



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~~ 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**

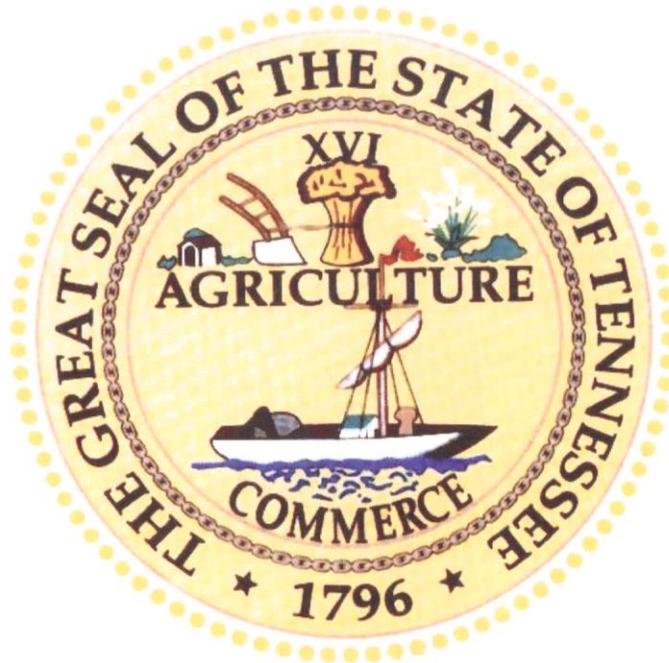
*State Route 374 (Purple Heart Parkway)*

*At Evans Road*

*L.M. 12.50 to L.M. 13.18*

*MONTGOMERY COUNTY*

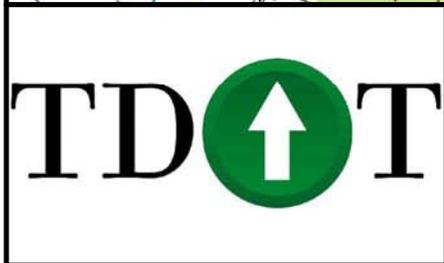
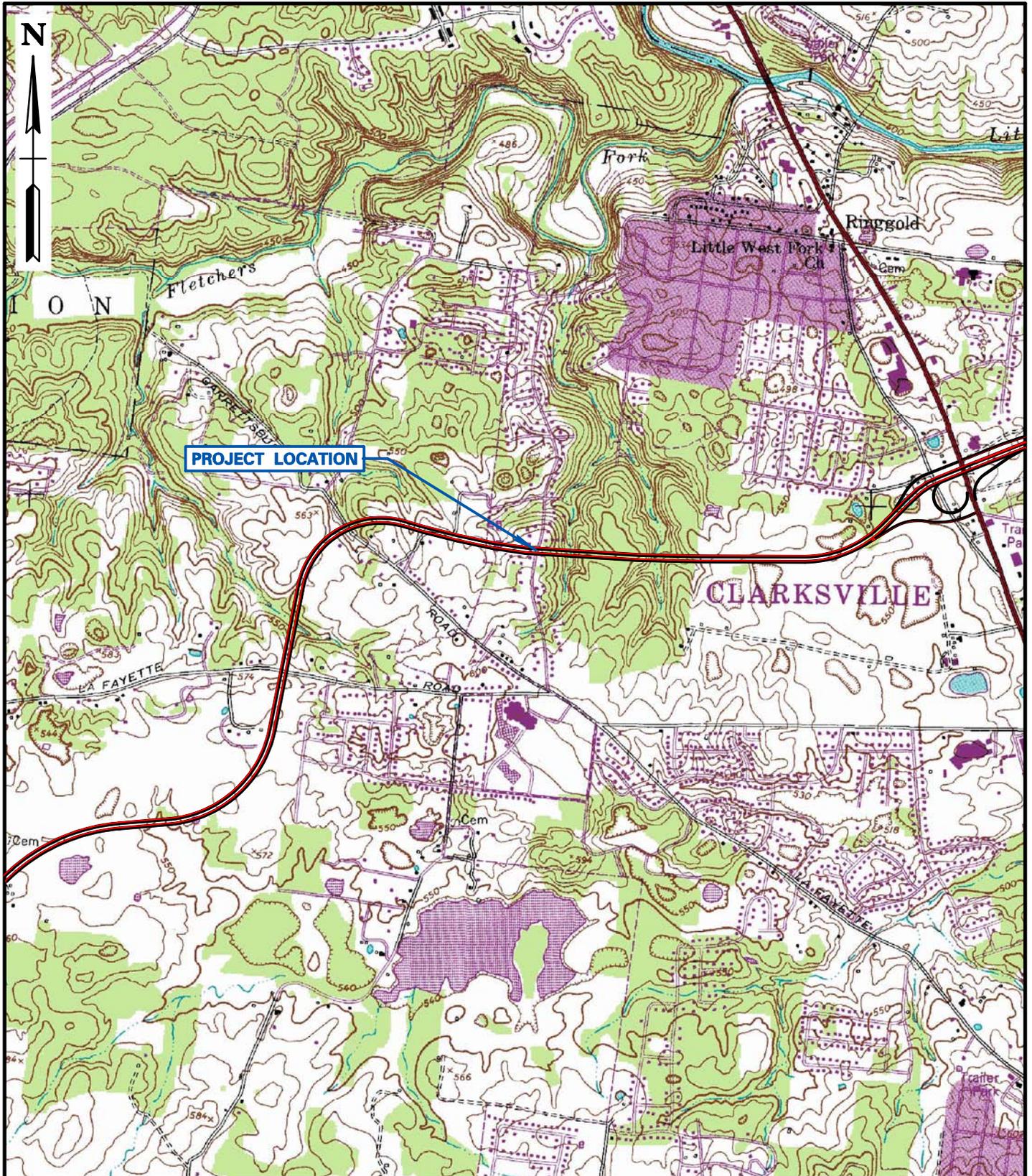
*PIN 114287.00*



