North Jersey Transportation Planning Authority

FY21 Freight Concept Development Program Studies

Concept Development Report

Port Reading Secondary South Main Street Grade Crossing Elimination Project

June 2023

NJTPA

NJTPA Freight Concept Development Program

Jacobs

Somerset County

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Acronyms and Abbreviations

AREMA	American Railway Engineering and Maintenance of Way Association
CE	Categorical Exclusion
CEA	Classification Exception Area
CFR	Code of Federal Regulations
dB	Decibel
DFE	Design Flood Elevation
DOE	Determination of Eligibility
EA	Environmental Assessment
EIS	Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHA	Flood Hazard Area
GIS	Geographic Information System
IPaC	Information for Planning and Consultation
KCSL	Known Contaminated Sites List
LSRP	Licensed Site Remediation Professional
MCUA	Middlesex County Utilities Authority
mph	mile(s) per hour
NEPA	National Environmental Policy Act
NJDEP	New Jersey Department of Environmental Protection
NJHPO	New Jersey Historic Preservation Office
NJR	New Jersey Register of Historic Places
NJSM	New Jersey State Museum
NJTPA	North Jersey Transportation Planning Authority
NRHP	National Register of Historic Places
NTS	not to scale
PANYNJ	Port Authority of New York and New Jersey
PI	Program Interest
PIAP	Public Involvement Action Plan
PPA	Preliminary Preferred Alternative
RAO	Response Action Outcome
RFAP	Rail Freight Assistance Program
ROSI	Recreational and Open Space Inventory
ROW	Right-of-Way
SHPO	State Historic Preservation Office
SI&A	Structure Inventory and Appraisal

SIP	State Implementation Plan
USFWS	U.S. Fish and Wildlife Service
VE	Value Engineering

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Cover page aerial map courtesy of New Jersey Office of Information Technology, Office of GIS. Image tiles for 2020 Orthophotography are available from the NJGIN Imagery page at https://njgin.nj.gov/njgin/edata/imagery.

EXECUTIVE SUMMARY

The North Jersey Transportation Planning Authority, in partnership with Somerset County, retained Jacobs Engineering Group Inc ("Jacobs") to prepare a Freight Concept Development Study to identify a preliminary preferred alternative (PPA) for eliminating the at-grade crossing of Conrail's Port Reading Secondary over South Main Street in Bound Brook, New Jersey. The at-grade crossing is shown on Figure E.1.

Figure E.1: At-Grade Crossing – Port Reading Secondary over South Main Street

While recognized locally as a safety and mobility issue for some time, this project need was officially identified in the Somerset County Planning Board study *Advancing Intermodal Freight Opportunities within Central Somerset County* (Somerset County 2007).

The defined purpose and need of this project is "to eliminate the at-grade rail crossing on South Main Street in the Borough of Bound Brook, while maintaining freight rail access to existing and future customers along the Port Reading Secondary line."

The primary goals of this project are to:

- **Eliminate** roadway congestion and vehicle queuing that results from the closure of the crossing.
- **Improve** safety for vehicles, bicyclists, and pedestrians at the crossing.
- **Support** existing and future freight rail-related development.
- **Facilitate** development of and access to the Raritan River waterfront.
- **Improve** connectivity and mobility between the Borough of Bound Brook and the Borough of South Bound Brook.

E.1 Environmental and Infrastructure Constraints Screening

Investigation of feasible alternatives that would meet the project purpose and need began with a detailed screening to identify environmental and utility infrastructure constraints within the project area. Concept development is 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 relation to 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

The primary constraints identified in the study area include cultural resources (the Stone Arch Bridge), existing land uses (privately owned businesses) and floodplains associated with the Green Brook and the Raritan River.

E.2 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 purpose and need and generates strong stakeholder support. Planners must understand the perspectives of the public, elected officials, stakeholders, advocates, and opponents throughout the project development process. In recognition of this importance, a thorough and comprehensive stakeholder and public outreach program was integrated into the study process. Key components of the process included the following:

- Briefing of local elected officials representing the project area
- 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

E.3 Alternatives Development and Evaluation

A wide range of alternatives to address the individual projects was developed and evaluated against a series of criteria. The screening evaluation was qualitative and considered alternatives in terms of their basic attributes and compared alternatives to each other. 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

E.4 Value Engineering Review

The alternatives 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 preliminary preferred alternative.

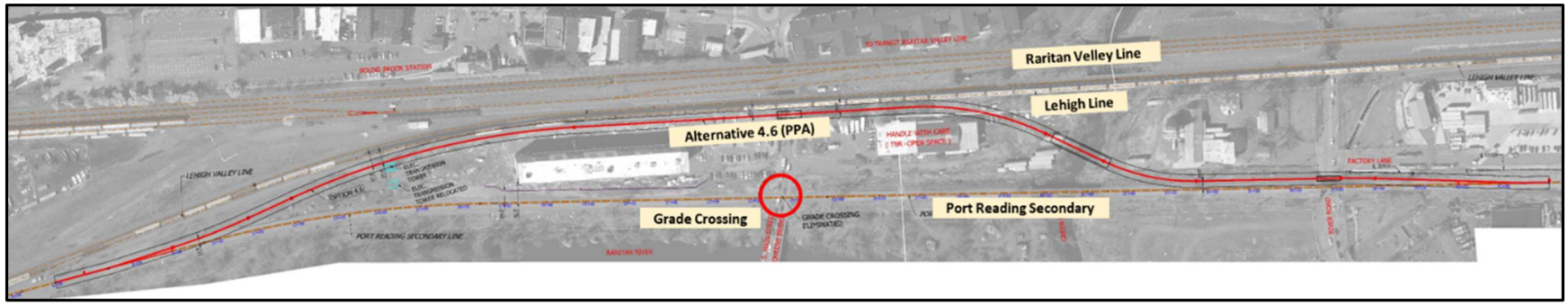
The VE team subsequently met in a workshop forum to identify alternatives that the project team may not have initially considered and evaluate possible modifications of the alternatives already developed. The creative idea phases focused on alternatives that might leave less of an impact on the project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

E.5 Preliminary Preferred Alternative

Fourteen alternatives were developed and evaluated. After VE review and scoring the alternatives based on criteria listed in Section E.3, the preliminary preferred alternative (PPA) was identified.

Alternative 4.6 was identified as the PPA that best meets the project purpose and need to eliminate the at-grade crossing of the Port Reading Secondary over South Main Street. Alternative 4.6 includes a bypass of a portion of the existing Port Reading Secondary consisting of a new track parallel to the Lehigh Line offset from the existing Lehigh Line by 20 feet. This line would be carried over South Main Street on a new bridge, eliminating the need for trains to run across the existing at-grade crossing of South Main Street. The tie-ins to the existing track would occur to the west, just east of the existing connection with the Lehigh Line, and to the east, just east of River Road using No. 20 turnouts, which would allow trains to continue to operate at the running speeds they travel at today. This alignment would also include a new railroad bridge over the Green Brook and over River Road. An overview of the PPA is depicted on Figure E.2.

Figure E.2: Preliminary Preferred Alternative (Alternative 4.6)



Estimated Construction Cost

An estimate of the cost for advancing the PPA through construction was prepared. In addition to the construction cost, this estimate includes preliminary and final design, environmental documentation and permitting, and construction engineering support and inspection. Estimated construction costs are summarized in Table E.1

Table E.1: Estimated Construction Cost

Description	Subtotal
Mobilization and Supplemental Costs	$ 4,476,934
Track and Ballast	$ 3,401,100
Structures	$ 26,077,000
Utilities	$ 2,500,000
Contingency	$ 7,994,525
Design, Civil Engineering Support, Right-of-Way, Permitting, Environmental Remediation	$ 9,296,715
TOTAL	**$ 53,746,274**

Construction cost estimate is in 2023 dollars.

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

1. INTRODUCTION

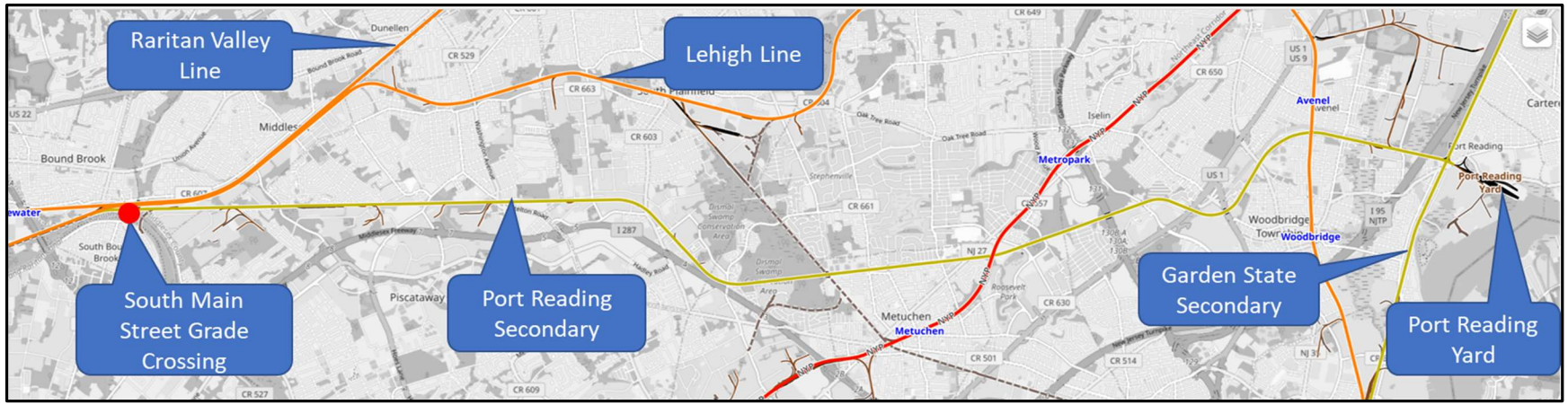
The Port Reading Secondary runs east-west along the northern side of the Raritan River in Bound Brook, crossing South Main Street at-grade. South Main Street is one of a limited number of roadways crossing the Raritan River. Immediately to the north of the crossing, South Main Street forms the southern leg of the modern roundabout in Bound Brook's downtown. When trains cross, the road is closed to automobile traffic. The closure of South Main Street during a train crossing results in roadway congestion, vehicle queuing, and adverse traffic impacts on downtown Bound Brook Borough, the Borough of South Bound Brook, and Middlesex Borough in Middlesex County, adversely affecting regional mobility. The Port Reading Secondary is depicted in its regional context on Figure 1.1.

The Port Reading Secondary is owned and operated by Conrail. Up to six round-trip trains per day are operated on the line, with trains of up to 100 railcars. A typical crossing of South Main Street lasts approximately 3 minutes. Depending on the time of day and the volume of roadway traffic, impacts on the free flow of traffic can last for as long as 15 to 20 minutes.

The North Jersey Transportation Planning Authority (NJTPA), in partnership with Somerset County, retained Jacobs for the preparation of a Freight Concept Development Study to identify a preferred alternative that would eliminate the at-grade crossing of the Port Reading Secondary over South Main Street.

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.

Figure 1.1: Port Reading Secondary – Regional Context



1.1 Existing Freight Rail Activity on the Port Reading Secondary

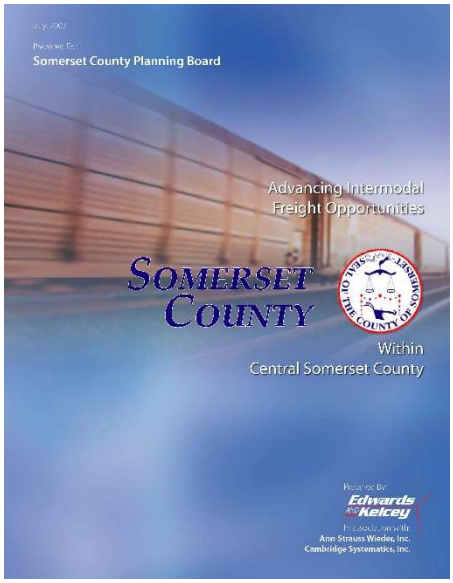
The Port Reading Secondary, also known as the Port Reading Branch, runs 16 miles (25.7 km) from a junction with the Lehigh Line west of South Main Street in Bound Brook, New Jersey, to Port Reading, New Jersey, on the Arthur Kill. The line is owned and operated by Conrail Shared Assets Operations.

Very little traffic on the Port Reading Secondary actually runs to or from Port Reading Yard. The line primarily carries more than 10 million gross tons of ethanol and crude oil annually handed off from Norfolk Southern, running along the Port Reading Secondary to the Garden State Secondary (formerly known as the Chemical Coast Line), with deliveries to refineries and port facilities from Linden to Perth Amboy. A small volume of carload freight runs on the Port Reading Secondary for on-line customers, but this makes up only a small percentage of the daily traffic on the line. Because of the configuration of the ExpressRail terminal at Port Elizabeth, the rail operators find it to be more efficient for inbound traffic (eastbound) to use the Port Reading Secondary, with the exiting movements (westbound) using the Lehigh Line. Conrail currently runs one to two eastbound intermodal trains daily to ExpressRail. After the completion of the southern connector out of ExpressRail Elizabeth (currently being advanced by the Port Authority of New York and New Jersey [PANYNJ]), intermodal traffic on the Port Reading Secondary would be expected to increase because the new route would avoid the existing congestion on the Lehigh Line within Oak Island Yard.

1.2 Predecessor Projects and Studies

In July 2007, Somerset County issued Advancing Intermodal Freight Opportunities within Central Somerset County (Figure 1.2; herein referred to as the 2007 Predecessor Study). This study examined the movement of intermodal freight to and from the county and identified several issues related to the freight rail infrastructure within the county that required improvement. One of these issues was the at-grade crossing of the Port Reading Secondary over South Main Street in Bound Brook. The study included a formal Problem Statement for this need, as follows:

Figure 1.2: 2007 Predecessor Study



The Port Reading Secondary runs along the northern side of the Raritan River, crossing South Main Street at-grade. South Main Street is one of a limited number of roadways crossing the Raritan River. Immediately to the north of the crossing, South Main Street forms the southern leg of the roadways comprising the modern round-about in the Bound Brook Town Center. When trains cross, the roadway is closed to automobile traffic, resulting in significant recurring roadway congestion that virtually gridlocks downtown Bound Brook for various discrete periods on a daily basis. This congestion is an adverse impact to the downtown and regional mobility directly attributable to the at-grade crossing operation.

Elimination of this grade crossing presents a number of challenges. Proximity to the Raritan River, the vertical and horizontal alignment of South Main Street, and the existing rail bridge which carries the Raritan Valley line and the Lehigh Line over the roadway limit the options for realigning or relocating the roadways as a solution. However, the adjacency of the other rail lines traversing the area offers an opportunity to realign the Port Reading Secondary as a long-term solution.

Several conceptual rail line realignments have been investigated as potential long-term solutions for elimination of this rail grade crossing. While the specific alignments differ, the common component of each concept is the rerouting of trains utilizing the Port Reading Secondary to the tracks currently crossing the existing rail bridge to the west of the bridge, connections currently exist to reroute the Port Reading trains onto the Lehigh Line. East of the bridge, existing industries rely upon the rail service via the Port Reading Secondary. Therefore, creating a means of routing the diverted trains back to the Port Reading Secondary is the primary focus of each of the concepts. (Somerset County 2007)

General realignment concepts envisioned in the 2007 Predecessor Study and additional alternatives were investigated in greater detail as part of this current study. Descriptions and assessments of these alternatives are presented in the following sections.

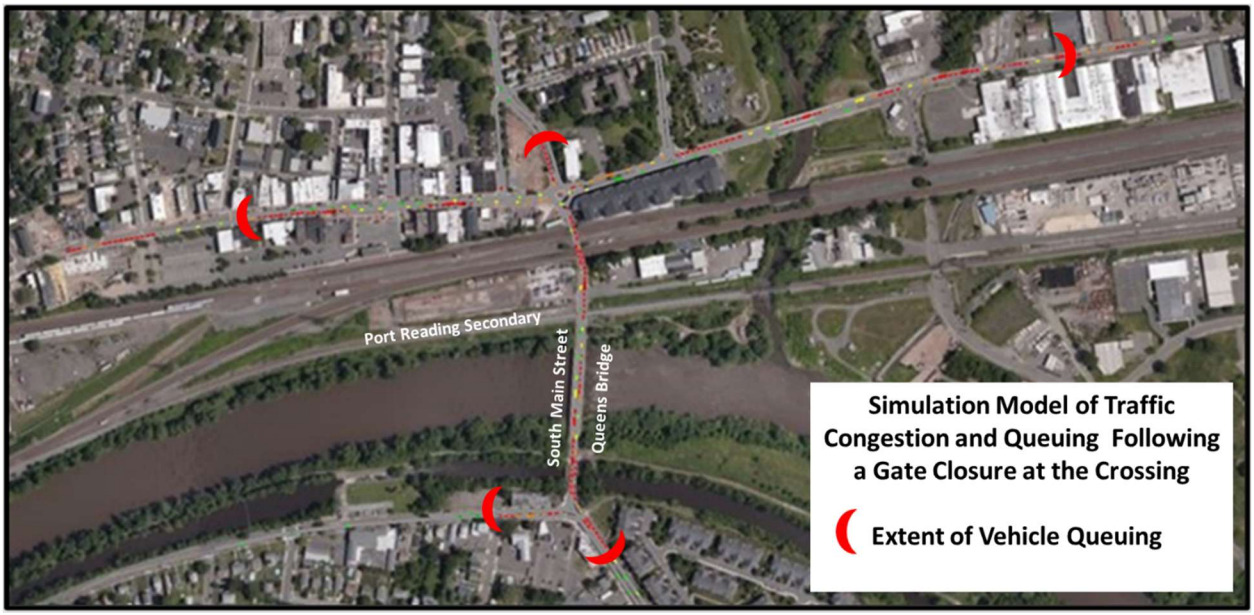
1.3 Existing Traffic Conditions

Up to six round-trip trains per day are operated on the line, with trains of up to 100 railcars. A typical crossing of South Main Street lasts approximately 3 minutes. Depending on the time of day and the volume of roadway traffic, impacts on the free flow of traffic can last for as long as 15 to 20 minutes. To assess the location and extent of the impacts on traffic during a gate closure, existing traffic volumes crossing the Queens Bridge and at the intersections of the roadways

connecting with the Bound Brook downtown roundabout were recorded through the installation of Miovision cameras. Assembled traffic volumes are presented in Appendix A.

Using the assembled traffic volumes as a baseline, a VISSIM Microsimulation model was developed to allow visualization of traffic operations during a gate closure at the crossing. Figure 1.3 is a screen capture of the simulation model reflecting the lengths of vehicle queuing on the local roadways following a crossing of South Main Street.

Figure 1.3: Roadway Traffic Queuing during Gate Closure at Crossing



2. PURPOSE AND NEED

"The purpose of this project is to eliminate the at-grade rail crossing on South Main Street in the Borough of Bound Brook, while maintaining freight rail access to existing and future customers along the Port Reading Secondary Line."

The following are primary goals of this project:

1. **Eliminate** roadway congestion and vehicle queuing that result from the closure of the crossing.
2. **Improve** safety for vehicles, bicyclists, and pedestrians at the crossing.
3. **Support** existing and future freight rail-related development.
4. **Facilitate** development of and access to the Raritan River waterfront.
5. **Improve** connectivity and mobility between the Borough of Bound Brook and the Borough of South Bound Brook.

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

1. Eliminate roadway congestion and vehicle queuing that result from the closure of the crossing.

    a. **Maintain** continuous vehicular and pedestrian movement along South Main Street.
    b. **Enhance** local and regional mobility.
    c. **Support** economic development in downtown Bound Brook and South Bound Brook.

2. Improve safety for vehicles, bicyclists, and pedestrians at the crossing.

    a. **Eliminate** potential conflicts between freight trains and pedestrians and vehicles.

3. Support existing and future freight rail-related development.

    a. **Promote** retention and expansion of existing rail-served industrial businesses along the Port Reading Secondary.
    b. **Attract** investment in rail-served industrial development of vacant and underused industrial parcels along the Port Reading Secondary.

4. Facilitate development of and access to the Raritan River waterfront.

    a. **Support** advancement of local and regional transportation plans.
    b. **Facilitate** repurposing of land along the waterfront for recreational use.
    c. **Enhance** waterfront access to pedestrians and vehicles.

5. Improve connectivity and mobility between the Borough of Bound Brook and the Borough of South Bound Brook.

    a. **Remove** potential barriers to emergency medical services, Fire, and Police access; traffic congestion resulting from a freight train crossing can lengthen response times.

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

3. ENVIRONMENTAL SCREENING

Concept development is 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. While 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 for consideration during design is an essential step in the development of viable project alternatives.

The study area defined for the environmental screening includes alternatives proposed in the 2007 Predecessor Study (Somerset County 2007). To allow for potential deviation from the previous alternatives and still provide useful screening data, each previous project alternative was buffered 300 feet or 1,000 feet from the potentially affected rail and roadway corridors, depending on the environmental discipline, in all directions. The area between the most northern, southern, eastern, and western edges of the buffers constituted the project area. The NJDOT Bureau of Environmental Program Resources reviewed and approved the project study area geographic description and rationale for the boundaries.

Sections 3.1 through 3.11 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 on and incompatibilities with particular land use features, such as wetlands, cultural resources, and environmental justice communities, are detailed in their own sections later in this screening. This section provides an overview of the land use character of the study area.

3.1.2 Methodology and Scope of Screening

3.1.2.1 Data Sources

This screening uses the New Jersey Department of Environmental Protection (NJDEP) 2012 Land Use/Land Cover Update (NJDEP 2015). Some field verification was conducted as part of study area site visits.

3.1.2.2 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 create a dataset that contained only the data pertinent to the study area.

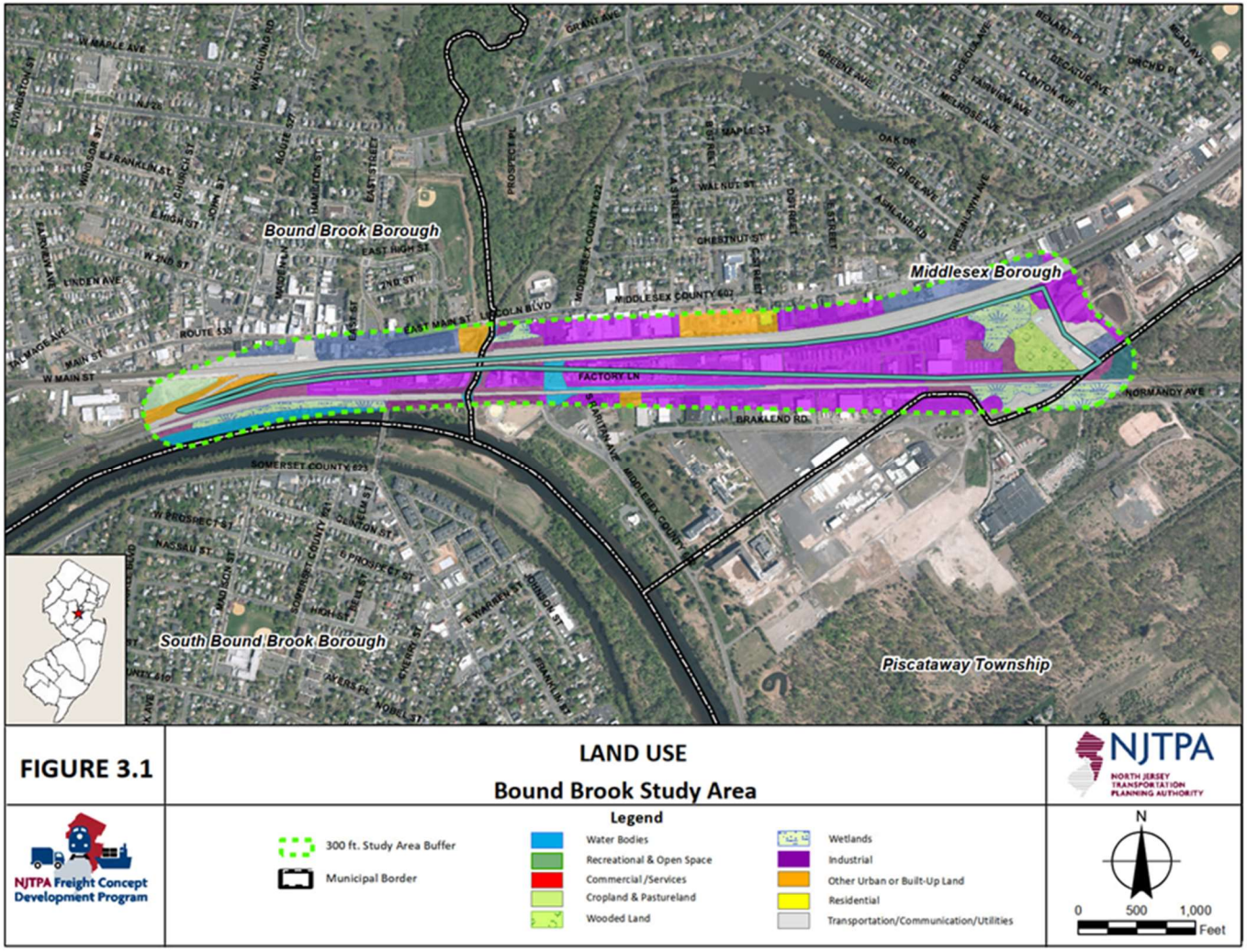
The screening involved desktop analysis with limited field reconnaissance undertaken in the course of field assessments for alternatives development. Once a preliminary preferred alternative (PPA) is selected and advanced to preliminary engineering, site reconnaissance for a more detailed assessment 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 Sections 3.2 through 3.11.

3.1.3 Results of Screening

The project area is approximately 1.5 miles long and incorporates land within four municipalities and two counties: Bound Brook Borough and South Bound Brook Borough in Somerset County, and Middlesex Borough and Piscataway Township in Middlesex County. From west to east, the land uses adjacent to the Port Reading Secondary are primarily urban built-up land, industrial, and undeveloped open space (Figure 3.1). There are no public recreational resources within the study area. No residences are located within the study area, with most residential properties located north of the study area across Main Street in Bound Brook and Lincoln Boulevard in Middlesex Borough.

The acquisition of commercial properties in the downtown area would also require careful analysis to determine whether such an acquisition could constitute an environmental justice impact.

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 the public outreach plan is fair and inclusive. This screening supported development of an inclusive public outreach process initiated with the hosting of the first public meeting, which was held virtually on September 13, 2021.

3.2.2 Methodology and Scope of Screening

3.2.2.1 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.

Data were obtained from the U.S. Census American Community Survey 2019 (U.S. Census Bureau 2019) and updated U.S. census tracts made available through the New Jersey GIS data clearinghouse. Datasets 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

3.2.2.2 Analysis Methodology

For this assessment, "minority" constitutes the population that self-identifies as any of the U.S. Census racial groups or combination of racial groups and/or Hispanic or Latino. In other words, an individual who self-identifies as one race and white but also Latino would be considered a minority. Non-minority 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 project area census tracts in more detail. The project tracts are the census tracts located within 1,000 feet of the project limits. This analysis did not use smaller geographic area data, such as block groups, because certain datasets 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 implications of these findings.

3.2.3.1 Community Facilities and Resources

The project area is located across Somerset County and Middlesex County and encompasses Bound Brook Borough, South Bound Brook Borough, Middlesex Borough, and Piscataway Township. Within 1,000 feet of the project area, there are several community facilities and resources, including schools, houses of worship, and active use recreational facilities.

As the Port Reading Secondary traverses through the study area, there is little separation between the adjacent uses and the railroad right-of-way (ROW). Many commercial properties, from small local business to large industrial buildings, are directly adjacent to the railroad ROW. The typical use within the study area is a mix of residential, commercial, and industrial, with minimal separation between the various land uses.

The Bound Brook Community Middle School is the only school located within the study area. The Somerset County Library System of New Jersey – Bound Brook Branch is located at the corner of High Street and Hamilton Street in Bound Brook Borough. Multiple houses of worship serve the community, including the Christian Center of Somerset, Assembly of Christian Churches, God's Presence Ministry, Hope Church, Reformed Church - Bound Brook, and the Christian Life Church.

There are also many parks and recreational facilities throughout the study area, including Mariposa Park, Delaware and Raritan Canal Sate Park, and Billian Legion Park. These facilities are spread throughout the 1,000-foot study area along the Port Reading Secondary.

Somerset County also runs two local shuttle bus services within the study area. The SCOOT line serves Bound Brook Borough, Bridgewater Township, and Hillsborough Township, and runs along Main Street, with a bus stop located at the intersection of Main Street and Hamilton Street. The second local shuttle bus service, the DASH line, provides service between Bound Brook and the New Brunswick train station, with a stop at the Bound Brook NJ TRANSIT Train Station. The NJ TRANSIT Raritan Valley Line also provides commuter rail service between High Bridge and New York City at the Bound Brook train station.

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	**Somerset County**	**Middlesex County**	**Bound Brook Borough**	**South Bound Brook Borough**	**Middlesex Borough**	**Piscataway Township**	**Census Tracts**
Total Population	329,838	825,920	10,288	4,534	13,662	56,884	23,591
Racial and Ethnic Composition							
White	66.3%	57.9%	75.5%	62.9%	64.3%	34.8%	68.3%
Black or African-American	9.7%	10.3%	4.9%	13.1%	8.2%	20.0%	7.9%
Native American/Alaskan Native	0.3%	0.2%	0.6%	1.4%	0.6%	0.3%	0.8%
Asian	17.7%	24.0%	3.9%	12.4%	6.3%	37.1%	9.7%
Pacific Islander	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%
Other Race Not Specified	3.7%	4.5%	12.6%	7.1%	15.3%	3.6%	9.7%
Two or More Races	2.3%	2.9%	2.5%	3.1%	5.3%	4.1%	3.5%
Hispanic/Latino of Any Race	14.7%	21.2%	52.2%	30.2%	29.9%	14.1%	34.5%
One Race, White, Not Hispanic/Latino	56.3%	43.1%	37.0%	41.6%	56.5%	26.7%	45.4%
Total Minority Percentage	43.7%	56.9%	63.0%	58.4%	43.5%	73.3%	54.6%
Percentage of Population Living at or below the Federal Poverty Line	5.1%	8.5%	8.1%	2.2%	7.0%	7.5%	5.9%
Percentage of Households with No Vehicle	4.9%	8.0%	9.8%	10.1%	5.1%	4.0%	8.1%
Percentage of Workers over 16 with No Vehicle	2.1%	4.0%	8.3%	3.2%	1.7%	2.9%	5.3%
Language Proficiency							
Speak only English	68.6%	55.5%	47.4%	65.6%	67.4%	60.5%	59.6%
Speak Spanish	11.4%	17.1%	46.2%	26.0%	24.6%	9.3%	29.4%
Speak other Indo-European Languages	9.9%	15.7%	3.8%	4.7%	4.2%	17.7%	6.0%
Speak Asian and Pacific Island Languages	8.5%	9.1%	2.1%	3.4%	3.3%	10.9%	4.2%
Speak Other Languages	1.5%	2.7%	0.5%	0.3%	0.5%	1.6%	0.8%

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	**Somerset County**	**Middlesex County**	**Bound Brook Borough**	**South Bound Brook Borough**	**Middlesex Borough**	**Piscataway Township**	**Census Tracts**
Percentage of Population 65 and Older	15.3%	14.7%	10.2%	11.5%	14.8%	11.4%	11.4%

3.2.3.2 Race and Ethnicity

As shown in Table 3.1, the total percentage of minorities within the study area is consistent with the total percentage of minorities in the four towns and two counties that the study area encompasses. Piscataway Township has the highest percentage of minorities (73.3 percent); however, the portion of the study area that is part of Piscataway Township consists almost entirely of commercial and industrial uses. Bound Brook Borough (63 percent) and South Bound Brook Borough (58.4 percent) also have a significant percentage of minorities and consist of mostly residential and commercial uses within the study area. A significant percentage within Bound Brook Borough (52.2 percent) and the study area census tracts (34.5 percent) identify as "Hispanic/Latino of Any Race." Other minorities are also represented, although in smaller percentages, throughout the study area.

3.2.3.3 Limited English Proficiency

The percentage of English proficiency varies in each community. Bound Brook Borough has the lowest percentage of English proficiency at 47.4 percent. Those who do not speak English exclusively speak Spanish and to a lesser extent Indo-European languages, Asian languages, and other languages. Bound Brook Borough, South Bound Brook Borough, Middlesex Borough, and the study area census tracts report a high percentage of Spanish speakers. Bound Brook Borough has the highest percentage of Spanish speakers at 46.2 percent. Each census tract is shown on Figure 3.2. An interpreter was available at public meetings to engage Spanish-speaking participants. Additionally, the legal notices and flyers advertising the public meeting were provided in both English and Spanish.

3.2.3.4 Poverty

The poverty rate within the study area is less than that of the state and consistent across the two counties and four towns. Middlesex County has the highest percentage of the population living at or below the federal poverty line at 8.5 percent, although less than that of the state at 9.2 percent. Overall, the poverty rate within the study area and neighboring communities is comparatively low (Figure 3.3).

Figure 3.2: Percentage of Limited English Proficiency by Tract

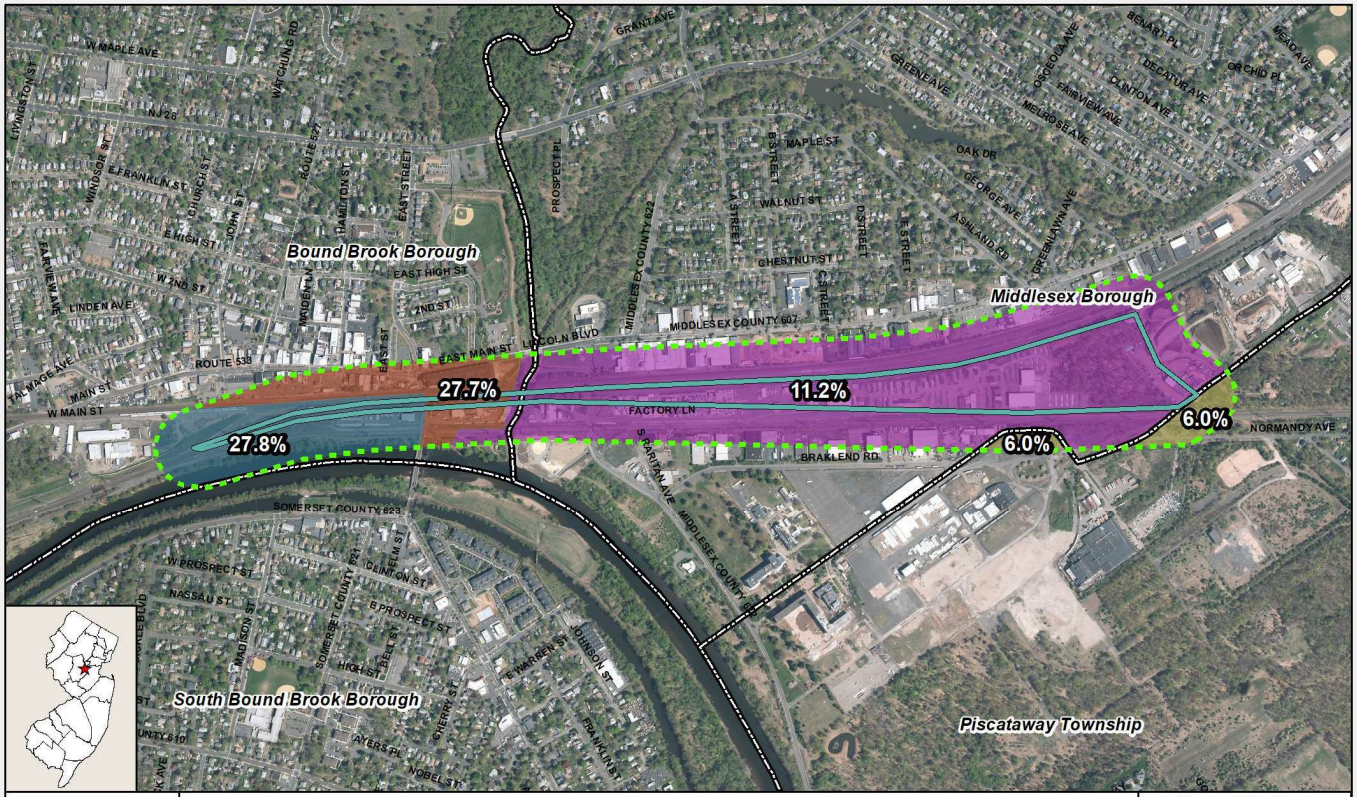
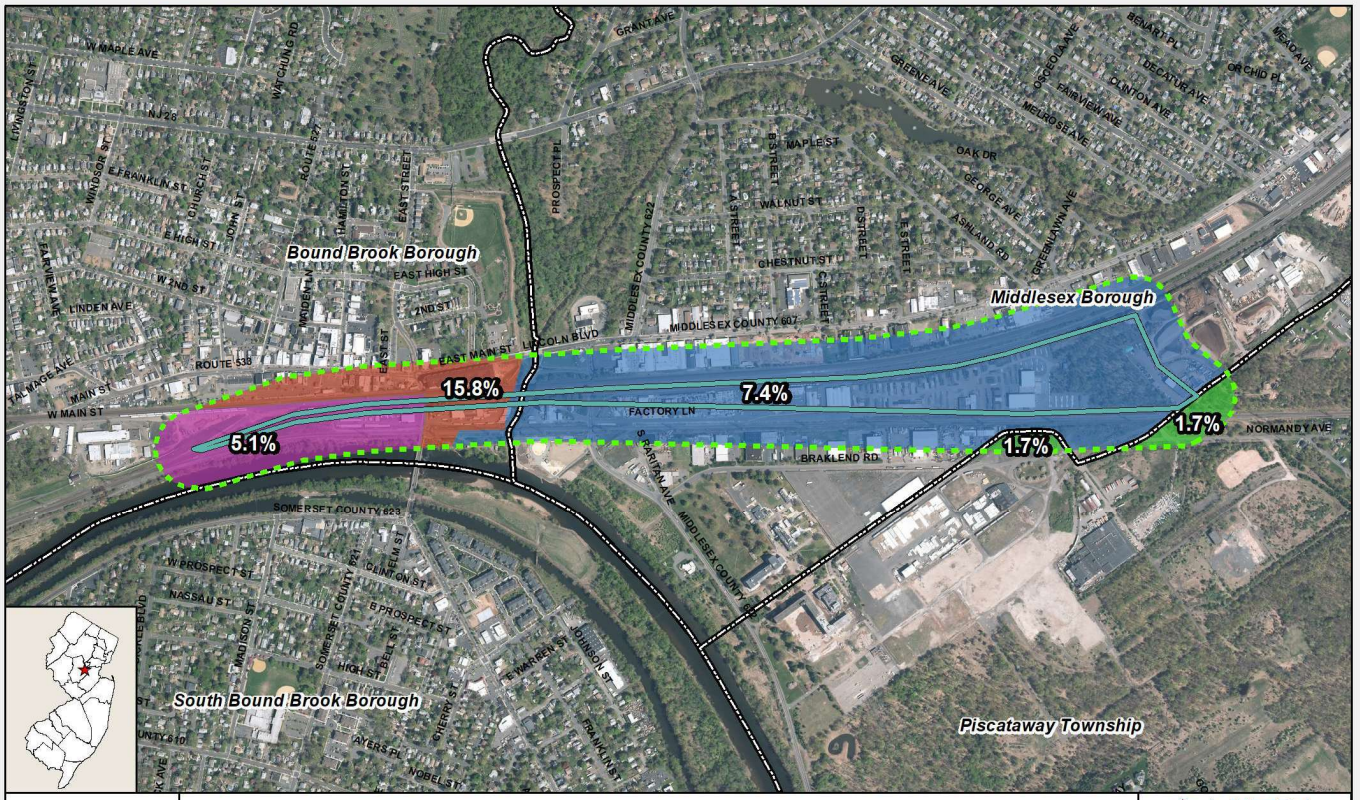


Figure 3.3: Percentage of Persons below the Poverty Line by Tract



3.2.3.5 Automobile Ownership

South Bound Brook Borough reported the highest percentage of households with no automobiles at 10.1 percent followed by Bound Brook Borough at 9.8 percent. However, the overall percentage of households with no vehicle is comparatively low across the two counties and four towns.

3.2.3.6 Senior Population

The study area's population over the age of 65 is consistent across the two counties and four towns at 11.4 percent (Figure 3.4).

3.2.3.7 Disability Status

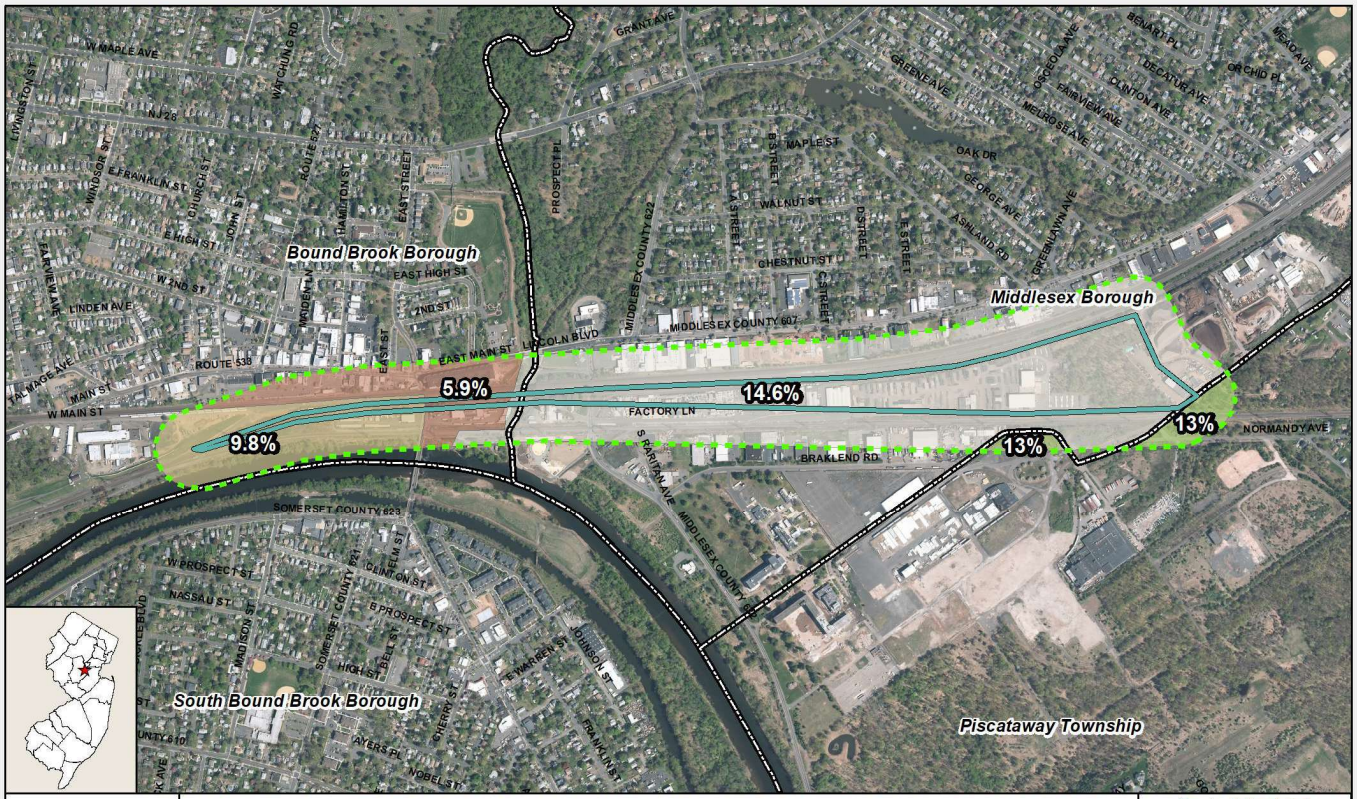
Disability status was also examined as part of the demographic analysis to confirm that public outreach was inclusive and accessible to residents with mobility and sensory limitations. Disability status data are summarized in Table 3.2. Overall disability percentages within the study area are comparable to percentages of Somerset County and Middlesex County, with most below 5 percent.

There was a higher percentage of people with mobility impairments than with other disabilities. Census Tract 530 in Somerset County reports the highest percentage for mobility impairment at 5.45 percent followed by Census Tract 001 in Middlesex County at 5.29 percent. The average mobility impairment percentage for all census tracts within the study area is approximately 4.3 percent. However, the remaining disability percentages for each individual census tract are less than 5 percent.

Table 3.2: Disability Status in the Project Area

		Hearing Impaired		Visually Impaired			Cognitively Impaired		Mobility Impaired	
	Population	Total	%	Total	%	Population	Total	%	Total	%
Somerset County	326,872	6,762	2.07%	3,582	1.10%	309,886	8,903	2.87%	12,705	4.10%
Project Area Census Tracts										
511 – Somerset County	3,193	55	1.72%	60	1.88%	2,961	79	2.67%	127	4.29%
512 – Somerset County	5,156	92	1.78%	71	1.38%	4,836	232	4.80%	160	3.31%
530 – Somerset County	4,534	121	2.67%	31	0.68%	4,089	124	3.03%	223	5.45%
Middlesex County	817,768	18,678	2.28%	13,135	1.61%	769,700	27,241	3.54%	46,726	6.07%
Project Area Census Tracts										
001 – Middlesex County	7,554	293	3.88%	118	1.56%	7,074	389	5.50%	374	5.29%
7.01 – Middlesex County	3,154	56	1.78%	27	0.86%	2,937	147	5.01%	99	3.37%

Figure 3.4: Percentage of Population 65 and Older by Tract



3.3 Cultural Resources

3.3.1 Purpose

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

In 36 CFR 800, Section 106, federal agencies are required 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 listing, or are 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 Native Hawaiian Organizations.

In accordance with these applicable regulations, a Cultural Resource Screening analysis was undertaken in the area surrounding the train 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 for, 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. The Cultural Resources Screening Report is presented in Appendix C, with key findings summarized in Sections 3.3.2 and 3.3.3.

3.3.2 Methodology and Scope of Screening

3.3.2.1 Data Sources

A range of data sources was 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.

3.3.2.2 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 and/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 to identify any registered archaeological sites and 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

Richard Grubb & Associates prepared a Cultural Resources screening report in September 2022. Figure 3.5 shows the historic resources identified in the study area.

3.3.3.1 Known Historic Properties

Background research conducted online using the LUCY cultural resources map viewer indicated there are a total of nine known, extant historic properties located within the study area (NJDEP 2022). These nine historic properties are currently listed in the New Jersey Register of Historic Places ("NJR") and the National Register of Historic Places ("NRHP"), or are eligible for listing in the NRHP. The intersection of the Port Reading Secondary and South Main Street is situated within the NRHP-eligible Port Reading Railroad Historic District (SHPO Opinion: March 14, 2002). Each project alternative being considered intersects with and is proximate to various historic properties within the study area, including the Lehigh Valley Railroad Historic District and Port Reading Railroad Historic District.

Three additional historic districts run through the study area. They include the following:

- NRHP-eligible Central Railroad of New Jersey Main Line Corridor Historic District (SHPO Opinion: July 19, 1991; Determination of Eligibility [DOE]: November 30, 1995)
- NRHP-eligible Lehigh Valley Railroad Historic District (SHPO Opinion: March 14, 2002) on the northern side of the Raritan River
- NJR- and NRHP-listed Delaware and Raritan Canal Historic District (NJR: November 30, 1972; NRHP: May 11, 1973) on the southern side of the river

Three contributing resources to the Central Railroad or New Jersey Main Line Corridor Historic District are also located within the study area: River Road Bridge, Green's Brook Bridge, and Main Street Bridge. Additional historic resources within the study area include the following:

- NRHP-eligible Pillar of Fire Building (SHPO Opinion: March 18, 1996; DOE: June 15, 2000)
- NJR- and NRHP-listed Old Stone Arch Bridge (NJR: May 7, 2008; NRHP: June 27, 2008; SHPO Opinion: May 24, 2008)
- NRHP-eligible Lehigh Valley Railroad and Port Reading Railroad Bridges (SHPO Opinion: March 18, 1996)

- NJR- and NRHP-listed Brook Theatre (Brook Arts Center) (NJR: February 26, 2014; NRHP: May 4, 2014)
- NJR and NRHP-listed Bound Brook Railroad Station (NJR: March 16, 1984; NRHP: June 21, 1984)

Six previously identified historic architectural properties within the study have been demolished. NJHPO's LUCY cultural resources GIS program indicates that the following have been demolished:

- NRHP-eligible Raritan Road/Plainfield Road/Landing Road/Railroad Avenue Iron Truss Bridge (Structure #18H0708) (SHPO Opinion: March 3, 2003)
- NRHP-eligible Lincoln Boulevard/East Main Street Bridge (Structure Inventory and Appraisal [SI&A] #122B235) (SHPO Opinion: March 18, 1996)

Field survey conducted on March 4, 2022 confirmed the following historic properties have also been demolished:

- NRHP-eligible Bolmer Building (SHPO Opinion: January 27, 2004)
- NRHP-eligible Bound Brook Hotel and Tavern (SHPO Opinion: March 18, 1996)
- Ruberoid Company Port Reading Railroad Spur, which was a contributing element to the extant Port Reading Railroad Historic District
- Railroad Bridge, which was a contributing resource to the extant Delaware and Raritan Canal Historic District

Information currently available in LUCY does not yet reflect that the above-mentioned resources have been demolished.

3.3.3.2 Registered Archaeological Sites

A review of the NJSM site files and standard references (Cross 1941; Skinner and Schrabisch 1913; Spier 1915) indicated that there are no registered archaeological sites located within the study area. The study area falls within two archaeological site grids: DD111 and DE111 (NJDEP 2022).

Five registered archaeological sites are located within 1 mile of the study area (Table 3.3). Sites 28-Mi-24 and 28-Mi-39 are both pre-Contact period encampments that were identified in the early twentieth century (Spier 1915). The Van Horne House site (28-So-130), situated approximately 1 mile west of the study area, consists of a concentration of mid- to late-eighteenth century artifacts and pre-Contact period artifacts (i.e., flakes) from an unknown time period. The Van Horne House is listed in the NJR and NRHP. Site 28-So-133 is the historic Staats House that is listed in the NRHP. The site is approximately 0.5 mile south of the study area. Site 28-So-157 is a historic site approximately 0.5 mile west of the study area that consists of a

mid-nineteenth century residence (Voorhees House), associated historic features, and a collection of eighteenth and nineteenth century artifacts.

Table 3.3: Registered Archaeological Sites within 1 Mile of the Study Area

Sie Number	Site Name	Cultural Designation	Temporal Period	Site Function	Source
28-Mi-4	Lincoln	Pre-Contact	Unknown	Camp	Spier 1915; NJSM
28-Mi-39	East Bound Brook	Pre-Contact	Archaic?	Large Camp	Spier 1915; NJSM
28-So-130	Van Horne House	Pre-Contact/Historic	Unknown Pre-Contact/Mid- to late 18th century	Domestic; Camp Site	NJSM
28-So-133	Staats House	Historic	18th to 19th century	Domestic	NJSM
28-So-157	King/Voorhees House	Historic	18th to 20th century	Domestic	NJSM

NJSM = New Jersey State Museum

3.3.3.3 Surveys Identifying Cultural and Historic Resources

New Jersey Historic Bridge Survey

The 1994 New Jersey Historic Bridge Survey identified one bridge within the study area: Main Street Bridge over Green Brook (Structure No. 122B235), also known as the NRHP-eligible Lincoln Boulevard/ East Main Street Bridge (SI&A #122B235) (SHPO Opinion: March 18, 1996) (A.G. Lichtenstein & Associates, Inc. 1994). The bridge was later demolished and replaced in 2002. The New Jersey Historic Bridge Survey only identified roadway bridges more than 50 years old at the time of the survey, not railroad bridges. No other bridges identified in the New Jersey Historic Bridge Survey are located in the study area.

Planning Surveys

The study area lies within three different municipalities: the Borough of Bound Brook, Somerset County, to the west; the Borough of Middlesex, Middlesex County, to the east; and a small portion of the Borough of South Bound Brook, Somerset County, to the south. A large portion of the study area in the Borough of Bound Brook, roughly bounded by Main Street, John Street, and East High Street, was previously surveyed in a 1985 Historic Architecture Survey of Downtown Bound Brook (Acroterion 1985).

The 1985 reconnaissance-level survey included 113 survey forms, which inventoried all buildings, regardless of their age, within the bounds of the potential "Downtown Bound Brook Historic

District" to assess their potential NRHP-eligibility, both individually and as a district. Approximately 89 of the 113 surveyed properties were located within the study area. Of the approximately 89 identified resources (89 survey forms were prepared for buildings falling within the study area, some of which addressed multiple buildings or streetscapes), only 2 were recommended as individually eligible for listing in the NRHP.

The two resources include the 1913 Pillar of Fire Building (Historic Sites Inventory No. 1804-01), and the 1881 Voorhees Building (Historic Sites Inventory No. 1804-20). The Pillar of Fire Building was later determined eligible for listing in the NRHP (SHPO Opinion: March 18, 1996; DOE: June 15, 2000). The Voorhees Building has not yet received a formal opinion of eligibility from the NJHPO. The 1985 survey recommended two resources within the study area as potentially eligible for NRHP-listing: the Bound Brook Hotel and Tavern (Historic Sites Inventory No. 1804-03) and the Bound Brook Diner at 500 Main Street (Historic Sites Inventory No. 1804-6). The Bound Brook Hotel and Tavern was later determined eligible for listing in the NRHP (SHPO Opinion: March 18, 1996) but has since been demolished. The Bound Brook Diner, a 1930s Art Moderne-style diner, was also demolished and never received a formal opinion of eligibility. One additional historic property within the study area was identified in the 1985 survey, the Bound Brook Railroad Station, which was listed in the NJR and NRHP in 1984. All remaining resources surveyed within the study area were recommended as not eligible for listing in the NRHP or had no recommendation at all.

Cultural Resources Surveys

A review of the NJHPO files indicated that several cultural resources surveys have been performed within the study area. This section reviews the various studies done that provide cultural resources information for the study area.

The 1978 *Cultural Resources Survey of Middlesex Borough* did not identify any historic architectural resources within the study area (Heritage Studies 1978). The 1989 *Cultural Resources Survey of South Bound Brook* did not identify any historic architectural resources within the study area other than the Delaware and Raritan Canal Historic District, which was listed in the NJR and NRHP in 1972 and 1973, respectively (Research & Archaeological Management, Inc. 1989).

In 1992 and 1993, Richard Grubb & Associates, Inc. performed a Stage I cultural resources survey in the Boroughs of South Plainfield and Middlesex, and the Township of Piscataway, for a proposed sanitary sewer system. The survey did not identify any archaeological resources, and no further testing was recommended; the survey did not include a historic architectural component (Richard Grubb & Associates, Inc. 1993).

In 1999, a feasibility study was performed for the Brook Theater Arts Center to examine the building in conjunction with plans to restore and reopen the theatre (Ford Farewell Mills and Gatsch, Architects 1999).

Also in 1999, a contributing resource study was performed for the NJ TRANSIT Raritan Valley Line, which determined that several historic resources within the study area were contributing elements to the NRHP-eligible Central Railroad of New Jersey Main Line Corridor Historic District (SHPO Opinion: July 19, 1991; DOE: November 30, 1995), including the River Road Bridge, Green's Brook Bridge, Main Street Bridge, and the Bound Brook Railroad Station (Arch2 Inc. 1999). Also, because the Bound Brook Railroad Station is individually listed in the NRHP, it is a key contributing resource to the Central Railroad of New Jersey Main Line Corridor Historic District.

As an addendum to an earlier 1997 report, Evaluation of Bridges and Flood Proofing/Buy out Structures for the Green Brook Flood Control Project Middlesex Borough, Middlesex County and Bound Brook Borough, Somerset County (Nolte et al. 1997), a subsequent cultural resources survey was undertaken in 1999 that evaluated structures potentially affected by flood-proofing and buy-out activities by the Green Brook Flood Control Project (Panamerican Consultants, Inc. 1999). The 1999 survey evaluated the NRHP eligibility of 19 structures, none of which were recommended eligible for listing in the NRHP (Panamerican Consultants, Inc. 1999). Another element of the Green Brook Flood Control Project included a Historic American Engineering Record documentation of the Greenbrook Bridge (East Main Street Bridge, Bound Brook Bridge, and Lincoln Boulevard Bridge) spanning the Green Brook in Middlesex Borough, Middlesex County, and Bound Brook Borough, Somerset County in 2000 (Panamerican Consultants, Inc. 2000).

In 2002, a cultural resources assessment was performed to evaluate the NHRP-eligibility of three bridges and a railroad spur, along with the potential for archaeological remains for a grist mill. The assessment was prepared for the Green Brook Flood Control Project that the U.S. Army Corps of Engineers was performing (Hunter Research, Inc. 2002). As a result of the survey, the Iron Truss Bridge over Green Brook (Structure #H0708) was recommended eligible for listing in the NRHP. The Ruberoid Company Port Reading Railroad Spur was recommended eligible for listing in the NRHP as a contributing resource to the NRHP-eligible Port Reading Railroad Historic District. In addition, the two bridges carried by the Ruberoid Company Port Reading Railroad Spur (one over the Raritan River and the other over the Delaware and Raritan Canal) were also recommended eligible for listing in the NRHP as contributing resources to the NJR- and NRHP-listed Delaware and Raritan Canal Historic District, within which both bridges reside. Of note, none of the surveyed bridges nor the railroad spur is extant today. The Field Gristmill Site at the mouth of the Green Brook was identified as being disturbed by construction from the installation of sewer lines

and the railroad lines. However, the site was determined to have the potential for containing deeply buried remains from the foundation, wheel pit, and tail race.

In 2003, a cultural resources investigation was performed for construction of the Bound Brook Rotary and East Street Realignment and Linkage in Bound Brook and South Bound Brook (Richard Grubb & Associates, Inc. 2003). No archaeological resources were identified, and no further work was recommended. As a result of the historic architectural survey, three Conrail bridges (which formerly carried the Port Reading Railroad South Brook Branch over the Raritan River, River Road [CR514] , and the Delaware and Raritan Canal) were recommended as contributing resources to the Port Reading Railroad Historic District, which falls within the study area, and contributing resources to the Ruberoid Company Factory (no longer extant) located outside the study area on the southern side of the Raritan River in the Borough of South Bound Brook. The historic architectural survey also recommended the Old Presbyterian Burial Grounds, located within the study area at the southwestern corner of East High Street and East Street, as individually eligible for listing in the NRHP.

Following the 2003 survey, Historic American Engineering Record documentation was undertaken in 2004 for the Lehigh Valley Railroad Bridge (Conrail Railroad Bridge) over South Main Street and the Central Railroad of New Jersey Bridge (NJ TRANSIT Raritan Valley Line Bridge) over South Main Street, both of which lie within the study area in Bound Brook (Richard Grubb & Associates, Inc. 2004). This work included several photographs and aerial views (Richard Grubb & Associates, Inc. 2004).

In 2005 and 2006, Richard Grubb & Associates, Inc. completed a Phase IA archaeological survey for the Lehigh Line Double Track as part of Conrail's capacity improvements project in Middlesex and Somerset Counties. The project traversed the study area in Bound Brook and involved the reinstallation of a second main line track that had been removed by Conrail in 1984. Based on the limited nature of the impacts, no further archaeological survey was necessary to fulfill permitting requirements (Richard Grubb & Associates, Inc. 2006).

On behalf of Somerset County, Richard Grubb & Associates, Inc. performed research and documentation in preparation of a National Register Nomination for the Old Stone Arch Bridge that lies along Railroad Avenue, approximately 200 feet east of South Main Street in Bound Brook (Leynes 2006). The period of significance for the structure was circa 1730 to 1895, and the areas of significance include transportation, military, engineering, and archaeology. The bridge was listed on the NRHP under Criteria A, C, and D. The Old Stone Arch Bridge was built circa 1730 to 1760 to carry the Raritan Road over Green Brook. Extensive reworking of Green Brook has taken place since the nineteenth century when the railroads were constructed. This structural feature

was intact in 2006 and exhibited a high degree of integrity when the nomination was prepared (Leynes 2006).

The 2013 Statewide Jersey Diner Inventory included the Bound Brook Diner, even though the diner had been removed from its location at 502 East Main Street in Bound Brook by that time. The *Statewide Jersey Diner Inventory* identified the Bound Brook Diner as a 1948 model manufactured by the Fodero Dining Car Company (Saari 2013).

In 2019, an architectural reconnaissance survey identifying existing eighteenth and nineteenth century buildings constructed in the East Jersey Cottage Style throughout central and northern New Jersey was conducted. This survey did not identify any extant East Jersey Cottages within the study area and did not contain an archaeological component (Richard Veit and Dennis Bertland Associates 2019).

3.3.3.4 Fieldwork Identifying Cultural and Historical Resources

Historic Architecture

Site visits were conducted on March 4 and December 2, 2022 and have been documented. Architecture in the study area consists primarily of commercial buildings along Main Street in the Borough of Bound Brook, which eventually turns into Lincoln Boulevard as it runs east through the study area into the Borough of Middlesex. Main Street and Lincoln Boulevard run on a roughly east-west axis through the study area. A collection of commercial buildings dating from the nineteenth to early twenty-first centuries is concentrated along Main Street between its intersections with Bolmer Avenue/South Main Street and Mountain Avenue. Several listed or eligible historic resources are located proximate to this area, including the Bound Brook Railroad Station, the Brook Theatre, and the Pillar of Fire Building. A series of streets branch off to the north from Main Street/Lincoln Boulevard and become increasingly residential as they extend outside the study area. The NJR- and NRHP-listed Old Stone Arch Bridge at Railroad Avenue in Bound Brook is extant.

The southern end of the study area is dominated by railroads and industrial buildings, sandwiched between Main Street and Lincoln Boulevard to the north and the Raritan River to the south. Three railroad historic districts run through this area: the Central Railroad of New Jersey Main Line Corridor Historic District, the Lehigh Valley Railroad Historic District, and the Port Reading Railroad Historic District. These railroad corridors are still active as the present-day NJ TRANSIT Raritan Valley Line, Conrail Lehigh Line, and Port Reading Secondary Line, respectively. The project alternatives were overlaid throughout the section of the study area that contains these railroad historic districts. Each of the alternatives intersects with at least one cultural resource in the Lehigh Valley Railroad Historic District and Port Reading Railroad Historic District.

One alternative is proximate to the historic Stone Arch Bridge. Any work near the bridge will require care to ensure integrity of the structure.

Archaeology

A site visit was conducted on March 4, 2022, by the project archaeologist. Project Alternative 1 is within the ROW of the current Port Reading Secondary Line railroad and borders urban and industrial development. The Old Stone Arch Bridge is situated north of Alternative 1. Jersey barriers line the southern side of Railroad Avenue, proximate to the bridge. The southern façade of the bridge is overgrown but remains intact. Archaeological resources could potentially be present proximate to the bridge. Although not registered as an archaeological site, the Old Stone Arch Bridge itself is considered an archaeological resource because it was listed in the NRHP under Criterion D. Project Alternatives 3.1 and 3.3 pass through industrial and urban development with disturbed areas observed. Project Alternative 3.6 passes through a wooded area between the Lehigh Line and the Port Reading Secondary Line. Alternatives 4.1, 4.3, 4.4, 4.5, and 4.6 all fall within a developed area between the two rail lines. Alternatives 1, 2, 3.1, 4.1, 4.2, 4.3, 4.4, 4.5, and 4.6 cross the Green Brook.

3.3.3.5 Summary of Findings

Historic Architecture

Nine extant historic properties, which are either eligible for listing or currently listed in the NJR or NRHP, are located within the study area, as follows:

1. NRHP-eligible Port Reading Railroad Historic District (SHPO Opinion: March 14, 2002)
2. Central Railroad of New Jersey Main Line Corridor Historic District (SHPO Opinion: July 19, 1991; DOE: November 30, 1995)
3. Lehigh Valley Railroad Historic District (SHPO Opinion: March 14, 2002)
4. Pillar of Fire Building (SHPO Opinion: March 18, 1996; DOE: June 15, 2000)
5. Lehigh Valley Railroad and Port Reading Railroad Bridges (SHPO Opinion: March 18, 1996)
6. NJR- and NRHP-listed Delaware and Raritan Canal Historic District (NJR: November 30, 1972; NRHP: May 11, 1973)
7. Old Stone Arch Bridge (NJR: May 7, 2008; NRHP: June 27, 2008)
8. Brook Theatre (Brook Arts Center) (NJR: February 26, 2014; NRHP: May 4, 2014)
9. Bound Brook Railroad Station (NJR: March 16, 1984; NRHP: June 21, 1984)

Of the nine listed and eligible historic properties, two are intersected by, or lie within the route of, the proposed project alternatives necessary to eliminate the Port Reading Secondary grade

crossing at South Main Street (Queens Bridge). All of the alternatives intersect with the Port Reading Railroad Historic District and Lehigh Valley Railroad Historic District. As indicated, Alternative 1 is proximate to the Old Stone Arch Bridge, which should be avoided, if at all possible.

A Cultural Resources Survey of the selected alternative will be necessary during the preliminary engineering phase. Should the selected alternative fall within the limits of a New Jersey Register of Historic Places Act-listed historic district or resource (New Jersey Administrative Code 7:4), 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.

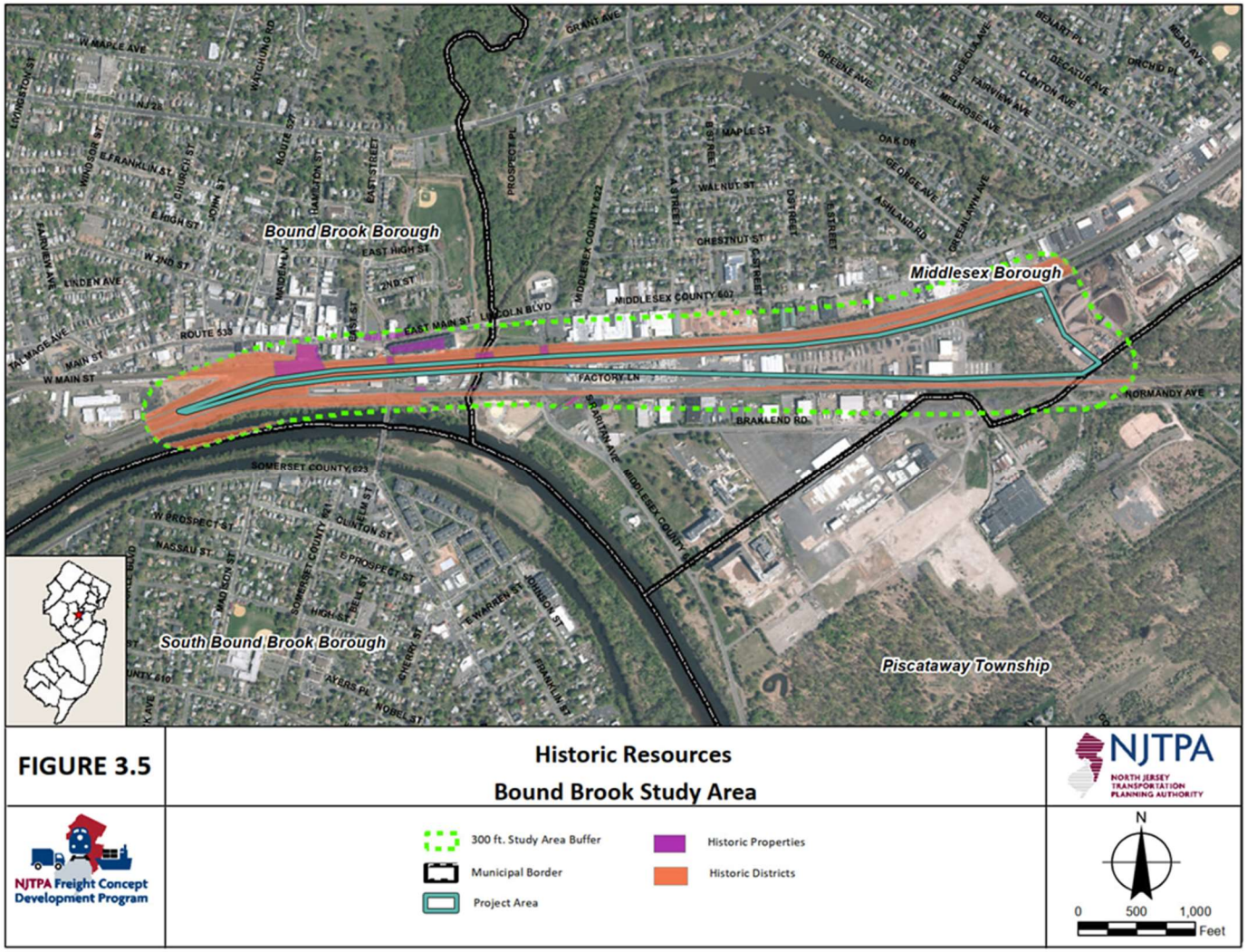
Archaeology

No registered archaeological sites are located within the study area; however, five registered archaeological sites are located within 1 mile of the study area. The study area is located in multiple railroad historic districts and also contains the Old Stone Arch Bridge, an eighteenth century structure listed in the NJR and NRHP under Criterion D, among others. The Old Stone Arch Bridge is an archaeological resource that remains intact. The study area includes critical transportation corridors, supported by the former Queens Bridge and Old Stone Arch Bridge, used since early colonial times and during the Revolutionary War.

The study area falls near the confluence of the Green Brook and Raritan River and is bisected by the Green Brook. Several pre-Contact (i.e., Native American) archaeological resources have been identified in upland and floodplain settings along the Green Brook and Raritan River. As a result, the study area is sensitive for pre-Contact, historic, industrial, and military-related archaeological resources. Prior ground disturbance and development throughout the study area may well have compromised archaeological resources. In urban areas, intact pockets of soil may still persist and such areas could have the potential to contain archaeological sites and resources that could potentially contribute to the significance of the railroad historic districts and Old Stone Arch Bridge.

A Cultural Resources Survey of the selected alternative will be necessary during the preliminary engineering phase. Should the selected alternative fall within the limits of a New Jersey Register of Historic Places Act-listed historic district or resource (New Jersey Administrative Code 7:4), 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 3.5: 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 affects 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 its 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, 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 the 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.

Impacts on 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 it 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

3.4.2.1 Data Sources

Preserved open space for both the county and the state was obtained from the NJDEP 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 Somerset or Middlesex Counties or a municipality within the study area 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 likely subject to Section 4(f).

3.4.2.2 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 project 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 apply to public resources, ball fields attached to public schools were considered constrained resources, but 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.

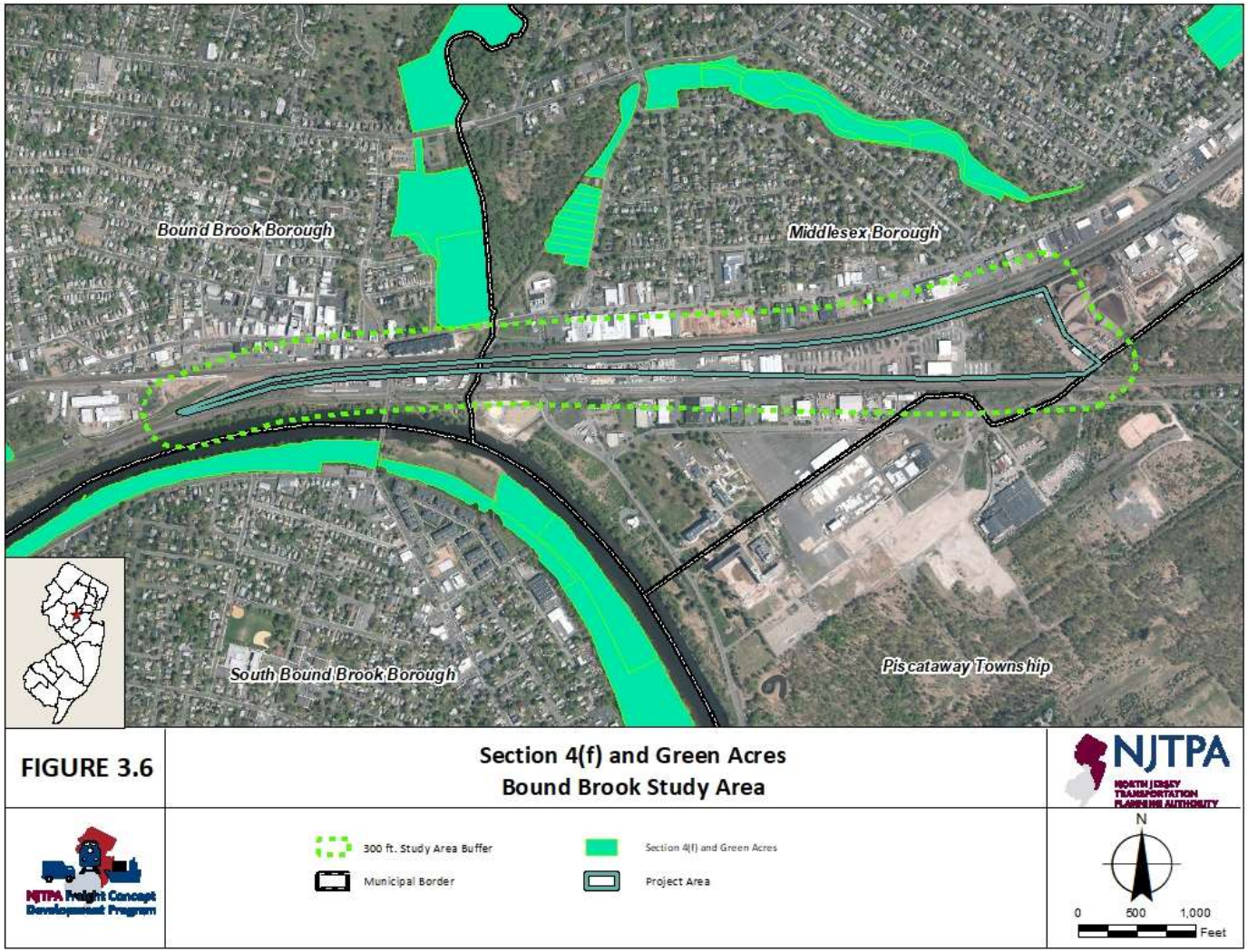
3.4.3 Results of Screening

All municipalities in the study area have preserved open space at the municipal level through the Green Acres program. The study area also includes one preserved county facility (Figure 3.6). On the ROSI, within Piscataway, the Columbus Park property (Block 75, Lot 1.01) is listed. However,

upon review, it appears that the actual park location is located beyond the study area farther east where no improvements are proposed.

If any impact on parkland or open space areas occurs in the future as part of this project, it would be subject to the Green Acres process, and if the project is federally funded, it would be subject to Section 4(f). Note that impacts can include the acquisition of easements and any shared-use agreements where a new transportation use would involve parkland (including parking lots and other hardscape areas.)

Figure 3.6: Section 4(f) and 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 (i.e., 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 project 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

3.5.2.1 Data Sources

Air quality matters are under the jurisdiction of the U.S. Environmental Protection Agency, which publishes its Green Book on air quality conformance. The Green Book identifies states, counties, and regions within the United States where the levels of criteria air pollutants exceed or have exceeded the National Ambient Air Quality Standards levels. These areas, known as non-attainment 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 National Environmental Policy Act (NEPA) are determined by comparing “noise under design-year with-project conditions” to “noise under design-year with no-build conditions.” While there are no specific thresholds for assessing this incremental project-related increase in noise under NEPA, the context and intensity of project-related noise effects are considered to determine the overall impact of the project on the ambient noise environment.

3.5.2.2 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. While direct pollutant emissions occur at the same time or place as a proposed project, indirect emissions occur at a different time or place. Because 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 offsite construction truck travel and worksite commuting. Because 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, as follows: if project-related emissions do not exceed allowable *de minimis* criteria in the year during which emissions from the project are expected to be greatest on an annual basis, the proposed project is presumed to conform to the SIP because it would not have the potential to either delay timely attainment or create new violations of the National Ambient Air Quality Standards.

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.

3.5.3 Results of Screening

Because 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, but these emissions would be self-correcting after construction ceases. Given that 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. In addition, the project would benefit localized air quality because the closing of the South Main Street at-grade crossing would reduce

queuing and emissions from idling automobile tailpipes, which emit the highest rate of criteria pollutants of local concern.

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 relocated Port Reading Secondary alignment. Although the proposed alignment would move rail traffic closer to residences north of the Raritan Valley Line, the volume of rail traffic would not be sufficient to cause a doubling of existing sound energy that consists of frequent freight and high-speed passenger traffic on both the Raritan Valley Line and Lehigh Line. As a result, the proposed Port Reading Secondary realignment is unlikely to result in the 3-dB ambient noise increase that is detectable by the human ear.

Although no impacts on 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 Wetlands and Surface Water Resources

3.6.1 Purpose

Freshwater wetland resources are an environmental constraint regulated by 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 impacts on 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 on wetlands areas if more than 1/10 of an acre (4,356 square feet) is disturbed. Project schedule and budget are therefore also better served by limiting impacts on 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

3.6.2.1 Data Sources

The environmental screening for freshwater wetland resources relied on the most recent updates of NJDEP's wetlands data. Data were 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 derived from NJDEP's 2012 Land Use/Land Cover Update (NJDEP 2015).

3.6.2.2 Analysis Methodology

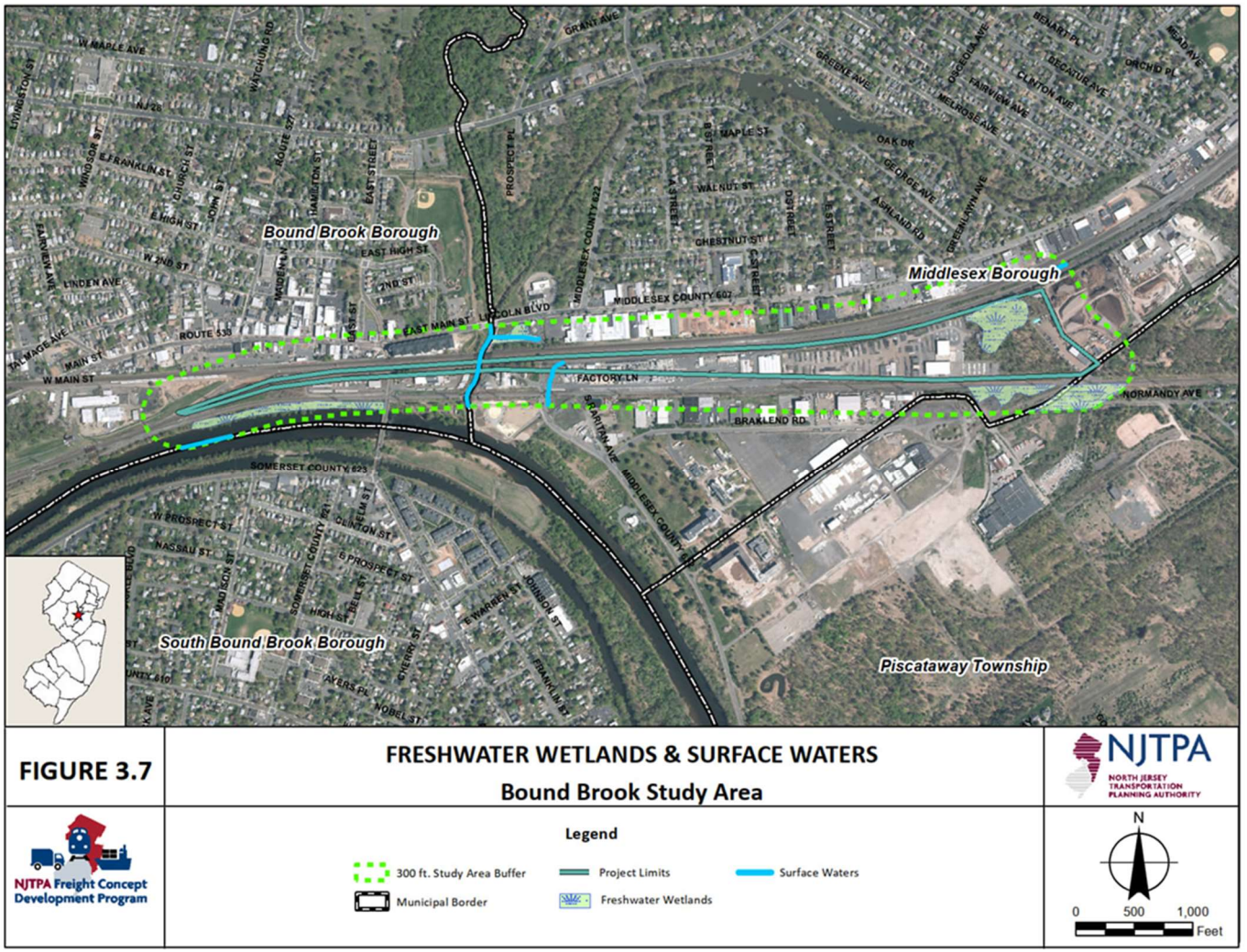
The GIS data obtained from NJDEP were displayed on a GIS base map of the study area and clipped to the study area buffer to create a total freshwater wetland dataset that contained only the data pertinent to the study area.

The screening involved only this desktop analysis and is therefore limited to wetland areas made known to NJDEP as part of its development of the 2012 Land Use/Land Cover update (NJDEP 2015). Field reconnaissance to identify new or previously undocumented wetland areas was not performed because 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 wetlands within the limits of the study area. These wetlands include deciduous wetlands in the southeastern portion of the study area, and herbaceous wetlands in the northeastern portion of the study area (Figure 3.7). NJDEP data also indicate the presence of surface water resources in the project area. These are Bound Brook, the Raritan River, and an unnamed tributary of the Raritan River. These freshwater resources are classified as FW2-NT, indicating that they are freshwater rivers subject to man-made wastewater discharges and do not contain trout.

Figure 3.7: Freshwater Wetlands and Surface Waters



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's) 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 are critical drinking water resources and also supply surface bodies of water. Identification of sole-source aquifers is important if a project is likely to involve excavation that would encounter groundwater.

3.7.2 Methodology and Scope of Screening

3.7.2.1 Data Sources

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

3.7.2.2 Analysis Methodology

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 dataset was clipped to the project area buffer and then displayed so as to differentiate between the flood zone types (Figure 3.8). The 100-year FHA is the area most likely to be inundated during a flood, or during 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 area has a 0.2 percent annual chance of flood hazard. Flood Zone X represents areas unlikely to flood. Within Zone X (defined as the area determined to be outside the 500-year flood and protected by levees from a 100-year flood), some areas are marked as Areas with Reduced Flood Risk Due to Levee. These areas are marked on the landward side of FEMA-accredited levees.

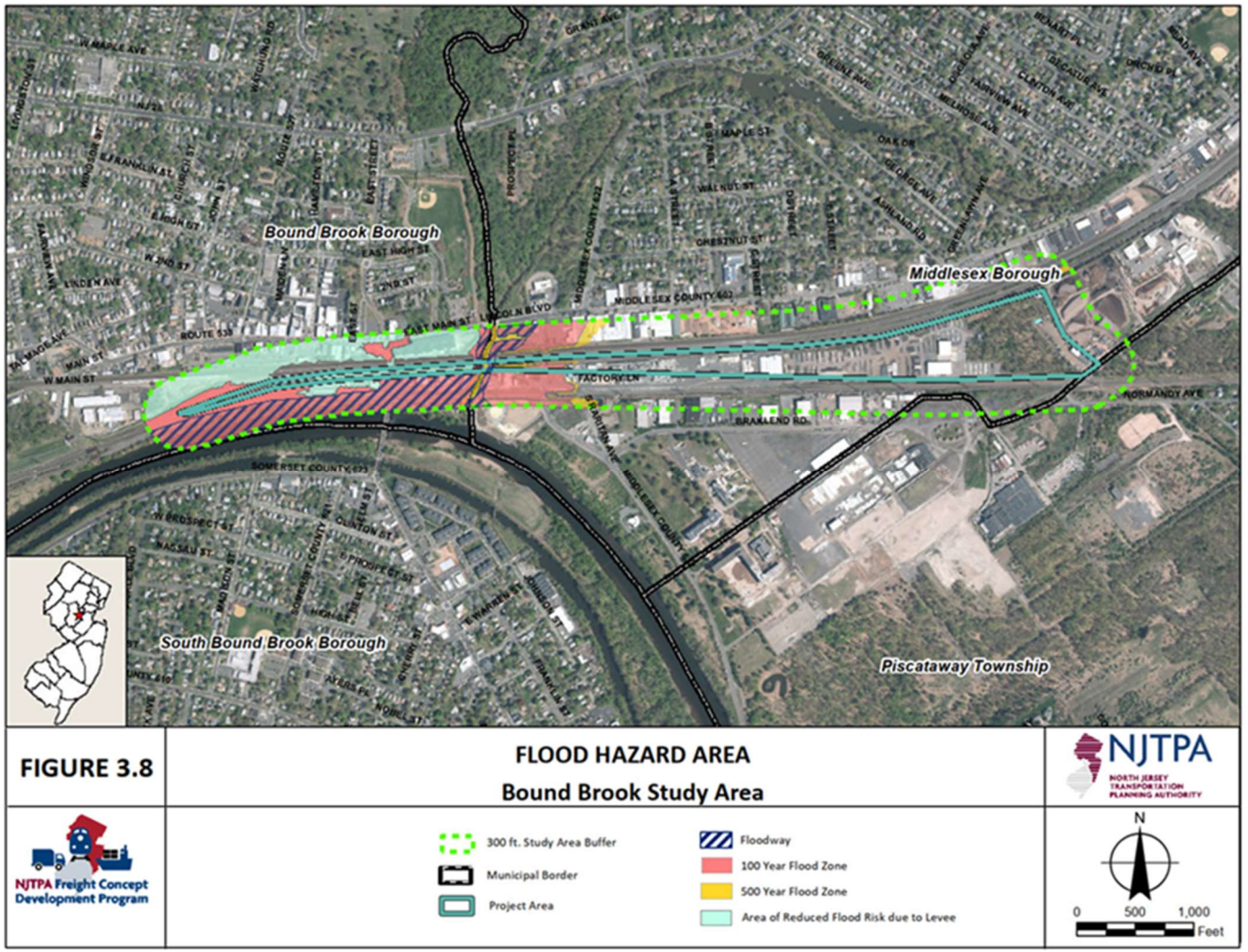
Aquifer analysis involved overlaying the study area with the NJDEP aquifer data.

3.7.3 Results of Screening

The southwestern portion of the study area is designated as a regulatory floodway. The 100-year and 500-year flood zones were identified in the central and western portion of the study area. The northwestern end of the study area was identified as an Area with Reduced Flood Risk Due to Levee. Historically, floods are a common occurrence in the study area. During large storm events, Bound Brook and other communities near the Raritan River are known to experience flooding.

The study area is not located within a sole-source aquifer as identified by NJDEP.

Figure 3.8: 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 affect the construction schedule. Threatened and endangered species are regulated by NJDEP and the U.S. Fish and Wildlife Service (USFWS). Disturbing, harassing, or taking threatened and endangered species is prohibited without a permit, and in the instance 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 on threatened and endangered species also involve disruptive construction activity during times of critical lifecycle activities of the species, such as mating and nesting.

3.8.2 Methodology and Scope of Screening

3.8.2.1 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 Piedmont Plains 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 impacts on species because not all habitat areas are inhabited by listed species.

3.8.2.2 Analysis Methodology

The 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 dataset to one that contained only the data pertinent to the study area.

The screening involved only 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 (Figure 3.9), and a species search using the USFWS's Information for Planning and Consultation (IPaC) resource list of the project ROW. These data sets provide a guide of the geographic assessment of species habitat that may contain threatened or endangered species in the 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 listed in Table 3.4 to be present in the study area.

Table 3.4: Species Potentially Present in the Study Area

Species Common Name	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	—
NJDEP Landscape Data Version 3.3 – Piedmont Plains			
Bald Eagle	*Haliaeetus leucocephalus*	—	E
Great Blue Heron	*Ardea herodias*	—	SC

Source: NJDEP Landscape Data Version 3.3; U.S. Fish and Wildlife Service IPaC information 2023
- = not applicable
T = Threatened
E = Endangered
SC = Species of Special Concern
.

Figure 3.9: 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

3.9.2.1 Data Sources

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

3.9.2.2 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 create a total dataset 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

As described in Section 3.6.3, the freshwater resources in the study area are classified as FW2-NT. Reflecting early industrial infrastructure development, the Port Reading Secondary Line runs parallel to the Raritan River through the center of the project area. Because none of the freshwater resources in the study area are C-1 streams, no 300-foot buffer is required according to the Stormwater Management Act or Flood Hazard Area Control Act.

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 purpose of alternatives development constraint analysis. Known hazardous materials locations are those that have been reported to 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.

Known hazardous materials contamination sites must be identified 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 will be acquired. Environmental regulations assign responsibility for remediation to the owner of a contaminated property, regardless of when the contamination occurred. Consequently, an alternative that 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. While reuse of brownfield sites for infrastructure ROWs typically require 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, some RAO restrictions limit the potential reuse of remediated land, presenting an opportunity for infrastructure development. Use of ROWs for 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 just an adverse constraint.

3.10.2 Methodology and Scope of Screening

3.10.2.1 Data Sources

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

- Known Contaminated Sites List (KCSL). Updated 2022. This dataset 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 Classification Exception Area (CEA) Contamination Areas. Updated 2016. This dataset 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. Updated 2016. This dataset 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. Updated 2016. This dataset uses polygons to identify historic fill covering areas of 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.

3.10.2.2 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 2007 Predecessor Study (Somerset County 2007). This buffer area was determined to be appropriate based on existing topography, infrastructure, and development patterns. It is unlikely that a practical alternative would be developed further than 0.5 mile from the alternatives initially explored in the 2007 study. The result was a polygon that contained previously described alternatives and extended 0.5 mile 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 create a total statewide dataset that contained only the data pertinent to the study area. The attribute data included with the GIS dataset were 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://njems.nj.gov/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 the 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 because 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 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 3.5.

Contaminated locations may appear in more than one dataset. For example, a location undergoing remediation involving contaminated groundwater where a groundwater CEA has been determined may be included in both the KCSL dataset and the CEA dataset. Deed-restricted properties that received an RAO may be included in both the deed-restriction dataset and the KCSL dataset. 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, 18 properties listed on New Jersey’s KCSL were located within the study area. Additionally, there are 23 Deed Notice areas and 15 CEAs. A summary of these sites is provided in Table 3.5 and known contaminated sites are shown on Figure 3.10.

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

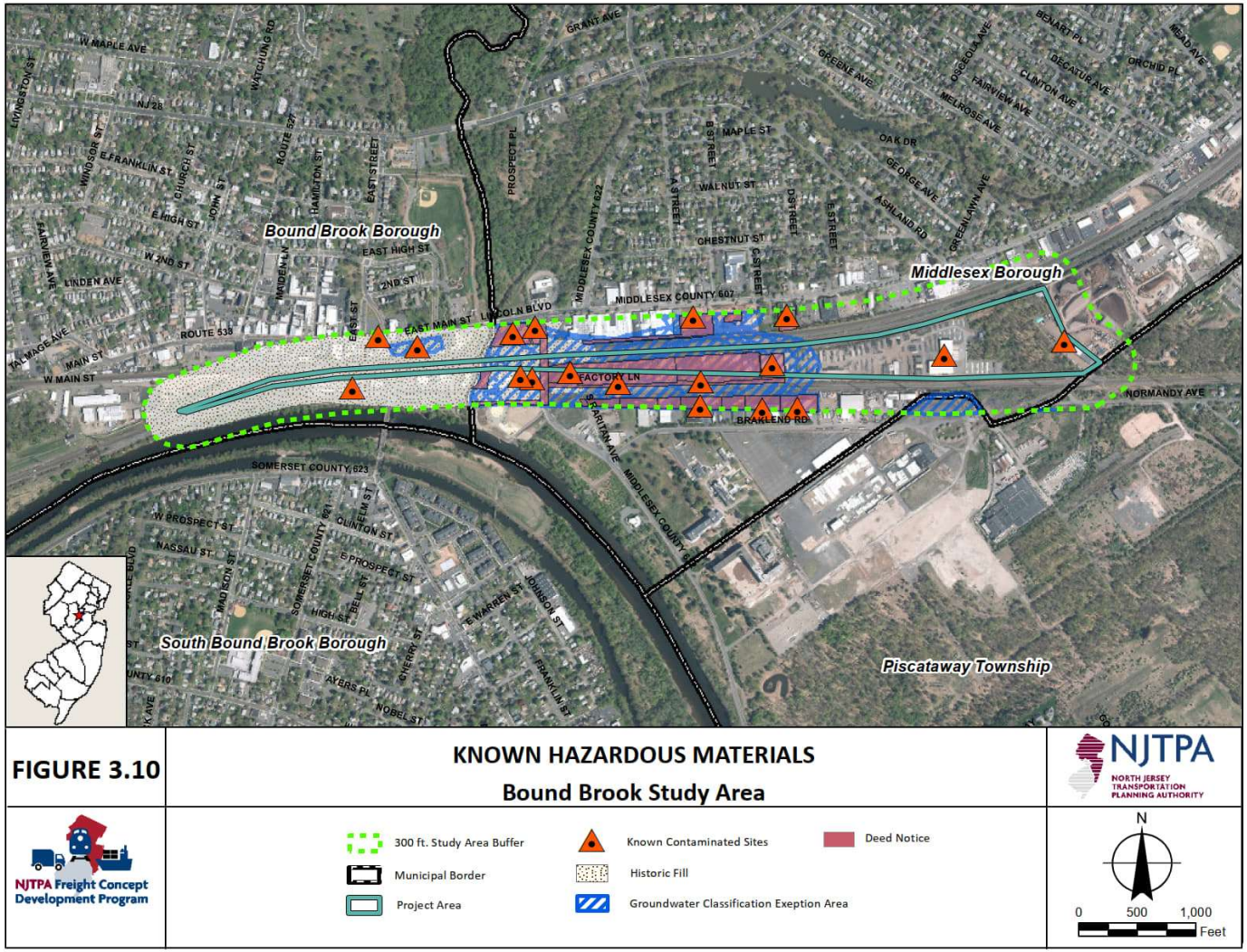
A hazardous waste screening or Phase I Site Assessment is recommended to identify any sites that may have the potential to be contaminated from construction of new or modified transportation infrastructure.

A hazardous material remediation effort is also underway within the Port Reading Secondary adjacent to River Road. Bayer CropSciences, Inc. is the responsible party and is leading this remediation effort, which will require the removal of soil beneath the existing Conrail-owned railroad. The construction of the preliminary preferred alternative may be an opportunity to help Bayer CropSciences, Inc. clean up this portion of the Conrail property.

Table 3.5: Known Contaminated Sites in the Bound Brook Study Area

Site Name	Address	PI Number	Status	Manager/LRSP	Contact
American Precision Sheet Metal Corp	84 Baekeland Ave	761817	Remedial Action Permit Approved	Not provided	Not provided
Rapid Disposal Service Inc.	92 Baekeland Ave	G000036689	Remedial Action Permit Approved	Gregory Casabona	Not provided
Koba Corp	60 Baekeland Ave	761815	Remedial Action Permit Approved	Not provided	Not provided
Media Self Storage	69 S Main St	791976	Groundwater contamination	Devang Patel	732-253-5740
Marisol Incorporated	125 Factory Ln	004333	Remedial Action Permit Approved	Mackenzie Smith	609-633-2876
Rhone Poulenc Inc.	5 Factory Ln	G000004483	Soil contamination	Robert Meehan	732-224-7066
Reagent Chemical & Research Inc.	124 River Rd	004363	Groundwater contamination	OPRA	Not provided
Rear Parking Lot at 124 River Road	River Rd	805290	Remedial Action Permit Approved	Not provided	Not provided
Reagent Chemical & Research Inc.	100 Factory Ln	761819	Remedial Action Permit Approved	Not provided	Not provided
Hood Finishing Products Inc.	7 11 Factory Ln	G000002926	Soil contamination	OPRA	Not provided
Rbh Dispersions Inc.	L-5 Factory Ln	001231	Soil contamination	Jeanette Cleary	609-633-1428
Meridia Main Station Apartments	532 E Main St	013463	Soil and groundwater contamination	OPRA	Not provided
Falgi Carting Inc. / Falgi Carting Llc	156 Baekeland Ave	G000008911	Groundwater contamination	OPRA	Not provided
M Tarantino Trucking	507 E Main St	776681	Soil contamination	OPRA	Not provided
Elizabethtown Water Co North	Lincoln Blvd	761829	Remedial Action Permit Approved	Not provided	Not provided
Delta	26 Lincoln Blvd	033936	Remedial Action Permit Approved	Not provided	Not provided
The Lofts at Middlesex	146-150 Lincoln Blvd	G000024732	Groundwater contamination	Kristin Pointin-Hahn	609-584-4171
Middlesex Mini Warehouse	212 Lincoln Ave	761827	Remedial Action Permit Approved	Not provided	Not provided

Figure 3.10: Known Hazardous Materials



3.11 Existing Utilities

3.11.1 Purpose

The goal of identifying existing utilities is to estimate the quantity and nature of utilities that would need to be relocated or protected during construction and in the site's final condition. The extent of impacts on 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

A wide array of utility infrastructure, both overhead and below ground, exists within the project area. Identifying these utilities and their locations is critical in development of alternatives that avoid or minimize utility impacts and the need for utility relocations.

3.11.3 Data Sources

The screening process employed multiple data sources to identify as many existing utilities as possible. Initially, survey team members identified several existing overhead wires/support poles, manhole covers, and other evidence of utilities during their initial site visits. The study team then reached out to known utility providers in the area (Table 3.6) 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 (e.g. drainage structures and ditches) and to verify the information supplied by the 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 herein.

3.11.4 Analysis Methodology

The data obtained from each external source were digitized and placed into a CAD basemap, which was also used to corroborate the survey data. The proposed alignments were then overlaid onto the basemap, 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.

