SUBJECT OF THE STUDY

The project site is located at the intersection of State Route 10/25 with State Route 141 and Halltown Road in Hartsville, Tennessee. The area is mostly commercial with a gas station in the northeast quadrant, a bank in the southeast, and a restaurant in the southwest. The northwest quadrant is currently residential, but there is a plan for site development in the future.

PROJECT PURPOSE AND NEED

The purpose of the proposed improvements to the intersection is to provide additional capacity and improve the overall safety of the intersection.

State Route 10/25 is a primary east-west route for Trousdale County and is used to access the cities of Gallatin, Lebanon, and Carthage. The route also connects Hartsville, the county seat, to US-231, which serves as a primary access to Interstate 40.

Trousdale County High School is located approximately one (1) mile west of the intersection, along State Route 10/25. The school generates high traffic volumes in the morning and early evening peak hours through the subject intersection.

The site development planned for the northwest quadrant of the study intersection will incorporate retail and office land use as well as the relocation of the Trousdale Medical Center. This development is expected to add approximately 8,000 vehicles a day to the study area, many of which will travel through the study intersection to access the site.

Based on the findings of this study and the field review with local officials, the goals and objectives of an improved intersection for State Route 10/25 with State Route 141 and Halltown Road include:

- Improve line of sight of the approaches;
- Improve signal operation;
- Promote a safer intersection operation;
- Accommodate projected site development traffic.

BACKGROUND INFORMATION

This study was initiated at the request of local officials who indicate the intersection of State Route 10/25 with State Route 141 and Halltown Road experiences significant delays due to high traffic volumes through the area. State Route 10/25 also provides a connection to the cities of Gallatin to the west and Carthage to the east.

In addition to the current demand on the existing transportation system, there is a planned development that will be located in the northwest quadrant of the study intersection. It is anticipated that this new development will incorporate retail and office land use as well as the relocation of Trousdale Medical Center which will substantially increase the number of trips through the study intersection.

CORRIDOR OPTIONS

The existing intersection traffic was investigated in this study with regards to historical growth as well as to proposed site development which may increase traffic demand. Because of the need for increased vehicular capacity and improved safety conditions, two different build options were considered. Each of these options has advantages and disadvantages that were discussed during the study process. Option 1 considers only historical traffic growth without the proposed development and focused primarily on reducing the overall intersection delay. Option 2 includes improvements that will be necessary based upon the historical traffic growth in the area in addition to the planned development traffic based upon the projected traffic for the land use changes anticipated.

Option 1 contains one additional travel lane at the intersection and other minor improvements necessary for safety and accommodation of that additional travel lane.
Estimated Cost - $659,200

Option 2 contains two additional travel lanes at the intersection, curb and gutter for all the intersection approaches, additional catch basins, and storm drain tie-ins.
Estimated Cost - $801,000

SUMMARY

State Route 10/25 is a primary east-west route for Trousdale County and is used to access the cities of Gallatin, Lebanon, and Carthage. The route also connects Hartsville, the county seat, to US-231, which serves as a primary access to Interstate 40.

Based on the findings of this study and the objectives of an improved intersection for State Route 10/25 with State Route 141 and Halltown Road include:

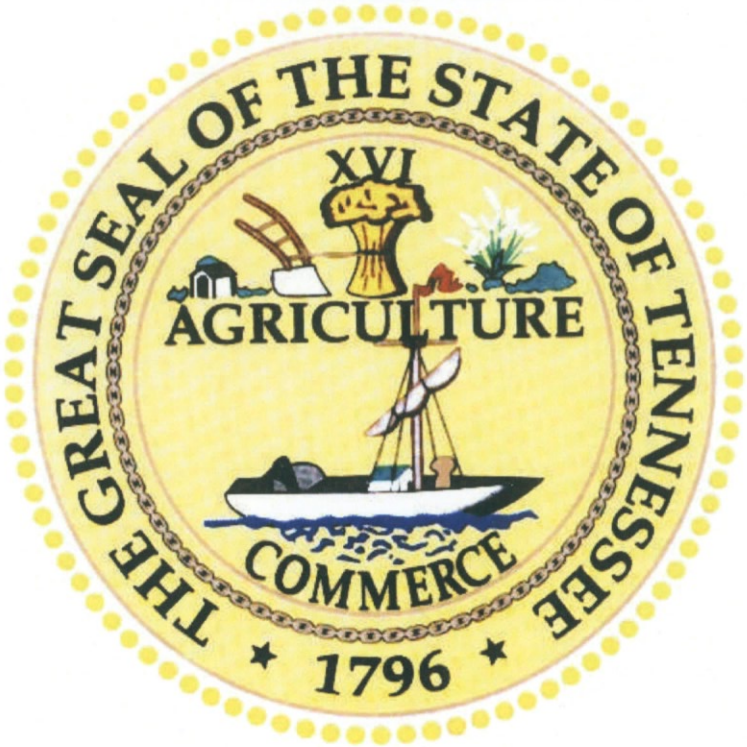
- Improve line of sight of the approaches;
- Improve signal operation;
- Promote a safer intersection operation;
- Accommodate projected site development traffic.

Capacity analysis for the intersection shows that Option 1 will yield an acceptable LOS in both the base and design year. As discussed previously, once the site development project is constructed and complete, additional improvements will be necessary to maintain an acceptable LOS. The Option 2 improvements would require an additional funding of $141,800 above the cost of Option 1.

TRANSPORTATION PLANNING REPORT

State Route 10/25

At State Route 141 & Halltown Road
TROUSDALE COUNTY
PIN # 112336.00



PREPARED BY
CLINARD ENGINEERING ASSOCIATES, LLC
For the
TENNESSEE DEPARTMENT OF TRANSPORTATION
PROJECT PLANNING DIVISION

Approved by:	Signature	DATE
CHIEF OF ENVIRONMENT AND PLANNING		8/6/09
TRANSPORTATION DIRECTOR PROJECT PLANNING DIVISION		8-6-09
TRANSPORTATION MANAGER 2 PROJECT PLANNING DIVISION	Bill Hart	7/29/09

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

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APPENDICES

1.0 PROJECT HISTORY AND BACKGROUND INFORMATION

1.1 Project History

This study was initiated at the request of local officials who indicate the intersection of State Route 10/25 with State Route 141 and Halltown Road experiences significant delays due to high traffic volumes through the area. State Route 10/25 also provides a connection to the cities of Gallatin to the west and Carthage to the east.

In addition to the current demand on the existing transportation system, there is a planned development that will be located in the northwest quadrant of the study intersection. It is anticipated that this new development will incorporate retail and office land use as well as the relocation of Trousdale Medical Center which will substantially increase the number of trips through the study intersection.

The study incorporates available background data, as well as information provided by local officials and the Tennessee Department of Transportation, and reviews potential improvements for the subject intersection.

1.2 Project Study Area

The project site is located at the intersection of State Route 10/25 with State Route 141 and Halltown Road in Hartsville, Tennessee. The area is mostly commercial with a gas station in the northeast quadrant, a bank in the southeast, and a restaurant in the southwest. The northwest quadrant is currently residential but there is, as previously mentioned, a plan for site development in the future (See Figure 5).

1.3 Community Profile

The Town of Hartsville is the county seat of Trousdale County, and is located approximately 45 miles northeast of Nashville, Tennessee. The Town of Hartsville and Trousdale County currently share a consolidated city-county government.

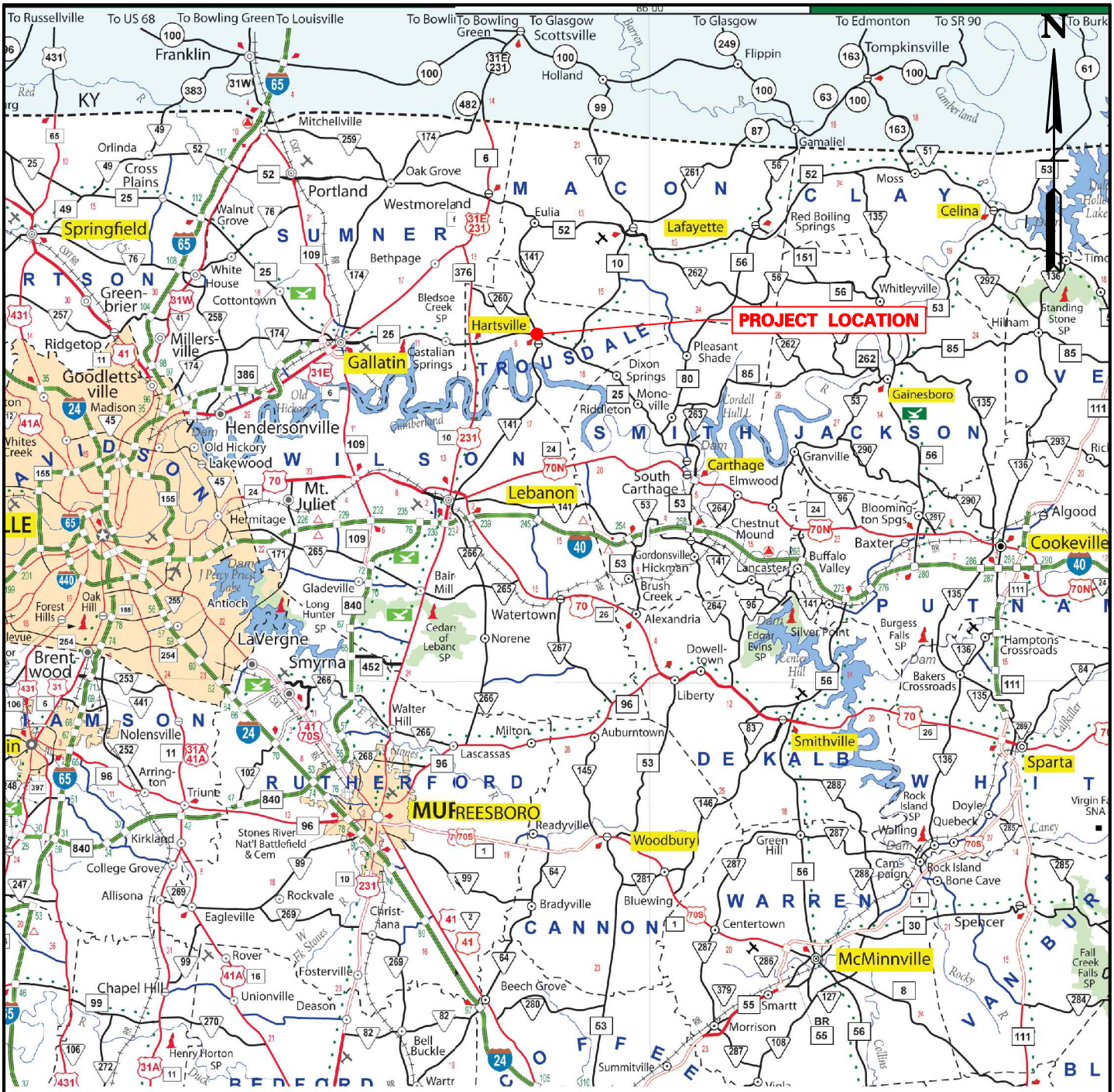
As of 2007, the reported employment for Trousdale County is 3,640, with an unemployment rate of 5.50%. As listed in the Middle Tennessee Industrial Development Association 2009 Community Data Profile, the major manufacturers in the county are Mueller Refrigeration Products (20 employees), General Spring LLC (32 employees), Dakota Works (20 employees) and Hartsville Cabinet & Millwork Inc (18 employees).

Trousdale County High School is located approximately one mile west of the intersection and is a major factor in affecting traffic patterns throughout the area.

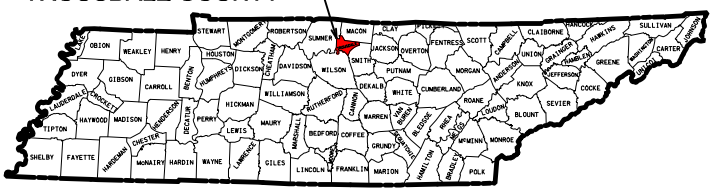
Table 1 – Population Trends

Year	Hartsville			Trousdale County			State of Tennessee		
	Pop.	% Change	Avg. Growth Rate	Pop.	% Change	Avg. Growth Rate	Pop.	% Change	Avg. Growth Rate
1990	2,188	-	-	5,920	-	-	4.9 Mil.	-	-
2000	2,395	9.5%	0.86%	7,259	22.6%	2.1%	5.7 Mil.	16.7%	1.52%
2008[1]	-	-	-	7,822	7.8%	0.98%	6.2 Mil.	9.2%	1.15%

[1] 2008 counts are estimated and are currently unavailable for the Town of Hartsville



TROUSDALE COUNTY



TDOT	VICINITY MAP
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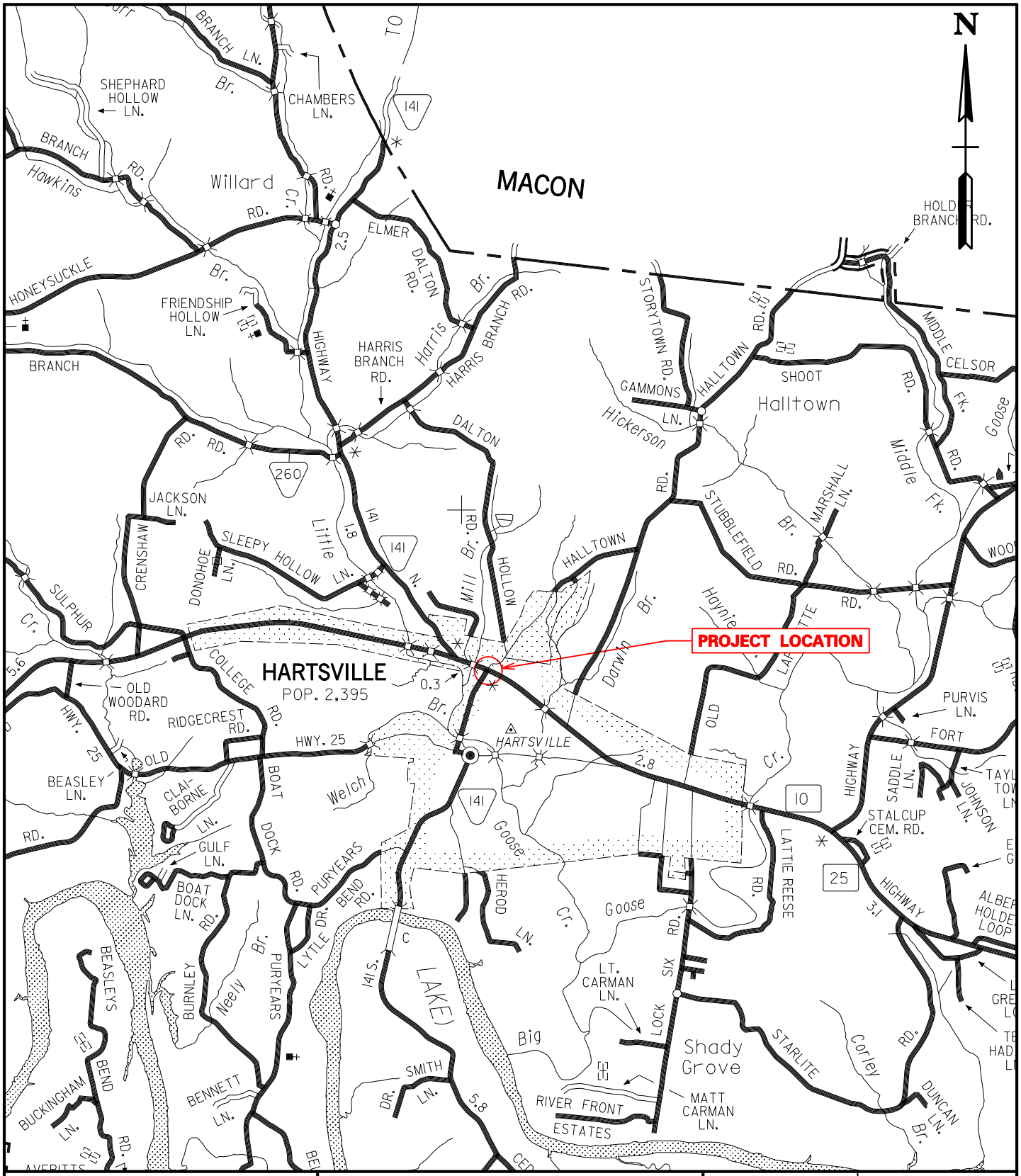
FIGURE # 1	
PIN # 112336.00	
SCALE: 1"= 10 MILE	DATE: 01-21-09



TDOT

LOCATION MAP

DRAWN BY:	CHECKED BY:
BNG	TMC
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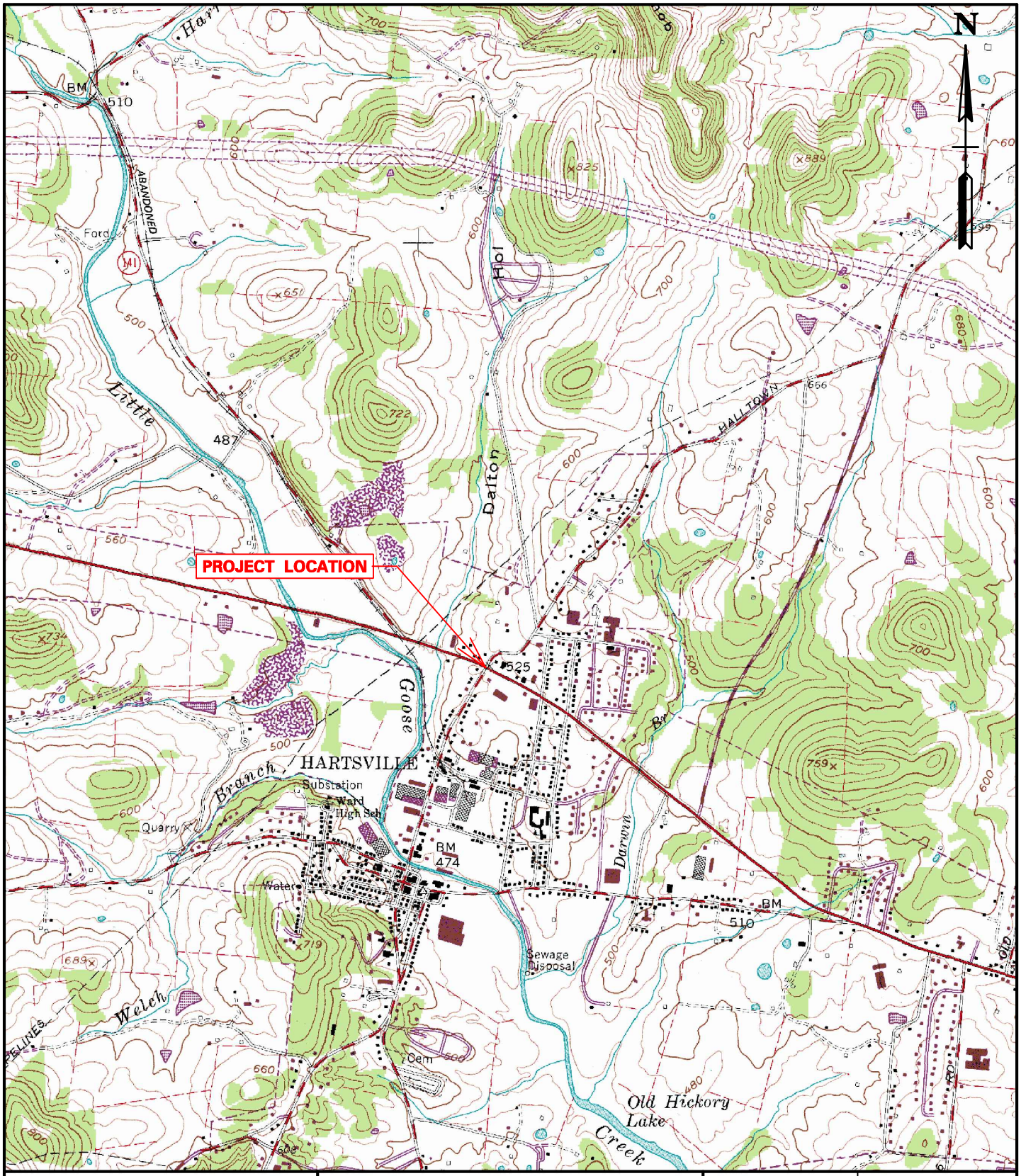

TDOT

TOPOGRAPHY MAP

DRAWN BY:	CHECKED BY:
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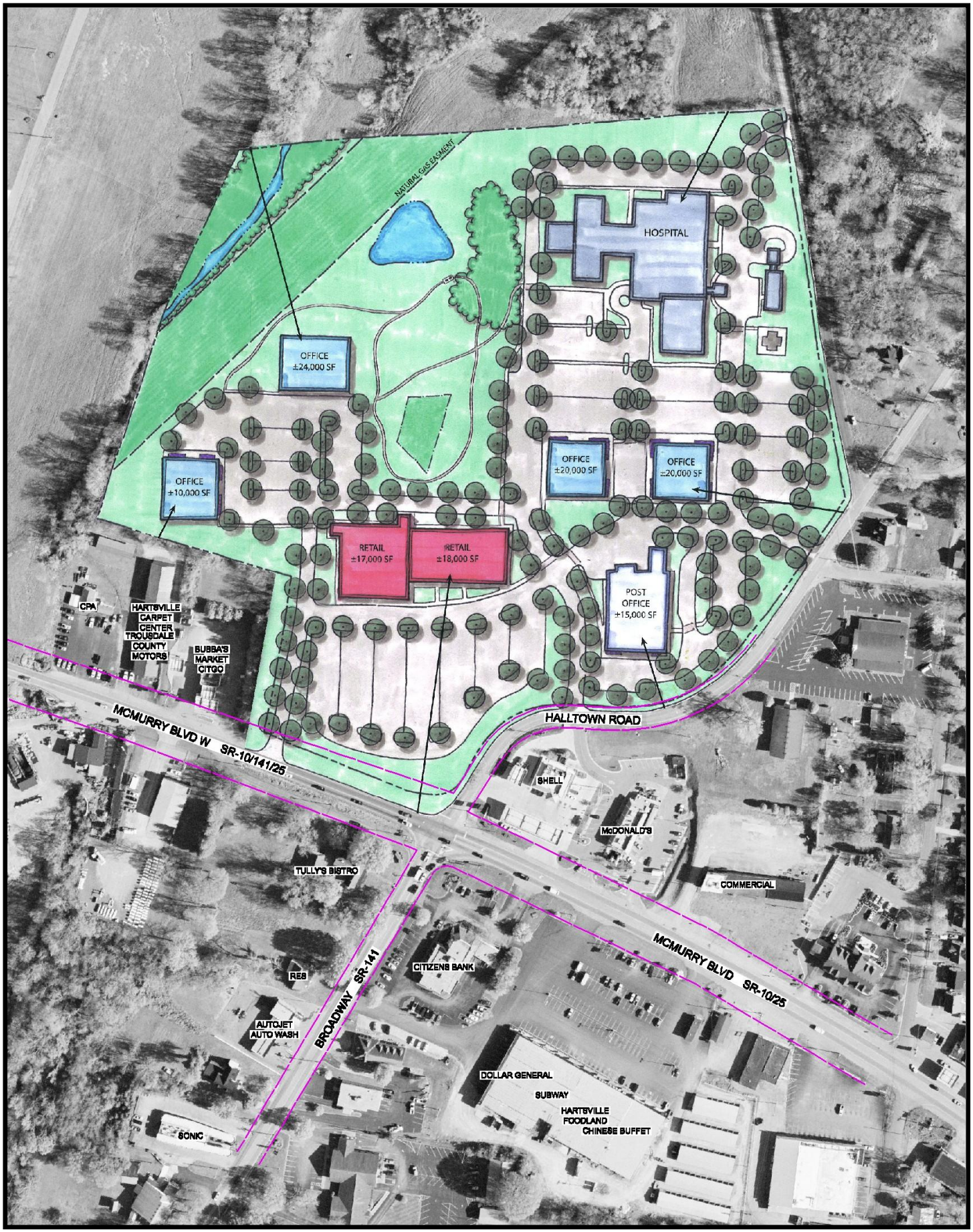


Figure 4 – Proposed Site Development

1.4 Existing Transportation Conditions

Historic Traffic

TDOT count stations are used to collect traffic data at various locations across the state. Four (4) such stations are located along each of the routes included in the project area and are shown in Figure 5. The 20 year growth along these routes has been minimal and the volumes are within the acceptable range for a two lane roadway. Table 2 shows the data for the four (4) stations.

Table 2 – Historic Traffic Growth

Count Station	Route Location	1987	2007	Average Annual Growth Rate
15	Halltown Road	739	1,225	4.04%
34	SR 25	7,430	7,799	1.43%
36	SR 141	6,161	6,017	0.42%
47	SR 25	8,747 *	9,213	0.92%

* Data only available since 2001

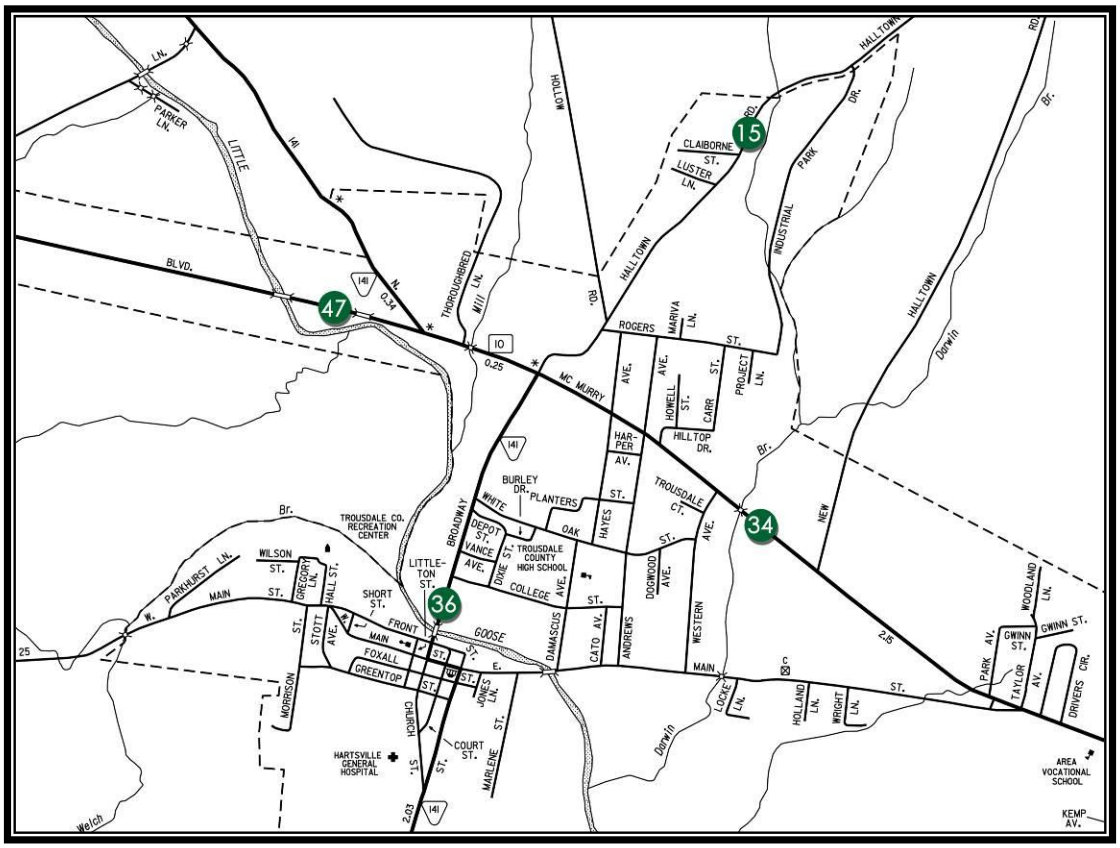


Figure 5 – TDOT Count Station Locations

Existing Route Information

State Route 10/25 is a Rural Minor Arterial, with eleven (11) foot travel lanes and a twelve (12) foot two way left turn lane east of the intersection. Shoulders vary from three (3) foot west of the intersection to twelve (12) foot east of the intersection. The route is an east-west arterial that connects the town of Hartsville to cities of Gallatin and Carthage, and to US-231. US-231 is the primary access for the region to the city of Lebanon and the Interstate 40.

Photo 1 - SR 10/25 Westbound Approach

Photo 2 - SR 10/25 Eastbound Approach

State Route 141 is Rural Major Collector, with three (3) eleven (11) foot lanes and one (1) foot shoulders in the project study area. At the intersection the right turn lane is channelized and operates under yield condition. The route is primarily a north-south route and serves as a connection between the town of Hartsville and the city of Lebanon.

Photo 3 - SR 141 Northbound Approach

Photo 4 - SR 141 Channelized Right Turn

Halltown Road is a Rural Minor Collector, with two (2) ten (10) foot travel lanes and one (1) foot shoulders. It is used as an access to residential and industrial areas north of Hartsville.

Photo 5 - Halltown Road Southbound Approach

Photo 6 - Driveway access near intersection

Existing Intersection Performance

A "Level of Service" (LOS) index was used to gauge the operational performance at the intersection. The LOS is a qualitative measure that describes traffic conditions related to speed and travel time, freedom to maneuver, traffic interruptions, etc. There are six levels ranging from "A" to "F" with "F" being the worst. Each level represents a range of operating conditions. Table 3 shows the traffic flow conditions and approximate driver comfort level at each level of service.

Table 3 – Level of Service Descriptions

LOS	Traffic Flow Conditions
A	Free flow operations. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The general level of physical and psychological comfort provided to the driver is high.
B	Reasonably free flow operations. The ability to maneuver within the traffic stream is only slightly restricted and the general level of physical and psychological comfort provided to the driver is still high.
C	Flow with speeds at or near free flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted and lane changes require more vigilance on the part of the driver. The driver notices an increase in tension.
D	Speeds decline with increasing traffic. Freedom to maneuver within the traffic stream is more noticeably limited. The driver experiences reduced physical and psychological comfort levels.
E	At lower boundary, the facility is at capacity. Operations are volatile because there are virtually no gaps in the traffic stream. There is little room to maneuver. The driver experiences poor levels of physical and psychological comfort.
F	Breakdowns in traffic flow. The number of vehicles entering the highway section exceeds the capacity or ability of the highway to accommodate that number of vehicles. There is little or no room to maneuver. The driver experiences poor levels of physical and psychological comfort.

The Highway Capacity Manual provides a measure of intersection efficiency based on the average delay of traffic moving through the intersection. The delay is made up of factors relating to control, geometrics, traffic and incidents. According to the overall delay, a level of service is assigned to the intersection. These delay ranges and the corresponding level of service is listed in Table 4 below.

Table 4 – Signalized Intersection LOS & Delay

Level of Service	Signalized Intersection Expected Delay (seconds/vehicle)
A	<= 10
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	>80

Information Source: Exhibit 16-2 of the Highway Capacity Manual (2000)

An eight hour turning movement count was conducted and the intersection was analyzed to determine the level of service for the existing signalized intersection for both the base (2014) and design (2034) year traffic. The resulting data is shown in Table 5.

Table 5 – Existing Intersection LOS

Year	Intersection Approach	AM LOS	AM Delay (sec/veh)	PM LOS	PM Delay (sec/veh)
2014	*Overall*	*C*	*21.0*	*C*	*27.1*
	Eastbound	C	20.1	D	38.3
	Westbound	B	19.7	B	14.5
	Northbound	C	24.0	C	28.1
	Southbound	C	22.8	C	23.0
2034	*Overall*	*C*	*24.9*	*D*	*46.2*
	Eastbound	C	27.3	F	85.4
	Westbound	C	23.0	B	15.7
	Northbound	C	25.7	C	30.6
	Southbound	C	24.6	C	26.9

The table shows that the overall intersection operates at a LOS C in 2014 and a LOS D in 2034. The highest delay for the intersection is the eastbound approach during the PM peak hour. The volume increases in this direction due to afternoon school traffic and the delay is primarily due to the lack of a left turn lane at the subject intersection. With only one lane of traffic for through, left turn and right turn movements, delays are caused when vehicles wish to turn left onto Halltown Road and are unable to find a sufficient gap in westbound traffic to do so.

Additional traffic was generated for the proposed site development in the northwest quadrant of the project intersection. These numbers were estimated using rates from the ITE Trip Generation Handbook and preliminary site plan information provided by developers, via TDOT Project Planning. Table 6 presents the volumes expected to be generated by the proposed site development.

Table 6 – Site Development Traffic Generation

Land Use	# of Units	ADT	AM Peak	PM Peak
General Office Building	74,000 Sq. Ft.	1,058	147	162
United States Post Office	15,000 Sq. Ft.	1,623	120	163
Hospital	25 Beds	1,919	28	32
Retail	35,000 Sq. Ft.	3,432	83	313

The traffic generated by the proposed site development was then added to the existing intersection volumes and analyzed for performance. The results are shown below, in Table 7.

Table 7 – Existing Intersection with Projected Development Traffic

Year	Intersection Approach	AM LOS	AM Delay (sec/veh)	PM LOS	PM Delay (sec/veh)
2014	*Overall*	*F*	*94.7*	*F*	*196.8*
	Eastbound	F	260.4	F	347.2
	Westbound	C	30.4	B	17.8
	Northbound	C	28.4	C	34.8
	Southbound	D	49.0	F	433.6
2034	*Overall*	*F*	*138.5*	*F*	*264.1*
	Eastbound	F	382.5	F	462.6
	Westbound	D	40.3	B	19.5
	Northbound	C	32.3	D	40.5
	Southbound	F	89.1	F	601.4

The overall delay for the signalized intersection has increased dramatically with the additional site development traffic. The greatest changes in delay can be found on the eastbound and southbound approaches. Presently, neither of these approaches have right nor left turn lanes and any vehicles making turning movements from these approaches increases the delay of the overall approach. Also, while the future site development traffic is evident throughout the entire project area, the area with the highest concentration of traffic will be the southbound approach. This is due to the proposed locations of the site development entrances.

Safety (Crash and Geometrics)

In addition to level of service, information from the Department of Safety / TDOT was obtained to assess crash history for the subject intersection. Crash data is used to identify the types of crashes occurring, the location of crashes and identification of factors that might contribute to the frequency of crashes. For comparison purposes, crash rates are averaged for similar segments of roadways across the state and are calculated per million vehicle miles.

Table 8 – Crash Rate Summary

# of Crashes	# of Years	Crash Rate (A)	Statewide Avg. Crash Rate	Critical Crash Rate (C)	Ratio of A/C	Predominant Types of Crash
11	3	0.719	0.450	0.882	0.82	Rear-End

Rear-end crashes occur most frequently when a vehicle slows down to make a turn or stop and the following driver is unable to bring their vehicle to a stop. This type of crash at an intersection is often due to lack of proper stopping sight distance, especially with channelized turn lanes under yield condition. As traffic volumes increase so will congestion and it can be expected that the crash rates will likely increase.

Photo 7 - Line of Sight issues for SR-141 channelized right turn

During a field visit, it was noted that the westbound signal heads are not equipped with glare protection. This could be a contributing factor to crashes especially in the evening peak hours as the setting sun likely makes it difficult for westbound motorists to see the signal heads.

Photo 8 - Lack of glare protection on westbound signal heads

Other issues noted in the field visit were the number of driveways that were located in close proximity to the intersection. The Citizens Bank in the southeast corner has driveways located on both SR-10/25 and SR-141. The Shell gas station located in the northeast quadrant also has multiple entrances, on both SR-10/25 and Halltown Road. Presently, two access drives parallel SR-10/25 just west of the intersection and are currently located inside TDOT Right-of-Way and are in close proximity of the existing roadway.

Bicycle and Pedestrian

Bicycle lanes are not presently provided along any of the intersection approaches and there are currently no pedestrian crosswalks or sidewalks in the project area. Based upon the crash data there were no reported incidents where bicyclist and motorized vehicles collided.

Field Review

A meeting and field review of the site was made by the following individuals on March 10, 2009:

Brian Gaffney	Clinard Engineering Associates, LLC
Phil Clinard	Clinard Engineering Associates, LLC
Chris Armstrong	TDOT Project Planning
Jessica Wilson	TDOT Long Range Planning
Ron Cowan	Trousdale Medical Center
William D. Mize	Trousdale Medical Center
David M. Popen	Sumner Regional / Trousdale Medical Center
Jerry Clift	Hartsville/Trousdale County Executive
Eleanor Ford	Trousdale Chamber of Commerce
Seth Thurman	Trousdale Chamber of Commerce

2.0 PRELIMINARY PURPOSE AND NEED

The purpose of the proposed improvements to the intersection is to provide additional capacity and improve the overall safety of the intersection.

State Route 10/25 is a primary east-west route for Trousdale County and is used to access the cities of Gallatin, Lebanon, and Carthage. The route also connects Hartsville, the county seat, to US-231, which serves as a primary access to Interstate 40.

Trousdale County High School is located approximately one (1) mile west of the intersection, along State Route 10/25. The school generates high traffic volumes in the morning and early evening peak hours through the subject intersection.

The site development planned for the northwest quadrant of the study intersection will incorporate retail and office land use as well as the relocation of the Trousdale Medical Center. This development is expected to add approximately 8,000 vehicles a day to the study area, many of which will travel through the study intersection to access the site.

Based on the findings of this study and the field review with local officials, the goals and objectives of an improved intersection for State Route 10/25 with State Route 141 and Halltown Road include:

- Improve line of sight of the approaches;
- Improve signal operation;
- Promote a safer intersection operation;
- Accommodate projected site development traffic.

3.0 CONCEPTS ANALYZED

3.1 No-Build Option

This option assumes that no improvements are made to the intersection that will add capacity or dramatically improve existing conditions. Some regular maintenance may still occur (resurfacing, additional signing and isolated safety improvements).

3.2 Option 1: No Development Traffic

This option includes changes focused primarily on reducing overall intersection delay based upon historical traffic growth in the area without the planned development traffic volumes included. The existing eastbound leg will continue to experience a very substantial delay, especially during the PM peak hour. By focusing on changes to reduce the eastbound delay, this option also reduces the overall intersection delay and thus improves the overall signal operation.

Eastbound Approach

The approach will be widened to the north to accommodate an additional lane in the eastbound direction, allowing a left turn lane to be included at the signalized intersection. The existing through lane will become a through and right turn lane.

Westbound Approach

Only minor work will be required on this approach for the overall improvement of the intersection. Resurfacing and restriping will be required to accommodate the widening on the eastbound approach.

Northbound Approach
The free flow, channelized right turn lane will be modified and brought under signal control at the intersection. This reduces the chance for rear-end collisions due to failure to yield and line of sight issues under yield condition. Additionally, it is recommended that all signage on the eastbound approach be relocated to provide the appropriate sight distance for these right turning vehicles.

Southbound Approach
No major improvements will be made to Halltown Road. Minor changes will be required to accommodate the extra laneage on SR-10/25 and the roadway will need to be restriped.

Table 9 – Option 1 Intersection LOS

Year	Intersection Approach	AM LOS	AM Delay (sec/veh)	PM LOS	PM Delay (sec/veh)
2014	*Overall*	*C*	*20.2*	*C*	*22.2*
	Eastbound	B	17.1	C	24.0
	Westbound	B	19.7	B	15.8
	Northbound	C	24.0	C	28.1
	Southbound	C	22.8	C	23.0
2034	*Overall*	*C*	*22.6*	*C*	*27.1*
	Eastbound	B	18.9	C	31.3
	Westbound	C	23.2	B	19.7
	Northbound	C	25.7	C	30.6
	Southbound	C	24.6	C	26.9

As shown in Table 9, overall intersection operation will improve to a LOS C for both the base and design years with the recommendations as outlined for Option 1. This option however, does not take into account the projected site development traffic volumes. Therefore, this option can be considered an interim improvement prior to the site development projects construction.

3.3 Option 2: With Development
This option includes improvements that will be necessary based upon the historical traffic growth in the area in addition to the planned development traffic based upon the projected traffic for the land use changes anticipated.

Eastbound/Westbound/Northbound Approaches
The intersection improvements for these approaches would be similar to those outlined previously for Option 1.

Southbound Approach
Halltown Road will be widened to the west to include one additional lane. At the intersection, this approach will provide a left turn lane as well as a shared through and right turn lane. Minor changes in horizontal alignment may be required to accommodate the additional laneage and to ensure that the lanes are in alignment with the northbound approach.

Curb and gutter is proposed for all approaches in the project area. This will require additional catch basins and tie-ins to the existing storm drainage system. The existing traffic signal will need to be modified to accommodate the additional travel lanes.

Pedestrian crosswalks and bike lanes should be considered during design of the intersection if such traffic is expected to develop due to the proposed site improvements in the northwest quadrant.

The proposed improvements for Option 2 will allow the intersection to perform at an acceptable level of service. The intersection was reanalyzed with the changes and the results are shown in Table 10.

Table 10 – Option 2 Intersection LOS

Year	Intersection Approach	AM LOS	AM Delay (sec/veh)	PM LOS	PM Delay (sec/veh)
2014	*Overall*	*C*	*23.1*	*C*	*28.0*
	Eastbound	B	16.6	C	24.1
	Westbound	C	20.1	B	19.6
	Northbound	C	34.6	D	42.2
	Southbound	C	30.0	D	35.8
2034	*Overall*	*C*	*25.7*	*C*	*33.1*
	Eastbound	B	18.5	C	28.5
	Westbound	C	22.7	C	27.2
	Northbound	D	38.7	D	46.5
	Southbound	C	31.9	D	38.5

Overall intersection delay can be maintained at a LOS C for both the base and design years with the proposed improvements as outlined for this concept. The analysis for Option 2 assumes that the proposed site development will be in place and fully constructed for the base year (2014) and beyond.

3.4 Projected Costs

The projected costs for the no build and two build options are listed below and detailed in the attached appendices.

Table 11 – Option Cost Estimates

	Right-of-Way	Utility	Construction	Preliminary Engineering	Inflation	Total Estimated Cost
No Build Option	0$	0$	0$	0$	0$	0$
Option 1	$7,200	$155,000	$373,000	$34,000	$90,000	$659,200
Option 2	$27,000	$195,000	$431,000	$39,000	$109,000	$801,000

As shown in Table 11, the additional cost of improving the intersection to handle both historical traffic growth and the future projected site development traffic is approximately $141,800. This amount represents an additional 21% increase in cost.

4.0 EARLY ENVIRONMENTAL SCREENING (EES)

In preparation of Transportation Planning Reports (TPR), the Tennessee Department of Transportation (TDOT) has introduced an environmental screening process for the project study area. By screening the latest available Geographic Information Systems (GIS) environmental data during the early stages of project planning TDOT and the public will be better prepared to anticipate potential environmental issues and mitigation requirements. This screening process involves using GIS to assess environmental data as it spatially relates to the project's Area of Potential Effect (APE). In broad terms, the GIS environmental data reviewed in this TPR include the following categories:

- Archaeological/Historic Architecture – Historic properties and cemetery sites;
- Community Impacts – Sensitive community populations;
- Ecology – Scenic Waterways, Natural Areas, large wetlands, protected species (bat, aquatic, terrestrial, plants);
- Hazardous Substances/Geology – Hazardous substance sites, pyritic rock/geotechnical, caves; and,
- Parks & Public Land – parks (federal/state/local), public land/buildings, railroads, wildlife management areas.

As of the publication of this document, the GIS data within each category was up to date relevant to date of its publication. This data will be updated as part of the ongoing project development process.

All of the previously referenced GIS data is in the study area are included in the appendix of this TPR.

Archaeological/Historical Architecture

National Historic Register Properties & Structures – A preliminary investigation of the National Register of Historical Places indicates four (4) buildings and three (3) districts are located in the vicinity of the Town of Hartsville.

- Averitt Herod House (Building - #96000411)
- James R. Debow House (Building - #88002381)
- Hartsville Depot (Building - #80003876)
- Turney-Hutchins House (Building - #92000780)
- East Main Street Historic District (District - #97000221)
- Hartsville Battlefield (District - #98001247)
- Hartsville Historic District (District - #93000568)

While there are multiple buildings and districts listed on the Historical Register, none are located in the project study area. If any properties are later identified within in the project area as being eligible for the National Register, they will need to be considered and avoided during the design and construction phases.

