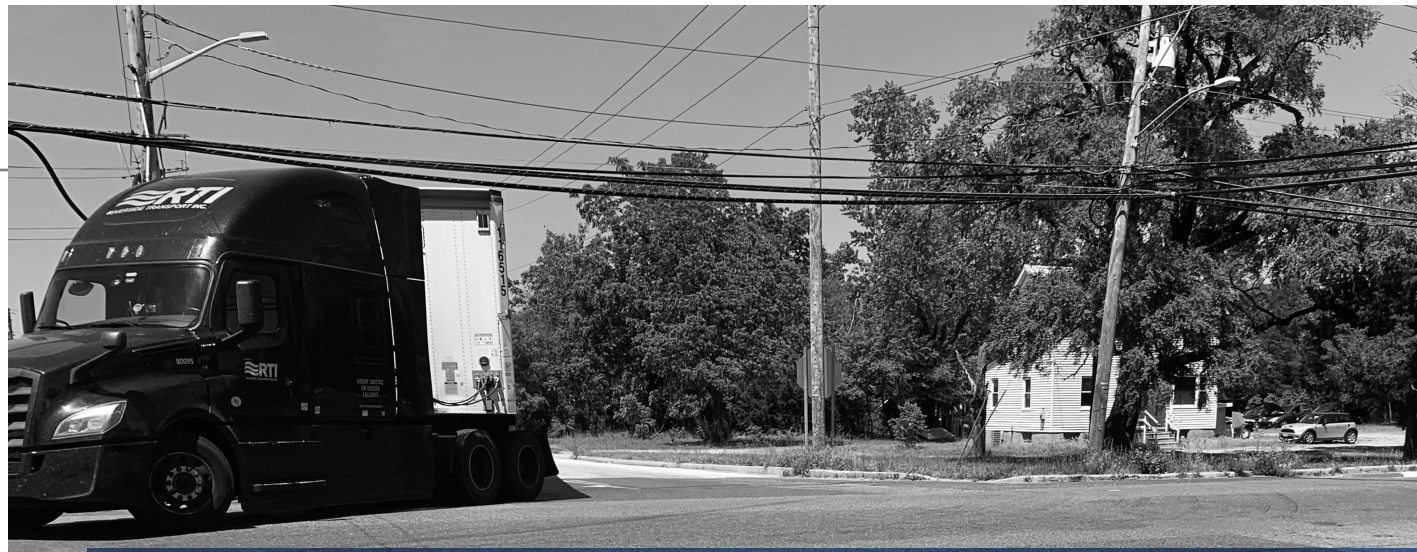

Millville City, Vineland City, Commercial Township
& Maurice River Township

TRUCK ROUTE IDENTIFICATION STUDY FOR EASTERN CUMBERLAND COUNTY

June 2020

Est. 1989
TRAFFIC PLANNING AND DESIGN, INC.

Imperial
TRAFFIC & DATA COLLECTION

THE BOARD OF CHOSEN FREEHOLDERS OF THE COUNTY OF CUMBERLAND NEW JERSEY

SJTPO

With funding assistance from:

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This report, with funding from the South Jersey Transportation Planning Organization, provides an implementation strategy for pursuit of future funding opportunities under the NJDOT Local Freight Impact Fund (LFIF) Program focused on potentially eligible county routes within the eastern part of Cumberland County including Millville City, Vineland City, Commercial Township, and Maurice River Township.

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Introduction

Introduction

Traffic Planning and Design, Inc. (TPD), with subconsultant Imperial Traffic Data Collection, LLC, was retained by Cumberland County to study truck travel on the county roadway system within eastern Cumberland County. The primary goal of the study was to identify potential projects that would be eligible for future rounds of funding under New Jersey Department of Transportation (NJDOT) Local Freight Impact Fund (LFIF) Grant program. The study documents the development of the Truck Route Study to address the stated goal and outlines the findings from the evaluation of the County road network.

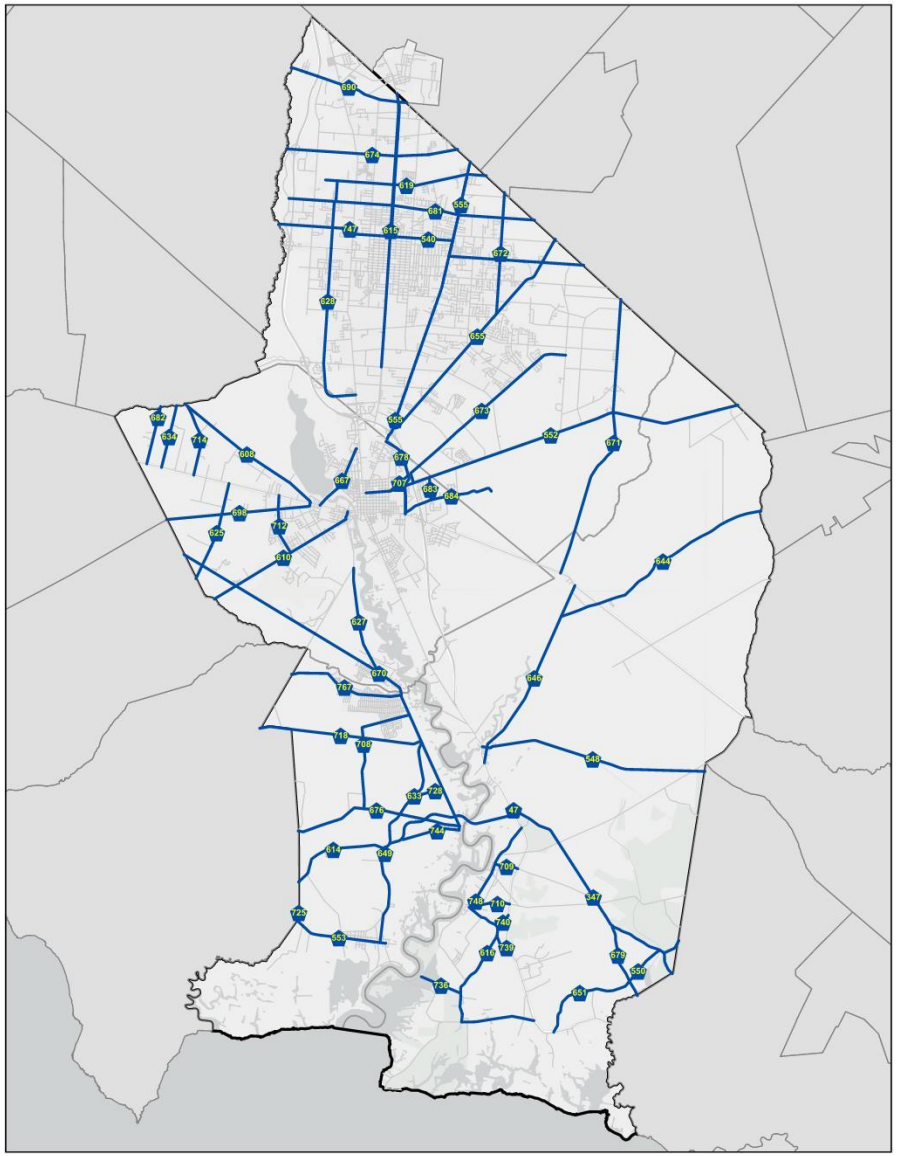
Project Purpose

The purpose of this study was to identify existing and potential truck routes within and through the eastern portion of the County that will link the regional highway network with facilities generating a significant volume of truck traffic.

Project Overview

- Identify truck routes that connect the region's major freight destinations and provide efficient flow of truck traffic
- Evaluate infrastructure impediments to connect freight land uses with freight transportation facilities
- Recommend solutions that provide the most efficient benefit to regional truck connectivity
- Develop an implementable plan that can translate to pursuit of future funding through NJDOT's Local Freight Impact Funds

Figure 1. County Roadway System within the Focus Area



Background

Background

The Local Freight Impact Fund (LFIF) Program is a competitive state-funded grant established by the legislature with the adoption of Assembly Bill No. 10(4R). The LFIF program provides approximately $30.1 million in funding annually to assist counties and local municipalities to address local transportation system impacts associated with the State's freight industry. Since Fiscal Year 2018, the LFIF program has funded sixty-three projects throughout the State aimed at improving the transportation infrastructure. Within Cumberland County, $6.48 million has been awarded to the county and local municipalities.

Past projects have been awarded funding between $0.23 million to $4.0 million with an average award amount value just under $1.5 million and approximately 80% of the awarded amounts at or below $2.0 million. A majority of the awarded projects were categorized under Pavement Preservation. For example in FY 2019, 76% of the funded projects fell in this category.

