# *TECHNICAL STUDY*

## *PROJECT TRIPLE CROWN*

### *SATURN PARKWAY EXTENSION*

### *FROM SATURN PARKWAY (SR-396) TO BEECHCROFT ROAD (SR-247)*

### *PIN 123399.00*

### *MAURY COUNTY*

# *TENNESSEE*

## *DEPARTMENT OF TRANSPORTATION*

***PREPARED BY***

***Strategic Transportation Investments Division***

| Recommended by: | Signature | DATE |
|---|---|---|
| **TRANSPORTATION DIRECTOR**<br>**STRATEGIC TRANSPORTATION**<br>**INVESTMENTS DIVISION** | | 6-13-16 |

# Executive Summary

### *Purpose of Study*

The purpose of this study is to provide recommendations for the design of the Saturn Parkway Extension in Maury County (PIN 123399.00) and give direction on the design-build project. Saturn Parkway (SR-396) is freeway facility that connects Interstate 65 to the General Motors Spring Hill manufacturing plant (GM Plant). It currently terminates at the GM Plant, providing access to both truck traffic and employees. Located to the north of the GM Plant along Beechcroft Road (SR-247) are industries that receive deliveries from the Interstate and provide deliveries to the GM plant. The current route to access these industries uses local routes in a commercially developed area. Creating a direct route from Saturn Parkway to Beechcroft Road will reduce travel time for trucks moving through the area.

### *Project Recommendations*

This new route will provide direct connectivity from existing Saturn Parkway (SR-396) to Beechcroft Road (SR-247) and provide access to the GM Plant. This project will provide a new signalized intersection at the entrance for trucks to the GM Plant and maintain free flow access to the employee parking area. Beechcroft Road to Saturn Parkway will become a free flow movement and existing Beechcroft Road to the east of the project will tie into the route at a stop controlled intersection. This project will also provide a new grade-separated railroad crossing over the CSX rail on Beechcroft Road.

The Saturn Parkway Extension is estimated to cost **$27,101,000**.

### *Design-Build Recommendations*

The Saturn Parkway Extension project will be incorporated into a design-build project which includes two projects that were already under development: an Road Safety Audit Report (RSAR) for intersection improvements at Cleburne Road and Beechcroft Road (PIN 117319.01) and the Project Shotgun State Industrial Access (SIA) that provides widening on Beechcroft Road and intersection improvements at two locations (PIN 121394.00).

The total design-build project is estimated to cost **$29,629,000**.

## Purpose of the Technical Study

The purpose of this study is to provide background on the recommendations for the design of the Saturn Parkway Extension in Maury County (PIN 123399.00). This new route will provide connectivity from existing Saturn Parkway (SR-396) to Beechcroft Road (SR-247) and provide access to the General Motors Spring Hill manufacturing plant (GM Plant).

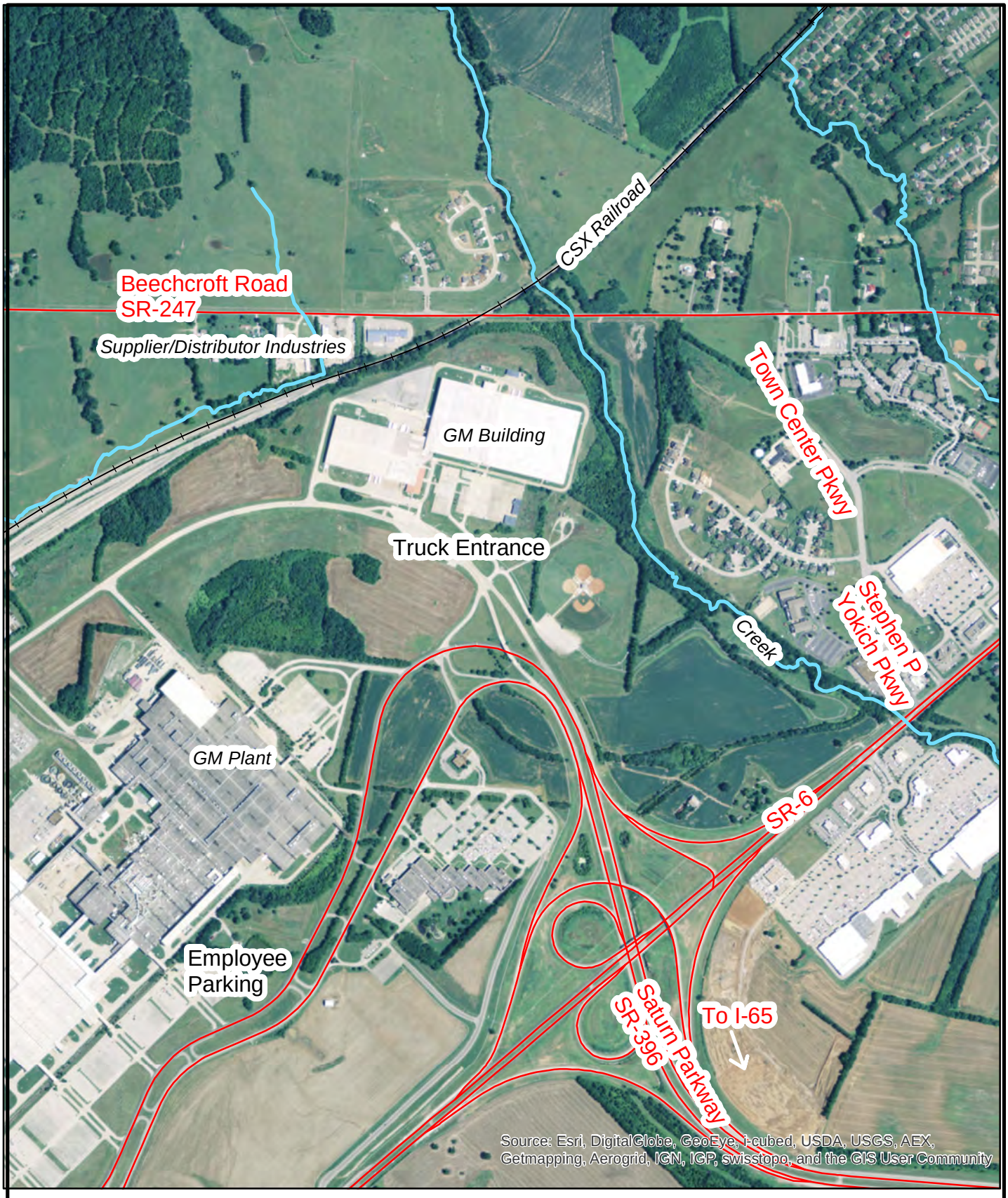
This study also provides direction on the design-build letting of the project in conjunction with two adjacent projects: Project Shotgun SIA on Beechcroft Road and the two intersections of Town Center Parkway at Beechcroft Road and Stephen P Yokich Parkway at SR-6 (PIN 121394.00) and the RSAR for the intersection of Cleburne Road at Beechcroft Road (PIN 117319.01).

## History and Background

### *Existing Routes and GM Plant Access*

Saturn Parkway is a four (4) lane divided facility that connects I-65 to the GM Plant. At the Saturn Parkway and Main Street (SR-6) interchange, vehicles traveling west on Saturn Parkway will enter the GM Plant facility if they do not choose to take the exit to SR-6. Past the SR-6 interchange, access to the GM plant is split into two directions on free flow ramps, to the left towards the employee parking and to the right towards the truck entrance. Exiting the GM Plant is similarly split, with two ramps merging from employee parking and the truck entrance.

Located to the north of the GM Plant along Beechcroft Road are industries that receive deliveries from the Interstate and provide deliveries to the GM plant. Currently, trucks coming from the interstate to the industries on Beechcroft Road have to follow this route: exit Saturn Parkway to SR-6, turn left onto Stephen P. Yokich Parkway, continue on Town Center Parkway, and turn left onto Beechcroft Rd. Likewise, trips from Beechcroft Road to the GM Plant must follow this route: from Beechcroft Rd, turn right onto Town Center Parkway, continue on Stephen P. Yokich Parkway, turn right onto SR-6, and take the ramp toward Saturn Parkway. **See Figure 1** for existing routes and features**.**




0 0.050.1 0.2 0.3 0.4 Miles

N

Figure 1

AREA MAP

ROUTES AND FEATURES NEAR GM PLANT

MAURY COUNTY

### *History of Project Triple Crown*

On September 10, 2015, Danielle Hagewood from TDOT and Clay Banks from the Department of Economic and Community Development (ECD) met with GM staff to discuss industry needs and initiate Project Triple Crown. **See Appendix B** for minutes from this meeting with GM**.**

On September 17, 2015, a follow-up meeting was held at the GM Plant where preliminary concepts were discussed with GM corporate staff. Attending were the following: Steve Allen and Danielle Hagewood from TDOT, Clay Banks from ECD, Victor Lay from the City of Spring Hill, and Holly Milewski and Eric Henning from GM.

On Sept 22, 2015, TDOT Commissioner Schroer signed a letter of support for Project Triple Crown, committing to extend the 3 lane improvement along SR-247 from the existing SIA, include a grade-separated rail crossing, and to construct the new Saturn Parkway Extension consisting of two travel lanes with paved shoulders.

Through November and December of 2015, TDOT staff met and discussed with Michael Rayburn, the facility area manager of the GM Spring Hill, to develop a conceptual design that both TDOT and GM staff agreed upon. On December 12, 2015, Michael Rayburn contacted TDOT staff stating that the GM plant staff unanimously approved of the conceptual design.

On April 27, 2016, Governor Haslam and Tennessee Department of Economic and Community Development Commissioner Randy Boyd along with GM officials announced that GM will invest $788.7 million and create 781 new jobs for a new high-efficiency engine program and to modernize the vehicle programs at the company's Spring Hill manufacturing plant.

### *Connected Projects*

Both of the following projects will be incorporated into the design-build project with the Saturn Parkway Extension described in this report. **See Figure 2** for locations of these projects.

*RSAR*

In 2014, a Road Safety Audit Report (RSAR) was completed for the intersection of SR-247 (Beechcroft Road) and Cleburne Road (PIN 117319.01). This project involves the widening of SR-247 (Beechcroft Road), east of Cleburne Road, from 2 lanes to 3 lanes curb & gutter section, widening of SR-247, west of Cleburne Road to accommodate an east bound right turn

lane onto Cleburne Road and the widening of Cleburne Road to accommodate a northbound left turn lane. Project length is approximately 1250 feet along SR-247 and 400 feet along Cleburne. This project will connect to the Beechcroft Road improvements in the SIA project described below. Right of Way (R.O.W.) and utilities funding has been authorized for $498,000. Construction is estimated to cost $829,000. **See Table 1** for summary of the project cost. **See Appendix D for this report.**

*SIA*

Also in 2014 a State Industrial Access (SIA) project for Project Shotgun (PIN 121394.00) was initiated. This project involves improvements at three (3) sites:

- Widen SR-247 (Beechcroft Road) from 2 lanes to 3 lanes curb & gutter section. This site is approximately 2750 feet in length and will connect to the RSAR project described above and the Saturn Parkway Extension.
- Widen SR-247 (Beechcroft Road) to accommodate an eastbound right turn lane onto Town Center Parkway. This site is approximately 700 feet in length.
- Improve of the northwest quadrant of the US 31 (Main Street) and Stephen P. Yokich Parkway.

Preliminary Engineering for this project was the responsibility of the City of Spring Hill. R.O.W. and utilities funding has been authorized for $1,200,000. Construction is estimated to cost $1,500,000. **See Table 1** for summary of the project cost. R.O.W. plans for this project can be obtained by contacting the TDOT Region 3 Project Development Office.

**Table 1: Costs of Connected Projects**

| | Preliminary Engineering | Right of Way | Utilities | Construction | Total |
|---|---|---|---|---|---|
| SIA (PIN 121394.00) | N/A | $110,000 | $1,100,000 | $1,500,000 | **$2,710,000** |
| RSAR (PIN117319.01) | $ 67,000 | $ 77,000 | $ 421,000 | $ 828,360 | **$1,393,360** |

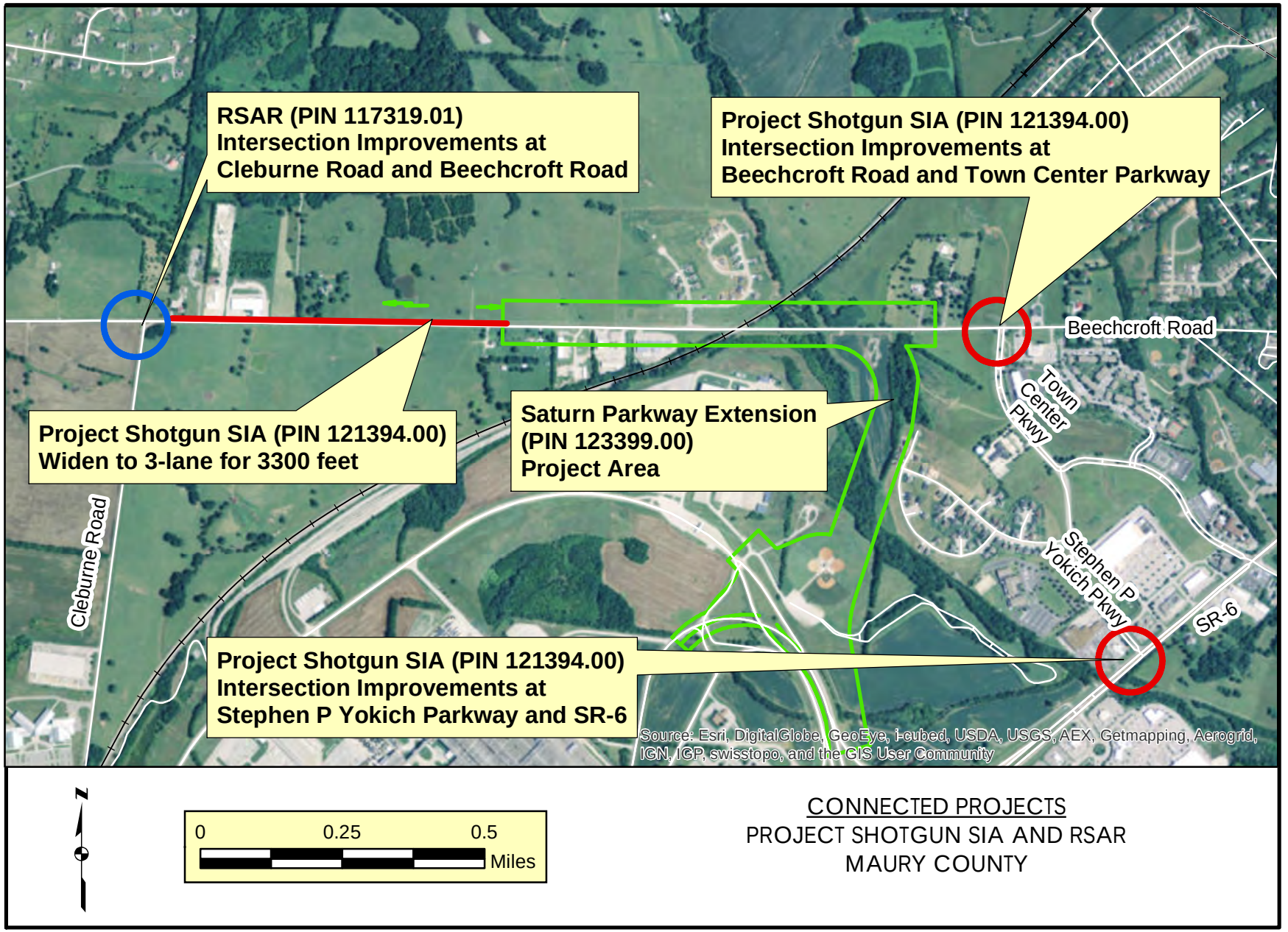



Figure 2: Connected Projects Locations

## Purpose and Need

1. The purpose of this project is to promote economic development by providing reduced travel times for trucks moving among the supplier industries located on Beechcroft Road, the GM Plant, and the Interstate System.
2. The purpose is also to provide improved safety and operations along Beechcroft Road by widening the existing route from a narrow 2 lane section to a 3 lane section and by constructing a grade-separated crossing over the CSX rail line. The at-grade railroad crossing on Beechcroft Road often has trains block the road, and there is no reasonable alternate route. This causes delays for emergency vehicles, trucks making deliveries, and local residents. A grade-separated crossing is also safer than an at-grade crossing.
3. The implementation of this project will improve safety and reduce traffic on the existing routes along SR-6 and Stephen P. Yokich Parkway by removing truck traffic from those routes.

## Design considerations

### *Design Challenges*

R.O.W.

The majority of the construction of the Saturn Parkway Extension will take place on property belonging to GM. GM has agreed to donate the R.O.W. required to construct the Saturn Parkway Extension across the GM property. GM has also agreed to provide the mitigations required for the removal of the ball park on the GM property, including finding a new location for the leagues to play.