Cemetery-Archaeological Sites – No impact on the project is anticipated as there are no known cemetery sites within the study area.

An archeological review was not conducted for inclusion in this document. A thorough investigation during the NEPA process will be conducted to identify sites that need evaluation.

Community Impacts

Sensitive Populations – Within the study area, preliminary investigation indicate that more than 13% of the population is below the poverty level.

Ecology

TDEC Conservation Sites & Scenic Waterways – No impact is expected as there are no scenic waterways or TDEC Conservation sites within the project study area.

Large Wetland Impacts – A substantial impact is anticipated as there is greater than 2 acres of wetlands within the project study area. It will be necessary to avoid and minimize impacts to wetlands during the design process.

A search of the Federal Emergency Management Agency's (FEMA) website for flood insurance maps provided a map of the Town of Hartsville, effective August 16, 1982. The map indicates that both build concepts potentially encroach into the floodway and/or flood plain for a tributary to Little Goose Creek. Any stormwater drainage system changes/additions will need to take this into account.

Bats – No impact is anticipated as there is no known occurrence of Indiana or gray bats within four (4) miles of the project study area.

Aquatic Species – There is no impact expected as there is no known occurrence of a rare, state, or federally protected aquatic species within the project study area.

Terrestrial Species - There is no impact expected as there is no known occurrence of a rare, state, or federally protected terrestrial species within the project study area.

Hazardous Substances/Geology

Pyritic Rock/Geotechnical – No impact is anticipated as Pyritic rock is not known to occur in the study area. Limestone and dolomite are present.

Caves – No impact is anticipated as there are no caves in the project study area.

Hazardous Materials and Superfund Sites – A potential impact to the project could occur as there is a Shell gas station located in the northeastern quadrant of the intersection.

There are no known contaminated land tracts abutting or within the project study area.

Parks & Public Land

Tennessee Natural Areas Program – There is no impact anticipated as the project area does not include a Natural Area.

Wildlife Management Area (WMA) – There is no impact anticipated as a WMA does not abut nor is located within the project study area.

TWRA Lakes & Other Public Lands – There is no impact anticipated as there are no parks located within or abutting the project study area.

Railroads – There is no impact anticipated as there are no railroads located within the project study area.

5.0 ASSESSMENT OF OPTIONS

TDOT's Seven Guiding Principles

The Tennessee Department of Transportation has adopted seven (7) guiding principles against which all transportation projects are to be evaluated. These guiding principles address concerns for system management, mobility, economic growth, safety, community, environmental stewardship, and fiscal responsibility. These guiding principles are discussed in regard to both of the proposed build options.

Guiding Principle 1: Preserve and Manage the Existing Transportation System

Both build options as presented will increase the number of travel lanes, relieve congestion, and enhance the safety characteristics of the intersection. The improved intersection will also provide additional vehicular capacity for residents traveling to and from the downtown area of Hartsville as well improve regional mobility.

Guiding Principle 2: Move a Growing, Diverse, and Active Population

The improvement options discussed in this report will reduce congestion and optimize the efficiency of the existing intersection and surrounding network. An improved State Route 10/25 intersection will also benefit freight movements, rural transportation services and emergency vehicles.

Guiding Principle 3: Support the State's Economy

The land use surrounding the study intersection is mostly commercial in nature and as discussed in the report, additional commercial and retail is in development for the area. With the proposed improvements presented for both build options, reduced congestion will be realized and it would be expected that this would enhance the local and regional economy and thus support the state's economy.

Guiding Principle 4: Maximize Safety and Security

As indicated earlier in this report, rear-end collisions were the predominant type of crash at this intersection. Both of the build options discussed in this report will help to reduce those types of crashes and increase safety, while still improving mobility. By adding left turn lanes and increasing the radius of returns, there will be fewer conflicts between turning vehicles and those in the travel lanes. Overall signal improvements will allow for dedicated turning phases as well as reducing potential glare issues for drivers.

Guiding Principle 5: Build Partnerships for Livable Communities

During the preparation of this report, a meeting was conducted with the Town of Hartsville and Trousdale County officials as well as TDOT staff. The purpose was to provide an opportunity to discuss the preliminary analysis of this report and to ascertain whether there were any unknown issues that needed to be considered and that the recommended options were in accordance with the expectations of the locals. Other options not identified in this study may arise or be suggested as the project progresses. The public involvement process will continue after this planning document is completed. Public hearings will be scheduled during the National Environmental Policy Act (NEPA) process and during the design phase of the project. Every effort will be made to mitigate any negative impacts to the local citizenry during the implementation of any build option. An improved transportation corridor that benefits the community with as few disruptions as possible is essential in providing for future planned growth of the region.

Guiding Principle 6: Promote Stewardship of the Environment

Additional environmental studies will be necessary for this project if state and/or federal funds are to be utilized. A document consistent with the National Environmental Policy Act (NEPA) will be required if federal funds are involved and a Tennessee Environmental Evaluation Report (TEER) is necessary if only state funds are used.

Preliminary environmental investigations indicate that there is a potentially substantial wetland impact for this project and all design options should take special precautions to minimize any such impact. Floodplain culverts may also be necessary as the project is located near the Little Goose Creek Flooplain.

Guiding Principle 7: Promote Financial Responsibility

Cost estimates for the two build options were calculated for this report. The cost estimates, as depicted in this report, are offered for comparison purposes and will fluctuate with inflation and any unexpected conditions. It is the Department's goal to follow a comprehensive transportation planning process, promote coordination among public and private operators of transportation systems, and support efforts to provide stable funding for the public component of the transportation system. This entails exercising financial responsibility in the development and implementation of roadway projects and minimizing costs to taxpayers. As presented, both options have been developed to utilize as much of existing right-of-way as possible to minimize impacts to the adjacent properties as well as to reduce costs.

6.0 SUMMARY

State Route 10/25 is a primary east-west route for Trousdale County and is used to access the cities of Gallatin, Lebanon, and Carthage. The route also connects Hartsville, the county seat, to US-231, which serves as a primary access to Interstate 40.

Based on the findings of this study and the objectives of an improved intersection for State Route 10/25 with State Route 141 and Halltown Road include:

- Improve line of sight of the approaches;
- Improve signal operation;
- Promote a safer intersection operation;
- Accommodate projected site development traffic.

Capacity analysis for the intersection shows that Option 1 will yield an acceptable LOS in both the base and design year. As discussed previously, once the site development project is constructed and complete, additional improvements will be necessary to maintain an acceptable LOS. The Option 2 improvements would require an additional funding of $141,800 above the cost of Option 1.

SUMMARY DATA TABLE

Item	SR-10/25 (West)	SR-141 (South)	SR 10/25 (East)	Halltown Road (North)
Functional Class	Rural Minor Arterial	Rural Major Collector	Rural Minor Arterial	Rural Minor Collector
System Class	STP	STP	STP	Local
Length (Miles)	N/A	N/A	N/A	N/A
Cross Section (Feet)	36’ /44’ / As Req’d	36’ / 44’ / As Req’d	36’ / 44’ / As Req’d	36’ / 44’ / As Req’d
Base Year ADT (2014)	9,670	6,010	10,260	5,764
Design Year ADT (2034)	10,720	6,490	11,090	6.124
Design Year DHV (2034)	1,209	700	1,256	499
Percent Trucks	2% (ADT) 1% (DHV)	3% (ADT) 2% (DHV)	3% (ADT) 2% (DHV)	2% (ADT) 1% (DHV)

TDOT DESIGN CRITERIA FOR LOCATION AND DESIGN PHASE

ROUTE: State Route 10/25 SECTION: West of Int.
REGION: III COUNTY: Trousdale PROJECT NO.:
LOCATION: State Route 10/25 at State Route 141 & Halltown Road

PRESENT ADT (2014)	13,266
FUTURE ADT (2034)	14,316
PERCENT TRUCKS	2
DHV (2034)	1,447
FUNCTIONAL CLASSIFICATION	Rural Minor Arterial
MINIMUM DESIGN SPEED	45 MPH (Posted 35 MPH)
ACCESS CONTROL	N/A
MINIMUM RADIUS	730' (0.04 Max S.E.)
MAXIMUM GRADE	7%
MINIMUM STOPPING SIGHT DISTANCE	360'
SURFACE WIDTH	36'
NUMBER OF LANES	3 @ 12'
USABLE SHOULDER WIDTH	4' (2' C&G)
MEDIAN WIDTH	12' Left Turn Lane
MINIMUM RIGHT OF WAY	64'
SIGNALIZATION	Modify Existing Signal

REMARKS:

TDOT DESIGN CRITERIA FOR LOCATION AND DESIGN PHASE

ROUTE: State Route 141 SECTION: N/A
REGION: III COUNTY: Trousdale PROJECT NO.:
LOCATION: State Route 10/25 at State Route 141 & Halltown Road

PRESENT ADT (2014)	7,618
FUTURE ADT (2034)	8,098
PERCENT TRUCKS	3
DHV (2034)	805
FUNCTIONAL CLASSIFICATION	Rural Major Collector
MINIMUM DESIGN SPEED	45 MPH (Posted 35 MPH)
ACCESS CONTROL	N/A
MINIMUM RADIUS	730' (0.04 Max S.E.)
MAXIMUM GRADE	8%
MINIMUM STOPPING SIGHT DISTANCE	360'
SURFACE WIDTH	36'
NUMBER OF LANES	3 @ 12'
USABLE SHOULDER WIDTH	4' (2' C&G)
MEDIAN WIDTH	12' Left Turn Lane
MINIMUM RIGHT OF WAY	64'
SIGNALIZATION	Modify Existing Signal

REMARKS:

TDOT DESIGN CRITERIA FOR LOCATION AND DESIGN PHASE

ROUTE: State Route 10/25 SECTION: East of Int.
REGION: III COUNTY: Trousdale PROJECT NO.:
LOCATION: State Route 10/25 at State Route 141 & Halltown Road

PRESENT ADT (2014)	13,072
FUTURE ADT (2034)	13,902
PERCENT TRUCKS	3
DHV (2034)	1,440
FUNCTIONAL CLASSIFICATION	Rural Minor Arterial
MINIMUM DESIGN SPEED	45 MPH (Posted 35 MPH)
ACCESS CONTROL	N/A
MINIMUM RADIUS	730' (0.04 Max S.E.)
MAXIMUM GRADE	7%
MINIMUM STOPPING SIGHT DISTANCE	360'
SURFACE WIDTH	36'
NUMBER OF LANES	3 @ 12'
USABLE SHOULDER WIDTH	4' (2' C&G)
MEDIAN WIDTH	12' Left Turn Lane
MINIMUM RIGHT OF WAY	64'
SIGNALIZATION	Modify Existing Signal

REMARKS:

TDOT DESIGN CRITERIA FOR LOCATION AND DESIGN PHASE

ROUTE: Halltown Road SECTION: N/A
REGION: III COUNTY: Trousdale PROJECT NO.:
LOCATION: State Route 10/25 at State Route 141 & Halltown Road

PRESENT ADT (2014)	5,764
FUTURE ADT (2034)	6,124
PERCENT TRUCKS	2
DHV (2034)	499
FUNCTIONAL CLASSIFICATION	Rural Minor Collector
MINIMUM DESIGN SPEED	40 MPH (Posted 30 MPH)
ACCESS CONTROL	N/A
MINIMUM RADIUS	565' (0.04 Max S.E.)
MAXIMUM GRADE	10%
MINIMUM STOPPING SIGHT DISTANCE	305
SURFACE WIDTH	36'
NUMBER OF LANES	3 @ 12'
USABLE SHOULDER WIDTH	4' (2' C&G)
MEDIAN WIDTH	12' Left Turn Lane
MINIMUM RIGHT OF WAY	64'
SIGNALIZATION	Modify Existing Signal

REMARKS:

Appendices

FIELD REVIEW
& BACKGROUND INFORMATION

Clinard Engineering Associates, LLC
INFRASTRUCTURE • PLANNING • DESIGN

Clinard Engineering Associates, LLC
109 Westpark Drive, Suite 440
Brentwood, Tennessee 37027
Tel: 615.370.6079 Fax: 615.627.4066
clinardengineering.com

MEMORANDUM

DATE: March 2, 2009

FROM: Tom Clinard, P.E.

RE: Field Review for Transportation Planning Report
State Route 25/10
Intersection with State Route 141 & Halltown Road
Trousdale County

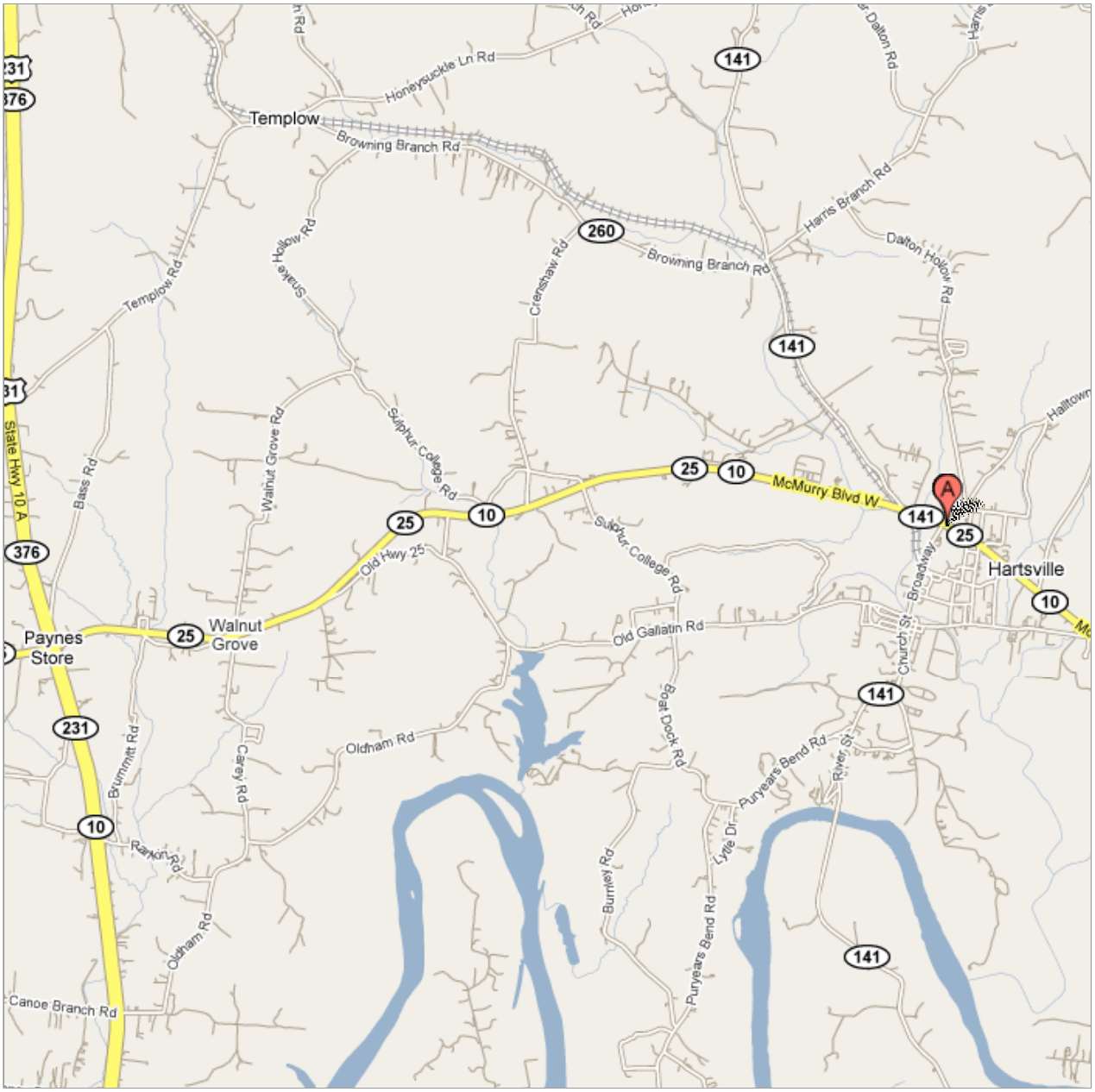
A field review will be held for the project on ***Tuesday, March 10th***. We will meet in the parking lot of the Citizens Bank located at the southeast corner of the intersection (See address and map on following page) at 10:30 AM (CDT). If you have any questions, please feel free to call me. (cell phone: 615-969-6433)

ATTENDEE LIST

TDOT Project Planning	
Steve Allen	Steve.Allen@state.tn.us
Bill Hart	Bill.Hart @state.tn.us
Christopher Armstrong	Christopher.Armstrong@state.tn.us
Tyler King	Tyler.King@state.tn.us
TDOT Environmental	
Suzanne Herron	Suzanne.Herron@state.tn.us
Martha Carver	Martha.Carver@state.tn.us
TDOT Design	
John Moore	John.W.Moore@state.tn.us
TDOT Survey	
David Marshall	David.Marshall@state.tn.us
Traffic Engineer	
Mike Tugwell	Mike.Tugwell@state.tn.us
Ali Farhangi	Ali.Farhangi@state.tn.us
Phil Trammel	Phil.Trammel@state.tn.us
Stanley Sumner	Stanley.Sumner@state.tn.us
City of Hartsville	
Jerry Clift	trousdaleexec@bellsouth.net
Charles Beasley	
Eleanor Ford	eford@hartsvilletrousdale.com
Trousdale Medical Center	
William D. Mize	Mizeb@sumner.org
FHWA	
Gary Fottrell	Gary.Fottrell@fhwa.dot.gov
Nashville MPO	
Michael Skipper	skipper@nashvillempo.org

Google Maps

Address **100 McMurry Blvd**
Hartsville, TN 37074



Clinard Engineering Associates, LLC
INFRASTRUCTURE • PLANNING • DESIGN

STATE ROUTE 25/10 INTERSECTION AT STATE ROUTE 141 & HALLTOWN RD HARTSVILLE, TENNESSEE TROUSDALE COUNTY

Meeting Minutes

ISSUE VERSION: DRAFT

MEETING NO.: 1
DATE: 03/10/09
TIME: 10:30 am
LOCATION: Citzens Bank (Project Site)

SUBJECT: SR-25/10 @ SR-141 & Halltown Rd TPR Field Review

Prepared by: Brian Gaffney, P.E.
bgaffney@clinardengineering.com

Approved by: Tom Clinard, P.E.
tclinard@clinardengineering.com

Date Prepared: 03/10/09

Attendee Names / Company

Brian Gaffney / Clinard Engineering Associates, LLC
Phil Clinard / Clinard Engineering Associates, LLC
Chris Armstrong / TDOT Project Planning
Jessica Wilson / TDOT
Jerry Clift / Hartsville/Trousdale County Executive
Ron Cowan / TMC
Eleanor Ford / Trousdale Chamber of Commerce
Seth Thurman / Trousdale Chamber of Commerce
David M. Popen / Sumner Regional/Trousdale Medical Center
William D. Mize / Trousdale Medical Center

Copies To: File

The following items presented summarize the substantive items discussed or issues resolved at the above meeting to the best of the writer's memory.

ITEM	DESCRIPTION	STATUS	OPENED	CLOSED	ACTION
01	**Agenda Item 1 (Initial Project Concerns):** The meeting began with a general discussion of project area concerns. • Eleanor Ford and Jerry Clift voiced concerns over backup at the signal due to school traffic traveling eastbound through the intersection. • General discussion of proposed site development located in the northwest quadrant of the intersection o Includes Hospital, Post Office, Retail, and General Office space	FYI			
02	**Agenda Item 2 (Project Information):** Brian Gaffney with Clinard Engineering provided a brief overview of the project. • Crash History o 11 total crashes from 2005-2007 o 7 rear-ends, 4 angles, and 1 unknown • Traffic Counts o Clinard Engineering conducted 24 hour volume counts and an 8 hour intersection turning movement count on February 4, 2009. o Traffic Data was generated for base year (2014) and for the design year (2034) o Trip generation was analyzed for proposed development located in northwest quadrant of the intersection. o Existing intersection operates at a LOS C for 2014 and LOS D for 2034. o Intersection with proposed Site traffic operates at LOS F for 2014 & 2034. • Existing Issues/Problems as determined by Clinard Engineering o Signal Timing o Right turn from SR-141 NB to SR-25/10 EB is under yield condition and sight distance looking westbound is limited by road signs, power pole and grade difference. o Possible glare issues with signal heads o Poor stop bar location • Additional Existing Issues/Problems noted during the meeting o Possible additional traffic from residential developments west of intersection o Concerns over volume of traffic from the school and backup when vehicles turn left onto Halltown Road from SR-25/10. o Concerns over intersection radii being too small for trucks wishing to use Halltown Road to access trucking company located north of the intersection. o Potentially Historic buildings in the northwest quadrant (TDOT will provide any Historical Information; however, not currently listed on register)	FYI			

Clinard Engineering Associates, LLC
109 Westpark Drive • Suite 440 • Brentwood, TN 37027 • 615-370-6079 • FAX 615-627-4066

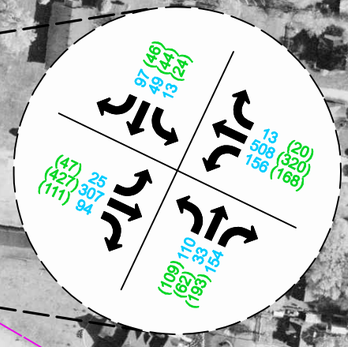
ITEM	DESCRIPTION	STATUS	OPENED	CLOSED	ACTION
	• Proposed Site Development o William D. Mize of Trousdale Medical Center indicated that the new hospital is expected to generate a large amount of outpatient traffic o Most of the site development traffic is expected to use Halltown Road as the primary access to the site.				
03	**Agenda Item 3 (Proposed Improvement Discussion):** A discussion of possible improvements were discussed. • No-Build Concept o A no build concept will be analyzed for the TPR • Possible Improvements due to Existing Issues o Alter signal timing to improve intersection operation o Re-stripe intersection pavement markings and relocate stop bars o Remove Yield sign for right turn from SR-141 and bring that turning movement under the signal operation. o Improve sight distance by relocating road signs and provide additional intersection warning signs. • Possible improvements due to proposed site development o Widen SR-25/10 west of the intersection to three lanes, providing a left turn lane at the intersection. o Widen Halltown Road to three lanes to accommodate additional traffic through the intersection. o Increase intersection radii o Upgrade signal for new laneage and volume.	FYI			
04	**Agenda Item 4 (Conclusions):** At the end of the meeting these items were discussed: • Traffic will be reviewed and refined as needed due to additional information received during the field review. • Clinard Engineering will create a draft TPR for the intersection and send it to TDOT.	Open	03/10/09		Review Traffic and complete draft version of TPR

TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		

N

HARTSVILLE CARPET CENTER
TROUSDALE COUNTY MOTORS
SUBARU MARCOS CITRO
MCMURRY BLVD W SR-10/141/25
FREE ROW
HALLTOWN ROAD
SHELL
McDONALD'S
TULLY'S BISTRO
CITIZENS BANK
RBS
AUTOZONE / AUTO XPRESS
BROADWAY SR-141
MCMURRY BLVD SR-10/25
DOLLAR GENERAL
SUBWAY
HARTSVILLE FOODLAND
CHINESE BUFFET
SONIC



EXISTING TRAFFIC
2014 DHV
AM PM
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0 100' 200' 300'

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TRANSPORTATION PLANNING REPORT (TPR)

STATE ROUTE 25 & HALLTOWN ROAD

HARTSVILLE, TN
TROUSDALE COUNTY

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TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		

N

NATURAL GAS EASMENT

HOSPITAL

OFFICE ±24,000 SF

OFFICE ±10,000 SF

OFFICE ±20,000 SF

OFFICE ±20,000 SF

RETAIL ±17,000 SF

RETAIL ±18,000 SF

POST OFFICE ±15,000 SF

OPEN

HARTSVILLE CARPET CENTER

TROUSDALE COUNTY MOTORS

BURRUS MARKET CITGO

MCMURRY BLVD W SR-10/141/25

HALLTOWN ROAD

SHELL

McDONALD'S

TULLY'S BISTRO

MCMURRY BLVD SR-10/25

CITIZENS BANK

RDS

AUTOART AUTO WASH

BROADWAY SR-141

SONIC

(1) 12
(2) 1

24 (25)
(38) 10
(77) 34
(50) 68

35 (77)
(50) 68

14 (79)
22 (124)
(57) 39
61 (90)

27 (60)
15 (34)
27 (60)
(39) 53
(79) 39
(45) 14
8
53 (39)
39 (57)
(33) 22
(23) 30

DEVELOPMENT TRAFFIC
2014 DHV
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ASSUMES FULL DEVELOPMENT BUILD-OUT BY 2014

0 100' 200' 300'

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TRANSPORTATION PLANNING REPORT (TPR)

STATE ROUTE 25 & HALLTOWN ROAD

HARTSVILLE, TN
TROUSDALE COUNTY

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TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		

N

NATURAL GAS EASEMENT

HOSPITAL

OFFICE ±24,000 SF

OFFICE ±10,000 SF

OFFICE ±20,000 SF

OFFICE ±20,000 SF

RETAIL ±17,000 SF

RETAIL ±18,000 SF

POST OFFICE ±15,000 SF

OPEN

HARTSVILLE CARPET CENTER

TROUSDALE COUNTY MOTORS

RUBBER MARKET CITGO

MCMURRY BLVD W SR-10/41/25

HALLTOWN ROAD

SHELL

McDONALD'S

TULA'S BISTRO

MCMURRY BLVD SR-10/25

BROADWAY SR-141

CITIZENS BANK

RBS

AUTOJET AUTO WASH

DOLLAR GENERAL

SUBWAY

HARTSVILLE FOODLAND

CHINESE BUFFET

SONIC

14 (79)
22 (124)
61 (90)
715 (475)
(57) 39
(624) 479

124 (166)
64 (79)
40 (84)
66 (59)
547 (377)
156 (168)
(86) 78
(506) 321
(156) 102
(142) 132
(82) 83
(195) 154

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PROPOSED TRAFFIC (WITH DEVELOPMENT) 2014 DHV

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ASSUMES FULL DEVELOPMENT BUILD-OUT BY 2014

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TRANSPORTATION PLANNING REPORT (TPR)

STATE ROUTE 25 & HALLTOWN ROAD

HARTSVILLE, TN
TROUSDALE COUNTY

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TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		

N

NATURAL GAS EASEMENT

HOSPITAL

OFFICE ±24,000 SF

OFFICE ±10,000 SF

OFFICE ±20,000 SF

OFFICE ±20,000 SF

RETAIL ±17,000 SF

RETAIL ±18,000 SF

POST OFFICE ±15,000 SF

OPEN

HARTSVILLE CARPET CENTER

TROUSDALE COUNTY MOTORS

BUBBA'S WARNOCK CITGO

MCMURRY BLVD W SR-10/141/25

HALLTOWN ROAD

SHELL

McDONALD'S

TULLY'S BISTRO

MCMURRY BLVD SR-10/25

CITIZENS BANK

RBS

AUTOJET AUTO WASH

BROADWAY SR-141

DOLLAR GENERAL

SUBWAY

HARTSVILLE FOODLAND

CHINESE BUFFET

SONIC

14 (79)
22 (124)
61 (90)
808 (577)
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(687) 525

140 (113)
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588 (403)
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(168) 112
(151) 141
(89) 85
(258) 167

PROPOSED TRAFFIC
(WITH DEVELOPMENT)
2034 DHV
AM PM
0000 (0000)
ASSUMES FULL DEVELOPMENT BUILD-OUT BY 2014

0 100' 200' 300'

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TRANSPORTATION PLANNING REPORT (TPR)

STATE ROUTE 25 & HALLTOWN ROAD

HARTSVILLE, TN
TROUSDALE COUNTY

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U.S. Census Bureau
American FactFinder

DP-1. **General Population and Housing Characteristics: 1990**
Data Set: 1990 Summary Tape File 1 (STF 1) - 100-Percent data
Geographic Area: **Trousdale County, Tennessee**

NOTE: For information on confidentiality, nonsampling error, and definitions, see http://factfinder.census.gov/home/en/datanotes/expstf190.htm.

Subject	Number
Total population	**5,920**
SEX	
Male	2,873
Female	3,047
AGE	
Under 5 years	342
5 to 17 years	1,079
18 to 20 years	250
21 to 24 years	290
25 to 44 years	1,748
45 to 54 years	651
55 to 59 years	285
60 to 64 years	282
65 to 74 years	556
75 to 84 years	334
85 years and over	103
Under 18 years	1,421
65 years and over	993
HOUSEHOLDS BY TYPE	
Total households	**2,261**
Family households (families)	1,715
Married-couple families	1,402
Other family, male householder	72
Other family, female householder	241
Nonfamily households	546
Householder living alone	512
Householder 65 years and over	265
Persons living in households	5,795
Persons per household	2.56
GROUP QUARTERS	
Persons living in group quarters	125
Institutionalized persons	100
Other persons in group quarters	25
RACE AND HISPANIC ORIGIN	
White	5,040
Black	853
American Indian, Eskimo, or Aleut	14
Asian or Pacific Islander	8
Other race	5
Hispanic origin (of any race)	31
Total housing units	**2,537**
OCCUPANCY AND TENURE	
Occupied housing units	2,261
Owner occupied	1,690
Renter occupied	571
Vacant housing units	276

Subject	Number
For seasonal, recreational, or occasional use	25
Homeowner vacancy rate	1.4
Rental vacancy rate	9.7
Persons per owner-occupied unit	2.54
Persons per renter-occupied unit	2.63
Units with over 1 person per room	66
UNITS IN STRUCTURE	
1-unit detached	1,804
1-unit attached	21
2 to 4 units	84
5 to 9 units	58
10 or more units	88
Mobile home, trailer, or other	482
VALUE	
Specified owner-occupied housing units	**928**
Less than $50,000	607
$50,000 to $99,999	291
$100,000 to $149,999	26
$150,000 to $199,999	2
$200,000 to $299,999	1
$300,000 or more	1
Median (dollars)	41,900
CONTRACT RENT	
Specified renter-occupied housing units paying cash rent	**422**
Less than $250	341
$250 to $499	79
$500 to $749	1
$750 to $999	1
$1,000 or more	0
Median (dollars)	187
RACE AND HISPANIC ORIGIN OF HOUSEHOLDER	
Occupied housing units	**2,261**
White	1,919
Black	338
American Indian, Eskimo, or Aleut	2
Asian or Pacific Islander	2
Other race	0
Hispanic origin (of any race)	9

(X) Not applicable
Source: U.S. Bureau of the Census, 1990 Census of Population and Housing, Summary Tape File 1 (100% Data)
Matrices P1, P3, P5, P6, P8, P11, P15, P16, P23, H1, H2, H3, H5, H8, H10, H18A, H21, H23, H23B, H32, H32B, H41.

DP-1. **General Population and Housing Characteristics: 1990**
Data Set: 1990 Summary Tape File 1 (STF 1) - 100-Percent data
Geographic Area: **Hartsville town, Tennessee**

NOTE: For information on confidentiality, nonsampling error, and definitions, see http://factfinder.census.gov/home/en/datanotes/expstf190.htm.

Subject	Number
Total population	**2,188**
SEX	
Male	999

Subject	Number
Female	1,189
AGE	
Under 5 years	139
5 to 17 years	346
18 to 20 years	96
21 to 24 years	89
25 to 44 years	597
45 to 54 years	219
55 to 59 years	128
60 to 64 years	116
65 to 74 years	239
75 to 84 years	157
85 years and over	62
Under 18 years	485
65 years and over	458
HOUSEHOLDS BY TYPE	
Total households	**878**
Family households (families)	597
Married-couple families	411
Other family, male householder	27
Other family, female householder	159
Nonfamily households	281
Householder living alone	266
Householder 65 years and over	139
Persons living in households	2,063
Persons per household	2.35
GROUP QUARTERS	
Persons living in group quarters	125
Institutionalized persons	100
Other persons in group quarters	25
RACE AND HISPANIC ORIGIN	
White	1,633
Black	549
American Indian, Eskimo, or Aleut	4
Asian or Pacific Islander	1
Other race	1
Hispanic origin (of any race)	4
Total housing units	**964**
OCCUPANCY AND TENURE	
Occupied housing units	878
Owner occupied	543
Renter occupied	335
Vacant housing units	86
For seasonal, recreational, or occasional use	3
Homeowner vacancy rate	2.3
Rental vacancy rate	9.2
Persons per owner-occupied unit	2.37
Persons per renter-occupied unit	2.32
Units with over 1 person per room	28
UNITS IN STRUCTURE	
1-unit detached	650
1-unit attached	10
2 to 4 units	80
5 to 9 units	58
10 or more units	88
Mobile home, trailer, or other	78

Subject VALUE	Number
Specified owner-occupied housing units	**455**
Less than $50,000	339
$50,000 to $99,999	103
$100,000 to $149,999	11
$150,000 to $199,999	1
$200,000 to $299,999	0
$300,000 or more	1
Median (dollars)	38,300
CONTRACT RENT	
Specified renter-occupied housing units paying cash rent	**302**
Less than $250	246
$250 to $499	55
$500 to $749	0
$750 to $999	1
$1,000 or more	0
Median (dollars)	188
RACE AND HISPANIC ORIGIN OF HOUSEHOLDER	
Occupied housing units	**878**
White	654
Black	224
American Indian, Eskimo, or Aleut	0
Asian or Pacific Islander	0
Other race	0
Hispanic origin (of any race)	1

(X) Not applicable
Source: U.S. Bureau of the Census, 1990 Census of Population and Housing, Summary Tape File 1 (100% Data)
Matrices P1, P3, P5, P6, P8, P11, P15, P16, P23, H1, H2, H3, H5, H8, H10, H18A, H21, H23, H23B, H32, H32B, H41.

Middle Tennessee Industrial Development Association

2009 Community Data Profile

HARTSVILLE

Trousdale County

QUICK FACTS

County Seat: Hartsville
Year Incorporated: 1833
Area in Square Miles (County): 114
Latitude: N36° 23.45'
Elevation: 474'
Longitude: W86° 10.03'
Market Region: Nashville
Distance From Nashville: 45 miles
City URL: http://www.hartsvilletrousdale.com
Additional Incorporated Cities within County: None

POPULATION

	City	County
2000 (Census)	2,395	7,259
July 2007 (Estimates)	2,395	7,727
Percent Population Change 2000 – 2007	0 %	7.1 %
% Nonwhite	24.3 %	13.4 %

CLIMATE

Annual Average Temperature: 59.46°
Average High Temperature: 77.3°
Average Low Temperature: 37.5°
Annual Average Precipitation: 54.55"
Annual Average Snowfall: "
Prevailing Winds: South-Southwest
Mean Length of Freeze-Free Period (days): 180-220

Hartsville PowerCom Site is among industrial sites in Middle Tennessee to be certified "Deal Ready". For complete information about the site and the Deal Ready program go to www.DealReady.com.

This report was prepared with the assistance of:
The Four Lake Regional Industrial Development Authority
Hartsville, Tennessee

TAX STRUCTURE

LOCAL

	City	County
Property Taxes:		
Rate per $100 value	$ 1.37	$ 3.08
Ratio of Assessment:		
Residential and Farm	25 %	25 %
Commercial/ Industrial	40 %	40 %
Personal (Equipment)	30 %	30 %
(Inventory Tax) Raw Materials Only:		
Bonded Debt	$ 340,000	$ 164,000
Assessed Valuation	$ 29,065,008	$ 89,222,194
School Tax	0 %	.088 %
Sales	2.25 %	2.25 %
Wheel Tax	$40.00	0 %

STATE

Sales Tax 5.5% tax on food and food ingredients; 7% on all other tangible personal property unless specifically exempted.

Income Tax

- **Personal** 6 % on Interest & Dividends
- **Corporate** Excise tax – 6.5% of Tennessee taxable income
- **Franchise tax** – .25% of the greater of net worth or real and tangible property in Tennessee. The minimum tax is $100.
- **Unemployment Tax:** New Employers 2.7% of first $7,000

COMMUNICATIONS

Post Office Class:First

Newspapers:	Frequency:
Hartsville Vidette	Weekly
The Tennessean	Daily

Telephone Companies: North Central Telephone Coop.
AT&T, US Cellular, Verizon
Radio Stations: WTNK/1090AM (Simulcast on FM93.5)
Television Networks: 4
Cable Companies: Yes
Channels: 35

EDUCATION

	# Local Schools	Enrollment	Pupil/Teachers Ratio
Elementary	1	603	20:1
Jr. High	1	297	21:1
Sr. High	1	435	30:1
Voc-Tech	0		
Private/Parochial	0		
Technology Center: 1		450	
Colleges:			
Other:			

State Industrial Training Service Available: Yes
Type of Public School System:

GOVERNMENT

Governing Body:
City: Metro Executive and Commissioners
Meets: 4th Monday (every month)
Time: 7:00 p.m.
Place: Courthouse
County: County Executive and County Commissioners

Fire Department:
full-time fire fighters in city: 0
city volunteers: 0
full-time fire fighters in county: 0
county volunteers: 25
fire stations in city: 1 city fire trucks: 4
fire stations in county: 2 county fire trucks: 4

Law Enforcement:
full-time police officers in city: 16
full-time police officers in county & sheriff: 8
city patrol cars: 16 county patrol cars:

	City:	County:
Insurance Rating:	6	10
Zoning Regulations:	Yes	Yes
Planning Commission:	Yes	Yes
Industrial Development Corp:	Yes	Yes

TRANSPORTATION

AIR SERVICE:
Nearest General Aviation:
Sumner County Regional Airport
Location Identifier: M33
Distance from City: 2 miles E
Runway Length: 5,000 feet
Surface: Asphalt
Lighting: MIRL/PAPI
Fuel: 100LL/Jet A
Repair: Major/Minor
Transportation: Taxi, Courtesy Car and Rental Car
Nearest Commercial Service:
Nashville International Airport
Location Identifier: BNA
Served by 16 airlines; operating 350 average daily flights to 89 markets and 45 non-stop markets (as of January 1, 2009).

HIGHWAYS:
U.S Highways: 231
State Highways: 25, 10, 141
Nearest Interstate: 20 miles to Interstate 40

COMMON CARRIERS:
Air Freight Companies: None
Motor Freight Companies: 1
Terminal Facilities: 1
Bus Services – Inter-City: None
Local: None Carrier Service: UPS

RAILROADS SERVED BY:
None

NAVIGABLE WATERWAYS:
River: Cumberland
Channel Depth: 9 feet
Nearest Port Facility: Nashville
Miles: 45

INDUSTRIAL SUPPORT SERVICES

Service	Town	Distance (Miles)
Tool & Die	Gallatin	16
Heat Treating	Nashville	48
Foundry	Local	
Heavy Hardware	Nashville	48
Sheet Metal	Nashville	48
Lubricants	Nashville	48
Welding Supplies	Nashville	48
Abrasives		
Other:		

COMMUNITY FACILITIES

Health Care:
- Hospitals: 1 Beds: 21
- Clinics: 2 Beds: 5
- Doctors: 7 Dentists: 2

Nursing Homes: 1 Beds:
Retirement Homes: 0 Beds:
Residential Care/Assisted Living: 1

Religious Organizations:
- Protestant: 18 Catholic: 0 Jewish: 0
- Jehovah's Witness: 0 Spanish: 1
- Other:

Day Care Centers: 5 Day Care Homes: 0

Recreation:
- Libraries: 2 Parks: 2
- Golf Courses (Public & Private): 0
- Swimming Pools (Public & Private): 22
- Country Clubs: 0 Theaters: 0
- Bowling Alleys: 0

Hotels & Motels: 1 Rooms: 20
Bed & Breakfasts: 0
Largest Meeting Room Capacity: 500
Restaurants: 15
Other: Senior Citizen Center

NATURAL RESOURCES

Minerals:
Timber:

AGRICULTURAL PRODUCTS

Crops: Hay, Soybeans, Wheat, Tobacco and Corn

FINANCIAL INSTITUTIONS

Name of Banks:	Number of Branches:	Deposits
Citizens Bank	1	$ 69,165,000
Peoples State Bank of Commerce	1	18,893,000
Wilson Bank & Trust	1	66,735,000

Commercial Banks: 3
Savings Institutions: 0
US Branches of Foreign Banks: 0
Total # of Institutions: 3
Combined Deposits: $ 154,793,000 (Deposits ($000) for June 30, 2008)

SELECTED ECONOMIC INDICATORS

2007 Annual Average

	County	Labor Market Area*
Labor Force:		
Civilian Labor Force	3,850	162,980
Employment	3,640	156,070
Unemployment	210	6,920
Unemployment Rate	5.5 %	4.9 %
HS Graduates (2007-08)	97	3,360

Manufacturing in Area (Annual Averages):
Number of Units: 6
Ann. Avg. Employment: 251

Per Capita Personal Income
Year: 2006 Amount: $ 24,517

Retail Sales
Year: 2007 Amount: $ 48,876,207

Estimated County Available Labor:
Date (month): December 2008

	County	Labor Market Area
Total:	380	13,630
Male:	160	6,790
Female:	220	6,840

County 10-Year Growth Report

Years: 1998-2007	New Plants	Expansions
Number Projects:	0	14
Job Opportunities:	0	222
Total Investments:	$	$ 6,303,995

* *Labor Market Area is defined as Macon, Smith, Sumner, **Trousdale** and Wilson Counties in Tennessee*

The Industrial Advantage

In addition to its strategic location, Middle Tennessee offers other advantages to a wide variety of industries:

- Cap on franchise/inventory tax for distribution/warehousing facilities.
- Tax incentives on machinery, manufacturing, and distribution equipment/ racking systems.
- Jobs Tax Credit Program
- Abundant workforce in "Right-to-Work" state
- Reliable TVA electric power
- Highly-developed transportation system

And a climate that supports business and growth.

UTILITIES

GAS
Local Distributor: **Hartsville Gas Company**
Voice:
Source Company: Piedmont
Fuel Oil Suppliers: 2
Suppliers of LP Gas: 1

WATER
Water Supplier: **Hartsville Water System**
Voice: 615.374.3484
Source: Cumberland River
Capacity: 2,000,000 GPD
Current Consumption: 600,000 GPD
Storage Capacity: 2,750,000 Gallons

SEWER
Sewer Provider: **Hartsville Sewer System**
Voice: 615.374.3529
Type of Treatment: Activated sludge (secondary)
Capacity: 750,000 GPD
Current Usage: 300,000 GPD
City Sewer Coverage: 90 %
Storm Sewer Coverage: 50 %
Solid Waste Disposal Type:

MTIDA works closely with the Tennessee Valley Authority, which supplies electric power to Middle Tennessee through 27 distributors.

ELECTRICITY
Source Company: Tennessee Valley Authority

Local Distributor City:
Electric Power System:
Tri-County Electric Membership Corporation
Exec. VP/General Manager: Paul Thompson
Address: Post Office Box 40
Lafayette, Tennessee 37083
Voice: 615.666.2111
Fax: 615.688.2141
Website: www.tcemc.org

Local Distributor County:
Electric Power System:
Tri-County Electric Membership Corporation
Exec. VP/General Manager: Paul Thompson
Address: Post Office Box 40
Lafayette, Tennessee 37083
Voice: 615.666.2111
Fax: 615.688.2141
Website: www.tcemc.org

MAJOR INDUSTRIAL MANUFACTURERS/DISTRIBUTION

Firm	Product or Service	Total Employees	Union	Phone Number
Dakota Works	Gas fireplace logs	20	None	615-374-4190
General Spring LLC	Wire springs	32	None	615-374-9500
Hartsville Cabinet Millwork	Cabinets & countertops	18	None	615-374-2203
Mueller Refrigeration Products	Commercial refrigeration components	20	None	615-374-2124

For information on industrial sites and available industrial buildings contact:

Mr. George W. Shuff, III, Executive Director
Middle Tennessee Industrial Development Association
2108 Westwood Avenue
Nashville, Tennessee 37212
Phone: 615.269.5233 WATS: 800.227.6628
Fax: 615.269.5184
Email: mtida@mtida.org Website: www.mtida.org

Seth Thurman, Executive Director
Hartsville-Trousdale Co. Chamber of Commerce
240 Broadway (in the Depot)
Hartsville, Tennessee 37074-1336
Phone: 615.374.9243 Fax: 615.374.0068
Email: sthurman@hartsvilletrousdale.com
Website: www.hartsvilletrousdale.com

Trousdale County is the smallest county in the state with 75,000 acres. It is approximately 16 miles from Gallatin, Lebanon, Carthage, Lafayette, and Westmoreland, TN. A 45 minute drive to Rivergate Shopping Mall and about 1 hour from Nashville.

