

Poplar Southern / Corridor Study

August 11, 2009 - PRELIMINARY

Listing of Crossings from West to East

Street	Crossing Number	MilePost	Maximum Train Speed (Time Table)	Average Daily Traffic		Total Volume per Lane	2030 Truck Volume	# of Thru Lanes	Total Crashes*	Ranking Criteria															Total	Overall Ranking						
				Current	Future Year 2030					Congestion Relief and Mobility							Economic Opportunities				Safety		Public Support				Environmental		Funding			
										Congestion	Continuity-Connectivity	Intermodal	Major Users	Bike/Pedestrians	Emergency Access	Transit	Growth Areas	Land Use	Truck Use	Job Creation	Geometric Impact	Crash Reduction	Existing Plans	Travel Demand Management			Natural Environment	Neighborhood	Feasibility			
Maximum Available Score										10	5	5	5	5	5	5	10	5	5	5	5	5	5	5	5	5	5	5	5	5	100	1 - 16
SEMMES ST	732181D	A546.24	20	6,450	12,900	6450	626	2	1	2	3	4	2	5	5	0	1	4	2	1	0	1	1	0	0	5	3	0	29	15		
HIGHLAND ST	732178V	A545.36	30	27,270	34,000	8500	1760	4		6	4	2	5	5	5	3	5	4	4	2	4	0	0	2	5	3	0	59	3			
GOODLETT ST	732175A	A544.24	30	22,860	31,000	7750	1715	4	2	4	3	0	4	4	3	3	4	1	4	1	3	2	3	0	5	1	4	49	8			
PERKINS ST EXT.	732173L	A543.30	30	18,840	32,700	8175	1725	4	1	4	4	4	5	3	3	3	5	5	4	1	1	1	0	1	5	4	2	55	4			
MENDENHALL RD	732169W	A542.52	30	20,660	33,300	8325	1517	4	4	4	4	3	5	0	3	4	1	4	3	1	5	4	0	2	4	2	4	53	5			
WHITE STATION RD	732168P	A542.01	50	21,000	37,800	9450	1404	4	1	5	4	3	5	1	3	3	2	3	3	2	2	1	0	1	5	3	3	49	8			
ESTATE DR	732167H	A541.71	50	11,550	23,800	5950	518	4		1	2	0	2	2	3	1	2	2	1	1	1	0	0	0	5	2	0	25	16			
MASSEY RD	732163F	A539.71	50	3,950	5,100	2550	110	2	3	0	2	0	3	2	1	1	5	1	0	1	1	3	0	0	5	5	0	30	14			
KIRBY PKY.	732161S	A539.02	35	25,900	38,600	7720	1441	5	12**	4	4	3	3	2	3	2	6	5	3	2	1	2	0	0	5	2	3	50	6			
WEST ST	732154G	A537.36	35	19,150	53,500	13375	2239	4	4	8	5	2	5	2	5	3	7	3	5	3	4	4	5	0	5	4	5	75	1			
GERMANTOWN RD	732153A	A537.19	35	14,330	14,300	7150	1005	2		3	3	1	5	2	5	2	6	4	2	3	2	0	0	0	5	4	2	49	8			
OLD POPLAR PIKE	732152T	A536.52	35	17,800	22,000	5500	1208	4	2	1	4	1	2	4	3	2	6	1	3	3	3	2	3	0	4	1	4	47	11			
HACKS CROSS RD	732149K	A535.87	50	20,900	23,500	5875	1156	4	1	1	4	2	3	3	2	1	6	1	2	3	3	1	3	0	5	2	1	43	12			
FOREST HILL-IRENE	732143U	A533.50	50	12,600	13,500	4500	574	3	1	0	4	2	3	0	1	0	7	3	1	3	2	1	0	0	5	2	3	37	13			
HOUSTON LEVEE RD	732135C	A531.71	45	21,800	38,400	9600	1494	4	1	5	5	4	3	1	0	0	9	2	3	5	2	1	0	0	4	4	2	50	6			
BYHALIA RD	732125W	A529.22	45	33,300	52,700	13175	2012	4	2	10	5	5	4	1	2	2	9	5	5	3	2	2	0	1	0	4	2	62	2			

* - Total Crashes are from FRA's Accident Report Database and represent the total number of motor vehicle/rail vehicle incidents over a ten year period.

** - Does not reflect geometric and traffic signal improvements made in 2007.

Ranking of Crossings

Street	Crossing Number	MilePost	Maximum Train Speed (Time Table)	Average Daily Traffic		Total Volume per Lane	2030 Truck Volume	# of Thru Lanes	Total Crashes*	Ranking Criteria															Total	Overall Ranking					
				Current	Future Year 2030					Congestion Relief and Mobility							Economic Opportunities				Safety		Public Support				Environmental		Funding		
										Congestion	Continuity-Connectivity	Intermodal	Major Users	Bike/Pedestrians	Emergency Access	Transit	Growth Areas	Land Use	Truck Use	Job Creation	Geometric Impact	Crash Reduction	Existing Plans	Travel Demand Management			Natural Environment	Neighborhood	Feasibility		
Maximum Available Score										10	5	5	5	5	5	5	10	5	5	5	5	5	5	5	5	5	5	5	5	100	1 - 16
WEST ST	732154G	A537.36	35	19,150	53,500	13375	2239	4	4	8	5	2	5	2	5	3	7	3	5	3	4	4	5	0	5	4	5	75	1		
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HIGHLAND ST	732178V	A545.36	30	27,270	34,000	8500	1760	4		6	4	2	5	5	5	3	5	4	4	2	4	0	0	2	5	3	0	59	3		
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MENDENHALL RD	732169W	A542.52	30	20,660	33,300	8325	1517	4	4	4	4	3	5	0	3	4	1	4	3	1	5	4	0	2	4	2	4	53	5		
KIRBY PKY.	732161S	A539.02	35	25,900	38,600	7720	1441	5	12**	4	4	3	3	2	3	2	6	5	3	2	1	2	0	0	5	2	3	50	6		
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GOODLETT ST	732175A	A544.24	30	22,860	31,000	7750	1715	4	2	4	3	0	4	4	3	3	4	1	4	1	3	2	3	0	5	1	4	49	8		
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ESTATE DR	732167H	A541.71	50	11,550	23,800	5950	518	4		1	2	0	2	2	3	1	2	2	1	1	1	0	0	0	5	2	0	25	16		

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POPLAR SOUTHERN / CORRIDOR STUDY

DATA COLLECTION AND RANKING CRITERIA

Memphis Urban Area Metropolitan Planning Organization Poplar Southern / Corridor Study

Data Collection – Ranking Criteria:

- I. Congestion Relief and Mobility (40 pts / 40%)
 - A. Congestion (10 pts max.)
 1. 8 pts – The Memphis MPO Travel Demand Model was used to estimate the total average daily traffic for the horizon year of 2030. To estimate the relative level of congestion, the volumes were grouped into categories in terms of volume per day per lane. The categories for volume per lane were then assigned values ranging from 0-8. This value accounts for congestion experienced in the future horizon year.
 2. 2 pts – Data collected from questionnaires at the Neighborhood Sub-Area Meetings (4 meetings total) and online. Specifically questions 7, 8, and 9 on the questionnaire. The assigned point values ranging from 0-2 account for existing perceived congestion experienced by the public. The point values summarized from the questionnaire were then added to those estimated from the future year model for a total congestion ranking value up to 10 points.
 - B. Continuity and Connectivity (5 pts max.)
 1. 5 pts – Point values ranging from 0-5 were assigned based on route continuity and roadway network connectivity. Continuous routes through the region received a higher number of points than those that terminate shorter distances from the study corridor boundary. For roadway network connectivity, routes were assigned points based on proximity to adjacent facilities.
 - C. Intermodal (5 pts max.)

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1. 5 pts – Point value given to roads with higher truck transportation based on connections to major roads/interstates.

D. Major Uses (5 pts max.)

1. 5 pts – Studied major traffic generators/attractors within $\frac{1}{4}$ mile radius and gave a value to each based on the number of users per generator. The higher the amount of traffic generated the higher point value given to the crossing ranging from 1-5.

E. Bike/Pedestrian (5 pts max.)

1. 5 pts – Data collected from questionnaire question # 13 and value given to the number of pedestrian generators within a $\frac{1}{4}$ mile including: greenways, parks, schools, and community centers.

F. Emergency Access (5 pts max.)

1. 5 pts – Data collected from questionnaire question #11 and a value given to the number of emergency facilities within a $\frac{1}{4}$ mile including: hospitals, fire, and police.

G. Transit (5 pts max.)

1. 3 pts – Data collected from questionnaire question # 10.
2. 2 pts – Rail crossings used by public transit were identified using MATA's route map. Points ranging from 0-2 were assigned based on whether the roadway is served by public transit and if so, the number of transit routes using the crossing. These points were then combined with those estimated from questionnaire responses referencing school bus use for a total transit ranking value up to 5 points.

II. Economic Opportunities (25 pts / 25%)

A. Growth Areas / Unemployment (10 pts max.)

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1. 5 pts – Data collected from questionnaire question #12 relating to how often a crossing is used in route to employment.
 2. 5 pts – The land use component of the Memphis Travel Demand Model was used to identify the relative change in population in traffic analysis zones adjacent to rail crossings along the study corridor. Points ranging from 0-5 were assigned to crossings based on percent growth in population, with higher growth receiving a higher point value. These points were then combined with those estimated from questionnaire responses referencing growth areas for a maximum total growth area ranking value of 10 points.
- B. Land Use (5 pts max.)**
1. 5 pts – Land Use and Zoning Maps studied to determine the land uses within a ¼ mile of the crossing. Higher values were given where existing uses are consistent with appropriate land uses at a railroad crossing.
- C. Truck Use (5 pts max.)**
1. 5 pts - The Memphis Travel Demand Model was used to identify horizon year 2030 truck volumes. The truck volumes included single unit trucks and combination unit trucks. Total truck volumes were grouped into categories and assigned points from ranging from 0-5, with higher values assigned to routes with higher truck volumes.
- D. Substantial Job Creation (5 pts max.)**
1. 5 pts – Stimulus to substantial creation of new jobs (Approved Plans and potential of growth in more rural areas south of railroad.)
 2. 5 pts - The land use component of the Memphis Travel Demand Model was used to identify the relative change in employment in traffic analysis zones adjacent to rail crossings along the study corridor. Points ranging from 0-5 were assigned to crossings based on growth in employment, with higher growth receiving a higher point

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DATA COLLECTION AND RANKING CRITERIA

value. These points were then averaged with those based on approved plans and potential for job growth for a total maximum job creation ranking value of 5.

III. Safety and Security (10 pts / 10%)

A. Geometric Impact (5 pts max.)

1. 5 pts – Crossings with complex horizontal or vertical geometry, such as multiple parallel routes and adjacent intersections, will have a more significant impact on the surroundings during and after construction, if improved. While other roadways at rail crossings, such as those with a hump crossing, may be easier to implement a grade separation. Points ranging from 0-5 were assigned to the crossings based on ease of construction and impact to adjacent roadway facilities.

B. Crash Reduction (5 pts max.)

1. 5 pts – Historic crash data was obtained from the Federal Railroad Administration's (FRA) Accident Report Database. With the exception of Kirby Parkway, the total number of crashes experienced at each crossing over a ten-year period ranged from 0 to 4. Kirby Parkway had significantly more crashes, but safety related improvements were recently completed at that crossing. Points ranging from 0-5 were assigned based on the total number of crashes at each crossing. Kirby Parkway was assigned a nominal value of 2 due to a limited amount of crash data since the improvements were completed.

IV. Public Support (10 pts / 10%)

A. Existing Plans (5 pts max.)

1. 5 pts – In part, public support for improvement along a roadway was gauged by identification of crossings where plans currently exist for improvement. Points ranging from 0-5 were assigned to crossings based on whether a planned roadway improvement exists. The current

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Memphis and Shelby County Long Range Transportation plan was used to identify planned roadway projects. Planned improvements by the Tennessee Department of Transportation, as part of a Federal program to improve safety at rail crossings, were also identified and used in this ranking.

B. Travel Demand Management Strategies (5 pts max.)

1. 5 pts – Travel demand management (TDM) is a set of strategies that result in more efficient use of the existing transportation system and resources. Examples of TDM strategies in the Memphis region are carpooling, vanpooling, alternative work hours, transit service enhancement, incident management, and intelligent transportation systems. Points ranging from 0-5 were assigned to each crossing based on the anticipated impact on TDM strategies from crossing improvement.

V. Environmental Impact (10 pts / 10%)

A. Natural Environment (5 pts max.)

1. 5 pts – Point values ranging from 0-5 were assigned to each study crossing location based on the potential for environmental impact. The greater the potential for environmental impact, the lower the score that was assigned. The location of watersheds and wetlands was obtained from the Army Corps of Engineers. Ecological sites of rare plants, animals and ecological communities along the corridor were identified from the National Heritage Inventory Program database. Superfund sites, hazardous waste generators, toxic chemical release sites, air release sites, and water discharge sites were identified from the Environmental Protection Agency's database.

B. Neighborhood (5 pts max.)

1. 5 pt – Point value assigned based on the number of neighborhoods within a $\frac{1}{4}$ mile of the crossing. The more neighborhoods within the $\frac{1}{4}$ mile area the lower score it

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DATA COLLECTION AND RANKING CRITERIA

received. Included in this ranking were cultural resources such as historic and archeological sites. The locations of these sites were identified from the National Register of Historic Places.

VI. Feasibility (5 pts / 5%)

A. Feasibility (5 pts max.)

1. 5 pt – Point values from 0-5 were assigned based on the constructability or feasibility of providing a grade separated crossing. The more feasible the improvement, the higher the point value assigned for the ranking. Considerations included in this ranking criteria included geometric impact to the surrounding roadway network and the ability to move traffic (rail and roadway) during construction.



Crossing Attributes

Below, each of the 16 crossings is categorized by surrounding land use and vertical geometry attributes. The **Land Use** category is divided into commercial/industrial (CI), residential (R), and hybrid (H) (a combination of land uses). The **Vertical Geometry** category is divided into grade change (Δ) and flat (F). Each crossing is listed in both the Land Use and Vertical Geometry categories.

Land Use:

- 1. *Commercial/Industrial (CI)*
 - a. West Street (1) [number indicates initial Matrix ranking]
 - b. Byhalia (2)
 - c. Highland (3)
 - d. Perkins Ext.(4)
 - e. Mendenhall (5)
 - f. Houston Levee (7)
 - g. White Station (9)
 - h. Estate (16)
- 2. *Residential (R)*
 - a. Goodlett (8)
 - b. Old Poplar Pike (11)
 - c. Hack Cross Road (12)
- 3. *Hybrid (H)*
 - a. Kirby Parkway (6)
 - b. Germantown Road (10)
 - c. Forest Hill Irene (13)
 - d. Massey (14)
 - e. Semmes (15)

Vertical Geometry:

- 1. *Grade Change (Δ)*
 - a. West Street (1)
 - b. Mendenhall (5)
 - c. Kirby Parkway (6)
 - d. Goodlett (8)
 - e. White Station (9)
 - f. Forest Hill Irene (13)



- 2. *Flat (F)*
 - a. Byhalia (2)
 - b. Highland (3)
 - c. Perkins Ext.(4)
 - d. Houston Levee (7)
 - e. Germantown Road (10)
 - f. Old Poplar Pike (11)
 - g. Hacks Cross Road (12)
 - h. Massey (14)
 - i. Semmes (15)
 - j. Estate (16)

Land Use and Vertical Geometry Combinations

- CI/Δ – West Street (1) • Mendenhall (5) • White Station (9)
- CI/F – Byhalia (2) • Highland (3) • Perkins Ext.(4) • Houston Levee (7) • Estate (16)
- R/Δ – Goodlett (8)
- R/F – Old Poplar Pike (11) • Hacks Cross Road (12)
- H/Δ – Kirby Parkway (6) • Forest Hill Irene (13)
- H/F – Germantown Road (10) • Massey (14) • Semmes (15)

Recommended Six Representative Crossings

- West Street (1) CI/Δ
- Byhalia (2) CI/F
- Perkins Ext.(4) CI/F
- Mendenhall (5) CI/Δ
- Kirby Parkway (6) H/Δ
- Houston Levee (7) CI/F