

2012



Randolph Township Walkable Community Workshop

Pedestrian Safety and Accessibility at the Intersection of Center Grove Road and Route 10



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Background

The North Jersey Transportation Planning Authority (NJTPA), the Metropolitan Planning Organization (MPO) for the 13 counties of northern and central New Jersey, conducts half-day Walkable Community and Senior Mobility Workshops (Workshop) with counties and municipalities to identify barriers to walking and make recommendations to improve pedestrian safety with stakeholder input and involvement. For each workshop, NJTPA staff coordinates with local representatives to include a broad range of stakeholders including local leaders, planners, engineers, and residents.

Each workshop consists of four parts: 1) an introduction of local stakeholders; 2) a presentation by an NJTPA facilitator on best practices in a walkable community; 3) a guided walking audit of a study area identified by the local hosts; and 4) small group sessions where recommendations for improvements are discussed and prioritized. The objective is to identify and prioritize recommendations that will increase pedestrian safety and accessibility. The workshop also serves as a catalyst for local communities and county representatives to implement the improvements and/or to further refine the recommendations for implementation by other agencies.

Initiated by the County of Morris and Randolph Township, a Walkable Community Workshop was held in Randolph Township on April 26, 2012, to assess pedestrian safety at the intersection of Center Grove Road and Route 10 (**Figure 1**). Center Grove Road is a county road also identified as County Route 670. Route 10 is a state roadway. This intersection accommodates high speed vehicular movement. Route 10 has a posted speed limit of 50 mph, while Center Grove Road's posted speed limit is 40 mph. Pedestrian safety is a major concern along high speed corridors such as Route 10 since there is a greater probability of pedestrian injury and fatality with higher vehicular speeds. In January 2010, a 17-year-old Randolph High School student was struck and killed at the intersection of Center Grove Road and Route 10 while walking home from her shift at the Randolph Diner. Two additional pedestrian injuries occurred at the intersection between 2006 and 2011. (Additional information on pedestrian crashes at this intersection can be found on page 17.)

In addition to addressing safety, the Workshop also incorporates the New Jersey Department of Transportation's Complete Streets Policy which seeks to accommodate roadways users of all ages and abilities, including bicyclists, pedestrians, and transit riders. Walkable communities are essential for ensuring the public's health, advancing multi-modal networks, fostering economic development, and improving air quality through a reduction in greenhouse gas emissions produced by vehicles. Within a half mile of the intersection of Center Grove Road and Route 10 there are several apartment complexes, many single-family homes, medical facilities, numerous retail establishments and offices, a "super" A&P grocery store, and the County College of Morris, all of which generate significant motor vehicle traffic. In addition, a gas station, bank, and diner are located at the intersection's corners as shown in **Figure 2**.

The Workshop benefitted from the collaboration of participants from a number of government and non-profit agencies including the New Jersey Department of Transportation, TransOptions (Transportation Management Association), Morris County Division of Transportation, Rutgers Center for Advanced Infrastructure and Transportation (CAIT), County College of Morris, Randolph Township, and local law enforcement. Participants walked all four legs of the Center Grove Road and Route 10 intersection, as shown in **Figure 1**, to assess pedestrian safety, and the ease of crossing, convenience, and accessibility.

