



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION


SUITE 1000, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-0334

John Schroer
COMMISSIONER

Bill Haslam
GOVERNOR

MEMORANDUM

TO: Paul Degges, Chief Engineer

FROM:  Steve Allen, Director
Project Planning Division

DATE: June 7, 2011

SUBJECT: **Road Safety Audit Review (RSAR)**
State Route 374 at Evans Rd. (L.M. 12.93)
Montgomery County, PIN 114287.00

The Road Safety Audit Review for the subject location has been completed and the report is attached.

This project was identified through the TDOT safety needs planning process. The unsignalized intersection of State Route 374 and Evans Road at log mile 12.93 is a four (4) lane median divided urban principle arterial, with lane widths of twelve (12) feet and ten (10) foot shoulders. State Route 374 appears on the **Highway Safety Improvement Program (HSIP)** list and qualifies for **Hazard Elimination Safety Program (HESP)** funds, because the crash ratio (actual crash rate divided by the critical crash rate) was 4.38, which is greater than 3.50 (the minimum threshold).

The total estimated cost for the signalization is \$811,000. No local match is required. This improvement will be let to contract.

If you should need any further information, please contact me at (615) 741-2208 or e-mail me at Steve.Allen@tn.gov.

SLA/cb

Attachment

CC: Joe Carpenter, Jim Moore, Mike Tugwell, Winston Gaffron, Ali Farhangi, Brian Hurst, file

ROAD SAFETY AUDIT REPORT

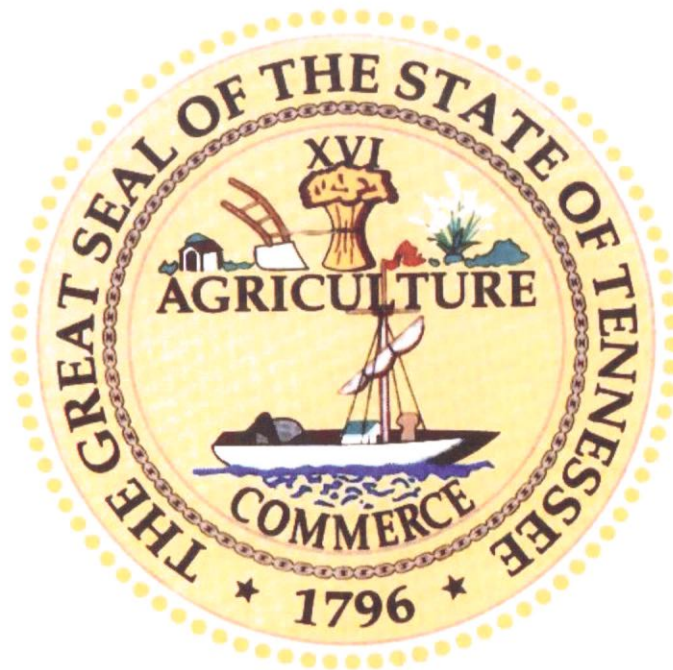
State Route 374 (Purple Heart Parkway)