Updated February 2009

Looking East along SR 10/25 (East of Intersection)

View of Intersection from Shell Gas Station

Looking Northeast along Halltown Road

Looking East towards Shell Gas Station from Halltown Road

Looking North along Halltown Road at concrete drainage ditch

Looking West along SR 10/25 (West of Intersection)

Signs located in the southwestern quadrant of the intersection

Looking South along SR-141 (South of the Intersection)

Signal Pole and controller box located in southeastern quadrant

Looking East along SR 10/25 (West of Intersection)

COST DATA SHEETS

COST DATA SHEET

PROJECT: SR-10/25 @ SR-141 & Halltown Road
LOCATION: Hartsville, Trousdale County
SECTION LENGTH: N/A
DESCRIPTION: Option 1

RIGHT-OF-WAY				
Land, Improvements & Damages	(# Acres	0.04)	$3,600	
Incidentals	(# Tracts	1)	$3,600	
Relocation Payments	(Residences	0)	$0	
	(Businesses	0)	$0	
	(Non-Profits	0)		
Total Right-Of-Way Cost				**$7,200**
UTILITY RELOCATION				
Reimbursable			$0	
Non-Reimbursable			$155,000	
Total Utility Adjustment Cost				**$155,000**
CONSTRUCTION				
Clear and Grubbing			$2,000	
Earthwork			$11,000	
Pavement Removal			$2,000	
Drainage (Erosion Control =	$12,000)		$76,000	
Structures			$0	
Railroad Crossing			$0	
Paving			$57,000	
Retaining Walls			$66,000	
Maintenance of Traffic			$8,000	
Topsoil			$4,000	
Seeding			$4,000	
Sodding			$4,000	
Signing			$5,000	
Lighting			$0	
Signalization (Upgrade)			$30,000	
Fence			$0	
Guardrail			$12,000	
Rip-rap or Slope Protection			$0	
Other Construction Items (15%)			$42,000	
Mobilization			$16,000	
10% Engineering and Contigencies			$34,000	
Total Construction Cost				**$373,000**
Preliminary Engineering (10% of Constr.)				**$34,000**
Inflation (5% per year for 3 years)				**$90,000**
ESTIMATED COST				**$659,200**

COST DATA SHEET

PROJECT: SR-10/25 @ SR-141 & Halltown Road
LOCATION: Hartsville, Trousdale County
SECTION LENGTH: N/A
DESCRIPTION: Option 2

RIGHT-OF-WAY				
Land, Improvements & Damages	(# Acres	0.15)	$20,000	
Incidentals	(# Tracts	2)	$7,000	
Relocation Payments	(Residences	0)	$0	
	(Businesses	0)	$0	
	(Non-Profits	0)		
Total Right-Of-Way Cost				**$27,000**
UTILITY RELOCATION				
Reimbursable			$0	
Non-Reimbursable			$195,000	
Total Utility Adjustment Cost				**$195,000**
CONSTRUCTION				
Clear and Grubbing			$2,000	
Earthwork			$18,000	
Pavement Removal			$3,000	
Drainage (Erosion Control = $15,000)			$87,000	
Structures			$0	
Railroad Crossing			$0	
Paving			$71,000	
Retaining Walls			$66,000	
Maintenance of Traffic			$9,000	
Topsoil			$5,000	
Seeding			$5,000	
Sodding			$5,000	
Signing			$6,000	
Lighting			$0	
Signalization (Upgrade)			$35,000	
Fence			$0	
Guardrail			$12,000	
Rip-rap or Slope Protection			$0	
Other Construction Items (15%)			$49,000	
Mobilization			$19,000	
10% Engineering and Contigencies			$39,000	
Total Construction Cost				**$431,000**
Preliminary Engineering (10% of Constr.)				**$39,000**
Inflation (5% per year for 3 years)				**$109,000**
ESTIMATED COST				**$801,000**

CONCEPT LAYOUTS

TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		1

N

CPA
HARTSVILLE CARPET CENTER
TROUSDALE COUNTY MOTORS
BUBBA'S MARKET CITGO
MCMURRY BLVD W SR-10/141/25
PRES. R.O.W.
PROP. C&G
EXIST. DRIVEWAY
PROPOSED 5' RETAINING WALL
RESURFACE & RESTRIPE
HALLTOWN ROAD
SHELL
McDONALD'S
TULLY'S BISTRO
COMMERCIAL
CITIZENS BANK
RES
AUTOJET AUTO WASH
BROADWAY SR-141
DOLLAR GENERAL
SUBWAY
HARTSVILLE FOODLAND

AREA TO BE SCARIFIED, TOPSOILED AND SODDED

0 50' 100' 150'

OPTION 1

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TRANSPORTATION PLANNING REPORT (TPR)

STATE ROUTE 25 & HALLTOWN ROAD

HARTSVILLE, TN
TROUSDALE COUNTY

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TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		

N

RETAIL
±17,000 SF

RETAIL
±18,000 SF

POST
OFFICE
±15,000 SF

CPA

HARTSVILLE
CARPET
CENTER

TROUSDALE
COUNTY
MOTORS

BUBBA'S
MARKET
CITGO

MCMURRY BLVD W SR-10/141/25

PRES. R.O.W.

PROP. C&G

PROPOSED 5'
RETAINING WALL

EXIST. DRIVEWAY

PROPOSED 5'
RETAINING WALL

PROP. C&G

TULLY'S BISTRO

PROP. R.O.W.

HALLTOWN ROAD

PRES. R.O.W.

SHELL

RESURFACE & RESTRIPE

McDONALD'S

PRES. R.O.W.

COMMERCIAL

RESURFACE & RESTRIPE

PRES. R.O.W.

MCMURRY BLVD SR-10/25

CITIZENS BANK

RES

PRES. R.O.W.

PRES. R.O.W.

BROADWAY SR-141

AUTOJET
AUTO WASH

DOLLAR GENERAL

SUBWAY

HARTSVILLE
FOODLAND

AREA TO BE SCARIFIED,
TOPSOILED AND SODDED

0 50' 100' 150'

OPTION 2

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TRANSPORTATION
PLANNING REPORT (TPR)

STATE ROUTE 25 &
HALLTOWN ROAD

HARTSVILLE, TN
TROUSDALE COUNTY

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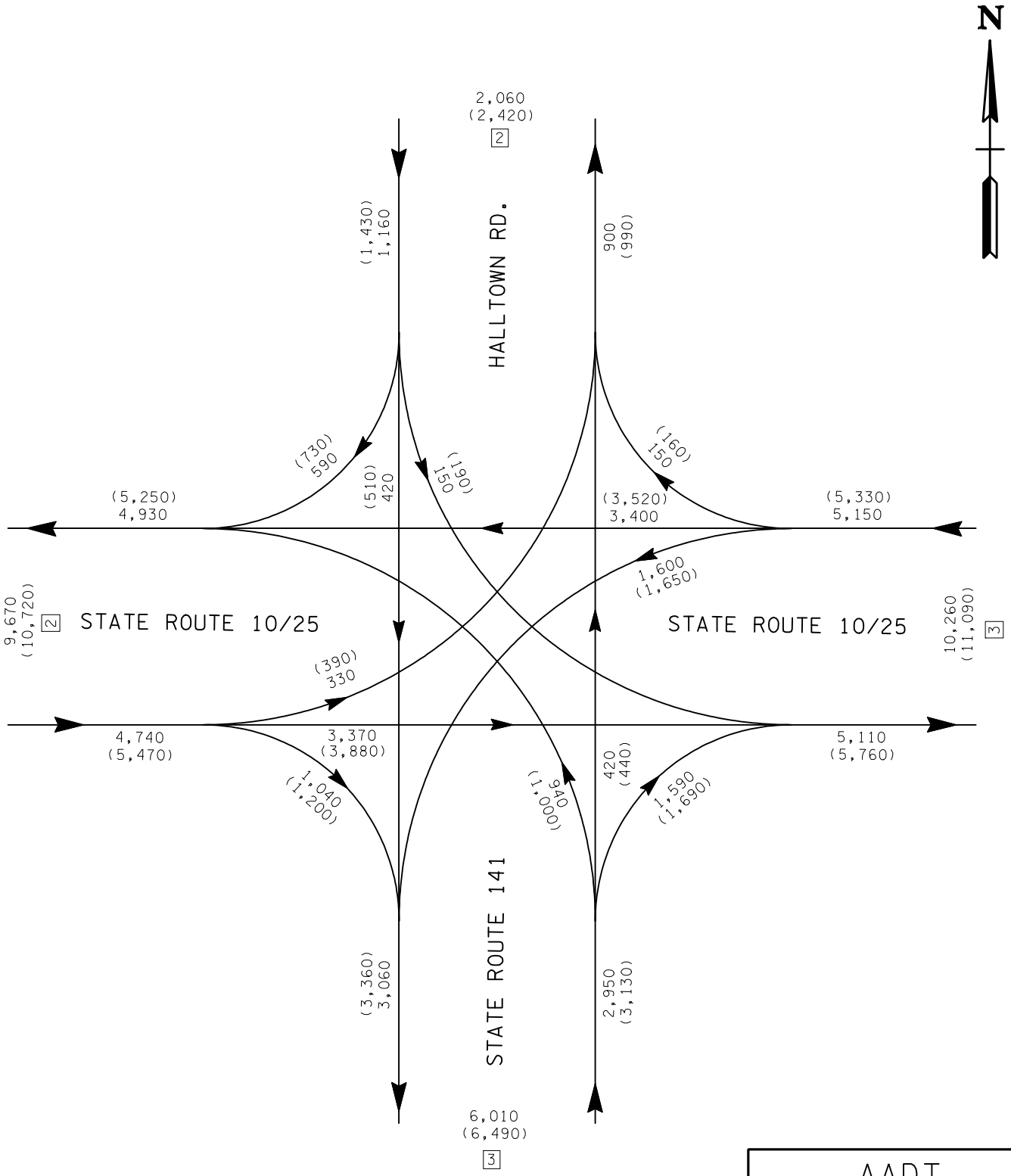
PROJECT TRAFFIC
& TRIMS DATA

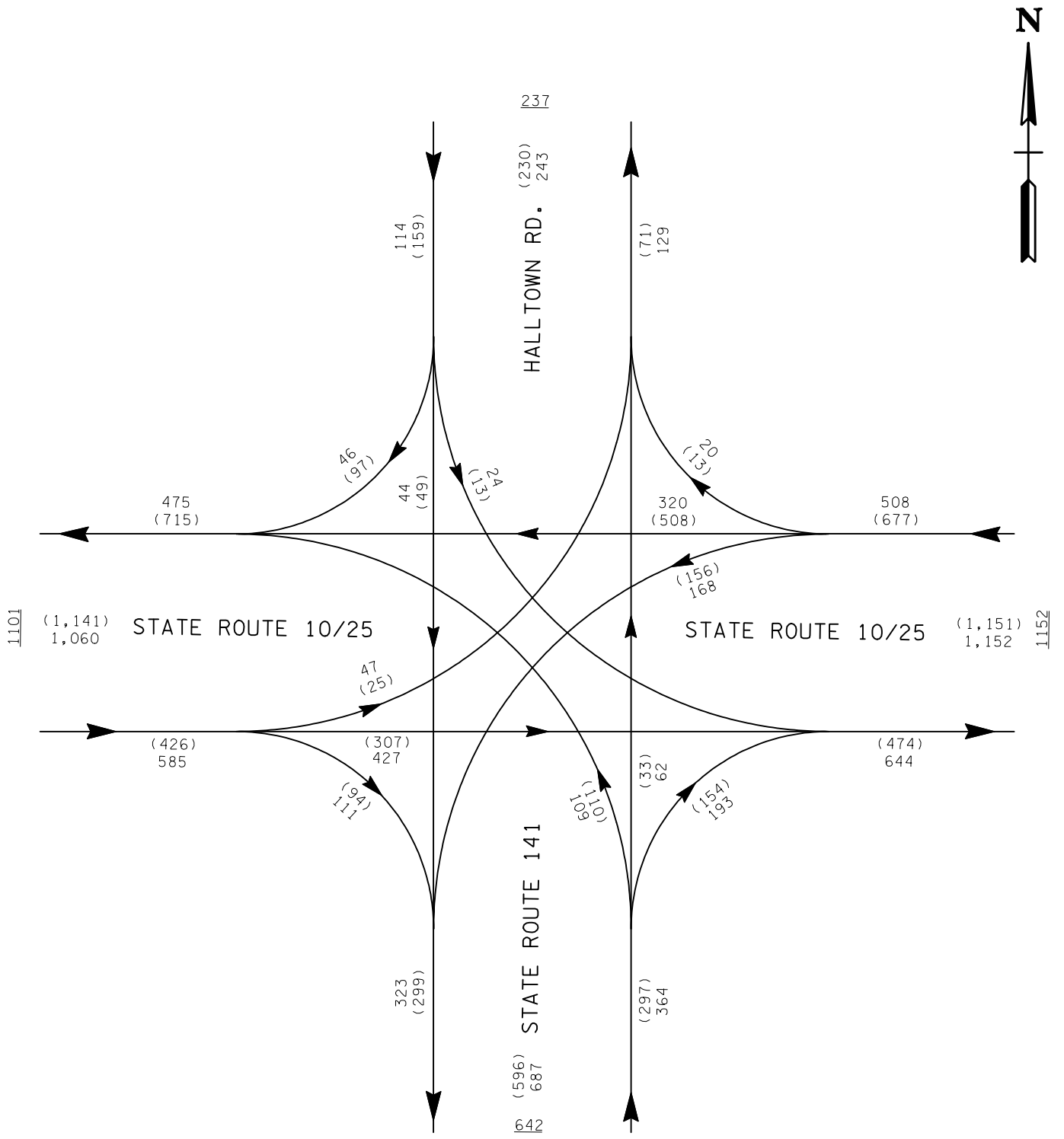


AADT EXISTING

STATE ROUTE 25
@ STATE ROUTE 141
& HALLTOWN ROAD

000 - 2014 AADT
(000) - 2034 AADT
[0] - % TRUCKS

N.T.S.

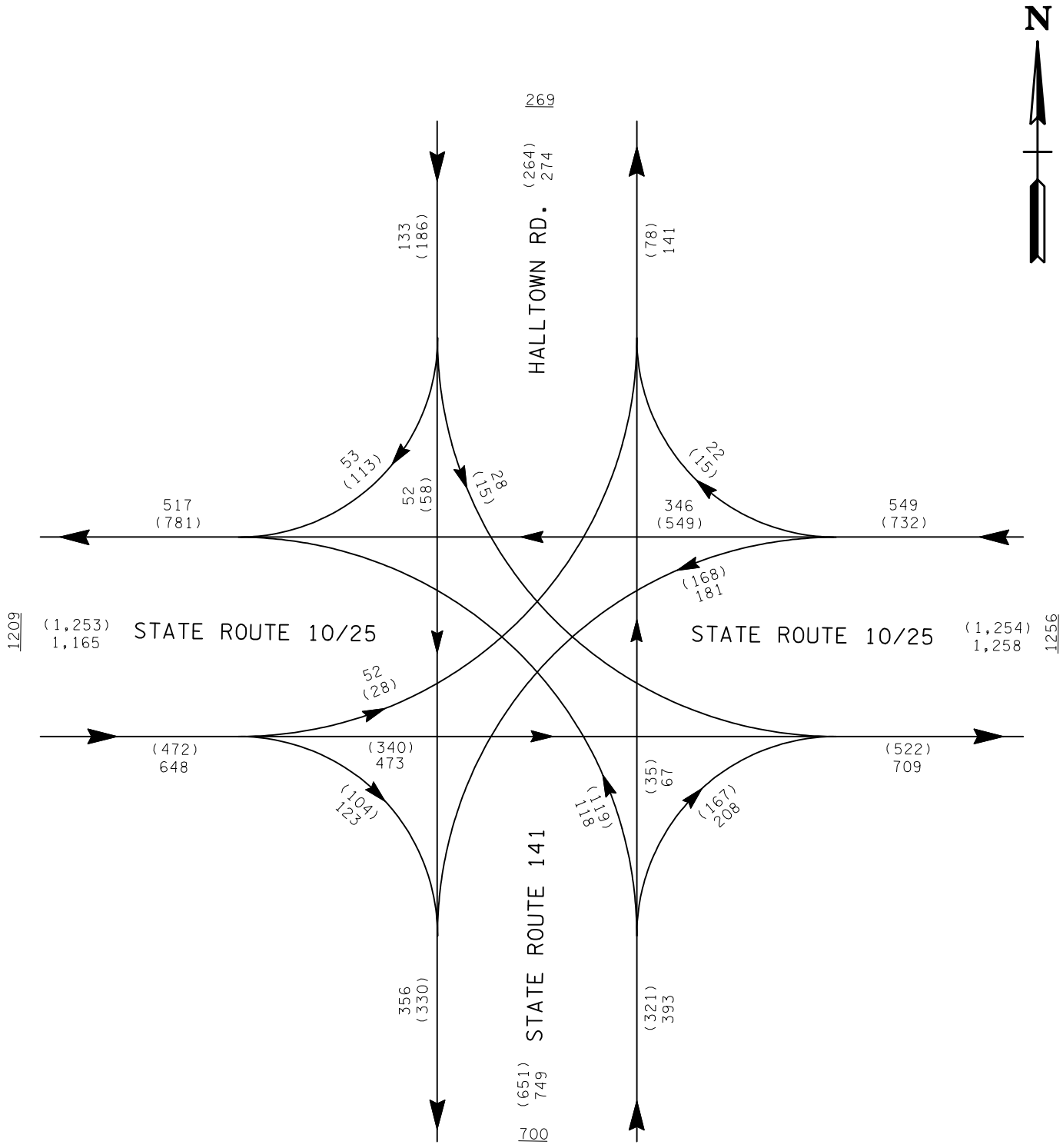


2014 DHV EXISTING

STATE ROUTE 25
@ STATE ROUTE 141
& HALLTOWN ROAD

PM
(AM)

N.T.S.

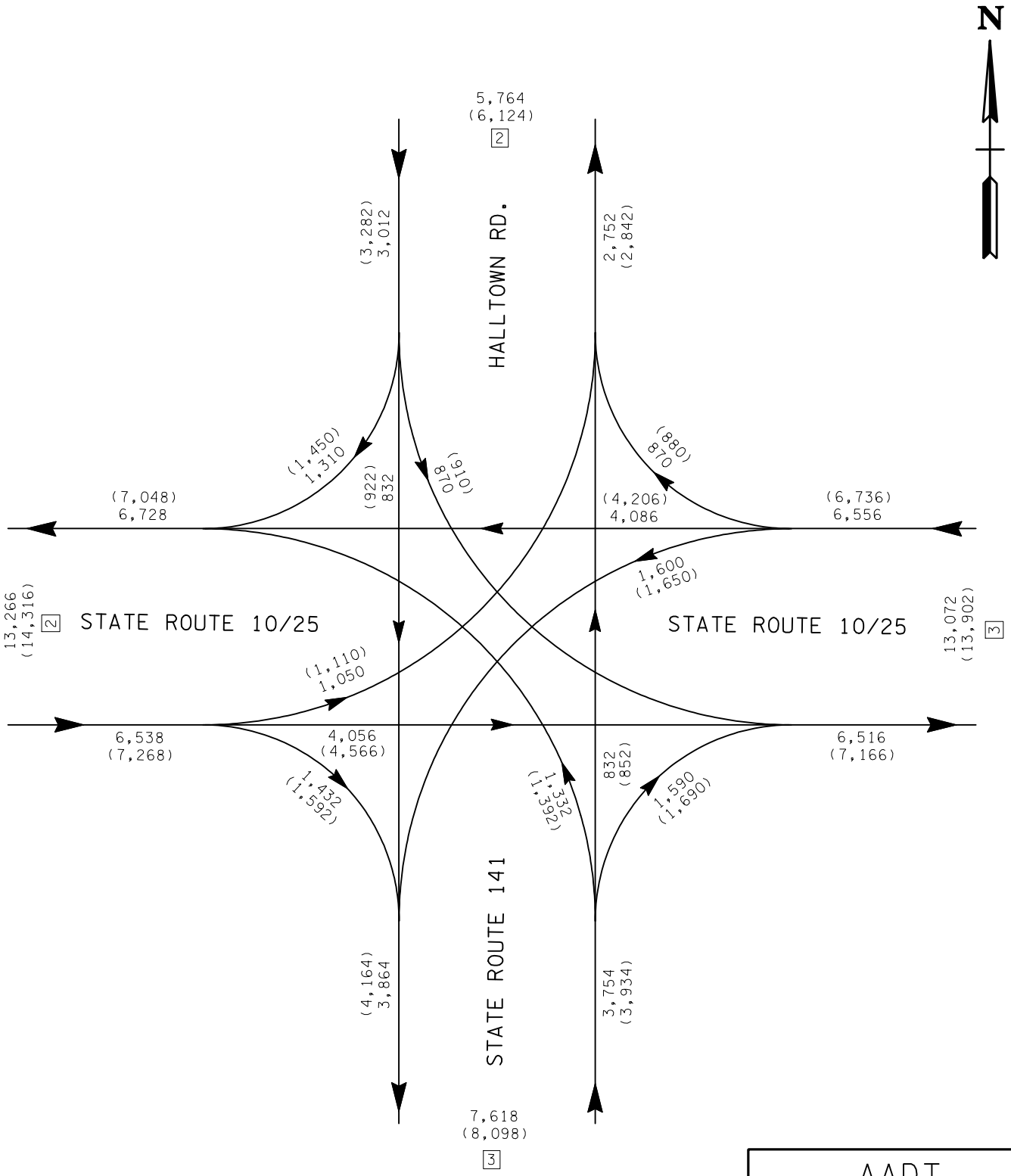


2034 DHV EXISTING

STATE ROUTE 25
@ STATE ROUTE 141
& HALLTOWN ROAD

PM
(AM)

N.T.S.



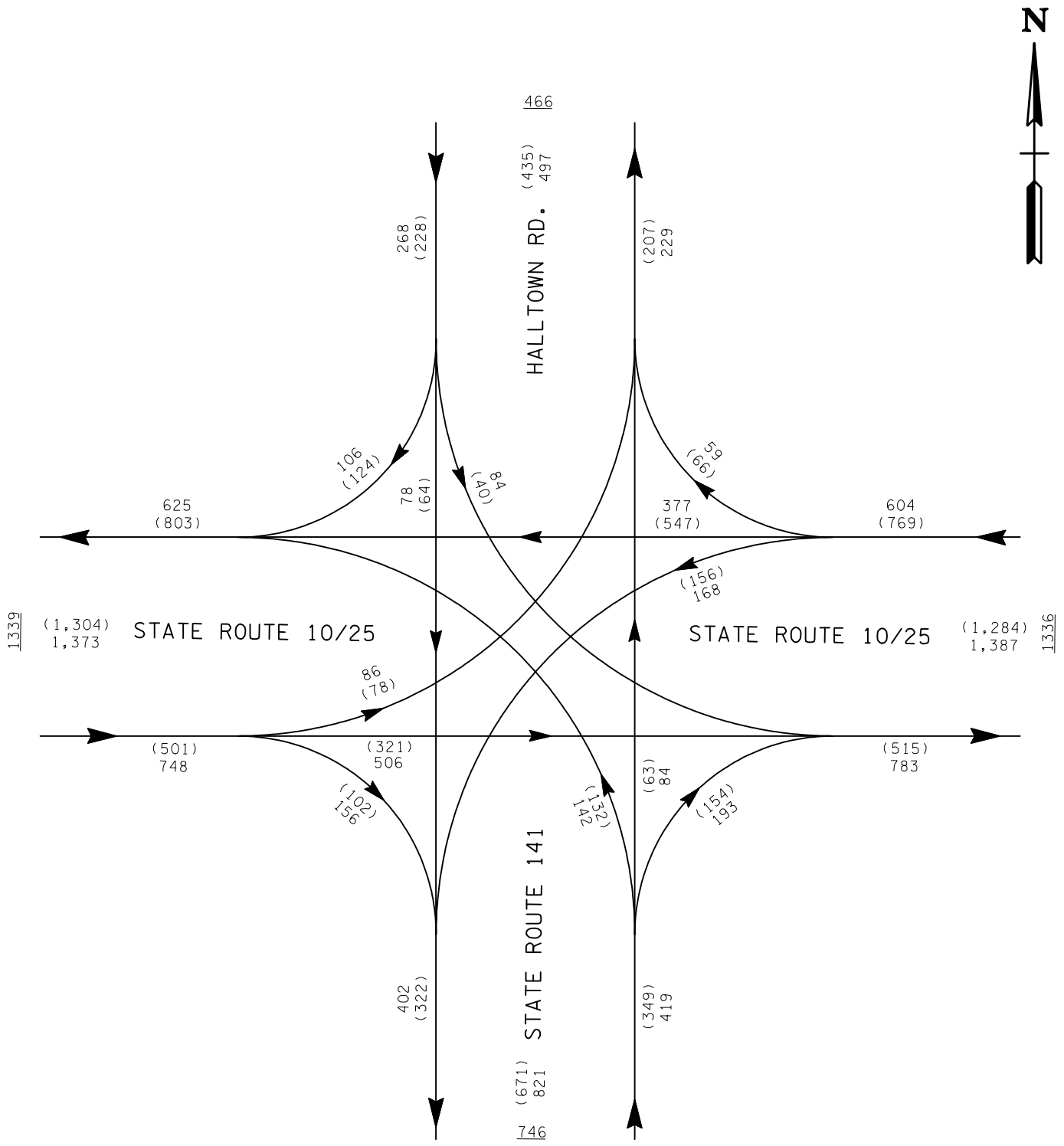
AADT PROPOSED

STATE ROUTE 25
@ STATE ROUTE 141
& HALLTOWN ROAD

000 - 2014 AADT
(000) - 2034 AADT
[0] - % TRUCKS

N.T.S.

PROPOSED VOLUMES INCLUDE FUTURE SITE DEVELOPMENT VOLUMES



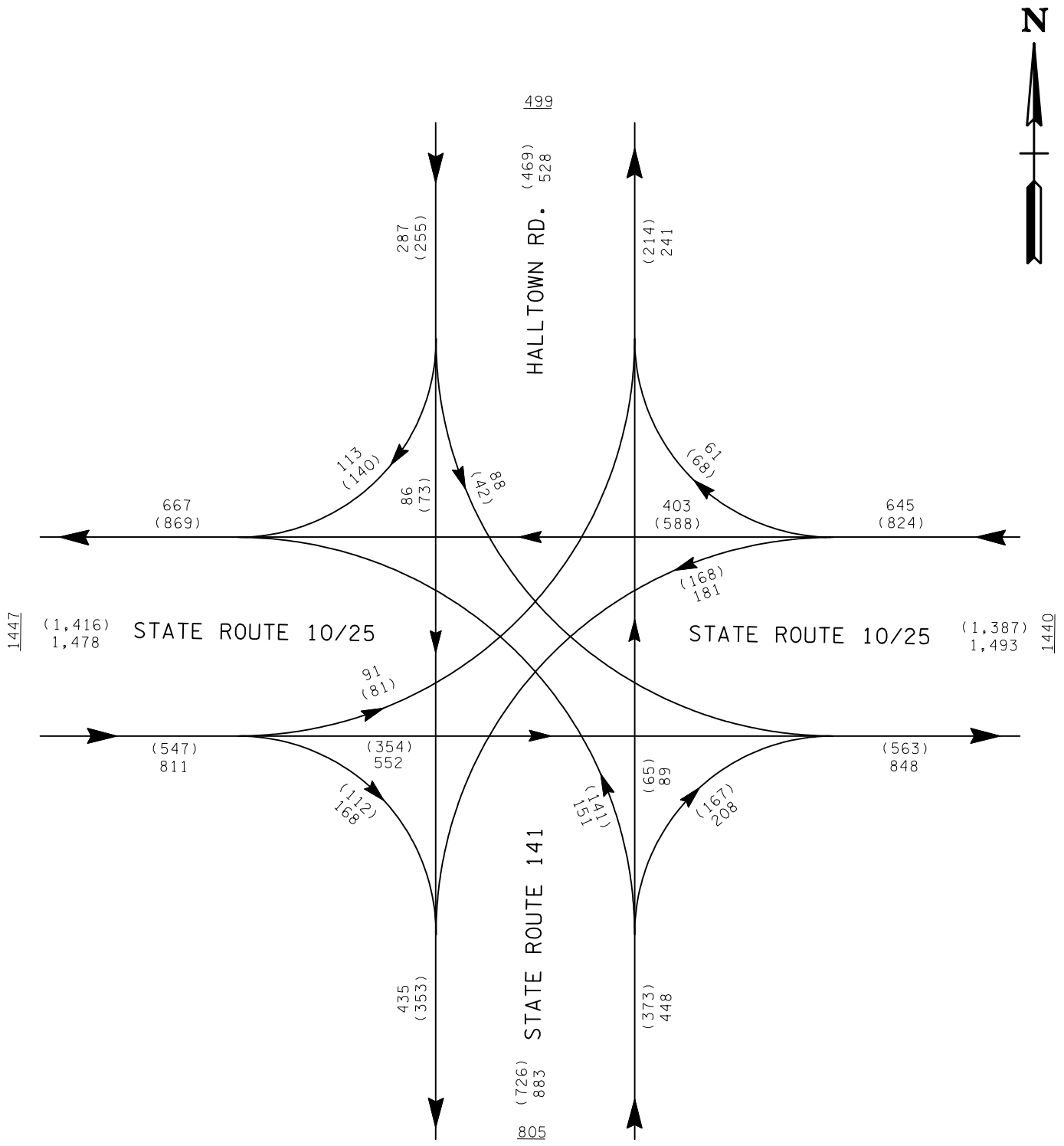
PROPOSED VOLUMES INCLUDE FUTURE SITE DEVELOPMENT VOLUMES

2014 DHV PROPOSED

STATE ROUTE 25
@ STATE ROUTE 141
& HALLTOWN ROAD

PM
(AM)

N.T.S.



PROPOSED VOLUMES INCLUDE FUTURE SITE DEVELOPMENT VOLUMES

2034 DHV PROPOSED

STATE ROUTE 25
@ STATE ROUTE 141
& HALLTOWN ROAD

PM
(AM)

N.T.S.

TRIMS ROAD SEGMENT REPORT

TROUSDALE County - SR010

COUNTY: TROUSDALE **COUNTY NO: 85**

ROUTE NBR	SPEC CASE	CTY SEQ	BEG LOG MILE	END LOG MILE	SP SY	SP SY2	SP SY3	US RTE	US RTE2	FUNCTIONAL CLASS	ADM SYS	URB AREA	INC AREA	GOV CON	ROAD NAME	HPMS SEC_ID
SR010	0	1	0.000	6.240	11	13	23	231		R / OTH PRIN ART	NHS STATE RURAL			STATE HWAY	HWY 231S	
SR010	0	1	6.240	9.839	13	23				R / MIN ART	STP STATE RURAL			STATE HWAY	STATE HWY-10	
SR010	0	1	9.839	14.256	13	23				R / MIN ART	STP STATE RURAL		127	STATE HWAY	MCMURRY BLVD	
SR010	0	1	14.256	14.950	13	23				R / MIN ART	STP STATE RURAL			STATE HWAY	HWY 25 E.	
SR010	0	1	14.950	19.630	13	23				R / MIN ART	STP STATE RURAL			STATE HWAY	HWY 25 N.	

ROUTE FEATURE DESCRIPTION LISTING

TROUSDALE County - SR010

COUNTY: TROUSDALE **COUNTY NO.** 85

ROUTE: SR010 **SPECIAL CASE:** None **CTY SEQ:** 1

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
5.027	5	A125 ARMSTRONG RD. LT.	530
5.040	9	CULVERT: BRANCH	980
5.048	5	A117 RANKIN RD. RT.	520
5.420	9	CULVERT [85CULV010374]: BRANCH	980
5.584	5	A213 TULIP CT. RT.	520
5.660	9	CULVERT: BRANCH	980
5.669	5	A125 BROWN RD. LT.	530
6.210	9	CEMETERY RT.	913
6.220	7	RAMP TO SR-10 US/HWY 231 S RT. & RAMP FROM SR-25 LT.	710
6.240	9	4-WAY STOP	904
6.240	3	SR-25 STATE HWY-25 LT.	330
6.240	0	90 DEG. RIGHT TURN	921
6.240	3	SR-376 US/HWY-231 N. LT.	330
6.240	0	PICK-UP SR-25	994
6.240	0	BEGIN STATE HWY-10	920
6.240	0	BEGIN STATE HWY 25 W	920
6.240	0	END US-231	993
6.260	7	RAMP FROM SR-10 US/HWY 231 S RT. & RAMP TO SR-376 US/HWY 231 N LT.	711
6.610	2	BRIDGE [85SR0100003]: BRANCH	221
6.670	9	PHILIPPI CHURCH OF CHRIST RT.	912
6.690	2	BRIDGE [85SR0100005]: BRANCH	221
6.789	5	A097 ROCKY CREEK LOOP LT.	530
6.800	5	A118 OLD 25 LOOP RT.	520
6.837	5	A181 ROCKY CREEK LOOP LT.	530
6.860	2	BRIDGE [85SR0100007]: ROCKY CREEK	211
7.268	5	A118 OLD 25 LOOP RT.	520

ROUTE FEATURE DESCRIPTION LISTING

TROUSDALE County - SR010

COUNTY: TROUSDALE **COUNTY NO.** 85

ROUTE: SR010 **SPECIAL CASE:** None **CTY SEQ:** 1

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
7.389	5	A111 CAREY RD. RT. & A031 WALNUT GROVE RD. LT.	510
7.720	9	CULVERT: DRAINAGE	980
7.780	5	A102 OLD HWY. 25 RT.	520
7.951	5	A004 BADGITT LN. RT.	520
8.958	5	A120 OLD WOODARD RD. RT.	520
9.220	2	BRIDGE [85SR0100009]: SECOND CREEK	221
9.448	5	A030 CRENSHAW RD. LT.	530
9.800	9	CULVERT: DRAINAGE	980
9.830	4	2089 SULPHUR COLLEGE RD. RT.	420
9.830	5	A031 SULPHUR COLLEGE RD. LT.	530
9.839	1	ENTER HARTSVILLE CITY LIMITS	130
9.839	0	BEGIN MCMURRY BLVD.	920
10.660	9	BEGIN 50 MPH	932
10.980	9	SPEED LIMIT 35 MPH	932
11.010	9	BEGIN ILLUMINATION	930
11.010	9	BEGIN 15 MPH SCHOOL ZONE	933
11.220	9	TROUSDALE COUNTY HIGH SCHOOL LT.	915
11.390	9	CHURCH OF THE FIRSTBORN LT.	912
11.430	9	END SCHOOL ZONE	934
11.530	2	BRIDGE [85SR0100011]: LITTLE GOOSE CREEK	211
11.710	2	BRIDGE [85SR0100013]: OVERFLOW	211
11.810	3	PICK-UP SR-141 STATE HWY-141 LT.	331
11.907	5	A095 THOROUGHBRED BLVD. LT.	530
11.960	2	BRIDGE [85SR0100015]: MILL BRANCH	221
12.110	9	TRAFFIC SIGNAL	905
12.110	3	LEAVE SR-141 BROADWAY RT.	322

ROUTE FEATURE DESCRIPTION LISTING

TROUSDALE County - SR010

COUNTY: TROUSDALE **COUNTY NO.** 85

ROUTE: SR010 **SPECIAL CASE:** None **CTY SEQ:** 1

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
12.110	4	1082 HALLTOWN RD. LT.	430
12.290	5	A152 HAYES AVE. RT. & LT.	510
12.368	5	A150 ANDREWS AVE. RT. & LT.	510
12.368	9	TRAFFIC SIGNAL	905
12.410	5	A153 HILLTOP DR. LT.	530
12.560	5	A158 WESTERN AVE. RT.	520
12.610	2	BRIDGE [85SR0100017]: DARWIN BRANCH	211
12.640	9	BEGIN 45 MPH	932
12.834	5	A042 NEW HALLTOWN RD. LT.	530
13.123	5	A211 LT.	530
13.240	9	GREATER BEECH HILL MISSIONARY BAPTIST CHURCH LT.	912
13.278	5	A170 PARK AVE. LT.	530
13.290	5	RAMP TO A135 E. MAIN ST. RT.	520
13.337	5	A135 E. MAIN ST. RT.	520
13.349	5	A169 TAYLOR AVE. LT.	530
13.391	5	A172 DRIVERS CIR. LT.	530
13.439	5	A172 DRIVERS CIR. LT.	530
13.470	9	TENNESSEE TECHNOLOGY CENTER SCHOOL AT HARTSVILLE RT.	915
13.540	9	BEGIN 25 MPH SCHOOL ZONE	933
13.588	5	A176 THOMPSON LN. RT.	520
13.670	9	FIRST BAPTIST CHURCH LT.	912
13.688	5	A076 LOCK SIX RD. RT.	520
13.808	5	A040 MELROSE DR. LT.	530
13.877	5	A165 TURNER DR. LT.	530
13.889	5	A011 SAM BEASLEY RD. RT.	520
13.970	9	END 25 MPH SCHOOL ZONE	934

ROUTE FEATURE DESCRIPTION LISTING

TROUSDALE County - SR010

COUNTY: TROUSDALE **COUNTY NO.** 85

ROUTE: SR010 **SPECIAL CASE:** None **CTY SEQ:** 1

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
13.998	5	A133 ROYAL ELM CIR. LT.	530
14.060	5	A133 ROYAL ELM CIR. LT.	530
14.160	9	END OF ILLUMINATION	931
14.256	1	LEAVE HARTSVILLE CITY LIMITS	135
14.256	0	BEGIN STATE HWY 25 E	920
14.260	2	BRIDGE [85SR0100019]: GOOSE CREEK	211
14.318	5	A077 LATTIE REESE RD. RT.	520
14.380	9	SPEED LIMIT 55 MPH	932
14.950	0	90 DEG. LEFT TURN	922
14.950	3	LEAVE SR-25 STATE HWY-25 RT.	322
14.950	9	1-WAY STOP	901
14.950	0	BEGIN HWY 25 N	920

TROUSDALE County - SR010

County: TROUSDALE (85) ***Route No.*** SR010 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
5.000	6.240	66	0-NONE	2-TWO WAY	NO		55		2-ROLLING	0-RURAL	2	2	8	DRAINAGE		DITCH
		66									2	2	9	SHOULDER (OUTSIDE)	5.0	ASPHALT CONCRETE
		66									2	2	10	PAVEMENT	24.0	ASPHALT CONCRETE
		66									2	2	12	SHOULDER (OUTSIDE)	5.0	ASPHALT CONCRETE
		66									2	2	13	DRAINAGE		DITCH
6.240	11.010	100	0-NONE	2-TWO WAY	NO		55		2-ROLLING	0-RURAL	2	2	8	DRAINAGE		DITCH
		100									2	2	9	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		100									2	2	10	PAVEMENT	22.0	ASPHALT CONCRETE
		100									2	2	12	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		100									2	2	13	DRAINAGE		DITCH
11.010	11.120	100	0-NONE	2-TWO WAY	YES	15	35		2-ROLLING	2-COMMERCIAL	2	2	8	DRAINAGE		DITCH
		100									2	2	9	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		100									2	2	10	PAVEMENT	22.0	ASPHALT CONCRETE
		100									2	2	12	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		100									2	2	13	DRAINAGE		DITCH
11.120	11.290	100	0-NONE	2-TWO WAY	YES	15	35		2-ROLLING	2-COMMERCIAL	2	2	9	DRAINAGE		DITCH
		100									2	2	11	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		100									2	2	13	PAVEMENT	11.0	ASPHALT CONCRETE
		100									2	2	14	LEFT TURN LANE	11.0	ASPHALT CONCRETE
		100									2	2	15	PAVEMENT	11.0	ASPHALT CONCRETE
		100									2	2	16	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE

TROUSDALE County - SR010

County: TROUSDALE (85) ***Route No.*** SR010 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
11.120	11.290	100	0-NONE	2-TWO WAY	YES	15	35		2-ROLLING	2-COMMERCIAL	2	2	17	DRAINAGE		DITCH
11.290	11.370	100	0-NONE	2-TWO WAY	YES	15	35		2-ROLLING	2-COMMERCIAL	2	2	1	DRAINAGE		DITCH
		100									2	2	2	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		100									2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE
		100									2	2	4	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		100									2	2	5	DRAINAGE		DITCH
11.370	11.430	100	0-NONE	2-TWO WAY	YES	15	35		2-ROLLING	2-COMMERCIAL	2	2	1	DRAINAGE		DITCH
		100									2	2	2	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		100									2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE
		100									2	2	4	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		100									2	2	5	DRAINAGE		DITCH
11.430	11.580	100	0-NONE	2-TWO WAY	YES		35		2-ROLLING	2-COMMERCIAL	2	2	1	DRAINAGE		DITCH
		100									2	2	2	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		100									2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE
		100									2	2	4	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		100									2	2	5	DRAINAGE		DITCH
11.580	11.700	100	0-NONE	2-TWO WAY	YES		35		2-ROLLING	2-COMMERCIAL	2	2	1	DRAINAGE		DITCH
		100									2	2	2	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		100									2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE
		100									2	2	4	SHOULDER (OUTSIDE)	11.0	ASPHALT CONCRETE
		100									2	2	5	DRAINAGE		DITCH

TROUSDALE County - SR010

County: TROUSDALE (85) ***Route No.*** SR010 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
11.700	11.770	100	0-NONE	2-TWO WAY	YES		35		2-ROLLING	2-COMMERCIAL	2	2	1	DRAINAGE		DITCH
		100									2	2	2	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		100									2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE
		100									2	2	4	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		100									2	2	5	DRAINAGE		DITCH
11.770	11.810	100	0-NONE	2-TWO WAY	YES		35		2-ROLLING	2-COMMERCIAL	2	2	1	DRAINAGE		DITCH
		100									2	2	2	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
		100									2	2	3	PAVEMENT	11.0	ASPHALT CONCRETE
		100									2	2	4	MEDIAN	11.0	PAINTED
		100									2	2	5	PAVEMENT	11.0	ASPHALT CONCRETE
		100									2	2	6	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
		100									2	2	7	DRAINAGE		DITCH
11.810	11.860	60	0-NONE	2-TWO WAY	YES		35		2-ROLLING	2-COMMERCIAL	2	2	1	DRAINAGE		DITCH
		60									2	2	2	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
		60									2	2	3	PAVEMENT	11.0	ASPHALT CONCRETE
		60									2	2	4	MEDIAN	11.0	PAINTED
		60									2	2	5	PAVEMENT	11.0	ASPHALT CONCRETE
		60									2	2	6	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
		60									2	2	7	DRAINAGE		DITCH
11.860	12.110	60	0-NONE	2-TWO WAY	YES		35		2-ROLLING	2-COMMERCIAL	2	2	1	DRAINAGE		DITCH
		60									2	2	2	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE

TROUSDALE County - SR010

County: TROUSDALE (85) ***Route No.*** SR010 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
11.860	12.110	60	0-NONE	2-TWO WAY	YES		35		2-ROLLING	2-COMMERCIAL	2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE
		60									2	2	4	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		60									2	2	5	DRAINAGE		DITCH
12.110	12.368	66	0-NONE	2-TWO WAY	YES		35		2-ROLLING	2-COMMERCIAL	2	2	9	DRAINAGE		DITCH
		66									2	2	11	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		66									2	2	13	PAVEMENT	11.0	ASPHALT CONCRETE
		66									2	2	15	2-WAY LT. TURN LN.	12.0	ASPHALT CONCRETE
		66									2	2	16	PAVEMENT	11.0	ASPHALT CONCRETE
		66									2	2	17	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		66									2	2	18	DRAINAGE		DITCH
12.368	12.640	66	0-NONE	2-TWO WAY	YES		35		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	8	DRAINAGE		DITCH
		66									2	2	9	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	10	PAVEMENT	22.0	ASPHALT CONCRETE
		66									2	2	12	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	13	DRAINAGE		DITCH
12.640	13.540	66	0-NONE	2-TWO WAY	YES		45		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	8	DRAINAGE		DITCH
		66									2	2	9	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	10	PAVEMENT	22.0	ASPHALT CONCRETE
		66									2	2	12	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	13	DRAINAGE		DITCH
13.540	13.650	66	0-NONE	2-TWO WAY	YES	25	45		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	8	DRAINAGE		DITCH