Figure 1: Randolph Township and Local Roadway Network

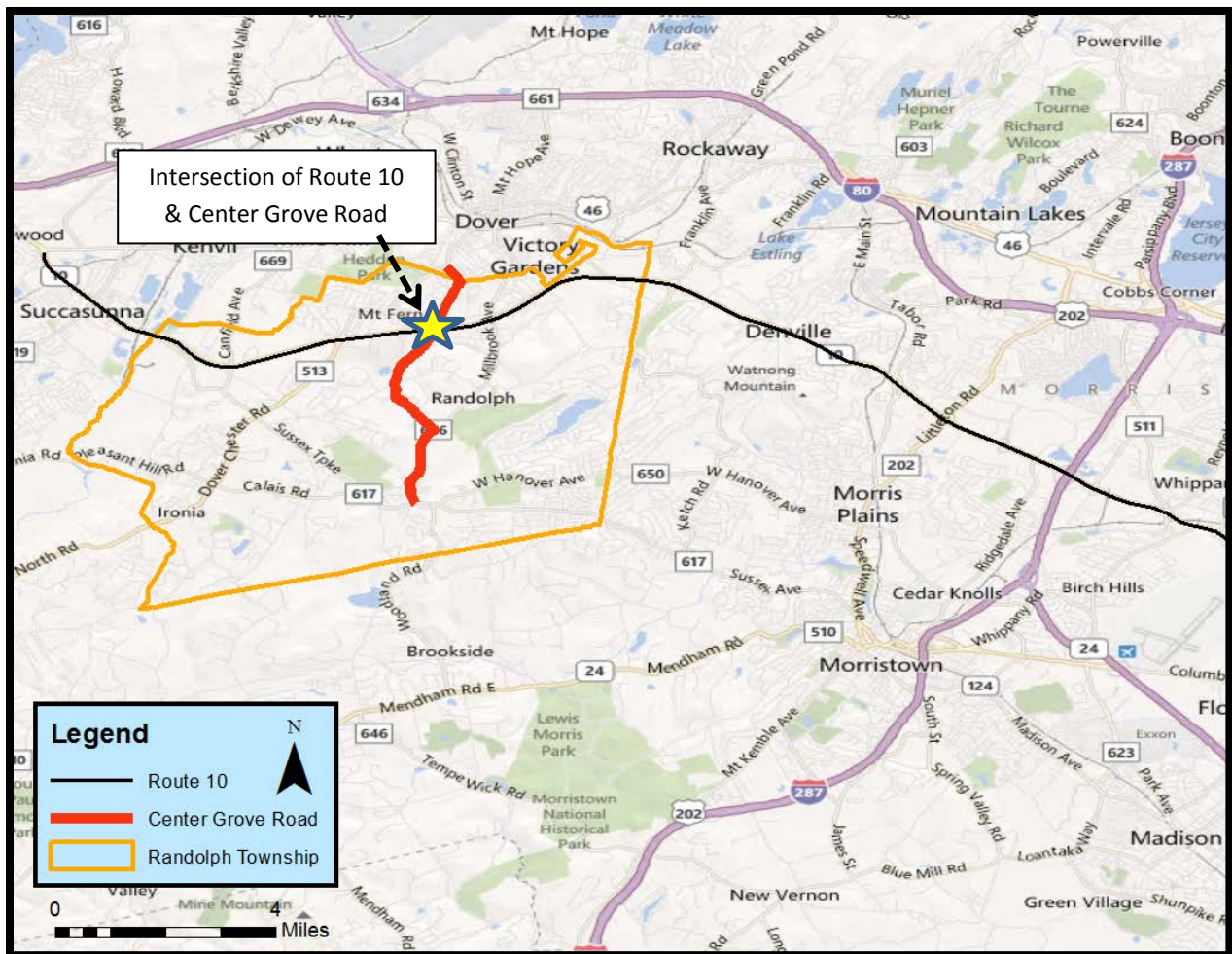
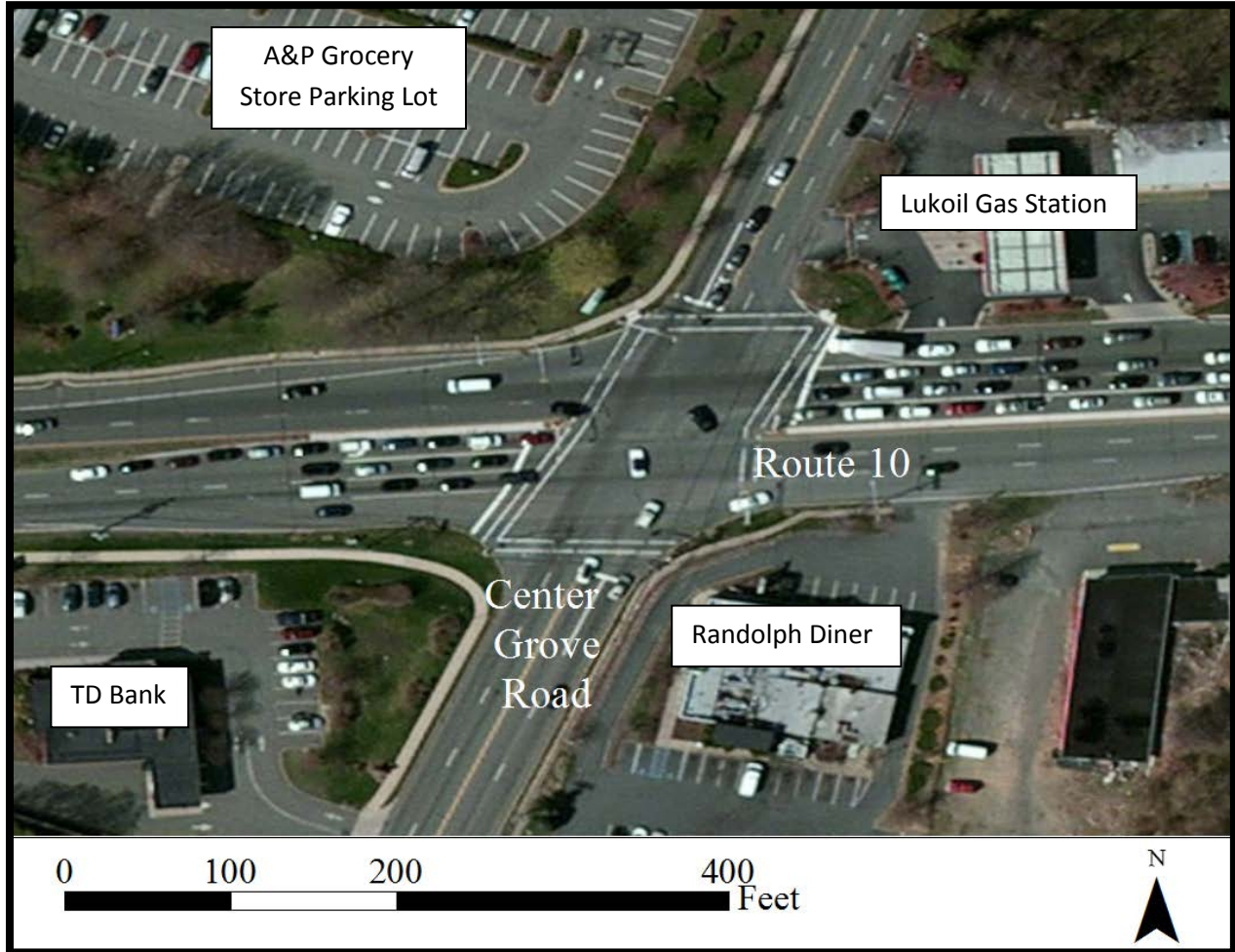


