


Union County - Route 27 Corridor Safety Study

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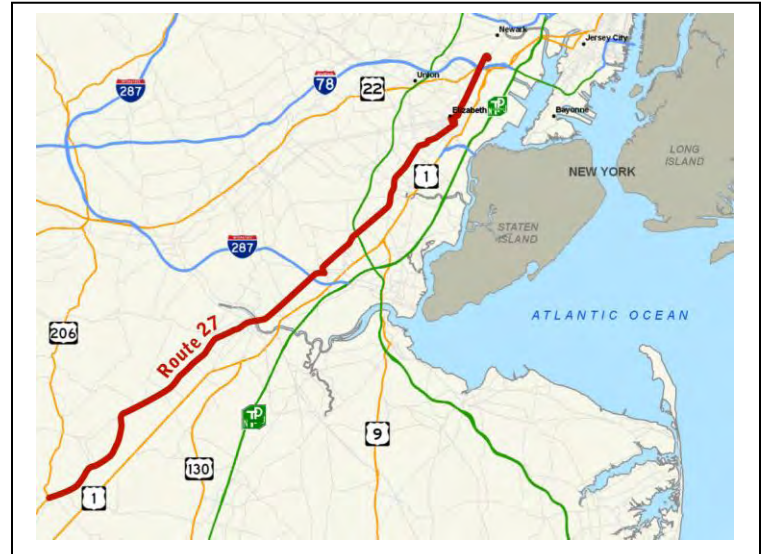
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PROJECT OVERVIEW

Background

In June 2008, the Union County Division of Planning and Community Development initiated the Route 27 Corridor Safety Study to look at issues with vehicular and non-motorized transportation from midtown Elizabeth to the Middlesex County border. The local names for Route 27 change from St. George's Avenue to Rahway Avenue and to Cherry Street. This study is funded by the North Jersey Transportation Planning Authority (NJTPA) and Union County, and was completed in June 2009.



Location Map

Study Area

The study area for this project includes a seven-mile stretch of Route 27 from midtown Elizabeth, through the City of Linden, the Borough of Roselle, and through the City of Rahway. Route 27 is primarily a four-lane road that is classified as an Urban Principal Arterial by the New Jersey Department of Transportation (NJDOT) and Union County. Throughout the corridor, Route 27 supports a variety of commercial residential land uses. Community facilities located within the corridor include two county-owned parks and four schools (see Study Limits Map).

Route 27 is heavily-traveled by commuters, pedestrians, and bicyclists. In 2005 NJTPA identified much of the Route 27 Corridor as a crash-prone location in its Regional Safety Priorities Study. In 2007, the NJDOT conducted a Pedestrian Safety Impact Team (PSIT) field analysis in a portion of this study area. Between 2005 and 2007, 2,295 crashes occurred in the study area, which was higher than the statewide average for roadways of this type. Included in these figures are nine fatalities and 714 injury crashes.

Goals and Objectives

The goal of this study is to identify specific safety-related improvements to reduce vehicular accidents, improve mobility, support transit, and increase bicycle and pedestrian safety along Route 27. Specific objectives include:

- Identification of transportation problems and locally acceptable solutions.
- Development of conceptual plans to be advanced through NJDOT, NJ TRANSIT, Union County and/or the four municipalities.
- Utilization of resources already being provided by the Meadowlink Commuter Services, the Transportation Management Authority (TMA) for the region.

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Methodology/Process

Union County formed a Technical Advisory Committee (TAC) made up of representatives from each municipality, NJ TRANSIT, Meadowlink and the NJDOT to guide and contribute to the study, identify problems and possible solutions. The project team conducted a series of interviews with key municipal and transportation stakeholders who are likely to be involved in the implementation and funding of safety solutions in the Route 27 Corridor. A Public Open House was held to obtain input from the general public, bicycle and pedestrian interest groups, local business representatives, and more importantly, those individuals who use and wrestle with the issues occurring along Route 27 on a daily basis.

Based on traffic volume data collected by NJDOT, origin-destination/travel pattern data from the North Jersey Travel Demand Model, and crash data from the NJDOT crash database, the project team determined what travel conditions and intersection operations will be like in the future. The project team also looked at travel demand management strategies (e.g., carpooling, transit, walking/bicycling), transit service improvements, and modifications to local land use plans and zoning ordinances as ways to reduce vehicle trips and improve mobility within the corridor.

Other Efforts:

- Updated and reviewed recommendations and matrix developed by the 2007 PSIT Study.
- Conducted a Lighting Analysis.
- Integrated recommendations proposed by other related studies, including the 2007 Comprehensive Bicycle Master Plan and East Coast Greenway (ECG) Intersection Study.

After reviewing the results of the analyses, the project team identified both corridor-wide strategies and specific critical locations along the corridor and developed sketch-level concepts/designs that could be implemented by NJ TRANSIT, Union County, municipalities or NJDOT. Additional recommendations include proposed design guidelines, and recommendations for land use policies and ordinances that support vehicular circulation, pedestrian safety, transit access, and travel by bicycle that might be incorporated into County and municipal master plan or ordinance updates. The project team also identified enforcement and educational solutions.

Key Issues

Key issues associated with travel conditions and safety are illustrated on the following photo page and in the Photo Log in the Appendix. These issues range from physical and engineering-oriented items such as outdated traffic signal hardware and missing sidewalks/pedestrian crosswalks to programmatic and regulatory items such as parking regulations/enforcement and transit-friendly land use policies. Primary issues and observations included the following:

Travel Patterns:

- Majority of trips are to/from areas within Union County.
- High number of vehicle hours of delay exists corridor-wide.
- Traffic signal timings have not been reviewed systematically.

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Traffic Safety:

- Crashes are well above statewide average.
- Lane changes contribute to crashes.
- Worst intersection per crash statistics is Wood Avenue.
- Fatal crashes along Route 27 are more frequent than the statewide average.
- Almost 70% of crashes occurred at signalized intersections.

Infrastructure

- The traffic signals are highly antiquated.
- Only 8 signals have pedestrian heads and many of these are out of date (i.e., word messages).
- Only 4 intersections have left turn slots.
- Some traffic signals have electro-mechanical controllers (i.e., antiquated).
- Street lighting does not comply with minimum recommended lighting level guidelines.
- Design of the East Coast Greenway crossing at Route 27 and River Road is underway at NJDOT.

Transit Use

- There are four routes that serve or cross and connect with Route 27 within the corridor.
- There is only one bus shelter within the entire corridor.
- There are no rail stations along Route 27 but the Elizabeth, Linden and Rahway railroad stations are located approximately 1-1/2 mile from the corridor.

Land Use

- Current plans and regulations focus mainly on commercial redevelopment with limited integration of residential uses.
- Existing zoning and land use regulations do not include design standards for connectivity for pedestrian ways or bicycle access with surrounding development or the municipal network.

Recommendations

Recommendations for safety-related solutions and implementation measures were developed in collaboration with stakeholders, county and local officials, TAC members and general input from each of the communities. These findings update and expand upon recommendations developed in previous, related studies. A matrix format compatible with the 2007 PSIT project was utilized and findings from both projects were combined into a single document. The current matrix now contains new recommendations for the City of Rahway, which was not part of the previous NJDOT study, and includes additional issues related to broader traffic, transit, land use and infrastructure concerns.

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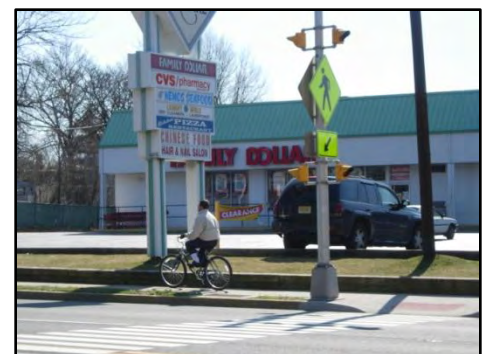
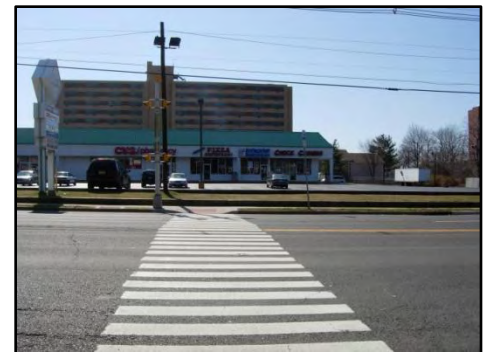
Corridor-wide recommendations are separated into the following categories:

- **Engineering and Operations** – These include measures such as updating antiquated signals, provision of pedestrian-scale lighting, municipal wayfinding, signage at school zones, and bus stop inventory and/or design.
- **Maintenance** – Potential measures include provision of enhanced crosswalk striping, street light maintenance and bicycle-safe drainage grate replacement.
- **Regulatory** – These include revision and adoption of pedestrian and transit-friendly local land use and zoning ordinances.
- **Enforcement and Education** – Potential activities such as joint municipal traffic safety campaigns, police activity associated with pedestrian sting operations, safe routes to school programs and transit informational programs are of interest.

Site specific recommendations within these same categories are also listed in the matrix for each of the four municipalities. Priority locations and ideas included, for example, posting of advance warning signs for motorists at the curve near Baltimore Avenue at the point where Route 27 narrows from four to two lanes in Roselle and Linden.

A comprehensive listing of all recommendations with notations related to jurisdictional responsibilities and implementation timeframes is provided in the section of this report entitled “Corridor Improvement Plan”.

In addition, two priority areas in each municipality were selected as “Critical Locations”. These areas were examined in greater detail, and individual Conceptual Plans and Problem Statements were developed for each. These can also be found in the last section of this report.



UNION COUNTY

Route 27 Corridor Safety Study: Study Limits



Route 27 Corridor: Legend

- | | | | |
|---------------------------|-----------------------|-----------------|--------------------|
| Route 27 Corridor | NJ Transit Rail Lines | Golf Courses | Non-Public Schools |
| Hospitals | Rivers & Streams | County Parks | Public Schools |
| Airports | Municipal Boundaries | Municipal Parks | Historical Sites |
| NJ Transit Train Stations | | | |



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Key Issues



Potential Gateways



Regional Centers



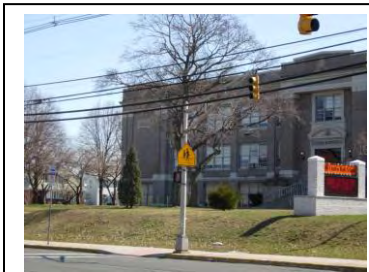
Commercial Development



Economic Revitalization Opportunities



Multi-Modal Activity



Safe Routes to School



Sidewalk Gaps



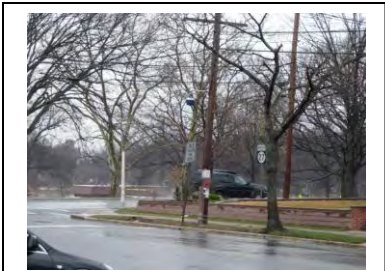
Transit Access



Intersection & Crossing Treatments



Traffic Signals/Infrastructure



Lighting Conditions



Education/Enforcement Policies

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INTRODUCTION

Study Purpose/Goals

The Union County Route 27 Corridor Safety Study focuses on vehicular and non-motorized transportation along the Route 27 corridor from midtown Elizabeth through the City of Linden, the Borough of Roselle and the City of Rahway. The goal of the study along this state highway is to identify specific safety related improvements to reduce vehicular accidents, improve mobility, support transit and increase pedestrian and bicycle safety. The objectives are to identify transportation problems and locally accepted solutions and to develop conceptual plans which can be advanced to preliminary design by the New Jersey Department of Transportation (NJDOT) or NJ TRANSIT. NJDOT, NJ TRANSIT, the four municipalities as well as Meadowlink, the local Transportation Management Association were key participants in the project.

The NJTPA identified much of the Route 27 corridor within Union County as a crash prone location in its recently completed Regional Safety Priorities Study. From 2002 to 2004, there were 2,074 crashes in the study area, which represented 12% of total crashes on state highways in Union County. This included 6 fatal and 694 injury crashes over that time period. Data also indicate a comparatively high percentage of right angle and left turn crashes, as well as pedestrian/bicycle injuries. More recent crash data from 2005 to 2007 indicates even higher figures, above the average for roadways of this type.

In 2007, NJDOT selected Route 27 as it passes through Roselle, Linden and Elizabeth (MP 30.98 to MP 94.98) for its Pedestrian Safe Corridors Program. A Route 27 Pedestrian Safety Impact Team (PSIT) collected information on existing pedestrian accommodations in order to identify potential corridor-wide safety improvements and spot improvements at high crash locations. This study includes a review, update and integration of the PSIT results as part of the overall project effort.

Background

Route 27 is mainly a four-lane road that is classified as an Urban Principal Arterial under the jurisdiction of NJDOT. The road changes names several times. Traveling from south to north, Route 27 through Rahway and Linden/Roselle is known as St. George's Avenue. In Elizabeth, it is Rahway Avenue, then Cherry Street and beyond the study area, it continues as Westfield Avenue, North Broad Street and then Newark Avenue. The length of highway within the study area is almost seven miles from Middlesex County at MP 27.13 to Cherry Street in Elizabeth at MP 34.05. It should be noted that the highway acts as the boundary between the communities of Roselle and Linden. The road supports a variety of land uses including commercial, retail and residential as well as the entrances to two county parks and four schools.

The 7 mile section of Route 27 between the Union County – Middlesex County border and Cherry Street in Elizabeth is primarily a four lane roadway (two lanes per direction) with 39 signalized intersections, and passes through the communities of Rahway, Linden, Roselle, and Elizabeth (it forms the border between Linden and Roselle). It carries 20,000-28,000 vehicles per day. From 2005-2007, this section of Route 27 had 2,295 crashes, according to records maintained by the State of New Jersey. Given the traffic volumes on Route 27, this represents 9.1 crashes per million vehicle-miles traveled, which is 45% higher than an appropriate benchmark rate. These crashes included 8 fatal crashes, which resulted in 9 fatalities. Half of these fatal crashes were vehicles

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colliding with bicycles or pedestrians. There were a total of 79 vehicle crashes with bicycles or pedestrians in that time period. A total of 67% of these crashes occurred at signalized intersections.

