North Jersey Transportation Planning Authority

FY21 Freight Concept Development Program Studies

Concept Development Report

Berkshire Valley Road Truck Circulation Project



June 2023

NJTPA

NJTPA Freight Concept Development Program

Jacobs

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This report has been prepared as part of the North Jersey Transportation Planning Authority (NJTPA) Freight Concept Development Program with financing by the Federal Transit Administration and the Federal Highway Administration of the U.S. Department of Transportation. This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The NJTPA is solely responsible for its contents.

NJTPA is the federally authorized Metropolitan Planning Organization (MPO) for the 13-county northern New Jersey region, home to 7 million people. It evaluates and approves transportation improvement projects, provides a forum for cooperative transportation planning, sponsors and conducts studies, assists county and city planning agencies, and monitors compliance with air quality goals.

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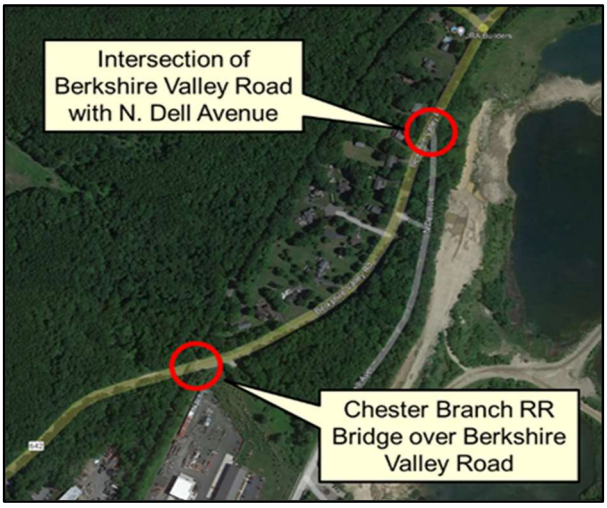
EXECUTIVE SUMMARY

The North Jersey Transportation Planning Authority (NJTPA), in partnership with Morris County, retained Jacobs for the preparation of a Freight Concept Development Study to identify a preferred alternative to accomplish the following actions at the project locations (Figure E.1):

- Eliminate the vertical clearance restriction imposed by the **Chester Branch Bridge to trucks traveling along Berkshire Valley Road.**
- Accommodate **the movement of trucks through the intersection of North Dell Avenue with Berkshire Valley Road.**

Figure E.1: Project Locations



The need for and benefits of heightening the Chester Branch Bridge over Berkshire Valley Road and improving the geometric configuration of the intersection of Berkshire Valley Road with North Dell Avenue were evaluated and documented in the **Morris County Freight Infrastructure and Land Use Analysis, June 2011.**

The purpose of this project is ***"to eliminate the height restriction that the Chester Branch rail bridge creates on Berkshire Valley Road (642), improve safety, and to improve the geometric configuration of the intersection of Berkshire Valley Road with North Dell Avenue to efficiently accommodate large truck movements"***.

The primary goals of this project are to:

1. Improve safety along Berkshire Valley Road, North Dell Avenue, and the Chester Branch
2. Support existing and future freight supported development

While each individual improvement project has independent utility, when implemented together the combined benefits would better support the management of truck circulation and industrial development in the immediate area.

Environmental and Infrastructure Constraints Screening

Investigation of feasible alternatives to address the two issues began with a detailed screening to identify environmental and utility infrastructure constraints within the project area. Concept Development is essentially a fatal flaws analysis performed early in the project delivery process to eliminate impractical and inefficient options and advance those alternatives that are more likely to be constructible. Constraints that would potentially affect the development and screening of alternative improvements were investigated in the following categories:

- Land Use
- Community Profile and Environmental Justice/Title VI
- Cultural Resources
- Section 4(f) and Green Acres
- Air and Noise
- Freshwater Wetlands and Surface Water Resources
- Floodplains and Aquifers
- Threatened and Endangered Species
- Stormwater (Surface Water Quality)
- Hazardous Materials
- Existing Utilities

Key constraints identified in the study area include cultural resources (Morris Canal), potential encroachment to wetland transition areas and impacts to threatened and endangered species habitats.

Stakeholder and Public Outreach

Stakeholder and public involvement in the transportation planning process is intended to ensure that citizens have a direct voice in public decision-making. Public involvement is a key component of the transportation planning process and is critical in successfully developing a transportation project that serves a true purpose and need and generates strong stakeholder support. It is important for planners to understand the perspectives of the public, elected officials, stakeholders, advocates and opponents throughout the project development process. In recognition of this importance, this study included a thorough and comprehensive stakeholder and public outreach program throughout the study process. Key components of this process included the following:

- Briefing of local elected officials representing the project area
- Presentation before the Roxbury Township Council
- Hosting of public meetings, heavily advertised in multiple print and social media outlets

- Hosting of a project website
- Outreach to businesses and property owners who might be affected by the preferred alternative

Alternatives Development and Evaluation

A wide range of alternatives to address the individual projects were developed and evaluated against a series of criteria. The screening evaluation was qualitative in nature and considered alternatives in terms of their basic attributes as compared to the other alternatives. The criteria used to evaluate each alternative include the following:

- Meets Project Purpose and Need
- Freight Rail/Truck Operations Impacts/Benefits – During Construction
- Freight Rail/Truck Operations Impacts/Benefits – After Construction
- Passenger Rail Operations Impacts/Benefits
- Adjacent and Proximate Land Use Impacts/Benefits
- Historic and Cultural Resources Impacts/Benefits
- Community Profile and Environmental Justice/Title VI Impacts/Benefits
- Wetlands Impacts/Benefits
- Floodplains and Aquifers Impacts/Benefits
- Threatened and Endangered Species Impacts/Benefits
- Stormwater and Drainage Impacts/Benefits
- Hazardous Materials Impacts/Benefits
- Air Quality and Noise Impacts/Benefits
- Community Impacts/Benefits
- Safety Impacts/Benefits
- Utility Impacts/Relocation Requirements
- Project Independence – Creates or Eliminates Need for Other Infrastructure Project
- Roadway Operational and Mobility Impacts/Benefits

Value Engineering Review

The alternative evaluation process included an independent Value Engineering (VE) review conducted by an independent team of engineers and planners from a firm not involved in the development of the alternatives. The VE team was provided with an overview presentation of the projects, followed by a visit to the project site. Data assembled in the alternative development process were provided to the VE team with a summary of the alternatives considered and the initial recommendation of the preferred alternative.

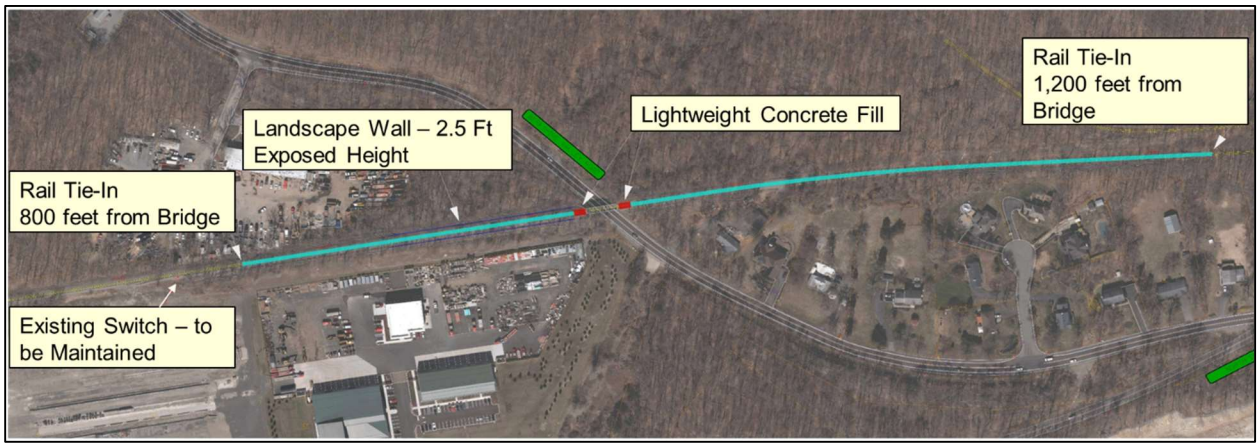
The VE team subsequently met in a workshop forum to identify alternatives that the project team may not have initially considered and evaluate possible modifications of the alternatives already developed. The creative idea phases focused on alternatives that might leave a lesser impact on the project area resources, while meeting the stated purpose and need.

Preliminary Preferred Alternatives

Based upon the criteria scoring applied to the alternatives, a Preliminary Preferred Alternative (PPA) was identified for each of the projects.

Alternative 5.2a was identified as the PPA that best meets the project purpose and need to eliminate the vertical clearance restriction imposed by the Chester Branch Bridge to trucks traveling along Berkshire Valley Road. Alternative 5.2a would use Accelerated Bridge Construction techniques to fully replace the existing bridge superstructure and substructure, heightening the abutments and setting a prefabricated bridge in place. The abutments would be heightened such that a vertical clearance of 14 feet 3 inches would be achieved, allowing large trucks to travel along Berkshire Valley Road. The profile of the track would be elevated on each side of the bridge to match the height of the new bridge. An overview of this alternative is depicted on Figure E.2.

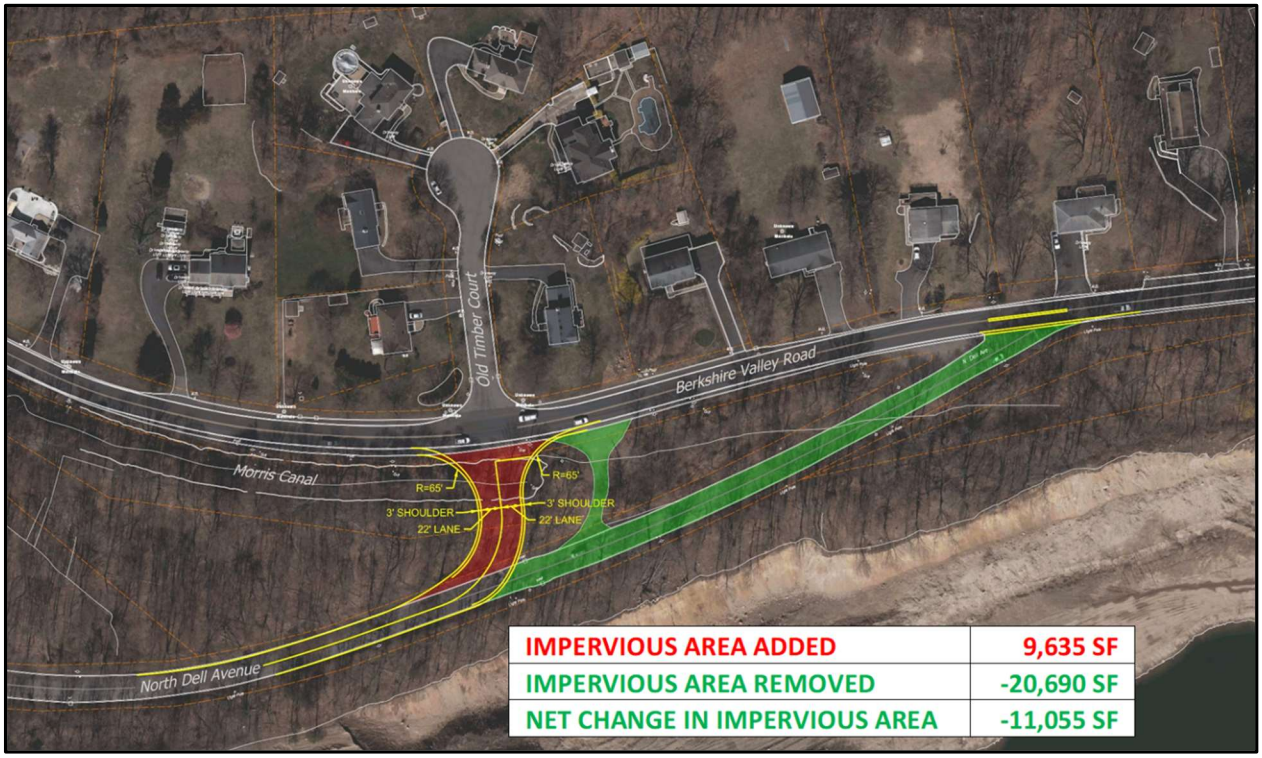
Figure E.2: Preliminary Preferred Alternative 5.2a



Alternative I.3 was identified as the PPA that best meets the project purpose and need for the accommodation of trucks traveling through the intersection of Berkshire Valley Road with North Dell Avenue. Alternative I.3 provides a connection from North Dell Avenue to Berkshire Valley Road which aligns with the existing intersection of Old Timber Court converting the existing

three-way intersection to a four-way intersection. At the intersection, the lanes are widened and roadway pavement width is widened to 50 feet to accommodate W-62 truck turning movements. This alternative allows for the removal of over 20,000 square feet of existing pavement for a net reduction in impervious cover of approximately 11,325 square feet. An overview of this alternative is depicted on Figure E.3.

Figure E.3: Preliminary Preferred Alternative I.3



Estimated Construction Cost

Estimates of the cost for advancing each of the PPAs through construction were prepared. In addition to the construction cost, these estimates include preliminary and final design, environmental documentation and permitting, construction engineering support and inspection.

Table E.1: Estimated Construction Cost

Description	Cost
Chester Branch Bridge over Berkshire Valley Road – Replacement of Bridge Substructure, Substructure and Reprofiling of Track	**$ 6,606,975**
Intersection of Berkshire Valley Road with North Dell Avenue – Relocation to Old Timber Court	**$ 632,346**
TOTAL	**$ 7,239,320**

Note: Construction cost estimate is in 2023 dollars.

The following sections detail the analysis process leading to the selection of the PPAs for recommendation of advancement into design and construction.

1. INTRODUCTION

Morris County owns and operates three branch lines accessed by the Washington Secondary and NJ TRANSIT's Morristown Line to serve a wide range of industrial customers in the county. One of the three Morris County-owned branch lines, the Chester Branch, currently passes immediately adjacent to the former Hercules site that covers more than 900 acres. This property represents one of the largest vacant industrial properties in the region. A smaller 74-acre site on the east side of Berkshire Valley Road and the Petillo property and Kenvil Newcrete site along the east side of the Chester Branch hold significant potential for new rail-served industrial development. As described in the Morris County Freight Infrastructure and Land Use Analysis, trucks traveling to and from the Hercules site and the adjacent parcel across Berkshire Valley Road must use Hercules Road and U.S. Highway (US-)46 to the south to access Interstate Highway (I-)80. A more circuitous route to I-80 is available to the north on Berkshire Valley Road through Wharton, but trucks traveling on this route are impeded by the low (12-foot 2-inch) overhead bridge clearance where the Chester Branch crosses over Berkshire Valley Road.

Restrictions to truck movements imposed by the Chester Branch bridge over Berkshire Valley Road and the geometric configuration of the intersection of Berkshire Valley Road with North Dell Avenue represent impediments to realization of the full economic potential of these properties. This project will develop alternatives to eliminate these impediments to industrial and economic growth in Roxbury Township. Elimination of these constraints is directly in line with, and supporting of, New Jersey's State Strategic Plan, which presents a blueprint for achieving sustainable economic growth and prosperity balanced with natural resource preservation and quality of life for New Jersey residents.

The North Jersey Transportation Planning Authority (NJTPA), in partnership with Morris County, retained Jacobs for the preparation of a Freight Concept Development Study to identify the preferred alternatives to accomplish the following actions:

- Eliminate the vertical clearance restriction imposed by the Chester Branch Bridge to trucks traveling along Berkshire Valley Road
- Accommodate the movement of trucks through the intersection of North Dell Avenue with Berkshire Valley Road.

This report documents the study process, alternatives considered, public and stakeholder outreach and coordination, and recommendation of a preferred alternative that best meets the project purpose and need for advancement into design and construction of the replacement of

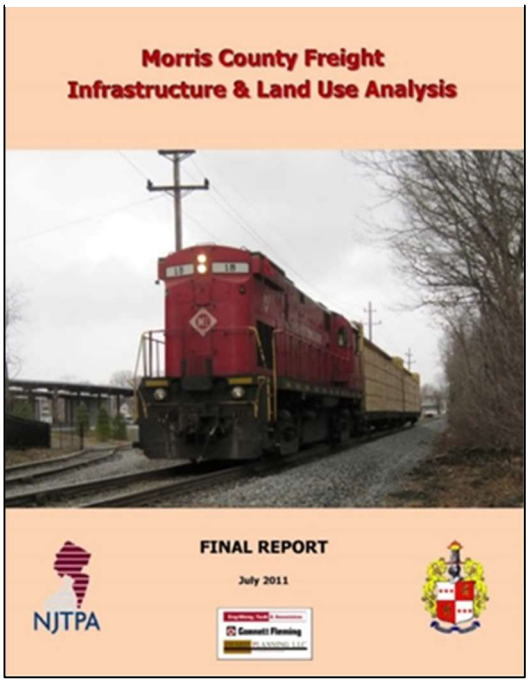
the Chester Branch Bridge over Berkshire Valley Road and reconfiguration of the intersection of Berkshire Valley Road with North Dell Avenue.

1.1 Predecessor Projects and Studies

Upgrading and improving safety on key rail corridors and roadways to accommodate truck traffic is fully consistent with the goals and priorities set forth in NJTPA's long-range transportation plan, the New Jersey Department of Transportation's (NJDOT's) Statewide Freight Plan, and the additional plans listed in subsequent sections, which support investments in the transportation infrastructure supporting the safe and efficient movement of freight. Improvements to the freight transportation infrastructure within the study area would create opportunities for growing the existing rail-served businesses and attracting new rail-served developments which would, as a result, increase the number of jobs and economic vitality of the region.

The need for and benefits of heightening the Chester Branch Bridge over Berkshire Valley Road and improving the geometric configuration of the intersection of Berkshire Valley Road with North Dell Avenue were evaluated and documented in the **Morris County Freight Infrastructure and Land Use Analysis (Figure 1).** Morris County, with funding from the NJTPA, completed the study in 2011. This study examined the impact and role of the goods movement industry on the county's transportation network, land use, and economy. The study recommended physical infrastructure improvements, identified potential freight-related development locations, and analyzed the economic impact of the value of the goods movement industry in the county. It also included a guide to freight planning for municipalities and a marketing plan to promote economic development and transportation in the county.

Figure 1.1: Morris County Freight Infrastructure & Land Use Analysis



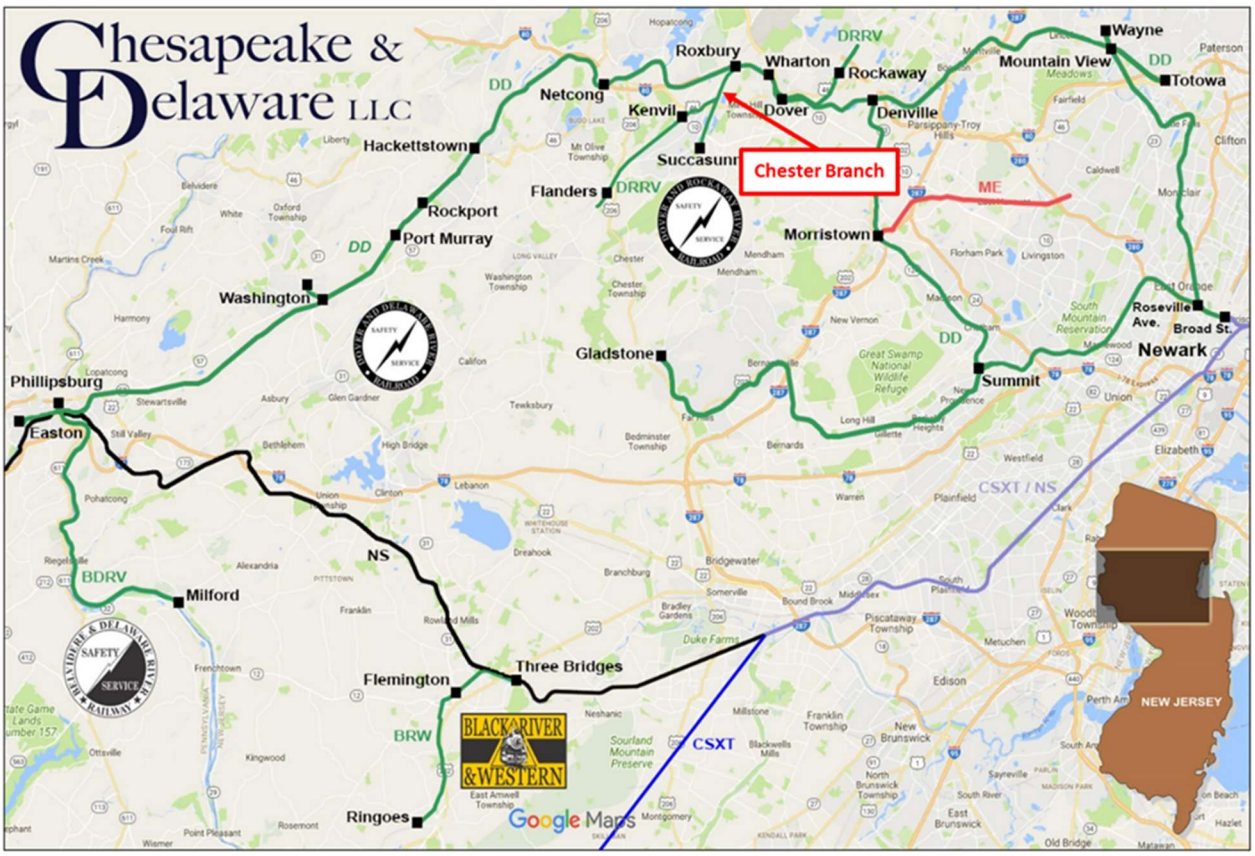
1.2 Existing Conditions

1.2.1 Chester Branch Rail Line

Freight service on the Washington Secondary and the branch lines owned by Morris County is operated by the Dover & Rockaway River Railroad Company, LLC (DRRV), a wholly owned

subsidiary of Chesapeake and Delaware, LLC. The DRRV was formed in 2017 to operate and service customers along the three rail lines owned by Morris County: the Chester Branch, High Bridge Branch, and D&R Line. In 2019, the DRRV leased the Washington Secondary from Phillipsburg to Hackettstown from Norfolk Southern. The DRRV maintains operating rights on NJ TRANSIT's Morristown Line from Hackettstown to Morristown, from which they provide last-mile switching service to businesses located on connecting branch lines, including the Chester Branch.

Figure 1.2: Chesapeake and Delaware, LLC – Dover and Rockaway River Railroad
Source: http://www.chesapeakeanddelaware.com/Railroads_DRRV.html



The DRRV serves over 20 active industrial customers along the Washington Secondary/NJ TRANSIT Morristown Line and the connecting branch lines, delivering over 2,300 rail cars annually. One of these branch lines—the Chester Branch—is a 4-mile rail line in Roxbury owned by Morris County. The line branches off from the NJ TRANSIT Morristown Line at Lake Junction and runs southward to Succasunna. The two customers along the Chester Branch and the three customers along the High Bridge Branch are currently served via the Chester Branch.

Two of these customers—Kuiken Lumber and Holland Manufacturing—are located along the Chester Branch. An additional three customers—Blue Ridge Lumber, Triumph Plastics, and Reuther Material Company—are along the High Bridge Branch which is accessed via the Chester Branch. Additional underdeveloped former industrial properties that could potentially be served in the future exist in the area; for instance, there are industrial properties on the east side of Berkshire Valley Road and along the east side of the Chester Branch that hold significant potential for new rail-served industrial development. Trucks accessing these sites from US-46 to the south must pass through the residential area of Kenvil north of US-46 along North Dell Avenue.

The Chester Branch crosses over Berkshire Valley Road on a single track, single span thru-girder bridge. The rail bridge has a physical vertical clearance of 12 feet 2 inches, but in the interest of better controlling trucks, the bridge is signed for a clearance of 11 feet 5 inches; this limits the size of trucks that can travel on the road. This height restriction requires larger vehicles to divert to North Dell Avenue when using Berkshire Valley Road to travel between I-80 and US-46.

Figure 1.3: Chester Branch Rail Bridge over Berkshire Valley Road – Looking South



Despite advance warning signs and the posting of the vertical clearance on the bridge itself, in the 3-year period from July 2018 to July 2021 there have been a total of 10 documented incidents where a truck struck the bridge resulting in varying degrees of damage over the past 3 years. One of the incidents that caused significant damage occurred on July 13, 2021 when a tri-axle truck traveling northbound on Berkshire Valley Road struck the bridge. The extent of the damage forced the closure of the Chester Branch to rail traffic for a 10-day period, with rail traffic restored on July 23, 2021. During the initial repairs to the bridge, Berkshire Valley Road was fully closed to traffic for 2 days. To accommodate the remainder of the repairs, the roadway was restricted to a single travel lane accommodating alternating traffic through October 19, 2021. Elimination of this vertical constraint is critical to improving safety along Berkshire Valley Road and the Chester Branch and continued operation of both the rail line and the roadway.

In May, 2022, the latest bridge inspection as mandated by the Federal Railroad Administration Bridge Management Regulations was completed. The May 2022 inspection report assigned a sufficiency rating of 41.27. Sufficiency ratings below 50 (on a scale of 1 to 100) indicate a need for full replacement of the super structure and the substructure. The full inspection report is presented in Appendix A.

1.2.2 Intersection of Berkshire Valley Road with North Dell Avenue

In addition to the height restriction imposed by the bridge, the geometric configuration of the intersection at Berkshire Valley Road and North Dell Avenue is difficult for vehicles, especially trucks, to navigate. Without these impediments, Berkshire Valley Road would be the preferred truck route serving local businesses through this area between I-80 and US-46 as it avoids the residential neighborhoods along North Dell Avenue closer to Route 46.

Figure 1.4: Intersection of Berkshire Valley Road with North Dell Avenue – Looking South



Automatic Traffic Recorders (ATRs) were installed for a 1-week period in May 2021 recording the traffic volumes along Berkshire Valley Road and North Dell Avenue. Concurrent with the ATRs, MioVision cameras were deployed from 6:00 a.m. to 6:00 p.m. to record traffic volumes by movement at the intersection of the two roadways. Recorded volumes were classified as cars, medium trucks and heavy trucks.

On a typical day between 6:00 a.m. and 6:00 p.m., nearly 8,000 vehicles pass through this intersection. This 12-hour travel period represents over 75 percent of the typical 24-hour volumes. During this peak travel demand period, approximately 3.6 percent of these vehicles are heavy trucks. During this period, due to the configuration of the geometric configuration of the intersection, no trucks were recorded making the turn from northbound Berkshire Valley Road to North Dell Avenue, nor did the reverse move—a left turn from North Dell Avenue to Berkshire Valley Road—occur. Table 1.1 and Figure 1. summarize the typical traffic volumes by movement through this intersection during the 12-hour peak demand period. Details of the recorded traffic volumes are presented in Appendix B.

Table 1.1: Existing Traffic Volumes – 6:00 a.m. to 6:00 p.m.

	Total	Heavy Trucks	% Trucks
Berkshire Valley Road			
Southbound Left	1,156	85	7.4%
Southbound Thru	2,928	51	1.7%
Northbound Thru	2,596	53	2.0%
Northbound Right	31	0	0.0%
North Dell Avenue			
Northbound Thru	1,232	97	7.9%
Northbound Left	17	0	0.0%
TOTAL	**7,960**	**286**	**3.6%**

Figure 1.5: Existing Traffic Volumes – 6:00 a.m. to 6:00 p.m.



2. PROJECT PURPOSE AND NEED

The purpose of this project is ***"to eliminate the height restriction that the Chester Branch rail bridge creates on Berkshire Valley Road (642), improve safety, and to improve the geometric configuration of the intersection of Berkshire Valley Road with North Dell Avenue to efficiently accommodate large truck movements."***

The primary goals of this project are to:

1. Improve safety along Berkshire Valley Road, North Dell Avenue, and the Chester Branch
2. Support existing and future freight supported development

Within each of these overarching goals, specific objectives have been identified:

1. Improve safety along Berkshire Valley Road, North Dell Avenue, and the Chester Branch
   a. **Allow** for the movement of large trucks along Berkshire Valley Road
   b. **Support** economic vitality by supporting existing and future industrial development competitiveness by improving truck and rail access

2. Support existing and future freight supported development
   a. **Reduce** the operational cost of truck movements through the study area
   b. **Promote** retention and expansion of existing rail and truck served industrial businesses in Morris County
   c. **Attract** investment in industrial development of vacant and underutilized industrial parcels along the Chester Branch

The full Purpose and Need Statement is presented in Appendix C.

3. ENVIRONMENTAL CONSTRAINT SCREENING

Concept Development is essentially a fatal flaws analysis performed early in the project delivery process to eliminate impractical and inefficient options and advance those alternatives that are more likely to be constructible. One critical aspect of the fatal flaws analysis is assessing potential environmental impacts. Most impacts exist on a continuum, ranging from no effect to significant impact. Although permits may be obtained and mitigation plans developed to address significant impacts, these permissions and ameliorative actions add substantial cost to the project budget, extend the project schedule, and can result in negative public perception and local government opposition, which can jeopardize funding. As a result, an environmental screening to identify environmental obstacles to consider in design is an essential step in the development of viable project alternatives.

The study area defined for the environmental screening considered the alternatives proposed in the previous *Morris County Freight Infrastructure & Land Use Analysis* in the context of existing topography and land development patterns. To allow for the potential for some deviation from the previous alternatives and still provide useful screening data, each of the previous project alternatives was buffered 300 or 1,000 feet (depending on the environmental discipline) in all directions. The area between the most northern, southern, and eastern and western edges of the buffers composed the study area. The NJDOT Division of Environmental Resources reviewed and approved the project study area geographic description and rationale for the boundaries.

The following sections describe the purpose, data, methodology, and results of each category considered under the environmental screening conducted for the Concept Development phase of project delivery.

3.1 Land Use

3.1.1 Purpose

Land use analysis considers whether a project alternative is compatible with existing, adjacent uses. Impacts and incompatibilities with particular land use features, such as wetlands, cultural resources, and environmental justice (EJ) communities, are each discussed in their own sections in this screening. The land use discussion in this specific section provides an overview of the land use character of the study area.

3.1.2 Methodology and Scope of Screening

Data Sources

This screening uses the NJDEP 2012 Land Use/Land Cover Update (February 17, 2015) (LU/LC 2012). Some field verification was conducted as part of study area site visits.

Analysis Methodology

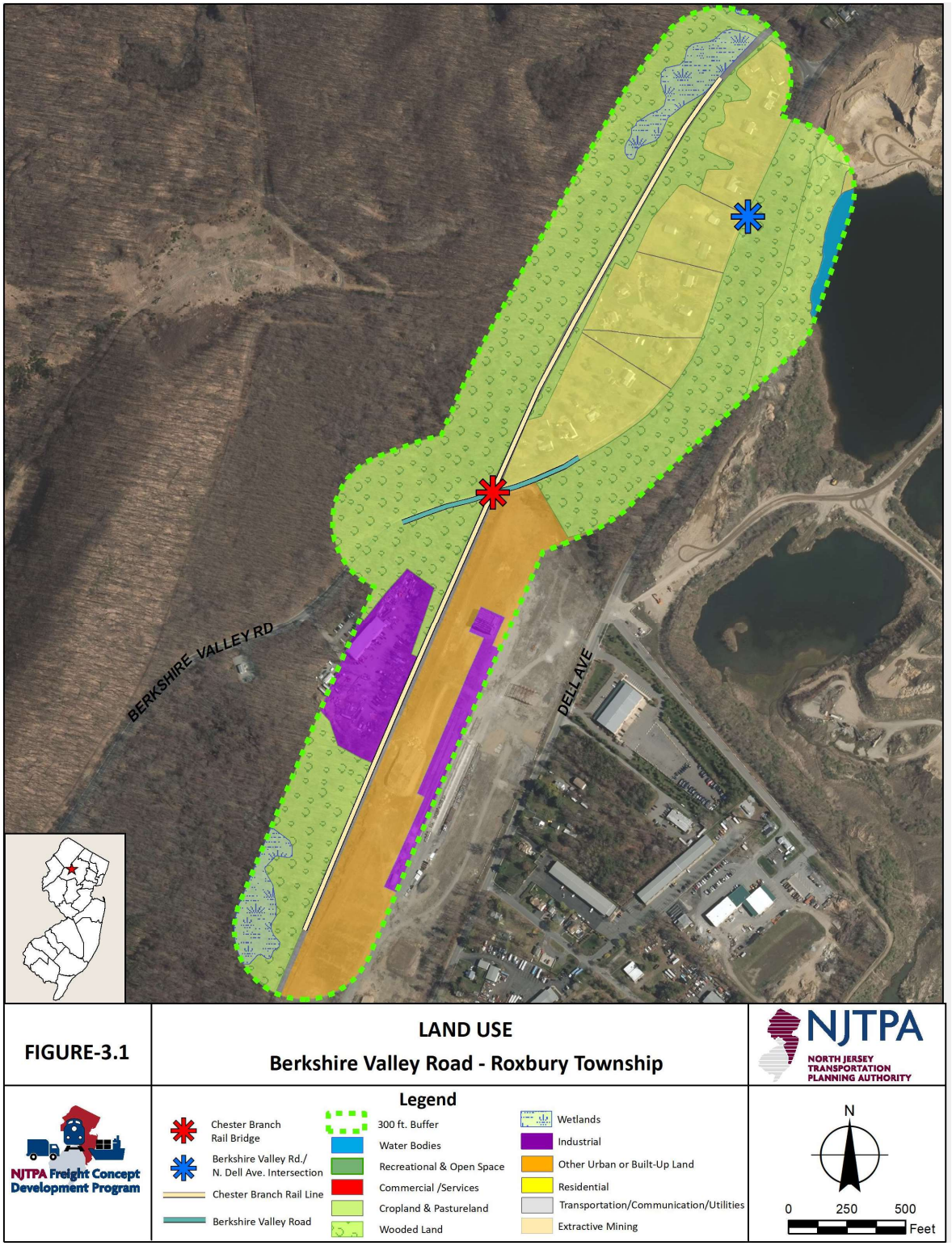
The geographic information system (GIS) data obtained from NJDEP were displayed on a GIS basemap of the project area and clipped to the study area buffer to reduce the total data set to one that contained only the data pertinent to the study area.

The screening involved desktop analysis with limited field reconnaissance undertaken in the course of field assessments for alternatives development. Once a preliminary preferred alternative (PPA) is selected and advanced to preliminary engineering, site reconnaissance for a more detailed assessment of land use types may be performed, although all pertinent issues will likely be addressed as part of the field reconnaissance for the discipline areas discussed in the following sections.

3.1.3 Results of Screening

The study area is approximately 1 mile long and within Roxbury Township. To the west of the Chester Branch Line is predominantly undeveloped wooded land. One industrial property (Green Outlook Landscaping) is in the southwest quadrant of the rail bridge and Berkshire Valley Road. To the east of the Chester Branch Line, the area is characterized as including residential, undeveloped wooded land, other built land, and industrial uses. There are no public recreational resources within the study area (Figure 3.1).

Figure 3.1: Land Use



3.2 Community Profile and Environmental Justice/Title VI

3.2.1 Community Demographics

The goal of identifying the project's community composition is to identify protected communities identified by Environmental Justice and Title VI nondiscrimination statutes and policies, to ensure impacts associated with the project are not disproportionately distributed, and to ensure the public outreach plan is fair and inclusive.

3.2.2 Methodology and Scope of Screening

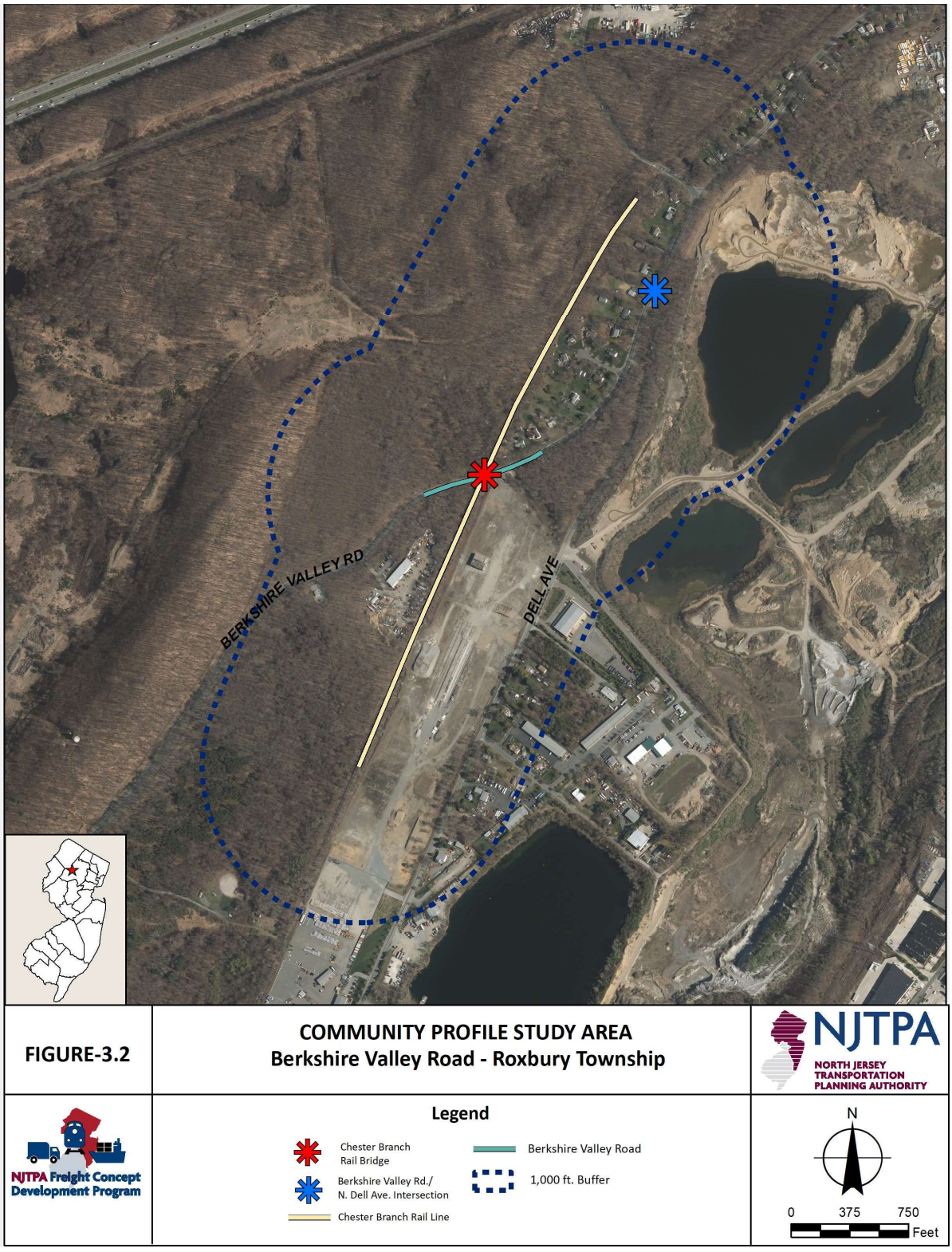
Data Sources

Community facilities were determined through review of resources provided online by the municipality, county, and state. The location of resources was verified through mapping tools such as Google Maps and Google Earth. The primary Community Profiles Screening Area is depicted on Figure 3.2.

Data were obtained from the U.S. Census American Community Survey 2019 (U.S. Census Bureau 2019) and updated U.S. census tracts available through the New Jersey GIS data clearinghouse. Data sets obtained from the U.S. Census and used in this analysis included the following:

- S0501: Selected Characteristics of the Native and Foreign-Born Populations
- DP03: Selected Economic Characteristics
- S0501: Populations
- S0103: Population 65 Years and Over in the United States
- S1601: Language Spoken at Home
- S1701: Poverty Status in the Past 12 Months
- B01003: Total Population
- B02001: Race
- B03003: Hispanic or Latino Origin
- B01001H: Sex by Age (White Alone, not Hispanic or Latino)
- S0101: Age and Sex
- B18102: Sex by Age by Hearing Difficulty
- B18103: Sex by Age by Vision Difficulty
- B18104: Sex by Age by Cognitive Difficulty
- B18105: Sex by Age by Ambulatory Difficulty
- B08141: Means of Transportation to Work by Vehicles Available
- B08201: Household Size by Vehicles Available

Figure 3.2: Community Profile Study Area



Analysis Methodology

For this assessment, the "minority population" constitutes the population that self-identifies as any of the U.S. Census racial groups, combination of racial groups, or as Hispanic or Latino. In other words, an individual who self-identifies as one race and white but also Latino would be considered a minority. Nonminority is restricted to those who self-identify as being of one race, white, and neither Hispanic nor Latino.

The screening-level review of the community demographics considered the socioeconomic composition of the community in comparison to state, county, and municipality statistics and then examined the study area census tracts in more detail. The project tracts are the census tract located within 1,000 feet north and south of the Chester Branch. This analysis did not use smaller geographic area data, such as block groups, because certain data sets were not available at that level of detail.

3.2.3 Results of Screening

Table 3.1 summarizes the comparative socioeconomic data. This section describes the numerical data in more detail and summarizes the implications of these findings.

Community Facilities and Resources

The study area is located entirely in Morris County and Roxbury Township. There are no community facilities within the study area, and land uses consist of undeveloped wooded land, single-family residential housing, and private businesses. The Chester Branch runs somewhat parallel to North Dell Avenue. The section north of Berkshire Valley Road consists of single-family homes, and the section to the south consists of private businesses. Most community facilities and resources are located to the east of the Chester Branch and beyond the study area.

Table 3.1: Study Area Demographic Data

State of New Jersey			
Percentage of Population Self-identifying as a Minority	45.7%		
Percentage of Population Living at or Below the Federal Poverty Line	9.2%		
Project Area	**Morris County**	**Roxbury Township**	**Census Tracts**
Total Population	493,379	22,956	4,458
Racial and Ethnic Composition			
White	81.5%	85.8%	90.9%
Black or African-American	3.5%	5.7%	2.1%
Native American/Alaskan Native	0.1%	0.5%	0.0%
Asian	10.3%	4.9%	2.1%
Native Hawaiian and Other Pacific Islander	0.0%	0.1%	0.0%
Other Race Not Specified	2.3%	0.5%	1.1%
Two or More Races	2.2%	2.4%	3.8%
Hispanic/Latino of Any Race	13.3%	8.6%	12.4%
One Race, White, Not Hispanic/Latino	71.4%	79.2%	81.5%
Total Minority Percentage	**28.6%**	**20.8%**	**18.5%**
Percentage of Population Living at or Below the Federal Poverty Line	5.5%	5.3%	3.6%
Percentage of Households with No Vehicle	4.9%	3.5%	4.8%
Percentage of Workers Over 16 with No Vehicle	3.1%	0.9%	0.8%
Language Proficiency			
Speak Only English	74.6%	83.6%	77.8%
Speak Spanish	10.8%	7.0%	13.3%
Speak Other Indo-European Languages	8.5%	5.8%	7.5%
Speak Asian and Pacific Island Languages	5.5%	2.2%	1.0%
Speak Other languages	0.5%	1.4%	0.4%
Percentage of Population 65 and Older	16.7%	18.0%	21.0%

Race and Ethnicity

As described in Table 3.1, the total percentage of minorities within the study area is lower than both the average for Roxbury Township and Morris County at 18.5 percent and less than half that compared to that of New Jersey at 45.7 percent. The percentage of those who identify as

"Hispanic/Latino of Any Race" within the study area census tract is consistent with that of Morris County. Other minorities are also represented, though in significantly smaller percentages, throughout the study area.

Limited English Proficiency

Morris County, Roxbury Township, and the study area census tract have a high percentage of English proficiency. Those who do not speak English exclusively speak Spanish and to a lesser extent Indo-European languages, Asian languages, and other languages. As shown in Table 3.1 and on Figure 3.3, 13.3 percent of the study area census tract speaks Spanish. An interpreter was available at public meetings to engage Spanish-speaking participants. Additionally, the legal notices and flyers advertising the public meeting was provided in both English and Spanish.

Poverty

The poverty rate within the study area is lower than that of both Morris County and Roxbury Township and less than that of the State. As shown in Table 3.1 and on Figure 3.4, the poverty rate within the study area and neighboring communities are comparatively low.

Auto Ownership

Within the study area census tract, the percentage of households with no vehicle is less than that of Morris County. It is slightly higher than that of Roxbury Township but, at 4.8 percent, it can be considered low. Outreach efforts should focus on directly communicating to the households and businesses within the study area and provide accommodations as needed.

Senior Population

The study area's population over the age of 65 is slightly higher than that of Morris County and Roxbury Township (Figure 3.5).

Disability Status

Disability status was also examined as part of the demographic analysis to confirm public outreach was inclusive and accessible to residents with mobility and sensory limitations. Disability status data are summarized in Table 3.2. Overall disability percentages within the study area are comparable to that of Morris County.

There was a higher percentage of people with mobility impairments than other disabilities at 7.02 percent for the study area census tract; however, the remaining disability percentages for the census tract are less than 4 percent. Regardless, the public information center should be held

in a fully Americans with Disabilities Act (ADA)-compliant accessible location to accommodate any potential needs.

Figure 3.3: Limited English Proficiency

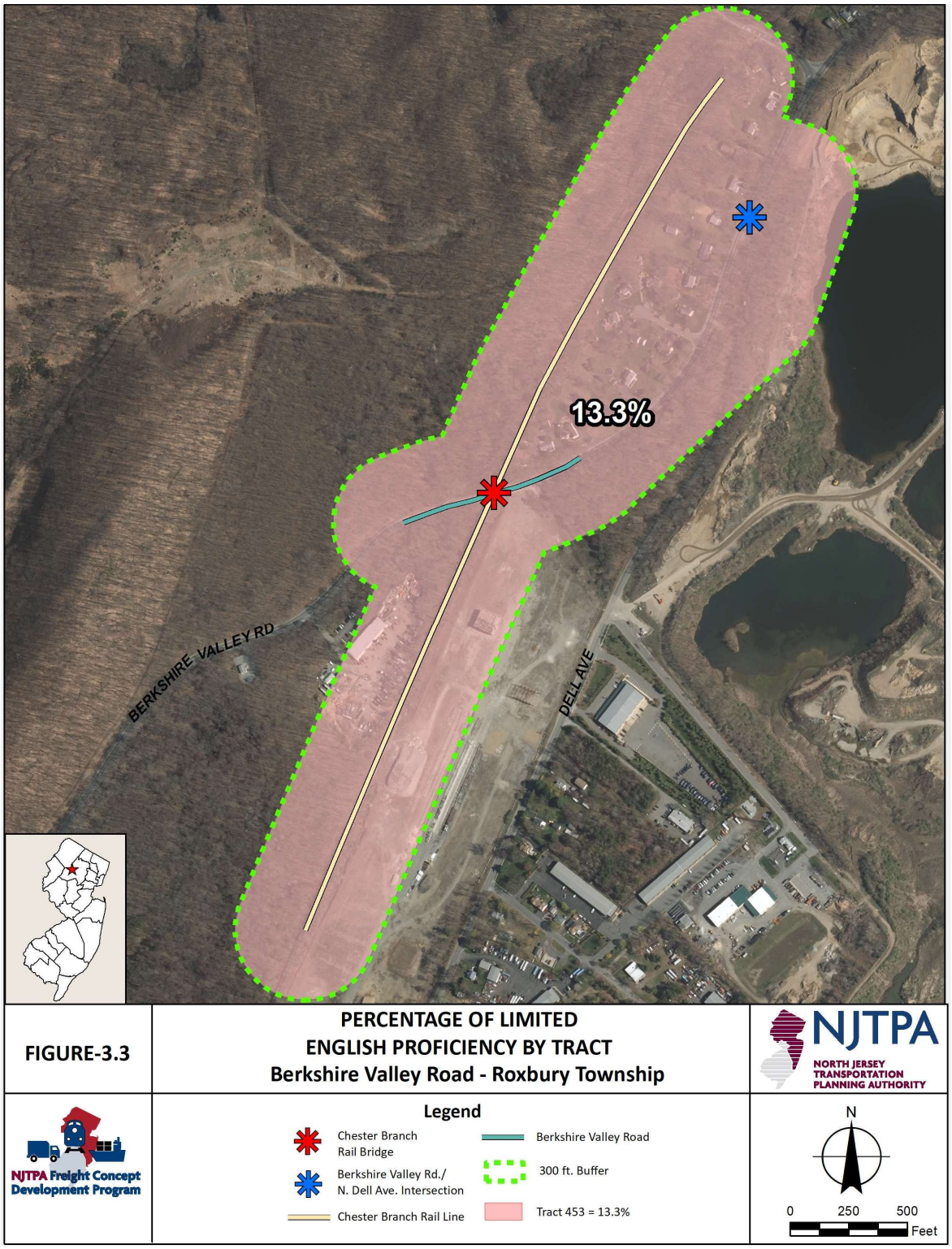


Figure 3.4: Poverty

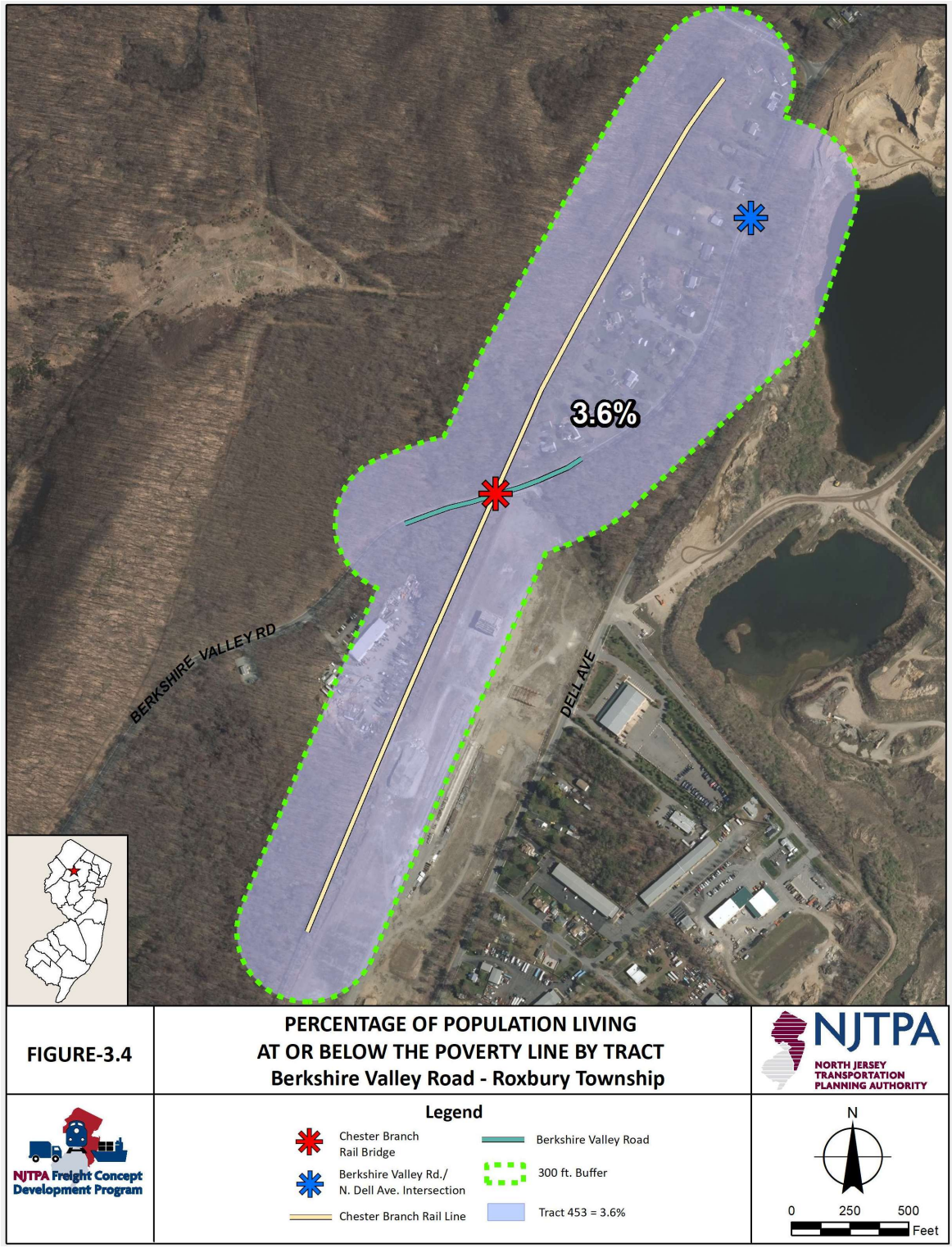
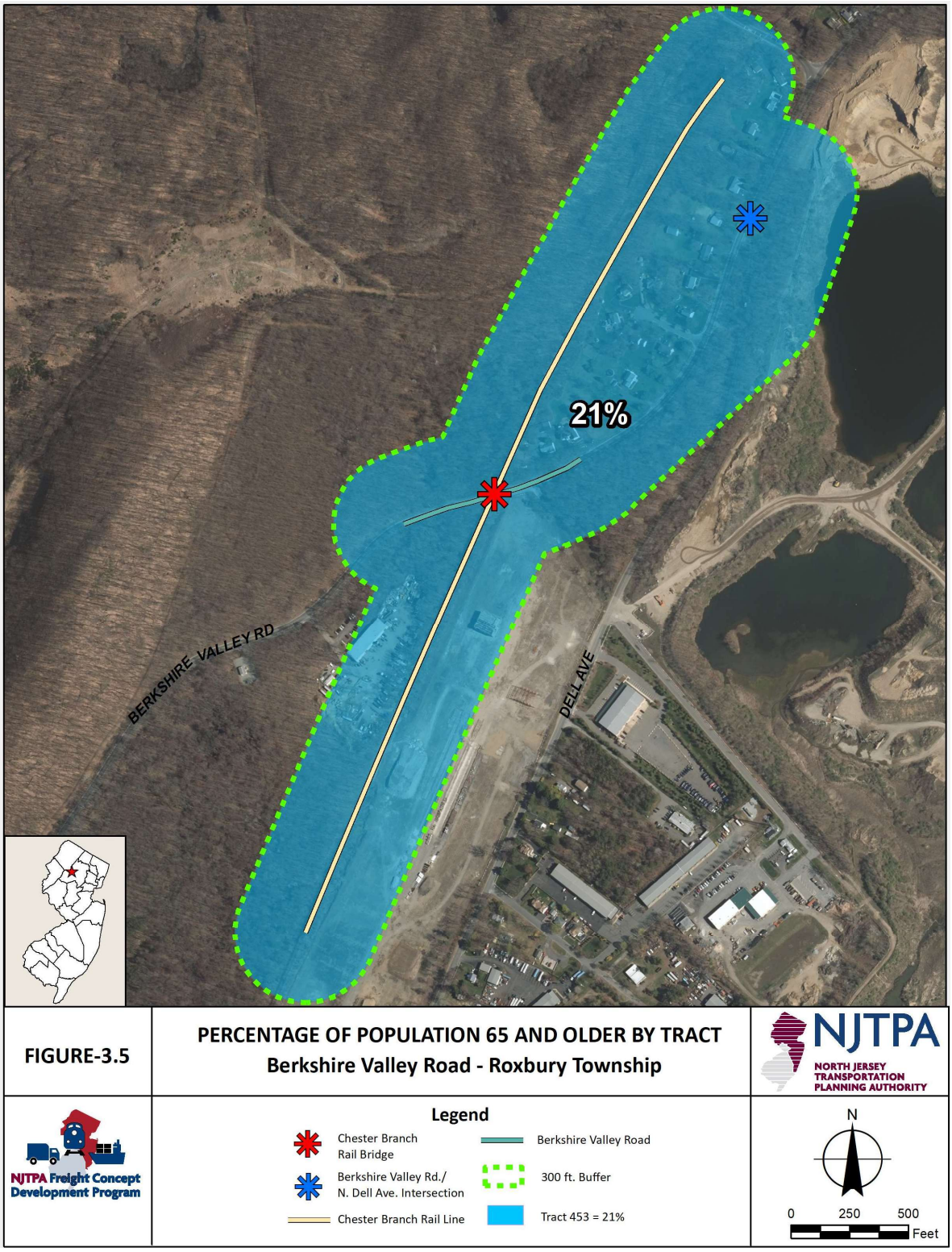


Table 3.2: Disability Status in the Study Area

Population		Hearing Impaired		Visually Impaired		Population	Cognitively Impaired		Mobility Impaired	
		Total	%	Total	%		Total	%	Total	%
Morris County	489,401	12,024	2.46%	6,263	1.28%	464,741	13,865	2.98%	14,510	3.12%
Study Area Census Tract										
453 – Morris County	4,264	135	3.17%	70	1.64%	4,075	159	3.90%	286	7.02%

Figure 3.5: Senior Population



3.3 Cultural Resources

3.3.1 Purpose

Federal regulations (36 *Code of Federal Regulations* [CFR] 800, Section 106, *Protection of Historic Properties and the National Historic Preservation Act*,) require federally funded projects to consult with the State Historic Preservation Offices (SHPO), Tribal Historic Preservation Offices, Native American tribes, Native Hawaiian Organizations (NHOs), and other interested parties; identify historic properties; determine whether and how such properties may be affected; and resolve adverse effects.

36 CFR 800, Section 106 requires federal agencies to consider how projects affect historic properties. Historic properties are defined as any prehistoric or historic districts, sites, buildings, structures, or objects that are eligible for or already listed in the National Register of Historic Places (NRHP). Also included are any artifacts, records, and remains (surface or subsurface) that are related to and located within historic properties and any properties of traditional religious and cultural importance to Native American tribes or NHOs.

In accordance with these applicable regulations, a Cultural Resource Screening analysis was undertaken in the area surrounding the drain bridge. The goal of the screening was to identify known cultural resources in or near the project area. This includes known archaeological resources in the project area and historic architectural resources that are listed in, eligible, or potentially eligible for the New Jersey Register of Historic Places (NJR) and NRHP. The project area delineated for this screening used the maximum possible extent of proposed improvements at this location.

3.3.2 Methodology and Scope of Screening

Data Sources

A range of data sources were reviewed for this screening. This review was supplemented by field observations to validate the information assembled from the data review and identify any additional features that may not have been included in previous investigations.

Analysis Methodology

Tasks completed for the historic architectural component of the cultural resources screening included background research at the New Jersey Historic Preservation Office (NJHPO) to identify properties within approximately 0.5 mile of the project area that are listed in the NJR or listed in or eligible for the NRHP. Previously conducted historic site inventories and regulatory surveys on file at the NJHPO were reviewed. The archaeological portion of this cultural resources screening

consisted of background research at the NJHPO and the New Jersey State Museum (NJSM) to identify any registered archaeological sites as well as prior cultural resources surveys completed in or near the project area. The results of this screening were used in the environmental screening document.

3.3.3 Results of Screening

Environmental Setting

Richard Grubb & Associates prepared a Cultural Resources screening report in September 2022. The full document is provided in Appendix D. Figure 3.6 shows the historic resources identified in the study area.

Known Historic Properties

Background research conducted online with the Look Up Cultural Resources for Yourself (LUCY) cultural resources map viewer indicated that there is one previously identified historic resource listed in the New Jersey Register of Historic Places (NJR) and National Register of Historic Places (NRHP) within the study area: the Morris Canal Historic District (NJR: 11/26/1973; NR: 10/1/1974; SHPO Opinion: 4/27/2004) (NJDEP 2022b). The Morris Canal Historic District runs through the northern portion of the study area alongside Berkshire Valley Road and is listed in the NRHP under Criteria A, B, C, and D. The Morris Canal meets Criterion A for its association with critical transportation, industrial, and economic themes; Criterion B for its association with noted engineers and inventors; Criterion C for its technological innovations; and Criterion D for its information potential relating to canal engineering and construction and the culture and lifeways of nineteenth-century canal workers and travelers. The period of significance for the historic district ranges from 1831 to 1924.

The Old Main Delaware, Lackawanna and Western Railroad (Old Main DL&WRR) Historic District (SHPO Opinion 9/24/1996, revised 6/7/2004) lies approximately 2,150 feet north of the study area. The Old Main DL&WRR Historic District is eligible for the NRHP under Criteria A and C for its associations with suburbanization, transportation, engineering, and architecture.

Registered Archaeological Sites

A review of the NJSM site files and standard references (Cross 1941; Skinner and Schrabisch 1913) indicated that there are no archaeological sites located within the study area and it does not fall within an archaeological site grid (NJDEP 2022b).

Two registered archaeological sites were within 1 mile of the study area:

- The Mount Arlington Station/Post Office Site (28-Mr-300) is 1 mile west of the study area. It is a late nineteenth-century historic site consisting of deposits and partial foundations associated with the DL&WRR. This site is a contributing resource to the Old Main DL&WRR Historic District (SHPO Opinion: 6/7/2004).
- The Morris Canal Lock 2 East Site (28-Mr-320) is 3,150 feet to northeast of the study area. It consists of nineteenth-century historic deposits associated with a canal lock and lock tender's house along the Morris Canal.

New Jersey Historic Bridge Survey

The Chester Branch Railroad Bridge over Berkshire Valley Road, which is located within the study area, was not identified in the 1994 New Jersey Historic Bridge Survey (A.G. Lichtenstein and Associates, Inc. 1994). The bridge dates to circa 1910 (Van Cleef Engineering Associates 2022). The New Jersey Historic Bridge Survey only identified roadway bridges over 50 years of age at the time of survey, not railroad bridges. No other bridges identified in the New Jersey Historic Bridge Survey are located in the study area.

Planning Surveys

The 1987 Cultural Resources Survey of Roxbury Township does not identify any historic architectural resources within or adjacent to the study area, with the exception of the NJR- and NRHP-listed Morris Canal Historic District (Acroterion 1987).

Cultural Resources Surveys

A review of the NJHPO files indicated that five prior cultural resources surveys have been conducted within or adjacent to the study area (Dewberry 2013; Morris County 2014; NV5 et al. 2018; The RBA Group 2011; Richard Veit and Dennis Bertland Associates 2019). Of these, none contained an archaeological component nor did they identify any additional archaeological resources within or adjacent to the study area. In addition, none of the prior cultural resources surveys identified historic architectural resources within or adjacent to the study area other than the Morris Canal Historic District and the Old Main DL&WRR Historic District.

Historic Architecture

A site visit was conducted on March 2, 2022. There is one bridge located within the study area: the Chester Branch Railroad Bridge over Berkshire Valley Road. Architecture in the study area mostly consists of mid- to late twentieth-century, single-family, residential dwellings located along the northwest side of Berkshire Valley Road. At the southern end of the study area are several late nineteenth-to-early-twenty-first-century warehouses and industrial buildings along North Dell Avenue between its intersections with the Roxbury Recycling Center Driveway and

Pine Street. The Morris Canal Historic District runs through the study area on a roughly northeast to southwest alignment; evidence of the canal's historic route, which has been abandoned and filled in, can be seen along depressed sections in a wooded area between North Dell Avenue and Berkshire Valley Road. A majority of the project intersection alternatives would entail cutting a new road through this wooded area, connecting North Dell Avenue and Berkshire Valley Road.

Archaeology

The project archaeologist conducted a site visit on March 2, 2022. The path of the Morris Canal was still visible throughout the study area, where it had been partially filled in with redeposited soils. The proposed route of Alternative 1 was largely obscured by wetlands vegetation, while the routes of Alternatives 2 through 5 showed significantly less secondary growth along the interior. The route of Alternative 8 showed tree fall activity and some evidence of earthmoving associated with grading operations presumably from a nearby quarry. The Morris Canal was also present in this alternative. The proposed routes of Alternatives 6 and 7 showed the presence of the Morris Canal. Examination of the study area showed sparse secondary tree growth in the area bounded by Berkshire Valley Road and North Dell Avenue. A concrete structure was located along North Dell Avenue near the footprint of Alternative 1. It is unknown whether the structure had a domestic or industrial related function.

Summary of Findings

Historic Architecture

There is one previously identified historic architectural resource listed in the NJR and NRHP within the study area: the Morris Canal Historic District (NJR: 11/26/1973; NR: 10/1/1974; SHPO Opinion: 4/27/2004). Additionally, there is one other previously identified historic resource eligible for listing in the NRHP within 0.5-mile: the Old Main DL&WRR Historic District (SHPO Opinion: 9/23/1996, revised 6/7/2004). All other structures over 50 years of age within the study area (including the Chester Branch Railroad Bridge over Berkshire Valley Road, the Chester Branch of the DL&WRR, and several dwellings along Berkshire Valley Road) have not yet been evaluated for NRHP eligibility. Project impacts to historic properties should be considered during the Local Preliminary Engineering phase of the proposed project. All eight of the intersection reconfiguration project alternatives involve the laying of new roads through the boundary of the Morris Canal Historic District and are all located within 0.5-mile of the Old Main DL&WRR Historic District. As such, each of the eight project alternatives would have a direct impact on the Morris Canal Historic District. Any potential impacts to the Old Main DL&WRR Historic District or any other previously unidentified historic resources would be indirect.

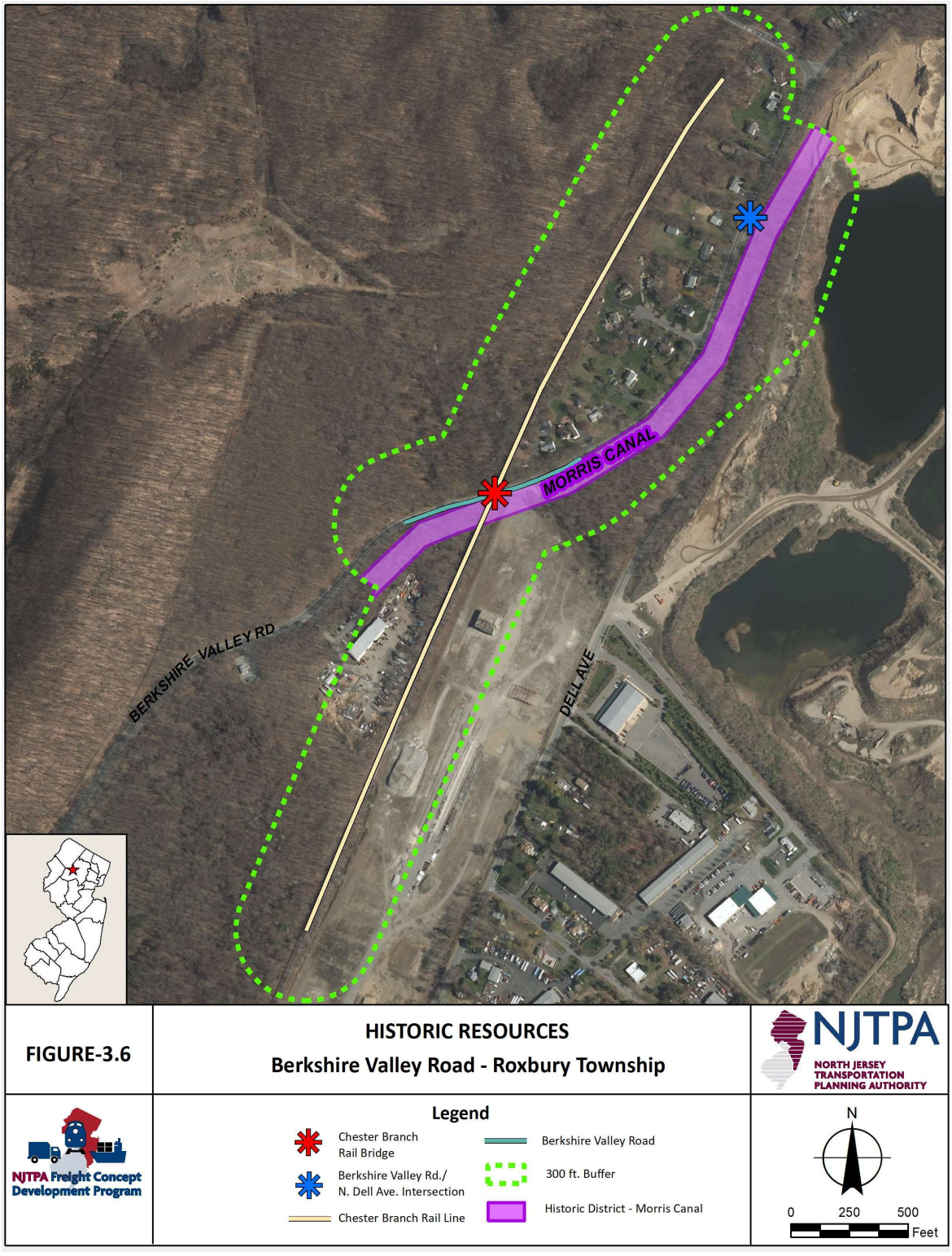
An evaluation of the National Register eligibility of the 112-year old Chester Branch Railroad Bridge will be necessary as part of Section 106 compliance. Assessing whether the project is an encroachment on the State and National Register-listed Morris Canal will also be required under New Jersey Register of Historic Places Act review.

Archaeology

No registered archaeological sites are within the study area, and two registered archaeological sites are located within 1 mile. The closest site, 28-Mr-320, is a canal lock and lock tender's house located 3,150 feet to the northeast of the study area, which is associated with the Morris Canal Historic District. The study area encompasses a portion of the Morris Canal Historic District and lies within 0.5 mile of the Old Main DL&WRR Historic District. As a result, the study area for the Berkshire Valley Road Truck Circulation Project is sensitive for historic cultural resources because of its proximity to the Morris Canal Historic District and possible domestic resources. The study area shows evidence of the Morris Canal within secondary growth deciduous woodlands. Some disturbances were also observer; however, considering the topographic setting, undisturbed areas that are under 15 percent slopes are considered to be generally sensitive for pre-contact archaeological resources and especially locations proximate to wetlands.

A Cultural Resources Survey of the selected alternatives (for vertical clearance and intersection improvements) will be necessary during the preliminary engineering phase to fulfill the requirements of the New Jersey Register of Historic Places Act (New Jersey Administrative Code 7:4) due to the potential encroachment to the State and National Register-listed Morris Canal Historic District. The preparation and submission of an Application for Project Authorization will be necessary to facilitate New Jersey Register review. The Cultural Resources Survey will also be performed under Section 106 of the National Historic Preservation Act of 1966, as amended, to identify and evaluate historical and archaeological resources and to assess effects on historic properties.

Figure 3.6: Cultural and Historic Resources



3.4 Section 4(f) and Green Acres

3.4.1 Purpose

Section 4(f) of the Department of Transportation Act of 1966 prohibits the use of federal transportation funding for a project that impacts public open space, recreational resources, cultural resources, or waterfowl refuges unless it can be proven that no prudent and feasible alternative exists. The complexity of Section 4(f) analyses depends on the degree of "use" to the resource. The most complex analyses are associated with physical taking of a protected resource.

In New Jersey, projects, regardless of funding source, are potentially subject to NJDEP's Green Acres rules. Green Acres applies to a parcel of open or recreational space if its jurisdictional agency accepted Green Acres funding for *any* park, open space, or recreational project within their jurisdiction. Consequently, a ball field may be a municipal property and not preserved specifically but, if the township accepted Green Acres funding for the development of a nature center somewhere else within the municipal boundaries, the ball field becomes encumbered by Green Acres as if it were itself deed-restricted.

The Green Acres process takes approximately 1 year to complete and requires public hearings and New Jersey State House Approval. Additionally, mitigation for parkland takes (known as "diversions" or "disposals" of Green Acres property) requires, at a minimum, acre-for-acre compensation in the form of a suitable parcel to develop as parkland or open space. In some instances, payment can be made to the county, but this approach requires an appraisal and the ratio for payment is always greater than the one-to-one acre replacement value. It can also be the case that Green Acres compensation ratio and requirements were established by the mechanism that funded the preservation of the parkland, which may be more restrictive than the Green Acres regulations, generally. This information is not always readily apparent and requires research and consultation with the NJDEP Green Acres program.

Impact to parks and open space resources can also be considered an environmental justice impact when viewed in the context of the study area's socioeconomic character and the occurrence of similar impacts elsewhere in the study area. It can be the case that operationally and from a design perspective, the use of a Section 4(f) resource is feasible and prudent but fails the environmental justice test. Consequently, it is best to avoid the taking of parkland whenever possible.

3.4.2 Methodology and Scope of Screening

Data Sources

Preserved open space for both the county and the state was obtained from NJDEP's Bureau of GIS. A review of the NJDEP Recreational and Open Space Inventory (ROSI) was undertaken to determine whether properties within the study area were encumbered by Green Acres. As described previously, if Morris County or the Town of Roxbury Township participated in the Green Acres program, all public open space owned and maintained by the participating jurisdiction is considered encumbered by Green Acres. The ROSI database provides block and lot numbers only; therefore, Google Earth imagery and NJDEP aerials were also used to identify parkland resources within the study area that would be encumbered by Green Acres and also likely subject to Section 4(f).

Analysis Methodology

The constraints map presents desktop-level reconnaissance using data made available by the resource agencies with jurisdiction over the resource. Field reconnaissance has not been performed to verify the spatial analysis findings. Field reconnaissance is recommended during preliminary engineering.

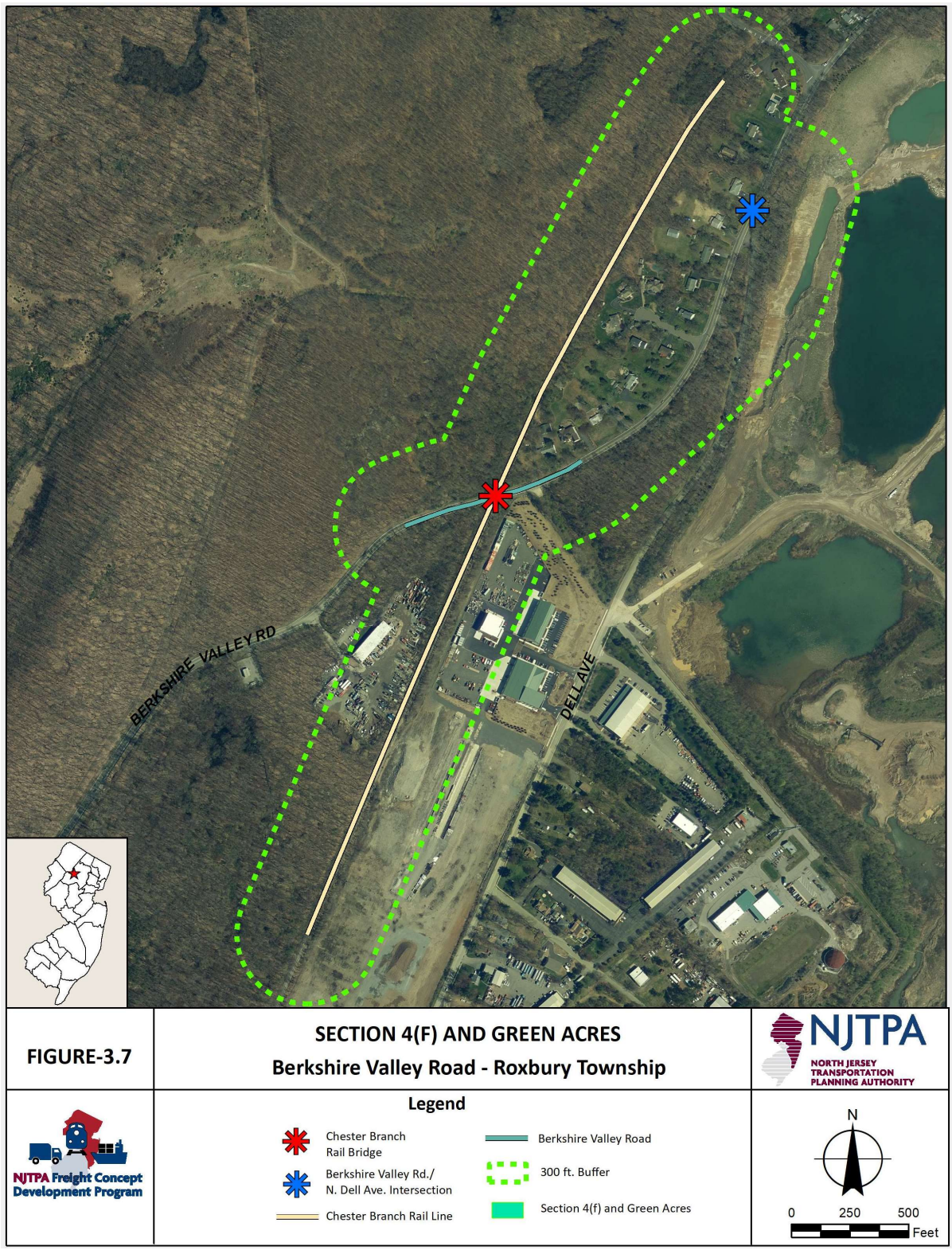
The NJDEP Open Space (State and local) and Park data were displayed on an aerial base map of the study area to determine whether deed-restricted Green Acres encumbered open space areas are located within the study area boundary. The ROSI database was also used to indicate whether potential parkland in a community should be considered encumbered by Green Acres and whether natural preserves were found in the study area. As Section 4(f) and Green Acres applies to public resources, ball fields attached to public schools were considered constrained resources, whereas private resources such as ball fields associated with private religious schools were not considered in the analysis.

Additionally, while cemeteries provide some amenities similar to passive use parks, they are typically owned privately and not subject to Section 4(f) or Green Acres and therefore are not included in this screening. Cemeteries are often considered cultural resources and, if applicable, are addressed in the Cultural Resources section of the screening.

3.4.3 Results of Screening

As depicted on Figure 3.7, no Green Acres encumbered properties were identified within the Berkshire Valley Road study area.

Figure 3.7: Section 4(f), Green Acres



3.5 Air and Noise

3.5.1 Purpose

The purpose of an air quality screening is to determine whether the project is likely to contribute criteria pollutants to the project area and affect regional air quality. Air quality impacts are typically a concern for projects that increase the use of non-point sources of pollution (such as engines) through the addition of infrastructure capacity or through secondary impacts that adversely affect the efficiency of existing operations (for instance, causing additional traffic congestion).

Noise impact screening is directly associated with adjacent land uses and the potential for the project to adversely affect the use and enjoyment of certain categories of use. The purpose of the noise screening is therefore to identify sensitive receptors in the study area so that mitigation, whether through avoidance or physical noise abatement measures, can be factored into the design process.

3.5.2 Methodology and Scope of Screening

Data Sources

Air quality matters are under the jurisdiction of the U.S. Environmental Protection Agency (EPA), which publishes its Green Book on air quality conformance. The Green Book identifies states, counties, and regions within the U.S. where the levels of criteria air pollutants exceed or have exceeded National Ambient Air Quality Standards (NAAQS) levels. These areas—known as nonattainment and maintenance areas, respectively—are required to implement plans to reduce the levels of criteria pollutants. Projects that emit criteria pollutants and are proposed within maintenance or nonattainment areas must perform an air applicability study to demonstrate conformity with emission targets established in the controlling state implementation plan (SIP).

For non-highway projects, traffic noise impacts under the National Environmental Policy Act (NEPA) are determined by comparing noise under future conditions with the project to noise under future conditions without the project. Although there are no specific thresholds under NEPA for assessing this incremental project-related noise increase, both the context and intensity of project-related noise effects are considered to determine the overall impact of the project on the ambient noise environment.

Analysis Methodology

At the Concept Development stage of project delivery, air and noise analysis consists primarily of the awareness of impact triggers and prevailing regulations combined with a review of adjacent

land uses and operational goals of the project. The analysis is therefore qualitative, not quantitative.

Air pollutant emissions may stem from both direct and indirect pollutant emission sources. Although direct pollutant emissions occur at the same time or place as a proposed project, indirect emissions occur at a different time or place. Since the proposed project would not increase rail or roadway system capacity, the potential for direct emissions would be limited to construction activities, whereas indirect emissions would be limited to off-site construction truck travel and worksite commuting. Since the proposed project would receive federal funding, is not an exempt federal action, and would not expand rail or roadway network capacity in New Jersey, an air conformity applicability study would be performed under the General Conformity rule established in 40 CFR 93.153: **If project-related emissions do not exceed allowable *de minimis* criteria in the year during which emissions from the project is expected to be greatest on an annual basis, the proposed project is presumed to conform to the SIP as it would not have the potential to either delay timely attainment or create new violations of the NAAQS**.

In typical noisy environments, changes in noise of 1 decibel (dB) to 2 dB are generally not perceptible; however, it is widely accepted that people can begin to detect noise level increases of 3 dB in typically noisy environments. An increase of 3 dB requires a doubling of existing sound energy, such as doubling the volume of roadway traffic, halving the distance from a roadway, or removing shielding between a noise receptor and noise sources that exposes new lines of sight between them. Generally, a 3 dB increase in noise levels is considered barely detectable while a 5 dB increase is perceived as a distinctly noticeable increase and a 10 dB increase is perceived as being twice as loud. This project is not expected to increase roadway or rail activity in the study area and as such, noise impacts are not expected to occur as a result of implementation of the project improvements.

3.5.3 Results of Screening

Since the project would not increase rail or roadway network capacity, neither long-term direct nor indirect air pollutant emission sources would be introduced to the study area. Any project-related emissions would be short-term and limited to increased fugitive dust and mobile source emissions during construction activities which would be self-correcting after construction ceases. Since it is highly unlikely that construction emissions would approach the *de minimis* criteria under the General Conformity rule established in 40 CFR 93.153, the proposed project may be presumed to conform to regional air quality attainment goals and commitments expressed in the controlling New Jersey SIP.

The future ambient noise environment in the study area is expected to be similar with or without the proposed project. No new noise sources or changes to existing rail traffic are proposed on the Chester Branch rail alignment. Noise propagation patterns would also not be affected because the proposed vertical profile modification to the alignment would not substantively change the existing line-of-sight relationship between rail vehicle noise sources and adjacent residences. Although the proposed modification to the North Dell Avenue intersection would relocate vehicle acceleration noise closer to sensitive receptors near the Old Timber Court, it would have a net-zero effect in the overall study area noise environment. In addition, with the Chester Branch Bridge height restriction eliminated by the proposed project, a considerable number of heavy trucks are expected to enter and travel through the study area via Berkshire Valley Road instead of North Dell Ave, resulting in fewer heavy truck acceleration noise events in the study area. As such, it is expected that any traffic noise increase localized at Old Timber Court is unlikely to result in the 3 dB ambient noise increase that is detectable by the human ear.

Although no impacts to air and noise are anticipated, both will be addressed in subsequent design and permitting phases of the project when additional analyses may be performed to confirm these screening determinations.

3.6 Freshwater Wetlands and Surface Water Resources

3.6.1 Purpose

Freshwater wetland resources are an environmental constraint regulated by the NJDEP and, in some instances, the U.S. Army Corps of Engineers. Wetlands provide a critical role in the maintenance of water quality for both surface and groundwater and provide habitat for multiple plant and animal species, many of which are migratory and may also be threatened or endangered. Consequently, environmental stewardship and ethical design require that impact to wetland resources be avoided and minimized whenever possible. In addition, NJDEP's freshwater wetlands regulations can be onerous and impose substantial mitigation requirements for permanent impacts to wetlands areas if more than 0.1 of an acre (4,356 square feet) is disturbed. Project schedule and budget are therefore also better served by limiting impacts to wetlands. As a result, the identification of known (mapped) freshwater wetlands in the study area is an important component of overall constraints mapping and necessary in the development of project alternatives.

3.6.2 Methodology and Scope of Screening

Data Sources

The environmental screening for freshwater wetland resources relied on the most recent updates of NJDEP's wetlands data. Data was downloaded directly from NJDEP's Bureau of GIS website. Although NJDEP provides county-specific wetlands data for each county in the state, the data are based on aerial photography analysis from 1986. To provide more accurate assessment of wetland resources, wetland data were therefore derived from NJDEP's LU/LC 2012 (Wetlands 2012, 2015).

Analysis Methodology

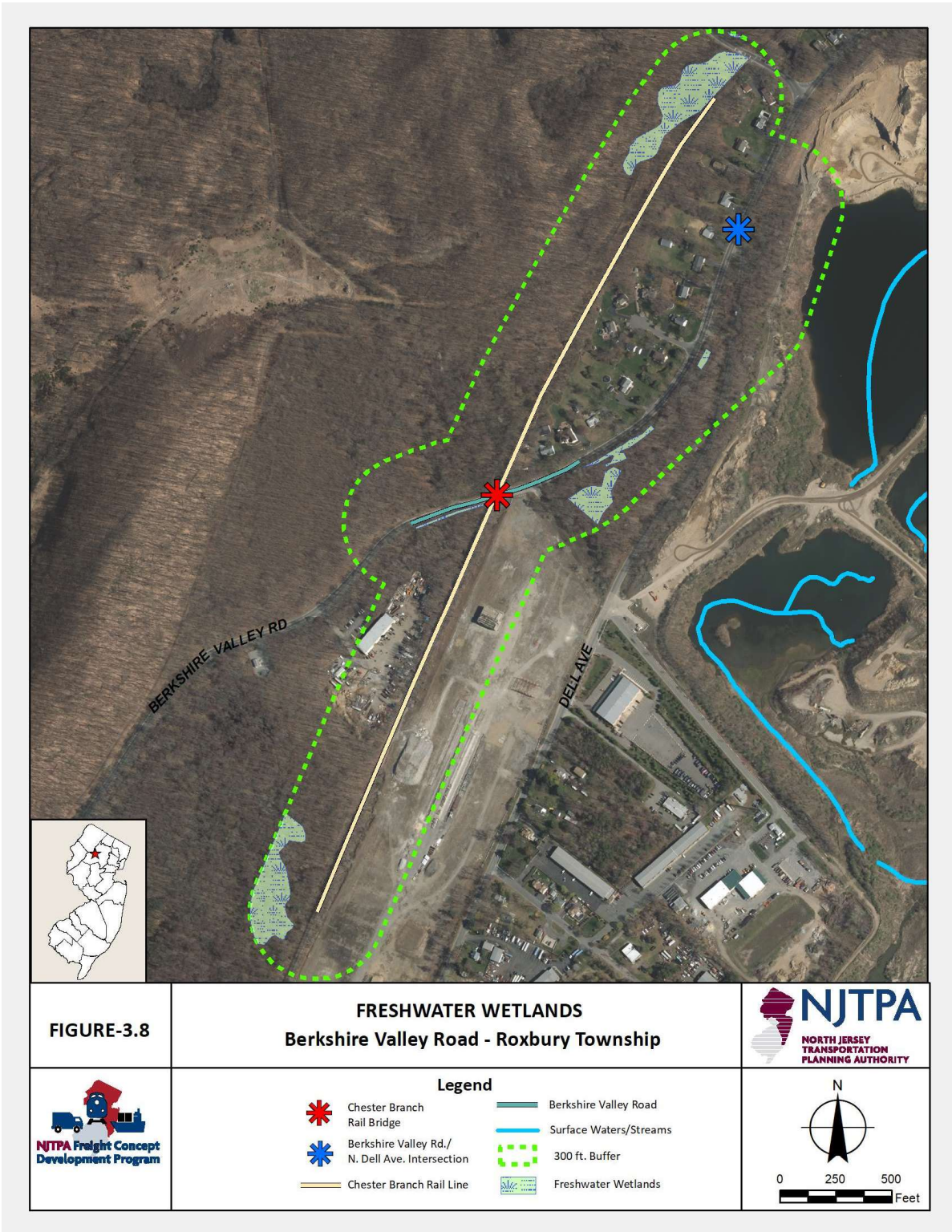
The GIS data obtained from NJDEP were displayed on a GIS base map of the study area and clipped to the study area buffer to reduce the total freshwater wetland data set to one that contained only the data pertinent to the study area.

The screening involved only this desktop analysis and is therefore limited to wetland areas made known to NJDEP as part of their development of the LU/LC 2012. Field reconnaissance to identify new or previously undocumented wetland areas was not performed as this level of assessment is not typically required during the concept stage of project development. Once a PPA is selected and advanced to preliminary engineering, site reconnaissance for undocumented resources may be performed.

3.6.3 Results of Screening

The existing NJDEP freshwater wetlands mapping identified two deciduous wooded wetland complexes (PFO1 – Palustrine (P), Forested (FO), Broad-leaved Deciduous (1)), within the limits of the study area. A limited site visit also identified unmapped NJDEP regulated freshwater wetland resources near the existing rail bridge that may have the potential to be disturbed due to the proposed rail infrastructure and roadway improvements (Figure 3.8). These disturbances may require NJDEP land resource protection freshwater wetland general permits depending on the project limit of disturbance and impacts to freshwater wetlands as well as freshwater wetlands transition areas. Freshwater wetland mitigation may need to be performed if 0.1 acre (4,356 square feet) or more of permanent disturbance occurs. Once an alternative is agreed upon and a formal freshwater delineation is conducted, design engineers can determine the amount of potential impact that may occur and refine the alignment to minimize freshwater wetland resource disturbances if possible.

Figure 3.8: Wetlands



3.7 Floodplains and Aquifers

3.7.1 Purpose

The goal of screening for flood hazard areas (FHAs) is to identify those sections of the study area that would be subject to design flood elevations (DFEs) that could consequently affect the overall design and cost of project alternatives.

FHAs are locations that are within the Federal Emergency Management Agency's (FEMA) 100-year flood zone, or Flood Zone A. Improvements constructed in FHAs are subject to NJDEP's FHA rules and design flood standards, which require that all improvements be constructed at the elevation equal to FEMA's DFE plus 1 foot. The DFE varies based on topography, and for a large study area there may be multiple DFEs.

Sole-source aquifers (SSA) are critical drinking water resources and also supply surface bodies of water. EPA defines sole-source aquifers through guidance set forth in the Safe Drinking Water Act of 1974, Section 1424(e); that is, as aquifers which contribute more than 50 percent of drinking water to areas where they could not be replaced if they were contaminated. Identification of SSAs is important if a project is likely to involve excavation that would encounter groundwater. New Jersey has a total of seven SSAs.

3.7.2 Methodology and Scope of Screening

Data Sources

Flood hazard data were obtained from FEMA and represent 2012 data (post-Superstorm Sandy). NJDEP data made available through the New Jersey GIS clearinghouse provided the aquifer data.

Analysis Methodology

It is important to note that FEMA and NJDEP frequently update FHA data and design standards; consequently, during preliminary engineering, FHA data should be confirmed.

FEMA FHA data were displayed on an aerial base map of the study area. The FHA data set was clipped to the project area buffer and then displayed so as to differentiate between the flood zone types (Figure 3.9). The 100-year FHA is the area most likely to be inundated in a flooding event, or the 1 percent annual chance flood. The floodway carries the storm discharge waters from the 100-year flood and includes the channel and often land adjacent to the channel. The 500-year flood zone is the area with a 0.2 percent annual chance of flood. Flood Zone X represents areas unlikely to flood.

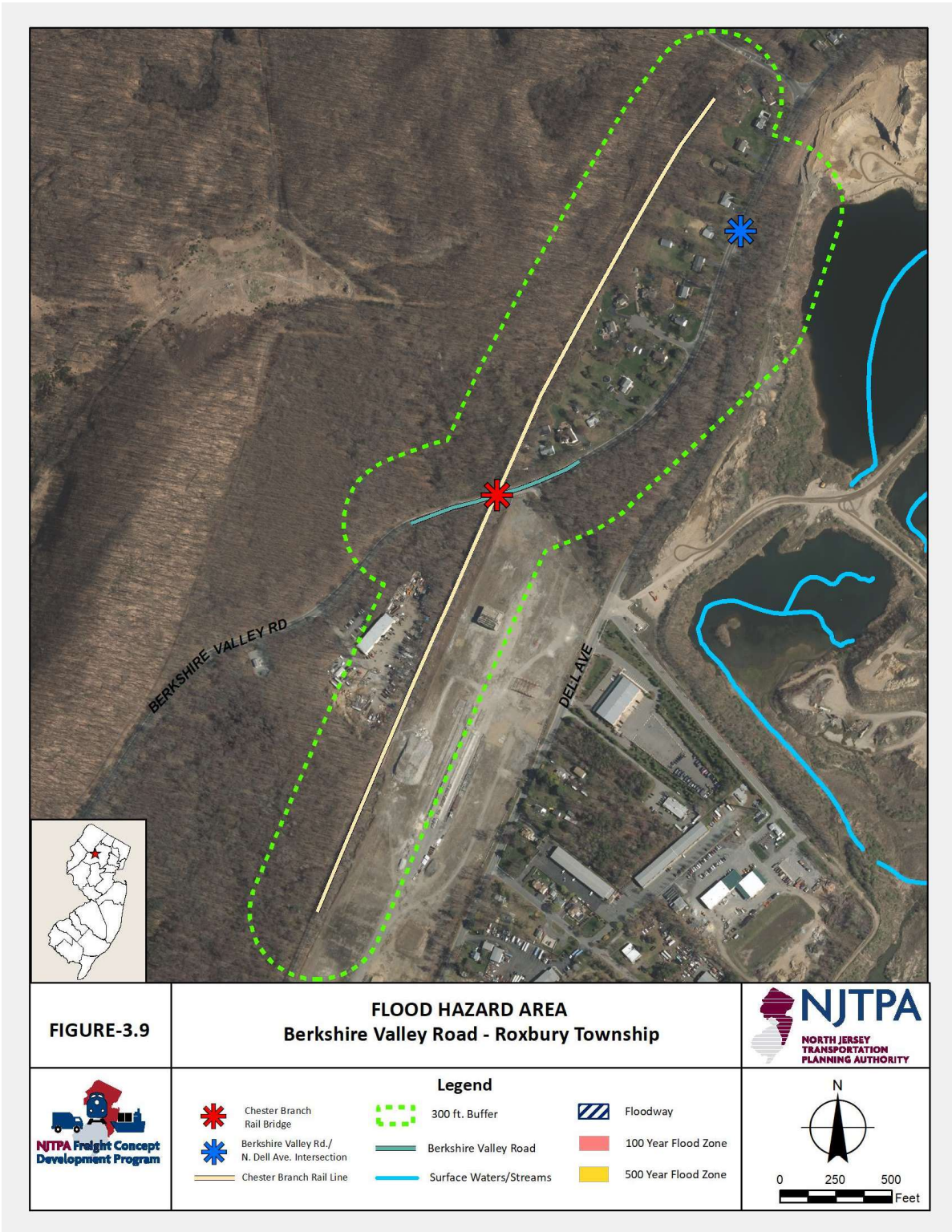
Aquifer analysis involved overlaying the study area with the NJDEP aquifer data.

3.7.3 Results of Screening

No mapped flood zones or flood hazard areas were identified within the Berkshire Valley Road study area.

The study area is located within the Northwest New Jersey and Rockaway SSAs. Additional geotechnical analysis is required during preliminary engineering to determine whether measures to protect the aquifer would be necessary during construction.

Figure 3.9: Flood Hazard Area



3.8 Threatened and Endangered Species

3.8.1 Purpose

The purpose of screening for threatened and endangered species is to identify a constraint that can affect the footprint of the project (both during and after construction) and impact the construction schedule. Threatened and endangered species are regulated by the NJDEP and the U.S. Fish and Wildlife Service (USFWS). Disturbing, harassing, or taking threatened and endangered species is prohibited without a permit; in the case of takings, approval to permanently remove individual specimens requires extensive review and documentation proving there is no alternative to the destructive action. In addition to physical alteration of habitats and harm to individuals, impacts to threatened and endangered species also involve disruptive construction activity during those times of the year coinciding with critical lifecycle activity of the species, such as mating and nesting.

3.8.2 Methodology and Scope of Screening

Data Sources

The environmental screening for threatened and endangered species used NJDEP's latest update to its Landscape Project, Landscape 3.3, as of May 2021. Landscape Project data are grouped by physiographic province. The study area is located in the Skylands province. The Landscape data provide information on the presence of habitat types known to support threatened and endangered species as well as reported sightings of individual specimens of protected species. The species data are important and useful in more accurately assessing the potential for impact to species, as not all habitat areas are inhabited by listed species.

Analysis Methodology

The GIS data obtained from NJDEP were displayed on a GIS base map of the project area and clipped to the study area buffer to reduce the total data set to one that contained only the data pertinent to the study area (Figure 3.10).

The screening involved a desktop analysis and is therefore limited to habitats and sightings made known to NJDEP as part of the development of Landscape Data Version 3.3, and a species search using the USFWS's Information for Planning and Consultation (IPaC) resource list of the project right-of-way (ROW). These data sets provide a guide of the geographic assessment of species habitat that may contain threatened or endangered species along the Berkshire Valley Road study area. Field reconnaissance to identify undocumented habitat areas and the presence of listed species was not performed as this level of assessment is not typically required during the

concept stage of project development. Once a PPA is selected and advanced to preliminary engineering, site reconnaissance for undocumented resources may be performed.