Table 3.6: Known Utility Providers Within the Project Area

Utility Type	Owner	Contact Name	Contact Email	Notes
Gas & Electric	PSE&G	Jerry Laurizio	Jeremiah.Laurizio@PSEG.com	Locations plotted in CADD.
Telephone	Verizon	Krzysztof Ogrodnik	Krzysztof.ogrodnik@verizon.com	Locations plotted in CADD.
	AT&T	Louis J. Marello	LM5215@att.com	Markups provided. Right at Main Street (Queens Bridge), AT&T transfers from its own underground system into Verizon's conduit system. AT&T has an executed utility agreement for the job that is already in the works for the bridge.
Cable TV	Comcast	Alfred Conteh	Conteh@cable.comcast.com	Locations plotted in CADD.
	CSC TKR, LLC d/b/a Cable Vision of Raritan Valley	Elvin Rosa	Elvin.Rosa@alticeusa.com	Locations plotted in CADD.
Water	New Jersey American Water Company, Inc.	Melissa A. Hazelton	melissa.hazelton@amwater.com	Locations plotted in CADD.
Fiber	Cross River Fiber	Michael Spangler	mspangler@crossriverfiber.com	Locations plotted in CADD.
Sewer	Middlesex County Utilities Authority	Jodi Litus	JLitus@mcua.com	Locations plotted in CADD. (Only received sewer information for eastern part of the project; still need information at Main Street). MCUA has an active 10-inch-diamter cast iron force main parallel and crossing railroad tracks in project area. Locations plotted in CADD.
	Plainfield Area Regional Sewer Authority(PARSA)	Dan Madden	DMadden@jmt.com	MCUA's engineer mentioned this utility (48-inch trunk sanitary sewer near Station 31+00) in response to Utility Letter No. 2. CAD files received about existing and new projects in the vicinity. Locations plotted in CADD.
	Piscataway Township	Jorge Casacuberta	jcasacuberta@piscatawaynj.org	Piscataway Township has begun with the discussion of upgrading the 36-inch Piscataway Basin to a 48-inch pipe. The township would like to perform the work at the same time as the railroad work so there would be less environmental impact.

d/b/a = doing business as
MCUA = Middlesex County Utilities Authority
NTS = not to scale

3.11.5 Results of Screening

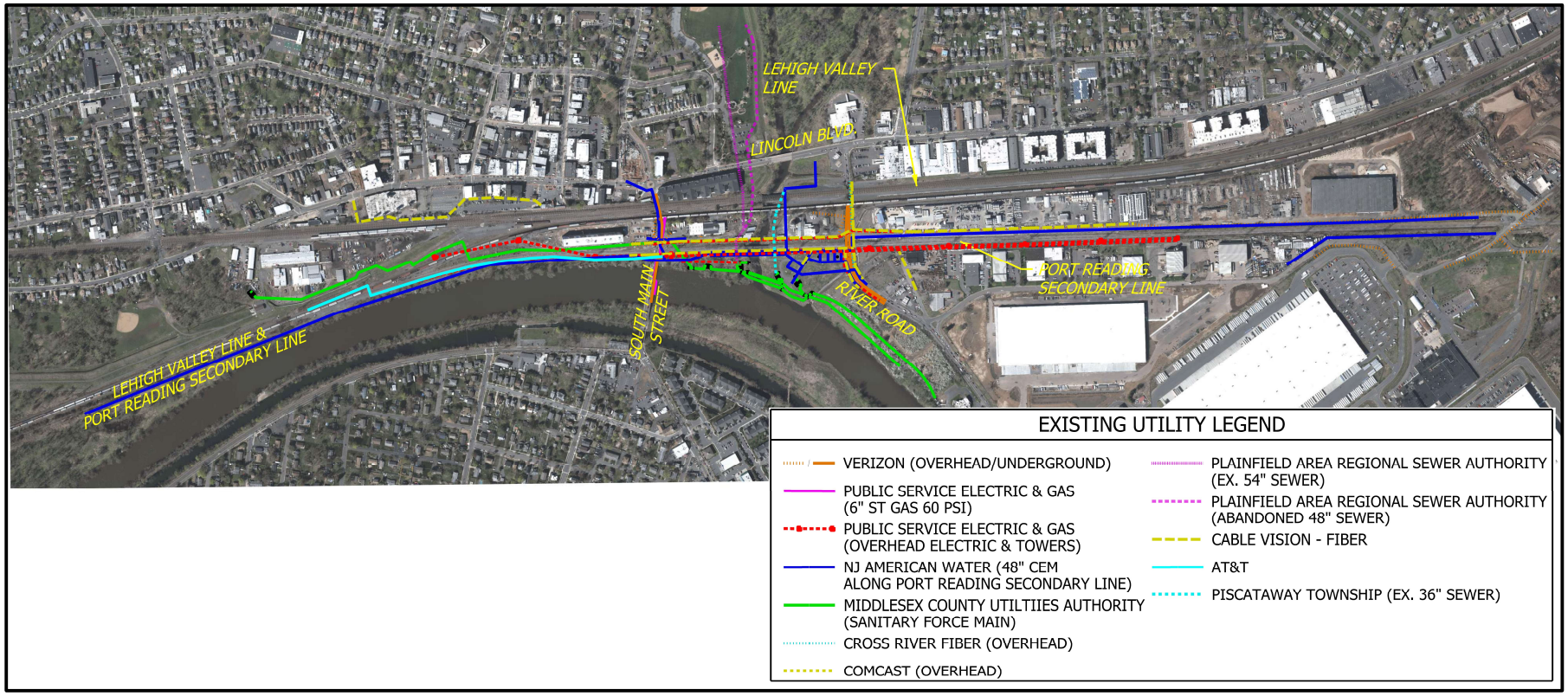
Numerous utilities are present within the study area, both above- and below-ground. Industrial facilities like those present within the study area are often unable to continue operating during cessations in utility service. As such, the project must ensure that industrial facilities remain operational during track construction and maintenance and rail operations. Accommodations can include requiring utility work to be performed during off-hours or running a secondary "bypass line" that ensures continued service to the industry.

In addition to the various utility types, there are multiple utility providers in the Bound Brook study area. Each provider typically has its own design standards and construction procedures that need to be followed.

This screening is intended to be preliminary and may not include all utilities present within the study area (particularly where smaller/private service lines are concerned). However, this screening provides an order-of-magnitude estimate of the utility work required for each alternative. No considered alternative is without utility conflict; therefore, construction of any of the alternatives will require the engagement of multiple utility providers and the implementation of multiple sets of design standards.

Existing utilities are depicted on Figure 3.11.

Figure 3.11: Existing Utilities



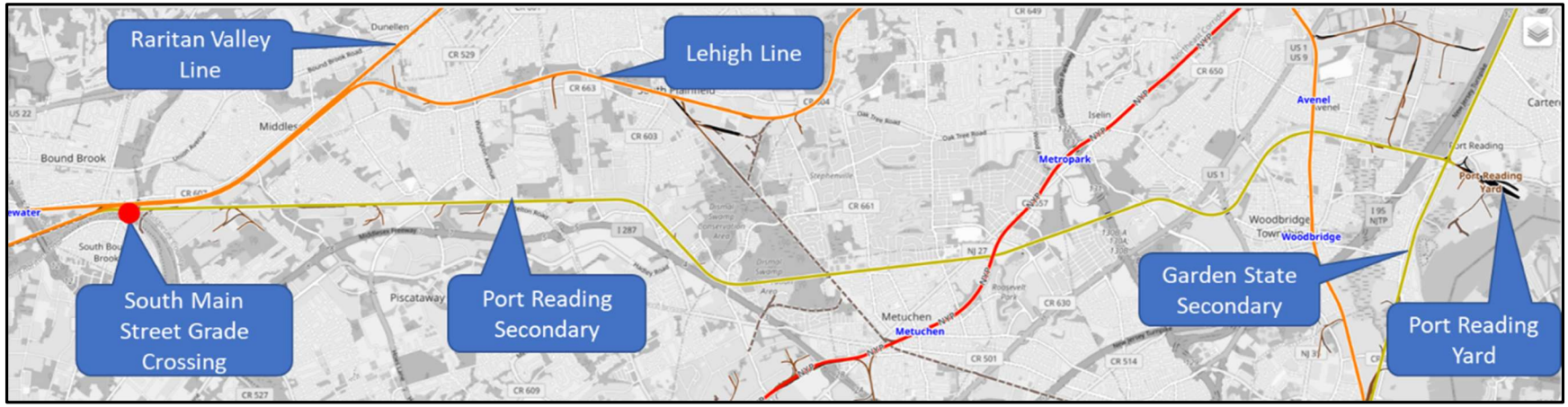
4. INFRASTRUCTURE ANALYSIS

4.1 Rail Infrastructure – Port Reading Secondary and the Lehigh Line

The Port Reading Secondary, also known as the Port Reading Branch runs 16 miles (25.7 km) from a junction with the Lehigh Line west of South Main Street in Bound Brook, New Jersey, to Port Reading, New Jersey, on the Arthur Kill. The line is owned and operated by Conrail Shared Assets Operations.

Conrail operates up to six trains per day on the Port Reading Secondary. Very little of this traffic actually runs to and from Port Reading Yard. The line primarily carries ethanol and crude oil (more than 10 million gross tons annually) handed off from Norfolk Southern running along the Port Reading Secondary to the Garden State Secondary (formerly known as the Chemical Coast Line), with deliveries to refineries and port facilities from Linden to Perth Amboy. A small volume of carload freight runs on the Port Reading Secondary for on-line customers, but this makes up only a small percentage of the daily traffic on the line. Due to the configuration of the ExpressRail terminal at Port Elizabeth, the rail operators find it to be more efficient for inbound traffic (eastbound) to use the Port Reading Secondary, with the exiting movements (westbound) using the Lehigh Line. Conrail currently runs up to two eastbound intermodal trains daily to ExpressRail. After the completion of the Port Newark Southern Connector (being advanced by the PANYNJ), intermodal traffic on the Port reading Secondary is expected to increase because the new route avoids the existing congestion on the Lehigh Line within Oak Island Yard. Figure 4.1 shows a schematic of the Port Reading Secondary.

Figure 4.1: Schematic of Port Reading Secondary



4.2 Design Standard Compliance/ Substandard Features

4.2.1 Rail Design Standards

The owner of the Port Reading Secondary, Conrail, maintains railroad design standards that must be adhered to for any project that requires modification of the Conrail-owned rail infrastructure. Conrail follows American Railway Engineering and Maintenance of Way Association (AREMA) standards for design of trackage and undergrade bridges. Conrail also maintains Standard Maintenance of Way Plans and specifications that follow Norfolk Southern standards.

For any construction project that has the potential to impact Conrail's property or operations, applicants are required to submit a Public Improvements Project application. Public Improvement Projects generally include the following project types:

- Highway rail grade crossings
- Bridges over the railroad
- Bridges carrying the railroad
- Adjacent or parallel roads and facilities
- Stormwater management, flood control, and open-flow drainage
- Bicycle/pedestrian trails and crossings
- Painting overhead bridges
- Bridge beautification and landscaping

For horizontal clearance to utility poles, the distance required is measured from the center of track to the nearest conflicting surface (e.g., 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 or influence zone and designed to withstand AREMA Cooper E-80 Load Case. This is a historical 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.

In addition, underground casing pipe 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.

4.2.2 Utility Standards

Typically, railroads will not permit the construction of track with substandard utility clearances. Each considered alternative for elimination of the at-grade crossing will likely require the relocation or alteration of at least one existing utility line.

There are several for-profit utility providers within the study area (Section 3.11.3), as well as public utilities such as MCUA and the Plainfield Area Regional Sewer Authority and Piscataway Township, all of which operate and maintain public sanitary sewer systems within the project area. Each provider has its own requirements for clearances above or below its lines, as well as any required protections or encasements. Unless specific utility location agreements exist between Somerset or Middlesex Counties 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 the work and 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.

5. PUBLIC AND STAKEHOLDER INVOLVEMENT

Public involvement in the transportation planning process ensures 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. Planners must 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 integrate 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 D.

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, as well as from local advocacy, cultural, historical, environmental, business, neighborhood, 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 coordination 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. While not a codified requirement in all grant programs, local support enhances the attractiveness and potential success of any grant application, particularly if the program from which funding is sought is competitive.

Coordination was conducted with officials from the following:

- Borough of Bound Brook
- Borough of South Bound Brook

- Somerset County
- Middlesex County
- Middlesex Borough

Coordination with elected officials and other municipal representatives was continuous throughout the process. Efforts centered around two formal local officials briefings, while other separate meetings with individual municipalities occurred throughout the study.

To increase the odds that local officials would be able to attend, a Doodle Poll was distributed in advance of each formal briefing to representatives of Bound Brook, Middlesex Borough, South Bound Brook, Middlesex and Somerset County. The poll solicited the best date and time for each attendee.

In the beginning of the study, on April 29, 2021, the project team met with the Bound Brook Mayor's Office to introduce the project and answer any immediate questions.

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

- Bound Brook
- South Bound Brook
- Somerset County
- Middlesex County

On August 12, 2022, a presentation was delivered to representatives of Middlesex County. The presentation provided a project overview and highlighted the issues that have emerged in the course of the study.

The second local officials briefing was held on January 17, 2023, via Microsoft Teams. The municipal representatives were reintroduced to the project, presented with the preferred alternatives for improvements to the at-grade crossing on South Main Street for the Port Reading Secondary Branch, 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 PPA. The meeting was attended by representatives of the following:

- Somerset County

- Middlesex County
- Bound Brook

Following the local officials briefing, separate briefings were held with both South Bound Brook and Middlesex Borough to review the project materials pertinent to the municipalities. South Bound Brook's briefing was held on January 20, 2023 with the Borough's Administrator. Middlesex Borough's briefing occurred on January 24 and was attended by the Borough's Mayor, Interim Administrator, Department of Public Works superintendent, and Council President.

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

5.4 Property Owner Stakeholder Coordination

A search of local parcel data was conducted to identify the properties and property-owners potentially affected by the alternatives evaluated for the elimination of the at-grade crossing. The project location and impacted parcels are depicted on Figures 5.1 and 5.2 for Bound Brook and Middlesex Borough, respectively. A table of parcel ownership by block and lot is presented in Appendix F.

The surrounding parcels are mostly industrial with some urban or built-up land, bodies of water, wetlands and wooded land. Several existing industrial and commercial developments were identified as being potentially affected by one or more of the alternatives considered. These developed properties include the following:

- Meridia
- Reagent Chemical
- Handle with Care
- PSE&G

Multiple attempts were made to reach the owners of the properties identified to discuss their potential concerns. Individual meetings were held for interested property owners. Issues raised by the owners were considered in the development and evaluation of the realignment alternatives.

Communication with Conrail was continuous throughout the study.

Figure 5.1: Potentially Affected Parcels – Bound Brook

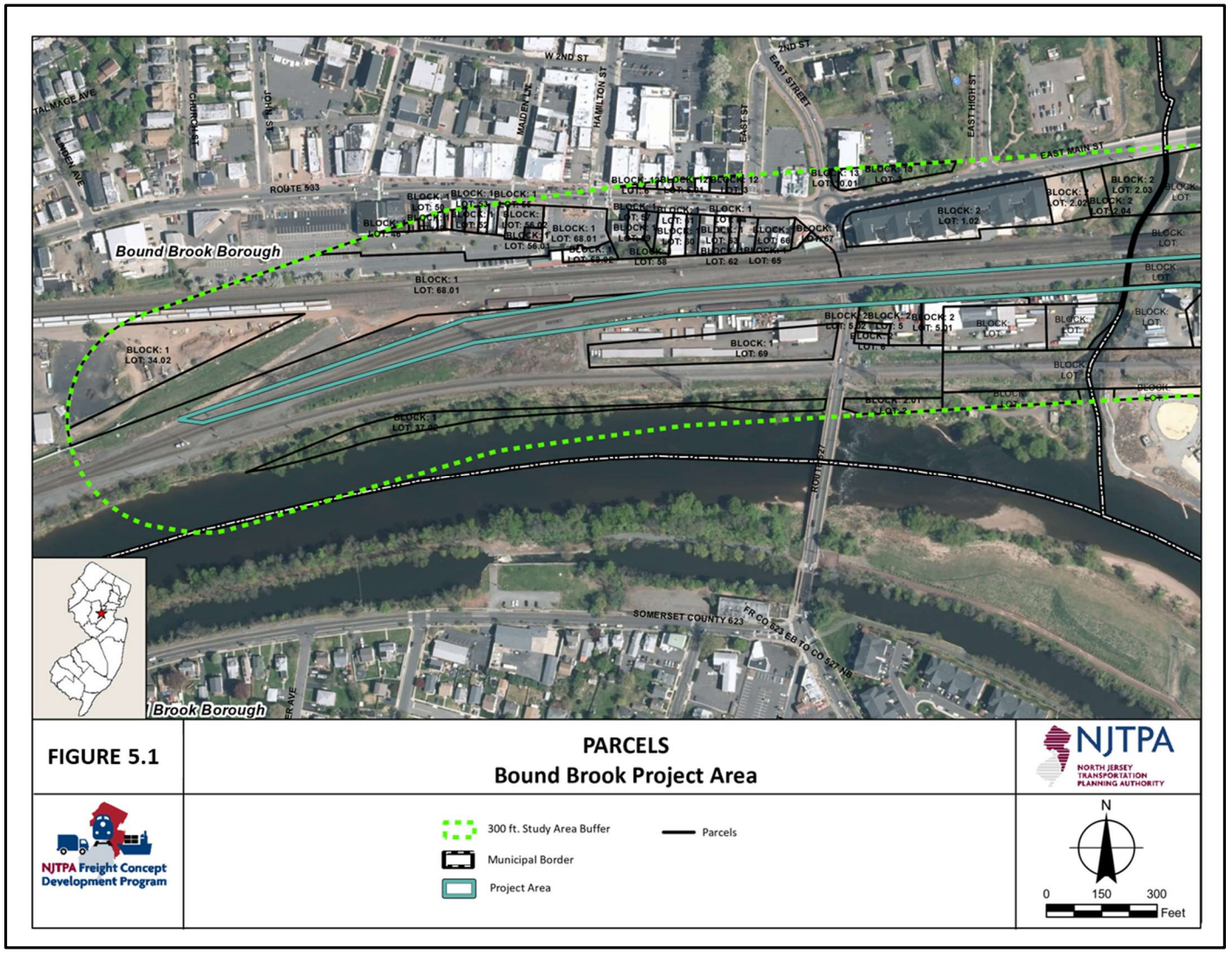
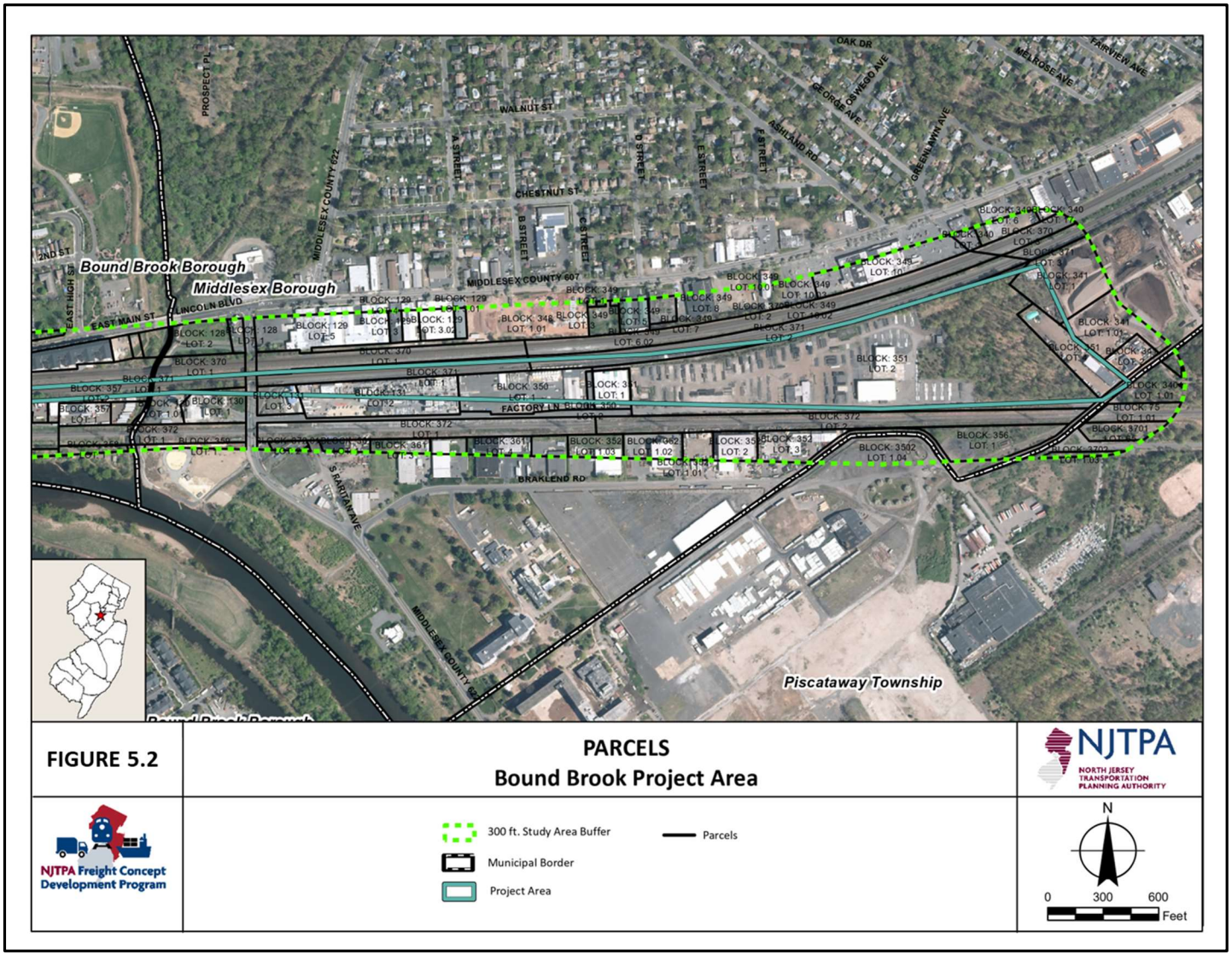


Figure 5.2: Potentially Affected Parcels – Middlesex Borough



5.5 Public Meeting No. 1

As defined in the PIAP, two public meetings were held to present project information to the public. Before the first public meeting, the team launched the project website (https://www.southmainstreetgradecrossing.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.

5.5.1 First Public Meeting

The first public meeting was held virtually on September 13, 2021 via GoToMeeting from 6:30 to 8 p.m. The purpose of the meeting was to introduce the project to the residents of the boroughs of Bound Brook, South Bound Brook, and Middlesex and other interested parties, solicit their feedback, and respond to questions on a variety of items.

The public was informed of the meeting via press release, mail, email, project website, and social media. The meeting was promoted via a legal advertisement in *The Star-Ledger* and *Daily Record* and in English and Spanish in the *Americano*. A flyer with the meeting details was created in English and Spanish and shared with the local municipalities. Somerset County was asked to distribute the flyer to residents via its communications channel.

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

- The draft Purpose and Need Statement
- Project background and 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. Twenty-two participants attended the meeting, which included project team members, local officials, and residents.

5.5.2 Public Meeting No. 2

The second public meeting was held virtually on March 16, 2023, at 6:30 p.m., via GoToMeeting, to reintroduce the interested members of the public to the project and to garner additional feedback and comments.

The public was informed of the meeting via press release, mail, email, project website, and social media. Legal ads for the meeting were placed in the *Star Ledger, Courier News* and *Americano* in both English and Spanish. Before the meeting, the project website was updated. Updates included enhancing 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. Somerset County was asked to distribute the flyer to residents via its communications channel.

The second public meeting featured a formal presentation that included:

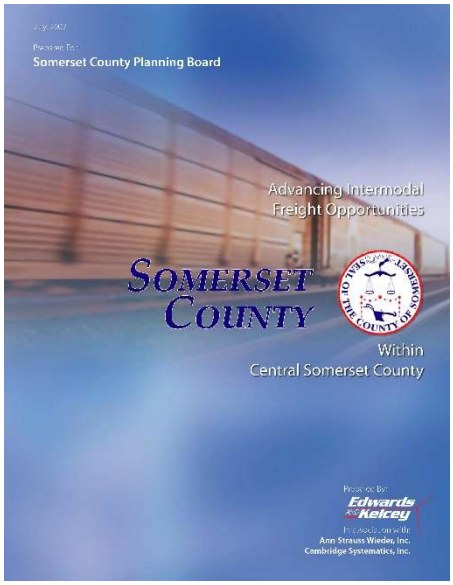
- Project overview
- Environmental constraints
- Stakeholder engagement
- Alternatives scoring and selection of preliminary preferred alternative
- Next steps

Following the presentation was an open questions and comments segment with the public participants. Local officials and municipal representatives were in attendance and showed support of the project. A Spanish interpreter was present for non-English, Spanish-speaking attendees. Twenty-seven participants attended the meeting, which included project team members, local officials, and residents.

Copies of the public meeting presentation materials are presented in Appendix G.

6. CONCEPT DEVELOPMENT

6.1 Previously Developed Alternatives



The 2007 Predecessor Study (Somerset County 2007) examined the movement of intermodal freight to and from the county and identified several issues related to the freight rail infrastructure within the county that required improvement. One of these issues was the at-grade crossing of the Port Reading Secondary over South Main Street in Bound Brook. The study included development of a formal Problem Statement for this need, as follows:

The Port Reading Secondary runs along the northern side of the Raritan River, crossing South Main Street at-grade. South Main Street is one of a limited number of roadways crossing the Raritan River. Immediately to the north of the crossing, South Main Street forms the southern leg of the roadways comprising the modern round-about in the Bound Brook Town Center. When trains cross, the roadway is closed to automobile traffic, resulting in significant recurring roadway congestion that virtually gridlocks downtown Bound Brook for various discrete periods on a daily basis. This congestion is an adverse impact to the downtown and regional mobility directly attributable to the at-grade crossing operation.

Elimination of this grade crossing presents a number of challenges. Proximity to the Raritan River, the vertical and horizontal alignment of South Main Street, and the existing rail bridge which carries the Raritan Valley line and the Lehigh Line over the roadway limit the options for realigning or relocating the roadways as a solution. However, the adjacency of the other rail lines traversing the area offers an opportunity to realign the Port Reading Secondary as a long-term solution.

Several conceptual rail line realignments have been investigated as potential long-term solutions for elimination of this rail grade crossing. While the specific alignments differ, the common component of each concept is the rerouting of trains utilizing the Port Reading Secondary to the tracks currently crossing the existing rail bridge to the west of the bridge, connections currently exist to reroute the Port Reading trains onto the Lehigh Line. East of the bridge, existing industries rely upon the rail service via the Port Reading Secondary. Therefore,

creating a means of routing the diverted trains back to the Port Reading Secondary is the primary focus of each of the concepts.

General realignment concepts envisioned in the 2007 Predecessor Study are presented on Figure 6.1. These concepts and additional alternatives were investigated in greater detail as part of this current study. Descriptions and assessments of these alternatives are presented in Section 6.3.

Figure 6.1: Preliminary Alignment Concepts from the 2007 Predecessor Study

Source: Somerset County 2007

6.2 Alternatives Screening Process

As ideas and alternative concepts were generated, a qualitative fatal-flaw screening 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 in this section.

The purpose of the fatal-flaw screening was to identify 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 compared to other alternatives. The criteria used to evaluate each alternative are described in more detail in the following subsections.

6.2.1 Meets Project Purpose and Need

This 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.

6.2.2 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.

6.2.3 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, cause delays on the rail line, or disrupt existing operations. Benefits may include enhanced operational efficiency through reduced rail or truck travel times.

6.2.4 Passenger Rail Operations Impacts/Benefits

Passenger rail operational impacts would significantly reduce the level of service on the passenger route or disrupt existing operations. Benefits may include avoiding or limiting potential impacts of freight rail service on existing or planned passenger operations (particularly where tracks are shared).

6.2.5 Adjacent and Proximate Land Use Impacts/Benefits

Land use impacts 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.

6.2.6 Historic and Cultural Resources Impacts/Benefits

New Jersey is home to an array of historic and cultural resources. Impacts to historic and cultural resources include 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 actions that could allow a buried resource to be uncovered or improve public access to the resource.

6.2.7 Community Profile and Environmental Justice/Title VI Impacts/Benefits

The U.S. Environmental Protection Agency 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 Environmental Justice (EJ) Communities would be disproportionately affected by a proposed action.

6.2.8 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.

6.2.9 Floodplains and Aquifers Impacts/Benefits

This criterion examines the potential impacts on 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 on 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 resulting from 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 on the existing floodplains, wetlands, and aquifers (both during and after construction).

6.2.10 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 species are regulated by NJDEP and USFWS. Disturbing threatened and endangered species or their habitat can create significant permitting issues for advancing a project. Accordingly, an alternative's impact on threatened and endangered species and their habitat is a significant criterion for scoring and ranking alternatives.

6.2.11 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).

6.2.12 Hazardous Materials Impacts/Benefits

Because rail operation developed before the need for environmental stewardship was widely recognized, rail corridors typically have some level of ground contamination within the ROW. Past use of historic fill to construct the ROW can also be a contributing factor to contamination. This criterion focuses on avoidance of known contaminated properties to the greatest extent possible in the selection of a PPA.

6.2.13 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 on air quality in the area or noise levels at sensitive land uses.

6.2.14 Community Impacts/Benefits

This criterion considers potential impacts and 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 noise levels, safety, and mobility for area residents and workers.

6.2.15 Safety Impacts/Benefits

This criterion ranks the improvement to public safety expected to accrue to implementation of the alternative.

6.2.16 Utility Impacts/Relocation Requirements

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

6.2.17 Project Independence – Creates or Eliminates Need for Other Infrastructure Projects

This criterion addresses whether an alternative would be dependent upon another improvement being advanced by other parties and projects, or if the alternative can be advanced without consideration of other projects in the area.

6.2.18 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

As a starting point in the development of alternatives for the elimination of the Port Reading Secondary at-grade crossing of South Main Street, three primary categories of improvement alternatives were investigated:

- **Go Over** – Elevate the roadway or the rail line to eliminate the at-grade crossing.
- **Go Under** – Depress the roadway or the rail line to eliminate the at-grade crossing.
- **Go Around** – Realign roadway or rail line to eliminate the at-grade crossing.

Fourteen alternatives were identified, evaluated, and ranked to identify the alternative for recommendation as the PPA. During the VE investigation (refer to Section 6.6), an independent team reviewed the alternatives and considered additional options which may have been overlooked. The VE investigation identified one additional alternative for consideration. The full range of alternatives developed and evaluated are listed in Table 6.1 with a summary of each alternative provided in the following sections.

Table 6.1: Summary of Alternatives

Alternative	General Description
1.0	Replaces the existing railroad crossing with a grade separation railroad over the roadway.
2.0	Replaces the existing roadway with a grade separation roadway under the railroad.
3.1	Bypass using the Lehigh Line to eliminate a grade crossing and then constructing a realigned Port Reading Secondary track. The new alignment will include a No. 15 Turnout on Lehigh Line that includes a horizontal reverse curve alignment, with new RR Bridge over River Road and Factory Lane and tie-in to existing Port Reading Secondary Line with new No.15 Turnout or Simple curve.
3.2	Bypass using the Lehigh Line to eliminate a grade crossing and then constructing a realigned Port Reading Secondary track. Similar to Alternative 3.1 but having the tie-in in a different location. The new alignment will include a No. 15 Turnout on Lehigh Line that includes a horizontal reverse curve alignment, with new railroad bridge over River Road and Factory Lane. This also includes a tie-in to existing Port Reading Secondary Line with a new No.15 Turnout or Simple curve.
3.3	Bypass using the Lehigh Line to eliminate a grade crossing and then constructing a realigned Port Reading Secondary track. Assuming inactive Factory Lane, new No. 15 Turnout on existing Lehigh Line track with sharp curve tie-in as soon as possible with reverse curve to existing Port Reading Secondary Line with simple curve or Turnout. This option incorporates a grade crossing at Factory Lane.
3.4	Bypass using the Lehigh Line to eliminate a grade crossing and then constructing a realigned Port Reading Secondary track. This will be located close to east end property to get sufficient distance to avoid stiff vertical grade, achieve min. clearance over railroad bridge and stay within Conrail design criteria of max grade 1.15%.
3.5	Bypass using the Lehigh Line to eliminate a grade crossing and then constructing a realigned Port Reading Secondary track. A tie-in to the existing Lehigh Line Track on the existing curve with a new No.15 turnout, including a horizontal sharp reverse curve alignment over retention pond with an assumed realigned Factory Lane. The Tie-in would be as soon as possible to existing Port Reading Secondary Track with a New No.15 turnout before crossing.
3.6	Bypass using the Lehigh Line to eliminate a grade crossing and then constructing a realigned Port Reading Secondary track. A tie-in to the existing Lehigh Line Track on the existing curve with a new No.15 turnout, including a horizontal sharp reverse curve alignment over a retention pond with a new railroad crossing over Baekeland Avenue. The Tie-in would be to the existing Port Reading Secondary Track with New No.15 turnout
4.1	Bypass with a new track parallel to the Lehigh Line which would eliminate the grade crossing. A new siding track offset by 14 feet and parallel from the existing Lehigh Line track is proposed. The tie-in would occur west to the existing Lehigh Line Track with a New No.20 turnout, including a horizontal reverse curve alignment. This would also include a new railroad bridge over South Main Street and the Green Brook. The anticipated tie in would be to the existing Port Reading Secondary Line with a new No.15 turnout on east end.
4.2	Bypass with a new track parallel to the Lehigh Line which would eliminate the grade crossing. A new siding track offset by 14 feet and parallel from the existing Lehigh Line track is proposed. The tie-in would occur west to the existing Lehigh Line Track with a new No.20 turnout, including a horizontal reverse curve alignment. This would also include a new railroad bridge over South Main Street, the Green Brook River, River Road and Factory Lane. The anticipated tie in would be to the existing Port Reading Secondary Line with a new No.15 turnout.

Alternative	General Description
4.3	Bypass with a new track parallel to the Lehigh Line which would eliminate the grade crossing. A new siding track using new No.20 turnout on existing Port Reading Secondary line is proposed. The new line would be offset 20 feet and parallel from the existing Lehigh Line track to consider constructability, horizontal reverse curve alignment, and a new railroad bridge over South Main Street and the Green Brook River crossing. The anticipated tie in would be to the existing Port Reading Secondary Line with a new No.20 turnout on east end.
4.4	Bypass with a new track parallel to the Lehigh Line which would eliminate the grade crossing. A new siding track offset 20 feet and parallel from the existing Lehigh Line track is proposed. The tie in would occur west to the existing Lehigh Line Track with a new No. 20 turnout, including a horizontal reverse curve alignment. This would also include a new railroad bridge over South Main Street and the Green Brook River and tie in to the existing Port Reading Secondary Line with a new No.20 turnout.
4.5	Bypass with a new track parallel to the Lehigh Line which would eliminate the grade crossing. A new siding track offset by 20 feet and parallel from the existing Lehigh Line track is proposed. The tie-in would occur west to the existing Port Reading Secondary Line with a new No.20 turnout including a horizontal reverse curve alignment. This would also include a new railroad bridge over South Main Street and the Green Brook River. The anticipated tie in would be to the existing Port Reading Secondary Line with a new No.20 turnout.
4.6	Bypass with a new track parallel to the Lehigh Line which would eliminate the grade crossing. A new siding track offset by 20 feet and parallel from the existing Lehigh Line track is proposed. The tie-in would occur west to the existing Port Reading Secondary Track with a new No.20 turnout, including a horizontal reverse curve alignment. This would also include a new railroad bridge over South Main Street and the Green Brook River. This would also include the relocation of an existing electrical transmission tower.

Any alternative advanced to construction would require Conrail's approval and support. Conrail seeks to maintain service to the existing customers along the Port Reading Secondary during construction. Alternatives that could not be constructed while maintaining service were considered fatally flawed. The following sections detail the alternatives and key considerations in their evaluation and scoring. Maps of each alternative considered are presented in Appendix H.

6.3.1 Alternative 1.0

6.3.1.1 Overview

Alternative 1.0 replaces the existing railroad crossing with a grade separation of the railroad over the roadway.

6.3.1.2 Key Features & Considerations

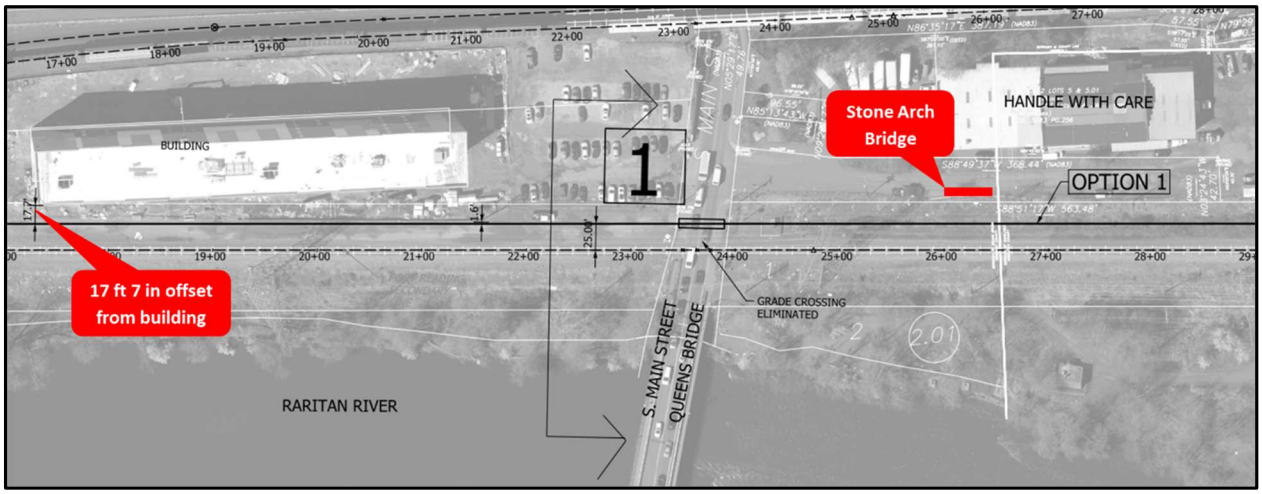
This new alignment would begin approximately 400 feet east of the existing interlocking connecting the Port Reading Secondary to the Lehigh Line. A new connection would be constructed at this point using a No. 20 turnout which would preserve the existing 35-mile-per-hour (mph) design speed of the line. The new alignment would begin diverging from the existing

alignment to create an offset of approximately 25 feet. This offset is required to allow continued rail operations during construction.

In conformance with Conrail design criterion of a maximum grade of 1.15 percent (with a maximum grade of 1.0 percent preferred), elevating the rail line to fly over South Main Street and provide a minimum vertical clearance over the roadway of 13 feet, 1 inch (matching the existing clearance beneath the Lehigh Line) would require construction of approximately 1,400 feet of new track (most of which would be supported on structure or on retaining wall contained fill) west of South Main Street. An additional 2,100 feet of new track (also a combination of structure and retaining wall contained fill) would be constructed east of South Main Street to form a new connection back to the existing Port Reading Secondary. This alignment would require a new bridge crossing over the Green Brook and a new bridge crossing over River Road.

The required offset of the new track from the existing track would create an encroachment into the Self-Storage building property, with the track coming within 18 feet of the western end of the building. Of even greater concern, the offset would bring the new rail alignment within 25 feet of the historic Old Stone Arch Bridge which would be considered a significant detrimental effect on this historic structure. Constraints considered to be fatal flaws are depicted on Figure 6.2.

Figure 6.2: Alternative 1.0 ROW and SHPO Implications



6.3.1.3 Fatal Flaws

This alternative is considered fatally flawed. The need to construct the new alignment off-set from the existing alignment to allow continuation of rail operations during construction would

cause the new alignment to encroach into the Self-Storage property with the center of track being off-set from the building by less than 18 feet. The off-setting of the new alignment would also bring the rail to within 25 feet of the historic Stone Arch Bridge which is considered a detrimental effect on this important historic structure.

6.3.2 Alternative 2.0

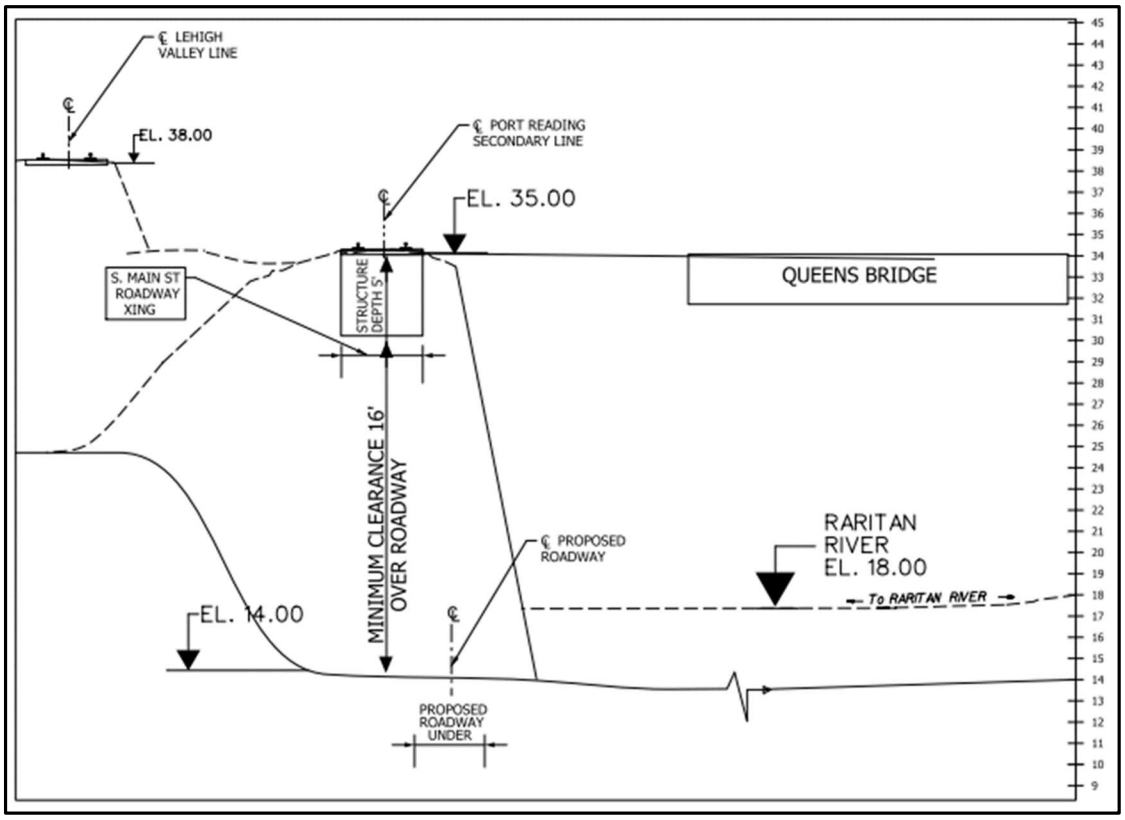
6.3.2.1 Overview

Alternative 2.0 eliminates the at-grade crossing by depressing South Main Street beneath the existing rail line.

6.3.2.2 Key Features & Considerations

Beginning at the bottom of the sag curve of South Main Street beneath the Lehigh Line bridge, the roadway would be further depressed as it moves south towards the Raritan River. The roadway would be depressed a minimum of an additional 6 feet (ideally an additional 9 feet) to create sufficient clearance beneath the rail line. This additional depression would create space for a new structure supporting the existing rail line with a depth of structure of approximately 6 feet. Depressing the roadway to this extent would place the surface of the roadway below the typical surface elevation of the Raritan River. In addition, the Queens Bridge would require replacement to match the elevation of the roadway at the northern end of the bridge. The fatal flaws associated with Alternative 2.0 are depicted on Figure 6.3.

Figure 6.3: Alternative 2.0 Surface Water Elevation Issue



6.3.2.3 Fatal Flaws

This alternative is considered fatally flawed. Depressing the roadway to provide sufficient clearance beneath the rail line to accommodate roadway traffic on South Main Street would place the surface of the roadway below the surface water elevation of the Raritan River.

6.3.3 Alternative 3.1

6.3.3.1 Overview

Alternative 3.1 would create a bypass of the at-grade crossing keeping trains on the Lehigh Line to cross South Main Street on the existing Lehigh Line bridge, with a new connection back to the existing Port Reading Secondary alignment constructed east of the Green Brook.

6.3.3.2 Key Features & Considerations

Alternative 3.1 consists of bypassing the at-grade crossing by maintaining train movements on the Lehigh Line from the existing connection of the Port Reading Secondary to the west to a point approximately 125 feet east of the bridge over South Main Street. At this point, a new No. 15

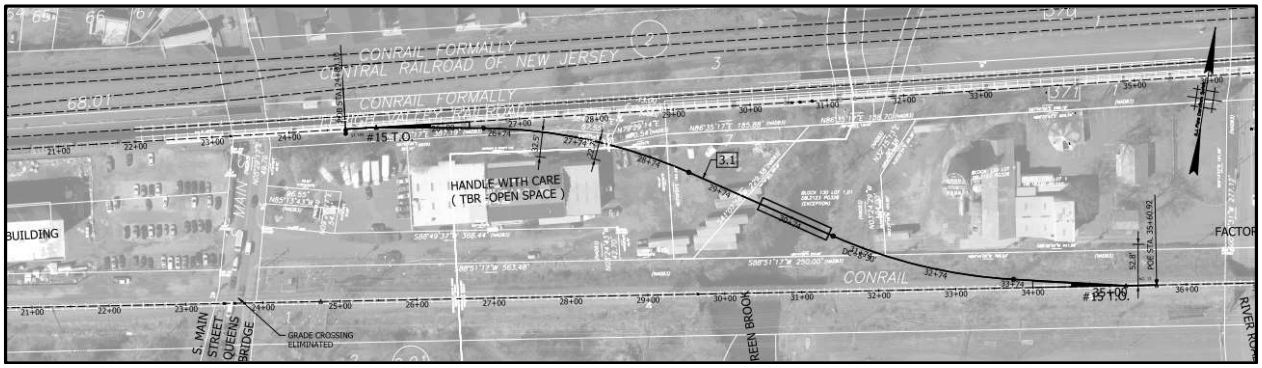
turnout would be constructed to start a new alignment of the Port Reading Secondary. The alignment would pass through the property of Handle with Care Express, a freight trucking company, then cross a new bridge over the Green Brook, and reconnect with the existing alignment approximately 400 feet east of the Green Brook.

This alignment was presented to Conrail for review and comment. Conrail expressed several concerns related to this alternative. First, this would require relocation of the existing interlocking located west of South Main Street. While this issue was not considered a fatal flaw, the new configuration would affect their operation of the Lehigh Line, which is the most heavily used freight rail line in New Jersey. Beyond the operational concerns, use of No. 15 turnouts would require a reduction in the operating speed of the trains from 30 mph running speed to 20 mph.

This alternative would also require acquisition of a portion of the Handle with Care Express property. Somerset and Middlesex Counties are currently in negotiations to purchase this property using open space funds and converting the property into public open space. If the construction of the rail realignment within the property were to occur after the property was acquired, lands of equal or better resource value as public open space in relative proximity to the study area would need to be acquired to replace the area lost to the conversion to a rail corridor. A 2-to 1 replacement would be required. This would be a challenge due to the lack of similar space in the immediate area that could be acquired for public open space.

This issue was addressed with Somerset County. The County expressed a willingness to purchase the property with alternative funds, thereby avoiding the need to find and acquire suitable replacement lands. Alternative 3.1 is depicted on Figure 6.4.

Figure 6.4: Alternative 3.1



6.3.3.3 Fatal Flaws

While not fatally flawed from a constructability perspective, Conrail raised a number of concerns. First, the use of No. 15 turnouts for the connections with the Lehigh Line and the Port Reading

Secondary Line would require a reduction in operation speeds on the line. Second, Conrail expressed concerns related to the need to construct a new interlocking on the Lehigh Line. Finally, Conrail expressed additional concerns related to the impacts to their existing operations on the Lehigh Line which is already one of the most heavily utilized freight lines in New Jersey. For these reasons, Alternative 3.1 was dismissed from further consideration.

6.3.4 Alternative 3.2

6.3.4.1 Overview

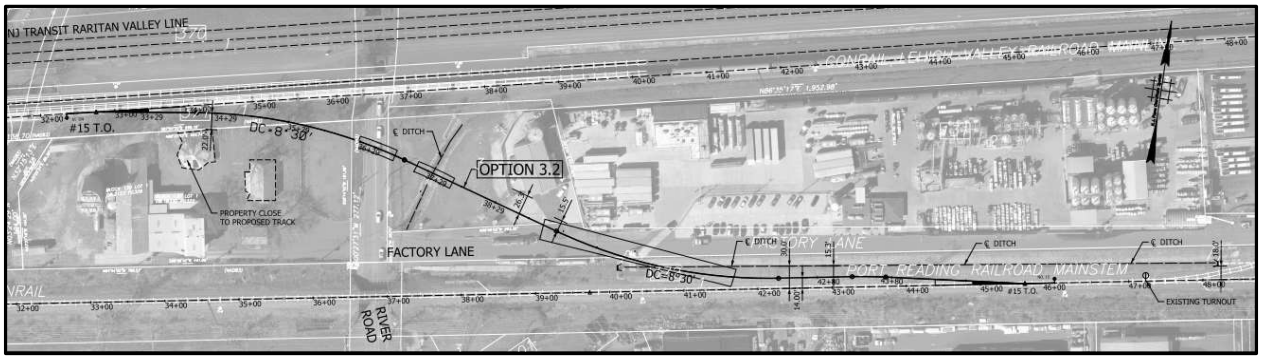
Alternative 3.2 includes a bypass using the Lehigh Line to eliminate the at-grade crossing and then constructing a realigned Port Reading Secondary track. Alternative 3.2 is similar to Alternative 3.1, but having their tie-ins are in different locations. The new alignment will include a No. 15 turnout on Lehigh Line that includes a horizontal reverse curve alignment, with new railroad bridge over River Road and Factory Lane. This also includes a tie-in to the existing Port Reading Secondary Line with a new No.15 turnout or simple curve.

6.3.4.2 Key Features & Considerations

Similar to Alternative 3.1, Alternative 3.2 consists of bypassing the at-grade crossing by maintaining train movements on the Lehigh Line from the existing connection of the Port Reading Secondary to the west. A new turnout would be constructed from the Lehigh Line at a point approximately 900 feet east of the bridge over South Main Street. At this point, a new No. 15 turnout would be constructed to start a new alignment of the Port Reading Secondary. The alignment would avoid passing through the Handle with Care property and the need for a new bridge over the Green Brook. However, this alignment would require a bridge over River Road, a bridge over the existing drainage culvert east of River Road and a bridge over Factory Lane. In addition, this alternative would require acquisition of a portion of the Reagent Chemical property and the industrial property east of River Road in Middlesex Borough. After crossing Factory Lane, the alignment would parallel the existing alignment allowing the line to come back down to the elevation of the existing Port Reading Secondary prior to reconnecting.

Conrail's concerns with Alternative 3.2 were similar to their concerns with Alternative 3.1. Alternative 3.2 is depicted on Figure 6.5.

Figure 6.5: Alternative 3.2



6.3.4.3 Fatal Flaws

In addition to the concerns expressed by Conrail related to Alternative 3.1, the Factory Lane roadway crossing is at an elevation of 33 feet and approximately 200 feet from the River Road crossing. Given the vertical profile for Alternative 3.2, it is not possible to achieve greater than a 12-foot clearance over the roadway. While not strictly a fatal flaw, this would effectively close Factory Lane at the western end, limiting access to the industrial uses to the eastern end of Factory Lane only. For these reasons, Alternative 3.2 was dismissed from further consideration.

6.3.5 Alternative 3.3

6.3.5.1 Overview

Similar to Alternatives 3.1 and 3.2, Alternative 3.3 includes a bypass using the Lehigh Line to eliminate the at-grade crossing and then constructing a realigned Port Reading Secondary track. This alternative assumes an inactive Factory Lane. This alternative also assumes a new No. 15 turnout on existing Lehigh Line track with sharp curve tie-in as soon as possible with reverse curve to existing Port Reading Secondary Line with simple curve or turnout. This alternative incorporates an at-grade crossing at Factory Lane.

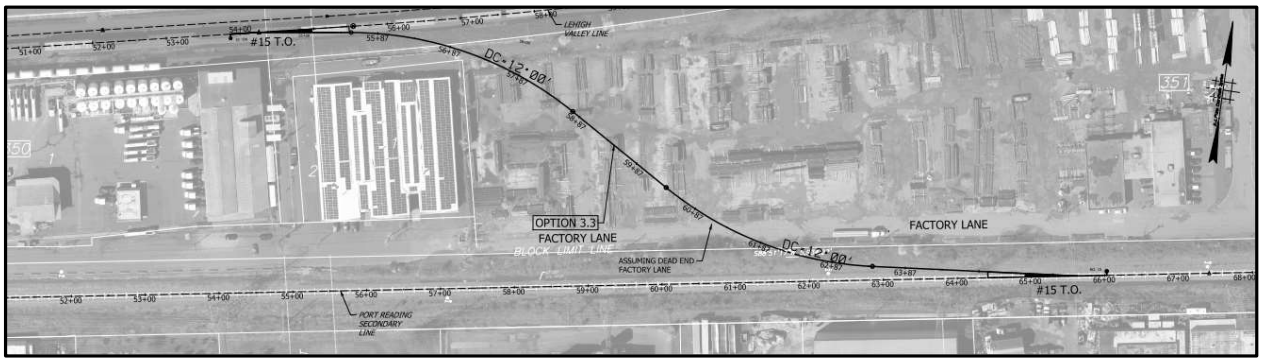
6.3.5.2 Key Features & Considerations

Similar to Alternative 3.1, Alternative 3.3 consists of bypassing the at-grade crossing by maintaining train movements on the Lehigh Line from the existing connection of the Port Reading Secondary to the west. A new turnout would be constructed from the Lehigh Line at a point approximately 3,000 feet east of the bridge over South Main Street. At this point, a new No. 15 turnout would be constructed to start a new alignment of the Port Reading Secondary connecting back to the existing alignment. The alignment would avoid passing through the Handle with Care

Express property and the need for a new bridge over the Green Brook. However, this alignment would require the acquisition of a large industrial property in Middlesex Borough.

Given the elevation difference between the Port Reading Secondary and the Lehigh Line, conforming to Conrail design standards and maintaining a maximum 1 percent grade on the new alignment would place the rail line approximately 5 feet above Factory Lane where it would cross the roadway. To avoid bifurcating Factory Lane, the roadway would require elevation to meet the elevation of the rail line, thus creating a new at-grade crossing at a skewed angle across a roadway carrying significant volumes of heavy trucks. Alternative 3.3 is depicted on Figure 6.6.

Figure 6.6: Alternative 3.3



6.3.5.3 Fatal Flaws

While not strictly fatally flawed, Conrail expressed similar concerns with this alignment as they expressed with Alternatives 3.1 and 3.2. Accordingly, Alternative 3.3 was dismissed from further consideration.

6.3.6 Alternative 3.4

6.3.6.1 Overview

Similar to Alternatives 3.1, 3.2, and 3.3, Alternative 3.4 includes a bypass using the Lehigh Line to eliminate the at-grade crossing. Alternative 3.4 then constructs a realigned Port Reading Secondary track. This track will be located close to east end on an industrial property to gain sufficient distance, avoid steep vertical grade, and comply with Conrail design criterion of a maximum grade of 1.15 percent.

6.3.6.2 Key Features & Considerations

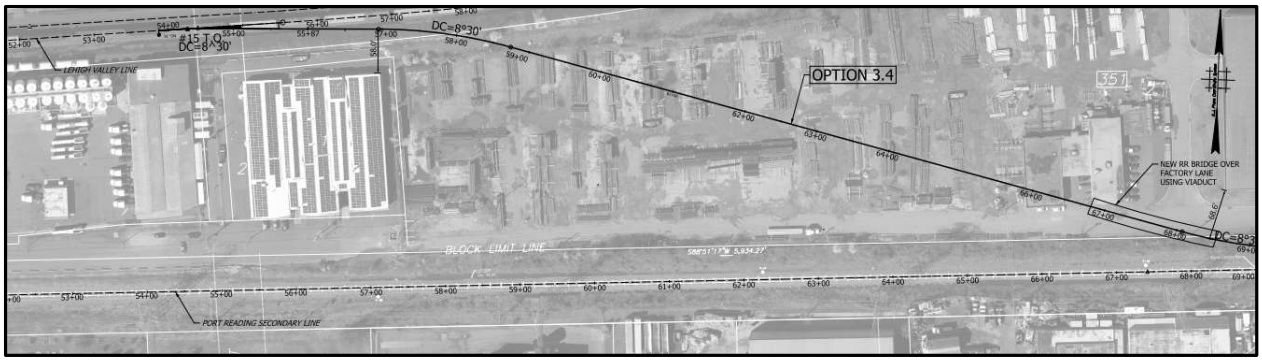
Alternative 3.4 is similar to Alternative 3.3 in that it consists of bypassing the at-grade crossing by maintaining train movements on the Lehigh Line from the existing connection of the Port

Reading Secondary to the west. A new turnout would be constructed from the Lehigh Line at a point approximately 3,000 feet east of the bridge over South Main Street. At this point, a new No. 15 turnout would be constructed to start a new alignment of the Port Reading Secondary connecting back to the existing alignment. The alignment would avoid passing through the Handle with Care Express property and the need for a new bridge over the Green Brook. However, this alignment would require acquisition of a large industrial property in Middlesex Borough.

The difference from Alternative 3.3 is that the Alternative 3.4 alignment would reconnect with the existing Port Reading Secondary at a point approximately 1,370 feet farther east and require a more significant acquisition of industrial properties in Middlesex Borough, as well as a new bridge constructed at a skewed angle over Factory Lane.

Alternative 3.4 is depicted on Figure 6.7.

Figure 6.7: Alternative 3.4



6.3.6.3 Fatal Flaws

While not strictly fatally flawed, Conrail expressed similar concerns with this alignment as they expressed with Alternatives 3.1 through 3.3. Accordingly, Alternative 3.4 was dismissed from further consideration.

6.3.7 Alternative 3.5

6.3.7.1 Overview

As with Alternatives 3.1 through 3.4, Alternative 3.5 includes a bypass using the Lehigh Line to eliminate the at-grade crossing. Alternative 3.5 then constructs a realigned Port Reading Secondary track, and a tie-in to the existing Lehigh Line track on the existing curve with a new

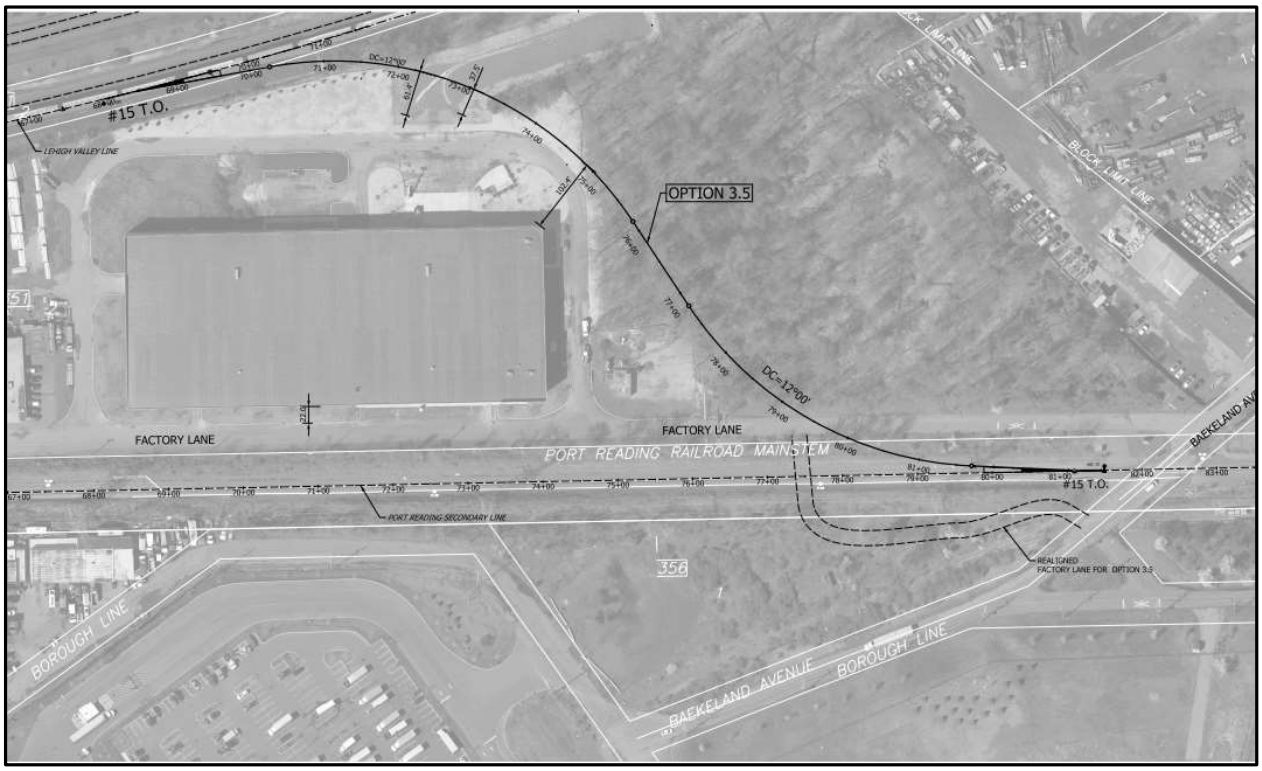
No.15 turnout, including a horizontal sharp reverse curve alignment over retention pond with an assumed realigned Factory Lane. The tie-in would be placed as soon as possible to the existing Port Reading Secondary track with a new No.15 turnout before crossing.

6.3.7.2 Key Features & Considerations

Similar to Alternatives 3.1 through 3.4, Alternative 3.5 includes a bypass using the Lehigh Line to eliminate the at-grade crossing and then constructs a realigned Port Reading Secondary track. A new turnout would be constructed approximately 4,200 feet east of the bridge over South Main Street. The alignment would encroach into a retention pond and pass immediately adjacent to the driveway serving the industrial property. To avoid the need to span over Baekeland Avenue with a new structure, No. 15 turnouts would be required for each of the new turnouts. A new at-grade crossing of Baekeland Avenue would be required.

Due to the difference in elevation between the Lehigh Line and the Port Reading Secondary, adherence to Conrail design standards would not be achievable, with grades approaching 2.5 percent. Alternative 3.5 is depicted on Figure 6.8.

Figure 6.8: Alternative 3.5



6.3.7.3 Fatal Flaws

This alternative has the following significant issues:

- To stay within Conrail design criteria of a maximum grade of 1.15 percent would not be achievable. For this option, a grade of 2.85 percent west end and a grade of 1.31 percent east end tie-in would be necessary.
- Due to vertical constraints, this option would require going 450 feet horizontally to tie into the existing Port Reading Secondary Line with No.15 turn out on a simple curve. This would require a new railroad grade crossing at Baekeland Avenue.
- This option would require realignment of Factory Lane.

Accordingly, Alternative 3.5 was dismissed from further consideration.

6.3.8 Alternative 3.6

6.3.8.1 Overview

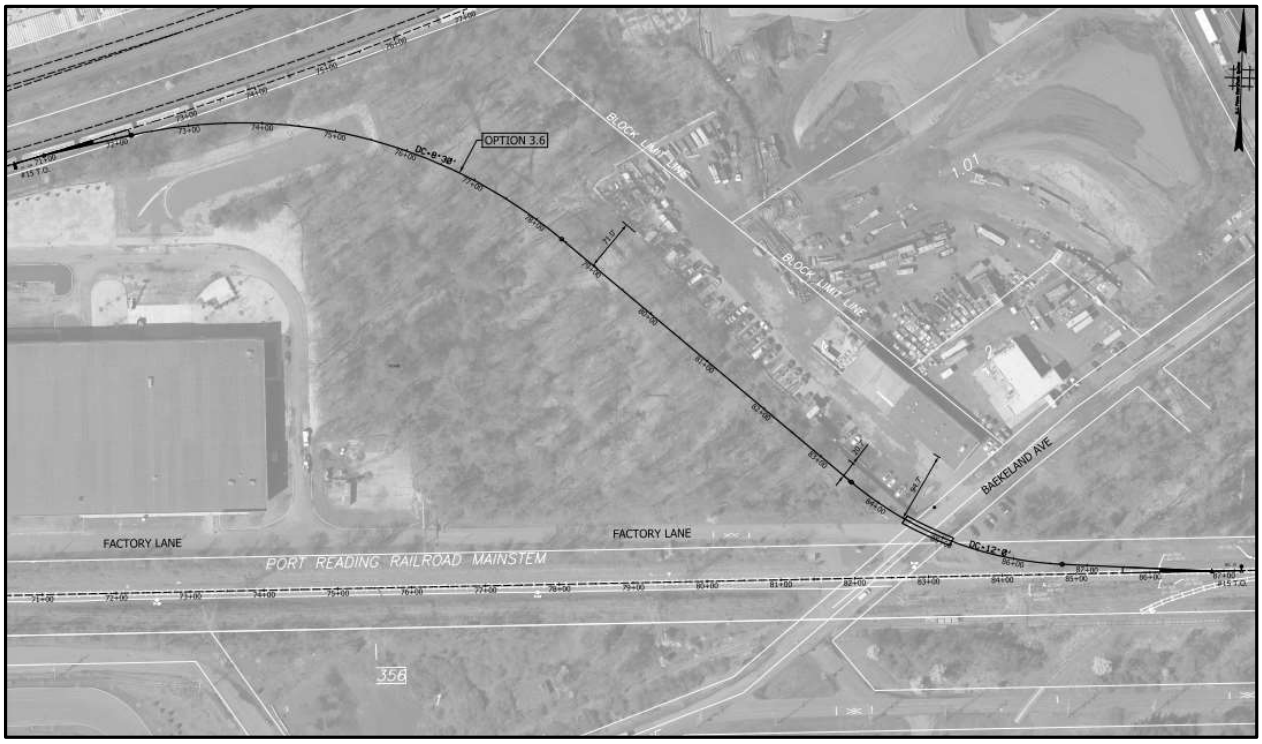
As with Alternatives 3.1 through 3.5, Alternative 3.6 includes a bypass using the Lehigh Line to eliminate the South Main Street grade crossing, constructing a new siding track to reconnect to the existing Port Reading Secondary.

6.3.8.2 Key Features & Considerations

A tie-in to the existing Lehigh Line track on the existing curve with a new No.15 turnout would be constructed approximately 4,300 feet east of the South Main Street bridge. The new siding track would reconnect to the existing Port Reading Secondary east of Baekeland Avenue. Baekeland Avenue would require elevation by approximately 2 feet to match the elevation of the new siding tract forming a new at-grade crossing. This alignment would pass through an existing retention basis and would require significant acquisition of privately owned property.

Alternative 3.6 is depicted on Figure 6.9.

Figure 6.9: Alternative 3.6



6.3.8.3 Fatal Flaws

While there are no strictly fatal flaws associated with this alternative, concerns raised by Conrail regarding the use of the Lehigh Line for bypassing of the South Main Street crossing apply to Alternative 3.6. Accordingly, Alternative 3.6 was dismissed from further consideration.

6.3.9 Alternative 4.1

6.3.9.1 Overview

Alternative 4.1 would create a new siding track parallel to the existing Lehigh Line, crossing South Main Street and the Green Brook on new bridges, subsequently reconnecting with the existing Port Reading Secondary.

6.3.9.2 Key Features & Considerations

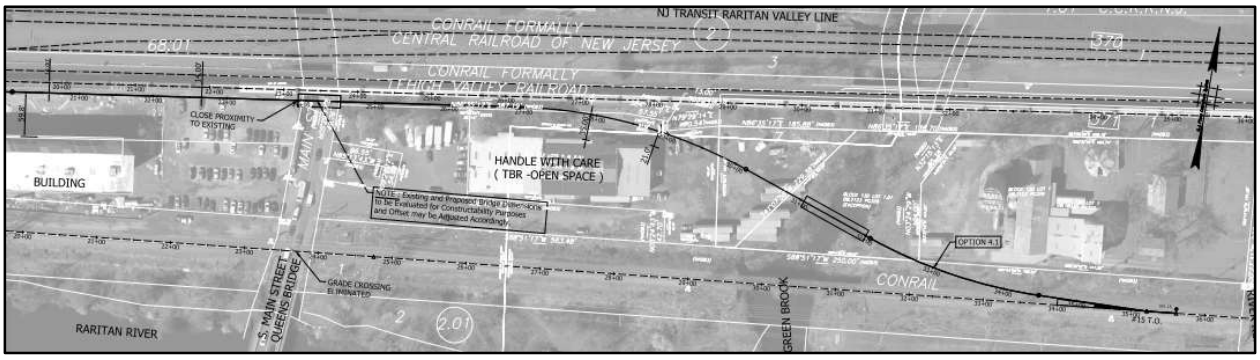
In consideration of Conrail's expressed concerns about Alternatives 3.1 through 3.6 which use a portion of the existing Lehigh Line, Alternative 4.1 was developed. This alternative constructs a new connection with the Lehigh Line approximately 400 feet east of the connection with the Port Reading Secondary to begin a new siding track offset by 14 feet from the existing Lehigh Line.

The connection would use a new No. 20 turnout to allow operations at the existing 30 mph running speed desired by Conrail. The new siding track would be carried over South Main Street on a new bridge, subsequently curving southward through the Handle with Care property crossing the Green Brook on a new structure. The siding track would then reconnect with the existing Port Reading Secondary approximately 400 feet east of the bridge over the Green Brook using a No. 15 turnout to avoid the need to construct a new bridge over River Road.

Due to the existing topography and elevation of the Port Reading Secondary, to allow connection to the existing Port Reading Secondary west of River Road, the elevation of the new bridge over the Green Brook would have a low chord elevation of approximately 32 feet. This elevation would encroach below the flood hazard elevation within this area.

Alternative 4.1 is depicted on Figure 6.10.

Figure 6.10: Alternative 4.1



6.3.9.3 Fatal Flaws

While not strictly fatally flawed, construction of the bridge over the Green Brook at the elevation necessary to avoid the need to construct a new bridge over River Road would require approval from NJDEP for encroachment below the flood hazard elevation. This approval would require NJDEP to accept the new bridge elevation based upon the existing bridges upstream along the Green Brook are already at a lower elevation. Hydrologic modeling would be required to demonstrate that the new bridge would not raise existing surface water elevations during flooding events. Furthermore, Conrail expressed concerns related to the use of the No 15 turnout to avoid the need to construct a new bridge over River Road and the need to construct a new interlocking on the Lehigh Line. Accordingly, Alternative 4.1 was dismissed from further consideration.

6.3.10 Alternative 4.2

6.3.10.1 Overview

Alternative 4.2 would create a new siding track parallel to the existing Lehigh Line, crossing South Main Street on the Lehigh Line bridge, followed by a new turnout and a siding track crossing the Green Brook on a new bridge.

6.3.10.2 Key Features & Considerations

This alternative continues to utilize the existing Lehigh Line, with a new No. 15 turnout to a new siding track constructed approximately 200 feet east of the South Main Street bridge. The siding track would run parallel to the Lehigh Line for approximately 600 feet, crossing the Green Brook on a new bridge before curving south to reconnect with the existing Port Reading Secondary. This alignment would require a new bridge over River Road as well as a new bridge over Factory Lane that would effectively sever Factory Lane to roadway traffic due to the limited vertical clearance that could be achieved beneath the bridge. This alignment would require partial acquisition of several existing industrial properties within Middlesex Borough with the acquisition potentially adversely affecting vehicle circulation within the properties. Alternative 4.2 is depicted on Figure 6.11.

Figure 6.11: Alternative 4.2

6.3.10.3 Fatal Flaws

While not strictly fatally flawed, this alternative retains the issues that were expressed by Conrail regarding use of the Lehigh Line as a bypass. In addition, the Factory Lane roadway crossing is at an elevation of 35 feet and approximately 250 feet from River Road crossing. Due to the topography in the area, connecting back to the existing Port Reading Secondary without an extensive run-out of new track parallel to the Port Reading Secondary while the siding comes back down to a matching elevation requires either the severing of Factory Lane or the use of grades in excess of 3.4 percent.

In addition, Conrail expressed concerns related to the use of the No 15 turnout to avoid the need to construct a new bridge over River Road and the need to construct a new interlocking on the Lehigh Line. Accordingly, Alternative 4.2 was dismissed from further consideration.

6.3.11 Alternative 4.3

6.3.11.1 Overview

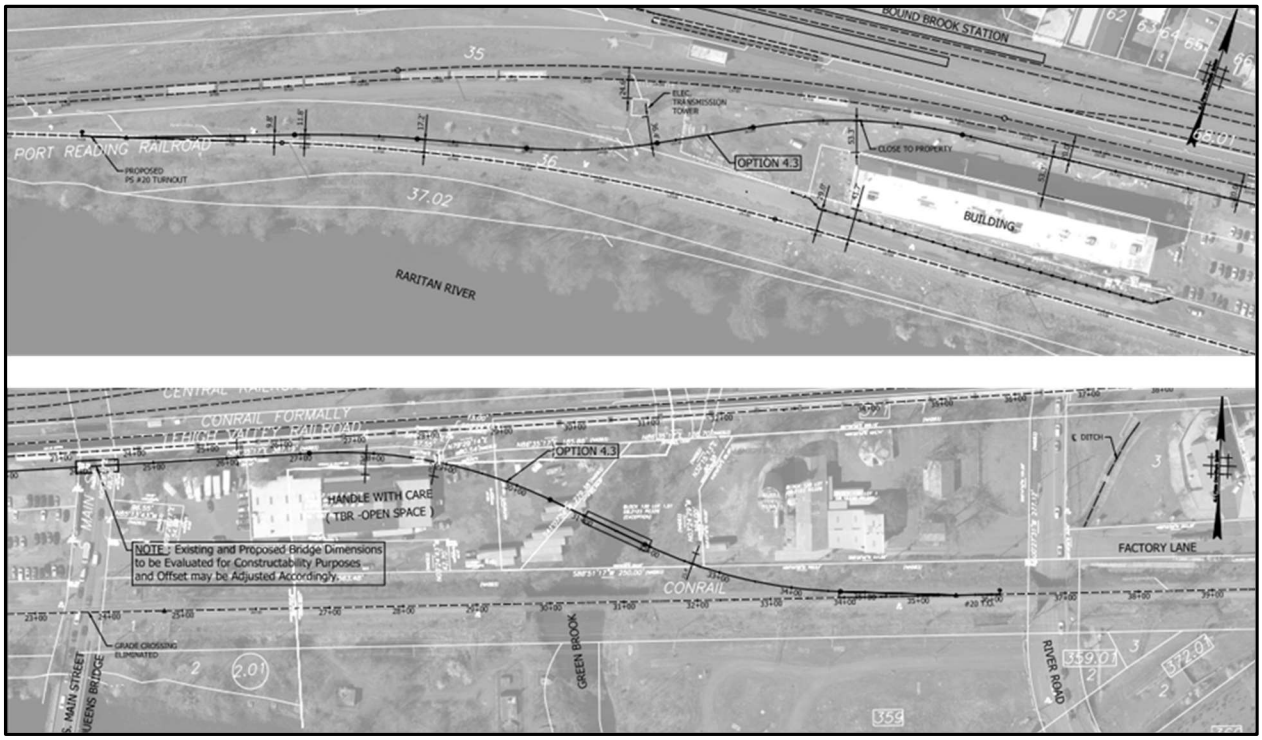
Alternative 4.3 includes a bypass with a new track parallel to the Lehigh Line, which would eliminate the at-grade crossing. A new siding track would be constructed parallel to the Lehigh Line to eliminate the South Main Street crossing.

6.3.11.2 Key Features & Considerations

In consideration of Conrail's expressed concerns related to Alternatives 3.1 through 3.6 which use a portion of the existing Lehigh Line, Alternative 4.3 was developed. This alternative constructs a new connection with the Port Reading Secondary approximately 700 feet east of the connection with the Lehigh Line using new No. 20 turnout to begin a new siding track. The new track would curve north to skirt around the Self-Storage building continuing along the Lehigh Line with a 20-foot offset to facilitate construction.

The new siding track would be carried over South Main Street on a new bridge, subsequently curving southward through the Handle with Care property crossing the Green Brook on a new structure. The siding track would then reconnect with the existing Port Reading Secondary approximately 400 feet east of the bridge over the Green Brook utilizing a No. 20 turnout. Alternative 4.3 is depicted on Figure 6.12.

Figure 6.12: Alternative 4.3



6.3.11.3 Fatal Flaws

While not fatally flawed, this alignment would require acquisition of a significant portion of the Self-Storage building property. While the portion of the property to be acquired is not developed, acquisition would eliminate its use for outside storage of larger vehicles, which is a common activity for self-storage facilities. Conrail expressed concerns regarding the use of a series of reverse curves intended to maximize separation of the line from the base of the electrical transmission tower. These concerns coupled with the level of ROW impact led to the dismissal of alternative 4.3 from further consideration.

6.3.12 Alternative 4.4

6.3.12.1 Overview

Similar to Alternative 4.3, Alternative 4.4 includes a bypass with a new track parallel to the Lehigh Line, which would eliminate the at-grade crossing. The primary difference is the new connection would be made from the Lehigh Line to reduce the area of ROW acquisition required.

6.3.12.2 Key Features & Considerations

To minimize the need for acquisition of portions of the Self-Storage property, this alternative would relocate the switch with the Lehigh Line to a point approximately 400 feet east of the existing switch. A new siding track would be constructed parallel to the Lehigh Line to eliminate the South Main Street crossing. A new siding track offset 20 feet and parallel from the existing Lehigh Line track is proposed. The siding track would cross South Main Street and the Green Brook on new bridges, The tie in back to the Port Reading Secondary would occur approximately 150 feet west of River Road with a new No. 20 turnout following a horizontal reverse curve alignment.

Alternative 4.4 is depicted on Figure 6.13.

Figure 6.13: Alternative 4.4

6.3.12.3 Fatal Flaws

While constructable, this alignment would bring the new rail siding within 5 feet of the existing PSE&G electrical transmission tower located to the west of the Self-Storage building. This proximity would be in violation of Conrail track design standards which require a minimum clearance of 25 feet. Based on the close proximity of the alignment to the PSE&G electrical transmission tower this alternative was dismissed. Accordingly, Alternative 4.4 was dismissed from further consideration.

6.3.13 Alternative 4.5

6.3.13.1 Overview

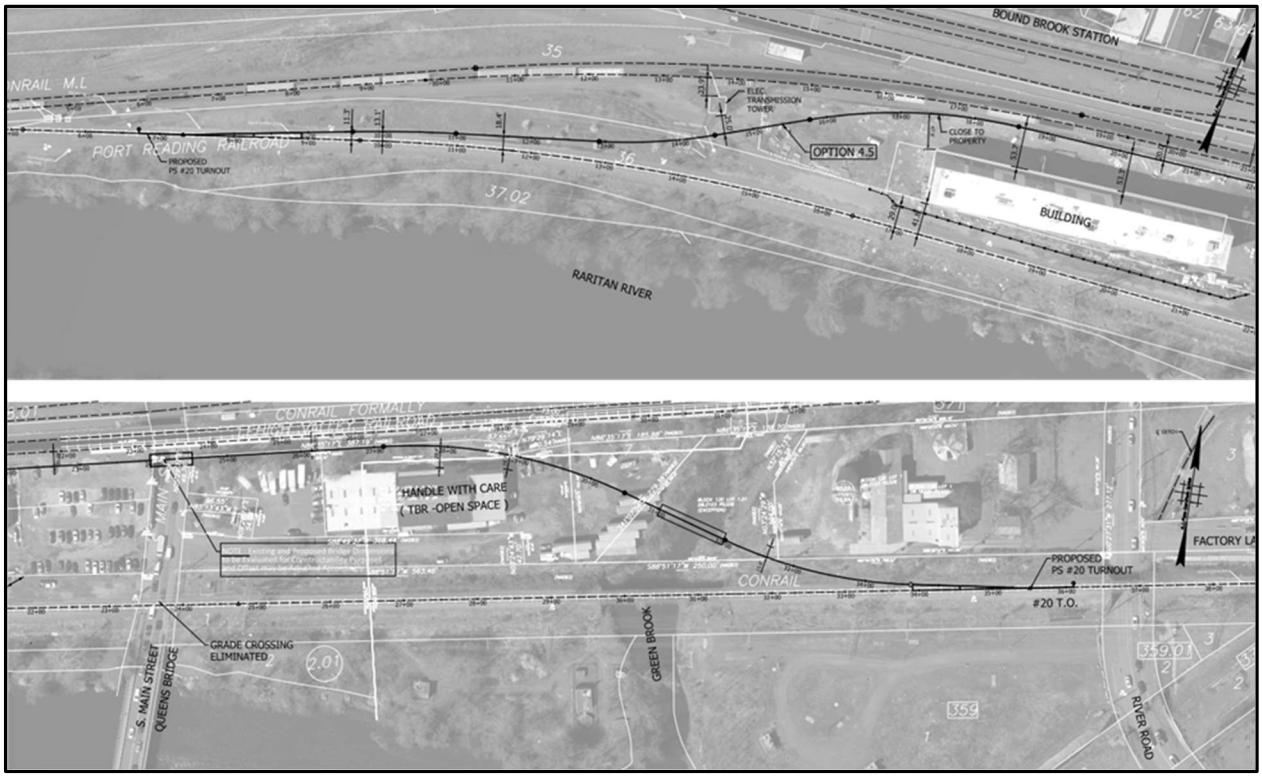
Similar to Alternative 4.3, Alternative 4.5 includes a bypass with a new track parallel to the Lehigh Line, which would eliminate the at-grade crossing. The primary difference is the new side track alignment would run south of the PSE&G tower offset by 25 feet in an effort to reduce the ROW impact to the Self-Storage property.

6.3.13.2 Key Features & Considerations

This alternative would construct a new switch from the Port Reading Secondary approximately 750 feet east of the existing switch with the Lehigh Line. The new siding track would generally parallel the existing Port Reading Secondary before curving northward passing the PSE&G tower with a 25-foot offset. The line would then curve eastward paralleling the Lehigh Line, crossing South Main Street and the Green Brook on new bridges. The tie in back to the Port Reading Secondary would occur approximately 150 feet west of River Road with a new No. 20 turnout following a horizontal reverse curve alignment. This alignment would reduce the area of ROW acquisition required from the Self-Storage property compared to Alternative 4.3.

Alternative 4.5 is depicted on Figure 6.14.

Figure 6.14: Alternative 4.5



6.3.13.3 Fatal Flaws

While not fatally flawed, this alternative would require acquisition of a significant portion of the Self-Storage property, effectively eliminating the property's use for outside storage of items such as recreational vehicles and boats. To facilitate the tie in to the existing Port Reading Secondary west of River Road, the bridge over the Green Brook would be constructed at an elevation higher than the existing bridges but would still be below the flood hazard elevation associated with the Green Brook. This would represent a significant challenge to environmental permitting unless the existing bridge over the Green Brook were to be removed. Ultimately, the ROW impact and flood hazard elevation issues led to the dismissal of this alternative from further consideration.

6.3.14 Alternative 4.6

6.3.14.1 Overview

Alternative 4.6 represents a combination of features of other alternatives with adjustments to the height of the bridge over the Green Brook to minimize construction within the floodway and keep the low chord of the new bridge above the flood hazard elevation.

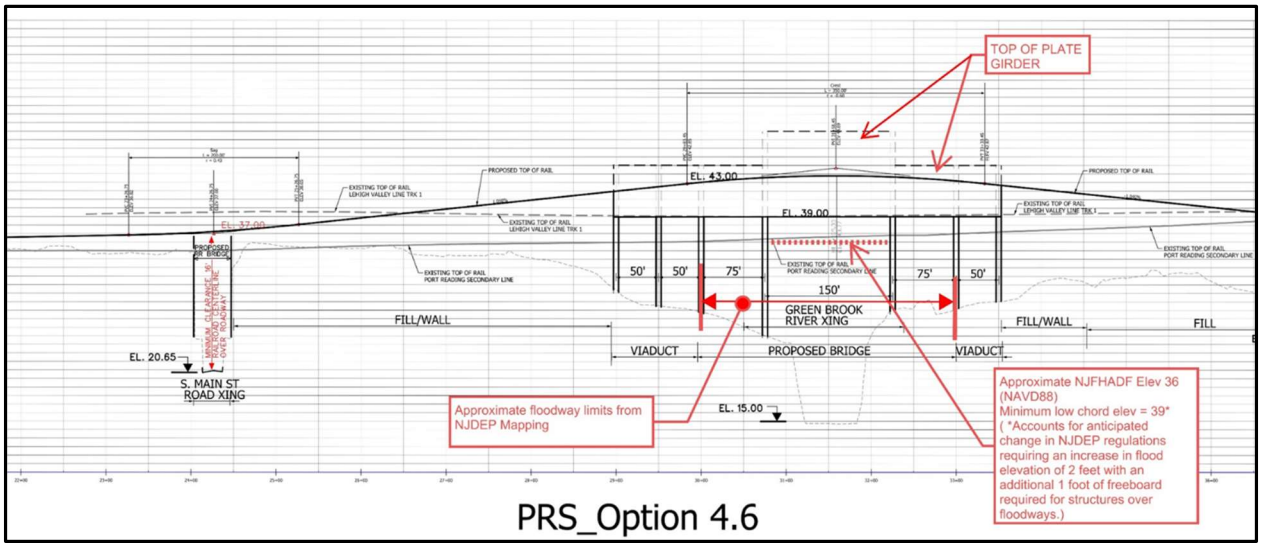
6.3.14.2 Key Features & Considerations

Like Alternative 4.5, this alternative would construct a new switch from the Port Reading Secondary approximately 750 feet east of the existing switch with the Lehigh Line. Immediately past the switch, the new siding track would run through a reverse curve alignment then run parallel to the Lehigh Line with a 20-foot offset. The PSE&G tower would require relocation southward by approximately 60 feet to allow an offset of 25 feet between the tower and the new siding track. The line would then parallel the Lehigh Line, crossing South Main Street and the Green Brook on new bridges. The green Brook bridge would be constructed at a higher elevation that under the other alternatives, with the low chord of the bridge set at an elevation of 36 feet to remain above the flood hazard elevation. This heightening of the bridge would require construction of a new bridge across River Road, with the siding track coming back down to grade and reconnecting with the Port Reading Secondary approximately 400 feet east of the bridge across River Road.

The horizontal alignment of Alternative 4.6 is shown on Figure 6.15, and the profile and elevations of the section over the Green Brook are shown on Figure 6.16.

Figure 6.15: Alternative 4.6

Figure 6.16: Alternative 4.6 – Profile and Elevation



6.3.14.3 Fatal Flaws

Alternative 4.6 was developed in recognition of the issues and concerns expressed related to the Alternatives 4.1 through 4.5. Alternative 4.6 utilizes No. 20 turnouts, minimizes the degree of curvature of the alignment west of South Main Street, does not require a new interlocking on the Lehigh Line, minimizes ROW impacts to the Self-Storage property and elevates the bridge over the Green Brook to minimize potential impacts to flood elevation. Accordingly, Alternative 4.6 is recommended for advancement as the Preliminary Preferred Alternative to meet the project purpose and need.

6.4 Preliminary Preferred Alternative – Alternative 4.6

6.4.1 Alternatives Scoring

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 score from 5 to -5 for each defined evaluation criterion. As summarized in Table 6.2, 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 criterion. A score of 0 indicates that the alternative has no effect on the criterion. 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 6.2: 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

The primary considerations leading to the identification of Alternative 4.6 as the PPA include:

- Fully meets the project purpose and need
- Maintains rail service on the Port Reading Secondary during construction
- Minimizes required ROW acquisition
- Minimizes floodplain and stormwater impacts

In Summary, 14 alternatives were screened, with Alternatives 1 and 2 both having fatal flaws identified. For Alternative 1, the fatal flaw was the new alignment being within approximately 18 feet of the Self-Storage property and in close proximity (approximately 25 feet) to the historic Old Stone Arch Bridge. For Alternative 2, the fatal flaw was depressing South Main Street that would place the surface of the roadway below the typical surface elevation of the Raritan River.

Alternatives 3.1 through 3.6, which recommended a bypass rail line using the Lehigh Valley Line Southern Track that would eliminate the grade crossing via a realigned Port Reading Secondary track east of the Green Brook. These alternatives represented options that didn't necessary rise to fatal flaws but did result in significant concerns as expressed by Conrail. Ultimately these concerns resulted in alternatives that were identified as not viable. Below is a summary of these concerns for each alternative.

- Alternative 3.1- Freight rail impacts during and post construction, land use impacts, wetland impacts, flood plain impacts, threatened and endangered species impacts and hazardous waste concerns.
- Alternative 3.2- Freight rail impacts during and post construction, land use impacts, wetland impacts, flood plain impacts, stormwater impacts, hazardous waste concerns and utility relocation.
- Alternative 3.3- Freight rail impacts during and post construction, land use impacts, wetland impacts, floodplain impacts and hazardous waste concerns.
- Alternative 3.4- Freight rail impacts during and post construction, land use impacts, wetland impacts, floodplain impacts and hazardous waste concerns.
- Alternative 3.5- Freight rail impacts during and post construction, land use impacts, wetland impacts, stormwater, hazardous waste concerns and utility relocations.
- Alternative 3.6- Freight rail impacts during and post construction, land use impacts, wetland impacts, stormwater, hazardous waste concerns and utility relocations.

Alternatives 4.1, 4.2, and 4.4 resulted in moderate and highly detrimental impacts for the various criteria. Below is a summary of these concerns.

- Alternative 4.1- Freight rail impacts during and post construction, land use impacts, wetland impacts, floodplain impacts, threatened and endangered species impacts, stormwater, hazardous waste concerns and utility relocations.
- Alternative 4.2- Freight rail impacts during and post construction, land use impacts, wetland impacts, floodplain impacts, threatened and endangered species impacts, stormwater, hazardous waste concerns and utility relocations.
- Alternative 4.4- Freight rail impacts during construction, land use impacts, wetland impacts, floodplain impacts, threatened and endangered species impacts, stormwater, hazardous waste concerns and utility relocations.

The remaining three alternatives (4.3, 4.5 and 4.6) represent the only options that are not fatally flawed. Impacts were still present for these options, but they were offset by numerous benefits. All three alternatives had the same impacts identified. Below is a summary of these impacts.

- Freight rail impacts during construction, land use impacts, wetland impacts, floodplain impacts, threatened and endangered species impacts, stormwater, hazardous waste concerns and utility relocations.

Alternative 4.6 scored higher in the evaluation than Alternatives 4.3 and 4.5 because the Green Brook Bridge will be at a higher elevation as compared to Alternatives 4.3 and 4.5. By raising the bridge elevation, the floodplain impact is anticipated to be 0.90 acres for Alternative 4.6 as compared to 1.29 acres for Alternative 4.3 and 4.5. Furthermore, the stormwater impact for Alternative 4.6 will be less as compared to Alternative 4.3 and 4.5.

Table 6.3 summarizes the scores assigned to each criterion for each candidate alternative considered for the elimination of the South Main Street Grade Crossing. As shown, Alternative 4.6 received a final score of 3, which is the highest score for an alternative relative to the other alternatives considered.

The full scoring matrix including notes supporting the assignment of each score is presented in Appendix I.

Table 6.3: Alternative Scoring Matrix

Criteria	Grade Separation		Diversion Via Realigned PRS Track															
	Railroad over Roadway	Roadway Under Railroad	Bypass Using Lehigh Valley Line Southern Track - Eliminate Grade Crossing via Realigned PRS Track						Bypass Using New Track Parallel to Lehigh Valley Line - Eliminate Grade Crossing via Realigned PRS Track						VE Alternatives - Elevate Rail along Existing Alignment			
	1	2	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6	VE-1	VE-1A	VE-1B	VE-1C
Meets Project Purpose and Need	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Freight Rail Operations Impacts / Benefits - During Construction	-1	0	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
Freight Rail Operations Impacts / Benefits - Post Construction	0	0	-100	-100	-100	-100	-100	-100	-1	-1	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	0	0
Adjacent and Proximate Land Use Impacts / Benefits	-1	-1	-3	-5	-3	-3	-3	-3	-3	-5	-3	-3	-3	-3	-3	-3	-3	-3
Historic and Cultural Resources Impacts / Benefits	-5	0	1	1	1	1	1	1	1	1	1	1	1	1	-1	-3	-3	-1
Community Profile & Environmental Justice/Title VI Impacts / Benefits	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Wetlands Impacts / Benefits	-3	-3	-3	-3	-1	-1	-1	-1	-3	-3	-1	-1	-1	-1	-1	-1	-1	-5
Floodplains & Aquifers Impacts / Benefits	-3	-100	-3	-3	-1	-1	0	0	-5	-5	-5	-5	-5	-3	-3	-3	-3	-5
Threatened & Endangered Species Impacts / Benefits	-1	-1	-1	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Stormwater and Drainage Impacts / Benefits	-1	-100	0	-5	0	0	-3	-3	-3	-5	-3	-3	-3	-1	-1	-1	-1	-1
Hazardous Materials Impacts / Benefits	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Air Quality & Noise Impacts / Benefits	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Community Impacts / Benefits	3	-100	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Safety Impacts / Benefits	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Utility Impacts / Relocation Requirements	-5	-5	0	-5	0	0	-3	-3	-3	-1	-1	-3	-1	-3	-3	-5	-5	-3
Project Independence – Creates or Eliminates Need for other infrastructure project	0	-100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roadway Operational and Mobility Impacts / Benefits	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Summary Score	**-3**	**-396**	**-95**	**-106**	**-90**	**-90**	**-95**	**-95**	**-4**	**-6**	**1**	**-1**	**1**	**3**	**1**	**-3**	**-3**	**-5**

6.4.2 Risk Register

An assessment and summary of the impacts on 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 J and includes the following considerations.

- Cooperation of and coordination with Conrail (owner of the existing rail ROW)
- Maintaining rail service during construction
- Acquisition of privately owned ROW and property impacts
- Maintenance of Traffic (roadway) during construction
- Potential environmental permits / approvals and interagency coordination
- Detrimental effect on cultural resources
- Surface Transportation Board coordination
- Outdoor Advertising signs
- Environmental Remediation Site – Reagent Chemical

While the majority of these issues pose a low or moderate risk to the project schedule moving forward, the last issue on the list – Environmental Remediation Site – Reagent Chemical potentially poses a significant risk. The owners of the Reagent Chemical property are currently coordinating a site remediation project to remove contaminated soils and cap an area running along the lands between the property and the Port Reading Secondary. Contaminants have migrated outside of the Reagent Chemical property into the soils within the Conrail right of way affecting soils below the existing rail line. Removal of these soils would require an extended closure of operations on the Port Reading Secondary. In coordination talks with Reagent Chemical property owners, Conrail expressed a willingness to consider limited short-term closures of the rail line over weekend periods, but not extended closures sought to perform the mitigation.

While this issue could potentially disrupt the schedule for construction of Alternative 4.6, this also represents a potential opportunity to achieve the environmental remediation. Any future permitting and design efforts should incorporate staged construction that would facilitate the environmental remediation. Portions of the affected lands not occupied by the existing rail line could be remediated prior to construction of the realigned rail corridor. Upon shifting rail traffic to the new alignment, remediation efforts on the lands beneath the existing rail alignment could be accomplished.

6.4.3 NEPA Classification

Enacted on January 1, 1970, 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 PPA through design and into construction. There are three levels of environmental documentation required for any infrastructure project: a Categorical Exclusion (CE), an Environmental Assessment (EA), and an Environmental Impact Statement (EIS). The applicable level of documentation is determined by the nature and extent of environmental impacts associated with construction and operation of the project.

A CE is applicable to a project where the project actions will not individually or cumulatively significantly affect the quality of the human environment. These effects generally include adverse effects on endangered species, protected cultural sites, and wetlands. Due primarily to the location of the project within the floodway, with its history of flooding, numerous hazardous waste concerns, cultural resources located in the area, and property acquisition, in the construction of the preferred alternative, a CE is not expected to be applicable. As such, at a minimum an EA will be required.

The purpose of an EA is to determine the significance of the project's environmental outcomes and to look at alternatives of achieving the project objectives with a minimum impact on the quality of the environment. An EA provides sufficient evidence and analysis for determining whether preparation of a full EIS is required.

Most agency procedures do not require public involvement prior to finalizing an EA document; however, agencies advise that a public comment period is considered at the draft EA stage. EAs need to be of sufficient length to ensure that the underlying decision to prepare an EIS is legitimate, but they should not attempt to substitute an EIS. If no substantial effects on the environment are found after investigation and the drafting of an EA, the sponsoring agency produces a Finding of No Significant Impact, explaining why construction and operation of the proposed project will not have a significant effect on the human environment.

Close coordination with NJDEP will be required as part of preliminary engineering to prepare an EA and determine whether preparation of a full EIS is required.

6.5 Preliminary Construction Cost Estimate

A detailed construction cost estimate for the PPA was prepared, concluding that the total cost for advancing this alternative from concept development through construction and commencement of operation would be approximately $53.7 million. This cost includes actual construction costs as well as ROW acquisition, environmental permitting and remediation, construction engineering services, and construction management activities. A summary cost estimate is provided in Table 6.4. The detailed cost estimate is presented in Appendix H.

Table 6.4: PPA Preliminary Construction Cost Estimate

Description	Subtotal
Mobilization and Supplemental Costs	$ 4,476,934
Track and Ballast	$ 3,401,100
Structures	$ 26,077,000
Utilities	$ 2,500,000
Contingency	$ 7,994,525
Design, CE Support, ROW, Permitting, Environmental Remediation	$ 9,296,715
TOTAL	**$ 53,746,274**

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 Port Reading Secondary South Main Street Grade Crossing Elimination 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 PPA.

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 K, with findings of the review summarized in this section.

The VE Team identified one additional alternative, which was basically a modification of Alternative 1.0. The VE alternative considered replacement of the existing Port Reading Secondary alignment with an elevated alignment constructed above the existing alignment. This would require construction of a temporary track (referred to as a Shoo-fly[1]) on the north side of the existing track. While trains are diverted to the temporary track, a new guideway would be constructed above the existing track on hammerhead piers.

The alignment of the temporary track would encroach into the Self-Storage building property similar to the encroachment that would result from Alternative 1.0. In addition, the alignment would occupy the location of the single driveway affording vehicular traffic access to the site from South Main Street. The grade of South Main Street adjacent to the property would not permit creation of an alternate or temporary driveway.

Construction of the temporary track would encroach into the Handle with Care Express property passing approximately 25 feet away from the historic stone arch bridge. Vibration from construction activity could potentially adversely affect the structure of the bridge. For these reasons, the VE alternative was dismissed from further consideration and Alternative 4.6 remained the PPA.

[1] A Shoofly on a railroad track is a temporary track used to avoid an obstacle that blocks movement on the normal track.

7. NEXT STEPS

7.1 Project Design and Construction Funding Opportunities

The NJTPA Freight Concept Development Program 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 Freight Concept Development Program'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 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.

7.2 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.

7.3 New Jersey Local Freight Impact Fund

The Local Freight Impact Fund Grant Program is a newly created State Funded Program established by the legislature with the adoption of Assembly Bill No. 10(4R). In fiscal year 2018 NJDOT issues a solicitation announcement for the first time for the program. The program is established for the purpose of assisting counties and local municipalities with the mitigation of impacts on the local transportation system associated with the State's freight industry. The available funding for the fiscal year 2021 Local Freight Impact Fund program is $30.1 million.

Applicants of eligible projects can select from five project categories:

- Pavement Preservation - to improve pavement conditions in support of freight travel on municipal/county transportation infrastructure
- Truck Safety and Mobility - to improve large truck access, routing and mobility along the municipal/county roadway system.
- Bridge Preservation - to improve bridge ratings/conditions in support of freight travel on municipal/county transportation infrastructure.
- New Construction - to promote new construction in support of freight travel on municipal/county transportation infrastructure.
- Pedestrian Safety- to improve pedestrian safety and access on the local/county roadway system.

7.4 FRA Grade Crossing Elimination Grant Program

This program provides funding for highway-rail or pathway-rail grade crossing improvement projects that focus on improving the safety and mobility of people and goods. This program was authorized in Section 22305 of the Bipartisan Infrastructure Law. 49 U.S.C. § 22909.

Projects eligible for funding under this program include:

- Grade separation or closure, including through the use of a bridge, embankment, tunnel, or combination thereof
- Track relocation
- Improvement or installation of protective devices, signals, signs, or other
- Measures to improve safety related to a separation, closure, or track relocation project
- Other means to improve the safety if related to the mobility of people and goods at highway-rail grade crossings (including technological solutions)

- The planning, environmental review, and design of an eligible project type

Entities eligible to receive funding under this program include:

- States, including the District of Columbia, Puerto Rico, and other United States territories and possessions
- Political subdivision of a state
- Federally recognized Indian Tribe
- A unit of local government or a group of local governments
- A public port authority
- A metropolitan planning organization
- A group of the entities described above

7.5 Eligibility of the PPA under State and Federal Grant Programs

Due to the scale and complexity of the PPA, it is recommended that the PPA be advanced through multiple funding sources in a series of applications. An initial application to the NJDOT under the RFAP could be made seeking funding for the design and permitting phase of project advancement. Subsequent to completion of the design, application could be made to the FRA under the Grade Crossing Elimination Program for construction of the PPA.