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

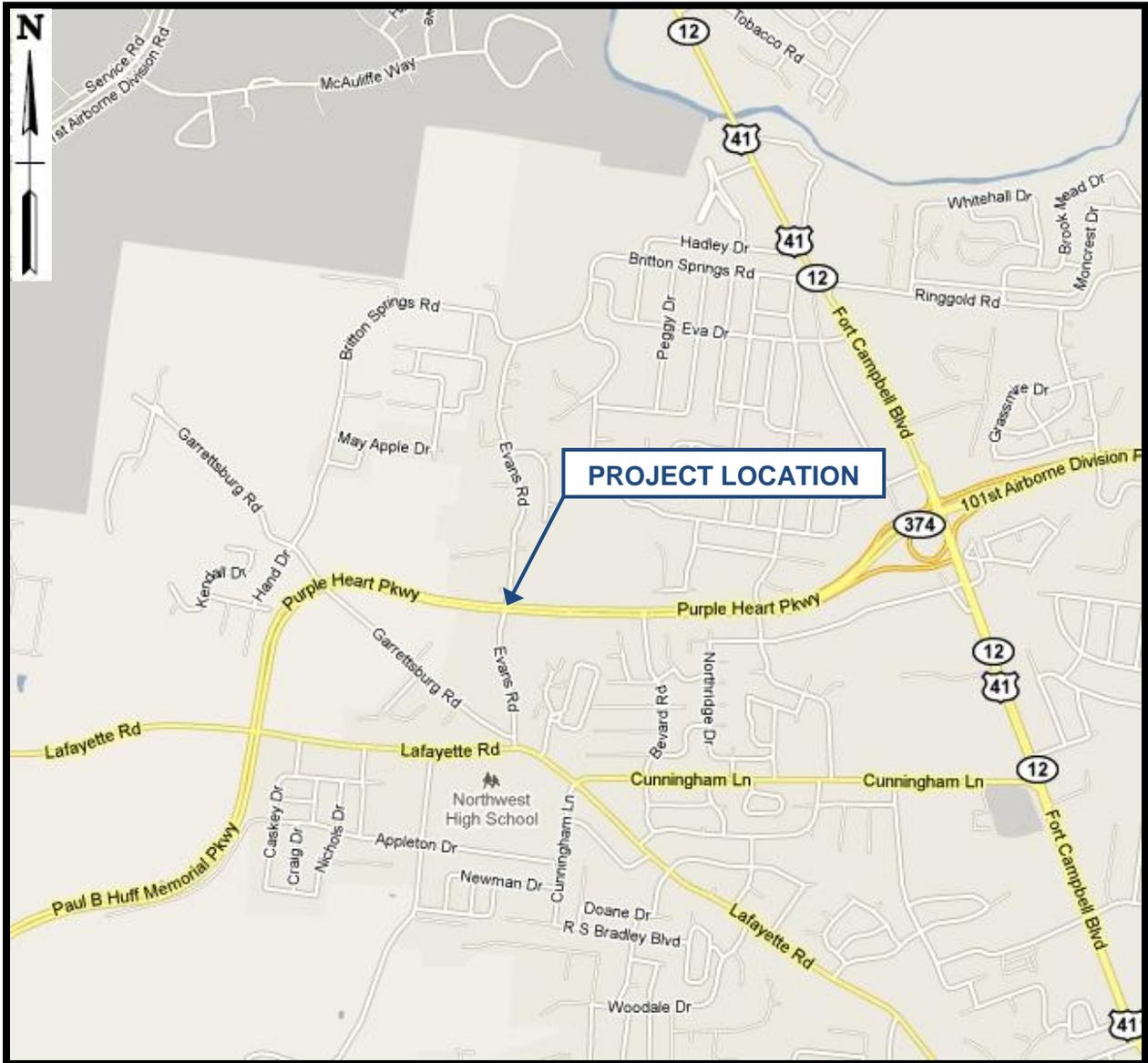
Approved by:	Signature	DATE
<b>DIRECTOR</b> Project Planning Division		6-14-11

*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



	<h1>LOCATION MAP</h1>		<small>DRAWN BY:</small> <b>CMB</b>	<small>CHECKED BY:</small> <b>TMC</b>
			<small>PIN</small> 114287.00	
	<small>SCALE:</small> <b>N.T.S</b>	<small>DATE:</small> <b>10-11-10</b>		



MAP SCALE 1" = 500'



CITY OF CLARKSVILLE  
470137

PROJECT LOCATION

374

BEVARD ROAD

LANCASTER ROAD

BRECKINRIDGE ROAD

MANORSTONE LANE

GARRETTSBURG ROAD

ZONE X

**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	3208	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-MI™ 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](http://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 southbound along Evans Rd. approach to SR-374



**Photograph 2**  
View looking northbound 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 <sup>1</sup>			\$ 5,000	\$ 5,000
Pavement Markings <sup>1</sup>			\$ 28,000	\$ 28,000
Lighting <sup>1</sup>			\$ -	\$ -
Signalization <sup>1</sup>			\$ 175,000	\$ 175,000
Guardrail <sup>1</sup>			\$ 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
<b>CONSTRUCTION COST</b>		\$ 40,000	\$ 629,000	\$ 669,000
Engineering and Contingency (10%)		\$ 4,000	\$ 63,000	\$ 67,000
<b>TOTAL CONSTRUCTION COST</b>		\$ 44,000	\$ 692,000	\$ 736,000
Preliminary Engineering (10%)		\$ 5,000	\$ 70,000	\$ 75,000
<b>PROJECT COST <sup>2</sup></b>	\$ -	\$ 49,000	\$ 762,000	\$ 811,000