Projects submitted for consideration must meet the following eligibility criteria:

- Projects must be **within the jurisdictional limits** of the applicant's municipality and/or county unless filed jointly with an adjacent municipality and/or county
- Applicants must demonstrate that the project will **provide access to a port, warehouse distribution center or any other freight node** by providing a narrative and a map supporting their request
- Projects must have as a **minimum 10% Large Truck Volume** within the project limits. A traffic study must be submitted to support this information

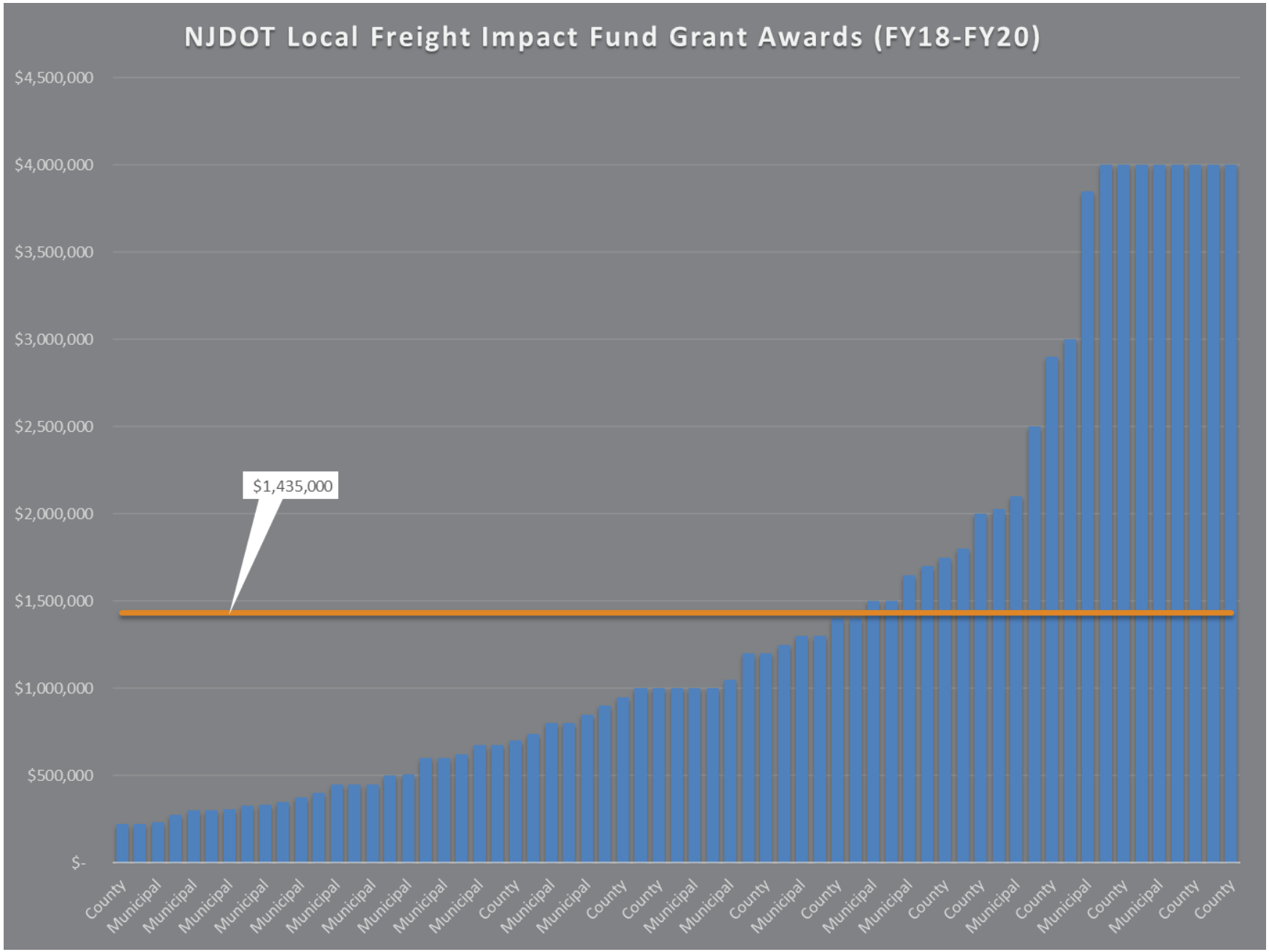
Projects for the LFIF program need to be classified in one of the following categories:

- **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

Table 1. NJDOT Local Freight Impact Fund – Cumberland County Awards

Grant Recipient	Project Name	Grant Amount
Vineland City	Gallagher Drive Resurfacing	$330,000
Millville City	Wade Boulevard & Orange Street Road Reconstruction	$1,000,000
	Wade Boulevard & Orange Street Road Reconstruction	$450,000
Commercial Township	Port Norris Riverfront Roadway Improvements	$1,500,000
	Port Norris Riverfront Roadway Improvements - Phase II	$600,000
Cumberland County	Cumberland County Freight Enhancement Project	$1,400,000
	Resurfacing of CR 720	$1,200,000

Figure 2. Summary of NJDOT Local Freight Impact Fund Grant Awards



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Study Process & Approach

Study Process and Approach

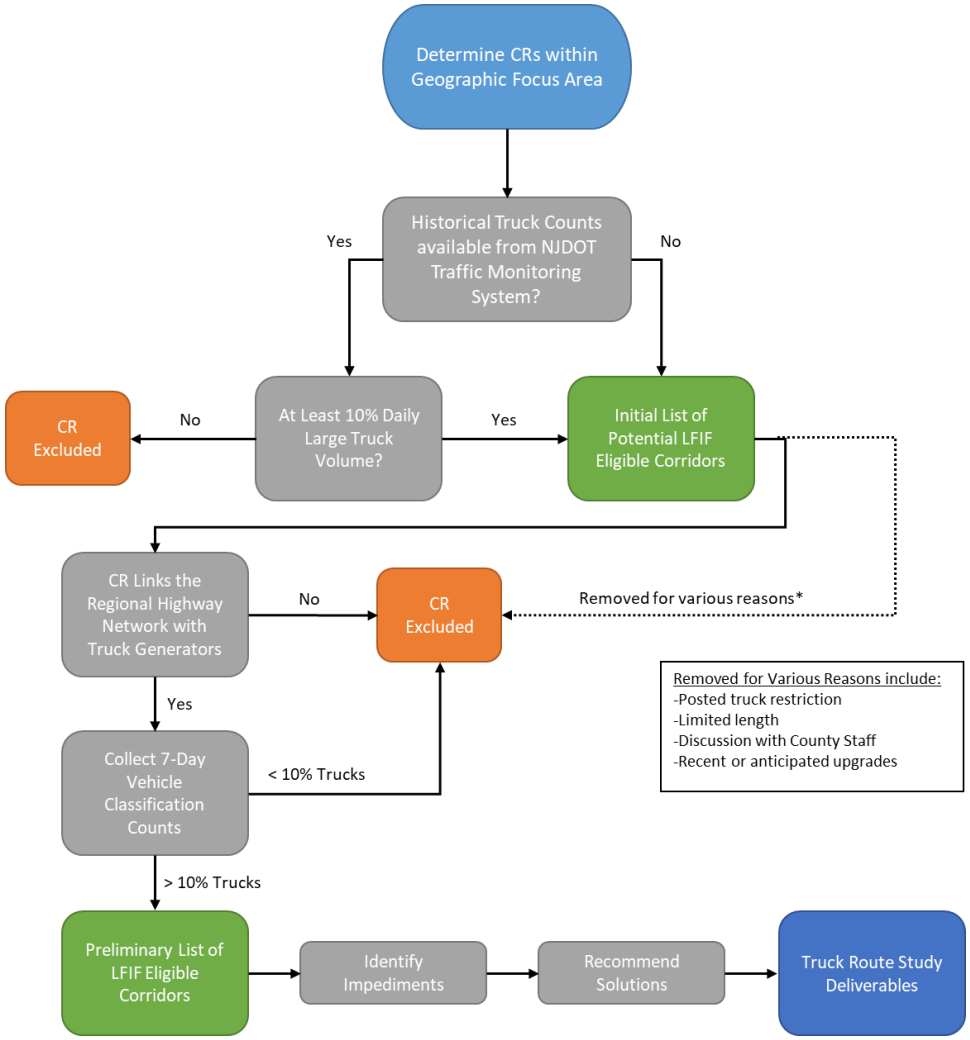
Study Process Overview

The geographic focus study area encompasses a rather expansive area in terms of land area and county roadway system. The fifty-six county routes identified within the study area total approximately 215 miles of roadway system. The four municipalities in the study area total over 243 square miles of land area. It was important to develop a study process that would evaluate the county roadway system in an efficient manner.

The Study Process consisted of five primary steps:

- The first step involved an initial filter screening of the county roadway system based on historical truck count data to remove roadways that historically did not meet the truck volume requirement threshold.
- The second step evaluated the linkage of the county roadway system to freight nodes.
- The third step developed a traffic count program for the potentially eligible county roadway system to confirm the identified roadways meet the required truck volume threshold.
- The fourth step included evaluation and ranking of the eligible roadways.
- The fifth and final step involved the identification of truck impediments, development of recommendations and a prioritization strategy for future funding applications.

Figure 3. Study Process Flowchart



Relevant Document Review

TPD conducted a review of all relevant documents regarding trucking in the study area. TPD searched for and reviewed many documents, studies and programs that could contain potential trucking projects and important information including:

- NJ Statewide Freight Plan, December 2017
- Southern New Jersey Freight Transportation and Economic Development Plan, December 2010
- Transportation Plan Cumberland County, March 2013
- Millville Transportation Improvement Study, May 2013
- City of Vineland, Master Plan Circulation Element

A brief summary of the relevant data within these documents is provided below.

NJ Statewide Freight Plan

This plan, completed in 2017, meets the specific guidelines outlined in the FAST Act requiring any state that received funding under the National Highway Freight Program (NHFP) to develop a state freight plan. The plan provides future opportunities to freight-specific federal funding opportunities and competitive grant resources.

The plan identifies a range of projects aimed at maintaining efficient movement of goods through the State. One such project identified in the focus area is the NJ 55 and NJ 47 interchange aimed at addressing ramp, capacity, and operational deficiencies. This interchange was previously identified as having specific safety concerns through NJDOT's Safe Corridors program as well as the Millville Transportation Improvement Study completed by SJTPO in 2013. This area is the primary retail activity node for South Jersey and provides links to numerous small and medium sized warehousing facilities located in Millville and Vineland. SJTPO identified this interchange as the most critical bottleneck in its 2016 Probe Data Analytics (VPP Suite) bottleneck analysis.

The following county routes within the focus area were identified as critical freight corridors or highway problem areas:

- CR 555, Vineland City, from NJ 55 (MP 12.07) to CR 655 (MP 12.17)
- CR 674, Vineland City, from Mill Road (MP 0.7) to Mill Road (MP 0.8)

Southern New Jersey Freight Transportation Plan

This plan built on the efforts from the past year and focused on the assessment of freight transportation, logistics, and industrial activity in the South Jersey region. The plan looked to prioritize transportation needs to support freight, logistics, and industrial clusters across the South Jersey region including Cumberland County.