3.8.3 Results of Screening

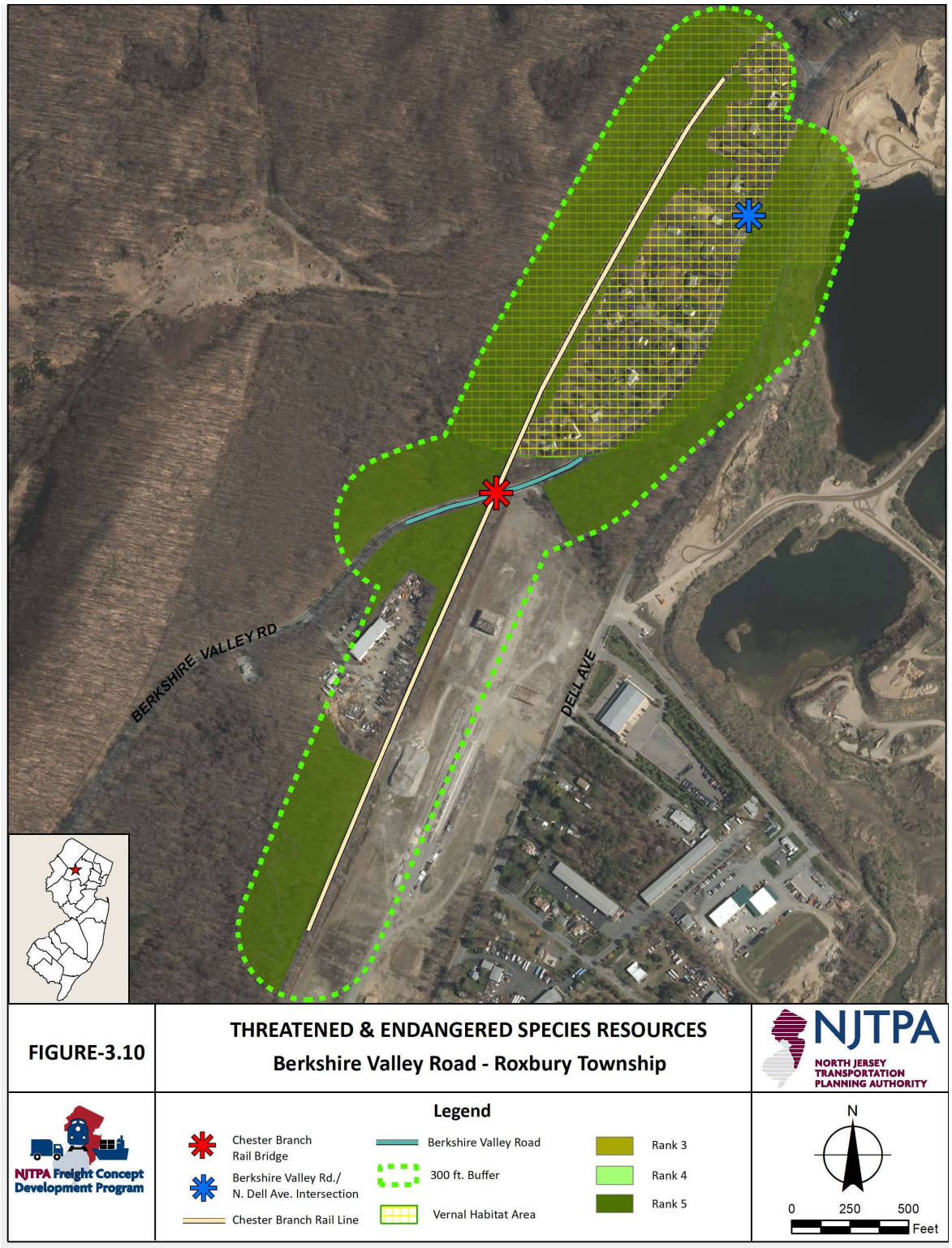
Review of the USFWS IPaC and the NJDEP Division of Fish and Wildlife Landscape Data Version 3.3, identified the potential for the species shown in Table 3.3 to be present in the study area.

Table 3.3: Potential Threatened and Endangered Species in Study Area
Source: NJDEP Landscape Data Version 3.3; U.S. Fish and Wildlife Service IPaC information 2022.

	Species Scientific Name	Federal Status	State Status
USFWS IPaC List			
Indiana bat	*Myotis sodalis*	E	E
Northern long-eared bat	*Myotis septentrionalis*	E	–
Tricolored bat	*Perimyotis subflavus*	E	–
Bog turtle	*Glyptemys muhlenbergii*	T	–
Monarch butterfly	*Danaus plexippus*	C	–
Swamp pink	*Helonias bullata*	T	E
NJDEP Landscape Data Version 3.3 – Skylands			
Bobcat	*Lynx rufus*	–	E
Arogos skipper	*Atrytone arogos arogos*	–	E
Red-shouldered hawk	*Buteo lineatus*	–	E
Wood thrush	*Hylocichla mustelina*		SC

T = Threatened; E = Endangered; SC = Species of Special Concern

Figure 3.10: Threatened and Endangered Species



3.9 Stormwater (Surface Water Quality)

3.9.1 Purpose

NJDEP regulates surface water bodies and the types of activities permitted within the stream channel and the transitional area (buffer). Surface waters of the highest quality that feed drinking water sources are designated C-1 waters. To protect these resources, NJDEP established a 300-foot buffer around C-1 waters. Disturbance within the 300-foot buffer is prohibited without permits issued by NJDEP, and only after proving that an avoidance alternative is not feasible. Consequently, screening for surface waters identifies important environmental constraints that can have a substantial effect on alternative design.

3.9.2 Methodology and Scope of Screening

Data Sources

The environmental screening for stormwater and surface water quality used NJDEP's Surface Water Quality Classification Streams data, updated in November 2021.

Analysis Methodology

The GIS data obtained from NJDEP were displayed on a GIS base map of the project area and clipped to the study area buffer to reduce the total data set to one that contained only the data pertinent to the study area. Jacobs generated 300-foot buffers around all C-1 streams.

The screening involved a desktop analysis. A field reconnaissance to delineate the streambanks will be necessary to verify the buffer areas and channel. Once a PPA is selected and advanced to preliminary engineering, site reconnaissance may be performed.

3.9.3 Results of Screening

After review of the NJDEP Surface Water Quality Classification, a waterbody associated with Stephen's Brook is located approximately 200 feet from the project area (Figure 3.6). It is assumed that this waterbody would have a 300-foot riparian buffer from its edge of water as is associated with C-1 waters. This waterbody is located within the limits of disturbance of an active mining/quarry operation.

3.10 Hazardous Materials

3.10.1 Purpose

The intent of the hazardous materials screening is to identify documented areas of hazardous materials contamination within the study area for the purposes of alternatives development

constraint analysis. Known hazardous materials locations are those that have been reported to the NJDEP and are undergoing classification and study, undergoing remediation, or have been remediated but remain in the NJDEP database for real estate risk analysis and deed-restriction purposes.

It is important to identify known hazardous materials contamination sites when planning construction-phase activities to protect worker and community health and safety. It is also important to identify these sites before developing alignment alternatives when new ROWs are acquired. Environmental regulations assign responsibility for remediation to the owner of a contaminated property, regardless of when the contamination occurred. Consequently, an alternative which would require the acquisition of multiple contaminated parcels would necessitate complex negotiations with the existing owners regarding remediation or would cause the future owner of the infrastructure to bear the cost of remediation.

Remediation activities can take years to complete, particularly when contamination involves groundwater resources. Although reuse of brownfield sites for infrastructure ROWs typically requires less complex remediation than required for other civic, institutional, or recreational uses, the time required to mitigate, document, and achieve the Response Action Outcome (RAO) still adversely affects the construction schedule for a project when compared to the development of properties that are not encumbered by existing contamination.

At the same time, it is important to note that some RAO restrictions limit the potential reuse of remediated land, presenting an opportunity for infrastructure development. Use as infrastructure ROWs, where environmental capping would not be disturbed or where access to contaminated groundwater is not a consideration, can be an adaptive reuse and is a benefit to the community, returning brownfields to active use. Consequently, the identification of known contaminated sites can present a project benefit, not only an adverse constraint.

3.10.2 Methodology and Scope of Screening

Data Sources

The environmental screening for hazardous materials relied on the most recent updates (January 10, 2023). of NJDEP's Site Remediation Program GIS data. Data were downloaded directly from NJDEP's Bureau of GIS website and included the following data sets:

- **Known Contaminated Sites List (KCSL)**. Updated January 10, 2023. This data set presents known contaminated sites in New Jersey geographically as point data and provides the Program Interest (PI) number for further investigation using the NJDEP Data Miner.

- **Groundwater Contamination Areas (CEA)**. This data set uses polygons to delineate areas where groundwater has been determined to be contaminated and unsafe for use as a source of potable water. Drinking water wells are prohibited within CEAs.
- **Deed Notice Extent Polygons**. This data set uses polygons to identify parcels that have received a deed notice to inform prospective owners that contamination exists on the property, the use of the property may be restricted as a result, and mitigation measures put in place on the property must be maintained.
- **Historic Fill.** This data set uses polygons to identify areas of historic fill covering more than approximately 5 acres. Historic fill is nonindigenous landform material intentionally deposited in an area at some point in the past. The composition of the fill material is generally unknown and, in many areas, fill contains contaminants from manufacturing processes, urban demolition, and mining.

Analysis Methodology

The study area for the purposes of GIS analysis was determined to be a 300-foot buffer area around the concept alternatives explored in the ***Morris County Freight Infrastructure & Land Use Analysis*** report. This buffer area was determined to be appropriate based on existing topography, infrastructure, and development patterns; that is, it is unlikely that a practical alternative would be developed further than 300 feet from the alternatives initially explored in the earlier study. The result was a polygon that contained previously described alternatives and extended 300 feet beyond these alternatives in all directions.

The GIS data obtained from NJDEP was displayed on a GIS base map of the project area and clipped to the study area buffer to reduce the total statewide data set to one that contained only the data pertinent to the study area (Figure 3.11). The attribute data included with the GIS data set was used to identify the PI identifiers for each site within the study area buffer. The PI data were entered into the NJDEP Data Miner (https://www13.state.nj.us/DataMiner) to obtain a report of site remediation status. Site remediation status and case management or licensed site remediation professional (LSRP) contact information was recorded in a data table.

The screening involved this desktop analysis and is therefore limited to known contamination sites as reported to NJDEP. Field reconnaissance to identify new or previously undocumented contamination was not performed as this level of assessment is not typically required during the Concept Development phase. Once a PPA is selected and advanced to preliminary engineering, site reconnaissance for undocumented sites of contamination may be performed.

Additionally, the data presented in this section were derived directly from the NJDEP Data Miner and presented as retrieved from NJDEP. Follow-up interviews with the listed LSRP or case

manager were not performed. Some data were missing from the NJDEP records for some sites. In these instances, a search through multiple site documents was performed to determine whether LSRP names or contact information existed elsewhere in the project record. In some instances, the data were not found in any of the records available on the Data Miner. Such data are identified as "not provided" in Table 3.4.

Contaminated locations may appear in more than one data set. For example, a location undergoing remediation involving contaminated groundwater where a groundwater exception area has been determined may be included in both the KCSL data set and the CEA data set. Deed-restricted properties that received a RAO may be included in both the deed-restriction data set and the KCSL data set. Each site is counted only once in the assessment. The GIS mapping and data table indicate those situations where one location is included in more than one program.

3.10.3 Results of Screening

After review of the surrounding study area, one property is listed on New Jersey's KCSL and is adjacent to the rail line/bridge, identified as Block 6701, Lot 1, 100 Howard Boulevard, in Roxbury Township. This site is identified as Alliant Techsystems Inc., which is the former Hercules Powder Works site. NJDEP's Case Oversight Information lists the site remedial level as a **"Multi-Phased Remedial Action with – Multiple Source/Release to Multi-Media Including groundwater."**

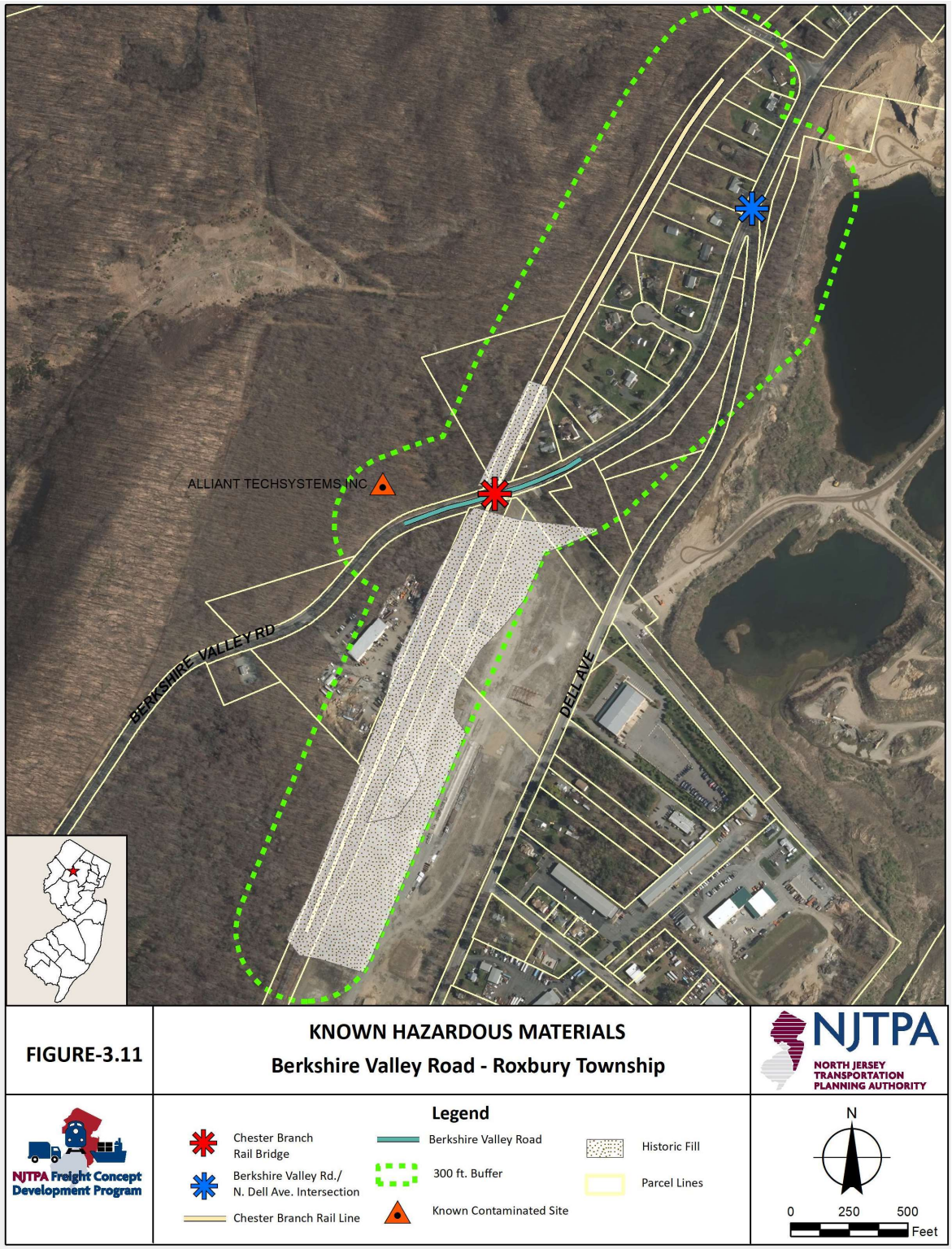
Historic fill is mapped on the rail embankments and may be anticipated at any location with a history of the use or creation of hazardous materials where project-related excavation could occur; however, known previous history is not always an indicator of the presence of hazardous materials. Pollutants may have migrated through groundwater and unreported or unintended deposition of hazardous materials may have occurred within the study area.

A hazardous waste screening or Phase I Site Assessment is recommended to identify any potential sites that may have the potential to be contaminated from the proposed bridge replacement and roadway improvements.

Table 3.4: Known Contaminated Sites in the Study Area

Site Name	Address	PI Number	Status	Manager/ LRSP	Contact
Alliant Techsystems Inc.	100 Howard Boulevard, Roxbury, New Jersey	14794	Active	Not Provided	Not provided

Figure 3.11: Known Contaminated Sites



3.11 Existing Utilities

3.11.1 Purpose

The goal of identifying existing utilities is to estimate the quantity and nature of existing utilities that would need to be relocated and/or protected during construction and in the site's final condition. The extent of impacts to existing utilities has the potential to affect the project cost, schedule, required ROW, and stakeholders. The purpose of identifying existing utilities early in the design process is to avoid unforeseen costs and delays during the subsequent phases of the project.

3.11.2 Methodology and Scope of Screening

It is important to note that the locations Chester Branch Bridge over Berkshire Valley Road and the intersection of Berkshire Valley Road with North Dell Avenue have existing utilities that if impacted, need to be protected, relocated, and/or re-designed to the standards of the railroad and utility owner.

Data Sources

The screening process employed multiple data sources to capture as many existing utilities as possible. Initially, the survey team identified several existing overhead wires and support poles, utility hole covers, and other utility evidence during their initial site visits. The study team then reached out to known utility providers in the area (Table 3.5) to obtain any readily available as-built- information. The study team performed multiple follow-up site visits to detect the presence of any additional utilities (such as drainage structures and ditches) and to verify the information supplied by the aforementioned utility providers. Finally, the study team performed a desktop analysis via Google Earth Pro© 2020 and Bing Maps© 2020 to identify any additional lines and poles that may not have been detected by the efforts outlined above.

Analysis Methodology

The data obtained from each external source were digitized and placed into a CAD base map, which was also used to corroborate the survey data. The proposed alignments were then overlaid onto said base map, and the resulting conflicts noted and recorded. At this level, the screening involved only this desktop analysis. Once a PPA is selected and advanced to preliminary engineering, additional site reconnaissance (to include aerial shots and test pits) may be performed.

3.11.3 Results of Screening

There are four utility owners with both above- and below-ground infrastructure within the project area. Each provider has their own design standards and construction procedures that will need to be met and/or followed. The existing utility owners include:

- Verizon (Overhead and Underground)
- New Jersey Natural Gas Company (Underground)
- Jersey Central Power & Light (Overhead)
- Cable Vision (Overhead)

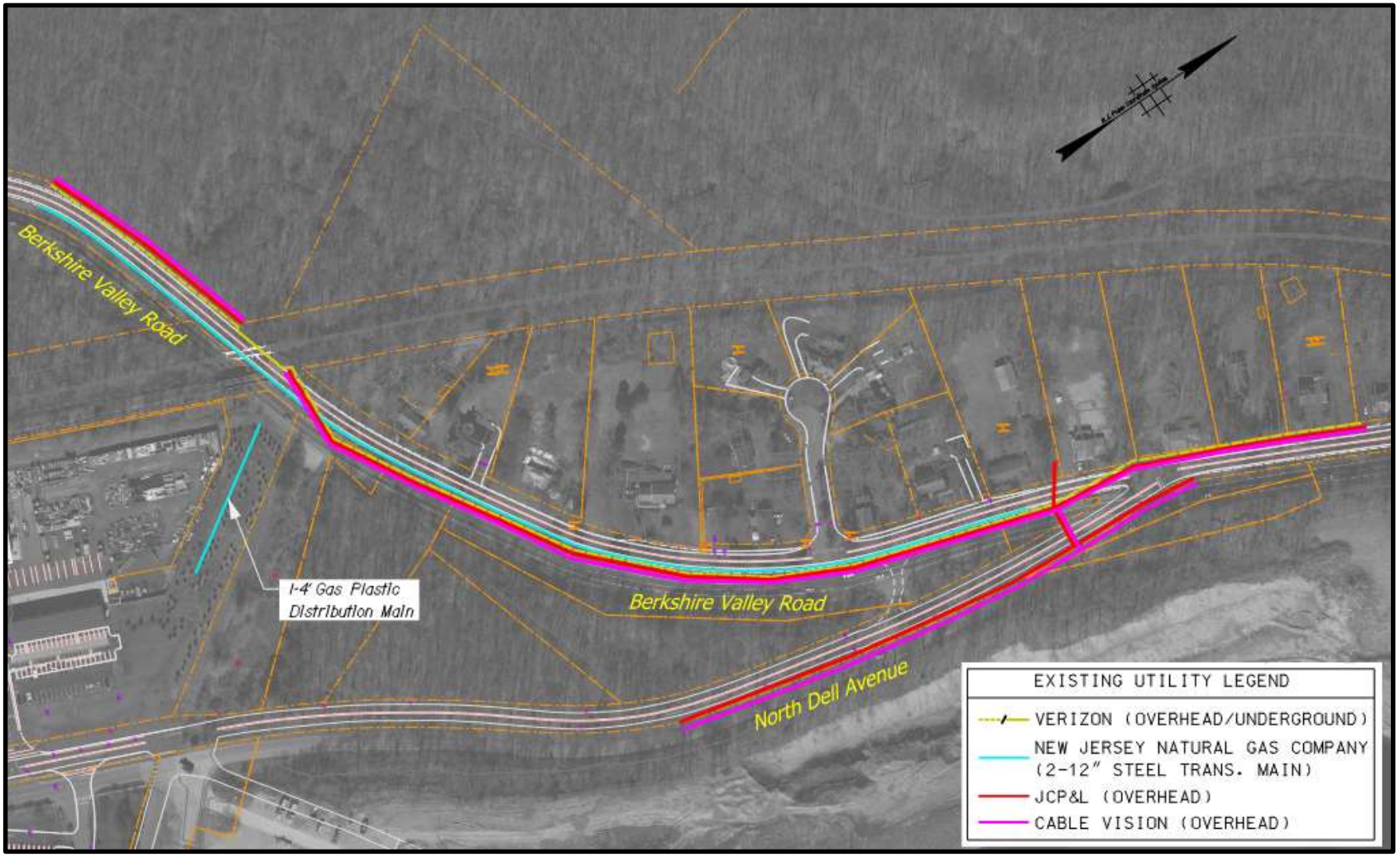
Table 3.5: Utility List

Utility Type	Owner	Contact Name	Contact Email	Notes
Telephone	AT&T	Louis J. Marello	LM5215@att.com	10/18/21: They don't have facilities within the project limits
Gas	NJNG	Wasley Lukridge	wlukridge@NJNG.com	4/29/22: Locations plotted in CADD
Electric	JCP&L	Robin Alston-Santiago	ralstonsantiago@firstenergycorp.com	9/28/22: Email from JCPL: JCP&L overhead facilities are readily observable; it is incumbent on the customer to call for a mark-out to determine the nature and location of underground facilities. Underground electrical facilities to commercial business establishments are characteristically customer owned; not owned by JCP&L.
Telephone	Verizon	Krzysztof Ogrodnik	Krzysztof.ogrodnik@verizon.com	4/29/22: Locations plotted in CADD
Cable TV	CSC TKR, LLC d/b/a Cable Vision of Morris	Glenn Cisek	Glenn.Cisek@AlticeUSA.com	10/7/22: Corrected Markups provided
Water	New Jersey American Water Company, Inc.	Melissa A. Hazelton	melissa.hazelton@amwater.com	8/5/2022: They don't have facilities within the project limits
Gas	Columbia Gas Transmission Corp.	Kenneth Hollenbeck	kenneth_hollenbeck@tcenergy.com	7/20/2022: They don't have facilities within the project limits
Water & Sewerage	Morris County Municipal Utilities Authority	Anthony Milonas	amilonas@mcmua.com	8/25/2022: They do not have any infrastructure within the area
Sewerage	Musconetcong Sewerage Authority	James Schilling	jschilling@msa-nj.org	3/14/2022: They don't have facilities within the project limits
Water & Sewerage	Township of Roxbury Water and Sewer Dept.	Michael Kobylarz	kobylarzm@roxburynj.us	3/7/2022: They don't have facilities within the project limits

This is intended to be a preliminary screening, and as such may not include every utility present within the study area (particularly where smaller/private service lines exist). However, this screening is intended to give an order-of-magnitude estimate of the utility work required for each

alignment option. As discussed in Section 6, no proposed alignment is without utility conflict; more specifically, each alignment will require the engagement of multiple utility providers and the implementation of multiple sets of design standards. Existing utilities are depicted on Figure 3.12.

Figure 3.12: Existing Utilities

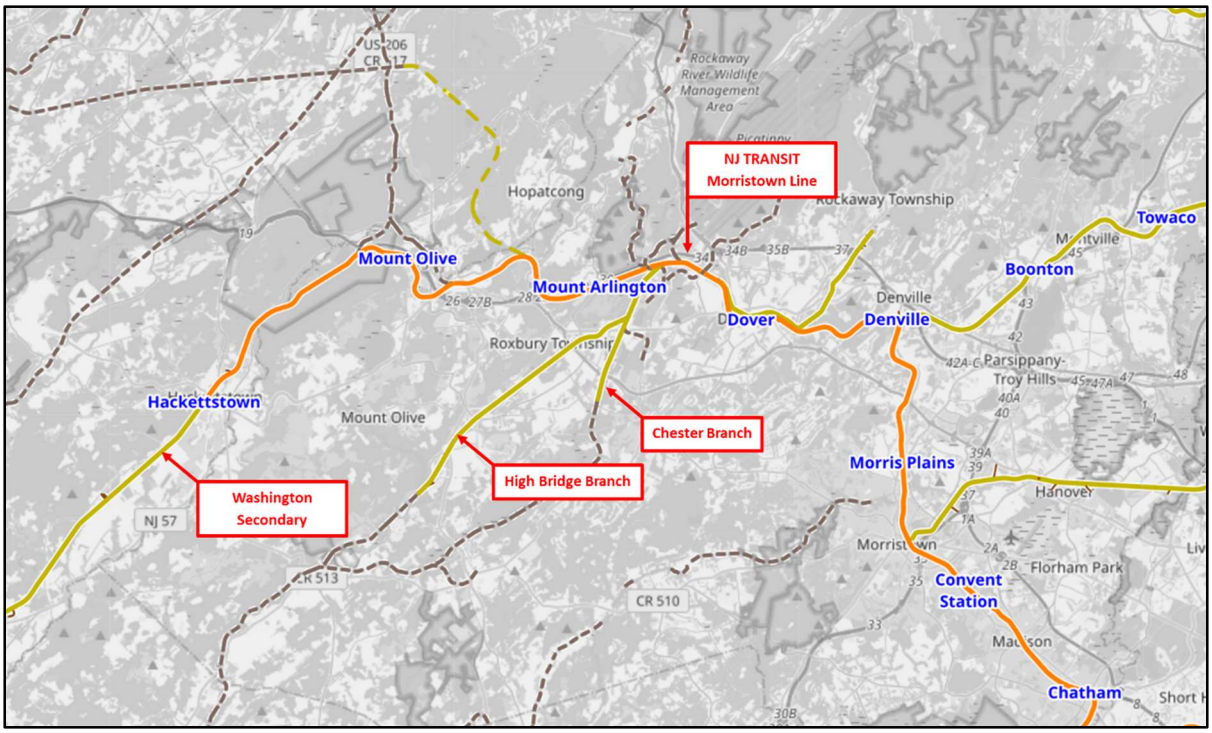


4. EXISTING INFRASTRUCTURE ANALYSIS

4.1 Rail Infrastructure – Chester Branch

NJ TRANSIT's Morristown Line originates in Hackettstown, New Jersey, and passes through Dover, Morristown, Summit, Newark – Broad Street before terminating at Hoboken. NJ TRANSIT owns the vast majority of the line with the exception of the 10-mile-long stretch between Hackettstown and Netcong, which is owned by Norfolk Southern and leased to NJ TRANSIT. Norfolk Southern, the D&R Line, and a third railroad—the Morristown and Erie—all have freight rights over NJ TRANSIT's Morristown Line. A schematic of this portion of NJ TRANSIT's Morristown Line is depicted on Figure 4.1.

Figure 4.1: Schematic of Chester Branch and Connection to the NJ TRANSIT Morristown Line

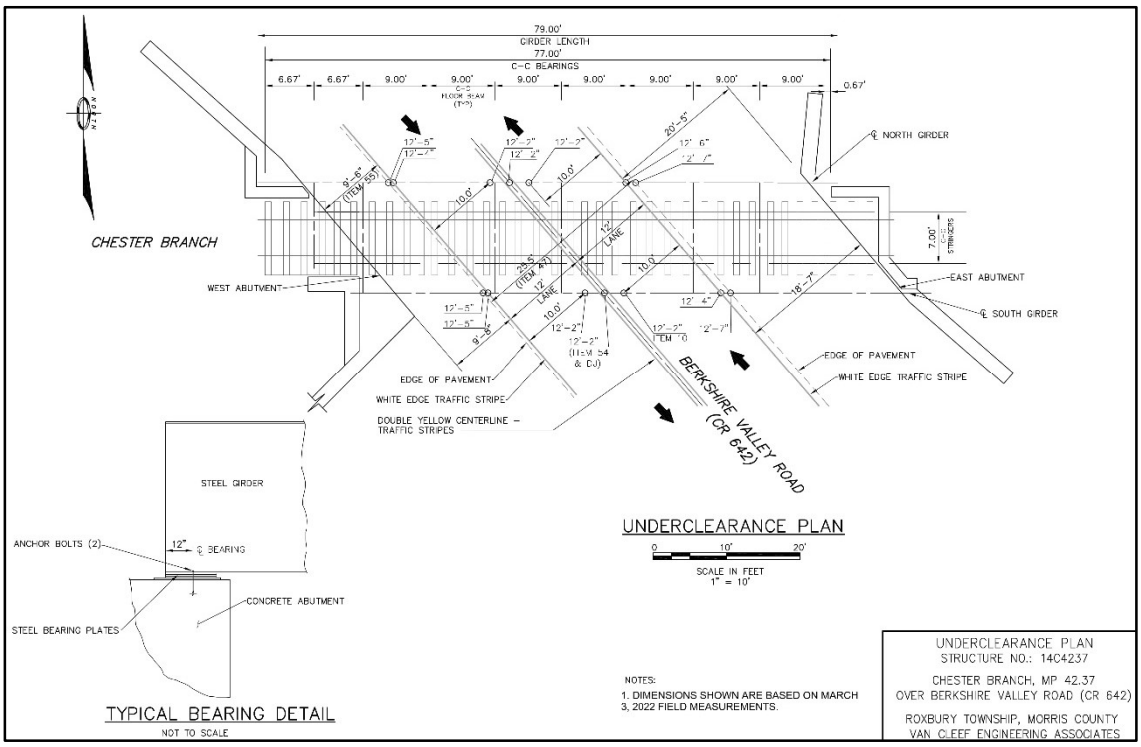


4.1.1 Chester Branch Bridge over Berkshire Valley Road

The Chester Branch Bridge over Berkshire Valley Road is a typical single-span thru-girder bridge. The span length is approximately 79 feet with floor beams spaced at 9-foot intervals. The span sits atop concrete abutments with a vertical clearance over Berkshire Valley Road of 12 feet 2 inches.

The bridge was constructed circa 1910 and has undergone a series of repairs to the superstructure and substructure over the years. These repairs were necessitated by normal wear and tear and deterioration over time and periodic vehicle strikes that damaged the structure. The bridge currently has a sufficiency rating of 41.27, which suggests that full replacement of both the superstructure and substructure is warranted. The general structural plan of the bridge is depicted on Figure 4.2.

Figure 4.2: Chester Branch Bridge
Source: Bridge Re-Evaluation Survey Report, Van Cleef Engineering, March 3, 2022



4.2 Design Standard Compliance/ Substandard Features

4.2.1 Utility Standards

There are several for-profit utility providers within the study area (see Section 3.11.3) as well as public utilities such as the Morris County Municipal Utilities Authority and the Township of Roxbury Water and Sewer Department who maintain the stormwater drainage infrastructure. Each provider has its own requirements for clearances above or below their lines, as well as any protection or encasement that is required. Unless specific utility location agreements exist between Morris County and the utility owners, the entity that was in place first (in this case the

utility) retains the right to require the second entity (in this case the project owner) to fund any necessary changes to ensure that the project-required utility modifications meet each company's standards. Often the utility will perform the work and bill the project owner for said work, as well as any design fees, insurance, or other expenses incurred as a result of the project.

Where two entities' standards conflict, the more stringent standard will normally apply.

4.2.2 Rail Design Standards

In addition to each utility's design standards, the owner of the Chester Branch—Morris County—maintains Morris County Railroad Design Standards that must be adhered to for any project that requires modification of the County-owned rail infrastructure. In addition, DRRV (and their parent company, Chesapeake & Delaware, LLC) has its own set of design guidelines that ideally should be adhered to unless they conflict with the Morris County standards. These can be found in Chesapeake & Delaware, LLC's latest versions of the following standards:

- System Track Standards
- System Pipeline Standards
- System Wire, Conduit and Cable Standards

For horizontal clearance to utility poles, the distance required is measured from the center of track to the nearest conflicting surface (for example, the clear distance between the track centerline and a 1-foot-diameter pole located 15 feet away would be 14 feet, 6 inches).

For overhead utility crossings, the distance required between the top of rail and the lowest overhead line will vary depending on the type of line (such as guy, messenger, communication, or supply) and any voltage carried. To account for normal thermal expansion and contraction of the lines due to ambient temperature fluctuations, these distances are measured from the top of rail to the final unloaded sag height of the line at 60 degrees Fahrenheit.

For underground utility crossings, railroads typically require the line to be built below a certain depth/influence zone and designed to withstand the American Railway Engineering and Maintenance-of-Way Association (AREMA) Cooper E-80 Load Case. This is a historic metric used in rail design that simulates the effect of two 2-8-0 Consolidation-Type steam locomotives traveling over the structure. For more information, refer to the latest version of the AREMA manual.

This is in addition to any underground casing pipe that may be required by the railroad or utility, as well as provisions to ensure that rail service is not interrupted while utility line maintenance is performed.

4.2.3 Substandard Features

Typically, railroads will not permit the construction of track with substandard utility clearances. Each proposed alignment will likely require the relocation or alteration of at least one existing utility line. For more information on the specific changes required by each alternative, refer to Section 6.

4.3 Roadway Infrastructure – Berkshire Valley Road and North Dell Avenue

Both Berkshire Valley Road and North Dell Avenue are two-lane urban minor arterial roadways with posted speed limits of 40 miles per hour (mph). Within these limits, Berkshire Valley Road is also known as Morris County Road 624 running in the north–south direction. Berkshire Valley Road runs below the Chester Branch Bridge and intersects with North Dell Avenue approximately 1/3 of a mile north of the rail crossing. North Dell Avenue is the first intersecting roadway along the northbound direction with a paper street cut through intersecting slightly south of North Dell Avenue. North of North Dell Avenue, Berkshire Valley Road comes to a T-intersection, and the roadway continuing straight becomes West Dewey Avenue (CR 624). Turning left would keep on Berkshire Valley Road, which is under municipal jurisdiction, where it also comes to an at-grade crossing with the Chester Rail Line. On the southbound side, Old Timber Court intersects with Berkshire Valley Road south of the North Dell Avenue intersection.

Berkshire Valley Road has two 12-foot lanes (one lane in each direction) with generally 2-foot shoulders varying between 0 feet and 8 feet at the intersections with Old Timber Court, North Dell Avenue, and West Dewey Avenue. North Dell Avenue has two 13-foot lanes (with no shoulders) controlled with a stop sign at the intersection with Berkshire Valley Road. This intersection is at 22 degrees, which is substandard according to the NJDOT Roadway Design Manual which suggests intersections meet at nearly 90-degree angles; those less than 60 degrees normally warrant realignment and require excessive widening for turning movements. Per the American Association of State Highway and Transportation Officials (AASHTO), intersections at stop conditions should be no less than 75 degrees. The angle of the intersection provides poor visibility to view oncoming traffic and encourages vehicles to overlook the existing stop sign on North Dell Avenue to Berkshire Valley Road northbound. Additionally, only a passenger vehicle can presently achieve a left turn from North Dell Avenue northbound to Berkshire Valley Road

southbound and a right turn from Berkshire Valley Road northbound to North Dell Avenue southbound without overrunning the existing pavement limits. The existing physical nose of the intersection appears heavily trafficked with no vegetation growing within it, suggesting a number of vehicles using this area to complete the turns.

5. PUBLIC AND STAKEHOLDER INVOLVEMENT

Public involvement in the transportation planning process is an effort to ensure that citizens have a direct voice in public decision-making. Public involvement is a key component of the transportation planning process and is critical in successfully developing a transportation project that serves a true purpose and need and generates strong stakeholder support. It is important for planners to understand the perspectives of the public, elected officials, stakeholders, advocates, and opponents throughout the project development process. NJTPA has long recognized the importance of proactively engaging the public. This section details the public involvement process employed in this freight concept development study.

5.1 Public Involvement Action Plan Summary

A Public Involvement Action Plan (PIAP) was prepared to serve as a blueprint for integrating comprehensive public and stakeholder engagement into the study. The PIAP described the study and its purpose, defined the project team's approach and objectives related to the public involvement element of the study, and included a targeted schedule for key public involvement activities. The PIAP is presented in Appendix E.

5.2 Stakeholder Groups

At the initiation of the study, a stakeholder database was developed that included key stakeholders from municipal, county, state, and other governmental agencies, and from local advocacy, cultural, historical, environmental, business, neighborhood, property owners and other organizations.

5.3 Local Officials Coordination

The key to a successful transportation project is coordination with and the support of the local elected officials representing the municipality where the project is located. This is particularly important if subsequent design and construction funding may be sought from a variety of grant programs like the NJDOT Rail Freight Assistance Program (RFAP), which requires any project receiving RFAP funds to have municipal support.

Local official coordination for the freight concept development study involved representatives and officials from the following:

- Morris County
- Roxbury Township
- Roxbury Police Department

Coordination with elected officials and other municipal representatives centered around two formal local officials briefings. Before each meeting, to guarantee the local officials were able to attend the meetings, a Doodle Poll was distributed to representatives of Roxbury and Morris County to understand what date and time was best for them.

The first briefing was held on August 3, 2021, via GoToMeeting, to introduce the local officials from the affected municipality to the project and identify any concerns they may have. In addition, the briefing provided a forum to gather their insights and knowledge to better inform the study process. The meeting was attended by representatives of the following:

- Roxbury Township
- Roxbury Police Department
- Morris County

The second local officials briefing was held on January 19, 2023, via Microsoft Teams. The municipal representatives were reintroduced to the project, presented with the preferred alternatives for improvements, and debriefed on the status of the project and next steps. The briefing provided participants a forum to ask questions and provide comments on the preliminary preferred alternative. The meeting was attended by representatives of the following:

- Roxbury Township
- Roxbury Police Department
- Morris County

Slides from the local officials briefings are presented in Appendix F.

5.4 Property Owner Stakeholder Coordination

A search of local parcel data was conducted to identify the properties and their owners who could potentially be affected by the potential improvements to Berkshire Valley Road and the Chester Branch rail bridge.

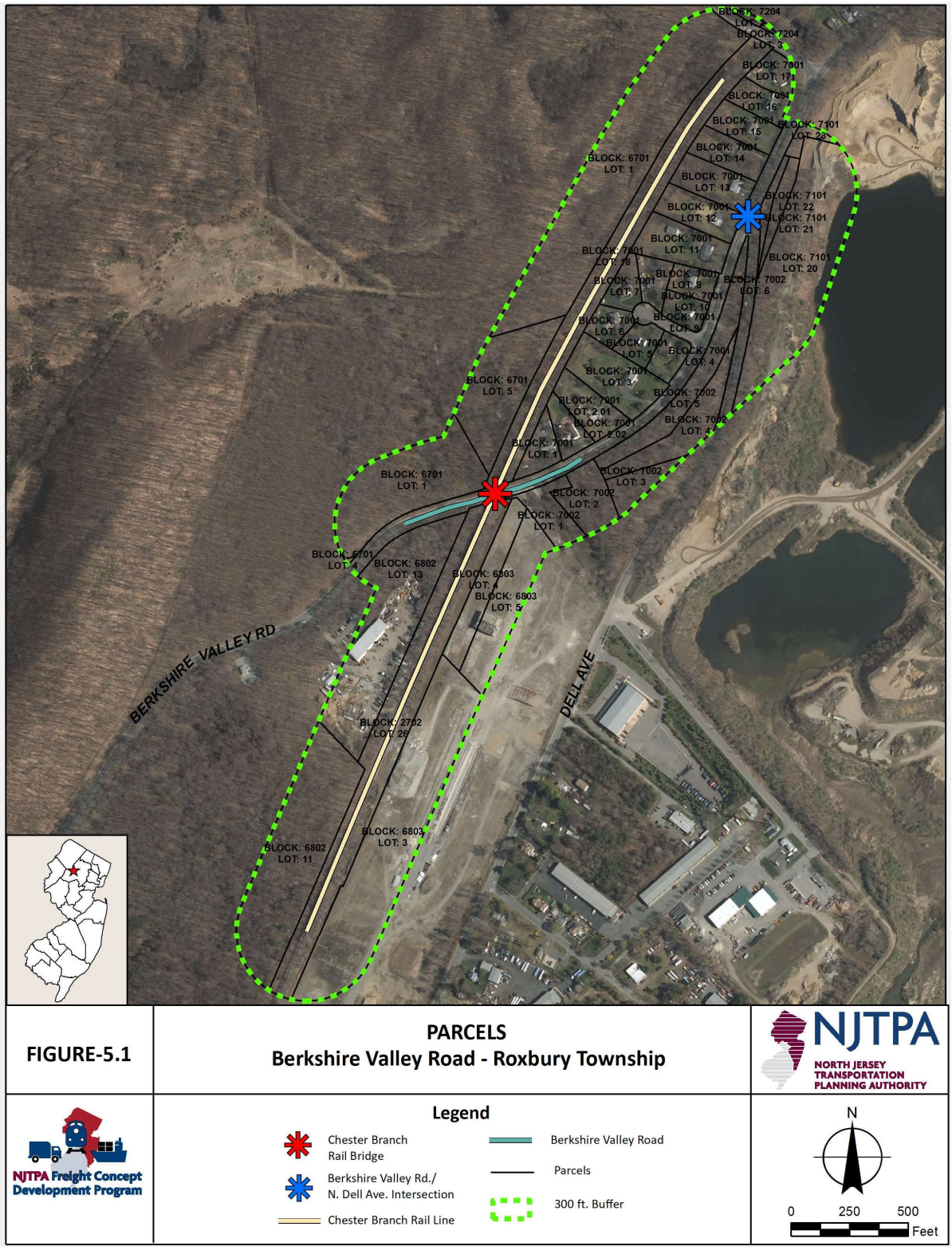
Outreach was conducted to proximate residents, representatives of the owners of the property bounded by North Dell Avenue and Berkshire Valley Road, and the property owners along

Berkshire Valley Road. This consisted of sending the owners invites to each public meeting and meeting with the Roxbury Township Council and the Morris County Board of Transportation.

The meeting with Roxbury Township Council took place during their regular public meeting on September 14, 2021 and consisted of a presentation with an overview of the project and highlighting the alternatives that would affect the township. The Morris County Board of Transportation meeting took place on October 19, 2021. The project team presented to the board and discussed the purpose and need, project background and overview, stakeholder involvement, and ongoing and future activities.

The project location and impacted parcels are depicted on Figure 5.1. A table of parcel ownership by block and lot is presented in Appendix G.

Figure 5.1: Property Parcels within the Project Area



The surrounding parcels are a mix of residential, commercial, and industrial lands. Existing industrial and commercial development, as well as a future subdivision development, were deemed to be potentially affected by one or more of the considered alternatives. Multiple attempts were made to reach the owners of the properties identified to discuss their potential concerns and individual meetings were held for interested property owners. Issues raised by the owners were considered when developing and evaluating the realignment alternatives.

5.5 Public Meetings

As defined in the PIAP, the study hosted two public meetings to present project information clearly and concisely to the public.

Before the first public meeting, the team launched the project website (https://www.berkshirevalleyroadstudy.com/). The website serves as a hub of information for the public to learn about the project. The website includes information about the study, project delivery overview community outreach, and resources. There is also a Contact Us page for submitting questions and comments to the project team. The homepage is translated into Spanish and a uses a Google Translate widget for other non-English speakers.

The first public meeting was held on September 21, 2021 at 6:30 p.m., via GoToMeeting. The purpose of the first public meeting was to introduce interested parties to the project, solicit their feedback, and respond to questions on a variety of items, including the Purpose and Need Statement.

The public was informed of the meeting via press release, mail, email, project website, and social media in both English and Spanish. A legal ad was placed in the *Star Ledger* and *Daily Record* in both English and Spanish. A flyer with the meeting details was created in English and Spanish and shared with the local municipalities. Roxbury and Morris County were asked to distribute the flyer via their communications channel to residents in their area. Morris County advertised the event by sending out a press release and posting information on their website.

The public meeting featured a formal presentation that included the following:

- A review of the project's purpose and need statement
- Background
- Overview
- Stakeholder involvement
- Ongoing and future activities

Following the presentation, a questions and comments segment was opened to public participants. Local officials and municipal representatives were in attendance and showed support of the project. A Spanish-language interpreter was also in attendance in the event because a meeting participant desired translation. Thirty-four participants attended the meeting, which included project team members, local officials and residents.

The second public meeting was held virtually on March 15, 2023 at 6:30 p.m., via GoToMeeting. The purpose of the second public meeting was to reintroduce the project to the public, discuss environmental constraints and what has occurred in terms of stakeholder engagement, present the preferred alternative, show the next steps, and garner additional feedback and comments.

The public was informed of the meeting via press release, mail, email, project website, and social media. Legal ads were placed in the Daily Record and Star Ledger in both English and Spanish. Before the meeting, the project website was updated. Updates included adding to the content and adding information about the second public meeting.

A flyer with the meeting details was created in English and Spanish and shared with the local municipalities. Roxbury and Morris County were asked to distribute the flyer via their communications channel to residents in their area. Morris County advertised the event by sending out a press release and posting information on their website.

The second public meeting featured a formal presentation that included the following:

- Project overview
- Environmental constraints
- Stakeholder engagement
- Alternatives scoring and selection of PPAs
- Next steps

Following the presentation was an open questions and comments segment with public participants. A Spanish interpreter was present for non-English, Spanish-speaking attendees. Twenty-two participants attended the meeting, which included project team members, local officials and residents.

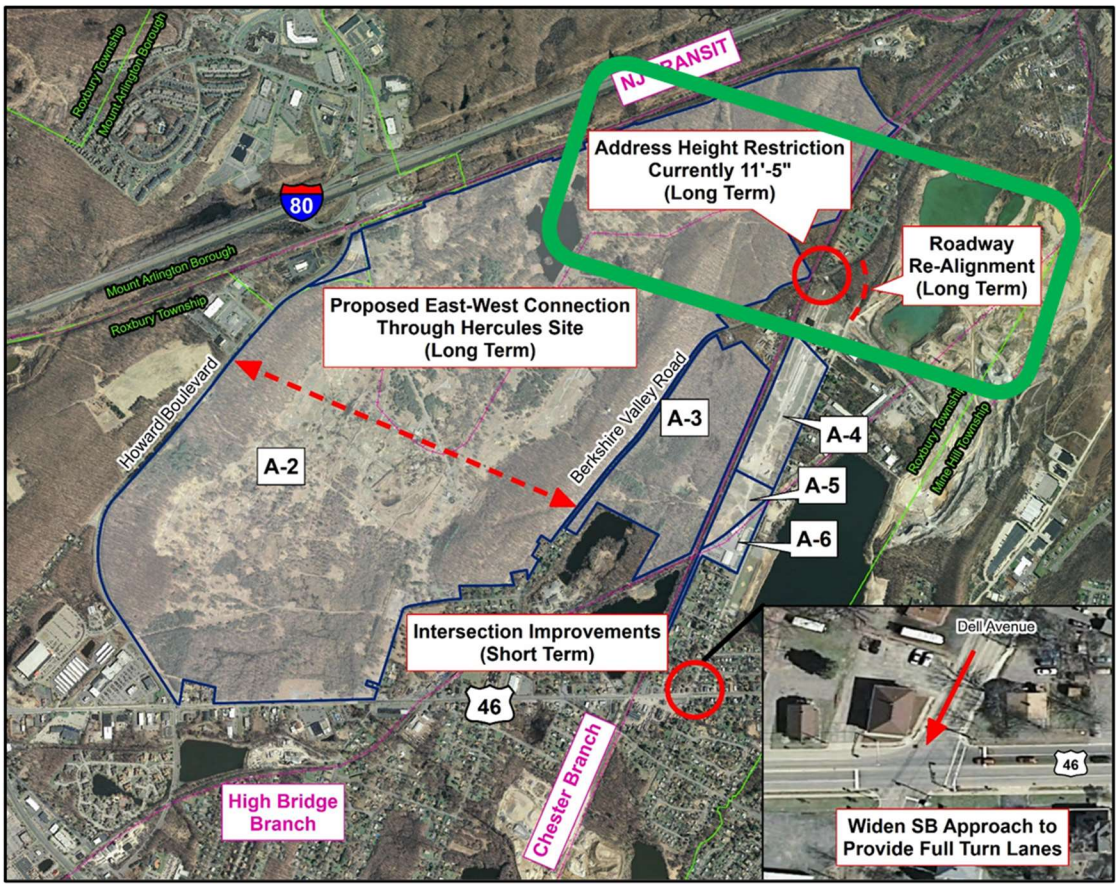
Following each public meeting, recordings of the meetings were immediately added to the project websites along with the presentation. Members of the public had 45-days following the meetings to submit their questions and comments about the project. Public Meeting presentation materials from both of the public meetings are presented in Appendix H.

6. ALTERNATIVE DEVELOPMENT AND SCORING

6.1 Previously Studies and Identified Needs

In July 2011, NJTPA published the *Morris County Freight Infrastructure & Land Use Analysis*, which examined "the impact and role of the goods movement industry on the county's transportation network, land use, and economy." Two key recommendations of this study focused on improving safety and accommodating the movement of large trucks within the Berkshire Valley Road/North Dell Avenue section of Roxbury Township. Although the study did not develop any detailed alternatives, the study did suggest the need to elevate the Chester Branch Rail Bridge over Berkshire Valley Road and to increase the vertical clearance beneath and to re-align/relocate the intersection of Berkshire Valley Road with North Dell Avenue to accommodate the movement of large trucks from any direction to any direction. These general issues and solutions as set forth in the 2011 study are depicted on Figure 6.1.

Figure 6.1: Locations in Need of Improvement
Source: Morris County Freight Infrastructure and Land Use Analysis, July 2011



6.2 Alternatives Screening Process

As ideas and alternative concepts were generated, fatal-flaw screening that was qualitative in nature was performed via a desktop analysis and consideration of issues related to permitting and constructability. Alternatives that passed the fatal flaw screening were subjected to further study and assessment, with each alternatives scored and ranked following the criteria described below.

The purpose of the fatal-flaw screening was to identify any alternatives deemed to be infeasible, based on a comparison of the alternatives against a set of fatal-flaw screening criteria developed from the study's stated goals and objectives. The screening evaluation was qualitative in nature and considered alternatives in terms of their basic attributes as compared to the other alternatives. The criteria used to evaluate each alternative are described in more detail in the following subsections.

Meets Project Purpose and Need

The first criterion evaluated whether the alternative fully meets the project's stated Purpose and Need. Alternatives that do not meet the Purpose and Need are dismissed from further consideration.

Freight Rail/Truck Operations Impacts/Benefits – During Construction

This criterion evaluates the general magnitude of effect construction activities would have on truck and rail operations in and around the project area. Disruption to rail service for extended periods of time poses a hardship to the businesses that rely upon the railroad for delivery of raw materials and shipment of finished products. Similarly, disruptions to truck movement that require trucks to take alternate roadways represents a scheduling and financial hardship on the truckers and the customers they serve.

Freight Rail/Truck Operations Impacts/Benefits – After Construction

Freight rail operational impacts after completion of construction are those impacts which would significantly increase running times or cause delays on the rail line or disrupt existing operations. Benefits may include enhanced operational efficiency through reduced rail or truck travel times.

Passenger Rail Operations Impacts/Benefits

Passenger rail operational impacts are those impacts which ***would significantly reduce the level of service on the passenger route or disrupt existing operations. Benefits may include avoiding***

or limiting any potential impacts of freight rail service on existing or planned passenger operations (particularly where tracks are shared).

Adjacent and Proximate Land Use Impacts/Benefits

Land use impacts are those that would require acquisition of privately owned ROW or adversely affect access to existing and future residential, commercial or recreational land uses. Benefits include activities that would improve land use access.

Historic and Cultural Resources Impacts/Benefits

An array of historic and cultural resources exists all across New Jersey. Impacts to historic and cultural resources include such thing as actions that visually obstruct a resource from view, restrict public access to the resource, or alter the character or aesthetic of the resource. Benefits include such actions that could allow a buried resource to be uncovered or improve public access to the resource.

Community Profile and Environmental Justice/Title VI Impacts/Benefits

EPA defines "environmental justice" as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. This criterion assesses the extent to which communities that are defined as EJ Communities would be disproportionately affected by a proposed action.

Wetlands Impacts/Benefits

Wetlands are protected areas of land that are often saturated or inundated with water. Construction within a wetland is typically discouraged and requires the interested party to obtain a wetland permit. Permit requirements can include wetland mitigation or the purchase of credits to offset the proposed impact.

Floodplains and Aquifers Impacts/Benefits

This criterion examines the potential impacts to floodplains, wetlands, and aquifers resulting from the implementation of an alternative alignment (both during and after construction).

Floodplains are low-lying lands adjacent to rivers and streams. When left in their natural state, floodplain systems store and dissipate floods without adverse impacts to humans, buildings, roads, and other infrastructure. Construction within floodplains decreases the land's natural

ability to store and absorb water; this exacerbates storm impacts and increases the risk of flooding.

Aquifers can be a source of water for residents, businesses, and industries; impacts due to construction can include groundwater table decline, subsidence, attenuation and drying of springs, decreased river flow, and increased vulnerability to pollutants.

A benefit for this criterion would be to avoid or limit impacts to the existing floodplains, wetlands, and aquifers (both during and after construction).

Threatened and Endangered Species Impacts/Benefits

The existence of threatened and endangered species or habitat suitable for their survival can affect the footprint of the project, both during and after construction. Threatened and Endangered (TE) species are regulated by NJDEP and USFWS. Disturbing TE species or their habitat can create significant permitting issues for advancing a project. Accordingly, an alternative's impact to TE species and their habitat is a significant criterion for scoring and ranking alternatives.

Stormwater and Drainage Impacts/Benefits

Stormwater runoff can include contaminants and pollutants that impact the quality of the receiving waters. In addition, increased stormwater runoff can overwhelm existing drainage systems, resulting in backups and flooding downstream of the project site. A benefit for this criterion would be to avoid or limit any adverse stormwater or drainage impacts (both during and after construction).

Hazardous Materials Impacts/Benefits

In large part because of the historic nature of rail operations in the years before need for environmental stewardship was widely recognized, rail corridors typically have some level of ground contamination within the ROW. Use of historic fill to construct the ROW can also be a contributing factor to contamination. This criterion focusing on avoidance of known contaminated properties to the greatest extent possible in the selection of a PPA.

Air Quality and Noise Impacts/Benefits

This criterion assesses the existence and proximity of sensitive land uses to the infrastructure being altered and realigned and the likelihood that the alternative would result in significant impacts to air quality in the area or noise levels at sensitive land uses.

Community Impacts/Benefits

This criterion considers potential impacts/benefits of an alternative to the overall quality of life in the area proximate to the alternative's areas of disturbance. Issues that affect quality of life include such considerations as noise levels, safety, and mobility for area residents and workers.

Safety Impacts/Benefits

As previously discussed, the substandard vertical clearance beneath the Chester Branch Bridge over Berkshire Valley Road and the geometric configuration of the intersection of Berkshire Valley Road with North Dell Avenue represent safety concerns to the traveling public. This criterion ranks the improvement to public safety expected to accrue to implementation of the alternative. This criterion supports the study's goal to improve safety along Berkshire Valley Road, North Dell Avenue, and the Chester Branch.

Utility Impacts/Relocation Requirements

This criterion examines potential impacts to existing above- and belowground utilities (such as power lines, gas lines, and sanitary sewers) and evaluates the need to relocate them to accommodate the new alignment.

Project Independence – Creates or Eliminates Need for Other Infrastructure Projects

This criterion addresses whether or not the alternative would be dependent upon another improvement being advanced by others or if the alternative can be advanced without consideration of other projects in the area.

Roadway Operational and Mobility Impacts/Benefits

In some cases, constructing an improvement that would benefit one mode of transportation or piece of infrastructure would have a detrimental effect on the operations or safety of another mode. For example, constructing a new rail alignment may benefit rail operations but would impact roadway operations from the construction of at-grade crossings. This criterion assesses the impact of the alternative on the safe and efficient movement of roadway vehicles in the surrounding area.

6.3 Alternatives Considered

6.3.1 Vertical Clearance Constraint Elimination

As a starting point in the development of alternatives for the elimination of the vertical constraint imposed by the Chester Branch Bridge over Berkshire Valley Road, three primary categories of improvement alternatives were investigated:

- Go Under – Depress the roadway
- Go Over – Elevate the bridge
- Go Around – Realign roadway or rail line to eliminate crossing of the corridors

The full range of alternatives developed and evaluated are listed in Table 6.1 with a brief summary of each alternative provided in the following sections.

Table 6.1: Summary of Alignment Alternatives

Alternative	General Description
1.0	Depress Roadway
2.0	Depress Rail
3.1	New Roadway Alignment – Close Berkshire Valley Road
3.2	New Roadway Alignment – Maintain Berkshire Valley Road
4.0	New Parallel Rail Alignment
5.1a	Existing Superstructure/Existing Substructure
5.1b	Existing Superstructure/New Substructure
5.1c	New Superstructure/Existing Substructure
5.1d	New Superstructure/New Substructure
5.1e	ABC Bridge Replacement – Existing Superstructure
5.1f	ABC Bridge Replacement – New Superstructure
5.2a	Precast Concrete Cantilever Abutments
5.2b	Precast Concrete Anchor Wall Abutments
5.2c	MSE Abutments
5.2d	Modular Block Wall Abutments
5.2e	Pile-Supported Substructure

MSE = mechanically stabilized earth systems

6.3.1.1 Alternative 1.0 - Depress Roadway

Description of Alternative

Alternative 1.0 depresses the existing Berkshire Valley Road by approximately 2 feet, 10 inches to achieve a vertical clearance beneath the low chord of the bridge of 14 feet 3 inches. Depressing

the roadway beneath the bridge would require reprofiling the roadway for approximately 250 feet on either side of the bridge to return to the existing profile. This reprofiling would require reprofiling of the residential driveway to the north of the bridge. A primary concern with Alternative 1.0 would be the creation of a low point in the roadway beneath the bridge. Draining stormwater would require the placement of inlets and piping to discharge the water at another location. Discharging to the east would represent a detrimental effect on the Morris Canal. Properties on the west of the roadway are at a higher elevation than the roadway itself, making discharging to the west infeasible.

Key Features and Considerations

Alternative I.1 fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction** – no effect on rail service. May require short duration lane closures during construction.
- **Freight Rail/Truck Operations After Construction** – no effect on rail service after construction. Truck circulation will be improved.
- **Adjacent and Proximate Land Use** –No adverse effect on existing land uses and access.
- **Historic and Cultural Resources** – no adverse effect.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas.
- **Floodplains and Aquifers** – no disturbance within floodplain or FHA.
- **Threatened and Endangered Species** – potential impact due to tree cutting, up to 6,000 square feet.
- **Stormwater and Drainage** – potential for minor effect due to increase in impervious cover. An option to close North Dell Avenue north of this intersection may be considered and potentially transformed to a vegetated area which would reduce the impervious area being added with this option.
- **Hazardous Materials** – potential involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – Minor increase in roadway traffic in front of residential properties
- **Community** – eliminates operational constraints at existing intersection.
- **Safety** – eliminates safety concerns at existing intersection.
- **Utilities** – no significant utility impacts anticipated.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

While there are no strictly fatal flaws in this alternative, a number of issues would need to be addressed in final design. Increases in impervious cover will likely require a stormwater management permit. In addition, once the final profile is decided for the Chester Branch Rail Line, further evaluation is required to determine any potential sight distance restrictions below the rail bridge for cars traveling north on Berkshire Valley Road to see the new intersection. With presence of a sidewalk on North Dell Avenue, the entire intersection on North Dell Avenue with the Recycling Center driveway may require reconfiguration to upgrade to full ADA compliance.

6.3.1.2 Alternative 2.0 - Depress Rail

Description of Alternative

Alternative 2.0 evaluated the potential of lowering the rail to remove the bridge an create a new at-grade crossing of Berkshire Valley Road. This alternative would require an extended outage of rail service while the existing bridge, rail and embankment are removed. Extended outage of service would create an operational and economic hardship to the existing rail-served customers during construction. In addition, there is a general trend in the freight rail industry to eliminate at-grade crossings and avoid creation of new at-grade crossings.

Key Features and Considerations

Alternative 2.0 fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction** – requires a disruption of service during construction. Requires a disruption of service during construction in which the trucks will need to be rerouted for deliveries.
- **Truck Operations:**
  - **Freight Rail/Truck Operations After Construction** – no impact after construction.
  - **Adjacent and Proximate Land Use** – requires ROW acquisition and temporary construction easements to adjacent properties.
  - **Historic and Cultural Resources** – removes the historic bridge.
  - **Community Profile and EJ** – no effect; not in or proximate to the EJ community.
  - **Wetlands** – impacts to wetlands based on the new roadway alignment and disturbance through an existing forested area.
  - **Floodplains and Aquifers** – anticipated disturbance within the floodplain of FHA.
  - **Threatened and Endangered Species** – impacts to threatened and endangered species based on the new roadway alignment and disturbance through an existing forested area.

- **Stormwater and Drainage** – stormwater management will be assessed with the new roadway alignment. No overall concerns about meeting stormwater management and drainage needs.
- **Hazardous Materials** – potential involvement due to rail ROW excavation.
- **Air Quality and Noise** – no change.
- **Community** – eliminates the potential for bridge strikes and maintains the existing circulation.
- **Safety** – eliminates the potential for bridge strikes assuming all oversized vehicles follow the signage correctly.
- **Utilities** – will require utility relocations.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

While there are no fatal flaws related to this alternative, lowering of an extended length of the rail line represents a detrimental effect to this historic rail corridor. Furthermore, creation of a new at-grade crossing represents a significant challenge to permitting and funding of construction of this alternative.

6.3.1.3 Alternative 3.1 - New Roadway Alignment – Close Berkshire Valley Road

Description of Alternative

Alternative 3.1 reroutes Berkshire Valley Road west of the Chester Branch Rail Line and reconnects with Berkshire Valley Road after the existing Berkshire Valley Road turns left at Dew Avenue while removing the crossing below the railroad line (Appendix I). The new alignment continues the same lane configuration of existing Berkshire Valley Road, with two lanes of traffic with one lane in each direction. The existing roadway not concurrent with the proposed alignment west of the grade separated RR crossing would be removed. The east side would end in a cul-de-sac at the section of Berkshire Valley Road east of the railroad. The roadway would be designed and constructed in accordance with the following guidelines:

- Berkshire Valley Road and North Dell Avenue maintain a 45 mph design speed (based on NJDOT criteria, the design speed should be 5 mph more than the posted speed limit)
- Design Vehicle = WB-62
- All lanes are 12 feet unless otherwise noted
- Outside shoulders 8 feet minimum

Key Features and Considerations

Alternative 3.1 fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction** – requires no disruption of service during construction. Requires a disruption of service during construction in which the trucks will need to be re-routed for deliveries.
- **Freight Rail/Truck Operations After Construction** – no impact after construction.
- **Adjacent and Proximate Land Use** – requires ROW acquisition and temporary construction easements to adjacent properties.
- **Historic and Cultural Resources** – no impacts to Historic Bridge.
- **Community Profile and EJ** – no effect; not in or proximate to the EJ community.
- **Wetlands** – impacts to wetlands based on the new roadway alignment and disturbance through an existing forested area.
- **Floodplains and Aquifers** – anticipated disturbance within the floodplain of FHA.
- **Threatened and Endangered Species** – impacts to threatened and endangered species based on the new roadway alignment and disturbance through an existing forested area.
- **Stormwater and Drainage** – stormwater management will be assessed with the new roadway alignment. No overall concerns about meeting stormwater management and drainage needs.
- **Hazardous Materials** – potential involvement due to rail ROW excavation.
- **Air Quality and Noise** – no change.
- **Community** – eliminates the potential for bridge strikes and temporary roadway closures after construction however realigns roadway circulation for the community.
- **Safety** – eliminates the potential for bridge strikes.
- **Utilities** – will require utility relocations.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

Although strictly there are no fatal flaws in this alternative, this alternative would result in environmental impacts to environmental features including wetlands and threatened and endangered species habitat.

6.3.1.4 *Alternative 3.2 - New Roadway Alignment – Maintain Berkshire Valley Road*

Description of Alternative

Alternative 3.2 provides a new alignment west of the Chester Branch Rail Line and connecting with Berkshire Valley Road while maintaining the crossing below the railroad (Appendix I). The new alignment will connect at a T-intersection west of the grade-separated railroad crossing and intersects at another T-intersection with Berkshire Valley Road after it turns west at the intersection with Dewey Avenue. The new roadway will have two lanes (one in each direction) and will be designed in accordance with the following guidelines:

- Berkshire Valley Road and North Dell Avenue maintain a 45 mph design speed (based on NJDOT criteria, the design speed should be 5 mph more than the posted speed limit)
- Design Vehicle = WB-62
- All lanes are 12 feet unless otherwise noted
- Outside shoulders 8 feet minimum

A clearance indicator would be placed on Berkshire Valley Road in advance of the west approach to the crossing below the railroad. Vehicles advance of the intersection exceeding the clearance limit would be able to make a left onto the new alignment to continue to Berkshire Valley Road while avoiding the low clearance under the bridge, while vehicles meeting the clearance limit may continue on the existing alignment.

Key Features and Considerations

Alternative 3.2 technically fully meets the Project's Purpose and Need but would not fully eliminate the potential for trucks to strike the bridge. This alternative has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction** – requires no disruption of service during construction. Requires a disruption of service during construction in which the trucks will need to be re-routed for deliveries.
- **Freight Rail/Truck Operations After Construction** – no impact after construction.
- **Adjacent and Proximate Land Use** – requires ROW acquisition and temporary construction easements to adjacent properties.
- **Historic and Cultural Resources** – no impacts to historic bridge.
- **Community Profile and EJ** – no effect; not in or proximate to the EJ community.
- **Wetlands** – impacts to wetlands based on the new roadway alignment and disturbance through an existing forested area.
- **Floodplains and Aquifers** – anticipated disturbance within the floodplain of FHA.

- **Threatened and Endangered Species** – impacts to threatened and endangered species based on the new roadway alignment and disturbance through an existing forested area.
- **Stormwater and Drainage** – stormwater management will be assessed with the new roadway alignment. No overall concerns about meeting stormwater management and drainage needs.
- **Hazardous Materials** – potential involvement due to rail ROW excavation.
- **Air Quality and Noise** – no change.
- **Community** – eliminates the potential for bridge strikes and maintains the existing circulation.
- **Safety** – eliminates the potential for bridge strikes assuming all oversized vehicles follow the signage correctly.
- **Utilities** – will require utility relocations.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

While there are no fatal flaws related to this alternative, construction of the realigned roadway would result in significant environmental impacts, particularly to wetlands and threatened and endangered species habitats. In addition, this alternative would not fully meeting the project purpose and need. Maintaining the existing Berkshire Valley Road alignment would not fully preclude a large truck from attempting to travel under the bridge and striking the structure.

6.3.1.5 Alternative 4.0 - New Parallel Rail Alignment

Description of Alternative

Alternative 4.0 eliminates the conflict point due to limited clearance with the rail bridge by reconstructing a new rail alignment roughly parallel with the existing alignment but with a higher clearance beneath the bridge over Berkshire Valley Road (Appendix I). This alternative maintains the existing Berkshire Valley Road alignment and builds a new rail bridge adjacent to the existing structure. This will require approximately 4,000 linear feet of rail to be realigned to meet the new bridge elevation. This will require retaining walls to support the rail grades and minimize impacts to the adjacent property owners.

Key Features and Considerations

Alternative 4.0 fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction**: requires only minimal disruption of rail service during construction. May require disruption of service/use of Berkshire Valley Road for short periods of time.
- **Freight Rail/Truck Operations After Construction** – no impact after construction.
- **Adjacent and Proximate Land Use** – requires ROW acquisition and temporary construction easements to adjacent properties.
- **Historic and Cultural Resources** – Will require the existing historic bridge to have the deck removed to provide increased vertical clearance for roadway vehicles. Will impact the sightlines for the existing Historic Bridge from both sides of Berkshire Valley Road.
- **Community Profile and EJ** – no effect; not in or proximate to the EJ community.
- **Wetlands** – impacts to wetlands based on the new rail alignment and disturbance through an existing forested area.
- **Floodplains and Aquifers** – anticipated disturbance within the floodplain of FHA.
- **Threatened and Endangered Species** – impacts to threatened and endangered species based on the new rail alignment and disturbance through an existing forested area.
- **Stormwater and Drainage** – stormwater management will be assessed with the new rail alignment. No overall concerns about meeting stormwater management and drainage needs.
- **Hazardous Materials** – potential involvement due to rail ROW excavation.
- **Air Quality and Noise** – no change.
- **Community** – eliminates the potential for bridge strikes and maintains the existing circulation.
- **Safety** – eliminates the potential for bridge strikes.
- **Utilities** – will require utility relocations.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

While there are no fatal flaws in this alternative, this alternative would result in impacts to environmental features including wetlands and threatened and endangered species habitat.

6.3.1.6 Alternative 5.1a - Existing Superstructure/Existing Substructure

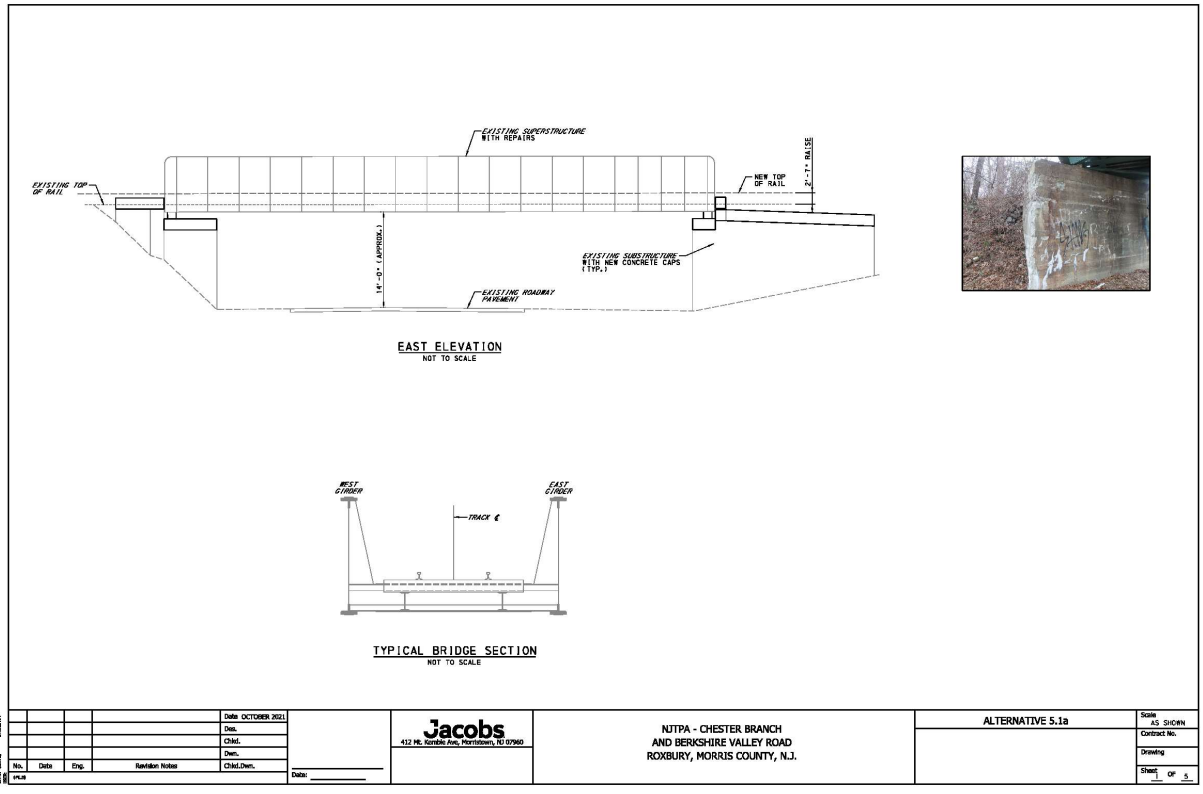
Description of Alternative

Alternative 5.1a raises the elevation of the bridge to 14 feet 3 inches (Appendix I). This alternative uses and repairs both the existing superstructure and the existing substructure (Figure 6.2). The construction sequence includes the following activities:

- Repair the existing bridge superstructure steel components as identified.

- Jack the existing superstructure to allow for required substructure work.
- Remove the top portion of the existing abutments and wingwalls.
- Place new concrete substructure caps and reset the existing steel superstructure.
- Adjust approach rail to accommodate the required bridge raise.
- Construction activities will require intermediate-term track outage (estimated 4 to 6 weeks) outage for substructure work and a series of weekend outages for steel repairs).
- Estimated total construction duration is 5 months.

Figure 6.2: Alternative 5.1a



Key Features and Considerations

Alternative 5.1a fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction** – requires a lengthy closure of rail service during construction.
- **Freight Rail/Truck Operations After Construction** – no effect after construction.
- **Adjacent and Proximate Land** Use – requires minor property acquisition for toe of embankment slope.

- **Historic and Cultural Resources** – minor modification to historic bridge.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas; approximately 2,000 square feet.
- **Floodplains and Aquifers** – no disturbance within floodplain of FHA.
- **Threatened and Endangered Species** – minor impact; approximately 2,000 square feet.
- **Stormwater and Drainage** – no significant change in stormwater drainage.
- **Hazardous Materials** – potential involvement due to rail ROW excavation.
- **Air Quality and Noise** – no change.
- **Community** – eliminates the potential for bridge strikes and temporary roadway closures.
- **Safety** – eliminates the potential for bridge strikes.
- **Utilities** – no significant utility impacts anticipated.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

Although strictly speaking there are no fatal flaws for this alternative in the short term, the May 2022 inspection report assigned a sufficiency rating of 41.27. Sufficiency ratings below 50 on a scale of 1 to 100 indicate a need for full replacement of the super structure and the substructure. Maintaining either the existing superstructure or substructure as part of a bridge heightening would leave the need for an additional replacement in the near future.

6.3.1.7 Alternative 5.1b - Existing Superstructure/New Substructure

Description of Alternative

Alternative 5.1b raises the elevation of the bridge to 14 feet 3 inches (refer to Appendix I for full-size plan). This alternative uses and repairs the existing superstructure with construction of a new substructure. The construction sequence includes the following activities:

- Remove the existing bridge superstructure steel components as identified.
- Jack the existing superstructure to allow for required substructure work.
- Remove the top portion of the existing abutments and wingwalls.
- Construct a new concrete substructure and reset the existing steel superstructure.
- Adjust approach rail to accommodate the required bridge raise.
- Construction activities will require intermediate-term track outage (estimated 4 to 6 week outage for substructure work and a series of weekend outages for steel repairs).
- Estimated total construction duration is 5 months.

Key Features and Considerations

Alternative 5.1b fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction** – requires a lengthy closure of rail service during construction.
- **Freight Rail/Truck Operations After Construction** – no effect after construction.
- **Adjacent and Proximate Land Use** – requires minor property acquisition for toe of embankment slope.
- **Historic and Cultural Resources** – minor modification to historic bridge.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas; approximately 2,000 square feet.
- **Floodplains and Aquifers** – no disturbance within floodplain of FHA.
- **Threatened and Endangered Species** – minor impact; approximately 2,000 square feet.
- **Stormwater and Drainage** – no significant change in stormwater drainage.
- **Hazardous Materials** – potential involvement due to rail ROW excavation.
- **Air Quality and Noise** – no change.
- **Community** – eliminates the potential for bridge strikes and temporary roadway closures.
- **Safety** – eliminates the potential for bridge strikes.
- **Utilities** – no significant utility impacts anticipated.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

Although strictly speaking there are no fatal flaws for this alternative in the short term, the May 2022 inspection report assigned a sufficiency rating of 41.27. Sufficiency ratings below 50 on a scale of 1 to 100 indicate a need for full replacement of the super structure and the substructure. Maintaining either the existing superstructure or substructure as part of a bridge heightening would leave the need for an additional replacement in the near future.

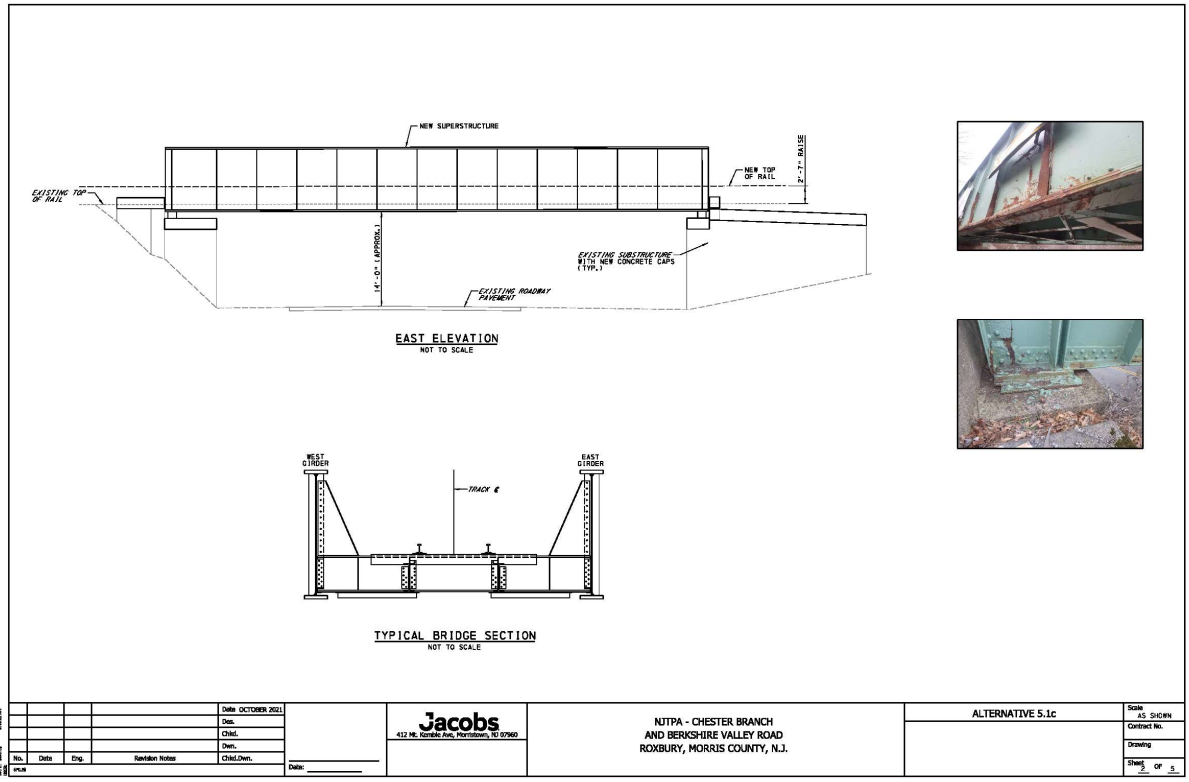
6.3.1.8 Alternative 5.1c - New Superstructure/Existing Substructure

Description of Alternative

Alternative 5.1c raises the elevation of the bridge to 14 feet 3 inches (refer to Appendix I for full-size plan). This alternative constructs a new superstructure and uses the existing substructure with new concrete caps (Figure 6.3). The construction sequence includes the following activities:

- Remove the existing bridge superstructure and the top portion of the existing abutments and wingwalls.
- Place new concrete substructure caps and a new steel superstructure.
- Adjust approach rail and accommodate the required bridge raise.
- Assemble the new steel superstructure adjacent to project and set in place after the substructure bearings have been raised.
- Construction activities will require intermediate-term track outage (estimated 6 to 8 week outage).
- Estimated total construction duration is 6 months.

Figure 6.3: Alternative 5.1c



Key Features and Considerations

Alternative 5.1c fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction** – requires a lengthy closure of rail service during construction.
- **Freight Rail/Truck Operations After Construction** – no effect after construction.

- **Adjacent and Proximate Land Use** – requires minor property acquisition for toe of embankment slope.
- **Historic and Cultural Resources** – minor modification to historic bridge.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas; approximately 2,000 square feet.
- **Floodplains and Aquifers** – no disturbance within floodplain of FHA.
- **Threatened and Endangered Species** – minor impact; approximately 2,000 square feet.
- **Stormwater and Drainage** – no significant change in stormwater drainage.
- **Hazardous Materials** – potential involvement due to rail ROW excavation.
- **Air Quality and Noise** – no change.
- **Community** – eliminates the potential for bridge strikes and temporary roadway closures.
- **Safety** – eliminates the potential for bridge strikes.
- **Utilities** – no significant utility impacts anticipated.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

Although strictly speaking there are no fatal flaws for this alternative in the short term, the May 2022 inspection report assigned a sufficiency rating of 41.27. Sufficiency ratings below 50 on a scale of 1 to 100 indicate a need for full replacement of the super structure and the substructure. Maintaining either the existing superstructure or substructure as part of a bridge heightening would leave the need for an additional replacement in the near future.

6.3.1.9 Alternative 5.1d - New Superstructure/New Substructure

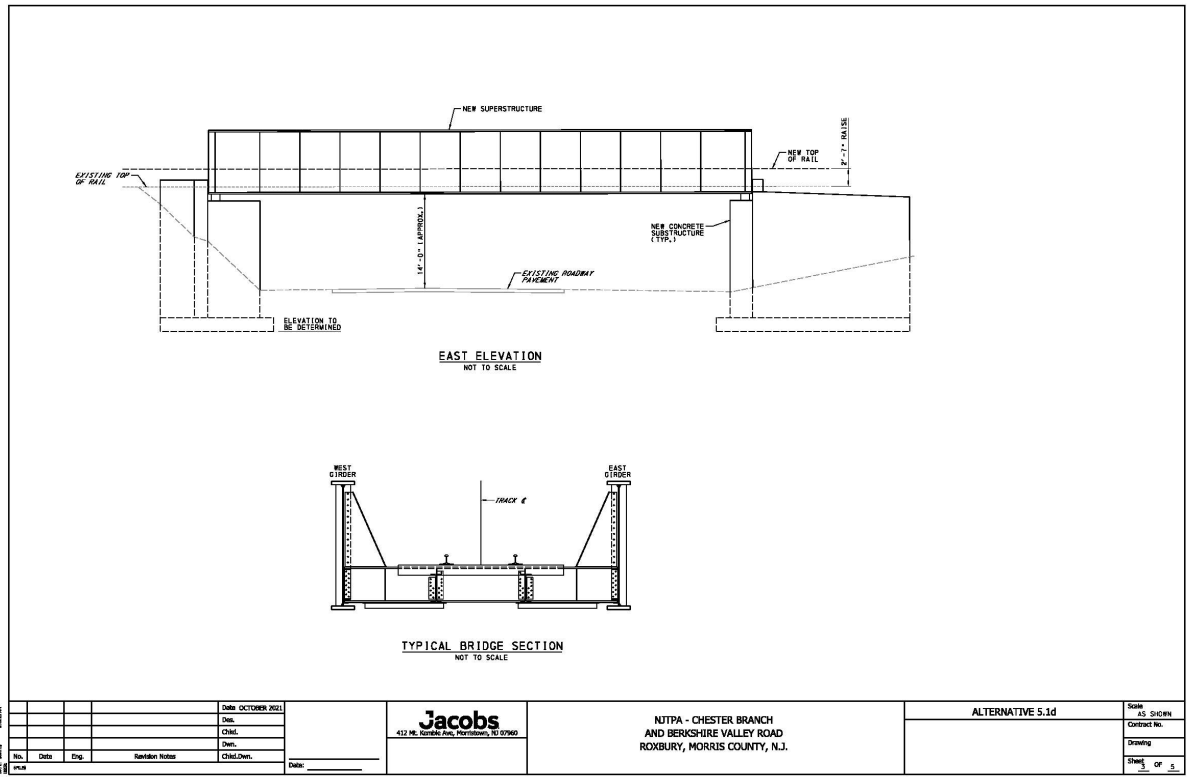
Description of Alternative

Alternative 5.1d raises the elevation of the bridge to 14 feet 3 inches (refer to Appendix I for full-size plan). This alternative constructs a new superstructure and a new concrete substructure (Figure 6.4). The construction sequence includes the following activities:

- Remove the existing bridge superstructure and substructure.
- Construct new reinforced concrete substructure units and placement of a new steel superstructure.
- Adjust approach rail to accommodate the required bridge raise.
- Assemble new steel superstructure adjacent to project and set in place after the new substructure units have been constructed.
- Permanent utility relocation will likely be required.

- Construction activities will require long-term track outage (estimated 5 month outage).
- Estimated total construction duration is 8 months.

Figure 6.4: Alternative 5.1d



Key Features and Considerations

Alternative 5.1d fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction** – requires a lengthy closure of rail service during construction.
- **Freight Rail/Truck Operations After Construction** – no effect after construction.
- **Adjacent and Proximate Land Use** – requires minor property acquisition for toe of embankment slope.
- **Historic and Cultural Resources** – minor modification to historic bridge.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands –** potential impacts to freshwater wetland transition areas; approximately 2,000 square feet.
- **Floodplains and Aquifers** – no disturbance within floodplain of FHA.

- **Threatened and Endangered Species** – minor impact; approximately 2,000 square feet.
- **Stormwater and Drainage** – no significant change in stormwater drainage.
- **Hazardous Materials** – potential involvement due to rail ROW excavation.
- **Air Quality and Noise** – no change.
- **Community** – eliminates the potential for bridge strikes and temporary roadway closures.
- **Safety** – eliminates the potential for bridge strikes.
- **Utilities** – no significant utility impacts anticipated.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation

Fatal Flaws

There are no fatal flaws for this alternative.

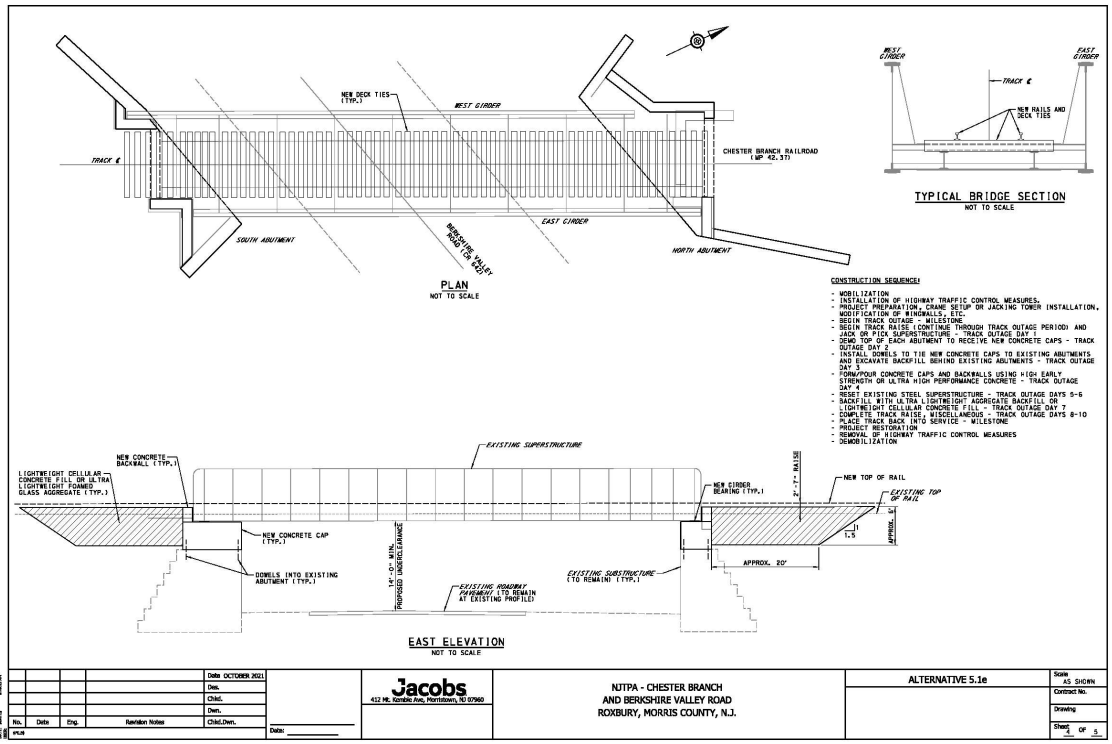
6.3.1.10 Alternative 5.1e - ABC Bridge Replacement – Existing Superstructure

Description of Alternative

Alternative 5.1e uses load balancing in unison with Accelerated Bridge Construction by keeping the existing superstructure and replacing the substructure as shown (Figure 6.5). The elevation of the proposed bridge is 14 feet 3 inches (refer to Appendix I for full-size plan). The construction sequence includes the following activities:

- Remove the existing bridge superstructure and the top portion of the existing abutments and wingwalls.
- Jack the existing superstructure to allow for required substructure work.
- Remove the top portion of the existing abutments and wingwalls.
- Construct a new concrete substructure reset the existing steel superstructure.
- Reset existing superstructure after the new substructure units have been constructed.
- Permanent utility relocation will likely be required.
- Construction activities will require short-term track outage (estimated 2 weeks outage).
- Estimated total construction duration is 1 month.

Figure 6.5: Alternative 5.1e



Key Features and Considerations

Alternative 5.1e fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction** – requires a short closure of rail service during construction.
- **Freight Rail/Truck Operations After Construction** – no effect after construction.
- **Adjacent and Proximate Land Use** – requires minor property acquisition for toe of embankment slope. This could potentially be eliminated with retaining walls.
- **Historic and Cultural Resources** – modification of the abutments and reuse of the existing bridge.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas; approximately 2,000 square feet.
- **Floodplains and Aquifers** – no disturbance within floodplain of FHA.
- **Threatened and Endangered Species** – minor impact; approximately 2,000 square feet.
- **Stormwater and Drainage** – no significant change in stormwater drainage.
- **Hazardous Materials** – potential involvement due to new/existing rail ROW excavation.

- **Air Quality and Noise** – no change.
- **Community** – eliminates the potential for bridge strikes and temporary roadway closures.
- **Safety** – eliminates the potential for bridge strikes.
- **Utilities** – no significant utility impacts anticipated.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

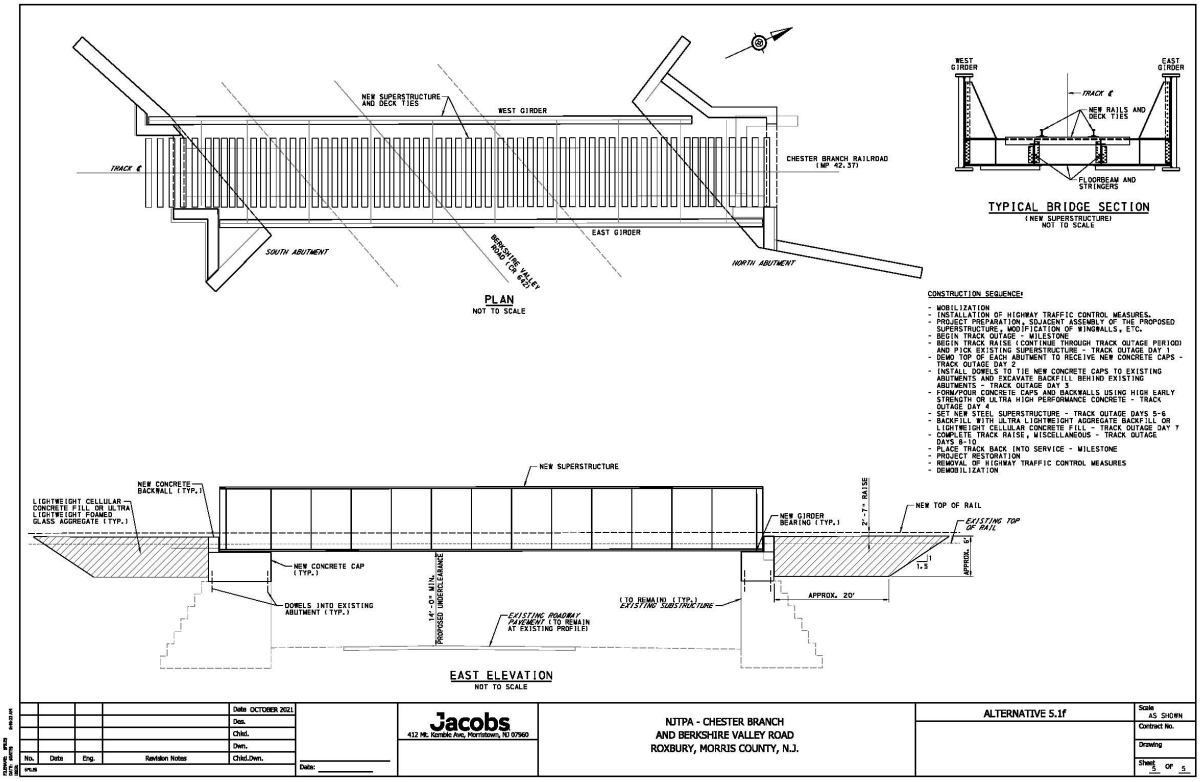
Although strictly speaking there are no fatal flaws for this alternative in the short term, the May 2022 inspection report assigned a sufficiency rating of 41.27. Sufficiency ratings below 50 on a scale of 1 to 100 indicate a need for full replacement of the super structure and the substructure. Maintaining either the existing superstructure or substructure as part of a bridge heightening would leave the need for an additional replacement in the near future.

6.3.1.11 Alternative 5.1f - ABC Bridge Replacement – New Superstructure

Alternative 5.1f uses load balancing in unison with Accelerated Bridge Construction to replace the existing superstructure (Figure 6.6). The elevation of the proposed bridge is 14 feet 3 inches (refer to Appendix I for full-size plan). The construction sequence includes the following activities:

- Remove the existing bridge superstructure and the top portion of the existing abutments and wingwalls.
- Jack the existing superstructure to allow for required substructure work.
- Remove the top portion of the existing abutments and wingwalls.
- Construct a new concrete substructure reset the existing steel superstructure.
- Set new steel superstructure.
- Permanent utility relocation will likely be required.
- Construction activities will require short-term track outage (estimated 2 weeks outage).
- Estimated total construction duration is 1 month.

Figure 6.6: Alternative 5.1f



Description of Alternative

Alternative 5.1 fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction** – requires a short closure of rail service during construction.
- **Freight Rail/Truck Operations After Construction** – no effect after construction.
- **Adjacent and Proximate Land Use** – requires minor property acquisition for toe of embankment slope. This could potentially be eliminated with retaining walls.
- **Historic and Cultural Resources** – modification of the abutments and replacement of the existing bridge.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas; approximately 2,000 square feet.
- **Floodplains and Aquifers** – no disturbance within floodplain of FHA.
- **Threatened and Endangered Species** – minor impact; approximately 2,000 square feet.
- **Stormwater and Drainage** – no significant change in stormwater drainage.

- **Hazardous Materials** – potential involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – no change.
- **Community** – eliminates the potential for bridge strikes and temporary roadway closures.
- **Safety** – eliminates the potential for bridge strikes.
- **Utilities** – no significant utility impacts anticipated.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

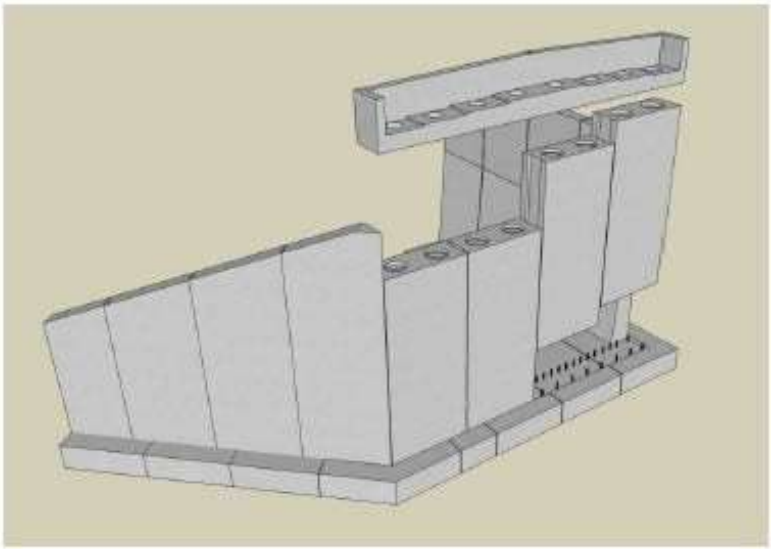
Although strictly speaking there are no fatal flaws for this alternative in the short term, the May 2022 inspection report assigned a sufficiency rating of 41.27. Sufficiency ratings below 50 on a scale of 1 to 100 indicate a need for full replacement of the super structure and the substructure. Maintaining either the existing superstructure or substructure as part of a bridge heightening would leave the need for an additional replacement in the near future.

6.3.1.12 Alternative 5.2a - Precast Concrete Cantilever Abutments

Description of Alternative

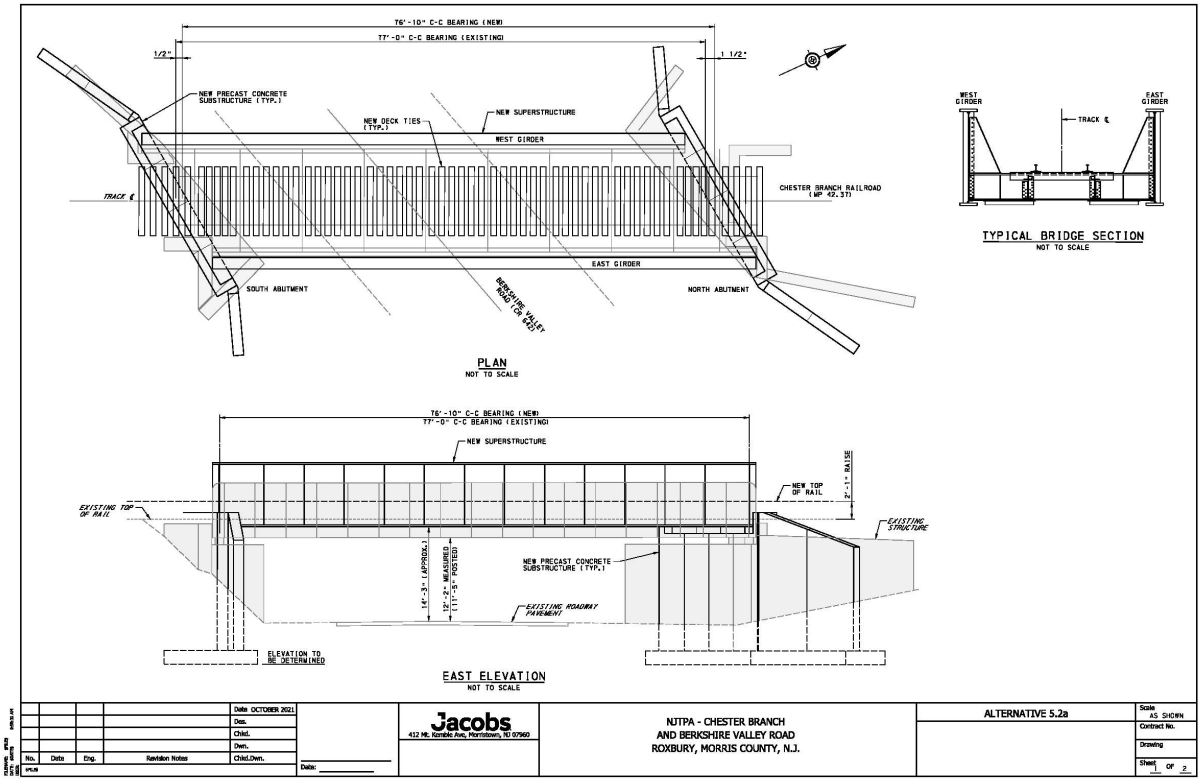
Alternative 5.2a uses Accelerated Bridge Construction to fully replace the bridge with precast cantilever abutments. The elevation of the proposed bridge is 14 feet 3 inches (Appendix I). This alternative uses precast concrete components that are rapidly assembled in place and post-tensioned/grouted/spliced into a cantilever abutment final configuration like a traditional cast-in-place abutment (Figure 6.7).