At Evans Road

L.M. 12.50 to L.M. 13.18

MONTGOMERY COUNTY

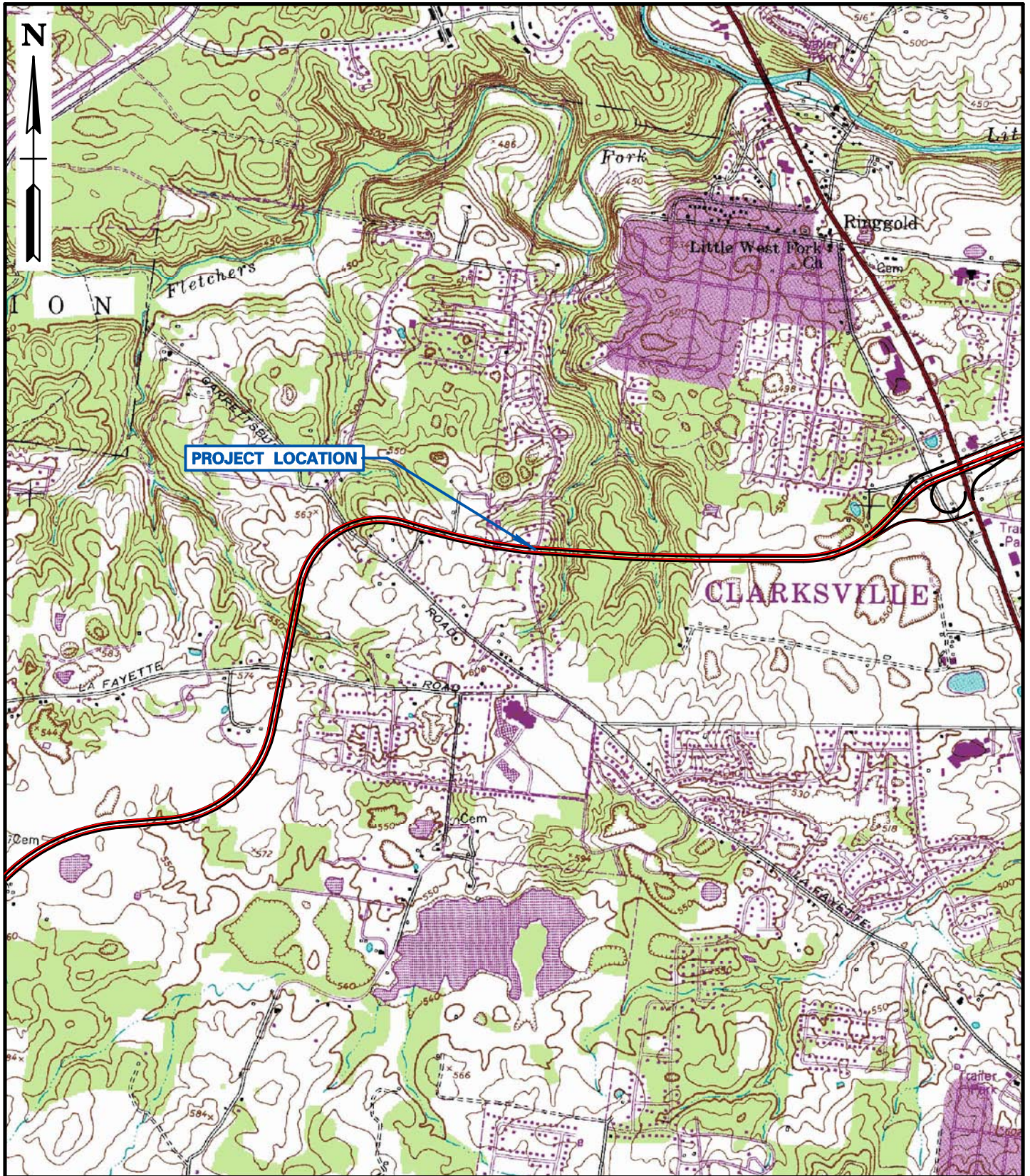
PIN 114287.00



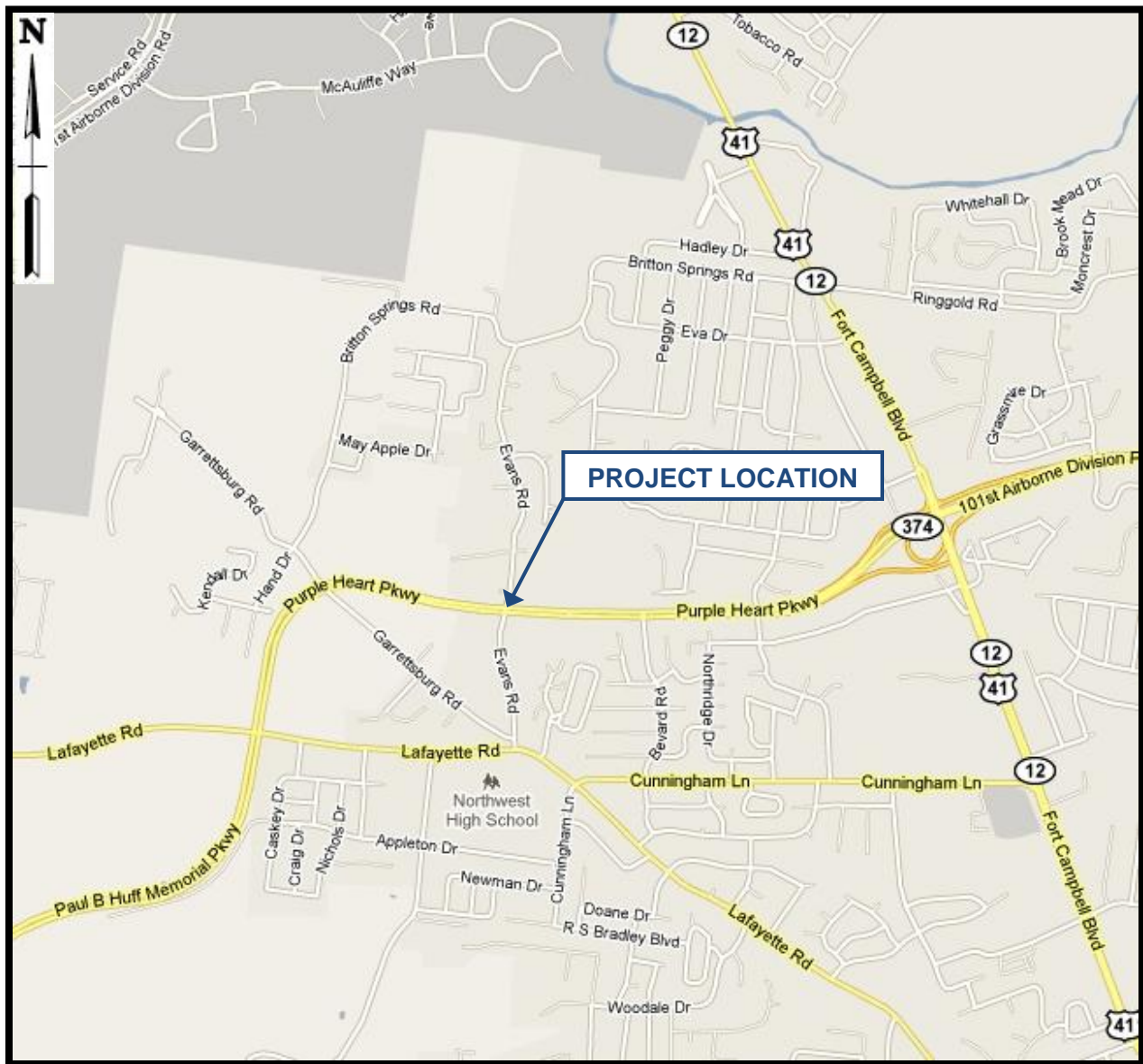
*PREPARED BY
CLINARD ENGINEERING ASSOCIATES, LLC
FOR THE
TENNESSEE DEPARTMENT OF TRANSPORTATION
PROJECT PLANNING DIVISION*

Approved by:	Signature	DATE
DIRECTOR Project Planning Division		6-14-11

This document is covered by 23 USC § 409 and its production pursuant to fulfilling public planning requirements does not waive the provisions of § 409.



	VICINITY MAP		DRAWN BY: CMB	CHECKED BY: TMC
			PIN 114287.00	
	SCALE: 1"= 2000'		DATE: 07-15-10	



	LOCATION MAP		DRAWN BY: CMB	CHECKED BY: TMC
			PIN 114287.00	
			SCALE: N.T.S	DATE: 10-11-10



MAP SCALE 1" = 500'



CITY OF CLARKSVILLE

470137

PROJECT LOCATION

374

HAW DRIVE

CITY OF
CLARKSVILLE

SETTER ROAD

BEVARD ROAD

LANCASTER ROAD

BRECKINRIDGE ROAD

MANORSTONE LANE

GARRETTSBURG
ROAD

ZONE X

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL D208D

FIRM

FLOOD INSURANCE RATE MAP

MONTGOMERY COUNTY
TENNESSEE
AND INCORPORATED AREAS

PANEL 208 OF 491

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLARKSVILLE, CITY OF	470137	3208	D
MONTGOMERY COUNTY	470136	3206	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER

47125C0208D

EFFECTIVE DATE

MARCH 18, 2008

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Road Safety Audit Review

Date: May 21, 2010

Project Description and Background

This project was identified through the TDOT safety needs planning process. The intersection of State Route 374 and Evans Road at log mile 12.93 is a four (4) lane median divided urban principle arterial, with lane widths of twelve (12) feet and ten (10) foot shoulders. State Route 374 appears on the **Highway Safety Improvement Program (HSIP)** list and qualifies for **Hazard Elimination Safety Program (HESP)** funds, because the crash ratio (actual crash rate divided by the critical crash rate) was 4.38, which is greater than 3.50 (the minimum threshold).

Traffic data from 2009 shows the Average Annual Daily Traffic (AADT) on State Route 374 to be 13,890 vehicles per day. Crash data was taken for the years 2006 through 2008. A total of thirty-three (33) crashes occurred at the intersection during that period; with twelve (12) non-incapacitating injury crashes, ten (10) incapacitating injury crashes, and zero (0) crashes involving fatalities. A pedestrian was involved in one (1) crash.

RSAR Team Members:

Name	Organization	Title	Phone #	Email
Glenda Tyus	TDOT Project Planning Division	Transportation Planner 4	615-741-1816	Glenda.Tyus@tn.gov
Paul Lane	TDOT NEPA and Conceptual Planning	Transportation Manager 1	615-253-2432	Paul.Lane@tn.gov
Terrance Hill	Center for Trans. Research	Special Projects Coordinator	615-532-5824	Terrance.Hill@tn.gov
Tracy Pernell	TDOT Safety Division	Transportation Planner 3	615-741-0969	Tracy.Pernell@tn.gov
Will Oliver	TDOT Maintenance Division	Highway Maintenance Superintendent 2	931-648-5570	Will.Oliver@tn.gov
Terry Arnold	TDOT Traffic Division	Roadway Specialist Supervisor 1	615-350-4274	Terry.Arnold@tn.gov
Stanley Sumner	TDOT Traffic Division	Operations Specialist 2	615-350-4046	Stanley.Sumner@tn.gov
Stan Williams	Clarksville MPO	MPO Coordinator	931-645-7448	Stan.Williams@cityofclarksville.com
Chris Cowan	Clarksville Street Department	Traffic Engineer	931-645-7467	Chris.Cowan@cityofclarksville.com
Brian Gaffney	Clinard Engineering Associates	Project Engineer	615-370-6079	bgaffney@clinardengineering.com
Chris Berry	Clinard Engineering Associates	Project Engineer	615-370-6079	cberry@clinardengineering.com

Information Used in Review

- County Highway Map
- Aerial Photographs
- TRIMS Route Feature and Geometric Reports
- TRIMS Traffic Reports
- 8-Hour Turning Movement Counts provided by the City of Clarksville
- Crash Rate Summary
- Crash Reports and Diagrams
- NCHRP Report 524 – Safety of U-Turns at Unsignalized Median Openings
- NCHRP Report 650 – Median Intersection Design for Rural High-Speed Divided Highways
- Alternative Intersection/Interchanges: Informational Report (AIIR) – FHWA April 2010
- Flood Plain Map
- On-Site Visit at 1:00 PM CST on 5/21/2010

Pre-Brief Summary

A pre-brief meeting was held on May 17, 2010 at 9:00 a.m. at TDOT Headquarters in Nashville.

Observations

An on-site field review was held at 1:00 PM CST on May 21, 2010. The following discussions/observations are provided concerning the location:

- Pavement and pavement markings along SR-374 are in good condition.
- 94% of crashes were angle collisions, with 67% of crashes resulting in an injury. Most of the crashes were from through traffic along Evans Rd.
- There is a large residential area to the north of the intersection and a new residential development immediately adjacent to the intersection to the east along Ash Ridge Rd. There were multiple new residences under construction at the time of the field review.
- Northwest High School is located at the termini of Evans Rd. to the south, a distance approximately 0.5 miles.
- Minglewood Elementary and Providence Middle School are located on Cunningham Lane to the southwest of the intersection approximately 1.5 miles from the project intersection.
- There is an existing signal to the west along SR-374 at Lafayette Rd. and a proposed traffic signal to be installed to the east along SR-374 at Jordan Rd.
- Two (2) pedestrians and one (1) bicyclist crossed the intersection during the field review. One (1) pedestrian involved crash was provided within the crash reports.
- SR-374 is a proposed state bike route.
- Advanced intersection warning signs are present on SR-374 before the intersection with Evans Rd.
- No objects appear to be limiting sight distance at the intersection.
- The posted speed along SR-374 is fifty-five (55) miles per hour.
- SR-374 is a controlled-access, median divided facility with sporadic at-grade intersections.
- An analysis of traffic signal warrants was conducted after the field review and did meet the warrants.
- The counts provided by the City of Clarksville from 2/11/2010 included three (3) pedestrian crossings. The RSAR team agreed that the existing conditions at the intersection and the pedestrian counts do not provide sufficient evidence that an active pedestrian crossing is necessary at this time.