Appendix A

Traffic Count Data

TechniQuest Corporation

4105 US Route 1, Suite #10
Monmouth Junction, NJ 08852
Phone: 732-274-9500 Fax: 732-274-9510
www.techniquestcorporation.com

Site Code: 015-01
Date Start: 21-May-21
S Main Street South of the Circle
NB

Start	17-May-21		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	*	*	*	*	*	*	*	123	30	129	18	115	24	122
12:15	*	*	*	*	*	*	*	*	*	135	17	155	14	134	16	141
12:30	*	*	*	*	*	*	*	*	*	164	5	139	7	125	6	143
12:45	*	*	*	*	*	*	*	*	*	168	12	131	12	123	12	141
01:00	*	*	*	*	*	*	*	*	*	137	12	114	16	122	14	124
01:15	*	*	*	*	*	*	*	*	*	157	11	157	10	117	10	144
01:30	*	*	*	*	*	*	*	*	*	179	14	129	10	**132**	12	147
01:45	*	*	*	*	*	*	*	*	*	182	5	134	5	**127**	5	148
02:00	*	*	*	*	*	*	*	*	*	167	6	124	7	**111**	6	134
02:15	*	*	*	*	*	*	*	*	*	170	8	**148**	3	**135**	6	**151**
02:30	*	*	*	*	*	*	*	*	*	193	11	**167**	3	128	7	**163**
02:45	*	*	*	*	*	*	*	*	*	**195**	6	**151**	6	110	6	**152**
03:00	*	*	*	*	*	*	*	*	*	**187**	5	**138**	5	116	5	**147**
03:15	*	*	*	*	*	*	*	*	*	**197**	12	118	6	107	9	141
03:30	*	*	*	*	*	*	*	*	*	**203**	9	132	6	103	8	146
03:45	*	*	*	*	*	*	*	*	*	177	8	144	8	98	8	140
04:00	*	*	*	*	*	*	*	*	*	204	14	165	7	110	10	160
04:15	*	*	*	*	*	*	*	*	*	178	11	116	8	130	10	141
04:30	*	*	*	*	*	*	*	*	*	182	17	150	18	123	18	152
04:45	*	*	*	*	*	*	*	*	*	174	30	123	22	107	26	135
05:00	*	*	*	*	*	*	*	*	*	169	35	124	15	114	25	136
05:15	*	*	*	*	*	*	*	*	*	172	36	137	27	109	32	139
05:30	*	*	*	*	*	*	*	*	*	188	52	141	30	110	41	146
05:45	*	*	*	*	*	*	*	*	*	140	54	113	42	106	48	120
06:00	*	*	*	*	*	*	*	*	*	127	65	117	32	109	48	118
06:15	*	*	*	*	*	*	*	*	*	122	61	125	33	103	47	117
06:30	*	*	*	*	*	*	*	*	*	143	79	90	39	109	59	114
06:45	*	*	*	*	*	*	*	*	*	124	100	86	55	92	78	101
07:00	*	*	*	*	*	*	*	*	*	86	83	92	50	91	66	90
07:15	*	*	*	*	*	*	*	*	*	122	90	84	59	97	74	101
07:30	*	*	*	*	*	*	*	*	*	110	128	84	66	107	97	100
07:45	*	*	*	*	*	*	*	*	*	90	134	78	78	77	106	82
08:00	*	*	*	*	*	*	*	*	*	103	105	73	75	81	90	86
08:15	*	*	*	*	*	*	*	*	*	96	132	73	93	61	112	77
08:30	*	*	*	*	*	*	*	*	*	72	110	60	97	55	104	62
08:45	*	*	*	*	*	*	*	*	*	73	139	77	110	58	124	69
09:00	*	*	*	*	*	*	*	*	102	56	134	76	131	62	122	65
09:15	*	*	*	*	*	*	*	*	116	59	131	68	145	45	131	57
09:30	*	*	*	*	*	*	*	*	113	57	155	49	106	49	125	52
09:45	*	*	*	*	*	*	*	*	101	55	148	54	121	35	123	48
10:00	*	*	*	*	*	*	*	*	122	59	**164**	45	144	23	143	42
10:15	*	*	*	*	*	*	*	*	116	44	**139**	46	102	32	119	41
10:30	*	*	*	*	*	*	*	*	132	38	**157**	36	122	24	137	33
10:45	*	*	*	*	*	*	*	*	146	47	**153**	32	**168**	21	**156**	33
11:00	*	*	*	*	*	*	*	*	**149**	30	148	29	**140**	13	**146**	24
11:15	*	*	*	*	*	*	*	*	**161**	30	144	20	**167**	16	**157**	22
11:30	*	*	*	*	*	*	*	*	**167**	36	139	18	**131**	10	**146**	21
11:45	*	*	*	*	*	*	*	*	**152**	16	133	18	139	7	141	14
Total	0	0	0	0	0	0	0	0	1577	5936	3391	4809	2708	4189	3015	4982
Day Total	0		0		0		0		7513		8200		6897		7997	
% Splits	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	21.0 %	79.0 %	41.4 %	58.6 %	39.3 %	60.7 %	37.7 %	62.3%
Peak	-	-	-	-	-	-	-	-	11:00	02:45	10:00	02:15	10:45	01:30	10:45	02:15
Vol.	-	-	-	-	-	-	-	-	629	782	613	604	606	505	605	613
P.H.F.									0.942	0.963	0.934	0.904	0.902	0.935	0.963	0.940

TechniQuest Corporation

4105 US Route 1, Suite #10
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Site Code: 015-01
Date Start: 21-May-21
S Main Street South of the Circle
NB

Start Time	24-May-21 A.M.	P.M.	Tue A.M.	P.M.	Wed A.M.	P.M.	Thu A.M.	P.M.	Fri A.M.	P.M.	Sat A.M.	P.M.	Sun A.M.	P.M.	Average Da A.M.	P.M.
12:00	3	114	6	143	2	142	5	133	12	*	*	*	*	*	6	133
12:15	14	147	6	132	2	140	4	159	7	*	*	*	*	*	7	144
12:30	7	130	2	128	3	134	3	139	10	*	*	*	*	*	5	133
12:45	2	122	4	123	5	145	6	122	8	*	*	*	*	*	5	128
01:00	7	141	10	150	7	143	9	120	13	*	*	*	*	*	9	138
01:15	9	141	5	164	1	143	10	137	8	*	*	*	*	*	7	146
01:30	6	164	7	147	2	134	5	187	6	*	*	*	*	*	5	158
01:45	6	153	5	186	7	144	1	188	4	*	*	*	*	*	5	168
02:00	2	152	5	167	3	167	8	167	9	*	*	*	*	*	5	163
02:15	9	160	7	185	6	147	2	184	9	*	*	*	*	*	7	169
02:30	2	182	2	174	2	167	7	176	7	*	*	*	*	*	4	175
02:45	6	189	6	199	7	186	0	188	6	*	*	*	*	*	5	190
03:00	4	177	8	190	5	162	2	177	6	*	*	*	*	*	5	176
03:15	7	168	9	185	8	**188**	2	198	10	*	*	*	*	*	7	185
03:30	14	170	13	182	9	**196**	2	**199**	9	*	*	*	*	*	9	**187**
03:45	7	**181**	16	193	17	**180**	4	**212**	15	*	*	*	*	*	12	**192**
04:00	25	**167**	18	**216**	19	**203**	21	**198**	26	*	*	*	*	*	22	**196**
04:15	35	**197**	34	**186**	33	178	36	**199**	25	*	*	*	*	*	33	**190**
04:30	52	**182**	48	**193**	57	186	45	182	40	*	*	*	*	*	48	186
04:45	55	164	63	**194**	51	174	61	187	46	*	*	*	*	*	55	180
05:00	62	166	65	147	76	194	66	190	51	*	*	*	*	*	64	174
05:15	69	142	69	168	76	160	82	179	71	*	*	*	*	*	73	162
05:30	87	147	88	147	74	166	79	148	86	*	*	*	*	*	83	152
05:45	103	127	111	134	81	158	97	130	102	*	*	*	*	*	99	137
06:00	113	127	107	125	80	126	134	147	**131**	*	*	*	*	*	113	131
06:15	**142**	122	**155**	124	79	113	**149**	148	**129**	*	*	*	*	*	**131**	127
06:30	**156**	131	**160**	125	90	109	**139**	122	**139**	*	*	*	*	*	**137**	122
06:45	**167**	92	**147**	105	114	91	**153**	128	**133**	*	*	*	*	*	**143**	104
07:00	**131**	114	**137**	108	**128**	92	**150**	119	111	*	*	*	*	*	**131**	108
07:15	122	108	123	90	**144**	85	122	125	127	*	*	*	*	*	128	102
07:30	151	86	131	85	**124**	79	127	99	138	*	*	*	*	*	134	87
07:45	48	79	118	98	**154**	56	124	110	147	*	*	*	*	*	118	86
08:00	52	67	110	83	120	66	111	89	100	*	*	*	*	*	99	76
08:15	120	55	113	81	129	63	99	69	109	*	*	*	*	*	114	67
08:30	99	44	108	62	134	55	126	74	113	*	*	*	*	*	116	59
08:45	94	46	111	43	145	48	111	74	119	*	*	*	*	*	116	53
09:00	112	56	102	63	107	35	113	68	123	*	*	*	*	*	111	56
09:15	93	43	90	49	103	46	105	55	132	*	*	*	*	*	105	48
09:30	128	41	117	39	120	53	126	51	125	*	*	*	*	*	123	46
09:45	111	31	117	33	118	35	103	45	113	*	*	*	*	*	112	36
10:00	83	31	105	42	96	32	100	27	*	*	*	*	*	*	96	33
10:15	100	31	124	28	102	39	109	52	*	*	*	*	*	*	109	38
10:30	125	25	119	29	114	25	121	27	*	*	*	*	*	*	120	26
10:45	115	12	130	22	112	13	129	24	*	*	*	*	*	*	122	18
11:00	134	20	138	27	98	25	159	31	*	*	*	*	*	*	132	26
11:15	131	18	160	26	139	20	142	32	*	*	*	*	*	*	143	24
11:30	146	21	119	21	129	17	113	27	*	*	*	*	*	*	127	22
11:45	118	6	131	8	113	11	128	17	*	*	*	*	*	*	122	10
Total	3384	5189	3579	5549	3345	5271	3550	5859	2575	0	0	0	0	0	3482	5467
Day Total		8573		9128		8616		9409		2575		0		0		8949
% Splits	39.5 %	60.5 %	39.2 %	60.8 %	38.8 %	61.2 %	37.7 %	62.3 %	100.0 %	0.0%	0.0%	0.0%	0.0%	0.0%	38.9 %	61.1%
Peak	06:15	03:45	06:15	04:00	07:00	03:15	06:15	03:30	06:00	-	-	-	-	-	06:15	03:30
Vol.	596	727	599	789	550	767	591	808	532	-	-	-	-	-	542	765
P.H.F.	0.892	0.923	0.936	0.913	0.893	0.945	0.966	0.953	0.957						0.948	0.976

ADT ADT 8,702 AADT 8,702

TechniQuest Corporation

4105 US Route 1, Suite #10
Monmouth Junction, NJ 08852
Phone: 732-274-9500 Fax: 732-274-9510
www.techniquestcorporation.com

Site Code: 015-02
Date Start: 21-May-21
S Main Street, South of the Circle
SB

Start	17-May-21		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	*	*	*	*	*	*	*	158	14	**149**	21	150	18	152
12:15	*	*	*	*	*	*	*	*	*	156	12	**141**	21	141	16	146
12:30	*	*	*	*	*	*	*	*	*	121	10	**139**	10	121	10	127
12:45	*	*	*	*	*	*	*	*	*	163	19	**164**	20	135	20	**154**
01:00	*	*	*	*	*	*	*	*	*	153	18	126	25	**127**	22	**135**
01:15	*	*	*	*	*	*	*	*	*	153	29	145	9	**138**	19	**145**
01:30	*	*	*	*	*	*	*	*	*	165	9	142	9	**176**	9	**161**
01:45	*	*	*	*	*	*	*	*	*	152	9	129	6	**137**	8	139
02:00	*	*	*	*	*	*	*	*	*	160	4	161	8	119	6	147
02:15	*	*	*	*	*	*	*	*	*	137	10	131	6	131	8	133
02:30	*	*	*	*	*	*	*	*	*	150	11	144	4	109	8	134
02:45	*	*	*	*	*	*	*	*	*	181	10	127	5	129	8	146
03:00	*	*	*	*	*	*	*	*	*	169	1	145	3	107	2	140
03:15	*	*	*	*	*	*	*	*	*	161	10	132	7	118	8	137
03:30	*	*	*	*	*	*	*	*	*	**176**	9	148	6	117	8	147
03:45	*	*	*	*	*	*	*	*	*	**183**	13	128	4	113	8	141
04:00	*	*	*	*	*	*	*	*	*	**168**	13	138	7	125	10	144
04:15	*	*	*	*	*	*	*	*	*	**167**	18	129	8	108	13	135
04:30	*	*	*	*	*	*	*	*	*	170	29	133	14	136	22	146
04:45	*	*	*	*	*	*	*	*	*	172	44	111	15	118	30	134
05:00	*	*	*	*	*	*	*	*	*	148	31	135	27	135	29	139
05:15	*	*	*	*	*	*	*	*	*	170	31	135	32	107	32	137
05:30	*	*	*	*	*	*	*	*	*	168	70	116	63	127	66	137
05:45	*	*	*	*	*	*	*	*	*	181	79	131	52	109	66	140
06:00	*	*	*	*	*	*	*	*	*	142	65	120	45	108	55	123
06:15	*	*	*	*	*	*	*	*	*	141	87	118	29	97	58	119
06:30	*	*	*	*	*	*	*	*	*	132	75	107	51	104	63	114
06:45	*	*	*	*	*	*	*	*	*	115	87	122	59	88	73	108
07:00	*	*	*	*	*	*	*	*	*	128	81	88	54	70	68	95
07:15	*	*	*	*	*	*	*	*	*	106	79	97	35	85	57	96
07:30	*	*	*	*	*	*	*	*	*	102	85	92	69	73	77	89
07:45	*	*	*	*	*	*	*	*	*	93	129	77	79	81	104	84
08:00	*	*	*	*	*	*	*	*	*	100	119	92	82	93	100	95
08:15	*	*	*	*	*	*	*	*	*	111	113	74	84	53	98	79
08:30	*	*	*	*	*	*	*	*	*	89	115	83	105	61	110	78
08:45	*	*	*	*	*	*	*	*	*	68	124	71	96	42	110	60
09:00	*	*	*	*	*	*	*	*	115	75	101	69	106	43	107	62
09:15	*	*	*	*	*	*	*	*	126	88	125	61	94	51	115	67
09:30	*	*	*	*	*	*	*	*	140	65	135	52	116	33	130	50
09:45	*	*	*	*	*	*	*	*	117	47	113	44	**146**	36	125	42
10:00	*	*	*	*	*	*	*	*	130	39	145	43	**99**	37	125	40
10:15	*	*	*	*	*	*	*	*	125	38	130	34	**130**	16	128	29
10:30	*	*	*	*	*	*	*	*	128	38	130	30	**124**	16	127	28
10:45	*	*	*	*	*	*	*	*	113	39	**162**	33	121	17	132	30
11:00	*	*	*	*	*	*	*	*	**152**	26	**146**	25	120	16	**139**	22
11:15	*	*	*	*	*	*	*	*	**152**	23	**144**	16	129	19	**142**	19
11:30	*	*	*	*	*	*	*	*	**149**	28	**147**	18	113	9	**136**	18
11:45	*	*	*	*	*	*	*	*	**143**	20	128	21	136	10	**136**	17
Total	0	0	0	0	0	0	0	0	1590	5735	3268	4866	2604	4291	2961	4960
Day Total		0		0		0		0		7325		8134		6895		7921
% Splits	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	21.7 %	78.3 %	40.2 %	59.8 %	37.8 %	62.2 %	37.4 %	62.6%
Peak	-	-	-	-	-	-	-	-	11:00	03:30	10:45	12:00	09:45	01:00	11:00	00:45
Vol.	-	-	-	-	-	-	-	-	596	694	599	593	499	578	553	595
P.H.F.									0.980	0.948	0.924	0.904	0.854	0.821	0.974	0.924

TechniQuest Corporation

4105 US Route 1, Suite #10
Monmouth Junction, NJ 08852
Phone: 732-274-9500 Fax: 732-274-9510
www.techniquestcorporation.com

Site Code: 015-02
Date Start: 21-May-21
S Main Street, South of the Circle
SB

Start	24-May-21		Tue		Wed		Thu		Fri		Sat		Sun		Average Da	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	7	140	3	153	4	144	7	146	8	*	*	*	*	*	6	146
12:15	7	140	4	131	8	123	5	147	6	*	*	*	*	*	6	135
12:30	10	135	7	138	7	121	6	143	5	*	*	*	*	*	7	134
12:45	9	149	7	145	4	138	4	158	3	*	*	*	*	*	5	148
01:00	1	154	2	120	6	131	3	158	4	*	*	*	*	*	3	141
01:15	2	162	7	159	6	118	2	167	3	*	*	*	*	*	4	152
01:30	6	138	6	167	6	123	5	144	3	*	*	*	*	*	5	143
01:45	2	137	3	153	5	137	2	144	2	*	*	*	*	*	3	143
02:00	4	149	3	150	5	137	3	157	3	*	*	*	*	*	4	148
02:15	3	166	10	165	2	146	2	175	2	*	*	*	*	*	4	163
02:30	3	160	2	162	4	157	2	162	3	*	*	*	*	*	3	160
02:45	7	180	8	168	7	150	3	183	6	*	*	*	*	*	6	170
03:00	5	148	6	170	6	133	8	152	7	*	*	*	*	*	6	151
03:15	9	124	12	140	11	160	11	129	13	*	*	*	*	*	11	138
03:30	9	150	15	162	12	161	14	156	15	*	*	*	*	*	13	157
03:45	22	167	17	163	27	154	17	174	18	*	*	*	*	*	20	164
04:00	18	**172**	19	**177**	19	**166**	25	**180**	28	*	*	*	*	*	22	**174**
04:15	39	**158**	30	**179**	28	**161**	41	**165**	36	*	*	*	*	*	35	**166**
04:30	75	**160**	74	**158**	42	**182**	77	**166**	89	*	*	*	*	*	71	**166**
04:45	89	**175**	97	**173**	59	**163**	97	**180**	85	*	*	*	*	*	85	**173**
05:00	66	144	62	153	68	164	68	148	83	*	*	*	*	*	69	152
05:15	93	125	99	169	66	145	99	128	120	*	*	*	*	*	95	142
05:30	**168**	118	**174**	151	70	168	**170**	120	**163**	*	*	*	*	*	149	139
05:45	**165**	129	**198**	129	72	159	**169**	136	**206**	*	*	*	*	*	162	138
06:00	**143**	124	**160**	134	78	126	**146**	130	**150**	*	*	*	*	*	135	128
06:15	**141**	91	**137**	140	116	100	**145**	96	**151**	*	*	*	*	*	**138**	107
06:30	161	109	157	108	**152**	114	166	113	145	*	*	*	*	*	**156**	111
06:45	157	105	166	104	**186**	109	163	108	157	*	*	*	*	*	**166**	106
07:00	140	110	132	123	**140**	113	147	113	144	*	*	*	*	*	**141**	115
07:15	125	125	142	113	**139**	127	133	129	143	*	*	*	*	*	136	124
07:30	126	86	141	74	126	88	129	91	132	*	*	*	*	*	131	85
07:45	109	81	145	92	155	84	115	87	172	*	*	*	*	*	139	86
08:00	46	87	140	83	136	92	119	94	143	*	*	*	*	*	117	89
08:15	97	64	96	65	125	67	103	72	131	*	*	*	*	*	110	67
08:30	99	64	103	58	115	67	106	73	117	*	*	*	*	*	108	66
08:45	100	50	117	68	144	53	106	58	103	*	*	*	*	*	114	57
09:00	72	50	87	83	111	54	109	57	100	*	*	*	*	*	96	61
09:15	89	52	95	62	112	57	114	58	97	*	*	*	*	*	101	57
09:30	93	35	106	52	91	37	125	40	94	*	*	*	*	*	102	41
09:45	102	36	120	34	99	41	109	40	104	*	*	*	*	*	107	38
10:00	92	24	104	29	89	30	112	27	*	*	*	*	*	*	99	28
10:15	94	17	130	21	97	24	102	21	*	*	*	*	*	*	106	21
10:30	106	20	102	21	92	22	112	25	*	*	*	*	*	*	103	22
10:45	133	14	123	19	106	17	142	16	*	*	*	*	*	*	126	16
11:00	120	11	154	24	103	17	128	14	*	*	*	*	*	*	126	16
11:15	132	9	152	13	103	14	139	11	*	*	*	*	*	*	132	12
11:30	117	12	132	13	109	16	123	6	*	*	*	*	*	*	120	12
11:45	114	7	117	9	113	10	119	7	*	*	*	*	*	*	116	8
Total	3527	4963	3923	5277	3381	5020	3852	5204	2994	0	0	0	0	0	3719	5116
Day Total		8490		9200		8401		9056		2994		0		0		8835
% Splits	41.5 %	58.5 %	42.6 %	57.4 %	40.2 %	59.8 %	42.5 %	57.5 %	100.0 %	0.0%	0.0%	0.0%	0.0%	0.0%	42.1 %	57.9%
Peak	05:30	04:00	05:30	04:00	06:30	04:00	05:30	04:00	05:30	-	-	-	-	-	06:15	04:00
Vol.	617	665	669	687	617	672	630	691	670	-	-	-	-	-	601	679
P.H.F.	0.918	0.950	0.845	0.959	0.829	0.923	0.926	0.960	0.813						0.905	0.976

ADT ADT 6,804 AADT 6,804

TechniQuest Corporation
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Phone: 732.274.9500, Fax: 732.274.9510
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File Name : 21T1-015-01
Site Code : 21T1-015-01
Start Date : 5/26/2021
Page No : 1

Groups Printed- Cars - Light Trucks - Heavy Trucks

	Bolmer Blvd Southbound					E Main Street Westbound					S Main Street Northbound					E Main Street Eastbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
06:00 AM	2	34	0	0	36	26	26	0	0	52	24	32	20	0	76	1	28	14	2	45	209
06:15 AM	3	39	0	0	42	46	22	1	0	69	22	25	28	0	75	4	39	27	6	76	262
06:30 AM	5	75	0	0	80	47	32	3	0	82	28	31	28	0	87	2	31	38	2	73	322
06:45 AM	6	77	0	0	83	61	40	3	0	104	24	37	48	0	109	1	49	54	3	107	403
Total	16	225	0	0	241	180	120	7	0	307	98	125	124	0	347	8	147	133	13	301	1196
07:00 AM	4	47	1	0	52	54	31	5	0	90	26	69	34	0	129	0	33	32	3	68	339
07:15 AM	6	64	2	1	73	44	61	3	0	108	32	70	46	0	148	1	43	35	2	81	410
07:30 AM	2	64	0	0	66	37	60	6	0	103	21	64	35	0	120	5	48	32	3	88	377
07:45 AM	6	63	3	0	72	48	45	7	0	100	34	62	57	0	153	1	45	37	3	86	411
Total	18	238	6	1	263	183	197	21	0	401	113	265	172	0	550	7	169	136	11	323	1537
08:00 AM	6	52	0	0	58	50	36	3	0	89	24	58	42	2	126	6	34	40	6	86	359
08:15 AM	3	53	0	0	56	25	42	5	0	72	35	56	41	1	133	2	37	51	3	93	354
08:30 AM	8	49	0	0	57	37	45	2	0	84	36	54	40	0	130	2	36	34	4	76	347
08:45 AM	5	59	0	0	64	48	48	4	0	100	33	65	53	0	151	0	34	43	1	78	393
Total	22	213	0	0	235	160	171	14	0	345	128	233	176	3	540	10	141	168	14	333	1453
09:00 AM	6	47	1	0	54	36	46	2	1	85	29	44	37	0	110	2	26	34	2	64	313
09:15 AM	7	51	3	0	61	35	39	1	0	75	19	45	36	0	100	4	28	29	1	62	298
09:30 AM	5	41	1	0	47	27	42	5	0	74	24	68	33	1	126	1	32	28	3	64	311
09:45 AM	4	34	1	0	39	25	43	4	0	72	26	56	31	0	113	2	38	38	1	79	303
Total	22	173	6	0	201	123	170	12	1	306	98	213	137	1	449	9	124	129	7	269	1225
10:00 AM	4	32	0	0	36	16	41	3	0	60	28	39	31	0	98	2	46	38	3	89	283
10:15 AM	7	44	2	0	53	18	29	7	0	54	32	37	29	1	99	1	23	31	2	57	263
10:30 AM	8	29	1	0	38	22	45	6	2	75	32	53	26	0	111	2	30	37	1	70	294
10:45 AM	4	41	3	0	48	30	42	6	0	78	29	56	30	0	115	0	31	31	1	63	304
Total	23	146	6	0	175	86	157	22	2	267	121	185	116	1	423	5	130	137	7	279	1144
11:00 AM	5	38	3	0	46	24	43	5	0	72	30	37	28	0	95	2	44	37	1	84	297
11:15 AM	3	32	1	0	36	30	33	4	1	68	31	59	42	0	132	2	35	37	6	80	316
11:30 AM	4	37	1	0	42	29	41	5	0	75	27	57	39	0	123	2	46	39	3	90	330
11:45 AM	7	40	1	3	51	25	47	7	0	79	32	42	35	0	109	3	36	43	7	89	328
Total	19	147	6	3	175	108	164	21	1	294	120	195	144	0	459	9	161	156	17	343	1271

TechniQuest Corporation
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File Name : 21T1-015-01
Site Code : 21T1-015-01
Start Date : 5/26/2021
Page No : 2

Groups Printed- Cars - Light Trucks - Heavy Trucks

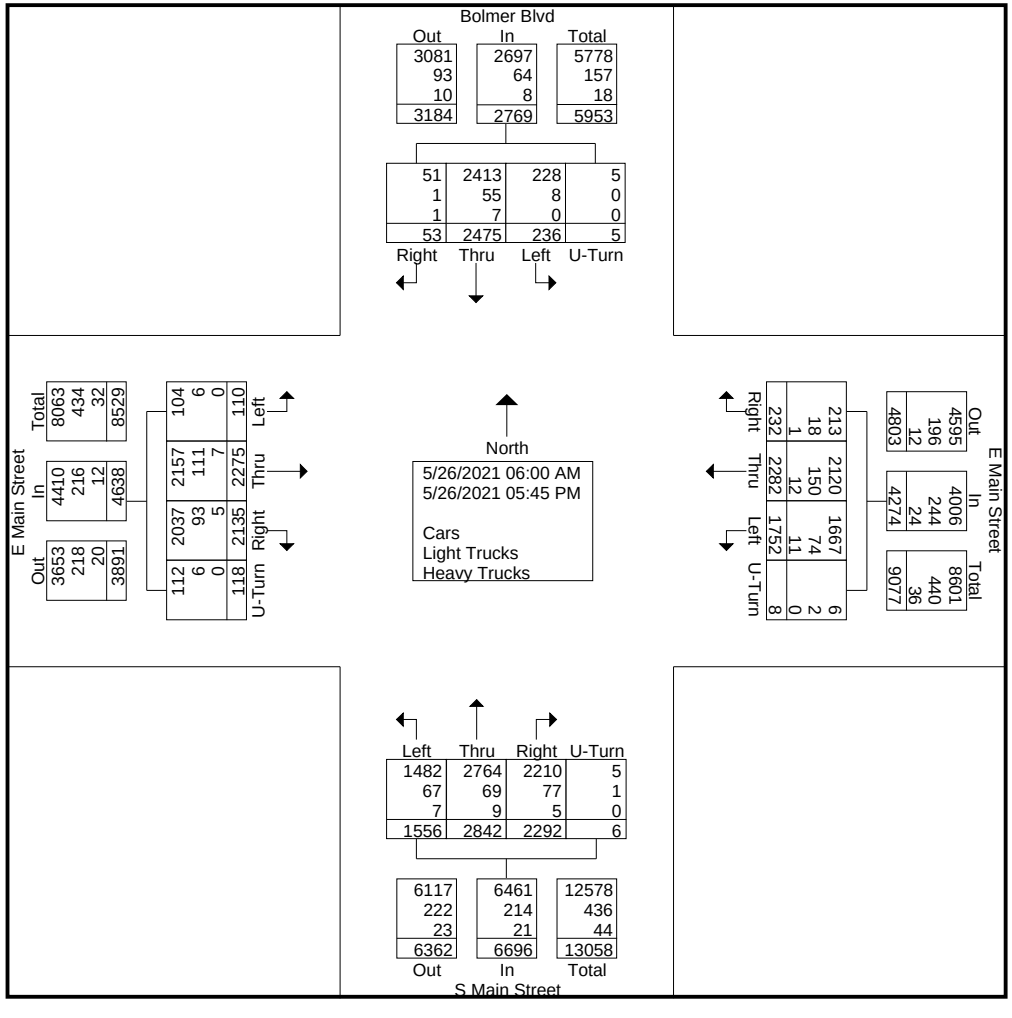
	Bolmer Blvd Southbound					E Main Street Westbound					S Main Street Northbound					E Main Street Eastbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
12:00 PM	7	47	1	0	55	38	38	7	1	84	39	59	48	0	146	2	53	63	3	121	406
12:15 PM	7	48	1	0	56	21	38	3	1	63	44	59	42	0	145	2	51	48	1	102	366
12:30 PM	7	35	1	0	43	34	52	8	0	94	31	57	53	0	141	2	66	50	2	120	398
12:45 PM	5	44	1	0	50	40	33	1	0	74	39	64	50	0	153	3	66	57	3	129	406
Total	26	174	4	0	204	133	161	19	2	315	153	239	193	0	585	9	236	218	9	472	1576
01:00 PM	3	47	2	0	52	30	48	3	0	81	34	60	45	0	139	3	74	61	3	141	413
01:15 PM	7	43	1	0	51	29	56	4	0	89	31	60	47	0	138	4	67	41	1	113	391
01:30 PM	3	39	1	0	43	34	54	9	0	97	32	48	49	0	129	4	69	46	4	123	392
01:45 PM	2	49	1	0	52	43	54	6	0	103	33	68	39	0	140	1	55	46	4	106	401
Total	15	178	5	0	198	136	212	22	0	370	130	236	180	0	546	12	265	194	12	483	1597
02:00 PM	5	44	1	0	50	34	44	4	0	82	52	68	56	0	176	3	61	53	2	119	427
02:15 PM	8	45	1	0	54	36	48	2	0	86	37	56	50	0	143	3	69	58	0	130	413
02:30 PM	4	54	2	0	60	41	58	6	0	105	36	68	58	0	162	1	73	66	2	142	469
02:45 PM	5	48	2	0	55	33	53	5	0	91	37	75	71	0	183	1	72	63	0	136	465
Total	22	191	6	0	219	144	203	17	0	364	162	267	235	0	664	8	275	240	4	527	1774
03:00 PM	8	39	2	0	49	36	61	11	0	108	30	71	56	0	157	0	84	52	1	137	451
03:15 PM	4	48	1	1	54	39	48	5	1	93	48	67	68	0	183	2	73	69	1	145	475
03:30 PM	6	56	1	0	63	41	48	5	0	94	45	76	78	0	199	1	50	56	5	112	468
03:45 PM	4	67	4	0	75	49	48	12	1	110	34	81	62	1	178	2	65	40	2	109	472
Total	22	210	8	1	241	165	205	33	2	405	157	295	264	1	717	5	272	217	9	503	1866
04:00 PM	3	78	1	0	82	37	68	3	0	108	41	81	71	0	193	2	44	54	1	101	484
04:15 PM	5	75	2	0	82	41	65	11	0	117	42	68	75	0	185	3	53	52	1	109	493
04:30 PM	5	77	0	0	82	49	74	4	0	127	36	81	63	0	180	3	49	58	6	116	505
04:45 PM	5	65	0	0	70	44	51	9	0	104	36	69	62	0	167	3	33	48	2	86	427
Total	18	295	3	0	316	171	258	27	0	456	155	299	271	0	725	11	179	212	10	412	1909
05:00 PM	3	71	2	0	76	39	70	4	0	113	36	90	74	0	200	5	53	56	1	115	504
05:15 PM	5	58	1	0	64	34	73	4	0	111	32	59	64	0	155	3	49	47	2	101	431
05:30 PM	3	75	0	0	78	51	57	7	0	115	27	71	73	0	171	6	38	48	1	93	457
05:45 PM	2	81	0	0	83	39	64	2	0	105	26	70	69	0	165	3	36	44	1	84	437
Total	13	285	3	0	301	163	264	17	0	444	121	290	280	0	691	17	176	195	5	393	1829
Grand Total	236	2475	53	5	2769	1752	2282	232	8	4274	1556	2842	2292	6	6696	110	2275	2135	118	4638	18377
Apprch %	8.5	89.4	1.9	0.2		41	53.4	5.4	0.2		23.2	42.4	34.2	0.1		2.4	49.1	46	2.5		
Total %	1.3	13.5	0.3	0	15.1	9.5	12.4	1.3	0	23.3	8.5	15.5	12.5	0	36.4	0.6	12.4	11.6	0.6	25.2	
Cars	228	2413	51	5	2697	1667	2120	213	6	4006	1482	2764	2210	5	6461	104	2157	2037	112	4410	17574
% Cars	96.6	97.5	96.2	100	97.4	95.1	92.9	91.8	75	93.7	95.2	97.3	96.4	83.3	96.5	94.5	94.8	95.4	94.9	95.1	95.6
Light Trucks	8	55	1	0	64	74	150	18	2	244	67	69	77	1	214	6	111	93	6	216	738
% Light Trucks	3.4	2.2	1.9	0	2.3	4.2	6.6	7.8	25	5.7	4.3	2.4	3.4	16.7	3.2	5.5	4.9	4.4	5.1	4.7	4

TechniQuest Corporation
4105 US Route 1, Suite 10
Monmouth Junction, NJ 08852
Phone: 732.274.9500, Fax: 732.274.9510
www.techniquestcorporation.com

File Name : 21T1-015-01
Site Code : 21T1-015-01
Start Date : 5/26/2021
Page No : 3

Groups Printed- Cars - Light Trucks - Heavy Trucks

	Bolmer Blvd Southbound					E Main Street Westbound					S Main Street Northbound					E Main Street Eastbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Heavy Trucks	0	7	1	0	8	11	12	1	0	24	7	9	5	0	21	0	7	5	0	12	65
% Heavy Trucks	0	0.3	1.9	0	0.3	0.6	0.5	0.4	0	0.6	0.4	0.3	0.2	0	0.3	0	0.3	0.2	0	0.3	0.4



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File Name : 21T1-015-01
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Start Date : 5/26/2021
Page No : 4

	Bolmer Blvd Southbound					E Main Street Westbound					S Main Street Northbound					E Main Street Eastbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	**6**	**64**	2	**1**	**73**	44	**61**	3	0	**108**	32	**70**	46	0	148	1	43	35	2	81	410
07:30 AM	2	64	0	0	66	37	60	6	0	103	21	64	35	0	120	5	**48**	32	3	**88**	377
07:45 AM	6	63	**3**	0	72	48	45	**7**	0	100	**34**	62	**57**	0	**153**	1	45	37	3	86	**411**
08:00 AM	6	52	0	0	58	**50**	36	3	0	89	24	58	42	**2**	126	**6**	34	**40**	**6**	86	359
Total Volume	20	243	5	1	269	179	202	19	0	400	111	254	180	2	547	13	170	144	14	341	1557
% App. Total	7.4	90.3	1.9	0.4		44.8	50.5	4.8	0		20.3	46.4	32.9	0.4		3.8	49.9	42.2	4.1		
PHF	.833	.949	.417	.250	.921	.895	.828	.679	.000	.926	.816	.907	.789	.250	.894	.542	.885	.900	.583	.969	.947
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:30 PM																					
12:30 PM	**7**	35	1	0	43	34	52	**8**	0	**94**	31	57	**53**	0	141	2	66	50	2	120	398
12:45 PM	5	44	1	0	50	**40**	33	1	0	74	**39**	**64**	50	0	**153**	3	66	57	**3**	129	406
01:00 PM	3	**47**	**2**	0	**52**	30	48	3	0	81	34	60	45	0	139	3	**74**	**61**	3	**141**	**413**
01:15 PM	7	43	1	0	51	29	**56**	4	0	89	31	60	47	0	138	**4**	67	41	1	113	391
Total Volume	22	169	5	0	196	133	189	16	0	338	135	241	195	0	571	12	273	209	9	503	1608
% App. Total	11.2	86.2	2.6	0		39.3	55.9	4.7	0		23.6	42.2	34.2	0		2.4	54.3	41.6	1.8		
PHF	.786	.899	.625	.000	.942	.831	.844	.500	.000	.899	.865	.941	.920	.000	.933	.750	.922	.857	.750	.892	.973
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	**5**	75	**2**	0	**82**	41	65	**11**	0	117	**42**	68	**75**	0	185	3	**53**	52	1	109	493
04:30 PM	5	**77**	0	0	82	**49**	**74**	4	0	**127**	36	81	63	0	180	3	49	**58**	**6**	**116**	**505**
04:45 PM	5	65	0	0	70	44	51	9	0	104	36	69	62	0	167	3	33	48	2	86	427
05:00 PM	3	71	2	0	76	39	70	4	0	113	36	**90**	74	0	**200**	**5**	53	56	1	115	504
Total Volume	18	288	4	0	310	173	260	28	0	461	150	308	274	0	732	14	188	214	10	426	1929
% App. Total	5.8	92.9	1.3	0		37.5	56.4	6.1	0		20.5	42.1	37.4	0		3.3	44.1	50.2	2.3		
PHF	.900	.935	.500	.000	.945	.883	.878	.636	.000	.907	.893	.856	.913	.000	.915	.700	.887	.922	.417	.918	.955

Appendix B

Project Purpose and Need Statement

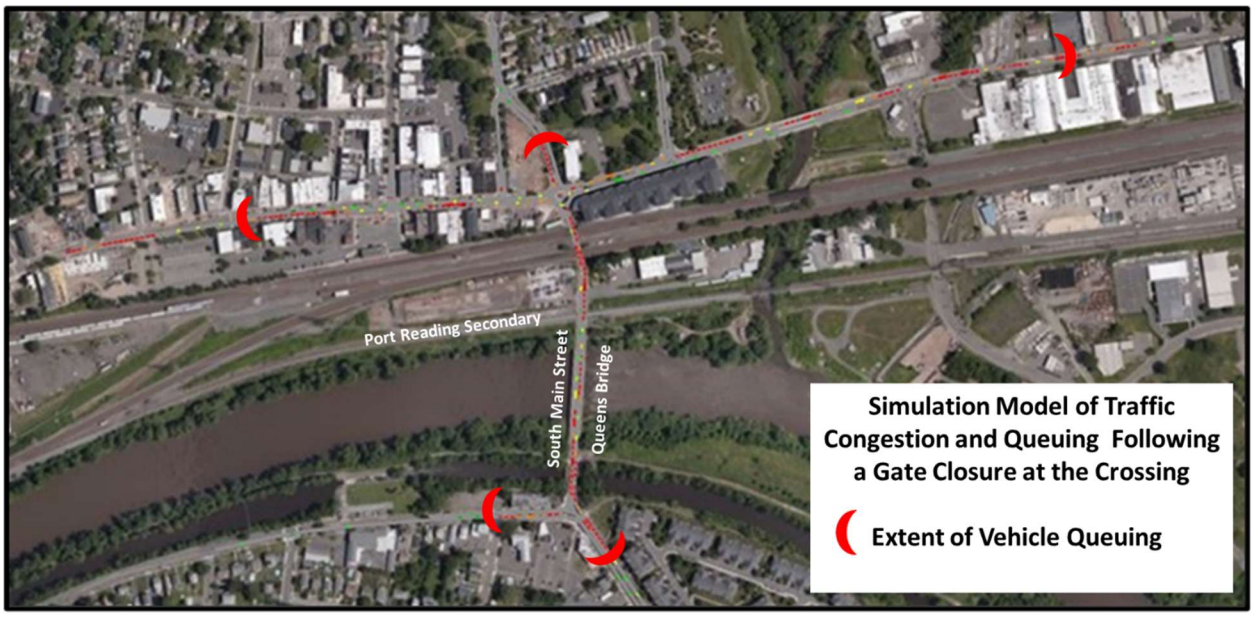
Purpose & Need Statement

"The purpose of this project is to eliminate the at-grade rail crossing on South Main Street in the Borough of Bound Brook, while maintaining freight rail access to existing and future customers along the Port Reading Secondary line."

Existing Conditions & Issues

The Port Reading Secondary runs east-west along the northern side of the Raritan River in Bound Brook, crossing South Main Street at-grade. South Main Street is one of a limited number of roadways crossing the Raritan River. Immediately to the north of the crossing, South Main Street forms the southern leg of the modern roundabout in Bound Brook's downtown. When trains cross, the road is closed to automobile traffic. The closure of South Main Street during a train crossing results in roadway congestion, vehicle queuing and adverse traffic impacts in downtown Bound Brook Borough as well as in the Borough of South Bound Brook and Middlesex Borough in Middlesex County, and impacting regional mobility.

The Port Reading Secondary is owned and operated by Conrail. Up to six (6) round trip trains per day are operated on the line with trains of up to 100 railcars. A typical crossing of South Main Street lasts approximately 3 minutes. Depending upon the time of day and the volume of roadway traffic impacts to the free flow of traffic can last for as long as 15 to 20 minutes. The following is a screen capture of a VISSIM Microsimulation model depicting the lengths of vehicle queuing on the local roadways following a crossing of South Main Street.



This issue was formally identified as part of the Somerset County's study *Advancing Intermodal Freight Opportunities in Central Somerset County completed in 2007*.

Elimination of the active grade crossing while maintaining freight rail service to existing and future customers along the Port Reading Secondary is fully consistent with the goals and priorities set forth in the NJTPA's Long Range Transportation Plan (LRTP), Plan 2050, NJDOT's Statewide Freight Plan, and the NJDOT's Statewide Freight Rail Strategic Plan. Elimination of active rail through the crossing would be expected to improved local and regional mobility, enhance safety for vehicles, bicyclists and pedestrians, and advance local and regional transportation plans.

Eliminating this grade crossing while preserving freight rail service to existing and future customers along the line presents a number of challenges. The vertical and horizontal alignment of South Main Street, existing land uses along the rail line, proximity to the Raritan River and location within a Flood Hazard Area, proximity of cultural and historic resources and known hazardous materials in the area must all be carefully considered in the development of alternatives and identification of the alternative that best meets the project purpose and need.

GOALS AND OBJECTIVES

The primary goals of this project are to:

1. **Eliminate** roadway congestion and vehicle queuing that results from the closure of the crossing.
2. **Improve** safety for vehicles, bicyclists and pedestrians at the crossing.
3. **Support** existing and future freight rail related development.
4. **Facilitate** development of and access to the Raritan River waterfront.
5. **Improve** connectivity/mobility between the Borough of Bound Brook and the Borough of South Bound Brook.

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

1. Eliminate roadway congestion and vehicle queuing that results from the closure of the crossing.
   A. **Maintain** continuous vehicular and pedestrian movement along South Main Street
   B. **Enhance** local and regional mobility
   C. **Support** economic development in downtown Bound Brook and South Bound Brook
2. Improve safety for vehicles, bicyclists and pedestrians at the crossing
   A. **Eliminate** potential conflicts between freight trains and pedestrians and vehicles.
3. Support existing and future freight rail related development.
   A. **Promote** retention and expansion of existing rail served industrial businesses along the Port Reading Secondary
   B. **Attract** investment in rail served industrial development of vacant and underutilized industrial parcels along the Port Reading Secondary
4. Facilitate development of and access to the Raritan River waterfront
   A. **Support** advancement of local and regional transportation plans
   B. **Facilitate** repurposing of land along the waterfront for recreational use
   C. **Enhance** waterfront access to pedestrians and vehicles

5. Improve connectivity/mobility between the Borough of Bound Brook and the Borough of South Bound Brook.
   A. **Remove** potential barriers to EMS Fire and Police response times due to traffic congestion resulting from a freight train crossing.

Appendix C

Cultural Resources Screening Report

Cultural Resources Screening
Freight Concept Development Program
Port Reading Secondary South Main Street
Grade Crossing Elimination Project
Borough of Bound Brook, Somerset County, New Jersey

December 2, 2022

The North Jersey Transportation Planning Authority (NJTPA), is preparing a Freight Concept Development Program Study for the Port Reading Secondary South Main Street Grade Crossing Elimination Project in the Borough of Bound Brook, Somerset County, New Jersey. This project will receive a federal grant from the United States Department of Transportation and be executed jointly by the North Jersey Transportation Planning Authority (NJTPA) and New Jersey Institute of Technology (NJIT). The NJTPA has undertaken this project in close cooperation with the New Jersey Department of Transportation (NJDOT), Bureau of Local Aid, Multimodal Services and Environmental Program Resources (BEPR).

This project will determine the potential to eliminate the Port Reading Secondary grade crossing at South Main Street (Queens Bridge). The number and length of daily freight trains result in significant congestion and traffic delays throughout the downtown area. Elimination of this grade crossing would improve mobility.

The work of developing alternatives to eliminate the Port Reading Secondary grade crossing at South Main Street (Queens Bridge) 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 selection of a Preliminary Preferred Alternative (PPA).

A total of 14 proposed alternatives (henceforth "project alternatives") were developed and subsequently evaluated for feasibility. As a result of a feasibility assessment, it was determined that five of the project alternatives were not feasible (i.e. Alternatives 2, 3.2, 3.4, 3.5 and 4.2), and therefore were not explored in this Cultural Resources Screening. The remaining seven alternatives and two more recently developed alternatives for the Port Reading Secondary South Main Street Grade Crossing Elimination Project are plotted on U.S.G.S. maps (Attachment A: Figures 1 through 9). These include alternative numbers 1, 3.1, 3.3, 3.6, 4.1, 4.3, 4.4, 4.5 and 4.6. The overall area encompassed by the project alternatives shall henceforth be referred to as the "study area". The study area is primarily located within the Borough of Bound Brook, Somerset County, but also extends into the Borough of South Bound Brook, Somerset County and Middlesex Borough, Middlesex County. For reference, all known, extant historic properties within the study area that are listed in the New Jersey Register of Historic Places (NJR) and/or the National Register of Historic Places (NRHP) or eligible for the NRHP are depicted on Figures 1 through 9 (see Attachment A).

CULTURAL RESOURCES SCREENING

The goal of this Cultural Resources Screening is to identify known cultural resource constraints within or proximate to the project alternatives (Figure 10; Table 1). Cultural resource constraints include known archaeological resources and historic architectural properties that are listed in the NJR and NRHP or are eligible or potentially eligible for the listing in 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 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 within one mile of the study area and to review prior cultural resources surveys within or proximate to the study area. The results of this screening may be utilized in the Environmental Screening document.

Background research to identify historic properties listed in the NJR and/or NRHP or eligible for listing in the NRHP and to examine previous historic sites surveys and regulatory surveys on file at the New Jersey Historic Preservation Office's (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 RGA's in-house library.

Table 1: Historic properties within the study area and whether they will be intersected or not by the routes of the proposed project alternatives.

Cultural Resource	Project Alternative Number								
	1	3.1	3.3	3.6	4.1	4.3	4.4	4.5	4.6
Central Railroad of New Jersey Main Line Corridor HD	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect
Lehigh Valley Railroad Historic District	Intersect	Intersect	Intersect	Intersect	Intersect	Intersects	Intersect	Intersect	Intersect
Port Reading Railroad HD	Intersect	Intersect	Intersect	Intersect	Intersect	Intersect	Intersect	Intersect	Intersect
Delaware and Raritan Canal Historic District	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect
Lehigh Valley Railroad and Port Reading Railroad Bridges	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect
Bound Brook Railroad Station	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect
Brook Theatre	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect
Pillar of Fire Building	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect
Old Stone Arch Bridge	Proximate	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect	Does Not Intersect

Overall Project Environmental Setting

The project alternatives are located on upland terrace and/or floodplain settings with elevations ranging from approximately 30 to 60 feet above mean sea level (see Figures 1 through 9). Topography is relatively flat. The study area is drained by Green Brook which bisects several of the alternatives. The confluence of the Green Brook and Raritan River is situated approximately 200 feet south of the study area. The Raritan River empties into Raritan Bay and then into the Atlantic Ocean. Vegetation is limited because of the urban environment but the surrounding area includes manicured grass, secondary growth deciduous trees, undergrowth, and brambles. All the project alternatives fall within industrial laydown yards between the NJ Transit Raritan Valley Line and the Port Reading Secondary Line. Representative views of the project environs are presented in Plates 1-19.

The study area is located within the New Jersey Piedmont Lowlands Province, which is characterized by gently undulating topography that slopes from the Highlands to the Coastal Plain (Wolfe 1977). In this province, rocks, clays, and marls, as well as soft shales, argillites, sandstones, and siltstones that formed during periods of glacial activity and geological plate movements are common (Wolfe 1977). The Piedmont Lowlands consist of low, gently rounded hills with elevations of 200 to 400 feet above mean sea level as well as higher areas of volcanic basaltic ridges, such as the Sourland Mountain and Watchung Mountains (Wolfe 1977). The bedrock consists of Passaic Formation Mudstone Facies from the Lower Jurassic and Upper Triassic era (Drake et al. 1996). Surficial sediments in this area consist of Late Pleistocene-aged Eolian Deposits comprised of fine sand and silts and weathered shale, mudstone, and sandstone (Stone et al. 2002).

Soil types within the study area consist of Raritan silt loam, 0 to 3 percent slopes, moderately well drained (RarAr), Reaville-Urban land complex, 0 to 6 percent slopes (RemB), Rowland silt loam, 0 to 2 percent slopes, frequently flooded (RorAt), Bowmansville silt loam 0 to 2 percent slopes, poorly drained (BoyAt), Dunellen-Urban land complex, 0 to 3 percent slopes, well drained (DuuA), and Ellington moderately deep variant-Urban land complex, 0 to 6 percent slopes, moderately well drained (EkmB), and Urban land (UR) (Figure 11; NRCS 2022). These soils range from poorly drained to well-drained sediments.

Brief Historic Context and Map Review

A preliminary review of historic maps and aerial photographs was undertaken and selected maps are attached (Figures 12 through 17).

The Raritan valley, with its easily traversed watercourses and growing trade centers, provided a natural route for commerce and communication and ensured an ever-improving transportation network. As early as the 1680s, the "Great Raritan Road," was laid out from Piscataway through Bound Brook, joining another seventeenth century thoroughfare, the Old York Road, near the North Branch of the Raritan River (Van Sickle 1936: 81; Lane 1939: 51). To improve trade along the Great Raritan Road to New Brunswick, the state legislature authorized construction of a new bridge over Green Brook in 1727/28. The construction of a bridge (i.e. Old Stone Arch Bridge) at this location, at the shared expense of Somerset and Middlesex Counties, was authorized in 1730; however, it is unknown when construction began or whether another structure preceded the Old Stone Arch Bridge. At least one historian suggests that the Old Stone Arch Bridge was built in 1731 (Van Horn 1965: 43). Remnants of the Old Stone Arch Bridge are present in the study area (Leynes 2006).

Another law, passed in 1760 made specific mention of stone bridges across Green Brook, which also marked the boundary between Middlesex and Somerset Counties (Hunter Research Inc. 2003: 2). Another bridge over the Raritan River at this location, known as Queen's Bridge, proved an important means of communication between the two banks and gave Bound Brook strategic importance in the region's growing transportation network. The Queen's Bridge lay in the footprint of the current bridge traversing the Raritan River between Bound Brook and South Bound Brook. On the eve of the American Revolution, the settlement of Bound Brook included approximately 35 houses, a blacksmith shop, two hotels, several taverns, a general store, and a church (Bicentennial Committee of Bound Brook 1976: 5).

Bound Brook was settled in the late seventeenth century, and was initially part of Bridgewater Township which was founded in 1789 (Snell 1881:648-649). Late eighteenth-century maps have Bound Brook identified at the confluence of the Raritan River and Bound Brook (Ewald 1779; Hills 1781, see Figures 12 and 13). The Great Raritan Road is depicted with multiple structures proximate to the study area in the late eighteenth century (Hills 1781). A mill is also shown on the 1781 map within the study area (see Figure 13). A summary history of the early transportation routes, bridge construction, grist mill and associated industrial developments, including a raceway, may be found in the National Register Nomination for the Old Stone Arch Bridge (see Leynes 2006).

Two engagements of note took place in the area in 1777, including one in Bound Brook (Richard Grubb & Associates, Inc. 2006). To protect Bound Brook and its strategic bridges from British raids, General George Washington, from his winter headquarters in Morristown, dispatched General Lincoln and about 500 soldiers to defend the town. Lincoln took up a position near the northern approach to Queens Bridge and constructed a redoubt or battery to defend the river crossing, as well as the stone bridge across Green Brook (Bicentennial Committee of Bound Brook 1976: 6; see Figure 12). Early on Palm Sunday morning, April 13, 1777, a greatly superior force led by Lord Cornwallis launched an attack on Lincoln's troops, forcing the Continentals to retreat to the wooded hills in the rear (Van Horn 1965: 40). Information about the Battle of Bound Brook comes to us from the diary of Johann Ewald, a Hessian in the service of the British (Ewald 1979).

By 1833, a bridge had been constructed across the Raritan River at its confluence with Green Brook. Multiple structures along the road within the study area were constructed, and the mill depicted on the 1781 Hills map was still extant (Gordon 1833; see Figure 14). By 1850, the Central Raritan Railroad had been constructed which passes through the study area. To the north of the study area houses, hotels, and a lumber mill had been constructed (Otley and Keily 1850; see Figure 15). By 1873, there were multiple rail lines that passed through the study area. There were two lines for the Central Railroad of New Jersey on the north side of the study area and on the south side there was the proposed Easton and Amboy Railroad line. On the western side of Green Brook, the Borough of Bound Brook had become increasingly developed. The eastern side of Green Brook was significantly less developed with land being owned by the railroad companies (Beers 1873; see Figure 16). At the confluence of Bound Brook/Green Brook and the Raritan River, the stream had been diverted proximate to a grist mill and the railroad lines (Beers 1873).

The arrival of the Elizabethtown and Somerville Railroad (E&SRR) assured the region's primacy as a transportation corridor, although it took many years for the line to realize its full potential. Chartered in 1831, the E&SRR crept toward Bound Brook (1838) and Somerville (1842) before collapsing in bankruptcy in 1847 (Cunningham 1997: 70). Just prior to its failure, it brought important changes to Bound Brook. In 1844, New Jersey journeymen, Barber and Howe were impressed: "This is a thriving place and at certain seasons a very large business is done in the purchase of grain as uncommon facilities are furnished for freighting to New York either by canal or railroad." Bound Brook hummed with ten stores, several mechanics, two grist mills,

two tanneries, two lumber yards, two coal yards, four taverns, along with 80 dwellings and a population of about 566 (Barber and Howe 1861: 452).

New owners of the failed railroad secured two additional charters on February 24, 1847: one for the Somerville and Easton Railroad (S&ERR) and another for the Central Railroad of New Jersey (CRRNJ) (Cunningham 1997: 71). In 1849 the E&SRR and the S&ERR combined under the CRRNJ, and through service between Elizabeth and Phillipsburg began on July 2, 1852 (Holton 1992: 312). The goal was to tap the coal fields of Pennsylvania, and once the railroad reached the Delaware River, it provided an important bridge line for the major Pennsylvania coal producers and carriers seeking an outlet to the sea. The Lehigh Valley Railroad (LVRR) connected with the CRRNJ in Easton in 1855 (Greenberg and Fischer 1997: 65). The LVRR's rival, the Delaware, Lackawanna, and Western Railroad (DL&WRR) concluded a similar agreement and linked with the CRRNJ at Hampton in 1856 (Casey and Douglas 1951: 82).

The CRRNJ's incursion into the Pennsylvania coal regions in turn alarmed the Philadelphia & Reading Railroad (P&RRR), which countered with its own entry into the anthracite business. The P&RRR also had long recognized the importance of tapping the Philadelphia-to-New York market, in a direct challenge to its arch rival, the Pennsylvania Railroad (PRR). The P&RRR worked to open, connect with, and operate the Delaware & Bound Brook Railroad (D&BBRR) in 1876, with the CRRNJ providing the final critical link between Bound Brook and New York Harbor. The P&RRR formally leased the D&BBRR in 1879, and so began a long and tumultuous relationship between the dominant P&RRR and its CRRNJ partner. The P&RRR even went so far as to charter (November 5, 1890) and build the Port Reading Railroad (PRRR), a small New Jersey-based branch running 20 miles from Bound Brook to Perth Amboy, then use it to quietly lease the CRRNJ in February 1892. The PRRR then entered into an operating agreement with the P&RRR on November 1, 1892 (Holton 1989: 282). The whole scheme was an effort to circumvent New Jersey's laws against out-of-state ownership of New Jersey corporations. The bid failed, but the PRRR became an important outlet for P&RRR coal, and ultimately the P&RRR gained a controlling interest in the CRRNJ (see Richard Grubb & Associates, Inc. 2006). The development of the railroads are shown on 1850 and 1876 atlases and maps (see Figures 15 and 16).

By the early twentieth century, industrial activity in and around the study area intensified which precipitated population growth in Bound Brook and neighboring municipalities. All three railroads in the study area are depicted by 1905 (U.S.G.S. 1905; see Figure 17). Throughout the twentieth century the study area went through various different waves of development with various different structures and laydown yards being built and demolished. This constant change is still on going with construction actively occurring to the study area (NETR 1931, 1957, 1969, 1979, 1987, 1995, 2006, 2017, 2022).

Known Historic Properties

Background research conducted online using the LUCY cultural resources map viewer indicated there are a total of nine known, extant historic properties located within the study area (NJDEP 2022b). These nine historic properties are currently listed in the NJR and NRHP, or are eligible for listing in the NRHP. The intersection of the Port Reading Secondary and South Main Street is situated within the NRHP-eligible Port Reading Railroad Historic District (SHPO Opinion: 3/14/2002). Each of the project alternatives being considered intersect with and are proximate to various historic properties within the study area, including the Lehigh Valley Railroad Historic District and Port Reading Railroad Historic District.

Three additional historic districts run through the study area. They include the NRHP-eligible Central Railroad of New Jersey Main Line Corridor Historic District (SHPO Opinion: 7/19/1991; DOE: 11/30/1995) and NRHP-eligible Lehigh Valley Railroad Historic District (SHPO Opinion: 3/14/2002) on the north side of the Raritan River; and the NJR- and NRHP-listed Delaware and Raritan Canal Historic District (NJR: 11/30/1972; NR: 5/11/1973) on the south side of the river. Three contributing resources to the Central Railroad or New Jersey Main Line Corridor Historic District are also located within the study area; River Road Bridge, Green's Brook Bridge, and Main Street Bridge. Additional historic resources within the study area include the NRHP-eligible Pillar of Fire Building (SHPO Opinion: 3/18/1996; DOE: 6/15/2000), the NJR- and NRHP-listed Old Stone Arch Bridge (NJR: 5/7/2008; NR: 6/27/2008; SHPO Opinion: 5/24/2008), the NRHP-eligible Lehigh Valley Railroad and Port Reading Railroad Bridges (SHPO Opinion: 3/18/1996), the NJR- and NRHP-listed Brook Theatre (Brook Arts Center) (NJR: 2/26/2014; NR: 5/4/2014), and the NJR- and NRHP-listed Bound Brook Railroad Station (NJR: 3/16/1984; NR: 6/21/1984).

A total of six previously identified historic architectural properties within the study have been demolished. NJHPO's LUCY cultural resources geographic information system program indicates that the NRHP-eligible Raritan Road/Plainfield Road/Landing Road/Railroad Avenue Iron Truss Bridge (Structure #18H0708) (SHPO Opinion: 3/3/2003) and NRHP-eligible Lincoln Boulevard/ East Main Street Bridge (SI&A #122B235) (SHPO Opinion: 3/18/1996) have been demolished. Field survey conducted on March 4, 2022 confirmed the following historic properties have also been demolished: the NRHP-eligible Bolmer Building (SHPO Opinion: 1/27/2004); the NRHP-eligible Bound Brook Hotel and Tavern (SHPO Opinion: 3/18/1996); the Ruberoid Company Port Reading Railroad Spur, which was a contributing element to the extant Port Reading Railroad Historic District; and the Railroad Bridge, which was a contributing resource to the extant Delaware and Raritan Canal Historic District. Information currently available of LUCY does not yet reflect that the above-mentioned resources have been demolished.

For additional context, summaries of the railroad historic districts and Old Stone Arch Bridge are provided below.

Central Railroad of New Jersey (CRRNJ), Main Line Corridor Historic District (CRRNJHD)
(SHPO Opinion: 7/19/1991; DOE: 11/30/1995)

The CRRNJ Main Line Corridor Historic District (SHPO Opinion: 7/19/1991; DOE: 11/30/1995) is eligible for inclusion in the National Register under Criteria A and C for its historical significance in the development of transportation and commerce in New Jersey and for its architectural and engineering importance associated with key transportation trends in the nineteenth and twentieth century (Guzzo 1995). The CRRNJ was the first line to cross New Jersey to tap the coal mines of Pennsylvania and serve as the chief conduit for coal from the Lehigh Valley region. It also directly affected residential growth and development in numerous communities across the state through associated growth and commercial development along the railroad right-of-way. The line contributed on the national level by transporting thousands of new immigrants from the Port of New York and Ellis Island to points west. The railroad's period of significance extends from the formation of its first chartered predecessor in 1831 to the date the last National Register-eligible station was built on the line in 1937 (Hall 1994). The district boundaries extend from Phillipsburg, Warren County to Bayonne, Hudson County.

Lehigh Valley Railroad (LVRR) Historic District
(SHPO Opinion: 3/15/2002 [HPO Log # 02-1100])

The Lehigh Valley Railroad Historic District (LVRRHD) (SHPO Opinion: 3/15/2002) is eligible for inclusion in the National Register under Criterion A for its statewide significance in transporting coal from the Pennsylvania coal fields to the New York market and for its local significance in leading to the industrial development of South Plainfield and various Middlesex County communities, such as Perth Amboy (Guzzo 2002). The district's period of significance begins in 1875, when the first shipment passed through to Perth Amboy, and ends in 1951 with the 50-year cut-off at the time the resource was surveyed (ARCH2 & Richard Grubb & Associates, Inc. 2001). The district boundary consists of the line's historic right-of-way and extends from Phillipsburg, Warren County in the west to South Plainfield, Middlesex County in the east, where it splits and continues to Perth Amboy, Middlesex County and Jersey City, Hudson County.

Port Reading Railroad (PRRR) Historic District
(SHPO Opinion: 3/15/2002 [HPO Log # 02-1100])

The Port Reading Railroad (PRRR) Historic District extends from its junction with the Delaware and Bound Brook Railroad in Bound Brook, Somerset County to its terminus on the Arthur Kill at Port Reading in Woodbridge Township, Middlesex County. The district possesses both state and national significance and is eligible under Criteria A and C for its contributions to the development of the Port of New York and as a major anthracite coal carrier in the region. The district is also significant as an instrument of railroad expansion, acquisition, and consolidation during the late nineteenth and early twentieth century. The district's boundaries include the historic right-of-way with a period of significance extending from the railroad's chartering in 1890 through 1951 (ARCH2 and Richard Grubb & Associates, Inc. 2001: Port Reading Railroad Survey Form; Guzzo 2002).

Old Stone Arch Bridge
(NJR: 5/7/2008; NR: 6/27/2008; SHPO Opinion: 5/24/2008)

The Old Stone Arch Bridge is significant on the state level under National Register Criteria A, C, and D in the areas of transportation, military history, engineering, and historical archaeology. The structure's period of significance begins with its construction, circa 1730, and ends in 1895, when East Main Street was constructed north of the railroad embankments, thus relegating the former Raritan Road causeway to a secondary role in local transportation (Leynes 2006).

Registered Archaeological Sites

A review of the NJSM site files and standard references (Cross 1941; Skinner and Schrabisch 1913; Spier 1915) indicated that there are no registered archaeological sites located within the study area. The study area falls within two archaeological site grids: DD111 and DE111 (NJDEP 2022b).

Five registered archaeological sites are located within one mile of the study area. Sites 28-Mi-24 and 28-Mi-39 are both pre-Contact period encampments that were identified in the early twentieth century (Spier 1915). The Van Horne House site (28-So-130), situated approximately one mile west of the study area, consists of a concentration of mid to late eighteenth century artifacts and pre-Contact period artifacts (i.e. flakes) from an unknown time period. The Van Horne House is listed in the State and National Registers of Historic Places. Site 28-So-133 is the historic Staats House that is listed in the NRHP. The site is approximately a half mile south of the study area. Site 28-So-157 is a historic site approximately a half mile west of the study area that

consists of a mid-nineteenth century residence (Voorhees House), associated historic features and collection of eighteenth and nineteenth century artifacts.

Table 2. Registered archaeological sites within one mile of the study area.

Site Number	Site Name	Cultural Designation	Temporal Period	Site Function	Source
28-Mi-24	Lincoln	Pre-Contact	Unknown	Camp	Spier 1915; NJSM*
28-Mi-39	East Bound Brook	Pre-Contact	Archaic?	Large Camp	Spier 1915; NJSM
28-So-130	Van Horne House	Pre-Contact/ Historic	Unknown Pre-Contact/mid-to late 18th century	Domestic; Camp Site	NJSM
28-So-133	Staats House	Historic	18th to 19th century	Domestic	NJSM
28-So-157	King/Voorhees House	Historic	18th to 20th century	Domestic	NJSM

NJSM* - New Jersey State Museum files

New Jersey Historic Bridge Survey

The 1994 New Jersey Historic Bridge Survey identified one bridge within the study area; Main Street Bridge over Green Brook (Structure No. 122B235), also known as the NRHP-eligible Lincoln Boulevard/ East Main Street Bridge (SI&A #122B235) (SHPO Opinion: 3/18/1996) (A.G. Lichtenstein & Associates, Inc. 1994). The bridge was later demolished and replaced in 2002. 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 study area lies within three different municipalities; the Borough of Bound Brook, Somerset County, to the west; the Borough of Middlesex, Middlesex County, to the east; and a small portion of the Borough of South Bound Brook, Somerset County, to the south. A large portion of the study area in the Borough of Bound Brook, roughly bounded by Main Street, John Street, and East High Street was previously surveyed in a 1985 Historic Architecture Survey of Downtown Bound Brook (Acroterion 1985). The 1985 reconnaissance-level survey included 113 survey forms which inventoried all buildings, regardless of their age, within the bounds of the potential "Downtown Bound Brook Historic District" to assess their potential NRHP-eligibility both individually and as a district. Approximately 89 of the 133 surveyed properties were located within the study area. Of the approximately 89+ identified resources (89 survey forms were prepared for buildings falling within the study area, some of which addressed multiple buildings or streetscapes), only two were recommended individually eligible for listing in the NRHP. They include the 1913 Pillar of Fire Building (Historic Sites Inventory No. 1804-01), and the 1881 Voorhees Building (Historic Sites Inventory No. 1804-20). The Pillar of Fire Building was later determined eligible for listing in the NRHP (SHPO Opinion: 3/18/1996; DOE: 6/15/2000). The Voorhees Building has not yet received a formal opinion of eligibility from the NJHPO. The 1985 survey recommended two resources within the study area as *potentially* eligible for NRHP-listing; the Bound Brook Hotel (Historic Sites Inventory No. 1804-03), and the Bound Brook Diner at 500 Main Street (Historic Sites Inventory No. 1804-6). The Bound Brook Hotel (Bound Brook Hotel and Tavern) was later determined eligible for listing in the NRHP (SHPO Opinion: 3/18/1996), but has since been demolished. The Bound Brook Diner, a 1930's Art Moderne-style diner, was also demolished

and never received a formal opinion of eligibility. One additional historic property within the study area was identified in the 1985 survey; the Bound Brook Railroad Station which was listed in the NJR and NRHP in 1984. All remaining resources surveyed within the study area were recommended not eligible for listing in the NRHP, or had no recommendation at all.

The 1978 Cultural Resources Survey of Middlesex Borough did not identify any historic architectural resources within the study area (Heritage Studies 1978). The 1989 Cultural Resources Survey of South Bound Brook, did not identify any historic architectural resources within the study area other than the Delaware and Raritan Canal Historic District, which was listed in the NJR and NRHP in 1972 and 1973, respectively (Research & Archaeological Management, Inc. 1989).

CULTURAL RESOURCES SURVEYS

A review of the NJHPO files indicated that several cultural resources surveys have been performed within the study area.

In 1992 and 1993 Richard Grubb & Associates, Inc. performed a Stage I cultural resources survey in the Boroughs of South Plainfield and Middlesex, and the Township of Piscataway for a proposed sanitary sewer system. The survey did not identify any archaeological resources and no further testing was recommended; the survey did not include a historic architectural component (Richard Grubb & Associates, Inc. 1993).

In 1999, a feasibility study was performed for the Brook Theater Arts Center to examine the building in conjunction with plans to restore and reopen the theatre (Ford Farewell Mills and Gatsch, Architects 1999).

Also in 1999, there was a contributing resource study performed for the NJ Transit Raritan Valley Line, which determined several historic resources within the study area as contributing elements to the NRHP-eligible Central Railroad of New Jersey Main Line Corridor Historic District (SHPO Opinion: 7/19/1991; DOE: 11/30/1995), including the River Road Bridge, Green's Brook Bridge, Main Street Bridge, and the Bound Brook Railroad Station (Arch2 Inc. 1999). Also, because the Bound Brook Railroad Station is individually listed in the NRHP, it is a key-contributing resource to the Central Railroad of New Jersey Main Line Corridor Historic District.

As an addendum to an earlier 1997 report, *Evaluation of Bridges and Flood Proofing/Buy out Structures for the Green Brook Flood Control Project Middlesex Borough, Middlesex County and Bound Brook Borough, Somerset County*, a subsequent cultural resources survey was undertaken in 1999 which evaluated structures potentially impacted by flood-proofing and buy-out activities by the aforementioned Green Brook Flood Control Project (Nolte et al. 1997; Panamerican Consultants, Inc. 1999). The 1999 survey evaluated the NRHP-eligibility of 19 structures, none of which were recommended eligible for listing in the NRHP (Panamerican Consultants, Inc. 1999). Another element of the Green Brook Flood Control Project included a Historic American Engineering Record (HAER) documentation of the Greenbrook Bridge (East Main Street Bridge; Bound Brook Bridge; and Lincoln Boulevard Bridge) spanning the Green Brook in Middlesex Borough, Middlesex County, and Bound Brook Borough, Somerset County in 2000 (Panamerican Consultants, Inc. 2000).

In 2002, a cultural resources assessment was performed to evaluate the NHRP-eligibility of three bridges and a railroad spur, along with the potential for archaeological remains for a grist mill. The assessment was prepared for the Green Brook Flood Control Project that the U.S. Army Corps of Engineers was performing (Hunter Research, Inc. 2002). As a result of the survey, the Iron Truss Bridge over Green Brook (Structure

#H0708) was recommended eligible for listing in the NRHP. The Ruberoid Company Port Reading Railroad Spur was recommended eligible for listing in the NRHP as a contributing resource to the NRHP-eligible Port Reading Railroad Historic District. In addition, the two bridges carried by the Ruberoid Company Port Reading Railroad Spur; one over the Raritan River, and the other over the Delaware and Raritan Canal were also recommended eligible for listing in the NRHP as contributing resources to the NJR and NRHP-listed Delaware and Raritan Canal Historic District, which both bridges fall within the boundaries of. Of note, none of the surveyed bridges, nor the railroad spur are extant today. The Field Gristmill Site at the mouth of the Green Brook was identified as being disturbed by construction from the installation of sewer lines and the railroad lines. However, the site was determined to have the potential for containing deeply buried remains from the foundation, wheel pit, and tail race.

In 2003, a cultural resources investigation was performed for construction of the Bound Brook Rotary and East Street Realignment and Linkage in Bound Brook and South Bound Brook (Richard Grubb & Associates, Inc. 2003). No archaeological resources were identified and no further work was recommended. As a result of the historic architectural survey, three Conrail bridges which formerly carried the Port Reading Railroad South Brook Branch over the Raritan River, River Road (CR 514), and the Delaware and Raritan Canal were recommended as contributing resources to the Port Reading Railroad Historic District which falls within the study area, as well as contributing to the Ruberoid Company Factory (no longer extant) located outside the study area on the south side of the Raritan River in the Borough of South Bound Brook. The historic architectural survey also recommended the Old Presbyterian Burial Grounds, located within the study area at the southwest corner of East High Street and East Street, as individually eligible for listing in the NRHP.

Following the above-mentioned 2003 survey, HAER documentation was undertaken in 2004 for the Lehigh Valley Railroad Bridge (Conrail Railroad Bridge) over South Main Street and the Central Railroad of New Jersey Bridge (NJ Transit Raritan Valley Line Bridge) over South Main Street; both of which lie within the study area in Bound Brook (Richard Grubb & Associates, Inc. 2004). This work included several photographs and aerial views (Richard Grubb & Associates, Inc. 2004).

In 2005 and 2006, RGA completed a Phase IA archaeological survey for the Lehigh Line Double Track as part of Conrail's Capacity Improvements project in Middlesex and Somerset Counties. The project traversed the study area in Bound Brook, and involved the reinstallation of a second main-line track that had been removed by Conrail in 1984. Based on the limited nature of the impacts, no further archaeological survey was necessary to fulfill permitting requirements (Richard Grubb & Associates, Inc. 2006).

On behalf of Somerset County, RGA performed research and documentation in preparation of a National Register Nomination for the Old Stone Arch Bridge that lies along Railroad Avenue, approximately 200 feet east of South Main Street in Bound Brook (Leynes 2006). The period of significance for the structure was circa 1730 to 1895 and the areas of significance include transportation, military, engineering and archaeology. The bridge was listed on the National Register of Historic Places under Criteria A, C and D. The Old Stone Arch Bridge was built circa 1730-1760 to carry the Raritan Road over Green Brook. Extensive reworking of Green Brook has taken place since the nineteenth century when the railroads were constructed. This structural feature was intact in 2006 and exhibited a high degree of integrity when the nomination was prepared (Leynes 2006).

The 2013 Statewide Jersey Diner Inventory included the Bound Brook Diner, despite the fact that the diner had been removed from its location at 502 East Main Street in Bound Brook by that time. The Statewide

Diner Inventory identified the Bound Brook Diner as a 1948 model manufactured by the Fodero Dining Car Company (Saari 2013).

In 2019, an architectural reconnaissance survey identifying existing eighteenth- and nineteenth-century buildings constructed in the East Jersey Cottage Style throughout central and northern New Jersey was conducted. This survey did not identify any extant East Jersey Cottages within the study area, and did not contain an archaeological component (Richard Veit and Dennis Bertland Associates 2019).

FIELDWORK

Archaeology
A site visit was conducted on March 4, 2022 by the project archaeologist and has been documented in Plates 1-19, the locations and directions of which are illustrated on Figures 18a through 18c. Project alternative 1 is within the right of way of the current Port Reading Secondary Line railroad and borders urban and industrial development (see Plates 1-5). The Old Stone Arch Bridge is situated north of Alternative 1. Jersey barriers line the south side of Railroad Avenue proximate to the bridge. The south façade of the bridge is overgrown but remains intact (see Plates 45 and 46). Archaeological resources could potentially be present proximate to the bridge. Although not registered as an archaeological site, the Old Stone Arch Bridge itself is considered an archaeological resource since it was listed in the NRHP under Criterion D.

Project alternatives 3.1 and 3.3 pass through industrial and urban development with disturbed areas observed (see Plates 6-9). Project alternative 3.6 passes through a wooded area between the Lehigh Valley Line and the Port Reading Secondary Line (see Plates 10-13). Alternatives 4.1, 4.3, 4.4, 4.5 and 4.6 all fall within a developed area between the two rail lines (see Plates 5, 6, 9, 14-19). Alternatives 1, 2, 3.1, 4.1, 4.2, 4.3, 4.4, 4.5 and 4.6 cross the Green Brook.

Historic Architecture
A site visit was conducted on March 4, 2022 and December 2, 2022, and has been documented in Plates 20-46 (see Figures 18a-18c). Architecture in the study area consists primarily of commercial buildings along Main Street in the Borough of Bound Brook, which eventually turns into Lincoln Boulevard as it runs east through the study area into the Borough of Middlesex (see Plates 21-32). Main Street and Lincoln Boulevard run on a roughly east-west axis through the study area. A collection of commercial buildings ranging in age from the nineteenth to early twenty-first centuries are concentrated along Main Street between its intersections with Bolmer Avenue/ South Main Street and Mountain Avenue. Several listed or eligible historic resources are located proximate to this area including the Bound Brook Railroad Station (see Plate 23), the Brook Theatre (see Plate 24), and the Pillar of Fire Building (see Plates 30 and 31). A series of streets branch off to the north from Main Street/ Lincoln Boulevard, and become increasingly residential as they extend outside the study area. The NJR and NR listed Old Stone Arch Bridge at Railroad Avenue in Bound Brook is extant (Plates 45 and 46).

The south end of the study area is dominated by railroads and industrial buildings, sandwiched between Main Street and Lincoln Boulevard to the north, and the Raritan River to the south. Three railroad historic districts run through this area; the Central Railroad of New Jersey Main Line Corridor Historic District, the Lehigh Valley Railroad Historic District, and the Port Reading Railroad Historic District. These railroad corridors are still active as the present-day NJ Transit Raritan Valley Line, Conrail Lehigh Line, and Port Reading Secondary Line, respectively. The nine project alternatives are laid throughout the section of the study area which contains the above-mentioned railroad historic districts. Each of the nine alternatives intersects with at least

the Lehigh Valley Railroad Historic District and Port Reading Railroad Historic District. Alternative 1 falls proximate to the Old Stone Arch Bridge. Any work near the bridge will require care to ensure integrity of the structure.

SUMMARY

Archaeology

No registered archaeological sites are located within the study area; however, five registered archaeological sites located within one mile of the study area. The study area is located in multiple railroad historic districts and also contains the Old Stone Arch Bridge, an eighteenth century structure which is listed in the NJR and NRHP under Criterion D, among others. The Old Stone Arch Bridge is an archaeological resource that remains intact. The study area includes critical transportation corridors, supported by the former Queens Bridge and Old Stone Arch Bridge, used since early colonial times and during the Revolutionary War. The study area falls near the confluence of the Green Brook and Raritan River, and is bisected by the Green Brook. Several pre-Contact archaeological resources (i.e. Native American) have been identified in upland and floodplain settings along the Green Brook and Raritan River. As a result, the study area is sensitive for pre-Contact, historic, industrial, and military related archaeological resources. Prior ground disturbance and development throughout the study area may well have compromised archaeological resources. In urban areas, intact pockets of soil may still persist and such areas would have the potential to contain archaeological sites and resources that could potentially contribute to the significance of the railroad historic districts and Old Stone Arch Bridge.

Historic Architecture

A total of nine extant historic properties which are either eligible for listing or currently listed in the NJR or NRHP are located within the study area. They include the NRHP-eligible Port Reading Railroad Historic District (SHPO Opinion: 3/14/2002), Central Railroad of New Jersey Main Line Corridor Historic District (SHPO Opinion: 7/19/1991; DOE: 11/30/1995), Lehigh Valley Railroad Historic District (SHPO Opinion: 3/14/2002), the Pillar of Fire Building (SHPO Opinion: 3/18/1996; DOE: 6/15/2000), Lehigh Valley Railroad and Port Reading Railroad Bridges (SHPO Opinion: 3/18/1996); and the NJR- and NRHP-listed Delaware and Raritan Canal Historic District (NJR: 11/30/1972; NR: 5/11/1973), Old Stone Arch Bridge (NJR: 5/7/2008; NR: 6/27/2008), the Brook Theatre (Brook Arts Center) (NJR: 2/26/2014; NR: 5/4/2014), and the Bound Brook Railroad Station (NJR: 3/16/1984; NR: 6/21/1984).

Of those nine listed and eligible historic properties, two are intersected by, or lie within the route of the proposed project alternatives necessary to eliminate the Port Reading Secondary grade crossing at South Main Street (Queens Bridge). All of the alternatives intersect with the Port Reading Railroad Historic District and Lehigh Valley Railroad Historic District. As indicated, Alternative 1 is proximate to the Old Stone Arch Bridge and should be avoided, if at all possible.

A Cultural Resources Survey of the selected alternative will be necessary during the LPE phase. Should the selected alternative fall within the limits of a New Jersey Register of Historic Places Act (NJAC 7:4) listed historic district or resource, 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.

SOURCES

Acroterion
1985 Historic Architecture Survey of Downtown Bound Brook. Borough of Bound Brook, Somerset County, New Jersey. On file, New Jersey Historic Preservation Office, Trenton, New Jersey.

A.G. Lichtenstein & Associates, Inc.
1994 New Jersey Historic Bridge Survey. Prepared for the New Jersey Department of Transportation, Bureau of Environmental Analysis, Trenton, New Jersey. On file, the State Historic Preservation Office, Trenton, New Jersey.

Arch2, Inc.,
1999 NJ Transit Raritan Valley Line Contributing Resources Study Contract No. 95-CJ-075.D.04 Task III – Survey Report On file, New Jersey Historic Preservation Office, Trenton, New Jersey.

Arch2, Inc. and Richard Grubb & Associates, Inc.
2001 Cultural Resources Investigation, Helen Street Extension Project, Borough of South Plainfield, Middlesex County, New Jersey. Prepared by Nancy L. Zerbe, John W. Lawrence, and Paul J. McEachen. On file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Barber, John W. and Henry Howe
1861 *Historical Collections of the State of New Jersey.* Originally published 1844. Benjamin Olds, Newark, New Jersey.

Beers, F.W.
1873 *Atlas of Somerset County, New Jersey.* Beers, Comstock & Cline, New York, New York.

Bicentennial Committee of Bound Brook
1976 *Under the Council Oak.* Bicentennial Committee of Bound Brook, Bound Brook, New Jersey.

Casey, Robert J, and W. A.S. Douglas
1951 *The Lackawanna Story.* McGraw-Hill Book Company, Inc., New York, New York.

Cross, Dorothy
1941 *Archaeology of New Jersey, Volume One.* The Archaeological Society of New Jersey and the New Jersey State Museum, Trenton, New Jersey.

Cunningham, John T.
1997 *Railroads of New Jersey: The Formative Years.* Afton Publishing Co., Inc., Andover, New Jersey.

Drake, Jr., Avery, Richard Volkert, Donald Monteverde, Gregory Herman, Hugh Houghton, Ronald Parker, and Richard Dalton
1996 Bedrock Geologic Map of Northern New Jersey. U.S. Geological Survey, U.S. Department of the Interior, Washington, D.C.

Ewald, Johann von
1979 *Diary of the American War: A Hessian Journal.* Translated and edited by Joseph P. Tustin. Yale University Press, New Haven, Connecticut.

Ford Farewell Mills and Gatsch, Architects
1999 The Brook Theater Arts Center Bound Brook, New Jersey. On file, New Jersey Historic Preservation Office, Trenton, New Jersey.

Gordon, Thomas F.
1833 A Map of the State of New Jersey with part of the adjoining States. Second edition. Thomas Gordon, Trenton, New Jersey and H.S. Tanner, Philadelphia, Pennsylvania.

Greenberg, William T., and Robert F. Fischer
1997 *The Lehigh Valley Railroad East of Mauch Chunk*. The Gingerbread Shop, Martinsville, New Jersey.

Guzzo, Dorothy
2002 Dorothy Guzzo, Deputy Historic Preservation Officer to Andras Fekete, NJ Department of Transportation, March 15, 2002 (HPO Log # 02-1100). On file, New Jersey Historic Preservation Office, Trenton, New Jersey.

1995 Dorothy Guzzo, State Historic Preservation Officer to Carol Shull, Chief, National Register of Historic Places, August 2, 1995 (HPO Log # G95-139). On file, New Jersey Historic Preservation Office, Trenton, New Jersey.

Hall, James
1994 James Hall, Deputy State Historic Preservation Officer to David Koenig, New Jersey Transit, Re: Union County, Westfield Town Replacement of Crossway Place Bridge (Bridge No. 19.42), Raritan Valley Line-Historically Main Line of the Central Railroad of New Jersey. On file, New Jersey State Historic Preservation Office, Trenton, New Jersey.

Heritage Studies
1978 Cultural Resources Survey of Middlesex Borough, Middlesex County, New Jersey. On file, New Jersey Historic Preservation Office, Trenton, New Jersey.

Hills, John
1781 A Sketch of the Northern Parts of New Jersey at the Time of the Revolution. Copied from the original. Lieutenant John Hills, 23rd Regiment. Library of Congress, Washington, D.C.

Holton, James L.
1989 *The Reading Railroad: History of A Coal Age Empire, Vol. 1.* Garrigues House Publishers, Laury's Station, Pennsylvania.

1992 *The Reading Railroad: History of A Coal Age Empire, Vol. 2.* Garrigues House Publishers, Laury's Station, Pennsylvania.

Hunter Research, Inc.
1989 A Cultural Resource Survey for the Green Brook Flood Control Project in the City of Plainfield, the Boroughs of Bound Brook, Middlesex, Dunellen, North Plainfield, and South Plainfield and the Townships of Green Brook and Bridgewater Middlesex, Somerset and Union Counties New Jersey. On file, New Jersey Historic Preservation Office, Trenton, New Jersey.
2002 Evaluating the National Register of Historic Places Eligibility of Three Bridges and a Railroad Spur and Assessing Potential for Mill Related Archaeological Remains Green Brook Flood Control Project Middlesex Borough, Middlesex County, New Jersey. On file, New Jersey Historic Preservation Office, Trenton, New Jersey.
2003 Evaluating the National Register of Historic Places Eligibility of three Bridges and a Railroad Spur and Assessing Potential for Mill Related Archaeological Remains Green Brook Flood Control Project, Middlesex Borough, Middlesex County, New Jersey. Prepared by Richard W. Hunter and Damon Tvaryanas. On file, Historic Preservation Office, Trenton, New Jersey.

Lane, Wheaton J.
1939 From Indian Trail to Iron Horse: Travel and Transportation in New Jersey. Princeton University Press, Princeton, New Jersey.

Leynes, Jennifer B.
2006 Old Stone Arch Bridge, National Register Nomination Form. On file, Richard Grubb & Associates, Inc., Cranbury, New Jersey and New Jersey Historic Preservation Office, Trenton, New Jersey.

National Resources Conservation Service (NRCS)
2022 Web Soil Survey National Cooperative Soil Survey. websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. Accessed February and November, 2022.

Nationwide Environmental Title Research, LLC (NETR)
1931 Historic Aerial Photograph. Electronic document, www.historicaerials.com. Accessed February 2022.
1957 Historic Aerial Photograph. Electronic document, www.historicaerials.com. Accessed February 2022.
1969 Historic Aerial Photograph. Electronic document, www.historicaerials.com. Accessed February 2022.
1979 Historic Aerial Photograph. Electronic document, www.historicaerials.com. Accessed February 2022.
1987 Historic Aerial Photograph. Electronic document, www.historicaerials.com. Accessed February 2022.
1995 Historic Aerial Photograph. Electronic document, www.historicaerials.com. Accessed February 2022.
2006 Historic Aerial Photograph. Electronic document, www.historicaerials.com. Accessed February 2022.
2017 Historic Aerial Photograph. Electronic document, www.historicaerials.com. Accessed February 2022.
2022 Historic Aerial Photograph. Electronic document, www.historicaerials.com. Accessed February 2022.

New Jersey Department of Environmental Protection (NJDEP)
2022a Geology. NJGeoWeb. Version 3.0, NJDEP GIS, Trenton, New Jersey.
2022b Historic Archaeological Site Grid. NJGeoWeb. Version 3.0, NJDEP GIS, Trenton, New Jersey.

Nolte, Kelly M., Mark A. Steinbeck and Michael A. Cinquino
1997 Evaluation of Bridges and Flood Proofing/Buy out Structures for the Green Brook Flood Control Project, Middlesex Borough, Middlesex County and Bound Brook Borough, Somerset County. On file, New Jersey Historic Preservation Office, Trenton, New Jersey.

Otley, J. W., and J. Keily
1850 Map of Somerset County. Lloyd Vanderveer, Camden, New Jersey.

Panamerican Consultants, Inc.
1999 Addendum: Evaluation of Nineteen Flood Proofing/Buy out structures for the Green Brook Flood Control Project Middlesex, Union, and Somerset Counties, New Jersey Final. On file, New Jersey Historic Preservation Office, Trenton, New Jersey.
2000 Lincoln Boulevard/East Main Street Bridge Spanning the Green Brook, Green Brook Flood Control Project Middlesex Borough, Middlesex County and Bound Brook Borough, Somerset County. On file, New Jersey Historic Preservation Office, Trenton, New Jersey.

Research & Archaeological Management, Inc.
1989 Cultural Resources Survey of the Borough of South Bound Brook, Somerset County, New Jersey. On file, New Jersey Historic Preservation Office, Trenton, New Jersey.

Richard Grubb & Associates, Inc.
1993 Cultural Resources Survey Sanitary Sewer Pump Station, Force Main, Gravity Systems, Boroughs of South Plainfield and Middlesex, and the Township of Piscataway, Middlesex County New Jersey. On file, New Jersey Historic Preservation Office, Trenton, New Jersey.

2003 Cultural Resources Investigation Bound Brook Rotary and East Street Realignment and Linkage Between Bound Brook and South Bound Brook Boroughs of Bound Brook and Southern Bound Brook Somerset County, New Jersey. On file, New Jersey Historic Preservation Office, Trenton, New Jersey.

2004 Lehigh Valley Railroad Bridge (Conrail Railroad Bridge) Over South Main Street, Central Railroad of New Jersey Bridge (NJ Transit Raritan Valley Line Bridge) Over South Main Street, Borough of Bound Brook, Somerset County: Photographs and Aerial Views. On file, New Jersey Historic Preservation Office, Trenton, New Jersey.

2006 Cultural Resources Investigation, Conrail Capacity Improvements North Jersey Terminal Lehigh Line Double Track, March 2006. On file, New Jersey Historic Preservation Office, Trenton, New Jersey.

Saari, Ronald C.
2013 Statewide Jersey Diner Inventory. On file, New Jersey Historic Preservation Office, Trenton, New Jersey.

Skinner, Alanson and Max Schrabisch
1913 *A Preliminary Report of the Archaeological Survey of the State of New Jersey*. In Geological Survey of New Jersey, Bulletin 9. MacCrellish & Quigley, Trenton, New Jersey.

Snell, James P.
1881 *History of Hunterdon and Somerset Counties, New Jersey*. Everts & Peck, Philadelphia, Pennsylvania.

Spier, Leslie
1915 *Indian Remains Near Plainfield, Union Co., and Along the Lower Delaware Valley*. In Geological Survey of New Jersey, Bulletin 13. Dispatch Printing Company, Union Hill, New Jersey.

Stone, Byron D., Scott D. Stanford and Ron W. Witte
2002 *Surficial Geologic Map of Northern New Jersey*. U.S. Department of the Interior, U.S. Geological Survey, Washington, D.C.

United States Geological Survey (U.S.G.S.)
2019 7.5' Quadrangle: Bound Brook, NJ
1905 15' Quadrangle: Somerville, NJ

Van Horn, James H.
1965 *Historic Somerset*. James H. Van Horn, New Brunswick, New Jersey.

Van Sickle, Emogene
1936 *The Old York Road and its Stage Coach Days*. Hunterdon County Democrat, Flemington, New Jersey.

Veit, Richard and Dennis Bertland Associates (DBA)
2019 In Search of the East Jersey Cottage: Early Anglo-Dutch Domestic Architecture in East Jersey. On file, New Jersey Historic Preservation Office, Trenton, New Jersey.

Wolfe, Peter E.
1977 *Geology and Landscapes of New Jersey*. Crane, Russak & Company, New York, New York.

ATTACHMENT A

FIGURES AND PLATES

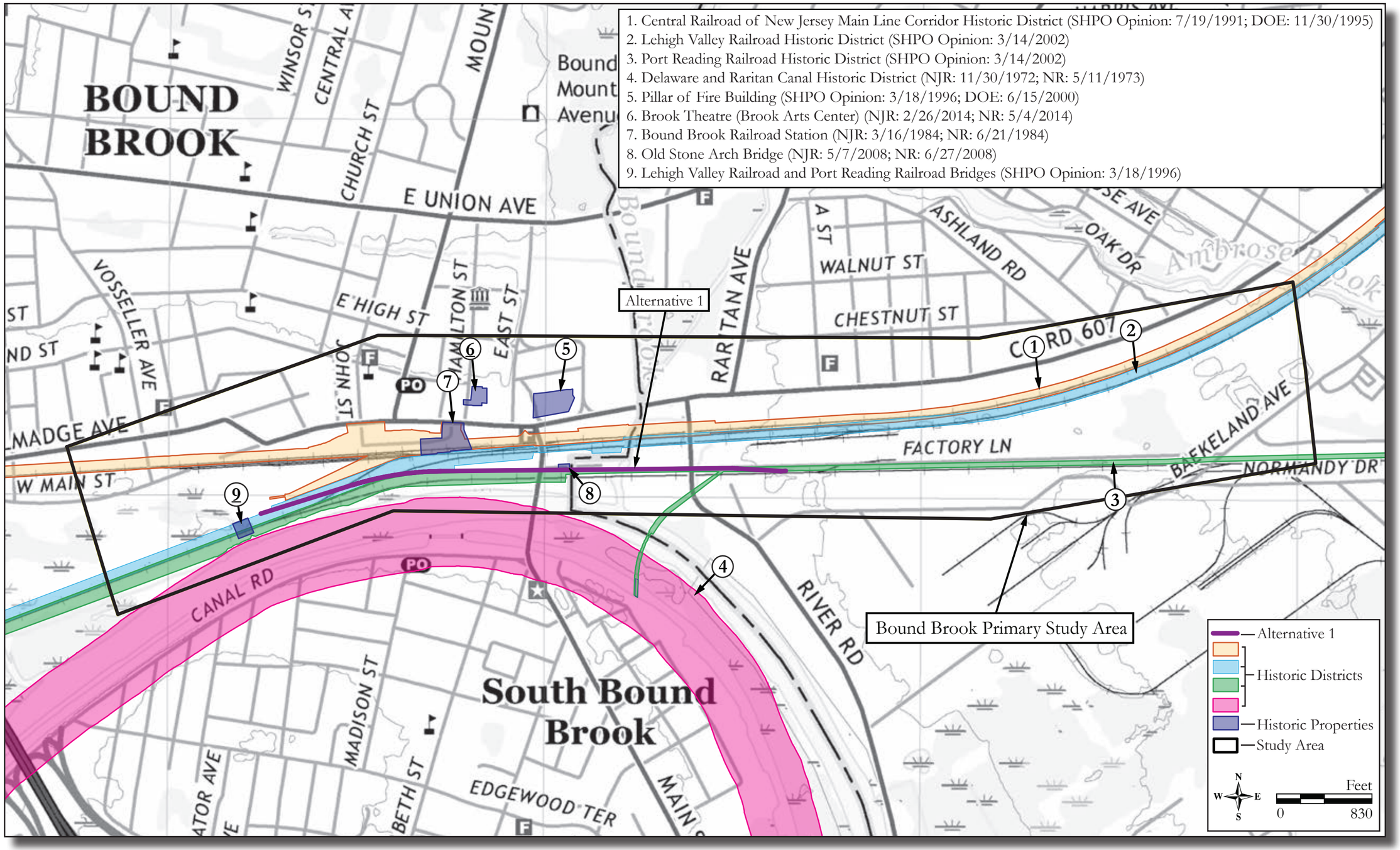


Figure 1: U.S.G.S. Map with Project Alternative 1 and Extant Historic Properties within the Study Area (2019 U.S.G.S. 7.5' Quadrangle: Bound Brook, NJ).

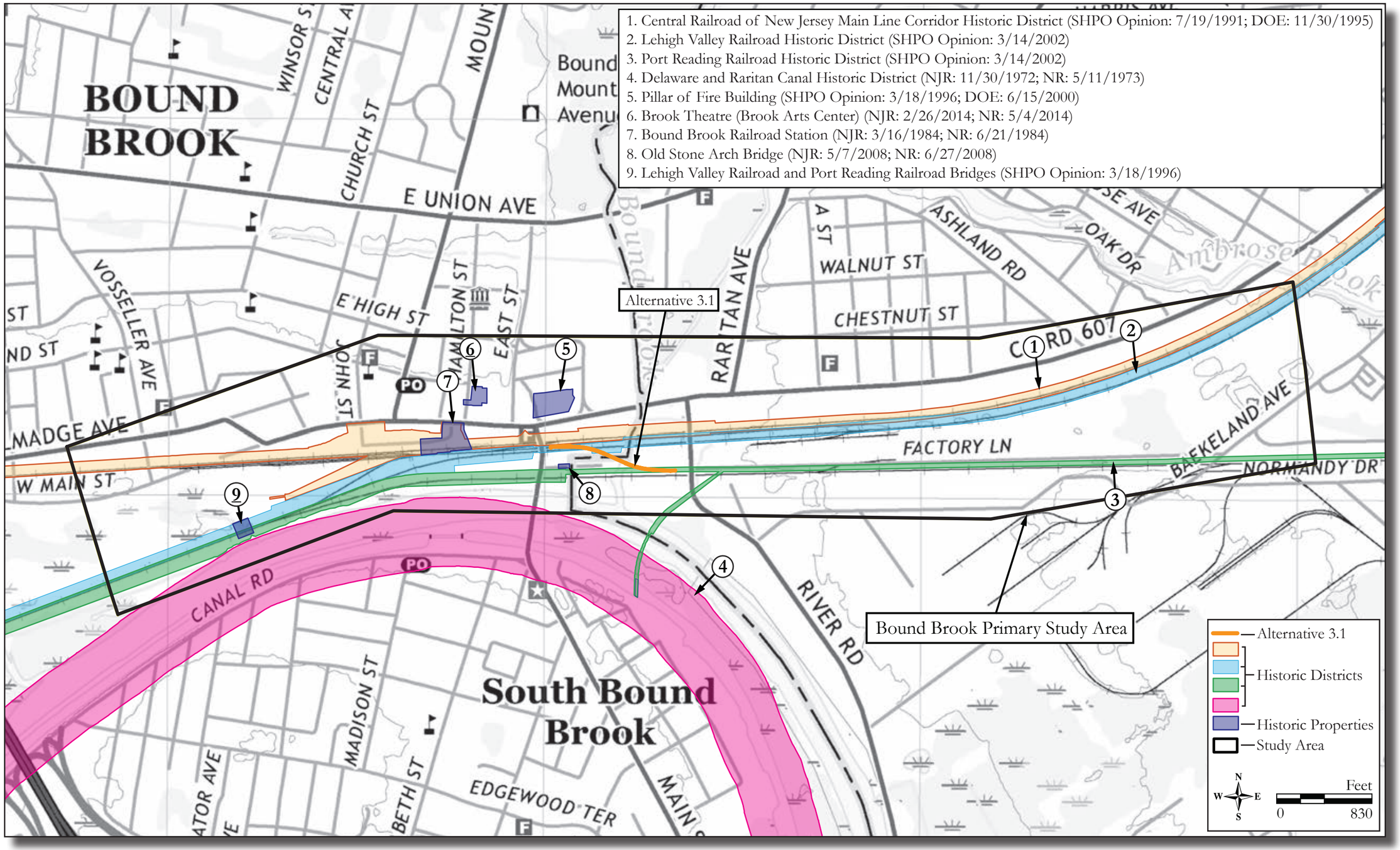


Figure 2: U.S.G.S. Map with Project Alternative 3.1 and Extant Historic Properties within the Study Area (2019 U.S.G.S. 7.5' Quadrangle: Bound Brook, NJ).