This study developed a three stage blueprint which focused on maintaining the existing core industries and strengths, followed by improving industry through targeted improvements to infrastructure and policy, and finally expanding investments into new products, services, modes, and delivery. Stage One improvements are primarily highway-related, while Stage Two is primarily rail-related, and Stage Three is primarily marine.

The NJ 55 interchanges with NJ 47 and NJ 49 were listed as Stage One projects within the focus area. There did not appear to be any projects listed under the Stage Two and Stage Three blueprint within the focus area.

Cumberland County Transportation Plan

Truck freight is a large component of Cumberland County's economy, both in employment and industry share. But the trucking industry is constrained by the two-lane road network within the County and the County's relative remoteness from larger markets to the North and West.

One of the major industries in the County is agriculture which brings a unique set of challenges to goods movement. Agricultural freight has a strong seasonal component. The majority of agricultural food products grown in South Jersey are perishable resulting in a high demand on trucking within the County.[1]

There are possibilities to expand the trucking industry in the County in spite of the limitations of the road network. The County's trucking industry is dispersed somewhat widely across the northern half of the County. This reduces the effectiveness of overall warehouse space in the County in terms of attracting storage markets. On the positive side, the County has a healthy warehouse capacity in its four urban industrial parks.[2]

The plan developed fifteen strategies to promote improvements and changes to the transportation system. Several strategies had a relationship with freight which identified opportunities including development on intermodal terminals along existing tracks at industrial parks, and possible improvements to Route 55 with a new exchange at South Millville Industrial Park for better rail service and accessibility.

Figure 4. Goods Movement Assessment within Cumberland County

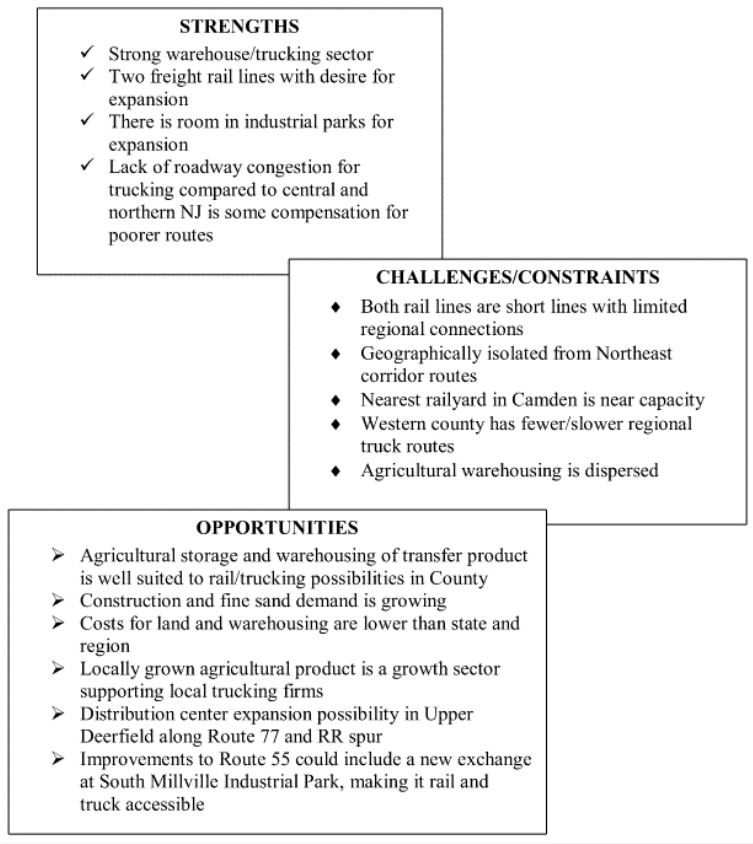


Figure 5. Major Industrial Park Identified within Cumberland County

NAME	CITY	SQ. FT. STORAGE	PRIMARY ACCESS
Vineland Industrial Parks	Vineland	2,000,000	NJ Route 55, Exit 35
Bridgeton Industrial Parks	Bridgeton	750,000	NJ Route 49, NJ Route 77
Millville Airport Industrial Park	Millville	600,000	Local roads (4 miles) to NJ Route 55, Exit 4
South Millville Industrial Parks	Millville	2,500,000	NJ Route 55, Exit 4

Source: NJDOT South Jersey Freight Transportation & Economic Development Assessment (Tech. App.)

[1] Goods Movement Assessment shown from page 52 of the 2013 Transportation Plan Cumberland County
[2] Figure 23 from the 2013 Transportation Plan Cumberland County

City of Vineland, Master Plan Circulation Element

The City has an active and growing industrial base, and large trucks are thus regularly seen on certain City streets. The plan notes that the needs of large vehicles should be taken into consideration. The plan indicates the location of major trucking generators in the City; including produce brokers, produce freezers, cement manufacturing, landscaping, and trucking companies. The truck traffic generated by these facilities are logically focused on roadways that feed and access Route 55.

The City currently does not have a truck route system. In general, the plan states that trucks should use arterial and collector roadways and seek routes that are removed from residential neighborhoods and community facilities. The plan recommends that the City establish preferred truck routes to be followed by local companies, using the routes recommended in the illustration[3] as a template.

Figure 6. Truck Routes and Generators in Vineland City

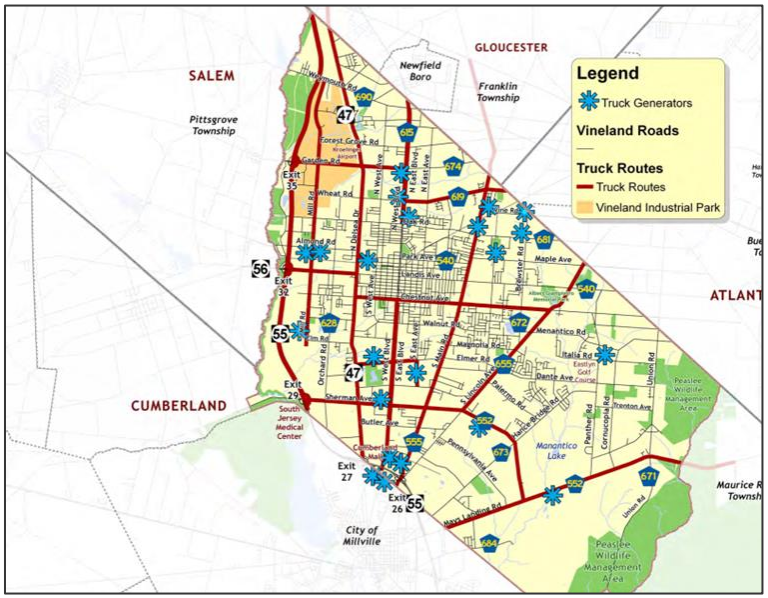
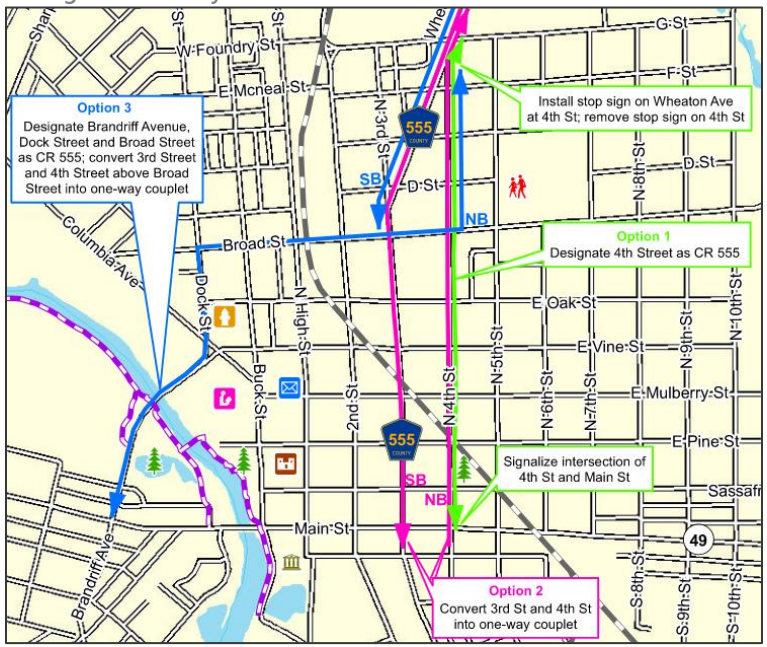


Figure 7. County Route 555 Alternatives in Central Millville Area



Millville Transportation Improvement Study

In 2013, the City requested assistance from the New Jersey Department of Transportation, Local Transportation Planning Assistance (NJDOT-LTPA) Unit, in developing a comprehensive transportation improvement study with a primary focus on the Central Millville area.

Several recommendations were made to improve travel in the study area including the following notably associated with the county roadway system:

- Enhance north-south travel by rerouting CR 555 on the north side of town through the underutilized Brandriff Avenue Bridge crossing to connect back into CR 555 on the south end of town at Silver Run Road.
- Further enhance the roadway network in northern Millville by extension of Wade Boulevard and extension of SW Boulevard to Vineland.
- Improvements to CR 555 on Wheaton Avenue between 3rd Street and 4th Street.[4]

[3] Figure 5 from the City of Vineland, Master Plan Circulation Element
[4] Figure 15 from the Millville Transportation Improvement Study

Initial Route Screening

The initial route screening focused on identifying the county roadway system within the geographic focus study area and reviewing readily available vehicle classification traffic data. Based on a review of New Jersey Department of Transportation's Straight Line Diagrams (SLD), the county roadway system within the geographic focus study area consists of over 215 miles of county roads, and 57 county routes, or 66 county routes when you consider municipal boundaries.

The initial route screening removed county roadways where 48-hour short-term vehicle classification counts from NJDOT's Traffic Monitoring System showed less than 10% daily large truck volumes along the county road. County roadways that did not have short-term vehicle classification counts were included for further analysis.

The screening list was then further refined based on coordination with County staff to exclude county roadways that were not of sufficient length (less than 1.0 mile) or have posted truck restrictions. This resulted in a list of 41 designated county roadways within the focus study area for further analysis.