Figure 6.7: Precast Cantilever Abutments



This system is assembled after the existing bridge abutments are removed and the foundation subgrade is prepared to receive the new system. The precast concrete components may be match-cast for proper fit. The footings in this system are connected to the wall stems using grouted reinforcing splice couplers which emulate reinforcement bar lap splices. The use of ultra-lightweight aggregate fill material or lightweight cellular concrete fill behind the abutment wall could be incorporated as required by design.

Figure 6.8: Alternative 5.2a



Key Features and Considerations

Alternative 5.2a fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations** – requires a short closure of rail service during construction.
- **Freight Rail/Truck Operations** – no effect after construction.
- **Adjacent and Proximate Land Use** – requires minor property acquisition for toe of embankment slope. This could potentially be eliminated with retaining walls.
- **Historic and Cultural Resources** – replacement of the existing bridge; form liners can replicate the existing abutments.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas; approximately 2,000 square feet.
- **Floodplains and Aquifers** – no disturbance within floodplain of FHA.
- **Threatened and Endangered Species** – minor impact; approximately 2,000 square feet.
- **Stormwater and Drainage** – no significant change in stormwater drainage.

- **Hazardous Materials** – potential involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – no change.
- **Community** – eliminates the potential for bridge strikes and temporary roadway closures.
- **Safety** – eliminates the potential for bridge strikes.
- **Utilities** – no significant utility impacts anticipated.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Pros:

- Short duration rail closure (14 days).
- Components are fabricated offsite, stored, and shipped to the site on demand.
- General appearance is similar to the existing.
- Precast components can incorporate an aesthetic treatment, if desired (through form liners or similar tools).

Cons:

- Limited area available for construction.
- Preassembly fit-up anticipated to avoid issues during final assembly.
- Moderate excavation and backfill operations required.

Fatal Flaws

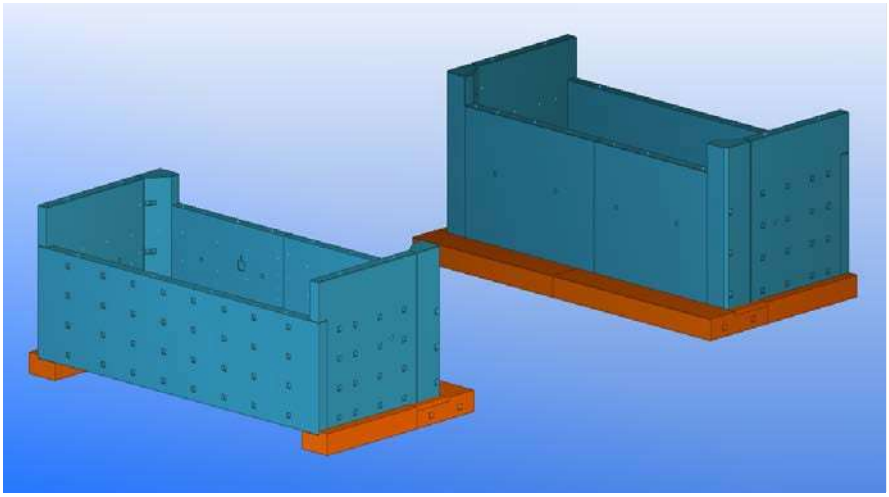
There are no fatal flaws for this alternative.

6.3.1.13 Alternative 5.2b - Precast Concrete Anchor Wall Abutments

Description of Alternative

Alternative 5.2b uses precast concrete components that are rapidly assembled in a box configuration. This system is assembled after the existing bridge abutments are removed and the foundation subgrade is prepared to receive the new system. This system includes a precast concrete foundation and wall panels. The precast concrete components may be match-cast for proper fit. The system uses a multi-level interconnected grid of galvanized steel chains for abutment/wingwall self-stabilization. The anchored wall system resists the backfill and other horizontal applied loads and the foundation is designed to support the bearing load (Figure 6.9).

Figure 6.9: Precast Concrete Abutments



Key Features and Considerations

Alternative 5.2b fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction** – requires a short closure of rail service during construction. Requires short term temporary road closure during various construction stages.
- **Freight Rail/Truck Operations After Construction** – no effect after construction.
- **Adjacent and Proximate Land Use** – requires minor property acquisition for toe of embankment slope. This could potentially be eliminated with retaining walls.
- **Historic and Cultural Resources** – replacement of the existing bridge.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas; approximately 2,000 square feet.
- **Floodplains and Aquifers** – no disturbance within floodplain of FHA.
- **Threatened and Endangered Species** – minor impact; approximately 2,000 square feet.
- **Stormwater and Drainage** – no significant change in stormwater drainage.
- **Hazardous Materials** – potential involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – no change.
- **Community** – eliminates the potential for bridge strikes and temporary roadway closures.
- **Safety** – eliminates the potential for bridge strikes.
- **Utilities** – no significant utility impacts anticipated.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Pros:

- Short duration rail closure (14 days).
- Components are fabricated offsite, stored, and shipped to the site on demand.
- General appearance is similar to the existing.
- Precast components can incorporate an aesthetic treatment, if desired (through form liners or similar tools).
- Simple to construct.

Cons:

- Limited area available for construction.
- Preassembly fit-up anticipated to avoid issues during final assembly.
- Largest area of disturbance required for all alternatives due to large area of excavation and backfill necessary.
- Long-term serviceability of buried galvanized chain restraint system.

Fatal Flaws

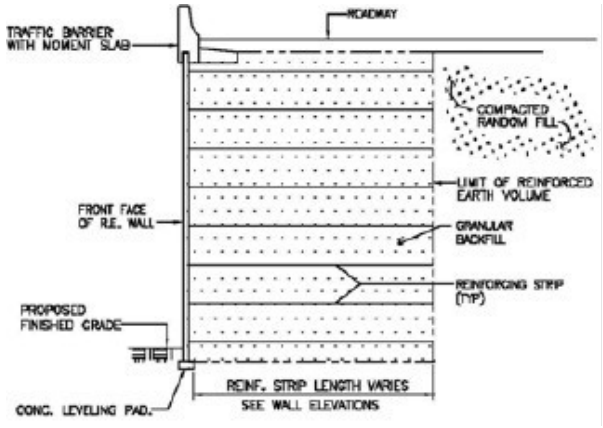
There are no fatal flaws for this alternative.

6.3.1.14 Alternative 5.2c - MSE Abutments

Description of Alternative

Alternative 5.2c uses prefabricated precast concrete wall panels that are connected to earth-reinforcing devices to engage the soil/backfill mass behind the wall. This system creates a mass soil gravity wall to resist forces. This system uses traditional fill materials and is constructed in lifts as the facing panels and earth reinforcing materials are installed. As a result, construction of these walls can progress rapidly because wall construction and backfilling operations are combined into a single operation. The superstructure will then bear on a stub abutment or pile foundation located behind the face of the MSE walls (Figure 6.10).

Figure 6.10: Typical MSE Wall Details



Key Features and Considerations

Alternative 5.2c fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction** – requires a short closure of rail service during construction. Requires short term temporary road closure during various construction stages.
- **Freight Rail/Truck Operations After Construction** – no effect after construction.
- **Adjacent and Proximate Land**- requires minor property acquisition for toe of embankment slope. This could potentially be eliminated with retaining walls.
- **Historic and Cultural Resources** – replacement of the existing bridge.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas; approximately 2,000 square feet.
- **Floodplains and Aquifers** – no disturbance within floodplain of FHA.
- **Threatened and Endangered Species** – minor impact; approximately 2,000 square feet.
- **Stormwater and Drainage** – no significant change in stormwater drainage.
- **Hazardous Materials** – potential involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – no change.
- **Community –** eliminates the potential for bridge strikes and temporary roadway closures.
- **Safety** – eliminates the potential for bridge strikes.
- **Utilities** – no significant utility impacts anticipated.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Pros:

- Short duration rail closure (14 days).
- Components are fabricated offsite, stored, and shipped to the site on demand.
- Precast components can incorporate an aesthetic treatment, if desired (through form liners or similar tools).
- Simple to construct.

Cons:

- Limited area available for construction.
- Preassembly fit-up anticipated to avoid issues during final assembly.
- Moderate area of disturbance required for excavation and backfill.
- Wall aesthetics are **not** similar to the existing bridge abutments.
- Prefabricated precast concrete wall panels typically have a modern appearance.
- A stub abutment or pile foundation behind the panel face is typically required to support the superstructure loadings. This requirement will complicate construction and potentially add time before or during the rail closure.

Fatal Flaws

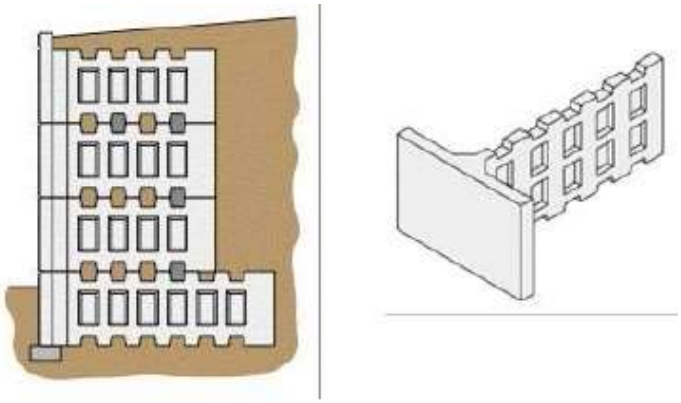
There are no fatal flaws for this alternative.

6.3.1.15 Alternative 5.2d - Modular Block Wall Abutments

Description of Alternative

Alternative 5.2d uses a proprietary interlocking modular block wall system to construct a gravity retaining wall. This system resists forces by the mass of the wall and backfill within the voids of the precast concrete modules. This alternative functions in a similar manner to the existing gravity substructure units. Depending on the proprietary modular wall system selected, superstructure loads may not be able to bear directly on the modular block wall system (Figure 6.11).

Figure 6.11: Modular Block Wall Example (T-Wall)



Key Features and Considerations

Alternative 5.2d fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction** – requires a short closure of rail service during construction. Requires short term temporary road closure during various construction stages.
- **Freight Rail/Truck Operations After Construction** – no effect after construction.
- **Adjacent and Proximate Land**- requires minor property acquisition for toe of embankment slope. This could potentially be eliminated with retaining walls.
- **Historic and Cultural Resources** – replacement of the existing bridge.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands –** potential impacts to freshwater wetland transition areas; approximately 2,000 square feet.
- **Floodplains and Aquifers** – no disturbance within floodplain of FHA.
- **Threatened and Endangered Species** – minor impact; approximately 2,000 square feet.
- **Stormwater and Drainage** – no significant change in stormwater drainage.
- **Hazardous Materials** – potential involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – no change.
- **Community** – eliminates the potential for bridge strikes and temporary roadway closures.
- **Safety** – eliminates the potential for bridge strikes.
- **Utilities** – no significant utility impacts anticipated.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Pros:

- Short duration rail closure (14 days).
- Components are fabricated offsite, stored, and shipped to the site on demand.
- Precast components can incorporate an aesthetic treatment, if desired (through form liners or similar tools).
- Simple to construct.

Cons:

- Limited area available for construction.
- Moderate area of disturbance required for excavation and backfill.
- Wall aesthetics are **not** similar to the existing bridge abutments.
- Prefabricated precast concrete wall panels typically have a modern appearance.

A stub abutment or pile foundation behind the panel face may be required to support the superstructure loadings. This requirement will complicate construction and potentially add time before or during the rail closure.

Fatal Flaws

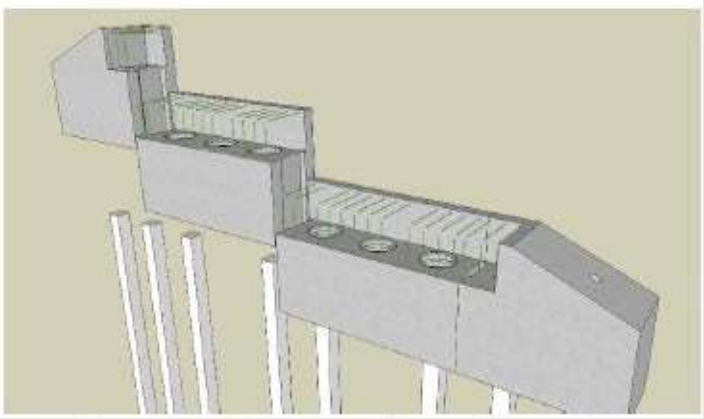
There are no fatal flaws for this alternative.

6.3.1.16 Alternative 5.2e - Pile-Supported Substructure

Description of Alternative

Alternative 5.2e uses piles driven to a certain depth behind the existing abutments between trains (Appendix I). Once the rail is closed to traffic, a precast concrete pile cap is installed, the area in front of the pile caps is excavated, and the existing abutments are removed. A portion of the existing abutments, MSE wall, or modular block wall system may be used at the location of the existing abutments to limit the length of slope that is required in front of the pile cap foundations. This will help reduce the superstructure span length that would be required. It should be noted that this alternative will not aesthetically appear similar to the existing substructure.

Figure 6.12: Prefabricated Pile Supported Abutment



Key Features and Considerations

Alternative 5.2e fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction** – requires a short closure of rail service during construction. Requires short term temporary road closure during various construction stages.
- **Freight Rail/Truck Operations After Construction** – no effect after construction.
- **Adjacent and Proximate Land** – requires minor property acquisition for toe of embankment slope. This could potentially be eliminated with retaining walls.
- **Historic and Cultural Resources** – replacement of the existing bridge.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands –** potential impacts to freshwater wetland transition areas; approximately 2,000 square feet.
- **Floodplains and Aquifers** – no disturbance within floodplain of FHA.
- **Threatened and Endangered Species** – minor impact; approximately 2,000 square feet.
- **Stormwater and Drainage** – no significant change in stormwater drainage.
- **Hazardous Materials** – potential involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – no change.
- **Community** – eliminates the potential for bridge strikes and temporary roadway closures.
- **Safety** – eliminates the potential for bridge strikes.
- **Utilities** – no significant utility impacts anticipated.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

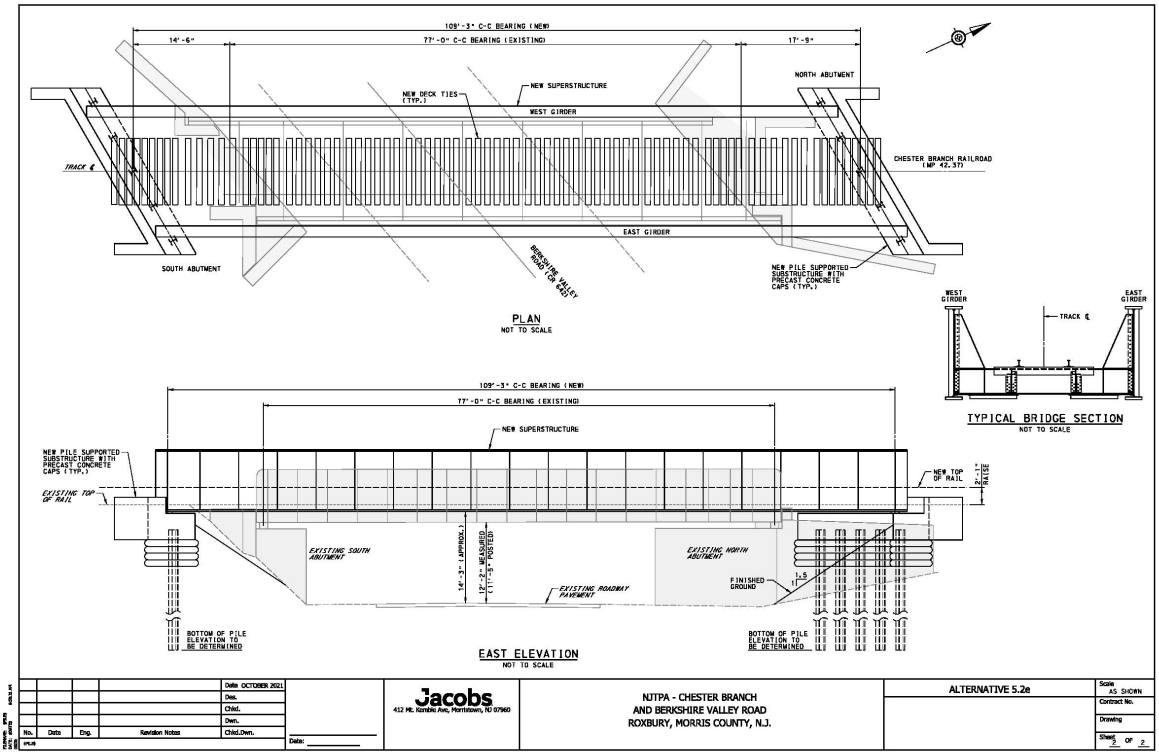
Pros:

- Short duration rail closure (14 days).
- Components are fabricated offsite, stored, and shipped to the site on demand.
- Precast components can incorporate an aesthetic treatment, if desired (through form liners or similar tools).

Cons:

- Limited area available for construction. Access for pile driving operations may be a challenge.
- Moderate area of disturbance required for excavation and backfill.
- Wall aesthetics are not similar to the existing bridge abutments.
- Piles will be driven behind the existing abutments. This operation will occur between trains prior to the rail closure. This will require increased coordination between the contractor, rail owner, shipper, and industries.
- Depending on the configuration chosen, an MSE wall, modular block wall, or other system may be required to retain a portion of the embankment slope in front of the pile foundations.
- Superstructure span will increase substantially to accommodate this alternative.

Figure 6.13: Alternative 5.2e



Fatal Flaws

There are no fatal flaws for this alternative.

6.3.2 Intersection of Berkshire Valley Road with North Dell Avenue Reconfiguration

As a starting point in the development of alternatives for the reconfiguration of the intersection of Berkshire Valley Road with North Dell Avenue, each alternative aimed to provide an intersection able to accommodate trucks turns to support the safe movement of trucks in the area. The alternatives would improve intersection visibility and encourage North Dell Avenue northbound traffic to come to a stop prior to entering Berkshire Valley Road. Ideally, the alternative would have minimal environmental and community impacts while improving the substandard condition.

The following guidelines apply for each alternative:

- Berkshire Valley Road and North Dell Avenue maintain a 45 mph design speed (based on NJDOT criteria, the design speed should be 5 mph more than the posted speed limit)
- New intermediate roadways connecting Berkshire Valley Road and North Dell Avenue assume a 25 mph design speed
- Design Vehicle = WB-62
- All lanes are 12 feet unless otherwise noted
- Inside shoulders 3 feet minimum
- Outside shoulders 8 feet minimum

These alternatives are listed with a brief summary of each alternative provided in Table 6.2.

Table 6.2: Summary of Alignment Alternatives

Alternative	General Description
I.1	Recycling Center Driveway Extension
I.2	Mid-Field Connection
I.3	Old Timber Court Connection
I.4	Cut-Thru Plus Reconfigure Existing (1)
I.5	Cut-Thru Plus Reconfigure Existing (2)
I.6	Split Connections – New Plus Reconfigured Existing
I.7	Relocate with 90-degree intersection
I.8	Maintain Location with 90-degree Intersection
VE.1	Roundabout

Maps depicting each individual alternative evaluated are presented in Appendix I.

6.3.2.1 Alternative I.1

Description of Alternative

Alternative I.1 provides a connection from North Dell Avenue to Berkshire Valley via a roadway located at the Roxbury Recycling Center Driveway extending this roadway through the infield area. The alignment will extend from the Roxbury Recycling Center Driveway and is placed at 90 degrees with Berkshire Valley Road, encouraging traffic to slow down to a stop prior to making turns. If combined with removal of the existing Berkshire Valley Road/North Dell Avenue intersection, this option will eliminate the operational issue at the existing intersection. Access to the area east of the Chester Branch Rail Line will improve truck circulation by providing adequate pavement widths for truck turning movements and a standard intersection angle that improves visibility of oncoming traffic.

Key Features and Considerations

Alternative I.1 fully meets the Project's Purpose and Need and has the following characteristics with respect to the defined alternative scoring criteria:

- **Freight Rail/Truck Operations During Construction** – no effect on rail service. May require short duration lane closures during construction.
- **Freight Rail/Truck Operations After Construction** – no effect on rail service after construction. Truck circulation will be improved.
- **Adjacent and Proximate Land Use** – requires minor property acquisition of undeveloped lands. No adverse effect on existing land uses and access.
- **Historic and Cultural Resources** – no adverse effect.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas.
- **Floodplains and Aquifers** – no disturbance within floodplain or FHA.
- **Threatened and Endangered Species** – potential impact due to tree cutting, up to 6,000 square feet.
- **Stormwater and Drainage** – potential for minor effect due to increase in impervious cover. An option to close North Dell Avenue north of this intersection may be considered and potentially transformed to a vegetated area which would reduce the impervious area being added with this option.
- **Hazardous Materials** – potential involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – Minor increase in roadway traffic in front of residential properties
- **Community** – eliminates operational constraints at existing intersection.
- **Safety** – eliminates safety concerns at existing intersection.
- **Utilities** – no significant utility impacts anticipated.

- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

There are no fatal flaws for this alternative. However, once the final profile is decided for the Chester Branch Rail Line, further evaluation is required to determine any potential sight distance restrictions below rail bridge for cars traveling north on Berkshire Valley Road to see the new intersection. With presence of sidewalk on North Dell Avenue, the entire intersection on North Dell Avenue with the Recycling Center driveway may require reconfiguration to upgrade to full ADA compliance.

6.3.2.2 Alternative I.2

Description of Alternative

Alternative I.2 provides a connection from North Dell Avenue to Berkshire Valley via a roadway located mid-way between the Roxbury Recycling Center and the existing intersection of North Dell Avenue with Berkshire Valley Road. The alignment will be placed at approximately 85 degrees with North Dell Avenue and 82 degrees with Berkshire Valley Road encouraging traffic to slow down to a stop prior to make the turns. If combined with removal of the existing Berkshire Valley Road/North Dell Avenue intersection, this option will eliminate the operational issue at the existing intersection.

Key Features and Considerations

This option fully meets the project's purpose and need and has the following features:

- **Freight Rail/Truck Operations During Construction** – no effect on rail service. May require short duration lane closures during construction.
- **Freight Rail/Truck Operations After Construction** – no effect on rail service after construction. Truck circulation will be improved.
- **Adjacent and Proximate Land Use** – requires minor property acquisition of undeveloped lands. No adverse effect on existing land uses and access.
- **Historic and Cultural Resources** – no adverse effect.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas. The roadway is located within wetlands and wetlands transitions disturbing approximately 1,700 square feet of freshwater wetlands.
- **Floodplains and Aquifers** – no disturbance within floodplain or FHA.

- **Threatened and Endangered Species** – the area is heavily vegetated with a number of trees present potentially resulting in a disturbance to threatened and endangered species of approximately 11,700 square feet.
- **Stormwater and Drainage** – potential for minor effect due to increase in impervious cover. An option to close North Dell Avenue north of this intersection may be considered and potentially transformed to a vegetated area which would reduce the impervious area being added with this option.
- **Hazardous Materials** – potential involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – minor increase in roadway traffic in front of residential properties
- **Community** – eliminates operational constraints at existing intersection.
- **Safety** – eliminates safety concerns at existing intersection.
- **Utilities** – no significant utility impacts anticipated. However, Existing utility poles with overhead wires are located at both new proposed intersections and will require relocation.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

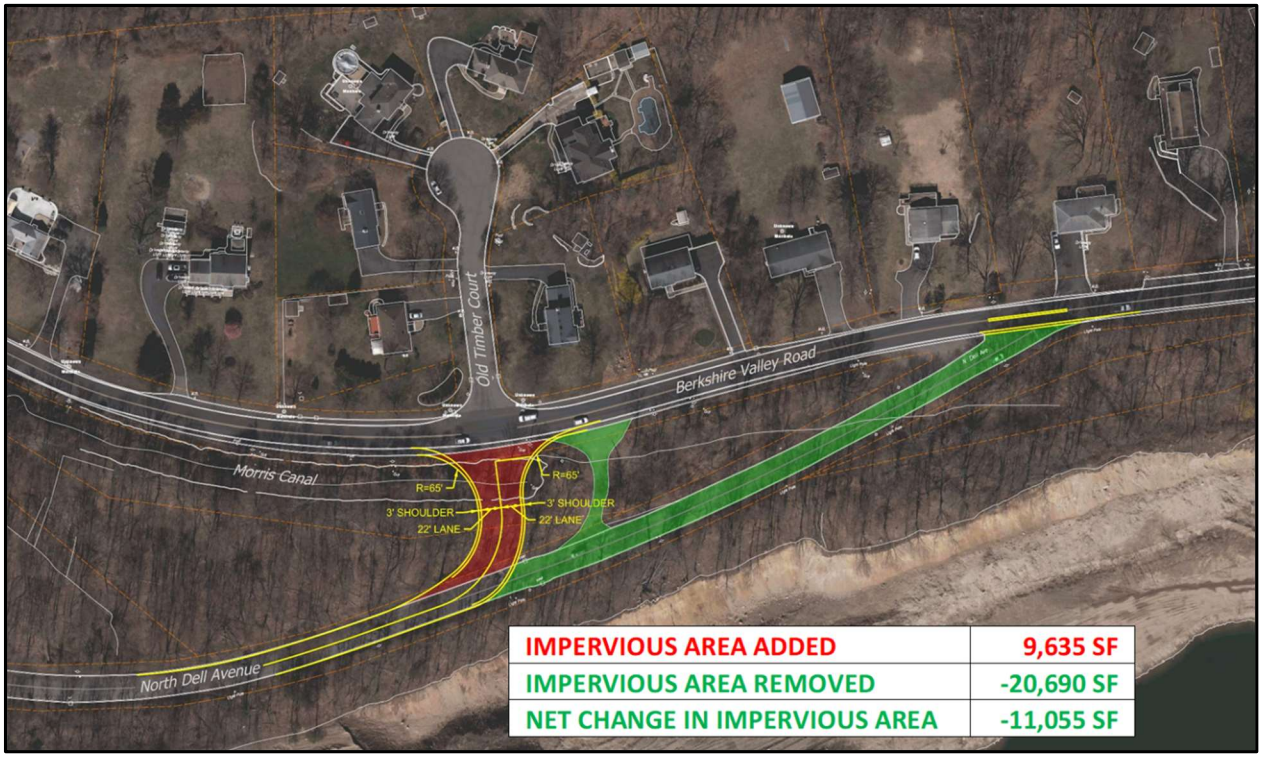
There are no fatal flaws for this alternative.

6.3.2.3 Alternative I.3

Description of Alternative

Alternative I.3 provides a connection from North Dell Avenue to Berkshire Valley which aligns with the existing intersection of Old Timber Court converting the existing three-way intersection to a four-way intersection. At the intersection, the lanes are widened and roadway pavement width is widened to 50 feet to accommodate W-62 truck turning movements. This option simplifies the existing roadway network by reducing the number of intersections along Berkshire Valley Road locating this leg at the existing Old Timber Court intersection. Advanced signing will be used to notify motorists of upcoming roadway curvature. The new North Dell Ave alignment will be placed at approximately 90 degrees with Berkshire Valley Road, encouraging traffic to slow down to a stop prior to making any turning maneuvers.

Figure 6.14: Alternative I.3



Key Features and Considerations

This option fully meets the project's purpose and need and has the following features:

- **Freight Rail/Truck Operations During Construction** – no effect on rail service. May require short duration lane closures during construction.
- **Freight Rail/Truck Operations After Construction** – no effect on rail service after construction. Truck circulation will be improved.
- **Adjacent and Proximate Land Use** – requires minor property acquisition of undeveloped lands. No adverse effect on existing land uses and access.
- **Historic and Cultural Resources** – no adverse effect.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas. Roadway would disturb approximately 1,800 square feet of freshwater wetlands and associated transition areas
- **Floodplains and Aquifers** – no disturbance within floodplain or FHA.

- **Threatened and Endangered Species** – the area is heavily vegetated with a number of trees present potentially resulting in a disturbance to threatened and endangered species of approximately 7,200 square feet.
- **Stormwater and Drainage** – potential for minor effect due to increase in impervious cover. An option to close North Dell Avenue north of this intersection may be considered and potentially transformed to a vegetated area which would result in a net reduction of impervious cover.
- **Hazardous Materials** – potential involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – minor increase in roadway traffic in front of residential properties
- **Community** – eliminates operational constraints at existing intersection.
- **Safety** – eliminates safety concerns at existing intersection.
- **Utilities** – no significant utility impacts anticipated. However, existing utility poles with overhead wires are located at the proposed intersection location and will require relocation.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

There are no fatal flaws for this alternative.

6.3.2.4 Alternative I.4

Description of Alternative

Alternative I.4 maintains the existing Berkshire Valley/North Dell intersection (north intersection) while reconfiguring it slightly to allow trucks turning left North Dell Avenue to Berkshire Valley Road at the current intersection and reconstructing the existing paper street (south intersection) for trucks turning right from Berkshire Valley Road to North Dell Avenue. The roadway extending from North Dell Avenue to Berkshire Valley Road at the south intersection will be a minimum 15 feet and the north intersection will be 44 feet minimum pavement width per requirements in AASHTO Geometric Design of Highways and Streets (GDHS) for WB-62 vehicles.

Key Features and Considerations

This option fully meets the project's purpose and need and has the following features:

- **Freight Rail/Truck Operations During Construction** – no effect on rail service. May require short duration lane closures during construction.
- **Freight Rail/Truck Operations After Construction** – no effect on rail service after construction. Truck circulation will be improved.

- **Adjacent and Proximate Land Use** – requires minor property acquisition of undeveloped lands. Minor impacts to residential driveways and homes due to the additional intersection along Berkshire Valley Road.
- **Historic and Cultural Resources** – new roadway crosses over the Morris Canal.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas.
- **Floodplains and Aquifers** – no disturbance within floodplain or FHA.
- **Threatened and Endangered Species** – the area is heavily vegetated with a number of trees present potentially resulting in a disturbance to threatened and endangered species of approximately 3,000 square feet.
- **Stormwater and Drainage** – potential for minor effect due to increase in impervious cover. An option to close North Dell Avenue north of this intersection may be considered and potentially transformed to a vegetated area which would offset the increase in impervious cover.
- **Hazardous Materials** – potential for minimal involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – Minor increase in roadway traffic in front of residential properties.
- **Community** – eliminates operational constraints at existing intersection. Accommodates all traffic but does not address operational issue at existing intersection.
- **Safety** – Improves sight lines for turning vehicles.
- **Utilities** – no significant utility impacts anticipated. However, existing utility poles with overhead wires are located at the proposed intersection location and will require relocation.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

There are no fatal flaws for this alternative.

6.3.2.5 Alternative I.5

Description of Alternative

Alternative I.5 reconstructs the existing street to be used for all truck turns to/from the southern approaches of Berkshire Valley Road to/from North Dell Avenue and trucks accessing the northern leg of Berkshire Valley Road will be through the north intersection at the existing Berkshire Valley/North Dell intersection. The roadway extending from North Dell Avenue to Berkshire Valley Road at the south intersection will be a minimum 40-foot pavement width per requirements in AASHTO GDHS for WB-62 vehicles to accommodate trucks in both directions.

Signage will be installed to encourage trucks to use the south intersection to access Berkshire Valley Road southbound and North Dell Ave southbound versus the north intersection. This option improves the existing roadway geometry by providing 90-degree intersections for truck turning movements and improving sight lines. This configuration does not address the existing operational issues at the existing intersection; however, an option to eliminate the existing substandard intersection will eliminate this condition.

Key Features and Considerations

This option fully meets the project's Purpose and Need and has the following features:

- **Freight Rail/Truck Operations During Construction** – no effect on rail service. May require short duration lane closures during construction.
- **Freight Rail/Truck Operations After Construction** – no effect on rail service after construction. Truck circulation will be improved.
- **Adjacent and Proximate Land Use** – requires minor property acquisition of undeveloped lands. Minor impacts to residential driveways and homes due to the additional intersection along Berkshire Valley Road.
- **Historic and Cultural Resources** – new roadway crosses over the Morris Canal.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas.
- **Floodplains and Aquifers** – no disturbance within floodplain or FHA.
- **Threatened and Endangered Species** – the area is heavily vegetated with a number of trees present potentially resulting in a disturbance to threatened and endangered species of approximately 5,700 square feet
- **Stormwater and Drainage** – potential for minor effect due to increase in impervious cover.
- **Hazardous Materials** – potential for minimal involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – Minor increase in roadway traffic in front of residential properties.
- **Community** – eliminates operational constraints at existing intersection. Accommodates all traffic but does not address operational issue at existing intersection
- **Safety** – Improves sight lines for turning vehicles.
- **Utilities** – no significant utility impacts anticipated. Utility poles with OH wires are visible along Berkshire Valley Road and North Dell Avenue; however, the location of the intersection seems to avoid existing utilities thus anticipated to have minimal to no utility relocation.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

This option improves the existing roadway geometry by providing 90-degree intersections for truck turning movements and improving sight lines. This configuration does not address the existing operational issues at the existing intersection, however an option to eliminate the existing substandard intersection will eliminate this condition.

- Truck operations will be improved with this option by improving directional access and truck circulation.
- Utility poles with overhead wires are visible along Berkshire Valley Road and North Dell Avenue; however, the location of the intersection seems to avoid existing utilities thus anticipated to have minimal to no utility relocation.
- Minor impacts to residential driveways and homes due to the additional intersection along Berkshire Valley Road.
- The realignment will have impacts to historic and cultural resources where it crosses the Morris Canal.
- No disturbance within Flood Plain of FHA.
- The final roadway footprint is located within the wetlands transition area. There may be potential impacts to endangered and threatened species due to the disturbance of approximately 5,700 square feet of vegetated and treed areas.
- This alternative will not increase noise due to roadway traffic.
- Potential impacts to stormwater and drainage include a minor increase in impervious cover. An analysis of potential drainage network requirements is needed to determine adequate drainage of roadway surface runoff.
- Excavation of the new roadway has potential to unearth hazardous materials. Further testing is required to determine existing soil conditions.

Fatal Flaws

There are no fatal flaws for this alternative.

6.3.2.6 Alternative I.6

Description of Alternative

Alternative I.6 functions the same way as Alternative I.5 but brings the southern portion of the intersection as close to the north intersection as possible to minimize disturbance. The smaller curvature to bring the intersection closer to the north intersection will require the pavement width to be 87 feet per AASHTO GDHS. This option improves the existing roadway geometry by providing 90-degree intersections for truck turning movements and improving sight lines. This configuration does not address the existing operational issues at the existing intersection; however, an option to eliminate the existing substandard intersection will eliminate this

condition. Truck operations will be improved with this option by improving directional access and truck circulation.

Key Features and Considerations

This option fully meets the project's purpose and need and has the following features:

- **Freight Rail/Truck Operations During Construction** – no effect on rail service. May require short duration lane closures during construction.
- **Freight Rail/Truck Operations After Construction** – no effect on rail service after construction. Truck circulation will be improved.
- **Adjacent and Proximate Land Use** – requires minor property acquisition of undeveloped lands. No adverse effect on existing land uses and access.
- **Historic and Cultural Resources** – new roadway crosses over the Morris Canal. Potential to remove North Dell Avenue north of this intersection would potentially allow for a net increase in the exposure of the Morris Canal footprint.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas.
- **Floodplains and Aquifers** – no disturbance within floodplain or FHA.
- **Threatened and Endangered Species** – the area is heavily vegetated with a number of trees present potentially resulting in a disturbance to threatened and endangered species of approximately 6,000 square feet.
- **Stormwater and Drainage** – potential for minor effect due to increase in impervious cover.
- **Hazardous Materials** – potential for minimal involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – Minor increase in roadway traffic in front of residential properties.
- **Community** – eliminates operational constraints at existing intersection. Accommodates all traffic but does not address operational issue at existing intersection
- **Safety** – Improves sight lines for turning vehicles.
- **Utilities** – no significant utility impacts anticipated. Utility poles with OH wires are visible along Berkshire Valley Road and North Dell Avenue; however, the location of the intersection seems to avoid existing utilities thus anticipated to have minimal to no utility relocation.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

There are no fatal flaws for this alternative.

6.3.2.7 Alternative I.7

Description of Alternative

Alternative I.7 achieves a 90-degree intersection with Berkshire Valley Road while maintaining the North Dell Avenue alignment. Signage will be used to notify motorists of the roadway curvature leading up to the intersection. Pavement width is widened out to accommodate WB-62 turning movements.

Key Features and Considerations

This option fully meets the project's purpose and need and has the following features:

- **Freight Rail/Truck Operations During Construction** – no effect on rail service. May require short duration lane closures during construction.
- **Freight Rail/Truck Operations After Construction** – no effect on rail service after construction. Truck circulation will be improved.
- **Adjacent and Proximate Land Use** – requires minor property acquisition of undeveloped lands. No adverse effect on existing land uses and access.
- **Historic and Cultural Resources** – new roadway crosses over the Morris Canal.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas.
- **Floodplains and Aquifers** – no disturbance within floodplain or FHA.
- **Threatened and Endangered Species** – the area is heavily vegetated with a number of trees present potentially resulting in a disturbance to threatened and endangered species of approximately 5,400 square feet.
- **Stormwater and Drainage** – potential for minor effect due to increase in impervious cover.
- **Hazardous Materials** – potential for minimal involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – Minor increase in roadway traffic in front of residential properties.
- **Community** – eliminates operational constraints at existing intersection.
- **Safety** – Improves sight lines for turning vehicles.
- **Utilities** – no significant utility impacts anticipated. Utility poles with OH wires are visible along Berkshire Valley Road and North Dell Avenue; however, the location of the intersection seems to avoid existing utilities thus anticipated to have minimal to no utility relocation.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

There are no fatal flaws for this alternative.

6.3.2.8 Alternative I.8

Description of Alternative

Alternative I.8 maintain existing Berkshire Valley/North Dell intersection location while realigning North Dell Avenue 90-degrees at intersection approach. Grading along the steep slope adjacent to the rock quarry wall may require a retaining wall; however, slope stability and soil conditions are questionable. To accommodate the truck turning movements, the pavement width is 51 feet at its widest with the exception of the curb returns.

Key Features and Considerations

This option fully meets the project's purpose and need and has the following features:

- **Freight Rail/Truck Operations During Construction** – no effect on rail service. May require short duration lane closures during construction.
- **Freight Rail/Truck Operations After Construction** – no effect on rail service after construction. Truck circulation will be improved.
- **Adjacent and Proximate Land Use** – requires minor property acquisition of undeveloped lands. No adverse effect on existing land uses and access.
- **Historic and Cultural Resources** – new roadway crosses over the Morris Canal.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – potential impacts to freshwater wetland transition areas.
- **Floodplains and Aquifers** – Potential Riparian impact from adjacent waterbody (Stephens Brook FW2-NTC1).
- **Threatened and Endangered Species** – the area is heavily vegetated with a number of trees present potentially resulting in a disturbance to threatened and endangered species of approximately 18,500 square feet.
- **Stormwater and Drainage** – potential for minor effect due to increase in impervious cover.
- **Hazardous Materials** – potential for minimal involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – Minor increase in roadway traffic in front of residential properties.
- **Community** – eliminates operational constraints at existing intersection.
- **Safety** – Improves sight lines for turning vehicles. Eliminates operational issue at existing intersection.

- **Utilities** – A light pole with overhead wires are visible along Berkshire Valley Road and North Dell Avenue which will require relocation. Necessity for lighting on the new roadway alignment to be assessed.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

There are no fatal flaws for this alternative.

6.3.2.9 Alternative VE.1

Description of Alternative

Alternative VE.1 is an alternative taken from the value engineering (VE) study which relocates the Berkshire Valley Road and North Dell Avenue intersection to align with Old Timber Court and reconfigure the intersection to a Roundabout. It is a single-lane roundabout with an inscribed circle diameter of 60 feet with 1- to 12-foot lanes entering and exiting at each of four approaches. This alternative is able to accommodate WB-62 vehicles.

Key Features and Considerations

This option fully meets the project's purpose and need and has the following features:

- **Freight Rail/Truck Operations During Construction** – no effect on rail service. Impacts to existing traffic during construction would be more significant requiring the existing roadway to be staged in order to maintain traffic through the reconstructed intersection since the roundabout is in line with the existing intersection
- **Freight Rail/Truck Operations After Construction** – no effect on rail service after construction. Truck circulation will be improved.
- **Adjacent and Proximate Land Use** – requires minor property acquisition of undeveloped lands as well as portions of the two residential properties on the corners of the intersection of Berkshire Valley Road with Old Timber Court.
- **Historic and Cultural Resources** – footprint of the roundabout would disturb significant section of the Morris Canal.
- **Community Profile and EJ** – no effect; not in or proximate to EJ community.
- **Wetlands** – roadway would disturb approximately 2,400 square feet of freshwater wetlands and associated transition areas.
- **Floodplains and Aquifers** – Potential Riparian impact from adjacent waterbody (Stephens Brook FW2-NTC1).

- **Threatened and Endangered Species** – the area is heavily vegetated with a number of trees present potentially resulting in a disturbance to threatened and endangered species of approximately 18,500 square feet.
- **Stormwater and Drainage** – potential for minor effect due to increase in impervious cover.
- **Hazardous Materials** – potential for minimal involvement due to new/existing rail ROW excavation.
- **Air Quality and Noise** – Minor increase in roadway traffic in front of residential properties.
- **Community** – eliminates operational constraints at existing intersection.
- **Safety** – Improves sight lines for turning vehicles. Eliminates operational issue at existing intersection.
- **Utilities** – light poles and overhead utilities along Berkshire Valley Road and North Dell are impacted and will require relocation. Necessity for lighting on the new roadway and round-about to be assessed.
- **Project Independence** – independent utility project with no effect on other projects/needs.
- **Roadway Operational and Mobility** – improved truck circulation.

Fatal Flaws

There are no fatal flaws for this alternative.

6.4 Preliminary Preferred Alternatives

Following the screening criteria described in Section 6.2, alternatives that passed the fatal flaw assessment were assigned a score comparing the pros and cons of each alternative against the other alternatives.

Alternatives were assigned a numerical scope from 5 to -5 for each defined evaluation criteria. As summarized in Table 6.3, a score of 5 indicates that the alternative is highly beneficial with respect to the subject criteria, A score of -5 indicates that the alternative would have significant impacts with respect to that criteria. A score of 0 indicates that the alternative has no effect on the criteria. If an alternative was found to have a fatal flaw that was not identified during the initial screening, a score of -100 would be assigned, effectively ensuring that that alternative would not rise to the level of a PPA based solely on the relative scores assigned to the alternatives.

Table 6.3: Relative Scoring of Candidate Alternatives

Highly Beneficial	5
Moderately Beneficial	3
Minorly Beneficial	1
Neutral	0
Minorly Detrimental	-1
Moderately Detrimental	-3
Highly Detrimental	-5
Fatally Flawed	-100

6.4.1 Vertical Clearance Constraint Elimination

Table 6.4 summarizes the scores assigned to each criterion for each candidate alternative considered for the elimination of the vertical constraint imposed by the Chester Branch Bridge over Berkshire Valley Road. As shown, Alternative 5.2a – full replacement of the superstructure and substructure utilizing precast concrete cantilever abutments received a final score of 4. Alternative 5.2a was selected for recommendation as the PPA for advancement into design, permitting and construction. The full scoring matrix including notes supporting the assignment of each score is presented in Appendix J.

Table 6.4: Alternative Scoring – Vertical Constraint Elimination

Criteria	Vertical Constraint Elimination															
						Elevate Bridge (identical alignment…just different construction) Elevation 13 ft 6 in						ABC Full Replacement at 14 ft 3 in				
	Depress Roadway	Depress Rail	New Roadway Alignment - Close Berkshire Valley Rd	New Roadway Alignment - Maintain Berkshire Valley Rd	New Parallel Rail Alignment	Existing Superstructure / Existing Substructure	Existing Superstructure / New Substructure	New Superstructure / Existing Substructure	New Superstructure / New Substructure	ABC Bridge Replacement - Existing Superstructure	ABC Bridge Replacement - New Superstructure	Precast Concrete Cantilever Abuttments	Precast Concrete Anchor Wall Abutments	Mechanically Stabilized Earth Systems (MSE) Abutments	Modular Block Wall Abutments	Pile-Supported Substructure
Alternative No.	1.0	2.0	3.1	3.2	4.0	5.1a	5.1b	5.1c	5.1d	5.1e	5.1f	5.2 a	5.2b	5.2c	5.2d	5.2e
Meets Project Purpose and Need	5	5	5	0	5	5	5	5	5	5	5	5	5	5	5	5
Freight Rail / Truck Operations Impacts / Benefits - During Construction	0	-5	0	0	0	-3	-5	-3	-5	0	0	0	0	0	0	-1
Freight Rail / Truck Operations Impacts / Benefits - After Construction	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Passenger Rail Operations Impacts / Benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjacent and Proximate Land Use Impacts / Benefits	0	0	-1	0	0	-1	-1	-1	-1	-1	-1	-1	-3	-1	-1	-1
Historic and Cultural Resources Impacts / Benefits	0	-3	0	0	-3	-1	-1	-1	-1	-1	-1	0	-1	-1	-1	-1
Community Profile & Environmental Justice/Title VI Impacts / Benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wetlands Impacts / Benefits	-1	-1	-5	-5	-3	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Floodplains & Aquifers Impacts / Benefits	-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Threatened & Endangered Species Impacts / Benefits	-1	-3	-3	-3	-3	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Stormwater and Drainage Impacts / Benefits	-3	0	-3	-3	-3	0	0	0	0	0	0	0	0	0	0	0
Hazardous Materials Impacts / Benefits	-1	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
Air Quality & Noise Impacts / Benefits	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Community Impacts / Benefits	-1	1	-1	1	1	1	1	1	1	1	1	1	1	1	1	1
Safety Impacts / Benefits	3	3	3	1	3	3	3	3	3	3	3	3	3	3	3	3
Utility Impacts / Relocation Requirements	-3	-3	0	0	0	0	-1	0	-1	0	0	0	0	0	0	0
Project Independence – Creates or Eliminates Need for other infrastructure project	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Roadway Operational and Mobility Impacts / Benefits	1	-1	-1	1	1	1	1	1	1	1	1	1	1	1	1	1
Summary Score	**-4**	**-11**	**-7**	**-9**	**-5**	**0**	**-3**	**0**	**-3**	**3**	**3**	**4**	**1**	**3**	**3**	**2**

6.4.1.1 *Risk Register*

An assessment and summary of the impacts to existing infrastructure, systems and environmental resources potentially associated with the construction of the PPA was conducted. A risk register was prepared identifying the design and construction considerations to be addressed during preliminary engineering and permitting. The risk register is presented in Appendix K and includes the following considerations.

- Construction Duration - Exceeding 14-day maximum desired
- Unexpected Utilities
- Planned Vertical Clearance Beneath Chester Branch Bridge
- Noise complaint from nearby sensitive receivers
- Maintenance of Traffic During Construction
- Potential Environmental Permits / Approvals and Interagency Coordination
- Privately Owned Right-of-Way and Property Impacts
- Detrimental effect on cultural resources

6.4.2 Intersection of Berkshire Valley Road with North Dell Avenue Reconfiguration

Table 6.5 summarizes the scores assigned to each criterion for each candidate alternative considered for the elimination of the vertical constraint imposed by the Chester Branch Bridge over Berkshire Valley Road. As shown, Alternative I.3 – Old Timber Court Connection received a final score of 5. Alternative I.3 was selected for recommendation as the PPA for advancement into design, permitting and construction.

Table 6.5: Alternative Scoring – Intersection Reconfiguration

Criteria	Intersection Modification								
	Realignment			Reconfiguration					
	Recycling Center Driveway Extension	Mid-Field Connection	Old Timber Court Connection	Cut-Thru Plus Reconfigure Existing (1)	Cut-Thru Plus Reconfigure Existing (2)	Split Connections - New Plus Reconfigured Existing	Relocate with 90-degree intersection	Maintain Location with 90-degree Intersection	VE Alternative - Round-About at Old Timber Court (modification of Alt I.3)
Alternative No.	I.1	I.2	I.3	I.4	I.5	I.6	I.7	I.8	VE.1
Meets Project Purpose and Need	5	5	5	5	5	5	5	5	5
Freight Rail / Truck Operations Impacts / Benefits - During Construction	0	0	0	0	0	0	0	0	-1
Freight Rail / Truck Operations Impacts / Benefits - After Construction	1	1	1	1	1	1	1	1	1
Passenger Rail Operations Impacts / Benefits	0	0	0	0	0	0	0	0	0
Adjacent and Proximate Land Use Impacts / Benefits	0	0	0	-1	-1	-1	-1	-1	-1
Historic and Cultural Resources Impacts / Benefits	0	0	0	-1	-1	-1	-1	-1	-1
Community Profile & Environmental Justice/Title VI Impacts / Benefits	0	0	0	0	0	0	0	0	0
Wetlands Impacts / Benefits	-1	-3	-3	-1	-1	-1	-1	-1	-3
Floodplains & Aquifers Impacts / Benefits	0	0	0	0	0	0	0	-1	0
Threatened & Endangered Species Impacts / Benefits	-3	-3	-1	-1	-1	-1	-3	-3	-3
Stormwater and Drainage Impacts / Benefits	-1	-1	-1	-1	-1	-1	-1	-1	-1
Hazardous Materials Impacts / Benefits	-1	-1	-1	-1	-1	-1	-1	-1	-1
Air Quality & Noise Impacts / Benefits	-1	-1	0	0	0	0	0	0	0
Community Impacts / Benefits	1	1	1	0	0	0	1	1	1
Safety Impacts / Benefits	3	3	3	1	1	1	3	3	3
Utility Impacts / Relocation Requirements	0	0	0	0	0	0	0	0	0
Project Independence – Creates or Eliminates Need for other infrastructure project	0	0	0	0	0	0	0	0	0
Roadway Operational and Mobility Impacts / Benefits	1	1	1	1	1	1	1	1	1
Summary Score	**4**	**2**	**5**	**2**	**2**	**2**	**3**	**2**	**0**

It is noted that sidewalks do not currently exist along Berkshire Valley Road or along N. Dell Avenue. However, in subsequent design and construction phases of the project, incorporation of sidewalks within the limits of construction of the intersection improvements should be considered.

6.4.2.1 Risk Register

An assessment and summary of the impacts to existing infrastructure, systems and environmental resources potentially associated with the construction of the PPA was conducted. A risk register was prepared identifying the design and construction considerations to be addressed during preliminary engineering and permitting. The risk register is presented in Appendix K and includes the following considerations.

- Unexpected Utilities
- Detrimental effect on cultural resources
- Challenge in acquiring privately owned ROW

- Noise complaint from nearby sensitive receivers

6.4.3 NEPA Classification

Enacted on January 1, 1970, the NEPA is a federal environmental law that established the President's Council on Environmental Quality and promotes the enhancement of the environment. Compliance with NEPA will be required in the advancement of the preferred alternative through design and into construction. There are three levels of environmental documentation required for any infrastructure project: a Categorical Exclusion (CE), an Environmental Assessment, and an Environmental Impact Statement. The applicable level of documentation is determined by the nature and extent of environmental impacts associated with construction and operation of the project.

Three potential options related to the NEPA classification could be available based on the project sponsors future course of action, availability of funds and sequencing of the projects.

Option 1 assumes federal money would be used for design and construction and the two projects (Chester Branch Railroad Bridge replacement and the new intersection at Berkshire Valley Road with N. Dell Avenue) are considered separate projects. Under this option, a CE would be applicable for each project. The bridge replacement project meets the description of 23 CFR 771.117 c(28)- "Bridge rehabilitation, reconstruction, or replacement; or the construction of grade separation to replace existing at-grade railroad crossings; however, the recommended action does exceed the thresholds in Section IV(A)(1)(b)(iv)." The intersection improvement portion would meet the description of 23 CFR 771.117 c(26)-"Moderation of a highway by resurfacing, restoration, rehabilitation, reconstruction, adding shoulders, or auxiliary lanes (including parking weaving, turning, and climbing lanes); however, the recommended action does exceed the thresholds in Section IV(A)(1)(b)(iv) ." According to the Programmatic Agreement signed by NJDOT/FHWA, on December 8, 2015, under Section IV(B) the NJDOT shall submit a CE form for actions it certifies as meeting the CE requirements, for FHWA approval. FHWA will either approve or respond to NJDOT with comments within 30 days of receipt of the documentation.

Option 2 similarly assumes federal money would be utilized for design and construction but with the two projects progressing together as one larger project. Under this option, an Environmental Assessment may be necessary to meet NEPA requirements.

Option 3 assumes State funding would be used for design and construction of all improvements. This would be applicable whether or not the projects were treated separately or as two individual projects with independent utility. Either way, the projects(s) would result in a total project with an estimated cost less than $30,000,000 with federal funding (funds utilized for the concept development phase) comprising less than 15% of the total estimated project cost. Based on this approach, the project would qualify as a Caltex pursuant to 23 CFR 771.117 c(23)- "Federally-

funded projects that receive less than $5,000,000; or with total estimated cost of not more than $30,000,000 and Federal Funds comprising less than 15% of total estimated project cost."

6.5 Preliminary Construction Cost Estimate

A detailed construction cost estimate was prepared for the PPAs for both projects. Summaries of the cost estimates are presented in Table 6.6 for replacement of the Chester Branch Rail Bridge over Berkshire Valley Road, and in Table 6.7 for the reconfiguration of the intersection of Berkshire Valley Road with North Dell Avenue.

Table 6.6: PPA Preliminary Construction Cost Estimate – Chester Branch Rail Bridge over Berkshire Valley Road

	Description	Unit	QTY	Unit Cost	Subtotal
Guideway and Track	Install New Track	LF	4,400	$ 209	$ 919,600
	Ballast	TON	1,686	$ 21	$ 35,408
	Sub-ballast	CY	2,119	$ 70	$ 148,296
	Stabilized Subgrade	CY	2,680	$ 70	$ 187,588
	Track removal, furnish, and install jointed rail	Track FT	2,200	$ 209	$ 459,800
	Tie Disposal	EA	1,354	$ 7	$ 9,478
Subtotal					**$ 1,760,170**
Sitework & Special Conditions	Excavation, miscellaneous locations	CY	1,163	$ 139	$ 161,630
	Clearing & Grubbing - General	AC	1	$ 13,500	$ 7,695
	Grading & Fill	CY	1,304	$ 139	$ 181,215
	Silt Fence	LF	4,400	$ 3	$ 13,200
Subtotal					**$ 363,740**
Bridge Substructure and Superstructure Replacement	Removal of the Existing Superstructural Elements	LS	1	$ 150,000	$ 150,000
	Removal of the Existing Substructural Elements	LS	1	$ 200,000	$ 200,000
	Structural Steel	LB	130,000	$ 7	$ 910,000
	Railroad Timber Tie	U	102	$ 1,200	$ 122,400
	Excavation, Test Pit	CY	50	$ 250	$ 12,500
	Excavation, Unclassified	CY	550	$ 100	$ 55,000
	Foundation Drains	LF	100	$ 75	$ 7,500
	Mobilization	LS	1	$ 225,000	$ 225,000
	Reinforced Elastomeric Bearing Assembly	U	4	$ 15,000	$ 60,000
	Precast Concrete (Footing, Abutment Wall, Wingwall)	CY	120	$ 2,000	$ 240,000
	Traffic Control	LS	1	$ 100,000	$ 100,000
	Erosion and Sedimentation Control	LS	1	$ 50,000	$ 50,000
	UL-FGA (Ultra-lightweight Foamed Glass Aggregate)	CY	270	$ 550	$ 148,500
Subtotal					**$ 2,280,900**
Construction Sub-Total					**$ 4,404,810**
	Unallocated Contingencies	25%			$ 1,101,203
Construction Sub-Total with Contingencies					**$ 5,506,013**
	Preliminary Design	7%			$ 308,337
	Final Design	3%			$ 132,144
	Environmental Analysis / Documentation	LS	1	$ 200,000	$ 200,000
	Environmental Permitting	LS	1	$ 20,000	$ 20,000
	Post Design Services/ Construction Engineering and Inspection	10%			$ 440,481
Subtotal					**$ 1,100,962**
ENGINEERS ESTIMATE OF PROBABLE COSTS					**$ 6,606,975**

Table 6.7: PPA Preliminary Construction Cost Estimate – Intersection of Berkshire Valley Road with North Dell Avenue

	Description	Unit	QTY	Unit Cost	Subtotal
Guideway and Track	Site Clearing	SF	10,000	$ 5.00	$ 50,000
	Remove Existing Pavement	SY	2,300	$ 25.00	$ 57,500
	Milling	SY	1,000	$ 7.30	$ 7,300
	Grading and Fill	CY	418	$ 150.00	$ 62,700
	Dense Graded Aggregate	SY	741	$ 27.00	$ 20,007
	Subbase	SY	741	$ 100.00	$ 74,100
	HMA Intermediate Course	TON	375	$ 120.00	$ 45,000
	HMA Surface Course	TON	125	$ 165.00	$ 20,625
	Striping	LF	1,600	$ 1.36	$ 2,176
	Topsoiling	SY	2,300	$ 6.00	$ 13,800
	Seeding	SY	2,300	$ 1.25	$ 2,875
	Silt Fence	LF	1,350	$ 10.00	$ 13,500
	Signs	EA	2	$ 500.00	$ 1,000
Construction Sub-Total					**$ 370,583**
	Unallocated Contingencies	25%			$ 92,646
Construction Sub-Total with Contingencies					**$ 463,229**
	Preliminary Design	7%			$ 25,941
	Final Design	3%			$ 11,117
	ROW Acquisition	LS	1	$ 250,000	$ 250,000
	Environmental Analysis / Documentation	LS	1	$ 75,000	$ 75,000
	Environmental Permitting	LS	1	$ 20,000	$ 20,000
	Post Design Services/ Construction Engineering and Inspection	10%			$ 37,058
Subtotal					**$ 419,117**
ENGINEERS ESTIMATE OF PROBABLE COSTS					**$ 882,346**

6.6 Value Engineering Assessment

As part of the alternative development and evaluation process, an independent team of engineers and planners from a firm not involved in the development of the alternatives described above convened and conducted a VE Assessment workshop. As an introductory step in the VE process, the VE team was provided with an overview presentation of the D&R Realignment Project, followed by a visit to the project site. Data assembled in the alternative development process were provided to the VE team with a summary of the alternatives considered and the initial recommendation of the preferred alternative.

The VE team subsequently met in a workshop forum—the creative ideas phase of the VE Assessment—to identify alternatives that the project team may not have initially considered and evaluate possible modifications of the alternatives already developed. The creative idea phases focused on alternatives that might leave a lesser impact on the project area resources, while meeting the stated purpose and need. These ideas could include the following:

- An intuitively lower cost alternative
- An alternative with a smaller impact on identified cultural and natural resource
- An alternative that has a smaller real estate impact

The VE team reviewed the existing alternatives studied including the identified preferred alternatives and conducted a facilitated brainstorming session to identify additional new alternatives. The full VE report is presented in Appendix L, with findings of the review summarized below.

6.6.1 Vertical Constraint Elimination

The VE Team revisited Alternative 1 – Depressing the roadway, incorporating additional features to accommodate the drainage and management of stormwater, including the installation of catch basins and pipes to convey stormwater away from the depression that would be created by the lowering of the roadway. Upon a more detailed review of the topography in the study area, it was determined that the depth of the pipe would be lower than the bottom of the former Morris Canal, thereby precluding the ability to discharge stormwater into the canal. This VE Alternative was subsequently dismissed from further consideration.

6.6.2 Intersection Reconstruction

The VE Team identified one additional alternative, which was basically a modification of the PPA (Alternative I.3). The VE alternative considered replacement of the intersection proposed at Old Timber Court with a modern roundabout. Providing a sufficient radius to accommodate

trucks within the roundabout would require minor acquisition of ROW from the residential properties located on the corners of Berkshire Valley Road with Old Timber Court. In addition, the roundabout would require fill and cover of a significant section of the Morris Canal. Alternative locations for construction of a roundabout would have the same issues and concerns associated with them. For these reasons, this VE alternative was dismissed from further consideration.

6.7 Resolution of Support

A key requirement in advancing the PPA's into design and construction is having the support of the municipality within which the construction will be performed. Resolutions of support from Morris County and Roxbury Township are presented in Appendix M.

7. NEXT STEPS

7.1 Project Design and Construction Funding Opportunities

The NJTPA Freight Concept Development Program (FCDP) was developed as a pathway to fund the advancement of freight-supporting infrastructure projects that otherwise would not have a viable funding program to advance from an idea or expressed need defined in a local, regional or statewide planning study into design and construction. Adoption of the PPA developed through this study represents the final stage of the FCDP's ability to advance a project through to construction. As such, alternative funding programs and project advancement pipelines must be identified to move the PPA into design. This is particularly important when addressing issues on non-publicly owned and operated infrastructure such as much of the freight rail infrastructure serving the needs of New Jersey industries.

To address this, existing publicly supported funding programs were identified as potential pathways for advancing projects from concept through design. Funding programs are managed and funded by a wide variety of federal, state, and other agencies, each having its own unique funding levels and cost-sharing requirements as well as requirements for eligible project types and project sponsors/applicants.

7.1.1 New Jersey Rail Freight Assistance Program

The New Jersey Statewide Freight Rail Strategic Plan was developed for the purpose of maintaining and supporting an efficient freight rail system in the State. The Plan assesses the state and efficiency of the existing system; projects future freight rail demands; analyzes infrastructure improvements that are in progress and determines what needs to be done in order

to complete those projects; and prioritizes a series of improvements and actions to ensure the efficiency and effectiveness of New Jersey's freight rail system.

The RFAP was developed as a tool for the State to provide financial partnering and support for projects that address the *Statewide Freight Rail Strategic Plan's* goals and objectives. Financial assistance under the RFAP is available to Class I, Class II, and Class III railroads. Projects that would improve and support the existing freight rail system and acquisition of property needed for these projects are eligible as well. Funds can be used for final design and construction.

Owners of rail projects, operators of rail freight service, and public agencies or authorities can seek financial assistance through RFAP, if the projects are included in the program's annual list of eligible projects. The RFAP distributes $25 million annually to eligible capital improvement projects that result in the continuation or improvement of economically viable rail freight services.

7.1.2 Federal Funding Programs

Since the signing of the federal Infrastructure Investment and Jobs Act (IIJA), also referred to as the Bipartisan Infrastructure Law, the U.S. Department of Transportation (USDOT) and the Federal Highway Administration (FHWA) are administering a range of programs to provide funding in support of transportation infrastructure improvements. While these programs can expire, be revised or replaced over time, current programs that would potentially be a source of funding for the design and construction of the project include:

Under IIJA, RAISE (Rebuilding American Infrastructure with Sustainability and Equity) - Administered by the USDOT – is a discretionary grant program that provides funding for surface transportation projects that will improve safety, environmental sustainability, quality of life, mobility and community connectivity, and economic competitiveness.

7.1.3 Eligibility of the PPA under RFAP

Design and construction of the PPA is considered eligible for funding under the RFAP based upon the following:

- Reconstruction and heightening of the Chester Branch Bridge over Berkshire Valley Road would improve and support the existing freight rail system, making design and construction of the PPA eligible for financial support under the RFAP. While not required, should changes introduced during the design phase require, the RFAP also supports the acquisition of ROW necessary to construct the project.

- The RFAP provides financial assistance to a Class I railroad at 50 percent of the total eligible cost. Class II railroads are eligible for assistance at 70 percent of the total eligible cost. Although the Chester Branch is owned by Morris County, the operator of the freight rail service on the Washington Secondary and the Chester Branch is a Class III railroad. Financial assistance to a Class III railroad through the RFAP may be provided at 90 percent of the total eligible cost with the remaining 10 percent to be paid by the sponsor.

It is recommended that the PPA be advanced through an application to the NJDOT for support under the RFAP, with Morris County as the application sponsor. The 10 percent local funding match would be a combination of funding to be provide by Morris County and the freight rail operator, the DRRV.

7.1.4 Privately Owned Right-of-way and Property Impacts

Replacement of the Chester Branch Bridge and reprofiling of the rail (Alternative 5.2a) would be constructed entirely within ROW owned by Morris County, No acquisition of privately owned ROW is expected to be required.

Reconstruction of the intersection of Berkshire Valley Road with North Dell Avenue)Alternative I.3) requires acquisition of portions of two undeveloped privately owned parcels

- Block 7001, Lot 4
- Block 7005, Lot 5

7.1.5 Utilities

The proposed alignment will require relocation of several utility poles supporting overhead electrical transmission lines. Coordination of the pole relocation will require coordination with Jersey Central Power and Light and securing of rights of access to the utility easement.

7.1.6 Maintenance of Traffic During Construction

Construction staging in this area may be complicated due to limited availability of flat ground proximate to the Chester Branch Bridge. Short term closures of Berkshire Valley Road will be required during the removal of the existing bridge and placement of the new prefabricated bridge. This will require coordination with Roxbury Township and the Roxbury Police Department, with Maintenance of Traffic controls put in place during construction to maintain mobility and safety for the movement of vehicles or pedestrians.

7.1.7 Potential Environmental Permits/Approvals and Interagency Coordination

Both of the PPAs will result in limited disturbance of wetlands transition areas and threatened and endangered species habitat. A detailed wetlands delineation and flagging program should be undertaken in the early stages of preliminary engineering and permitting to quantify the amount of anticipated wetlands transition area disturbance.

Preliminary engineering should include an in-depth geotechnical investigation to properly design the bridge to handle Cooper E-80 loading.

Appendix A

Chester Branch Bridge over Berkshire Valley Road Inspection Report, May 2022



NJTPA

NJTPA Freight Concept Development Program

Jacobs

County of Morris

DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
COURT STREET
P.O. Box 900
MORRISTOWN, NEW JERSEY 07963-0900

BRIDGE RE-EVALUATION SURVEY REPORT

STRUCTURE NO. 14C42.37
CHESTER BRANCH OVER
BERKSHIRE VALLEY ROAD (CR 642)
RR MP 42.37, ROUTE 6155
USRA LINE CODE 1210
ROXBURY TOWNSHIP
MORRIS COUNTY

3rd CYCLE

March 3rd, 2022

PRELIMINARY

Prepared By:

Van Cleef
ENGINEERING WITH FOCUS
755 Memorial Parkway, Suite 110
Phillipsburg, NJ 08865

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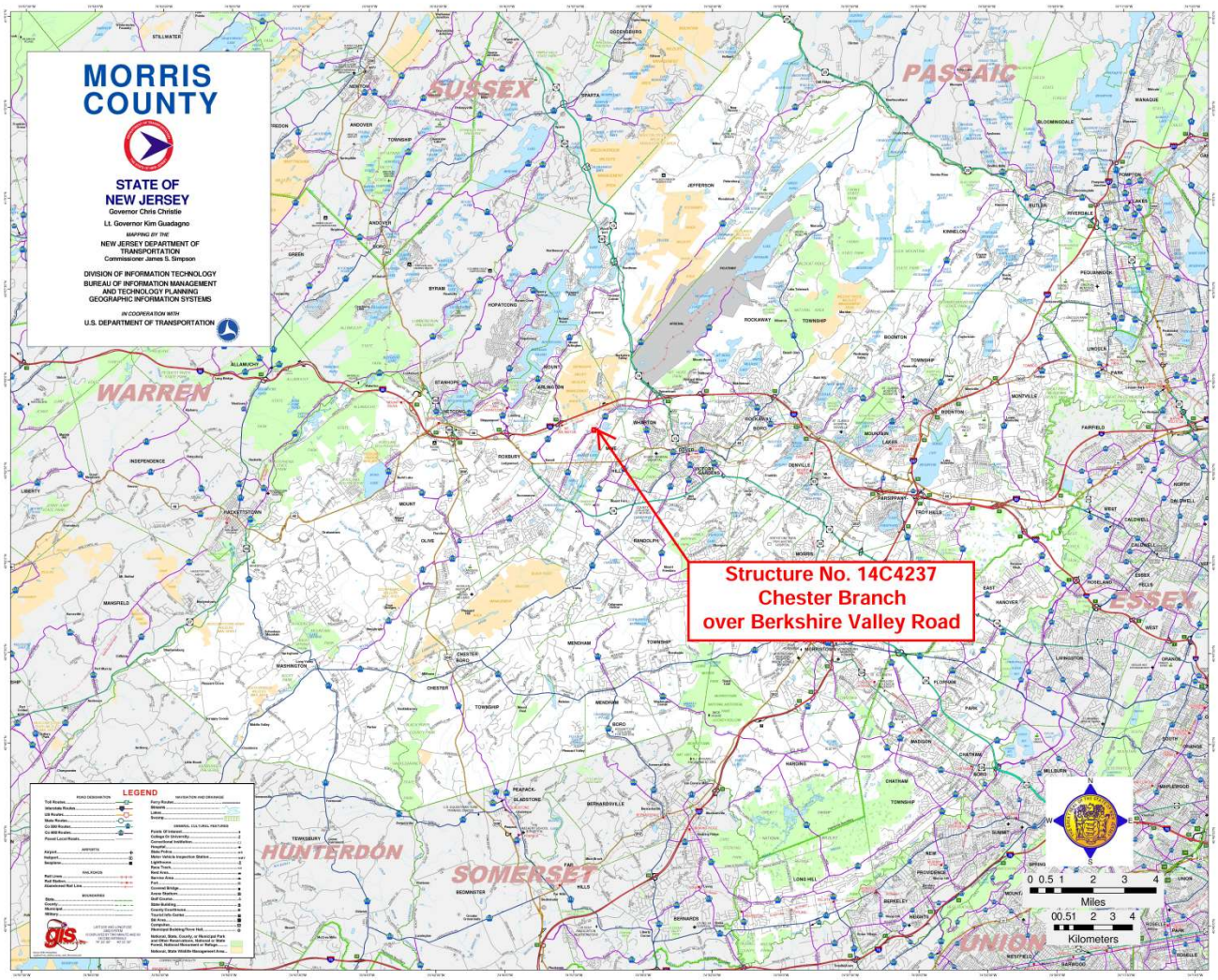
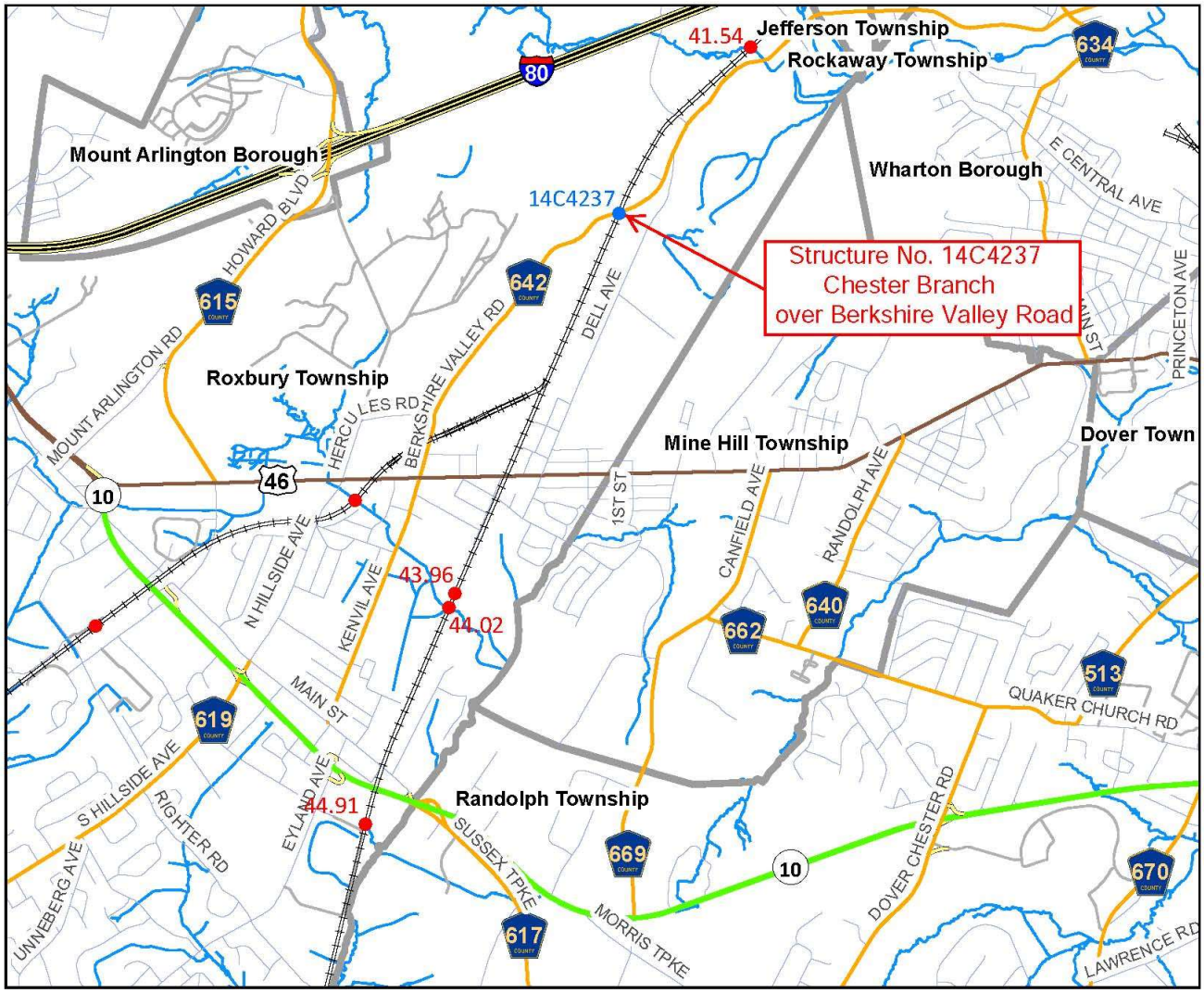
GENERAL LOCATION MAP



BRIDGE LOCATION MAP



COUNTY OF MORRIS
RE-EVALUATION BRIDGE SURVEY REPORT

CYCLE NO. 3

STRUCTURAL DATA:

Bridge No.:	14C42.37	Year Built:	Circa 1910	Widened/Rehab:	2020
Route No.:	6155	Length:	79’	Width:	13.8’
Mile Point:	42.37	Date of this Evaluation:		03/03/2022	
Name:	Chester Branch over Berkshire Valley Road (CR 642)	By:	Van Cleef Engineering Associates, LLC		
		Date of Previous Evaluation:		12/12/2018	
		By:	Van Cleef Engineering Associates, LLC		
		Special Equipment Used:		MOT & Bucket Truck (Photos 3-26 & 3-27)	
		Special Testing Used:		Dye Penetrant (Photo 3-12)	

Structure Type: Single span, riveted steel through girder with riveted steel floorbeams and rolled steel stringers with open timber tie deck (non-electrified)

WORK DONE: All deck ties, tie plates, spikes, rails, J-hooks and spacers replaced (Photo 3-23). Timber backwall ties replaced and old ones placed as retaining walls along embankments with additional ballast (Photo 3-23). Scattered lateral bracing and vertical stiffeners replaced on girders and steel repairs made to girders (Photos 3-05, 3-09 & 3-25). Anchor bolts replaced at south abutment girder bearings (Photo 3-19). Superstructure cleaned and painted (Photos 3-05 & 3-19). Concrete repairs to abutments and wingwalls (Photos 3-20 & 3-26).

OVERALL PHYSICAL CONDITION: Poor due to condition of superstructure.

OVERALL CONDITION (ITEM 67): Poor due to condition of superstructure.

Inspection Team Leader: Michael A. Francisco, P.E. **Initials:** _____

Certifying Engineer: Matthew E. Spengler, P.E.

N.J. P.E. Number: 24GE03376600

I certify that this report is an accurate description of the subject structure, to the extent determinable by visual inspection and testing performed.

Signature: _____

Date: _____

Seal

CONCLUSIONS AND RECOMMENDATIONS:

The structure is in overall poor condition due to the condition of the superstructure.

The deck is in satisfactory condition due to the ½" gap underneath north rail at east abutment backwall tie (Photo 3-06).

The approaches are in satisfactory condition due to settlement of the 1st tie (from bridge) on the west approach with up to ½" gap between the tie plate and the north rail and medium to wide longitudinal checks along top of ties (Photos 3-07 and 3-08).

The superstructure is in poor condition due to the ongoing collision damage to the girders, floorbeams and stringers resulting in deformations, gouges, holes and cracks in the bottom flanges webs, and the angles connecting these fracture critical members (Photos 3-09, 3-10, 3-11, 3-12, 3-13, 3-14, 3-15, 3-16, 3-17 & 3-18).

Since the previous inspection, the superstructure condition has been lowered from fair to poor due the defects cited above, and the substructure has been raised from satisfactory to good due to the concrete repairs to both abutments (Photo 3-20).

Due to the non-redundant two-girder, floorbeam and stringer configuration, this structure is classified as fracture critical; however, the riveted steel members are considered to be internally redundant. The welded bottom cover plates on the girders, floorbeams and stringers are classified as Category E fatigue details. The riveted connections on the girders and floorbeams are classified as Category D fatigue details. The fracture critical girders, floorbeams and stringers are in fair condition due to the extensive collision damage (Photos 3-09, 3-10, 3-11, 3-12, 3-13, 3-14, 3-15, 3-16, 3-17 & 3-18).

Since the "As-Built" and "As-Inspected" allowable stress Operating (Maximum) ratings computed in the 1st cycle report exceed the AREMA Cooper E-80 loading, posting this structure for a restricted load limit is not warranted. The 1st cycle ratings are based on reduced impact due to the 15 MPH speed restriction on this line per by the previous operator, the Morristown and Erie Railway. A 5 MPH restriction on this bridge should be imposed due to the critical findings during this current inspection (See Priority Repair Letter). There were no conditions observed during this inspection warranting revisions to the current load ratings.

The structure is classified as Structurally Deficient due to the poor condition of the superstructure, and Functionally Obsolete due to the substandard vertical underclearance (12'-2" measured, posted for 11'-5"). Due to the severely restricted vertical underclearance, resulting in ongoing vehicular collisions and damage to the structure, we recommend replacement of the existing bridge and lowering the underpassing roadway to meet minimum vertical underclearance requirements (14'-0"):

Replace Bridge and Lower Underpassing Roadway:

A. Bridge Construction:			
15' wide x 79' long = 1,185 S.F. @ $450/S.F.		=	$534,000
B. Demolition (20%)		=	$107,000
C. Roadway construction (underpassing roadway, 2 lanes):			
Lower roadway 2' @ $850/vertical ft. (2,000 L.F.)		=	$1,700,000
D. Traffic Control (Lump Sum)		=	$100,000
	SUBTOTAL	=	$2,441,000
E. Preliminary Engineering (15%)		=	$367,000
	TOTAL	**=**	**$2,808,000**

Note:

Lowering the underpassing roadway is recommended due to the anticipated greater cost of raising the railway vertical alignment by 2 feet to meet the minimum required underclearance. There is also no feasible alternative to the through girder superstructure configuration that would improve the underclearance.

We recommend that the following conditions be monitored during the next cycle inspection:

- All areas of impact damage for potential formation of cracks in the girders, floorbeams and stringers.
- Cracks observed in the FB/girder connection angles at south ends of FB5W (11 ½" high) and FB6W (4" high) and north end of FB4W (5" high) (Photos 3-16, 3-17 and 3-18).

We recommend that the following emergency/priority repairs should be made to retard the further deterioration, preserve the structural integrity of the bridge, improve safety and extend its useful life:

Additional impact damage to the girders and cracks in the FB/girder connection angles were observed during this inspection. The county was notified of this condition on a priority basis. We recommend replacement of the cracked angle connections between the floorbeam and girder webs. Repair plans were in progress at the time of this report.

REPAIR RECOMMENDATIONS:

In the interim, until the structure is replaced, we recommend that the following repairs should be made to retard the further deterioration, preserve the structural integrity of the bridge, improve safety and extend its useful life:

1) Replace approach ties (Photo 3-08) 30 Ties
2) Replace anchor bolts/nuts at northeast and southeast girder bearing (Photo 3-19): 2 Anchor bolts, 2 Anchor Nuts
3) Reset 1st tie (from bridge) on west approach (Photo 3-07): 1 Tie

14C42.37 Chester Branch over Berkshire Valley Road (CR 642)					
No.	**Item**	**Unit**	**Quantity**	**Unit Price**	**Cost**
1	Replace approach ties	Each	30	$1,200	$36,000
2	Replace anchor bolts at northeast girder bearing	Unit	2	$1,200	$2,400
3	Re-set settled tie 1 at west approach	Unit	1	$550	$550
				Subtotal =	$38,950
				50% Railroad Escalation =	$19,475
				Total =	$58,425
				SAY =	**$59,000**

County of Morris / DRRV Railroad
Railroad Structural Inventory and Appraisal

Structure Number: 14C4237 ***Sufficiency Rating = 41.27***

Name: Chester Branch over Berkshire Valley Road (CR 642)

Inspection Date: 03/03/2022 SI&A Sheet 1 of 3

IDENTIFICATION					
8) Structure No.:	14C4237				
AB) Structure Name:	Chester Branch over Berkshire Valley Road (CR 642)				
7) Facility Carried:	Chester Branch				
5A) Route On/Under	1	On	5B) Route Signing Pref	8	- Other
5C) Level of Service:	1	Mainline	5D) Route Number	06155	
5E) Directional Suffix:	0		BC) USRA Line Code:	1210	
1) State:	34 - New Jersey		BE) RR Milepost:	42.37	
2) SHD District	01	- North	3) County Code	027 - Morris	
6) Feature Intersected:	Berkshire Valley Rd (CR 642)		4) Place Code (FIPS):	64980	Roxbury Twp.
9) Location (RR Branch):	Chester Branch		A) Town	1436	Roxbury Twp.
16) Latitude:	40.8943	Degrees	17) Longitude:	74.6129	Degrees
AA) Route:	6155		AN) Plans Available	NO	
AC) Non-Inventory Feature:	RR		AD) Admin. Agency	1 - State	
AE) Alternate Agency:	02062		AF) Alternate Struct. N	--	

STRUCTURE TYPE AND MATERIALS					
43) Structure Type, Main	A) Material:	3	Steel	AG) Railing Type:	9
	B) Design Type:	03	Girder and Floorbeam System	AH) Rail Height:	
107) Deck Type:	8	Wood or Timber		AM) Fill Depth:	0.00
108A) Wearing Surface:	0	None		AT) Spec. Mat. 1:	
108B) Membrane:	0	None		AT) Spec. Mat. 2:	
108C) Deck Protection:	0	None		AU) Add. Str. 1:	F
45) Number of Spans:	1			AU) Add. Str. 2:	
46) Number of Approach\ Spans:	0			AV) Widen. Str. 1:	
AK) Abutment Type:	03 - Full Height			AV) Widen. Str. 2:	
AL) Pier Type:	N/A				

AGE AND SERVICE			
27) Year Built:	1910	106) Year Reconstructed:	2020
42A) Type of Service On:	2 - Railroad	42B) Type of Service Under:	1- Highway
BD) No. Tracks on Structure:	1		

GEOMETRIC DATA					
47) Inv. Route, Horiz. Clearance:	6.7	Feet	53) Min Vert. Clearance Over:	99.99	Feet
48) Length of Max. Span:	77.0	Feet	54A) Min. Vert. U/C Reference:	H - Highway	
49) Structure Length:	79.0	Feet	54B) Min. Vert. Under Clearance :	12.20	Feet
52) Deck Width Out to Out:	13.8	Feet	55A) Min. Lat. U/C Rt. Reference:	H- Highway	
34) Skew Angle:	40.0	Degrees	55B) Min. Lat. Under Clr. Right:	9.5	Feet
35) Structure Flared:	NO		56) Min. Lat. Under Clr. Left:	N	Feet

FATIGUE DETAILS (AZ)		
AZ) Location 1	02	23
AZ) Location 2	02	22
AZ) Location 3	02	21

County of Morris / DRRV Railroad
Railroad Structural Inventory and Appraisal

Structure Number: 14C4237 ***Sufficiency Rating = 41.27***

Name: Chester Branch over Berkshire Valley Road (CR 642)

Inspection Date: 03/03/2022 SI&A Sheet 2 of 3

INSPECTION				
CI) Cycle No.:	03		CM) Consultant:	Van Cleef Engineering Assocs.
CJ) Inspection Type:	R		90) Inspection Date:	03/03/2022
91) Frequency:	12	Months	CO) Prev. Consultant:	Van Cleef Engineering Assocs.
92A) FC Insp. Frequency:	12	Months	93A) FC Insp. Date:	03/03/2022
92B) UW Insp. Frequency:	N	Months	93B) UW Insp. Date:	N/A
92C) Special Insp. Frequency:	N	Months	93C) Special Insp. Date:	N/A
CP) Federal Report	X		GC) Paint Insp. Date:	03/03/2022
AR) Special Equipment:	E - Bucket Truck, M - MOT		AS) Special Testing:	U - Non-destructive Testing

CLASSIFICATION				
37) Historical Significance	4		26) Funct. Classification:	98 Freight Only
103) Temporary Structure	--		22) Owner:	02 Morris County
104) Highway System:	09		21) Custodian:	02 Morris County
112) NBIS Length	Y			

CONDITION				
58) Deck:	6	- Satisfactory	59) Superstructure:	4 - Poor
60) Substructure:	7	- Good	62) Culvert:	N - Not Applicable
61) Channel:	N	- Not Applicable	BA) Approach	6 - Satisfactory

LOAD RATING				
41) Operational Status:	R - Speed Restriction		31) Design Load:	Unknown
63) Inv. Rating Method:	2 - Allowable Stress		65) Op. Rating Method:	2 - Allowable Stress
COOPER E RATING:			CH) Miscellaneous:	W - Working Stress Ratings
64) MAXIMUM (Oper.):	E	83	AI) Speed Posting:	5 MPH
66) NORMAL (Inv.):	E	59	Item 67 based on Load Rating or	6 - Satisfactory

APPRAISAL				
67) Structural Evaluation:	4	- Poor	68) Deck Geometry:	5 - Above Tolerable
36A) Location:	0	- Substandard	36B) Attachment:	0 - Substandard
36C) Extension:	0	- Substandard	36D) Ends:	0 - Substandard
69) Underclearance, Vert.&Hor.:	2	- Intolerable - Replace	113) Scour Critical:	N - Not Applicable
71) Waterway Adequacy:	N	- Not Applicable	FA) FHWA Scour Categ.:	
72) Approach Alignment:	7	- Above Minimum		

PROPOSED IMPROVEMENTS			
94) Bridge Cost	$534,000	75) Type of Work:	31 1
96) Total Cost	$2,808,000	76) Length of Improvement:	79 feet
97) Year of Cost Estimate	2021	FI) Scour Countermeasures:	
		FJ) Scour Countermeasure Cost:	

PAINTING				
GA) Painting Required:	Y		GB) Environment:	01
GD) Fascia Beam:	09		GR) Date of Last Painting:	06/2020
GE) Fascia Bottom Flange:	09		GK) Bracing:	05
GF) Interior Beam:	09		GL) Bearings:	06
GH) Interior Bottom Flange:	09		GM) Substrucure:	N/A
GI) Beam Ends:	09		GN) Above Deck Supstr.:	07
GJ) Connections:	09		GO) Railings / Fence:	N/A
GP) Remarks 1:				
GQ) Remakrs 2:				

County of Morris / DRRV Railroad
Railroad Structural Inventory and Appraisal
RECORD FOR HIGHWAY UNDER STRUCTURE

Structure Number: 14C4237

Name: Chester Branch over Berkshire Valley Road (CR 642)

Inspection Date: 03/03/2022

ROADWAY IDENTIFICATION				
SRI	14000642__			
Roadway Name	Berkshire Valley Road (CR 642)			
5A) Route On/Under	2	Under	5B) Route Signing Pref	4
5C) Level of Service:	1	Mainline	5D) Route Number	00642
5E) Directional Suffix:	0			

HIGHWAY NETWORKS AND SERVICE CLASSIFICATION			
11) Milepost:	2.30		
12) Base Highway Network:	0		
20) Toll Facility:	3		
13A) LRS Inventory Route:		Subroute:	00
26) Functional Classification:	16	102) Traffic Direction:	0

ALTERNATE CLASSIFICATION	
100) Strahnet Highway	0
104) NHS System:	0
105) Federal Lands Highway:	0
110) Truck Highway Network:	0

TRAFFIC AND ACCIDENTS		
28) Lanes	2	
Num. Medians	0	
Road Speed:	40	MPH
29) ADT:	5740	
30) Year of ADT:	2021	
114) Future ADT:	6890	
115) Year of Future ADT:	2041	
109) Truck ADTT%:	4	
19) Bypass Length:	1	mile(s)
Detour Speed:	25	MPH

CLEARANCES		
10) Vertical Clearance	12.17	feet
47) Inv. Route Horiz. Clerance:	25.5	feet
DJ) Min. Vert. U/C incl. Shldrs.:	12.17	feet

Structure No.:	14C42.37	Route:	6155	Cycle No.:	3
Name:	Chester Branch over Berkshire Valley Road (CR 642)			Insp. Date:	3/3/2022

LOAD RATING SUMMARY SHEET (LRSS)

(Form NJ-BI-101 Created 1/25/2011)

Project Information: Inspection of 9 Morris County Owned Railway Bridges (2013)

Rating Comments:

Since plans were unavailable for this structure, all rating information was based on field measurements.

Rating Information:

Method:	LRFR:	No	LFR:	No	ASR:	Yes	Other (Specify):	N/A
Rating Date:	12/12/2013	Computer Software Used:	PennDOT BAR 7			Version:	7.13.0.1	
Load Testing:	No	Cycle when Rating Performed:	1			Design Load:	Unknown	

Structure Information:

Plans Available?	No	Contract Designation:	N/A		
Ballast?	No	Considered in Rating?	N/A	Type/Thickness:	N/A
Section Losses?	Yes	Considered in Rating?	Yes	Item 59 Cond.:	5 - Fair

Load Rating Engineer:

Name: Robert A. Serrao, P.E. Firm: Cherry Weber & Associates PC Initial:

Load Rating Reviewer:

Name: Matthew E. Spengler, P.E. N.J. P.E. No.: 24GE03376600

Firm: Cherry Weber & Associates, P.C.

I certify that this rating is an accurate representation of the subject structure, considering all deterioration and/or changes to loading conditions, to the extent determinable by research and visual inspection and testing performed. I am charged with the overall responsibility for bridge capacity evaluation for the above mentioned structure.

Sign and Seal if Rating Performed in this Cycle

Sign Date

LOAD RATING SUMMARY SHEET (LRSS) (*cont'd.*)

The Allowable Stress ratings, computed in accordance with the 2013 AREMA Specifications and Section 44 of the 2009 NJDOT Design Manual for Bridges and Structures, are as follows:

Material	Compressive Strength f'c	Allowable Stresses (Psi)		
		Yield	Inventory	Operating
Structural Steel	--	30,000	16,500	22,500

COOPER E 80

COOPER E RATING ANALYSIS - INVENTORY (NORMAL) RATINGS

Member	Capacity of Bridge - Cooper E Load				Remarks
	As-Built		As-Inspected		
	E Moment	E Shear	E Moment	E Shear	
Girder	E 82	**E 59**	E 77	**E 59**	*Section loss assumed for moment ratings*
Interior Floorbeam	E 74	**E 71**	E 62	**E 61**	*Interior floorbeam #5 controls*
Stringer	E 112	E 106	E 94	E 98	*Stringers between FB's #4 & #5 control*

COOPER E RATING ANALYSIS - OPERATING (MAXIMUM) RATINGS

Member	Capacity of Bridge - Cooper E Load				Remarks
	As-Built		As-Inspected		
	E Moment	E Shear	E Moment	E Shear	
Girder	E 115	**E 83**	E 109	**E 83**	*Section loss assumed for moment ratings*
Interior Floorbeam	E 102	**E 97**	E 85	**E 84**	*Interior floorbeam #5 controls*
Stringer	E 153	E 145	E 130	E 134	*Stringers between FB's #4 & #5 control*

LOAD RATING SUMMARY SHEET (LRSS) (*cont'd.*)

ALTERNATE LIVE LOAD ON 4 AXLES

COOPER E RATING ANALYSIS - INVENTORY (NORMAL) RATINGS

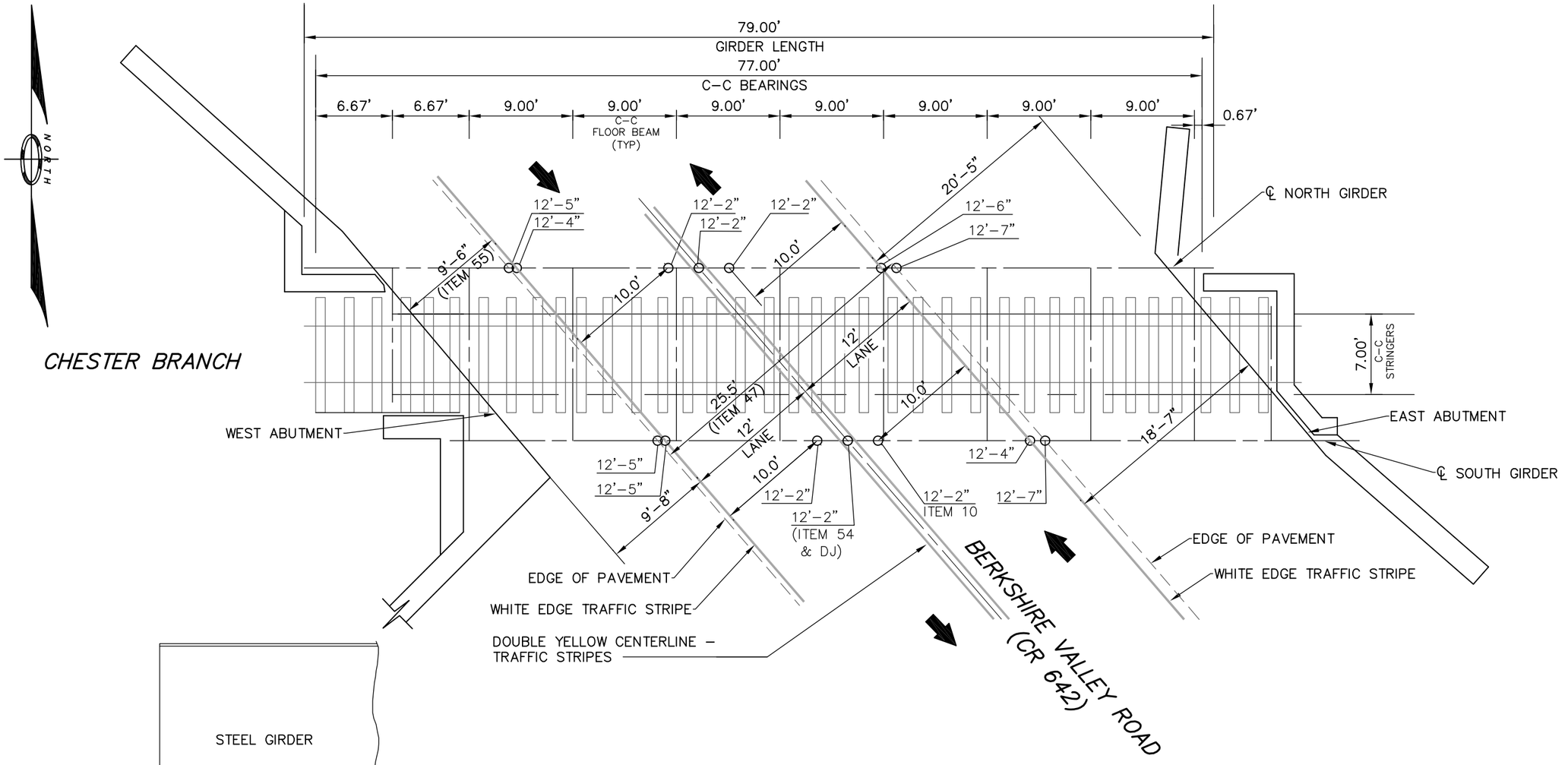
Member	Capacity of Bridge - Cooper E Load				Remarks
	As-Built		As-Inspected		
	E Moment	E Shear	E Moment	E Shear	
Girder	E 101	E 80	E 96	E 79	*Section loss assumed for moment ratings*
Interior Floorbeam	E 63	**E 60**	E 52	**E 52**	*Interior floorbeam #5 controls*
Stringer	E 89	E 85	E 75	E 78	*Stringers between FB's #4 & #5 control*

COOPER E RATING ANALYSIS - OPERATING (MAXIMUM) RATINGS

Member	Capacity of Bridge - Cooper E Load				Remarks
	As-Built		As-Inspected		
	E Moment	E Shear	E Moment	E Shear	
Girder	E 143	E 112	E 136	E 111	*Section loss assumed for moment ratings*
Interior Floorbeam	E 87	**E 82**	E 72	**E 71**	*Interior floorbeam #5 controls*
Stringer	E 123	E 116	E 104	E 107	*Stringers between FB's #4 & #5 control*

Notes:

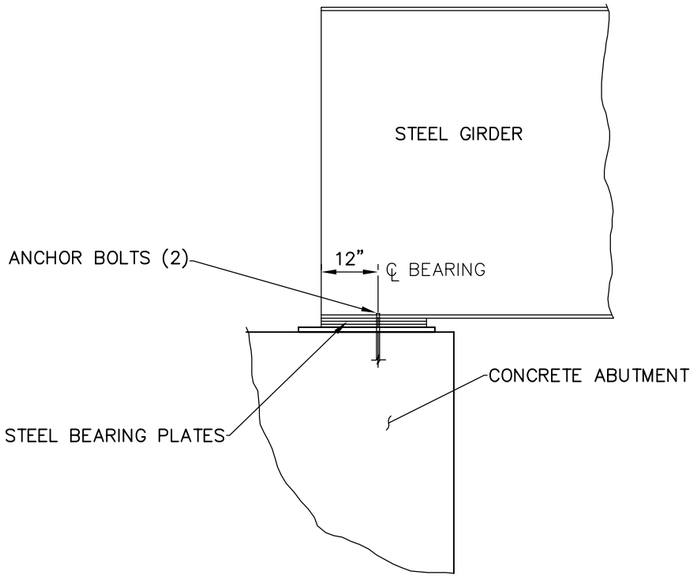
1. Results given as equivalent Cooper E loading (E = Cooper E Rating).
2. Ratings shown are based on Cooper E80 load and Alternate Live Load on 4 Axles (E10). Only ratings for Cooper E-80 load are reported. Ratings for Alternate Live Load on 4 Axles are provided as basis for comparison with current AREMA design requirements and are shown for informational purposes only.
3. At the time of the rating calculations, the impact load was reduced based on a 15 MPH speed limit on the Chester Branch per the Morristown and Erie Railway Operations Department. At time of the current inspection, this bridge was speed restricted to 5 MPH due to superstructure impact damage.
4. As Inspected ratings for girders, floorbeams and stringers include reduction in section due to impact damage to these members – see "Ratings Assumptions" for details.
5. Load ratings in BAR 7 output labeled as "Critical" indicate controlling ratings.