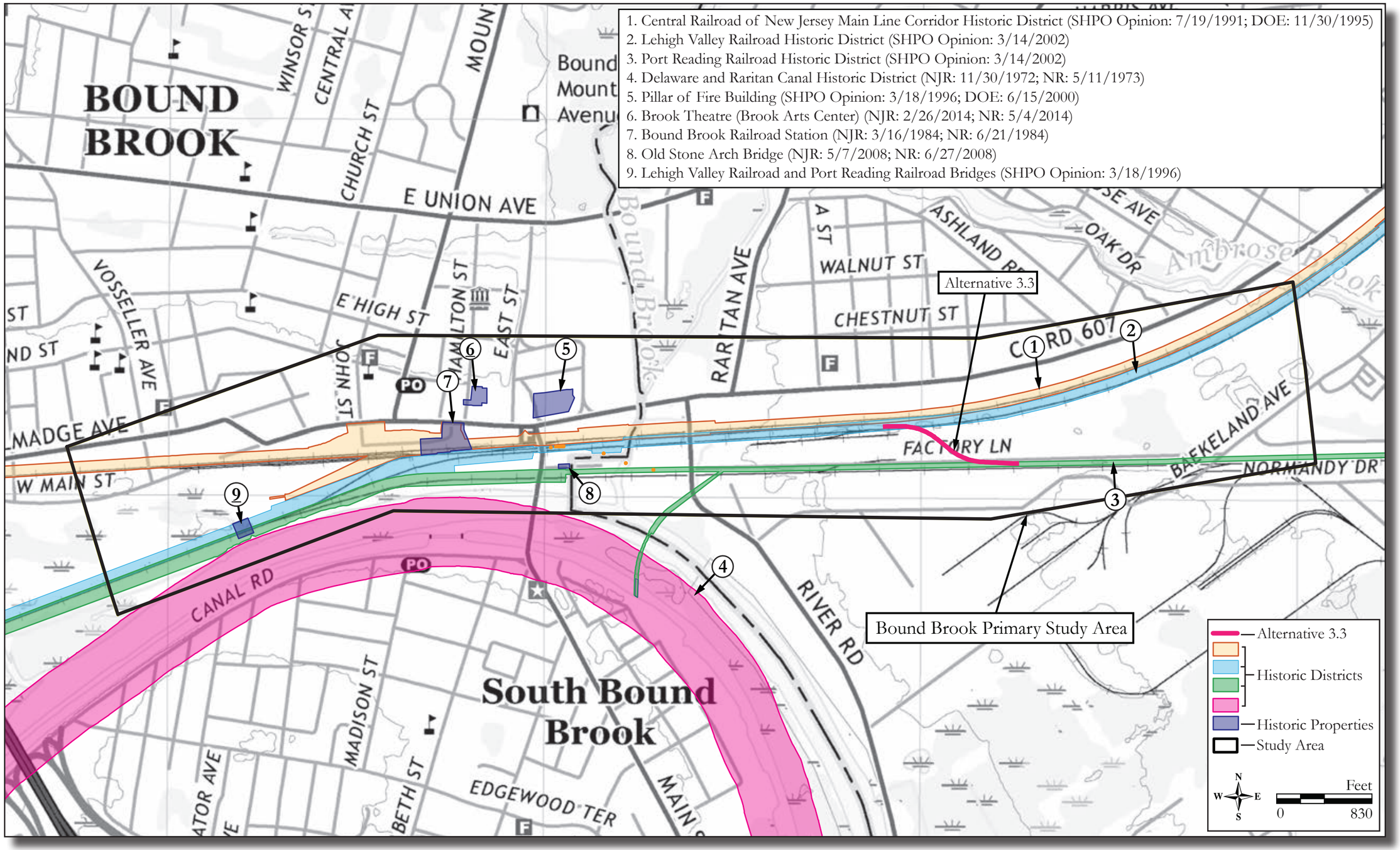


Figure 3: U.S.G.S. Map with Project Alternative 3.3 and Extant Historic Properties within the Study Area (2019 U.S.G.S. 7.5' Quadrangle: Bound Brook, NJ).

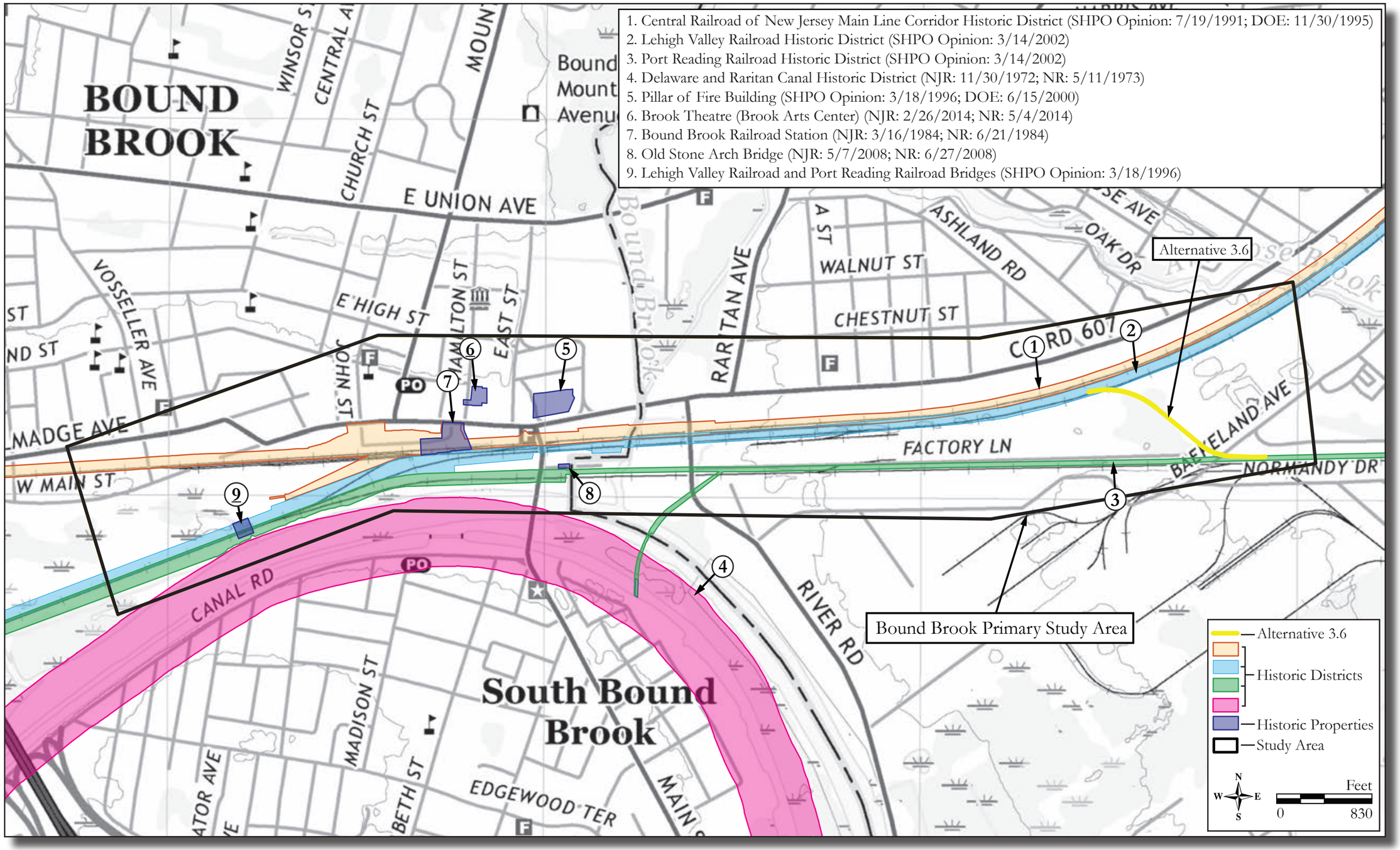


Figure 4: U.S.G.S. Map with Project Alternative 3.6 and Extant Historic Properties within the Study Area (2019 U.S.G.S. 7.5' Quadrangle: Bound Brook, NJ).

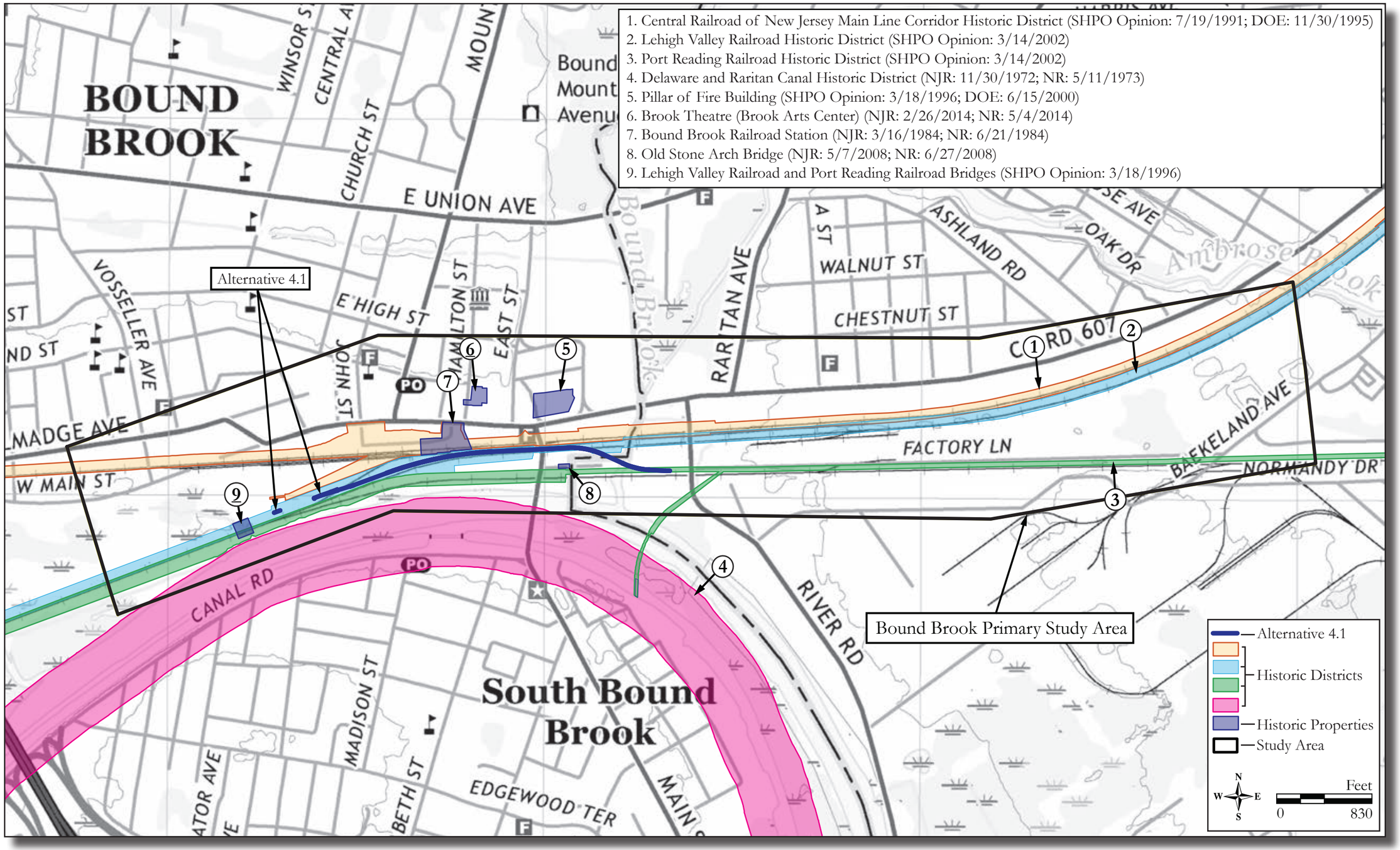


Figure 5: U.S.G.S. Map with Project Alternative 4.1 and Extant Historic Properties within the Study Area (2019 U.S.G.S. 7.5' Quadrangle: Bound Brook, NJ).

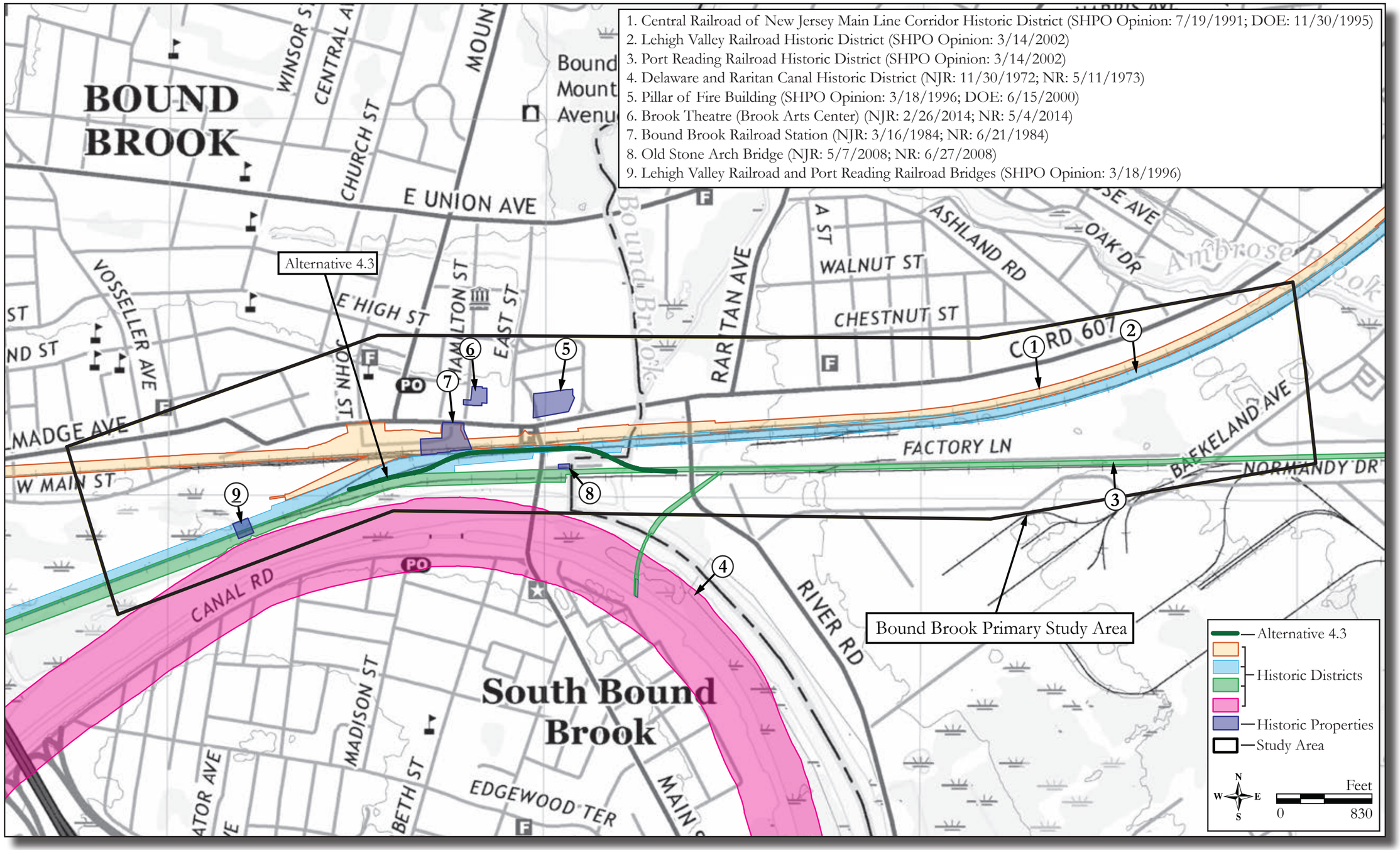


Figure 6: U.S.G.S. Map with Project Alternative 4.3 and Extant Historic Properties within the Study Area (2019 U.S.G.S. 7.5' Quadrangle: Bound Brook, NJ).

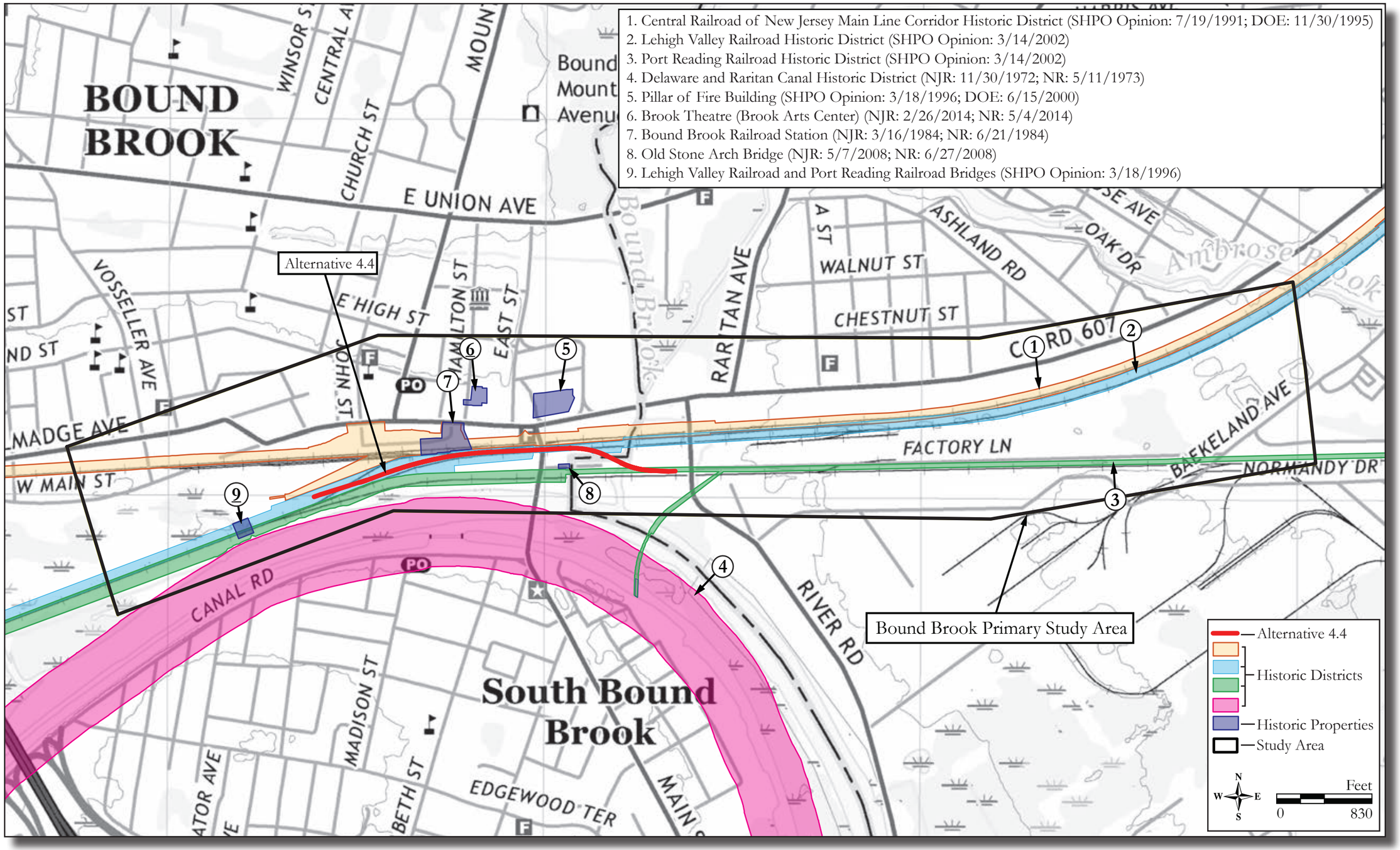


Figure 7: U.S.G.S. Map with Project Alternative 4.4 and Extant Historic Properties within the Study Area (2019 U.S.G.S. 7.5' Quadrangle: Bound Brook, NJ).

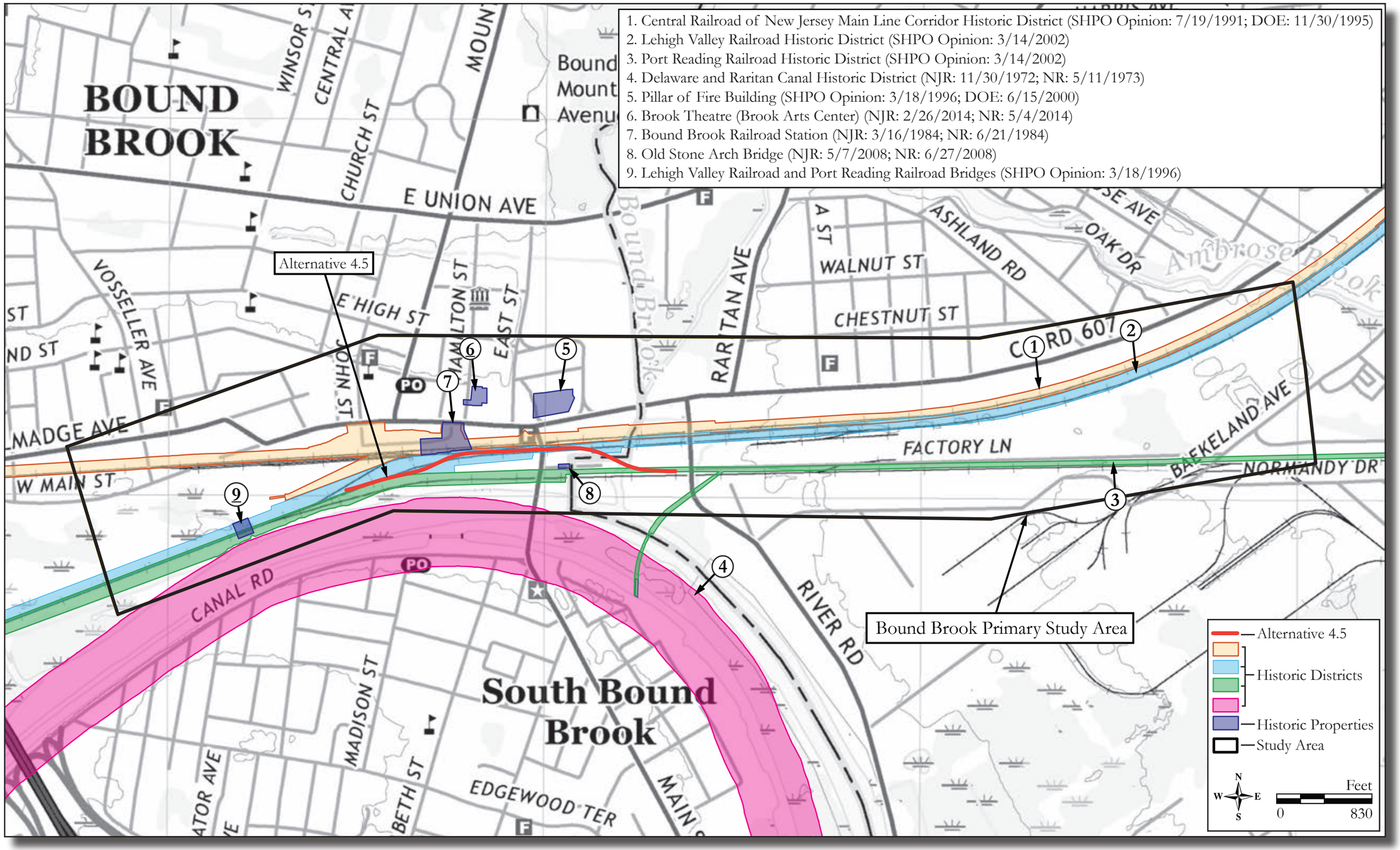


Figure 8: U.S.G.S. Map with Project Alternative 4.5 and Extant Historic Properties within the Study Area (2019 U.S.G.S. 7.5' Quadrangle: Bound Brook, NJ).

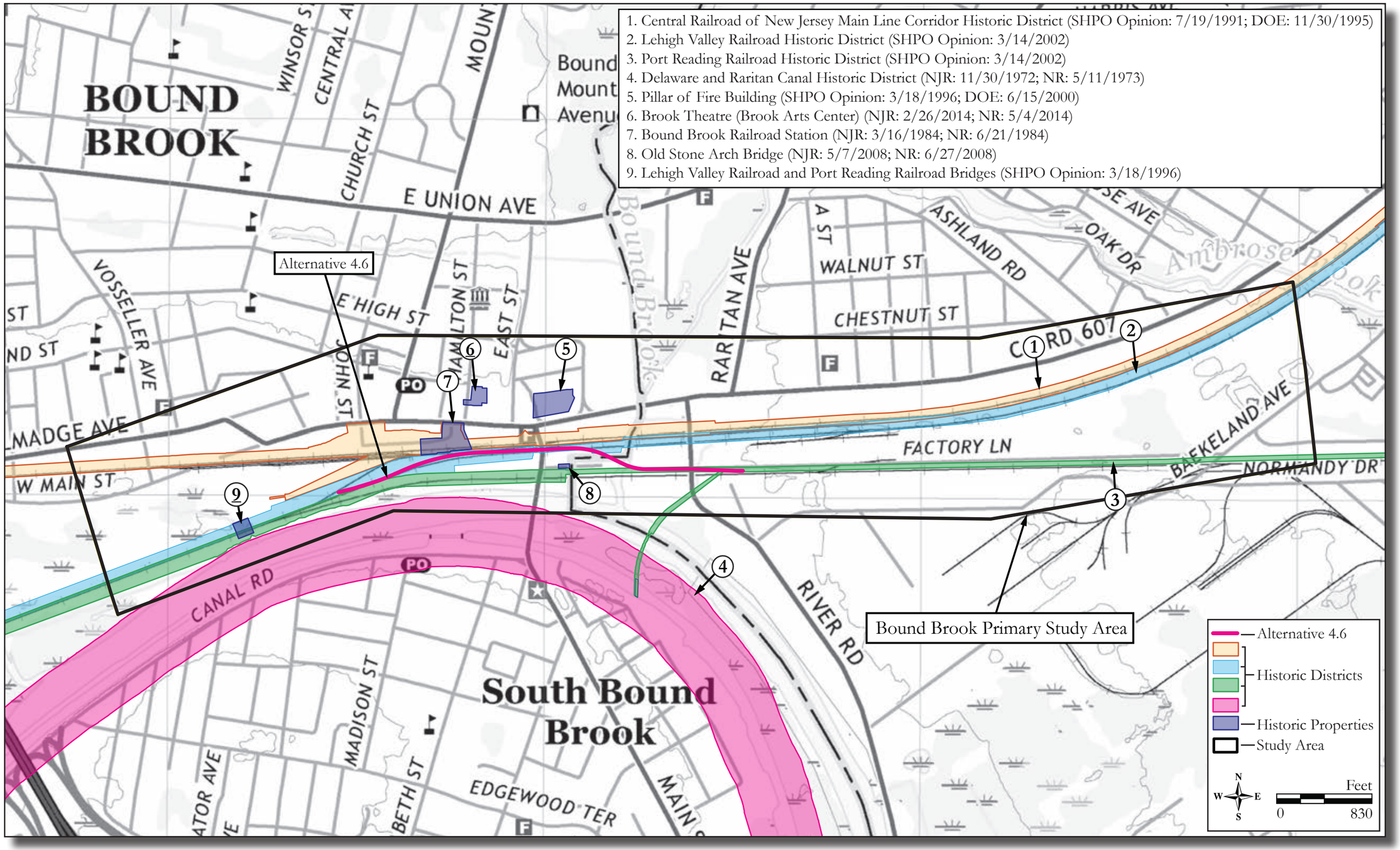


Figure 9: U.S.G.S. Map with Project Alternative 4.6 and Extant Historic Properties within the Study Area (2019 U.S.G.S. 7.5' Quadrangle: Bound Brook, NJ).

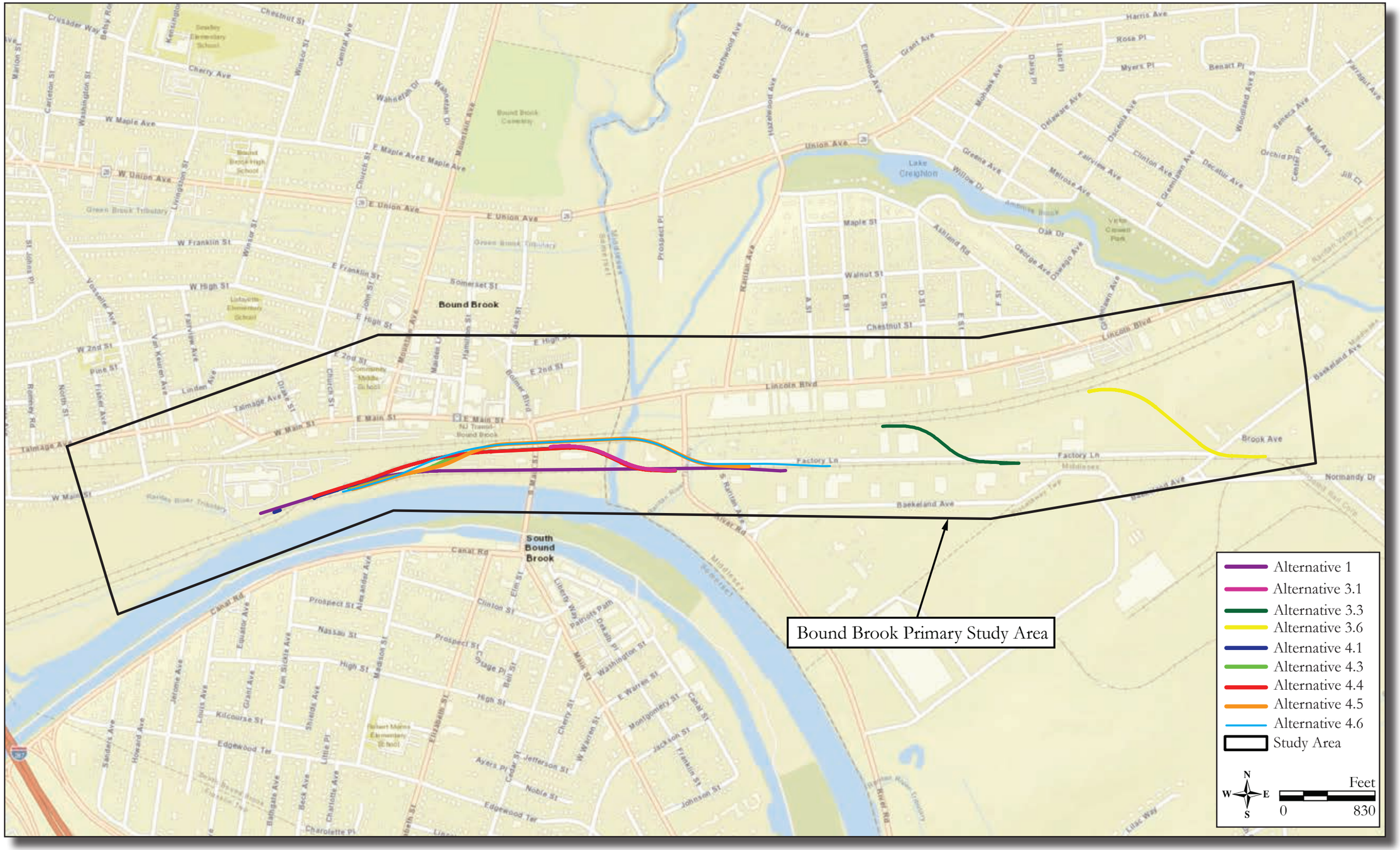


Figure 10: Road Map with Proposed Alternatives
(World Street Map, ESRI 2021).

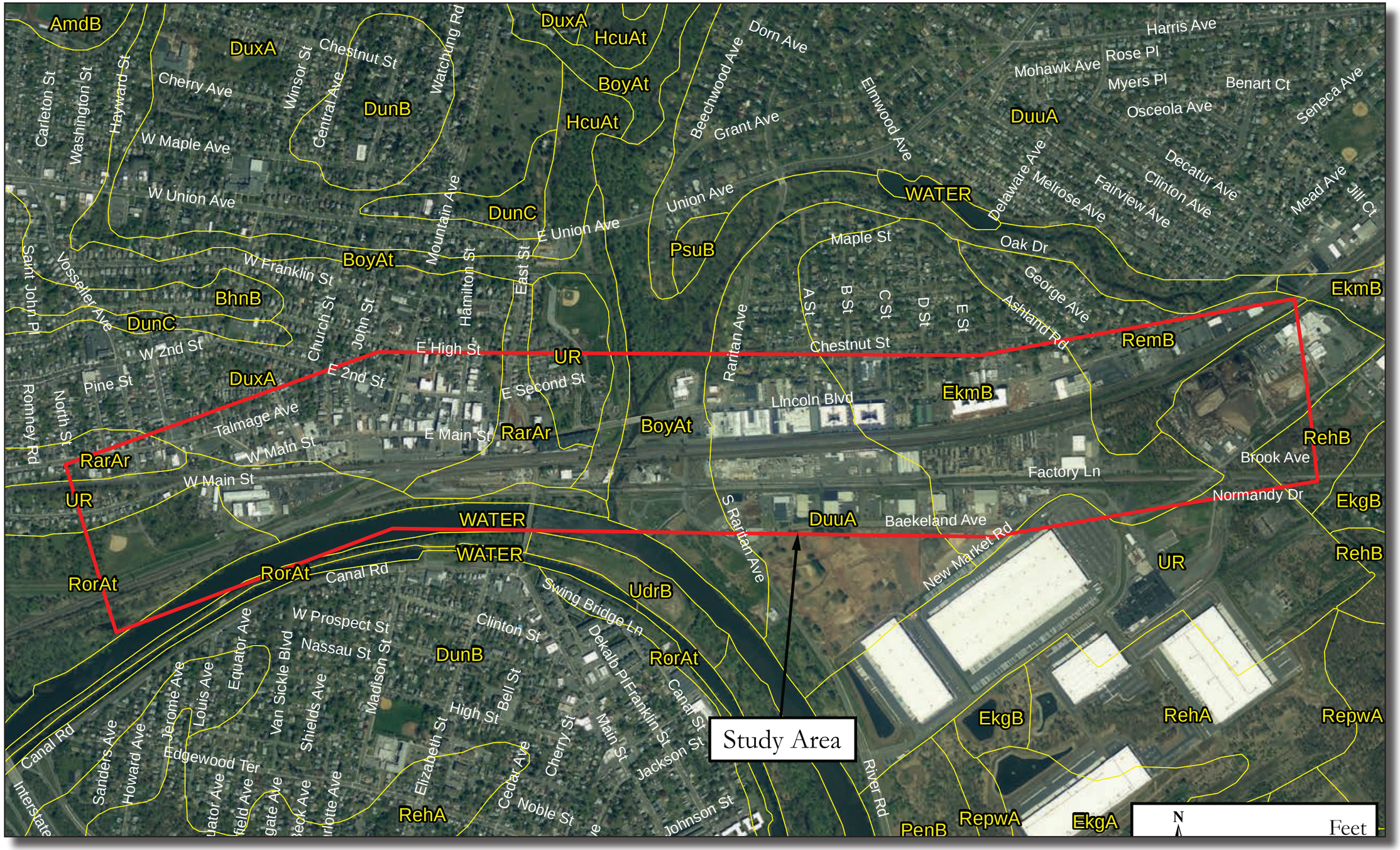


Figure 11: Soils Map with Overall Study Area
(2008 Soil Survey Staff, Natural Resource Conservation Service, United States Department of Agriculture. Soil Survey Geographic [SSURGO]).

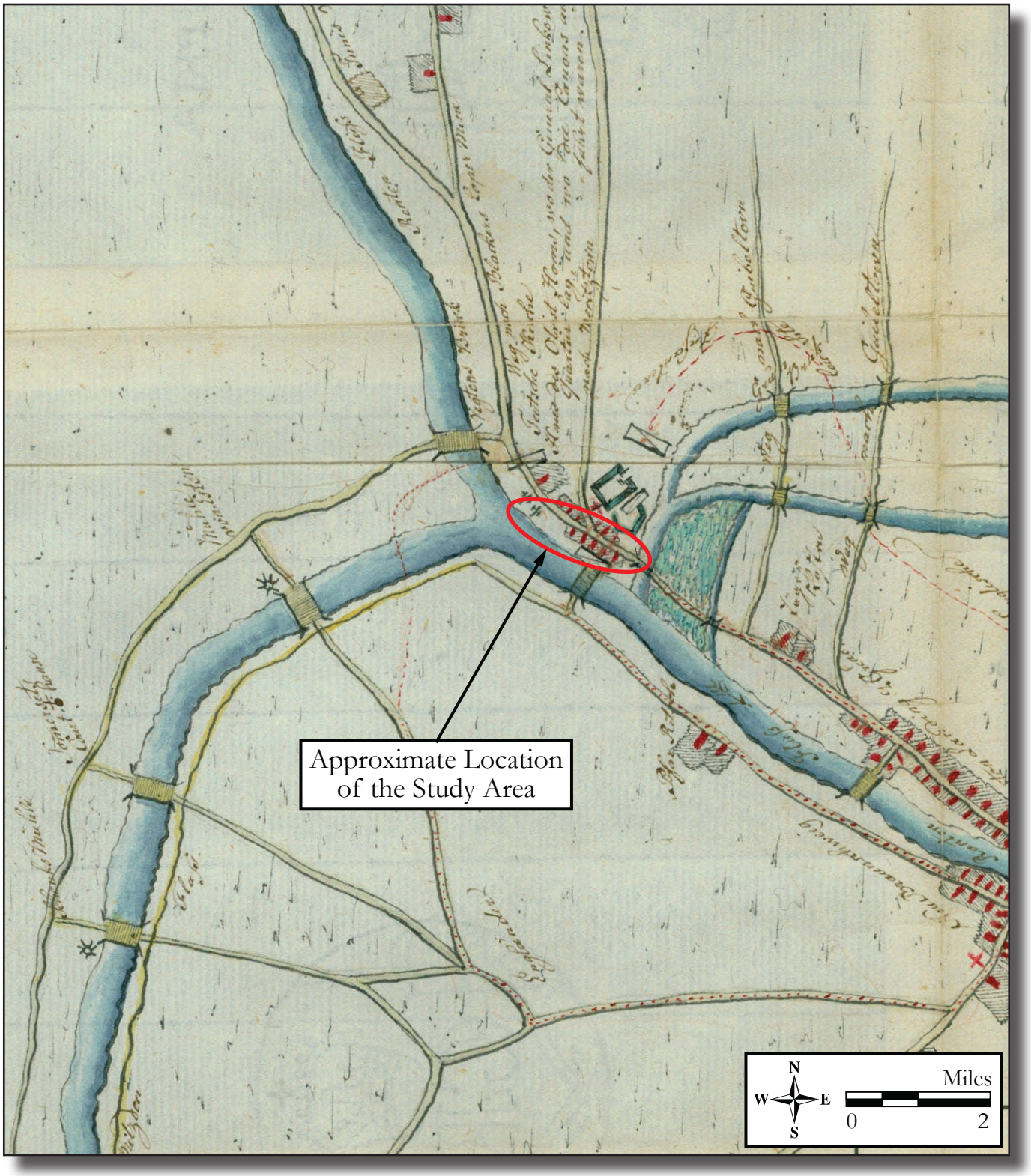


Figure 12: 1777 J. Ewald, *Plan of the Area of Bound Brook.*

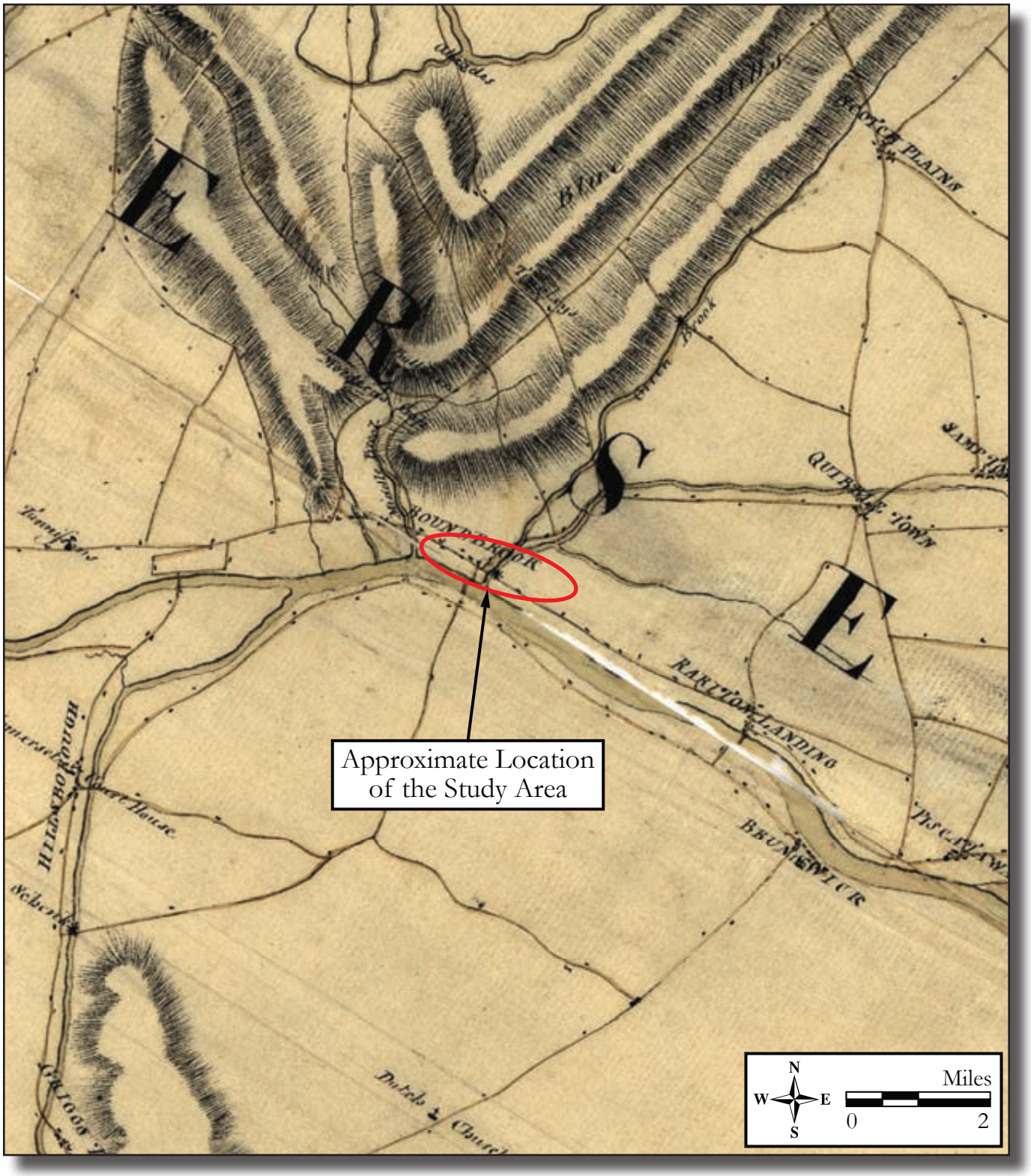


Figure 13: 1781 J. Hills, *A Sketch of the Northern Parts of New Jersey*.

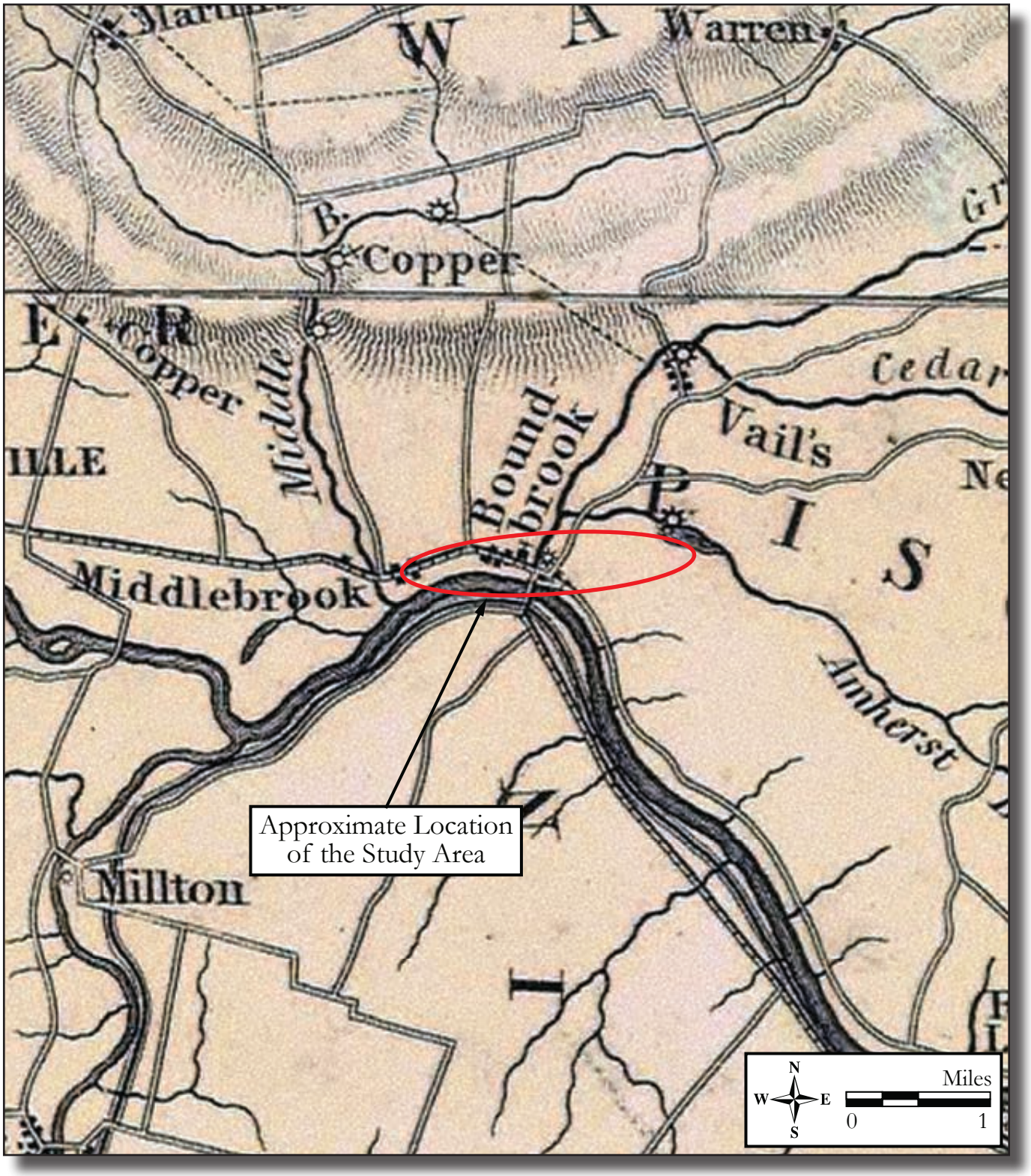


Figure 14: 1833 T.F. Gordon, *A Map of the State of New Jersey.*

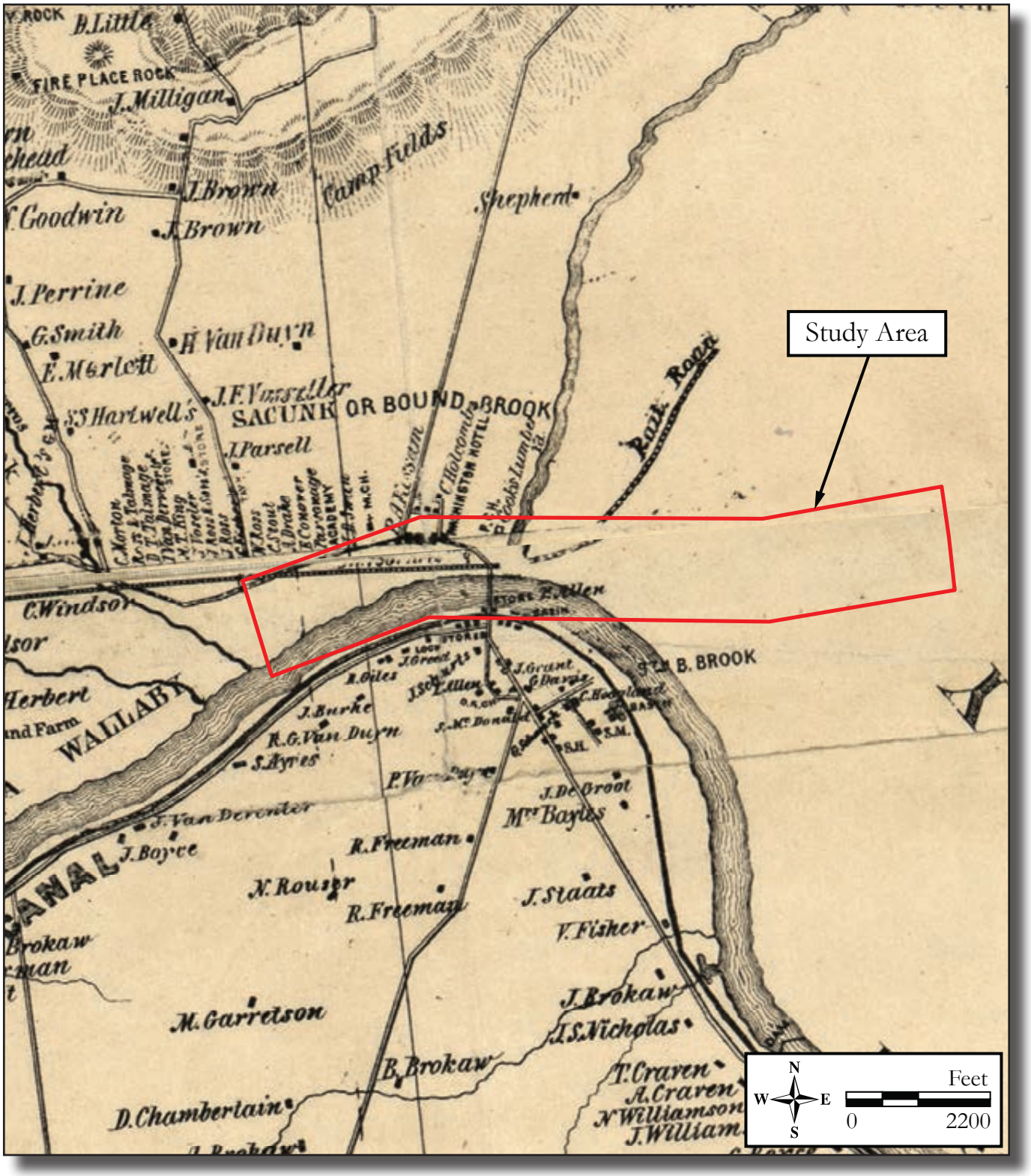


Figure 15: 1850 Otley, Vanderveer, *Keily Map of Somerset County*.

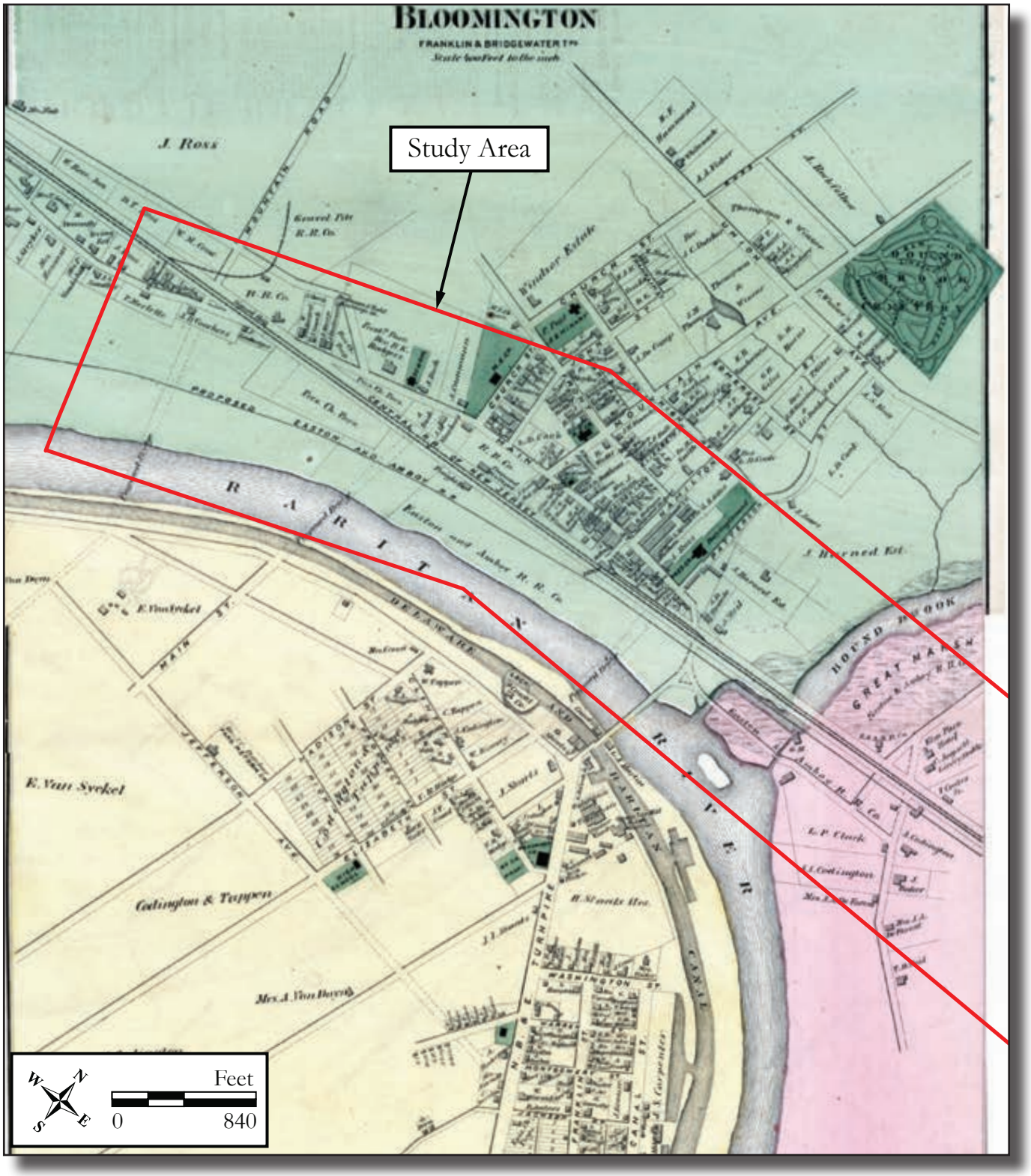


Figure 16: 1873 F.W. Beers, *Somerset County 1873*.

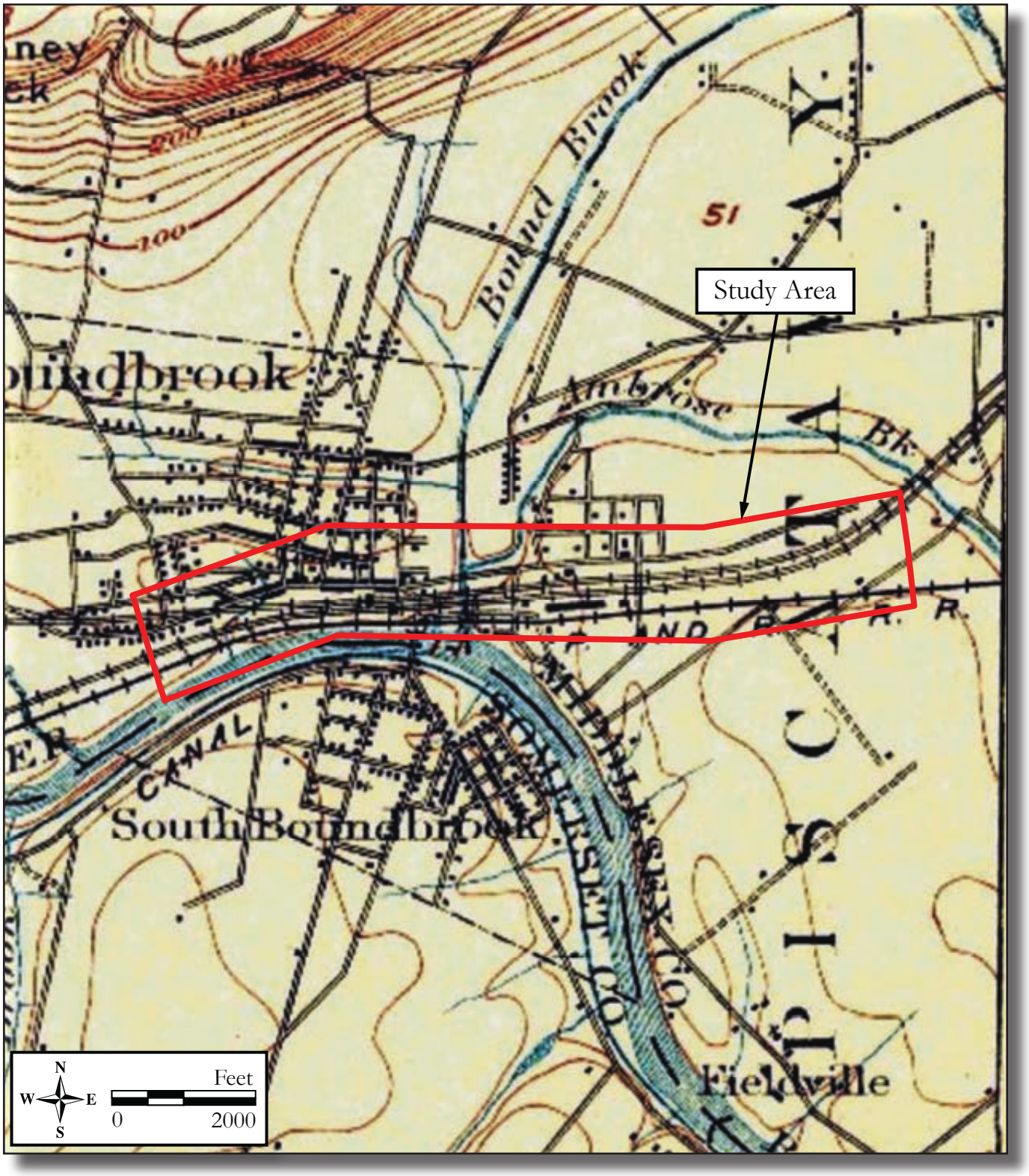


Figure 17: 1905 U.S.G.S. 15' Quadrangle: Somerville, NJ.

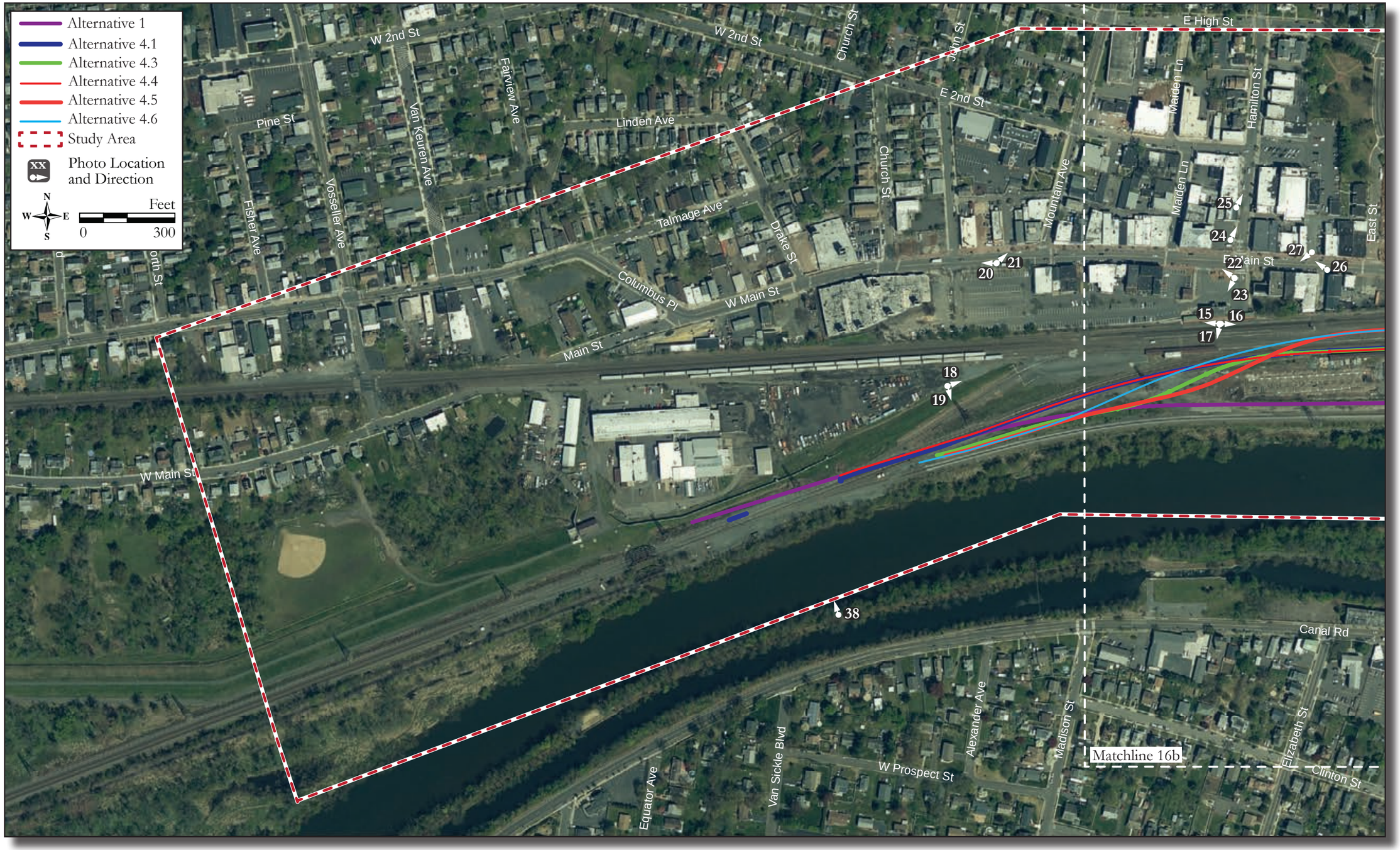


Figure 18a: Photo Location Map with Proposed Alternatives
(NJGIS Digital Orthographic Imagery, 2020).

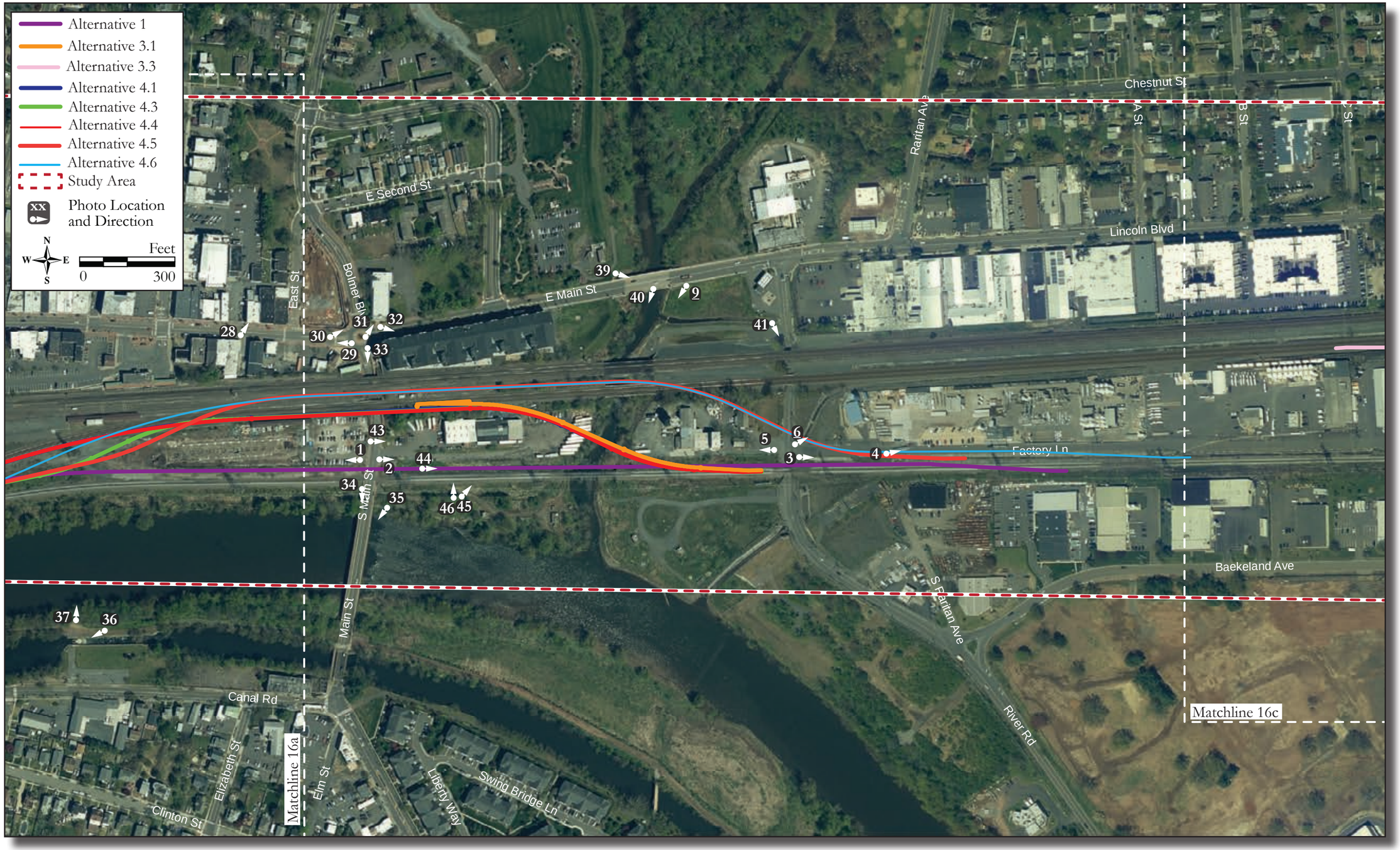


Figure 18b: Photo Location Map with Proposed Alternatives
(NJGIS Digital Orthographic Imagery, 2020).

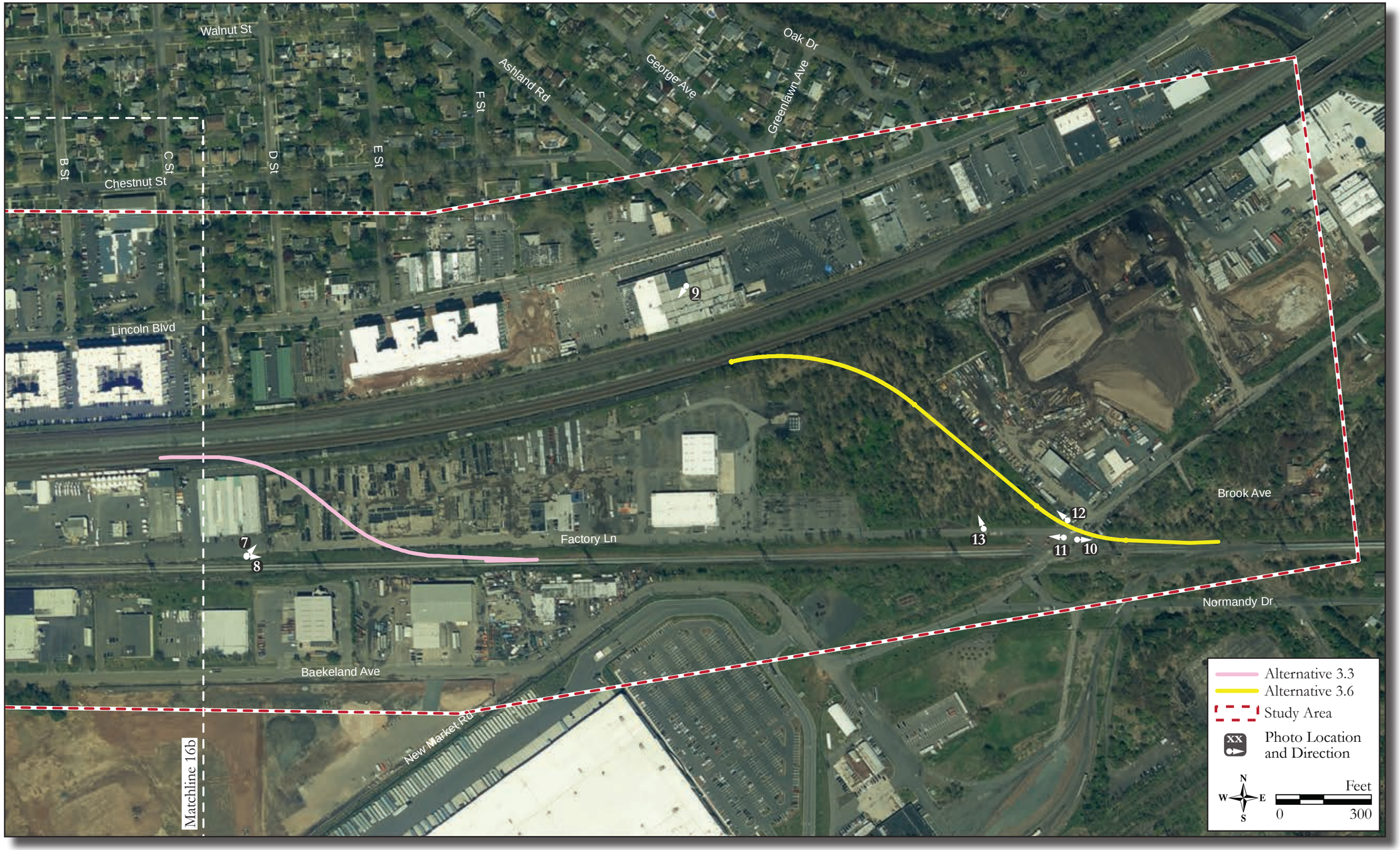


Figure 18c: Photo Location Map with Proposed Alternatives
(NJGIS Digital Orthographic Imagery, 2020).

Plate 1: View of Port Reading Secondary Line from South Main Street.

Photo view: West

Photographer: Evan Robinson

Date: March 4, 2022

Plate 2: View of Port Reading Secondary Line from South Main Street.

Photo view: East

Photographer: Evan Robinson

Date: March 4, 2022

Plate 3: View of Factory Lane and railroad tracks with industrial development.

Photo view: East

Photographer: Evan Robinson

Date: March 4, 2022

Plate 4: View of Factory Lane and railroad tracks with industrial development.

Photo view: East

Photographer: Evan Robinson

Date: March 4, 2022

Plate 5: View of industrial buildings and development on western side of River Road.

Photo view: West

Photographer: Evan Robinson

Date: March 4, 2022

Plate 6: View of industrial buildings on eastern side of River Road.

Photo view: East

Photographer: Evan Robinson

Date: March 4, 2022

Plate 7: View of razed buildings and development northeast of Factory Lane.

Photo view: Northeast

Photographer: Evan Robinson

Date: March 4, 2022

Plate 8: View of razed buildings and development east of Factory Lane.

Photo view: East

Photographer: Evan Robinson

Date: March 4, 2022

Plate 9: View of bridge over Green Brook.

Photo view: Southwest

Photographer: Evan Robinson

Date: March 4, 2022

Plate 10: View of railroad tracks east of Baekeland Avenue.

Photo view: East

Photographer: Evan Robinson

Date: March 4, 2022

Plate 11: View of driveway and building west of Baekeland Avenue.

Photo view: West

Photographer: Evan Robinson

Date: March 4, 2022

Plate 12: View of building west of Baekeland Avenue.

Photo view: Northwest

Photographer: Evan Robinson

Date: March 4, 2022

Plate 13: View of wooded area west of Baekeland Avenue.

Photo view: Northwest

Photographer: Evan Robinson

Date: March 4, 2022

Plate 14: View of bridge over South Main Street.

Photo view: South

Photographer: Evan Robinson

Date: March 4, 2022

Plate 15: View west from Bound Brook Train Station.

Photo view: West

Photographer: Evan Robinson

Date: March 4, 2022

Plate 16: View east from Bound Brook Train Station.

Photo view: East

Photographer: Evan Robinson

Date: March 4, 2022

Plate 17: View south from Bound Brook Train Station.

Photo view: South

Photographer: Evan Robinson

Date: March 4, 2022

Plate 18: View towards Bound Brook Train Station.

Photo view: West

Photographer: Evan Robinson

Date: March 4, 2022

Plate 19: View towards Raritan River.

Photo view: South

Photographer: Evan Robinson

Date: March 4, 2022

Plate 20: View towards the west end of the study area, along Main Street.

Photo view: West

Photographer: Evan Robinson

Date: March 4, 2022

Plate 21: View looking northeast along Main Street, east of its intersection with John Street.

Photo view: Northeast

Photographer: Evan Robinson

Date: March 4, 2022

Plate 22: View of the 1881 Voorhees Building on the north side of Main Street.

Photo view: Northwest

Photographer: Evan Robinson

Date: March 4, 2022

Plate 23: View of the north elevation of the NJR- and NRHP-listed Bound Brook Train Station.

Photo view: Southwest

Photographer: Evan Robinson

Date: March 4, 2022

Plate 24: Overview of the NJR- and NRHP-listed Brook Theatre (Brook Arts Center), located on the east side of Hamilton Street.

Photo view: Northeast

Photographer: Evan Robinson

Date: March 4, 2022

Plate 25: View of the Morecraft building located next to the Brook Theatre.

Photo view: Northeast

Photographer: Evan Robinson

Date: March 4, 2022

Plate 26: View of the north side of Main Street, east of its intersection with Hamilton Avenue.

Photo view: Northwest

Photographer: Evan Robinson

Date: March 4, 2022

Plate 27: View of the south side of Main Street, east of its intersection with Hamilton Avenue.

Photo view: Southwest

Photographer: Evan Robinson

Date: March 4, 2022

Plate 28: View of the north side of Main Street, west of its intersection with East Street.

Photo view: Northeast

Photographer: Evan Robinson

Date: March 4, 2022

Plate 29: View looking west along Main Street. Note the building under construction on the north side of the Street (right) which replaced the former NRHP-eligible Bound Brook Hotel and Tavern (demolished).

Photo view: West

Photographer: Evan Robinson

Date: March 4, 2022

Plate 30: Overview of the NRHP-eligible Pillar of Fire Building, and the traffic circle where Main Street, Bolmer Avenue, and Lincoln Boulevard meet.

Photo view: Northeast

Photographer: Evan Robinson

Date: March 4, 2022

Plate 31: View of the primary (south) elevation of the NRHP-eligible Pillar of Fire Building.

Photo view: Northeast

Photographer: Evan Robinson

Date: March 4, 2022

Plate 32: Overview of the building that replaced the former NRHP-eligible Bolmer Building (demolished).

Photo view: Southeast

Photographer: Evan Robinson

Date: March 4, 2022

Plate 33: View of the north elevation of the Main Street Bridge which carries and is a contributing resource to the NRHP-eligible Central Railroad of New Jersey Main Line Corridor Historic District.

Photo view: South

Photographer: Evan Robinson

Date: March 4, 2022

Plate 34: View looking south along Queen's Bridge which carries South Main Street over the Raritan River.

Photo view: South

Photographer: Evan Robinson

Date: March 4, 2022

Plate 35: View of Queen's Bridge from the north Bank of the Raritan River.

Photo view: Southeast

Photographer: Evan Robinson

Date: March 4, 2022

Plate 36: View of the South Bound Brook Lock within the NRHP-listed Delaware and Raritan Canal Historic District.

Photo view: Southwest

Photographer: Evan Robinson

Date: March 4, 2022

Plate 37: View of the Raritan River looking north toward the Borough of Bound Brook at the west end of the study area.

Photo view: North

Photographer: Evan Robinson

Date: March 4, 2022

Plate 38: View of the NRHP-eligible Lehigh Valley Railroad and Port Reading Railroad Bridges

Photo view: Northwest

Photographer: Evan Robinson

Date: March 4, 2022

Plate 39: View of the Lincoln Boulevard/ East Main Street Bridge over Green Brook which replaced the former NRHP-eligible Lincoln Boulevard/ East Main Street Bridge (demolished) in 2002.

Photo view: Southeast

Photographer: Evan Robinson

Date: March 4, 2022

Plate 40: View of Green's Brook Bridge carries and is a contributing resource to the NRHP-eligible Central Railroad of New Jersey Main Line Corridor Historic District.

Photo view: Southwest

Photographer: Evan Robinson

Date: March 4, 2022

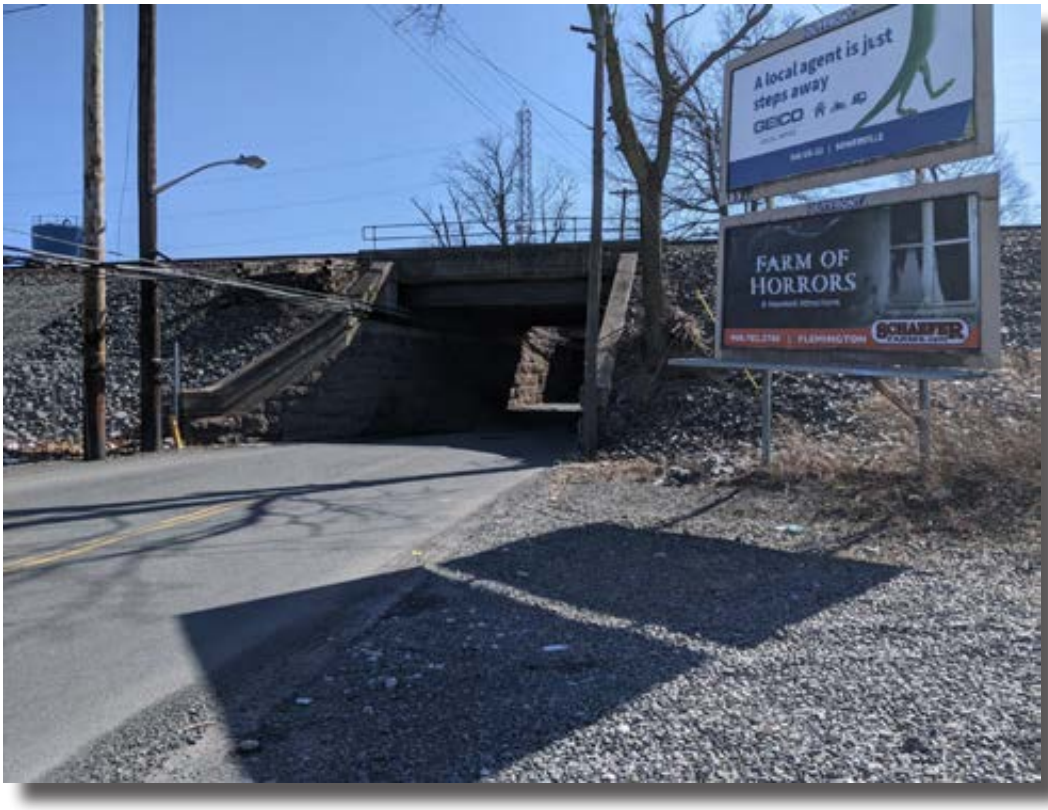


Plate 41: View of the River Road Bridge which carries and is a contributing resource to the NRHP-eligible Central Railroad of New Jersey Main Line Corridor Historic District.

Photo view: Southeast

Photographer: Evan Robinson

Date: March 4, 2022

Plate 42: Overview of the NRHP-eligible Central Railroad of New Jersey Main Line Corridor Historic District, at the west end of the study area.

Photo View: Northeast

Photographer: Evan Robinson

Date: March 4, 2022

Plate 43: Overview of Railroad Avenue and the Handle With Care Express building.

Photo View: East

Photographer: Evan Robinson

Date: March 4, 2022

Plate 44: Overview of Railroad Avenue proximate to the Old Stone Arch Bridge.

Photo View: East

Photographer: Kristen Herrick

Date: December 2, 2022

Plate 45: Overview of Stone Arch Bridge from south of Railroad Avenue.

Photo View: Northeast

Photographer: Kristen Herrick

Date: December 2, 2022

Plate 46: Close Up of the Old Stone Arch Bridge.

Photo View: North

Photographer: Kristen Herrick

Date: December 2, 2022

Appendix D

Public Involvement Action Plan

NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

FREIGHT CONCEPT DEVELOPMENT STUDY

PUBLIC INVOLVEMENT ACTION PLAN

Port Reading Secondary South Main Street Grade Crossing Elimination Project

Bound Brook, New Jersey

Contents

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

Somerset County Department of Public Works/Planning Division

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

Jacobs Engineering Group Inc. – Consultant Team Lead

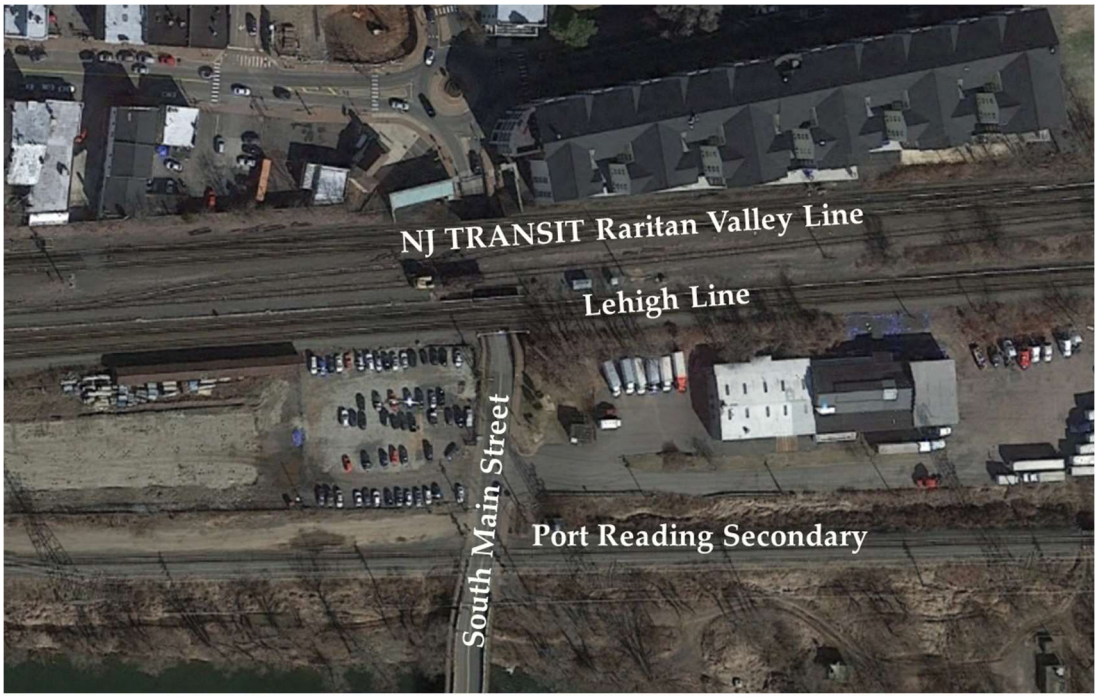
Stokes Creative Group, Inc. – Public & Stakeholder Outreach Lead

Project Description

The Port Reading Secondary runs along the northern side of the Raritan River in Bound Brook. South Main Street is one of a limited number of roadways crossing the Raritan River. Immediately to the north of the crossing, South Main Street forms the southern leg of the modern roundabout in Bound Brook's downtown. When trains cross, the road is closed to automobile traffic, resulting in significant recurring congestion that creates gridlock on a daily basis. The congestion the at-grade crossing creates adversely impacts the downtown, regional mobility, safety and the area's economic vitality.

Eliminating this grade crossing presents several challenges. Proximity to the Raritan River, the vertical and horizontal alignment of South Main Street, and the rail bridge which carries the Raritan Valley and the Lehigh lines over South Main Street limit the options for realigning or relocating the roadways as a solution. However, the bridge and other rail lines traversing the area offer a potential opportunity to realign the Port Reading Secondary as a long-term solution.

This phase of work includes the evaluation of alternatives to eliminate the roadway and railroad crossing.



Project Location

Public Involvement Process Overview

The public outreach approach for the Port Reading Secondary South Main Street Grade Crossing Elimination Project 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 regarding actions, schedule, considerations related to assuring traditionally under-represented groups, referred to as Environmental Justice communities, are effectively engaged, and offered a meaningful opportunity for input.

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 project. This list will include local, county, and state officials, and other 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

- Somerset County Officials, Engineers, Planners, Parks Commission, Transportation
- Legislative Representatives, State Senate and Assembly
- Borough of Bound Brook Mayor, Administrator, Clerk, Engineer
- Bound Brook Historic Preservation Commission
- Borough of Bound Brook First Responders
- Adjacent Community – Borough of South Bound Brook Mayor, Administrator, Clerk, Engineer
- Adjacent Community – Middlesex Borough Mayor, Administrator, Clerk, Engineer
- Adjacent Community – Middlesex County Engineer, Planner

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

- Bound Brook Area Chamber of Commerce
- Bound Brook Revitalization Partnership Special Improvement District (the Downtown Merchants Association)
- Somerset County Business Partnership
- Conrail
- Urban Developers, LLC
- Meridia Developers
- Queensbridge Storage Park
- Fisher WF & Son Feed
- American Driveshaft Services

Community Organizations

- United Way
- Healthier Somerset, a coalition convened by Robert Wood Johnson University Hospital Somerset
- Casa de Esperanza - community legal services organization serving immigrants & families
- Assembly of Christian Churches
- St. Joseph Roman Catholic Church
- God's Presence Ministry

- St. Mary Church
- Iglesia Alabanza Y Adoracion Inc.
- Congregational Church of Bound Brook
- Hope Church
- Congregation Knesset Israel
- Bound Brook Recreation Department
- Bound Brook Lodge No. 988 Loyal Order of Moose
- Benevolent & Protective Order of Elks of the USA

Target organizations that serve NJ populations are anticipated to include:

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

2. Project Website

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
- Custom-translated key documents
- ADA compatibility

The site will be translatable to other languages through a Google Translate add-on with key documents to be custom translated. It will contain links to related social media accounts and the various agencies and organizations involved in the project. It also will 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. Social Media Content for Posting by NJTPA and Somerset County

Content will be developed through the course of the project for NJTPA and Somerset 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

- Collaborate with the Public Information Office to promote the study with members of the community through social media

Content will include the following anticipated schedule:

- All content to be drafted and provided for approval and use by the NJTPA and Somerset County
- 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 for a virtual meeting. Key local officials, identified in the stakeholder database, will be invited in addition to Project Team members and key regional stakeholders, such as Somerset 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 extensive posting and distribution of meeting notices and project flyers, 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 Creative Group, Inc. (Stokes) will facilitate wide posting and distribution of meeting notices and project flyers and will 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.
- As required by the Project Manager, materials will be translated into Spanish (the predominant language other than English in Bound Brook) to ensure that local residents, where English is not their first language, have equal access to the study. In addition, notifications, such as flyers, will include the ability to request translators. The Project Team will seek to coordinate with Somerset County for 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. The posters developed will focus on the studied alternatives, and the PPA. 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 it is determined that holding in-person public meetings is preferred, 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. Meetings will be adequately staffed by members of the Project Team to ensure attendees can have their immediate questions and concerns addressed. In addition, 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

Action #	Action	Scheduled Completion
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	Nov 17, 2022
23	Conduct Stakeholder Meeting 2	November 29, 2022
24	Public Meeting 2 Summary	Dec 3, 2022
25	Stakeholder Meeting 2 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 (EJ) populations as identified by the Bound Brook American Community Survey profile.

1. Limited English Proficiency (LEP) populations

Almost half (44 percent) of Bound Brook's estimated population of 10,512 identify themselves as Hispanic/Latino of any race, and about the same percentage (41 percent) of the Borough's population speaks Spanish. In terms of language proficiency, 77 percent of the population speaks Spanish at home and speaks English "less than very well" indicating a potential need for Spanish language services throughout the public outreach process. This population also represents 12 percent of the Borough's total population. Strategies to provide opportunities for this population to participate in the study include translating content on the project website, including key documents, providing translation services at Public Meetings and partnering with local organizations to promote the study and opportunities to get involved.

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 by the percentage of population living at or below the Federal Poverty Line, 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) 5-year Estimates, 14 percent of households had annual incomes of $25,000 or less. In addition, 12 percent of the population (520 people) living in the Borough of South Bound Brook, whose municipality is near the project area, are living below the poverty level. Strategies to help encourage people with limited incomes and mobility

options to participate in the public outreach process include distributing flyers to areas that aid lower income individuals, such as the Somerset County Office of Temporary Assistance to Needy Families. In addition, Public Meetings, if held in person, should be held within close proximity of NJ TRANSIT bus routes to accommodate transit-dependent populations. If held virtually, they should be arranged in a manner that allows those without high-speed internet to access the meetings by telephone through a dial-in number.

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 meeting and project information at Bound Brook and South Bound Brook transit stations, libraries, senior centers, and community centers, such as Zufall Health and Healthier Somerset and other high traffic locations.

3. Senior Population

In the Borough of Bound Brook, 10.2 percent of residents are age 65 or older, compared to Somerset County's population at 16.2 percent. Strategies for engaging with an older population include distributing flyers to senior/civic centers, libraries, and hosting Public Meetings at locations with good accessibility and at a time of day at which they might be more likely to attend. If these meetings are held remotely, they should be arranged to assure telephone dial-in access to populations less familiar or with less access to the internet.

4. Disability Status

According to the Community Profile, the percentage of populations with hearing, visual, cognitive, or mobility impairments within the Project Area Census Tracts are generally consistent with the rest of Somerset County's population, with some exceptions. As the Community Profile notes, the percentages of these populations that do not require special accommodations. Any in-person meetings will be held at locations that meet ADA accessibility requirements.

Public Involvement Deliverables

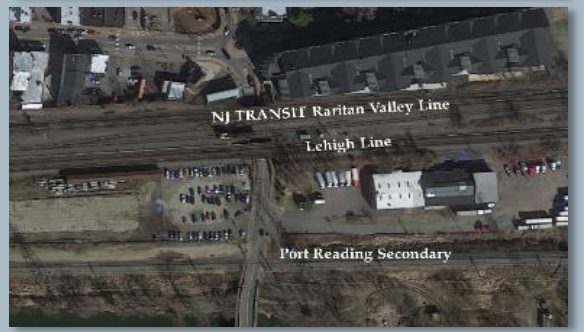
The following lists the expected deliverables of the public outreach process for the Port Reading Secondary South Main Street Grade Crossing Elimination Project Concept Development Study:

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
   Public Outreach Summary Report

Appendix E

Local Officials Briefings

Port Reading Secondary South Main Street Grade Crossing Elimination Project



Local Officials Briefing

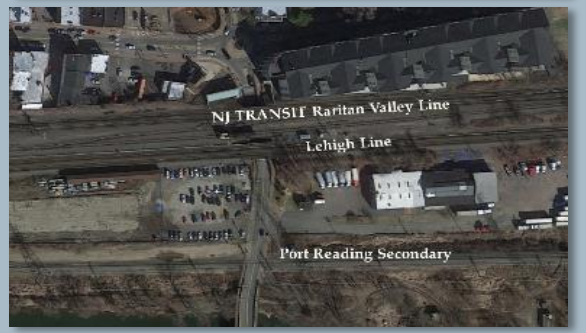
August 2, 2021

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

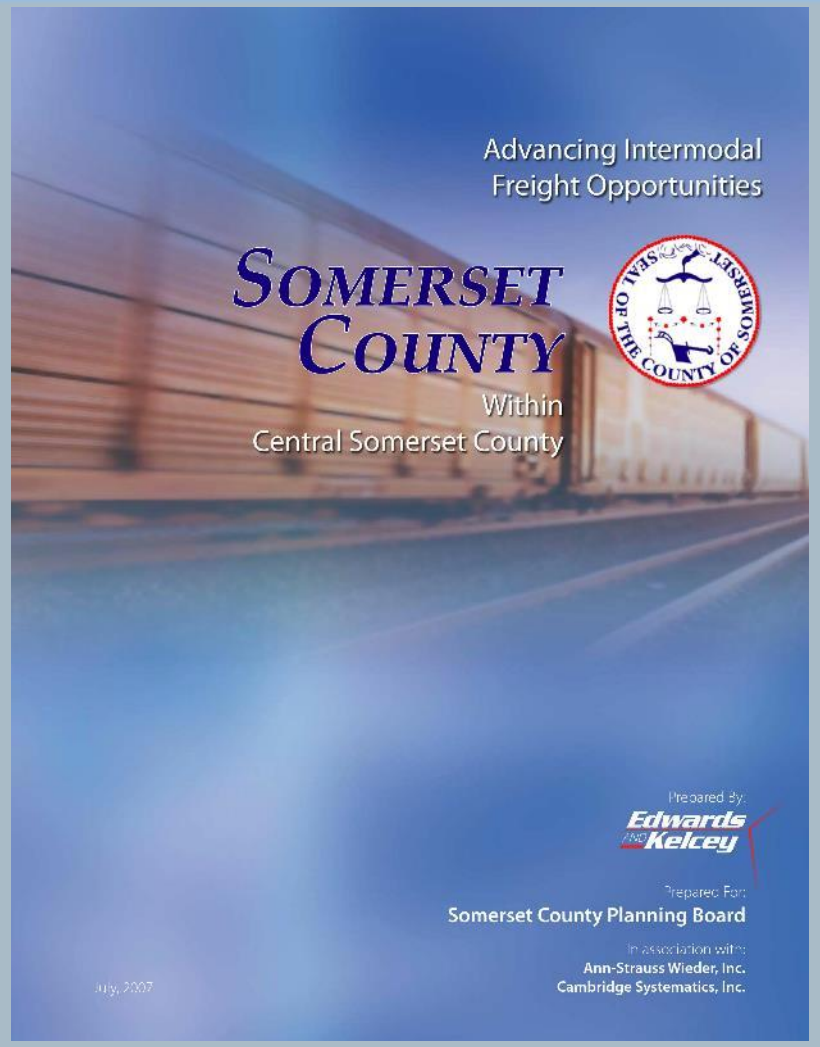


Draft Project Purpose and Need

"The purpose of this project is to eliminate the at-grade rail crossing on South Main Street in the Borough of Bound Brook, while maintaining freight rail access to existing and future customers along the Port Reading Secondary line."