Construction should be avoided in the northeast quadrant of the Saturn Parkway and SR-6 interchange which has buildings on the GM property that should not be impacted. Construction of this project must also minimize impact to the residential neighborhoods to the north of Beechcroft Road and to the east of GM Property.

Traffic

The GM Plant has separate entrances for trucks and employees arriving in their personal vehicles. GM wants to maintain the separation of that traffic as it enters the facility. During work shift change peaks at the GM Plant, there are 1,500 vehicles arriving per half-hour. There are

also a large number of trucks making deliveries in the morning that currently queue up on the ramp to the truck entrance before the gates open.

It is important to maintain traffic throughout construction along Beechcroft Road. There are no other reasonable routes for trucks to take to reach the Interstate from the industries located on Beechcroft. Also accessed from Beechcroft Road is the Spring Hill Middle School on Cleburne Road. It is also important to maintain traffic during construction to the GM Plant. Any delays or down time for the plant means loss of revenue for GM.

Driver Expectancy

Saturn Parkway is a state route that currently terminates at a private property. Access between SR-6 and Saturn Parkway, requires drivers to use interchange ramps. Extending Saturn Parkway to Beechcroft Road will allow drivers to stay on a public road without diverging from the main traffic movement. Allowing the state route to terminate at another state route will aid in driver expectancy. Maintaining the minimum design standards for a state route will also aid in driver expectancy.

Currently the entrances for both the truck entrance and employee parking are free flow access. GM wants to maintain free flow as much as possible.

Flood Zone

The Saturn Parkway Extension will cross through the floodway of McCormack Branch. **See Figure 3** for the FEMA flood area. The flood maps that cover the area of this project are number 47119C0065E and 47119C0180E, both effective on 04/16/2007.

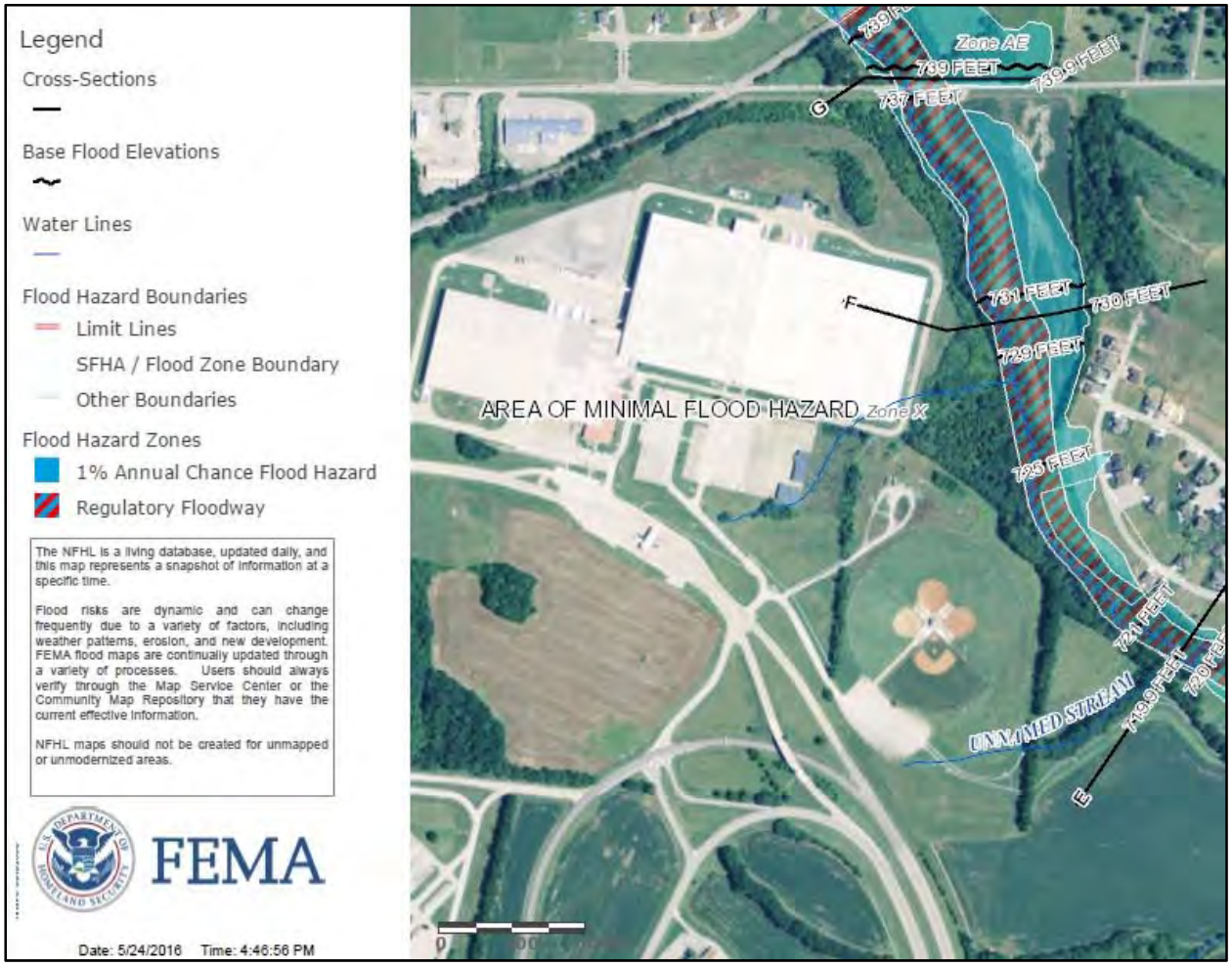



Figure 3: FEMA Map

### *Design Iterations*

A conceptual design was prepared by a consultant during the development of the Project Shotgun SIA. This design was the first to propose a connector from existing Saturn Parkway to Beechcroft Road. **See Figure 4**

The first design developed for this project used a single signalized intersection for all access to the GM Plant. This design made use of most of the existing ramps to access the GM Plant. This design also has a realignment of the ramp from SR-6 that accesses the plant. This design was discarded because the ramp configuration on the GM Plant entrance leg of the intersection was too complicated and the realignment of the ramp from SR-6 would impact the structures near the existing ramp. **See Figure 5**

The second design developed used two signalized intersections to provide access to the GM Plant. This design separated the truck and employee traffic, but only provided one free flow movement from the employee parking to Saturn Parkway. This design was discarded because GM preferred a design that maintained free flow access to the employee parking. **See Figure 6**

A design using a roundabout for access to the GM Plant was developed, but was discarded because the application of a roundabout at this location not preferred by TDOT or GM. **See Figure 7**

A design that preserves as many free flow movements as possible was developed. This design was discarded because it required an additional structure and created a safety and traffic issue at the four-way stop intersection that would have to be installed at the truck entrance gate. **See Figure 8**

The design concept for the Saturn Parkway Extension that was agreed upon by TDOT and GM is shown in **Figure 9**, in detail in the function plans in **Appendix C**, and its features described on the following pages**.**


| ANGUS | | |
|---|---|---|
| Asphalt | | $511,084 |
| Site Utilities | | 273,043 |
| Concrete | | 115,396 |
| Detention | | 93,000 |
| Storm Sewer | | 59,000 |
| | | $1,051,523 |
| | | |
| **BUCKEYE** | | |
| Asphalt & Curb | | $608,838 |
| Site Utilities | | 350,463 |
| Concrete | | 127,550 |
| Detention | | 109,000 |
| Storm Sewer | | 80,000 |
| Rail Spur | | 1,625,000 |
| | | $2,900,851 |
| | | |
| **ON-SITE PUBLIC** | | |
| Sanitary Main | | $482,134 |
| Fire Tank & Pump | | $600,000 |
| | | $1,082,134 |
| | | |
| **OFF-SITE PUBLIC** | | |
| Beechcroft Turn/Decel Lanes | | $1,586,386 |
| Widening of Beechcroft to Connector | | 634,554 |
| Grade Separation at CSX Crossing | | 2,900,000 |
| Connector Road | | 1,368,540 |
| Radius Improvement | | 49,000 |
| | | $6,538,480 |

