



circulation element



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TRANSPORTATION NETWORK

The Town of Dover is served by a dense roadway network that provides both local and regional access through Dover. Interstate 80 (located just north of Dover) and NJ Route 10 (located just south of Dover) are the major regional east-west routes. Within Dover, US Route 46 forms the northern boundary of the downtown, while County Route 513 (Blackwell Street) traverses east-west within the core of the downtown.

Dover is also served by a radial network of north-south roads which connect the downtown area to the regional east-west highways. NJ Route 15 connects US Route 46 to Interstate 80 at the western edge of town, while County Route 661 (Mount Hope Avenue) serves the same function at the eastern edge of town. Similarly, County Route 513 (Prospect Street) connects Blackwell Street to NJ Route 10 at the western edge of town, while County Route 665 (Salem Street) does the same at the eastern edge of town. Blackwell Street is Dover's "Main Street" traversing the downtown in an east-west direction, with direct access to Route 46 to the west. Blackwell Street is an element of the Morris County Master Plan, Bicycle and Pedestrian Element, and is part of a proposed bicycle network connecting Victory Garden via Salem Street, through Dover to Route 46 and continuing along Route 47 through Mine Hill and beyond.

Dover is a very walkable town, with pedestrian-scale streets that include closely-spaced land uses and short block lengths. The local road network consists of a fairly dense street grid in the downtown core surrounded by residential neighborhoods that feature their own street grids. All of the downtown streets and many of the streets in residential neighborhoods have sidewalks on both sides. These facilities are important, and are especially important where there are missing links, as Dover is a designated "walk-to-school" town. This means that students are not bussed to school, but arrive to school via foot or by car drop-off.



CIRCULATION NEEDS AND PROBLEMS

Dover is well served by rail and bus transit. Two separate NJT rail lines provide direct access into New York City's Penn Station. Both the Morristown Line and the Montclair-Boonton Line originate in Hackettstown, pass through Dover, and arrive at Penn Station via Secaucus Junction. Each line features both express and local service through Dover Station. Dover is also served by the MCM-2 and MCM-10 NJT bus routes. The MCM-10 runs both ways on Blackwell Street through Dover, while the MCM-2 travels on Penn Street, Morris Street and Blackwell Street east of Morris.

This town-wide Circulation Plan was undertaken to form the basis of Dover's Master Plan Transportation Element. Prior to conducting technical work, many circulation issues within Dover were identified in meetings with the Town Engineer and with the Planning Board. A summary of concerns is shown in graphically in **Figure A**, and as summarized below:

Vehicular Issues

- Traffic congestion is a major issue in Dover, especially downtown. There is traffic congestion day and night on Blackwell Street. If traffic congestion is a problem today, how will Dover handle the additional traffic volume generated by future redevelopment?
- Commuter traffic uses Dover as a cut-through because Dover is surrounded by regional highways, including Route 15, Route 46, Route 10 and I-80. There are patterns to the cut-through traffic. For instance, traffic goes east in the AM to Route 10, and west in the PM from Route 10. Additionally, everyone is routed through town when there is a traffic incident on Interstate 80. Cut-through commuter traffic does not bring any benefits to the downtown, but local traffic is beneficial because it brings in retail customers.

- Bus travel is hampered by downtown traffic congestion. One provider will not serve Dover and some riders will not use downtown bus stops because of the congestion.
- While some downtown streets are congested, there are some under-utilized streets, especially north-south routes such as Union and Mercer Streets.
- There is a lack of east-west routes through the downtown. Bassett Highway is a problem because it dead-ends at the NJT tracks.
- The gate closings for NJT service cause traffic to back up along North Morris Street past the Blackwell Street intersection.
- Large vehicles such as concrete trucks and tandem trucks use Blackwell Street. There are no regulated truck routes through Dover.
- Managing traffic implications from the Bassett Highway redevelopment project is a top priority.
- There are opportunities for traffic calming throughout Dover. It is needed on King Street, and there may be other candidates. Traffic calming should be a comprehensive evaluation with definitive guidelines and recommendations.



DOVER CIRCULATION PLAN ELEMENT

MAP OF CRITICAL ISSUES & NETWORK DEFICIENCIES

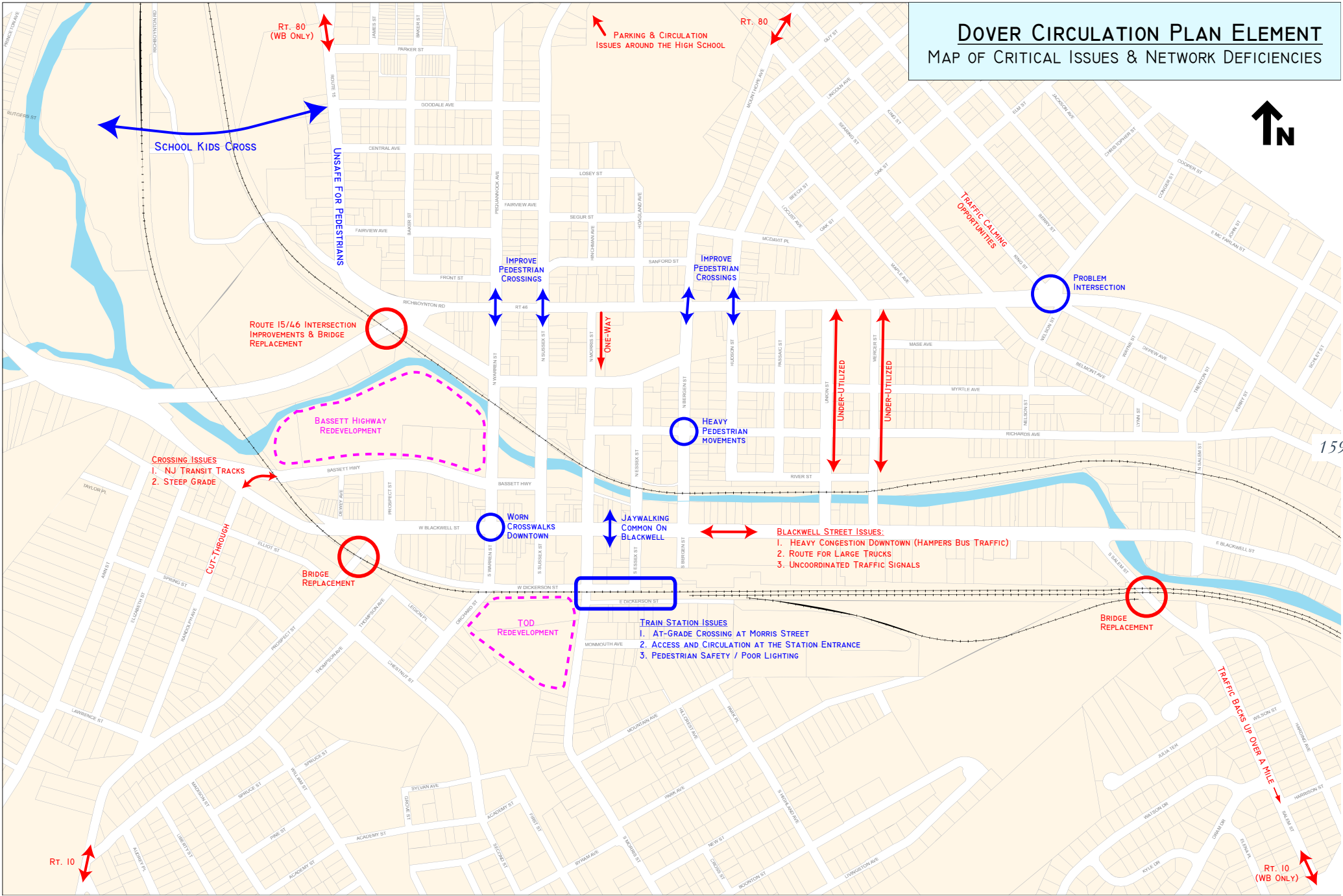


Figure A

Pedestrian Issues

- Lack of sidewalk continuity is a problem in Dover. There are major hubs/patterns of activity that are not connected by sidewalks. Portions of Route 15 do not have sidewalks and/or crosswalks and are unsafe for pedestrians.
- The Morris Street / Dickerson Street intersection near Dover Station is a bad situation for pedestrians and needs significant improvement. Lighting in this area is also poor.
- Dover needs a striping program. The crosswalks downtown are worn, making them hard to see. Better crosswalk treatments are needed.
- Jaywalking is a common occurrence on Blackwell Street. Past efforts to educate pedestrians have not yielded significant results.
- There is heavy pedestrian traffic and poor lighting near Sacred Heart Church at the intersection of North Bergen Street and Richards Avenue.
- The Planning Board needs to decide if they want to emphasize a pedestrian downtown for Dover, where pedestrians carry equal weight with vehicles. A pedestrian downtown would support and complement the TOD study recommendations since a TOD is based on people walking for their everyday

needs. There should be signage directing cars to yield to pedestrians.

- Signage needs to be symbolized as Dover is a bilingual community.

Based on the problems and issues identified, goals for this circulation plan were formulated. They are:

- Address downtown traffic congestion
- Improve circulation to and from Dover Station for pedestrians, bicycles, and cars
- Improve parking and safety conditions at the town schools, including North Dover Elementary School, East Dover Elementary School, and Dover High School
- Identify the necessary off-site improvements to accommodate the "Bassett Highway Redevelopment Project" and develop a concept plan for site access and circulation
- Support Transit-Oriented Development (TOD)

Approach to Plan

The Circulation Plan was developed in several key phases, working closely with both the Township Engineer and the Planning Board. Prior to conducting technical work, the project team discussed transportation problems and issues with the Township Engineer and Planning Board. Then, an overview of existing conditions was conducted. This included field

observations, a review of existing traffic and transit data and studies, current and planned projects, and data collection to supplement existing traffic information. As part of the traffic analysis, level of service conditions at selected intersections were calculated for weekday morning and afternoon peak hours. Transportation concepts were then developed which addressed identified problems.



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EXISTING CONDITIONS

The existing traffic count data shown in **Figure B** was compiled from the following sources:

- Morris County ATR data (1990-2004)
- NJDOT ATR data (1999-2003)
- Prospect Street bridge replacement ATR data (Vollmer, 2000)
- Prospect Street bridge replacement CTM data (Vollmer, 2000)
- Route 46/Route 15 CTM data (HNTB, 2005)

Urban conducted peak period turning movement counts at the following two locations on a typical weekday in May 2006:

- The intersection of Blackwell Street and Prospect Street (PM peak hour)
- The five-legged intersection of Route 46, King Street, East McFarland Street, Nelson Street, and Depew Avenue (AM peak hour)

Signal timing plans were obtained from Morris County Department of Public Works for six intersections along Blackwell Street. The signal timings were measured during a site visit in May 2006 and confirmed to match the timing plans. Roadway cross-sections, including lane, parking, and sidewalk widths were measured at selected streets during the site visit.

Vehicular crash data for the period between 2002 and 2006 was obtained from the Dover Police Department. The data for all reported accidents over this time period was analyzed based on location and type.

Analysis

Vehicular and pedestrian crash analysis, a review of transit ridership and field observation of sidewalk conditions were undertaken to verify problem locations for both modes.

Crash Analysis

The incidence of both vehicular (3,353) and pedestrian (59) crashes are comparatively high to other areas and are indicative of problem conditions. The intersection of Blackwell Street and Salem Street had the highest total number of crashes, with the majority being rear end collisions. Based on field observation, many of these crashes occur due to driver inattention at the eastbound right turn from Blackwell Street and the forced merge between right and left turning vehicles on Salem Avenue.

The next five highest crash locations were all along Route 46, including the intersections with Blackwell Street, Pequannock Avenue, Sussex Street, Mt. Hope Avenue, and Perry Street. The crash cluster analysis along Route 46 was

compared to the vehicular crash rates obtained from the NJDOT Bureau of Safety Programs for the same period. The intersections with the most accidents are consistently the segments of Route 46 which have crash rates far exceeding the state average. Many of the highest ranked locations (#1-6) have been addressed or will be addressed in pending projects.

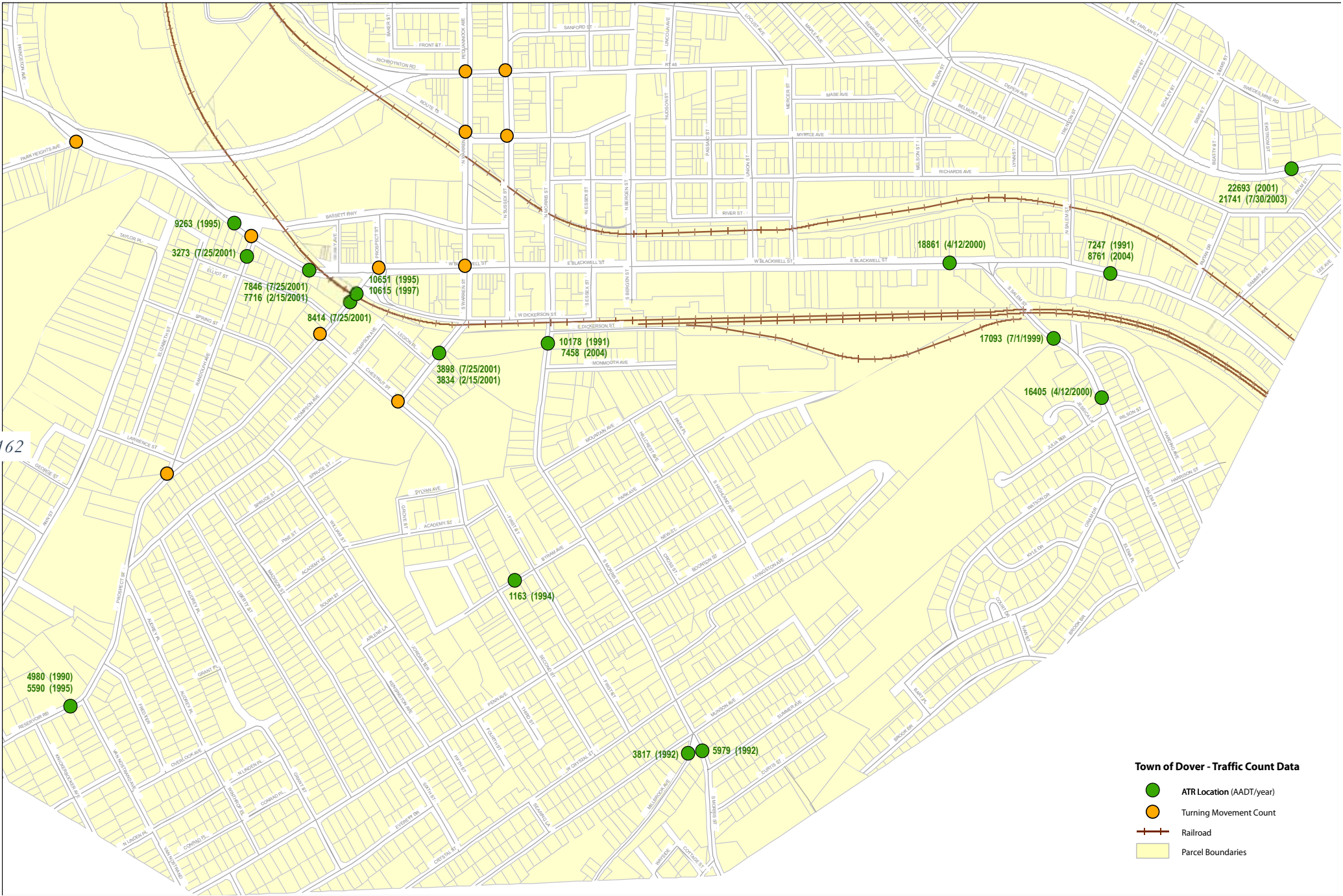
Access to Transit Service

Both NJT rail lines provide direct access to New York City's Penn Station through Dover Station. According to information compiled by NJT's 2005 ticket sales, there is a weekday average of 3,650 riders at Dover Station. As shown below, based on 1996 origin-destination datasets, most riders either drive or are dropped off at Dover Station.

Dover Station Ridership – Method of Access

ACCESS MODE	FREQUENCY	PERCENT
Drove alone & parked	516	61.3
Driver in carpool and parked	24	2.8
Passenger in carpool and parked	7	0.9
Dropped off by car	147	17.5
Walk only	98	11.6
Bus	3	0.3
Taxi	8	0.9
Other	39	4.6
Total	842	100

Source: NJT, 2005



Town of Dover - Traffic Count Data

- ATR Location (AADT/year)
- Turning Movement Count
- +— Railroad
- Parcel Boundaries

Figure B

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Both NJT bus routes – the MCM-2; MCM-5; MCM-7 and the MCM-10 – have primary Dover Station stop at Blackwell and Bergen. No bus route directly enters the station. The main Bus routes are the MCM-2 and the MCVM-10. The MCM-5 and MCM-7 operate only two days a week on a very limited basis. The MCM-10 has about twice the ridership of the MCM-2, both along the total route and locally within Dover. For the MCM-2, the vast majority

of boardings within Dover occur at Blackwell and Bergen. The MCM-10 has several heavy boarding locations along Blackwell Street, including the intersections with Warren, Morris, Bergen, and St. Claire’s Hospital on the western edge of town. Ridership data shows that the activity at Morris and Blackwell is mostly riders waiting to travel in both directions, while the activity at St. Claire’s is primarily riders from the eastbound direction alighting.

Typical Weekday Boardings

LOCATION	MCM2	MCM10	COMBINED
Warren (Westbound)	NA	18	18
Warren (Eastbound)	NA	18	18
Morris (Westbound)	6	43	49
Morris (Eastbound)	4	43	47
Bergen (Westbound)	24	14	38
Bergen (Eastbound)	22	7	29
Salem (Westbound)	7	6	13
Salem (Eastbound)	4	8	12

Source: NJT, 2005

Pedestrian Conditions

All of the downtown streets and most of the streets in residential neighborhoods have sidewalks on both sides. Exceptions include Route 15 north of Davis Avenue, which has no sidewalks, and miscellaneous blocks of missing sidewalk in the residential neighborhood near Dover High School.

Pedestrian crash data for the period between 2002 and 2005 was obtained from the Dover Police Department. The data for all reported accidents over this time period was analyzed based on location and the results are shown in **Figure C**.

The highest number of accidents occurred along Blackwell Street between Warren and Bergen Streets, which corresponds to the highest area of pedestrian activity. In particular, the intersection of Blackwell and Sussex had eight crashes over the four year period. The Dover Police Department indicated that some of these crashes involved cars hitting pedestrians while making a right turn on red. Numerous pedestrian crashes also occurred along Route 15 through the downtown and Route 46 between Route 15 and East Dover Elementary School, indicating that these roads present potential obstacles to north-south pedestrian movements.

Pedestrian Crashes: Town-wide (2002 - 2005) **Dover, New Jersey**



59 Pedestrian Crashes
33 Pedestrians Injured
2 Pedestrians Killed
22 Vehicle Summons
6 Pedestrian Summons

164

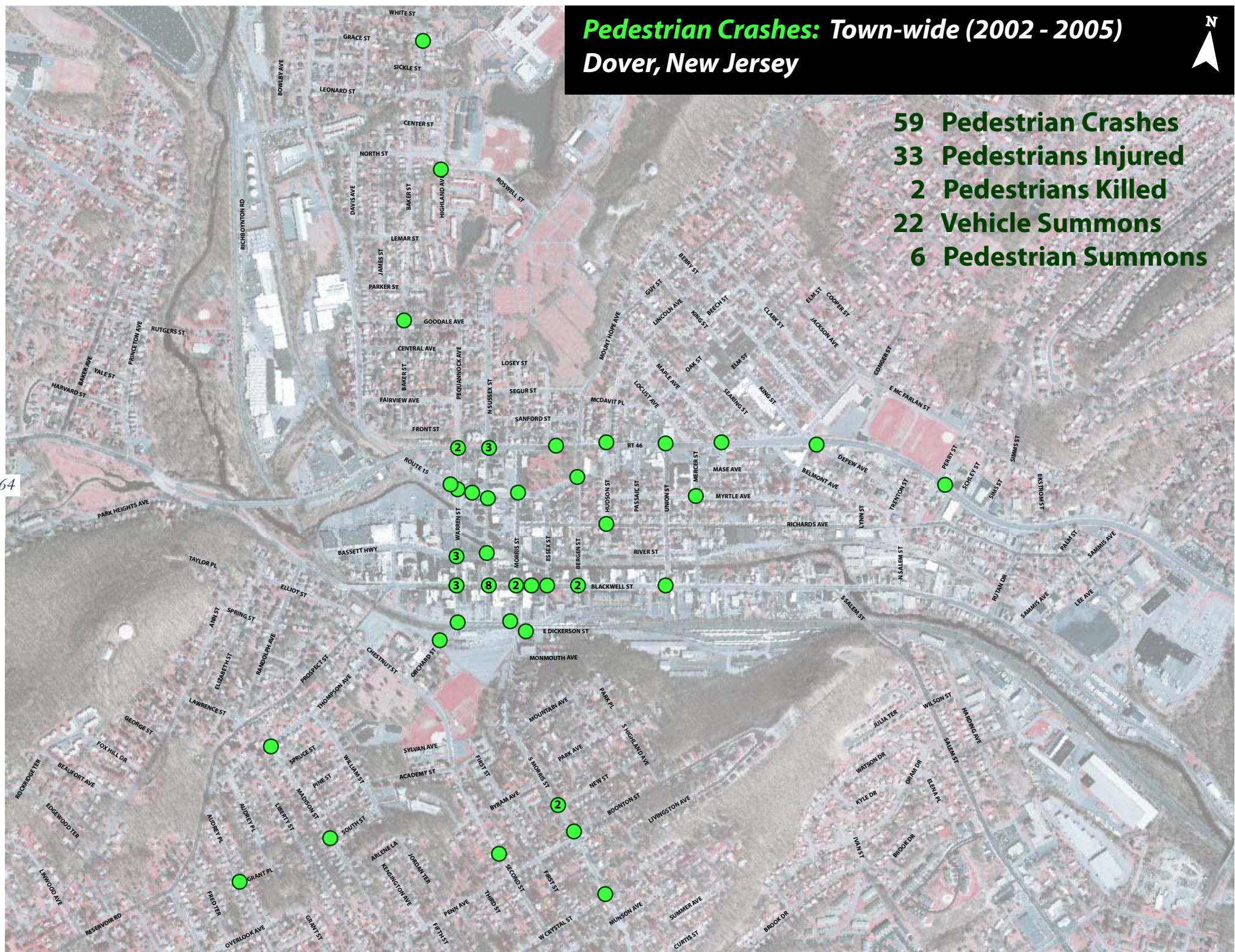


Figure C

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CURRENT AND PLANNED PROJECTS

There are several projects being planned or designed at this time that will have a significant affect on Dover's future transportation network. Bridge replacements slated for Prospect Street and Salem Street means that the two main southern entrance points to the downtown are currently undergoing preliminary design. Furthermore, the Town is planning for transit-oriented development near Dover Station and redevelopment along Bassett Highway. While both developments will bring additional traffic, they also bring opportunities. Below is a brief description of current planning and design efforts:

Route 46 – Sections 7L & 8K

This project will widen and realign Route 46 from Princeton Avenue to the west to Pequannock Street to the east. The work consists of the replacement of the two Route 46 bridges over the Rockaway River & NJT Railroad and the Morristown & Erie Railway with the creation of a grade level T-intersection with Route 15 (Clinton Street). The proposed T-intersection will allow direct access between Routes 46 and 15 in all directions. The intersection will be signalized and will maintain two through travel lanes in each direction. The eastern project limits include the intersection of Route 46 with North Sussex Street. A pedestrian

crosswalk connecting the eastern side of North Sussex Street at the intersection with Route 46 should be included in the project.

The project is in the Draft 2007 Transportation Improvement Program (TIP) for construction in FY2008 and 2009.

Salem Street Bridge Replacement

This project is currently undergoing preliminary design by NJDOT. The project will replace the existing bridge carrying Salem Street over the NJT Morristown Line (just south of Blackwell Street). The bridge replacement would use the existing alignment and would alter the intersection of Blackwell Street and Salem Street to include two northbound lanes on Salem Street for separate right, and shared right and left turn lanes.

Prospect Street Bridge Replacement

The proposed improvements at Prospect Street consist of replacing the existing bridge carrying Prospect Street over the NJT Morristown Line (just south of Blackwell Street). The project has already been carried through Feasibility Assessment and detour routes have been established. The project is in the Draft 2007 TIP for Preliminary Design.

Town of Dover Transit-Oriented Development Plan

The "Town of Dover Transit-Oriented Development (TOD) Plan" is a detailed plan for the downtown and station area that will be coupled with Dover's Master Plan. The TOD Plan suggests how new development should be designed, coordinated, and connected into the business district, while maintaining a strong relationship with the surrounding community. Recognizing that Dover Station is a catalyst for new development, the TOD Plan provides conceptual development scenarios and development regulations.

Bassett Highway Redevelopment Plan

The Bassett Highway Redevelopment Plan Area (BHRPA) is approximately 18 acres, with some of the properties located in a 100-year flood hazard area and some properties jointly situated in the Blackwell Historic District. The plan area is characterized by excessive surface parking partly in disrepair and largely undefined areas of asphalt between the edge of the Rockaway River and the rear of commercial buildings fronting Bassett Highway. The Redevelopment Plan requires the creation of a Riverfront Park to be situated along the southerly bank of the Rockaway River, and provides design standards that utilize traditional neighborhood design principles to help conserve environmental

Route 46 (7L, 8K) Considerations

Route 46 (7L, 8K)

New Crossing

Eliminate
Signals



resources and further strengthen the sense of community in Dover. The Redevelopment Plan also provides standards for the local street and parking requirements within the site or its integration with Dover's existing network.

CIRCULATION RECOMMENDATIONS

Recommendations for circulation improvements were developed and are summarized on page 180, Dover Master Plan Circulation Element Action Plan. The Action Plan reflects improvements in four categories: Dover Station, Blackwell Street, Pedestrian Improvements and Other Initiatives. The actions are characterized as short, mid-term or long-term in implementation time frame, and lead and support roles are defined. Order of magnitude costs for each action are also provided.

Walkable Community Workshop

The North Jersey Transportation Planning Authority (NJTPA) conducted a workshop with the Town of Dover and performed a bicycle and pedestrian audit of the Downtown. The report summarizes many of this Circulation Plan's recommendations and is consistent with the Goals and Objectives of this Master Plan. Some key points to highlight in that report are:

- 1) Implementation of Bike Lanes;
- 2) Installation of Countdown Signals. Particularly-
 - Installation of fully accessible pedestrian countdown signal that provide audible cues to pedestrians.
- 3) Curb Extensions. Particularly;
 - Provide curb extensions along Blackwell Street as well as Bergen Street, Morris Street, Warren Street.

- 4) Pedestrian Crossing of North Warren at Town Hall. Particularly;
 - Provide high visibility ladder striped crosswalk across North Warren Street
 - Consider a raised treatment such as a speed table or raised crosswalk to further emphasize the priority of the crosswalk.
- 5) Complete sidewalk along firehouse. Particularly;
 - Provide a concrete sidewalk along North Warren Street past the firehouse.

Dover Station Improvements

Poor circulation to and from Dover Station for pedestrians, bicycles, and cars was identified as a deficiency during the problem identification process. Excessive vehicular speeds, the need for better drop-off areas and better management of traffic were also listed as concerns in this area. The following concepts were developed to address these issues:

Dickerson Street Improvements

Dickerson Street has several problems, including cut through traffic, high travel speeds, inadequate drop-off area, inadequate network, and inadequate pedestrian amenities. These problems, in turn, create congestion and conflicts for vehicles and pedestrians.

Figure E shows a conceptual layout for



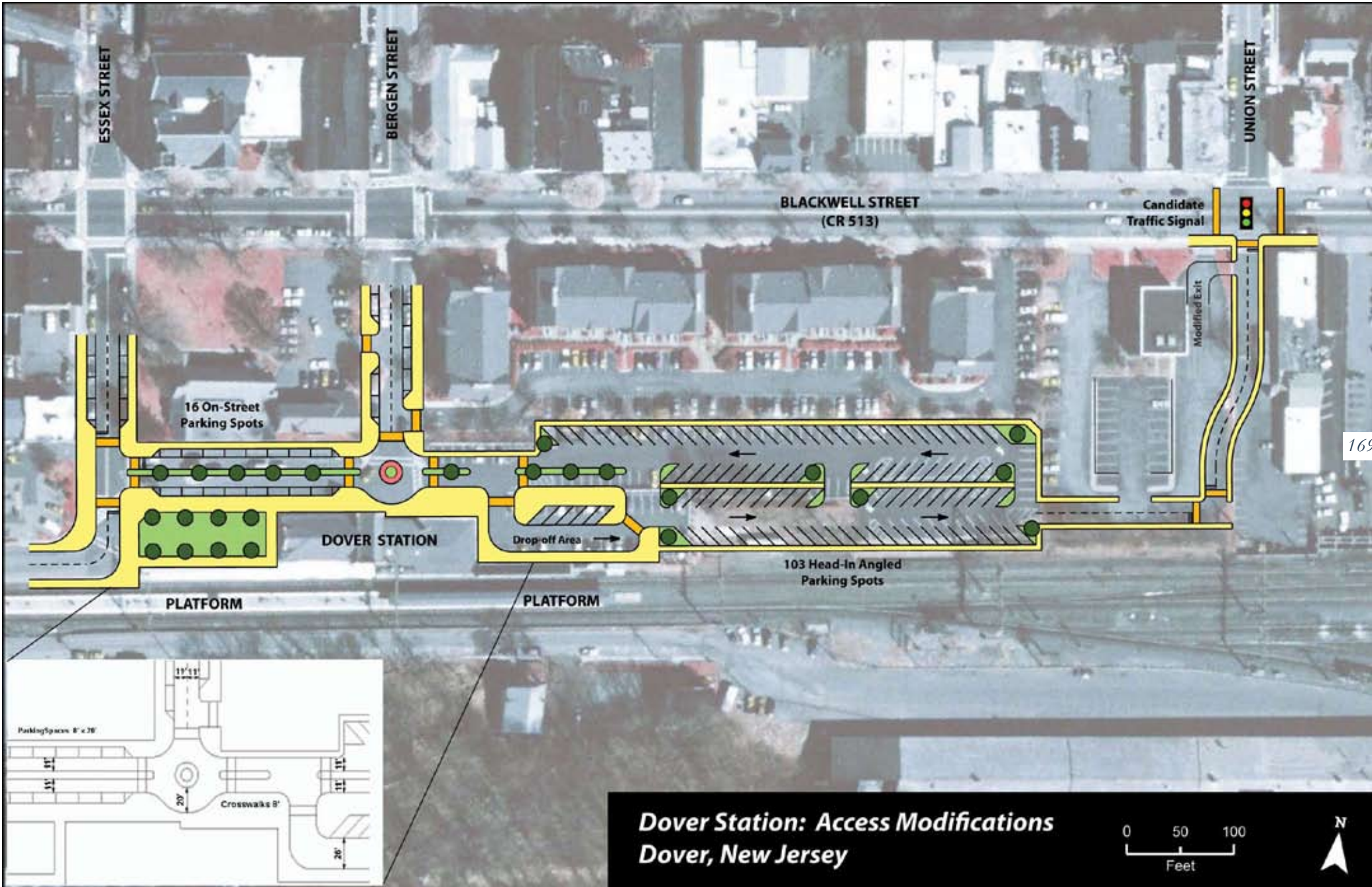


Figure E

improvements to the Dover Station area. These improvements are consistent with recommendations from the TOD Plan. The conceptual layout calls for a realigned intersection between Essex Street and Dickerson Street to remove the existing speed encouraging curve and calm traffic as it enters the station. The roadway should take on a minor street or driveway character to signal the entrance into a more pedestrian-oriented space. Designated pedestrian crossings are moved to perpendicular positions at the station entrance. Textured or colored/pigmented pavement at the threshold or throughout the system would inform the driver of this transition.

To the west of the station, the former parking areas for the restaurant at Dover Station would be replaced by a re-configured Dickerson Street and a new public plaza. The new Dickerson Street would feature 11-foot lanes, a six-foot landscaped median, and 16 on-street parking spaces. A small roundabout would be located at the intersection of Bergen and Dickerson Streets in front of Dover Station.

To the east of the station, a new 25-foot wide drop-off area would be created adjacent to the platform. Dickerson Street would continue eastward with the landscaped median into a re-configured parking area. This parking area would feature 18-foot wide lanes, 103 back-in-angled parking spaces, landscaped islands, and minimum five-foot sidewalks to guide

pedestrians to the station. As future demand may warrant, this area could be converted into structured parking.

Union Street Extension/Signal Modifications

Union Street was identified as an underutilized part of the network, with no marked opportunity for pedestrians to cross Blackwell between Bergen and Salem. Concepts to improve Union that will also help alleviate congestion within the network, and better accommodate pedestrians were explored.

Figure E shows a conceptual scheme for extending Union Street south across Blackwell Street to connect with and serve as additional access to the station and parking areas. The alignment would weave 10-foot lanes through an existing parking area and connect with the eastern edge of the re-configured Dover Station parking lot. Adjacent businesses along the street would be afforded street frontage and impacts to buildings would be avoided. The intersection of Union Street and Blackwell Street could be a candidate location for a future traffic signal pending MUTCD minimum warrants. With the shift in traffic to Union Street, the traffic signal along Route 46 at Mercer Street should be re-located to Union Street.

The Union Street extension and signalization concept provides numerous benefits:

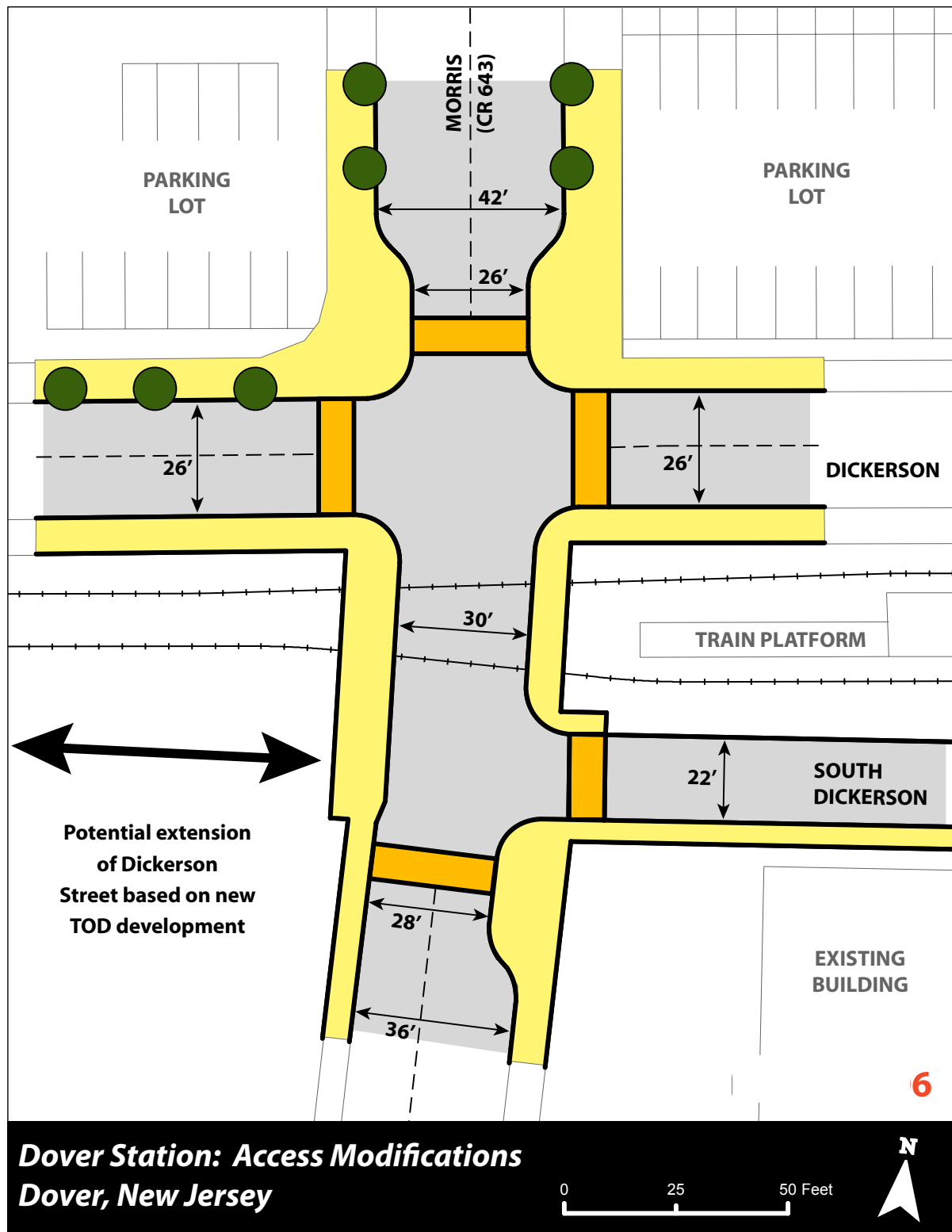
- The added connection improves regional access to the train station

area, especially from the east, by providing an alternative route into Dover Station.

- Providing an alternative route would reduce downtown congestion along Blackwell Street and on the southern portions of Morris, Essex, and Bergen Streets.
- The intersection would provide an additional needed pedestrian crossing of Blackwell Street, in the segment between Bergen and Salem Streets.
- The intersection of Union Street and Route 46 would operate better than the existing multi-phase signal at Mercer Street.
- The re-located signal could also improve utilization of Union Street as a north-south connection between Blackwell Street and Route 46, while simultaneously reducing traffic pressure on other north-south streets downtown.

Morris Street (CR643)/Dickerson Street Intersection

The existing intersection between Morris Street and Dickerson Street at the entrance to Dover Station is extremely poor for pedestrians and motorists alike. Although there are major pedestrian movements from the parking lots south of the tracks to Dover Station and the train platform, there are no crossing amenities provided across the tracks. Pedestrians



are often side-by-side with automobile traffic and are constantly in conflict with left-turning vehicles. Other issues in this area include poor lighting and inadequate sidewalks. The train crossing gate closures will cause traffic to back up along Morris Street in both directions.

Figure F depicts a conceptual plan to improve this intersection for both pedestrians and motorists. The concept would allow North Dickerson Street to intersect Morris Street as proposed in the TOD plan.

Bulb-outs along Morris Street will reduce pedestrian crossing widths, while textured crosswalks will help define the pedestrian space. New sidewalk should be constructed across the rail tracks and should have a defined edge sloping away from the tracks. A 30-foot width on Morris Street at the rail tracks will allow 15-foot travel lanes in each direction. Pedestrian-scale lighting and street trees should be implemented along both Morris Street and Dickerson Street to make a more attractive pedestrian environment, heighten the sense of security, and improve the overall aesthetics.

Blackwell Street Improvements

Blackwell Street is the commercial core of downtown Dover. Heavy pedestrian, bus and truck traffic, side street traffic congestion and jaywalking along Blackwell Street were identified as critical issues.

Blackwell Street's congestion is an indication of Dover's commercial vitality and will remain as long as the downtown area is thriving. Excessive congestion, however, often indicates an incomplete network and threatens a thriving

downtown. Physical improvement to the intersections and roadway are not recommended for this area because they would conflict with its downtown function. The following recommendations are intended to address these problems as well as provide for a more “complete” street that encourages pedestrian and bicycle use.

Traffic Signal Re-timing/Coordination

There are six signalized intersections in the eight mile segment between Prospect Street and Salem Street. The traffic signal system was updated in 1997 to include signal redesign, updated equipment, eight-phase, semi-actuated controllers; pedestrian signals and time-based coordination. The signals operate on a 60 second background cycle and will rest on green indication for Blackwell Street during off peak periods. The system does not currently operate to its capacity due to poor signal progression, pedestrian conflicts, high side street volumes and limited street capacity.

Signal progression needs to be re-established, since signal coordination is no longer present. The time-based settings within the controllers have migrated over the years, making the coordination haphazard and inconsistent. The controllers should be re-calibrated with the proper offsets, or

a mechanical connection interlinking the controllers should be installed. A variety of interconnection options are available including both telecommunication and hardwired forms.

The signalized intersections operate very inefficiently during the peak periods. Contributing factors include the lost cycle time inherent in a 60 second background cycle, and the conflict between the pedestrian and vehicle movements. With a 60 second cycle length, a higher proportion – 10 seconds or 17% – of the cycle interval is lost to clearance and all red phases. Increasing the cycle to 80 seconds will decrease lost time to about 12% and increase overall efficiency. Also, green time is effectively lost during the early part of the phase to heavy pedestrian crossing movements. This can amount to a lost time of one-third to one-half of the green time available to vehicle movements, particularly on the side streets where conflicts with pedestrians are the highest.

An “All Red Pedestrian” phase could be installed that stops all traffic movements and allows pedestrians to cross all legs of the intersection at the same time including diagonal movements. This eliminates vehicle-pedestrian conflicts and provides a safer intersection. The pedestrian phase would

be actuated through the use of pedestrian push buttons and would only come on when a pedestrian actuates the system. During the vehicular phases the capacity should be increased since turning vehicles will not have to yield to pedestrians using the intersection. An “All Red Pedestrian” phase shown in **Figure G** has pedestrians moving on their own phase across and diagonally along all approaches without vehicle conflicts. This technique has been used on the NJDOT state system in Salem City, New Brunswick and other locations.

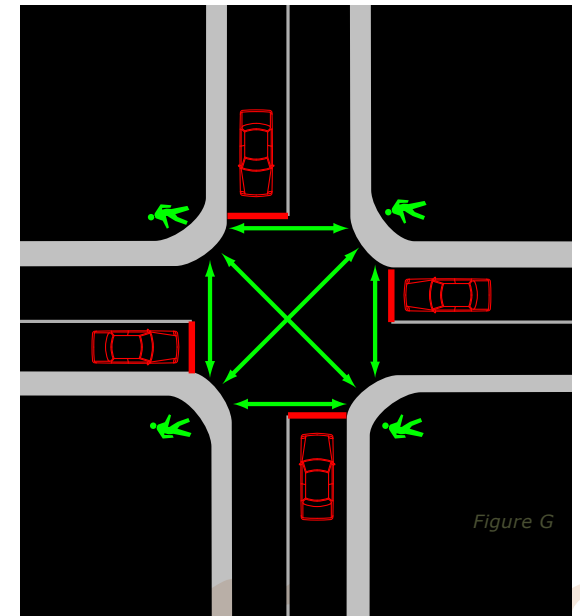


Figure G



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Blackwell Street - Parking Modifications
Dover, New Jersey



Candidate Parking Spaces for Removal



Figure H



Figure I

On-Street Parking Re-striping

There are four locations where parallel parking along Blackwell Street encroaches on intersections with detrimental effect on the intersection operation. Generally, a vehicle attempting to move straight through the intersection cannot pass a staged left-turning vehicle because the occupied parking space does not provide room for the through vehicle to pass. **Figure H** shows the four candidate locations identified for removal. Additionally, as the Town analyzes candidate locations for the removal or installation of Bus stops, additional spaces may be considered for removal.

Pedestrian Crossings in the Downtown

The Town should consider installing additional pedestrian amenities to further reduce the conflict between pedestrian and automobile. Although some of these recommendations are discussed in various portions of this element, such as the use of bulb-outs or curb extensions, re-stripping of parking spaces, bicycle lanes, and additional pedestrian crossing locations, all these elements work toward making a Town pedestrian and bicycle friendly.

Right-Turn-on-Red (RTOR) Prohibitions (Figure I)

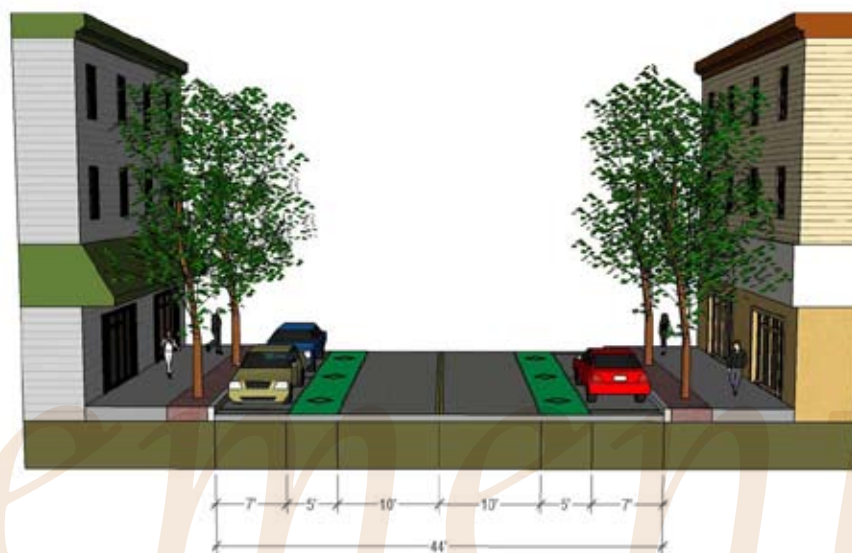
In a downtown environment, cars that are allowed to make a right-turn-on-red will conflict with pedestrians as cars move into

the pedestrian crosswalk to make their turn, even though pedestrians have the legal right-of-way. A RTOR prohibition can be used to protect pedestrians from this encroachment and encourage a safer, more pedestrian-friendly environment.

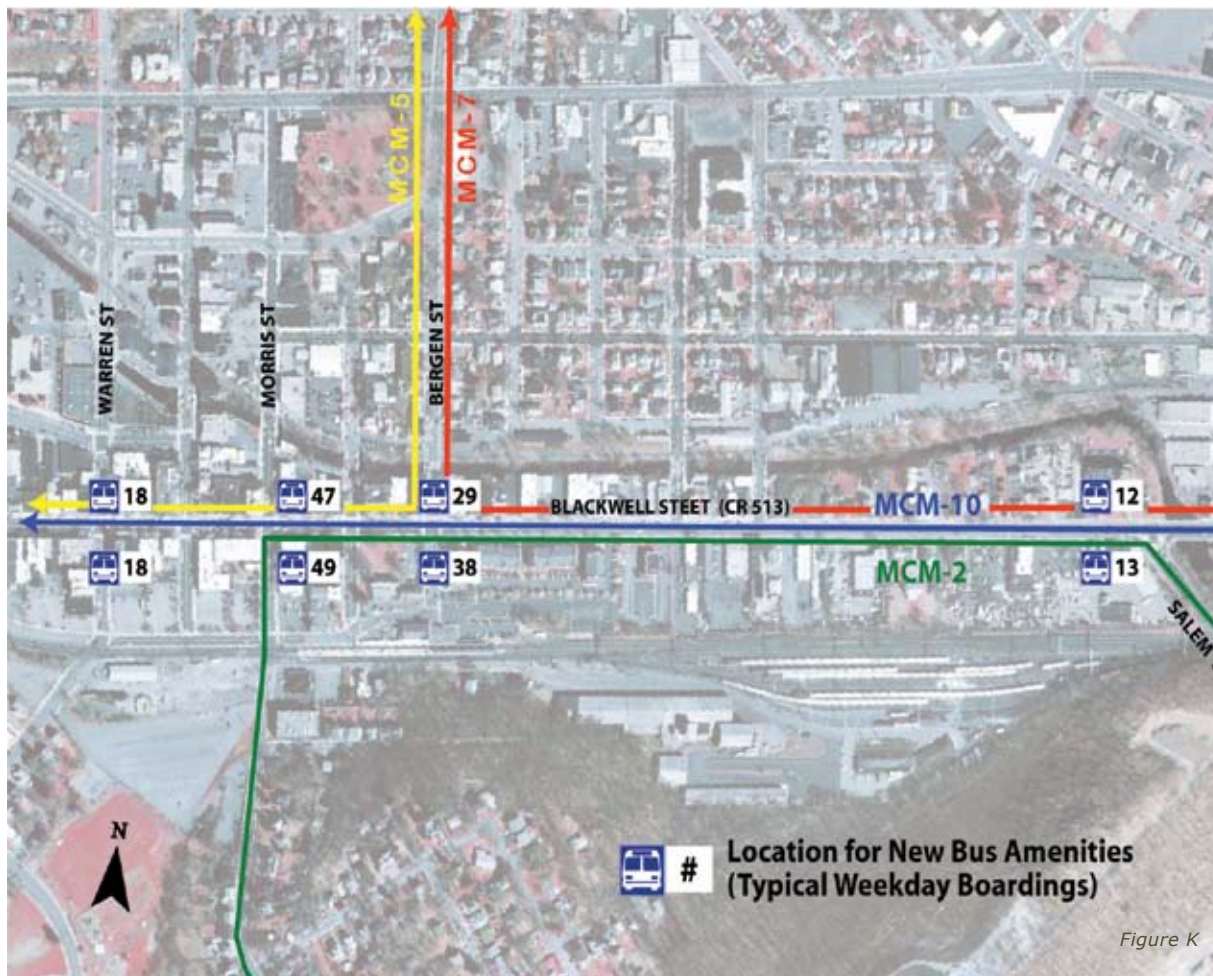
A RTOR prohibition within the downtown area is recommended for each of the main intersections along Blackwell Street, including Warren, Sussex, Morris, Essex, and Bergen. Because of the density of traffic and pedestrians on Blackwell Street that limit vehicle opportunity to RTOR, and the lane geometry limiting right turning vehicles to arrive at the stop line, few vehicles per cycle are able to make the RTOR maneuver. The prohibition of RTOR

Figure J

Blackwell Street - Proposed Section with Bike Lanes



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will not have a measurable effect on the performance of the signal system, and it will provide a safer pedestrian environment.

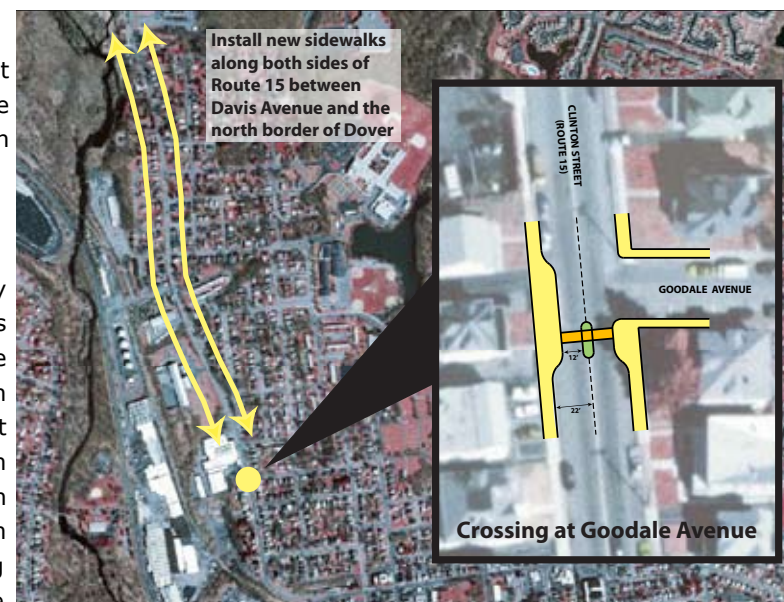
Bicycle Lane Compatibility

Blackwell Street is an element of the Morris County Master Plan Bicycle and Pedestrian Element, and should be made bicycle compatible. The existing Blackwell Street cross-section between Salem and Bergen has two 14-foot travel lanes and two 8-foot parking lanes for a total width of 44 feet. **Figure J** shows a bicycle compatible cross-section within the existing curb to curb cross-section with a seven-foot parking lane, a five-foot bicycle lane, and a ten-foot travel lane in each direction. This cross-section is being used in other cities and towns to accommodate bicycle lanes on a 44-foot wide urban street. Whether designated lanes or some other type of bicycle demarcation, it is clear that bicycle safety should be a consideration.

Bus Stops & Bus Stop Facilities

The Town may consider working with NJ Transit to review all bus stop locations in Dover. The goal of such an endeavor would be to ensure the most efficient placement of bus stops throughout the Downtown area. As depicted in Figure K, the proximity of stops in relation to traffic movement and potential

Figure L



transfers to the Dover Rail Station may be more practical in slightly different locations to better serve the needs of bus passengers as well as the movement of vehicles throughout the Downtown. As previously stated, NJ Transit will have to be consulted to achieve the best possible scenario.

To coordinate with the locational decisions, bus stop accommodations should be provided to bus patrons at locations where high embarking ridership and patron waiting occurs. Accommodations could include benches, shelters, and kiosks. Based on NJT ridership data, bus accommodations should be considered on both sides of Blackwell Street at Morris, Warren and Bergen Streets. **(Figure K)** A shelter could be considered in front of the Senior Apartment complex at Salem and Blackwell Streets. While the total movements are lower at this location than the downtown locations, there is ample room and enough ridership to warrant installation, especially considering that many of the riders are elderly.

Pedestrian Improvements

There are several areas throughout Dover where specific action can be taken to improve the pedestrian environment:

Route 15 Pedestrian Enhancements

The lack of sidewalk continuity on certain streets in Dover was identified as a critical issue during the problem identification process. This issue is most evident along Route 15 (Clinton Street) between the intersection with Route 46 and the northern border of Dover. Missing sidewalk was identified at the following locations during a site investigation:

- Southbound Route 15 between Richboynton Road and the Route 46 overpass
- The western side of the ramp connecting Route 46 to Route 15
- Both directions of Route 15, north of Baker Street to the Dover border

The first two locations will be addressed by future construction of the Route 15/Route 46 intersection under the "Route 46 – Sections 7L & 8K" project. However, the third location is inconvenient to pedestrians traveling along Route 15. Due to the urban nature of this

area and the close proximity of Dover High School, North Dover Elementary School, and several small businesses, this stretch of Route 15 should have sidewalks on both sides. Further study would be needed to investigate the feasibility and cost of constructing these sidewalks.

Crossing Route 15 can also be intimidating for pedestrians due to high vehicular speeds and the wide roadway. A marked pedestrian crossing of Route 15 exists at Goodale Avenue. Modification to the crossing of the type shown in Figure L is suggested to provide a median refuge

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area allowing the pedestrian to cross the highway one direction at a time. Median refuge areas reduce the time a pedestrian is in the street, and also provide a measure of traffic calming. Additionally, Grace Street would benefit from such a redesign as it is the street that leads directly to the High School and North Dover Elementary.

Route 46 and North Sussex Street Crosswalk

The lack of adequate pedestrian connections across Route 46 was also identified as a critical deficiency. One location where this is particularly evident is at Route 46 and Sussex Street. Pedestrians walking along Sussex Street are prohibited from crossing through the east side of the intersection, even though there is sidewalk leading up to the intersection in both directions. Furthermore, police data indicates that three pedestrian crashes have occurred in this location in recent years.

Although the "Route 46 – Sections 7L & 8K" project limits extend to this intersection, the proposed work calls for matching the existing condition. Instead, the pedestrian crossing prohibition should be removed and a clearly marked crosswalk should be installed to transfer right-of-way from turning vehicles to pedestrians.

Bassett Highway Pedestrian Crosswalk

Two of the three approaches to the Bassett Street and North Sussex Street intersection are marked for pedestrian crossing. The missing move is from the south side of Bassett Highway to the east side of North Sussex Street. A crosswalk is recommended in this high pedestrian traffic area. A single on-street parking space may be lost as a result of the crosswalk.

Other Initiatives

Traffic Calming Policy on Local Streets

A wide variety of measures are available to manage driver behavior in residential areas. The measures applicable to residential areas change the roadway geometry by raising, curving or narrowing the roadway. Speed humps are frequently used on residential street to reduce speeds. They are an inexpensive alternative,

Figure M

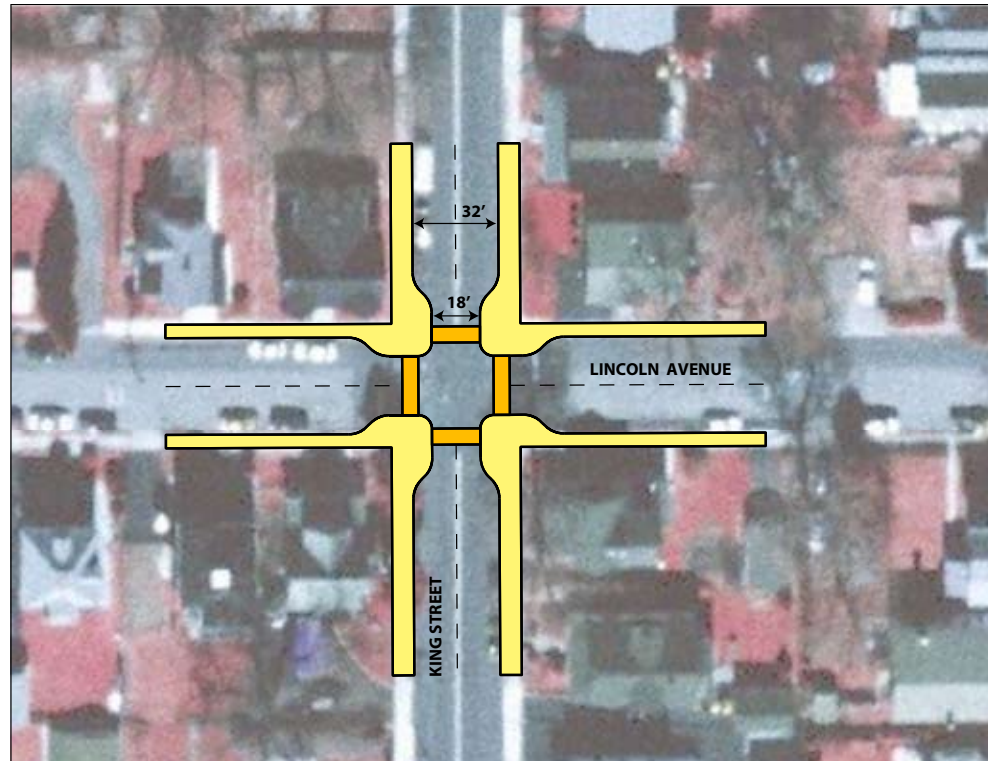




Figure N

Route 46/McFarland Street Improvements

The King, Nelson, Depew and East McFarland Streets intersection has six approach legs and operates under four signal phases. Three of the side streets operate under separate phases. The result is high delay and poor quality of service for the side street traffic. Student traffic crossing Route 46 is heavy arriving and departing the nearby East Dover Middle School. A crossing guard is deployed to usher the students across the highway. The numerous approaches, multi-phase operation and pedestrian demands limit the opportunity to make significant improvements in the intersection. A roundabout design was tested and found to operate well. Short term recommendations include adding a separate eastbound left turn lane on Route 46 (**Figure N**) and installing pedestrian signals and call buttons on all approaches with marked pedestrian crossings.

Pedestrian Education

Community based safety awareness program may help to reduce the pedestrian accident occurrence. The NJDOT, County and NJTPA are potential funding resources for studies as the "Safe Streets to Schools" program is a valued State of NJ resource. Because Dover is a walk to school district, pedestrian education is of vital importance. As such, the Town should work with the school system to

however they can create unwanted noise and may cause motorist to slow down more than necessary. Speed humps are not desirable on routes with high truck or bus traffic. Curb extensions or bulb-outs and raised intersection are also effective options. As general rule, a minimum of 70% approval from households and businesses in the target neighborhood is a good basis for implementing traffic calming measures. An effective traffic calming program would include a public process and a comprehensive study of problems, needs and alternatives.

King Street

Excessive speed along King Street was identified as a problem. Curb extension modification to the intersections of the type shown in **Figure M** is suggested for King Street.

elements

circulation

implement educational programs that target children of all ages. Such a program may also have use and impact on pedestrians that are not in the Dover School system. Given the high degree of pedestrian accidents in this community, education becomes critical to work in-concert with the hardscape improvements recommended in this plan.

Clinton Street Traffic Signal Assessment

Once the "Route 46 – Sections 7L & 8K" project has been completed, Route 15 and Clinton Street between Warren and North Bergen Streets will see a major reduction in traffic. Accordingly, the need for traffic signals along Route 15 at Sussex and Morris Streets should be reviewed and potentially replaced with stop control.

Dover High School Area Improvements

White Street is a two-way roadway connecting with the Dover High School driveway. All vehicles exiting the school use White Street. Highland Street is one-way westbound between Grace Street and White Street with no traffic control at the White Street intersection. A stop sign should be placed on the Highland Street approach.

The system of sidewalks is incomplete in the neighborhood surrounding the High School. It is certainly desirable to have sidewalks for students walking to and from schools, particularly in a no busing district. Many

areas of the neighborhood have limited ROW to devote to the construction of new sidewalks. Sidewalk impacts to residential property can be significant. A sidewalk improvement program should be developed which studies the need, cost and priority of individual street blocks for sidewalk construction. The township should apply for Safe Routes to School (SFTS) funding from the NJDOT to develop a comprehensive walk to school program. Initially it is recommended to add crosswalk markings to all intersections where connecting sidewalks meet. An example is a crossing across Hillside Avenue connecting sidewalk on the south side of Grace Street.



FIGURE	ACTIONS	TIMEFRAME	LEAD	SUPPORT	COST
	Dover Station Improvements				
	Dickerson Street Improvements (Drop-off Area, Reconfigured Parking)	M	Dover	NJTransit	\$\$\$
	Union Street Extension/Signal Modifications	M	Dover	County	\$\$\$
	Morris Street (CR643)/Dickerson Street Intersection	M	County	Dover	\$\$
	Blackwell Street Improvements				
	Traffic Signal Re-timing/Coordination	S	Dover		\$
	Countdown Pedestrian Signals	M	County		\$\$
	On-Street Parking Re-striping	S	Dover		\$
	Right-turn-on-red (RTOR) Prohibitions	S	Dover		\$
	Bicycle Lane Compatibility	M	County	Dover	\$
	Bus Stop Facilities	S	Dover	NJTransit/ County	\$
	Curb Extensions (Bulb-outs)	L	County	Dover	\$\$
	Pedestrian Improvements				
	Route 15 Pedestrian Enhancements	M	NJDOT	Dover	\$\$
	Route 46 and North Sussex Street Crosswalk	M	NJDOT	Dover	\$
	Warren Street Pedestrian Crossing & Firehouse sidewalk	S	Dover		\$
	Other Initiatives				
	Traffic Calming Policy on Local Streets	S	Dover		\$
	Route 46/McFarland Street Improvements	M	NJDOT	Dover	\$\$
	Pedestrian Education	S	Dover	County/ NJDOT	\$
	Neighborhood Crosswalk Marking	S	Dover		\$
	Clinton Street Traffic Signal Assessment	M	Dover		
	Dover High School Area Improvements	S	Dover	NJDOT	

Legend: Timeframe:
 S = Short-term
 M = Mid-term
 L = Long-term

Cost:
 \$ = least expensive
 \$\$ = mid-range expense
 \$\$\$ = most expensive

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