Table 2. Initial List of County Routes within Geographic Focus Study Area

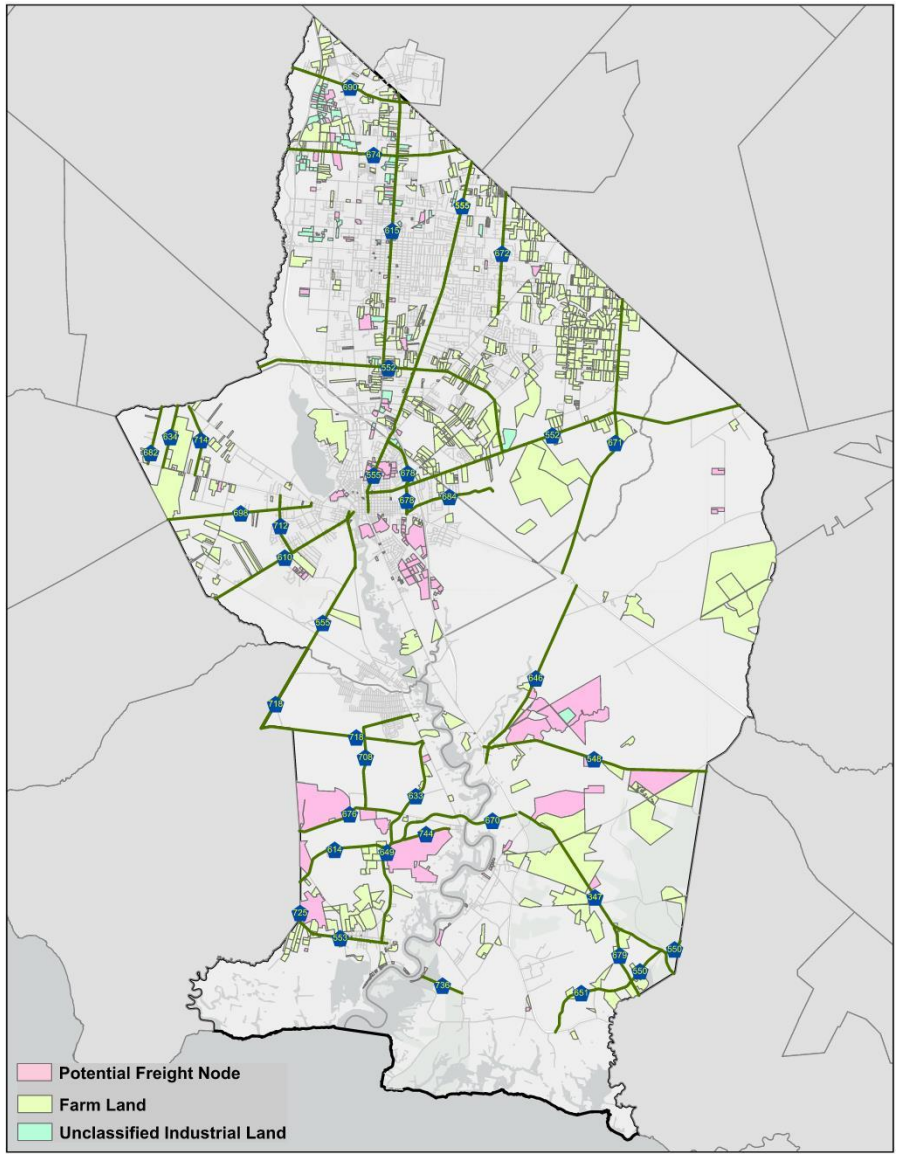
Municipality	County Route	Municipality	County Route	Municipality	County Route	Municipality	County Route
Vineland	552	Millville	552S	Commercial	553	Maurice River	347
	552S		555		555		548
	555		610		614		550S
	615N		634		633		552
	615S		678		649		646
	671		682		670		651
	672		684		676		670
	674		698		708		671
	684		712		718		679
	690		714		725		736
					744		

Freight Linkage Analysis

In order to demonstrate that a county roadway meets the established criterion of providing access to a freight node, the Consultant Team developed a methodology to correlate property tax parcel records data with electronic geographic information system (GIS) map layers to identify freight land uses. Relevant data points were extracted from the New Jersey Property Tax System, known as MOD-IV, which provides for the uniform preparation, maintenance, presentation and storage of the property tax information. The following outlines the methodology used to determine potential freight land use connections:

1. Download multi-municipal (Vineland, Millville, Commercial, Maurice River) electronic property tax parcel records (MOD IV data) from the State's tax assessment records website and remove all unnecessary data fields.
2. Extract the following Property Use Codes from MOD IV data:
   a. 222 Greenhouse/Nursery
   b. 33X Industrial
   c. 440 Lumber Yard
   d. 51X Marina
   e. 571 Food and Beverage Processing
   f. 580 Quarry – Stone/Sand
   g. 650 Recycling Facility
   h. 79X Trucking
   i. 95X Warehouse
3. Extract the following Property Class Codes without Property Use Codes from MOD IV data:
   a. 3A Farm
   b. 3B Farm (Qualified)
   c. 4B Industrial
4. Correlate MOD IV data with available GIS map layers to provide each tax parcel with a unique GIS tax parcel identification number

Figure 8. Freight Land Use Connections



Traffic Count Program

Traffic vehicle classification counts were conducted with automatic traffic recorders (ATR) on each initial route screening listed county roadway in order to identify county roadways that would be eligible for funding based on the LFIF criteria of at least 10% daily large truck volume.

The data collected hourly directional traffic flow data and vehicle classification for a 7-day period pursuant to the procedures and criteria for data collection as outlined in NJDOT's Local Freight Impact Fund Handbook. Large trucks are defined by the LFIF program as medium or heavy trucks, excluding buses and motor homes, with a gross vehicle rating (GVWR) greater than 5 tons (10,000 pounds).

The traffic count program commenced in February 2020 and was completed prior to the impacts from the COVID-19 pandemic and statewide stay-at-home order which effected regional and national traffic conditions.

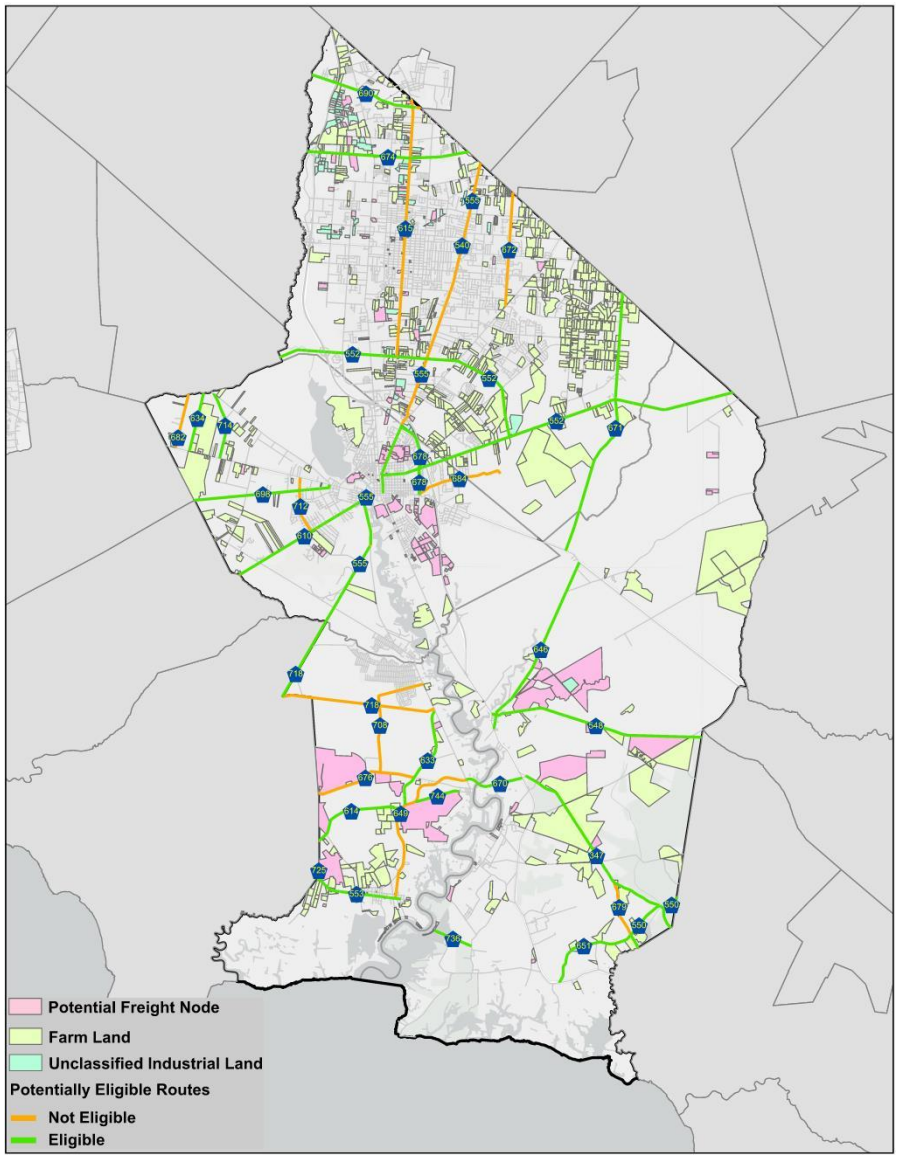
For study purposes, the vehicle classification data followed the 13 vehicle category classifications used by FHWA and considered Classes 5-13 as large trucks. Based on the traffic count program, 24 county routes within the geographic focus area met the requirement of at least 10% daily large trucks.