TROUSDALE County - SR010

County: TROUSDALE (85) ***Route No.*** SR010 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
13.540	13.650	66	0-NONE	2-TWO WAY	YES	25	45		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	9	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	10	PAVEMENT	22.0	ASPHALT CONCRETE
		66									2	2	12	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	13	DRAINAGE		DITCH
13.650	13.750	66	0-NONE	2-TWO WAY	YES	25	45		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	1	DRAINAGE		DITCH
		66									2	2	2	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		66									2	2	3	PAVEMENT	11.0	ASPHALT CONCRETE
		66									2	2	4	MEDIAN	11.0	PAINTED
		66									2	2	5	PAVEMENT	11.0	ASPHALT CONCRETE
		66									2	2	6	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		66									2	2	7	DRAINAGE		DITCH
13.750	13.808	66	0-NONE	2-TWO WAY	YES	25	45		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	1	DRAINAGE		DITCH
		66									2	2	2	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		66									2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE
		66									2	2	4	SHOULDER (OUTSIDE)	14.0	ASPHALT CONCRETE
		66									2	2	5	DRAINAGE		DITCH
13.808	13.970	66	0-NONE	2-TWO WAY	YES	25	45		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	1	DRAINAGE		DITCH
		66									2	2	2	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE
		66									2	2	4	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	5	DRAINAGE		DITCH

TROUSDALE County - SR010

County: TROUSDALE (85) ***Route No.*** SR010 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
13.970	14.160	66	0-NONE	2-TWO WAY	YES		45		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	1	DRAINAGE		DITCH
		66									2	2	2	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE
		66									2	2	4	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	5	DRAINAGE		DITCH
14.160	14.380	66	0-NONE	2-TWO WAY	NO		45		2-ROLLING	0-RURAL	2	2	1	DRAINAGE		DITCH
		66									2	2	2	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE
		66									2	2	4	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	5	DRAINAGE		DITCH
14.380	14.950	100	0-NONE	2-TWO WAY	NO		55		2-ROLLING	0-RURAL	2	2	1	DRAINAGE		DITCH
		100									2	2	2	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		100									2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE
		100									2	2	4	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		100									2	2	5	DRAINAGE		DITCH
14.950	15.000	66	0-NONE	2-TWO WAY	NO		55		2-ROLLING	0-RURAL	2	2	1	DRAINAGE		DITCH
		66									2	2	3	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	5	PAVEMENT	22.0	ASPHALT CONCRETE
		66									2	2	9	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	15	DRAINAGE		DITCH

TRIMS TRAFFIC REPORT

TROUSDALE County - SR010

COUNTY: TROUSDALE

ROUTE	SC	CO	SQ	BEG LOG MILE	END LOG MILE	YR OF TRAFFIC	ANNUAL AVERAGE DAILY TRAFFIC	PEAK HOUR %	DESIGN HOUR VOLUME	DIRECT DIST %	% PASS CARS	% SINGLE UNIT TRUCKS	% MULTI UNIT TRUCKS	CYCLE COUNTS STATION NBR	CYCLE COUNTS STATION COUNTY	CLASS COUNTS STATION NBR	CLASS COUNTS STATION COUNTY	IS CLASS COUNT?
SR010	0	1		3.940	6.240	2008	6730	8	10	65	87	4	9	26	85	185S	85	YES
SR010	0	1		6.240	11.810	2008	7610	8	10	65	94	2	4	35	85	207S	85	YES
SR010	0	1		11.810	12.110	2008	10770	10	12	65	98	1	1	47	85	007C	85	NO
SR010	0	1		12.110	13.889	2008	9330	9	11	65	97	1	2	34	85	007C	85	NO
SR010	0	1		13.889	14.950	2008	7480	8	10	65	97	1	2	9	85	007C	85	NO
SR010	0	1		14.950	15.750	2008	4950	8	10	65	95	2	3	7	85	007C	85	YES

TRIMS ROAD SEGMENT REPORT

TROUSDALE County - SR141

COUNTY: TROUSDALE **COUNTY NO: 85**

ROUTE NBR	SPEC CASE	CTY SEQ	BEG LOG MILE	END LOG MILE	SP SY	SP SY2	SP SY3	US RTE	US RTE2	FUNCTIONAL CLASS	ADM SYS	URB AREA	INC AREA	GOV CON	ROAD NAME	HPMS SEC_ID
SR141	0	1	0.000	4.061	01					R / MAJ COL	STP STATE RURAL			STATE HWAY	HWY.141 N	
SR141	0	1	4.061	4.240	01					R / MAJ COL	STP STATE RURAL		127	STATE HWAY	HWY.141 N	
SR141	0	1	4.240	4.890	01					R / MAJ COL	STP STATE RURAL		127	STATE HWAY	BROADWAY	
SR141	0	1	4.890	4.920	01					R / MAJ COL	STP STATE RURAL		127	STATE HWAY	W. MAIN ST.	
SR141	0	1	4.920	4.950	01					R / MAJ COL	STP STATE RURAL		127	STATE HWAY	E. MAIN ST.	
SR141	0	1	4.950	6.263	01					R / MAJ COL	STP STATE RURAL		127	STATE HWAY	RIVER ST.	
SR141	0	1	6.263	10.030	01					R / MAJ COL	STP STATE RURAL			STATE HWAY	HWY 141 S	

ROUTE FEATURE DESCRIPTION LISTING

TROUSDALE County - SR141

COUNTY: TROUSDALE **COUNTY NO.** 85

ROUTE: SR141 **SPECIAL CASE:** None **CTY SEQ:** 1

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
0.000	1	MACON-TROUSDALE COUNTY LINE	120
0.000	0	BEGIN HWY.141 N	920
0.000	9	BEGIN 40 MPH	932
0.060	9	CULVERT: BRANCH	980
0.499	5	A025 ELMER DALTON RD. LT.	530
0.730	4	2090 HONEYSUCKLE LN. RT.	420
1.240	9	CULVERT: BRANCH	980
1.320	9	CHURCH OF GOD OF PROPHECY LT. / 300 FT.	912
1.440	2	BRIDGE [85SR1410001]: HARRIS BRANCH	221
1.719	5	A027 FRIENDSHIP HOLLOW LN. RT.	520
2.461	5	A026 HARRIS BRANCH RD. LT.	530
2.510	3	SR-260 BROWNING BRANCH RD. RT.	320
3.050	9	CULVERT: BRANCH	980
3.423	5	A408 LT.	530
3.469	5	B130 SLEEPY HOLLOW LN. RT.	520
3.490	9	CULVERT: BRANCH	980
3.913	1	HARTSVILLE CITY LIMITS LT. BEGIN CENTERLINE OF RD. AS HARTSVILLE CITY LIMITS	161
4.061	1	ENTER HARTSVILLE CITY LIMITS RT. END CENTERLINE OF RD. AS HARTSVILLE CITY LIMITS	130
4.240	9	1-WAY STOP	901
4.240	3	SR-10 MCMURRY BLVD. RT. & LT. / ALONG SR-10 LT. FOR 0.30 MILE	310
4.240	3	LEAVE SR-10 RT.	322
4.240	0	BEGIN BROADWAY	920
4.240	9	BEGIN 30 MPH	932
4.240	9	BEGIN ILLUM	920
4.529	5	A160 WHITE OAK ST. LT.	530
4.560	5	A163 DEPOT ST. LT.	530

ROUTE FEATURE DESCRIPTION LISTING

TROUSDALE County - SR141

COUNTY: TROUSDALE **COUNTY NO.** 85

ROUTE: SR141 **SPECIAL CASE:** None **CTY SEQ:** 1

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
4.648	5	A164 VANCE AVE. LT.	530
4.709	5	A162 COLLEGE ST. LT.	530
4.780	9	HARTSVILLE CITY HALL LT.	918
4.820	2	BRIDGE [85SR1410003]: LITTLE GOOSE CREEK	251
4.848	5	A144 FRONT ST. RT. & LT.	510
4.890	9	4-WAY STOP	904
4.890	5	A140 CHURCH ST. RT.	520
4.890	0	90 DEG. LT. TURN	922
4.890	4	2088 W. MAIN ST. RT.	420
4.890	0	BEGIN W. MAIN ST.	920
4.917	5	A141 COURT ST. RT. & LT.	510
4.917	0	BEGIN E. MAIN ST.	920
4.940	9	TROUSDALE COUNTY COURTHOUSE RT.	918
4.950	9	4-WAY STOP	904
4.950	5	A144 FRONT ST. LT. & A135 E. MAIN ST. FRONT	530
4.950	0	90 DEG. RT. TURN	921
4.950	0	BEGIN RIVER ST.	920
4.981	5	A137 FOXALL ST. RT. & LT.	510
5.020	5	A142 GREENTOP ST. RT.	520
5.130	9	HARTSVILLE UNITED METHODIST CHURCH RT.	912
5.180	7	RAMP TO A140 CHURCH ST. RT.	731
5.218	5	A140 CHURCH ST. RT.	520
5.301	5	A080 CEMETERY RD. LT.	530
5.380	5	CUT-OFF TO A080 CEMETERY RD. LT.	530
5.579	5	A099 ROMS LN. RT.	520
5.731	5	A216 EAST DR. RT.	520

ROUTE FEATURE DESCRIPTION LISTING

TROUSDALE County - SR141

COUNTY: TROUSDALE **COUNTY NO.** 85

ROUTE: SR141 **SPECIAL CASE:** None **CTY SEQ:** 1

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
5.831	5	A186 RIVER VALLEY DR. LT.	530
5.831	7	RAMP TO 2089 PURYEARS BEND RD. RT.	721
5.890	9	TROUSDALE COUNTY STATE HWY. GARAGE LT.	950
6.021	5	A131 WATER PLANT RD. RT.	520
6.128	5	A130 WATER PLANT RD. RT.	520
6.240	2	BRIDGE [85SR1410005]: CUMBERLAND RIVER / COLEMAN WINSTON MEM. BRIDGE	241
6.263	1	LEAVE HARTSVILLE CITY LIMITS	135
6.263	0	BEGIN HWY.141 S	920
6.263	9	BEGIN 45 MPH	932
6.263	9	END ILLUMINATION	931
6.400	9	END OF BRIDGE	983
6.430	9	CULVERT: DRAINAGE	980
6.500	2	BRIDGE [85SR1410007]: CUMBERLAND RIVER OVERFLOW / COLEMAM WINSTON MEM. BRIDGE	221
7.751	5	A083 DR. SMITH LN. RT.	520
8.430	4	1070 CEDAR BLUFF RD. LT.	430
9.571	5	A085 RIADON RD. LT.	530
9.590	7	RAMP TO & FROM A085 RIADON RD. LT.	732
10.030	1	TROUSDALE-WILSON COUNTY LINE	125

TROUSDALE County - SR141

County: TROUSDALE (85) ***Route No.*** SR141 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
0.000	2.260	40	0-NONE	2-TWO WAY			40		2-ROLLING	0-RURAL	2	2	8	DRAINAGE		DITCH
		40									2	2	9	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		40									2	2	10	PAVEMENT	20.0	ASPHALT CONCRETE
		40									2	2	12	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		40									2	2	13	DRAINAGE		DITCH
2.260	2.500	80	0-NONE	2-TWO WAY			40		2-ROLLING	0-RURAL	2	2	8	DRAINAGE		DITCH
		80									2	2	9	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		80									2	2	10	PAVEMENT	20.0	ASPHALT CONCRETE
		80									2	2	12	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		80									2	2	13	DRAINAGE		DITCH
2.500	2.510	40	0-NONE	2-TWO WAY	NO		40		2-ROLLING	0-RURAL	2	2	8	DRAINAGE		DITCH
		40									2	2	9	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		40									2	2	10	PAVEMENT	20.0	ASPHALT CONCRETE
		40									2	2	12	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		40									2	2	13	DRAINAGE		DITCH
2.510	4.190	40	0-NONE	2-TWO WAY	NO		40		2-ROLLING	0-RURAL	2	2	8	DRAINAGE		DITCH
		40									2	2	9	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		40									2	2	10	PAVEMENT	20.0	ASPHALT CONCRETE
		40									2	2	12	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		40									2	2	13	DRAINAGE		DITCH
4.190	4.240	80	0-NONE	2-TWO WAY	NO		40		2-ROLLING	0-RURAL	2	2	1	DRAINAGE		DITCH

TROUSDALE County - SR141

County: TROUSDALE (85) ***Route No.*** SR141 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
4.190	4.240	80	0-NONE	2-TWO WAY	NO		40		2-ROLLING	0-RURAL	2	2	3	SHOULDER (OUTSIDE)	5.0	ASPHALT CONCRETE
		80									2	2	5	PAVEMENT	12.0	ASPHALT CONCRETE
		80									2	2	9	MEDIAN	12.0	PAINTED
		80									2	2	13	PAVEMENT	12.0	ASPHALT CONCRETE
		80									2	2	15	SHOULDER (OUTSIDE)	5.0	ASPHALT CONCRETE
		80									2	2	17	DRAINAGE		DITCH
4.240	4.370	40	0-NONE	2-TWO WAY	YES		30		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	9	DRAINAGE		DITCH
		40									2	2	10	SHOULDER (OUTSIDE)	1.0	ASPHALT CONCRETE
		40									2	2	11	PAVEMENT	11.0	ASPHALT CONCRETE
		40									2	2	12	2-WAY LT. TURN LN.	11.0	ASPHALT CONCRETE
		40									2	2	13	PAVEMENT	11.0	ASPHALT CONCRETE
		40									2	2	14	SHOULDER (OUTSIDE)	1.0	ASPHALT CONCRETE
		40									2	2	15	DRAINAGE		DITCH
4.370	4.529	40	0-NONE	2-TWO WAY	YES		30		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	9	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
		40									2	2	10	PAVEMENT	22.0	ASPHALT CONCRETE
		40									2	2	12	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
4.529	4.540	44	0-NONE	2-TWO WAY	YES		30		2-ROLLING	2-COMMERCIAL	2	2	9	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
		44									2	2	10	PAVEMENT	22.0	ASPHALT CONCRETE
		44									2	2	12	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
4.540	4.810	44	0-NONE	2-TWO WAY	YES		30		2-ROLLING	2-COMMERCIAL	2	2	8	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		44									2	2	9	PAVEMENT	22.0	ASPHALT CONCRETE

TROUSDALE County - SR141

County: TROUSDALE (85) ***Route No.*** SR141 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
4.540	4.810	44	0-NONE	2-TWO WAY	YES		30		2-ROLLING	2-COMMERCIAL	2	2	10	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		44									2	2	12	DRAINAGE		CURB & SIDEWALK
4.810	4.848	44	0-NONE	2-TWO WAY	YES		30		2-ROLLING	2-COMMERCIAL	2	2	8	DRAINAGE		CURB & SIDEWALK
		44									2	2	10	PARKING LANE	8.0	ASPHALT CONCRETE
		44									2	2	11	PAVEMENT	22.0	ASPHALT CONCRETE
		44									2	2	12	PARKING LANE	8.0	ASPHALT CONCRETE
		44									2	2	13	DRAINAGE		CURB & SIDEWALK
4.848	4.890	53	0-NONE	2-TWO WAY	YES		30		2-ROLLING	2-COMMERCIAL	2	2	8	DRAINAGE		CURB & SIDEWALK
		53									2	2	10	PARKING LANE	8.0	ASPHALT CONCRETE
		53									2	2	11	PAVEMENT	22.0	ASPHALT CONCRETE
		53									2	2	12	PARKING LANE	8.0	ASPHALT CONCRETE
		53									2	2	13	DRAINAGE		CURB & SIDEWALK
4.890	4.950	63	0-NONE	2-TWO WAY	YES		30		2-ROLLING	2-COMMERCIAL	2	2	8	DRAINAGE		CURB, GUTTER & SIDEWALK
		63									2	2	10	PARKING LANE	8.0	ASPHALT CONCRETE
		63									2	2	11	PAVEMENT	22.0	ASPHALT CONCRETE
		63									2	2	12	PARKING LANE	16.0	ASPHALT CONCRETE
		63									2	2	13	DRAINAGE		CURB, GUTTER & SIDEWALK
4.950	4.981	58	0-NONE	2-TWO WAY	YES		30		2-ROLLING	2-COMMERCIAL	2	2	8	DRAINAGE		CURB, GUTTER & SIDEWALK
		58									2	2	10	PARKING LANE	11.0	ASPHALT CONCRETE
		58									2	2	11	PAVEMENT	24.0	ASPHALT CONCRETE
		58									2	2	12	PARKING LANE	11.0	ASPHALT CONCRETE

TROUSDALE County - SR141

County: TROUSDALE (85) ***Route No.*** SR141 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
4.950	4.981	58	0-NONE	2-TWO WAY	YES		30		2-ROLLING	2-COMMERCIAL	2	2	13	DRAINAGE		CURB, GUTTER & SIDEWALK
4.981	5.020	54	0-NONE	2-TWO WAY	YES		30		2-ROLLING	2-COMMERCIAL	2	2	8	DRAINAGE		CURB, GUTTER & SIDEWALK
		54									2	2	10	PARKING LANE	11.0	ASPHALT CONCRETE
		54									2	2	11	PAVEMENT	24.0	ASPHALT CONCRETE
		54									2	2	12	PARKING LANE	11.0	ASPHALT CONCRETE
		54									2	2	13	DRAINAGE		CURB, GUTTER & SIDEWALK
5.020	5.180	56	0-NONE	2-TWO WAY	YES		30		2-ROLLING	7-RESIDENTIAL	2	2	8	DRAINAGE		CURB & SIDEWALK
		56									2	2	10	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		56									2	2	11	PAVEMENT	22.0	ASPHALT CONCRETE
		56									2	2	12	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		56									2	2	13	DRAINAGE		DITCH
5.180	5.260	50	0-NONE	2-TWO WAY	YES		30		2-ROLLING	7-RESIDENTIAL	2	2	8	DRAINAGE		DITCH
		50									2	2	9	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		50									2	2	10	PAVEMENT	22.0	ASPHALT CONCRETE
		50									2	2	12	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		50									2	2	13	DRAINAGE		DITCH
5.260	5.420	50	0-NONE	2-TWO WAY	YES		30		2-ROLLING	7-RESIDENTIAL	2	2	8	DRAINAGE		DITCH
		50									2	2	9	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		50									2	2	10	PAVEMENT	22.0	ASPHALT CONCRETE
		50									2	2	12	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		50									2	2	13	DRAINAGE		DITCH

TROUSDALE County - SR141

County: TROUSDALE (85) ***Route No.*** SR141 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
5.420	6.128	66	0-NONE	2-TWO WAY	YES		30		2-ROLLING	7-RESIDENTIAL	2	2	8	DRAINAGE		DITCH
		66									2	2	9	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	10	PAVEMENT	22.0	ASPHALT CONCRETE
		66									2	2	12	SHOULDER (OUTSIDE)	3.0	ASPHALT CONCRETE
		66									2	2	13	DRAINAGE		DITCH
6.128	6.240	160	0-NONE	2-TWO WAY	YES		30		2-ROLLING	0-RURAL	2	2	8	DRAINAGE		DITCH
		160									2	2	9	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		160									2	2	10	PAVEMENT	22.0	ASPHALT CONCRETE
		160									2	2	12	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		160									2	2	13	DRAINAGE		DITCH
6.240	6.263	160	0-NONE	2-TWO WAY	YES		30		2-ROLLING	0-RURAL	2	2	8	DRAINAGE		CURB ONLY
		160									2	2	9	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		160									2	2	10	PAVEMENT	22.0	ASPHALT CONCRETE
		160									2	2	12	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		160									2	2	13	DRAINAGE		CURB ONLY
6.263	6.400	160	0-NONE	2-TWO WAY	NO		45		2-ROLLING	0-RURAL	2	2	8	DRAINAGE		CURB ONLY
		160									2	2	9	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		160									2	2	10	PAVEMENT	22.0	ASPHALT CONCRETE
		160									2	2	12	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		160									2	2	13	DRAINAGE		CURB ONLY
6.400	6.890	160	0-NONE	2-TWO WAY	NO		45		2-ROLLING	0-RURAL	2	2	8	DRAINAGE		DITCH

TROUSDALE County - SR141

County: TROUSDALE (85) ***Route No.*** SR141 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
6.400	6.890	160	0-NONE	2-TWO WAY	NO		45		2-ROLLING	0-RURAL	2	2	9	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		160									2	2	10	PAVEMENT	22.0	ASPHALT CONCRETE
		160									2	2	12	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		160									2	2	13	DRAINAGE		DITCH
6.890	7.280	60	0-NONE	2-TWO WAY	NO		45		2-ROLLING	0-RURAL	2	2	8	DRAINAGE		DITCH
		60									2	2	9	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		60									2	2	10	PAVEMENT	20.0	ASPHALT CONCRETE
		60									2	2	12	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		60									2	2	13	DRAINAGE		DITCH
7.280	10.030	40	0-NONE	2-TWO WAY	NO		45		2-ROLLING	0-RURAL	2	2	8	DRAINAGE		DITCH
		40									2	2	9	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		40									2	2	10	PAVEMENT	20.0	ASPHALT CONCRETE
		40									2	2	12	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		40									2	2	13	DRAINAGE		DITCH

TRIMS TRAFFIC REPORT

TROUSDALE County - SR141

COUNTY: TROUSDALE

ROUTE	SC	CO	SQ	BEG LOG MILE	END LOG MILE	YR OF TRAFFIC	ANNUAL AVERAGE DAILY TRAFFIC	PEAK HOUR %	DESIGN HOUR VOLUME	DIRECT DIST %	% PASS CARS	% SINGLE UNIT TRUCKS	% MULTI UNIT TRUCKS	CYCLE COUNTS STATION NBR	CYCLE COUNTS STATION COUNTY	CLASS COUNTS STATION NBR	CLASS COUNTS STATION COUNTY	IS CLASS COUNT?
SR141	0	1		0.000	2.510	2008	1050	9	11	65	98	2	0	20	85	014C	85	NO
SR141	0	1		2.510	4.240	2008	2160	8	10	65	99	1	0	14	85	014C	85	YES
SR141	0	1		4.240	4.890	2008	6660	9	11	65	97	1	2	36	85	045C	85	NO
SR141	0	1		4.890	4.950	2008	4910	9	11	65	96	1	3	44	85	045C	85	NO
SR141	0	1		4.950	5.831	2008	3600	9	11	65	95	1	4	45	85	045C	85	YES
SR141	0	1		5.831	8.430	2008	2440	9	11	65	98	1	1	11	85	311S	85	YES
SR141	0	1		8.430	10.030	2008	2000	9	11	65	98	1	1	30	85	311S	85	NO

TRIMS ROAD SEGMENT REPORT

TROUSDALE County - 01082

COUNTY: TROUSDALE **COUNTY NO: 85**

ROUTE NBR	SPEC CASE	CTY SEQ	BEG LOG MILE	END LOG MILE	SP SY	SP SY2	SP SY3	US RTE	US RTE2	FUNCTIONAL CLASS	ADM SYS	URB AREA	INC AREA	GOV CON	ROAD NAME	HPMS SEC_ID
01082	0	1	0.000	0.777	22					R / MIN COL	OTH CITY ST		127	MUNICIPAL	HALLTOWN RD	
01082	0	1	0.777	1.478	22					R / MIN COL	OTH CTY ROADS			CO HWAY	HALLTOWN RD	
01082	0	1	1.478	3.850	01					R / MIN COL	OTH CTY ROADS			CO HWAY	HALLTOWN RD	

ROUTE FEATURE DESCRIPTION LISTING

TROUSDALE County - 01082

COUNTY: TROUSDALE **COUNTY NO.** 85

ROUTE: 01082 **SPECIAL CASE:** None **CTY SEQ:** 1

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
0.000	3	SR-10 MCMURRY BLVD. RT. & LT.	310
0.000	0	BEGIN HALLTOWN RD.	920
0.000	9	TRAFFIC SIGNAL	905
0.000	9	BEGIN 30 MPH	932
0.000	9	BEGIN ILLUMINATION	930
0.150	9	HARTSVILLE CHURCH OF CHRIST RT.	912
0.168	5	A151 ROGERS ST. RT.	520
0.188	5	A036 DALTON HOLLOW RD. LT.	530
0.560	5	A166 LUSTER LN. LT.	530
0.640	5	A167 CLAIBORNE ST. LT.	530
0.750	9	END ILLUMINATION	931
0.777	1	LEAVE HARTSVILLE CITY LIMITS	135
0.800	9	CULVERT: BRANCH	980
0.942	5	A151 INDUSTRIAL PARK DR. RT.	520
1.478	9	1-WAY STOP	901
1.478	5	A042 NEW HALLTOWN RD. RT.	520
1.940	5	A039 STUBBLEFIELD RD. RT.	520
2.580	2	BRIDGE [85S62890001]: HICKERSON BRANCH	221
2.679	5	A038 GAMMONS LN. LT.	530
3.252	5	A044 SHOOT RD. RT.	520
3.390	9	CEMETERY RT.	913
3.660	9	CEMETERY LT.	913
3.850	1	TROUSDALE-MACON COUNTY LINE	125

TROUSDALE County - 01082

County: TROUSDALE (85) ***Route No.*** 01082 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illumination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
0.000	0.210	36	0-NONE	2-TWO WAY	YES		30		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	8	DRAINAGE		DITCH
		36									2	2	9	SHOULDER (OUTSIDE)	1.0	ASPHALT CONCRETE
		36									2	2	10	PAVEMENT	20.0	ASPHALT CONCRETE
		36									2	2	12	SHOULDER (OUTSIDE)	1.0	ASPHALT CONCRETE
		36									2	2	13	DRAINAGE		DITCH
0.210	0.777	30	0-NONE	2-TWO WAY	YES		30		2-ROLLING	7-RESIDENTIAL	2	2	8	DRAINAGE		DITCH
		30									2	2	9	SHOULDER (OUTSIDE)	1.0	ASPHALT CONCRETE
		30									2	2	10	PAVEMENT	18.0	ASPHALT CONCRETE
		30									2	2	12	SHOULDER (OUTSIDE)	1.0	ASPHALT CONCRETE
		30									2	2	13	DRAINAGE		DITCH
0.777	1.478	40	0-NONE	2-TWO WAY			30		2-ROLLING	0-RURAL	2	2	8	DRAINAGE		DITCH
		40									2	2	9	SHOULDER (OUTSIDE)	1.0	ASPHALT CONCRETE
		40									2	2	10	PAVEMENT	18.0	ASPHALT CONCRETE
		40									2	2	12	SHOULDER (OUTSIDE)	1.0	ASPHALT CONCRETE
		40									2	2	13	DRAINAGE		DITCH
1.478	3.850	40	0-NONE	2-TWO WAY			30		2-ROLLING	0-RURAL	2	2	8	DRAINAGE		DITCH
		40									2	2	9	SHOULDER (OUTSIDE)	2.0	GRAVEL
		40									2	2	10	PAVEMENT	18.0	ASPHALT CONCRETE
		40									2	2	12	SHOULDER (OUTSIDE)	2.0	GRAVEL
		40									2	2	13	DRAINAGE		DITCH

TRIMS TRAFFIC REPORT

TROUSDALE County - 01082

COUNTY: TROUSDALE

ROUTE	SC	CO	SQ	BEG LOG MILE	END LOG MILE	YR OF TRAFFIC	ANNUAL AVERAGE DAILY TRAFFIC	PEAK HOUR %	DESIGN HOUR VOLUME	DIRECT DIST %	% PASS CARS	% SINGLE UNIT TRUCKS	% MULTI UNIT TRUCKS	CYCLE COUNTS STATION NBR	CYCLE COUNTS STATION COUNTY	CLASS COUNTS STATION NBR	CLASS COUNTS STATION COUNTY	IS CLASS COUNT?
01082	0	1		0.000	1.478	2008	1190	9	11	65	98	1	1	15	85	006C	85	NO
01082	0	1		1.478	3.850	2008	750	9	11	65	98	1	1	60 @	56	060C	56	NO

ENVIRONMENTAL DATA

Tennessee Department of Transportation
EARLY ENVIRONMENTAL SCREENING PROCESS (EES)
PROJECT SCORING

Project Score Factors

	Total Impacts Evaluated	Total Impacts to Evaluate	EES Evaluation
Project Impact Areas:	15	15	Complete
Date of Evaluation:	June 17, 2009		
Evaluation done by:	Chris Armstrong		
	Transportation Planner 4		
County:	Trousdale		
Route:	SR-10/SR-25		
PIN:	112336.00		
Termini:	Intersection of Halltown Rd./SR-141 and SR-10/SR-25		

Impact Ranking of Features Evaluated:	**Total by Rank**
Features with No Impact	**13**
Cemetery Sites & Cemetery Properties	
National Register Sites	
Bat	
Terrestrial Species	
Aquatic Species	
TDEC Conservation Sites & TDEC Scenic Waterways	
Superfund Sites	
Caves	
Pyritic Rock	
Railroads	
Tennessee Natural Areas Program	
Wildlife Management Areas	
TWRA Lakes & Other Public Lands	
Features with Low Impact	**0**

Features with Moderate Impact	**0**
Features with Substantial Impact	**1**

Large Wetland Impacts

Community Impacts Present:

Institutions:

Populations:

Populations below poverty - State average- 13%

EES Project Impact: **Complete**

Impacts Evaluated Within 1,000 Ft of Study Area

CEMETERY SITES & CEMETERY PROPERTIES

Impact

Project Impact (Environmental, Time, Cost, Design, and Maintenance)	☑ **None** - No impact on the project as there are no known cemetery sites within or abutting the project study area or corridor. It is anticipated that a 'normal' effort to complete this environmental review as part of NEPA.

INSTITUTIONS & SENSITIVE COMMUNITY POPULATIONS

Sensitive Populations Project Impact:	Present	Not Present
Institutions:		
Hospital	☐	☑
School	☐	☑
Church	☐	☑
Public Building	☐	☑
Populations:		
No population present	☐	☑
65 and older populations	☐	☑
Disability populations	☐	☑
Households without a vehicle	☐	☑
Minority populations 24%	☐	☑
Linguistically isolated populations	☐	☑
Populations below poverty - State average - 13%	☑	☐
Populations below poverty - State average - 27%	☐	☑

BAT

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	☑ **None** – No project impact is anticipated. There is no occurrence of Indiana or gray bats within 4 miles of the proposed project study area or corridor.

RAILROADS

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	☑ **None** – No impact on the project is anticipated. There are no railroads located within the project study area or corridor.

Impacts Evaluated Within 2,000 Ft of Study Area

NATIONAL REGISTER SITES

Impact

Project Impact (Environmental, Time, Cost, Design, and Maintenance)	☑ **None** – No project impact is anticipated as there are no National Register listed properties abutting or within the project study area or corridor.

SUPERFUND SITES

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	☑ **None** – No project impact is anticipated as there are no known contaminated land tracts abutting or within the project study area or corridor.

PYRITIC ROCK

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	☑ **None** – No project impact is anticipated. Pyritic rock is not known to occur in the study area/corridor or project does not involve excavation. Limestone (symbolized as dark green) and dolomite (symbolized as light green) are present.

TWRA LAKES & OTHER PUBLIC LANDS

Impact

Project Impact (Environment, Time,	☑ **None** – No impact on the project is anticipated as there area no parks located within or

Cost, Design, and Maintenance)	abutting the project study area or corridor.

Impacts Evaluated Within 4,000 Ft of Study Area

TERRESTRIAL SPECIES

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	☑ **None** - No impact to the project is anticipated. There is no known occurrence of a rare, state, or federally-protected terrestrial species within the proposed transportation study area or corridor.

TDEC CONSERVATION SITES & TDEC SCENIC WATERWAYS

Impact

Project Impact (Environment, Time, Cost, Design, Maintenance)	☑ **None** – No project impact is expected as there are no scenic waterways or TDEC Conservation Sites within project study area or corridor.

LARGE WETLAND IMPACTS

Impact

Project Impact (Environment, Time, Cost, Design, Maintenance)	☑ **Substantial** – Regions 1, 2, and 3: A substantial impact to the project is probable as there is greater than 2 acres of wetlands within the project study area or corridor. Compensatory mitigation will be required. Design effort will be needed to avoid and minimize impacts to wetlands to the maximum extent practicable. If a floodplain is crossed by the project, floodplain culverts may be necessary.

TENNESSEE NATURAL AREAS PROGRAM

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	☑ **None** – No impact on the project is anticipated as the project study area or corridor does not include a Natural Area.

WILDLIFE MANAGEMENT AREAS

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	☑ **None** – No project impact is anticipated as a WMA does not abut nor is located within the project study area or corridor.

Impacts Evaluated Within 10,000 Ft of Study Area

AQUATIC SPECIES

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	☑ **None** - No impact to the project is anticipated. There is no known occurrence of a rare, state, or federally-protected aquatic species within the project study area or corridor.

CAVES

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	☑ **None** – No project impact is anticipated as there are no caves in the project study area or corridor.

EES Report

PIN 112336.00

1,000 Foot Corridor

Study Line ID: 112336_8501V01

Version Date: May 27, 2009

Created by: CHARLES GILLIHAN

Cemetery Sites & Cemetery Properties	
Cemeteries	None were found
Cemetery Property	None were found
Institutions & Sensitive Community Populations	
Institutions	None were found
Populations:	
No population present	None were found
65 & older populations	None were found
Disability populations	None were found
Households without a vehicle	None were found
Minority populuations 24%	None were found
Linguistically isolated populations	None were found
Populations below poverty-State average-13%	Present
Populations below poverty-State average-27%	None were found
Bat	None were found
Railroads	None were found

EES Report

PIN 112336.00

2,000 Foot Corridor

Study Line ID: 112336_8501V01

Version Date: May 27, 2009

Created by: CHARLES GILLIHAN

National Register Sites	None were found
Superfund Sites	None were found
Pyritic Rock	None were found
TWRA Lakes & Other Public Lands	
TWRA Lakes	None were found
Other Public Lands	None were found

EES Report

PIN 112336.00

4,000 Foot Corridor

Study Line ID: 112336_8501V01

Version Date: May 27, 2009

Created by: CHARLES GILLIHAN

Terrestrial Species

Total= 1

	USESA	SPROT
Leavenworthia exigua var. exigua		S

TDEC Conservation Sites & TDEC Scenic Waterways

TDEC Conservation Sites: None were found

TDEC Scenic Waterways: None were found

Large Wetland Impacts

Total Acerage= 1,766.98

L1OWHh	1,735.61	acres
L2USCh	0.33	acres
PFO1A	0.86	acres
PFO1F	0.81	acres
POWFh	0.27	acres
POWHx	1.01	acres
POWHx	0.30	acres
POWHx	0.71	acres
R2OWH	27.08	acres

Tennessee Natural Areas Program

None were found

Wildlife Management Areas

None were found

EES Report

PIN 112336.00

10,000 Foot Corridor

Study Line ID: 112336_8501V01

Version Date: May 27, 2009

Created by: CHARLES GILLIHAN

Aquatic Species	None were found
Caves	None were found

SR-10 / SR-141 / Halltown Road
SR-10 / SR-141 / Halltown Road
Hartsville, TN 37074

Inquiry Number: 2495579.1s
May 15, 2009

EDR NEPACheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EDR NEPACheck® DESCRIPTION

The National Environmental Policy Act of 1969 (NEPA) requires that Federal agencies include in their decision-making processes appropriate and careful consideration of all environmental effects and actions, analyze potential environmental effects of proposed actions and their alternatives for public understanding and scrutiny, avoid or minimize adverse effects of proposed actions, and restore and enhance environmental quality as much as possible.

The EDR NEPACheck provides information which may be used, in conjunction with additional research, to determine whether a proposed site or action will have significant environmental effect.

The report provides maps and data for the following items (where available). Search results are provided in the Map Findings Summary on page 2 of this report.

Section	Regulation
Natural Areas Map	
• Federal Lands Data:	
- Officially designated wilderness areas	47 CFR 1.1307(1)
- Officially designated wildlife preserves, sanctuaries and refuges	47 CFR 1.1307(2)
- Wild and scenic rivers	40 CFR 6.302(e)
- Fish and Wildlife	40 CFR 6.302
• Threatened or Endangered Species, Fish and Wildlife, Critical Habitat Data (where available)	47 CFR 1.1307(3); 40 CFR 6.302
Historic Sites Map	
• National Register of Historic Places	47 CFR 1.1307(4); 40 CFR 6.302
• State Historic Places (where available)	
• Indian Reservations	
Flood Plain Map	
• National Flood Plain Data (where available)	47 CFR 1.1307(6); 40 CFR 6.302
Wetlands Map	
• National Wetlands Inventory Data (where available)	47 CFR 1.1307(7); 40 CFR 6.302
FCC & FAA Map	
• FCC antenna/tower sites, AM Radio Towers, FAA Markings and Obstructions, AM Radio Interference Zones, Airports, Topographic gradient	47 CFR 1.1307(8)
Key Contacts and Government Records Searched	

MAP FINDINGS SUMMARY

The databases searched in this report are listed below. Database descriptions and other agency contact information is contained in the Key Contacts and Government Records Searched section on page 23 of this report.

TARGET PROPERTY ADDRESS

SR-10 / SR-141 / HALLTOWN ROAD
SR-10 / SR-141 / HALLTOWN ROAD
HARTSVILLE, TN 37074

Inquiry #: 2495579.1s
Date: 5/15/9

TARGET PROPERTY COORDINATES

Latitude (North):	36.399601 - 36˚ 23' 58.6''
Longitude (West):	86.163200 - 86˚ 9' 47.5''
Universal Tranverse Mercator:	Zone 16
UTM X (Meters):	575039.1
UTM Y (Meters):	4028395.0

Applicable Regulation from 47 CFR/FCC Checklist	Database	Search Distance (Miles)	Within Search	Within 1/8 Mile
NATURAL AREAS MAP				
1.1307a (1) Officially Designated Wilderness Area	US Federal Lands	1.00	NO	NO
1.1307a (2) Officially Designated Wildlife Preserve	US Federal Lands	1.00	NO	NO
1.1307a (3) Threatened or Endangered Species or Critical Habitat	County Endangered Species	County	YES	N/A
HISTORIC SITES MAP				
1.1307a (4) Listed or eligible for National Register	National Register Hist. Places	1.00	YES	NO
1.1307a (4) Listed or eligible for National Register	TN Historic Sites	1.00	NO	NO
	Indian Reservation	1.00	NO	NO
	APPAL_TRAIL	1.00	NO	NO
FLOODPLAIN MAP				
1.1307 (6) Located in a Flood Plain	FLOODPLAIN	1.00	NO	NO
WETLANDS MAP				
1.1307 (7) Change in surface features (wetland fill)	NWI	1.00	NO	NO
FCC & FAA SITES MAP				
	FCC Cellular	1.00	NO	NO
	FCC Antenna	1.00	NO	NO
	FCC Tower	1.00	YES	NO
	FCC AM Tower	1.00	NO	NO
	FAA DOF	1.00	YES	NO
	Airports	1.00	NO	---
	Power Lines	1.00	NO	---

Natural Areas Map

- Target Property
- Roads
- County Boundary
- Waterways
- Water
- Locations
- Federal Areas
- Federal Linear Features
- State Areas
- State Linear Features

SITE NAME:	SR-10 / SR-141 / Halltown Road	CLIENT:	Clinard Engineering Associates
ADDRESS:	SR-10 / SR-141 / Halltown Road Hartsville TN 37074	CONTACT:	Brian Gaffney
		INQUIRY #:	2495579.1s
LAT/LONG:	36.3996 / 86.1632	DATE:	May 15, 2009

NATURAL AREAS MAP FINDINGS

Endangered Species Listed for: TROUSDALE County, TN.

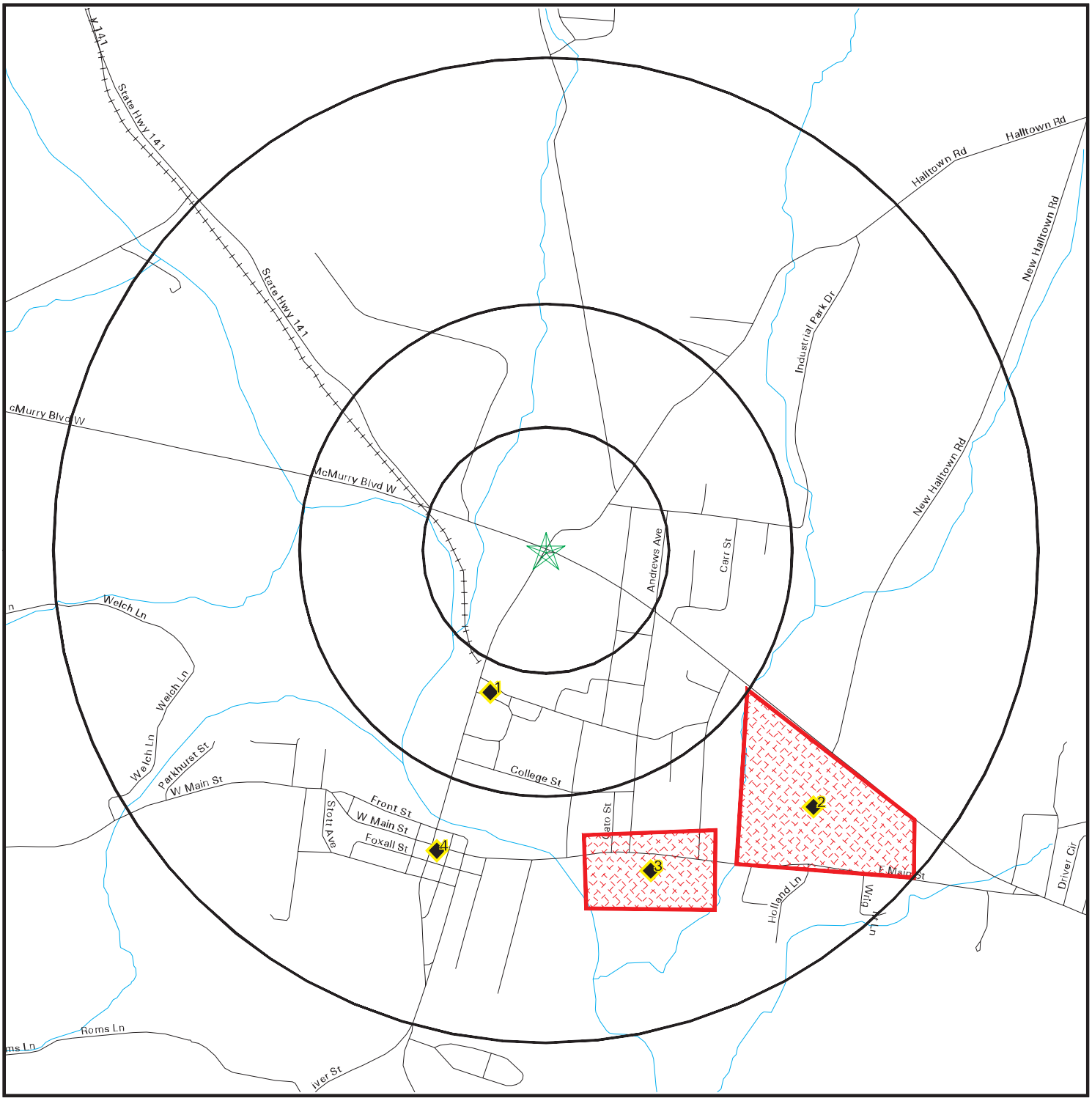
Source: EPA Endangered Species Protection Program Database

CLAM:	PEARLYMUSSEL, PINK MUCKET
CLAM:	MUSSEL, RING PINK (=GOLF STICK PEARLY)
CLAM:	PEARLYMUSSEL, DROMEDARY
CLAM:	PEARLYMUSSEL, PURPLE CAT'S PAW
CLAM:	PEARLYMUSSEL, APPALACHIAN MONKEYFACE
MAMMAL:	BAT, INDIANA

Map ID Direction Distance Distance (ft.)	EDR ID Database

No mapped sites were found in EDR's search of available government records within the search radius around the target property.

Historic Sites Map



- Target Property
- Streets
- County Boundary
- Waterways
- Water
- Historic Sites
- Federal Historic Areas
- State Historic Areas
- US Indian Reservations
- Scenic Trail

SITE NAME:	SR-10 / SR-141 / Halltown Road	CLIENT:	Clinard Engineering Associates
ADDRESS:	SR-10 / SR-141 / Halltown Road Hartsville TN 37074	CONTACT:	Brian Gaffney
LAT/LONG:	36.3996 / 86.1632	INQUIRY #:	2495579.1s
		DATE:	May 15, 2009

HISTORIC SITES MAP FINDINGS

Map ID Direction Distance Distance (ft.)			EDR ID Database
1 SSW 1/4-1/2 mi 1634	Resource Name: Alternate Name: Resource Address: Resource Type: Location: County: Primary Certification: Certification Date: Number of Buildings: Number of Sites: Number of non-contributing Buildings: Number of non-contributing Objects: Number of non-contributing Sites: Num. of non-contributing Structures: Applicable Criteria: Areas of Significance: Current Function: Building Material:	Hartsville Depot Not Reported Broadway Building Hartsville, TN Trousdale, TN Listed in the national register 19800703 Acreage: 10 1 Number of Objects: 0 0 Num. of Structures: 0 0 0 0 0 Architecture/Engineering Architecture Work in progress Tin, Weatherboard, None listed, Brick	80003876 National Register Hist. Places
2 SE 1/4-1/2 mi 2626	Resource Name: Alternate Name: Resource Address: Resource Type: Location: County: Primary Certification: Certification Date: Number of Buildings: Number of Sites: Number of non-contributing Buildings: Number of non-contributing Objects: Number of non-contributing Sites: Num. of non-contributing Structures: Applicable Criteria: Areas of Significance: Current Function: Building Material: Other Names:	Turney--Hutchins House Not Reported TN 25 Building Hartsville, TN Trousdale, TN Listed in the national register 19920701 Acreage: 300 2 Number of Objects: 0 0 Num. of Structures: 0 3 0 0 0 Architecture/Engineering Architecture Domestic Tin, Weatherboard, Wood, Asphalt, Limestone Darwin House	92000780 National Register Hist. Places

HISTORIC SITES MAP FINDINGS

Map ID Direction Distance Distance (ft.)			EDR ID Database
3 South 1/2-1 mi 3080	Resource Name:	East Main Street Historic District	97000221 National Register Hist. Places
	Alternate Name:	Not Reported	
	Resource Address:	405--516 E. Main St.	
	Resource Type:	District	
	Location:	Hartsville, TN	
	County:	Trousdale, TN	
	Primary Certification:	Determined eligible/owner objection	
	Certification Date:	19970310 Acreage: 170	
	Number of Buildings:	30 Number of Objects: 0	
	Number of Sites:	0 Num. of Structures: 4	
	Number of non-contributing Buildings:	8	
	Number of non-contributing Objects:	0	
	Number of non-contributing Sites:	0	
	Num. of non-contributing Structures:	0	
	Applicable Criteria:	Architecture/Engineering	
	Areas of Significance:	Architecture	
	Current Function:	Domestic	
	Building Material:	Stone, Weatherboard, Brick, Asphalt, Concrete	

4 SSW 1/2-1 mi 3426	Resource Name:	Hartsville Historic District	93000568 National Register Hist. Places
	Alternate Name:	Not Reported	
	Resource Address:	Roughly bounded by Church, Front, River, Greentop and Court Sts.	
	Resource Type:	District	
	Location:	Hartsville, TN	
	County:	Trousdale, TN	
	Primary Certification:	Listed in the national register	
	Certification Date:	19930624 Acreage: 50	
	Number of Buildings:	29 Number of Objects: 0	
	Number of Sites:	0 Num. of Structures: 2	
	Number of non-contributing Buildings:	11	
	Number of non-contributing Objects:	0	
	Number of non-contributing Sites:	0	
	Num. of non-contributing Structures:	0	
	Applicable Criteria:	Event, Architecture/Engineering	
	Areas of Significance:	Commerce, Architecture	
	Current Function:	Domestic, Government, Religion, Commerce/trade	
	Building Material:	Terra cotta, Weatherboard, Concrete, Brick, Asphalt, Limestone	

UNMAPPABLE HISTORIC SITES

Due to poor or inadequate address information, the following sites were not mapped:

Status
EDR ID
Database

Name: DeBow, James R., House Vineland
City: Hartsville
County: Trousdale
Address: TN 25
Date Added: 10/06/1988
MPDF Name: Not Reported
Assessment: Date Received/Pending Nomination

Unmappable
TN10002553
TN Historic Sites

Name: DeBow, James R., House Vineland
City: Hartsville
County: Trousdale
Address: TN 25
Date Added: 11/03/1988
MPDF Name: Not Reported
Assessment: Listed in the National Register

Unmappable
TN10002552
TN Historic Sites

Name: Hartsville Depot
City: Hartsville
County: Trousdale
Address: BROADWAY
Date Added: 07/03/1980
MPDF Name: Not Reported
Assessment: Listed in the National Register

Unmappable
TN10002554
TN Historic Sites

Name: Hartsville Historic District
City: Hartsville
County: Trousdale
Address: ROUGHLY BOUNDED BY CHURCH, FRONT, RIVER, GREENTOP AND COURT STS.
Date Added: 05/25/1993
MPDF Name: Not Reported
Assessment: Date Received/Pending Nomination

Unmappable
TN10002556
TN Historic Sites

Name: Hartsville Historic District
City: Hartsville
County: Trousdale
Address: ROUGHLY BOUNDED BY CHURCH, FRONT, RIVER, GREENTOP AND COURT STS.
Date Added: 06/24/1993
MPDF Name: Not Reported
Assessment: Listed in the National Register

Unmappable
TN10002555
TN Historic Sites

Name: Turney--Hutchins House Darwin House
City: Hartsville
County: Trousdale
Address: TN 25
Date Added: 05/18/1992
MPDF Name: Not Reported
Assessment: Date Received/Pending Nomination

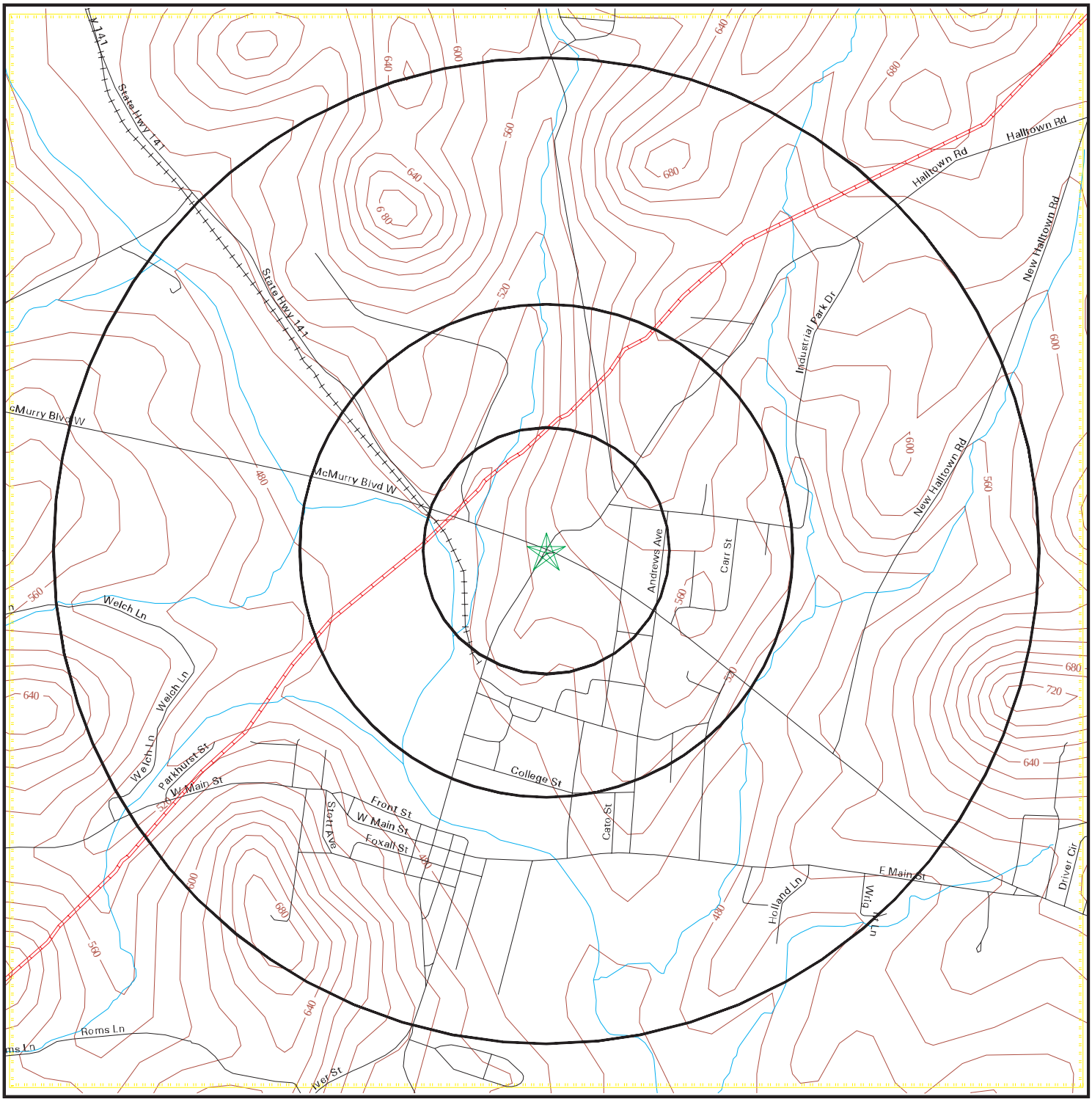
Unmappable
TN10001816
TN Historic Sites

UNMAPPABLE HISTORIC SITES

Due to poor or inadequate address information, the following sites were not mapped:

		Status **EDR ID** **Database**
Name:	Turney--Hutchins House Darwin House	Unmappable
City:	Hartsville	TN10001815
County:	Trousdale	TN Historic Sites
Address:	TN 25	
Date Added:	07/01/1992	
MPDF Name:	Not Reported	
Assessment:	Listed in the National Register	

Flood Plain Map



- Major Roads
- Contour Lines
- Waterways
- County Boundary
- Power Lines
- Pipe Lines
- Fault Lines
- Water
- 100-year flood zone
- 500-year flood zone
- Electronic FEMA data available
- Electronic FEMA data not available

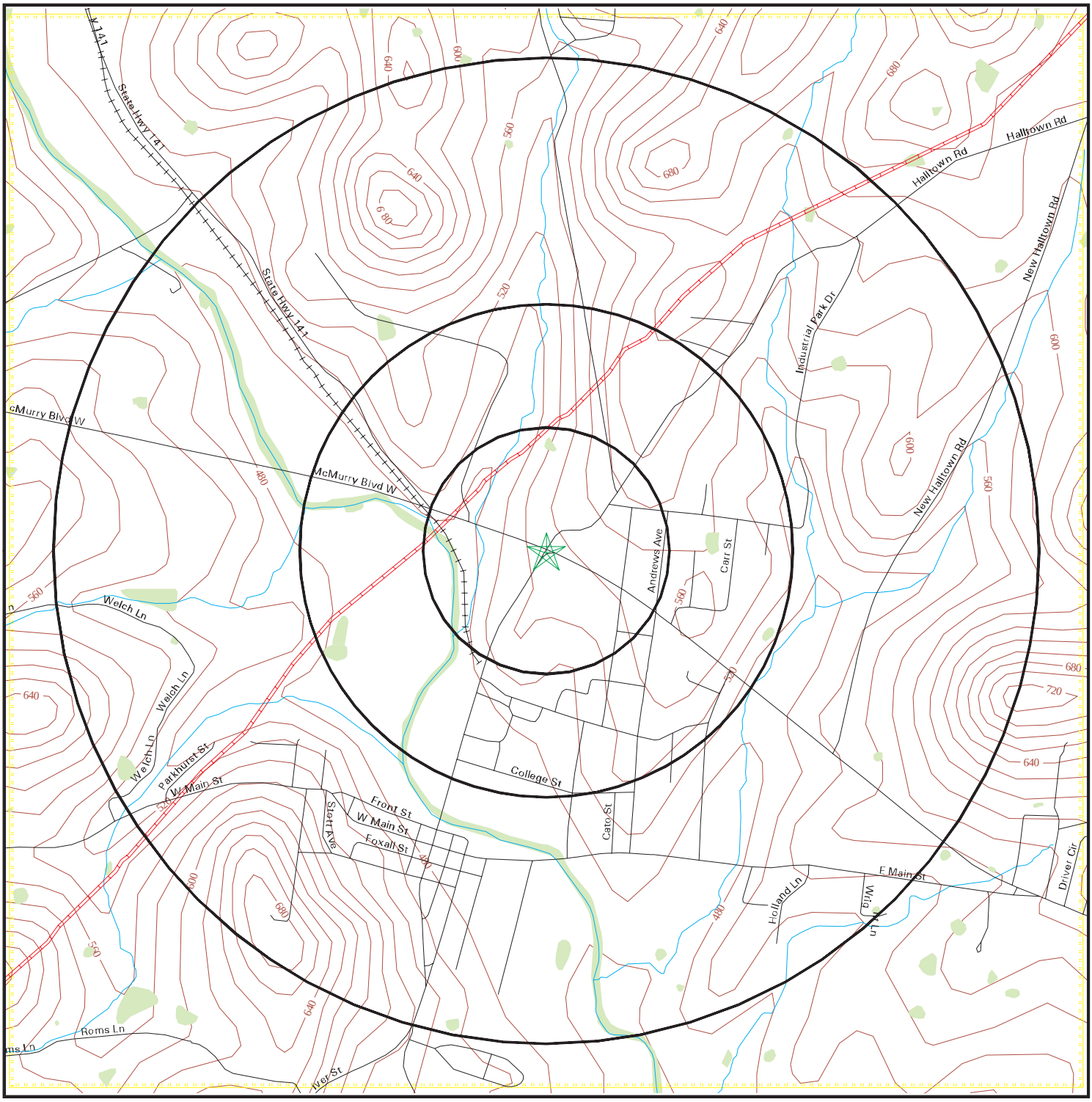
SITE NAME:	SR-10 / SR-141 / Halltown Road	CLIENT:	Clinard Engineering Associates
ADDRESS:	SR-10 / SR-141 / Halltown Road Hartsville TN 37074	CONTACT:	Brian Gaffney
LAT/LONG:	36.3996 / 86.1632	INQUIRY #:	2495579.1s
		DATE:	May 15, 2009

FLOOD PLAIN MAP FINDINGS

Source: FEMA Q3 Flood Data

County	FEMA flood data electronic coverage
TROUSDALE, TN	NO
Flood Plain panel at target property:	None Reported
Additional Flood Plain panel(s) in search area:	None Reported

National Wetlands Inventory Map



- Major Roads
- Contour Lines
- Waterways
- County Boundary
- Power Lines
- Pipe Lines
- Fault Lines
- Water
- National Wetland Inventory
- State Wetlands
- Electronic NWI data available
- Electronic NWI data not available

SITE NAME:	SR-10 / SR-141 / Halltown Road	CLIENT:	Clinard Engineering Associates
ADDRESS:	SR-10 / SR-141 / Halltown Road Hartsville TN 37074	CONTACT:	Brian Gaffney
LAT/LONG:	36.3996 / 86.1632	INQUIRY #:	2495579.1s
		DATE:	May 15, 2009

WETLANDS MAP FINDINGS

Source: Fish and Wildlife Service NWI data

NWI hardcopy map at target property: Hartsville
Additional NWI hardcopy map(s) in search area:
Not reported in source data

Map ID Direction Distance Distance (ft.)	Code and Description*	Database

No Sites Reported.

*See Wetland Classification System for additional information.

WETLANDS CLASSIFICATION SYSTEM

National Wetland Inventory Maps are produced by the U.S. Fish and Wildlife Service, a sub-department of the U.S. Department of the Interior. In 1974, the U.S. Fish and Wildlife Service developed a criteria for wetland classification with four long range objectives:

- to describe ecological units that have certain homogeneous natural attributes,
- to arrange these units in a system that will aid decisions about resource management,
- to furnish units for inventory and mapping, and
- to provide uniformity in concepts and terminology throughout the U.S.

High altitude infrared photographs, soil maps, topographic maps and site visits are the methods used to gather data for the productions of these maps. In the infrared photos, wetlands appear as different colors and these wetlands are then classified by type. Using a hierarchical classification, the maps identify wetland and deepwater habitats according to:

- system
- subsystem
- class
- subclass
- modifiers

(as defined by Cowardin, et al. U.S. Fish and Wildlife Service FWS/OBS 79/31. 1979.)

The classification system consists of five systems:

1. marine
2. estuarine
3. riverine
4. lacustrine
5. palustrine

The marine system consists of deep water tidal habitats and adjacent tidal wetlands. The riverine system consists of all wetlands contained within a channel. The lacustrine systems includes all nontidal wetlands related to swamps, bogs & marshes. The estuarine system consists of deepwater tidal habitats and where ocean water is diluted by fresh water. The palustrine system includes nontidal wetlands dominated by trees and shrubs and where salinity is below .5% in tidal areas. All of these systems are divided in subsystems and then further divided into class.

National Wetland Inventory Maps are produced by transferring gathered data on a standard 7.5 minute U.S.G.S. topographic map. Approximately 52 square miles are covered on a National Wetland Inventory map at a scale of 1:24,000. Electronic data is compiled by digitizing these National Wetland Inventory Maps.

SYSTEM **MARINE**

SUBSYSTEM **1 - SUBTIDAL** **2 - INTERTIDAL**

CLASS	RB-ROCK BOTTOM	UB-UNCONSOLIDATED BOTTOM	AB-AQUATIC BED	RF-REEF	OW-OPEN WATER / Unknown Bottom	AB-AQUATIC BED	RF-REEF	RS-ROCKY SHORE	US-UNCONSOLIDATED SHORE
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Algal 3 Rooted Vascular 5 Unknown Submergent	1 Coral 3 Worm		1 Algal 3 Rooted Vascular 5 Unknown Submergent	1 Coral 3 Worm	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic

SYSTEM **E - ESTUARINE**

SUBSYSTEM **1 - SUBTIDAL**

CLASS	RB-ROCK BOTTOM	UB-UNCONSOLIDATED BOTTOM	AB-AQUATIC BED	RF-REEF	OW-OPEN WATER / Unknown Bottom
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Algal 3 Rooted Vascular 4 Floating Vascular 5 Unknown Submergent 6 Unknown Surface	2 Mollusk 3 Worm	

SUBSYSTEM **2 - INTERTIDAL**

CLASS	AB-AQUATIC BED	RF-REEF	SB - STREAMBED	RS-ROCKY SHORE	US-UNCONSOLIDATED SHORE	EM-EMERGENT	SS-SCRUB SHRUB	FO-FORESTED
Subclass	1 Algal 3 Rooted Vascular 4 Floating Vascular 5 Unknown Submergent 6 Unknown Surface	2 Mollusk 3 Worm	1 Cobble- Gravel 2 Sand 3 Mud 4 Organic	1 Bedrock 2 Rubble	1 Cobble- Gravel 2 Sand 3 Mud 4 Organic	1 Persistent 2 Nonpersistent	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen

SYSTEM — **R - RIVERINE**

SUBSYSTEM	1 - TIDAL	2 - LOWER PERENNIAL	3 - UPPER PERENNIAL	4 - INTERMITTENT	5 - UNKNOWN PERENNIAL
CLASS	RB-ROCK BOTTOM UB-UNCONSOLIDATED BOTTOM *SB-STREAMBED AB-AQUATIC BED RS-ROCKY SHORE US-UNCONSOLIDATED SHORE **EM-EMERGENT OW-OPEN WATER/ Unknown Bottom				
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Bedrock 2 Rubble 3 Cobble-Gravel 4 Sand 5 Mud 6 Organic 7 Vegetated	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular 5 Unknown Submergent 6 Unknown Surface	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated	2 Nonpersistent	

* STREAMBED is limited to TIDAL and INTERMITTENT SUBSYSTEMS, and comprises the only CLASS in the INTERMITTENT SUBSYSTEM.
**EMERGENT is limited to TIDAL and LOWER PERENNIAL SUBSYSTEMS.

SYSTEM — **L - LACUSTRINE**

SUBSYSTEM — **1 - LIMNETIC**

CLASS	RB-ROCK BOTTOM	UB-UNCONSOLIDATED BOTTOM	AB-AQUATIC BED	OW-OPEN WATER/ Unknown Bottom
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular 5 Unknown Submergent 6 Unknown Surface	

SUBSYSTEM — **2 - LITTORAL**

CLASS	RB-ROCK BOTTOM	UB-UNCONSOLIDATED BOTTOM	AB-AQUATIC BED	RS-ROCKY SHORE	US-UNCONSOLIDATED SHORE	EM-EMERGENT	OW-OPEN WATER/ Unknown Bottom
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular 5 Unknown Submergent 6 Unknown Surface	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated	2 Nonpersistent	

SUBSYSTEM — **P - PALUSTRINE**

CLASS	RB--ROCK BOTTOM	UB--UNCONSOLIDATED BOTTOM	AB-AQUATIC BED	US--UNCONSOLIDATED SHORE	ML--MOSS-LICHEN	EM--EMERGENT	SS--SCRUB-SHRUB	FO--FORESTED	OW-OPEN WATER/ Unknown
Bottom									
Subclass	1 Bedrock 2 Rubble 3 Mud 4 Organic	1 Cobble-Gravel 2 Sand	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular 5 Unknown Submergent 6 Unknown Surface	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated	1 Moss 2 Lichen	1 Persistent 2 Nonpersistent	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6Deciduous 7 Evergreen	

MODIFIERS

In order to more adequately describe wetland and deepwater habitats one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

WATER REGIME

Non-Tidal

A Temporarily Flooded
B Saturated
C Seasonally Flooded
D Seasonally Flooded/ Well Drained
E Seasonally Flooded/ Saturated
F Semipermanently Flooded
G Intermittently Exposed

Tidal

H Permanently Flooded
J Intermittently Flooded
K Artificially Flooded
W Intermittently Flooded/Temporary
Y Saturated/Semipermanent/ Seasonal
Z Intermittently Exposed/Permanent
U Unknown

Coastal Halinity

K Artificially Flooded
L Subtidal
M Irregularly Exposed
N Regularly Flooded
P Irregularly Flooded

Inland Salinity

*S Temporary-Tidal
*R Seasonal-Tidal
*T Semipermanent -Tidal
V Permanent -Tidal
U Unknown

*These water regimes are only used in tidally influenced, freshwater systems.

pH Modifiers for WATER CHEMISTRY

		all Fresh Water
1 Hyperhaline	7 Hypersaline	
2 Euhaline	8 Eusaline	a Acid
3 Mixohaline (Brackish)	9 Mixosaline	t Circumneutral
4 Polyhaline	0 Fresh	i Alkaline
5 Mesohaline		
6 Oligohaline		
0 Fresh		

SOIL

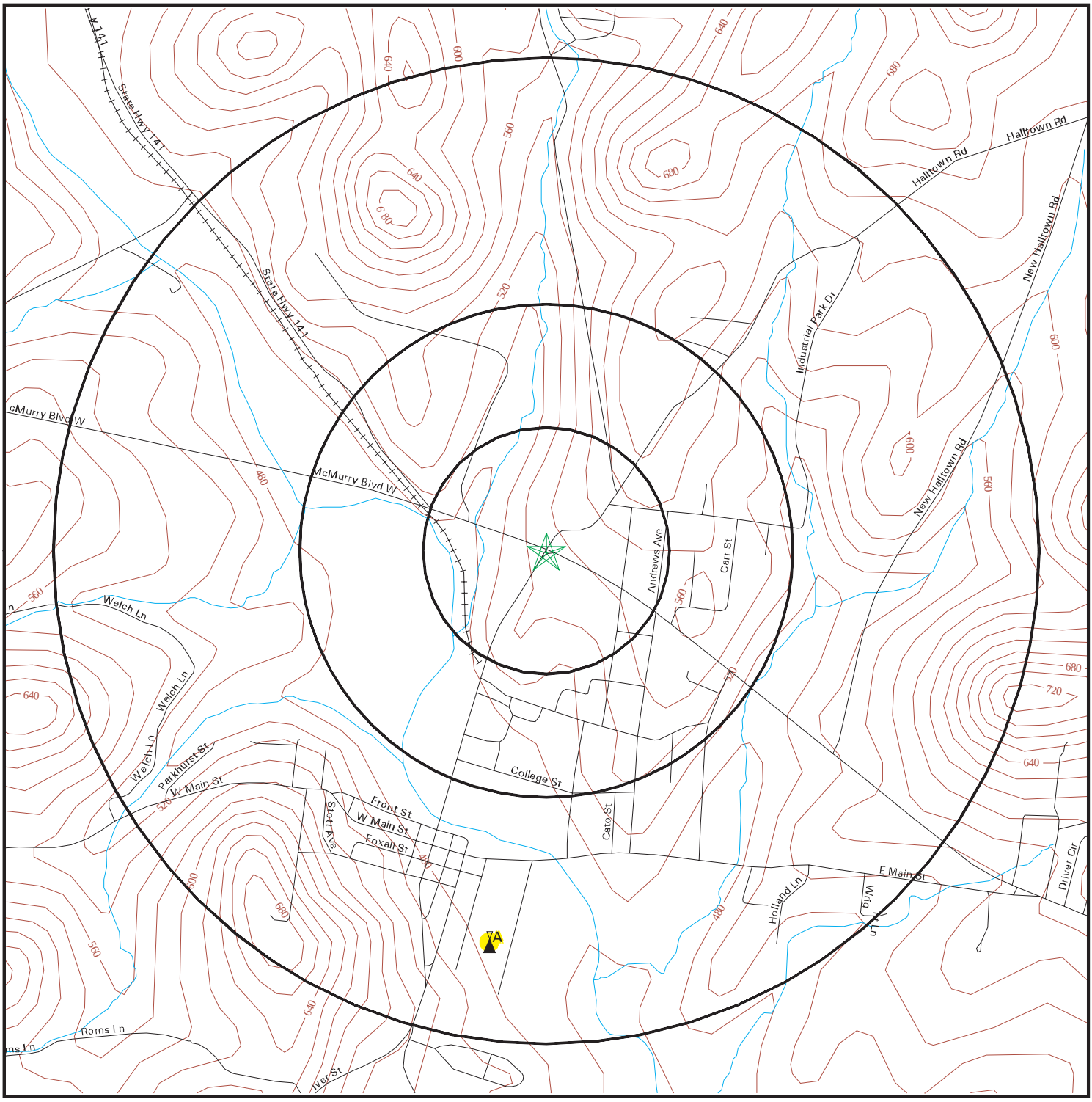
g Organic
n Mineral

SPECIAL MODIFIERS

b Beaver
d Partially Drained/Ditched
f Farmed
h Diked/Impounded
r Artificial Substrate
s Spoil
x Excavated

Source: U.S. Department of the Interior
Fish and Wildlife Service
National Wetlands Inventory

FCC & FAA Sites Map



- Streets
- Contour Lines
- County Boundary
- Waterways
- Power Lines
- Water
- Sites
- Omni Directional AM Interference
- Directional AM Interference

SITE NAME:	SR-10 / SR-141 / Halltown Road	CLIENT:	Clinard Engineering Associates
ADDRESS:	SR-10 / SR-141 / Halltown Road Hartsville TN 37074	CONTACT:	Brian Gaffney
LAT/LONG:	36.3996 / 86.1632	INQUIRY #:	2495579.1s
		DATE:	May 15, 2009

FCC & FAA SITES MAP FINDINGS
TOWERS

Map ID
Direction
Distance
Distance (ft.)

EDR ID
Database

A1
South
1/2-1 mi
4225

TOW100000045106
TOWER

Tower ID:	27091		
Tower Owner Name:			
, HARTSVILLE, TN			
Latitude:	36 23' 130997"	Latitude (in seconds):	130997
Longitude:	86 9' 55"	Longitude (in seconds):	310195
Transmitter Latitude:	362317	Transmitter Longitude	0860955
Construction Date:	12/31/1975	Activation Date:	Sep 17 1979
FAA Date:	Feb 19 1975	FCC Date:	Sep 7 1979
File Number:	STA	FAA ID:	74-SO-2565-OE
Antenna Height:	0.0000	Antenna Height (M):	0.0000
Beacon Height:	0.0000	Beacon Height (M):	0.0000
Elevation:	665.0000	Elevation FAA:	665.0000
Elevation FAA (M):	202.7000	Elevation (M):	202.7000
Structure Height:	205.0000	Structure Height (M):	62.5000
Structure Height FAA:	205.0000	Structure Height FAA (M):	62.5000
Supporting Struct Hgt:	0.0000	Supporting Struct Hgt (M):	0.0000
Tower Height:	0.0000	Tower Height (M):	0.0000
Structure Type:	TOW	Tower Type:	E
Key Remarks:		Date:	
Key Site:	33884	Record Action:	OLD
ID Exam:		ID_ASB_ACC:	W
Paint and Lighting Specs:			
Special Conditions/Remarks:			

This record is for a license, and it may or may not indicate a site which has been built.

A2
South
1/2-1 mi
4245

DOF100000057628
FAA DOF

Nacg code:	43	Obs number:	0229
O or u:	O	State id:	TN
City name:	HARTSVILLE	Latdeg:	36
Latmin:	23		
Latsec:	17		
Lat hemi:	N	Longdeg:	86
Longmin:	9		
Longsec:	55		
Long hemi:	W	Obs type:	TOWER
Frequency:	Not Reported	Agl ht:	0207

FCC & FAA SITES MAP FINDINGS
TOWERS

Map ID
Direction
Distance
Distance (ft.)

EDR ID
Database

Amsl ht:	00665	Strobe ind:	Not Reported
Acc h:	Not Reported	Acc v:	Not Reported
Mark ind:	Y	Faa stdy n:	74SO2565
Act acd dt:	C75365	Datchk cd:	224112
Dat file:	ASO	Site id:	DOF100000057628

FCC & FAA SITES MAP FINDINGS
AIRPORTS

EDR ID
Database

No Sites Reported.

FCC & FAA SITES MAP FINDINGS
POWERLINES

EDR ID
Database

No Sites Reported.

KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

Various Federal laws and executive orders address specific environmental concerns. NEPA requires the responsible offices to integrate to the greatest practical extent the applicable procedures required by these laws and executive orders. EDR provides key contacts at agencies charged with implementing these laws and executive orders to supplement the information contained in this report.

NATURAL AREAS
Officially designated wilderness areas
Government Records Searched in This Report

FED_LAND: Federal Lands
Source: USGS
Telephone: 703-648-5094
Federal data from Bureau of Land Management, National Park Service, Forest Service, and Fish and Wildlife Service.
- National Parks
- Forests
- Monuments
- Wildlife Sanctuaries, Preserves, Refuges
- Federal Wilderness Areas.
Date of Government Version: 12/31/2005

Federal Contacts for Additional Information

National Park Service, Southeast Region
100 Alabama Street SW, 1924 Building
Atlanta, GA 30303
404-562-3100

USDA Forest Service, Southern
1720 Peachtree Road, N.W.
Atlanta, GA 30367
404-347-2384

Fish & Wildlife Service, Region 4
Budget and Finance 1875 Century Boulevard
Atlanta, GA 30345
404-679-4096

Officially designated wildlife preserves, sanctuaries and refuges
Government Records Searched in This Report

FED_LAND: Federal Lands
Source: USGS
Telephone: 703-648-5094
Federal data from Bureau of Land Management, National Park Service, Forest Service, and Fish and Wildlife Service.
- National Parks
- Forests
- Monuments
- Wildlife Sanctuaries, Preserves, Refuges
- Federal Wilderness Areas.
Date of Government Version: 12/31/2005

KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

Federal Contacts for Additional Information

Fish & Wildlife Service, Region 4
Budget and Finance 1875 Century Boulevard
Atlanta, GA 30345
404-679-4096

State Contacts for Additional Information

Wildlife Resources Agency 615-781-6552

Wild and scenic rivers

Government Records Searched in This Report

FED_LAND: Federal Lands
Source: USGS
Telephone: 703-648-5094
Federal data from Bureau of Land Management, National Park Service, Forest Service, and Fish and Wildlife Service.
- National Parks
- Forests
- Monuments
- Wildlife Sanctuaries, Preserves, Refuges
- Federal Wilderness Areas.

Date of Government Version: 12/31/2005

Federal Contacts for Additional Information

Fish & Wildlife Service, Region 4
Budget and Finance 1875 Century Boulevard
Atlanta, GA 30345
404-679-4096

Endangered Species

Government Records Searched in This Report

Endangered Species Protection Program Database
A listing of endangered species by county.
Source: Environmental Protection Agency
Telephone: 703-305-5239

Federal Contacts for Additional Information

Fish & Wildlife Service, Region 4
Budget and Finance 1875 Century Boulevard
Atlanta, GA 30345
404-679-4096

State Contacts for Additional Information

Div. Of Natural Heritage, Dept. of Env. & Conservation 615-532-0431

LANDMARKS, HISTORICAL, AND ARCHEOLOGICAL SITES

Historic Places

Government Records Searched in This Report

National Register of Historic Places:
The National Register of Historic Places is the official federal list of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture. These contribute to an understanding of the historical and cultural foundations of the nation.

The National Register includes:
- All prehistoric and historic units of the National Park System;
- National Historic Landmarks, which are properties recognized by the Secretary of the Interior as possessing national significance; and
- Properties significant in American, state, or local prehistory and history that have been nominated by State Historic Preservation Officers, federal agencies, and others, and have been approved for listing by the National Park Service.

Date of Government Version: 03/23/2006

TN Historic Sites: Properties Listed in the National Register
Listing of historic sites included on the National Register for Tennessee
Source: Tennessee Historical Commission.
Telephone: 615-532-1550

Federal Contacts for Additional Information

Park Service; Advisory Council on Historic Preservation
1849 C Street NW
Washington, DC 20240
Phone: (202) 208-6843

State Contacts for Additional Information

Tennessee Historical Commission 615-532-1550

Indian Religious Sites

Government Records Searched in This Report

Indian Reservations:

This map layer portrays Indian administrated lands of the United States that have any area equal to or greater than 640 acres.
Source: USGS
Phone: 888-275-8747
Date of Government Version: 12/31/2005

Federal Contacts for Additional Information

Department of the Interior- Bureau of Indian Affairs
Office of Public Affairs
1849 C Street, NW
Washington, DC 20240-0001
Office: 202-208-3711
Fax: 202-501-1516

National Association of Tribal Historic Preservation Officers
1411 K Street NW, Suite 700
Washington, DC 20005
Phone: 202-628-8476
Fax: 202-628-2241

KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

State Contacts for Additional Information
A listing of local Tribal Leaders and Bureau of Indian Affairs Representatives can be found at:
http://www.doi.gov/bia/areas/agency.html

Scenic Trails

Government Records Searched in This Report
APPAL_TRAIL: Appalachian Trail
Source: Appalachian Trail Conference
Telephone: (304) 535-6331
Appalachian Trail centerline.

State Contacts for Additional Information
Appalachian Trail Conference
799 Washington Street P.O. Box 807
Harpers Ferry, WV 25425-0807
(304) 535-6331

Natchez Trace National Scenic Trail
American Hiking Society 1422 Fenwick Lane
Silver Spring, Maryland 20910
301-565-6704

FLOOD PLAIN, WETLANDS AND COASTAL ZONE

Flood Plain Management
Government Records Searched in This Report
Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

Federal Contacts for Additional Information
Federal Emergency Management Agency 877-3362-627

State Contacts for Additional Information
Tennessee Emergency Management Affairs 615-741-0001

Wetlands Protection
Government Records Searched in This Report
NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2004 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetlands Inventory
Source: Tennessee Spatial Data Server
Telephone: 931-528-6481

Federal Contacts for Additional Information
Fish & Wildlife Service 813-570-5412

State Contacts for Additional Information
Wildlife Resource Agency 615-781-6552

KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

Coastal Zone Management
Government Records Searched in This Report

CAMA Management Areas
Dept. of Env., Health & Natural Resources
919-733-2293

Federal Contacts for Additional Information

Office of Ocean and Coastal Resource Management
N/ORM, SSMC4
1305 East-West Highway
Silver Spring, Maryland 20910
301-713-3102

State Contacts for Additional Information

FCC & FAA SITES MAP
For NEPA actions that come under the authority of the FCC, the FCC requires evaluation of Antenna towers and/or supporting structures that are to be equipped with high intensity white lights which are to be located in residential neighborhoods, as defined by the applicable zoning law.

Government Records Searched in This Report

Cellular
Federal Communications Commission
Mass Media Bureau
2nd Floor - 445 12th Street SW
Washington DC 20554 USA
Telephone (202) 418-2700

Tower
Federal Communications Commission
Mass Media Bureau
2nd Floor - 445 12th Street SW
Washington DC 20554 USA
Telephone (202) 418-2700

Antenna Registration
Federal Communications Commission
Mass Media Bureau
2nd Floor - 445 12th Street SW
Washington DC 20554 USA
Telephone (202) 418-2700

AM Tower
Federal Communications Commission
Mass Media Bureau
2nd Floor - 445 12th Street SW
Washington DC 20554 USA
Telephone (202) 418-2700

KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

FAA Digital Obstacle File
Federal Aviation Administration (FAA)
1305 East-West Highway, Station 5631
Silver Sprinng, MD 20910-3281
Telephone: 301-713-2817
Describes known obstacles of interest to aviation users in the US. Used by the Federal Aviation Administration (FAA) and the National Oceanic and Atmospheric Administration to manage the National Airspace System.

Airport Landing Facilities
Federal Aviation Administration
Telephone (800) 457-6656
Private and public use landing facilities.

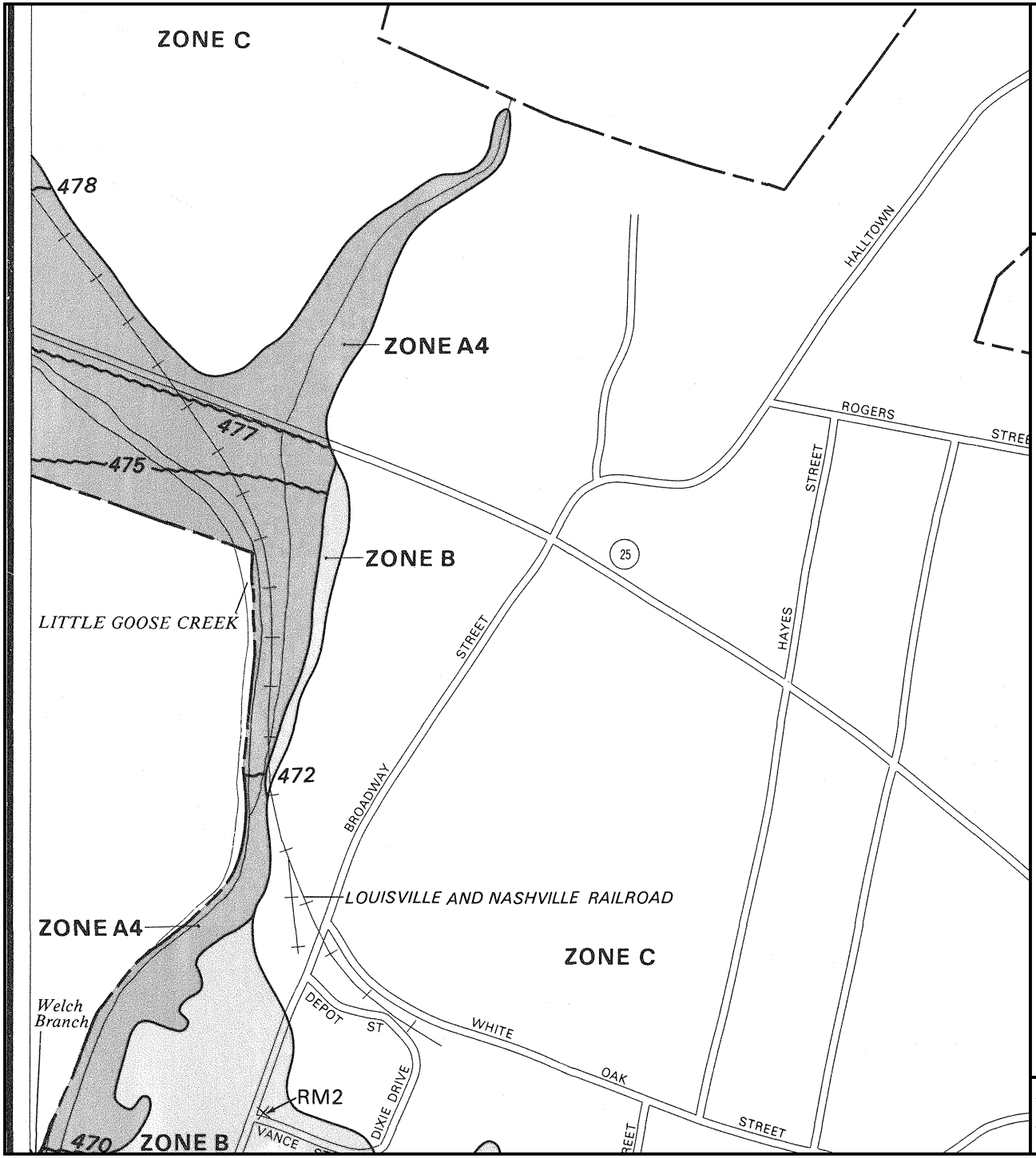
Electric Power Transmission Line Data
PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Excessive Radio Frequency Emission
For NEPA actions that come under the authority of the FCC, Commission actions granting construction permits, licenses to transmit or renewals thereof, equipment authorizations or modifications in existing facilities, require the determination of whether the particular facility, operation or transmitter would cause human exposure to levels of radio frequency in excess of certain limits.

Federal Contacts for Additional Information
Office of Engineering and Technology
Federal Communications Commission
445 12th Street SW
Washington, DC 20554
Phone: 202-418-2470

OTHER CONTACT SOURCES

STREET AND ADDRESS INFORMATION



N

APPROXIMATE SCALE

500 0 500 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

TOWN OF
HARTSVILLE,
TENNESSEE
TROUSDALE COUNTY

PANEL 2 OF 2

COMMUNITY-PANEL NUMBER
470093 0002 B

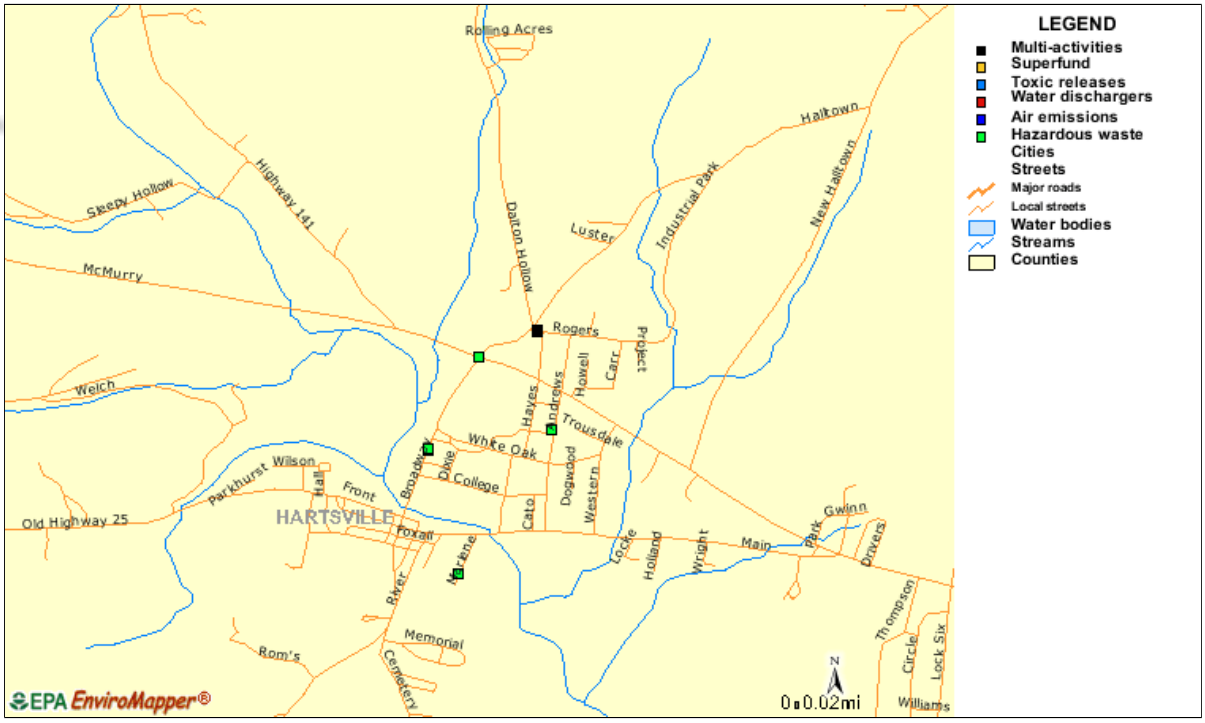
EFFECTIVE DATE:
AUGUST 16,1982

Federal Emergency Management Agency

http://iaspub.epa.gov/wme/i3_ef_link.query_links?db_type=ENVIROFACTS&ul_lr=-86.1874211133334,36.4174832466667,-86.1390301133334,36.3811899966667
Last updated on Tuesday, March 31st, 2009.

Envirofacts Data Warehouse

You are here: EPA Home Envirofacts Multisystem Query



LIST OF EPA-REGULATED FACILITIES IN ENVIROFACTS

To see a report on a facility click on the underlined Facility Name. Click on the underlined "View Facility Information" link to view EPA Facility information for the facility.

Go To Bottom Of The Page

FACILITY NAME/ADDRESS	FACILITY INFORMATION	Permitted Discharges to Water?	Toxic Releases Reported?	Hazardous Waste Handler?	Active or Archived Superfund Report?	Air Releases Reported?
DR. E. K. BRATTON'S OFFICE 213 BROADWAY HARTSVILLE, TN 37074	View Facility Information	NO	NO	**YES**	NO	NO
FELDKIRCHER WIRE FABRICATING CO 122 ROGERS ST. HARTSVILLE, TN 37074	View Facility Information	NO	**YES**	**YES**	NO	NO
LAMSTEEL CORP OF AMERICA ANDREWS AVE N HARTSVILLE, TN 37074	View Facility Information	NO	NO	**YES**	NO	NO
LEBANON PUBLISHING COMPANY INC	View Facility	NO	NO	**YES**	NO	NO

MARLENE DRIVE HARTSVILLE, TN 37074	Information					
MUELLER REFRIGERATION PRODUCTS COMPANY 121 RODGERS ST. HARTSVILLE, TN 37074	View Facility Information	NO	**YES**	**YES**	NO	NO
RONNIE'S AMOCO INC 201 MCMURRY BLVD. HARTSVILLE, TN 37074	View Facility Information	NO	NO	**YES**	NO	NO
SOUTH CENTRA BELL ANDREWS STREET HARTSVILLE, TN 37074	View Facility Information	NO	NO	**YES**	NO	NO
TOWN OF HARTSVILLE 210 BROADWAY HARTSVILLE, TN 37074	View Facility Information	NO	NO	**YES**	NO	NO

Go To Top Of The Page

Total Number of Facilities Displayed: 13

Final Version 2008 303(d) LIST (Old Hickory Watershed cont.)

Waterbody ID	Impacted Waterbody	County	Miles/Acres Impaired	CAUSE / TMDL Priority	Pollutant Source	COMMENTS
TN05130201 021 – 2000	ROUND LICK CREEK	Wilson	3.96	Nitrate+Nitrite L Loss of biological integrity due to siltation H Low dissolved oxygen L Alteration of stream-side or littoral vegetation H Escherichia coli H	Minor Municipal Point Source Pasture Grazing	Area impacts include Watertown STP. Stream is Category 5. (One or more uses impaired.)
TN05130201 021 – 3000	ROUND LICK CREEK	Wilson	3.16	Loss of biological integrity due to siltation H Alteration of stream-side or littoral vegetation H	Pasture Grazing	Stream is Category 5. (One or more uses impaired.)
TN05130201 028-0100	LITTLE GOOSE CREEK	Trousdale	12.7	Other Anthropogenic Habitat Alteration H Escherichia coli H	Hydromodification Undetermined Source	Stream is Category 5. (One or more uses impaired.)
TN05130201 028-0150	LITTLE GOOSE CREEK	Trousdale Macon	10.0	Escherichia coli H	Pasture Grazing	Stream is Category 5. (One or more uses impaired.)
TN05130201 047 – 0100	UNNAMED TRIB TO DRAKES CREEK	Sumner	3.16	Alteration of stream-side or littoral vegetation H	Discharges from MS4 Area	Hendersonville area. Stream is Category 5. (One or more uses impaired.)
TN05130201 047 – 0200	UNNAMED TRIB TO DRAKES CREEK	Sumner	6.13	Alteration of stream-side or littoral vegetation H	Discharges from MS4 Area	Hendersonville area. Stream is Category 5. (One or more uses impaired.)
TN05130201 055-0200	SINKING CREEK	Wilson	7.4	Nutrients M Other Anthropogenic Substrate Alterations H Escherichia coli H	Collection System Failure Discharges from MS4 Area	Stream is Category 5. (One or more uses impaired.)
TN05130201 055-0250	SINKING CREEK	Wilson	10.0	Alteration in stream-side or littoral vegetative cover H Other Anthropogenic Substrate Alterations H Escherichia coli H	Pasture Grazing Land Development Highway, Road, and Bridge Construction	Stream is Category 5. (One or more uses impaired.)
TN05130201 055-1000	BARTONS CREEK	Wilson	8.0	Escherichia coli H	Collection System Failure	Stream is Category 5. (One or more uses impaired.)

Group 4 Watersheds

»» back to the top

- Barren River Watershed
  - Barren River - A Total Maximum Daily Load for E. Coli in the Barren River Water Jackson, Macon and Sumner Counties. Approved 10/23/2007.
- Clear Fork of the Cumberland River Watershed
  - Clear Fork of the Cumberland River - A Total Maximum Daily Load for Siltation ir Fork of the Cumberland River Watershed in Campbell, Claiborne and Scott Cour 03/12/2009.
  - Clear Fork of the Cumberland River - A Total Maximum Daily Load for E. Coli in of the Cumberland River Watershed in Campbell, Claiborne and Scott Counties. 08/23/2007.
- Cordell Hull Lake Watershed
  - Cordell Hull Lake - A Total Maximum Daily Load for E. Coli in the Cordell Hull La in the Jackson, Overton, and Putnam Counties. Approved 11/13/2007.
- Hatchie River Watershed
  - Cane Creek - A total maximum daily load (TMDL) for total copper for Cane Creel subwatershed from river mile (RM) 17.9 to the confluence with the Hatchie River County. Approved 08/25/1999.
  - Hatchie River - A Total Maximum Daily Load for E. Coli in the Hatchie River Wat Chester, Fayette, Hardeman, Haywood, Lauderdale, Madison and Tipton Counti 03/18/2008.
- Holston River Watershed
  - Holston River - A Total Maximum Daily Load for E. Coli in the Holston River Wat Grainger, Hamblen, Hawkins, Jefferson, Knox, Sevier, Sullivan and Union Count 09/30/2008.
- Lower Tennessee River Watershed
  - Lower Tennessee River - A Total Maximum Daily Load for E. Coli in the Lower T River Watershed in Bledsoe, Bradley, Hamilton, Loudon, Marion, McMinn, Meigs and Sequatchie Counties. Approved 07/07/2006.
  - North and South Suck Creek - A Total Maximum Daily Load for PH and Iron in N Suck Creek in the Lower Tennessee River Watershed in Hamilton, Marion, & Se Counties. Approved 08/16/2006.
  - Lower Tennessee River - Total Maximum Daily Load for Siltation and Habitat Alt Lower Tennessee River Watershed in Bledsoe, Bradley, Hamilton, Loudon, Mari Meigs, Rhea, Roane, and Sequatchie Counties. Approved 09/25/2006.
  - North Chickamauga Creek - A Total Maximum Daily Load for pH for North Chick in the Tennessee River Watershed. Approved 03/17/2005.
- Obey River Watershed
  - Obey River - A Total Maximum Daily Load for pH and Metals in the Obey River \ Fentress, Overton and Putnam Counties. Approved 03/07/2008.
  - Obey River - A Total Maximum Daily Load for E. Coli in the Obey River Watersh Cumberland, Fentress, Overton, Pickett, and Putnam Counties. Approved 03/11/
- Old Hickory Lake Watershed
  - Old Hickory Lake - A Total Maximum Daily Load for E. Coli in the Old Hickory La in Macon, Smith, Sumner, Trousdale and Wilson Counties. Approved 03/28/200
- Powell River Watershed
  - Powell River - A Total Maximum Daily Load for E. Coli in the Powell River Water Campbell, Claiborne, Hancock and Union Counties. Approved 10/15/2008.
- Red River Watershed
  - Red River - A Total Maximum Daily Load for E. Coli in the Red River Watershed Davidson, Montgomery, Robertson, Stewart and Sumner Counties. Approved 03
- South Fork Cumberland River Watershed
  - Pine Creek - A Total Maximum Daily Load for E. Coli in the Pine Creek Subwate South Fork Cumberland Watershed in Scott County. Approved 02/27/2006.
  - Bear Creek - A Total Maximum Daily Load for pH and Iron in the Bear Creek Sut the South Fork Cumberland River Watershed in Scott County. Approved 08/01/2
  - Straight Fork Creek - A Total Maximum Daily Load for pH in the Straight Fork Cr Subwatershed in the South Fork Cumberland River Watershed in Campbell and Counties. Approved 12/10/2007.

05130201	Cumberland-Old Hickory Lake	Cumberland River (Old Hickory Reservoir including Cedar Creek embayment).	Wilson, Trousdale Smith	From Cedar Creek (Hwy 231) including embayment area to Hogan Creek.	Federal endangered Appalachian Monkeyface, Cumberlandian Combshell, Catspaw, Ring Pink, Rough Pigtoe, Dromedary Pearlymussel, Pink Mucket, and Orange-foot Pimpleback. State threatened Water Stichwort. Cedar Creek embayment within Old Hickory Lock 5 Wildlife Refuge.	36.3052	36.2557	-86.2496	-85.9602

Old Hickory Lake is approximately 3.6 miles downstream of the SR-25 project.

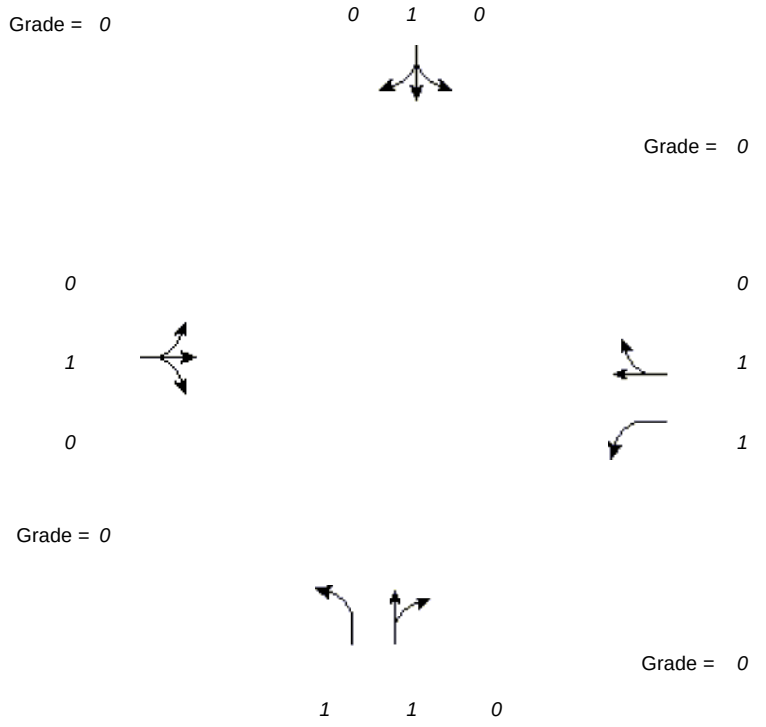
CAPACITY ANALYSIS

EXISTING SYSTEM
(2014 & 2034)

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*2/24/2009*	Jurisdiction	*Trousdale County*
Time Period	*Existing AM*	Analysis Year	*2014*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*25*	*307*	*94*	*156*	*508*	*13*	*110*	*33*	*154*	*13*	*49*	*97*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Ext. eff. green		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Unit Extension		*3.0*		*3.0*	*3.0*		*3.0*	*3.0*			*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width		*11.0*		*12.0*	*11.0*		*11.0*	*11.0*			*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr		*0*		*0*	*0*		*0*	*0*			*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *25.0*	G =	G =	G = *15.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*					Cycle Length C = *60.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	25	307	94	156	508	13	110	33	154	13	49	97
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow Rate	28	341	104	173	564	14	122	37	171	14	54	108
Lane Group		LTR		L	TR		L	TR			LTR	
Adj. flow rate		473		173	578		122	208			176	
Prop. LT or RT	0.059	--	0.220	0.000	--	0.024	0.000	--	0.822	0.080	--	0.614

Saturation Flow Rate

Base satflow		1900		1900	1900		1900	1900			1900	
Num. of lanes	0	1	0	1	1	0	1	1	0	0	1	0
fW		0.967		1.000	0.967		0.967	0.967			0.933	
fHV		0.990		0.980	0.980		0.980	0.980			0.990	
fg		1.000		1.000	1.000		1.000	1.000			1.000	
fp		1.000		1.000	1.000		1.000	1.000			1.000	
fbb		1.000		1.000	1.000		1.000	1.000			1.000	
fa		1.00		1.00	1.00		1.00	1.00			1.00	
fLU		1.00		1.00	1.00		1.00	1.00			1.00	
fLT		0.927	--	0.950	1.000	--	0.642	1.000	--		0.968	--
Secondary fLT			--	0.350		--			--			--
fRT	--	0.970		--	0.996		--	0.877		--	0.917	
fLpb		1.000	--	1.000	1.000	--	1.000	1.000	--		1.000	--
fRpb	--	1.000		--	1.000		--	1.000		--	1.000	
Adj. satflow		1635		1770	1794		1156	1579			1558	
Sec. adj. satflow			--	653		--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB	WB		NB		SB
Lane group	*LTR*	*L*	*TR*	*L*	*TR*	*LTR*
Adj. flow rate	*473*	*173*	*578*	*122*	*208*	*176*
Satflow rate	*1635*	*1770*	*1794*	*1156*	*1579*	*1558*
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Green ratio	*0.42*	*0.58*	*0.42*	*0.25*	*0.25*	*0.25*
Lane group cap.	*681*	*475*	*747*	*289*	*395*	*390*
v/c ratio	*0.69*	*0.36*	*0.77*	*0.42*	*0.53*	*0.45*
Flow ratio	*0.29*		*0.32*	*0.11*	*0.13*	*0.11*
Crit. lane group	*N*	*N*	*Y*	*N*	*Y*	*N*
Sum flow ratios	*0.54*					
Lost time/cycle	*15.00*					
Critical v/c ratio	*0.72*					

Lane Group Capacity, Control Delay, and LOS Determination

	EB	WB		NB		SB
Lane group	*LTR*	*L*	*TR*	*L*	*TR*	*LTR*
Adj. flow rate	*473*	*173*	*578*	*122*	*208*	*176*
Lane group cap.	*681*	*475*	*747*	*289*	*395*	*390*
v/c ratio	*0.69*	*0.36*	*0.77*	*0.42*	*0.53*	*0.45*
Green ratio	*0.42*	*0.58*	*0.42*	*0.25*	*0.25*	*0.25*
Unif. delay d1	*14.4*	*7.5*	*15.1*	*18.9*	*19.4*	*19.0*
Delay factor k	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*
Increm. delay d2	*5.8*	*2.2*	*7.7*	*4.5*	*5.0*	*3.7*
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
Control delay	*20.1*	*9.7*	*22.7*	*23.3*	*24.4*	*22.8*
Lane group LOS	*C*	*A*	*C*	*C*	*C*	*C*
Apprch. delay	*20.1*	*19.7*		*24.0*		*22.8*
Approach LOS	*C*	*B*		*C*		*C*
Intersec. delay	*21.0*	Intersection LOS				*C*

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*60.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*13.46*		
Unopposed green intvl, g_u (s)		*16.54*		
Red time, r(s)		*25.0*		
Arrival rate, q_a (veh/s)		*0.05*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.33*		
X_{perm}		*0.26*		
X_{prot} (N/A for lagging left-turns)		*0.59*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.20*		
Queue at start of unsaturated green, Q_u		*0.65*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*7.5*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(S_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group		*LTR*		*L*	*TR*		*L*	*TR*			*LTR*	
Init. queue/lane		*0.0*		*0.0*	*0.0*		*0.0*	*0.0*			*0.0*	
Flow rate/lane		*473*		*173*	*578*		*122*	*208*			*176*	
Satflow per lane		*1635*		*813*	*1794*		*1156*	*1579*			*1558*	
Capacity/lane		*681*		*475*	*747*		*289*	*395*			*390*	
Flow ratio		*0.29*		*0.21*	*0.32*		*0.11*	*0.13*			0.11	
v/c ratio		*0.69*		*0.36*	*0.77*		*0.42*	*0.53*			*0.45*	
I factor		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Platoon ratio		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
PF factor		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
Q_1		*6.5*		*1.2*	*8.3*		*1.7*	*3.0*			*2.5*	
k_B		*0.7*		*0.5*	*0.7*		*0.4*	*0.4*			*0.4*	
Q_2		*1.4*		*0.3*	*2.2*		*0.3*	*0.5*			*0.4*	
Q avg.		*7.9*		*1.5*	*10.5*		*2.0*	*3.5*			*2.8*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$		*1.8*		*2.3*	*1.7*		*2.3*	*2.1*			*2.2*	
BOQ, $Q_{\%}$		*14.3*		*3.6*	*18.0*		*4.5*	*7.3*			*6.2*	

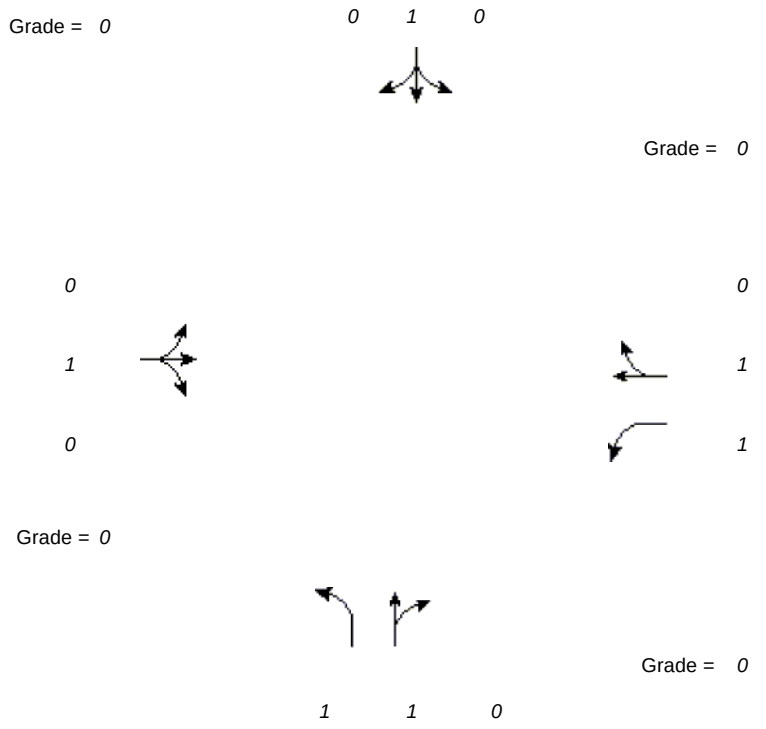
Queue Storage Ratio

Q spacing		*25.0*		*25.0*	*25.0*		*25.0*	*25.0*			*25.0*	
Q storage		*0*		*0*	*0*		*0*	*0*			*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*2/24/2009*	Jurisdiction	*Trousdale County*
Time Period	*Existing PM*	Analysis Year	*2014*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*47*	*427*	*111*	*168*	*320*	*20*	*109*	*62*	*193*	*24*	*44*	*46*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Ext. eff. green		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Unit Extension		*3.0*		*3.0*	*3.0*		*3.0*	*3.0*			*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width		*11.0*		*12.0*	*11.0*		*11.0*	*11.0*			*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr		*0*		*0*	*0*		*0*	*0*			*0*	
Ped timing		*3.2*			*3.2*			*3.2*			*3.2*	

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *25.0*	G =	G =	G = *15.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*					Cycle Length C = *60.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*47*	*427*	*111*	*168*	*320*	*20*	*109*	*62*	*193*	*24*	*44*	*46*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Adj. Flow Rate	*52*	*474*	*123*	*187*	*356*	*22*	*121*	*69*	*214*	*27*	*49*	*51*
Lane Group		*LTR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate		*649*		*187*	*378*		*121*	*283*			*127*	
Prop. LT or RT	*0.080*	--	*0.190*	*0.000*	--	*0.058*	*0.000*	--	*0.756*	*0.213*	--	*0.402*

Saturation Flow Rate

Base satflow		*1900*		*1900*	*1900*		*1900*	*1900*			*1900*	
Num. of lanes	*0*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*	*0*	*1*	*0*
fW		*0.967*		*1.000*	*0.967*		*0.967*	*0.967*			*0.933*	
fHV		*0.990*		*0.980*	*0.980*		*0.980*	*0.980*			*0.990*	
fg		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fp		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fbb		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fa		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLU		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLT		*0.940*	--	*0.950*	*1.000*	--	*0.707*	*1.000*	--		*0.733*	--
Secondary fLT			--	*0.269*		--			--			--
fRT	--	*0.974*		--	*0.991*		--	*0.887*		--	*0.946*	
fLpb		*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--		*1.000*	--
fRpb	--	*1.000*		--	*1.000*		--	*1.000*		--	*1.000*	
Adj. satflow		*1666*		*1770*	*1785*		*1273*	*1596*			*1218*	
Sec. adj. satflow			--	*501*		--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB	WB		NB		SB
Lane group	*LTR*	*L*	*TR*	*L*	*TR*	*LTR*
Adj. flow rate	*649*	*187*	*378*	*121*	*283*	*127*
Satflow rate	*1666*	*1770*	*1785*	*1273*	*1596*	*1218*
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Green ratio	*0.42*	*0.58*	*0.42*	*0.25*	*0.25*	*0.25*
Lane group cap.	*694*	*399*	*744*	*318*	*399*	*305*
v/c ratio	*0.94*	*0.47*	*0.51*	*0.38*	*0.71*	*0.42*
Flow ratio	*0.39*		*0.21*	*0.10*	*0.18*	*0.10*
Crit. lane group	*Y*	*N*	*N*	*N*	*Y*	*N*
Sum flow ratios	*0.65*					
Lost time/cycle	*15.00*					
Critical v/c ratio	*0.87*					

Lane Group Capacity, Control Delay, and LOS Determination

	EB	WB		NB		SB
Lane group	*LTR*	*L*	*TR*	*L*	*TR*	*LTR*
Adj. flow rate	*649*	*187*	*378*	*121*	*283*	*127*
Lane group cap.	*694*	*399*	*744*	*318*	*399*	*305*
v/c ratio	*0.94*	*0.47*	*0.51*	*0.38*	*0.71*	*0.42*
Green ratio	*0.42*	*0.58*	*0.42*	*0.25*	*0.25*	*0.25*
Unif. delay d1	*16.7*	*8.7*	*12.9*	*18.6*	*20.5*	*18.8*
Delay factor k	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*
Increm. delay d2	*21.5*	*3.9*	*2.5*	*3.4*	*10.2*	*4.1*
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
Control delay	*38.3*	*12.6*	*15.4*	*22.1*	*30.7*	*23.0*
Lane group LOS	*D*	*B*	*B*	*C*	*C*	*C*
Apprch. delay	*38.3*	*14.5*		*28.1*		*23.0*
Approach LOS	*D*	*B*		*C*		*C*
Intersec. delay	*27.1*	Intersection LOS				*C*

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*60.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*17.12*		
Unopposed green intvl, g_u (s)		*12.88*		
Red time, r(s)		*25.0*		
Arrival rate, q_a (veh/s)		*0.05*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.32*		
X_{perm}		*0.37*		
X_{prot} (N/A for lagging left-turns)		*0.63*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.30*		
Queue at start of unsaturated green, Q_u		*0.89*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*8.7*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(S_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

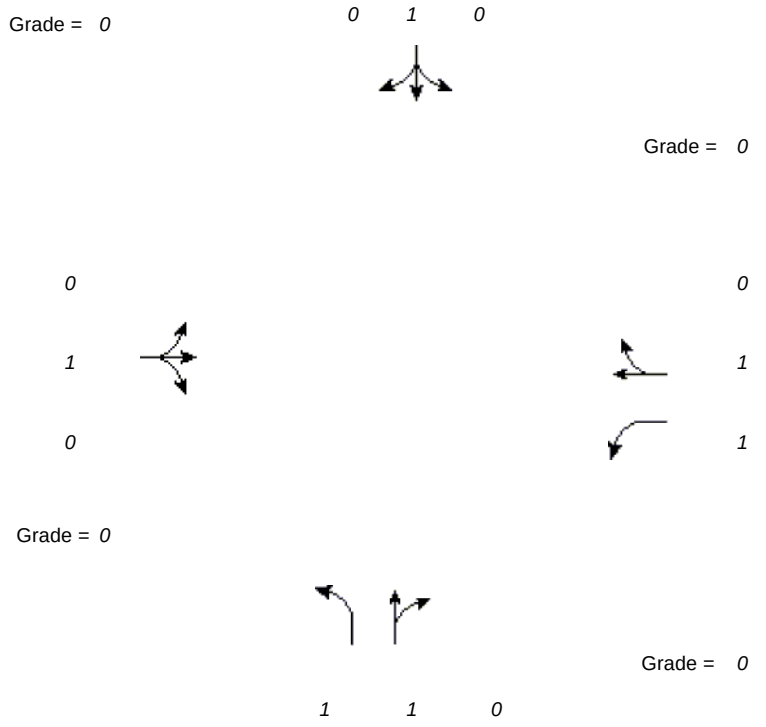
Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group		*LTR*		*L*	*TR*		*L*	*TR*			*LTR*	
Init. queue/lane		*0.0*		*0.0*	*0.0*		*0.0*	*0.0*			*0.0*	
Flow rate/lane		*649*		*187*	*378*		*121*	*283*			*127*	
Satflow per lane		*1666*		*682*	*1785*		*1273*	*1596*			*1218*	
Capacity/lane		*694*		*399*	*744*		*318*	*399*			*305*	
Flow ratio		*0.39*		*0.27*	*0.21*		*0.10*	*0.18*			0.10	
v/c ratio		*0.94*		*0.47*	*0.51*		*0.38*	*0.71*			*0.42*	
I factor		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Platoon ratio		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
PF factor		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
Q_1		*10.3*		*1.4*	*4.7*		*1.7*	*4.3*			*1.8*	
k_B		*0.7*		*0.5*	*0.7*		*0.4*	*0.5*			*0.4*	
Q_2		*5.1*		*0.4*	*0.7*		*0.2*	*1.0*			*0.3*	
Q avg.		*15.4*		*1.7*	*5.4*		*1.9*	*5.3*			*2.0*	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$		*1.6*		*2.3*	*1.9*		*2.3*	*1.9*			*2.3*	
BOQ, $Q_{\%}$		*25.3*		*4.0*	*10.4*		*4.4*	*10.4*			*4.6*	
Queue Storage Ratio												
Q spacing		*25.0*		*25.0*	*25.0*		*25.0*	*25.0*			*25.0*	
Q storage		*0*		*0*	*0*		*0*	*0*			*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*2/24/2009*	Jurisdiction	*Trousdale County*
Time Period	*Existing AM*	Analysis Year	*2034*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*28*	*340*	*104*	*168*	*549*	*15*	*119*	*35*	*167*	*15*	*58*	*113*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Ext. eff. green		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Unit Extension		*3.0*		*3.0*	*3.0*		*3.0*	*3.0*			*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width		*11.0*		*12.0*	*11.0*		*11.0*	*11.0*			*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr		*0*		*0*	*0*		*0*	*0*			*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *25.0*	G =	G =	G = *15.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*					Cycle Length C = *60.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*28*	*340*	*104*	*168*	*549*	*15*	*119*	*35*	*167*	*15*	*58*	*113*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Adj. Flow Rate	*31*	*378*	*116*	*187*	*610*	*17*	*132*	*39*	*186*	*17*	*64*	*126*
Lane Group		*LTR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate		*525*		*187*	*627*		*132*	*225*			*207*	
Prop. LT or RT	*0.059*	--	*0.221*	*0.000*	--	*0.027*	*0.000*	--	*0.827*	*0.082*	--	*0.609*

Saturation Flow Rate

Base satflow		*1900*		*1900*	*1900*		*1900*	*1900*			*1900*	
Num. of lanes	*0*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*	*0*	*1*	*0*
fW		*0.967*		*1.000*	*0.967*		*0.967*	*0.967*			*0.933*	
fHV		*0.990*		*0.980*	*0.980*		*0.980*	*0.980*			*0.990*	
fg		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fp		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fbb		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fa		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLU		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLT		*0.864*	--	*0.950*	*1.000*	--	*0.586*	*1.000*	--		*0.964*	--
Secondary fLT			--	*0.321*		--			--			--
fRT	--	*0.970*		--	*0.996*		--	*0.876*		--	*0.918*	
fLpb		*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--		*1.000*	--
fRpb	--	*1.000*		--	*1.000*		--	*1.000*		--	*1.000*	
Adj. satflow		*1524*		*1770*	*1793*		*1055*	*1577*			*1553*	
Sec. adj. satflow			--	*599*		--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB		WB			NB			SB	
Lane group	*LTR*		*L*	*TR*		*L*	*TR*		*LTR*	
Adj. flow rate	*525*		*187*	*627*		*132*	*225*		*207*	
Satflow rate	*1524*		*1770*	*1793*		*1055*	*1577*		*1553*	
Lost time	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	
Green ratio	*0.42*		*0.58*	*0.42*		*0.25*	*0.25*		*0.25*	
Lane group cap.	*635*		*448*	*747*		*264*	*394*		*388*	
v/c ratio	*0.83*		*0.42*	*0.84*		*0.50*	*0.57*		*0.53*	
Flow ratio	*0.34*			*0.35*		*0.13*	*0.14*		*0.13*	
Crit. lane group	*N*		*N*	*Y*		*N*	*Y*		*N*	
Sum flow ratios	*0.58*									
Lost time/cycle	*15.00*									
Critical v/c ratio	*0.77*									

Lane Group Capacity, Control Delay, and LOS Determination

	EB		WB			NB			SB	
Lane group	*LTR*		*L*	*TR*		*L*	*TR*		*LTR*	
Adj. flow rate	*525*		*187*	*627*		*132*	*225*		*207*	
Lane group cap.	*635*		*448*	*747*		*264*	*394*		*388*	
v/c ratio	*0.83*		*0.42*	*0.84*		*0.50*	*0.57*		*0.53*	
Green ratio	*0.42*		*0.58*	*0.42*		*0.25*	*0.25*		*0.25*	
Unif. delay d1	*15.6*		*7.9*	*15.7*		*19.3*	*19.7*		*19.5*	
Delay factor k	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	
Increm. delay d2	*11.8*		*2.8*	*10.9*		*6.6*	*5.9*		*5.2*	
PF factor	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	
Control delay	*27.3*		*10.8*	*26.6*		*25.9*	*25.6*		*24.6*	
Lane group LOS	*C*		*B*	*C*		*C*	*C*		*C*	
Apprch. delay	*27.3*		*23.0*			*25.7*			*24.6*	
Approach LOS	*C*		*C*			*C*			*C*	
Intersec. delay	*24.9*		Intersection LOS						*C*	

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*60.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*14.57*		
Unopposed green intvl, g_u (s)		*15.43*		
Red time, r(s)		*25.0*		
Arrival rate, q_a (veh/s)		*0.05*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.32*		
X_{perm}		*0.31*		
X_{prot} (N/A for lagging left-turns)		*0.63*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.30*		
Queue at start of unsaturated green, Q_u		*0.76*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*7.9*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(s_p - q_s)} + g_q Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(s_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(s_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(s_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(s_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

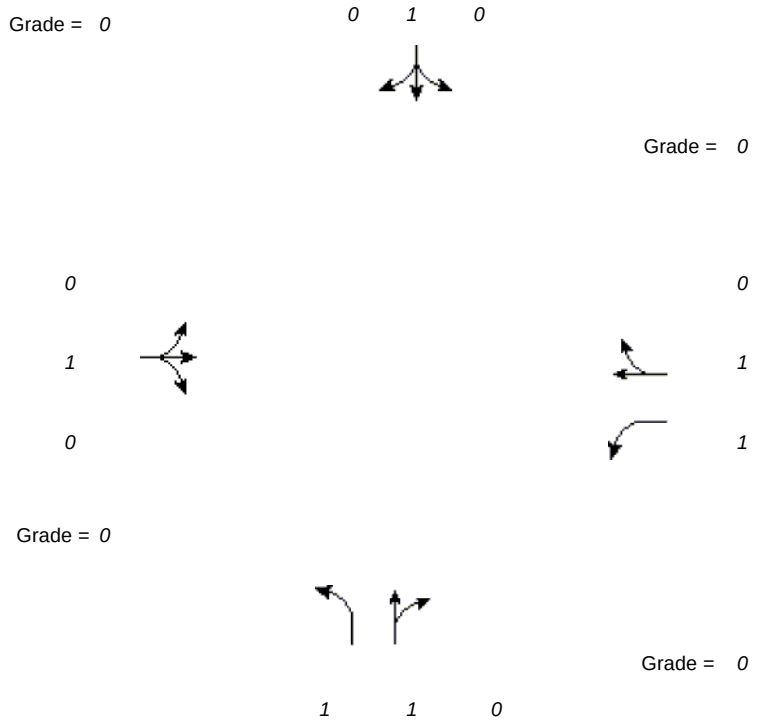
Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group		*LTR*		*L*	*TR*		*L*	*TR*			*LTR*	
Init. queue/lane		*0.0*		*0.0*	*0.0*		*0.0*	*0.0*			*0.0*	
Flow rate/lane		*525*		*187*	*627*		*132*	*225*			*207*	
Satflow per lane		*1524*		*766*	*1793*		*1055*	*1577*			*1553*	
Capacity/lane		*635*		*448*	*747*		*264*	*394*			*388*	
Flow ratio		*0.34*		*0.24*	*0.35*		*0.13*	*0.14*			0.13	
v/c ratio		*0.83*		*0.42*	*0.84*		*0.50*	*0.57*			*0.53*	
I factor		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Platoon ratio		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
PF factor		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
Q_1		*7.8*		*1.3*	*9.4*		*1.9*	*3.3*			*3.0*	
k_B		*0.6*		*0.5*	*0.7*		*0.3*	*0.4*			*0.4*	
Q_2		*2.5*		*0.3*	*3.0*		*0.3*	*0.6*			*0.5*	
Q avg.		*10.3*		*1.7*	*12.4*		*2.2*	*3.9*			*3.5*	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$		*1.7*		*2.3*	*1.7*		*2.2*	*2.1*			*2.1*	
BOQ, $Q_{\%}$		*17.8*		*3.9*	*20.9*		*5.0*	*8.0*			*7.3*	
Queue Storage Ratio												
Q spacing		*25.0*		*25.0*	*25.0*		*25.0*	*25.0*			*25.0*	
Q storage		*0*		*0*	*0*		*0*	*0*			*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*2/24/2009*	Jurisdiction	*Trousdale County*
Time Period	*Existing PM*	Analysis Year	*2034*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*52*	*473*	*123*	*181*	*346*	*22*	*118*	*67*	*208*	*28*	*52*	*53*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Ext. eff. green		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Unit Extension		*3.0*		*3.0*	*3.0*		*3.0*	*3.0*			*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width		*11.0*		*12.0*	*11.0*		*11.0*	*11.0*			*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr		*0*		*0*	*0*		*0*	*0*			*0*	
Ped timing		*3.2*			*3.2*			*3.2*			*3.2*	

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *25.0*	G =	G =	G = *15.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*					Cycle Length C = *60.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*52*	*473*	*123*	*181*	*346*	*22*	*118*	*67*	*208*	*28*	*52*	*53*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Adj. Flow Rate	*58*	*526*	*137*	*201*	*384*	*24*	*131*	*74*	*231*	*31*	*58*	*59*
Lane Group		*LTR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate		*721*		*201*	*408*		*131*	*305*			*148*	
Prop. LT or RT	*0.080*	--	*0.190*	*0.000*	--	*0.059*	*0.000*	--	*0.757*	*0.209*	--	*0.399*

Saturation Flow Rate

Base satflow		*1900*		*1900*	*1900*		*1900*	*1900*			*1900*	
Num. of lanes	*0*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*	*0*	*1*	*0*
fW		*0.967*		*1.000*	*0.967*		*0.967*	*0.967*			*0.933*	
fHV		*0.990*		*0.980*	*0.980*		*0.980*	*0.980*			*0.990*	
fg		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fp		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fbb		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fa		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLU		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLT		*0.884*	--	*0.950*	*1.000*	--	*0.699*	*1.000*	--		*0.661*	--
Secondary fLT			--	*0.241*		--			--			--
fRT	--	*0.974*		--	*0.991*		--	*0.886*		--	*0.946*	
fLpb		*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--		*1.000*	--
fRpb	--	*1.000*		--	*1.000*		--	*1.000*		--	*1.000*	
Adj. satflow		*1565*		*1770*	*1785*		*1258*	*1596*			*1098*	
Sec. adj. satflow			--	*449*		--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB	WB		NB		SB
Lane group	*LTR*	*L*	*TR*	*L*	*TR*	*LTR*
Adj. flow rate	*721*	*201*	*408*	*131*	*305*	*148*
Satflow rate	*1565*	*1770*	*1785*	*1258*	*1596*	*1098*
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Green ratio	*0.42*	*0.58*	*0.42*	*0.25*	*0.25*	*0.25*
Lane group cap.	*652*	*373*	*744*	*315*	*399*	*275*
v/c ratio	*1.11*	*0.54*	*0.55*	*0.42*	*0.76*	*0.54*
Flow ratio	*0.46*		*0.23*	*0.10*	*0.19*	*0.13*
Crit. lane group	*Y*	*N*	*N*	*N*	*Y*	*N*
Sum flow ratios	*0.74*					
Lost time/cycle	*15.00*					
Critical v/c ratio	*0.98*					

Lane Group Capacity, Control Delay, and LOS Determination

	EB	WB		NB		SB
Lane group	*LTR*	*L*	*TR*	*L*	*TR*	*LTR*
Adj. flow rate	*721*	*201*	*408*	*131*	*305*	*148*
Lane group cap.	*652*	*373*	*744*	*315*	*399*	*275*
v/c ratio	*1.11*	*0.54*	*0.55*	*0.42*	*0.76*	*0.54*
Green ratio	*0.42*	*0.58*	*0.42*	*0.25*	*0.25*	*0.25*
Unif. delay d1	*17.5*	*9.3*	*13.2*	*18.8*	*20.9*	*19.5*
Delay factor k	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*
Increm. delay d2	*67.9*	*5.5*	*2.9*	*4.0*	*13.0*	*7.4*
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
Control delay	*85.4*	*14.8*	*16.1*	*22.8*	*33.9*	*26.9*
Lane group LOS	*F*	*B*	*B*	*C*	*C*	*C*
Apprch. delay	*85.4*	*15.7*		*30.6*		*26.9*
Approach LOS	*F*	*B*		*C*		*C*
Intersec. delay	*46.2*	Intersection LOS				*D*

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*60.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*18.55*		
Unopposed green intvl, g_u (s)		*11.45*		
Red time, r(s)		*25.0*		
Arrival rate, q_a (veh/s)		*0.06*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.33*		
X_{perm}		*0.45*		
X_{prot} (N/A for lagging left-turns)		*0.68*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.40*		
Queue at start of unsaturated green, Q_u		*1.04*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*9.3*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(s_p - q_s)} + g_q Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(s_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(s_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(s_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(s_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group		*LTR*		*L*	*TR*		*L*	*TR*			*LTR*	
Init. queue/lane		*0.0*		*0.0*	*0.0*		*0.0*	*0.0*			*0.0*	
Flow rate/lane		*721*		*201*	*408*		*131*	*305*			*148*	
Satflow per lane		*1565*		*638*	*1785*		*1258*	*1596*			*1098*	
Capacity/lane		*652*		*373*	*744*		*315*	*399*			*275*	
Flow ratio		*0.46*		*0.32*	*0.23*		*0.10*	*0.19*			0.13	
v/c ratio		*1.11*		*0.54*	*0.55*		*0.42*	*0.76*			*0.54*	
I factor		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Platoon ratio		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
PF factor		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
Q_1		*12.0*		*1.5*	*5.1*		*1.8*	*4.7*			*2.1*	
k_B		*0.6*		*0.4*	*0.7*		*0.4*	*0.5*			*0.3*	
Q_2		*13.0*		*0.5*	*0.8*		*0.3*	*1.3*			*0.4*	
Q avg.		*25.1*		*2.0*	*6.0*		*2.1*	*6.0*			*2.5*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$		*1.6*		*2.3*	*1.9*		*2.3*	*1.9*			*2.2*	
BOQ, $Q_{\%}$		*40.2*		*4.4*	*11.4*		*4.7*	*11.5*			*5.6*	

Queue Storage Ratio

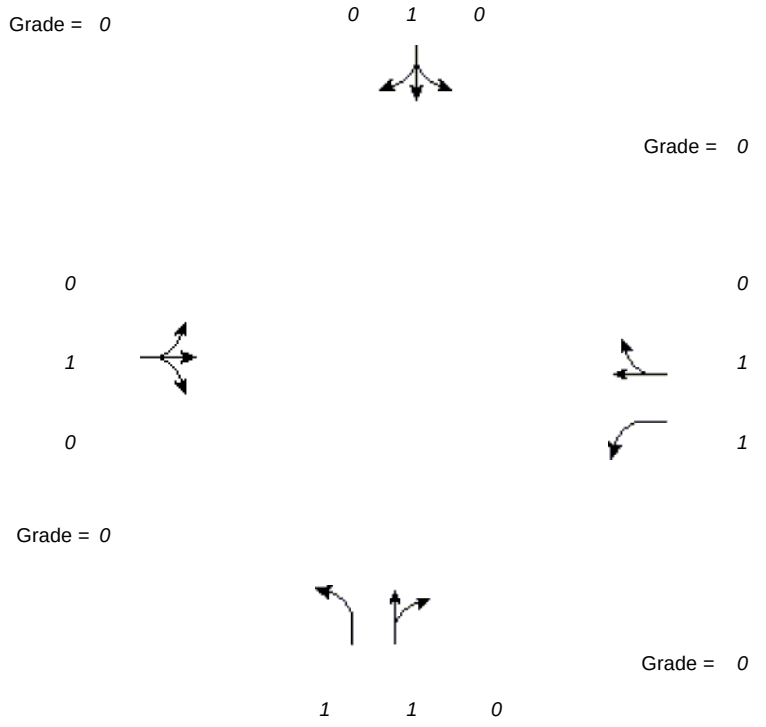
Q spacing		*25.0*		*25.0*	*25.0*		*25.0*	*25.0*			*25.0*	
Q storage		*0*		*0*	*0*		*0*	*0*			*0*	
Avg. R_Q												
95% $R_{Q\%}$												

EXISTING SYSTEM
WITH SITE DEVELOPMENT
(2014 & 2034)

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*3/09/2009*	Jurisdiction	*Trousdale County*
Time Period	*Existing+Site AM*	Analysis Year	*2014*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*78*	*321*	*102*	*156*	*547*	*66*	*132*	*63*	*154*	*40*	*64*	*124*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Ext. eff. green		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Unit Extension		*3.0*		*3.0*	*3.0*		*3.0*	*3.0*			*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width		*11.0*		*12.0*	*11.0*		*11.0*	*11.0*			*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr		*0*		*0*	*0*		*0*	*0*			*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *25.0*	G =	G =	G = *15.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*					Cycle Length C = *60.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	78	321	102	156	547	66	132	63	154	40	64	124
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow Rate	87	357	113	173	608	73	147	70	171	44	71	138
Lane Group		LTR		L	TR		L	TR			LTR	
Adj. flow rate		557		173	681		147	241			253	
Prop. LT or RT	0.156	--	0.203	0.000	--	0.107	0.000	--	0.710	0.174	--	0.545

Saturation Flow Rate

Base satflow		1900		1900	1900		1900	1900			1900	
Num. of lanes	0	1	0	1	1	0	1	1	0	0	1	0
fW		0.967		1.000	0.967		0.967	0.967			0.933	
fHV		0.990		0.980	0.980		0.980	0.980			0.990	
fg		1.000		1.000	1.000		1.000	1.000			1.000	
fp		1.000		1.000	1.000		1.000	1.000			1.000	
fbb		1.000		1.000	1.000		1.000	1.000			1.000	
fa		1.00		1.00	1.00		1.00	1.00			1.00	
fLU		1.00		1.00	1.00		1.00	1.00			1.00	
fLT		0.501	--	0.950	1.000	--	0.524	1.000	--		0.718	--
Secondary fLT			--	0.333		--			--			--
fRT	--	0.973		--	0.984		--	0.894		--	0.926	
fLpb		1.000	--	1.000	1.000	--	1.000	1.000	--		1.000	--
fRpb	--	1.000		--	1.000		--	1.000		--	1.000	
Adj. satflow		886		1770	1772		944	1609			1168	
Sec. adj. satflow			--	621		--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB	WB		NB		SB
Lane group	*LTR*	*L*	*TR*	*L*	*TR*	*LTR*
Adj. flow rate	*557*	*173*	*681*	*147*	*241*	*253*
Satflow rate	*886*	*1770*	*1772*	*944*	*1609*	*1168*
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Green ratio	*0.42*	*0.58*	*0.42*	*0.25*	*0.25*	*0.25*
Lane group cap.	*369*	*459*	*738*	*236*	*402*	*292*
v/c ratio	*1.51*	*0.38*	*0.92*	*0.62*	*0.60*	*0.87*
Flow ratio	*0.63*		*0.38*	*0.16*	*0.15*	*0.22*
Crit. lane group	*Y*	*N*	*N*	*N*	*N*	*Y*
Sum flow ratios	*0.93*					
Lost time/cycle	*15.00*					
Critical v/c ratio	*1.24*					

Lane Group Capacity, Control Delay, and LOS Determination

	EB	WB		NB		SB
Lane group	*LTR*	*L*	*TR*	*L*	*TR*	*LTR*
Adj. flow rate	*557*	*173*	*681*	*147*	*241*	*253*
Lane group cap.	*369*	*459*	*738*	*236*	*402*	*292*
v/c ratio	*1.51*	*0.38*	*0.92*	*0.62*	*0.60*	*0.87*
Green ratio	*0.42*	*0.58*	*0.42*	*0.25*	*0.25*	*0.25*
Unif. delay d1	*17.5*	*8.0*	*16.6*	*20.0*	*19.9*	*21.5*
Delay factor k	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*
Increm. delay d2	*242.9*	*2.4*	*18.9*	*11.8*	*6.5*	*27.5*
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
Control delay	*260.4*	*10.4*	*35.5*	*31.8*	*26.3*	*49.0*
Lane group LOS	*F*	*B*	*D*	*C*	*C*	*D*
Apprch. delay	*260.4*	*30.4*		*28.4*		*49.0*
Approach LOS	*F*	*C*		*C*		*D*
Intersec. delay	*94.7*	Intersection LOS				*F*

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*60.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*15.24*		
Unopposed green intvl, g_u (s)		*14.76*		
Red time, r(s)		*25.0*		
Arrival rate, q_a (veh/s)		*0.05*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.35*		
X_{perm}		*0.28*		
X_{prot} (N/A for lagging left-turns)		*0.59*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.20*		
Queue at start of unsaturated green, Q_u		*0.73*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*8.0*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(s_p - q_s)} + g_q Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(s_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(s_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(s_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(s_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

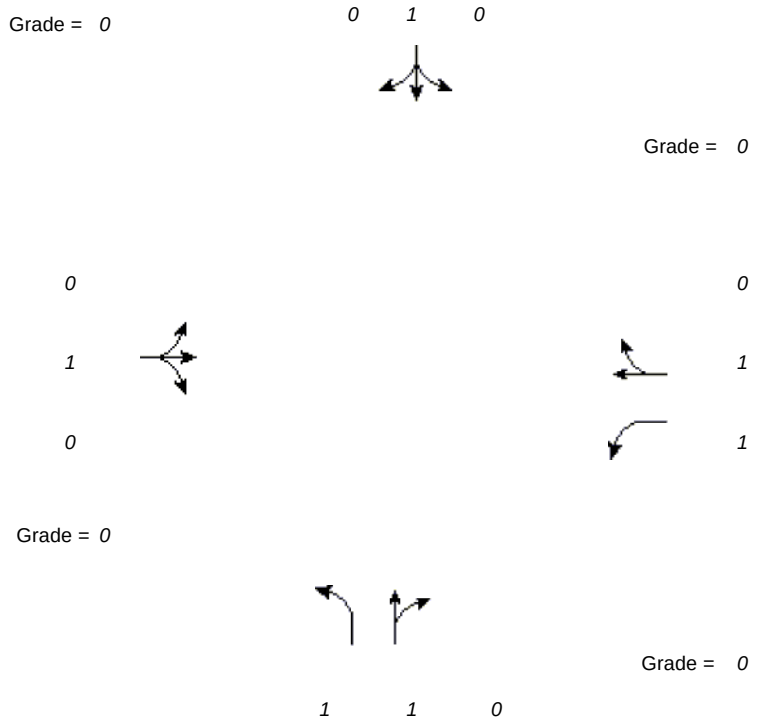
Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group		*LTR*		*L*	*TR*		*L*	*TR*			*LTR*	
Init. queue/lane		*0.0*		*0.0*	*0.0*		*0.0*	*0.0*			*0.0*	
Flow rate/lane		*557*		*173*	*681*		*147*	*241*			*253*	
Satflow per lane		*886*		*785*	*1772*		*944*	*1609*			*1168*	
Capacity/lane		*369*		*459*	*738*		*236*	*402*			*292*	
Flow ratio		*0.63*		*0.22*	*0.38*		*0.16*	*0.15*			0.22	
v/c ratio		*1.51*		*0.38*	*0.92*		*0.62*	*0.60*			*0.87*	
I factor		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Platoon ratio		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
PF factor		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
Q_1		*9.3*		*1.2*	*10.8*		*2.2*	*3.5*			*4.0*	
k_B		*0.4*		*0.5*	*0.7*		*0.3*	*0.5*			*0.4*	
Q_2		*24.7*		*0.3*	*4.9*		*0.5*	*0.7*			*1.7*	
Q avg.		*34.0*		*1.5*	*15.7*		*2.7*	*4.2*			*5.8*	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$		*1.6*		*2.3*	*1.6*		*2.2*	*2.0*			*1.9*	
BOQ, $Q_{\%}$		*54.4*		*3.6*	*25.8*		*5.8*	*8.5*			*11.1*	
Queue Storage Ratio												
Q spacing		*25.0*		*25.0*	*25.0*		*25.0*	*25.0*			*25.0*	
Q storage		*0*		*0*	*0*		*0*	*0*			*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*3/09/2009*	Jurisdiction	*Trousdale County*
Time Period	*Existing+Site PM*	Analysis Year	*2014*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*86*	*506*	*156*	*168*	*377*	*59*	*142*	*84*	*193*	*84*	*78*	*106*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Ext. eff. green		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Unit Extension		*3.0*		*3.0*	*3.0*		*3.0*	*3.0*			*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width		*11.0*		*12.0*	*11.0*		*11.0*	*11.0*			*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr		*0*		*0*	*0*		*0*	*0*			*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *25.0*	G =	G =	G = *15.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*					Cycle Length C = *60.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*86*	*506*	*156*	*168*	*377*	*59*	*142*	*84*	*193*	*84*	*78*	*106*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Adj. Flow Rate	*96*	*562*	*173*	*187*	*419*	*66*	*158*	*93*	*214*	*93*	*87*	*118*
Lane Group		*LTR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate		*831*		*187*	*485*		*158*	*307*			*298*	
Prop. LT or RT	*0.116*	--	*0.208*	*0.000*	--	*0.136*	*0.000*	--	*0.697*	*0.312*	--	*0.396*

Saturation Flow Rate

Base satflow		*1900*		*1900*	*1900*		*1900*	*1900*			*1900*	
Num. of lanes	*0*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*	*0*	*1*	*0*
fW		*0.967*		*1.000*	*0.967*		*0.967*	*0.967*			*0.933*	
fHV		*0.990*		*0.980*	*0.980*		*0.980*	*0.980*			*0.990*	
fg		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fp		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fbb		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fa		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLU		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLT		*0.659*	--	*0.950*	*1.000*	--	*0.499*	*1.000*	--		*0.384*	--
Secondary fLT			--	*0.220*		--			--			--
fRT	--	*0.972*		--	*0.980*		--	*0.895*		--	*0.947*	
fLpb		*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--		*1.000*	--
fRpb	--	*1.000*		--	*1.000*		--	*1.000*		--	*1.000*	
Adj. satflow		*1165*		*1770*	*1764*		*899*	*1612*			*638*	
Sec. adj. satflow			--	*411*		--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB		WB			NB			SB	
Lane group	*LTR*		*L*	*TR*		*L*	*TR*		*LTR*	
Adj. flow rate	*831*		*187*	*485*		*158*	*307*		*298*	
Satflow rate	*1165*		*1770*	*1764*		*899*	*1612*		*638*	
Lost time	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	
Green ratio	*0.42*		*0.58*	*0.42*		*0.25*	*0.25*		*0.25*	
Lane group cap.	*485*		*354*	*735*		*225*	*403*		*160*	
v/c ratio	*1.71*		*0.53*	*0.66*		*0.70*	*0.76*		*1.86*	
Flow ratio	*0.71*			*0.27*		*0.18*	*0.19*		*0.47*	
Crit. lane group	*Y*		*N*	*N*		*N*	*N*		*Y*	
Sum flow ratios	*1.26*									
Lost time/cycle	*15.00*									
Critical v/c ratio	*1.69*									

Lane Group Capacity, Control Delay, and LOS Determination

	EB		WB			NB			SB	
Lane group	*LTR*		*L*	*TR*		*L*	*TR*		*LTR*	
Adj. flow rate	*831*		*187*	*485*		*158*	*307*		*298*	
Lane group cap.	*485*		*354*	*735*		*225*	*403*		*160*	
v/c ratio	*1.71*		*0.53*	*0.66*		*0.70*	*0.76*		*1.86*	
Green ratio	*0.42*		*0.58*	*0.42*		*0.25*	*0.25*		*0.25*	
Unif. delay d1	*17.5*		*10.0*	*14.1*		*20.5*	*20.8*		*22.5*	
Delay factor k	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	
Increm. delay d2	*329.7*		*5.5*	*4.6*		*16.8*	*12.8*		*411.1*	
PF factor	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	
Control delay	*347.2*		*15.5*	*18.7*		*37.2*	*33.6*		*433.6*	
Lane group LOS	*F*		*B*	*B*		*D*	*C*		*F*	
Apprch. delay	*347.2*		*17.8*			*34.8*			*433.6*	
Approach LOS	*F*		*B*			*C*			*F*	
Intersec. delay	*196.8*		Intersection LOS						*F*	

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*60.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*20.67*		
Unopposed green intvl, g_u (s)		*9.33*		
Red time, r(s)		*25.0*		
Arrival rate, q_a (veh/s)		*0.05*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.37*		
X_{perm}		*0.45*		
X_{prot} (N/A for lagging left-turns)		*0.63*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.30*		
Queue at start of unsaturated green, Q_u		*1.07*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*10.0*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(S_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

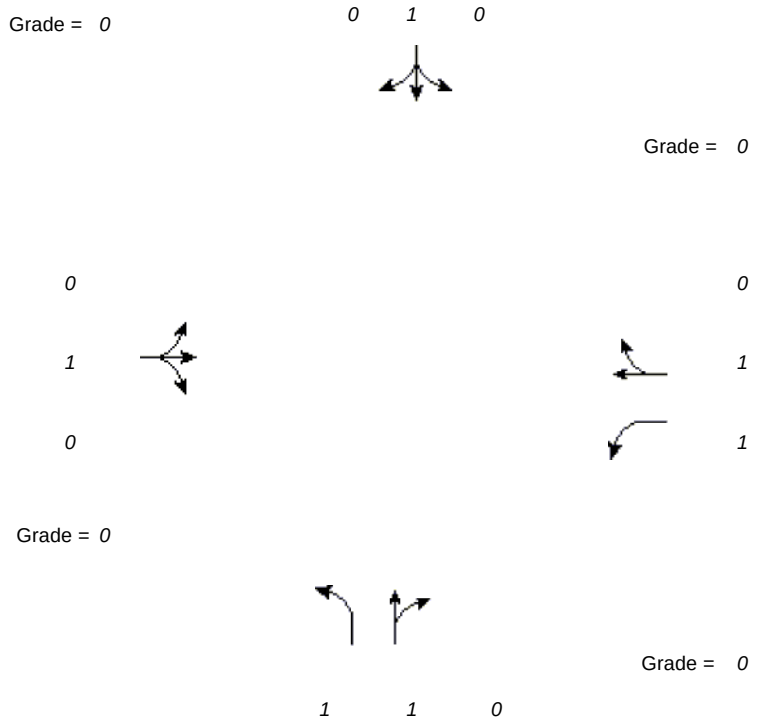
Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group		*LTR*		*L*	*TR*		*L*	*TR*			*LTR*	
Init. queue/lane		*0.0*		*0.0*	*0.0*		*0.0*	*0.0*			*0.0*	
Flow rate/lane		*831*		*187*	*485*		*158*	*307*			*298*	
Satflow per lane		*1165*		*605*	*1764*		*899*	*1612*			*638*	
Capacity/lane		*485*		*354*	*735*		*225*	*403*			*160*	
Flow ratio		*0.71*		*0.31*	*0.27*		*0.18*	*0.19*			0.47	
v/c ratio		*1.71*		*0.53*	*0.66*		*0.70*	*0.76*			*1.86*	
I factor		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Platoon ratio		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
PF factor		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
Q_1		*13.9*		*1.4*	*6.5*		*2.4*	*4.7*			*5.0*	
k_B		*0.5*		*0.4*	*0.7*		*0.3*	*0.5*			*0.2*	
Q_2		*44.5*		*0.5*	*1.3*		*0.7*	*1.3*			*17.7*	
Q avg.		*58.3*		*1.8*	*7.8*		*3.1*	*6.1*			*22.7*	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$		*1.6*		*2.3*	*1.8*		*2.1*	*1.9*			*1.6*	
BOQ, $Q_{\%}$		*93.3*		*4.2*	*14.1*		*6.5*	*11.5*			*36.6*	
Queue Storage Ratio												
Q spacing		*25.0*		*25.0*	*25.0*		*25.0*	*25.0*			*25.0*	
Q storage		*0*		*0*	*0*		*0*	*0*			*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*3/30/2009*	Jurisdiction	*Trousdale County*
Time Period	*Existing+Site AM*	Analysis Year	*2034*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*81*	*354*	*112*	*168*	*588*	*68*	*141*	*65*	*167*	*42*	*73*	*140*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Ext. eff. green		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Unit Extension		*3.0*		*3.0*	*3.0*		*3.0*	*3.0*			*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width		*11.0*		*12.0*	*11.0*		*11.0*	*11.0*			*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr		*0*		*0*	*0*		*0*	*0*			*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *25.0*	G =	G =	G = *15.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*					Cycle Length C = *60.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*81*	*354*	*112*	*168*	*588*	*68*	*141*	*65*	*167*	*42*	*73*	*140*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Adj. Flow Rate	*90*	*393*	*124*	*187*	*653*	*76*	*157*	*72*	*186*	*47*	*81*	*156*
Lane Group		*LTR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate		*607*		*187*	*729*		*157*	*258*			*284*	
Prop. LT or RT	*0.148*	--	*0.204*	*0.000*	--	*0.104*	*0.000*	--	*0.721*	*0.165*	--	*0.549*

Saturation Flow Rate

Base satflow		*1900*		*1900*	*1900*		*1900*	*1900*			*1900*	
Num. of lanes	*0*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*	*0*	*1*	*0*
fW		*0.967*		*1.000*	*0.967*		*0.967*	*0.967*			*0.933*	
fHV		*0.990*		*0.980*	*0.980*		*0.980*	*0.980*			*0.990*	
fg		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fp		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fbb		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fa		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLU		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLT		*0.461*	--	*0.950*	*1.000*	--	*0.480*	*1.000*	--		*0.669*	--
Secondary fLT			--	*0.309*		--			--			--
fRT	--	*0.972*		--	*0.984*		--	*0.892*		--	*0.926*	
fLpb		*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--		*1.000*	--
fRpb	--	*1.000*		--	*1.000*		--	*1.000*		--	*1.000*	
Adj. satflow		*815*		*1770*	*1772*		*864*	*1606*			*1088*	
Sec. adj. satflow			--	*576*		--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB		WB			NB			SB	
Lane group	*LTR*		*L*	*TR*		*L*	*TR*		*LTR*	
Adj. flow rate	*607*		*187*	*729*		*157*	*258*		*284*	
Satflow rate	*815*		*1770*	*1772*		*864*	*1606*		*1088*	
Lost time	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	
Green ratio	*0.42*		*0.58*	*0.42*		*0.25*	*0.25*		*0.25*	
Lane group cap.	*340*		*436*	*738*		*216*	*402*		*272*	
v/c ratio	*1.79*		*0.43*	*0.99*		*0.73*	*0.64*		*1.04*	
Flow ratio	*0.74*			*0.41*		*0.18*	*0.16*		*0.26*	
Crit. lane group	*Y*		*N*	*N*		*N*	*N*		*Y*	
Sum flow ratios	*1.09*									
Lost time/cycle	*15.00*									
Critical v/c ratio	*1.45*									

Lane Group Capacity, Control Delay, and LOS Determination

	EB		WB			NB			SB	
Lane group	*LTR*		*L*	*TR*		*L*	*TR*		*LTR*	
Adj. flow rate	*607*		*187*	*729*		*157*	*258*		*284*	
Lane group cap.	*340*		*436*	*738*		*216*	*402*		*272*	
v/c ratio	*1.79*		*0.43*	*0.99*		*0.73*	*0.64*		*1.04*	
Green ratio	*0.42*		*0.58*	*0.42*		*0.25*	*0.25*		*0.25*	
Unif. delay d1	*17.5*		*8.4*	*17.3*		*20.6*	*20.1*		*22.5*	
Delay factor k	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	
Increm. delay d2	*365.0*		*3.1*	*30.3*		*19.2*	*7.7*		*66.6*	
PF factor	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	
Control delay	*382.5*		*11.5*	*47.6*		*39.8*	*27.8*		*89.1*	
Lane group LOS	*F*		*B*	*D*		*D*	*C*		*F*	
Apprch. delay	*382.5*		*40.3*			*32.3*			*89.1*	
Approach LOS	*F*		*D*			*C*			*F*	
Intersec. delay	*138.5*		Intersection LOS						*F*	

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*60.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*16.27*		
Unopposed green intvl, g_u (s)		*13.73*		
Red time, r(s)		*25.0*		
Arrival rate, q_a (veh/s)		*0.05*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.35*		
X_{perm}		*0.32*		
X_{prot} (N/A for lagging left-turns)		*0.63*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.30*		
Queue at start of unsaturated green, Q_u		*0.85*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*8.4*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(S_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group		*LTR*		*L*	*TR*		*L*	*TR*			*LTR*	
Init. queue/lane		*0.0*		*0.0*	*0.0*		*0.0*	*0.0*			*0.0*	
Flow rate/lane		*607*		*187*	*729*		*157*	*258*			*284*	
Satflow per lane		*815*		*747*	*1772*		*864*	*1606*			*1088*	
Capacity/lane		*340*		*436*	*738*		*216*	*402*			*272*	
Flow ratio		*0.74*		*0.25*	*0.41*		*0.18*	*0.16*			0.26	
v/c ratio		*1.79*		*0.43*	*0.99*		*0.73*	*0.64*			*1.04*	
I factor		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Platoon ratio		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
PF factor		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
Q_1		*10.1*		*1.3*	*12.0*		*2.4*	*3.8*			*4.7*	
k_B		*0.4*		*0.5*	*0.7*		*0.3*	*0.5*			*0.3*	
Q_2		*34.3*		*0.4*	*7.4*		*0.7*	*0.8*			*4.3*	
Q avg.		*44.4*		*1.7*	*19.5*		*3.1*	*4.6*			*9.1*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$		*1.6*		*2.3*	*1.6*		*2.1*	*2.0*			*1.8*	
BOQ, $Q_{\%}$		*71.0*		*3.9*	*31.5*		*6.6*	*9.2*			*16.0*	

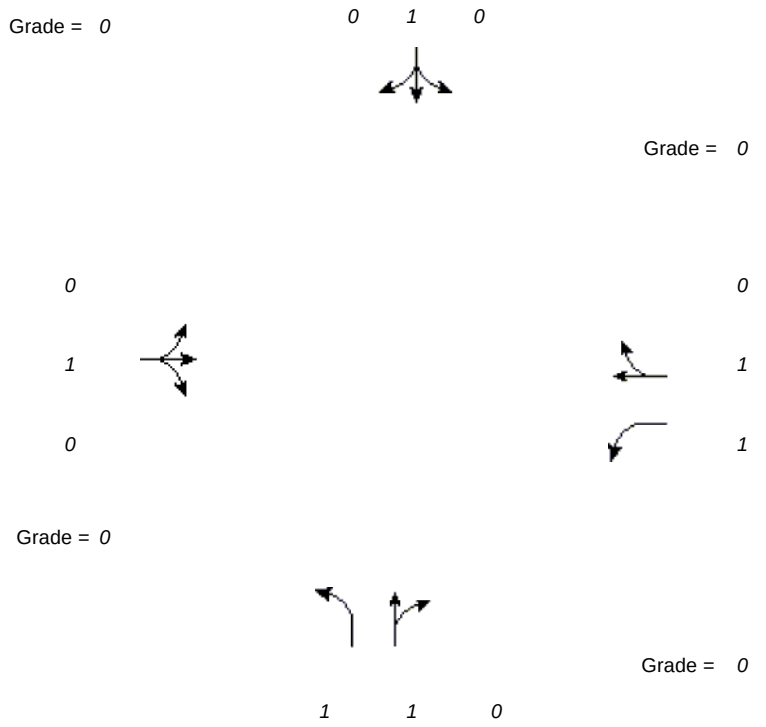
Queue Storage Ratio

Q spacing		*25.0*		*25.0*	*25.0*		*25.0*	*25.0*			*25.0*	
Q storage		*0*		*0*	*0*		*0*	*0*			*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*3/30/2009*	Jurisdiction	*Trousdale County*
Time Period	*Existing+Site PM*	Analysis Year	*2034*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*91*	*552*	*168*	*181*	*403*	*61*	*151*	*89*	*208*	*88*	*86*	*113*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Ext. eff. green		*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Unit Extension		*3.0*		*3.0*	*3.0*		*3.0*	*3.0*			*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width		*11.0*		*12.0*	*11.0*		*11.0*	*11.0*			*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr		*0*		*0*	*0*		*0*	*0*			*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *25.0*	G =	G =	G = *15.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*					Cycle Length C = *60.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*91*	*552*	*168*	*181*	*403*	*61*	*151*	*89*	*208*	*88*	*86*	*113*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Adj. Flow Rate	*101*	*613*	*187*	*201*	*448*	*68*	*168*	*99*	*231*	*98*	*96*	*126*
Lane Group		*LTR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate		*901*		*201*	*516*		*168*	*330*			*320*	
Prop. LT or RT	*0.112*	--	*0.208*	*0.000*	--	*0.132*	*0.000*	--	*0.700*	*0.306*	--	*0.394*

Saturation Flow Rate

Base satflow		*1900*		*1900*	*1900*		*1900*	*1900*			*1900*	
Num. of lanes	*0*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*	*0*	*1*	*0*
fW		*0.967*		*1.000*	*0.967*		*0.967*	*0.967*			*0.933*	
fHV		*0.990*		*0.980*	*0.980*		*0.980*	*0.980*			*0.990*	
fg		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fp		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fbb		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fa		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLU		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLT		*0.621*	--	*0.950*	*1.000*	--	*0.476*	*1.000*	--		*0.344*	--
Secondary fLT			--	*0.201*		--			--			--
fRT	--	*0.972*		--	*0.980*		--	*0.895*		--	*0.947*	
fLpb		*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--		*1.000*	--
fRpb	--	*1.000*		--	*1.000*		--	*1.000*		--	*1.000*	
Adj. satflow		*1098*		*1770*	*1765*		*857*	*1612*			*572*	
Sec. adj. satflow			--	*374*		--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB	WB			NB			SB	
Lane group	*LTR*	*L*	*TR*		*L*	*TR*		*LTR*	
Adj. flow rate	*901*	*201*	*516*		*168*	*330*		*320*	
Satflow rate	*1098*	*1770*	*1765*		*857*	*1612*		*572*	
Lost time	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	
Green ratio	*0.42*	*0.58*	*0.42*		*0.25*	*0.25*		*0.25*	
Lane group cap.	*457*	*335*	*735*		*214*	*403*		*143*	
v/c ratio	*1.97*	*0.60*	*0.70*		*0.79*	*0.82*		*2.24*	
Flow ratio	*0.82*		*0.29*		*0.20*	*0.20*		*0.56*	
Crit. lane group	*Y*	*N*	*N*		*N*	*N*		*Y*	
Sum flow ratios	*1.46*								
Lost time/cycle	*15.00*								
Critical v/c ratio	*1.95*								

Lane Group Capacity, Control Delay, and LOS Determination

	EB	WB			NB			SB	
Lane group	*LTR*	*L*	*TR*		*L*	*TR*		*LTR*	
Adj. flow rate	*901*	*201*	*516*		*168*	*330*		*320*	
Lane group cap.	*457*	*335*	*735*		*214*	*403*		*143*	
v/c ratio	*1.97*	*0.60*	*0.70*		*0.79*	*0.82*		*2.24*	
Green ratio	*0.42*	*0.58*	*0.42*		*0.25*	*0.25*		*0.25*	
Unif. delay d1	*17.5*	*10.6*	*14.4*		*21.0*	*21.2*		*22.5*	
Delay factor k	*0.50*	*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	
Increm. delay d2	*445.1*	*7.7*	*5.5*		*24.5*	*16.7*		*578.9*	
PF factor	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	
Control delay	*462.6*	*18.3*	*20.0*		*45.5*	*38.0*		*601.4*	
Lane group LOS	*F*	*B*	*B*		*D*	*D*		*F*	
Apprch. delay	*462.6*	*19.5*			*40.5*			*601.4*	
Approach LOS	*F*	*B*			*D*			*F*	
Intersec. delay	*264.1*	Intersection LOS						*F*	

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*60.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*21.99*		
Unopposed green intvl, g_u (s)		*8.01*		
Red time, r(s)		*25.0*		
Arrival rate, q_a (veh/s)		*0.06*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.39*		
X_{perm}		*0.54*		
X_{prot} (N/A for lagging left-turns)		*0.68*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.40*		
Queue at start of unsaturated green, Q_u		*1.23*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*10.6*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(S_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group		*LTR*		*L*	*TR*		*L*	*TR*			*LTR*	
Init. queue/lane		*0.0*		*0.0*	*0.0*		*0.0*	*0.0*			*0.0*	
Flow rate/lane		*901*		*201*	*516*		*168*	*330*			*320*	
Satflow per lane		*1098*		*573*	*1765*		*857*	*1612*			*572*	
Capacity/lane		*457*		*335*	*735*		*214*	*403*			*143*	
Flow ratio		*0.82*		*0.35*	*0.29*		*0.20*	*0.20*			0.56	
v/c ratio		*1.97*		*0.60*	*0.70*		*0.79*	*0.82*			*2.24*	
I factor		*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Arrival type		*3*		*3*	*3*		*3*	*3*			*3*	
Platoon ratio		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
PF factor		*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
Q_1		*15.0*		*1.5*	*7.1*		*2.6*	*5.2*			*5.3*	
k_B		*0.5*		*0.4*	*0.7*		*0.3*	*0.5*			*0.2*	
Q_2		*56.5*		*0.6*	*1.5*		*0.9*	*1.7*			*22.5*	
Q avg.		*71.5*		*2.0*	*8.6*		*3.5*	*6.9*			*27.8*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$		*1.6*		*2.3*	*1.8*		*2.1*	*1.9*			*1.6*	
BOQ, $Q_{\%}$		*114*		*4.6*	*15.4*		*7.4*	*12.8*			*44.7*	

Queue Storage Ratio

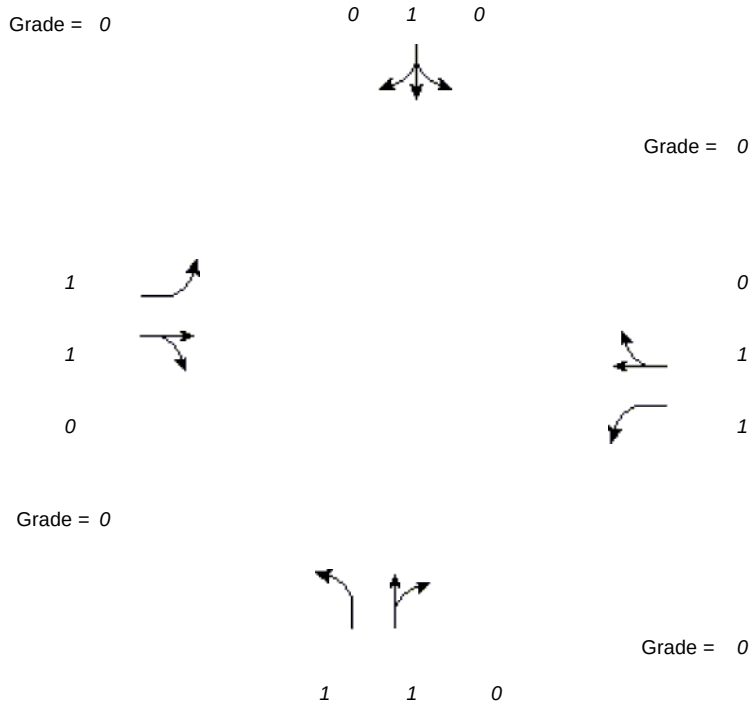
Q spacing		*25.0*		*25.0*	*25.0*		*25.0*	*25.0*			*25.0*	
Q storage		*0*		*0*	*0*		*0*	*0*			*0*	
Avg. R_Q												
95% $R_{Q\%}$												

PROPOSED SYSTEM
(2014 & 2034)

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*3/30/2009*	Jurisdiction	*Trousdale County*
Time Period	*Proposed Concept 1 AM*	Analysis Year	*2014*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*25*	*307*	*94*	*156*	*508*	*13*	*110*	*33*	*154*	*13*	*49*	*97*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*			*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*			*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width	*12.0*	*11.0*		*12.0*	*11.0*		*11.0*	*11.0*			*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*			*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *25.0*	G =	G =	G = *15.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =

Duration of Analysis (hrs) = *0.25* | Cycle Length C = *60.0*

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*25*	*307*	*94*	*156*	*508*	*13*	*110*	*33*	*154*	*13*	*49*	*97*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Adj. Flow Rate	*28*	*341*	*104*	*173*	*564*	*14*	*122*	*37*	*171*	*14*	*54*	*108*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate	*28*	*445*		*173*	*578*		*122*	*208*			*176*	
Prop. LT or RT	*0.000*	*--*	*0.234*	*0.000*	*--*	*0.024*	*0.000*	*--*	*0.822*	*0.080*	*--*	*0.614*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*		*1900*	*1900*			*1900*	
Num. of lanes	*1*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*	*0*	*1*	*0*
fW	*1.000*	*0.967*		*1.000*	*0.967*		*0.967*	*0.967*			*0.933*	
fHV	*0.990*	*0.990*		*0.980*	*0.980*		*0.980*	*0.980*			*0.990*	
fg	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fa	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLU	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLT	*0.240*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.642*	*1.000*	*--*		*0.968*	*--*
Secondary fLT			*--*	*0.312*		*--*			*--*			*--*
fRT	*--*	*0.965*		*--*	*0.996*		*--*	*0.877*		*--*	*0.917*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*		*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*		*--*	*1.000*		*--*	*1.000*	
Adj. satflow	*452*	*1755*		*1770*	*1794*		*1156*	*1579*			*1558*	
Sec. adj. satflow			*--*	*580*		*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate	*28*	*445*		*173*	*578*		*122*	*208*			*176*	
Satflow rate	*452*	*1755*		*1770*	*1794*		*1156*	*1579*			*1558*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Green ratio	*0.42*	*0.42*		*0.58*	*0.42*		*0.25*	*0.25*			*0.25*	
Lane group cap.	*188*	*731*		*438*	*747*		*289*	*395*			*390*	
v/c ratio	*0.15*	*0.61*		*0.39*	*0.77*		*0.42*	*0.53*			*0.45*	
Flow ratio	*0.06*	*0.25*			*0.32*		*0.11*	*0.13*			*0.11*	
Crit. lane group	*N*	*N*		*N*	*Y*		*N*	*Y*			*N*	
Sum flow ratios	*0.54*											
Lost time/cycle	*15.00*											
Critical v/c ratio	*0.72*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate	*28*	*445*		*173*	*578*		*122*	*208*			*176*	
Lane group cap.	*188*	*731*		*438*	*747*		*289*	*395*			*390*	
v/c ratio	*0.15*	*0.61*		*0.39*	*0.77*		*0.42*	*0.53*			*0.45*	
Green ratio	*0.42*	*0.42*		*0.58*	*0.42*		*0.25*	*0.25*			*0.25*	
Unif. delay d1	*10.9*	*13.7*		*7.1*	*15.1*		*18.9*	*19.4*			*19.0*	
Delay factor k	*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*			*0.50*	
Increm. delay d2	*1.7*	*3.8*		*2.7*	*7.7*		*4.5*	*5.0*			*3.7*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Control delay	*12.6*	*17.4*		*9.8*	*22.7*		*23.3*	*24.4*			*22.8*	
Lane group LOS	*B*	*B*		*A*	*C*		*C*	*C*			*C*	
Apprch. delay	*17.1*			*19.7*			*24.0*			*22.8*		
Approach LOS	*B*			*B*			*C*			*C*		
Intersec. delay	*20.2*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*60.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*11.49*		
Unopposed green intvl, g_u (s)		*18.51*		
Red time, r(s)		*25.0*		
Arrival rate, q_a (veh/s)		*0.05*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.26*		
X_{perm}		*0.30*		
X_{prot} (N/A for lagging left-turns)		*0.59*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.20*		
Queue at start of unsaturated green, Q_u		*0.55*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*7.1*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(s_p - q_s)} + g_q Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(s_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(s_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(s_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(s_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*			*0.0*	
Flow rate/lane	*28*	*445*		*173*	*578*		*122*	*208*			*176*	
Satflow per lane	*452*	*1755*		*750*	*1794*		*1156*	*1579*			*1558*	
Capacity/lane	*188*	*731*		*438*	*747*		*289*	*395*			*390*	
Flow ratio	*0.06*	*0.25*		*0.23*	*0.32*		*0.11*	*0.13*			0.11	
v/c ratio	*0.15*	*0.61*		*0.39*	*0.77*		*0.42*	*0.53*			*0.45*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*			*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
Q_1	*0.3*	*5.8*		*1.2*	*8.3*		*1.7*	*3.0*			*2.5*	
k_B	*0.3*	*0.7*		*0.5*	*0.7*		*0.4*	*0.4*			*0.4*	
Q_2	*0.0*	*1.0*		*0.3*	*2.2*		*0.3*	*0.5*			*0.4*	
Q avg.	*0.3*	*6.8*		*1.6*	*10.5*		*2.0*	*3.5*			*2.8*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.5*	*1.9*		*2.3*	*1.7*		*2.3*	*2.1*			*2.2*	
BOQ, $Q_{\%}$	*0.9*	*12.7*		*3.6*	*18.0*		*4.5*	*7.3*			*6.2*	

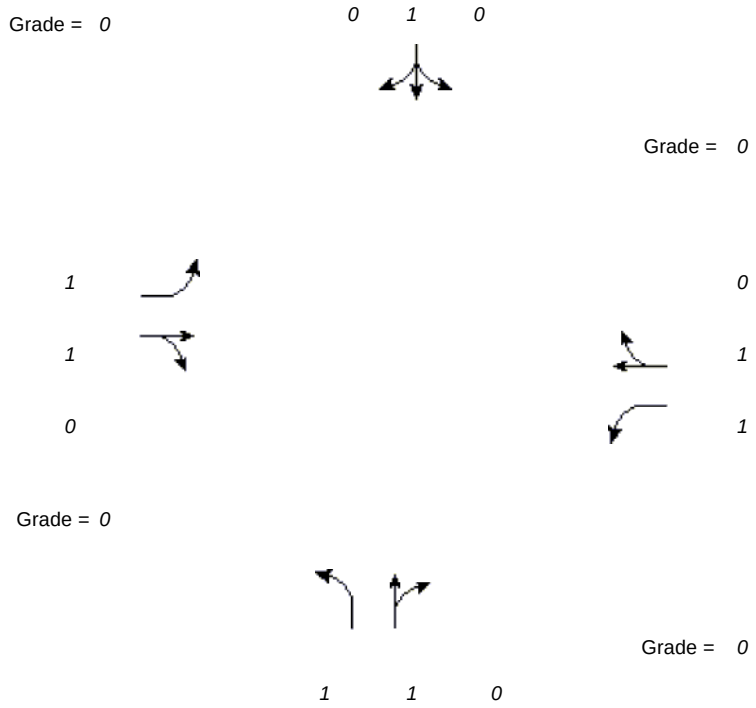
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*			*25.0*	
Q storage	*0*	*0*		*0*	*0*		*0*	*0*			*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*3/30/2009*	Jurisdiction	*Trousdale County*
Time Period	*Proposed Concept 1 PM*	Analysis Year	*2014*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*47*	*427*	*111*	*168*	*320*	*20*	*109*	*62*	*193*	*24*	*44*	*46*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*			*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*			*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width	*12.0*	*11.0*		*12.0*	*11.0*		*11.0*	*11.0*			*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*			*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *25.0*	G =	G =	G = *15.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =

Duration of Analysis (hrs) = *0.25* | Cycle Length C = *60.0*

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*47*	*427*	*111*	*168*	*320*	*20*	*109*	*62*	*193*	*24*	*44*	*46*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Adj. Flow Rate	*52*	*474*	*123*	*187*	*356*	*22*	*121*	*69*	*214*	*27*	*49*	*51*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate	*52*	*597*		*187*	*378*		*121*	*283*			*127*	
Prop. LT or RT	*0.000*	--	*0.206*	*0.000*	--	*0.058*	*0.000*	--	*0.756*	*0.213*	--	*0.402*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*		*1900*	*1900*			*1900*	
Num. of lanes	*1*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*	*0*	*1*	*0*
fW	*1.000*	*0.967*		*1.000*	*0.967*		*0.967*	*0.967*			*0.933*	
fHV	*0.990*	*0.990*		*0.980*	*0.980*		*0.980*	*0.980*			*0.990*	
fg	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fa	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLU	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLT	*0.445*	*1.000*	--	*0.950*	*1.000*	--	*0.707*	*1.000*	--		*0.733*	--
Secondary fLT			--	*0.185*		--			--			--
fRT	--	*0.969*		--	*0.991*		--	*0.887*		--	*0.946*	
fLpb	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--		*1.000*	--
fRpb	--	*1.000*		--	*1.000*		--	*1.000*		--	*1.000*	
Adj. satflow	*837*	*1762*		*1770*	*1785*		*1273*	*1596*			*1218*	
Sec. adj. satflow			--	*344*		--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate	*52*	*597*		*187*	*378*		*121*	*283*			*127*	
Satflow rate	*837*	*1762*		*1770*	*1785*		*1273*	*1596*			*1218*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Green ratio	*0.42*	*0.42*		*0.58*	*0.42*		*0.25*	*0.25*			*0.25*	
Lane group cap.	*349*	*734*		*320*	*744*		*318*	*399*			*305*	
v/c ratio	*0.15*	*0.81*		*0.58*	*0.51*		*0.38*	*0.71*			*0.42*	
Flow ratio	*0.06*	*0.34*			*0.21*		*0.10*	*0.18*			*0.10*	
Crit. lane group	*N*	*Y*		*N*	*N*		*N*	*Y*			*N*	
Sum flow ratios	*0.60*											
Lost time/cycle	*15.00*											
Critical v/c ratio	*0.80*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate	*52*	*597*		*187*	*378*		*121*	*283*			*127*	
Lane group cap.	*349*	*734*		*320*	*744*		*318*	*399*			*305*	
v/c ratio	*0.15*	*0.81*		*0.58*	*0.51*		*0.38*	*0.71*			*0.42*	
Green ratio	*0.42*	*0.42*		*0.58*	*0.42*		*0.25*	*0.25*			*0.25*	
Unif. delay d1	*10.9*	*15.4*		*9.1*	*12.9*		*18.6*	*20.5*			*18.8*	
Delay factor k	*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*			*0.50*	
Increm. delay d2	*0.9*	*9.6*		*7.6*	*2.5*		*3.4*	*10.2*			*4.1*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Control delay	*11.8*	*25.0*		*16.7*	*15.4*		*22.1*	*30.7*			*23.0*	
Lane group LOS	*B*	*C*		*B*	*B*		*C*	*C*			*C*	
Apprch. delay	*24.0*			*15.8*			*28.1*			*23.0*		
Approach LOS	*C*			*B*			*C*			*C*		
Intersec. delay	*22.2*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*60.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*17.37*		
Unopposed green intvl, g_u (s)		*12.63*		
Red time, r(s)		*25.0*		
Arrival rate, q_a (veh/s)		*0.05*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.23*		
X_{perm}		*0.54*		
X_{prot} (N/A for lagging left-turns)		*0.63*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.30*		
Queue at start of unsaturated green, Q_u		*0.90*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*9.1*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(s_p - q_s)} + g_q Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(s_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(s_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(s_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(s_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*			*0.0*	
Flow rate/lane	*52*	*597*		*187*	*378*		*121*	*283*			*127*	
Satflow per lane	*837*	*1762*		*548*	*1785*		*1273*	*1596*			*1218*	
Capacity/lane	*349*	*734*		*320*	*744*		*318*	*399*			*305*	
Flow ratio	*0.06*	*0.34*		*0.34*	*0.21*		*0.10*	*0.18*			0.10	
v/c ratio	*0.15*	*0.81*		*0.58*	*0.51*		*0.38*	*0.71*			*0.42*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*			*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
Q_1	*0.5*	*8.8*		*1.4*	*4.7*		*1.7*	*4.3*			*1.8*	
k_B	*0.4*	*0.7*		*0.4*	*0.7*		*0.4*	*0.5*			*0.4*	
Q_2	*0.1*	*2.6*		*0.5*	*0.7*		*0.2*	*1.0*			*0.3*	
Q avg.	*0.6*	*11.4*		*1.9*	*5.4*		*1.9*	*5.3*			*2.0*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.5*	*1.7*		*2.3*	*1.9*		*2.3*	*1.9*			*2.3*	
BOQ, $Q_{\%}$	*1.5*	*19.4*		*4.3*	*10.4*		*4.4*	*10.4*			*4.6*	

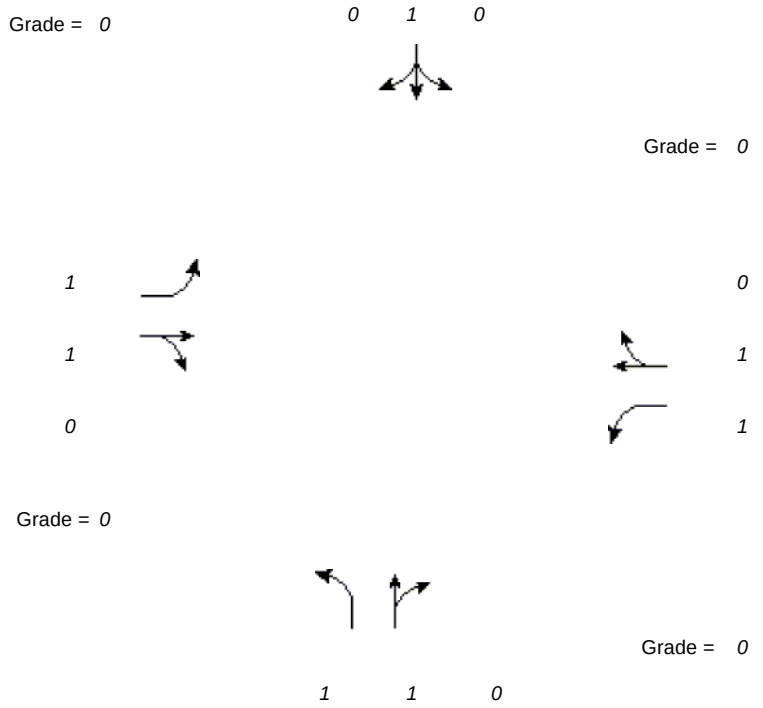
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*			*25.0*	
Q storage	*0*	*0*		*0*	*0*		*0*	*0*			*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*3/30/2009*	Jurisdiction	*Trousdale County*
Time Period	*Proposed Concept 1 AM*	Analysis Year	*2034*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*28*	*340*	*104*	*168*	*549*	*15*	*119*	*35*	*167*	*15*	*58*	*113*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*			*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*			*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width	*12.0*	*11.0*		*12.0*	*11.0*		*11.0*	*11.0*			*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*			*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *25.0*	G =	G =	G = *15.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =

Duration of Analysis (hrs) = *0.25* | Cycle Length C = *60.0*

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*28*	*340*	*104*	*168*	*549*	*15*	*119*	*35*	*167*	*15*	*58*	*113*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Adj. Flow Rate	*31*	*378*	*116*	*187*	*610*	*17*	*132*	*39*	*186*	*17*	*64*	*126*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate	*31*	*494*		*187*	*627*		*132*	*225*			*207*	
Prop. LT or RT	*0.000*	*--*	*0.235*	*0.000*	*--*	*0.027*	*0.000*	*--*	*0.827*	*0.082*	*--*	*0.609*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*		*1900*	*1900*			*1900*	
Num. of lanes	*1*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*	*0*	*1*	*0*
fW	*1.000*	*0.967*		*1.000*	*0.967*		*0.967*	*0.967*			*0.933*	
fHV	*0.990*	*0.990*		*0.980*	*0.980*		*0.980*	*0.980*			*0.990*	
fg	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fa	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLU	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLT	*0.193*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.586*	*1.000*	*--*		*0.964*	*--*
Secondary fLT			*--*	*0.270*		*--*			*--*			*--*
fRT	*--*	*0.965*		*--*	*0.996*		*--*	*0.876*		*--*	*0.918*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*		*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*		*--*	*1.000*		*--*	*1.000*	
Adj. satflow	*363*	*1754*		*1770*	*1793*		*1055*	*1577*			*1553*	
Sec. adj. satflow			*--*	*502*		*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate	*31*	*494*		*187*	*627*		*132*	*225*			*207*	
Satflow rate	*363*	*1754*		*1770*	*1793*		*1055*	*1577*			*1553*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Green ratio	*0.42*	*0.42*		*0.58*	*0.42*		*0.25*	*0.25*			*0.25*	
Lane group cap.	*151*	*731*		*399*	*747*		*264*	*394*			*388*	
v/c ratio	*0.21*	*0.68*		*0.47*	*0.84*		*0.50*	*0.57*			*0.53*	
Flow ratio	*0.09*	*0.28*			*0.35*		*0.13*	*0.14*			*0.13*	
Crit. lane group	*N*	*N*		*N*	*Y*		*N*	*Y*			*N*	
Sum flow ratios	*0.58*											
Lost time/cycle	*15.00*											
Critical v/c ratio	*0.77*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate	*31*	*494*		*187*	*627*		*132*	*225*			*207*	
Lane group cap.	*151*	*731*		*399*	*747*		*264*	*394*			*388*	
v/c ratio	*0.21*	*0.68*		*0.47*	*0.84*		*0.50*	*0.57*			*0.53*	
Green ratio	*0.42*	*0.42*		*0.58*	*0.42*		*0.25*	*0.25*			*0.25*	
Unif. delay d1	*11.2*	*14.2*		*7.7*	*15.7*		*19.3*	*19.7*			*19.5*	
Delay factor k	*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*			*0.50*	
Increm. delay d2	*3.1*	*5.0*		*3.9*	*10.9*		*6.6*	*5.9*			*5.2*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Control delay	*14.2*	*19.2*		*11.6*	*26.6*		*25.9*	*25.6*			*24.6*	
Lane group LOS	*B*	*B*		*B*	*C*		*C*	*C*			*C*	
Apprch. delay	*18.9*			*23.2*			*25.7*			*24.6*		
Approach LOS	*B*			*C*			*C*			*C*		
Intersec. delay	*22.6*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*60.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*13.24*		
Unopposed green intvl, g_u (s)		*16.76*		
Red time, r(s)		*25.0*		
Arrival rate, q_a (veh/s)		*0.05*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.25*		
X_{perm}		*0.37*		
X_{prot} (N/A for lagging left-turns)		*0.63*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.30*		
Queue at start of unsaturated green, Q_u		*0.69*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*7.7*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(S_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*			*0.0*	
Flow rate/lane	*31*	*494*		*187*	*627*		*132*	*225*			*207*	
Satflow per lane	*363*	*1754*		*683*	*1793*		*1055*	*1577*			*1553*	
Capacity/lane	*151*	*731*		*399*	*747*		*264*	*394*			*388*	
Flow ratio	*0.09*	*0.28*		*0.27*	*0.35*		*0.13*	*0.14*			0.13	
v/c ratio	*0.21*	*0.68*		*0.47*	*0.84*		*0.50*	*0.57*			*0.53*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*			*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
Q_1	*0.3*	*6.7*		*1.4*	*9.4*		*1.9*	*3.3*			*3.0*	
k_B	*0.2*	*0.7*		*0.5*	*0.7*		*0.3*	*0.4*			*0.4*	
Q_2	*0.1*	*1.4*		*0.4*	*3.0*		*0.3*	*0.6*			*0.5*	
Q avg.	*0.4*	*8.1*		*1.7*	*12.4*		*2.2*	*3.9*			*3.5*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.5*	*1.8*		*2.3*	*1.7*		*2.2*	*2.1*			*2.1*	
BOQ, $Q_{\%}$	*1.0*	*14.5*		*4.0*	*20.9*		*5.0*	*8.0*			*7.3*	

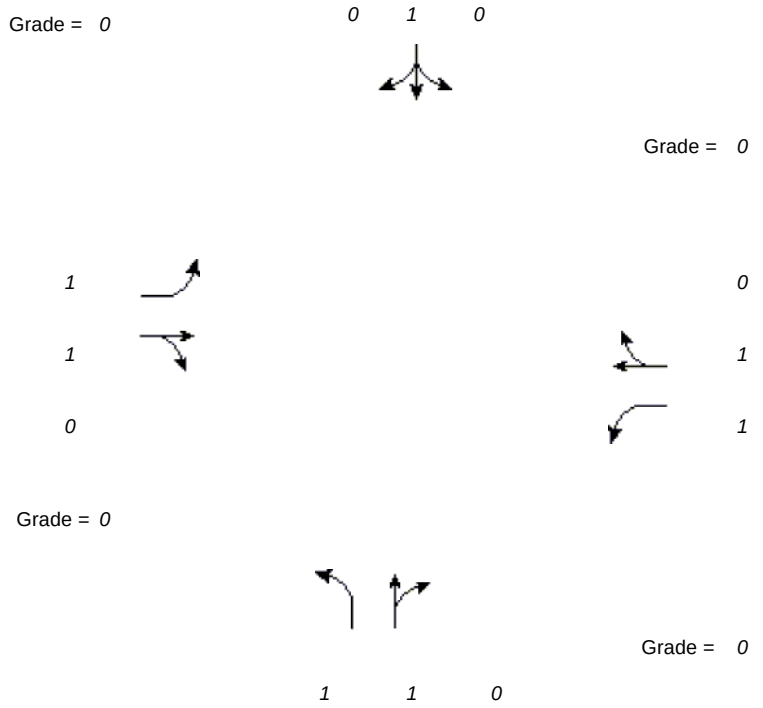
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*			*25.0*	
Q storage	*0*	*0*		*0*	*0*		*0*	*0*			*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*3/30/2009*	Jurisdiction	*Trousdale County*
Time Period	*Proposed Concept 1 PM*	Analysis Year	*2034*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*52*	*473*	*123*	*181*	*346*	*22*	*118*	*67*	*208*	*28*	*52*	*53*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*			*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*			*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width	*12.0*	*11.0*		*12.0*	*11.0*		*11.0*	*11.0*			*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*			*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *25.0*	G =	G =	G = *15.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =

Duration of Analysis (hrs) = *0.25*

Cycle Length C = *60.0*

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*52*	*473*	*123*	*181*	*346*	*22*	*118*	*67*	*208*	*28*	*52*	*53*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Adj. Flow Rate	*58*	*526*	*137*	*201*	*384*	*24*	*131*	*74*	*231*	*31*	*58*	*59*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate	*58*	*663*		*201*	*408*		*131*	*305*			*148*	
Prop. LT or RT	*0.000*	--	*0.207*	*0.000*	--	*0.059*	*0.000*	--	*0.757*	*0.209*	--	*0.399*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*		*1900*	*1900*			*1900*	
Num. of lanes	*1*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*	*0*	*1*	*0*
fW	*1.000*	*0.967*		*1.000*	*0.967*		*0.967*	*0.967*			*0.933*	
fHV	*0.990*	*0.990*		*0.980*	*0.980*		*0.980*	*0.980*			*0.990*	
fg	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
fa	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLU	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
fLT	*0.413*	*1.000*	--	*0.950*	*1.000*	--	*0.699*	*1.000*	--		*0.661*	--
Secondary fLT			--	*0.133*		--			--			--
fRT	--	*0.969*		--	*0.991*		--	*0.886*		--	*0.946*	
fLpb	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--		*1.000*	--
fRpb	--	*1.000*		--	*1.000*		--	*1.000*		--	*1.000*	
Adj. satflow	*776*	*1762*		*1770*	*1785*		*1258*	*1596*			*1098*	
Sec. adj. satflow			--	*248*		--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate	*58*	*663*		*201*	*408*		*131*	*305*			*148*	
Satflow rate	*776*	*1762*		*1770*	*1785*		*1258*	*1596*			*1098*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*			*2.0*	
Green ratio	*0.42*	*0.42*		*0.58*	*0.42*		*0.25*	*0.25*			*0.25*	
Lane group cap.	*323*	*734*		*272*	*744*		*315*	*399*			*275*	
v/c ratio	*0.18*	*0.90*		*0.74*	*0.55*		*0.42*	*0.76*			*0.54*	
Flow ratio	*0.07*	*0.38*			*0.23*		*0.10*	*0.19*			*0.13*	
Crit. lane group	*N*	*Y*		*N*	*N*		*N*	*Y*			*N*	
Sum flow ratios	*0.65*											
Lost time/cycle	*15.00*											
Critical v/c ratio	*0.87*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Adj. flow rate	*58*	*663*		*201*	*408*		*131*	*305*			*148*	
Lane group cap.	*323*	*734*		*272*	*744*		*315*	*399*			*275*	
v/c ratio	*0.18*	*0.90*		*0.74*	*0.55*		*0.42*	*0.76*			*0.54*	
Green ratio	*0.42*	*0.42*		*0.58*	*0.42*		*0.25*	*0.25*			*0.25*	
Unif. delay d1	*11.0*	*16.4*		*10.6*	*13.2*		*18.8*	*20.9*			*19.5*	
Delay factor k	*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*			*0.50*	
Increm. delay d2	*1.2*	*16.6*		*16.4*	*2.9*		*4.0*	*13.0*			*7.4*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Control delay	*12.2*	*33.0*		*27.0*	*16.1*		*22.8*	*33.9*			*26.9*	
Lane group LOS	*B*	*C*		*C*	*B*		*C*	*C*			*C*	
Apprch. delay	*31.3*			*19.7*			*30.6*			*26.9*		
Approach LOS	*C*			*B*			*C*			*C*		
Intersec. delay	*27.1*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*60.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*20.41*		
Unopposed green intvl, g_u (s)		*9.59*		
Red time, r(s)		*25.0*		
Arrival rate, q_a (veh/s)		*0.06*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.22*		
X_{perm}		*0.81*		
X_{prot} (N/A for lagging left-turns)		*0.68*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.40*		
Queue at start of unsaturated green, Q_u		*1.14*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*10.6*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(s_p - q_s)} + g_q Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(s_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(s_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(s_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(s_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*			*LTR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*			*0.0*	
Flow rate/lane	*58*	*663*		*201*	*408*		*131*	*305*			*148*	
Satflow per lane	*776*	*1762*		*465*	*1785*		*1258*	*1596*			*1098*	
Capacity/lane	*323*	*734*		*272*	*744*		*315*	*399*			*275*	
Flow ratio	*0.07*	*0.38*		*0.43*	*0.23*		*0.10*	*0.19*			0.13	
v/c ratio	*0.18*	*0.90*		*0.74*	*0.55*		*0.42*	*0.76*			*0.54*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*			*1.000*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*			*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*			*1.00*	
Q_1	*0.6*	*10.3*		*1.5*	*5.1*		*1.8*	*4.7*			*2.1*	
k_B	*0.4*	*0.7*		*0.3*	*0.7*		*0.4*	*0.5*			*0.3*	
Q_2	*0.1*	*4.3*		*0.9*	*0.8*		*0.3*	*1.3*			*0.4*	
Q avg.	*0.7*	*14.7*		*2.4*	*6.0*		*2.1*	*6.0*			*2.5*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.5*	*1.7*		*2.2*	*1.9*		*2.3*	*1.9*			*2.2*	
BOQ, $Q_{\%}$	*1.7*	*24.3*		*5.3*	*11.4*		*4.7*	*11.5*			*5.6*	

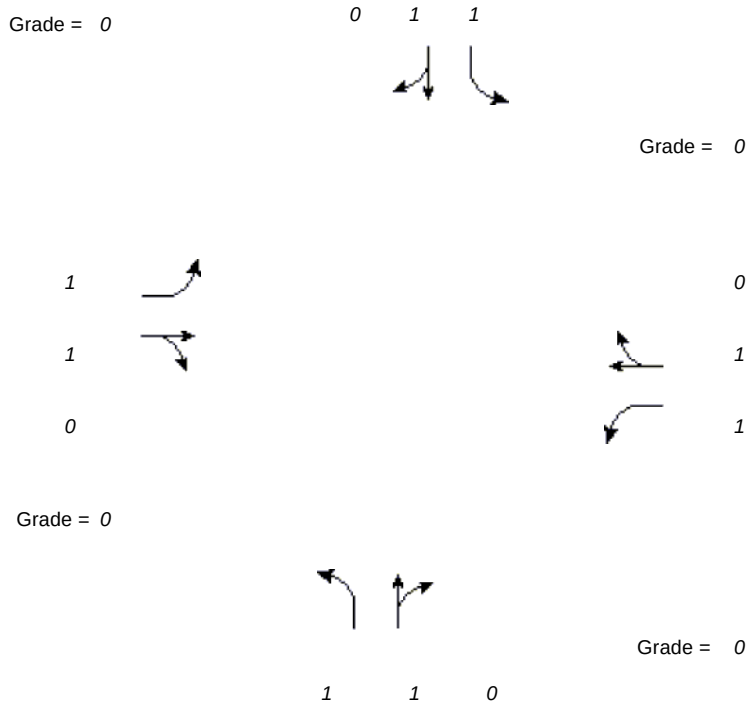
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*			*25.0*	
Q storage	*0*	*0*		*0*	*0*		*0*	*0*			*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*3/30/2009*	Jurisdiction	*Trousdale County*
Time Period	*Proposed Concept 2 AM*	Analysis Year	*2014*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*78*	*321*	*102*	*156*	*547*	*66*	*132*	*63*	*154*	*40*	*64*	*124*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width	*12.0*	*11.0*		*12.0*	*11.0*		*11.0*	*11.0*		*12.0*	*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *40.0*	G =	G =	G = *20.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =

Duration of Analysis (hrs) = *0.25* | Cycle Length C = *80.0*

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*78*	*321*	*102*	*156*	*547*	*66*	*132*	*63*	*154*	*40*	*64*	*124*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Adj. Flow Rate	*87*	*357*	*113*	*173*	*608*	*73*	*147*	*70*	*171*	*44*	*71*	*138*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*87*	*470*		*173*	*681*		*147*	*241*		*44*	*209*	
Prop. LT or RT	*0.000*	--	*0.240*	*0.000*	--	*0.107*	*0.000*	--	*0.710*	*0.000*	--	*0.660*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*		*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*1*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*
fW	*1.000*	*0.967*		*1.000*	*0.967*		*0.967*	*0.967*		*1.000*	*0.933*	
fHV	*0.990*	*0.990*		*0.980*	*0.980*		*0.980*	*0.980*		*0.990*	*0.990*	
fg	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
fLU	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
fLT	*0.210*	*1.000*	--	*0.950*	*1.000*	--	*0.537*	*1.000*	--	*0.479*	*1.000*	--
Secondary fLT			--	*0.339*		--			--			--
fRT	--	*0.964*		--	*0.984*		--	*0.894*		--	*0.901*	
fLpb	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--
fRpb	--	*1.000*		--	*1.000*		--	*1.000*		--	*1.000*	
Adj. satflow	*394*	*1753*		*1770*	*1772*		*966*	*1609*		*901*	*1582*	
Sec. adj. satflow			--	*631*		--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*87*	*470*		*173*	*681*		*147*	*241*		*44*	*209*	
Satflow rate	*394*	*1753*		*1770*	*1772*		*966*	*1609*		*901*	*1582*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.50*	*0.50*		*0.63*	*0.50*		*0.25*	*0.25*		*0.25*	*0.25*	
Lane group cap.	*197*	*877*		*466*	*886*		*242*	*402*		*225*	*396*	
v/c ratio	*0.44*	*0.54*		*0.37*	*0.77*		*0.61*	*0.60*		*0.20*	*0.53*	
Flow ratio	*0.22*	*0.27*			*0.38*		*0.15*	*0.15*		*0.05*	*0.13*	
Crit. lane group	*N*	*N*		*N*	*Y*		*Y*	*N*		*N*	*N*	
Sum flow ratios	*0.60*											
Lost time/cycle	*15.00*											
Critical v/c ratio	*0.74*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*87*	*470*		*173*	*681*		*147*	*241*		*44*	*209*	
Lane group cap.	*197*	*877*		*466*	*886*		*242*	*402*		*225*	*396*	
v/c ratio	*0.44*	*0.54*		*0.37*	*0.77*		*0.61*	*0.60*		*0.20*	*0.53*	
Green ratio	*0.50*	*0.50*		*0.63*	*0.50*		*0.25*	*0.25*		*0.25*	*0.25*	
Unif. delay d1	*12.8*	*13.7*		*7.8*	*16.2*		*26.5*	*26.5*		*23.7*	*25.9*	
Delay factor k	*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*	
Increm. delay d2	*7.0*	*2.3*		*2.3*	*6.4*		*10.8*	*6.5*		*1.9*	*5.0*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*19.9*	*16.0*		*10.0*	*22.6*		*37.4*	*32.9*		*25.6*	*30.9*	
Lane group LOS	*B*	*B*		*B*	*C*		*D*	*C*		*C*	*C*	
Apprch. delay	*16.6*			*20.1*			*34.6*			*30.0*		
Approach LOS	*B*			*C*			*C*			*C*		
Intersec. delay	*23.1*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*80.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*14.14*		
Unopposed green intvl, g_u (s)		*30.86*		
Red time, r(s)		*30.0*		
Arrival rate, q_a (veh/s)		*0.05*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.26*		
X_{perm}		*0.27*		
X_{prot} (N/A for lagging left-turns)		*0.68*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.44*		
Queue at start of unsaturated green, Q_u		*0.68*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*7.8*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(s_p - q_s)} + g_q Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(s_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(s_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(s_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(s_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*87*	*470*		*173*	*681*		*147*	*241*		*44*	*209*	
Satflow per lane	*394*	*1753*		*745*	*1772*		*966*	*1609*		*901*	*1582*	
Capacity/lane	*197*	*877*		*466*	*886*		*242*	*402*		*225*	*396*	
Flow ratio	*0.22*	*0.27*		*0.23*	*0.38*		*0.15*	*0.15*		*0.05*	0.13	
v/c ratio	*0.44*	*0.54*		*0.37*	*0.77*		*0.61*	*0.60*		*0.20*	*0.53*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*1.2*	*7.1*		*1.5*	*12.3*		*2.9*	*4.7*		*0.8*	*4.0*	
k_B	*0.3*	*1.0*		*0.6*	*1.0*		*0.4*	*0.6*		*0.4*	*0.5*	
Q_2	*0.3*	*1.1*		*0.4*	*2.9*		*0.6*	*0.8*		*0.1*	*0.6*	
Q avg.	*1.5*	*8.2*		*1.8*	*15.2*		*3.5*	*5.5*		*0.9*	*4.6*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.3*	*1.8*		*2.3*	*1.6*		*2.1*	*1.9*		*2.4*	*2.0*	
BOQ, $Q_{\%}$	*3.5*	*14.7*		*4.2*	*25.0*		*7.3*	*10.7*		*2.1*	*9.2*	

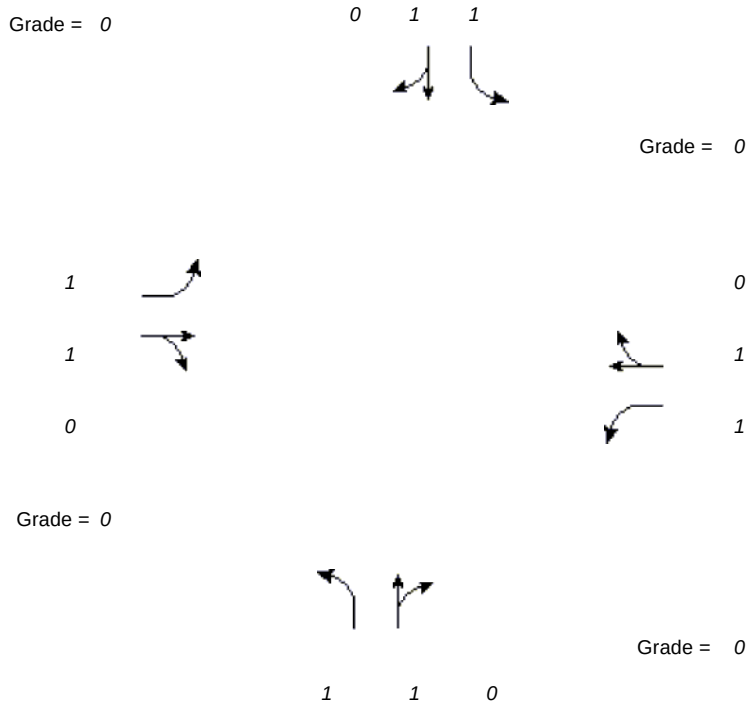
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*3/30/2009*	Jurisdiction	*Trousdale County*
Time Period	*Proposed Concept 2 PM*	Analysis Year	*2014*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*86*	*506*	*156*	*168*	*377*	*59*	*142*	*84*	*193*	*84*	*78*	*106*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width	*12.0*	*11.0*		*12.0*	*11.0*		*11.0*	*11.0*		*12.0*	*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *50.0*	G =	G =	G = *25.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =

Duration of Analysis (hrs) = *0.25*

Cycle Length C = *95.0*

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*86*	*506*	*156*	*168*	*377*	*59*	*142*	*84*	*193*	*84*	*78*	*106*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Adj. Flow Rate	*96*	*562*	*173*	*187*	*419*	*66*	*158*	*93*	*214*	*93*	*87*	*118*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*96*	*735*		*187*	*485*		*158*	*307*		*93*	*205*	
Prop. LT or RT	*0.000*	*--*	*0.235*	*0.000*	*--*	*0.136*	*0.000*	*--*	*0.697*	*0.000*	*--*	*0.576*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*		*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*1*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*
fW	*1.000*	*0.967*		*1.000*	*0.967*		*0.967*	*0.967*		*1.000*	*0.933*	
fHV	*0.990*	*0.990*		*0.980*	*0.980*		*0.980*	*0.980*		*0.990*	*0.990*	
fg	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
fLU	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
fLT	*0.374*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.529*	*1.000*	*--*	*0.358*	*1.000*	*--*
Secondary fLT			*--*	*0.168*		*--*			*--*			*--*
fRT	*--*	*0.965*		*--*	*0.980*		*--*	*0.895*		*--*	*0.914*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*		*--*	*1.000*		*--*	*1.000*	
Adj. satflow	*703*	*1754*		*1770*	*1764*		*952*	*1612*		*673*	*1604*	
Sec. adj. satflow			*--*	*313*		*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*96*	*735*		*187*	*485*		*158*	*307*		*93*	*205*	
Satflow rate	*703*	*1754*		*1770*	*1764*		*952*	*1612*		*673*	*1604*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.53*	*0.53*		*0.63*	*0.53*		*0.26*	*0.26*		*0.26*	*0.26*	
Lane group cap.	*370*	*923*		*274*	*928*		*251*	*424*		*177*	*422*	
v/c ratio	*0.26*	*0.80*		*0.68*	*0.52*		*0.63*	*0.72*		*0.53*	*0.49*	
Flow ratio	*0.14*	*0.42*			*0.27*		*0.17*	*0.19*		*0.14*	*0.13*	
Crit. lane group	*N*	*Y*		*N*	*N*		*N*	*Y*		*N*	*N*	
Sum flow ratios	*0.66*											
Lost time/cycle	*15.00*											
Critical v/c ratio	*0.79*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*96*	*735*		*187*	*485*		*158*	*307*		*93*	*205*	
Lane group cap.	*370*	*923*		*274*	*928*		*251*	*424*		*177*	*422*	
v/c ratio	*0.26*	*0.80*		*0.68*	*0.52*		*0.63*	*0.72*		*0.53*	*0.49*	
Green ratio	*0.53*	*0.53*		*0.63*	*0.53*		*0.26*	*0.26*		*0.26*	*0.26*	
Unif. delay d1	*12.3*	*18.3*		*14.1*	*14.7*		*30.9*	*31.9*		*29.9*	*29.6*	
Delay factor k	*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*	
Increm. delay d2	*1.7*	*7.1*		*12.9*	*2.1*		*11.4*	*10.3*		*10.7*	*4.0*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*14.0*	*25.4*		*27.0*	*16.8*		*42.3*	*42.1*		*40.6*	*33.5*	
Lane group LOS	*B*	*C*		*C*	*B*		*D*	*D*		*D*	*C*	
Apprch. delay	*24.1*			*19.6*			*42.2*			*35.8*		
Approach LOS	*C*			*B*			*D*			*D*		
Intersec. delay	*28.0*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*95.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*31.06*		
Unopposed green intvl, g_u (s)		*23.94*		
Red time, r(s)		*35.0*		
Arrival rate, q_a (veh/s)		*0.05*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.20*		
X_{perm}		*0.60*		
X_{prot} (N/A for lagging left-turns)		*0.85*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.82*		
Queue at start of unsaturated green, Q_u		*1.61*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*14.1*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(S_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*96*	*735*		*187*	*485*		*158*	*307*		*93*	*205*	
Satflow per lane	*703*	*1754*		*434*	*1764*		*952*	*1612*		*673*	*1604*	
Capacity/lane	*370*	*923*		*274*	*928*		*251*	*424*		*177*	*422*	
Flow ratio	*0.14*	*0.42*		*0.43*	*0.27*		*0.17*	*0.19*		*0.14*	0.13	
v/c ratio	*0.26*	*0.80*		*0.68*	*0.52*		*0.63*	*0.72*		*0.53*	*0.49*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*1.4*	*15.8*		*1.9*	*8.4*		*3.7*	*7.4*		*2.1*	*4.6*	
k_B	*0.6*	*1.1*		*0.5*	*1.1*		*0.5*	*0.7*		*0.4*	*0.6*	
Q_2	*0.2*	*3.8*		*0.9*	*1.2*		*0.7*	*1.5*		*0.4*	*0.6*	
Q avg.	*1.6*	*19.6*		*2.8*	*9.6*		*4.4*	*8.9*		*2.5*	*5.2*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.3*	*1.6*		*2.2*	*1.7*		*2.0*	*1.8*		*2.2*	*2.0*	
BOQ, $Q_{\%}$	*3.7*	*31.7*		*6.1*	*16.7*		*8.9*	*15.8*		*5.5*	*10.1*	

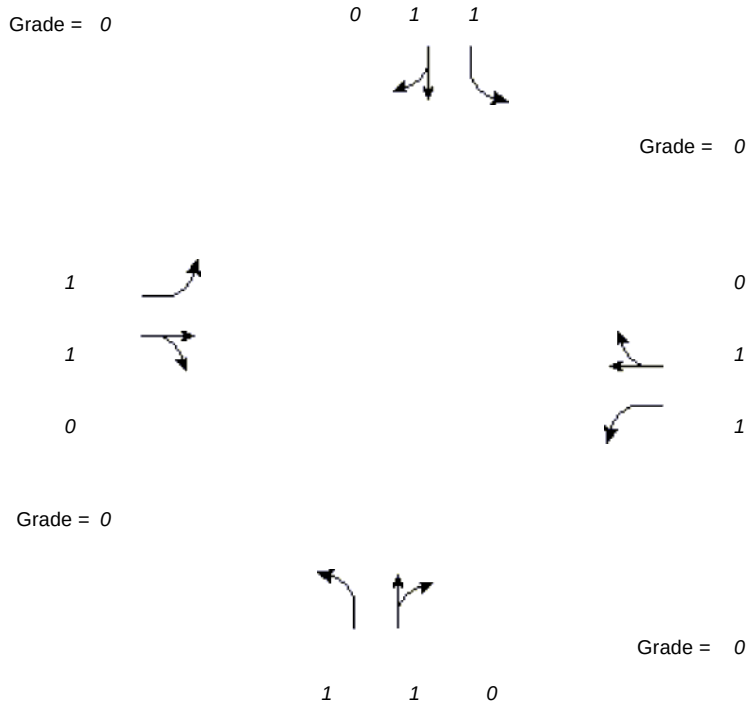
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*3/30/2009*	Jurisdiction	*Trousdale County*
Time Period	*Proposed Concept 2 AM*	Analysis Year	*2034*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*81*	*354*	*112*	*168*	*588*	*68*	*141*	*65*	*167*	*42*	*73*	*140*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width	*12.0*	*11.0*		*12.0*	*11.0*		*11.0*	*11.0*		*12.0*	*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *40.0*	G =	G =	G = *20.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =

Duration of Analysis (hrs) = *0.25* | Cycle Length C = *80.0*

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*81*	*354*	*112*	*168*	*588*	*68*	*141*	*65*	*167*	*42*	*73*	*140*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Adj. Flow Rate	*90*	*393*	*124*	*187*	*653*	*76*	*157*	*72*	*186*	*47*	*81*	*156*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*90*	*517*		*187*	*729*		*157*	*258*		*47*	*237*	
Prop. LT or RT	*0.000*	*--*	*0.240*	*0.000*	*--*	*0.104*	*0.000*	*--*	*0.721*	*0.000*	*--*	*0.658*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*		*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*1*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*
fW	*1.000*	*0.967*		*1.000*	*0.967*		*0.967*	*0.967*		*1.000*	*0.933*	
fHV	*0.990*	*0.990*		*0.980*	*0.980*		*0.980*	*0.980*		*0.990*	*0.990*	
fg	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
fLU	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
fLT	*0.173*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.486*	*1.000*	*--*	*0.449*	*1.000*	*--*
Secondary fLT			*--*	*0.303*		*--*			*--*			*--*
fRT	*--*	*0.964*		*--*	*0.984*		*--*	*0.892*		*--*	*0.901*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*		*--*	*1.000*		*--*	*1.000*	
Adj. satflow	*325*	*1753*		*1770*	*1772*		*875*	*1606*		*844*	*1582*	
Sec. adj. satflow			*--*	*565*		*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*90*	*517*		*187*	*729*		*157*	*258*		*47*	*237*	
Satflow rate	*325*	*1753*		*1770*	*1772*		*875*	*1606*		*844*	*1582*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.50*	*0.50*		*0.63*	*0.50*		*0.25*	*0.25*		*0.25*	*0.25*	
Lane group cap.	*163*	*877*		*429*	*886*		*219*	*402*		*211*	*396*	
v/c ratio	*0.55*	*0.59*		*0.44*	*0.82*		*0.72*	*0.64*		*0.22*	*0.60*	
Flow ratio	*0.28*	*0.29*			*0.41*		*0.18*	*0.16*		*0.06*	*0.15*	
Crit. lane group	*N*	*N*		*N*	*Y*		*Y*	*N*		*N*	*N*	
Sum flow ratios	*0.65*											
Lost time/cycle	*15.00*											
Critical v/c ratio	*0.80*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*90*	*517*		*187*	*729*		*157*	*258*		*47*	*237*	
Lane group cap.	*163*	*877*		*429*	*886*		*219*	*402*		*211*	*396*	
v/c ratio	*0.55*	*0.59*		*0.44*	*0.82*		*0.72*	*0.64*		*0.22*	*0.60*	
Green ratio	*0.50*	*0.50*		*0.63*	*0.50*		*0.25*	*0.25*		*0.25*	*0.25*	
Unif. delay d1	*13.8*	*14.2*		*8.4*	*17.0*		*27.4*	*26.8*		*23.8*	*26.5*	
Delay factor k	*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*	
Increm. delay d2	*12.8*	*2.9*		*3.2*	*8.5*		*18.2*	*7.7*		*2.4*	*6.5*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*26.6*	*17.1*		*11.6*	*25.5*		*45.6*	*34.5*		*26.3*	*33.0*	
Lane group LOS	*C*	*B*		*B*	*C*		*D*	*C*		*C*	*C*	
Apprch. delay	*18.5*			*22.7*			*38.7*			*31.9*		
Approach LOS	*B*			*C*			*D*			*C*		
Intersec. delay	*25.7*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*80.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*16.12*		
Unopposed green intvl, g_u (s)		*28.88*		
Red time, r(s)		*30.0*		
Arrival rate, q_a (veh/s)		*0.05*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.24*		
X_{perm}		*0.33*		
X_{prot} (N/A for lagging left-turns)		*0.74*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.56*		
Queue at start of unsaturated green, Q_u		*0.84*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*8.4*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(S_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

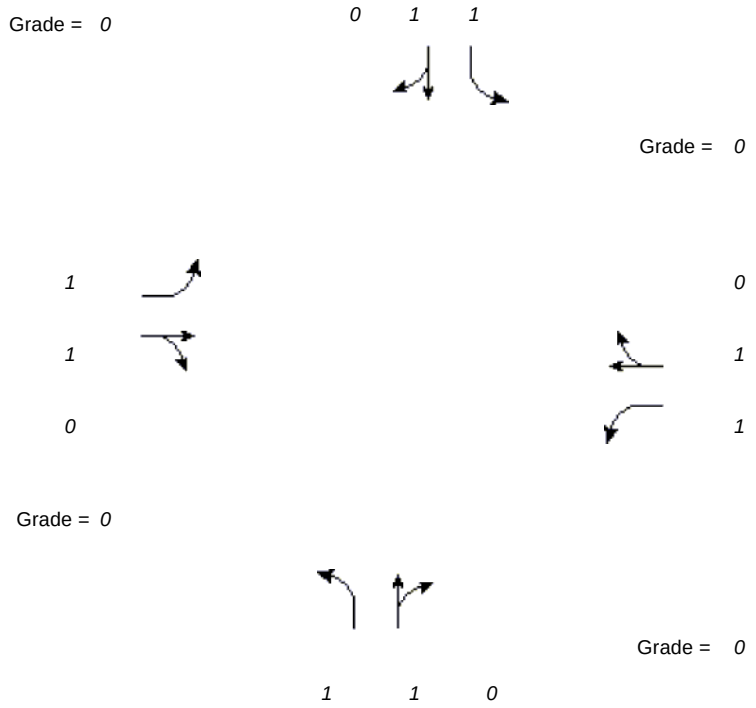
Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*90*	*517*		*187*	*729*		*157*	*258*		*47*	*237*	
Satflow per lane	*325*	*1753*		*686*	*1772*		*875*	*1606*		*844*	*1582*	
Capacity/lane	*163*	*877*		*429*	*886*		*219*	*402*		*211*	*396*	
Flow ratio	*0.28*	*0.29*		*0.27*	*0.41*		*0.18*	*0.16*		*0.06*	0.15	
v/c ratio	*0.55*	*0.59*		*0.44*	*0.82*		*0.72*	*0.64*		*0.22*	*0.60*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*1.4*	*8.1*		*1.6*	*13.8*		*3.2*	*5.1*		*0.8*	*4.6*	
k_B	*0.3*	*1.0*		*0.6*	*1.0*		*0.4*	*0.6*		*0.4*	*0.5*	
Q_2	*0.4*	*1.3*		*0.4*	*3.8*		*0.8*	*0.9*		*0.1*	*0.8*	
Q avg.	*1.7*	*9.5*		*2.0*	*17.5*		*4.0*	*6.1*		*0.9*	*5.4*	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	*2.3*	*1.8*		*2.3*	*1.6*		*2.0*	*1.9*		*2.4*	*1.9*	
BOQ, $Q_{\%}$	*4.0*	*16.6*		*4.6*	*28.6*		*8.2*	*11.5*		*2.3*	*10.5*	
Queue Storage Ratio												
Q spacing	*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR-25/10 & SR-141*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*3/30/2009*	Jurisdiction	*Trousdale County*
Time Period	*Proposed Concept 2 PM*	Analysis Year	*2034*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*91*	*552*	*168*	*181*	*403*	*61*	*151*	*89*	*208*	*88*	*86*	*113*
% Heavy veh	*1*	*1*	*1*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*		*0*	*0*		*0*	*0*		*0*	*0*		*0*
Lane Width	*12.0*	*11.0*		*12.0*	*11.0*		*11.0*	*11.0*		*12.0*	*10.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *5.0*	G = *50.0*	G =	G =	G = *25.0*	G =	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y =	Y =	Y =

Duration of Analysis (hrs) = *0.25*

Cycle Length C = *95.0*

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*91*	*552*	*168*	*181*	*403*	*61*	*151*	*89*	*208*	*88*	*86*	*113*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Adj. Flow Rate	*101*	*613*	*187*	*201*	*448*	*68*	*168*	*99*	*231*	*98*	*96*	*126*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*101*	*800*		*201*	*516*		*168*	*330*		*98*	*222*	
Prop. LT or RT	*0.000*	--	*0.234*	*0.000*	--	*0.132*	*0.000*	--	*0.700*	*0.000*	--	*0.568*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*		*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*1*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*
fW	*1.000*	*0.967*		*1.000*	*0.967*		*0.967*	*0.967*		*1.000*	*0.933*	
fHV	*0.990*	*0.990*		*0.980*	*0.980*		*0.980*	*0.980*		*0.990*	*0.990*	
fg	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
fLU	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
fLT	*0.349*	*1.000*	--	*0.950*	*1.000*	--	*0.499*	*1.000*	--	*0.321*	*1.000*	--
Secondary fLT			--	*0.126*		--			--			--
fRT	--	*0.965*		--	*0.980*		--	*0.895*		--	*0.915*	
fLpb	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--
fRpb	--	*1.000*		--	*1.000*		--	*1.000*		--	*1.000*	
Adj. satflow	*657*	*1755*		*1770*	*1765*		*899*	*1612*		*603*	*1606*	
Sec. adj. satflow			--	*234*		--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*101*	*800*		*201*	*516*		*168*	*330*		*98*	*222*	
Satflow rate	*657*	*1755*		*1770*	*1765*		*899*	*1612*		*603*	*1606*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.53*	*0.53*		*0.63*	*0.53*		*0.26*	*0.26*		*0.26*	*0.26*	
Lane group cap.	*346*	*924*		*228*	*929*		*237*	*424*		*159*	*423*	
v/c ratio	*0.29*	*0.87*		*0.88*	*0.56*		*0.71*	*0.78*		*0.62*	*0.52*	
Flow ratio	*0.15*	*0.46*			*0.29*		*0.19*	*0.20*		*0.16*	*0.14*	
Crit. lane group	*N*	*N*		*N*	*N*		*N*	*Y*		*N*	*N*	
Sum flow ratios	*0.72*											
Lost time/cycle	*10.00*											
Critical v/c ratio	*0.80*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*101*	*800*		*201*	*516*		*168*	*330*		*98*	*222*	
Lane group cap.	*346*	*924*		*228*	*929*		*237*	*424*		*159*	*423*	
v/c ratio	*0.29*	*0.87*		*0.88*	*0.56*		*0.71*	*0.78*		*0.62*	*0.52*	
Green ratio	*0.53*	*0.53*		*0.63*	*0.53*		*0.26*	*0.26*		*0.26*	*0.26*	
Unif. delay d1	*12.6*	*19.6*		*17.0*	*15.1*		*31.7*	*32.4*		*30.8*	*29.9*	
Delay factor k	*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*	
Increm. delay d2	*2.1*	*10.7*		*35.3*	*2.4*		*16.4*	*13.2*		*16.6*	*4.6*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*14.7*	*30.3*		*52.3*	*17.5*		*48.1*	*45.6*		*47.4*	*34.5*	
Lane group LOS	*B*	*C*		*D*	*B*		*D*	*D*		*D*	*C*	
Apprch. delay	*28.5*			*27.2*			*46.5*			*38.5*		
Approach LOS	*C*			*C*			*D*			*D*		
Intersec. delay	*33.1*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)		*95.0*		
Prot. phase eff. green intvl, g (s)		*5.0*		
Opposed queue eff. green intvl, g_q (s)		*36.00*		
Unopposed green intvl, g_u (s)		*19.00*		
Red time, r(s)		*35.0*		
Arrival rate, q_a (veh/s)		*0.06*		
Prot. phase departure rate, s_p (veh/s)		*0.492*		
Perm. phase departure rate, s_s (veh/s)		*0.19*		
X_{perm}		*0.86*		
X_{prot} (N/A for lagging left-turns)		*0.91*		
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a		*1.95*		
Queue at start of unsaturated green, Q_u		*2.01*		
Residual queue, Q_r		*0.00*		
Uniform delay, d_1		*17.0*		

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(s_p - q_s)} + g_q Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(s_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(s_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(s_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(s_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *SR-25/10 Intersection at SR-141 & Halltown Road*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*101*	*800*		*201*	*516*		*168*	*330*		*98*	*222*	
Satflow per lane	*657*	*1755*		*362*	*1765*		*899*	*1612*		*603*	*1606*	
Capacity/lane	*346*	*924*		*228*	*929*		*237*	*424*		*159*	*423*	
Flow ratio	*0.15*	*0.46*		*0.56*	*0.29*		*0.19*	*0.20*		*0.16*	0.14	
v/c ratio	*0.29*	*0.87*		*0.88*	*0.56*		*0.71*	*0.78*		*0.62*	*0.52*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*1.5*	*18.4*		*2.0*	*9.1*		*4.0*	*8.1*		*2.3*	*5.0*	
k_B	*0.6*	*1.1*		*0.4*	*1.1*		*0.4*	*0.7*		*0.3*	*0.6*	
Q_2	*0.2*	*5.4*		*2.0*	*1.4*		*0.9*	*2.0*		*0.5*	*0.7*	
Q avg.	*1.7*	*23.7*		*4.0*	*10.5*		*5.0*	*10.0*		*2.8*	*5.7*	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	*2.3*	*1.6*		*2.0*	*1.7*		*2.0*	*1.7*		*2.2*	*1.9*	
BOQ, $Q_{\%}$	*4.0*	*38.2*		*8.2*	*18.1*		*9.8*	*17.4*		*6.0*	*11.0*	
Queue Storage Ratio												
Q spacing	*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												