Project Background

- While recognized locally as an issue for some time, this project need was officially identified in the 2007 Advancing Intermodal Freight Opportunities within Central Somerset County, 2007
- A Transportation Problem Statement was submitted to NJDOT, Capital Programming & Funds Management
- NJTPA Freight Concept Development Program Studies investigating potential improvements to eliminate constraints impacts on vehicular traffic flow while maintaining freight service to customers on the Port Reading Secondary line



Existing Conditions

- Conrail runs trains of up to 100 cars along the Port Reading Secondary several times daily
- Gate closures last approximately 3 minutes per crossing
- Roadway traffic queues through the Bound Brook Circle, across the Queens Bridge into South Bound Brook and along Lincoln Blvd into Middlesex Borough during each train crossing

SOMERSET COUNTY

NJTPA

VISSIM Simulation Model of Gate Closure Congestion

Potential Categories of Options

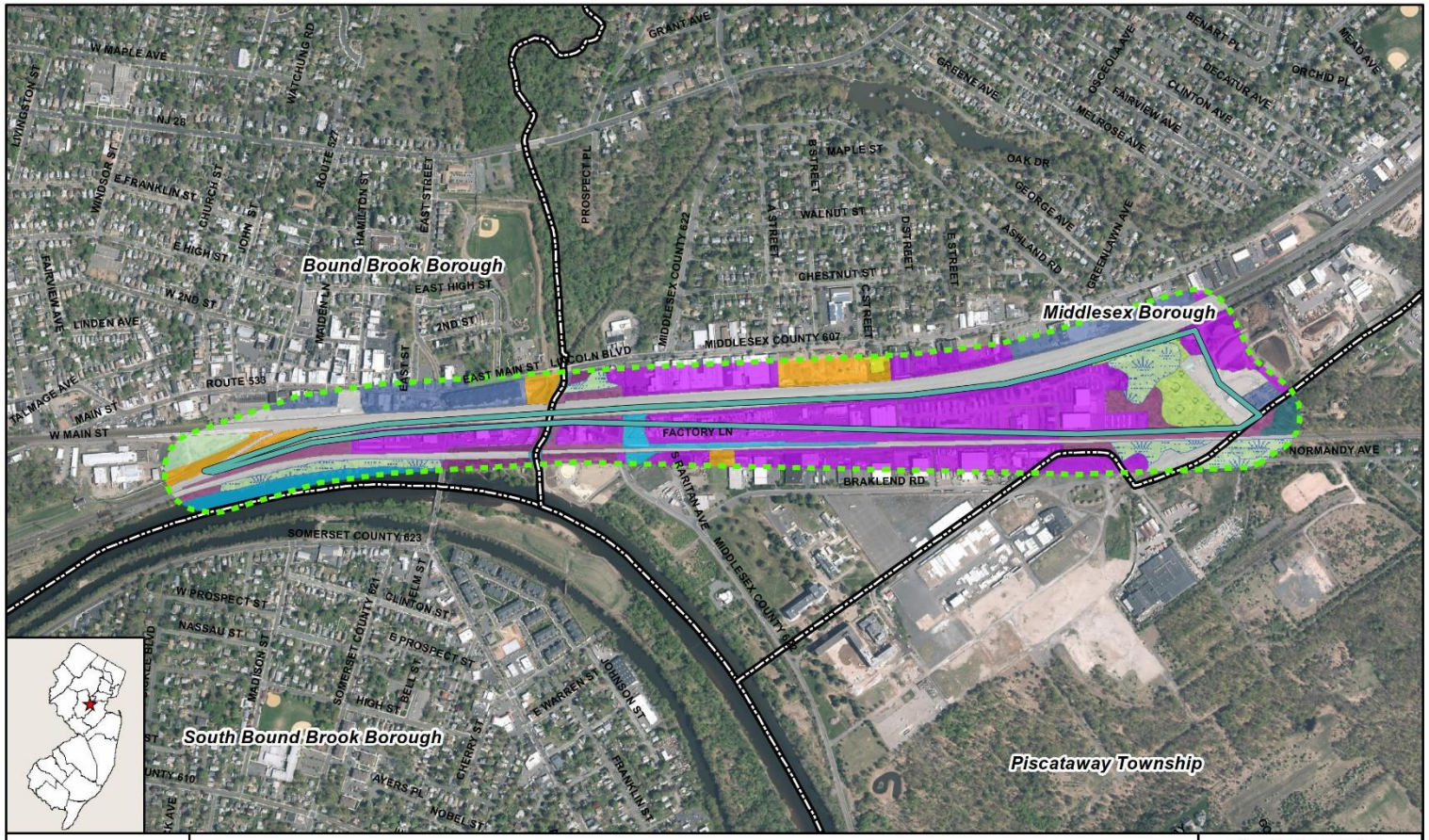
There are three basic categories of alternatives to develop and assess to eliminate the rail crossings

- **Go Up** – Elevate the rail line over South Main Street
- **Go Down** – Depress the roadway beneath the rail line
- **Go Around** – Divert rail traffic to alternate route

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
- Hazardous Materials

Environmental Constraints



Environmental Constraints

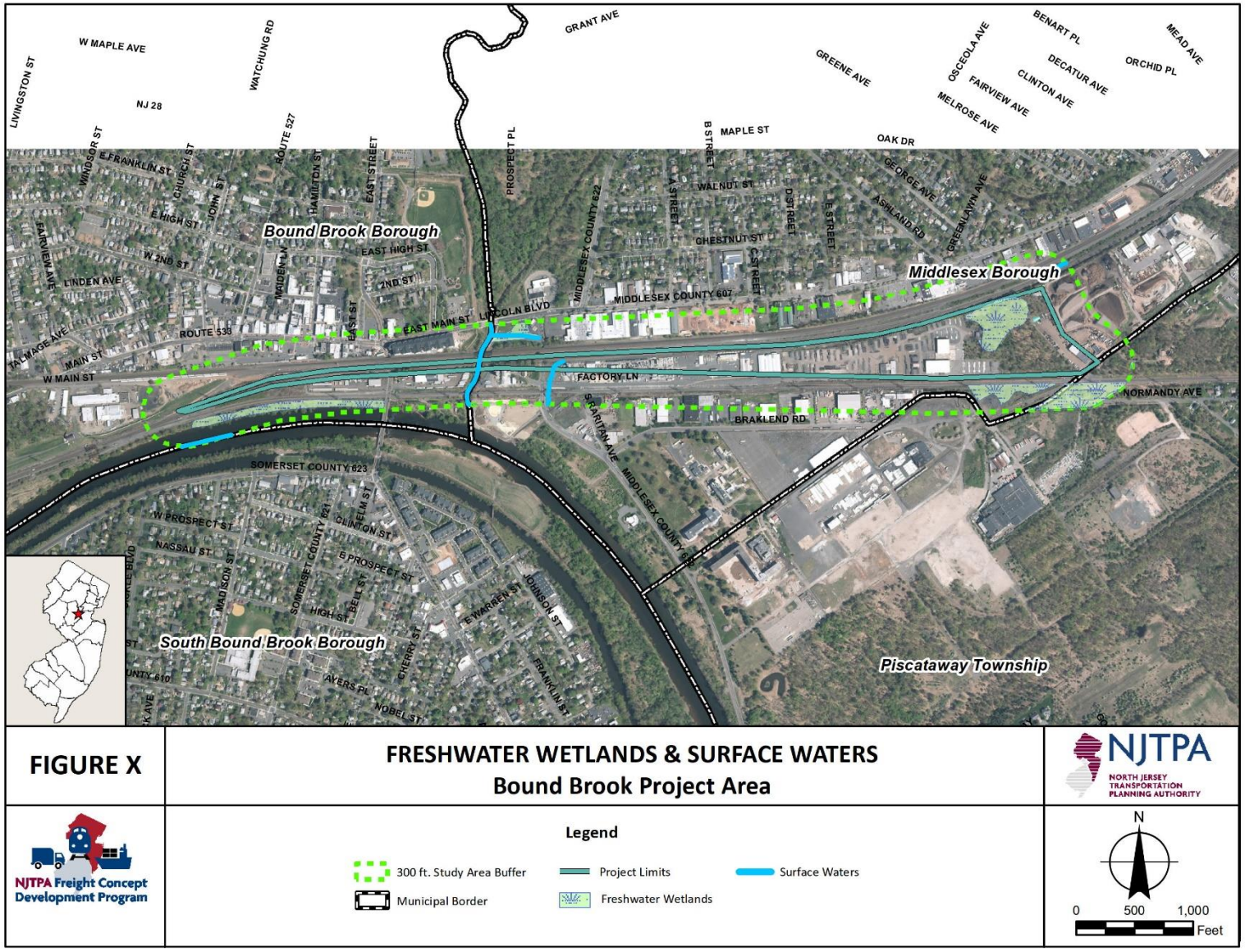
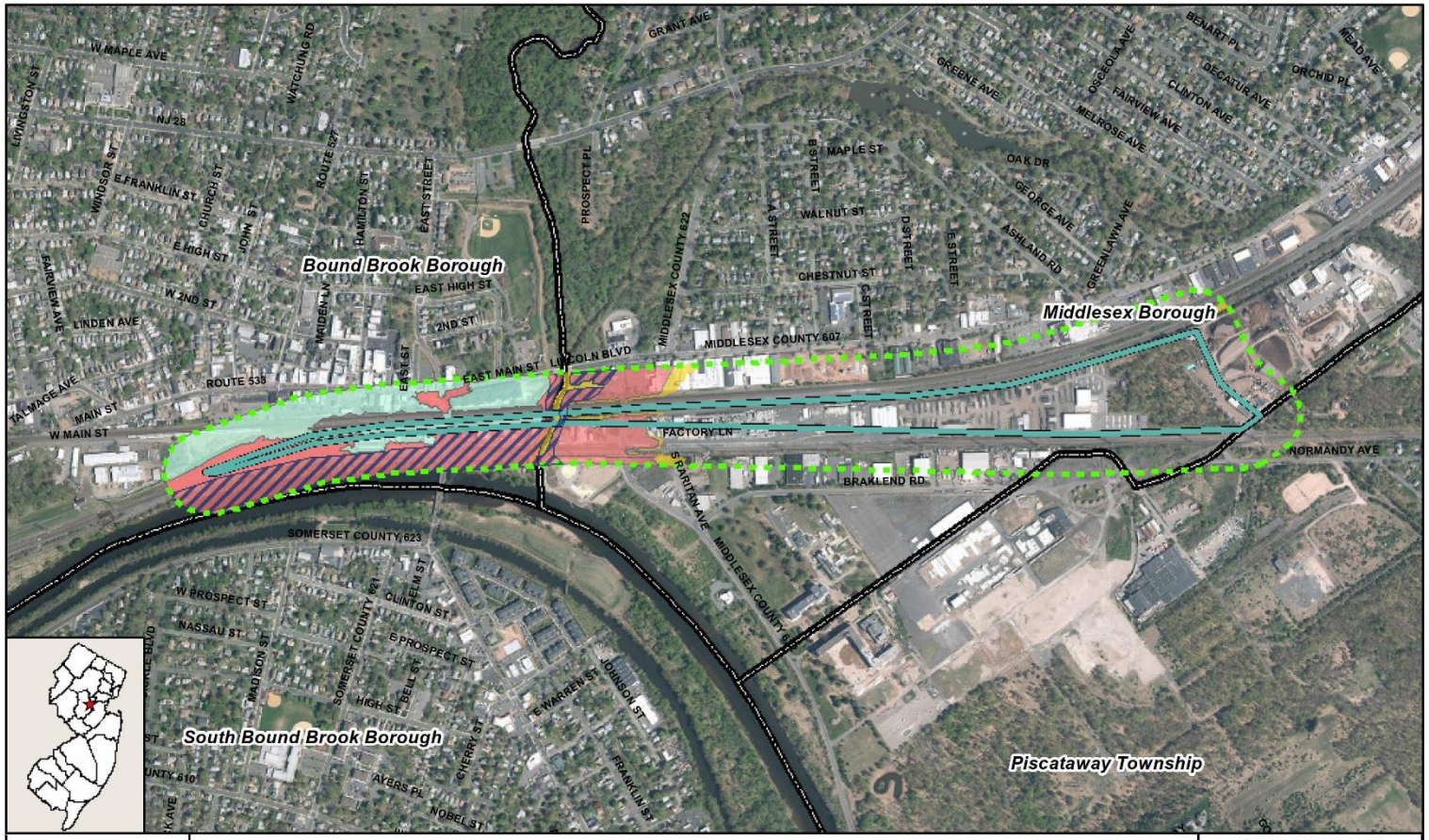


FIGURE X	FRESHWATER WETLANDS & SURFACE WATERS Bound Brook Project Area	NJTPA NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY
NJTPA Freight Concept Development Program	Legend 300 ft. Study Area Buffer Project Limits Surface Waters Municipal Border Freshwater Wetlands	N 0 500 1,000 Feet

Environmental Constraints



Environmental Constraints

Environmental Constraints

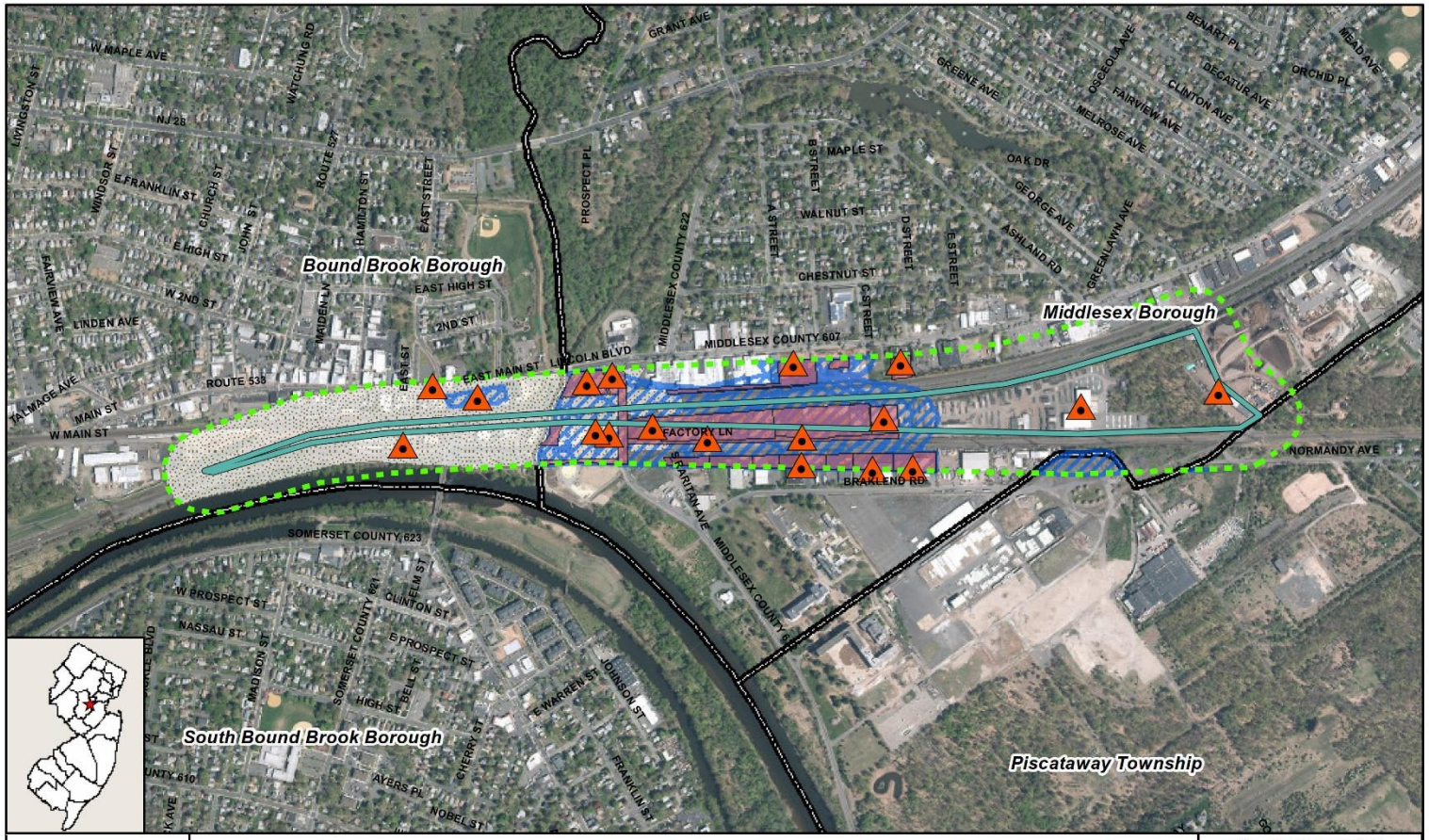
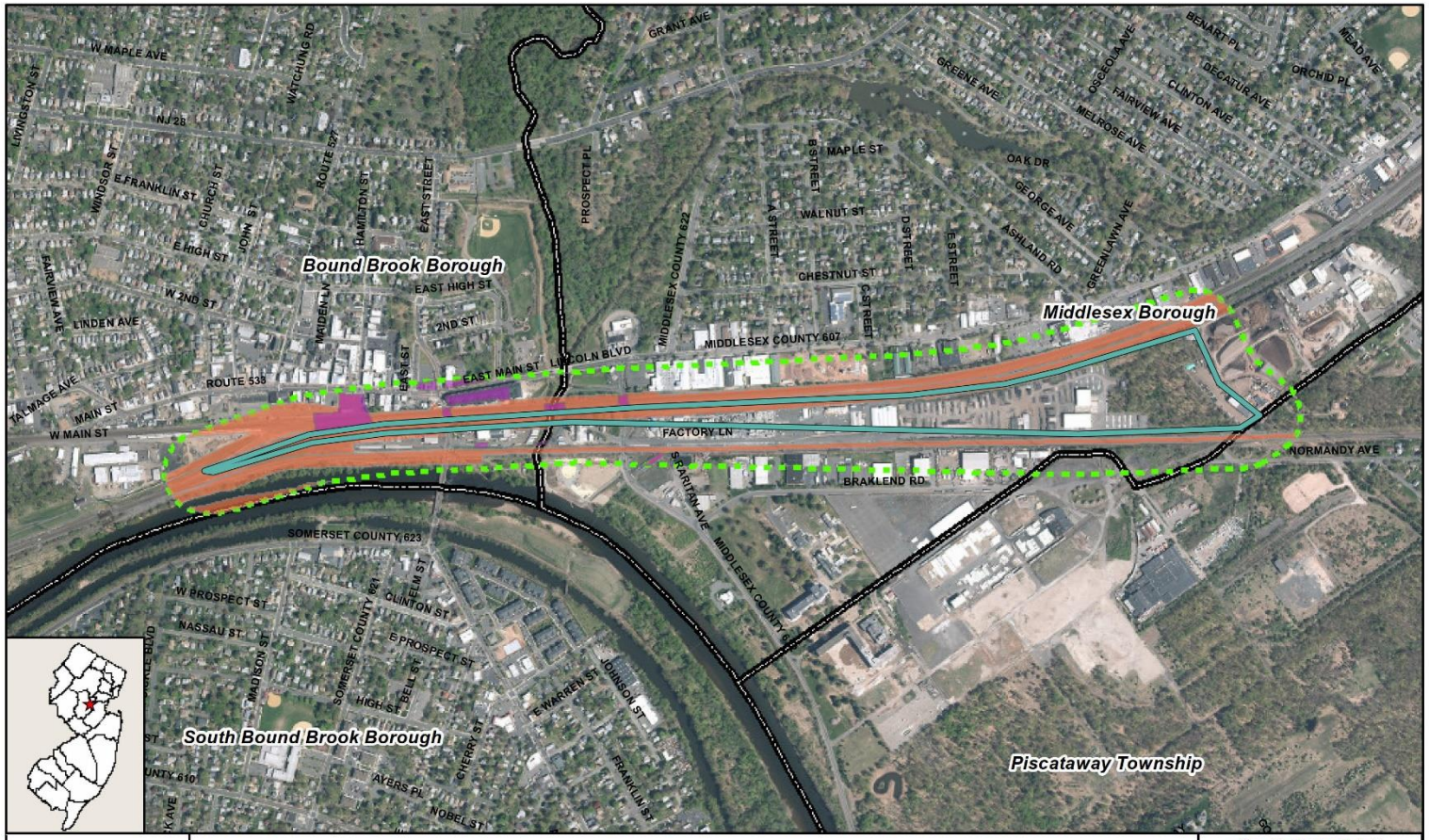


FIGURE X	KNOWN HAZARDOUS MATERIALS Bound Brook Project Area	NJTPA NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY
NJTPA Freight Concept Development Program	300 ft. Study Area Buffer Municipal Border Project Area Known Contaminated Sites Historic Fill Groundwater Classification Exeption Area Deed Notice	N 0 500 1,000 Feet

Environmental Constraints



Community Profiles

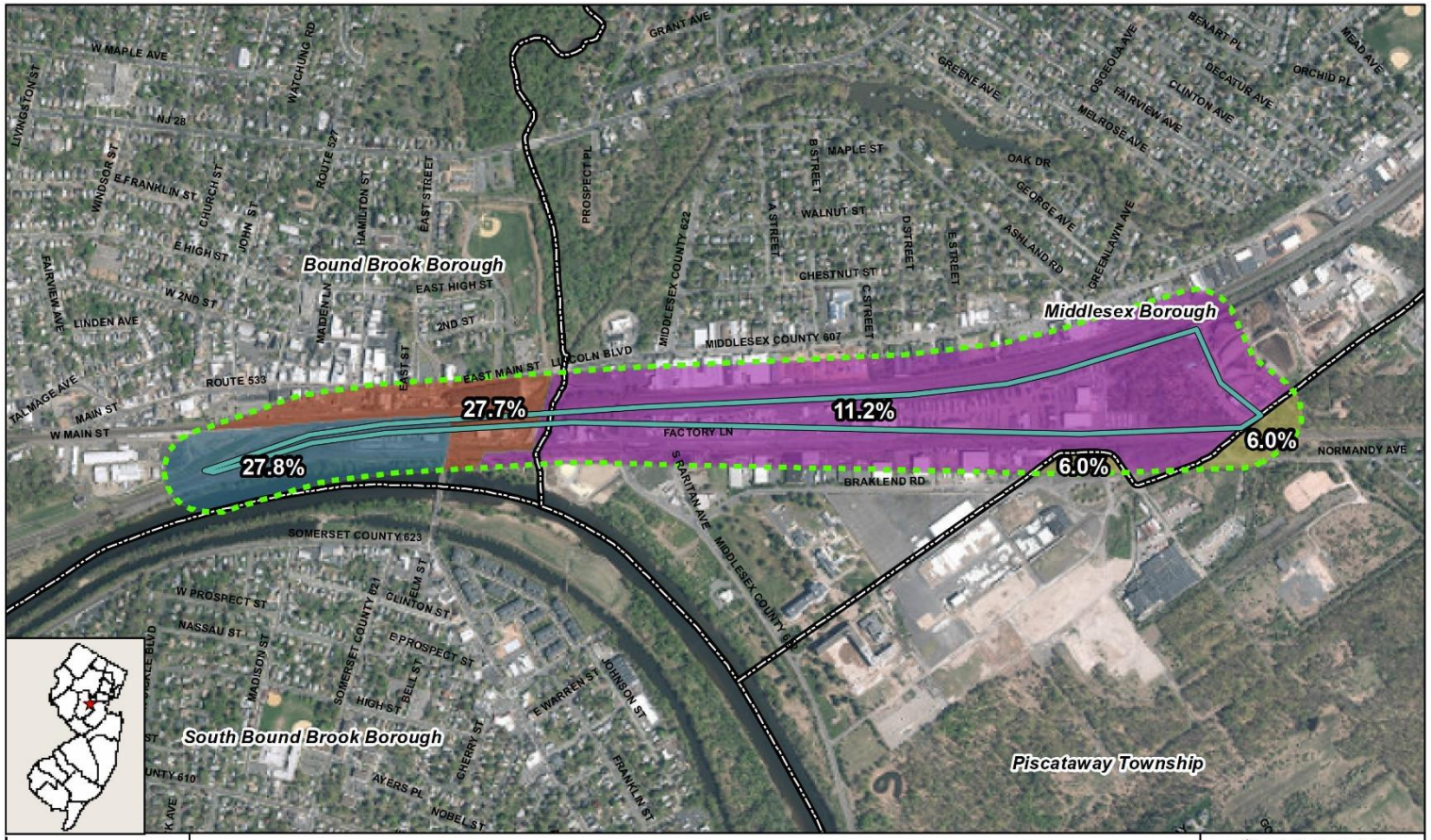


FIGURE X

Percentage of Limited English Proficiency by Tract
Bound Brook Project Area

NJTPA
NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

NJTPA Freight Concept Development Program

- 300 ft. Study Area Buffer
- Municipal Border
- Project Area
- Tract 1 = 11.2%
- Tract 7.01 = 6.0%
- Tract 511 = 27.7%
- Tract 512 = 27.8%

N

0 500 1,000 Feet

Community Profiles

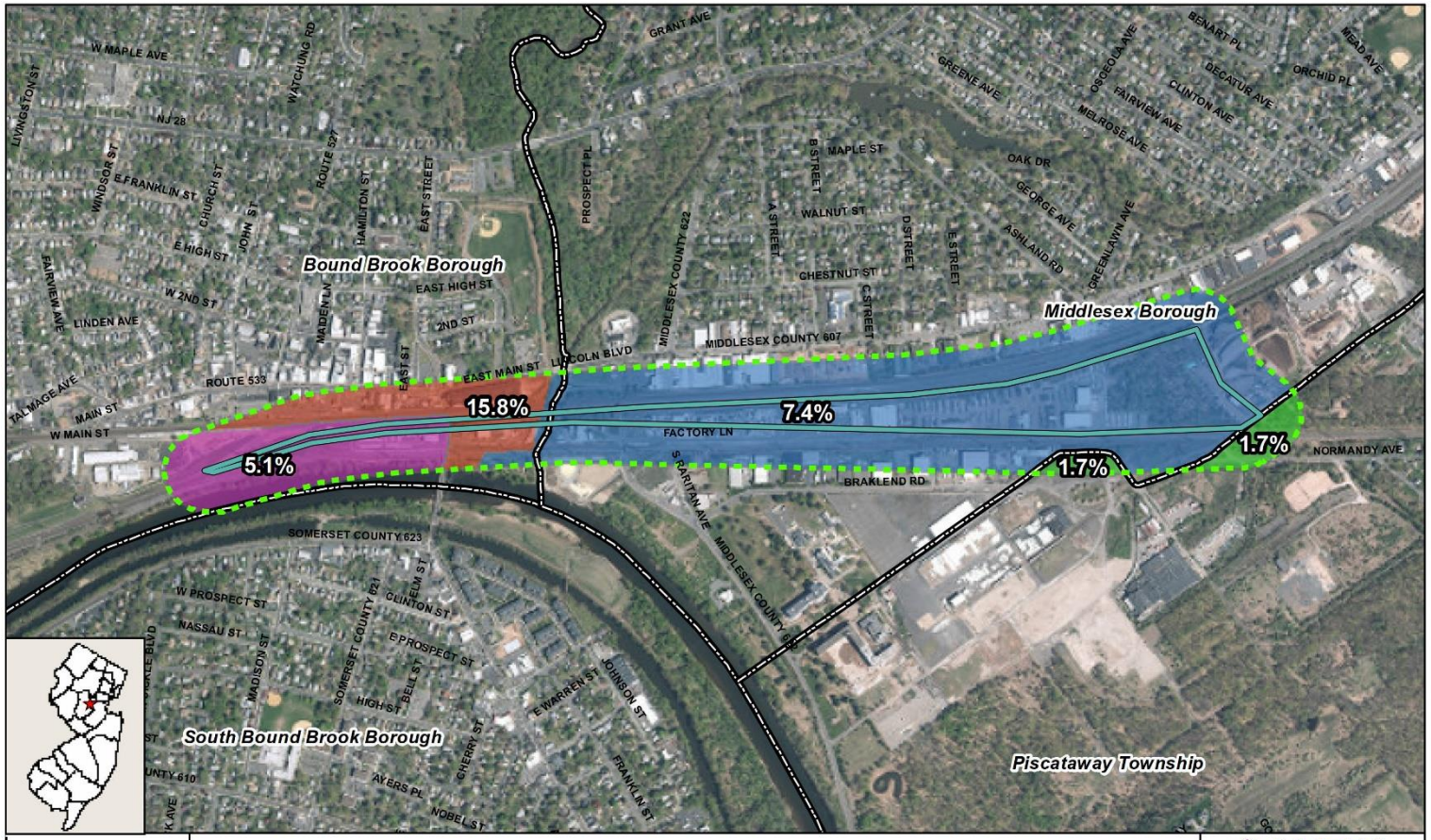


FIGURE X	Percentage of Persons Below the Poverty Line by Tract Bound Brook Project Area	NJTPA North Jersey Transportation Planning Authority
NJTPA Freight Concept Development Program	300 ft. Study Area Buffer Municipal Border Project Area Tract 1 = 7.4% Tract 7.01 = 1.7% Tract 511 = 15.8% Tract 512 = 5.1%	N 0 500 1,000 Feet

Community Profiles

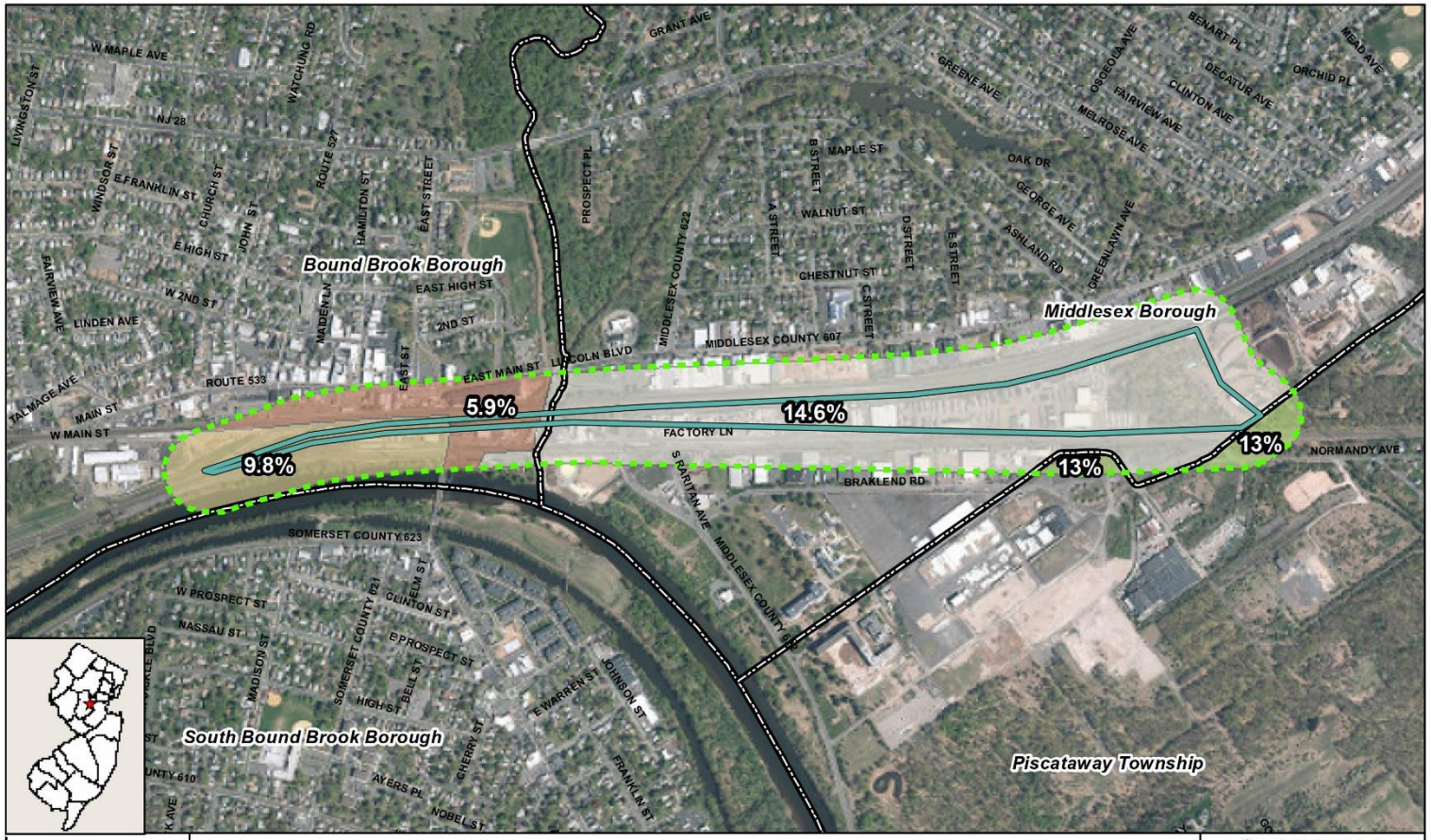
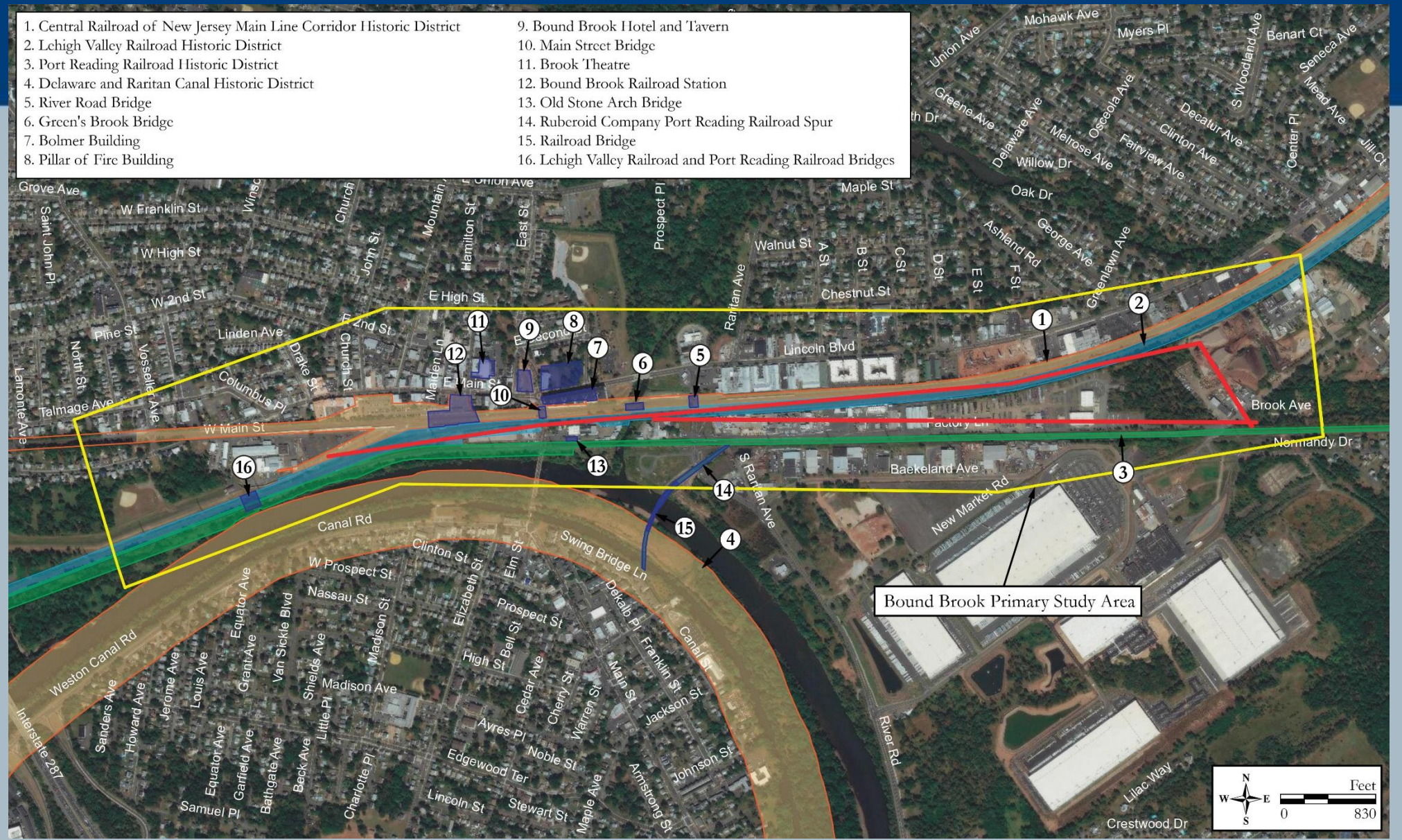


FIGURE X	Percentage of Population 65 and Older by Tract Bound Brook Project Area	NJTPA North Jersey Transportation Planning Authority
NJTPA Freight Concept Development Program	300 ft. Study Area Buffer Municipal Border Project Area Tract 1 = 14.6% Tract 7.01 = 13% Tract 511 = 5.9% Tract 512 = 5.1%	N 0 500 1,000 Feet

Cultural Resources



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
- 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

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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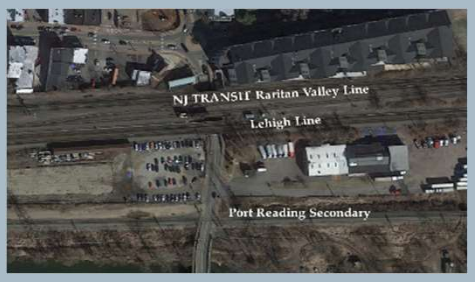
Find Us On Instagram

YouTube SUBSCRIBE TO OUR CHANNEL

Port Reading Secondary South Main Street Grade Crossing Elimination Project

Local Officials Briefing

January 17, 2023

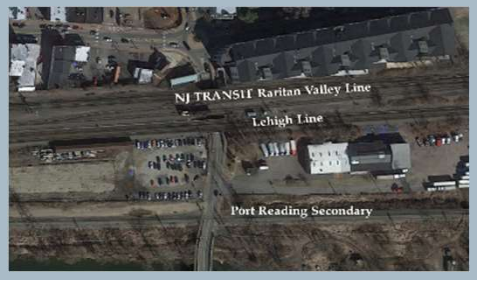


Jakub Rowinski, NJTPA Project Manager

Scott Parker, Jacobs Engineering Project Manager

Meeting Agenda

- Project Overview
- Data Collection
- Stakeholder Engagement
- Alternatives Scoring and Selection of Preliminary Preferred Alternative (PPA)
- Next Steps



Project Overview

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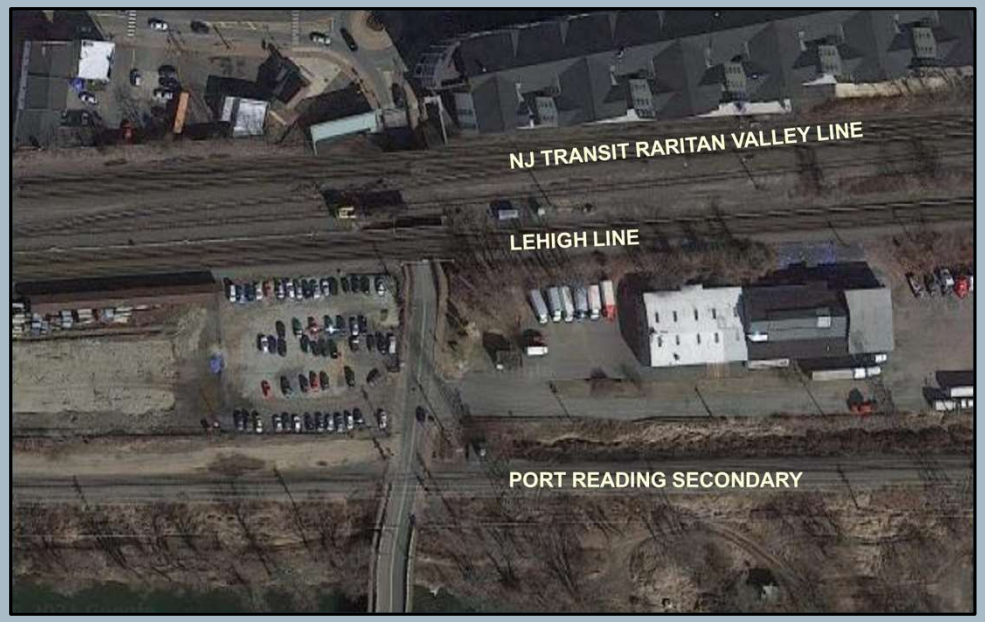
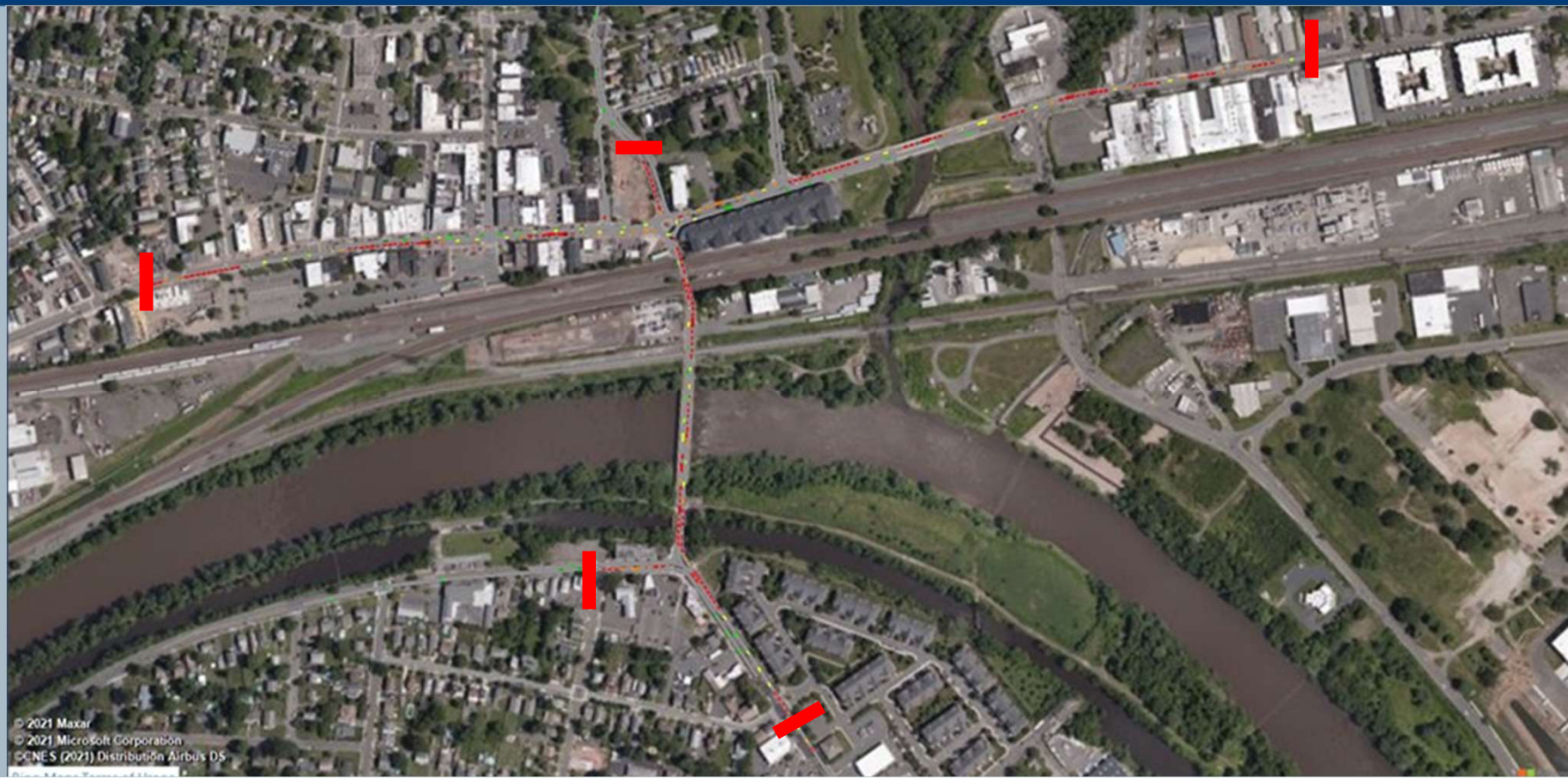


VISSIM Simulation Model of Gate Closure Congestion



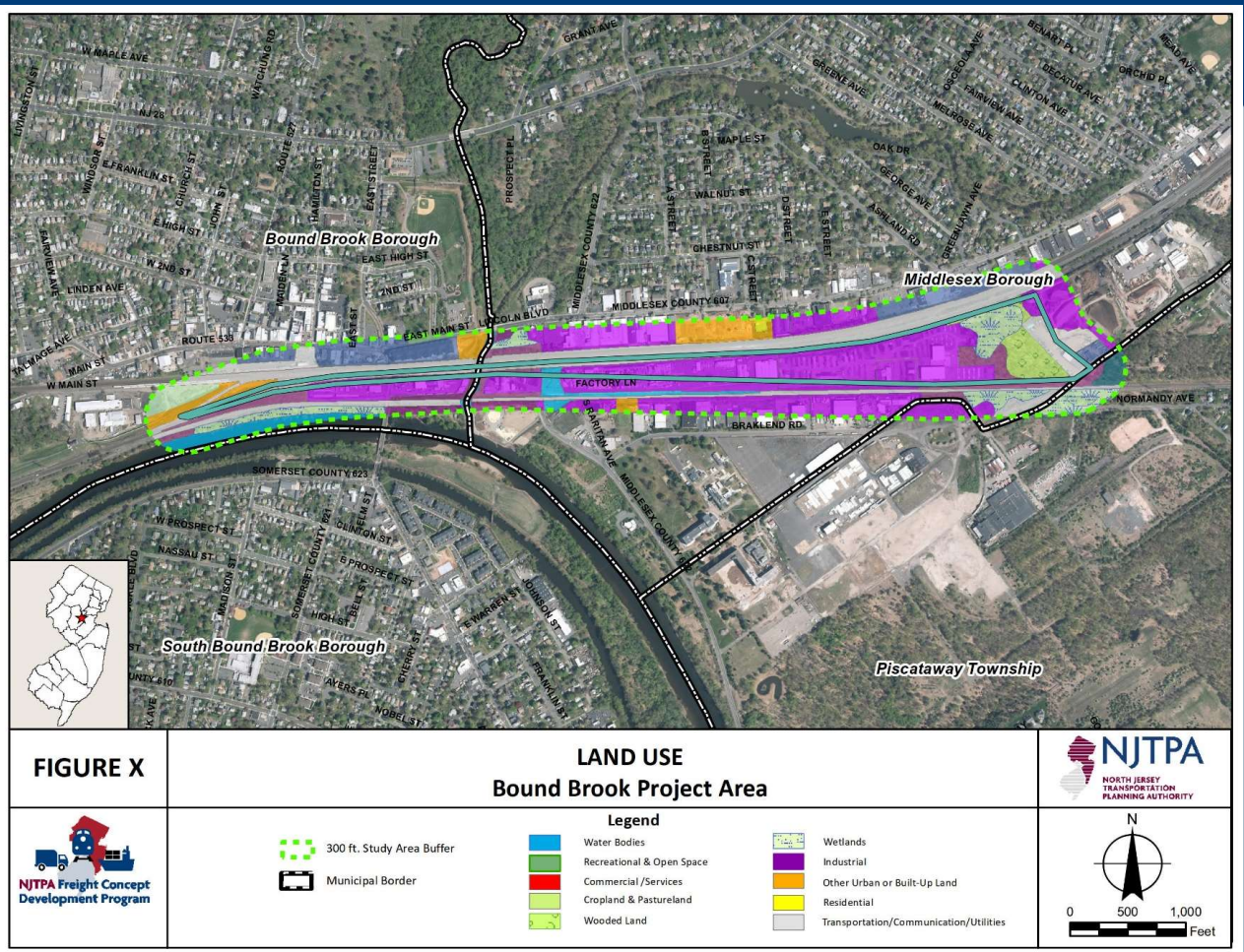
Project Overview

"The purpose of this project is to eliminate the at-grade rail crossing on South Main Street in the Borough of Bound Brook, while maintaining freight rail access to existing and future customers along the Port Reading Secondary line."

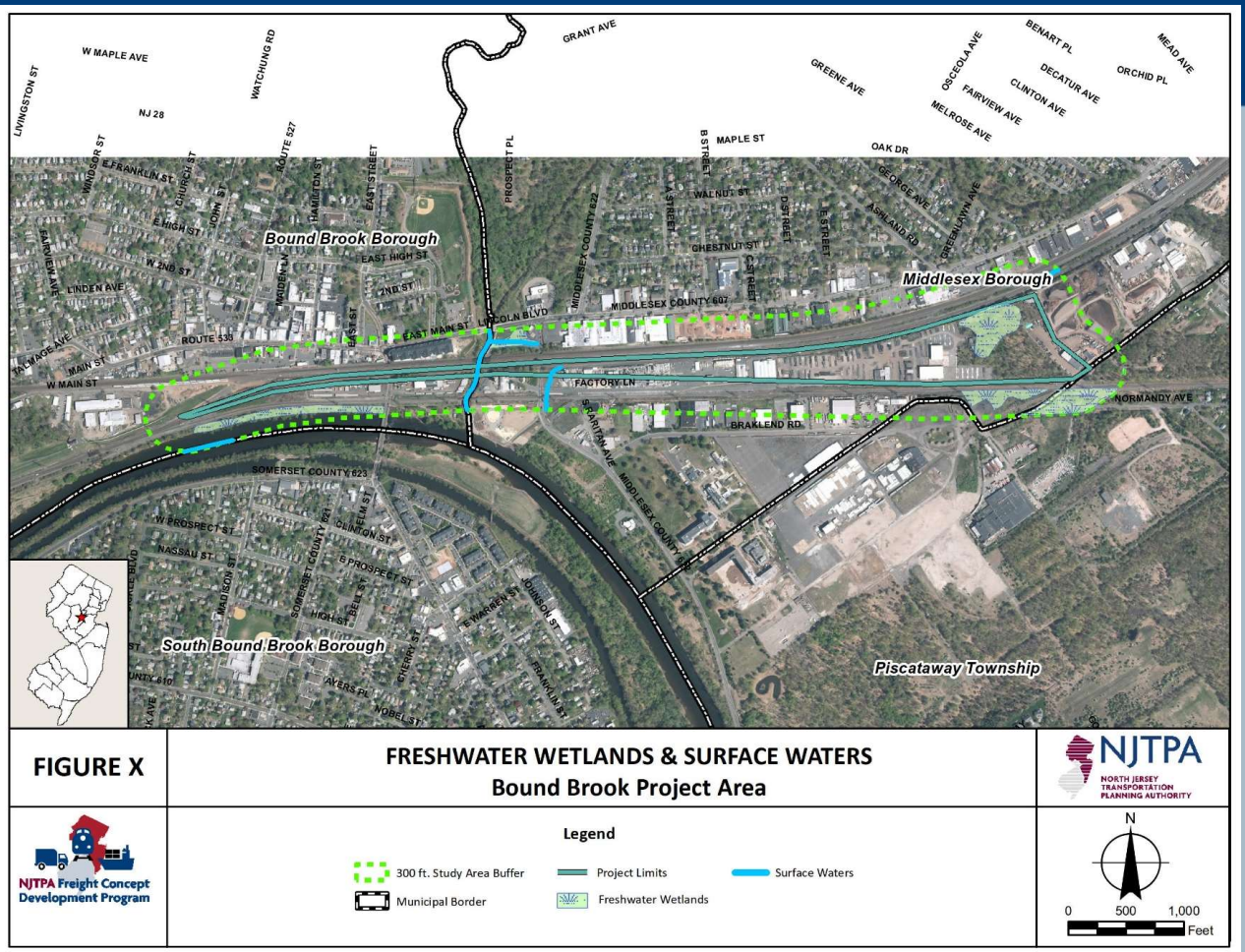
Potential Issues and Constraints

- Adjacent and Proximate Land Uses
- Community Profile & Environmental Justice/Title VI
- Section 4(f)
- Wetlands
- Floodplains & Aquifers
- Threatened & Endangered Species
- Hazardous Materials
- Historic and Cultural Resources
- Utilities

Environmental Constraints

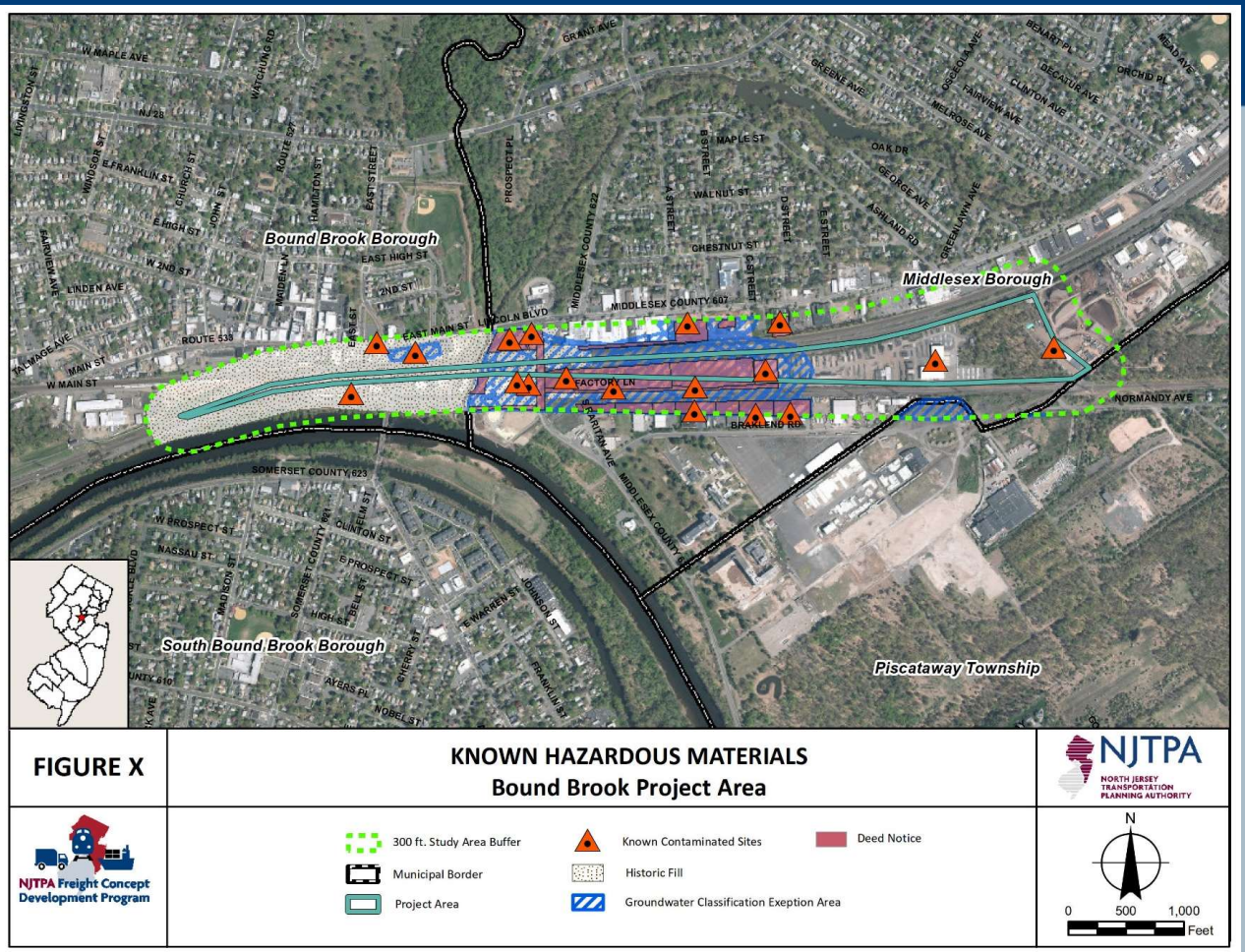


Environmental Constraints

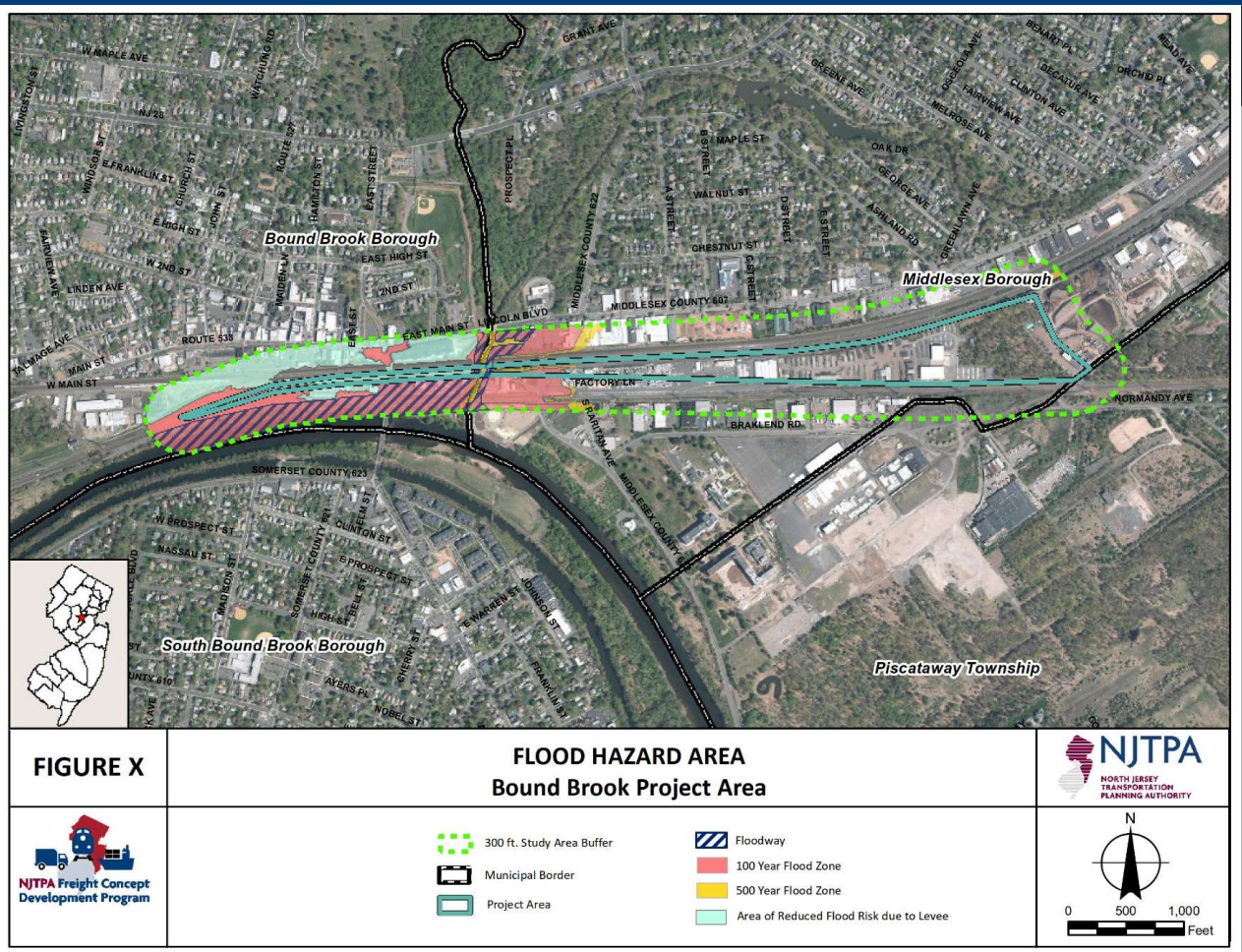


Environmental Constraints

Environmental Constraints

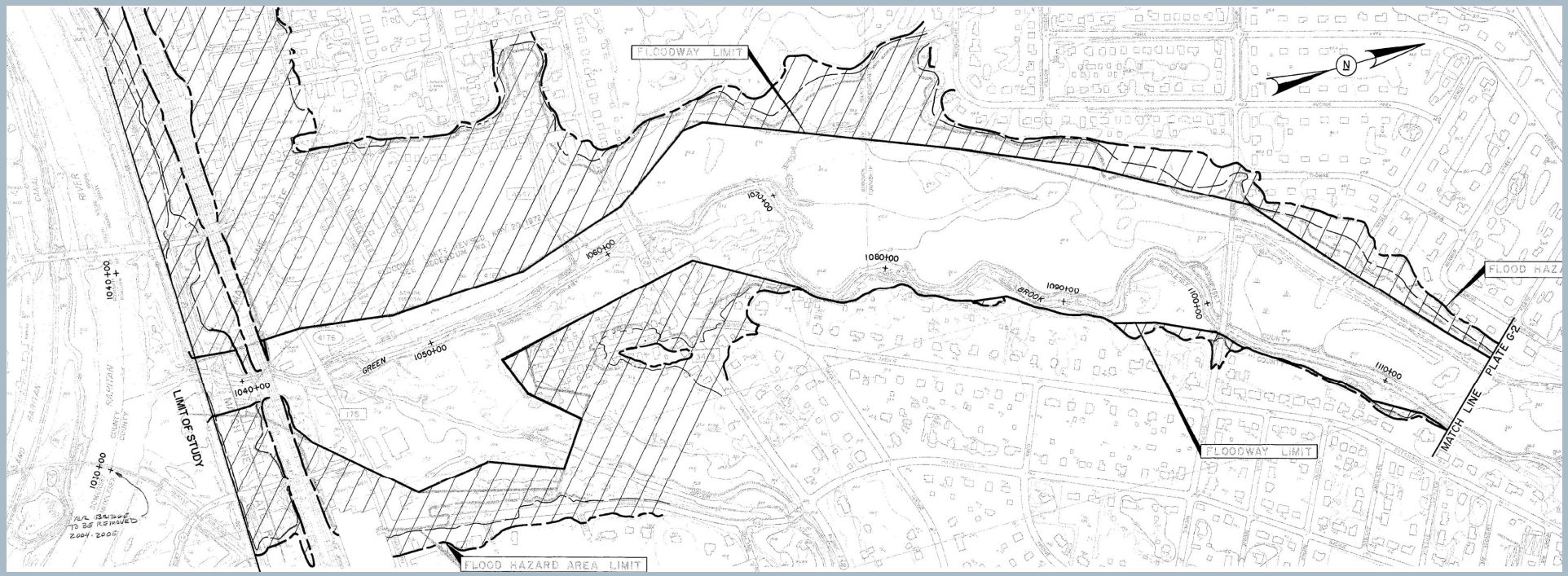


Environmental Constraints



Environmental Constraints

NJDEP FHA Map



Cultural Resources

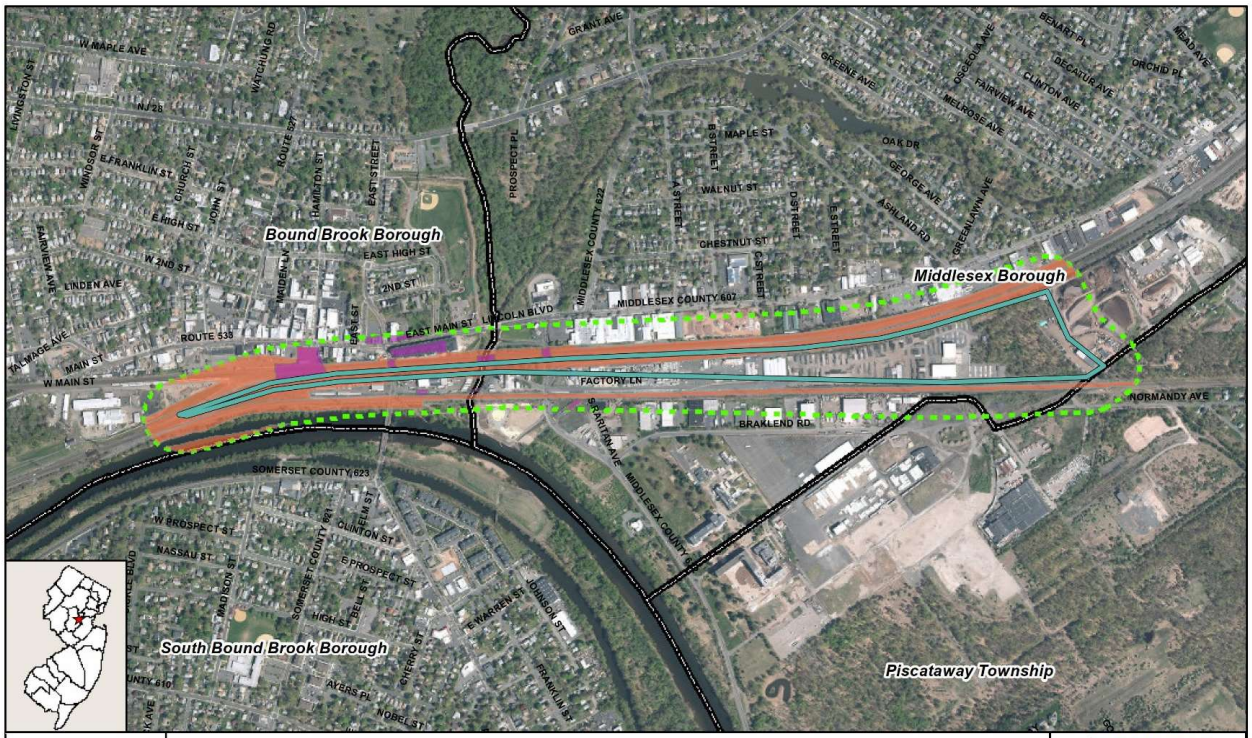
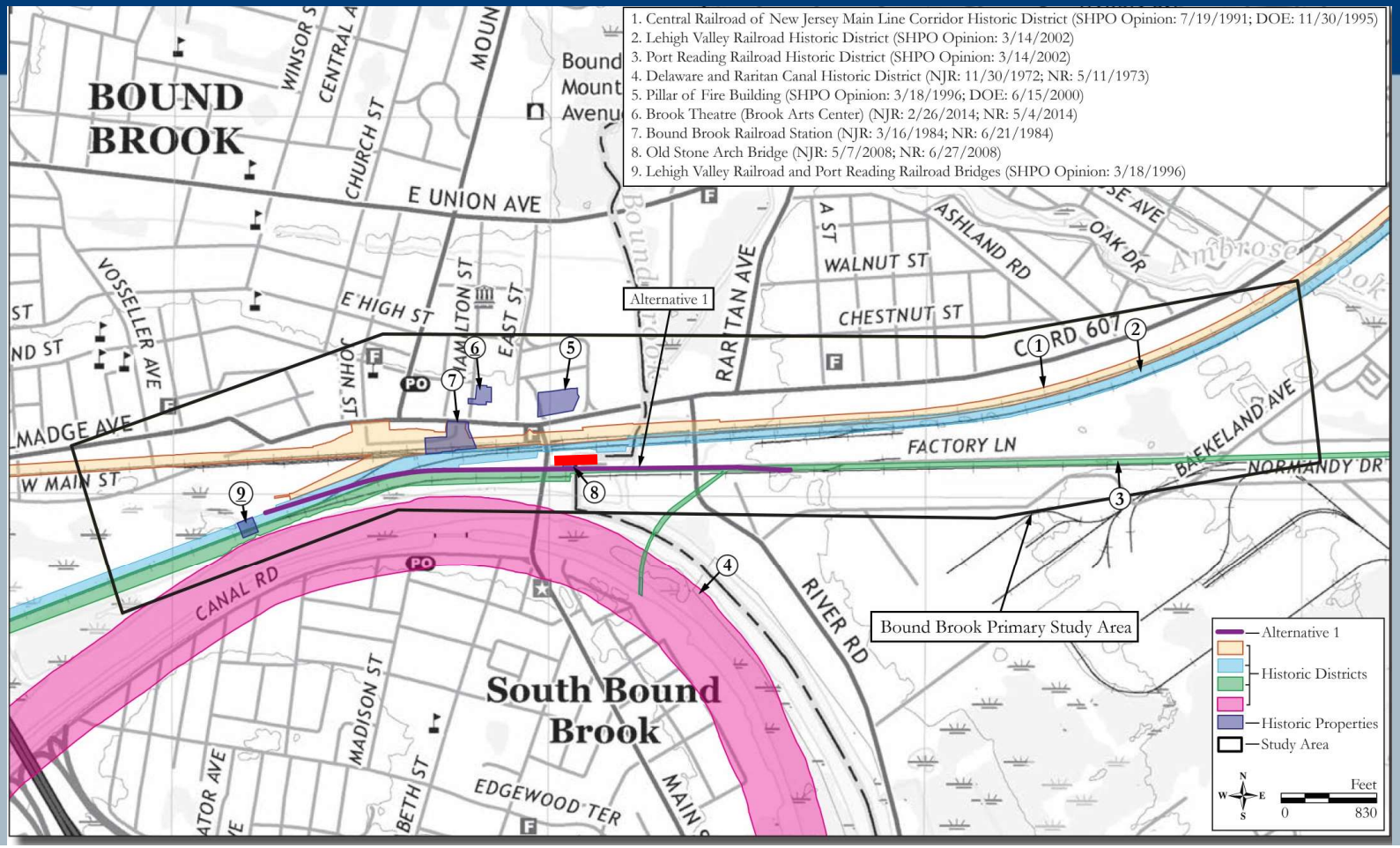
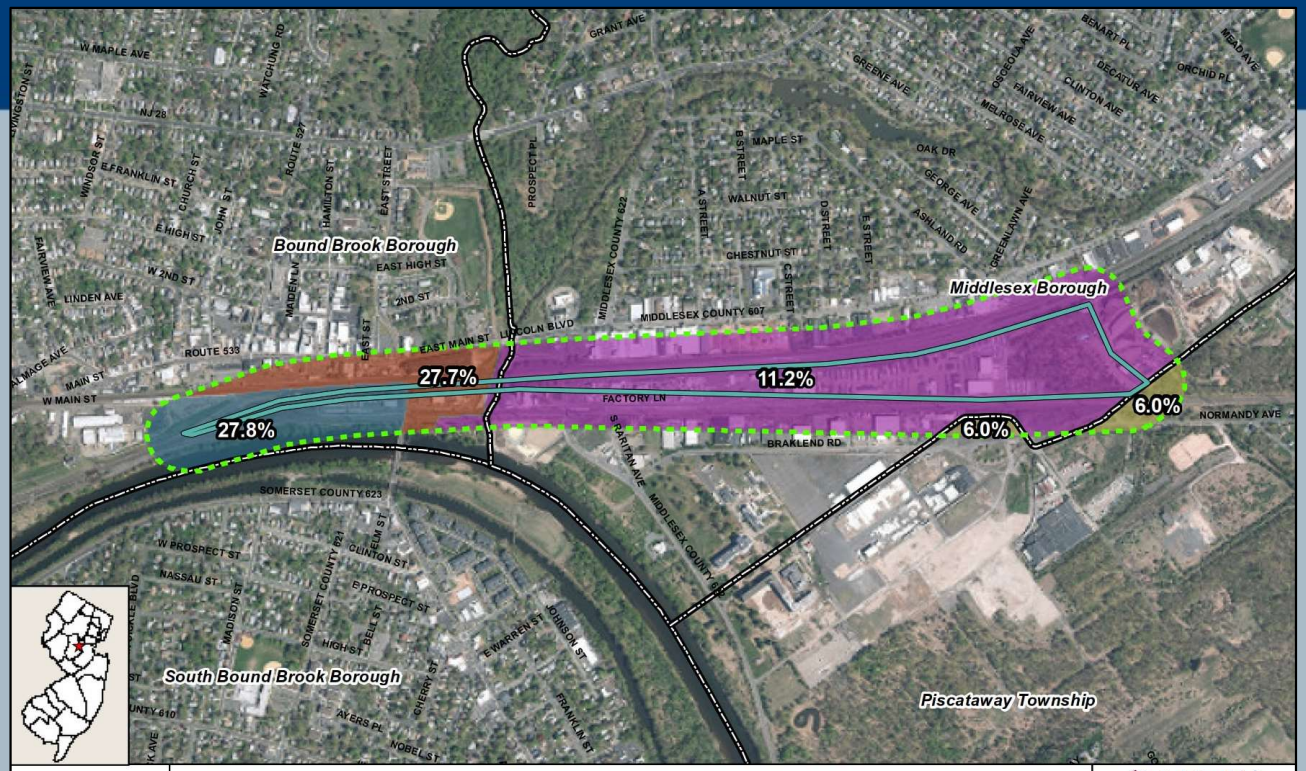


FIGURE X	Historic Resources Bound Brook Project Area	NJTPA NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY
NJTPA Freight Concept Development Program	300 ft. Study Area Buffer Municipal Border Project Area Historic Properties Historic Districts	N 0 500 1,000 Feet

Cultural Resources



Community Profile



Community Profile

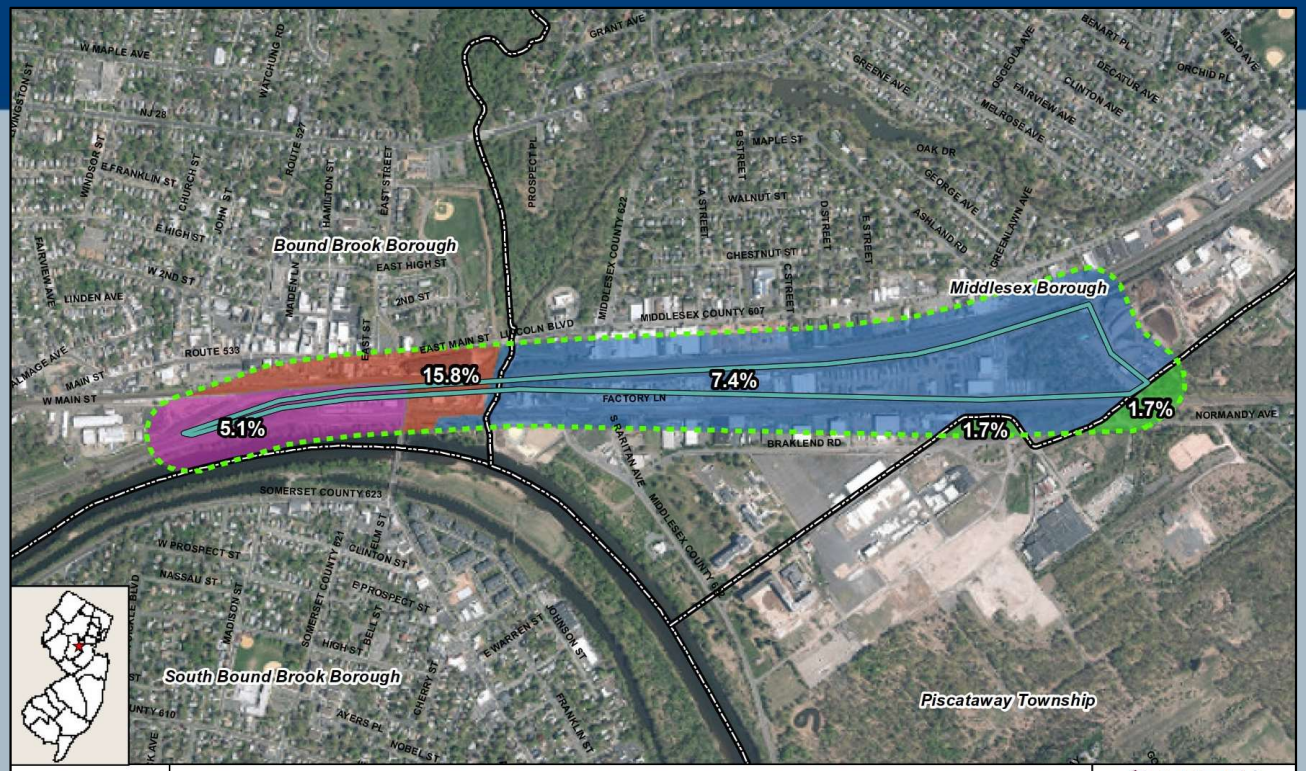


FIGURE X	Percentage of Persons Below the Poverty Line by Tract Bound Brook Project Area	NJTPA North Jersey Transportation Planning Authority
NJTPA Freight Concept Development Program	300 ft. Study Area Buffer Municipal Border Project Area Tract 1 = 7.4% Tract 7.01 = 1.7% Tract 511 = 15.8% Tract 512 = 5.1%	N 0 500 1,000 Feet

Community Profile

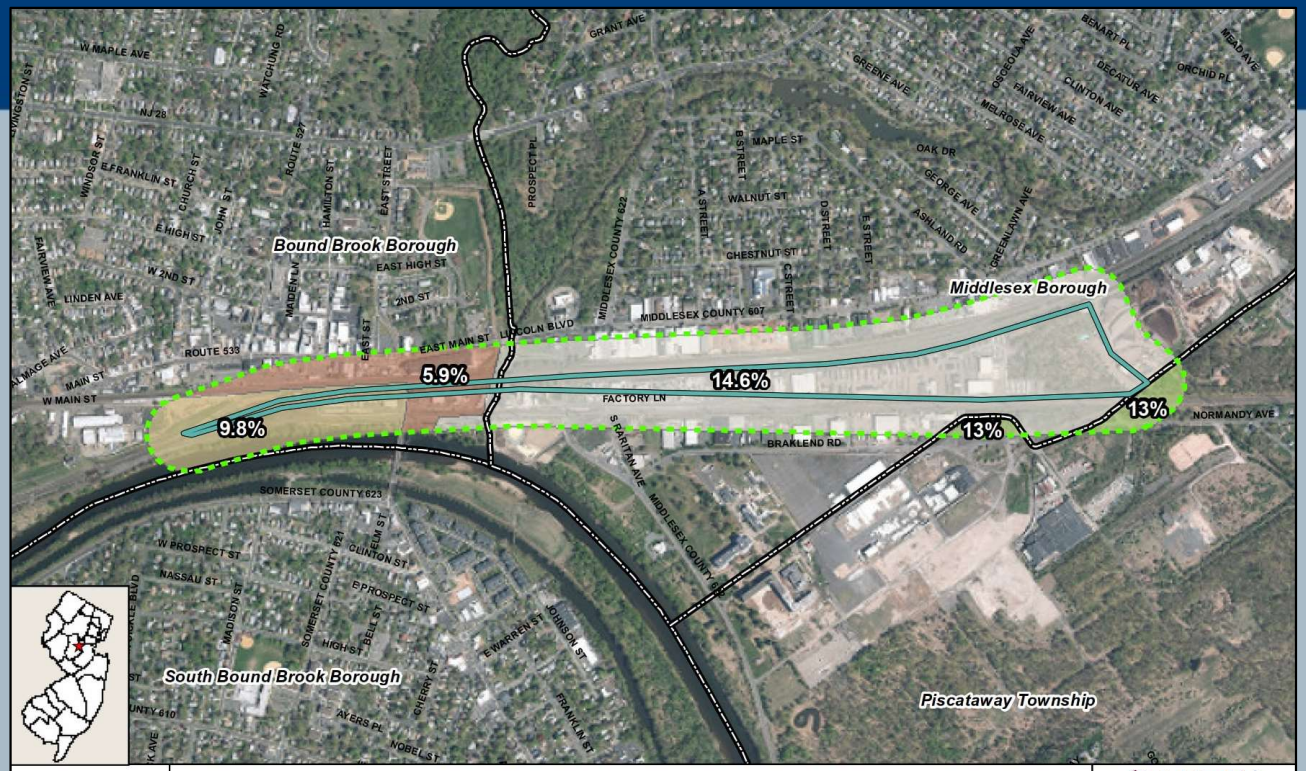


FIGURE X

Percentage of Population 65 and Older by Tract
Bound Brook Project Area

NJTPA North Jersey Transportation Planning Authority

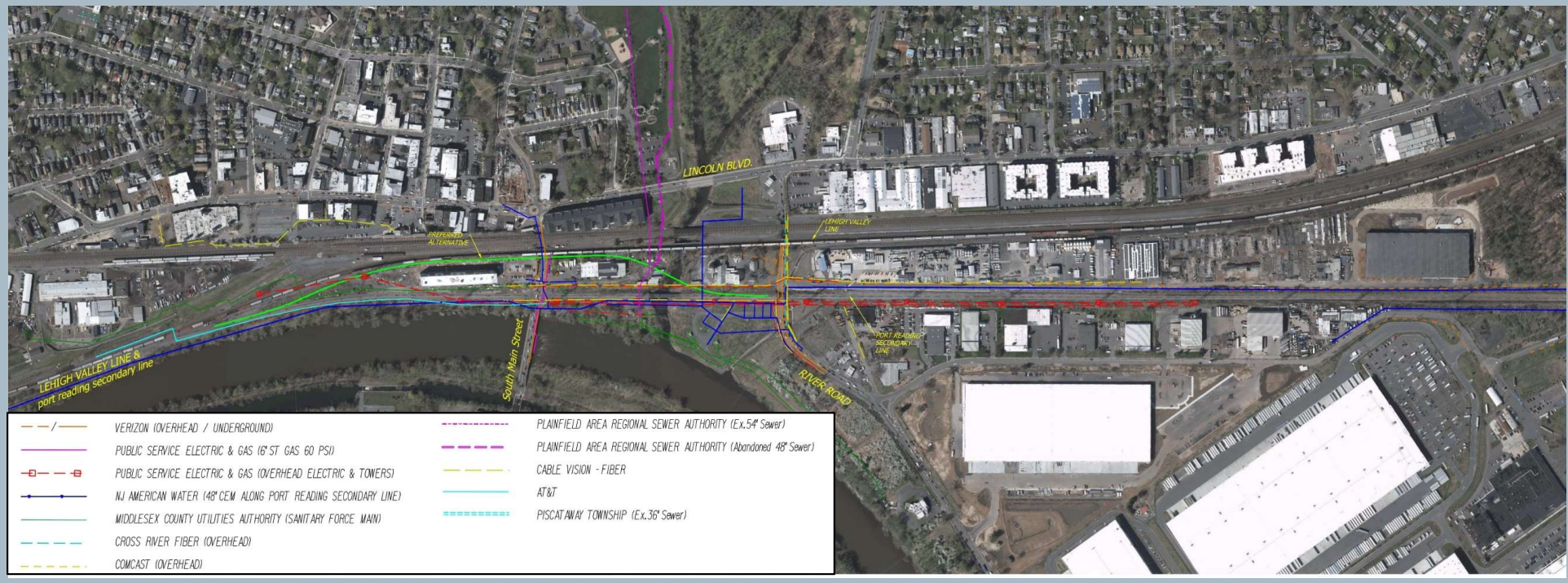
NJTPA Freight Concept Development Program

- 300 ft. Study Area Buffer
- Municipal Border
- Project Area
- Tract 1 = 14.6%
- Tract 7.01 = 13%
- Tract 511 = 5.9%
- Tract 512 = 5.1%

N

0 500 1,000 Feet

Utilities


LINCOLN BLVD.
PREFERRED ALTERNATIVE
LEHIGH VALLEY LINE
LEHIGH VALLEY LINE & port reading secondary line
South Main Street
RIVER ROAD
PORT READING SECONDARY LINE
VERIZON (OVERHEAD / UNDERGROUND)
PUBLIC SERVICE ELECTRIC & GAS (16" ST GAS 60 PSI)
PUBLIC SERVICE ELECTRIC & GAS (OVERHEAD ELECTRIC & TOWERS)
NJ AMERICAN WATER (48" CEM ALONG PORT READING SECONDARY LINE)
MIDDLESEX COUNTY UTILITIES AUTHORITY (SANITARY FORCE MAIN)
CROSS RIVER FIBER (OVERHEAD)
COMCAST (OVERHEAD)
PLAINFIELD AREA REGIONAL SEWER AUTHORITY (Ex.54" Sewer)
PLAINFIELD AREA REGIONAL SEWER AUTHORITY (Abandoned 48" Sewer)
CABLE VISION - FIBER
AT&T
PISCATAWAY TOWNSHIP (Ex.36" Sewer)

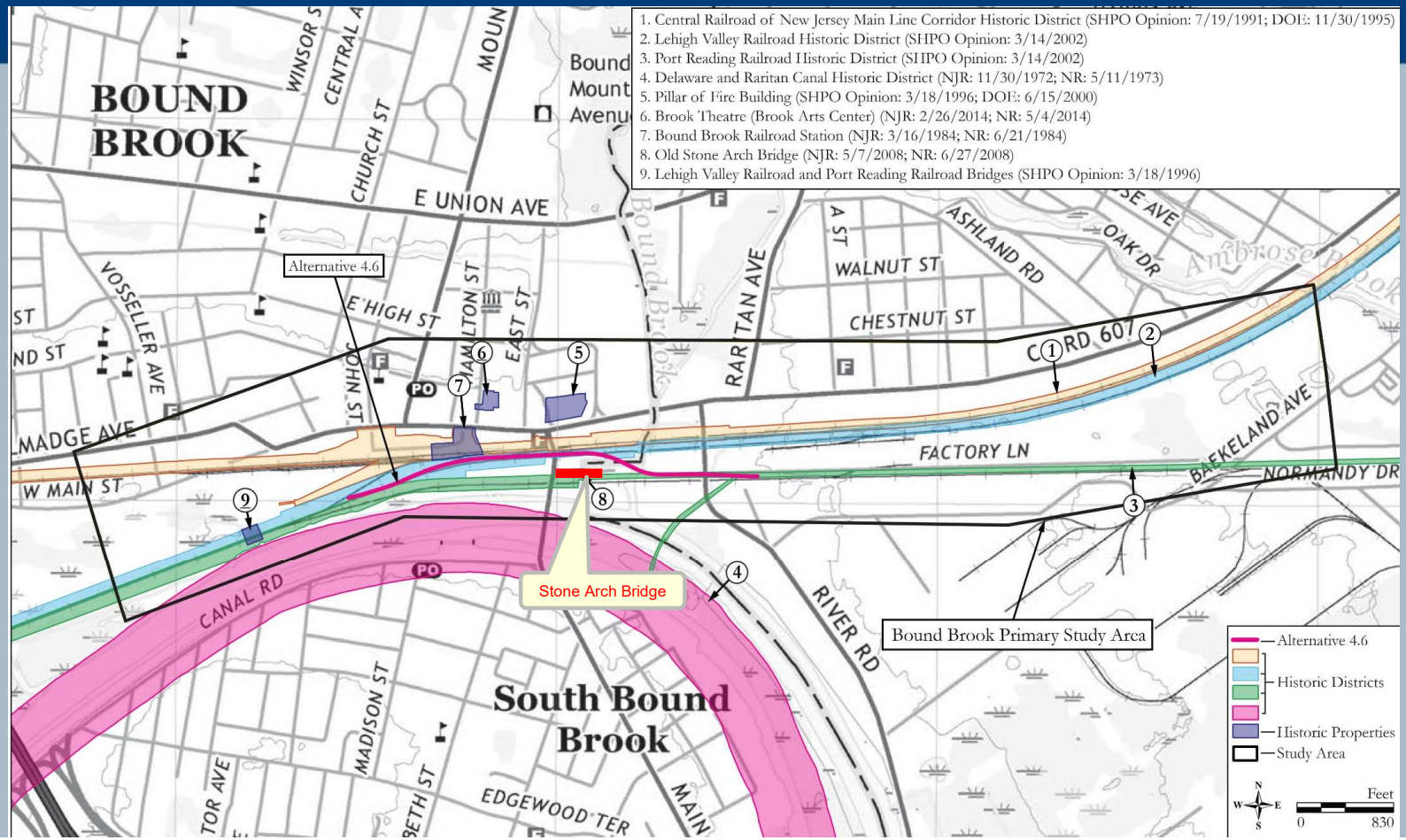
Stakeholder Engagement

- Bound Brook Mayors Office – April 29, 2021
- Local Officials Briefing No. 1 – August 2, 2021
- Public Meeting – September 13, 2021
- Middlesex County – August 12, 2022
- Study Website
- Coordination with Conrail
- Local Property / Infrastructure Owners
    - Re-Agent Chemical
    - PSE&G

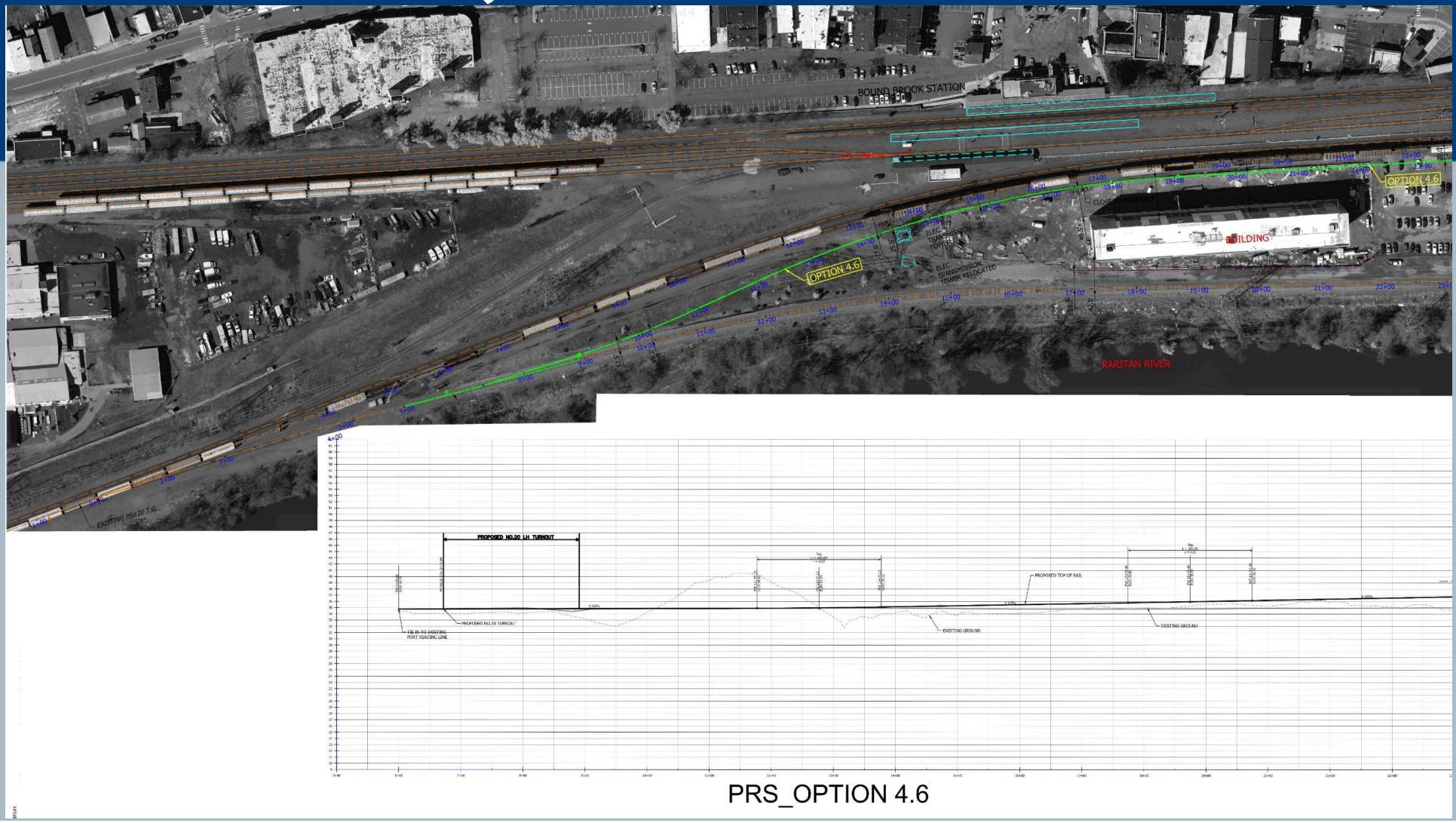
Alternatives Considered

Criteria	Grade Separation		Diversion Via Realigned PRS Track															
	Railroad over Roadway	Roadway Under Railroad	Bypass Using Lehigh Valley Line Southern Track - Eliminate Grade Crossing via Realigned PRS Track						Bypass Using New Track Parallel to Lehigh Valley Line - Eliminate Grade Crossing via Realigned PRS Track						VE Alternatives - Elevate Rail along Existing Alignment			
	1	2	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6	VE-1	VE-1A	VE-1B	VE-1C
Meets Project Purpose and Need	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Freight Rail Operations Impacts / Benefits - During Construction	-1	0	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
Freight Rail Operations Impacts / Benefits - Post Construction	0	0	-100	-100	-100	-100	-100	-100	-1	-1	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	0	0
Adjacent and Proximate Land Use Impacts / Benefits	-1	-1	-3	-5	-3	-3	-3	-3	-3	-5	-3	-3	-3	-3	-3	-3	-3	-3
Historic and Cultural Resources Impacts / Benefits	-5	0	1	1	1	1	1	1	1	1	1	1	1	1	-1	-3	-3	-1
Community Profile & Environmental Justice/Title VI Impacts / Benefits	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Wetlands Impacts / Benefits	-3	-3	-3	-3	-1	-1	-1	-1	-3	-3	-1	-1	-1	-1	-1	-1	-1	-5
Floodplains & Aquifers Impacts / Benefits	-3	-100	-3	-3	-1	-1	0	0	-5	-5	-5	-5	-5	-3	-3	-3	-3	-5
Threatened & Endangered Species Impacts / Benefits	-1	-1	-1	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Stormwater and Drainage Impacts / Benefits	-1	-100	0	-5	0	0	-3	-3	-3	-5	-3	-3	-3	-1	-1	-1	-1	-1
Hazardous Materials Impacts / Benefits	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Air Quality & Noise Impacts / Benefits	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Community Impacts / Benefits	3	-100	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Safety Impacts / Benefits	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Utility Impacts / Relocation Requirements	-5	-5	0	-5	0	0	-3	-3	-3	-1	-1	-3	-1	-3	-3	-5	-5	-3
Project Independence – Creates or Eliminates Need for other infrastructure project	0	-100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roadway Operational and Mobility Impacts / Benefits	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Summary Score	**-3**	**-396**	**-95**	**-106**	**-90**	**-90**	**-95**	**-95**	**-4**	**-6**	**1**	**-1**	**1**	**3**	**1**	**-3**	**-3**	**-5**

Preliminary Preferred Alternative

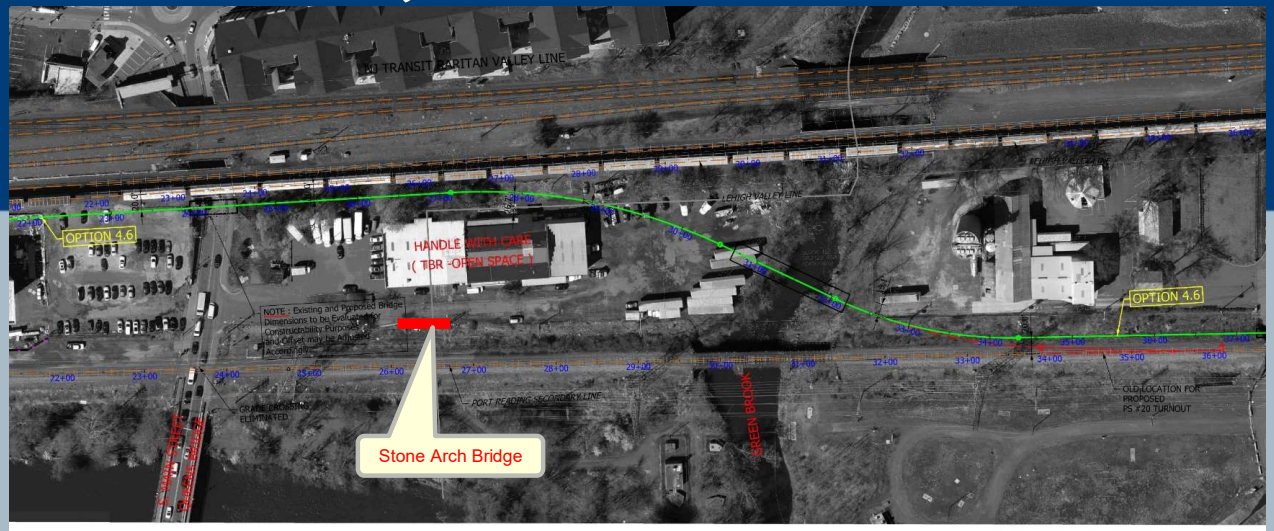


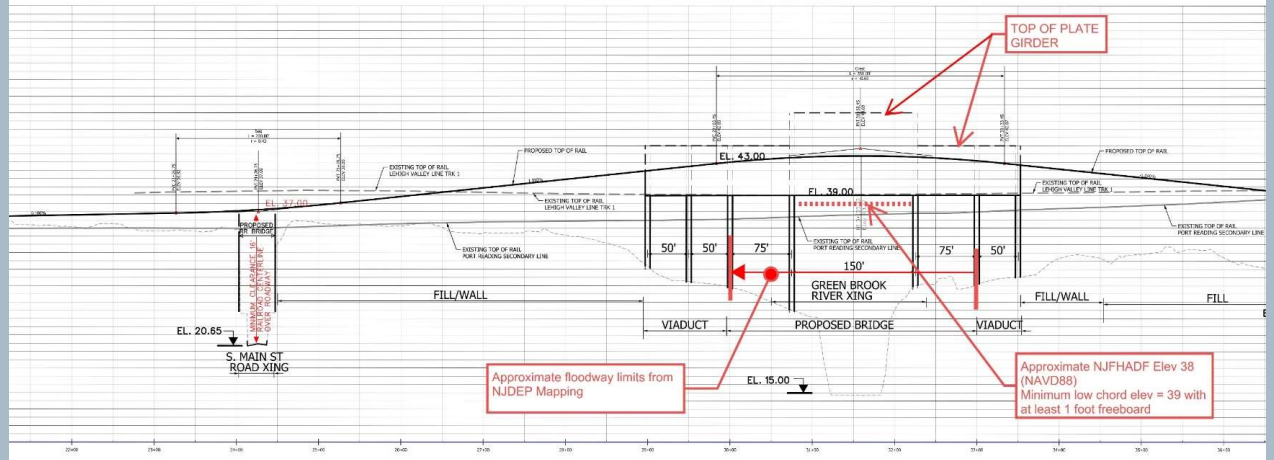
Preliminary Preferred Alternative



PRS_OPTION 4.6

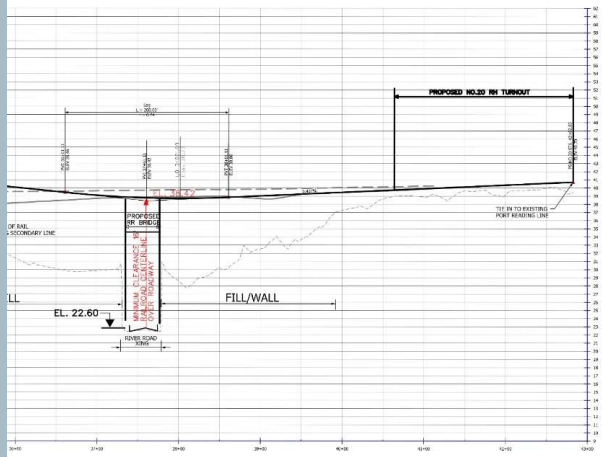
Preliminary Preferred Alternative





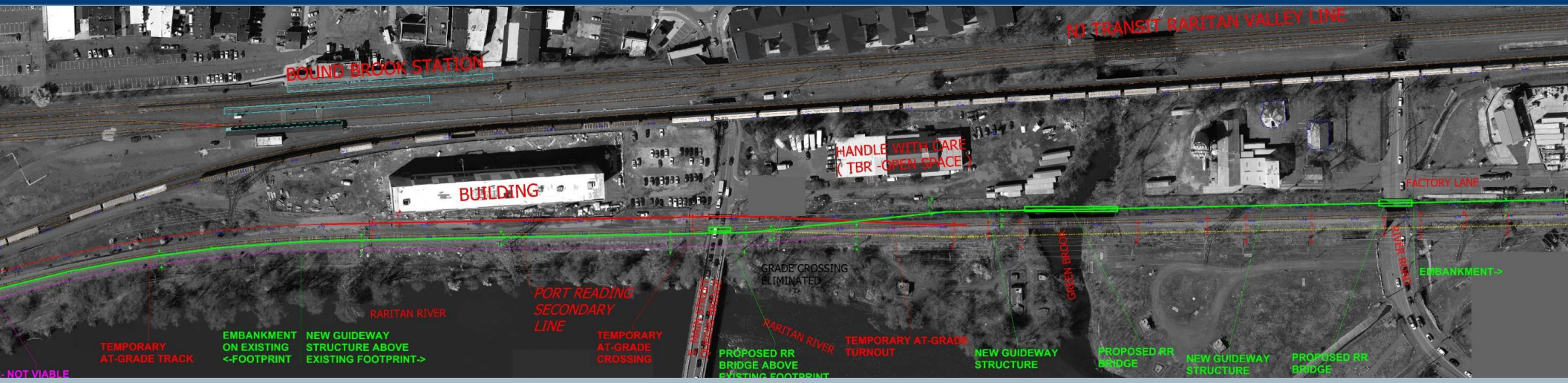
PRS_Option 4.6

Preliminary Preferred Alternative



PRS_OPTION 4.6

Value Engineering Workshop and State Historic Preservation Office Coordination



Independent VE Study Ideas

- Elevated railroad on existing alignment

SHPO Review

- No fatal flaws with respect to the Preliminary Preferred Alternative

Next Steps

- Program Compliance Review No. 2
- Public Information Center No. 2
- **Resolutions of Support from Potentially Affected Municipalities**
- Draft Concept Development Report
- Interagency Review Committee Meeting
- Finalize Concept Development Report

Questions?

Defining the Vision. Shaping the Future.