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

<sup>2</sup> 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%

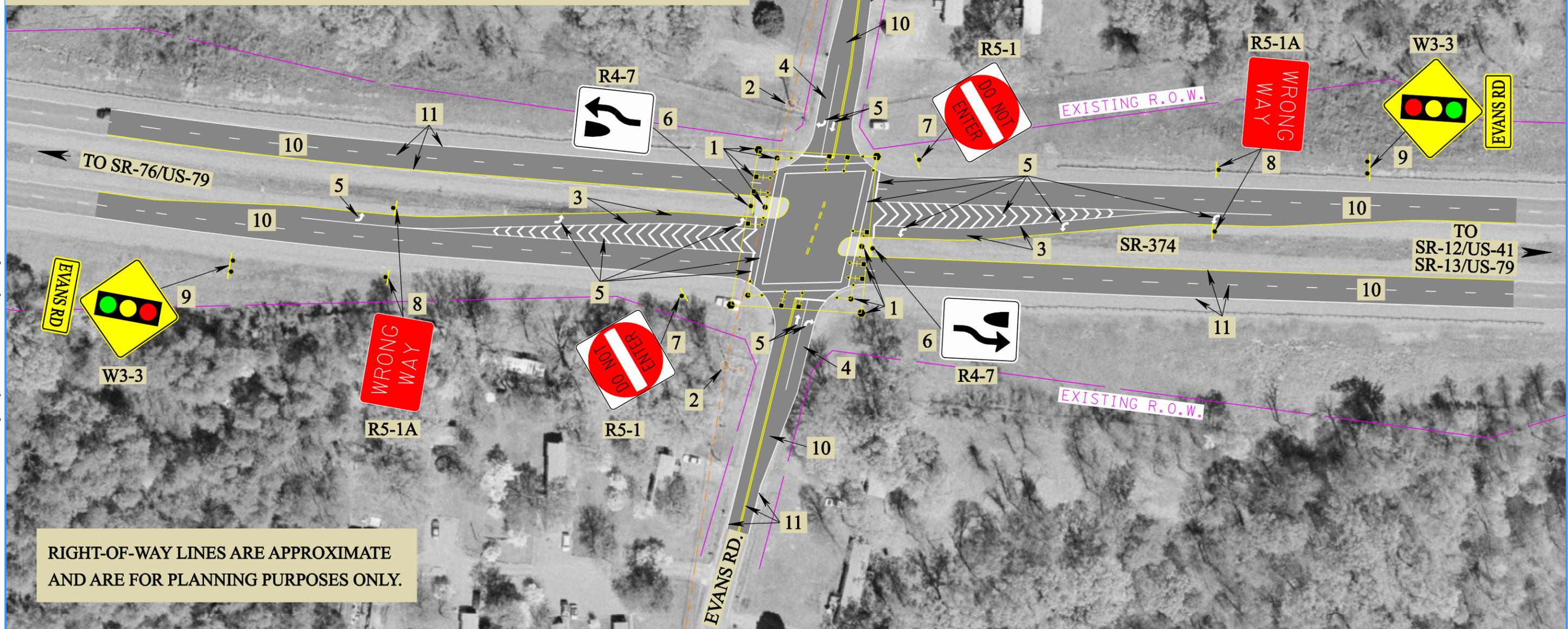
2006-2008 Crash Data

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

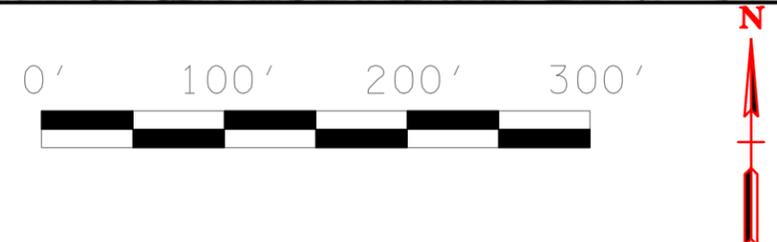
### GUIDANCE

1. Install traffic signal with four (4) steel strain poles, span wires, and six (6) posts with pedestrian signals and push buttons.
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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.



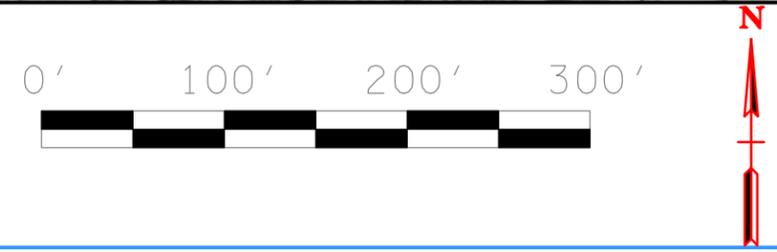
ROAD SAFETY AUDIT REVIEW  
STATE ROUTE 374 AT EVANS RD.  
LOG MILE 12.93  
MONTGOMERY COUNTY

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

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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**

<b>SIGNING</b>					
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	\$ -
<b>Signing Subtotal =</b>					<b>\$ 5,000</b>

