Monroe Township
Bicycle and Pedestrian Planning Study

Roadway Network Development Plan

FINAL

March 2010

Prepared For:
The Township of Monroe and
The New Jersey Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

Prepared by:
Michael Baker, Jr., Inc.

Baker

TABLE OF CONTENTS

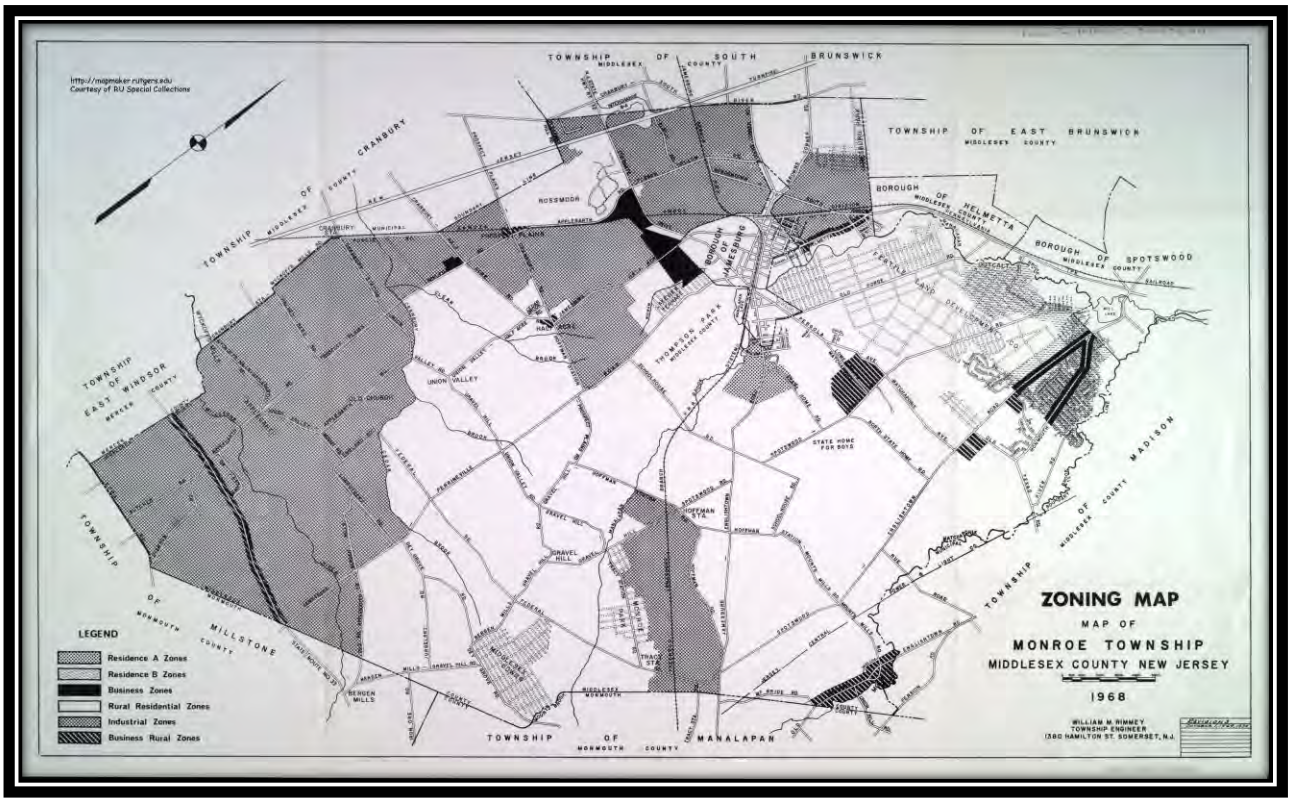
FIGURES

TABLES

APPENDICES

I. INTRODUCTION

Monroe is a township rich in history, recreation and agriculture. Founded in 1838, the township was named in honor of President James Monroe and for a century remained largely a farming community. As portions of the township grew into more defined neighborhoods, they seceded (e.g., Jamesburg). In the past several decades, residential and retail development has patterned the landscape, and many age-restricted communities and services call Monroe home. According to the 2000 Census, nearly half (44%) of the township's population was 65 years of age or older.[1] Monroe's transportation network includes major north/south and east/west county roadway corridors, NJ Transit bus and shuttle bus services, a park-and-ride facility and recreational trails. State Route 33 bisects the southern portion of the township, while the NJ Turnpike traverses the township to the west. Monroe does not have designated on-road bicycle facilities and while sidewalk is being constructed adjacent to new development, there are sidewalk network gaps in areas that are active pedestrian zones.



http://mapmaker.rutgers.edu/MIDDLESEX_COUNTY/MonroeMidCoZoning_1968.gif

[1] History and demographic data was obtained from the following resources: http://www.monroetwp.com; http://www.city-data.com; and http://www.census.gov/.

This document, *The Roadway Network Improvement Guide*, accompanies the Trail Network Development Plan and together they serve as a planning, and implementation resource for bicycle and pedestrian opportunities in the township. This document focuses on existing data and conditions as related to the roadway network, and recommends improvements to enhance bicycle and pedestrian mobility and access.

Resident reviewing the existing trails map at Public Information Center #1

II. STUDY AREA

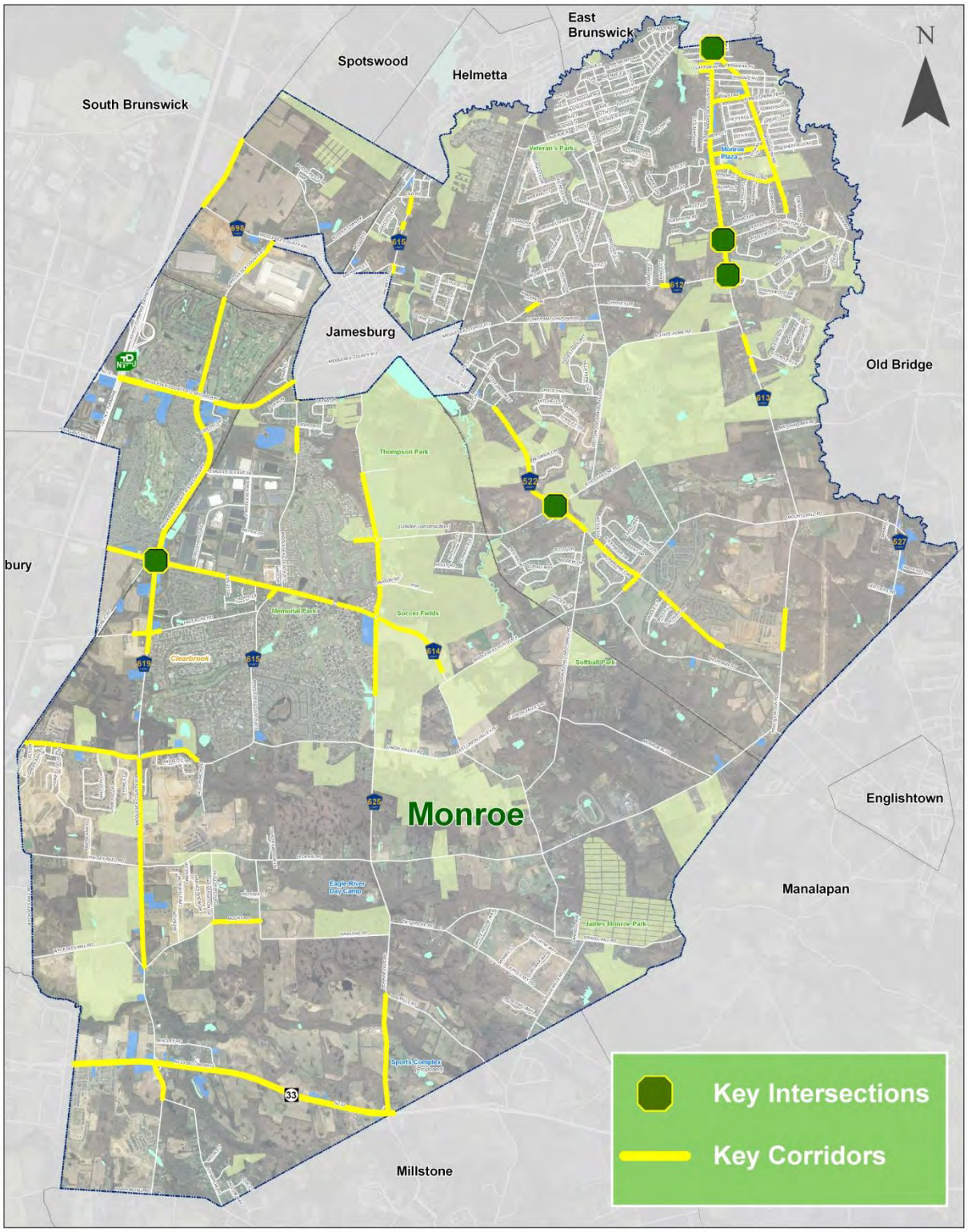
Specific areas of investigation for the roadway network analysis included:

1) Key corridors and roadways with the potential to provide bicycle and pedestrian connections to major generators, attractors and destinations, including schools, commercial developments, recreational areas and parks, and residential developments.

2) Specific intersections, or areas, where pedestrian and bicycle safety and/or mobility were identified as a concern by local officials, through field investigation, and/or through a review of bicycle and pedestrian crash data.

Figure 1 illustrates the corridors, intersections and areas investigated.

Figure 1. Corridors and Areas Investigated



III. ROADWAY NETWORK RESOURCES

Data collection was performed to obtain existing resources related to bicycle and pedestrian facilities. Data and documents were obtained from Monroe Township, the Central Jersey Transportation Forum, Middlesex County, the North Jersey Transportation Planning Authority (NJTPA) and the State of New Jersey. Traffic volumes, bicycle and pedestrian crash data, GIS data, NJDOT Straight Line Diagrams and available plans and mapping were requested and received. To supplement data from public agencies, an inventory of sidewalk, roadway attributes (for bicycle compatibility) and pedestrian facilities at identified intersections was performed through several field visits. A summary of existing conditions, as identified through the data collection process, is detailed in this section.

A. TRAFFIC VOLUMES

Available traffic volumes were collected for roadways in the township. **Table 1** lists the collected volumes by roadway.

Table 1. Traffic Volumes for Township Roadways

Roadway	Limits	AADT (veh./day)	Source	Year
Route 619 (Applegarth Rd.)	Centre Dr. and Route 612 (Forsgate Dr.)	10,000	So. Midd. Co. Traffic Study	2001
Route 619	Route 614 (Prospect Plains Rd.) and S. Middlesex Ave.	14,000	So. Midd. Co. Traffic Study	2001
Route 619	Blackberry Wy. and Route 614 (Prospect Plains Rd.)	12,000	So. Midd. Co. Traffic Study	2001
Route 619	Wycoff Mill Rd. and Halsey Reed Rd.	9,400	NJDOT	2006
Route 619	Route 33 and Bentley Rd.	5,700	NJDOT	2006
Route 522 (Buckelew Ave.)	Ralston Wy. and Route 614 (Mounts Mill Rd.)	6,400	NJDOT	2006

Roadway	Limits	AADT (veh./day)	Source	Year
Butcher Rd.	Route 33 and Disbrow Rd.	4,400	NJDOT	2006
Cranbury Rd.	Route 522 (Buckelew Rd.) and Docks Corner Rd.	13,600	NJDOT	2006
Route 612	Half Acre Rd. and Centre Dr.	15,000	So. Midd. Co. Traffic Study	2001
Route 612	Rossmoor Dr. and Monroe Twp. boundary	20,000	So. Midd. Co. Traffic Study	2001
Jamesburg-Englishtown Rd.	School House Rd. and Spotswood Rd.	8,200	NJDOT	2008
Route 619 (Possum Hollow Rd.)	Route 612 and the railroad tracks	3,200	So. Midd. Co. Traffic Study	2001
Mount Rd.	England Rd. and Route 619	400	NJDOT	2005
Perrineville Rd.	Route 33 and Mills Rd.	10,400	NJDOT	2005
Prospect Plains Rd.	Route 619 and Engelghard Rd.	13,100	NJDOT	2008
Route 33	Bentley Rd. and Perrineville Rd.	30,600	NJDOT	2005
Route 33	Route 619 and Bentley Rd.	26,400	NJDOT	2006
Route 33	Mercer County boundary and Route 619	27,900	NJDOT	2007
Route 613 (Spotswood-Englishtown Rd.)	Old Texas Rd. and Cornell Ave.	8,900	NJDOT	2006

B. BICYCLE AND PEDESTRIAN CRASHES

Bicycle and pedestrian crash reports were requested from the NJDOT – Bureau of Safety Programs (BSP) and the Monroe Township Police Department for the most recent three (3) years available (2006, 2007 and 2008). The reports were requested to determine the crash history of bicyclists and pedestrians on the township's roadway network.

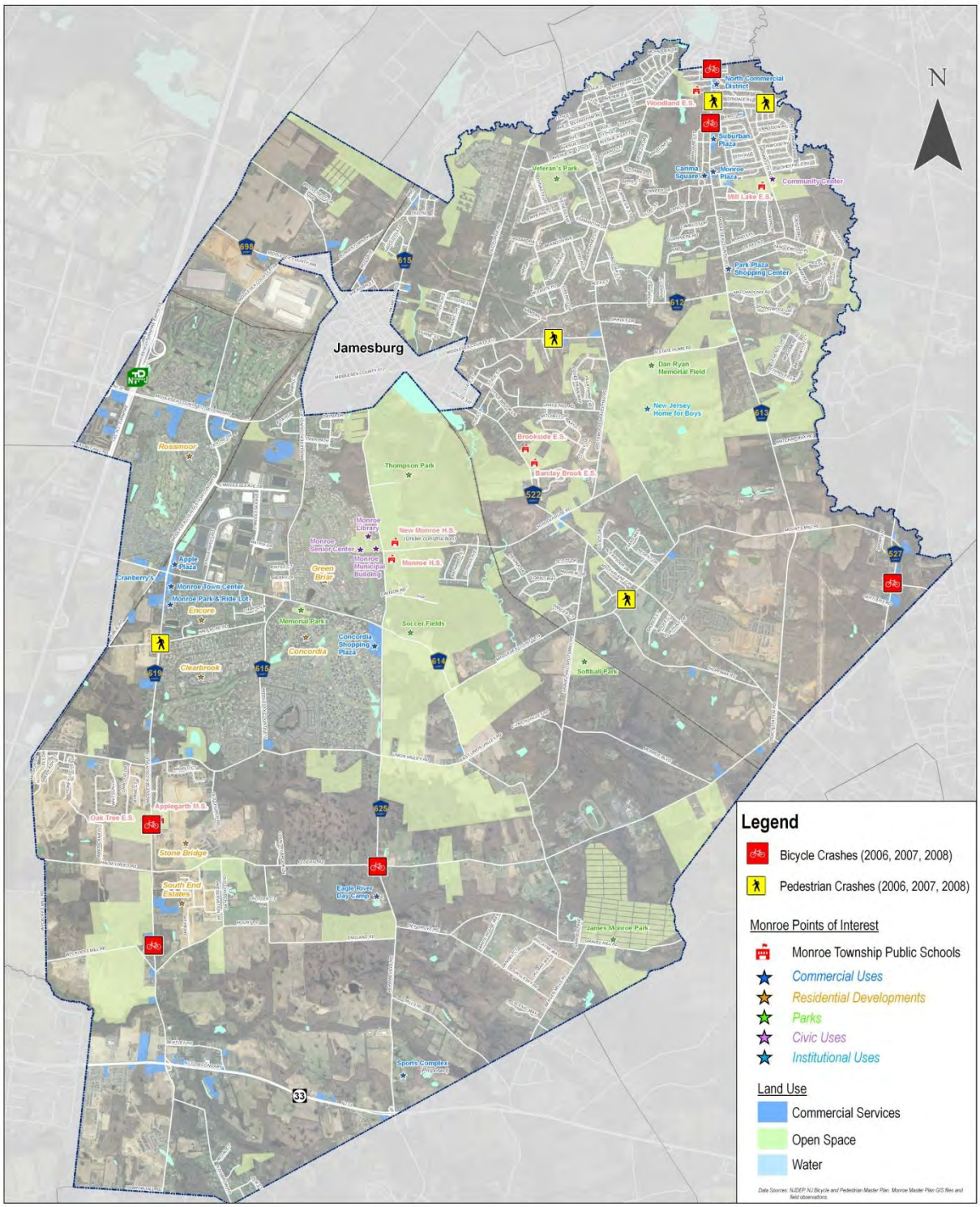
There were eleven (11) reported crashes involving bicyclists or pedestrians between 2006 and 2008. Six (6) crashes involved bicyclists and five (5) crashes involved pedestrians. Reported crashes are illustrated in **Figure 2**.

1. **October 01, 2007 (4:19pm) –** A crash involving a pedestrian and vehicle occurred on Lower Matchaponix Road approximately a 1/2 mile south of Spotswood-Gravel Hill Road. The pedestrian wandered into the roadway and was struck by a vehicle traveling east on Lower Matchaponix Road. The pedestrian was a 1-year old and the crash resulted in a pedestrian fatality.
2. **February 13, 2008 (7:09am) –** A crash involving a pedestrian and a vehicle occurred on Tyndale Avenue approximately 0.2 miles east of Monmouth Road. A pedestrian was walking east along the westbound shoulder of Tyndale Road and was struck by a vehicle traveling westbound, which immediately left the scene. The pedestrian was 40-years old and suffered minor injuries.
3. **June 6, 2008 (9:33pm) –** A crash involving a bicycle and vehicle occurred on Route 527 (Englishtown Road) 100' feet south of Union Valley Road. The bicyclist was traveling south on the roadway and was struck by a vehicle traveling in the same direction, and which immediately left the scene. The bicyclist, who was 24-years old, was severely injured from the crash.
4. **July 9, 2008 (10:23pm) –** A crash involving a pedestrian and a vehicle occurred on Tyndale Avenue approximately a 25' east of Route 613 (Spotswood-Englishtown Road). A pedestrian exited a vehicle and was struck by the door of the vehicle as it pulled away. The pedestrian was 19-years old and suffered minor injuries.
5. **July 24, 2008 (11:55am) –** A crash involving a bicycle and vehicle occurred at the intersection of First Avenue and Route 613. The crash occurred when the vehicle attempted to make a left turn from Route 613 onto First Avenue and then struck the bicyclist who was traveling northbound on Route 613. The bicyclist was 25-years old and suffered minor injuries.
6. **August 23, 2008 (11:02pm) –** A crash involving a pedestrian and two (2) vehicles occurred on Hoffman Station Road approximately a 0.15 miles west of Route 522 (Buckelew Avenue). A vehicle stopped in the eastbound lane of travel on Hoffman Station Road to pick up a passenger and was struck by another vehicle traveling eastbound. The pedestrian was then struck by the vehicle stopped in the travel lane. The pedestrian was 24-years old and suffered minor injuries.
7. **September 29, 2008 (6:28pm) –** A crash involving a bicycle and vehicle occurred at the intersection of Taylor Avenue and Route 613. The vehicle was attempting to make a right

turn from Route 613 onto Taylor Avenue, and failed to yield, striking the bicyclist who was traveling northbound on Route 613. The bicyclist was 37-years old and suffered minor injuries.

8. **September 10, 2008 (10:46am) –** A crash involving a bicycle and vehicle occurred on Route 619 (Applegarth Road) approximately 1/4 mile south of Lilac Road. The bicyclist was traveling north on Route 619 and was struck by a vehicle traveling in the same direction, which immediately left the scene. The bicyclist was 43-years old and suffered moderate injuries.
9. **October 03, 2008 (11:25am) –** A crash involving a pedestrian and vehicle occurred at the intersection of Route 619 and Cranbury-Half Acre Road. The pedestrian was crossing the intersection with a green light, when a vehicle attempted to turn right onto Route 619 and struck the pedestrian. The age of the pedestrian was not noted and the pedestrian suffered minor injuries as a result of the crash.
10. **October 12, 2008 (5:21pm) –** A crash involving a bicycle and vehicle occurred on Route 619 approximately a 1/4 mile south of Old Church Road. The bicyclist was traveling north on Route 619 and was struck by the side view mirror of a vehicle traveling in the same direction. The bicyclist was 46-years old and suffered moderate injuries.
11. **December 14, 2008 (8:07am) –** A crash involving a bicycle and a vehicle occurred at the intersection of Perrineville Road and Federal Road. The bicyclist and vehicle entered the intersection at the same time, and the bicycle struck the vehicle causing the crash. The bicyclist was 56-years old and suffered moderate injuries.

Figure 2. Bicycle and Pedestrian Crash Map



C. SIDEWALK SURVEY

The presence and condition of sidewalks were inventoried within a ¼ mile of identified trip generators and attractors to determine where sidewalk network improvements may be needed to enhance pedestrian access and mobility. Additionally, NJDOT County Sidewalk Inventory data was utilized to identify the presence and condition of sidewalk on county routes in the township.

Sidewalk conditions were rated based on the following criteria:

Excellent Condition:	*Well maintained or new sidewalk with no cracks, overgrowth (encroaching landscape) or obstacles.*
Good Condition:	*Nearly new sidewalk with very little distress.*
Fair Condition:	*Sidewalk with minor cracking, some overgrowth and/or a few obstacles.*
Poor Condition:	*Cracks in several sections with overgrowth and/or trees uprooting the sidewalk several obstacles in the walkway.*
Very Poor Condition:	*Extremely deteriorated sidewalks with severe cracks and/or sections completely covered by dirt, overgrowth or mud.*

The sidewalk inventory resulted in six (6) general survey areas. Those areas were:

1. Route 613/ Spotswood-Englishtown Road and Monmouth Road
2. Route 522/Buckelew Avenue
3. Route 612/Forsgate Road and Route 619/Possum Hollow/Applegarth Road
4. Route 619/Applegarth Road and Route 614/Prospect Plains Road
5. Route 614/Prospect Plains Road and Perrineville Road
6. Route 619/Applegarth Road, Route 615/ Union Valley Road and Halsey Reed Road

The results of the sidewalk inventory are illustrated below in **Figures 3 – 8** and detailed in **Table 2**.

Figure 3. Route 613 and Monmouth Road

Figure 4. Route 522

Figure 5. Route 612 and Route 619

Figure 6. Route 619 and Route 614

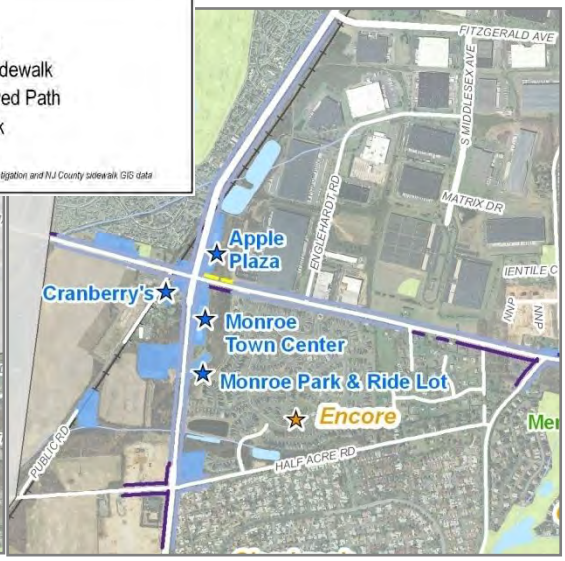


Figure 7. Route 614 and Perrineville Road

Figure 8. Route 619, Route 615 and Halsey Reed Road

Table 2. Sidewalk Inventory Results

Roadway	Side of Street	Description *(distances are approximate)*	Avg. Width	Buffer	Avg. Condition	Sidewalk Survey Area
Route 613	West	Concrete sidewalk extends from 320’ south of Route 612 to Brandy Place	4’	Yes, Grass	Fair	1
Route 613	East	Concrete sidewalk extends from 330’ south of Brandy Place to 350’ north of Brandy Place	4’	Yes, Grass	Fair	1
Route 613	West	A mixture asphalt paved and concrete sidewalk extends from Camelot Drive to Morton Avenue	4’	Yes, Grass	Fair (Poor section between Cornell Ave. and 10th Ave.)	1
Route 613	East	Concrete sidewalk extends from Lori Street to First Avenue	4’	Yes, Grass	Fair	1
Route 613	West	Concrete sidewalk extends from Park Avenue to Monmouth Road	4’	Yes, Grass	Fair	1
Route 613	East	Concrete sidewalk extends from 120’ south of Harrigan Avenue to the municipal border.	4’	Yes, Grass	Fair (Poor section between Erickson Ave. and municipal border)	1
Monmouth Road	West	Concrete sidewalk extends from Brandy Place to 230’ south of Cornell Avenue	4’	Yes, Grass	Fair	1
Monmouth Road	East	Concrete sidewalk extends from Brandy Place to Route 613	4’	Yes, Grass	Fair	1
Monmouth Road	West	Concrete sidewalk extends from 350’ south of Sheffield Avenue to Forest Park Terrace	4’	Yes, Grass	Fair	1
Cornell Avenue	East and West	Concrete sidewalk extends from Route 613 to Monmouth Road	4’	Yes, Grass	Fair	1
10th Avenue	East and West	Concrete sidewalk extends from Route 613 to Monmouth Road	4’	Yes, Grass	Fair	1
1st Avenue	East and West	Concrete sidewalk extends from Route 613 to Monmouth Road	4’	Yes, Grass	Fair	1
Route 522	West	Concrete sidewalk extends from Barclay Brook ES to 1,120’ feet north of Schoolhouse Road	5’	Yes, Grass	Fair	2
Route 522	East and West	Concrete sidewalk extends from Ralston Way and Mounts Mill Road	5’	Yes, Grass	Fair	2
Route 522	West	Sidewalk extends from 255’ north of Saddle Court to 2100’ south of Fox Hunt Drive	5’	Yes, Grass	Fair	2
Route 522	East	Sidewalk extends from 255’ north of Saddle Court to Fox Hunt Drive	5’	Yes, Grass	Fair	2
Mount Mills Road	East	Sidewalk extends for 780’ from Route 522	5’	Yes, Grass	Fair	2
Route 612	North	Concrete sidewalk extends from 760’ west of Fawn Court to the municipal border	4’	Yes, Grass	Fair	3

Roadway	Side of Street	Description *(distances are approximate)*	Avg. Width	Buffer	Avg. Condition	Sidewalk Survey Area
Route 619	West	Asphalt paved sidewalk extends from the rail line to Afton Drive	5’	Yes, Grass	Fair	3
Route 619	East	Asphalt paved sidewalk extends from Afton Drive to 200’ north of Route 612	5’	Yes, Grass	Fair	3
Route 619	East	Concrete sidewalk extends from Centre Drive to South Middlesex Avenue	4’	Yes, Grass	Fair	3
Route 619	West	Concrete sidewalk extends from 300’ north of the Half Acre Road to 800’ south of Half Acre Road	5’	Yes, Grass	Fair	4
Half Acre Road	East and West	Concrete sidewalk extends for 580’ from Route 619	5’	Yes, Grass	Good	4
Route 614	North	Concrete sidewalk extends from the municipal border to 80’ feet west of the border	4’	Yes, Grass	Fair	4
Route 614	South	Concrete sidewalk extends 290’ from the Monroe Town Center driveway into the Encore residential development	6’	Yes, Grass	Fair	4
Route 614	South	Concrete sidewalk extends from Kelly Court and Route 615/Union Valley-Half Acre Road. *There are two (2) gaps in the sidewalk between Kelly Court and Cedar Brook Road*	4’	Yes, Grass	Fair	4
Route 614	North	An asphalt paved sidewalk extends approximately 300’ west of Gravel Hill Road to 300’ east of Perrineville Road.	8’	Yes, Grass	Good	5
Route 614	South	Concrete sidewalk extends from 300’ east of Perrineville Road to Whittingham Drive	4’	Yes, Grass	Fair	5
Perrineville Road	West	Concrete sidewalk extends from Route 614 to Schoolhouse Road	5’	Yes, Grass	Fair	5
Perrineville Road	East	Concrete sidewalk extends 720’ north of Route 614	5’	Yes, Grass	Fair	5
Perrineville Road	East	Concrete sidewalk extends 450’ south of Schoolhouse Road	5’	Yes, Grass	Fair	5
Perrineville Road and Schoolhouse Road	(Intersection)	Concrete sidewalk at each corner of the intersection, with a 5’ wide concrete sidewalk extending from the intersection to the Monroe Municipal Building	---	---	Fair	5
Route 619	West	Concrete sidewalk extends from Route 615 to Oak Tree ES	5’	Yes, Grass	Fair	6
Route 619	East	Concrete sidewalk extends from 1,050’ south of Route 615 to Halsey Reed Road	5’	Yes, Grass	Fair	6
Route 615	North	Concrete sidewalk extends 2700’ feet from municipal border to	5’	Yes, Grass	Fair	6
Route 615	South	Concrete sidewalk extends 1,060’ feet east of the municipal border to Route 619	5’	Yes, Grass	Fair	6
Route 615	South	Concrete sidewalk extends 650’ feet east of to Route 619 to 350’ west of Old Church Road	4’	Yes, Grass		6

D. BICYCLE COMPATIBILITY

Roadways with available traffic volumes were inventoried to determine bicycle compatibility based on NJDOT guidelines.

NJDOT maintains that "bicycle compatible roadway improvements are intended for the shared use of all highway users" and that a "well designed bicycle compatible roadway should reduce accidents and exposure to liability by allowing a safer environment."[2] Roadway pavement widths were inventoried and compared to traffic volumes, the percentage of truck traffic, posted speed, and parking conditions to determine if sufficient width exists for the roadway to be shared by bicycle traffic. The following sections of roadways were inventoried for bicycle compatibility:

- Route 619 (Applegarth Rd.)
- Route 522 (Buckalew Ave.)
- Butcher Rd.
- Cranbury Rd.
- Route 612 (Forgate Drive)
- Mount Rd.
- Perrineville Rd.
- Route 614 (Prospect Plains Rd.)
- Route 33
- Route 613 (Spotswood-Englishtown Rd.)

Data collected for the above listed roadways included posted speed limits, pavement width (lane width and shoulder width), pavement condition, on-street parking, bicycle compatibility of drainage grates, existing bicycle facilities (designated bicycle lanes and/or routes), location of traffic signals, lighting condition, roadway geometry, and potential horizontal and vertical sight distance issues. A matrix was developed to illustrate the compatibility results. The Bicycle Compatibility Matrix for roadways with traffic volumes in Monroe Township is presented in **Table 3** and illustrated in **Figure 9.**

[2] *Bicycle Compatible Roadways and Bikeways, Planning and Design Guidelines*, New Jersey Department of Transportation, page 6, 1996.

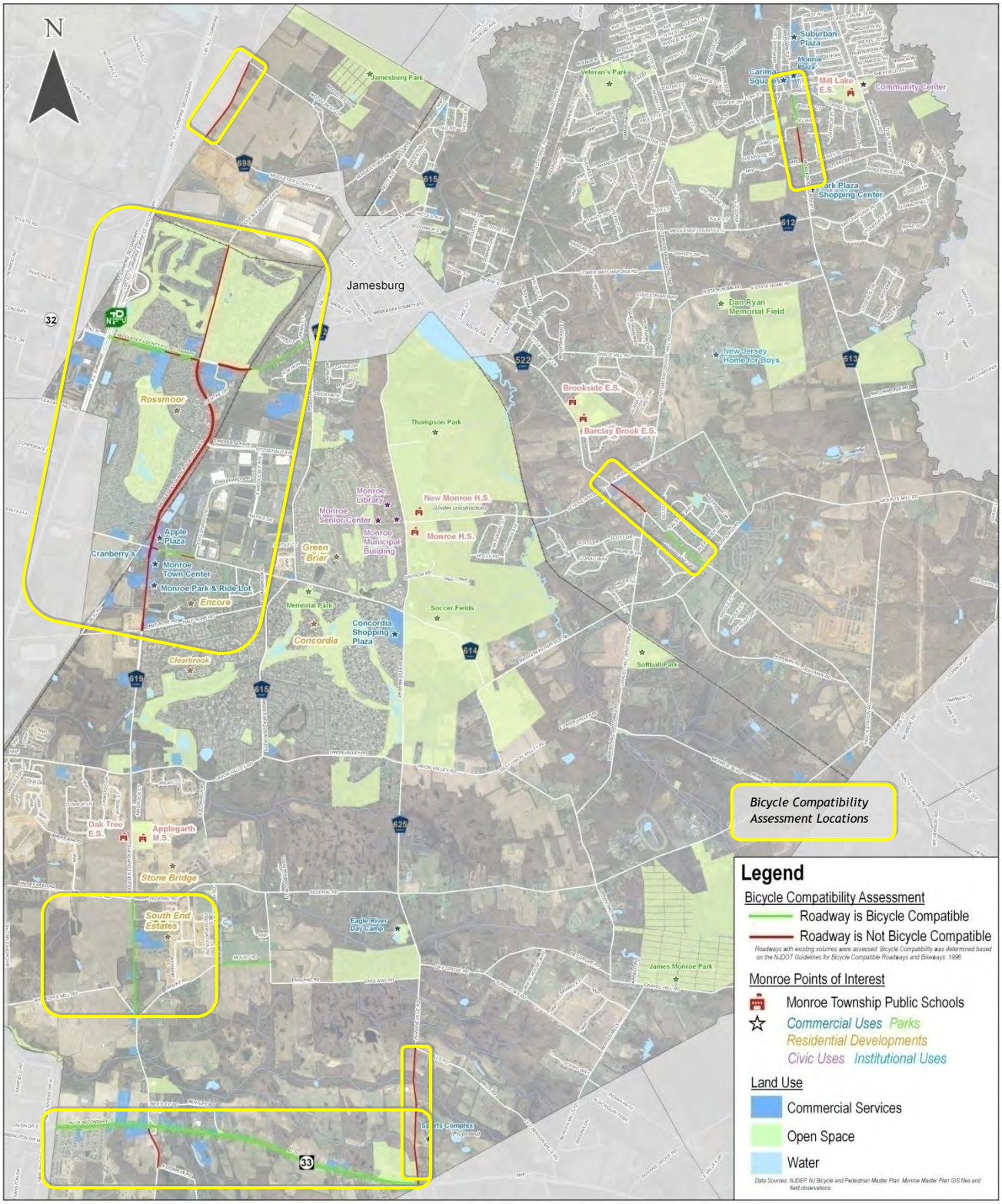
Table 3. Monroe Township Bicycle Compatibility Matrix [3]

Street	From	To	AADT	Speed Limit	On Street Parking Permitted	Total Pavement Width	Direction Lane NB//SB	Shoulder Width [4] NB//SB	Direction Lane EB//WB	Shoulder Width [4] EB//WB	Bicycle Compatible [5, 6]
Route 625	Route 33	Mills Road	10,400	45 MPH	No	25’	11’//11’	1.5’//1.5’			No *6’ shoulder required*
Route 619	Disbrow Hill Road	Route 33	4,400	45 MPH	No	26’	11’//11’	2’//2’			No *4’ shoulder required*
Route 619	Wyckoffs Mills Road	Halsey Reed Road/ Federal Road	9,400	40 MPH	No	29’	11.5’//11.5’	3’//3’			Yes
Route 619	Halsey Reed Road/ Federal Road	Union Valley Road/ Cranbury Station Road	TBD	45 MPH	No	46’	12’//12’	0’-11’//0’-11’ (NB shoulder end approx. 100’ south of Union Valley Road; SB shoulder ends at Oak Tree ES, then ends at approx. 200’ north of Federal Road)			Yes *where 6’’+ shoulders are maintained* *8’ shoulder recommended*
Route 619	Union Valley Road/ Cranbury Station Road	Cranbury-Half Acre Road	TBD	Not Posted	Partial	26’ – 45’	11’-13’//11’-12’	2’-9’//2’-11’			Yes *where 6’’+ shoulders are maintained* *8’ shoulder recommended*
Route 619	Cranbury-Half Acre Road	Route 614	12,000	40 MPH	No	30’	12’//12’	3.5’//2.5’ (12’ NB shoulder from P&R to Monroe Town Center driveway)			No *8’ shoulder recommended*
Route 619	Route 614/ Prospect Plains Road	Rossmoor Drive	14,000	35 – 45 MPH	No	50’ 14’ Grass Median (Total = 64’)	13’/12’//12’/13’	0’//0’			No *4’ shoulder required*
Route 619	Centre Drive	Route 612	10,000	35 MPH	No	50’ 14’ Grass Median (Total = 64’)	13’/12’//12’/13’	0’//0’			No *4’ – 6 shoulder required*
Route 619	Route 612	Dead End/ Railroad Bridge	3,200	35 MPH	No	24’	11’//11’	1’//1’			No *3’ shoulder required*
Route 614	Route 619	Engelhard Road	13,100	45 MPH	No	33’ – 50’			13’//13’	1’-18’//6’	Yes *where 6’’+ shoulders are maintained* *8’ shoulder recommended*

[3] Compatibility was determined based on NJDOT Guidelines for Bicycle Compatible Roadway Pavement Widths.
[4] On roadways with an Average Annual Daily Traffic (AADT) greater than 10,000, a shoulder width of 8’ should be provided wherever possible
[5] If parking occurs intermittently then bicyclists could share the roadway as few conflicts with vehicles would potentially exist. However, if parking occurs frequently, then the likelihood for potential conflicts increase and sharing the roadways is not recommended.
[6] If traffic volume was unknown, roadway was assessed under Condition III (AADT over 10,000) of the NJDOT guidelines

Street	From	To	AADT	Speed Limit	On Street Parking Permitted	Total Pavement Width	Direction Lane NB//SB	Shoulder Width [4] NB//SB	Direction Lane EB//WB	Shoulder Width [4] EB//WB	Bicycle Compatible [5, 6]
Route 612	Rossmoor Drive	Route 619	20,000	45 MPH	No	63’ – 74’ 30’ Grass Median (Total = 93’-104’)			12’/13’//13’/12’	0’ – 11’’//9’ (2’ inside EB//WB shoulder)	Yes *where 6’’+ shoulders are maintained* *8’ shoulder recommended*
Route 612	Centre Drive	Railroad Crossing	15,000	40 MPH	No	50’ 16’ Grass Median (Total = 64’)			12’/12’//12’/12’	1’//1 (2’ inside EB//WB shoulder)	No *4’ shoulder required* *8’ shoulder recommended*
Route 612	Railroad Crossing	Route 615	15,000	40 MPH	No	42’			15’//15’	5’//5’	Yes *8’ shoulder recommended*
Route 613	Cornell Avenue	Camelot Avenue	8,900	45 MPH	Yes	42’ – 48’	14’//14’	4’ – 10’//10’			Yes *intermittent parking observed*
Route 613	Camelot Avenue	Brandy Place	8,900	45 MPH	No	30’	14’//14’	1’//1’			No *4’ shoulder required*
Route 613	Brandy Place	Texas Road	8,900	45 MPH	Yes	42’ – 48’	14’//14’	4’ – 10’//10’			Yes *intermittent parking observed*
Route 522	Schoolhouse Road	Gravel Hill-Spotswood Road	8,200	50 MPH	No	27’			12.5’//12.5’	1’//1’	No *6’ shoulder required*
Route 522	Ralston Way	Mounts Mills Road	6,400	50 MPH	No	52’			12’//12’	14’//14’	Yes
Route 535	Docks Corner Road	Route 522	13,600	50 MPH	No	36’	12’//12’	3’//3’			No *4’ shoulder required* *8’ shoulder recommended*
Mount Road	England Road	Old Church Road	400	Not Posted	No	20’			10’//10’	0’//0’	Yes
Route 33	Township Boundary	Perrineville Road	25,000 – 30,000	55 MPH	No	70’ 32’ Grass Median (Total = 102’)			12’/12’//12’/12’	10’//12’	Yes

Figure 9. Bicycle Compatibility Map



Additional roadways without available traffic volumes were inventoried based on the on-road trail recommendations from the Monroe Township Proposed Trails plan and input from township officials and stakeholders. Since volumes were not available for these roadways, they were assessed under Condition III (AADT over 10,000) under NJDOT guidelines for bicycle compatible roadways.

The Bicycle Compatibility Matrix for these roadways in Monroe Township is presented in **Table 4.**

Bicyclists on Halsey Reed Road

Table 4. Bicycle Compatibility Matrix [7] for Additional Identified Roadways

Street	From	To	AADT	Speed Limit	On Street Parking Permitted	Total Pavement Width	Direction Lane NB//SB	Shoulder Width [4] NB//SB	Direction Lane EB//WB	Shoulder Width [8] EB//WB	Bicycle Compatible [9, 10]
Matchaponix Road	Route 613	Texas Road	*Not Available*	35 MPH	No	40’			17’//17’	0’//6’	No *4’ shoulder required*
Texas Road	Township Boundary	River Road	*Not Available*	35 MPH	No	40’			12’//12’	8’//8’	Yes
Texas Road	River Road	Approx. 300’ west of River Road	*Not Available*	35 MPH	No	36’			18’//14’	0’//2’	No *4’ shoulder required*
Texas Road	Approx. 300’ west of River Road	Matchaponix Road	*Not Available*	35 MPH	No	40’			24’//16’	0’//0’	No *4’ shoulder required*
Halsey Reed Road	Route 619	Wyckoffs Mill Road	*Not Available*	40 MPH	No	26’ - 40’			12’//12’	1’- 8’//1’ -8’ (Shoulder reduced approx. 300’ west of Route 619)	Yes *where 4”+ shoulders are maintained*
Halsey Reed Road/ Ely Drive	Wyckoffs Mill Road	Route 615	*Not Available*	Not Posted	No	24’	10.5’//10.5’	1.5’-8’//1.5’ (Roadway ends in a residential development with 16’ travel lanes and no shoulders)			Yes *where 4’+ shoulders are maintained northbound*
Route 615	Ely Drive	Route 619	*Not Available*	50 MPH	No	34’ - 52’			12’- 13’//12’ - 13’	4’ - 13’//6’ - 13’	Yes *where 6’’+ shoulders are maintained*
Route 615	Route 619	Union Valley Road	*Not Available*	50 MPH	No	37’ - 44’			11-12’//12’	1’-13’//1’-8’ (shoulder widths vary)	Yes *where 6’’+ shoulders are maintained*
Route 615	Union Valley Road	Route 614	*Not Available*	50 MPH	Yes	44’ - 50’	14’//14’	8’-11’//8’-11’ (Shoulders end approx. 200’ south of Route 614)			Yes
Route 615	Route 614	Municipal Border	*Not Available*	50 MPH	Yes	40’ – 54’	14’//14’	6’-20’’//6’ (Shoulders starts approx. 100’ north of Route 614)			Yes

[7] Compatibility was determined based on NJDOT Guidelines for Bicycle Compatible Roadway Pavement Widths.
[8] On roadways with an Average Annual Daily Traffic (AADT) greater than 10,000, a shoulder width of 8’ should be provided wherever possible
[9] If parking occurs intermittently then bicyclists could share the roadway as few conflicts with vehicles would potentially exist. However, if parking occurs frequently, then the likelihood for potential conflicts increase and sharing the roadways is not recommended.
[10] If traffic volume was unknown, roadway was assessed under Condition III (AADT over 10,000) of the NJDOT guidelines

Street	From	To	AADT	Speed Limit	On Street Parking Permitted	Total Pavement Width	Direction Lane NB//SB	Shoulder Width [4] NB//SB	Direction Lane EB//WB	Shoulder Width [8] EB//WB	Bicycle Compatible [9, 10]
Spotswood-Gravel Hill Road	Route 612	Samantha Drive	*Not Available*	25 MPH	Yes	32’	16’//16’	0’//0’			Yes
Federal Road	Route 619	Kelly Lane	*Not Available*	35 MPH	No	40’			12’//12’	8’//8’	Yes
Union Valley Road	Route 615	Route 625	*Not Available*	30 MPH	No	30’ – 46’			13’//13’	0’–17’//3’–6’	No *14’ shared lane required*
Union Valley Road	Route 625	Gravel Hill Road	*Not Available*	35 MPH	No	22’			10’//10’	1’//1’	No *4’ shoulder required*
Gravel Hill Road	Union Valley Road	Gravel Hill-Spotswood Road	*Not Available*	35 MPH	No	22’ - 24’			10’//10’	1-2’//1-2’	No *4’ shoulder required*
Gravel Hill-Spotswood Road	Gravel Hill Road	Monroe Boulevard	*Not Available*	Not Posted	No	22’			10’//10’	1’//1’	No *14’ shared lane required*
Monroe Boulevard	Gravel Hill-Spotswood Road	Federal Road	*Not Available*	40 MPH	No	20’			10’//10’	0’//0’	No *14’ shared lane required*

E. INTERSECTIONS

Five (5) intersections were identified by Monroe Township local officials for inventory and assessment. These intersections included:

- Route 613 (Spotswood-Englishtown Road), Monmouth Road and Erickson Avenue
- Route 613 and Texas Road
- Route 613 and Matchaponix Avenue
- Route 522 (Buckelew Avenue) and Schoolhouse Road
- Route 619 (Applegarth Road) and Route 614 (Prospect Plains Road)

NJDOT *Pedestrian Compatible Planning and Design Guidelines* state that "there are 32 possible vehicle to pedestrian conflicts at the 4-way intersection of two roads."[11] At signalized intersections, vehicle turning movements account for many of these potential conflicts. Monroe intersections were inventoried for the presence and condition of pedestrian facilities, including curb ramps, crosswalks, warning signage, and, if signalized, pedestrian signals and push buttons. Potential conflicts with turning vehicles, and through movements at unsignalized intersections, were observed during field inventory and noted for future development of conceptual improvements. The results of the inventory are detailed in **Figures 10** through **14**.

[11] *Pedestrian Compatible Planning and Design Guidelines*, New Jersey Department of Transportation, page 28, 1997.

Figure 10. Route 613, Monmouth Road and Erickson Avenue

Intersection Control:	• Free flow movements on Route 613 • Stop Control on Erickson Avenue and Monmouth Road
Crosswalks:	One (1) standard striped crosswalk across Monmouth Road
Curb Ramps:	Two (2) curb ramps for crosswalk across Monmouth Road
Warning Signs:	No existing warning signs
Pedestrian Signals or Push Buttons:	No existing pedestrian signals or push buttons
Observations:	• Vehicles waiting to turn from Monmouth Road onto Route 613 block the crosswalk. • Multiple rolling stops were observed at stop sign on Monmouth Road • Pedestrians observed crossing Monmouth Road at Cooper Avenue.

Figure 11. Route 613 and Texas Road

Intersection Control:	Signalized Intersection
Crosswalks:	One (1) standard striped crosswalk across Texas Road
Curb Ramps:	Two (2) curb ramps for crosswalk across Texas Road
Warning Signs:	No existing warning signs
Pedestrian Signals or Push Buttons:	No existing pedestrian signals or push buttons
Observations:	• Crosswalk striping faded on Texas Road • No crosswalks to facilitate movements between existing partial sidewalk on northbound and southbound Route 613

Figure 12. Route 613 and Matchaponix Avenue

Intersection Control:	Signalized intersection
Crosswalks:	Standard striped crosswalks across all four (4) intersection approaches
Curb Ramps:	Two (2) recessed curbs on southern approach. No curb ramps on the northern approach.
Warning Signs:	No existing warning signs
Pedestrian Signals or Push Buttons:	Pedestrian signal heads and push buttons with walk/don't walk symbols are provided for all approaches.
Observations:	No pedestrian activity was observed during site visits

Figure 13. Route 522 and Schoolhouse Road

Intersection Control:	Signalized intersection
Crosswalks:	Standard striped crosswalks across all four (4) intersection approaches.
Curb Ramps:	Curb ramps are provided on all corners to facilitate movements to the crosswalks.
Warning Signs:	No existing warning signs
Pedestrian Signals or Push Buttons:	• Pedestrian signal heads with walk/don't walk text are provided for all approaches. • Pedestrian push buttons are provided for all approaches.
Notes:	• Crosswalk striping is faded. • Existing sidewalk only at the corners of the intersection.