The table below summarizes the type of crash for 2005-2007. As indicated, more than half of all crashes are rear end, sideswipe, or left turn crashes. These are indicative of the lack of left turn lanes throughout the corridor. By not having left turn lanes, vehicles frequently stop in the left lane, leading vehicles that are following to either hit them, or change lanes to avoid them and then hit another vehicle. Also, by not having left turn lanes that align, sight lines of oncoming traffic tend to be obstructed when two vehicles are turning left across from each other. Given that half of all vehicles on the road are now mini-vans, pickup trucks, or SUVs, these sight distance obstructions are more of an issue than they were 30 years ago. As a result, left turning vehicles are often too busy looking for gaps in oncoming traffic to watch for pedestrians in crosswalks.

All crashes, 2005-2007

Crash Type	Fatal	Injury	Property Damage Only	Total
Same Direction - Rear End	0	243	513	756
Same Direction - Sideswipe	0	36	337	373
Angle	2	202	342	546
Head-On	0	18	28	46
Struck Parked Vehicle	0	22	122	144
Left Turn / U-Turn	0	88	119	207
Fixed Object	2	31	66	99
Pedestrian / Cyclist	4	66	9	79
Other	0	8	37	45
Total	8	714	1,573	2,295

Total Persons Killed = 9 (5 were pedestrians/cyclists)

Total Persons Injured = 1,032 (71 were pedestrians/cyclists)

The Route 27 Pedestrian Safety Impact Team conducted by the NJDOT in June of this year in Roselle, Linden, and Elizabeth noted that lighting could be improved throughout the corridor. The 2006 crash history supports this fact. The tables below summarize all crashes by light conditions and pedestrian/bicycle crashes by light conditions. As shown, nearly 30% of all crashes occurred in darkness, and over 40% of pedestrian/bicycle crashes occurred in darkness. This is higher than typical, given the exposure levels (i.e. traffic volumes).

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All crash records contain a field for light conditions. Within the table that follows, darkness is defined as anytime the crash did not occur in daylight.

All crashes, 2006

Light Condition	Fatal	Injury	PDO	Total	Share
Daylight	3	157	373	533	72%
Dawn		2	5	7	1%
Dusk	1	12	12	25	3%
Dark (St. Lights Off)		6	10	16	2%
Dark (No St. Lights)		2	8	10	1%
Dark (St. Lights On, continuous)	2	39	103	144	19%
Dark (St. Lights On, spot)		1	4	5	1%
Total	6	219	515	740	

PDO = Property Damage Only Crashes

Pedestrian / Bicycle Crashes

Light Condition	Fatal	Injury	PDO	Total	Share
Light	1	12	0	13	59%
Dark	2	3	4	9	41%
Total	3	15	4	22	

PDO = Property Damage Only Crashes

The traffic signal optimization project that will be implemented by the NJDOT, along with some recent spot improvements, are expected to improve mobility in the corridor. Specifically, travel times are expected to be reduced by 5-15% in peak hours. However, there are a number of intersections that will have operational problems even with the traffic signal optimization.

Transit Background

NJ TRANSIT currently provides bus service within the study area via four routes that serve, cross or connect with Route 27 in the corridor. A number of transfer points and connections to nearby rail and air hubs, including the local train stations in Elizabeth and Rahway also exist. There are 14 bus stops along Route 27 in Elizabeth, 25 in Linden, 12 in Roselle, and 19 in Rahway. Minimal amenities such as shelters, route information, trash or newspaper vending machines are found throughout the system, and conditions and access issues are often lacking.

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Land Use Background

The current land use patterns along Route 27 provide the context for evaluating which land use management tools and strategies may be most effective to achieving the vision for the corridor for the future. Existing land use forms the baseline from which future land use change and access improvements may evolve. A brief overview of current patterns is provided.

Route 27 traverses the four densely developed communities of Elizabeth, Roselle, Linden, and Rahway, New Jersey. Elizabeth is a historically industrial city while Roselle, Linden, and Rahway have traditionally been suburban communities. The corridor, however, is predominantly commercial along the roadway frontage. As is common to suburban environments, there is, nonetheless, a mix of land uses within the abutting neighborhoods; a diverse range of housing and community resources such as schools. Most of the development in the Route 27 corridor is relatively low scale at one or two story buildings with on-site parking. The Route 27 corridor also features numerous nearby large parks and open spaces, most notably Warinanco Park in Elizabeth (with winding trails) and the Rahway River Park (with bicycle paths) and Madison Avenue Park in Rahway.



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Historic Context

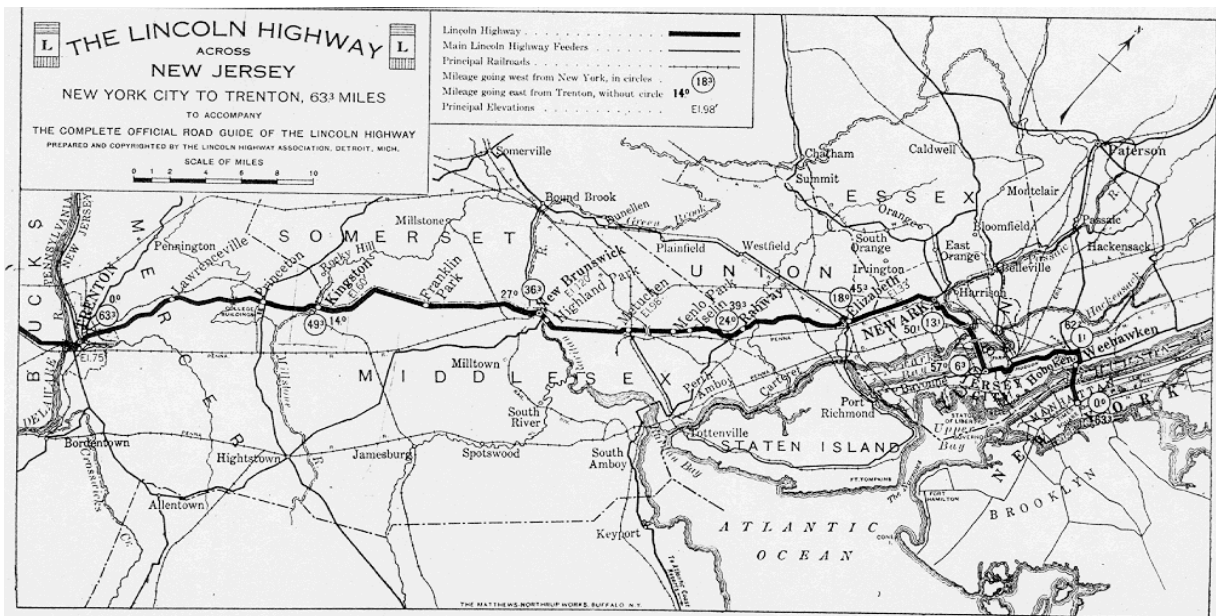
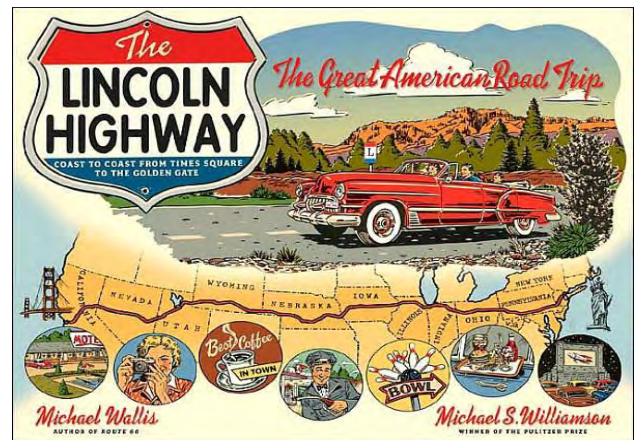
Route 27 was part of the alignment through New Jersey of the Lincoln Highway, the United States' first transcontinental highway that was established in 1913 to run from New York City to San Francisco. Route 27 is still referred to as the Lincoln Highway in many municipalities.



Early automobile enthusiasts led by Carl G. Fisher¹ (famous manufacturer of carbide-gas headlights, builder of the Indianapolis Speedway, and developer of Miami Beach in the 1920s) envisioned a transcontinental continuous improved highway from the Atlantic to the Pacific well before roads were viewed as more than a means of local transportation. At the time, railroads led interstate transportation of people and goods and the Federal-Aid Highway Program was just beginning. The Lincoln Highway was a precursor to later highways such as Route 66 and Route 80 today. It traversed 3,389 miles, 14 states, 128 counties and 500 cities/towns. In New Jersey it runs from Newark through Trenton for a total of 63 miles.

Design features of the proposed typical highway section were to include the following features:

- 110-foot right-of-way
- 40-foot wide concrete pavement 10 inches thick
- Guardrail at all embankments
- Curves super-elevated for a speed of 35 mph
- No grade crossings or advertising signs
- Footpath for pedestrians



¹ Sources: Wikipedia and FHWA Highway History

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Travelers could anticipate a total trip cross-country by car to take 20 to 30 days at a speed of approximately 18 mph.

In later years, the Lincoln Highway was often featured in radio shows and even Hollywood movies, such as the 1951 movie with Lucille Ball and Desi Arnaz, Long, Long Trailer.

As indicated in the findings of this study, Route 27's role as an interstate travel corridor has changed significantly. Almost 25-30% of all existing traffic is local to the corridor, nearly all remaining traffic is regional in nature to Union County and less than 2% is through-traffic.

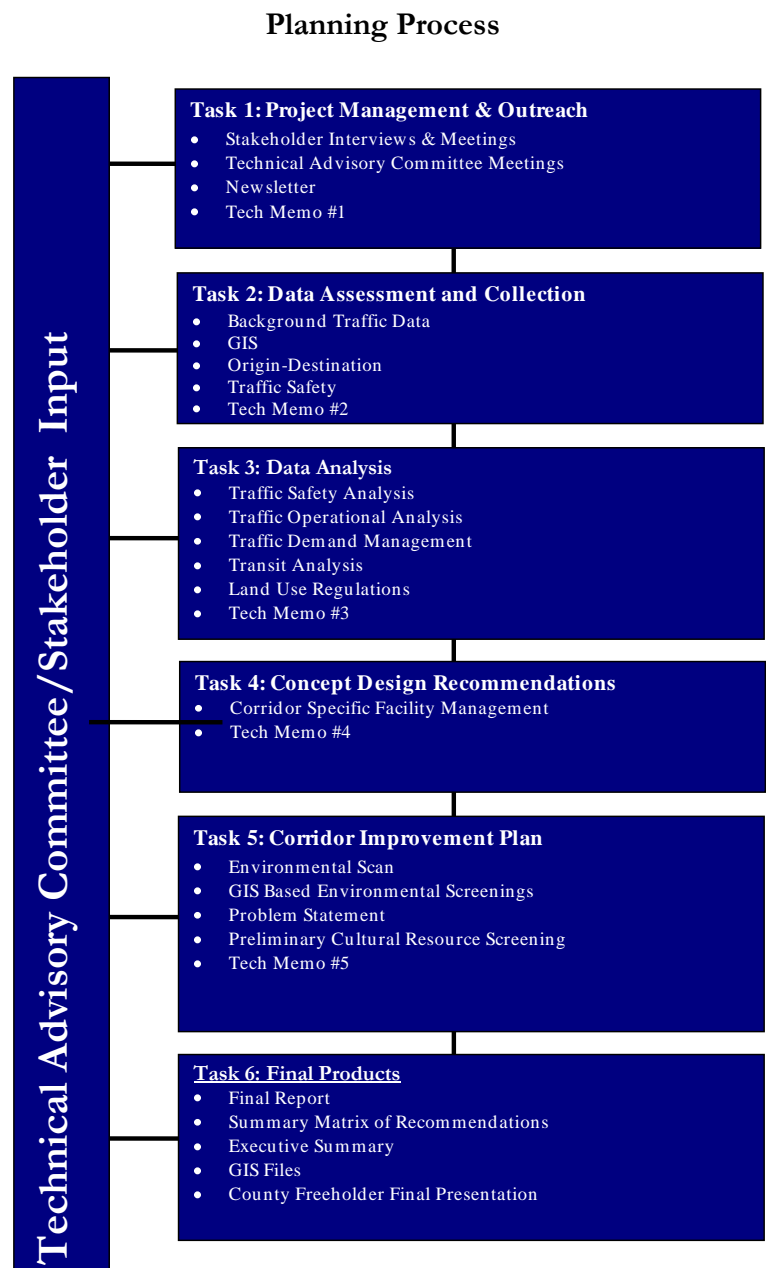
METHODOLOGY

The development of a safe, integrated system of vehicular traffic, land use and multi-modal facilities is a key goal of the Union County Route 27 Corridor Safety Study. The overall plan and products will ensure the incorporation of safety solutions into future municipal development and local transportation improvement projects, serve economically the residents and business community, provide alternative mobility choices within a range of urban and suburban environments, increase access to transit and build on related safety initiatives and plans by NJDOT and others.

The project approach adheres to six (6) work tasks and a 13-month study timeframe as illustrated in the flow chart.

Efforts included:

- Integrating specialized safety and multi-modal educational materials as part of PowerPoint presentations and outreach activities.
- Conducting informal interviews, fact-finding and field meetings as part of data collection and outreach activities.
- Utilizing state-of-the-practice traffic safety/operational/regulatory team expertise to create unique, implementable solutions.
- Integrating and updating related studies (PSIT/ECG)



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Outreach Effort

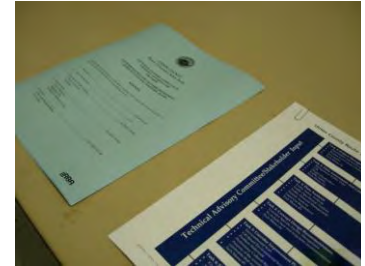
A Technical Advisory Committee (TAC) composed of representatives from the participating municipalities, Union County, North Jersey Transportation Planning Authority, NJ TRANSIT and Meadowlink Transportation Management Association was convened by Union County to oversee and direct this study. The consultant team met with members of the TAC to inform them of the nature of the project and to solicit input from members on specific problems, issues within the study area that had been identified as part of the initial data collection and analysis effort.

Through input from the TAC and the County, the consultant team identified key stakeholders, such as various bicycle/pedestrian user groups, who could provide input through interviews and/or follow-up meetings. The consultant team conducted four formal stakeholder interview meetings, one with each municipality, and elicited additional input from various users while traveling the corridor.