- Two (2) crashes involving fatalities occurred at the intersection that were not included in the crash data set from 2006 through 2008. The crashes occurred in December 2009 and April 2010. Both fatal crashes involved crossing traffic along Evans Road.

Guidance

- **Figure 1 (L.M. 12.93)**

1. Install traffic signal with four (4) steel strain poles, span wires, and six (6) posts with pedestrian signals and push buttons.
2. Relocate two (2) existing overhead utility poles.
3. Construct offset left turn lanes along SR-374. (See Figure 1A for details)
4. Construct right turn bays along Evans Road. (See Figure 1A for details)
5. Install plastic pavement markings for left turn channelization, longitudinal crosswalks, stop bars, and arrows.
6. Install two (2) Keep Right (R4-7) (36"x48") signs in median along SR-374.
7. Install two (2) Do Not Enter (R5-1) (36"x36") signs along SR-374.
8. Install four (4) Wrong Way (R5-1A) (36"x24") signs along SR-374.
9. Install two (2) Signal Ahead (W3-3) (48"x48") signs with supplemental 'EVANS RD' plaques.
10. Cold plane and overlay asphalt pavement from L.M. 12.79 to L.M. 13.07.
11. Stripe pavement markings as shown with 4" sprayable thermoplastic pavement markings.

SIGN SIZES ALONG SR-374 SHALL MEET 2009 MUTCD STANDARDS FOR EXPRESSWAYS.

SEE FIGURE 1A FOR DIMENSIONS AND PLACEMENT DETAILS.

- **Figure 1A (L.M. 12.93)**

1. Dimension and Placement Details

The total estimated cost for the signalization is \$811,000. No local match is required. This improvement will be let to contract.

Project Photographs

RSAR

S.R. 374 at Evans Road

Montgomery County

Date Photos Taken: 5/21/2010



Photograph 1

View looking south-bound along Evans Rd. approach to SR-374



Photograph 2

View looking north-bound along Evans Rd. approach to SR-374

Project Photographs

RSAR

S.R. 374 at Evans Road

Montgomery County

Date Photos Taken: 5/21/2010



Photograph 3

View looking east along SR-374 from median crossover location at Evans Rd. Pedestrian crossed to median from Evans Rd. and proceeded east along SR-374.



Photograph 4

View looking west along SR-374 from median crossover location at Evans Rd.

Project Photographs

RSAR

S.R. 374 at Evans Road

Montgomery County

Date Photos Taken: 5/21/2010



Photograph 5

View of traffic signal at SR-374 and Lafayette Rd. Crosswalks and pedestrian signals are present at this location along SR-374.



Photograph 6

View of sidewalk terminating at southern end of Evans Rd. across from Northwest High School. This location is approximately 2000' feet from Evans Rd. at SR-374.

Route: State Route 374

Description: At Evans Road
L.M. 12.93

County: Montgomery County

Length: 0.00 Miles

Date: May 2, 2011

<u>Description</u>	<u>Local</u>	<u>State</u>	<u>Federal</u>	<u>Total</u>
Right-of-Way	\$ -	\$ -	\$ -	\$ -
Utilities	\$ -	\$ 700	\$ 6,300	\$ 7,000
Clearing and Grubbing	\$ -	\$ -	\$ -	\$ -
Earthwork	\$ -	\$ 1,000	\$ 9,000	\$ 10,000
Pavement Removal	\$ -	\$ 3,800	\$ 34,200	\$ 38,000
Drainage	\$ -	\$ 1,100	\$ 9,900	\$ 11,000
Structures	\$ -	\$ -	\$ -	\$ -
Railroad Crossing or Separation	\$ -	\$ -	\$ -	\$ -
Paving	\$ -	\$ 22,000	\$ 198,000	\$ 220,000
Roadway and Pavement	\$ -	\$ 600	\$ 5,400	\$ 6,000
Retaining Walls	\$ -	\$ -	\$ -	\$ -
Topsoil	\$ -	\$ 300	\$ 2,700	\$ 3,000
Seeding and Sodding	\$ -	\$ 100	\$ 900	\$ 1,000
Fencing	\$ -	\$ -	\$ -	\$ -
Signing ¹			\$ 5,000	\$ 5,000
Pavement Markings ¹			\$ 28,000	\$ 28,000
Lighting ¹			\$ -	\$ -
Signalization ¹			\$ 175,000	\$ 175,000
Guardrail ¹			\$ 26,000	\$ 26,000
Rip-Rap or Slope Protection			\$ -	\$ -
Other Construction Items (15%)		\$ 5,000	\$ 76,000	\$ 81,000
Maintenance of Traffic		\$ 2,500	\$ 22,500	\$ 25,000
Mobilization (5%)		\$ 2,000	\$ 30,000	\$ 32,000
CONSTRUCTION COST		\$ 40,000	\$ 629,000	\$ 669,000
Engineering and Contingency (10%)		\$ 4,000	\$ 63,000	\$ 67,000
TOTAL CONSTRUCTION COST		\$ 44,000	\$ 692,000	\$ 736,000
Preliminary Engineering (10%)		\$ 5,000	\$ 70,000	\$ 75,000
PROJECT COST ²	\$ -	\$ 49,000	\$ 762,000	\$ 811,000

¹ This safety item is 100% eligible and does not require a 10% funding match by the local agency.

² For estimating future project costs, a compounded inflation rate of 10% should be applied from the date of this estimate.

**RSAR – STATE ROUTE 374
at Evans Road
L.M. 12.93
PIN 114287.00**

Crash Data Statistics

Condition	Frequency	Percentage of Total
Daylight	28	85%
Dark-Lighted	2	6%
Dusk / Dawn	3	9%
Dry Road	32	97%
Wet Road	1	3%
Property Damage	11	33%
Non-Incap. Injury	10	30%
Incapacitating Injury	12	37%
Fatality	0	0%
Tree/Embankment/Fixed Object	0	0%
Rear-End	1	3%
Angle	31	94%
Sideswipe	0	0%
Head-On	0	0%
Animal	1	3%
Pedestrians/Cyclist Involved	1	3%

