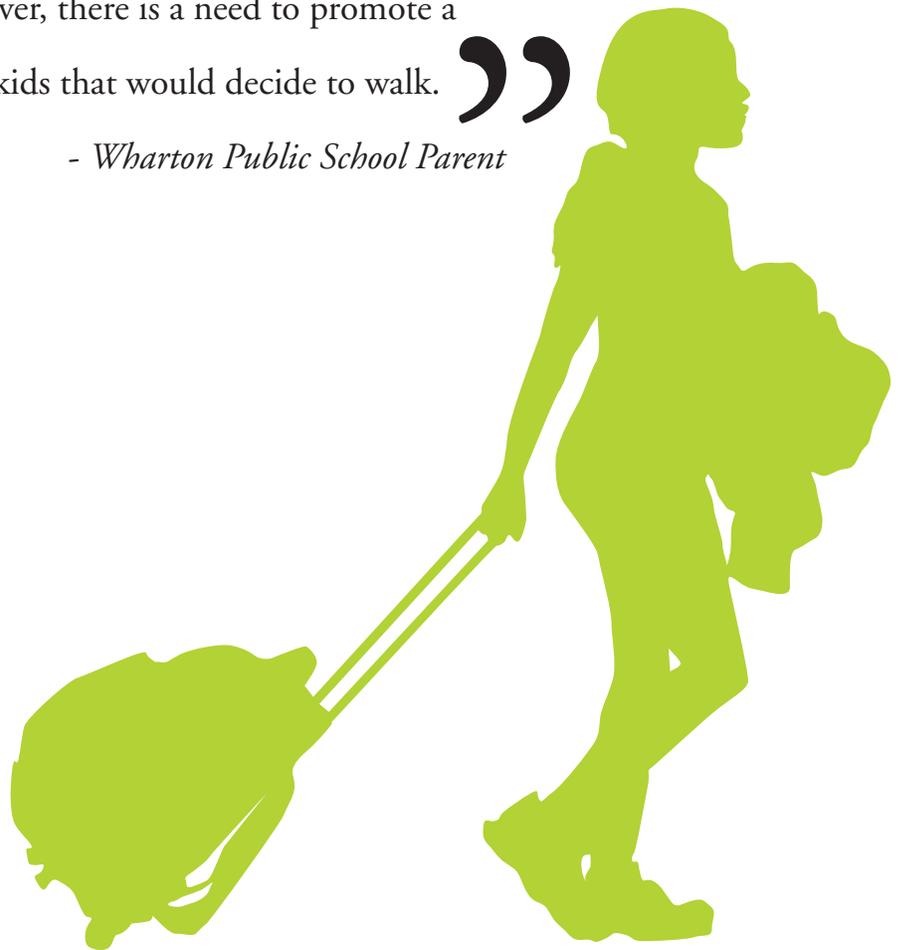


Appendices

Appendix I - Appendix IX

“ It is a great idea to promote walking and/or biking to and from school especially for children who live in a very close proximity. A few minutes out in the fresh air before and after all day in school, and a little exercise could become a good health habit. However, there is a need to promote a safe environment for the kids that would decide to walk. ”

- Wharton Public School Parent





APPENDIX I: EXISTING CONDITIONS ANALYSIS

Analyses

Speed Analysis

A speed analysis was conducted within the school routes. Several areas showed that 25 percent or more vehicles exceed the speed limit daily. East Stirling Street and Wabash Avenue are thoroughfares used by locals traveling within a high residential area.

East Central Avenue, which showed 25 percent or more vehicles exceeding the speed limit, as well as 10 percent or more exceeding the speed limit by 20 mph or more is a newly paved, widened street between Main Street and Route 46 in Dover. The schools are located on East Central Avenue, halfway between Main Street and Princeton Avenue, which ends at a traffic light on Route 46. East Central Avenue is used as a shortcut to Route 46 since access to Route 46 via South Main Street is often congested.

Washington Street and Fern Avenue are also used as a shortcut from the north side of town, where the main shopping areas are toward a highly residential area, as well as toward Route 46. Fern Avenue and Washington Street are two-lane residential streets, but heavily traveled.

North Main Street is a direct route from Route 46 in Dover to Route 80 E/W, Route 15 N/S, Picatinny Arsenal, Rockaway Mall, and the busy intersection of ShopRite/Costco/Busy Lady Plaza. This heavily traveled area, shown to have speeding, is an open area of Main Street where it is easy to pick up speed either leading into or out of the main downtown area. **(See Figure 3)**

Accident Summary

Accident reports for the Borough of Wharton for the three years between 2003-2006 were reviewed and summarized according to area and time. Specific times listed were between 7:00 a.m. and 8:30 a.m. and between 3:00 p.m. and 4:00 p.m. These times are relative to school hours and children walking to school, since busing is not available within the Borough.

A total of 76 accidents occurred during the 7:00 a.m. and 8:30 a.m. time frame. There were 81 accidents during the 3:00 p.m. and 4:00 p.m. time frame, three of which involved pedestrians.

A pedestrian accident took place at South/North Main Street and East/West Central Avenue, which also had eight other accidents during the specified times. The Main/Central intersection is an extremely busy intersection in the center of downtown with no traffic light. Businesses are located at each corner, the schools are located on East Central Avenue, and the Municipal/Police/Fire Headquarters are located on West Central Avenue.



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The other pedestrian accidents occurred at East Dewey Avenue/Huff Street and Burns/Pine Street. East Dewey Avenue is a major street between North Main and Route 15. It is the access road to the shopping center area, which includes Shop Rite, Costco and the Busy Lady Plaza.

East Dewey Avenue is an extremely congested street at most times of the day. The highest number of accidents during that time (38) in the Borough occurred at the East Dewey Avenue and Route 15N/S intersection. A merging lane from East



Dewey Avenue onto Route 15 is a source of accidents. At the East/West Dewey Avenue and North Main Street intersection, there were 6 accidents during the time frame. Again showing that Dewey Avenue in either direction is an area of high accident rates.

Another accident-prone area is North Main and Harry Shupe Blvd/Washington Street. There were 13 accidents at Harry Shupe Blvd and nine at Washington Street during the times studied. This area is extremely dangerous and is a walking route to the schools. Truck traffic into these industrial centers at these intersections is high. Harry Shupe Blvd and Washington Street are within one block of each other. Washington Street is between North Main and Fern Avenue. Fern Avenue is a direct street to the schools ending at the schools property on East Central Avenue. Four accidents occurred on Fern Avenue during the specified times at different cross streets.

The South Main Street area experienced accidents but at a lower rate than the North Main Street area. Accidents at the intersections of South Main Street and Route 46/St. Marys Street/Hance Street/ Orange Street were the highest areas for accidents.

In summary, North & South Main Street connects Route 46 and Route 15 and is highly traveled. Main Street is an access route to Picatinny Arsenal (military base with large civilian work force), Rockaway Mall (off Route 15), industrial complexes, and shopping centers (Shop Rite, Costco, etc.). Intersections and cross streets are busy and many streets experience high traffic and truck volume. (See Figure 4 and Figure 5)

Truck Traffic Analysis

An analysis of truck traffic was conducted in certain school route areas. West Central Avenue near Main Street was shown to have 10 to 20 percent truck traffic. The Borough Garage, which houses all garbage trucks and heavy equipment, uses West Central Avenue to access Main Street and therefore most areas of the Borough. West Central ends at West Dewey Avenue, where the County Garage is located. Truck traffic from both the Borough and county garage use West Central Avenue extensively. With access from Route 46 in the Roxbury area, West Dewey is a direct route to Wharton with West Central being the shortest route to Main Street. The police, ambulance and fire headquarters are located in the designated areas, again producing truck traffic.



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Truck traffic in excess of 20 percent or more was detected on East Central Avenue. East Central Avenue is a newly paved, widened street with direct access between Route 46 and Main Street. From a section of Route 46 where traffic is congested, there is a cutoff onto Princeton Avenue, which leads directly to East Central. Trucks use this shortcut to access North Main Street, thereby avoiding backups on Route 46. With North Main Street a direct route to Route 80 E/W, Route 15 N/S, industrial complexes and several shopping areas, truck traffic through the East Central Avenue area could be excessive. (See **Figure 6**)



Inventories

Sidewalk

Wharton Borough has a fairly complete sidewalk network. The sidewalks along the current routes to school and several other corridors were inventoried to document existing sidewalks and gaps in the sidewalk network along the school routes. (See Figure 7)

Roadway

Roadways throughout the current routes to school and several other corridors were evaluated to document the pavement width and various other conditions. This information is valuable in assessing the compatibility for bicycle traffic and planning what types of treatments can fit within the existing cartway, as detailed later in this report. Roadway cross-section data collection was performed at the following locations:

- North Main Street between Dewey Avenue and Jackson Avenue
- North Main Street between Dewey Avenue and Washington Street
- Washington Street between Fern Avenue and North Main Street
- Fern Avenue between Main Street and Lafayette Street
- Lafayette Street between Fern Avenue and East Central Avenue
- East Central Avenue between Lafayette Street and Princeton Avenue
- Baker Avenue between Stickle Avenue and Princeton Avenue
- Sterling Street between Wabash Avenue and Stickle Avenue
- Wabash Avenue between Baker Avenue and Summit Avenue
- Orange Street between Summit Avenue and Downs Avenue
- Stickle Avenue\Denison Way between East Central Avenue and Sterling Street
- Sterling Street between Stickle Avenue and South Main Street
- Baker Avenue between Stickle Avenue and Thomas Street
- Central Avenue between Lafayette Street and Main Street
- Sterling Street between Main Street and Port Oram Drive



- Port Oram Drive between Sterling Street and Lowery Avenue
- Central Avenue between Main Street and Burns Street
- Burns Avenue between Central Avenue and Pine Street

Students also participated in assessing the roadway conditions. To quantify the roadway measurements field, inventory forms were completed. This helped document the width and condition of the sidewalk, buffer, curb, roadway and various corridor conditions. Completing these forms introduced the students to the documentation process, and gave them an appreciation for the variances in the roadway environment.

Signal Timing and Accessibility

Pedestrian crossing time was field verified at signalized intersections in the vicinity of the Wharton Schools, and found to be adequate (for a child pedestrian walking rate of 3ft/sec) in all directions and approaches (Table 1). This assessment helps to determine if there is adequate time allocated for pedestrians to cross each roadway during the appropriate signal phase.

Intersection Name	Crosswalk Width (Feet)	Ped. Phase Actual (Seconds)	Ped. Phase Req'd (Seconds)	Timing Adjustment? (Yes/No)
North Main Street & Dewey Avenue				
Crossing Main Street	47	20	19	NO
Crossing Dewey Avenue	51	28	20	NO

Note – A rate of 3 ft/sec plus 3 seconds reaction time was utilized as the child pedestrian walking rate

The crossing time data demonstrates that there is adequate time for a pedestrian to cross Main Street alongside the traffic traveling on Dewey Avenue, and to cross Dewey Avenue along Main Street traffic. The conflict between pedestrians walking along a street and motorized traffic turning left or right from that street is not factored into this assessment, which assumes that drivers will yield the legal right of way to pedestrians.

Lighting

The presence or absence of on street lighting was also documented in the roadway inventory. Lighting that is present along roadways throughout Wharton is typically overhead cobra-style lights that focus their illumination on the roadway. There are portions of the sidewalk network that are illuminated by these lights, however the roadway area is the focus of the existing lighting fixtures.

Assessments

Traffic Counts

In order to facilitate further assessments, traffic count data was collected from Morris County. The following numbers were recorded:



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Roadway	Peak Hour Traffic Volume	
	AM	PM
Main Street (between Ross St. & Washington St.)	854	1016
Washington Street (between Main St. & Fern Ave.)	101	122
Fern Avenue (between Church St. & Curtis Ave.)	44	65
Baker Street (between Michigan St. & Princeton St.)	51	78
Wabash Street (between Columbia St. & Summit Ave.)	28	33
Stirling Street (between Division St. & LaFayette St.)	68	71
Stirling Street (between Roberts St. & Main St.)	41	97
Central Avenue (between Burns St. & Main St.)	211	210
Burns Street (between Central Ave. & Pine St.)	46	55

Note: Hourly traffic volumes, classification of vehicle type, and travel speed in formation is available from Morris County.

Walkability

Students assessed the condition of sections of the walking routes utilizing a checklist developed by the Pedestrian and Bicycle Information Center to determine what locations were and were not walkable. Each of the route assessments yield a number result, which can range between 5 and 30. The consultant staff also completed these same assessments for the entire school route corridors. The students generally ranked the roadways a bit higher than the consultant staff, who were more conservative in their assessments. (See Figure 8)

The Walkability of each of the identified routes to school are summarized in the following table:

Corridor	Location	Rating
Baker Avenue	Between Stickle Avenue to Princeton Avenue	22
Stickle Avenue	Between East Central Avenue & Sterling Street	19
Washington Street	Between Fern Avenue & Lafayette Street	18
Wabash Avenue	Between Baker Avenue & Summit Avenue	18
Sterling Street	Between Port Oram Drive & Wabash Avenue	18
East Central Avenue	Between Main Street & Lafayette Street	18
Main Street	Between Landon Avenue & Washington Street	13
Burns Avenue	Between West Central Avenue & Pine Street	18

*Note: The Walkability rankings have generalized ranges of how the assessment “stack up” that are as follows:
5 – 10: Very poor “Oh Dear. Consider wearing body armor and Christmas tree lights before venturing out again.”
11 – 15: “It needs lots of work. You deserve better than that.”
16 – 20: “Okay, but it needs work.”
21 – 25: “Celebrate a little. Your neighborhood is pretty good.”
26 – 30: “Celebrate! You have a great neighborhood for walking.”*

Bikeability

The compatibility of the roadways along the identified and considered routes to school have been assessed using the New Jersey Bicycle and Pedestrian Master Plan evaluation tools, which yield a general bicycle compatibility measure. Corridors can be compared to alternative routes within the school commute area for deciding the recommended routes to school. This also allows a comparison between the existing condition, and any design concepts being considered to enhance the route to school, such as striping bicycle lanes along the roadway. (See Figure 9)



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The following table summarizes the results of the assessment:

Street	Bicycle Compatibility (BCI)	Level of Service (LOS)	Suitability for Bike Use
1. North Main Street	3.15	C	High
2. North Main Street	3.45	D	Medium
3. Washington Street	3.23	C	High
4. Fern Avenue	3.30	C	High
5. Lafayette Street	3.15	C	High
6. East Central Avenue	2.59	C	High
7. Baker Avenue	1.29	A	High
8. Sterling Street	2.55	C	High
9. Wabash Avenue	2.52	C	High
10. Orange Street	2.96	C	High
11. Stickle Avenue/Denison Way	2.41	C	High
12. Sterling Street	2.73	C	High
13. Baker Avenue	2.96	C	High
14. Central Avenue	3.04	C	High
15. Sterling Street	3.03	C	High
16. Port Oram Drive	2.76	C	High
17. Central Avenue	2.98	C	High
18. Burns Avenue	3.36	C	High

Note: The BCI The Bicycle Compatibility Index (BCI) rates the suitability of the roadway for bicyclists based on lane widths, volumes and other factors at a roadway link level.

- Higher Value Indicates Poor Level of Service (LOS)
- Lower Value Indicates Good Level of Service
- BCI Increases for Lane Widths, Shoulders and Residential Area (Improves LOS)
- BCI Decreases with Traffic Volumes, Parking, Speed and Trucks (Decreases LOS)

Time Radius Map

Students walked from the school out along identified walking routes and noted how far they got at five, ten and fifteen minute intervals. The three teams headed different directions from the school property. By marking these results on a map, rough walking time radii were displayed on one aggregate map. This was useful in determining total area of town that is within various walking times from the school. (See Figure 10)

Student Camera Exercise (Good/ Bad/ Ugly).

A student volunteer photographer and a note keeper were paired to document the elements on a walk along identified school routes that struck them as either good for walking, bad for walking or anything else that might affect their decision to walk to school. The students took photos and kept notes on the photos taken. These student insights were used during the public visioning meeting and throughout the project. (See Figure 11)



Previous Studies and Plans

Wharton Borough has produced a *Master Plan* (1994), *Open Space Element* (2001) and *Periodic Reexamination of the Master Plan and Land Use Plan* (2005). Each of these documents contains information that was helpful in understanding the geographic and demographic context of Wharton, in addition to the Borough's vision for the future. Several on-going design and construction projects in Wharton affect the school commute areas or plan implementation, including:

- East Central Avenue Roadway Reconstruction Project – This project incorporates the section of East Central Avenue between Lafayette Street and Cornell Street, and Stickle Avenue between East Central Street and Baker Avenue. The project proposes reconstruction of the roadway, sidewalks, curb ramps, crosswalks and driveway aprons.
- Duffy Elementary School Campus Enhancements – This project will reconfigure the front yard area of the Duffy Elementary School, including removal of existing sidewalks and construction of new sidewalks that align with the proposed crosswalk across East Central Avenue at Stickle Avenue.