NorthPoint DEVELOPMENT

Figure 4: Conceptual design provided by consultant for Project Shotgun SIA

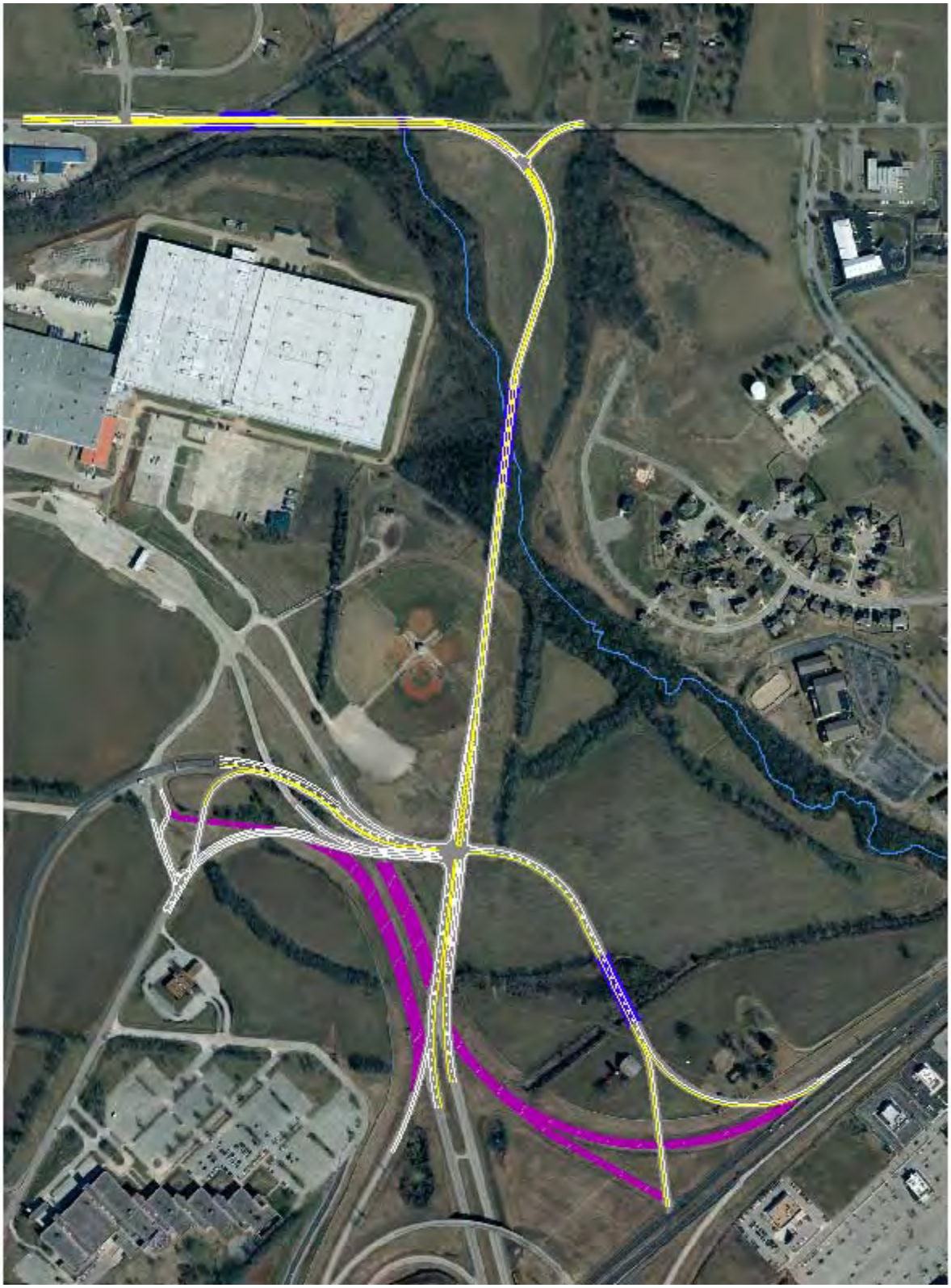


Figure 5: Single Intersection

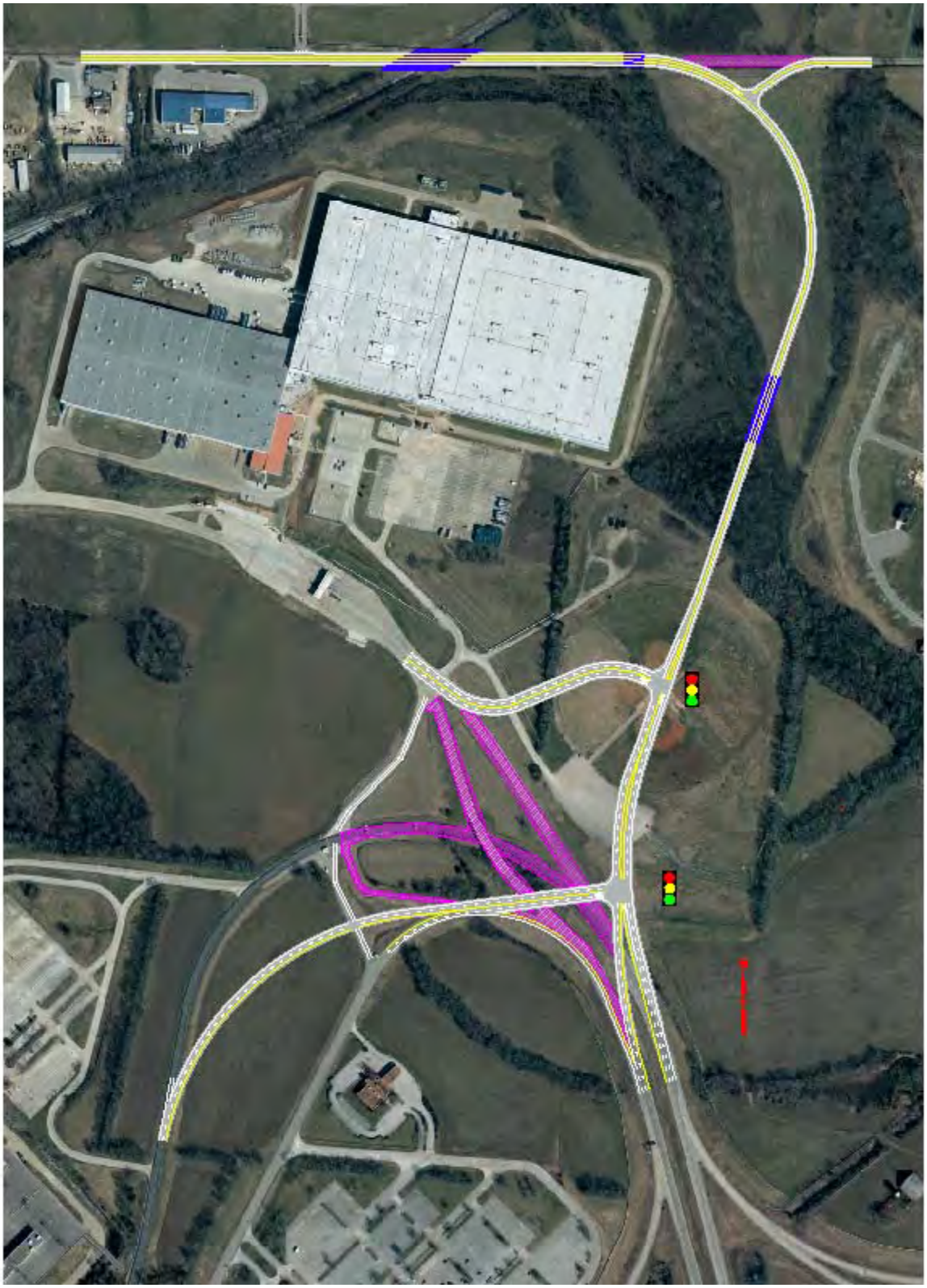


Figure 6: Two Intersections

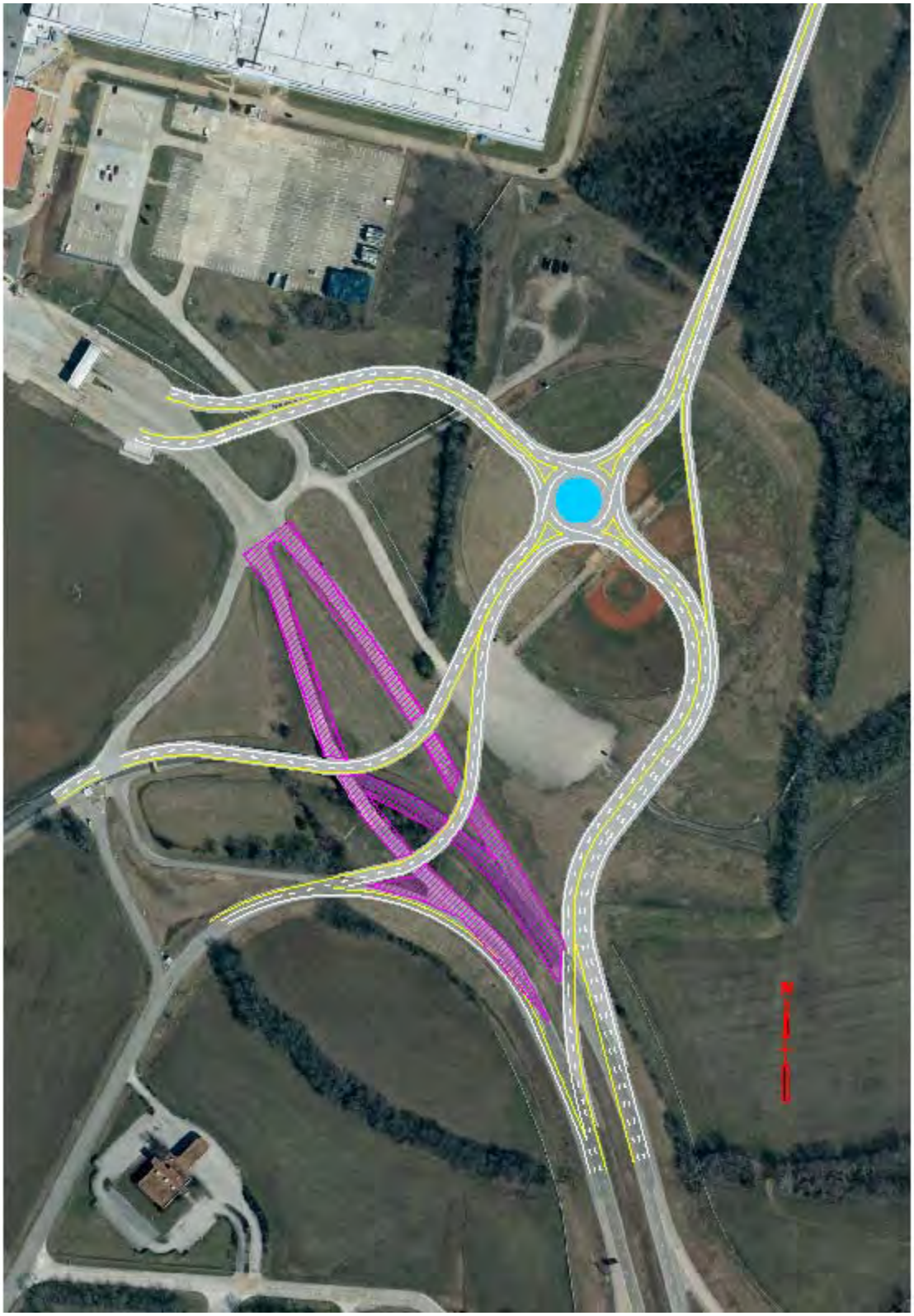


Figure 7: Roundabout


Figure 8: Full Interchange

Figure 9: Final Design

## Final Design Recommendation for Saturn Parkway Extension

See Figures in **Appendix C** for further detail of the recommended design approved by GM of the Saturn Parkway Extension project. These figures are to be used as guidance for completing the design for this project and does not necessarily show the exact alignments required to meet the purpose and design requirements of this project as described in this report. Any major change to the concept will require coordination with TDOT and GM.

***Intersections***

This project will create two new traffic controlled intersections. The first intersection will be where Beechcroft road is realigned to make the Saturn Parkway Extension the free flow through movement. The westbound leg of Beechcroft will be stop controlled. The east/south bound leg will have an eastbound left turn lane, to provide a transition from the three lane typical section along Beechcroft Road to the two lane typical section on the extension of the new alignment. See Figure 2 in **Appendix C**.

The second is a signalized intersection at the truck entrance for the GM Plant. The intersection provides one through lane and two left turn lanes on the northbound leg, one through lane and a channelized right turn lane on the southbound leg and a single left turn lane on the eastbound leg. This geometry is based on the existing geometry that facilitates the truck entrance from Saturn Parkway, with two lanes entering and one free flow ramp lane exiting. See Figure 3 in **Appendix C**.

This project also recommends creating a two way stop controlled intersection at the truck entrance ramp and the internal driveways. See Figure 3 in **Appendix C**.

***Typical Sections***

See Figures 4-6 in **Appendix C** for the typical sections to be used on this project.

Beechcroft Road from Cleburne Road to the intersection with the realigned Beechcroft Road will be widened to have a three (3) lane cross section, with two twelve (12) foot lanes, a twelve (12) foot center turn lane, and curb and gutter.

Between intersection with Beechcroft Road and the signalized intersection at the truck entrance, the route will have two twelve (12) foot lanes with twelve (12) foot shoulders.

The existing Saturn Parkway has two (2) travel lanes in each direction. This will be maintained in the northbound direction up to the signalized intersection at the GM Plant truck entrance, where one lane will become the left turn lane and the other the through lane. In the southbound direction, the route will have one lane from the signalized intersection until it merges with the truck entrance exit ramp, which will then merge with the employee parking exit ramp to enter existing Saturn Parkway.

This project will maintain the free flow movements to and from existing Saturn Parkway for the employee parking. Trips between the employee parking area and Beechcroft Road must use the signalized intersection.

This project will maintain the free flow movement from the truck entrance to existing Saturn Parkway. Trips exiting the truck entrance toward Beechcroft Road and trips entering the truck entrance must use the signalized intersection.

***Structures***

This project will require the construction of four (4) new structures:

- Bridge over CSX railroad
    - Traffic on Beechcroft Road must remain open during construction.
    - Construction must avoid the houses in the McCormick Crossing neighborhood to the north of Beechcroft and west of the railroad.
    - This bridge must be wide enough to accommodate a future 5-lane section. See Figure 4 in **Appendix C** for typical section.
- Bridge crossing McCormack Branch to replace culvert on Beechcroft Road
- Bridge crossing McCormack Branch on new alignment
    - See Figure 4 in **Appendix C** for typical section.
- Bridge over GM Plant employee Parking entrance.
    - South-bound traffic on Saturn Parkway extension crosses over the entering employee parking free-flow ramp.

### *Right of Way*

The majority of the construction of the Saturn Parkway Extension will take place on property belonging to GM. GM has agreed to donate the R.O.W. required to construct the Saturn Parkway Extension across the GM property. GM has also agreed to provide the mitigations required for the removal of the ball park on the GM property, including finding a new location for the leagues to play.

### *Project Limits of Saturn Parkway Extension*

The project will begin at the eastern limit of Project Shotgun SIA, at approximately L.M. 17.86 on SR-247. The eastern limit of the project on Beechcroft Road will be at approximately L.M. 18.58 on SR-247, at the limit of the required distance to realign Beechcroft into a stop controlled intersection.

Construction on the Saturn Parkway Extension will end near the boundary where the existing Saturn Parkway enters the GM Plant property and becomes the private ramps that provide access to the GM Plant. Currently, the 0.39 mile section from the interchange to the ramps into the GM Plant is designated as local route Saturn Parkway (0B075).

### *Project Cost of Saturn Parkway Extension*

For the Saturn Parkway Extension it is estimated that utilities will cost approximately $1,100,000, R.O.W. cost approximately $100,000, and construction will cost approximately $21,383,900. See **Appendix A** for the Cost Estimate breakdown.

# Recommendations for Project Triple Crown

### *Combining Projects for Design-Build*

For ease of letting and construction, the Saturn Parkway Extension project will be combined into one design-build project along with the RSAR and SIA projects described in ***Connected Projects on page 4***. The relationship of these projects is shown in **Figure 10.**

The basic configuration and associated information provided in this Section are subject to change at any time by TDOT without notice. This information is being provided solely as an aid in describing the general scope and nature of the work. The information given should not be used or relied upon for any other purposes. TDOT does not imply or guarantee the information contained in the basic configuration is accurate. The specific scope of this project will be defined within the second phase of the procurement process (Request for Proposals).

The design-build contractor will be responsible for the design and construction of the RSAR and SIA projects while staying within the R.O.W. limits that have already been determined. The design-build contractor will also be responsible for the ROW appraisals and acquisitions coordination, design and construction of the Saturn Parkway Extension.

### *Project Limits*

The overall design-build project limits will be from L.M. 17.15 to approximately L.M. 18.58 on Beechcroft Road (SR-247), and, to the south, approximately L.M. 0.00 on Saturn Parkway (0B075). It also included the two intersections to the east, as described above. The extent of the design-build project is shown in **Figure 10.**

### *Phasing*

The first phase of construction will be the RSAR improvements at the intersection of Beechcroft Road at Cleburne Road. The second phase of construction will be the improvements at the intersection of Town Center Parkway and Beechcroft Road and the intersection of Stephen P Yokich Parkway and SR-6. The third phase will be the widening of Beechcroft Road, beginning at the construction limits of the RSAR project at Cleburne Road, complete the 3,300 feet of the SIA project, and continue through the Saturn Parkway Extension project.

RSAR PROJECT

SIA PROJECT SHOTGUN

BEGIN RSAR (PIN: 117319.01)

END RSAR (PIN: 117319.01)
BEGIN PROJECT SHOTGUN (PIN:121394.00)

END PROJECT SHOTGUN (PIN: 121394.00)
BEGIN SATURN PARKWAY EXTENSION (PIN: 123399.00)

BEECHCROFT RD / SR-247

BEECHCROFT RD

CSX RAIL ROAD

SIA PROJECT SHOTGUN
WIDEN SR-247 FROM 2 LANES TO 3 LANES
CURB AND GUTTER

CLEBURNE RD.

GM FACILITY

MC CORMACK BRANCH

SATURN PARKWAY EXTENSION

SIA PROJECT SHOTGUN
PROPOSED RIGHT TURN LANE AND
RADIUS IMPROVEMENTS

TOWN CENTER PKWY.

SIA PROJECT SHOTGUN

TOWN CENTER PKWY.

KEDRON PKWY.

TRUCK ENTRANCE/EXIT

TRUCK EXIT

EMPLOYEE ENTRANCE

STEPHEN P. YOKICH PKWY.

SR-6

SIA PROJECT SHOTGUN

END SATURN PARKWAY EXTENSION (PIN: 123399.00)

SR-396

SATURN PARKWAY

SIA PROJECT SHOTGUN
RADIUS IMPROVEMENTS

BEECHCROFT RD / SR-247

CLEBURNE RD.

RSAR PROJECT
INTERSECTION IMPROVEMENTS
AT CLEBURNE ROAD

FIGURE 10

# TECHNICAL STUDY - DESIGN-BUILD CONNECTED PROJECTS

SATURN PARKWAY EXTENSION (PIN 123399.00)
SIA PROJECT SHOTGUN (PIN 121394.00)
ROAD SAFETY AUDIT REVIEW (PIN 117319.01)
MAURY COUNTY

N

### Project Cost

The design-build project is estimated to cost $29,629,000. See **Table 2** for a summary of the estimated costs that are involved. The R.O.W. and utilities has already been authorized for the RSAR and SIA projects and only the construction and any needed additional engineering will be completed for these sections of the project. See **Appendix A** for a more detailed cost estimate for the Saturn Parkway Extension.

**Table 2: Costs estimates associated with Design-Build Project**

| | Preliminary Engineering | R.O.W & Utilities | Construction | Total |
|---|---|---|---|---|
| SIA (PIN 121394.00) | $150,000 | N/A | $1,500,000 | **$1,650,000** |
| RSAR (PIN117319.01) | $ 50,000 | N/A | $ 828,000 | **$878,000** |
| Saturn Pkwy Extension | $2,258,400 | $ 1,200,000 | $21,383,900 | **$27,101,000** |
| Total | | | | **$29,629,000** |

# Appendix A

## *Cost Estimate for Final Design*

| | |
|---|---|
| **Route:** | **SR-396 Saturn Pkwy Extension** |
| **Description:** | **Connect Interchange at SR-6 to Beechcroft road, Includes connections with GM Plant and bridge over RR** |
| **County:** | **Maury** |
| **Length:** | |
| **Date:** | **May 27, 2016** |

| DESCRIPTION | LOCAL 0% | STATE 0% | FEDERAL 0% | TOTAL |
|---|---|---|---|---|
| **Construction Items** | | | | |
| Pavement Removal | $0 | $0 | $0 | $14,700 |
| Asphalt Paving | $0 | $0 | $0 | $1,271,400 |
| Concrete Pavement | $0 | $0 | $0 | $0 |
| Drainage | $0 | $0 | $0 | $528,500 |
| Appurtenances | $0 | $0 | $0 | $126,300 |
| Structures | $0 | $0 | $0 | $6,797,000 |
| Fencing | $0 | $0 | $0 | $0 |
| Signalization | $0 | $0 | $0 | $120,000 |
| Railroad Crossing or Separation | $0 | $0 | $0 | $0 |
| Earthwork | $0 | $0 | $0 | $2,313,400 |
| Clearing and Grubbing | $0 | $0 | $0 | $0 |
| Seeding & Sodding | $0 | $0 | $0 | $40,200 |
| Rip-Rap or Slope Protection | $0 | $0 | $0 | $0 |
| Guardrail | $0 | $0 | $0 | $178,600 |
| Signing | $0 | $0 | $0 | $26,900 |
| Pavement Markings | $0 | $0 | $0 | $25,900 |
| Maintenance of Traffic | $0 | $0 | $0 | $1,145,000 |
| Mobilization (5%) | $0 | $0 | $0 | $629,400 |
| Other Items 25% | $0 | $0 | $0 | $3,304,300 |
| Const. Contingency = 50% | $0 | $0 | $0 | $4,862,300 |
| Construction Estimate | $0 | $0 | $0 | $21,383,900 |
| **Interchanges & Unique Intersections** | | | | |
| Roundabouts | $0 | $0 | $0 | $0 |
| Interchanges | $0 | $0 | $0 | $0 |
| **Right-of-Way & Utilties** | | | | |
| Right-of-Way | $0 | $0 | $0 | $100,000 |
| Utilities | $0 | $0 | $0 | $1,100,000 |
| **Preliminary & Construction Engineering and Inspection** | | | | |
| Prelim. Eng. (10%) | $0 | $0 | $0 | $2,258,400 |
| Const. Eng. & Inspec. (10%) | $0 | $0 | $0 | $2,258,400 |
| **Total Project Cost** | $0 | $0 | $0 | $ 27,101,000 |

# Appendix B

## *Minutes from GM Meeting Sept. 10, 2015*

Project Triple Crown Meeting Summary

Tennessee Tower, 27th Floor

September 10, 2015, 3:00 PM

**Attendees:**

Eric Henning, GM Regional Director Southeast

Holly Milewski, GM Senior Project Manager (Corporate POC)

Michael Rayburn, GM Facilities Area Manager (Local POC)

Joseph Yoshuka, GM Operations

Clay Banks, TN. ECD

Danielle Hagewood, TDOT

**Minutes:**

- Anticipate 800 trucks per day as production ramps up. (1600 trips)
- Current CSX rail is used for outbound vehicles only, but they intend to use for inbound suppliers by 3rd quarter 2016 at their new cross dock, soon to be constructed.
- In order for CSX to assemble the train for outbound vehicles, which is typically 2x per day, it requires the train to block Beechcroft for an extended period of time.
- Requested a 3 to 4 lane grade separated rail crossing.
- The most urgent concern from GM's perspective is the lane width and lack of shoulders on Beechcroft. They discussed two incidents which involved their trucks, one where mirrors in opposing travel lanes were hit and another incident where a truck ran off the road during this past winters snow/ice event. Would like a minimum 3-lane road, but also discussed the need for 4-lane.
- Their safety concern on Beechcroft is also amplified by the proximity of a local school and the buses that frequently use Beechcroft. The narrow width of Beechcroft makes the combo of school buses and trucks less than ideal.
- Discussed the need for a connection from Saturn Parkway direct to Beechcroft through GM property. GM suggested that a ROW donation for this work was not unreasonable. The current route along Town Center Parkway is not feasible due to the number of

trucks and the amount of retail in the area. They do not feel that the intersection improvements we currently have proposed will be of much value to their logistics.

- Discussed the connection from Saturn Pkwy to Beechcroft needed to include elevated ramps due to the number of conflict points.
- Preference would be for some sort of ramps to tie the new connector into Beechcroft, but at minimum would require a signal with ample room for truck turns.
- There will be some jobs created by the new cross dock facility, but the capital investment and number of jobs were not readily available. Mr. Henning did allude to a possibility of additional production and more jobs at GM, but was not at liberty to discuss further and indicated that the local facility was just hearing this at the meeting.
- They were aware of another possible distribution facility coming to the area that is not related to GM.
- Clay Banks will follow-up with Northpoint to determine if their option is still open on the original supplier tracts and if Northpoint would reconsider that location if road improvements were made
- TDOT discussed recent meeting with Spring Hill and explained that the City indicated they had abandoned the idea of a grade separated rail crossing. Further explained that we were anticipating applications for road improvements from the City, but had not received them at this time. Suggested that the Department needed to look at the overall system and improvements that are currently under development need to be reviewed to determine if they meeting the overall needs of the area. Recommended a follow-up meeting with Steve Allen, Corporate GM, Local GM, ECD and Spring Hill.