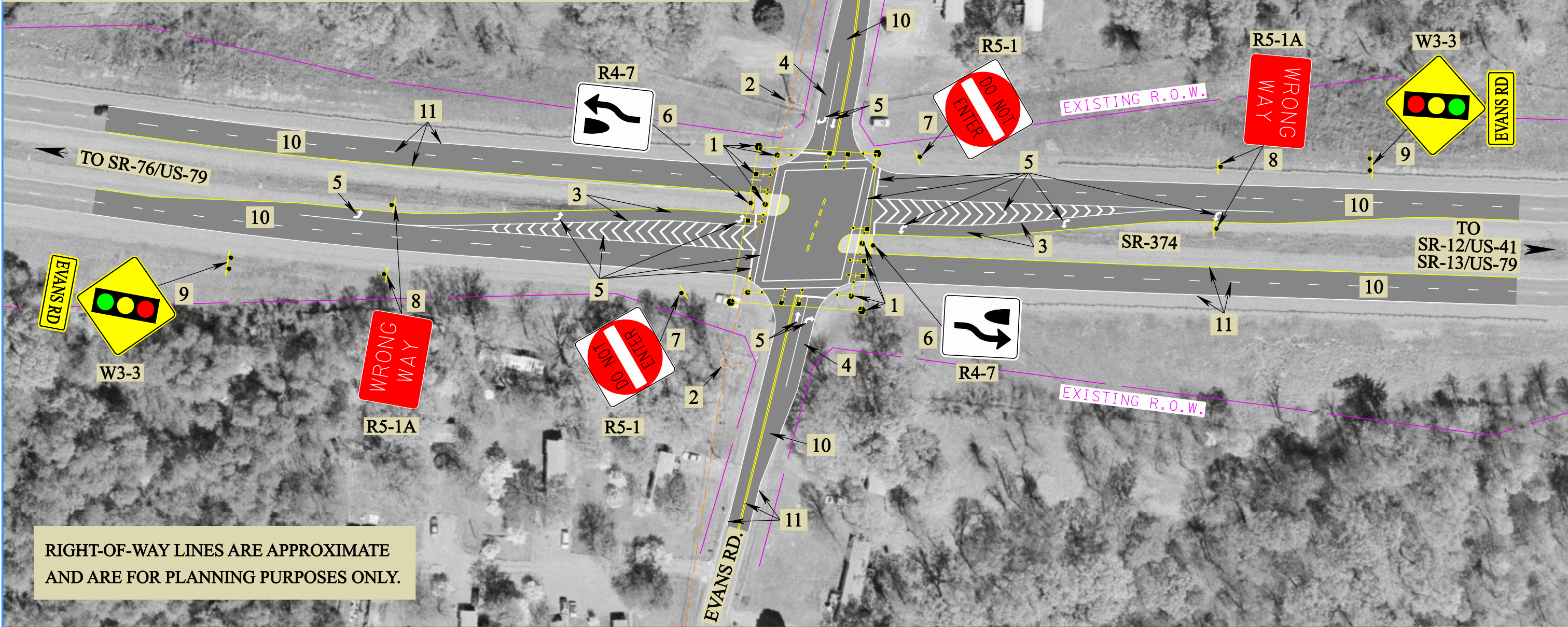
2006-2008 Crash Data

2009 AADT – 13,890 Vehicles / Day on SR-374 (Purple Heart Pkwy)

GUIDANCE

1. Install traffic signal with four (4) steel strain poles, span wires, and six (6) posts with pedestrian signals and push buttons.
2. Relocate two (2) existing overhead utility poles.
3. Construct offset left turn lanes along SR-374. (See Figure 1A for details)
4. Construct right turn bays along Evans Road. (See Figure 1A for details)
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11. Stripe pavement markings as shown with 4" sprayable thermoplastic pavement markings.

SIGN SIZES ALONG SR-374 SHALL MEET 2009 MUTCD STANDARDS FOR EXPRESSWAYS.
SEE FIGURE 1A FOR DIMENSIONS AND PLACEMENT DETAILS.



RIGHT-OF-WAY LINES ARE APPROXIMATE
AND ARE FOR PLANNING PURPOSES ONLY.



ROAD SAFETY AUDIT REVIEW
STATE ROUTE 374 AT EVANS RD.
LOG MILE 12.93
MONTGOMERY COUNTY



DIMENSION AND PLACEMENT DETAILS ARE APPROXIMATE
AND ARE FOR PLANNING PURPOSES ONLY.



ROAD SAFETY AUDIT REVIEW

STATE ROUTE 374 AT EVANS ST.
LOG MILE 12.93
MONTGOMERY COUNTY

APPENDIX

CLEARING AND GRUBBING

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
201-01	Clearing and Grubbing	LS	1	\$ -	\$ -

Clearing and Grubbing Subtotal = \$ -

EARTHWORK

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
203-01	Road and Drainage Excavation	C.Y.	1,889	\$ 5	\$ 10,000

Earthwork Subtotal = \$ 10,000

PAVEMENT REMOVAL

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
202-03	Removal of Rigid Pvmnt, Sidewalk, etc.	S.Y.	0	\$ 20	\$ -
202-03.01	Removal of Asphalt Pavement	S.Y.	0	\$ 4	\$ -
411-10.01	4" Wide Recessed Pvmnt Mrking Groove	L.M.	14	\$ 700	\$ 10,000
411-10.02	6" Wide Recessed Pvmnt Mrking Groove	L.M.	0	\$ 800	\$ -
411-10.02	Scoring Pavement 12" Wide	L.M.	0	\$ 900	\$ -
415-01.02	Cold Planing Bituminous Pavement	S.Y.	13,667	\$ 2	\$ 28,000
604-10.51	Scarifying	S.Y.	0	\$ 20	\$ -

Pavement Removal Subtotal = \$ 38,000

DRAINAGE

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
607-03.02	18" Concrete Pipe Culvert	L.F.	100	\$ 40	\$ 4,000
607-05.02	24" Concrete Pipe Culvert	L.F.	0	\$ 50	\$ -
607-07.02	36" Concrete Pipe Culvert	L.F.	0	\$ 90	\$ -
607-39.02	18" Pipe Culvert (Sidedrain)	L.F.	0	\$ 30	\$ -
607-39.03	24" Pipe Culvert (Sidedrain)	L.F.	0	\$ 35	\$ -
611-07.01	Class A Concrete (Pipe Endwalls)	C.Y.	4	\$ 600	\$ 3,000
611-07.02	Steel Bar Reinforcement (Pipe Endwalls)	LB.	444	\$ 2	\$ 1,000
611-07.03	Structural Stee (Pipe Endwalls)	LB.	554	\$ 4	\$ 3,000
611-12.01	Catch Basins, Type 12, 0'-4' Depth	EACH	0	\$ 2,000	\$ -
611-12.02	Catch Basins, Type 12, 4'-8' Depth	EACH	0	\$ 2,500	\$ -
611-03.04	Gray Iron Castings (Catchbasin)	LB.	0	\$ 1	\$ -

Drainage Subtotal = \$ 11,000

UTILITIES

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
N/A	Utilities (Gas, Water, Sewer, Electric, etc)	LS	1	\$ 7,000	\$ 7,000
775-30.75	Relocate Existing Fire Hydrant	EACH	0	\$ 3,000	\$ -

Utilities Subtotal = \$ 7,000.00

STRUCTURES

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
N/A	Estimated Bridge Cost	S.F.	0	\$ 150	\$ -

Structures Subtotal = \$ -

RAILROAD CROSSING OR SEPARATION

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
720-03-01	Railroad Crossing Signal System	LS			\$ -

Railroad Crossing or Separation Subtotal = \$ -

PAVING

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
303-01	Mineral Aggregate, Ty A Base, Grading D	TON	1,704	\$ 15	\$ 26,000
307-01.01	Asp. Conc Mix (PG64-22) Gr A	TON	1,303	\$ 60	\$ 79,000
307-03.08	Asphalt Conc Mix (PG76-22) Gr B-M2	TON	427	\$ 65	\$ 28,000
411-01.10	ACS Mix (PG64-22) Grading D	TON	1,087	\$ 80	\$ 87,000

Paving Subtotal = \$ 220,000

ROADWAY AND PAVEMENT APPURTENANCES

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
701-01.01	Concrete Sidewalk (4")	S.F.	0	\$ 4	\$ -
701-02.03	Concrete Handicap Ramp	S.F.	0	\$ 14	\$ -
701-03	Concrete Median Pavement	C.Y.	22	\$ 250	\$ 6,000
702-03	Concrete Combined Curb & Gutter	C.Y.	0	\$ 250	\$ -

Roadway and Pavement Appurtenances Subtotal = \$ 6,000

RETAINING WALLS

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
604-07	Retaining Wall	S.F.	0	\$ 30	\$ -

Retaining Walls Subtotal = \$ -

MAINTENANCE OF TRAFFIC

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
712-01	Traffic Control	LS	1	\$ 25,000	\$ 25,000

Maintenance of Traffic Subtotal = \$ 25,000

TOPSOIL

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
203-04	Placing and Spreading topsoil	C.Y.	444	\$ 5	\$ 3,000

Topsoil Subtotal = \$ 3,000

SEEDING AND SODDING

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
801-01	Seeding (With Mulch)	Unit	24	\$ 30	\$ 1,000
803-01	Sodding (New Sod)	S.Y.	0	\$ 5	\$ -

Seeding and Sodding Subtotal = \$ 1,000

SIGNING

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
713-11.01	U' Section Steel Posts	LB.	300	\$ 3	\$ 1,000
713-13.02	Flat Sheet Aluminum Signs (0.080" Thick)	S.F.	30	\$ 25	\$ 1,000
713-13.03	Flat Sheet Aluminum Signs (0.100" Thick)	S.F.	56	\$ 30	\$ 2,000
713-15	Removal of Signs, Posts, and Footings	EACH	2	\$ 150	\$ 1,000
713-16.41	Relocate Sign	EACH	0	\$ 250	\$ -