UNDERCLEARANCE PLAN

0 10' 20'

SCALE IN FEET
1" = 10'



TYPICAL BEARING DETAIL

NOT TO SCALE

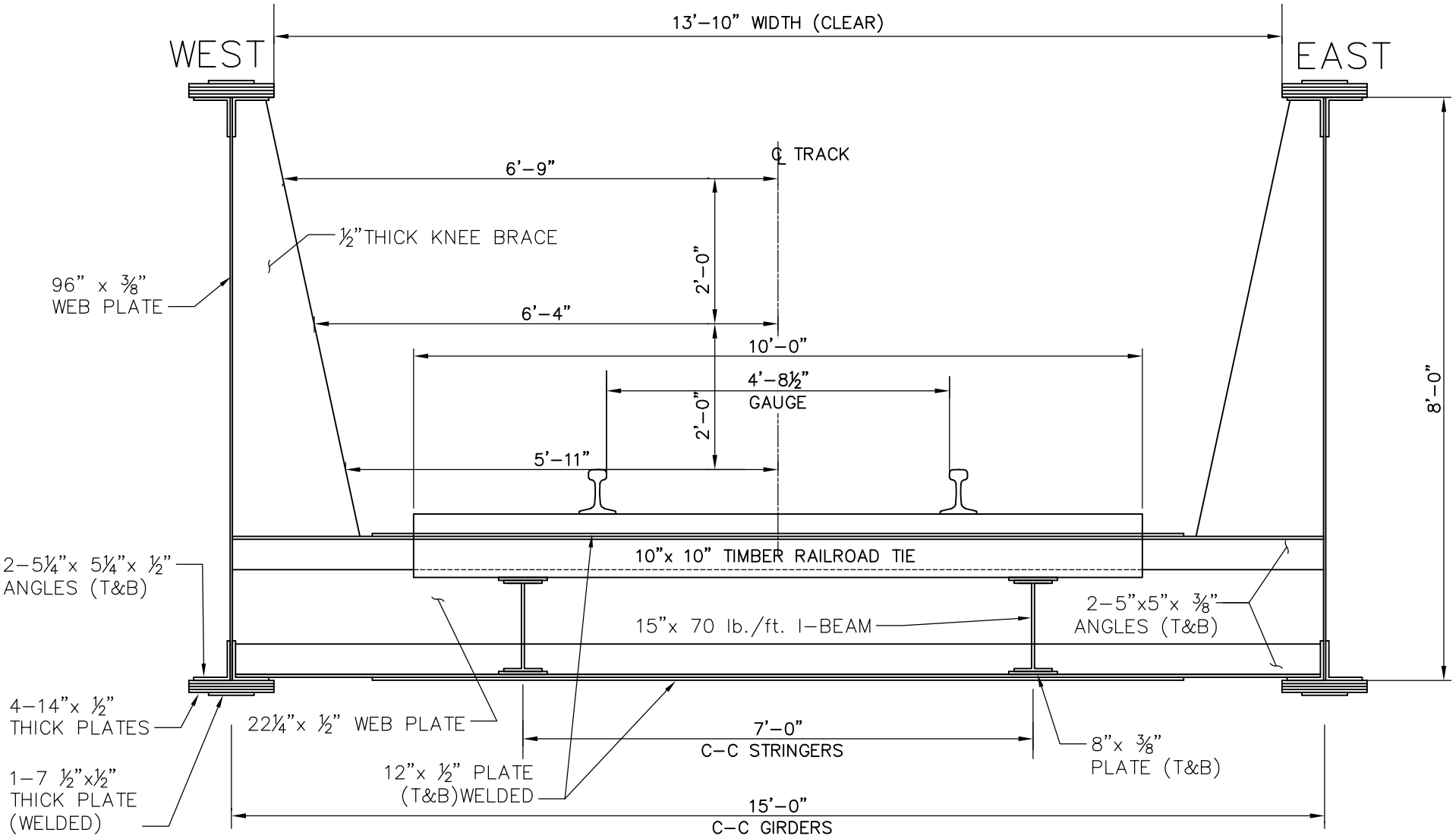
NOTES:

1. DIMENSIONS SHOWN ARE BASED ON MARCH 3, 2022 FIELD MEASUREMENTS.

UNDERCLEARANCE PLAN
STRUCTURE NO.: 14C4237

CHESTER BRANCH, MP 42.37
OVER BERKSHIRE VALLEY ROAD (CR 642)

ROXBURY TOWNSHIP, MORRIS COUNTY
VAN CLEEF ENGINEERING ASSOCIATES



SUPERSTRUCTURE SECTION (MID–SPAN)

0 1' 2' 4'

SCALE IN FEET
½" = 1'

SECTION VIEW
STRUCTURE NO.: 14C4237

CHESTER BRANCH, MP 42.37
OVER BERKSHIRE VALLEY ROAD (CR 642)

ROXBURY TOWNSHIP, MORRIS COUNTY

VAN CLEEF ENGINEERING ASSOCIATES



Photo No: 3-01

Location:	South elevation, looking north.
Description:	General view. “11’-5” vertical underclearance posting on south fascia girder. Special Equipment: MOT.



Photo No: 3-02

Location:	North elevation, looking south.
Description:	General view. “11’-5” vertical underclearance posting on north fascia girder.



Photo No: 3-03

Location:	Railroad track looking west.
Description:	General view.



Photo No: 3-04

Location:	Railroad track looking east.
Description:	General view.



Photo No: 3-05

Location:	Underside of deck and superstructure, looking east.
Description:	General view. Work Done: Superstructure has been cleaned and painted. Cross frame members have been replaced.



Photo No: 3-06

Location:	East abutment backwall tie at north rail, looking northeast.
Description:	Settled tie with gap underneath the rail.



Photo No: 3-07

Location:	West approach at tie 1 (from bridge) at north rail, looking north.
Description:	Settled tie with gap between tie plate and rail.



Photo No: 3-08

Location:	West approach at ties 2 through 6 (from bridge), looking south.
Description:	Medium to wide longitudinal checks along top of ties (typical).



Photo No: 3-09

Location:	G1S over northbound lane between FB7W and FB8W, looking north.
Description:	Impact damage to bottom flange with bent bottom flange and cracked intermittent fillet welds. Work Done: Vertical stiffeners replaced (typical).



Photo No: 3-10

Location:	G1S over northbound lane between FB7W and FB8W, looking north.
Description:	Close up of impact damage to bottom flange with bent bottom flange and cracked intermittent fillet welds.



Photo No: 3-11

Location:	G1S at midpoint between FB2W and FB3W, looking southwest.
Description:	Hole in web adjacent to vertical stiffener.



Photo No: 3-12

Location:	G2S over southbound lane, looking south.
Description:	Impact damage with gouge along outside edge of the bottom flange. Dye penetrant testing of this area did not show any cracks. Monitor in future inspections.



Photo No: 3-13

Location:	South stringer (S1) between Floorbeams 5W and 6W, looking northwest.
Description:	Impact damage with bent bottom flange.



Photo No: 3-14

Location:	North stringer (S2) between Floorbeams 5W and 6W, looking northwest.
Description:	Impact damage with gouge in bottom cover plate.



Photo No: 3-15

Location:	East face of floorbeam 2S, looking west.
Description:	Impact damage with bent bottom flange.



Photo No: 3-16

Location:	East face of floorbeam 4W at north end, looking west.
Description:	Vertical crack in floorbeam connection angle. Monitor during future inspections.



Photo No: 3-17

Location:	West face of floorbeam 5W at south end, looking east.
Description:	Vertical crack in floorbeam connection angle. Monitor during future inspections.



Photo No: 3-18

Location:	West face of floorbeam 6W at south end, looking east.
Description:	Vertical crack in floorbeam connection angle. Monitor during future inspections.



Photo No: 3-19

Location:	G1S at east bearing, looking northwest.
Description:	Unset anchor bolt nut. Work Done: Bearings have been cleaned and painted (typical).



Photo No: 3-20

Location:	Northwest wingwall, looking northwest.
Description:	Wide horizontal crack along top of wingwall. Fine to medium scattered cracks with efflorescence. Work Done: Concrete patches on the wingwall (typical).



Photo No: 3-21

Location:	East abutment backwall at south end, looking northeast.
Description:	Spall at top of backwall. Work Done: Concrete repairs to the backwall (typical).



Photo No: 3-22

Location:	Southeast wingwall, looking southeast.
Description:	Moderate scaling along top of wingwall.



Photo No: 3-23

Location:	Top of deck from east end, looking west.
Description:	Work Done: All deck and backwall ties, tie plates, spikes, rails, J-hooks and tie spacers have been replaced. Superstructure has been cleaned and painted.



Photo No: 3-24

Location:	Northwest approach timber retaining wall, looking west.
Description:	Work Done: Repairs to timber retaining wall with additional ballast added along retaining wall.



Photo No: 3-25

Location:	South stringer (S1) between floorbeams 6W and 7W, looking northwest.
Description:	Work Done: New south stringer installed.



Photo No: 3-26

Location:	East abutment, looking east.
Description:	Work Done: Concrete patches/repairs throughout the abutment (typical at west abutment).



Photo No: 3-26

Location:	Berkshire Valley Road in southbound lane, looking south.
Description:	Special Equipment: Bucket Truck



Photo No: 3-27

Location:	Berkshire Valley Road in southbound lane, looking north.
Description:	Special Equipment: MOT.

Structure No.:	14C42.37	Route:	6155	Cycle No.:	3
Name:	Chester Branch over Berkshire Valley Road (CR 642)			Insp. Date:	3/3/2022

NEW JERSEY DEPARTMENT OF TRANSPORTATION
STRUCTURAL EVALUATION AND BRIDGE MANAGEMENT
FIELD NOTES
Dover & Rockaway River Railroad

Inspectors: Matthew Wechsler & Sia Gabrilis
Name: Chester Branch over Berkshire Valley Road (CR 642)
Crew Chief: Michael Francisco, P.E.
Temperature: 36ºF (3/03), 40ºF (3/21)
Weather: Clear (03/03), Clear (03/21)
Special Equipment Used: MOT and Bucket Truck
(Photos 3-01, 3-26 & 3-27)

RATINGS:

N Not applicable.
9 Excellent Condition.
8 Very Good Condition – no problems noted.
7 Good Condition – some minor problems.
6 Satisfactory Condition – some minor deterioration of structural elements.
5 Fair Condition – minor section loss to primary structural elements.
4 Poor Condition – advanced section loss to primary structural elements.
3 Serious Condition – seriously deteriorated primary structural elements.
2 Critical Condition – facility should be closed until repairs are made.
1 Imminent Failure Condition – facility closed. Study of repairs is feasible.
0 Failed Condition – facility is closed and beyond repair.

GPS COORDINATES			
@ Centerline of Bridge			
N	**40°**	**53′ 39.38″**	**Lat.**
W	**74°**	**36′ 46.36″**	**Long.**

GENERAL

Type of Bridge: Single span, simply supported, riveted steel through girder with riveted steel floorbeams and rolled steel stringers with open timber tie deck (non-electrified)

Year Built: Circa 1910
Year of Widening / Major Repairs: N/A

No. of Tracks: On 1 Under N/A – 2 Lane Roadway

Vertical Clearances: Over Deck: Unrestricted

Minimum Under: 12’-2” along centerline of roadway below both girders

Maximum Under (Item 10): 12’-2” under both girders, 10’ from shoulder stripes in both lanes

Horizontal Underclearance: Total Horizontal Clearance: 25.5’ edge of pavement to edge of pavement

Right 9’-6” from west shoulder stripe of southbound lane to west abutment.

Left N/A

Overall Physical Condition of Structure: Poor due to superstructure

Structure No.:	14C42.37	Route:	6155	Cycle No.:	3
Name:	Chester Branch over Berkshire Valley Road (CR 642)			Insp. Date:	3/3/2022

DECK

SI&A Item 58 Condition Rating: **6**

SPAN # Single

RATING	COMPONENT	REMARKS
8	Rails *Jointed*	Work Done: Rails reset/replaced (Photo 3-23). No significant defects.
N	Pumping	N/A – No train traffic
N	Track Shim Plates	None
8	Ties *52 Ties (#'d from west, not including backwall ties)*	Size: 10" wide x 10" high x 10' long. Spacing: Varies 1'-2" to 1'-6". Deflection: N/A (No train traffic) Work Done: All the ties have been replaced (Photo 3-23). No significant defects
8	Tie Plates	Work Done: Tie plates reset during tie replacement (Photo 3-23). No significant defects.
N	Tie Pads	None
8	Spikes	Work Done: Spikes reset during tie replacement (Photo 3-23). No significant defects.
N	Ballast	None – open deck
N	Guard Rails	None
N	Parapets	None
6	Backwall Ties	Work Done: Backwall ties have been replaced (Photo 3-23). East: South end of tie higher than the north end with ½" gap under the north rail at the cutout (Photo 3-06)
N	Shoulders	None
	Alignment	Gage: Generally consistent Line: Generally tangent Surface: Generally level
N	Underside of Deck	See ties
8	Others *J-Hooks*	Work Done: J-hooks reset during tie replacement (Photo 3-23). No significant defects.
8	Others *Tie Spacers*	Work Done: Tie spacers replaced during tie replacement (Photo 3-23). No significant defects.
8	Others *Steel Grates*	Access grates along south girder, tack welded to top of floorbeams – no significant defects.

Additional Remarks:

Structure No.: 14C42.37 Route: 6155 Cycle No.: 3
Name: Chester Branch over Berkshire Valley Road (CR 642) Insp. Date: 3/3/2022

APPROACHES

SI&A Item BA Rating: **6**

SI&A Item 72 Rating: **7**

APPROACH West

RATING	COMPONENT	REMARKS
7	Rails	Light rust on top of rails. North Rail: Minor gap between rail and tie plate at Ties 1 and 2.
N	Pumping	N/A – No train traffic
6	Ties *25 ties counting from the bridge*	Settlement at north end of Tie 1 along north rail with up to ½" gap between tie plate and rail (Photo 3-07). Minor settlement at north end of Tie 2 along north rail Medium to wide longitudinal checks along tops of ties (Photo 3-08). **[Replace ties – approx. 15 ties]** **[Reset tie flush with the north rail]**
7	Tie Plates	North Rail: Tie plate loose and undermined at settled Tie 1 and tie plate undermined at Tie 2. No missing tie plates.
N	Tie Pads	None
7	Spikes	North Rail: Bent spike at Tie 24. No other significant defects.
7	Ballast	Ballast is generally clean with minor leaf debris. Height below tie: Flush to 2" below top of ties. No significant defects.
7	Approach Embankments	Timber retaining walls (cribbing) adjacent to bridge. Work Done: Previous timber headwalls repaired and ballast added along northwest and southwest approach embankments (Photo 3-24). Medium to long longitudinal checks along tops of timber retaining walls – otherwise no significant defects.
	Alignment	Gage: Generally consistent Line: Tangent Surface: Generally level
N	Others	None
	Additional Remarks:	First 25 ties inspected from the bridge

Structure No.: 14C42.37 Route: 6155 Cycle No.: 3
Name: Chester Branch over Berkshire Valley Road (CR 642) Insp. Date: 3/3/2022

APPROACHES

SI&A Item BA Rating: **6**

SI&A Item 72 Rating: **7**

APPROACH East

RATING	COMPONENT	REMARKS
7	Rails	Light rust on top of rails. North Rail: Minor gap between rail and tie plate at Tie 1.
N	Pumping	N/A – No train traffic
6	Ties *25 ties counting from the bridge*	Medium to wide longitudinal checks along tops of ties (Similar Photo 3-08). Minor settlement at north end of Tie 1 along north rail **[Replace ties – approx. 15 ties]**
7	Tie Plates	North Rail: Loose tie plate at Tie 1. No missing tie plates.
N	Tie Pads	None
7	Spikes	No significant defects
7	Ballast	Ballast is generally clean with minor leaf debris. Height below tie: Flush to 2" below top of ties. No significant defects.
7	Approach Embankments	Timber retaining walls (cribbing) adjacent to bridge. Work Done: Previous timber headwalls repaired and ballast added along northwest and southwest approach embankments (Similar Photo 3-24). Medium to long longitudinal checks along tops of timber retaining walls – otherwise no significant defects.
	Alignment	Gage: Generally consistent Line: Tangent Surface: Generally level
N	Others	None

Additional Remarks:

Structure No.:	14C42.37	Route:	6155	Cycle No.:	3
Name:	Chester Branch over Berkshire Valley Road (CR 642)			Insp. Date:	3/3/2022

SUPERSTRUCTURE

SI&A Item 59 Condition Rating: **4**

SPAN # SINGLE

RATING	COMPONENT	REMARKS
4	2 Riveted Steel Plate Girders *G1 = South* *G2 = North*	Work Done: Entire superstructure cleaned and painted (Photo 3-05). Scattered vertical stiffeners replaced on the girders (Photo 3-09). Repair plate (51"L x 36"H x1/2" thick) bolted to web of G1S between FB2W and FB3W on both inside and outside faces. Plate (6" x 6" x ½" thick) welded to web on outside face of G2S at FB4W. Areas of blistered and peeling paint (worst along inside tops of bottom flanges). Both girders shown areas of heavy impact damage from underpassing vehicles. Scrapes along bottom flange exhibit moderate rust. <u>G1:</u> *Web:* 5"± high x 1"± long hole with adjacent section loss at west end beyond centerline of bearing. 5" long x 3" high hole with adjacent section loss at east end beyond centerline of bearing. 1" diameter hole at bottom of web in front the west bearing stiffener. 2" x 1" triangle shaped hole in bottom of web between FB2W and FB3W (Photo 3-11). *Bottom flange:* 1"± deep gouges along lower riveted cover plate). *Girder between FB6 & FB7:* Lower portion of web bent inward 1"± - worst within 2'± of bottom flange. Outside half of bottom flange between upward 1½"± x 2'-6"± long with 3 sheared rivets & 2 broken intermittent fillet welds attaching auxiliary bottom flange cover plate to lower riveted cover plate (Photos 3-09 & 3-10). <u>G2:</u> *Web:* 1"± diameter hole with adjacent section loss at base of web at west end beyond centerline of bearing. Minor inward deformation of base of web between FB3 & FB4. *Bottom flange:* Impact damage to bottom flange between FB3W and FB4W over the southbound lane. 6"L x 1"H x 1" deep gouge along the outside edge of the bottom flange. Dye Penetrant testing of this area did not show any cracks. Monitor in future inspections (Photo 3-12). Adjacent to impact damage mentioned above, outside half of bottom flange bent upward 1"± high x 12"± long between FB3 & FB4. **[Monitor impact areas for cracks forming]**

SUPERSTRUCTURE (cont'd.)

SI&A Item 59 Condition Rating: **4**

SPAN # SINGLE

5	Stringers *Rolled steel beams with welded cover plates (2 per floorbeam bay)* *S1 = South* *S2 = North*	Work Done: Superstructure has been cleaned and painted (Photo 3-05). New south stringer between FB6W and FB7W (Photo 3-25). Inside edge of bottom flange cover plates notched (1"± wide x 3"± long) at cross bracing connections. Stringers show areas of impact damage due to underpassing vehicles at the following locations: Between FB4 & FB5: *S1:* Small gouges in bottom flange with north edge bent up 1"±. Gouge/tear in north edge of bottom flange cover plate (1"± deep) adjacent to FB. Between FB5 & FB6: *S1:* South edge of bottom flange bent upward ¾"± x 6"± long approximately 3'± from FB6 (Photo 3-13). 8"± long x 1"± deep gouge in south edge of bottom flange cover plate approximately 2' from FB6. Bent connection plate with FB5. *S2:* 6"± long x 1"± gouge in south edge of bottom flange cover plate with cracked bottom flange weld (Photo 3-14).
4	10 Riveted Floorbeams (FB) w/Welded Cover Plates *(#'d from west)*	Work Done: Repair plate bolted to south end of FB3W. Areas of impact scrapes and impact damage to FB5 & FB6. *FB5:* Scattered upward bending of bottom flange (2"± max. x 9"± long) – worst at south end (Photo 3-15). Areas of 1"± deep edge gouges along bottom flange cover plate. Minor separation of west edge of floorbeam connection with G1 with ¼"± wide (max. at base of floorbeam) x 1'-4"± high gap (Photo 3-17). **[Monitor during future inspections]** Cracks observed in the FB/girder connection angle at the following locations: FB4W, North End – 5" high. FB5W, South End – 11" high crack. FB6W, South End – 4" high crack. (County has been notified of current condition and repair plans in progress) **[Drill holes at end of cracks and install supplemental angle as needed – 1 crew day. Monitor during future inspections]** FB6: Minor deformation of bottom flange at G1.
7	Cross Frames	Work Done: Cross frame members replaced (Photo 3-05).

SUPERSTRUCTURE (cont'd.)

SI&A Item 59 Condition Rating: **4**

SPAN # SINGLE

6	Bearings *Sliding plate with retrofit keeper blocks at west girder bearings*	Work Done: Bearings cleaned and painted (Photo 3-19). G1 east bearing: Missing nut at inboard anchor bolt, unseated nut at outboard anchor bolt (Photo 3-19). G2 east bearing: Sheared anchor bolts on north and south sides. **[Replace anchor bolts – 2 Units, Install anchor bolt nuts – 2 Units].**
	Deflection and Vibration	N/A – No train traffic
7	Others Girder Web Stiffeners	Work Done: Previously damaged stiffeners replaced and bolted to girders. No significant defects (Photo 3-09).
	Additional Remarks:	Girder, floorbeam and stringer sections used for load ratings reduced due to collision damage. Refer to Load Ratings.

FATIGUE DETAILS

Minimal train traffic

Category	Detail Description and Location
N/A	*Field welds throughout girders, floorbeams and stringers.*
E	*Intermittent fillet welds along bottom flange cover plates and angles along girders (Detail 11)*
E	*Squared end welded cover plate welded to bottom flange of girder (narrower than girder bottom flange) (Detail 7)* *Cover plate welded to bottom flange of floorbeams and stringers (wider than floorbeam and stringer bottom flanges) (Detail 9).*
D	*Riveted connections (Detail 23)*

Structure No.:	14C42.37	Route:	6155	Cycle No.:	3
Name:	Chester Branch over Berkshire Valley Road (CR 642)			Insp. Date:	3/3/2022

PAINT INSPECTION

*Environment: 1

Date of Last Painting: Unknown

1. Rural or Industrial, Mild exposure
2. Industrial, Severe Exposure
3A. Marine, Mild Exposure
3B. Marine, Severe Exposure
*Ref. NJDOT Design Manual Sec. 1.24.19

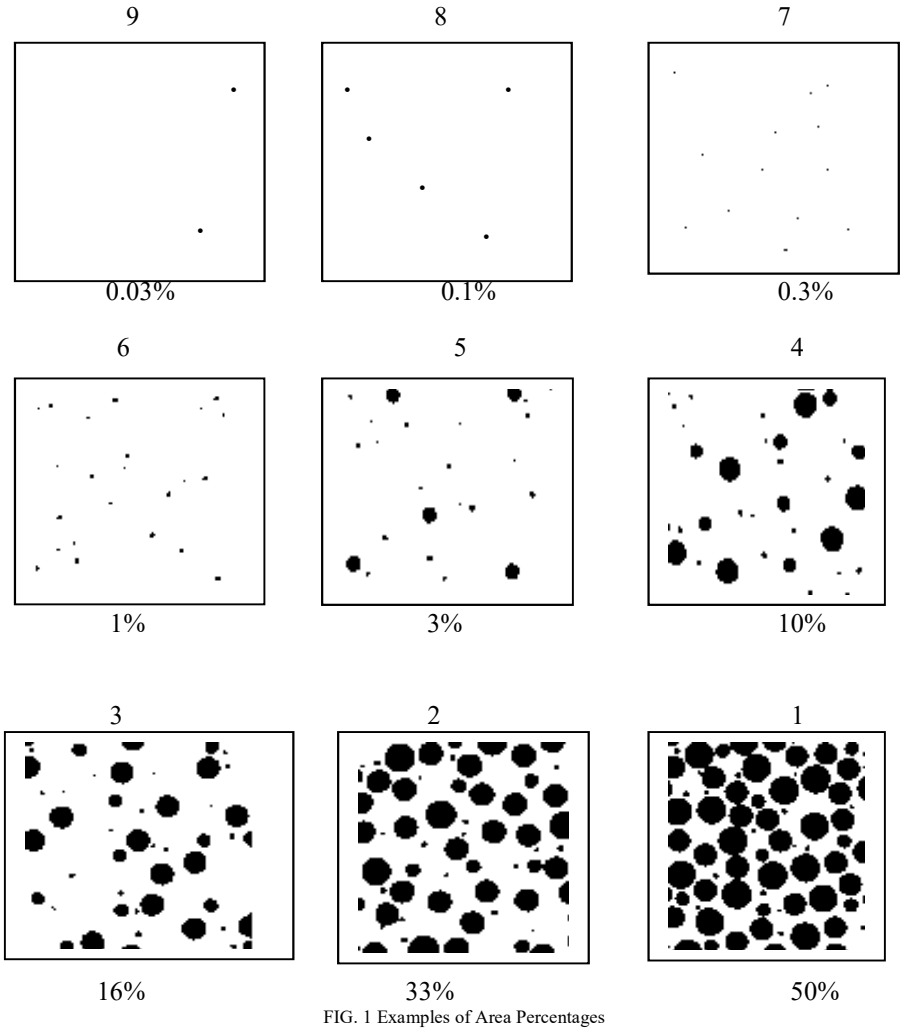


FIG. 1 Examples of Area Percentages

Notes: Blistered Paint areas are counted as rust

10 = 0% Rust
0 = 100% Rust

Use the closest rating to the actual field condition based on the average for the bridge. Indicate any areas of severe rusting in remarks.

For structures composed of weathering steel, this sheet should be used to rate the effectiveness of the iron oxide coating (see Appendix G from the state coding guide). For beam ends, use the controlling rating (paint or oxide coating).

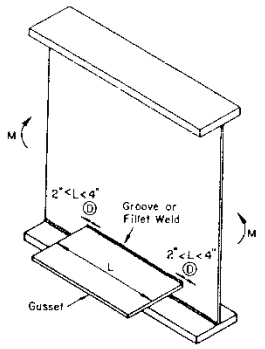
INSPECTION RATINGS (0 THROUGH 10 OR N/A)

Fascia Beam:	9	Fascia Bottom Flange:	9	Beams Ends:	9
Interior Beam:	9	Interior Bottom Flange:	9	Connections:	9
Bracing:	9	Substructure:	N/A	Railings/Fence:	N/A
Bearings:	69	Above Deck Superstructure	9		

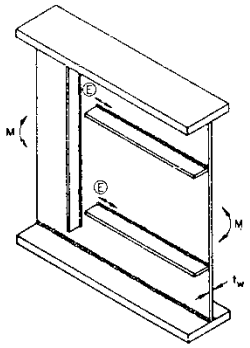
Remarks 1:

Remarks 2:

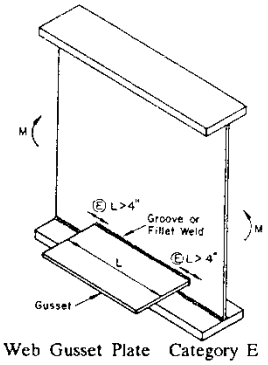
TYPICAL FATIGUE DETAILS



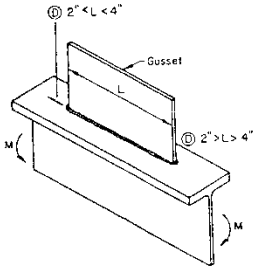
Short Wed Gusset Plate L < 4 in. Category D
Detail 1



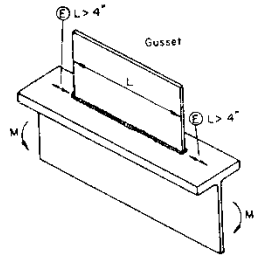
Termination of Longitudinal Stiffeners Category E
Detail 2



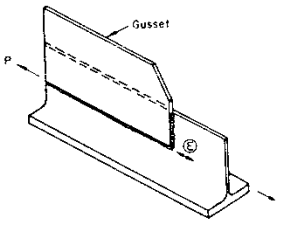
Web Gusset Plate Category E
Detail 3



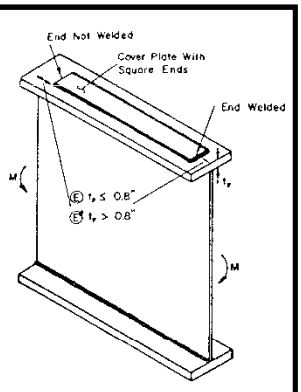
Short Flange Gusset Plate L ≤ 4 in. Category D
Detail 4



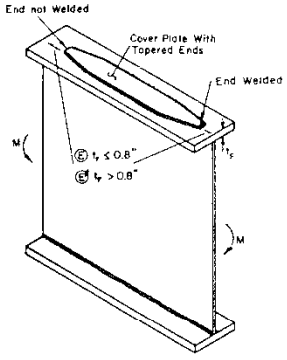
Flange Gusset Plate Category E
Detail 5



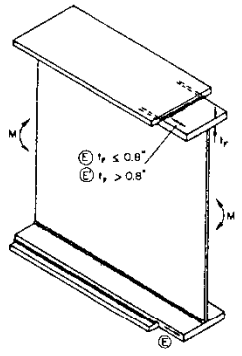
Gusset Welded to Bracing Member Category E
Detail 6



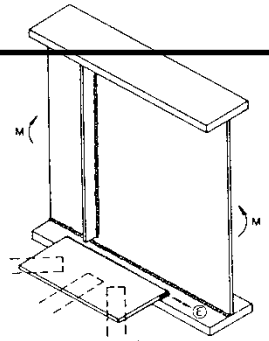
Square Ended Cover Plates Narrower than the Girder Flange Category E or E'
Detail 7



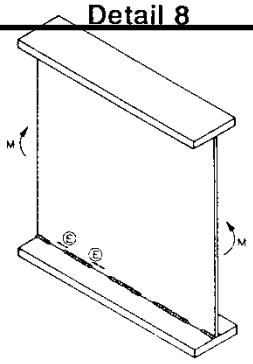
Cover Plates Narrower than the Girder Flange with Tapered Ends Category E or E'
Detail 8



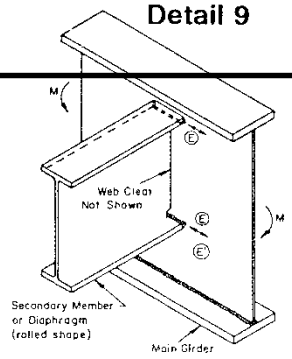
Cover Plates Wider than the Girder Flange with End Welds Category E or E'
Detail 9



Flange Gusset Plate Category E
Detail 10



Intermittent Fillet Welds Category E
Detail 11



Stringer Framing into Girder Web Category E or E'
Detail 12

TYPICAL FATIGUE DETAILS

13. Field Weld Repairs - Proper welding procedures may not have been used; testing of weld by non-destructive methods was usually not done, therefore, the possibility of large flaws exists. Check carefully on the main structural members (stringers, floorbeams, girders).

14. Tack Welds - Check carefully on riveted members constructed in 1940's and 1950's as these welds were sometimes used to hold the plates together during riveting.

15. Plug Welds - Check at bolted connections on welded structures. These welds may have been used to fill-in incorrectly drilled holes (see sketch).

16. Backing Bars - These welds are possibly not full penetration. Check carefully on box girders if accessible and at butt (groove) welds made in the field.

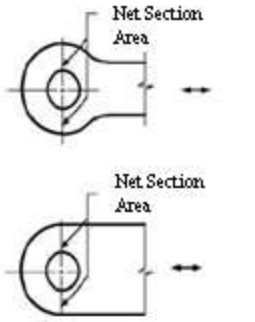
17. Details with 2 or 3 Intersecting Welds (Slot Welds) - Incomplete penetration of the second and third welds is possible.

18. Butt (Groove) Welds on Horizontal Web Stiffeners - NDT of the weld was not always required on the stiffener in the tension zone. If the weld is not good, this will be an "E" detail or worse which can exist in a high stress area (This would be the same as or worse than typical detail 3).

19. Detail Without Proper Welding Clearance - Poor welding can result if proper clearance for the welding rod is not maintained by the designer (such as a horizontal web stiffener placed too near the bottom flange of a girder; fillet weld at bottom of stiffener is difficult due to a lack of clearance for the welding rod).

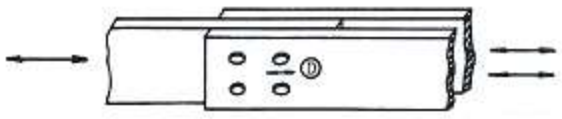
20. Coped or Blocked Flanges - Check carefully when these details exist on main structural members (stringers and floorbeams). Coped flanges are a typical detail on movable spans.

21. Distortion (Bending) at Small Gaps - For typical details which exhibit damage due to this, see "Inspecting Steel Bridges for Fatigue Damage" (see sketches).



Base Metal at the Net Section of the Eyebar Head or Pin Plate

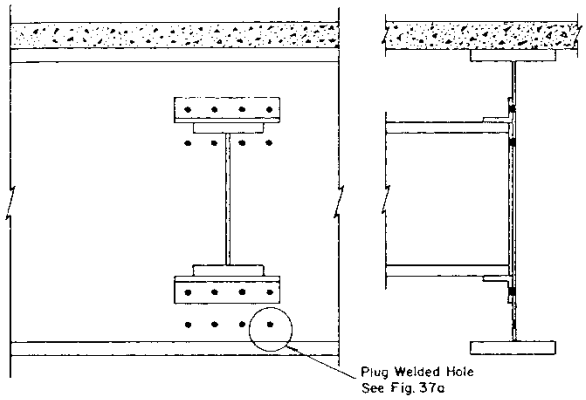
Detail 22



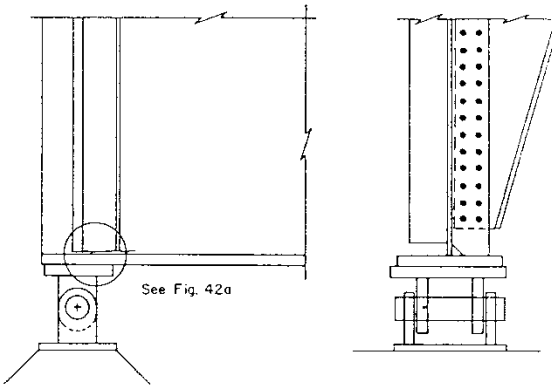
Base Metal at the Net Section of Riveted Connections

Detail 23

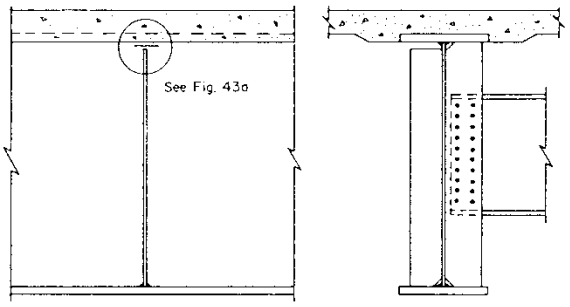
TYPICAL FATIGUE DETAILS



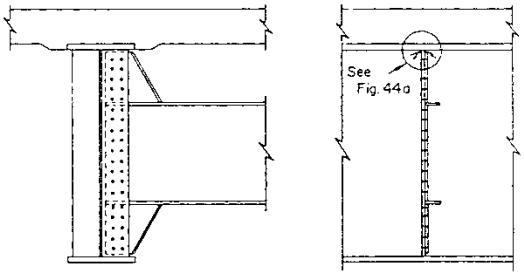
Schematic Showing Misplaced Holes Filled with Weld
Detail 15



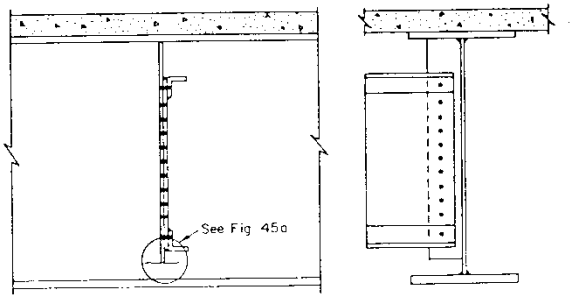
Schematic Showing Crack in Girder Web at Floor Beam Connection Plates at Supports
Detail 21A



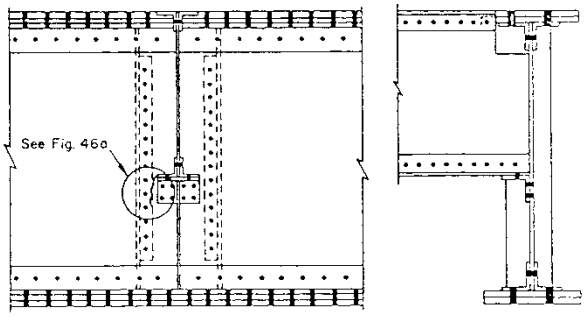
Schematic of Crack in Girder Web at Floor Beam Connection Plates in Negative Moment Region
Detail 21B



Schematic of Crack in Girder Web and Transverse Connection Plate Welds at Floor Beam in Negative Moment Region of Skewed Bridge
Detail 21C



Schematic of Transverse Diaphragm Attached to Cut Short Welded Connection Plate Showing Web Cracking in Gap
Detail 21D



Schematic Showing Stringer Framing into Riveted Floor Beam With Crack Between Seat Angle Connection and Adacent Web Stiffeners
Detail 21E

Structure No.:	14C42.37	Route:	6155	Cycle No.:	3
Name:	Chester Branch over Berkshire Valley Road (CR 642)			Insp. Date:	3/3/2022

SUBSTRUCTURE

SI&A Item 60 Condition Rating: **7**

ABUTMENT West

RATING	COMPONENT	REMARKS
7	Breastwall *Concrete*	Work Done: Concrete patches throughout the abutment (75% of breastwall) (Similar Photo 3-26). Concrete patches exhibits few fine cracks. Medium to wide horizontal crack at original concrete (6 LF). Fine to medium cracking with efflorescence at original concrete (15 SF). Honey combing at north end (8 SF).
7	Backwall *Concrete*	Fine vertical crack at north end.
7	Bridge Seat *Concrete*	Work Done: Bridge seat has been patched with concrete for full length (Similar Photo 3-26). Minor ballast/debris accumulation on bridge seat.
6	Wingwalls / Retaining Walls *Concrete*	Work Done: Concrete patches at southwest wingwall (full height) and northwest wingwall (30% of length) (Photo 3-20). SW: No significant defects. NW: Wide horizontal crack along top of northwest wingwall (15 LF). Fine to medium cracking with efflorescence scattered throughout (20 LF total) (Photo 3-20).
N	Embankment / Slope Protection	None
N	Others	Tree growth along both wingwalls.

Additional Remarks:

ABUTMENT East

RATING	COMPONENT	REMARKS
7	Breastwall *Concrete*	Work Done: Abutment has been patched with concrete for full length (Photo 3-26). Few fine full height vertical cracks with light efflorescence and water stains (3 LF).
6	Backwall *Concrete*	Work Done: Scattered concrete patches on the backwall (Photo 3-21). Spall at top of backwall at south end (2 SF) (Photo 3-21).
7	Bridge Seat *Concrete*	Work Done: Bridge seat has been patched with concrete for full length (Photo 3-26). Fine cracking on front faces of concrete patches.
6	Wingwalls / Retaining Walls *Concrete*	SE: Fine horizontal cracking with water stains (8 LF). Moderate scaling along top at south end (5 LF) (Photo 3-22). NE: Light scaling along top of wingwall.
N	Embankment / Slope Protection	None
N	Others	None

Additional Remarks:

RAILROAD SAFETY

Coding of SI&A Item 36: **0000**

1: Meets Currently Acceptable Standards

0: Does Not Meet Currently Acceptable Standards

RATING	COMPONENT	REMARKS
7	Track Alignment	Generally level and tangent
0	Inner Guard Rail	1. Location (are guard rails on the bridge and 10" from the running rail?) N - NONE
		2. Attachment (are the guard rails attached to the structure?) N - NONE
		3. Extension (must extend 50' beyond the bridge) N - NONE
		4. End Treatments (are ends of the guard rail beveled down toward the center of the track?) N - NONE

DECK GEOMETRY

SI&A Item 68 Rating: **5**

COMPONENT	REMARKS
Bridge Cross Section	Refer to Superstructure Section, p. 2-14.
Adequacy of Track Clearance	Measured distances from centerline of track to through girder knee braces: Top of rail: 5'-11" 2' above rail: 6'-4" 4' above rail: 6'-9" Based on table on NJDOT SI&A manual page R-6, code = 5.
Vertical Clearance over Deck	No restrictions.

*Posting for Load / Speed / Clearance Restrictions	At time of inspection, this bridge was speed restricted to 5 MPH due to superstructure impact damage. Refer to e-mail May 20, 2019 from Scott Harris, Vice President of Operations, Chesapeake and Delaware, LLC. Except for this bridge, the Chester Branch is an FRA Class 2 track with a 25 mph speed limit for freight trains. The bridge is posted for 11'-5" vertical underclearance (Photo 2-26).

Structure No.:	14C42.37	Route:	6155	Cycle No.:	3
Name:	Chester Branch over Berkshire Valley Road (CR 642)			Insp. Date:	3/3/2022

CLEARANCES

FEATURE ON STRUCTURE: Chester Branch SI&A SHEET 1

Minimum Vertical Clearance (SI&A Item 10)	No restrictions
Total Horizontal Clearances (SI&A Item 47)	6'-9" from centerline of tracks to knee brace 4' above top of rail.

CONTROLLING UNDERCLEARANCE DATA:	
Minimum Vertical Underclearance (SI&A Item 54)	12’-2” along centerline of roadway below both girders.
Minimum Vertical Underclearance (incl. shoulders) (SI&A Item DJ)	12’-2” along centerline of roadway below both girders.
Lateral Right (SI&A Item 55)	9’-6” from west shoulder stripe of southbound lane to west abutment.
Lateral Left (SI&A Item 56)	N/A

FEATURE UNDER STRUCTURE: Berkshire Valley Road (CR 642) SI&A SHEET 2

*Minimum Vertical Clearance (SI&A Item 10)	12’-2” under both girders, 10’ from shoulder stripes in both lanes.
Total Horizontal Clearance (SI&A Item 47)	25.5' edge of pavement to edge of pavement.
Minimum Vertical Underclearance (incl. shoulders) (SI&A Item DJ)	12’-2” along centerline of roadway below both girders.

Structure No.:	14C42.37	Route:	6155	Cycle No.:	3
Name:	Chester Branch over Berkshire Valley Road (CR 642)			Insp. Date:	3/3/2022

FENCING

Coding of SI&A Item FN:	**N**
Coding of SI&A Item FO:	**N**
Coding of SI&A Item FP (in thousands):	**--**

Warranted (Per Design Manual Section 23):	No	
If Yes: Description:		
Current Status of Fence & Sidewalk:	Left Side	Right Side
a. Fence:	No	No
b. Sidewalk Width:	N/A	N/A
c. Total Height of fence above curb/sidewalk:	N/A	N/A
d. Type of Fence (per Design Manual Section 23):	N/A	N/A

Action Recommended: None

Estimated Cost: N/A

WORK DONE HISTORICAL DATA

CYCLE NO.	YEAR	WORK DONE SUMMARY
3	2022	All deck ties, tie plates, spikes, rails, J-hooks and spacers replaced. Timber backwall ties replaced. Timber retaining walls repaired along approach embankments with additional ballast added. Superstructure cleaned and painted. Scattered lateral bracing and vertical stiffeners replaced on girders and steel repairs made to girders. Concrete repairs/patches to abutments and wingwalls.
2	2018	None
1	2013	N/A – 1st cycle

Appendix B

Traffic Count Data



NJTPA

NJTPA Freight Concept Development Program

Jacobs

Berkshire Valley Road south of N Dell Avenue
Northbound

Interval Start	Fri	Sat	Sun	Mon	Tue	Wed	Thur	Fri	Sat	Sun	Mon	Tue	Wed
	5/21/2021	5/22/2021	5/23/2021	5/24/2021	5/25/2021	5/26/2021	5/27/2021	5/28/2021	5/29/2021	5/30/2021	5/31/2021	6/1/2021	6/2/2021
12:00 AM		4	2	1	1	3	4	4	8	0	5	1	4
12:15 AM		9	6	1	8	2	0	2	4	2	5	2	2
12:30 AM		4	3	1	1	0	2	2	4	2	3	2	2
12:45 AM		6	6	0	2	1	1	3	4	6	2	1	0
01:00 AM		1	5	0	0	1	0	2	1	1	3	1	1
01:15 AM		6	5	4	0	5	0	1	1	3	3	0	1
01:30 AM		0	2	1	0	0	1	2	2	10	2	3	1
01:45 AM		0	1	1	2	3	0	2	1	4	3	0	0
02:00 AM		1	2	1	1	2	2	2	0	4	4	1	0
02:15 AM		5	3	4	1	0	1	1	0	3	0	0	3
02:30 AM		1	2	1	2	1	4	0	0	0	0	1	1
02:45 AM		1	0	3	2	3	0	6	2	1	0	4	1
03:00 AM		3	1	2	2	2	4	6	1	0	1	2	0
03:15 AM		3	0	4	5	1	0	3	1	0	4	3	5
03:30 AM		3	0	4	3	12	6	2	3	0	0	1	4
03:45 AM		0	1	6	7	0	9	10	0	1	2	3	0
04:00 AM		0	1	6	4	11	2	6	0	2	2	3	12
04:15 AM		2	2	7	7	2	15	6	4	1	1	8	6
04:30 AM		6	1	10	8	13	14	9	3	0	2	5	11
04:45 AM		7	7	1	15	13	8	4	4	1	0	11	5
05:00 AM		9	2	9	5	11	14	19	4	1	0	13	12
05:15 AM		3	2	6	11	8	10	11	0	0	2	9	15
05:30 AM		5	5	12	14	13	14	9	4	6	4	7	9
05:45 AM		4	2	15	17	11	14	11	2	5	2	19	12
06:00 AM		8	4	10	19	13	22	9	6	5	5	11	14
06:15 AM		7	3	23	15	27	21	16	7	3	3	24	13
06:30 AM		9	5	43	37	37	58	28	9	2	8	39	46
06:45 AM		11	13	45	46	36	62	26	5	8	8	43	40
07:00 AM		19	5	38	34	36	70	33	6	0	11	33	41
07:15 AM		16	7	51	46	62	53	36	11	5	9	41	43
07:30 AM		21	11	47	51	54	65	37	11	7	6	57	54
07:45 AM		20	12	44	54	62	58	50	10	6	9	47	42
08:00 AM		29	14	42	47	47	55	35	15	6	8	52	51
08:15 AM		26	13	57	47	42	60	49	22	12	11	32	47
08:30 AM		33	17	41	50	36	38	46	19	12	15	52	44
08:45 AM		29	23	31	42	30	47	46	22	7	18	29	42
09:00 AM		36	18	41	55	41	40	60	23	8	15	32	45
09:15 AM		35	15	27	37	46	48	39	35	12	26	38	
09:30 AM		49	29	29	28	30	40	57	29	19	27	41	
09:45 AM		52	32	41	40	36	43	48	29	25	24	35	
10:00 AM		56	46	32	36	35	39	52	31	29	25	39	
10:15 AM		60	45	37	44	53	40	36	36	31	45	40	
10:30 AM		57	49	41	48	41	54	55	38	32	33	48	
10:45 AM		43	46	38	36	51	59	41	46	25	33	48	
11:00 AM		63	54	36	40	39	51	46	38	19	45	45	
11:15 AM	29	65	53	47	37	45	46	65	46	31	52	49	
11:30 AM	55	61	58	43	46	48	43	71	58	38	42	44	
11:45 AM	48	64	50	52	42	41	44	59	51	41	37	42	

Berkshire Valley Road south of N Dell Avenue
Northbound

Interval Start	Fri	Sat	Sun	Mon	Tue	Wed	Thur	Fri	Sat	Sun	Mon	Tue	Wed
	5/21/2021	5/22/2021	5/23/2021	5/24/2021	5/25/2021	5/26/2021	5/27/2021	5/28/2021	5/29/2021	5/30/2021	5/31/2021	6/1/2021	6/2/2021
12:00 PM	52	61	50	38	44	38	45	36	52	46	41	43	
12:15 PM	50	50	54	41	41	45	48	71	43	59	34	44	
12:30 PM	50	53	40	46	45	52	42	50	48	38	49	38	
12:45 PM	44	57	49	28	57	46	60	53	42	39	41	53	
01:00 PM	58	62	40	50	59	43	31	59	56	36	50	42	
01:15 PM	59	71	57	41	42	46	47	54	56	43	66	46	
01:30 PM	60	64	36	39	44	55	47	56	70	49	54	43	
01:45 PM	67	58	51	47	40	65	56	58	45	49	47	54	
02:00 PM	61	102	50	44	38	64	51	64	48	44	47	56	
02:15 PM	56	175	62	61	54	61	60	67	47	49	65	44	
02:30 PM	53	150	58	54	47	67	56	66	39	49	77	55	
02:45 PM	68	75	61	47	67	66	52	59	58	43	91	70	
03:00 PM	65	68	46	60	57	61	67	58	48	40	78	68	
03:15 PM	73	67	49	55	68	79	74	66	41	36	62	85	
03:30 PM	68	49	39	54	73	67	70	78	46	42	62	57	
03:45 PM	74	35	44	79	59	68	89	67	43	41	57	59	
04:00 PM	78	62	62	70	77	64	92	69	40	27	46	61	
04:15 PM	84	52	60	63	74	68	66	80	54	31	45	76	
04:30 PM	93	43	53	70	87	101	76	71	37	29	29	75	
04:45 PM	69	48	34	93	60	67	71	67	32	32	27	58	
05:00 PM	81	53	42	72	90	71	93	66	32	39	35	79	
05:15 PM	82	48	36	68	92	66	67	102	44	40	46	70	
05:30 PM	82	43	47	66	54	80	71	84	42	24	38	62	
05:45 PM	60	43	33	58	66	65	65	46	36	16	27	75	
06:00 PM	72	40	32	58	74	66	64	53	40	28	20	65	
06:15 PM	55	49	28	38	66	71	55	51	31	21	30	57	
06:30 PM	43	27	39	45	51	60	51	37	35	20	23	53	
06:45 PM	51	40	31	52	44	47	53	34	31	16	23	32	
07:00 PM	42	35	27	50	37	37	54	44	34	21	26	41	
07:15 PM	53	24	29	45	62	37	55	32	30	19	31	41	
07:30 PM	48	27	26	35	37	27	51	19	17	18	26	39	
07:45 PM	31	33	24	35	33	27	51	19	20	19	20	25	
08:00 PM	36	32	18	29	23	30	35	19	16	14	25	38	
08:15 PM	34	37	29	25	30	28	41	24	14	14	20	28	
08:30 PM	32	21	19	27	25	21	34	21	24	9	27	32	
08:45 PM	37	26	23	23	30	26	35	13	17	11	10	23	
09:00 PM	24	31	11	22	22	17	28	17	17	11	11	20	
09:15 PM	20	21	13	7	15	14	17	21	12	8	16	19	
09:30 PM	23	18	14	0	26	16	15	14	12	9	15	18	
09:45 PM	19	16	7	0	13	15	20	14	16	15	10	19	
10:00 PM	21	15	7	2	18	10	21	16	14	12	14	10	
10:15 PM	11	9	7	2	7	8	12	10	5	7	9	13	
10:30 PM	10	8	5	0	6	9	4	9	2	9	5	6	
10:45 PM	9	6	5	10	10	7	7	5	7	5	4	6	
11:00 PM	13	15	6	4	10	9	9	12	5	1	4	7	
11:15 PM	8	11	1	1	7	3	9	7	5	3	1	3	
11:30 PM	6	8	4	1	5	6	2	4	4	5	4	5	
11:45 PM	5	5	4	2	2	0	5	4	3	5	3	4	
Total	2,422	3,095	2,245	2,893	3,183	3,202	3,505	3,209	2,166	1,677	2,156	3,078	629

Berkshire Valley Road south of N Dell Avenue
Southbound

Interval Start	Fri	Sat	Sun	Mon	Tue	Wed	Thur	Fri	Sat	Sun	Mon	Tue	Wed
	5/21/2021	5/22/2021	5/23/2021	5/24/2021	5/25/2021	5/26/2021	5/27/2021	5/28/2021	5/29/2021	5/30/2021	5/31/2021	6/1/2021	6/2/2021
12:00 AM		3	4	2	3	3	2	5	8	3	4	5	1
12:15 AM		8	8	0	3	3	0	2	7	7	6	3	1
12:30 AM		2	7	1	2	2	2	2	5	4	2	1	1
12:45 AM		0	5	2	1	1	0	3	1	3	3	0	2
01:00 AM		1	2	1	1	2	2	2	2	4	4	3	2
01:15 AM		2	4	4	0	0	1	2	2	1	2	1	0
01:30 AM		3	4	0	0	1	0	0	1	2	3	0	0
01:45 AM		0	6	1	1	1	1	0	2	0	0	1	2
02:00 AM		2	5	0	0	2	0	1	2	4	0	0	0
02:15 AM		0	1	2	0	1	1	1	3	3	2	1	0
02:30 AM		0	2	1	1	1	0	0	2	4	2	0	0
02:45 AM		0	2	2	1	0	0	1	1	1	0	1	2
03:00 AM		2	0	0	0	0	1	3	0	3	0	0	0
03:15 AM		2	0	1	1	1	4	0	0	0	1	2	1
03:30 AM		4	0	3	3	2	3	2	4	2	0	0	0
03:45 AM		1	0	1	0	2	0	2	0	0	3	2	3
04:00 AM		3	0	3	2	4	1	10	3	1	2	3	6
04:15 AM		1	0	4	3	5	4	1	2	0	2	3	4
04:30 AM		4	0	5	7	8	5	2	4	2	1	6	4
04:45 AM		3	0	2	8	9	6	9	3	0	2	6	6
05:00 AM		2	3	5	8	4	6	7	1	1	1	3	3
05:15 AM		2	4	3	3	10	7	8	1	2	2	3	10
05:30 AM		5	7	10	12	15	14	7	8	5	5	11	16
05:45 AM		9	6	14	17	14	16	15	2	6	3	18	14
06:00 AM		7	6	20	20	23	20	19	7	6	2	12	26
06:15 AM		10	7	28	31	27	32	22	7	6	6	38	38
06:30 AM		13	13	44	45	44	38	38	6	5	7	39	38
06:45 AM		18	6	50	58	49	58	32	9	2	5	41	52
07:00 AM		22	6	40	39	54	56	42	13	6	10	53	58
07:15 AM		18	21	61	59	63	49	42	19	6	15	56	45
07:30 AM		40	21	57	53	51	59	51	16	7	11	64	57
07:45 AM		40	16	56	65	60	60	65	17	11	12	51	66
08:00 AM		39	29	54	58	44	55	48	18	13	9	54	52
08:15 AM		39	21	49	53	61	67	57	22	10	20	58	62
08:30 AM		38	24	59	57	60	54	60	24	11	21	55	75
08:45 AM		41	36	46	50	60	61	44	33	25	21	65	62
09:00 AM		48	25	50	45	40	38	34	27	13	22	46	49
09:15 AM		51	36	47	36	42	37	35	19	20	22	37	0
09:30 AM		42	36	50	39	47	49	51	51	27	31	39	0
09:45 AM		57	45	36	38	54	45	49	41	24	43	41	0
10:00 AM		59	53	44	53	65	42	46	52	21	29	47	0
10:15 AM		59	39	46	47	42	43	59	51	34	39	37	0
10:30 AM		63	37	48	44	40	42	56	38	32	41	38	0
10:45 AM		68	52	40	52	43	56	58	55	32	40	46	0
11:00 AM		58	47	41	46	48	59	67	47	36	38	48	0
11:15 AM	58	61	46	56	44	37	47	67	49	24	40	48	0
11:30 AM	56	62	50	54	50	47	57	79	44	47	50	55	0
11:45 AM	56	78	58	64	51	59	52	48	49	29	40	55	0

Berkshire Valley Road south of N Dell Avenue
Southbound

Interval Start	Fri 5/21/2021	Sat 5/22/2021	Sun 5/23/2021	Mon 5/24/2021	Tue 5/25/2021	Wed 5/26/2021	Thur 5/27/2021	Fri 5/28/2021	Sat 5/29/2021	Sun 5/30/2021	Mon 5/31/2021	Tue 6/1/2021	Wed 6/2/2021
12:00 PM	51	55	63	46	63	37	61	62	53	48	64	52	0
12:15 PM	61	76	53	61	53	51	52	78	56	44	52	63	0
12:30 PM	49	79	62	48	56	67	49	56	57	56	57	39	0
12:45 PM	60	67	64	55	58	50	59	79	59	65	49	49	0
01:00 PM	66	74	57	44	62	48	54	66	66	54	61	61	0
01:15 PM	67	63	47	51	48	54	50	66	55	62	55	60	0
01:30 PM	64	67	57	75	47	48	56	58	55	47	46	60	0
01:45 PM	64	91	50	57	57	47	68	75	51	46	54	63	0
02:00 PM	69	94	73	60	61	52	75	66	60	53	54	52	0
02:15 PM	82	79	55	71	62	59	79	84	57	50	48	70	0
02:30 PM	74	76	49	56	78	80	71	81	70	54	74	78	0
02:45 PM	66	73	60	58	67	68	80	78	65	49	56	80	0
03:00 PM	61	64	67	72	74	74	79	85	50	52	44	69	0
03:15 PM	85	71	68	68	67	75	73	97	60	47	47	74	0
03:30 PM	81	74	53	75	87	66	82	86	64	47	57	65	0
03:45 PM	100	49	70	77	109	105	90	88	62	48	58	79	0
04:00 PM	103	50	64	96	114	83	82	90	51	40	49	89	0
04:15 PM	79	62	53	89	87	75	100	102	62	55	45	80	0
04:30 PM	73	67	50	84	84	73	80	84	38	43	39	75	0
04:45 PM	85	58	49	82	97	74	81	71	52	41	54	88	0
05:00 PM	75	51	51	69	77	81	74	75	47	41	38	68	0
05:15 PM	93	68	25	85	83	101	87	65	44	34	42	76	0
05:30 PM	100	47	48	84	76	75	110	71	37	36	35	83	0
05:45 PM	76	63	41	72	67	81	92	70	37	31	43	68	0
06:00 PM	69	65	41	68	54	75	78	52	49	42	44	57	0
06:15 PM	76	54	39	57	57	88	74	51	44	29	43	63	0
06:30 PM	79	54	42	41	48	57	69	62	34	24	37	57	0
06:45 PM	62	42	38	43	64	56	70	62	35	26	41	51	0
07:00 PM	54	40	38	49	57	28	49	53	33	23	37	53	0
07:15 PM	60	33	37	45	40	41	55	56	21	34	33	51	0
07:30 PM	51	32	29	36	44	37	27	43	25	22	31	40	0
07:45 PM	37	42	25	32	38	31	41	41	24	13	34	37	0
08:00 PM	46	34	36	36	44	41	54	28	28	19	22	34	0
08:15 PM	38	22	16	26	32	31	36	24	33	22	29	37	0
08:30 PM	36	31	18	30	28	23	44	21	31	16	22	31	0
08:45 PM	25	34	23	15	31	26	37	22	18	17	23	30	0
09:00 PM	42	21	17	24	19	17	22	26	18	13	24	21	0
09:15 PM	31	29	13	11	23	15	19	21	15	6	30	19	0
09:30 PM	16	17	9	2	18	17	12	16	16	14	18	14	0
09:45 PM	26	21	10	1	10	9	21	7	17	8	16	12	0
10:00 PM	12	14	7	0	12	7	16	18	9	14	8	16	0
10:15 PM	27	16	10	4	14	13	18	5	13	6	13	9	0
10:30 PM	15	18	5	0	10	6	14	12	13	12	12	10	0
10:45 PM	7	10	4	2	12	11	14	10	11	10	5	10	0
11:00 PM	7	15	3	0	5	9	11	12	12	5	5	7	0
11:15 PM	9	10	4	7	7	5	6	8	11	5	5	9	0
11:30 PM	15	6	7	6	3	3	5	5	8	5	4	3	0
11:45 PM	4	7	2	2	4	2	5	7	8	9	2	3	0
Total	2,798	3,375	2,602	3,379	3,618	3,523	3,833	3,749	2,612	2,042	2,383	3,511	758

N. Dell Avenue south of Berkshire Valley Road
Northbound

Interval Start	Fri	Sat	Sun	Mon	Tue	Wed	Thur	Fri	Sat	Sun	Mon	Tue	Wed
	5/21/2021	5/22/2021	5/23/2021	5/24/2021	5/25/2021	5/26/2021	5/27/2021	5/28/2021	5/29/2021	5/30/2021	5/31/2021	6/1/2021	6/2/2021
12:00 AM		2	1	2	0	0	0	1	2	0	1	0	2
12:15 AM		1	1	0	2	1	0	0	3	0	1	0	1
12:30 AM		4	2	2	0	1	2	4	0	0	0	0	1
12:45 AM		1	1	2	1	1	1	0	1	0	1	0	1
01:00 AM		2	1	1	3	0	1	5	1	0	1	2	1
01:15 AM		2	2	0	0	4	0	1	0	1	1	4	0
01:30 AM		1	2	3	0	1	0	1	5	0	1	0	0
01:45 AM		5	0	0	3	1	4	0	0	0	0	3	2
02:00 AM		3	0	2	2	9	2	3	2	2	0	0	4
02:15 AM		2	0	2	1	0	0	2	1	2	0	1	0
02:30 AM		2	2	2	1	1	1	1	1	2	2	0	2
02:45 AM		2	1	4	2	2	0	0	0	1	0	0	2
03:00 AM		0	0	11	0	2	5	4	2	0	1	0	2
03:15 AM		2	0	3	9	2	0	6	0	0	0	4	2
03:30 AM		0	0	3	11	6	7	5	3	0	1	1	5
03:45 AM		0	0	2	0	4	5	3	2	0	0	4	5
04:00 AM		0	0	8	7	3	6	13	2	0	0	13	4
04:15 AM		0	0	3	5	5	3	12	2	0	0	5	8
04:30 AM		1	0	2	8	0	6	4	0	0	1	4	1
04:45 AM		1	0	7	6	7	3	5	6	1	2	9	11
05:00 AM		12	2	9	7	5	8	9	1	2	1	11	9
05:15 AM		6	0	5	9	18	13	8	10	1	2	13	10
05:30 AM		7	2	16	19	24	17	12	2	2	2	9	17
05:45 AM		5	0	9	18	10	12	7	1	2	3	12	11
06:00 AM		4	1	13	10	24	16	12	7	2	2	15	11
06:15 AM		7	4	17	26	23	27	17	7	2	2	24	26
06:30 AM		9	5	23	16	20	16	17	7	0	1	27	34
06:45 AM		14	3	14	19	17	26	25	7	4	3	18	21
07:00 AM		14	4	26	23	29	24	23	5	0	3	19	36
07:15 AM		5	8	23	30	27	38	11	5	1	3	30	25
07:30 AM		14	6	30	20	23	32	27	9	3	5	27	35
07:45 AM		15	8	16	19	22	22	21	10	3	7	14	22
08:00 AM		9	3	18	23	20	18	12	12	1	6	21	19
08:15 AM		20	6	22	18	28	14	26	12	3	4	20	23
08:30 AM		15	7	21	23	25	28	21	11	9	8	22	26
08:45 AM		19	4	19	20	15	22	11	11	4	6	17	15
09:00 AM		25	7	25	15	14	15	10	10	6	7	23	13
09:15 AM		22	14	14	25	13	19	12	12	9	11	15	15
09:30 AM		24	11	23	16	13	20	15	16	7	15	21	0
09:45 AM		22	8	21	13	22	19	12	8	12	9	16	0
10:00 AM		24	20	23	14	19	17	11	11	16	8	8	0
10:15 AM		30	16	18	19	18	16	22	15	13	13	20	0
10:30 AM		26	18	26	22	18	17	23	20	11	14	19	0
10:45 AM		24	19	28	17	18	31	24	27	13	15	19	0
11:00 AM		29	22	24	16	17	26	20	15	7	12	14	0
11:15 AM		27	27	19	27	17	23	19	29	14	18	18	0
11:30 AM	11	36	11	24	18	15	13	21	14	13	13	7	0
11:45 AM	28	24	13	16	11	23	23	22	23	12	12	15	0

N. Dell Avenue south of Berkshire Valley Road
Northbound

Interval Start	Fri	Sat	Sun	Mon	Tue	Wed	Thur	Fri	Sat	Sun	Mon	Tue	Wed
	5/21/2021	5/22/2021	5/23/2021	5/24/2021	5/25/2021	5/26/2021	5/27/2021	5/28/2021	5/29/2021	5/30/2021	5/31/2021	6/1/2021	6/2/2021
12:00 PM	27	21	21	23	13	19	22	17	18	15	14	23	0
12:15 PM	22	25	25	23	22	19	26	25	19	9	14	24	0
12:30 PM	23	22	27	22	23	33	30	28	14	11	14	18	0
12:45 PM	30	23	16	27	26	28	27	23	25	20	18	23	0
01:00 PM	20	33	10	15	25	22	21	28	16	16	19	26	0
01:15 PM	25	24	23	20	18	27	26	18	11	17	13	21	0
01:30 PM	23	27	21	21	16	31	20	33	20	12	8	15	0
01:45 PM	24	29	25	28	21	37	27	15	19	18	16	23	0
02:00 PM	27	27	27	27	22	20	23	28	16	10	21	21	0
02:15 PM	26	19	27	25	28	22	22	25	18	10	18	24	0
02:30 PM	23	17	19	27	20	28	19	21	20	12	17	14	0
02:45 PM	19	20	12	35	27	30	30	40	19	21	14	19	0
03:00 PM	24	23	12	23	35	25	33	31	17	9	18	31	0
03:15 PM	17	18	13	30	34	32	22	39	16	11	22	15	0
03:30 PM	40	18	15	33	42	43	39	33	18	11	17	31	0
03:45 PM	38	17	13	26	26	26	27	32	12	14	16	22	0
04:00 PM	38	23	16	32	36	39	29	22	20	13	8	34	0
04:15 PM	39	18	22	31	37	37	43	32	15	7	17	39	0
04:30 PM	36	16	17	43	64	61	45	40	9	9	15	55	0
04:45 PM	27	22	20	41	50	32	43	28	22	12	19	42	0
05:00 PM	46	17	13	66	49	54	56	42	10	9	13	55	0
05:15 PM	40	19	12	42	38	52	53	34	13	7	7	34	0
05:30 PM	32	12	20	47	40	43	32	30	15	12	10	31	0
05:45 PM	25	13	18	29	31	40	25	31	11	8	11	33	0
06:00 PM	26	18	12	34	35	38	26	40	4	5	14	49	0
06:15 PM	28	17	12	18	27	25	22	21	10	6	11	29	0
06:30 PM	22	19	10	16	26	32	36	20	14	11	14	15	0
06:45 PM	19	13	11	22	27	20	26	16	12	11	8	22	0
07:00 PM	11	11	13	21	20	19	17	17	11	6	10	26	0
07:15 PM	15	16	11	18	24	8	29	8	13	3	6	13	0
07:30 PM	19	15	13	16	26	16	22	21	5	4	9	31	0
07:45 PM	8	13	10	9	19	24	22	12	10	13	13	7	0
08:00 PM	20	13	12	25	11	16	12	11	7	5	9	12	0
08:15 PM	10	13	10	11	10	9	19	9	5	6	10	8	0
08:30 PM	23	4	9	9	15	12	20	5	7	5	7	13	0
08:45 PM	11	11	3	6	10	12	9	7	5	5	7	7	0
09:00 PM	7	14	3	4	17	8	7	5	4	9	10	14	0
09:15 PM	5	8	10	13	8	8	12	4	11	4	5	8	0
09:30 PM	9	7	3	19	6	8	7	4	7	4	7	6	0
09:45 PM	6	7	3	16	8	5	4	7	7	6	7	0	0
10:00 PM	7	3	4	14	7	5	7	6	5	1	3	11	0
10:15 PM	3	7	2	9	5	2	10	7	7	3	5	4	0
10:30 PM	2	5	2	8	3	4	3	2	4	3	5	3	0
10:45 PM	8	5	1	8	4	3	2	7	2	2	2	4	0
11:00 PM	1	6	1	3	6	1	2	3	2	1	5	3	0
11:15 PM	1	4	1	5	1	2	6	2	4	2	1	0	0
11:30 PM	3	1	6	1	3	2	1	5	0	2	2	3	0
11:45 PM	2	2	1	0	0	3	1	6	4	0	1	1	0
Total	996	1,254	869	1,642	1,635	1,669	1,680	1,480	903	591	748	1,506	422

N. Dell Avenue south of Berkshire Valley Road
Southbound

Interval Start	Fri	Sat	Sun	Mon	Tue	Wed	Thur	Fri	Sat	Sun	Mon	Tue	Wed
	5/21/2021	5/22/2021	5/23/2021	5/24/2021	5/25/2021	5/26/2021	5/27/2021	5/28/2021	5/29/2021	5/30/2021	5/31/2021	6/1/2021	6/2/2021
12:00 AM		3	2	1	0	0	0	3	2	4	1	0	4
12:15 AM		0	1	2	3	1	0	2	1	1	6	5	2
12:30 AM		4	2	3	0	1	1	1	0	2	2	0	0
12:45 AM		1	3	1	0	0	1	1	1	2	0	2	2
01:00 AM		0	0	0	0	5	1	5	0	2	1	1	2
01:15 AM		2	0	1	2	3	2	3	0	1	3	0	1
01:30 AM		0	2	0	1	0	0	2	0	1	1	0	2
01:45 AM		4	0	2	3	0	2	2	0	0	0	0	2
02:00 AM		3	0	1	0	1	3	0	2	0	0	0	1
02:15 AM		0	1	1	1	1	0	3	0	1	1	2	1
02:30 AM		1	3	2	2	1	1	0	1	1	0	0	1
02:45 AM		0	1	3	1	0	1	1	2	2	1	0	0
03:00 AM		3	0	0	5	1	0	1	0	0	0	0	1
03:15 AM		0	1	0	1	1	2	1	2	1	1	0	3
03:30 AM		0	0	0	1	1	0	0	0	0	0	2	2
03:45 AM		3	0	1	1	1	2	8	3	0	0	1	2
04:00 AM		0	0	1	0	1	3	4	4	0	0	3	2
04:15 AM		1	1	4	2	3	3	6	2	1	0	1	9
04:30 AM		3	0	1	3	3	6	5	2	1	0	6	2
04:45 AM		1	1	6	5	2	8	4	3	0	1	3	6
05:00 AM		1	1	5	3	7	3	3	0	0	2	7	8
05:15 AM		2	0	11	6	10	9	3	1	0	1	13	8
05:30 AM		3	2	13	16	12	5	8	1	1	0	15	14
05:45 AM		7	0	17	24	23	21	10	3	2	0	16	21
06:00 AM		3	2	8	14	18	11	7	5	1	1	8	15
06:15 AM		5	0	15	17	18	20	17	8	2	3	23	23
06:30 AM		8	0	30	26	31	25	25	1	2	1	24	25
06:45 AM		4	3	28	36	26	33	26	11	1	4	33	22
07:00 AM		11	3	30	36	24	36	24	3	2	3	37	37
07:15 AM		15	6	36	33	28	35	27	11	2	2	35	27
07:30 AM		23	6	32	36	47	31	34	7	5	5	41	35
07:45 AM		20	4	41	33	29	39	29	8	1	7	41	46
08:00 AM		12	9	33	26	38	29	32	11	1	1	26	48
08:15 AM		15	6	25	40	37	36	35	9	2	8	37	38
08:30 AM		18	8	28	19	26	22	26	11	4	3	20	17
08:45 AM		28	12	22	30	32	24	17	19	9	12	20	27
09:00 AM		33	17	23	25	20	23	19	20	5	6	23	15
09:15 AM		22	8	24	30	29	22	29	9	4	8	27	15
09:30 AM		22	17	27	18	19	20	16	19	8	10	28	
09:45 AM		25	9	21	19	28	29	20	18	9	7	21	
10:00 AM		21	13	9	27	23	23	29	17	7	8	17	
10:15 AM		22	9	22	12	21	19	16	15	7	13	26	
10:30 AM		25	17	22	14	16	20	23	21	5	11	22	
10:45 AM		21	13	23	34	11	12	14	12	9	13	22	
11:00 AM		29	35	25	12	18	9	16	16	6	12	20	
11:15 AM		34	34	15	18	19	24	13	21	14	13	19	
11:30 AM	16	33	20	19	21	15	18	20	15	7	12	22	
11:45 AM	22	27	17	27	16	15	18	16	19	10	15	14	
12:00 PM	25	21	12	16	18	18	29	25	9	12	8	24	
12:15 PM	20	18	20	21	14	28	21	17	14	7	10	18	
12:30 PM	17	14	20	12	23	19	21	20	18	9	12	24	
12:45 PM	16	21	32	19	29	20	18	22	20	7	7	26	
01:00 PM	20	15	17	21	12	16	18	18	14	15	14	19	

N. Dell Avenue south of Berkshire Valley Road
Southbound

Interval Start	Fri	Sat	Sun	Mon	Tue	Wed	Thur	Fri	Sat	Sun	Mon	Tue	Wed
	5/21/2021	5/22/2021	5/23/2021	5/24/2021	5/25/2021	5/26/2021	5/27/2021	5/28/2021	5/29/2021	5/30/2021	5/31/2021	6/1/2021	6/2/2021
01:15 PM	18	25	9	28	28	24	32	19	23	9	15	19	
01:30 PM	21	23	13	29	30	28	19	21	18	10	9	18	
01:45 PM	32	28	21	23	21	18	22	24	9	9	12	27	
02:00 PM	20	12	22	26	26	26	27	22	16	13	19	13	
02:15 PM	23	34	12	22	18	24	23	20	13	11	19	15	
02:30 PM	28	17	21	19	30	38	18	33	14	16	14	28	
02:45 PM	20	28	16	29	28	32	32	25	10	14	17	23	
03:00 PM	24	17	13	26	37	15	36	32	14	10	15	19	
03:15 PM	24	15	6	27	36	29	24	16	11	9	12	27	
03:30 PM	37	15	12	30	37	25	31	27	18	23	9	34	
03:45 PM	30	16	13	40	38	40	39	20	17	15	11	35	
04:00 PM	24	20	22	35	31	31	27	37	15	9	14	35	
04:15 PM	20	25	12	25	36	27	43	21	17	8	17	29	
04:30 PM	19	20	13	34	22	30	28	30	12	9	12	28	
04:45 PM	23	13	15	31	35	32	37	29	12	9	15	25	
05:00 PM	31	19	12	29	34	32	36	24	6	5	10	30	
05:15 PM	29	11	8	34	38	40	28	23	12	11	13	39	
05:30 PM	24	16	9	42	24	24	21	18	16	10	14	20	
05:45 PM	27	9	18	27	34	30	22	18	13	4	18	34	
06:00 PM	28	12	18	21	42	24	32	21	11	12	9	31	
06:15 PM	28	19	15	20	26	29	27	15	11	6	21	22	
06:30 PM	23	17	13	8	20	23	21	21	16	11	12	22	
06:45 PM	10	14	12	18	16	17	19	13	8	9	11	19	
07:00 PM	13	13	15	18	19	15	12	17	9	6	11	18	
07:15 PM	11	8	12	13	20	17	21	10	5	12	9	23	
07:30 PM	12	14	13	10	15	22	16	19	9	8	10	11	
07:45 PM	9	7	13	11	13	13	21	7	5	3	7	15	
08:00 PM	9	19	11	14	9	9	20	16	8	7	12	8	
08:15 PM	12	9	6	24	10	7	10	9	3	3	15	17	
08:30 PM	9	10	1	10	11	14	10	2	3	7	13	8	
08:45 PM	6	8	8	8	10	3	13	7	4	5	10	9	
09:00 PM	7	7	7	21	13	4	7	6	6	4	5	5	
09:15 PM	13	10	5	13	10	7	7	8	4	3	9	0	
09:30 PM	5	7	6	15	5	7	6	5	6	1	6	6	
09:45 PM	11	6	4	23	4	6	8	6	3	5	5	9	
10:00 PM	5	6	7	9	1	1	12	6	5	1	1	3	
10:15 PM	6	4	4	13	4	2	4	2	6	5	6	4	
10:30 PM	4	6	4	18	6	4	3	4	7	3	3	1	
10:45 PM	5	7	5	21	2	3	2	6	4	4	4	4	
11:00 PM	3	4	2	9	2	3	4	5	1	3	2	4	
11:15 PM	5	4	1	0	3	2	5	3	1	4	2	2	
11:30 PM	3	6	3	2	2	0	0	2	0	3	2	1	
11:45 PM	4	7	1	0	0	1	0	0	2	2	0	2	
Total	851	1,194	843	1,625	1,614	1,545	1,584	1,377	814	527	700	1,536	486

Berkshire Valley Road with N. Dell Avenue
Thursday May 27, 2021
6:00 AM to 6:00 PM

TOTAL VEHICLES

Start Time	Berkshire Valley Road Southbound			N Dell Avenue Westbound			Berkshire Valley Road Northbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
6:00:00 AM	11	19	0	0	0	15	0	22	0
6:15:00 AM	20	31	0	0	0	25	0	21	1
6:30:00 AM	24	38	0	0	0	17	0	59	0
6:45:00 AM	34	56	0	0	0	26	0	61	0
7:00:00 AM	33	55	0	0	0	24	0	70	0
7:15:00 AM	33	47	0	0	0	38	0	55	0
7:30:00 AM	33	61	0	1	0	30	0	66	0
7:45:00 AM	36	57	0	0	0	20	0	54	1
8:00:00 AM	28	54	0	0	0	17	0	54	0
8:15:00 AM	36	67	0	0	0	13	0	58	0
8:30:00 AM	22	56	0	0	0	29	0	38	1
8:45:00 AM	23	61	0	0	0	21	0	46	0
9:00:00 AM	21	40	0	0	0	16	0	40	1
9:15:00 AM	21	39	0	0	0	17	0	49	1
9:30:00 AM	19	47	0	0	0	21	0	41	0
9:45:00 AM	28	46	0	0	0	18	0	43	1
10:00:00 AM	22	40	0	0	0	16	0	39	0
10:15:00 AM	19	43	0	0	0	15	0	41	1
10:30:00 AM	19	40	0	1	0	17	0	52	0
10:45:00 AM	12	59	0	0	0	29	0	56	1
11:00:00 AM	8	56	0	0	0	24	0	49	1
11:15:00 AM	22	44	0	2	0	21	0	45	0
11:30:00 AM	17	55	0	0	0	14	0	41	0
11:45:00 AM	15	51	0	0	0	22	0	44	2
12:00:00 PM	26	64	0	0	0	21	0	45	1
12:15:00 PM	19	51	0	0	0	24	0	46	1
12:30:00 PM	22	50	0	0	0	31	0	40	0
12:45:00 PM	16	62	0	0	0	26	0	57	1
1:00:00 PM	17	54	0	0	0	20	0	31	0
1:15:00 PM	29	51	0	0	0	26	0	45	1
1:30:00 PM	18	55	0	1	0	21	0	44	1
1:45:00 PM	21	65	0	0	0	28	0	59	0
2:00:00 PM	24	74	0	0	0	21	0	51	2
2:15:00 PM	23	81	0	0	0	24	0	58	0
2:30:00 PM	16	67	0	0	0	20	0	55	1
2:45:00 PM	29	80	0	1	0	32	0	49	1
3:00:00 PM	33	74	0	1	0	31	0	68	2
3:15:00 PM	24	75	0	0	0	23	0	70	0
3:30:00 PM	28	85	0	0	0	36	0	67	1
3:45:00 PM	34	87	0	0	0	28	0	83	2
4:00:00 PM	24	85	0	1	0	30	0	86	1
4:15:00 PM	38	94	0	1	0	41	0	62	2
4:30:00 PM	26	78	0	5	0	43	0	78	0
4:45:00 PM	35	78	0	0	0	40	0	67	1
5:00:00 PM	34	77	0	0	0	53	0	90	0
5:15:00 PM	25	84	0	0	0	50	0	68	1
5:30:00 PM	20	108	0	3	0	34	0	69	0
5:45:00 PM	19	87	0	0	0	24	0	64	1
12-Hour Total	**1,156**	**2,928**	**0**	**17**	**0**	**1,232**	**0**	**2,596**	**31**
AM Peak Hr									
6:45 - 7:45 AM	**133**	**219**	**0**	**1**	**0**	**118**	**0**	**252**	**0**
PM Peak Hr									
4:15 - 5:15 PM	**133**	**327**	**0**	**6**	**0**	**177**	**0**	**297**	**3**

Berkshire Valley Road with N. Dell Avenue
Thursday May 27, 2021
6:00 AM to 6:00 PM

Passenger Vehicles

Start Time	Berkshire Valley Road Southbound			N Dell Avenue Westbound			Berkshire Valley Road Northbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
6:00:00 AM	10	19	0	0	0	7	0	19	0
6:15:00 AM	17	28	0	0	0	18	0	20	1
6:30:00 AM	24	36	0	0	0	17	0	52	0
6:45:00 AM	32	55	0	0	0	21	0	60	0
7:00:00 AM	32	53	0	0	0	22	0	68	0
7:15:00 AM	30	44	0	0	0	31	0	55	0
7:30:00 AM	31	61	0	1	0	28	0	65	0
7:45:00 AM	31	55	0	0	0	14	0	52	1
8:00:00 AM	27	53	0	0	0	13	0	54	0
8:15:00 AM	36	59	0	0	0	10	0	57	0
8:30:00 AM	22	53	0	0	0	25	0	38	1
8:45:00 AM	21	60	0	0	0	20	0	46	0
9:00:00 AM	20	40	0	0	0	14	0	38	1
9:15:00 AM	20	38	0	0	0	12	0	46	1
9:30:00 AM	15	45	0	0	0	20	0	40	0
9:45:00 AM	24	43	0	0	0	13	0	43	1
10:00:00 AM	19	40	0	0	0	14	0	38	0
10:15:00 AM	17	41	0	0	0	13	0	39	1
10:30:00 AM	18	39	0	0	0	15	0	52	0
10:45:00 AM	12	59	0	0	0	26	0	53	1
11:00:00 AM	6	56	0	0	0	22	0	46	1
11:15:00 AM	19	44	0	2	0	19	0	43	0
11:30:00 AM	13	53	0	0	0	12	0	40	0
11:45:00 AM	13	49	0	0	0	21	0	43	2
12:00:00 PM	21	63	0	0	0	18	0	45	1
12:15:00 PM	15	49	0	0	0	22	0	46	1
12:30:00 PM	19	50	0	0	0	26	0	40	0
12:45:00 PM	13	61	0	0	0	21	0	50	1
1:00:00 PM	17	53	0	0	0	19	0	31	0
1:15:00 PM	24	49	0	0	0	20	0	44	0
1:30:00 PM	16	53	0	1	0	21	0	39	1
1:45:00 PM	18	64	0	0	0	23	0	56	0
2:00:00 PM	17	69	0	0	0	20	0	47	2
2:15:00 PM	21	78	0	0	0	22	0	54	0
2:30:00 PM	14	59	0	0	0	16	0	53	1
2:45:00 PM	23	76	0	1	0	31	0	43	1
3:00:00 PM	26	71	0	1	0	26	0	64	2
3:15:00 PM	21	71	0	0	0	22	0	69	0
3:30:00 PM	27	80	0	0	0	34	0	64	1
3:45:00 PM	30	84	0	0	0	28	0	77	2
4:00:00 PM	21	78	0	1	0	27	0	82	1
4:15:00 PM	30	91	0	1	0	37	0	60	2
4:30:00 PM	20	76	0	5	0	39	0	77	0
4:45:00 PM	32	72	0	0	0	39	0	65	1
5:00:00 PM	31	72	0	0	0	52	0	87	0
5:15:00 PM	22	80	0	0	0	47	0	68	1
5:30:00 PM	17	105	0	3	0	33	0	67	0
5:45:00 PM	18	86	0	0	0	24	0	60	1
12-Hour Total	**1,022**	**2,813**	**0**	**16**	**0**	**1,094**	**0**	**2,495**	**30**
AM Peak Hr									
6:45 - 7:45 AM	**125**	**213**	**0**	**1**	**0**	**102**	**0**	**248**	**0**
PM Peak Hr									
4:45 - 5:45 PM	**102**	**329**	**0**	**3**	**0**	**171**	**0**	**287**	**2**

Berkshire Valley Road with N. Dell Avenue
Thursday May 27, 2021
6:00 AM to 6:00 PM

Light Trucks

Start Time	Berkshire Valley Road Southbound			N Dell Avenue Westbound			Berkshire Valley Road Northbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
6:00:00 AM	1	0	0	0	0	1	0	0	0
6:15:00 AM	0	1	0	0	0	1	0	0	0
6:30:00 AM	0	0	0	0	0	0	0	3	0
6:45:00 AM	1	1	0	0	0	0	0	0	0
7:00:00 AM	0	1	0	0	0	0	0	1	0
7:15:00 AM	2	1	0	0	0	0	0	0	0
7:30:00 AM	1	0	0	0	0	1	0	0	0
7:45:00 AM	1	0	0	0	0	1	0	0	0
8:00:00 AM	0	1	0	0	0	0	0	0	0
8:15:00 AM	0	5	0	0	0	1	0	0	0
8:30:00 AM	0	2	0	0	0	2	0	0	0
8:45:00 AM	0	0	0	0	0	0	0	0	0
9:00:00 AM	0	0	0	0	0	0	0	0	0
9:15:00 AM	1	1	0	0	0	0	0	0	0
9:30:00 AM	0	0	0	0	0	0	0	0	0
9:45:00 AM	0	0	0	0	0	0	0	0	0
10:00:00 AM	1	0	0	0	0	1	0	1	0
10:15:00 AM	2	2	0	0	0	0	0	2	0
10:30:00 AM	0	1	0	1	0	0	0	0	0
10:45:00 AM	0	0	0	0	0	0	0	2	0
11:00:00 AM	1	0	0	0	0	1	0	2	0
11:15:00 AM	0	0	0	0	0	0	0	2	0
11:30:00 AM	1	2	0	0	0	2	0	1	0
11:45:00 AM	0	2	0	0	0	1	0	1	0
12:00:00 PM	0	0	0	0	0	0	0	0	0
12:15:00 PM	0	1	0	0	0	0	0	0	0
12:30:00 PM	3	0	0	0	0	4	0	0	0
12:45:00 PM	1	1	0	0	0	4	0	0	0
1:00:00 PM	0	1	0	0	0	0	0	0	0
1:15:00 PM	2	1	0	0	0	2	0	1	1
1:30:00 PM	2	2	0	0	0	0	0	4	0
1:45:00 PM	2	0	0	0	0	2	0	2	0
2:00:00 PM	4	5	0	0	0	0	0	3	0
2:15:00 PM	0	2	0	0	0	1	0	3	0
2:30:00 PM	2	7	0	0	0	2	0	1	0
2:45:00 PM	2	3	0	0	0	1	0	4	0
3:00:00 PM	3	1	0	0	0	5	0	4	0
3:15:00 PM	0	1	0	0	0	0	0	0	0
3:30:00 PM	1	2	0	0	0	2	0	0	0
3:45:00 PM	2	1	0	0	0	0	0	1	0
4:00:00 PM	1	1	0	0	0	1	0	0	0
4:15:00 PM	5	1	0	0	0	2	0	1	0
4:30:00 PM	0	1	0	0	0	1	0	0	0
4:45:00 PM	0	1	0	0	0	0	0	0	0
5:00:00 PM	3	5	0	0	0	1	0	3	0
5:15:00 PM	2	4	0	0	0	0	0	0	0
5:30:00 PM	2	3	0	0	0	1	0	2	0
5:45:00 PM	0	0	0	0	0	0	0	4	0
12-Hour Total	**49**	**64**	**0**	**1**	**0**	**41**	**0**	**48**	**1**
AM Peak Hr									
11:00 - 12:00 AM	**2**	**4**	**0**	**0**	**0**	**4**	**0**	**6**	**0**
PM Peak Hr									
2:15 - 3:15 PM	**7**	**13**	**0**	**0**	**0**	**9**	**0**	**12**	**0**

Berkshire Valley Road with N. Dell Avenue
Thursday May 27, 2021
6:00 AM to 6:00 PM

Heavy Trucks

Start Time	Berkshire Valley Road Southbound			N Dell Avenue Westbound			Berkshire Valley Road Northbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
6:00:00 AM	0	0	0	0	0	7	0	3	0
6:15:00 AM	3	2	0	0	0	6	0	1	0
6:30:00 AM	0	2	0	0	0	0	0	4	0
6:45:00 AM	1	0	0	0	0	5	0	1	0
7:00:00 AM	1	1	0	0	0	2	0	1	0
7:15:00 AM	1	2	0	0	0	7	0	0	0
7:30:00 AM	1	0	0	0	0	1	0	1	0
7:45:00 AM	4	2	0	0	0	5	0	2	0
8:00:00 AM	1	0	0	0	0	4	0	0	0
8:15:00 AM	0	3	0	0	0	2	0	1	0
8:30:00 AM	0	1	0	0	0	2	0	0	0
8:45:00 AM	2	1	0	0	0	1	0	0	0
9:00:00 AM	1	0	0	0	0	2	0	2	0
9:15:00 AM	0	0	0	0	0	5	0	3	0
9:30:00 AM	4	2	0	0	0	1	0	1	0
9:45:00 AM	4	3	0	0	0	5	0	0	0
10:00:00 AM	2	0	0	0	0	1	0	0	0
10:15:00 AM	0	0	0	0	0	2	0	0	0
10:30:00 AM	1	0	0	0	0	2	0	0	0
10:45:00 AM	0	0	0	0	0	3	0	1	0
11:00:00 AM	1	0	0	0	0	1	0	1	0
11:15:00 AM	3	0	0	0	0	2	0	0	0
11:30:00 AM	3	0	0	0	0	0	0	0	0
11:45:00 AM	2	0	0	0	0	0	0	0	0
12:00:00 PM	5	1	0	0	0	3	0	0	0
12:15:00 PM	4	1	0	0	0	2	0	0	0
12:30:00 PM	0	0	0	0	0	1	0	0	0
12:45:00 PM	2	0	0	0	0	1	0	7	0
1:00:00 PM	0	0	0	0	0	1	0	0	0
1:15:00 PM	3	1	0	0	0	4	0	0	0
1:30:00 PM	0	0	0	0	0	0	0	1	0
1:45:00 PM	1	1	0	0	0	3	0	1	0
2:00:00 PM	3	0	0	0	0	1	0	1	0
2:15:00 PM	2	1	0	0	0	1	0	1	0
2:30:00 PM	0	1	0	0	0	2	0	1	0
2:45:00 PM	4	1	0	0	0	0	0	2	0
3:00:00 PM	4	2	0	0	0	0	0	0	0
3:15:00 PM	3	3	0	0	0	1	0	1	0
3:30:00 PM	0	3	0	0	0	0	0	3	0
3:45:00 PM	2	2	0	0	0	0	0	5	0
4:00:00 PM	2	6	0	0	0	2	0	4	0
4:15:00 PM	3	2	0	0	0	2	0	1	0
4:30:00 PM	6	1	0	0	0	3	0	1	0
4:45:00 PM	3	5	0	0	0	1	0	2	0
5:00:00 PM	0	0	0	0	0	0	0	0	0
5:15:00 PM	1	0	0	0	0	3	0	0	0
5:30:00 PM	1	0	0	0	0	0	0	0	0
5:45:00 PM	1	1	0	0	0	0	0	0	0
12-Hour Total	**85**	**51**	**0**	**0**	**0**	**97**	**0**	**53**	**0**
AM Peak Hr									
6:45 - 7:45 AM	**4**	**3**	**0**	**0**	**0**	**15**	**0**	**3**	**0**
PM Peak Hr									
4:00 - 5:00 PM	**5**	**5**	**0**	**0**	**0**	**4**	**0**	**2**	**0**

Appendix C

Project Purpose and Need Statement



NJTPA

NJTPA Freight Concept Development Program

Jacobs

Purpose & Need Statement

The purpose of this project is to eliminate the height restriction that the Chester Branch rail bridge creates on Berkshire Valley Road (642), improve safety, and to improve the geometric configuration of the intersection of Berkshire Valley Road with N. Dell Avenue to efficiently accommodate large truck movements.

Existing Conditions & Issues



The Chester Branch is a four-mile rail line in Roxbury owned by Morris County. The line branches off from the NJ TRANSIT Morristown Line at Lake Junction and runs southward to Succasunna. Two customers are currently served by the Chester Branch, with additional under-developed former industrial properties that could potentially be served in the future.

The Chester Branch crosses over Berkshire Valley Road on a single track, single span thru-girder bridge. The rail bridge restricts overhead clearance on Berkshire Valley Road to 11' 5" which limits the size of trucks that can travel on the road. This height restriction requires larger vehicles to divert to N. Dell Avenue when using Berkshire Valley Road to travel between I-80 and US-46. This also limits truck access to the Hercules site, which is located near the bridge. The former Hercules Powder Plant is a 900-acre site that is one of the largest vacant industrial properties in the region. In addition, there are industrial properties on the east side of Berkshire Valley Road and along the east side of the Chester Branch that hold significant potential for new rail-served industrial development.

Trucks accessing these sites from US-46 to the south must pass through the residential area of Kenvil north of US-46 along N. Dell Avenue. Future industrial development envisioned for the Hercules site and other under-developed former industrial properties would exacerbate this condition.



Despite advance warning signs and the posting of the vertical clearance on the bridge itself, there have been a total of 10 documented incidents where a truck struck the bridge resulting in varying degrees of damage over the past 3 years. Most recently on Tuesday, July 13, 2021, a tri-axle truck traveling northbound on Berkshire Valley Road struck the bridge resulting is significant damage. The extent of the damage forced the closure of the Chester Branch to rail traffic through Friday, July 23, and a partial closure of Berkshire Valley Road

limiting roadway travel to one lane. Elimination of this vertical constraint is critical to improving safety along Berkshire Valley Road and the Chester Branch.

In addition to the height restriction imposed by the bridge, the geometric configuration of the intersection at Berkshire Valley Road and N. Dell Avenue is difficult for trucks to navigate. Without these impediments, Berkshire Valley Road would be the preferred truck route through this area between I-80 and US-46 as it avoids Roxbury's residential neighborhoods.



The Chester Branch is one of three rail lines Morris County owns that serve a wide range of industrial customers. Maintaining freight rail service and improving truck access to this area is critical. Addressing the constraints on Berkshire Valley Road would not just improve safety but would facilitate industrial and economic growth and improve quality of life in Roxbury Township. This project aligns with and supports New Jersey's State Strategic Plan, which presents a blueprint for achieving sustainable economic growth balanced with natural resource preservation and quality of life for New Jersey residents.

The objectives of this project are fully consistent with the goals and priorities set forth in the NJTPA's current Long Range Transportation Plan (LRTP), Plan 2050, NJDOT's Statewide Freight Plan, as well as the additional plans listed below which support investments in the rail infrastructure and eliminating weight and overhead clearance restrictions throughout the NJTPA region as well as New Jersey. Improvements to the rail service within the corridor would create opportunities for growing the existing rail served businesses and attracting new developments which would, as a result, increase the number of jobs as well as the economic vitality of the region.

- Morris County Freight Infrastructure & Land Use Analysis, July 2011
- NJTPA Rail Freight Capacity and Needs Assessment to Year 2040, June 2013
- Morris and Warren County Rail Corridor Study, July 2013
- NJDOT Freight Rail Strategic Plan, June 2014
- Morris County Circulation Element, October 2018

Cultural and Historic Resources

Berkshire Valley Road is located adjacent to the historic Morris Canal. Preservation of this important historic resource will be a key consideration in the development of alternatives that meet the project purpose and need. Any alternative that modifies the alignment or profile of the Chester Branch or Berkshire Valley Road will require close coordination with the State Historic Preservation Office (SHPO).