Figure 2: Aerial View of the Intersection of Center Grove Road and Route 10



Workshop Methodology

The Workshop kicked off with participant introductions and a short presentation at the County College of Morris. NJTPA staff facilitated a discussion of workshop goals, the benefits of improving walkability, and traffic calming techniques that could be used to address pedestrian safety at the Center Grove Road and Route 10 intersection. Improvements such as Lead Pedestrian Intervals (LPI), pedestrian countdown signals, curb ramps, crosswalks, pedestrian refuge islands, medians, and traffic calming signage were discussed along with compliance with the Americans with Disabilities Act (ADA). The discussion also included the public health rationale for increasing physical activity and the relationship between walkability and improved quality-of-life. The Workshop agenda and list of participants can be found on pages 15-16.

Following the presentation, attendees conducted a walking audit of the intersection (**Figure 2**) to identify impediments to pedestrian safety. Particular attention was paid to the ease at which pedestrians were able to cross the intersection, the availability of

sidewalks, driver behavior, ADA compliance (with a sensitivity to strollers and wheelchairs), and connectivity to neighboring land uses.

The Workshop participants then returned to County College of Morris for the final segment of the program which was devoted to discussing what they had learned about the intersection during the walking audit. The participants gathered around street maps of the study area to pinpoint the location of specific walkability problems and offer possible solutions including the installation of traffic calming features. Recommendations were discussed and priorities identified as noted in the **Findings and Recommendations of Workshop Participants** found on Page 8.

Current Conditions at the Intersection of Center Grove Road and Route 10

East Leg of the Intersection:



(facing south)



(facing north)



(facing north)

North Leg of the Intersection:

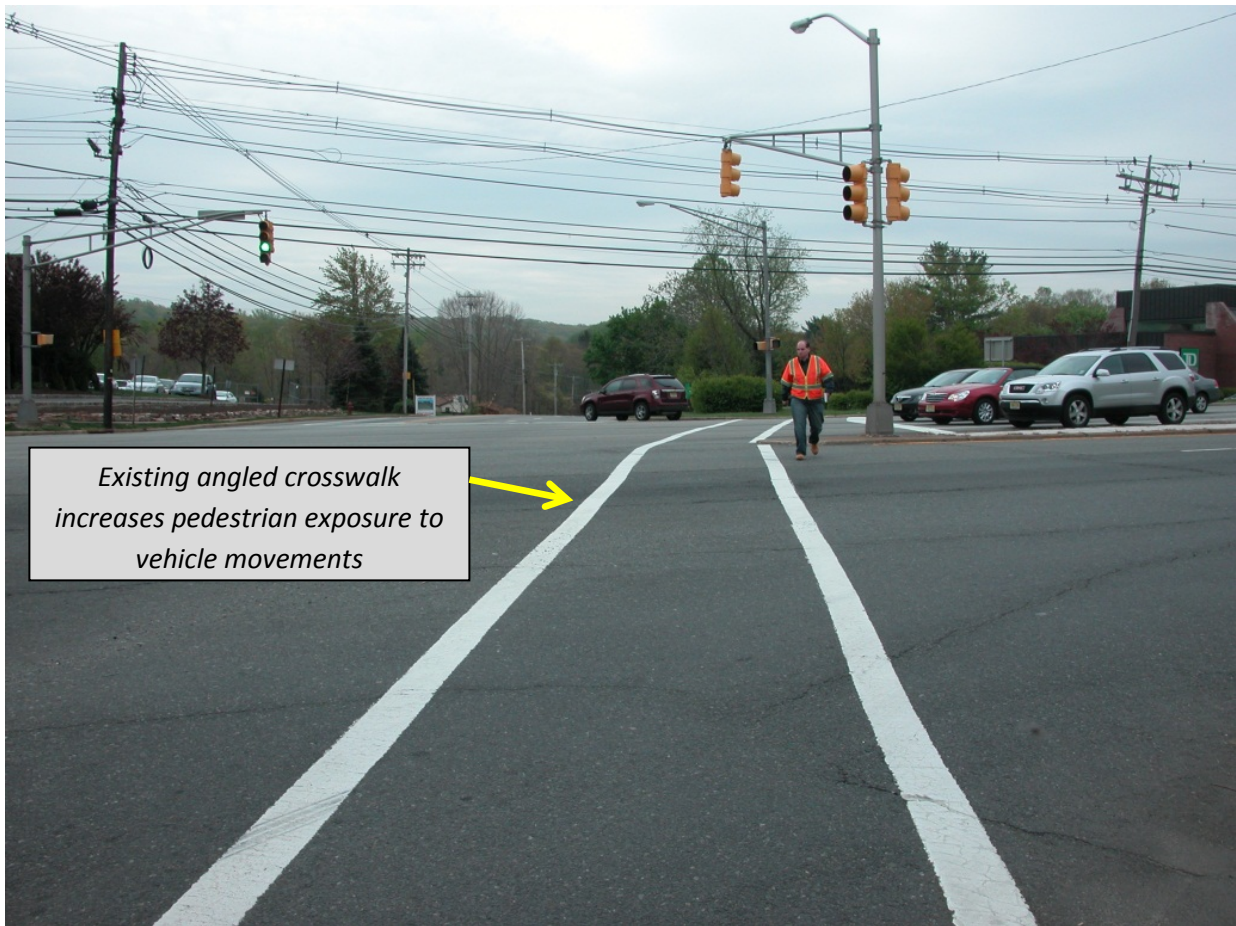


(northeast corner)

(facing east)

(facing west)

West Leg of the Intersection:



(facing south)

Workshop Findings and Recommendations

Identifying barriers to pedestrian safety and making recommendations to address them is the primary goal of a Walkable Community Workshop. Additionally, participants are encouraged to suggest improvements that will address aesthetics and sidewalk conditions, which are an important determinant in the decision of whether or not to walk in a given area. Roadway design that accommodates pedestrians (including those with limited mobility) and, in particular, provides direct access over a short distance, encourages more trips by foot. During the Randolph Township Workshop walking audit of the Route 10 intersection, participants paid particular attention to the following:

- The condition and/or lack of sidewalks, curb ramps, signals, and crosswalks
- Whether enough time is provided for pedestrians to cross safely
- The ease of controlling and understanding the pedestrian signal heads
- The length of the crosswalk and whether a pedestrian refuge island is needed and feasible
- Curb radii and the speed of vehicular turning movements
- Motorist behavior and turning movements while a pedestrian was crossing

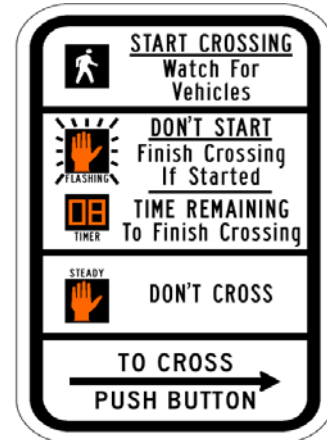
The Workshop participants identified the following recommendations to address pedestrian safety, access and convenience at the intersection of Center Grove Road and Route 10. Cost estimates are provided for the recommendations as well. Please note that estimated cost is based on cost proposals generated from other transportation safety studies and programs within the NJTPA region.

Pedestrian Signal Recommendations

- **Install pedestrian countdown signal heads** with fixed signals, LED push button assemblies, and R10-3e plaques with supplemental information (in English and Spanish) that direct the pedestrian, via an arrow, to the push button that controls the crosswalk they are attempting to use. The countdown signal heads let pedestrians know how much time they have to cross and provide a visual cue to drivers making turning movements to stop (as mandated by law) for pedestrians in the crosswalk.



Estimated material cost for retrofitting existing pedestrian head or providing new pedestrian head, respectively: \$900 per signal head



Sign image from the Manual of Traffic Signs <<http://www.traffic-sign.us/>>
This sign image copyright Richard C. Moeur. All rights reserved.

- **Install a stop for pedestrian signal** that alerts right-turning motorists when a pedestrian is in the crosswalk. The signal is activated when the pedestrian triggers the pedestrian push button. This technology could be particularly helpful at this intersection since there are sight-distance issues and motorists turning movements are conducted at relatively high speeds due to the posted 50 mph speed limit and wide curb radii. *Estimated material cost for pedestrian signage that lights up: \$1,500*
- **Provide adequate time for pedestrians to cross** the roadway. Participants observed that enough time was provided to cross Route 10 at a brisk pace. Consider providing more time for pedestrian crossings by seniors, youth, and those in a wheelchair or with stroller. The Manual on Uniform Traffic Control Devices (MUTCD) recommends one second of pedestrian crossing time per 3.5 feet of crosswalk length. *Estimated cost is a few hours of NJDOT staff time to adjust signal timing*
- **Provide a Lead Pedestrian Interval (LPI)** which gives pedestrians a 3-5 second “head start” into the crosswalk and allows for better eye contact between pedestrians and motorists. For example, a pedestrian trying to cross Route 10 is given the “WALK” signal 3-5 seconds before the left-turning driver from Center Grove Road is given the green light to make his/her turning movement towards the pedestrian in the crosswalk. It also provides the most vulnerable pedestrians time to ascend and descend the curb before vehicles may begin turning movements, which occur frequently at this intersection. Research has shown a 58.7% reduction in pedestrian crashes at intersections with a LPI.¹ *Estimated cost is a few hours of NJDOT staff time to adjust signal timing*

¹ Fayish, Aaron, and Frank Gross. "Safety Effectiveness of Leading Pedestrian Intervals Evaluated by a Before-After Study with Comparison Groups." *Transportation Research Board of the National Academies* (2010): Web. <<http://trid.trb.org/view.aspx?id=1094800>>.

In-roadway Recommendations

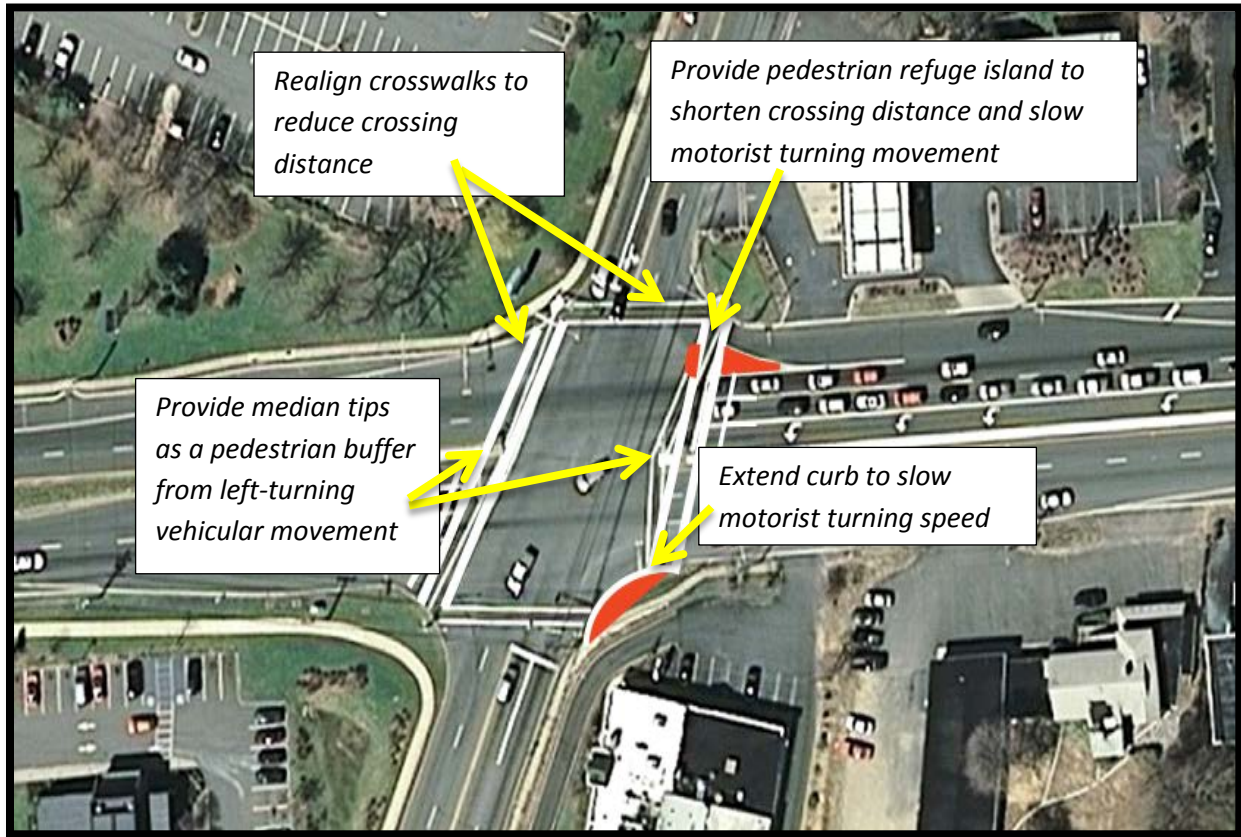
- **Install Ladder reflective crosswalk striping** to “show” pedestrians and motorists the desired crossing path at each leg of the intersection. Reflective striping is recommended to enhance visibility at night. *Estimated material cost per crosswalk leg: \$600*
- **Install a pedestrian refuge island** (example shown below) along the east side of the westbound leg of Route 10. This reduces pedestrian exposure to vehicle conflicts and encourages motorists to reduce their speed as they prepare to make a right-turn onto Center Grove Road as shown in **Figure 3** (below). *Estimated material cost of pedestrian refuge island: \$5,000-\$20,000 depending on design, site condition, and type (asphalt versus landscaped)*



- **Extend median tips** to protect pedestrian in the crosswalk and provide a greater sense of “safety” when motorists are making turning movements as shown in **Figure 3** (below).
- **Reconfigure the pedestrian crosswalks** to shorten crossing distance as shown in **Figure 3** (below). *Estimated material cost per crosswalk leg: \$600*
- **Extend the curb and reduce vehicle turning radii** so that motorists are encouraged to reduce the speed of their turning movements as shown in **Figure 3** (below). Extending the intersection curb can help decrease the number of pedestrian crashes by reducing the speed of turning vehicles and allow pedestrians to see and be seen. It also shortens the crosswalk so pedestrians spend less time in the street and minimizes their risk exposure. Typically, in new construction the turning radius is approximately 15 feet for a passenger vehicle where the street has sufficient space to retain the curb lane. For arterial streets, the turning radius increases to 30 feet to accommodate truck volume which require a wider turning radius than cars.² *Estimated material cost per corner: \$2,000-\$20,000 depending on design and site conditions*

² According to 2010 AASHTO, Section 7: Minimum Designs for Truck and Bus Turns, Urban Intersections

Figure 3: Reconfiguration of the Intersection of Center Grove Road and Route 10



American with Disabilities Act Compliance Recommendations:

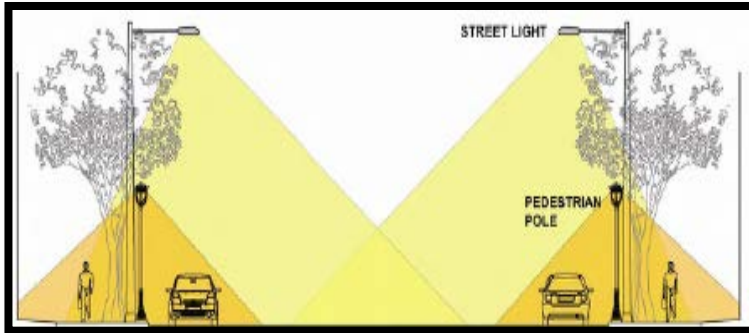
- **Install ADA compliant curb ramps** with detectable warning surfaces and a slope of less than 2%. This allows a pedestrian pushing a stroller, toting luggage, or traveling via wheelchair to more easily maneuver into and out of the intersection. *Estimated material cost per curb ramp: \$800-\$1,500*



- **Provide sidewalks** in close proximity to the intersection with a connection to surrounding land uses. There is currently no sidewalk connectivity east of the intersection on both sides of Route 10. The Federal Highway Administration recommends sidewalks that are at least 5-feet wide and not obstructed by trees or sign posts. If there is sufficient space, provide a buffer (i.e., landscaping, trees) between pedestrians and motorists. *Estimated material cost for walkway: \$72/square yard*

Lighting Recommendation:

- **Install pedestrian-scale lighting** at the intersection. Lighting improves pedestrian visibility for motorists during the early morning and evenings particularly in the winter months. In addition to safety, lighting enhances security. Lighting is recommended at 9-12 feet in height for pedestrians.



- **Assess existing street lighting.** The intersection currently has cobra-style lighting at all four corners of the intersection and an additional two in the middle of Route 10 on both the east and west sides. This report recommends assessing the lighting condition of the crosswalks in dark conditions. All three of the pedestrian crashes reported were between 5PM and 9AM during “dark” conditions.³

Signage Recommendation:

- Provide signage that alerts motorists of pedestrian crossing activity as noted. *Estimated material cost for signage: \$200-\$300 each*



³ See Page 17

Next Steps

In addition to physical design improvements (engineering), it is recommended to identify opportunities to address pedestrian safety through enforcement and education. Leveraging the three “E’s” (engineering, education, and enforcement) is essential for making gains in traffic safety. While physical improvements will enhance the comfort, safety, convenience, and accessibility for all roadway users, coupling the design recommendations outlined in this report with enforcement and education ensures a more successful walking environment, since motorist and pedestrian behaviors directly impact a community’s walkability.

Safety education programs focusing on both pedestrians and motorists are a priority in New Jersey particularly since the state has been designated a “Pedestrian Safety Focus State” by the Federal Highway Administration (FHWA) due to its high number of pedestrian injuries and fatalities. Various government and private-sector organizations are taking an active role in addressing pedestrian safety at the community level, while the New Jersey Division of Highway Traffic Safety (NJDOTS) provides enforcement grants and educational materials focusing on aggressive driving and jaywalking. Information on NJDOTS’ grant opportunities and resources such as the “Walk Safely New Jersey” palm card can be found at <http://www.nj.gov/oag/hts/index.html> and page 17 of this report. A PDF of the “Shared Responsibility” poster can be found on page 19. Also, Hunterdon County’s Transportation Management Association, HART, provides free pedestrian safety materials that can be displayed at store-front entrances outside their service area. A link to request the “Free Window Cling” can be found at: <http://www.harttma.com/FREWindowCling.aspx>.

The NJTPA website also provides links to a number of resources offering both a national and local perspective on traffic safety, including pedestrian safety. Information may be found at <http://www.njtpa.org/Plan/Element/Safety/default.aspx>. Additional information on pedestrian safety, including effective countermeasures, can also be found on the FHWA website at http://safety.fhwa.dot.gov/ped_bike/. Randolph Township is encouraged to leverage these and other resources to implement pedestrian safety education and enforcement initiatives targeted at residents, employees, and others who drive into and through the community.

Conclusion

The intersection of Center Grove Road and Route 10 in Randolph Township generates significant motorist and pedestrian traffic due to its close proximity to shopping, residences, banks, restaurants, and other services. The intersection experiences significant turning movements exacerbated by its location adjacent to the County College of Morris, which serves more than 8,500 undergraduates who commute to the campus.

Local, county, and state stakeholders, concerned about the safety of pedestrians who travel in and around the intersection, participated in a Walkable Community Workshop facilitated by the NJTPA. Through their efforts, a number of recommendations to improve the safety, comfort, convenience, and accessibility of pedestrians crossing at the intersection of Center

Grove Road and Route 10 were identified. Workshop participants assessed the condition of crosswalks and pedestrian signals during the walking audit, as well as noted the lack of sidewalks and curb ramps at the four legs of the intersection. They also examined the ease at which pedestrians crossed the intersection and were able to use the pedestrian signal push buttons, and noted motorist behavior towards pedestrians in the crosswalk, especially during motorist turning movements.

As a result of the walking audit, a number of recommendations were identified to shorten the pedestrian crossing distance and alert motorists to stop for pedestrians in the crosswalk. Several of the recommendations are aimed at reducing the speed of vehicular turning movements so that pedestrian safety is enhanced. The recommendations also include the construction of a pedestrian refuge island, changing the existing pedestrian signal heads to include a countdown mechanism, extending median tips on Route 10, replacing and realigning current crosswalks with “ladder” reflective crosswalk striping, adjusting signal timing, installing ADA compliant curb ramps, and decreasing curb radii. Adding sidewalks to connect the intersection with destination land uses, providing pedestrian scale lighting, and coupling these physical improvements with educational and enforcement elements were also suggested.

The recommendations outlined in this Walkable Community Workshop report seek to improve the walking environment at the intersection of Center Grove Road and Route 10, while supporting the New Jersey Department of Transportation’s Complete Streets Policy. The report is a valuable tool that the public, law enforcement, community officials, and citizens are encouraged to use to improve the safety and mobility of all who traverse this intersection as well as other intersections within Randolph Township.

**Randolph Township,
Route 10 & Center Grove Street Intersection**

Walkable Community Workshop Agenda

**County College of Morris library, Room LRC 115
10AM-12:30PM
April 26th, 2012**

Welcome.....10:00

Walkable Community and Complete Streets Presentation.....10:15

- Complete Streets Policy
- Walking Environment

Walking Audit of Route 10 & Center Grove St.....10:40

- In field assessment

Design Solutions (Breakout Session).....11:30

- Small team working groups
- Presentation of recommendations
- Priorities and action plan
- Next steps, questions, and wrap-up

Adjourn.....12:30



Workshop Participants

Name	Title	Organization
Jim Loveys	Councilman	Randolph Township Council
Tom MacArthur	Councilman	Randolph Township Council
Joanne Veech	Councilwoman	Randolph Township Council
John Lovell	Township Manager	Randolph Township
Carl LeMarble	Sergeant	Randolph Township Law Enforcement
Jim Maraska	Committee Member	Randolph Township Traffic Advisory Committee
Robert Mason	Chief	Randolph Township Law Enforcement
John Hayes	Principal Planner	Morris County Division of Transportation
Kathy Avola	Business Services Coordinator	County College of Morris
Don Watt	Vice President	TransOptions Transportation Management Association
Angela Quevedo	Traffic Engineer	NJ Department of Transportation, Traffic Safety Operations
Baher Girgis	Principal Engineer	NJ Department of Transportation
Andy Kaplan	Senior Transportation Safety Engineer	Rutgers Transportation Safety Resource Center
Elizabeth Thompson	Principal Planner	North Jersey Transportation Planning Authority

Pedestrian Crashes at the Intersection of Route 10 and Center Grove Street

Crash Date	Crash Day of Week	Crash Time	Light Condition	Location Direction	Ped. Injured	Ped. Killed	Motorist Turning Movement	Pedestrian Gender
11/6/2006	Monday	5:23 PM	Dark (Street Lights On/continuous)	NULL	1	0	Left Turn	Male
1/5/2010	Tuesday	8:42 PM	Dark (Street Lights On/continuous)	West	0	1	Straight	Female
10/5/2010	Tuesday	7:50 PM	Dark (Street Lights On/continuous)	West	1	0	Left Turn	Male

Walk Safely

New Jersey

- Always Cross at Corners
- Look Both Ways Before Crossing the Street
- Always Walk Facing Traffic

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moving toward zero fatalities
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Walk Safely New Jersey

Facts:

Walking is a great activity and a great way to stay fit. However, it can also be dangerous.

More than a hundred pedestrians are killed in New Jersey each year and thousands more are injured.

Tips:

-  Wear bright-colored clothing, especially at night. If necessary, attach a piece of reflective material to your clothing or handbag.
-  Walk on sidewalks or paths and always cross at the corner, within marked crosswalks.
-  Do not try to cross mid-block or between parked cars.
-  Look left, right and left again before crossing and be on the lookout for turning vehicles.
-  Continue to look for vehicles while crossing.
-  Make eye contact with the driver before crossing in front of a vehicle.
-  Learn the proper use of "Walk/Don't Walk" signals and obey them.
-  Use the buddy system. Walk and cross with others when possible.
-  If at all possible, do not walk at night or during bad weather such as rain, snow or ice.



DIVISION OF HIGHWAY TRAFFIC SAFETY

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MP042011

THIS IS A WARNING

YOU HAVE JUST FAILED TO STOP FOR A PEDESTRIAN IN A MARKED CROSSWALK

The law is clear (see reverse side).

Motorists in New Jersey **MUST** stop for pedestrians in a marked crosswalk. Failure to observe the law may subject you to one or more of the following:

- **2 POINTS**
- **\$200 FINE**
(plus court costs)
- **15 DAYS COMMUNITY SERVICE**
- **INSURANCE SURCHARGES**

SHARED RESPONSIBILITY

YOU HAVE JUST FAILED TO USE DUE CARE AS A PEDESTRIAN

The law is clear, pedestrians must obey pedestrian signals and use crosswalks at signalized intersections. Both carry a \$54.00 fine for failure to observe the law. (C.39:4-32 and 33)

This initiative is provided as an educational tool to foster public awareness about pedestrian safety and ultimately reduce injuries and deaths.

SAFE PASSAGE

moving toward zero fatalities

WWW.NJSAFEROADS.COM

New Jersey Statute 39:4-36 Driver to stop for pedestrian: exceptions, violations, penalties.

A. The driver of a vehicle must stop and stay stopped for a pedestrian crossing the roadway within any marked crosswalk, but shall yield the right-of-way to a pedestrian crossing the roadway within an unmarked crosswalk at an intersection, except at crosswalks when the movement of traffic is being regulated by police officers or traffic control signals, or where otherwise prohibited by municipal, county, or State regulation, and except where a pedestrian tunnel or overhead pedestrian crossing has been provided, but no pedestrian shall suddenly leave a curb or other place of safety and walk or run into the path of a vehicle which is so close that it is impossible for the driver to stop or yield. Nothing contained herein shall relieve a pedestrian from using due care for his safety.

Whenever any vehicle is stopped to permit a pedestrian to cross the roadway, the driver of any other vehicle approaching from the rear shall not overtake and pass such stopped vehicle.

Every pedestrian upon a roadway at any point other than within a marked crosswalk or within an unmarked crosswalk at an intersection shall yield the right-of-way to all vehicles upon the roadway.

B. A person violating this section shall, upon conviction thereof, pay a fine to be imposed by the court in the amount of \$200. The court may also impose a term of community service not to exceed 15 days.

C. Of each fine imposed and collected pursuant to subsection B. of the section, \$100 shall be forwarded to the State Treasurer who shall annually deposit the moneys into the "Pedestrian Safety Enforcement and Education Fund" created by section 1 of PL 2005, c 84 (C.39:4-36.2)

MF10010

**Pedestrian
safety is a....**

SHARED

RESPONSIBILITY

Traveling on Foot

**Use crosswalks,
obey all signs
and signals!**

Traveling by Car

**Stop for pedestrians
in the crosswalk!**

IT'S THE LAW.