# Appendix C

## *Functional Plans*

Index Of Sheets

| TENN. | YEAR | SHEET NO. |
|---|---|---|
| | 2016 | 1 |
| FED. AID PROJ. NO. | STP-396(4) | |
| STATE PROJ. NO. | 60100-1209-04 | |

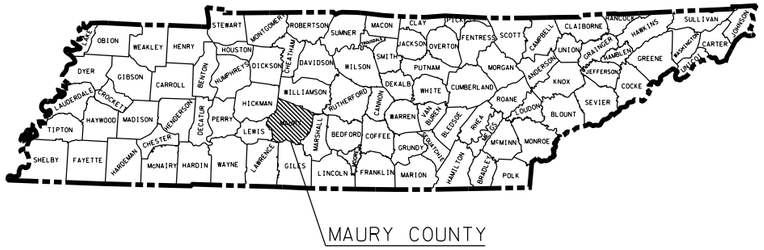
# STATE OF TENNESSEE
# DEPARTMENT OF TRANSPORTATION
# BUREAU OF ENGINEERING

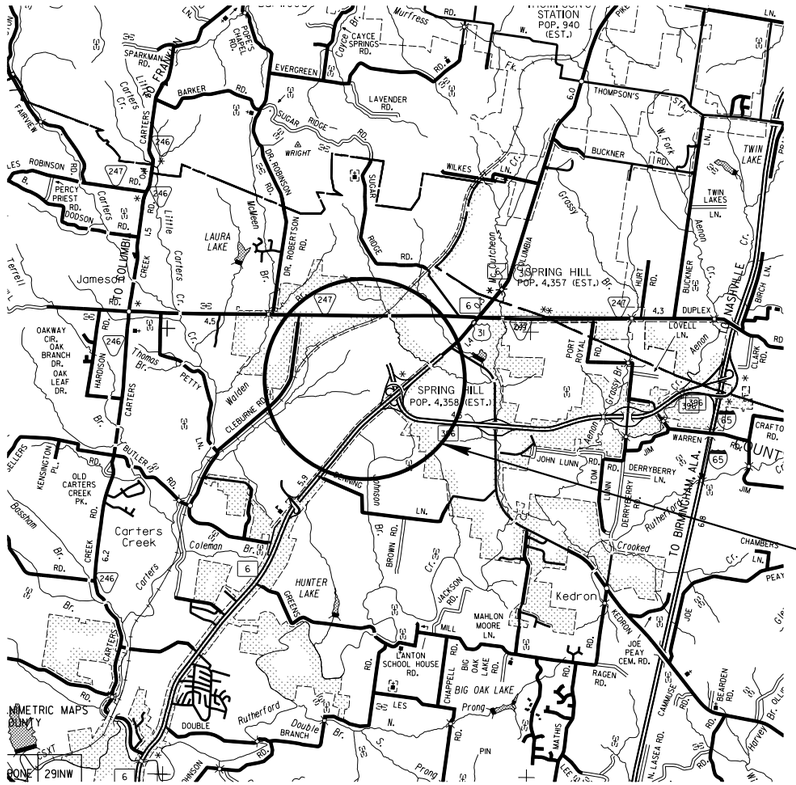
# MAURY COUNTY

SATURN PARKWAY EXTENSION
EXTEND SR-396 TO SR-247

## TECHNICAL STUDY

STATE HIGHWAY NO. F.A.H.S. NO.




N

SCALE: 1"= 1 MILE

## SPECIAL NOTES

PROPOSALS MAY BE REJECTED BY THE COMMISSIONER IF ANY OF THE UNIT PRICES CONTAINED THEREIN ARE OBVIOUSLY UNBALANCED, EITHER EXCESSIVE OR BELOW THE REASONABLE COST ANALYSIS VALUE.

THIS PROJECT TO BE CONSTRUCTED UNDER THE STANDARD SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION DATED MARCH 1, 2006 AND ADDITIONAL SPECIFICATIONS AND SPECIAL PROVISIONS CONTAINED IN THE PLANS AND IN THE PROPOSAL CONTRACT.

TDOT C.E. MANAGER 1 OR
TDOT DESIGN MANAGER 1 _____
TDOT ROAD SP. SV. 2 _____
DESIGNED BY _____
DESIGNER _____ CHECKED BY _____

P.E. NO. _____

PIN NO. _____

SEALED BY

APPROVED: Paul D. Degges
PAUL D. DEGGES, CHIEF ENGINEER

DATE: _____

APPROVED: _____
JOHN SCHROER, COMMISSIONER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED: _____ _____
DIVISION ADMINISTRATOR DATE

5/27/2016 2:28:02 PM
X:\ECD-SIA Projects\Region 3\Maury\Project Triple Crown\Project Files\Microstation\Title.dgn

TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

| TYPE | YEAR | COUNTY | FIGURE NO. |
|---|---|---|---|
| TS | 2016 | MAURY | 1 |

PROJECT SHOTGUN
PIN 121394.00
ROW 60LPLM-S2-021
PE 60019-1208-04

END PROJECT SHOTGUN
BEGIN PROJECT TRIPLE CROWN

BEECHCROFT RD (SR 247)

A

A

SEE FIGURE NO. 2

MATCH LINE

CSX RAILROAD

0′ 200′ 400′ 600′

N

# TECHNICAL STUDY

SATURN PARKWAY EXTENSION
PIN 123399.00
MAURY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 1
SATURN
PARKWAY
EXTENSION

6/1/2016 11:54:12 AM
X:\ECD-SIA Projects\Region 3\Maury\Project Triple Crown\Project Files\Microstation\Sheet 1.dgn

TENNESSEE D.O.T.

S.T.I.D.

FILE NO.

| TYPE | YEAR | COUNTY | FIGURE NO. |
|---|---|---|---|
| TS | 2016 | MAURY | 2 |


0′ 200′ 400′ 600′

N

# TECHNICAL STUDY

SATURN PARKWAY EXTENSION
PIN 123399.00
MAURY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 2
SATURN PARKWAY EXTENSION

6/1/2016 11:9:20 AM
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TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

| TYPE | YEAR | COUNTY | FIGURE NO. |
|---|---|---|---|
| TS | 2016 | MAURY | 3 |

GM

FEMA FLOOD MAP
47119C0065E

SEE FIGURE NO. 2

MATCH LINE

EMPLOYEE ENTRANCE

EMPLOYEE EXIT

TRUCK ENTRANCE/EXIT

RAISED MEDIAN

SATURN PARKWAY EXTENSION (SR 247)

PROPOSED BRIDGE

TRUCK EXIT

PROPOSED BRIDGE

PROPOSED SIGNALIZED INTERSECTION

MCCORMACK BRANCH

DOGWOOD TRAIL

RED PEPPER RIDGE

DIRECTION OF FLOW

FEMA FLOOD MAP
47119C0180E

SR-396
SATURN PARKWAY

END PROJECT

0′ 200′ 400′ 600′

N

# TECHNICAL STUDY

SATURN PARKWAY EXTENSION
PIN 123399.00
MAURY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 3
SATURN
PARKWAY
EXTENSION

6/1/2016 11:52:41 AM
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| TYPE | YEAR | COUNTY | FIGURE NO. |
|---|---|---|---|
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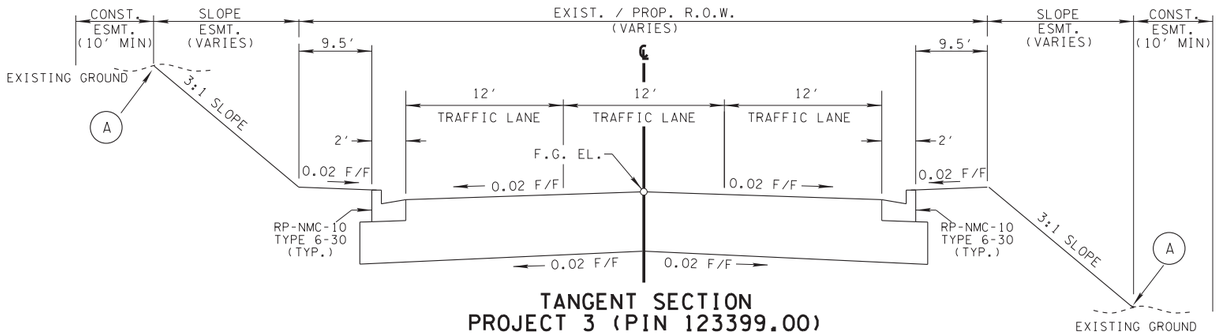
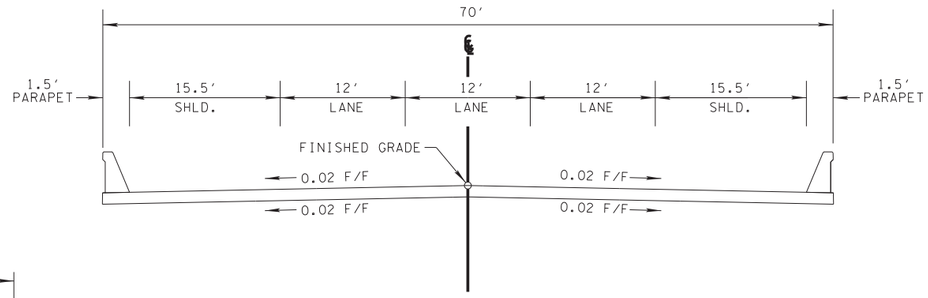



TANGENT SECTION
PROJECT 3 (PIN 123399.00)

(BASED ON STD. DWG. RD01-TS-7A)

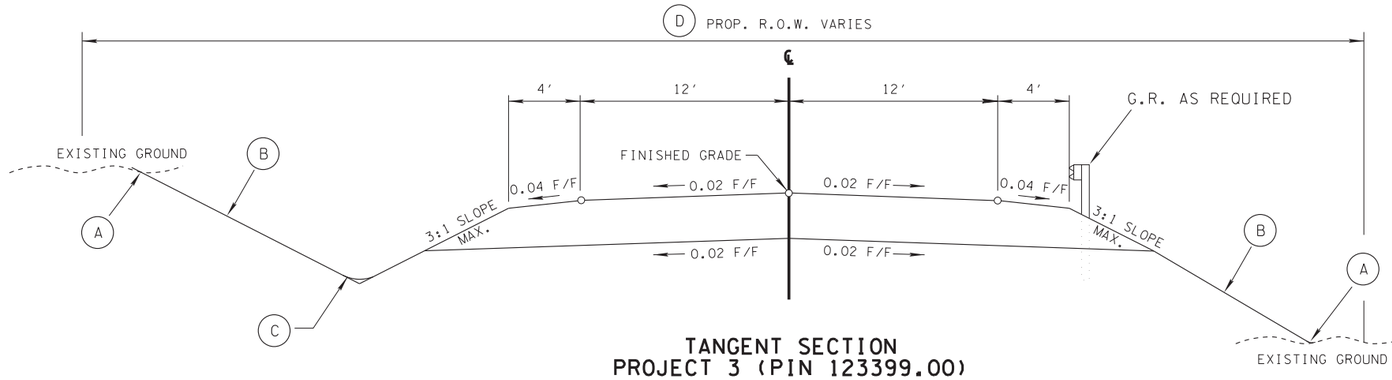
SECTION A-A




TANGENT BRIDGE SECTION
PROJECT 3 (PIN 123399.00)

SECTION B-B

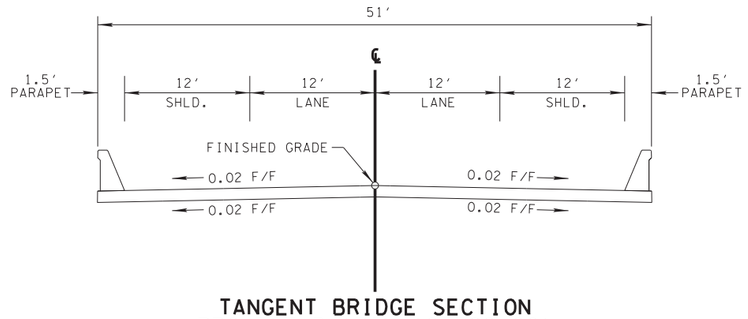
BRIDGE TO ACCOMMODATE FUTURE 5-LANE SECTION
(5-11' LANES WITH 6' SHOULDERS)




TANGENT SECTION
PROJECT 3 (PIN 123399.00)

(BASED ON STD. DWG. RD01-TS-1)

SECTION C-C




TANGENT BRIDGE SECTION
PROJECT 3 (PIN 123399.00)

SECTION D-D

FOOTNOTES

| | |
|---|---|
| (A) | SEE STD. DWG. RD01-S-11 FOR ROUNDING. |
| (B) | SEE STD. DWG. RD01-S-11 AND RD01-S-11B FOR DESIRABLE CUT AND FILL SLOPES AND NOTES REGARDING GEOLOGICAL RECOMMENDATIONS. |
| (C) | SEE STD. DWG. RD01-S-11A FOR DITCH ROUNDING. |
| (D) | SEE REFERENCED STD. DWG. FOR DESIRABLE RIGHT-OF-WAY LIMITS. |

TECHNICAL STUDY

SATURN PARKWAY EXTENSION
PIN 123399.00
MAURY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 4
SATURN PARKWAY EXTENSION

TENNESSEE D.O.T.
S.T.I.D.
FILE NO. ——

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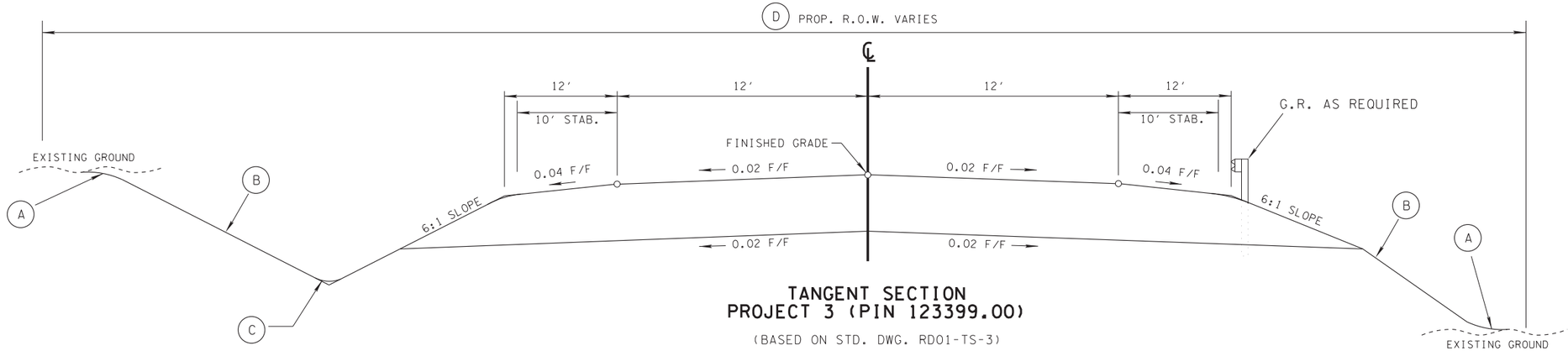
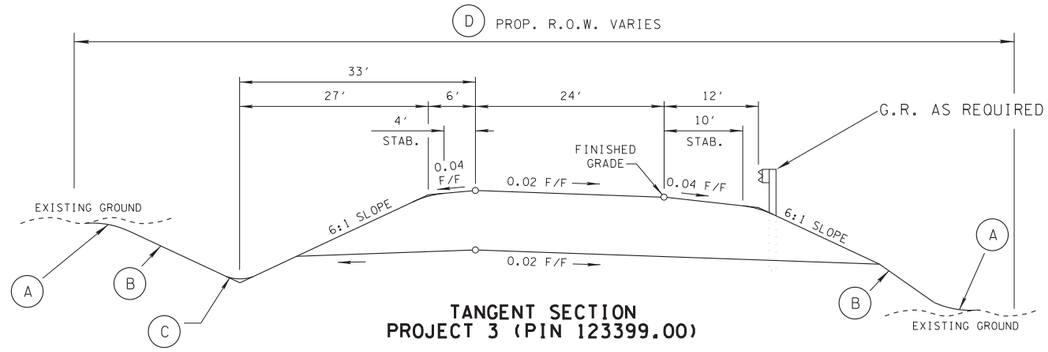
| TYPE | YEAR | COUNTY | FIGURE NO. |
|---|---|---|---|
| TS | 2016 | MAURY | 5 |




TANGENT SECTION
PROJECT 3 (PIN 123399.00)

(BASED ON STD. DWG. RD01-TS-3)

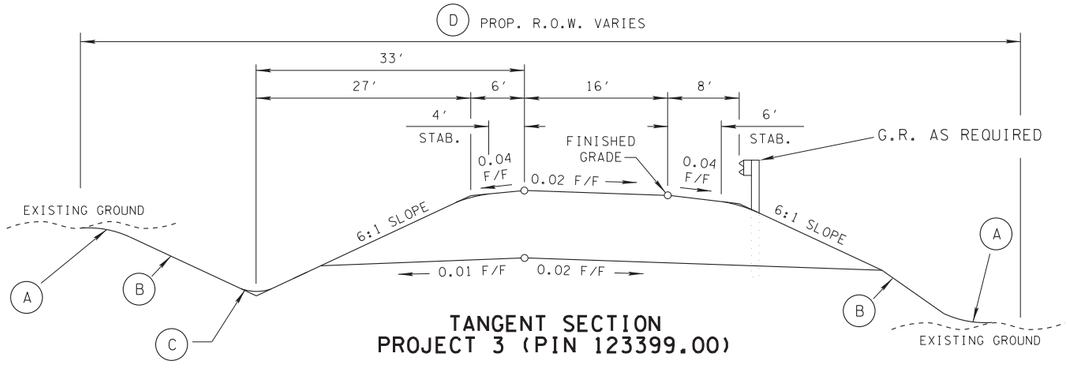
SECTION E-E




TANGENT SECTION
PROJECT 3 (PIN 123399.00)

(BASED ON STD. DWG. RD01-TS-4)

SECTION G-G




TANGENT SECTION
PROJECT 3 (PIN 123399.00)

(BASED ON STD. DWG. RD01-TS-4)

SECTION F-F

FOOTNOTES

| | |
|---|---|
| (A) | SEE STD. DWG. RD01-S-11 FOR ROUNDING. |
| (B) | SEE STD. DWG. RD01-S-11 AND RD01-S-11B FOR DESIRABLE CUT AND FILL SLOPES AND NOTES REGARDING GEOLOGICAL RECOMMENDATIONS. |
| (C) | SEE STD. DWG. RD01-S-11A FOR DITCH ROUNDING. |
| (D) | SEE REFERENCED STD. DWG. FOR DESIRABLE RIGHT-OF-WAY LIMITS. |

TECHNICAL STUDY

SATURN PARKWAY EXTENSION
PIN 123399.00
MAURY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 5
SATURN
PARKWAY
EXTENSION

TENNESSEE D.O.T.
S.T.I.D.
FILE NO. ——

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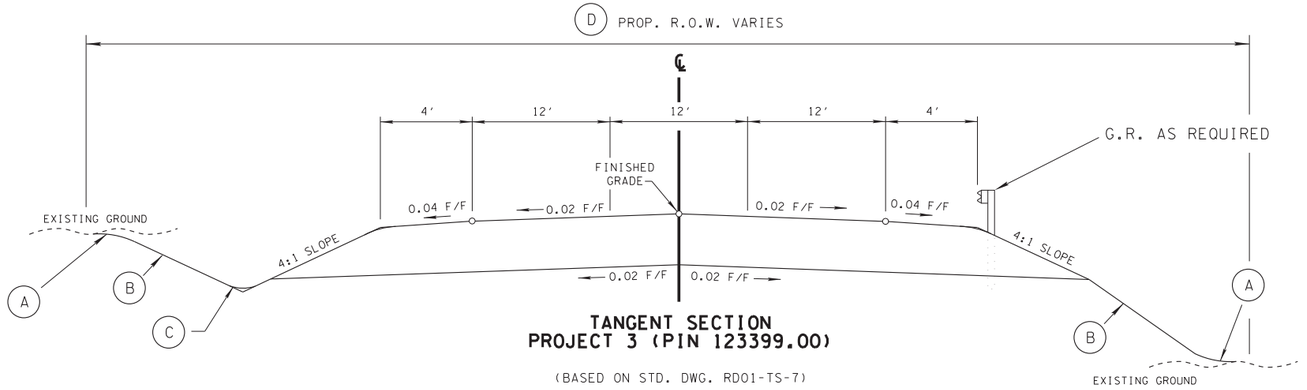
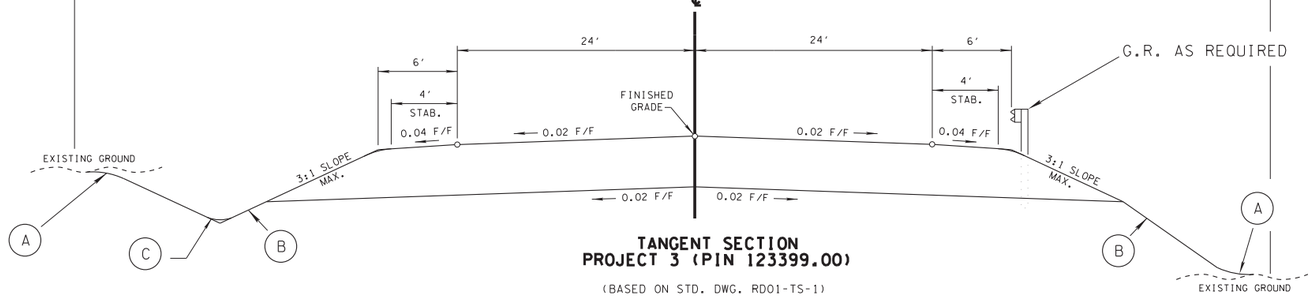
| TYPE | YEAR | COUNTY | FIGURE NO. |
|---|---|---|---|
| TS | 2016 | MAURY | 6 |




**TANGENT SECTION**
**PROJECT 3 (PIN 123399.00)**

(BASED ON STD. DWG. RD01-TS-7)

## SECTION H-H




**TANGENT SECTION**
**PROJECT 3 (PIN 123399.00)**

(BASED ON STD. DWG. RD01-TS-1)

## SECTION I-I

FOOTNOTES

| | |
|---|---|
| (A) | SEE STD. DWG. RD01-S-11 FOR ROUNDING. |
| (B) | SEE STD. DWG. RD01-S-11 AND RD01-S-11B FOR DESIRABLE CUT AND FILL SLOPES AND NOTES REGARDING GEOLOGICAL RECOMMENDATIONS. |
| (C) | SEE STD. DWG. RD01-S-11A FOR DITCH ROUNDING. |
| (D) | SEE REFERENCED STD. DWG. FOR DESIRABLE RIGHT-OF-WAY LIMITS. |

TECHNICAL STUDY

SATURN PARKWAY EXTENSION
PIN 123399.00
MAURY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 6
SATURN PARKWAY EXTENSION

TENNESSEE D.O.T.
S.T.I.D.
FILE NO. ——

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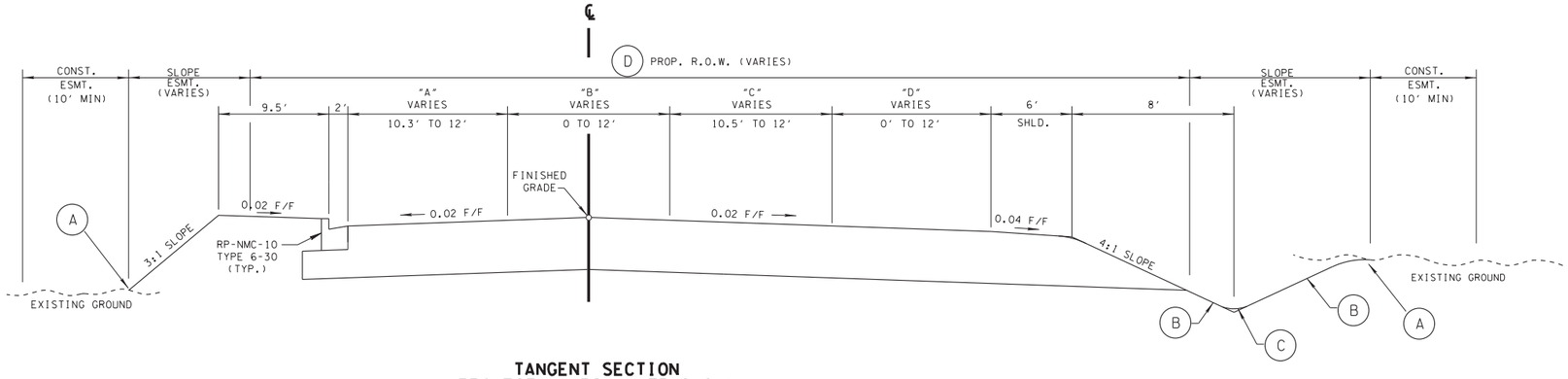
| TYPE | YEAR | COUNTY | FIGURE NO. |
|---|---|---|---|
| TS | 2016 | MAURY | 7 |



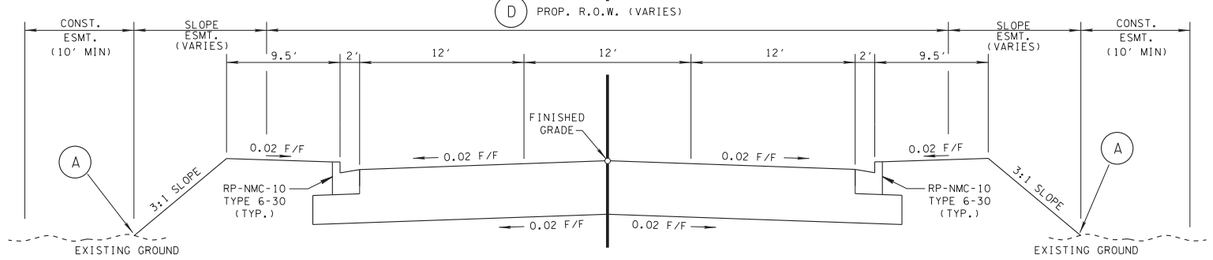

**TANGENT SECTION**
**PROJECT 1 (PIN 117319.01)**

(BASED ON STD. DWG. RD01-TS-2)

S.R. 247 (BEECHCROFT RD.)

STA. 12+25.00 TO STA. 17+64.00

| TABLE OF DIMENSIONS S.R. 247 (BEECHCROFT RD.) | | | | | |
|---|---|---|---|---|---|
| DIMENSION | WIDTH (FT) | STATION | WIDTH (FT) | STATION | REMARKS |
| "A" | 10.30 | 12+25.00 | 12.00 | 16+35.00 | TRANSITION |
| "A" | 12.00 | 16+35.00 | 12.00 | 17+64.00 | |
| "B" | 0 | 12+25.00 | 12.00 | 16+35.00 | TRANSITION |
| "B" | 12.00 | 16+35.00 | 12.00 | 17+64.00 | |
| "C" | 10.50 | 12+25.00 | 12.00 | 12+65.00 | TRANSITION |
| "C" | 12.00 | 12+65.00 | 12.00 | 17+64.00 | |
| "D" | 0 | 12+25.00 | 0 | 12+65.00 | |
| "D" | 0 | 12+65.00 | 12.00 | 16+35.00 | TRANSITION |
| "D" | 12.00 | 16+35.00 | 12.00 | 17+64.00 | |




**TANGENT SECTION**
**PROJECT 1 (PIN 117319.01)**

(BASED ON STD. DWG. RD01-TS-6A)

S.R. 247 (BEECHCROFT RD.)

STA. 18+45.00 TO STA. 21+55.00

FOOTNOTES

| | |
|---|---|
| (A) | SEE STD. DWG. RD01-S-11 FOR ROUNDING. |
| (B) | SEE STD. DWG. RD01-S-11 AND RD01-S-11B FOR DESIRABLE CUT AND FILL SLOPES AND NOTES REGARDING GEOLOGICAL RECOMMENDATIONS. |
| (C) | SEE STD. DWG. RD01-S-11A FOR DITCH ROUNDING. |
| (D) | SEE REFERENCED STD. DWG. FOR DESIRABLE RIGHT-OF-WAY LIMITS. |

TENNESSEE D.O.T.
S.T.I.D.
FILE NO. ——

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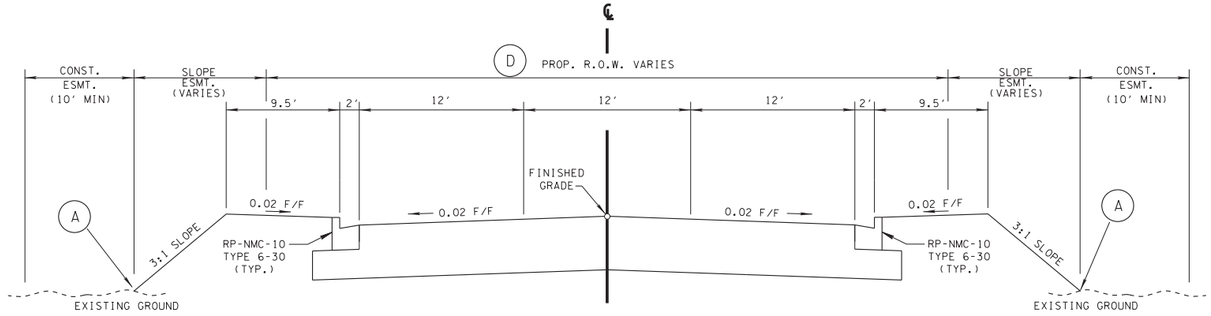
# TECHNICAL STUDY

SR-247 (BEECHCROFT ROAD)
PIN 117319.01
MAURY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 7
SR-247

| TYPE | YEAR | COUNTY | FIGURE NO. |
|---|---|---|---|
| TS | 2016 | MAURY | 8 |

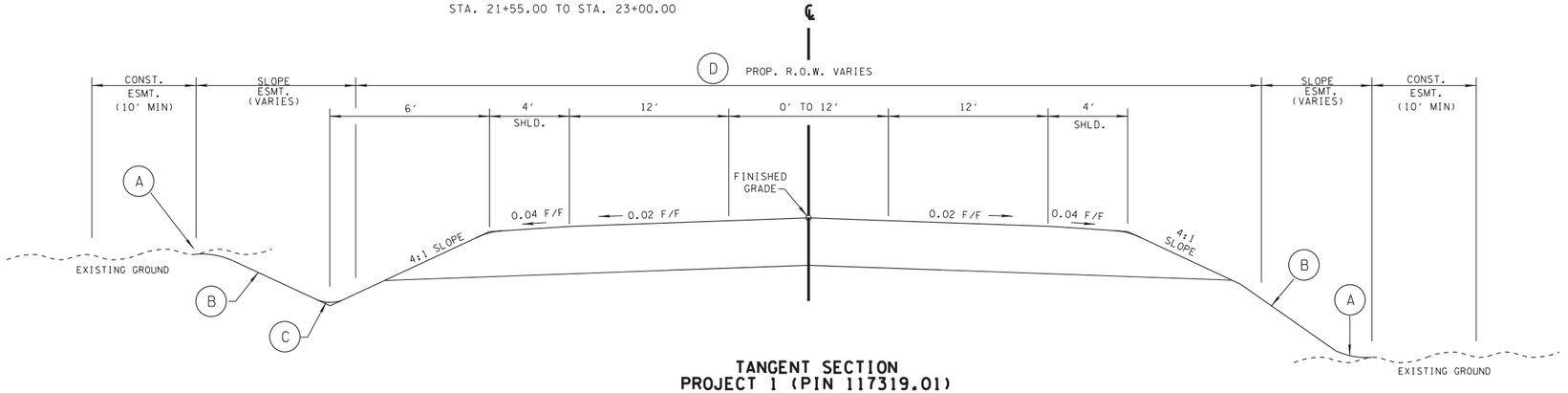



**TANGENT SECTION**
**PROJECT 1 (PIN 117319.01)**

(BASED ON STD. DWG. RD01-TS-6A)

S.R. 247 (BEECHCROFT RD.)

STA. 17+64.00 TO STA. 18+45.00
STA. 21+55.00 TO STA. 23+00.00



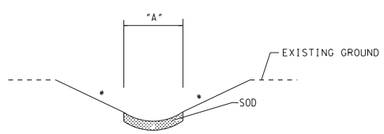

**TANGENT SECTION**
**PROJECT 1 (PIN 117319.01)**

(BASED ON STD. DWG. RD01-TS-2)

CLEBURNE ROAD

STA. 20+00.00 TO STA. 24+25.00

* SLOPES VARIES (SEE CROSS SECTIONS)




TYPICAL GEOMEMBRANE LINED
SOD DITCH

| ROAD NAME | | FROM STA. | | TO STA. | LT/RT |
|---|---|---|---|---|---|
| BEECHCROFT | STA | 11+50.00 | STA | 12+50.00 | RT |

FOOTNOTES

| | |
|---|---|
| (A) | SEE STD. DWG. RD01-S-11 FOR ROUNDING. |
| (B) | SEE STD. DWG. RD01-S-11 AND RD01-S-11B FOR DESIRABLE CUT AND FILL SLOPES AND NOTES REGARDING GEOLOGICAL RECOMMENDATIONS. |
| (C) | SEE STD. DWG. RD01-S-11A FOR DITCH ROUNDING. |
| (D) | SEE REFERENCED STD. DWG. FOR DESIRABLE RIGHT-OF-WAY LIMITS. |

TENNESSEE D.O.T.
S.T.I.D.
FILE NO. ——

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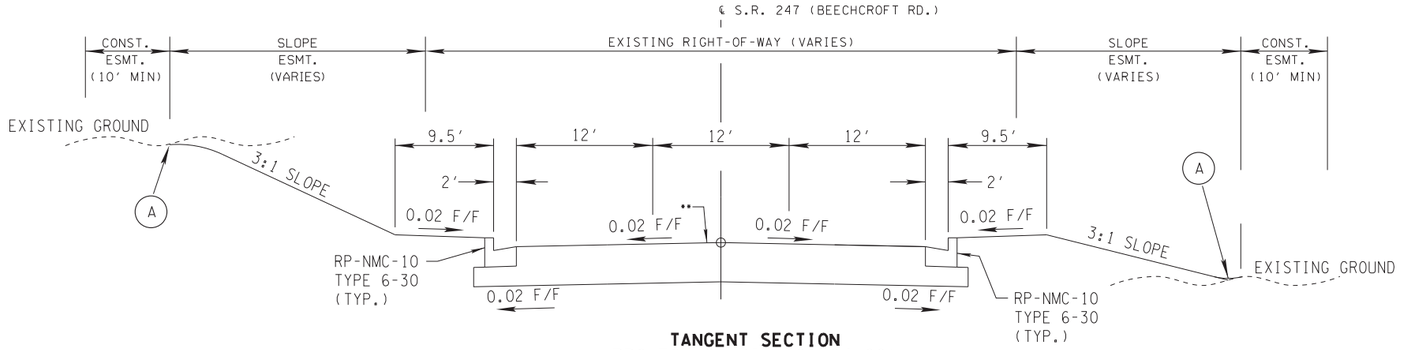
# TECHNICAL STUDY

SR-247 (BEECHCROFT ROAD)
PIN 117319.01
MAURY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 8
SR-247

| TYPE | YEAR | COUNTY | FIGURE NO. |
|---|---|---|---|
| TS | 2016 | MAURY | 9 |



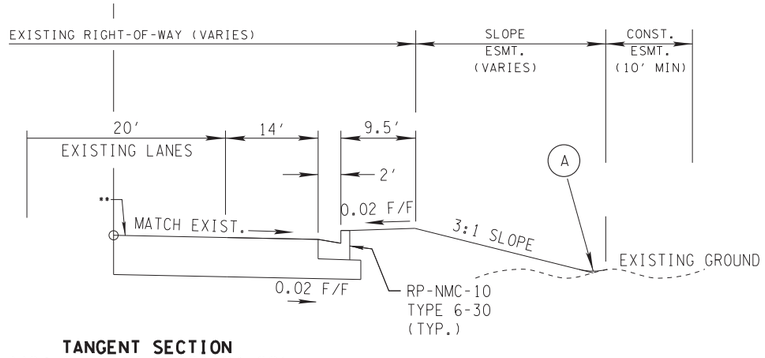

**TANGENT SECTION**
**PROJECT 2 (PIN 121394.00)**

(BASED ON STD. DWG. RDO1-TS-7A)

S.R. 247 (BEECHCROFT RD.)

STA. 23+00.00 TO STA. 26+50.00
STA. 29+08.00 TO STA. 38+80.00
STA. 45+00.00 TO STA. 50+50.00

** EXISTING PAVEMENT TO BE COLD PLANED A DEPTH OF 1.5 INCHES (+/-) AND RESURFACED.

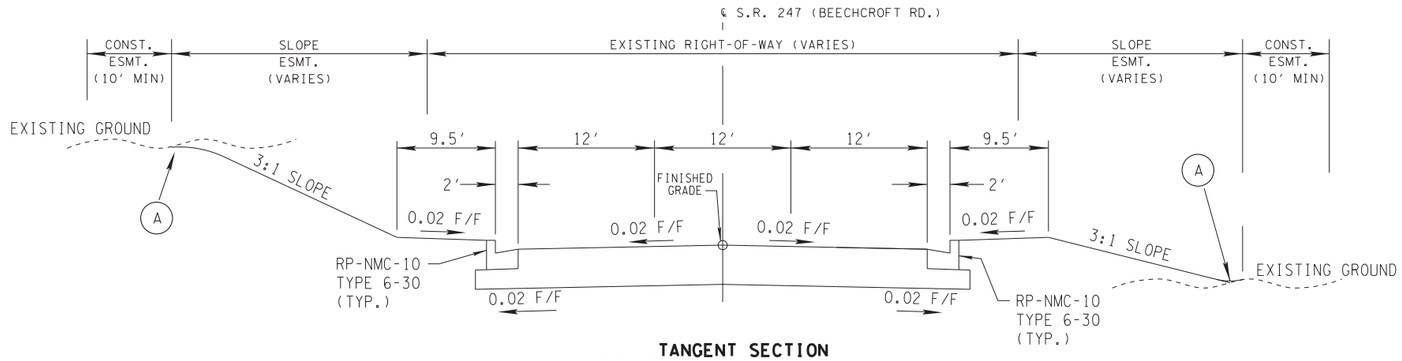



**TANGENT SECTION**
**PROJECT 2 (PIN 121394.00)**

RIGHT TURN LANE

S.R. 247 (BEECHCROFT RD.)

STA. 102+00.00 TO STA. 107+31.27




**TANGENT SECTION**
**PROJECT 2 (PIN 121394.00)**

(BASED ON STD. DWG. RDO1-TS-7A)

S.R. 247 (BEECHCROFT RD.)

STA. 26+50.00 TO STA. 29+08.00
STA. 38+80.00 TO STA. 45+00.00

FOOTNOTES

(A) SEE STD. DWG. RDO1-S-11 FOR ROUNDING.

TENNESSEE D.O.T.
S.T.I.D.
FILE NO. ——

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# TECHNICAL STUDY

SR-247 (BEECHCROFT ROAD)
PIN 121394.00
MAURY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 9
SR-247

# Appendix D

## *Beechcroft Road at Cleburne Road RSAR (PIN 117319.01)*

**STATE OF TENNESSEE**
**DEPARTMENT OF TRANSPORTATION**
**STRATEGIC TRANSPORTATION INVESTMENTS DIVISION**
SUITE 1000, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-2208

**JOHN C. SCHROER**
COMMISSIONER

**BILL HASLAM**
GOVERNOR

**MEMORANDUM**

To: Mr. Paul Degges, Chief Engineer and Deputy Commissioner

From: Steve Allen, Director
Strategic Transportation Investments Division

Date: April 23, 2014

**Subject: ROAD SAFETY AUDIT REVIEW (RSAR) STATE ROUTE 247 (BEECHCROFT ROAD) INTERSECTION AT CLEBURNE ROAD, LOG MILE 17.24 (MAURY COUNTY), PIN 117319.01**

The intersection of State Route 247 (Beechcroft Road) and Cleburne Road located at log mile 17.24 is a supplementary study for the State Route 247, from the Spring Hill City Limits to State Route 6, Road Safety Audit Report (PIN 117319.00). The intersection of State Route 247 and Cleburne Road has limited sight distance due to a vertical curve east of the intersection on State Route 247 and is considered to be a high priority along the State Route 247 corridor.

The total estimated cost of improvements listed in the report is $468,600. Right-of-way acquisition is required ($50,000). A maintenance agreement is not required. A local match is not required. These improvements will be let to contract.

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

SA/BT

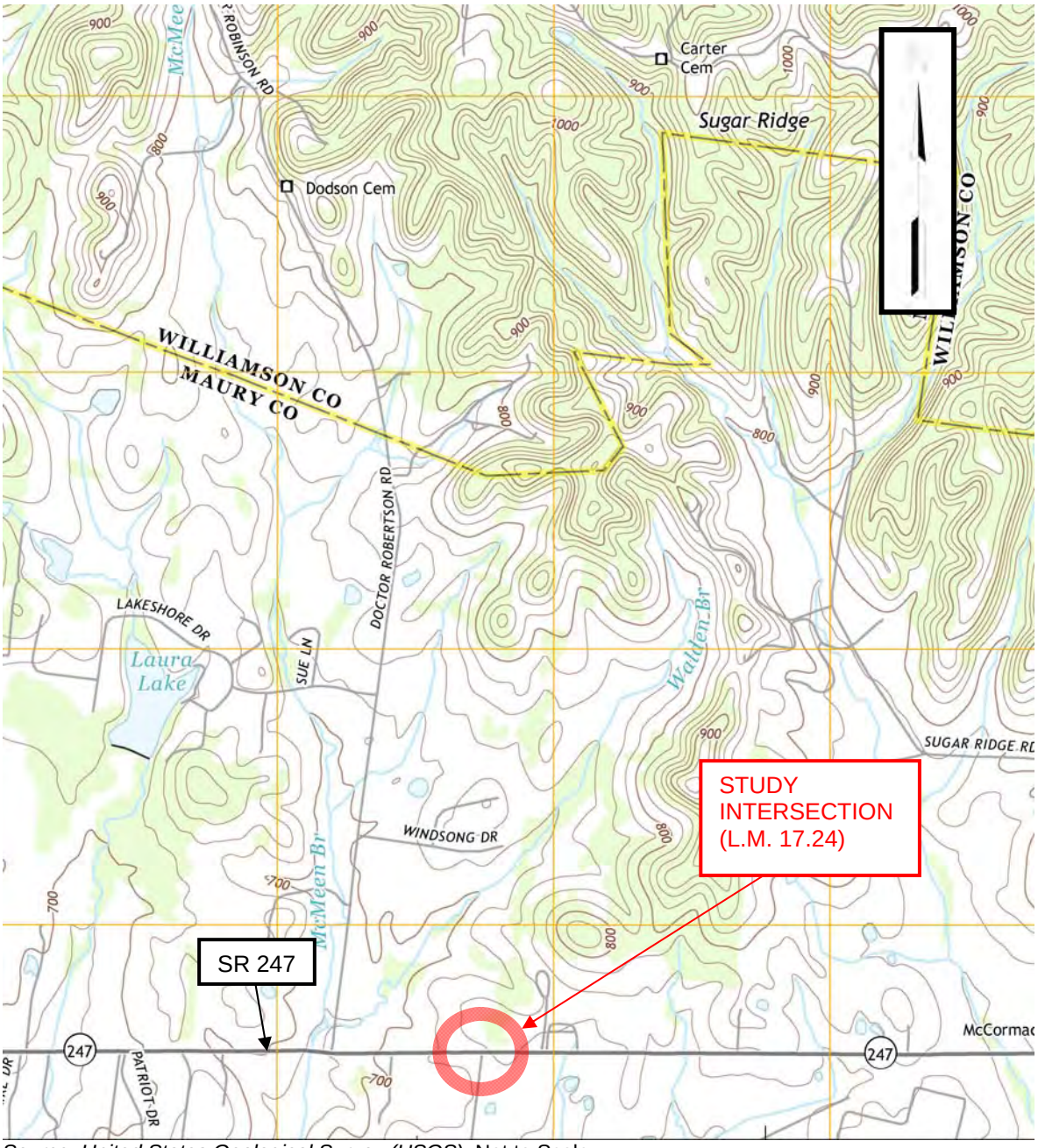
Attachment
CC: David Layhew, Jeff Jones, Jim Moore, Brian Hurst, Mike Tugwell, Phil Trammel, Brad Freeze, Michael Skipper, FILE

# *TENNESSEE*
## *DEPARTMENT OF TRANSPORTATION*

# *ROAD SAFETY AUDIT REPORT*
## *STATE ROUTE 247 (BEECHCROFT ROAD)*
### *Intersection with Cleburne Road,*
### *Maury County*
### *PIN 117319.01*

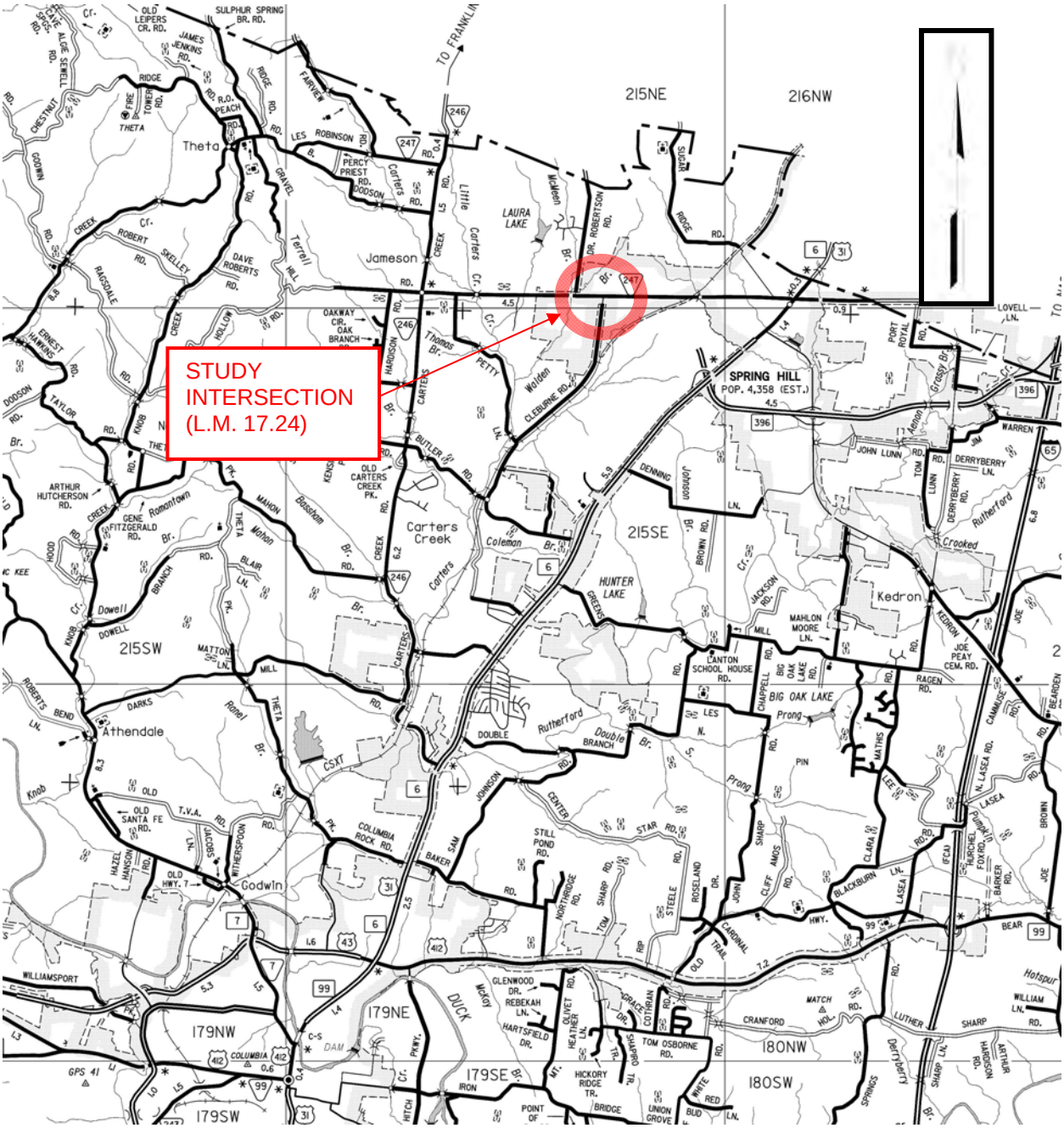
*Prepared by RPM Transportation Consultants, LLC.*
*for the*
***Strategic Transportation Investments Division***

| Recommended by: | Signature | DATE |
|---|---|---|
| **TRANSPORTATION DIRECTOR<br>STRATEGIC TRANSPORTATION<br>INVESTMENTS DIVISION** | | 4-23-14 |



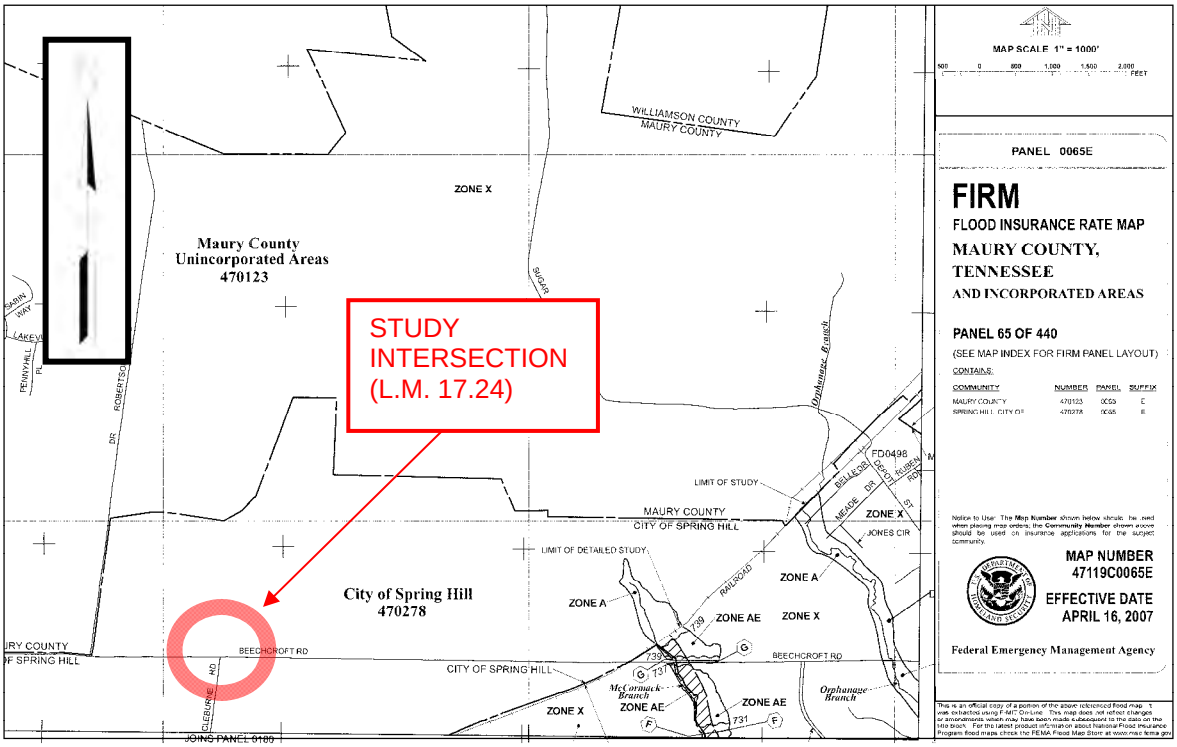

*Source: United States Geological Survey (USGS).* Not to Scale.

**Vicinity Map**
**State Route 247 at Cleburne Road, Maury County**
**L.M. 17.24**




*Source: TDOT County and City Maps.* Not to Scale.

**Location Map**
**State Route 247 at Cleburne Road, Maury County**
**L.M. 17.24**




*Source: Federal Emergency Management Agency (FEMA).*

## Flood Map
## State Route 247 at Cleburne Road, Maury County
## L.M. 17.24

# Road Safety Audit Review

## Description of Project and Background

The intersection of State Route 247 (Beechcroft Road) and Cleburne Road located at log mile 17.24 is a supplementary study for the State Route 247, from the Spring Hill City Limits to State Route 6, Road Safety Audit Report (PIN 117319.00). The intersection of State Route 247 and Cleburne Road has limited sight distance due to a vertical curve east of the intersection on State Route 247 and is considered to be a high priority along the State Route 247 corridor.

## RSAR Team Members, Information used in the Review, Pre-Briefing Summary and Observations

Refer to the State Route 247, from the Spring Hill City Limits to State Route 6, Road Safety Audit Report (PIN 117319.00).

The total estimated cost of improvements listed in the report is $468,600. Right-of-way acquisition is required ($50,000). A maintenance agreement is not required. A local match is not required. These improvements will be let to contract.

*6/22/12: Looking east on State Route 247 from the intersection of State Route 247 and Cleburne Road. (L.M. 17.24).*

*6/22/12: Looking west on State Route 247 towards the intersection of State Route 247 and Cleburne Road. (L.M. 17.30).*

*6/22/12: Looking south on Cleburne Road from the intersection of State Route 247 and Cleburne Road. (L.M. 17.24).*

*6/22/12: Looking east on State Route 247 towards the intersection of State Route 247 and Cleburne Road. (L.M. 17.20).*

**COST DATA SHEET**
**TOTAL PROJECT COST**

**RSAR DESIGN COST ESTIMATE**

| | |
|---|---|
| Route: | State Route 247 and Cleburne Road |
| Description: | (L.M. 17.24) |
| County: | Maury County |
| Length: | Intersection |
| Date: | March 12, 2014 |

| DESCRIPTION | LOCAL | STATE | FEDERAL | TOTAL |
|---|---|---|---|---|
| Right-of-Way | $ - | $ 5,000 | $ 45,000 | $ 50,000 |
| Clearing and Grubbing | $ - | $ 2,500 | $ 22,500 | $ 25,000 |
| Earthwork | $ - | $ 640 | $ 5,760 | $ 6,400 |
| Railroad Crossing or Separation | $ - | $ - | $ - | $ - |
| Drainage | $ - | $ 2,500 | $ 22,500 | $ 25,000 |
| Utilities | $ - | $ 6,000 | $ 54,000 | $ 60,000 |
| Structures | $ - | $ - | $ - | $ - |
| Pavement Removal | $ - | $ 1,300 | $ 11,300 | $ 12,600 |
| Paving | $ - | $ 14,140 | $ 127,300 | $ 141,400 |
| Roadway and Pavement Appurtenances | $ - | $ - | $ - | $ - |
| Retaining Walls | $ - | $ - | $ - | $ - |
| Topsoil | $ - | $ - | $ - | $ - |
| Seeding | $ - | $ - | $ - | $ - |
| Sodding | $ - | $ - | $ - | $ - |
| Rip-Rap or Slope Protection | $ - | $ - | $ - | $ - |
| Fencing | $ - | $ - | $ - | $ - |
| Signing [1] | | | $ 2,300 | $ 2,300 |
| Pavement Markings [1] | | | $ 9,300 | $ 9,300 |
| Lighting [1] | | | $ - | $ - |
| Signalization [1] | | | $ - | $ - |
| Guardrail [1] | | | $ - | $ - |
| Pay Item Quantity Adjustment (15%)[2] | $ - | $ 4,100 | $ 38,200 | $ 42,300 |
| Maintenance of Traffic | $ - | $ 500 | $ 4,500 | $ 5,000 |
| Mobilization (5%) | $ - | $ 1,600 | $ 14,900 | $ 16,500 |
| CONSTRUCTION COST (rounded) | $ - | $ 33,300 | $ 312,600 | $ 345,900 |
| Engineering and Contingency (10%) | $ - | $ 3,300 | $ 31,300 | $ 34,600 |
| TOTAL CONSTRUCTION COST (rounded) | $ - | $ 36,600 | $ 343,900 | $ 380,500 |
| Preliminary Engineering (10%) | $ - | $ 3,700 | $ 34,400 | $ 38,100 |
| PROJECT COST [3] (rounded) | $ - | $ 45,300 | $ 423,300 | $ 468,600 |

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

[2] *For estimating purposes pay items are adjusted for fluctuation of cost based on quantity.*

[3] *For estimating future project costs, a compounded inflation rate of 7% should be applied from the date of this estimate.*

TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO. ____

| TYPE | YEAR | COUNTY | FIGURE NO. |
|---|---|---|---|
| RSAR | 2014 | MAURY | 1 |

SR 247
EXISTING ROW
PROPOSED ROW
EXISTING ROW
PROPOSED ROW
EXISTING ROW
PROPOSED ROW
Cleburne Rd

1 W2-2
1
2
3
4
5 BEGIN HIGHER FINES ZONE
6 END SCHOOL ZONE
7 END HIGHER FINES ZONE
7 R2-11 END HIGHER FINES ZONE
8
9 W1-7
6 S5-2 END SCHOOL ZONE
4
18
19 20 MPH
19 W2-2
20
12
11
10 W3-1
10
13
14
15 STOP
15 R1-1
5 BEGIN HIGHER FINES ZONE
5 R2-10
16 DO NOT ENTER
VIEW
17 SPEED LIMIT 20 SCHOOL
17 S4-3P R2-1

0′ 100′ 200′ 300′

N

# ROAD SAFETY AUDIT REPORT

SR 247 AT CLEBURNE ROAD
L.M. 17.24
MAURY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

SR 247 AT CLEBURNE RD
L.M. 17.24
FIGURE NO. 1

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO. ____

| TYPE | YEAR | COUNTY | FIGURE NO. |
|---|---|---|---|
| RSAR | 2014 | MAURY | 1A |

# GUIDANCE

1. Remove and relocate one (1) Side Road sign with one (1) solar powered flashing yellow beacon mounted above on the south side of State Route 247 approximately 200 feet west of the intersection of State Route 247 and Cleburne Road to approximately 540 feet west of the proposed intersection of State Route 247 and Cleburne Road . (See TDOT Standard Drawing T-S-24 - Details of Sign with Solar Flashing Assembly)
2. Install snowplowable, bi-directional yellow and white pavement markers spaced at 20 feet along the centerlines and lane lines, respectively, of State Route 247 from approximately 400 feet west of the proposed intersection of State Route 247 and Cleburne Road to 500 feet east of the proposed intersection.
3. Cold plane and repave approximately 9,600 square feet of pavement and construct approximately 9,800 square feet of roadway with full depth pavement along State Route 247 extending approximately 400 feet west of the proposed intersection of State Route 247 and Cleburne Road. The construction of full depth pavement will extend both edges of pavement along State Route 247 to include an additional 24 feet of pavement creating one (1) eastbound through lane, one (1) westbound receiving lane, one (1) lane transition taper and one (1) dedicated right turn lane as the western leg of the proposed intersection of State Route 247 and Cleburne Road. The transition taper lane shall include approximately 360 feet of taper and the dedicated right turn lane shall include 100 feet of storage and 180 feet of taper. (See Figure 3 - Paving Details)
4. Install enhanced flatline thermoplastic 4" single solid white edgelines, enhanced flatline thermoplastic 4" double solid yellow centerlines, an enhanced flatline thermoplastic 4" single solid white lane line, an enhanced flatline thermoplastic 4" single dotted white lane line, and 12" diagonal yellow channelization pavement markings along State Route 247 extending approximately 400 feet east and west of the proposed intersection of State Route 247 and Cleburne Road.
5. Remove and relocate one (1) BEGIN HIGHER FINES ZONE sign on the south side of State Route 247 approximately 160 feet west of the proposed intersection of State Route 247 and Cleburne Road to approximately 100 feet east of the proposed intersection of State Route 247 and Cleburne Road.
6. Remove and relocate one (1) END SCHOOL ZONE sign on the north side of State Route 247 approximately 100 feet west of the intersection of State Route 247 and Cleburne Road to approximately 100 feet east of the proposed intersection of State Route 247 and Cleburne Road.
7. Remove and relocate one (1) END HIGHER FINES ZONE sign on the north side of State Route 247 approximately 100 feet west of the intersection of State Route 247 and Cleburne Road to approximately 100 feet east of the proposed intersection of State Route 247 and Cleburne Road.
8. Install two (2) thermoplastic right turn arrow pavement markings in the proposed right turn lane approximately 50 feet and 100 feet west of the proposed intersection of State Route 247 and Cleburne Road.
9. Install one (1) Two-Direction Large Arrow (W1-7) (48"x24") sign with 2" strips of yellow retroreflective sheeting mounted on the posts facing northbound traffic directly across from and perpendicular to Cleburne Road. (See Figure 2 - Sign Details)
10. Remove one (1) Stop Ahead sign on the east side of Cleburne Road approximately 660 feet south of the intersection of State Route 247 and Cleburne Road and install one (1) Stop Ahead (W3-1) (36"x36") sign with a 2" strip of yellow retroreflective sheeting mounted on the post facing northbound traffic on the east side of Cleburne Road approximately 200 feet south of the intersection of State Route 247 and Cleburne Road. (See Figure 2 - Sign Details)
11. Cold plane and repave approximately 3,120 square feet of pavement and construct approximately 4,160 square feet of roadway with full depth pavement along Cleburne Road extending approximately 260 feet south of the proposed intersection of State Route 247 and Cleburne Road. The construction of full depth pavement will extend both edges of pavement along Cleburne Road to include an additional 12 feet of pavement creating one (1) southbound receiving lane, one (1) dedicated left turn lane and one (1) dedicated right turn lane as the southern leg of the proposed intersection of State Route 247 and Cleburne Road. The dedicated left turn lane shall include 100 feet of storage, 60 feet of bay taper and 100 feet of approach taper. (See Figure 3 - Paving Details)
12. Install enhanced flatline thermoplastic 4" single solid white edgelines, enhanced flatline thermoplastic 4" double solid yellow centerlines, an enhanced flatline thermoplastic 4" single solid white lane line, an enhanced flatline thermoplastic 4" single dotted white lane line, and 12" diagonal yellow channelization pavement markings along State Route 247 extending approximately 260 feet south of the proposed intersection of State Route 247 and Cleburne Road.
13. Install two (2) thermoplastic right turn arrow pavement markings and two (2) thermoplastic left turn arrow pavement markings in the proposed right and left turn lanes, respectively, approximately 25 feet and 75 feet south of the proposed intersection of State Route 247 and Cleburne Road.
14. Scarify and sod approximately 2,100 square feet of existing right turn lane channelization pavement located in the southeast quadrant of the intersection of State Route 247 and Cleburne Road.
15. Remove one (1) existing STOP sign on Cleburne Road at the intersection of State Route 247 and Cleburne Road and install one (1) STOP (R1-1) (36"x36") sign with 2" red retroreflective sheeting mounted on the post and install one (1) thermoplastic 32' long and 24" wide stop line on Cleburne Road. (See Figure 2 - Sign Details)
16. Remove one (1) YIELD sign and one (1) DO NOT ENTER sign mounted back to back on the south side of State Route 247 approximately 80 feet east of the proposed intersection of State Route 247 and Cleburne Road.
17. Remove and relocate one (1) SCHOOL sign and one (1) (20 MPH) Speed Limit sign with one (1) solar powered flashing yellow beacon mounted above and below on the south side of State Route 247 approximately 100 feet east of the intersection of State Route 247 and Cleburne Road to approximately 400 feet west of the proposed intersection of State Route 247 and Cleburne Road . (See TDOT Standard Drawing T-S-24 - Details of Sign with Solar Flashing Assembly)
18. Install two (2) thermoplastic left turn arrow pavement markings in the proposed left turn lane approximately 50 feet and 100 feet east of the proposed intersection of State Route 247 and Cleburne Road.
19. Remove and relocate one (1) Side Road sign and one (1) (20 MPH) Advisory Speed Plaque with one (1) solar powered flashing yellow beacon mounted above on the south side of State Route 247 approximately 350 feet east of the intersection of State Route 247 and Cleburne Road to approximately 480 feet east of the proposed intersection of State Route 247 and Cleburne Road. The (20 MPH) Advisory Speed Plaque is to excluded from the relocated sign assembly (See TDOT Standard Drawing T-S-24 - Details of Sign with Solar Flashing Assembly)
20. Cold plane and repave approximately 12,000 square feet of pavement and construct approximately 8,000 square feet of roadway with full depth pavement along State Route 247 extending approximately 500 feet east of the proposed intersection of State Route 247 and Cleburne Road. The construction of full depth pavement will extend both edges of pavement along State Route 247 to include an additional 12 feet of pavement creating one (1) westbound through lane, one (1) eastbound receiving lane and one (1) dedicated left turn lane as the eastern leg of the proposed intersection of State Route 247 and Cleburne Road. The dedicated left turn lane shall include 100 feet of storage, 90 feet of bay taper and 270 feet of approach taper. The proposed westbound approach to the intersection of State Route 247 and Cleburne Road shall be constructed to provided a minimum of 530 feet of sight distance for northbound Cleburne Road vehicles attempting a left turn onto westbound State Route 247. (See Figure 3 - Paving Details)

ROAD SAFETY AUDIT REPORT

SR 247 AT CLEBURNE ROAD
L.M. 17.24
MAURY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

SR 247 AT CLEBURNE RD
L.M. 17.24
FIGURE NO. 1A

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO. ___

| TYPE | YEAR | COUNTY | FIGURE NO. |
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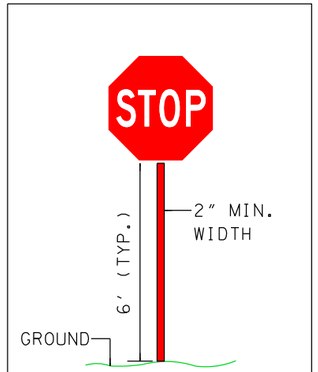
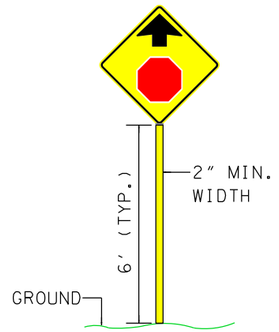
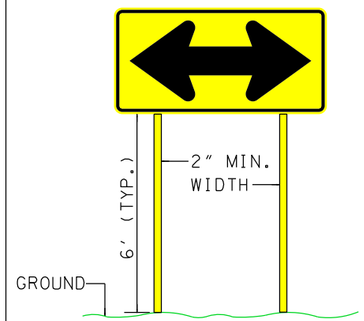
| RSAR | 2014 | MAURY | 2 |




REFLECTIVE STRIP ON STOP (R1-1) SIGN POST (RED)




REFLECTIVE STRIP ON STOP AHEAD (W3-1) SIGN POST (FLUORESCENT YELLOW)




REFLECTIVE STRIPS ON TWO-DIRECTION LARGE ARROW (W1-7) SIGN POSTS (FLUORESCENT YELLOW)

# ROAD SAFETY AUDIT REPORT

SR 247 AT CLEBURNE ROAD
L.M. 17.24
MAURY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

STATE ROUTE 247
DETAILS SHEET
(FIGURE NO.2)

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
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| TYPE | YEAR | COUNTY | FIGURE NO. |
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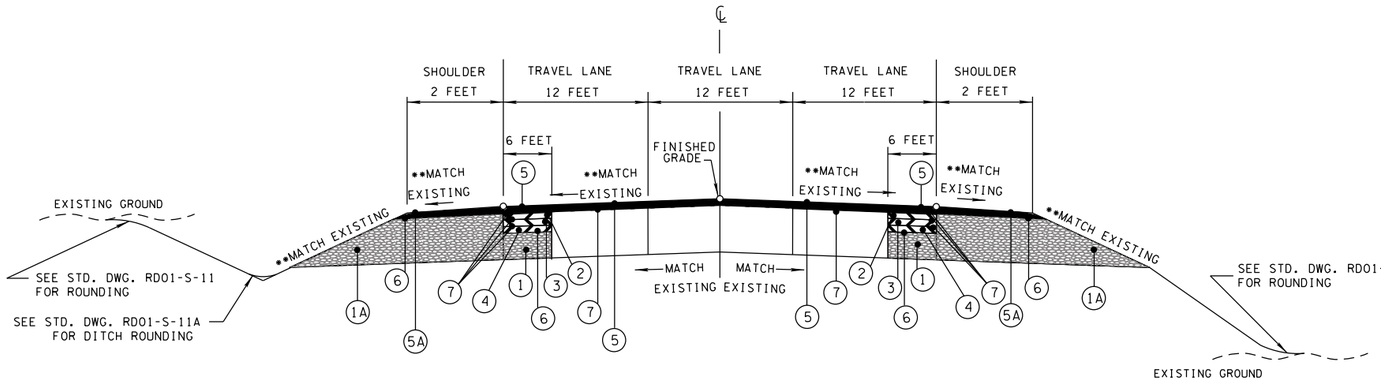
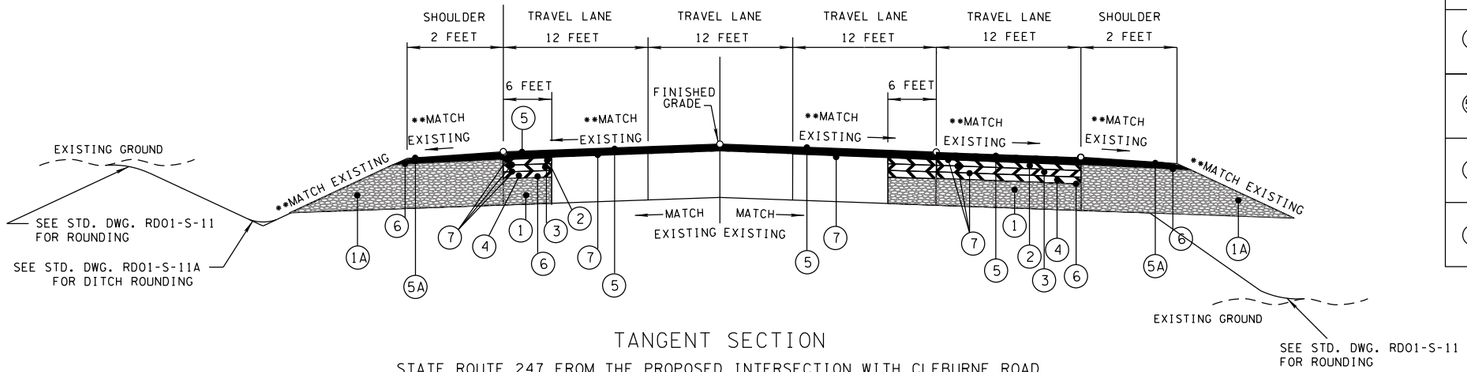



TANGENT SECTION
STATE ROUTE 247 FROM THE PROPOSED INTERSECTION WITH CLEBURNE ROAD AND EXTENDING TO APPROXIMATELY 500 FEET EAST & CLEBURNE ROAD FROM THE PROPOSED INTERSECTION WITH STATE ROUTE 247 AND EXTENDING TO APPROXIMATELY 300 FEET SOUTH
(BASED ON STD. DWG. RD01-TS-7)




TANGENT SECTION
STATE ROUTE 247 FROM THE PROPOSED INTERSECTION WITH CLEBURNE ROAD AND EXTENDING TO APPROXIMATELY 400 FEET WEST
(BASED ON STD. DWG. RD01-TS-7)

## PROPOSED PAVEMENT SCHEDULE

| | |
|---|---|
| (1) | MINERAL AGGREGATE BASE<br>ITEM NO. 303-01 MINERAL AGGREGATE, TYPE A BASE,<br>GRADING D ROADWAY @ 8.00" THICK |
| (1A) | MINERAL AGGREGATE BASE<br>ITEM NO. 303-01 MINERAL AGGREGATE, TYPE A BASE,<br>GRADING D SHOULDER @ 15.75" THICK |
| (2) | BITUMINOUS BINDER @ 2.00" THICK (APPROX. 226 LBS/S.Y.)<br>ITEM NO. 307-02.08 ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM)<br>GRADING B-M2 |
| (3) | BITUMINOUS BINDER @ 3.00" THICK (APPROX. 345 LBS/S.Y.)<br>ITEM NO. 307-02.01 ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM)<br>GRADING A |
| (4) | BITUMINOUS BINDER @ 3.00" THICK (APPROX. 270 LBS/S.Y.)<br>ITEM NO. 307-02.02 ASPHALT CEMENT (PG70-22) (BPMB-HM) GRADING A-S<br>ITEM NO. 307-02.03 AGGREGATE (BPMB-HM) GRADING A-S MIX |
| (5) | BITUMINOUS SURFACE @ 1.25" THICK (APPROX. 132.5 LBS/S.Y.)<br>ITEM NO. 411-02.10 ACS MIX (PG70-22)<br>GRADING D |
| (5A) | BITUMINOUS SURFACE @ 1.50" THICK (APPROX. 154.5 LBS/S.Y.)<br>ITEM NO. 411-01.07 ACS MIX (PG64-22)<br>GRADING E SHOULDER |
| (6) | PRIME COAT<br>ITEM NO. 402-01 BITUMINOUS MATERIAL FOR PRIME COAT (PC) @ 0.30 - 0.35 GAL./S.Y.<br>ITEM NO. 402-02 AGGREGATE FOR COVER MATERIAL (PC) @ 8-12 LBS./S.Y. |
| (7) | TACK COAT<br>ITEM NO. 403-01 BITUMINOUS MATERIAL FOR TACK COAT (TC) |

**Note: All grades and sight distances shall be adjusted in accordance with the requirements for a 45 MPH speed limit in the design process.

# ROAD SAFETY AUDIT REPORT

SR 247 AT CLEBURNE ROAD
L.M. 17.24
MAURY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

SR 247
PAVING DETAILS
(FIGURE NO. 3)

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# APPENDIX

MAURY COUNTY SR 247 AND CLEBURNE ROAD (L.M. 17.24) SIGN SCHEDULE

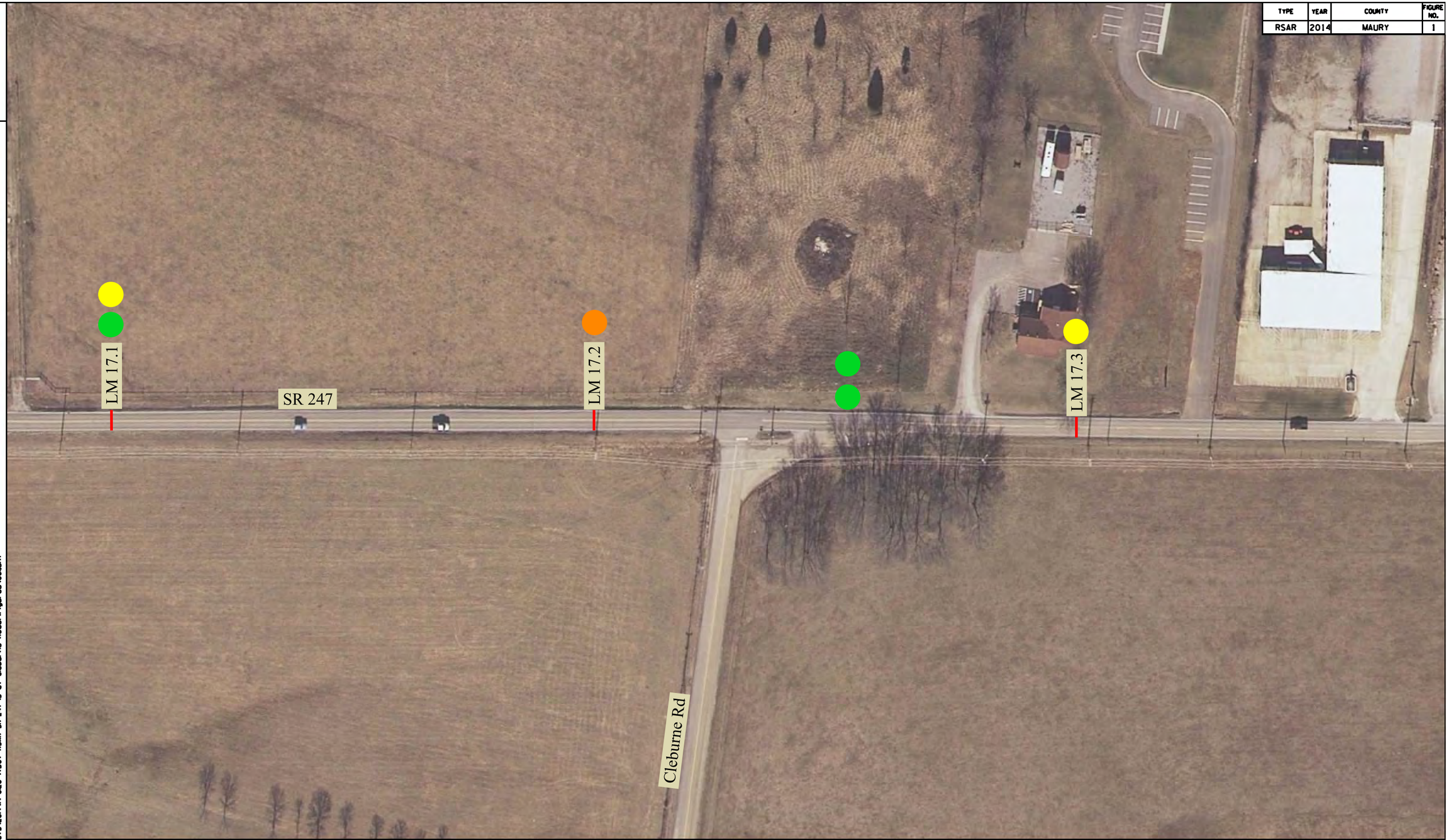
| Designation | Legend or Description | No. of Signs | Size (in.) | Size (sq. ft.) 0.080" | Size (sq. ft.) 0.100" | Total Sq. Ft. 0.080" | Total Sq. Ft. 0.100" | Post Type |
|---|---|---|---|---|---|---|---|---|
| R1-1 | STOP | 1 | 36"X36" | | 7.50 | 0.00 | 7.50 | P8 |
| W1-7 | TWO-DIRECTION LARGE ARROW | 1 | 48"X24" | | 8 | 0.00 | 8.00 | U1 |
| W3-1 | STOP AHEAD | 1 | 36"X36" | | 9 | 0.00 | 9.00 | P8 |
| TOTALS | | 3 | | | | 0.00 | 24.50 | |

MAURY COUNTY SR 247 AND CLEBURNE ROAD (L.M. 17.24) PAY ITEM SUMMARY

| TDOT PAY ITEM | ITEM DESCRIPTION | UNIT | QUANTITY | UNIT COST | TOTAL COST |
|---|---|---|---|---|---|
| 713-01.01 | Class A Concrete (Foundation for Sign Supports) | CY | 0.11635 | $ 523.99 | $ 60.97 |
| 713-01.02 | Steel Bar Reinforcement (Foundation for Sign Supports) | LB | 25 | $ 2.50 | $ 62.50 |
| 713-02.21 | Sign Post Delineation Enhancement | LF | 24 | $ 5.93 | $ 142.32 |
| 713-11.01 | "U" Section Steel Posts | LB | 52 | $ 2.80 | $ 145.60 |
| 713-11.02 | Perforated/Knockout Square Tube Post | LB | 56 | $ 4.05 | $ 226.80 |
| 713-13.03 | Flat Sheet Aluminum Signs (0.100" Thick) | SF | 24.50 | $ 12.76 | $ 312.62 |
| 713-15.36 | Remove Sign, Support & Footing | EA | 9 | $ 56.95 | $ 512.55 |
| 730-01.02 | Removal of Signal Equipment | EA | 1 | $ 809.87 | $ 809.87 |
| | | | | SIGNING TOTAL (ROUNDED) | $ 2,300.00 |
| 716-01.21 | Snwplwble Pvmt Mrkrs (Bi-Dir) (1 Color Lens) | EA | 50 | $ 26.20 | $ 1,310.00 |
| 716-02.04 | Plastic Pavement Marking (Chnz Striping) | SY | 62 | $ 15.15 | $ 939.30 |
| 716-02.05 | Plastic Pavement Marking (Stop Line) | LF | 35 | $ 10.13 | $ 354.55 |
| 716-02.06 | Plastic Pvmt Marking (Turn Lane Arrow) | EA | 8 | $ 124.32 | $ 994.56 |
| 716-04.01 | Plastic Pvmt Mkg (Straight-Turn Arrow) | EA | 4 | $ 171.07 | $ 684.28 |
| 716-12.01 | Enhanced Flat Thermo P.M. (4 in.) | LM | 1.5 | $ 2,985.65 | $ 4,478.48 |
| 716-12.04 | Enhanced Flat Thermo P.M. (4 in. Dotted) | LF | 320 | $ 1.67 | $ 534.40 |
| | | | | PAVEMENT MARKINGS TOTAL (ROUNDED) | $ 9,300.00 |
| 202-03.01 | Removal of Asphalt Pavement | SY | 2100 | $ 5.96 | $ 12,516.00 |
| 203-01.06 | Road & Drainage Excavation | LS | 1 | $ 50,000.00 | $ 50,000.00 |
| 203-01.79 | Excavation/Backfill | CY | 300 | $ 21.04 | $ 6,312.00 |
| 209-01.10 | Erosion and Silt Control | LS | 1 | $ 25,000.00 | $ 25,000.00 |
| 303-01 | Mineral Aggregate, Type A Base, Grading D | TON | 866.13 | $ 18.08 | $ 15,659.63 |
| 307-02.01 | Asphalt Conc. Mix (PG70-22) (BPMB-HM) Grading A | TON | 331.2 | $ 60.63 | $ 20,080.66 |
| 307-02.02 | Asphalt Cement (PG70-22) (BPMB-HM) Grading A-S | TON | 8.42 | $ 259.51 | $ 2,185.07 |
| 307-02.03 | Aggregate (BPMB-HM) Grading A-S Mix | TON | 250.78 | $ 52.36 | $ 13,130.84 |
| 307-02.08 | Asphalt Conc. Mix (PG70-22) (BPMB-HM) Grading B-M2 | TON | 216.96 | $ 63.81 | $ 13,844.22 |
| 411-01.07 | ACS Mix (PG64-22) Grading E Shoulder | TON | 148.32 | $ 79.44 | $ 11,782.54 |
| 411-02.10 | ACS Mix (PG70-22) Grading D | TON | 317.12 | $ 87.02 | $ 27,595.78 |
| 402-01 | Bituminous Material for Prime Coat | TON | 2.91 | $ 508.44 | $ 1,479.56 |
| 402-02 | Aggregate for Cover Material | TON | 11.52 | $ 571.21 | $ 6,580.34 |
| 403-01 | Bituminous Material for Tack Coat | TON | 2.07 | $ 292.71 | $ 605.91 |
| 415-01.02 | Cold Planing Bituminous Pavement | SY | 3200 | $ 0.93 | $ 2,976.00 |
| 801-03 | Water (Seeding & Sodding) | MG | 1 | $ 9.21 | $ 9.21 |
| 803-01 | Sodding (New Sod) | SY | 180 | $ 2.10 | $ 378.00 |
| | | | | PAVING TOTAL (ROUNDED) | $ 141,400.00 |

TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO. ____

| TYPE | YEAR | COUNTY | FIGURE NO. |
|---|---|---|---|
| RSAR | 2014 | MAURY | 1 |




0' 100' 200' 300'

# ROAD SAFETY AUDIT REPORT

SR 247 AT CLEBURNE ROAD
L.M. 17.24
MAURY COUNTY

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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

SR 247 AT CLEBURNE RD
L.M. 17.24
FIGURE NO. 1

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