Figure 14. Route 619 and Route 614

Intersection Control:	Signalized intersection
Crosswalks:	Standard striped crosswalks across all four (4) intersection approaches
Curb Ramps:	No existing curb ramps
Warning Signs:	No existing warning signs
Pedestrian Signals or Push Buttons:	• No existing pedestrian signals • Pedestrian push buttons provided on western approach of Route 614.
Notes:	• A concentration of pedestrian travel was observed at the intersection, and mid-block to the east of the intersection. • No existing sidewalk at the intersection or connecting to adjacent commercial centers and residential development.

IV. IMPLEMENTATION GUIDE

Recommendations to upgrade and enhance bicycle and pedestrian facilities in Monroe were determined based on findings from data collection, site evaluations, crash analysis and public outreach. Although this guide identifies only seven (7) recommended improvement areas, there are other locations in Monroe Township that could benefit from the installation of bicycle and pedestrian facilities.

Intersection of County Route 614, Prospect Plains Road and County Route 619,

1) **North Business District Pedestrian Improvements** (sidewalk installation and intersection improvements on County Route 613/Spotswood-Englishtown Road)

2) **Community Center Connections** (Veteran's Park to Community Center Bicycle Route and sidewalk installation on Monmouth Road)

3) **Texas and Matchaponix Community Links** (Matchaponix Share the Road and sidewalk installation on County Route 613/Spotswood-Englishtown Road)

4) **Barclay Brook and Brookside Schools Walking Route** (County Route 522, Buckelew Avenue and Schoolhouse Road intersection improvements, and sidewalk installation on County Route 522)

5) **Thompson Park Shared Use Path**

6) **County Route 615, Union Valley Road Share the Road**

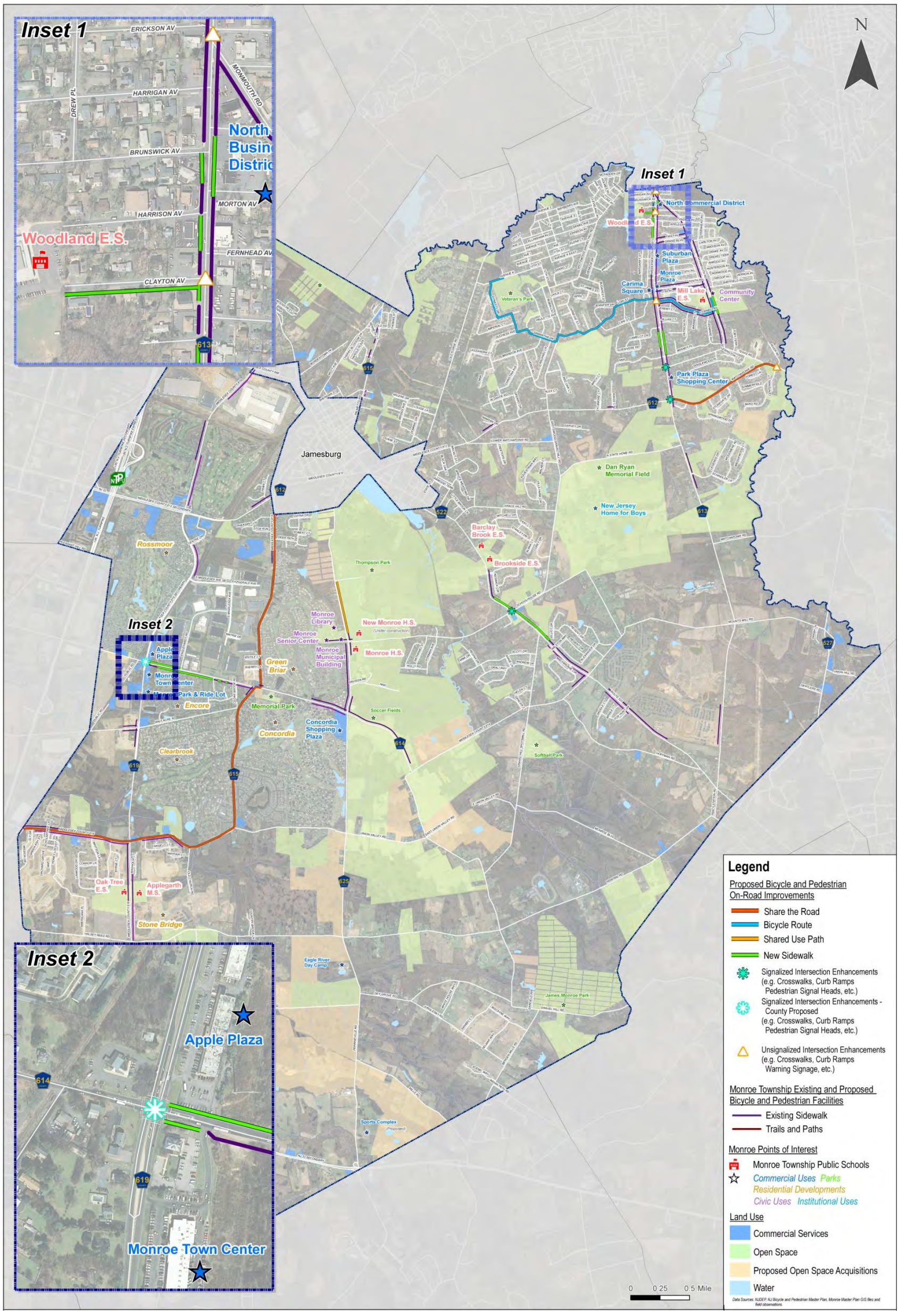
7) **County Route 614 Sidewalk Installation**

Worksheets were created to detail existing conditions, recommended improvements, potential constraints, time to implement and order-of-magnitude cost (preliminary cost estimating spreadsheets are included in **Appendix A**). One (1) of the recommended improvements will require additional planning, preliminary design, and final design prior to construction (e.g., Thompson Park Shared Use Path). However, the balance of recommended roadway improvements will not require additional planning or design and could potentially be constructed as funding becomes available. Proposed improvements to the roadway network

are illustrated on **Figure 15**. Other locations that could benefit from the installation of bicycle and pedestrian facilities, most notably trail network connections, are detailed in the *Trail Network Development Plan*.

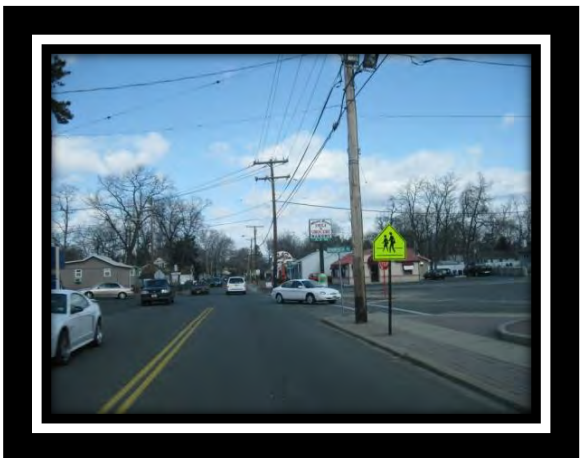
Recommended improvements identified in this guide were developed in accordance with NJDOT guidelines for bicycle and pedestrian facilities (*Bicycle Compatible Roadways and Bikeways, Planning and Design Guidelines* and *Pedestrian Compatible Planning and Design Guidelines*), American Association of State Highway and Transportation Officials (AASHTO) guidelines (*Guide for the Planning, Design, and Operations of Pedestrian Facilities and Guide for the Development of Bicycle Facilities*), and the Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD), including 2009 revisions and 2010 proposed amendments .

Figure 15. Proposed Roadway Network Improvements



A. NORTH BUSINESS DISTRICT PEDESTRIAN IMPROVEMENTS

Existing School Crossing location at Route 613 and Clayton Avenue



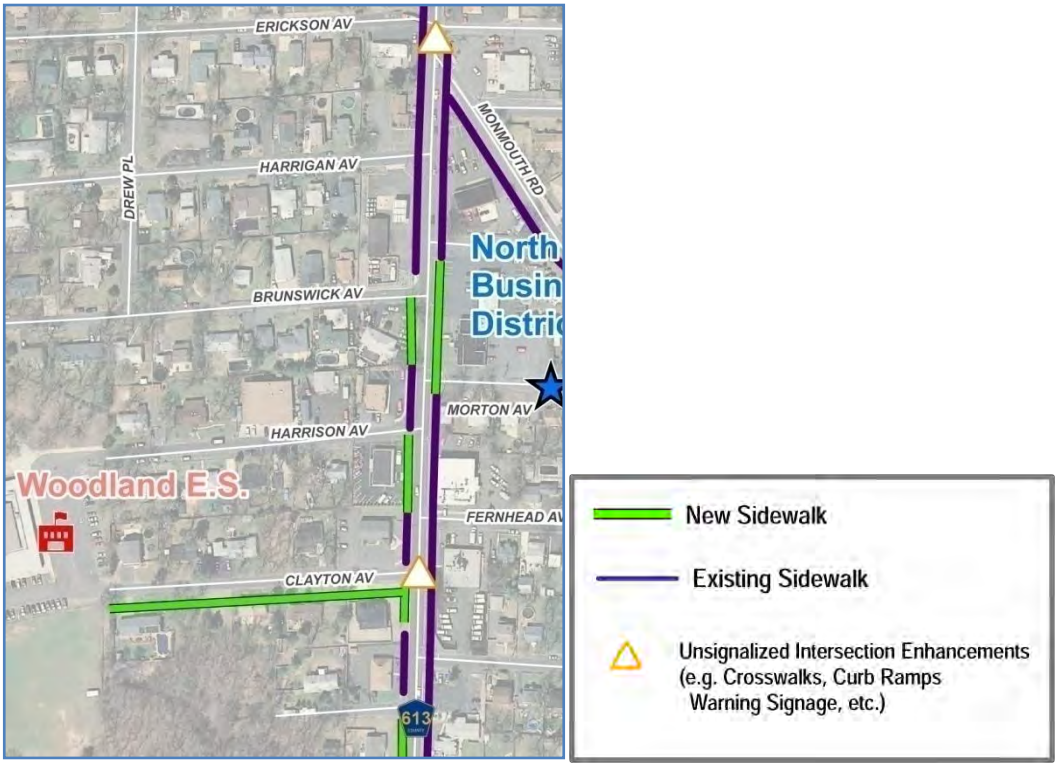
Existing School Crossing location at Route 613 and Monmouth Road

1. Existing Condition Summary	
Speed Limit:	45 mph
AADT:	8,900
Sidewalk:	Intermittent
Land Use:	• Concentrated retail on Route 613 • Residential side streets • School
Deficiencies:	• Sidewalk network gaps with observed pedestrian activity • Faded or missing crosswalks at school crossing locations
Opportunities	• Provide children with a continuous walking route to school • Improved access and mobility for pedestrians in business district • Enhanced pedestrian crossing accommodations

2. Recommended Improvements

i) Install 225’ of sidewalk on northbound Route 613 between Morton Avenue and Park Avenue.
ii) Install 120’ of sidewalk on southbound Route 613 between Brunswick Avenue and Harrison Avenue.
iii) Install 135’ of sidewalk on southbound Route 613 between Harrison Avenue and Clayton Avenue.
iv) Install 70’ of sidewalk on southbound Route 613 between Clayton Avenue and Sherman Avenue
v) Install 500’ of sidewalk on southern side of Clayton Avenue between Route 613 and Woodland Elementary School.
vi) Install longitudinal striped crosswalks, ADA-compliant curb ramps and school crossing warning signage at designated school crossing location at Clayton Avenue and Route 613. As part of improvement, consider supplemental flashing beacons that would be automated during school hours.
vii) Install longitudinal striped crosswalks, ADA-compliant curb ramps and school crossing warning signage at designated school crossing location at Monmouth Road and Route 613.

North Business District Pedestrian Improvements



3. Potential Constraints

Impacts to right-of-way, traffic, utilities, drainage and the environment are not anticipated for the sections of Route 613 where new sidewalk is proposed. Clayton Avenue has a right-of-way of 40' and sidewalk installation could potentially impact on-street parking if two (2) travel lanes are maintained and a 5' sidewalk with 3' buffer is constructed.

Coordination with Middlesex County is needed during the design phase of the sidewalk and crosswalk improvements as the roadway is within the county's jurisdiction. Since the sidewalk improvements may increase impervious cover, the improvement will need to be evaluated for compliance with New Jersey Department of Environmental Protection (NJDEP) Stormwater Management rules (NJAC 7:8), NJDEP Flood Hazard Area Control Act rules (NJAC 7:13) and NJDEP Freshwater Wetlands rules (NJAC 7:7A). Development of a Stormwater Management Plan and permit review should be considered in the project schedule.

4. Time to Implement

The potential time to implement the improvements is estimated to be mid-term (signing and striping with regards to intersection improvements are short-term, while sidewalk installation will require preliminary and final design prior to construction).

5. Order of Magnitude Cost = $300,000

B. COMMUNITY CENTER CONNECTIONS

Existing sidewalk on the western side of Monmouth Road south of the Community Center

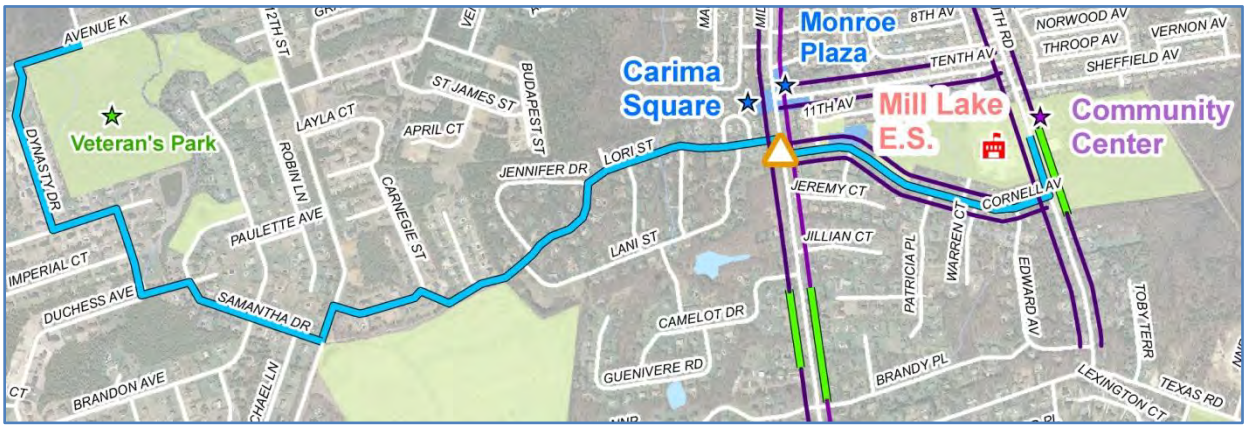
Existing conditions on Lori Street, west of Route 613

1. Existing Condition Summary	
Speed Limit:	• 25 MPH on Monmouth Road, Cornell Avenue, Lori Street, Carnegie Street, Samantha Drive, Dynasty Drive and Avenue K, • 45 MPH on Route 613 south of Cornell Avenue • 35 MPH on Route 613 north of Cornell Avenue
AADT:	Varies
Sidewalk:	Continuous
Land Use:	• Residential • Civic – Community Center • Institutional – Elementary School
Deficiencies:	• Sidewalk gap with observed pedestrian activity • Missing pedestrian and bicycle crossing accommodations at Cornell Avenue
Opportunities	• Provide children with a continuous walking route to school • Enhanced pedestrian and bicycle crossing accommodations • Sidewalk network connection to civic use • A bicycle route and directional signage to connect between civic use and open space (Veteran's Park), approximately 2.65 miles

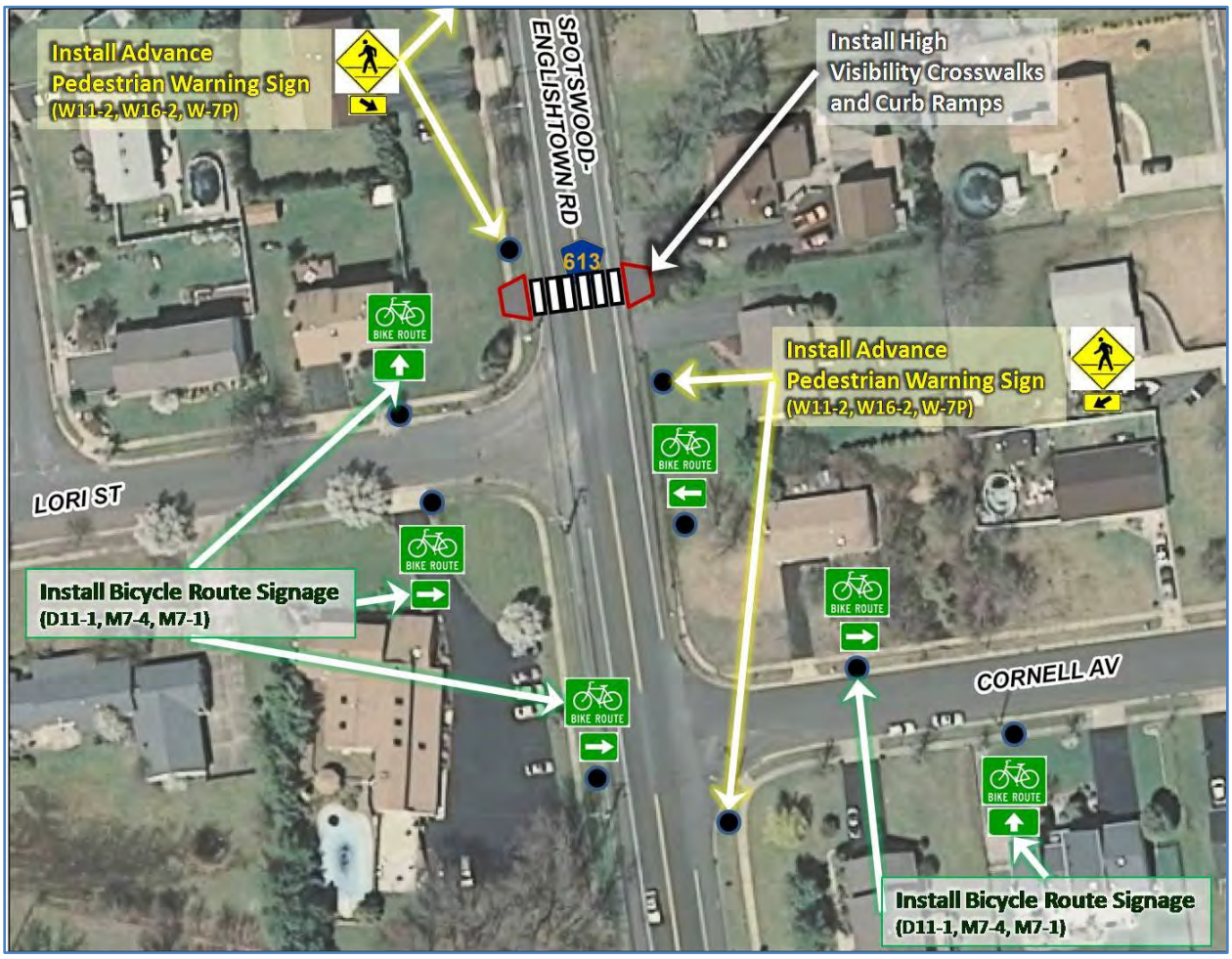
2. Recommended Improvements

i) Install 900’ of sidewalk on northbound Monmouth Road between Cornell Avenue and the Community Center.
ii) Install 1,230’ of sidewalk on northbound Route 613 between Morton Avenue and Park Avenue.
iii) Install 770’ of sidewalk on southbound Route 613 between Brunswick Avenue and Harrison Avenue.
iv) Install bicycle route signage with destination (e.g., Veteran’s Park) and distance information (mileage to destination) between the Community Center and Veteran’s Park. Proposed route includes Monmouth Road, Cornell Avenue, Lori Street, Carnegie Street, Samantha Drive, Dynasty Drive and Avenue K. Route signage is recommended every 1,000’ eastbound and westbound.
v) Install longitudinal striped crosswalks, curb ramps and pedestrian crossing warning signs for crossing location at Route 613 north of Lori Street.
vi) Widen existing 6’ wide, 600’ long sidewalk between Lori Street and Carnegie Street to 8’ for shared use by bicyclists and pedestrians.
vii) Install 8’ wide, 450’ long shared use path between Samantha Drive and Dynasty Drive.

Community Center Connections – Improvement Overview Map



Community Center Connections – Bicycle Route Improvements Detail



Community Center Connections – Existing Conditions at Lori Street and Route 613

3. Potential Constraints

Impacts to right-of-way, traffic, and the environment are not anticipated for the section of Monmouth Road where new sidewalk is proposed, on the sections of Route 613 where sidewalk is proposed and at the crossing locations where the crosswalk improvements are proposed. Additionally, impacts are not anticipated for installation of bicycle route signage and related improvements between Lori Street and Carnegie Street and between Samantha Drive and Dynasty Drive.

Coordination with Middlesex County is needed during the design phase of the crosswalk improvements and sidewalk improvements on Route 613 as the roadway is within the county's jurisdiction.

4. Time to Implement

The potential time to implement the improvements is estimated to be mid-term (signing and striping with regards to intersection improvements are short-term, while sidewalk installation will require preliminary and final design prior to construction).

5. Order of Magnitude Cost = $800,000

C. TEXAS ROAD AND MATCHAPONIX ROAD COMMUNITY LINKS

Intersection of Route 613 and Matchaponix Road

Texas Road, between River Road and Matchaponix Road

1. Existing Condition Summary	
Speed Limit:	• 45 MPH on Route 613 • 35 MPH on Matchaponix Avenue and on Texas Road
AADT:	---
Sidewalk:	Intermittent
Land Use:	• Residential • Commercial
Deficiencies:	• Lack of on-road bicycle facility connections • Missing pedestrian accommodations signalized intersection
Opportunities	• On-road bicycle facility to connect to proposed trail network and Community Center • Enhanced pedestrian crossing accommodations • Enhanced pedestrian access to connect to proposed trail network

2. Recommended Improvements

i) Restripe Texas Road between the township boundary and Matchaponix Avenue to have two (2) 12' travel lanes and two 6' – 8' paved shoulders. Install 'Share the Road' bicycle signage along the restriped section of roadway.

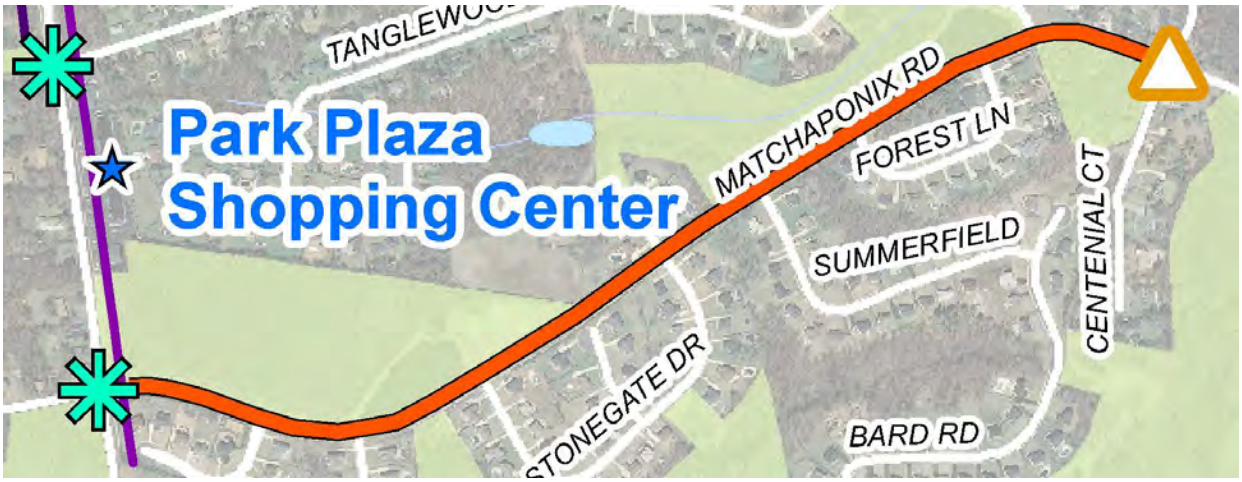
ii) Restripe Matchaponix Avenue between the Texas Road and Route 613 to have two (2) 12' travel lanes and two 8' paved shoulders. Install 'Share the Road' bicycle signage along the restriped section of roadway.

iii) Install pedestrian countdown signal heads, longitudinal striped crosswalks and ADA-compliant curb ramps for pedestrian movements at the intersection of Route 613 and Matchaponix Avenue.

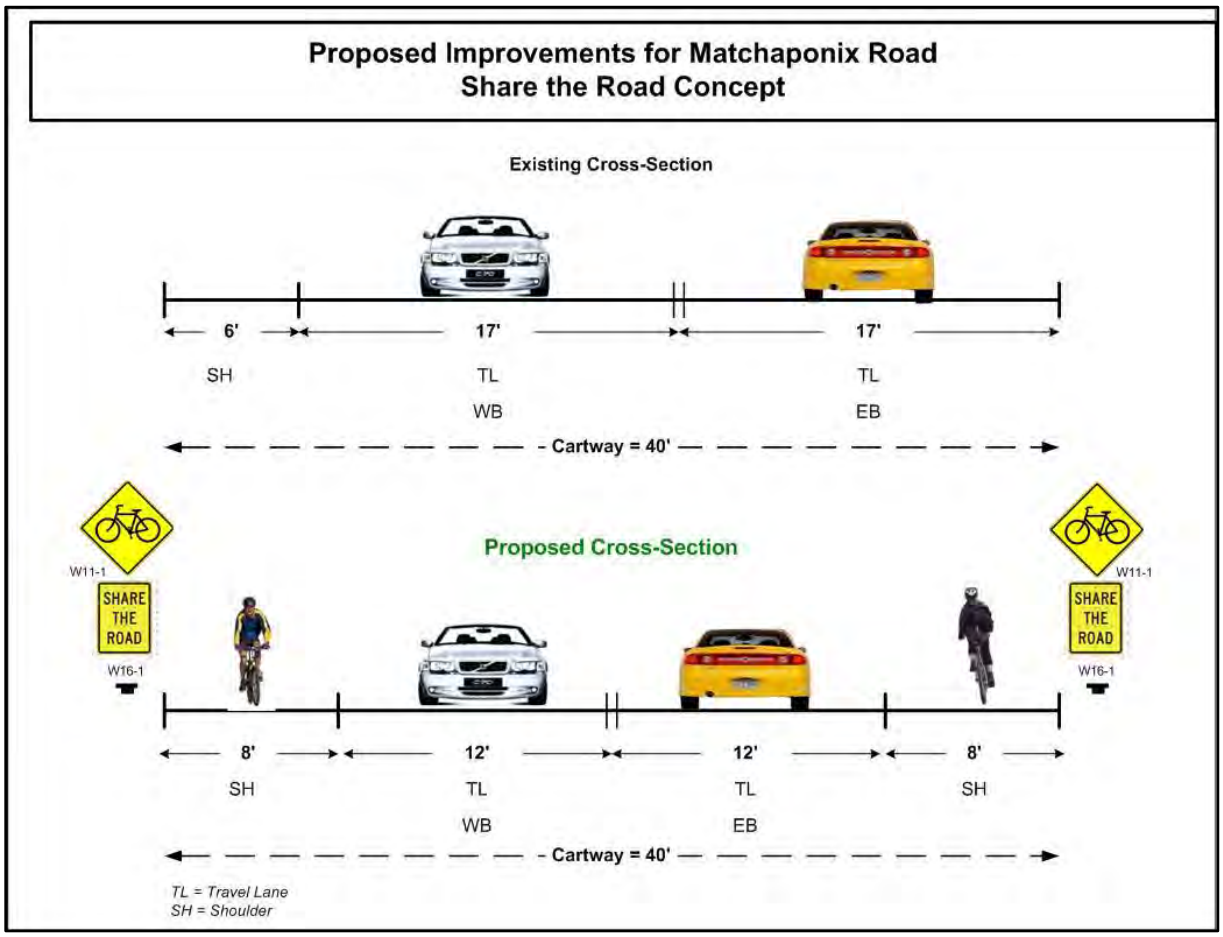
iv) Install pedestrian countdown signal heads, longitudinal striped crosswalks and ADA-compliant curb ramps for pedestrian movements at the intersection of Route 613 and Texas Avenue.

v) Install longitudinal striped crosswalks and ADA-compliant curb ramps for pedestrian movements across Matchaponix Road and the southern approach of Centennial Court at the intersection of Texas Road and River Road/ Centennial Court.

Texas Road and Matchaponix Road Community Links – Improvement Overview Map

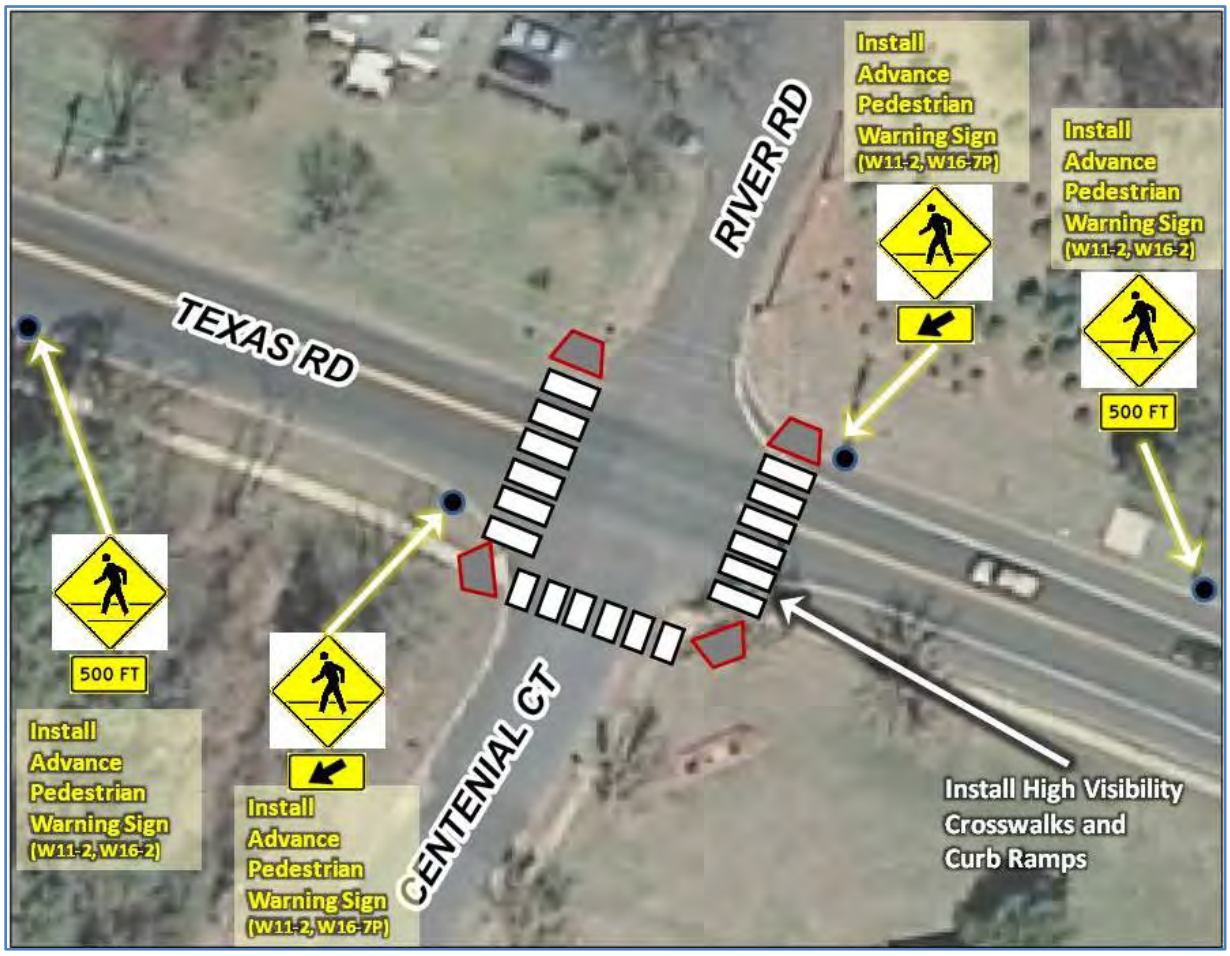


Texas Road and Matchaponix Road Community Links – Matchaponix Road 'Share the Road' Improvements



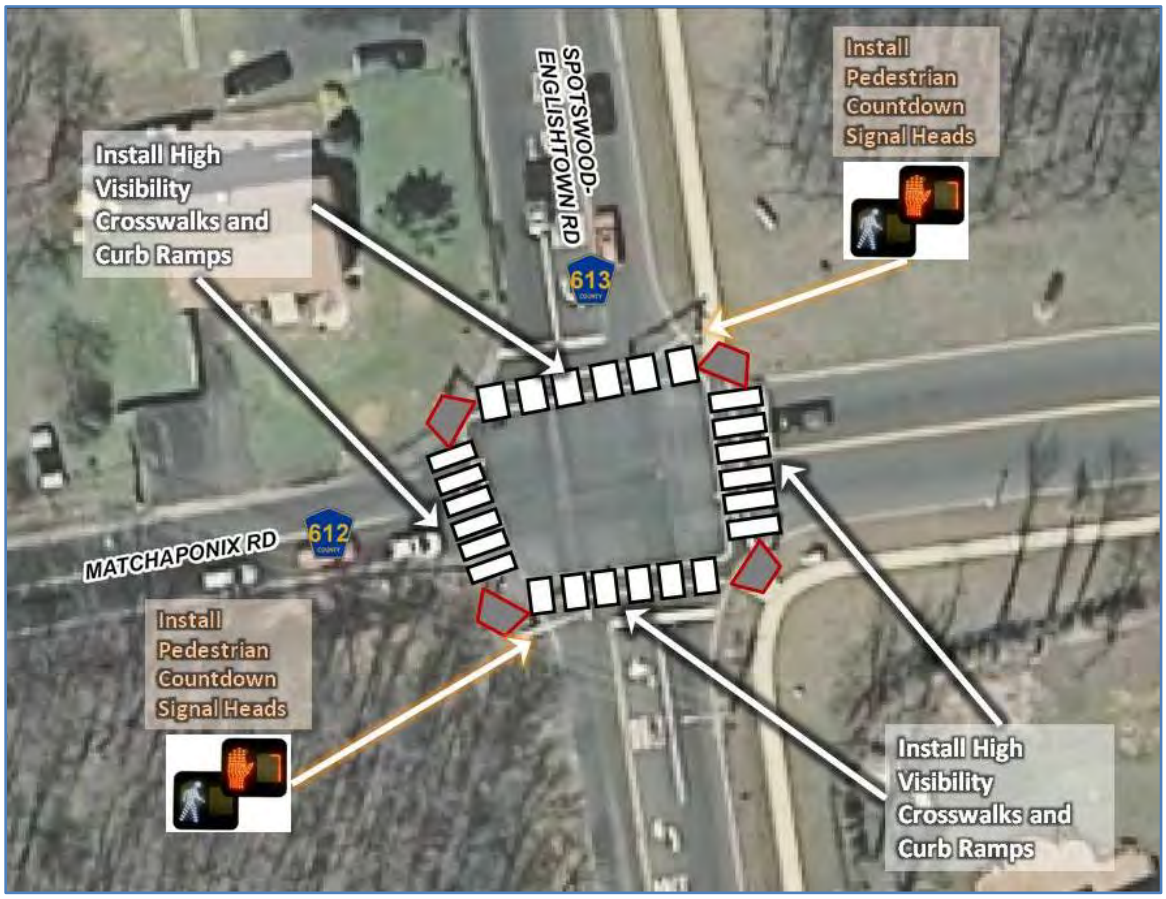
Texas Road and Matchaponix Road – Existing Conditions on Matchaponix Road

Texas Road and Matchaponix Road Community Links –
Texas Road and River Road/Centennial Court Improvement Detail



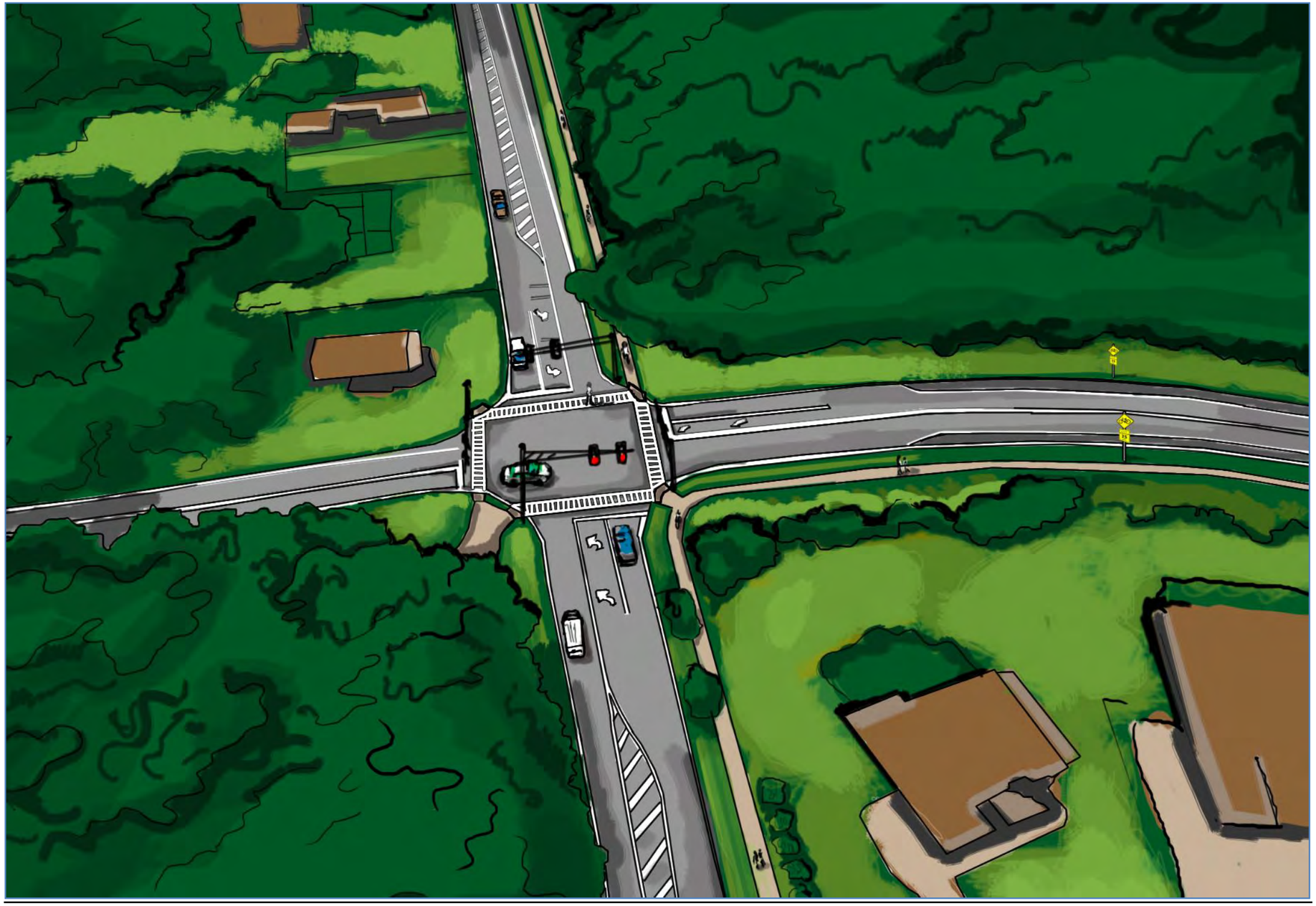
Texas Road and Matchaponix Road Community Links – Existing Conditions on Texas Road

Texas Road and Matchaponix Road Community Links –
Matchaponix Road and Route 613 Intersection Improvement Detail



Texas Road and Matchaponix Road Community Links –
Existing Conditions at Matchaponix Road and Route 613 Intersection

Concept sketch of potential improvements at the intersection Texas Road and Matchaponix Road



3. Potential Constraints

Impacts to right-of-way, traffic and the environment are not anticipated for the sections of Texas Road and Matchaponix Avenue where re-striping and signage is proposed.

Coordination with Middlesex County is needed during the design phase of the crosswalk, curb ramp and pedestrian signal head improvements at the intersection of Route 613 and Matchaponix Avenue, since Route 613 is within the county's jurisdiction.

Potential future connections from intersection into proposed trail network on open space (at southwest corner of intersection) may be constrained by potential environmental remediation work on land.

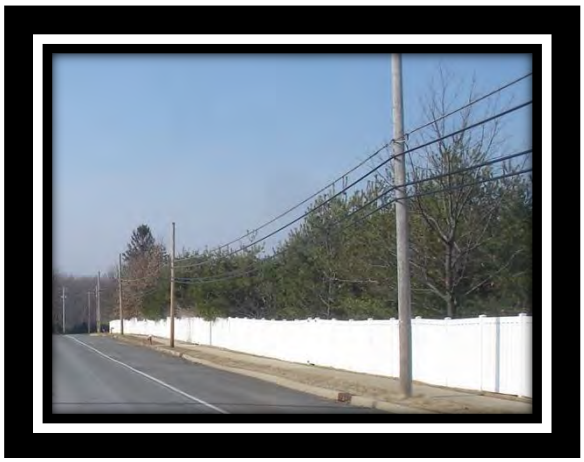
4. Time to Implement

The potential time to implement the improvements is estimated to be short-term.

5. Order of Magnitude Cost = $300,000

D. BARCLAY BROOK AND BROOKSIDE SCHOOLS WALKING ROUTE

Southern approach at the intersection of Route 522 and Schoolhouse Road



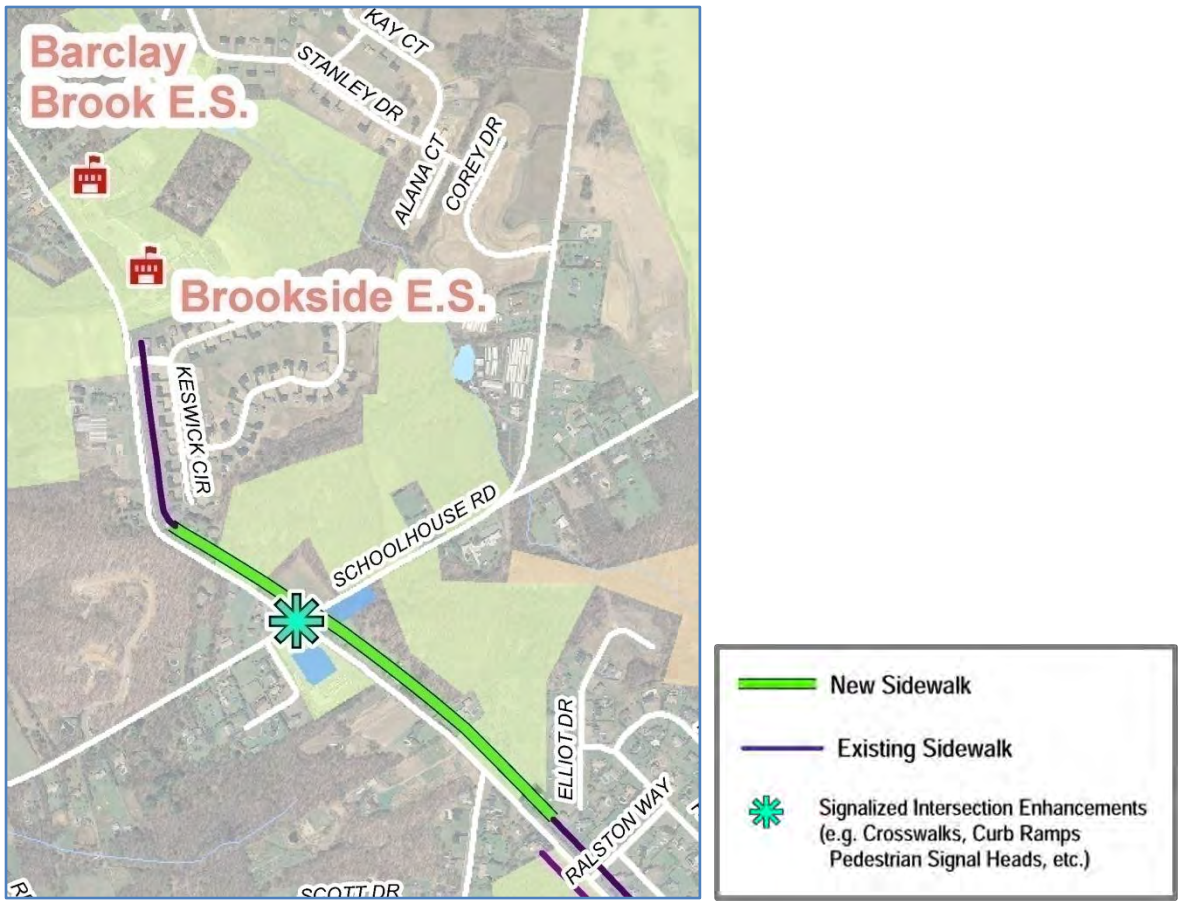
Existing sidewalk on Route 522, north of Ralston Way

1. Existing Condition Summary	
Speed Limit:	• 50 MPH on Route 522
AADT:	• 8,200 on Route 522, north of Schoolhouse Road • 6,400 on Route 522, south of Schoolhouse Road
Sidewalk:	• Minimal – present only in vicinity of recent residential developments
Land Use:	• Residential • Commercial • Institutional – Elementary Schools
Deficiencies:	• Sidewalk network with major gap between residential uses and nearby schools • Missing and faded pedestrian crossing accommodations at intersection of Route 522 and Schoolhouse Road
Opportunities	• Provide children with a continuous walking route to school • Enhanced pedestrian crossing accommodations

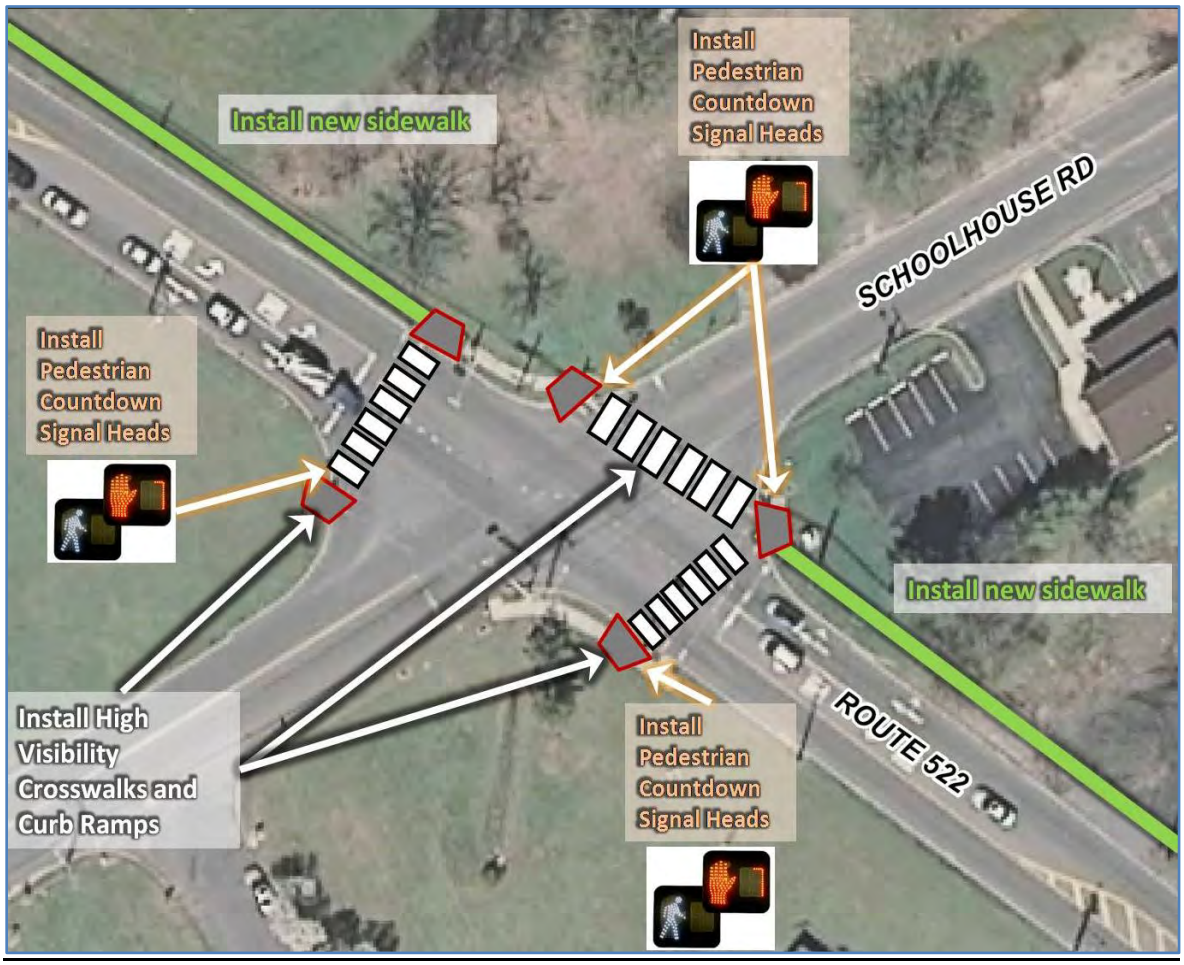
2. Recommended Improvements

i) Install 2140’ of sidewalk on northbound Route 522 between Ralston Way and the Schoolhouse Road.
ii) Install 1,030’ of sidewalk on northbound Route 613 between Schoolhouse Road and Devonshire Boulevard.
iii) Install longitudinal striped crosswalks and ADA-compliant curb ramps across three (3) approaches at the intersection of Route 522 and Schoolhouse Road, excluding the western approach of Schoolhouse Road.
iv) Install pedestrian countdown signal heads for each permitted pedestrian movement at the intersection of Route 522 and Schoolhouse Road.