<b>PAVEMENT MARKINGS</b>					
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 Pvmt Markers (Bi Directional) (1 Color)	EACH	0	\$ 25	\$ -
716-01.12	Raised Pvmt Markers (Mono-Directional) (1 Color)	EACH	0	\$ 20	\$ -
716-01.21	Snwplwble Pvmt Mrkrs (Bi-Dir) (1 Color)	EACH	0	\$ 75	\$ -
716-01.22	Snwplwble Pvmt Mrkrs (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 Pvmt Mkg (Longitudinal X-Walk)	L.F.	420	\$ 30	\$ 12,600
716-03.01	Plastic Word Pvmt Marking (Only)	EACH	0	\$ 200	\$ -
716-03.03	Plastic Word Pvmt Marking (Stop Ahead)	EACH	0	\$ 400	\$ -
716-03.09	Plastic Work Pvmt Marking (No Parking)	EACH	3	\$ 400	\$ 1,200
716-04.01	Plastic Pvmt Mkg (Straight - Turn Arrow)	EACH	0	\$ 200	\$ -
716-04.02	Plastic Pvmt 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	\$ -
<b>Pavement Markings Subtotal =</b>					<b>\$ 28,000</b>

<b>LIGHTING</b>					
ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
714-01.36	Roadway Lighting	LS	1	\$ -	\$ -
<b>Lighting Subtotal =</b>					<b>\$ -</b>

<b>SIGNALIZATION</b>					
ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL ITEM COST
730-01	Traffic Signals	LS	1	\$175,000	\$ 175,000
<b>Signalization Subtotal =</b>					<b>\$ 175,000</b>

<b>FENCING</b>					
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	\$ -
<b>Fence Subtotal =</b>					<b>\$ -</b>

<b>GUARDRAIL</b>					
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
<b>Guardrail Subtotal =</b>					<b>\$ 26,000</b>

<b>RIP-RAP OR SLOPE PROTECTION</b>					
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	\$ -
<b>Rip-Rap or Slope Protection Subtotal =</b>					<b>\$ -</b>

**713-16.20 — SIGN PLACEMENT ITEMIZATION**

MUTCD NO.	MUTCD DESCRIPTION	SIZE	QUANTITY	SIGN AREA (ft. <sup>2</sup> )	TOTAL AREA (ft. <sup>2</sup> )
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.<sup>2</sup>) = 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
<hr/>	
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
<b>03-05 S/W Rates</b>					
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



EVANS RD.

SR-374

D-D-CL ② D-D-CL ②  
 D-D-CL ② D-D-CL ② D-W-R ②

D-D-CL ② D-D-CL ②  
 DKL-D-CL ② D-D-CL ②  
 DS-D-CL ② D-D-CL ②  
 D-D-CL ② D-D-CL ②

DKL-D-CL ①

D-D-CL ②

D-D-CL ②  
 D-D-CL ②

DN-D-CL ①

D-D-CL ②

D-D-CL ②

EVANS RD.

LEGEND

- ← VEHICLE PATH
  - ←← BACKING VEHICLE
  - ←+ REAR-END COLLISION
  - ▭ PARKED VEHICLE
  - ←→ HEAD-ON COLLISION
  - ←| SIDE SWIPE
  - ←- NON-INVOLVED VEHICLE
  - PEDESTRIAN PATH
  - PERSONAL INJURY
  - FATALITY
  - ⊕ PEDESTRIAN COLLISION
  - ⊕ BICYCLE COLLISION
  - FIXED OBJECT
  - ⊖ OUT OF CONTROL
  - ⊖ OVERTURNED VEHICLE
  - ⊖ TURN COLLISION
  - ⊖ RIGHT ANGLE COLLISION
  - ⊖ LEFT TURN COLLISION
- ③ NUMBER OF VEHICLES
- |                  |  |              |  |             |  |
|------------------|--|--------------|--|-------------|--|
| LIGHTING         |  | ROAD SURFACE |  | WEATHER     |  |
| D=DAYLIGHT       |  | D=DRY        |  | R=RAIN      |  |
| DK=DARK          |  | W=WET        |  | CL=CLEAR    |  |
| DKL=DARK LIGHTED |  | I=ICY        |  | CLDY=CLOUDY |  |
| DS=DUSK          |  | S=SLIPPERY   |  | F=FOG       |  |
| DN=DAWN          |  |              |  | S=SNOW      |  |
- X - X - X