Signing Subtotal = \$ 5,000

PAVEMENT MARKINGS

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
713-02.14	Flexible Delineator (White)	EACH	0	\$ 40	\$ -
713-02.15	Flexible Delineator (Yellow)	EACH	0	\$ 40	\$ -
716-01.11	Raised Pvmnt Markers (Bi Directional) (1 Color)	EACH	0	\$ 25	\$ -
716-01.12	Raised Pvmnt Markers (Mono-Directional) (1 Color)	EACH	0	\$ 20	\$ -
716-01.21	Snwplwble Pvmnt Mrks (Bi-Dir) (1 Color)	EACH	0	\$ 75	\$ -
716-01.22	Snwplwble Pvmnt Mrks (Mono-Dir) (1 Color)	EACH	0	\$ 70	\$ -
716-02.04	Plastic Pavement Marking (Chnz Striping)	S.Y.	300	\$ 20	\$ 6,000
716-02.05	Plastic Pavement Marking (Stop Line)	L.F.	60	\$ 15	\$ 900
716-02.06	Plastic Pavement Mkg (Turn Lane Arrow)	EACH	8	\$ 175	\$ 1,400
716-02.09	Plastic Pvmnt Mkg (Longitudinal X-Walk)	L.F.	420	\$ 30	\$ 12,600
716-03.01	Plastic Word Pvmnt Marking (Only)	EACH	0	\$ 200	\$ -
716-03.03	Plastic Word Pvmnt Marking (Stop Ahead)	EACH	0	\$ 400	\$ -
716-03.09	Plastic Work Pvmnt Marking (No Parking)	EACH	3	\$ 400	\$ 1,200
716-04.01	Plastic Pvmnt Mkg (Straight - Turn Arrow)	EACH	0	\$ 200	\$ -
716-04.02	Plastic Pvmnt Mkg (Double Turn Arrow)	EACH	0	\$ 200	\$ -
716-04.05	Plastic Pavement Mkg (Straight Arrow)	EACH	2	\$ 150	\$ 300
716-04.12	Plastic Pavement Mkg (Yield Line)	EACH	0	\$ 20	\$ -
716-11.01	Spry Thermo Pavement Marking (4" Line)	L.M.	3	\$ 1,700	\$ 5,100
716-11.03	Spry Thermo Pavement Marking (6" Line)	L.M.	0	\$ 2,500	\$ -

Pavement Markings Subtotal = \$ 28,000

LIGHTING

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
714-01.36	Roadway Lighting	LS	1	\$ -	\$ -

Lighting Subtotal = \$ -

SIGNALIZATION

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
730-01	Traffic Signals	LS	1	\$175,000	\$ 175,000

Signalization Subtotal = \$ 175,000

FENCING

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
707-01.01	Chain-Link Fence (4-Foot)	L.F.	0	\$ 11	\$ -
707-03.01	Stock Fence	L.F.	0	\$ 5	\$ -
Fence Subtotal =				\$	-

GUARDRAIL

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
705-01.01	Guardrail at Bridge Ends	L.F.	0	\$ 60	\$ -
705-01.04	Metal Beam Guard Fence	L.F.	0	\$ 60	\$ -
705-02.02	Single Guardrail (Type 2)	L.F.	0	\$ 20	\$ -
705-03.02	Median Divider Guardrail (Type 2)	L.F.	0	\$ 30	\$ -
705-04.02	Guardrail Terminal (Type 12)	EACH	0	\$ 1,000	\$ -
705-04.03	Guardrail Terminal (Type 13)	EACH	0	\$ 1,000	\$ -
705-04.04	Guardrail Terminal (Type 21)	EACH	0	\$ 2,000	\$ -
705-04.05	Guardrail Terminal (Type-In-Line)	EACH	0	\$ 1,000	\$ -
705-04.07	Tan Energy Absg Term (NCHRP 350, TL3)	EACH	0	\$ 2,000	\$ -
705-04.09	Earth Pad For Type 38 GR End Treatment	EACH	0	\$ 500	\$ -
705-04.26	Concrete Barrier Delineator	EACH	56	\$ 20	\$ 1,200
713-02.34	Delineators (All) - [Guardrail Delineation System]	L.F.	3,085	\$ 8	\$ 24,700
Guardrail Subtotal =				\$	26,000

RIP-RAP OR SLOPE PROTECTION

ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
709-05.06	Machined Rip-Rap (Class A-1)	TON	0	\$ 30	\$ -
709-05.08	Machined Rip-Rap (Class B)	TON	0	\$ 30	\$ -
709-05.09	Machined Rip-Rap (Class C)	TON	0	\$ 30	\$ -
Rip-Rap or Slope Protection Subtotal =				\$	-

713-16.20 — SIGN PLACEMENT ITEMIZATION					
MUTCD NO.	MUTCD DESCRIPTION	SIZE	QUANTITY	SIGN AREA (ft. ²)	TOTAL AREA (ft. ²)
R4-7	Keep Right	36" x 48"	2	12.00	24.00
R5-1	Do Not Enter	36" x 36"	2	9.00	18.00
R5-1A	Wrong Way	36" x 24"	2	6.00	12.00
W3-3	Traffic Signal Ahead	48" x 48"	2	16.00	32.00
Total Sign Area (ft. ²) =				44.00	

COUNTY	=	MONTGOMERY	Date:	8/30/2010
Route	=	SR 374		
Location	=	at Evans Rd. L.M. 12.93		
Highway Type	=	4 Lane Urban		
FUNCTIONAL CLASS	=	U OTH PRIN		
DATA YEARS	=	2006-2008		
ADT YEARS USED	=	ADAM (Mainline) and Tube Counts (Sideroad)		
COMMENTS	=			
ANALYZED BY	=	CMB		

SECTION = MORE THAN 0.10 MILE / SPOT = LESS THAN 0.10 MILE

BLM	ELM	Length	Average AADT	VMT
0.00	0.00	0.00	0	0
0.00	0.00	0.00	0	0
0.00	0.00	0.00	0	0
0.00	0.00	0.00	0	0
0.00	0.00	0.00	0	0
0.00	0.00	0.00	0	0
0.00	0.00	0.00	0	0

0.00 0 0

INTERSECTION

Log Mile = 0

Leg Traffic AADT

North = 1,360

East = 11,880

South = 3,350

West = 12,290

Entering AADT = 14,440

Adam (Mainline) And Tube Counts (Sideroad)

4 Lane Urban
2006-2008

		Total	Fatal	Incap. Injury	*Severe Crashes	Other Injury
No. of Crashes	=	33	0	10	10	12
No. of Years	=	3				
SW avg. rate	=	0.190	0.001	0.005	0.006	0.047

03-05 S/W Rates

Exposure (E)	=	15.8118				
Crash Rate (A)	=	2.087	0.000	0.632	0.632	0.759
Critical Rate (C)	=	0.477				
Severity Index (SI)	=	0.9697				
Actual Rate/SW Average	=	10.98	0.00	126.49	105.41	16.15
Ratio of A/C	=	4.38				

* Severe Crashes are the sum of fatal and incapacitating injury crashes

Revised 4/3/2007



City of Clarksville
Street Department

199 10th Street
Clarksville, TN 37040
Tennessee's Top Spot

File Name : Evans PHP 2-11-10
Site Code : 00000000
Start Date : 2/11/2010
Page No : 1

Peak Hour
Turning Movement Count
Evans Road and SR 374 (Purple Heart Parkway)
02-11-2010

Groups Printed- Unshifted

Start Time	From North				From East				From South				From West			
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	1	2	4	0	7	2	57	42	0	101	33	3	0	0	36	251
07:15 AM	2	8	2	0	12	2	64	28	0	94	37	6	0	0	43	263
07:30 AM	0	6	3	0	9	2	65	11	0	78	25	5	0	0	30	264
07:45 AM	1	2	7	0	10	3	54	23	0	80	22	3	0	0	25	237
Total	4	18	16	0	38	9	240	104	0	353	117	17	0	0	134	1015
08:00 AM	3	3	5	0	11	5	56	8	0	69	13	0	0	0	13	204
08:15 AM	0	2	5	0	7	1	82	9	0	92	11	1	0	0	12	218
08:30 AM	2	1	2	0	5	4	102	6	0	112	28	3	0	0	31	241
08:45 AM	1	2	4	0	7	2	83	11	0	96	18	2	0	0	20	206
Total	6	8	16	0	30	12	323	34	0	369	70	6	0	0	76	869
*** BREAK ***																
11:00 AM	1	5	0	1	7	2	61	12	0	75	15	11	0	0	26	194
11:15 AM	0	1	7	0	8	3	64	10	0	77	10	2	0	0	12	197
11:30 AM	2	0	9	0	11	5	42	13	0	60	12	1	0	0	13	214
11:45 AM	0	5	3	0	8	3	74	14	0	91	16	4	0	0	20	246
Total	3	11	19	1	34	13	241	49	0	303	53	18	0	0	71	851
12:00 PM	0	4	1	0	5	5	77	14	0	96	22	7	0	0	29	210
12:15 PM	0	7	2	0	9	4	73	10	0	87	20	4	0	0	24	200
12:30 PM	2	2	4	0	8	3	97	13	0	113	11	3	1	0	15	226
12:45 PM	1	3	3	0	7	1	109	7	0	117	23	4	0	0	28	222
Total	3	16	10	0	29	13	356	44	0	413	76	18	2	0	96	858
*** BREAK ***																
02:00 PM	2	5	5	0	12	2	68	26	0	96	14	3	0	0	17	200
02:15 PM	0	6	4	0	10	7	82	27	0	116	14	8	0	0	22	232
02:30 PM	0	6	6	1	13	6	86	11	0	103	35	8	2	0	45	248
02:45 PM	3	2	4	0	9	3	98	14	0	115	23	13	0	0	36	243
Total	5	19	19	1	44	18	334	78	0	430	86	32	2	0	120	923
03:00 PM	1	5	3	0	9	10	77	37	0	124	22	6	0	0	28	234
03:15 PM	0	9	7	0	16	7	114	24	0	145	22	2	0	0	24	284
03:30 PM	2	2	4	0	8	6	104	32	0	142	15	2	0	0	17	276
03:45 PM	3	11	7	0	21	1	116	37	0	154	20	8	0	0	28	324
Total	6	27	21	0	54	24	411	130	0	565	79	18	0	0	97	1118

City of Clarksville
Street Department

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Tennessee's Top Spot

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Peak Hour
Turning Movement Count
Evans Road and SR 374 (Purple Heart Parkway)
02-11-2010

Groups Printed- Unshifted

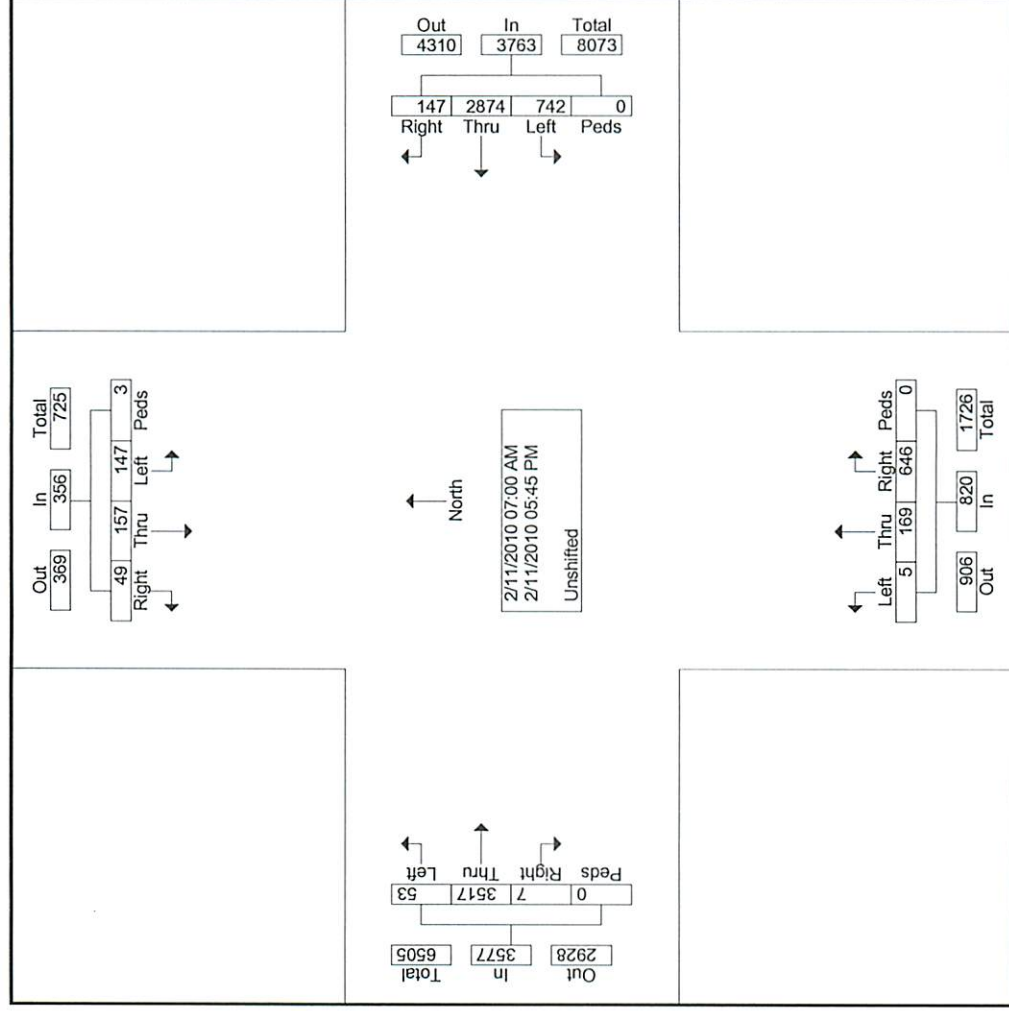
		From North					From East					From South					From West					
		Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Start Time	04:00 PM	5	4	7	0	16	4	116	54	0	174	16	3	0	0	19	0	108	1	0	109	318
	04:15 PM	3	12	8	1	24	10	134	40	0	184	17	4	0	0	21	0	159	2	0	161	390
	04:30 PM	3	6	1	0	10	13	99	28	0	140	25	13	0	0	38	0	148	6	0	154	342
	04:45 PM	2	8	6	0	16	9	131	38	0	178	15	5	0	0	20	0	151	7	0	158	372
Total		13	30	22	1	66	36	480	160	0	676	73	25	0	0	98	0	566	16	0	582	1422
	05:00 PM	0	10	5	0	15	5	118	31	0	154	22	10	0	0	32	2	142	1	0	145	346
	05:15 PM	0	6	3	0	9	8	140	46	0	194	25	10	0	0	35	0	172	2	0	174	412
	05:30 PM	3	5	4	0	12	6	129	27	0	162	27	6	0	0	33	1	181	1	0	183	390
	05:45 PM	6	7	12	0	25	3	102	39	0	144	18	9	1	0	28	0	114	1	0	115	312
Total		9	28	24	0	61	22	489	143	0	654	92	35	1	0	128	3	609	5	0	617	1460
Grand Total		49	157	147	3	356	147	2874	742	0	3763	646	169	5	0	820	7	3517	53	0	3577	8516
Approch %		13.8	44.1	41.3	0.8		3.9	76.4	19.7	0		78.8	20.6	0.6	0		0.2	98.3	1.5	0		
Total %		0.6	1.8	1.7	0	4.2	1.7	33.7	8.7	0	44.2	7.6	2	0.1	0	9.6	0.1	41.3	0.6	0	42	

City of Clarksville
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Peak Hour
 Turning Movement Count
 Evans Road and SR 374 (Purple Heart Parkway)
 02-11-2010



City of Clarksville
Street Department

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File Name : Evans PHP 2-11-10
Site Code : 00000000
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Peak Hour
Turning Movement Count
Evans Road and SR 374 (Purple Heart Parkway)
02-11-2010