NJTPA

NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

Jakub Rowinski
jrowinski@njtpa.org
Scott Parker
Scott.Parker@jacobs.com

Appendix F

Parcel Data

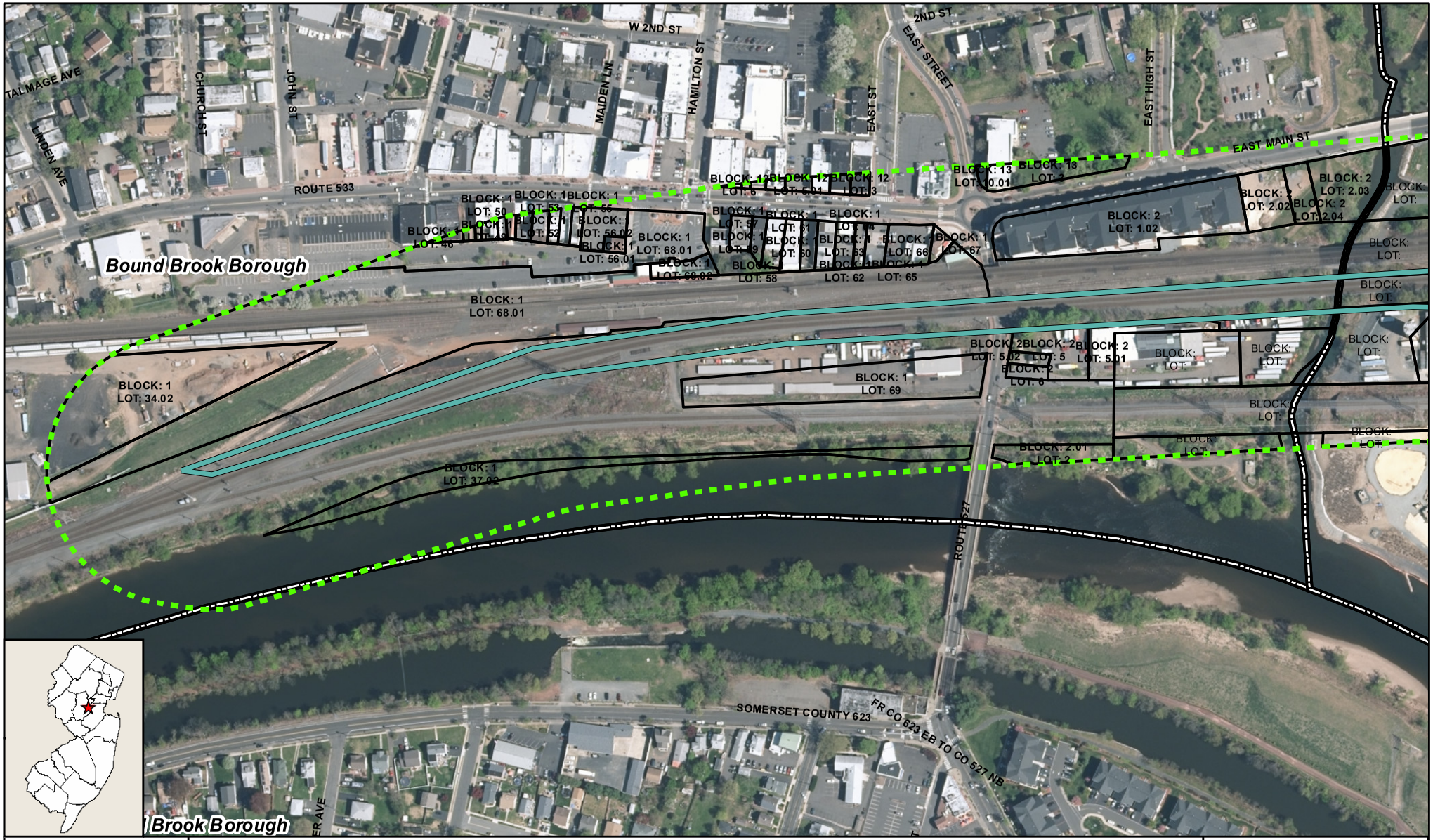


FIGURE X

PARCELS
Bound Brook Project Area

NJTPA
NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

NJTPA Freight Concept Development Program

300 ft. Study Area Buffer
Municipal Border
Project Area
Parcels

N

0 150 300 Feet

BLOCK	LOT	COUNTY	MUNICIPALITY	PROPERTY LOCATION	OWNER	OWNER ADDRESS	CITY_STATE	ZIP_CODE
1	44	SOMERSET	BOUND BROOK BORO	198-200 EAST MAIN STREET	IH PROPERTIES LLC,	200 EAST MAIN STREET	BOUND BROOK NJ	8805
1	68.02	SOMERSET	BOUND BROOK BORO	EAST MAIN STREET	NEW JERSEY TRANSIT	PO BOX 10009	NEWARK, NJ	7101
1	49.01	SOMERSET	BOUND BROOK BORO	214 EAST MAIN STREET	ALLT, LLC	PO BOX 583	MARTINSVILLE, NJ	8836
12	7.01	SOMERSET	BOUND BROOK BORO	409 EAST MAIN STREET	409 E MAIN STREET, LLC	420 HILL ROAD	GLEN GARDNER, NJ	8826
1	50	SOMERSET	BOUND BROOK BORO	216 EAST MAIN STREET	IKING NJ LLC,	1328 JANKOWSKI COURT	SOUTH PLAINFIELD NJ	7080
1	51	SOMERSET	BOUND BROOK BORO	218-220 EAST MAIN STREET	HAMILTON BOUND LLC	227 EAST 56TH ST. SE401	NEW YORK, NY	10022
2	5.01	SOMERSET	BOUND BROOK BORO	RAILROAD AVENUE	G&P PROPERTIES, LLC	P.O. BOX 649	BOUND BROOK NJ	8805
2	5.02	SOMERSET	BOUND BROOK BORO	SOUTH MAIN STREET	COUNTY OF SOMERSET	PO BOX 3000	SOMERVILLE NJ	8876
12	5.01	SOMERSET	BOUND BROOK BORO	415 EAST MAIN STREET	BOROUGH OF BOUND BROOK	230 HAMILTON STREET	BOUND BROOK NJ	8805
2	5	SOMERSET	BOUND BROOK BORO	540 SOUTH MAIN STREET	G&P PROPERTIES LLC,	P.O. BOX 649	BOUND BROOK NJ	8805
1	61	SOMERSET	BOUND BROOK BORO	424 EAST MAIN STREET	TRAIN BOUND LLC,	227 E. 56TH ST STE 401	NEW YORK, NY	10022
1	68.01	SOMERSET	BOUND BROOK BORO	198 EAST MAIN STREET	NEW JERSEY TRANSIT	PO BOX 10009	NEWARK, NJ	7101
1	62	SOMERSET	BOUND BROOK BORO	426 EAST MAIN STREET	TRAIN BOUND LLC,	227 E. 56TH ST STE 401	NEW YORK, NY	10022
1	49	SOMERSET	BOUND BROOK BORO	212 EAST MAIN STREET	ALLT LLC,	PO BOX 583	MARTINSVILLE NJ	8836
13	10.01	SOMERSET	BOUND BROOK BORO	EAST SECOND STREET	507 EAST MAIN STREET URBAN RENEWAL	42 OKNER PKWY	LIVINGSTON, NJ	7039
1	57	SOMERSET	BOUND BROOK BORO	408 EAST MAIN STREET	150 EAST FOURTH ST. BLK 836 LOT 18	724 AMWELL RD	HILLSBOROUGH, NJ	8844
1	64	SOMERSET	BOUND BROOK BORO	432 EAST MAIN ST	HOPE, JAMES S JR. & ARLENE J	394 JAGUAR LANE	BRIDGEWATER NJ	8807
2	6	SOMERSET	BOUND BROOK BORO	SOUTH MAIN STREET	BOROUGH OF BOUND BROOK	230 HAMILTON STREET	BOUND BROOK NJ	8805
1	69	SOMERSET	BOUND BROOK BORO	69 SOUTH MAIN STREET	MERIDIA SELF STORAGE, URBAN RENEWAL	201 SOUTH WOOD AVE.	LINDEN, NJ	7036
1	58	SOMERSET	BOUND BROOK BORO	410 EAST MAIN STREET	WU, WING CHEUNG	69 MOUNTAIN AVE	CEDAR KNOLLS, NJ	7927
1	59	SOMERSET	BOUND BROOK BORO	416-418 EAST MAIN STREET	G.A.H. REALTY INC.C/O GATH LLC	525 RISEN STAR CT	HAVRE DE GRACE, MD	21078
1	56.01	SOMERSET	BOUND BROOK BORO	300-306 EAST MAIN STREET	TEJAS CORP,	240 WOODROW AVENUE	PISCATAWAY NJ	8854
12	7	SOMERSET	BOUND BROOK BORO	407 EAST MAIN STREET	YU,CHUN LIANG & LILY HENG LI WU	69-12 FOREST AVENUE	RIDGEWOOD NY	11385
13	3	SOMERSET	BOUND BROOK BORO	519 EAST MAIN STREET	HOUSE OF PRAYER & EVANGELISM INC	519 EAST MAIN STREET	BOUND BROOK NJ	8805
12	6	SOMERSET	BOUND BROOK BORO	411-413 EAST MAIN STREET	TRACKSIDE PLAZA, LLC	P.O. BOX 583	MARTINSVILE NJ	8836
1	55	SOMERSET	BOUND BROOK BORO	228 EAST MAIN STREET	L & S REAL ESTATE HOLDINGS LLC	228 EAST MAIN STREET	BOUND BROOK NJ	8805
12	4	SOMERSET	BOUND BROOK BORO	423-425 EAST MAIN STREET	MAZARAKI INC,	212 VESPER AVENUE	MIDDLESEX NJ	8846
1	65	SOMERSET	BOUND BROOK BORO	500-502 EAST MAIN STREET	RIO BOUND BROOK LLC,	227 EAST 56 STREET SE401	NEW YORK, NY	10022
1	37.02	SOMERSET	BOUND BROOK BORO	WEST MAIN STREET	E'TOWN - AMERICAN WATER	PO BOX 2738	CAMDEN, NJ	8101
1	56.02	SOMERSET	BOUND BROOK BORO	EAST MAIN STREET	BOROUGH OF BOUND BROOK	230 HAMILTON STREET	BOUND BROOK NJ	8805
1	47	SOMERSET	BOUND BROOK BORO	208 EAST MAIN STREET	BOROUGH OF BOUND BROOK	230 HAMILTON STREET	BOUND BROOK NJ	8805
1	45	SOMERSET	BOUND BROOK BORO	202 EAST MAIN STREET	KEUNG, AU YEUNG & IUN-MENG CHANG	182 DICKENS COURT	SOMERSET NJ	8873
1	52	SOMERSET	BOUND BROOK BORO	222 EAST MAIN STREET	PMP REALTY MGMT LLC,	79 HERITAGE COURT	BRIDGEWATER NJ	8807
1	67	SOMERSET	BOUND BROOK BORO	580 EAST MAIN STREET	BOUND BROOK HOSE CO. # 1	580 EAST MAIN STREET	BOUND BROOK NJ	8805
1	66	SOMERSET	BOUND BROOK BORO	506 EAST MAIN STREET	EAST MAIN STREET REALTY LLC	7 SWEETBRIAR COURT	MULLICA HILL NJ	8062
1	48	SOMERSET	BOUND BROOK BORO	210 EAST MAIN STREET	BOROUGH OF BOUND BROOK	230 HAMILTON STREET	BOUND BROOK NJ	8805
1	53	SOMERSET	BOUND BROOK BORO	224 EAST MAIN STREET	L & S REAL ESTATE HOLDINGS LLC	224 EAST MAIN STREET	BOUND BROOK NJ	8805
12	5	SOMERSET	BOUND BROOK BORO	417-419 EAST MAIN STREET	RIT ENTERPRISE LLC,	BOX 583	MARTINSVILLE NJ	8836
12	3	SOMERSET	BOUND BROOK BORO	429 EAST MAIN STREET	SILVER PLUS LLC,	7 ESTERBROOK DRIVE	PRINCETON, NJ	8540
12	8	SOMERSET	BOUND BROOK BORO	405 EAST MAIN STREET	MAIN BOUND LLC,	227 E. 56TH ST. SE 401	NEW YORK, NY	10022
1	46	SOMERSET	BOUND BROOK BORO	204 EAST MAIN STREET	ATHANASOPOULOS,GEO. & K.	212 VESPER AVENUE	MIDDLESEX NJ	8846
1	63	SOMERSET	BOUND BROOK BORO	428 EAST MAIN STREET	HOPE, JAMES S JR. & ARLENE J	394 JAGUAR LANE	BRIDGEWATER NJ	8807
1	34.02	SOMERSET	BOUND BROOK BORO	100 WEST MAIN STREET	BROOK INDUSTRIAL PARK LLC	PO BOX 266	BOUND BROOK NJ	8805
1	60	SOMERSET	BOUND BROOK BORO	420 EAST MAIN STREET	CASTILLO, VICTOR E	300 SECOND AVE	PISCATAWAY, NJ	8854
2.01	2	SOMERSET	BOUND BROOK BORO	EAST MAIN STREET	E'TOWN - AMERICAN WATER	PO BOX 2738	CAMDEN, NJ	8101
12	9	SOMERSET	BOUND BROOK BORO	401-403 EAST MAIN STREET	MAIN BOUND LLC,	227 E. 56TH ST. SE 401	NEW YORK, NY	10022
2	1.02	SOMERSET	BOUND BROOK BORO	530-548 EAST MAIN STREET	MERIDIA MAIN STATION URBAN RENEWAL	201 SOUTH WOOD AVE	LINDEN, NJ	7036
2	2.02	SOMERSET	BOUND BROOK BORO	EAST MAIN STREET	U.S. ARMY CORPS OF ENGINEERS	BALTIMORE DIST BOX 1715	BALTIMORE MD	21203
2	2.03	SOMERSET	BOUND BROOK BORO	552 EAST MAIN STREET	U.S. ARMY CORPS OF ENGINEERS	BALTIMORE DIST. BOX 1715	BALTIMORE MD	21203
2	2.04	SOMERSET	BOUND BROOK BORO	EAST MAIN STREET	U.S. ARMY CORPS OF ENGINEERS	BALTIMORE DIST. BOX 1715	BALTIMORE MD	21203

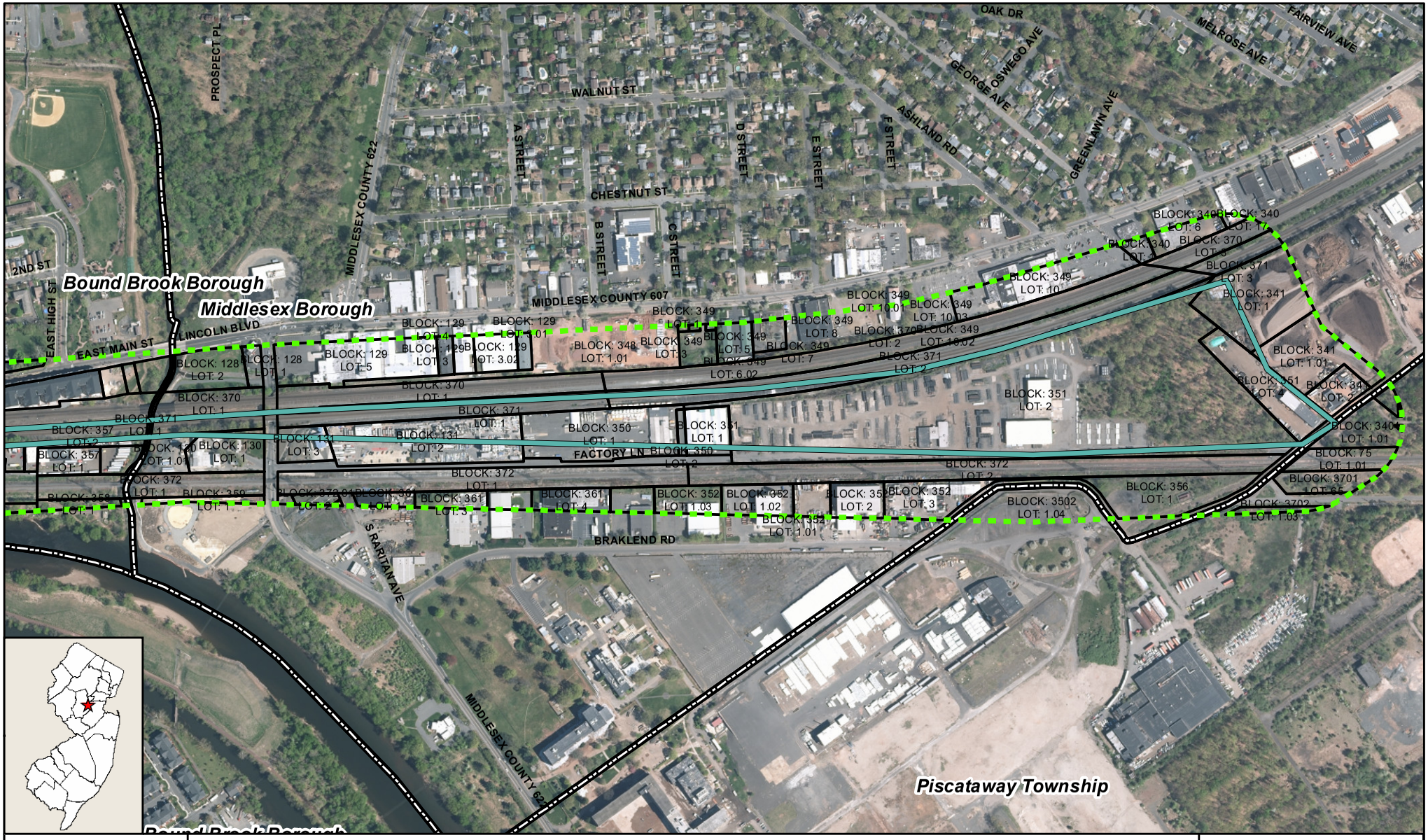


FIGURE X

PARCELS
Bound Brook Project Area

NJTPA
NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

NJTPA Freight Concept Development Program

300 ft. Study Area Buffer
Municipal Border
Project Area
Parcels

N

0 300 600 Feet

BLOCK	LOT	COUNTY	MUNICIPALITY	PROPERTY LOCATION	OWNER	ADDRESS	CITY_STATE	ZIP_CODE
3702	1.03	MIDDLESEX	PISCATAWAY TWP	149 BAEKELAND AVE	OHR REALTY CORPORATION	116 39TH ST	BROOKLYN, NY	11232
3403	141.01	MIDDLESEX	PISCATAWAY TWP	407 BROOK AVE	TUCCI, JULIUS C/O MARCIA L TUCCI	525 S ANAHEIM HILLS RD	ANAHEIM, CA	92807
3403	68.01	MIDDLESEX	PISCATAWAY TWP	401 BROOK AVE	NARGES LLC	33 CLAWSON ST	PISCATAWAY, NJ	8854
3404	1.02	MIDDLESEX	PISCATAWAY TWP	406 BROOK AVE	NARGES LLC	33 CLAWSON ST	PISCATAWAY, NJ	8854
3701	65	MIDDLESEX	PISCATAWAY TWP	99 NORMANDY DR	AXIALL CORPORATION ATT:INDIRECT TAX	2801 POST OAK BLVD	HOUSTON, TX	77056
75	1.01	MIDDLESEX	PISCATAWAY TWP	101 PORT READING RAILROAD	CONRAIL(FORMALLY LVRR)PORT READING	READING TERMINAL	PHILADELPHIA, PA	19107
360	1	MIDDLESEX	MIDDLESEX BORO	145 RIVER RD	145 RIVER ROAD, LLC	79 ROUTE 520	ENGLISHTOWN, NJ	7726
358	1	MIDDLESEX	MIDDLESEX BORO	OFF RIVER RD	U.C.& H. C/O AMERICAN WATER	PO BOX 08101	CAMDEN, NJ	8101
359	1	MIDDLESEX	MIDDLESEX BORO	RIVER RD	ELIZABETHTOWN WATER COMPANY	PO BOX 2738	CAMDEN, NJ	8101
359.01	2	MIDDLESEX	MIDDLESEX BORO	RIVER RD	STARLINK LOGISTICS INC % M BOGDAN	55 CORPORATE DR	BRIDGEWATER, NJ	8807
361	1	MIDDLESEX	MIDDLESEX BORO	S RARITAN AVE	B & G ENTERPRISES, INC	1 SO RARITAN AVE	MIDDLESEX, NJ	8846
361	3	MIDDLESEX	MIDDLESEX BORO	30 BAEKELAND AVE	RALYN REALTY LLC	30 BAEKELAND AVE	MIDDLESEX, NJ	8846
361	3.01	MIDDLESEX	MIDDLESEX BORO	50 BAEKELAND AVE	CONTAINER PROPERTIES LLC	50 BAEKELAND AVE, BOX 428	MIDDLESEX, NJ	8846
361	4	MIDDLESEX	MIDDLESEX BORO	60 BAEKELAND AVE	AWARDS REALTY LLC	60 BAEKELAND AVE	MIDDLESEX, NJ	8846
361	4.01	MIDDLESEX	MIDDLESEX BORO	80 BAEKELAND AVE	TOWEY LLC	80 BAEKELAND AVE	MIDDLESEX, NJ	8846
352	1.03	MIDDLESEX	MIDDLESEX BORO	84 BAEKELAND AVE	BAKELAND, INC	84 BAEKELAND AVE	MIDDLESEX, NJ	8846
352	1.02	MIDDLESEX	MIDDLESEX BORO	92 BAEKELAND AVE	RAPID DISPOSAL SVC % REPUBLIC SVCS	P O BOX 29246	PHOENIX, AZ	85038
352	1.01	MIDDLESEX	MIDDLESEX BORO	BAEKELAND AVE	IMPORTICO'S INC	120 BAEKELAND AVE	MIDDLESEX, NJ	8846
352	2	MIDDLESEX	MIDDLESEX BORO	120 BAEKELAND AVE	IMPORTICO, WILLIAM J	120 BAKELAND AVE	MIDDLESEX, NJ	8846
352	3	MIDDLESEX	MIDDLESEX BORO	140 BAEKELAND AVE	LOR-PRIL REALTY LLC	140 BAEKELAND AVE	MIDDLESEX, NJ	8846
356	1	MIDDLESEX	MIDDLESEX BORO	BAEKELAND AVE	RCS-LEG PISCATAWAY LLC % LINQUE MGT	1 MEADOWLANDS, STE 803	EAST RUTHERFORD, NJ	7073
372	1	MIDDLESEX	MIDDLESEX BORO	RAILROAD	CONRAIL	1000 HOWARD BLVD 4TH FLR	MT LAUREL, NJ	8054
372	2	MIDDLESEX	MIDDLESEX BORO	RAILROAD	CONRAIL	1000 HOWARD BLVD 4TH FLR	MT LAUREL, NJ	8054
357	1	MIDDLESEX	MIDDLESEX BORO	SO MAIN ST	G & P PROPERTIES LLC	P O BOX 649	BOUND BROOK, NJ	8805
130	1	MIDDLESEX	MIDDLESEX BORO	124 RIVER RD	REAGENT CHEMICAL & RESEARCH INC	115 U S HWY 202	RINGOES, NJ	8551
131	3	MIDDLESEX	MIDDLESEX BORO	100 FACTORY LN	REAGENT CHEMICAL & RESEARCH INC	115 U S HWY 202	RINGOES, NJ	8551
371	1	MIDDLESEX	MIDDLESEX BORO	RAILROAD	CONRAIL	1000 HOWARD BLVD 4TH FLR	MT LAUREL, NJ	8054
131	2	MIDDLESEX	MIDDLESEX BORO	125 FACTORY LN	VEOLIA ES TECHNICAL SOLUTIONS LLC	13155 NOEL RD STE 100	DALLAS, TX	75240
350	2	MIDDLESEX	MIDDLESEX BORO	FACTORY LN	REAGENT CHEMICAL & RESEARCH, INC	115 U S HYW 202	RINGOES, NJ	8551
350	1	MIDDLESEX	MIDDLESEX BORO	FACTORY LN	REAGENT CHEMICAL & RESEARCH, INC	115 U S HWY 202	RINGOES, NJ	8551
351	1	MIDDLESEX	MIDDLESEX BORO	7-11 FACTORY LN	7-11 FACTORY LANE LLC	285 PIERCE ST	SOMERSET, NJ	8873
370	1	MIDDLESEX	MIDDLESEX BORO	RAILROAD	CONRAIL	1000 HOWARD BLVD 4TH FLR	MT LAUREL, NJ	8054
341	2	MIDDLESEX	MIDDLESEX BORO	160 BAEKELAND AVE	STONEWALL PROPERTY MGT LLC	4 SHADY LN	BOUND BROOK, NJ	8805
351	2	MIDDLESEX	MIDDLESEX BORO	FACTORY LN	PIPELINE REALTY MIDDLESEX LLC	2330 HOLMES RD	HOUSTON, TX	77051
128	2	MIDDLESEX	MIDDLESEX BORO	LINCOLN BLVD	ELIZABETHTOWN WATER % AMER WATER	PO BOX 2738	CAMDEN, NJ	8101
128	1	MIDDLESEX	MIDDLESEX BORO	26 LINCOLN BLVD	DHILLON, AMRIK & RAWINDER	465 HOLDBRIDGE AVE	STATEN ISLAND, NY	10312
351	4	MIDDLESEX	MIDDLESEX BORO	156 BAEKELAND AVE	FALGI CARTING LLC	PO BOX 250	MIDDLESEX, NJ	8846
129	5	MIDDLESEX	MIDDLESEX BORO	100 LINCOLN BLVD	MOTA, MARY C	100 LINCOLN BLVD	MIDDLESEX, NJ	8846
129	4	MIDDLESEX	MIDDLESEX BORO	130 LINCOLN BLVD	COHEN, BARBARA	41 ABBOTTSFORD DR	PINEHURST, NC	28374
129	3	MIDDLESEX	MIDDLESEX BORO	128 LINCOLN BLVD	125 LINCOLN/FRIENDLY,L.L.C.	736 JOHNSTON DR	WATCHUNG, NJ	7069
129	3.02	MIDDLESEX	MIDDLESEX BORO	136 LINCOLN BLVD	136 LINCOLN LLC	SPRIGRO MGMT POB 040308	BROOKLYN, NY	11204
129	3.01	MIDDLESEX	MIDDLESEX BORO	132 LINCOLN BLVD	LINCOLN ENTERPRISES LLC	132 LINCOLN BLVD	MIDDLESEX, NJ	8846
349	1	MIDDLESEX	MIDDLESEX BORO	204 LINCOLN BLVD	MOYA,LUIS F PEREZ&MORENO,DALILA G P	204 LINCOLN BLVD	MIDDLESEX, NJ	8846
349	2	MIDDLESEX	MIDDLESEX BORO	206 LINCOLN BLVD	LAVI PROPERTY SOLUTIONS LLC	15 SCHLEY RD	FAR HILLS, NJ	7931
349	3	MIDDLESEX	MIDDLESEX BORO	OFF LINCOLN BLVD	136 LINCOLN LLC	PO BOX 040308	BROOKLYN, NY	11204
349	3.01	MIDDLESEX	MIDDLESEX BORO	210 LINCOLN BLVD	WALLACE,IRENE	210 LINCOLN BLVD	MIDDLESEX, N J	8846
349	5	MIDDLESEX	MIDDLESEX BORO	212 LINCOLN BLVD	B&B 18 LLC	1259 E 10TH ST	BROOKLYN, NY	11230
349	7	MIDDLESEX	MIDDLESEX BORO	216 LINCOLN BLVD	PUBLIC SERVICE ELECTRIC & GAS CO	80 PARK PLAZA, 6TH FLR	NEWARK, NJ	7102
341	1.01	MIDDLESEX	MIDDLESEX BORO	BAEKELAND AVE	JH REID HOLDINGS I LLC	3230 HAMILTON BLVD	SOUTH PLAINFIELD, NJ	7080
371	2	MIDDLESEX	MIDDLESEX BORO	RAILROAD	CONRAIL	1000 HOWARD BLVD 4TH FLR	MT LAUREL, NJ	8054
370	2	MIDDLESEX	MIDDLESEX BORO	RAILROAD	CONRAIL	1000 HOWARD BLVD 4TH FLR	MT LAUREL, NJ	8054
349	10	MIDDLESEX	MIDDLESEX BORO	242 LINCOLN BLVD	MIDMARKET URBAN RENEWAL LLC	400 SOUTH AVE, STE 9	MIDDLESEX, NJ	8846
340	1	MIDDLESEX	MIDDLESEX BORO	244A-248 LINCOLN BLVD	LINCOLN PLAZA LLC % BRENDA FINAZZO	26 KING GEORGE RD	WARREN, NJ	7059
357	2	MIDDLESEX	MIDDLESEX BORO	SO MAIN ST	G AND P PROPERTIES LLC	P O BOX 649	BOUND BROOK, NJ	8805
370	3	MIDDLESEX	MIDDLESEX BORO	RAILROAD	CONRAIL	1000 HOWARD BLVD 4TH FLR	MT LAUREL, NJ	8054
371	3	MIDDLESEX	MIDDLESEX BORO	RAILROAD	CONRAIL	1000 HOWARD BLVD 4TH FLR	MT LAUREL, NJ	8054
340	6	MIDDLESEX	MIDDLESEX BORO	224 LINCOLN BLVD	THE SANTELLI FAMILY LP	205 HALLOCK AVE	MIDDLESEX, NJ	8846
340	17	MIDDLESEX	MIDDLESEX BORO	270-72 LINCOLN BLVD	OLBRICH MIDDLESEX, LLC	22 ARGYLE CT	SUMMIT, NJ	7901
372.01	2	MIDDLESEX	MIDDLESEX BORO	RIVER RD	STARLINK LOGISTICS INC % M BOGDAN	55 CORPORATE DR	BRIDGEWATER, NJ	8807
130	1.01	MIDDLESEX	MIDDLESEX BORO	RIVER RD	ELIZABETHTOWN WATER % AMER WATER	PO BOX 2738	CAMDEN, NJ	8101
341	1	MIDDLESEX	MIDDLESEX BORO	172-176 BAEKELAND AVE	BAEKELAND RENTALS, INC	1 JOHNNY DR	FARMINGDALE, NJ	7727

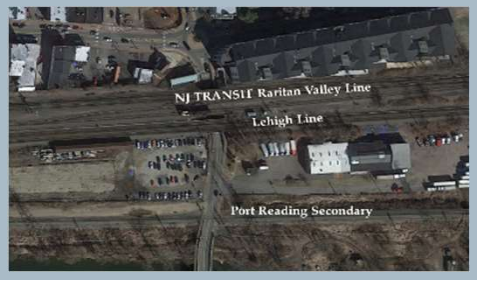
Appendix G

Public Meetings

Port Reading Secondary South Main Street Grade Crossing Elimination Project

Public Meeting

September 13, 2021

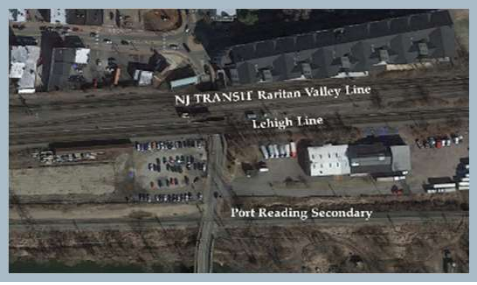


Jakub Rowinski, NJTPA Project Manager

Scott Parker, Jacobs Engineering Project Manager

Meeting Agenda

- Introductions
- Project Purpose and Need
- Project Background
- Project Overview
- Stakeholder Involvement
- Ongoing and Future Activities



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Draft Project Purpose and Need

"The purpose of this project is to eliminate the at-grade rail crossing on South Main Street in the Borough of Bound Brook, while maintaining freight rail access to existing and future customers along the Port Reading Secondary line."

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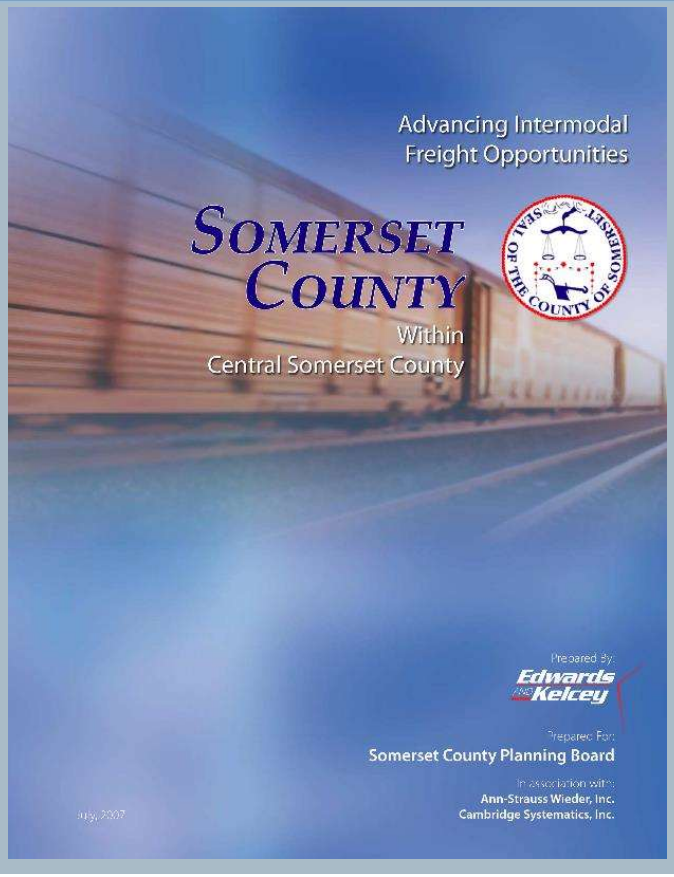
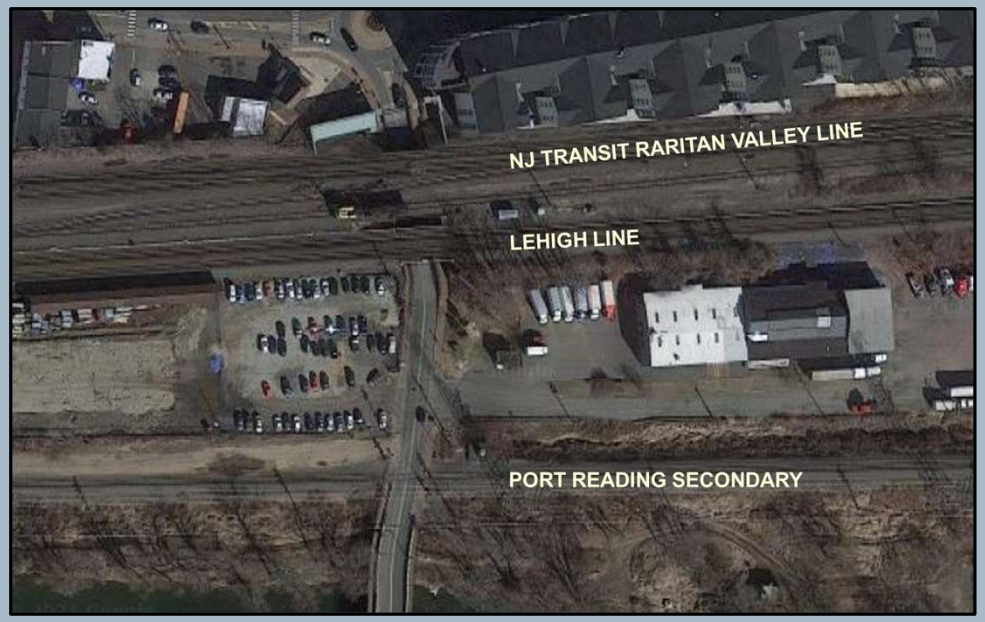
Project Background

- While recognized locally as an issue for some time, this project need was officially identified in the 2007 Advancing Intermodal Freight Opportunities within Central Somerset County, 2007
- A Transportation Problem Statement was submitted to NJDOT, Capital Programming & Funds Management
- This Freight Concept Development Study will investigate ways to eliminate closures at the crossing and improve the flow of vehicular traffic while maintaining freight service to customers on the Port Reading Secondary line



Existing Conditions

- Conrail runs trains of up to 100 cars along the Port Reading Secondary several times daily
- Gate closures last approximately 3 minutes per crossing
- Roadway traffic queues through the Bound Brook Circle, across the Queens Bridge into South Bound Brook and along Lincoln Blvd into Middlesex Borough during each train crossing



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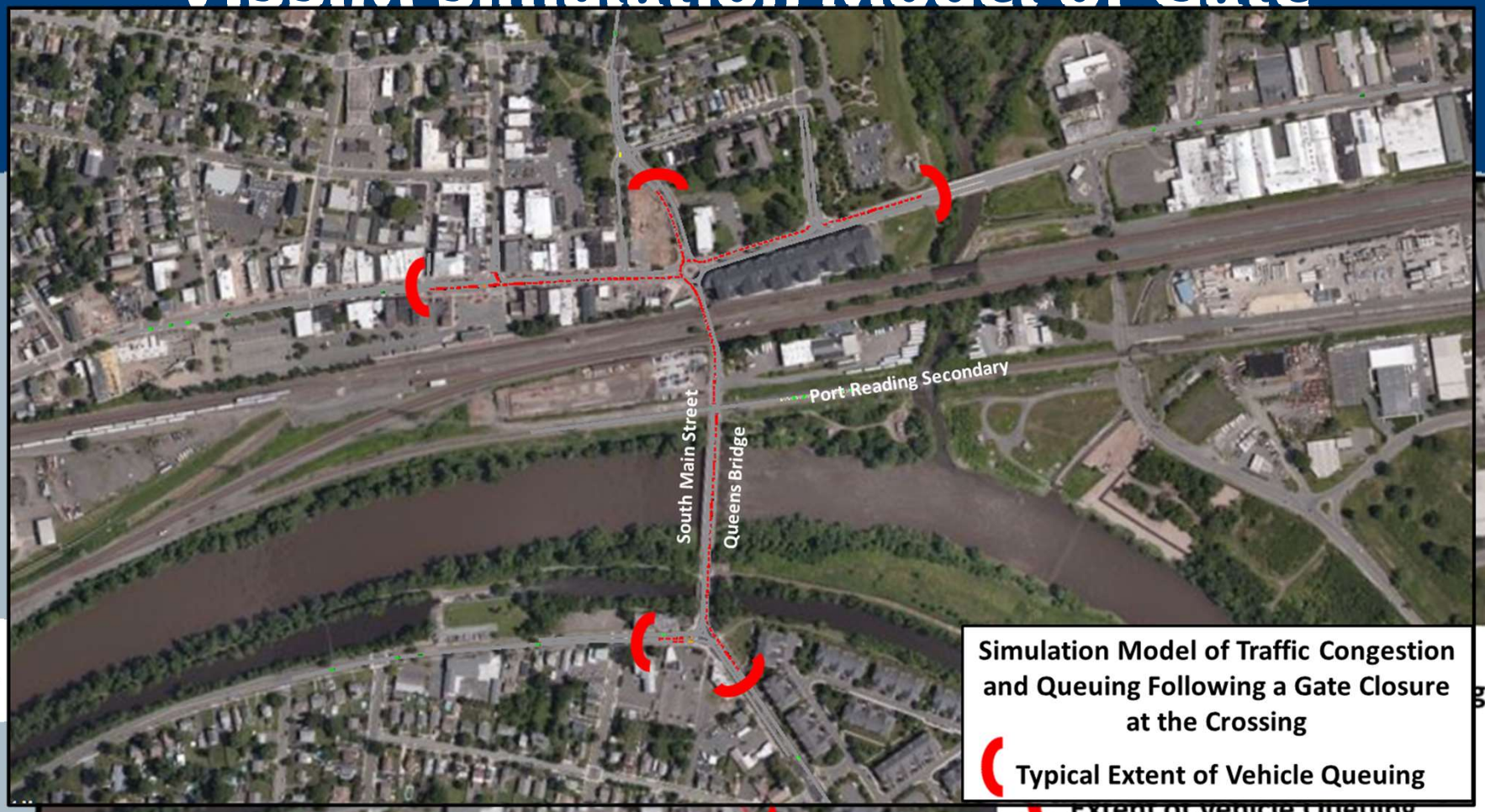
VISSIM Simulation Model of Gate



Potential Categories of Options

There are three basic categories of alternatives to develop and assess to eliminate the rail crossings

- **Go Up** – Elevate the rail line over South Main Street
- **Go Down** – Depress the roadway beneath the rail line
- **Go Around** – Divert rail traffic to alternate route

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
- Hazardous Materials

Environmental Constraints

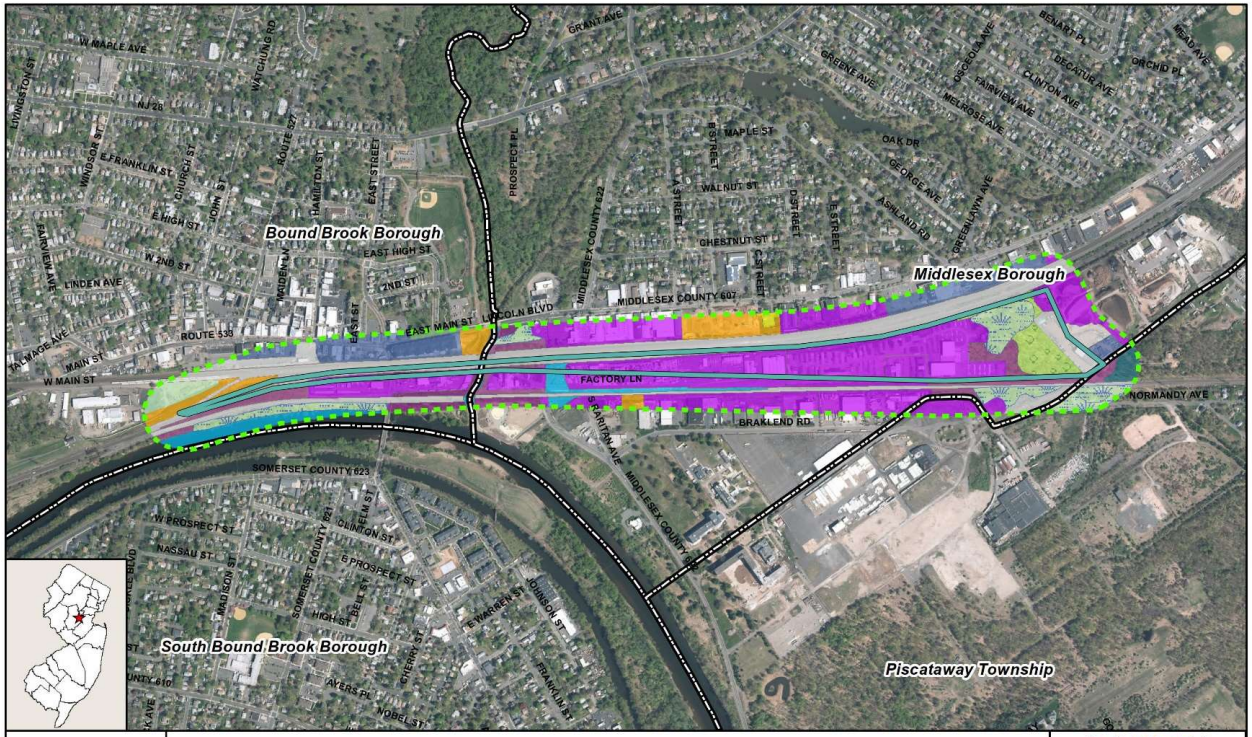


FIGURE X

LAND USE
Bound Brook Project Area

NJTPA
NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

NJTPA Freight Concept Development Program

Legend

- 300 ft. Study Area Buffer
- Municipal Border
- Water Bodies
- Recreational & Open Space
- Commercial /Services
- Cropland & Pastureland
- Wooded Land
- Wetlands
- Industrial
- Other Urban or Built-Up Land
- Residential
- Transportation/Communication/Utilities

N

0 500 1,000 Feet

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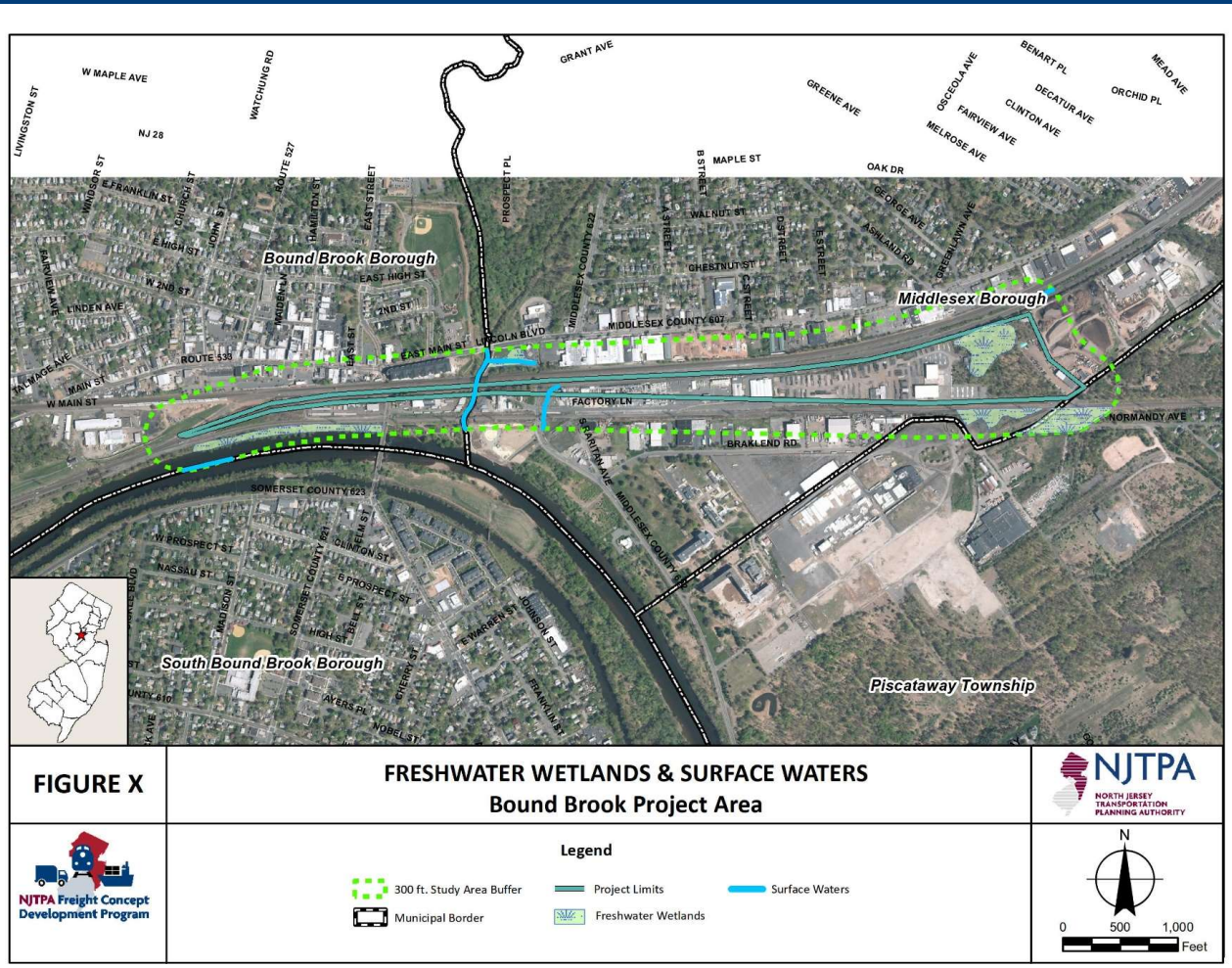
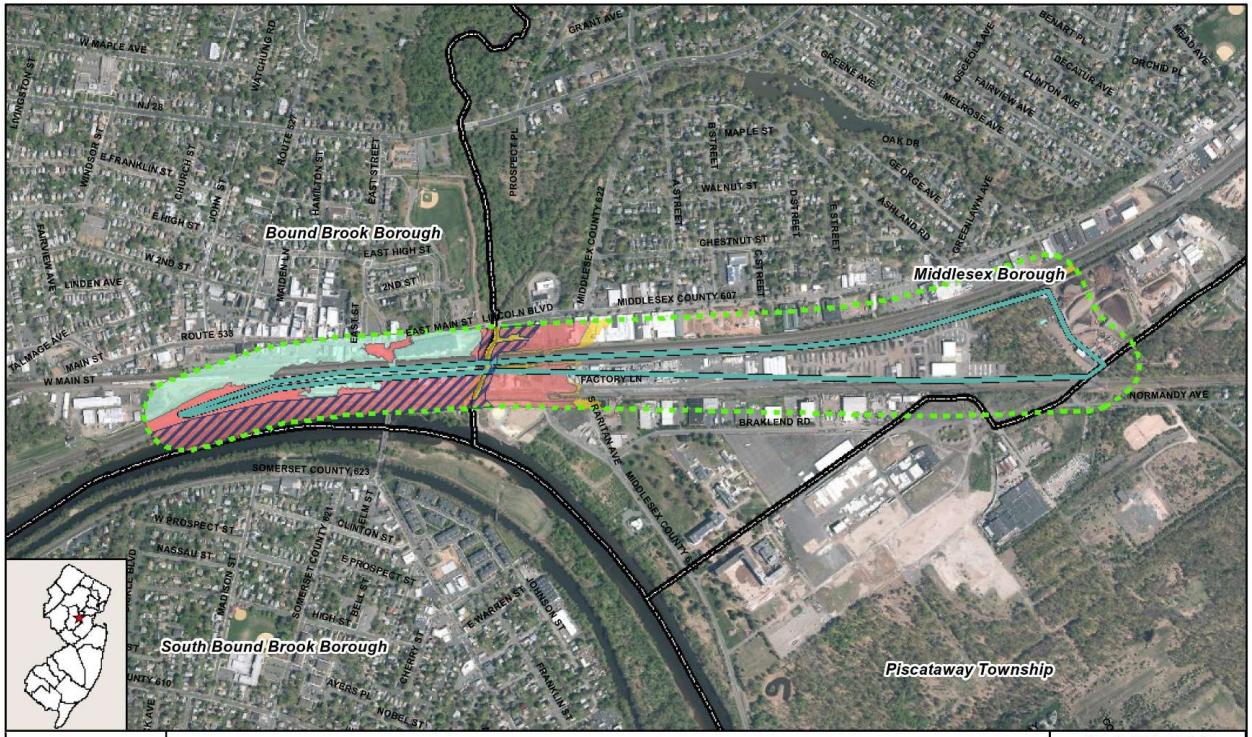
Environmental Constraints



Environmental Constraints



Environmental Constraints

Environmental Constraints

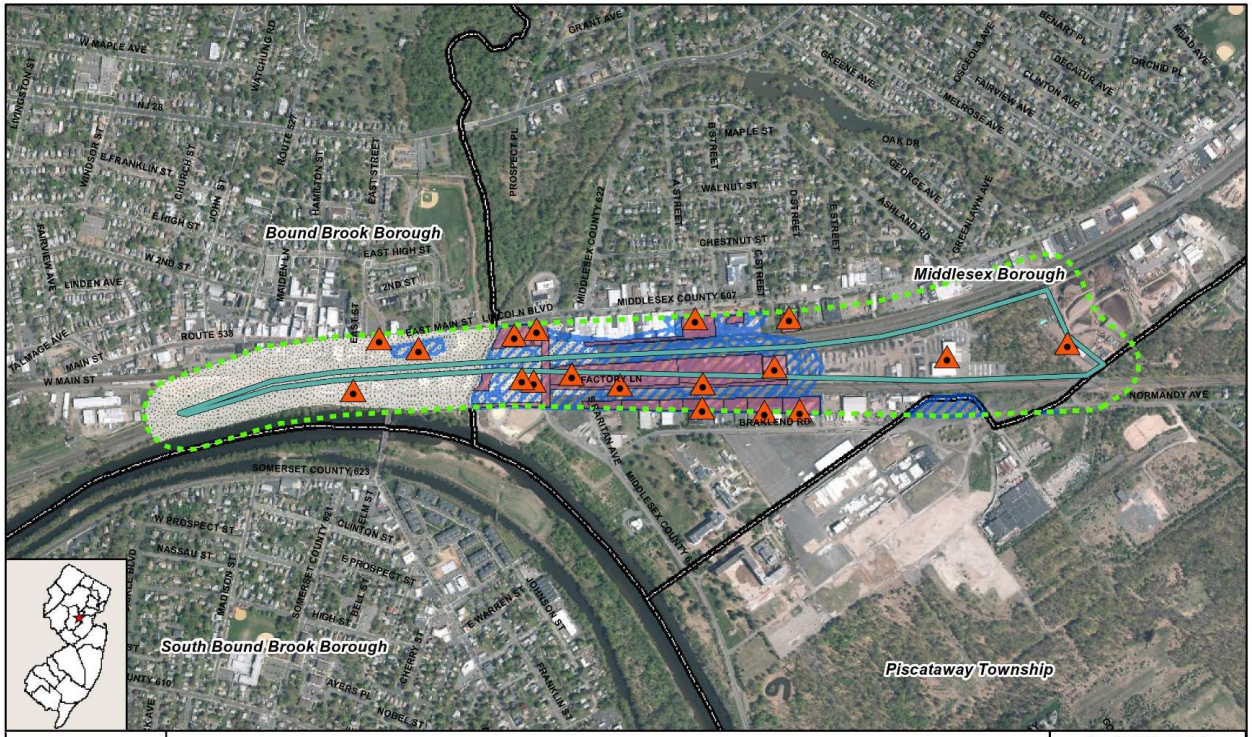


FIGURE X	KNOWN HAZARDOUS MATERIALS Bound Brook Project Area	NJTPA NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY
NJTPA Freight Concept Development Program	300 ft. Study Area Buffer Municipal Border Project Area Known Contaminated Sites Historic Fill Groundwater Classification Exeption Area Deed Notice	N 0 500 1,000 Feet

Environmental Constraints

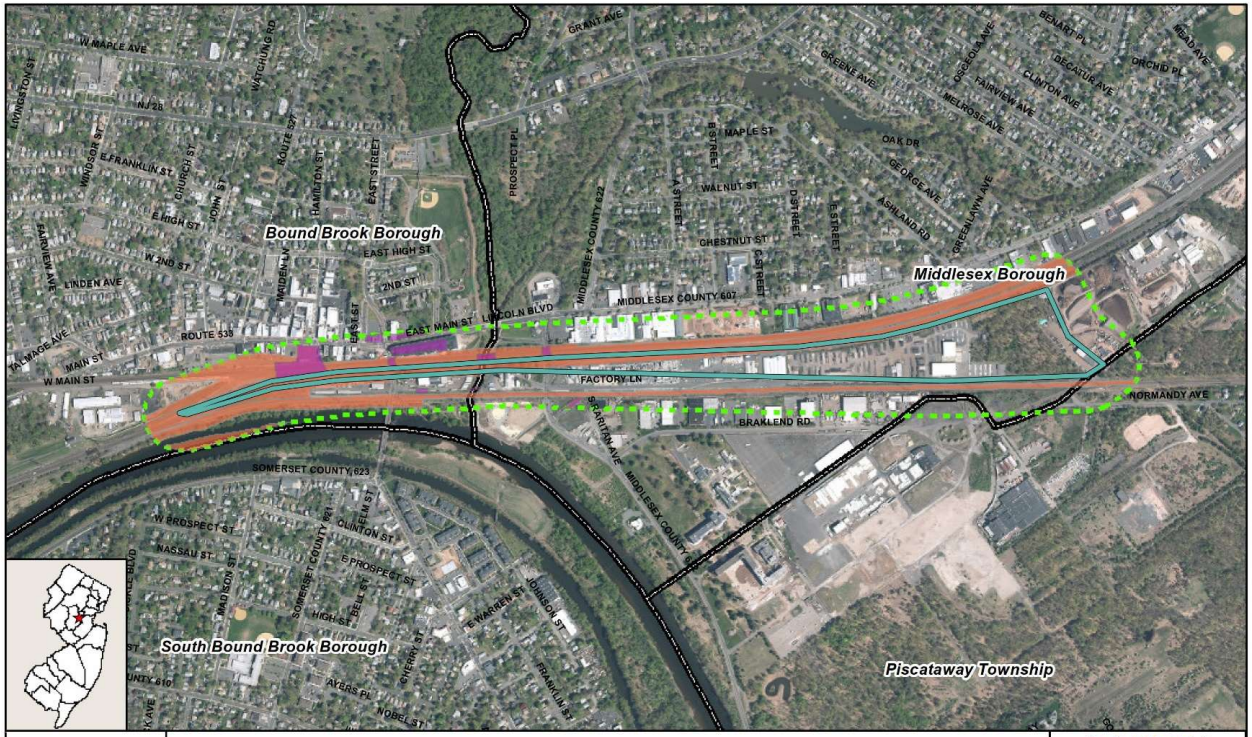


FIGURE X	Historic Resources Bound Brook Project Area	NJTPA NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY
NJTPA Freight Concept Development Program	300 ft. Study Area Buffer Municipal Border Project Area Historic Properties Historic Districts	N 0 500 1,000 Feet

Community Profiles

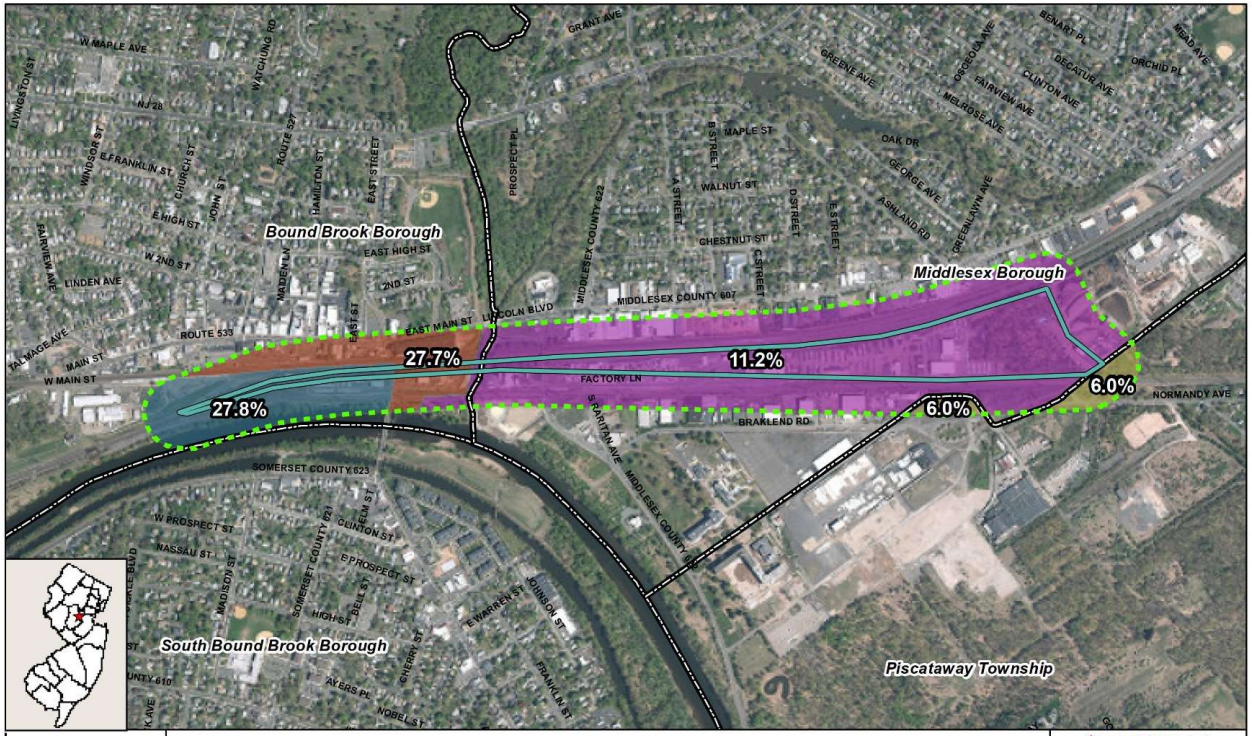


FIGURE X

Percentage of Limited English Proficiency by Tract
Bound Brook Project Area

NJTPA Freight Concept Development Program

300 ft. Study Area Buffer
Municipal Border
Project Area

Tract 1 = 11.2%
Tract 7.01 = 6.0%
Tract 511 = 27.7%
Tract 512 = 27.8%

N

0 500 1,000 Feet

NJTPA
NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

SOMERSET COUNTY

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Community Profiles

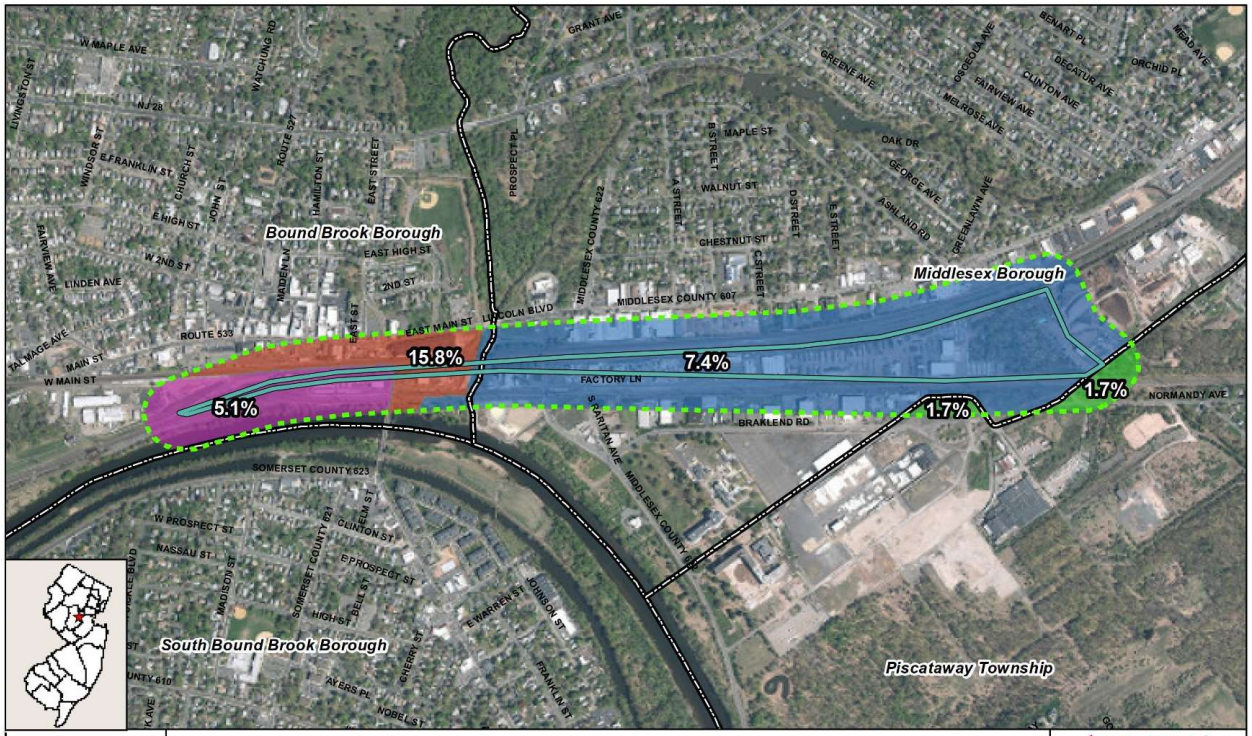
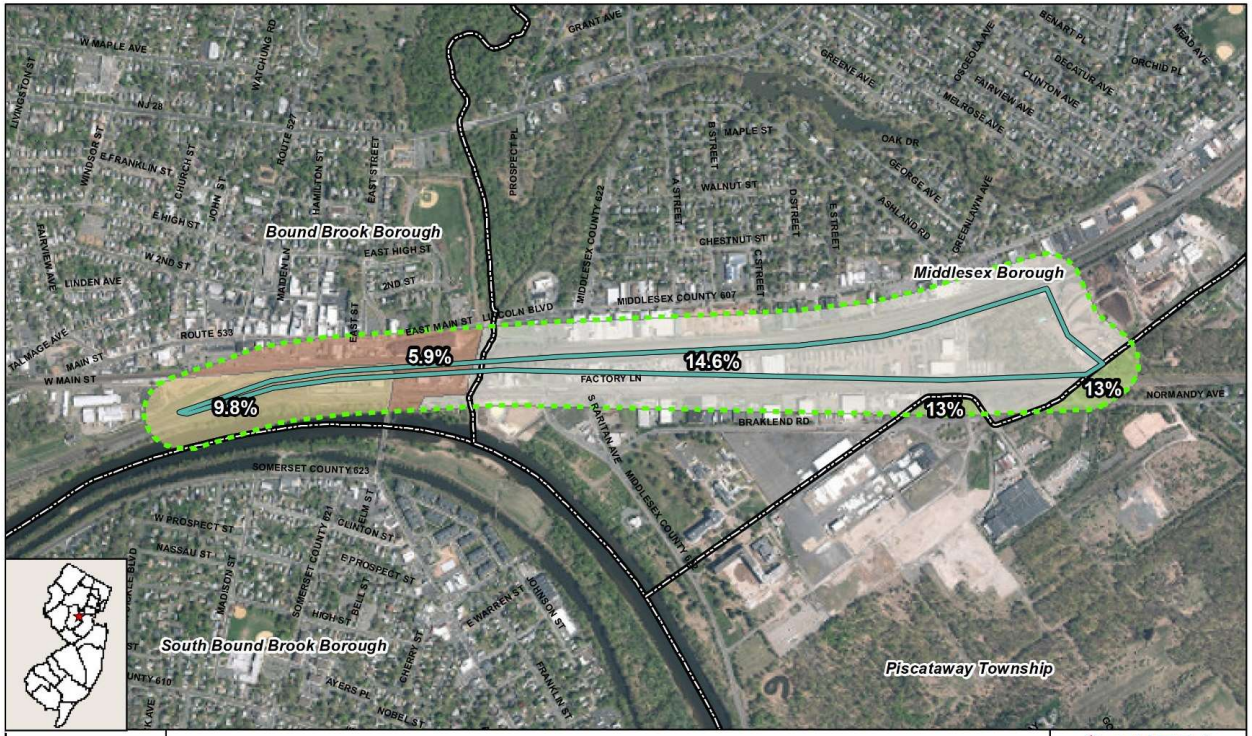
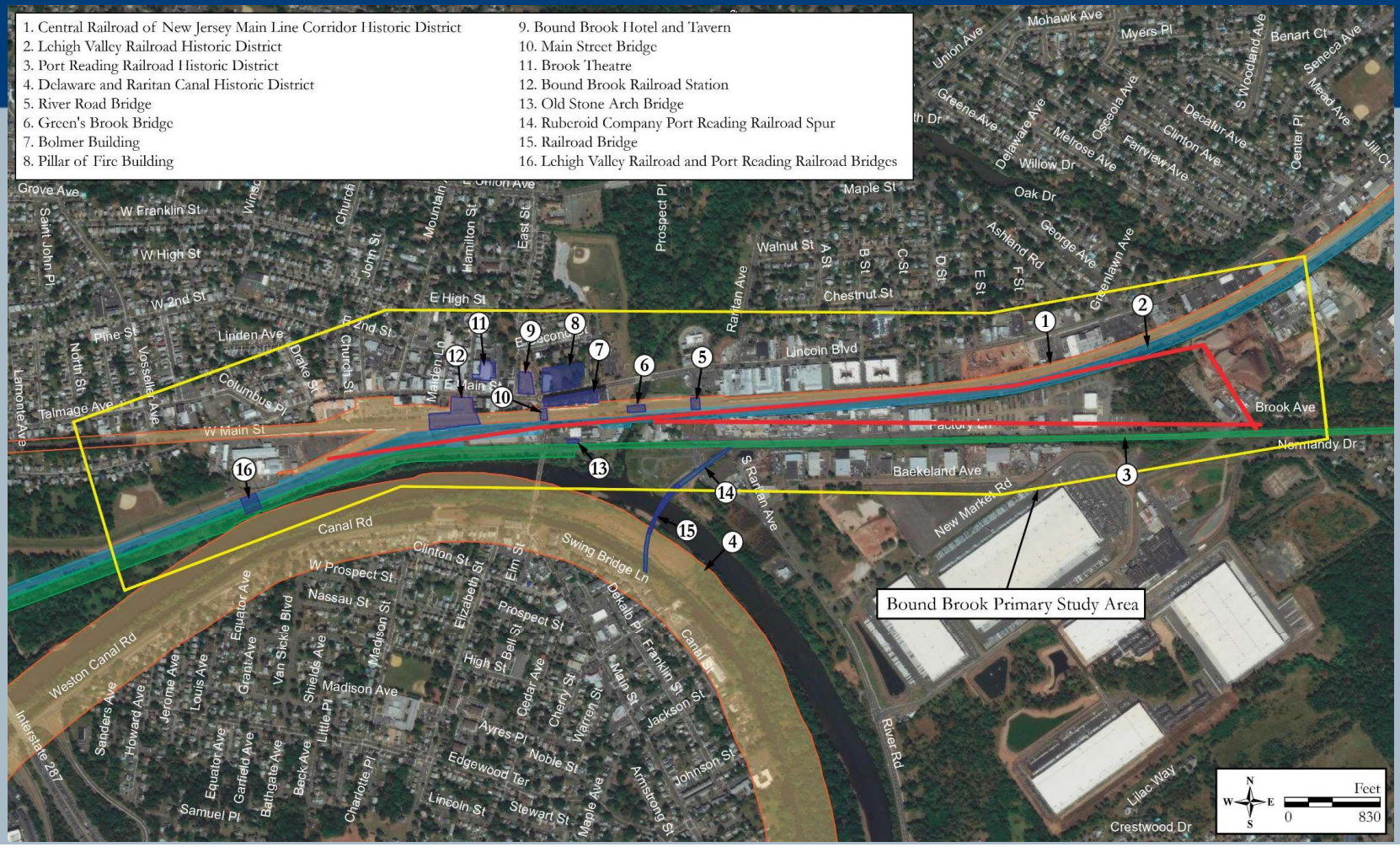


FIGURE X	Percentage of Persons Below the Poverty Line by Tract Bound Brook Project Area	NJTPA NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY
NJTPA Freight Concept Development Program	300 ft. Study Area Buffer Municipal Border Project Area Tract 1 = 7.4% Tract 7.01 = 1.7% Tract 511 = 15.8% Tract 512 = 5.1%	N 0 500 1,000 Feet

Community Profiles



Cultural Resources



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
- Public Meetings (2)
- Project Website
  https://www.southmainstreetgradecrossing.com
- Social Media (Twitter, Facebook)

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Progress to Date

- Assembled available existing data from the project stakeholders and other sources
- Performed environmental screening – foundation for constraints mapping
- Developed Community Profiles
- 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 Thursday October 28, 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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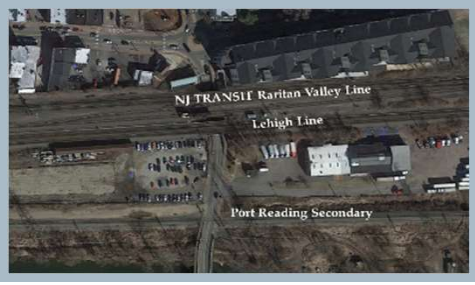
Port Reading Secondary South Main Street Grade Crossing Elimination Project

Public Meeting No. 2

March 16, 2023

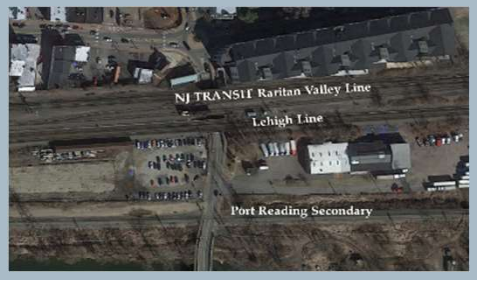


Jakub Rowinski, NJTPA Project Manager

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



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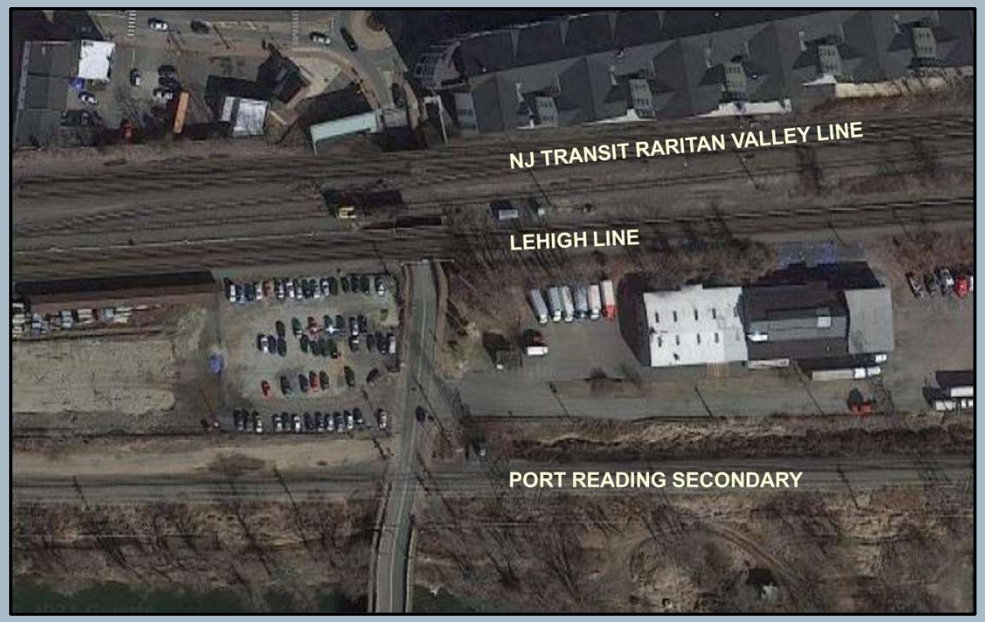

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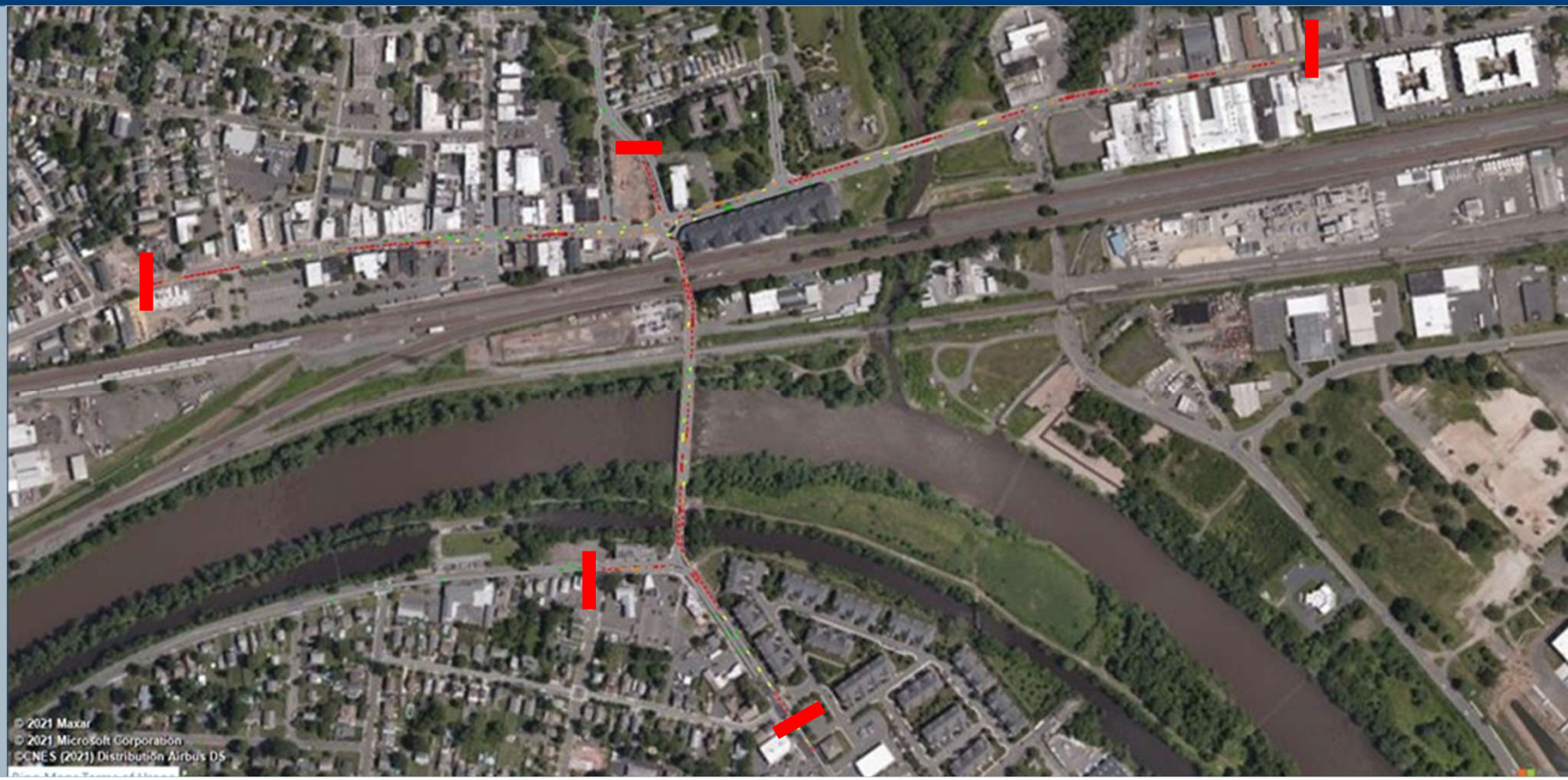
VISSIM Simulation Model of Gate Closure Congestion



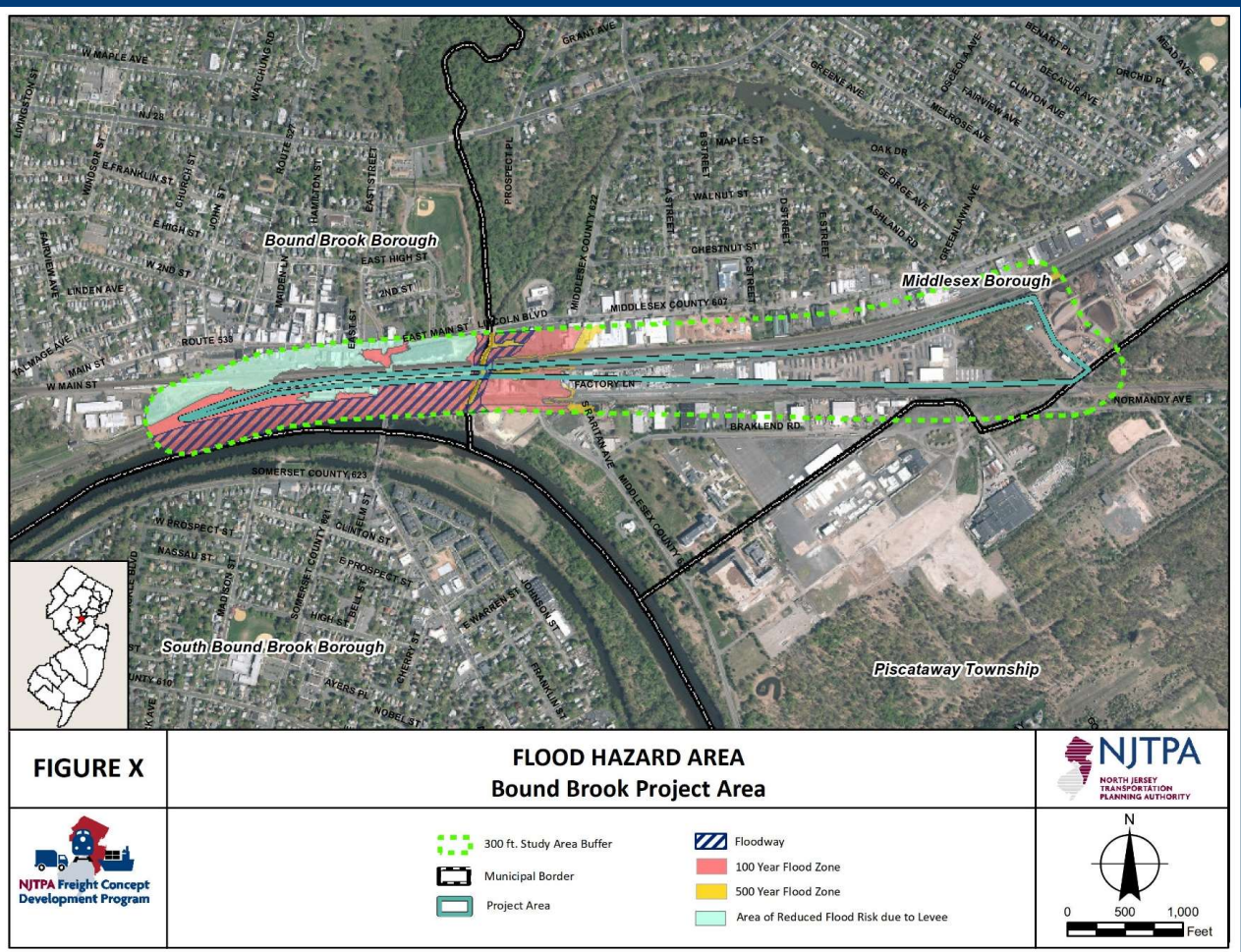
Project Overview

"The purpose of this project is to eliminate the at-grade rail crossing on South Main Street in the Borough of Bound Brook, while maintaining freight rail access to existing and future customers along the Port Reading Secondary line."

Potential Issues and Constraints

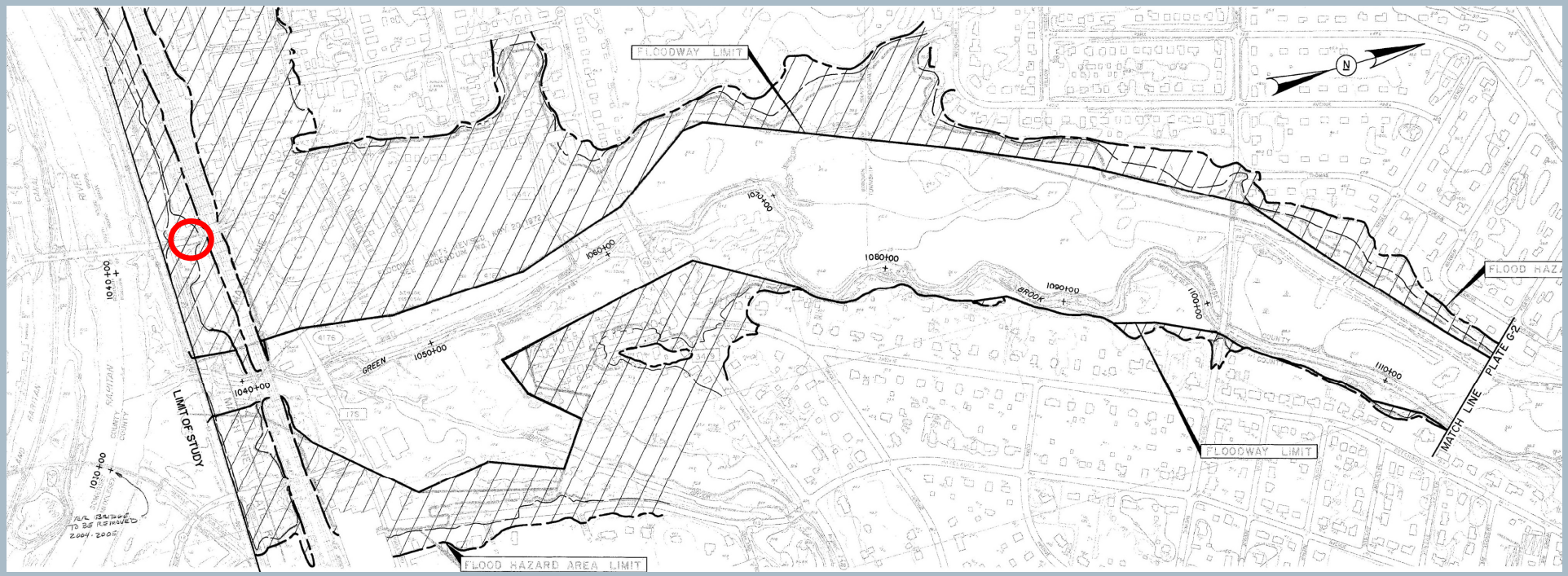
- **Floodplains & Aquifers**
- **Historic and Cultural Resources**
- **Adjacent and Proximate Land Uses**
- **Community Profile & Environmental Justice/Title VI**
- Section 4(f)
- Wetlands
- Threatened & Endangered Species
- Hazardous Materials
- Utilities

Environmental Constraints

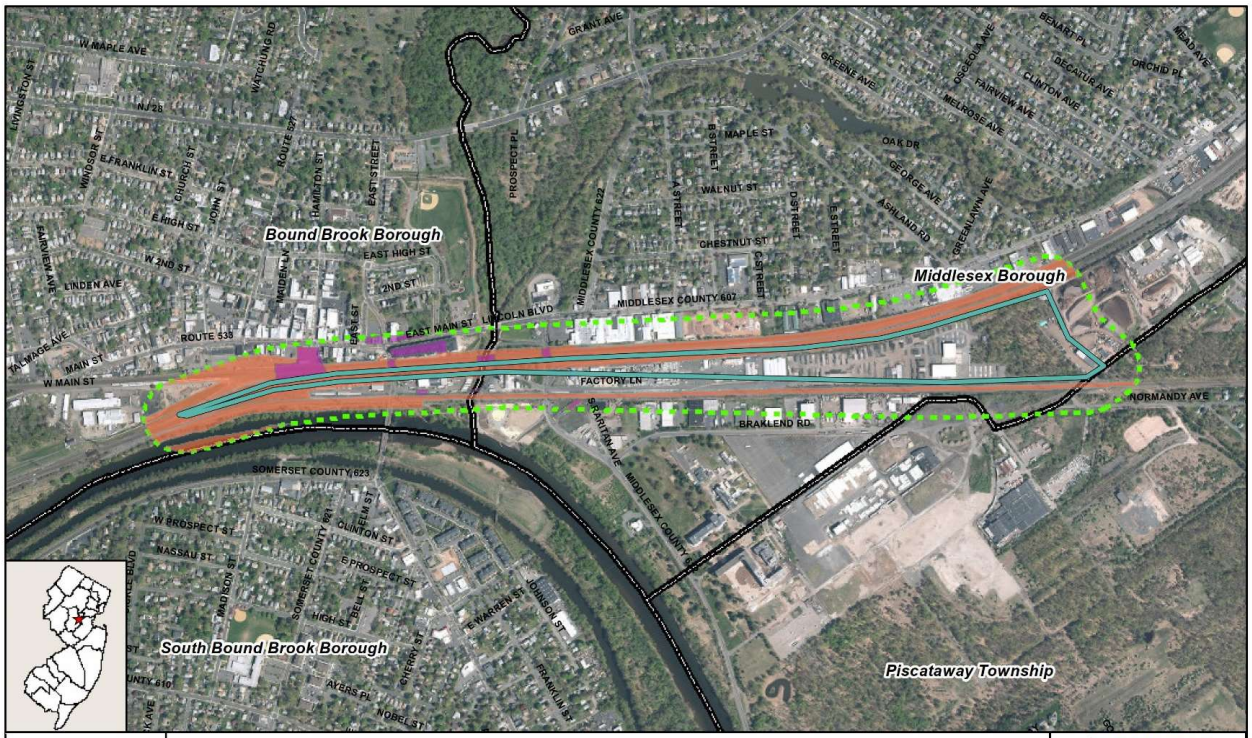


Environmental Constraints

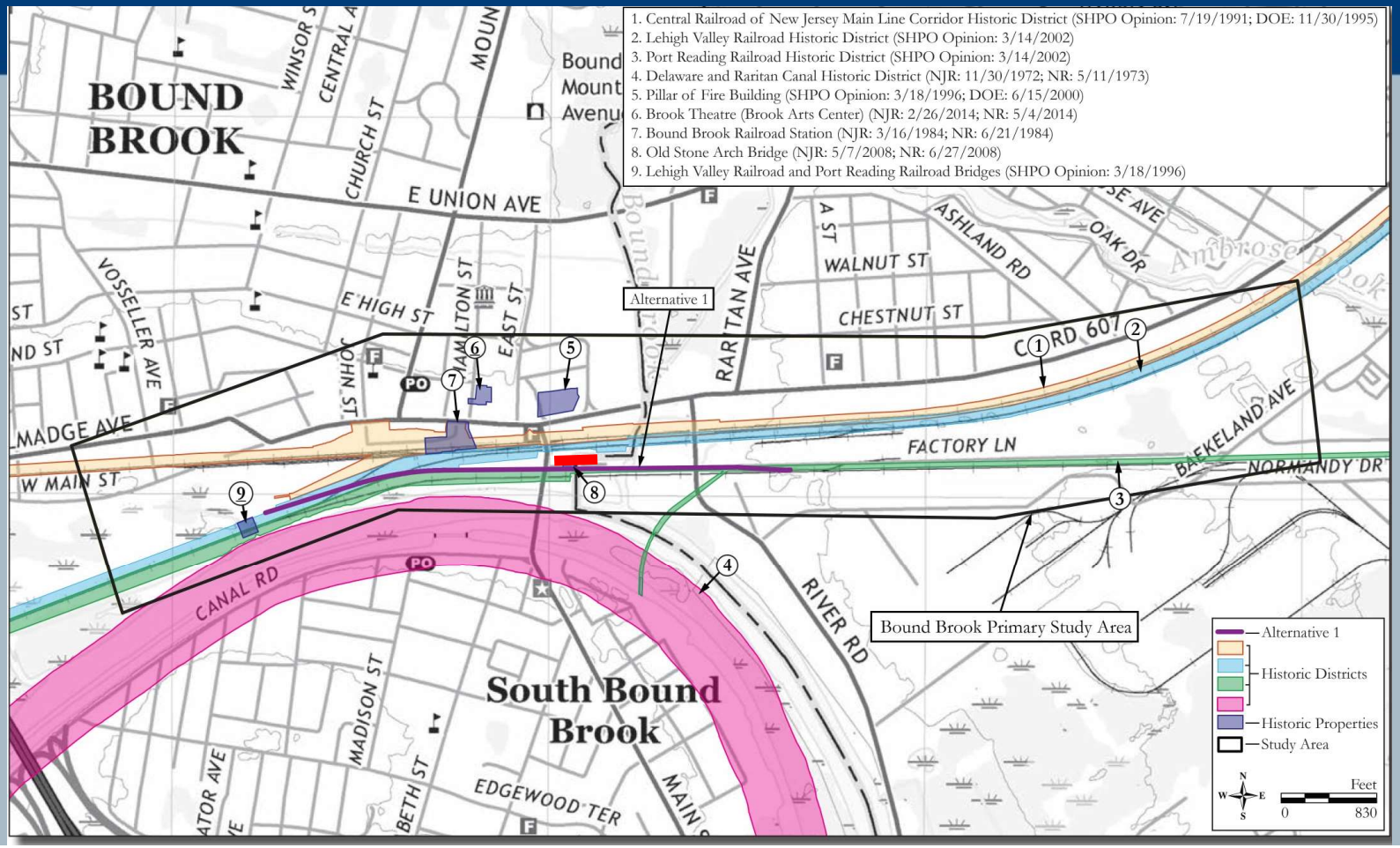
NJDEP FHA Map



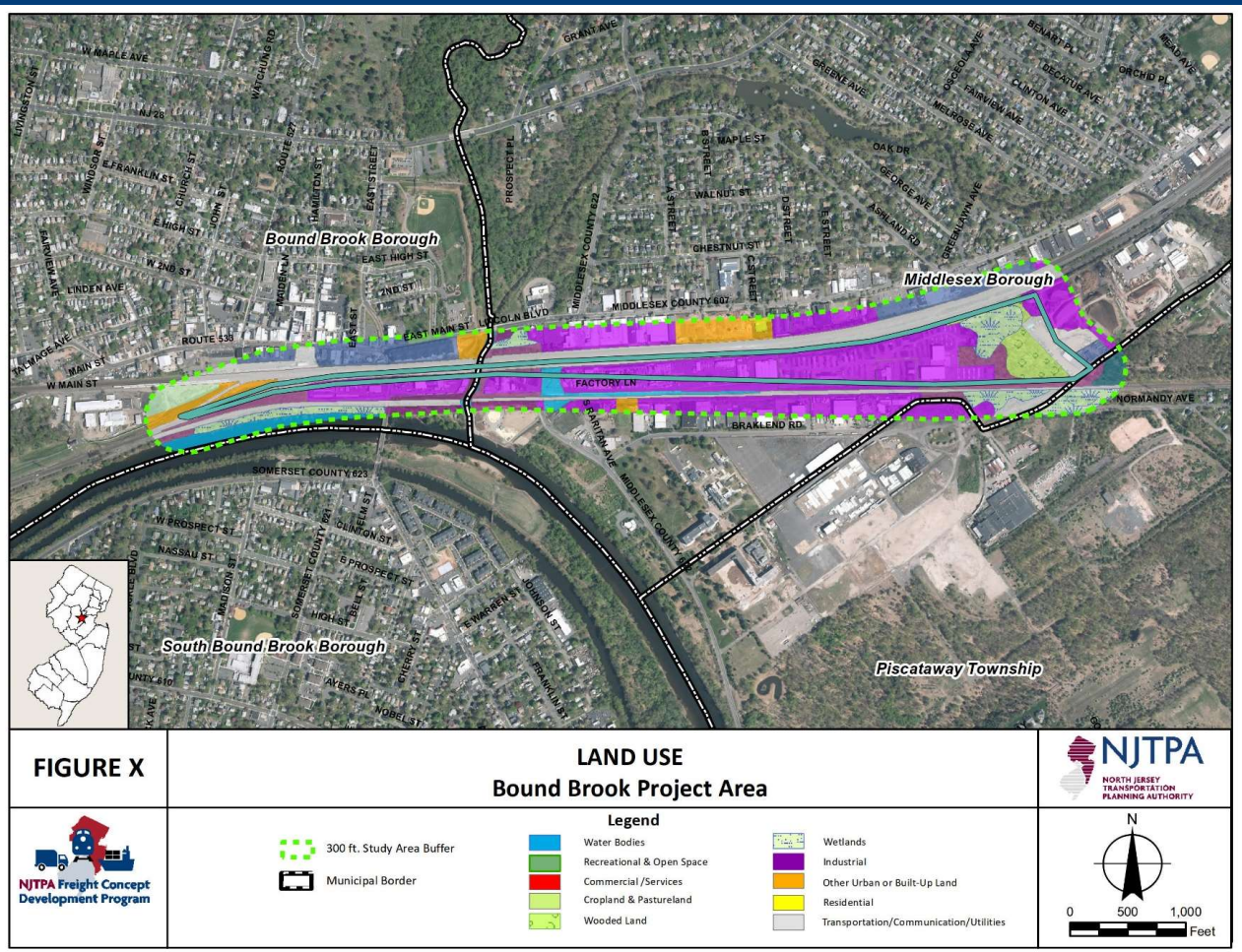
Cultural Resources



Cultural Resources



Environmental Constraints



Utilities


LINCOLN BLVD.
PREFERRED ALTERNATIVE
LEHIGH VALLEY LINE
LEHIGH VALLEY LINE & port reading secondary line
South Main Street
PORT READING SECONDARY LINE
RIVER ROAD
VERIZON (OVERHEAD / UNDERGROUND)
PUBLIC SERVICE ELECTRIC & GAS (16" ST GAS 60 PSI)
PUBLIC SERVICE ELECTRIC & GAS (OVERHEAD ELECTRIC & TOWERS)
NJ AMERICAN WATER (48" CEM ALONG PORT READING SECONDARY LINE)
MIDDLESEX COUNTY UTILITIES AUTHORITY (SANITARY FORCE MAIN)
CROSS RIVER FIBER (OVERHEAD)
COMCAST (OVERHEAD)
PLAINFIELD AREA REGIONAL SEWER AUTHORITY (Ex.54" Sewer)
PLAINFIELD AREA REGIONAL SEWER AUTHORITY (Abandoned 48" Sewer)
CABLE VISION - FIBER
AT&T
PISCATAWAY TOWNSHIP (Ex.36" Sewer)

Stakeholder Engagement

- Bound Brook Mayor's Office – April 29, 2021
- Local Officials Briefing No. 1 – August 2, 2021
- Public Meeting No. 1 – September 13, 2021
- Middlesex County Planning – August 12, 2022
- Local Officials Briefing No. 2 – January 17, 20 and 24, 2023
- Study Website – www.southmainstreetgradecrossing.com
- Coordination with Conrail
- Local Property / Infrastructure Owners
  - Reagent Chemical
  - PSE&G

Alternatives Evaluation and Scoring

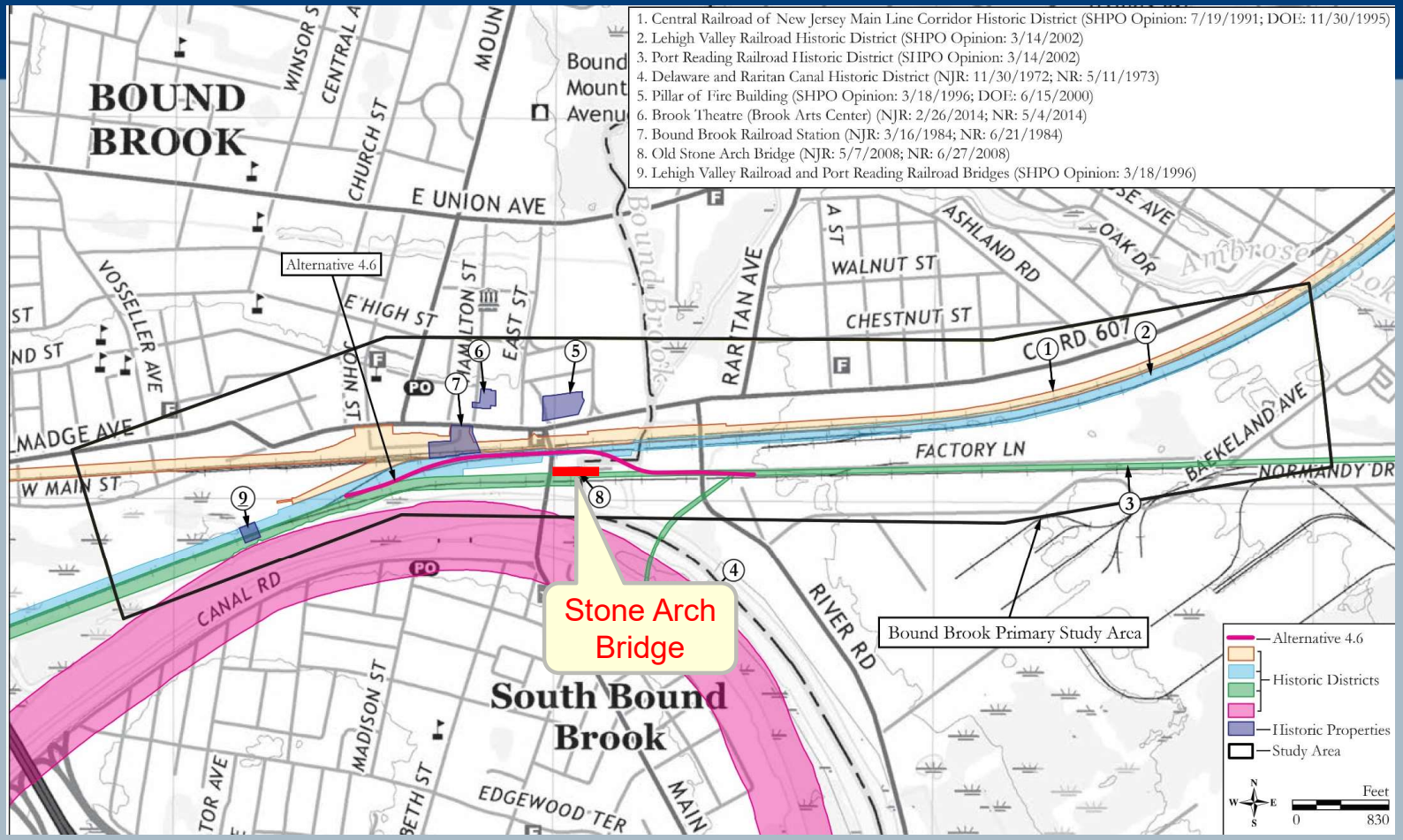
Criteria	Grade Separation		Diversion Via Realigned PRS Track															
	Railroad over Roadway	Roadway Under Railroad	Bypass Using Lehigh Valley Line Southern Track - Eliminate Grade Crossing via Realigned PRS Track						Bypass Using New Track Parallel to Lehigh Valley Line - Eliminate Grade Crossing via Realigned PRS Track						VE Alternatives - Elevate Rail along Existing Alignment			
	1	2	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6	VE-1	VE-1A	VE-1B	VE-1C
Meets Project Purpose and Need	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Freight Rail Operations Impacts / Benefits - During Construction	-1	0	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
Freight Rail Operations Impacts / Benefits - Post Construction	0	0	-100	-100	-100	-100	-100	-100	-1	-1	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	0	0
Adjacent and Proximate Land Use Impacts / Benefits	-1	-1	-3	-5	-3	-3	-3	-3	-3	-5	-3	-3	-3	-3	-3	-3	-3	-3
Historic and Cultural Resources Impacts / Benefits	-5	0	1	1	1	1	1	1	1	1	1	1	1	1	-1	-3	-3	-1
Community Profile & Environmental Justice/Title VI Impacts / Benefits	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Wetlands Impacts / Benefits	-3	-3	-3	-3	-1	-1	-1	-1	-3	-3	-1	-1	-1	-1	-1	-1	-1	-5
Floodplains & Aquifers Impacts / Benefits	-3	-100	-3	-3	-1	-1	0	0	-5	-5	-5	-5	-5	-3	-3	-3	-3	-5
Threatened & Endangered Species Impacts / Benefits	-1	-1	-1	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Stormwater and Drainage Impacts / Benefits	-1	-100	0	-5	0	0	-3	-3	-3	-5	-3	-3	-3	-1	-1	-1	-1	-1
Hazardous Materials Impacts / Benefits	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Air Quality & Noise Impacts / Benefits	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Community Impacts / Benefits	3	-100	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Safety Impacts / Benefits	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Utility Impacts / Relocation Requirements	-5	-5	0	-5	0	0	-3	-3	-3	-1	-1	-3	-1	-3	-3	-5	-5	-3
Project Independence – Creates or Eliminates Need for other infrastructure project	0	-100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roadway Operational and Mobility Impacts / Benefits	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Summary Score	**-3**	**-396**	**-95**	**-106**	**-90**	**-90**	**-95**	**-95**	**-4**	**-6**	**1**	**-1**	**1**	**3**	**1**	**-3**	**-3**	**-5**

Preliminary Preferred Alternative

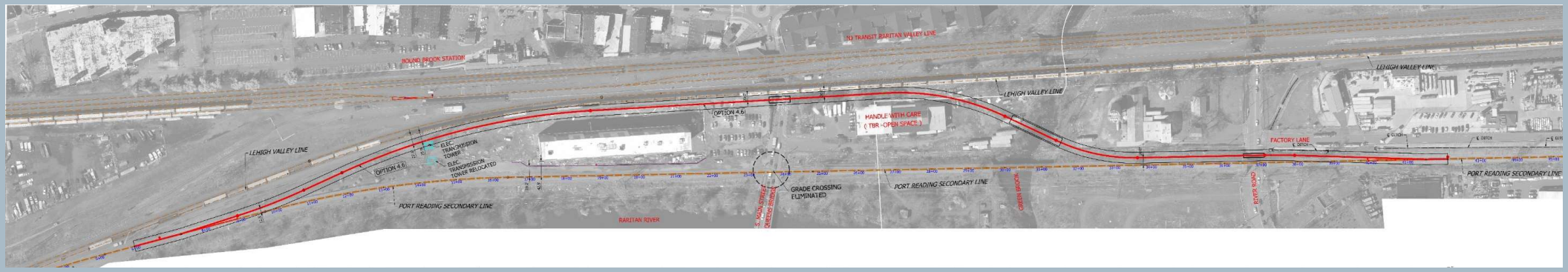
Alternative 4.6

- Construct new single-track alignment generally parallel to the existing Lehigh Line
- Construct new bridges carrying the rail line over South Main Street, the Green Brook and River Road
- Reconnect to the existing alignment in Middlesex Borough east of River Road

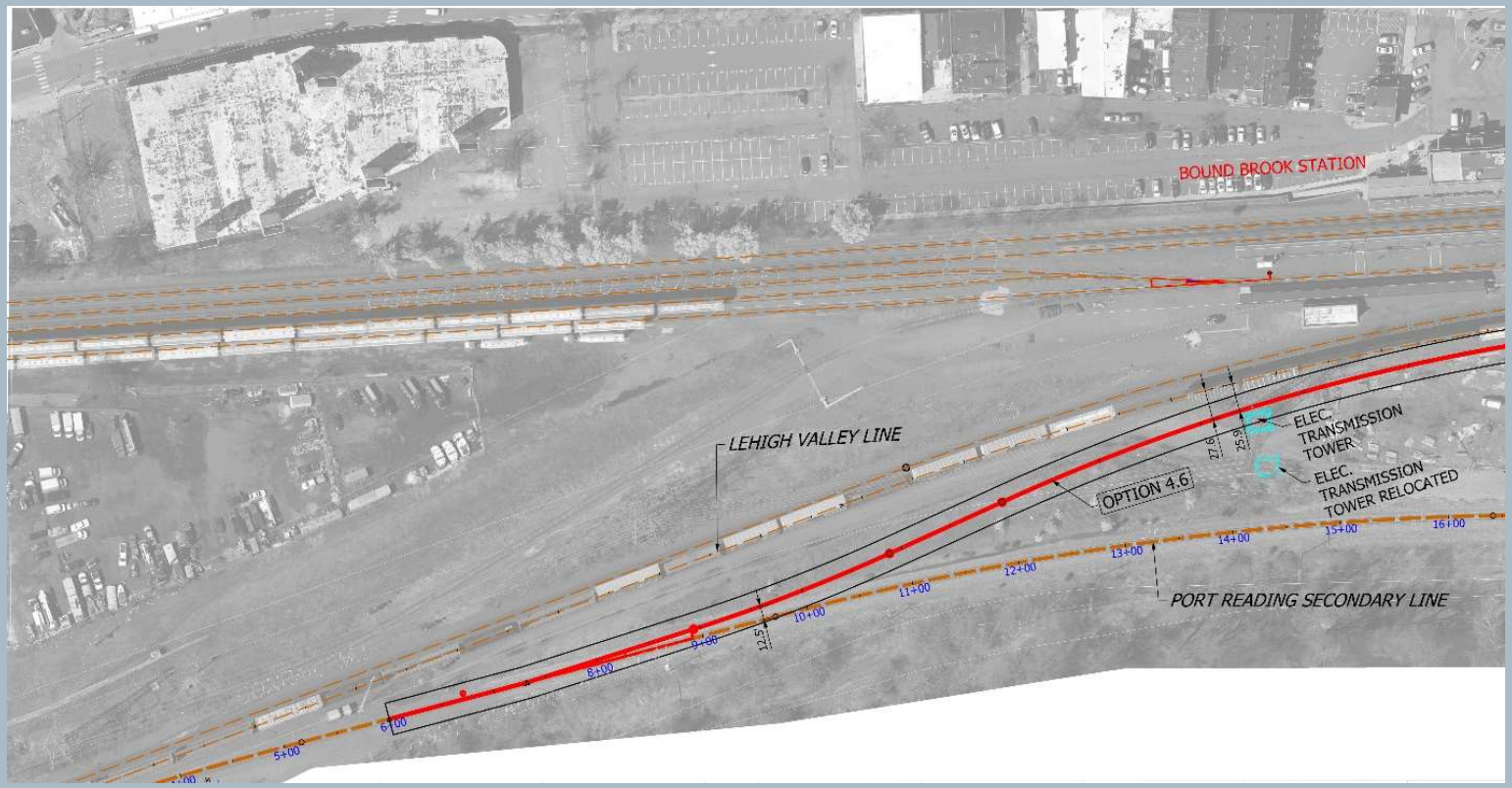
Preliminary Preferred Alternative



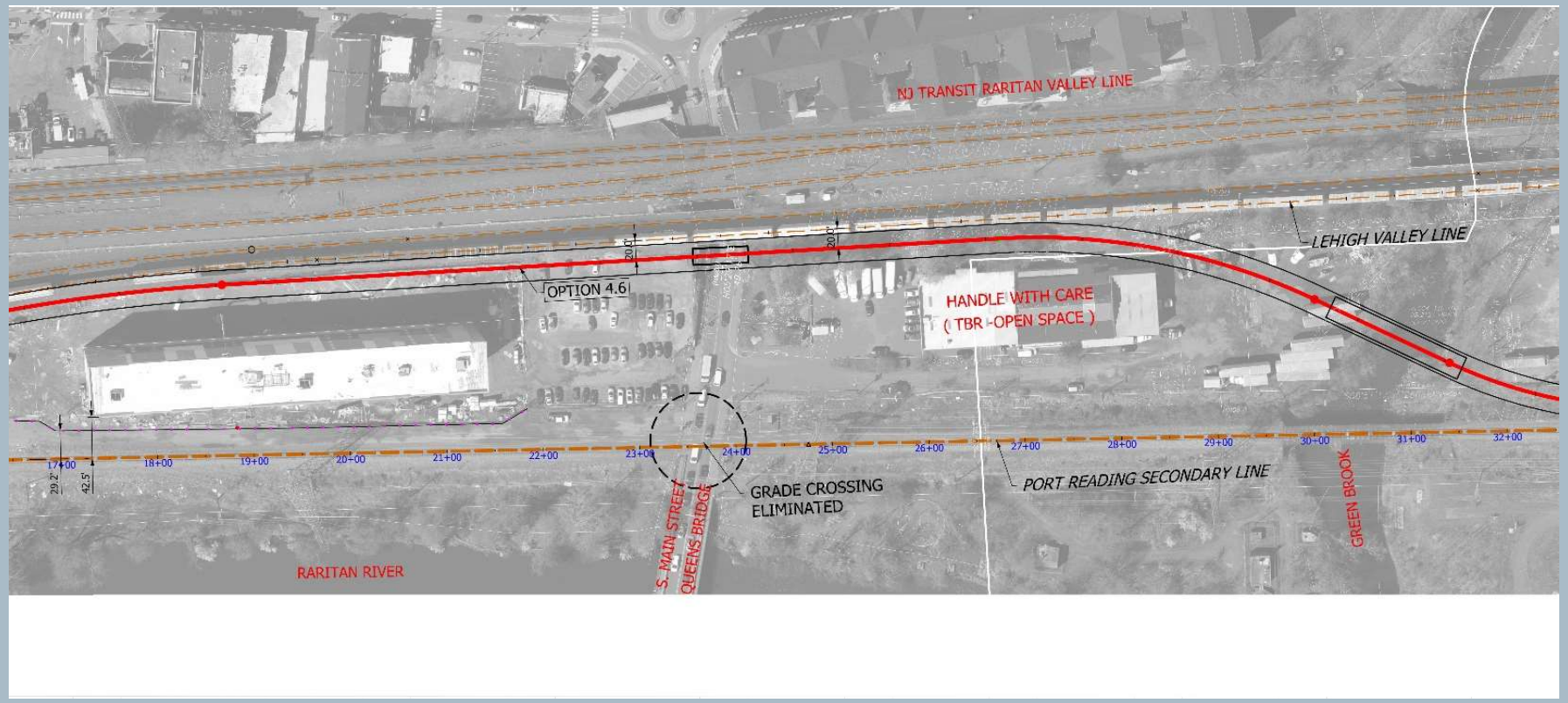
Preliminary Preferred Alternative



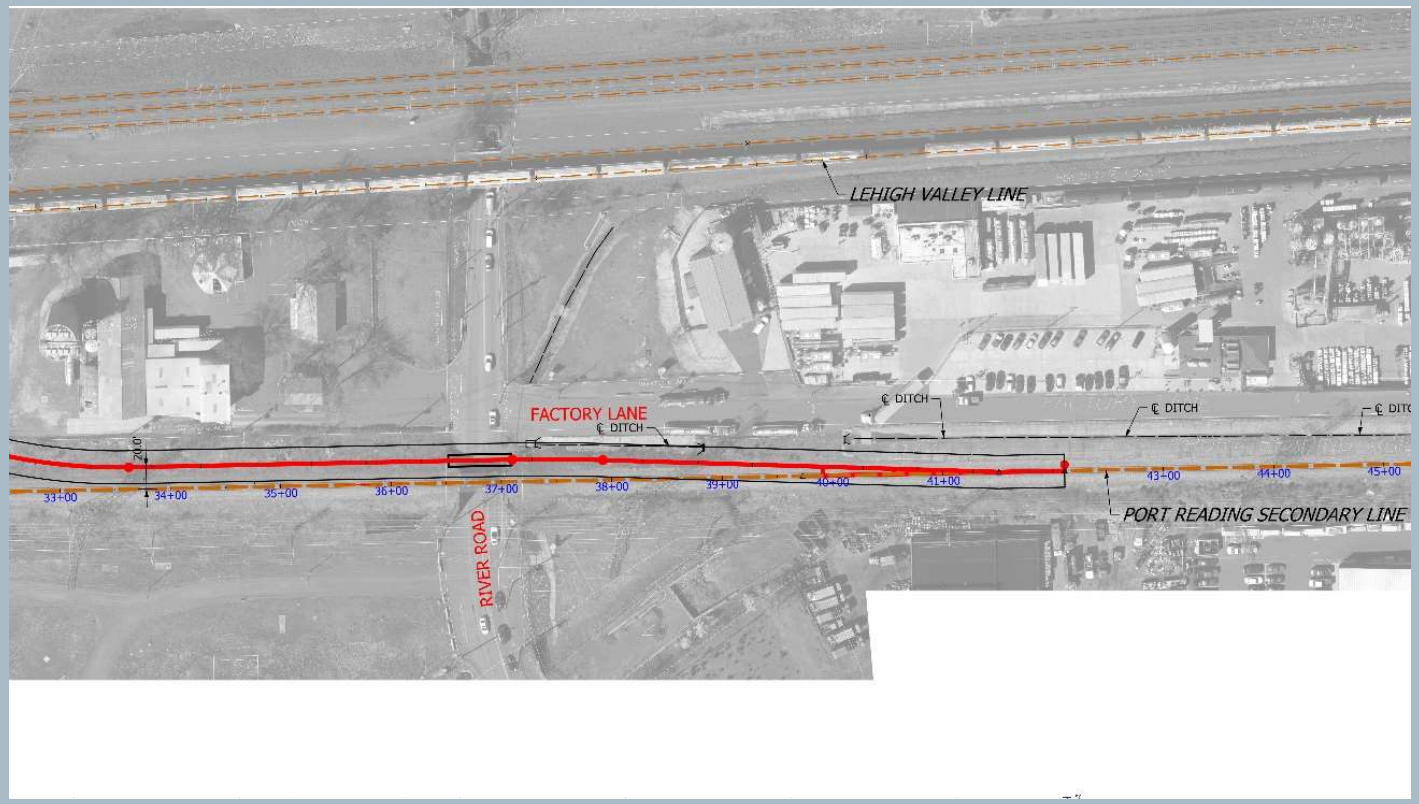
Preliminary Preferred Alternative



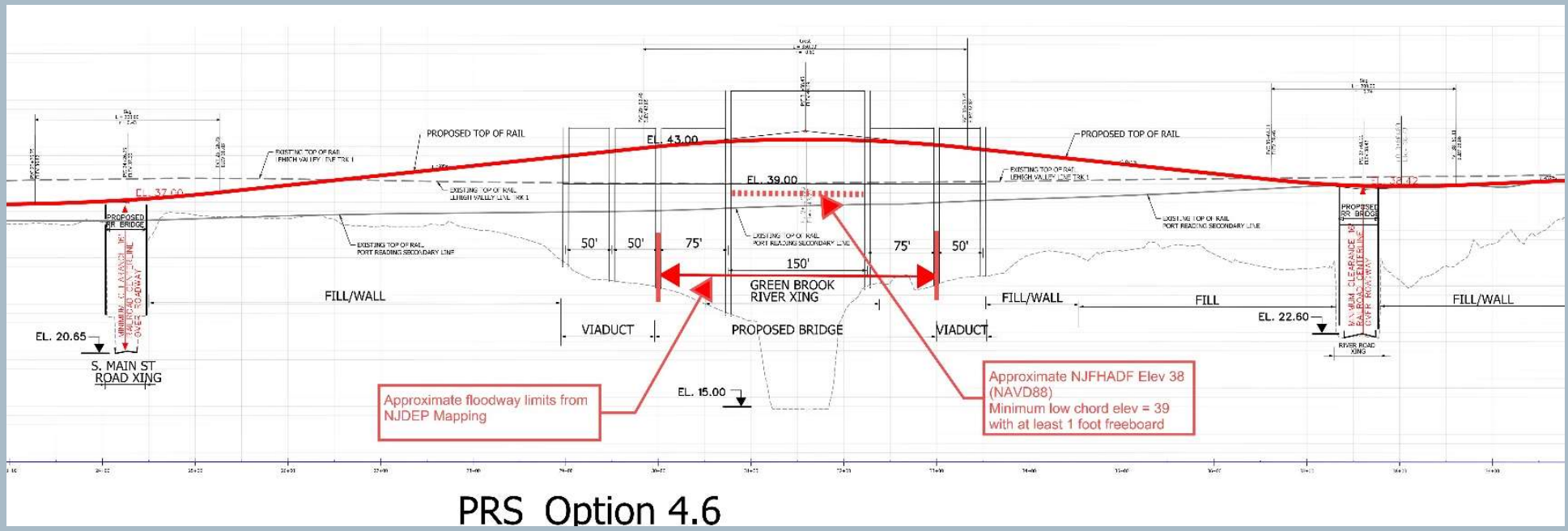
Preliminary Preferred Alternative



Preliminary Preferred Alternative



Preliminary Preferred Alternative



PRS Option 4.6

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

SOMERSET COUNTY

NJTPA

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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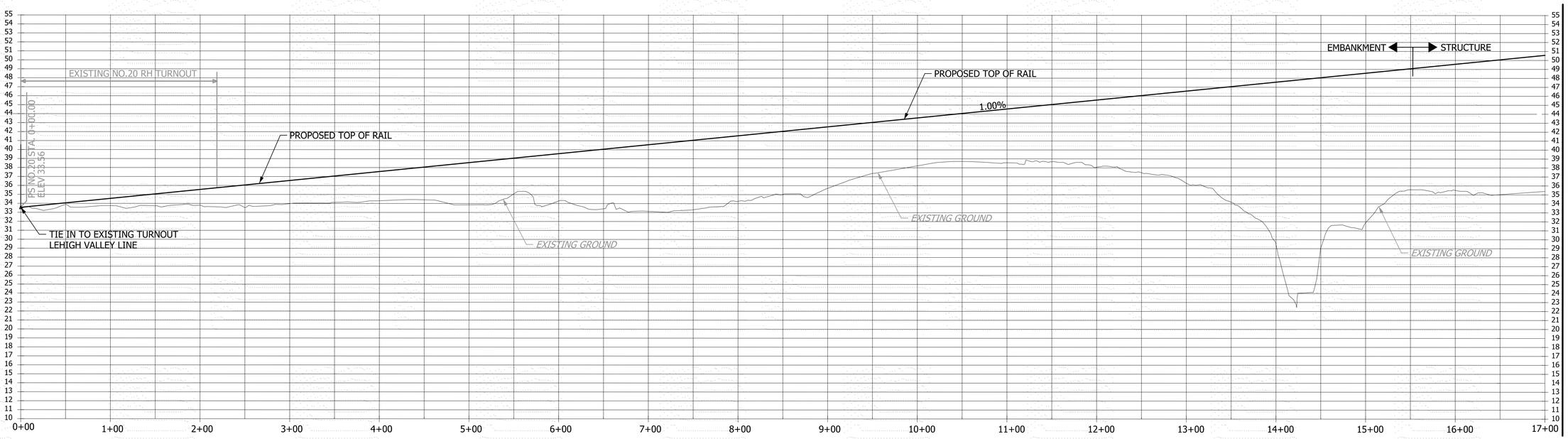
Appendix H

Alternatives Considered

WESTBOUND

EASTBOUND

MATCH LINE -02



MATCH LINE -02

Grade separation Railroad over Roadway
– OFFLINE NORTH (OPTION 1)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

FILEPATH-NAME

Date: SIGN-DATE

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DATE: $DATE$
USER: $USERNAME$

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 1

Scale 1" = 60'

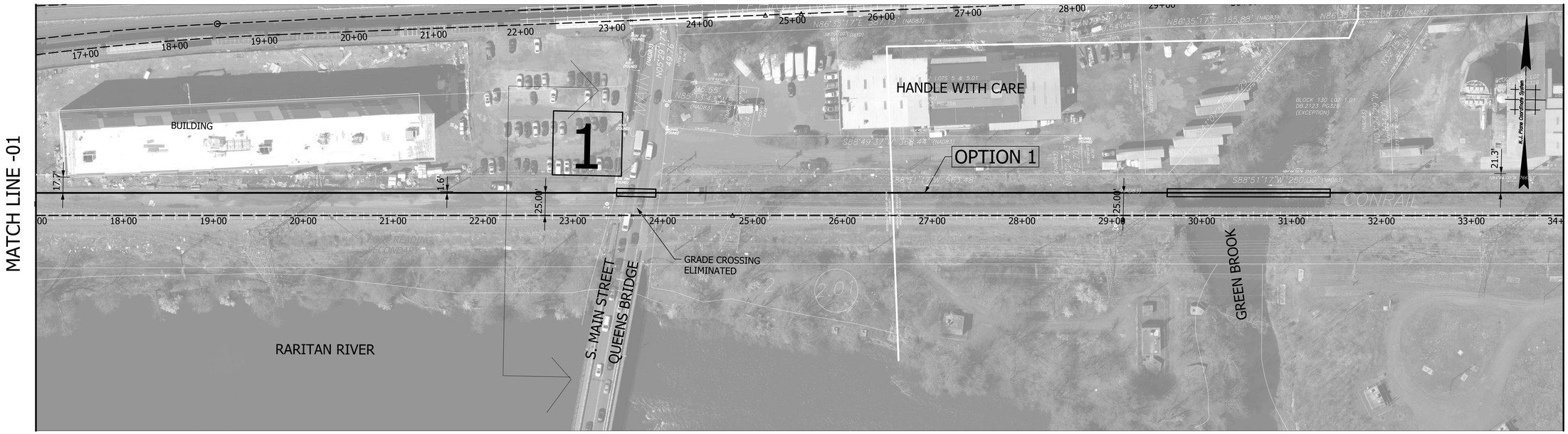
Contract No.

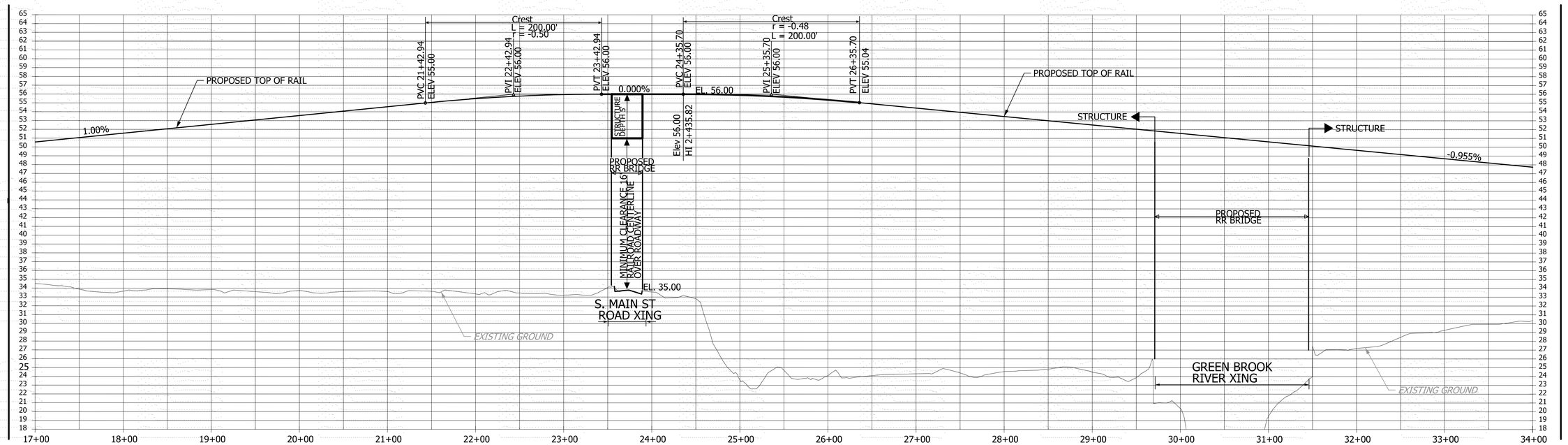
Drawing

Sheet 1 OF 27

WESTBOUND

EASTBOUND





Grade separation Railroad over Roadway
– OFFLINE NORTH (OPTION 1)

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				Dwn. DRAWN
				Chkd. CHECKER-1
				Des. DESIGNER
				Date JUNE 2023

FILEPATH-NAME

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DATE: $DATE$
USER: $USERNAME$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 1

Scale 1" = 60'

Contract No.

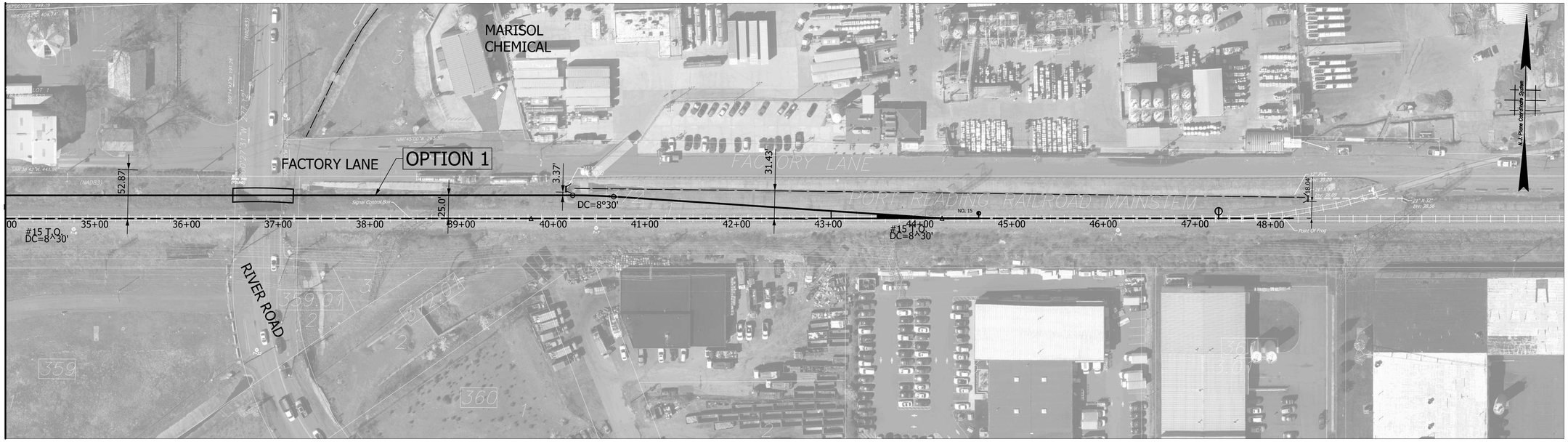
Drawing

Sheet 2 OF 27

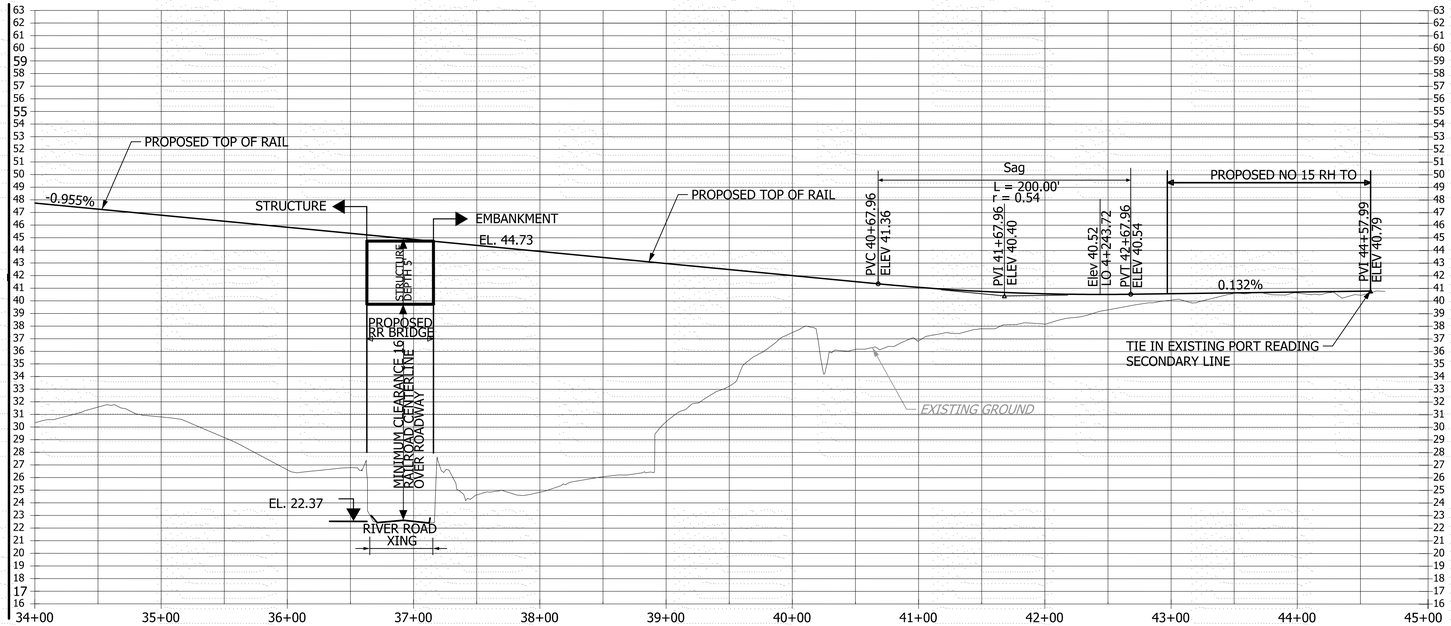
WESTBOUND

EASTBOUND

MATCH LINE -02



MATCH LINE -02



Grade separation Railroad over Roadway
– OFFLINE NORTH (OPTION 1)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

FILEPATH-NAME

Date: SIGN-DATE

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 1

Scale 1" = 60'

Contract No.

Drawing

Sheet 3 OF 27

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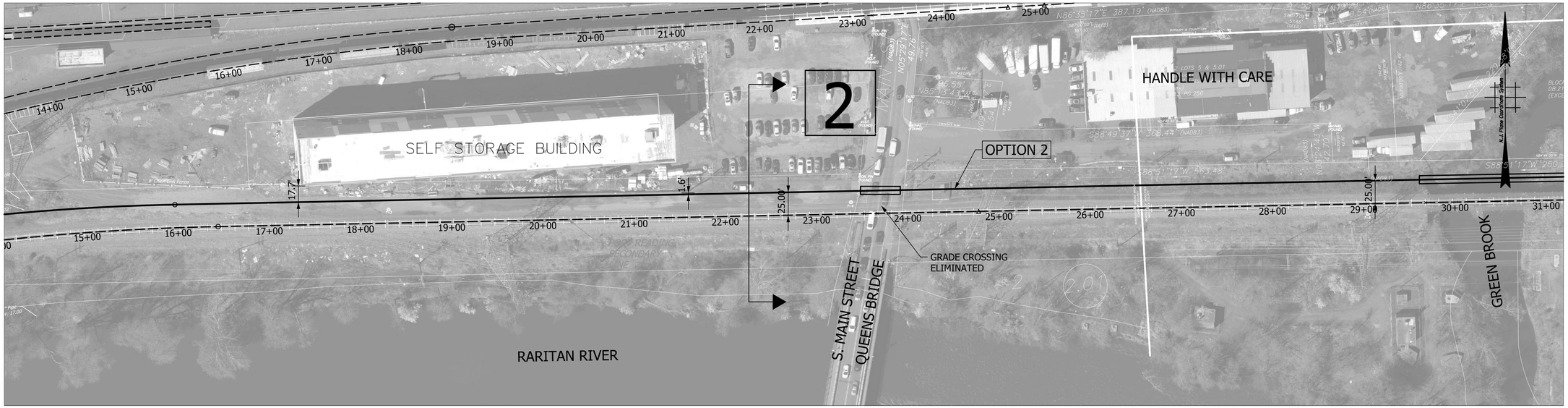
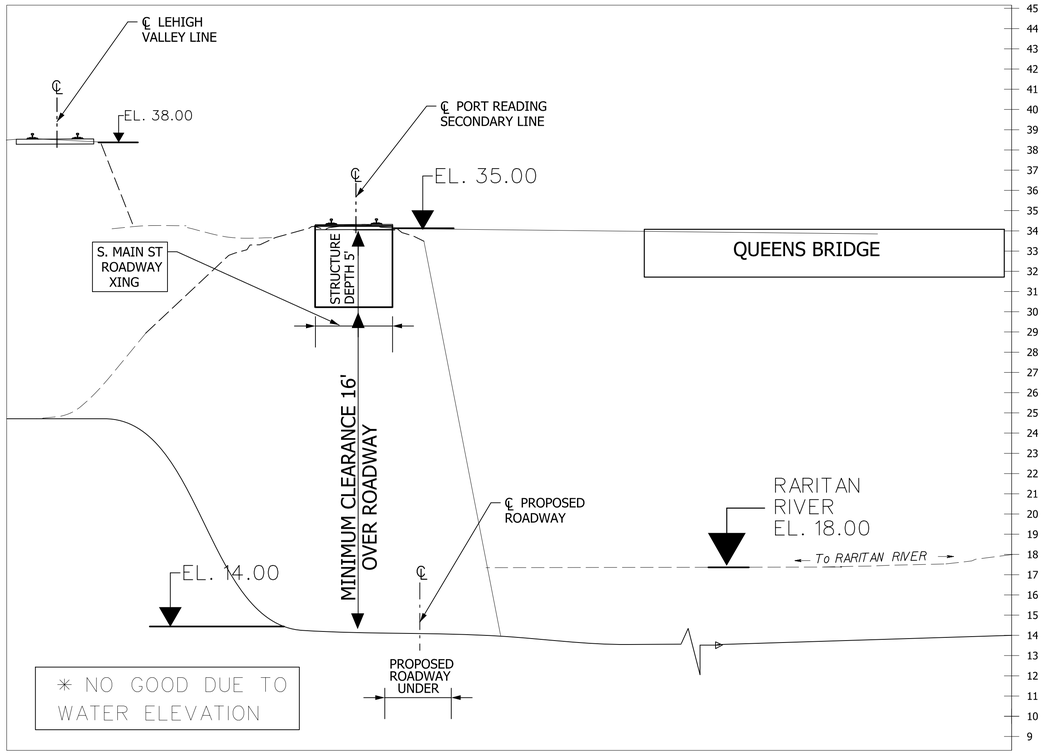
DATE: $DATE$
USER: $USERNAME$
$TIME$

WESTBOUND

EASTBOUND





Grade separation Roadway UNDER (OPTION 2)

N.T.S.

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

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DATE: $DATE$
USER: $USERNAME$
TIME$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 2

Scale 1" = 60'

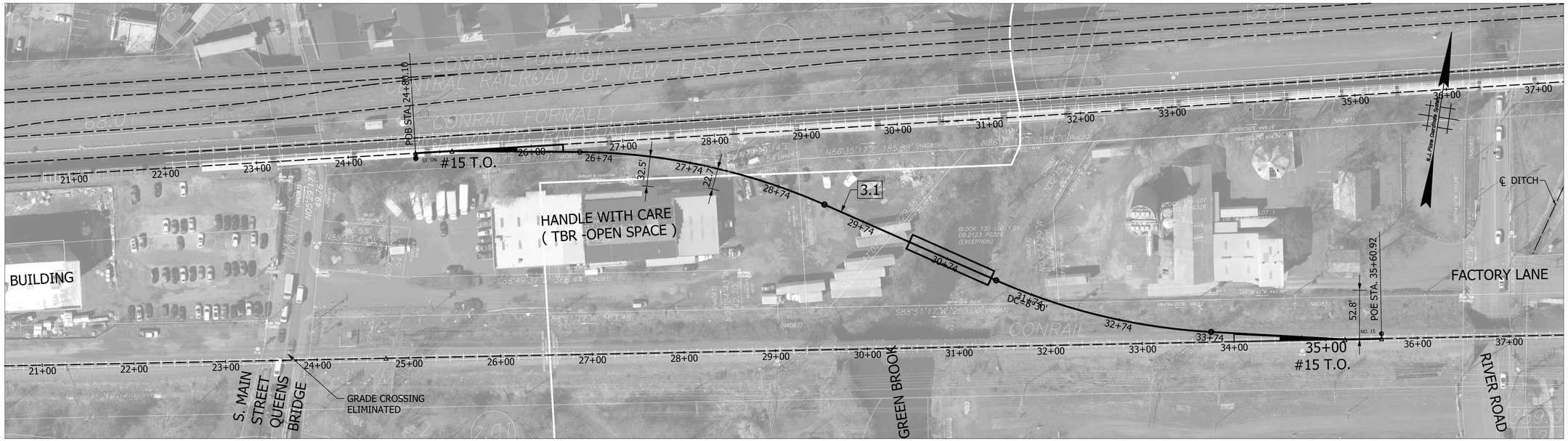
Contract No.

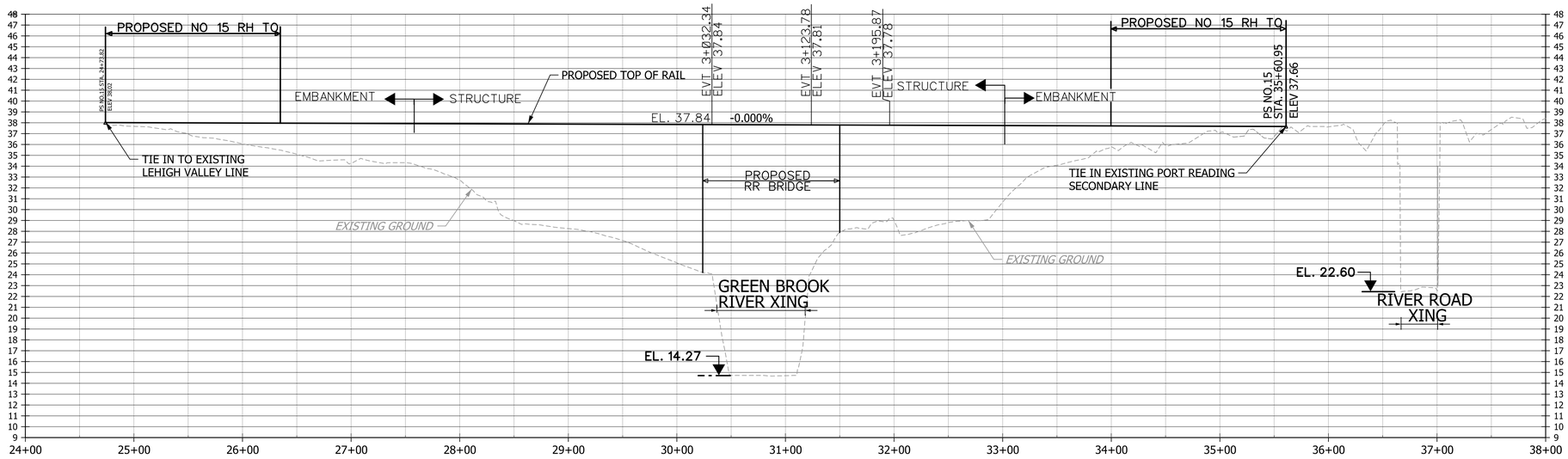
Drawing

Sheet 4 OF 27

WESTBOUND

EASTBOUND





BYPASS USING LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 3.1)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

FILEPATH-NAME

Date: SIGN-DATE

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DATE: $DATE$
USER: $USERNAME$

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 3.1

Scale 1" = 60'

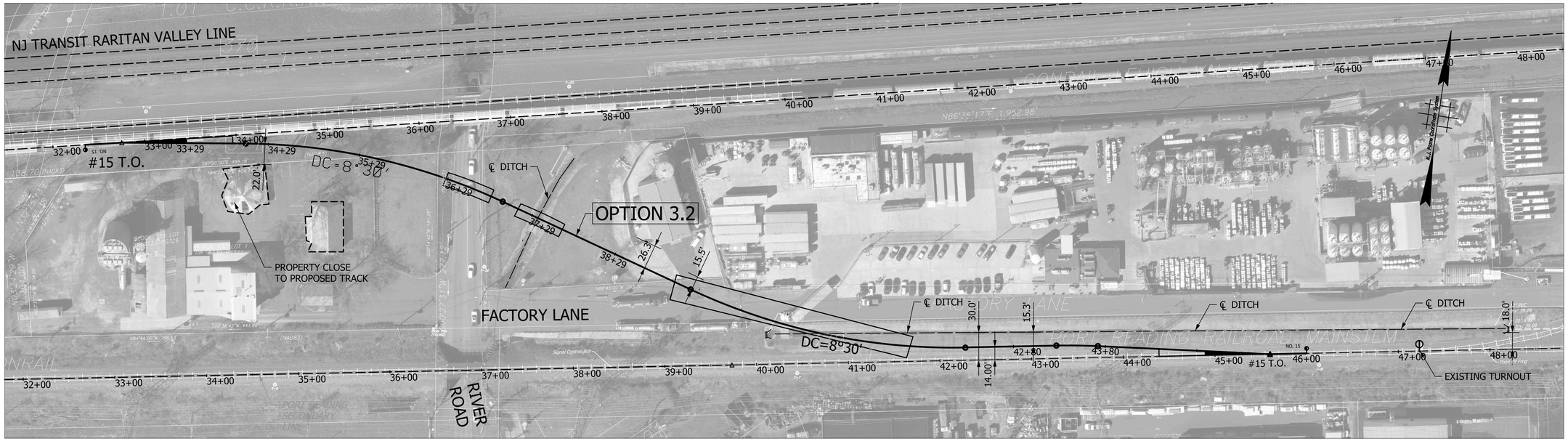
Contract No.

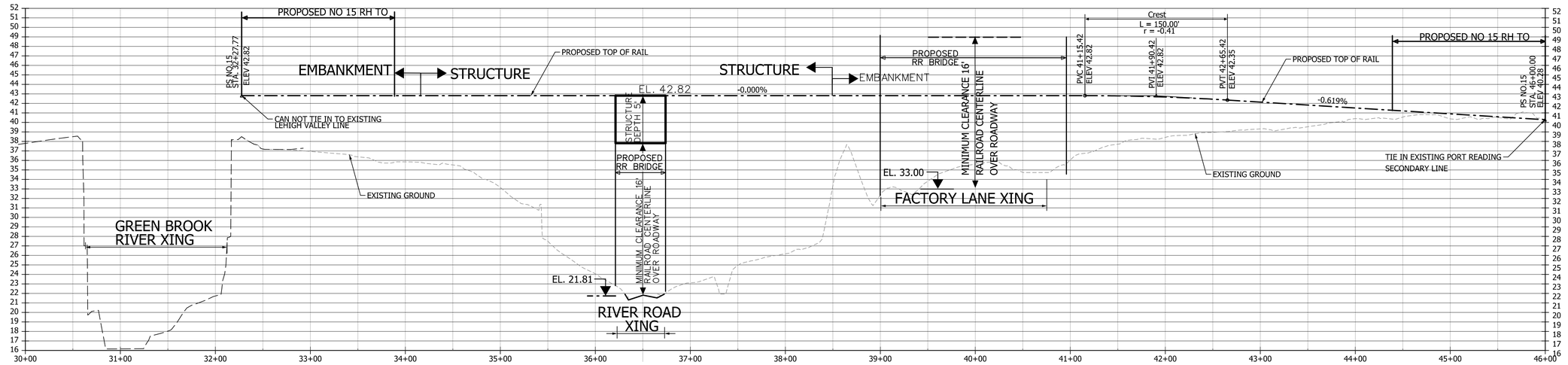
Drawing

Sheet 5 OF 27

WESTBOUND

EASTBOUND





BYPASS USING LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 3.2)

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				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

$FILE$

FILENAME: $FILE$
DATE: $DATE$ $TIME$
USER: $USERNAME$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

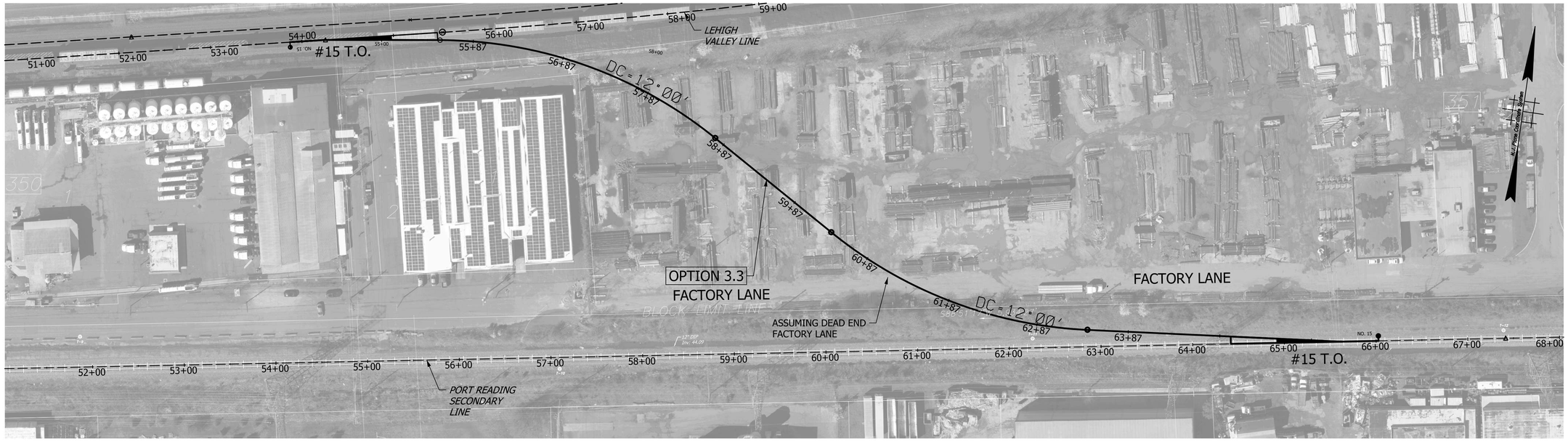
CONCEPT STUDY

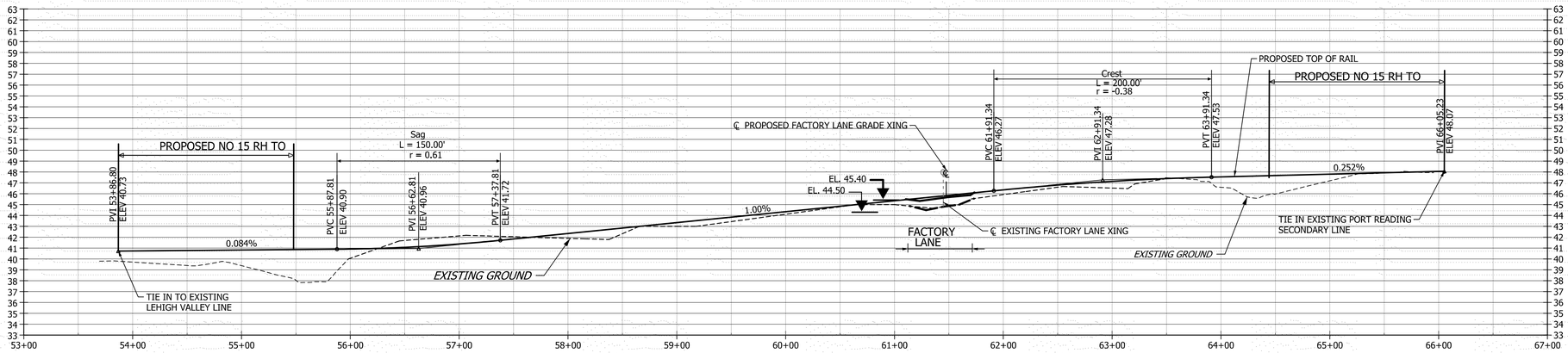
PORT READING SECONDARY LINE
OPTION 3.2

Scale 1" = 60'
Contract No.
Drawing
Sheet 6 OF 27

WESTBOUND

EASTBOUND





BYPASS USING LEHIGH VALLEY LINE – ELIMINATE GRADE CROSSING (OPTION 3.3)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

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USER: $USERNAME$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 3.3

Scale 1" = 60'

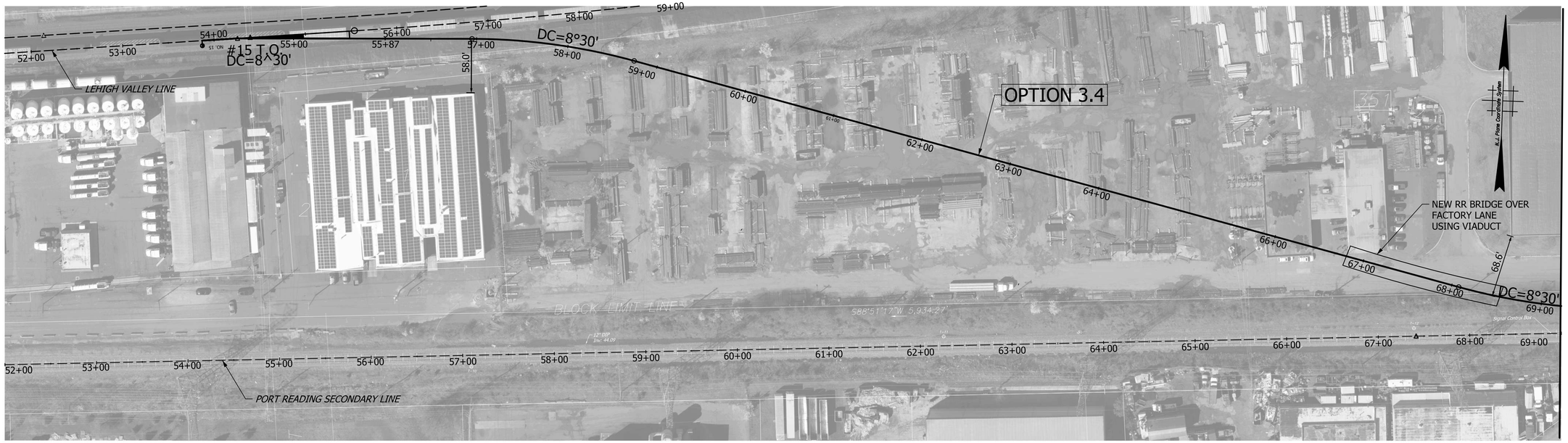
Contract No.

Drawing

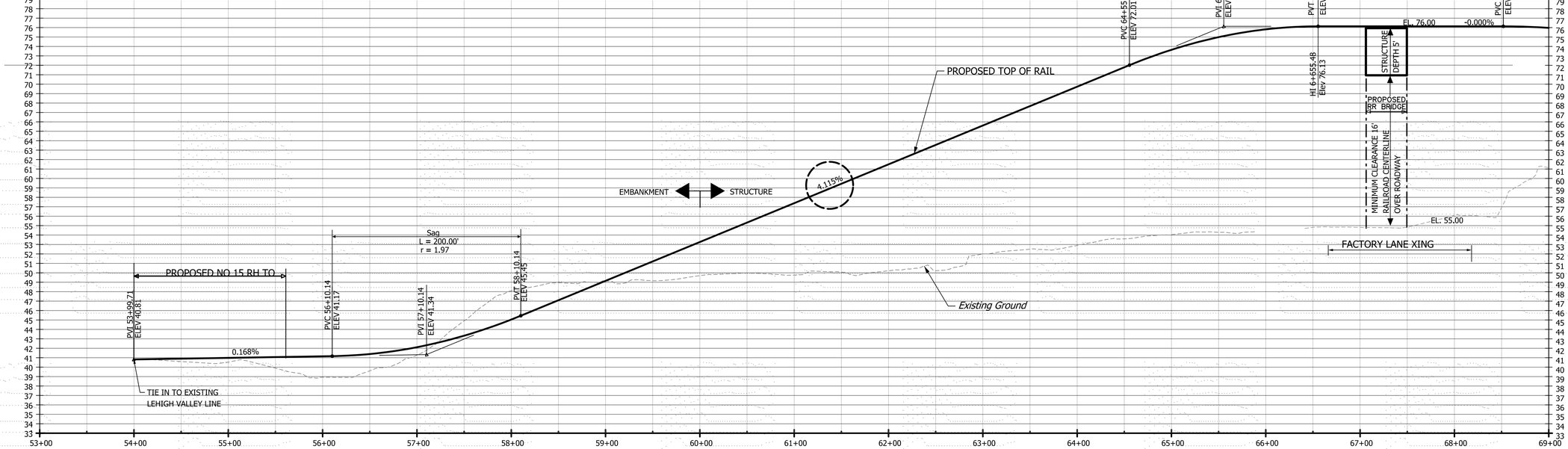
Sheet 7 OF 27

WESTBOUND

EASTBOUND



MATCH LINE -09



MATCH LINE -09

BYPASS USING LEHIGH VALLEY LINE – ELIMINATE GRADE CROSSING (OPTION 3.4)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

$FILE$

Date: _____

FILENAME: $FILE$
DATE: $DATE$
USER: $USERNAME$
$TIME$

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 3.4

Scale 1"=60'

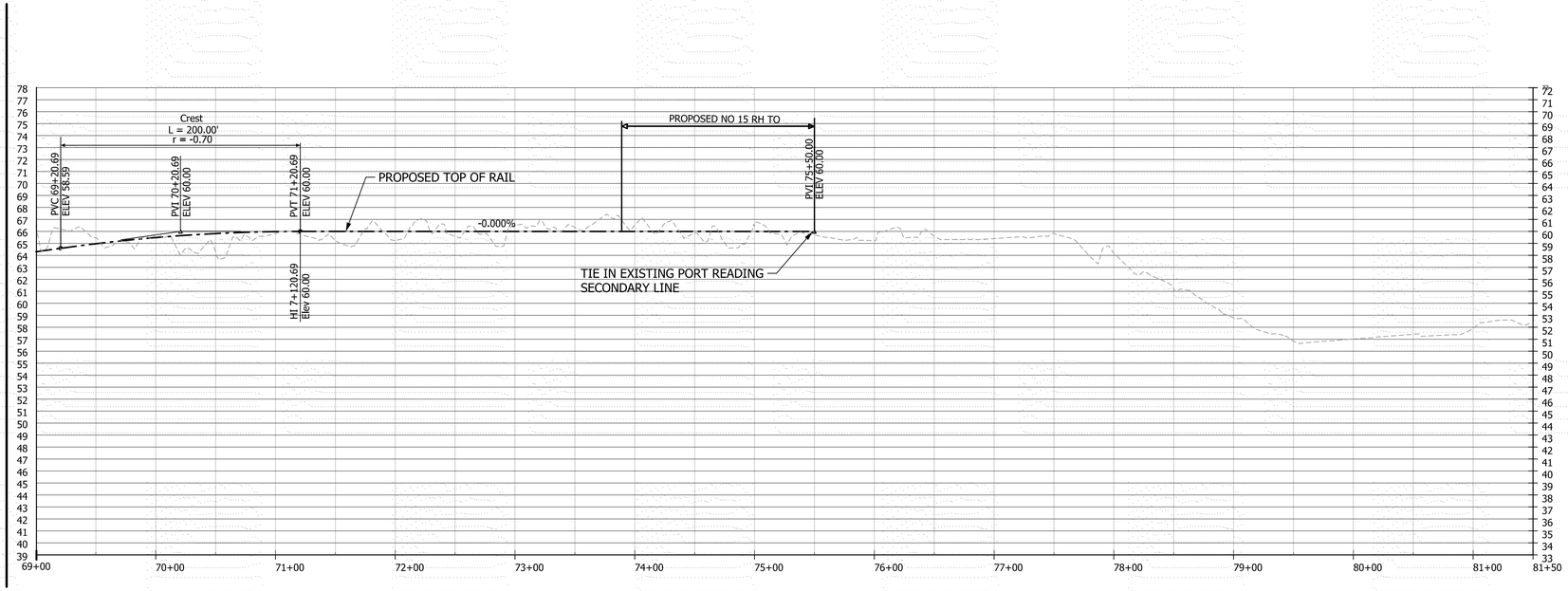
Contract No.

Drawing

Sheet 8 OF 27

WESTBOUND

EASTBOUND



BYPASS USING LEHIGH VALLEY LINE – ELIMINATE GRADE CROSSING (OPTION 3.4)

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				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

FILEPATH-NAME

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USER: $USERNAME$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 3.4

Scale 1" = 60'

Contract No.

Drawing

Sheet 9 OF 27

WESTBOUND

EASTBOUND

BYPASS USING LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 3.5)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

$FILE$

FILENAME: $FILE$
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USER: $USERNAME$
$TIME$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

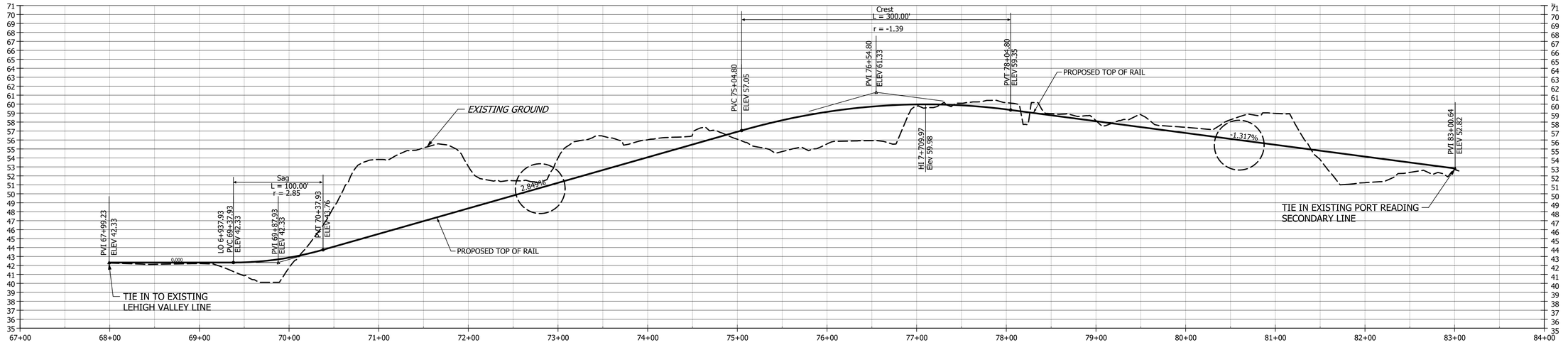
CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 3.5

Scale 1" = 60'
Contract No.
Drawing
Sheet 10 OF 27

WESTBOUND

EASTBOUND



BYPASS USING LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 3.5)

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USER: $USERNAME$

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Dwn.
				Chkd.
				Des.
				Date JUNE 2023

$FILE$

Date: _____

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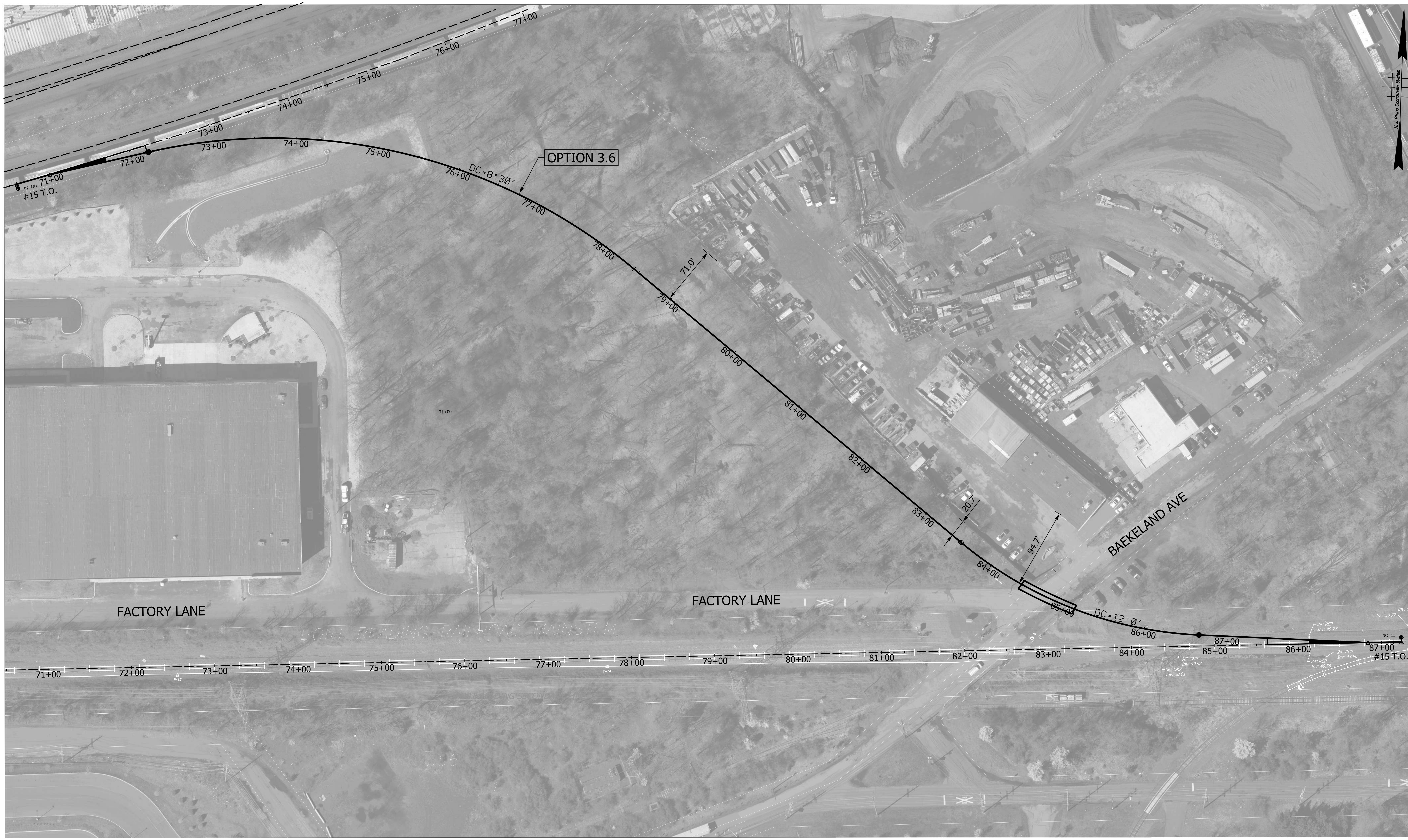
412 Mt. Kemble Ave, Morristown, NJ 07960

NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 3.5

Scale 1" = 60'
Contract No.
Drawing
Sheet 11 OF 27



BYPASS USING LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 3.6)

No.	Date	Eng.	Revision Notes	
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.
No.	Date	Eng.	Revision Notes	Chkd.Dwn.

$FILE$

Date: ________

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

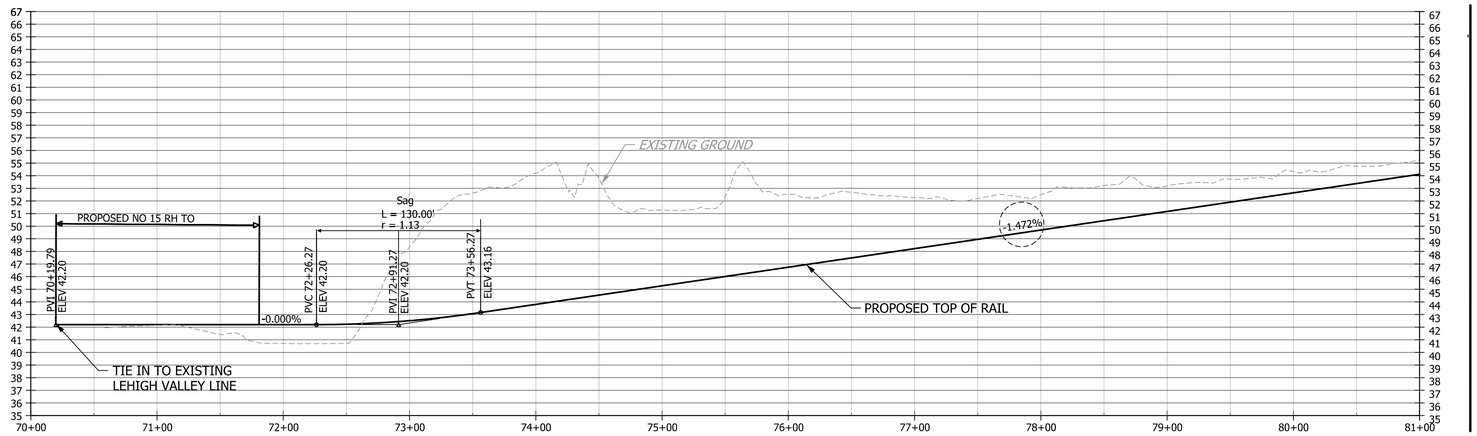
PORT READING SECONDARY LINE
OPTION 3.6

Scale 1"=60'
Contract No.
Drawing
Sheet 12 OF 27

FILENAME: $FILE$ DATE: $DATE$ USER: $USERNAME$ $TIME$

WESTBOUND

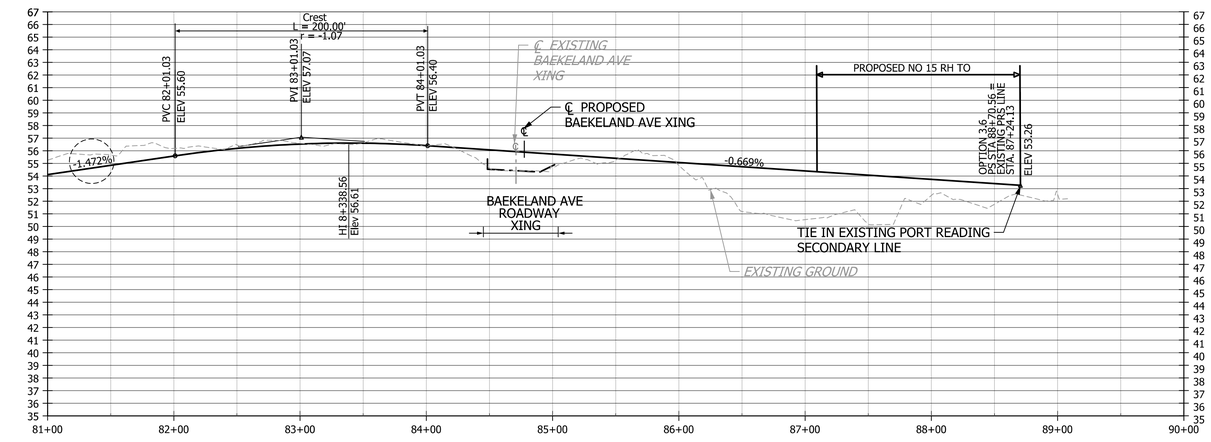
EASTBOUND



SEE MATCH LINE BELOW

OPTION 3.6 PROFILE

SEE MATCH LINE ABOVE



OPTION 3.6 PROFILE

BYPASS USING LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 3.6)

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DATE: $DATE$ $TIME$
USER: $USERNAME$

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

$FILE$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 3.6

Scale 1" = 60'

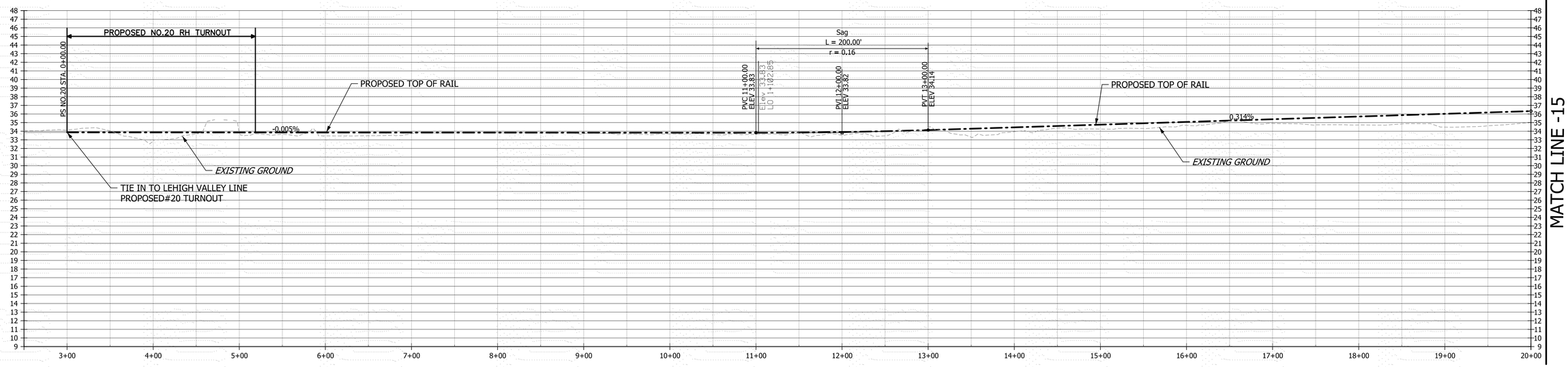
Contract No.

Drawing

Sheet 13 OF 27

WESTBOUND

EASTBOUND



BYPASS WITH NEW TRACK PARALLEL TO LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 4.1)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

$FILE$

Date: _____

FILENAME: $FILE$ $TIME$
DATE: $DATE$
USER: $USERNAME$

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 4.1

Scale 1" = 60'

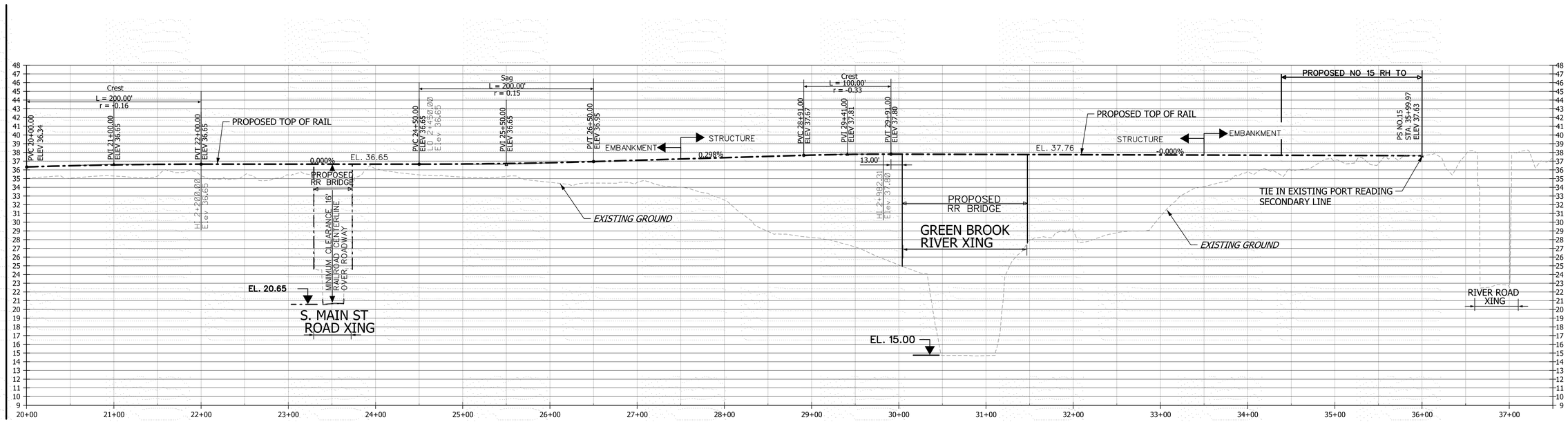
Contract No.

Drawing

Sheet 14 OF 27

WESTBOUND

EASTBOUND



BYPASS WITH NEW TRACK PARALLEL TO LEHIGH VALLEY LINE – ELIMINATE GRADE CROSSING (OPTION 4.1)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

FILENAME: $FILE$ $TIME$
DATE: $DATE$
USER: $USERNAME$
$FILE$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

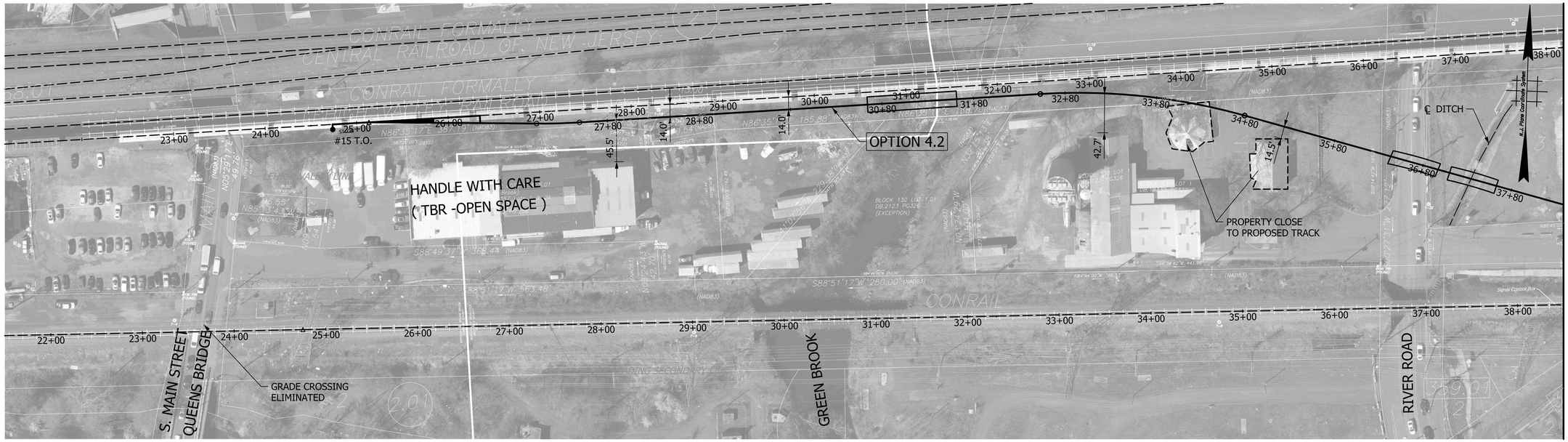
CONCEPT STUDY

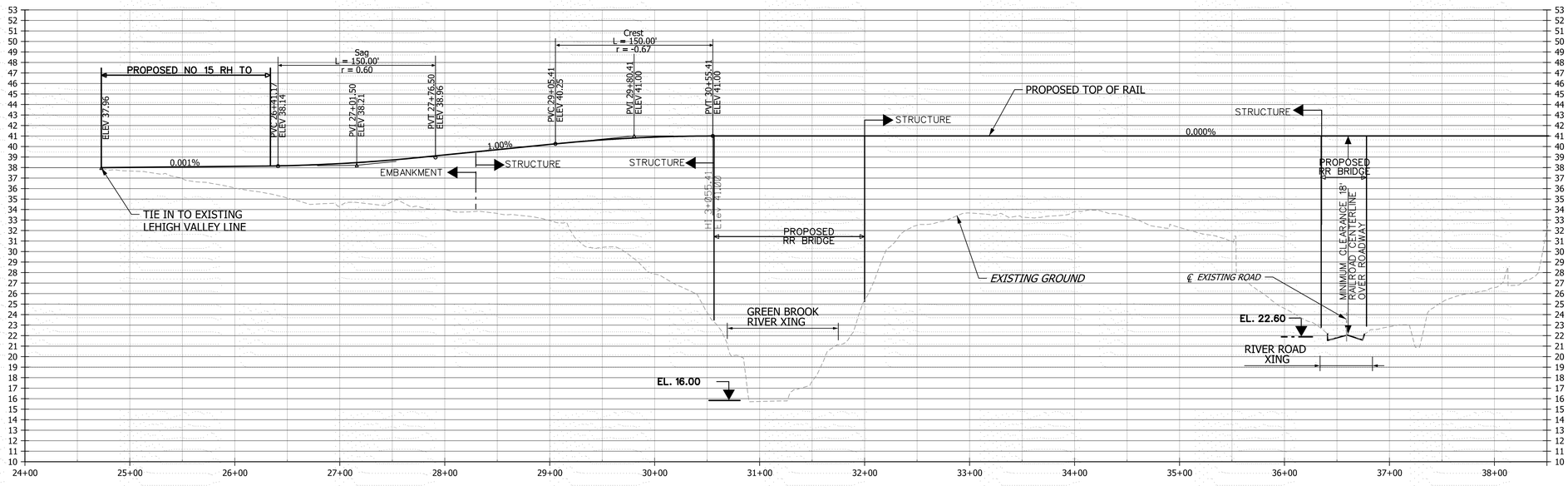
PORT READING SECONDARY LINE
OPTION 4.1

Scale 1"= 60'
Contract No.
Drawing
Sheet 15 OF 27

WESTBOUND

EASTBOUND





BYPASS WITH NEW TRACK PARALLEL TO LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 4.2)

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				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

FILENAME: $FILE$ $TIME$
DATE: $DATE$
USER: $USERNAME$
$FILE$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 4.2

Scale 1"= 60'

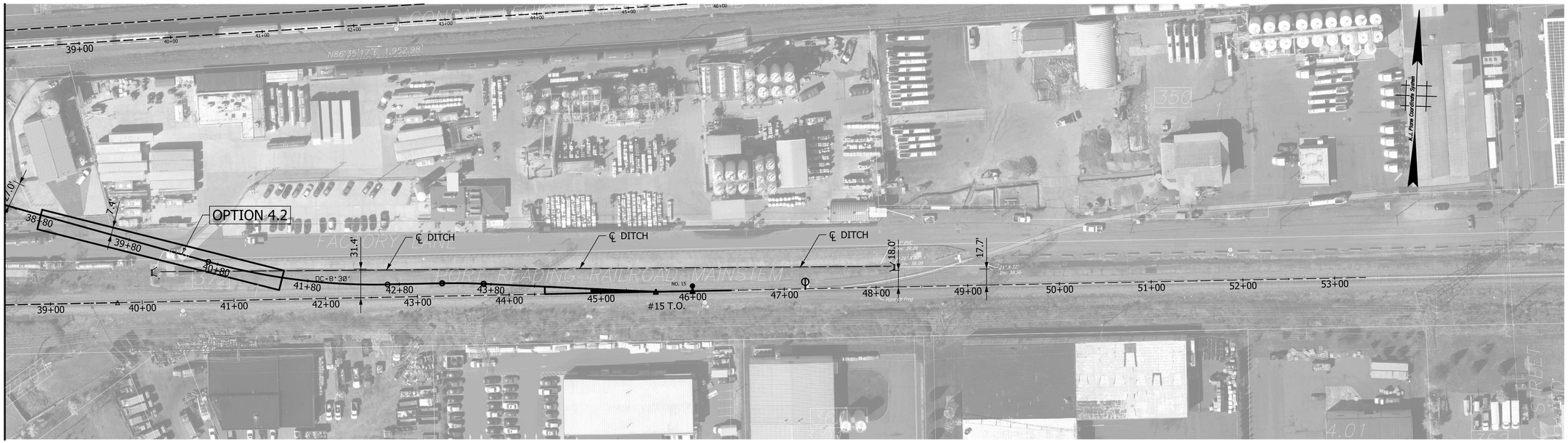
Contract No.

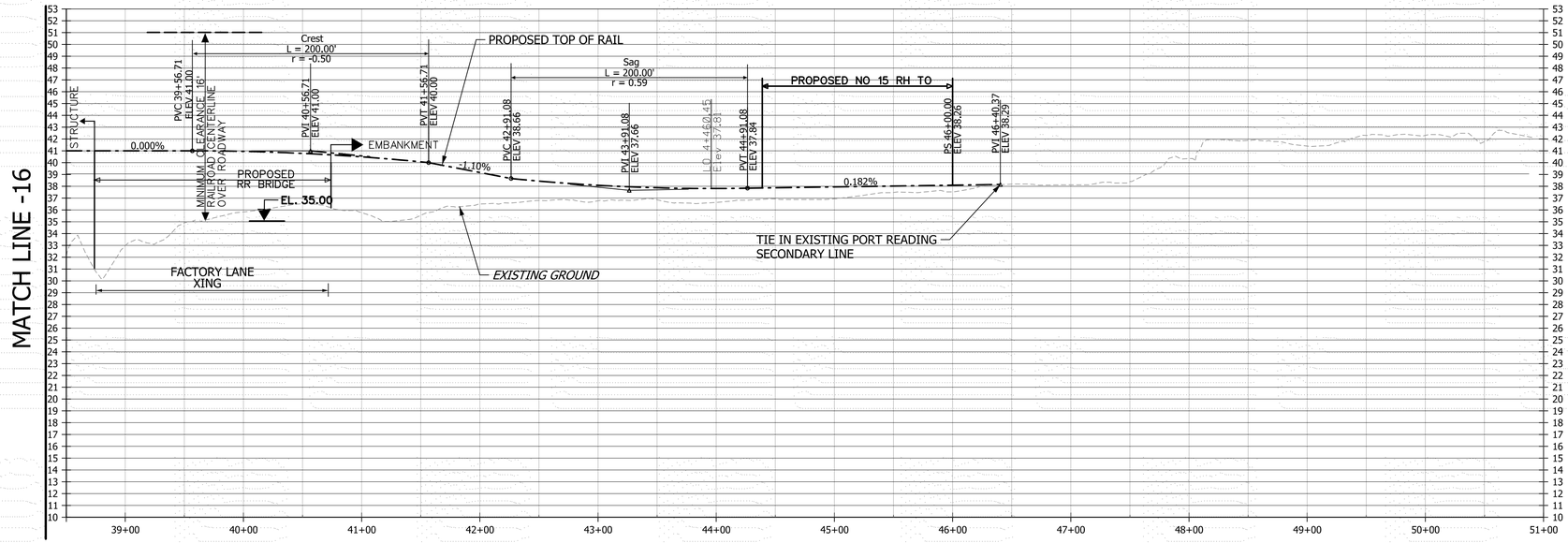
Drawing

Sheet 16 OF 27

WESTBOUND

EASTBOUND





BYPASS WITH NEW TRACK PARALLEL TO LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 4.2)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Dwn.
				Chkd.
				Des.
				Date JUNE 2023

FILENAME: $FILE$ $TIME$
DATE: $DATE$
USER: $USERNAME$
$FILE$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 4.2

Scale 1"= 60'

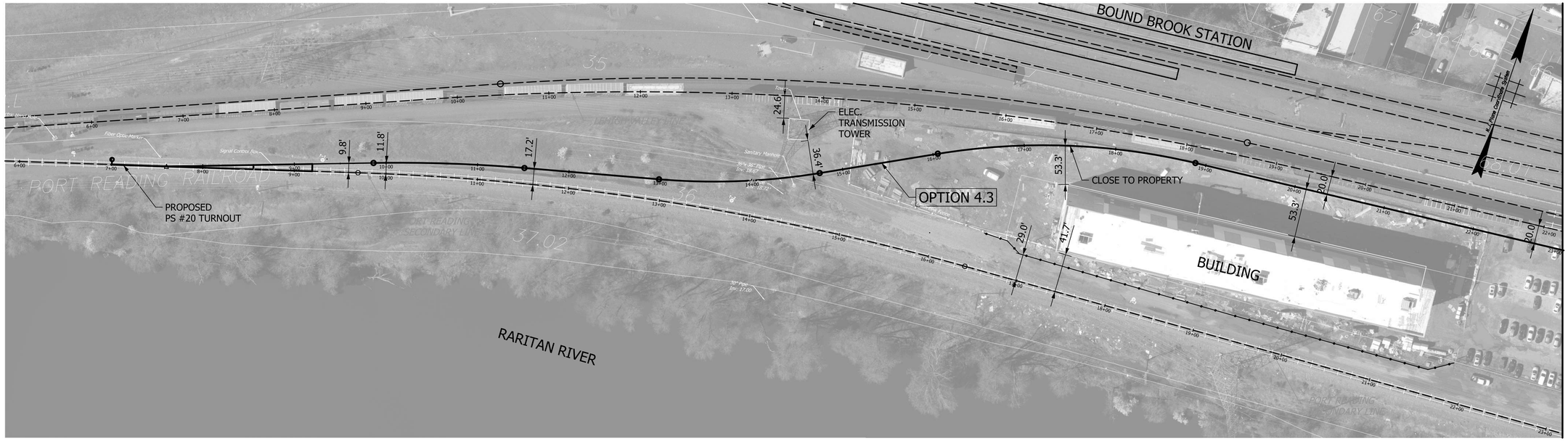
Contract No.

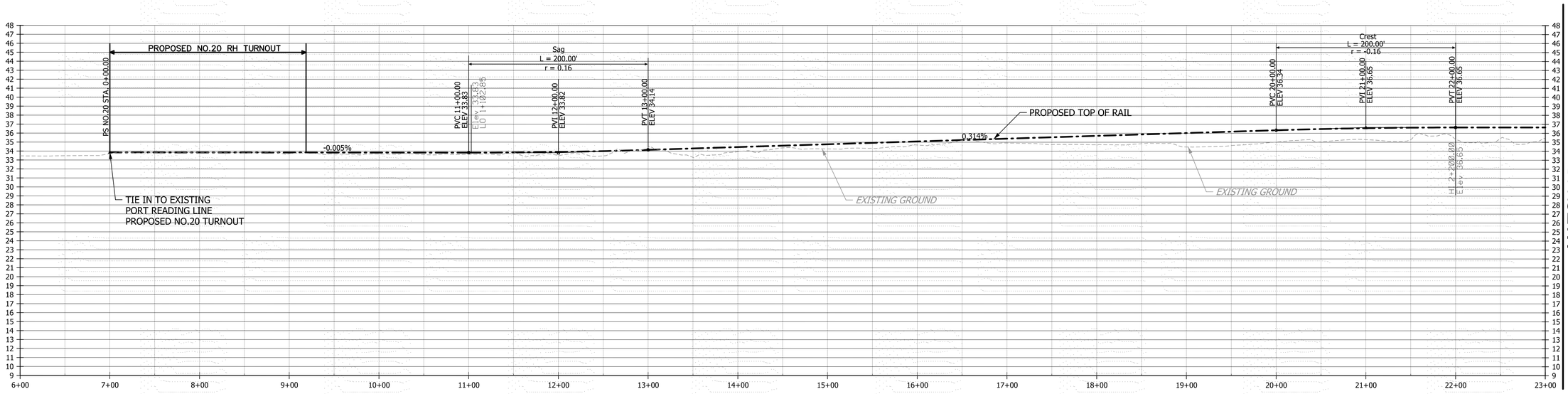
Drawing

Sheet 17 OF 27

WESTBOUND

EASTBOUND





BYPASS WITH NEW TRACK PARALLEL TO LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 4.3)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

$FILE$

FILENAME: $FILE$
DATE: $DATE$ $TIME$
USER: $USERNAME$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 4.3

Scale 1" = 60'

Contract No.

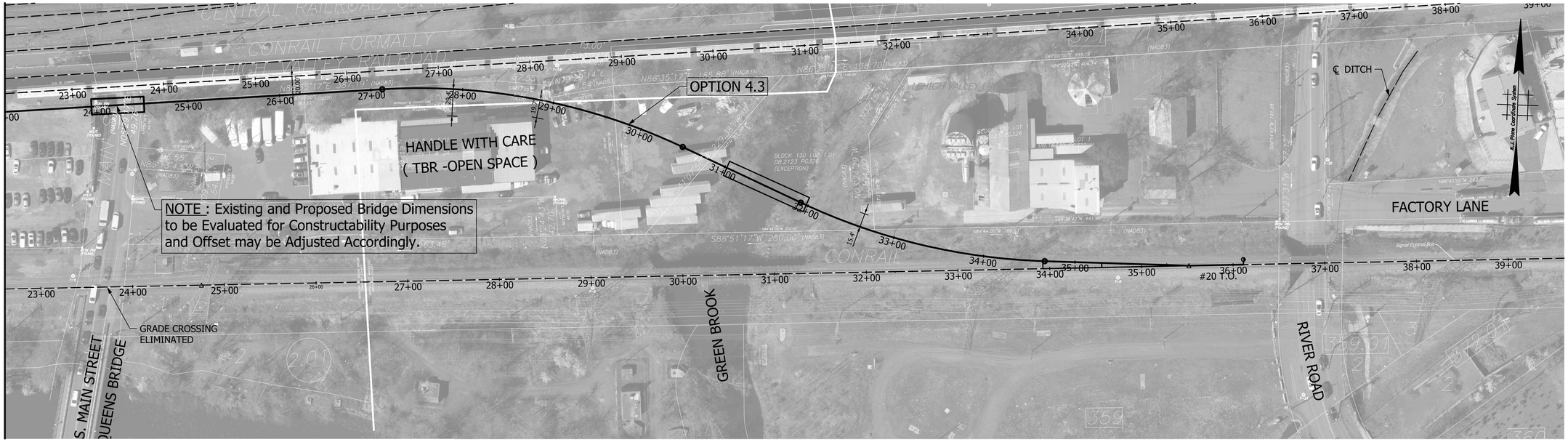
Drawing

Sheet 18 OF 27

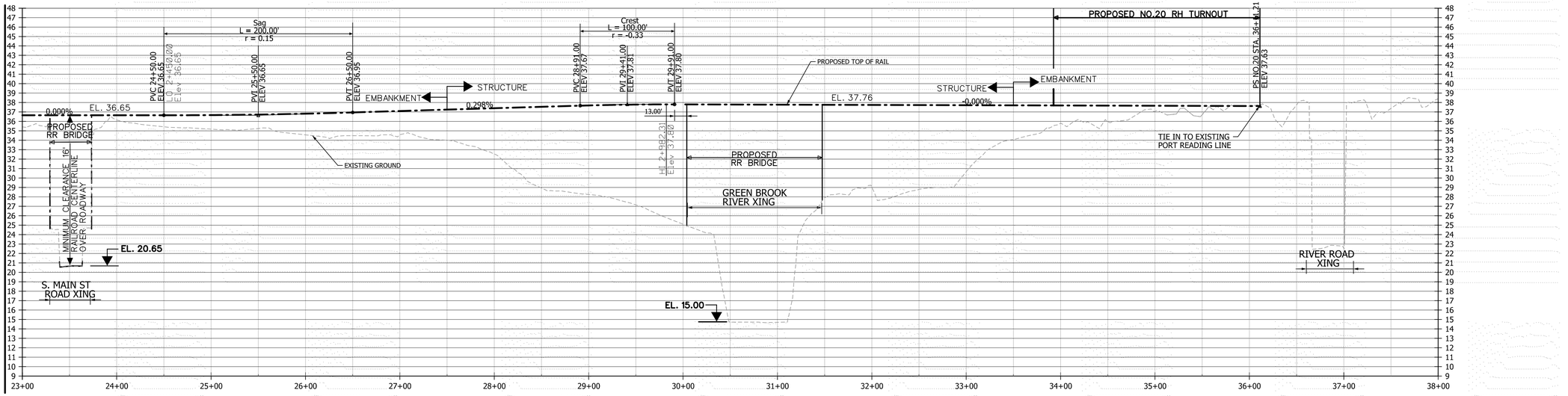
WESTBOUND

EASTBOUND

MATCH LINE -18



MATCH LINE -18



BYPASS WITH NEW TRACK PARALLEL TO LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 4.3)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

$FILE$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 4.3

Scale 1" =60'

Contract No.

Drawing

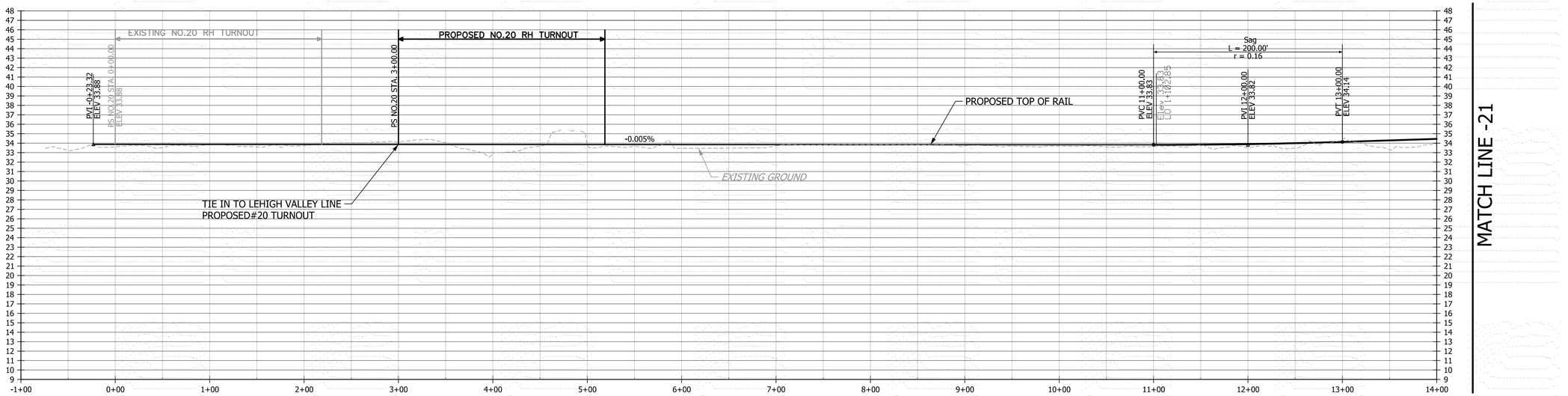
Sheet 19 OF 27

FILENAME: $FILE$ $TIME$
DATE: $DATE$
USER: $USERNAME$

WESTBOUND

EASTBOUND

MATCH LINE -21



MATCH LINE -21

BYPASS WITH NEW TRACK PARALLEL TO LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 4.4)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

$FILE$

FILENAME: $FILE$
DATE: $DATE$ $TIME$
USER: $USERNAME$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 4.4

Scale 1" = 60'

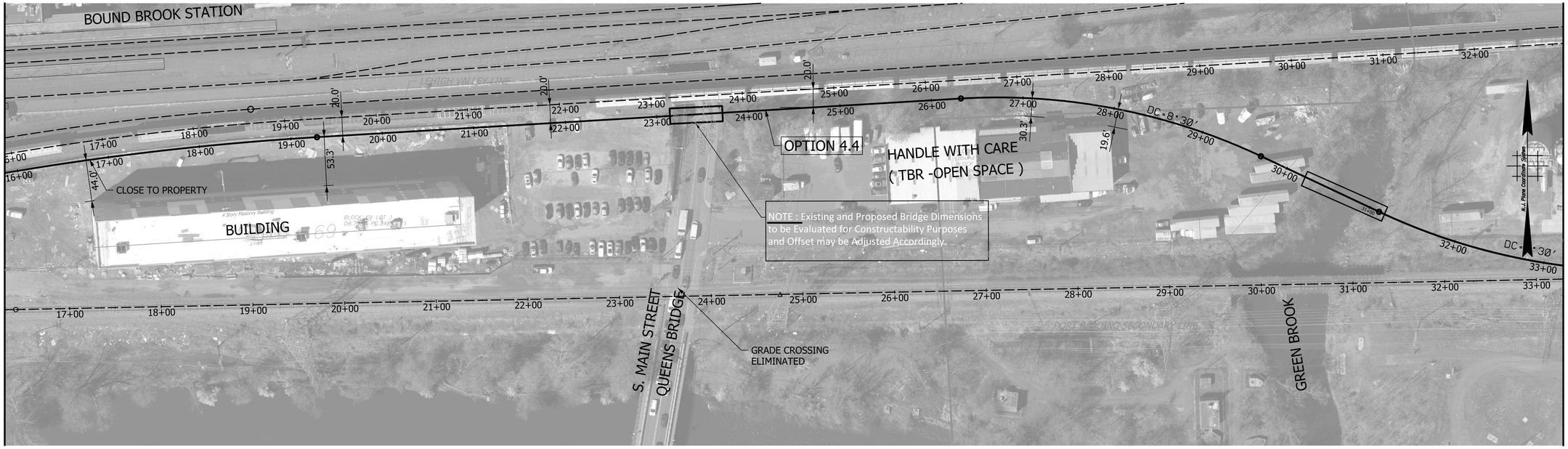
Contract No.

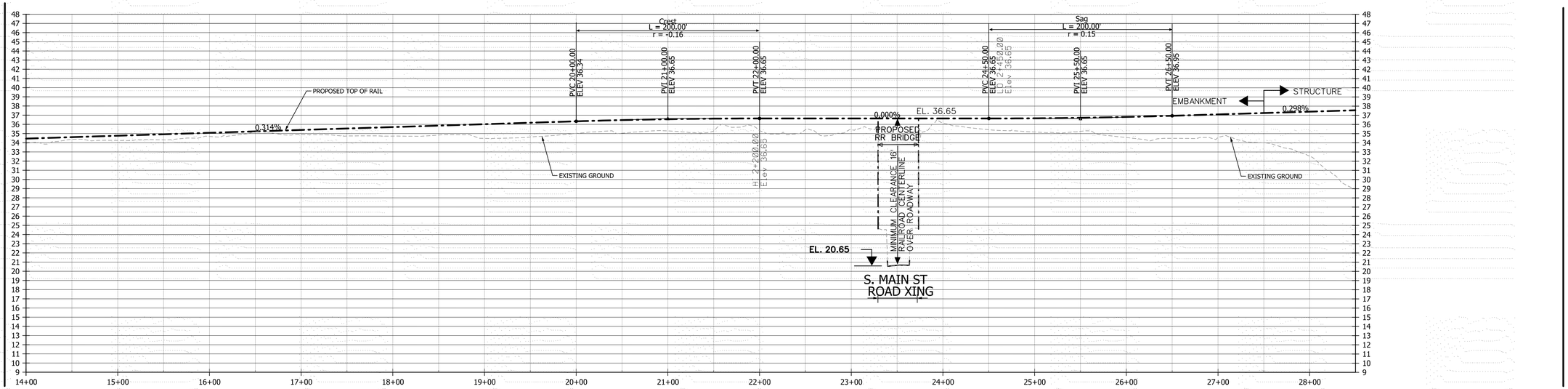
Drawing

Sheet 20 OF 27

WESTBOUND

EASTBOUND





BYPASS WITH NEW TRACK PARALLEL TO LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 4.4)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

$FILE$ $TIME$
FILENAME: $FILE$
DATE: $DATE$
USER: $USERNAME$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 4.4

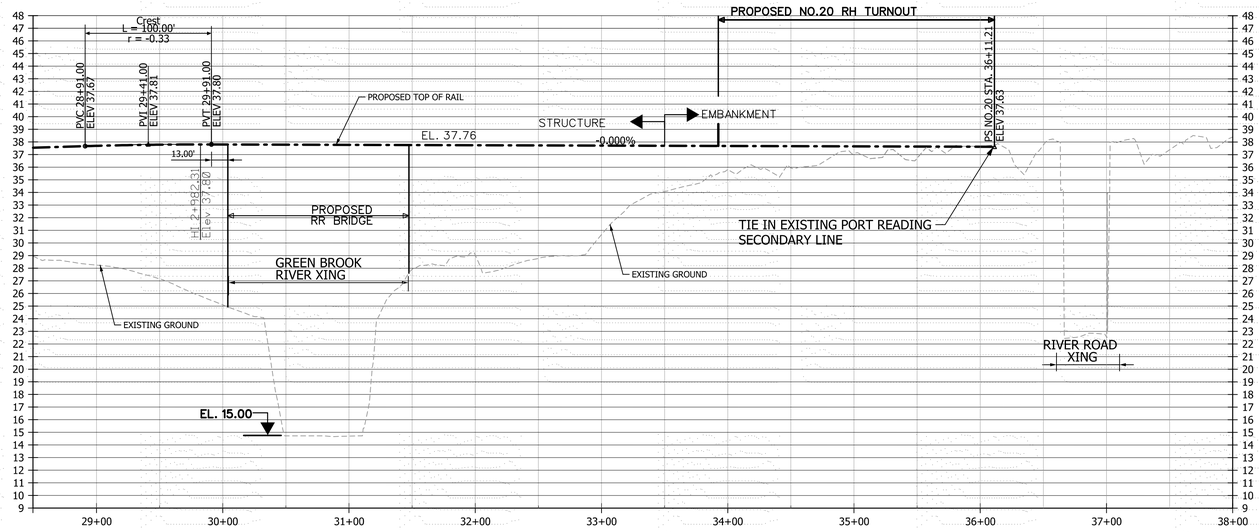
Scale 1" = 60'
Contract No.
Drawing
Sheet 21 OF 27

WESTBOUND

EASTBOUND

MATCH LINE - 21

MATCH LINE -21



BYPASS WITH NEW TRACK PARALLEL TO LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 4.4)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

$FILE$

FILENAME: $FILE$
DATE: $DATE$ $TIME$
USER: $USERNAME$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 4.4

Scale 1" = 60'

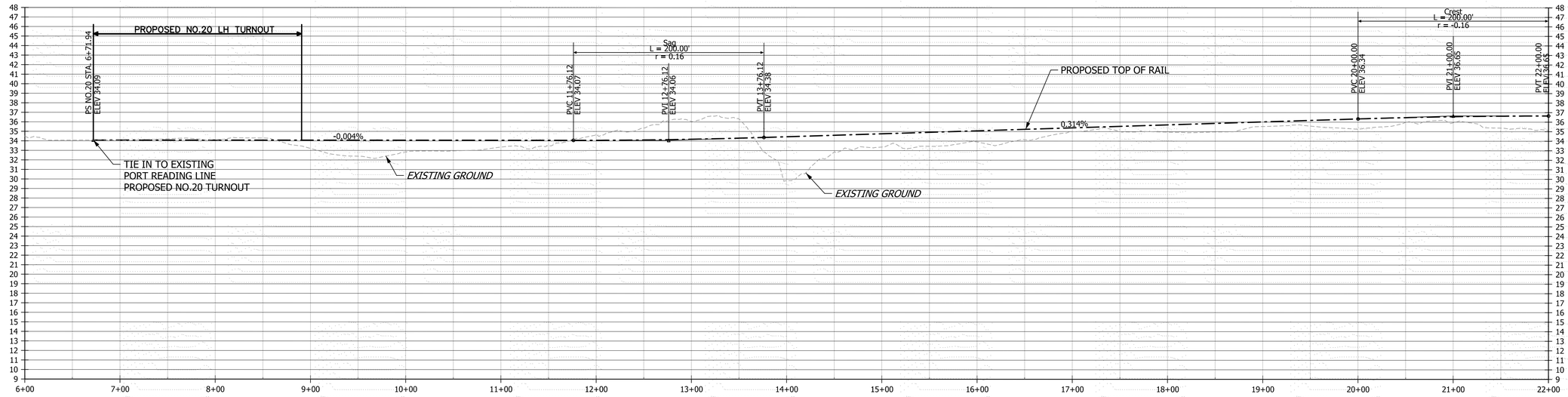
Contract No.

Drawing

Sheet 22 OF 27

WESTBOUND

EASTBOUND



BYPASS WITH NEW TRACK PARALLEL TO LEHIGH VALLEY LINE – ELIMINATE GRADE CROSSING (OPTION 4.5)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

$TIME$
FILENAME: $FILE$
DATE: $DATE$
USER: $USERNAME$
$FILE$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 4.5

Scale 1"= 60'

Contract No.