2006-2008  
CRASH DATA

DRAWN BY: CMB	CHECKED BY: TMC
SHEET 1 OF 1	
PIN # 114287.00	
SCALE: 1"= 50'	DATE: 04-21-10

*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			Int. Total			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		App. Total	Peds	App. Total
07:00 AM	1	2	4	7	57	42	33	3	0	0	106	0	36	0	107	251
07:15 AM	2	8	2	12	64	28	37	6	0	0	114	0	43	0	114	263
07:30 AM	0	6	3	9	65	11	25	5	0	0	146	1	30	0	147	264
07:45 AM	1	2	7	10	54	23	22	3	0	0	120	2	25	0	122	237
Total	4	18	16	38	240	104	117	17	0	0	486	3	134	0	490	1015
08:00 AM	3	3	5	11	56	8	13	0	0	0	110	1	13	0	111	204
08:15 AM	0	2	5	7	82	9	11	1	0	0	105	2	12	0	107	218
08:30 AM	2	1	2	5	102	6	28	3	0	0	93	0	31	0	93	241
08:45 AM	1	2	4	7	83	11	18	2	0	0	81	2	20	0	83	206
Total	6	8	16	30	323	34	70	6	0	0	389	5	76	0	394	869
*** BREAK ***																
11:00 AM	1	5	0	7	61	12	15	11	0	0	85	0	26	0	86	194
11:15 AM	0	1	7	8	64	10	10	2	0	0	99	1	12	0	100	197
11:30 AM	2	0	9	11	42	13	12	1	0	0	126	3	13	1	130	214
11:45 AM	0	5	3	8	74	14	16	4	0	0	126	1	20	0	127	246
Total	3	11	19	34	241	49	53	18	0	0	436	5	71	2	443	851
12:00 PM	0	4	1	5	77	14	22	7	0	0	78	1	29	1	80	210
12:15 PM	0	7	2	9	73	10	20	4	0	0	78	2	24	0	80	200
12:30 PM	2	2	4	8	97	13	11	3	1	0	90	0	15	0	90	226
12:45 PM	1	3	3	7	109	7	23	4	1	0	70	0	28	0	70	222
Total	3	16	10	29	356	44	76	18	2	0	316	3	96	1	320	858
*** BREAK ***																
02:00 PM	2	5	5	12	68	26	14	3	0	0	74	1	17	0	75	200
02:15 PM	0	6	4	10	82	27	14	8	0	0	84	0	22	0	84	232
02:30 PM	0	6	6	13	86	11	35	8	2	0	84	3	45	0	87	248
02:45 PM	3	2	4	9	98	14	23	13	0	0	82	1	36	0	83	243
Total	5	19	19	44	334	78	86	32	2	0	324	5	120	0	329	923
03:00 PM	1	5	3	9	77	37	22	6	0	0	72	1	28	0	73	234
03:15 PM	0	9	7	16	114	24	22	2	0	0	95	4	24	0	99	284
03:30 PM	2	2	4	8	104	32	15	2	0	0	105	4	17	0	109	276
03:45 PM	3	11	7	21	116	37	20	8	0	0	119	2	28	0	121	324
Total	6	27	21	54	411	130	79	18	0	0	391	11	97	0	402	1118

*City of Clarksville*  
*Street Department*

199 10th Street  
Clarksville, TN 37040  
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File Name : Evans PHP 2-11-10  
Site Code : 00000000  
Start Date : 2/11/2010  
Page No : 2

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

Groups Printed- Unshifted

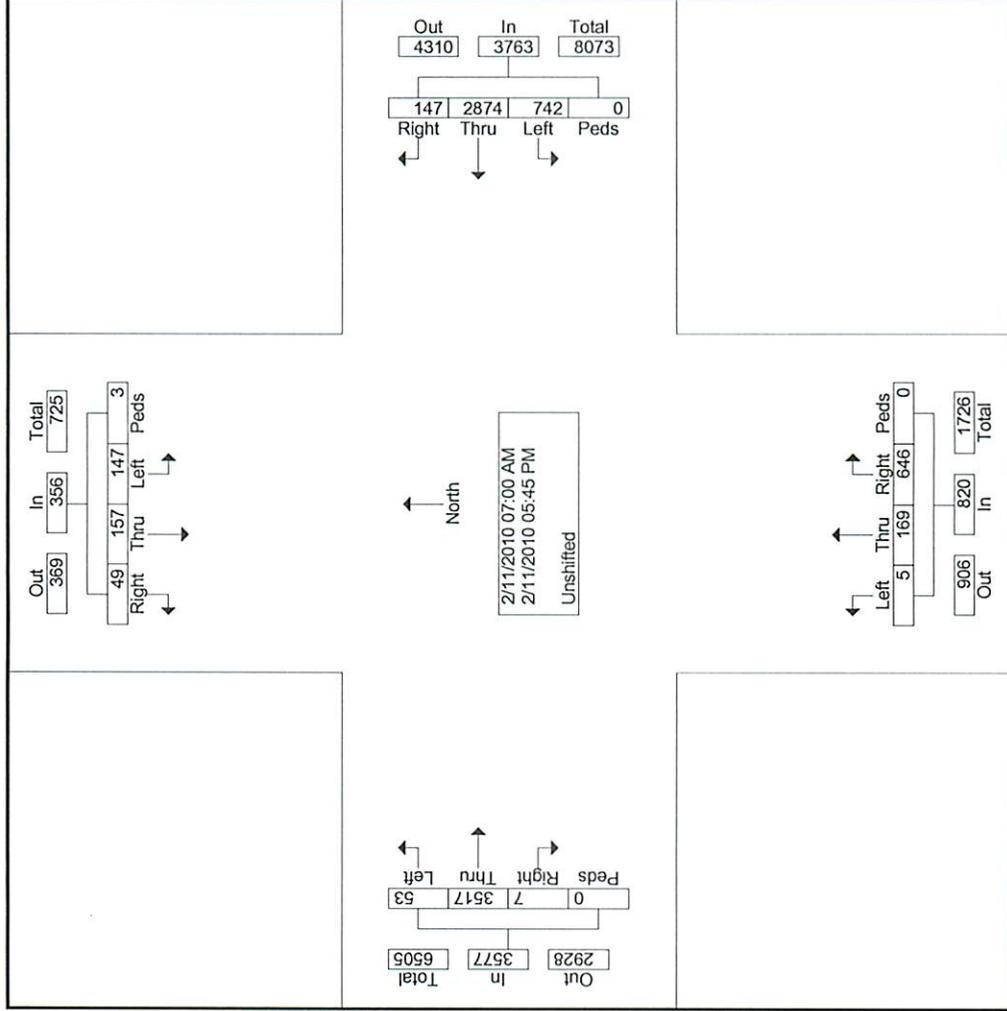
Start Time	From North			From East			From South			From West			Int. Total	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		App. Total
04:00 PM	5	4	7	4	116	54	16	3	0	19	0	108	109	318
04:15 PM	3	12	8	10	134	40	17	4	0	21	0	159	161	390
04:30 PM	3	6	1	13	99	28	25	13	0	38	0	148	154	342
04:45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