A public meeting was also conducted by the consultant team in an “open house” format to allow ample opportunity for project stakeholders and the public at large to contribute original ideas as well as targeted feedback for concepts and recommendations.

In addition to the stakeholder meetings, a project newsletter was prepared by the consultant team for distribution by the County. It served as both an informational overview of the project as well as a meeting/workshop announcement for the public.

Outreach comments and activities are recorded and detailed in Technical Memorandum #1 (see Appendix).



EVALUATION AND ANALYSIS

Data assessment and analysis provides a framework for recommendations. Along with travel data, the study included an assessment of land use, transit and development data. The County's Geographic Information System (GIS) was utilized to obtain the existing land use for the immediate corridor area. New or approved development and redevelopment projects that are within the corridor were discussed and provided by municipal stakeholders.

Operational information within the study area and geometric roadway layout from Straight Line Diagrams was assembled that identifies number of lanes, lane width, presence of shoulder, parking, traffic signal operation plans, traffic volumes, turning movements and speed limits. Most recent information on traffic volumes were obtained through NJDOT. Much of the study area has sidewalks but gaps were identified and a lighting assessment was conducted throughout the length of the study corridor. Crash data for three most recent years was collected from the NJDOT and municipalities to assist with the identification of problem locations. Pedestrian crash reports were reviewed for location, time of day and description to assess emerging patterns.

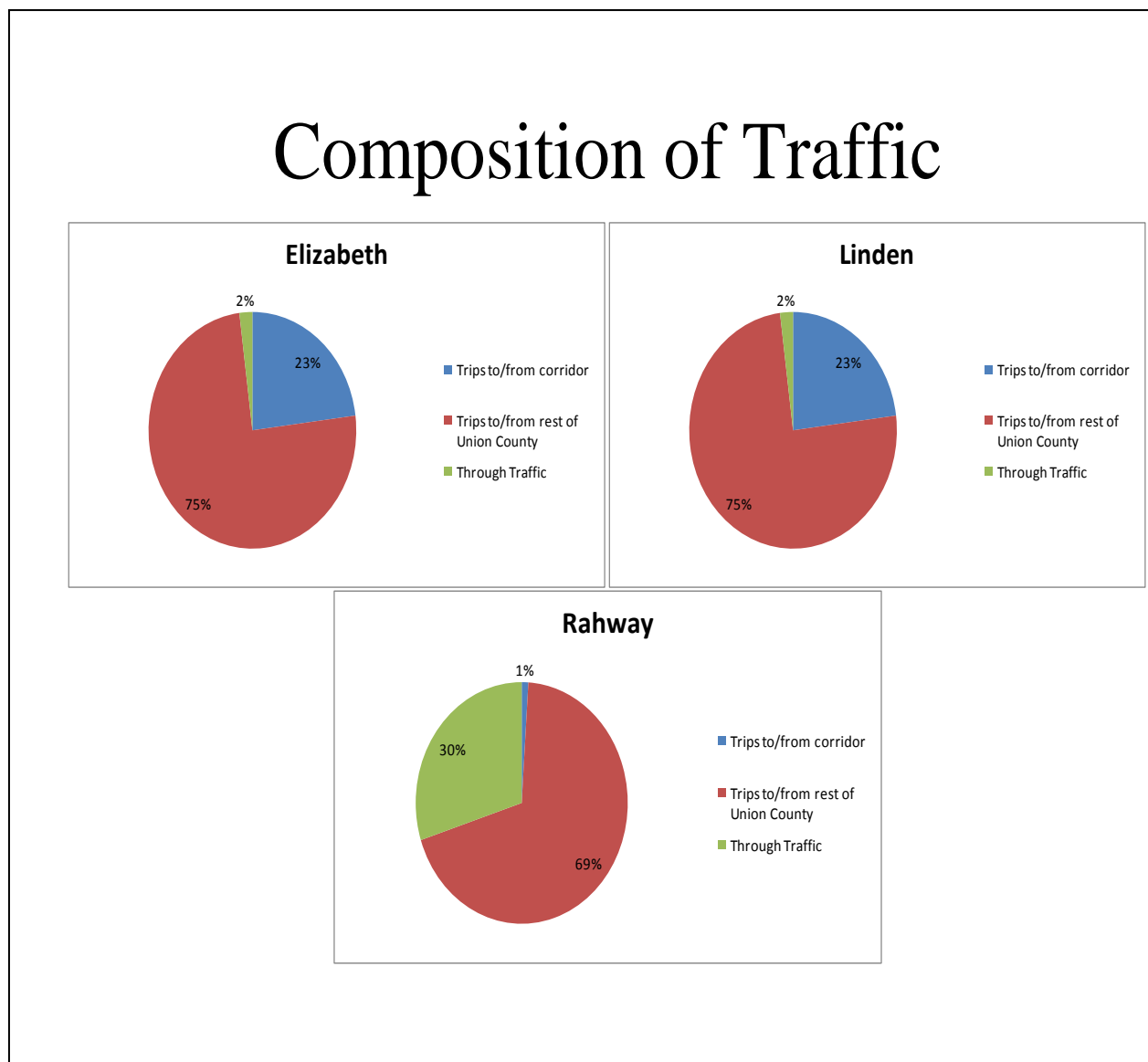
Other data collected in this task included:

- Origin and Destination (O&D) data.
- Interviews with key traffic personnel at the State, County and Municipal levels.
- Baseline mapping related to roadways, on-street parking, aerials, and land use.
- Transit information (bus schedules, routes, bus stops, frequency and ridership and rail passenger boardings for nearby Elizabeth, Linden and Rahway stations).

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Traffic Data Collection & Analysis

Understanding the composition of traffic can assist in developing strategies to reduce automobile trips in favor of transit, walking or bicycling trips. Given the size of the corridor, a comprehensive origin and destination survey can be expensive, due to the need to control origin and destination points. Further, it still will not yield information on origins and destinations beyond the corridor limits. Therefore, as an alternative, the North Jersey Travel Demand Model was utilized to conduct a “select-link” analysis of Route 27 through the corridor. This model forecasts travel patterns region-wide. The “select-link” analysis provides an approximation of the origin and destination of all traffic using Route 27 through the corridor. Key findings include the following, and additional data and details may be found in Technical Memo #2/3 in the Appendix.



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Traffic Safety Analysis

Locations that exhibit high frequency of traffic crashes throughout the corridor were analyzed. Benchmark crash rates were determined for each location, and illustrate to what extent crashes exceed benchmark rates (which are based on statewide or national data). Locations that have the greatest potential for crash reductions were identified and crashes were weighted by severity. Pedestrian and bicycle crashes were prioritized, since the severity of these crashes are higher than other types of crashes.

For all locations that exhibit a combination of higher than typical crash rate, high frequency of crashes, and high severity of crashes, a diagnosis of the problem and potential counter-measures was prepared for key locations.

Crash Rate

- Approx. 9.1 crashes/million vehicle-miles traveled (VMT)
- Statewide average for 4 lane roads with no median or shoulder is approx. 6.2 crashes/million VMT
- Therefore, crash rate is approx. 45% above statewide average
- Roads with shoulders and/or medians is approx. 2-4 crashes/million VMT

Crash Severity

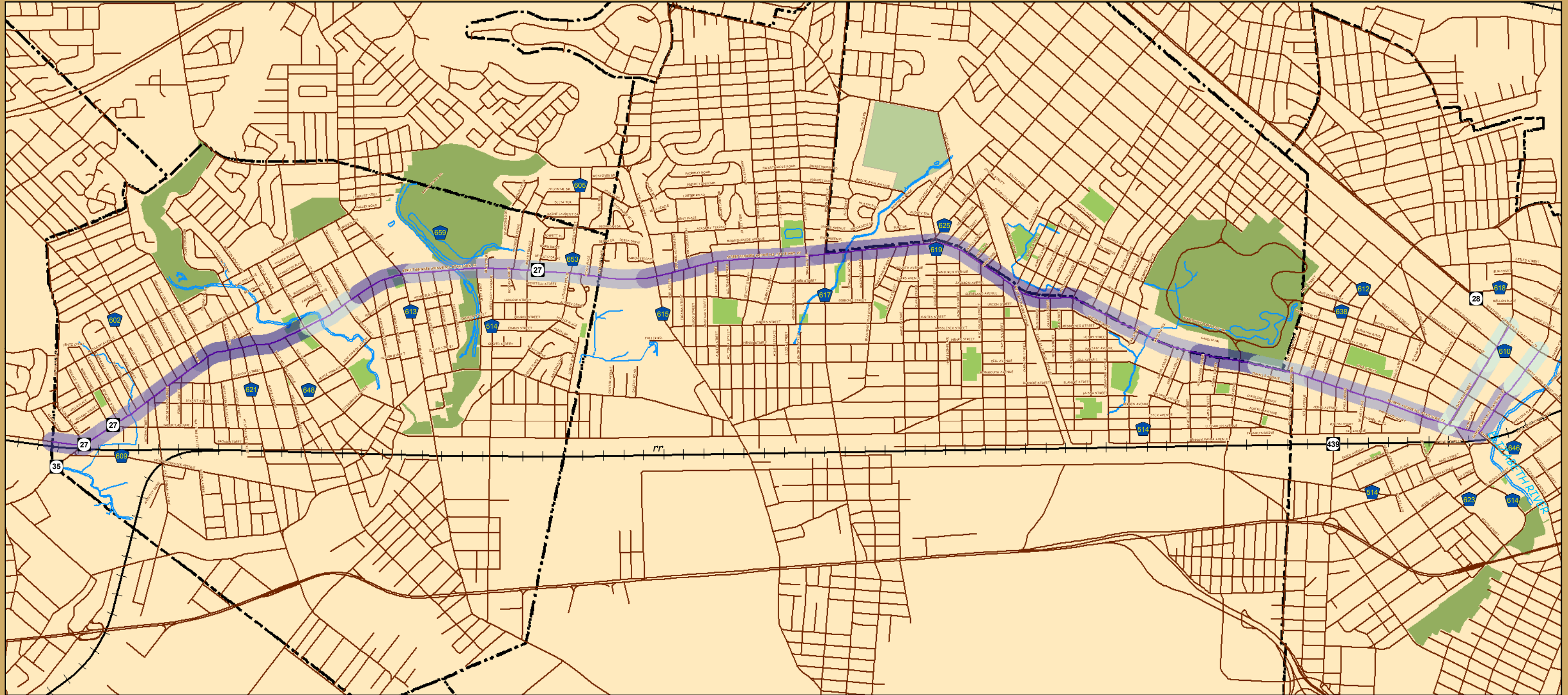
- Fatal crashes comprise 0.36% of all crashes, versus statewide average of 0.25% of crashes (approx. 45% higher than statewide average)
- Injury crashes comprise 31% of all crashes, versus statewide average of 26% of crashes (approx. 20% higher than statewide average)

Crash Pattern Observations

- High number of left turn, rear end, and sideswipe crashes – likely due to lack of left turn lanes and frequent lane changing
- High number of pedestrian and pedalcyclist crashes (although sadly share is consistent with statewide average)
- High share of right angle crashes (far greater than statewide average)

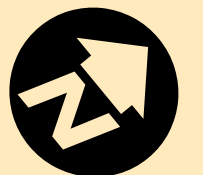
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Route 27 Corridor Safety Study: Crash Locations (Quarter Mile)



Route 27 Corridor: Crash Locations

Total Crashes: 2005-2007



Traffic Operational Analysis

The North Jersey Travel Demand Model was utilized to determine an appropriate traffic volume growth rate for the corridor. Utilizing the SYNCHRO network developed by the NJDOT for signal optimization, an intersection capacity analysis was prepared both for the existing case (assuming that the signal timing optimization has been implemented), and the future no build condition. Capacity improvements needed to provide mobility in the corridor were identified for 8 locations.

Traffic Operations

- 420-600 vehicle-hours of delay per hour during peak hours
 - 6 intersections highly congested
 - 11 intersections somewhat congested
 - 12 intersections less than ideal
 - 10 intersections have no operational problems

Traffic Volume Observations

- Some peaking of traffic during typical commuter peak, although traffic volume remains high throughout day and on weekends
- Volume is lower at ends of corridor (approx. 30,000 vehicles per day), and highest through Linden (approx. 35,000 vehicles per day)
- Peak hour volumes are 1,400-1,600 vehicles per hour per direction
- Trucks make up about 2% of traffic in peak hours

Traffic Operations

Traffic Operations (Signalized Intersections)