GOALS AND OBJECTIVES

The primary goals of this project are to:

1. Improve safety along Berkshire Valley Road, N. Dell Avenue, and the Chester Branch
2. Support existing and future freight supported development

Within each of these overarching goals, specific objectives have been identified as noted below:

1. Improve safety along Berkshire Valley Road, N. Dell Avenue, and the Chester Branch
   A. **Allow** for the movement of large trucks along Berkshire Valley Road
   B. **Support** economic vitality by supporting existing and future industrial development competitiveness by improving truck and rail access

2. Support existing and future freight supported development
   A. **Reduce** the operational cost of truck movements through the study area
   B. **Promote** retention and expansion of existing rail and truck served industrial businesses in Morris County
   C. **Attract** investment in industrial development of vacant and underutilized industrial parcels along the Chester Branch

Appendix D

Cultural Resources Screening Report



NJTPA

NJTPA Freight Concept Development Program

Jacobs

Cultural Resources Screening
Freight Concept Development Program
Berkshire Valley Road Truck Circulation Project
Township of Roxbury, Morris County, New Jersey

September 30, 2022

The North Jersey Transportation Planning Authority (NJTPA) is preparing a Freight Concept Development Program Study for the Berkshire Valley Road Truck Circulation Project in the Township of Roxbury, Morris County, New Jersey. This project will receive a federal grant from the United States Department of Transportation that will be executed jointly by the NJTPA and the New Jersey Institute of Technology (NJIT). The NJTPA has undertaken this project in close cooperation with the New Jersey Department of Transportation (NJDOT), and the Bureaus of Local Aid, Multimodal Services and Environmental Program Resources (BEPR).

This project seeks to improve truck circulation along Berkshire Valley Road by providing a more direct truck route that would avoid residential areas. The project will examine the low overhead clearance where the Morris County-owned Chester Branch Railroad Bridge (Structure No. 14C42.37) crosses Berkshire Valley Road, and improvements to the configuration of the intersection of North Dell Avenue and Berkshire Valley Road, northeast of the aforementioned railroad bridge. Freight mobility would be improved by preventing truck collisions with the railroad bridge, which often results in the bridge being taken out of service for repairs and impacting rail operations.

Structure No. 14C42.37, Chester Branch over Berkshire Valley Road (CR 642) dates to 1910. The bridge is a single span, riveted steel through girder with riveted steel floorbeams and rolled steel stringers with open timber tie deck (non-electrified) that is supported by concrete abutments (Van Cleef Engineering Associates 2018). The bridge is 79-foot long by 13 feet, 8 inches wide. The structure is classified as Functionally Obsolete due to the substandard vertical underclearance (11'-5" posting, 12'-2" existing). The severely restricted vertical underclearance has resulted in numerous vehicular collisions and damage to the structure (Van Cleef Engineering Associates 2018).

Since the project involves eliminating the vertical constraints associated with the Chester Branch Railroad Bridge and intersection improvements at North Dell Avenue and Berkshire Valley Road, several alternatives for each are under consideration. The bridge itself and various alternatives for the intersection improvements fall in the project study area.

The work of developing the alternative road alignments and vertical constraint elimination alternatives is being performed as part of a Freight Concept Development Program that will mirror the Local Capital Project Delivery (LCPD) program that funds local bridge and roadway projects. As such, the Freight Concept Development study will be similar to the Local Concept Development (LCD) studies performed for other transportation projects and will result in the development of several alternatives and the selection of Preliminary Preferred Alternatives (PPA) for the Chester Branch Railroad Bridge and intersection improvements at North Dell Avenue and Berkshire Valley Road.

The proposed alternative road alignments (henceforth "project alternatives") for the Berkshire Valley Road Truck Circulation Project are plotted on Figure 1 (see Attachment A). For reference, the figure shows the spatial relationship of the project alternatives to two historic districts: the adjoining Morris Canal Historic

District (NJR: 11/26/1973; NR: 10/1/1974; SHPO Opinion: 4/27/2004) and the nearby Old Main Delaware, Lackawanna and Western Railroad (DL&WRR) Historic District (SHPO Opinion: 9/23/1996). The main focus of this study was on the project alternatives which are found within a larger study area defined by the project team.

For the vertical constraint elimination project (i.e. Berkshire Valley Road Bridge), several alternatives are under consideration. These alternatives include depressing Berkshire Valley Road, depressing the rail line, new roadway alignments that close or maintain Berkshire Valley Road, installation of a new parallel rail alignment, and varying alternatives for elevating the bridge to a 13-foot, 6-inch underclearance and full replacement alternatives for a 14-foot, 3-inch underclearance.

At this point, the alternative that appears most favorable is the full bridge replacement with a 14-foot, 3-inch underclearance. Alternative 5.2a is the possible PPA for the Berkshire Valley Road Bridge project and is shown in Attachment B. For Alternative 5.2a, the replacement bridge will be placed within the footprint of the current bridge, and will include a girder structure with precast concrete cantilever abutments (see Attachment B). The rail will be raised approximately 2-feet, 1-inch in order to accommodate for increased vertical clearance. The proposed abutments fall largely within the limits of the existing abutments. Alternative 5e, which includes a girder bridge with pile supported substructure, is also under consideration (see Attachment B). The pile supported substructure includes pre-cast concrete caps. While footprint of Alternative 5.2e falls within the confines of the existing bridge, the anticipated limits of disturbance extend slightly beyond the existing abutments. Both alternatives minimize overall impacts.

CULTURAL RESOURCES SCREENING

The goal of this Cultural Resources Screening is to identify known cultural resource constraints within or proximate to the eight project alternatives for the Berkshire Valley Road Truck Circulation Project, and location of the Chester Branch Railroad Bridge (Attachment A: Figures 1, 2, and 3; Table 1; see Attachment B). Cultural resource constraints include known archaeological resources and historic architectural properties that are listed in the New Jersey Register of Historic Places (NJR) and the National Register of Historic Places (NRHP), or are eligible or potentially eligible for the NRHP. The project alternatives delineated for the purposes of this Cultural Resources Screening take into account the maximum, possible extent of the proposed improvements. The project limits may be refined as the project goes through the LCD phase. Tasks completed for the historic architectural component of the screening included background research identify properties within approximately one-half mile of the eight project alternatives that are listed in the NJR and/or NRHP or eligible for the NRHP. Tasks completed for the archaeological portion of this screening consisted of background research to identify any registered archaeological sites as well as prior cultural resources surveys completed within one mile of the eight currently proposed project alternatives. The results of this screening may be utilized in the Environmental Screening document.

The cultural resources screening was prepared by archaeologist Theodore Gold, MA, RPA and architectural historian Sarah Rosso, BA, under the direction of Paul McEachen, MA, RPA and Allee Davis, MS. This work effort was prepared to support the initiation of consultation with the New Jersey Historic Preservation Office (NJHPO), and the preparation of an Alternatives Analysis and CD report for the project.

Background research to identify historic properties listed on the NJR and/or NRHP or eligible for listing on the NRHP and to examine previous historic sites surveys and regulatory surveys on file at the NJHPO's facilities in Trenton was not possible due to COVID-19 restrictions. However, a good faith effort

was made to conduct research by reviewing the NJHPO's LUCY cultural resources geographic information system program, the updated list of historic properties, and the list of cultural resources survey reports on the NJHPO's website; surveys on file in the RGA in-house library were also reviewed. Files at the New Jersey State Museum (NJSM) were checked for the presence of registered archaeological sites within or near the study area. Additional background research consisted of a review of historic and modern maps, atlases, and aerial imagery and pertinent secondary sources available online and in the RGA in-house library.

Table 1: Known cultural resources inside or within 0.5 miles of the eight project alternatives (Intersection Project).

Cultural Resource	Project Alternative Number							
	1	2	3	4	5	6	7	8
Morris Canal	Inside	Inside	Inside	Inside	Inside	Inside	Inside	Inside
Chester Branch of DL&WRR	Inside	Within 0.5 miles	Within 0.5 miles	Within 0.5 miles	Within 0.5 miles	Within 0.5 miles	Within 0.5 miles	Within 0.5 miles
Main Branch of DL&WRR	Within 0.5 miles	Within 0.5 miles	Within 0.5 miles	Within 0.5 miles	Within 0.5 miles	Within 0.5 miles	Within 0.5 miles	Within 0.5 miles

DL&WRR - Delaware, Lackawanna and Western Railroad

Overall Project Environmental Setting

The project alternatives are located within the New Jersey Highlands Physiographic Province and are bordered by the Kittatinny Valley to the west and the Piedmont Lowlands to the east. In general, the Highlands consist of northeast-southwest trending broad, rounded, or flat-topped mountain ranges separated by deep, narrow valleys (Wolfe 1977). A few river valleys, including the Pequannock, the Delaware, and the Rockaway, run transverse to the general trend and the transverse valleys carved by these waterways have afforded pathways across the Highlands for people, railroads, and roads. The project alternatives are underlain by Middle and Lower Cambrian Leithsville Formation dolomite (Drake et al. 1996; NJDEP 2019a). Surficial sediments are mapped as Late Wisconsinan Glacial Lake Succasunna Deposits and bedrock quarries are located to the east (Stone et al. 2002; NJDEP 2022a). Soil types within the eight project alternatives consist of either Rockaway gravelly sandy loam, 3 to 8 percent slopes (RocB) or Rockaway sandy loam, 8 to 15 percent slopes, very stony (RobCb). Rockaway soils are common to glacial settings and are typically moderately well to very well drained. A portion of Alternative 1 falls in urban land soils near the Nordic Contracting Company's facilities (NRCS 2018). Rockaway soils are found in upland, ground moraine settings.

The eight proposed project alternatives are located on a ground moraine at elevations ranging from approximately 700 to 736 feet above mean sea level (see Figure 3). The project alternatives lie approximately 1,000 feet from a tributary of the Rockaway River. However, wetlands could be much closer. Watercourses have been altered by extensive mining activities that have taken place since colonial times. Several man-made lakes are evident on the landscape. The Rockaway River empties into the Boonton Reservoir and drains into the Passaic River. The Passaic River empties into the Newark Bay and then into the Atlantic Ocean via the Kill Van Kull, Upper and Lower New York Bay, and the Raritan Bay. Vegetation within the eight alternatives is varied and includes manicured grass, secondary growth deciduous trees, and undergrowth.

Brief Historic Context and Map Review

A preliminary review of historic maps and aerial photographs was undertaken and selected maps and aerial photographs are attached hereto (see Figures 4 through 9). The study area is depicted; however, the focus of the discussion is on the area proximate to the project alternatives.

Roxbury Township was formed from Morris Township in 1740, and officially incorporated in 1798. The township sustained itself on the productive iron mines and charcoal manufactories throughout the eighteenth and nineteenth centuries (Halsey et al. 1882: 39-40, 364). Eighteenth-century maps (Faden 1777; Hills 1781; see Figures 4 and 5) show several forges near the study area, including the Brookland Forge near Lake Hopatcong (Faden 1777), the I. Beaman Forge, and Hurd's Forge (Hills 1781). Hills' 1781 map shows the Rockaway River and Stephen's Brook, with the latter being crossed by a precursor to Dewey Avenue. Despite the forges and associated buildings, eighteenth-century maps show no evidence of structures within the study area.

By 1831, the Morris Canal had been built through the study area and the footprints of North Dell Avenue and U.S. Highway 46 had been laid (Gordon 1833; Figure 6). No mills were depicted in the study area. Lightfoot's 1853 map charts several modern landmarks around the study area, including Marine Lake, Duck Pond, the Morris Canal, and the Warren, Morris, and Essex Railroad. North Dell Avenue and Berkshire Valley Road had both been laid by this time. A residence belonging to H. Tebo is depicted near the intersection of North Dell Avenue and Berkshire Valley Road (Lightfoot 1853; see Figure 7). The Chester Branch of the Delaware, Lackawanna and Western Railroad was laid through the area by 1867, as was a minor railway (siding) extending from the study area to "Schrub Oak or Dell Mines" (Hopkins 1867; see Figure 8). The Chester Branch of the DL&WRR was built for a length of approximately four miles to haul iron ore from Lake Junction near Wharton to Chester (Richard Grubb & Associates, Inc. 2021a, b). The Hopkins map also shows three structures and associated farm fields at the intersection of North Dell Avenue and Berkshire Valley Road (see Figure 8). Robinson's 1887 map of the study area shows the Morris Canal, the Chester Branch, and two dwellings near the intersection of North Dell Avenue and Berkshire Valley Road. One lies between the two roads and is labelled as belonging to M. Brody, while the other lies north of Berkshire Valley Road and is labelled as belonging to A. Rush (Robinson 1887; see Figure 9). The map does not show the ancillary railway line that connects the Chester Branch to "Schrub Oak or Dell Mines." The current railroad bridge carrying Chester Branch over Berkshire Valley Road was built in approximately 1910 (Van Cleef Engineering Associates 2018), and lies adjacent to the Morris Canal (see Attachment A: Figure 1).

By 1929, the Morris Canal had been abandoned and filled in (Lane 1939: 246). Aerial photography of the study area shows that the southern industrial and commercial lots along North Dell Avenue, south of the project alternatives, were developed between 1931 and 1957 (NETR 1931, 1957; Figure 10). Suburban infill to the west along Berkshire Valley Road, commercial development to the south, and the industrial excavation to the east of the study area took place between the mid- and late twentieth century (NETR 1963, 1970, 1979. 1984, 1991, 1995; Figure 11). The final block of houses on the west side of Berkshire Valley Road were added in the 1990s, the same time period as the final filling of the artificial pond to the east (NETR 1991, 1995). The study area fully achieved its modern-day appearance by 1995 (NETR 1995, 2002, 2019).

Known Historic Properties

Background research conducted online with the LUCY cultural resources map viewer indicated that there is one previously identified historic resource listed in the NJR and NRHP within the study area: the Morris Canal Historic District (NJR: 11/26/1973; NR: 10/1/1974; SHPO Opinion: 4/27/2004) (NJDEP 2022b) (see Figure 1). The Morris Canal Historic District runs through the northern portion of the study area, alongside

Berkshire Valley Road, and is listed in the NRHP under Criteria A, B, C, and D. The Morris Canal meets Criterion A for its association with critical transportation, industrial, and economic themes; Criterion B for its association with noted engineers and inventors; Criterion C for its technological innovations; and Criterion D for its information potential relating to canal engineering and construction, as well as the culture and lifeways of nineteenth-century canal workers and travelers. The period of significance for the historic district ranges from 1831 to 1924.

The Old Main DL&WRR Historic District (SHPO Opinion 9/24/1996, revised 6/7/2004) lies approximately 2,150 feet north of the study area (see Figure 1). The Old Main DL&WRR Historic District is eligible for the NRHP under Criteria A and C for its associations with suburbanization, transportation, engineering, and architecture.

Registered Archaeological Sites

A review of the NJSM site files and standard references (Cross 1941; Skinner and Schrabisch 1913) indicated that there are no archaeological sites located within the study area and it does not fall within an archaeological site grid (NJDEP 2022b).

Two registered archaeological sites were located within one mile of the study area. The Mount Arlington Station/Post Office Site (28-Mr-300) is located one mile west of the study area. It is a late nineteenth-century historic site consisting of deposits and partial foundations associated with the DL&WRR. This site is a contributing resource to the Old Main DL&WRR Historic District (SHPO Opinion: 6/7/2004). The Morris Canal Lock 2 East Site (28-Mr-320) is located 3,150 feet to northeast of the study area. It consists of nineteenth-century historic deposits associated with a canal lock and lock tender's house along the Morris Canal.

New Jersey Historic Bridge Survey

The Chester Branch Railroad Bridge over Berkshire Valley Road, which is located within the study area, was not identified in the 1994 New Jersey Historic Bridge Survey (A.G. Lichtenstein & Associates, Inc. 1994). The bridge dates to circa 1910 (Van Cleef Engineering Associates 2018). The New Jersey Historic Bridge Survey only identified roadway bridges over 50 years of age at the time of survey, not railroad bridges. No other bridges identified in the New Jersey Historic Bridge Survey are located in the study area.

Planning Surveys

The 1987 Cultural Resources Survey of Roxbury Township does not identify any historic architectural resources within or adjacent to the study area, with the exception of the NJR- and NRHP-listed Morris Canal Historic District (Acroterion 1987).

Cultural Resources Surveys

A review of the NJHPO files indicated that five prior cultural resources surveys have been conducted within or adjacent to the study area (Dewberry 2013; Morris County 2014; NV5 et al. 2018; The RBA Group 2011; Richard Veit and Dennis Bertland Associates 2019). Of these, none contained an archaeological component, nor did they identify any additional archaeological resources within or adjacent to the study area. In addition, none of the prior cultural resources surveys identified historic architectural resources within or adjacent to the study area other than the Morris Canal Historic District and the Old Main DL&WRR Historic District.

Fieldwork

Historic Architecture

A site visit was conducted on March 2, 2022, and has been documented in Plates 1-48, the locations and directions of which are illustrated on Figure 12. There is one bridge located within the study area: the Chester Branch Railroad Bridge over Berkshire Valley Road (see Plates 1 and 2). Architecture in the study area mostly consists of mid- to late twentieth-century, single-family, residential dwellings located along the northwest side of Berkshire Valley Road (see Plates 3-5, 6, 7, and 8-13). At the southern end of the study area are several late nineteenth- to early twenty-first-century warehouses and industrial buildings, along North Dell Avenue between its intersections with the Roxbury Recycling Center Driveway and Pine Street (see Plates 19-23). The Morris Canal Historic District runs through the study area on a roughly northeast to southwest alignment; evidence of the canal's historic route, which has been abandoned and filled in, can be seen along depressed sections in a wooded area between North Dell Avenue and Berkshire Valley Road (see Plate 27). A majority of the project intersection alternatives would entail cutting a new road through this wooded area, connecting North Dell Avenue and Berkshire Valley Road (see Plates 21, 37, and 38).

Archaeology

The project archaeologist conducted a site visit on March 2, 2022. The path of the Morris Canal was still visible throughout the study area, where it had been partially filled in with redeposited soils (Plates 24 through 27). The proposed route of Alternative 1 was largely obscured by wetlands vegetation (Plates 28 through 30), while the routes of Alternatives 2 through 5 showed significantly less secondary growth along the interior (Plates 31 through 41). The route of Alternative 8 showed tree fall activity and some evidence of earthmoving associated with grading operations presumably from a nearby quarry. The Morris Canal was also present in this alternative (Plates 42 through 45). The proposed routes of Alternatives 6 and 7 showed the presence of the Morris Canal (see Plates 27 and 39). Examination of the study area showed sparse secondary tree growth in the area bounded by Berkshire Valley Road and North Dell Avenue (Plate 46). A concrete structure was located along North Dell Avenue near the footprint of Alternative 1 (Plates 47 and 48). It is unknown whether the structure had a domestic or industrial related function.

Summary

Historic Architecture

There is one previously identified historic architectural resource listed in the NJR and NRHP within the study area: the Morris Canal Historic District (NJR: 11/26/1973; NR: 10/1/1974; SHPO Opinion: 4/27/2004). There is one other previously identified historic resource eligible for listing in the NRHP within one-half-mile: the Old Main DL&WRR Historic District (SHPO Opinion: 9/23/1996, revised 6/7/2004). All other structures over 50 years of age within the study area, including the Chester Branch Railroad Bridge over Berkshire Valley Road, the Chester Branch of the DL&WRR, and several dwellings along Berkshire Valley Road, have not yet been evaluated for NRHP eligibility. Project impacts to historic properties should be considered during the Local Preliminary Engineering (LPE) phase of the proposed project. All eight of the project alternatives involve the laying of new roads through the boundary of the Morris Canal Historic District, and are all located within one-half-mile of the Old Main DL&WRR Historic District. As such, each of the eight project alternatives would have a direct impact on the Morris Canal Historic District. Any potential impacts to the Old Main DL&WRR Historic District, any other previously unidentified historic resources, would be indirect.

An evaluation of the National Register eligibility of the 112-year old Chester Branch Railroad Bridge will be necessary as part of Section 106 compliance. Assessing whether the project is an encroachment on the State

and National Register listed Morris Canal will also be required under New Jersey Register of Historic Places Act review.

Archaeology

No registered archaeological sites are located within the study area and two registered archaeological sites are located within one mile. The closest site, 28-Mr-320, is a canal lock and lock tender's house located 3,150 feet to the northeast of the study area, which is associated with the Morris Canal Historic District. The study area encompasses a portion of the Morris Canal Historic District, and lies within a half mile of the Old Main DL&WRR Historic District. As a result, the study area for the Berkshire Valley Road Truck Circulation Project is sensitive for historic cultural resources due to its proximity to the Morris Canal Historic District and possible domestic resources. The study area shows evidence of the Morris Canal within secondary growth deciduous woodlands. Some disturbances were also observed. However, considering the topographic setting, undisturbed areas that are under 15% slopes are considered to be generally sensitive for pre-Contact archaeological resources and especially locations proximate to wetlands.

A Cultural Resources Survey of the selected alternatives (for vertical clearance and intersection improvements) will be necessary during the LPE phase to fulfill the requirements of the New Jersey Register of Historic Places Act (NJAC 7:4) due to the potential encroachment to the State and National Register listed Morris Canal Historic District. The preparation and submission of an Application for Project Authorization (APA) will be necessary to facilitate New Jersey Register review. The Cultural Resources Survey will also be performed under Section 106 of the National Historic Preservation Act of 1966, as amended, to identify and evaluate historical and archaeological resources and to assess effects on historic properties.

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ATTACHMENT A

FIGURES AND PLATES

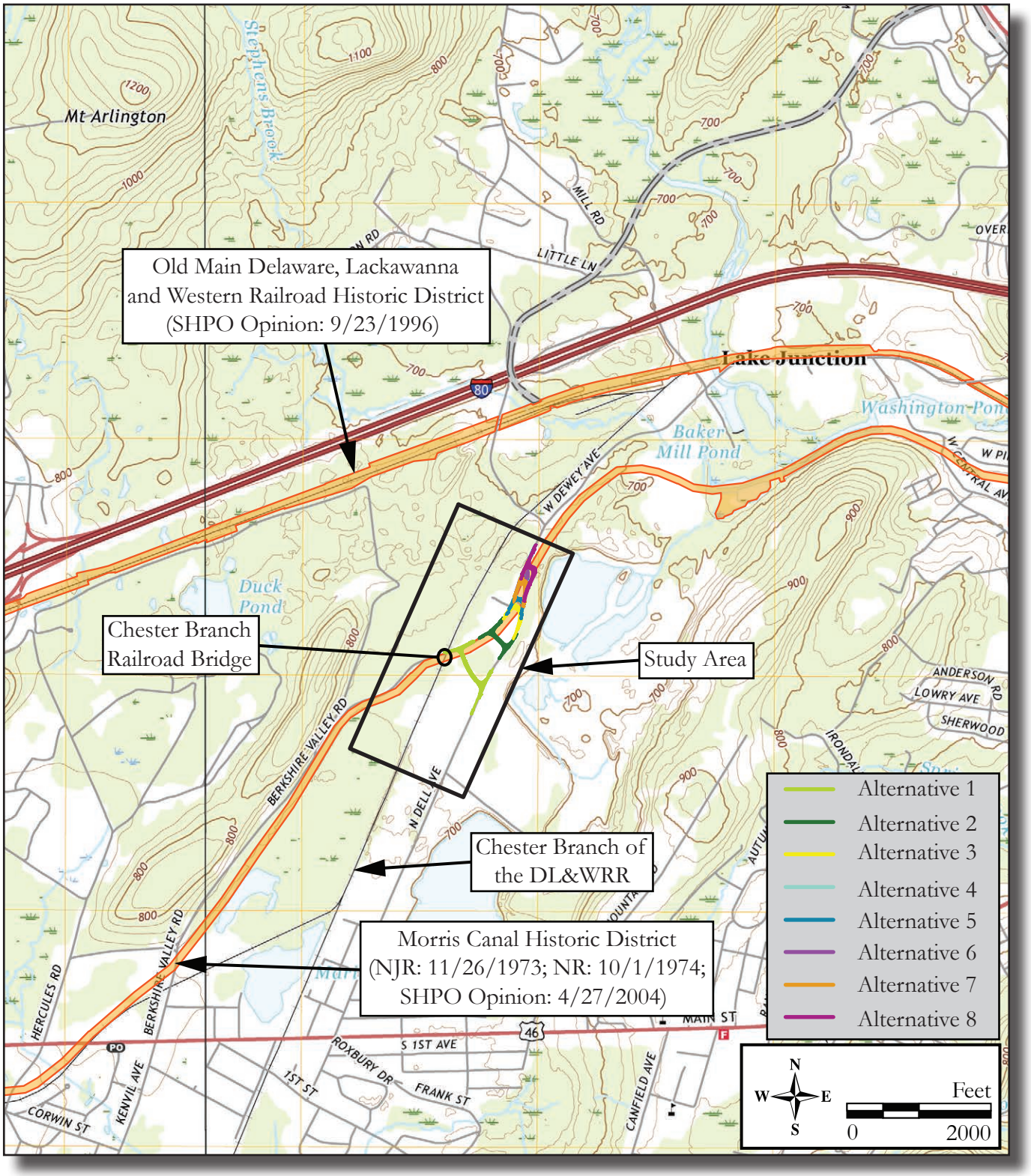


Figure 1: U.S.G.S. map showing the proposed alternatives
(2019 U.S.G.S. 7.5' Quadrangles: Dover, NJ and Stanhope, NJ).

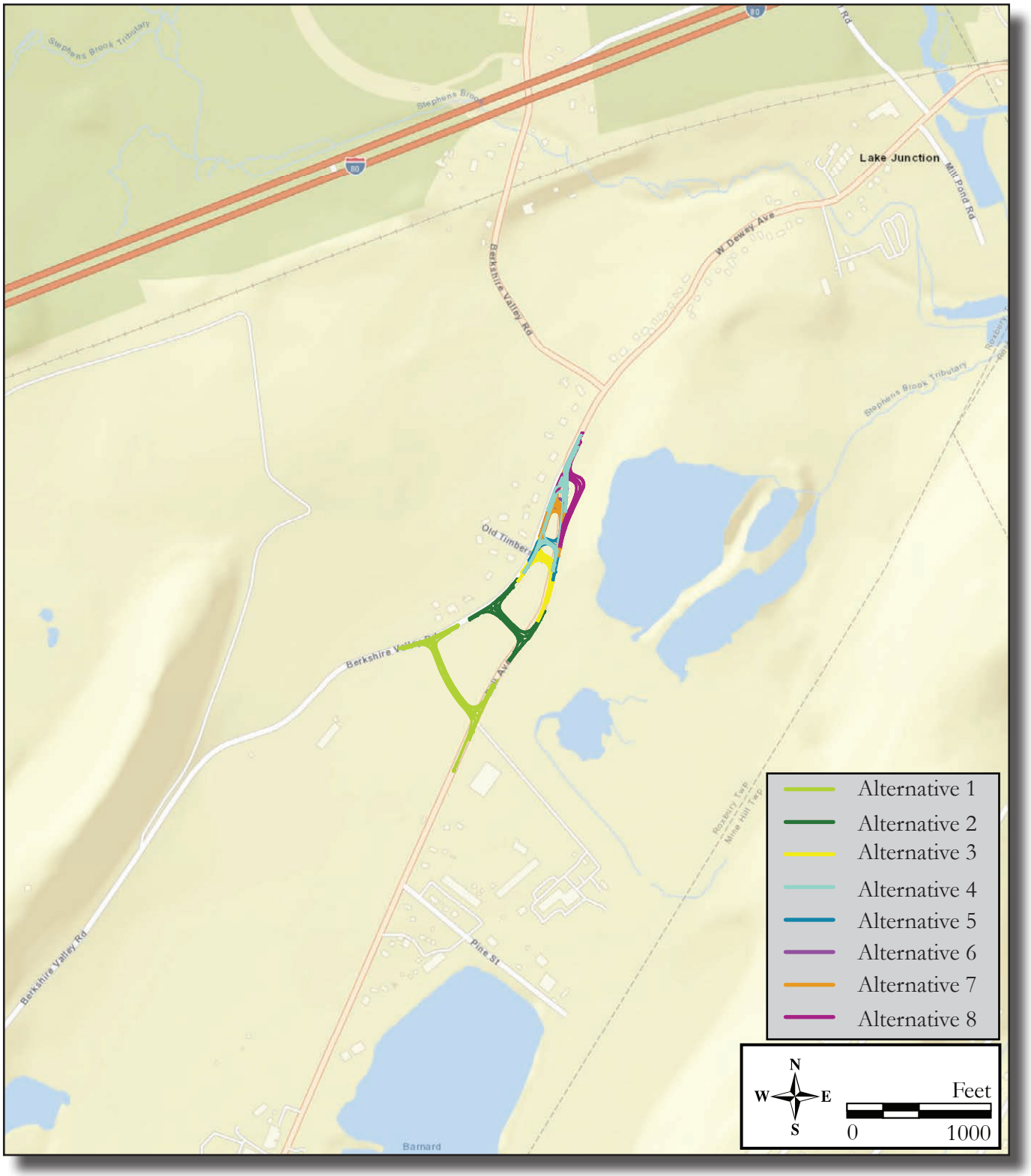


Figure 2: Road map showing the proposed alternatives (World Street Map, ESRI 2021).

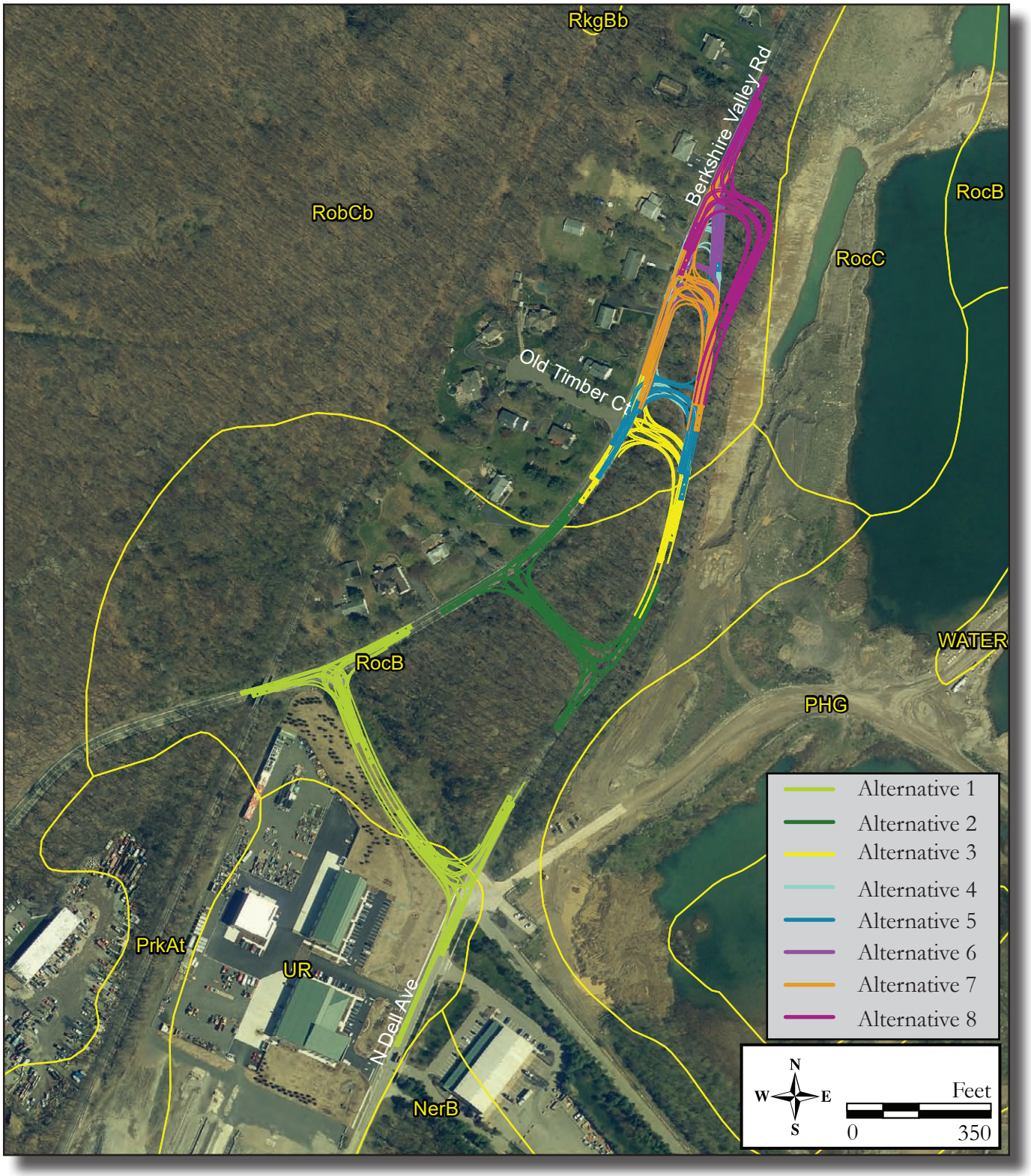


Figure 3: Soils map showing the proposed alternatives
(2018 Soil Survey Staff, Natural Resource Conservation Service, United States Department of Agriculture. Soil Survey Geographic [SSURGO]).



Figure 4: 1777 W. Faden, *The Province of New Jersey, Divided into East and West, commonly called The Jerseys.*

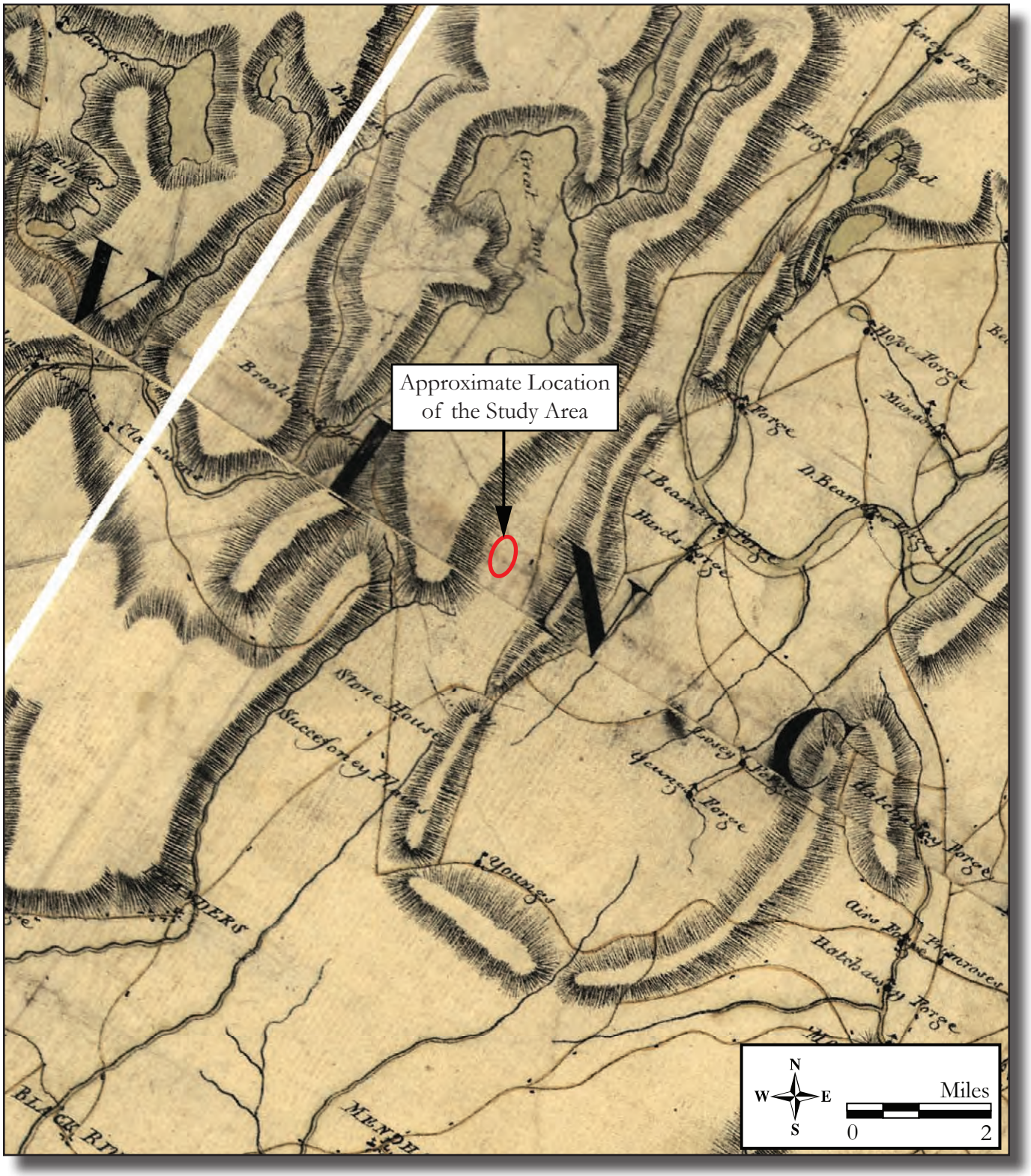


Figure 5: 1781 J. Hills, *A Sketch of the Northern Parts of New Jersey.*

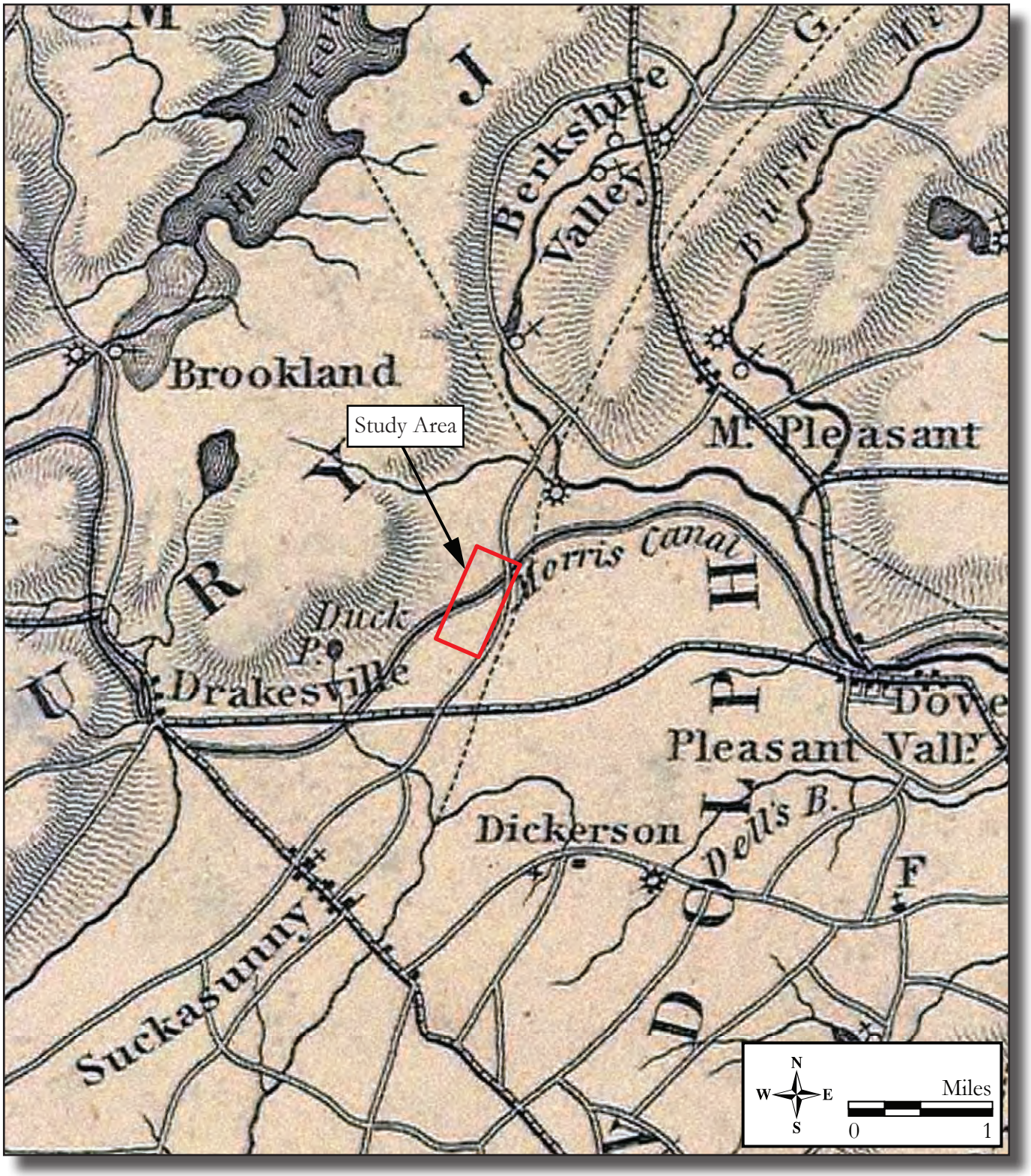


Figure 6: 1833 T.F. Gordon, *A Map of the State of New Jersey.*

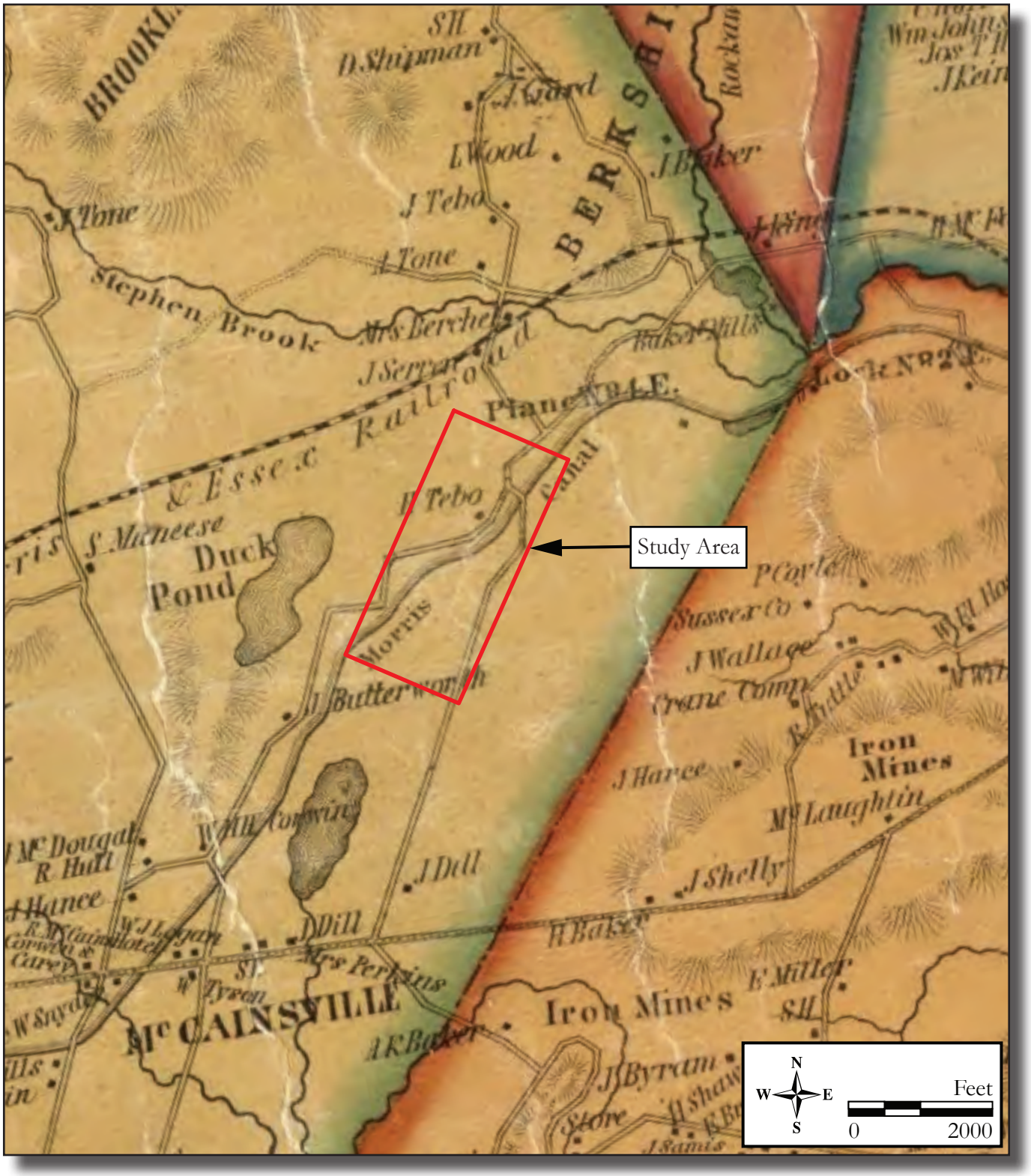


Figure 7: 1853 J. Lightfoot and S. Geil, *Map of Morris County, New Jersey*.

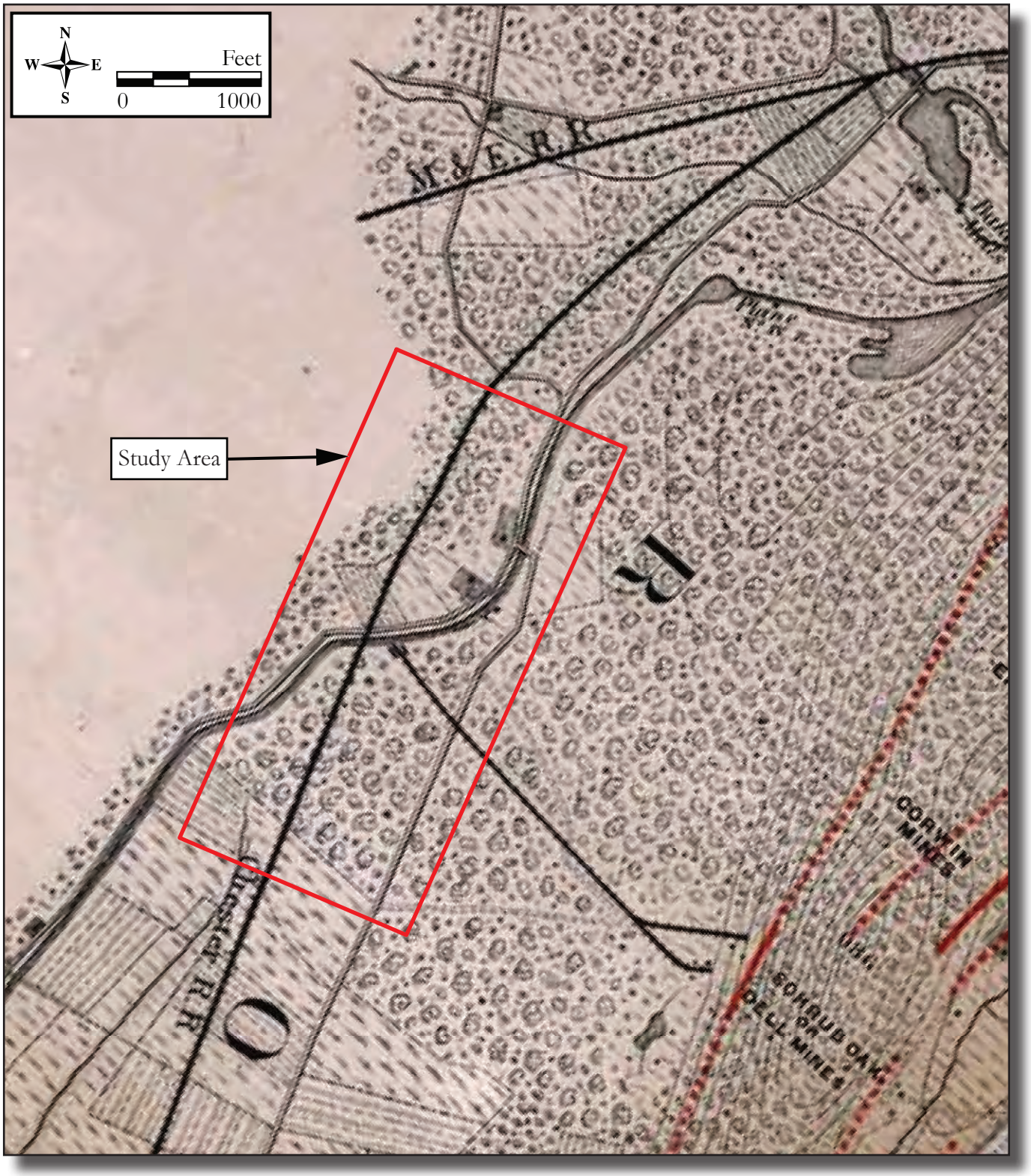


Figure 8: 1867 G.M. Hopkins, *Map of a Ground of Iron Mines in Morris County, New Jersey.*

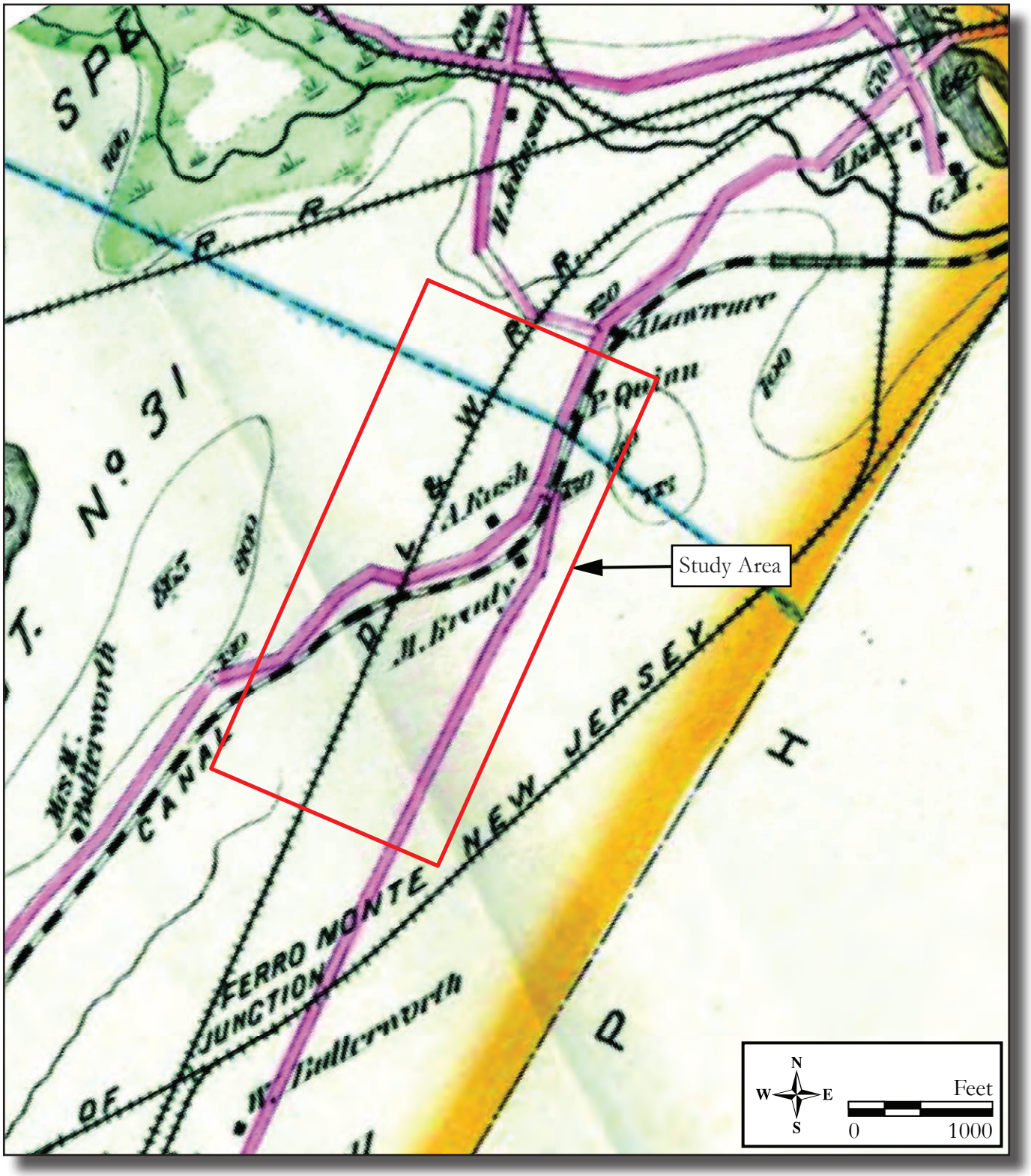


Figure 9: 1887 E. Robinson, *Atlas of Morris County, New Jersey*.

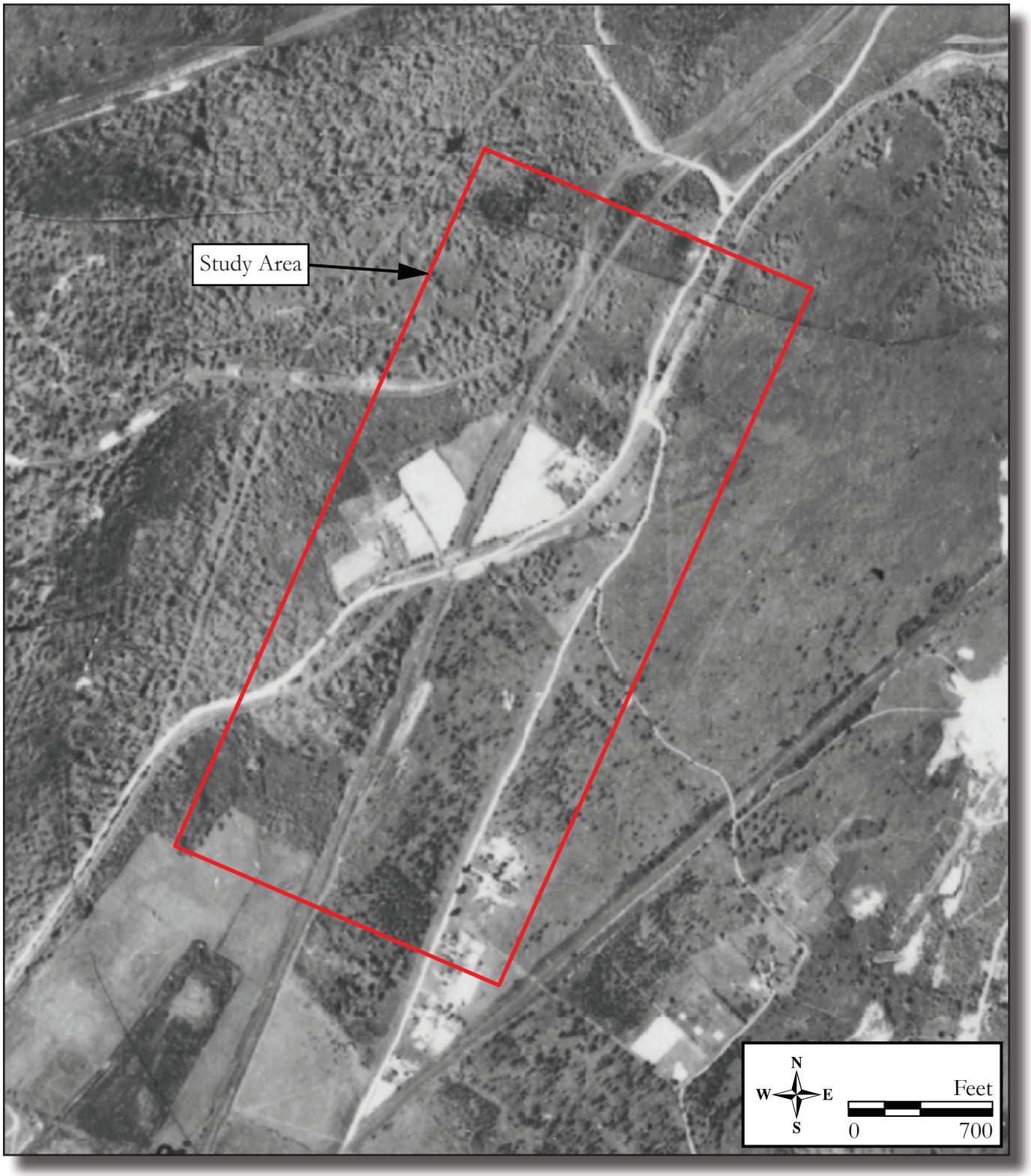


Figure 10: 1931 historic aerial photograph (NETR 1931).

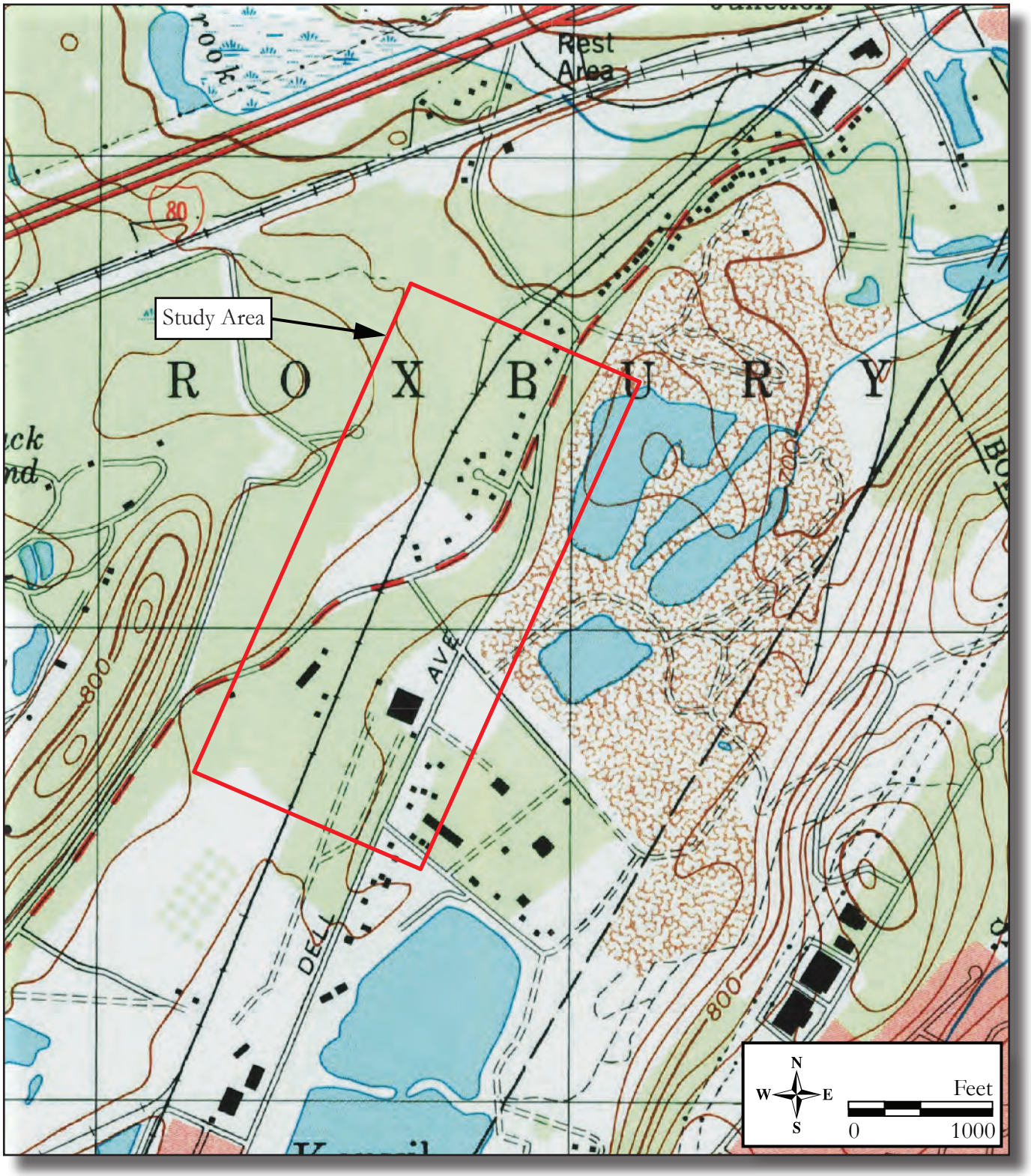


Figure 11: 1997 U.S.G.S. 7.5' Quadrangle: Dover, NJ.

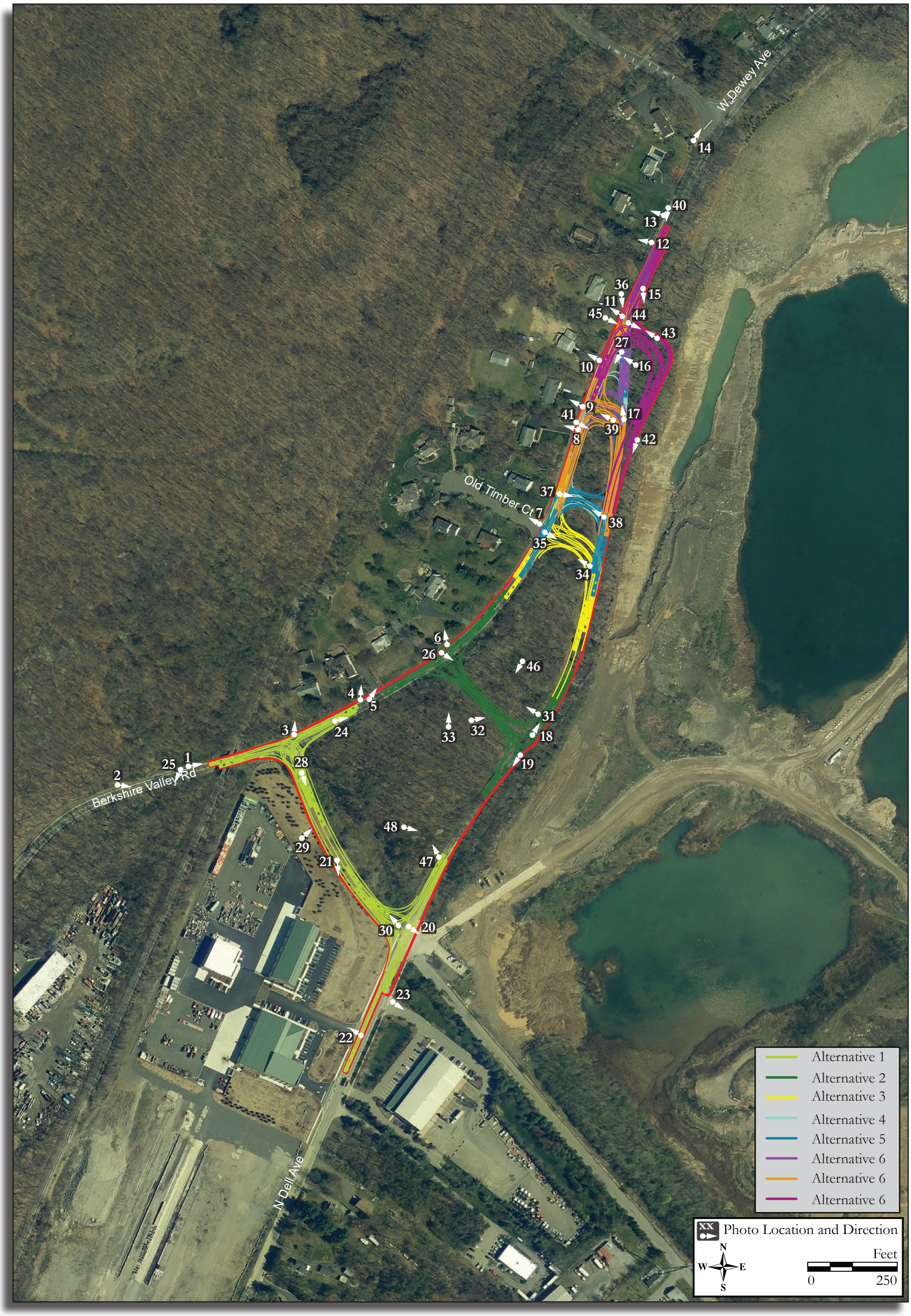


Figure 12: Aerial map showing the proposed alternatives and photograph locations and directions (NJGIS Digital Orthographic Imagery, 2020).



Plate 1: View of the Chester Branch Railroad Bridge over Berkshire Valley Road.

Photo view: Northeast

Photographer: Theodore Gold

Date: March 2, 2022



Plate 2: Overview of the Chester Branch Railroad Bridge over Berkshire Valley Road along a wooded stretch of the roadway.

Photo view: East

Photographer: Theodore Gold

Date: March 2, 2022



Plate 3: View of the one-story dwelling at 157 Berkshire Valley Road.

Photo view: North

Photographer: Theodore Gold

Date: March 2, 2022



Plate 4: View of the two-story dwelling at 159 Berkshire Valley Road.

Photo view: North

Photographer: Theodore Gold

Date: March 2, 2022



Plate 5: Overview of Berkshire Valley Road, looking northeast.

Note, dwellings along the road are all located on the west side, while the east side is wooded.

Photo view: Northeast

Photographer: Theodore Gold

Date: March 2, 2022



Plate 6: View of the two-story dwelling at 165 Berkshire Valley Road.

Photo view: North

Photographer: Theodore Gold

Date: March 2, 2022



Plate 7: Overview of Old Timber Ct., a cul-de-sac that is spurs northwest from Berkshire Valley Road.

Photo view: Northwest

Photographer: Theodore Gold

Date: March 2, 2022



Plate 8: View of the split-level dwelling at 173 Berkshire Valley Road.

Photo view: Northwest

Photographer: Theodore Gold

Date: March 2, 2022



Plate 9: View of the one-story dwelling at 177 Berkshire Valley Road.

Photo view: Northwest

Photographer: Theodore Gold

Date: March 2, 2022



Plate 10: View of the two-story dwelling at 179 Berkshire Valley Road.

Photo view: Northwest

Photographer: Theodore Gold

Date: March 2, 2022



Plate 11: View of the dwelling at 181 Berkshire Valley Road.

Photo view: Northwest

Photographer: Theodore Gold

Date: March 2, 2022



Plate 12: View of the dwelling at 183 Berkshire Valley Road.

Photo view: West

Photographer: Theodore Gold

Date: March 2, 2022



Plate 13: View of the dwelling at 185 Berkshire Valley Road.

Photo view: Northwest

Photographer: Theodore Gold

Date: March 2, 2022



Plate 14: View looking northeast toward West Dewey Avenue from its junction with Berkshire Valley Road.

Photo view: Northeast

Photographer: Theodore Gold

Date: March 2, 2022



Plate 15: Overview of the junction of North Dell Avenue (left) and Berkshire Valley Road (right).

Photo view: South

Photographer: Theodore Gold

Date: March 2, 2022



Plate 16: View looking toward Berkshire Valley Road from North Dell Avenue.

Photo view: Northwest

Photographer: Theodore Gold

Date: March 2, 2022



Plate 17: Overview looking north along North Dell Avenue.

Photo view: North

Photographer: Theodore Gold

Date: March 2, 2022



Plate 18: Overview along North Dell Avenue, which is wooded along both sides.

Photo view: Northeast

Photographer: Theodore Gold

Date: March 2, 2022



Plate 19: View looking southwest along North Dell Avenue toward a cluster of late twentieth-to early twenty-first-century industrial buildings.

Photo view: Southwest

Photographer: Theodore Gold

Date: March 2, 2022



Plate 20: View looking toward the Roxbury Recycling Center Driveway.

Photo view: Southeast

Photographer: Theodore Gold

Date: March 2, 2022



Plate 21: Overview of where the wooded area between Berkshire Valley Road and North Dell Avenue terminates and meets the more developed cluster of industrial buildings south of the study area, along the proposed route of Alternative 1.

Photo view: South

Photographer: Theodore Gold

Date: March 2, 2022



Plate 22: Overview of buildings associated with Nordic Contracting Co. Inc. at 95 North Dell Avenue.

Photo view: Northwest

Photographer: Theodore Gold

Date: March 2, 2022



Plate 23: Overview of the Henderson Products property at 94 North Dell Avenue.

Photo view: Southeast

Photographer: Theodore Gold

Date: March 2, 2022



Plate 24: View of the Morris Canal along Berkshire Valley Road.

Photo view: East

Photographer: Theodore Gold

Date: March 2, 2022



Plate 25: View of the Morris Canal along Berkshire Valley Road, southwest of the Chester Branch Railroad Bridge.

Photo view: South

Photographer: Theodore Gold

Date: March 2, 2022



Plate 26: View of the Morris Canal along Berkshire Valley Road.

Photo view: Southeast

Photographer: Theodore Gold

Date: March 2, 2022



Plate 27: View of the Morris Canal running through the intersection of North Dell Avenue and Berkshire Valley Road.

Photo view: Southwest

Photographer: Theodore Gold

Date: March 2, 2022



Plate 28: View of wetlands vegetation along the route of Alternative 1.

Photo view: Southeast

Photographer: Theodore Gold

Date: March 2, 2022



Plate 29: View of wetlands vegetation along the route of Alternative 1.

Photo view: Northeast

Photographer: Theodore Gold

Date: March 2, 2022



Plate 30: View of wetlands vegetation along the route of Alternative 1.

Photo view: Northwest

Photographer: Theodore Gold

Date: March 2, 2022



Plate 31: View of secondary growth deciduous trees and undeveloped land between North Dell Avenue and Berkshire Valley Road.

Photo view: Northwest

Photographer: Theodore Gold

Date: March 2, 2022

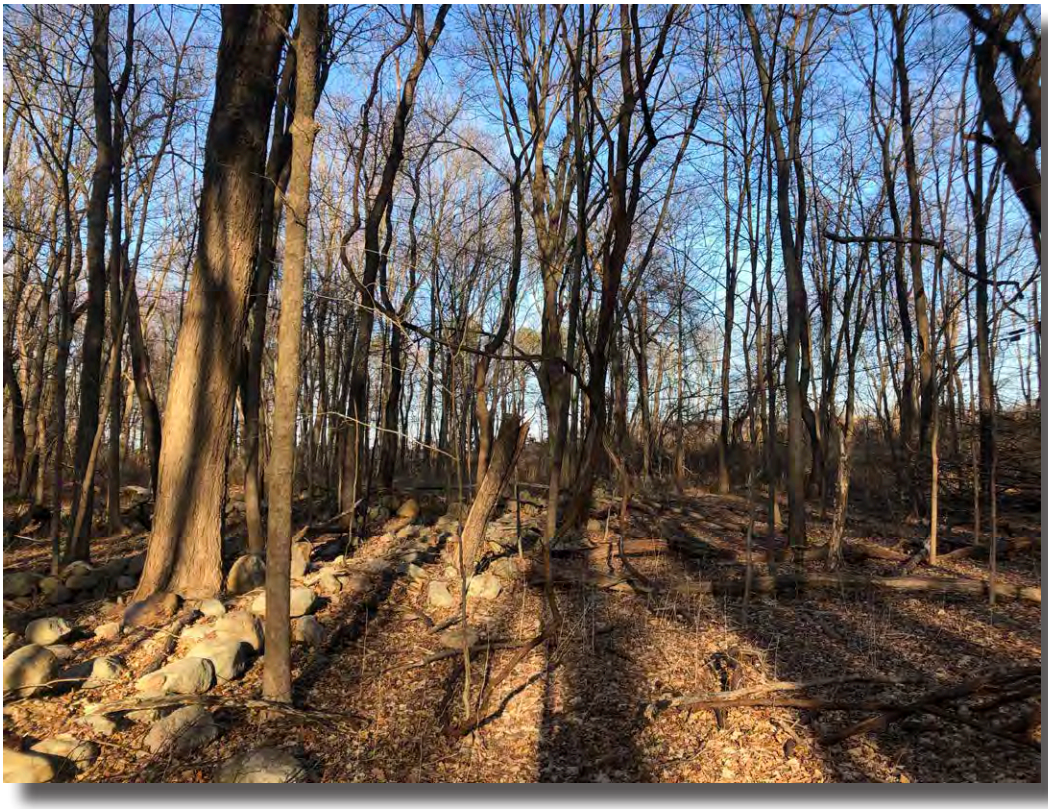


Plate 32: View of secondary growth deciduous trees and undeveloped land between North Dell Avenue and Berkshire Valley Road.

Photo view: East

Photographer: Theodore Gold

Date: March 2, 2022



Plate 33: View of secondary growth deciduous trees and undeveloped land between North Dell Avenue and Berkshire Valley Road.

Photo view: North

Photographer: Theodore Gold

Date: March 2, 2022



Plate 34: View of secondary growth deciduous trees and undeveloped land between North Dell Avenue and Berkshire Valley Road.

Photo view: West

Photographer: Theodore Gold

Date: March 2, 2022



Plate 35: View of secondary growth deciduous trees and undeveloped land between North Dell Avenue and Berkshire Valley Road.

Photo view: East

Photographer: Theodore Gold

Date: March 2, 2022



Plate 36: Overview of the intersection of North Dell Avenue and Berkshire Valley Road.

Photo view: South

Photographer: Theodore Gold

Date: March 2, 2022



Plate 37: View of the unpaved access road between North Dell Avenue and Berkshire Valley Road.

Photo view: East

Photographer: Theodore Gold

Date: March 2, 2022



Plate 38: View of the unpaved access road between North Dell Avenue and Berkshire Valley Road.

Photo view: West

Photographer: Theodore Gold

Date: March 2, 2022



Plate 39: View of secondary growth deciduous trees and Morris Canal route north of the unpaved access road and south of the intersection between North Dell Avenue and Berkshire. Valley Road

Photo view: West

Photographer: Theodore Gold

Date: March 2, 2022

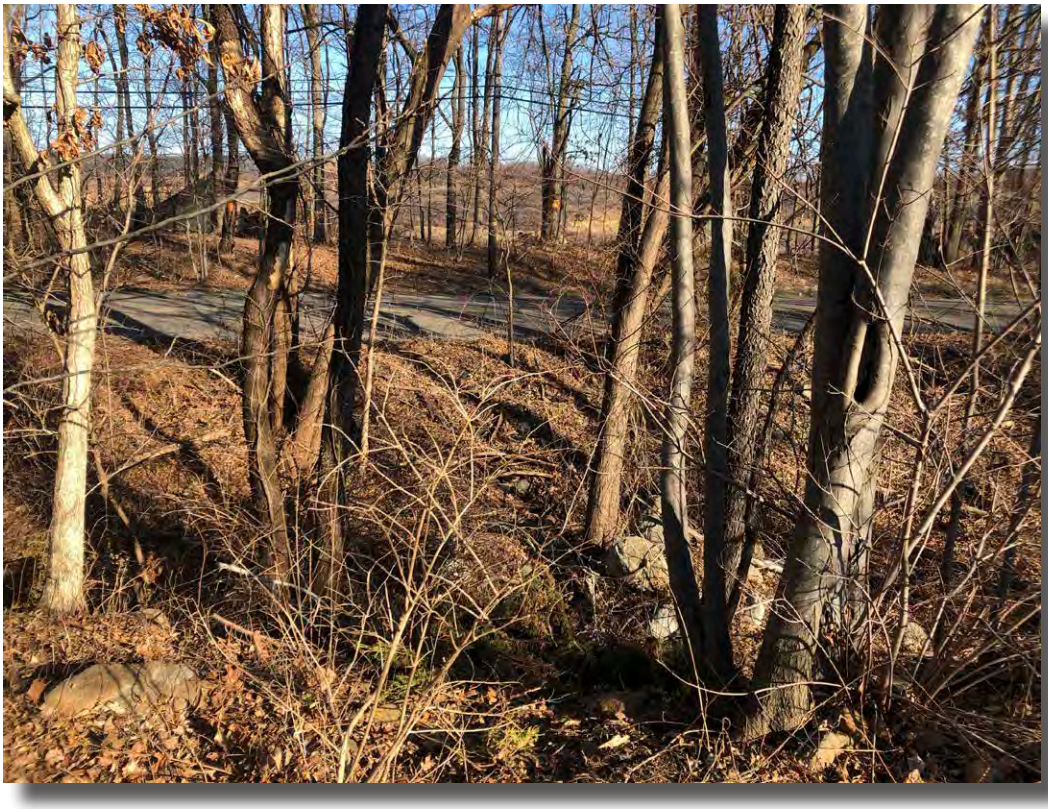


Plate 40: View of the northern approach to the intersection of Berkshire Valley Road and North Dell Avenue.

Photo view: South

Photographer: Theodore Gold

Date: March 2, 2022



Plate 41: View of the northern approach to the intersection of Berkshire Valley Road and North Dell Avenue.

Photo View: East

Photographer: Theodore Gold

Date: March 2, 2022



Plate 42: View of the Alternative 8 route, showing a treefall and existing conditions.

Photo View: Southwest

Photographer: Theodore Gold

Date: March 2, 2022



Plate 43: View of the Alternative 8 route, showing existing conditions.

Photo View: Northwest

Photographer: Theodore Gold

Date: March 2, 2022



Plate 44: View of the Alternative 8 route, showing treefall and the location of the Morris Canal.

Photo View: Southeast

Photographer: Theodore Gold

Date: March 2, 2022

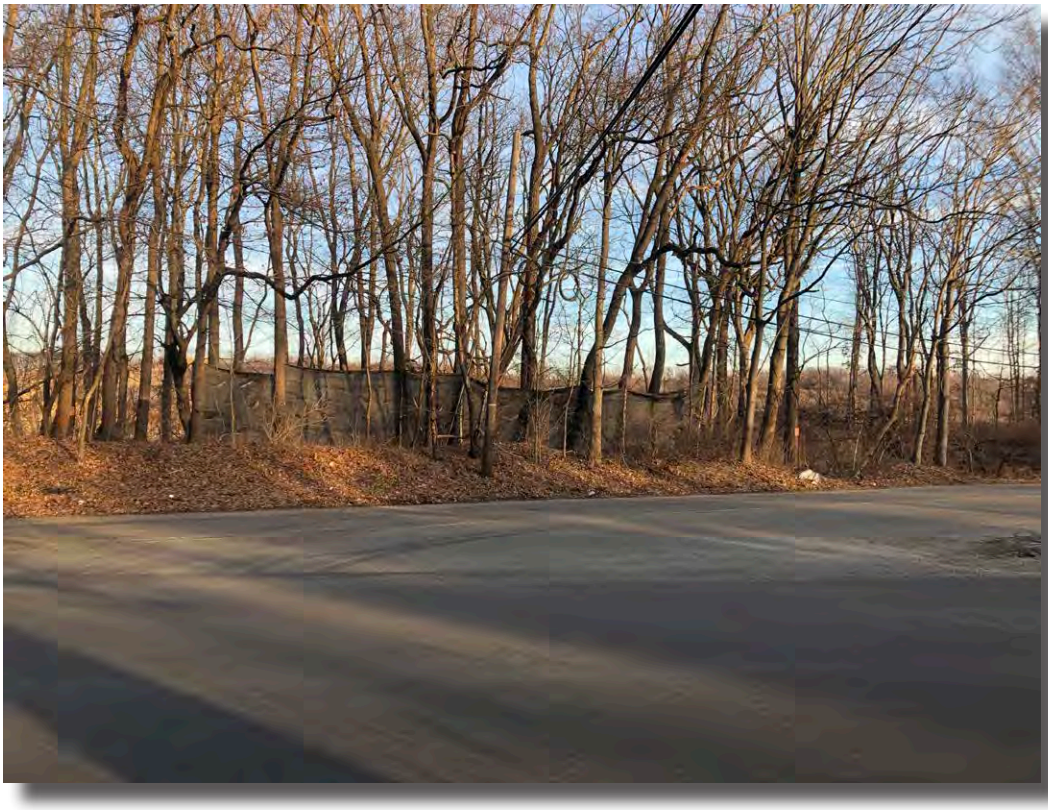


Plate 45: View of the Alternative 8 route from the northern curb of Berkshire Valley Road at the intersection of Berkshire Valley Road and North Dell Avenue.

Photo View: Southeast

Photographer: Theodore Gold

Date: March 2, 2022

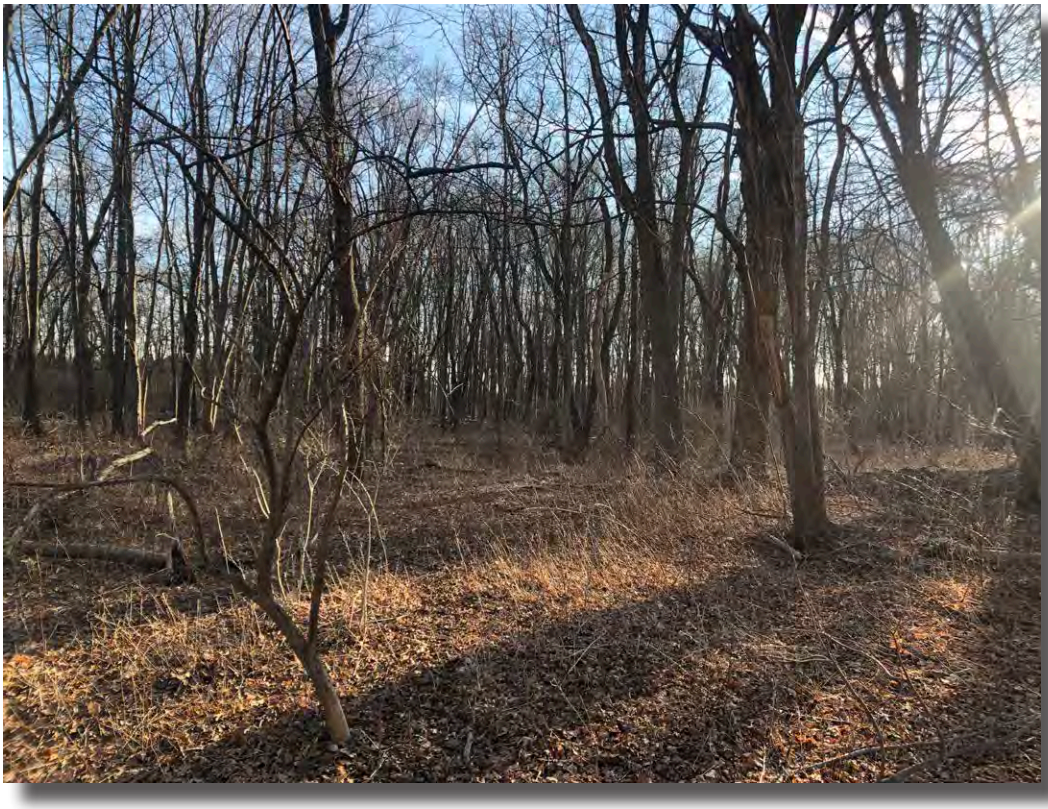


Plate 46: View of sparse secondary growth in the area bounded by Berkshire Avenue and North Dell Avenue.

Photo View: Southwest

Photographer: Theodore Gold

Date: March 2, 2022



Plate 47: View of a concrete structure north of the intersection of North Dell Avenue and the Roxbury Recycling Center Driveway.

Photo View: North

Photographer: Theodore Gold

Date: March 2, 2022



Plate 48: View of concrete structural remnants north of the intersection of North Dell Avenue and the Roxbury Recycling Center Driveway.

Photo View: East

Photographer: Theodore Gold

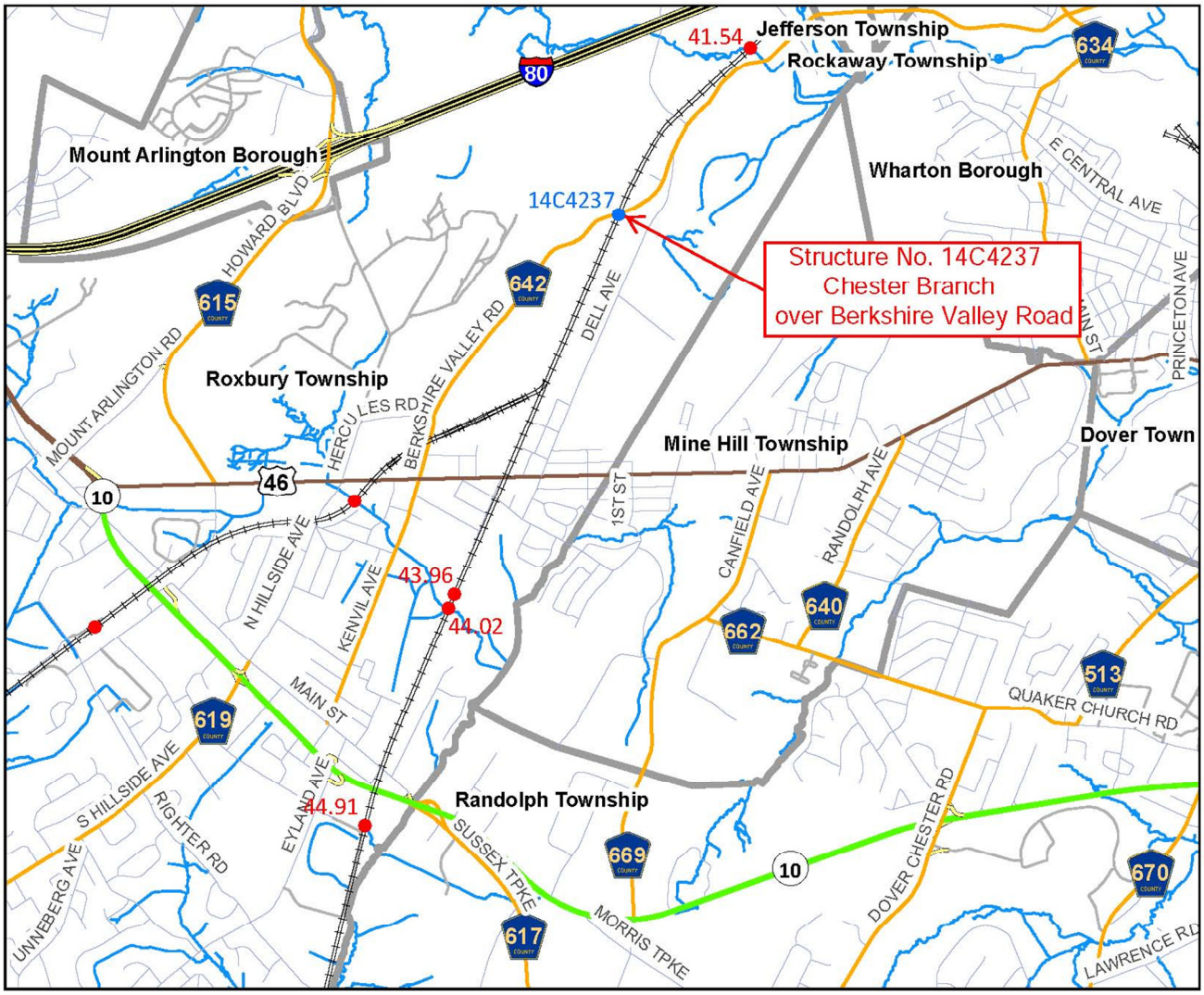
Date: March 2, 2022

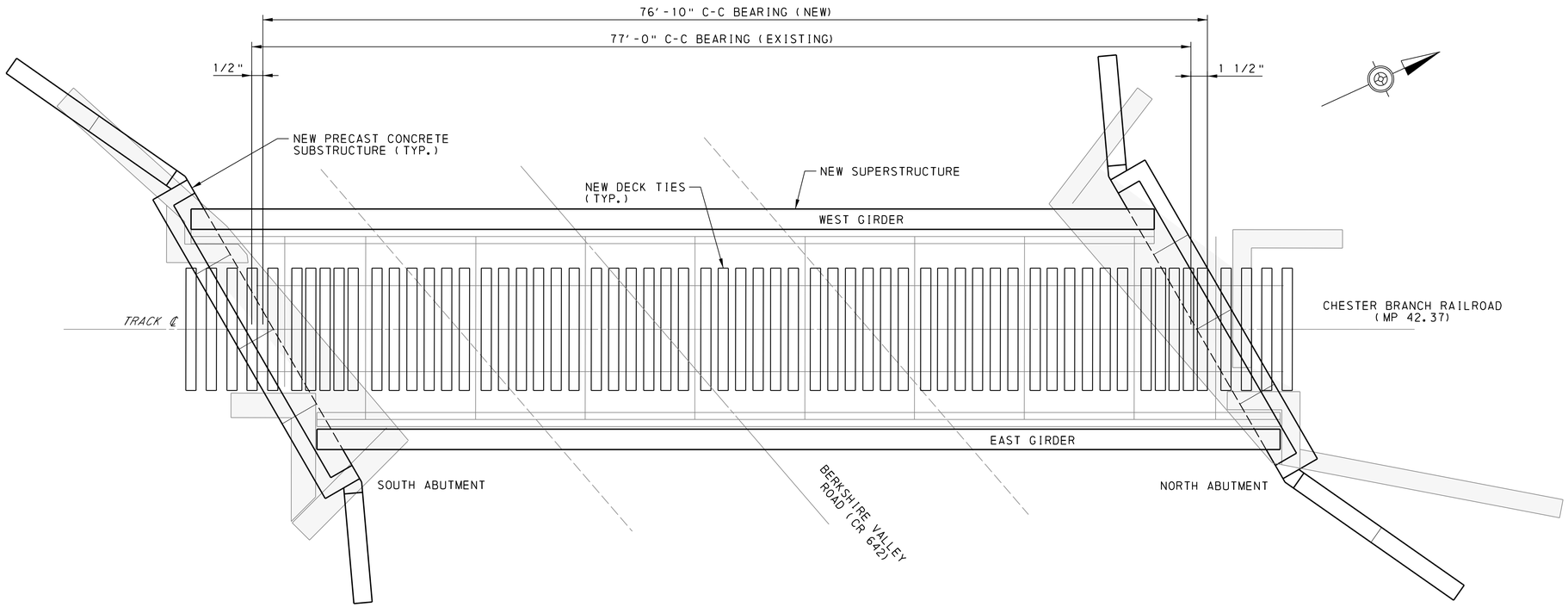
ATTACHMENT B

BRIDGE LOCATION MAP

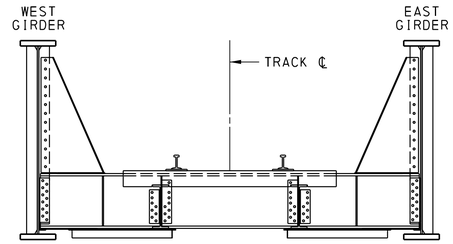
ALTERNATIVES 5.2a AND 5.2e PLAN AND SECTION DRAWINGS

BRIDGE LOCATION MAP





PLAN
NOT TO SCALE



TYPICAL BRIDGE SECTION
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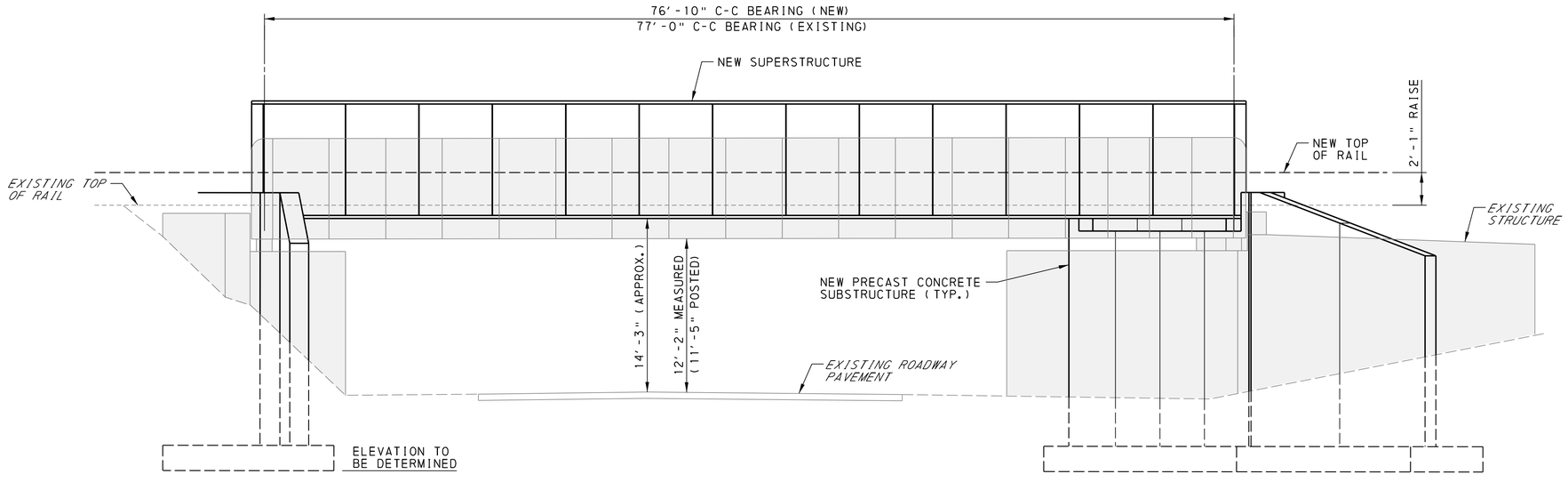

EAST ELEVATION
NOT TO SCALE

REV.	DATE	DESCRIPTION

ALTERNATIVE 5.2a

FY-2021 FREIGHT CONCEPT DEVELOPMENT STUDY
CHESTER BRANCH OVER
BERKSHIRE VALLEY ROAD

ROXBURY TOWNSHIP,
MORRIS COUNTY, NEW JERSEY

PROJECT NO.: 3735-2	DESIGNED BY: SDM	DRAWN BY: ARR	CHECKED BY: SDM

SAMIR D. MODY, P.E.
NJ PROFESSIONAL ENGINEER LICENSE NO. 24GE03945800

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SBE and MBE Certified Firm in New Jersey
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Camden, NJ 08102
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DATE: _____

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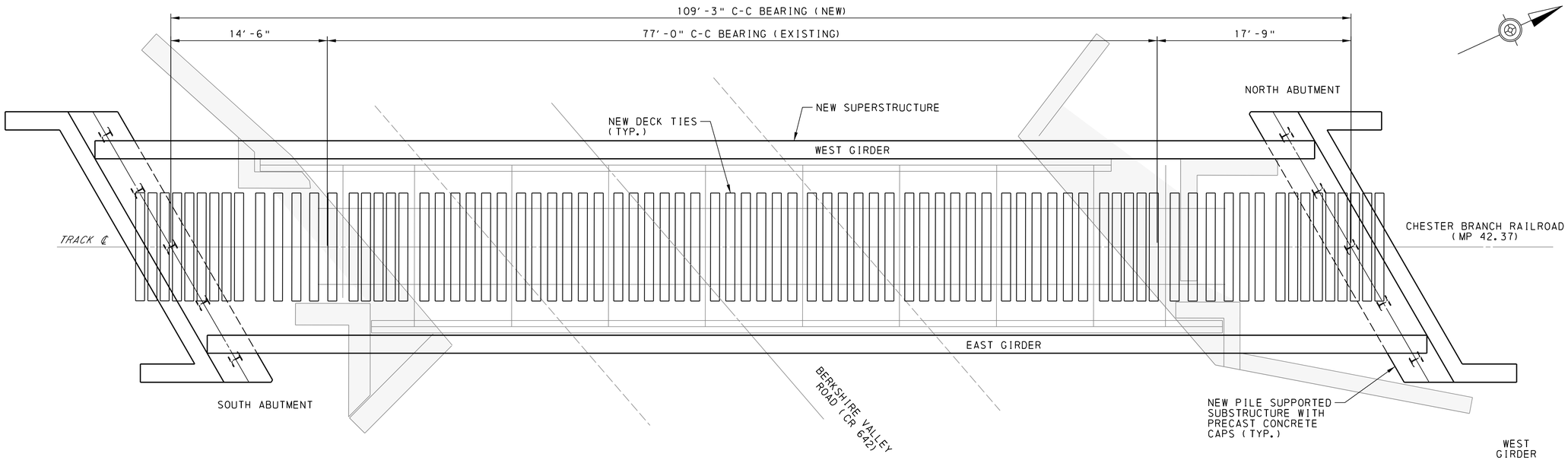
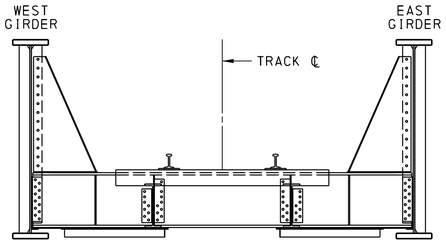


PLAN
NOT TO SCALE



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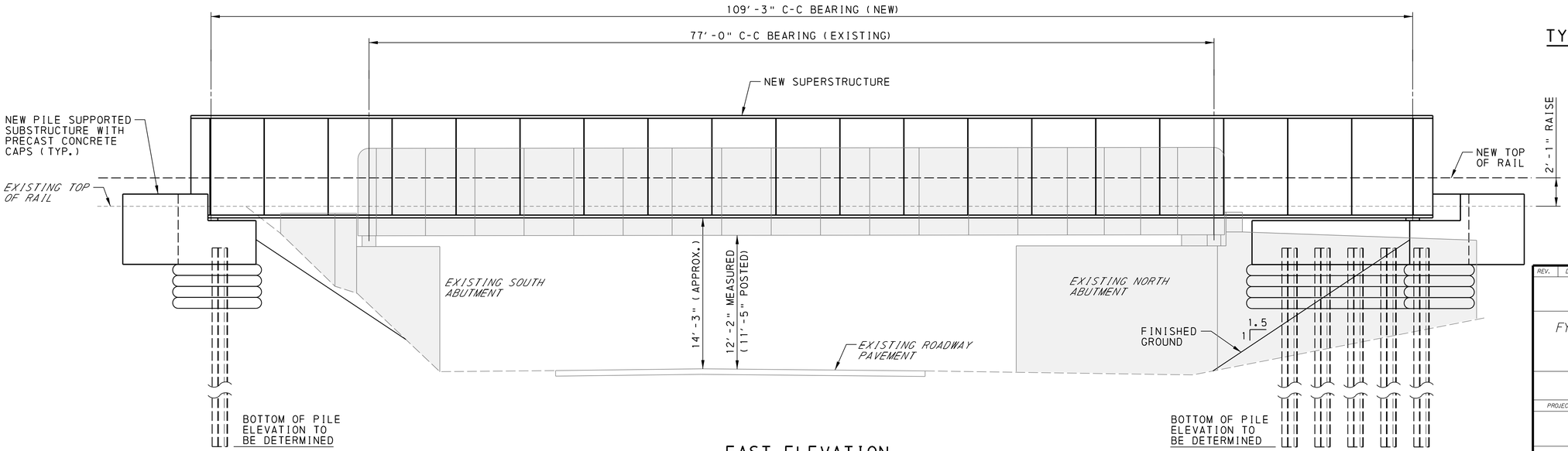

EAST ELEVATION
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REV.	DATE	DESCRIPTION

ALTERNATIVE 5.2e

FY-2021 FREIGHT CONCEPT DEVELOPMENT STUDY
CHESTER BRANCH OVER
BERKSHIRE VALLEY ROAD

ROXBURY TOWNSHIP,
MORRIS COUNTY, NEW JERSEY

PROJECT NO.: 3735-2	DESIGNED BY: SDM	DRAWN BY: ARR	CHECKED BY: SDM

SAMIR D. MODY, P.E.
NJ PROFESSIONAL ENGINEER LICENSE NO. 24GE03945800

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DATE: _____

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Appendix E

Public Involvement Action Plan



NJTPA

NJTPA Freight Concept Development Program

Jacobs

NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

FREIGHT CONCEPT DEVELOPMENT STUDY

PUBLIC INVOLVEMENT ACTION PLAN

Berkshire Valley Road Truck Circulation Project

Roxbury Township, New Jersey

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Purpose

The purpose of the Public Involvement Action Plan (PIAP) is to provide a transparent and understandable process in which the concept development phase will provide information to the public and opportunities for meaningful feedback during the study. This document describes the study and its purpose, the project team's approach and objectives related to public outreach, the planned schedule for engagement, and expected outcomes. The PIAP also includes a list of identified stakeholders at the outset of the project (which will be updated throughout the course of the project), and potential community challenges with strategies to address them. Because this is a living document, it will evolve over the course of the project, with updates describing in greater detail the public outreach elements.

Project Team

NJTPA – Project Sponsor

Morris County Department of Public Works, Division of Engineering & Transportation

NJDOT Staff – Division of Local Aid, Bureau of Multimodal Services, Bureau or Environmental Program Resources

Jacobs Engineering Group Inc. – Consultant Team Lead

Stokes Creative Group, Inc. – Public & Stakeholder Outreach Lead

Project Description

The Chester Branch rail bridge restricts overhead clearance on Berkshire Valley Road (642) to 11-feet-5-inches, which limits the size of trucks that can travel on the road. In addition, the geometric configuration of the intersection at Berkshire Valley Road and North Dell Avenue makes it difficult for trucks to navigate. Without these impediments, Berkshire Valley Road would be the preferred truck route through this area between I-80 to US-46 as it avoids Roxbury's residential neighborhoods.

The Chester Branch is one of three rail lines Morris County owns, that serve a wide range of industrial customers. Berkshire Valley Road, County Route 6422, is under Morris County's jurisdiction. Maintaining freight rail service and improving truck access to this area is critical. The rail bridge is located near the former Hercules Powder Plant, a 900-acre site that is one of the largest vacant industrial properties in the region. In addition, there are industrial properties on the east side of Berkshire Valley Road and along the east side of the Chester Branch that hold significant potential for new rail-served industrial development. Addressing the constraints on Berkshire Valley Road would facilitate industrial and economic growth and improve quality of life in Roxbury Township. This project aligns with and supports New Jersey's State Strategic Plan, which presents a blueprint for achieving sustainable economic growth balanced with natural resource preservation and quality of life for New Jersey residents.



Project Location

Public Involvement Process Overview

The public outreach approach for the Berkshire Valley Road Truck Circulation Study will consist of both traditional methods of communication in the form of press releases and in-person engagement (when feasible), as well as the use of technology via website, social media, and virtual presentations. This approach will offer flexibility in engaging stakeholders and the general public early in the study process. By reaching out to the public early, the Project Team will have the opportunity to clearly explain the project, its goals, and address questions and/or misconceptions. The following sections provide details about how the study will work to engage different populations, including traditionally under-represented groups, known as Environmental Justice communities.

Public Involvement Process

The following describes the expected actions to encourage public involvement during the concept development program schedule.

1. Stakeholder List

Stokes will develop and maintain a project stakeholder list throughout the duration of the study. This list will include key stakeholders from municipal, county, state, and other governmental agencies. Community stakeholders from local advocacy, cultural, historical, environmental, business, neighborhood, and other organizations will be included and updated as needed. This list will be provided at the Local Officials Briefings for further input and refinement. Two tiers of stakeholders will be developed with the list, described as follows:

- Tier One: Critical stakeholders who will be invited to Local Officials Briefings, consulted at critical junctures, and whose support through letters or resolutions will/may be requested
- Tier Two: Stakeholders who will be kept apprised of the project via notifications, email, and phone calls as needed

The stakeholder list includes representation from the following governmental agencies, businesses, or organizations. A stakeholder list with contact information will be maintained separately for the following list:

County and Municipal Officials and Organizations

- Morris County Officials, Engineers, Planners, Parks Commission, Transportation, Utilities Authority
- Legislative Representatives, State Senate and Assembly
- Township of Roxbury Mayor, Administrator, Clerk, Engineer
- Roxbury Township First Responders
- Adjacent Community – Borough of Wharton Mayor, Administrator, Clerk, Engineer
- Adjacent Community – Jefferson Township Mayor, Administrator, Clerk, Engineer

Federal, State, and Regional Agencies

- North Jersey Transportation Planning Authority (NJTPA)
- New Jersey Department of Transportation (NJDOT)
- New Jersey Department of Environmental Protection (NJDEP)
- NJ TRANSIT

Businesses and Business Organizations

- Roxbury Area Chamber of Commerce
- Dover& Rockaway River Railroad (Chesapeake & Delaware, LLC)Ledgewood Commons
- Roxbury Mall

Community Organizations

Target organizations that serve NJ populations are anticipated to include:

- Community Centers
- Educational/Academic Institutions
- Houses of Worship
- Civic Organizations
- Community, Business, and Natural Environment/Wildlife Advocacy Organizations

2. Project Website

Stokes Creative Group (Stokes) will create a project website and maintain it throughout the course of the project, with the URL,"_____" that will comply with NJTPA standards**.** The website will act as a clearinghouse for project materials that will keep the public informed of the study. In addition to

providing materials for view and download, the website will provide the following information and features:

- Project timeline
- Meeting dates/locations
- Technical materials and deliverables
- Meeting summaries
- Widget for translation
- ADA compatibility

The site will be translatable to other languages with a Google Translate add-on. It will also contain links to related social media accounts and the various agencies and organizations involved in the project as well as have the capacity for the public to sign-up for future email and/or text notifications of meetings or when new project materials are added.

3. Media Content for Posting by NJTPA and Morris County

Content will be developed through the course of the project for NJTPA and Morris County to actively inform and engage with the public on the study. Content will be used to:

- Notify followers of changes to promote project and website
- Alert follows when new documents are posted
- Update on study progress
- Promote upcoming meetings
- Expand network of informed stakeholders

Content will include the following anticipated schedule:

- All content to be drafted and provided for approval and use by the NJTPA
- Meeting notifications scheduled in regular intervals starting 4 weeks prior to public information centers
    - 4 weeks prior
    - 3 weeks prior
    - 2 weeks prior
    - 1 week prior
    - 1 day prior
    - Day of Public Meeting
- When new documents are uploaded to the website
- Occasional posting of historic photos or general information about area and study

The following strategies will be used to engage the public and maintain interest in the project:

4. Local Official Briefings

We plan to hold two Local Officials Briefings during the course of the project. The first briefing will introduce the project to the local officials, present the draft Purpose and Need Statement, obtain information on the concerns/comments, potential problems and/or additional issues from their perspective, and to identify potential stakeholders and local interest groups to further refine the stakeholder database with particular attention to Environmental Justice considerations. The Project Team

will arrange and coordinate a meeting, either virtually or in person, at a time convenient to the local stakeholders. Key local officials, identified in the stakeholder database, will be invited in addition to Project Team members and key regional stakeholders, such as Morris County. For all Local Officials Briefings, meeting logistics, including email notification, will be provided and telephone follow-up calls will be made when necessary. The Project Team will provide an agenda, meeting facilitation, meeting minutes, and action items. A list of potential invitees will be provided to the NJTPA no later than one month prior to the date of the Local Officials Briefing.

Meeting materials will be designed to clearly define the project and the official's role in the public involvement process. Each official will be provided with project information including:

- Project Fact Sheet
- Draft Purpose and Need statement
- Community Profile
- Results of Environmental Screening
- Public Involvement Action Plan
- Project Schedule

The team will hold a second Local Officials Briefing to facilitate input and concurrence with regard to the selected Preliminary Preferred Alternative (PPA) and to obtain a Resolution of Support for the PPA. At this briefing, the Project Team will provide information on the development of the alternatives, public feedback gathered through the Public Meeting, website, and other means, and why the PPA was selected. The Project Team will provide an agenda, meeting facilitation, meeting minutes, and action items. A list of potential invitees will be provided to the NJTPA no later than one month prior to the date of the Local Officials Briefing.

5. Public Meetings

The Project Team will plan, organize, and facilitate two public meetings over the course of the project. The first public meeting will be virtual. Adhering to the NJTPA's "Virtual Public Engagement Best Practices" document, the Project Team will use GoToMeeting to conduct public outreach virtually. By using online tools, the project can continue moving forward while achieving the same results to include and engage the public. Virtual outreach efforts will have equitable approaches and be cognizant of digital gaps in project areas, especially among low-income and minority populations. Ensuring inclusive outreach will require mailing materials to residents in the study area, as well as providing call-in numbers for phone participation in virtual meetings if computer access is not possible.

The following is a breakdown of the logistics for a live, online meeting:

LIVE MEETING VIA GOTOMEETING – Stokes will mail and e-blast invitations for the meeting, facilitate the introduction and the Q&A discussion and record the meeting via GoToMeeting (the video could be housed on the project website for additional views later). Q&A may be conducted via chat and/or unmuting participants for verbal communication. Non-computer participants will be provided a call-in number.

Additional logistics for a successful virtual meeting includes the following:

- Presentation documents and files designed for optimal viewing online.
- Practice run-through time with the Project Team.

- A dedicated project website page to announce and house the presentation and comment forms.
- Processing written comments/questions and sending responses via email; and posting to FAQ page.
- Following the public meeting, the Project Team will review any comments and questions submitted and develop responses. Once approved, these responses will be posted on the project website for public availability.
- We will develop and maintain mailing lists, meeting notifications, press releases, handouts, and presentation materials for the Public Meetings. All materials will be reviewed and approved by the NJTPA prior to public distribution. All presentation materials will be submitted to the NJTPA for their approval no later than two weeks prior to any Public Meeting.
- Within two weeks following each public meeting, a meeting summary will be prepared. This summary will be used for documentation as part of the Public Outreach Summary to be included in the final Concept Development Report.
- The Project Team will seek to coordinate with Morris County for language facilitation at meetings, if requested.

The second Public Meeting will be either in-person, virtual or hybrid. If in person, it will have an "open house" style format with a short presentation at the beginning of the session. This will allow individuals to attend the session at their convenience and have questions answered by members of the project team. If public health or other circumstances indicate that in-person gathering is not ideal, a virtual meeting will be arranged.

For the first in-person meeting, posters will be prepared to display information about the study which will include:

- Purpose of the study
- Map of the study area
- Conditions maps
    - Zoning and land use
    - Transportation network
    - Demographics
    - Hazardous materials
    - Environmental conditions
    - Environmental constraints
    - Utilities
    - Cultural resources

A comparable set of presentation materials will be prepared and used if the meeting is virtual.

The second public meeting will follow the same general format as the first one. If in person, the posters developed will focus on the studied alternatives, and the PPA. The presentation materials from the first meeting will also be set up, to provide a complete picture of the study, especially for attendees who did not attend the first meeting. Again, a virtual meeting will provide the same presentation materials in the appropriate format.

- If the preferred option is to hold in-person public meetings, the Project Team will arrange for facilities to host them, coordinating with key stakeholders to ensure they will properly

accommodate the public. The selected space will be accessible to affected populations within the study area, ensuring accessibility by people with limited mobility. It will also be accessible via public transit. In-person and virtual meetings will be adequately staffed by members of the Project Team to ensure attendees can have their immediate questions and concerns addressed. In addition, for in-person meetings, a station will be set up where members of the public can separately submit questions and comments and sign up for project updates. If the meeting is to be held virtually, comparable accommodations for different populations will be incorporated into all remote meeting arrangements.

Schedule of Public Involvement Initiatives

The following presents a list of major public outreach activities for the duration of the project. Dates are approximate and may be changed as the project progresses.

Action #	Action	Scheduled Completion
1	Draft Stakeholder List	April 15, 2021
2	Contact Local Officials for Briefing	July 1, 2021
4	Coordinate for Local Officials Briefing 1	July 15, 2021
5	Draft Project Webpage	July 20, 2021
6	Coordinate for Public Meeting 1	August 1, 2021
7	Conduct Local Officials Briefing 1	August 15, 2021
8	Live Project Website	September 8, 2021
9	Local Officials Briefing Summary	September 15, 2021
10	Develop Public Meeting 1 materials	August 15, 2021
11	Advertise Public Meeting 1	August 15, 2021
12	Conduct Public Meeting 1	September 15, 2021
13	Public Meeting 1 Summary	October 1, 2021
14	Conduct Stakeholder Meeting 1	October 15, 2021
15	Stakeholder Meeting 1 Summary	October 29, 2021
16	Coordinate for Local Officials Briefing 2	March 15, 2022
17	Conduct Local Officials Briefing 2	April 15, 2022
18	Local Officials Briefing Summary	May 1, 2022
19	Coordinate for Public Meeting 2	September 15, 2022
20	Develop Public Meeting 2 materials	October 1, 2022
21	Advertise Public Meeting 2	October 20, 2022
22	Conduct Public Meeting 2	November 17, 2022
23	Public Meeting 2 Summary	December 3, 2022
24	Conduct Stakeholder Meeting 2	November 29, 2022
25	Stakeholder Meeting Summary	December 13, 2022
26	Public Outreach Summary for CD Report	Dec 30, 2022

Special Considerations for Public Involvement

The following section identifies special considerations for engaging Environmental Justice populations in the vicinity of the Berkshire Valley Road study.

1. Limited English Proficiency (LEP) populations

Within a half-mile radius of the intersection of North Dell Avenue and Berkshire Valley Road (the Chester Branch rail bridge is one-tenth of a mile from this intersection), there is an estimated population of 135 of whom 95 percent identify as white. In terms of language proficiency, 87 percent of the population ages 5 and above, speak English at home. Of the remaining 13 percent who do not speak English at home, almost all (83 percent) speak English "very well."

2. Income and Mobility

Income and personal mobility may influence an individual's or household's ability to participate in the outreach process with respect to attendance at the Public Meetings. This can be measured as the percentage of population living at or below the Federal Poverty Line provides an indication of the financial ability to own an automobile or have discretionary incomes for other than non-elastic (i.e., work, school, food shopping, etc.) trips. According to the 2014-2018 American Community Survey (ACS) Summary Report, 5 percent of households had annual incomes of $25,000 or less. Strategies to help encourage people with limited incomes and mobility options to participate in the public outreach process include distributing flyers to organizations and agencies which aid lower income individuals, such as the Morris County Department of Human Services. In addition, in-person Public Meetings should be held within close proximity of NJ TRANSIT bus routes to accommodate transit-dependent populations. For virtual meetings, there will be many strategies to proactively engage the community to assure their input, such as by providing a dial-in option and translation services during the meeting.

We also will collaborate and provide notification through houses of worship, schools, local businesses and community and health organizations and facilities. Additionally, we will post information at transit stations and other high traffic locations.

3. Senior Population

In the study area, 15 percent of the population is age 65 and over, lower than Morris County's total 65 and over population of 17.6 percent. Considerations for engaging with an older population include distributing flyers to senior/civic centers, libraries, and hosting Public Meetings at locations with good accessibility at a time of day at which they might be more likely to attend. For meetings that are virtual, a dial-in option will be available to assure that those who are less familiar with online communication can still take part.

4. Disability Status

According to 2015-2019 Census data, 6.1 percent of the Roxbury population under the age of 65 has a disability compared with 4.7 percent of the Morris County population. As the Community Profile notes, the percentages of these populations do not require special accommodations. Any in-person meetings will be held at locations that meet ADA accessibility requirements.

Public Involvement Deliverables

The following lists the expected deliverables of the public outreach process for the Berkshire Valley Road Truck Circulation Project Concept Development Study:

1. Media Content
2. Project Fact Sheet
3. Public Meeting Publicity Materials

4. Display Posters for in-person meetings
5. Comment/Question Forms
6. Survey (TBD)
7. Meeting Summaries
8. Public Outreach Summary Report

Appendix F

Local Officials Briefings Presentation Materials



NJTPA

NJTPA Freight Concept Development Program

Jacobs

Berkshire Valley Road Truck Circulation Project

Local Officials Briefing

August 3, 2021





Jakub Rowinski, NJTPA Project Manager

Scott Parker, Jacobs Engineering Project Manager

Meeting Agenda

- Introductions
- Project Purpose and Need
- Project Background
- Project Overview
- Stakeholder Involvement
- Ongoing and Future Activities





NJTPA

Draft Project Purpose and Need

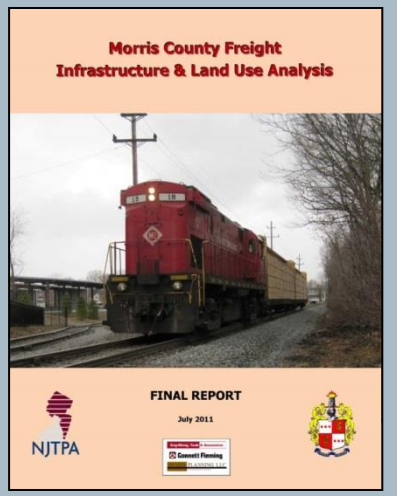
Two projects each having independent utility. However, if implemented together, the combined benefits would better support the management of truck circulation and industrial development in the immediate area than either project alone would be.

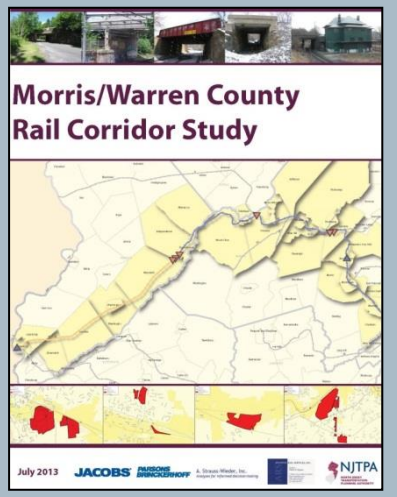
"The purpose of this project is to eliminate the height restriction that the Chester Branch rail bridge creates on Berkshire Valley Road (642) and to improve the geometric configuration of the intersection of Berkshire Valley Road with N. Dell Avenue to efficiently accommodate large truck movements"

NJTPA

Project Background

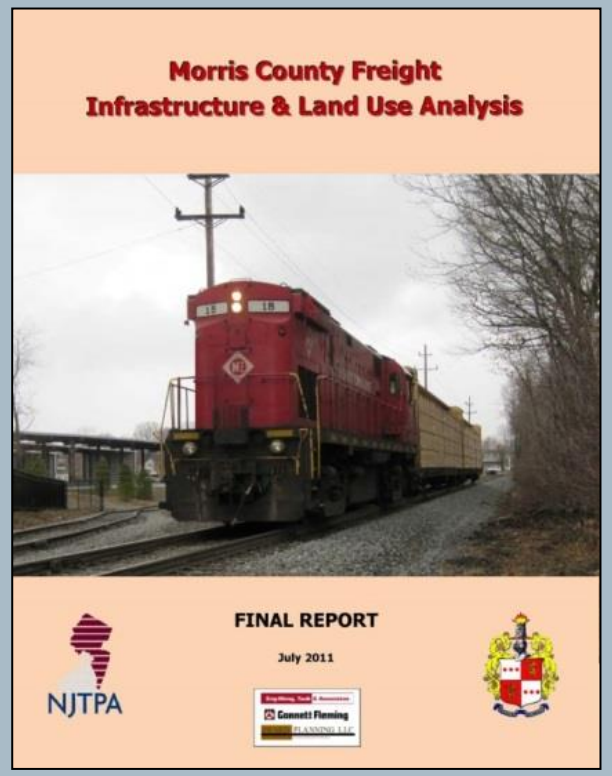
- Two previous studies identified a range of issues constraining state-of-the-industry freight rail operations on the Washington Secondary/Morristown Line Corridor and connecting branch lines
- NJTPA Freight Concept Development Program Studies investigating potential improvements to eliminate constraints

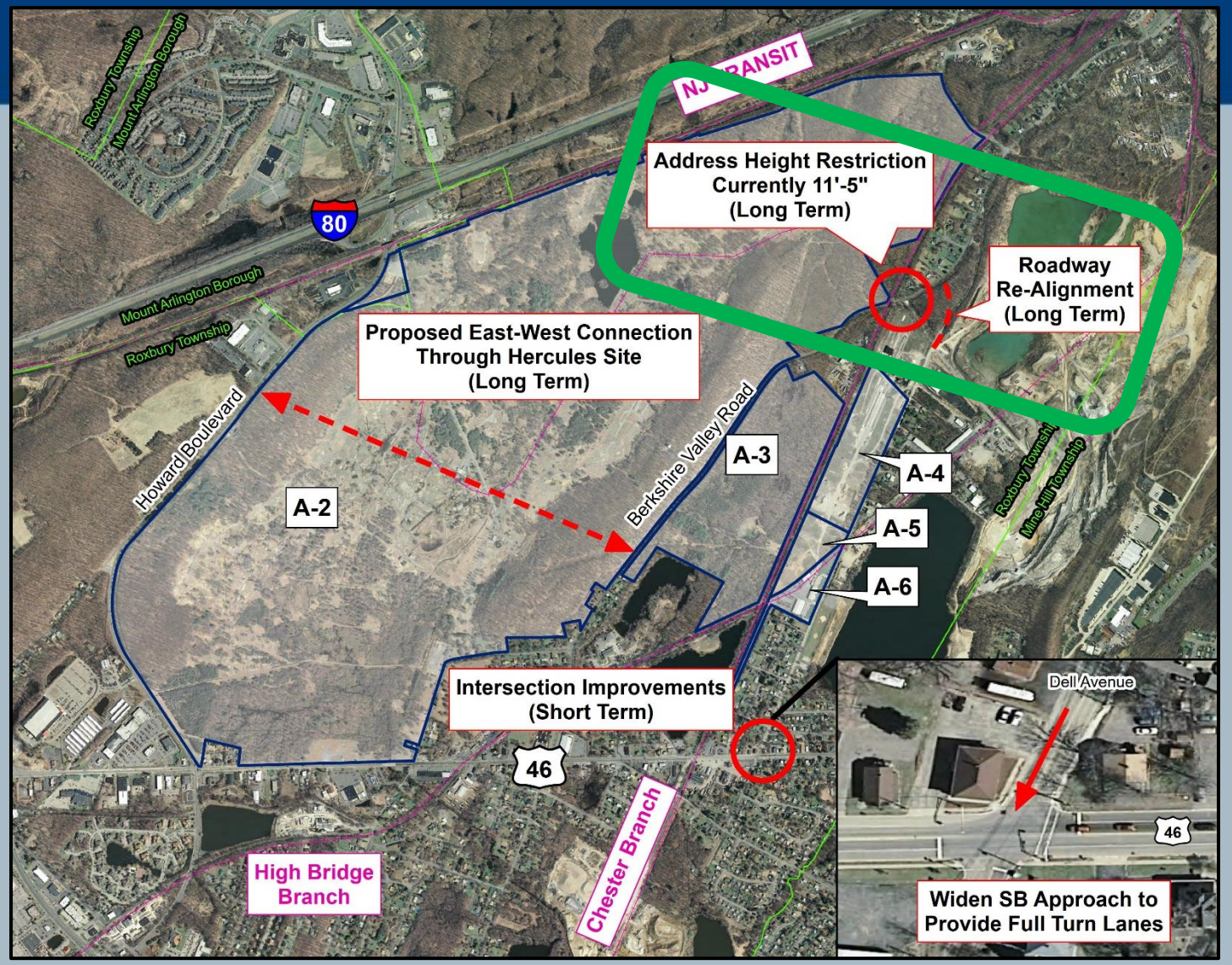




NJTPA

Project Overview





NJTPA

Project 1 – Eliminate Vertical Constraint

Existing Conditions

- Existing Vertical Clearance of 11’-5” – Chester Branch over Berkshire Valley Road
- Standard Dimension of Semi-Trailers is 13’-6”
- Targeting 14’-0” Vertical Clearance

NJTPA

Project 1 – Eliminate Vertical Constraint

- Approximately 10 roadway vehicles have struck the bridge in the past 3 years.
- Most recent strike resulted in closure of the Chester Branch to rail service and the temporary closure of Berkshire Valley Road while emergency repairs were being made





NJTPA

Project 1 – Eliminate Vertical Constraint

Potential Categories of Options

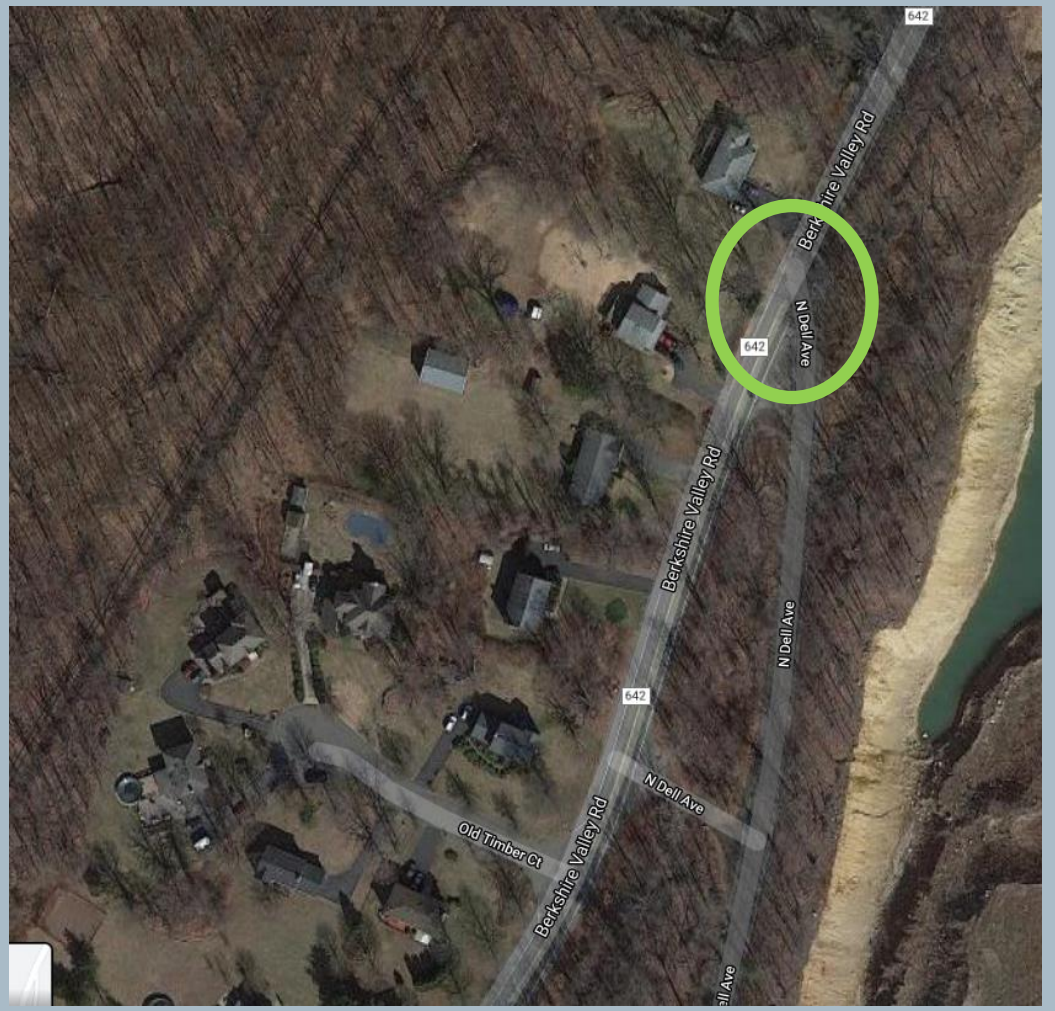
There are three basic categories of alternatives to develop and assess to provide additional vertical clearance below the structure

- Undercut the existing roadway
- Raise/Replace the existing rail bridge superstructure
- Realign the existing rail or roadway alignment to eliminate the convergence of the two corridors.

NJTPA

Project 2 – Realign Intersection of N. Dell Avenue with Berkshire Valley Road

Alignment of the intersection of N. Dell Avenue with Berkshire Valley Road is not conducive to truck movements



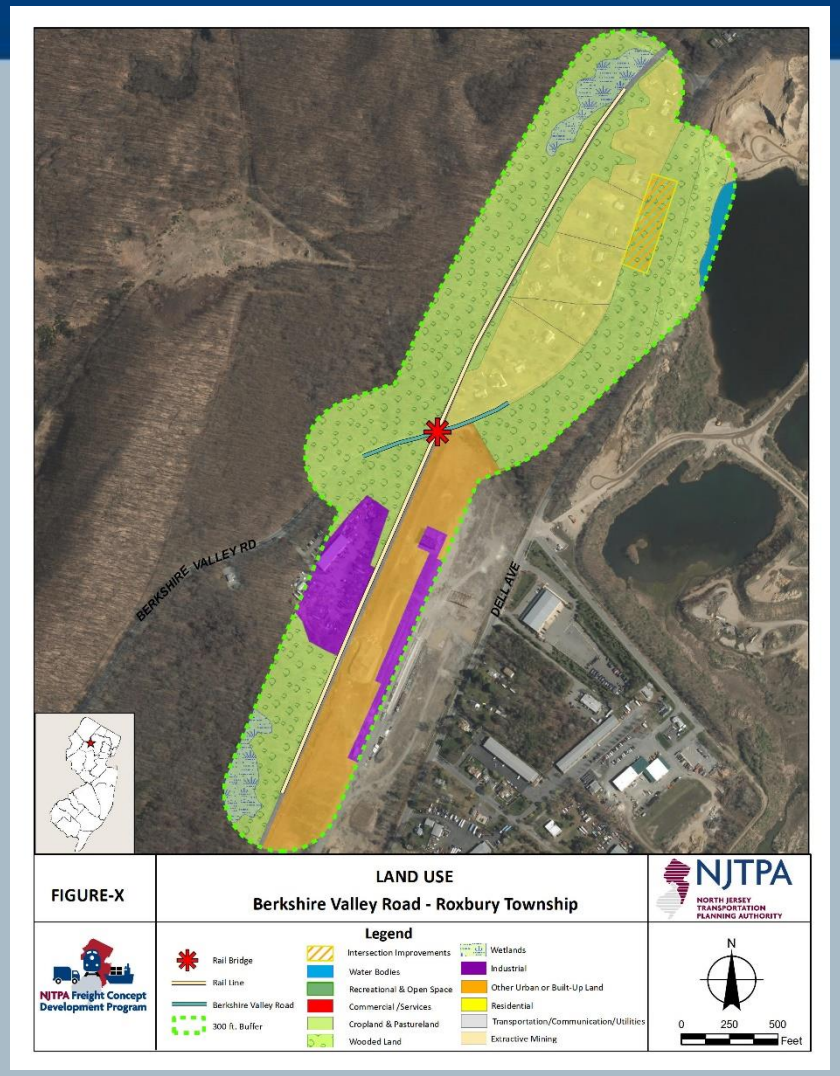
NJTPA

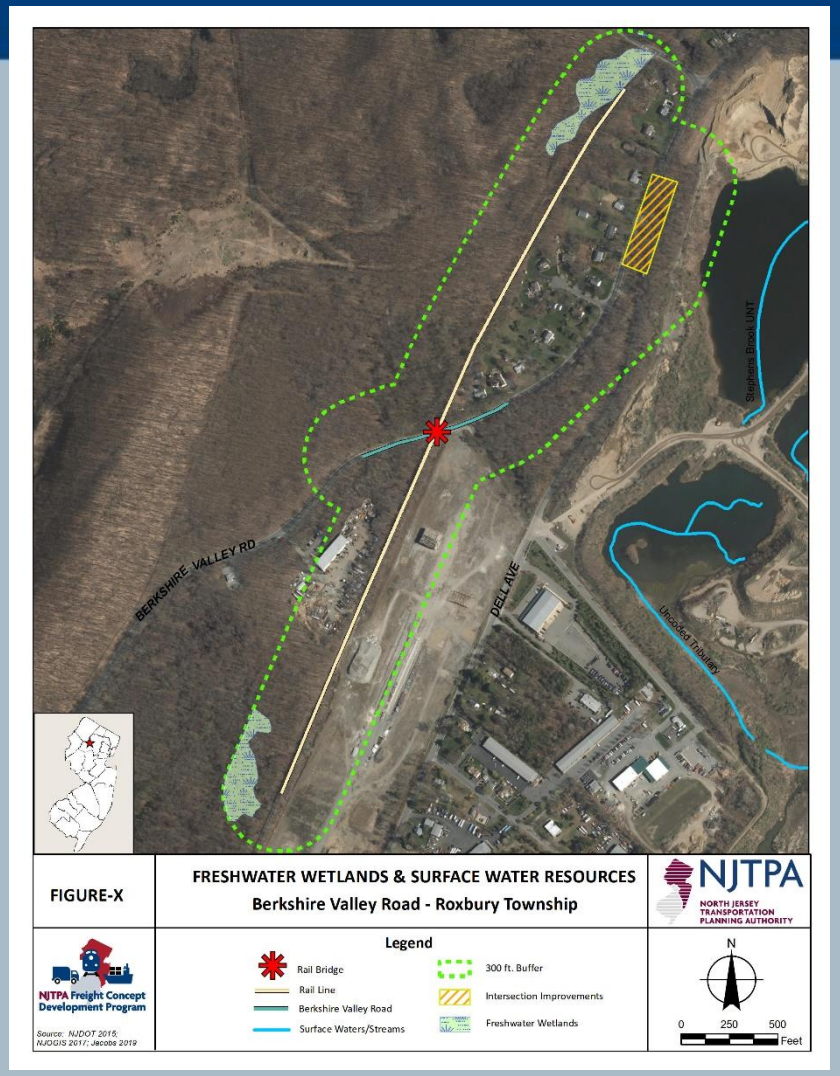
Potential Issues and Constraints

- Adjacent and Proximate Land Uses
- Historic and Cultural Resources
- Community Profile & Environmental Justice/Title VI
- Section 4(f)
- Wetlands
- Floodplains & Aquifers
- Threatened & Endangered Species
- Stormwater
- Hazardous Materials

NJTPA

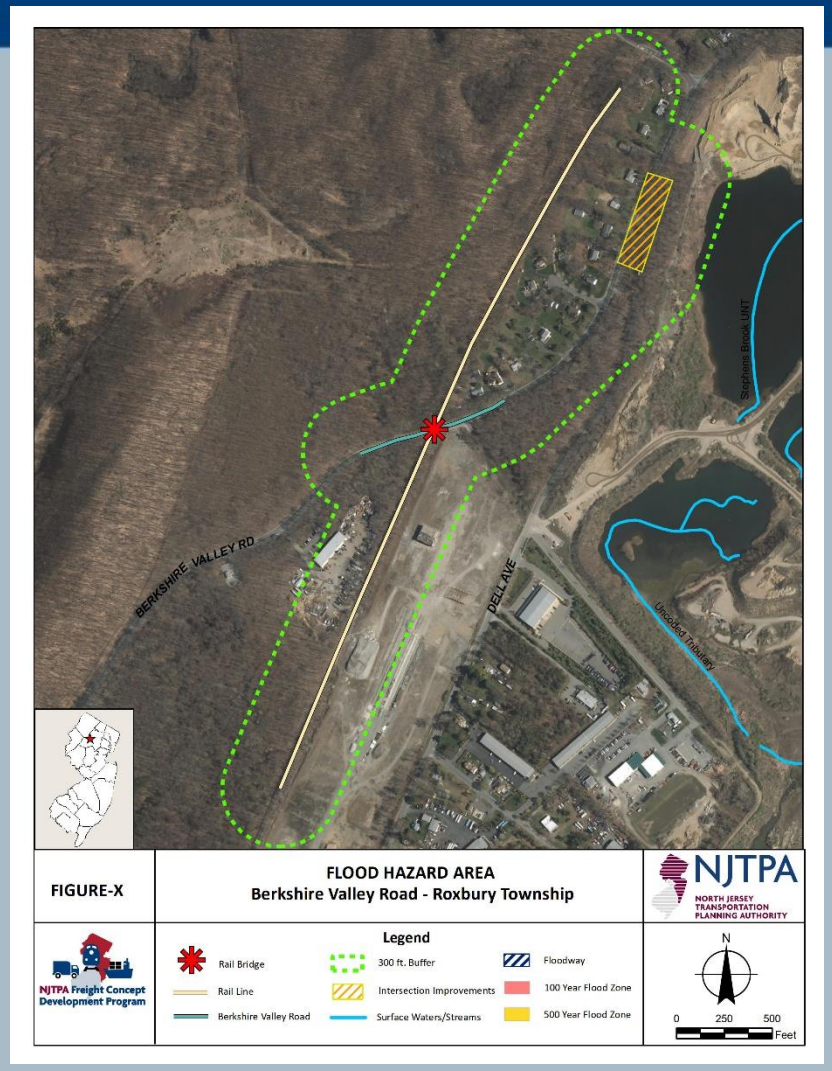
Environmental Constraints

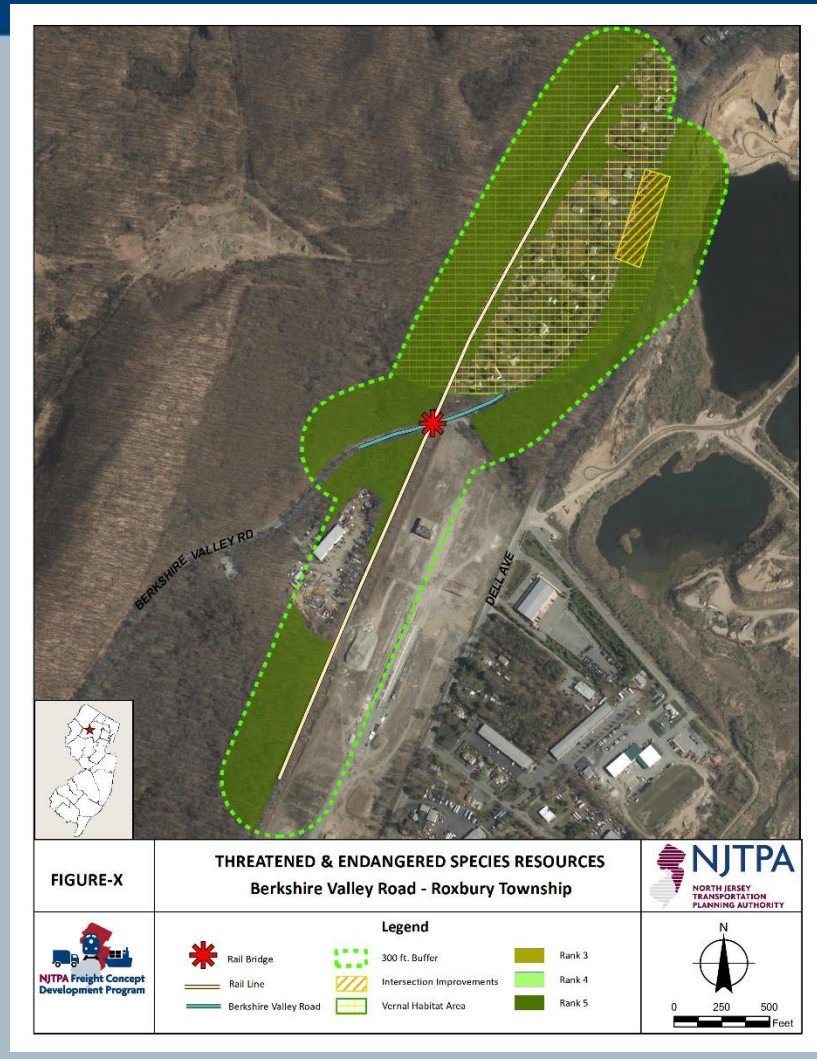




NJTPA

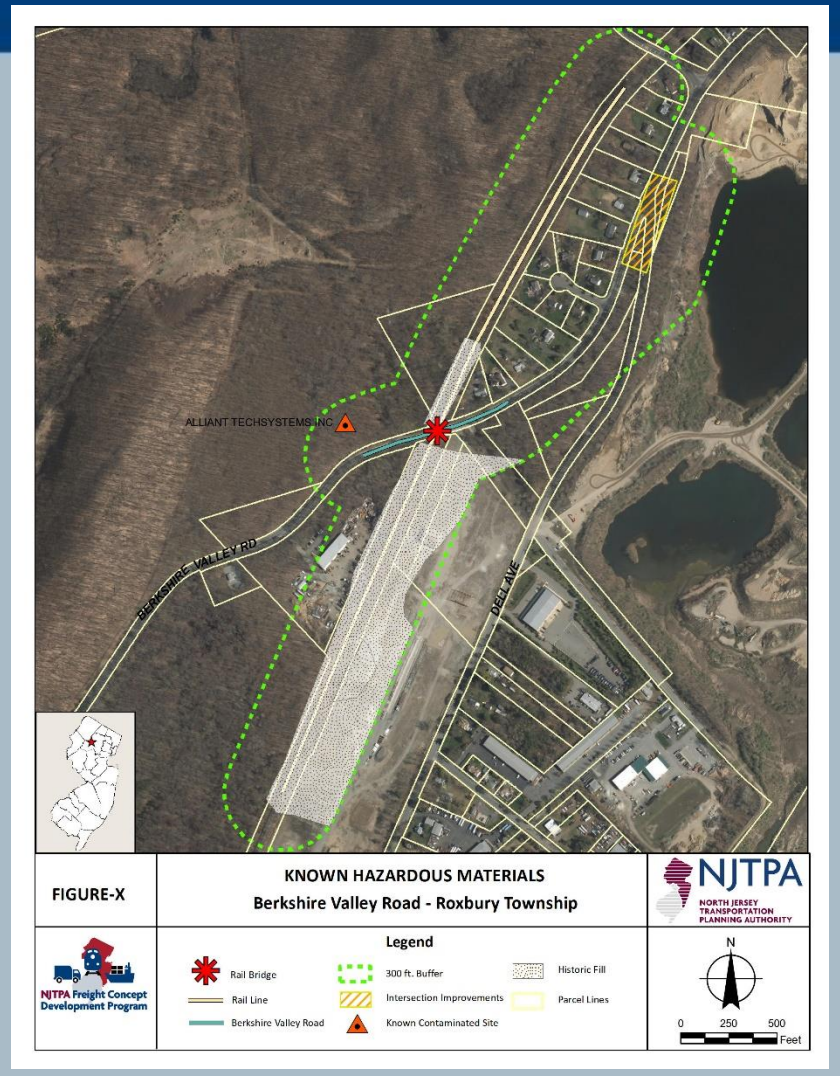
Environmental Constraints

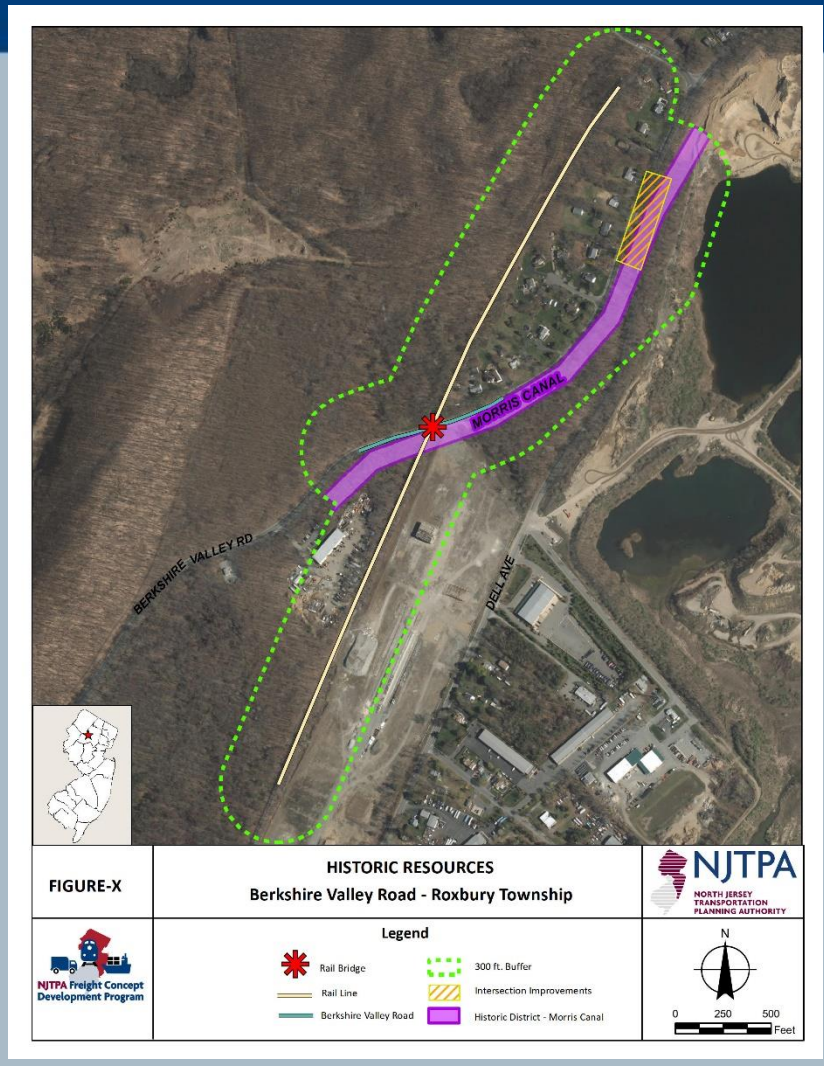




NJTPA

Environmental Constraints





NJTPA

Get Involved

Stakeholder involvement is critical

- Help develop a comprehensive Purpose and Need Statement
- Consider local issues in the development and screening of improvement concepts
- Identify the preferred alternative

NJTPA

Get Involved

- Local Officials Briefings (2)
- Stakeholder Outreach Meetings (2)
- Public Meetings (2)
- Project Website
- Social Media (Twitter, Facebook)

NJTPA

Progress to Date

- Assembled available existing data from the project stakeholders and other sources
- Performed environmental screening – foundation for constraints mapping
- Identified existing design deficiencies
- Drafted Purpose and Need Statement

NJTPA

Future Activities

- Finalize Purpose and Need Statement
- Develop engineering alternatives
- Alternatives assessment
- Construction cost estimates
- Selection of preliminary preferred alternative
- Alternative analysis documentation
- Value engineering/constructability review
- Risk management review and documentations

NJTPA

Thank You/Questions?

Defining the Vision. Shaping the Future.

NJTPA

NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

Jakub Rowinski
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Scott Parker
scott.parker@jacobs.com

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follow us on twitter

Find Us On Instagram

YouTube SUBSCRIBE TO OUR CHANNEL

Appendix G

Parcel Data



NJTPA

NJTPA Freight Concept Development Program

Jacobs

Berkshire Valley Road Truck Circulation Project
Parcels within Study Area

Block	Lot	County	Municipality	Street Address	Owner	Owner Address	Municipality	Zip Code
6802	13	MORRIS	ROXBURY TWP	70 BERKSHIRE VALLEY RD	DEEP CREEK HOLDINGS LLC	70 BERKSHIRE VALLEY RD	KENVIL, NJ	07847
7001	11	MORRIS	ROXBURY TWP	177 BERKSHIRE VALLEY RD	CARRERO, LUIS/ROBYN	177 BERKSHIRE VALLEY RD	KENVIL, NJ	07847
7002	4	MORRIS	ROXBURY TWP	111 N DELL AVE	ROXBURY MORTGAGE COMPANY	PO BOX 224	KENVIL, NJ	07847
7001	9	MORRIS	ROXBURY TWP	2 OLD TIMBERS CT	BRUTOSKY, CECELIA A/TIMOTHY J	2 OLD TIMBERS CT	KENVIL, NJ	07847
7002	5	MORRIS	ROXBURY TWP	164 BERKSHIRE VALLEY RD	ROXBURY MORTGAGE COMPANY	PO BOX 224	KENVIL, NJ	07847
7001	13	MORRIS	ROXBURY TWP	181 BERKSHIRE VALLEY RD	ORBIN, DOUGLAS	181 BERKSHIRE VALLEY RD	KENVIL, NJ	07847
7101	21	MORRIS	ROXBURY TWP	121 N DELL AVE	COUNTY CONCRETE CORP	50 RAILROAD AVE PO BOX F	KENVIL, NJ	07847
7001	1	MORRIS	ROXBURY TWP	157 BERKSHIRE VALLEY RD	SICSKO, MICHAEL	157 BERKSHIRE VALLEY RD	KENVIL, NJ	07847
7001	2.02	MORRIS	ROXBURY TWP	159 BERKSHIRE VALLEY RD	RANA, ANIL/SHAH, TRUSHNA	159 BERKSHIRE VALLEY RD	KENVIL, NJ	07847
7001	2.01	MORRIS	ROXBURY TWP	161 BERKSHIRE VALLEY RD	DELRUSSO, ANDREW	161 BERKSHIRE VALLEY RD	KENVIL, NJ	07847
7001	10	MORRIS	ROXBURY TWP	173 BERKSHIRE VALLEY RD	MICHELE, NICOLA/PATRICIA	173 BERKSHIRE VALLEY RD	KENVIL, NJ	07847
7001	7	MORRIS	ROXBURY TWP	6 OLD TIMBERS CT	GREMSPERGER, ADRIAN/DIANE	6 OLD TIMBERS CT	KENVIL, NJ	07847
7002	1	MORRIS	ROXBURY TWP	97 N DELL AVE	COUNTY CONCRETE CORP	50 RAILROAD AVE	KENVIL, NJ	07847
7001	14	MORRIS	ROXBURY TWP	183 BERKSHIRE VALLEY RD	JOHNSON, ELAINE/CHARLES C JR	183 BERKSHIRE VALLEY RD	KENVIL, NJ	07847
7002	2	MORRIS	ROXBURY TWP	142 N DELL AVE	SYLWAY PROPERTIES INC	47 N DELL AVE	KENVIL, NJ	07847
7002	3	MORRIS	ROXBURY TWP	101 N DELL AVE	ROXBURY MORTGAGE CO INC	PO BOX 224	KENVIL, NJ	07847
7001	8	MORRIS	ROXBURY TWP	4 OLD TIMBERS CT	MISEO, GIOVANNI/JOAN	4 OLD TIMBERS CT	KENVIL, NJ	07847
7001	4	MORRIS	ROXBURY TWP	1 OLD TIMBERS CT	BIZZARI, MICHAEL	1 OLD TIMBERS CT	KENVIL, NJ	07847
7001	12	MORRIS	ROXBURY TWP	179 BERKSHIRE VALLEY RD	SHUMAKER, WILLIAM E	179 BERKSHIRE VALLEY RD	KENVIL, NJ	07847
7001	5	MORRIS	ROXBURY TWP	3 OLD TIMBERS CT	BELCASTRO, PATRICK J/LYNN L	3 OLD TIMBERS CT	KENVIL, NJ	07847
7001	15	MORRIS	ROXBURY TWP	185 BERKSHIRE VALLEY RD	TORRES, ELVIS/SOSSA, CYNTHIA	185 BERKSHIRE VALLEY RD	KENVIL, NJ	07847
7001	3	MORRIS	ROXBURY TWP	165 BERKSHIRE VALLEY RD	DOUGAR, ANDREW/LUCY	165 BERKSHIRE VALLEY RD	KENVIL, NJ	07847
7001	16	MORRIS	ROXBURY TWP	187 BERKSHIRE VALLEY RD	ROMAN, EDVIN/ROSSANA	187 BERKSHIRE VALLEY RD	KENVIL, NJ	07847
7001	6	MORRIS	ROXBURY TWP	5 OLD TIMBERS CT	MANGANELLA, SAMUEL G/ELVIRA A	5 OLD TIMBERS CT	KENVIL, NJ	07847
7101	22	MORRIS	ROXBURY TWP	N DELL AVE, REAR	TOWNSHIP OF ROXBURY	1715 ROUTE 46	LEDGEWOOD, NJ	07852
7001	18	MORRIS	ROXBURY TWP	BERKSHIRE VALLEY RD	CHESTER BRANCH CO.	PO BOX 404	SUCCASUNNA, NJ	07876
7001	17	MORRIS	ROXBURY TWP	189 BERKSHIRE VALLEY RD	RODRIQUEZ, JOSE A/HERMINIA	189 BERKSHIRE VALLEY RD	WHARTON, NJ	07885
2702	26	MORRIS	ROXBURY TWP	US ROUTE 46	CONRAIL	6 PENN CENTER PLAZA	PHILADELPHIA, PA	19103
6802	11	MORRIS	ROXBURY TWP	60 BERKSHIRE VALLEY RD	HERCULES INC %TAX DIVISION	PO BOX 14000	LEXINGTON, KY	40512
6701	4	MORRIS	ROXBURY TWP	BERKSHIRE VALLEY RD	HERCULES INC %TAX DIVISION	PO BOX 14000	LEXINGTON, KY	40512
6701	1	MORRIS	ROXBURY TWP	BERKSHIRE VALLEY RD	HERCULES INC %TAX DIVISION	PO BOX 14000	LEXINGTON, KY	40512
6701	5	MORRIS	ROXBURY TWP	BERKSHIRE VALLEY RD	HERCULES INC %TAX DIVISION	PO BOX 14000	LEXINGTON, KY	40512
7204	2	MORRIS	ROXBURY TWP	BERKSHIRE VALLEY RD	HERCULES INC %TAX DIVISION	PO BOX 14000	LEXINGTON, KY	40512
7204	3	MORRIS	ROXBURY TWP	BERKSHIRE VALLEY RD	NJ TRANSIT C/O ENERGY SOLVE-UBAR-14	PO BOX 6077	SOMERSET, NJ	88736

Appendix H

Public Meeting Presentation Materials



NJTPA

NJTPA Freight Concept Development Program

Jacobs

Berkshire Valley Road Truck Circulation Project

Public Meeting

September 21, 2021



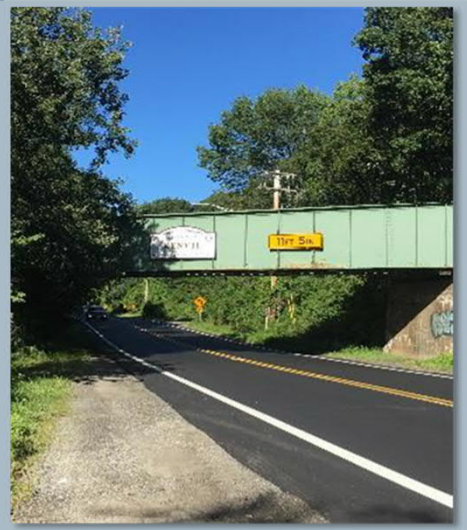


Jakub Rowinski, NJTPA Project Manager

Scott Parker, Jacobs Engineering Project Manager

Meeting Agenda

- Introductions
- Project Purpose and Need
- Project Background
- Project Overview
- Stakeholder Involvement
- Ongoing and Future Activities





NJTPA

MORRIS COUNTY, NJ ESTABLISHED 1738

Draft Project Purpose and Need

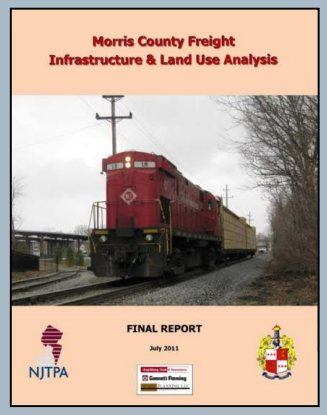
"The purpose of this project is to eliminate the height restriction that the Chester Branch rail bridge creates on Berkshire Valley Road (642), improve safety, and to improve the geometric configuration of the intersection of Berkshire Valley Road with N. Dell Avenue to efficiently accommodate large truck movements"

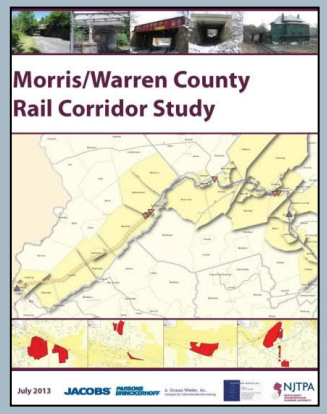
NJTPA

MORRIS COUNTY, NJ ESTABLISHED 1738

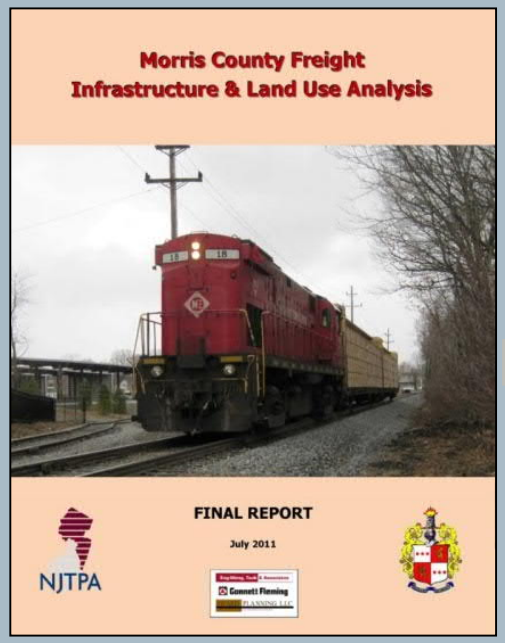
Project Background

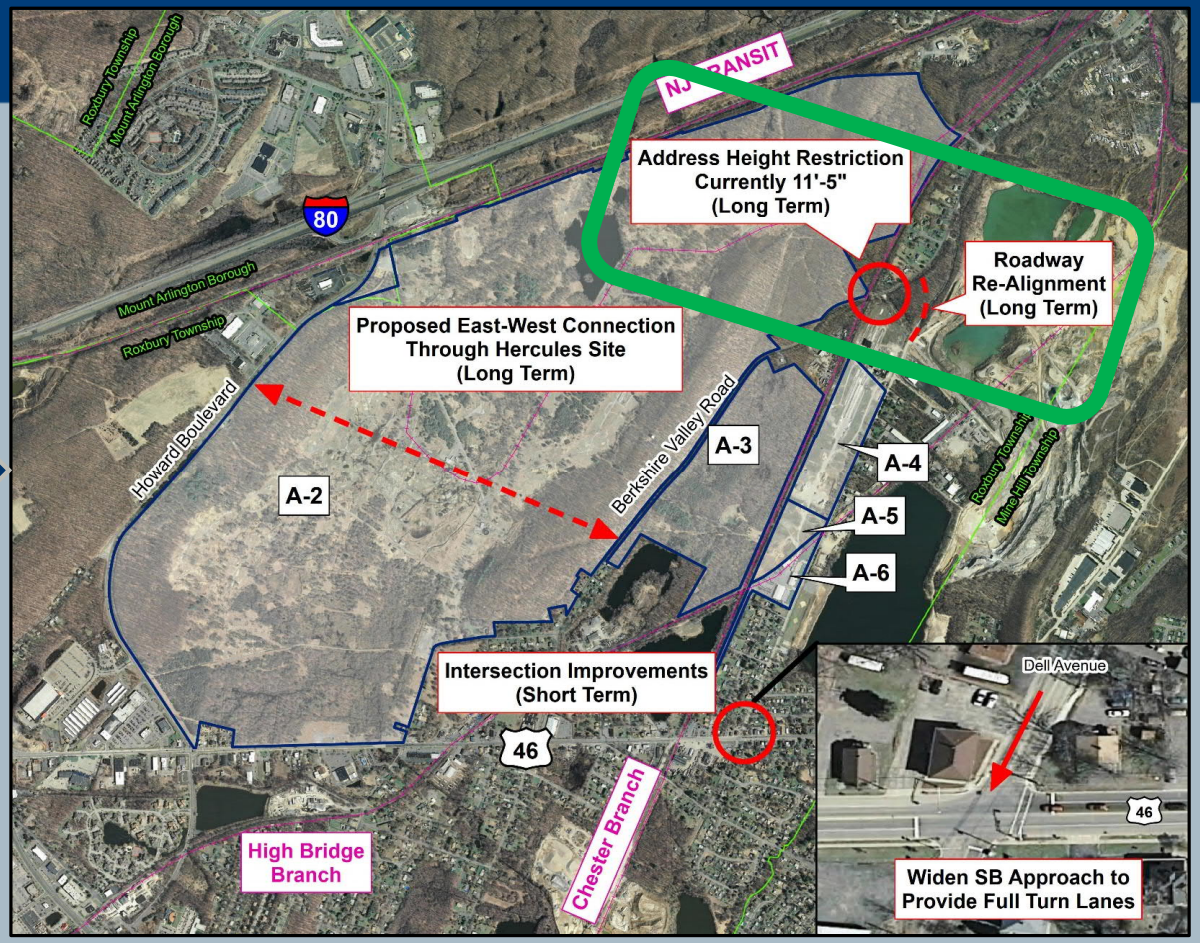
- Two previous studies identified a range of issues constraining state-of-the-industry freight rail operations on the Washington Secondary/Morristown Line Corridor and connecting branch lines
- NJTPA Freight Concept Development Program Studies investigating potential improvements to eliminate constraints





Project Overview





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MORRIS COUNTY, NJ ESTABLISHED 1738

Project 1 – Eliminate Height Restriction

Existing Conditions

- Existing Vertical Clearance of 11’-5” – Chester Branch over Berkshire Valley Road
- Standard Dimension of Semi-Trailers is 13’-6”
- Targeting 14’-0” Vertical Clearance

NJTPA

MORRIS COUNTY, NJ ESTABLISHED 1738

Project 1 – Eliminate Height Restriction

- Approximately 10 vehicles have struck the bridge in the past 3 years.
- Most recent strike resulted in closure of the Chester Branch to rail service and the temporary closure of Berkshire Valley Road while emergency repairs are being made.





NJTPA

MORRIS COUNTY NJ ESTABLISHED 1738

Project 1 – Eliminate Height Restriction

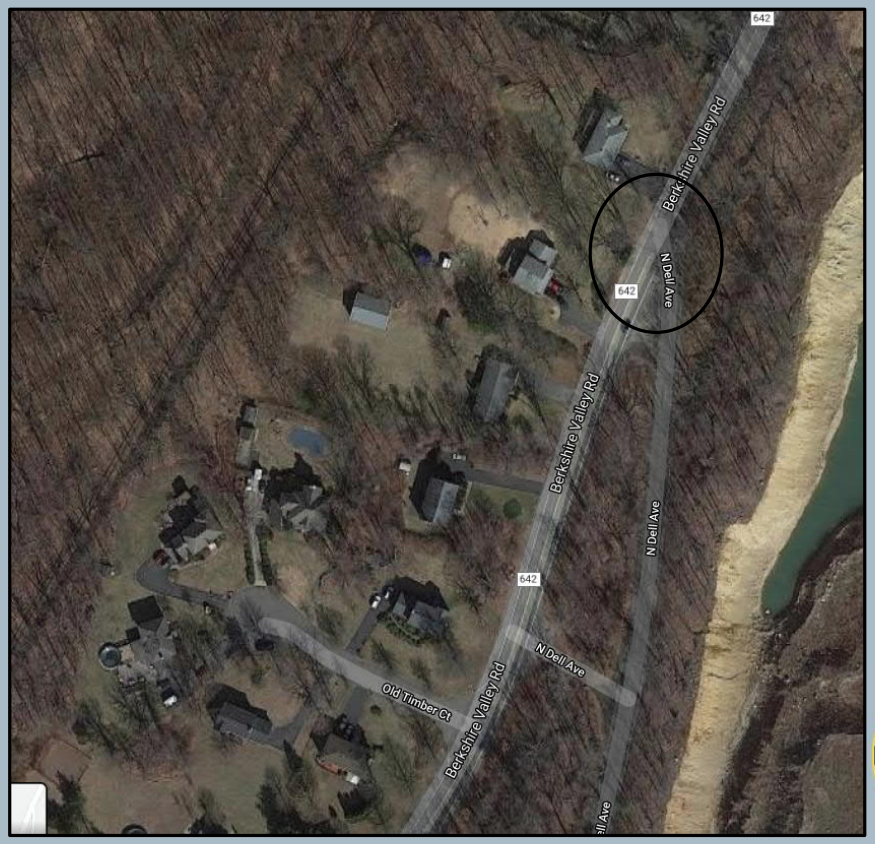
Potential Categories of Options

There are three basic categories of alternatives to develop and assess to provide additional vertical clearance below the structure

- Undercut the existing roadway
- Raise/Replace the existing rail bridge superstructure
- Realign the existing rail or roadway alignment to eliminate the convergence of the two corridors.

Project 2 – Realign Intersection of N. Dell Avenue with Berkshire Valley Road

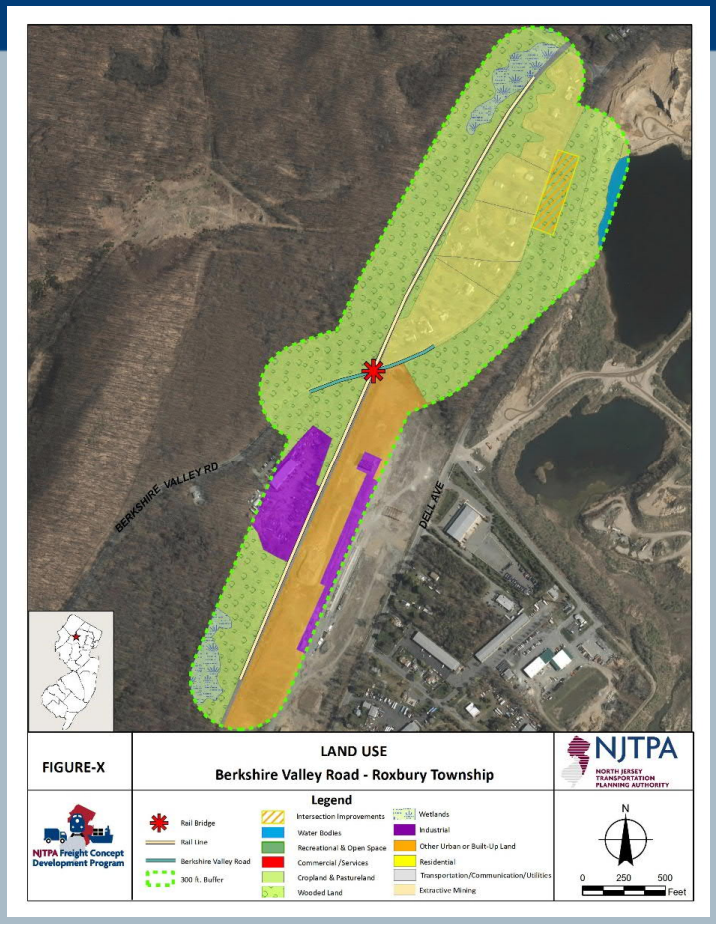
Alignment of the intersection of N. Dell Avenue with Berkshire Valley Road is not conducive to truck movements

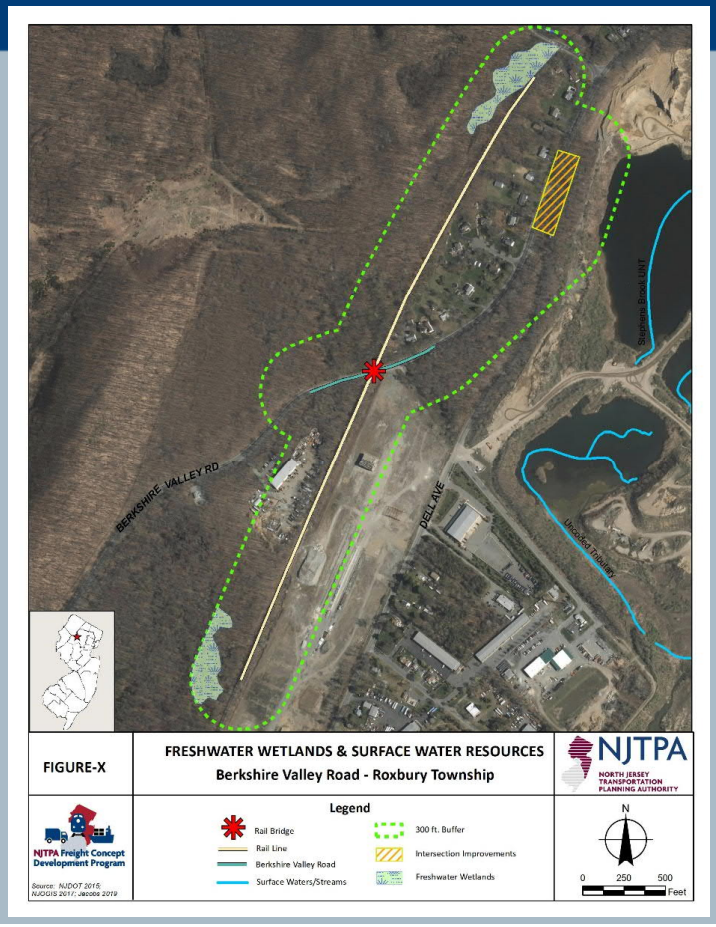


Potential Issues and Constraints

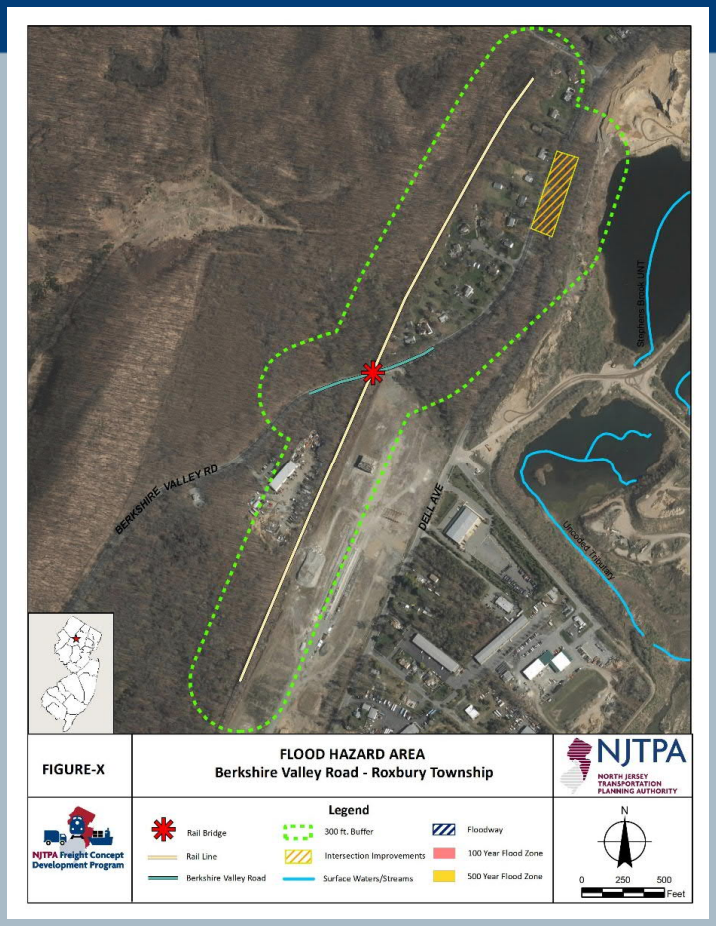
- Adjacent and Proximate Land Uses
- Historic and Cultural Resources
- Community Profile & Environmental Justice/Title VI
- Section 4(f)
- Wetlands
- Floodplains & Aquifers
- Threatened & Endangered Species
- Stormwater
- Hazardous Materials

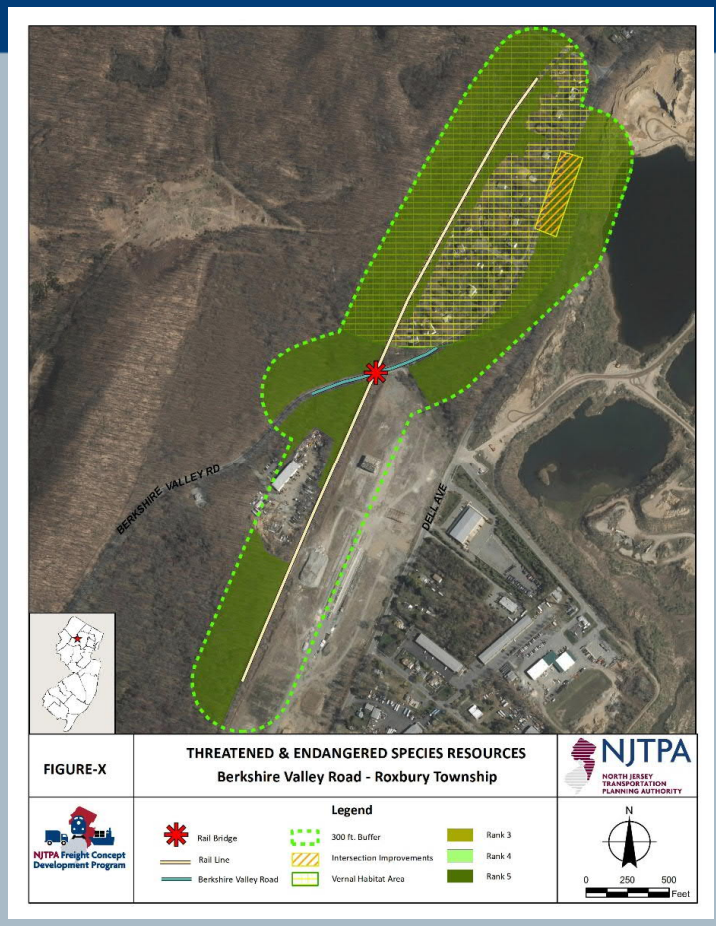
Environmental Constraints



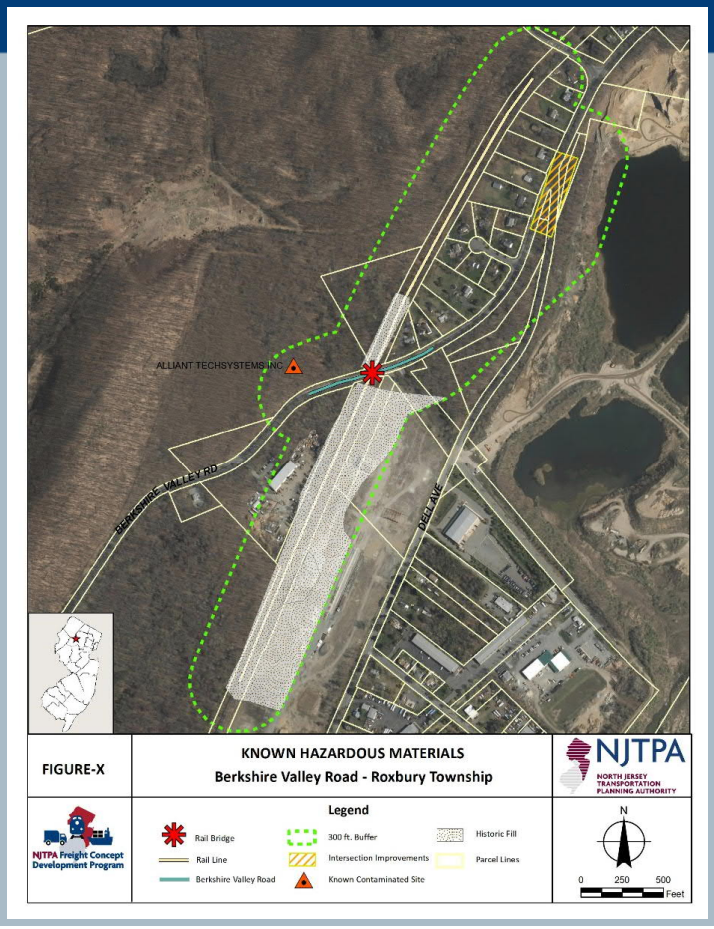


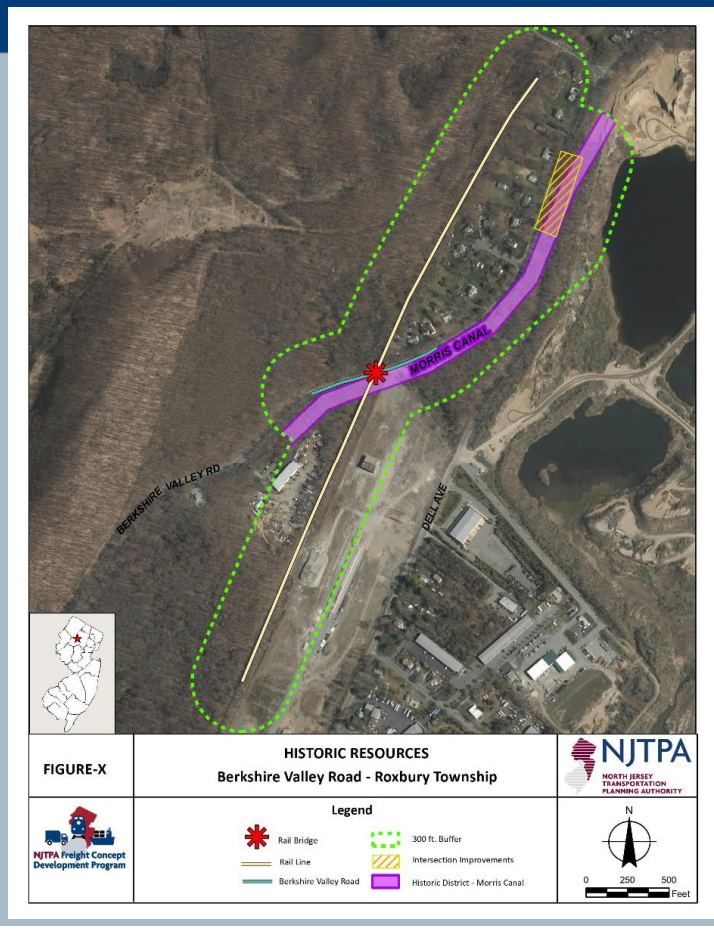
Environmental Constraints



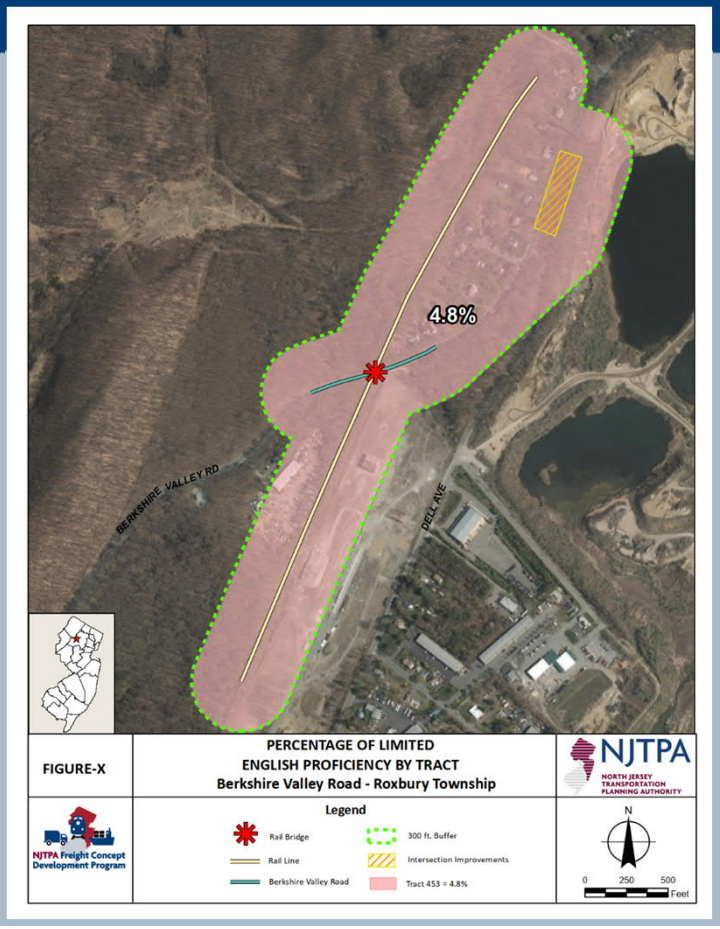


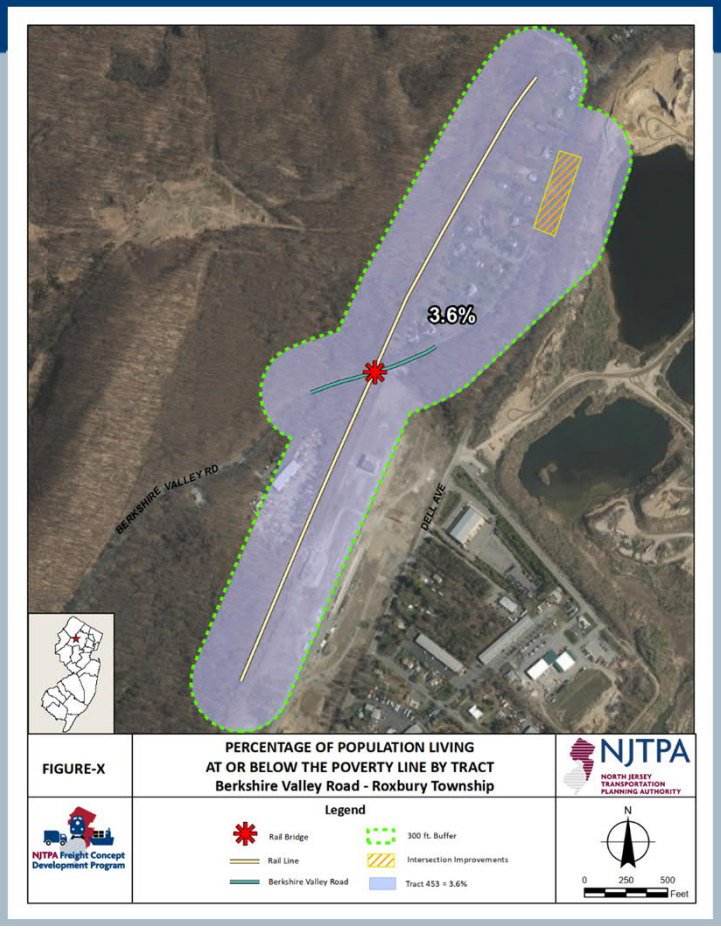
Environmental Constraints



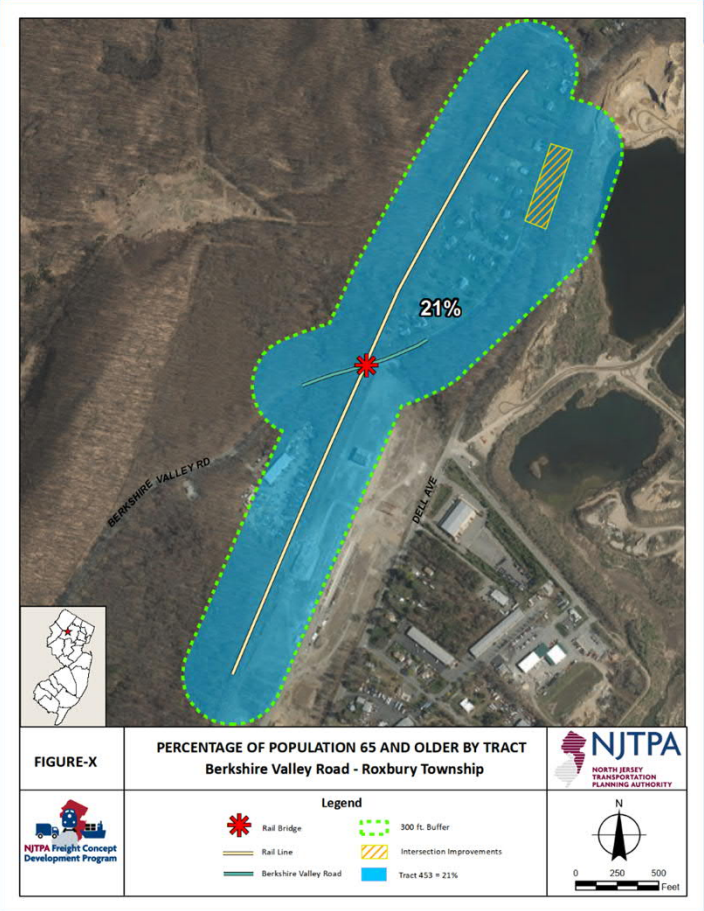


Community Profiles





Community Profiles



Get Involved

Stakeholder involvement is critical

- Help develop a comprehensive Purpose and Need Statement
- Consider local issues in the development and screening of improvement concepts
- Identify the preferred alternative

Get Involved

- Local Officials Briefings (2)
- Stakeholder Outreach Meetings (2)
- Public Meetings (2)
- Project Website: www.berkshirevalleyroadstudy.com
- Social Media (Twitter, Facebook)

Progress to Date

- Assembled available existing data from the project stakeholders and other sources
- Performed environmental screening – foundation for constraints mapping
- Identified existing design deficiencies
- Drafted Purpose and Need Statement

Future Activities

- Finalize Purpose and Need Statement
- Develop engineering alternatives
- Alternatives assessment
- Construction cost estimates
- Selection of Preliminary Preferred Alternative
- Alternative analysis documentation
- Value engineering/constructability review
- Risk management review and documentations

Public Comments

- Comments from the public are welcome and encouraged
- Public comment period will remain open through Friday November 5, 2021
- Submit your comments to:

  Jakub Rowinski-NJTPA Project Manager
  jrowinski@njtpa.org
  Scott Parker-Jacobs Engineering Project Manager
  scott.parker@jacobs.com

Thank You/Questions?

Defining the Vision. Shaping the Future.

NJTPA

NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

Jakub Rowinski
jrowinski@njtpa.org
Scott Parker
scott.parker@jacobs.com

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Berkshire Valley Road Truck Circulation Project

Public Meeting No. 2

March 15, 2023





Jakub Rowinski, NJTPA Project Manager

Scott Parker, Jacobs Engineering Project Manager

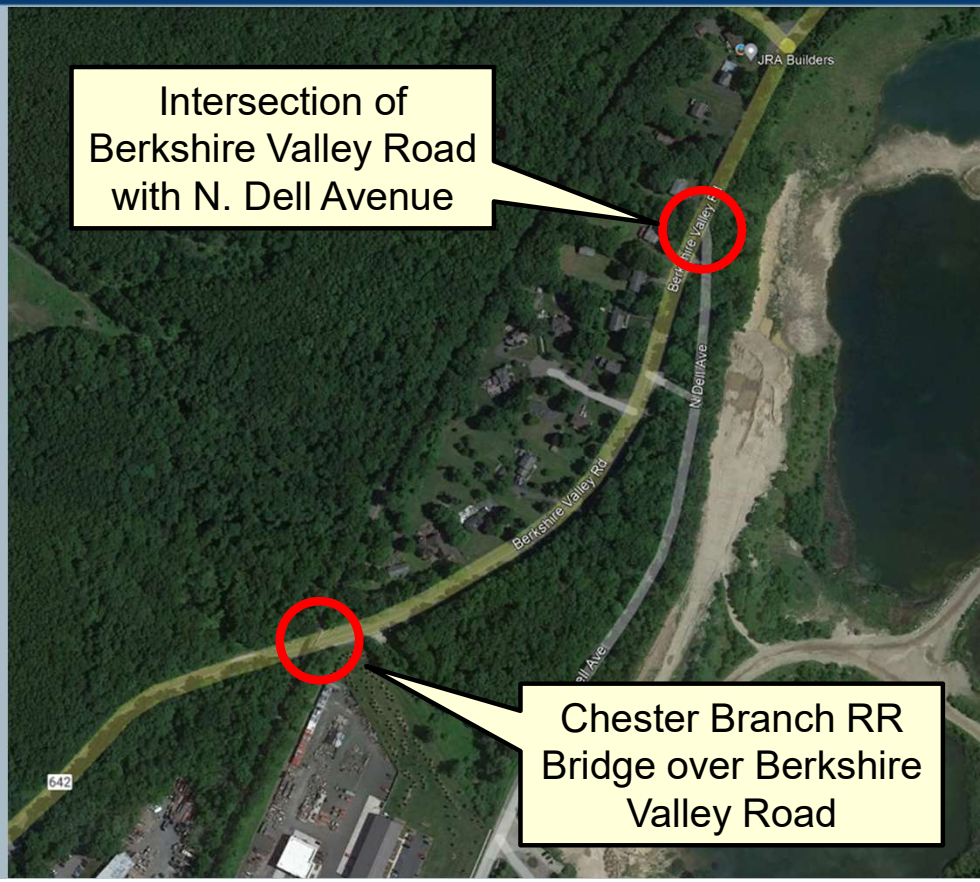
Meeting Agenda

- Project Overview
- Environmental Constraints
- Stakeholder Engagement
- Alternatives Scoring and Selection of Preliminary Preferred Alternative (PPA)
- Next Steps

Project Overview

"The purpose of this project is to eliminate the height restriction that the Chester Branch rail bridge creates on Berkshire Valley Road (642) and to improve the geometric configuration of the intersection of Berkshire Valley Road with N. Dell Avenue to efficiently accommodate large truck movements"

<u>Two projects with independent utility.</u> Implemented together, the combined benefits would better support the management of truck circulation and industrial development in the immediate area.



Project 1 – Eliminate Vertical Constraint

Existing Conditions

- Existing Vertical Clearance of 12′-2″ (signed for 11′-5″) – Chester Branch over Berkshire Valley Road
- Standard Dimension of Semi-Trailers up to 13′-6″
- Targeting 14′-3″ Vertical Clearance

NJTPA

MORRIS COUNTY, NJ ESTABLISHED 1738

Project 1 – Eliminate Vertical Constraint

- Approximately 10 vehicles have struck the bridge in the past 3 years
- Most recent strike resulted in closure of the Chester Branch to rail service and the temporary closure of Berkshire Valley Road while emergency repairs were being made





Project 1 – Eliminate Vertical Constraint

Potential Categories of Options

There are three basic categories of alternatives to develop and assess to provide additional vertical clearance below the structure

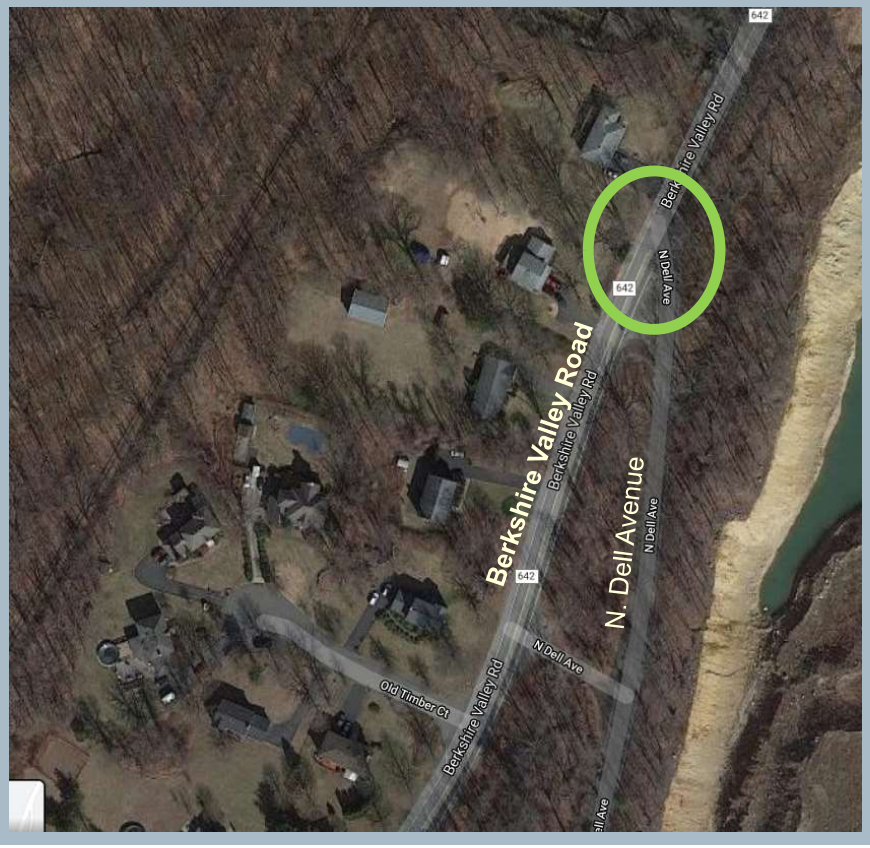
- **Undercut** the existing roadway
- **Realign** the existing rail or roadway alignment to eliminate the convergence of the two corridors
- **Raise/Replace** the existing rail bridge superstructure

NJTPA

MORRIS COUNTY, NJ ESTABLISHED 1738

Project 2 – Realign Intersection of N. Dell Avenue with Berkshire Valley Road

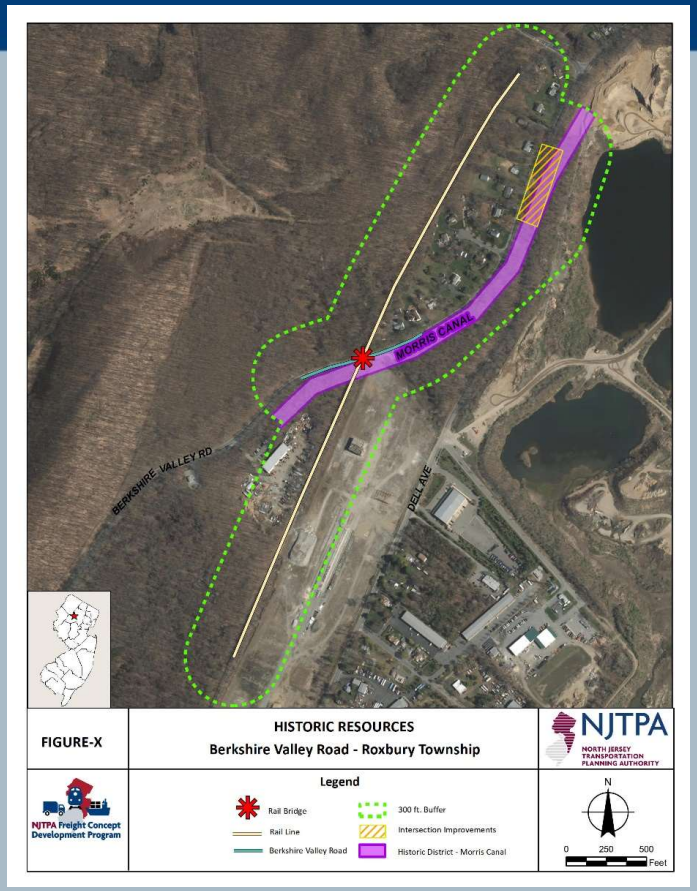
Existing alignment of the intersection of N. Dell Avenue with Berkshire Valley Road is not conducive to truck movements

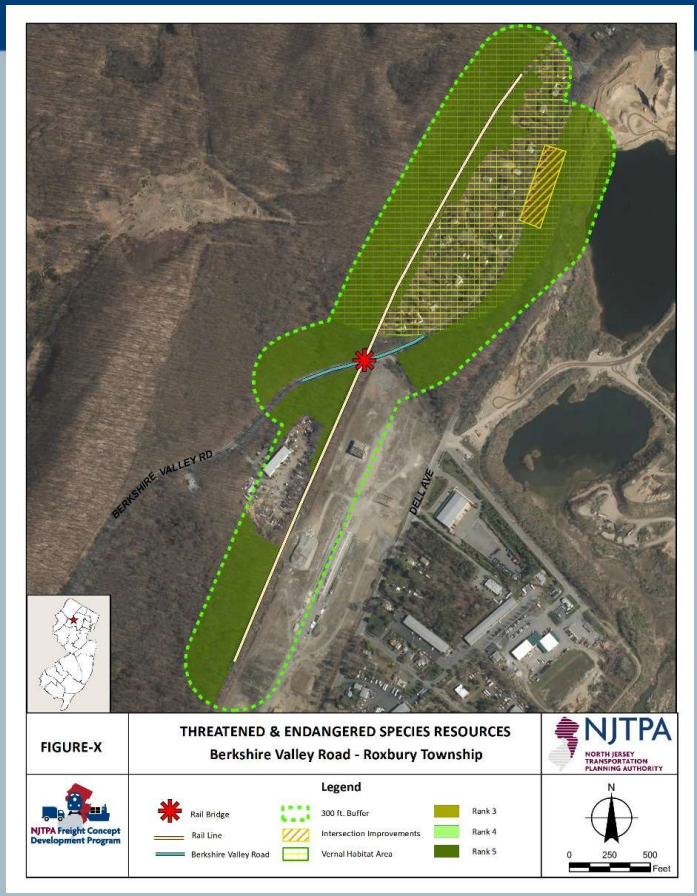


Potential Constraints

- **Historic and Cultural Resources**
- **Threatened & Endangered Species**
- Adjacent and Proximate Land Uses
- Community Profile & Environmental Justice/Title VI
- Section 4(f)
- Wetlands
- Floodplains & Aquifers
- Stormwater
- Hazardous Materials
- Utilities

Potential Constraints





Utilities


UTILITY LEGEND
VERIZON (OVERHEAD / UNDERGROUND)
NEW JERSEY NATURAL GAS COMPANY (2 12" STEEL TRANS.MAIN)
JCP&L (OVERHEAD)
CABLE VISION (OVERHEAD)
Berkshire Valley Road
1 4" Gas Plastic Distribution Main
Berkshire Valley Road
North Dell Avenue

Stakeholder Engagement

- Local Officials Briefing No. 1 – August 3, 2021
- Presentation to Roxbury Township Council – September 14, 2021
- Public Meeting No. 1 – September 21, 2021
- Morris County Board of Transportation – October 19, 2021
- Local Officials Briefing No. 2 – January 19, 2023
- Study Website – www.berkshirevalleyroadstudy.com
- Coordination with Freight Rail Operator
- Local Property Owners
  - Proximate Residents
  - Representative of the owners of the property bounded by N. Dell Avenue and Berkshire Valley Road

NJTPA

MORRIS COUNTY, NJ ESTABLISHED 1738

Project 1 - Vertical Clearance Elimination

Criteria	Vertical Constraint Elimination															
						Elevate Bridge (identical alignment…just different construction) Elevation 13 ft 6 in						ABC Full Replacement at 14 ft 3 in				
	Depress Roadway	Depress Rail	New Roadway Alignment - Close Berkshire Valley Rd	New Roadway Alignment - Maintain Berkshire Valley Rd	New Parallel Rail Alignment	Existing Superstructure / Existing Substructure	Existing Superstructure / New Substructure	New Superstructure / Existing Substructure	New Superstructure / New Substructure	ABC Bridge Replacement - Existing Superstructure	ABC Bridge Replacement - New Superstructure	Precast Concrete Cantilever Abuttments	Precast Concrete Anchor Wall Abutments	Mechanically Stabilized Earth Systems (MSE) Abutments	Modular Block Wall Abutments	Pile-Supported Substructure
Alternative No.	**1.0**	**2.0**	**3.1**	**3.2**	**4.0**	**5.1a**	**5.1b**	**5.1c**	**5.1d**	**5.1e**	**5.1f**	**5.2 a**	**5.2b**	**5.2c**	**5.2d**	**5.2e**
Meets Project Purpose and Need	5	5	5	0	5	5	5	5	5	5	5	5	5	5	5	5
Freight Rail / Truck Operations Impacts / Benefits - During Construction	0	-5	0	0	0	-3	-5	-3	-5	0	0	0	0	0	0	-1
Freight Rail / Truck Operations Impacts / Benefits - After Construction	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Passenger Rail Operations Impacts / Benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjacent and Proximate Land Use Impacts / Benefits	0	0	-1	0	0	-1	-1	-1	-1	-1	-1	-1	-3	-1	-1	-1
Historic and Cultural Resources Impacts / Benefits	0	-3	0	0	-3	-1	-1	-1	-1	-1	-1	0	-1	-1	-1	-1
Community Profile & Environmental Justice/Title VI Impacts / Benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wetlands Impacts / Benefits	-1	-1	-5	-5	-3	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Floodplains & Aquifers Impacts / Benefits	-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Threatened & Endangered Species Impacts / Benefits	-1	-3	-3	-3	-3	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Stormwater and Drainage Impacts / Benefits	-3	0	-3	-3	-3	0	0	0	0	0	0	0	0	0	0	0
Hazardous Materials Impacts / Benefits	-1	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
Air Quality & Noise Impacts / Benefits	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Community Impacts / Benefits	-1	1	-1	1	1	1	1	1	1	1	1	1	1	1	1	1
Safety Impacts / Benefits	3	3	3	1	3	3	3	3	3	3	3	3	3	3	3	3
Utility Impacts / Relocation Requirements	-3	-3	0	0	0	0	-1	0	-1	0	0	0	0	0	0	0
Project Independence – Creates or Eliminates Need for other infrastructure project	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Roadway Operational and Mobility Impacts / Benefits	1	-1	-1	1	1	1	1	1	1	1	1	1	1	1	1	1
Summary Score	**-4**	**-11**	**-7**	**-9**	**-5**	**0**	**-3**	**0**	**-3**	**3**	**3**	**4**	**1**	**3**	**3**	**2**

NJTPA

Preliminary Preferred Alternative - Bridge

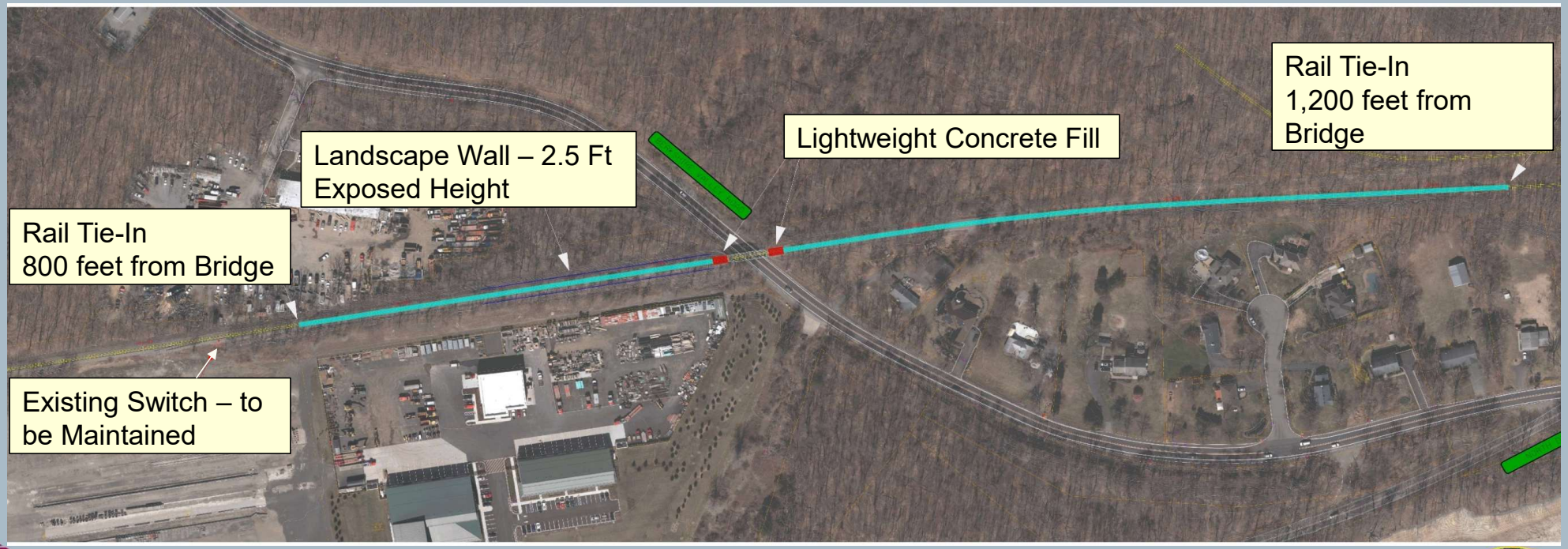
Alternative 5.2a

- Replicate look and feel of the existing bridge
- Replace and heighten the bridge substructure to accommodate a 14′ 3″ vertical clearance beneath the bridge
- Replace existing superstructure with a new thru-girder bridge. Fabricated off-site and lifted into place on top of the new abutments
- Re-profile tracks to meet the new bridge elevation
- Construction duration – Approximately 14 days

NJTPA

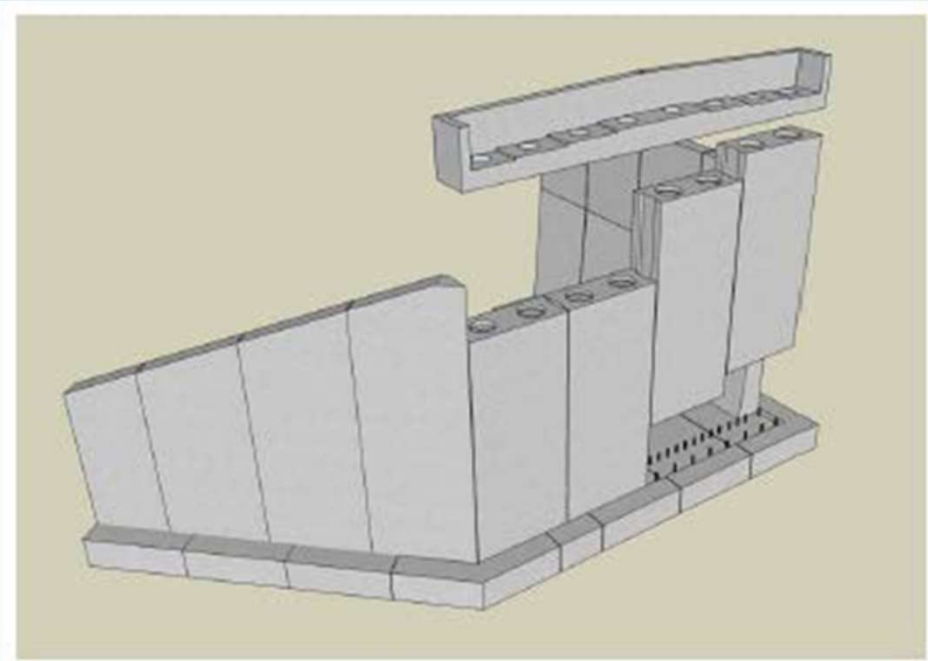
MORRIS COUNTY, NJ ESTABLISHED 1738

Preliminary Preferred Alternative - Bridge

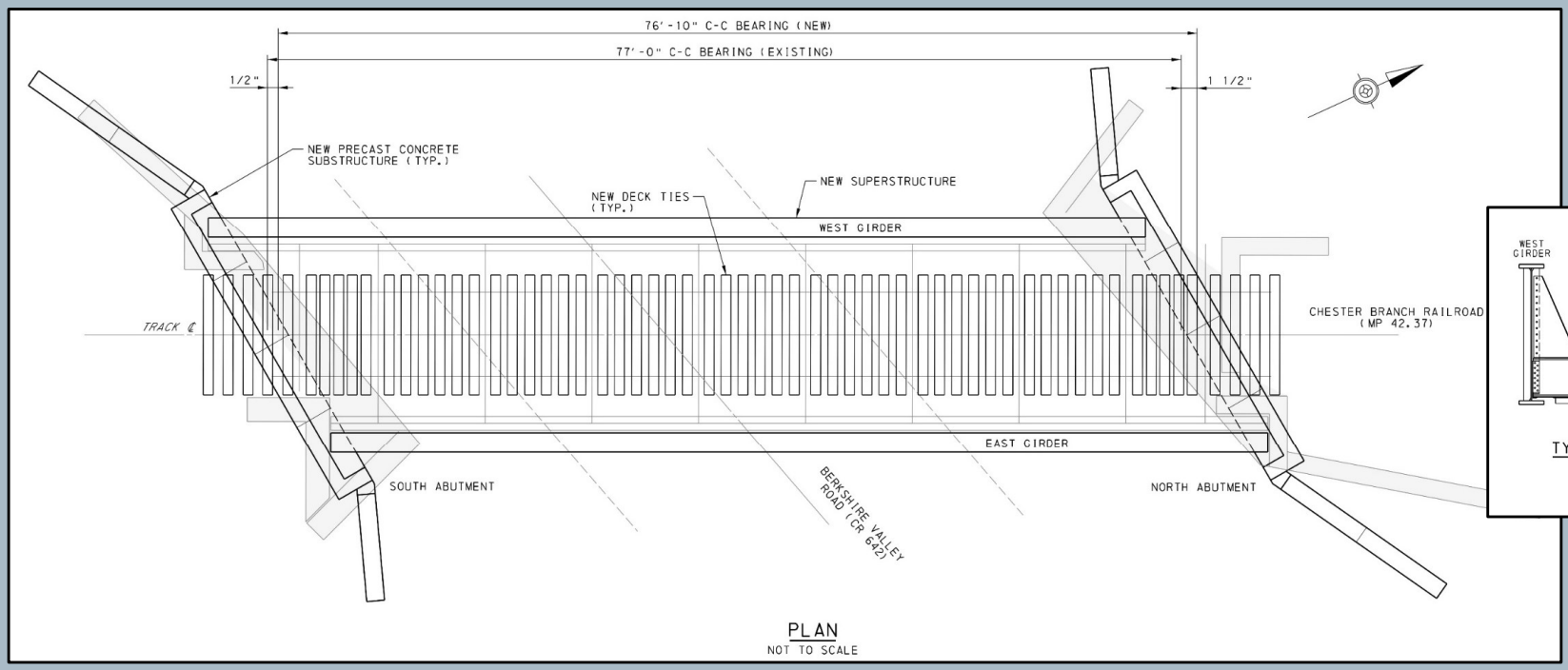


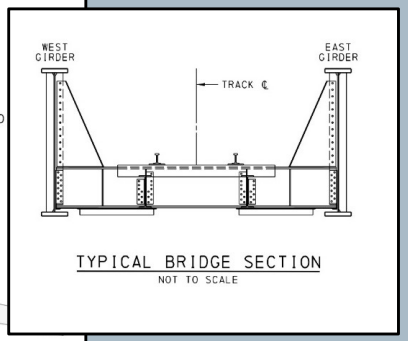
Preliminary Preferred Alternative - Bridge

- Accelerated Bridge Construction to fully replace the bridge with precast cantilever abutments
- Precast concrete components that are rapidly assembled in place and post-tensioned/ grouted/ spliced

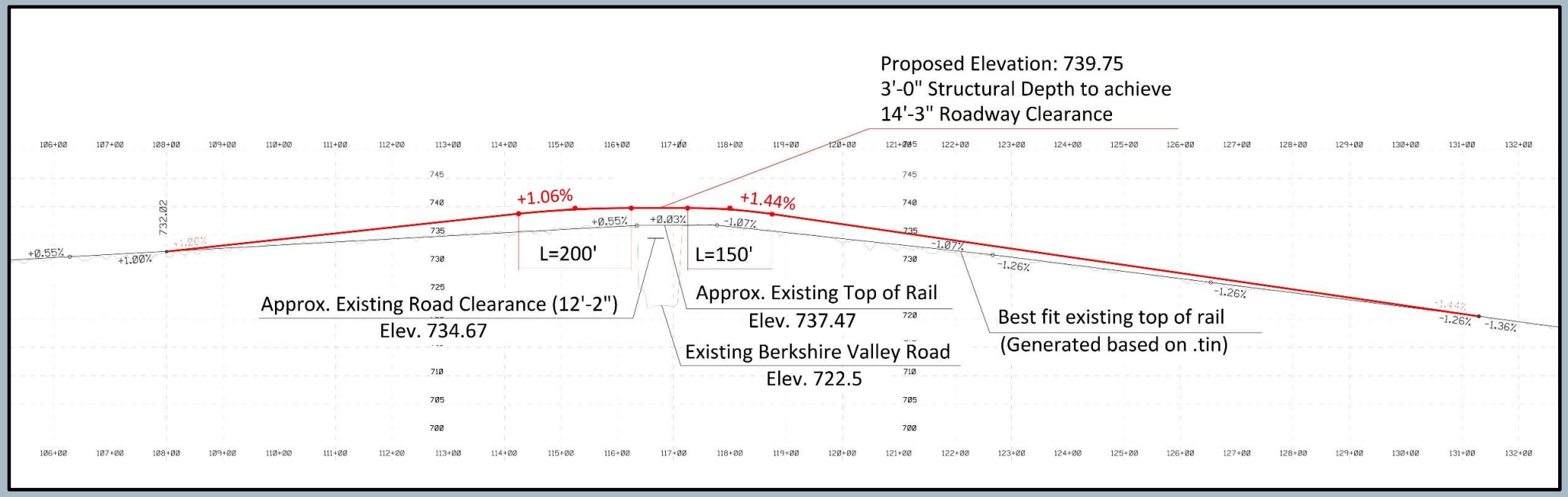


Preliminary Preferred Alternative - Bridge





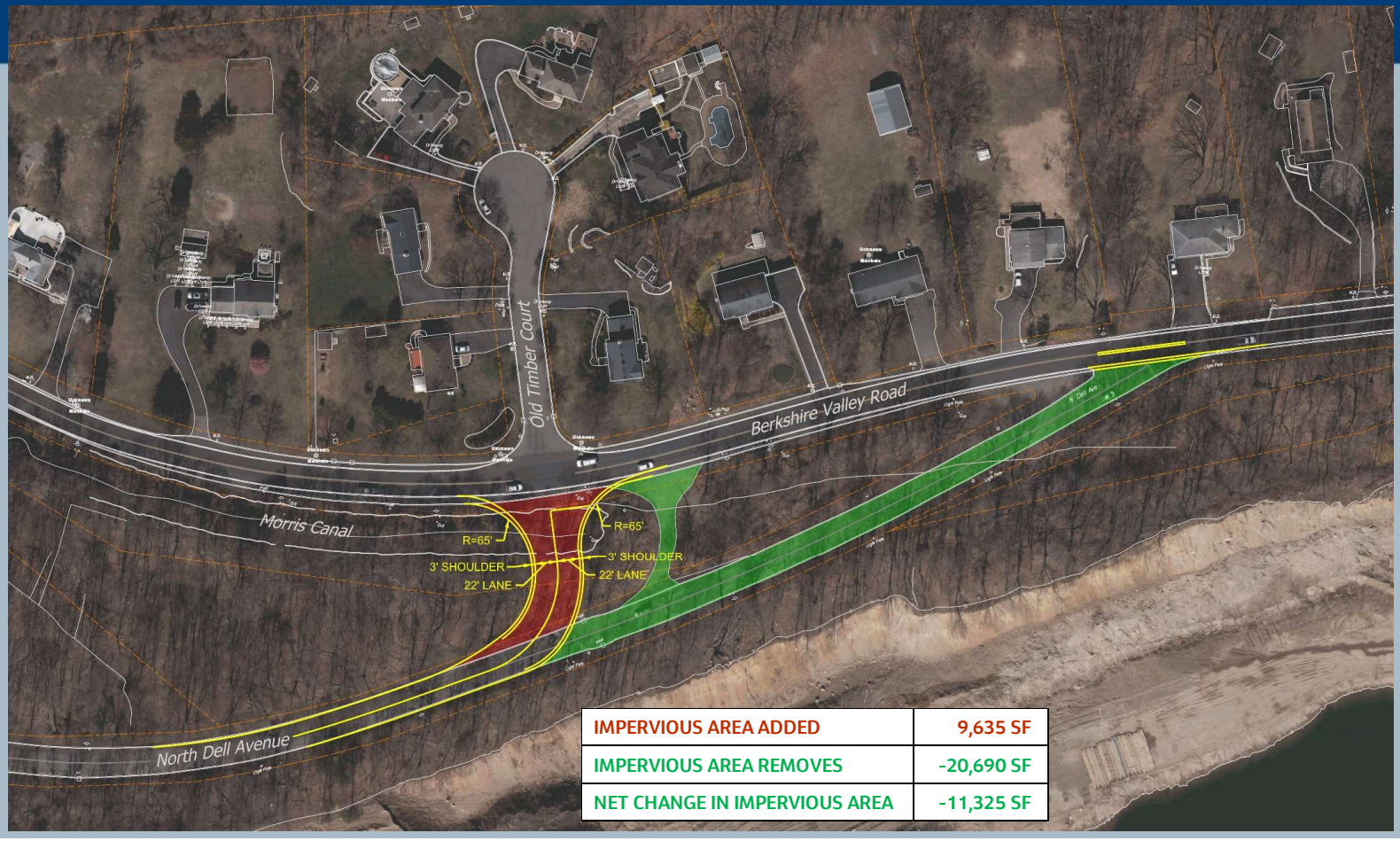
Preliminary Preferred Alternative - Bridge



Project 2 - Intersection Reconfiguration

Criteria	Intersection Modification								
	Realignment			Reconfiguration					
	Recycling Center Driveway Extension	Mid-Field Connection	Old Timber Court Connection	Cut-Thru Plus Reconfigure Existing (1)	Cut-Thru Plus Reconfigure Existing (2)	Split Connections - New Plus Reconfigured Existing	Relocate with 90-degree intersection	Maintain Location with 90-degree Intersection	VE Alternative - Round-About at Old Timber Court (modification of Alt I.3)
Alternative No.	**I.1**	**I.2**	**I.3**	**I.4**	**I.5**	**I.6**	**I.7**	**I.8**	**VE.1**
Meets Project Purpose and Need	5	5	5	5	5	5	5	5	5
Freight Rail / Truck Operations Impacts / Benefits - During Construction	0	0	0	0	0	0	0	0	-1
Freight Rail / Truck Operations Impacts / Benefits - After Construction	1	1	1	1	1	1	1	1	1
Passenger Rail Operations Impacts / Benefits	0	0	0	0	0	0	0	0	0
Adjacent and Proximate Land Use Impacts / Benefits	0	0	0	-1	-1	-1	-1	-1	-1
Historic and Cultural Resources Impacts / Benefits	0	0	0	-1	-1	-1	-1	-1	-1
Community Profile & Environmental Justice/Title VI Impacts / Benefits	0	0	0	0	0	0	0	0	0
Wetlands Impacts / Benefits	-1	-3	-3	-1	-1	-1	-1	-1	-3
Floodplains & Aquifers Impacts / Benefits	0	0	0	0	0	0	0	-1	0
Threatened & Endangered Species Impacts / Benefits	-3	-3	-1	-1	-1	-1	-3	-3	-3
Stormwater and Drainage Impacts / Benefits	-1	-1	-1	-1	-1	-1	-1	-1	-1
Hazardous Materials Impacts / Benefits	-1	-1	-1	-1	-1	-1	-1	-1	-1
Air Quality & Noise Impacts / Benefits	-1	-1	0	0	0	0	0	0	0
Community Impacts / Benefits	1	1	1	0	0	0	1	1	1
Safety Impacts / Benefits	3	3	3	1	1	1	3	3	3
Utility Impacts / Relocation Requirements	0	0	0	0	0	0	0	0	0
Project Independence – Creates or Eliminates Need for other infrastructure project	0	0	0	0	0	0	0	0	0
Roadway Operational and Mobility Impacts / Benefits	1	1	1	1	1	1	1	1	1
Summary Score	**4**	**2**	**5**	**2**	**2**	**2**	**3**	**2**	**0**

Preliminary Preferred Alternative - Intersection



IMPERVIOUS AREA ADDED	9,635 SF
IMPERVIOUS AREA REMOVES	-20,690 SF
NET CHANGE IN IMPERVIOUS AREA	-11,325 SF

Next Steps

- Resolutions of Support from Potentially Affected Municipalities
- Draft Concept Development Report
- Interagency Review Committee Meeting
- Finalize Concept Development Report
- Study Completed by June 30, 2023

NJTPA

MORRIS COUNTY, NJ
ESTABLISHED 1738

Questions?

Defining the Vision. Shaping the Future.

NJTPA

NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

Jakub Rowinski
jrowinski@njtpa.org
Scott Parker
Scott.Parker@jacobs.com

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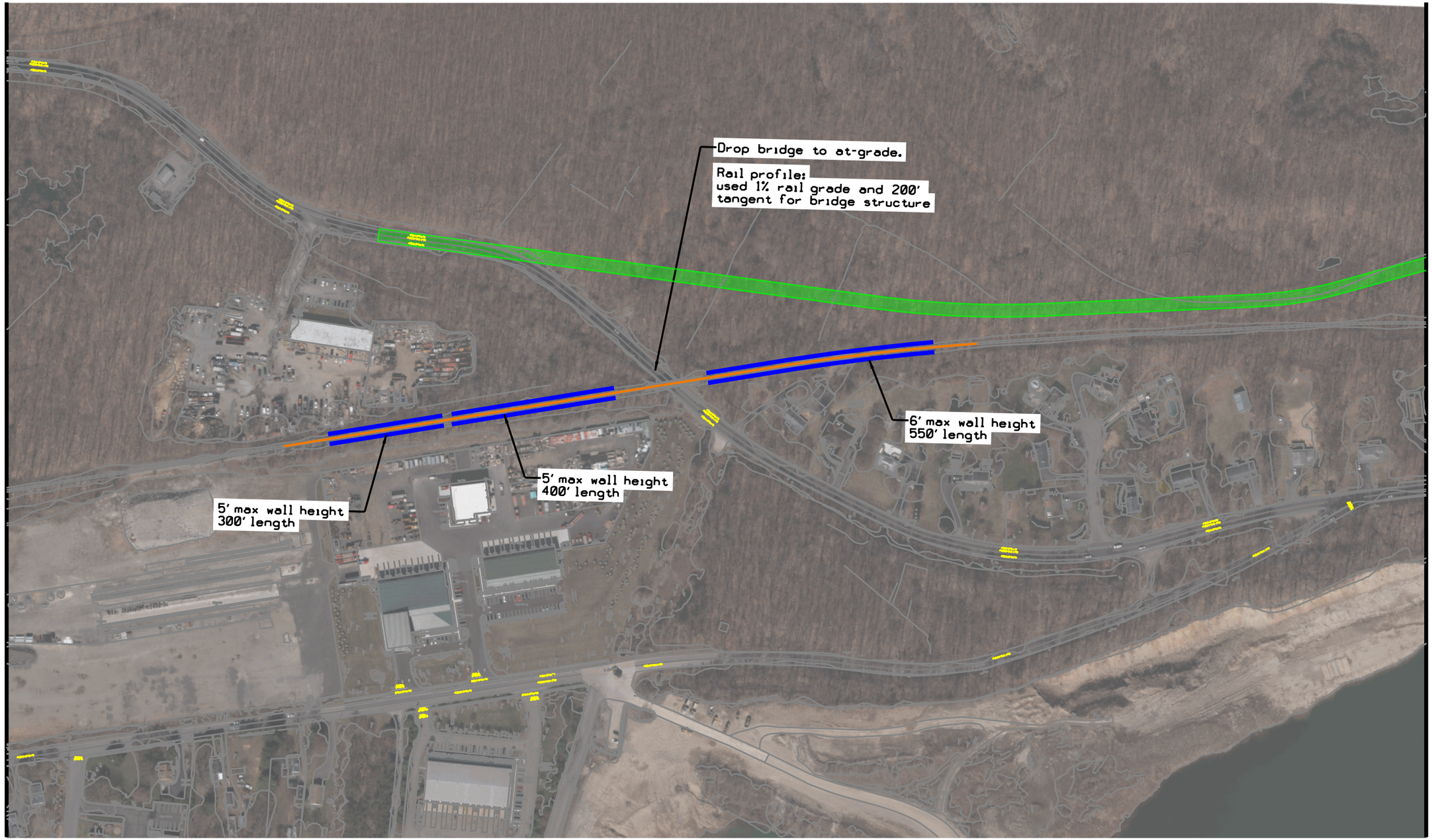
Appendix I

Alternatives Considered



← WESTBOUND

EASTBOUND →



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				Des.
				Chkd.
				Dwn.
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DATE: $DATE$ $TIME$
USER: $USERNAME$

Date: _____

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AND BERKSHIRE VALLEY ROAD
ROXBURY, MORRIS COUNTY, N.J.

CONCEPT STUDY

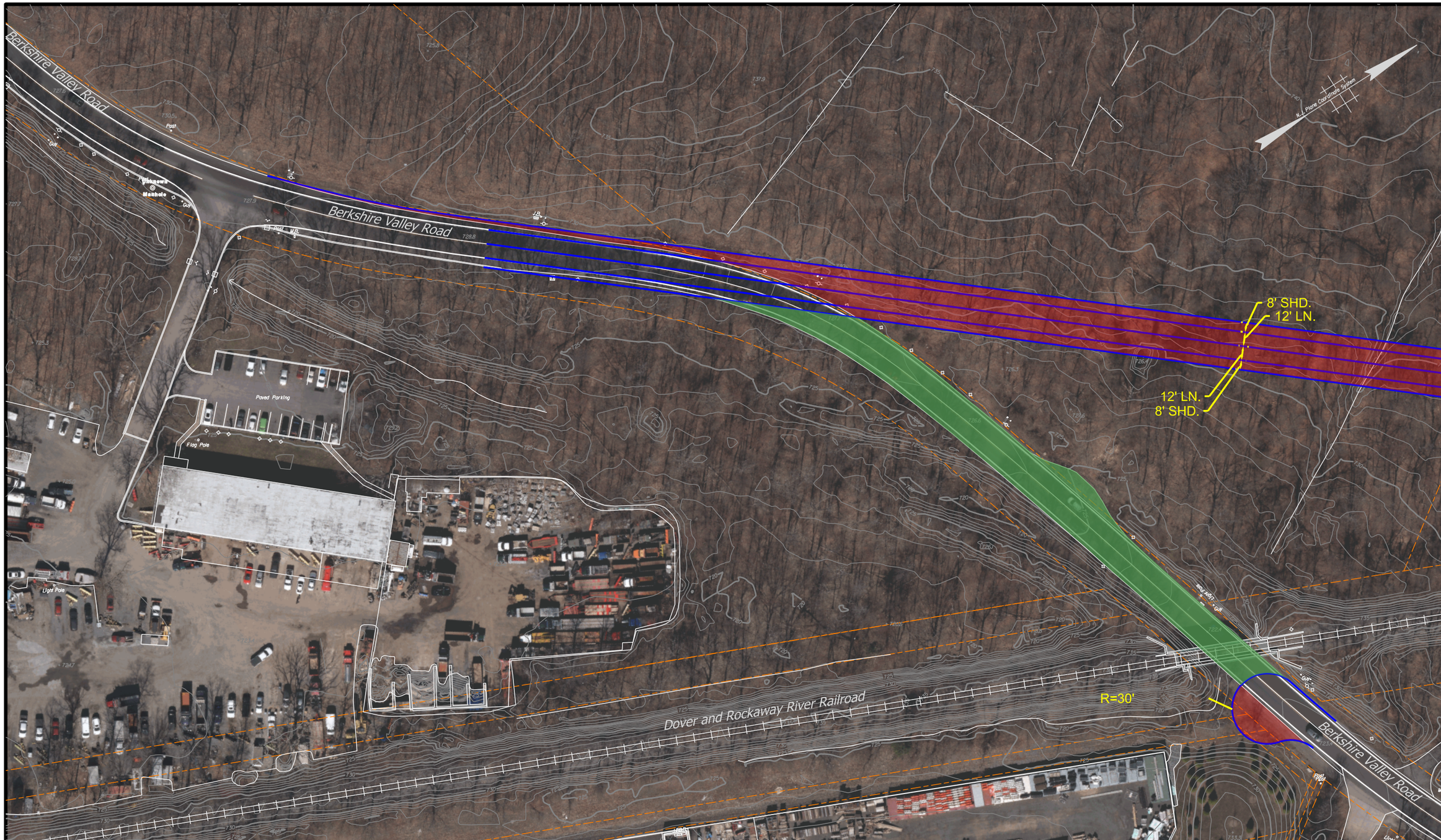
ALTERNATIVE 2

Scale

Contract No.

Drawing

Sheet ___ OF ___



LEGEND

ALTERNATIVE 3.1 LAYOUT

PAVEMENT REMOVED

PAVEMENT ADDED

SCALE IN FEET

80' 40' 0 80' 160'

No.	Date	Eng.	Revision Notes	Date FEB 2023
				Des.
				Chkd.
				Dwn.
				Chkd.Dwn.

$FILE$

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CONCEPT STUDY

ALTERNATIVE 3.1
PLAN

Scale 1" = 80'

Contract No.

Drawing

Sheet 1 OF 3

FILENAME: $FILE$
DATE: $DATE$
USER: $USERNAME$
$TIME$

MATCH LINE SHEET 1

MATCH LINE SHEET 3

8' SHD.
12' LN.

12' LN.
8' SHD.

BERKSHIRE VALLEY ROAD SB

BERKSHIRE VALLEY ROAD NB

R=2,900'

Dover and Rockaway River Railroad

Berkshire Valley Road

Old Timber Court

Unknown Manhole

Unknown Manhole

Unknown Manhole

Driveway

W.B.

N.J. State Plane Coordinate System

LEGEND

ALTERNATIVE 3.1 LAYOUT

PAVEMENT REMOVED

PAVEMENT ADDED

SCALE IN FEET

80' 40' 0 80' 160'

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date FEB 2023
				Des.
				Chkd.
				Dwn.

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CONCEPT STUDY

ALTERNATIVE 3.1
PLAN

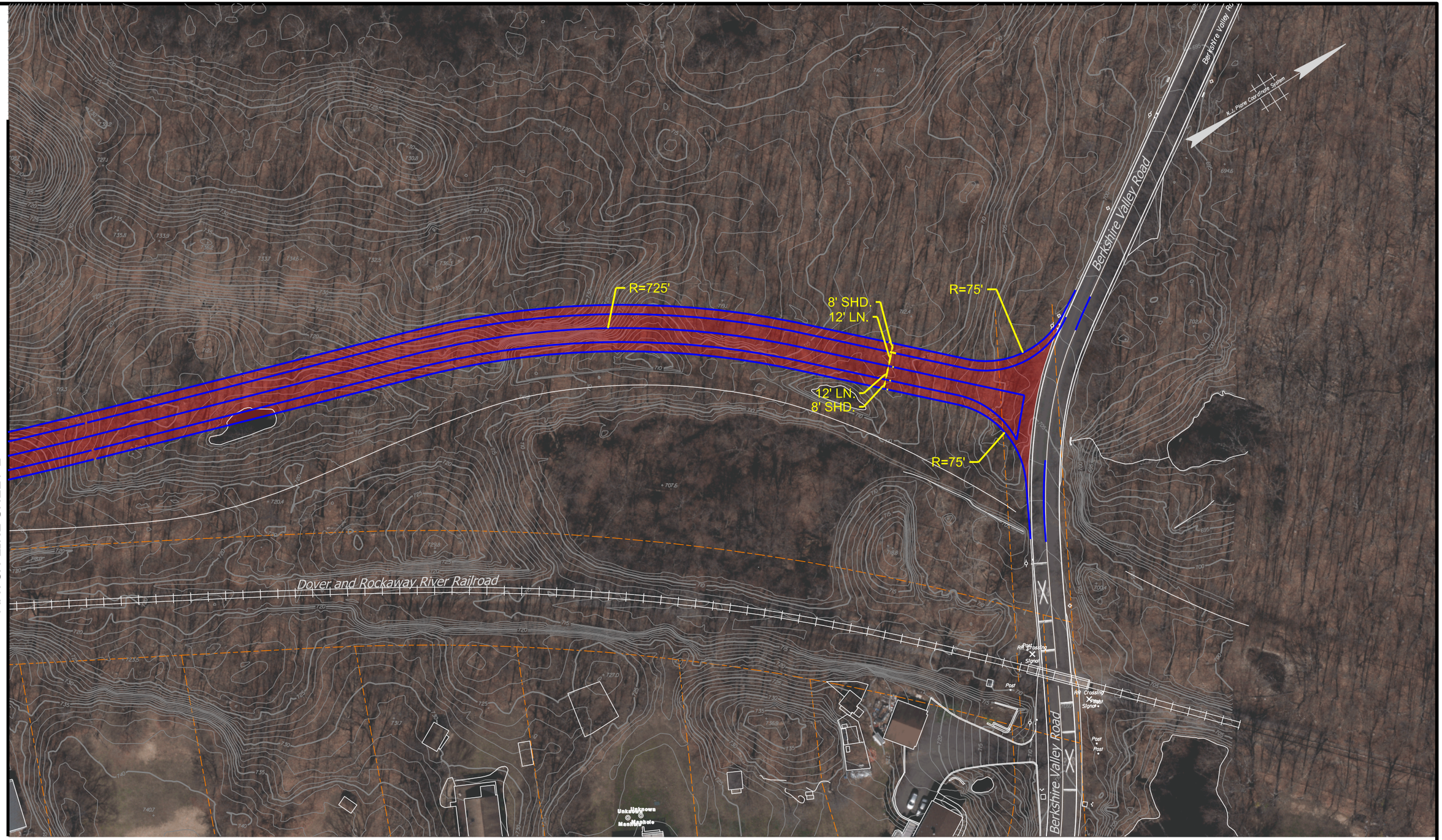
Scale 1" = 80'

Contract No.

Drawing

Sheet 2 OF 3

MATCH LINE SHEET 2



LEGEND

ALTERNATIVE 3.1 LAYOUT PAVEMENT REMOVED PAVEMENT ADDED

SCALE IN FEET

80' 40' 0 80' 160'

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date FEB 2023
				Des.
				Chkd.
				Dwn.

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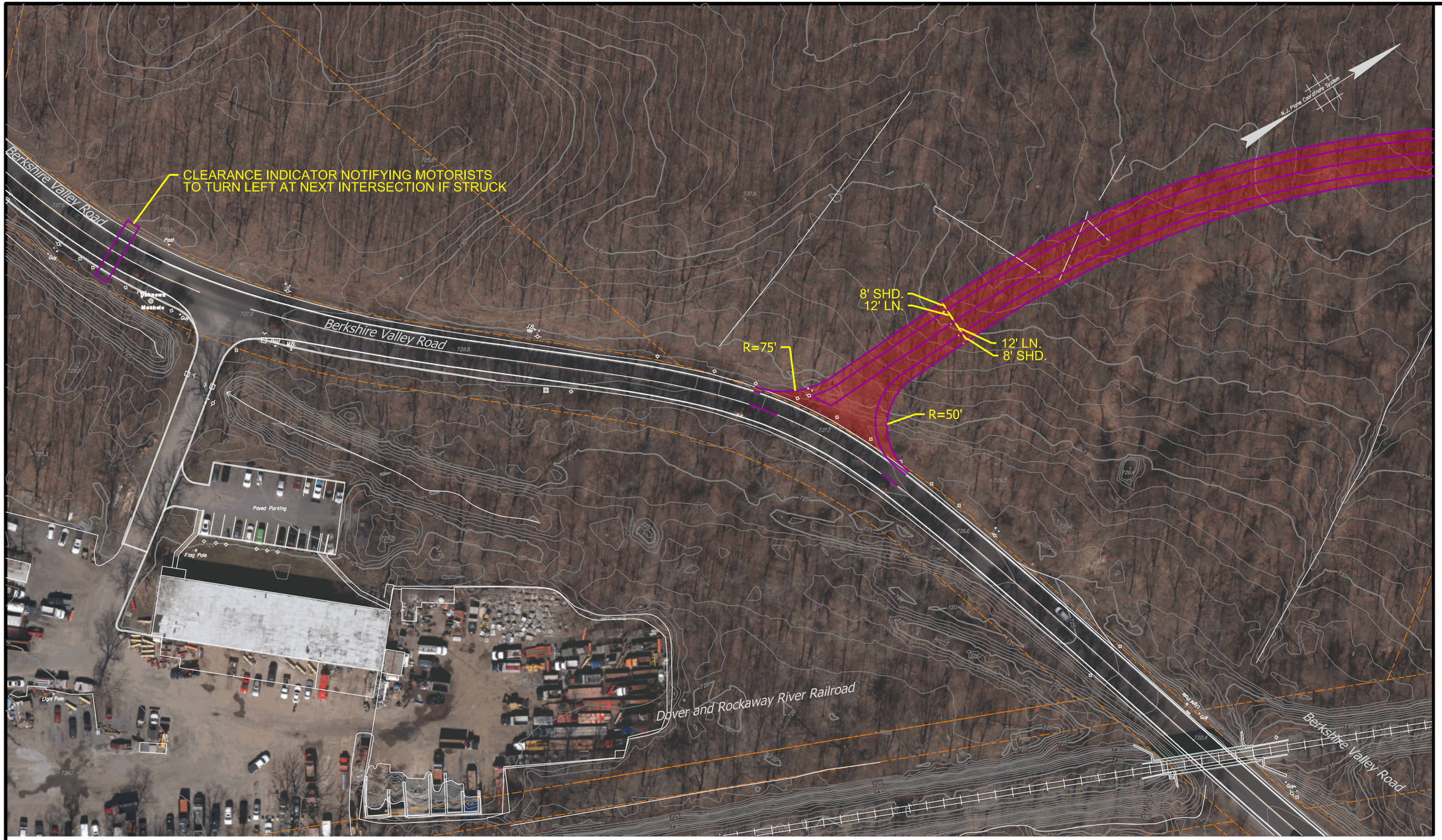
CONCEPT STUDY

ALTERNATIVE 3.1
PLAN

Scale 1" = 80'
Contract No.
Drawing
Sheet 3 OF 3



LEGEND

ALTERNATIVE 3.2 LAYOUT PAVEMENT REMOVED PAVEMENT ADDED

SCALE IN FEET

80' 40' 0 80' 160'

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				Date FEB 2023
				Des.
				Chkd.
				Dwn.

$FILE$

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CONCEPT STUDY

ALTERNATIVE 3.2
PLAN

Scale 1" = 80'
Contract No.
Drawing
Sheet 1 OF 3

MATCH LINE SHEET 1

MATCH LINE SHEET 3

R=850'

8' SHD.
12' LN.

12' LN.
8' SHD.

BERKSHIRE VALLEY ROAD SB
BERKSHIRE VALLEY ROAD NB

R=850'

N.J. Plane Coordinate System

Unknown Manhole

Unknown Manhole

Unknown Manhole

LEGEND

ALTERNATIVE 3.2 LAYOUT

PAVEMENT REMOVED

PAVEMENT ADDED

SCALE IN FEET

80' 40' 0 80' 160'

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				Date FEB 2023
				Des.
				Chkd.
				Dwn.

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CONCEPT STUDY

ALTERNATIVE 3.2
PLAN

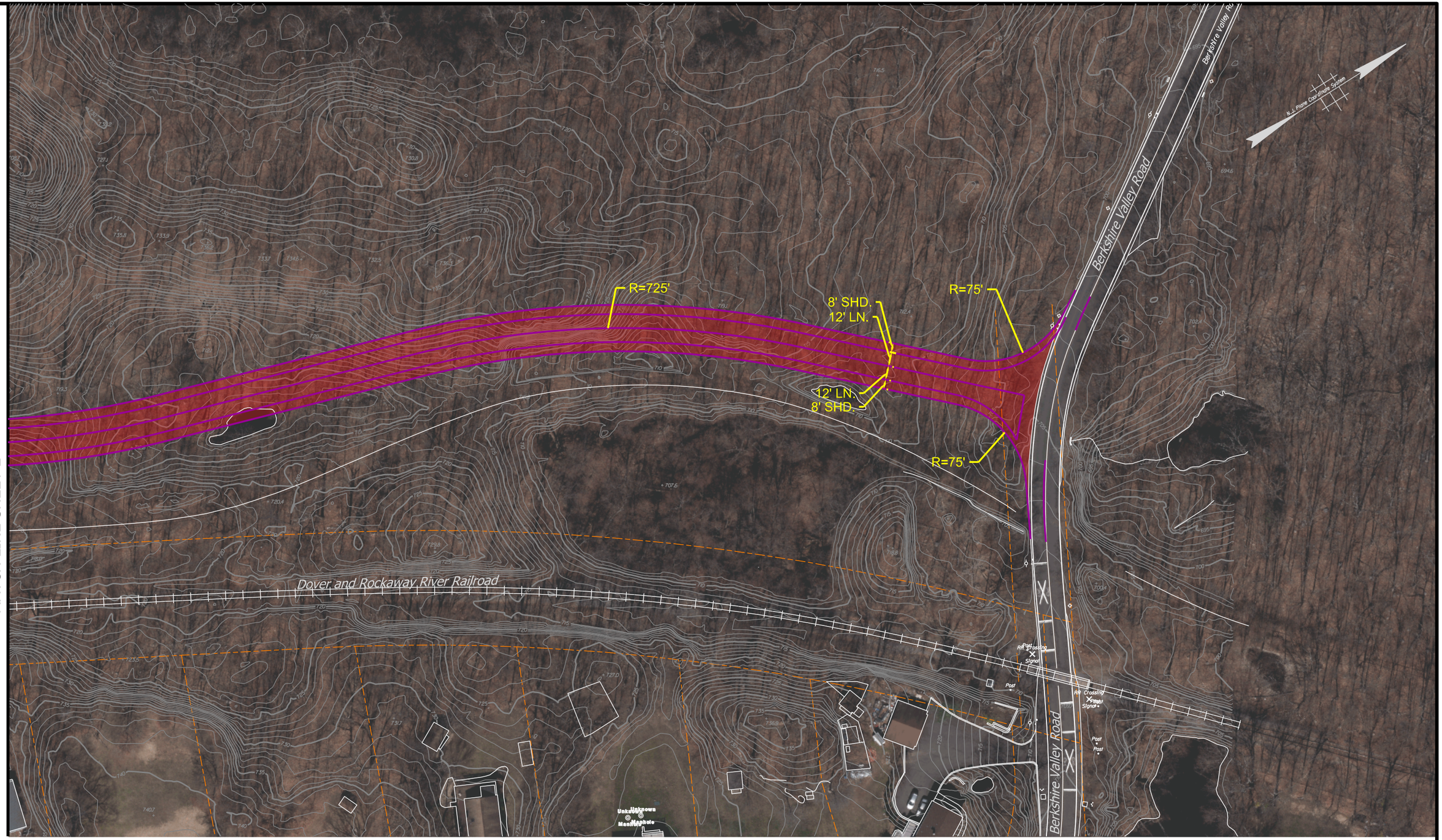
Scale 1" = 80'

Contract No.

Drawing

Sheet 2 OF 3

MATCH LINE SHEET 2



LEGEND

ALTERNATIVE 3.2 LAYOUT PAVEMENT REMOVED PAVEMENT ADDED

SCALE IN FEET

80' 40' 0 80' 160'

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date FEB 2023
				Des.
				Chkd.
				Dwn.

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CONCEPT STUDY

ALTERNATIVE 3.2
PLAN

Scale 1" = 80'
Contract No.
Drawing
Sheet 3 OF 3

WESTBOUND

EASTBOUND

Bridge length 88'
48° Center-Center offset from existing bridge

top of rail to top pavement
14' clearance + 6' structure depth (total 20')

Possible Temporary
Construction Easement

Approx tie-in sta 48+20

Limit of ret wall
16' max height
700' length from bridge

R=3000'
L=265'

Approx tie-in sta 18+80

R=3000'
L=320'

R=3000'
L=250'

Remove
existing
bridge

Limit of ret wall.
22' max height
800' length from bridge



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				Date FEB 2023
				Des.
				Chkd.
				Dwn.

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CONCEPT STUDY

ALTERNATIVE 4

Scale

Contract No.

Drawing

Sheet OF

FILENAME: $FILE$
DATE: $DATE$
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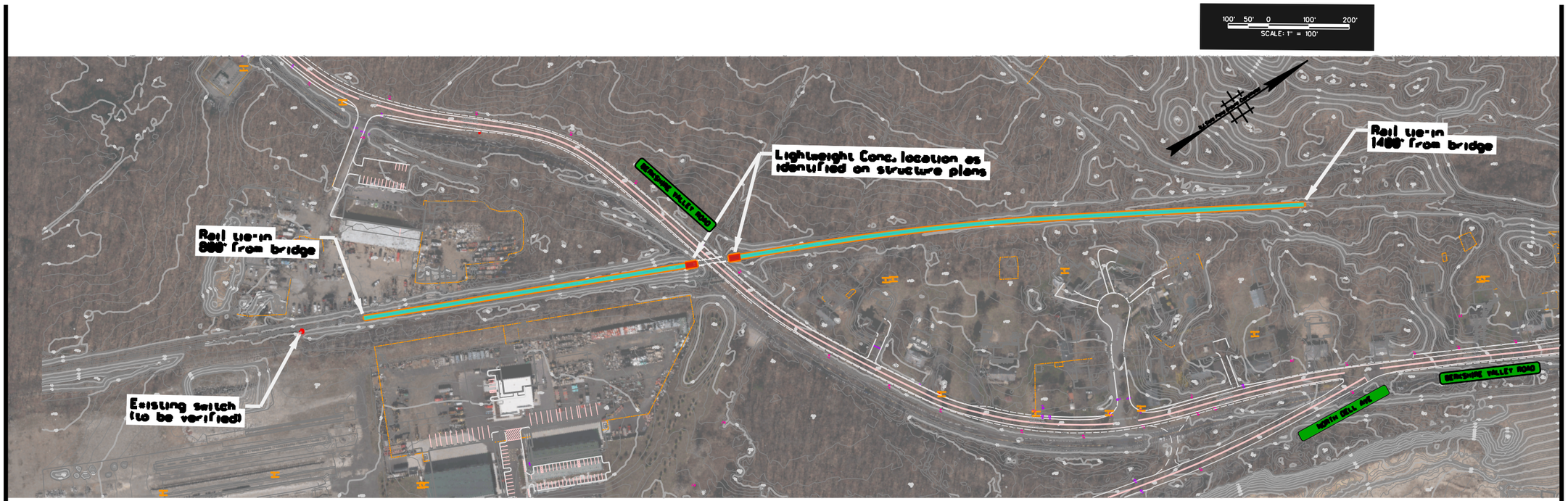
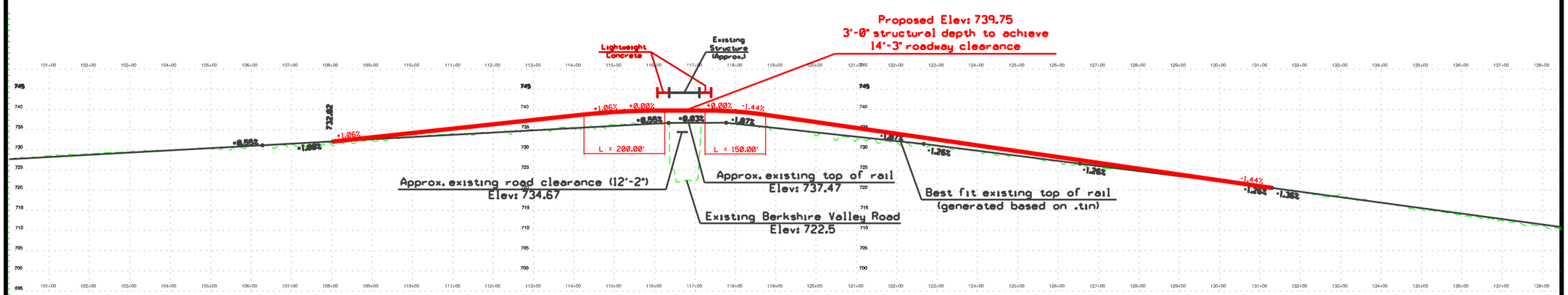
$TIME$

ROXBURY OPTION 5.2.a
4'-3" ROADWAY CLEARANCE

← WESTBOUND

EASTBOUND →





Rail Profile applies to Alternatives 5.1a thru 5.2e

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
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				Des.
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				Dwn.

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CONCEPT STUDY

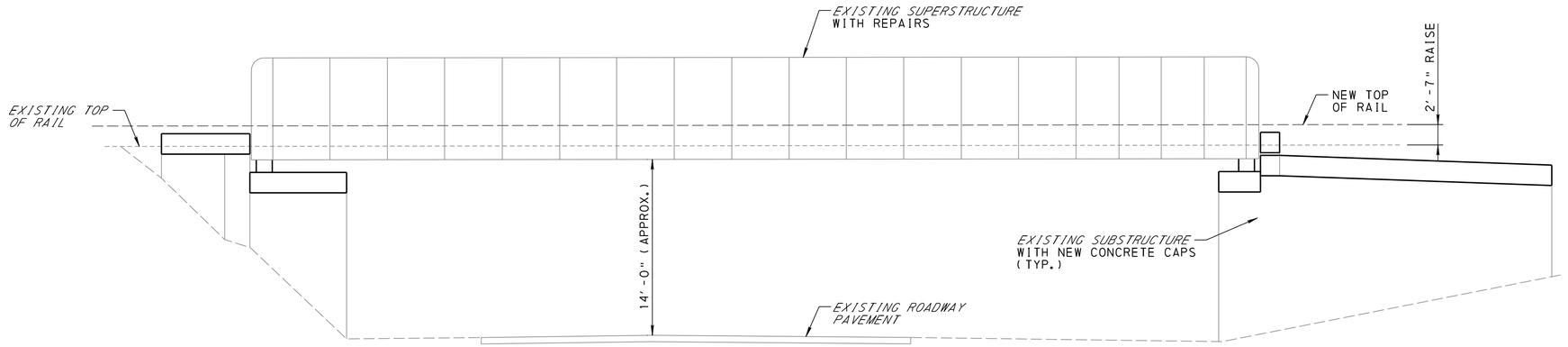
ALTERNATIVE 5

Scale

Contract No.

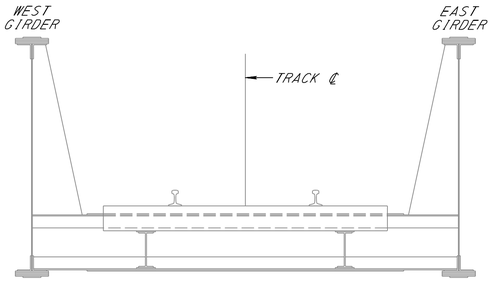
Drawing

Sheet ___ OF ___



EAST ELEVATION
NOT TO SCALE





TYPICAL BRIDGE SECTION
NOT TO SCALE

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				Dwn.
				Chkd.
				Des.
				Date OCTOBER 2021

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ALTERNATIVE 5.1a

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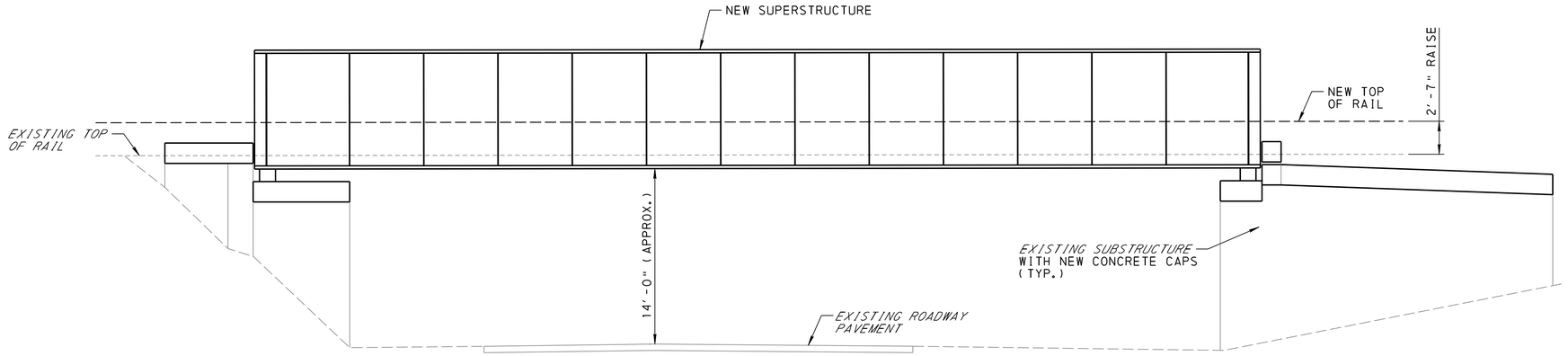

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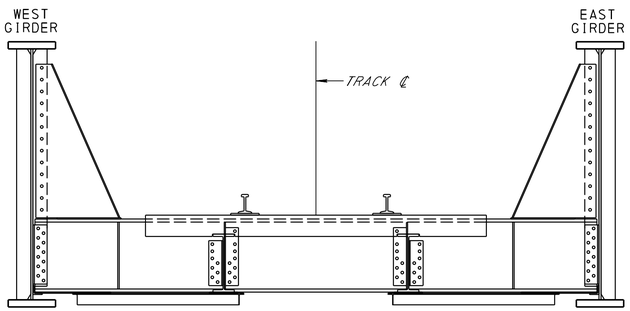

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				Des.
				Chkd.
				Dwn.
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ALTERNATIVE 5.1c

Scale AS SHOWN
Contract No.
Drawing
Sheet 2 OF 5

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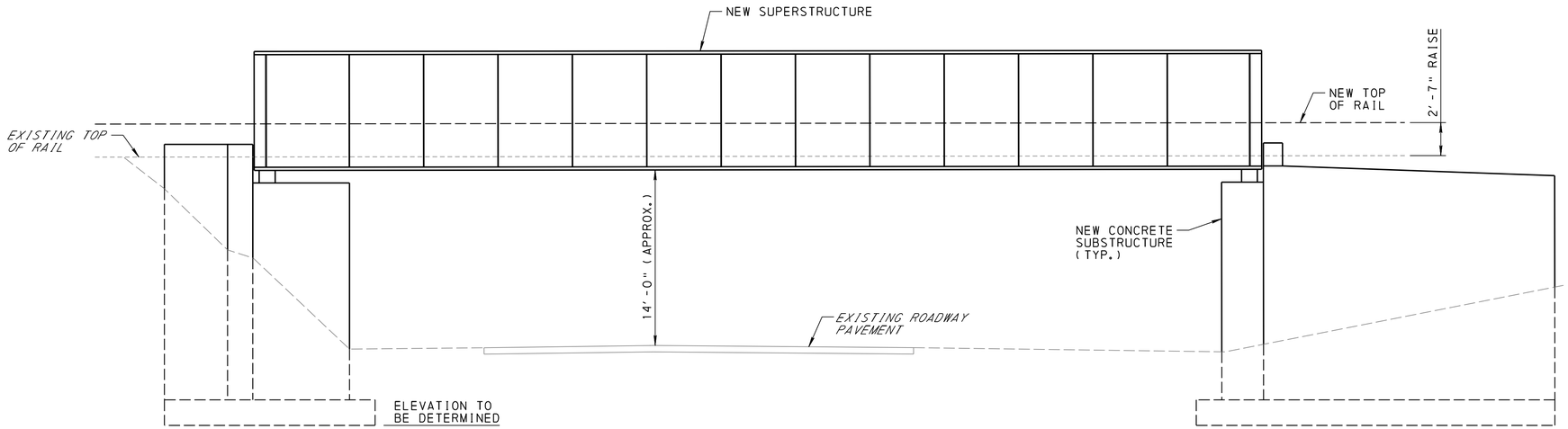

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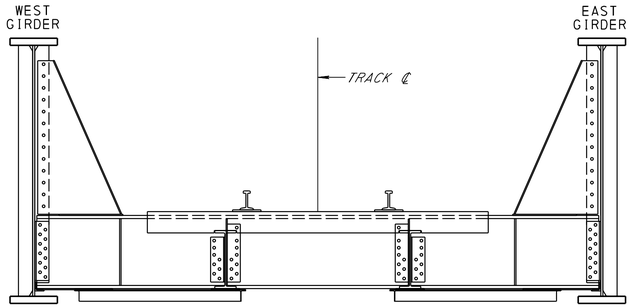

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NOT TO SCALE

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				Des.
				Chkd.
				Dwn.

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ALTERNATIVE 5.1d

Scale AS SHOWN
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Drawing
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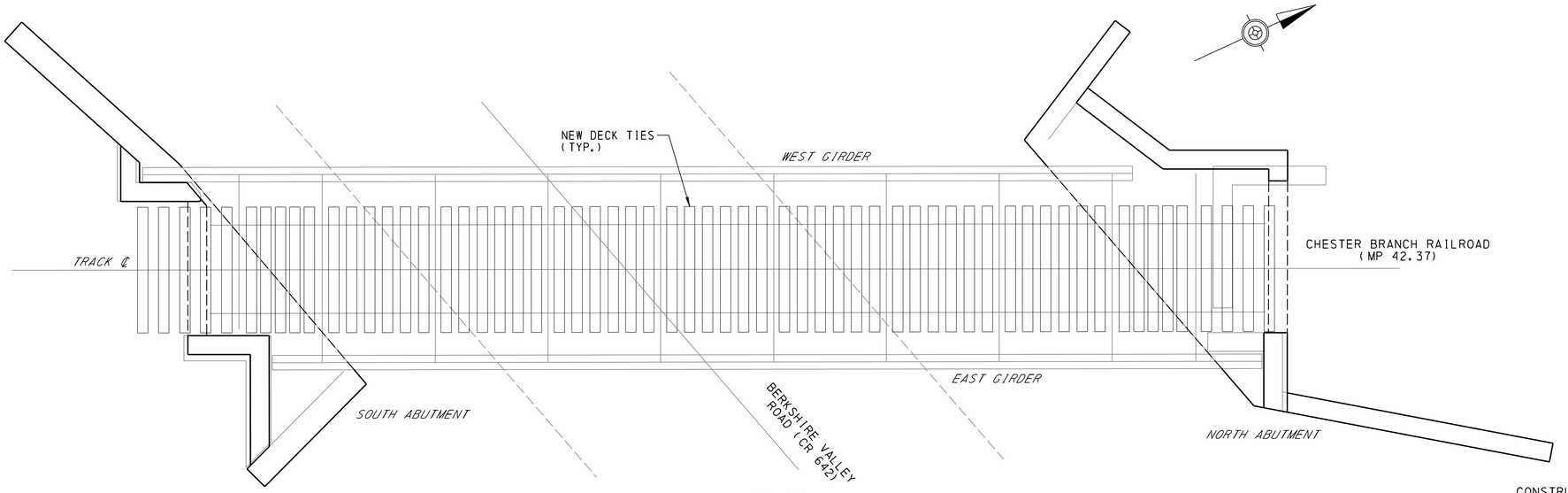

PLAN
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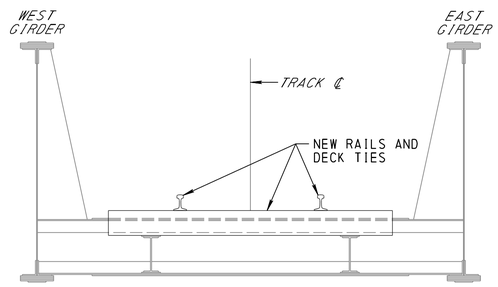
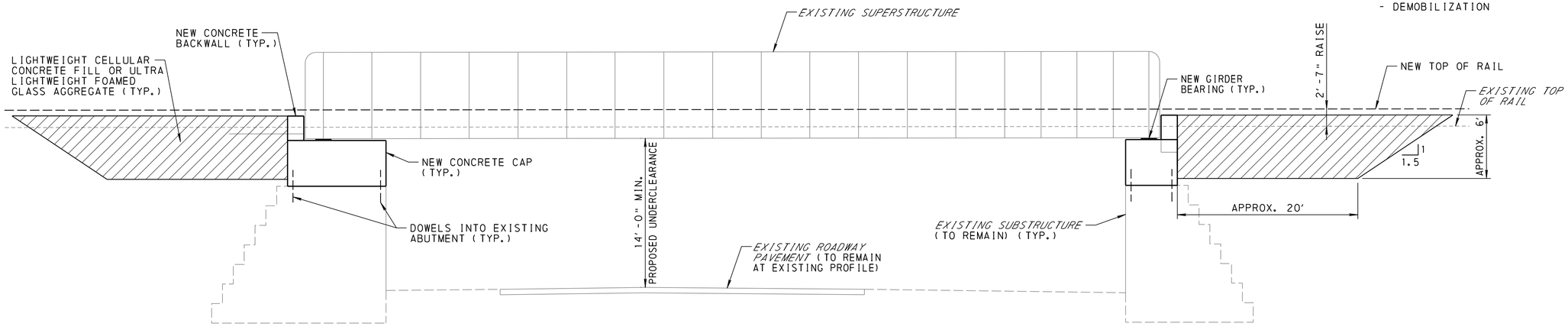


TYPICAL BRIDGE SECTION
NOT TO SCALE

CONSTRUCTION SEQUENCE:

- MOBILIZATION
- INSTALLATION OF HIGHWAY TRAFFIC CONTROL MEASURES.
- PROJECT PREPARATION, CRANE SETUP OR JACKING TOWER INSTALLATION, MODIFICATION OF WINGWALLS, ETC.
- BEGIN TRACK OUTAGE - MILESTONE
- BEGIN TRACK RAISE (CONTINUE THROUGH TRACK OUTAGE PERIOD) AND JACK OR PICK SUPERSTRUCTURE - TRACK OUTAGE DAY 1
- DEMO TOP OF EACH ABUTMENT TO RECEIVE NEW CONCRETE CAPS - TRACK OUTAGE DAY 2
- INSTALL DOWELS TO TIE NEW CONCRETE CAPS TO EXISTING ABUTMENTS AND EXCAVATE BACKFILL BEHIND EXISTING ABUTMENTS - TRACK OUTAGE DAY 3
- FORM/POUR CONCRETE CAPS AND BACKWALLS USING HIGH EARLY STRENGTH OR ULTRA HIGH PERFORMANCE CONCRETE - TRACK OUTAGE DAY 4
- RESET EXISTING STEEL SUPERSTRUCTURE - TRACK OUTAGE DAYS 5-6
- BACKFILL WITH ULTRA LIGHTWEIGHT AGGREGATE BACKFILL OR LIGHTWEIGHT CELLULAR CONCRETE FILL - TRACK OUTAGE DAY 7
- COMPLETE TRACK RAISE, MISCELLANEOUS - TRACK OUTAGE DAYS 8-10
- PLACE TRACK BACK INTO SERVICE - MILESTONE
- PROJECT RESTORATION
- REMOVAL OF HIGHWAY TRAFFIC CONTROL MEASURES
- DEMOBILIZATION



EAST ELEVATION
NOT TO SCALE

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				Date OCTOBER 2021
				Des.
				Chkd.
				Dwn.
$FILE$				

Date: _____

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ALTERNATIVE 5.1e

Scale AS SHOWN
Contract No.
Drawing
Sheet 4 OF 5

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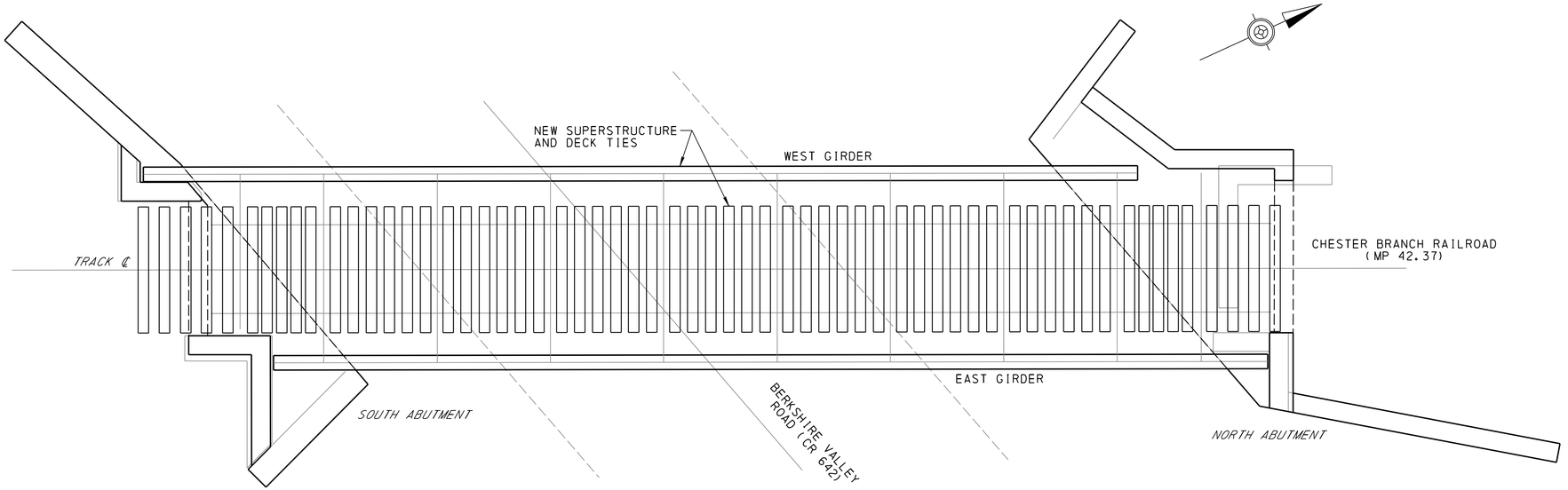
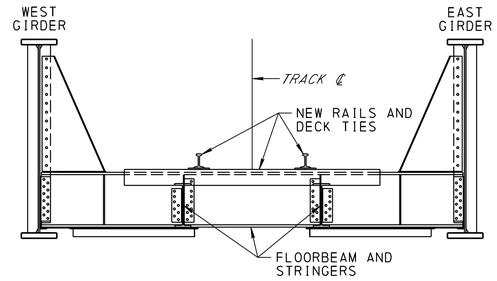


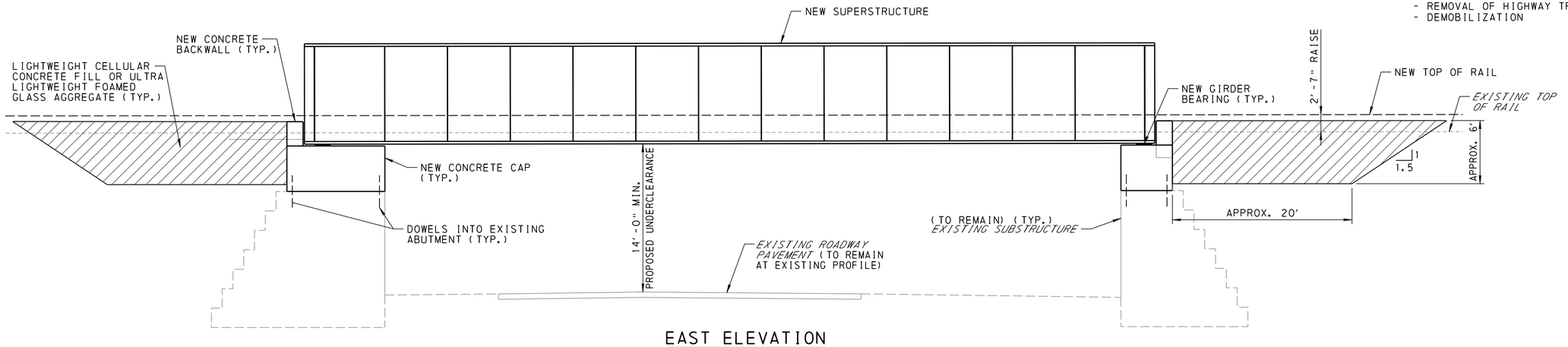
PLAN
NOT TO SCALE



TYPICAL BRIDGE SECTION
(NEW SUPERSTRUCTURE)
NOT TO SCALE

CONSTRUCTION SEQUENCE:

- MOBILIZATION
- INSTALLATION OF HIGHWAY TRAFFIC CONTROL MEASURES.
- PROJECT PREPARATION, SDJACENT ASSEMBLY OF THE PROPOSED SUPERSTRUCTURE, MODIFICATION OF WINGWALLS, ETC.
- BEGIN TRACK OUTAGE - MILESTONE
- BEGIN TRACK RAISE (CONTINUE THROUGH TRACK OUTAGE PERIOD) AND PICK EXISTING SUPERSTRUCTURE - TRACK OUTAGE DAY 1
- DEMO TOP OF EACH ABUTMENT TO RECEIVE NEW CONCRETE CAPS - TRACK OUTAGE DAY 2
- INSTALL DOWELS TO TIE NEW CONCRETE CAPS TO EXISTING ABUTMENTS AND EXCAVATE BACKFILL BEHIND EXISTING ABUTMENTS - TRACK OUTAGE DAY 3
- FORM/POUR CONCRETE CAPS AND BACKWALLS USING HIGH EARLY STRENGTH OR ULTRA HIGH PERFORMANCE CONCRETE - TRACK OUTAGE DAY 4
- SET NEW STEEL SUPERSTRUCTURE - TRACK OUTAGE DAYS 5-6
- BACKFILL WITH ULTRA LIGHTWEIGHT AGGREGATE BACKFILL OR LIGHTWEIGHT CELLULAR CONCRETE FILL - TRACK OUTAGE DAY 7
- COMPLETE TRACK RAISE, MISCELLANEOUS - TRACK OUTAGE DAYS 8-10
- PLACE TRACK BACK INTO SERVICE - MILESTONE
- PROJECT RESTORATION
- REMOVAL OF HIGHWAY TRAFFIC CONTROL MEASURES
- DEMOBILIZATION



EAST ELEVATION
NOT TO SCALE

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date OCTOBER 2021
				Des.
				Chkd.
				Dwn.
$FILE$				

Date: _____

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NJTPA - CHESTER BRANCH
AND BERKSHIRE VALLEY ROAD
ROXBURY, MORRIS COUNTY, N.J.

ALTERNATIVE 5.1f

Scale AS SHOWN
Contract No.
Drawing
Sheet 5 OF 5

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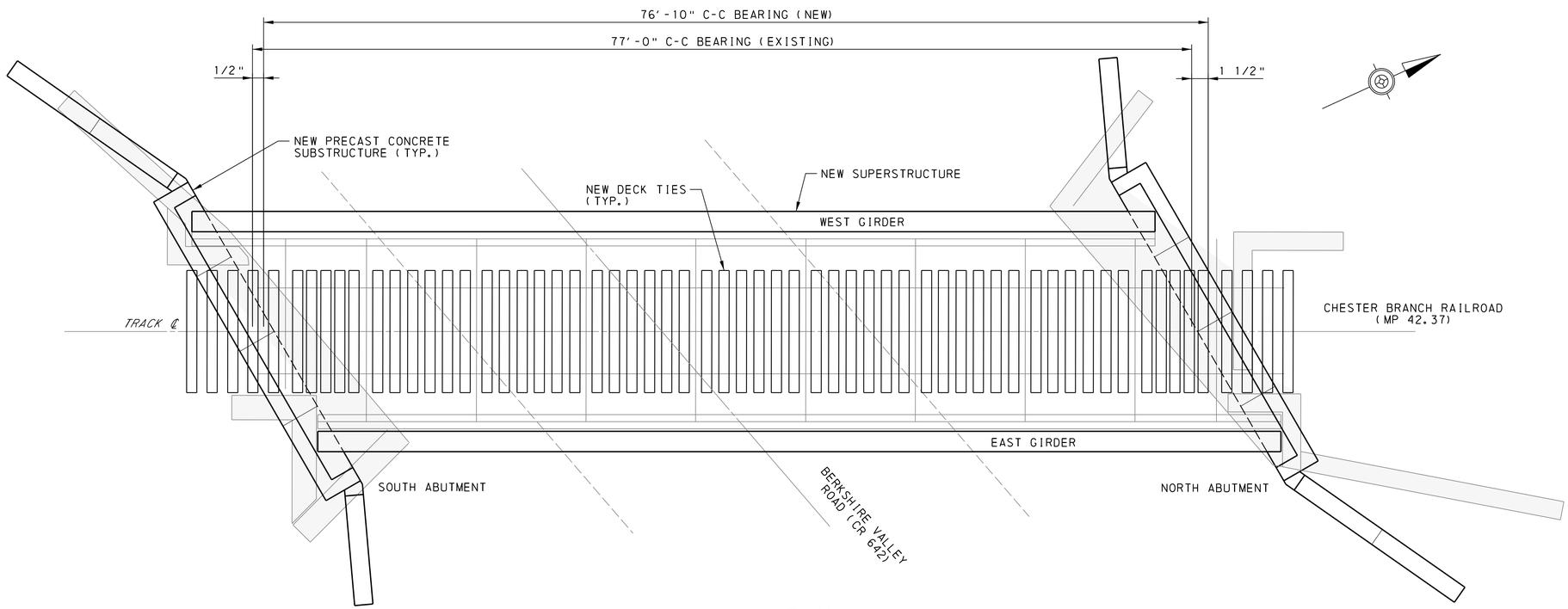
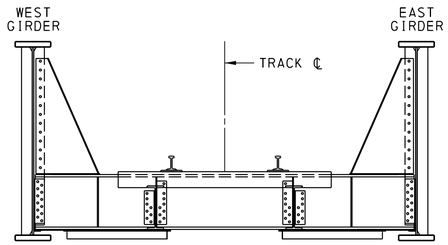


PLAN
NOT TO SCALE



TYPICAL BRIDGE SECTION
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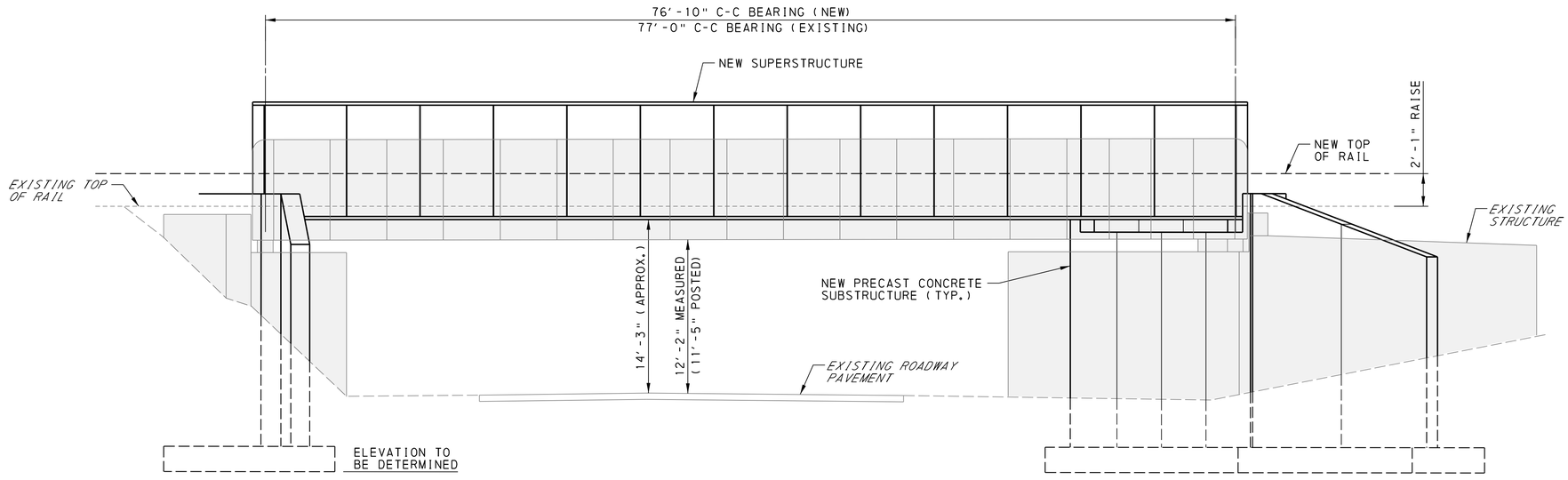

EAST ELEVATION
NOT TO SCALE

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date OCTOBER 2021
				Des.
				Chkd.
				Dwn.

$FILE$

Date: _____

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ALTERNATIVE 5.2a

Scale AS SHOWN
Contract No.
Drawing
Sheet 1 OF 2

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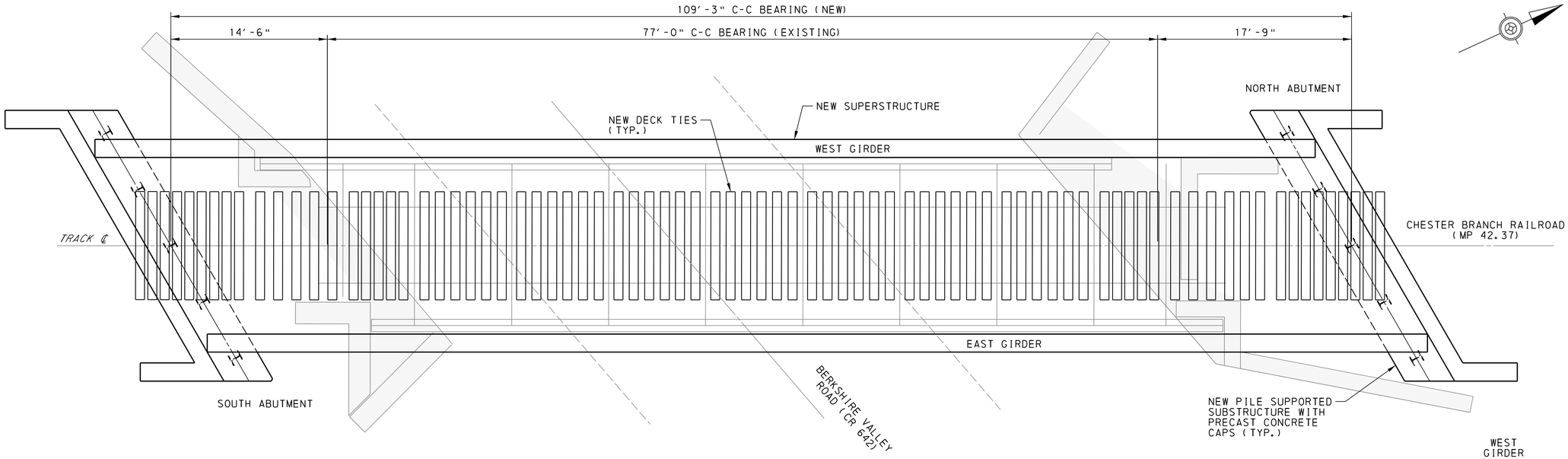

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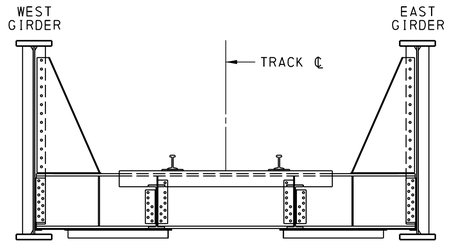

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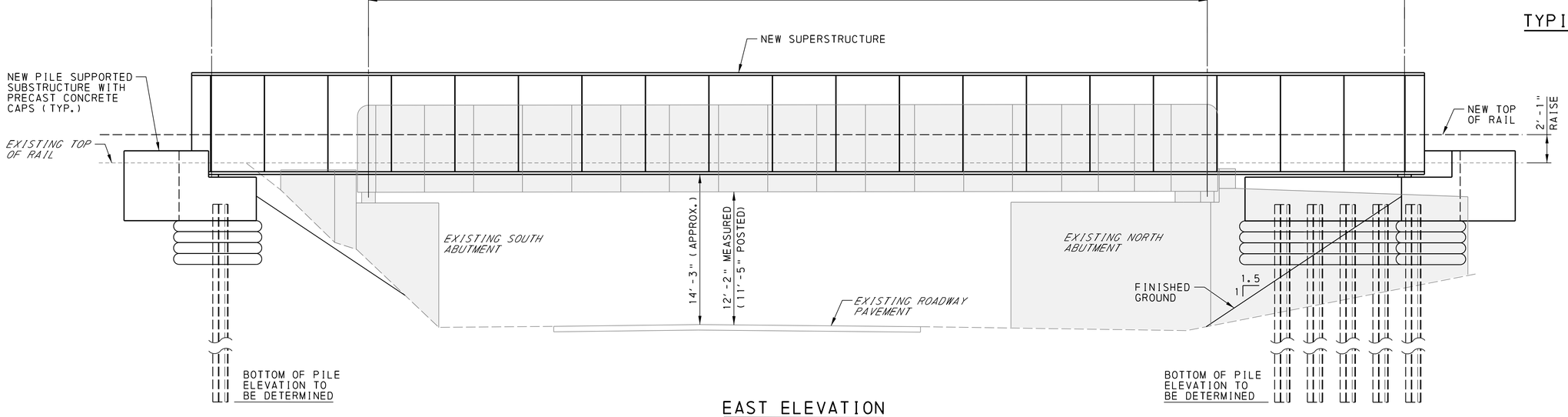

EAST ELEVATION
NOT TO SCALE

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date OCTOBER 2021
				Des.
				Chkd.
				Dwn.

$FILE$

Date: _____

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ROXBURY, MORRIS COUNTY, N.J.

ALTERNATIVE 5.2e

Scale: AS SHOWN
Contract No.
Drawing
Sheet 2 OF 2

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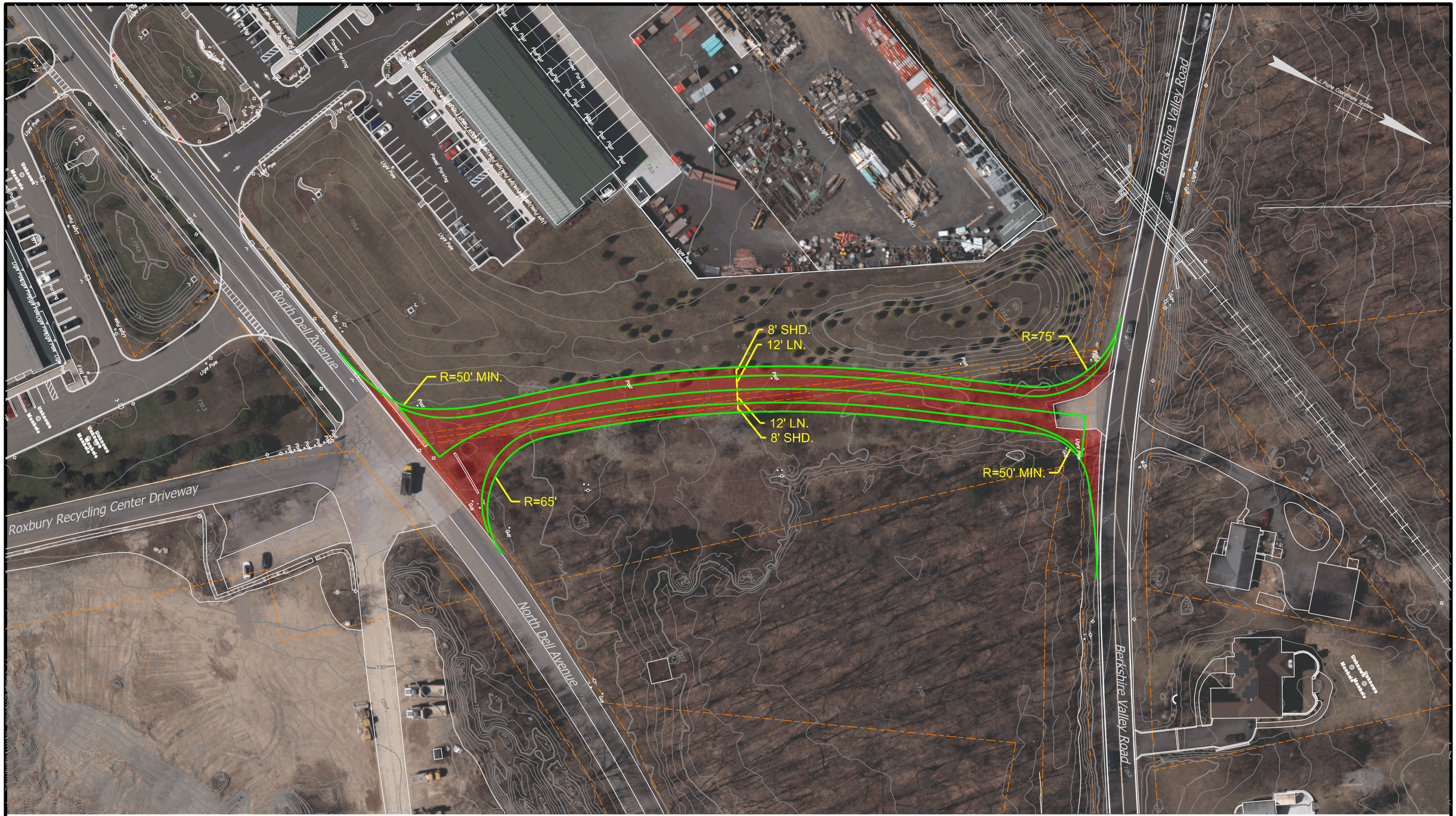

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				Des.
				Chkd.
				Dwn.

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Date: _____

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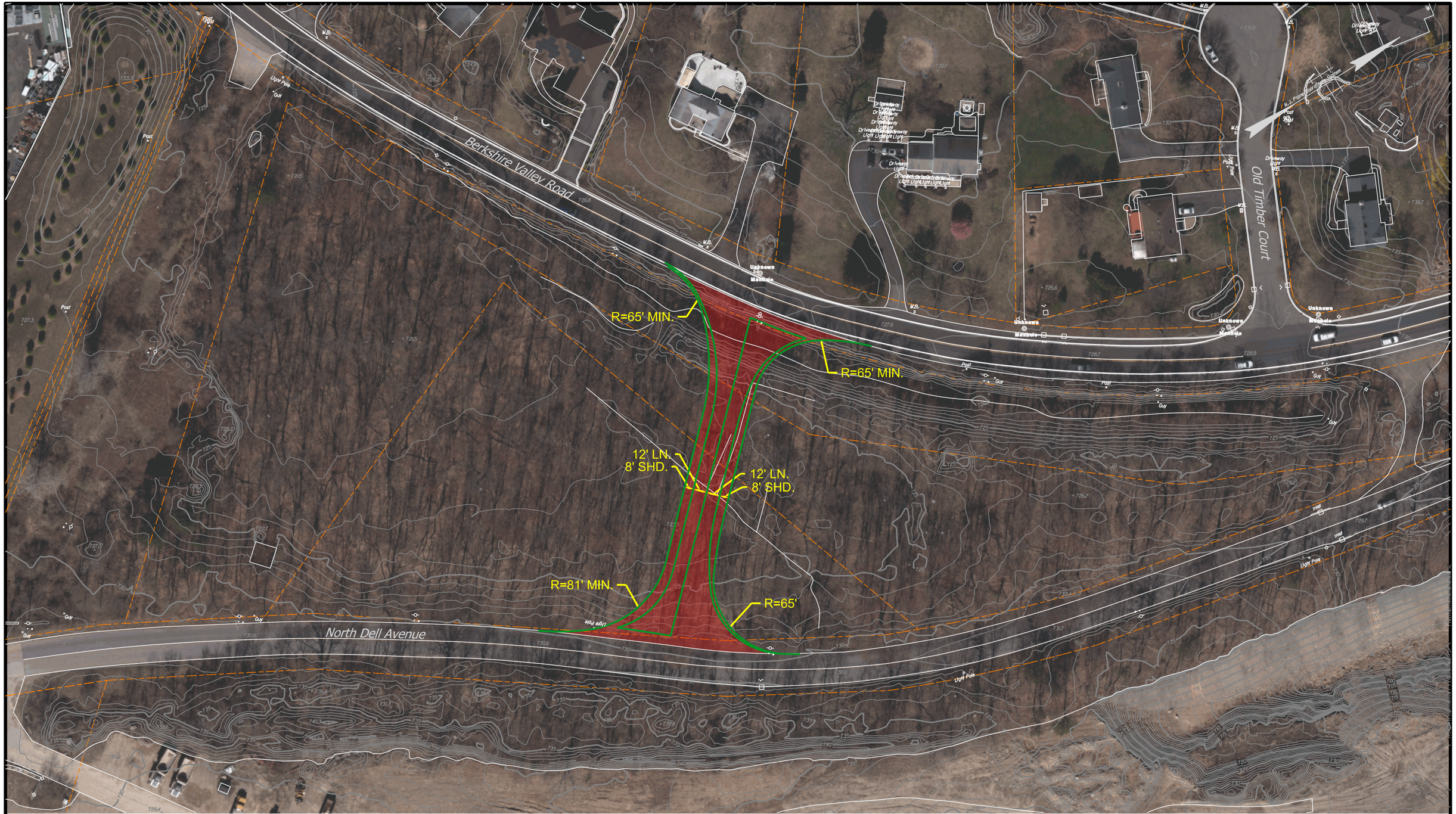
ROXBURY, MORRIS COUNTY, N.J.

CONCEPT STUDY

ALTERNATIVE I.1
PLAN

Scale 1" = 80'
Contract No.
Drawing
Sheet ___ OF ___



LEGEND

ALTERNATIVE I.2 LAYOUT

PAVEMENT ADDED

SCALE IN FEET

80' 40' 0 80' 160'

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date FEB 2023
				Des.
				Chkd.
				Dwn.

FILENAME: $FILE$ $TIME$
DATE: $DATE$
USER: $USERNAME$
$FILE$

Date: _____

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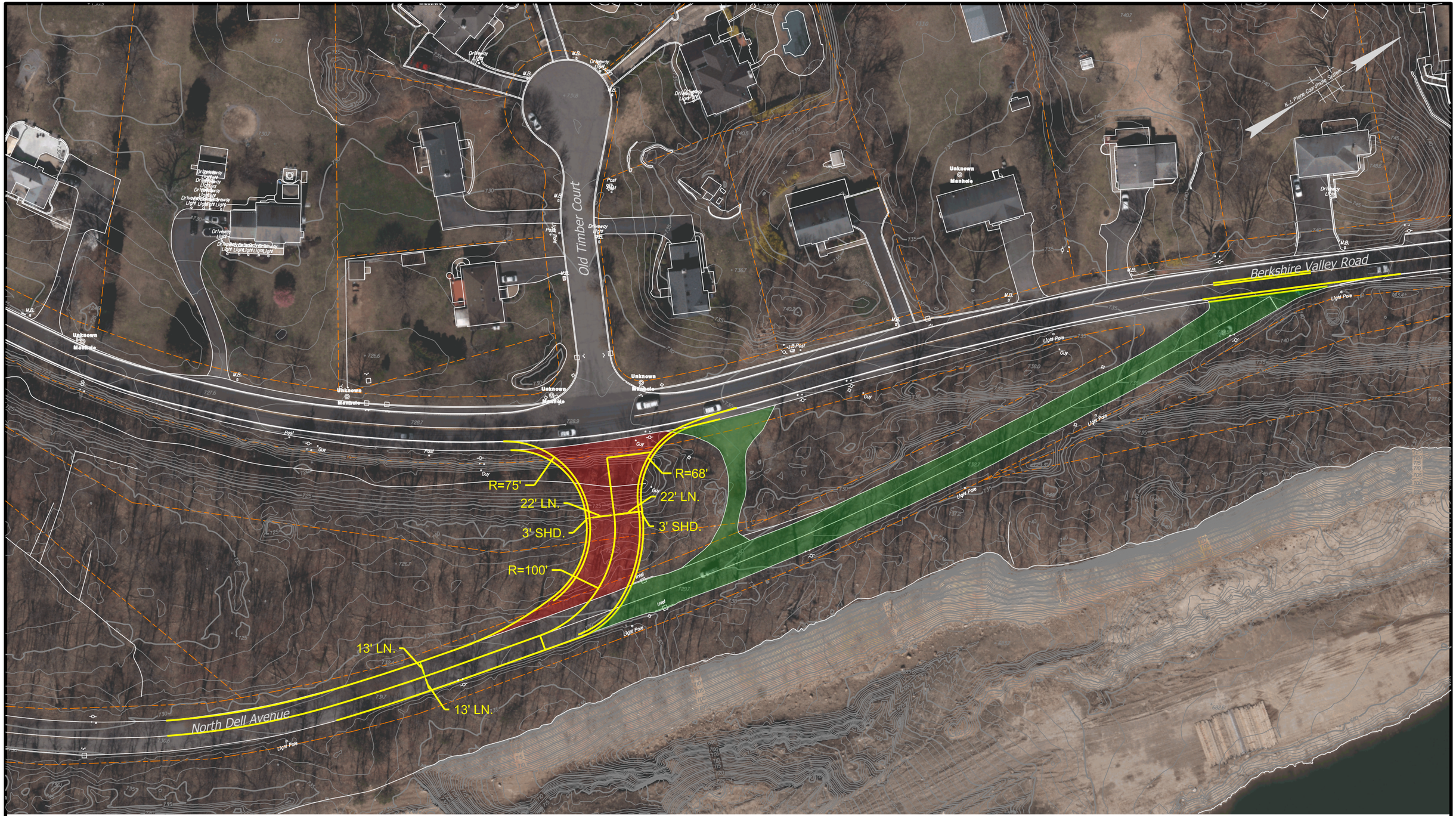
ROXBURY, MORRIS COUNTY, N.J.

CONCEPT STUDY

ALTERNATIVE I.2
PLAN

Scale 1" = 80'
Contract No.
Drawing
Sheet ___ OF ___



LEGEND

ALTERNATIVE I.3 LAYOUT

PAVEMENT REMOVED

PAVEMENT ADDED

SCALE IN FEET

80' 40' 0 80' 160'

No.	Date	Eng.	Revision Notes	Date FEB 2023
				Des.
				Chkd.
				Dwn.
				Chkd.Dwn.

$FILES

Date:

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AND BERKSHIRE VALLEY ROAD
ROXBURY, MORRIS COUNTY, N.J.

CONCEPT STUDY

ALTERNATIVE I.3
PLAN

Scale 1" = 80'

Contract No.

Drawing

Sheet ___ OF ___

FILENAME: $FILE$
DATE: $DATE$
USER: $USERNAME$
$TIME$



LEGEND

ALTERNATIVE I.4 LAYOUT

PAVEMENT REMOVED

PAVEMENT ADDED

SCALE IN FEET

80' 40' 0 80' 160'

No.	Date	Eng.	Revision Notes	Date FEB 2023
				Des.
				Chkd.
				Dwn.
				Chkd.Dwn.

$FILE$

Date:

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ROXBURY, MORRIS COUNTY, N.J.

CONCEPT STUDY

ALTERNATIVE I.4
PLAN

Scale 1" = 80'

Contract No.

Drawing

Sheet ___ OF ___

FILENAME: $FILE$
DATE: $DATE$
USER: $USERNAME$
$TIME$



LEGEND

ALTERNATIVE I.5 LAYOUT

PAVEMENT REMOVED

PAVEMENT ADDED

SCALE IN FEET

80' 40' 0 80' 160'

No.	Date	Eng.	Revision Notes	Date FEB 2023
				Des.
				Chkd.
				Dwn.
				Chkd.Dwn.

$FILE$

Date:

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ROXBURY, MORRIS COUNTY, N.J.

CONCEPT STUDY

ALTERNATIVE I.5
PLAN

Scale 1" = 80'

Contract No.

Drawing

Sheet ___ OF ___

FILENAME: $FILE$
DATE: $DATE$
USER: $USERNAME$
$TIME$



LEGEND

ALTERNATIVE I.6 LAYOUT

PAVEMENT REMOVED

PAVEMENT ADDED

SCALE IN FEET

80' 40' 0 80' 160'

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No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date FEB 2023
				Des.
				Chkd.
				Dwn.
$FILE$				

Date: _____

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CONCEPT STUDY

ALTERNATIVE I.6
PLAN

Scale 1" = 80'

Contract No.

Drawing

Sheet ___ OF ___



LEGEND

ALTERNATIVE I.7 LAYOUT

PAVEMENT REMOVED

PAVEMENT ADDED

SCALE IN FEET

80' 40' 0 80' 160'

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date FEB 2023
				Des.
				Chkd.
				Dwn.
$FILE$				

FILENAME: $FILE$
DATE: $DATE$
USER: $USERNAME$
TIME$ $TIME$

Date:

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ROXBURY, MORRIS COUNTY, N.J.

CONCEPT STUDY

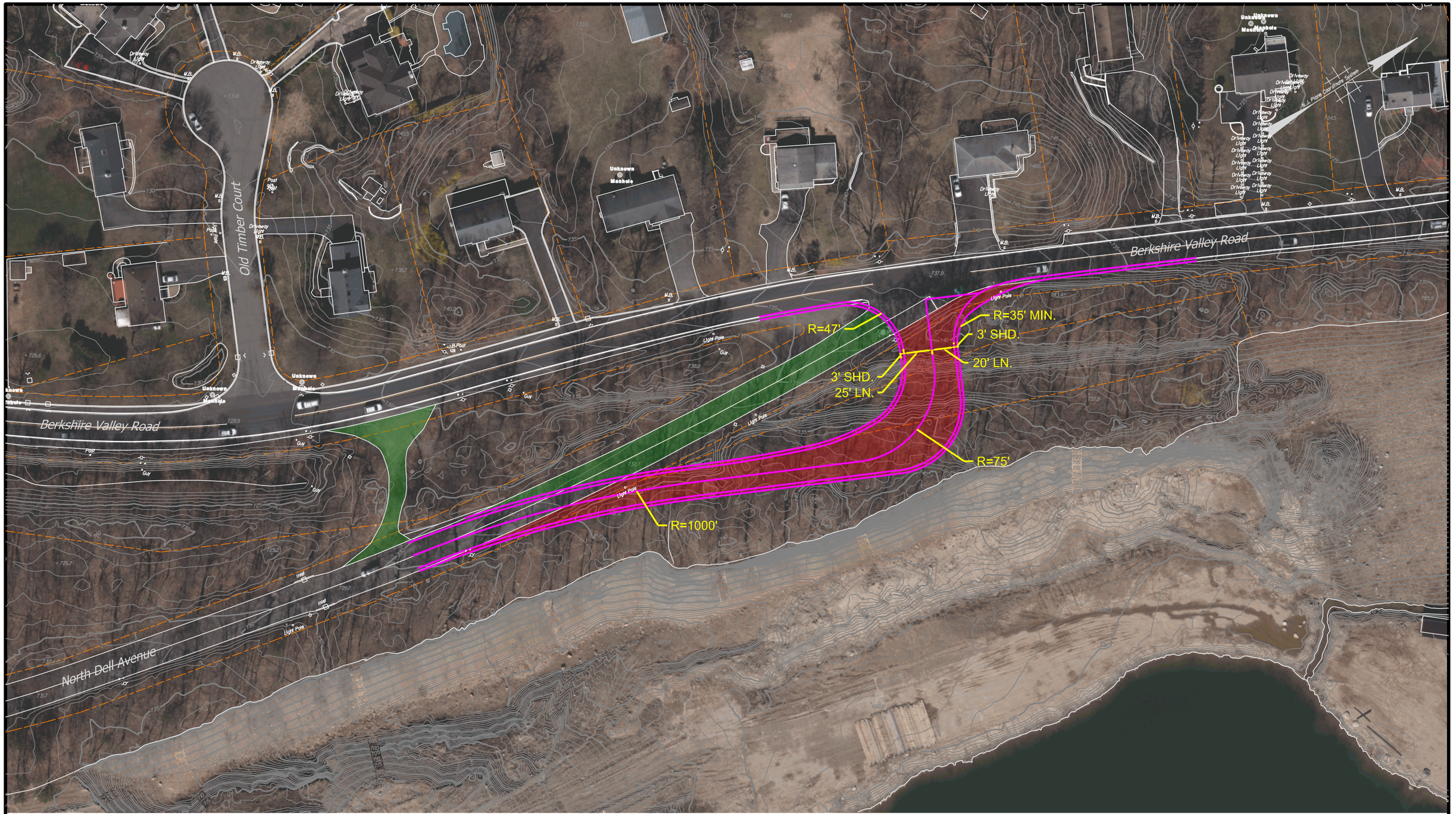
ALTERNATIVE I.7
PLAN

Scale 1" = 80'

Contract No.

Drawing

Sheet OF



LEGEND

ALTERNATIVE I.7 LAYOUT

PAVEMENT REMOVED

PAVEMENT ADDED

SCALE IN FEET

80' 40' 0 80' 160'

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date FEB 2023
				Des.
				Chkd.
				Dwn.
$FILE$				

FILENAME: $FILE$ $TIME$
DATE: $DATE$
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Date: _____

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NJTPA - CHESTER BRANCH
AND BERKSHIRE VALLEY ROAD
ROXBURY, MORRIS COUNTY, N.J.

CONCEPT STUDY

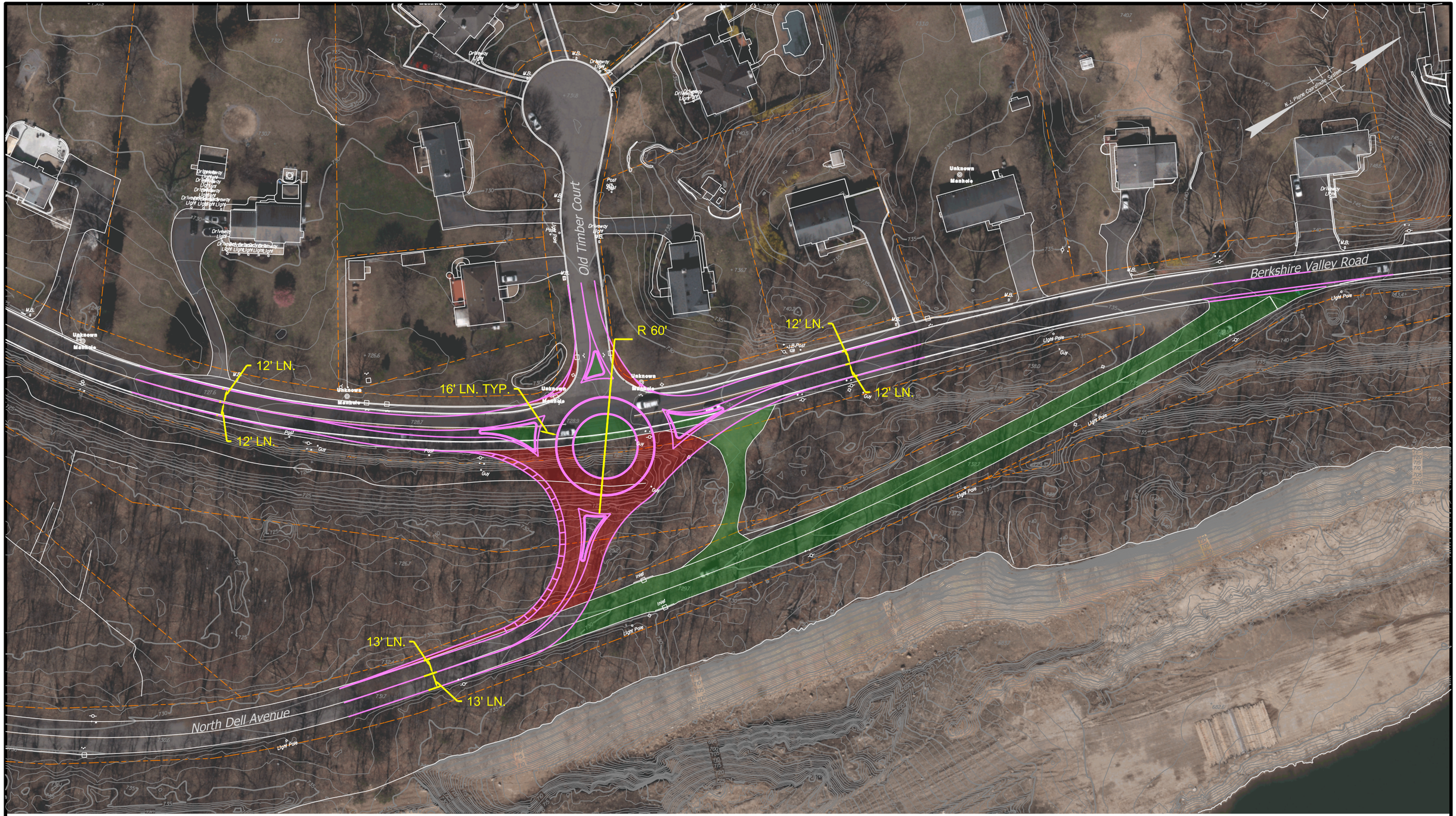
ALTERNATIVE I.8
PLAN

Scale 1" = 80'

Contract No.

Drawing

Sheet ___ OF ___



LEGEND

ALTERNATIVE VE.1 LAYOUT

PAVEMENT REMOVED

PAVEMENT ADDED

SCALE IN FEET

80' 40' 0 80' 80'

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date FEB 2023
				Des.
				Chkd.
				Dwn.
$FILE$				

FILENAME: $FILE$
DATE: $DATE$
USER: $USERNAME$
$TIME$

Date: _____

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ROXBURY, MORRIS COUNTY, N.J.

CONCEPT STUDY

ALTERNATIVE
VE.1 PLAN

Scale 1" = 80'

Contract No.

Drawing

Sheet ___ OF ___

Appendix J

Alternatives Scoring Matrices



NJTPA

NJTPA Freight Concept Development Program

Jacobs

NJTPA FY21 Freight Concept Development Study
Alternatives Evaluation - Berkshire Valley Road Vertical Constraint Elimination

Criteria	Vertical Constraint Elimination											ABC Full Replacement at 14 ft 3 in					Intersection Modification								
						Elevate Bridge (identical alignment…just different construction) Elevation 13 ft 6 in											Realignment			Reconfiguration					
	Depress Roadway	Depress Rail	New Roadway Alignment - Close Berkshire Valley Rd	New Roadway Alignment - Maintain Berkshire Valley Rd	New Parallel Rail Alignment	Existing Superstructure / Existing Substructure	Existing Superstructure / New Substructure	New Superstructure / Existing Substructure	New Superstructure / New Substructure	ABC Bridge Replacement - Existing Superstructure	ABC Bridge Replacement - New Superstructure	Precast Concrete Cantilever Abuttments	Precast Concrete Anchor Wall Abutments	Mechanically Stabilized Earth Systems (MSE) Abutments	Modular Block Wall Abutments	Pile-Supported Substructure	Recycling Center Driveway Extension	Mid-Field Connection	Old Timber Court Connection	Cut-Thru Plus Reconfigure Existing (1)	Cut-Thru Plus Reconfigure Existing (2)	Split Connections - New Plus Reconfigured Existing	Relocate with 90-degree intersection	Maintain Location with 90 degree Intersection	VE Alternative - Round-About at Old Timber Court (modification of Alt I.3)
Alternative No.	**1.0**	**2.0**	**3.1**	**3.2**	**4.0**	**5.1a**	**5.1b**	**5.1c**	**5.1d**	**5.1e**	**5.1f**	**5.2 a**	**5.2b**	**5.2c**	**5.2d**	**5.2e**	**I.1**	**I.2**	**I.3**	**I.4**	**I.5**	**I.6**	**I.7**	**I.8**	**VE.1**
Meets Project Purpose and Need	5	5	5	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Freight Rail / Truck Operations Impacts / Benefits - During Construction	0	-5	0	0	0	-3	-5	-3	-5	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	-1
Freight Rail / Truck Operations Impacts / Benefits - After Construction	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
Passenger Rail Operations Impacts / Benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjacent and Proximate Land Use Impacts / Benefits	0	0	-1	0	0	-1	-1	-1	-1	-1	-1	-1	-3	-1	-1	-1	0	0	0	-1	-1	-1	-1	-1	-1
Historic and Cultural Resources Impacts / Benefits	0	-3	0	0	-3	-1	-1	-1	-1	-1	-1	0	-1	-1	-1	-1	0	0	0	-1	-1	-1	-1	-1	-1
Community Profile & Environmental Justice/Title VI Impacts / Benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wetlands Impacts / Benefits	-1	-1	-5	-5	-3	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-3	-3	-1	-1	-1	-1	-1	-3
Floodplains & Aquifers Impacts / Benefits	-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0
Threatened & Endangered Species Impacts / Benefits	-1	-3	-3	-3	-3	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-3	-3	-1	-1	-1	-1	-3	-3	-3
Stormwater and Drainage Impacts / Benefits	-3	0	-3	-3	-3	0	0	0	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1
Hazardous Materials Impacts / Benefits	-1	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-1	-1	-1	-1	-1	-1	-1	-1	-1
Air Quality & Noise Impacts / Benefits	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	-1	-1	0	0	0	0	0	0	0
Community Impacts / Benefits	-1	1	-1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1
Safety Impacts / Benefits	3	3	3	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	3	3	3
Utility Impacts / Relocation Requirements	-3	-3	0	0	0	0	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Independence – Creates or Eliminates Need for other infrastructure project	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roadway Operational and Mobility Impacts / Benefits	1	-1	-1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Summary Score	**-4**	**-11**	**-7**	**-9**	**-5**	**0**	**-3**	**0**	**-3**	**3**	**3**	**4**	**1**	**3**	**3**	**2**	**4**	**2**	**5**	**2**	**2**	**2**	**3**	**2**	**0**

Relative Scores

Highly Beneficial	**5**
Moderately Beneficial	**3**
Minorly Beneficial	**1**
Neutral	**0**
Minorly Detrimental	**-1**
Moderately Detrimental	**-3**
Highly Detrimental	**-5**
Fatally Flawed	**-100**

NJTPA FY21 Freight Concept Development Study
Alternatives Evaluation - Port Reading Secondary / South Main Street Grade Crossing Elimination

Criteria	Vertical Constraint Elimination											Intersection Modification								
					Elevate Bridge							ABC Full Replacement at 14 ft 3 in					Realignment			Reconfiguration					
	Depress Roadway	Depress Rail	New Roadway Alignment - Close Berkshire Valley Rd	New Roadway Alignment - Maintain Berkshire Valley Rd	New Parallel Rail Alignment	Existing Superstructure / Existing Substructure	Existing Superstructure / New Substructure	New Superstructure / Existing Substructure	New Superstructure / New Substructure	ABC Bridge Replacement - Existing Superstructure	ABC Bridge Replacement - New Superstructure	Precast Concrete Cantilever Abutments	Precast Concrete Anchor Wall Abutments	Mechanically Stabilized Earth Systems (MSE) Abutments	Modular Block Wall Abutments	Pile-Supported Substructure	Recycling Center Driveway Extension	Mid-Field Connection	Old Timber Court Connection	Cut-Thru Plus Reconfigure Existing (1)	Cut-Thru Plus Reconfigure Existing (2)	Split Connections - New Plus Reconfigured Existing	Relocate with 90-degree intersection	Maintain Location with 90-degree Intersection	VE Alternative - Round-About at Old Timber Court (modification of Alt I.3)
Final Alt Number (Cha nges Needed)	**1.0**	**2.0**	**3.1**	**3.2**	**4.0**	**5.1a**	**5.1b**	**5.1c**	**5.1d**	**5.1e**	**5.1f**	**5.2 a**	**5.2b**	**5.2c**	**5.2d**	**5.2e**	**I.1**	**I.2**	**I.3**	**I.4**	**I.5**	**I.6**	**I.7**	**I.8**	**VE.1**
Meets Project Purpose and Need	Fully Meets	Fully Meets	Fully Meets	Partially Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets
Freight Rail / Truck Operations Impacts / Benefits - During Construction	No Adverse Effect	Requires lengthy closure of rail service	No Adverse Effect	No Adverse Effect	Requires short closure of rail service	Requires lengthy closure of rail service	Requires lengthy closure of rail service	Requires lengthy closure of rail service	Requires lengthy closure of rail service	Requires short closure of rail service	Requires short closure of rail service	Requires short closure of rail service	Requires short closure of rail service	Requires short closure of rail service	Requires short closure of rail service	Requires short closure of rail service; additional coordination req'd.	No Effect	No Effect	No Effect	No Effect	No Effect	Minor effect due to MPT requirements at existing intersection	Minor effect due to MPT requirements at existing intersection	Minor effect due to MPT requirements at existing intersection	Temporary detouring of traffic required during construction
Freight Rail / Truck Operations Impacts / Benefits - After Construction	No Effect	Creates new at-grade crossing	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	Improved directional access	Improved directional access	Improved directional access	Improved directional access	Improved directional access	Improved directional access	Improved directional access	Improved directional access	Improved directional access
Passenger Rail Operations Impacts / Benefits	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Adjacent and Proximate Land Use Impacts / Benefits	No Adverse Effect	No Adverse Effect	Property Acquisition Required	Property Acquisition Required	Significant property acquisition required - toe of embankment slope	Minor property acquisition required - toe of embankment slope	Minor property acquisition required - toe of embankment slope	Minor property acquisition required - toe of embankment slope	Minor property acquisition required - toe of embankment slope	Minor property acquisition required - toe of embankment slope. Could eliminate with retaining sheet walls.	Minor property acquisition required - toe of embankment slope. Could eliminate with retaining sheet walls.	Minor property acquisition required - toe of embankment slope. Could eliminate with retaining sheet walls.	Minor property acquisition required - toe of embankment slope. Could eliminate with retaining sheet walls.	Minor property acquisition required - toe of embankment slope. Could eliminate with retaining sheet walls.	Minor property acquisition required - toe of embankment slope. Could eliminate with retaining sheet walls.	Minor property acquisition required - toe of embankment slope. Could eliminate with retaining sheet walls.	No Adverse Effect	No Adverse Effect	No Adverse Effect	Minor effect on residential driveways and homes	Minor effect on residential driveways and homes	Minor effect on residential driveways and homes	Potential Effect on Quarry Property	Potential Effect on Quarry Property	Minor ROW acquisition required from residential properties
Historic and Cultural Resources Impacts / Benefits	No Effect	Eliminates Historic Bridge	No Effect	No Effect	Replaces / Relocated Historic Bridge	Minor modification to Historic Bridge	Minor modification to Historic Bridge	Minor modification to Historic Bridge	Minor modification to Historic Bridge	Modification of the abuttments. Reuse of the existing bridge.	Modification of the abuttments. Replacement of the existing bridge.	Replacement of the existing bridge. Formliners can replicate ex. abutments.	Replacement of the existing bridge.	Replacement of the existing bridge.	Replacement of the existing bridge.	Replacement of the existing bridge.	No Effect	No Effect	Crosses over Morris Canal	Crosses over Morris Canal	Crosses over Morris Canal	Crosses over Morris Canal	Modification of existing crossing of the Morris Canal	Modification of existing crossing of the Morris Canal	Construction over footprint of Morris Canal required
Community Profile & Environmental Justice/Title VI Impacts / Benefits	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community	No Effect. Not in or proximate to EJ Community
Wetlands Impacts / Benefits	Minimal Impacts - Due to reconstruction and drainage - Less than 0.25 acre disturbance	Potential Impacts to freshwater wetland transition areas on rail ROW embankment removal.	Potential Impacts to freshwater wetlands 0.11 acres (4,700 sq. ft) and associated transition areas.	Potential Impacts to freshwater wetlands 0.11 acres (4,700 sq. ft) and associated transition areas.	Potential Impacts to freshwater wetlands and associated transition areas from new ROW construction	Potential Impacts to freshwater wetland transition areas Approx. 2,000 sq.ft.	Potential Impacts to freshwater wetland transition areas Approx. 2,000 sq.ft.	Potential Impacts to freshwater wetland transition areas Approx. 2,000 sq.ft.	Potential Impacts to freshwater wetland transition areas Approx. 2,000 sq.ft.	Potential Impacts to freshwater wetland transition areas Approx. 2,000 sq.ft.	Potential Impacts to freshwater wetland transition areas Approx. 2,000 sq.ft.	Potential Impacts to freshwater wetland transition areas Approx. 2,000 sq.ft.	Potential Impacts to freshwater wetland transition areas Approx. 2,000 sq.ft.	Potential Impacts to freshwater wetland transition areas Approx. 2,000 sq.ft.	Potential Impacts to freshwater wetland transition areas Approx. 2,000 sq.ft.	Potential Impacts to freshwater wetland transition areas Approx. 2,000 sq.ft.	Potential Impacts - Roadway within freshwater wetlands transition area	Potential Impacts - Roadway would disturb approx. 1,700 sq. ft. of freshwater wetlands and associated transition areas	Potential Impacts Roadway would disturb approx. 1,800 sq. ft. of freshwater wetlands and associated transition areas	Potential Impacts within freshwater wetlands transition area	Potential Impacts within freshwater wetlands transition area	Potential Impacts within freshwater wetlands transition area	Potential Impacts within freshwater wetlands transition area	Potential Impacts within freshwater wetlands transition area	Potential Impacts Roadway would disturb approx. 2,400 sq. ft. of freshwater wetlands and associated transition areas
Floodplains & Aquifers Impacts / Benefits	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	No disturbance within Flood Plain of FHA	Potential Riparian impact from adjacent waterbody (Stephens Brook FW2-NTC1)	No disturbance within Flood Plain of FHA
Threatened & Endangered Species Impacts / Benefits	Minimal Impacts due to potential drainage modifications	Potential Impacts due to tree cutting along rail ROW embankment	Potential Impacts due to tree cutting - Approx. 3.25 acres of disturbance	Potential Impacts due to tree cutting Approx. 3.25 acres of disturbance	Potential Impacts due to tree cutting - New 2,010' lf. X 30' wide new rail ROW = 60,300 sq.ft (1.38 ac.) disturbance	Minimal Impacts - Approx. 2,000 sq. ft.	Minimal Impacts - Approx. 2,000 sq. ft.	Minimal Impacts - Approx. 2,000 sq. ft.	Minimal Impacts - Approx. 2,000 sq. ft.	Minimal Impacts - Approx. 2,000 sq. ft.	Minimal Impacts - Approx. 2,000 sq. ft.	Minimal Impacts - Approx. 2,000 sq. ft.	Minimal Impacts - Approx. 2,000 sq. ft.	Minimal Impacts - Approx. 2,000 sq. ft.	Minimal Impacts - Approx. 2,000 sq. ft.	Minimal Impacts - Approx. 2,000 sq. ft.	Potential Impacts due to tree cutting Approx. 6,000 sq. ft. of disturbance	Potential Impacts due to tree cutting - Approx. 11,700 sq. ft. of disturbance	Potential Impacts due to tree cutting - Approx. 7,200 sq. ft. of disturbance	Minimal Impacts due to tree cutting - Approx. 3,000 sq. ft. of disturbance including existing cut-through	Potential Impacts due to tree cutting- Approx. 5,700 sq. ft. of disturbance including existing cut-through	Potential Impacts due to tree cutting - Approx. 6,000 sq. ft. of disturbance	Potential Impacts due to tree cutting Approx. 5,400 sq. ft of disturbance	Potential Impacts due to tree cutting - Approx. 18,500 sq. ft of disturbance	Potential Impacts due to tree cutting – Approx. XX,XXX sq. ft of disturbance
Stormwater and Drainage Impacts / Benefits	Significant effect due to creation of depressed area without natural drainage	No significant change in SW Drainage	Potential for moderate effect due to increased impervious cover	Potential for moderate effect due to increased impervious cover	Potential for moderate effect due to increased impervious cover	No significant change in SW Drainage	No significant change in SW Drainage	No significant change in SW Drainage	No significant change in SW Drainage	No significant change in SW Drainage	No significant change in SW Drainage	No significant change in SW Drainage	No significant change in SW Drainage	No significant change in SW Drainage	No significant change in SW Drainage	No significant change in SW Drainage	Potential effect due to minor increase in impervious cover	Potential effect due to minor increase in impervious cover	Potential effect due to minor increase in impervious cover	Potential effect due to minor increase in impervious cover	Potential effect due to minor increase in impervious cover	Potential effect due to minor increase in impervious cover	Potential effect due to minor increase in impervious cover	Potential effect due to minor increase in impervious cover	Potential effect due to minor increase in impervious cover
Hazardous Materials Impacts / Benefits	Potential involvement due to roadway excavation	Potential involvement due to rail ROW excavation	Potential involvement due to new roadway excavation	Potential involvement due to new roadway excavation	Potential involvement due to new /existing rail ROW excavation	Potential involvement due to rail ROW excavation	Potential involvement due to rail ROW excavation	Potential involvement due to rail ROW excavation	Potential involvement due to rail ROW excavation	Potential involvement due to new /existing rail ROW excavation	Potential involvement due to new /existing rail ROW excavation	Potential involvement due to new /existing rail ROW excavation	Potential involvement due to new /existing rail ROW excavation	Potential involvement due to new /existing rail ROW excavation	Potential involvement due to new /existing rail ROW excavation	Potential involvement due to new /existing rail ROW excavation	Potential involvement due to new roadway excavation	Potential involvement due to new roadway excavation	Potential involvement due to new roadway excavation	Minimal involvement due to new roadway excavation	Potential involvement due to new roadway excavation	Potential involvement due to new roadway excavation	Potential involvement due to new roadway excavation	Potential involvement due to new roadway excavation	Potential involvement due to new roadway excavation
Air Quality & Noise Impacts / Benefits	No change	New at grade crossing would require train horn and claxons at the crossing	Reduced roadway traffic in front of residential properties	Reduced roadway traffic in front of residential properties	No change	No change	No change	No change	No change	No change	No change	No change	No change	No change	No change	No change	Minor increase in roadway traffic in front of residential properties	Minor increase in roadway traffic in front of residential properties	No change	No change	No change	No change	No change	No change	No change
Community Impacts / Benefits	Potential Local Flodding issue	Eliminates rail embankments - potentially opens properties for other uses	Requires rerouting of local residential traffic	Provides alternative route to reduce chance of bridge strikes	Eliminates potential for bridge strikes and temporary roadway closures	Eliminates potential for bridge strikes and temporary roadway closures	Eliminates potential for bridge strikes and temporary roadway closures	Eliminates potential for bridge strikes and temporary roadway closures	Eliminates potential for bridge strikes and temporary roadway closures	Eliminates potential for bridge strikes and temporary roadway closures	Eliminates potential for bridge strikes and temporary roadway closures	Eliminates potential for bridge strikes and temporary roadway closures	Eliminates potential for bridge strikes and temporary roadway closures	Eliminates potential for bridge strikes and temporary roadway closures	Eliminates potential for bridge strikes and temporary roadway closures	Eliminates potential for bridge strikes and temporary roadway closures	Eliminates operational issue at existing intersection	Eliminates operational issue at existing intersection	Eliminates operational issue at existing intersection	Accommodates all traffic but does not address operational issue at existing intersection	Accommodates all traffic but does not address operational issue at existing intersection	Accommodates all traffic but does not address operational issue at existing intersection	Eliminates operational issue at existing intersection	Eliminates operational issue at existing intersection	Eliminates operational issue at existing intersection
Safety Impacts / Benefits	Eliminates potential for bridge strikes	Eliminates potential for bridge strikes	Eliminates potential for bridge strikes	Provides alternate route but does not eliminate potential for bridge strikes	Eliminates potential for bridge strikes	Eliminates potential for bridge strikes	Eliminates potential for bridge strikes	Eliminates potential for bridge strikes	Eliminates potential for bridge strikes	Eliminates potential for bridge strikes	Eliminates potential for bridge strikes	Eliminates potential for bridge strikes	Eliminates potential for bridge strikes	Eliminates potential for bridge strikes	Eliminates potential for bridge strikes	Eliminates potential for bridge strikes	Eliminates operational issue at existing intersection	Eliminates operational issue at existing intersection	Eliminates operational issue at existing intersection	Improves sight lines for turning vehicles	Improves sight lines for turning vehicles	Improves sight lines for turning vehicles	Eliminates operational issue at existing intersection	Eliminates operational issue at existing intersection	Eliminates operational issue at existing intersection
Utility Impacts / Relocation Requirements	Significant utility relocations required	Significant utility relocations required	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated	Minor utility relocations required	No significant utility impacts anticipated	Minor utility relocations required	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated	No significant utility impacts anticipated
Project Independence – Creates or Eliminates Need for other infrastructure project	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs	Independent utility project with no effect on other projects / needs
Roadway Operational and Mobility Impacts / Benefits	Improved truck circulation	Improved truck circulation but creates a new at-grade crossing	Improved truck circulation but requires rerouting of residential traffic	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation	Improved truck circulation

Appendix K

Risk Registers



NJTPA

NJTPA Freight Concept Development Program

Jacobs

Impact Definitions					
Rating -->	**Very Low**	**Low**	**Moderate**	**High**	**Very High**
Cost Impact of Threat	Insignificant cost increase	<5% cost increase	5-10% cost increase	10-20% cost increase	>20% cost increase
Cost Impact of Opportunity	Insignificant cost reduction	<1% cost decrease	1-3% cost decrease	3-5% cost decrease	>5% cost decrease
Schedule Impact of Threat	Insignificant slippage	<1 month slippage	1-3 months slippage	3-6 months slippage	>6 months slippage
Schedule Impact of Opportunity	Insignificant improvement	<1 month improvement	1-2 months improvement	2-3 months improvement	>3 months improvement
Probability	1–9%	10–19%	20–39%	40–59%	60–99%

Risk Matrix						
Probability Rating	**5 - Very High**	**5**	**10**	**20**	**35**	**50**
	4 - High	**4**	**8**	**16**	**28**	**40**
	3 - Moderate	**3**	**6**	**12**	**21**	**30**
	2 - Low	**2**	**4**	**8**	**14**	**20**
	1 - Very Low	**1**	**2**	**4**	**7**	**10**
		1	**2**	**4**	**7**	**10**
		Very Low	**Low**	**Moderate**	**High**	**Very High**
		Impact Rating				

Project Risk Register

Municipality: Roxbury Township
County: Morris

Project Name:	**Berkshire Valley Road Truck Circulation Project**
Preliminary Preferred Alternative (PPA)	**Alt 5.2-A - Full Replacement and Elevation to 14ft 3in clearance with Precast Concrete Cantilever Abuttments**

Risk Rank & ID		Risk Statement & Category			Risk Analysis Matrix						Risk Response Strategy & Response Planning				
Risk Rank	Unique ID #	Risk Statement	Risk Category		Risk Probability	Risk Impact		Schedule Score	Cost Score	Final Score	Risk Response Strategy	Risk Response Action Plan	Final Risk Owner	Action Plan Status	Risk Last Updated
			Initial Risk Owner	Risk May Occur In		Schedule	Cost								
1	2	Unexpected Utilities	Construction	Construction	2 - Low	4 - Moderate	2 - Low	8	4	12	Mitigate Threat	Conduct detailed subsurface utility investigation to locate utilities and incorporate relocation as needed in the design phase	Contractor and Designer	Plan To Be Developed	4/1/2023
1	6	Potential Environmental Permits / Approvals and Interagency Coordination	Environmental	Preliminary Engineering	2 - Low	4 - Moderate	2 - Low	8	4	12	Mitigate Threat	Coordination with NJDEP and refinement of design as needed to reduce impacts and support permitting.	Contractor and Designer	Plan To Be Developed	4/1/2023
1	8	Detrimental effect on cultural resources	Environmental	Preliminary Engineering	2 - Low	4 - Moderate	2 - Low	8	4	12	Mitigate Threat	Early coordination with SHPO during the preliminary design process	Owner	Plan To Be Developed	4/1/2023
4	1	Construction Duration - Exceeding 14 day max	Construction	Construction	2 - Low	2 - Low	2 - Low	4	4	8	Accept Threat	Coordination with the rail operator to facilitate alternative transportation methmodes for temporary ily supplying rail served cistomers	Contractor	Plan To Be Developed	4/1/2023
4	5	Maintenance of Traffic During Construction	Construction	Construction	2 - Low	2 - Low	2 - Low	4	4	8	Mitigate Threat	Develop detailed MOT plans during design and coordinate with local police	Contractor and Designer	Plan To Be Developed	4/1/2023
4	7	Privately Owned Right-of-Way and Property Impacts	Right of Way	Final Design	1 - Very Low	4 - Moderate	4 - Moderate	4	4	8	Mitigate Threat	Refine design to avoid or minimize need for private ROW acquisition	Owner	Plan To Be Developed	4/1/2023
7	4	Noise complaint from nearby sensitive receivers	Environmental	Construction	2 - Low	1 - Very Low	2 - Low	2	4	6	Mitigate Threat	Noise monitoring and/or modeling to demonstrate non-impact from construction and/or future operation of	Owner	Plan To Be Developed	4/1/2023
8	3	Planned Vertical Clearance Beneath Chester Branch Bridge	Geometric Design	Preliminary Engineering	2 - Low	1 - Very Low	1 - Very Low	2	2	4	Accept Threat	Replacement bridge proposed to provide 14 ft 3 in clearance with posted clearance at 14 ft 0 in. State	Owner	Plan To Be Developed	4/1/2023

Project Risk Register

Municipality: Roxbury Township
County: Morris

Project Name:	**Berkshire Valley Road Truck Circulation Project**
Preliminary Preferred Alternative (PPA)	**Alt I.3 - Old Timber Court Connection**

Risk Rank & ID		Risk Statement & Category			Risk Analysis Matrix						Risk Response Strategy & Response Planning				
Risk Rank	Unique ID #	Risk Statement	Risk Category		Risk Probability	Risk Impact		Schedule Score	Cost Score	Final Score	Risk Response Strategy	Risk Response Action Plan	Final Risk Owner	Action Plan Status	Risk Last Updated
			Initial Risk Owner	Risk May Occur In		Schedule	Cost								
1	2	Unexpected Utilities	Construction	Construction	2 - Low	4 - Moderate	2 - Low	8	4	12	Mitigate Threat	Conduct detailed subsurface utility investigation during preliminary engineering and incorporate utility relocation, if required, into design	Contractor and Designer	Plan To Be Developed	4/1/2023
1	4	Detrimental effect on cultural resources	Environmental	Preliminary Engineering	2 - Low	4 - Moderate	2 - Low	8	4	12	Mitigate Threat	Early coordination with SHPO during preliminary design phase	Owner	Plan To Be Developed	4/1/2023
3	1	Challenge in acquiring privately owned ROW	Right of Way	Preliminary Engineering	2 - Low	2 - Low	2 - Low	4	4	8	Accept Threat	Early initiation of ROW acquisition process	Contractor	Plan To Be Developed	4/1/2023
4	3	Noise complaint from nearby sensitive receivers	Environmental	Construction	2 - Low	1 - Very Low	2 - Low	2	4	6	Mitigate Threat	Noise monitoring and/or modeling to demonstrate non-impact from construction and/or future operation of	Owner	Plan To Be Developed	4/1/2023

Appendix L

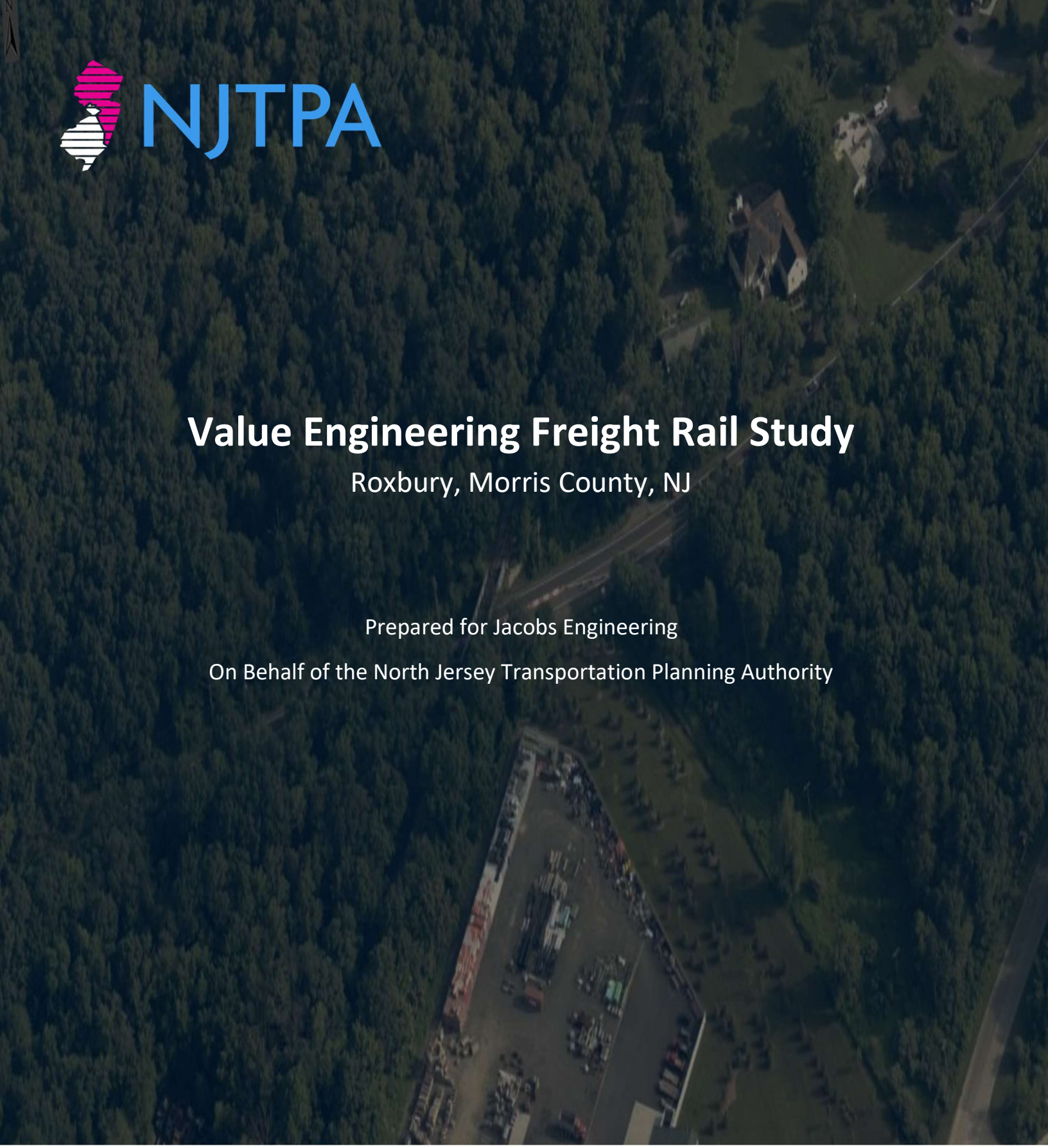
Value Engineering Report



NJTPA

NJTPA Freight Concept Development Program

Jacobs



Value Engineering Freight Rail Study

Roxbury, Morris County, NJ

Prepared for Jacobs Engineering

On Behalf of the North Jersey Transportation Planning Authority

Prepared by:

Urban Engineers, Inc.
220 Lake Drive East, Suite 300
Cherry Hill, NJ 08002

Preface

Urban Engineers, Inc. (Urban) has been commissioned through Jacobs Engineering (Jacobs) to review the options for the Concept Development designs for a freight improvement project in Roxbury, Morris County, New Jersey as described herein.

As part for the review process, Urban was requested to identify other options through an abbreviated Value Engineering methodology process and further recommend any design suggestions to the previously identified alternatives to provide Jacobs and the North Jersey Transportation Planning Authority (NJTPA) an independent overview and validation of proposals as currently presented.

Due to required scope and quick turnaround time for the study, no attempt was made or requested for Urban Engineers to follow up any ideas with supporting design calculations, schedule, or cost estimations.

Urban Engineers Study Team:

- Project Manager: Antonio Ditri PE, Urban Construction Management Services Leader
- Bridge & Highway Engineering: Michael McAtee, PE, Vice President, Urban Bridge Design Services Leader
- Constructability: Glenn Miller, Urban Senior Construction Manager
- Environmental: Brad Tombs, Urban Senior Environmental Scientist
- Rail Logistics: Frank Teifeld, Urban Senior Railroad Engineer
- RAB / Highways: Adam Brown, Urban Highway Engineer
- Highways / Drainage: Patrick J. Williams, P.E., LEED AP, Urban Highway Engineer
- Value Engineering Team Lead: Will Willson , FRICS (QS), VMA (SAVE), Urban Risk Management Leader

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EXECUTIVE SUMMARY

Project Description

The assignment comprises the review of a project involving the removal of the height restriction on the Chester Branch freight rail crossing over Berkshire Valley Road and improvements at the nearby North Dell Avenue Interchange in Roxbury NJ.

Approach

Jacobs Engineering provided the Urban Value Engineering study team with project information, and after a short period allowed for familiarization, the Urban study team was invited to a one day in-person workshop at Jacobs' office in Morrisville NJ, where project details were presented via PowerPoint of Options considered. The Urban study team was afforded time to seek clarifications and ask questions. The morning's presentations were then followed by a on-site visit by the Urban study team with key members of the Jacobs Engineering design team. Supporting team members from both Jacobs and Urban attended the morning's presentations virtually via Microsoft *Teams.*

After this information phase, the Urban study team held an independent one-day workshop that followed the abridged Value Engineering workshop format:

1. Purpose and need were reiterated for each project
2. Functions were listed
3. Key risks were identified
4. Current Options and the scoring of each in the Jacobs matrix was discussed for each project
5. Brainstorming was performed to generate additional ideas and design suggestions on existing ideas
6. Ideas were debated and scored against the Jacobs matrix
7. Short listed ideas were agreed and assigned to project team members to draft descriptive justifications following a standard templated format
8. Ideas were summarized into a PowerPoint presentation and incorporated into a report to form a reference document for Jacobs and NJTPA as final options for project consideration

Results of Study – Key Recommendations

The study team initial proposal for consideration (11-9-22):

Idea: ROX-VE-1 – Lowering Berkshire Valley Road to increase the height clearance below the Chester Valley freight rail line bridge.

Idea: ROX-VE-2 – Introduce a roundabout at the intersection of Old Timber Court residential neighborhood and Berkshire Valley Road approximating to the existing unmade-cut through to North Dell Avenue

Idea ROX-VE-3 – Design suggestion on 'top idea', redefine intersections as fully functional temporary detour, and utilize during 14-day ABC construction [14 day window may not be possible without closing Berkshire for extended period]

Options within the above two primary ideas are provided in the following report sections and idea write-ups incorporated into the Appendices.

Conclusions and Recommendations (Post 11-9-22 Presentation)

1. The Urban study team found the methodology and detailed analysis of possible alternatives considered by the Jacobs Engineering design team sound and comprehensive.
2. As part of the Roxbury Chester Valley bridge height restriction evaluation, the top scoring alternatives identified by Jacobs clearly favored options that incorporated total bridge replacement given the current bridge had been recently found structurally deficient. The Urban study team notes this as a valid reason for options shortlisted, however also notes the bridge replacement goes beyond the purpose and need statement and therefore would likely require additional funding and a possible revision to the purpose and need statement should the road lowering prove viable when studied in greater detail. Any replacement of the current bridge runs the risk of inability to limit a rail closure to under 14 days while safely maintaining access of Berkshire Valley Road. The bridge replacement however, given the bridges current structural deficiency, would satisfy the objective of improving safety, given any future collision could result in a more catastrophic consequence.
    a. *Following the 11-9-22 presentation, stakeholders' noted the purpose & need of the study should be amended to include replacement of bridge structure due to poor condition. As a result, Urban acknowledges that Idea ROX-VE 1 & ROX-VE-1.A are no longer viable options.*
    b. *Urban was made aware of a prior drainage study suggesting topography does not allow for drainage invert to be higher than Canal bed. Further reason to eliminate VE 1 & 1.A as a viable option. Urban would recommend further analyses on possible drainage facilities is conducted prior to elimination.*
3. All options proposed for improvements to the North Dell Avenue Interchange have similar potential objections from Residents adjacent to Berkshire Valley Road and will all require some land acquisition from the same Landowner. Further consultation with Residents and Landowner would therefore be beneficial prior to proposing a final option, given most options have similar impacts.

Introduction and Process

The Urban study team attended a one day project familiarization and information session at Jacobs Engineering [Jacobs] offices in Morristown, NJ on Tuesday October 18th 2022 where Jacobs Team leader, Scott Parker, and his team introduced the Roxbury Project partly face to face and partly through attendance on Microsoft TEAMS.

The Jacobs team:

- Jakub Rowinski, NJTPA Project Manager
- Scott Parker – Jacobs Project Manager
- Krupa Patel – Jacobs
- Richard Sirabian – Jacobs
- Jean Go – Jacobs
- Samir D Mody – Keller-Engineering
- Brian Strizki – JMT Engineering

The afternoon site tour visited the Roxbury Chester Valley Line bridge and continued onto the N. Dell Ave interchange. The afternoon site visits were attended by Scott Parker, Krupa Patel, Jacub Rovinski, and Antonio Ditri, Glen Miller, and Will Willson of the Urban study team.

The Urban study team held a one day 'closed door' independent Hybrid VE workshop on Tuesday October 25th 2022 at Urban offices in Cherry Hill. The Hybrid VE workshop followed the SAVE methodology stages as shown in Figure 1 below [blue highlighted text Hybrid approach]:

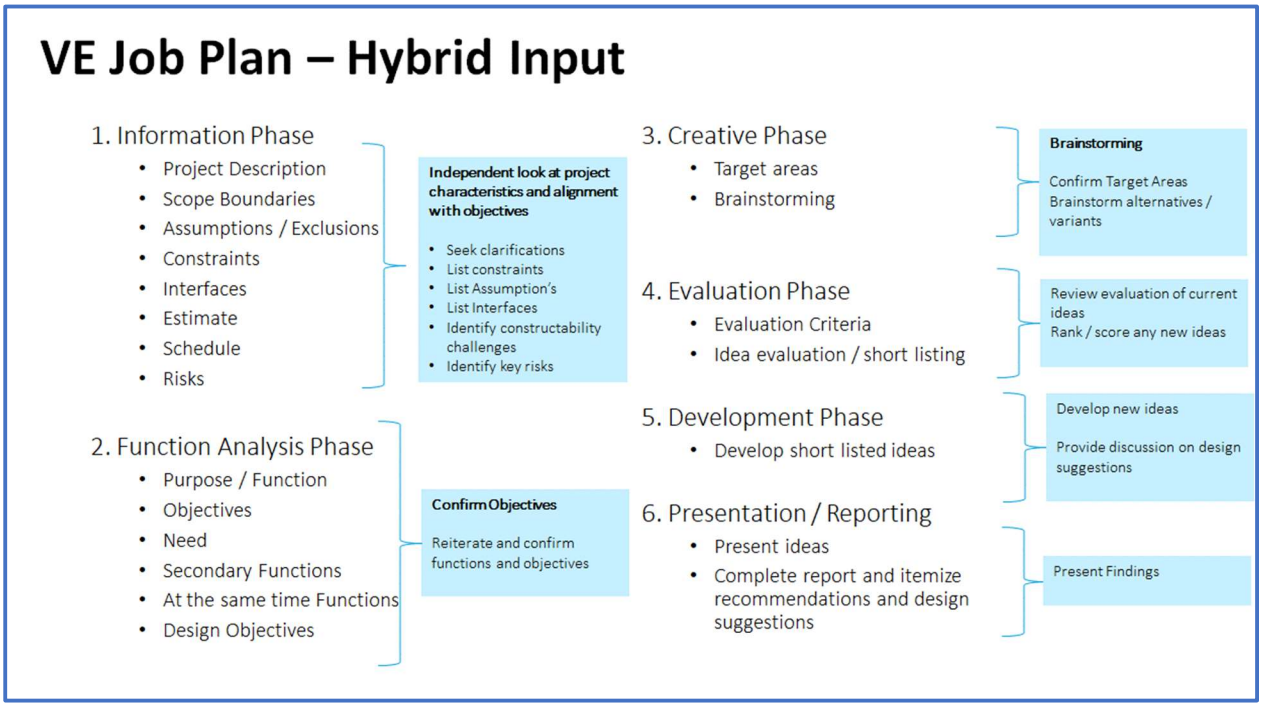


Figure 1- VE Hybrid Process

Preliminary results of write-ups of key ideas and study 'takeaways' were sent to Scott Parker on October 28th 2022. This was followed by a discussion on November 1st 2022 of the key ideas including the Urban study team comments on the Jacob recommended options and matrix scoring and a question and answer session. Jacobs relayed comments back to the Urban study team which have been incorporated into this report.

Initial Observations

Little construction working space and lay down areas available along Berkshire Valley Road

- Elevated track bed to provide approach to a raised bridge deck would require extended embankment toe
- Concerned geotechnical investigations would reveal need for more extensive footings in a new bridge substructure extending construction time beyond the 14-day rail closure
- Challenging to keep Berkshire Valley Road open during (ABC) construction
- Multiple overhead power lines constraining type of lifting equipment
- Environmental impacts likely to canal bed and vegetation through any embankment foot expansion
- Large scope of work during 14-day rail access shut down (Jacobs noted concern if existing freight customers forced into alternative supply chain through delayed construction, extending rail freight closure period]
- Existing HV cable clearly close to existing bridge abutment foundations
- Berkshire Valley Road and Chester Rail bridge width provides opportunity to maintain one lane of traffic during any construction
- Canal bed appears to be utilized as drainage receptor for street run off [no evidence of independent street gullies / drainage]
- Residents along Berkshire Valley Road likely to incur increased heavy traffic impacts as height restriction removed and N. Dell Ave turning improved

Purpose and Need / Function analysis

The purpose of this project is to eliminate the height restriction that the Chester Branch rail bridge creates on Berkshire Valley Road (642), improve safety, and to improve the geometric configuration of the intersection of Berkshire Valley Road with N. Dell Avenue to efficiently accommodate large truck movements.



Figure 2- Roxbury location map

Functions identified satisfying the purpose and need statement were proposed as:

Provide Access	Comply [with] regulations
Increase vertical clearance	Maintain [Rail] service
Enable Development	Safeguard [rail] costumers
Avoid accidents	Protect [the rail] business
Improve Safety	Maintain access [on Berkshire Rd]
Fix bridge	

Below is a simple Function Analysis System Technique Diagram [FAST] to illustrate the Functions necessary to accomplish the Purpose and Need Statement:

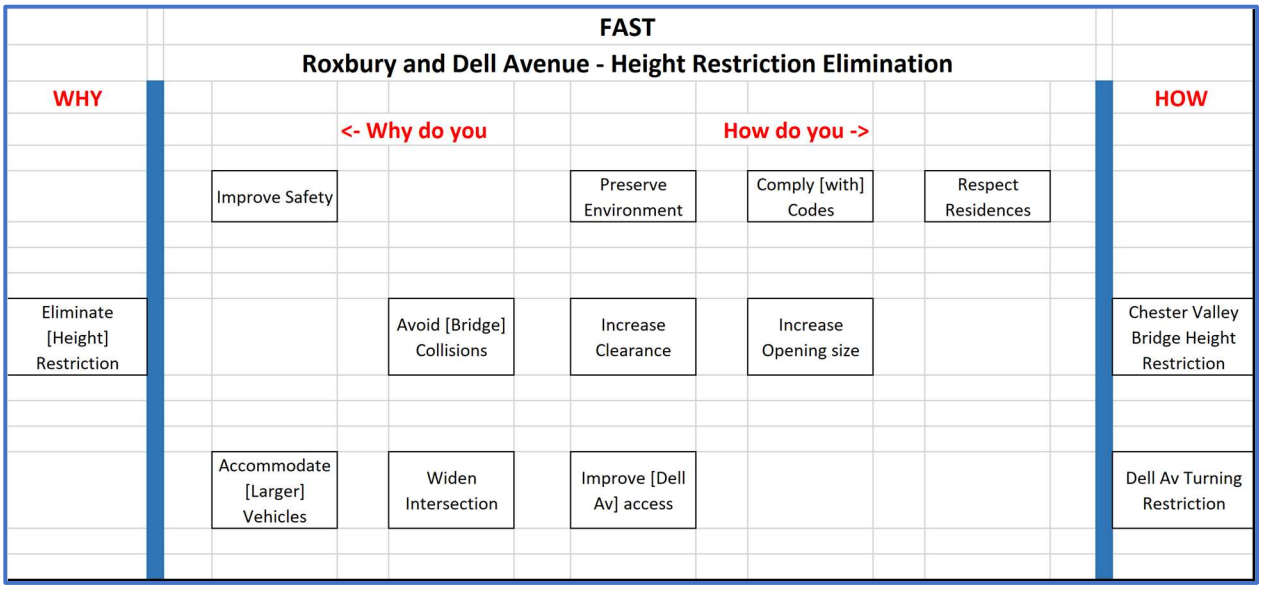


Figure 3- FAST diagram Roxbury

Identification Key Risks

The Urban study team identified their opinion as to the following key risks impacting the project:

RAIL BRIDGE HEIGHT RESTRICTION

ROAD LOWER OPTION

1. Underground HV cable damage / may require relocation
2. Ability to discharge surface water runoff into existing canal without EA / nothing close to tie into / potential capacity drain
3. Diversion of traffic / complete short term road closure may be required
4. Unforeseen utilities in road may limit lowering
5. Bridge abutment / foundations may be unable to support 2-3 foot lowering of grade without becoming unstable
6. Intersections with the existing street may limit lowering

RAIL BRIDGE REPLACEMENT

1. Ground may be unable to take PCC wing walls /abutments without new substantial foundations
2. Limited working space and crane height restrictions due to overhead HV cables may increase construction duration and costs
3. Ability to undertake work in 14-day railroad closure window may be overly ambitious
4. Proximity of underground HV cable to bridge footings and potential for damage may result in need to relocate
5. Staging footprint adjacent to bridge may not be available / large enough to accommodate equipment significantly impacting approach and increasing construction duration and costs

DELL ROAD JUNCTION RECONFIGURATION

1. Residential objections due to headlights whilst turning may extend consultation period and delay construction
2. Increased heavier Truck noise in changing gears adjacent to residential properties may increase objections requiring additional noise mitigation
3. Developer / landowner resistance may significantly delay start of intersection construction potentially placing intersection improvements after bridge height restriction elimination
4. Extended period for Environmental/Permitting may delay construction

RECOMMENDED RISK MITIGATION

1. The Urban study team noted there was significant cost and schedule risk at this stage and would recommend a concept quantitative risk assessment be conducted to provide an input to the scoring matrix especially given NJTPA's directions to:
   - Minimize any closures to Berkshire Valley Road
   - Avoid construction shut down of Chester Valley line for more than 2 weeks
2. Obtain a definitive timespan where the Chester Valley Line bridge must be replaced and any options available for strengthening the existing structure [substructure and / or substructure] to prolong its life if alternative road lowering was proved viable.

Idea development and Jacob Options matrix review

VE idea development

The Urban study team identified the following ideas in Table 1 below:

ROXBURY – DELL INTERCHANGE

Ref	Ideas
ROX VE2	Roundabout Dell / Berkshire [utilizing existing cut through as part of R/B
ROX VE3	Design suggestion on 'top idea' redefine intersections as fully functional, and utilize during 14 day ABC construction [14 day window not possible without closing Berkshire for extended period]
ROX VE4	Build new bridge superstructure [lateral slide] off line and slide in during rail outage
ROX VE5	Phased approach to bridge reconstruction to avoid closure of Berkshire Road
ROX VE 2.A	Aseptic garden wall / sound barrier to protect residences
ROX VE 1A	Design retention basin as part of roundabout as environmental improvement / mitigation

ROXBURY – BRIDGE HEIGHT – raise bridge

Ref	Ideas
ROX VE 6	Consider combination of raise bridge and lower road ***Note : slopes would be widened and cable relocated beforehand***

ROXBURY – BRIDGE HEIGHT – lower road

Ref	Ideas
ROX VE1	Lower Berkshire Valley Road Lower road invert and discharge surface water via active drainage system to avoid local increased impacts

Table 1- Roxbury VE ideas

VE idea scoring

The Urban study team scored the most favored ideas as shown in Table 2 below. Idea 2 & 2.A were re-scored more favorably following evaluation.

Criteria	URBAN	URBAN DELL	URBAN BRIDGE
	Lower Bershire Valley Road	Roudab at Timber Ct	ABC Construction with Detour
Final Alt Number (Cha nges Needed)	ROX VE 1 & 1.A	ROX VE 2 & 2.A	ROX VE 3
Meets Project Purpose and Need	5	5	5
Freight Rail / Truck Operations Impacts / Benefits - During Construction	0	0	2
Freight Rail / Truck Operations Impacts / Benefits - After Construction	0	0	0
Passenger Rail Operations Impacts / Benefits	0	0	0
Adjacent and Proximate Land Use Impacts / Benefits	0	0	-1
Historic and Cultural Resources Impacts / Benefits	0	0	0
Community Profile & Environmental Justice/Title VI Impacts / Benefits	0	-1	0
Wetlands Impacts / Benefits	-1	-4	-1
Floodplains & Aquifers Impacts / Benefits	0	0	0
Threatened & Endangered Species Impacts / Benefits	-1	-3	-1
Stormwater and Drainage Impacts / Benefits	-3	-2	0
Hazardous Materials Impacts / Benefits	-1	-1	-3
Air Quality & Noise Impacts / Benefits	0	-1	1
Community Impacts / Benefits	1	2	-1
Safety Impacts / Benefits	3	4	4
Utility Impacts / Relocation Requirements	-3	0	0
Project Independence – Creates or Eliminates Need for other infrastructure project	0	0	0
Roadway Operational and Mobility Impacts / Benefits	1	3	1
New Track Length (LF) / Pavement (SF)			
Costs ($M)			
Summary Score	**1**	**2**	**6**

Table 2- Roxbury VE ideas scoring Matrix

Ideas taken forward to development

The Urban study team developed the following ideas which are included in the Appendix C

- Idea ROX-VE1 & 1.A – Lowering of Berkshire Valley Road to accomplish removal of vertical clearance restriction combined with discharge of surface water via active drainage system to avoid local increased impacts and reduce risk of localized flooding during heavy rain
- Idea ROX-VE2 & 2.A – Introduce roundabout at N. Dell Ave and Berkshire Valley Road utilizing existing cut-through and introduce aseptic garden wall as noise / headlight mitigation to residents impacted by increased truck movements
- Idea ROX-VE3 - Design suggestion on 'top idea' redefine intersections as fully functional, during 14 day ABC construction [14 day freight rail closure window otherwise likely not possible without closing Berkshire Valley Road for extended period]

APPENDIX A – VE study team Workshop Agenda

Ref	Task	Target Time
1	'Around the table' initial thoughts / take aways from orientation / site visit' • Roxbury • Bound Brook	9:00-9:30

2	Re-Confirm Purpose and Need Statements:
	• Roxbury
	  o Confirm Purpose and Need Statement
	  o List 'no / go' and outside scope 'ideas'
	  o List 5-10 functions ['verb / noun'] satisfying Purpose /. Need
	• Bound Brook
	  o Confirm Purpose and Need Statement
	  o List 'no / go' and outside scope 'ideas'
	  o List 5-10 functions ['verb / noun'] satisfying Purpose /. Need
		9:30-09:50

3	Identify Key risks to project [target 15-20] • Roxbury • Bound Brook	09:50-10:20
	BREAK / CATCH UP / RE-SET	10:20-10:30
4	Review - **Roxbury** • Agree 'target areas' for Brainstorming • Brainstorm our Top "new" ideas to progress / List • Score our 'ideas' by Jacobs evaluation matrix' Review each proposed 'idea' generated by Jacobs • Confirm scoring looks OK / Adjust as necessary with justification / reasons noted • Short list ideas to further review For 'top 5 Jacobs ideas': • Brainstorm 'design suggestions' to improve Jacobs' ideas • Review our list of top [ideally 5-10 max] risks and which are mitigated / avoided / increased by top options • Re-confirm best ideas we agree with • List our Pro's Con's for top ideas to support conclusions Assign "new ideas" / design suggestions on "existing ideas" to our team to write up	10:30 – 12:25
5	**ACTIONS / CONCLUSIONS ROXBURY**	12:25-12:30
	LUNCH / CATCH-UP / EMAILS / RESET	12:30-13:00

Ref	Task	Target time
6	Review – **<u>Bound Brook</u>** • Agree 'target areas' for Brainstorming • Brainstorm our Top "new" ideas to progress / List • Score our 'ideas' by Jacobs' evaluation matrix' Review each proposed 'idea' generated by Jacobs • Confirm scoring looks OK / Adjust as necessary with justification / reasons noted • Short list ideas to further review For 'top 5 Jacobs ideas': • Brainstorm 'design suggestions' to improve Jacobs' ideas • Review our list of top [ideally 5-10 max] risks and which are mitigated / avoided / increased by top options • Re-confirm best ideas we agree with • List our Pro's Con's for top ideas to support conclusions Assign "new ideas" / design suggestions on "existing ideas" to our team to write up	13:00 – 17:00
7	**ACTIONS / CONCLUSIONS BOUND BROOK** Explain / distribute report templates Agree deliverable timelines for write ups Next meeting	17:00-17:30





NJTPA Freight CD Study

Value Engineering Findings

Roxbury and Bound Brook

Wednesday, November 9th, 2022

URBAN ENGINEERS

NJTPA

VE Panel Assignment summary

The assignment comprises the review of two projects:

1. The removal of the height restriction on the Chester Branch freight rail crossing over Berkshire Valley Road and improvements at the nearby North Dell Avenue Interchange in Roxbury NJ; and

2. Elimination of the ‘at grade’ crossing of the Port Reading Secondary freight rail line on Main Street in Bound Brook NJ

Introductions

Study Team

Project Manager: Antonio Ditri PE, Urban –Construction Management Services Leader

Value Engineering Team Lead: Will Willson FRICS / QS, VMA SAVE, Vice President, Urban Risk Management Leader

Bridge & Highway: Michael McAtee, PE, Vice President, Urban Bridge Design Services Leader

Highway/Drainage: Patrick Williams, PE, LEED AP, Vice President, Urban Highway Engineer

Constructability: Glen Miller, PE, Urban Senior Construction Manager

Rail Engineer: Frank Teifeld, Urban Senior Railroad Engineer

Environmental Engineer: Bradley Tombs, Urban Senior Environmental Scientist

Highway/RAB: Adam Brown, Urban Highway Engineer

Value Process

The Urban study team found that the possible alternatives considered by the Jacobs Engineering design team comprised:

- Sound methodology followed
- Comprehensive consideration of alternatives
- Evaluation of ideas focused on the purpose and needs statements

Urban potential variant ‘Ideas’ and design suggestions on current proposed ideas presented herein are intended to complement Jacobs Engineering by providing an independent view of further options. Time for the study was limited and did not permit any in-depth analysis or verification of alternative proposals.

VE Job Plan – Hybrid Input

1. Information Phase

- Project Description
- Scope Boundaries
- Assumptions / Exclusions
- Constraints
- Interfaces
- Estimate
- Schedule
- Risks

Independent look at project characteristics and alignment with objectives

- Seek clarifications
- List constraints
- List Assumption's
- List Interfaces
- Identify constructability challenges
- Identify key risks

2. Function Analysis Phase

- Purpose / Function
- Objectives
- Need
- Secondary Functions
- At the same time Functions
- Design Objectives

Confirm Objectives

Reiterate and confirm functions and objectives

3. Creative Phase

- Target areas
- Brainstorming

Brainstorming

Confirm Target Areas
Brainstorm alternatives / variants

4. Evaluation Phase

- Evaluation Criteria
- Idea evaluation / short listing

Review evaluation of current ideas
Rank / score any new ideas

5. Development Phase

- Develop short listed ideas

Develop new ideas

Provide discussion on design suggestions

6. Presentation / Reporting

- Present ideas
- Complete report and itemize recommendations and design suggestions

Present Findings

VE Panel Discussion / tasks performed

1. Purpose and need were reiterated for each project
2. Functions were listed
3. Key risks were identified
4. Current Options and the scoring of each in the Jacobs Matrix was discussed for each project
5. Brainstorming was performed to generate additional ideas and design suggestions on existing ideas
6. Ideas were debated and scored against the Jacobs Matrix
7. Short listed ideas were agreed and assigned to project team members to draft descriptive justifications following a standard templated format
8. Ideas were summarized into a PowerPoint presentation and incorporated into a summary report to form a reference document for Jacobs and NJTPA to further consider in consideration of final options to recommend for project consideration

Value Process

Project Review

Roxbury

Roxbury



Purpose & Need

- Provide Access
- Increase Vertical Clearance
- Enable Development
- Avoid accidents
- Improve Safety
- Fix bridge
- Comply with regulations
- Maintain Rail service
- Safeguard rail costumers
- Protect the rail business
- Maintain access along Berkshire Rd

VE Panel Discussion

- Limitation on 14 day shut down window
- Elevating track bed would require extended embankment toe
- No Geo investigations
- Focus on dropping road – everything was focused on raising bridge
- Where to align intersection / wasted space not owned by township
- Possibility for roundabout ?
- Bridge needs replacing for structural reasons – re-use existing bridge not an option
- Evaluation criteria may not consider regulations and crude weighting
- Goal is clearance

Risks – Roxbury

RAIL BRIDGE HEIGHT RESTRICTION

ROAD LOWER OPTION

1. Underground HV cable damage / requires relocation
2. Ability to discharge SW runoff into existing canal without EA / nothing close to tie into / potential capacity drain
3. Diversion of traffic / complete road closure may not be allowed
4. Unforeseen utilities in road may limit lowering
5. Bridge Abutment / foundations unable to support 2-3 foot lowering of grade / become unstable
6. Intersections with the existing street may not allow lowering

RAIL BRIDGE REPLACEMENT

1. Ground unable to take PCC wing walls / buttresses without new substantial foundations
2. Insufficient working space / height for cranes and need to relocate HV cables across street
3. Ability to undertake work in 14 day railroad closure window
4. Underground HV cable damage / requires relocation
5. Staging footprint adjacent to bridge may not be available / large enough

DELL ROAD JUNCTION RECONFIGURATION

1. Residential objections due to headlights whilst turning
2. Truck noise in changing gears adjacent residential objections
3. Developer / landowner condemnation forced

Ideas – Roxbury

RAIL BRIDGE HEIGHT RESTRICTION

BERKSHIRE ROAD LOWER OPTION IN LIEU OF BRIDGE REPLACEMENT

- VE 1- Lower road invert and discharge surface water via active drainage system to avoid local increased impacts
- VE 1A- Design Retention Basin as part of Roundabout Concept or Include Independent Retention Basin to collect stormwater discharge

RAIL BRIDGE REPLACEMENT

- VE 3- Detour Berkshire for 14day after Constructing Full functional intersection & N. Dell Ave

DELL ROAD JUNCTION RECONFIGURATION

- VE 2- Roundabout Concept at Berkshire/ N. Dell Ave & Old Timber Road Connection
- VE 2A- Include Aesthetic Noise Wall Protection at Residential Properties adjacent to RAB

Evaluation – Roxbury

Idea VE1 & 1A- BERKSHIRE ROAD LOWER OPTION IN LIEU OF BRIDGE REPLACEMENT

Goals Achieved

- Reduce cost significantly by avoiding bridge construction
- Maintain Rail Service with no interruptions
- Comply with regulations

Risk Impact

Risk Description	Yes/ No	Change in Status with this Idea
Developer/Landowner condemnation	No	Requires additional ROW
Bridge Construction-Risks	Yes	Avoid reconstruction of bridge
Underground Utility relocation	No	Likely require lowering underground utilities
Bridge Footing stability due to road lowering	No	May impact stability of foundation
Impact Environment	No	Require Environmental Permitting

Comparative Analysis

Advantages		Disadvantages
Eliminates Expensive bridge construction		Permitting Approvals
No RR coordination needed		ROW acquisitions
Replace aging roadway pavement		Retention Basin near residential area

Evaluation – Roxbury

Idea VE 1& 1A- BERKSHIRE ROAD LOWER OPTION IN LIEU OF BRIDGE REPLACEMENT

Cost Impacts: Cost savings in Roadway construction versus Bridge Replacement
Schedule Impacts: Negligible, project can be completed in single season pending utility relocation efforts.
Discussion / Constructability / Justification Summary : Alternate roadway construction achieves the need/purpose of Study. Minimal constructability concerns versus ABC construction. Design analysis needed to identify optimum method to discharge stormwater. Appears to be a series of inlets at Old Timber Court & Berkshire that may/may not receive down station drainage pending invert elevation. If this is not feasible, incorporating a retention basin within center of Roundabout option or independent Basin within/adjacent canal provides a Point of Discharge and/or reduce the length drainage pipe run needed.

Evaluation – Roxbury

Idea VE 1& 1A- BERKSHIRE ROAD LOWER OPTION IN LIEU OF BRIDGE REPLACEMENT

Criteria	Score	Notes / Justification
Meets Project Purpose and Need	5	
Freight Rail Operations Impacts / Benefits - During Construction	0	
Freight Rail Operations Impacts / Benefits - Post Construction	0	
Passenger Rail Operations Impacts / Benefits	0	
Adjacent and Proximate Land Use Impacts / Benefits	-2	
Historic and Cultural Resources Impacts / Benefits	0	
Community Profile & Environmental Justice/Title VI Impacts / Benefits	-1	
Wetlands Impacts / Benefits	-4	
Floodplains & Aquifers Impacts / Benefits	0	
Threatened & Endangered Species Impacts / Benefits	-4	
Stormwater and Drainage Impacts / Benefits	1	
Hazardous Materials Impacts / Benefits	-1	
Air Quality & Noise Impacts / Benefits	-1	
Community Impacts / Benefits	3	
Safety Impacts / Benefits	5	
Utility Impacts / Relocation Requirements	0	
Project Independence – Creates or Eliminates Need for other infrastructure project	0	
Roadway Operational and Mobility Impacts / Benefits	3	
New Track Length (LF)		
Costs ($M)		
Summary Score	6	

Conclusion:

VE Panel found this option to score favorably versus Preferred Option 5.2a= Score 4

(ABC- Precast Concrete Abut)

Evaluation – Roxbury

RAIL BRIDGE REPLACEMENT

- VE3- Detour Berkshire for 14-day after Constructing Full functional intersection & N. Dell Ave

Goals Achieved

- Improve Safety during construction
- Improve traffic flow during construction

Risk Impact

Risk Description	Yes/No	Change in Status with this Idea
Residential Objections due to headlights while turning	Yes	Roundabout Functionality mitigates headlights + Aesthetic Soundwall install if required
Truck Noise in changing gears adjacent to residential area	Yes	Roundabout Functionality mitigates noise/vibration + Aesthetic Soundwall install if required
Developer/landowner condemnation forced	No	Likely require more ROW acquisition

Comparative Analysis

Advantages		Disadvantages
Improved functional intersection		Community Resistance to R/B
Safety improvement		Additional ROW
Mitigate noise/headlight impact		

Evaluation – Roxbury

- VE3- Detour Berkshire for 14day after Constructing Full functional intersection & N. Dell Ave

Cost Impacts: Cost Effective, improves contractor efficiency+ Savings for bridge erection (may not require SPMT (Self Propelled Modular Transporters)- allows for traditional crane picks
Schedule Impacts: A+BX Schedule allows contractor to dictate length of detour closure not to exceed 14 days.
Discussion / Constructability / Justification Summary: Upon evaluating 14 day ABC construction, concern/risk in the ability to complete work without long-term road closure. The need for staging area adjacent to structure is critical during ABC. Alleviates constructability and safety concerns working adjacent to traffic. Will also reduce the need or duration of Night-time work which presents noise challenges in residential areas.

Evaluation – Roxbury

- VE3- Detour Berkshire for 14day after Constructing Full functional intersection & N. Dell Ave

Criteria	Score	Notes / Justification
Meets Project Purpose and Need	5	
Freight Rail Operations Impacts / Benefits - During Construction	2	May reduce duration with A+BX Schedule + improved contractor efficiency
Freight Rail Operations Impacts / Benefits - Post Construction	0	
Passenger Rail Operations Impacts / Benefits	0	
Adjacent and Proximate Land Use Impacts / Benefits	-1	
Historic and Cultural Resources Impacts / Benefits	0	
Community Profile & Environmental Justice/Title VI Impacts / Benefits	0	
Wetlands Impacts / Benefits	-1	
Floodplains & Aquifers Impacts / Benefits	0	
Threatened & Endangered Species Impacts / Benefits	-1	
Stormwater and Drainage Impacts / Benefits	0	
Hazardous Materials Impacts / Benefits	-3	
Air Quality & Noise Impacts / Benefits	1	Reduce nightwork-residential area
Community Impacts / Benefits	-1	Detour maybe negatively received
Safety Impacts / Benefits	4	Improved safety during construction
Utility Impacts / Relocation Requirements	0	
Project Independence – Creates or Eliminates Need for other infrastructure project	0	
Roadway Operational and Mobility Impacts / Benefits	1	
New Track Length (LF)		
Costs ($M)		
Summary Score	**6**	

Conclusion:

VE Panel found this option to score favorably versus Preferred Option 5.2a= Score 4

(ABC- Precast Concrete Abut)

Evaluation – Roxbury

DELL ROAD JUNCTION RECONFIGURATION

- VE 2- Roundabout Concept at Berkshire/ N. Dell Ave & Old Timber Road Connection
- VE 2.A- Include Aesthetic Noise Wall Protection at Residential Properties adjacent to RAB

Goals Achieved

- Reduce cost significantly by avoiding bridge construction
- Maintain Rail Service with no interruptions
- Comply with regulations

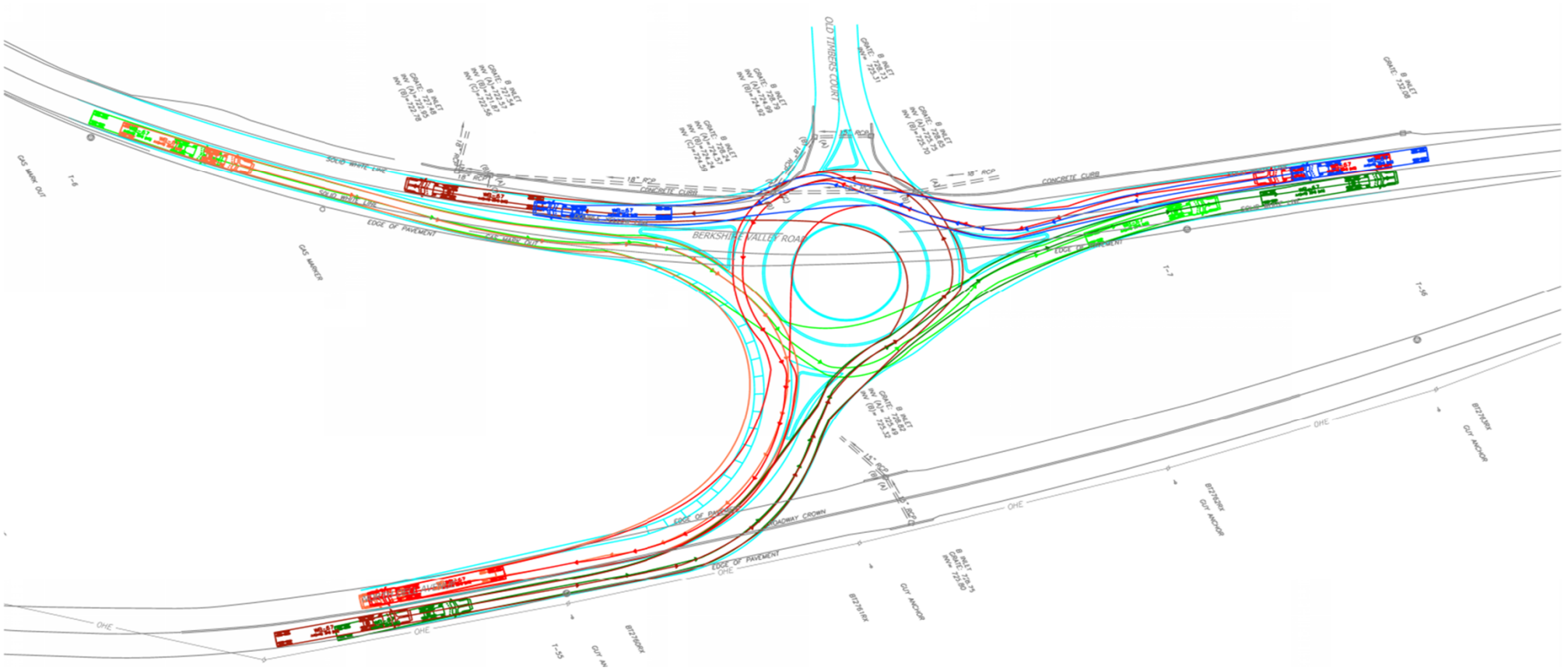
Risk Impacts

Risk Description	Yes/No	Change in Status with this Idea
Residential Objections due to headlights while turning	Yes	Roundabout Functionality mitigates headlights + Aesthetic Soundwall install if required
Truck Noise in changing gears adjacent to residential area	Yes	Roundabout Functionality mitigates noise/vibration + Aesthetic Soundwall install if required
Developer/landowner condemnation forced	No	Likely require more ROW acquisition

Comparative Analysis

Advantages		Disadvantages
Improved functional intersection		Community Resistance to R/B
Safety improvement		Additional ROW
Mitigate noise/headlight impact		

Evaluation – Roxbury



Evaluation – Roxbury

- VE 2- Roundabout Concept at Berkshire/ N. Dell Ave & Old Timber Road Connection
- VE 2.A- Include Aesthetic Noise Wall Protection at Residential Properties adjacent to RAB

Cost Impacts: The cost to install Roundabout will likely be higher than traditional intersection as defined in Idea 1.3.
Schedule Impacts: Increased duration due to staged construction required to install roundabout
Discussion / Constructability / Justification Summary: Alternate roadway construction achieves the need/purpose of Study. Constructability will need to be considered as part of construction versus traditional intersection, but feasible. Utilization of area adjacent to Old Timber Court appears most effective and reduces ROW acquisition. While noise/ headlight impact should be less than traditional intersection with a Stop condition. If study still identifies a negative impact, installation of aesthetic soundwall could offset concern. Due to wetland/environmental impact idea scored lower than 1.3.

Evaluation – Roxbury

- VE2- Roundabout Concept at Berkshire/ N. Dell Ave & Old Timber Road Connection
- VE 2.A- Include Aesthetic Noise Wall Protection at Residential Properties adjacent to RAB

Criteria	Score	Notes / Justification
Meets Project Purpose and Need	5	
Freight Rail Operations Impacts / Benefits - During Construction	0	
Freight Rail Operations Impacts / Benefits - Post Construction	0	
Passenger Rail Operations Impacts / Benefits	0	
Adjacent and Proximate Land Use Impacts / Benefits	0	
Historic and Cultural Resources Impacts / Benefits	0	
Community Profile & Environmental Justice/Title VI Impacts / Benefits	-1	
Wetlands Impacts / Benefits	-4	Result of Additional ROW compared to 1.3
Floodplains & Aquifers Impacts / Benefits	0	
Threatened & Endangered Species Impacts / Benefits	-3	Result of Additional ROW compared to 1.3
Stormwater and Drainage Impacts / Benefits	-2	
Hazardous Materials Impacts / Benefits	-1	
Air Quality & Noise Impacts / Benefits	-1	
Community Impacts / Benefits	2	r/b functionality seen as a community improv
Safety Impacts / Benefits	4	r/b safety improvement
Utility Impacts / Relocation Requirements	0	
Project Independence – Creates or Eliminates Need for other infrastructure project	0	
Roadway Operational and Mobility Impacts / Benefits	3	r/b operational improvement
New Track Length (LF)		
Costs ($M)		
Summary Score	**2**	

Conclusion:

Panel found this option to score less favorably
Preferred Option 1.3= Score 5

(Int. Mod. Old Timber Court)


Questions
For more, visit us at urbanengineers.com

APPENDIX C – Roxbury Idea Evaluations

Roxbury	
Idea Ref: Rox. VE1 & 1.A	Title: Lower Road Profile in lieu of Bridge Replacement- Address runoff through the following-Design retention basin as part of roundabout as environmental improvement / mitigation or include independent Retention basin if Roundabout is not feasible.
Type : ~~Qualitative Value Alternative~~ / **Design Suggestion**	
Purpose / Need / Objectives Targeted: Increase Clearance Height under Structure	
Original Concept: No drainage impacts as part of the Bridge Reconstruction, roadway profile not effected.	
Alternative Concept: As an alternative to Bridge Reconstruction to achieve proper clearance height. Lower the profile of roadway. Low point will be at Bridge structure creating a ponding scenario. Install drainage with invert outflowing to a retention basin if no drainage facilities are within reasonable distance or at proper invert to accept flow. Incorporating a retention at the center of Roundabout or perimeter to minimize need for additional ROW acquisition.	
Goals Achieved: Reduce cost significantly, Maintain Rail Service, comply with regulations	

Risk Impact

Ref	Risk Description	Yes/No	Change in Status with this Idea
	Developer/Landowner condemnation	No	Requires additional ROW
	Bridge Construction-Risks	Yes	Avoid reconstruction of bridge
	Underground Utility relocation	No	Likely require lowering underground utilities
	Bridge Footing stability due to road lowering	No	May impact stability of foundation
	Impact Environment	No	Require Environmental Permitting

Pro's / Con's Comparative Analysis

Ref	Advantages		Disadvantages
	Eliminates Expensive bridge construction		Permitting Approvals
	No RR coordination needed		ROW acquisitions
	Replace aging roadway pavement		Retention Basin near residential area

Cost Impacts: Cost savings in Roadway construction versus Bridge Replacement
Schedule Impacts: Negligible, project can be completed in single season pending utility relocation efforts.

Discussion / Constructability / Justification Summary
Alternate roadway construction achieves the **original** need/purpose of Study. Minimal constructability concerns versus ABC construction. Design analysis needs to identify optimum method to discharge stormwater. Appears to be a series of inlets at Old Timber Court & Berkshire that may/may not receive down station drainage pending invert elevation. If this is not feasible, incorporating a retention basin within center of Roundabout option or independent Basin within/adjacent canal provides a Point of Discharge and/or reduce the length drainage pipe run needed. *Note: Amended Purpose & Need to replace bridge- discussed during 11-09-21 County Meeting would reduce score and eliminate idea as Viable.

Supporting Sketches / Calculations
N/A

Criteria	Score	Notes / Justification
Meets Project Purpose and Need	5	Amended purpose/need would **Score:0** therefore eliminating Idea as viable
Freight Rail Operations Impacts / Benefits - During Construction	0	
Freight Rail Operations Impacts / Benefits - Post Construction	0	
Passenger Rail Operations Impacts / Benefits	0	
Adjacent and Proximate Land Use Impacts / Benefits	0	
Historic and Cultural Resources Impacts / Benefits	0	
Community Profile & Environmental Justice/Title VI Impacts / Benefits	0	
Wetlands Impacts / Benefits	-1	
Floodplains & Aquifers Impacts / Benefits	0	
Threatened & Endangered Species Impacts / Benefits	-1	

Stormwater and Drainage Impacts / Benefits	-3	
Hazardous Materials Impacts / Benefits	-1	
Air Quality & Noise Impacts / Benefits	0	
Community Impacts / Benefits	1	
Safety Impacts / Benefits	3	
Utility Impacts / Relocation Requirements	-3	
Project Independence – Creates or Eliminates Need for other infrastructure project	0	
Roadway Operational and Mobility Impacts / Benefits	1	
New Track Length (LF)		
Costs ($M)		
Summary Score	1	

Roxbury	
Idea Ref: ROX VE 2 & 2.A	Title: Roundabout design at N. Dell & Berkshire {Roundabout Dell / Berkshire [utilizing existing cut through as part of R/B} + Idea 2.A- Aesthetic Noise Wall protect residence
Type : **Qualitative Value Alternative** / ~~Design Suggestion~~	
Purpose / Need / Objectives Targeted: Improve Safety & Access, Enable development, avoid accidents	
Original Concept: Preferred Idea 1.3- Old Timber Road Connection	
Alternative Concept: To improve functionality of intersection at Berkshire/Dell, implement roundabout.	
Goals Achieved: Improves safety and flow of traffic.	

Risk Impact

Ref	Risk Description	Yes/No	Change in Status with this Idea
	Residential Objections due to headlights while turning	Yes	Roundabout Functionality mitigates headlights + Aesthetic Soundwall install if required
	Truck Noise in changing gears adjacent to residential area	Yes	Roundabout Functionality mitigates noise/vibration + Aesthetic Soundwall install if required
	Developer/landowner condemnation forced	No	Likely require more ROW acquisition

Pro's / Con's Comparative Analysis

Ref	Advantages		Disadvantages
	Improved functional intersection		Community Resistance to R/B
	Safety improvement		Additional ROW
	Mitigate noise/headlight impact		

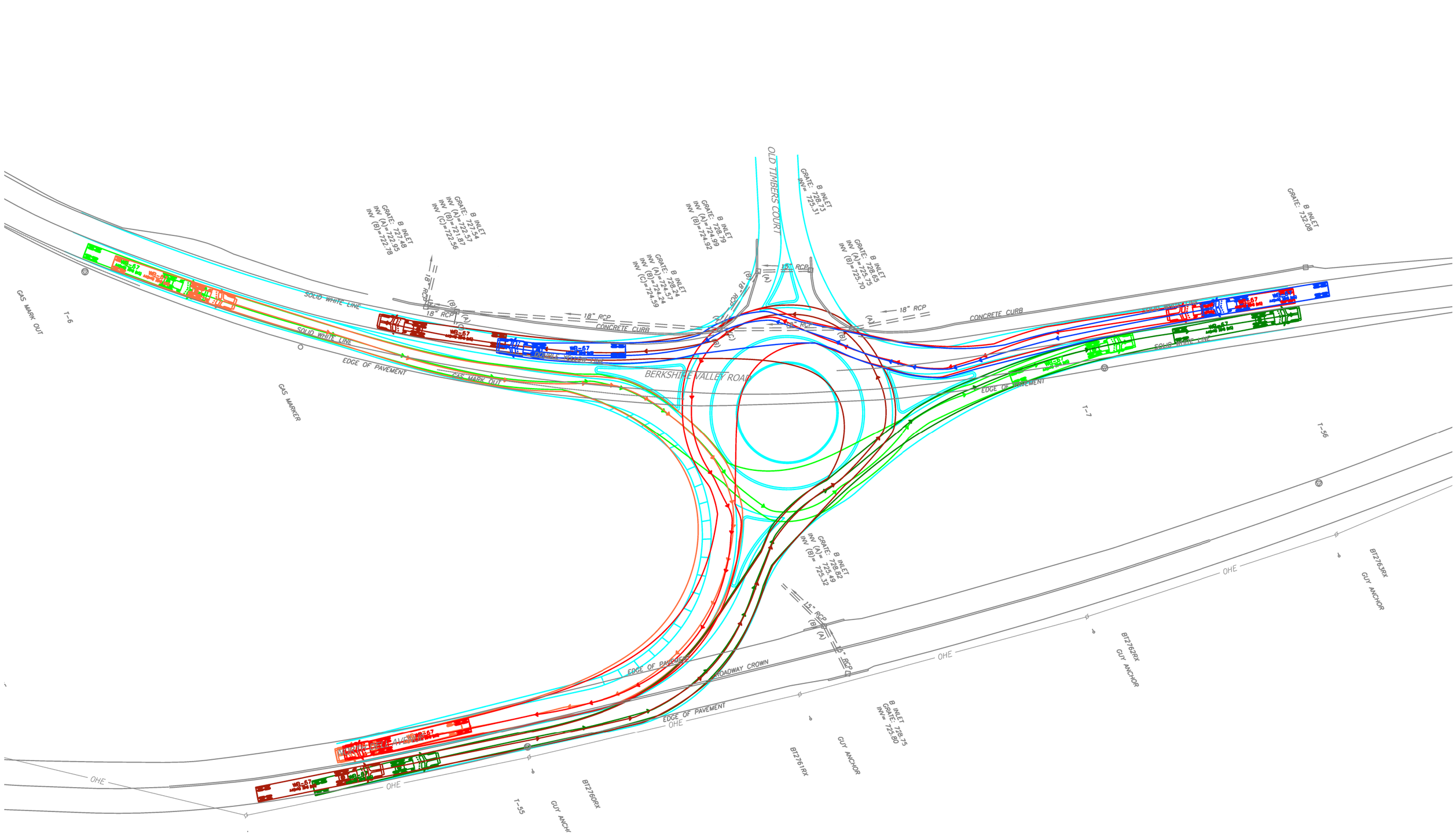
Cost Impacts: The cost to install Roundabout will likely be higher than traditional intersection as defined in Idea 1.3.
Schedule Impacts: Increased duration due to staged construction required to install roundabout
Discussion / Constructability / Justification Summary
Alternate roadway construction achieves the need/purpose of Study. Constructability will need to be considered as part of construction versus traditional intersection, but feasible. Utilization of area adjacent to Old Timber Court appears most effective and reduces ROW acquisition. While noise/

headlight impact should be less than traditional intersection with a Stop condition. If study still identifies a negative impact, installation of aesthetic soundwall could offset concern. Construct an aesthetic garden wall or sound barrier to shield residences from headlight glare and vehicular noise at the intersection of Long Lane and Berkshire Road. A sound wall could be constructed on each side of Timber Creek Road which is the entrance to the development. If the wall is close to the roadside then it may require a single face concrete barrier. Plantings such as shrubs or arborvitae could soften the look of a sound wall. If the adjacent property owners do not like the look of the sound wall, then maybe a natural landscape with trees or a natural screen of arborvitae may help to reduce the glare and noise. Another option would be to create and landscaped earthen berm although this may infringe upon the adjacent properties. Note: Due to wetland/environmental impact idea scored lower than 1.3.

Supporting Sketches / Calculations
See attached.

Criteria	Score	Notes / Justification
Meets Project Purpose and Need	5	
Freight Rail Operations Impacts / Benefits - During Construction	0	
Freight Rail Operations Impacts / Benefits - Post Construction	0	
Passenger Rail Operations Impacts / Benefits	0	
Adjacent and Proximate Land Use Impacts / Benefits	0	
Historic and Cultural Resources Impacts / Benefits	0	
Community Profile & Environmental Justice/Title VI Impacts / Benefits	-1	
Wetlands Impacts / Benefits	-4	Result of Additional ROW compared to 1.3
Floodplains & Aquifers Impacts / Benefits	0	
Threatened & Endangered Species Impacts / Benefits	-3	Result of Additional ROW compared to 1.3
Stormwater and Drainage Impacts / Benefits	-2	

Hazardous Materials Impacts / Benefits	-1	
Air Quality & Noise Impacts / Benefits	-1	
Community Impacts / Benefits	2	r/b functionality seen as a community improvement
Safety Impacts / Benefits	4	r/b safety improvement
Utility Impacts / Relocation Requirements	0	
Project Independence – Creates or Eliminates Need for other infrastructure project	0	
Roadway Operational and Mobility Impacts / Benefits	3	r/b operational improvement
New Track Length (LF)		
Costs ($M)		
Summary Score	2	


OLD TIMBERS COURT
BERKSHIRE VALLEY ROAD
B INLET
GRATE: 727.48
INV (A)= 722.95
INV (B)=722.78
B INLET
GRATE: 727.54
INV (A)=722.57
INV (B)=721.87
INV (C)=722.56
B INLET
GRATE: 728.24
INV (A)=724.57
INV (B)=724.24
INV (C)=724.59
B INLET
GRATE: 728.79
INV (A)=724.99
INV (B)=724.92
B INLET
GRATE: 728.73
INV= 725.31
B INLET
GRATE: 728.65
INV (A)=725.75
INV (B)=725.70
B INLET
GRATE: 732.08
B INLET
GRATE: 728.82
INV (A)= 725.49
INV (B)= 725.32
B INLET
GRATE: 728.75
INV= 725.80
18" RCP
15" RCP
CONCRETE CURB
SOLID WHITE LINE
EDGE OF PAVEMENT
GAS MARK OUT
GAS MARKER
ROADWAY CROWN
OHE
GUY ANCHOR
BT2763RX
BT2762RX
BT2761RX
BT2760RX
T-55
T-56
T-6
T-7

Roxbury	
Idea Ref: ROX VE3	Title: Design suggestion on 'top idea' redefine intersections as fully functional, and utilize during 14 day ABC construction [14 day window may not be possible without closing Berkshire for extended period]
Type : **Qualitative Value Alternative** / ~~Design Suggestion~~	
Purpose / Need / Objectives Targeted: Demolition & Reconstruction of Bridge Structure within 14 days, maintain access to Berkshire Road	
Original Concept: Construction Sequence does not consider work zone impact while maintaining roadway access. At minimum, reduces efficiency of construction and extends duration.	
Alternative Concept: Reconstruct/establish full functional intersection at N. Dell Ave & Berkshire & implement detour for through traffic (maintaining residential access) to US 46- back to Berkshire. Consider A+Bx schedule to reduce cost/14-day duration through Contractor bidding process.	
Goals Achieved: Reduce risk, cost, & improve constructability	

Risk Impact			
Ref	Risk Description	Yes/No	Change in Status with this Idea
	Ability to undertake work in 14- day RR closure window	Yes	Detour allowing continual construction during 14 day
	Staging footprint adjacent to bridge may not be available	Yes	Detour provides additional staging area on Berkshire
	Diversion of Traffic/ Complete road closure	No	Requires detour

Pro's / Con's Comparative Analysis			
Ref	Advantages		Disadvantages
	Reduces cost of bridge & demolition		Community Concerns for detour
	Increases Contractor Access/Staging		
	May reduce Freight Disruption duration		

Cost Impacts: Cost Effective, improves contractor efficiency+ Savings for bridge erection (may not require SPMT (Self Propelled Modular Transporters)- allows for traditional crane picks
Schedule Impacts: A+BX Schedule allows contractor to dictate length of detour closure not to exceed 14 days.

Discussion / Constructability / Justification Summary
Upon evaluating 14 day ABC construction, concern/risk in the ability to complete work without long-term road closure. The need for staging area adjacent to structure is critical during ABC. Alleviates constructability and safety concerns working adjacent to traffic. Will also reduce the need or duration of Night-time work which presents noise challenges in residential areas.

Supporting Sketches / Calculations
N/A

Criteria	Score	Notes / Justification
Meets Project Purpose and Need	5	
Freight Rail Operations Impacts / Benefits - During Construction	2	May reduce duration with A+BX Schedule + improved contractor efficiency
Freight Rail Operations Impacts / Benefits - Post Construction	0	
Passenger Rail Operations Impacts / Benefits	0	
Adjacent and Proximate Land Use Impacts / Benefits	-1	
Historic and Cultural Resources Impacts / Benefits	0	
Community Profile & Environmental Justice/Title VI Impacts / Benefits	0	
Wetlands Impacts / Benefits	-1	
Floodplains & Aquifers Impacts / Benefits	0	
Threatened & Endangered Species Impacts / Benefits	-1	
Stormwater and Drainage Impacts / Benefits	0	
Hazardous Materials Impacts / Benefits	-3	
Air Quality & Noise Impacts / Benefits	1	Reduce nightwork- residential area
Community Impacts / Benefits	-1	Detour maybe negatively received

Safety Impacts / Benefits	4	Improved safety during construction
Utility Impacts / Relocation Requirements	0	
Project Independence – Creates or Eliminates Need for other infrastructure project	0	
Roadway Operational and Mobility Impacts / Benefits	1	
New Track Length (LF)		
Costs ($M)		
Summary Score	6	

Appendix M

Resolutions of Support



NJTPA

NJTPA Freight Concept Development Program

Jacobs

Board of County Commissioners
Morris County, New Jersey

RES-2023-419

Adopted: May 10, 2023

WHEREAS, the North Jersey Transportation Planning Authority (NJTPA) has developed the Freight Concept Development Program to identify and study freight needs throughout the Northern New Jersey region; and

WHEREAS, the NJTPA, in coordination with Morris County, has identified elimination of the vertical clearance constraint of the Chester Branch Rail Line Bridge over Berkshire Valley Road (CR 642) and improving the intersection configuration of North Dell Avenue with Berkshire Valley Road (CR 642) to accommodate trucks as needs to optimize freight movement and improve safety; and

WHEREAS, there are active freight rail customers at the end of the Chester Branch in Roxbury Township that must continue to receive rail service eliminating the option to take the entire Chester Branch out of service and removing the bridge; and

WHEREAS, the project area is entirely within Roxbury Township; and

WHEREAS, the NJTPA and Morris County met with local officials to discuss the issues, held public meetings, and hosted a study website to gain public input from residents and stakeholders; and

WHEREAS, after extensive study and development of multiple alternatives to address the study purpose and need, replacement of the existing bridge and abutments with a structure that provides 14 feet, 3 inches of vertical clearance beneath the bridge, and realigning the northern end of North Dell Avenue to form an intersection with Berkshire Valley Road at Old Timber Court were identified as the most effective solutions and were selected as the Preliminary Preferred Alternatives; and

WHEREAS, the study team informed Roxbury Township local officials of the Preliminary Preferred Alternative on Thursday, January 19, 2023.

NOW, THEREFORE, BE IT RESOLVED that the Board of County Commissioners of the County of Morris in the State of New Jersey formally supports the Preliminary Preferred Alternatives in the Berkshire Valley Road Truck Circulation Study, and the pursuit of public funding to complete this project.

RESULT:	**ADOPTED [6 TO 0]**
MOVER:	Douglas R. Cabana, Commissioner
SECONDER:	Stephen H. Shaw, Commissioner
AYES:	Krickus, Myers, Mastrangelo, Selen, Shaw, Smith
ABSTAIN:	Cabana

I hereby certify the above to be a true copy of a resolution adopted by the Board of County Commissioners of the County of Morris at a regular meeting on May 10, 2023.

Debra L. Lynch

Debra L. Lynch, Clerk of the Board

ID# 10471

RESOLUTION NO. 2023-138

A RESOLUTION OF SUPPORT BY THE TOWNSHIP OF ROXBURY FOR THE NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY FY21 FREIGHT CONCEPT DEVELOPMENT BERKSHIRE VALLEY ROAD TRUCK CIRCULATION STUDY

WHEREAS, the North Jersey Transportation Planning Authority (NJTPA) has developed the Freight Concept Development Program to identify and study freight needs throughout the northern New Jersey region; and

WHEREAS, the NJTPA, in coordination with Morris County, has identified elimination of the vertical clearance constraint of the Chester Branch Rail Line bridge over Berkshire Valley Road and improving the intersection of N. Dell Avenue with Berkshire Valley Road to accommodate trucks as needs to optimize freight movement and improve safety; and

WHEREAS, there are active freight rail customers at the end of the Chester Branch that must continue to receive rail service eliminating the option to take the entire Chester Branch out of service and removing the bridge; and

WHEREAS, the project area is entirely within Roxbury Township; and

WHEREAS, the NJTPA and Morris County met with local officials to discuss the issue, held public meetings, and hosted a website to gain public input from residents and stakeholders; and

WHEREAS, after extensive study and development of multiple alternatives to address the study purpose and need, replacement of the existing bridge and abutments with a structure that provides 14 feet, 3 inches of vertical clearance beneath the bridge, and realigning the northern end of N. Dell Avenue to form an intersection with Berkshire Valley Road at Old Timber Court were identified as the most effective solutions and were selected as the Preliminary Preferred Alternatives; and

WHEREAS, the study team informed Roxbury Township local officials of the Preliminary Preferred Alternative on Thursday, January 19, 2023.

NOW, THEREFORE, BE IT RESOLVED, that Roxbury Township formally supports the Preliminary Preferred Alternatives in the Berkshire Valley Road Truck Circulation Study, and the pursuit of public funding to complete this project.

ADOPTED: June 13, 2023

Attest:

Amy E. Rhead, RMC
Township Clerk

JMS