**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 : 3

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



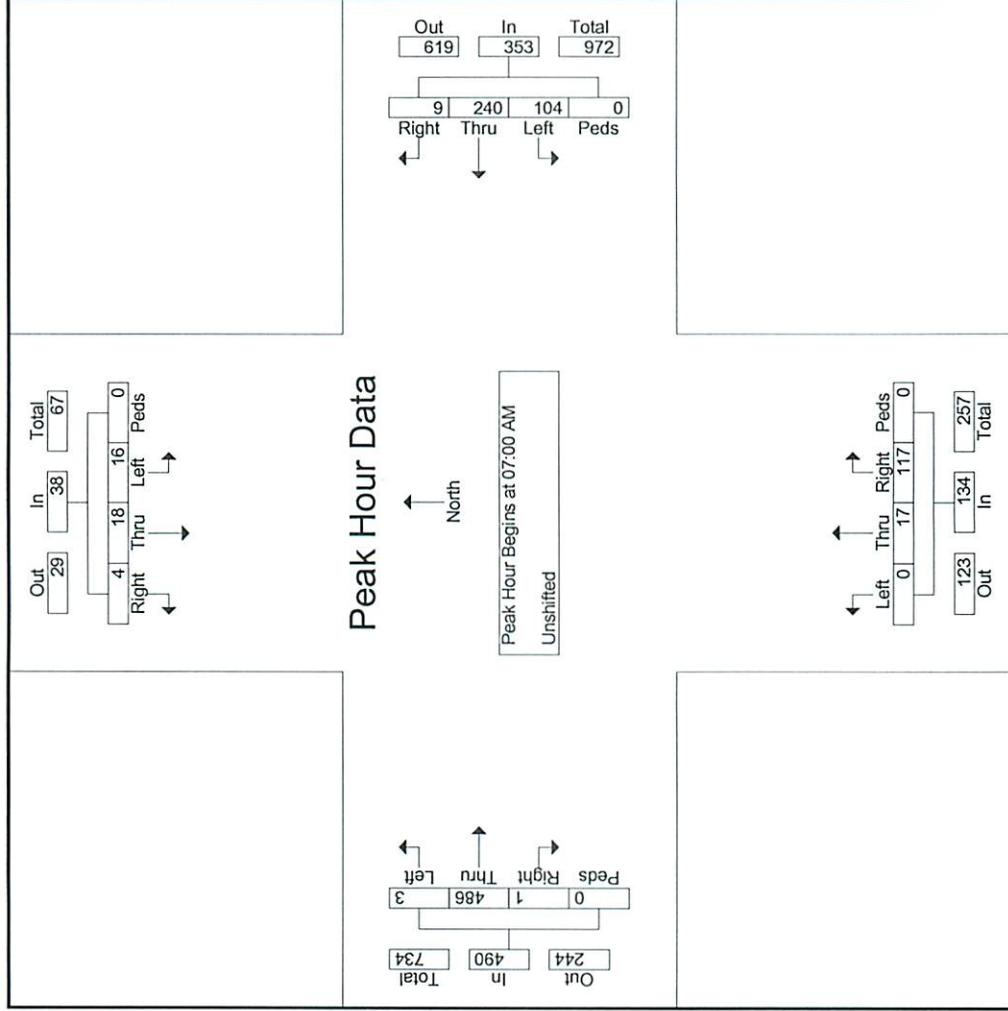
*City of Clarksville*  
*Street Department*

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 : 4

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			Int. Total			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		App. Total	Peds	App. 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	0	101	33	3	0	0	0	36	0	107	251
07:15 AM	2	8	2	0	12	0	94	37	6	0	0	0	43	0	114	263
07:30 AM	0	6	3	0	9	0	78	25	5	0	0	0	30	0	147	264
07:45 AM	1	2	7	0	10	0	80	22	3	0	0	0	25	0	122	237
Total Volume	4	18	16	0	38	0	353	117	17	0	0	0	134	1	486	1015
% App. Total	10.5	47.4	42.1	0	2.5	0	87.3	12.7	0	0	0	0	99.2	0.2	99.2	1015
PHF	.500	.563	.571	.000	.792	.000	.874	.791	.708	.000	.000	.000	.779	.250	.832	.961