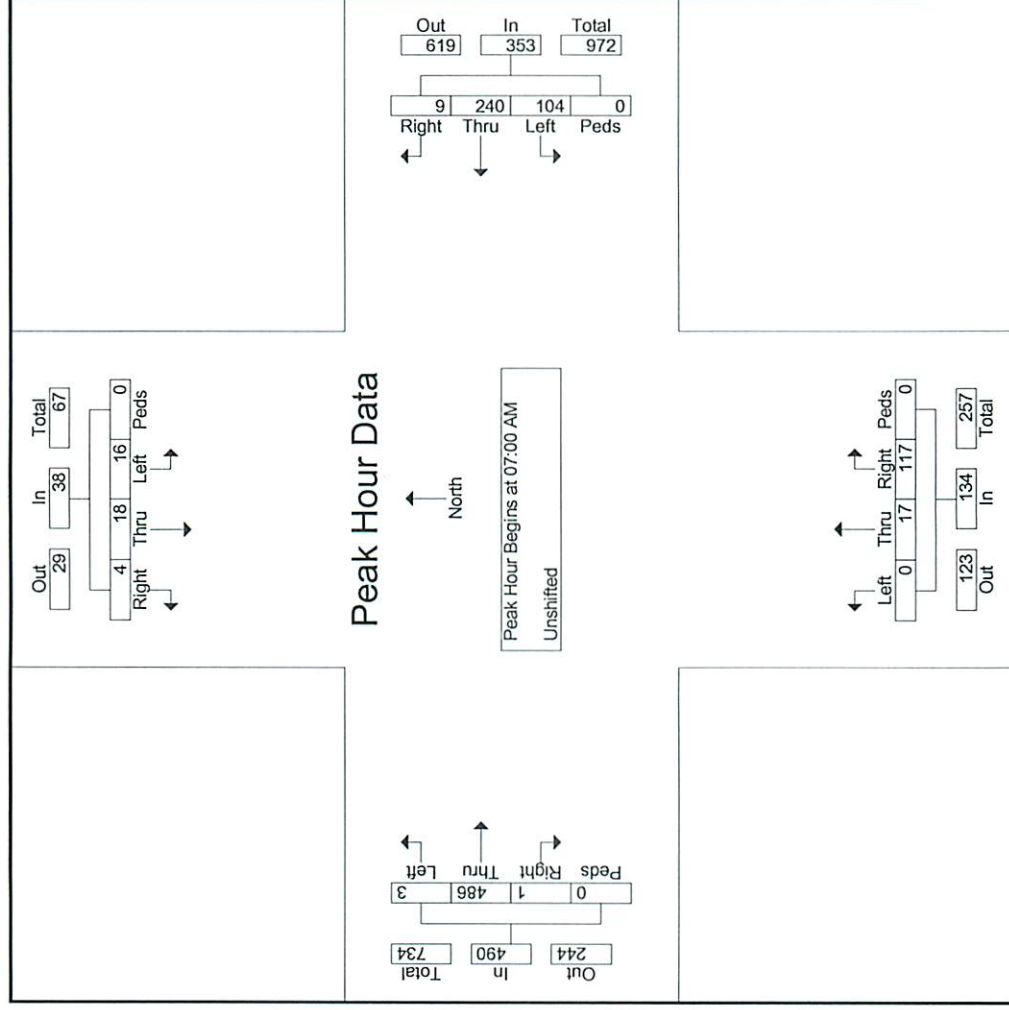
Start Time	From North				From East				From South				From West			
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 07:00 AM																
07:00 AM	1	2	4	0	7	2	57	42	0	101	33	3	0	0	36	251
07:15 AM	2	8	2	0	12	2	64	28	0	94	37	6	0	0	43	263
07:30 AM	0	6	3	0	9	2	65	11	0	78	25	5	0	0	30	264
07:45 AM	1	2	7	0	10	3	54	23	0	80	22	3	0	0	25	237
Total Volume	4	18	16	0	38	9	240	104	0	353	117	17	0	0	134	1015
% App. Total	10.5	47.4	42.1	0		2.5	68	29.5	0		87.3	12.7	0	0		
PHF	.500	.563	.571	.000	.792	.750	.923	.619	.000	.874	.791	.708	.000	.000	.779	.961
											.250	.832	.375	.000	.833	

City of Clarksville
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Peak Hour
 Turning Movement Count
 Evans Road and SR 374 (Purple Heart Parkway)
 02-11-2010



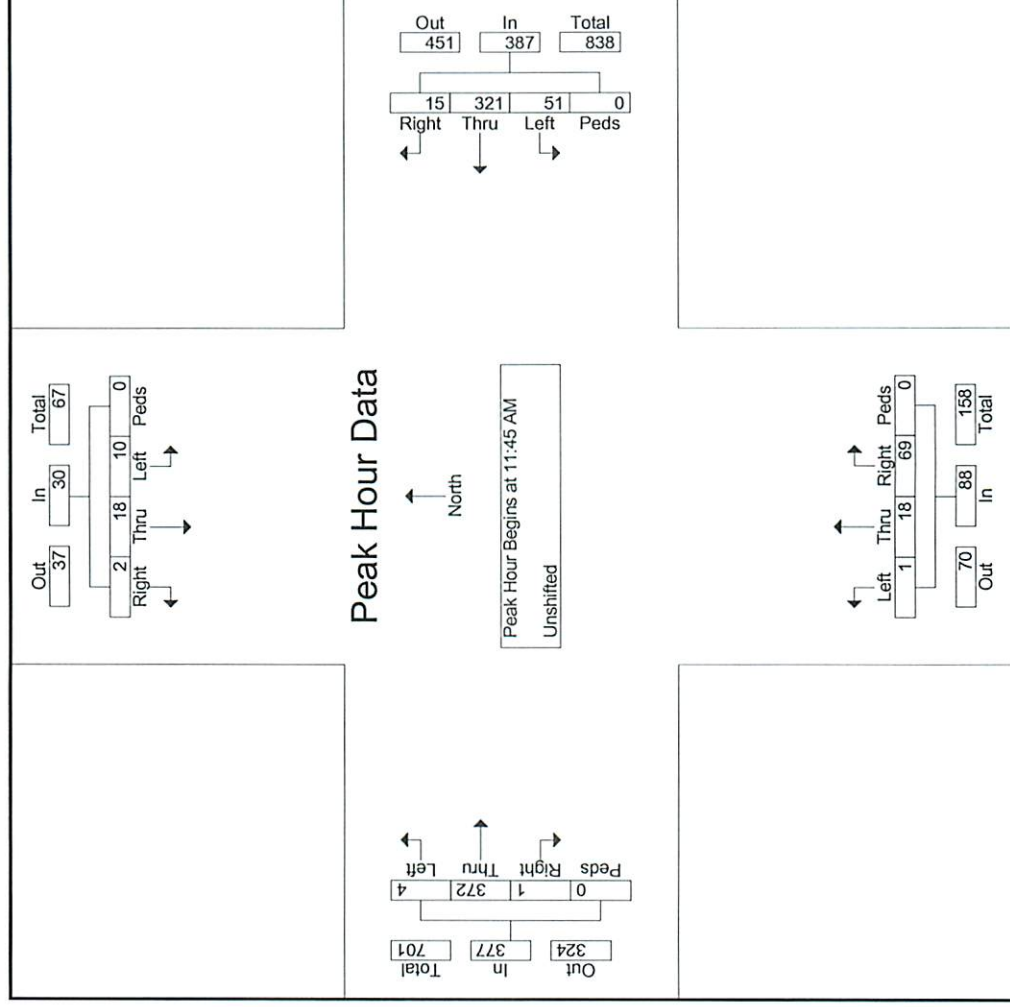
City of Clarksville
Street Department

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Clarksville, TN 37040
Tennessee's Top Spot

File Name : Evans PHP 2-11-10
Site Code : 00000000
Start Date : 2/11/2010
Page No : 6

Peak Hour
Turning Movement Count
Evans Road and SR 374 (Purple Heart Parkway)
02-11-2010

	From North					From East					From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	0	5	3	0	8	3	74	14	0	91	16	4	0	0	20	0	126	1	0	127	246
12:00 PM	0	4	1	0	5	5	77	14	0	96	22	7	0	0	29	1	78	1	0	80	210
12:15 PM	0	7	2	0	9	4	73	10	0	87	20	4	0	0	24	0	78	2	0	80	200
12:30 PM	2	2	4	0	8	3	97	13	0	113	11	3	1	0	15	0	90	0	0	90	226
Total Volume	2	18	10	0	30	15	321	51	0	387	69	18	1	0	88	1	372	4	0	377	882
% App. Total	6.7	60	33.3	0		3.9	82.9	13.2	0		78.4	20.5	1.1	0		0.3	98.7	1.1	0		
PHF	.250	.643	.625	.000	.833	.750	.827	.911	.000	.856	.784	.643	.250	.000	.759	.250	.738	.500	.000	.742	.896



City of Clarksville
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Peak Hour
 Turning Movement Count
 Evans Road and SR 374 (Purple Heart Parkway)
 02-11-2010

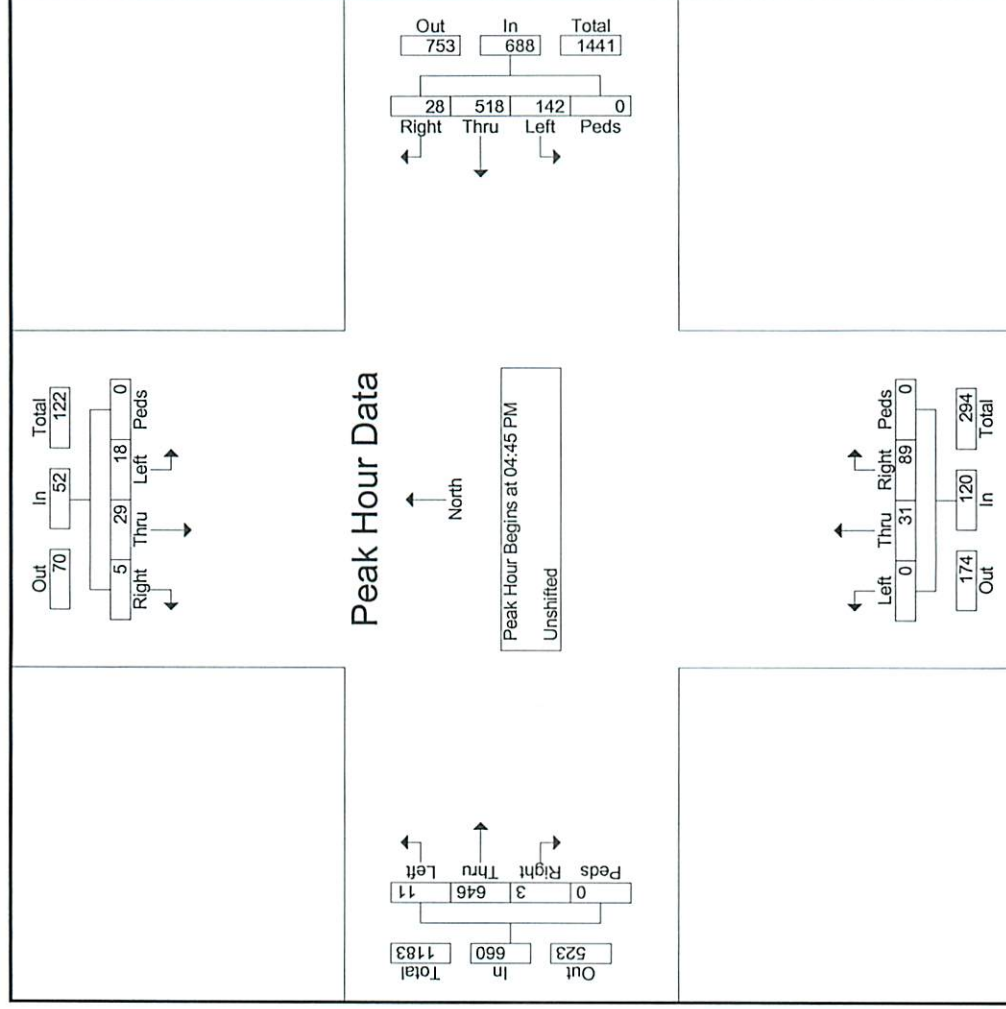
	From North					From East					From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	2	8	6	0	16	9	131	38	0	178	15	5	0	0	20	0	151	7	0	158	372
05:00 PM	0	10	5	0	15	5	118	31	0	154	22	10	0	0	32	2	142	1	0	145	346
05:15 PM	0	6	3	0	9	8	140	46	0	194	25	10	0	0	35	0	172	2	0	174	412
05:30 PM	3	5	4	0	12	6	129	27	0	162	27	6	0	0	33	1	181	1	0	183	390
Total Volume	5	29	18	0	52	28	518	142	0	688	89	31	0	0	120	3	646	11	0	660	1520
% App. Total	9.6	55.8	34.6	0		4.1	75.3	20.6	0		74.2	25.8	0	0		0.5	97.9	1.7	0		
PHF	.417	.725	.750	.000	.813	.778	.925	.772	.000	.887	.824	.775	.000	.000	.857	.375	.892	.393	.000	.902	.922

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File Name : Evans PHP 2-11-10
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Peak Hour
 Turning Movement Count
 Evans Road and SR 374 (Purple Heart Parkway)
 02-11-2010



Turning Movement Count Field Form

Site Information

Date of Count: Feb 11 2010
Day of Week: Thursday
Weather: Clear
Technicians: Kim
W.O. #: _____

Major Street: Purple Heart Pkwy
Minor Street: Evans Rd
Intersection Type: ☐ T-Type ☒ Four-way
Site ID #: _____
Board ID: D4-2455

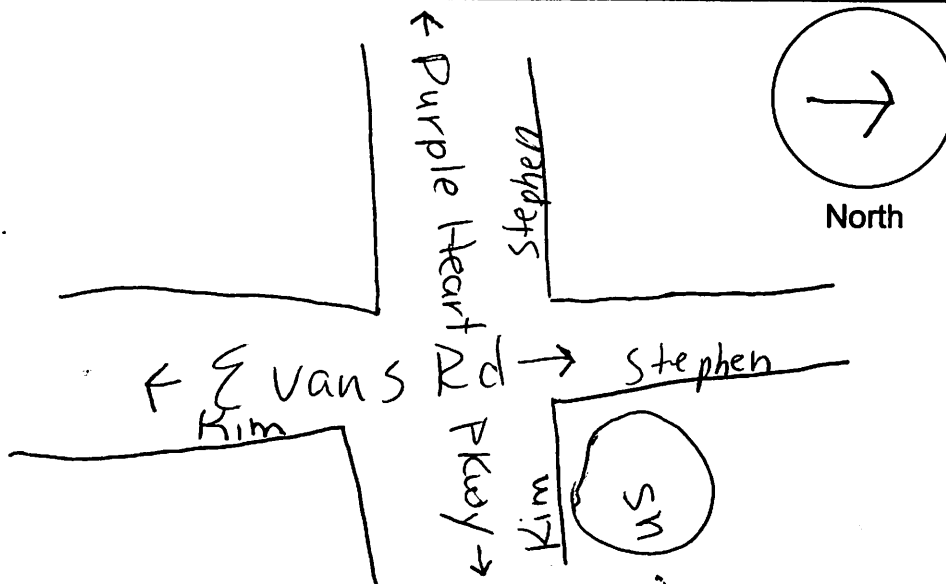
Field Information

Battery Checked: yes
Date/Time Correct?: yes
Time Collection Began: 7:00am
Time Collection Stopped: 6:00pm

Data Collection Periods:

7:00am - 9:00am
11:00am - 1:00pm
2:00pm - 6:00pm

In the space provided below, **sketch** the intersection layout, control cabinet location, technician location, approximate north, and lane designations



For Office Use Only

Filename of Data:

C:\Program Files\JAMAR\PETRA\Data Files_____

Date Data Downloaded:

Turning Movement Count Field Form

Site Information

Date of Count: 2-11-2010 Major Street: Purple Heart PKwy
Day of Week: Thursday Minor Street: Evans Rd
Weather: Clear Intersection Type: ☐ T-Type ☒ Four-way
Technicians: Stephen Pender Site ID #: _____
W.O. #: _____ Board ID: 04-2453

Field Information

Battery Checked: yes
Date/Time Correct?: yes
Time Collection Began: 7:00am
Time Collection Stopped: 6:00pm

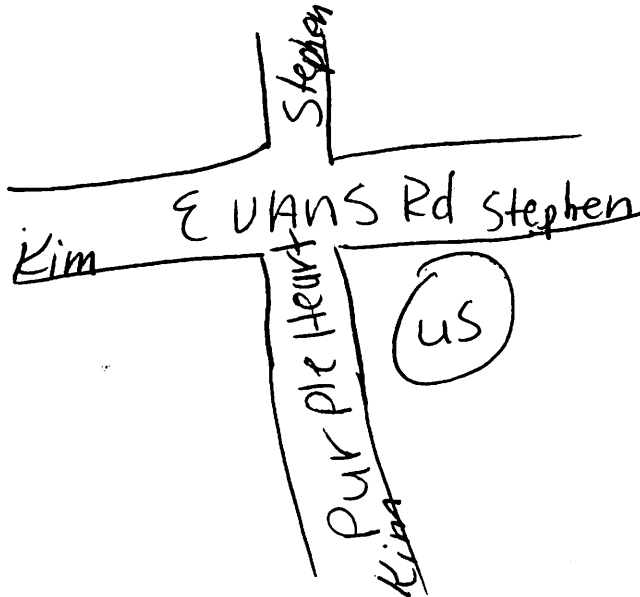
Data Collection Periods:

7:00am - 9:00am

11:00am - 1:00pm

2:00pm - 6:00pm

In the space provided below, **sketch** the intersection layout, control cabinet location, technician location, approximate north, and lane designations



For Office Use Only

Filename of Data:

C:\Program Files\JAMAR\PETRA\Data Files\

Date Data Downloaded: