East Windsor

New Jersey Turnpike Interchange 8 Planning Study

September 2014

Prepared for:

Township of East Windsor Mayor & Council

Funded by a Grant from the Delaware Valley Regional Planning Commission

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Section 1. Introduction & Project Purpose

The New Jersey Turnpike Authority (NJTA) has embarked upon a major project to expand the New Jersey Turnpike (NJTP). This project will widen the roadway from 6 to 12 lanes between Interchanges 6 and 9. The project includes re-constructing Interchange 8 in East Windsor, which is positioned between the Borough of Hightstown and the Twin Rivers PUD in East Windsor. The new interchange provides a re-located toll booth on the east side of the NJTP and direct connection with Route 133 at a new grade-separated intersection with Route 33 (see NJ Turnpike Project Overview Map).

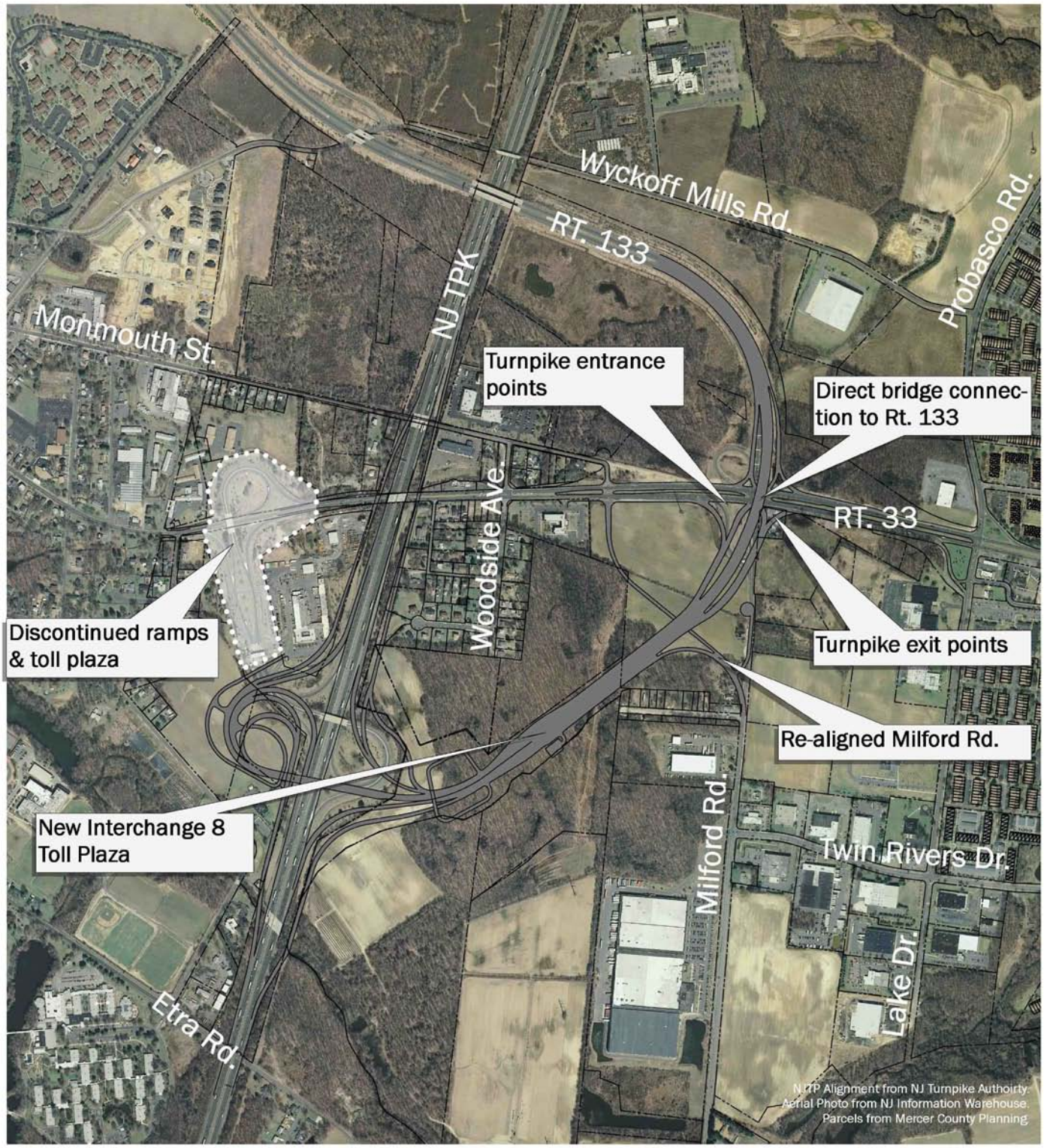
In addition to affecting traffic circulation patterns and transportation access, the Interchange 8 re-construction has resulted in the reconfiguration of some land parcels in the area. While some land parcels have been acquired for the new alignment, the NJTA may also dispose of some of the surplus lands not needed for the expansion.

The Township of East Windsor's Master Plan identifies the Interchange 8 area (see Study Area Location Map) as favorable for commercial development and the Township has had a number of successes promoting commercial improvements in this area. This study assesses the land use impacts of the Turnpike expansion project and identifies potential development and redevelopment opportunities in the area resulting from the project, as well as improvements needed to the transportation system to facilitate and enhance the prospects for commercial development in the area. This effort also identifies needed changes to the Township's master plan, zoning ordinance, and land use and development regulations. In sum, this assessment provides the Township with a "blueprint" for leveraging the Turnpike improvement project into economic development opportunities that will benefit the Township and region.

6/8/12 NJTA progress view of Interchange 8.

9/14/12 NJTA progress view of Interchange 8.

3/17/12 NJTA progress view of new Toll Plaza.



PROJECT OVERVIEW MAP

STUDY AREA LOCATION MAP

Section 2. Existing Conditions

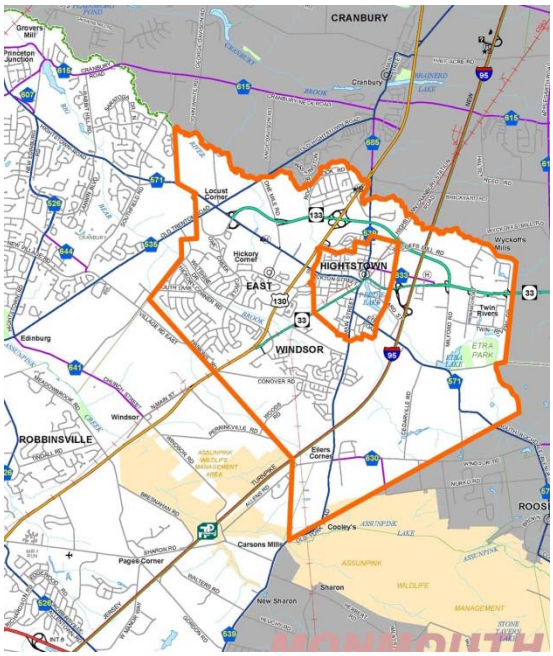
Regional & Local Setting

The Township of East Windsor is a 15.6 square mile municipality in northeastern Mercer County, approximately 10 miles northeast of the City of Trenton. The Millstone River forms the northern boundary line for both East Windsor Township and Mercer County. The Township is located along the New Jersey Turnpike, specifically at Interchange 8.

At the time of the U.S. 2010 Census, the recorded population of the Township was 27,190, an increase of 9.6 percent (2,271) over the 2000 population. The current population estimate is 27,255. Major employers in the Township include McGraw Hill Companies, Conair Corporation, Shiseido America, and Elementis, which was formerly located on Wyckoff Mills Road.

Routes 130 and 571 have developed as the Township's primary retail and office corridors. There are also retail and smaller office uses on Route 33, and larger warehouse uses on Milford and Wyckoff Mills Roads as well as within the Twin Rivers Planned Unit Development. The Interchange 8 area is home to hotels, motels, restaurants, light industrial, agricultural and residential uses, as described in further detail later in this section.

Regional Setting. *(Source: new-jersey-map.org)*



Local Setting. *(Source: state.nj.us)*

Highways, Streets, Intersections

The roadway network within the study area is largely influenced by access to and from Interchange 8. Widening of both directions of the NJTP mainline, in combination with the relocation of the Interchange 8 toll plaza, is changing traffic circulation patterns within the area. The entire NJTP Widening Project from Interchange 6 to Interchange 9 is anticipated to be completed at the end of 2014.

On-going construction at Interchange 8 throughout the duration of this planning study and the other interchanges undergoing modifications make it difficult to assess actual "existing conditions," however the following is a description of the roadways within the project area at the time of this study:

I-95 / NJTP

The study area is traversed in a north-south direction by the NJTP, designated as I-95. The NJTP is the primary north-south, high-speed, limited access roadway in the state. When the NJTP widening project is completed, there will be a 12-lane dual-dual (3 "cars/trucks/buses" lanes and 3 "cars only" lanes in each direction) car-truck roadway for a 25-mile section of the NJTP from Interchange 6 to 9 (Milepost

48 to Milepost 73). This will require adding a new 3-lane roadway in each direction.

In this capacity, the NJTP provides a number of functions beneficial to New Jersey and the region, due in part to its location, as well as its ability to accommodate large volumes of free-flowing traffic. These functions are vital to the transportation needs of many of New Jersey's residents and travelers throughout the northeast, whether that travel is for personal, work, or commercial purposes. These functions are also vital to the movement of commerce within, to and from, and through the state.

The NJTP functions as both an interstate and intrastate transportation link. In its interstate function, NJTP interchanges connect the major east-west highways of New Jersey, particularly those highways of the interstate system which lead to centers within New Jersey and those of neighboring states; e.g., Wilmington (Delaware) and points south via I-295; Philadelphia (Pennsylvania) via I-76; southern Pennsylvania via I-276 (the Pennsylvania Turnpike); central and northern Pennsylvania via I-78 and I-80; and New York via I-287, I-278, I-78, I-495 and I-95.

The section of the NJTP that traverses East Windsor Township is designated as I-95, the main north-south transportation corridor on the east coast in the interstate system. These interstate connections are important to the economy of the state and the region, as they contribute to the attractiveness of these areas for economic investment, as well as to their accessibility to and from outside markets.

Until the new toll plaza was opened on the northbound side of the NJTP in January of 2013, the Interchange 8 toll plaza was located on the southbound side of the NJTP at Milepost 67.6 in East Windsor. The previous interchange was a standard trumpet design and provided access to and from the five-lane toll plaza and NJTP mainline via Route 33.

The mainline widening required a new toll plaza with modified access to the Central Shops maintenance area, and modified NJTP ramps. The previous NJTP interchange with Route 33 was also in close proximity to the center of Hightstown, thereby causing traffic destined to and from the NJTP with origins west of Hightstown to travel through the downtown Hightstown area. NJTA designed Interchange 8 so that it would be relocated to the east side of the NJTP and connect the interchange ramps directly with Route 133 by grade separating the existing Routes 33/133 signalized intersection.

State Jurisdiction Roadways

- Route 133 is a limited access highway under the jurisdiction of the NJDOT. The road begins at the east with complete access at Route 33. As part of Interchange 8 project, direct connection was designed from Interchange 8 onto Route 133 via a grade separated access over Route 33. In addition to the direct connection between Route 133 and the NJTP, the reconfigured roadway continues to provide complete access to and from Route 33 via at-grade ramps.

  Traveling west from this location within the study area, Route 133 continues as a grade-separated roadway, until it terminates beyond the study area with its intersection at-grade with CR 571 (Princeton-Hightstown Road) opposite Windsor Center Drive, which is also located in East Windsor west of Route 130. At CR 571, motorists can turn west and travel to Princeton Junction, Route 1 and Princeton.

- Route 33. When this planning study commenced, Route 33 was a 4-lane Urban Principal Arterial east of the NJTP. The road is still under the jurisdiction of the NJDOT, and has become a 6-lane arterial through most of the study area with turn lanes at key intersections. Left turns are permissible from Route 33 to the NJTP and Route 133 entrance ramps.

County Roads

- Etra Road (CR 571) is under the jurisdiction of Mercer County. Within the study area, it is classified as an Urban Minor Arterial where it is a two lane undivided roadway. The posted speed limit is 40 MPH. An annual average daily traffic (AADT) volume of 3,521 was recorded in 2007.

- Monmouth Street (CR 633) is under Mercer County jurisdiction with a posted speed limit of 25 mph. It is classified as an Urban Collector roadway and consists of two undivided lanes. CR 633 extends from Route 33 opposite the reconfigured terminus of Milford Road to Route 539 (Main Street in Hightstown) in the east to west direction.

Municipal Roads

- Cranbury Station Road is a two lane, undivided roadway with a north-south orientation. The road is at the northwest limit of the study area and intersects with Wyckoff Mills Road at a stop controlled intersection.
- Lake Drive is a two lane undivided roadway, which runs in a north-south direction. Lake Drive begins on the south side of Route 33 directly opposite Probasco Road and ends just south of Twin Rivers Drive.
- Milford Road is designated in the East Windsor Master Plan as a 2-lane Urban Minor Arterial with a statutory 50 mph speed limit. The roadway runs in a general north-south direction. As part of the NJTP expansion project, a section of Milford Road was relocated so that a direct connection could be made between the NJTP and Route 133. Milford Road now terminates to the north at its intersection with Route 33, opposite Monmouth Street (CR 633).
- Probasco Road is classified as an Urban Collector roadway and has a posted speed limit of 40 mph. It is a two lane, undivided roadway that extends from Route 33 to the Cranbury Township border in the south and north directions.
- Twin Rivers Drive is directly east of the study area boundary and is classified as an Urban Collector. It is a two lane, undivided roadway with a posted speed limit of 35 mph.
- Woodside Avenue is a two lane undivided, north-south roadway, which begins south of Katherine Court and runs north to Monmouth Street. Although the road is not a through connection, it provides left turn access onto Monmouth Street from eastbound Route 33.
- Wyckoff Mills Road is classified as an Urban Collector. It is a two lane undivided roadway with a posted speed limit of 40 mph that extends east from CR 539 to Probasco Road.

Signalized Intersections

There are four signalized intersections within the study area limits. These signals are located along Route 33 and its intersection with Woodside Avenue, Monmouth Street/Milford Road, Route 133/NJTP Ramps and Lake Drive/Probasco Road.

Three of the 4 intersections provide for full turning movements. Eastbound left turns from Route 33 onto Monmouth Street are restricted. Motorists wishing to turn onto Monmouth Street from Route 33 must make a left at Woodside Avenue.

Transit, Pedestrian and Bicycle Accommodation

Coach USA buses travel along Route 33 but there is no service stop within the bounds of the study area. The closest identified stop is in Twin Rivers at Abbington Drive. There are no sidewalks or bicycle routes in the study area.

Access

While bringing regional access to the many properties in the area, the alignment of the NJTP and Route 133, which are interchange access only roadways, has contributed to the creation of parcels in the area which have very limited access, particularly in the Wyckoff Mills and Milford Roads areas. The Wyckoff Mills area is accessible only through residential areas, and does not have direct access to Route 133 or the NJTP.

South of Route 33, Block 22, Lot 11.01 (Milford Realty) (see Appendix A for study area Tax Maps) is accessible only through the Woodside Avenue residential neighborhood and Lot 13.01 (Daniel Street Realty) is accessible through a 90’ long segment of re-aligned Milford Road. Block 22.02, Lot 13.01 (Daniel Street Realty) is accessible through Daniel Street, which is a narrow street through a primarily residential neighborhood. Block 22.02, Lot 11.01 (Milford Realty) appears to have no established access to a street, and Lot 8.01 (Sanskrutti) has a 50’ unimproved access easement to Milford Road. These parcels are currently farmed so access has been shared, however more formal developments will require formalized access. A Master Plan roadway is currently indicated to the landlocked area from Milford Road between the DHL and Conair sites. This alignment may be infeasible due to wetlands. Alternatively, if NJDEP permits can be obtained for the crossing, the 50’ wide easement across Lot 2.02 could be used to provide access to the interior of this block.

The new Interchange 8 configuration will likely further reduce the amount of pass-by traffic in front

of the five lodging establishments on either side of the NJTP to the north and south of Route 33, which means that additional signage and visibility enhancements will need to be made.

Land Use & Ownership

Land use and ownership in the area is diverse, and has been affected by both the Route 133 and NJTP right-of-way acquisitions (see Generalized Existing Land Use Map on Page 8). As such, a large portion of the area serves as NJTP and NJDOT right-of-way. NJTA land in the area includes right-of-way, toll plaza, a maintenance yard on Route 33 and a radio tower. The list of properties in the area as well as additional area photos are attached in Appendix A. The property tax classification breakdown of the area is as follows:

Existing Land Use	Acreage
Commercial	43.52
Industrial	68.12
Vacant	105.64
Farm	60.80
Residential	2.14
Institutional	46.76
Total	326.98

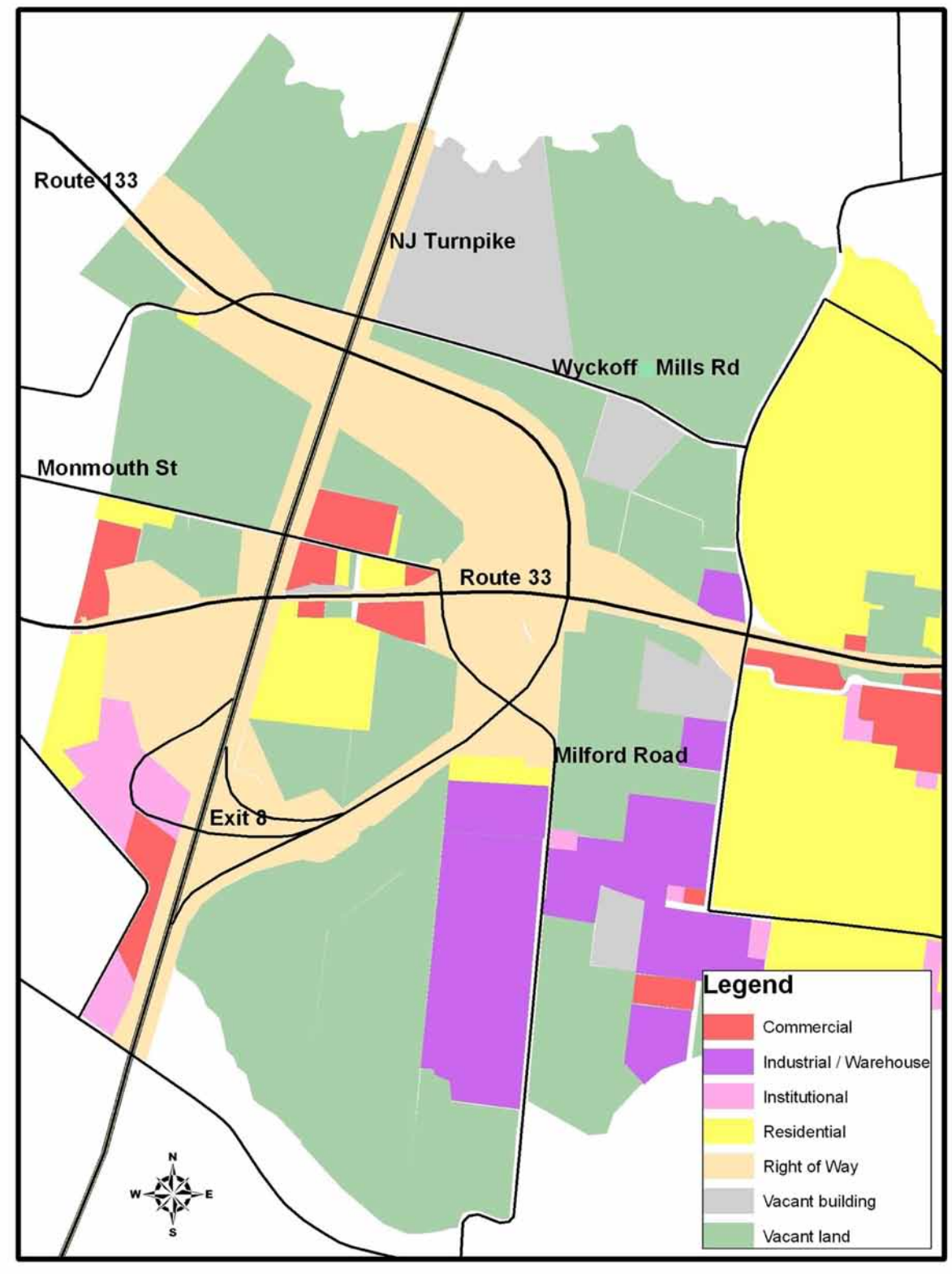
Land to the north of the Interchange is sparsely developed and abutted by the Millstone River. Land to the south of the interchange is predominantly used as farmland and to a lesser extent as warehouse. Conair Corporation and DHL are located on Milford Road south of the Interchange. Land development in the Interchange 8 area began with residential and small retail development along Route 33, which expanded to small hotel and motel uses on Route 33 and Monmouth Street to serve travelers at Interchange 8. There are 5 hotel/motels in the Route 33/Monmouth Street area including Holiday Inn, Hampton Inn, Days Inn, Quality Inn and Town House Motel (see Property Information Map on Page 9). The Holiday Inn and Days Inn have attached restaurants. Mom's Peppermill restaurant on Route 33 westbound is closed and currently listed for sale.