41 COUNT LOCATIONS

10 ROUTES PER MUNICIPALITY

24 COUNTY ROUTES DEEMED ELIGIBLE

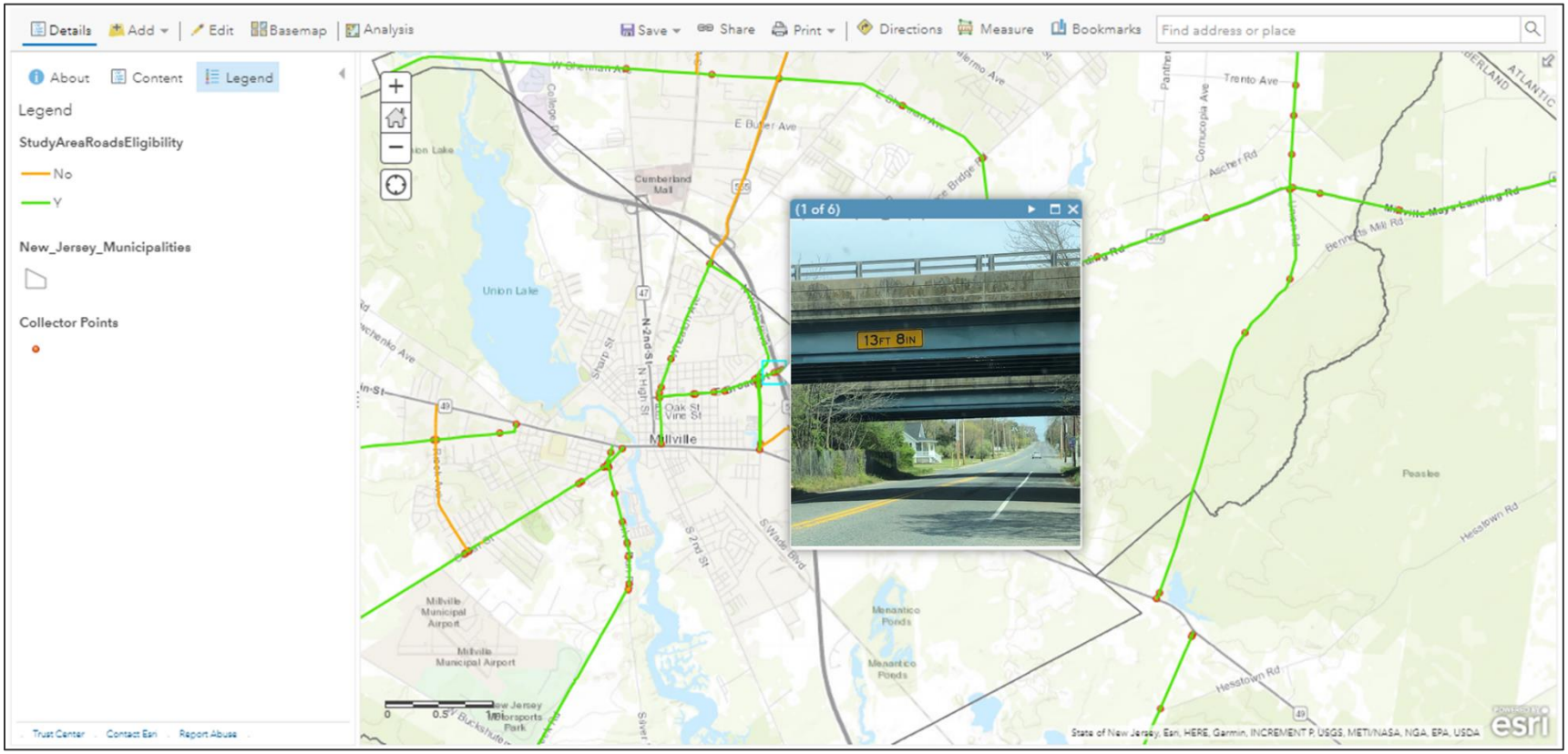
Figure 9. Traffic Count Program Locations



Field Reconnaissance

Once the more refined list of routes was established, the Consultant Team conducted field reconnaissance to view and evaluate existing conditions related to truck usage of these roadways focused on identifying critical infrastructure impediments. The field reconnaissance consisted of photo documenting and field videoing each roadway while completing visual windshield identification of key obstructions and truck impediments such as narrow turning radii at intersections, weight restrictions, vertical clearances, steep grades and roadside hazards. The field reconnaissance data was supplemented through the use of Collector for ArcGIS, a mobile data collection application, so the information could be correlated to electronic geographic information system (GIS) map layers.

Figure 10. Screenshot from Collected Field Reconnaissance Data using Collector ArcGIS



Regional Pavement Condition Data

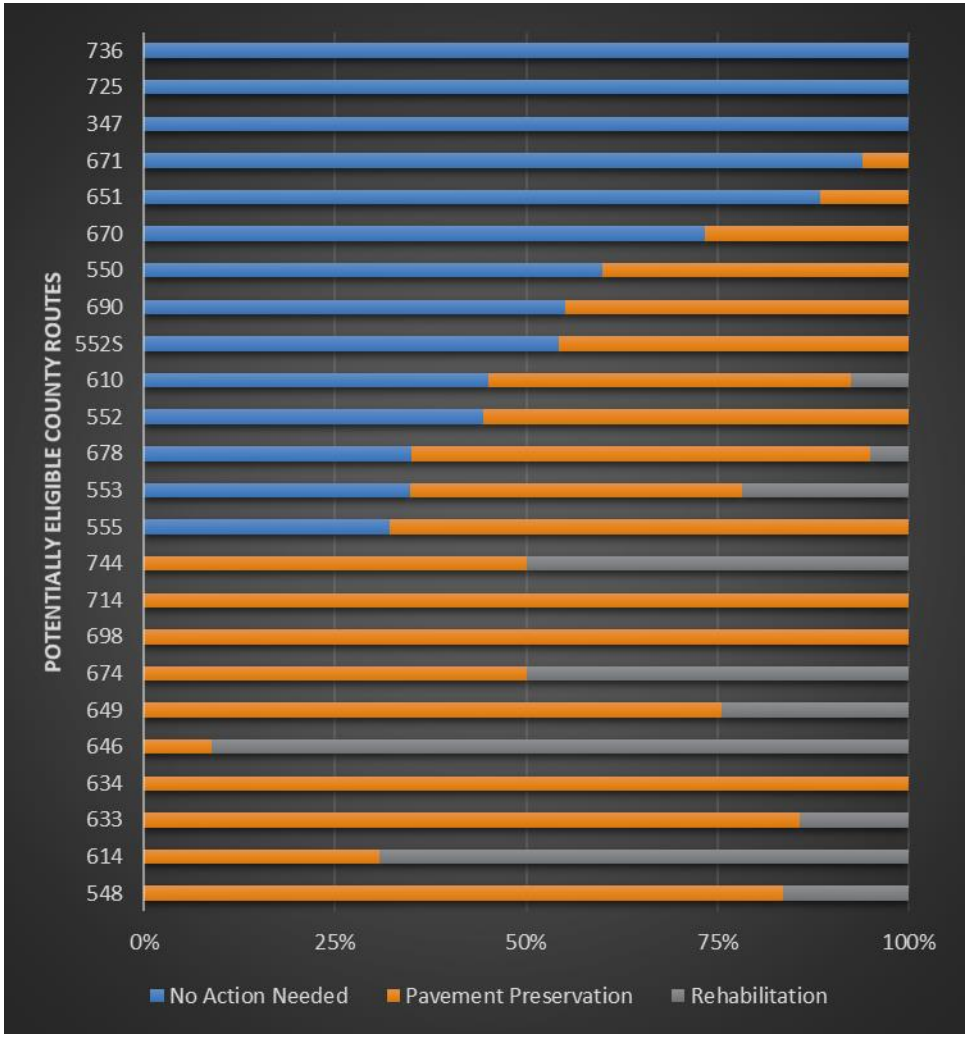
In 2018/2019, the South Jersey Transportation Planning Organization (SJTPO) contracted with a consultant team to conduct a regional pavement data collection throughout the planning region covering Atlantic, Cape May, Cumberland, and Salem counties. As part of the SJTPO Regional Pavement Condition Data Collection Project, the consultant team, led by Advanced Infrastructure Design, Inc., collected pavement conditions within SJTPO's counties including International Roughness Index (IRI), Surface Distress Index (SDI), cracking percentages, and rut depths.

The project developed six treatment alternative programs based on the conditions that were classified into three categories:

- No Action Needed
- Pavement Preservation
  (crack seal / slurry seal / micromill with High Performance Thin Overlay)
- Rehabilitation
  (mill and pave / structural rehabilitation).

The information related to the treatment alternative programs were extracted from the data provided by SJTPO for the refined list of routes. The data was utilized to prioritize the preliminary list of eligible routes. Some modifications were made to the dataset based on input from the County Engineer to account for projects that occurred or are scheduled to occur since the SJTPO project data was collected which would impact the pavement condition and subsequent treatment.

Figure 11. Percentage of Pavement Treatments by Category



Preliminary List of Eligible Routes

Based on the findings from the traffic count program and freight linkage analysis, along with input from the County, 24 county routes within the geographic focus area were identified as eligible routes for future pursuit of funding through NJDOT's Local Freight Impact Funds (LFIF) Grant program.

The list includes 24 county routes, has 24 unique county roads within the geographic focus study area, or 29 county roads when you consider municipal boundaries. There are five county routes within Vineland City, seven county routes within Millville City, eight within Commercial Township, and nine within Maurice River Township.