No.	Intersection	Location	Total Peak Hour Delay (vehicle-hours)				Status
			Morning	Midday	Evening	Saturday	
30	Rahway Av (Route 27) & Chilton St/South St	Elizabeth	102.4	17.3	68.2	25.9	Highly Congested
18	St Georges Av (Route 27) & Wood Av (CR 617)	Linden/Roselle	78.5	29.7	43.6	61.1	Highly Congested
26	St Georges Av (Route 27) & Park Av (CR 616)	Linden/Roselle	9.9	10.5	98.0	37.8	Highly Congested
1	St Georges Av (Route 27) & Colonia Blvd	Rahway	21.8	20.7	45.6	51.7	Highly Congested
15	St Georges Av (Route 27) & Dewitt St	Linden	12.1	7.4	48.0	17.3	Highly Congested
39	Chilton St (Route 27 SB) & Westfield Av (Route 28)	Elizabeth	10.5	3.6	24.6	4.0	Highly Congested
10	St Georges Av (Route 27) & Westfield Av/West Grand Av (CR 613)	Rahway	42.0	28.4	25.2	24.5	Somewhat Congested
13	St Georges Av (Route 27) & Stiles St (CR 615)	Linden	18.8	21.3	24.2	40.6	Somewhat Congested
20	St Georges Av (Route 27) & Roselle St/Chestnut St (CR 619)	Linden/Roselle	19.6	11.4	30.6	17.1	Somewhat Congested
28	Rahway Av (Route 27) & S Elmora Av (Route 439)	Elizabeth	18.2	14.0	23.9	17.1	Somewhat Congested
4	St Georges Av (Route 27) & W Lake Av	Rahway	26.0	7.5	19.1	11.7	Somewhat Congested
37	Chilton St (Route 27 SB) & W Jersey St (CR 612)	Elizabeth	19.6	5.3	15.3	11.3	Somewhat Congested
38	Chilton St (Route 27 SB) & Grand St (CR 610)	Elizabeth	11.3	5.3	8.6	24.8	Somewhat Congested
3	St Georges Av (Route 27) & Inman Av (CR 602)	Rahway	9.6	8.7	12.0	18.1	Somewhat Congested
5	St Georges Av (Route 27) & Hazelwood Av (CR 621)	Rahway	13.0	6.8	18.0	7.8	Somewhat Congested
6	St Georges Av (Route 27) & Maple Av	Rahway	4.4	5.0	11.5	5.7	Somewhat Congested
22	St Georges Av (Route 27) & Chandler Av	Linden/Roselle	6.6	4.3	7.7	7.7	Somewhat Congested
12	St Georges Av (Route 27) & Ross St (CR 605)/Linden Av	Rahway	10.9	3.4	13.9	7.0	Less than Ideal
7	St Georges Av (Route 27) & Milton Av (CR 608)	Rahway	5.7	4.6	11.6	6.8	Less than Ideal
29	Rahway Av (Route 27) & Grove St	Linden/Roselle	4.6	4.8	9.2	5.2	Less than Ideal
11	St Georges Av (Route 27) & W Scott St (CR 652)	Rahway	4.5	4.4	9.8	4.9	Less than Ideal
2	St Georges Av (Route 27) & Jaques Av/Murray St	Rahway	3.4	3.7	8.7	5.1	Less than Ideal
23	St Georges Av (Route 27) & Drake Av/Cranford Av	Linden/Roselle	5.0	3.9	5.0	5.1	Less than Ideal
8	St Georges Av (Route 27) & Central Av	Rahway	5.6	2.6	5.2	2.8	Less than Ideal
19	St Georges Av (Route 27) & Washington Av	Linden/Roselle	4.8	2.0	4.5	4.4	Less than Ideal
16	St Georges Av (Route 27) & Summit St	Linden	4.3	1.9	4.7	1.8	Less than Ideal
9	St Georges Av (Route 27) & Hamilton St	Rahway	5.5	1.2	2.8	1.9	Less than Ideal
14	St Georges Av (Route 27) & Hollywood Rd/Ercama St	Linden	1.6	2.3	2.6	3.1	Less than Ideal
21	St Georges Av (Route 27) & Frank St/Charles St	Linden/Roselle	0.8	0.9	1.9	1.1	Less than Ideal
34	Cherry St (Route 27) & Grand St (CR 610)	Elizabeth	10.0	7.3	12.0	6.9	No Real Problems
31	Rahway Av (Route 27) & Elizabeth Av	Elizabeth	6.5	5.7	9.0	5.5	No Real Problems
33	Cherry St (Route 27) & W Jersey St (CR 612)	Elizabeth	9.6	4.6	6.6	4.1	No Real Problems
35	Cherry St (Route 27) & Westfield Av (Route 28)	Elizabeth	4.9	3.0	5.7	3.0	No Real Problems
32	Rahway Av/Cherry St (Route 27) & Murray St	Elizabeth	4.7	2.5	4.5	3.0	No Real Problems
36	Chilton St (Route 27 SB) & Murray St	Elizabeth	2.8	1.6	3.2	1.7	No Real Problems
25	St Georges Av (Route 27) & Garden Dr/Adams St	Linden/Roselle	1.5	0.8	4.4	1.6	No Real Problems
24	St Georges Av (Route 27) & Garden Dr/Garfield St	Linden/Roselle	1.3	1.0	2.7	1.9	No Real Problems
17	St Georges Av (Route 27) & Ainsworth St	Linden	0.6	0.6	1.4	1.1	No Real Problems
27	St Georges Av (Route 27) & Hagel Av	Linden/Roselle	0.1	0.0	0.0	0.0	No Real Problems
TOTAL			522.9	270.1	653.7	462.4	

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Traffic Demand Management

Utilizing the information from the “select link” analysis of the North Jersey Travel Demand Model, the Census journey-to-work survey, vehicle travel time runs, and transit schedule information, an estimate was prepared to assess to what extent vehicle travel along the Route 27 corridor can be reduced through enhancements to transit and bicycling/walking infrastructure.

Roadway Lighting

Certain types of crashes were found to occur with higher propensity at night, such as pedestrian/bicycle crashes, fixed object crashes, striking parked vehicles, and striking animals. In particular, these crashes are higher severity crashes. There appears to be a link between some of these crashes and roadway lighting (or the lack thereof). Most lighting in the Route 27 Corridor is provided via lighting fixtures mounted on utility poles. The lighting levels in the corridor are inconsistent, and not up to standards. (NJDOT targets a minimum illumination level of 0.6 foot candles for signalized intersections.) Several locations have a combination of darkness and high bicycle/pedestrian crashes in darkness. Such areas include the following:

- Cherry Street between Rahway Avenue and Westfield Avenue – the area is dark, and there were 8 pedestrian/bicycle crashes in darkness between 2005-2007
- Rahway Avenue in Elizabeth (several stretches) – the area has dark spots, and there were 2 pedestrian/bicycle crashes in darkness between 2005-2007
- St Georges Avenue by Hagel Avenue
- St Georges Avenue between Roselle Street/Chestnut Street and Frank Street/Charles Street – the area has dark spots, and there were 7 pedestrian/bicycle crashes in darkness between 2005-2007
- Many stretches of St Georges Avenue in Rahway

More detail can be found in Technical Memorandum 2/3.

Environmental Screening

A GIS-based Preliminary Environmental Screening of the recommended concepts was performed to identify, on a broad scale, environmental resources and constraints for each of the Critical Locations. Data collection included wetlands, floodplains, USGS flood-prone areas, potential threatened and endangered species habitat, rivers, lakes, NJDEP known contaminated sites and soils. This data was mapped and utilized to identify, generally, opportunities and constraints to be considered for inclusion in the Route 27 Corridor Study. A preliminary cultural resource screening was a component of the work effort. Both the environmental and cultural investigations were performed for each of the Critical Locations.

Land Use Regulations Analysis

Municipal planning documents and land use regulations can influence the character of land development in a manner that will encourage behaviors such as use of transit and other trip-reduction activities through policies, standards, and incentives built into the development approval process. A cursory review of local land use and planning documents such as comprehensive plans, capital improvement programs, open space plans and transportation system plans, as well as zoning and subdivision ordinances was performed to determine whether regulatory measures exist that

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support pedestrian, bicycle, and transit mobility. A synthesis of existing plans, policies and recommended changes or additions was developed. Findings and recommendations have been integrated into the implementation matrix. Additional detail may be found in Technical Memo 2/3.

Transit Analysis

Qualitative methods for improving bus stop safety and increasing transit ridership within the County were developed as part of this study. Recommendations regarding service frequencies, routing based on future land use and development patterns, marketing, and supporting programs that could be implemented in short- and long-term timeframes to increase the overall visibility and efficiency of transit services in the County is presented in Technical Memo 2/3. The NJ TRANSIT Handbook includes guidelines on location and design of transit stops and focuses on safety and access. Stops do not typically contain any amenities such as shelters, benches, lighting or timetable information. Most of the pole signs do contain route names and numbers, however. These are often not visible due to shielding by trees, telephone poles or other traffic and directional signs. Recommendations suggest that NJ TRANSIT conduct an inventory of all bus stops within the corridor to quantitatively assess upgrade.

CORRIDOR IMPROVEMENT PLAN

Corridor-specific facility recommendations, including proposed design guidelines and recommendations for land use policies and ordinances that support vehicular circulation, pedestrian safety, transit access and travel by bicycle that might be incorporated into County and municipal plan or ordinance updates, are detailed in the study.

Corridor-wide recommendations are provided in the form of a matrix indicating potential engineering, operational, maintenance, regulatory, enforcement and education solutions. Each recommendation includes identification of an agency/jurisdictional entity responsible for leading implementation of the proposed measure. In addition, a near-term, medium-term or long-term timeframe for action is identified.

The Corridor-wide Recommendations Matrix*, is further supplemented by a separate matrix with site-specific recommendations for each municipality. Both sets of recommendations are included in this section of the report and supporting documentation, mapping, images and input are provided within the report Appendices.

Per corridor-specific facility recommendations and TAC/Stakeholder input from previous tasks, selected Critical Locations were identified and advanced as conceptual level design plans. Conceptual Plans are included in this section and were also prepared in the form of Problem Statements (total of 8 Statements) in the Appendix. Each Problem Statement consists of a description, plan view or graphic sketch, typical section (if appropriate), and an order of magnitude cost estimate. Typical design details in the appendix illustrate proposed facility recommendations.

* (Note: The matrix is an update and expansion of the PSIT 2007 Study and incorporates the extended geographic study area limits of the portion of the corridor within Rahway included in the current study, updates of earlier recommendations per stakeholder input and field investigation results, and additional traffic, transit and land use related factors. The matrix legend indicates the study source for each recommendation.)

Critical Locations

1. St. Georges Avenue from the intersection of W. Hazelwood Avenue to the intersection of W. Milton Avenue, **Rahway**
2. St. Georges Avenue from the intersection of School Street to the intersection of River Road, **Rahway**
3. Intersection of Dewitt Terrace and St. Georges Avenue, **Linden**
4. Intersection of N. Wood Avenue and St. Georges Avenue, **Linden/Roselle**
5. St. Georges Avenue from the intersection of Chestnut Street to the intersection Chandler Avenue, **Roselle/Linden**
6. St. Georges Avenue along Warinanco Park frontage from Park Avenue to end of park property, **Roselle/Linden**
7. Intersection of Cherry Street and Rahway Avenue, **Elizabeth**
8. Intersection of W. Grand Street and Cherry Street, **Elizabeth**

Note: The East Coast Greenway crosses Route 27 at the intersection of River Road, Rahway. Crossing and intersection treatments for the River Road intersection at this Critical Location area are currently under design by NJDOT.

Completion is anticipated in July 2009. Plans for both projects should be reviewed for compatibility.

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1. St. Georges Avenue from the intersection of W. Hazelwood Avenue to the intersection of W. Milton Avenue, **Rahway**



Areas of Concern:

- Identified by stakeholders as a priority 3/6/09.
- The intersections are close together.
- The intersection had 153 crashes between 2005-2007.
- Many of the crashes are the result of the poor intersection layout and the close spacing of traffic signals – drivers sometimes react to the wrong signal.
- The crash rate is 1.3 crashes/million entering vehicles, which is nearly **double** typical urban intersection crash rates.
- Summary of crashes between 2005-2007 is as follows:

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Type of Crash	Severity			Total
	Fatal	Injury	PDO	
Right Angle	1	13	32	46
Left Turn	0	6	12	18
Rear End/Sideswipe	0	14	58	72
Pedestrian/Pedacycle	0	7	0	7
Other	0	0	10	10
Total	1	40	112	153

Specific Deficiencies at each Intersection:

W. Milton Avenue

- Missing curb ramps and detectable warning surfaces.
- Pedestrian pushbuttons are present at all 4 corners of the intersection but there are no pedestrian signal heads.
- Poor pavement on the east side of Route 27.

Maple Avenue

- Missing curb ramps and detectable warning surfaces.
- Pedestrian pushbuttons are missing from two corners of the intersection.
- There are no pedestrian signal heads at the intersection but pedestal poles exist.

W. Hazelwood Avenue

- There are no pedestrian signal heads at the intersection but pedestal poles exist.
- Missing curb ramps and detectable warning surfaces.
- Pedestrians on the southbound side of Route 27 crossing W. Hazelwood Avenue are unable to gauge when it is safe to cross because there are no pedestrian signal heads or traffic signal heads visible from the sidewalk.
- Crosswalk missing from the north leg of the intersection.
- Northbound centerline extends beyond the stop bar.
- Poor pavement surface on the west side of the intersection.
- School Advance Warning sign should be replaced with fluorescent yellow-green.

Proposed Improvements:

- Replace and update traffic signal equipment to improve layout.
- Add left turn lanes to Route 27.
- Install pedestrian signals with countdown feature.
- Replace striping with high visibility lines and markings.
- Install missing crosswalks.
- Install missing curb ramps and detectable warning surfaces.
- Coordinate the timing plans for West Milton, Maple and West Hazelwood to improve traffic flow.

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2a. St. Georges Avenue at the intersection of School Street, **Rahway**



Areas of Concern:

- Identified by municipal stakeholders as area of concern 3/6/09.
- Identified as location for potential midblock crossing in the NJDOT PSIT.
- Frequent pedestrian crossings between elementary school, senior housing and park.
- Drainage issues and pavement failure on St. Georges.
- Speeding problem. Designated as school zone with flashing beacons.
- Inadequate street lighting.
- Missing curb ramps.
- Worn and faded striping.
- Broken fence on southbound side poses fall hazard to pedestrians.

Proposed Improvements:

- Replace striping with high visibility lines and markings.
- Install driver speed feedback variable message signs with indication of fine for speeding in a school zone.
- Install overhead or post mounted lighting.
- Repair fence.

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2b. St. Georges Avenue at the intersection of River Road/Parkway Drive, **Rahway**



Areas of Concern:

- Noted as a problem intersection in the **East Coast Greenway Intersections Concept Development Report, March 2007**.
- Identified as location for potential midblock crossing in the NJDOT PSIT.
- Identified by municipal stakeholders as area of concern 3/6/09.
- It is difficult for vehicles and pedestrians to see on-coming traffic, especially northbound traffic, from Parkway Drive. Visibility is obstructed by a Hot Dog Truck and parked vehicles of possible patrons.
- Disconnect in the trails on the west and east sides of Rt. 27.
- Inadequate street lighting.
- Missing curb ramps and detectable warning surfaces.
- Preferred crossing for pedestrians in the area but no painted crosswalk.

Proposed Improvements:

This intersection is being improved by the NJDOT.

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3. Intersection of Dewitt Terrace and St. Georges Avenue, Linden



Areas of Concern:

- Identified by municipal stakeholders as an area of concern 3/12/09.
- Illegal left turns from business driveways.
- No pedestrian signal heads.
- Missing curb ramps.
- No detectable warning surface on ramps.
- Worn and faded striping.
- Outdated signs for School Crossing.
- Traffic capacity problems.

Proposed Improvements:

- Install left turn lanes on St. Georges Avenue.
- Install pedestrian signals with countdown feature.
- Replace striping with high visibility lines and markings.
- Install missing curb ramps and detectable warning surfaces.
- Install new fluorescent yellow-green School Advance Warning (S1-1) sign with additional plaque "Ahead" (W16-9p) between 150ft – 700ft in advance of school grounds or the school crossing.