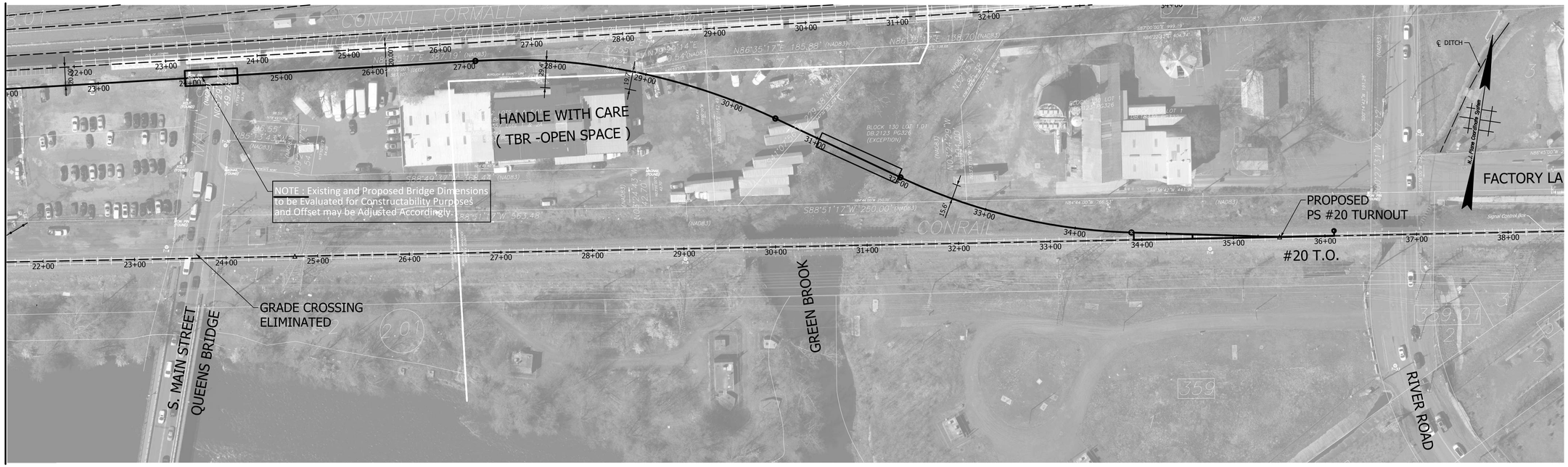
Drawing

Sheet 23 OF 27

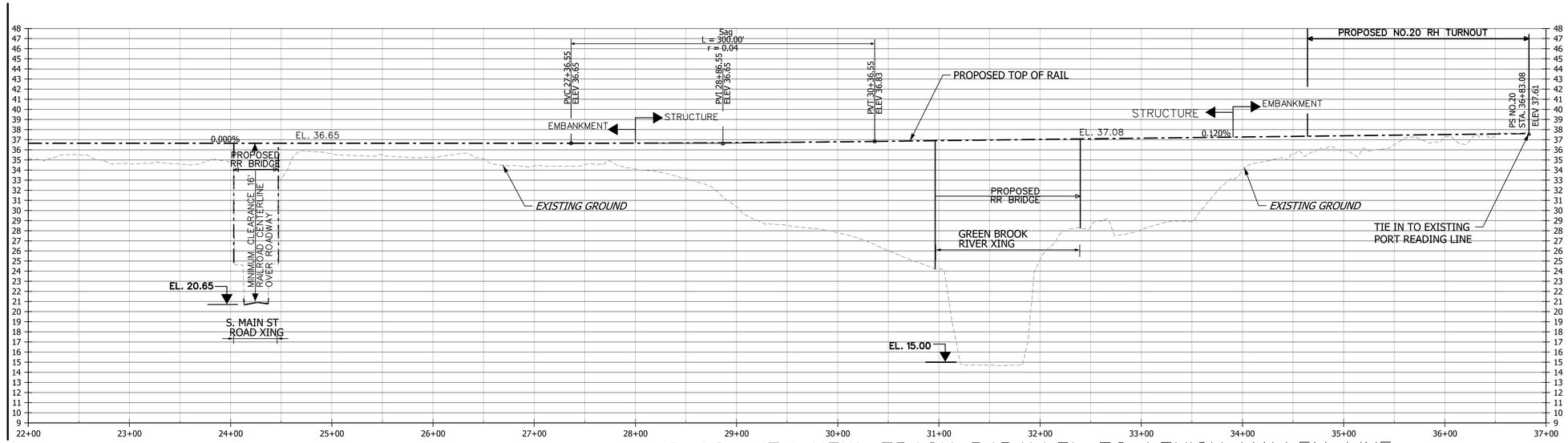
WESTBOUND

EASTBOUND

MATCH LINE -23



MATCH LINE -23



BYPASS WITH NEW TRACK PARALLEL TO LEHIGH VALLEY LINE – ELIMINATE GRADE CROSSING (OPTION 4.5)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

$FILE$

$TIME$
$FILE$
$DATE$
$USERNAME$

FILENAME:
DATE:
USER:

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 4.5

Scale 1" = 60'

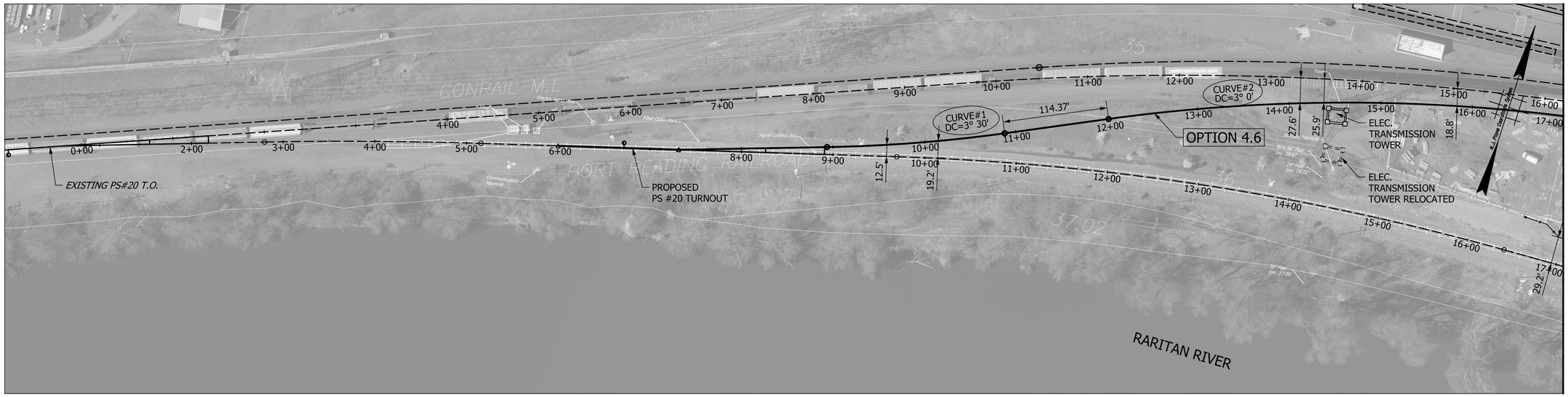
Contract No.

Drawing

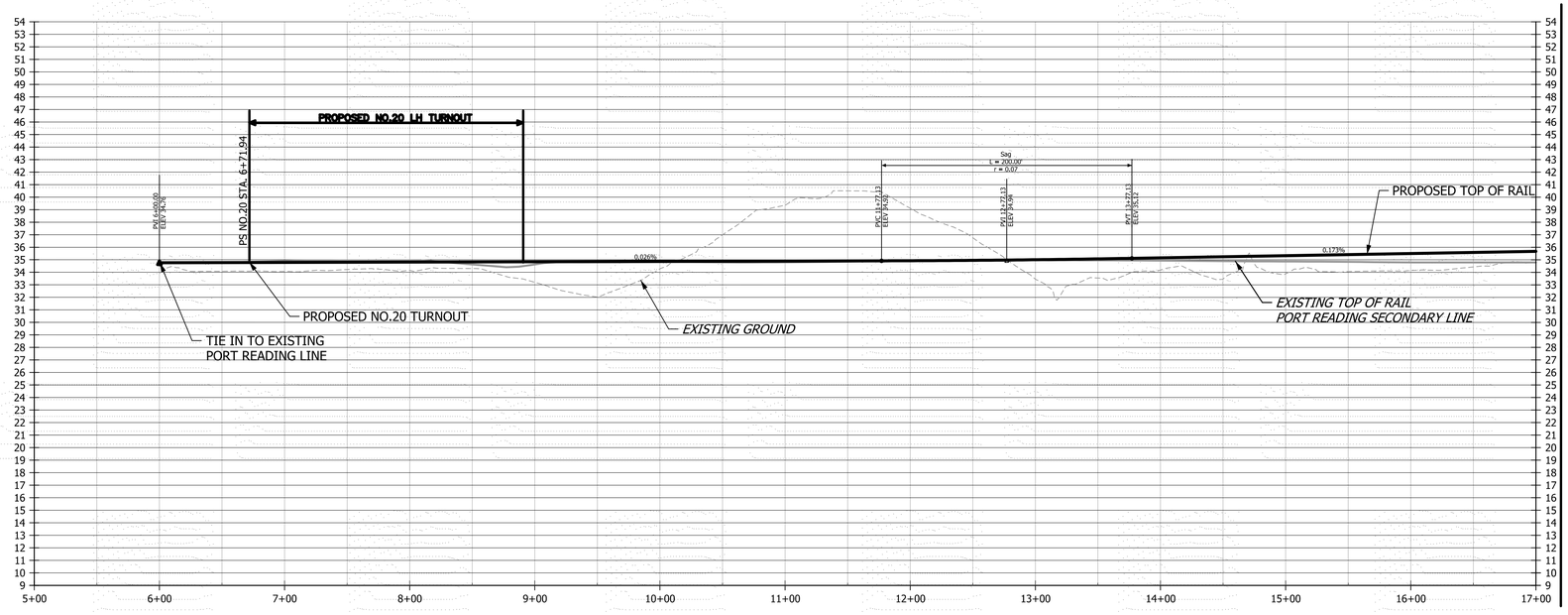
Sheet 24 OF 27

WESTBOUND

EASTBOUND



MATCH LINE - 26



MATCH LINE -26

BYPASS WITH NEW TRACK PARALLEL TO LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 4.6)

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DATE: $DATE$
USER: $USERNAME$
$FILE$

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 4.6

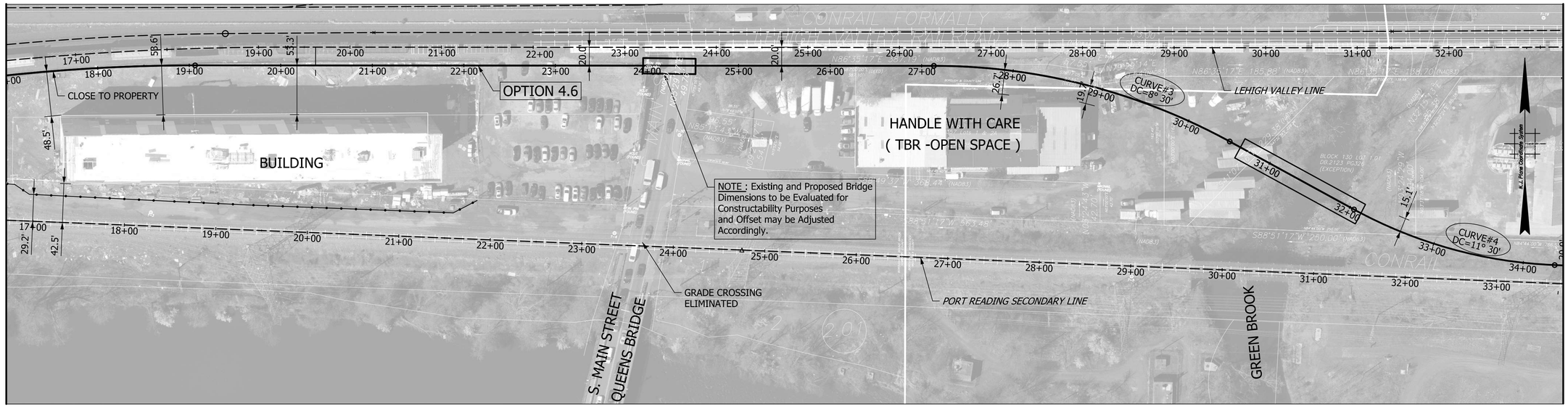
Scale 1" = 60'
Contract No.
Drawing
Sheet 25 OF 27

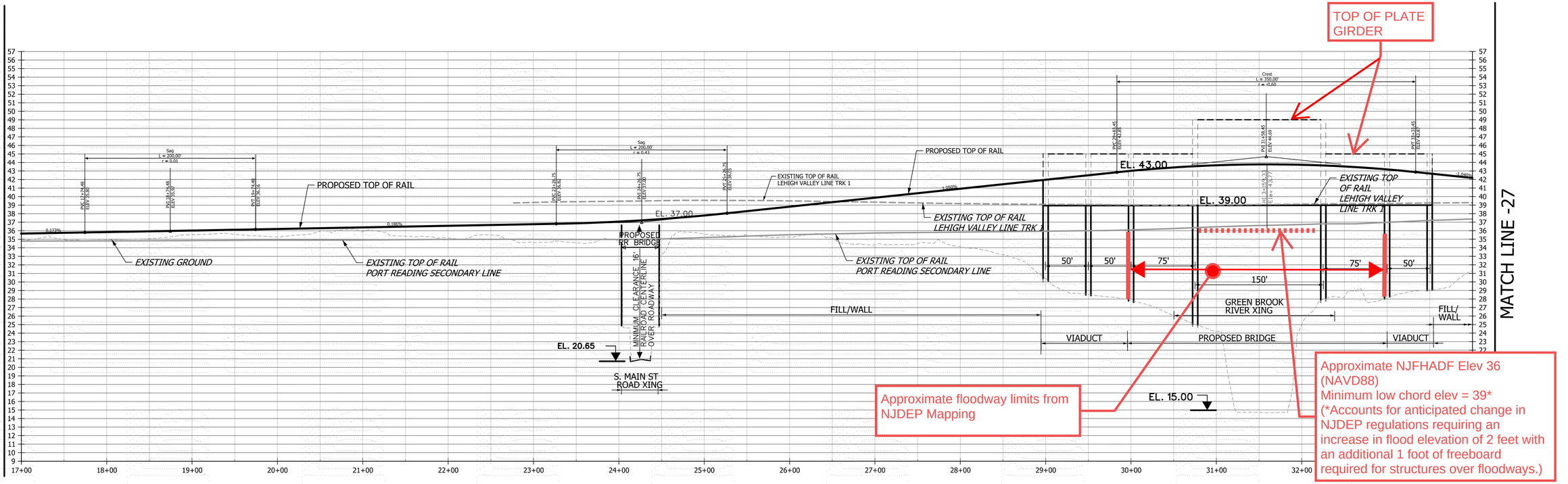
WESTBOUND

EASTBOUND

MATCH LINE - 25

MATCH LINE - 27





BYPASS WITH NEW TRACK PARALLEL TO LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 4.6)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Date JUNE 2023
				Des.
				Chkd.
				Dwn.

$FILE$

FILENAME: $FILE$
DATE: $DATE$
USER: $USERNAME$
$TIME$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

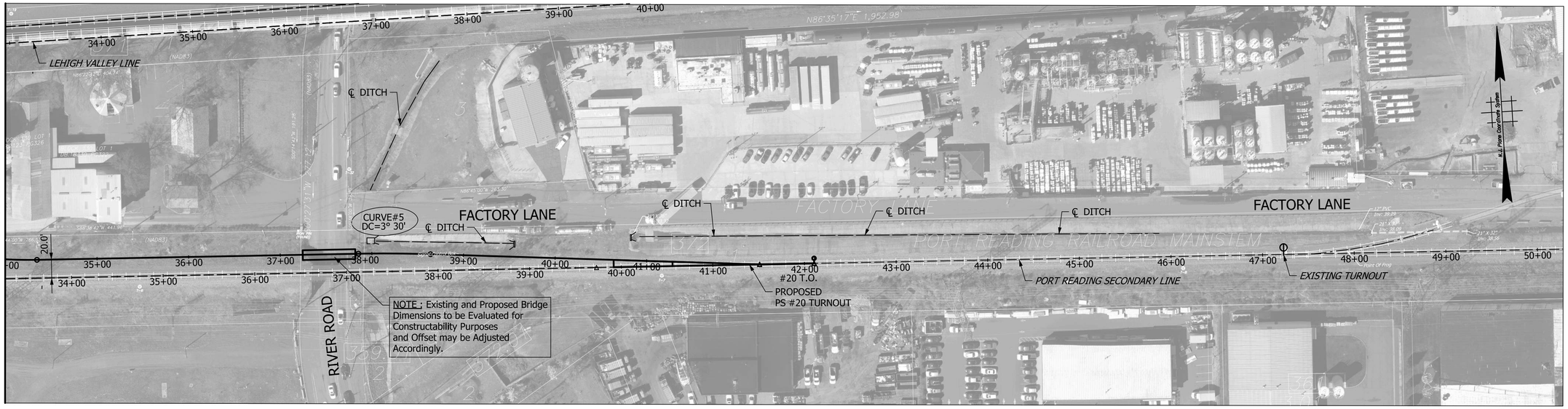
PORT READING SECONDARY LINE
OPTION 4.6

Scale 1" = 60'
Contract No.
Drawing
Sheet 26 OF 27

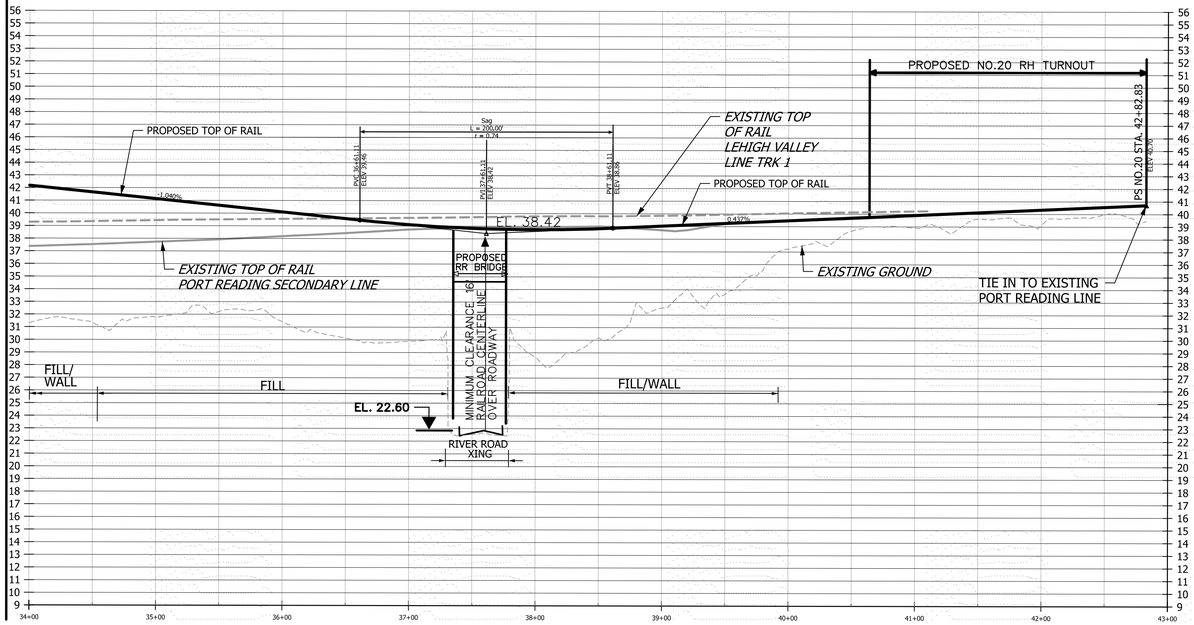
WESTBOUND

EASTBOUND

MATCH LINE - 26



MATCH LINE -26



BYPASS WITH NEW TRACK PARALLEL TO LEHIGH VALLEY LINE
– ELIMINATE GRADE CROSSING (OPTION 4.6)

No.	Date	Eng.	Revision Notes	Chkd.Dwn.
				Dwn.
				Chkd.
				Des.
				Date JUNE 2023

$FILE$

FILENAME: $FILE$
DATE: $DATE$
USER: $USERNAME$
$TIME$

Date: _____

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NJTPA - PORT READING SECONDARY RAIL LINE
GRADE CROSSING ELIMINATION AT SOUTH MAIN STREET
BOUND BROOK, SOMERSET COUNTY, N.J.

CONCEPT STUDY

PORT READING SECONDARY LINE
OPTION 4.6

Scale 1" = 60'

Contract No.

Drawing

Sheet 27 OF 27

Appendix I

Alternatives Evaluation Scoring Matrix

NJTPA FY21 Freight Concept Development Study
Alternatives Evaluation - Port Reading Secondary / South Main Street Grade Crossing Elimination

Criteria	Grade Separation		Diversion Via Realigned PRS Track														
	Railroad over Roadway	Roadway Under Railroad	Bypass Using Lehigh Valley Line Southern Track - Eliminate Grade Crossing via Realigned PRS Track						Bypass Using New Track Parallel to Lehigh Valley Line - Eliminate Grade Crossing via Realigned PRS Track						VE Alternatives - Elevate Rail along Existing Alignment			
	1	2	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6	VE-1	VE-1A	VE-1B	VE-1C
Meets Project Purpose and Need	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Freight Rail Operations Impacts / Benefits - During Construction	-1	0	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
Freight Rail Operations Impacts / Benefits - Post Construction	0	0	-100	-100	-100	-100	-100	-100	-1	-1	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	0	0
Adjacent and Proximate Land Use Impacts / Benefits	-1	-1	-3	-5	-3	-3	-3	-3	-3	-5	-3	-3	-3	-3	-3	-3	-3	-3
Historic and Cultural Resources Impacts / Benefits	-5	0	1	1	1	1	1	1	1	1	1	1	1	1	-1	-3	-3	-1
Community Profile & Environmental Justice/Title VI Impacts / Benefits	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Wetlands Impacts / Benefits	-3	-3	-3	-3	-1	-1	-1	-1	-3	-3	-1	-1	-1	-1	-1	-1	-1	-5
Floodplains & Aquifers Impacts / Benefits	-3	-100	-3	-3	-1	-1	0	0	-5	-5	-5	-5	-5	-3	-3	-3	-3	-5
Threatened & Endangered Species Impacts / Benefits	-1	-1	-1	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Stormwater and Drainage Impacts / Benefits	-1	-100	0	-5	0	0	-3	-3	-3	-5	-3	-3	-3	-1	-1	-1	-1	-1
Hazardous Materials Impacts / Benefits	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Air Quality & Noise Impacts / Benefits	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Community Impacts / Benefits	3	-100	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Safety Impacts / Benefits	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Utility Impacts / Relocation Requirements	-5	-5	0	-5	0	0	-3	-3	-3	-1	-1	-3	-1	-3	-3	-5	-5	-3
Project Independence – Creates or Eliminates Need for other infrastructure project	0	-100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roadway Operational and Mobility Impacts / Benefits	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Summary Score	**-3**	**-396**	**-95**	**-106**	**-90**	**-90**	**-95**	**-95**	**-4**	**-6**	**1**	**-1**	**1**	**3**	**1**	**-3**	**-3**	**-5**

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	Grade Separation		Diversion Via Realigned PRS Track					
	Railroad over Roadway	Roadway Under Railroad	Bypass Using Lehigh Valley Line Southern Track - Eliminate Grade Crossing via Realigned PRS Track					
	1	2	3.1	3.2	3.3	3.4	3.5	3.6
Meets Project Purpose and Need	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets
Freight Rail Operations Impacts / Benefits - During Construction	Potential impact during Construction of new RR bridge over S.Main street crossing to existing train operation on PRS Line	Potential impacts to rail operations during tuneling beneath rail corridor	Installation of new Turnouts on LVL and PRS line disrupt existing train operation during the construction	Installation of new Turnouts on LVL and PRS line disrupt existing train operation during the construction	Installation of new Turnouts on LVL and PRS line disrupt existing train operation during the construction	Installation of new Turnouts on LVL and PRS line disrupt existing train operation during the construction	Installation of new Turnouts on LVL and PRS line disrupt existing train operation during the construction	Installation of new Turnouts on LVL and PRS line disrupt existing train operation during the construction
Freight Rail Operations Impacts / Benefits - Post Construction	no change	no change	Adverse effect to LVL Rail operations	Adverse effect to LVL Rail operations	Adverse effect to LVL Rail operations	Adverse effect to LVL Rail operations	Adverse effect to LVL Rail operations	Adverse effect to LVL Rail operations
Passenger Rail Operations Impacts / Benefits	no change	no change	no change	no change	no change	no change	no change	no change
Adjacent and Proximate Land Use Impacts / Benefits	ROW acquisition required. Rail moves closer to self storage building. Reduces land area for future public open space on Handle with Care Property	Lowering of roadway would exacerbate flooding along South Main Street corridor	ROW acquisition required on Handle with Care property and ReAgent Chemical property.	ROW acquisition required on Handle with Care property and ReAgent Chemical property. Requires severing of Factory Lane.	ROW acquisition required on multiple properties	ROW acquisition required on multiple properties	ROW acquisition required on multiple properties	ROW acquisition required on multiple properties
Historic and Cultural Resources Impacts / Benefits	PRS corridor moved immediately adjacent to the Stone Arch Bridge	no change	Moves PRS corridor operations further from the stone arch bridge. Preserve the historic, architectural, and aesthetic character and heritage of the community.	Moves PRS corridor operations further from the stone arch bridge. Preserve the historic, architectural, and aesthetic character and heritage of the community.	Moves PRS corridor operations further from the stone arch bridge. Preserve the historic, architectural, and aesthetic character and heritage of the community.	Moves PRS corridor operations further from the stone arch bridge. Preserve the historic, architectural, and aesthetic character and heritage of the community.	Moves PRS corridor operations further from the stone arch bridge. Preserve the historic, architectural, and aesthetic character and heritage of the community.	Moves PRS corridor operations further from the stone arch bridge. Preserve the historic, architectural, and aesthetic character and heritage of the community.
Community Profile & Environmental Justice/Title VI Impacts / Benefits	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities
Wetlands Impacts / Benefits	Potential Impacts From New Bridge Crossing (Less than 0.25 ac = 10,890 sq. ft.)	Potential Impacts From New Bridge Crossing (Less than 0.25 ac = 10,890 sq. ft.)	Potential Impacts From New Bridge Crossing (Less than 0.25 ac = 10,890 sq. ft.)	Potential Impacts From New Bridge Crossing (Less than 0.25 ac = 10,890 sq. ft.)	No impacts anticipated	No impacts anticipated	Potential Impacts to Mapped Freshwater Wetlands (180 Linear Feet x 30' ROW = 0.123 ac. = 5,400 sq. ft.)	Potential Impacts to Mapped Freshwater Wetlands (400 Linear Feet x 30' ROW = 0.275 ac. = 12,000 sq. ft.)
Floodplains & Aquifers Impacts / Benefits	New Bridge crossing and 3,675 linear ft. in FHA x 30 ft. ROW width = 110,250 sq. ft.(2.53 ac.)	New Bridge Crossing and 3,675 linear ft. in FHA x 30 ft. ROW width = 110,250 sq. ft.(2.53 ac.)	New Bridge Crossing and 750 linear ft. in FHA x 30 ft. ROW width = 22,500 sq. ft.(0.52 ac.)	New Bridge Crossing and 475 linear ft. in FHA x 30 ft. ROW width = 14,250 sq. ft.(0.33 ac.)	No impacts anticipated	No impacts anticipated	No impacts anticipated	No impacts anticipated
Threatened & Endangered Species Impacts / Benefits	Potential Impacts Rank 4 - Bald Eagle -State Endangered- Foraging Area - Green Brook (180' bridge structure x 30 ft. ROW = Approx. Impact Area of 0.123 ac =5,400 sq.ft.)	Potential Impacts Rank 4 - Bald Eagle -State Endangered- Foraging Area - Green Brook (180' bridge structure x 30 ft. ROW = Approx. Impact Area of 0.123 ac =5,400 sq.ft.)	Potential Impacts Rank 4 - Bald Eagle -State Endangered- Foraging Area- Green Brook (100' bridge structure x 30 ft. ROW = Approx. Impact Area of 0.07 ac =3,000 sq.ft.)	No impacts anticipated	No impacts anticipated	No impacts anticipated	No impacts anticipated	No impacts anticipated
Stormwater and Drainage Impacts / Benefits	Close to existing culvert at Sta.40+00.	No change	No change	Impact to existing culvert @ sta. 37+00 and 41+74. New Bridge required to build over existing ditch.	None	None	Alignment encroaches into retention pond.	Close to Retention pond.
Hazardous Materials Impacts / Benefits	Potential Impacts during excavation	Potential Impacts during excavation	Potential Impacts during excavation	Potential Impacts during excavation	Potential Impacts on Property	Potential Impacts on Property	Potential Impacts on Property	Potential Impacts on Property
Air Quality & Noise Impacts / Benefits	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions
Community Impacts / Benefits	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways	Exacerbated flodding along South Main Street and in downtown Bound Brook anticipated	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways
Safety Impacts / Benefits	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street
Utility Impacts / Relocation Requirements	Potential sub-surface utility impacts and relocations required.	Potential sub-surface utility impacts and relocations required.	Potential sub-surface utility impacts and relocations required.	Rail is close to light pole at Sta. 32+00.	Potential sub-surface utility impacts and relocations required.	Potential sub-surface utility impacts and relocations required.	Need to relocate Factory lane at least 30ft from existing transmission tower.	Potential sub-surface utility impacts and relocations required.
Project Independence – Creates or Eliminates Need for other infrastructure project	No effect on other project needs	Requires reconstruction of the Queens Bridge	No effect on other project needs	No effect on other project needs	No effect on other project needs	No effect on other project needs	No effect on other project needs	No effect on other project needs
Roadway Operational and Mobility Impacts / Benefits	Improved roadway operations and local/regional mobility	Improved roadway operations and local/regional mobility	Improved roadway operations and local/regional mobility	Desirable clearance over Factory lane is not achievable.	Improved roadway operations and local/regional mobility	Desirable clearance over roadway is not achievable.	Realigned Factory lane at this option. Tie in to existing curve on LVL track.	Improved roadway operations and local/regional mobility
Summary Score	**-3**	**-396**	**-95**	**-106**	**-90**	**-90**	**-95**	**-95**

NJTPA FY21 Freight Concept Development Study

Alternatives Evaluation - Port Reading Secondary / South Main Street Grade Crossing Elimination

Criteria	Diversion Via Realigned PRS Track Bypass Using New Track Parallel to Lehigh Valley Line - Eliminate Grade Crossing via Realigned PRS Track						VE Alternatives - Elevate Rail along Existing Alignment			
	4.1	4.2	4.3	4.4	4.5	4.6	VE-1	VE-1A	VE-1B	VE-1C
Meets Project Purpose and Need	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets	Fully Meets
Freight Rail Operations Impacts / Benefits - During Construction	Due to constructability with 14' offset from existing track, it will be difficult to build new RR bridge near S.Main street Xing. Potential impacts during construction due to working close proximity to PRS and Lehigh Valley corridors	Due to constructability with 14' offset from existing track, it will be difficult to build new RR bridge near S.Main street Xing. Potential impacts during construction due to working close proximity to PRS and Lehigh Valley corridors	Due to constructability with 14' offset from existing track, it will be difficult to build new RR bridge near S.Main street Xing. Potential impacts during construction due to working close proximity to PRS and Lehigh Valley corridors	Due to constructability with 14' offset from existing track, it will be difficult to build new RR bridge near S.Main street Xing. Potential impacts during construction due to working close proximity to PRS and Lehigh Valley corridors	Due to constructability with 14' offset from existing track, it will be difficult to build new RR bridge near S.Main street Xing. Potential impacts during construction due to working close proximity to PRS and Lehigh Valley corridors	Due to constructability with 14' offset from existing track, it will be difficult to build new RR bridge near S.Main street Xing. Potential impacts during construction due to working close proximity to PRS and Lehigh Valley corridors	Construction of temporary tracks and Sfly run-around will require reduced speed operations	Construction of temporary tracks and Sfly run-around will require reduced speed operations	Construction of temporary tracks and Sfly run-around will require reduced speed operations	Construction of temporary tracks and Sfly run-around will require reduced speed operations
Freight Rail Operations Impacts / Benefits - Post Construction	#15 trunouts would reduce running speed from 30 mph to 25 mph	#15 trunouts would reduce running speed from 30 mph to 25 mph	#20 turnouts allow continuation of 30 mph running speed	#20 turnouts allow continuation of 30 mph running speed	#20 turnouts allow continuation of 30 mph running speed	#20 turnouts allow continuation of 30 mph running speed	Allows continuation of existing rail service	Allows continuation of existing rail service	Allows continuation of existing rail service	Allows continuation of existing rail service
Passenger Rail Operations Impacts / Benefits	no change	no change	no change	no change	no change	no change	no change	no change	no change	no change
Adjacent and Proximate Land Use Impacts / Benefits	ROW acquisition required on Meridia and ReAgent Chemical property.	ROW acquisition required on Meridia and ReAgent Chemical property. Requires severing of Factory Lane.	ROW acquisition required on Meridia and ReAgent Chemical property.	ROW acquisition required on Meridia and ReAgent Chemical property.	ROW acquisition required on Meridia and ReAgent Chemical property.	ROW acquisition required on Meridia and ReAgent Chemical property.	Minimal ROW acquisition required. Elevated structure will affect view sheds.	Minimal ROW acquisition required. Elevated structure will affect view sheds.	Minimal ROW acquisition required. Elevated structure will affect view sheds.	Minimal ROW acquisition required. Elevated structure will affect view sheds.
Historic and Cultural Resources Impacts / Benefits	Moves PRS corridor operations further from the stone arch bridge. Preserve the historic, architectural, and aesthetic character and heritage of the community.	Moves PRS corridor operations further from the stone arch bridge. Preserve the historic, architectural, and aesthetic character and heritage of the community.	Moves PRS corridor operations further from the stone arch bridge. Preserve the historic, architectural, and aesthetic character and heritage of the community.	Moves PRS corridor operations further from the stone arch bridge. Preserve the historic, architectural, and aesthetic character and heritage of the community.	Moves PRS corridor operations further from the stone arch bridge. Preserve the historic, architectural, and aesthetic character and heritage of the community.	Moves PRS corridor operations further from the stone arch bridge. Preserve the historic, architectural, and aesthetic character and heritage of the community.	Temporary track moves closer to the Stone Arch Bridge.	Temporary track moves closer to the Stone Arch Bridge.	Temporary track moves closer to the Stone Arch Bridge.	Temporary track moves closer to the Stone Arch Bridge.
Community Profile & Environmental Justice/Title VI Impacts / Benefits	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities	Improved mobility through historically challenged communities
Wetlands Impacts / Benefits	Potential Impacts From New Bridge Crossing (Less than 0.25 ac = 10,890 sq. ft.)	Potential Impacts From New Bridge Crossing (Less than 0.25 ac = 10,890 sq. ft.)	Potential Impacts From New Bridge Crossing (Less than 0.25 ac = 10,890 sq. ft.)	Potential Impacts From New Bridge Crossing (Less than 0.25 ac = 10,890 sq. ft.)	Potential Impacts From New Bridge Crossing (Less than 0.25 ac = 10,890 sq. ft.)	Potential Impacts From New Bridge Crossing (Less than 0.25 ac = 10,890 sq. ft.)	Potential Impacts From New Bridge Crossing (Less than 0.25 ac = 9,5000 sq. ft.)	Potential Impacts From New Bridge Crossing (Less than 0.25 ac = 9,5000 sq. ft.)	Potential Impacts From New Bridge Crossing (Less than 0.25 ac = 9,5000 sq. ft.)	Extensive wetlands impacts from hammerhead pier placement along Raritan River bank.
Floodplains & Aquifers Impacts / Benefits	New Bridge Crossing and 2,152 linear ft. in FHA x 30 ft. ROW width = 64,560 sq. ft.(1.48 ac.)	New Bridge Crossing and 568 linear ft. in FHA x 30 ft. ROW width = 17,040 sq. ft.(0.39 ac.)	New Bridge Crossing and 1,880 linear ft. in FHA x 30 ft. ROW width = 56,400 sq. ft.(1.29 ac.)	New Bridge Crossing and 2,235 linear ft. in FHA x 30 ft. ROW width = 67,050 sq. ft.(1.54 ac.)	New Bridge Crossing and 1,880 linear ft. in FHA x 30 ft. ROW width = 56,400 sq. ft.(1.29 ac.)	New Bridge Crossing and 1,330 linear ft. in FHA x 30 ft. ROW width = 39,900 sq. ft.(0.9 ac.)	New Bridge Crossing and 1,400 linear ft. in FHA x 30 ft. ROW width = 42,000 sq. ft.(0.95 ac.)	New Bridge Crossing and 1,400 linear ft. in FHA x 30 ft. ROW width = 42,000 sq. ft.(0.95 ac.)	New Bridge Crossing and 1,400 linear ft. in FHA x 30 ft. ROW width = 42,000 sq. ft.(0.95 ac.)	Constructs embankment which will impede flow in the floodway of the Raritan River.
Threatened & Endangered Species Impacts / Benefits	Potential Impacts Rank 4 - Bald Eagle -State Endangered- Foraging Area- Green Brook (100' bridge structure x 30 ft. ROW = Approx. Impact Area of 0.07 ac =3,000 sq.ft.)	Potential Impacts Rank 4 - Bald Eagle -State Endangered- Foraging Area- Green Brook (100' bridge structure x 30 ft. ROW = Approx. Impact Area of 0.07 ac =3,000 sq.ft.)	Potential Impacts Rank 4 - Bald Eagle -State Endangered- Foraging Area- Green Brook (100' bridge structure x 30 ft. ROW = Approx. Impact Area of 0.07 ac =3,000 sq.ft.)	Potential Impacts Rank 4 - Bald Eagle -State Endangered- Foraging Area- Green Brook (100' bridge structure x 30 ft. ROW = Approx. Impact Area of 0.07 ac =3,000 sq.ft.)	Potential Impacts Rank 4 - Bald Eagle -State Endangered- Foraging Area- Green Brook (100' bridge structure x 30 ft. ROW = Approx. Impact Area of 0.07 ac =3,000 sq.ft.)	Potential Impacts Rank 4 - Bald Eagle -State Endangered- Foraging Area- Green Brook (100' bridge structure x 30 ft. ROW = Approx. Impact Area of 0.07 ac =3,000 sq.ft.)	Potential Impacts Rank 4 - Bald Eagle -State Endangered- Foraging Area- Green Brook (100' bridge structure x 30 ft. ROW = Approx. Impact Area of 0.07 ac =3,000 sq.ft.)	Potential Impacts Rank 4 - Bald Eagle -State Endangered- Foraging Area- Green Brook (100' bridge structure x 30 ft. ROW = Approx. Impact Area of 0.07 ac =3,000 sq.ft.)	Potential Impacts Rank 4 - Bald Eagle -State Endangered- Foraging Area- Green Brook (100' bridge structure x 30 ft. ROW = Approx. Impact Area of 0.07 ac =3,000 sq.ft.)	Potential Impacts Rank 4 - Bald Eagle -State Endangered- Foraging Area- Green Brook (100' bridge structure x 30 ft. ROW = Approx. Impact Area of 0.07 ac =3,000 sq.ft.)
Stormwater and Drainage Impacts / Benefits	Moderate impact to flood elevations due to bridge over Green Brook	Potential impact to flood elevations due to bridge over Green Brook. Plus impact to existing culvert @ sta. 37+00 and 40+80. New Bridge required to build over existing ditch.	Moderate impact to flood elevations due to bridge over Green Brook	Moderate impact to flood elevations due to bridge over Green Brook	Moderate impact to flood elevations due to bridge over Green Brook	Modest impacts to flood elevations due to bridge over Green Brook. Minimized by elevated bridge and narrow piers.	Modest impacts to flood elevations due to bridge over Green Brook. Minimized by elevated bridge and narrow piers.	Modest impacts to flood elevations due to bridge over Green Brook. Minimized by elevated bridge and narrow piers.	Modest impacts to flood elevations due to bridge over Green Brook. Minimized by elevated bridge and narrow piers.	Modest impacts to flood elevations due to bridge over Green Brook. Minimized by elevated bridge and narrow piers.
Hazardous Materials Impacts / Benefits	Potential Impacts during excavation	Potential Impacts during excavation	Potential Impacts during excavation	Potential Impacts during excavation	Potential Impacts during excavation	Potential Impacts during excavation	Potential Impacts during excavation	Potential Impacts during excavation	Potential Impacts during excavation	Potential Impacts during excavation
Air Quality & Noise Impacts / Benefits	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions	Improved air quality resulting from reduced vehicle queuing, idling and emissions
Community Impacts / Benefits	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways	Enhanced mobility to, from and through downtown Bound Brook and connecting roadways
Safety Impacts / Benefits	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street	Improved safety for vehicles, pedestrians and bicyclists due to elimination of active train crossings of South Main Street
Utility Impacts / Relocation Requirements	Close to signal hut at sta. 4+50 on west side. Close to Elec. Transmission tower near Sta. 14+50.	Potential sub-surface utility impacts and relocations required.	Save impact to existing Elec. Transmission tower. No impact to existing signal hut.	Close to signal hut at sta. 4+50 on west side. Close to Elec. Transmission tower near Sta. 14+50.	Save impact to existing Elec. Transmission tower. No impact to existing signal hut.	Requires relocation of PSEG Transmission Tower	Modest potential impacts to wire heights on the PSE&G Towers. Requires heightening of wires	Significant potential for impacts to wire heights on the PSE&G Towers. Requires heightening of wires	Significant potential for impacts to wire heights on the PSE&G Towers. Requires heightening of wires	Modest potential impacts to wire heights on the PSE&G Towers. Requires heightening of wires
Project Independence – Creates or Eliminates Need for other infrastructure project	No effect on other project needs	No effect on other project needs	No effect on other project needs	No effect on other project needs	No effect on other project needs	No effect on other project needs	No effect on other project needs	No effect on other project needs	No effect on other project needs	No effect on other project needs
Roadway Operational and Mobility Impacts / Benefits	Improved roadway operations and local/regional mobility	Improved roadway operations and local/regional mobility	Improved roadway operations and local/regional mobility	Improved roadway operations and local/regional mobility	Improved roadway operations and local/regional mobility	Improved roadway operations and local/regional mobility	Improved roadway operations and local/regional mobility	Improved roadway operations and local/regional mobility	Improved roadway operations and local/regional mobility	Improved roadway operations and local/regional mobility
Summary Score	**-4**	**-6**	**1**	**-1**	**1**	**3**	**1**	**-3**	**-3**	**-5**

Appendix J

Risk Register

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

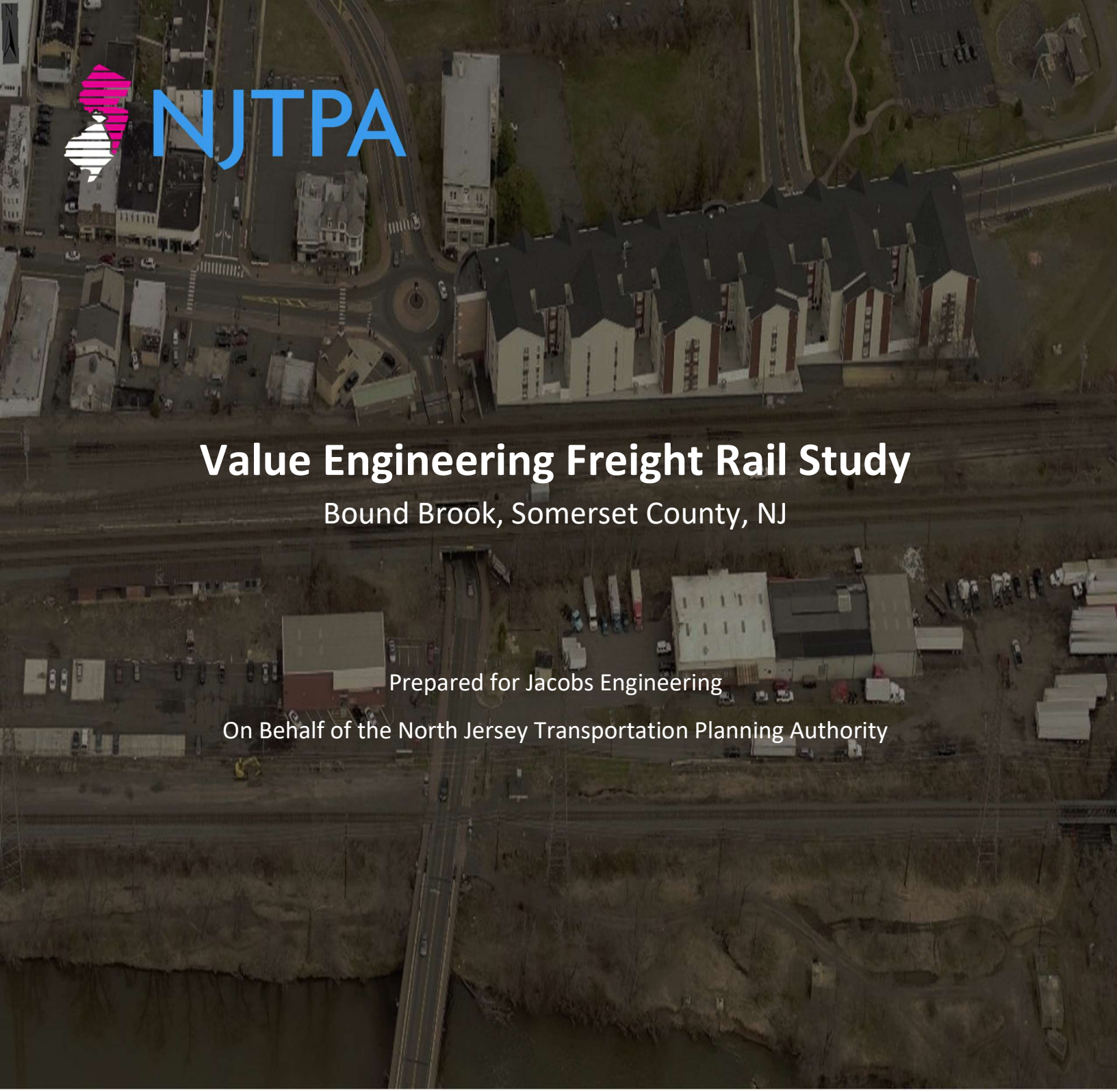
Municipality: Boro of Bound Brook
County: Somerset

Project Name:	**Port Reading Secondary South Main Street Grade Crossing Elimination**
Preliminary Preferred Alternative (PPA)	**Alt 4.6 - New alignment with Piers in the Floodway**

Risk Rank & ID		Risk Statement & Category			Risk Analysis Matrix						Risk Response Strategy & Response Planning			
			Risk Category			Risk Impact								
Risk Rank	Unique ID #	Risk Statement	Initial Risk Owner	Risk May Occur In	Risk Probability	Schedule	Cost	Schedule Score	Cost Score	Final Score	Risk Response Strategy	Risk Response Action Plan	Final Risk Owner	Action Plan Status
4	1	Cooperation of and coordination with Conrail (owner of the existing rail ROW)	Geometric Design	Preliminary Engineering	3 - Moderate	4 - Moderate	4 - Moderate	12	12	24	Mitigate Threat	Close coordination with Conrail from beginning of design process	designer	Plan To Be Developed
3	2	Maintaining rail service during construction	Construction	Construction	2 - Low	4 - Moderate	2 - Low	8	4	12	Mitigate Threat	Close coordination with Conrail from beginning of design process	designer	Plan To Be Developed
1	3	Acquisition of privately owned ROW and property impacts	Right of Way	Preliminary Engineering	3 - Moderate	4 - Moderate	4 - Moderate	12	12	24	Mitigate Threat	Early initiation of ROW acquisition process	owner	Plan To Be Developed
1	4	Maintenance of Traffic (roadway) during construction	Traffic Operations	Construction	2 - Low	2 - Low	2 - Low	4	4	8	Mitigate Threat	Coordination of construction phasing plans with Bound Brook	designer	Plan To Be Developed
1	5	Potential environmental permits / approvals and interagency coordination	Environmental	Final Design	3 - Moderate	4 - Moderate	4 - Moderate	12	12	24	Mitigate Threat	Issues related to construction within the floodway and construction over the site mitigation area for Bayer	designer	Plan To Be Developed
2	6	Detrimental effect on cultural resources	Environmental	Final Design	2 - Low	4 - Moderate	4 - Moderate	8	8	16	Mitigate Threat	Early coordination with State Historic Preservation Office	designer	Plan To Be Developed
5	7	Surface Transportation Board coordination	Other	Final Design	1 - Very Low	2 - Low	2 - Low	2	2	4	Mitigate Threat	Early coordination with STB	owner	Plan To Be Developed
5	8	Outdoor Advertising signs	Right of Way	Preliminary Engineering	3 - Moderate	2 - Low	2 - Low	6	6	12	Mitigate Threat	Early coordination to eliminate or relocate the billboard sig in the preliminary engineering phase	owner	Plan To Be Developed
5	9	Environmental Remediation Site - ReAgent Chemical	Environmental	Preliminary Engineering	4 - High	7 - High	4 - Moderate	28	16	44	Mitigate Threat	Early coordination with NJDEP and reAgent Chemical's LSRP team	owner	Plan To Be Developed

Appendix K

Value Engineering Report



Value Engineering Freight Rail Study

Bound Brook, Somerset 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 projects in Bound Brook, Somerset 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

EXECUTIVE SUMMARY

Project Description

The assignment comprises the review of the project involving the elimination of the 'at-grade' crossing of the Port Reading Secondary freight rail line on Main Street in Bound Brook 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 (11-9-22) for consideration:

Idea: BB-VE-1 Temporary Track (Shoo-fly*) / Grade Crossing on North Side of Existing Track with New Guideway Built above existing track footprint

**A Shoofly on a Railroad track is a temporary track used to avoid an obstacle that blocks movement on the normal track.*

Further discussion of this idea and other options reviewed, are provided in the following report sections and idea write-ups incorporated into the Appendices.

A summary presentation was provided to NJTPA and Jacobs on November 9th 2022.

> **Scoring documented in Appendix B-PP.PDF has since been adjusted to reflect commentary/feedback from Stakeholders during 11-9-22 meeting.*

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. No matter which option is deemed the most beneficial in the elimination of the Port Reading Secondary grade crossing, this objective will likely be expensive and time-consuming to implement with many interfaces with utility owner's, landowners, the freight rail companies, environmental groups, conservation groups, highways agencies, townships and the public. In the opinion of the Urban study team, NJTPA would benefit in seeking more detailed design analysis of on-alignment options such as proposed, prior to making a decision on the solution to be recommended for progression.
    a. *During the 11-9-22 presentation, NJTPA requested that a high-level schedule analysis be provided for Idea BB-VE-1. A Summary can be found in Appendix D- Bound Brook Idea Evaluation.*

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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 Bound Brook Project partly face to face and partly through attendance on Microsoft TEAMS.

The Jacobs team:

- Scott Parker – Jacobs Project Manager
- Krupa Patel – Jacobs
- Richard Sirabian – Jacobs
- Jean Go – Jacobs
- Samir D Mody – Keller-Engineering
- Brian Strizki - JMA group
- Jacub Rovinski, project manager, NJTPA

The afternoon site tour visited the Bound Brook grade crossing location. The afternoon site visit was attended by Scott Parker, Krupa Patel, 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]:

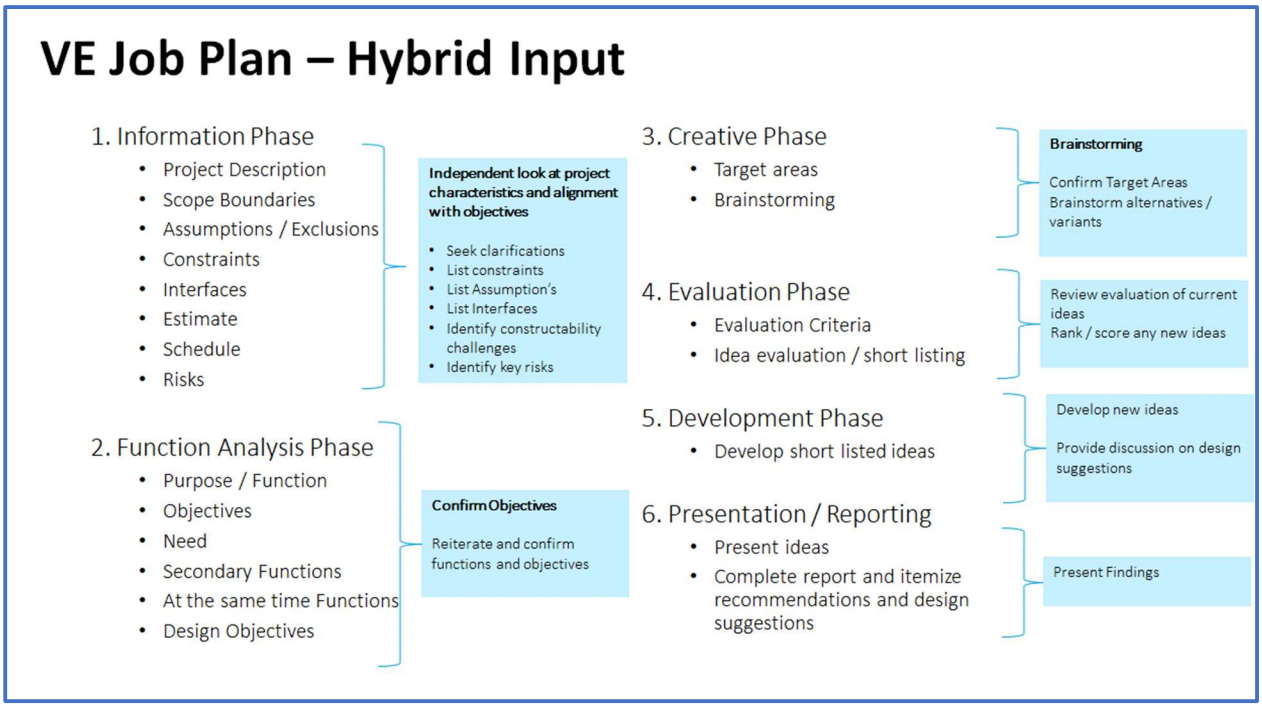


Figure 1- VE Hybrid Process

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

- Significant costs likely to remove grade separation and maintain Port Reading secondary service whilst minimal disruption to freight operations during construction no matter which option is chosen
- Significant visible above ground utilities straddle all options and evidence suggests below ground utilities also likely; restrictive season and operational window constraints likely
- Stone Arch bridge disturbance / avoidance extremely important
- Significant opportunities for working space parallel to current alignment whilst avoiding major disruption to existing businesses
- Low height restriction and approach to main street rail tunnel, architectural stone wing walls and lack of working space pose challenges to any new structures over South Main Street
- Flood susceptibility of whole area poses additional construction challenges and risks
- Construction adjacent to / over existing grade crossing difficult to undertake without some additional traffic disruption and congestion

Purpose and Need / Function analysis

The purpose of this project is to eliminate the at-grade rail crossing on South Main Street in the Borough of Bound Brook, while maintaining freight rail access to existing and future customers along the Port Reading Secondary line.

Figure 2- Bound Brook location map

Functions identified satisfying the purpose and need statement were proposed as:

Reduce Congestion [Bound Brook and BB South] Improve [pedestrian / bike] access Improve safety Improve [traffic] access Reduce pollution Avoid / Reduce [flood] disruption	• Minimize environment [Impact] • Avoid water-table • Preserve [freight rail] corridor • Preserve stone arch bridge • Maintain businesses • Avoid [Rail] utilities • Avoid HV powerlines

Below is a simple Function Analysis System Technique Diagram [FAST] to illustrate the Functions necessary to accomplish the Purpose and Need Statement:

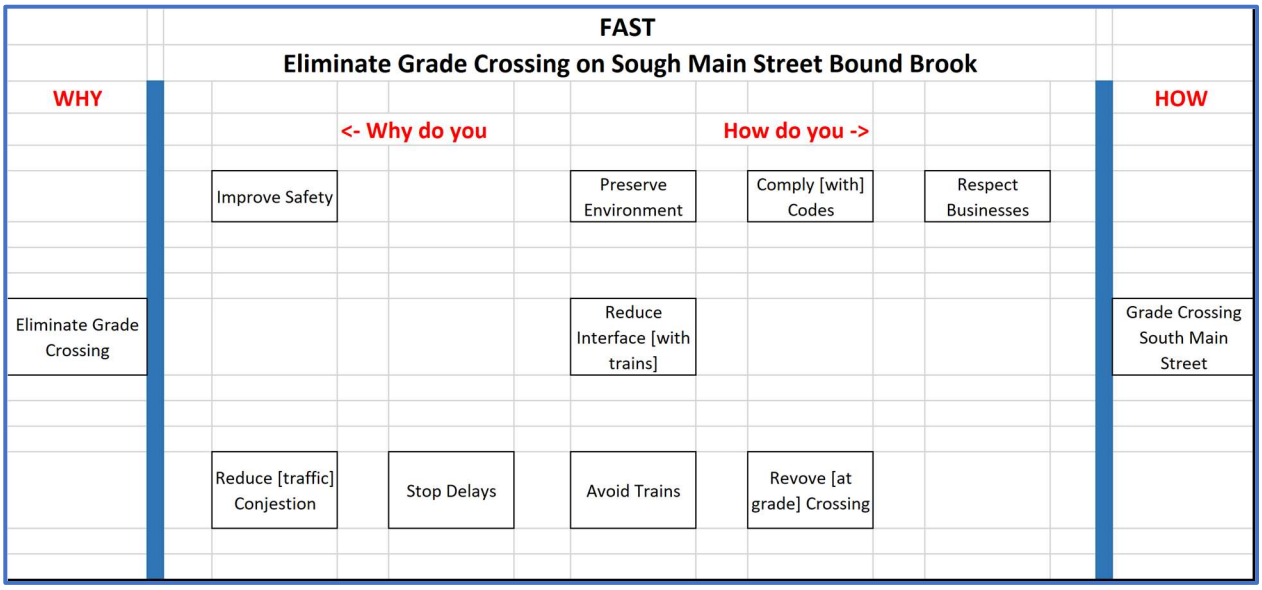


Figure 3- FAST diagram Bound Brook

Identification Key Risks

The Urban study team identified their opinion as to the following key risks impacting the Bound Brook project:

SAME ALIGNMENT VIADUCT / SHOO-FLY- Temporary Relocation OPTION

1. Cannot make shoefly to get grade separation over South Main Street between bridges / temporary bridge cannot be constructed
2. Construction of on-alignment viaduct impossible due to proximity of HV power lines
3. Underground powerlines may require moving
4. Significant Outage Constraints may be required, working adjacent to or due to relocation of HV Powerlines
5. Railroad does not agree to temporary Shoo-fly
6. Option to build viaduct at river side may meet environmental objections
7. There may be insufficient working space to construct the new bridge across Bound Brook; significant additional ROW may be required and / or need to obtain increased temporary construction easements [TCE's]
8. Stone arch tunnel integrity / stability may be compromised
9. Elimination of grade crossing does not solve congestion problem – additional options are necessary to alleviate traffic in Bound Brook as well

4.6 OPTION

1. There may be significant additional costs in ROW, Utility relocations and / or unforeseen Railroad utility relocations [noted signal / communications huts on / close to proposed realignment]
2. Insufficient or challenging working space to construct new bridge over Main Street may increase construction duration, extent of ROW and / or TCE's required
3. Existing grade and utilities of South Main Street may make 4.6 complicated, extending construction and adding staging / phasing impacting traffic

GENERAL

1. ROW acquisitions could take significant time to clear
2. Regulatory review may be a problem
3. Relocation of HV towers and seasonal restrictions may significantly extend overall project duration
4. Significant pedestrian presence may result in safety challenges and restrictive working practices

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 to provide an input to the scoring matrix especially given NJTPA's directions to:
   - Minimize disruption to existing businesses
   - Minimize any increased traffic congestion during construction works
   - Avoid any disruption to Freight trail operations
2. Determine schedule implications and resulting cost impact of ROW acquisitions, TCE's, HV powerline relocations and outage constraints
3. Obtain freight rail Operator concurrence with best option

Idea development and Jacob Options matrix review

VE idea development

The Urban study team identified through a brainstorming session the following ideas shown in Table 1 below:

Ref	Ideas
BB VE 1	Temporary shoeefly around existing grade crossing to then construct a viaduct using hammer head piers on same alignment
BB VE 1.A	Temporary shoeefly around existing grade crossing to then construct a viaduct using hammer head piers on river side of existing alignment
BB VE 1.B	Construct a viaduct using hammer head piers on river side of existing alignment maintaining service
BB VE 1.C	Construct at grade embankment transitioning to bridge over Main street with new crossing of Green Brook [off alignment either side]

Table 1- Bound Brook VE ideas

VE idea scoring

The Urban study team scored the most favored ideas as shown in Table 5 below.

Criteria	Urban Options			
	VE 1	VE 1.A	VE 1.B	VE 1.C
	On Alignment S/Fly	R/Side Alignmt S/Fly	R/Side Alignment No S/Fly	Trans/al Embank
Meets Project Purpose and Need	5	5	5	5
Freight Rail Operations Impacts / Benefits - During Construction	-1	-1	-1	-1
Freight Rail Operations Impacts / Benefits - Post Construction	0	0	0	0
Passenger Rail Operations Impacts / Benefits	0	0	0	0
Adjacent and Proximate Land Use Impacts / Benefits	-1	-1	-1	-1
Historic and Cultural Resources Impacts / Benefits	0	-3	-3	0
Community Profile & Environmental Justice/Title VI Impacts / Benefits	1	1	1	1
Wetlands Impacts / Benefits	-1	-1	-1	-5
Floodplains & Aquifers Impacts / Benefits	0	-3	-3	-5
Threatened & Endangered Species Impacts / Benefits	-1	-3	-3	-3
Stormwater and Drainage Impacts / Benefits	-1	-1	-1	-1
Hazardous Materials Impacts / Benefits	-1	-1	-1	-1
Air Quality & Noise Impacts / Benefits	3	3	3	3
Community Impacts / Benefits	3	3	3	3
Safety Impacts / Benefits	3	3	3	3
Utility Impacts / Relocation Requirements	-3	-5	-5	-3
Project Independence – Creates or Eliminates Need for other infrastructure project	0	0	0	0
Roadway Operational and Mobility Impacts / Benefits	3	3	3	3
New Track Length (LF)				
Costs ($M)				
Summary Score	**9**	**-1**	**-1**	**-2**

Table 2- Bound Brook VE ideas scoring Matrix

Ideas VE 1.A, B, C were all considered worthy of further consideration given the perceived reduced negative impacts achieved.

Ideas taken forward to development

The Urban study team developed the following ideas which are included in the Appendix D

- Idea BB VE 1- Temporary Track/Grade Crossing on North Side of Existing Track with New Guideway Built Above Existing Track Footprint
- Idea BB VE 1.A.B.C combined into composite write up
- *Note: Ideas considered as a potential variant alignment to Jacobs idea 4.6 discounted after further evaluation and not taken forward*

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 – **Bound Brook** • 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

APPENDIX B – PowerPoint summary presentation of key ideas

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

Bound Brook

Bound Brook

Purpose & Need

- Reduce Congestion [Bound Brook and BB South]
- Improve pedestrian / bike access
- Improving safety
- Improve access
- Reduce pollution
- Avoid / Reduce disruption [at time of flooding]
- [Minimize] Impact environment
- Avoid water table
- Preserve FREIGHT rail corridor
- Preserve stone bridge
- Maintain businesses
- Avoid Rail utilities
- Avoid HV Overhead powerlines

Risks – Bound Brook

SAME ALIGNMENT VIADUCT / SHOO-FLY OPTION

1. Can not make shoo-fly to get grade separation over at grade Main Street between bridges / temporary bridge can not be constructed
2. Construction of viaduct impossible due to proximity of HV power lines
3. Underground powerlines require moving
4. Significant Outage Constraints on HV Powerlines
5. Rail road does not agree to Shoo-fly
6. Option to build viaduct river side meets environmental objections
7. Insufficient working space to construct new bridge across Bound Brook ; significant ROW required and / or TCE's
8. Stone arch tunnel compromised
9. Elimination of grade crossing does not solve congestion problem – something needed to alleviate traffic in Bound Brook also

4.6 OPTION

1. Significant additional costs in ROW, Utility relocations, Railroad utility relocations
2. Insufficient working space to construct new bridge over Main Street
3. Existing grade and utilities of Main Street make 4.6 unviable

GENERAL

1. ROW acquisitions could take significant time to clear
2. Regulatory review may be a problem
3. Relocation of HV towers and seasonal restrictions
4. Significant pedestrian presence

Ideas – Bound Brook

SAME ALIGNMENT VIADUCT / SHOEEFLY OPTION

- VE1: Temporary Track/Grade Crossing on North Side of Existing Track with New Guideway Built Above Existing Track Footprint
- VE 1.A,B,C:Temporary Track/Grade Crossing on South(River) Side of Existing Track with New Guideway Built Above Existing Track Footprint or VE 1.B: Permanent Guideway on South(River) Side of Existing Track, VE1.C: Construct Option VE 1 with gradient reduction at STA 28 to eliminate need to replace River Rd Structure

4.6 OPTION

No other viable alternative developed

Evaluation – Bound Brook

- Idea VE 1: Temporary Track/Grade Crossing on North Side of Existing Track with New Guideway Built Above Existing Track Footprint

Goals Achieved

- Eliminate Grade Crossing
- Maintain Rail Freight Access

Risk Impact

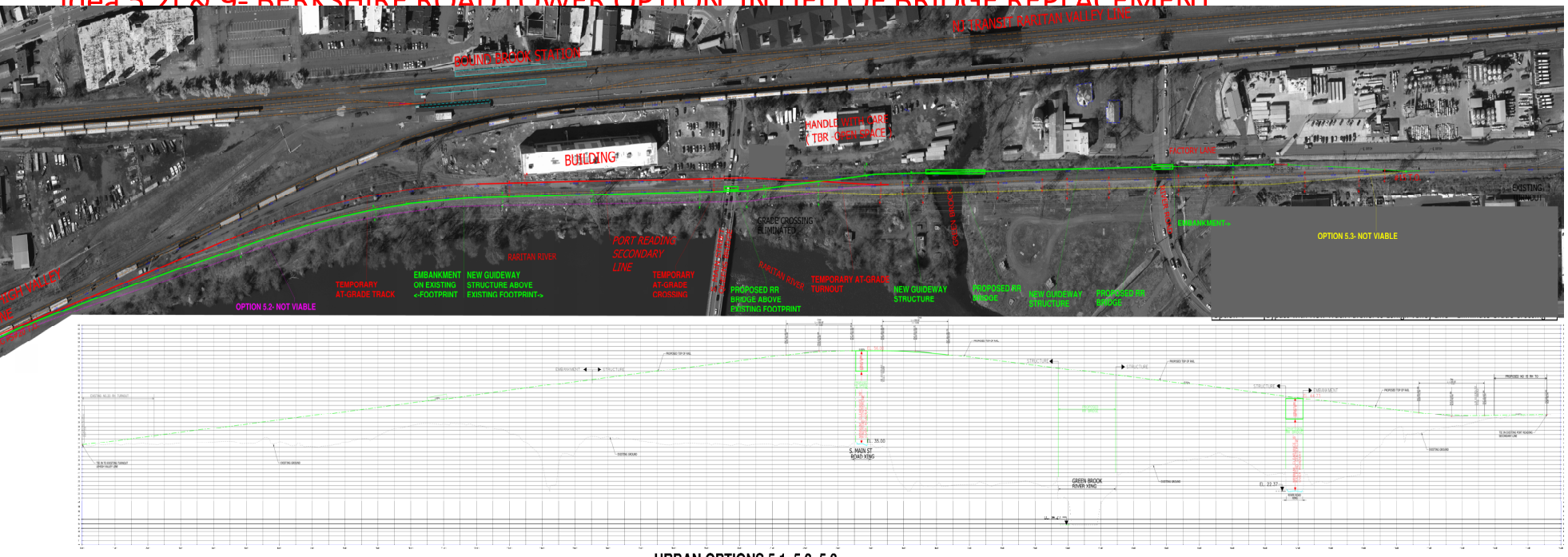
Risk Description	Yes/No	Change in Status with this Idea
Utility relocations/ HV Tower impact	YES	Less relocation required within RR ROW versus Jacobs option 4.6, Viaduct structure to be evaluated for location/fouling of HV line
ROW Acquisitions- lengthy process	YES	All work constructed in existing RR ROW
Regulatory Review issues & duration	YES	Less environmental impact/ review process
Encroaching/Compromising Historic Bridge	Yes	Permanent condition does not affect Historic Bridge, temp encroachment condition can be mitigated with Retaining wall system

Comparative Analysis

Advantages		Disadvantages
Temp track and guideway built on RR ROW		HV Tower will need to be relocated- ROW concern
Maintain freight rail access during construction		Temp track/grade crossing and guideway will increase project duration
		Impact to Flood Plain/Wetlands
		Limited access for equipment to build between existing track and River.

Evaluation – Bound Brook

Idea 5.2f & 9- BERKSHIRE ROAD LOWER OPTION, IN LIEU OF BRIDGE REPLACEMENT



URBAN OPTIONS 5.1, 5.2, 5.3

Evaluation – Bound Brook

- Idea VE 1: : Temporary Track/Grade Crossing on North Side of Existing Track with New Guideway Built Above Existing Track Footprint

Cost Impacts: Property/ROW acquisition maybe required for HV Tower relocation. Additional temporary track length will add to estimated cost. Elevated guideway structure and retaining walls will be more expensive. Additional bridge structure will increase cost. Relocating utilities will increase cost.
Schedule Impacts: Constructing temporary track, elevated guideway, and additional bridge structure will increase project duration. Relocating utilities will increase duration. ROW acquisition & permitting will increase overall project duration.
Discussion / Constructability / Justification Summary: Construct a temporary track on grade which ties into the existing turnout at the Lehigh Valley Line. This temporary track will run along the south side of the existing Port Reading Secondary Line and cross Main Street at grade and tie back into the Secondary Line. The temporary track will be constructed on railroad property and will require minimal property take aways. When the temporary track is complete, a new elevated guideway structure can be built over the existing track bed footprint while the Port Reading Secondary continues to operate. A new elevated guideway will be constructed over the existing track bed footprint from the existing turnout at the Lehigh Valley Line, crossing above Main Street, changing alignment just to the south of the existing track with new bridge structures over Green Brook and River Road to the north of existing track, and tying back into the original Secondary Line at approximately STA 44+25.

Evaluation – Bound Brook

- Idea VE 1: Temporary Track/Grade Crossing on North Side of Existing Track with New Guideway Built Above Existing Track Footprint

Criteria	Score	Notes /Justification
Meets Project Purpose and Need	5	Eliminate grade crossing and maintain freight rail access
Freight Rail Operations Impacts / Benefits - During Construction	-1	
Freight Rail Operations Impacts / Benefits - Post Construction	0	
Passenger Rail Operations Impacts / Benefits	0	No impact to Passenger Rail Operations
Adjacent and Proximate Land Use Impacts / Benefits	-1	
Historic and Cultural Resources Impacts / Benefits	0	
Community Profile & Environmental Justice/Title VI Impacts / Benefits	1	
Wetlands Impacts / Benefits	-1	
Floodplains & Aquifers Impacts / Benefits	0	
Threatened & Endangered Species Impacts / Benefits	-1	
Stormwater and Drainage Impacts / Benefits	-1	
Hazardous Materials Impacts / Benefits	-1	
Air Quality & Noise Impacts / Benefits	3	
Community Impacts / Benefits	3	
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	3	
New Track Length (LF)		
Costs ($M)		
Summary Score	**9**	

Conclusion:

VE Panel found this option to score favorably versus Option 1= Score: -3 (RR- over Roadway)

Evaluation – Bound Brook

- VE 1.A,B,C:Temporary Track/Grade Crossing on South(River) Side of Existing Track with New Guideway Built Above Existing Track Footprint or VE 1.B: Permanent Guideway on South(River) Side of Existing Track, VE 1.C: Construct Option VE 1 with gradient reduction at STA 28 to eliminate need to replace River Rd Structure

Goals Achieved

- Eliminate Grade Crossing
- Maintain Rail Freight Access

Risk Impact

Risk Description	Yes/No	Change in Status with this Idea
Utility relocations/ HV Tower impact	NO	Requires fouling & replacement of HV Towers
ROW Acquisitions- lengthy process	NO	South Side location may encroach beyond RR ROW
Regulatory Review issues & duration	NO	Environmental impact likely at South Side location
Encroaching/Compromising Historic Bridge	Yes	Permanent condition does not affect Historic Bridge, temp encroachment condition can be mitigated with Retaining wall system

Comparative Analysis

Advantages		Disadvantages
Temp track and guideway built on RR ROW		HV Tower will need to be relocated- ROW concern
Maintain freight rail access during construction		Temp track/grade crossing and guideway will increase project duration
		Impact to Flood Plain/Wetlands
		Limited access for equipment to build between existing track and River.

Evaluation – Bound Brook

- VE 1.A,B,C:Temporary Track/Grade Crossing on South(River) Side of Existing Track with New Guideway Built Above Existing Track Footprint or VE 1.B: Permanent Guideway on South(River) Side of Existing Track, VE 1.C: Construct Option VE 1 with gradient reduction at STA 28 to eliminate need to replace River Rd Structure

Cost Impacts: Property/ROW acquisition maybe required for HV Tower relocation. Additional temporary track length will add to estimated cost. Elevated guideway structure and retaining walls will be more expensive. Additional bridge structure will increase cost. Relocating utilities will increase cost.
Schedule Impacts: Constructing temporary track, elevated guideway, and additional bridge structure will increase project duration. Relocating utilities will increase duration. ROW acquisition & permitting will increase overall project duration.
Discussion / Constructability / Justification Summary: Ultimately any construction on the river side of the existing Secondary Line has reduced access for construction equipment. There is limited room to build a temporary track or guideway track between the existing secondary line and the catenary towers. The towers would have to be relocated. The few areas where there is room, the overhead clearance below the power lines would reduce boom lengths and equipment heights necessary to perform the construction. Any construction on the river side of the Port reading Secondary Line is not a viable option. Idea 5.5: Utilize alignment of Idea 5.1, and begin to reduce gradient at approx. STA 28+00 to reduce height of structure over Greenbrook and ultimately return to grade/ track alignment prior to River Rd Bridge to avoid bridge replacement and additional LF of track reconstruction. This idea ultimately failed because Structure over Greenbrook now sits below NJFHADF Elev. 38.

Evaluation – Bound Brook

- VE 1.A,B,C:Temporary Track/Grade Crossing on South(River) Side of Existing Track with New Guideway Built Above Existing Track Footprint or VE 1.B: Permanent Guideway on South(River) Side of Existing Track, VE 1.C: Construct Option VE 1 with gradient reduction at STA 28 to eliminate need to replace River Rd Structure

Criteria	Score	Notes / Justification
Meets Project Purpose and Need	5	Eliminate grade Xing & maintain freight rail access
Freight Rail Operations Impacts / Benefits - During Construction	-5	
Freight Rail Operations Impacts / Benefits - Post Construction	0	
Passenger Rail Operations Impacts / Benefits	0	No impact to Operations
Adjacent and Proximate Land Use Impacts / Benefits	-1	
Historic and Cultural Resources Impacts / Benefits	0	
Community Profile & Environmental Justice/Title VI Impacts / Benefits	1	
Wetlands Impacts / Benefits	-2	
Floodplains & Aquifers Impacts / Benefits	-1	
Threatened & Endangered Species Impacts / Benefits	-1	
Stormwater and Drainage Impacts / Benefits	-1	
Hazardous Materials Impacts / Benefits	-1	
Air Quality & Noise Impacts / Benefits	3	
Community Impacts / Benefits	3	
Safety Impacts / Benefits	3	
Utility Impacts / Relocation Requirements	-5	
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	**1**	

Conclusion:

VE Panel found this option to score less favorably versus Option 4.6= Score: 3

(Bypass Parallel to Lehigh Valley Line)

Bound Brook	
Idea Ref: BB VE1	Title Temporary Track/Grade Crossing on North Side of Existing Track with New Guideway Built Above Existing Track Footprint
Type : Qualitative Value Alternative	
Purpose / Need / Objectives Targeted Eliminate the at-grade rail crossing on South Main Street in the Borough of Bound Brook, while maintaining freight rail access to existing and future customers along the Port Reading Secondary line.	
Original Concept Jacobs Option 1: Grade Separation- Railroad over Roadway. New track constructed adjacent to passenger rail line on the north side of existing properties with (3) new bridge structures.	
Alternative Concept Urban IDEA VE 1: Construct new temporary by-pass on-grade track crossing at Main Street to build new elevated guideway over existing track footprint with (3) new bridge structures, including retaining walls.	
Goals Achieved Eliminate grade crossing and maintain freight rail access	

Risk Impact

Ref	Risk Description	Yes/No	Change in Status with this Idea
	Utility relocations/ HV Tower impact	YES	Less relocation required within RR ROW versus Jacobs option 4.6, Viaduct structure to be evaluated for location/fouling of HV line
	ROW Acquisitions- lengthy process	YES	All work constructed in existing RR ROW
	Regulatory Review issues & duration	YES	Less environmental impact/ review process
	Encroaching/Compromising Historic Bridge	Yes	Permanent condition does not affect Historic Bridge, temp encroachment condition can be mitigated with Retaining wall system

Pro's / Con's Comparative Analysis

Ref	Advantages		Disadvantages
	Temp track and guideway built on RR ROW		Temp track/grade crossing, guideway, bridge, and retaining walls increase cost
	Maintain freight rail access during construction		Temp track/grade crossing and guideway will increase construction duration & RR coordination
	Minimize/ Potentially Avoid relocating utilities		

Cost Impacts: Reduction in property/ROW acquisition decreases cost. Additional temporary track length will add to estimated cost. Elevated guideway structure and retaining walls will be more expensive. Bridge crossings at Main St, Greenbrook versus Option 4.6 will be less expensive due to ease of constructability.

Schedule Impacts: Mitigating ROW Acquisition & Less intrusive Environmental permitting process will reduce overall project duration. Constructing temporary track, elevated guideway, and additional bridge structure will increase project duration.

Schedule Analysis: Urban projects Idea VE 1 to advance project to completion with a shorter Pre-Construction duration (1-2 years) versus (2-4 years)- Idea 4.6. As detailed below:

- Design/ROW/Utility Clearance/Bid Advertisement/Award: 2 Years
- Construction (Season 1):
  - Shops Drawings/Fabrication: 9-12 Months
  - Utility Coordination/ Relocation: 6 months
  - Site Prep-Temp Grading: 3 months
    - → RR Temporary Relocation: 3 months
      - → Caisson drilling/ Substructure Construction Viaduct: 6months
      - → Substructure Construction at 3 Bridges: 9 months

- Construction (Season 2):
  - Viaduct Superstructure-erect precast spans: 6 months
    - → 3 Bridges Superstructure Construction: 9 months
  - Retaining Wall/Embankment section: 3 months

- Construction (Season 3):
  - RR Coordination- Tie-in to new Rail: 3 months
    - → Existing Bridge Demolition/Site Clean-up/Restoration: 3 months

Discussion / Constructability / Justification Summary

Construct a temporary track on grade which ties into the existing turnout at the Lehigh Valley Line. This temporary track will run along the north side of the existing Port Reading Secondary Line and cross Main Street at grade and tie back into the Secondary Line at approximately STA 28+00, just before the existing bridge over Green Brook. The existing and temporary tracks will remain approximately 25'-0" apart between each center line until they tie in together at STA 0+00 and STA 28+00. This will allow continued use of the existing Secondary Line while the temporary track is constructed. Temporary outages will be required to tie the temporary track into the existing Secondary Line at the two locations.

The temporary track will be constructed on railroad property and will require minimal property take aways. Temporary construction easements will be required. Constructing the temporary at grade crossing on Main Street will be completed during nighttime or off-peak hours to reduce the impact to traffic. There is a deep swale which runs along the north side of the existing track from STA 25+00 to STA 29+50. Portions of this swale will have to backfilled to accommodate the temporary track. Also, there is a historic bridge structure on the north side of this swale between STA 26+00 and STA 27+00. To protect this structure, gabion baskets will be used as a temporary retaining wall to contain the fill for the temporary track in this area. When the temporary track is complete, a new elevated guideway structure can be built over the existing track bed footprint while the Port Reading Secondary continues to operate.

A new elevated guideway will be constructed over the existing track bed footprint from the existing turnout at the Lehigh Valley Line, crossing above Main Street, changing alignment just to the north of the existing track with new bridge structures over Green Brook and River Road, and tying back into the original Secondary Line at approximately STA 44+25. As the new guideway changes alignment to the north of the existing track, a minimum of 25 feet will be maintained between the two track centers.

To elevate the track to the new guideway structure, an embankment will start near the Lehigh Valley Line turnout and extend to approximately STA 15+50 where the elevated guideway will begin. A retaining wall may be required on the north side of the new track as it approaches the turn out and the distance between the two tracks decreases from 25 feet, to keep the sloped embankment fill from extending into the temporary track area.

The new elevated guideway starts at approximately STA 15+50 and will cross Main Street as a new bridge. This guideway may be constructed of drilled caisson foundations in pairs, with a steel substructure and precast concrete superstructure with 50 feet to 60 feet span lengths. Another option is precast concrete arch substructures placed in succession along the length of the guideway. The superstructure of the new bridge over Main Street, setting beams and protective shielding will have to occur during off peak hours to minimize the impact to traffic.

The elevated guideway will continue from the new bridge over Main Steet and change alignment to 25 feet north of the original track. As it changes alignment, the guideway will have to cross over the temporary track as well. Depending upon the orientation of the substructure and foundation around the temporary track, cantilevered column caps, bents, or substructure may be required. The guideway will cross Green Brook and then cross River Road as two new separate bridge structures.

On the east side of the bridge over River Road, approximately STA 37+25, an embankment will take the new track back down to grade and tie into the original track at approximately STA 44+58. Similar to the tie in at the Lehigh Valley Line, a retaining wall may be required on the south side of the new track as it approaches the original track and the distance between the two tracks decreases from 25 feet, to keep the sloped embankment fill from extending into the existing track area. Railroad outages will be required to tie the new track into the existing Lehigh Valley Line and Port Reading Secondary Line.

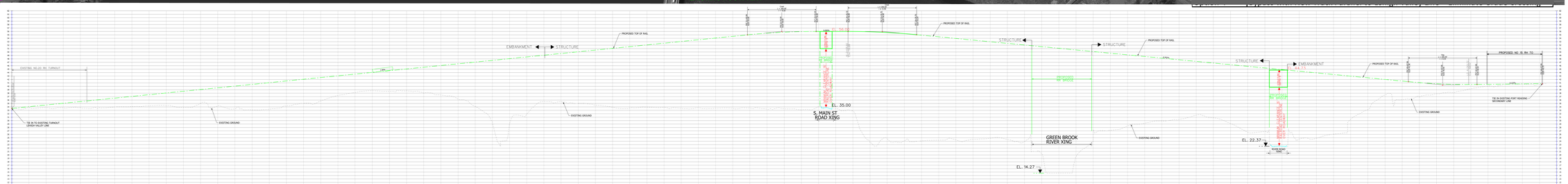
When the new elevated guideway structure is complete, the original track and temporary track between STA 0+00 and STA 44+58 can be removed. The original and temporary grade crossings at Main Street can be removed and paved. The temporary gabion retaining wall can be removed, and any backfill in the swale between STA 25+00 and STA 29+50 can be removed. With some future grading, and due to the elevated guideway, the area adjacent to the historical bridge between STA 26+00 and STA 27+00 can be made accessible to pedestrians. The existing bridge structures over Green Brook and River Road can be removed.

Supporting Sketches / Calculations

See attached

Criteria	Score	Notes / Justification
Meets Project Purpose and Need	5	Eliminate grade crossing and maintain freight rail access
Freight Rail Operations Impacts / Benefits - During Construction	-1	
Freight Rail Operations Impacts / Benefits - Post Construction	0	
Passenger Rail Operations Impacts / Benefits	0	No impact to Passenger Rail Operations
Adjacent and Proximate Land Use Impacts / Benefits	-1	
Historic and Cultural Resources Impacts / Benefits	0	
Community Profile & Environmental Justice/Title VI Impacts / Benefits	1	
Wetlands Impacts / Benefits	-1	
Floodplains & Aquifers Impacts / Benefits	0	
Threatened & Endangered Species Impacts / Benefits	-1	
Stormwater and Drainage Impacts / Benefits	-1	
Hazardous Materials Impacts / Benefits	-1	
Air Quality & Noise Impacts / Benefits	3	
Community Impacts / Benefits	3	
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	3	
New Track Length (LF)		
Costs ($M)		

Summary Score	9	



URBAN OPTIONS 5.1, 5.2, 5.3

Bound Brook	
Idea Ref: VE-1.A,B,C	Title 1.A:Temporary Track/Grade Crossing on South(River) Side of Existing Track with New Guideway Built Above Existing Track Footprint or 1.B: Permanent Guideway on South(River) Side of Existing Track, 1.C: Construct Option 5.1 with gradient reduction at STA 28 to eliminate need to replace River Rd Structure
Type : Qualitative Value Alternative	
Purpose / Need / Objectives Targeted Eliminate the at-grade rail crossing on South Main Street in the Borough of Bound Brook, while maintaining freight rail access to existing and future customers along the Port Reading Secondary line.	
Original Concept Jacobs Option 1: Grade Separation- Railroad over Roadway. New track constructed adjacent to passenger rail line on the north side of existing properties with (3) new bridge structures.	
Alternative Concept Urban VE 1.A:Temporary Track/Grade Crossing on South(River) Side of Existing Track with New Guideway Built Above Existing Track Footprint or 1.B: Permanent Guideway on South(River) Side of Existing Track, VE 1.C: Construct Option VE 1 with gradient reduction at STA 28 to eliminate need to replace River Rd Structure	
Goals Achieved Eliminate grade crossing and maintain freight rail access	

Risk Impact

Ref	Risk Description	Yes/No	Change in Status with this Idea
	Utility relocations/ HV Tower impact	NO	Requires fouling & replacement of HV Towers
	ROW Acquisitions- lengthy process	NO	South Side location may encroach beyond RR ROW
	Regulatory Review issues & duration	NO	Environmental impact likely at South Side location
	Encroaching/Compromising Historic Bridge	Yes	Permanent condition does not affect Historic Bridge, temp encroachment condition can be mitigated with Retaining wall system

Pro's / Con's Comparative Analysis

Ref	Advantages		Disadvantages
	Temp track and guideway built on RR ROW		HV Tower will need to be relocated- ROW concern
	Maintain freight rail access during construction		Temp track/grade crossing and guideway will increase project duration
			Impact to Flood Plain/Wetlands
			Limited access for equipment to build between existing track and River.

Cost Impacts: Property/ROW acquisition maybe required for HV Tower relocation. Additional temporary track length will add to estimated cost. Elevated guideway structure and retaining walls

will be more expensive. Additional bridge structure will increase cost. Relocating utilities will increase cost.

Schedule Impacts: Constructing temporary track, elevated guideway, and additional bridge structure will increase project duration. Relocating utilities will increase duration. ROW acquisition & permitting will increase overall project duration.

Discussion / Constructability / Justification Summary

Ultimately any construction on the river side of the existing Secondary Line has reduced access for construction equipment. There is limited room to build a temporary track or guideway track between the existing secondary line and the catenary towers. The towers would have to be relocated. The few areas where there is room, the overhead clearance below the power lines would reduce boom lengths and equipment heights necessary to perform the construction**. <u>Any construction on the river side of the Port reading Secondary Line is not a viable option.</u>**

The concept for construction is similar to Idea VE 1: Construct a temporary track on grade which ties into the existing turnout at the Lehigh Valley Line. This temporary track will run along the south side of the existing Port Reading Secondary Line and cross Main Street at grade and tie back into the Secondary Line. The temporary track will be constructed on railroad property and will require minimal property take aways.

When the temporary track is complete, a new elevated guideway structure can be built over the existing track bed footprint while the Port Reading Secondary continues to operate.

A new elevated guideway will be constructed over the existing track bed footprint from the existing turnout at the Lehigh Valley Line, crossing above Main Street, changing alignment just to the south of the existing track with new bridge structures over Green Brook and River Road, and tying back into the original Secondary Line at approximately STA 44+25.

To elevate the track to the new guideway structure, an embankment will start near the Lehigh Valley Line turnout and extend to approximately STA 15+50 where the elevated guideway will begin. A retaining wall may be required on the south side of the new track as it approaches the turn out and the distance between the two tracks decreases from 25 feet, to keep the sloped embankment fill from extending into the temporary track area.

The new elevated guideway starts at approximately STA 15+50 and will cross Main Street as a new bridge. This guideway may be constructed of drilled caisson foundations in pairs, with a steel substructure and precast concrete superstructure with 50 feet to 60 feet span lengths. Another option is precast concrete arch substructures placed in succession along the length of the guideway. The superstructure of the new bridge over Main Street, setting beams and protective shielding will have to occur during off peak hours to minimize the impact to traffic.

The elevated guideway will continue from the new bridge over Main Steet and change alignment to 25 feet south of the original track. As it changes alignment, the guideway will have to cross over the temporary track as well. Depending upon the orientation of the substructure and foundation around the temporary track, cantilevered column caps, bents, or substructure may be required. The guideway will cross Green Brook and then cross River Road as two new separate bridge structures.

On the east side of the bridge over River Road, an embankment will take the new track back down to grade and tie into the original track at approximately STA 44+58. Similar to the tie in at the Lehigh Valley Line, a retaining wall may be required on the north side of the new track as it approaches the original track and the distance between the two tracks decreases from 25 feet, to keep the sloped embankment fill from extending into the existing track area.

When the new elevated guideway structure is complete, the original track and temporary track between STA 0+00 and STA 44+58 can be removed. The original and temporary grade crossings at Main Street can be removed and paved. With some future grading, and due to the elevated guideway, the area adjacent to the historical bridge between STA 26+00 and STA 27+00 can be made accessible to pedestrians. The existing bridge structures over Green Brook and River Road can be removed.

Idea VE 1.C: Utilize alignment of Idea VE 1, and begin to reduce gradient at approx. STA 28+00 to reduce height of structure over Greenbrook and ultimately return to grade/ track alignment prior to River Rd Bridge to avoid bridge replacement and additional LF of track reconstruction. This idea ultimately failed because Structure over Greenbrook now sits below NJFHADF Elev. 38.

Supporting Sketches / Calculations
Refer to attachment

Criteria	Score	Notes / Justification
Meets Project Purpose and Need	5	Eliminate grade crossing and maintain freight rail access
Freight Rail Operations Impacts / Benefits - During Construction	-1	
Freight Rail Operations Impacts / Benefits - Post Construction	0	
Passenger Rail Operations Impacts / Benefits	0	No impact to Passenger Rail Operations
Adjacent and Proximate Land Use Impacts / Benefits	-1	
Historic and Cultural Resources Impacts / Benefits	-3	
Community Profile & Environmental Justice/Title VI Impacts / Benefits	1	
Wetlands Impacts / Benefits	-1	Score:-5 for VE 1.C
Floodplains & Aquifers Impacts / Benefits	-3	
Threatened & Endangered Species Impacts / Benefits	-1	
Stormwater and Drainage Impacts / Benefits	-1	

Hazardous Materials Impacts / Benefits	-1	
Air Quality & Noise Impacts / Benefits	3	
Community Impacts / Benefits	3	
Safety Impacts / Benefits	3	
Utility Impacts / Relocation Requirements	-5	
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	-1	VE 1.C Score: -2

Appendix L

Resolutions of Support

R23-1001

RESOLUTION OF SUPPORT FOR
THE NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY
FY21 FREIGHT CONCEPT DEVELOPMENT STUDY
PORT READING SECONDARY SOUTH MAIN STREET
GRADE CROSSING ELIMINATION PROJECT

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 Somerset County, has identified elimination of the at grade crossing of the Port Reading Secondary Rail Line over South Main Street as a need to improve local and regional mobility and improve safety in the *2007Advancing Inter-Modal-Freight Opportunities Study* prepared by Somerset County; and

WHEREAS, the Port Reading Secondary Rail Line's active freight rail customers must continue to receive rail services, hence the option of shutting down the Port Reading Secondary Rail line is not an option; and

WHEREAS, the project area is entirely within the Borough of Bound Brook, Somerset County and Middlesex Borough, Middlesex County; and

WHEREAS, the project would result in improved local and regional mobility within the Borough of South Bound Brook, Somerset County, the Borough of Bound Brook, Somerset County and Middlesex Borough, Middlesex County; and

WHEREAS, the NJTPA and Somerset 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, realignment of the Port Reading Secondary rail line to create a fully grade separated crossing of South Main Street was identified as the most effective solution and was selected as the Preliminary Preferred Alternative; and

WHEREAS, the study team informed Somerset County Office of Planning, Policy and Economic Development staff, Middlesex County Planning officials and Borough of Bound Brook officials of the Preliminary Preferred Alternative on Tuesday, January 17, 2023; and

WHEREAS, the study team informed South Bound Brook officials of the Preliminary Preferred Alternative on Tuesday, January 20, 2023; and

WHEREAS, the study team informed Middlesex Borough officials of the Preliminary Preferred Alternative on Tuesday, January 24, 2023.

NOW, THEREFORE, BE IT RESOLVED, by the Somerset Board of County Commissioners that the County of Somerset hereby formally supports the Preliminary Preferred Alternative in the Port Reading Secondary South Main Street Grade Crossing Elimination Project, and the pursuit of public funding to complete this project.

I, Kelly L. Mager, Clerk of the Board of County Commissioners of the County of Somerset in the State of New Jersey, do hereby certify that the foregoing is a true copy of a Resolution adopted by said Board of County Commissioners at its regular meeting of May 23, 2023.

Kelly L. Mager, Clerk of the Board

Approved as to Form and Legality

/s/ Joseph DeMarco

Joseph DeMarco, County Counsel

R2023-045

BOROUGH OF BOUND BROOK
County of Somerset

RESOLUTION 2023-045

RESOLUTION OF SUPPORT FOR THE NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY FY21 FREIGHT CONCEPT DEVELOPMENT STUDY PORT READING SECONDARY SOUTH MAIN STREET GRADE CROSSING ELIMINATION PROJECT SOMERSET COUNTY, NEW JERSEY

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 Somerset County, has identified elimination of the at grade crossing of the Port Reading Secondary Rail Line over South Main Street as a need to improve local and regional mobility and improve safety; and

WHEREAS, there are active freight rail customers along the Port Reading Secondary that must continue to receive rail service eliminating the option to take the entire Port Reading Secondary out of service; and

WHEREAS, the project area is entirely within the Borough of Bound Brook, Somerset County and Middlesex Borough, Middlesex County; and

WHEREAS, the project would result in improved local and regional mobility within the Borough of South Bound Brook, Somerset County, the Borough of Bound Brook, Somerset County and Middlesex Borough, Middlesex County; and

WHEREAS, the NJTPA and Somerset 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, realignment of the Port Reading Secondary to create a fully grade separated crossing of South Main Street was identified as the most effective solution and was selected as the Preliminary Preferred Alternatives; and

WHEREAS, the study team informed Middlesex Borough local officials of the Preliminary Preferred Alternative on Tuesday, January 24, 2023;

NOW, THEREFORE, BE IT RESOLVED, that the Borough of Bound Brook formally supports the Preliminary Preferred Alternatives in the Port Reading Secondary South Main Street Grade Crossing Elimination Project, and the pursuit of public funding to complete this project.

Attest:
Jasmine D. McCoy
Jasmine D. McCoy, Borough Clerk

Approved:
Mayor David Morris

Date of Adoption: February 14, 2023

Be it Resolved, by the Mayor and Council of the Borough of Middlesex, New Jersey that:

Resolution #141-2023

RESOLUTION OF SUPPORT BY MIDDLESEX BOROUGH FOR THE NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY FY21 FREIGHT CONCEPT DEVELOPMENT STUDY PORT READING SECONDARY SOUTH MAIN STREET GRADE CROSSING ELIMINATION PROJECT SOMERSET COUNTY, NEW JERSEY

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 Somerset County, has identified elimination of the at grade crossing of the Port Reading Secondary Rail Line over South Main Street as a need to improve local and regional mobility and improve safety; and

WHEREAS, there are active freight rail customers along the Port Reading Secondary that must continue to receive rail service eliminating the option to take the entire Port Reading Secondary out of service; and

WHEREAS, the project area is entirely within the Borough of Bound Brook, Somerset County and Middlesex Borough, Middlesex County; and

WHEREAS, the project would result in improved local and regional mobility within the Borough of South Bound Brook, Somerset County, the Borough of Bound Brook, Somerset County and Middlesex Borough, Middlesex County; and

WHEREAS, the NJTPA and Somerset 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, realignment of the Port Reading Secondary to create a fully grade separated crossing of South Main Street was identified as the most effective solution and was selected as the Preliminary Preferred Alternatives; and

WHEREAS, the study team informed the Borough of Middlesex local officials of the Preliminary Preferred Alternative on Tuesday, January 24, 2023;

NOW THEREFORE BE IT RESOLVED, that the Borough of Middlesex formally supports the Preliminary Preferred Alternatives in the Port Reading Secondary South Main Street Grade Crossing Elimination Project, and the pursuit of public funding to complete this project.

I Hereby Certify that the above resolution was duly adopted by the Governing Body of the Borough of Middlesex, at a meeting of said Borough Council on May 9, 2023.

RESULT:	**ADOPTED BY CONSENT VOTE [UNANIMOUS]**
MOVER:	Michael Conahan, Council President
SECONDER:	Jack Mikolajczyk, Councilman
AYES:	Conahan, Carnes, Dessino, Mikolajczyk, Quinn, Rex

CLERK OF THE BOROUGH OF MIDDLESEX

RESOLUTION NO. 2023-028

**RESOLUTION OF SUPPORT FOR
THE NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY
FY21 FREIGHT CONCEPT DEVELOPMENT STUDY
PORT READING SECONDARY SOUTH MAIN STREET GRADE CROSSING ELIMINATION
PROJECT
SOMERSET COUNTY, NEW JERSEY**

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 Somerset County, has identified elimination of the at grade crossing of the Port Reading Secondary Rail Line over South Main Street as a need to improve local and regional mobility and improve safety; and

WHEREAS, there are active freight rail customers along the Port Reading Secondary that must continue to receive rail service eliminating the option to take the entire Port Reading Secondary out of service; and

WHEREAS, the project area is entirely within the Borough of Bound Brook, Somerset County and Middlesex Borough, Middlesex County; and

WHEREAS, the project would result in improved local and regional mobility within the Borough of South Bound Brook, Somerset County, the Borough of Bound Brook, Somerset County and Middlesex Borough, Middlesex County; and

WHEREAS, the NJTPA and Somerset 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, realignment of the Port Reading Secondary to create a fully grade separated crossing of South Main Street was identified as the most effective solution and was selected as the Preliminary Preferred Alternatives; and

WHEREAS, the study team informed the Borough of South Bound Brook local officials of the Preliminary Preferred Alternative on Friday, January 20, 2023;

NOW, THEREFORE, BE IT RESOLVED, that the Borough of South Bound Brook formally supports the Preliminary Preferred Alternatives in the Port Reading Secondary South Main Street Grade Crossing Elimination Project, and the pursuit of public funding to complete this project.

I, Christina Fischer, Borough Clerk, hereby certify that the above resolution is a true and correct copy of a resolution adopted by the Borough Council of the Borough of South Bound Brook at a regular and duly convened meeting held on May 9, 2023.

In witness thereof, I have set my hand and affixed the seal of the Borough of South Bound Brook this 9th day of May 2023.

Christina Fischer

South Bound Brook Historic Preservation Advisory Commission

South Bound Brook Borough Hall, 12 Main Street, South Bound Brook, NJ 08880

April 20, 2023

Mr. Jacob Rowinski, Project Manager jwrowski@njtpa.org
NJTPA
One Newark Center, 17th Floor.
Newark, 07102

Re: Port Reading Secondary South Main Street Grade Crossing Elimination Project: Alternative 4.6
To: Mr. Jacob Rowinski:

Regarding options being considered for the Port Reading Secondary South Main Street Grade Crossing Elimination Project, the South Bound Brook Historic Preservation Advisory Commission (SBB HPAC) would like to voice our support for **Preliminary Preferred Alternative 4.6,** noted in the March 16, 2023 Public Meeting #2 Presentation. (*Construct new single-track alignment generally parallel to the existing Lehigh Line • Construct new bridges carrying the rail line over South Main Street, the Green Brook and River Road •Reconnect to the existing alignment in Middlesex Borough east of River Road.*)

The option provides for an elevation and relocation of the tracks next to the existing Lehigh Line behind the Storage Unit facility and the Handle With Care building and achieves the project goal of eliminating the at-grade rail crossing on South Main St. in Bound Brook, while maintaining freight rail access to existing and future customers along the Port Reading Secondary Line.

Importantly, this option also mitigates potential impact that other solutions could have on two key historic assets in the project scope: The Old Stone Arch Bridge (#8 in Project Map "Cultural Resources") and the Queen's Bridge.

The Queen's Bridge, connecting Bound Brook and South Bound Brook across the Raritan River, first began life as a "wood frame bridge," built in 1761 – early references say it was "known by the name of the Queen's Bridge." British and American soldiers used the crossing during the American Revolution. It was replaced by a classic steel pipe truss bridge in 1875. The stone piers under today's span (built in 1984) date back to at least that date.

The Old Stone Arch Bridge, built in 1731, is the second-oldest extant bridge in the United States, and the oldest bridge in New Jersey. The bridge is a classic, three-arch edifice with a center span approximately 18 feet wide and two side arches, each approximately 12.5 feet wide. It spans the Green Brook and connects Bound Brook (Somerset County) with Middlesex Borough (Middlesex County) The bridge carried the Great Road Up Raritan, laid out in 1681 and later known as the Old York Road, and allowed farmers, merchants, residents, and those west and north of the Raritan River a direct route to the colonial ports of New Brunswick and Raritan Landing. Since the early 1870s, the Old Stone Arch Bridge has been largely buried due to the construction of a railroad embankment. Today, only the south parapet and a spandrel are visible.
As the bridge had been buried for over 140 years, it is listed by Preservation New Jersey as one of the "10 Most Endangered Historic Sites in New Jersey". Somerset County has invested almost $100,000 to unearth and restore the bridge with cooperation from neighboring Middlesex County Cultural and Heritage Commission The bridge was placed on the National Register of Historic Places in 2008. *Source: Old Stone Arch Bridge (Bound Brook, New Jersey) - Wikipedia*
Because of the historic nature of both of these features, and the important place they hold in our neighboring community histories, we would like to strongly voice our support for an option that bypasses potential damage to either the Queen's Bridge or the fragile and rare Old Stone Arch Bridge. Therefore, we support the current **Preliminary Preferred Alternative 4.6.**

Respectfully,
Kathy L. Faulks

Kathy L. Faulks, President
South Bound Brook Historic Commission /Telephone: 732-469-5836 E-mail: bkfaulks@gmail.com

Cc: Chris Shoffner, SBB Mayor
Richard Eickhorst, SBB Council President
Kathryn Ormosi, President, FASH
Christina Fischer, SBB Clerk Administrator

APR 25 2023 #28311
ENTERED