There are no retail uses in the area, although there are retail uses a short distance to the east on Route 33. Office uses are in limited quantity at The National Conference Center (Holiday Inn) site. Warehouse use has been developed on the Conair and DHL sites on Milford Road as well as on Probasco Road and Wyckoff Mills Road. Former industrial / research lab uses are located at the former Elementis and National Lead sites on Wyckoff Mills Road just east of the NJTP. The remainder of the area consists of vacant land and farmland.

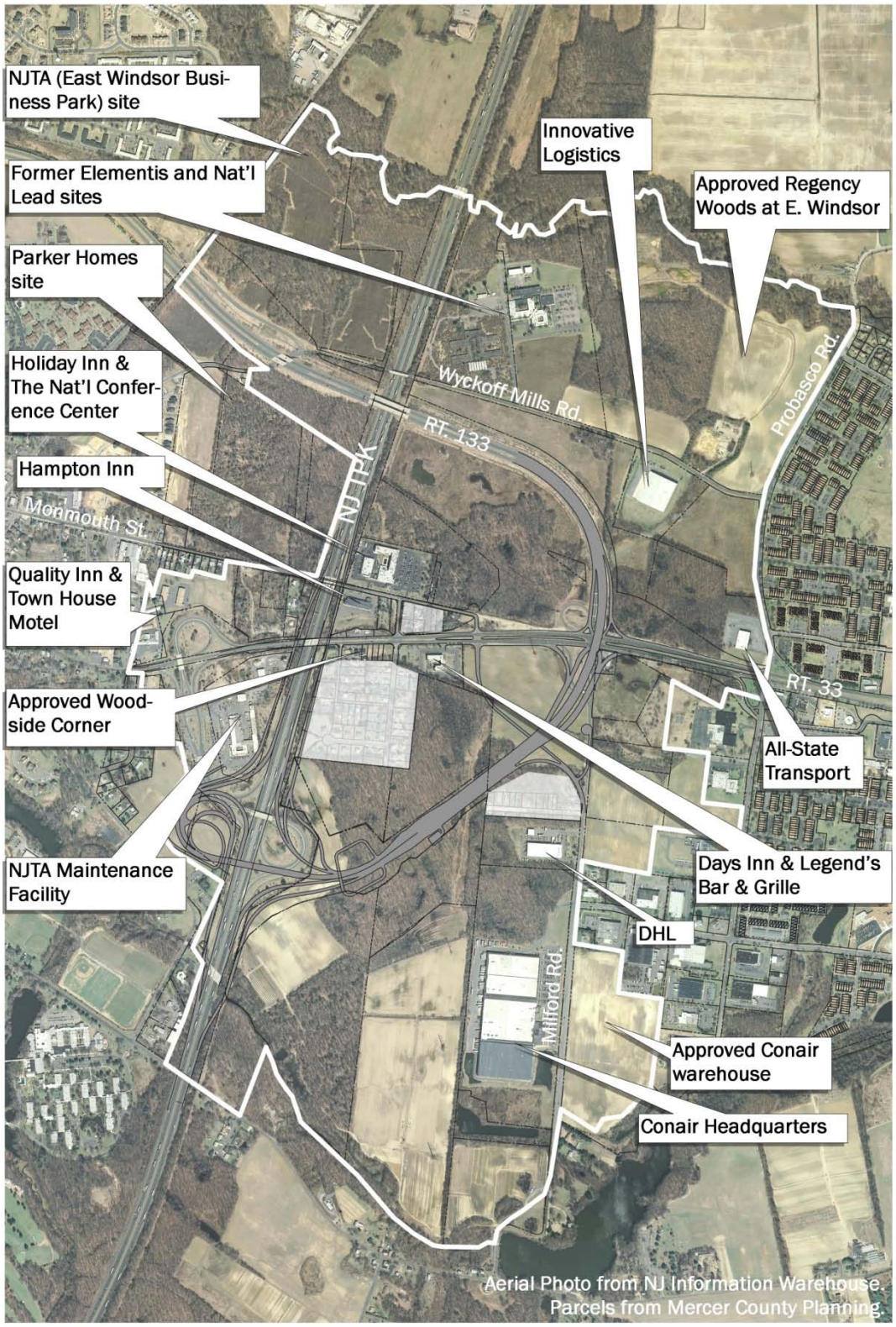
Residential uses that are located in the study area, other than those owned by the Hampton Inn, are proposed to remain as-is.

Zoning

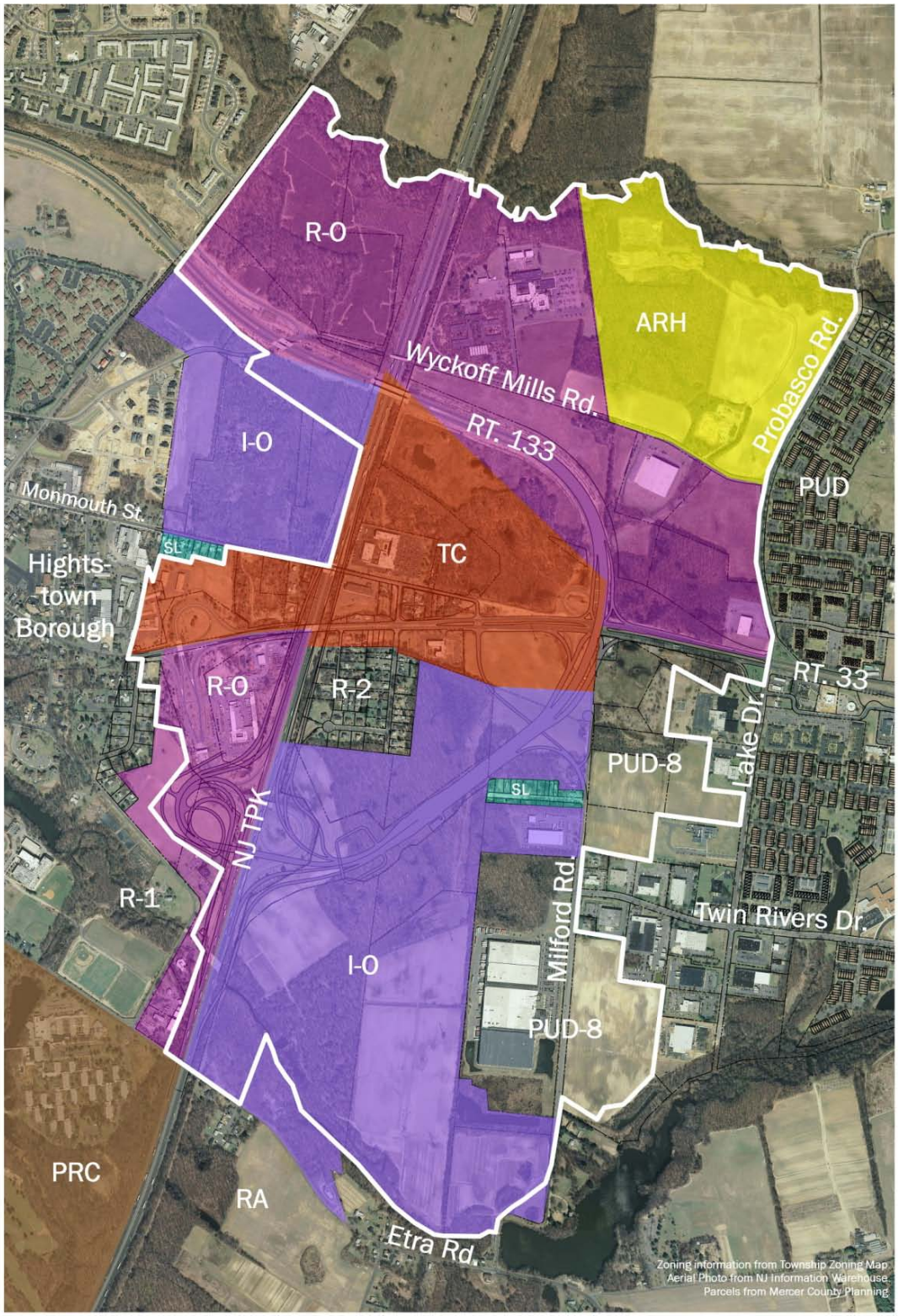
Zoning districts in the area include Turnpike Commercial (TC), Industrial-Office (I-O), Research-Office (R-O), Planned Unit Development (PUD-8) and Age-Restricted Housing (ARH) (see Existing Zoning Map on Page 10). Permitted land uses are listed in the table on Page 11.



GENERALIZED EXISTING LAND USE MAP



PROPERTY INFORMATION MAP



EXISTING ZONING MAP

Currently Permitted Uses	Zone			
	R-O	I-O/ PUD-8	TC	ARH
Hotels and motels, not including tourist cabins, trailer camps or camp sites	C		P	
Gasoline service stations pursuant to §20-16.3b (not including convenience stores)			P	
Restaurants, including cocktail lounges and taverns	A*	A*	P	
Day care and child care centers, nursery schools	P	P	P	
Existing residential uses				
Manufacturing, preparation, processing or fabrication of products, with all activities and product storage within a completely enclosed building	P	P		
Scientific or research laboratories which are devoted to research, design and experimentation including experimental operation of equipment and pilot plants.	P	P		
The warehousing or storage of products within an enclosed building	--	P		
The warehousing or storage of products within 80% of an enclosed building (20% shall be office)	P	P		
The warehousing or storage of products within an enclosed building exceeding FAR by 0.25 (not more than 4.0)	--	C		
Computer centers.	P	P		
Pharmaceutical operations.	P	P		
Office buildings, including medical office.	P	P		
Office buildings			C	
Industrial office parks compliant with §20-19.4	P	P		
Commuter parking facilities.	P	P		
Agricultural and horticultural uses.	P	P		
Employee cafeteria	A	A		
Employee recreational area.	A	A		
Living quarters for watchmen and caretakers.	A	A		
Retail and wholesale sale of goods produced on site.	A	A		
TV & radio recording and other communications facilities incl. accessory antennae.	A	A		
Helistops	C	C		
Restaurant in industrial office parks (≥100 ac.), excluding fast food and drive-ins	C	C		
Assisted living facility	C			
Age-restricted housing				P
C=Conditional Use **P=Permitted Use** **A=Accessory Use** **A*= Accessory to Office Uses**				

Turnpike Commercial Zone

Only four types of uses are currently permitted as-of-right in the zone including hotel/motel, restaurant, gasoline service station and child care centers. Office uses are permitted as Conditional Uses that must meet the bulk standards of the zone, otherwise a "d" variance is required (N.J.S.A. 40:55D-70(d)3), which may be a hindrance to office development in the zone. Existing residential uses are not permitted, which makes a number of residences in the zone non-conforming. The bulk standards of the zone appear suitable to the non-residential land in the district, although the permitted 60' building height is necessary only for hotel uses; 40' is appropriate for other uses.

Research-Office & Industrial-Office Zones

The permitted uses in the R-O and I-O Zones are very similar, and are primarily warehouse and research related. Hotels (meeting the standards of the TC Zone) and Assisted-Living Facilities are permitted conditionally in the R-O Zone, however not in the I-O Zone. Restaurant is only permitted in Industrial Office Parks of 100 acres or more, which are not present in the area.

Other differences between the zones are primarily in the permitted FAR, which in enclosed warehouses is permitted up to 4.0 in the I-O Zone, and remains at 0.25 in the R-O Zone. Building and lot coverage are permitted to be higher in the I-O zone (20% v. 30% building coverage; and 65% v. 75% lot coverage). Building height may be 60' in the I-O, compared to 45' in the R-O Zone. 4-acre minimum lots are required.

Approximately 213 acres in the Interchange 8 area are located in the R-O Zone, and 176 acres are located in the I-O Zone.

Planned Unit Development-8 Zone

Several lots along Milford Road are located in the PUD-8 Zone. The PUD-8 Zone permits non-residential development consistent with the I-O uses, however it utilizes different bulk standards. A smaller lot size (50,000 SF), greater lot coverage (80%) and a shorter building height (40') are permitted than in the I-O zone. The PUD-8 Zone does not have a maximum FAR standard; we note that the Conair warehouse on Milford Road (Block 22.06, Lot 4) was approved with an estimated 0.40 FAR. Approximately 94 acres in the Interchange 8 area are located in the PUD-8 Zone.

Age-Restricted Housing Zone

This zone permits age-restricted housing at 3 dwelling units per gross acre of land. Approximately 104 acres in the Interchange 8 area are located in the ARH Zone, which consists of the approved 209-unit Toll Brothers Regency Woods at East Windsor project.

Current Planning

The Township's last Master Plan was adopted in 1993, and the subsequent Master Plan Reexaminations re-adopted the goals and objectives from that plan. The Existing Land Use Map is similar to the uses that exist presently, and the Land Use Plan Map designations reflect current zoning. Applicable Master Plan goals are:

1. Promote concentrated rather than scattered commercial and industrial development at strategic locations serviced by major highways and utility infrastructure.
2. Promote adequacy, variety and convenience of shopping for local residents.
3. Promote continuation of farming as part of an agriculture-related economic base.
4. Encourage development of a township wide open space network.
5. Preserve, to the extent practical and feasible, environmentally sensitive areas, major vistas and other aesthetic attributes of the township.
6. Continue the development of a system of roadways to expedite regional, subregional and local traffic with minimum interference between such traffic movements.

In terms of circulation, improvements were recommended at the Probasco Road / Route 33 intersection. In the 2006 Circulation Plan, a Master Plan road was recommended to provide access to the interior, landlocked portion of Block 22 between the DHL and Conair sites.

Greenways were recommended along the Millstone River, Rocky Brook, and a connection between the two along Probasco Road, across Route 33 and south behind the existing Conair warehouse.

The Interchange 8 area is located in State Development and Redevelopment Planning Area 2, in which development is encouraged.

Approved Development

There are several properties in the study area and vicinity in East Windsor Township which have development approvals:

- Conair Corporation – Block 20.06, Lot 4; PUD Zone; 474,033 SF warehouse. Across Milford Road from the existing Conair warehouse.
- Regency Woods at East Windsor- Block 13, Lot 1; 209 units; converted from an approved age-restricted project to a non-age-restricted project on 2/28/11, enabled through P.L. 2009, c.82, which permitted development conversions state-wide under certain circumstances. Located at the northwest corner of Probasco and Wyckoff Mills Roads. 38 acres of open space to be dedicated to Township.
- Woodside Corner – Block 23, Lots 1-6; retail center on SW corner of Route 33 and Woodside Avenue. 8,172 SF child care center; 4,553 SF restaurant; 4,582 SF restaurant.
- East Windsor Business Park – Block 12, Lot 1, currently owned by NJTA but largely unneeded for roadway or grading. Located on Cranbury Station Road on the Millstone River. Approved on 3/20/06 for 5 lots plus 1 open space lot. 53.99 acres. Office and warehouse; (1) 45,000 SF; (2) 45,250 SF; (3) 13,200 SF; (4)8,800 SF; (5) 126,570 SF; (6) 4.46 ac. open space.
- The Promenade at East Windsor – Block 14, Lot 977; 671 Route 33 East. Across from CVS. 30,555 SF (2 sty) office; 17,402 SF (1 sty) retail with bank with drive-thru; 9,780 SF child care center; 17,402 SF retail; 14,400 SF office. PUD-7 Zone.
- Galleria – Route 33 East. Office and retail.
- Parker Homes - The I-O Zone was recently amended to permit skilled nursing, memory care, assisted living residence as well as adult day services and health and wellness community services for seniors on Block 16, Lots 1, 2, 5, 6, and 7. A site plan submission is anticipated in the near future.

Monroe Township has also approved a number of projects in the Route 33 corridor which will influence the commercial market and traffic in the area including:

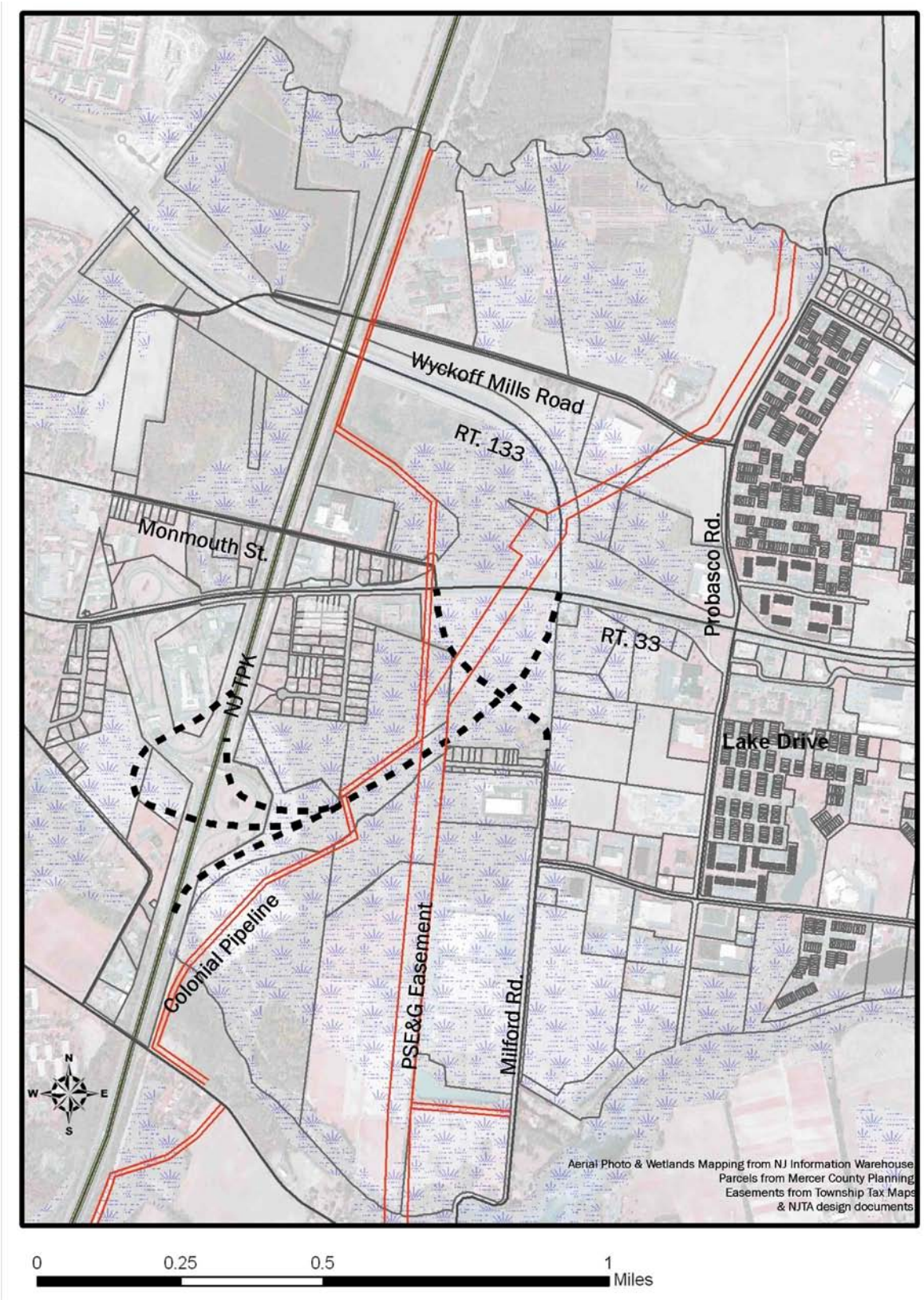
- Small retail center near Perrineville Road.
- Large box retail shopping center including Wawa with gasoline on the southwest corner of Route 33 and Applegarth Road.
- Quick Check with gasoline and 57,400 SF commercial; NW corner of Route 33 and Applegarth Road.
- 150+ miscellaneous new residential lots in vicinity, north and south of Route 33.
- 1,000,000 SF industrial building, near Perrineville Road (Township Planner says this will not be built; it was approved for sewer service reasons).

Environmental Factors & Utilities

The primary environmental factor in the area is freshwater wetlands, which are located throughout the area (see Development Constraints Map on Page 14). NJDEP mapping appears to be fairly accurate with respect to the location and extent of wetlands in the Wyckoff Mills Road and Monmouth Street areas, however it may be overly expansive in the area south of Route 33 and east of the NJTP, evidenced by the approved layout of the approved Conair warehouse (Block 20.06, Lot 4) and by NJTA delineations in their area of impact. In any case, only a full wetlands delineation would confirm the extent of wetlands in the area. There is also floodplain associated with the Millstone River and Rocky Brook, which is not extensive.

Another planning factor is the Colonial pipeline (50' wide right-of-way) and PSE&G (210' wide right-of-way) utility easements which traverse the area in a north-south direction. These easements, although substantial in size and length, are generally routed along roadway rights-of-way and property lines in order to minimize impact.

The Interchange 8 area is located in the sewer and water service area. According to the East Windsor



DEVELOPMENT CONSTRAINTS MAP

Municipal Utilities Authority, (EWMUA), there is excess water and sewer capacity in the area, and infrastructure is located in most study area roadways. There is, however, a lack of sewer infrastructure along Wyckoff Mills Road, and water infrastructure only extends from the corner of Probasco Road to the existing warehouse at #406. The former Elementis and adjacent abandoned industrial site operated with individual waste systems and wells, and Innovative Logistics operates on septic.

NJTP Right-of-Way

Much of the NJTP right-of-way will be used for the roadway itself as well as large detention basins along side the roadway. According to the NJTA Project Engineer John Keller, NJTA will consider selling portions of the right-of-way in approximately mid-2014, after the Turnpike Widening Project is complete. At that time, NJTA will assess whether it has any excess right-of-way, and has indicated that local and County governments will have rights to first bidding. NJTA intends to continue to utilize its maintenance yard area west of the Turnpike on Route 33 eastbound. The ramp area (5.3± acres) on Route 33 westbound (west of the Turnpike) next to the Quality Inn, is a likely candidate for disposition. There may also be an opportunity to utilize a portion of the ramp area across Route 33, which will not be used for Turnpike access, as well as currently unutilized portions of the NJTA maintenance areas on Block 24.01, Lot 1 and Block 25, Lots 18 and 19, for private development, particularly along the Route 33 frontage.

Block 12, Lot 1 on Wyckoff Mills Road, which was approved as the East Windsor Business Park, was purchased by NJTA and not fully utilized for roadway widening or grading. It is the Township's intent to return this site to productive, private use. Several property owners in the Township are still in litigation with NJTA regarding right-of-way acquisitions, so the full extent of the right-of-way has yet to be finalized.

Section 3. Development Opportunities & Objectives

Overview

The reconfiguration of Interchange 8 will affect the volume and direction of traffic, which will likely have an impact on the volume of pass-by traffic in the vicinity of the old ramps. This requires a re-balancing of the area where new opportunities are capitalized upon, and where a reduction in pass-by traffic can be transformed in a positive manner. Overall, the area's opportunities and challenges include:

Opportunities

- Close proximity to NJTP Interchange 8 and Routes 133 and 33
- Central location in Central New Jersey
- Presence of major businesses and hotel franchises
- Acreage of vacant land; available buildings and land
- Location in sewer service area
- Existing infrastructure
- Proximity to existing business and industrial parks
- Proximity to East Windsor Town Center (Route 130 corridor) and Hightstown
- Potential greenway and open space connections
- Mercer County Foreign Trade Zone Program

Challenges

- Development constraints including wetlands and stream / river corridors
- Development constraints related to Colonial Pipeline and PSE&G easements
- Lack of sewerage infrastructure in locations
- Lack of highway visibility of two hotel sites on Monmouth Street
- Lack of wayfinding signage to hotels and shopping
- Close proximity of residential uses will require sensitivity to impacts

Planning Objectives

- Make projects a win/win for the Township, property owners and residents.

- Promote greater utilization of commercial sites while still protecting the environment, providing adequate light, air and open space and free flow of traffic.
- Minimize commercial impacts on adjacent residential properties through vegetative buffering, setbacks and shielded light fixtures.
- Enhance the presence of hotels.
- Create a sense of place through pedestrian-scale lighting and streetscape.
- Create attractive and informative wayfinding signage to direct travelers to hotels, restaurants, businesses and shopping.
- Incorporate sustainable design elements such as bio-swales, pervious pavers, energy-efficient light fixtures, solar canopies, tuck-under parking and other features.
- Create bicycle and pedestrian linkages throughout area for greater safety and access.

Market Analysis

Taking the opportunities and challenges of the area into account, a market analysis was performed for the Interchange 8 study area, which analyzed the potential for use types including office, bio- and high-technology, pharmaceuticals, industrial warehouse and hospitality.

Industrial Market

The industrial market remains strong in Central New Jersey; the area is desirable as a location for distribution and warehousing because of its proximity to large markets in New York and Philadelphia and to Port Elizabeth. Turnpike access and the existence of an interchange and consistent travel times are also critical site location factors for industrial users.

Within the Central New Jersey Market, the study area is located within the geographic boundary of the Exit 7A Industrial Submarket at its eastern edge, and is immediately adjacent to and more reflective of the Exit 8A Submarket to the north and east. These submarkets have rebounded from the recession, and will be further buoyed as travel times to key markets continue to decrease as a result of NJTA's Turnpike Widening Project.

While the industrial vacancy rate for Central New Jersey was reported at 6.6%, the rates for Exit 8A and 7A were 5.1% and 11.4%, respectively (Q4 2013).[1]

Industrial Market

	Exit 8A Submarket	Exit 7A Submarket	Central NJ Total
Total Inventory (SF)	57,234,978	12,207,208	242,510,406
Total Vacant (SF)	2,891,713	1,388,667	15,994,246
Vacancy Rate (%)	5.1%	11.4%	6.6%
YTD Net Absorption (SF)	644,514	914,281	4,154,840
Source: Cassidy Turley			

The market remains competitive and asking rents are increasing as a result and average $4.53 per square foot for warehouse and $3 per square foot for manufacturing. Given access and market desirability, industrial and warehouse uses remain a compelling land use for the study area. It is forecast that the area will continue to attract speculative industrial and warehouse development and leasing activity for data, logistics, consumer products, and food related companies. There has also been a surge in the construction of E-commerce facilities as on-line shopping has increased and some big box retailers have closed brick-and-mortar stores.

Area Competition

A big box project located in Cranbury and the Exit 8A Submarket at 2450 US Highway 130 has been approved for 2.8 million square feet of warehouse space. The project is on a 395-acre tract of land located between Cranbury Station Road and Route 130. Cranbury Township also has a large office/warehouse project in the pipeline; it includes 3.054 million square feet of space by Alfieri Property Management. Amazon built a one million square foot distribution center in Robbinsville (part of the Exit 7A submarket) in 2014.

East Windsor has approved plans for three new industrial buildings totaling about 225-249,000 square feet across from the Airport Road intersection and has a large supply of industrial/warehouse space in and around the Conair facility. These buildings are generally smaller than the new facilities being developed in other parts of the region, but are

[1] *Cassidy Turley.*

suitable for users looking for easy Turnpike access and reasonably valued square footage options. As the economy continues to improve, it is anticipated that new construction will increase, in part due to demand by consumer product companies.

Market Implications

Demand for warehouse/industrial space in the region remains strong and will continue rise as the supply of new space in the pipeline decreases. Valued locations near the highway system are critical and should be considered for new warehouse or industrial use, especially as the economy continues to gain momentum.

Hospitality

There are eight national franchise properties located near Interchanges 8 and 8A. No new properties have been opened in the area since 2005; both the Hampton Inn and the Quality Inn opened in East Windsor during that year. The Holiday Inn and Days Inn, also both located at Interchange 8, are older properties, although they have been renovated. The Hampton Inn and Holiday Inn have limited visibility from Route 33. The largest hotel in the area in terms of rooms and conference facilities is the Holiday Inn with 201 rooms. Plans for a Hyatt Place in Cranbury have not yet materialized.

The remaining four hotels located near Interchange 8A are also competitive and include a Residence Inn and Staybridge Suites, both of which offer extended stays for nearby business travelers, as well as some leisure visitors. The Crowne Plaza and Marriott Courtyard hotels reportedly primarily serve business visitors.

East Windsor Area Hotels

Name of Establishment	Open Date	Class	Rooms
Hampton Inn E. Windsor	07/05	Upper Midscale	80
Days Inn E. Windsor	06/85	Economy Class	100
Town House Motor Inn E. Windsor		Economy Class	30
Holiday Inn E. Windsor	06/72	Upper Midscale	201
Quality Inn E. Windsor	07/05	Midscale Class	54
Residence Inn Cranbury S. Brunswick	10/02	Upscale Class	108
Courtyard Cranbury S. Brunswick	04/01	Upscale Class	144
Crowne Plaza Monroe S. Brunswick	06/84	Upscale Class	150
Total Properties:			954
Source: Smith Travel, AECOM.			

The market is driven largely by individual leisure travelers using the Turnpike and business visitors to the nearby office and industrial clusters. Visitors to the Princeton area, Six Flags and the Shore Areas will also find the area to be near their destination. The Holiday Inn is also able to serve business visitors needing meeting or conference space.

Hotels are highly prone to changes in the economy, as well as to shifts in local and regional supply, including new renovations and changes in hotel brands. In the East Windsor hotel market area, occupancy and Revenue Per Available Room are already greater than pre-recession (2007) figures. The occupancy rate for the eight hotels has rebounded significantly from the early recession years, and now stands at 69.4%, well above the low 50.7% reported in 2009. Because the market is relatively price sensitive, it appears that average daily rate (ADR) was reduced in order to help bolster occupancy; the current ADR is $98.67, a decrease from the pre-recession rate of $108.31. As a result of the increase in occupancy, Revenue Per Available room has also been increasing significantly since the lows of 2009, rising from $49.84 to $68.47.

Nationally, in 2014 hotel occupancy rates are expected to recover to pre-recession levels, with Average Daily Rate increasing 4.9%.[2]

Market Implications

With a relatively healthy occupancy rate, a significant pipeline of new industrial space in the area and the improved accessibility to and from Interchange 8, new hotels may be possible to serve the growing business visitor sector and to provide additional banquet facilities for business and social purposes.

Office Market

The Central New Jersey office market vacancy rate is estimated at 17.8% (Q1 2014), and available space remains relatively flat. Quarterly asking rents increased by 2.8%. In Mercer County, the overall vacancy rate was reported as 11.7% with an overall average rent of $26.44/SF. In Middlesex County, which is immediately adjacent to the study area, the overall vacancy rate was reported as 18.2% with an

[2] *PKF Hospitality Research, LLC.*

overall average rent of $23.14/SF. [3] These numbers are consistent with NAI Fennelly's reporting on the Greater Princeton Market Area as well, of which East Windsor is a part. Within the Greater Princeton Market Area, properties with easy access to the Turnpike may have the lower vacancy rates similar to those of the Routes 195/130 area which are significantly lower at 10.9% (December 2013).[4]

While no new office construction has occurred within the last four years within the five-mile market surrounding the study area (Cranbury, the eastern portion of Plainsboro, the eastern portion of West Windsor, Roosevelt, the northern portion of Millstone and portions of Monroe Township), the construction of new speculative office space remains a viable strategy for locations proximate to easy roadway access. In the Route 1 corridor, the University Medical Center at Princeton did recently construct 100,000 SF of speculative medical office. Given the improved access of the Interchange 8 area, corporate headquarters and build-to-suit office space is feasible.

A noteworthy trend is the "flight to quality" trend wherein relatively reasonable rents for Class A office space has made trading up possible for existing firms. Class A space continues to experience positive absorption. Throughout 2013, for the entire Greater Princeton Market Area, Class A properties consistently drove market improvements, posting 1,552,669 square feet of positive absorption.[5]

The market will continue to meet the increased demand for Class A properties through new construction, and continue to strengthen overall as unemployment in Central NJ continues to fall, creating a favorable outlook for 2014.

Bio-Technology/Laboratory Space

The Bio-Technology/Laboratory space category includes the strong pharmaceutical industry. The Greater Princeton Market Area remains the preferred location for the pharmaceutical industry. New Jersey is home to 17 of the world's 20 largest pharmaceutical companies, and this region remains one of the top regions within the State for pharmaceutical and bio-technology companies, in part due to a well-educated labor force and an effective transportation system.

Sci Park in East Windsor has been approved for four buildings totaling 240,000 square feet; the first building, which was built on spec, has been fully leased to the chemical company Elementis. There is also a significant inventory of laboratory space located in the Cranbury submarket. In order to reduce costs, some smaller biotechnology firms are opting to rent laboratory space from firms that have closed, rather than construct new, high-priced lab space. In some cases, large laboratories have re-opened as rental facilities. As a result, there may be limited new demand for laboratory space in the area in the short to mid-term, although existing vacant facilities along Wyckoff Mills Road may provide opportunity for conversion into biotech and pharmaceutical uses as well as major renovations.

Overall access to the NJ Turnpike offers companies excellent recruitment for employees from as far away as New York or South Jersey. Biotech companies, associations, sales offices, medical practices and/or company headquarters will benefit from this location.

Market Implications

The office market improved in 2013 and is expected to show continuing improvement in the upcoming years. Because location remains a significant draw for corporate headquarters, biotech and technology companies, improved access, infrastructure and capacity in the area surrounding Interchange 8, coupled with the elimination of travel delays on the southbound Turnpike between Interchanges 8 and 8A, will make office space in the study area competitive.

Retail Market

The retail market remains challenged throughout the country as large retail chains continue to close underperforming units and small retailers experience challenges to access to capital. However, retail centers (primarily larger scale regional centers) and well-performing big box retailers continue to look to highway interchanges for new store locations. As the retail climate continues to evolve, a few industry trends are worth noting:

- Well-performing big box retailers have shown a willingness to locate new stores in existing retail centers, such as Bottom Dollar in East Windsor's

[3] *Cushman & Wakefield Report Q1 2014.*
[4] *The NAI Fennelly Southern Hamilton Subarea Market.*
[5] *NAI Fennelly.*

Windsor Center. Ross Dress for Less and fitness franchises such as Retro Fitness have also occupied vacant space in the Township.

- Smaller prototype stores such as Lowe's Express are an increasing trend. Some big box chains have introduced smaller prototypes (25,000 to 15,000 square feet), although these smaller stores are still being market tested and it is not yet clear if the prototypes will be introduced more widely.
- While Outlets remain a viable form of new retail development, outlet malls are land-intensive and typically require at least 45 acres of buildable area for development.

Existing Area Retail

Existing retail within in the study area boundary is limited, as retail has been focused further east on Route 33 and in the Route 130 corridor. The Route 130 Retail Corridor in East Windsor provides a number of highway retail stores and commercial wholesale businesses. There is a Home Depot located at the southeast corner of Route 33 and Hickory Corner Road, and a Wal*Mart located south of the Windsor Crossing shopping center (see Retail Centers table, following). Other regional retail centers include:

- Hamilton Marketplace is a 959,903 square foot retail property located in Mercer County at I-195 & US 130 in Hamilton. The property is anchored by Wal*Mart, BJ's Wholesale Club, Lowe's, Kohl's, and Ross Dress for Less. The center opened in 2002.
- Quaker Bridge Mall is located in Lawrenceville, NJ and includes 1.1 million square feet of retail space. Mall anchors include Lord & Taylor, Macy's, JCPenney, and Sears. Market Fair retail center is located one mile north of Quaker Bridge and includes a Barnes & Noble store and United Artists Theater.
- Freehold Raceway Mall is a super-regional mall in Freehold, New Jersey. The mall's anchor stores are JCPenney, Lord & Taylor, Macy's, Nordstrom and Sears. The mall has 1,671,000 square feet of gross leasable area, making it the second largest shopping mall in New Jersey.
- Jackson Premium Outlets is located in Jackson, NJ near Six Flags Great Adventure. The outlet stores include over 70 name brand and designer outlets. Top outlet stores include Banana Republic, Brooks Brothers, Calvin Klein, Coach, Gap Outlet, J.Crew, Lucky Brand, Liz Claiborne New York, Nautica, Nike, Polo Ralph Lauren, Reebok, Timberland, and Tommy Hilfiger.

In terms of retail market trends, the vacancy rate in Central New Jersey was 9.8% in Q1 2014, which was similar to that of Q4 2013. Rents in the East Windsor market remain in the $10-$20 per square foot range. In the submarkets containing the study area, rents increased by an average 1.9% over the last quarter.[6]

The vacancy rate has remained steady over the past few years even as the economy continues to recover and the NJ unemployment rate continues to decline, indicating that there may be some older underperforming retail space in the area. This is not unusual as older retail centers become obsolete, and does not preclude the redevelopment of older centers and the development of smaller scale retail and/or new retail centers with good highway access. Access to shopping areas to the west of the study area along Route 130 is now better because of the grade-separated direct connection from the Turnpike to Route 133.

The demographics of the area are also supportive of retail. The population within 5 miles of the study area was estimated at 66,008 in 2012 and is estimated to increase to 68,222 by 2017. Within 7 miles of the study area there is a population of 123,671, estimated to increase to 127,239 by 2017. Median household income is also projected to increase and is currently $94,043 within a 7-mile radius (see Population Characteristics table, following). Of the 28,454 housing units within a 5-mile radius, 72.4% are owner occupied, which is another positive indicator.

Market Implications

Smaller-scale retail, personal service and restaurants are viable in the study area, particularly as part of a mixed-use development, given the strong demographics of the area, and a relatively limited current supply of these options particularly to the east and north of the study area.

[6] *REIS Reports.*

Retail Centers within Five Miles of the Study Area

Center Name	Address	City	Anchor GLA (SF)	Anchor Tenants	# Properties in Center	% Leased	Year Built	Center RBA/ GLA
Community Centers								
East Windsor Village	70 Princeton Hightstown Rd.	E. Windsor	165,900	Target, T.J. Maxx, Famous Footwear	4	100%	2001	249,029
Town Center Plaza	319 Rt. 130	E. Windsor	125,000	ShopRite, Cinemas	2	57.1%	1990	135,483
East Windsor Town Center	370 Rt. 130	E. Windsor	120,002	Burlington Coat Factory, CVS, Party Fair, Dollar Tree	3	91.2	1973	126,879
Neighborhood Centers								
Twin Rivers Mall	659 Abbington Dr.	E. Windsor			1	100	1971	51,260
Applegarth Professional Center	Cranbury Half Acre Rd.	Jamesburg	13,013	CVS	8	100	2007	38,941
Concordia Shopping Center	1600 Perrineville Rd.	Cranbury	66,648	Stop&Shop, Rite Aid	7	100	1985	194,273
Village Center	Princeton Hightstown Rd. @ Southfield Rd.	W. Windsor			5	71.6	2010	44,951
Southfield Commons	295-335 Princeton Hightstown Rd.	Princeton Jct.	17,869	McCaffrey's Market	2	97.3	NA	92,327
Washington Village	Rt. 130	Robbinsville			2	0	NA	55,340
Windsor Crossing	761 W. Rt. 33	E. Windsor	24,000	Gold's Gym	4	84.8	2007	80,009
Windsor Center	440 Rt. 130	E. Windsor		Staples, Retro Fitness, Ross Dress for Less	5	48.9	1958	154,150
Retail Centers								
	104 Hickory Corner Rd.	E. Windsor			1	100	NA	12,000
	2 Maple Stream Rd.	E. Windsor			1	100	1964	2,937
	177 Mercer St.	Hightstown			1	100	1960	11,990
	8 Princeton Hightstown Rd.	E. Windsor			1	100	NA	11,523
	24 Princeton Hightstown Rd.	E. Windsor			1	100	NA	8,233
	510 Rt. 130	E. Windsor			1	100	1980	24,750
	375 Rt. 130	E. Windsor			1	100	NA	5,127
	2674 Rt. 130	Cranbury			1	100	NA	17,294
Source: COSTAR, AECOM								

Population Characteristics, Five-and Seven-Mile Radius

	5 Mile Radius			*7-Mile Radius*		
	2000	2012	2017	2000	2012	2017
Total Pop.	56,638	66,008	68,222	104,666	123,671	127,239
Median HH income	NA	$86,612	$98,160	NA	$94,043	$103,249
Median home value	NA	$315,790	$348,540	NA	$363,287	$407,529
Median age	NA	44.6	45.2	NA	42.6	42.9
2012 Housing Units		28,454			51,108	
Owner Occupied		72.4%			71.2%	
Rental Occupied		21.3%			23.1%	
Vacant Units		6.3%			5.7%	
Source: ESRI, AECOM						

Institutional

A growing trend is the development of branch facilities for institutional uses such as medical and educational facilities. This could include a satellite campus or training facility for a nearby college or university or a for-profit technical school. Medical facilities are discussed below.

In some cases, training facilities are developed on site with new manufacturing uses. As an example, at the former Sony Plant facility in Westmoreland County, Pennsylvania, Westmoreland Community College is opening a satellite facility that will offer both credit and noncredit programs in areas such as electronics, machining, robotics and welding, as well as specialized training for industry. Further study is needed to assess the need for a training facility at the site.

Medical Facilities/Rehabilitation Center/Medical Office

A satellite outpatient health care facility affiliated with one of Central New Jersey's hospitals was mentioned as a potential viable use along the Route 33 corridor. These facilities can include primary care, urgent care, specialists, laboratory space, imaging, etc. Hospitals are finding that it is often more cost efficient to provide continuing care and out-patient services in smaller satellite facilities proximate to where people live and work. These facilities bring the level of service and quality of the larger institution closer to the people they serve, especially in areas outside of major cities. This type of use would benefit the area by generating jobs and also attracting people (patients and visitors) to the area throughout the day. A more detailed feasibility study would have to be completed in order to assess the market demand for a new satellite medical facility.

Other potential medical-related facilities include a rehabilitation center and medical office space. Rehabilitation centers vary greatly in size, with some facilities as small as 2,000 square feet while larger industrial rehabilitation centers are sized at 6,000 square feet (including space for drug screening, baseline physicals, and physical therapy). Rehabilitation centers also vary in terms of focus, with some emphasizing orthopedics, sports, and industrial rehabilitation.

The medical office space market is competitive with an approval for a third building at the East Windsor Medical Commons. It should be noted that University Medical Center of Princeton at Plainsboro opened last year, and that the site will ultimately include a new outpatient facility for the Children's Hospital of Philadelphia. The Capital Health Medical Center also recently opened in Hopewell Township. Capital Health has an outpatient center in Hamilton, New Jersey, and the Regional Medical Center in Trenton now houses a Perinatal Center for high-risk deliveries and newborns. It is anticipated that the new facility in Plainsboro will draw from West Windsor, East Windsor, and areas to the north.

New medical office space is being built near the new Plainsboro hospital, including an office building for doctors at the Plainsboro Village Center and an attempt to market medical office space users to the Princeton Forrestal Village shopping center on Route 1. Capital Health and University Medical Center will also each build more than 250,000 square feet of medical office space between them to accommodate new users. In addition, Biomed at One Research Way in Plainsboro has been renovated for medical office use (52,000 square feet, former home of Elan Pharmaceuticals).

Section 4. Opportunity Areas, Land Use Plan & Design Concept

Given the characteristics of various parcels in the study area, the Interchange 8 area presents 5 geographic planning areas for the purposes of this study. These areas are described below and summarized on the Opportunity Areas figure (see Page 23). Concept plans for several specific sites within the Opportunity Areas were prepared to explore potential development layouts on the sites (see Overall Area with Concepts figure on Page 24).

Area 1: Turnpike Commercial

This area is comprised of the TC Zone properties on Monmouth Street and Route 33 as well a portion of the NJTA ramp area on the south side of Route 33 which is zoned R-O. This area will likely experience a loss of pass-by traffic after the Interchange is fully opened, compared to the other areas in the study area, and therefore requires some reinvention to ensure viability. The NJTA anticipates selling the land currently occupied by the access ramps on the north side of Route 33. As such, there is an opportunity to redesign the Block 17 (ramp) area for traveler-related uses including extended stay hotel with restaurant or convenience retail, caterer, etc.

A concept plan has been prepared which presents a design yield of one 150-room, 3-story hotel/conference center, a 250-room, 3-story extended stay hotel and three restaurant pads.

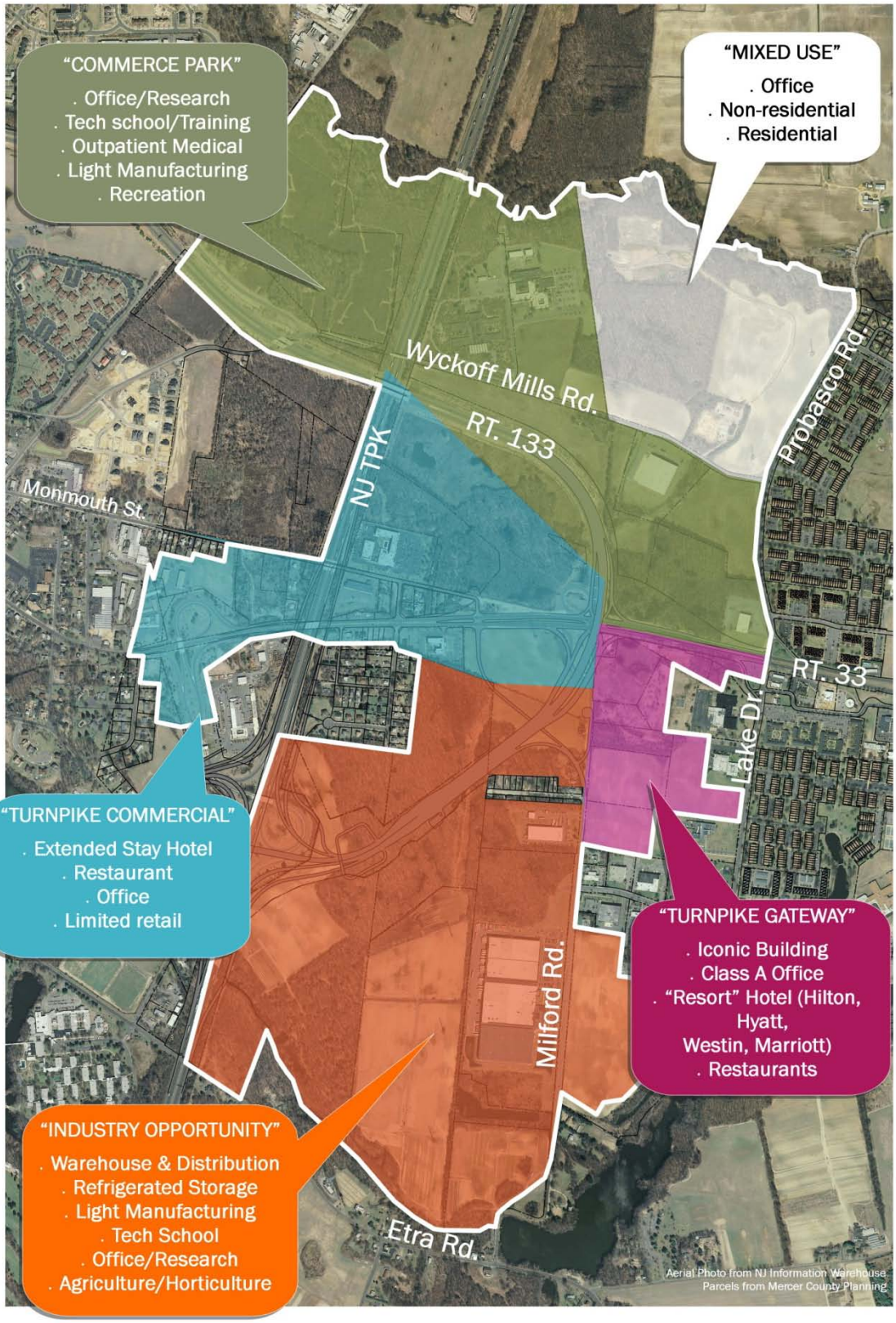
There is also an opportunity to utilize a portion of NJTA's Route 33 frontage across the street for private development, leaving the existing maintenance and parking areas intact. The discontinued ramp areas and the 1± acre lot on the corner of Route 33 and Davison Road across from Old Country Antiques could be utilized for office or small retail and restaurant use, similar to the approved Woodside Corner development. A concept plan has been prepared which presents a design yield of 100,000 square feet of office space, a small bank, coffee shop and an 18,000 square-foot pharmacy prototype. (See Turnpike Commercial Concepts 1 & 2 on Page 25.)

On Block 18, there is an opportunity to expand the existing 80-room Hampton Inn to 100 rooms, create greater visibility of the Hampton Inn from Route 33 through the former Mom's Peppermill site and provide a connection between the two so that a liquor license may be created for the restaurant building on Route 33 and/or a new restaurant pad site on the Hampton Inn owner's properties. Creation of new non-residential use of the Hampton Inn properties may also create greater visibility for the Holiday Inn site from the highway as well. Redevelopment of this area should seek to minimize impacts to the residential uses on adjacent Block 19.

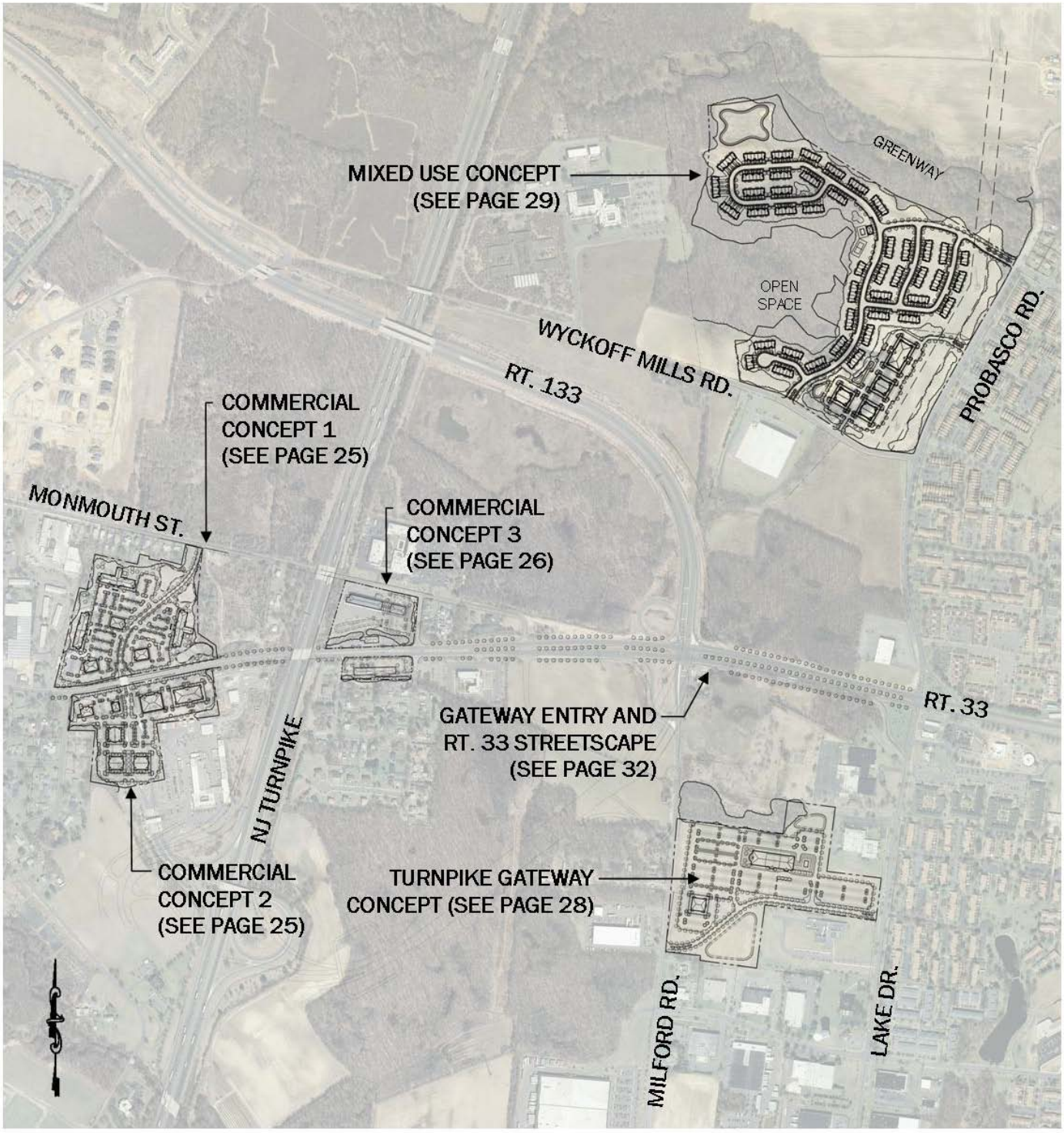
A concept plan has been prepared which presents a design yield of a 104-room hotel, a 6,500 square-foot restaurant pad site and a pedestrian connection to the restaurant on Route 33. (See Turnpike Commercial Concept 3 on Page 26.)

It is recommended that the list of permitted uses in the TC Zone be expanded to include:

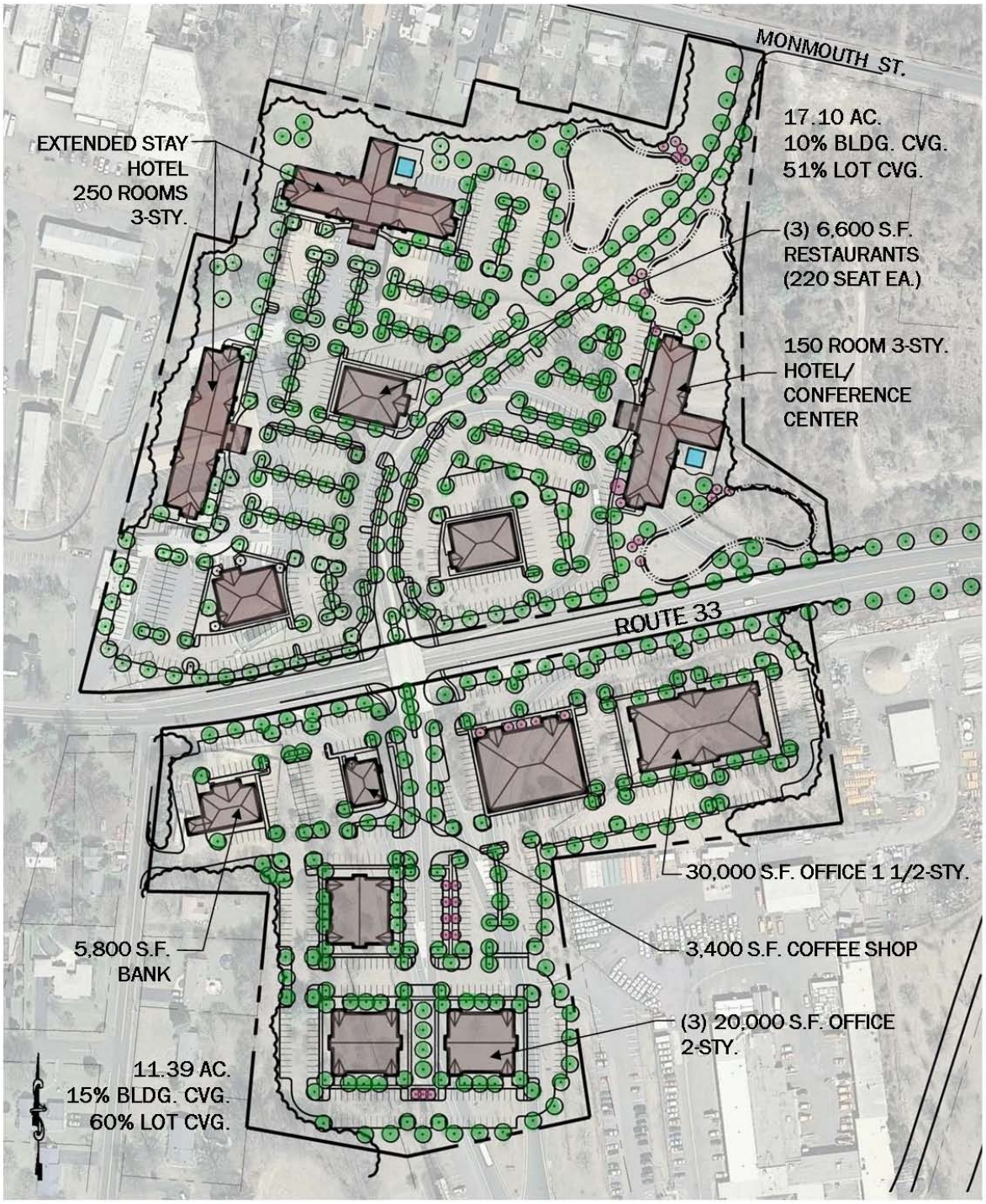
- General, professional and medical office
- Financial institutions
- Technical and professional schools; training and conference centers
- Indoor and outdoor recreation and fitness
- Assisted living facility
- Limited retail and business services such as coffee shop, caterer, bakery, dry cleaner, copy store, party supply rental
- Existing residential uses
- Prohibit gasoline service station and public transportation passenger facilities



OPPORTUNITY AREAS



OVERALL AREA WITH CONCEPTS



TURNPIKE COMMERCIAL CONCEPTS 1 & 2

TURNPIKE COMMERCIAL CONCEPT 3

Area 2: Turnpike Gateway

This area is located in a key location just off the new Interchange exit ramp, which presents a significant opportunity. The lots in this area total 43 acres, and there is a 24±-acre area of farmed uplands (Block 20.01 Lots 5-7, 10, 11, 18.01, 20, 21, and 22) which could host a prominent use such as a hotel/office tower. Currently zoned PUD-8, this area could be rezoned to permit a national destination or "resort" hotel franchise (Marriott, Westin, Hilton) with at least 100 rooms which offers the opportunity for restaurants with a liquor license. The office tower would be attractive as a regional headquarters. This iconic building could contain several hotel/restaurant floors with additional Class A office floors.

A concept plan has been prepared which presents a yield of a 10-story building containing a 100-room hotel, a 220-seat restaurant and 210,000 square feet of office space as well as a 45,000 square-foot office pad site. Because the lots are owned by several different property owners, assembly would be required to create a 24-acre parcel. (See Turnpike Gateway Concept on Page 28.) The concept plan shows a connection from the site to both Milford Road and Lake Drive, which facilitates a more direct departure route to Route 133, the NJ Turnpike and Route 33 eastbound.

An overlay zone is recommended for the Turnpike Gateway area so the underlying zoning can continue to be used.

Area 3: Commerce Park

This area is situated in the R-O Zone along Wyckoff Mills Road and is home to the former Elementis and National Lead, as well as two smaller warehouses. The established character is larger light industrial uses. Improvements to the Wyckoff Mills Road infrastructure including access and water and sewer infrastructure would help to attract new development as well as tenants for the existing buildings. Without enhancements, the area will attract distribution uses, and other passive uses that are not dependent upon sewer service, or that can operate under the capacities of the existing systems that are in place. Any development in the area should be sensitive to the existing residential uses in Twin Rivers on Probasco Road, and seek to create a separation.

This area shows potential for additional uses, and it is recommended that the permitted uses in the R-O Zone located to the north of Route 133 and east of Cranbury Station Road be expanded to permit:

- Hotels and motels
- Garden center; indoor and outdoor recreation and fitness
- Technical and professional schools; training and conference center
- Financial institutions

Block 12, Lot 1 is envisioned to be utilized for private development purposes in alignment with the East Windsor Business Park industrial subdivision approval. A greenway runs the length of the Millstone River, which could be preserved by conservation easement.

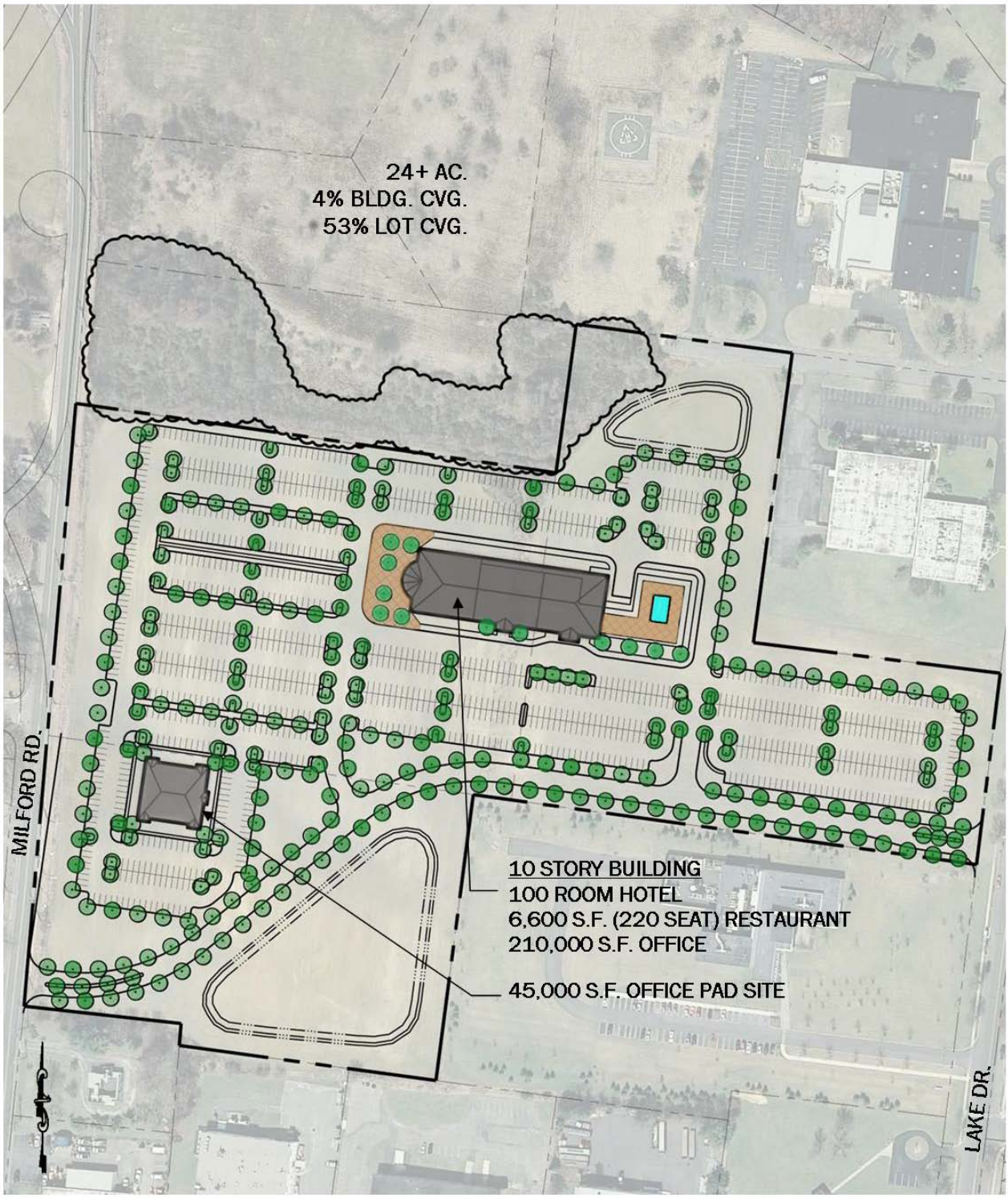
Area 4: Mixed Use

This area is situated at the northwest corner of Probasco and Wyckoff Mills Roads, and contains the Age-Restricted Housing Zone. The site is currently vacant, except for the PSE&G transmission tower right-of-way, and is farmed. The Regency Woods property (Block 13, Lot 1) could be re-imagined as a mixed-use project which would allow the opportunity to incorporate non-residential development with residential uses. A concept plan has been prepared which presents a yield of 75,000 square feet of 1 ½-story office buildings and 258 active adult townhouse uses. (See Mixed Use Concept on Page 29.)

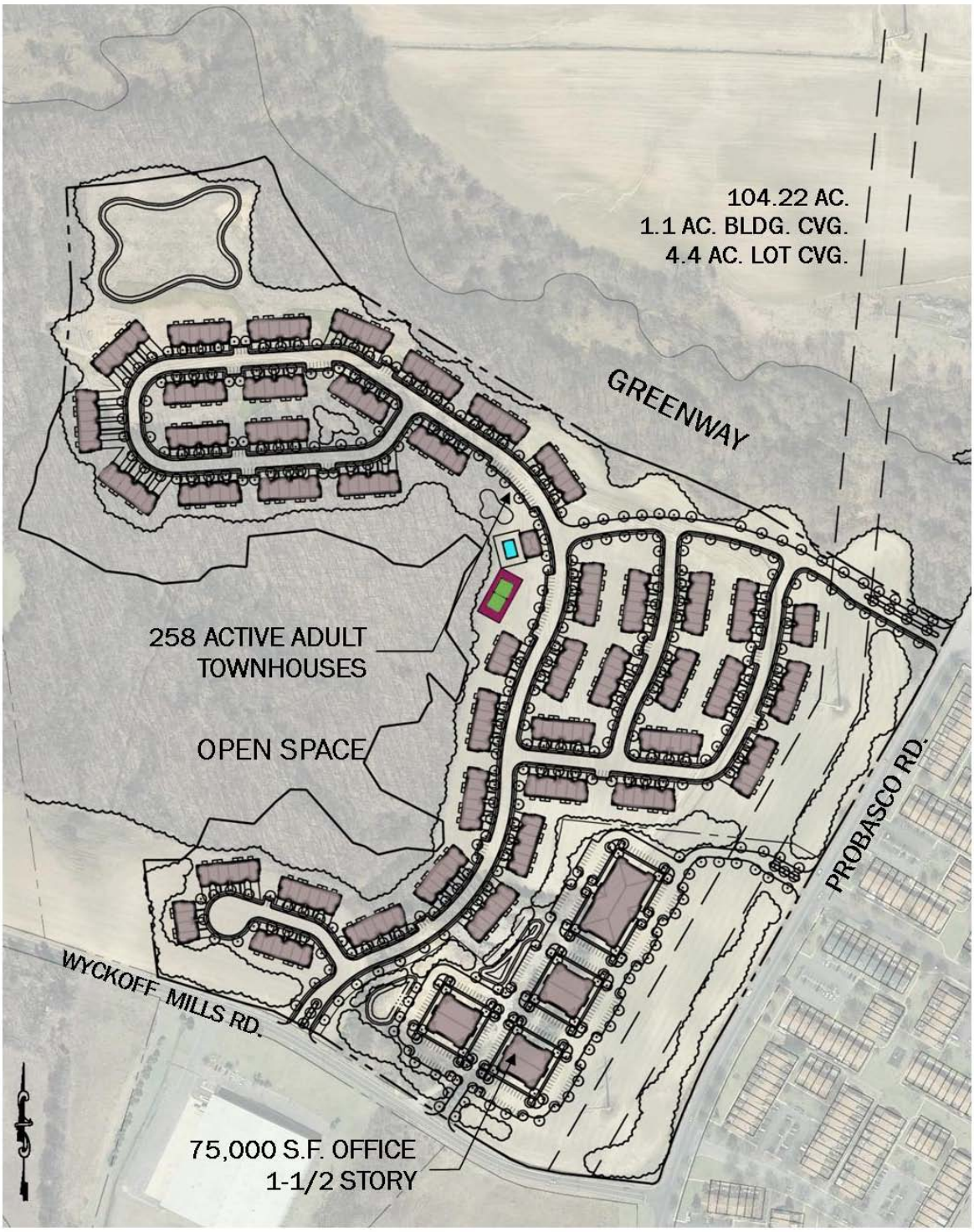
The project would be buffered from Probasco Road. The Millstone River greenway would continue through the site, and the open space dedication to the Township would remain.

Area 5: Industry Opportunity

Milford Road will remain attractive to warehouse and industrial operations, particularly with the new Interchange exit onto Milford Road, and the right-turn access back onto the Interchange. The undeveloped sites in the area contain a significant amount of mapped wetlands, however if the sites do prove developable, access from Milford Road will be



TURNPIKE GATEWAY CONCEPT



MIXED USE CONCEPT

necessary. A Master Plan roadway lies between DHL and Conair, and there is a 50' wide access easement to the south of Conair that could also potentially provide access. Wetlands crossing permits may be required.

Where currently zoned I-O, the area's permitted uses could be expanded to permit a wider variety of uses to provide greater opportunity including:

- Garden center
- Indoor and outdoor recreation and fitness
- Technical and professional schools
- Training and conference centers
- Financial institutions.

A greenway runs the length of Rocky Brook, which could be preserved by conservation easement.

The area currently zoned RO in the study area contains the rear portion of the NJTA maintenance yard and ramp system, which is not recommended for re-zoning.

Wayfinding Signage

The Interchange area lacks adequate wayfinding signage to destinations in the area. There is an opportunity to provide signage that will enhance a traveler's ability to locate destinations including hotels, restaurants and shopping. Wayfinding signage will make it easier for people to arrive at their destinations, which will facilitate circulation. The purposes of wayfinding signage include:

- Orient visitors to the amenities in the area to promote economic development.
- Facilitate travel to destinations.
- Improve community image.
- Simplify traffic patterns and make roads safer.

A sign system or suite is composed of an integrated hierarchy of different sign types that serve different purposes. Suites have a coordinated design theme which reinforces a sense of place for a downtown, neighborhood or community. Various signs include:

- Gateway signs, which announce arrival. Gateways play an important role in forming first impressions and welcoming travelers. Both the form and the character of a gateway can influence the overall experience of a particular area.
- Trailblazer and proximity destination signs, which guide visitors to specific destinations.
- Pedestrian signs/kiosks, special event signs and banners.
- Location signs, which identify destinations.

In addition to designing in accordance with the Manual for Uniform Traffic Control Devices (MUTCD) standards, signs should be designed to be easy to read, simple and uniform. Character height, type-face and contrast should be designed for the design speed of the road as well as visibility and lighting conditions. Messages should contrast with backgrounds to maximize legibility. A minimum of 70 percent is recommended in the ADA guidelines. In addition, signs should have a finish that is low glare to ensure good visibility. Character heights for design speeds in the area should be at least 1.5", and the principal legend on the sign should be 6" in height.

Because there is little existing wayfinding signage, there is an opportunity to create a new suite of signs which can be used to way-find to various destinations throughout town. The same color palette can be used for all the signs, or they can be differentiated by use type or destination. Signs can also be sponsored by individuals or businesses, which will reduce the cost of the signs. Sponsorship can last the life of the sign, or can be lease-based. Detachable sponsorship panels can be provided at the bottom of the sign for easy replacement of various sponsorships. The style, materials and color of the signs can be finalized based on further community input. Conceptual signage has been depicted on the Wayfinding & Streetscape figure.

Streetscape

There is an opportunity along Route 33 to create a pedestrian-scale streetscape which will increase aesthetics and sense of place while promoting traffic calming and pedestrian safety. A streetscape concept has been prepared for the length of Route 33 in the study area which proposes street trees in the center median and on both sides of the roadway. Sidewalk is also proposed on both sides of the roadway, as well as pedestrian-level street lighting. Locations for gateway signs have also been indentified (see Route 33 Streetscape Plan on Page 32). The addition of benches and trash receptacles at key locations will further enhance pedestrian usage of the area.

INTERSECTION TRAILBLAZING SIGNAGE ON STREETLIGHTS

STREET TREES

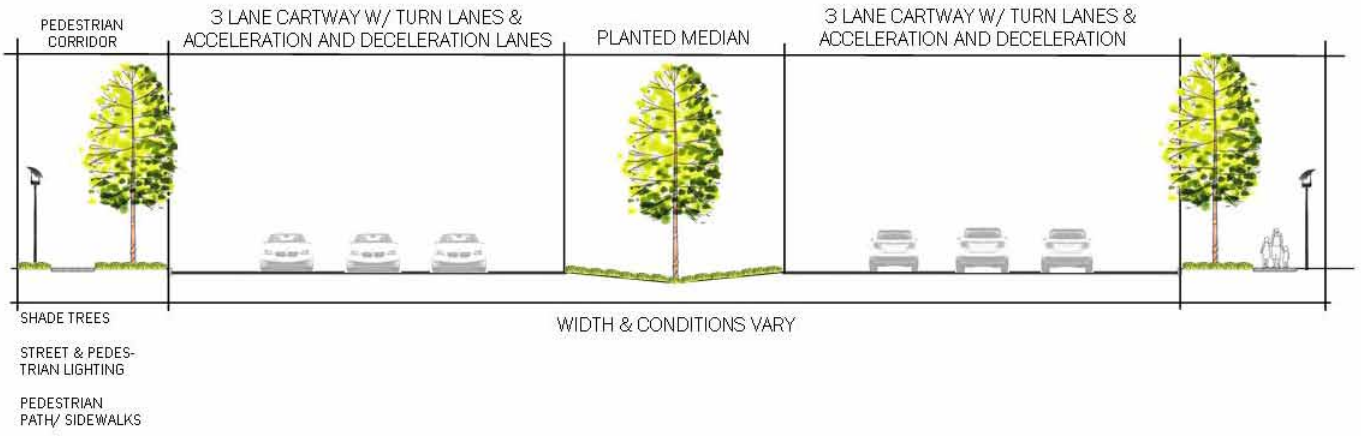
TRASH RECEPTACLES

BENCHES

GATEWAY SIGNAGE

WAYFINDING & STREETSCAPE

ROUTE 33 STREETSCAPE PLAN - Not to scale



STREETSCAPE SECTION - Not to scale

ROUTE 33 STREETSCAPE PLAN

Sustainability Elements

According to the U.S. Environmental Protection Agency, 'sustainability' "is based on a simple principle: Everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. Sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony, which permits fulfilling the social, economic and other requirements of present and future generations."

Sustainability includes increasing water quality and supply, decreasing dependence on non-renewable energy sources and increasing air quality. Sustainability elements should be incorporated into design features and development principles for the study area and include, but not be limited to, the following:

- Vegetative swales with low-maintenance, native plant materials. These swales will decrease the velocity of stormwater, allowing it time to drop sediment and some contaminants, as well as to partially filter into the ground.
- Native / naturalized drought-tolerant plant material in parking lot islands. In non-swale islands that will see a variable amount of rainfall and runoff, drought tolerant plants should be used, which resist indigenous pests and require minimal maintenance. This will decrease maintenance and replacement costs, and will provide habitat for local wildlife.
- Porous asphalt pavement and decorative porous pavers. Porous asphalt has a significantly higher infiltration rate than standard asphalt, which decreases the volume and velocity of water leaving the area, and increases opportunities for groundwater recharge. Pavers can be utilized in low-traffic pedestrian sidewalk and courtyard areas.
- Stormwater Infiltration Islands with subsurface rain tanks in areas where above-ground detention is not feasible. Stormwater can be funneled to infiltration islands where it is filtered of sediment and some oils, etc. Stormwater is detained in subsurface rain tanks and slowly released into the groundwater where it will be further naturally filtered.
- Locating parking under buildings helps to minimize total impervious coverage and reduce stormwater impacts and urban heat island effect.
- Energy efficient, decorative low-glare, full cut-off metered light fixtures. Full cut-off light fixtures are dark-sky friendly, which decrease light spillage upward where it is not needed. The usage of metered lights in public spaces will allow the Township to report the exact amount of energy used to the utility company, which should decrease cost.
- Solar canopies over parking spaces. Solar canopies or carports generate electricity which can be used to fuel parking lot lights or electric vehicles, or simply pump electricity back into the electrical grid. Solar canopies also provide shade to the ground surface and vehicles, so there will be less heating of the earth and less required cooling.
- Electric vehicle (EV) charging stations.
- Bike racks and bike shelters. Anything that makes the area more attractive to this mode of transportation will reduce the number of automobile trips and make the area safer and more pleasant for non-drivers. Air pollution is decreased as the number of bicycle trips increases.
- Benches. Like bicycle racks and shelters, benches are amenities that service pedestrians.

SMALL WIND ENERGY SYSTEM

NATIVE PLANTS

EV CHARGING STATION

POROUS ASPHALT

SOLAR PARKING LOT CANOPY

BIKE SHELTER

FULL CUT-OFF LIGHT FIXTURE

VEGETATED SWALE

SUSTAINABILITY ELEMENTS

Circulation Analysis

A traffic analysis was conducted for the study area to: a) assess existing available roadway capacity given the relocation of the NJ Turnpike Interchange 8 Toll Plaza and surrounding roadway improvements; and b) provide an indication of the ability of roadways within the study area to handle the potential development scenarios set forth in this planning study. Following is a description of the findings.

Findings

Although the overall Turnpike Widening Project has not yet been completed and therefore cannot be analyzed in its entirety, the following observations have been made:

- Relocating the Toll Plaza access east of the Turnpike mainline has made land parcels within the study area more easily accessible, both by decreasing the travel time and distance to all parcels and by creating easier turning movements on ramps and through the toll plaza.
- The grade separated direct connection between the Turnpike and Route 133 has eliminated a number of turning movements along Route 33, improving traffic flow within the study area. An additional benefit will be improved accessibility from the Turnpike to other areas of East Windsor outside of the study area via the Route 133 direct connection.
- The elimination of the merge between Interchanges 8A and 8 makes land parcels surrounding Interchange 8 more attractive to companies that are dependent on time-sensitive operations.

The analysis that was performed for this study also indicates that **existing infrastructure in the study area is sufficient to meet both current needs and those of the development scenarios contemplated in this study**. The existing infrastructure can accommodate development scenarios contemplated in this planning study without decreasing levels of service. Major improvements are unlikely to be necessary to roadway infrastructure unless proposed development is more intense than that conceived in this study.

The prolonged construction of the new Interchange did impact traffic flow in the area during construction. Even after the full interchange was opened, it was opened under construction conditions without benefit of a roadway surface course and full intersection striping, which continued driver confusion in the Route 33/Turnpike Access/Route 133 intersection. Data suggests, however, that the roadway network as designed is capable of functioning smoothly with current and projected traffic volumes, and recent field observations support this.

Until the fully completed intersection has had an opportunity to operate as intended and designed for a period of approximately 3 to 6 months, requests for design modifications, if any, may be unnecessary. The placement of automated traffic recorders at that time to capture real-time traffic data can help determine whether modifications to the area are warranted. It is likely that the Turnpike Authority will want to do such observations themselves.

Circulation Improvements

Excess capacity in the study area is due in large part to the pavement width of Route 33. As reported previously, during this planning study Route 33 was striped at times for one or two lanes in each direction with some turning movements. Route 33 is now striped with three lanes in each direction with turning lanes. Double left lanes are provided at the Turnpike Access points. It is important to note that because there is substantial pavement width, striping can be easily modified in the future, particularly at intersections if necessary, to provide better performance.

Only one infrastructure improvement has been identified as potentially necessary should all of the development scenarios in this planning study be constructed; a traffic light could be warranted west of the Turnpike mainline in the vicinity of the Turnpike Commercial concept area (the development on either side of Route 33) to address vehicle traffic flow. This signal could function as a semi-actuated signal that would leave movements on Route 33 in green phase until triggered by cars waiting on the developments' driveways.

A connection between Monmouth Street and Wyckoff Mills Road is also a potential improvement west of the Turnpike. This connection is not necessary for effective circulation in the area, however could provide an alternative to the Probasco Road connection to Wyckoff Mills Road.

Analysis Methodology

Because the Turnpike Widening Project and Route 133/33 improvements were under construction throughout the entire timeframe of this study, and improvements to Route 33 and the Lake Drive intersection only recently completed, a different approach was required than using existing traffic counts as a base condition. Traffic circulation patterns were reviewed based on count information and projections from the NJTA EIS report for Interchanges 6 thru 9, through redistribution and growth of traffic counts taken for recent traffic impact reports for proposed development, and from a 2006 Transportation and Community Development Initiative study of the area.

NJTA's existing PM peak hour volume data (2005) was redistributed to reflect updated conditions after Interchange 8 was realigned and the other improvements made to Routes 133 and 33. Intersection performance evaluation and traffic simulation models were developed to analyze the performance of study area intersections. Intersection Level of Service (LOS) and intersection delay were evaluated for each of the intersections.

NJTA's data was supplemented with existing data compiled for development projects in the area, [7] and adjustments were made to the network analysis accordingly. Additionally, field counts were taken at 15 minute intervals during PM peak conditions for use in calibrating the model to ensure that there were no major changes in the relative trip distribution and network travel within the study area.

Potential future trips estimated to be generated in the five development opportunity/concept areas were calculated using the Institute of Transportation Engineers' (ITE) Trip Generation Manual. As shown in the following tables, cumulatively, if all land was developed in the study area as depicted on the concept plans, it is expected that these development opportunities would generate an additional 2,146 new trips during the evening peak hour.

These trips were then assigned to the study area roadway network based on the new traffic distribution patterns created as part of NJTA's project. Trip distribution provides an assessment of the anticipated direction that vehicles will travel to and from. The relocation of the Interchange 8 Toll Plaza and the direct grade-separated connection of the Turnpike access ramp to Route 133 have changed the distribution of travel patterns in the study area. New trips were assumed to travel as follows:

- 47% of trips to and from the Turnpike
- 15% of trips traveling to and from Route 133
- 5% of trips traveling to/from Milford Road
- 18% of trips traveling to/from Route 33 to the east
- 10% of trips traveling to/from Route 33 to the west
- 5% of trips traveling to/from Probasco Road

Intersection Performance Results

The performance of major intersections in the study area were analyzed, as were traffic conditions based on additional trips anticipated to be potentially generated in the concept development areas.

Evening peak hour intersection performance (worst case scenario) was analyzed under 2005 reassigned, 2013 reassigned, and potential build-out conditions (see the following table for the analysis).

As previously indicated, the findings of the analysis are that no significant improvements are required for the roadway network either in the existing or proposed conditions because there is capacity within the existing roadway network to accommodate existing and potential new development. **The existing roadway network is expected to accommodate both existing and proposed potential development with no further modifications.** If the Turnpike Commercial conceptual development scenario on Route 33 west of the Turnpike is built out at the intensity depicted on the concept plan, a traffic signal could be warranted to better facilitate turning movements to and from the sites on either side of Route 33.

[7] *Data utilized included: 1) The Promenade at East Windsor (06/08), prepared by McDonough & Rea Associates; 2) Woodside Corner (01/10), prepared by McDonough & Rea Associates; 3) Enchantment at East Windsor (05/10), prepared by Maser Consulting; 4) Conair Warehouse (06/12), prepared by Maser Consulting*.

Evening Peak Hour Trip Generation for Conceptual Development Areas			
Concept Area Totals*	***Evening Peak Hour Trip Generation***		
	Entering	**Exiting**	**Total**
1. Turnpike Commercial Area	494	555	1,049
2. Turnpike Gateway Area	87	365	452
3. Commerce Park Area	33	198	231
4. Mixed-Use Area	62	120	182
5. Industrial Opportunity Area	96	136	232
Total	**--**	**--**	**2,146**
* *See Appendix B for details.*			

Intersection Level of Service and Delay – Study Area Scenarios							
	Intersection Control Type	***2005 Reconfigured Intersections***		***2013 Reconfigured Intersections***		***Study Area Build-out Intersections***	
		LOS	**Delay (sec/veh)**	**LOS**	**Delay (sec/veh)**	**LOS**	**Delay (sec/veh)**
1. Rt. 33 (Franklin Ave.) @ Woodside Ave.	Signalized	B	11.3	B	13.3	B	15.2
2. Rt. 33 @ Milford Rd./Monmouth St.	Signalized	B	10.4	B	16.9	B	18.8
3a. Rt. 33 @ Rt. 133/Tpk. Access Rd. West	Signalized	C	33.3	C	30.6	C	30.6
3b. Rt. 33 @ Rt. 133/Tpk. Access Rd. East	Signalized	C	34	C	32.3	C	32.3
4a. Rt. 33 @ Lake Dr./Probasco Rd.	Signalized	B	18.4	B	18.8	B	18.8
4b. EB Jughandle @ Lake Dr.	Unsignalized	A	8.5	A	9.8	C	22.6
4c. WB Jughandle @ Probasco Rd.	Unsignalized	A	1.8	A	3.2	A	3.2
5. Probasco Rd. @ Wyckoff Mills Rd.	Unsignalized	A	4.6	A	4.6	A	7.1
6. Monmouth St. @ Woodside Ave.	Unsignalized	A	2.5	B	13.3	B	14.9
7. Rt. 33 @ East of Tpk. Access to Area 1	Signalized	N/A	N/A	N/A	N/A	B	12.4

Section 5. Zoning Ordinance Amendments

To implement the land use plan and design concept as conceived in this study, the following zoning ordinance modifications are recommended:

1. §20-17.1. Amend the TC Zone permitted uses to those listed in Schedule A, attached below.
2. §20-17.3. Amend the TC Zone conditional uses to remove a. office buildings. They are now a permitted principal use.
3. §20-17.4.c. Amend permitted building height in TC Zone from 60' to 40' and 3 stories, except for hotels.
4. §20-18.1. Add new paragraph k. "In the R-O Zone north of Route 133 and east of Cranbury Station Road, the uses listed in Schedule A, attached below, shall be permitted."
5. Add new section §20-18.6. "The Millstone River floodplain shall be conserved in a conservation easement."
6. In the area indicated on the concept plan, rezone a portion of the NJTA land on the south side of Route 33 in the area indicated on the concept plan (Block 25, Lots 18 and part of 19 and Block 24.01, part of Lot 1) from R-O to TC to effectuate the concept plan.
7. §20-19.1. Add new paragraph h. "In the I-O Zone east of the NJ Turnpike, the uses listed in Schedule A, attached below, shall be permitted."
8. §20-19.4. Add new paragraph e. "The Rocky Brook floodplain shall be conserved in a conservation easement."
9. §20-19.4.d. A note shall be added that in the I-O Zone east of the NJ Turnpike, minimum lot area shall be 50,000 SF, maximum lot coverage 80%, and there shall be no limitation on Floor-Area-Ratio.
10. New section §20-19A. Turnpike Gateway Overlay Zone. Lots shall include Block 20.01, Lots 5-7, 10, 11, 18.01, 20, 21, and 22.
    a. §20-19A.1. Principal permitted uses shall include those indicated in Schedule A.
    b. §20-19A.2. Permitted accessory uses may include those indicated in Schedule A.
    c. §20-19A.3. Bulk requirements:

Min. lot area	10 acres
Min. lot width	350'
Min. lot depth	350'
Min. perimeter bldg. setback	100'
Max. bldg. coverage	20%
Max. improvement coverage	65%
Max. bldg. height	10 stories

11. §20-22.3. Amend the maximum number of dwelling units in the ARH Zone to permit up to 260 active adult townhouses.
12. §20-22.4, Permitted Uses in ARH Zone, add paragraph d. "Attached single-family dwelling units," and e. "Office and business service uses."
13. §20-22.15. Bulk requirements for Attached Dwelling Units and Non-residential Uses:

Min. lot area	10 acres
Min. lot width	400'
Min. lot depth	500'
Min. perimeter bldg. setback	100'
Max. bldg. coverage	30%
Max. improvement coverage	50%
Max. bldg. height	35'

14. §20-22.16. Permitted accessory uses, see Schedule A.
15. The permitted and proposed uses for each zoning district are summarized in Schedule A.

The following **design elements** should be followed in each new development where feasible:

1. Building Size, Mass, and Style. When buildings in an area are of similar and/or compatible scale, materials, massing and architectural style, the area becomes more harmonious thereby providing a more comfortable human experience. Design in a given area should achieve continuity between sites while still allowing for individuality of design.
    a. Commercial buildings should be at least 1.5 stories in height to create a strong architectural presence on their respective lots. Setbacks from the primary adjacent roadway

should be used to provide a logical building entry and decorative pedestrian paving, streetscape furnishings and amenities, and landscaping in front of the property.

b. All structures should be situated with proper consideration of their relationship to other buildings, both existing and proposed, in terms of light, air, and usable open spaces, access to public rights-of-way and off-street parking, height, and bulk.

c. Groups of related buildings should be designed to present a harmonious appearance in terms of building silhouette, architectural style and scale; massing of building form; surface material, finish, and texture; decorative features; window and doorway proportions and modulation, entry way placement and location, signage, and landscaping.

d. Buildings should be designed so as to have attractive, finished appearances from all public spaces.

e. All pedestrian entryways and/or lobbies should be prominent, well-lit and separate from service entrances, and should be at grade with the adjacent sidewalks to the greatest extent possible.

f. Building entrances should be clearly defined through the use of detailed paving, architectural treatment, and site furnishings.

g. The colors of all buildings, pavements, awnings, signage, site amenities and other structures should be warm, muted tones that are consistent with the prevailing styles in the area.

h. Buildings should have varied and interesting facades. Use of texture and window variations should be encouraged.

i. Entrances should include such features as canopies or porticos; overhangs, arcades; recesses/projections; raised corniced parapets over the doors; peaked roof forms; arches; outdoor patios; and/or display windows.

2. Building Arrangement. The arrangement of a building or buildings on a site is as important as the design of the building itself. Building arrangement dictates whether a site and an area will be close-knit and pedestrian friendly, or whether the character will be automobile-dominated and more sprawl-like in character. Building arrangement consists of such elements as setbacks from streets and property lines, distance between buildings and orientation of buildings towards each other, the street and parking areas.

   a. Buildings should be clustered to minimize the footprint of development on the landscape and provide for green areas, and to encourage pedestrians to walk between buildings and sites. Buildings should create a continuity of building facades along a building line parallel to the public streets or internal private drives, and should be arranged to define a rhythm of built and open areas.

   b. In a development of two or more buildings, building facades should be designed and located to relate to one another, both functionally and visually.

3. Facades, Materials and Colors. Facades should be designed with architectural features at the human scale. Human scale detailing is the treatment of elements of a building facade at a smaller scale based on human vision, proportion, height and rate of movement to add interest to the pedestrian user. Examples include textured stone or brick, patterned tiles, decorative trim work or carved wood, and decorative metalwork, particularly at street or sidewalk level. Colors should be earth-toned, however architectural accents can be colored in brighter, more saturate tones.

   a. Building facades, windows and window panes should respect traditional architectural proportions such as the Golden Rectangle.

   b. All visible building facades should feature architectural detailing. The architectural treatment of a facade or roof should be completely continued around all visibly exposed sides of a building. All sides of a building should be architecturally designed so as to be consistent with regard to style, materials, colors and details. In the instance of multi-story buildings, the architectural treatment and building materials of the first floor should be compatible with upper stories except where Classical styles dictate otherwise.

c. Where non-residential building facades exceed 80 horizontal feet in length, vertical divisions no greater than 40 feet should be designed on all street side building facades, defined by wall projections featuring a combination of piers, projecting bays, arcades or changes in roof configuration, so as to appear to be multiple structures. Wall plane projections should be at least 3 percent of the length of the facade and extend at least 20 percent of the length of the facade.

d. Predominant exterior building materials on non-industrial and warehouse buildings should limit the use of the following to the extent feasible:
(1) Smooth-faced concrete block
(2) Tilt-up concrete panels
(3) Pre-fabricated steel panels

e. The street level facade of stores should be transparent between the height of 3' and 8' above the walkway grade for no less than 60 percent of the horizontal length of the building facade.

f. The location of windows on the upper stories of a building should be vertically aligned with the location of windows and doors on the ground level of such building.

4. No flat roof should be permitted on a building with a building height less than 18' and mansard roofs should not be permitted.

5. Architectural embellishments that add visual interest to roofs, such as dormers, belvederes, masonry chimneys, clock towers and such similar elements are permitted, provided that such are architecturally compatible with the style, materials, colors and details of the building.

6. For all roofs other than flat roofs, the minimum permitted roof pitch should be 8/12, and all gables on a building should be of the same pitch. Maximum roof pitch should be 12/12, unless otherwise permitted.

7. Roofline offsets should be provided along any roof measuring longer than 75' in length in order to provide architectural interest and variety to the massing of a building and relieve the negative visual effect of a single, long roofline. The minimum height of a required roofline offset is 10".

8. When buildings are greater than 10,000 SF, and where a fully pitched roof throughout would not be practical, a sloped fascia roof with a slope of 8/12 or greater may be used in coordination with a flat roof, provided that the appearance is that of a full roof. In all circumstances the primary pitched roof should be at least one story in height. The primary roofing materials should be standing seam metal or dimensional shingles.

9. Rooftop equipment should be screened from public view. The average height of such parapets should not exceed 15 percent of the height of the supporting wall and such parapets should not at any point exceed one third of the height of the supporting wall.

10. Green Building Design Practices. The following practices should be undertaken regardless of whether LEED or similar certification is sought:

a. Orient habitable space to maximize solar gain in the winter and shade in the summer; include vegetated wind breaks and sun screens where appropriate;

b. Create shaded patios or terraces;

c. Install operable windows, awnings, shading devices and roof vents to reduce reliance on HVAC units;

d. Maximize daylight in working or living spaces to reduce reliance on artificial lighting;

e. Utilize recycled building and site materials and recycle construction debris;

f. Utilize renewable sources for electricity, heating and cooling including solar canopies over parking spaces and Electric Vehicle (EV) charging stations;

g. Provide non-structural stormwater management techniques such as vegetative parking lot islands and bio-swales with low-maintenance, native/naturalized plant materials;

h. Install porous asphalt pavement and pervious pavers where feasible. A 1:1 bonus may be granted for use of porous asphalt and pervious pavers;

i. Specify energy efficient, decorative low-glare, full cut-off metered light fixtures;

j. Maximize building and window insulation and create ante-rooms or foyers between the outdoors and living spaces to increase HVAC efficiency;

k. Plant indigenous vegetation to minimize water, pesticide and herbicide usage and to create foraging opportunities for local wildlife;

l. Create covered parking areas, or heavily shaded parking areas, to reduce reliance on automotive air conditioning upon vehicle start-up;

m. Create opportunities for bicyclists and pedestrianism to reduce reliance on automobiles including shaded sidewalks, benches, bike lanes and bike racks.

11. Accessory areas should be dedicated and thoughtfully designed for the location of mechanical equipment, storage areas and trash and recyclable materials storage. The areas should be designed for efficient access, but should be far removed from residential areas and viewsheds from heavily trafficked roadways.

a. Mechanical equipment, storage areas and trash storage should be screened and enclosed.

b. Loading and outdoor storage areas may be located between buildings if they are less than 40' apart, or on those sides of buildings that do not have customer entrances, but in no case may they abut a residential zone.

c. Areas for outdoor storage, truck parking, trash collection or compaction loading, or other such uses should not be visible from abutting streets.

d. No areas for outdoor storage, trash collection or compaction, loading or other such uses should be located within 20' of any public street, public sidewalk or internal pedestrian way.

e. Loading docks, truck parking, outdoor storage, utility meters, HVAC equipment, trash collection, trash compaction, and other service functions should be incorporated into the overall design of the building and the landscaping so that the visual and acoustic impact of these functions are fully contained and out of view of adjacent properties and public streets, and no attention attracted to the functions by the use of screening materials that are different from or inferior to the principal materials of the building and landscape.

f. Non-enclosed areas for the storage and sale of seasonal inventory should be permanently defined and screened with walls and/or fences. Materials, colors, and design of screening walls and/or fences and the cover should conform to those uses as predominant materials and colors on the building. If such areas are to be covered, then the covering should conform to those used as predominant materials and colors on the building.

g. Parking structures should be designed so as to be aesthetically pleasing and consistent in architecture to the principal building. Liner buildings should enclose the building where feasible, and incorporated into the landscape.

h. Trash enclosure(s) should be provided for every non-residential site and multi-family sites where dumpsters are proposed, sized large enough to contain all trash generated, including recyclables.

i. The trash enclosure(s) should be constructed on 3 sides of masonry, the exterior which should match the finish building materials and colors of the principal building(s) on site.

j. The 4th side of the structure should contain a gate constructed of a solid material.

k. The trash enclosure should be situated on a concrete pad.

12. Site circulation should focus on the pedestrian.

a. Sidewalks should be designed to be part of a comprehensive system to access all parts of a site. The materials, patterns and finishes of all sidewalks within a public right of way should match the overall site design palette.

b. Continuous internal pedestrian site walkways should be provided from the public sidewalk or right-of-way to the principal customer entrance of all principal buildings on the site. At a minimum, walkways should connect focal points of pedestrian activity such as, but not limited to, transit stops, street crossings, building and store entry points.

c. Sidewalks should be provided along the full length of the building along any facade featuring a customer entrance, and along any facade abutting public parking areas. Such sidewalks should be located at least 6' from the facade of the building to provide planting beds for foundation landscaping except where features such as arcades or entryways are part of the facade.

d. Internal pedestrian walkways should provide weather protection features such as awnings or arcades within 30' of all primary entrances and should be distinguished from driving surfaces through the use of durable, low maintenance surface materials such as pavers, bricks, or scored concrete to enhance pedestrian safety and comfort, as well as the attractiveness of the walkways.

e. Any areas of pedestrian crossing a main site drive aisle or public street should provide a change of texture, color and paving material in order to delineate the pedestrian crossing.

f. Service entrances and loading areas between adjacent buildings should be consolidated and separated from walkways and pedestrian entrances to the extent possible.

g. Street and directional signage, street lighting, furnishings and amenities, and plantings should be aesthetically unified, and complementary to the architecture.

h. Wherever feasible, shared parking schemes and access drives should be pursued.

i. Traffic Calming Devices such as decorative crosswalks, curb bump outs, decorative sidewalks, street furniture, "Yield to Pedestrians" signage, street trees and accent plantings should be utilized.

13. Site lighting should enhance access to buildings from the street, sidewalk or parking areas without creating nuisance glare, sky light or consuming too much electricity. Light poles and fixtures should enhance site aesthetics.

14. Site identification signage should identify businesses on site in an attractive manner that will promote pedestrian and vehicular safety. Sign design should complement the architecture of the buildings in color, form materials and placement. Wayfinding signage on sites should be the minimum number and size necessary to safely direct patrons to the correct location on-site.

SCHEDULE A **Permitted Uses & Proposed Uses** **(Uses in *Bold Italics* are proposed)** **(Uses with ~~strikethroughs~~ are recommended for deletion)**	Proposed Zones R-O*	I-O**	TC	ARH	Turnpike Gateway Overlay
Hotels & motels, not including tourist cabins, trailer camps or camp sites	~~C~~ ***P***		P		***P***
Gasoline service stations pursuant to §20-16.3b (not incl. convenience stores)			~~P~~		
Restaurants, including cocktail lounges and taverns	A*	A*	P	***P***	***P***
Public transportation passenger facilities		~~P~~	~~P~~		
Day care and child care centers, nursery schools	P	P	P	***P***	***P***
Cellular antennas	C	***C***	C		
Mfg., prep, processing or fabrication of products, with all activities & product storage within a completely enclosed bldg	P	P			
Scientific or research labs devoted to research, design & experimentation including experimental operation of equipment and pilot plants	P	P			
Warehousing or storage of products w/in an enclosed building	--	P			
Warehousing or storage of products within 80% of an enclosed building	P	P			
Warehousing or storage of products within an enclosed building exceeding FAR by 0.25 (not more than 4.0)	--	C			
Computer centers	P	P		***P***	***P***
Pharmaceutical operations	P	P			***P***
Office buildings, including medical office	P	P	***P***	***P***	***P***
Office buildings			~~C~~ ***P***	***P***	***P***
Industrial office parks compliant with §20-19.4	P	P			
Commuter parking facilities (park & ride)	~~P~~ ***A***	~~P~~ ***A***			***A***
Agricultural and horticultural uses	P	P	***A***	***P***	
Employee cafeteria & recreational area	A	A		***A***	***A***
Living quarters for watchmen and caretakers	A	A			
Retail and wholesale sale of goods produced on site	A	A			
TV & radio recording & other communications facilities incl. accessory antennae	A	A			
Helistops	C	C			***C***
Restaurant in industrial office parks (≥100 ac.), excluding fast food and drive-ins	C	C			
Assisted living facility	C	C	***C***	***C***	
Age-restricted housing				P	
Existing residential uses			***P***		
Retail sales and service: coffee shop, caterer, bakery, dry cleaner, copy store, party supply rental, spa, salon.			***P***	***P***	***P***
Retail sales and services					***A***
Garden center	***P***	***P***	***P***		
Indoor and outdoor recreation and fitness	***P***	***P***	***P***	***A***	***P***
Auto repair		***C***			
Technical & professional schools, training and conference centers	***P***	***P***	***P***	***P***	***P***
Financial institutions	***P***	***P***	***P***	***P***	***P***
Green energy production	***A***	***A***	***A***	***A***	***A***
Tuck under parking, solar parking lot canopies and structures.	***A***	***A***	***A***	***A***	***A***
Parking structures	***A***	***A***	***A***		***A***
*North of Route 133 and east of Cranbury Station Road. **East of the NJ Turnpike. **C=Conditional Use** **P=Permitted Use** **A=Accessory Use (A*= Accessory to Office Uses)**					

Appendix A:
Property Owners, Land Use & Photos




Town House Motel and Quality Inn (17/10, 17, 18).


Monmouth St. at Tpk bridge, looking east. | Detention basin at 17/12. and 17/13.


17/11.01 & 11 (Roedel Partners). | Holiday Inn and The National Conference Center (15.01/1).

Hampton Inn site (18/4-6).


Innovative Logistics (15/1.01).

Regency Woods at EW site (13/1; Toll Bros.).


Hampton Inn site (18/4-6) and Mom's Peppermill (18/1-3).


Supor vacant land (15/15) and All-State Transport warehouse (15/12).

Vacant site (15/1; Windsor Mills, LLC).

Area Photos

NJ Turnpike Interchange 8 Planning Study

March 2013

Days Inn and Legend's Bar & Grille (22/37.01).

Site of approved Woodside Center (23/1-6).

Detention basin between Milford Road and Rt. 133.

Vacant industrial site (13/1.02; Wyckoff Mills LLC).

DHL (22.02/14).

Vacant land across from DHL, Milford Rd.

Twin Rivers Ind. Pk. Owners vacant land (22.02/12.01).

Farm (22.02/2.02).

Conair Headquarters (22.02/12).

Former Elementis (13/1.01).

Area Photos

NJ Turnpike Interchange 8
Planning Study

March 2013

taylor design group

Property Owners & Land Use

Block	Lot	Property Location	Use	Owner's Name	Yr. Built	Acreage	Zone	Est. Buildable Ac.	% Buildable	FAR Buildout Current Zoning (SF)	Map Page
12	1	259 WYCKOFF MILLS RD	Approved EW Business Park (vacant)	NJ TURNPIKE AUTHORITY		53.75	RO	29.49	55	585,338	21
12	2	269 WYCKOFF MILLS RD	Vacant land	THE ANTI DEFAMATION LEAGUE		14.29	RO	8.21	57	155,618	21
13	1	409 WYCKOFF MILLS RD	Regency Woods project (farm)	TOLL LAND XVI L.P.		104.22	ARH	61.13	59		22
13	1.01	359 WYCKOFF MILLS RD	Former Elementis (114,057 SF)	ABCJ ASSO.C/O THOMPSON TAX & ACCOUN	1975	30.8	RO	18.48	60	335,412	22
13	1.02	329 WYCKOFF MILLS RD	Former industrial site	WYCKOFF MILLS, LLC		20.21	RO	20.21	100	220,087	20
15	1	330 WYCKOFF MILLS RD	Farm	WINDSOR MILLS	1900	22.473	RO	12.2	54	244,731	20
15	1.01	406 WYCKOFF MILLS RD	Warehouse (84,000 SF)	DON VOG E.WINDSOR,LLC C/O L.MARSTON	1987	10.609	RO	8.5	80	115,532	22
15	1.02	430 WYCKOFF MILLS RD	Vacant land	THE SUPOR FAMILY, LLC		13.272	RO	10.32	78	144,532	22
15	12	19 PROBASCO RD	Warehouse (17,000 SF)	THE SUPOR FAMILY, LLC	1966	17.198	RO	8.6	50	187,286	22
15.01	1	379 MONMOUTH ST	Conference Center; JT's Restaurant and Pub	JULIKA, INC. ATT:CAREY TAJFEL	1972	7.92	TC	7.92	100	103,499	20
15.01	2	403 MONMOUTH ST	Residence	GIANNONE, DENISE	1915	0.44	TC	0.44	100	5,750	20
15.01	3	419 MONMOUTH ST	Vacant	MONMOUTH AT WOODSIDE REALTY,LLC		14.545	TC	7.15	49	190,074	20
15.02	1	330 WYCKOFF MILLS RD REAR	Vacant	WINDSOR MILLS, LLC		14.94	RO	0	0	162,697	20
17	10, 18	328 MONMOUTH ST	Quality Inn	JAY AKSHAR REALTY LLC	1978	6.32	TC	6.32	100	82,590	20
17	11	336 MONMOUTH ST	Vacant land	ROEDEL PARTNERS OF EAST WINDSOR,LLC		5.126	TC	2.96	58	66,987	20
17	11.01	344 MONMOUTH ST	Vacant land	ROEDEL PARTNERS OF EAST WINDSOR,LLC		1.907	TC	1.58	83	24,921	20
17	12	354 MONMOUTH ST	Detention basin	NJ TURNPIKE AUTHORITY		1.55	TC	0	0	20,255	20
17	13	358 MONMOUTH ST	Detention basin	NJ TURNPIKE AUTHORITY		0.2583	TC	0	0	3,375	20
17	14	356 MONMOUTH ST REAR	Utility	EAST WINDSOR MUA		0.447	TC	0.447	100	5,841	20
17	16	355 FRANKLIN ST	ROW	NJ TURNPIKE AUTHORITY		0.2399	TC	0	0	3,135	20
17	17	351 FRANKLIN ST	Town House Motel	JAY AKSHAR REALTY LLC	1956	3.2	TC	3.2	100	41,818	20
17	21	FRANKLIN ST REAR	ROW	NJ TURNPIKE AUTHORITY		0.3444	TC	0.3444	100	4,501	20
17	23	349 FRANKLIN ST	Utility	EAST WINDSOR MUA		0.04	TC	0.04	100	523	20
18	1-3	425-441 ROUTE 33 EAST	Former Mom's Peppermill	SAFTB, LLC	1963	0.7459	TC	0.7459	100	9,747	20
18	4	392 MONMOUTH ST	Hampton Inn land	SURATI, HARISH C/O HAMPTON INN		0.398	TC	0.398	100	5,201	20
18	5	194 MONMOUTH ST	Hampton Inn	BHAVI MOTEL, LLC C/O HARISH SURATI	2004	3.137	TC	3.137	100	40,994	20
18	6	388 MONMOUTH ST	Hampton Inn owner residence	SURATI, RESHAM H.	1939	0.8264	TC	0.8264	100	10,799	20
20.01	5, 6, 11, 20	MILFORD AND LAKE RDS	Vacant land	THERAGEN INC.C/O ADVENT PHARM.		10.1915	PUD	0	0	177,577	23
20.01	7, 10	MILFORD RD AND ROUTE 33	Vacant land	MILFORD LAKEVIEW REALTY, LLC		8.316	PUD	0	0	144,898	23
20.01	18.01	30 LAKE DR	Farm	LAKE ENTERPRISES EW,LLC C/O		8.93	PUD	8.66	97	155,596	23
20.01	21	59 MILFORD RD	Farm	MILFORD ENTERPRISES, LLC		8.98	PUD	8.08	90	156,468	23
20.01	22	79 MILFORD RD	Farm	PLUMBERS & PIPEFITTERS LOCAL #9		6.54	PUD	4.91	75	113,953	23
22	11.01	66 WOODSIDE AVE	Farm	MILFORD REALTY ASSOC,LLC		10.03	I-O	0	0	109,227	20
22	13.01	65 WOODSIDE AVE	Vacant land	DANIEL STREET REALTY, LLC		20.06	I-O	0	0	218,453	20
22	37.01	460 ROUTE 33 EAST	Days Inn & Legend's Bar & Grille	EXIT 8, INC.	1980	4.271	TC	4.271	100	55,813	20
22.02	2.02	200 MILFORD RD	Farm	BOCHASANWASI SHREE ETAL N.EAST		17.16	RA	0.5	3		18
22.02	8.01	337 ETRA RD REAR	Farm	SANSKRUTI,LLC		60.7	I-O	17.96	30	661,023	19
22.02	10	261 ETRA RD	Farm (Tpk. staging on frontage)	RAMOS OSCAR & MICHAEL R		9.69	I-O	8.49	88	105,524	19
22.02	11.01	196 MILFORD RD REAR	Vacant land & farm	MILFORD REALTY ASSOC., LLC		46.24	I-O	8.34	18	503,554	19

Block	Lot	Property Location	Use	Owner's Name	Built	Acreage	Zone	Ac.	Buildable	Current	Page
22.02	12	150 MILFORD RD	Conair warehouse (650,000 SF)	CONAIR CORPORATION	1987	51.487	PUD	41.2	80	897,109	19
22.02	12.01	194 MILFORD RD	Vacant land	TWIN RIVERS INDUST PARK OWNERS		5.35	I-O	0	0	58,262	19
22.02	13.01	38 DANIEL ST	Vacant land	DANIEL STREET REALTY, LLC		15.26	I-O	0	0	166,181	19
22.02	14	80 MILFORD RD	DHL warehouse	TOURAINE ASSOC.C/O METROPOLITAN MNG	2000	9.93	I-O	8.44	85	108,138	19
23	1	430 ROUTE 33 EAST	Approved Woodside Center	ROUTE 33 REAL ESTATE, LLC	1940	0.8264	TC	0.8264	100	10,799	20
23	2	436 ROUTE 33 EAST	Approved Woodside Center	ROUTE 33 REAL ESTATE, LLC		0.2158	TC	0.2158	100	2,820	20
23	3	438 ROUTE 33 EAST	Approved Woodside Center	ROUTE 33 REAL ESTATE, LLC		0.2158	TC	0.2158	100	2,820	20
23	4	440 ROUTE 33 EAST	Approved Woodside Center	ROUTE 33 REAL ESTATE, LLC		0.1871	TC	0.1871	100	2,445	20
23	5	442 ROUTE 33 EAST	Approved Woodside Center	ROUTE 33 REAL ESTATE, LLC		0.1871	TC	0.1871	100	2,445	20
23	6	446 ROUTE 33 EAST	Approved Woodside Center	ROUTE 33 REAL ESTATE, LLC		0.3705	TC	0.3705	100	4,842	20
24.01	1	396 FRANKLIN ST REAR	Mnt. bldg. & radio tower	NJ TURNPIKE AUTHORITY C/O J.CARR	2000	13.9	RO	13.9	100	151,371	20
25	18	3 DAVISON RD	Staging & storage	NJ TURNPIKE AUTHORITY	1948	0.9401	R1	0.9401	100		20
25	19	FRANKLIN ST REAR	Vacant land	NJ TURNPIKE AUTHORITY		1.6	RO	1.6	100	17,424	20

Appendix B:
Circulation Data

Evening Peak Hour Trip Generation for Concept Area 1 – Turnpike Commercial				
Development Mix	**Units/Area**	**Evening Peak Hour Trip Generation**		
		Entering Trips	**Exiting Trips**	**Total Trips**
West of Turnpike on Route 33				
Hotel Rooms/Restaurants				
150 Rm Hotel/Conference Center	150 Units	34	52	86
250 Rm Extended Stay Hotel	250 Units	79	50	129
3 Restaurant Pads (660 seats)	19,800 SF	196	170	366
Office/Retail				
Bank	5,800 SF	39	38	77
Coffee Shop	3,400 SF	73	73	146
Office	90,000 SF	23	111	134
Pharmacy	18,000 SF	98	98	196
Trip reduction for pass-by trips* and internal trips** west of Turnpike		-203	-210	-413
Total New Trips West of Turnpike		**339**	**382**	**721**
East of Turnpike on Route 33				
104 Rm Hotel Expansion	104 Units	54	34	88
Restaurant	6,500 SF	65	56	121
Woodside Corner Project		68	111	179
Trip reduction for pass-by trips* and internal trips** in a mixed use development		-32	-28	-60
Total New Trips East of Turnpike		**155**	**173**	**328**
Total New Area 1 Trips to be Assigned to the Road Network		**494**	**555**	**1,049**

* Pass-by trip reduction is recommended by the ITE Trip Generation Manual for certain retail and commercial land uses. Pass-by trips are not new trips generated by the development but they are existing trips on adjacent roads that are diverted to the development for a limited time period. (Example of pass by trips - a quick stop at a convenience store or a bank on the way home from the office.)

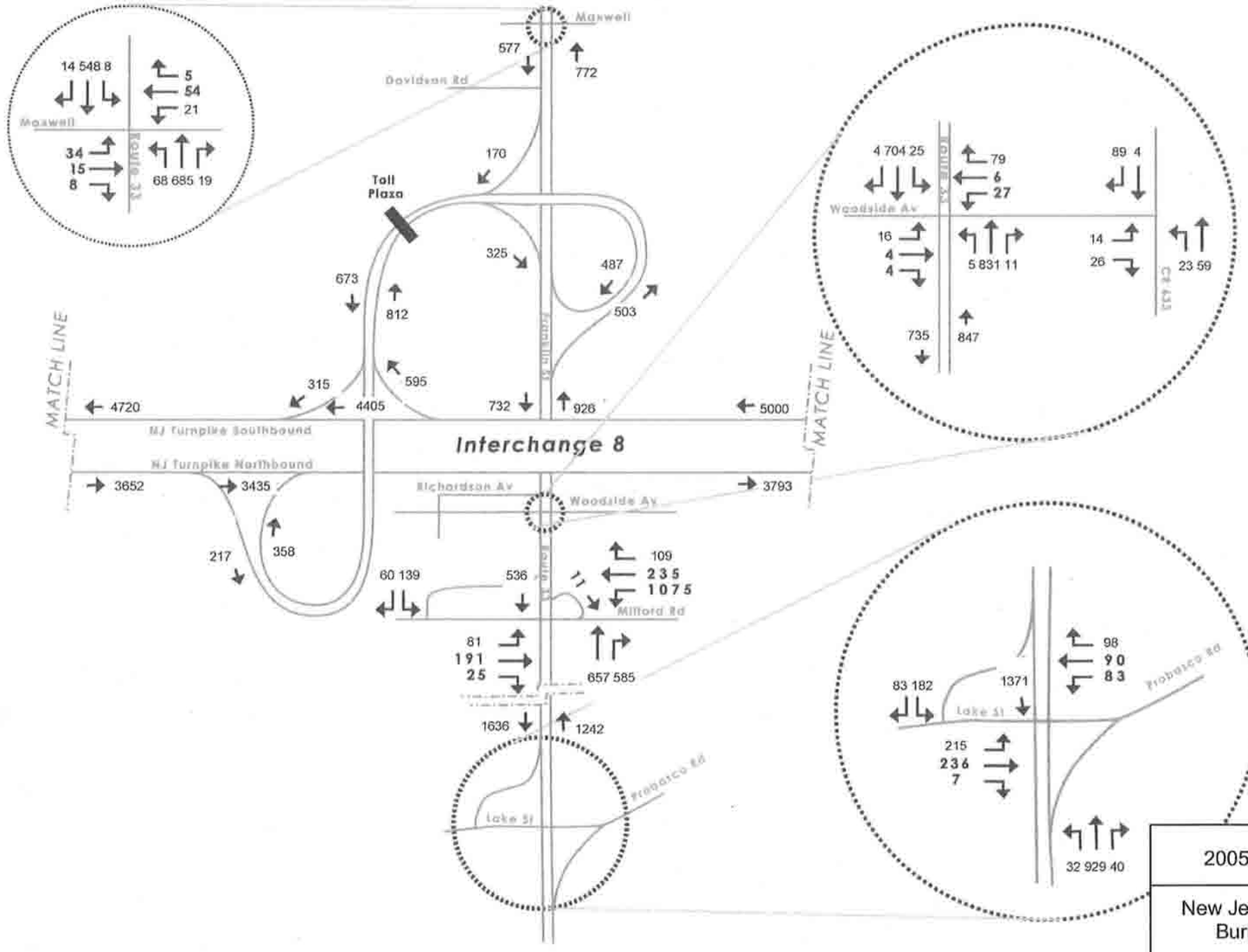
**Internal trip reduction is applied to mixed-used developments where certain retail or commercial or office trips are attracted from the residential units on the site. In other words, these trips do not leave the site and do not add to roadway traffic volumes.

Evening Peak Hour Trip Generation for Concept Area 2 – Turnpike Gateway				
Development Mix	**Units/Area**	**Evening Peak Hour Trip Generation**		
		Entering Trips	**Exiting Trips**	**Total Trips**
Office/Destination Hotel/Restaurant				
100 Hotel Rooms	100 Units	30	30	60
Office	255,000 SF	36	324	360
Restaurant	220 Seats	38	19	57
Trip reduction for pass-by trips* and internal trips** in a mixed use development		-17	-8	-25
Total New Area 2 Trips to be Assigned to the Road Network		**87**	**365**	**452**

Evening Peak Hour Trip Generation for Concept Area 3 – Commerce Park				
Development Mix	**Units/Area**	**Evening Peak Hour Trip Generation**		
		Entering Trips	**Exiting Trips**	**Total Trips**
Industrial/Warehouse	100,000 SF	15	93	108
Existing Vacant Office	115,000 SF	18	105	123
Trip reduction for pass-by trips* and internal trips** in a mixed use development		0	0	0
Total New Area 3 Trips to be Assigned to the Road Network		**33**	**198**	**231**

Evening Peak Hour Trip Generation for Concept Area 4 – Mixed Use				
Development Mix	**Units/Area**	**Evening Peak Hour Trip Generation**		
		Entering Trips	**Exiting Trips**	**Total Trips**
Residential Units				
Townhouses (Active Adult)	258 Units	43	27	70
Office	75,000 SF	19	93	112
Trip reduction for pass-by trips* and internal trips** in a mixed use development		0	0	0
Total New Area 4 Trips to be Assigned to the Road Network		**62**	**120**	**182**

Evening Peak Hour Trip Generation for Concept Area 5 – Industrial Opportunity				
Development Mix	**Units/Area**	**Evening Peak Hour Trip Generation**		
		Entering Trips	**Exiting Trips**	**Total Trips**
Technical School	100,000 SF	88	112	200
Warehouse	100,000 SF	8	24	32
Trip reduction for pass-by trips* and internal trips** in a mixed use development		0	0	0
Total New Area 5 Trips to be Assigned to the Road Network		**96**	**136**	**232**



APPENDIX C1(1)

2005 WEEKDAY PM PEAK HOUR VOLUMES

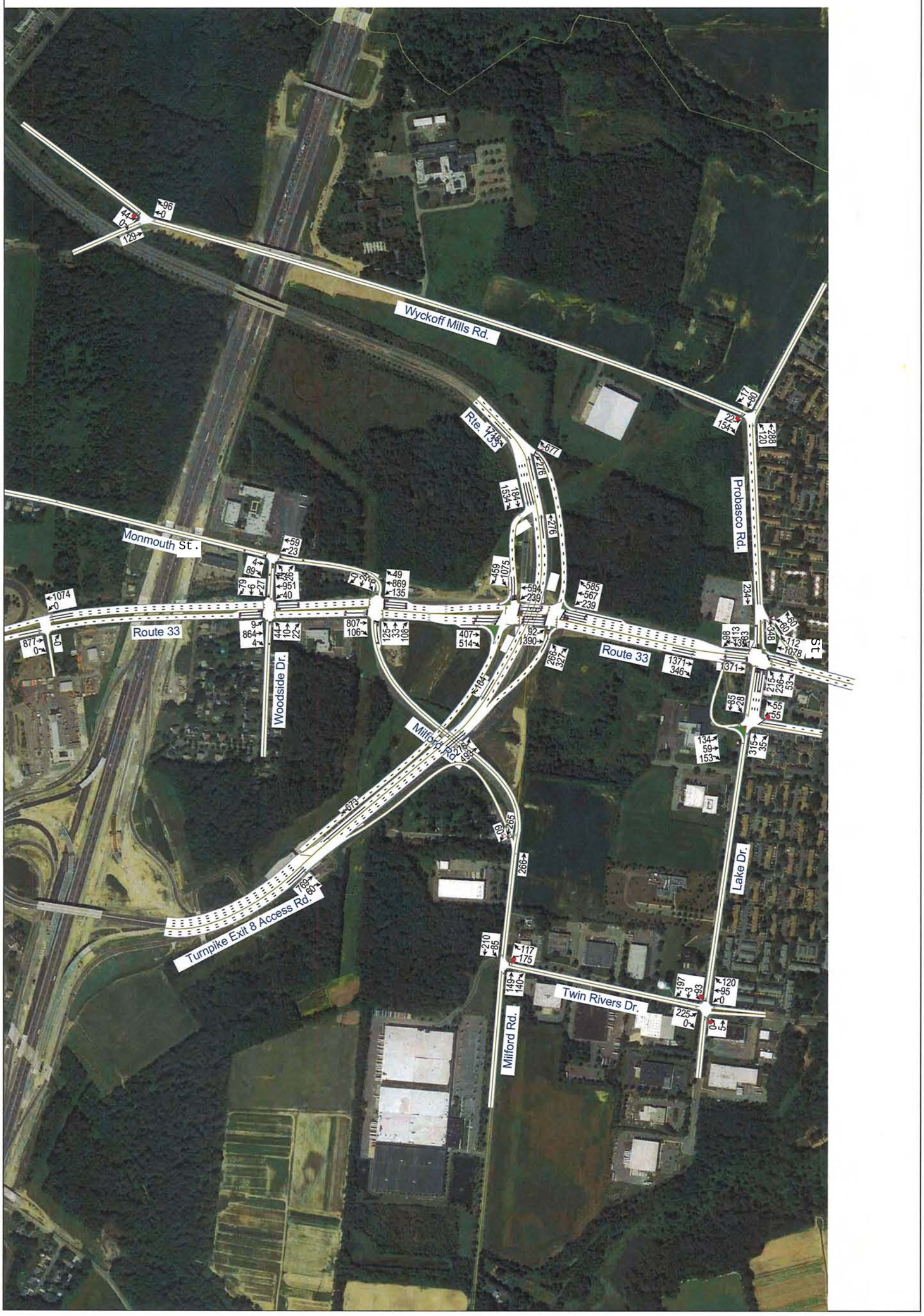
New Jersey Turnpike Interchange 6 to 9 Widening
Burlington, Mercer and Middlesex Counties
Executive Order No. 215
Environmental Impact Statement

NEW JERSEY TURNPIKE AUTHORITY
NEW JERSEY TURNPIKE

FIGURE
3-27b

Study Area 2005 Reassigned
PM Peak Volumes

Study Area 2012 Reassigned
PM Peak Volumes



Study Area Buildout
PM Peak Volumes

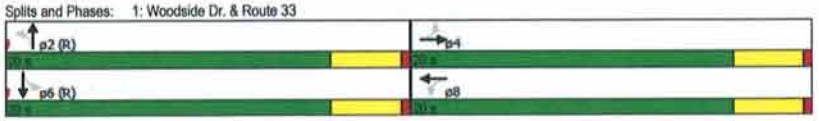
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	548	4	5	667	11	16	4	4	27	6	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.998			0.978			0.905	
Flt Protected	0.950			0.950				0.967			0.988	
Satd. Flow (prot)	1770	3536	0	1770	3532	0	0	1762	0	0	1666	0
Flt Permitted	0.311			0.396				0.858			0.947	
Satd. Flow (perm)	579	3536	0	738	3532	0	0	1563	0	0	1596	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			5			4			86	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		974			457			685			233	
Travel Time (s)		22.1			10.4			15.1			5.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	596	4	5	725	12	17	4	4	29	7	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	600	0	5	737	0	0	25	0	0	122	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	16.0	16.0		16.0	16.0			16.0			16.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40			0.40			0.40	
v/c Ratio	0.12	0.42		0.02	0.52			0.04			0.18	
Control Delay	16.0	17.5		10.2	10.2			7.0			4.8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	16.0	17.5		10.2	10.2			7.0			4.8	
LOS	B	B		B	B			A			A	
Approach Delay		17.4			10.2			7.0			4.8	
Approach LOS		B			B			A			A	

Intersection Summary

Area Type: Other
Cycle Length: 40
Actuated Cycle Length: 40
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 40
Control Type: Pretimed
Maximum v/c Ratio: 0.52
Intersection Signal Delay: 12.7 — Intersection LOS: B
Intersection Capacity Utilization 34.0% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Woodside Dr. & Route 33



Lanes, Volumes, Timings
3: Monmouth St & Woodside Drive

2005 Reassigned Volumes

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	4	89	23	59	14	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.870				0.912	
Flt Protected				0.986	0.983	
Satd. Flow (prot)	1621	0	0	1837	1670	0
Flt Permitted				0.986	0.983	
Satd. Flow (perm)	1621	0	0	1837	1670	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	1013			556	233	
Travel Time (s)	23.0			12.6	5.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	97	25	64	15	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	101	0	0	89	43	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.0%		ICU Level of Service A	
Analysis Period (min) 15			

Lanes, Volumes, Timings
4: Milford Road & Route 33

2005 Reassigned Volumes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	503	76	135	642	25	25	25	108	6	24	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		100	0		100	0		0
Storage Lanes	0		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980				0.850			0.850			
Flt Protected				0.950				0.976			0.990	
Satd. Flow (prot)	0	3434	0	1593	3185	1425	0	1636	1425	0	1660	0
Flt Permitted				0.376				0.898			0.964	
Satd. Flow (perm)	0	3434	0	630	3185	1425	0	1505	1425	0	1616	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50				27			117			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		457			282			1268			556	
Travel Time (s)		10.4			6.4			28.8			12.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	547	83	147	698	27	27	27	117	7	26	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	630	0	147	698	27	0	54	117	0	33	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.01	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases				8		8	2		2	6		
Minimum Split (s)		20.0		20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Total Split (s)		20.0		20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Total Split (%)		50.0%		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	
Maximum Green (s)		16.0		16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	
Yellow Time (s)		3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)		0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)		4.0		4.0	4.0	4.0		4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Flash Dont Walk (s)		11.0		11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0	0	0	0	0	0	0	
Act Effct Green (s)		16.0		16.0	16.0	16.0		16.0	16.0		16.0	
Actuated g/C Ratio		0.40		0.40	0.40	0.40		0.40	0.40		0.40	
v/c Ratio		0.45		0.58	0.55	0.05		0.09	0.18		0.05	

Lanes, Volumes, Timings
4: Milford Road & Route 33

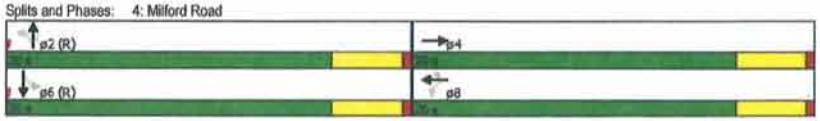
2005 Reassigned Volumes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		6.8		27.5	15.3	8.7		8.0	3.1		7.7	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay		6.8		27.5	15.3	8.7		8.0	3.1		7.7	
LOS		A		C	B	A		A	A		A	
Approach Delay		6.8			17.2			4.6			7.7	
Approach LOS		A			B			A			A	

Intersection Summary

Area Type: CBD
Cycle Length: 40
Actuated Cycle Length: 40
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 45
Control Type: Pretimed
Maximum v/c Ratio: 0.58
Intersection Signal Delay: 11.9 Intersection LOS: B
Intersection Capacity Utilization 43.6% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 4: Milford Road



Lanes, Volumes, Timings
7: Route 33 and Route 133 West Ramp

2005 Reassigned Volumes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱	↰↰	↑↑					↰↰		↱
Volume (vph)	0	367	250	239	567	0	0	0	0	1075	0	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	12	12	15	15	12	12	12	12	12	12
Storage Length (ft)	0		150	200		0	0		0	0		100
Storage Lanes	0		1	2		0	0		0	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	5594	1583	3433	3893	0	0	0	0	3261	0	1583
Flt Permitted				0.508						0.950		
Satd. Flow (perm)	0	5594	1583	1836	3893	0	0	0	0	3261	0	1583
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			272									144
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		323			178			183			395	
Travel Time (s)		7.3			4.0			4.2			9.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)										0		
Adj. Flow (vph)	0	399	272	260	616	0	0	0	0	1168	0	255
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	399	272	260	616	0	0	0	0	1168	0	255
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	1.00	1.00	0.88	0.88	1.00	1.00	1.00	1.07	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA	Perm	Perm	NA					Perm		Perm
Protected Phases		4			8							
Permitted Phases			4	8						6		6
Minimum Split (s)		20.0	20.0	20.0	20.0					20.0		20.0
Total Split (s)		20.0	20.0	20.0	20.0					20.0		20.0
Total Split (%)		50.0%	50.0%	50.0%	50.0%					50.0%		50.0%
Maximum Green (s)		16.0	16.0	16.0	16.0					16.0		16.0
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5		3.5
All-Red Time (s)		0.5	0.5	0.5	0.5					0.5		0.5
Lost Time Adjust (s)		0.0	0.0	0.0	0.0					0.0		0.0
Total Lost Time (s)		4.0	4.0	4.0	4.0					4.0		4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)		5.0	5.0	5.0	5.0					5.0		5.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0					11.0		11.0
Pedestrian Calls (#/hr)		0	0	0	0					0		0
Act Effct Green (s)		16.0	16.0	16.0	16.0					16.0		16.0
Actuated g/C Ratio		0.40	0.40	0.40	0.40					0.40		0.40

Lanes, Volumes, Timings
7: Route 33 and Route 133 West Ramp

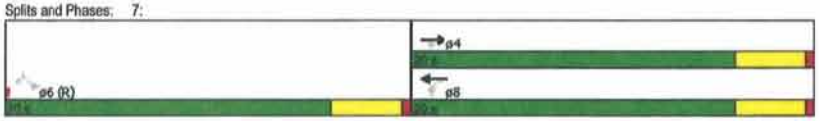
2005 Reassigned Volumes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.18	0.34	0.35	0.40					0.90		0.35
Control Delay		11.6	7.5	6.7	6.1					23.6		5.7
Queue Delay		0.0	0.0	0.2	0.8					48.9		0.0
Total Delay		11.6	7.5	7.0	6.9					72.5		5.7
LOS		B	A	A	A					E		A
Approach Delay		9.9			6.9							
Approach LOS		A			A							

Intersection Summary

Area Type: Other
Cycle Length: 40
Actuated Cycle Length: 40
Offset: 0 (0%), Referenced to phase 2: and 6:SBL, Start of Green
Natural Cycle: 45
Control Type: Pretimed
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 33.3 Intersection LOS: C
Intersection Capacity Utilization 54.6% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7:



Lanes, Volumes, Timings
9: Milford Rd./Milford Road / Turnpike Access Ramp

2005 Reassigned Volumes

Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Volume (vph)	0	158	235	0	0	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	0	1611
Link Speed (mph)		30	30		30	
Link Distance (ft)		523	1268		1217	
Travel Time (s)		11.9	28.8		27.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	172	255	0	0	65
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	172	255	0	0	65
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane					Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Yield	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 22.8% ICU Level of Service A
Analysis Period (min) 15

Lanes, Volumes, Timings
10: Twin Rivers Dr. & Milford Rd.

2005 Reassigned Volumes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	20	20	179	3	75	0	83	193	104	191	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	15	12	12	15	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.950			0.960			0.905				
Flt Protected		0.987			0.966						0.983	
Satd. Flow (prot)	0	1747	0	0	1727	0	0	1854	0	0	2014	0
Flt Permitted		0.987			0.966						0.983	
Satd. Flow (perm)	0	1747	0	0	1727	0	0	1854	0	0	2014	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		206			905			632			523	
Travel Time (s)		4.7			20.6			14.4			11.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	22	22	195	3	82	0	90	210	113	208	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	60	0	0	280	0	0	300	0	0	321	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	1.00	1.00	0.88	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

Lanes, Volumes, Timings
14: Route 33 Route 133 East Ramps

2005 Reassigned Volumes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	1390	0	239	418	585	149	0	327	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		250	0		200	0		0
Storage Lanes	1		0	2		1	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1770	5085	0	3433	3539	1583	1770	0	1583	0	0	0
Flt Permitted	0.490			0.222			0.950					
Satd. Flow (perm)	913	5085	0	802	3539	1583	1770	0	1583	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						636			27			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		178			673			616			744	
Travel Time (s)		4.0			15.3			14.0			16.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	1511	0	260	454	636	162	0	355	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	1511	0	260	454	636	162	0	355	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	Perm		Perm			
Protected Phases		4			8							
Permitted Phases	4			8		8	2		2			
Minimum Split (s)	20.0	20.0		20.0	20.0	20.0	20.0		20.0			
Total Split (s)	22.0	22.0		22.0	22.0	22.0	18.0		18.0			
Total Split (%)	55.0%	55.0%		55.0%	55.0%	55.0%	45.0%		45.0%			
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	14.0		14.0			
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5		3.5			
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5		0.5			
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0		0.0			
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0		4.0			
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0	5.0	5.0		5.0			
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0		11.0			
Pedestrian Calls (#/hr)	0	0		0	0	0	0		0			
Act Effct Green (s)	18.0	18.0		18.0	18.0	18.0	14.0		14.0			
Actuated g/C Ratio	0.45	0.45		0.45	0.45	0.45	0.35		0.35			
v/c Ratio	0.14	0.66		0.72	0.29	0.60	0.26		0.62			
Control Delay	7.6	11.4		28.5	11.5	8.7	10.8		16.0			

Lanes, Volumes, Timings
14: Route 33 Route 133 East Ramps

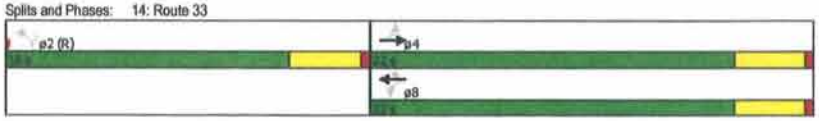
2005 Reassigned Volumes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	48.6		0.0	0.0	0.0	0.0		0.0			
Total Delay	7.6	60.0		28.5	11.5	8.7	10.8		16.0			
LOS	A	E		C	B	A	B		B			
Approach Delay		58.1			13.5							
Approach LOS		E			B							

Intersection Summary

Area Type: Other
Cycle Length: 40
Actuated Cycle Length: 40
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green
Natural Cycle: 70
Control Type: Pretimed
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 34.0 Intersection LOS: C
Intersection Capacity Utilization 53.8% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 14: Route 33



Lanes, Volumes, Timings
17: Probasco Rd. & Wyckoff Mills Rd.

2005 Reassigned Volumes

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	66	154	49	290	167	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.906				0.987	
Flt Protected	0.985			0.993		
Satd. Flow (prot)	1662	0	0	1850	1839	0
Flt Permitted	0.985			0.993		
Satd. Flow (perm)	1662	0	0	1850	1839	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	2786			889	671	
Travel Time (s)	63.3			20.2	15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	167	53	315	182	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	239	0	0	368	202	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 51.0% ICU Level of Service A
Analysis Period (min) 15

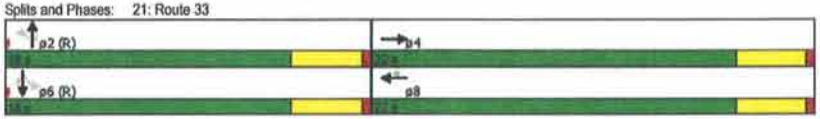
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1371	0	0	929	103	215	236	7	83	140	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	0		0	0		1
Storage Lanes	0		0	0		1	2		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			0.850
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	3539	0	0	3539	1583	3433	1863	1583	1770	1863	1583
Flt Permitted							0.660			0.586		
Satd. Flow (perm)	0	3539	0	0	3539	1583	2385	1863	1583	1092	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						112			27			54
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		252			425			280			150	
Travel Time (s)		5.7			9.7			6.4			3.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1490	0	0	1010	112	234	257	8	90	152	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1490	0	0	1010	112	234	257	8	90	152	107
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA			NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases						8	2		2	6		6
Minimum Split (s)		20.0			20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)		22.0			22.0	22.0	18.0	18.0	18.0	18.0	18.0	18.0
Total Split (%)		55.0%			55.0%	55.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%
Maximum Green (s)		18.0			18.0	18.0	14.0	14.0	14.0	14.0	14.0	14.0
Yellow Time (s)		3.5			3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)		0.5			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.0			4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)		5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	0
Act Effct Green (s)		18.0			18.0	18.0	14.0	14.0	14.0	14.0	14.0	14.0
Actuated g/C Ratio		0.45			0.45	0.45	0.35	0.35	0.35	0.35	0.35	0.35
v/c Ratio		0.94			0.63	0.14	0.28	0.39	0.01	0.24	0.23	0.18
Control Delay		29.2			10.7	2.4	9.7	11.2	1.4	11.3	10.4	6.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		29.2			10.7	2.4	9.7	11.2	1.4	11.3	10.4	6.3
LOS		C			B	A	A	B	A	B	B	A
Approach Delay		29.2			9.9			10.4			9.4	
Approach LOS		C			A			B			A	

Intersection Summary

Area Type: Other
Cycle Length: 40
Actuated Cycle Length: 40
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 50
Control Type: Pretimed
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 18.2 Intersection LOS: B
Intersection Capacity Utilization 64.9% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 21: Route 33



Lanes, Volumes, Timings
22: Wyckoff Mills & Cranbury Station Rd S

2005 Reassigned Volumes

Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Volume (vph)	0	35	13	5	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.964			
Flt Protected						
Satd. Flow (prot)	0	1863	1796	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1796	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		357	2786		688	
Travel Time (s)		8.1	63.3		15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	38	14	5	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	38	19	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 6.7%		ICU Level of Service A	
Analysis Period (min) 15			

Lanes, Volumes, Timings
24: Lake Drive & Abbington Dr / Route 33 Jughandle

2005 Reassigned Volumes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	59	153	55	0	9	0	315	35	55	85	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		40	0		0	0		0	0		0
Storage Lanes	0		1	1		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.986				
Flt Protected		0.966		0.950							0.981	
Satd. Flow (prot)	0	1799	1583	1770	0	1583	0	1837	0	0	1827	0
Flt Permitted		0.966		0.950							0.981	
Satd. Flow (perm)	0	1799	1583	1770	0	1583	0	1837	0	0	1827	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		431			330			1265			280	
Travel Time (s)		9.8			7.5			28.8			6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	146	64	166	60	0	10	0	342	38	60	92	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	210	166	60	0	10	0	380	0	0	152	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.4%		ICU Level of Service A	
Analysis Period (min) 15			

Lanes, Volumes, Timings
25: Twin Rivers Dr. & Lake Drive

2005 Reassigned Volumes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	247	65	5	0	90	98	0	5	0	121	5	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.922						0.923	
Flt Protected	0.950										0.980	
Satd. Flow (prot)	1770	1844	0	1863	1717	0	0	1863	0	0	1685	0
Flt Permitted	0.950										0.980	
Satd. Flow (perm)	1770	1844	0	1863	1717	0	0	1863	0	0	1685	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		905			290			300			1265	
Travel Time (s)		20.6			6.6			6.8			28.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	268	71	5	0	98	107	0	5	0	132	5	182
Shared Lane Traffic (%)												
Lane Group Flow (vph)	268	76	0	0	205	0	0	5	0	0	319	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.3%		ICU Level of Service B	
Analysis Period (min) 15			

Lanes, Volumes, Timings
41: Probasco Rd. & Route 33 WB Jughandle

2005 Reassigned Volumes

Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (vph)	317	0	0	349	52	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt					0.928	
Flt Protected					0.977	
Satd. Flow (prot)	1863	0	0	3539	1689	0
Flt Permitted					0.977	
Satd. Flow (perm)	1863	0	0	3539	1689	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	150			889	215	
Travel Time (s)	3.4			20.2	4.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	345	0	0	379	57	65
Shared Lane Traffic (%)						
Lane Group Flow (vph)	345	0	0	379	122	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.9%		ICU Level of Service A	
Analysis Period (min) 15			