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4. Intersection of N. Wood Avenue and St. Georges Avenue, Linden/Roselle



Areas of Concern:

- Identified as a location for concern by municipal stakeholders.
- Heavy volume of left turns out of the Exxon gas station.
- Speeding and erratic driver behavior is an issue along North Wood Avenue.
- There is a restaurant/lounge located on the northwest corner; issue with drunk driving from this location.
- According to crash statistics, this is the worst intersection in the corridor.
- Approximately 1/3 of all traffic entering this intersection turns right or left.
- The intersection had 120 crashes between 2005-2007.
- The crash rate is 2.3 crashes/million entering vehicles, which is more than *triple* a typical urban intersection crash rate.
- Summary of Crashes between 2005-2007 is as follows:

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Type of Crash	Severity			Total
	Fatal	Injury	PDO	
Right Angle	0	8	29	37
Left Turn	0	1	9	10
Rear End/Sideswipe	0	13	51	64
Pedestrian/Pedacycle	0	5	0	5
Other	0	1	3	4
Total	0	28	92	120

- Detectable warning surfaces are not present on all curb ramps.
- Traffic signal heads are 8”.
- Pedestrian countdown signal head is too far away from the crosswalk.
- Wood Avenue identified in the *Union County Comprehensive Bicycle Master Plan*, prepared by The RBA Group, Inc., June 2007, as an area of above average suitability for on-road cycling.
- This intersection is a bus transfer point for the #62, #115 and #56 bus lines with frequent stops on St. Georges Avenue but there are no bus shelters.

Proposed Improvements:

Short Term

- Install detectable warning surface treatments where missing.
- Upgrade traffic signal heads to 12”.
- Evaluate installation of bike lanes on Wood Avenue.
- Install bus shelters on St. Georges Avenue.

Long Term Improvements

- Evaluation replacement of traffic signal with 180’ diameter modern roundabout.
- Roundabouts improve safety by eliminating several types of crashes with higher crash severities. Right angle, left turn, and pedestrian crashes in particular are greatly reduced for roundabouts. For the roundabout, we can expect nearly half of all accidents to be eliminated. The reduction of delay may eliminate many of the rear end and sideswipe crashes as well.
- With a modern roundabout, all vehicles on approaches yield to traffic in the circle. Speeds are low, so safety is improved.
- Total existing delay for weekday morning, weekday evening, and Saturday midday peak hour is 183 vehicle-hours, with overall average delay of 47-73 seconds/vehicle.
- With a roundabout, total delay for weekday morning, weekday evening, and Saturday midday peak hour would be 34 vehicle-hours, with overall average delay of 6-16 seconds/vehicle. Off-peak delays would be even lower.
- Right of Way will be required from the Walgreens parking lot. It presently has 53 spaces for a building of approximately 14,000 square feet. We could maintain 36 parking spaces. Based on the *ITE Parking Generation Manual, 3rd Edition*, indicates that Pharmacies with a Drive-Thru require 2.6 parking spaces per 1,000 square feet at the most (36 spaces in this instance).

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5. St. Georges Avenue from the intersection of Chestnut Street to the intersection of Chandler Avenue, Roselle/Linden



Areas of Concern:

- Identified by municipal stakeholders as area of concern 3/19/09.
- Identified as an area of concern in the NJDOT PSIT.
- St. Georges Avenue from Chestnut Street to McCandless Street is identified in the *Union County Comprehensive Bicycle Master Plan*, prepared by The RBA Group, Inc., June 2007, as an area of above average suitability for on-road cycling.
- Speeding. Motorists speed off from the light at Chandler Avenue in an attempt to catch the green light at Frank Street/Charles Street.
- Change in speed limit.
- Abrupt reduction from 4 to 2 lanes on St. Georges Avenue.
- Pedestrian frequently cross at Rivington Street to access convenience store.
- Inadequate striping and missing stop bars on side streets.
- Missing curb ramps and detectable warning surfaces.
- No pedestrian signals at any of the signalized intersections within this area.
- Improper placement of stop sign and missing stop bar on W. Baltimore Avenue.

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Proposed Improvements:

- Install “curve ahead” signs on the northbound side of Route 27.
- Move stop sign on the westbound side of W. Baltimore Avenue to a more practical location for motorists to obey and make their movement.
- Install curb ramps and detectable warning surfaces.
- Install pedestrian signals with countdown feature at signalized intersections.
- Replace striping with high visibility lines and markings.
- Install missing stop bars on side streets.
- Upgrade signs.
- Evaluate installation of 10’ wide median island as pedestrian refuge.
- Evaluate reduction of St. Georges Avenue from 4 lanes to 2 between Roselle Street and Frank Street.
- Evaluate opportunities to provide bicycle facilities on St. Georges Avenue from Chestnut Street to McCandless Street.

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6. St. Georges Avenue along Warinanco Park frontage from Park Avenue to end of park property, **Roselle/Linden**



Areas of Concern:

- Identified as an area of concern in the NJDOT PSIT.
- Worn path along park frontage from Garden Drive to the edge of park property between Watson Avenue and Hagel Avenue where sidewalk is missing.
- No street lighting along park frontage.
- Bus stop/crosswalk issues and potential conflicts were cited at the intersection of St. Georges Avenue and Hagel Avenue.

Proposed Improvements:

- Install missing sidewalk and curb ramps.
- Replace striping with high visibility lines and markings.
- Install overhead or post mounted lighting.
- Evaluate potential bus stop relocation with NJ TRANSIT.

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7. Intersection of Cherry Street and Rahway Avenue, *Elizabeth*



Areas of Concern:

- Identified by stakeholders as a priority 2/11/09.
- Identified by NJDOT PSIT as an area of concern.
- Traffic signal has 8" signal heads aligned horizontally.
- No pedestrian signals.
- Two missing curb ramps.
- Missing signs.
- Centerlines for northbound Route 27 extend past stop bar.
- Midblock crossing at Farley Towers is an area of concern.

Proposed Improvements:

- Replace and update traffic signal equipment and improve layout. (This will include milling roadways and replacing all signs and striping with high visibility signs and pavement markings.)
- Replace striping with high visibility lines and markings.
- Install lane extension lines through the intersection to guide northbound vehicles onto Cherry Street.
- Install pavement markings in Route 27 northbound lanes to designate lane use.
- Install pedestrian signals with countdown feature.
- Install missing curb ramps and detectable warning surfaces.
- Upgrade signs including lane control and street name signs.
- Mill centerlines on Route 27 northbound to stop at the stop bar.

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8. Intersection of W. Grand Street and Cherry Street, *Elizabeth*



Areas of Concern:

- Identified by municipal stakeholders as a priority.
- Pedestrian crossing signs are antiquated orange.
- There are no pedestrian signals or pushbuttons.
- Antiquated traffic signal equipment.
- Missing curb ramps and detectable warning surfaces.
- Worn and faded striping.
- Missing crosswalk.
- Insufficient signing.
- High crash rate.

Proposed Improvements:

- Replace and update traffic signal equipment. (This will include milling roadways and replacing all signs and striping with high visibility signs and pavement markings.)
- Install pedestrian signals with countdown feature.
- Replace striping with high visibility lines and markings.
- Install missing crosswalk.
- Install missing curb ramps with detectable warning surfaces.
- Upgrade signs including overhead street name signs and pedestrian crossing signs.

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SUMMARY OF RECOMMENDATIONS FOR IMPLEMENTATION

Corridor-Wide

Engineering and Operations

Location	Potential Measure	Responsibility	Time-Frame	Comments
Corridor-Wide	Install pedestrian countdown signal heads with pushbutton assemblies and R10-3e (push button instruction cards) placards at appropriate locations for retrofits and new placements	NJDOT	Short-term	Pedestrian countdown signal heads with pushbutton assemblies and R10-3e placards are recommended for locations where they are currently missing.
Corridor-Wide	Conduct an overall review of parking locations and accommodations within the corridor. Paint and delineate streetside parking spaces and curbs to indicate appropriate parking and non-parking areas.	Borough of Roselle, City of Linden, City of Elizabeth, City of Rahway/NJDOT	Long-term	
Corridor-Wide	Relocate select utility poles away from curb to increase bus and truck turning radii	NJDOT	Long-term	May be included as part of separate highway projects.
Corridor-Wide	Make sure regulatory signs (i.e., "No Turn on Red") are in conformance with MUTCD requirements	Borough of Roselle, City of Linden, City of Elizabeth, City of Rahway/NJDOT	Short-term	
Corridor-Wide	Move toward a uniform look for signage, signals and striping.	NJDOT	Medium-term	
Corridor-Wide	Investigate possibility of creating a dedicated bus lane.	NJ TRANSIT/NJDOT	Long-term	
Corridor-Wide	Install ADA-compliant curb ramps with detectable warning surfaces	NJDOT	Short-term	Need prioritized locations from towns
Corridor-Wide	Update antiquated traffic signals in AutoCAD for NJDOT project advancement	NJDOT/Others	Short-term	Requires NJDOT as-built-CAD for many locations to advance
Corridor-Wide	Revise traffic signal timings for appropriate pedestrian clearance times, appropriate yellow and all red times, and improved coordination	NJDOT	Short-term	NJDOT in process of designing timings
Corridor-Wide	Increase the amount of ambient lighting to a suggested threshold value of 0.6 foot-candles	NJDOT/ Borough of Roselle, City of Linden, City of Elizabeth, City of Rahway	Short-term	Lighting Map prepared for Route 27 Corridor Safety Study
Corridor-Wide	Install vandal-resistant pedestrian-scale lighting in key spots	NJDOT/ Borough of Roselle, City of Linden, City of Elizabeth, City of Rahway	Short-term	



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Location	Potential Measure	Responsibility	Time-Frame	Comments
Corridor-Wide	Provide pedestrian-scale lighting, especially near business districts, recreation and other bicycling and walking destinations	Borough of Roselle, City of Linden, City of Elizabeth, City of Rahway	Short-term	
Corridor-Wide	Incorporate uniform corridor and/or municipality-wide wayfinding measures to enhance bicycle and pedestrian circulation throughout the corridor, highlighting special attractors	Union County/ Borough of Roselle, City of Linden, City of Elizabeth, City of Rahway	Short-term	
Corridor-Wide	Provide enhanced visibility crosswalks within school zones and along designated school routes	NJDOT	Short-term	
Corridor-Wide	Provide enhanced visibility crosswalks and advanced warning signs, especially near business districts, recreation and other bicycling and walking destinations	NJDOT	Short-term	
Corridor-Wide	Clearly define and enhance school zones with fluorescent, strong yellow-green advanced warning signs	NJDOT	Short-term	
Corridor-Wide	Install signage within the school zones clearly denoting the school zone speed limit and associated fines for speeding	NJDOT	Short-term	
Corridor-Wide	Consider shared lane markings or bicycle routes along designated sections of the corridor in need of improved of bicycle accommodations	Union County	Medium-term	See 2007 Union County Bicycle Master Plan
Corridor-Wide	Consider gateway treatments at entryways between municipal borders	NJDOT/Borough of Roselle, City of Linden, City of Elizabeth, City of Rahway	Short-term	
Corridor-Wide	Retrofit all traffic signal heads to 12"	NJDOT	Short-term	
Corridor-Wide	Conduct a bus stop inventory	NJ TRANSIT	Short-term	Bus shelter, route schedules, physical amenities
Corridor-Wide	Consider a bus shelter design study	NJ TRANSIT	Short-term	



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Maintenance

Location	Potential Measure	Responsibility	Time-Frame	Comments
Corridor-Wide	Regularly refresh crosswalk paint; upgrade crosswalk to ladder striping style.	NJDOT	Short-term & Ongoing	
Corridor-Wide	Maintain streetlights	Borough of Roselle, City of Linden, City of Elizabeth, City of Rahway	Short-term & Ongoing	Check to see who maintains lights, town, DOT, or PSE&G
Corridor-Wide	Retrofit stormwater drains with bicycle-compatible designs where needed.	NJDOT	Short-term	

Regulatory

Location	Potential Measure	Responsibility	Time-Frame	Comments
Corridor-Wide	Post additional speed limit signs throughout corridor	NJDOT	Short-term	
Corridor-Wide	Promote an Access Management Policy Development	NJDOT/Union County	Mid-term	
Corridor-Wide	Adopt Pedestrian and Transit-friendly Land Use and Zoning Ordinances	Borough of Roselle, City of Linden, City of Elizabeth, City of Rahway		See Route 27 Corridor Safety Study Appendix (Tech Memo # 2/3) for details

Enforcement and Education

Location	Potential Measure	Responsibility	Time-Frame	Comments
Corridor-Wide	Safety Cruiser/Education seminars	NJ Division of Highway Traffic Safety	Short-term & Ongoing	Should be occurring in July/August
Corridor-Wide	Post a speed trailer at varying locations throughout corridor; upgrade speed detection equipment.	Municipal Traffic Safety Officers/NJ Division of Highway Traffic Safety	Short-term	Upgrade speed detection equipment to laser radar.