Barclay Brook and Brookside Schools Walking Route – Improvements Overview Map



Barclay Brook and Brookside Schools Walking Route –
Route 522 and Schoolhouse Road Intersection Improvement Detail



Barclay Brook and Brookside Schools Walking Route –
Existing Conditions at the intersection of Route 522 and Schoolhouse Road

3. Potential Constraints

Potential impacts to right-of-way, utilities, drainage and the environment may occur for the section of Route 522 where new sidewalk is proposed. Recent sidewalk additions appear to have avoided utility impacts. North of Schoolhouse Road, there is existing guiderail and a wooded area, which could be county-owned open space, along northbound Route 522 that would likely be impacted.

Coordination with Middlesex County is needed during the design phase of the sidewalk and crosswalk improvements as the roadway is within the county's jurisdiction. Since the sidewalk improvements may increase impervious cover, the improvement will need to be evaluated for compliance with New Jersey Department of Environmental Protection (NJDEP) Stormwater Management rules (NJAC 7:8), NJDEP Flood Hazard Area Control Act rules (NJAC 7:13) and NJDEP Freshwater Wetlands rules (NJAC 7:7A). Development of a Stormwater Management Plan and permit review should be considered in the project schedule. Also, if there is the removal of 0.5 acre or more of contiguous forest, the New Jersey No Net Loss Reforestation Act (N.J.S.A. 13:1L-14.1 et seq.) may require the development and execution of a reforestation plan.

4. Time to Implement

The potential time to implement the improvements is estimated to be mid-term (signing and striping with regards to intersection improvements are short-term, while sidewalk installation will require preliminary and final design prior to construction).

5. Order of Magnitude Cost = $700,000 (not including right-of-way impacts and environmental mitigation)

E. THOMPSON PARK SHARED USE PATH

New driveway for Monroe High School adjacent Thompson Park

Thompson Park along Perrinevill Road, south of park entrance

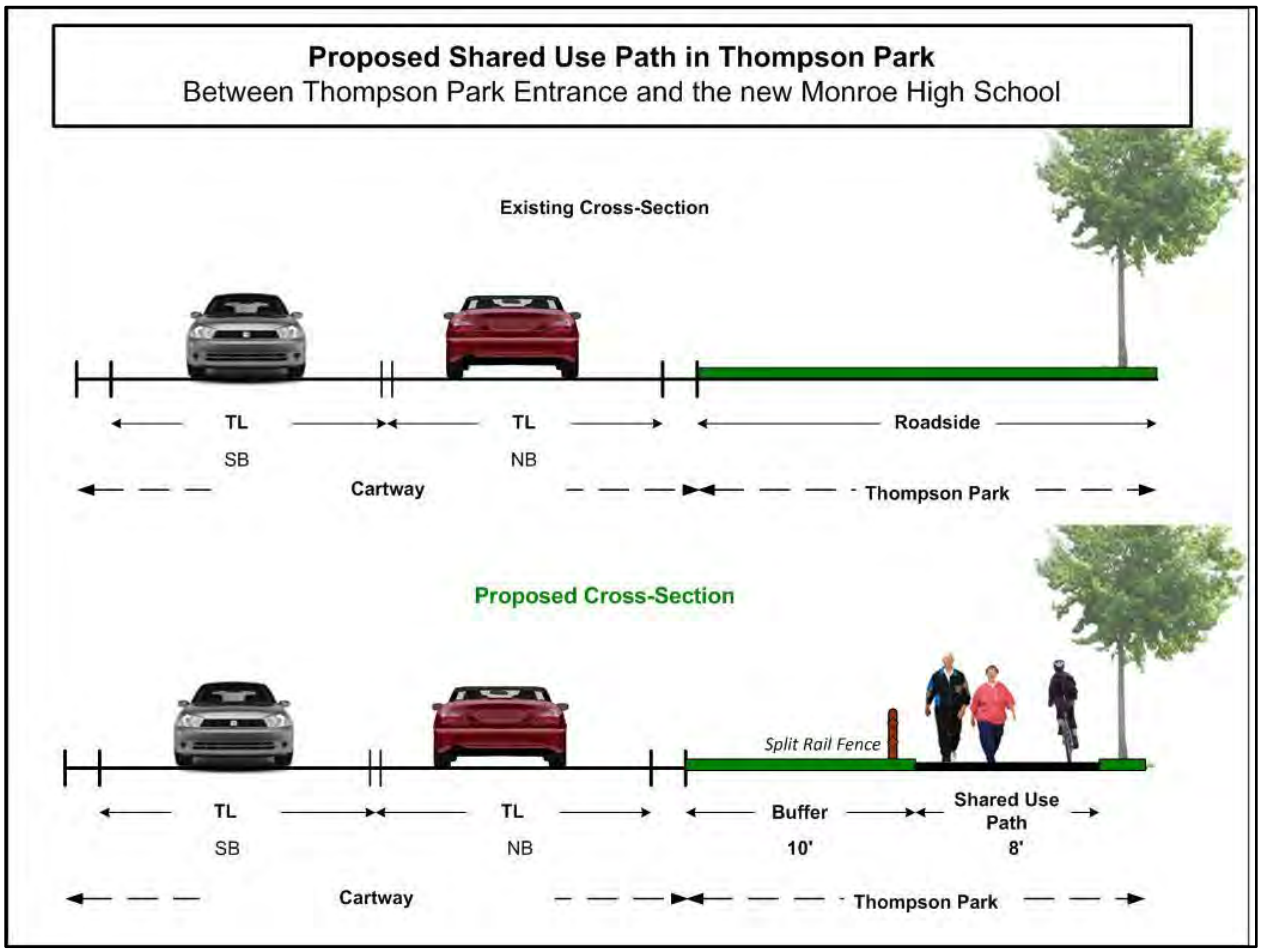
1. Existing Condition Summary	
Speed Limit:	• 45 MPH on Perrineville Road
AADT:	---
Sidewalk:	Limited
Land Use:	• Recreational/Open Space • Civic – Municipal Complex • Institutional – High School
Deficiencies:	• Missing pedestrian and bicycle accommodations between high school, municipal complex and park entrance
Opportunities	• Enhanced connection between high school, municipal complex and park • Connection to pedestrian facilities at, and south of, Schoolhouse Road

2. Recommended Improvements

i) Install an 8' wide, 2,370' long asphalt-paved shared use path along northbound Perrineville Road between the driveway for Monroe High School and the park entrance to Thompson Park.

Thompson Park Shared Use Path – Improvements Overview Map

Thompson Park Shared Use Path –Shared Use Path Improvements Detail



3. Potential Constraints

Impacts to right-of-way, traffic, and utilities are not anticipated for the section of Perrineville Road where the shared use path is proposed.

Since the shared use path improvement may increase impervious cover there may be potential drainage and environmental impacts. The improvement will need to be evaluated for compliance with New Jersey Department of Environmental Protection (NJDEP) Stormwater Management rules (NJAC 7:8), NJDEP Flood Hazard Area Control Act rules (NJAC 7:13) and NJDEP Freshwater Wetlands rules (NJAC 7:7A). Development of a Stormwater Management Plan and permit review should be considered in the project schedule.

The grassed area along northbound Perrineville Road was noted as a temporary parking location during recreational activities at the park (e.g., soccer games). An impact to the availability of parallel parking on the grassed area is not anticipated since the shared use path will have a 10' setback from the roadway. Township officials would however like to discourage parking in the grass by installing a split rail fence parallel to the path in the buffer.

4. Time to Implement

The potential time to implement the improvements is estimated to be mid-term.

5. Order of Magnitude Cost = $300,000

F. COUNTY ROUTE 615, UNION VALLEY ROAD SHARE THE ROAD

Route 615 between Union Valley Road and Cranbury-Half Acre Road

Route 615 north of Route 614 intersection

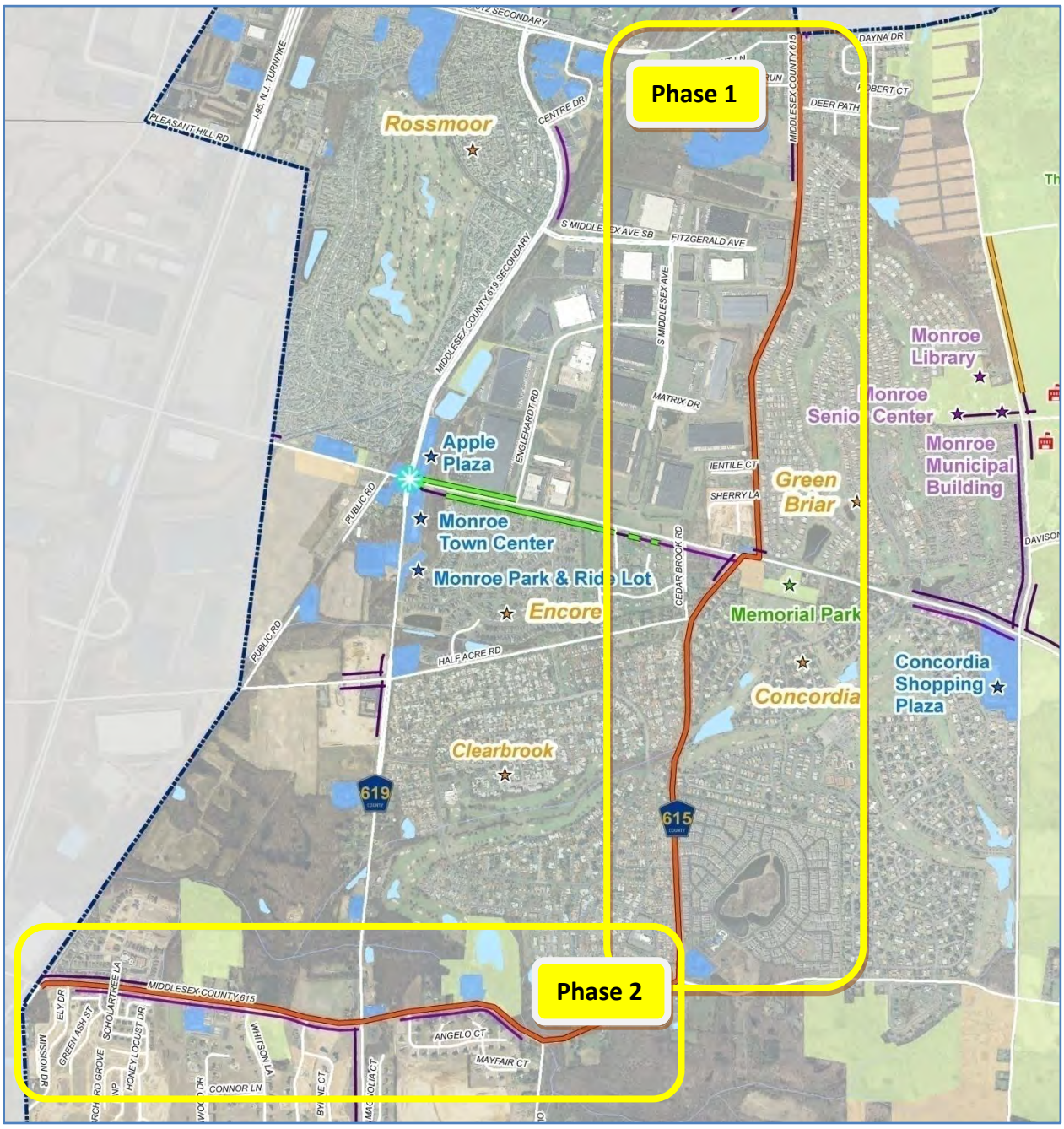
1. Existing Condition Summary	
Speed Limit:	• 50 MPH on Route 615
AADT:	---
Land Use:	• Residential
Opportunities	• North-south bicycle connection through the central section of the township • Bicycle facility spine for additional network development

2. Recommended Improvements

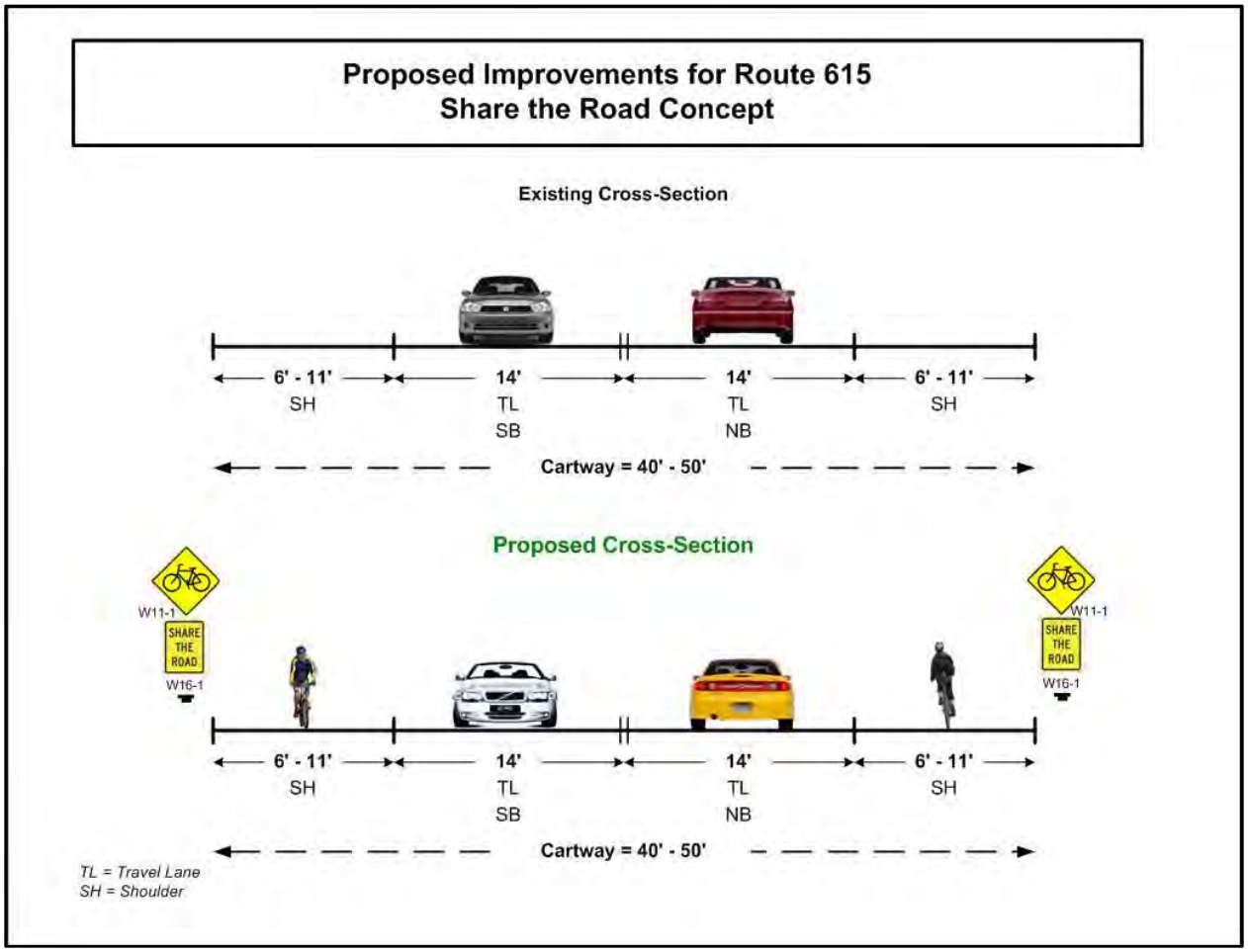
The improvement concept for a paved shoulder, 'Share the Road' bicycle facility on Route 615 is proposed in two (2) phases. Phase I would include Route 615 between the township boundary with Jamesburg and Union Valley Road; Phase II would extend between Union Valley Road and the township boundary with Cranbury.

i) Phase I: Install 'Share the Road' signage on Route 615, between the township boundary with Jamesburg and Union Valley Road
ii) Phase II: Widen the following shoulders by the dimensions cited to provide bicycle compatible shoulders on Route 615:
    a. Westbound shoulder by a minimum of 2' between milepost 5.90 and milepost 6.15.
    b. Westbound shoulder by a minimum of 5' between milepost 6.45 and milepost 6.65.
    c. Westbound shoulder by a minimum of 5' between milepost 6.7 and milepost 6.85.
    d. Westbound and eastbound shoulders by a minimum of 5' between milepost 6.9 and milepost 7.15.
    e. Eastbound shoulder by a minimum of 5' between milepost 7.15 and milepost 7.3.
iii) Phase II: Install 'Share the Road' signage on Route 615, between Union Valley Road and the township boundary with Cranbury.

Route 615 'Share the Road' Improvement Concept – Improvements Overview Map



Route 615 'Share the Road' Improvement Concept – 'Share the Road' Improvement Detail



Route 615 'Share the Road' Improvement Concept -
Existing Condition on westbound Route 615, east of Chianti Drive, with shoulder drop-off location

3. Potential Constraints

Potential impacts to right-of-way, utilities, drainage and the environment are not anticipated for the section of Route 615 where Phase I 'Share the Road' improvements are proposed. Potential impacts to right-of-way, utilities, drainage and the environment may occur for the section for Route 615 where Phase II 'Share the Road' improvements are proposed. These impacts could be anticipated due to the widening proposed.

Coordination with Middlesex County is needed during the design phase of 'Share the Road' improvements as the roadway is within the county's jurisdiction. Since the Phase II roadway improvements would likely increase impervious cover, these improvements will need to be evaluated for compliance with New Jersey Department of Environmental Protection (NJDEP) Stormwater Management rules (NJAC 7:8), NJDEP Flood Hazard Area Control Act rules (NJAC 7:13) and NJDEP Freshwater Wetlands rules (NJAC 7:7A). Development of a Stormwater Management Plan and permit review should be considered in the project schedule.

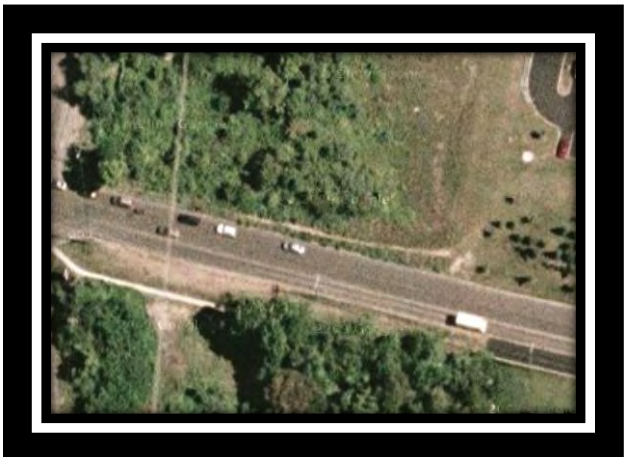
4. Time to Implement

The potential time to implement the improvements is estimated to be long-term.

5. Order of Magnitude Cost = $2,400,000

G. COUNTY ROUTE 614 SIDEWALK IMPROVEMENTS

Existing sidewalk from Encore residential development to Monroe Town Center Driveway

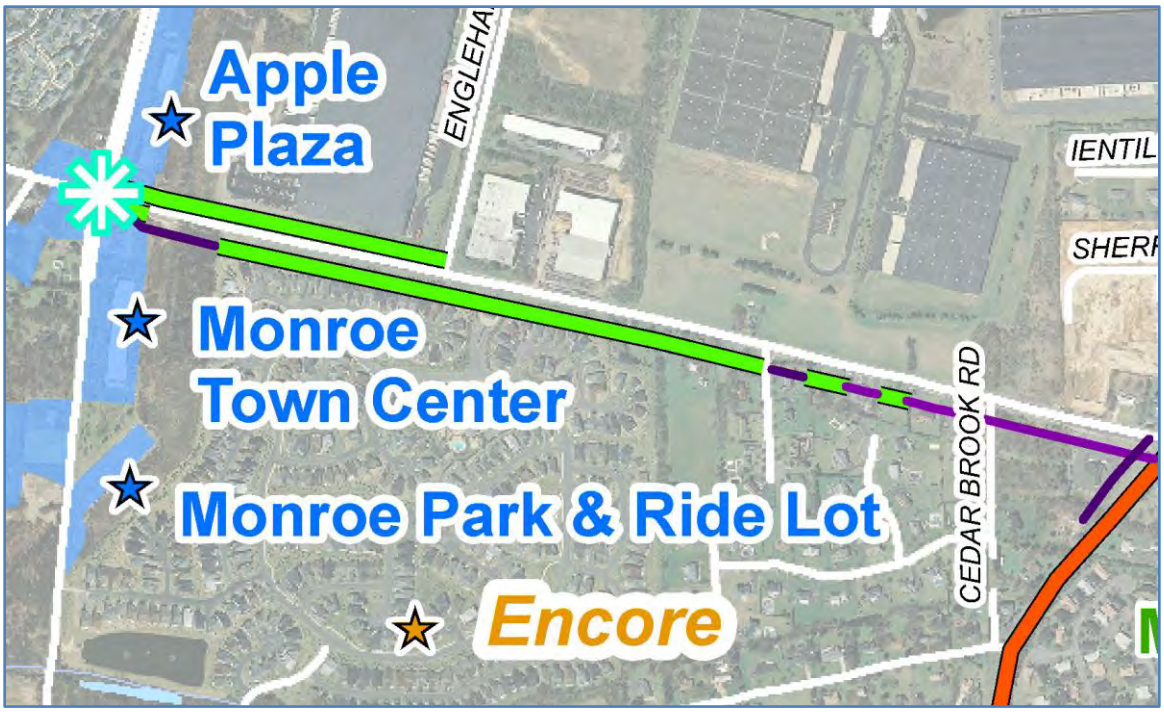


Existing worn footpath on Route 614, between Englehard Drive and Apple Plaza

1. Existing Condition Summary	
Speed Limit:	• 45 MPH on Route 614
AADT:	• 13,800, between Route 619 and Englehard Drive
Sidewalk:	Intermittent
Land Use:	• Residential • Commercial • Industrial
Deficiencies:	• Sidewalk gaps with observed pedestrian activity • Missing sidewalk connections to commercial destinations
Opportunities	• Enhanced pedestrian route to commercial destinations • Connection to planned county-sponsored improvements at the intersection of Route 614 and Route 619

2. Recommended Improvements

i) Install 170’ of sidewalk on eastbound Route 614 between Route 619 and Monroe Town Center driveway.
ii) Install 1,540’ of sidewalk on westbound Route 614 between Route 619 and Englehard Drive.
iii) Install 2,550’ of sidewalk on eastbound Route 614 between existing sidewalk (from Encore development) and Kelley Court.
iv) Install a 200’ sections of sidewalk and a 140’ section of sidewalk on eastbound Route 614 between Kelley Court and Cedar Brook Road.



3. Potential Constraints

Impacts to right-of-way, traffic, utilities and drainage are not anticipated for the new sidewalk proposed along eastbound Route 614. The existing sidewalk on westbound Route 614 appears to have avoided utility impacts and is set behind overhead utility poles. There may be potential right-of-way impacts for the sidewalk proposed along Route 614 westbound since the right-of-way narrows east of Englehard Drive.

Coordination with Middlesex County is needed during the design phase of the sidewalk and as the roadway is within the county's jurisdiction. Since the sidewalk improvements may increase impervious cover, the improvement will need to be evaluated for compliance with New Jersey Department of Environmental Protection (NJDEP) Stormwater Management rules (NJAC 7:8), NJDEP Flood Hazard Area Control Act rules (NJAC 7:13) and NJDEP Freshwater Wetlands rules (NJAC 7:7A). Development of a Stormwater Management Plan and permit review should be considered in the project schedule.

4. Time to Implement

The potential time to implement the improvements is estimated to be mid-term

5. Order of Magnitude Cost = $500,000

V. FUNDING THE IMPROVEMENTS

Costs associated with implementing the improvements will vary. Interim improvements (e.g., crosswalk striping at Texas Road) will have fewer design requirements and will therefore be lower in cost than an improvement that would need funding for feasibility assessment and design prior to construction (e.g., Thompson Park Shared Use Path). Preliminary cost estimates for each improvement concept are presented with a description of the recommended improvement in this Report. Cost estimates for roadway construction included costs for modifying drainage, the extent of which cannot be determined until preliminary and/or final design. Cost estimating spreadsheets are contained in Appendix A.

A. FUNDING SOURCES

Funding sources for bicycle and pedestrian improvements are contained in **Appendix B: "Funding Pedestrian and Bicycle Planning, Programs and Projects."** The funding sources identified in the document were compiled by NJDOT to identify major funding sources that can be used to fund bicycle and pedestrian planning and project development activities. Improvements documented in this report may also qualify for Transportation Enhancements (TE) funding (**Appendix C**).

B. SAFE ROUTES TO SCHOOL

The Safe Routes to School (SRTS) Program provides funding for programs and projects to encourage and facilitate children walking and biking to school safely. SRTS was created through Section 1404 of the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users Act* (SAFETEA-LU). It is a Federal-Aid program administered by State Departments of Transportation (DOTs).

The purposes of the program according to the FHWA are:

1. To enable and encourage children, including those with disabilities, to walk and bicycle to school;

2. To make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and,

3. To facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity (approximately 2 miles) of primary and middle schools (Grades K-8). Note: New Jersey

State Law mandates that school districts bus students living more than two (2) miles from their respective public elementary and middle schools.[12]

The SRTS Program provides two (2) types of funding: infrastructure projects and non-infrastructure activities. SAFETEA-LU specifies that eligible infrastructure-related projects include planning, design, and construction of projects that will improve the capability of students walking and biking to school including:

- Sidewalk improvements;
- Traffic calming and speed reduction improvements;
- Pedestrian and bicycle crossing improvements;
- On-street bicycle facilities;
- Off-street bicycle and pedestrian facilities;
- Secure bicycle parking facilities; and,
- Traffic diversion improvements in the vicinity of schools.

In New Jersey, NJDOT determines the specific types of infrastructure projects that are eligible for the SRTS Program. For infrastructure improvements specifically, funding must be spent on projects within the public right-of-way.

VI. MAINTENANCE, EDUCATION AND ENFORCEMENT

Maintenance of roadways; education of bicyclists, pedestrians and motorists; and, enforcement of state laws and statues by law enforcement are important considerations in implementing recommended improvements.

A. ROADWAY MAINTENANCE

The condition, specifically smoothness, of a roadway's surface is an important factor in bicycle comfort and safety. When a surface is irregular it not only causes an unpleasant ride, but also poses a risk to the bicyclist as these hazards may cause a bicyclist to swerve into motor vehicle traffic to avoid the obstacle. AASHTO recommends the routine maintenance of roadways to provide "good riding conditions."[13]

B. EDUCATION

To properly plan for future growth of bicycle and pedestrian use in a community, it is important to implement educational programs that encourage lawful and safe practices among bicyclists,

[12] Pietrafesa, Gianfranco A., Policy Update, Fundamentals of School Busing, School Leader, September/October 2003.
[13] American Association of State Highway and Transportation Officials, Guide for the Development of Bicycle Facilities, page 73.

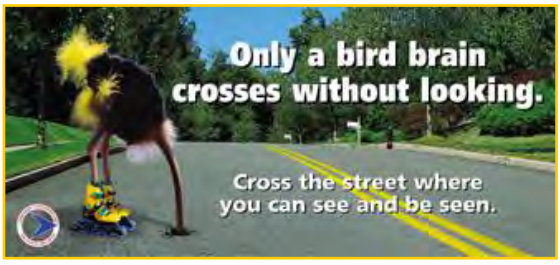
pedestrians and motorists. When educating a community it is important to dispel myths, encourage courteous and lawful behavior, and enhance awareness. By utilizing the resources of the local police, schools and libraries, education programs have the potential of reaching a broader audience and cross section of the community.

The following four (4) primary groups should be educated about bicycle safety and awareness:

1. **Young bicyclists**
2. **Parents of young bicyclists**
3. **Adult bicyclists**
4. **Motorists**

The National Highway Traffic Safety Administration (NHTSA) distributes a packet called "Getting to School Safely Community Action Kit." Within the packet there are fact sheets about bicycle and pedestrian safety. Another organization that distributes a guide about how to properly walk to school is the Department of Health and Human Services, Center for Disease Control and Prevention (CDC). The CDC gives parents fun tips for teaching their children the proper way to walk to school.

NJDOT uses several messages to educate citizens about bicycle and pedestrian safety. The two (2) messages used primarily for pedestrian safety education include: "Cross the street where you can see and be seen" (intended to encourage pedestrians to be aware of motorists) and "Yield to Pedestrians" (intended to encourage motorists to stop for pedestrians in a crosswalk).



C. ENFORCEMENT

The key to encouraging a safe and well traveled transportation system is an enforcement program for traffic regulations as they apply to all roadway users: motorists, bicyclists and pedestrians. Monroe Township can act to both reduce poor travel behavior and encourage beneficial travel habits through enforcement. This process should include reviewing current ordinances and regulations related to travel to identify elements that may unnecessarily affect users, especially in terms of bicyclists and pedestrians. In addition, this review may assist in

identifying opportunities to partner with community, county or state organizations to inform users about safe travel behavior, such as yielding to pedestrians in crosswalks and use of helmets by bicyclists under the age of 17.

1. Yielding to a Pedestrian in a Crosswalk

According to Chapter 4 of the New Jersey Driver Manual (www.njmvc.gov), if a motorist fails to yield for a pedestrian in a crosswalk as per state law (N.J.S.A 39:4-36), the penalty carries a $100 fine, up to 15 days in jail and two (2)-points on their driver's license.

2. Bicycle Helmets

New Jersey state law (N.J.S.A 39:4-10.1) requires anyone under the age of 17 years riding a bicycle to wear a safety helmet. The most common cause of death for a bicyclist is a head injury and in 1992, New Jersey became the first state to enforce a law that children under the age of 14 years wear a helmet. As a first offense, violators of the helmet law will receive a warning and the parent or legal guardian may be fined a maximum of $25. For subsequent offenses, a maximum fine of $100 could be imposed if a lack of parental supervision contributed to the offense.

VII. CONCLUSIONS

Monroe Township has an opportunity to enhance roadway conditions to improve bicycle and pedestrian mobility and access to commercial, residential and recreational areas. The Roadway Network Improvement Guide is intended to serve as a resource for the township in improving the roadway network for present and future generations of bicyclists and walkers. The data and findings presented herein will assist Monroe Township officials in obtaining funding for bicycle and pedestrian improvements.

Monroe Township
Bicycle and Pedestrian Planning Study

Appendix A

NJDOT COST ESTIMATING SPREADSHEETS

Roadway Network Improvement Guide

Classification Number 1 - NEW CONSTRUCTION - English

Route	614 Sidewalk Improvements	Section/Contract #	Monroe Township
PM	Del Vecchio	UPC No.	2007BPP643C TO#8/116129

EARTHWORK (must be calculated)

	Unit	Quantity	x Unit Price	Amount
Stripping (4 - 6" Depth)	Acre	0	4,050	0
Roadway Exc. Unclassified, **See (J)**	C.Y.	456	30	13680
Removal of Conc. Base & Conc. Surface Courses, **See (K)**	S.Y.	0		0
Channel Excavation	C.Y.	0	12.25	0
Ditch Excavation	C.Y.	0	10	0
Borrow Excavation Zone 3, **See (J)**	C.Y.	0		0
		0		0
EARTHWORK TOTAL	=			13680

Suggested procedure for calculating earthwork:
A) Determine Typical section (number of lanes, median widths, side slopes, etc.).
B) Get latest topography map available.
C) Plot proposed alignment on topo map.
D) Develop profile using topo controls such as existing roads, streams, rivers and design manual.
E) Calculate Areas for the typical section in 1 foot increments of cut or fill.
F) At 10 to 60 foot intervals (depending on frequency of X-section changes) calculate the earthwork.
G) Calculate any other significant earthwork (ramps, cross-roads, etc.).
H) Make appropriate earthwork corrections for the pavement box and striping. Use 21 inch depth for rigid pavement, 26 inch depth for all flexible pavement and 4 inch depth for stripping.
I) Deduct any roadway excavation from borrow required to calculate Borrow Excavation Zone 3.
J) See Construction Cost Estimate Work Sheet (Section 3.1). This worksheet must be utilized for the most recent price information.
K) 11.2 to 12.5, based on the quantity, location and type of project.

PAVEMENT

12 FOOT WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	10 inch R.C. Pavement	156
B	2 inch HMA Surf. Crs. & 8 inch HMA Base	61
C	3 inch HMA Surf. Crs. & 4 inch HMA Base	46
D	2 inch HMA Surf. Crs. & 2 inch HMA Base	22
E	Bridge Approach & Transition Slabs	156

Computation Table for Pavement. Cost

Type	Cost from table above	x Length	x Pavement *W.F.	= Amount
				0
				0
				0
				0
				0
				0
				0
				0
				0
PAVEMENT TOTAL			=	0

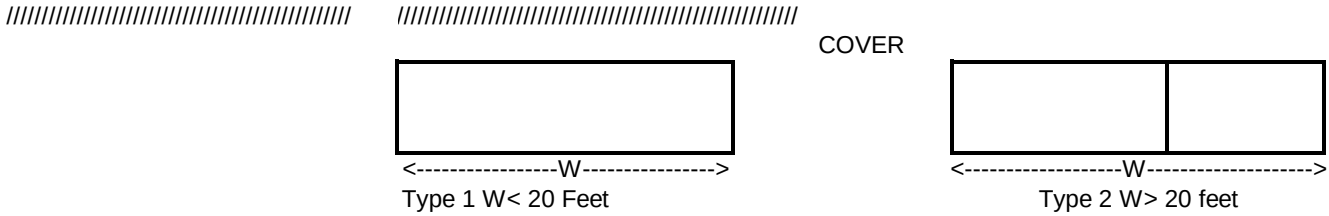
*Width Factors = Ratio of 12 foot wide lane to actual pavement width.

Example = actual pavement width = 25 foot = 25/12 = 2.08 W.F.

CONTEXT SENSITIVE DESIGN

Attach additional sheet detailing items and costs of context sensitive design work =

CULVERTS



Type 1 W< 20 Feet

Type 2 W> 20 feet

Type	Layout (3)	Skew (1)	Cover (2)	Cost Per Sq. Foot
Type 1	Area w x L exceeds 1000 Sq. Feet	0-60 degrees	0 to 10'	114.75
			10' to 20'	147.25
	Short Culverts Difficult Conditions under 1000 Square Feet	0-60 degrees	0 to 10'	203.50
			10' to 20'	235.00
Type 2	Area w x L exceeds 1000 Sq. Feet	0-60 degrees	0 to 10'	121.75
			10' to 20'	152.50
	Short Culverts Difficult Conditions under 1000 Square Feet	0-60 degrees	0 to 10'	203.50
			10' to 20'	235.00

For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.

Description	Area Computation	x Cost per Sq. Foot	= Amount
			0
			0
			0
			0
		Culvert Total =	0

BRIDGES

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 3 spans and 2 side spans (Max. Span 100 feet)
H = Clear Height 14 To 23 feet (4)
L = 100 to 400 feet & all viaducts over 400 feet (5)

Class	Layout	Skew (1)	Foundation (2)	Cost per Sq. Foot
I	Width at Least 45 feet	0 to 40 Degrees	No Piles	134.75
			Piles at Stub Abut.	159.75
			Piles at Piers & Stu	174.75
		40 to 60 Degrees	No Piles	145.00
			Piles at Stub Abut.	168.25
			Piles at Piers & Stu	181.25

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 3 spans and 2 side spans (Max. Span 100 feet) (3)
H = Clear Height 14 feet (4)
L = under 400 feet

Class 1 - New Construction

Class	Layout	Skew (1)	Foundation (2)	Cost per Sq. Foot
II	L exceeds W Area L x W exceeds 4500 Sq. Feet	0 to 40 Degrees	No Piles	176.50
			On Piles	187.25
		40 to 60 Degrees	No Piles	219.75
			On Piles	273.25
III	W exceeds L Area L x W exceeds 4500 Sq. Feet	0 to 40 Degrees	No Piles	226.75
			On Piles	299.25
		40 to 60 Degrees	No Piles	241.50
			On Piles	310.00
IV	Width 30 - 45 feet Area W x L under 4500 Sq. Foot	0 to 40 Degrees	No Piles	295.50
			On Piles	396.75
		40 to 60 Degrees	No Piles	318.25
			On Piles	416.25

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 2 spans (Max. Span 125 feet)
H = Clear Height 14 feet (4)
L = 100 to 250 feet

Layout	Skew (1)	Foundation (2)	Cost/ Sq. Foot
Width at Least 40 feet	0 to 40 Degrees	No Piles	157.00
		Piles at Semi-Stub Abut.	182.00
		Piles at Piers & Semi-Stub Abut.	204.50
Minimum Length 100 feet	40 to 60 Degrees	No Piles	166.50
		Piles at Semi-Stub Abut.	194.75
		Piles at Piers & Semi-Stub Abut.	217.50

			0
Length	Width	Cost per SF	Bridge Total

1. For skews over 60 degrees it will be necessary to make a special analysis and establish a square foot price comparable to above.

2. For very bad foundation conditions requiring unusual lengths or spacing of piles, it will be necessary to establish a square foot price.

3. For longer spans, adjust the cost per square foot to reflect increased cost of structural members.

4. For span bridges, it is expected the length of the side span will be in- creased in proportion to any increase in height. Because of the resultant increase in deck area, the square foot price will remain approximately the same in the range of heights shown. For extremely high structures (particularly for viaducts), square foot prices will have to be increased.

5. For structures over 400 foot long (viaducts), reduce the cost per square foot if repetitive span length and forming can be used. Reduce by $0.50 for lengths from 400 to 600 feet and by $1.00 for lengths over 600 feet. (Do not forget adjustments (3) and (4) above on viaducts).

6. For statically indeterminate structures, square foot prices will have to be established.

Structure Description	Calculated Sq. Foot of Bridge Deck	x Cost Per Square Foot	= Amount
			0
			0
			0
			0
			0
			0
			0
			0

	0
	0
	0
	0
Sub Total	0
	0

Clearing Site Bridge *0-3% of Sub Total

%

BRIDGE TOTAL 0

*Pick appropriate percent based on the size, type and materials of existing structure

DRAINAGE (includes inlets and cross drains)

Rural	0.05	364356	18217.8
	project length (miles)	x cost per mile	= Amount
Urban	0	544280	0
	project length (miles)	x cost per mile	= Amount

The above are the total costs of basins, manholes, longitudinal and transverse pipes, underdrains, headwalls, protecting curbs, aprons, etc. for a divided highway with a depressed median. The costs are assumed to apply to 4, 6 or 8 lane sections since there will be no appreciable difference in the number of basins or the sizes or lengths of pipes.

Frontage Road & Ramp Drainage

0	55	0
length of ramp or frontage rd. in feet	x cost per foot	= Amount

DRAINAGE TOTAL = 18217.8

INCIDENTAL ITEMS

Item	Cost	x Quantity	= Amount
Concrete Sidewalk 4" (SY)	51	2563	130713
9x16 Conc. Vertical Curb (LF)	22	513	11286
Curb Ramps - 2	1,500	2	3000
INCIDENTAL ITEMS TOTAL	=		144999

LANDSCAPE

	Quantity	x Unit Prices	= Amount
Topsoil and Seeding (Mainline) Length of Project in miles	0.4	112,815	45126
Planting (Mainline) Length of Project in miles	0	64,500	0

Topsoil, Seeding, Planting (Finger Ramp Number of Finger Ramps	0	12,500	0
Topsoil, Seeding, Planting (Loop Ramp) Number of Loop Ramps	0	20,000	0
Topsoil, Seeding (Access Road) Length of Access Road in Feet	0	7.9	0
LANDSCAPE TOTAL	=		45126

NOISE ABATEMENT

	Unit	Quantity	x Cost	= Amount
Noise Wall	L.F.	0	305	0
				0
				0
				0
NOISE ABATEMENT TOTAL	=			0

GENERAL ITEMS

Item	Project Length (miles)	x Cost/Mile	= Amount
Field Office	0	44,260	0
Materials Field Laboratory	0	28,970	0
Erosion Control during Construction	0.5	64,375	32187.5
GENERAL ITEMS TOTAL	=		32187.5

SUMMARY

Route	614 Sidewalk Improvements	Section/Contract #	Monroe Township
PM	Del Vecchio	UPC No.	2007BPP643C TO#8/116129

Work Type	Totals from other pages
Earthwork	13680
Pavement	0
Context Sensitive Design	0
Culverts	0
Bridges	0
Drainage	18217.8
Incidental Items	144999
Landscape	45126
Noise Abatement	0
General Items	32187.5
PROJECT SUBTOTAL	254210.3

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		0% of Proj. Subtotal	0
Maintenance of Traffic		10% of Proj. Subtotal	25421
Training		1% of Proj. Subtotal	2542.103
Mobilization			22878.927

	Project Cost < 5.0 (Mil.)	9% of Proj. Subtotal		22879
	Project Cost 5.0 & above	10% of Proj. Subtotal		0
Progress Schedule	Project Cost(Mil.)	$	0	
	Less than 2.0	0		0
	2.0 to 5.0	6,000		0
	5.0 to 10.0	8,000		0
	10.0 to 20.0	15,000		0
	20.0 to 30.0	30,000		0
	30.0 to 40.0	40,000		0
	40.0 & above	58,000		0
Clearing Site	Project Cost (Mil.)	$	15000	
	Less than 1.0	15,000		15000
	1.0 to 2.0	30,000		0
	2.0 to 5.0	45,000		0
	5.0 to 10.0	115,000		0
	10.0 to 20.0	220,000		0
	20.0 to 30.0	240,000		0
	30.0 to 40.0	250,000		0
	40.0 & above	490,000		0
Construction Layout	Project Cost(Mil.)	$	7000	
	Less than 1.0	7,000		7000
	1.0 to 2.0	20,000		0
	2.0 to 5.0	42,000		0
	5.0 to 10.0	87,000		0
	10.0 to 20.0	160,000		0
	20.0 to 30.0	220,000		0
	30.0 to 40.0	490,000		0
	40.0 & above	890,000		0
		PROJECT TOTAL	327052	

CONTINGENCIES & ESCALATION

		Y		2.00	1.00
Y = Number of Years until midpoint of construction duration plus number of years until construction start. If midpoint is less than 2 years from the date of this estimate, no escalation is required. Maximum value = 10%		0.00			
327052.36	1.030	1.00	336864		
Project Total	Contingencies (1+C)	1 + [0.01 (Y+1) (Y-2)]	Construction Estimate for PD		

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years		
0-10	3%	1		0.030
10-20	2.50%	2		0.000
20-50	2%	3		0.000
Over 50	1.50%	4		0.000

CONSTRUCTION ENGINEERING (CE)

Project Cost (Mil.)		% of Construction Cost		
Less than 1.0		28.40%		95669
1.0 to 5.0		17.60%		0
5.0 to 10.0		12.20%		0
10.0 & above		9.50%		0
CONSTRUCTION ENGINEERING AMOUNT		$95,669.36		

CONSTRUCTION CHANGE ORDER CONTINGENCIES

Total Federal Participating Items in Millions of $	Construction Change Order Contingency Amount	
$0 to 0.1	$6,000	0
0.1 to 0.5	25,000	25000
0.5 to 5.0	25,000 + 4% of amount in excess of $500,000	0
5.0 to 10.0	205,000 + 3% of amount in excess of $5,000,000	0
10.0 to 15.0	355,000 + 2% of amount in excess of $10,000,000	0
15.0 and above	455,000 + 1.5% of amount in excess of $15,000,000 - $500,000 max	0
		0

For State Funded Projects, Contingencies for Change orders = 0

CHANGE ORDER CONTINGENCY AMC = 25000

UTILITIES RELOCATIONS BY COMPANIES/OWNERS

Construction Cost for Initial Estimate	x % or + Estimate Use % or utilities detailed estimate	= Utility Relocation Cost for Initial Estimate
336863.9308	0.09	30318

If there are no utility relocations on the project indicate “No Utilities” in the box above.

RIGHT OF WAY COST

If there is no ROW cost on the project indicate “No ROW” the box

SUMMARY

Construction Estimate for Initial	336,864
Construction Engineering (CE)	95,669
Contingencies	25,000
Utilities Relocations	30,318
Total Construction Cost	**487,851**

Right of Way Cost	Not Known

Classification Number 1 - NEW CONSTRUCTION - English

Route	Barclay Brook Schools	Section/Contract #	Monroe Township
PM	Del Vecchio	UPC No.	2007BPP643C TO#8/116129

EARTHWORK (must be calculated)

	Unit	Quantity	x Unit Price	Amount
Stripping (4 - 6" Depth)	Acre	0	4,050	0
Roadway Exc. Unclassified, **See (J)**	C.Y.	313	30	9390
Removal of Conc. Base & Conc. Surface Courses, **See (K)**	S.Y.	0		0
Channel Excavation	C.Y.	0	12.25	0
Ditch Excavation	C.Y.	0	10	0
Borrow Excavation Zone 3, **See (J)**	C.Y.	0		0
		0		0
EARTHWORK TOTAL	=			9390

Suggested procedure for calculating earthwork:
A) Determine Typical section (number of lanes, median widths, side slopes, etc.).
B) Get latest topography map available.
C) Plot proposed alignment on topo map.
D) Develop profile using topo controls such as existing roads, streams, rivers and design manual.
E) Calculate Areas for the typical section in 1 foot increments of cut or fill.
F) At 10 to 60 foot intervals (depending on frequency of X-section changes) calculate the earthwork.
G) Calculate any other significant earthwork (ramps, cross-roads, etc.).
H) Make appropriate earthwork corrections for the pavement box and striping. Use 21 inch depth for rigid pavement, 26 inch depth for all flexible pavement and 4 inch depth for stripping.
I) Deduct any roadway excavation from borrow required to calculate Borrow Excavation Zone 3.
J) See Construction Cost Estimate Work Sheet (Section 3.1). This worksheet must be utilized for the most recent price information.
K) 11.2 to 12.5, based on the quantity, location and type of project.

PAVEMENT

12 FOOT WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	10 inch R.C. Pavement	156
B	2 inch HMA Surf. Crs. & 8 inch HMA Base	61
C	3 inch HMA Surf. Crs. & 4 inch HMA Base	46
D	2 inch HMA Surf. Crs. & 2 inch HMA Base	22
E	Bridge Approach & Transition Slabs	156

Computation Table for Pavement. Cost

Type	Cost from table above	x Length	x Pavement *W.F.	= Amount
				0
				0
				0
				0
				0
				0
				0
				0
				0
PAVEMENT TOTAL			=	0

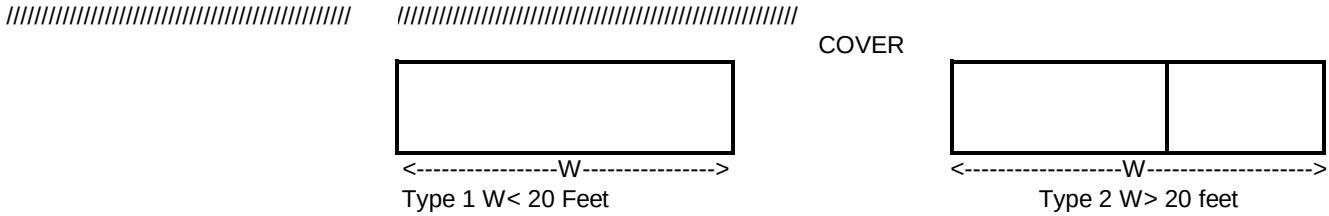
*Width Factors = Ratio of 12 foot wide lane to actual pavement width.

Example = actual pavement width = 25 foot = 25/12 = 2.08 W.F.

CONTEXT SENSITIVE DESIGN

Attach additional sheet detailing items and costs of context sensitive design work =

CULVERTS



Type 1 W< 20 Feet

Type 2 W> 20 feet

Type	Layout (3)	Skew (1)	Cover (2)	Cost Per Sq. Foot
Type 1	Area w x L exceeds 1000 Sq. Feet	0-60 degrees	0 to 10'	114.75
			10' to 20'	147.25
	Short Culverts Difficult Conditions under 1000 Square Feet	0-60 degrees	0 to 10'	203.50
			10' to 20'	235.00
Type 2	Area w x L exceeds 1000 Sq. Feet	0-60 degrees	0 to 10'	121.75
			10' to 20'	152.50
	Short Culverts Difficult Conditions under 1000 Square Feet	0-60 degrees	0 to 10'	203.50
			10' to 20'	235.00

For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.

Description	Area Computation	x Cost per Sq. Foot	= Amount
			0
			0
			0
			0
		Culvert Total =	0

BRIDGES

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 3 spans and 2 side spans (Max. Span 100 feet)
H = Clear Height 14 To 23 feet (4)
L = 100 to 400 feet & all viaducts over 400 feet (5)

Class	Layout	Skew (1)	Foundation (2)	Cost per Sq. Foot
I	Width at Least 45 feet	0 to 40 Degrees	No Piles	134.75
			Piles at Stub Abut.	159.75
			Piles at Piers & Stu	174.75
		40 to 60 Degrees	No Piles	145.00
			Piles at Stub Abut.	168.25
			Piles at Piers & Stu	181.25

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 3 spans and 2 side spans (Max. Span 100 feet) (3)
H = Clear Height 14 feet (4)
L = under 400 feet

Class 1 - New Construction

Class	Layout	Skew (1)	Foundation (2)	Cost per Sq. Foot
II	L exceeds W Area L x W exceeds 4500 Sq. Feet	0 to 40 Degrees	No Piles	176.50
			On Piles	187.25
		40 to 60 Degrees	No Piles	219.75
			On Piles	273.25
III	W exceeds L Area L x W exceeds 4500 Sq. Feet	0 to 40 Degrees	No Piles	226.75
			On Piles	299.25
		40 to 60 Degrees	No Piles	241.50
			On Piles	310.00
IV	Width 30 - 45 feet Area W x L under 4500 Sq. Foot	0 to 40 Degrees	No Piles	295.50
			On Piles	396.75
		40 to 60 Degrees	No Piles	318.25
			On Piles	416.25

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 2 spans (Max. Span 125 feet)
H = Clear Height 14 feet (4)
L = 100 to 250 feet

Layout	Skew (1)	Foundation (2)	Cost/ Sq. Foot
Width at Least 40 feet	0 to 40 Degrees	No Piles	157.00
		Piles at Semi-Stub Abut.	182.00
		Piles at Piers & Semi-Stub Abut.	204.50
Minimum Length 100 feet	40 to 60 Degrees	No Piles	166.50
		Piles at Semi-Stub Abut.	194.75
		Piles at Piers & Semi-Stub Abut.	217.50

			0
Length	Width	Cost per SF	Bridge Total

1. For skews over 60 degrees it will be necessary to make a special analysis and establish a square foot price comparable to above.

2. For very bad foundation conditions requiring unusual lengths or spacing of piles, it will be necessary to establish a square foot price.

3. For longer spans, adjust the cost per square foot to reflect increased cost of structural members.

4. For span bridges, it is expected the length of the side span will be in- creased in proportion to any increase in height. Because of the resultant increase in deck area, the square foot price will remain approximately the same in the range of heights shown. For extremely high structures (particularly for viaducts), square foot prices will have to be increased.

5. For structures over 400 foot long (viaducts), reduce the cost per square foot if repetitive span length and forming can be used. Reduce by $0.50 for lengths from 400 to 600 feet and by $1.00 for lengths over 600 feet. (Do not forget adjustments (3) and (4) above on viaducts).

6. For statically indeterminate structures, square foot prices will have to be established.

Structure Description	Calculated Sq. Foot of Bridge Deck	x Cost Per Square Foot	= Amount
			0
			0
			0
			0
			0
			0
			0
			0

			0
			0
			0
			0
		Sub Total	0
Clearing Site Bridge *0-3% of Sub Total			0
	%		
		BRIDGE TOTAL	0

*Pick appropriate percent based on the size, type and materials of existing structure

DRAINAGE (includes inlets and cross drains)

Rural	0.3	364356	109306.8
	project length (miles)	x cost per mile	= Amount
Urban		544280	0
	project length (miles)	x cost per mile	= Amount

The above are the total costs of basins, manholes, longitudinal and transverse pipes, underdrains, headwalls, protecting curbs, aprons, etc. for a divided highway with a depressed median. The costs are assumed to apply to 4, 6 or 8 lane sections since there will be no appreciable difference in the number of basins or the sizes or lengths of pipes.

Frontage Road & Ramp Drainage

0	55	0
length of ramp or frontage rd. in feet	x cost per foot	= Amount

DRAINAGE TOTAL = 109306.8

INCIDENTAL ITEMS

Item	Cost	x Quantity	= Amount
Concrete Sidewalk 4" (SY)	51	1761	89811
9x16 Concrete Vertical Curb	22	3170	69740
Curb Ramps - 4	1500	4	6000
Striping - Crosswalk at Schoolhouse	3.5	2475	8662.5
Pedestrian Countdown Signal Head	1200	6	7200
INCIDENTAL ITEMS TOTAL	=		181413.5

LANDSCAPE

	Quantity	x Unit Prices	= Amount
Topsoil and Seeding (Mainline) Length of Project in miles	0.3	112,815	33844.5
Planting (Mainline)			

Length of Project in miles	0	64,500	0
Topsoil, Seeding, Planting (Finger Ramp Number of Finger Ramps	0	12,500	0
Topsoil, Seeding, Planting (Loop Ramp) Number of Loop Ramps	0	20,000	0
Topsoil, Seeding (Access Road) Length of Access Road in Feet	0	7.9	0
LANDSCAPE TOTAL	=		33844.5

NOISE ABATEMENT

	Unit	Quantity	x Cost	= Amount
Noise Wall	L.F.	0	305	0
				0
				0
				0
NOISE ABATEMENT TOTAL	=			0

GENERAL ITEMS

Item	Project Length (miles)	x Cost/Mile	= Amount
Field Office	0	44,260	0
Materials Field Laboratory	0	28,970	0
Erosion Control during Construction	0.3	64,375	19312.5
GENERAL ITEMS TOTAL	=		19312.5

SUMMARY

Route	Barclay Brook Schools	Section/Contract #	Monroe Township
PM	Del Vecchio	UPC No.	2007BPP643C TO#8/116129

Work Type	Totals from other pages
Earthwork	9390
Pavement	0
Context Sensitive Design	0
Culverts	0
Bridges	0
Drainage	109306.8
Incidental Items	181413.5
Landscape	33844.5
Noise Abatement	0
General Items	19312.5
PROJECT SUBTOTAL	353267.3

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		0% of Proj. Subtotal	0
Maintenance of Traffic		10% of Proj. Subtotal	35327
Training		1% of Proj. Subtotal	3532.673
Mobilization			31794.057

	Project Cost < 5.0 (Mil.)	9% of Proj. Subtotal		31794
	Project Cost 5.0 & above	10% of Proj. Subtotal		0
Progress Schedule	Project Cost(Mil.)	$	0	
	Less than 2.0	0		0
	2.0 to 5.0	6,000		0
	5.0 to 10.0	8,000		0
	10.0 to 20.0	15,000		0
	20.0 to 30.0	30,000		0
	30.0 to 40.0	40,000		0
	40.0 & above	58,000		0
Clearing Site	Project Cost (Mil.)	$	15000	
	Less than 1.0	15,000		15000
	1.0 to 2.0	30,000		0
	2.0 to 5.0	45,000		0
	5.0 to 10.0	115,000		0
	10.0 to 20.0	220,000		0
	20.0 to 30.0	240,000		0
	30.0 to 40.0	250,000		0
	40.0 & above	490,000		0
Construction Layout	Project Cost(Mil.)	$	7000	
	Less than 1.0	7,000		7000
	1.0 to 2.0	20,000		0
	2.0 to 5.0	42,000		0
	5.0 to 10.0	87,000		0
	10.0 to 20.0	160,000		0
	20.0 to 30.0	220,000		0
	30.0 to 40.0	490,000		0
	40.0 & above	890,000		0
		PROJECT TOTAL	445921	

CONTINGENCIES & ESCALATION

		Y		2.00	1.00
Y = Number of Years until midpoint of construction duration plus number of years until construction start. If midpoint is less than 2 years from the date of this estimate, no escalation is required. Maximum value = 10%		0.00			
445920.76	1.030	1.00	459298		
Project Total	Contingencies (1+C)	1 + [0.01 (Y+1) (Y-2)]	Construction Estimate for PD		

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years		
0-10	3%	1		0.030
10-20	2.50%	2		0.000
20-50	2%	3		0.000
Over 50	1.50%	4		0.000

CONSTRUCTION ENGINEERING (CE)

Project Cost (Mil.)		% of Construction Cost		
Less than 1.0		28.40%		130441
1.0 to 5.0		17.60%		0
5.0 to 10.0		12.20%		0
10.0 & above		9.50%		0
CONSTRUCTION ENGINEERING AMOUNT		$130,440.74		

CONSTRUCTION CHANGE ORDER CONTINGENCIES

Total Federal Participating Items in Millions of $	Construction Change Order Contingency Amount	
$0 to 0.1	$6,000	0
0.1 to 0.5	25,000	25000
0.5 to 5.0	25,000 + 4% of amount in excess of $500,000	0
5.0 to 10.0	205,000 + 3% of amount in excess of $5,000,000	0
10.0 to 15.0	355,000 + 2% of amount in excess of $10,000,000	0
15.0 and above	455,000 + 1.5% of amount in excess of $15,000,000 - $500,000 max	0
		0

For State Funded Projects, Contingencies for Change orders = 0

CHANGE ORDER CONTINGENCY AMO = 25000

UTILITIES RELOCATIONS BY COMPANIES/OWNERS

Construction Cost for Initial Estimate	x % or + Estimate Use % or utilities detailed estimate	= Utility Relocation Cost for Initial Estimate
459298.3828	0.09	41337

If there are no utility relocations on the project indicate “No Utilities” in the box above.

RIGHT OF WAY COST

If there is no ROW cost on the project indicate “No ROW” the box

SUMMARY

Construction Estimate for Initial	459,298
Construction Engineering (CE)	130,441
Contingencies	25,000
Utilities Relocations	41,337
Total Construction Cost	**656,076**

Right of Way Cost	Not Known

Classification Number 1 - NEW CONSTRUCTION - English

Route	Community Center Connect	Section/Contract #	Monroe Township
PM	Del Vecchio	UPC No.	2007BPP643C TO#8/116129

EARTHWORK (must be calculated)

	Unit	Quantity	x Unit Price	Amount
Stripping (4 - 6" Depth)	Acre	0	4,050	0
Roadway Exc. Unclassified, **See (J)**	C.Y.	594	30	17820
Removal of Conc. Base & Conc. Surface Courses, **See (K)**	S.Y.	0		0
Channel Excavation	C.Y.	0	12.25	0
Ditch Excavation	C.Y.	0	10	0
Borrow Excavation Zone 3, **See (J)**	C.Y.	0		0
		0		0
EARTHWORK TOTAL	=			17820

Suggested procedure for calculating earthwork:
A) Determine Typical section (number of lanes, median widths, side slopes, etc.).
B) Get latest topography map available.
C) Plot proposed alignment on topo map.
D) Develop profile using topo controls such as existing roads, streams, rivers and design manual.
E) Calculate Areas for the typical section in 1 foot increments of cut or fill.
F) At 10 to 60 foot intervals (depending on frequency of X-section changes) calculate the earthwork.
G) Calculate any other significant earthwork (ramps, cross-roads, etc.).
H) Make appropriate earthwork corrections for the pavement box and striping. Use 21 inch depth for rigid pavement, 26 inch depth for all flexible pavement and 4 inch depth for stripping.
I) Deduct any roadway excavation from borrow required to calculate Borrow Excavation Zone 3.
J) See Construction Cost Estimate Work Sheet (Section 3.1). This worksheet must be utilized for the most recent price information.
K) 11.2 to 12.5, based on the quantity, location and type of project.

PAVEMENT

12 FOOT WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	10 inch R.C. Pavement	156
B	2 inch HMA Surf. Crs. & 8 inch HMA Base	61
C	3 inch HMA Surf. Crs. & 4 inch HMA Base	46
D	2 inch HMA Surf. Crs. & 2 inch HMA Base	22
E	Bridge Approach & Transition Slabs	156

Computation Table for Pavement. Cost

Type	Cost from table above	x Length	x Pavement *W.F.	= Amount
				0
				0
				0
				0
				0
				0
				0
				0
				0
PAVEMENT TOTAL			=	0

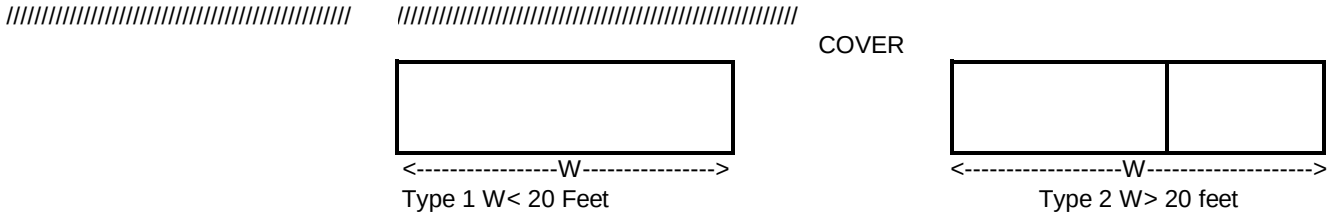
*Width Factors = Ratio of 12 foot wide lane to actual pavement width.

Example = actual pavement width = 25 foot = 25/12 = 2.08 W.F.

CONTEXT SENSITIVE DESIGN

Attach additional sheet detailing items and costs of context sensitive design work =

CULVERTS



Type 1 W< 20 Feet

Type 2 W> 20 feet

Type	Layout (3)	Skew (1)	Cover (2)	Cost Per Sq. Foot
Type 1	Area w x L exceeds 1000 Sq. Feet	0-60 degrees	0 to 10'	114.75
			10' to 20'	147.25
	Short Culverts Difficult Conditions under 1000 Square Feet	0-60 degrees	0 to 10'	203.50
			10' to 20'	235.00
Type 2	Area w x L exceeds 1000 Sq. Feet	0-60 degrees	0 to 10'	121.75
			10' to 20'	152.50
	Short Culverts Difficult Conditions under 1000 Square Feet	0-60 degrees	0 to 10'	203.50
			10' to 20'	235.00

For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.

Description	Area Computation	x Cost per Sq. Foot	= Amount
			0
			0
			0
			0
		Culvert Total =	0

BRIDGES

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 3 spans and 2 side spans (Max. Span 100 feet)
H = Clear Height 14 To 23 feet (4)
L = 100 to 400 feet & all viaducts over 400 feet (5)

Class	Layout	Skew (1)	Foundation (2)	Cost per Sq. Foot
I	Width at Least 45 feet	0 to 40 Degrees	No Piles	134.75
			Piles at Stub Abut.	159.75
			Piles at Piers & Stu	174.75
		40 to 60 Degrees	No Piles	145.00
			Piles at Stub Abut.	168.25
			Piles at Piers & Stu	181.25

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 3 spans and 2 side spans (Max. Span 100 feet) (3)
H = Clear Height 14 feet (4)
L = under 400 feet

Class 1 - New Construction

Class	Layout	Skew (1)	Foundation (2)	Cost per Sq. Foot
II	L exceeds W Area L x W exceeds 4500 Sq. Feet	0 to 40 Degrees	No Piles	176.50
			On Piles	187.25
		40 to 60 Degrees	No Piles	219.75
			On Piles	273.25
III	W exceeds L Area L x W exceeds 4500 Sq. Feet	0 to 40 Degrees	No Piles	226.75
			On Piles	299.25
		40 to 60 Degrees	No Piles	241.50
			On Piles	310.00
IV	Width 30 - 45 feet Area W x L under 4500 Sq. Foot	0 to 40 Degrees	No Piles	295.50
			On Piles	396.75
		40 to 60 Degrees	No Piles	318.25
			On Piles	416.25

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 2 spans (Max. Span 125 feet)
H = Clear Height 14 feet (4)
L = 100 to 250 feet

Layout	Skew (1)	Foundation (2)	Cost/ Sq. Foot
Width at Least 40 feet	0 to 40 Degrees	No Piles	157.00
		Piles at Semi-Stub Abut.	182.00
		Piles at Piers & Semi-Stub Abut.	204.50
Minimum Length 100 feet	40 to 60 Degrees	No Piles	166.50
		Piles at Semi-Stub Abut.	194.75
		Piles at Piers & Semi-Stub Abut.	217.50

			0
Length	Width	Cost per SF	Bridge Total

1. For skews over 60 degrees it will be necessary to make a special analysis and establish a square foot price comparable to above.

2. For very bad foundation conditions requiring unusual lengths or spacing of piles, it will be necessary to establish a square foot price.

3. For longer spans, adjust the cost per square foot to reflect increased cost of structural members.

4. For span bridges, it is expected the length of the side span will be in- creased in proportion to any increase in height. Because of the resultant increase in deck area, the square foot price will remain approximately the same in the range of heights shown. For extremely high structures (particularly for viaducts), square foot prices will have to be increased.

5. For structures over 400 foot long (viaducts), reduce the cost per square foot if repetitive span length and forming can be used. Reduce by $0.50 for lengths from 400 to 600 feet and by $1.00 for lengths over 600 feet. (Do not forget adjustments (3) and (4) above on viaducts).

6. For statically indeterminate structures, square foot prices will have to be established.

Structure Description	Calculated Sq. Foot of Bridge Deck	x Cost Per Square Foot	= Amount
			0
			0
			0
			0
			0
			0
			0
			0

			0
			0
			0
			0
		Sub Total	0
Clearing Site Bridge *0-3% of Sub Total			0
	%		
		BRIDGE TOTAL	0

*Pick appropriate percent based on the size, type and materials of existing structure

DRAINAGE (includes inlets and cross drains)

Rural		364356	0
	project length (miles)	x cost per mile	= Amount
Urban	0.3	544280	163284
	project length (miles)	x cost per mile	= Amount

The above are the total costs of basins, manholes, longitudinal and transverse pipes, underdrains, headwalls, protecting curbs, aprons, etc. for a divided highway with a depressed median. The costs are assumed to apply to 4, 6 or 8 lane sections since there will be no appreciable difference in the number of basins or the sizes or lengths of pipes.

Frontage Road & Ramp Drainage

	0	55	0
length of ramp or frontage rd. in feet		x cost per foot	= Amount
	DRAINAGE TOTAL	=	163284

INCIDENTAL ITEMS

Item	Cost	x Quantity	= Amount
Concrete Sidewalk 4" (SY)	51	1878	95778
Curb Ramps (per)	1500	2	3000
9" X 16" Conc. Vertical Curb (LF)	22	2900	63800
Shared Use Path - HMA 5" (CY)	75	69	5175
Shared Use Path - Soil Agg Base (CY)	30	56	1680
Striping - Crosswalk at Lori Street (LF)	3.5	2052	7182
Sign W11-2 Ped Warning (SF) - 2	32	12.5	400
Sign W16-7p Supplemental (SF) - 2	32	4.375	140
Sign D11-1 Bicycle Route (SF) - 28	32	84	2688
Sign M4-11/M4-12 Route Supp - 4	32	1.33	42.56
Sign M7-1/M72 Route Supp - 28	32	21	672
INCIDENTAL ITEMS TOTAL	=		180557.56

LANDSCAPE

	Quantity	x Unit Prices	= Amount
Topsoil and Seeding (Mainline) Length of Project in miles	0.3	112,815	33844.5
Planting (Mainline) Length of Project in miles	0	64,500	0
Topsoil, Seeding, Planting (Finger Ramp			

Number of Finger Ramps	0	12,500	0	
Topsoil, Seeding, Planting (Loop Ramp) Number of Loop Ramps	0	20,000	0	
Topsoil, Seeding (Access Road) Length of Access Road in Feet	0	7.9	0	
LANDSCAPE TOTAL	=		33844.5	

NOISE ABATEMENT

	Unit	Quantity	x Cost	= Amount
Noise Wall	L.F.	0	305	0
				0
				0
				0
NOISE ABATEMENT TOTAL	=			0

GENERAL ITEMS

Item	Project Length (miles)	x Cost/Mile	= Amount
Field Office		44,260	0
Materials Field Laboratory		28,970	0
Erosion Control during Construction	0.3	64,375	19312.5
GENERAL ITEMS TOTAL	=		19312.5

SUMMARY

Route	Community Center Connect	Section/Contract #	Monroe Township
PM	Del Vecchio	UPC No.	2007BPP643C TO#8/116129

Work Type	Totals from other pages
Earthwork	17820
Pavement	0
Context Sensitive Design	0
Culverts	0
Bridges	0
Drainage	163284
Incidental Items	180557.56
Landscape	33844.5
Noise Abatement	0
General Items	19312.5
PROJECT SUBTOTAL	414818.56

Other Items	Proj. Subtotal Range	Choice	Amount	
Lighting, Traffic Stripes, Signs and Delineators		0% of Proj. Subtotal	0	
Maintenance of Traffic		10% of Proj. Subtotal	41482	
Training		1% of Proj. Subtotal	4148.1856	
Mobilization			37333.6704	
	Project Cost < 5.0 (Mil.)	9% of Proj. Subtotal		37334

	Project Cost 5.0 & above	10% of Proj. Subtotal		0
Progress Schedule	Project Cost(Mil.)	$	0	
	Less than 2.0	0		0
	2.0 to 5.0	6,000		0
	5.0 to 10.0	8,000		0
	10.0 to 20.0	15,000		0
	20.0 to 30.0	30,000		0
	30.0 to 40.0	40,000		0
	40.0 & above	58,000		0
Clearing Site	Project Cost (Mil.)	$	15000	
	Less than 1.0	15,000		15000
	1.0 to 2.0	30,000		0
	2.0 to 5.0	45,000		0
	5.0 to 10.0	115,000		0
	10.0 to 20.0	220,000		0
	20.0 to 30.0	240,000		0
	30.0 to 40.0	250,000		0
	40.0 & above	490,000		0
Construction Layout	Project Cost(Mil.)	$	7000	
	Less than 1.0	7,000		7000
	1.0 to 2.0	20,000		0
	2.0 to 5.0	42,000		0
	5.0 to 10.0	87,000		0
	10.0 to 20.0	160,000		0
	20.0 to 30.0	220,000		0
	30.0 to 40.0	490,000		0
	40.0 & above	890,000		0
		PROJECT TOTAL	519782	

CONTINGENCIES & ESCALATION

		Y			
Y = Number of Years until midpoint of construction duration plus number of years until construction start. If midpoint is less than 2 years from the date of this estimate, no escalation is required. Maximum value = 10%		0.00		2.00	1.00
519782.272	1.030	1.00	535376		
Project Total	Contingencies (1+C)	1 + [0.01 (Y+1) (Y-2)]	Construction Estimate for PD		

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years		
0-10	3%	1		0.030
10-20	2.50%	2		0.000
20-50	2%	3		0.000
Over 50	1.50%	4		0.000

CONSTRUCTION ENGINEERING (CE)

Project Cost (Mil.)		% of Construction Cost		
Less than 1.0		28.40%		152047
1.0 to 5.0		17.60%		0
5.0 to 10.0		12.20%		0
10.0 & above		9.50%		0
CONSTRUCTION ENGINEERING AMOUNT		$152,046.71		

CONSTRUCTION CHANGE ORDER CONTINGENCIES

Total Federal Participating Items in Millions of $	Construction Change Order Contingency Amount	
$0 to 0.1	$6,000	0
0.1 to 0.5	25,000	25000
0.5 to 5.0	25,000 + 4% of amount in excess of $500,000	26400
5.0 to 10.0	205,000 + 3% of amount in excess of $5,000,000	0
10.0 to 15.0	355,000 + 2% of amount in excess of $10,000,000	0
15.0 and above	455,000 + 1.5% of amount in excess of $15,000,000 - $500,000 max	0
		0

For State Funded Projects, Contingencies for Change orders = 0

CHANGE ORDER CONTINGENCY AMC = 25000

UTILITIES RELOCATIONS BY COMPANIES/OWNERS

Construction Cost for Initial Estimate	x % or + Estimate Use % or utilities detailed estimate	= Utility Relocation Cost for Initial Estimate
535375.7402	0.09	48184

If there are no utility relocations on the project indicate “No Utilities” in the box above.

RIGHT OF WAY COST

If there is no ROW cost on the project indicate “No ROW” the box

SUMMARY

Construction Estimate for Initial	535,376
Construction Engineering (CE)	152,047
Contingencies	25,000
Utilities Relocations	48,184
Total Construction Cost	**760,606**

Right of Way Cost	Not Known

Classification Number 1 - NEW CONSTRUCTION - English

Route	North Business District	Section/Contract #	Monroe Township
PM	Del Vecchio	UPC No.	2007BPP643C TO#8/116129

EARTHWORK (must be calculated)

	Unit	Quantity	x Unit Price	Amount
Stripping (4 - 6" Depth)	Acre	0	4,050	0
Roadway Exc. Unclassified, **See (J)**	C.Y.	65	30	1950
Removal of Conc. Base & Conc. Surface Courses, **See (K)**	S.Y.	0		0
Channel Excavation	C.Y.	0	12.25	0
Ditch Excavation	C.Y.	0	10	0
Borrow Excavation Zone 3, **See (J)**	C.Y.	0		0
		0		0
EARTHWORK TOTAL	=			1950

Suggested procedure for calculating earthwork:
A) Determine Typical section (number of lanes, median widths, side slopes, etc.).
B) Get latest topography map available.
C) Plot proposed alignment on topo map.
D) Develop profile using topo controls such as existing roads, streams, rivers and design manual.
E) Calculate Areas for the typical section in 1 foot increments of cut or fill.
F) At 10 to 60 foot intervals (depending on frequency of X-section changes) calculate the earthwork.
G) Calculate any other significant earthwork (ramps, cross-roads, etc.).
H) Make appropriate earthwork corrections for the pavement box and striping. Use 21 inch depth for rigid pavement, 26 inch depth for all flexible pavement and 4 inch depth for stripping.
I) Deduct any roadway excavation from borrow required to calculate Borrow Excavation Zone 3.
J) See Construction Cost Estimate Work Sheet (Section 3.1). This worksheet must be utilized for the most recent price information.
K) 11.2 to 12.5, based on the quantity, location and type of project.

PAVEMENT

12 FOOT WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	10 inch R.C. Pavement	156
B	2 inch HMA Surf. Crs. & 8 inch HMA Base	61
C	3 inch HMA Surf. Crs. & 4 inch HMA Base	46
D	2 inch HMA Surf. Crs. & 2 inch HMA Base	22
E	Bridge Approach & Transition Slabs	156

Computation Table for Pavement. Cost

Type	Cost from table above	x Length	x Pavement *W.F.	= Amount
				0
				0
				0
				0
				0
				0
				0
				0
				0
PAVEMENT TOTAL			=	0

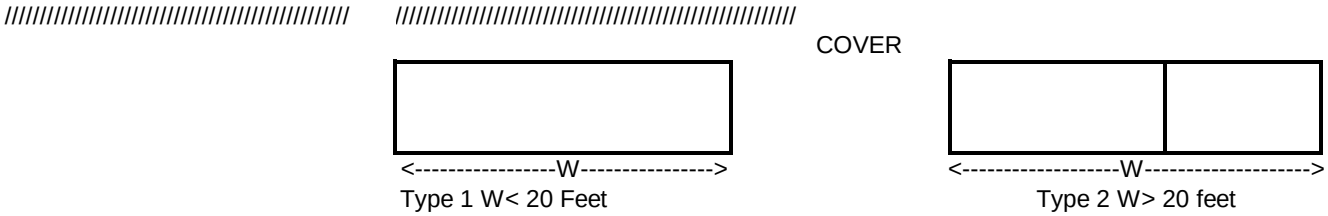
*Width Factors = Ratio of 12 foot wide lane to actual pavement width.

Example = actual pavement width = 25 foot = 25/12 = 2.08 W.F.

CONTEXT SENSITIVE DESIGN

Attach additional sheet detailing items and costs of context sensitive design work =

CULVERTS



Type 1 W< 20 Feet

Type 2 W> 20 feet

Type	Layout (3)	Skew (1)	Cover (2)	Cost Per Sq. Foot
Type 1	Area w x L exceeds 1000 Sq. Feet	0-60 degrees	0 to 10'	114.75
			10' to 20'	147.25
	Short Culverts Difficult Conditions under 1000 Square Feet	0-60 degrees	0 to 10'	203.50
			10' to 20'	235.00
Type 2	Area w x L exceeds 1000 Sq. Feet	0-60 degrees	0 to 10'	121.75
			10' to 20'	152.50
	Short Culverts Difficult Conditions under 1000 Square Feet	0-60 degrees	0 to 10'	203.50
			10' to 20'	235.00

For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.

Description	Area Computation	x Cost per Sq. Foot	= Amount
			0
			0
			0
			0
		Culvert Total =	0

BRIDGES

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 3 spans and 2 side spans (Max. Span 100 feet)
H = Clear Height 14 To 23 feet (4)
L = 100 to 400 feet & all viaducts over 400 feet (5)

Class	Layout	Skew (1)	Foundation (2)	Cost per Sq. Foot
I	Width at Least 45 feet	0 to 40 Degrees	No Piles	134.75
			Piles at Stub Abut.	159.75
			Piles at Piers & Stu	174.75
		40 to 60 Degrees	No Piles	145.00
			Piles at Stub Abut.	168.25
			Piles at Piers & Stu	181.25

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 3 spans and 2 side spans (Max. Span 100 feet) (3)
H = Clear Height 14 feet (4)
L = under 400 feet

Class 1 - New Construction

Class	Layout	Skew (1)	Foundation (2)	Cost per Sq. Foot
II	L exceeds W Area L x W exceeds 4500 Sq. Feet	0 to 40 Degrees	No Piles	176.50
			On Piles	187.25
		40 to 60 Degrees	No Piles	219.75
			On Piles	273.25
III	W exceeds L Area L x W exceeds 4500 Sq. Feet	0 to 40 Degrees	No Piles	226.75
			On Piles	299.25
		40 to 60 Degrees	No Piles	241.50
			On Piles	310.00
IV	Width 30 - 45 feet Area W x L under 4500 Sq. Foot	0 to 40 Degrees	No Piles	295.50
			On Piles	396.75
		40 to 60 Degrees	No Piles	318.25
			On Piles	416.25

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 2 spans (Max. Span 125 feet)
H = Clear Height 14 feet (4)
L = 100 to 250 feet

Layout	Skew (1)	Foundation (2)	Cost/ Sq. Foot
Width at Least 40 feet	0 to 40 Degrees	No Piles	157.00
		Piles at Semi-Stub Abut.	182.00
		Piles at Piers & Semi-Stub Abut.	204.50
Minimum Length 100 feet	40 to 60 Degrees	No Piles	166.50
		Piles at Semi-Stub Abut.	194.75
		Piles at Piers & Semi-Stub Abut.	217.50

				0
	Length	Width	Cost per SF	Bridge Total

1. For skews over 60 degrees it will be necessary to make a special analysis and establish a square foot price comparable to above.

2. For very bad foundation conditions requiring unusual lengths or spacing of piles, it will be necessary to establish a square foot price.

3. For longer spans, adjust the cost per square foot to reflect increased cost of structural members.

4. For span bridges, it is expected the length of the side span will be in- creased in proportion to any increase in height. Because of the resultant increase in deck area, the square foot price will remain approximately the same in the range of heights shown. For extremely high structures (particularly for viaducts), square foot prices will have to be increased.

5. For structures over 400 foot long (viaducts), reduce the cost per square foot if repetitive span length and forming can be used. Reduce by $0.50 for lengths from 400 to 600 feet and by $1.00 for lengths over 600 feet. (Do not forget adjustments (3) and (4) above on viaducts).

6. For statically indeterminate structures, square foot prices will have to be established.

Structure Description	Calculated Sq. Foot of Bridge Deck	x Cost Per Square Foot	= Amount
			0
			0
			0
			0
			0
			0
			0
			0

			0
			0
			0
			0
		Sub Total	0
Clearing Site Bridge *0-3% of Sub Total			0
	%		
		BRIDGE TOTAL	0

*Pick appropriate percent based on the size, type and materials of existing structure

DRAINAGE (includes inlets and cross drains)

Rural		364356	0
	project length (miles)	x cost per mile	= Amount
Urban	0.1	544280	54428
	project length (miles)	x cost per mile	= Amount

The above are the total costs of basins, manholes, longitudinal and transverse pipes, underdrains, headwalls, protecting curbs, aprons, etc. for a divided highway with a depressed median. The costs are assumed to apply to 4, 6 or 8 lane sections since there will be no appreciable difference in the number of basins or the sizes or lengths of pipes.

Frontage Road & Ramp Drainage

0	55	0
length of ramp or frontage rd. in feet	x cost per foot	= Amount

DRAINAGE TOTAL = 54428

INCIDENTAL ITEMS

Item	Cost	x Quantity	= Amount
Concrete Sidewalk 4" (SY)	51	583	29733
Curb Ramps (per)	1500	4	6000
9" X 16" Conc. Vertical Curb (LF)	22	1050	23100
Striping (Crosswalk) at Clayton (LF)	3.5	1944	6804
Striping (Crosswalk) at Monmouth (LF)	3.5	1944	6804
Sign S1-1 (School) (SF) - 4	32	25	800
Sign W16-7P (Supplemental) (SF) - 4	32	8.75	280
INCIDENTAL ITEMS TOTAL	=		73521

LANDSCAPE

	Quantity	x Unit Prices	= Amount
Topsoil and Seeding (Mainline) Length of Project in miles	0.1	112,815	11281.5
Planting (Mainline) Length of Project in miles	0	64,500	0
Topsoil, Seeding, Planting (Finger Ramp Number of Finger Ramps	0	12,500	0
Topsoil, Seeding, Planting (Loop Ramp) Number of Loop Ramps	0	20,000	0
Topsoil, Seeding (Access Road)			

Length of Access Road in Feet	0	7.9	0	
LANDSCAPE TOTAL	=		11281.5	

NOISE ABATEMENT

	Unit	Quantity	x Cost	= Amount
Noise Wall	L.F.	0	305	0
				0
				0
				0
NOISE ABATEMENT TOTAL	=			0

GENERAL ITEMS

Item	Project Length (miles)	x Cost/Mile	= Amount
Field Office		44,260	0
Materials Field Laboratory		28,970	0
Erosion Control during Construction	0.1	64,375	6437.5
GENERAL ITEMS TOTAL	=		6437.5

SUMMARY

Route	North Business District	Section/Contract #	Monroe Township
PM	Del Vecchio	UPC No.	2007BPP643C TO#8/116129

Work Type	Totals from other pages
Earthwork	1950
Pavement	0
Context Sensitive Design	0
Culverts	0
Bridges	0
Drainage	54428
Incidental Items	73521
Landscape	11281.5
Noise Abatement	0
General Items	6437.5
PROJECT SUBTOTAL	147618

Other Items	Proj. Subtotal Range	Choice	Amount	
Lighting, Traffic Stripes, Signs and Delineators		0% of Proj. Subtotal	0	
Maintenance of Traffic		10% of Proj. Subtotal	14762	
Training		1% of Proj. Subtotal	1476.18	
Mobilization			13285.62	
	Project Cost < 5.0 (Mil.)	9% of Proj. Subtotal		13286
	Project Cost 5.0 & above	10% of Proj. Subtotal		0
Progress Schedule	Project Cost(Mil.)	$	0	
	Less than 2.0	0		0

	2.0 to 5.0	6,000		0
	5.0 to 10.0	8,000		0
	10.0 to 20.0	15,000		0
	20.0 to 30.0	30,000		0
	30.0 to 40.0	40,000		0
	40.0 & above	58,000		0
Clearing Site	Project Cost (Mil.)	$	15000	
	Less than 1.0	15,000		15000
	1.0 to 2.0	30,000		0
	2.0 to 5.0	45,000		0
	5.0 to 10.0	115,000		0
	10.0 to 20.0	220,000		0
	20.0 to 30.0	240,000		0
	30.0 to 40.0	250,000		0
	40.0 & above	490,000		0
Construction Layout	Project Cost(Mil.)	$	7000	
	Less than 1.0	7,000		7000
	1.0 to 2.0	20,000		0
	2.0 to 5.0	42,000		0
	5.0 to 10.0	87,000		0
	10.0 to 20.0	160,000		0
	20.0 to 30.0	220,000		0
	30.0 to 40.0	490,000		0
	40.0 & above	890,000		0
		PROJECT TOTAL	199142	

CONTINGENCIES & ESCALATION

		Y			
Y = Number of Years until midpoint of construction duration plus number of years until construction start. If midpoint is less than 2 years from the date of this estimate, no escalation is required. Maximum value = 10%		0.00		2.00	1.00
199141.6	1.030	1.00	205116		
Project Total	Contingencies (1+C)	1 + [0.01 (Y+1) (Y-2)]	Construction Estimate for PD		

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years		
0-10	3%	1		0.030
10-20	2.50%	2		0.000
20-50	2%	3		0.000
Over 50	1.50%	4		0.000

CONSTRUCTION ENGINEERING (CE)

Project Cost (Mil.)		% of Construction Cost		
Less than 1.0		28.40%		58253
1.0 to 5.0		17.60%		0
5.0 to 10.0		12.20%		0
10.0 & above		9.50%		0
CONSTRUCTION ENGINEERING AMOUNT		$58,252.90		

CONSTRUCTION CHANGE ORDER CONTINGENCIES

Total Federal Participating Items in Millions of $	Construction Change Order Contingency Amount	
$0 to 0.1	$6,000	0
0.1 to 0.5	25,000	25000
0.5 to 5.0	25,000 + 4% of amount in excess of $500,000	0

5.0 to 10.0	205,000 + 3% of amount in excess of $5,000,000	0
10.0 to 15.0	355,000 + 2% of amount in excess of $10,000,000	0
15.0 and above	455,000 + 1.5% of amount in excess of $15,000,000 - $500,000 max	0
		0

For State Funded Projects, Contingencies for Change orders = 0

CHANGE ORDER CONTINGENCY AMO = 25000

UTILITIES RELOCATIONS BY COMPANIES/OWNERS

205115.848	0.09	18460
	x % or + Estimate	=
Construction Cost for Initial Estimate	Use % or utilities detailed estimate	Utility Relocation Cost for Initial Estimate

If there are no utility relocations on the project indicate “No Utilities” in the box above.

RIGHT OF WAY COST

If there is no ROW cost on the project indicate “No ROW” the box

SUMMARY

Construction Estimate for Initial	205,116
Construction Engineering (CE)	58,253
Contingencies	25,000
Utilities Relocations	18,460
Total Construction Cost	**306,829**

Right of Way Cost	Not Known

Classification Number 1 - NEW CONSTRUCTION - English

Route	Texas and Matchaponix	Section/Contract #	Monroe Township
PM	Del Vecchio	UPC No.	2007BPP643C TO#8/116129

EARTHWORK (must be calculated)

	Unit	Quantity	x Unit Price	Amount
Stripping (4 - 6" Depth)	Acre	0	4,050	0
Roadway Exc. Unclassified, **See (J)**	C.Y.	0	30	0
Removal of Conc. Base & Conc. Surface Courses, **See (K)**	S.Y.	0		0
Channel Excavation	C.Y.	0	12.25	0
Ditch Excavation	C.Y.	0	10	0
Borrow Excavation Zone 3, **See (J)**	C.Y.	0		0
		0		0
EARTHWORK TOTAL	=			0

Suggested procedure for calculating earthwork:
A) Determine Typical section (number of lanes, median widths, side slopes, etc.).
B) Get latest topography map available.
C) Plot proposed alignment on topo map.
D) Develop profile using topo controls such as existing roads, streams, rivers and design manual.
E) Calculate Areas for the typical section in 1 foot increments of cut or fill.
F) At 10 to 60 foot intervals (depending on frequency of X-section changes) calculate the earthwork.
G) Calculate any other significant earthwork (ramps, cross-roads, etc.).
H) Make appropriate earthwork corrections for the pavement box and striping. Use 21 inch depth for rigid pavement, 26 inch depth for all flexible pavement and 4 inch depth for stripping.
I) Deduct any roadway excavation from borrow required to calculate Borrow Excavation Zone 3.
J) See Construction Cost Estimate Work Sheet (Section 3.1). This worksheet must be utilized for the most recent price information.
K) 11.2 to 12.5, based on the quantity, location and type of project.

PAVEMENT

12 FOOT WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	10 inch R.C. Pavement	156
B	2 inch HMA Surf. Crs. & 8 inch HMA Base	61
C	3 inch HMA Surf. Crs. & 4 inch HMA Base	46
D	2 inch HMA Surf. Crs. & 2 inch HMA Base	22
E	Bridge Approach & Transition Slabs	156

Computation Table for Pavement. Cost

Type	Cost from table above	x Length	x Pavement *W.F.	= Amount
				0
				0
				0
				0
				0
				0
				0
				0
				0
PAVEMENT TOTAL			=	0

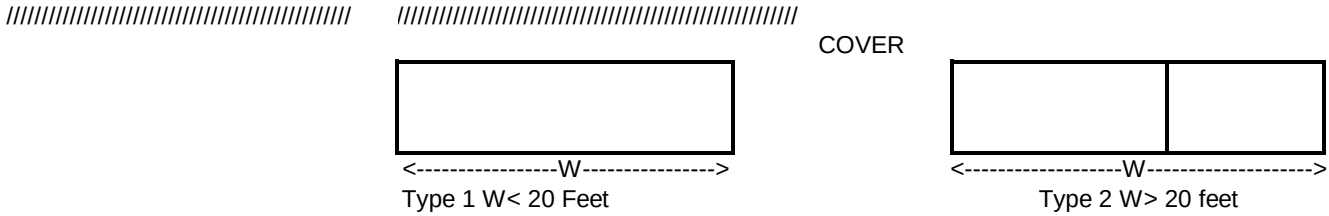
*Width Factors = Ratio of 12 foot wide lane to actual pavement width.

Example = actual pavement width = 25 foot = 25/12 = 2.08 W.F.

CONTEXT SENSITIVE DESIGN

Attach additional sheet detailing items and costs of context sensitive design work =

CULVERTS



Type 1 W< 20 Feet

Type 2 W> 20 feet

Type	Layout (3)	Skew (1)	Cover (2)	Cost Per Sq. Foot
Type 1	Area w x L exceeds 1000 Sq. Feet	0-60 degrees	0 to 10'	114.75
			10' to 20'	147.25
	Short Culverts Difficult Conditions under 1000 Square Feet	0-60 degrees	0 to 10'	203.50
			10' to 20'	235.00
Type 2	Area w x L exceeds 1000 Sq. Feet	0-60 degrees	0 to 10'	121.75
			10' to 20'	152.50
	Short Culverts Difficult Conditions under 1000 Square Feet	0-60 degrees	0 to 10'	203.50
			10' to 20'	235.00

For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.

Description	Area Computation	x Cost per Sq. Foot	= Amount
			0
			0
			0
			0
		Culvert Total =	0

BRIDGES

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 3 spans and 2 side spans (Max. Span 100 feet)
H = Clear Height 14 To 23 feet (4)
L = 100 to 400 feet & all viaducts over 400 feet (5)

Class	Layout	Skew (1)	Foundation (2)	Cost per Sq. Foot
I	Width at Least 45 feet	0 to 40 Degrees	No Piles	134.75
			Piles at Stub Abut.	159.75
			Piles at Piers & Stu	174.75
		40 to 60 Degrees	No Piles	145.00
			Piles at Stub Abut.	168.25
			Piles at Piers & Stu	181.25

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 3 spans and 2 side spans (Max. Span 100 feet) (3)
H = Clear Height 14 feet (4)
L = under 400 feet

Class 1 - New Construction

Class	Layout	Skew (1)	Foundation (2)	Cost per Sq. Foot
II	L exceeds W Area L x W exceeds 4500 Sq. Feet	0 to 40 Degrees	No Piles	176.50
			On Piles	187.25
		40 to 60 Degrees	No Piles	219.75
			On Piles	273.25
III	W exceeds L Area L x W exceeds 4500 Sq. Feet	0 to 40 Degrees	No Piles	226.75
			On Piles	299.25
		40 to 60 Degrees	No Piles	241.50
			On Piles	310.00
IV	Width 30 - 45 feet Area W x L under 4500 Sq. Foot	0 to 40 Degrees	No Piles	295.50
			On Piles	396.75
		40 to 60 Degrees	No Piles	318.25
			On Piles	416.25

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 2 spans (Max. Span 125 feet)
H = Clear Height 14 feet (4)
L = 100 to 250 feet

Layout	Skew (1)	Foundation (2)	Cost/ Sq. Foot
Width at Least 40 feet	0 to 40 Degrees	No Piles	157.00
		Piles at Semi-Stub Abut.	182.00
		Piles at Piers & Semi-Stub Abut.	204.50
Minimum Length 100 feet	40 to 60 Degrees	No Piles	166.50
		Piles at Semi-Stub Abut.	194.75
		Piles at Piers & Semi-Stub Abut.	217.50

			0
Length	Width	Cost per SF	Bridge Total

1. For skews over 60 degrees it will be necessary to make a special analysis and establish a square foot price comparable to above.

2. For very bad foundation conditions requiring unusual lengths or spacing of piles, it will be necessary to establish a square foot price.

3. For longer spans, adjust the cost per square foot to reflect increased cost of structural members.

4. For span bridges, it is expected the length of the side span will be in- creased in proportion to any increase in height. Because of the resultant increase in deck area, the square foot price will remain approximately the same in the range of heights shown. For extremely high structures (particularly for viaducts), square foot prices will have to be increased.

5. For structures over 400 foot long (viaducts), reduce the cost per square foot if repetitive span length and forming can be used. Reduce by $0.50 for lengths from 400 to 600 feet and by $1.00 for lengths over 600 feet. (Do not forget adjustments (3) and (4) above on viaducts).

6. For statically indeterminate structures, square foot prices will have to be established.

Structure Description	Calculated Sq. Foot of Bridge Deck	x Cost Per Square Foot	= Amount
			0
			0
			0
			0
			0
			0
			0
			0

			0
			0
			0
			0
		Sub Total	0
Clearing Site Bridge *0-3% of Sub Total			0
	%		
		BRIDGE TOTAL	0

*Pick appropriate percent based on the size, type and materials of existing structure

DRAINAGE (includes inlets and cross drains)

Rural	0	364356	0
	project length (miles)	x cost per mile	= Amount
Urban	0	544280	0
	project length (miles)	x cost per mile	= Amount

The above are the total costs of basins, manholes, longitudinal and transverse pipes, underdrains, headwalls, protecting curbs, aprons, etc. for a divided highway with a depressed median. The costs are assumed to apply to 4, 6 or 8 lane sections since there will be no appreciable difference in the number of basins or the sizes or lengths of pipes.

Frontage Road & Ramp Drainage

	0	55	0
length of ramp or frontage rd. in feet		x cost per foot	= Amount
	DRAINAGE TOTAL	=	0

INCIDENTAL ITEMS

Item	Cost	x Quantity	= Amount
Removal of Traffic Striping	4	11895	47580
Centerline Stripe WB - Long Life Epox	3.5	1983	6940.5
Centerline Stripe EB - Long Life Epox	3.5	1983	6940.5
Shoulder Stripe WB - Long Life Epox	3.5	1983	6940.5
Should Stripe EB - Long Life Epox	3.5	1983	6940.5
Striping - Crosswalk at Matchaponix	3.5	3600	12600
Striping - Crosswalk at Texas 1	3.5	2100	7350
Striping - Crosswalk at Texas 2	3.5	2400	8400
Curb Ramps - 11	1,500	11	16500
Pedestrian Countdown Signal Head	1,200	12	14400
Sign W11-2 Ped Warning - 4	32	25	800
Sign W16-7p Supplemental Arrow - 2	32	4.375	140
Sign M16-2-1	32	1.5	48
INCIDENTAL ITEMS TOTAL	=		135580

LANDSCAPE

	Quantity	x Unit Prices	= Amount
Topsoil and Seeding (Mainline) Length of Project in miles	0	112,815	0
Planting (Mainline)			

Length of Project in miles		0	64,500	0
Topsoil, Seeding, Planting (Finger Ramp				
Number of Finger Ramps		0	12,500	0
Topsoil, Seeding, Planting (Loop Ramp)				
Number of Loop Ramps		0	20,000	0
Topsoil, Seeding (Access Road)				
Length of Access Road in Feet		0	7.9	0
LANDSCAPE TOTAL	=			0

NOISE ABATEMENT

	Unit	Quantity	x Cost	= Amount
Noise Wall	L.F.	0	305	0
				0
				0
				0
NOISE ABATEMENT TOTAL	=			0

GENERAL ITEMS

Item	Project Length (miles)	x Cost/Mile	= Amount
Field Office	0	44,260	0
Materials Field Laboratory	0	28,970	0
Erosion Control during Construction	0	64,375	0
GENERAL ITEMS TOTAL	=		0

SUMMARY

Route	Texas and Matchaponix	Section/Contract #	Monroe Township
PM	Del Vecchio	UPC No.	2007BPP643C TO#8/116129

Work Type	Totals from other pages
Earthwork	0
Pavement	0
Context Sensitive Design	0
Culverts	0
Bridges	0
Drainage	0
Incidental Items	135580
Landscape	0
Noise Abatement	0
General Items	0
PROJECT SUBTOTAL	135580

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		0% of Proj. Subtotal	0
Maintenance of Traffic		3% of Proj. Subtotal	4067
Training		1% of Proj. Subtotal	1355.8
Mobilization			12202.2

	Project Cost < 5.0 (Mil.)	9% of Proj. Subtotal		12202
	Project Cost 5.0 & above	10% of Proj. Subtotal		0
Progress Schedule	Project Cost(Mil.)	$	0	
	Less than 2.0	0		0
	2.0 to 5.0	6,000		0
	5.0 to 10.0	8,000		0
	10.0 to 20.0	15,000		0
	20.0 to 30.0	30,000		0
	30.0 to 40.0	40,000		0
	40.0 & above	58,000		0
Clearing Site	Project Cost (Mil.)	$	15000	
	Less than 1.0	15,000		15000
	1.0 to 2.0	30,000		0
	2.0 to 5.0	45,000		0
	5.0 to 10.0	115,000		0
	10.0 to 20.0	220,000		0
	20.0 to 30.0	240,000		0
	30.0 to 40.0	250,000		0
	40.0 & above	490,000		0
Construction Layout	Project Cost(Mil.)	$	7000	
	Less than 1.0	7,000		7000
	1.0 to 2.0	20,000		0
	2.0 to 5.0	42,000		0
	5.0 to 10.0	87,000		0
	10.0 to 20.0	160,000		0
	20.0 to 30.0	220,000		0
	30.0 to 40.0	490,000		0
	40.0 & above	890,000		0
		PROJECT TOTAL	175205	

CONTINGENCIES & ESCALATION

		Y		2.00	1.00
Y = Number of Years until midpoint of construction duration plus number of years until construction start. If midpoint is less than 2 years from the date of this estimate, no escalation is required. Maximum value = 10%		0.00			
175205.4	1.030	1.00	180462		
Project Total	Contingencies (1+C)	1 + [0.01 (Y+1) (Y-2)]	Construction Estimate for PD		

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years		
0-10	3%	1		0.030
10-20	2.50%	2		0.000
20-50	2%	3		0.000
Over 50	1.50%	4		0.000

CONSTRUCTION ENGINEERING (CE)

Project Cost (Mil.)		% of Construction Cost		
Less than 1.0		28.40%		51251
1.0 to 5.0		17.60%		0
5.0 to 10.0		12.20%		0
10.0 & above		9.50%		0
CONSTRUCTION ENGINEERING AMOUNT		$51,251.08		

CONSTRUCTION CHANGE ORDER CONTINGENCIES

Total Federal Participating Items in Millions of $	Construction Change Order Contingency Amount	
$0 to 0.1	$6,000	0
0.1 to 0.5	25,000	25000
0.5 to 5.0	25,000 + 4% of amount in excess of $500,000	0
5.0 to 10.0	205,000 + 3% of amount in excess of $5,000,000	0
10.0 to 15.0	355,000 + 2% of amount in excess of $10,000,000	0
15.0 and above	455,000 + 1.5% of amount in excess of $15,000,000 - $500,000 max	0
		0

For State Funded Projects, Contingencies for Change orders = 0

CHANGE ORDER CONTINGENCY AMC = 25000

UTILITIES RELOCATIONS BY COMPANIES/OWNERS

Construction Cost for Initial Estimate	x % or + Estimate Use % or utilities detailed estimate	= Utility Relocation Cost for Initial Estimate
180461.562	0.09	16242

If there are no utility relocations on the project indicate “No Utilities” in the box above.

RIGHT OF WAY COST

If there is no ROW cost on the project indicate “No ROW” the box

SUMMARY

Construction Estimate for Initial	180,462
Construction Engineering (CE)	51,251
Contingencies	25,000
Utilities Relocations	16,242
Total Construction Cost	**272,954**

Right of Way Cost	Not Known

Classification Number 1 - NEW CONSTRUCTION - English

Route	Thompson Park	Section/Contract #	Monroe Township
PM	Del Vecchio	UPC No.	2007BPP643C TO#8/116129

EARTHWORK (must be calculated)

	Unit	Quantity	x Unit Price	Amount
Stripping (4 - 6" Depth)	Acre	0	4,050	0
Roadway Exc. Unclassified, **See (J)**	C.Y.	1185	30	35550
Removal of Conc. Base & Conc. Surface Courses, **See (K)**	S.Y.	0		0
Channel Excavation	C.Y.	0	12.25	0
Ditch Excavation	C.Y.	0	10	0
Borrow Excavation Zone 3, **See (J)**	C.Y.	0		0
		0		0
EARTHWORK TOTAL	=			35550

Suggested procedure for calculating earthwork:
A) Determine Typical section (number of lanes, median widths, side slopes, etc.).
B) Get latest topography map available.
C) Plot proposed alignment on topo map.
D) Develop profile using topo controls such as existing roads, streams, rivers and design manual.
E) Calculate Areas for the typical section in 1 foot increments of cut or fill.
F) At 10 to 60 foot intervals (depending on frequency of X-section changes) calculate the earthwork.
G) Calculate any other significant earthwork (ramps, cross-roads, etc.).
H) Make appropriate earthwork corrections for the pavement box and striping. Use 21 inch depth for rigid pavement, 26 inch depth for all flexible pavement and 4 inch depth for stripping.
I) Deduct any roadway excavation from borrow required to calculate Borrow Excavation Zone 3.
J) See Construction Cost Estimate Work Sheet (Section 3.1). This worksheet must be utilized for the most recent price information.
K) 11.2 to 12.5, based on the quantity, location and type of project.

PAVEMENT

12 FOOT WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	10 inch R.C. Pavement	156
B	2 inch HMA Surf. Crs. & 8 inch HMA Base	61
C	3 inch HMA Surf. Crs. & 4 inch HMA Base	46
D	2 inch HMA Surf. Crs. & 2 inch HMA Base	22
E	Bridge Approach & Transition Slabs	156

Computation Table for Pavement. Cost

Type	Cost from table above	x Length	x Pavement *W.F.	= Amount
				0
				0
				0
				0
				0
				0
				0
				0
				0
PAVEMENT TOTAL			=	0

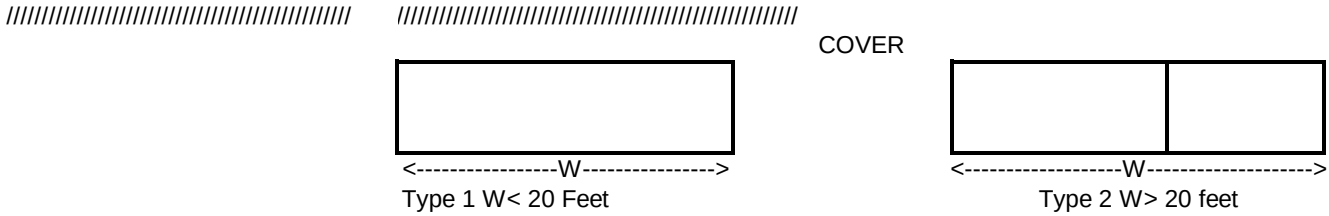
*Width Factors = Ratio of 12 foot wide lane to actual pavement width.

Example = actual pavement width = 25 foot = 25/12 = 2.08 W.F.

CONTEXT SENSITIVE DESIGN

Attach additional sheet detailing items and costs of context sensitive design work =

CULVERTS



Type	Layout (3)	Skew (1)	Cover (2)	Cost Per Sq. Foot
Type 1	Area w x L exceeds 1000 Sq. Feet	0-60 degrees	0 to 10'	114.75
			10' to 20'	147.25
	Short Culverts Difficult Conditions under 1000 Square Feet	0-60 degrees	0 to 10'	203.50
			10' to 20'	235.00
Type 2	Area w x L exceeds 1000 Sq. Feet	0-60 degrees	0 to 10'	121.75
			10' to 20'	152.50
	Short Culverts Difficult Conditions under 1000 Square Feet	0-60 degrees	0 to 10'	203.50
			10' to 20'	235.00

For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.

Description	Area Computation	x Cost per Sq. Foot	= Amount
			0
			0
			0
			0
		Culvert Total =	0

BRIDGES

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 3 spans and 2 side spans (Max. Span 100 feet)
H = Clear Height 14 To 23 feet (4)
L = 100 to 400 feet & all viaducts over 400 feet (5)

Class	Layout	Skew (1)	Foundation (2)	Cost per Sq. Foot
I	Width at Least 45 feet	0 to 40 Degrees	No Piles	134.75
			Piles at Stub Abut.	159.75
			Piles at Piers & Stu	174.75
		40 to 60 Degrees	No Piles	145.00
			Piles at Stub Abut.	168.25
			Piles at Piers & Stu	181.25

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 3 spans and 2 side spans (Max. Span 100 feet) (3)
H = Clear Height 14 feet (4)
L = under 400 feet

Class 1 - New Construction

Class	Layout	Skew (1)	Foundation (2)	Cost per Sq. Foot
II	L exceeds W Area L x W exceeds 4500 Sq. Feet	0 to 40 Degrees	No Piles	176.50
			On Piles	187.25
		40 to 60 Degrees	No Piles	219.75
			On Piles	273.25
III	W exceeds L Area L x W exceeds 4500 Sq. Feet	0 to 40 Degrees	No Piles	226.75
			On Piles	299.25
		40 to 60 Degrees	No Piles	241.50
			On Piles	310.00
IV	Width 30 - 45 feet Area W x L under 4500 Sq. Foot	0 to 40 Degrees	No Piles	295.50
			On Piles	396.75
		40 to 60 Degrees	No Piles	318.25
			On Piles	416.25

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 2 spans (Max. Span 125 feet)
H = Clear Height 14 feet (4)
L = 100 to 250 feet

Layout	Skew (1)	Foundation (2)	Cost/ Sq. Foot
Width at Least 40 feet	0 to 40 Degrees	No Piles	157.00
		Piles at Semi-Stub Abut.	182.00
		Piles at Piers & Semi-Stub Abut.	204.50
Minimum Length 100 feet	40 to 60 Degrees	No Piles	166.50
		Piles at Semi-Stub Abut.	194.75
		Piles at Piers & Semi-Stub Abut.	217.50

			0
Length	Width	Cost per SF	Bridge Total

1. For skews over 60 degrees it will be necessary to make a special analysis and establish a square foot price comparable to above.

2. For very bad foundation conditions requiring unusual lengths or spacing of piles, it will be necessary to establish a square foot price.

3. For longer spans, adjust the cost per square foot to reflect increased cost of structural members.

4. For span bridges, it is expected the length of the side span will be in- creased in proportion to any increase in height. Because of the resultant increase in deck area, the square foot price will remain approximately the same in the range of heights shown. For extremely high structures (particularly for viaducts), square foot prices will have to be increased.

5. For structures over 400 foot long (viaducts), reduce the cost per square foot if repetitive span length and forming can be used. Reduce by $0.50 for lengths from 400 to 600 feet and by $1.00 for lengths over 600 feet. (Do not forget adjustments (3) and (4) above on viaducts).

6. For statically indeterminate structures, square foot prices will have to be established.

Structure Description	Calculated Sq. Foot of Bridge Deck	x Cost Per Square Foot	= Amount
			0
			0
			0
			0
			0
			0
			0
			0

	0
	0
	0
	0
Sub Total	0
Clearing Site Bridge *0-3% of Sub Total	0
%	
BRIDGE TOTAL	0

*Pick appropriate percent based on the size, type and materials of existing structure

DRAINAGE (includes inlets and cross drains)

Rural	0.2	364356	72871.2
	project length (miles)	x cost per mile	= Amount
Urban	0	544280	0
	project length (miles)	x cost per mile	= Amount

The above are the total costs of basins, manholes, longitudinal and transverse pipes, underdrains, headwalls, protecting curbs, aprons, etc. for a divided highway with a depressed median. The costs are assumed to apply to 4, 6 or 8 lane sections since there will be no appreciable difference in the number of basins or the sizes or lengths of pipes.

Frontage Road & Ramp Drainage

0	55	0
length of ramp or frontage rd. in feet	x cost per foot	= Amount

DRAINAGE TOTAL = 72871.2

INCIDENTAL ITEMS

Item	Cost	x Quantity	= Amount
Shared Use Path- HMA 5"	75	293	21975
Shared Use Path - Soil Aggregate Base	30	234	7020
Curb Ramps - 1	1,500	1	1500
INCIDENTAL ITEMS TOTAL	=		30495

LANDSCAPE

	Quantity	x Unit Prices	= Amount
Topsoil and Seeding (Mainline) Length of Project in miles	0.2	112,815	22563
Planting (Mainline) Length of Project in miles	0	64,500	0

Topsoil, Seeding, Planting (Finger Ramp Number of Finger Ramps	0	12,500	0
Topsoil, Seeding, Planting (Loop Ramp) Number of Loop Ramps	0	20,000	0
Topsoil, Seeding (Access Road) Length of Access Road in Feet	0	7.9	0
LANDSCAPE TOTAL	=		22563

NOISE ABATEMENT

	Unit	Quantity	x Cost	= Amount
Noise Wall	L.F.	0	305	0
				0
				0
				0
NOISE ABATEMENT TOTAL	=			0

GENERAL ITEMS

Item	Project Length (miles)	x Cost/Mile	= Amount
Field Office		44,260	0
Materials Field Laboratory		28,970	0
Erosion Control during Construction	0.2	64,375	12875
GENERAL ITEMS TOTAL	=		12875

SUMMARY

Route	Thompson Park	Section/Contract #	Monroe Township
PM	Del Vecchio	UPC No.	2007BPP643C TO#8/116129

Work Type	Totals from other pages
Earthwork	35550
Pavement	0
Context Sensitive Design	0
Culverts	0
Bridges	0
Drainage	72871.2
Incidental Items	30495
Landscape	22563
Noise Abatement	0
General Items	12875
PROJECT SUBTOTAL	174354.2

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		0% of Proj. Subtotal	0
Maintenance of Traffic		3% of Proj. Subtotal	5231
Training		1% of Proj. Subtotal	1743.542
Mobilization			15691.878

	Project Cost < 5.0 (Mil.)	9% of Proj. Subtotal		15692
	Project Cost 5.0 & above	10% of Proj. Subtotal		0
Progress Schedule	Project Cost(Mil.)	$	0	
	Less than 2.0	0		0
	2.0 to 5.0	6,000		0
	5.0 to 10.0	8,000		0
	10.0 to 20.0	15,000		0
	20.0 to 30.0	30,000		0
	30.0 to 40.0	40,000		0
	40.0 & above	58,000		0
Clearing Site	Project Cost (Mil.)	$	15000	
	Less than 1.0	15,000		15000
	1.0 to 2.0	30,000		0
	2.0 to 5.0	45,000		0
	5.0 to 10.0	115,000		0
	10.0 to 20.0	220,000		0
	20.0 to 30.0	240,000		0
	30.0 to 40.0	250,000		0
	40.0 & above	490,000		0
Construction Layout	Project Cost(Mil.)	$	7000	
	Less than 1.0	7,000		7000
	1.0 to 2.0	20,000		0
	2.0 to 5.0	42,000		0
	5.0 to 10.0	87,000		0
	10.0 to 20.0	160,000		0
	20.0 to 30.0	220,000		0
	30.0 to 40.0	490,000		0
	40.0 & above	890,000		0
		PROJECT TOTAL	219020	

CONTINGENCIES & ESCALATION

		Y		2.00	1.00
Y = Number of Years until midpoint of construction duration plus number of years until construction start. If midpoint is less than 2 years from the date of this estimate, no escalation is required. Maximum value = 10%		0.00			
219020.246	1.030	1.00	225591		
Project Total	Contingencies (1+C)	1 + [0.01 (Y+1) (Y-2)]	Construction Estimate for PD		

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years		
0-10	3%	1		0.030
10-20	2.50%	2		0.000
20-50	2%	3		0.000
Over 50	1.50%	4		0.000

CONSTRUCTION ENGINEERING (CE)

Project Cost (Mil.)		% of Construction Cost		
Less than 1.0		28.40%		64068
1.0 to 5.0		17.60%		0
5.0 to 10.0		12.20%		0
10.0 & above		9.50%		0
CONSTRUCTION ENGINEERING AMOUNT		$64,067.80		

CONSTRUCTION CHANGE ORDER CONTINGENCIES

Total Federal Participating Items in Millions of $	Construction Change Order Contingency Amount	
$0 to 0.1	$6,000	0
0.1 to 0.5	25,000	25000
0.5 to 5.0	25,000 + 4% of amount in excess of $500,000	0
5.0 to 10.0	205,000 + 3% of amount in excess of $5,000,000	0
10.0 to 15.0	355,000 + 2% of amount in excess of $10,000,000	0
15.0 and above	455,000 + 1.5% of amount in excess of $15,000,000 - $500,000 max	0
		0

For State Funded Projects, Contingencies for Change orders = 0

CHANGE ORDER CONTINGENCY AMC = 25000

UTILITIES RELOCATIONS BY COMPANIES/OWNERS

Construction Cost for Initial Estimate	x % or + Estimate Use % or utilities detailed estimate	= Utility Relocation Cost for Initial Estimate
225590.8534	0.09	20303

If there are no utility relocations on the project indicate “No Utilities” in the box above.

RIGHT OF WAY COST

If there is no ROW cost on the project indicate “No ROW” the box

SUMMARY

Construction Estimate for Initial	225,591
Construction Engineering (CE)	64,068
Contingencies	25,000
Utilities Relocations	20,303
Total Construction Cost	**334,962**

Right of Way Cost	Not Known

Classification Number 1 - NEW CONSTRUCTION - English

Route	Union Valley Share the Road	Section/Contract #	Monroe Township
PM	Del Vecchio	UPC No.	2007BPP643C TO#8/116129

EARTHWORK (must be calculated)

	Unit	Quantity	x Unit Price	Amount
Stripping (4 - 6" Depth)	Acre	0	4,050	0
Roadway Exc. Unclassified, **See (J)**	C.Y.	3390	30	101700
Removal of Conc. Base & Conc. Surface Courses, **See (K)**	S.Y.	0		0
Channel Excavation	C.Y.	0	12.25	0
Ditch Excavation	C.Y.	0	10	0
Borrow Excavation Zone 3, **See (J)**	C.Y.	0		0
		0		0
EARTHWORK TOTAL	=			101700

Suggested procedure for calculating earthwork:
A) Determine Typical section (number of lanes, median widths, side slopes, etc.).
B) Get latest topography map available.
C) Plot proposed alignment on topo map.
D) Develop profile using topo controls such as existing roads, streams, rivers and design manual.
E) Calculate Areas for the typical section in 1 foot increments of cut or fill.
F) At 10 to 60 foot intervals (depending on frequency of X-section changes) calculate the earthwork.
G) Calculate any other significant earthwork (ramps, cross-roads, etc.).
H) Make appropriate earthwork corrections for the pavement box and striping. Use 21 inch depth for rigid pavement, 26 inch depth for all flexible pavement and 4 inch depth for stripping.
I) Deduct any roadway excavation from borrow required to calculate Borrow Excavation Zone 3.
J) See Construction Cost Estimate Work Sheet (Section 3.1). This worksheet must be utilized for the most recent price information.
K) 11.2 to 12.5, based on the quantity, location and type of project.

PAVEMENT

12 FOOT WIDE LANE (from subgrade up)

Pav't. Type	Description of Pavement	Cost/Linear Meter
A	10 inch R.C. Pavement	156
B	2 inch HMA Surf. Crs. & 8 inch HMA Base	8/SF
C	3 inch HMA Surf. Crs. & 4 inch HMA Base	46
D	2 inch HMA Surf. Crs. & 2 inch HMA Base	22
E	Bridge Approach & Transition Slabs	156

Computation Table for Pavement. Cost

Type	Cost from table above	x Length	x Pavement *W.F.	= Amount
B	8	42240	N/A	337920
				0
				0
				0
				0
				0
				0
				0
				0
PAVEMENT TOTAL			=	337920

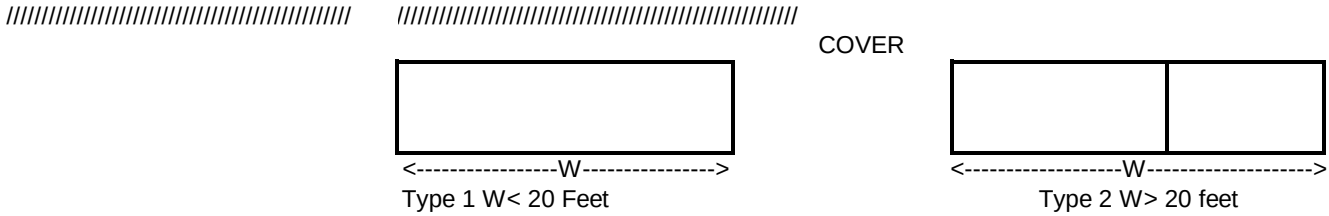
*Width Factors = Ratio of 12 foot wide lane to actual pavement width.

Example = actual pavement width = 25 foot = 25/12 = 2.08 W.F.

CONTEXT SENSITIVE DESIGN

Attach additional sheet detailing items and costs of context sensitive design work =

CULVERTS



Type	Layout (3)	Skew (1)	Cover (2)	Cost Per Sq. Foot
Type 1	Area w x L exceeds 1000 Sq. Feet	0-60 degrees	0 to 10'	114.75
			10' to 20'	147.25
	Short Culverts Difficult Conditions under 1000 Square Feet	0-60 degrees	0 to 10'	203.50
			10' to 20'	235.00
Type 2	Area w x L exceeds 1000 Sq. Feet	0-60 degrees	0 to 10'	121.75
			10' to 20'	152.50
	Short Culverts Difficult Conditions under 1000 Square Feet	0-60 degrees	0 to 10'	203.50
			10' to 20'	235.00

For skews over 60 degrees it will be necessary to make a special analysis and establish a square meter price comparable to above.

Description	Area Computation	x Cost per Sq. Foot	= Amount
			0
			0
			0
			0
		Culvert Total =	0

BRIDGES

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 3 spans and 2 side spans (Max. Span 100 feet)
H = Clear Height 14 To 23 feet (4)
L = 100 to 400 feet & all viaducts over 400 feet (5)

Class	Layout	Skew (1)	Foundation (2)	Cost per Sq. Foot
I	Width at Least 45 feet	0 to 40 Degrees	No Piles	134.75
			Piles at Stub Abut.	159.75
			Piles at Piers & Stu	174.75
		40 to 60 Degrees	No Piles	145.00
			Piles at Stub Abut.	168.25
			Piles at Piers & Stu	181.25

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 3 spans and 2 side spans (Max. Span 100 feet) (3)
H = Clear Height 14 feet (4)
L = under 400 feet

Class 1 - New Construction

Class	Layout	Skew (1)	Foundation (2)	Cost per Sq. Foot
II	L exceeds W Area L x W exceeds 4500 Sq. Feet	0 to 40 Degrees	No Piles	176.50
			On Piles	187.25
		40 to 60 Degrees	No Piles	219.75
			On Piles	273.25
III	W exceeds L Area L x W exceeds 4500 Sq. Feet	0 to 40 Degrees	No Piles	226.75
			On Piles	299.25
		40 to 60 Degrees	No Piles	241.50
			On Piles	310.00
IV	Width 30 - 45 feet Area W x L under 4500 Sq. Foot	0 to 40 Degrees	No Piles	295.50
			On Piles	396.75
		40 to 60 Degrees	No Piles	318.25
			On Piles	416.25

For the Bridge Sketch see the Construction Cost Estimation Preparation Manual
1 to 2 spans (Max. Span 125 feet)
H = Clear Height 14 feet (4)
L = 100 to 250 feet

Layout	Skew (1)	Foundation (2)	Cost/ Sq. Foot
Width at Least 40 feet	0 to 40 Degrees	No Piles	157.00
		Piles at Semi-Stub Abut.	182.00
		Piles at Piers & Semi-Stub Abut.	204.50
Minimum Length 100 feet	40 to 60 Degrees	No Piles	166.50
		Piles at Semi-Stub Abut.	194.75
		Piles at Piers & Semi-Stub Abut.	217.50

			0
Length	Width	Cost per SF	Bridge Total

1. For skews over 60 degrees it will be necessary to make a special analysis and establish a square foot price comparable to above.

2. For very bad foundation conditions requiring unusual lengths or spacing of piles, it will be necessary to establish a square foot price.

3. For longer spans, adjust the cost per square foot to reflect increased cost of structural members.

4. For span bridges, it is expected the length of the side span will be in- creased in proportion to any increase in height. Because of the resultant increase in deck area, the square foot price will remain approximately the same in the range of heights shown. For extremely high structures (particularly for viaducts), square foot prices will have to be increased.

5. For structures over 400 foot long (viaducts), reduce the cost per square foot if repetitive span length and forming can be used. Reduce by $0.50 for lengths from 400 to 600 feet and by $1.00 for lengths over 600 feet. (Do not forget adjustments (3) and (4) above on viaducts).

6. For statically indeterminate structures, square foot prices will have to be established.

Structure Description	Calculated Sq. Foot of Bridge Deck	x Cost Per Square Foot	= Amount
			0
			0
			0
			0
			0
			0
			0
			0

	0
	0
	0
	0
Sub Total	0
	0

Clearing Site Bridge *0-3% of Sub Total

%

BRIDGE TOTAL 0

*Pick appropriate percent based on the size, type and materials of existing structure

DRAINAGE (includes inlets and cross drains)

Rural	0	364356	0
	project length (miles)	x cost per mile	= Amount
Urban	0.825	544280	449031
	project length (miles)	x cost per mile	= Amount

The above are the total costs of basins, manholes, longitudinal and transverse pipes, underdrains, headwalls, protecting curbs, aprons, etc. for a divided highway with a depressed median. The costs are assumed to apply to 4, 6 or 8 lane sections since there will be no appreciable difference in the number of basins or the sizes or lengths of pipes.

Frontage Road & Ramp Drainage

0	55	0
length of ramp or frontage rd. in feet	x cost per foot	= Amount

DRAINAGE TOTAL = 449031

INCIDENTAL ITEMS

Item	Cost	x Quantity	= Amount
Phase I - W11-1 (Bike Warn) SF	35	137.5	4812.5
Phase I - W16-1 (Share) SF	35	49.5	1732.5
Phase II - Striping (Shoulder - LF)	$3.50	9240	32340
Phase II - Concerete Vertical Curb (LF)	22	18480	406560
Phase II - W11-1 (Bike Warn) SF	35	125	4375
Phase II - W16-1 (Share) SF	35	45	1575
INCIDENTAL ITEMS TOTAL	=		451395

LANDSCAPE

	Quantity	x Unit Prices	= Amount
Topsoil and Seeding (Mainline) Length of Project in miles	0.825	112,815	93072.375
Planting (Mainline) Length of Project in miles	0	64,500	0

Topsoil, Seeding, Planting (Finger Ramp Number of Finger Ramps	0	12,500	0
Topsoil, Seeding, Planting (Loop Ramp) Number of Loop Ramps	0	20,000	0
Topsoil, Seeding (Access Road) Length of Access Road in Feet	0	7.9	0
LANDSCAPE TOTAL	=		93072.375

NOISE ABATEMENT

	Unit	Quantity	x Cost	= Amount
Noise Wall	L.F.	0	305	0
				0
				0
				0
NOISE ABATEMENT TOTAL	=			0

GENERAL ITEMS

Item	Project Length (miles)	x Cost/Mile	= Amount
Field Office	0.825	44,260	36514.5
Materials Field Laboratory	0.825	28,970	23900.25
Erosion Control during Construction	0.825	64,375	53109.375
GENERAL ITEMS TOTAL	=		113524.125

SUMMARY

Route	Union Valley Share the Road	Section/Contract #	Monroe Township
PM	Del Vecchio	UPC No.	2007BPP643C TO#8/116129

Work Type	Totals from other pages
Earthwork	101700
Pavement	337920
Context Sensitive Design	0
Culverts	0
Bridges	0
Drainage	449031
Incidental Items	451395
Landscape	93072.375
Noise Abatement	0
General Items	113524.125
PROJECT SUBTOTAL	1546642.5

Other Items	Proj. Subtotal Range	Choice	Amount
Lighting, Traffic Stripes, Signs and Delineators		0% of Proj. Subtotal	0
Maintenance of Traffic		3% of Proj. Subtotal	46399
Training		1% of Proj. Subtotal	15466.425
Mobilization			139197.825

	Project Cost < 5.0 (Mil.)	9% of Proj. Subtotal		139198
	Project Cost 5.0 & above	10% of Proj. Subtotal		0
Progress Schedule	Project Cost(Mil.)	$	0	
	Less than 2.0	0		0
	2.0 to 5.0	6,000		0
	5.0 to 10.0	8,000		0
	10.0 to 20.0	15,000		0
	20.0 to 30.0	30,000		0
	30.0 to 40.0	40,000		0
	40.0 & above	58,000		0
Clearing Site	Project Cost (Mil.)	$	30000	
	Less than 1.0	15,000		0
	1.0 to 2.0	30,000		30000
	2.0 to 5.0	45,000		0
	5.0 to 10.0	115,000		0
	10.0 to 20.0	220,000		0
	20.0 to 30.0	240,000		0
	30.0 to 40.0	250,000		0
	40.0 & above	490,000		0
Construction Layout	Project Cost(Mil.)	$	20000	
	Less than 1.0	7,000		0
	1.0 to 2.0	20,000		20000
	2.0 to 5.0	42,000		0
	5.0 to 10.0	87,000		0
	10.0 to 20.0	160,000		0
	20.0 to 30.0	220,000		0
	30.0 to 40.0	490,000		0
	40.0 & above	890,000		0
		PROJECT TOTAL	1797706	

CONTINGENCIES & ESCALATION

		Y		2.00	1.00
Y = Number of Years until midpoint of construction duration plus number of years until construction start. If midpoint is less than 2 years from the date of this estimate, no escalation is required. Maximum value = 10%		0.00			
1797706.025	1.030	1.00	1851637		
Project Total	Contingencies (1+C)	1 + [0.01 (Y+1) (Y-2)]	Construction Estimate for PD		

Project Cost(Mil.)	Contingencies (C) Percent	Average Construction Duration in Years	
0-10	3%	1	0.030
10-20	2.50%	2	0.000
20-50	2%	3	0.000
Over 50	1.50%	4	0.000

CONSTRUCTION ENGINEERING (CE)

Project Cost (Mil.)		% of Construction Cost	
Less than 1.0		28.40%	0
1.0 to 5.0		17.60%	325888
5.0 to 10.0		12.20%	0
10.0 & above		9.50%	0
CONSTRUCTION ENGINEERING AMOUNT		$325,888.15	

CONSTRUCTION CHANGE ORDER CONTINGENCIES

Total Federal Participating Items in Millions of $	Construction Change Order Contingency Amount	
$0 to 0.1	$6,000	0
0.1 to 0.5	25,000	0
0.5 to 5.0	25,000 + 4% of amount in excess of $500,000	79100
5.0 to 10.0	205,000 + 3% of amount in excess of $5,000,000	0
10.0 to 15.0	355,000 + 2% of amount in excess of $10,000,000	0
15.0 and above	455,000 + 1.5% of amount in excess of $15,000,000 - $500,000 max	0
		0

For State Funded Projects, Contingencies for Change orders = 0

CHANGE ORDER CONTINGENCY AMO = 79100

UTILITIES RELOCATIONS BY COMPANIES/OWNERS

1851637.206	0.09	166647
	x % or + Estimate	=
Construction Cost for Initial Estimate	Use % or utilities detailed estimate	Utility Relocation Cost for Initial Estimate

If there are no utility relocations on the project indicate “No Utilities” in the box above.

RIGHT OF WAY COST

If there is no ROW cost on the project indicate “No ROW” the box

SUMMARY

Construction Estimate for Initial	1,851,637
Construction Engineering (CE)	325,888
Contingencies	79,100
Utilities Relocations	166,647
Total Construction Cost	**2,423,273**

Right of Way Cost	Not Known

Monroe Township
Bicycle and Pedestrian Planning Study

Appendix B

NJDOT "FUNDING PEDESTRIAN AND BICYCLE PLANNING, PROGRAMS AND PROJECTS"

Roadway Network Improvement Guide

Alan M. Voorhees Transportation Center

Funding Pedestrian and Bicycle Planning, Programs and Projects:

A Compilation of Funding Sources

prepared by:
New Jersey Bicycle and Pedestrian Resource Center

prepared for:
New Jersey Department of Transportation

funded by:
Federal Highway Administration

January 2009

RUTGERS
Edward J. Bloustein School of Planning and Public Policy

Introduction/Acknowledgements

This paper presents a compilation and brief description of sources of funding that have been used, or could be, to fund pedestrian and bicycle improvements in New Jersey. The list is not exhaustive, but there has been an attempt to identify all major funding sources that can be utilized to fund bicycle and pedestrian planning and project development activities, as well as construction. In some cases these funds may also be used to fund programmatic activities. The paper emphasizes those funding sources that have been utilized in, or are unique to, New Jersey.

Much of the material for the original version of this paper was taken directly from a previous draft called, "Funding Pedestrian and Bicycle Planning, Programs and Projects" that was originally taken from both the "Memorandum on Funding Sources for Innovative Local Transportation Projects" prepared by the Tri-State Transportation Campaign, and a paper on bicycle and pedestrian funding within ISTEA prepared by the Bicycle Federation of America. Virtually all of the funding sources that were available for bicycle or pedestrian projects or planning under ISTEA and TEA-21 have been continued under the new federal transportation funding legislation, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Additional material has been taken from the USDOT publication "A Summary: Bicycle and Pedestrian Provisions of the Federal-Aid Program" and from the Alan M. Voorhees Transportation Center "NJ Walks and Bikes!: A Partner's Guide to Who's Who in Walking and Biking in New Jersey."

This paper is a work in progress to be updated as new sources are identified.

Table of Contents

Funding of *Planning and Programmatic Activities*

Federal and/or State Funded Programs

Subregional Studies Program
This program provides federal grants for consultant-based planning, engineering, design, and evaluation of transportation projects. The funding is for studies, not capital improvements or operating costs. Applicants for grants can include state or local governmental entities. Funding can be, and has been, used to fund pedestrian and bicycle planning activities. For example, Monmouth County has received approval to carry out a planning study to address pedestrian needs and opportunities in several major corridors in the County. Additionally, Somerset County has received funding for a traffic calming study of selected locations in the county. Contact your regional MPO for more information. The North Jersey Transportation Planning Authority subregions served are the counties of Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union and Warren as well as Jersey City and Newark. More information is available at www.njtpa.org. The South Jersey Transportation Planning Authority serves Atlantic, Cape May, Cumberland and Salem counties and is available at www.sjtpo.org. The Delaware Valley Regional Planning Commission serves Burlington, Camden, Gloucester and Mercer counties and is available at www.dvrpc.org.

Supportive Task Grants
A portion of funds given to NJTPA to support planning activities are passed through to the sub-regions (counties) to fund staff planning activities. The Subregional Study Program funds studies assessing accessibility and mobility issues. For fiscal year 2008-2009 grants totaled approximately $2.4 million. Somerset County has used this to fund the "Somerset County Regional Center Pedestrian, Bicycle and Greenway Systems Connection Plan", intended to improve pedestrian, bike and greenway connections between community facilities.

Transportation Management Associations (TMAs)
In New Jersey, Transportation Management Associations receive substantial funding assistance through the Department of Transportation. In recent years, these funds have been from federal sources (CMAQ, or STP) although in the past, funding came from state sources. TMAs have considerable latitude in developing annual work programs to implement Travel Demand Management strategies. TMAs have carried out and are encouraged to continue to develop and undertake work program elements involving the promotion of bicycling and walking including development of bicycling suitability maps, promotional efforts aimed at increasing bicycling and walking, effective cycling presentations and other activities. For example, Keep Middlesex Moving sponsors the annual Bike to Work Week.

New Jersey TMA Contact Information

CROSS COUNTY CONNECTION TMA
Greentree Executive Campus
2002D Lincoln Drive West
Marlton, NJ 08053

Ph: 856-596-8228
Fax: 856-983-0388
Email: ccctma@driveless.com
www.driveless.com

GREATER MERCER TMA
15 Roszel Road South, Suite 101
Princeton, NJ 08540
Ph: 609-452-1491
Fax: 609-452-0028
www.gmtma.org

HUDSON TMA
574 Summit Avenue
5th Floor
Jersey City, NJ 07306
Ph: 201-792-2825
Fax: 201-795-0240
Email: info@hudsontma.org
www.hudsontma.org

HART COMMUTER INFORMATION SERVICES
84 Park Avenue, Suite E-104
Flemington, NJ 08822
Ph: 908-788-5553
Fax: 908-788-8583
Email: info@hart-tma.com
www.hart-tma.com

KEEP MIDDLESEX MOVING
100 Bayard Street, 2nd Floor, Suite 202
New Brunswick, NJ 08901
Ph: 732-745-4465
Fax: 732-745-7482
Email: kmm@kmm.org
www.kmm.org

MEADOWLINK RIDESHARING
C/O Meadowlands Regional Chamber of Commerce
201 Route 17 N
Rutherford, NJ 07070
Ph: 201-939-4242
Fax: 201-939-2630
Email: info@meadowlink.org
www.meadowlink.org

RIDEWISE OF RARITAN VALLEY
360 Grove Street
Bridgewater. NJ 08807
Ph: 908-704-1011
Email: staff@ridewise.org
www.ridewise.org

TRANSOPTIONS
2 Ridgedale Avenue, Suite 200
Cedar Knolls, NJ 07927
Ph: 973-267-7600
Fax: 973-267-6209
www.transoptions.org

Local Transportation Planning Assistance Program (LTPA)
This program makes professional transportation planning consultants available to municipalities wishing to implement the State's Smart Growth land use and transportation policies. The program is designed to help municipalities and counties with planning initiatives that will preserve the long term integrity of the state transportation system, as well as to enhance community quality of life objectives. Through the transportation and land use planning experts under contract with the Department, municipalities are able to develop or update local circulation elements, conduct downtown traffic calming and parking management studies, develop access management plans, and plan for improved bicycle, pedestrian and local transit services. Potential and designated Transit Villages, Transit Oriented Developments, and municipalities participating in the State's Office of Smart Growth Plan Endorsement Process receive highest priority.

The LTPA program is administered by the Division of Local Aid and Economic Development, Local Transportation Planning Assistance Unit. For more information please contact Helene Rubin, Section Chief, LTPA Unitat 609-530-2869, Helene.Rubin@dot.state.nj.us or Mike Russo, Director, Local Aid and Economic Development
at 609-530-3640, Michael.Russo@dot.state.nj.us.

Bicycle/Pedestrian Planning Assistance
This program provides NJDOT consultant support designed to develop local pedestrian/bicycle circulation plans and facility inventories. The program provides municipalities with consultant expertise in the professional disciplines of transportation and pedestrian/bicycle planning to develop local circulation elements and other transportation related planning initiatives. Potential and designated State Development and Redevelopment Plan Centers, target neighborhoods under the Urban Strategies Initiatives and improving bicycle and pedestrian access and safety locations receive priority. Assistance is to be provided under a partnership arrangement, and applicants must commit staff and or/financial resources to these efforts. All studies undertaken must have a public outreach aspect, including continuing involvement by both the official representatives of the municipality as well as participation by local citizens. This program is administered by the Division of Statewide Planning, Bureau of Commuter Mobility Strategies.

For more information please contact Sheree Davis, Manager of Commuter Mobility Strategies via email at sheree.davis@dot.state.nj.us.

Smart Future Planning Grants
The Smart Future Planning grant program, formerly known as Planning Assistance for Counties and Local Agencies, is administered through the Department of Community Affairs, Office of Smart Growth. The program provides money for municipalities, counties and regional organizations to develop plans that lead to smart growth objectives and create investment opportunities for communities. The grants are designed to promote the principles of smart growth by providing funding and technical assistance so that a county or municipality can develop and implement plans that add to the overall value of their communities. The value added comes from coordinating land use, transportation, parks and recreation, environmental protection, farmland preservation, health, schools and other land uses, so that communities can deliver services more efficiently as well as take full advantage of their positions in the region. Hudson County received a Smart Future grant in 2001 to support a Regional Strategic and Open Space Action Plan to focus on construction of the Waterfront Walkway along the Hudson River through seven Hudson County towns. Similar planning projects to improve the pedestrian or bicycle environment could be proposed by other counties or municipalities.
Each year, our grant categories change. For more information, visit http://www.nj.gov/dca/divisions/osg/programs/grants.html; visit SAGE at https://njdcasage.state.nj.us/portal.asp or call 609-292-7156.

Small Cities Development Block Grant
This grant provides funds for economic development, housing rehabilitation, community revitalization, and public facilities designed to benefit people of low and moderate income or to address recent local needs for which no other source of funding is available. For further information, visit http://www.state.nj.us/dca/dcr/sccdbg/index.shtml or contact Richard Z. Osworth at rosworth@dca.state.nj.us or (609) 633-6263.

New Jersey Historic Trust
The Historic Trust provides matching grants, loans and protection for New Jersey's historic resources. Funding assistance is limited to certified nonprofit organizations and units of local or county governments. Funding programs include, the Garden State Historic Preservation Fund, Revolving loan fund and the Cultural Trust Capital Preservation Grant Program. Private owners of historic resources may benefit from the Trust's easement or New Jersey Legacies programs. For more information, visit: http://www.njht.org or telephone (609) 984-0473.

New Jersey Redevelopment Authority (NJRA)
The New Jersey Redevelopment Authority (NJRA) is committed to revitalizing urban New Jersey as demonstrated in Governor Jon S. Corzine's Economic Growth Strategy. This strategy ensures that economic growth benefits all cities and regions of the state creating new economic opportunities for New Jersey citizens.

The mission of the New Jersey Redevelopment Authority (NJRA) supports the Governor's goal to support the resurgence of the state's cities by providing the necessary financial and technical tools to grow and revitalize neighborhoods.

It is NJRA's unique approach to revitalization that allows for the creation of programs and resources that improve the quality of life by creating value in urban communities. NJRA makes it mark in cities throughout the state by investing in comprehensive redevelopment projects that contribute to an improved quality of life.

The NJRA provides many resources, critical to the redevelopment process in the form of loans, loan guarantees, bond financing, and equity investments. The NJRA's remains flexible and responsive to ensure successful redevelopment throughout New Jersey. To date the NJRA has committed to invest more than $330 million in New Jersey's urban communities, leveraging over $2.9 billion in private sector investments.

Authority Resources

NJRA Pre-Development Fund ("NJRA PDF")
The NJRA PDF is a $2.5 million financing pool that provides funding to cover various predevelopment activities, including feasibility studies, architectural costs, environmental and engineering studies, legal and other related soft costs for development to occur. This program offers the flexibility to structure financing at the early stages of development. The NJRA PDF increases the availability of funding for community economic development projects within the NJRA's eligible municipalities.

New Jersey Urban Site Acquisition Program ("NJUSA")
The NJUSA Program is a $20 million revolving loan fund that facilitates the acquisition, site preparation and redevelopment of properties, which are components of an urban redevelopment plan in NJRA-eligible communities. Acting as a catalyst to jump-start urban revitalization efforts, the NJUSA Program provides for-profit and nonprofit developers and municipalities with a form of bridge financing to acquire title to property and for other acquisition-related costs.

NJRA Bond Program
The NJRA issues bonds at attractive interest rates to a broad range of qualified businesses and nonprofit organizations. The NJRA has the ability to issue both taxable and tax-exempt bonds to stimulate revitalization in New Jersey's urban areas.

New Jersey Redevelopment Investment Fund ("RIF")
The NJRA manages this flexible investment fund that provides debt and equity financing for business and real estate ventures. Through the RIF Program, the NJRA offers direct loans, real estate equity, loan guarantees and other forms of credit enhancements.

NJRA Environmental Equity Program ("E^2P")
The E^2P Program advances brownfields efforts by providing up-front capital to assist with the predevelopment stages of brownfields redevelopment projects. E^2P funds assist with site acquisition, remediation, planning, and demolition costs associated with brownfields redevelopment projects.

Working in Newark's Neighborhoods ("WINN")
WINN is a $10 million revolving loan program focused on redevelopment efforts in the City of Newark's neighborhoods. Funds from WINN can be used for commercial and mixed-use projects directly related to comprehensive redevelopment initiatives including: pre-development, site preparation, acquisition, demolition, permanent financing, loan guarantees and construction financing.

NJRA Redevelopment Training Institute
The NJRA Redevelopment Training Institute (NJRA RTI) offers intensive intermediate-level training courses that focus on the redevelopment of New Jersey's communities. NJRA RTI is designed to provide nonprofit and for-profit developers, professional consultants, entrepreneurs and city/county staff with a body of knowledge of the redevelopment and real estate development process. The goal of NJRA RTI is to provide classroom instruction outlining the nuances of the redevelopment planning process in New Jersey, to focus on the real estate development process and to unlock the key to understanding real estate finance.

Contact: New Jersey Redevelopment Authority
150 West State Street, Second Floor
P.O. Box 790
Trenton, NJ 08625
Phone: 609-292-3739
Fax: 609-292-6070
Web site: www.njra.us
E-mail: njra@njra.state.nj.us

Freshwater Wetlands Mitigation Council
The Freshwater Wetlands Mitigation Council's role in the state's wetland mitigation program is to serve as a repository for land donations and monetary contribution collected as a result of freshwater wetlands/state open water impacts that cannot be mitigated for on-site, off-site, or at a wetland mitigation bank. The Council also reviews and approves freshwater wetland mitigation banks. Furthermore, the Council is responsible for the management and disbursement of dollars from the Wetland Mitigation Fund to finance mitigation projects. With those funds, the council has the power to purchase land to provide areas for enhancement or restoration of degraded freshwater wetlands, to engage in the enhancement or restoration of degraded freshwater wetlands and transition areas determined to be of critical importance in protecting freshwater wetlands. For more information, contact the council at (609)777-0454 or Jill.Aspinwall@dep.state.nj.us or visit www.nj.gov/dep/landuse/fww/mitigate/mcouncil.html.

Other sources of funding

Bicycle and pedestrian planning activities and programs can and have been funded through local funds budgeted through county and municipal budgets.

Funding of *Projects*

Federal Funding Under SAFETEA-LU

All the major funding programs under SAFETEA-LU include bicycle and pedestrian facilities and programs as eligible activities.

Division of Local Aid and Economic Development
The Division of Local Aid and Economic Development oversees the development and authorization of funds in the Capital Program, Statewide Transportation Improvement Program, and Study and Development Program. The division also manages problem statements for NJDOT. Staff members work with county and municipal government officials to improve the efficiency and effectiveness of the state's transportation system. The SAFETEA-LU legislation has provided funding assistance to local governments for roads, bridges, and other transportation projects. For more information, telephone (609) 530-3640 or visit http://www.state.nj.us/transportation/business/localaid/funding.shtm.

National Highway System (NHS)
The NHS is comprised of the 42,000-mile Interstate system and another 113,000 miles of roads identified by the states based on their importance to the national and regional economy, defense and mobility. NHS funding for projects on NHS roadways can be used for bicycle and pedestrian improvements on NHS systems highways, or on land adjacent to any NHS system highway, including interstate highways. This includes incidental improvements within larger projects which enable bicycle compatibility such as paved shoulders and bicycle safe drainage grates, designated bicycle facilities such as bikeways, signed routes, bike lanes and paths, and pedestrian accommodations such as sidewalks, signals, overpasses and crosswalks. It also includes funding of independent bicycle and pedestrian projects (projects that are initiated primarily to benefit bicycle and pedestrian travel) along or in the vicinity of NHS roadways. Projects could include shoulder paving, bicycle safe drainage grates, construction of sidewalks or bikeways, installation of pedestrian signals, crosswalks or overpasses.

Surface Transportation Program (STP) Funds
The program is broadly defined and gives states flexibility to invest in a wide variety of transportation activities. Bicycle and pedestrian facilities and walkways are specifically listed as eligible activities under this program. As with NHS, pedestrian and bicycle improvements may be incidental improvements within larger projects which establish bicycle compatibility or designated bicycle and pedestrian accommodations. The funds can also be used for independent bicycle and pedestrian projects along or in the vicinity of roadways. Projects could include shoulder paving, bicycle safe drainage grates, construction of sidewalks or bikeways, installation of pedestrian signals, crosswalks or overpasses. Under SAFETEA-LU, it is specified that these funds may be used for the modification of sidewalks to comply with the Americans with Disabilities Act.

It should be noted that STP funds may be used for non-construction projects (such as maps,

brochures and public service announcements) related to safe bicycle use and walking. These funds are administered partially through NJDOT and partially through the state's Metropolitan Planning Organizations (MPOs).

STP Resources

Local Scoping and Local Lead Projects
The Local Scoping program (in the MPOs) provides a set aside of federal (STP) funds directly to the sub regions for the advancement of project proposals through the NEPA process, ultimately making that project eligible for inclusion in the Statewide Transportation Improvement Program, STIP (as a Local Lead project). The Local Lead Program provides funding to move projects from final design to construction. Local Scoping and Lead projects are selected via a competitive selection process.

Municipalities are eligible for the Local Scoping Program but must work through their appropriate sub region. Projects must be part of the National Highway System or be designated a Federal Aid route. A project is considered to be "Scoped" when it has received an approved environmental document, and a scoping Report including any design exceptions and that the preliminary engineering is completed. An important aspect of Scoping is the public involvement process that is required under NEPA. A decision to either advance a project for inclusion in the STIP and an eventual final design, right-of-way purchase and construction, or a decision to discontinue the project will be the result of the Scoping process. If a decision is made to advance the project to construction, funding will be provided either through the Local Lead Program, the New Jersey Department of Transportation, or other sources. A completed Scoping project does not guarantee construction funding.

The Local Lead program is an opportunity for sub regions to apply for federal funding for the advancement of projects through final design, right-of-way, and/or construction. This is a highly competitive program. The MPOs select the projects for inclusion in the Program. Applications are evaluated on a myriad of factors including but not limited to whether the project improves air quality, reduces travel time, reduces congestion, optimizes capacity, creates a community of place, etc.

Each of these sources of funds can be used to advance bicycle or pedestrian projects. As yet, only a handful of Local Scoping/Local Lead projects have directly addressed non-motorized needs as independent projects. Local Scoping/Local Lead projects can also benefit the non-motorized modes if they incorporate, incidentally, features that address bicycle and pedestrian travel needs. Contact your MPO for more information.

Transportation Enhancement Program
Ten percent of annual STP funds are set aside to support non-traditional transportation projects whose objectives support more livable communities, enhance the travel experience, and promote new transportation investment partnerships. The Transportation Enhancement Program links state and federal policy. It focuses on transportation projects

designed to preserve and protect environmental and cultural resources, and to promote alternative modes of transportation.

The grants are used to help local governments creatively integrate transportation facilities into their local surroundings. Two of the possible kinds of projects that can be funded with these grants are directly related to pedestrian and bicycle facilities and activities, and several others are indirectly related. The types of projects that can qualify include "provision of facilities for pedestrians and bicycles" and "provision of safety and educational activities for pedestrians and bicyclists." Others include "acquisition of scenic easements and scenic or historic sites," which could be used to enhance the pedestrian experience, "landscaping and other scenic beautification", which might be part of a streetscape project that can be beneficial to pedestrians and "preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian and bicycle trails)." The grants can also be used for other types of projects, which may have a more indirect or secondary benefit for bicyclists and pedestrians.

Several restrictions apply to the grants. Proposals must be for a complete, identifiable, and usable facility or activity. Funds are used for design, property acquisition or construction of projects. The proposed bicycle and pedestrian facilities cannot be solely for recreation; they must be proposed as transportation facilities. The projects must be ready for implementation or construction within two years after the project is selected for a grant. The proposal must also show, through an attached resolution or letter, that the facility or project will be maintained for at least 20 years. The proposal should show that the entire project would be wholly funded, either in combination with other funding sources, or solely through this grant program. Grants from this program can be used as matching funds; projects with supplemental funding will be given higher priority. Work that is performed before the project is formally approved by the Federal Highway Administration (FHWA), such as surveys, preliminary engineering or final design, will not be funded through the program.

Additionally, NJDOT analyzes user impact when evaluating proposals. Especially helpful to communities that are trying to make their environments more pedestrian and bicyclist friendly is the fact that NJDOT takes into consideration how the project would promote the use of non-automotive forms of transportation. Furthermore, the projects' urgency will be taken into consideration, such as a project that will lose other funding sources should it not receive matching funds. Finally, Urban Aid communities, proposals that include letters of community support and projects that have an economic benefit or have value as a cultural resource will also be given additional consideration.

Local agencies and non-profit groups can also apply for grants, but they need to have their projects endorsed by the governing board in the municipality in the form of a resolution. Regional projects must have both municipal and county endorsement. The projects must also conform to the National Environmental Policy Act, the National Historic Preservation Act and the Department of Transportation Act, Section 4(f). The projects must also be designed to meet American Association of State Highway and

Transportation Officials (AASHTO) standards and NJDOT's Planning and Design Guidelines for Bicycle and Pedestrian Facilities, the American Disabilities Act, state and local building codes, and other applicable professional design standards. All projects funded through this program are subject to the NJDOT policy requiring that bicycle and pedestrian traffic should be incorporated into the planning, design, construction and operation of all projects and programs funded or processed by the NJDOT.

These grants are funded through the federal SAFETEA-LU Act. Applications are submitted to the New Jersey Department of Transportation (DOT) and reviewed by several state agencies, including the DOT and the Department of Environmental Protection, as well as the Metropolitan Planning Organizations (MPOs) and representatives from outside the traditional transportation group. This committee reviews the applications and creates a short list to be submitted to the Commissioner of Transportation. Those applications that pass the basic eligibility part of the screening process are sent to the county planning department for the county perspective. Applicants should notify the county planning department about the proposed project. The funds are distributed on a reimbursement basis.

Hazard Elimination Program

Ten percent of the STP program is to be used to fund safety projects. The Local Safety Program provides $3 M ($1 M per MPO) annually to counties and municipalities for the improvement of known safety hazards on local and county roadways. Projects will focus on crash prone locations and may include but not be limited to intersections and other road improvements including installation and replacement of guide rail and pavement markings to enhance pedestrian and vehicular safety. These safety improvements are construction ready and can be delivered in a short period of time. Funding is provided for safety-oriented improvements. Improvements that either directly or indirectly improve conditions for pedestrians can be funded. In New Jersey, the program is administered by the NJDOT Bureau of Traffic Engineering and Safety (in the near future it will be transferred to a new Bureau of Safety Programs). In general, projects are selected on the basis of excessive occurrence of a particular accident type at a given location. This often involves some sort of intersection modification, such as resurfacing with a skid resistant pavement surface. In some cases safety improvements have included the installation of pedestrian signal heads. NJDOT is revising its project selection process. The new process will include specific accident categories for which projects are to be funded. One of these categories will be pedestrian-related accidents.

Sources: "Funding Bicycle and Pedestrian Projects in New Jersey: A guide for Citizens, Cities and Towns" by the Tri-State Transportation Campaign- October 1999;
http://www.fhwa.dot.gov/environment/bikeped/bp-broch.htm

Safe Routes to School
Safe Routes to School (SRTS) is a Federal-Aid program created in SAFETEA-LU and administered by State Departments of Transportation. The program provides funds to the States to substantially improve the ability of primary and middle school students to walk and bicycle to school safely. The purposes of the program are to enable and encourage children to walk and bicycle to school, to make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and to facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity (approximately 2 miles) of primary and middle schools (Grades K-8). The program encompasses a comprehensive approach that includes the five E's: Engineering, Education, Enforcement, Encouragement, and Evaluation. Counties and municipalities, school districts, and non-profit organizations will be eligible to apply. The New Jersey Department of Transportation awarded the first SRTS grants in July 2007 and announced the second round of grant applications in January 2008. For more information, contact Elise Bremer-Nei, New Jersey Safe Routes to School Coordinator, at (609) 530-2765.

Local Aid for Designated Transit Villages
NJDOT and NJ TRANSIT spearhead a multi-agency Smart Growth partnership known as the Transit Village Initiative. The Transit Village Initiative helps to redevelop and revitalize communities around transit facilities to make them an appealing choice for people to live, work and play, thereby reducing reliance on the automobile. The Transit Village Initiative is an excellent model for Smart Growth because it encourages growth in New Jersey where infrastructure and public transit already exist. Aside from Smart Growth community revitalization, two other goals of the Transit Village Initiative are to reduce traffic congestion and improve air quality by increasing transit riders.

Studies have shown that an increase in residential housing options within walking distance of a transit facility, typically a one quarter to one half mile radius, does more to increase transit ridership than any other type of development. Therefore, it is a goal of the Transit Village Initiative to bring more housing, more businesses and more people into communities with transit facilities. Programs include bicycle/pedestrian paths, bike routes signs, bicycle parking, and storage and bicycle/pedestrian safety education program. For more information, visit http://www.state.nj.us/transportation/community/village or contact Monica Etz at (609) 530-5957.

The Congestion Mitigation and Air Quality Improvement Program (CMAQ)
Authorized by SAFETEA-LU, The Congestion Mitigation and Air Quality Improvement Program provides funds for surface transportation and other projects that help to reduce congestion and improve air quality. The funds are mainly used to help communities in non-attainment areas and maintenance areas to reduce emissions. Non-attainment areas are those areas designated by the Environmental Protection Agency as not meeting the National Ambient Air Quality Standards (NAAQS). A maintenance area was once a non-attainment area but has now reached NAAQS. The SAFETEA-LU CMAQ program provides more than $8.6 billion in funds to State Departments of Transportation (DOT), Metropolitan Planning Organizations

(MPO), and transit agencies to invest in emissions-reducing projects. Pedestrian and Bicycle Programs are two kinds of many programs that can be funded using CMAQ funds.

Bicycle and pedestrian programs that can be funded under this program can come in one of many forms. Some include creating trails or storage facilities or marketing efforts designed to encourage bike riding and walking as forms of transportation. Education and outreach programs are also eligible for CMAQ funds and could be used to increase public knowledge about the benefits of biking and walking.

The funds are made available through the MPOs and NJDOT to local governments and non-profit organizations, as well as to private organizations as part of a public-private partnership CMAQ funds are only released as reimbursement payments for completed work. CMAQ funds require a state or local match. Usually, this breaks to 80% federal funding, subject to sliding scale, and 20% state or local funding.
Source: "The Congestion Mitigation and Air Quality Improvement Program" by the U.S. Department of Transportation, FHWA, Federal Transit Administration

National Recreational Trails Program (Symms Trails System Act)
An annual sum is apportioned to the states for use in developing trails related projects, many of which benefit bicyclists and pedestrians. Funding is from federal motor fuels taxes collected on sale of fuel for motorized recreational vehicles (ATVs, off road motorcycles, snowmobiles) and is administered through the Federal Highway Administration. In New Jersey, the program, including solicitation of projects and project selection, is administered by the Office of Natural Lands Management in the Division of Parks and Forestry. State, county, and local governments and non-profit organizations are eligible for funds.

In 2008, New Jersey will receive approximately $1,000,000 for trail projects. The deadline for submitting applications for 2008 was December 15, 2007. Next year's application and additional information can be obtained from Larry Miller at 609-984-1339, larry.miller@dep.state.nj.us or http://www.state.nj.us/dep/parksandforests/natural/njtrails.html.

Scenic Byways
This program recognizes roads having outstanding scenic, historic, cultural, natural, recreational, and archaeological qualities and provides for designation of these roads as National Scenic Byways, All-American Roads or America's Byways. Funds for this program can also be used in the development and provision of tourist implementation; and construction of bicycle and pedestrian facilities, interpretive facilities, overlooks and other enhancements for byway travelers. Designation of the scenic byway must be in accordance with a Scenic Byways program developed and adopted by the state.

Benefits of adoption as a Scenic Byway under the Program could include direct funding of projects and preferential treatment in the funding/selection process for other funding sources administered by the Department.

Section 402 Safety Funds
These funds are administered jointly by the National Highway Traffic Safety Administration

(NHTSA) and the Federal Highway Administration (FHWA) to be spent on non-construction activities to improve the safety of the traveling public. Pedestrian and bicycle projects are on the NHTSA priority list. In each state, the program is administered by a designated Highway Safety representative. In New Jersey, the designated representative is the Director of the Division of Highway Traffic Safety in the Department of Law and Public Safety.

Federal Transit Administration Funds
Title 49 U.S.C. (as amended by TEA-21) allows the Urbanized Area Formula Grants, Capital Investment Grants and Loans, and Formula Program for Other than Urbanized Area transit funds to be used for improving bicycle and pedestrian access to transit facilities and vehicles.

SAFETEA-LU continues the Transit Enhancement Activity program with a 1% set-aside of Urbanized Area Formula Grant funds designated for, among other things, pedestrian access and walkways and bicycle access, including storage equipment and installing equipment for transporting bicycles on mass transit vehicles.

Federal Community Development Block Grant (CDBG) Program

Community Development Block Grants (CDBG) are for the use of local communities serving low- to moderate-income people. These grants are funded through the U.S. Department of Housing and Urban Development and administered by the Office of Block Grant Assistance in HUD's Office of Community Planning and Development (CPD). The grants are most often used for projects such as rehabilitating or constructing affordable housing or for job-creating economic development, but they can also be used for projects that would benefit low- and moderate- income pedestrians and bicyclists. Several of the types of projects that can be funded with these grants could be used for pedestrian and bicycle activities. These include acquisition of land for some public purpose, building public improvements or facilities, including sidewalks and recreational facilities, and also the costs associated with administrating or planning these projects.

Not all local governments are eligible to apply for CDBG. The local government must have at least 50,000 residents or be designated a central city of a metropolitan area. Urban counties with at least 200,000 residents may also apply (these local governments are called entitlement communities). The local governments can spend the money themselves or distribute it to local non-profit or for-profit organizations or entities. Additionally, a portion of the funds is distributed to states, which can then distribute the funds as they see fit, including to non-entitlement communities. The most central restriction on the use of CDBG funds is that at least 70% of the money must be used for activities that primarily benefit low- to moderate-income people. In the case of building sidewalks or other pedestrian facilities, this usually means that these funds can only be used in areas where at least 70% of the residents have low to moderate incomes.

Importantly, a community must also prepare a Consolidated Plan in order to be eligible for the funds. This plan contains an action plan, which specifies how the community will use the funds,

as well as fulfills the reporting and application requirements for entitlement communities.

For more information on the federal CDBG program contact Kathleen Naymola of HUD at 973-776-7288 or kathleen_a._naymola@hud.gov. For information on New Jersey's Small Cities CDBG program please contact Richard Osworth at (609) 633-6263 or rosworth@dca.state.nj.us

Fairview, in Bergen County, used $449,000 in CDBG funds to make sidewalk and intersection improvements, including crosswalk striping and Guttenberg, in Hudson County, used $234,770 in CDBG funds for the Bergenline Avenue streetscape project and sidewalk improvements. Several other New Jersey communities have used the funds in a similar fashion.
Sources: http://www.hud.gov/offices/cpd/communitydevelopment/programs/cdbg.cfm *and Pedestrian and Bicycle Resource Project database.*

State Funding

Local Aid for Centers of Place
Currently, the Centers of Place program is designed to assist municipalities that have formally participated in implementation of the New Jersey State Development and Redevelopment Plan (SDRP). The program provides funds to non-traditional transportation improvements that advance municipal growth management objectives. NJDOT notifies eligible municipalities about the application process.

The funding from this program is meant to help communities in New Jersey make non-traditional transportation improvements that are meant to aid in managing growth. The funds can only be used by those communities that have formally participated in implementing the New Jersey State Development and Redevelopment Plan (SDRP). The State Planning Commission designates these communities as Centers (Urban, Regional, Town, or Village Center) as part of this process and the Centers prepare a Strategic Revitalization Plan and Program, approved by the Commissioner of Transportation or enter into an officially recognized Urban Complex. If a project is selected for funding, it must follow certain standards, including the NJDOT Bicycle Compatible Roadways Planning and Design Guidelines and the AASHTO Guide for the Development of New Bicycle Facilities.

The current categories of projects include, pedestrian and bicycle facilities, scenic or historic transportation programs, parking and circulation management, landscaping/beautification of transportation related facilities, and rehabilitation of transportation structures. Eligible pedestrian and bicycling projects include strategies which enable mixed use of a "Main Street" as both a public space and a transportation link, traffic calming improvements, bicycle lockers at transportation facilities, retail complexes, public buildings and public and mid-block connections/paths to ease bicycle and pedestrian circulation

The grants can be used for project-related activities including preliminary or final design (for Urban Aid or Depressed Rural Centers according to the Transportation Trust Fund Authority Act) and/or construction, including construction inspection and material testing according to the

Transportation Trust Fund Authority Act. These grants cannot be used for roadway projects that are eligible for funding though NJDOT's State Aid to Counties and Municipalities Program, such as resurfacing, rehabilitation or reconstruction, and signalization. They also cannot be used for right-of-way purchases or for operating costs associated with any project.

Priority is given to projects that meet several criteria, including that the project is transportation related, construction ready, compatible with the State Development and Redevelopment Plan, located in an Urban Coordinating Council target area, has local commitment, has supplemental funds, has community support and is coordinated with other funding sources or programs. Form SA-96 must be submitted to the Division of Local Government Services District Office to apply for funding. Supplemental materials, including photographs and maps, are encouraged.

Municipalities that want to make improvements on county or state roads must have the appropriate resolution or permission to proceed. Applications are evaluated by the Centers of Place Review Committee, which includes representatives from several state offices, including the DOT, the Office of State Planning, the Economic Development Authority and Downtown New Jersey. This committee makes recommendations to the Commissioner of Transportation.

Several New Jersey communities have received funding from NJDOT through this program for local pedestrian- and bicycle-oriented projects. 2007-2008 grant recipients include Palmyra Burrough of Burlington County which received $90,000 for their Palmyra Pathway Project. North Bergen Township of Hudson county received $400,000 for their JFK Boulevard East Streetscape while ten other municipalities received from $150,000 and $400,000 for a myriad of projects.

Contact your local Division of Local Government Services District Office for additional information. Visit http://www.state.nj.us/transportation/business/localaid/office.shtm.
Sources: "New Jersey Department of Transportation Centers of Place Handbook: Procedures for Local Aid for Centers of Place Program, November 1998" and http://www.state.nj.us/transportation/lgs/.

County Aid Program
Currently, County Aid is used for the improvement of public roads and bridges under county jurisdiction. Public transportation, bicycle and pedestrian projects, and other transportation initiatives are eligible for funds.

This program provides funding to counties for transportation projects. These funds are allocated to New Jersey's 21 counties by a formula that takes into account road mileage and population. Annually, each county develops an Annual Transportation Program that identifies all projects to be undertaken and their estimated cost. Projects may include improvements to public roads and bridges under county jurisdiction, public transportation or other transportation related work. Funding can be used for design, ROW, and construction.

Independent pedestrian and bicycle projects can be funded under the County Aid program; however, few independent pedestrian and bicycle projects have been funded.

As state funded projects, all projects funded under the county aid program are subject to the

NJDOT policy that requires that all bicycle and pedestrian traffic should be incorporated into the planning, design, construction and operation of all projects and programs funded or processed by the NJDOT. The Department of Transportation will continue efforts to encourage counties to comply with this policy mandate. For more information, visit their website at http://www.state.nj.us/transportation/business/localaid/countyaid.shtm.

Municipal Aid Program
Currently, funds are appropriated by the legislature for municipalities in each county based on a formula contained in legislation. These funds can be used for a variety of transportation projects including bicycle and pedestrian related projects. Additional funds are allotted for municipalities that qualify for Urban Aid.

The Municipal Aid program provides funding to municipalities for transportation projects. Funding is made available for municipalities in each county based on a formula that takes into account municipal road mileage within the county and county population. These funds are allocated to individual projects within various municipalities through a competitive process. Funding is allotted to municipalities that qualify for Urban Aid under N.J.S.A. 52:D-178 et seq. All 566 municipalities may apply. Projects may be improvements to public roads and bridges under municipal jurisdiction. Applications are submitted to the Division of Local Aid and Economic Development District Office. The results are presented to a Screening Committee comprised of Municipal Engineers and NJDOT staff, appointed by the Commissioner. The Committee evaluates the projects and makes recommendations to the Commissioner for approval.

NJDOT will pay 75% of the award amount at the time that the award of construction is approved by the NJDOT. The remaining amount is paid upon project completion.

As is the case with the County Aid program, independent pedestrian and bicycle projects can be funded under the Municipal Aid program; however, few if any independent pedestrian and bicycle projects have been funded through this program.

As with county aid projects, all projects funded under the Municipal Aid program are subject to NJDOT policy that requires that all bicycle and pedestrian traffic be incorporated into the planning, design, construction and operation of all projects and programs funded or processed by the NJDOT. More information is located at http://www.state.nj.us/transportation/business/localaid/municaid.shtm.

Discretionary Funding/Local Aid Infrastructure Fund
Currently, subject to funding appropriations, a discretionary fund is established to address emergencies and regional needs throughout the state. Any county or municipality may apply at any time. Under this program, a county or municipality may apply for funding for pedestrian safety and bikeway projects.

The Discretionary Aid program provides funding to address emergency or regional needs throughout the state. Any county or municipality may apply at any time. These projects are

approved at the discretion of the Commissioner.

As state funded projects, all projects funded under the discretionary aid program are subject to NJDOT policy which requires that all bicycle and pedestrian traffic should be incorporated into the planning, design, construction and operation of all projects and programs funded or processed by NJDOT.

NJDOT will pay 75% of the award amount at the time of the award of construction with the remaining amount to be paid upon project completion. To gain more information, visit their website at http://www.state.nj.us/transportation/business/localaid/descrfunding.shtm.

Safe Routes to School
This program is funded at $612 million over federal fiscal years 2005-2009 to fund projects that improve safety for school children walking or bicycling to school. New Jersey will receive approximately $15 million for fiscal years 2005-2009. It focuses on projects that create safer walkwats and bikeways, safer street crossings, and improve motorists' awareness of school children. For more information visit their website at www.state.nj.us/transportation/community/srts.

Bikeways Projects
This program provides funds for municipalities and counties for the construction of bicycle projects. These could include roadway improvements, which enable a roadway or street to safely accommodate bicycle traffic, or designated bikeways (signed bike routes, bike lanes or multi-use trails). The solicitation for project applications occurs at the same time as the solicitation for municipal aid projects. Special consideration will be given to bikeways that are physically separated from motorized vehicle traffic by an open space or barrier. 2008 recipients included Bordentown Township in Burlington County for the Joseph Lawrence Park Pedestrian/Bike Path as well as Princeton Township in Mercer County for their Stony Brook Regional Bicycle and Pedestrian Pathway. The program is administered by NJDOT's Division of Local Government Services. For more information, their website is http://www.state.nj.us/transportation/business/localaid/bikewaysf.shtm

Urban Enterprise Zones (UEZ)
Several communities in New Jersey have used Urban Enterprise Zones to fund pedestrian and bicycle facilities. The Urban Enterprise Zone Program (UEZ), enacted by the State Legislature in 1983, is meant to revitalize the State's most distressed urban communities through the creation of private sector jobs and public and private investment in targeted areas within these communities. The UEZ Authority usually designates around 30% of a city as a UEZ. New Jersey has established 32 UEZs covering 37 economically distressed cities.

More information is available at http://www.newjerseycommerce.org/about_uez_program.shtml or by calling (609) 777-0885.

Office of Green Acres
The Green Acres program provides loans and grants to counties, towns and nonprofit land trusts

to preserve land and develop parks for recreation and conservation purposes. (In a separate part of the program, Green Acres also directly purchases land for the state to increase the state's ownership of open space). The open space land that is purchased by the local government or nonprofit can be used for outdoor recreation, which is why the program is important for funding pedestrian and bicycle projects. The development of bikeways, trails, and other outdoor recreation is eligible for Green Acres funding.

Currently, the mission of the Office of Green Acres is to achieve, in partnership with others, a system of interconnected open spaces that protect, preserve, and enhance New Jersey's natural environment, which serves the historic, scenic, and recreational needs of the public through use and enjoyment. Green Acres' primary focus is acquiring land that creates linkages between existing protected lands to form open space corridors. These corridors provide linear habitat for wildlife to move through, parkland for recreation, and areas of scenic beauty between towns and urban centers. Recreation needs are as diverse as the people who play. To meet these needs, Green Acres funds different types of parks in a variety of settings. Whether in rural, suburban, or urban areas, parks play an important role in sustaining New Jersey's high quality of life. Increasingly, Green Acres gathers other public and private partners together to assist in buying and managing open space. The Program works with municipal and county governments, nonprofit organizations, and the state Farmland Preservation Program to meet compatible conservation goals. To gather more information, visit http://www.nj.gov/dep/greenacres/ or call Deputy Administrator Gary M. Rice at 609-984-0500.

County or Municipal Capital (Public Works) Funding

County or municipal funding can be used to fund pedestrian improvements including sidewalks, trails, crosswalks signals, traffic calming and other projects on rights of way under county or municipal jurisdiction, by including the project in the municipal (or county) budget, or bonding for it in the same way bonds are used to fund the construction and rehabilitation of roadway improvements for cars. Pedestrian improvements can be fully or partially assessed against the property owners along whose frontage the improvement (most commonly, a sidewalk) is placed. As with other categories of funding, bicycle and pedestrian improvements may be incidental to larger roadway projects, or they can be independent.

Even small amounts of funding from the county or municipality can be very important since they may be used to leverage or show local commitment in applications for other funding sources (e.g., TE, Local Aid For Centers, etc.).

Special Improvement Districts (SIDs)

Another form of municipal funding is through the creation of a local Special Improvement District. The funding is used for infrastructure improvements, including pedestrian improvements within the district. This form of funding can be used to leverage or show local commitment in applications for other funding sources. Impetus for SID usually comes from

business and property owners hoping to attract new customers by cleaning up sidewalks, improving parks, etc. Property owners within the District are assessed a special fee to cover the cost of the improvements.

Transportation Development Districts (TDD)

TDDs are joint state/county programs in New Jersey in which transportation improvements within a defined growth area are funded through a combination of public funding and developer contributions (for new developments) within the district. Independent pedestrian improvements can be included in the infrastructure improvement plan developed through a joint planning process for the district, and funded through the TDD. TDDs must have a plan of development consistent with other land use and development plans. They are a convenient and lawful method by which municipalities and counties can agree together on methods to raise revenue to fund infrastructure and other development related costs.

Developer Provided Facilities

The Residential Site Improvement Standards currently in effect in New Jersey require new residential developments to include sidewalks.

Other municipal and state zoning or access code regulations have been used to require developers to provide both onsite and offsite improvements to benefit bicycle and pedestrian traffic.

Open Space Trust Funds

Many counties have established open space trust funds, which can be used to purchase land for bicycle and pedestrian facilities. For example, Atlantic County used $459,000 from the Atlantic County Open Space Trust Fund to help pay for the Atlantic County Bikeway East. Other counties also have open space trust funds or an open space tax, including Bergen, Burlington, Camden, Cape May, Cumberland, Essex, Gloucester, Hunterdon, Mercer, Middlesex, Morris, Ocean, Passaic, Somerset, Sussex, Union and Warren.

The Bergen County Open Space, Recreation, Farmland and Historic Preservation Trust fund is funded through an annual property tax assessment and is used to preserve land, improve and develop outdoor recreation opportunities, preserve farmland, and improve historic areas. At least thirty percent of the money is distributed to municipalities to support their efforts in these areas. Additional information can be obtained from Mr. Robert Abbatomarco at 201-336-6446, rabbatomarco@co.bergen.nj.us, or Open Space, Recreation, Farmland & Historic Preservation Trust Fund, Bergen County Department of Planning & Economic Development, ONE Bergen County Plaza, Fourth Floor, Hackensack, New Jersey 07601-7000.

The Hunterdon County Open Space, Farmland and Historic Preservation Trust Fund is funded through property taxes and funds the preservation of lands for many purposes, including recreation, conservation, farmland and general open space and historic preservation. The funds can also be distributed to municipalities or charitable organizations for similar preservation purposes. The current fund does not provide for development of any facilities. Additional information about this fund can be obtained at www.co.hunterdon.nj.us/openspachtm, the Planning Board at (908)788-1490 , or Hunterdon County Open Space Trust Fund Program, Route 12 County Complex, Building #1, PO Box 2900, Flemington, New Jersey, 08822-2900.

Many municipal governments also have open space funding programs. Counties and municipalities with open space taxes can receive more money in matching grants than local governments that do not, as described in the Green Acres section of this document above. Manalapan is one of many townships with an open space tax and an open space element in their comprehensive plan. The open space element lays out the properties that the township hopes to acquire. Part of the open space element includes an "Action Plan" to apply for funds from the Green Acres program to buy their proposed open space lands.

Some private organizations also have established open space trust funds, including the Passaic River Coalition, which has established a Land Trust. Among other activities, the Land Trust acquires land for recreation.
Source: Pedestrian Bicycle Resource Project database; municipal and county websites; Passaic River Coalition website.

Other Funding Sources

Bicycles Belong
The Bicycles Belong Coalition is sponsored by member companies of the American bicycle industry. The Coalition's stated goal is to put more people on bikes more often through the implementation of TEA-21. One of the Coalition's primary activities is the funding of local bicycle advocacy organizations that are trying to ensure that TEA-21-funded bicycle or trail facilities get built. They concentrate efforts in 4 areas: federal policy, national partnerships, community grants and promoting bicycling. Grants are awarded for up to $10,000 on a rolling basis. Between 2002 and 2005, bicycles belong invested $1 million in a lobbying effort that involved several national bicycle advocacy groups. Information about the Coalition, including grant applications and related information, is on the web at www.bikesbelong.org. They can also be contacted at:

Bikes Belong
1368 Beacon Street, Suite 102
Brookline, MA 02446-2800
617-734-2800 Fax: 617-734-2810

Local School Districts
Local communities with bicycle/pedestrian plans that effect schools or will serve schools can

approach local school districts or private schools about funding those projects. The Phillipsburg Board of Education in Lopatcong Township, Warren County, has pledged to build trails near a proposed new high school, which would be built adjacent to a Lopatcong Township recreation center. As part of the discussions with the Board of Education concerning the new high school, the Board agreed to construct part of a proposed bikeway on the Board of Education property. Another example is in Hightstown, in Mercer County. The borough, the county, the state and the Peddie School are sharing the costs of engineering and constructing pedestrian improvements to a bridge that, in part, connects faculty housing to the school.

General Mills Foundation

The foundation provides grants through the Champions Youth Nutrition and Fitness program. The foundation awards 50 grants, each for up to $10,000. Applicants must be a non-profit organization of agency. The American Dietetic Association will assist in evaluating proposals along with the General Mills Foundation and other qualified nutrition and fitness experts. The application is available at http://www.generalmills.com/corporate/commitment/2006ChampionsApplicationOverview.pdf .

Source: http://www.generalmills.com/corporate/about/community/#Nutrition

Monroe Township
Bicycle and Pedestrian Planning Study

Appendix C

TRANSPORTATION ENHANCEMENTS

Roadway Network Improvement Guide

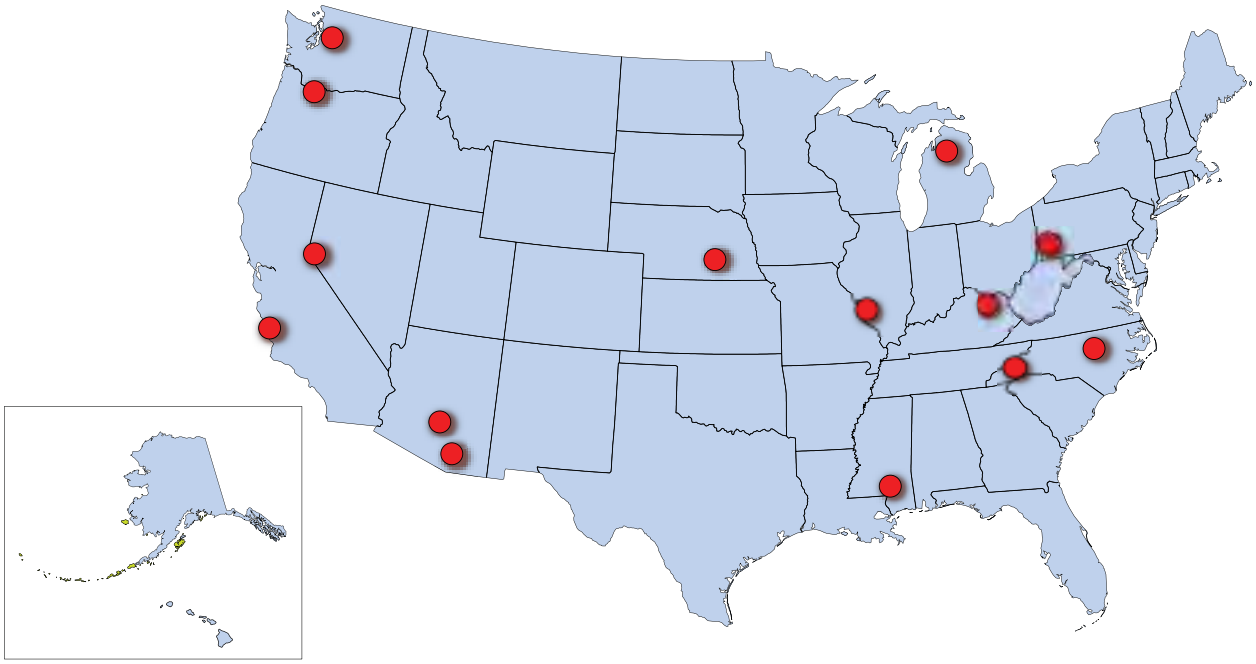
Enhancing America's Communities

A GUIDE TO TRANSPORTATION ENHANCEMENTS

National Transportation Enhancements Clearinghouse

Contents

Case Studies Locations



THE C&O CANAL TOWPATH AND PEDESTRIAN BRIDGE, WASHINGTON, D.C.

Enhancing America's Communities

Enhancing America's Communities showcases 15 projects that illustrate the power of Transportation Enhancements to catalyze community revitalization and provide for an enhanced transportation experience.

The Congress included Transportation Enhancements (TE) in the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991 to signal its intention to provide funding for a broad array of projects designed to maximize the potential of transportation to invigorate communities. The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), enacted in 2005, represents a continuing commitment by Congress to focus on more than just the provision of "ribbons of concrete." With more than 20,000 projects on the ground around the country, transportation enhancements have proven that transportation projects can do more than efficiently move people. They can simultaneously improve local economies, enhance the environment, and create central community places.

This third edition of *Enhancing America's Communities* highlights a variety of transportation enhancement projects from around the country, showcasing the potential of TE to build strong places through targeted transportation investments. In addition, these selected projects underscore the diversity of projects eligible under the TE program. This diversity allows communities great latitude in developing projects that meet the specific needs of local areas.

Enhancing America's Communities is divided into three sections. The first section provides historical background on the TE program with important statistical information on the scope and impact of Federal investments. This is followed by an articulation of the key stages of the TE application process, providing potential project sponsors with a detailed road map for navigating the TE process. Finally, the guide features 15 TE projects from around the country that highlight the important contributions TE projects make to improve local communities. While these projects can take many forms ranging from environmental mitigation of transportation facilities to the creation of bicycle and pedestrian amenities, each of the projects emphasizes the important catalyzing power of transportation enhancements to strengthen communities. These projects show that carefully targeted investments in the transportation infrastructure can produce both an efficient transportation system as well as stronger, healthier communities.

12 Transportation Enhancements Activities

The following list of the 12 Transportation Enhancement (TE) activities includes project examples that illustrate each activity authorized in law (23 U.S.C. 101(a)(35)). Although the Federal government provides guidance and ensures compliance, States are responsible for selecting projects. Contact your State TE coordinator to discuss specific eligibility practices in your State. The term Transportation Enhancement Activity means any of the following as they relate to surface transportation:

1. **Pedestrian and Bicycle Facilities:** New or reconstructed sidewalks, walkways, curb ramps, bike lane striping, paved shoulders, bike parking, bus racks, off-road trails, bike and pedestrian bridges and underpasses.

2. **Safety and educational activities for pedestrians and bicyclists:** Programs designed to encourage walking and bicycling by providing potential users with education and safety instruction through classes, pamphlets, and signs.

3. **Acquisition of scenic easements and scenic or historic sites, including historic battlefields:** Acquisition of scenic land easements, vistas, and landscapes, including historic battlefields; purchase of building in historic districts or historic properties.

4. **Scenic or historic highway programs including tourist and welcome center facilities:** Construction of turnouts, overlooks, visitor centers, and viewing areas, designation signs, and markers.

5. **Landscaping and other scenic beautification:** Street furniture, lighting, public art, and landscaping along street, highways, trails, waterfronts, and gateways.

6. **Historic Preservation:** Preservation of buildings and façades in historic districts; restoration and reuse of historic building for transportation-related purposes; access improvements to historic sites and buildings.

7. **Rehabilitation and operation of historic transportation buildings, structures, or facilities:** Restoration of historic railroad depots, bus stations, canals, canal towpaths, historic canal bridges, and lighthouses; rehabilitation of rail trestles, tunnels and bridges.

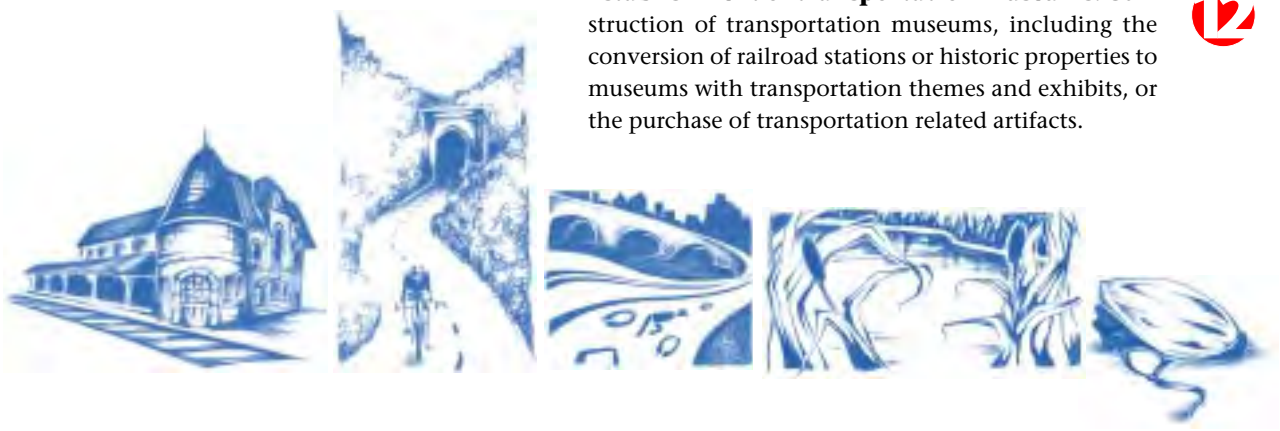
8. **Preservation of abandoned railway corridors and the conversion and use of the corridors for pedestrian or bicycle trails:** Acquiring railroad rights-of-way; planning, designing and constructing multi use trails; developing rail-with-trail projects; purchasing unused railroad property for reuse as trails.

9. **Inventory, control, and removal of outdoor advertising:** Billboard inventories or removal of nonconforming billboards.

10. **Archaeological planning and research:** Research, preservation planning and interpretation; developing interpretive signs, exhibits, guides, inventories, and surveys.

11. **Environmental mitigation to address water pollution due to highway runoff or to reduce vehicle-caused wildlife mortality while maintaining habitat connectivity:** Runoff pollution mitigation, soil erosion controls, detention and sediment basins, river cleanups, and wildlife crossings.

12. **Establishment of transportation museums:** Construction of transportation museums, including the conversion of railroad stations or historic properties to museums with transportation themes and exhibits, or the purchase of transportation related artifacts.



To be eligible for Federal aid, a project must:

❶ **be one of the 12 designated TE activities, and**

❷ **relate to surface transportation.**

Transportation Enhancements: Building a Legacy for the Future

In 1991, the United States Congress created Transportation Enhancements (TE) to help shape a truly multi-modal transportation system that enhances transportation choices for Americans and visitors. The premise was simple: Transportation spending should focus on more than just roads. The country needed to invest in a more balanced, multi-modal approach to mobility and accessibility. The TE activities allow communities to develop projects that improve the quality of a community and enhance the travel experience for people traveling by all modes.

Since its inception, TE has provided funding for more than 20,000 projects nationwide, helping communities protect scenic vistas, create nonmotorized trails, develop walkable downtowns, and protect the environment. To help communities realize social, cultural, and environmental goals, every State must reserve at least 10 percent of its Surface Transportation Program funds for designated Transportation Enhancement activities.

Under the Intermodal Surface Transportation Act of 1991 (ISTEA), Congress made $2.8 billion in TE funds available to States through the Federal Highway Administration (FHWA). In 1998, under the Transportation Equity Act for the 21st Century (TEA-21), Congress reaffirmed its commitment to enhancing communities by providing an additional $3.6 billion through 2003. In 2003 and 2004 Congress extended TEA-21 in one year increments at the 2003 funding levels. With the August 10, 2005 enactment of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Congress again reiterated its commitment to TE by providing $4 billion through 2009.

Communities derive a range of benefits from TE projects including economic stimulation, improved transportation, and community improvements. These types of benefits support the Federal Highway Administration's stated priority areas: safety, mobility, and environmental stewardship and streamlining. The TE activities are an important element in FHWA's strategy in all of these areas.

Transportation Enhancement projects also reflect the focus of the FHWA in encouraging States to create projects that are sensitive to the land-use context where they are built. TE funds are available to develop a variety of project types and the usual small scale of these projects means that they fit well into large, small, rural, and urban communities.

Transportation Enhancement projects create more choices for travel by providing funding for sidewalk connections, bike lanes, and the conversion of abandoned railroad rights-of-way to trails. Communities may also use the program to revitalize local and regional economies by restoring historic buildings, renovating streetscapes, or providing transportation museums and visitor centers. Many use the program to acquire, restore, and preserve scenic or historic areas. The program is also used to aid in environmental stewardship and safety efforts by providing wildlife crossings and ensuring cleaner water with the treatment of stormwater run-off from roadways. As the number of TE projects continues to increase, it is clear that leaders, citizens, and local governments want more from their transportation systems.

In 1991, implementing the newly introduced TE activities presented a challenge to Federal, State, and local partners. Since then, the State programs have evolved with the legislative updates, the Federal guidelines have been clarified, and there is more information-sharing among State practitioners. The result is that the current TE program is well positioned for the future.

The spirit of innovation at the heart of TE allows States and localities to create projects crafted to meet their own local conditions. This guide, in its third edition, highlights this diversity through a series of project examples from around the country.

Benefits

Transportation Enhancements:

- support context-sensitive solutions to transportation problems,
- foster safety, accessibility and environmental preservation,
- boost local economies,
- improve the transportation experience by strengthening multi-modal systems,
- increase partnerships between State and local agencies, and
- strengthen the public role in local and State transportation planning.

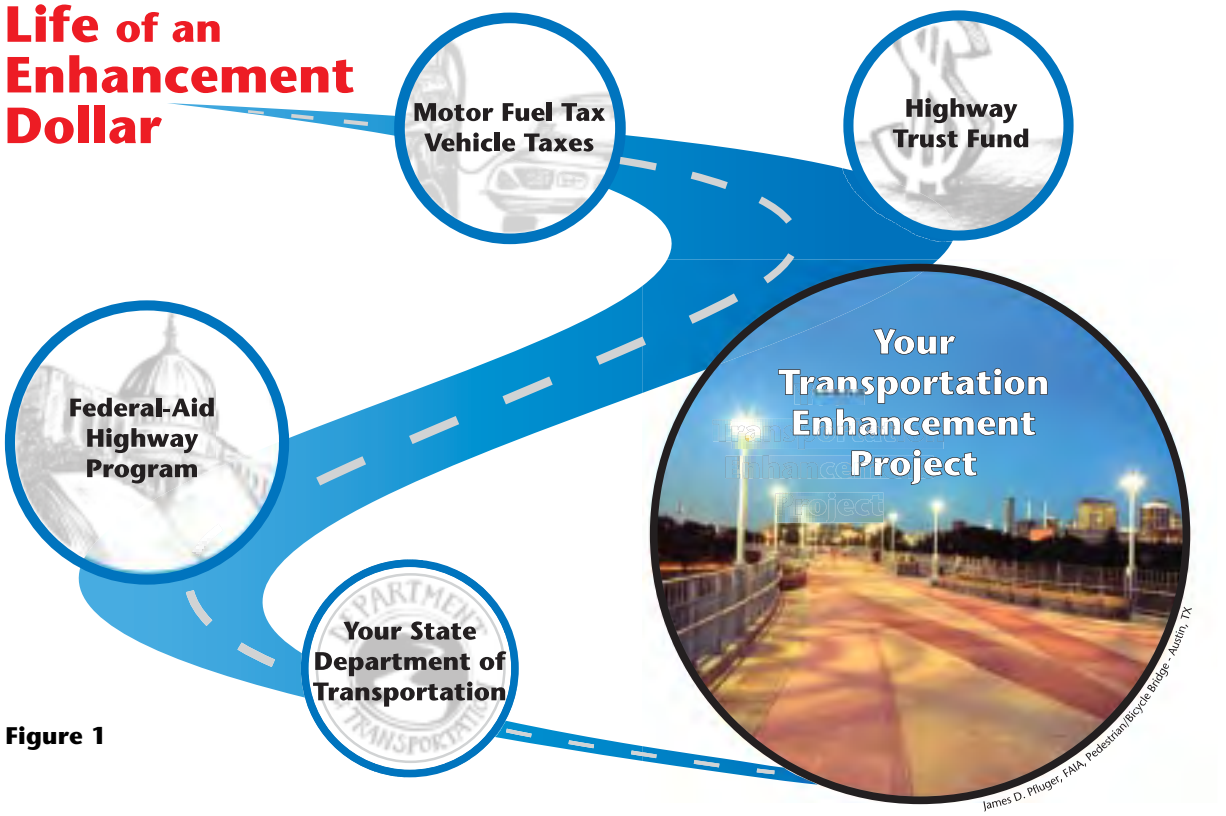


Figure 1

LINKING FEDERAL FUNDS TO COMMUNITY GOALS

Through 2009, the Federal government will provide approximately $803 million in TE funds for use by State transportation agencies each year. These agencies are required to set aside these funds for TE activities. In all 50 States, TE programs rely on communities and local governments to propose projects that improve local quality of life. Community members help generate ideas and opportunities for the use of these funds. State transportation agencies select from these proposals according to local, regional, and State planning and funding priorities. Applicants for selected projects become project sponsors and work with TE coordinators through the appropriate State and Federal transportation agencies until projects are completed.

Funding for TE comes from a portion of the funds paid into the Highway Trust Fund which includes money from the Federal gasoline tax. About 15 cents of every dollar spent on gasoline taxes flows into the Highway Trust Fund (see Figure 1, The Life of an Enhancements Dollar). The Highway Trust Fund also receives revenue from diesel fuel, gasohol, and truck user taxes. Money from this fund goes to the States as "Federal aid" for highway programs. One of these programs is the Surface Transportation Program (STP), which allows States to use highway funds for bicycle, pedestrian and transit projects. Specifically it requires that 10 percent of the STP funds be set aside for TE eligible projects.

To strengthen and encourage partnerships between State and regional agencies and increase the public role in transportation planning, Congress deliberately left the details of TE programs to the States. FHWA, the agency responsible for interpreting surface transportation legislation, has issued TE guidance. Since the program was created in 1992, there has been experimentation, information exchanges, and learning. The Federal government has strongly encouraged State agencies to work closely with project sponsors—often local governments working with community groups who want to build TE projects. The challenges of balancing roles among Federal, State, and local partners are very real. Yet as the case studies show, the opportunities for community enhancement are tremendous and the benefits significant.

Contacts

Your State TE Coordinator is responsible for providing guidance on the specific policies and procedures for your State.

THE FHWA DIVISION OFFICE in your State is responsible for administering the TE provisions of Federal law and providing guidance to the State coordinators.

To find contact information for TE coordinators in your State, visit **www.enhancements.org**.

Questions

Here are some useful questions to ask your State TE coordinator. Dial **1-888-388-NTEC** or visit **www.enhancements.org** for contact information.

- How well does my project fit one or more of the TE activities?
- Does this project relate to the surface transportation system?
- Do you have a copy of the application guidelines?
- What are the deadlines?
- Do you offer any TE workshops or seminars?
- What is the total State budget available for the next TE funding cycle?
- Does our State use any of the innovative financing measures?
- Do you have a copy of the regional and State transportation improvement plans?
- Does our State have an advisory committee?
- Who are the members?
- Do you have examples of successful TE applications from previous cycles?

MATCHING YOUR PROJECT WITH TRANSPORTATION ENHANCEMENT ACTIVITIES

Start your TE process by matching your project with at least one of the 12 Transportation Enhancements activities authorized in surface transportation legislation (23 U.S.C. 101(a)(35))

Projects often combine multiple transportation enhancement activities, strengthen local partnerships through fundraising, support multiple objectives, and increase local and regional transportation access. The Transportation Enhancement projects described in this publication illustrate these multiple goals. For example, the Bike St. Louis project increased miles of bike lanes in St. Louis, Missouri (page 17), rolled out an in school bicycle education campaign, and a bike map of the city that is used by cyclists, tourists, and motorists alike. The Hearst Ranch scenic acquisition in California (page 18) not only protects the Highway 1 viewshed but also helped leverage the protection of an additional 80,000 acres of ranchland. The Restoration of the Goddard Bridge in Goddard, Kentucky (page 26) is preserving a part of transportation history while it provided an opportunity for a community to recognize its heritage and spur tourism.

Meeting Federal Requirements for Eligibility

To sponsor a TE project in your community, you must adhere to Federal and State rules for using Federal-aid funds. The Federal government provides States with interpretive guidance and ensures their compliance with relevant Federal laws. A list of important resources concerning the eligibility rules is provided on the inside back cover of this guide.

As with other Federal-aid funding, the Federal government typically reimburses 80 percent of project costs (higher in States with a large percentage of Federal Lands). The project sponsor—a State, a local government or a nongovernmental organization—pays the balance. A TE project must provide public access and be related to surface transportation. It may be a "stand-alone" project, such as the Barrio Anita noise wall in Tucson, Arizona (page 22), or it may be part of a larger project such as the Vista House in Oregon (page 24). TE funds are available for all phases of eligible projects: planning, design, property acquisition, preliminary engineering, construction, and management. Preference for funding different phases can vary from State to State. TE funds may not be used for routine maintenance or standard environmental mitigation.

WATER STREET, NORWALK, CONN.

Typical Project Development Process

TE PROJECTS HAVE SEVERAL STAGES requiring time, effort, and coordination. Depending on your project, these steps may be simple or complex and take more or less time. Transportation Enhancements, like other Federal-aid projects, must comply with laws developed to protect human, environmental, and cultural resources. FHWA has developed streamlining measures to simplify these requirements, given the small-scale, environment-friendly and community-based nature of TE projects. Familiarize yourself with Federal streamlining measures and encourage your State to use as many measures as possible in developing your TE project. This section outlines major milestones of project development (see Figure 2). Bullets show when and what streamlining measures may be used to simplify the process. This is a typical example and specific procedures will vary from State to State and from project to project. While you can obtain a comprehensive packet of all FHWA guidance and streamlining information from NTEC, it is essential that you discuss specifics, including expected duration for each step, with your State TE coordinator.

1 **Confirm project parameters.** Once the State has approved your project for funding, you will discuss a project agreement with State personnel. The project budget and application—the basis for the project agreement—reflect the total level of Federal funding. At this time you may refine the scope of work, plan to select a consultant, and discuss compliance provisions. This is also the right time to request successful examples of procurement and bid documents and to identify and discuss all the measures to streamline project development your State allows.

2 **Sign an agreement.** You establish a formal working relationship with your State agency when you sign a project agreement. As the sponsor, you agree to develop the project as described in the scope of work according to State and Federal regulations and procedures. Find out how your State gives authorization(s) to proceed.

3 **Choose a project manager.** This person often coordinates the agency, sponsor(s) and consultants and facilitates the process to clarify a project's feasibility, costs, compliance and contracting. Depending on the State, the manager may be a consultant or a local or State government employee.

4 **Obtain environmental clearance.** If you plan to spend TE funds on construction, the project may face several environmental reviews. The level of review depends on the environmental impacts and the streamlining measures your agency uses. Project sponsors are responsible for initiating the reviews and supplying information to appropriate agencies. Agencies may approve your checklist and documentation, or they may visit the site, conduct tests or request more documentation.

Environmental clearances may include:

- Nationwide Programmatic Agreement. This agreement helps agencies and sponsors expedite impact reviews and processing to satisfy Historic Preservation Act Section 106 requirements.
- Applying Section 4(f). This guidance lets States determine whether or not rigorous reviews required in Section 4(f) provisions apply to TE projects.
- NEPA Requirements. TE projects that do not have significant environmental impacts are "categorically excluded" from Federally mandated environmental review.

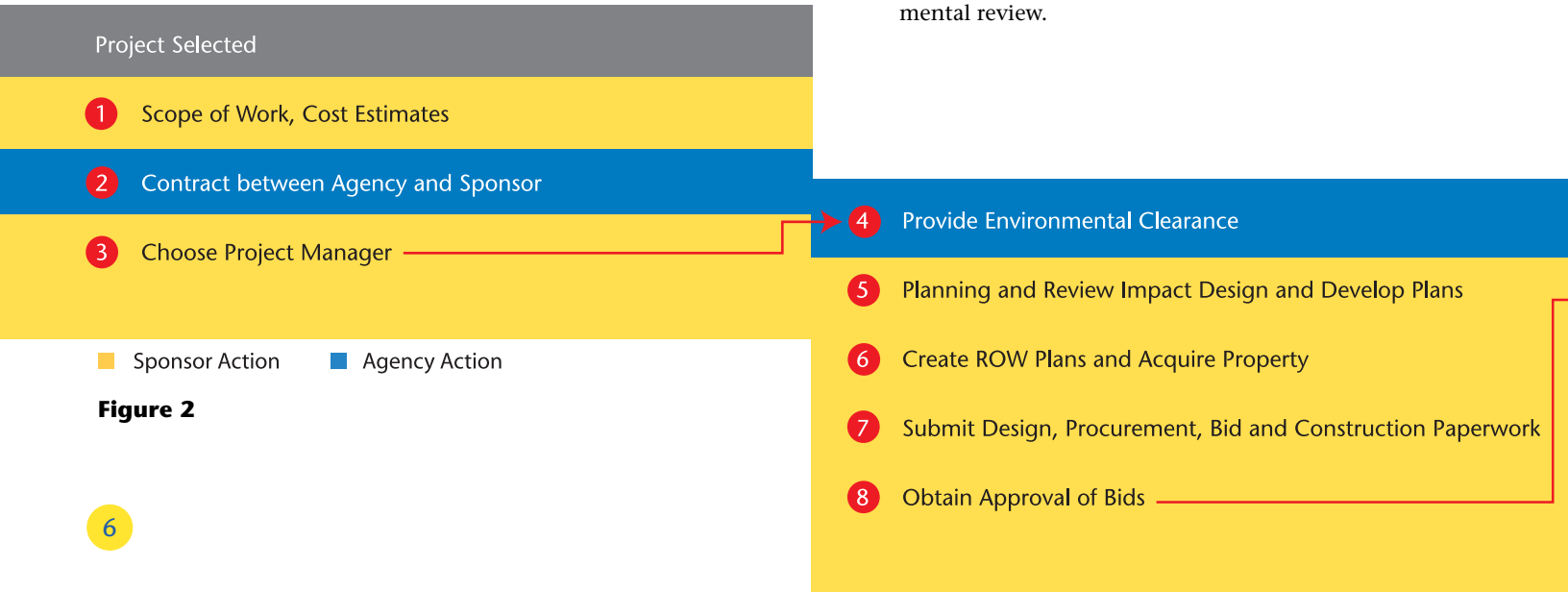


Figure 2

5 **Plan and design the project.** The process of completing an environmental document will affect the project design. The sponsor may assess resource impacts, hold public meetings on project planning and design, and ensure the final design plan complies with State and Federal codes.

6 **Obtain clearance of rights-of-way.** TE projects must provide public access, and sponsors must hold the rights to the real estate for the project by deed, lease, easement, license, agreement, or resolution. The right-of-way process may include the purchase of land or right-of-way and utility clearance. If you plan to acquire the property, you must not make an offer to the property owner until after you have received your environmental clearance and conducted a Federally-approved appraisal.

Considerations for property acquisition:

- Voluntary transactions under the Uniform Act. If the property owner is willing to sell, the purchase of property can be simplified.
- Organizations exempt from Uniform Act requirements. Conservation organizations may use simplified requirements if they obtain environmental clearance before making an offer to purchase a property or do not act on behalf of the State.

7 **Submit paperwork for design, procurement, bid and construction.** Guidelines for construction and non-construction projects may differ. Assemble and submit your environmental clearance, final plans, permits, design certification and appropriate clearances. Although standards vary from State to State, you will need the agency's approval before you break ground. In general, agencies cannot increase sponsor funding, so your cost estimates must be accurate. Think about lower-cost alternatives and include these as "bid alternates."

8 **Invite bids for projects.** Procedures for procurement and bid invitations may vary with the project scope, cost and the State. If all your bids come in high, you may have to re-bid.

Bid considerations include:

- Contracting and bidding under the Common Rule. If TE projects are outside the highway right-of-way, States may use their own State procurement practices.
- Applying Davis-Bacon prevailing wage requirements. For TE projects costing less than $2,000 or not linked to Federal-aid highway right-of-way, States may bypass prevailing wage payments. This allows agencies to use staff, volunteers, or youth conservation or service corps.
- Ensure opportunities for Disadvantaged Business Enterprises (DBE).

9 **Select a contractor.** After you have received bids, ask your TE coordinator for agreement to award the contract, then sign a contract. The sponsor may perform this work or contract it out. Some States encourage or even require contractors to be on a State list of "pre-qualified" consultants who understand Federal-aid requirements.

10 **Invoice for completed work and receive reimbursement.** During all phases, the sponsor must keep detailed records to claim reimbursement. In some States, the agency provides front-end financing for a project, including the sponsor's non-Federal match. Typically, as contractors complete work and submit the bills, the State agency reimburses at the percentage stated in the agreement.

Advance payment may be an option. If your State establishes a process with FHWA, it can secure payment in advance rather than reimburse you after you have paid the non-Federal match. The State must limit funds to amounts needed for prompt payment. Expect to follow a payment schedule.

11 **Obtain construction certificate.** Your last invoice and report should include a certification to verify the project has been constructed as designed and approved according to State and Federal guidelines and requirements. This certification should follow construction but occur before the final invoices are processed.

12 **Record-keeping and audit.** The audit requirements depend on the total Federal funding. Be sure to keep good records, identifying the source and application of project funds. Only direct project costs are eligible. The State may require the sponsor organization's financial statements and may request a certified independent audit.

13 **Celebrate your project**. Publicly thank all the decision makers for their support. Ribbon-cutting ceremonies with the media present can help foster continued support for your project. Give elected officials the opportunity to bask in the publicity of a popular community project.

9 Select Contractor(s)
10 Submit Invoices for Reimbursement
11 Final Invoice and Construction Certificate
12 Record Keeping and Audit
13 Celebrate Your Project

RELATING YOUR PROJECT TO TRANSPORTATION

Developing TE projects with a strong relationship to transportation is essential. The provision in title 23 reads, "The term 'transportation enhancement activity' means, with respect to any project or the area to be served by the project, any of the following activities as the activities relate to surface transportation:" (see page 2 for summarized definitions and examples of eligible activities). A proposed TE project must demonstrate a relationship to surface transportation. This relationship must be clearly stated and supported in the project application.

The law also refers to a transportation project or the area served by a transportation project. If a highway project is involved, the TE activity may have a direct relationship to that project. For example, if the pollution caused by stormwater runoff from an existing highway contaminates an adjacent water resource, and a TE application includes a proposal to mitigate the pollution, then a clear relationship to the surface transportation system exists.

STREETSCAPE ALONG BROADWAY IN BAYONNE, N.J.

Your project has a better chance if it:

- exceeds non-Federal requirements,
- demonstrates strong local support,
- combines Transportation Enhancement activities,
- demonstrates compatibility with existing plans,
- meets a need or provides a benefit, and
- sets a realistic schedule and cost estimate.

Given the nature of the list of eligible activities, a proposed TE activity does not have to be associated with a specific highway project to be eligible for funding. Case study examples which illustrate this point include the rehabilitation of historic train structures such as the Grand Island depot (page 28), the provision of a bicycle or pedestrian path such as the Snohomish Riverfront Trail (page 14) or the expansion of a transportation museum, such as the Pennsylvania Trolley Museum (page 34). In other words, the phrase "with respect to any project" may be helpful in establishing a transportation relationship, but is not the only way to establish that relationship.

Proximity to a highway facility alone is not sufficient to establish a relationship to surface transportation. For example, a historical hotel that is adjacent to a particular highway facility may not be eligible for TE funds simply because of its location. Other factors related to this specific case would have to be taken into consideration and a relationship to surface transportation established. Conversely, a historic structure should not be disqualified from consideration because it is not adjacent to a particular Federal-aid highway.

Additional discussion, beyond proximity, is needed in the TE project proposal to establish the relationship to surface transportation. If you have questions about eligibility, discuss them with your State TE coordinator. Where additional questions arise, closer coordination with the FHWA division office in your State may be helpful. Your project does not have to provide a past or current transportation function to qualify as an eligible TE activity. For example, a scenic or historical site may have a relationship to transportation but may not function as a transportation facility. The function of the proposed facility can be a factor, but the absence of that factor should not automatically preclude consideration for possible funding.

SETTING YOUR SIGHTS ABOVE AND BEYOND

Transportation Enhancement funds may not be used for maintenance, routine highway improvements, or required environmental mitigation. Ask your State TE coordinator if there are special or additional laws or criteria in your State. As the case studies illustrate, TE requires creativity and innovation in planning, design, and partnership development. Look to the case studies for ideas of how States have gone above and beyond the requirements. The Vista House in Oregon (page 24) involved partnerships among six organizations. In North Carolina, sponsors of the Reedy Creek Greenway (page 10) combined building a bicycle and pedestrian facility with scenic beautification by creating effective public art along the new trail.

TE IS A FEDERAL-AID REIMBURSEMENT PROGRAM

The TE program is a Federal-aid reimbursement program, not an advanced grant program. Generally, the Federal government pays 80 percent of a TE project cost (higher in States with a large percentage of Federal Lands). That amount is called the Federal award. The project sponsor usually pays the balance; that amount is called the non-Federal match. Usually, the project sponsor pays the associated project costs and submits a reimbursement request to the State transportation agency, which submits it to FHWA. Reimbursable project costs vary from State to State but usually include:

- project feasibility, planning and engineering plans,
- environmental reviews,
- land acquisition, and
- construction.

Federal law allows States to accept donations of right-of-way, funds, materials, or services (including from private sources or local governments) for any Federal-aid highway program project.

Federal law also has specific provisions for TE activities. FHWA may advance funds to the State for TE activities, limited to amounts necessary for prompt payments for project costs. Federal law also allows innovative financing for TE projects. States must maintain their required non-Federal share on a program-wide basis, but, subject to that requirement, States may:

- allow funds and the value of contributions from other Federal agencies to be credited toward the non-Federal share.
- calculate the non-Federal share for a project on a project, multiple-project, or program basis;
- therefore, the State may allow an individual project's Federal share to be up to 100 percent.

The US DOT encourages States to enter into contracts or cooperative agreements with youth conservation corps programs to participate in TE projects. This allows the TE program to meet more community needs by encouraging job training for youth and young adults.

RESTORED TIDAL WETLAND AT SILVER SANDS STATE PARK IN MILFORD, CONN.

These innovations serve as reminders that Federal aid is becoming more flexible at both State and Federal levels. Talk with your TE coordinator if you want to use these options. States employ these streamlined cost-sharing techniques at their discretion; perhaps State staff would be willing to try something new for your project.

Checklist for putting it all together

Be sure to include all elements of the application the State requests.

- ✔ Provide a clear statement demonstrating the transportation link.
- ✔ Describe how your project relates to the appropriate TE category.
- ✔ Define a scope of work and include preliminary studies, and land acquisition or construction.
- ✔ Include a workplan with a timeline.
- ✔ Include a budget for the scope of work.
- ✔ Identify the source of the matching funds with a letter verifying their availability.
- ✔ Explain how the community would benefit from the project.
- ✔ If the State requires, include letters of support, minutes from public meetings, and newspaper clips about the project.
- ✔ If available, include photographs of the site, preliminary sketches or plans.
- ✔ Include a plan for project maintenance.

TE CATEGORY 1

TE IN DEMAND

In North Carolina TE demand is 4.9 times the amount awarded.

In 2004, the State TE office, which directly awards about 30% of the available funds, received 186 complete applications requesting $53 million. It awarded $10.8 million to 75 projects.

The Reedy Creek Greenway

Raleigh, North Carolina

The Reedy Creek Greenway shows how environmentally sensitive design, creative partnerships to create public art, and strong public participation can be brought together to create a Transportation Enhancements funded trail that the whole community can embrace. From the iconic spiral sculpture that overlooks the trail at the North Carolina Museum of Art, the 5.3-mile bicycle-pedestrian trail connects a number of other key destinations including college campuses, office buildings, an educational environmental center, and additional nature trails at Umstead State Park. The result of such thoughtful planning is an aesthetic, functional trail that is widely used by the public and is an integral part of the area's nonmotorized transportation system. The project also shows how TE funds can be used with other available funds to help construct this type of project.

Integrating the Community and the Environment

The needs of city residents were a priority in planning the Reedy Creek Greenway. Trail designers studied the community. They connected college campuses safely with downtown, museums, and other desired end points. The trail design also integrated the needs of one of the area's largest employers to help increase bicycle commuting. Each day, 4,000 employees commute to the SAS Institute office building, the world's largest privately held software company, adjacent to the greenway and the busy Reedy Creek Road. To serve these employees and others in the area, the Reedy Creek Greenway was developed to link to these key employee concentrations. This allows workers to bicycle or walk to their office safely instead of driving. SAS Institute constructed a connection to its building accessible from both the road and the greenway. To keep the trail pleasant and safe despite its proximity to the high speed roadway, trail planners placed a landscaped buffer between the greenway and the road. Traffic on the road was calmed with the installation of a beautified median. Careful planning also limited the number of road crossings by placing the greenway along a protected forest preserve.

The Reedy Creek Greenway is an environmentally sound facility. One challenge was to maintain the integrity of the adjacent woodland preserve, Schenk Forest. The Reedy Creek Greenway partners worked with the forest facility to ensure that both the new road and the greenway system would follow the existing roadway corridor to help mitigate possible environmental pressure on the forest research facility. The agreement ensured that no land or trees were removed from Schenk Forest. This design resulted in a minimal physical footprint for the trail and roadway corridor while at the same time helping to provide safe passage for pedestrians and bicyclists. Neighboring landowners, including the SAS Institute, North Carolina State University, and Umstead State Park welcomed this solution.

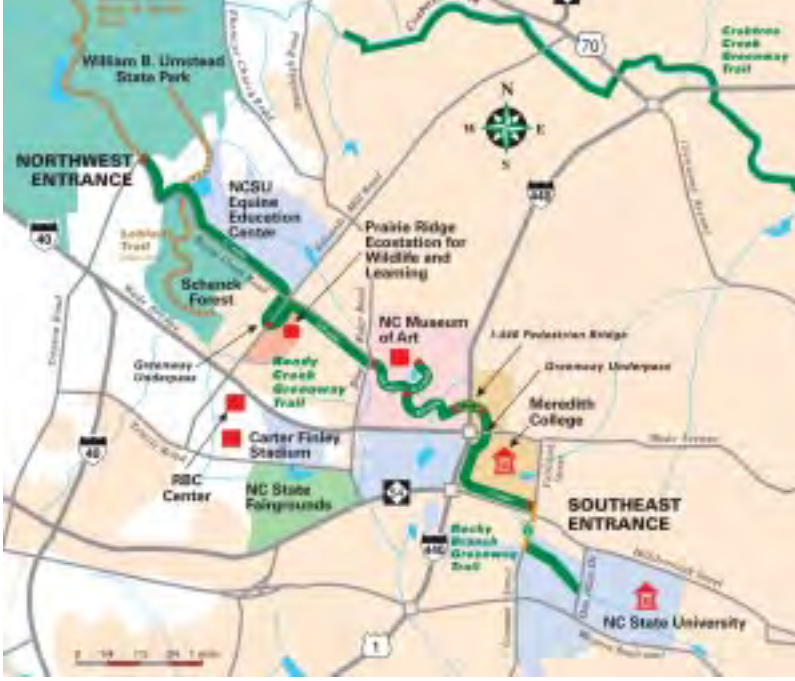
Art on the Trail

One of the unique partnerships created during the development of the Reedy Creek Greenway was with the North Carolina Museum of Art. The museum is a major destination on the trail. It is here that artist Thomas Sayre installed *Gyre*, three rings sculpted out of earth-cast concrete and iron oxide. This outdoor sculpture's strong presence signifies the creative spirit that the institution brings to the community and helps to give the trail a unique identity. The artist's work truly creates a destination along the trail that invites people to take a break and experience a walk through the sculpted castings. With the museum only steps away, the art also acts to invite trail users to visit the museum.

Artful design played a role throughout the trail. Beyond the stretch at the North Carolina Museum of Art, trail designers took inspiration from the architecture of local college campuses and existing buildings in the city to portray a sense of connectivity along the trail. Patterned fieldstone adorns the neighborhood's buildings and walkways. To provide visual continuity along the trail, this stone masonry was simulated along the greenway in several areas: on a major bridge, at road crossings, and on a retaining wall.

An Important Transportation Purpose

An essential element to the trail is the 660-foot bicycle-pedestrian bridge over the high volume I-440 Beltway. This overpass is vital to the nonmotorized transportation system in Raleigh because it crosses a major eight lane highway.



The appeal and safety of the facility encourages increased use of the greenway by connecting two college student bodies with local shops, cafes and other area destinations.

While TE funds were an integral part of funding this project, other Federal funding mechanisms are available for similar projects. Communities can use general National Highway System funds to help augment TE funds. In addition, Congestion Mitigation Air Quality (CMAQ) funds can also be used because of the air quality benefits associated nonmotorized transportation facilities.

The Reedy Creek Greenway shows how public art, innovative financing, and strong public participation can be used to create a community-oriented trail that meets the transportation needs of a community while simultaneously acting to help build strong community places. This project shows how strong planning and creative thinking can help create an outstanding community amenity.

PROJECT DETAILS

Federal Award: $4.01 million
Non-Federal Match: $1.66 million
Total Cost: $5.67 million
Year: 3 awards — 1999, 2003, 2004

PROJECT CONTACTS

Tom Norman
Director
Division of Bicycle and Pedestrian Transportation, NCDOT
TNorman@dot.state.nc.us • 919.807.0771

W. Jeffrey Cox
Staff Engineer
Division of Bicycle and Pedestrian Transportation, NCDOT
WJCox@dot.state.nc.us • 919.807.0775

TE CATEGORY 1

TE IN DEMAND

In Arizona the TE demand is 2.8 times the amount awarded.

In 2006, 72 applications requested $31 million in local project TE funding. $11 million was awarded to 24 projects.

Pedestrian Downtown Connection Phase 1

Mesa, Arizona

The Mesa downtown pedestrian connection helps reconnect important community destinations by creating a new, connected pedestrian system. This Transportation Enhancement funded project replaces an unappealing back alley with a two-block-long pedestrian connection that both improves pedestrian accessibility and rejuvenates the adjacent streetscape. Funded with the help of a $481,503 TE award, this project forms the core of a placemaking plan and is the basis for an area-wide expansion of streetscape improvements which will help create a strong community center for Mesa.

The Need for Improvement

Prior to the project, the area was not an inviting pedestrian zone due to the lack of delineated, accessible, and connected pathways. Further, the area did not include appropriate shading which is a vital element in creating Arizona pedestrian areas. Despite these urban design deficiencies, the area's high concentration of municipal buildings attracted large numbers of people who needed to traverse this difficult zone. To help address these concerns, the City of Mesa decided improvements to this vital pathway could be an important element in rejuvenating the area.

Project scope

The project involved several key elements designed to improve connections between major area destinations. Key elements included:

- Install accessible pedestrian pathways and concrete curbing
- Install landscaping and irrigation
- Reconfigure the existing parking lots
- Install light fixtures, street furniture, and directional signs
- Add traffic calming curbs
- Improve gutters.

The completed project provides a clear pedestrian walkway through two congested blocks. One of the primary design elements of this walkway system is the use of artistic, stamped concrete that provides a clear and inviting route through the area. This

pavement treatment was used to create an uninterrupted pedestrian zone in front of the Mesa City Plaza Building. The new, designated walkway system replaces Lewis Street, allowing access through a reconfigured parking lot, where a 50-foot-wide section has been adapted for pedestrian use. Further, a traffic calming crosswalk has been installed to facilitate the crossing at Pepper Place. The completed project cost a total of $562,351 with $481,503 coming from the TE award. The remaining amount was provided locally.

Future Already Planned

Planned future phases of the pedestrian connector will extend the streetscape improvements north to connect the conference center, the library, hotel, and the college campus to the municipal core. These future improvements are already capitalizing on the rejuvenated place that the TE award helped to create. The Mesa downtown pedestrian connection has helped transform the sprawling parking lots on the backside of buildings into a public space that connects local destinations and creates a new community place in its own right.

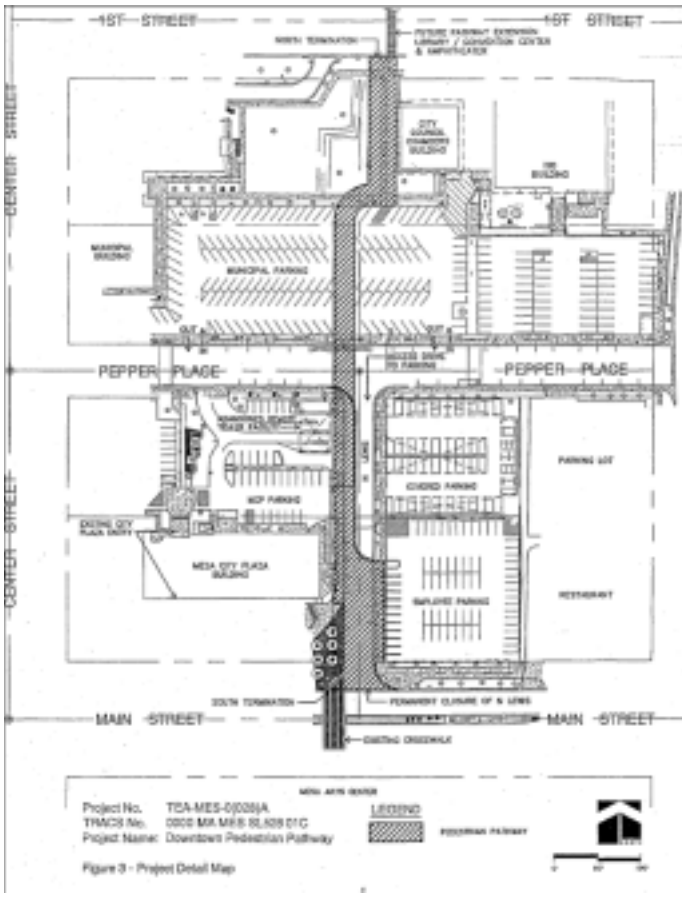


Figure 3 - Project Detail Map

PROJECT DETAILS

Federal Award: $481,503
Non-Federal Match: $29,105
Total Cost: $510,608
Year: 1998

PROJECT CONTACT

Kelly Jensen
City of Mesa Engineering Design
Kelly.jensen@cityofmesa.org
480.644.4254

TE CATEGORY 1

TE IN DEMAND

In Washington TE demand is 3 times the amount awarded.

In 2006, 305 applications requesting $128 million were considered. $42 million was awarded to 148 projects.

Snohomish Riverfront Trail

Snohomish, Washington

The City of Snohomish, Washington, which lies adjacent to the Snohomish River, restored their riverfront trail with the help of Transportation Enhancement funds. The Snohomish riverfront area was revitalized through careful planning of this trail bordering the Snohomish National Historic District. Supported on steel pilings, the cast-in-place concrete path's entire 350-foot length overlooks the river and connects a new TE-funded visitor center to Kla Ha Ya Park and regional trail system beyond. It even uses the former Chicago Milwaukee & St. Paul Railway right-of-way that the City of Snohomish purchased in 1941. The Trail improves public access, eases pedestrian congestion, and offers an additional cycling route around the town. The new riverfront trail replaces one that followed the same route that was badly damaged in 1995.

The 1995 Flood that Started It All

In November 1995, floodwaters sluiced away 400 feet of riverbank in Snohomish, Washington, threatening the town's National Historic District. At the end of the emergency, the historic district remained, but the original riverfront trail was badly damaged. Emergency repairs were made with FEMA (Federal Emergency Management Agency) assistance, but these repairs did not fully restore the trail. A Riverfront Master Plan was completed in 1998 to craft a longer range vision for the area. The highest priority project identified by the plan was rebuilding the riverfront trail. This project was a large undertaking for a small city (population 8,500). The project involved preserving endangered species habitat, bank stabilization, and maintaining historical resources.

Solid commitment by five successive city councils, a citizen task force, and city staff succeeded in assembling a matrix of funding partners for the various components of the Riverfront Master Plan. The critical section of the Master Plan, the trail, gained the heavy hitter it needed when the Puget Sound Regional Council awarded TE funding. This funding approval created a three-way business partnership between the Federal Highway Administration, Washington State Interagency Committee for Outdoor Recreation (Washington Wildlife and Recreation Program) and the City of Snohomish, combining transportation, park, and general fund sources.

1995 FLOOD

The Solution

The steep waterfront location was a difficult place to build a trail, but no other route provided the same transportation, historical, scenic, and economic benefits. The structure is located above the Ordinary High Water Mark, but since part of the trail is below the design flood stage, the trail is designed to withstand flooding.

Geotechnical evaluation concluded that the steep riverbank was not stable enough for a retaining wall so the path was built using concrete piles. The pile-supported path achieved a more dramatic river overlook capitalizing on the existing 1900s era pile-supported railroad/riverfront pier. The city hired a landscape architecture firm which designed the curving, sloping layout of the trail. An engineering firm was hired to create a simple, elegant design for a low-maintenance, long-life, lightweight bridge. The design, fairly standard for highway bridges, was scaled down to a 10-foot wide trail.

Long-term, the cost effectiveness of this design will prove itself many times over. Made of concrete and galvanized steel, there is nothing to rust, nothing to rot, and no moving parts. Maintenance is designed to be minimal. The annual maintenance checklist includes general cleaning and, where needed, touch-up galvanizing and bolt tightening. The pile-supported structure maintains soil permeability and preserves a continuously vegetated slope between upland and river edge. This maximizes the area of wildlife habitat, maintains habitat connectivity along the shore, reduces human disruption of local wildlife nesting and sheltering activities, and improves the near-shore environment for migrating fish.

Construction of the trail was made unusually difficult because of the site location, the weather, and the environmental constraints surrounding the trail. There was very limited room to maneuver on this steep, narrow site. The bridge deck itself was located well above ground and, thus, minimally impacts the river which contains the endangered species of Chinook salmon and bull trout. In addition, 125-year-old structures adjacent to the site needed to be monitored and protected from damage by pile-driving activities. Clever design and construction techniques helped maintain the environment despite these challenging conditions.

Construction

The general contractor assembled each of the nine bridge spans offsite, and then lifted them into place by crane. Assembling spans and concrete formwork at ground level improved worker safety, speed, and accuracy. By constructing forms off-site, the river was protected from contamination and disturbance to the bank was minimized during span assembly. Off-site, the assembly took a month, while on-site all nine bridge spans were bolted in place onto the pile caps in five days.

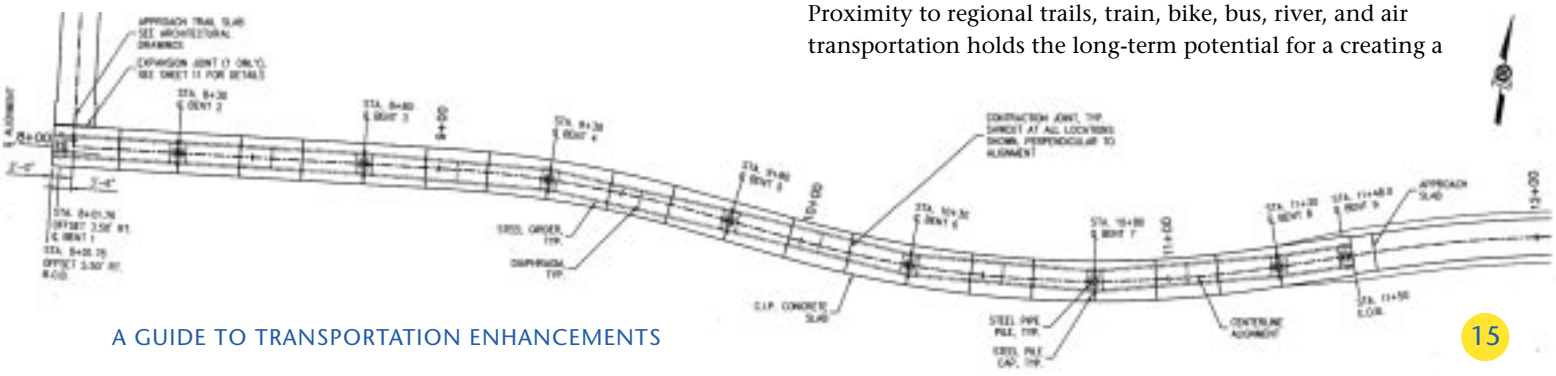
The construction phase made steady progress despite bad weather and a difficult site. A team approach by Washington State Department of Transportation staff, the engineering consultants, the project consultant, and the City of Snohomish led to prompt resolution of construction issues. Only one change order was needed, and the final contract price was $10,000 below the $824,970 bid amount. The project was dedicated to the public under blue skies on April 21, 2006.

The trail improves public access to shorelines, protects wildlife habitat, water quality and bank stability, and adds both recreation and economic value to the Snohomish National Historic District. It provides an accessible connection between the historic downtown and the river's edge. The trail unifies a series of small parks and street ends along the City's southern border into a single waterfront destination.

Relationship to Surface Transportation

Now that the previous steep and eroding riverbank path has been replaced with an accessible trail, safety and comfort has been improved for a wide range of users. Additionally bicyclists have a scenic alternative to First Street where they share the roadway with vehicles.

The Snohomish Riverfront Trail provides an important connection between the Seattle metropolitan area and a growing network of state and regional trails, including Snohomish County's 27-mile Centennial Trail. The trail linkage helps create a connected system of trails that facilitate bicycle commuting to the cities of Everett and Monroe. Proximity to regional trails, train, bike, bus, river, and air transportation holds the long-term potential for a creating a



true multi-modal community with improved air quality and traffic congestion relief. Results of a 1998 survey mailed to the City's 900 utility customers indicated that 60 percent of respondents expected to use the trail at least once or twice a week and 13 percent every day. Today, the trail is enjoyed by residents and visitors alike.

The trail's completion has sparked private investment in development projects to reorient the town to the river. This reinvestment is helping breathe new life into a treasured National Historic District. The Riverfront Trail and First Street's shops and restaurants are linked together with streetscape improvements that create a pleasant one-mile walking loop for a morning stroll or after dinner walk. One vacant lot is now under construction as a $1.2 million mixed use project while other building owners are planning river-oriented remodeling. Vacancies are down, and sales receipts are up.

Addendum: The 2006 Flood

In the fall of 2006, Washington State saw record rainfall and with it, record flooding. In Snohomish, however, a repeat of the 1995 flood damage did not occur. While flood waters were within a mere inch of the 100 year flood line, the Riverfront trail survived the event with only minimal damage to one abutment and approach slab. The new pile supported bridge spans, some of which where completely covered by swift moving water, survived intact. While flooding along the Snohomish River caused much damage to the shore, the TE funded trail remained intact with minimal damage. The trail shows how good planning and design can mitigate environmental problems and create a place that strengthens the community.

PROJECT DETAILS

Federal Award: $967,467
Non-Federal Match: $150,992
Total Cost: $1,118,500
Year: 1999

PROJECT CONTACT

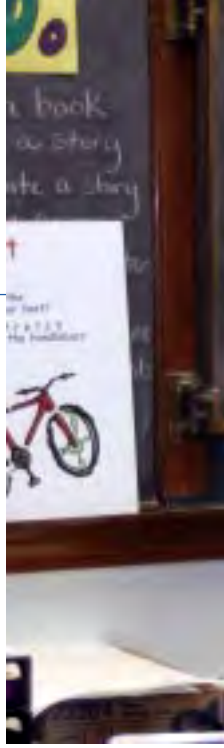
Ann Stanton
Park Development
City of Snohomish, Washington
Stanton@ci.snohomish.wa.us • 360.568.3115

TE CATEGORY 1 TE CATEGORY 2

TE IN DEMAND

In Missouri TE demand is 3.2 times the amount awarded.

In 2006, the St. Louis TMA which directly awards 28% of the State's TE funds, received 34 application requesting $29 million. $9 million was awarded to 10 projects.



Bike St. Louis
Phase 1

St. Louis, Missouri

The Bike St. Louis program shows how Transportation Enhancement funds can be used to create a comprehensive bicycle program for a community. Bike St. Louis' goals are to increase the public's participation in cycling by mainstreaming bicycle transportation. Key elements of their approach are the creation of safe and efficient bike routes and increased awareness of safe cycling throughout the region through educational outreach. Bike St. Louis acts as a coordinating force between local citizens, advocates, city politicians, city and county agencies, and the Great Rivers Greenway District (GRGD). TE funds have been used to make this possible.

A Comprehensive Plan

Bike St. Louis is the first comprehensive bike plan implemented in the City of St. Louis. First initiated in December 2002, the project was jumpstarted through a $214,525 TE award in 2003. This award helped to install 20 miles of continuous on-road bicycle and pedestrian routes, providing linkages to important community facilities, regional public transportation, and other existing bicycle facilities. In addition to the development of new on-street facilities, the Bike St. Louis project initiated a bicycle safety program focused on in-school presentations, brochures to support the presentations, and bicycle route map that provides bicyclists with the rules of the road.

The Bike St. Louis program was initiated through a series of policy discussions on the possibilities of integrating different modes of transportation between St. Louis Alderman Reed and U.S. Congressman Russ Carnahan. These discussions focused on the example of European cities where multiple modes of transportation commingle safely. The representatives saw an opportunity for St. Louis to enhance the city residents' quality of life and improve upon the livability by enriching the multimodal opportunities within the city. It didn't take long before other representatives found that they shared Alderman Reed's vision for a bike-friendly city.

Putting the Project Together

To get the project started, Alderman Reed hired local project manager Julie Padberg-White. Additionally the GRGD enthusiastically partnered with the Alderman to provide help with its knowledge of regional projects and organizational relationships to ensure project success.

For six months beginning in May 2002, an open committee comprised of city and county residents, avid and novice bicyclists, local members of the St. Louis Regional Bicycle Federation and Trailnet, and city officials conducted a series of meetings to identify the routes for Phase 1 of Bike St. Louis. Meanwhile, GRGD contracted with a local graphic design firm, Kiku Obata and Company, to design route signs as well as a bike route map, for use by both local cyclists and tourists to find safe routes to neighborhoods and business centers.

Education Materials Rolled Out with Bicycle Routes

For the most part, the bicycle routes identified for Phase 1 of the project have not required the removal of parking or alterations to current traffic and parking patterns. The routes use striped lanes where there currently exists adequate space that meets the MUTCD (Manual on Uniform Traffic Control Devices) bike lane standards. In other locations where there is insufficient space for a full bike lane, hybrid "sharrows" indicate a shared-use lane. These symbols signify to drivers that bicyclists can be expected to share the lane with cars. Where the street widths are even narrower, "share the road" signs augment Bike St. Louis' custom signs. The signs are interspersed throughout the routes to provide directional assistance to both pedestrian and bicycle users. The striping and signs will help reinforce the roadways dual use as a safe place for both cars and bicycles.

In addition to helping fund bike lane construction, the TE award has funded the safety and education component of the Bike St. Louis program to the tune of $48,000. The education components include presentations to middle school groups and the development of the bike route map with rules of the road included. In addition, two brochures were created for school presentations. More than 30,000 maps have been printed and distributed. Plans call for a third printing of more than 50,000 maps.

Positive Response Assures Project 2nd Phase

Given the overwhelmingly positive response to the Bike St. Louis project, GRGD and the City of St. Louis have already embarked on phase two of the project. Phase 2, funded through a 2005 TE award for $451,677, will see the addition of approximately 57 miles of additional on-road routes which will extend beyond the boundaries of St. Louis-proper into Clayton and Maplewood. The Bike St. Louis map, already well received, will be updated to include new bicycle facilities and important business centers. The safety program for phase two will be updated to include a public awareness campaign designed to improve knowledge of the rules of the road for both cyclists and drivers.

Bike St. Louis is helping to mainstream bicycle transportation by creating clear, well-signed cycling routes, including the public in the planning process for those routes, and educating the public about how to safely share the road with bicycles. The Bike St. Louis TE project resulted from concerted attention from city leaders who had the vision to push for a better solution. The success of the project has led the community to implement a second phase of the project which will help improve cycling conditions in St. Louis.

PROJECT DETAILS

Federal Award: $214,525
Non-Federal Match: $53,632
Total Cost: $268,157
Year: 2003

PROJECT CONTACTS

Julie Padberg-White
Project Manager
Bike St. Louis
Julie@vantagemgmt.com

Todd Antoine
Senior Planner
Great Rivers Greenway District
tantoine@greatrivers.info

TE CATEGORY 3

TE IN DEMAND

In California TE demand is 8.5 times the amount awarded.

In 2006, Caltrans, which directly awards 25% of the available funds, received 90 eligible TE proposals totaling about $110 million. $13 million was awarded to 14 projects.

Hearst Ranch Scenic Acquisition

San Luis Obispo County, California

To maintain the stunning views of the Pacific Ocean for the public, Caltrans (California Department of Transportation) used Transportation Enhancement money to protect 1,445 acres of the Hearst Ranch along and west of the Pacific Coast Highway through the use of a scenic easement. The project leveraged a deal negotiated between the Hearst Corporation, Caltrans, and the American Land Conservancy to protect the majority of the Hearst Ranch from development. The Hearst Ranch Scenic Acquisition along Highway 1 in California shows how TE funds can be creatively used to protect environmentally sensitive land. This project almost did not happen because of a number of factors, not least of which was the size of the award needed, the scope of the project, and the complexity of the scenic and conservation easements.

The Scope of the Project

The Hearst Ranch is an 82,000-acre parcel. It straddles nearly 18 miles of Central California's Highway 1 immediately adjacent to the Pacific Ocean. The use of TE funds was the last element needed to leverage the protection from development of nearly all of the Hearst Ranch's 82,000 acres. This section of State Route 1 between San Luis Obispo City limits in the south and San Luis Obispo County's northern edge has been designated a State scenic highway since 1997. The highway received national recognition from the FHWA as an All American Road in August 2003. This is the highest recognition bestowed by FHWA's National Scenic Byways Program.

These distinctions are government recognition of what is apparent to anyone who has driven this stretch of highway. Designation as a State scenic highway as well as FHWA's recognition helps to prioritize and identify the need to maintain these characteristics of the highway. That is, the undeveloped, breathtakingly gorgeous, sweeping views of both the Pacific Ocean and inland as the road curves up the coast.

What is a Scenic Easement and Why Acquire Them?

A scenic easement is a covenant placed on the property deed that restricts how the property can be used. According to Caltrans, "A land acquired for its scenic qualities must be maintained for its scenic qualities. Mechanisms must be in place to enforce significant scenic or historic values, and the project sponsor must agree to enforce mechanisms to preserve them. The owner of any property acquired must be willing to participate in a preservation covenant attached to the deed of the property. Such a covenant ensures that future work on the property will respect the scenic or historic integrity of the property."

Over the years the Hearst Corporation had put forth a number of proposals to develop their property along the coast. Objections from the environmental community as

well as from the California Coastal Commission prevented any of these developments from coming to fruition. As a direct result of these setbacks, the Hearst Corporation started discussions with the American Land Conservancy to put the entire ranch into a conservation easement as a way of reducing the cost of maintaining the land.

Further, Caltrans had more incentive to participate in the scenic easement acquisition than the laudable goal of preserving this scenic corridor for the public in perpetuity. Parts of the highway close to the shore are being impacted by wave-caused erosion. To protect the Highway from this erosion, Caltrans has been placing large rock slope protection into eroded areas; a practice that is frowned upon by the Coastal Commission. The solution is to realign Highway 1 away from the erosion.

The tricky part has been that the current Highway 1 alignment is a result of a road easement with the Hearst Corporation through the Ranch. When the last grandson of William Randolph Hearst dies, the corporation will cease to exist. All subsequent negotiations for realignment of the highway will then require Caltrans to negotiate with all the Hearst heirs.

Yellow hatching shows part of the 1,445 acres protected with TE funds

As part of the agreement to acquire the scenic easement between the ocean and the highway, the Hearst Corporation granted the current highway right-of-way and four additional areas up to five hundred feet inland in fee simple to Caltrans. The additional areas will allow Caltrans to relocate the highway away from the eroding shoreline. The abandoned roadways will then be returned to native coastal vegetation and be covered by the scenic easement.

Scenic Easements Acquisition Must Still Be Related To Surface Transportation

This final agreement was arrived at through painstaking negotiation to help facilitate the use of TE as a source of funding. When Caltrans first received the application, the application only addressed those areas within the existing road easement and the four additional areas. In evaluating the road segment with blinders to the ocean or inland views, Caltrans determined that the remaining views were not significant and, thus, not eligible for funding as a scenic easement acquisition. To be eligible the project would have to include the views of the coast and include the property between the highway and the coast.

It is these views that make the project attractive as a public enterprise. After the first application was not accepted, a subsequent application was submitted that included nearly all of the Hearst Ranch property between the ocean and the highway. This application with its renewed emphasis on access to the Pacific Ocean was deemed eligible for TE funding. This was the final piece needed for a much larger conservation easement for the rest of the Hearst Ranch that was being put together with the help of the American Land Conservancy. With the TE funding in place to protect the majority of land to the west between the ocean and the highway, the rest of the restrictive covenants protecting property to the east of the highway fell into place. In the end, all but about one thousand acres of the Hearst ranch is protected by a conservation or scenic easement restrictive covenant.

The TE award used to purchase the scenic easement is one of the largest anywhere in the nation and was carefully reviewed by both Caltrans and FHWA. Though the award was for $21 million, it was estimated that the real value of the scenic easement on the 1,445 acres is $55 million. The difference between the actual value and the cash payment, $32 million, is effectively donated property from the Hearst Corporation and is counted toward the local match requirement. More importantly the donated value of the land is documented as part of the final report before FHWA gave approval for the TE award.

The 1,445 acres of the Hearst Ranch along, and west of, the Pacific Coast Highway is now protected from development with a scenic easement funded with Transportation Enhancement dollars. With the conclusion of the TE-funded project the Hearst Corporation, which had been waiting to conclude this scenic easement project with Caltrans, completed the conservation easement with the American Land Conservancy to put the rest of the ranch (80,500 acres) under a conservation easement. California now has increased the acreage of land in the State that is protected from development, preserved the scenic vistas that contribute to California's national and world image, and secured the right-of-way for the Pacific Coast Highway for the future.

PROJECT DETAILS

Federal Award: $21 million
Non-Federal Match: $32 million
Total Cost: $53 million
Year: 2004

PROJECT CONTACT

John Haynes
California DOT
john_haynes@dot.ca.gov
916.653.8077

TE CATEGORY 4

TE IN DEMAND

In Nevada TE demand is 3.5 times the amount awarded.

During the 2006 and 2007 funding cycle 51 applications for $53 million were received. $15 million was awarded to 21 projects.

Memorial Point Overlook: From A Road Pull-Off to Scenic Destination

Incline Village, Nevada

Memorial Point Overlook's elevated balcony offers a spectacular view of the majestic Lake Tahoe area. This Transportation Enhancement (TE) funded rest area sits upon the East Shore Drive National Scenic Byway, nestled amid the majestic Sierra Nevada Mountains. The rest area now draws more than 3.5 million visitors a year to glimpse views of the mountains and lake from a spectacular treehouse-like viewing platform.

Back in 1998, before the rest area was revamped, the overlook facility consisted of a small barren parking lot adorned only with a chain link fence. In an effort to glimpse the breathtaking views, visitors would make their own paths down to the lakeshore and trample the native vegetation. The environment was suffering and the rest area was unsightly. The Nevada State Parks Division and the Nevada Department of Transportation realized they had to take action to protect this scenic natural resource. This mission presented the rest area designers with a challenge: How to encourage travelers to visit this national treasure without destroying the very environment they are beholding.

Sensitive Design for Environmental Management

Designers focused on the area's environmental concerns in creating plans for the rest area. To avoid removing trees and other vegetation, the restroom facilities were mounted on four concrete pillars, and tucked into an existing grove of large pine trees. The concrete was poured via a large crane from the parking lot, minimizing environmental damage on the densely vegetated slope. Designers also addressed the issue of visitors trampling the vegetation. Staircases made of environmentally sound native materials were imbedded into the slope, directing visitors along a designated path to access the lake. This helped prevent erosion on the steep slope. The top stairway platform was constructed to allow unrestricted views of the lake and its surroundings.

Visitors can also enjoy the view from the accessible observation deck of the restroom building. Its facilities were carefully planned so that its height would not tower over the existing tree line. A skylight on the building's roof provides natural light for the interior. The white roof on the skylight against the green roof of the structure mimics the snowcapped peaks of the surrounding mountains. The color of the building itself was chosen to blend in with the native vegetation. A vegetated island and two landscaped peninsulas enhance

the parking lot. Native shrubs, trees, and granite boulders were included in the landscape to blend with the existing natural surroundings. The additional greenery has softened the visual impact of the structure within the environment.

A package sewer treatment plant and electrical utilities were installed to provide public restrooms with a well and water system. Designers placed the wastewater treatment plant underground beneath the parking lot and sidewalk to preserve the scenery. The placement beneath the sidewalk additionally allows for easy and safe access for maintenance.

To complete the transformation of the rest area, the chain link fence that once stood along the property was replaced with a steel picket fence with wood support posts. This aesthetic fence clearly guides visitors to the restroom facilities and the designated trails and staircases.

In addition to sensitive design elements, the project also includes a strong educational component to describe the environmental history of the area. The rest area was fitted with fiberglass informational kiosks off the parking area,

PROJECT DETAILS

Federal Award: $793,958
Non-Federal Match: $112,820
Total Cost: $910,758
Year: 1995

PROJECT CONTACT

Kristena Shigenaga, P.E.
Intergovernmental Program Manager
Nevada Department of Transportation
kshigenaga@dot.state.nv.us • 775.888.7569

along the observation deck, and along the trails leading to the lakeshore. These educational exhibits uncover the geologic history of the lake, describe the flora and fauna of the Tahoe Basin, and delve into the cultural history of the area.

Good Design Helps to Build a Welcoming Place

TE funds were creatively used to transform a barren parking bay into a model of environmentally sensitive roadside design. This transformation was carried out by carefully incorporating key environmental features of the site into an attractive setting that simultaneously meets the needs of travelers and respects the sensitive environmental setting. Elements of ecology, aesthetics, and education have preserved this view of the majestic Lake Tahoe region.

TE CATEGORY 5

TE IN DEMAND

In Arizona the TE demand is 2.8 times the amount awarded.

In 2006, 72 applications requested $31 million in local project TE funding. $11 million was awarded to 24 projects.

Barrio Anita Noise Walls, Artistic Treatments

Tucson, Arizona

Transportation Enhancements (TE) can be a significant tool in helping to revitalize communities by creating places that local community members care for and respect. The use of public art to transform a barren wall along a road in Tucson into a vital community location shows the power of TE funds to engage the community and create new, revitalized community places. At the heart of this effort is the public participation aspect of the TE project that encouraged mural artist Josh Sarantitis and photographic artist William Wilson to engage community members to help identify a central symbol for the art. Community members could come up with no better symbol for their neighborhood than 100-year-old Josefa Carrillo, a local fixture renowned for her signature tortillas. Her image, rendered among other portraits painted upon the noise walls stretching along the western edge of Barrio Anita, emphasizes the community's resilient spirit. These community-oriented murals show how TE funds can be used to help both deal with transportation needs as well as help to create vital community places.

A Needed Transportation Facility

Barrio Anita's noise walls were first erected when the frontage roads of Interstate 10 were enlarged to accommodate the future widening of the roadway. At that time Interstate 10 separated Barrio Anita from the life and resources of other neighborhoods to the west. In 1999, the Barrio Anita Neighborhood Association (BANA) applied for a Transportation Enhancement award to enliven the noise walls. Artistic treatments would beautify the walls, and a small public park created around the north wall would provide a place where community residents could gather, relax, and view the artwork. $471,000 in TE funds were awarded in January 2000 to bring this project to reality.

The Artist and the Community

Once the money was awarded, BANA had the challenging task of choosing an artist that the community would stand behind. The selected artist would have to effectively involve the public, and research the neighborhood to develop an acceptable design. Such public engagement is a crucial component of effective public art installations. Since the final art product will belong to the community, residents need to appreciate and believe in the artist's efforts. Successful public art needs to be embraced by those who live in the vicinity to help create a positive community image.

Under the guidance of the City of Tucson's Transportation Department (DOT), the Tucson Pima Arts Council was charged with helping BANA to select an artist. The process

began with the formation of a selection panel comprised of an official from the DOT, working artists (several of whom lived in the neighborhood), arts professionals, and other BANA members. The Tucson Pima Arts Council sent out a call to artists, organized the selection panel to review the submissions, and guided the panel in a process to select four finalists. These artists were then asked to present their ideas to the panel in-person, and talk about how they would work with the Barrio Anita neighborhood residents. The panel deliberated and made its final decision: the team of muralist Sarantitis and photographer Wilson would take charge of the art project.

The artists were extremely sensitive to the attitudes and concerns of the community, immersing themselves in the community as the first step to reaching a final design. The artists talked to community members to explore the community's past and present. They discovered the intricate cultural diversity of the neighborhood that includes Native-American, Mexican-American, Chinese-American, African-American, and Anglo-American residents. The team held workshops aimed principally at youth to teach the community how to produce successful photographic images. Several of these photos were incorporated into the design of the mural. In addition, the artists used historical photographic references, stories, and ideas contributed by the community. The artists wove these elements together to create a visual narrative of the past, present, and future of Barrio Anita. Portrayed on the walls are the portraits of a diverse cross-section of local community members that include a beloved mariachi band teacher, a prominent civil rights leader, a local Folklorico performer, and the local church's Monsignor. Additionally, the dry Rio Santa Cruz, the railroad tracks, and the neighborhood's historic school building all appear, revealing elements that have helped shape the neighborhood.

The murals were created with innovative materials, honoring the uniqueness of the subject matter and the neighborhood. Images on the wall were created with a variety of media including Venetian glass tile mosaic, relief sculpture, cast concrete, steel, and paint.

Art and Place

The Barrio Anita Noise Wall murals were created to become an integral part of the neighborhood. The art was embraced by the local community and helped to create a new community place. Designers incorporated elements into the space that served to invite residents to sit and enjoy the art as a part of their neighborhood. A small park adjacent to the north wall mural was designed to relate to the community's heritage and natural environment. Seating and tables are interspersed under a trellis, creating a pleasant park space that is inviting to the public.

TE funds are a great way to enhance a community's transportation facilities, showcasing both local artists and a renewed sense of community. Barrio Anita's public art and park project is an excellent example of a TE project effectively uses public participation to create a new and well-used place. Starting with a barren noise wall, the community became involved and used art to turn those walls into positive and beautiful space.

PROJECT DETAILS

Federal Award: $471,500
Non-Federal Match: $28,500
Total Cost: $500,000
Year: 1999

PROJECT CONTACT

Robert Peterson
Planner, City of Tucson
520.791.4372

TE CATEGORY 6

TE IN DEMAND

In Oregon demand is 4.8 times the amount awarded.

During the 2006 and 2007 funding cycle, 64 completed applications requesting $53 million were considered. $11 million was awarded to 14 projects.

Vista House

Columbia River Gorge, Oregon

The Vista House is much more than a simple National Scenic Byway rest area. Perched 733 feet above Oregon's majestic Columbia River, the magnificent structure acts as community landmark. The building has been restored through the cooperation of the Department of Transportation with numerous other stakeholders. The result provides an excellent example of how partnership-building can help improve Transportation Enhancement (TE) funded historical preservation projects.

This uniquely designed building now offers a beautiful and welcoming rest area along the Historic Columbia River Highway, an All American Road under the National Scenic Byways Program. The highway, including the Vista House, is a National Historic District and a National Landmark. More than 85 years old, the Vista House had been deteriorating because of Crown Point's fierce weather conditions, the footsteps of millions of visitors, and the inevitable effects of time. These factors led to a temporary closing of the facility for several years so that a full restoration could be accomplished. In July 2005, however, TE funds enabled the reopening of Vista House to the travelers of the Historic Columbia River Highway. This historic transportation structure rehabilitation shows how detailed historic restoration can breathe new life into older, majestic structures.

The History of Vista House

The Vista House was originally designed as a simple roadside structure. It was authorized with a scant budget of $12,000 in 1916 by Multnomah County. Over the next two years, the price escalated to more than $100,000 — more than $1.5 million by today's dollars — as the building's design became more complex to fit its stunning surroundings. It was constructed at Crown Point, a spectacular promontory high above the Columbia River alongside the Historic Columbia River Highway. The noted Portland architect Edgar Lazarus designed the structure in the German Jugendstil style. The basalt-faced octagonal structure with marble interiors was also influenced by Samuel Lancaster, the consulting engineer for the Columbia River Highway. Lancaster envisioned the Vista House as "an observatory from which the view both up and down the Columbia could be viewed in silent communion with the infinite." The observatory would provide a memorial to "the trials and hardships of those who had come into the Oregon country" and "serve as a comfort station for the tourists and the travelers of America's greatest highway." Indeed, after its construction, Vista House at Crown Point became the most visited site on the scenic highway.

In the 1940s, Vista House faced its first major survival challenge at the very hands of those attempting to maintain it. Vista House was retaining moisture in its interior. Engineers of the time set out to make major changes to the structure

that would keep rain and moisture from entering the building. Vents were covered, the original ceramic tile was overlaid with a copper roof, and the attractive stained glass windows were replaced with double-pane clear glass. The glass skylights in the steps were covered with a new layer of concrete, creating a dark, uninviting space in the basement quarters. Unfortunately, these structural changes backfired by actually preventing any moisture from leaving the building. The original engineers had made allowances for the moisture and designed a system of vents to maintain circulation. With no way for the moisture or water to escape, the building began to deteriorate. The original masonry and plaster crumbled and the marble tiling began falling off the walls. It was just a matter of time before one of Oregon's most endearing icons was closed to the public.

By the 1990s, the iconic Vista House had deteriorated. As owners of the house, Oregon State Parks launched the effort to restore the beloved structure. Phase 1 of the restoration focused on the exterior of the building. It included a refurbishment of the green tiles of the dome roof. Planners accounted for the extreme weather conditions at Crown Point, including the heightened moisture and the extreme winds and ice storms.

In addition to exterior restoration, Phase One also included an interior restoration. The interior dome was painted to simulate the marble and bronze originally planned for the structure. Green opalized glass was featured among several windows. A hand-carved drinking fountain and eight gilded plaster Native American faces adorned the inside of the rotunda. In addition to the structure itself, educational exhibits were installed that explained the history of the building, the historic highway, and the local flora and fauna.

Collaboration at Crown Point

Funds were needed for both phases of the restoration. TE funds awarded in 2001 served as a catalyst for further funding to this important effort. By 2003, more than $4 million had been raised for the restoration through the combined efforts of public and private groups and agencies, including the Oregon Parks and Recreation Department, Oregon State Parks Trust, the Friends of Vista House, the Oregon Department of Transportation (ODOT) and the Western Federal Lands Highway Division (WFLHD) of the Federal Highway Administration (FHWA).

Of the multitude of partners and methods employed to garner funds for the building's repairs, one of the most innovative involved the use a small, humble band-aid. Oregon State Parks initiated Band-aids for Vista House, in which volunteers sold band-aids emblazoned with the Vista House logo and the words "Save Vista House" for $1 each. With more than a million visitors a year, the band-aid sales raised both awareness and funds that spurred the restoration of the historic Vista House.

The matching funds for most projects come from the community to meet the Federal requirement of a local match for the project. However another source for matching funds, one that helped Vista House, was to use Federal funds from other departments of the Federal government. FHWA allows funds received from other departments to count towards the match so long as the funds are from non-DOT Federal programs.

Since the Historic Columbia River Highway is not only a Scenic Byway and National Landmark, but also a designated Forest Highway, Forest Highway money was available for the project as well. The Forest Highway program is part of the Public Lands Highways Program. In Oregon, Forest Highway funds are managed by a tri-agency committee involving ODOT, U.S. Forest Service and WFLHD. Each year in Oregon, 10 percent of Forest Highway funds are set aside for enhancement projects. This typically adds up to about $2 million a year. These particular funds are for projects that enhance the traveler's experience, provide information and signing, restore historical highway features, address roadside parking or other environmental concerns on

Forest Highways. The Forest Highway Enhancement Program for Oregon is not a mandated program, but one that was cooperatively adopted to address highway issues outside of normal highway improvements. The program has been in place since 1995 and so far has provided more than $30 million for interpretive signing, Scenic Byway portals, thematic signing, corridor plans, historic restoration, trailhead parking, viewpoint parking, and fish passage in replacement of substandard culverts. ODOT and Oregon State Parks cooperatively proposed the Vista House Restoration to the tri-agency. Through the Forest Highway Program, the FHWA contributed $610,000 for exterior restoration and preliminary engineering of the interior restoration of Vista House. In addition, $545,000 in Transportation Enhancement funds, matched with $473,00 for a total of $1,018 million through the TE process was awarded to the Vista House.

The result of this collaboration of agencies and funds is a restored historic and educational structure that sits stoically above the Columbia River. Samuel Lancaster's original vision of an iconic viewing platform for the Oregon landscape has been reborn. Just as it did in 1918, the Vista House provides a place of beauty and rest during a voyage of discovery along the Historic Columbia River Highway.

PROJECT DETAILS

Federal Award: $545,000
Non-Federal Match: $473,000
Total Cost: $1,018,000
Year: 2001

PROJECT CONTACT

Friends of Vista House
www.vistahouse.com
503.695.2230

TE CATEGORY 7

TE IN DEMAND

In Kentucky TE demand is 8.6 times the amount awarded.

In 2006, 138 applications requesting about $120 million were received. $14 million was awarded to 61 projects.

Historic Goddard Covered Bridge

Goddard, Kentucky

Residents of Goddard, Kentucky, are justifiably proud of their historic, covered bridge. The Goddard Covered Bridge is listed on the National Register of Historic Places and is one of only four covered bridges left in Kentucky that remain open to traffic. To help preserve the history and transportation value of this important symbol of the town's identity, the Kentucky Transportation Cabinet (KyTC) developed an innovative model approach to historic preservation using Transportation Enhancement (TE) funds. This TE project is exceptional in its use of public involvement, partnerships, and informed preservation techniques.

Preserving the Past and Future of a Covered Bridge

The exact date of construction of Goddard's covered bridge is not known, but its lattice truss can be traced back to prominent American engineer Ithiel Town's 1820 patent design. It is the only Ithiel Town truss left in Kentucky. Since its original construction, the bridge has been renovated several times, once in 1910 and again in 1968.

Additionally, it was moved from its original site northward because of a road reconstruction project in 1932. Despite the upheaval, the bridge has survived due to the town's appreciation of it.

In 2002, TE funds were awarded so that the bridge could be renovated once again. The original plan incorporated a standard practice in the renovation of bridges in Kentucky, designed to create a neat and trim structure built almost entirely of new material. The original plans for the Goddard covered bridge restoration entailed similar techniques and required dismantling and rebuilding the bridge off-site. Eighty percent of the covered bridge was proposed to be replaced by new material, significantly weakening the historical character of the bridge.

This plan struck a dissonant chord within Goddard. Residents did not want to lose the unique historical essence of their covered bridge. In response to the public, the Buffalo Trace Covered Bridge Authority recruited two covered bridge experts to assess the situation. The KyTC paid for a third expert's opinion. The three experts presented their findings to the State, and convinced KyTC that the bridge should be preserved on-site to safeguard its unique Town truss system. Contrary to the initial plan, the experts were also adamant that much of the original wood could be saved.

Considering these new findings, KyTC approached the firm initially contracted to renovate the bridge. The firm agreed with KyTC's request to restore the bridge onsite instead of dismantling and rebuilding it elsewhere. KyTC used two of the bridge experts as consultants on the project.

In this way, the fate of the Goddard Covered Bridge was immensely affected by the public's demands and regard for it. Over the next two years, public meetings were held regularly to check in with the community on the plans and status of the bridge's restoration. Through this process, and through the work of the bridge experts with the contractors, it was decided that the bridge would be fitted with a new metal roof and rebuilt stone abutments. Bolsters and bents were used to spread the load and shorten the load-bearing span of the bridge. Instead of completely replacing the wood within the lattice truss, the original timbers were "sistered." This meant the original planks were kept, and that new planks were installed only to provide support for the original lumber. As a result of overwhelming public opinion, the added timbers were treated to maintain the weathered look of the bridge.

Goddard Covered Bridge was officially reopened in August 2006, just in time for the annual Fleming County Covered Bridge Festival. This event attracts thousands of tourists from all over the country to Goddard each year bringing in $50,000 to the community annually. The Goddard covered bridge plays a central role in the festivities and advertising. Its recognizable identity made the weathered and historical appearance of the bridge an important aspect of its restoration.

The innovative approach to preservation that took place in Goddard provides an important model that can be used in the restoration of covered bridges throughout the country. In addition to involving the public, the approach used in Goddard encouraged direct contact between the contractor and historical preservation engineers. This design-build partnership helps ensure that the historical integrity of bridge was maintained. The diversity of input and partnerships, including a strong public participation component, has helped to maintain the bridge's unique, historic character, ensuring that the bridge will continue to be a central element of the town's identity.

PROJECT DETAILS

Federal Award: $573,952
Total Cost: $1,154,752
Year: 2002

PROJECT CONTACT

Shane Tucker
Transportation Enhancement Project Coordinator
Kentucky Transportation Cabinet
502.564.2060

Patrick Kennedy
Restoration Project Manager
Kentucky Heritage Council
502.564.7005


AFTER

TE CATEGORY 7

TE IN DEMAND

In Nebraska TE demand is 3 times the amount awarded.

In 2006, 62 applications requesting $18 million were received. $6 million was awarded to 20 projects.

The Grand Island Plum Street Station

Grand Island, Nebraska

Through the use of Transportation Enhancement (TE) funds, the historic Plum Street Station in Grand Island, Nebraska has become a catalyst for community revitalization. In the early 1900s, the depot served as a flourishing hub of Midwestern transportation. Both passengers and freight frequented this central point of arrival and departure. Almost a century later, despite the thriving bustle that once typified it, the depot faced almost certain destruction. The historic depot narrowly avoided demolition as community residents used TE funds to create a new, vibrant, vision for this important community symbol.

The Life of a Depot

The depot was built in 1911 to house the Chicago, Burlington and Quincy Railroads. Two main buildings were constructed: the passenger depot and the freight depot. These two buildings were connected by a porte cochere, or a covered driveway. The buildings featured brick exteriors with granite foundations and detailing.

For more than fifty years, the depot served as a hub to the Central Platte River Valley. However, with declining railroad traffic and a new interstate system just eight miles away, train traffic ceased using the depot in the mid 1960s. The depot began its slow decline, eventually becoming an eyesore in the community. The neglected structure and surrounding landscape were targeted with graffiti. In August 1998, Burlington Northern Santa Fe (BNSF) - to which ownership of the depot had transferred - announced plans to demolish the building by the end of the year.


BEFORE

Rescuing a Historic Landmark

Recognizing the historical and cultural significance of the old depot, the Hall County Historical Society (HCHS) was quite alarmed to hear of its imminent destruction. They decided to intervene in order to rescue, renovate, and preserve the structure. The HCHS successfully negotiated the purchase of the property for $30,000 just days before it was scheduled to be demolished. With a vision to create a space to be shared with the public,

the HCHS began the remarkable effort to renovate this local historic structure.

In 1999, the Hall County Board of Supervisors, on behalf of the HCHS, applied for and received TE funds from the Nebraska Department of Roads (DOR). The funds were awarded to carry out the society's goal of restoring the depot for public use. Using an existing condition analysis of the depot, a renovation plan was created. A general contractor was hired to manage the renovation project in conjunction with a consultant with the State DOR. The consultant aided the project through the Federal and State TE guidelines.

The scope of work was divided into two components: the exterior rehabilitation of the buildings and platform, and the interior renovation of the depot, including the upgrade of the mechanical, plumbing, and electrical systems. The entire project cost $450,000, with TE funds providing $227,743. The HCHS voluntarily contributed $222,257, a 50 percent match made possible through local fund-raising and private donations.

The renovated depot features varnished oak box-beamed ceilings, original windows, white glazed ceramic tile and painted walls, and black-and-white checkerboard tile floors. These vintage components created an ideal home for the antique railroad memorabilia that the depot now displays. The depot also serves the community by housing a police substation and a community meeting area. The large, double doors on the east side of the building open to a brick courtyard, a welcoming space that allows public events to expand outdoors. Events are popular at the depot, including Town Hall meetings and small business trainings. There is no fee to reserve and use the space, but donations going toward maintenance of the depot are encouraged.

Depot Spurs Revitalization

The renovation of the Plum Street Station proved beneficial to the community indirectly as well. The depot's renewed presence spurred revitalization in the once-blighted neighborhood. Nearby the station, a gazebo and landscaped park replaced the site of an abandoned building. Houses now show off fresh coats of paint and back alleys are enjoying cleaner conditions. In 2002, the Grand Island Hall County Regional Planning Commission presented the Plum Street Station with its annual Community Beautification Award. The award was presented to recognize and show appreciation towards the depot's outstanding contribution to the community.

PROJECT DETAILS

Federal Award: $227,743.00
Non-Federal Match: $56,936
Total Cost: $284,679
Year: 1999

PROJECT CONTACT

Fred Roser
Hall County Historical Society
308.384.2154

TE CATEGORY 8

TE IN DEMAND

In Mississippi, 18 projects received a total of $3.2 million in 2005.

The Longleaf Trace

Hattiesburg to Prentiss, Mississippi

The Longleaf Trace National Recreation Trail has become an incredible asset to the southern Mississippi communities that border this 40 mile long rail-trail. Stretching from Southern Mississippi University in Hattiesburg to the small town of Prentiss to the northwest, the trail connects diverse neighborhoods and towns to the regional hub of Hattiesburg. This project shows how Transportation Enhancement (TE) funding can be used successfully to engage local communities to envision a project that enhances local business opportunities, offers a renewed connection to the area's landscape, and provides important transportation opportunities that connect small towns and the neighborhoods that surround them.

The Road to a Rail-Trail

In 1993, Canadian National Railroad announced its intentions to abandon the Illinois Central Gulf railway right-of-way from Hattiesburg to Prentiss, Mississippi. Initially, officials in the affected Mississippi counties of Forrest, Lamar, and Jefferson Davis opposed the abandonment. They anticipated that the unused corridor would result in a stagnation of the surrounding areas. However, they soon realized TE funds could help them purchase the right-of-way so that the corridor could be turned into a public multi-use trail. Suddenly, it seemed the abandonment could actually lead the local transportation system into a direction it had never gone before: if a rail-trail were built, it could support a community-oriented, nonmotorized system among the three counties.

The counties began working toward their goal to build a trail. One of the first steps was establishing a foundation of public support. A local bike shop owner and avid cyclist helped garner trail support by creating a community group advocating for the trail. The group's unwavering support proved vital to the development of the trail. The group voiced the appeal of the trail to all levels of the community, and solicited financial support from individuals, businesses, and corporations. A unique aspect of planning for the trail included sponsorship opportunities for local businesses and groups. Mile markers, rest areas, and trestle bridges could be sponsored and small signs would be placed to honor these groups for their contribution to the Trace. This effort raised well over $100,000 for the trail.

Armed with an abundance of corporate and individual support and sponsorship for the trail, the affected counties approached the Mississippi State Legislature. They asked for the approval of a proposed legislative act that would create an authority for rail-to-trails recreational districts in the State of Mississippi. The legislature granted this authority in 1994. This allowed for the formation of the Pearl & Leaf Rivers Rails-to-Trails Recreational District to oversee what would become the Longleaf Trace.

The District faced its first major challenge when the Mississippi Governor vetoed the necessary funds for the purchase of the railroad right-of-way. Although the District attempted to negotiate the purchase of the corridor, it soon became clear the needed funds would not be available in time to meet the purchase restraints set by the Canadian National Railroad. The district did not give up. They approached the Mississippi Department of Transportation (MDOT) to ask them to purchase the right-of-way. Understanding the benefits such a trail would provide the local transportation system, MDOT agreed.

After MDOT purchased the land, the Pearl & Leaf Rivers Rails-to-Trails Recreational District developed a master plan for the trail. The district then submitted an application for a TE award for trail construction. The funds allowed the District to hire engineers and architects to design and implement the first phase of the Master Plan. This phase was completed and opened for public use by September 2000. Thirty-nine miles of 10-foot wide smooth asphalt surface now meandered through Southeast Mississippi. Seven trestle bridges, six parking lots, and two trailhead stations were opened along its route.

During the construction of Phase I, Canadian National Railroad announced it was abandoning an additional two miles of right-of-way. MDOT and the Pearl & Leaf River Rails-to-Trails Recreational District agreed to share the cost of the purchase. TE funds were again awarded for this addition. Opened in 2003, the new section includes gateway facilities at the northern end of the trail in Prentiss and at the southern end at the University of Southern Mississippi. This southern gateway serves as the official welcome center of the Longleaf Trace. In addition, four trailhead stations opened along the trail to provide seating, restrooms, vending machines, and a spot of shade for the hot southern days.

Public Support Leads to Success

One major reason the Longleaf Trace is a successful rail-trail is that community support was integrated into planning and building the trail. Community outreach generated public input to benefit the trail. Local corporations contributed donations to make the trail a reality. The resulting pathway has connected and enhanced the neighborhoods along its route. The local economy thrived as visitors to the trail frequented area businesses. In addition, these improvements helped connect the diverse communities along the trail and built pride in the region.

The importance of the trail to the community was made clear after Hurricane Katrina ravaged much of the pathway in 2005. Hazards, debris, and more than 15,000 felled trees obstructed the course of the Trace. The entire 40 mile pathway was closed for several months. An outpouring of donations came in from all over the country to help clear the trail. In addition, the local convention and business bureau, representing area motels, hotels, and restaurants, valued the Trace so much that they donated necessary funds to apply for Federal assistance for its recovery. These efforts paid off as the Trace was reopened several months after the hurricane.

The economic, environmental and physical health, and the transportation needs of the neighborhoods located along the Longleaf Trace have been greatly enhanced by the presence of the trail. Residents and businesses alike fought to maintain the existence of the Trace, ensuring that it continue to serve as a lasting treasure for Southeast Mississippi.

PROJECT DETAILS

Two Awards:
Phase 1 (Awarded 1995):
- Federal Award: $2,692,192
- Matching Funds: $124,624
- MDOT Soft Match for ROW: $550,000

Phase 2 (Awarded 1999):
- Federal Award: $1,926,546
- Matching Funds: $481,637

Total Cost of Phase 1 and 2: $5,774,999

PROJECT CONTACT

Herlon D. Pierce
Trail Manager
Longleaf Trace
info@LongleafTrace.org • 601.450.5247
www.longleaftrace.org

TE CATEGORY 10

TE IN DEMAND

In North Carolina TE demand is 4.9 times the amount awarded.

In 2004, the State TE office, which directly awards about 30% of the available funds, received 186 complete applications requesting $53 million. It awarded $10.8 million to 75 projects.

Archaeological Planning and Research at the Allison-Deaver House

Transylvania County, North Carolina

This project shows how a small Transportation Enhancement award leveraged volunteer resources to significantly increase the understanding of the early transportation system of the region. In the mountains of western North Carolina, TE funds were used to help trace the early transportation system in the area. In the process of this evaluation, community groups were engaged in raising awareness of this important historical legacy. The TE funds were designated for an archaeological investigation of early roads surrounding the Allison-Deaver House, the oldest surviving house in these mountains. This exceptional historical structure, listed on the National Register of Historic Places, sits adjacent to major 18th and 19th century roads: the old "Boylston" Highway and the old "Estatoe" trading path. The "Estatoe" trading path is a Native American trail that predates European settlement. It was critical to the development of western North Carolina in the 19th century. The TE-funded archaeological dig helped uncover this important transportation history, helping the people of North Carolina better understand the importance of this early trading route to the area's growth.

The TE Process in Action

Transylvania County applied for and received TE funds for archaeological investigations designed to locate the early transportation system. The county received $17,460 in funding ($13,968 in Federal funds and $3,492 in local matching funds). Wake Forest University's Department of Public Archaeology was awarded this project, and students from the university set up camp and lived at the site alternately for several months. The project attracted significant local attention with groups of school children visiting the site weekly to learn both about the history of early transportation in North Carolina and the mechanics of an archaeological dig. In addition, volunteers participated in activities such as artifact screening. Two professional archaeologists worked directly with all volunteers instructing and supervising in the proper methods for recovering and recording information.

The investigations at the Allison-Deaver House uncovered more than 3,000 artifacts and culture items, including prehistoric Native American as well as Anglo-American items. The Native American artifacts provided evidence that the ridge top site was occupied during the Archaic (4000–5000 B.C.) and Woodland (A.D. 200–900) periods.

Uncovering History and Engaging the Community

The archaeological investigations at the Allison-Deaver house are an important component in the study of the history of transportation in the difficult mountainous terrain of western North Carolina. The project was made meaningful by involving a maximum number of university students to participate. The investigations became a community effort by involving local volunteers and bringing in school groups to observe and participate in the undertaking.

PROJECT DETAILS

Federal Award: $13,968
Non-Federal Match: $3,492
Total Cost: $17,460
Year: 2001

PROJECT CONTACT

Mr. Ken Robinson
Department of Public Archaeology
Wake Forest University
336.758.5117

Manistee Lake: Highway Runoff Improvements

Manistee, Michigan

TE CATEGORY 11

TE IN DEMAND

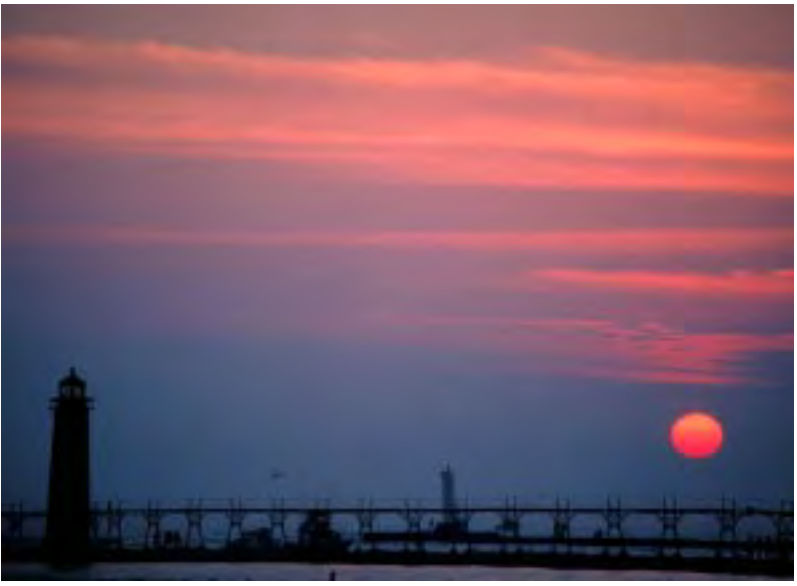
In Michigan, 75 projects received $42 Million in 2006.

Environmental Mitigation and TE: Building a Sustainable Future

Manistee Lake, a premier fishing destination in Northern Michigan, has been degraded by many sources of environmental pollution including industrial contamination, sewer overflows, and soil erosion. A Transportation Enhancement (TE) award was used to correct the drainage system along highway US-31, preventing sediment and other pollutants from entering the lake. By investing in the drainage repair using TE funds, the community protects itself as a premier fishing destination.

Project Specifics

Completed in 2004, the Michigan Department of Transportation used a TE award to fund a project to mitigate the environmental impacts occurring to Manistee Lake from a nearby highway. Prior to the project, drainage from the highway discharged into Manistee Lake via storm sewers and an existing drainage channel. The runoff conveyed pollutants



from the road to the lake. Further, runoff velocities within the channel resulted in eroded material being deposited into the lake. Pollutants from the road and sediment from the eroding drainage channel contributed to pollution that was endangering Manistee Lake as a fishing destination.

The northern region of Michigan is known for its superior fishing opportunities. It is partly because of these opportunities that the region has attracted a considerable number of tourists. Manistee Lake, part of the Manistee River watershed that drains into Lake Michigan, is in the middle of this premier fishing region. The lake is currently considered to be adversely impacted by pollution with elevated levels of heavy metals, oils, and other pollutants. While local government, State, and Federal agencies are addressing the elevated contaminant levels in the lake, one part of the solution was to reduce the direct highway runoff drainage into the lake.

To treat one source of the lake's contamination problem, the Michigan Department of Transportation, along with the Manistee County Road Commission, used a TE award of $252,000 to fund a stormwater treatment structure along Highway US-31 to treat the road runoff before it enters the lake. The structure contains a baffle system to separate oil from the water and a swirl chamber to retain sediment in its sump. The system is designed to remove 80 percent of the suspended solids during a 10 year storm event. This solution was chosen for this location because of worries from adjacent business over the appearance of traditional detention pond systems.

Maintaining a Sustainable Local Economy

In part, the TE project is helping to restore Manistee Lake as a premier fishing destination. This project directly benefits the community by removing large amounts of sediment and other contaminants from the highway drainage system that previously entered the lake. By removing pollution from the lake, the project is helping to restore both the environment of the region as well as maintaining the tourism and recreational resources that help the community thrive.

PROJECT DETAILS

Federal Award $252,000
Non-Federal Match: $63,000
Total Cost: $315,000

PROJECT CONTACT

Gary Karttunen
Development Engineer
MDOT
karttuneng@michigan.gov
231.775.3487

TE CATEGORY 12

TE IN DEMAND

In Pennsylvania TE demand is 3.3 times the amount awarded

In 2004, 260 applications requesting $118 million were considered. $36 million was awarded to 127 projects.

Pennsylvania Trolley Museum Trolley Display Building

Washington, Pennsylvania

One of the significant eras of transportation in the United States was the Streetcar Era. Beginning roughly in the 1890s and peaking in the 1940s and 1950s, the streetcar, or trolley, provided a significant percentage of Americans with everyday transportation to go to work, to school, or to visit with family and friends. The Pennsylvania Trolley Museum (PTM) received a Transportation Enhancement (TE) award to help preserve and interpret the trolley era for those more accustomed to the automobile lifestyle. The museum does this through exhibits, a collection of more than 30 historical trolleys from around the State and the Nation, and though the operation of many of its historical trolleys for visitor tours.

Creating a Museum

In 2004, the PTM completed Phase 1 of three expansion projects. The first phase constructed a half mile of trolley track and a trolley turning loop that connects the Trolley Museum and the Trolley Era Heritage Complex. Since 2004, more than 40,000 visitors have been able to live history by riding historical trolleys over this working section of track at the museum.

While the main draw of the new complex is the opportunity to ride trolleys, the PTM also has numerous exhibits that help to provide historical context. In Phase 2 of expansion, the Trolley Museum recently completed a 25,000–square foot trolley display building which houses the museum's trolleys. To construct this new building, several challenges needed to be overcome. The proposed trolley house site was within the 100-year flood zone. To make the site suitable for the trolley house, the building needed to be raised above the flood zone and storm water management infrastructure needed to be installed. To accomplish this, a Transportation Enhancement award of $475,000 was used to prepare the site for construction.

Protecting the Collection

Previous to the trolley display building, the antique trolleys were stored outdoors in a non-accessible site. The new trolley display building provides the much needed protection from the elements that historical, fragile trolleys need so that they can last for future generations. It also, of course, provides a year round, accessible location for the public to view the trolleys. Since opening in the spring of

2005, the guided tours of the trolley display building have fulfilled visitors' wishes to see the entire collection of trolleys and improved the preservation of this legacy for the future.

Education into the Future

The third phase of expansion is still in construction; however, $400,000 have already been obligated towards necessary site preparation work for Phase 3. Planned for the site is a new, larger, visitor center that will provide additional space for classrooms, exhibits, archives, and a location to showcases specific trolleys.

Through the use of TE and other funding sources, the Pennsylvania Trolley Museum has created a living legacy that helps provide a window on the trolley era which both draws visitors to the community and helps to provide an important historical understanding of the use of trolleys for transportation within the State and the Nation.

PROJECT DETAILS

Federal Award: $475,000
Non-Federal Match: $95,000
Total Cost: $475,000

PROJECT CONTACT

Scott R. Becker
Executive Director
Pennsylvania Trolley Museum
sbecker@pa-trolley.org
724.228.9256

Web Resources

National Transportation Enhancements Clearinghouse
For information on the Transportation Enhancements program, including contact information for State and Federal TE program managers, State bicycle and pedestrian coordinators, State historic preservation officers and recreational trails program managers. Over 50 publications available for download or e-mail order including the quarterly TE newsletter *Connections*. **www.enhancements.org**

Federal Highway Administration
For information on the Transportation Enhancements program, including definitions of allowable activities, Federal guidance and project eligibility guidelines.
www.fhwa.dot.gov/environment/te

The Corps Network
Federal TE guidance encourages the use of youth conservation corps in the development of TE projects. This web site will connect you with Corps in your area. **www.corpsnetwork.org**

Rails-to-Trails Conservancy
For information on the preservation of unused railroad corridors and their conversion to trails. The site includes links to downloadable reports and various technical assistance briefs.
www.railstotrails.org

National Trust for Historic Preservation
For information on various aspects of the historic preservation work that pertains to the use of TE funds.
www.nationaltrust.org

Scenic America
For information pertaining to scenic easements and billboard removal.
www.scenic.org

Pedestrian and Bicycle Information Center
Provides information about pedestrian and bicycle issues, including health and safety, engineering, advocacy, education, enforcement, access and mobility. **www.pedbikeinfo.org**

TE Glossary

Americans with Disabilities Act of 1990 (ADA) — Federal law that requires accessible public transportation services for persons with disabilities. ADA also pertains to facilities along highways, trails, sidewalks, and other public settings.

Categorical Exclusion (CE) — A technical exclusion for projects that do not result in significant environmental effects; such projects are not required to prepare environmental assessments or environmental impact statements.

Davis-Bacon Act — Federal law that requires the prevailing wage to be paid to all workers on Federal-aid highway projects that exceed $2,000. This requirement does not apply to Transportation Enhancements projects not located within the right-of-way of Federal-aid highways.

Eligibility — The criteria established by the FHWA by which a project qualifies for Transportation Enhancements funding. In determining eligibility, the FHWA has stipulated that a project must be one or more of the 12 TE activities, and be related to surface transportation. States may have additional eligibility requirements.

Federal Share — The portion of the project cost funded by the Federal government. These Federal funds are normally matched with State and/or local government funds. The Federal share is 80 percent for most projects (higher in some western States).

In-Kind Contributions — Allowable (chargeable) costs of a project contributed by other government entities or private parties, and including donations of cash, real property, materials and (voluntary) contribution of professional services and labor.

Matching Funding (Non-Federal Funding Share) — The percentage of non-Federal funds required for almost all Federal-aid programs to match a Federal contribution. The standard ratio is a 20 percent match from State and local sources (lower in some western States).

National Environmental Policy Act (NEPA) — Federal law that requires every Federal agency to prepare a detailed report evaluating environmental impacts and alternatives to a proposed action.

National Historic Preservation Act of 1966 (NHPA), Section 106 — This section requires Federal agencies to consider the potential effects of a project on a property that is listed in, or eligible for, the National Register of Historic Places.

Right-of-Way (ROW) — A linear corridor of land such as used for transportation or other facilities such as highways, roads, streets, railroads, trails, light-rail, and utilities.

Section 4(f) of the U.S. Department of Transportation Act — Section 4(f) resources consist of publicly owned parks, recreation areas, wildlife and waterfowl refuges, and national, State or local historic sites. Section 4(f) land cannot be used for U.S. DOT-funded projects unless it is determined that no feasible and prudent alternative exists.

Soft Match — The value of activities outside the project scope but directly related to the project which are credited toward the non-Federal share of a project.

Sponsor — One or more individuals, partnerships, associations, private corporations or public authorities recommending a particular project and committed to its development, implementation, construction, maintenance, management and financing. In most States, a project sponsor must be a public entity with tax-bearing authority.

Surface Transportation — All elements of the intermodal transportation system including water transport. TE funds cannot be used for military or aviation related projects.

Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as Amended — Federal law that provides procedural and other requirements in the acquisition of real property and provides for relocation payments and advisory assistance in the relocation of persons and businesses impacted by Federal or Federally-assisted projects.

ACKNOWLEDGEMENTS

Acknowledgements: Billy Fields, Ph.D., editor; Graham Stroh and Meghan Taylor, contributors; additional content provided by the contacts listed for each case study. Jennifer Kaleba, copy editor; Barbara Richey, designer. Thanks also to Christopher Douwes and John Fegan of the Federal Highway Administration for their guidance.

This material is based upon work supported by the Federal Highway Administration under cooperative agreement No. DTFH61-02-X-00055. Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the view of the Federal Highway Administration.

March 2007

PHOTO CREDITS:

p.1: NTEC; p.5: NTEC; p.8: NTEC; p.9: NTEC; P.10: NCDOT; p.11: NCDOT; p.12–13: Kelly Jensen; p.14–16: City of Snohomish, Washington, Ann Stanton; p.16–17: Julie Padberg-White; p.18–19: Caltrans; p.20–21: Kristena Shigenaga, NEDOT; p.22–23: Robert Peterson; p.24–25: David Sell; p.25: Friends of Vista House; p.26: Shane Tucker; p.27: Patrick Kennedy; p.28–29: Fred Roeser; p.30–31: Billy Fields; p.32: NCDOT; p.33: MIDOT; p.34–35: Pennsylvania Trolley Museum.

NATIONAL TRANSPORTATION ENHANCEMENTS CLEARINGHOUSE
1100 Seventeenth Street, NW, 10th Floor
Washington, D.C. 20036
1-888-388-NTEC
www.enhancements.org

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
1200 New Jersey Avenue, SE, HEPN-50
Washington, D.C. 20590
202-366-5013
www.fhwa.dot.gov

RAILS-TO-TRAILS CONSERVANCY
1100 Seventeenth Street, NW, 10th Floor
Washington, D.C. 20036
202-331-9696
www.railstotrails.org