Table 3. Preliminary List of County Routes within Geographic Focus Study Area

Municipality	County Route	Municipality	County Route	Municipality	County Route	Municipality	County Route
Vineland	552	Millville	552S	Commercial	553	Maurice River	347
	552S		555		555		548
	671		610		614		550S
	674		634		633		552
	690		678		649		646
			698		670		651
			714		725		670
					744		671
							736

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Findings & Recommendations

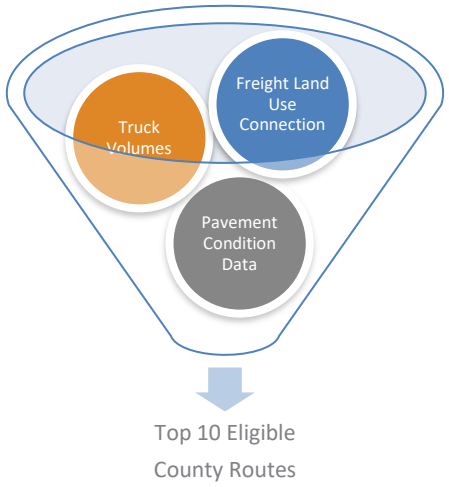
Findings and Recommendations

This study identified the eligible routes in the county roadway system within the geographic focus study area of Millville City, Vineland City, Commercial Township and Maurice River Township that meet the requirements for funding under the NJDOT Local Freight Impact Fund (LFIF) program.

Each of the eligible routes provide important truck linkage and access to freight-specific land uses such as the Vineland Industrial Park and Millville Airport Industrial Park. Providing critical infrastructure improvements to the eligible routes will ensure that the county roadway system in the eastern part of Cumberland County can continue to support the vital freight industry for the region.

Eligible Route Prioritization

While the findings from the freight linkage analysis and traffic count program provided a basis for a list of eligible routes within the geographic focus study area, it was important to further refine the list of routes since the LFIF program limits the number of applications the County can submit at two each fiscal year.



Since the majority of previous awarded projects under the LFIF program were classified as pavement projects, the extracted data from the SJTPO Regional Pavement Condition Data Collection Project was utilized as a barometer to rank the eligible routes. A scoring mechanism was derived by assigning a point value to the three pavement treatment categories: 0 points for No Action Needed, 1 point for Pavement Preservation, and 2 points for Rehabilitation. A factor was also applied to the various routes to account for the primary route linkage since there may be circumstances where unclassified industrial lands and farm lands from the freight linkage analysis may or may not be construed as providing access to a freight node. A factor of 1.0 was applied to the freight nodes category, 0.75 to the unclassified industrial land category, and 0.50 to the farm land category. The results of the scoring yielded a ranking list of the eligible routes that provides a basis for the County to pursue future LFIF funding applications.

The top 10 list included two county routes in Maurice River Township, four county routes in Commercial Township, two county routes in Millville City, one in Vineland City, and the segments of County Route 555 in Millville City and Commercial Township.

1. CR 646 (Cumberland Road) – MP 0.00 to MP 4.86
2. CR 614 (Dragston Road) – MP 1.42 to 3.99
3. CR 674 (Garden Road) – MP 0.00 to 4.15
4. CR 744 (Noble Street) – MP 0.00 to 1.20
5. CR 649 (North Avenue) – MP 0.00 to 4.47
6. CR 548 (Broadway) – MP 0.00 to 5.50
7. CR 633 (Steep Run Road) – MP 0.00 to 2.75
8. CR 555 (Millville / Commercial) – MP 3.80 to MP 11.90
9. CR 610 (Cedarville Road) – MP 7.69 to MP 11.59
10. CR 678 (Wade Boulevard – MP 0.00 to MP 2.00

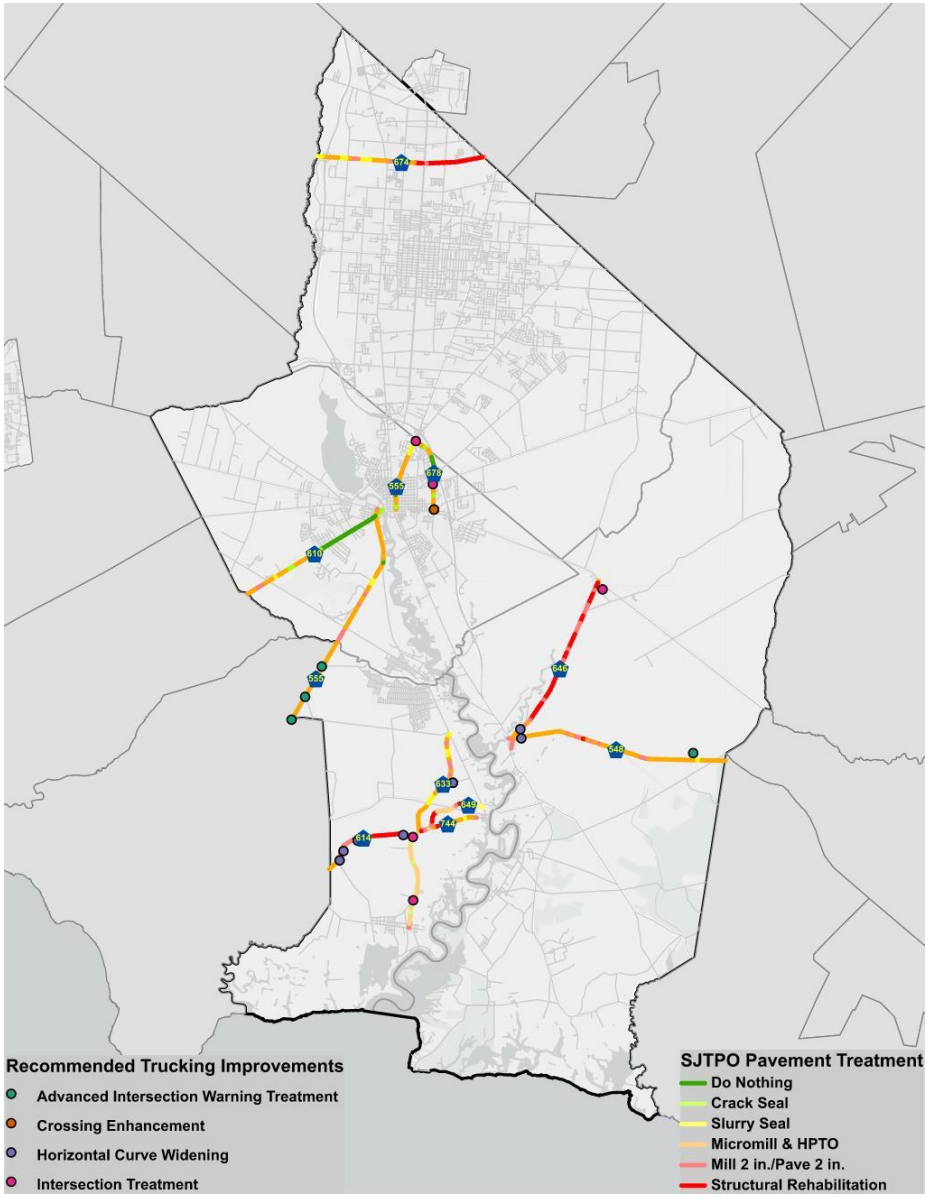
Table 4. Prioritized List of County Routes within Geographic Focus Study Area

County Route	Pavement Treatment			Pavement Treatment Score	Freight Linkage Factor	Weighted Score Rating
	No Action Needed	Pavement Preservation	Rehabilitation			
646	0%	9%	91%	1.91	1.00	1.91
614	0%	31%	69%	1.69	1.00	1.69
674	0%	50%	50%	1.50	1.00	1.50
744	0%	50%	50%	1.50	1.00	1.50
649	0%	76%	24%	1.24	1.00	1.24
548	0%	84%	16%	1.16	1.00	1.16
633	0%	86%	14%	1.14	1.00	1.14
555	32%	68%	0%	0.68	1.00	0.68
610	45%	48%	8%	0.63	1.00	0.63
678	35%	60%	5%	0.70	0.75	0.53
634	0%	100%	0%	1.00	0.50	0.50
698	0%	100%	0%	1.00	0.50	0.50
714	0%	100%	0%	1.00	0.50	0.50
690	55%	45%	0%	0.45	1.00	0.45
553	35%	43%	22%	0.87	0.50	0.43
552	44%	56%	0%	0.56	0.75	0.42
670	73%	27%	0%	0.27	1.00	0.27
552S	54%	46%	0%	0.46	0.50	0.23
550	60%	40%	0%	0.40	0.50	0.20
651	88%	12%	0%	0.12	0.50	0.06
671	94%	6%	0%	0.06	0.50	0.03
347	100%	0%	0%	0.00	0.50	0.00
725	100%	0%	0%	0.00	1.00	0.00
736	100%	0%	0%	0.00	1.00	0.00

[1] Treatments modified based on input from County Engineering regarding projects occurring after the SJTPO project that impacted pavement conditions.

Identified Impediments and Recommended Solutions

Figure 12. Potential Project Scopes for the Top 10 Eligible County Routes[5]



The route prioritization also provided the ability to more closely review the Top 10 list of eligible routes to identify impediments and recommend solutions to address truck mobility. Based on the more in-depth review of the Top 10 list, potential project scope for funding application were formulated.

The potential scopes focused on two primary categories: Pavement Treatments and Truck Mobility Improvements. The pavement treatments for the Top 10 list including, by total percentage of length:

No Action Needed	Pavement Preservation	Pavement Rehabilitation
37%	48%	15%

The truck mobility improvements centered on solutions that provide the most efficient benefit to regional truck connectivity.

8 Horizontal Curve Widenings

7 Intersection Treatments

4 Advanced Intersection Warning Locations

2 Crossing Enhancements

[5] Pavement Treatment Data Source: SJTPO and URS, modified based on input from County Engineering regarding projects occurring after the SJTPO project that impacted pavement conditions.

Table 5. Recommended Intersection and Segment Treatments

Identifier	Treatment Type	Route	Treatment Description	Longitude	Latitude
CR 548.1	Segment	CR 548	Horizontal Curve Widening	-74.97709932	39.31341696
CR 548.4	Intersection	CR 548	Advanced Intersection Warning Treatment	-74.89765436	39.30844571
CR 555.1	Intersection	CR 555	Intersection Treatment	-75.03631707	39.40338181
CR 555.3	Intersection	CR 555	Advanced Intersection Warning Treatment	-75.08332479	39.3196552
CR 555.4	Intersection	CR 555	Advanced Intersection Warning Treatment	-75.07712004	39.32788031
CR 555.5	Intersection	CR 555	Advanced Intersection Warning Treatment	-75.06949253	39.33882335
CR 610.1	Intersection	CR 610	Intersection Treatment	-75.07375859	39.37836498
CR 614.1	Segment	CR 614	Horizontal Curve Widening	-75.06070353	39.26920732
CR 614.2	Segment	CR 614	Horizontal Curve Widening	-75.05895013	39.27256899
CR 614.3	Segment	CR 614	Horizontal Curve Widening	-75.05238502	39.27634334
CR 614.4	Segment	CR 614	Horizontal Curve Widening	-75.03137169	39.27844154
CR 614.5	Intersection	CR 614	Intersection Treatment	-75.02693976	39.27776372
CR 633.2	Segment	CR 633	Horizontal Curve Widening	-75.00862795	39.29733433
CR 633.3	Segment	CR 633	Horizontal Curve Widening	-75.00862795	39.29733433
CR 646.1	Intersection	CR 646	Intersection Treatment	-74.9398759	39.36709581
CR 646.3	Segment	CR 646	Horizontal Curve Widening	-74.97755546	39.31671515
CR 649.1	Intersection	CR 649	Intersection Treatment	-75.02662204	39.2550403
CR 678.1	Intersection	CR 678	Crossing Enhancement	-75.01806236	39.39545379
CR 678.2	Intersection	CR 678	Crossing Enhancement	-75.01806236	39.39545379
CR 678.3	Intersection	CR 678	Intersection Treatment	-75.01865375	39.40457032
CR 678.6	Intersection	CR 678	Intersection Treatment	-75.02664877	39.42001373

Advanced Intersection Warning Treatment

Enhanced signage and pavement markings sufficiently placed in advance of an intersection can help alert truck drivers to the presence of an intersection ahead and allow them time to perceive and react. Several rural locations with sporadic cross roads were identified, particularly County Route 555 in Commercial Township and County Route 548 in Maurice River Township, which may benefit from this treatment to bring more conspicuity to these locations.

Figure 13. Advanced Intersection Warning Treatment

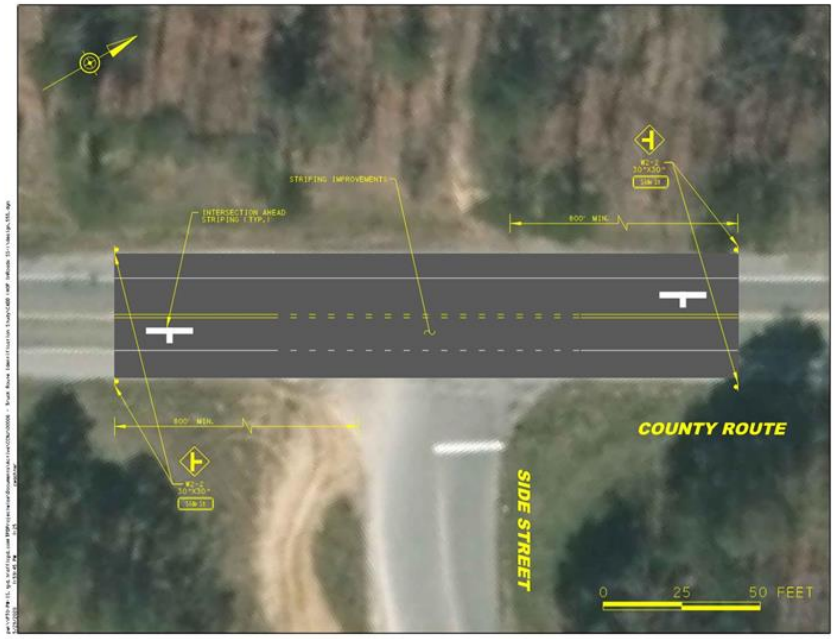


Figure 14. Horizontal Curve Widening Treatment

Horizontal Curve Widening

Several locations have been identified along the prioritized eligible routes where horizontal curve widening would provide increased mobility for trucks. When large trucks traverse a horizontal curve, the rear wheels may not follow the same path as the front wheels causing offtracking. Widening on horizontal curves may be needed to accommodate truck mobility depending on the curve characteristics, design speed and other factors. The geometry of these identified locations were reviewed in accordance with guidance provided in AASHTO Green Book.

Crossing Enhancements

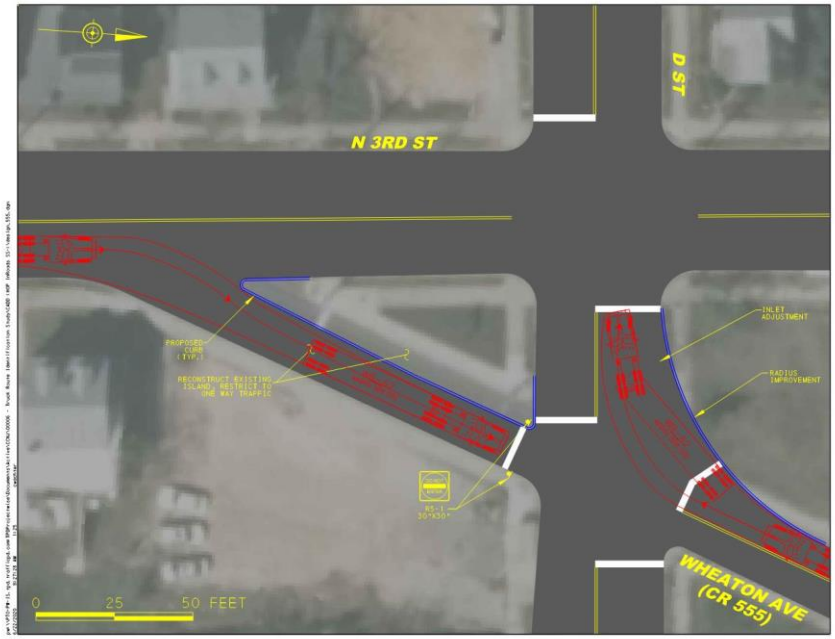
Two crossing locations along Wade Boulevard (CR 678) were identified as potential locations that could benefit from crossing enhancements. Within the vicinity of Millville Senior High School there are two uncontrolled crossings of Wade Boulevard at the school driveways. The roadway in this segment is divided but the medians do not extend to the marked crosswalks resulting in pedestrians traversing over 65 total feet of cartway width. Crossing enhancements such as the installation of rectangular rapid flashing beacons (RRFB) and/or pedestrian refuge islands could benefit both pedestrian safety and truck mobility. Research has shown pedestrian crossing islands can result in a 32% reduction in pedestrian crashes and a 47% reduction with RRFBs.[6]

Figure 15. Crossing Enhancement Treatment

[6] FHWA Safe Transportation for Every Pedestrian (STEP), https://safety.fhwa.dot.gov/ped_bike/step/resources/

Truck Mobility Treatments at Specific Intersections

Figure 16. Intersection Treatment CR 555.1

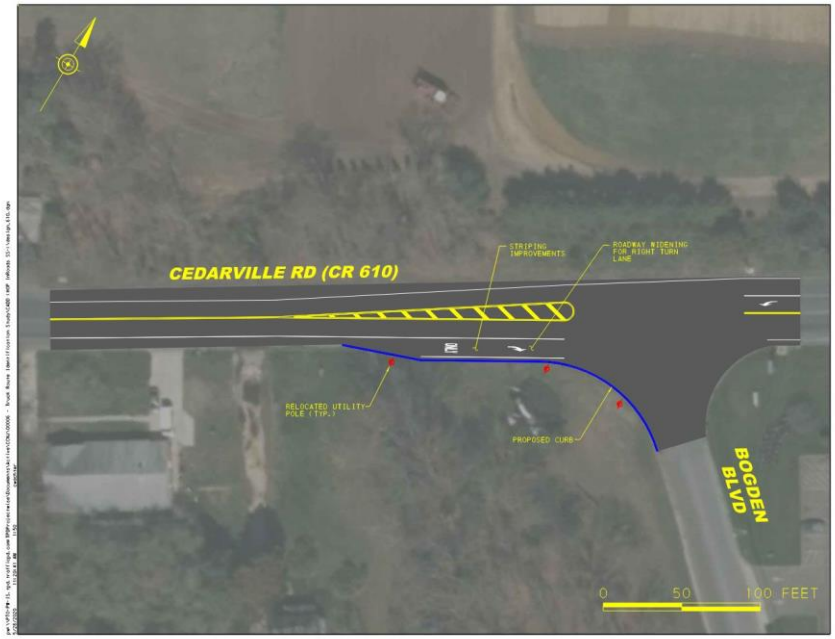


County Route 555 at 3rd Street (Millville City)

Identified Impediment: The skewed intersection of 3rd Street and Wheaton Avenue presents operational issues and limited visibility for trucks.

Recommended Solution: One recommendation to address truck mobility at this intersection is to close southbound Wheaton Avenue from D Street to 3rd Street and redirect southbound traffic to utilize D Street and continue south on CR 555 via 3rd Street.[7]

Figure 17. Intersection Treatment CR 610.2



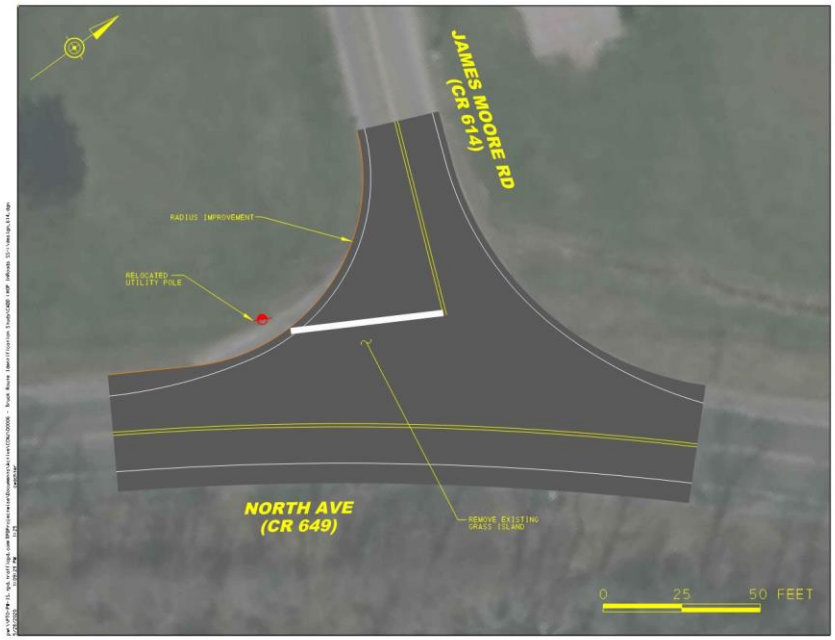
County Route 610 at Bogden Boulevard (Millville City)

Identified Impediment: The lack of auxiliary turn lanes on the northbound CR 610 approach to Bogden Boulevard may pose access and safety concerns for large trucks accessing the Airport Industrial Park especially due to the high posted speed on CR 610.

Recommended Solution: Provide a dedicated right-turn lane to reduce speed differentials and improve overall mobility for trucks to access the Airport Industrial Park.

[7] It should be noted that other alternative recommendations have been considered in the past for this area, as outlined in the Millville Transportation Study, including partial closure of 3rd Street. The full complement of treatment options should be considered by the County in consultation with the City as the project is scoped for a future funding application.

Figure 18. Intersection Treatment CR 614.4

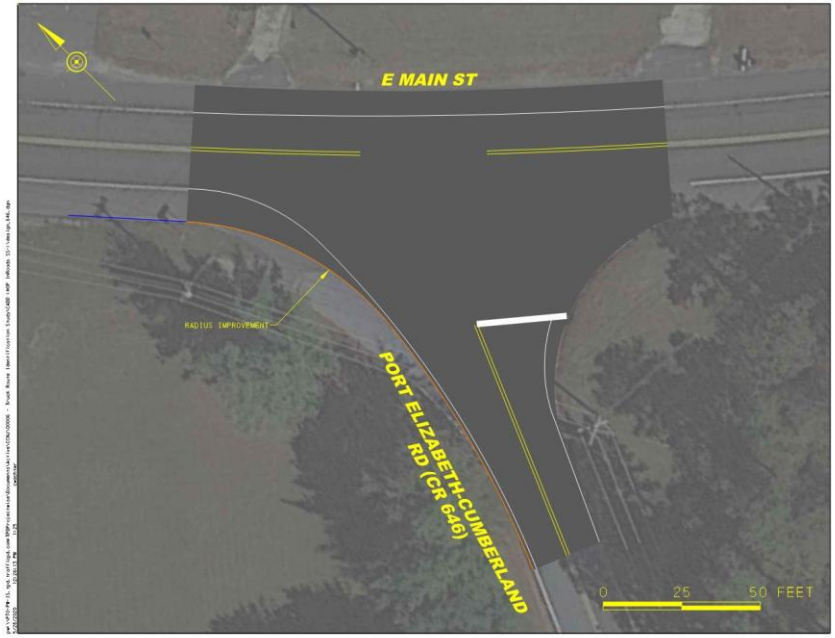


County Route 614 at County Route 649 (Commercial Township)

Identified Impediment: The existing channelized median on the CR 614 approach to CR 649 presents an impediment for large truck mobility and the potential for utility pole strikes.

Recommended Solution: It is recommended that the approach be reconfigured to remove the minimal channelized median and provide a large radius to facilitate turns at the intersection.

Figure 19. Intersection Treatment CR 646.1



County Route 646 at NJ 49 (Maurice River Township)

Identified Impediment: The excessive area that is relatively undefined on the southwest corner of the intersection may impact large truck mobility.

Recommended Solution: It is recommended minor radius improvement be made at the intersection to better facilitate truck movement.

Figure 20. Intersection Treatment CR 678.3

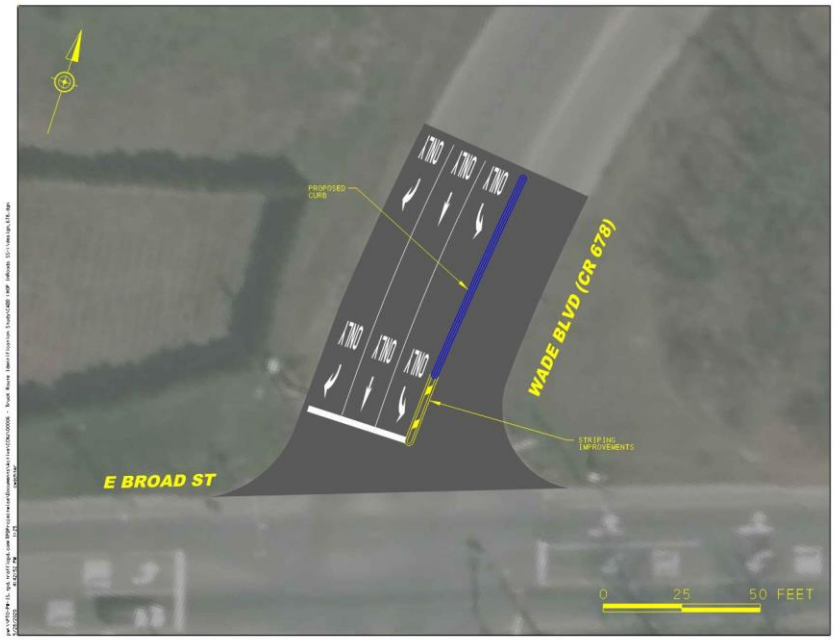


Figure 21. Intersection Treatment CR 678.6

County Route 678 at Broad Street (Millville City)

Identified Impediment: The worn pavement markings show evidence of turning vehicles cutting the corner given the skewed alignment of the intersection.

Recommended Solution: It is recommended to provide a median island along the northern leg of Wade Boulevard (CR 678) at the signalized intersection to better control the turning paths.

County Route 678 at County Route 555 (Millville City)

Identified Impediment: The existing westbound shoulder area terminates prior to the Wade Boulevard (CR 678) approach to CR 555 resulting in narrow approach lanes with large trucks traveling immediately adjacent to the edge of pavement and straddling the solid white lane line.

Recommended Solution: It is recommended that minor widening and curbing be installed along the westbound approach to increase truck mobility and provide structural support for the edge of pavement in this area.

Preliminary Cost Estimates

Preliminary order of magnitude cost estimates were developed for each of the Top 10 eligible county routes. The costs were derived from the latest NJDOT bid price report and information contained in the NJDOT Cost Estimating Guideline.

As noted previously, the majority of projects funded under this program have been at or below $2.0 million. As such, it may be necessary to phase some of the routes within the top 10 list for application purposes. For example, an initial application for CR 674 could focus on the western section around the Vineland Industrial Park and Route 55 interchange, from milepost 0.0 to 2.6, at a preliminary cost of $1.4 million.

Table 6. Preliminary Cost Estimates by County Route

	CR 548	CR 555	CR 610	CR 614	CR 633	CR 646	CR 649	CR 674	CR 678	CR 744
Pavement Preservation Items [1] [2]	$1,007,000	$1,317,700	$491,400	$173,900	$481,300	$113,900	$974,100	$533,000	$448,800	$111,500
Pavement Rehabilitation Items [1] [2] [3]	$331,400		$110,700	$1,085,700	$98,400	$2,827,300	$943,300	$1,877,500	$37,600	$362,000
Horizontal Curve Widening Items [4]	$14,400			$35,800	$20,700	$9,700				$14,200
Intersection Treatment Items [5]		$24,000	$181,000	$58,000		$5,000	$9,000		$102,000	
Advanced Intersection Warning Items [6]	$9,000	$27,000								
Crossing Enhancement Items [7]									$300,000	
Item Sub Total	$1,361,800	$1,368,700	$783,100	$1,353,400	$600,400	$2,955,900	$1,926,400	$2,410,500	$888,400	$487,700
Contingency [8]	$272,500	$273,500	$156,500	$270,500	$120,000	$591,000	$385,500	$482,000	$177,500	$97,500
Traffic Control [9]	$95,500	$96,000	$55,000	$94,500	$42,000	$207,000	$135,000	$168,500	$62,000	$34,000
Mobilization [10]	$109,000	$109,500	$62,500	$108,500	$48,000	$236,500	$154,000	$193,000	$71,000	$39,000
Construction Inspection and Material Testing [11]	$245,000	$246,500	$141,000	$243,500	$108,000	$532,000	$347,000	$434,000	$160,000	$88,000
Total Construction Estimate	$2,083,800	$2,094,200	$1,198,100	$2,070,400	$918,400	$4,522,400	$2,947,900	$3,688,000	$1,358,900	$746,200

Tables Notes:

(1) Quantities and selected treatments for Pavement Items derived from information contained in the SJTPO Regional Pavement Condition Data Collection Project.

(2) Cartway widths estimated based on available data contained in NJDOT Straight Line Diagrams.

(3) Pavement box for reconstruction assumed to match County pavement specification.

(4) Extent of widening along horizontal curves based on aerial imagery and guidance in AASHTO Green Book.

(5) Intersection Treatment Items include known items and lump sum estimates for potentially impacted aboveground utilities.

(6) Advanced Intersection Warning Items include lump sum estimates for a typical intersection treatment including enhanced signage and pavement markings.

(7) Crossing Enhancement is estimated based on prior project experience.

(8) Contingency Item for preliminary concepts is 20% of construction items.

(9) Traffic Control is estimated at 7% of construction items based on NJDOT Cost Estimating Guideline.

(10) Mobilization is estimated at 8% of construction items based on NJDOT Cost Estimating Guideline..

(11) Construction Inspection and Material Testing is 15% of construction subtotal.

(12) All estimates based on available aerial imagery and digitized information.

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Appendix