Union County - Route 27 Corridor Safety Study

Location	Potential Measure	Responsibility	Time-Frame	Comments
Corridor-Wide	Initiate a bike safety campaign.	Municipal Traffic Safety Officers/NJ Division of Highway Traffic Safety/Union County	Medium-term	Utilize guerilla marketing techniques, provide helmets, light reflectors
Corridor-Wide	Enforce posted streetside parking rules.	Borough of Roselle, City of Linden, City of Elizabeth, City of Rahway	Short-term & Ongoing	
Corridor-Wide	Utilize Variable Message Signals (VMS) on a rotating basis at various locations throughout corridor.	Borough of Roselle, City of Linden, City of Elizabeth, City of Rahway	Short-term & Ongoing	
Corridor-Wide	Provide comprehensive pedestrian-safety training to new police officers.	Borough of Roselle, City of Linden, City of Elizabeth, City of Rahway	Short-term & Ongoing	
TBD	Safety Enforcement Operation	NJDOT	Short-term	
Corridor-Wide	Conduct a joint municipality public awareness/traffic safety campaign with increased enforcement targeted at Impaired Driving	Municipal Traffic Safety Officers/NJ Division of Highway Traffic Safety	Short-term	See Route 27 Corridor Safety Study Appendix (Funding Sources) for details
Corridor-Wide	Introduce bicycle and pedestrian safety into the schools through curriculum based programs such as physical education class and WalkSafe™ or event based programs through Safe Kids or the Brain Injury Association of New Jersey	School Superintendent	Short-term	
Corridor-Wide	Create a series of public service announcements for print, municipal and County websites, social media i.e. blogs, with targeted messages: bicycle travel is legal on every road, even if others have dedicated facilities; yield to pedestrians in crosswalks	Union County/NJ Division of Highway Traffic Safety/Municipal Traffic Safety Officers	Short-term	See Route 27 Corridor Safety Study Appendix (Funding Sources) for details



Union County - Route 27 Corridor Safety Study

Location	Potential Measure	Responsibility	Time-Frame	Comments
Corridor-Wide	Provide educational materials about the dangers of speeding or other violations, especially in the school area, at major community gathering locations such as the Library, town centers, and County buildings.	Union County/NJ Division of Highway Traffic Safety/Municipal Traffic Safety Officers	Short-term	See Route 27 Corridor Safety Study Appendix (Funding Sources) for details
Corridor-Wide	Police could conduct a series of pedestrian stings, to strongly reinforce that these municipalities take its motor vehicle laws and pedestrian rights seriously. This should be considered to be repeated approximately every six weeks until driver behavior is perceived to be more respectful of pedestrian's right to travel safely.	Municipal Traffic Safety Officers/NJ Division of Highway Traffic Safety	Short-term	See Route 27 Corridor Safety Study Appendix (Funding Sources) for details
Corridor-Wide	Police presence should continue to be maintained at major pedestrian crossing locations such as N. Wood Avenue & St. Georges Avenue. This will help to passively encourage drivers to obey the laws, and expect that they are being monitored.	Municipal Traffic Safety Officers	Short-term	Locations to be determined
Corridor-Wide	Police should also work within the school system to educate students on bicycle and pedestrian safety.	Municipal Traffic Safety Officers/School Superintendent	Short-term	
Corridor-Wide	Transit Ridership Marketing Campaign	NJ TRANSIT	Short-term	
Corridor-Wide	Transit Informational Programs	NJ TRANSIT/ Meadowlink TMA	Short-term	Examples: Commuter store/website



Union County - Route 27 Corridor Safety Study

City of Elizabeth

Engineering and Operations

Location	Potential Measure	Responsibility	Time-Frame	Comments
Elmora Ave., Elizabeth	Install and update new and existing pedestrian crosswalks, curb ramps, and countdown timers with push-button activation. Relocate signal box, which obstructs visibility. Create left-turn lane and signal phase to mitigate conflict between left-turning vehicles and pedestrians. Improve truck turning radius.	NJDOT	Short-term	Priority for Elizabeth. Project currently in the pipeline with NJDOT
Newcomb Pl. & Hayes Ave., Elizabeth	Repair sidewalks to create a safer walking environment.	NJDOT	Short-term	
Cherry St. & W. Jersey St., Elizabeth	Modify signal timing to allow adequate crossing time for senior pedestrians.	City of Elizabeth	Short-term	City maintained signal.
Cherry St. & Rahway Ave., Elizabeth	Create pedestrian-only signal phase or relocate crosswalk to mitigate conflicts.	City of Elizabeth	Medium-term	City maintained signal-funding given only if problems or improvements are for pedestrian safety.
Cherry St. & Rahway Ave., Elizabeth	Replace and update traffic signal equipment and improve layout	City of Elizabeth	Medium-term	Addressed as part of Concept Design for Critical Location 7
Cherry St. & Rahway Ave., Elizabeth	Consider installing lane extension lines through the intersection to guide northbound vehicles onto Cherry Street	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 7
Cherry St. & Rahway Ave., Elizabeth	Install pavement markings in Route 27 northbound lanes to designate lane use	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 7
Cherry St. & Rahway Ave., Elizabeth	Mill center lines on Route 27 northbound to stop at the stop bar	NJDOT	Medium-term	Addressed as part of Concept Design for Critical Location 7
Cherry St. & Rahway Ave., Elizabeth	Restripe all crosswalks with high visibility striping	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 7
Cherry St. & Rahway Ave., Elizabeth	Install all missing curb ramps with detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 7



Union County - Route 27 Corridor Safety Study

Location	Potential Measure	Responsibility	Time-Frame	Comments
Cherry St. & Rahway Ave., Elizabeth	Install pedestrian signals with countdown feature	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 7
Cherry St. & Rahway Ave., Elizabeth	Install all missing detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 7
Cherry St. & Rahway Ave., Elizabeth	Update signs including lane control and street name signs	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 7
Chilton Street & Rahway Ave., Elizabeth	Install street identification signage for Chilton Street	NJDOT	Short-term	
Chilton Street & Rahway Ave., Elizabeth	Replace and update traffic signal equipment	City of Elizabeth	Medium-term	
Chilton Street & Rahway Ave., Elizabeth	Install pedestrian signals with countdown feature	NJDOT	Short-term	
Chilton Street & Rahway Ave., Elizabeth	Install all missing curb ramps with detectable warning surfaces	NJDOT	Short-term	
West Grand Street & Cherry Street, Elizabeth	Replace and update traffic signal equipment	City of Elizabeth	Medium-term	Addressed as part of Concept Design for Critical Location 8
West Grand Street & Cherry Street, Elizabeth	Update signs including pedestrian crossing signs and street name signs	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 8
West Grand Street & Cherry Street, Elizabeth	Install crosswalk on the north leg of the intersection	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 8
West Grand Street & Cherry Street, Elizabeth	Restripe crosswalks with high visibility striping as required	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 8
West Grand Street & Cherry Street, Elizabeth	Install pedestrian signals with countdown feature	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 8



Union County - Route 27 Corridor Safety Study

Location	Potential Measure	Responsibility	Time-Frame	Comments
West Grand Street & Cherry Street, Elizabeth	Install all missing curb ramps with detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 8

City of Linden

Engineering and Operations

Location	Potential Measure	Responsibility	Time-Frame	Comments
Hagel Avenue, Linden	Extend pedestrian phase to accommodate senior pedestrians	NJDOT	Short-term	
Hagel Avenue, Linden	Evaluate potential bus stop relocation in conjunction with NJ TRANSIT	NJ TRANSIT	Short-term	Cursory review was performed but additional operational evaluation recommended.
Between Chestnut St. and Frank St., Linden & Roselle	Install at least one mainline pedestrian crossing between these locations to reduce jaywalking	NJDOT	Medium-term	
Chestnut St. – Richford Terr., Linden & Roselle	Investigate designation of more one-way side streets to mitigate access issues.	Borough of Roselle, City of Linden, NJDOT	Long-term	May be controversial.
Baltimore Ave., Roselle & Linden	Post advance warning signs to alert drivers of curve, narrowing of road from 4-2 lanes, and to slow speed.	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
Between Nora Dr. & Grant St., Roselle & Linden	Create left-turn only lanes; consider reconfiguring CVS driveway to create a fully signalized intersection	NJDOT	Medium-term	This location is between the signalized intersection of Cranford Ave. and Garfield Ave. and is in close proximity to Garfield Ave. Former trailer park site on St. Georges is being redeveloped, so may need to work with developer on problem statement.
Park Ave., Linden & Roselle	Create left-turn lane, signal phase, and signage for traffic traveling SB on Route 27 onto Park Ave. Create left-turn lane with signing and striping for vehicles traveling SB on Route 27.	NJDOT	Long-term	Project currently in pipeline with NJDOT
Park Avenue, Linden	Install pedestrian countdown signal head at existing signal at SE corner of intersection.	NJDOT	Short-term	Project currently in pipeline with NJDOT
Dewitt Terrace, Linden	Install left turn lanes on St. Georges Avenue	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 3



Union County - Route 27 Corridor Safety Study

Location	Potential Measure	Responsibility	Time-Frame	Comments
Dewitt Terrace, Linden	Install all missing detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 3
Dewitt Terrace, Linden	Install all missing curb ramps with detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 3
Dewitt Terrace, Linden	Restripe all crosswalks with high visibility striping	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 3
Dewitt Terrace, Linden	Restripe stop bar, centerline, and receiving lane dashed line on Route 27 northbound	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 3
Dewitt Terrace, Linden	Install pedestrian signals with countdown feature	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 3
Dewitt Terrace, Linden	Replace and update traffic signal equipment	NJDOT	Medium-term	Addressed as part of Concept Design for Critical Location 3
Dewitt Terrace, Linden	Remove existing School Crosswalk sign near 277 St. Georges Avenue	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 3
Dewitt Terrace, Linden	Install new fluorescent yellow-green School Advance Warning (S1-1) sign with additional plaque "Ahead" (W16-9p) between 150ft – 700ft in advance of school grounds or the school crossing	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 3
N. Wood Avenue, Linden	Install all missing detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 4
N. Wood Avenue, Linden	Replace and update traffic signal equipment	NJDOT	Medium-term	Addressed as part of Concept Design for Critical Location 4
N. Wood Avenue, Linden	Add another pedestrian pole for pedestrian countdown signal to face northwest corner	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 4
N. Wood Avenue, Linden	Evaluate installation of bicycle lanes on N. Wood Avenue	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 4
N. Wood Avenue, Linden	Install bus shelters on St. Georges Avenue	NJ TRANSIT/NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 4



Union County - Route 27 Corridor Safety Study

Location	Potential Measure	Responsibility	Time-Frame	Comments
N. Wood Avenue, Linden	Evaluate feasibility for replacement of traffic signal with 180' diameter modern roundabout	NJDOT	Long-term	Addressed as part of Concept Design for Critical Location 4
Ainsworth Street, Linden	Restripe crosswalks with high visibility striping	NJDOT	Short-term	
Ainsworth Street, Linden	Update School Crosswalk (S1-1) sign with strong fluorescent yellow green signage with additional directional arrow plaque (W16-7p)	NJDOT	Short-term	
Ainsworth Street, Linden	Install all missing detectable warning surfaces	NJDOT	Short-term	
Summit Terrace, Linden	Restripe all crosswalks with high visibility striping	NJDOT	Short-term	
Summit Terrace, Linden	Update School Crosswalk (S1-1) sign with strong fluorescent yellow green signage with additional directional arrow plaque (W16-7p)	NJDOT	Short-term	
Summit Terrace, Linden	Install all missing detectable warning surfaces	NJDOT	Short-term	

Enforcement & Education

Location	Potential Measure	Responsibility	Time-Frame	Comments
Between Nora Dr. & Grant St., Roselle & Linden	Utilize "guerilla marketing" education techniques.	NJDOT, Borough of Roselle, City of Linden	Short-term & Ongoing	A "guerilla marketing" campaign is an educational strategy targeted within a specific geographic area. It makes use of a variety of educational tools in an intense and highly-focused manner.
N. Wood Avenue, Linden	Police presence should continue to be maintained at major pedestrian crossing locations such as N. Wood Avenue & St. Georges Avenue. This will help to passively encourage drivers to obey the laws, and expect that they are being monitored.	NJDOT	Short-term & Ongoing	



Union County - Route 27 Corridor Safety Study

Borough of Roselle

Engineering and Operations

Location	Potential Measure	Responsibility	Time-Frame	Comments
Chestnut St., Roselle	Investigate alternate bus stop location	NJ TRANSIT, Borough of Roselle	Short-term	
Chestnut St., Roselle	Investigate modification of intersection geometry to allow for greater turning radius for heavy vehicles, especially for the right-turn from Rt. 27 SB onto Chestnut St.	NJDOT	Medium-term	Need to submit problem statement.
Between Chestnut St. and Frank St., Linden & Roselle	Install at least one mainline pedestrian crossing between these locations to reduce jaywalking	NJDOT	Medium-term	Addressed as part of Concept Design for Critical Location 5
Chestnut St. – Richford Terr., Linden & Roselle	Investigate designation of more one-way side streets to mitigate access issues.	Borough of Roselle, City of Linden, NJDOT	Long-term	May be controversial.
Baltimore Ave., Roselle & Linden	Post advance warning signs to alert drivers of curve, narrowing of road from 4-2 lanes, and to slow speed.	NJDOT	Short-term	Concept Design for Critical Location 5 eliminates this need
Chandler Ave., Roselle	Install “curve ahead” signage to alert drivers of sharp curve in road.	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
From Park Ave. to opposite Hagel Avenue, Roselle	Install sidewalks and streetlights along park frontage on Roselle side of Rt. 27	NJDOT, Borough of Roselle/Union County	Short-term	Addressed as part of Concept Design for Critical Location 6
Between Chestnut Street and McCandless Street, Roselle & Linden	Install bicycle lane on St. Georges Avenue	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5



Union County - Route 27 Corridor Safety Study

Location	Potential Measure	Responsibility	Time-Frame	Comments
Between Chestnut Street and Chandler Avenue, Roselle & Linden	Install all missing curb ramps with detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
Between Chestnut Street and Chandler Avenue, Roselle & Linden	Install pedestrian signals with countdown feature at signalized intersections	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
Between Chestnut Street and Chandler Avenue, Roselle & Linden	Update signs	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
Between Chestnut Street and Chandler Avenue, Roselle & Linden	Evaluate installation of 10' wide median island as pedestrian refuge	NJDOT	Medium-term	Addressed as part of Concept Design for Critical Location 5
Between Chestnut Street and Chandler Avenue, Roselle & Linden	Evaluate reduction of St. Georges Avenue from 4 lanes to 2 between Roselle Street and Frank Street	NJDOT	Medium-term	Addressed as part of Concept Design for Critical Location 5
Between Chestnut Street and Chandler Avenue, Roselle & Linden	Restripe all crosswalks with high visibility striping	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
Between Chestnut Street and Chandler Avenue, Roselle & Linden	Install all missing stop bars on side streets	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
Park Ave., Roselle	Install all missing curb ramps with detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 6
Chestnut Street, Roselle	Install all missing detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
Chestnut Street, Roselle	Install pedestrian signals with countdown feature	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
Chestnut Street, Roselle	Install all missing curb ramps with detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
Chestnut Street, Roselle	Update signs with strong yellow-green fluorescent color	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
Chestnut Street, Roselle	Restripe all crosswalks with high visibility striping	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
Frank Street, Roselle	Install all missing curb ramps with detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5



Union County - Route 27 Corridor Safety Study

Location	Potential Measure	Responsibility	Time-Frame	Comments
Frank Street, Roselle	Install all missing detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
Frank Street, Roselle	Install pedestrian signals with countdown feature	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
Frank Street, Roselle	Restripe all crosswalks with high visibility striping	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
Morris Street, Roselle	Install stop bar at the intersection	Borough of Roselle	Short-term	Addressed as part of Concept Design for Critical Location 5
W. Baltimore Avenue, Roselle	Install all missing curb ramps with detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 5
W. Baltimore Avenue, Roselle	Install stop bar at the intersection of St. Georges Avenue	Borough of Roselle	Short-term	Addressed as part of Concept Design for Critical Location 5
W. Baltimore Avenue, Roselle	Move stop sign on the westbound side to a more practical location for motorists to obey and make their movement	Borough of Roselle	Short-term	Addressed as part of Concept Design for Critical Location 5
Hagel Avenue, Roselle	Evaluate location of bus stop at intersection of Route 27 southbound	NJ TRANSIT/NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 6

Regulatory

Location	Potential Measure	Responsibility	Time-Frame	Comments
Harrison Ave., Roselle	Consider prohibiting left turns from Harrison Ave.	Borough of Roselle	Medium-term	



Union County - Route 27 Corridor Safety Study

Enforcement and Education

Location	Potential Measure	Responsibility	Time-Frame	Comments
Chestnut Ave., Roselle	Enforce complete stops at channelized right onto Rt. 27 SB	Borough of Roselle	Short-term	
Between Nora Dr. & Grant St., Roselle & Linden	Utilize "guerilla marketing" education techniques.	NJDOT, Borough of Roselle, City of Linden	Short-term & Ongoing	A "guerilla marketing" campaign is an educational strategy targeted within a specific geographic area. It makes use of a variety of educational tools in an intense and highly-focused manner.
Between Chandler Avenue and Frank Street, Roselle	Consider installing a mounted driver feedback sign	NJDOT, Borough of Roselle, Municipal Traffic Safety Officer	Short-term	

City of Rahway

Engineering and Operations

Location	Potential Measure	Responsibility	Time-Frame	Comments
Rahway Section	Add a midblock crossing at one of the following locations: Union St., Harrison St., School St.	NJDOT/City of Rahway	Medium-term	(Note: NJDOT has advanced design work for the ECG Intersection project in the vicinity of this area. Route 27 and ECG project coordination/review is recommended to ensure consistency and continuity of both projects.)
Between School Street and River Road	Consider connecting both sides of the Rahway River Parkway with a crosswalk between School St. and River Road.	NJDOT/City of Rahway	Medium-term	(Note: NJDOT has advanced design work for the ECG Intersection project in the vicinity of this area. Route 27 and ECG project coordination/review is recommended to ensure consistency and continuity of both projects.)
Rahway Section	Post additional speed limit signs, especially in the SB direction	NJDOT/City of Rahway	Short-term	
Rahway Section	Install ADA-compliant curb ramps at appropriate intersections	NJDOT	Medium-term	
West Grand Avenue, Rahway	Reposition pedestrian countdown signalhead on NE corner of W. Grand Ave., and Route 27.	NJDOT	Short-term	
Between Union Street and River Road	Consider painting "School Ahead" notification on road pavement in advance of school zone.	NJDOT	Short-term	



Union County - Route 27 Corridor Safety Study

Location	Potential Measure	Responsibility	Time-Frame	Comments
Rahway Section	Relocate some utility poles and signage away from curbs to improve sidewalk visibility from the roadway, especially at intersections.	NJDOT	Medium-term	
Between W. Hazelwood Avenue and W. Milton Avenue, Rahway	Replace and update traffic signal equipment and improve layout	NJDOT	Medium-term	Addressed as part of Concept Design for Critical Location 1
W. Hazelwood Avenue, Rahway	Pedestrian crossing signs should be installed at crosswalks	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 1
W. Hazelwood Avenue, Rahway	Create crosswalk across Route 27 by moving back the stop line* *If crosswalk is not created, the signage indicating preferred pedestrian travel across Route 27 (R9-2) should be replaced with R9-3b for clarity	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 1
W. Hazelwood Avenue, Rahway	Install pedestrian signals with countdown feature	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 1
W. Hazelwood Avenue, Rahway	Install all missing curb ramps with detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 1
W. Hazelwood Avenue, Rahway	Restripe centerline to stop at the stop bar	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 1
Maple Avenue, Rahway	Create crosswalk with high visibility striping at the northeast leg of the intersection	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 1
Maple Avenue, Rahway	Install pedestrian signals with countdown feature	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 1
W. Milton Avenue, Rahway	Install all missing detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 1
W. Milton Avenue, Rahway	Install all missing curb ramps with detectable warning surfaces	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 1
W. Milton Avenue, Rahway	Install pedestrian signals with countdown feature	NJDOT	Short-term	Addressed as part of Concept Design for Critical Location 1
School Street, Rahway	Fix wrought iron fence on bridge over Rahway River for pedestrian safety	Union County/City of Rahway	Medium-term	Addressed as part of Concept Design for Critical Location 2
Between School Street and River Road, Rahway	Add pedestrian scale lighting on northbound and southbound Route 27	City of Rahway	Medium-term	Addressed as part of Concept Design for Critical Location 2



Union County - Route 27 Corridor Safety Study

Location	Potential Measure	Responsibility	Time-Frame	Comments
St. Georges Avenue and Route 35, Rahway	Install pedestrian signals with countdown feature	NJDOT	Short-term	
St. Georges Avenue and Route 35, Rahway	Add pedestrian crossing signage at all crosswalks	NJDOT	Medium-term	
St. Georges Avenue and Route 35, Rahway	Replace and update traffic signal equipment	NJDOT	Medium-term	
St. Georges Avenue and Route 35, Rahway	Install lighting in railroad underpass for pedestrian safety	NJDOT	Short-term	
Colonia Blvd, Rahway	Restripe crosswalk across Route 27 with high visibility striping	NJDOT	Short-term	
Colonia Blvd, Rahway	Install all missing curb ramps with detectable warning surface	NJDOT	Short-term	
Lincoln Highway, Rahway	Install crosswalk with high visibility striping	NJDOT	Short-term	
Colonia Blvd, Rahway	Install crosswalk with high visibility striping	NJDOT	Short-term	

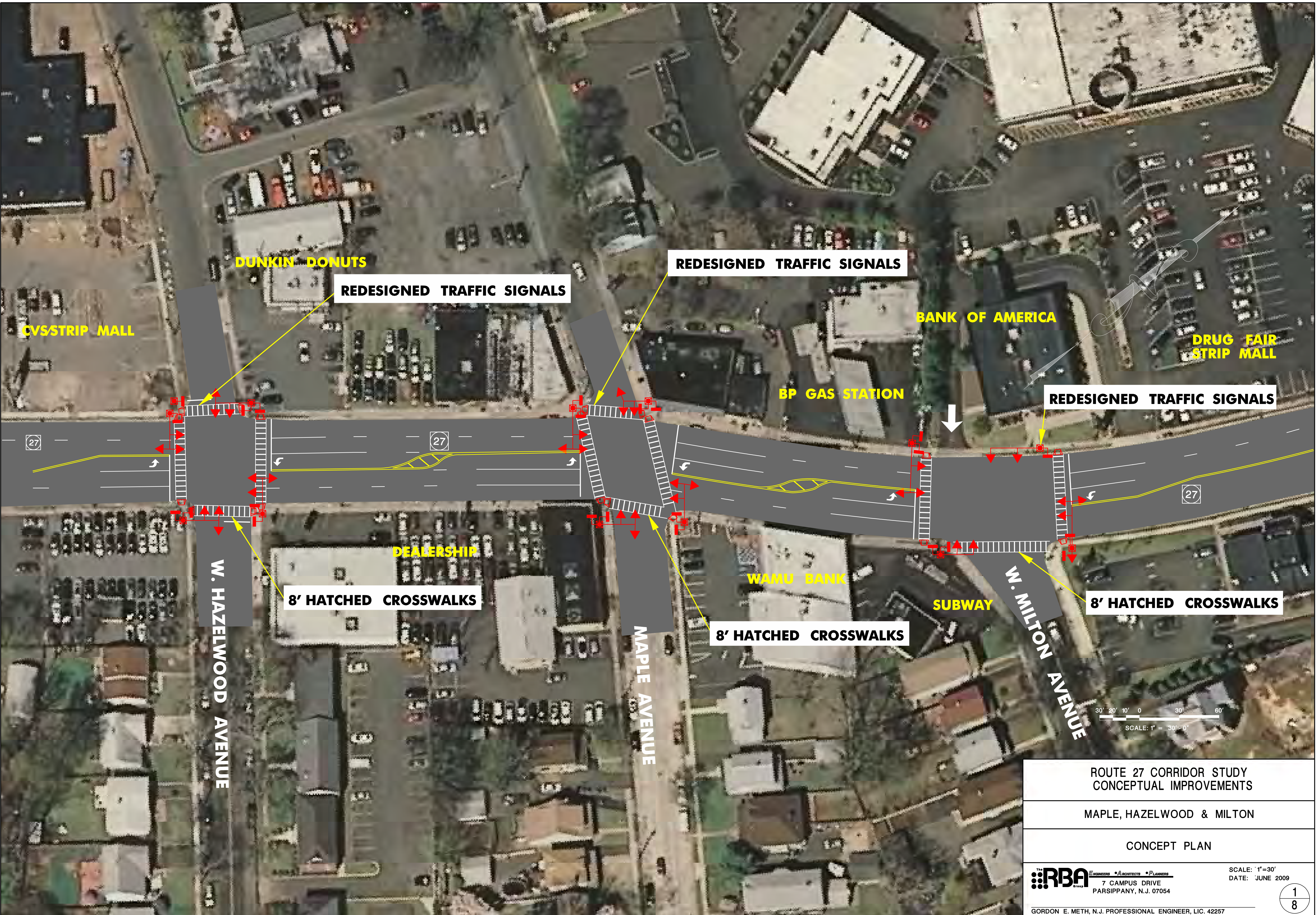
Maintenance

Location	Potential Measure	Responsibility	Time-Frame	Comments
School Street, Rahway	Trim vegetation from overhead school zone sign on Rt. 27 SB at School St.	NJDOT	Short-term	
Rahway Section	Repaint crosswalk striping throughout study area.	NJDOT	Short-term	

Enforcement and Education

Location	Potential Measure	Responsibility	Time-Frame	Comments
Rahway Section	Increase pedestrian safety, education and enforcement programs, including jaywalking citations	City of Rahway	Short-term & Ongoing	
Rahway Section	Begin a speed limit enforcement campaign.	City of Rahway	Short-term & Ongoing	
School Street, Rahway	Install driver speed feedback variable message sign with indication of fine for speeding in a school zone	NJDOT/City of Rahway	Short-term & Ongoing	





REDESIGNED TRAFFIC SIGNALS


REDESIGNED TRAFFIC SIGNALS

REDESIGNED TRAFFIC SIGNALS

8' HATCHED CROSSWALKS

8' HATCHED CROSSWALKS

8' HATCHED CROSSWALKS

<p>ROUTE 27 CORRIDOR STUDY CONCEPTUAL IMPROVEMENTS</p>	
<p>MAPLE, HAZELWOOD & MILTON</p>	
<p>CONCEPT PLAN</p>	
 <p>7 CAMPUS DRIVE PARSIPPANY, N.J. 07054</p>	<p>SCALE: 1" = 30' DATE: JUNE 2009</p>
<p>GORDON E. METH, N.J. PROFESSIONAL ENGINEER, LIC. 42257</p>	
<p>1 8</p>	



**INCORPORATE SAFE ROUTES TO SCHOOLS
CONCEPTS FOR SCHOOL DROP-OFF**

ENHANCED CROSSWALK

RAHWAY PARK

**EAST COAST GREENWAY
CROSSING PLANS (BY OTHERS)**


ST. GEORGES AVENUE

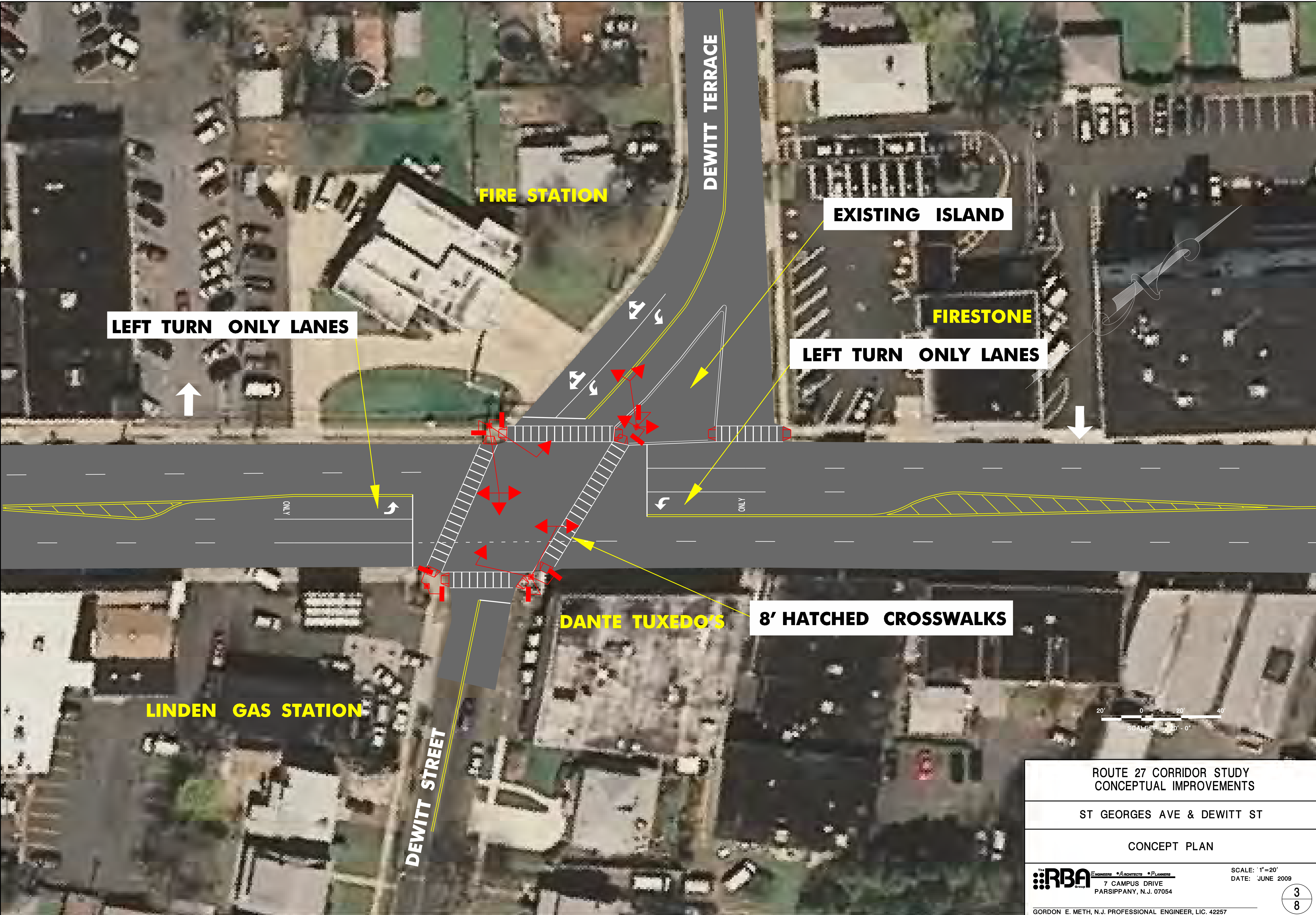
**FRANKLIN SCHOOL
1809 ST. GEORGES AVENUE**

**8' HATCHED CROSSWALKS FOR CROSSINGS
TO AND FROM FRANKLIN SCHOOL**

SCHOOL STREET

RIVER ROAD

ROUTE 27 CORRIDOR STUDY CONCEPTUAL IMPROVEMENTS	
SCHOOL STREET AND ST GEORGES AVENUE	
CONCEPT PLAN	
 RBA <small>ENGINEERS • ARCHITECTS • PLANNERS</small> 7 CAMPUS DRIVE PARSIPPANY, N.J. 07054	SCALE: 1" = 40' DATE: JUNE 2009
<small>GORDON E. METH, N.J. PROFESSIONAL ENGINEER, LIC. 42257</small>	
<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;"> 2 8 </div>	



LEFT TURN ONLY LANES

EXISTING ISLAND

FIRESTONE

LEFT TURN ONLY LANES

DANTE TUXEDO'S

8' HATCHED CROSSWALKS

LINDEN GAS STATION

DEWITT TERRACE

DEWITT STREET

20' 0 20' 40'
SCALE: 1" = 20'

**ROUTE 27 CORRIDOR STUDY
CONCEPTUAL IMPROVEMENTS**

ST GEORGES AVE & DEWITT ST

CONCEPT PLAN

THE RBA GROUP ENGINEERS ARCHITECTS PLANNERS
7 CAMPUS DRIVE
PARSIPPANY, N.J. 07054

SCALE: 1" = 20'
DATE: JUNE 2009

GORDON E. METH, N.J. PROFESSIONAL ENGINEER, LIC. 42257



ROUTE 27 CORRIDOR STUDY
CONCEPTUAL IMPROVEMENTS

NORTH WOOD AVE & ST GEORGES AVE

CONCEPT PLAN

RBA
ENGINEERS ARCHITECTS PLANNERS
7 CAMPUS DRIVE
PARSIPPANY, N.J. 07054

SCALE:
DATE: JUNE 2009

GORDON E. METH, N.J. PROFESSIONAL ENGINEER, LIC. 42257



CROSS SECTION 2

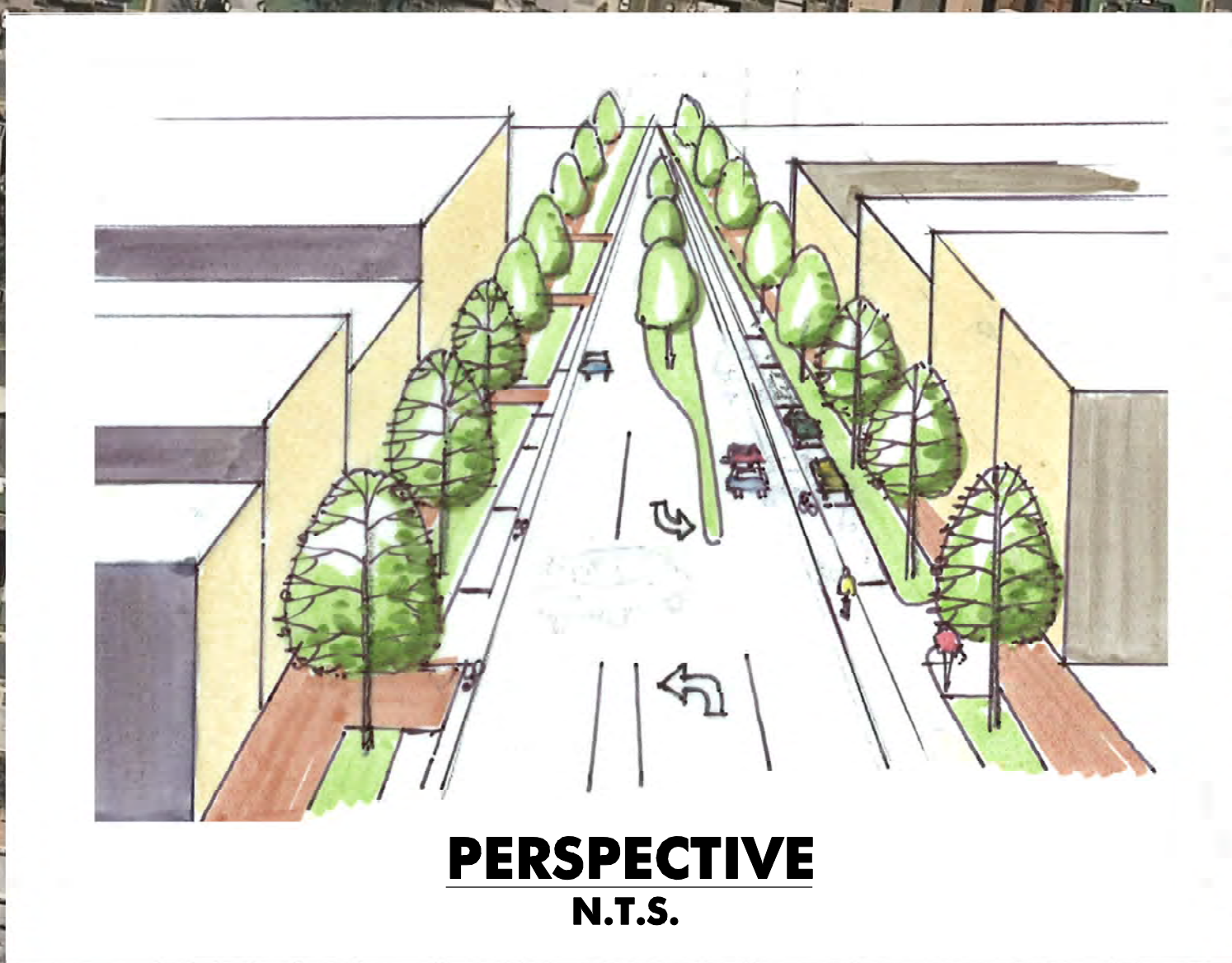
CROSS SECTION 1

10' WIDE MEDIAN ISLAND WITH 12' TRAVEL LANE AND 8' SHOULDER ON EACH SIDE

TRANSITION AREA FOR LANE REDUCTION

**ADVANCE AUTOPARTS
POPEYES CHICKEN
ALDI SUPERMARKET**

**COUNTY OF UNION
DEPARTMENT OF HUMAN SERVICES
DIVISION OF YOUTH SERVICES**



ROUTE 27 CORRIDOR STUDY CONCEPTUAL IMPROVEMENTS	
ST GEORGES AVE - CHESTNUT ST TO CHANDLER ST	
CONCEPT PLAN	
 ENGINEERS ARCHITECTS PLANNERS 7 CAMPUS DRIVE PARSIPPANY, N.J. 07054	SCALE: _____ DATE: JUNE 2009
GORDON E. METH, N.J. PROFESSIONAL ENGINEER, LIC. 42257	



ENTRANCE TO WARINANCO PARK

8' HATCHED CROSSWALK

PROPOSED SIDEWALK

8' HATCHED CROSSWALK

BUS STOP/SHELTER

**COLISEUM
DINER**

N. PARK AVENUE

ROUTE 27 (ST GEORGES AVENUE)

INGALLS AVENUE

HAGEL AVENUE

ONE WAY

ROUTE 27 CORRIDOR STUDY
CONCEPTUAL IMPROVEMENTS

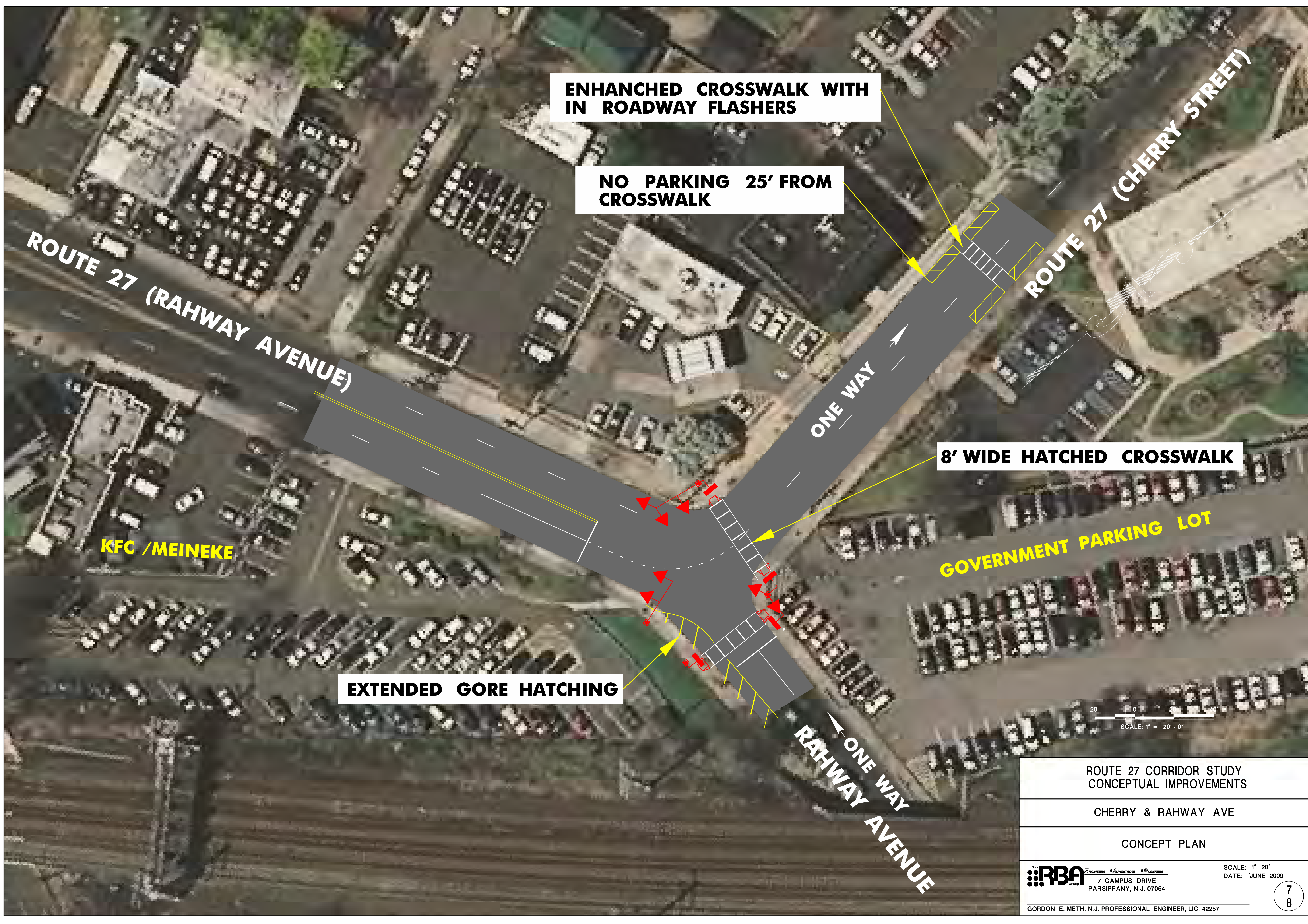
ST GEORGES @ WARINANCO PARK

CONCEPT PLAN

RBA ENGINEERS ARCHITECTS PLANNERS
7 CAMPUS DRIVE
PARSIPPANY, N.J. 07054

SCALE: 1" = 40'
DATE: JUNE 2009

GORDON E. METH, N.J. PROFESSIONAL ENGINEER, LIC. 42257



**ENHANCED CROSSWALK WITH
IN ROADWAY FLASHERS**

**NO PARKING 25' FROM
CROSSWALK**

8' WIDE HATCHED CROSSWALK

EXTENDED GORE HATCHING

GOVERNMENT PARKING LOT

KFC /MEINEKE

20' 0 20' 0'
SCALE: 1" = 20' - 0"

ROUTE 27 CORRIDOR STUDY CONCEPTUAL IMPROVEMENTS	
CHERRY & RAHWAY AVE	
CONCEPT PLAN	
RBA <small>ENGINEERS ARCHITECTS PLANNERS</small> 7 CAMPUS DRIVE PARSIPPANY, N.J. 07054	SCALE: 1" = 20' DATE: JUNE 2009
GORDON E. METH, N.J. PROFESSIONAL ENGINEER, LIC. 42257	
<div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;"> 7 8 </div>	



8' HATCHED CROSSWALK

REDESIGNED TRAFFIC SIGNAL

8' HATCHED CROSSWALK

ROUTE 27 CORRIDOR STUDY
CONCEPTUAL IMPROVEMENTS

CHERRY STREET & WEST GRAND

CONCEPT PLAN

RBA ENGINEERS ARCHITECTS PLANNERS
7 CAMPUS DRIVE
PARSIPPANY, N.J. 07054

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DATE: JUNE 2009

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Appendix (Separate Document)

- PROBLEM STATEMENTS
- TECH MEMO#1
 - Project Development and Outreach
 - Newsletter
 - Review Comment Summary
- TECH MEMO#2/3
 - Data Assessment & Analysis
 - Traffic
 - Lighting (w/map)
 - Planned Improvements
 - Land Use
 - Transit (Bus Stop map)
- TECH MEMO#4
 - Recommendations Matrix
 - Critical Locations & Concept Designs
 - Design Guidelines
- TECH MEMO#5
 - Environmental Screening
- FUNDING SOURCES
- PHOTO LOG