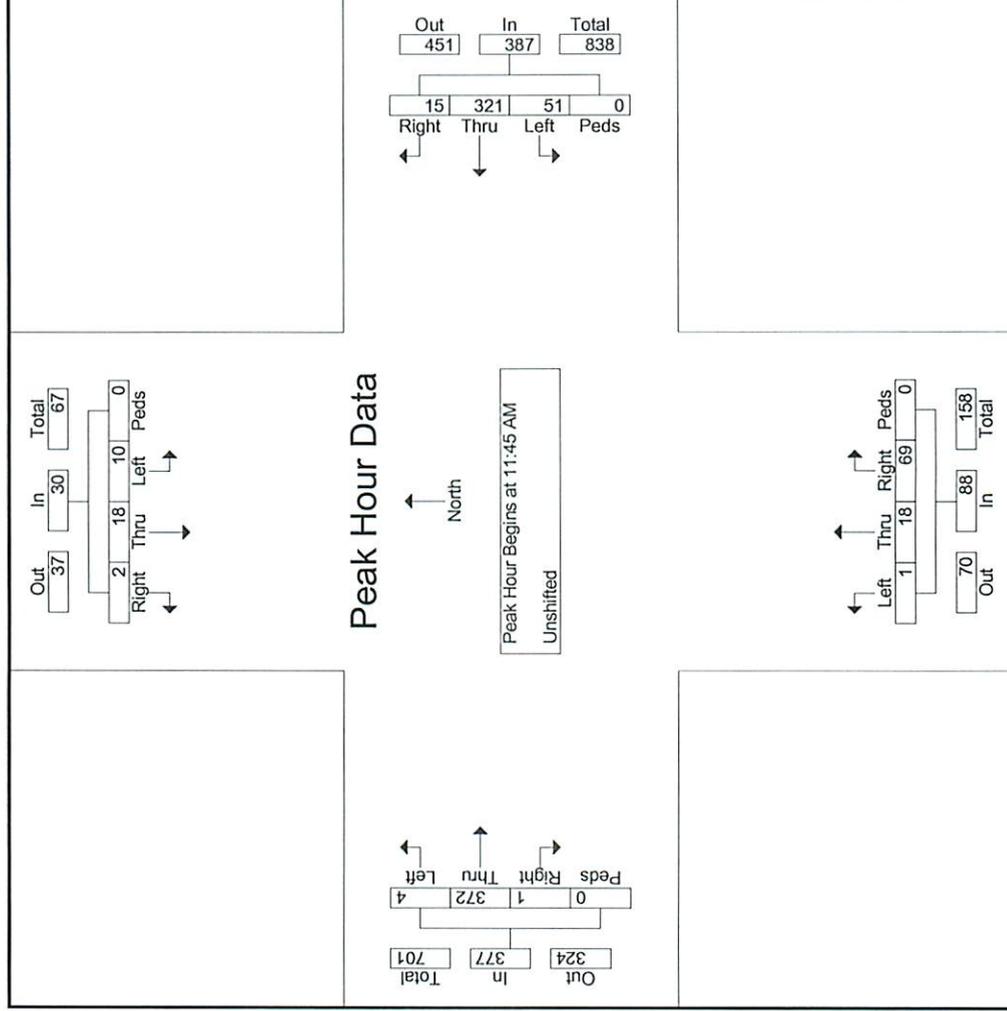
*City of Clarksville*  
*Street Department*

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

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

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

Start Time	From North			From East			From South			From West			Int. Total						
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		App. Total	Peds	App. Total	Peds		
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	3	74	14	0	91	16	4	0	0	20	0	126	1	0	127	246
12:00 PM	0	4	1	5	77	14	0	96	22	7	0	0	29	1	78	1	0	80	210
12:15 PM	0	7	2	4	73	10	0	87	20	4	0	0	24	0	78	2	0	80	200
12:30 PM	2	2	4	3	97	13	0	113	11	3	1	0	15	0	90	0	0	90	226
Total Volume	2	18	10	15	321	51	0	387	69	18	1	0	88	1	372	4	0	377	882
% App. Total	6.7	60	33.3	3.9	82.9	13.2	0	78.4	20.5	1.1	0	0	0	0.3	98.7	1.1	0	99.0	88.2
PHF	.250	.643	.625	.750	.827	.911	.000	.856	.784	.643	.250	.000	.759	.250	.738	.500	.000	.742	.896



*City of Clarksville*  
*Street Department*

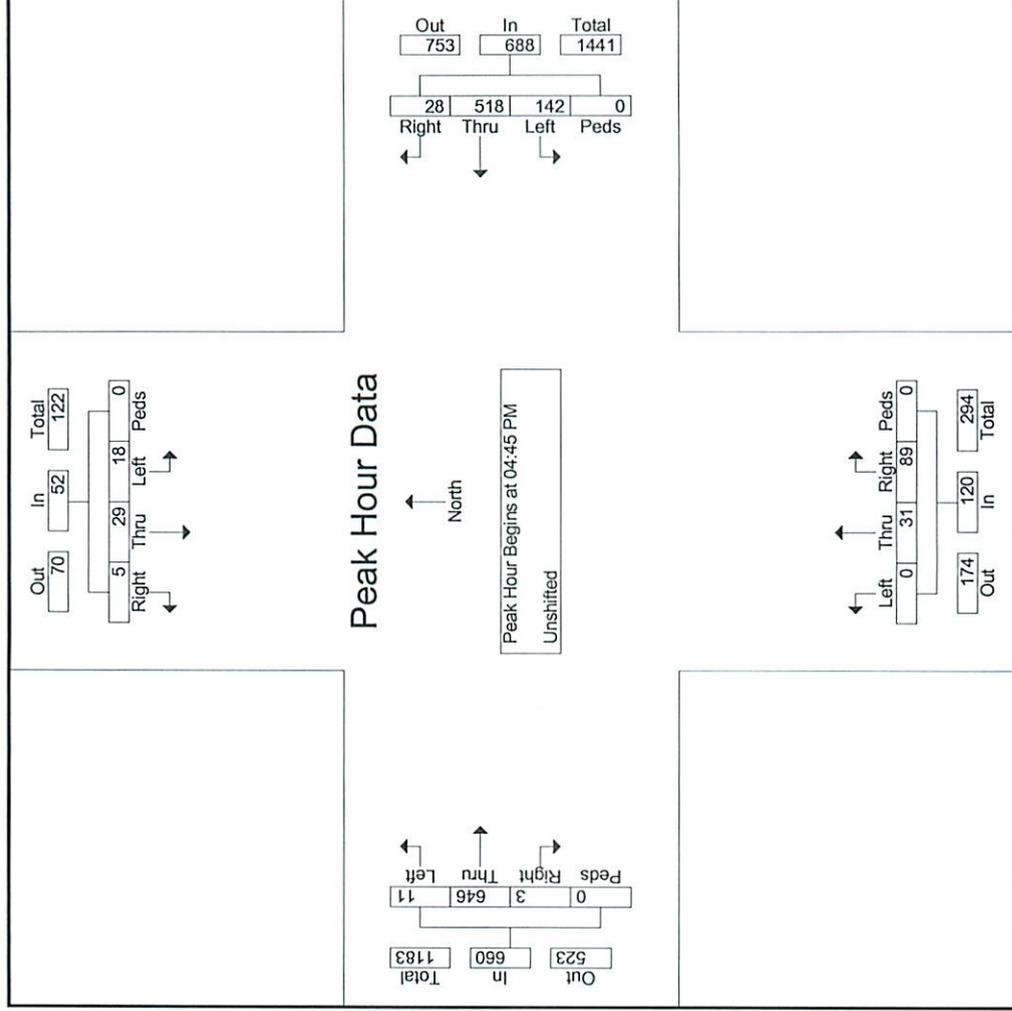
199 10th Street  
 Clarksville, TN 37040  
*Tennessee's Top Spot*

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

File Name : Evans PHP 2-11-10  
 Site Code : 00000000  
 Start Date : 2/11/2010  
 Page No : 8

Start Time	From North			From East			From South			From West												
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left										
04:45 PM	2	8	6	9	131	38	15	5	0	0	178	15	5	0	0	20	0	151	7	0	158	372
05:00 PM	0	10	5	5	118	31	22	10	0	0	154	22	10	0	0	32	0	142	1	0	145	346
05:15 PM	0	6	3	8	140	46	25	10	0	0	194	25	10	0	0	35	0	172	2	0	174	412
05:30 PM	3	5	4	6	129	27	27	6	0	0	162	27	6	0	0	33	1	181	1	0	183	390
Total Volume	5	29	18	28	518	142	89	31	0	0	688	89	31	0	0	120	3	646	11	0	660	1520
% App. Total	9.6	55.8	34.6	4.1	75.3	20.6	74.2	25.8	0	0	74.2	25.8	0	0	0	74.2	0.5	97.9	1.7	0	99.2	92.2
PHF	.417	.725	.750	.778	.925	.772	.824	.775	.000	.000	.887	.824	.775	.000	.000	.857	.375	.892	.393	.000	.902	.922

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



# 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

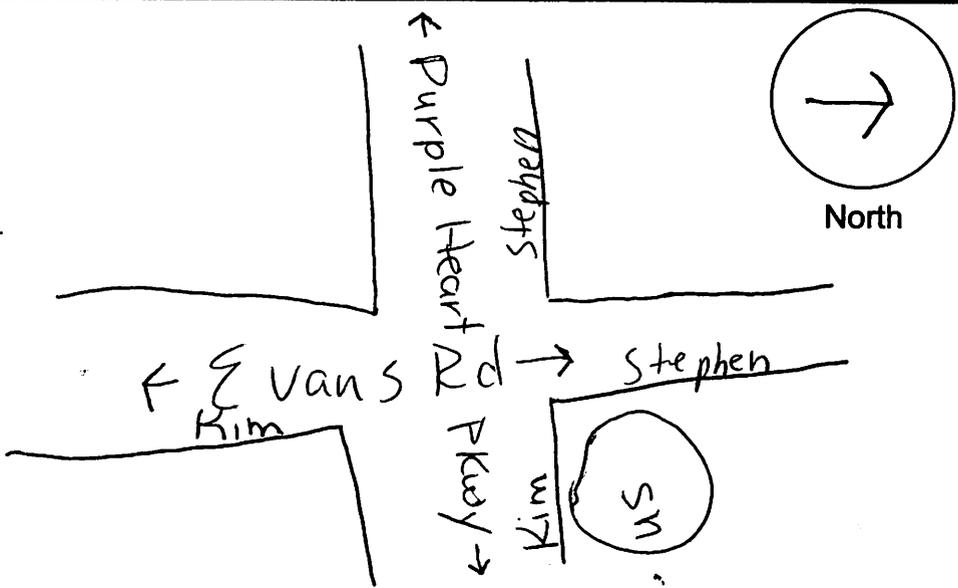
## Field Information

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:

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

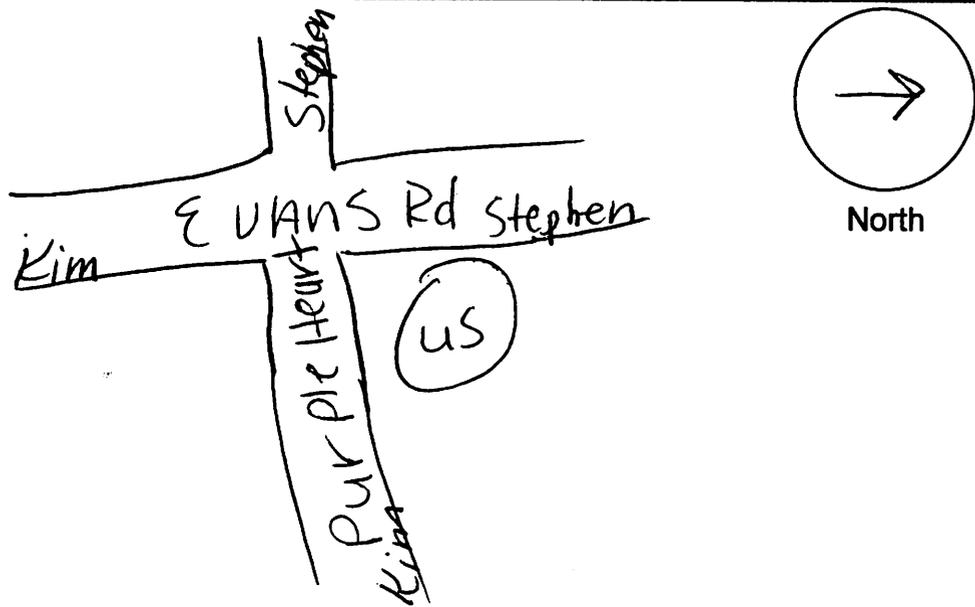
## Field Information

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:

Date Data Downloaded: