

TRANSPORTATION PLANNING REPORT

State Route 115 (U.S. 129) at Louisville Road
INTERSECTION IMPROVEMENTS
BLOUNT COUNTY
PIN# 107899.00



PREPARED BY
HMB PROFESSIONAL ENGINEERS, INC.
FOR
TENNESSEE DEPARTMENT OF TRANSPORTATION
PROJECT PLANNING DIVISION

Recommended by:	Signature	DATE
CHIEF OF ENVIRONMENT AND PLANNING		8/2/07
TRANSPORTATION DIRECTOR PROJECT PLANNING DIVISION		8-9-07
TRANSPORTATION MANAGER 2 PROJECT PLANNING DIVISION		8/9/07

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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BACKGROUND

The Tennessee Department of Transportation (TDOT) has initiated this study in response to a request from the Knoxville Regional Transportation Planning Organization and the City of Alcoa to evaluate the intersection of State Route 115 (U.S. 129) at Louisville Road in Blount County, Tennessee. This request was advanced due to the rapid increase of commercial and retail development within this immediate area. In addition to increased traffic, vehicular crashes have also increased significantly. Vicinity and location maps are provided in **Figures 1** and **2** for reference. The study area includes not only this main intersection but three other intersections located immediately to the east and west along Louisville Road.

EXISTING CONDITIONS

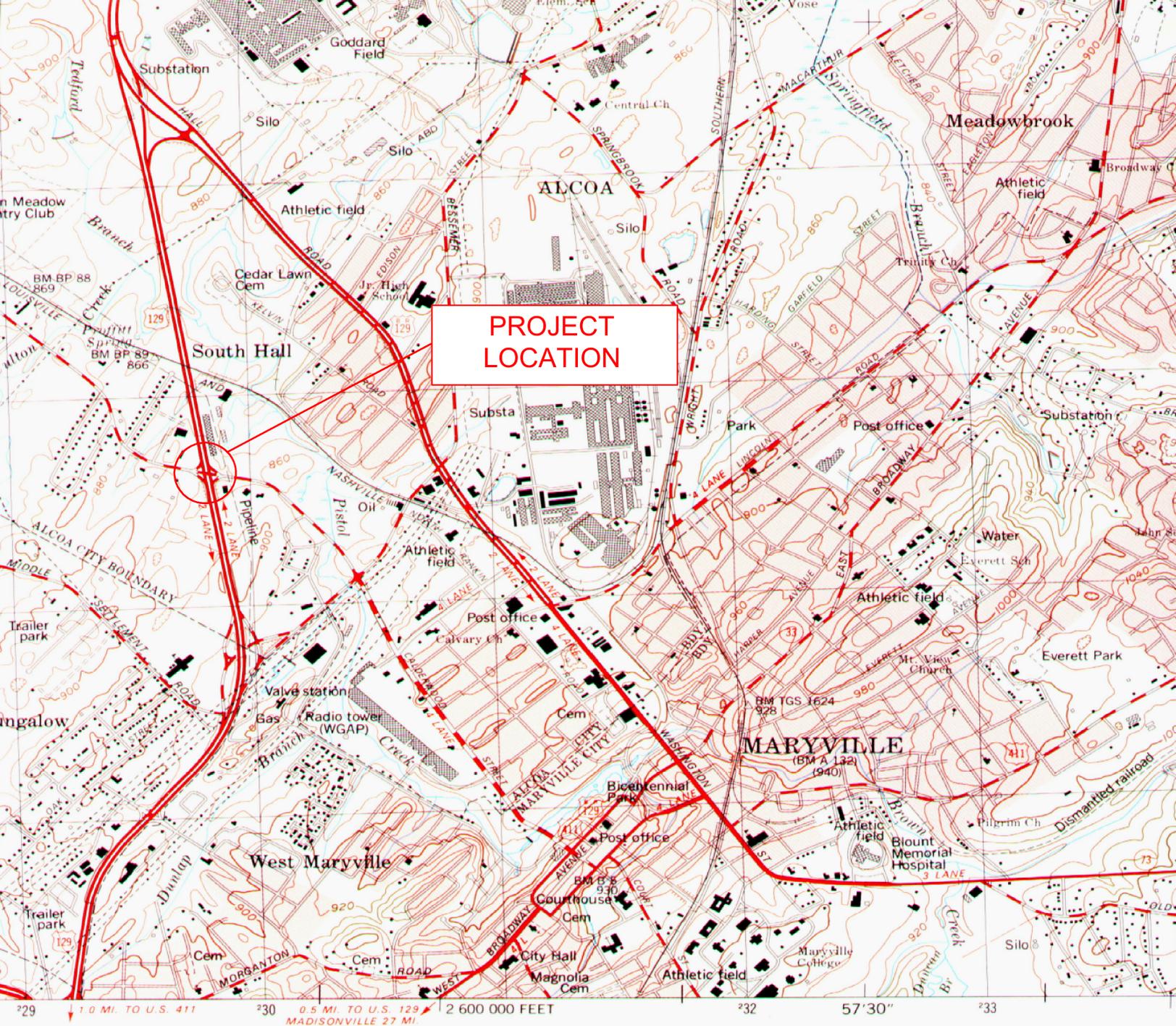
The intersection of SR-115 (US 129) and Louisville Road is located in the City of Alcoa, which lies between the City of Maryville and the City of Knoxville. The study area consists of this major signalized intersection, two intersections immediately to the west, one of which is signalized, and another unsignalized intersection immediately to the east.

SR-115 (US 129) is a major four-lane arterial roadway consisting of 12-ft travel lanes, with a full 12-ft outside shoulder, and having a 38-ft divided median. This roadway serves as a major commuter route between Maryville and Knoxville. Base year (2012) average daily traffic (ADT) along this route ranges from 44,560 to 46,460. This data is based upon 2006 cycle counts and 8-hr turning movement counts obtained on February 20, 2007.

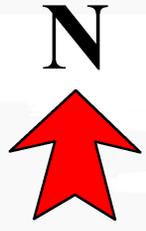
Louisville Road is a two-lane arterial that serves as a east/west connector for this area. This road consists mainly of 12-ft lanes with no shoulder and is comprised of several left and right auxiliary lanes within the intersection study area. Base year (2012) ADT for this road ranges from 23,160 to 23,590 based upon 2006 cycle counts and 8-hr turning movement counts obtained on February 20, 2007. This ADT represents data taken at the specific intersection of SR-115 and Louisville Road.

The area south of Louisville Road has been the focus of large commercial development. Located on the southwest quadrant of the intersection are two “big-box” stores (Wal-Mart and Lowes) and several restaurant out-parcels. The southeast quadrant of the intersection currently has several restaurants with two “big-box” retailers (unknown at this time) currently planned for this area and are under construction. At the time of this report, further commercial and retail development is planned for both the east and west quadrants, south of Louisville Road. An aerial photograph showing this development is provided in **Illustration 1**.

The northwest quadrant of the intersection is predominantly residential, with a local church and the county 911 call center located immediately on the corner. No further development is expected or can be accommodated in this area. On the northeast corner resides a local lumber company who is a major supplier of building materials for the surrounding area. Also located on this corner are a few retail stores and restaurants. Future development is expected in this quadrant, but the area is limited and no development is planned at this time.



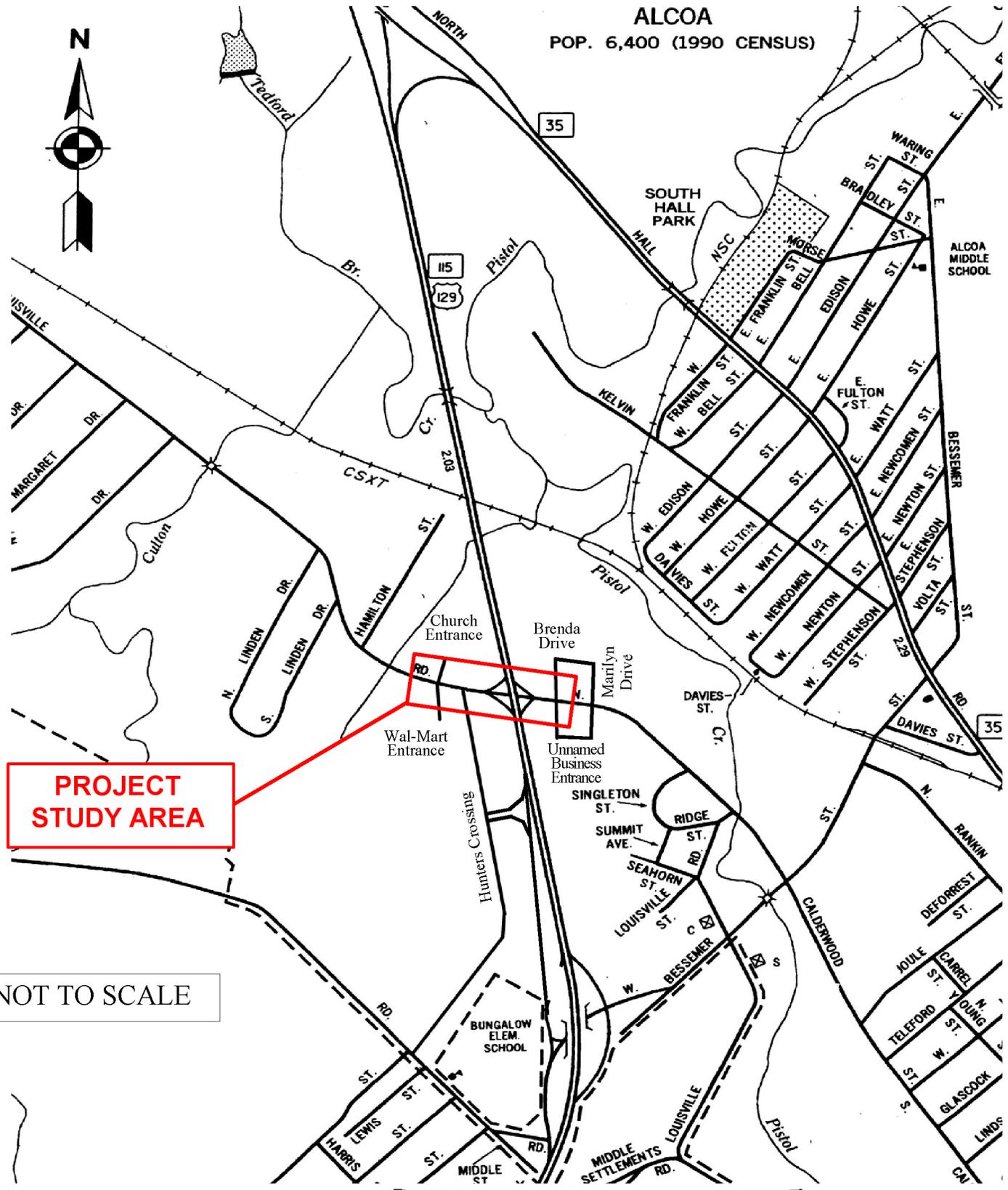
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PROJECT VICINITY MAP
 INTERSECTION IMPROVEMENTS
 SR-115 (US-129) @ LOUISVILLE ROAD
 BLOUNT COUNTY, TN
 USGS MARYVILLE QUADRANGLE

Figure 1

ALCOA
POP. 6,400 (1990 CENSUS)



**PROJECT
STUDY AREA**

NOT TO SCALE



LOCAL AREA MAP

INTERSECTION IMPROVEMENTS
SR-115 (US-129) @ LOUISVILLE ROAD
BLOUNT COUNTY, TN

Figure 2



LEADMARK



Illustration 1 - Future Development South of Louisville Road

Accident Summary. From the period January 1, 2003 to December 31, 2005, TRIMS crash data obtained from the Tennessee Department of Transportation (TDOT) indicated a total of 186 crashes were reported at the intersection of SR-115 and Louisville Road. Approximately 33 crashes were considered minor injury and only 1 severe injury accident. Of the total number of crashes, 157 of the reported 186 were rear-end collisions. A crash rate of 3.64 was calculated for this period. The critical rate was determined to be 1.23 and the severity index was 0.022. The ratio of crashes/critical rate was 2.96 and the actual rate/statewide average was 4.00.

In comparison, data obtained from the City of Alcoa indicates that a majority of accidents have occurred within the right turn lane for traffic traveling eastbound Louisville Road to southbound SR-115 and westbound Louisville Road to northbound SR-115. A copy of this data, shown in **Figure 3**, reveals 267 accidents, 37 of which were considered injury related, occurred at this intersection from the period of January 2004 to December 2006. The figure also illustrates the location and manner of the collisions within the intersection. A majority of the crashes occurred in the right turn lanes from Louisville Road to SR-115.

COMMUNITY PROFILE

The City of Alcoa is a small industrial and manufacturing community located approximately 20 miles south of Knoxville, Tennessee. The City is situated along SR-115 (US 129) which is a major route between Maryville and Knoxville and is easily accessible to Interstate 40. The name of the city originates from the aluminum company, Alcoa, Inc., then known as the Aluminum Company of America (ALCOA).

In 1910, Alcoa, Inc., began a long-range program to develop power along the Little Tennessee River near present-day Calderwood. Several dams were constructed to supply huge amounts of low-cost hydroelectric power necessary for the production of aluminum. Large land tracts north of Maryville were purchased for the establishment of reduction plants.

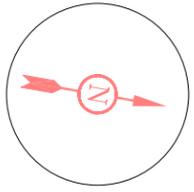
The actual City of Alcoa was planned and designed by Alcoa engineers. By 1919, the city contained houses, stores, schools, and other amenities. The early planners established water, sewer, and electrical; created zoning for industrial, commercial, and residential usage; and provided community facilities such as one(1) acre of land for parks and recreation for each 100 persons. The original site for the City covered five and one-half square miles and was designed for a population in excess of 10,000. Since that time, the City has grown to a size almost 15 square miles.

Since that time, Alcoa, Inc. has downsized, but the City has been able to develop a diverse economy consisting of a strong manufacturing base with retail and commercial services. Continuous growth has taken place in both Alcoa and fringe areas as the entire Alcoa-Maryville area has become a growing part of the Knoxville metropolitan area. **Table 1** indicates the current and projected growth for the City of Alcoa and surrounding communities.

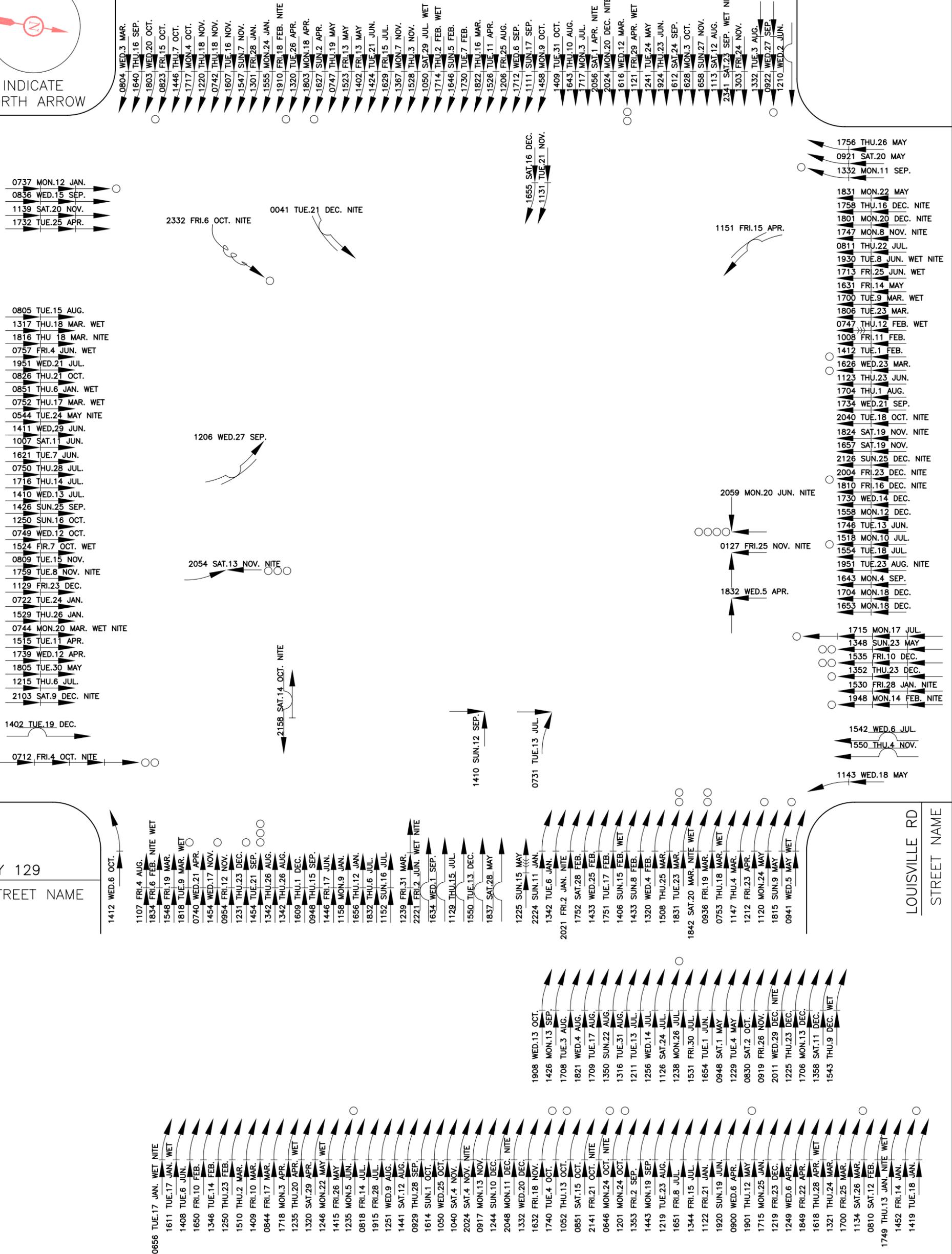
INTERSECTION HWY. 129 BYPASS AND LOUISVILLE ROAD

PERIOD 3 YEARS FROM JAN. 2004 TO DEC. 2006

CITY ALCOA, TN PREPARED BY SCOTT CARROLL



INDICATE NORTH ARROW



NUMBER OF ACCIDENTS

230 PROPERTY DAMAGE ONLY
37 INJURY OR FATAL
267 TOTAL ACCIDENTS

SYMBOLS

- MOVING VEHICLE
- BACKING VEHICLE
- NON-INVOLVED VEHICLE
- PEDESTRIAN
- PARKED VEHICLE
- FIXED OBJECT
- FATAL ACCIDENT
- INJURY ACCIDENT
- REAR END
- HEAD ON
- SIDE SWIPE
- OUT OF CONTROL
- LEFT TURN
- RIGHT ANGLE

SHOW OF EACH ACCIDENT

1. TIME, DAY, DATE
2. WEATHER AND ROAD SURFACE— IF UNUSUAL CONDITIONS EXISTED
3. NITE— IF BETWEEN DUSK AND DAWN

Table 1 – Current and Projected Census¹

County	Municipality		2000	2005	2010	2015	2020	2025
Blount	Alcoa	city	7,734	8,316	9,056	9,808	10,540	11,252
	Friendsville	city	890	920	953	991	1,009	1,035
	Louisville	city	2,001	2,188	2,424	2,664	2,904	3,147
	Maryville	city	23,120	24,655	26,639	28,588	30,462	32,277
	Rockford	city	798	830	868	901	941	963
	Townsend	city	244	247	265	270	273	287
	Unincorporated		71,036	75,065	80,386	85,495	90,228	94,746
	Total			105,823	112,222	120,592	128,718	136,357

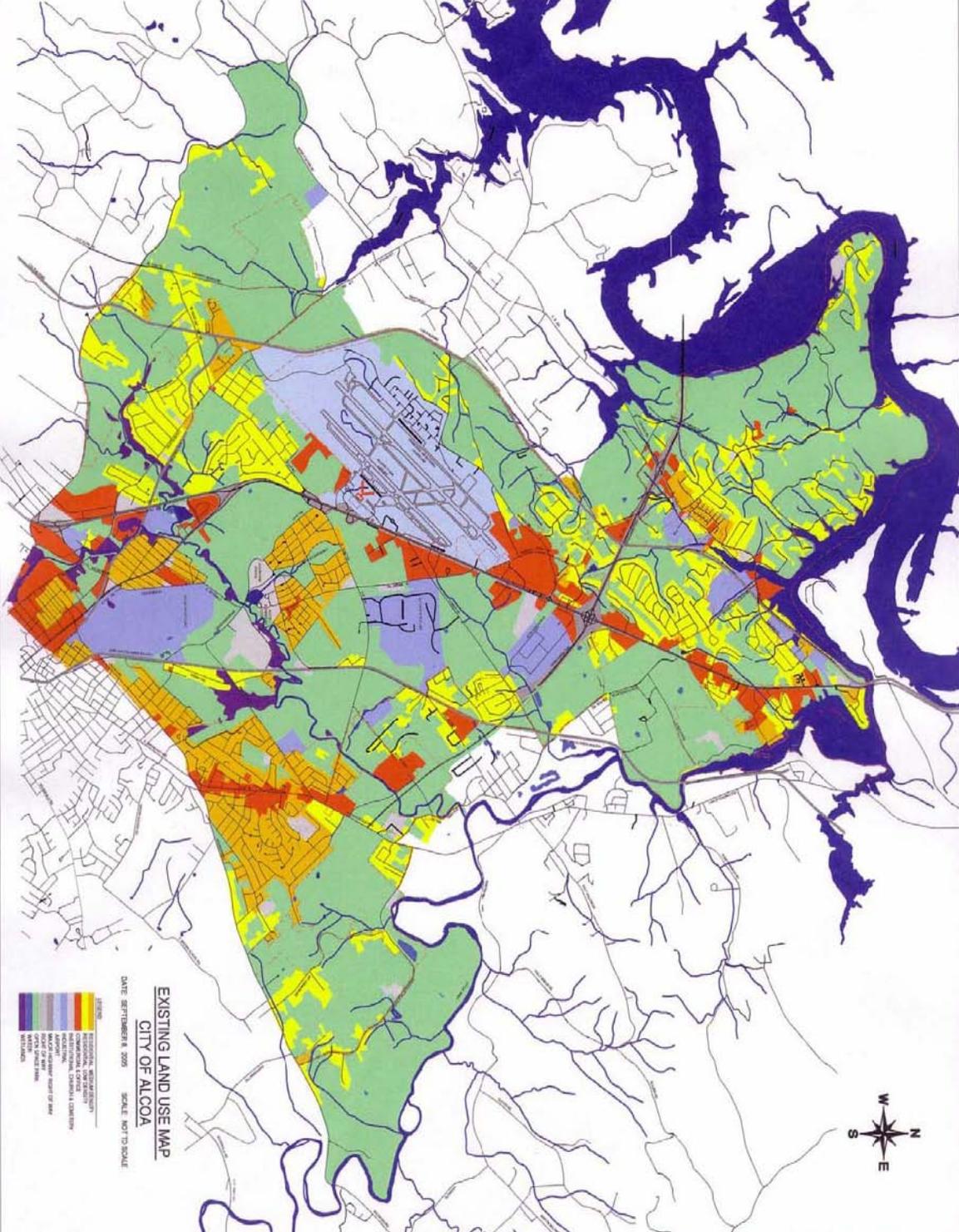
¹**Source:** A joint publication of the Tennessee Advisory Commission on Intergovernmental Relations and The University of Tennessee Center for Business and Economic Research.

Land Use. In year 2003, it was determined that the City of Alcoa has approximately 22,366 acres in and around the City limits; approximately 9,730 acres lie within the City limits. Approximately 11,024 acres, or roughly 50%, of this area is presently developed. **Table 2** indicates the current distribution of land use followed by **Figure 4** on the following page which offers a visual illustration of this usage.

Table 2 - Existing Land Use (2003)²

Land Use Category	Acres	Percentage of Total Land Area	Percentage of Developed Land	Acres Per Person
Residential	5,058	23	46	1.5
Commercial/Office	1,260	6	11	6.1
Industrial	1,237	6	11	6.3
Airport	1,421	6	13	5.4
Parks/Open Space/Public Buildings	1,630	7	15	4.7
Institutional/Churches/Cemetery	418	2	4	18.5
Total Developed	11,024	50	N/A	7
Vacant(Developable)	9,717	43	N/A	N/A
Right-of-Way	424	2	N/A	N/A
Water	910	4	N/A	N/A
Wetlands	293	1	N/A	N/A
Within City Limits	9,730	4	N/A	N/A

²**Source:** TVA Land Use Survey, as provided in 2025 Comprehensive Plan, May 9, 2006, City of Alcoa.



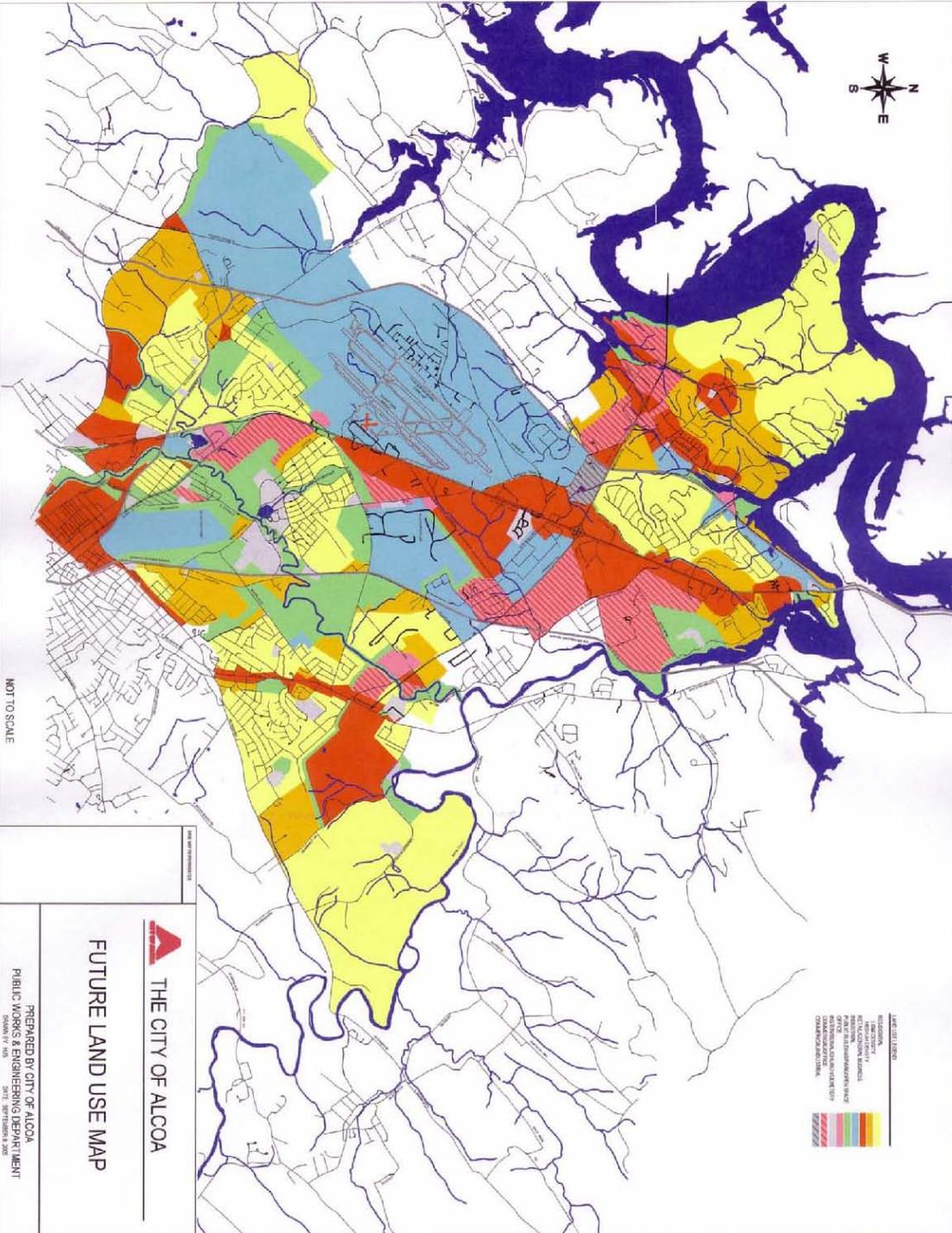
EXISTING LAND USE MAP

CITY OF ALCOA

DATE: SEPTEMBER 8, 2005 SCALE: NOT TO SCALE

- LEGEND**
- RESIDENTIAL, SUBDIVISIONS
 - COMMERCIAL & OFFICE
 - INDUSTRIAL
 - AGRICULTURE
 - MIXED USE / TRANSITION ZONE
 - CITY CENTER / DOWNTOWN
 - WATERSHED
 - WETLANDS





NOT TO SCALE

DATE: 08/11/2010



FUTURE LAND USE MAP

PREPARED BY CITY OF ALCOA
PUBLIC WORKS & ENGINEERING DEPARTMENT
August 11, 2010
1010 1/2th Street, Alcoa, TN 37016

The data provided in **Table 3** shown below projects the developable percentage of land use based upon the respective categories. Also, a visual illustration of future land use is shown in **Figure 5**.

Table 3 - Future Land Use²

Land Use Category	Acres	Percentage of Total Land Area
Residential	9,204	41
Commercial/Office	3,932	18
Industrial	4,996	22
Parks/Open Space/Public Buildings	3,033	14
Water	910	4
Wetlands	293	1

²Source: TVA Land Use Survey, as provided in 2025 Comprehensive Plan, May 9, 2006, City of Alcoa.

PURPOSE AND NEED

The objective of this report is to analyze existing and projected conditions at the intersection of SR-115 (US 129) and Louisville Road located in Blount County, Tennessee, to determine the purpose and need for improvements. This study was initiated due to the rapid and large commercial/retail development, as well as industrial development, occurring within the area which is surrounded by existing residential neighborhoods. These entities are a contributing factor of additional traffic to an already congested local and commuter transportation system. Also of significant interest is the number of vehicular crashes occurring in this area.

The intersection is affected by three adjacent intersections which are also included as part of this study. This study will review existing conditions, analyze traffic for existing and future conditions and levels of service, prepare recommendations for improvement, and determine preliminary costs relating to the proposed recommendations.

The primary need along SR-115 (US 129) is to provide for improved local and regional mobility and access. Several specific needs are included in this goal.

1. Provide an improved north/south route to serve demand for local and regional access to the interstate and neighboring communities.
2. Improve safety and mobility along SR-115 (US 129).
3. Accommodate the increased traffic demand spurred by commercial development within the adjacent intersection and local community.
4. Create an opportunity for additional economic growth within the City of Alcoa and Blount County by providing an improved transportation system.

PROPOSED IMPROVEMENTS

Year 2012 traffic data for the main SR-115/Louisville Road intersection indicates this intersection and adjacent intersections have capacity deficiencies. Also, future year volumes suggest that major relief to congestion and driver comfort can only be achieved through developing a grade-separated interchange at this location; SR-115 being elevated over Louisville Road. However, several issues complicate the viability this option.

1. Cost.
2. Inconvenience to the motoring public during construction.
3. Limited right-of-way.
4. No new parallel corridors or improvements to existing facilities have been considered to alleviate congestion along the SR-115 corridor. Local officials are currently working with the TPO to determine projects for the long-range plan. (Note, TDOT is currently developing right-of-way plans for widening Middlesettlements Road, located immediately south, which is scheduled due by end of year 2007. While this does not affect the SR-115 corridor, it will have an affect upon this study area since Hunters Crossing ties into Middlesettlements Road.)

While a grade-separated interchange does meet the purpose and need for this project, this option was not considered due to the aforementioned issues. Further study is suggested that will encompass a much broader study area for the purpose of reviewing the affects of a grade-separated interchange and its impacts along the entire SR-115 corridor.

Assessment of the study area by the design team, and input from the stakeholders field review, determined the following options that will best meet the purpose and need goals for this project.

- Option 1: Create auxiliary lanes along SR-115 for the movements eastbound (EB) Louisville Road to southbound (SB) SR-115, and westbound (WB) Louisville Road to northbound (NB) SR-115. Also create a deceleration lane for northbound (NB) SR-115 to eastbound (EB) Louisville Road.
- Option 2: Signalize the right-turn movements for EB Louisville Road to SB SR-115 and WB Louisville Road to NB SR-115.
- Option 3: Remove the left turn entry from Louisville Road onto both Hunters Crossing and Brenda Drive, and define these intersections to be right-in/right-out only.
- Option 4: Create a double left-turn movement for WB Louisville Road onto SB SR-115.
- Suggested Options: Several options are recommended as a suggestion to improving the overall operation and safety of the intersection at SR-115/Louisville Road, based upon a traffic operations standpoint. Because of their significant impact to the overall area and community, further study and stakeholder involvement is suggested to review the affects of these suggestions and consider other possible alternatives.

1. Eliminate the intersection of Hunters Crossing at Louisville Road.
2. Eliminate the intersection of Brenda Drive at Louisville Road.
3. Eliminate the intersection of the Unnamed Business Entrance (adjacent to Cracker Barrel) at Louisville Road.

A copy of the meeting minutes from the stakeholder field review is located in **Appendix A**.

Option 1:

Existing right-turn lanes at the intersection of SR-115/Louisville Road are such that they limit free-flow movement of traffic when exiting Louisville Road to SR-115. Currently vehicles on Louisville Road must yield to on-coming traffic along SR-115 when making a right turn which accounts for a large number of rear-end collisions occurring at these points. Development of an auxiliary lane for the movements EB Louisville Road to SB SR-115 and WB Louisville Road to NB SR-115 will likely help alleviate congestion by facilitating free-flow operations and reducing traffic queues waiting to enter the roadway, thereby reducing and/or eliminating potential crashes. A deceleration lane is also suggested for NB SR-115 to EB Louisville Road.



RT-turn lane, NB SR-115 to EB Louisville Rd.

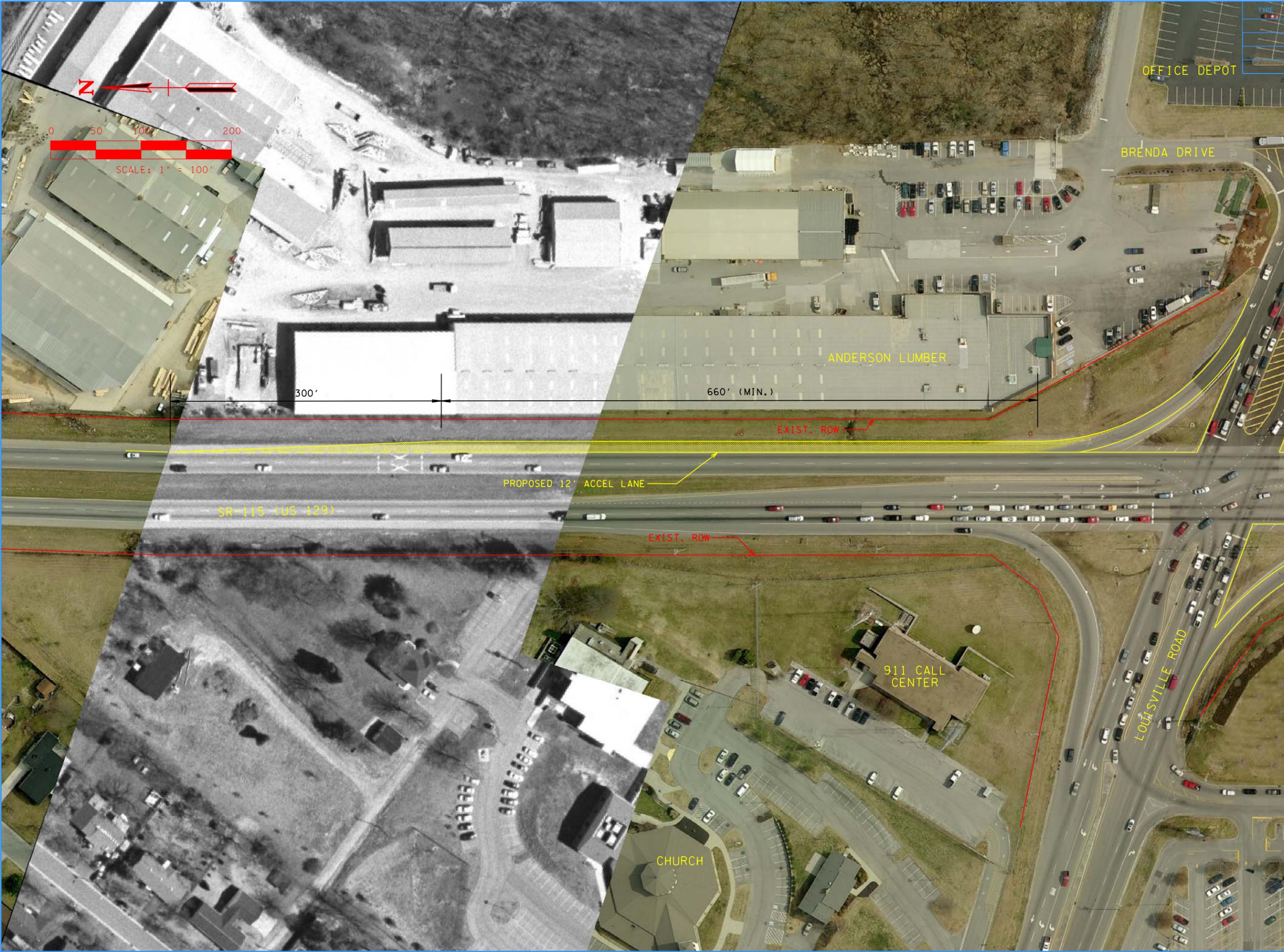


RT-turn lane, EB Louisville Rd to SB SR-115

The conceptual layout illustrated in **Figures 6-1** and **6-2** shows that sufficient length along SR-115 exists for the development of a full 12-ft auxiliary lane in the suggested locations. A minimum length of 660-feet can be obtained for the northbound and southbound acceleration lanes along SR-115 (Exhibit 10-70, AASHTO Greenbook – Chapter 10). Also, a minimum length of 435-feet can be obtained for the deceleration lane for northbound traffic along SR-115 ((Exhibit 10-73, AASHTO Greenbook – Chapter 10). Addition of the recommended auxiliary lanes can be accommodated within the existing right-of-way without the need for acquiring additional right-of-way.

Creation of an auxiliary lane along SB SR-115 will introduce a weaving situation near the exit ramp for the Wal-Mart shopping center and Middlesettlements Road. No traffic data was available for this exit ramp, therefore 15% traffic was assumed. **Table 4** indicates the results of this weave analysis.

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OPTION 1

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OPTION 1

Figure 6-3 - COST DATA SHEET (OPTION 1)

PROJECT SR-115 (US 129) @ LOUISVILLE ROAD
LOCATION BLOUNT COUNTY
LENGTH N/A
CROSS SECTION

RIGHT-OF-WAY

Land, Improvements, & Damages	(# Acres =)	\$	-
Incidentals	(# Tracts =)	\$	-
Relocation	(Residences =)	\$	-
	(Businesses =)	\$	-
TOTAL RIGHT-OF-WAY COST			\$ -

UTILITY RELOCATION

Reimbursable	\$	-
Non-Reimbursable	\$	-
TOTAL UTILITY COST		\$ -

CONSTRUCTION ITEMS

Mobilization	\$	45,000
Clearing & Grubbing	\$	5,000
Removal of Pavement	\$	49,000
Earthwork	\$	43,000
Drainage	\$	5,000
Structures	\$	-
Concrete Curb & Gutter	\$	-
Paving	\$	232,000
Maintenance of Traffic	\$	25,000
Concrete Barrier Rail	\$	50,000
Seeding	\$	6,000
Signing/Pavement Marking	\$	11,000
Signalization	\$	-
Silt Fence	\$	12,000
Rip-rap or Slope Protection	\$	-
Erosion Control (assume 5%)	\$	31,000
Other Items (assume 7.5%)	\$	46,000
10% Contingency	\$	60,000
TOTAL CONSTRUCTION COST		\$ 620,000

Engineering Cost (10% of Constr.)	\$	62,000
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Estimated Cost (OPTION 1) \$ 682,000

**TABLE 4 - PEAK HOUR LEVELS OF SERVICE
 WEAVE WITH FUTURE ACCELERATION LANES**

LOCATION	YEAR	AM PEAK HOUR	PM PEAK HOUR
State Route 115, between Louisville Road and ramp to Hunter's Crossing Drive / Bessemer Street	2012	LOS A	LOS B
	2032	LOS B	LOS C

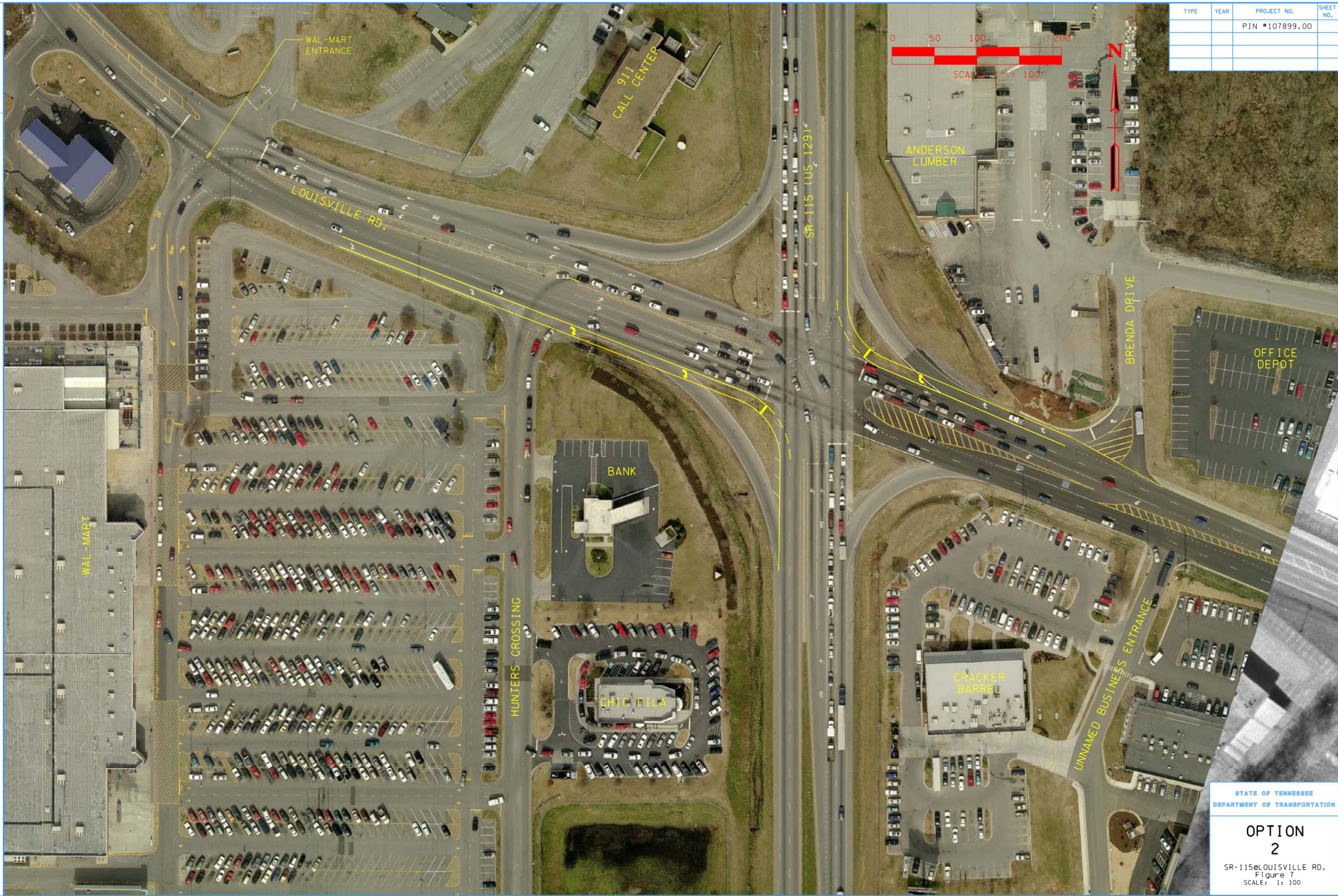
Option 2:

As an alternative to *Option 1*, additional consideration was given to reconstructing the eastbound and westbound right turn lanes so that they would be controlled by the traffic signal instead of the existing yield conditions. Under this scenario, the eastbound and westbound right turns would be given "green" time with the eastbound and westbound through movements. Also, right turn overlap signal phases would be provided to allow the eastbound and westbound right turns to operate with the northbound and southbound left turns. With this configuration, it is likely that rear-end accidents would decrease for the eastbound and westbound turning movements. However, the projected vehicle queues for these turning movements will be excessive, creating further congestion and delays. Specifically, based on both Year 2012 and Year 2032 traffic volumes, these queues are expected to extend beyond the adjacent intersections. **Table 5** shown in the next section, **Level of Service**, discusses the results of this analysis. Specifically, **Table 5a** and **5b** include the results of the capacity analyses conducted for the existing laneage and traffic control. **Table 5c** and **5d** include the results of the analyses conducted for the changes proposed for Option 2. A conceptual layout for this option is provided in **Figure 7**.

Since single right-turn lanes are not feasible, the formation of double right-turns for this option was considered. Analysis revealed this configuration also creates excessive vehicle queues, adding further congestion and delays. Results are also provided in **Table 5e** and **5f**.

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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

**OPTION
2**

SR-115@LOUISVILLE RD.
Figure 7
SCALE: 1: 100

Option 3:

Currently, vehicles can access Hunters Crossing and Brenda Drive directly via left-turn lanes off of Louisville Road. Each of these intersections reside approximately 350-ft within the main SR-115/Louisville Road intersection. The close proximity of these intersections combined with the heavy traffic volumes creates added congestion, backups, and reduced driver comfort levels within the area. This option proposes eliminating the left turns from Louisville Road. In each case, vehicles that desire to turn left onto the side streets can utilize an adjacent signalized intersection which will still provide easy access to these locations. Hunters Crossing and Brenda Drive would then be striped into a right-in/right-out only situation. A conceptual layout of this option is provided in **Figure 8-1**.



Left-turn onto Hunters Crossing to be eliminated.

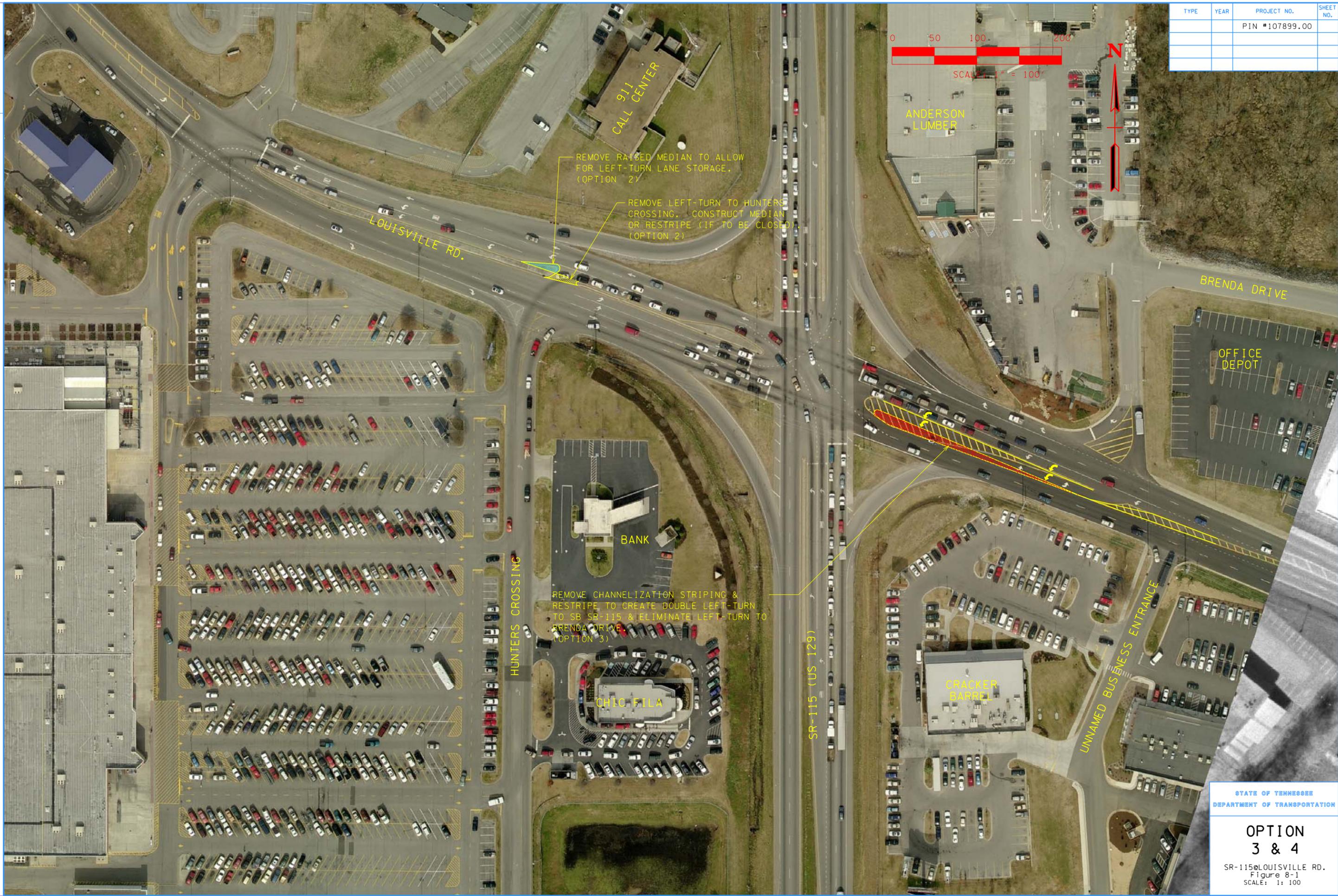
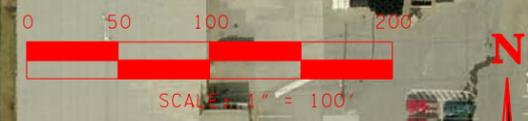


Left-turn onto Brenda Drive to be eliminated.

Option 4:

Traffic movement from WB Louisville Road to SB SR-115 currently utilizes a single left-turn lane at the intersection. Adequate area exists to create a double left-turn for this movement. As discussed in *Option 3*, the elimination of the left-turn from Louisville Road onto Brenda Drive would further facilitate this option and produce greater storage for this particular movement. A conceptual striping reconfiguration is also shown in **Figure 8-1**.

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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

**OPTION
3 & 4**

SR-115@LOUISVILLE RD.
Figure 8-1
SCALE: 1: 100

Figure 8-2 - COST DATA SHEET (OPTION 3)

PROJECT SR-115 (US 129) @ LOUISVILLE ROAD
LOCATION BLOUNT COUNTY
LENGTH N/A
CROSS SECTION

RIGHT-OF-WAY

Land, Improvements, & Damages	(# Acres =)	\$	-
Incidentals	(# Tracts =)	\$	-
Relocation	(Residences =)	\$	-
	(Businesses =)	\$	-
TOTAL RIGHT-OF-WAY COST			\$ -

UTILITY RELOCATION

Reimbursable	\$	-
Non-Reimbursable	\$	-
TOTAL UTILITY COST		\$ -

CONSTRUCTION ITEMS

Mobilization	\$	3,000
Clearing & Grubbing	\$	-
Removal of Pavement	\$	-
Earthwork	\$	-
Drainage	\$	-
Structures	\$	-
Concrete Curb & Gutter	\$	-
Concrete Median Pavement	\$	10,000
Paving	\$	-
Maintenance of Traffic	\$	5,000
Seeding	\$	-
Signing/Pavement Marking	\$	5,000
Removal of Pavement Marking	\$	11,000
Signalization	\$	10,000
Silt Fence	\$	-
Rip-rap or Slope Protection	\$	-
Erosion Control (assume 5%)	\$	-
Other Items (assume 5%)	\$	2,000
10% Contingency	\$	4,000

TOTAL CONSTRUCTION COST \$ 50,000

Engineering Cost (10% of Constr.) \$ 5,000

Estimated Cost (OPTION 3) \$ 55,000

Figure 8-3 - COST DATA SHEET (OPTION 4)

PROJECT SR-115 (US 129) @ LOUISVILLE ROAD
LOCATION BLOUNT COUNTY
LENGTH N/A
CROSS SECTION

RIGHT-OF-WAY

Land, Improvements, & Damages	(# Acres =)	\$	-
Incidentals	(# Tracts =)	\$	-
Relocation	(Residences =)	\$	-
	(Businesses =)	\$	-
TOTAL RIGHT-OF-WAY COST			\$ -

UTILITY RELOCATION

Reimbursable	\$	-
Non-Reimbursable	\$	-
TOTAL UTILITY COST		\$ -

CONSTRUCTION ITEMS

Mobilization	\$	3,000
Clearing & Grubbing	\$	-
Removal of Pavement	\$	-
Earthwork	\$	-
Drainage	\$	-
Structures	\$	-
Concrete Curb & Gutter	\$	-
Concrete Median Pavement	\$	-
Paving	\$	-
Maintenance of Traffic	\$	3,000
Seeding	\$	-
Signing/Pavement Marking	\$	14,000
Removal of Pavement Marking	\$	5,000
Signalization	\$	-
Silt Fence	\$	-
Rip-rap or Slope Protection	\$	-
Erosion Control	\$	-
Other Items (assume 5%)	\$	1,500
10% Contingency	\$	2,500

TOTAL CONSTRUCTION COST \$ 29,000

Engineering Cost (10% of Constr.) \$ 3,000

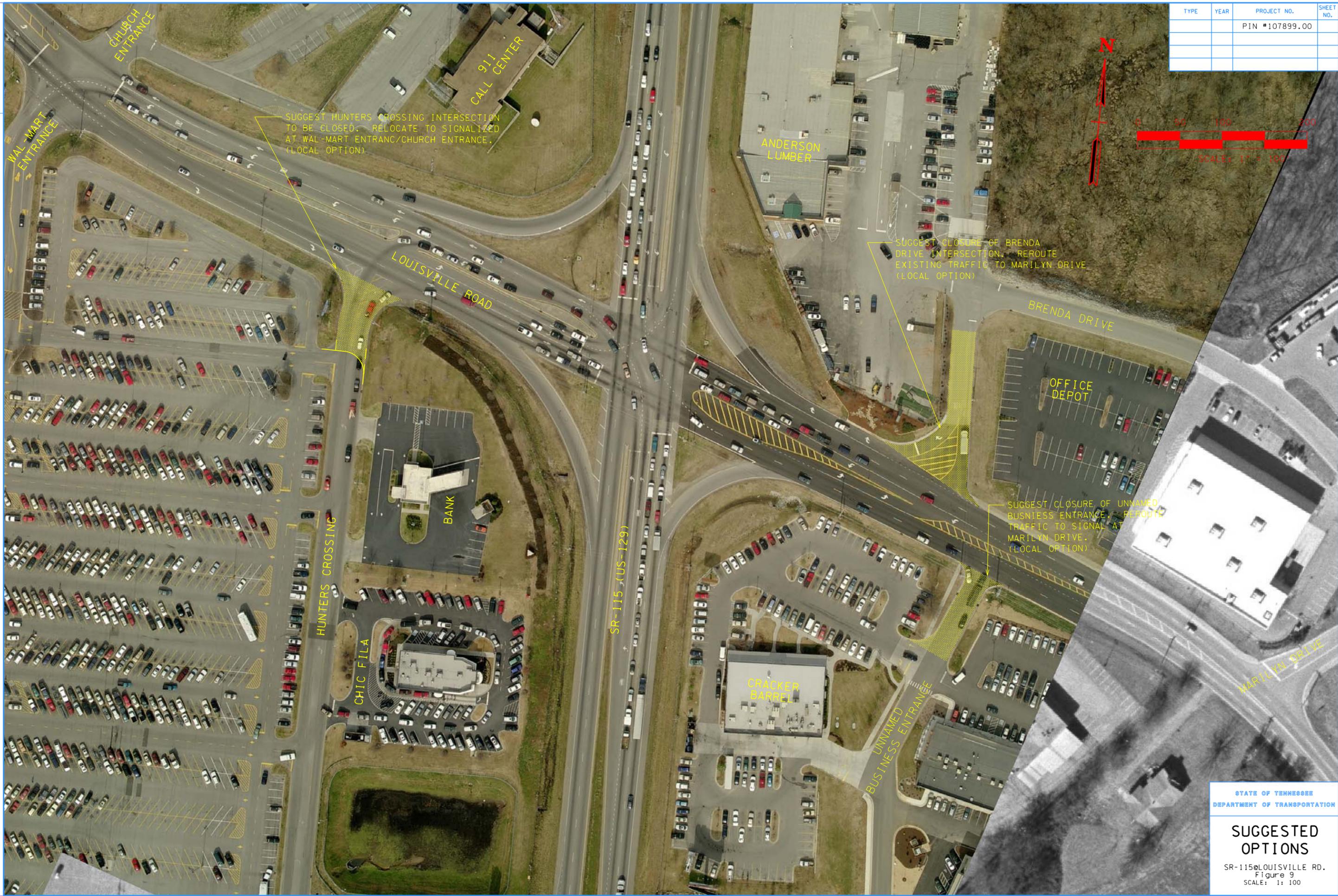
Estimated Cost (OPTION 4) \$ 32,000

Suggested Options:

The intersections of Hunters Crossing, Brenda Drive, and Unnamed Business Entrance (near the Cracker Barrel restaurant) along Louisville Road impact the overall traffic operation and safety of the main intersection SR-115 and Louisville Road. Their close proximity, approximately 350-ft., 350-ft., and 450-ft., respectively, creates added congestion, delays, and limits vehicle storage due to their turning movements along Louisville Road. The operation and performance of the intersection at SR-115 and Louisville Road **suggests** these intersections be closed due to their close proximity to the main intersection. **Figure 9** illustrates conceptually that existing traffic could utilize a nearby signalized intersection; Hunters Crossing rerouted to the signalized Wal-Mart entrance, Brenda Drive and the Unnamed Business Entrance rerouted to the signalized intersection at Marilyn Drive.

Improvements to these intersections do not fall within the scope of this report due to the local jurisdiction surrounding this study area. It is recommended that further study be initiated between local officials and stakeholders such as Wal-Mart, Cracker Barrel, Anderson Lumber, etc., who will be impacted the most to discuss the affects of closure at these intersections and determine acceptable solutions.

TYPE	YEAR	PROJECT NO.	SHEET NO.
		PIN #107899.00	



6/22/2007 7:52:49 AM
G:\TDOT\APR 0N-CALL\HDI022.00 SR115-Louisville Rd TPR\Cad\BLSR115Opt\10m4.sht

**SUGGESTED
OPTIONS**

LEVEL OF SERVICE

Operating conditions within a transportation route are distinguished by a “Level of Service” (LOS) analysis. This analysis reflects the ability of the roads, in this case, intersections, to accommodate motor vehicle traffic and subsequent physical and psychological comfort levels of drivers. A LOS analysis considers several factors including traffic volumes, number of travel lanes, terrain, truck traffic, and turning movements. Existing and projected traffic volumes for this study report are included in **Appendix B** of this report. Project volumes are for the base year (present year + 5 years) and design year (present year + 25 years). Schematic diagrams of each intersection are also included with their respective traffic volume.

LOS is a qualitative measure that describes the character of traffic conditions related to speed and travel time, freedom to maneuver, congestion, etc. There are six levels of operation ranging from “A” to “F” with “F” being the worst. A description of the operating conditions for each level is provided in the following.

<u>LOS</u>	<u>Traffic Flow Condition</u>
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 the highest.
B	Reasonably free flow operation. 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 speeds at or near free flow. 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 because of the additional vigilance required for safe operation.
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 no gaps in the traffic stream. There is little room to maneuver. The driver experiences poor physical and psychological comfort levels.
F	Traffic flow is breakdown. The number of vehicles entering the highway section exceeds the capacity or ability of the highway to accommodate the number of vehicles. There is little to no room to maneuver. The driver experiences poor physical and psychological comfort levels.

Specifically, these analyses are based on the Year 2012 and Year 2032 projected traffic volumes that have been developed by the Tennessee Department of Transportation (TDOT). In addition, it is important to note that two scenarios were considered:

Existing Laneage and Traffic Control
Proposed Laneage and Traffic Control

The proposed laneage and traffic control includes the following changes to the existing system:

State Route 115 and Louisville Road (Option 1)

It was assumed that an acceleration lane will be constructed on northbound State Route 115 for vehicles in the westbound right turn lane. Also, it was assumed that an acceleration lane will be constructed on southbound State Route 115 for vehicles in the eastbound right turn lane. Although these improvements will not provide additional capacity at the intersection of State Route 115 and Louisville Road, they are expected to reduce the vehicle crashes at this location.

Addition of Signalized Right-turn for WB / EB Louisville Road at SR-115 (Option 2)

Single and double right-turn lanes to be controlled by the signal at SR-115 were each considered for eastbound and westbound Louisville Road. Results for these configurations are shown in **Table 5**.

The intersection at Marilyn Drive was not part of this report's scope of work, and therefore no traffic data was available to analyze the performance of this intersection

A copy of the capacity analysis worksheets for this study can be found in **Appendix C** of this report.

**TABLE 5a - YEAR 2012 PEAK HOUR LEVELS OF SERVICE
 EXISTING LANEAGE AND TRAFFIC CONTROL**

INTERSECTION	TURNING MOVEMENT	AM PEAK HOUR		PM PEAK HOUR	
		LEVEL OF SERVICE	95 TH %-ILE QUEUE	LEVEL OF SERVICE	95 TH %-ILE QUEUE
State Route 115 and Louisville Road	Eastbound Left Turns	LOS E 73.7 sec/veh	17 vehicles	LOS F 262 sec/veh	20 vehicles
	Westbound Left Turns		3 vehicles		28 vehicles
	Northbound Lefts/Thrus		7 vehicles		18 vehicles
	Southbound Left Turns		9 vehicles		9 vehicles

**TABLE 5b - YEAR 2032 PEAK HOUR LEVELS OF SERVICE
 EXISTING LANEAGE AND TRAFFIC CONTROL**

INTERSECTION	TURNING MOVEMENT	AM PEAK HOUR		PM PEAK HOUR	
		LEVEL OF SERVICE	95 TH %-ILE QUEUE	LEVEL OF SERVICE	95 TH %-ILE QUEUE
State Route 115 and Louisville Road	Eastbound Left Turns	LOS F 135 sec/veh	25 vehicles	LOS F 362 sec/veh	29 vehicles
	Westbound Left Turns		4 vehicles		38 vehicles
	Northbound Lefts/Thrus		9 vehicles		26 vehicles
	Southbound Left Turns		12 vehicles		11 vehicles

**TABLE 5c - YEAR 2012 PEAK HOUR LEVELS OF SERVICE
 WITH EASTBOUND AND WESTBOUND RIGHT TURNS INCLUDED IN THE TRAFFIC SIGNAL
 AND RIGHT TURN OVERLAP PHASES PROVIDED**

INTERSECTION	TURNING MOVEMENT	AM PEAK HOUR		PM PEAK HOUR	
		LEVEL OF SERVICE	95 TH %-ILE QUEUE	LEVEL OF SERVICE	95 TH %-ILE QUEUE
State Route 115 and Louisville Road	Eastbound Left Turns	LOS F 160 sec/veh	17 vehicles	LOS F 309 sec/veh	20 vehicles
	Eastbound Right Turns		18 vehicles		65 vehicles
	Westbound Left Turns		3 vehicles		28 vehicles
	Westbound Right Turns		82 vehicles		49 vehicles
	Northbound Lefts/Thrus		7 vehicles		18 vehicles
	Southbound Left Turns		9 vehicles		9 vehicles

**TABLE 5d - YEAR 2032 PEAK HOUR LEVELS OF SERVICE
 WITH EASTBOUND AND WESTBOUND RIGHT TURNS INCLUDED IN THE TRAFFIC SIGNAL
 AND RIGHT TURN OVERLAP PHASES PROVIDED**

INTERSECTION	TURNING MOVEMENT	AM PEAK HOUR		PM PEAK HOUR	
		LEVEL OF SERVICE	95 TH %-ILE QUEUE	LEVEL OF SERVICE	95 TH %-ILE QUEUE
State Route 115 and Louisville Road	Eastbound Left Turns	LOS F 241 sec/veh	25 vehicles	LOS F undefined	29 vehicles
	Eastbound Right Turns		26 vehicles		undefined
	Westbound Left Turns		4 vehicles		38 vehicles
	Westbound Right Turns		102 vehicles		undefined
	Northbound Lefts/Thrus		9 vehicles		26 vehicles
	Southbound Left Turns		12 vehicles		11 vehicles

**TABLE 5e - YEAR 2012 PEAK HOUR LEVELS OF SERVICE
 WITH DOUBLE EASTBOUND AND WESTBOUND RIGHT TURNS INCLUDED IN THE
 TRAFFIC SIGNAL AND RIGHT TURN OVERLAP PHASES PROVIDED**

INTERSECTION	TURNING MOVEMENT	AM PEAK HOUR		PM PEAK HOUR	
		LEVEL OF SERVICE	95 TH %-ILE QUEUE	LEVEL OF SERVICE	95 TH %-ILE QUEUE
State Route 115 and Louisville Road	Eastbound Left Turns	LOS F 104 sec/veh	17 vehicles	LOS F 262 sec/veh	20 vehicles
	Eastbound Right Turns		7 vehicles		29 vehicles
	Westbound Left Turns		3 vehicles		28 vehicles
	Westbound Right Turns		39 vehicles		19 vehicles
	Northbound Lefts/Thrus		7 vehicles		18 vehicles
	Southbound Left Turns		9 vehicles		9 vehicles

**TABLE 5 f - YEAR 2032 PEAK HOUR LEVELS OF SERVICE
 WITH DOUBLE EASTBOUND AND WESTBOUND RIGHT TURNS INCLUDED IN THE
 TRAFFIC SIGNAL AND RIGHT TURN OVERLAP PHASES PROVIDED**

INTERSECTION	TURNING MOVEMENT	AM PEAK HOUR		PM PEAK HOUR	
		LEVEL OF SERVICE	95 TH %-ILE QUEUE	LEVEL OF SERVICE	95 TH %-ILE QUEUE
State Route 115 and Louisville Road	Eastbound Left Turns	LOS F 172 sec/veh	25 vehicles	LOS F undefined	29 vehicles
	Eastbound Right Turns		9 vehicles		undefined
	Westbound Left Turns		4 vehicles		38 vehicles
	Westbound Right Turns		50 vehicles		undefined
	Northbound Lefts/Thrus		9 vehicles		26 vehicles
	Southbound Left Turns		12 vehicles		11 vehicles

ASSESSMENT OF OPTIONS

The Tennessee Department of Transportation has adopted seven 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. The guiding principles are discussed in the following paragraphs as they relate to the options for improving the intersection of SR-115 at Louisville Road.

Guiding Principle 1: Preserve and Manage the Existing Transportation System

The intersection of SR-115 and Louisville Road is at capacity based upon year 2012 and 2032 traffic. Traffic volumes will continue to increase with the continued commercial and retail development. Options 1, 2, 3, and 4 are not intended to reduce traffic volumes but rather increase safety, reduce vehicle delays, and improve operation. Implementation of Option 1 or 2, and Option 3 and 4 will provide the greatest affect. Suggested closure of existing intersections should consider surrounding stakeholders prior to implementation.

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

Commercial development along the southern portion of the SR-115/Louisville Road has increased tremendously. Further commercial and industrial development within the area is anticipated which will also affect existing transportation network. The options for improvements are necessary to address an expanding market while accommodating regional commuter activity. Suggested options should be reviewed along with discussion and input between local officials and stakeholders.

Guiding Principle 3: Support the State's Economy

SR-115(US129) is a major corridor between Maryville and Knoxville. This highway serves as a major commuter route as well as providing direct and indirect access for industry located within Alcoa. The Knoxville Regional Airport is also located along SR-115, just a few miles to the north. The cities of Alcoa and Maryville have consistently grown since 2000, and continued growth is expected. Alcoa estimates that commercial/office and industrial businesses will account for forty percent (40%) of usable land and residential accounting for over forty percent (40%), a combined 80%, within the City's boundaries by year 2025. The improvement of the SR-115/Louisville Road intersection and corridor will create improved and safer access to residential, commercial, and industrial areas in the future.

Guiding Principle 4: Maximize Safety and Security

A crash rate of 3.64 was calculated for the period January 1, 2003 to December 31, 2005, and the statewide average rate is 0.91. The critical rate was determined to be 1.23 and the severity index was 0.02. The ratio of actual/critical rate was 2.96 and the actual rate/statewide average was 4.00. A total of 186 crashes were reported with only one crash considered as severe injury during this period. A majority of crashes occurred in the right turn lanes from Louisville Road to SR-115.

Guiding Principle 5: Build Partnerships for Livable Communities

Communication and involvement with stakeholders affected by the *suggested* closure options is crucial to the overall community. In addition, local officials have been coordinating with Knoxville TPO staff as well as TDOT officials to identify objectives for improving the region's transportation system. Long term goals would not only address this particular intersection but the entire SR-115 corridor.

Guiding Principle 6: Promote Stewardship of the Environment

A detailed environmental study will not be necessary to implement the improvements from described by each option. These options do not pose a significant impact to the environment.

Guiding Principle 7: Promote Financial Responsibilities

Preliminary construction cost estimates have been prepared for the various options and are summarized in **Table 6**.

Table 6 – Estimated Construction Costs for Proposed Improvements

Proposed Improvement	Estimated Cost
Option 1	\$682,000
Option 3	\$55,000
Option 4	\$32,000

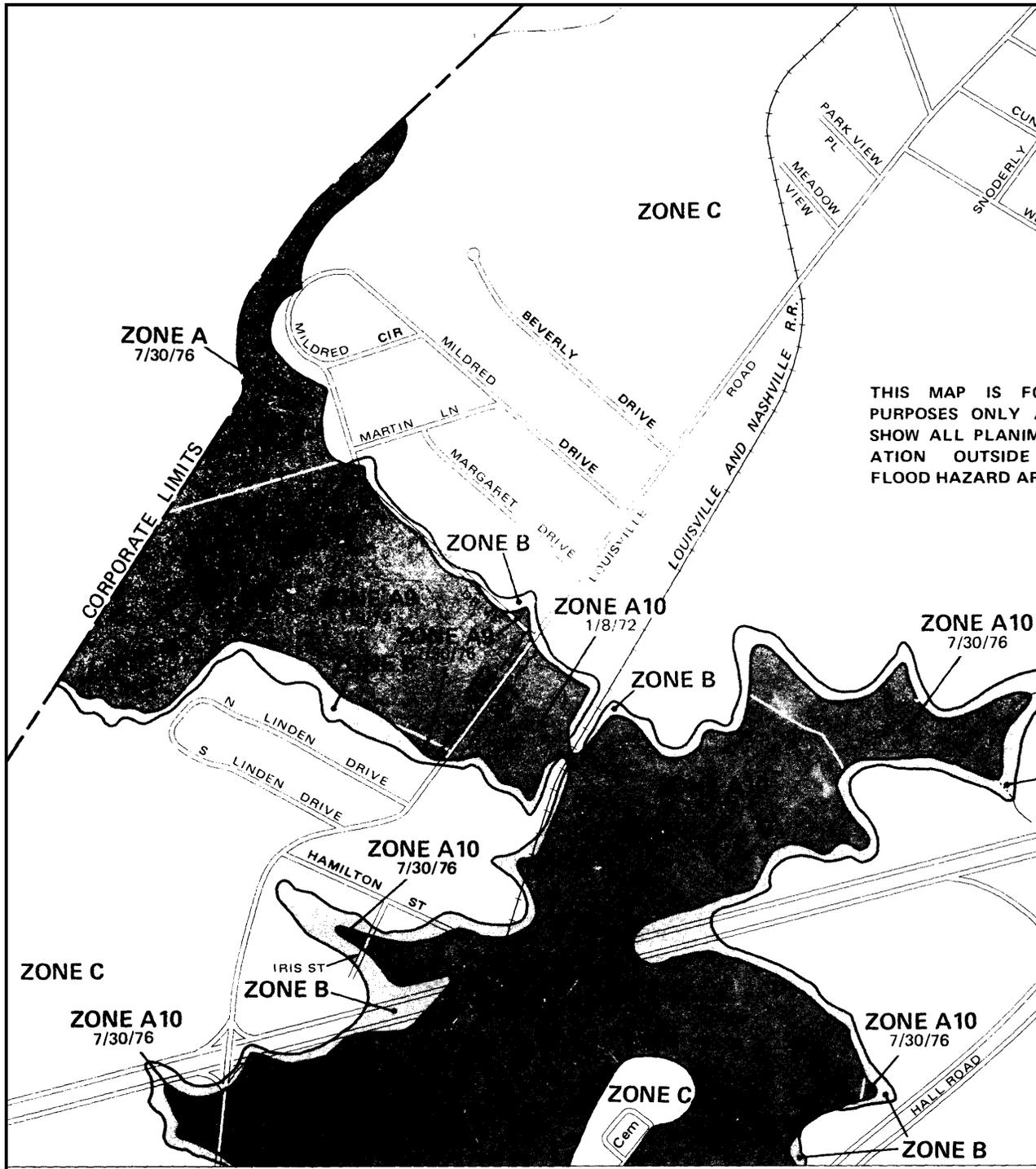
*Note: A cost for Option 2 is not provided as traffic analyses indicate this option fails.

PRELIMINARY ENVIRONMENTAL ANALYSIS

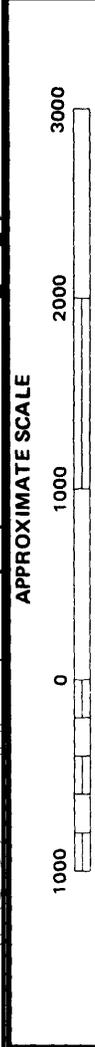
Information provided by TDOT and a field level survey conducted of the project area indicates there are no historic properties within the study area.

A review within the Area of Potential Effects (APE) displays there potentially could be some impact due to floodplain in the immediate area. The APE is the geographic area in which an activity may directly or indirectly impact the environment. A floodplain map, as provided by the Federal Emergency Management Agency (FEMA), indicates a portion of the northeast quadrant of the intersection at SR-115 and Louisville Road may lie within the designated zone. The limited improvements should not have any impact or effect to the existing flood zone. A copy of the floodplain map is provided on the following page in **Figure 10**.

An evaluation of existing environmental conditions was noted during the stakeholder field review and noted in the Preliminary Environmental Evaluation checklist. A copy of the form is also provided on the following pages.



THIS MAP IS FOR
 PURPOSES ONLY AND
 SHOW ALL PLANIM
 ATION OUTSIDE
 FLOOD HAZARD ARE



DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration
CITY OF ALCOA, TN
 (BLOUNT CO)

MAP REVISED
APRIL 15, 1977

Figure 10

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

Preliminary Environmental Evaluation

If preliminary field reviews indicate the presence of any of the following facilities or Economic, Social and Environmental categories (ESE), place the number of facilities in the blank opposite the item. Where more than one location option is to be considered, place its letter designation in the blank.

	<u>Option</u>
1.) Hazardous Material Site or Underground Storage Tanks.....	_____
2.) Floodplains.....	_____ X _____
3.) Historical, archaeological, cultural, or natural landmark, or cemeteries.....	_____
4.) Airport.....	_____
5.) Residential establishment.....	_____
6.) Urban area, city, town, or community..... (Alcoa , Pop. 7,734)	_____ X _____
7.) Commercial area, shopping center.....	_____ X _____
8.) Institutional usages:	
a. School or other educational institution.....	_____
b. Hospital or other medical facility.....	_____
c. Church or other religious institution.....	_____ X _____
d. Public Building, e.g., fire station.....	_____ X _____
e. Defense installation.....	_____
9.) Agricultural land usage.....	_____
10.) Forested land.....	_____
11.) Industrial park, factory.....	_____
12.) Recreational usages:	
a. Park or recreational area, State Natural Area.....	_____
b. Wildlife refuge or wildlife management area.....	_____
13.) Waterway:	
a. Lake.....	_____
b. Pond.....	_____
c. River.....	_____
d. Stream.....	_____
e. Spring.....	_____
14.) Railroad Crossings.....	_____
15.) Location coordinated with local officials.....	_____ X _____
16.) Other.....	_____

SUMMARY

SR-115 in Blount County is a four-lane arterial roadway that serves an increasingly high volume of both commuter, local, and industrial vehicles each day. SR-115 serves as a connector not only from Maryville to Knoxville, but provides access to Interstate 40 which is critical to industry located in the region. The population of Alcoa and other areas within Blount County has continued to grow, increasing between a total of 6-7% from 2000 to 2005. A large portion of Alcoa still remains undeveloped though, with only 50% of Alcoa accounted for at the current time. As the City of Alcoa continues to grow and expand, local development will contribute more vehicles to the local transportation system.

The traffic analysis reveals that for the base year 2012, the intersection of SR-115 and Louisville Road operates at LOS E during A.M. and LOS F during P.M. times. Future year 2032 analysis indicates LOS F for both peak hour times. The high traffic volumes accounted for at this intersection also creates a high number of crashes and the crash rate for this intersection is above the Tennessee statewide average crash rate.

Improvements to the intersection of SR-115 and Louisville Road are necessary to achieve the following criteria:

- Address operational and safety concerns at this intersection and adjacent intersections along Louisville Road.

While relief is much needed, efforts at this time to widen the intersection or construct a grade separated interchange would be futile since no corridor improvements are planned or identified along SR-115. Therefore this particular improvement was not considered as an option.

Option 2 is not considered a viable option as analyses indicate this improvement fails. Therefore this option is not recommended.

Four options were considered in addressing the purpose and need of this project. The following is a summary of these options.

Option 1

- Construct acceleration lanes along SR-115 for the movements of EB Louisville Road to SB SR-115 and WB Louisville Road to NB SR-115.
- Construct a deceleration lane along SR-115 for vehicle turning EB Louisville Road.
- Estimated Cost = \$682,000.

Option 3

- Eliminate the left-turn movement for traffic traveling WB Louisville Road to Hunters Crossing. Construct a raised median to prevent left turns.
- Restripe Hunters Crossing for right-in/right-out operation.
- Estimated Cost = \$55,000.

Option 4

- Create a double left-turn for vehicles at the intersection of SR-115/Louisville Road traveling WB Louisville Road to SB SR-115.
- Eliminate the left-turn movement for traffic traveling EB Louisville Road to Brenda Drive.
- Estimated Cost = \$32,000.

Suggested Option

- Close Hunters Crossing intersection at Louisville Road.
- Close Brenda Drive intersection at Louisville Road.
- Close the Unnamed Business Entrance (adjacent to Cracker Barrel) at Louisville Road.

Appendix A – Field Review Meeting Minutes

**DEPARTMENT OF TRANSPORTATION
BUREAU OF PLANNING AND DEVELOPMENT
PLANNING DIVISION**

FIELD REVIEW REPORT

Region	County	Project No.	Type of Report:
1	Blount	PIN #107899.00	<u>Transportation Planning Report (TPR)</u>

Route No. & Termini:	Date	Date of Inspection
SR-115(US 129)@Louisville Road	4/13/07	4/12/07

Inspection Made By:

Gary Webber – TDOT Planning
Mike Biggs – HMB Professional Engineers, Inc.
Chad Toles – HMB Professional Engineers, Inc.
Ken Sperry – HMB Professional Engineers, Inc.
Steve Hylton – TDOT Planning
Gillian Fischbach – Fischbach Transportation Group, Inc.
Mwafaq Mohammed – TDOT Environmental
Mike Conger – Knoxville TPO
Nathan Vatter – TDOT Reg.1 Traffic
Chris Jenkins – TDOT Reg. Project Manager
Jeff Turner – TDOT Reg. 1 Design
Mike Russell – TDOT Reg. 1
Mark Parrish – TDOT Reg. 1 Design
Kenny Wiggins – City of Alcoa
Andrew Sonner – City of Alcoa
Leigh Ann Tribble - FHWA

Written Comments Received From:

None

General Comments:

1. Introductions to all parties attending, HMB explained and discussed the background and scope of project.
2. HMB explained that peak volumes for base year average daily traffic (ADT) is approximately over 40,000, and project ADT in year 2032 is almost 55,000.
3. Updated crash data reveals approximately 200 crashes at this intersection. Almost all were rear-end type crashes with very few injuries and no fatalities. It was asked if this project could be considered as a regional safety audit report (RSAR) rather than TPR due to the number of crashes and focusing just on the intersection. TDOT explained this project does not qualify since the high traffic volumes create a low crash ratio, and no serious injuries or fatalities have

occurred. Representatives from the City of Alcoa pointed out that the majority of crashes occurred in the right-hand turn lane, either from EB Louisville Rd to SB SR-115 or NB Louisville Rd to NB SR-115.

4. A question was asked if the project limits involved only the SR-115/Louisville Road intersection or if it contained any of the SR-115 corridors. HMB explained the projects limits included the signalized intersection near the Wal-Mart entrance, the intersection at Hunters Crossing (a frontage road for the Wal-Mart complex), the SR-115/Louisville Road intersection, and the unsignalized intersection for Brenda Drive/Louisville Road.
5. The City of Alcoa had previously requested to TDOT that the SR-115 corridor as a whole be studied in conjunction with this intersection. This project was to focus only on the intersections discussed in Item #4.
6. A TDOT representative explained TDOT currently has a SIA project on-going immediately south that will address improvements to Middlesettlements Road @ SR-115.
7. The City of Alcoa has contracted with Kimley-Horn to study the signal phasing along Louisville Road and also for a few signals along SR-115. Design recommendations for synchronizing the timing have been implemented. Attendees who travel the area mentioned this has helped alleviate some congestion.
8. HMB explained because of the extremely large traffic volumes at the main intersection, a grade separation would best alleviate the congestion along SR-115. However, without addressing other issues along the corridor at the same time, a project of this magnitude would inconvenience the public without considering other long term corridor solutions.
9. Limited right-of-way within the immediate area of the main intersection prohibits any major improvements. Retail businesses and the local 911 call center are all built within close proximity of the existing right-of-way.
10. Long-range improvements along SR-115 are not identified in the long range plan for the Knoxville TPO at this time. The City mentioned it is working to have this placed in future plans.
11. It was agreed the best options for improvement would be to address short-term safety and congestion. HMB discussed with TDOT and the City various alternatives. Two of which would be to reduce crashes occurring in the right-turn lanes mentioned in Item #3. Also, it was discussed to realign Hunters Crossing with the signalized intersection for the Wal-Mart entrance to alleviate the left turn movement from Louisville Road. And also address the left turn movement from Brenda Drive onto Louisville Road.
12. It was mentioned that projected traffic does include traffic estimated for the development under construction in the southeast quadrant of the intersection.
13. Level of Service was discussed for the intersection; currently functions at Level D.
14. The City mentioned updated aerial photography may be available for the area. Current aerial mapping obtained from TDOT does not show recent improvements within the study area. HMB had previously contacted the GIS coordinator for Blount County and will follow up to determine if updated mapping can be obtained.

15. The City provided HMB with a printout of how and where crashes occurred within the main intersection.
16. The review team discussed a variety of options for improvements concerning Brenda Drive and the business entrance (opposite Brenda Drive) along Louisville Road which will be fully discussed in the TPR as a result of this field review.
17. Observed an illegal U-turn on Louisville Road in front of Brenda Drive during review. Also observed several motorists ignoring pavement markings in turning areas.
18. Noticed improperly placed pavement markings currently denoted for the Louisville Road left-turn lane for Brenda Drive. Representatives from the City stated they would correct as soon as possible.

APRIL 12, 2007

FIELD REVIEW - SR115 @ LOUISVILLE RD. TPR

NAME	AGENCY	email
Mike Biggs	HMB	m.biggs@hmbpe.com
Leigh Ann Tribble	FHWA	LeighAnn.Tribble@fhwa.dot.gov
STEVE HYLTON	TDOT PLANNING	STEVE.HYLTON@STATE.TN.US
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Gary Webber	TDOT Planning	Gary.Webber@state.tn.us
Gillian Fischbach	Fischbach Transp. Grp.	Gillian@FTGtraffic.com
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Mark Parrish	TDOT RI Design	John.Parrish@state.tn.us
Kenny Wiggins	City of Alcoa	kwiggins@cityofalcoa-tn.gov
Andrew Somers	" "	asomers@cityofalcoa-tn.gov

Appendix B – Traffic Report

**TENNESSEE DEPARTMENT OF TRANSPORTATION
PROJECT PLANNING DIVISION**

PROJECT NO.: _____ ROUTE: S.R. 115 @ LOUISVILLE RD.
 COUNTY: BLOUNT CITY: ALCOA
 PROJECT PIN NUMBER: _____
 PROJECT DESCRIPTION: INTERSECTION IMPROVEMENT @ S.R. 115 & LOUISVILLE ROAD.

- [1] S.R. 115 TRAFFIC DATA
[2] LOUISVILLE ROAD TRAFFIC DATA

DIVISION REQUESTING:

MAINTENANCE PAVEMENT DESIGN
 PLANNING STRUCTURES
 PROG. DEVELOPMENT & ADM. SURVEY & DESIGN
 PUBLIC TRANS. & AERO. TRAFFIC SIGNAL DESIGN
 OTHER _____
 YEAR PROJECT PROGRAMMED FOR CONSTRUCTION: _____
 PROJECTED LETTING DATE: _____

TRAFFIC ASSIGNMENT:

	BASE YEAR		DESIGN YEAR				DESIGN ROADWAY % TRUCKS		DESIGN AVERAGE DAILY LOADS		
	AADT	YEAR	AADT	DHV	%	YEAR	DIR.DIST.	DHV	AADT	FLEX	RIGID
[1]	47,740	2012	54,300	4,764	9	2032	65-35	5	7		
[2]	20,010	2012	24,010	1,761	7	2032	55-45	2	3		

REQUESTED BY: NAME GARY WEBBER DATE 8-22-06
 DIVISION PLANNING
 ADDRESS 900 J. K. POLK BUILDING
NASHVILLE TN 37243

REVIEWED BY: TONY ARMSTRONG Tony Armstrong DATE 3-20-07
 TRANSPORTATION MANAGER 1
 SUITE 1000, JAMES K. POLK BUILDING

APPROVED BY: BILL HART Bill Hart DATE 3-20-07
 TRANSPORTATION MANAGER 2
 SUITE 900, JAMES K. POLK BUILDING

COMMENTS:

INCLUDES 4-8 HOUR TURNING MOVEMENT COUNTS DONE BY HMB ENGINEERING.

THIS TRAFFIC BASED ON 2006 CYCLE COUNTS AND THE 4-8 HOUR TURNING MOVEMENT COUNTS DONE BY HMB ENGINEERING DATED 2-20/22-07. THE FUTURE TRAFFIC IS BASED ON GROWTH RATE FROM THE KNOXVILLE MPO COMPUTER ASSIGNMENT MODEL.

DHV'S ARE NOT REQUIRED FOR SIDE ROADS LESS THAN 1000 AADT.

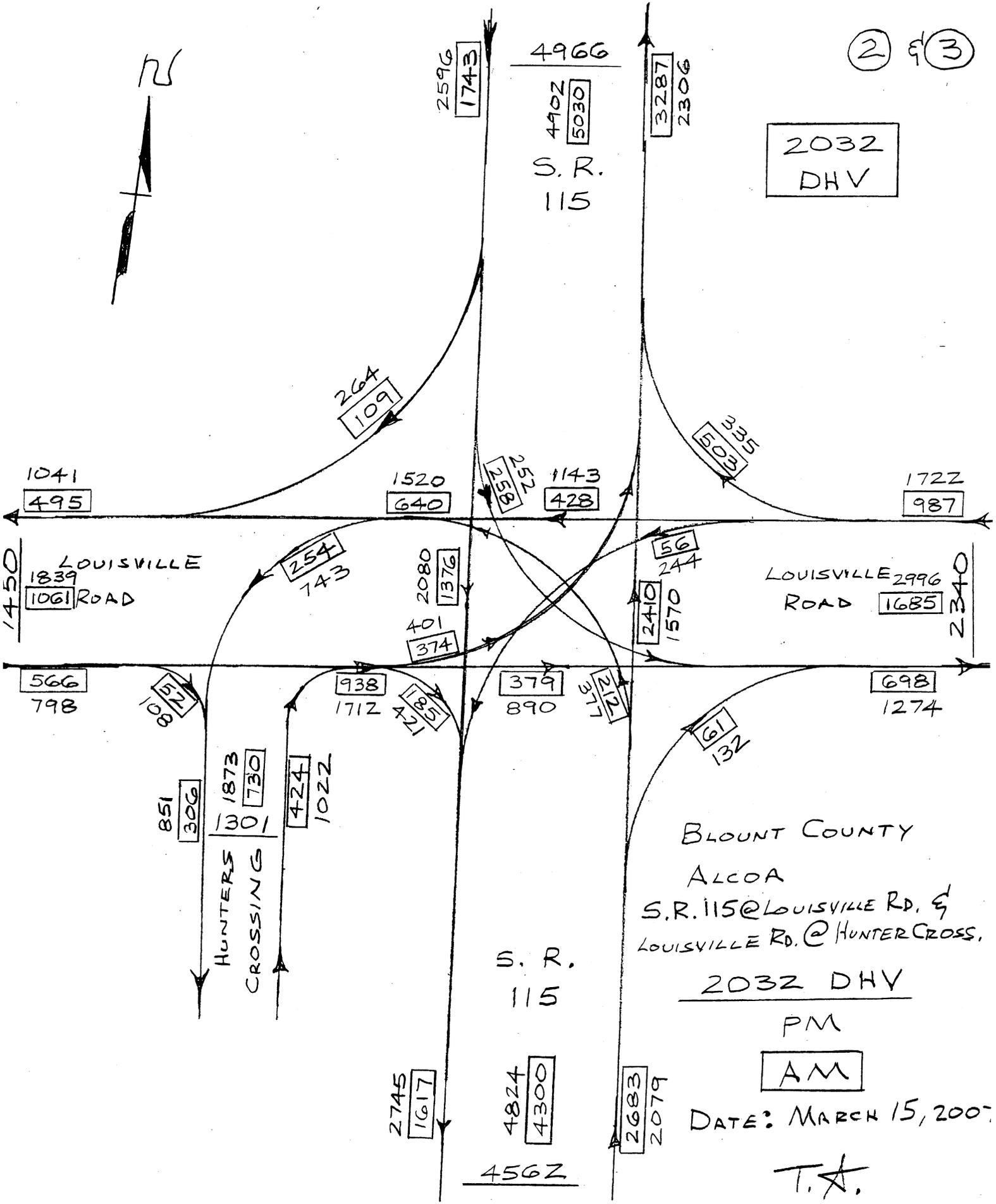
NOTE: FOR BRIDGE REPLACEMENT PROJECTS, ADLs ARE NOT REQUIRED FOR AADT's OF 1000 OR LESS AND PERCENTAGE OF TRUCKS OF 7% OR LESS.

SEE ATTACHMENTS FOR TURNING MOVEMENTS AND/OR OTHER DETAILS.

(REV. 11/6/06)



(2) (3)

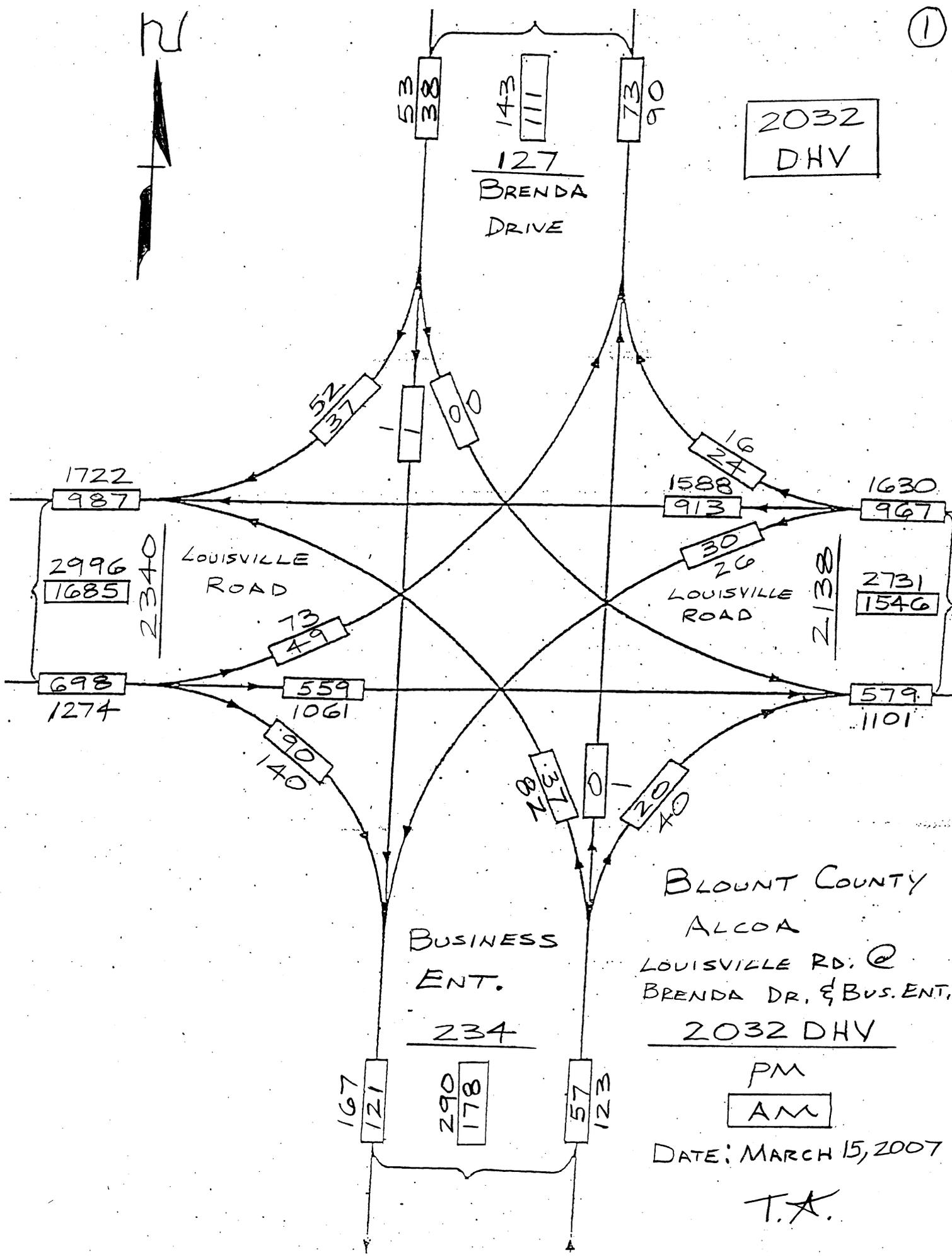


BLOUNT COUNTY
 ALCOA
 S.R. 115 @ LOUISVILLE RD. &
 LOUISVILLE RD. @ HUNTER CROSS.

2032 DHV
 PM
 AM

DATE: MARCH 15, 2000

T.A.



2032
DHV

127
BRENDA
DRIVE

LOUISVILLE
ROAD

LOUISVILLE
ROAD

BUSINESS
ENT.

BLOUNT COUNTY
ALCOA
LOUISVILLE RD. @
BRENDA DR. & BUS. ENT.

234

2032 DHV

PM

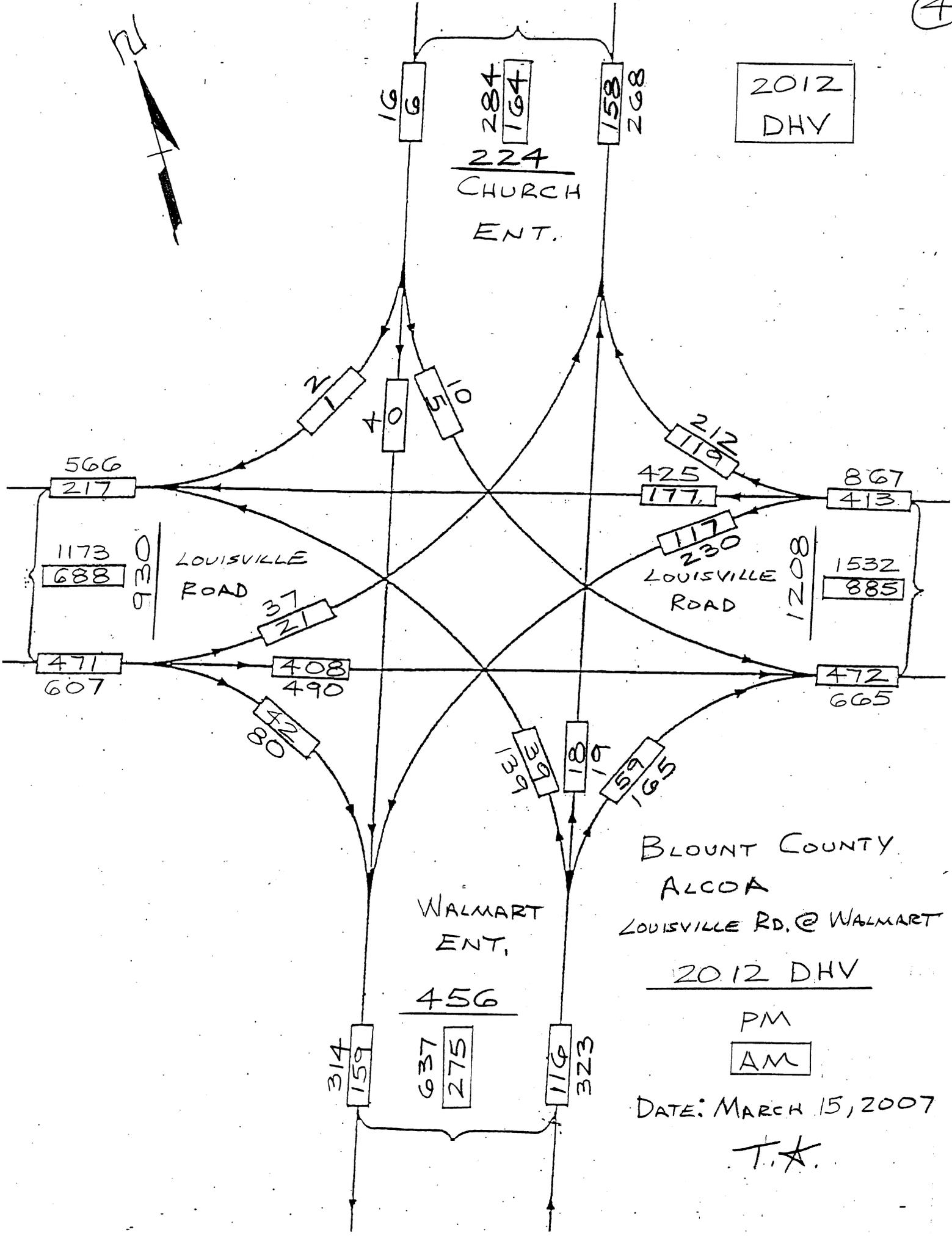
AM

DATE: MARCH 15, 2007

T.A.



2012
DHV



BLOUNT COUNTY
ALCOA
LOUISVILLE RD. @ WALMART

2012 DHV

PM

AM

DATE: MARCH 15, 2007

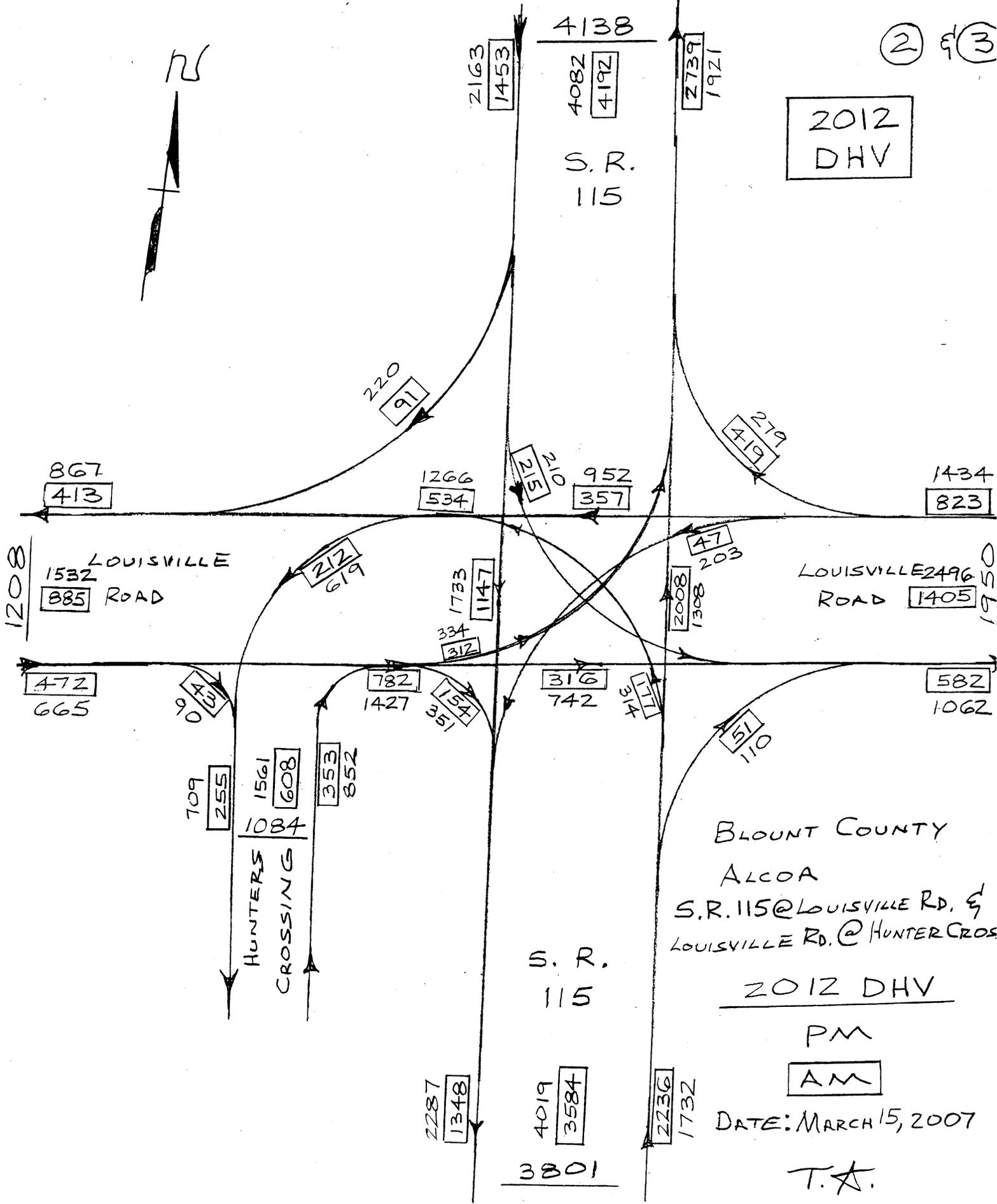
T.A.



② ③

2012
DHV

S. R.
115



867
413

1266
534

952
357

1434
823

1532
885

2496
1405

472
665

90
43

709
255

1561
608

353
852

782
1427

154
351

316
742

582
1062

HUNTERS
CROSSING

S. R.
115

BLOUNT COUNTY

ALCOA

S. R. 115 @ LOUISVILLE RD. &
LOUISVILLE RD. @ HUNTER CROSS

2012 DHV

PM

AM

DATE: MARCH 15, 2007

T. A.

2287
1348

4019
3584

2236
1732

3801

2163
1453

4138

4082
4192

2739
1921

220
91

212
210

279
419

212
619

1733
1147

47
203

334
312

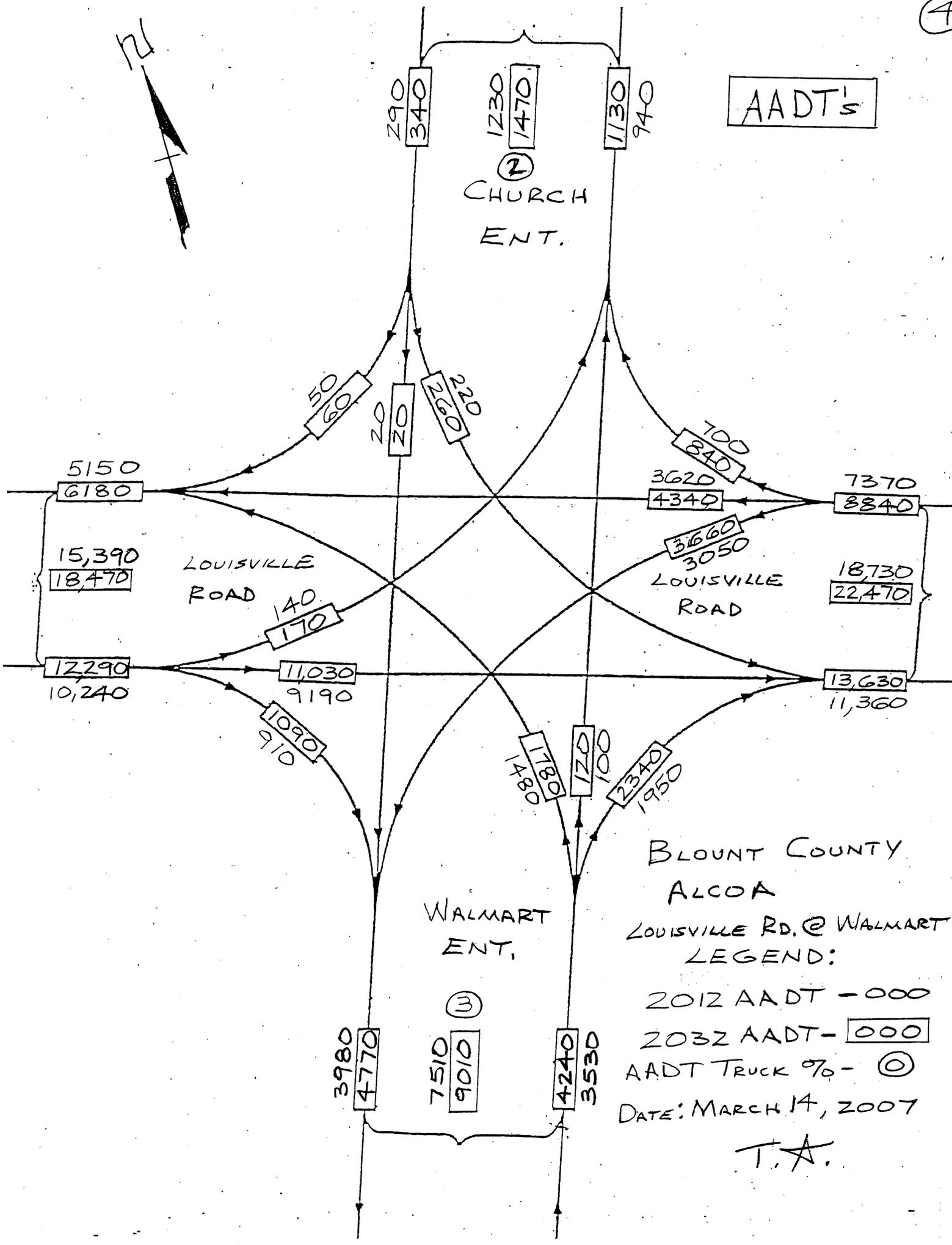
2008
1308

316
742

51
110



AADT's

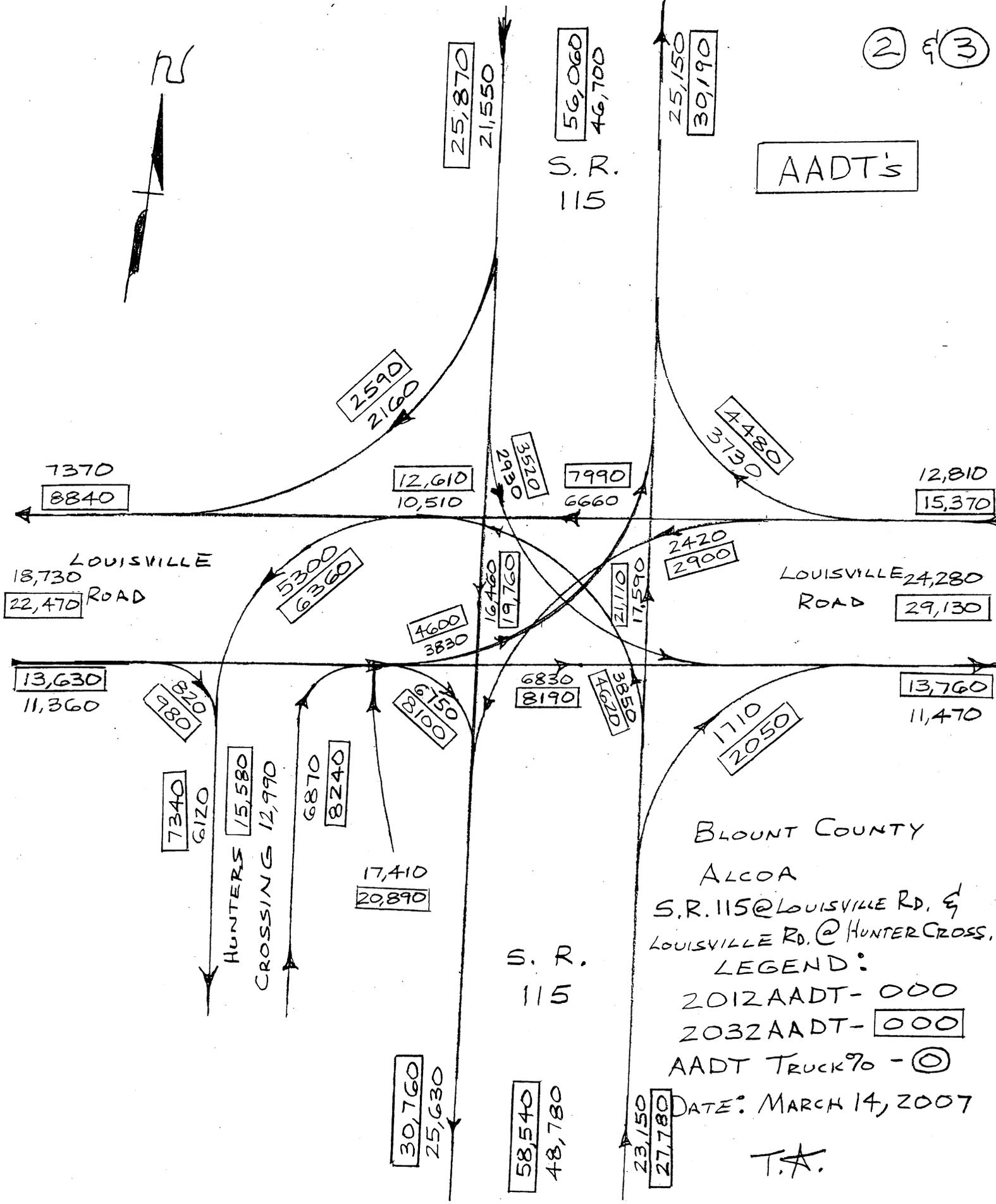


BLOUNT COUNTY
ALCOA
LOUISVILLE RD. @ WALMART
LEGEND:
2012 AADT - 000
2032 AADT - 000
AADT TRUCK % - ©
DATE: MARCH 14, 2007

T.A.



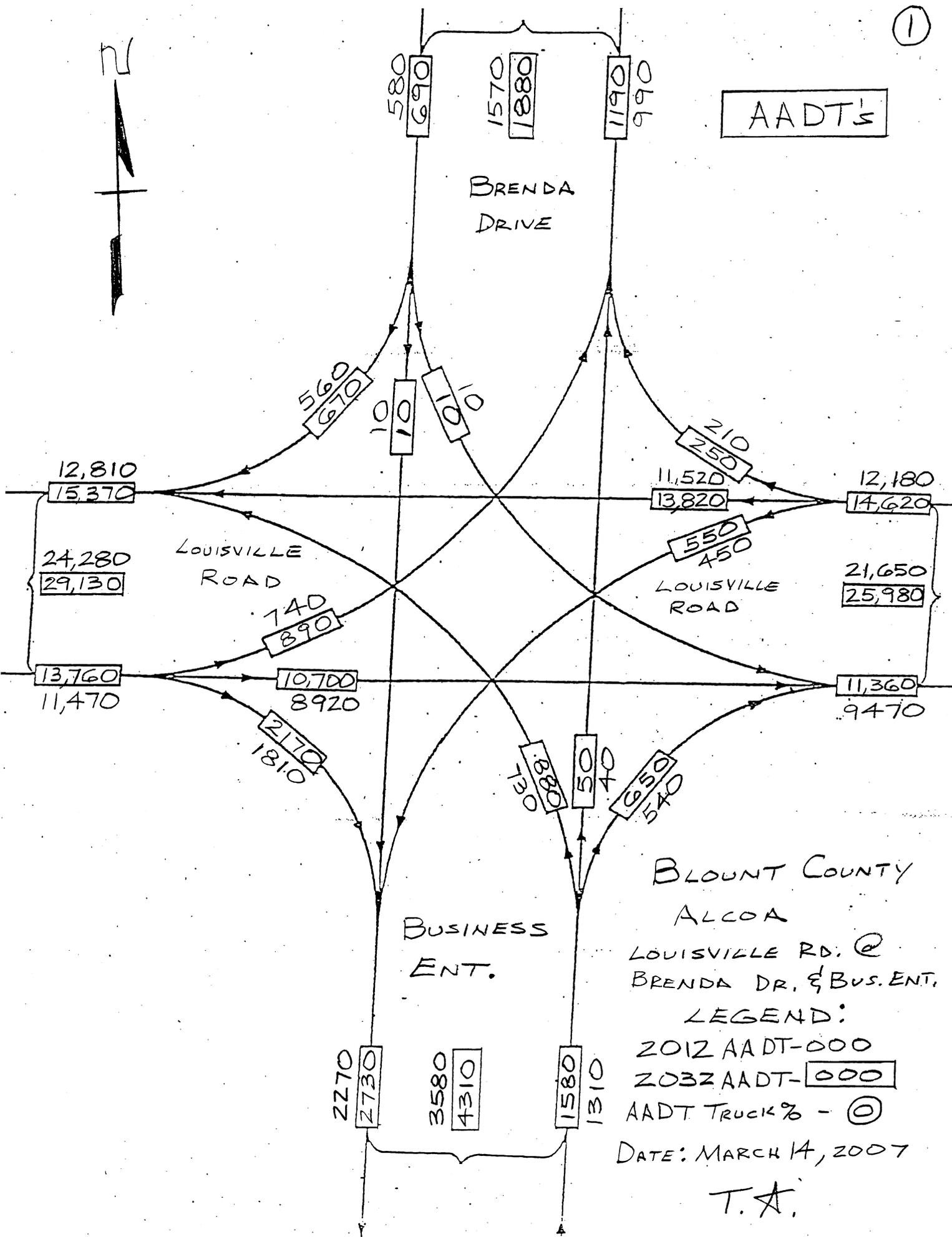
(2) of (3)



AADT's

BLOUNT COUNTY
 ALCOA
 S.R. 115 @ LOUISVILLE RD. &
 LOUISVILLE RD. @ HUNTER CROSS.
 LEGEND:
 2012 AADT - 000
 2032 AADT - 000
 AADT TRUCK % - ⊙
 DATE: MARCH 14, 2007

T.A.



AADT's

BRENDA DRIVE

LOUISVILLE ROAD

BUSINESS ENT.

BLOUNT COUNTY

ALCOA

LOUISVILLE RD. @ BRENDA DR. & BUS. ENT.

LEGEND:

2012 AADT-000

2032 AADT-000

AADT TRUCK% - (C)

DATE: MARCH 14, 2007

T.A.

580
690

1570
1880

1190
990

560
670

10
10

10
10

210
250

11,520
13,820

12,180
14,620

12,810
15,370

24,280
29,130

21,650
25,980

740
890

10,700
8920

550
450

13,760
11,470

11,360
9470

2170
1810

130
380

50
40

650
540

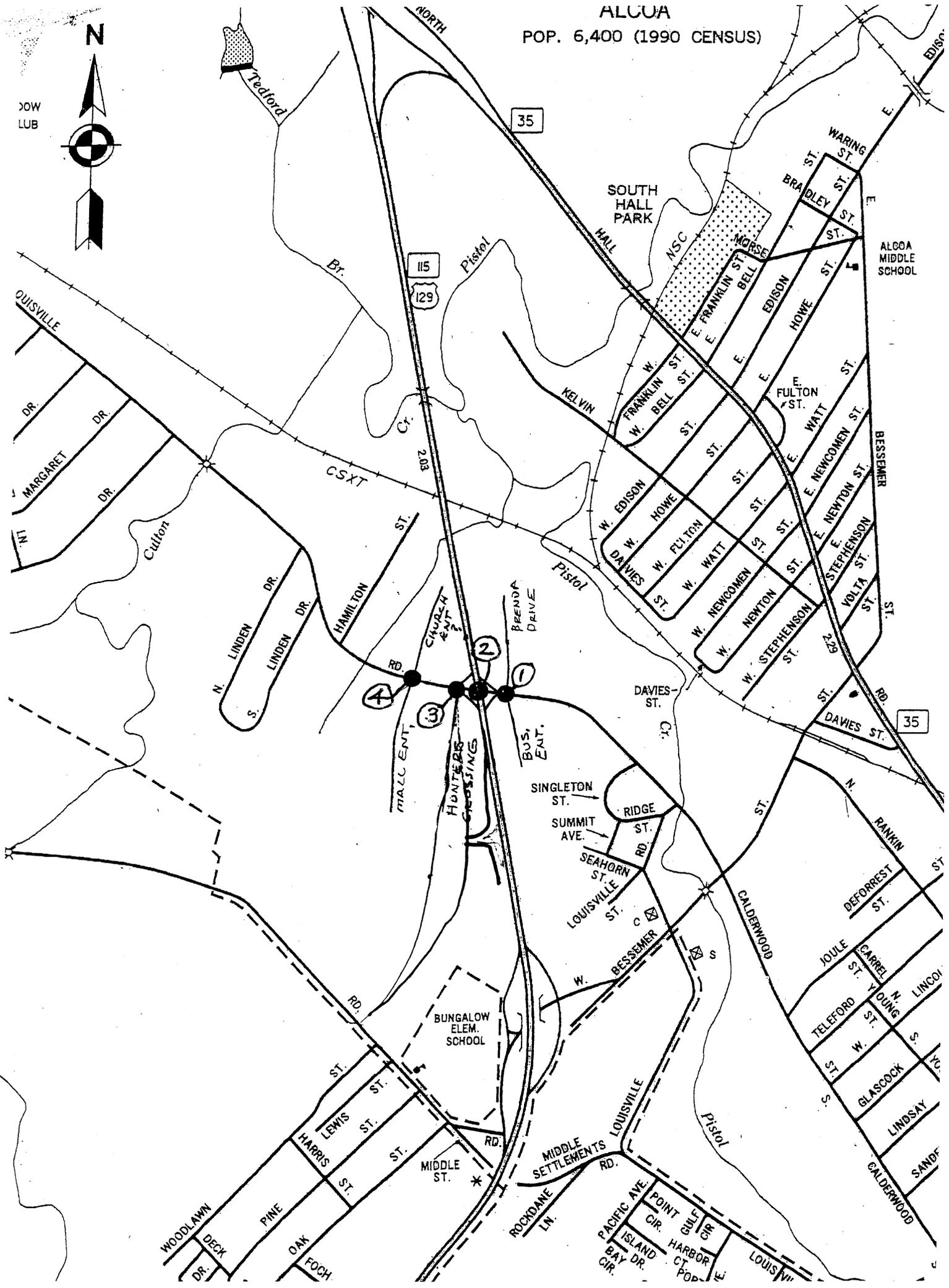
2270
2730

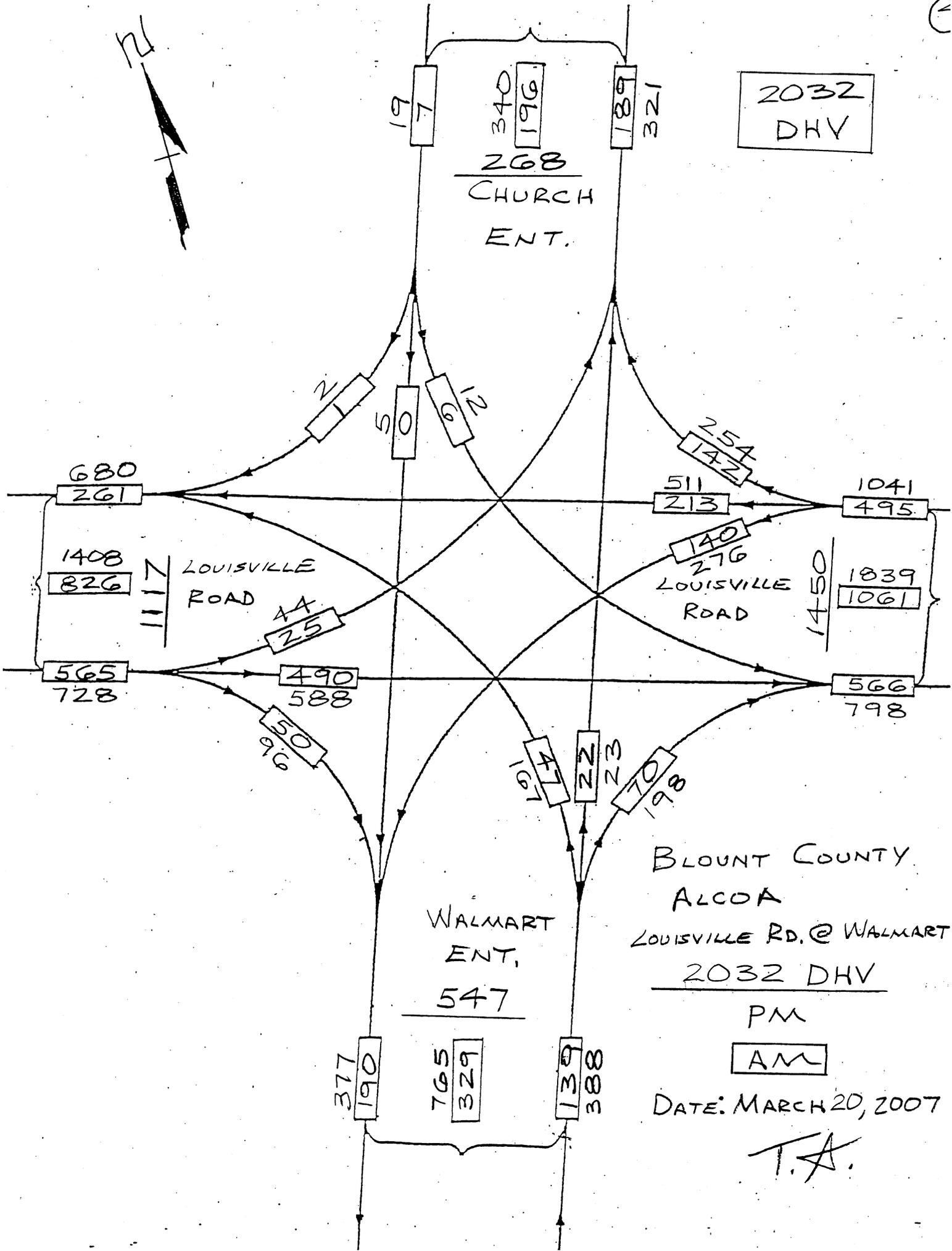
3580
4310

1580
1310

ALCOA
POP. 6,400 (1990 CENSUS)

LOW
LUB





2032
DHV

BLOUNT COUNTY
ALCOA
LOUISVILLE RD. @ WALMART

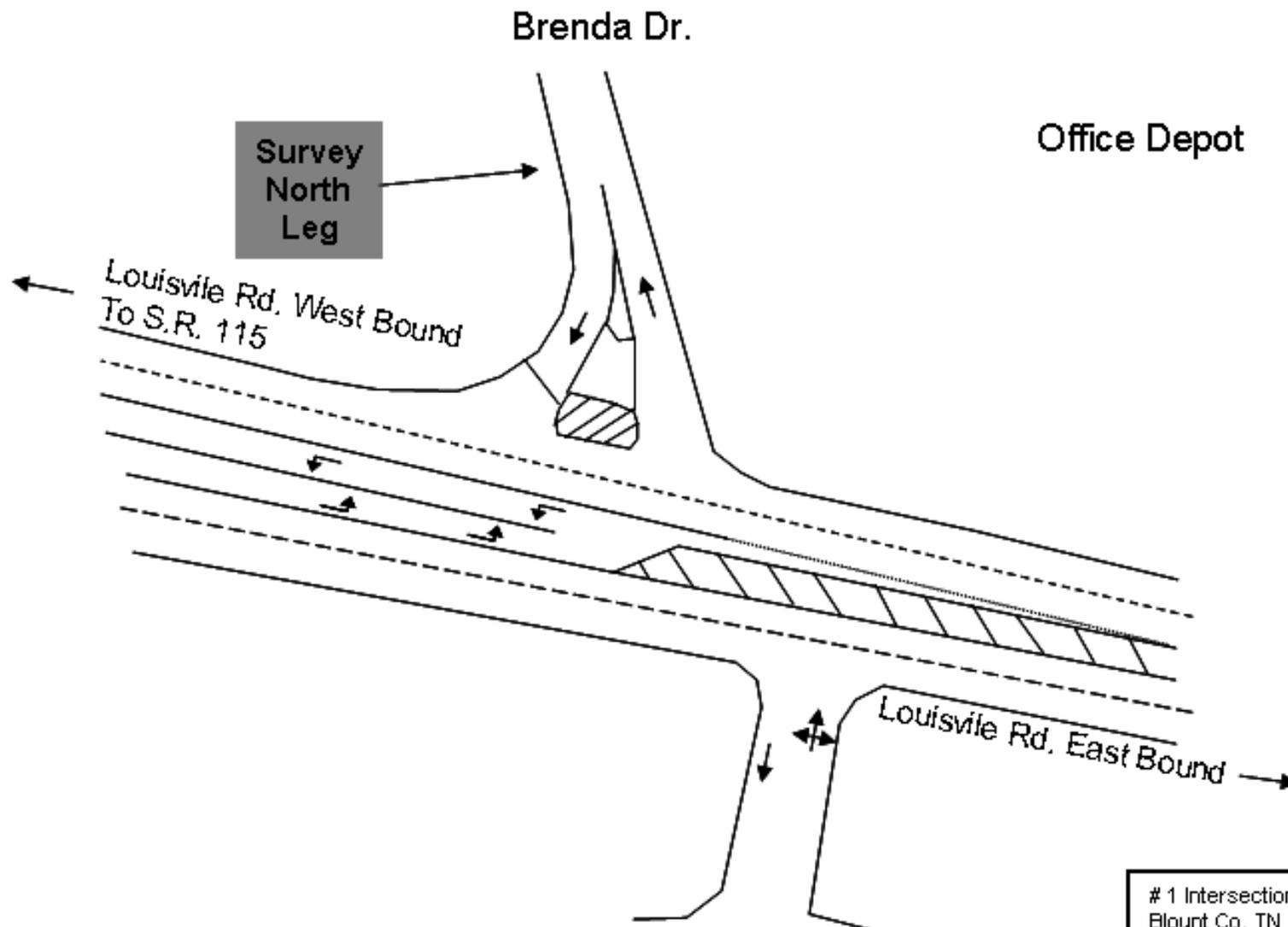
2032 DHV

PM

AM

DATE: MARCH 20, 2007

T.A.



Cracker Barrel

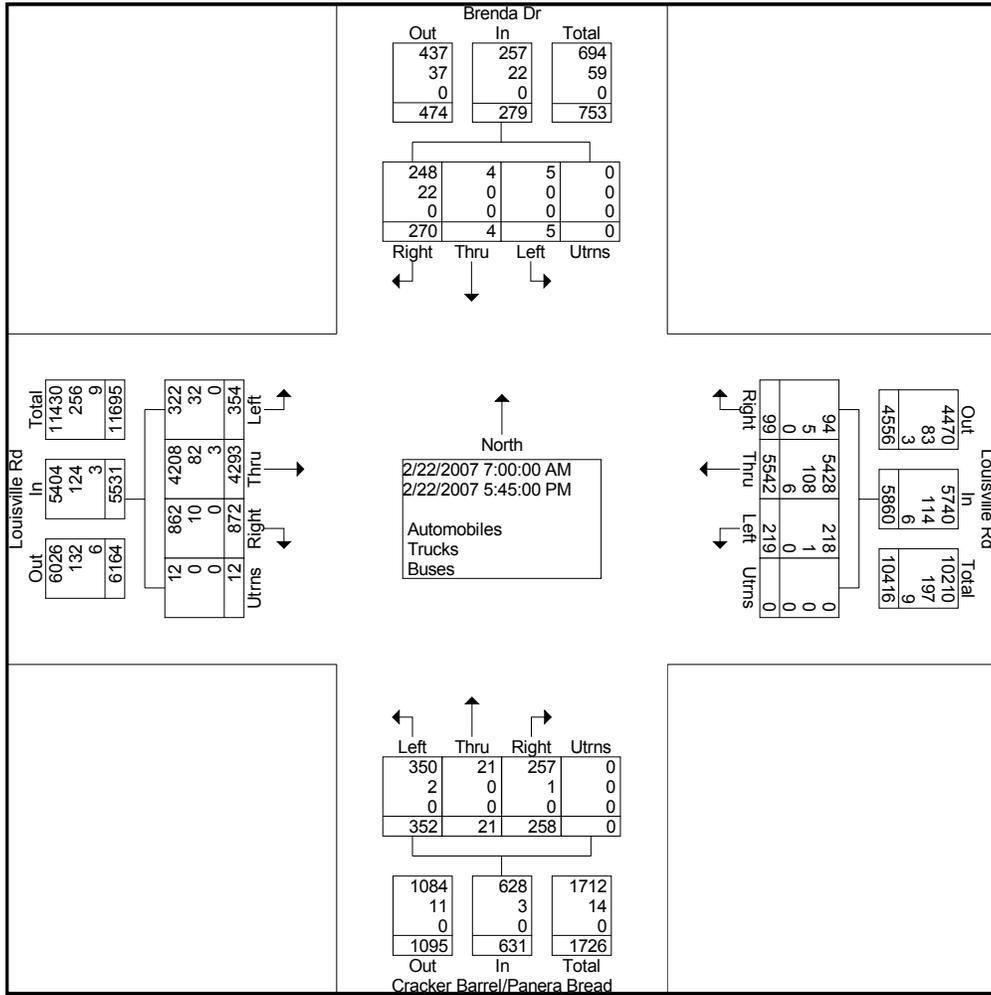
Panera Bread

1 Intersection Count Project 7049
 Blount Co. TN
 Louisville Rd @ Brenda Drive
 Lat.35.77205 Lon.83.98693
 Feb. 2007
 Performed by Southern Traffic Services

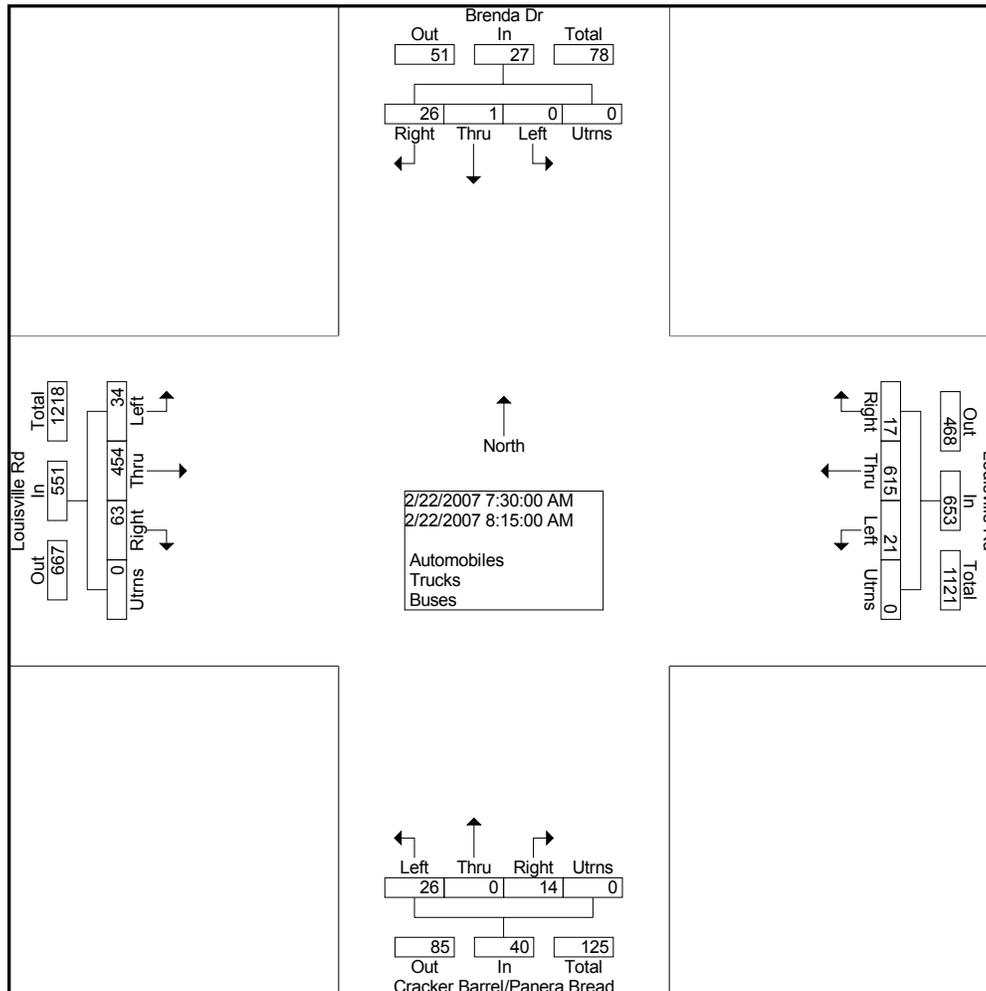


Groups Printed- Automobiles - Trucks - Buses

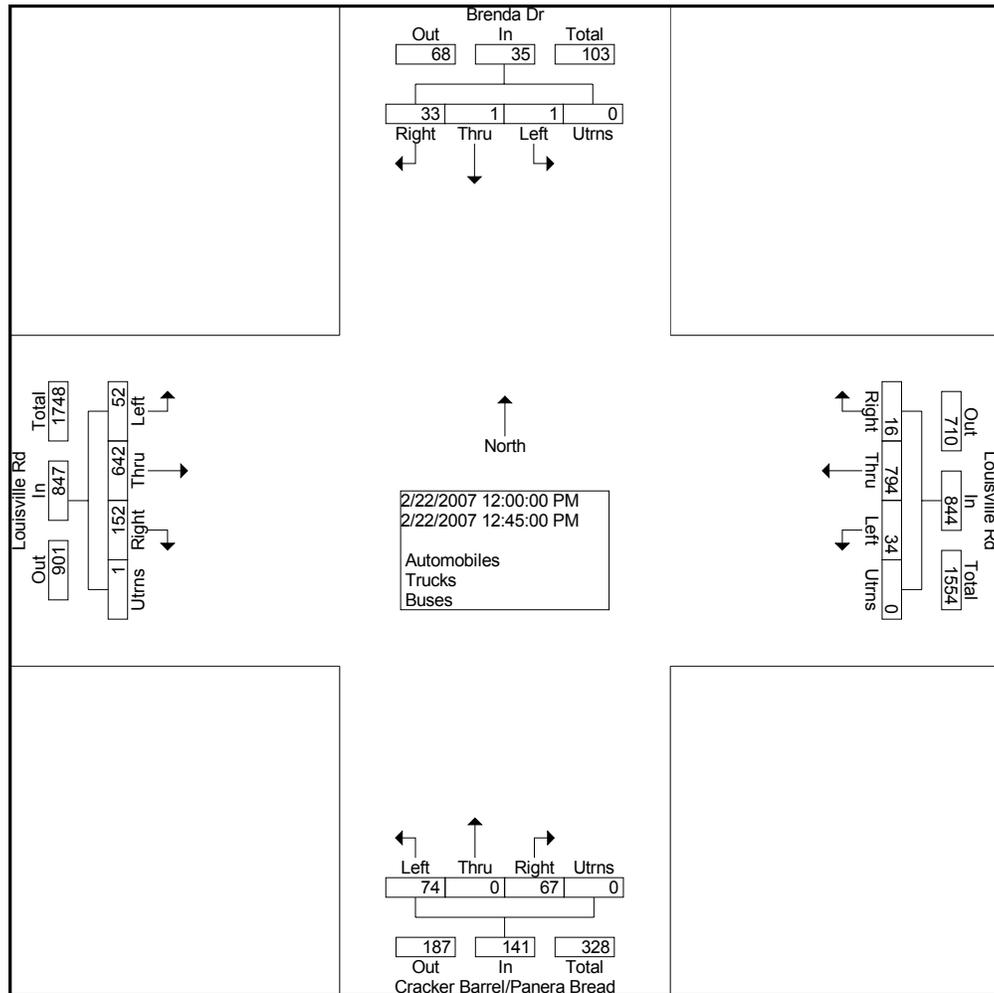
Start Time	Brenda Dr Southbound				Louisville Rd Westbound				Cracker Barrel/Panera Bread Northbound				Louisville Rd Eastbound				Int. Total
	Left	Thru	Right	Utrns	Left	Thru	Right	Utrns	Left	Thru	Right	Utrns	Left	Thru	Right	Utrns	
07:00	0	0	2	0	4	94	4	0	3	1	0	0	16	71	6	0	201
07:15	0	0	4	0	2	118	5	0	3	0	5	0	8	85	11	0	241
07:30	0	0	8	0	3	132	5	0	6	0	4	0	7	118	18	0	301
07:45	0	1	7	0	5	171	6	0	3	0	4	0	10	97	16	0	320
Total	0	1	21	0	14	515	20	0	15	1	13	0	41	371	51	0	1063
08:00	0	0	5	0	6	181	4	0	5	0	4	0	10	122	16	0	353
08:15	0	0	6	0	7	131	2	0	12	0	2	0	7	117	13	0	297
08:30	0	0	7	0	8	99	4	0	7	0	4	0	8	132	18	0	287
08:45	1	0	6	0	7	123	1	0	8	0	5	0	17	122	26	0	316
Total	1	0	24	0	28	534	11	0	32	0	15	0	42	493	73	0	1253
*** BREAK ***																	
11:00	0	0	16	0	13	157	1	0	6	0	6	0	9	144	33	1	386
11:15	0	0	6	0	3	163	2	0	13	0	11	0	16	127	40	1	382
11:30	0	0	14	0	10	196	4	0	6	17	10	0	13	113	33	0	416
11:45	0	1	8	0	17	192	2	0	8	0	11	0	9	150	36	0	434
Total	0	1	44	0	43	708	9	0	33	17	38	0	47	534	142	2	1618
12:00	0	0	10	0	6	195	5	0	15	0	14	0	7	145	37	0	434
12:15	0	0	5	0	10	195	2	0	16	0	21	0	10	175	37	0	471
12:30	0	0	7	0	13	226	1	0	29	0	18	0	17	156	41	1	509
12:45	1	1	11	0	5	178	8	0	14	0	14	0	18	166	37	0	453
Total	1	1	33	0	34	794	16	0	74	0	67	0	52	642	152	1	1867
*** BREAK ***																	
14:00	0	0	15	0	5	167	2	0	13	0	9	0	13	146	19	0	389
14:15	0	0	5	0	4	189	4	0	13	1	9	0	14	163	22	0	424
14:30	0	0	12	0	2	153	1	0	19	0	7	0	17	118	21	0	350
14:45	1	0	18	0	9	168	1	0	12	0	7	0	10	116	25	0	367
Total	1	0	50	0	20	677	8	0	57	1	32	0	54	543	87	0	1530
15:00	0	0	8	0	5	180	5	0	17	0	7	0	11	175	22	1	431
15:15	0	1	8	0	7	177	3	0	15	1	3	0	11	159	24	1	410
15:30	0	0	3	0	4	189	4	0	15	0	5	0	13	114	22	1	370
15:45	0	0	13	0	4	174	0	0	12	0	13	0	17	148	33	2	416
Total	0	1	32	0	20	720	12	0	59	1	28	0	52	596	101	5	1627
16:00	0	0	12	0	3	235	4	0	15	0	7	0	10	153	19	1	459
16:15	2	0	14	0	5	191	4	0	11	0	2	0	10	115	26	0	380
16:30	0	0	10	0	3	203	5	0	7	0	3	0	7	161	21	0	420
16:45	0	0	10	0	7	192	2	0	6	0	9	0	11	157	40	2	436
Total	2	0	46	0	18	821	15	0	39	0	21	0	38	586	106	3	1695
17:00	0	0	11	0	15	213	3	0	11	0	8	0	5	134	43	0	443
17:15	0	0	4	0	9	200	2	0	6	0	10	0	3	136	35	1	406
17:30	0	0	1	0	11	199	0	0	8	0	16	0	9	116	42	0	402
17:45	0	0	4	0	7	161	3	0	18	1	10	0	11	142	40	0	397
Total	0	0	20	0	42	773	8	0	43	1	44	0	28	528	160	1	1648
Grand Total	5	4	270	0	219	5542	99	0	352	21	258	0	354	4293	872	12	12301
Apprch %	1.8	1.4	96.8	0.0	3.7	94.6	1.7	0.0	55.8	3.3	40.9	0.0	6.4	77.6	15.8	0.2	
Total %	0.0	0.0	2.2	0.0	1.8	45.1	0.8	0.0	2.9	0.2	2.1	0.0	2.9	34.9	7.1	0.1	



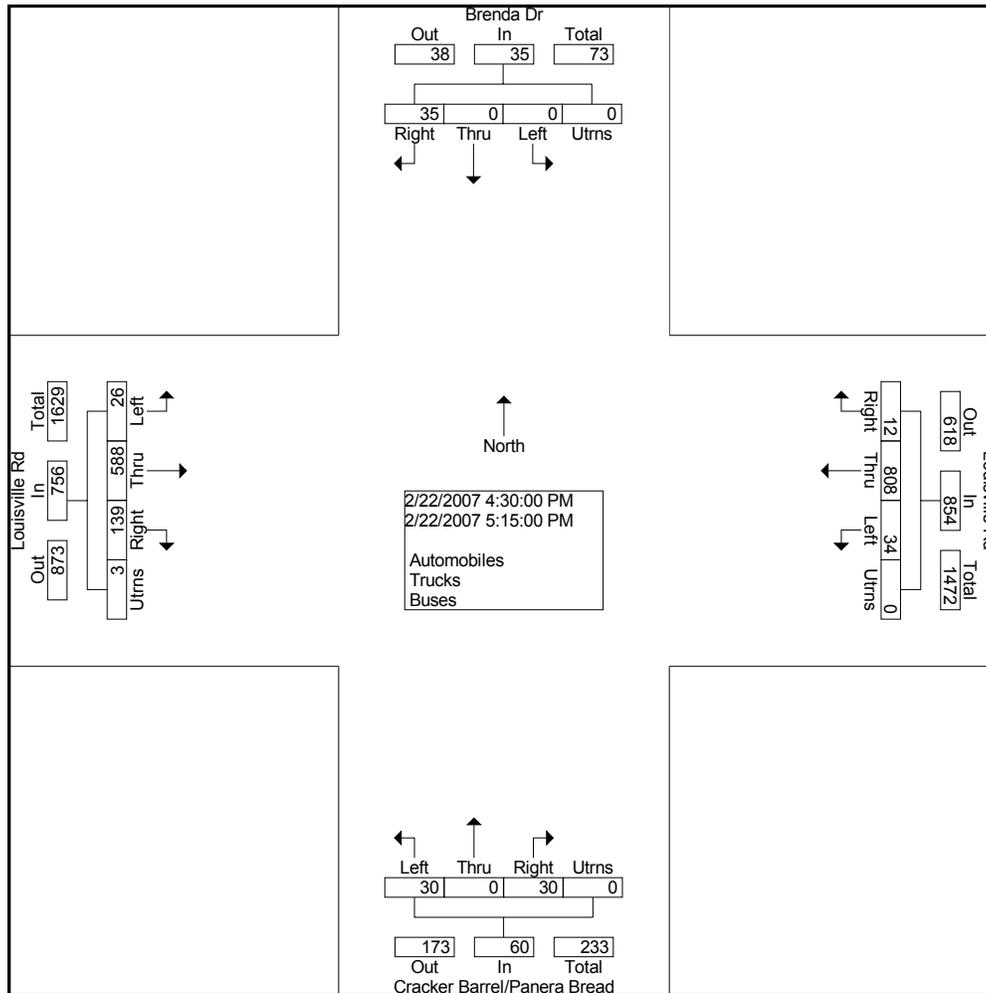
Start Time	Brenda Dr Southbound					Louisville Rd Westbound					Cracker Barrel/Panera Bread Northbound					Louisville Rd Eastbound					Int. Total
	Left	Thru	Right	Utrns	App. Total	Left	Thru	Right	Utrns	App. Total	Left	Thru	Right	Utrns	App. Total	Left	Thru	Right	Utrns	App. Total	
Peak Hour From 07:00 to 09:45 - Peak 1 of 1																					
Intersection	07:30																				
Volume	0	1	26	0	27	21	615	17	0	653	26	0	14	0	40	34	454	63	0	551	1271
Percent	0.0	3.7	96.3	0.0		3.2	94.2	2.6	0.0		65.0	0.0	35.0	0.0		6.2	82.4	11.4	0.0		
08:00 Volume	0	0	5	0	5	6	181	4	0	191	5	0	4	0	9	10	122	16	0	148	353
Peak Factor																					0.900
High Int. Volume	07:30					08:00					08:15					08:00					
Peak Factor	0	0	8	0	8	6	181	4	0	191	12	0	2	0	14	10	122	16	0	148	1
						0.84					0.71					0.93					
	4					5					4					1					



Start Time	Brenda Dr Southbound					Louisville Rd Westbound					Cracker Barrel/Panera Bread Northbound					Louisville Rd Eastbound					Int. Total
	Left	Thru	Right	Utrns	App. Total	Left	Thru	Right	Utrns	App. Total	Left	Thru	Right	Utrns	App. Total	Left	Thru	Right	Utrns	App. Total	
Peak Hour From 10:00 to 13:45 - Peak 1 of 1																					
Intersection	12:00																				
Volume	1	1	33	0	35	34	794	16	0	844	74	0	67	0	141	52	642	152	1	847	1867
Percent	2.9	2.9	94.3	0.0		4.0	94.1	1.9	0.0		52.5	0.0	47.5	0.0		6.1	75.8	17.9	0.1		
12:30 Volume	0	0	7	0	7	13	226	1	0	240	29	0	18	0	47	17	156	41	1	215	509
Peak Factor																					
High Int. Factor																					
12:45 Volume	1	1	11	0	13	13	226	1	0	240	29	0	18	0	47	10	175	37	0	222	0.917
Peak Factor	0.673					0.879					0.750					0.954					



Start Time	Brenda Dr Southbound					Louisville Rd Westbound					Cracker Barrel/Panera Bread Northbound					Louisville Rd Eastbound					Int. Total
	Left	Thru	Right	Utrns	App. Total	Left	Thru	Right	Utrns	App. Total	Left	Thru	Right	Utrns	App. Total	Left	Thru	Right	Utrns	App. Total	
Peak Hour From 14:00 to 17:45 - Peak 1 of 1																					
Intersect on	16:30																				
Volume	0	0	35	0	35	34	808	12	0	854	30	0	30	0	60	26	588	139	3	756	1705
Percent	0.0	0.0	100.0	0.0		4.0	94.6	1.4	0.0		50.0	0.0	50.0	0.0		3.4	77.8	18.4	0.4		
17:00 Volume	0	0	11	0	11	15	213	3	0	231	11	0	8	0	19	5	134	43	0	182	443
Peak Factor																					
High Int.	17:00																				
Volume	0	0	11	0	11	15	213	3	0	231	11	0	8	0	19	11	157	40	2	210	0.962
Peak Factor	0.79					0.92					0.78					0.90					



Survey North Leg

SR 115 NB to I-140.

Louisville Rd. EB
to Hunters Crossing

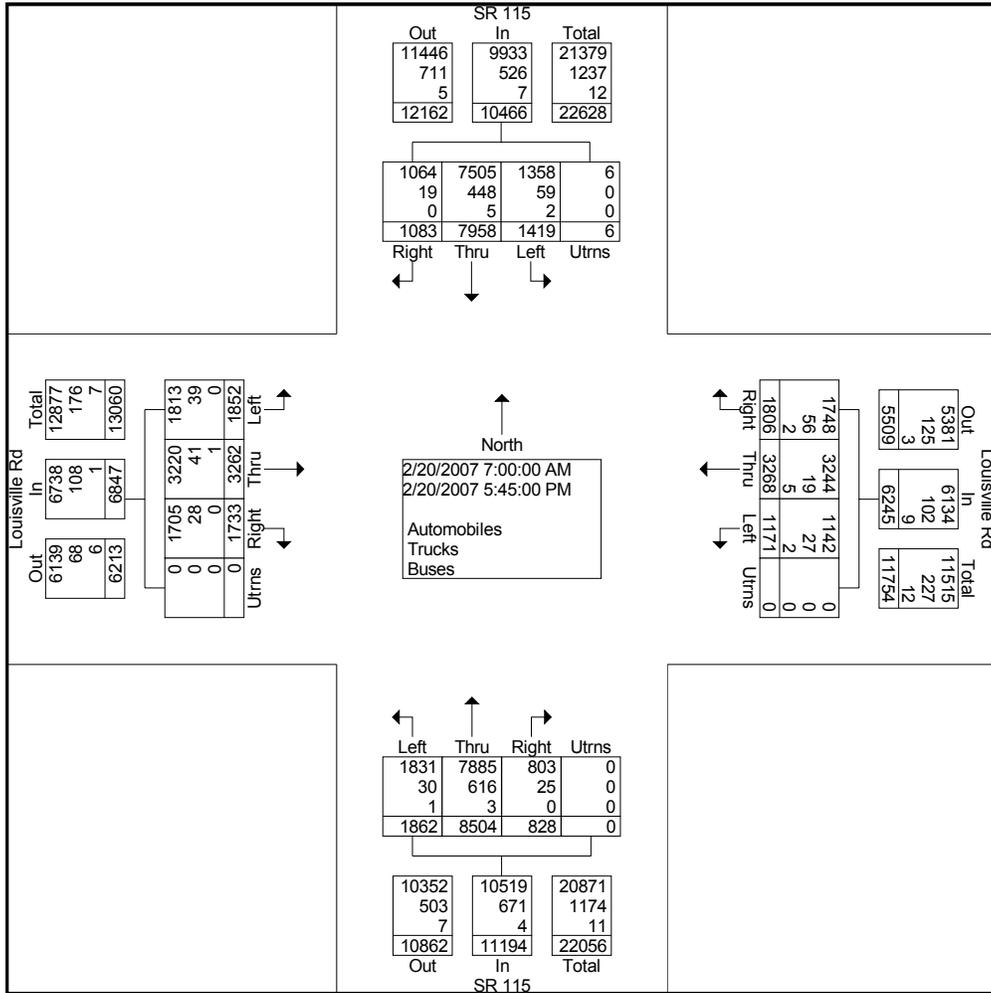
Louisville Rd.
EB to Brenda Dr.

2 Intersection Count Project 7049
Blount Co. TN
S.R. 115 @ Louisville Rd
Lat.35.77230 Lon.83.98777
Feb. 2007
Performed by Southern Traffic Services

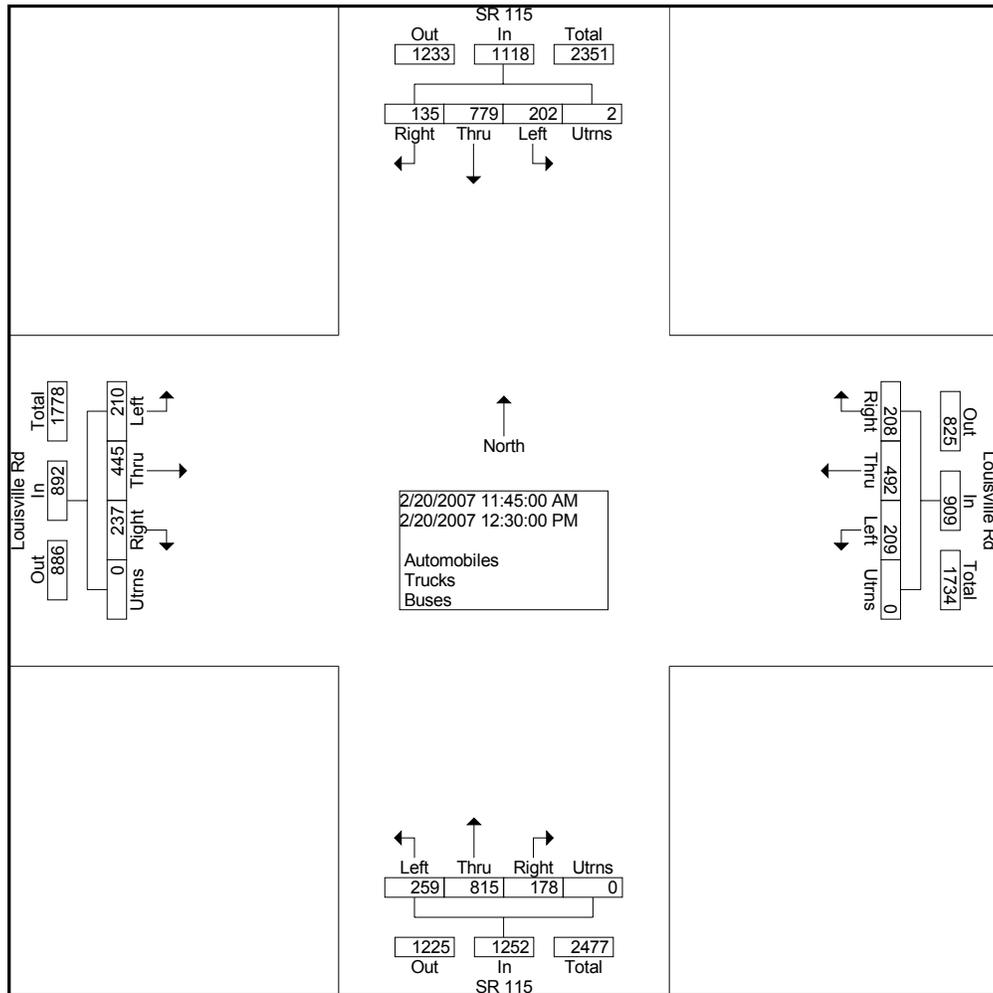


Groups Printed- Automobiles - Trucks - Buses

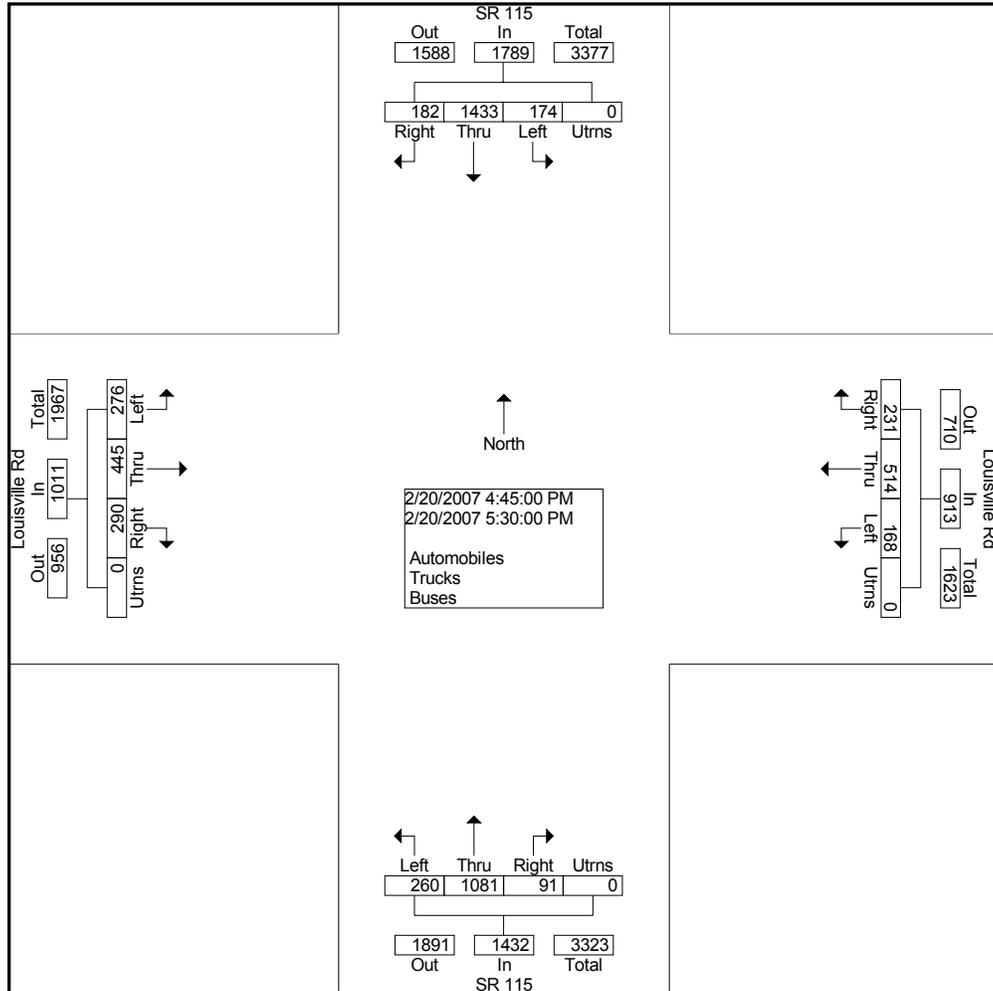
Start Time	SR 115 Southbound				Louisville Rd Westbound				SR 115 Northbound				Louisville Rd Eastbound				Int. Total
	Left	Thru	Right	Utrns	Left	Thru	Right	Utrns	Left	Thru	Right	Utrns	Left	Thru	Right	Utrns	
07:00	28	152	9	0	4	35	33	0	16	389	21	0	40	51	18	0	796
07:15	40	208	17	0	3	31	74	0	32	418	7	0	56	62	27	0	975
07:30	32	233	20	1	7	56	118	0	36	396	10	0	72	74	25	0	1080
07:45	48	297	20	0	16	66	87	0	41	463	11	0	79	70	41	0	1239
Total	148	890	66	1	30	188	312	0	125	1666	49	0	247	257	111	0	4090
08:00	58	210	18	0	13	76	67	0	37	383	14	0	51	107	34	0	1068
08:15	45	179	16	0	17	50	45	0	33	424	22	0	35	58	29	0	953
08:30	27	165	20	0	22	71	52	0	37	324	18	0	47	74	28	0	885
08:45	40	182	18	0	17	66	42	0	33	296	23	0	41	68	40	0	866
Total	170	736	72	0	69	263	206	0	140	1427	77	0	174	307	131	0	3772
*** BREAK ***																	
11:00	43	208	39	0	47	100	51	0	63	179	29	0	46	81	37	0	923
11:15	37	166	38	1	45	99	53	0	71	170	26	0	47	120	51	0	924
11:30	51	215	25	0	42	102	64	0	93	183	43	0	48	100	46	0	1012
11:45	44	216	28	0	51	119	51	0	58	194	53	0	57	112	68	0	1051
Total	175	805	130	1	185	420	219	0	285	726	151	0	198	413	202	0	3910
12:00	55	188	38	2	42	126	48	0	53	199	52	0	52	103	55	0	1013
12:15	52	203	34	0	52	116	45	0	78	219	29	0	48	113	50	0	1039
12:30	51	172	35	0	64	131	64	0	70	203	44	0	53	117	64	0	1068
12:45	40	214	24	1	42	98	49	0	55	234	31	0	59	119	49	0	1015
Total	198	777	131	3	200	471	206	0	256	855	156	0	212	452	218	0	4135
*** BREAK ***																	
14:00	50	256	42	0	51	103	48	0	66	180	24	0	49	136	46	0	1051
14:15	32	237	27	0	46	95	67	0	54	244	25	0	55	115	61	0	1058
14:30	47	293	38	0	40	114	53	0	63	199	29	0	48	101	69	0	1094
14:45	30	234	35	0	44	107	40	0	50	205	24	0	46	98	66	0	979
Total	159	1020	142	0	181	419	208	0	233	828	102	0	198	450	242	0	4182
15:00	43	241	40	0	35	132	37	0	71	203	32	0	41	118	62	0	1055
15:15	45	246	39	1	41	111	55	0	59	229	16	0	73	128	63	0	1106
15:30	59	266	45	0	55	119	82	0	71	230	17	0	84	114	55	0	1197
15:45	54	297	32	0	43	110	43	0	88	288	21	0	93	112	47	0	1228
Total	201	1050	156	1	174	472	217	0	289	950	86	0	291	472	227	0	4586
16:00	47	284	47	0	36	137	43	0	93	251	37	0	59	132	63	0	1229
16:15	48	295	73	0	49	147	68	0	59	218	24	0	65	137	77	0	1260
16:30	54	318	44	0	43	100	49	0	56	276	20	0	75	95	96	0	1226
16:45	26	344	53	0	45	133	62	0	48	241	30	0	66	98	74	0	1220
Total	175	1241	217	0	173	517	222	0	256	986	111	0	265	462	310	0	4935
17:00	61	344	43	0	45	128	53	0	74	276	16	0	66	144	78	0	1328
17:15	43	362	32	0	40	123	63	0	70	292	20	0	85	109	68	0	1307
17:30	44	383	54	0	38	130	53	0	68	272	25	0	59	94	70	0	1290
17:45	45	350	40	0	36	137	47	0	66	226	35	0	57	102	76	0	1217
Total	193	1439	169	0	159	518	216	0	278	1066	96	0	267	449	292	0	5142
Grand Total	1419	7958	1083	6	1171	3268	1806	0	1862	8504	828	0	1852	3262	1733	0	34752
Apprch %	13.6	76.0	10.3	0.1	18.8	52.3	28.9	0.0	16.6	76.0	7.4	0.0	27.0	47.6	25.3	0.0	
Total %	4.1	22.9	3.1	0.0	3.4	9.4	5.2	0.0	5.4	24.5	2.4	0.0	5.3	9.4	5.0	0.0	

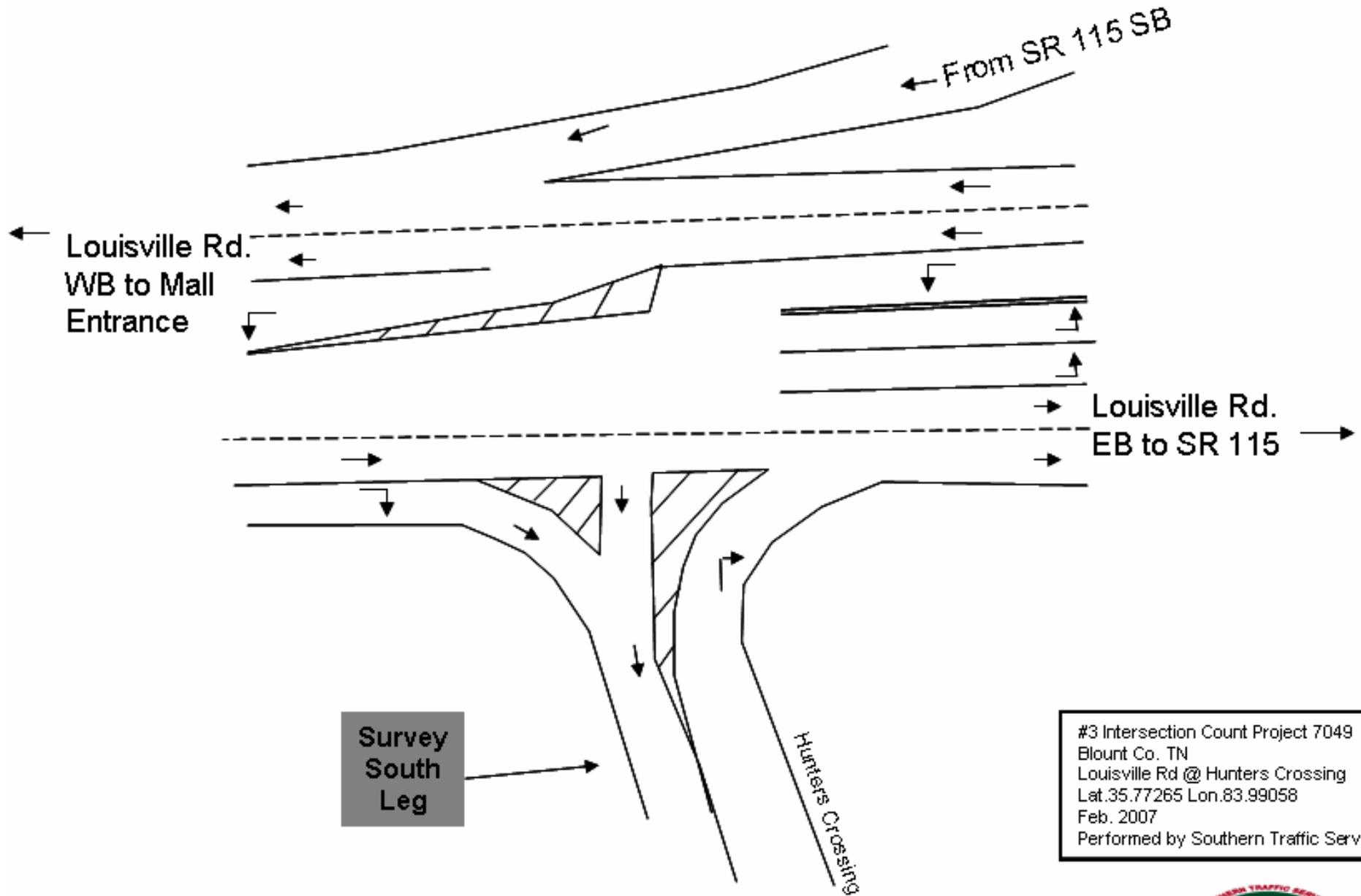


Start Time	SR 115 Southbound					Louisville Rd Westbound					SR 115 Northbound					Louisville Rd Eastbound					Int. Total
	Left	Thru	Rig ht	Utr ns	App. Total	Left	Thru	Rig ht	Utr ns	App. Total	Left	Thru	Rig ht	Utr ns	App. Total	Left	Thru	Rig ht	Utr ns	App. Total	
Peak Hour From 10:00 to 13:45 - Peak 1 of 1																					
Intersecti on	11:45																				
Volume	202	779	135	2	1118	209	492	208	0	909	259	815	178	0	1252	210	445	237	0	892	4171
Percent	18.1	69.7	12.1	0.2		23.0	54.1	22.9	0.0		20.7	65.1	14.2	0.0		23.5	49.9	26.6	0.0		
12:30 Volume	51	172	35	0	258	64	131	64	0	259	70	203	44	0	317	53	117	64	0	234	1068
Peak Factor																					
High Int.	12:15																				
Volume	52	203	34	0	289	64	131	64	0	259	78	219	29	0	326	57	112	68	0	237	1068
Peak Factor	0.967					0.877					0.960					0.941					



Start Time	SR 115 Southbound					Louisville Rd Westbound					SR 115 Northbound					Louisville Rd Eastbound					Int. Total
	Left	Thru	Right	Utrns	App. Total	Left	Thru	Right	Utrns	App. Total	Left	Thru	Right	Utrns	App. Total	Left	Thru	Right	Utrns	App. Total	
Peak Hour From 14:00 to 17:45 - Peak 1 of 1																					
Intersection	16:45																				
Volume	174	1433	182	0	1789	168	514	231	0	913	260	1081	91	0	1432	276	445	290	0	1011	5145
Percent	9.7	80.1	10.2	0.0		18.4	56.3	25.3	0.0		18.2	75.5	6.4	0.0		27.3	44.0	28.7	0.0		
17:00 Volume	61	344	43	0	448	45	128	53	0	226	74	276	16	0	366	66	144	78	0	288	1328
Peak Factor																					
High Int. Volume	44	383	54	0	481	45	133	62	0	240	70	292	20	0	382	66	144	78	0	288	0.969
Peak Factor																					





#3 Intersection Count Project 7049
 Blount Co. TN
 Louisville Rd @ Hunters Crossing
 Lat.35.77265 Lon.83.99058
 Feb. 2007
 Performed by Southern Traffic Services



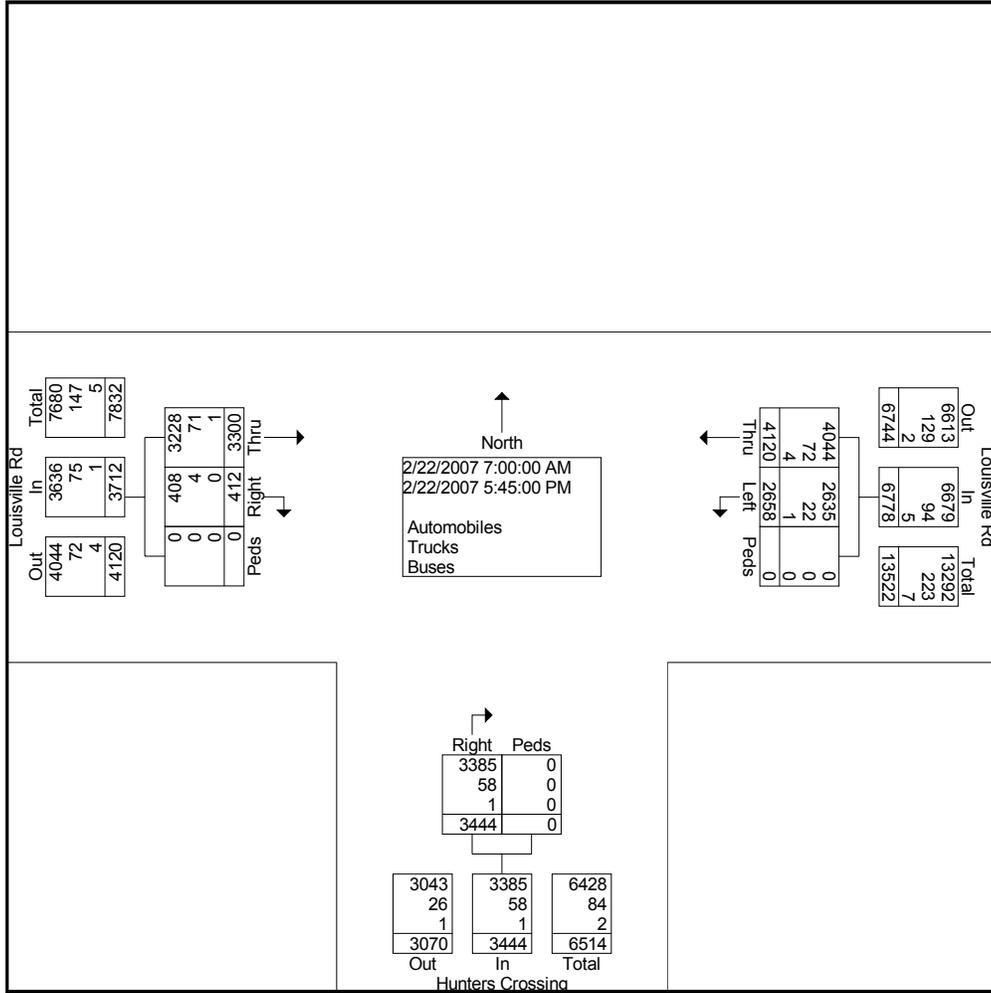
Southern Traffic Services, Inc.
2911 Westfield Rd

Louisville Rd @ Hunters Crossing
Blount County, TN

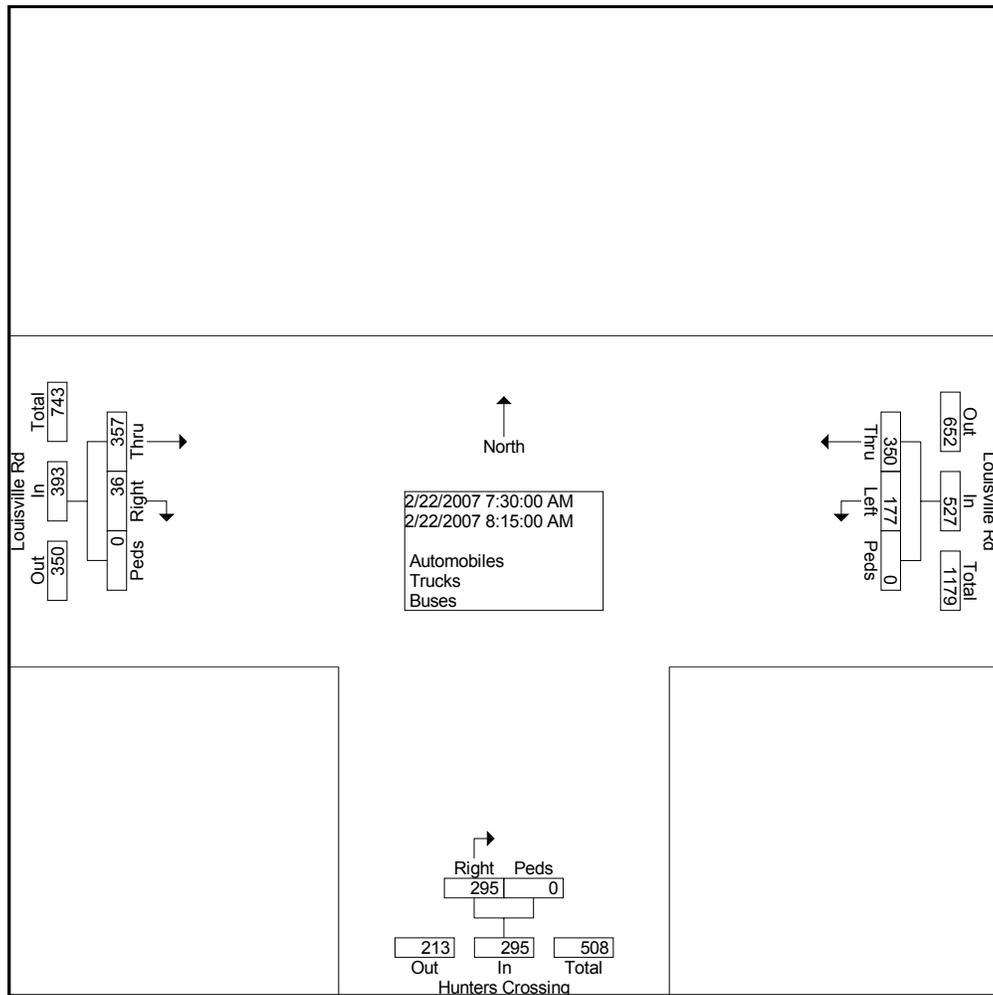
Gulf Breeze, FL 32561 Site Name : 7049-3 LOUISVILLE RD @ HUNTERS CROSSING
1-800-786-3374 Site Code : 70490003
Start Date : 2/22/2007
Page No : 1

Groups Printed- Automobiles - Trucks - Buses

Start Time	Louisville Rd Westbound			Hunters Crossing Northbound		Louisville Rd Eastbound			Int. Total
	Left	Thru	Peds	Right	Peds	Thru	Right	Peds	
07:00	34	47	0	52	0	56	10	0	199
07:15	25	57	0	52	0	77	6	0	217
07:30	40	84	0	77	0	94	5	0	300
07:45	35	111	0	89	0	96	12	0	343
Total	134	299	0	270	0	323	33	0	1059
08:00	54	81	0	57	0	95	14	0	301
08:15	48	74	0	72	0	72	5	0	271
08:30	39	68	0	52	0	78	10	0	247
08:45	70	67	0	62	0	145	13	0	357
Total	211	290	0	243	0	390	42	0	1176
*** BREAK ***									
11:00	80	89	0	72	0	96	11	0	348
11:15	99	92	0	93	0	91	11	0	386
11:30	80	123	0	95	0	89	8	0	395
11:45	106	119	0	127	0	100	15	0	467
Total	365	423	0	387	0	376	45	0	1596
12:00	106	112	0	106	0	101	20	0	445
12:15	123	147	0	128	0	89	14	0	501
12:30	102	128	0	146	0	104	18	0	498
12:45	119	133	0	149	0	92	17	0	510
Total	450	520	0	529	0	386	69	0	1954
*** BREAK ***									
14:00	77	126	0	130	0	122	15	0	470
14:15	91	113	0	94	0	108	10	0	416
14:30	78	124	0	112	0	121	9	0	444
14:45	64	113	0	95	0	124	16	0	412
Total	310	476	0	431	0	475	50	0	1742
15:00	69	121	0	101	0	84	18	0	393
15:15	77	139	0	115	0	98	15	0	444
15:30	62	121	0	104	0	84	9	0	380
15:45	82	159	0	111	0	101	10	0	463
Total	290	540	0	431	0	367	52	0	1680
16:00	126	127	0	87	0	96	11	0	447
16:15	77	153	0	114	0	113	13	0	470
16:30	83	177	0	122	0	124	11	0	517
16:45	95	168	0	118	0	140	11	0	532
Total	381	625	0	441	0	473	46	0	1966
17:00	104	189	0	174	0	146	14	0	627
17:15	145	215	0	184	0	144	18	0	706
17:30	140	252	0	196	0	102	22	0	712
17:45	128	291	0	158	0	118	21	0	716
Total	517	947	0	712	0	510	75	0	2761
Grand Total	2658	4120	0	3444	0	3300	412	0	13934
Apprch %	39.2	60.8	0.0	100.0	0.0	88.9	11.1	0.0	
Total %	19.1	29.6	0.0	24.7	0.0	23.7	3.0	0.0	



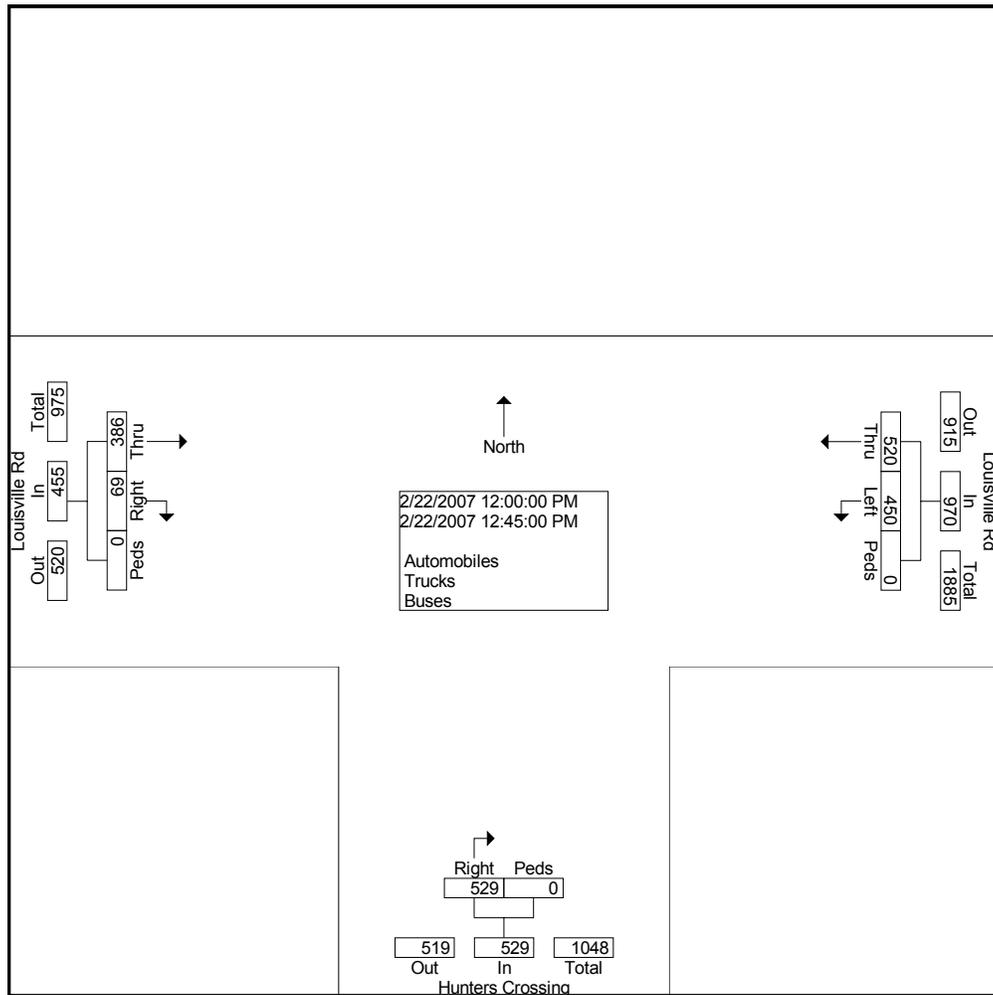
Start Time	Louisville Rd Westbound				Hunters Crossing Northbound			Louisville Rd Eastbound				Int. Total
	Left	Thru	Peds	App. Total	Right	Peds	App. Total	Thru	Right	Peds	App. Total	
Peak Hour From 07:00 to 09:45 - Peak 1 of 1												
Intersection	07:30											
Volume	177	350	0	527	295	0	295	357	36	0	393	1215
Percent	33.6	66.4	0.0		100.0	0.0		90.8	9.2	0.0		
07:45 Volume	35	111	0	146	89	0	89	96	12	0	108	343
Peak Factor	0.886											
High Int.	07:45											
Volume	35	111	0	146	89	0	89	95	14	0	109	
Peak Factor	0.902				0.829			0.901				



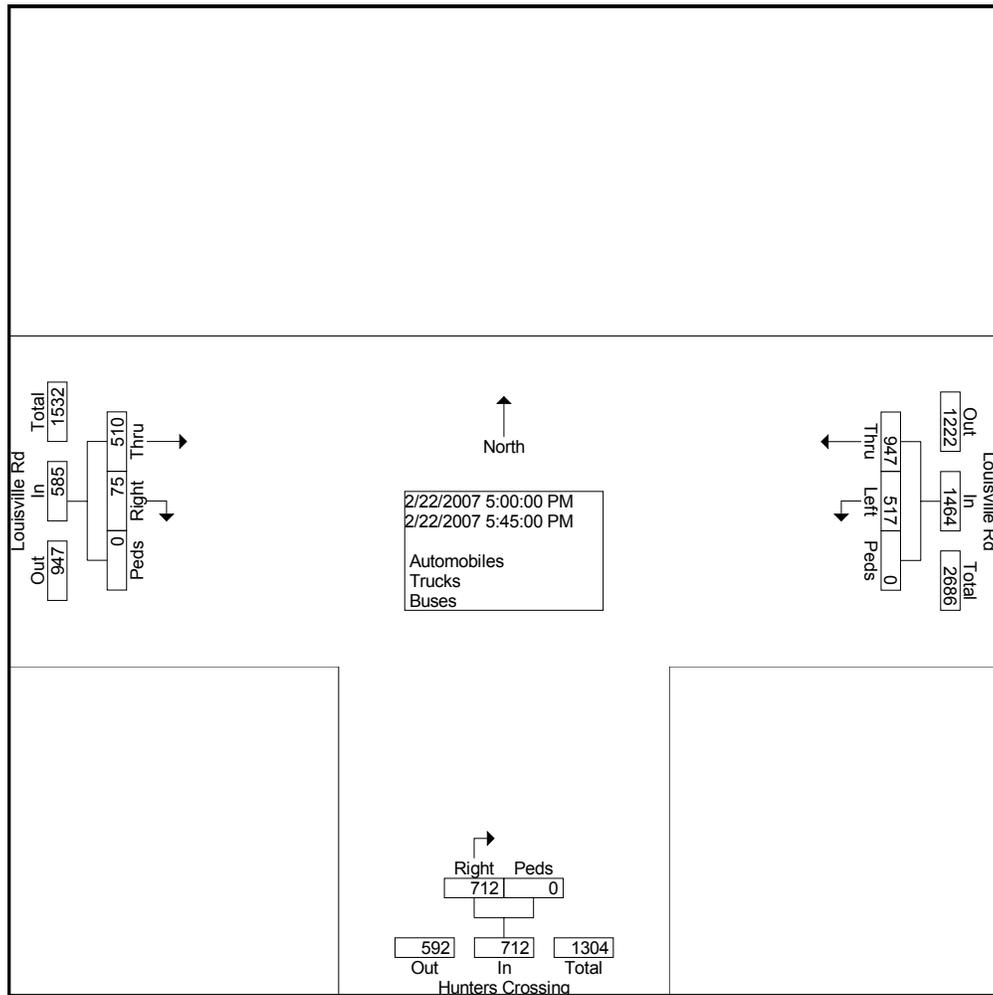
Louisville Rd @ Hunters Crossing
Blount County, TN

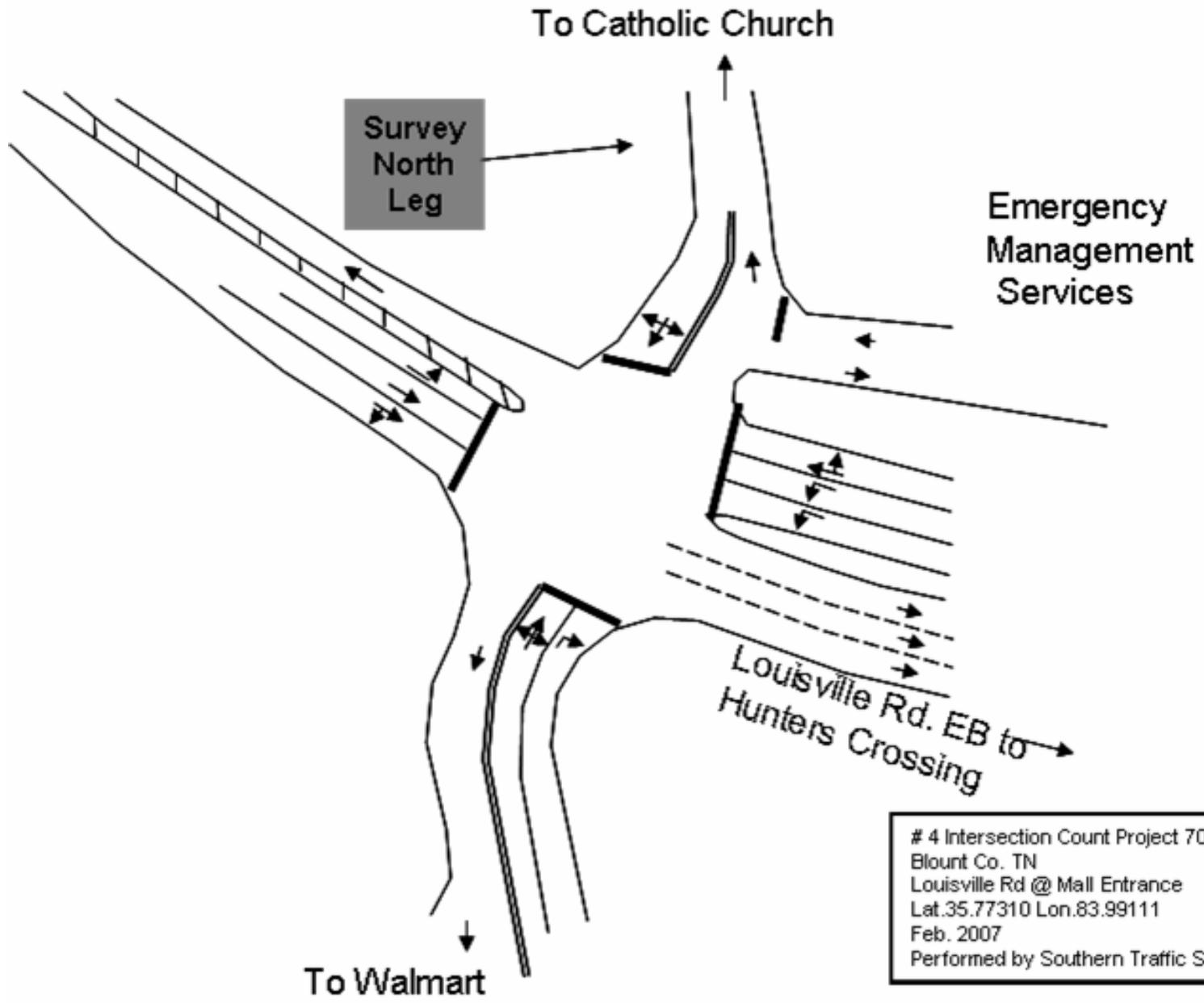
Southern Traffic Services, Inc.
2911 Westfield Rd
Gulf Breeze, FL 32561
1-800-786-3374
Site Name : 7049-3 LOUISVILLE RD @ HUNTERS CROSSING
Site Code : 70490003
Start Date : 2/22/2007
Page No : 4

Start Time	Louisville Rd Westbound				Hunters Crossing Northbound			Louisville Rd Eastbound				Int. Total
	Left	Thru	Peds	App. Total	Right	Peds	App. Total	Thru	Right	Peds	App. Total	
Peak Hour From 10:00 to 13:45 - Peak 1 of 1												
Intersection	12:00											
Volume	450	520	0	970	529	0	529	386	69	0	455	1954
Percent	46.4	53.6	0.0		100.0	0.0		84.8	15.2	0.0		
12:45 Volume	119	133	0	252	149	0	149	92	17	0	109	510
Peak Factor	0.958											
High Int.	12:15											
Volume	123	147	0	270	149	0	149	104	18	0	122	
Peak Factor	0.898				0.888			0.932				



Start Time	Louisville Rd Westbound				Hunters Crossing Northbound			Louisville Rd Eastbound				Int. Total
	Left	Thru	Peds	App. Total	Right	Peds	App. Total	Thru	Right	Peds	App. Total	
Peak Hour From 14:00 to 17:45 - Peak 1 of 1												
Intersection	17:00											
Volume	517	947	0	1464	712	0	712	510	75	0	585	2761
Percent	35.3	64.7	0.0		100.0	0.0		87.2	12.8	0.0		
17:45 Volume	128	291	0	419	158	0	158	118	21	0	139	716
Peak Factor	0.964											
High Int.	17:45				17:30			17:15				
Volume	128	291	0	419	196	0	196	144	18	0	162	
Peak Factor	0.874				0.908			0.908				





4 Intersection Count Project 7049
 Blount Co. TN
 Louisville Rd @ Mall Entrance
 Lat.35.77310 Lon.83.99111
 Feb. 2007
 Performed by Southern Traffic Services



Southern Traffic Services, Inc.

2911 Westfield Rd

Gulf Breeze, FL 32563

1-800-786-3374

File Name : 7049-4 Louisville @ Catholic Church-Walmart

Site Code : 70490004

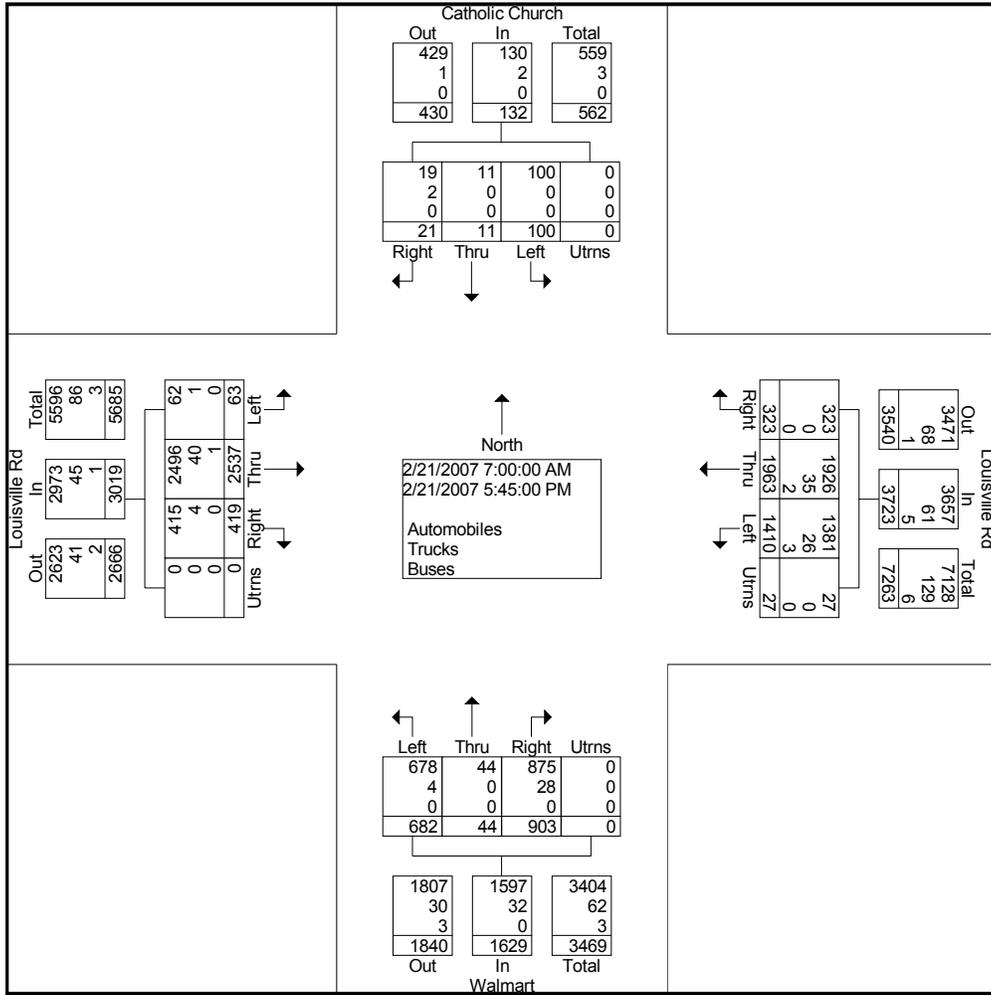
Start Date : 2/21/2007

Page No : 1

Louisville Rd @ Catholic Church/Walmart
Blount County, TN

Groups Printed- Automobiles - Trucks - Buses

Start Time	Catholic Church Southbound				Louisville Rd Westbound				Walmart Northbound				Louisville Rd Eastbound				Int. Total
	Left	Thru	Right	Utrns	Left	Thru	Right	Utrns	Left	Thru	Right	Utrns	Left	Thru	Right	Utrns	
07:00	1	0	0	0	16	31	0	1	14	1	12	0	0	48	2	0	126
07:15	0	0	0	0	12	31	5	1	12	2	12	0	2	77	4	0	158
07:30	0	0	0	0	25	39	14	0	6	0	12	0	1	85	7	0	189
07:45	1	0	0	0	29	34	51	1	8	11	8	0	10	98	7	0	258
Total	2	0	0	0	82	135	70	3	40	14	44	0	13	308	20	0	731
08:00	0	0	0	0	19	29	26	0	7	4	15	0	6	94	10	0	210
08:15	3	0	1	0	24	44	7	1	11	0	14	0	0	60	11	0	176
08:30	2	0	0	0	29	35	3	0	14	1	9	0	0	74	8	0	175
08:45	5	0	7	0	29	34	2	0	11	0	22	0	1	80	7	0	198
Total	10	0	8	0	101	142	38	1	43	5	60	0	7	308	36	0	759
*** BREAK ***																	
11:00	2	0	1	0	36	43	2	0	15	0	23	0	2	75	14	0	213
11:15	1	3	0	0	41	40	4	1	16	0	33	0	0	70	10	0	219
11:30	5	0	0	0	52	57	3	1	21	0	31	0	1	60	6	0	237
11:45	3	0	0	0	51	59	5	1	23	1	40	0	1	76	20	0	280
Total	11	3	1	0	180	199	14	3	75	1	127	0	4	281	50	0	949
12:00	8	1	0	0	58	55	1	2	16	0	29	0	1	80	23	0	274
12:15	3	0	1	0	74	71	1	0	30	1	34	0	0	66	19	0	300
12:30	1	1	1	0	67	52	4	1	38	1	36	0	0	87	13	0	302
12:45	5	1	1	0	67	56	3	0	25	1	31	0	1	71	11	0	273
Total	17	3	3	0	266	234	9	3	109	3	130	0	2	304	66	0	1149
*** BREAK ***																	
14:00	7	2	1	0	56	68	2	2	23	0	38	0	0	79	20	0	298
14:15	1	0	0	0	33	61	0	2	27	0	32	0	0	73	16	0	245
14:30	5	0	0	0	55	69	1	0	22	0	40	0	1	85	14	0	292
14:45	3	0	2	0	52	57	3	2	25	1	40	0	1	93	9	0	288
Total	16	2	3	0	196	255	6	6	97	1	150	0	2	330	59	0	1123
15:00	0	0	0	0	36	80	1	0	27	1	24	0	0	76	10	0	255
15:15	7	0	1	0	45	72	1	0	30	0	38	0	1	65	14	0	274
15:30	1	0	0	0	42	59	0	1	20	0	27	0	0	66	13	0	229
15:45	3	0	1	0	46	94	2	3	27	0	28	0	1	71	18	0	294
Total	11	0	2	0	169	305	4	4	104	1	117	0	2	278	55	0	1052
16:00	8	0	1	0	44	80	0	2	27	1	27	0	0	65	10	0	265
16:15	5	0	1	0	65	78	2	1	18	0	40	0	0	73	19	0	302
16:30	7	0	0	0	53	91	3	0	27	1	29	0	1	88	20	0	320
16:45	5	0	0	0	64	93	2	0	27	1	43	0	1	97	18	0	351
Total	25	0	2	0	226	342	7	3	99	3	139	0	2	323	67	0	1238
17:00	6	0	0	0	60	94	5	0	32	1	44	0	1	105	17	0	365
17:15	0	0	0	0	41	95	11	2	19	1	45	0	5	109	19	0	347
17:30	0	1	2	0	45	94	37	2	25	7	24	0	5	91	9	0	342
17:45	2	2	0	0	44	68	122	0	39	7	23	0	20	100	21	0	448
Total	8	3	2	0	190	351	175	4	115	16	136	0	31	405	66	0	1502
Grand Total	100	11	21	0	1410	1963	323	27	682	44	903	0	63	2537	419	0	8503
Apprch %	75.8	8.3	15.9	0.0	37.9	52.7	8.7	0.7	41.9	2.7	55.4	0.0	2.1	84.0	13.9	0.0	
Total %	1.2	0.1	0.2	0.0	16.6	23.1	3.8	0.3	8.0	0.5	10.6	0.0	0.7	29.8	4.9	0.0	



Southern Traffic Services, Inc.

2911 Westfield Rd

Gulf Breeze, FL 32563

1-800-786-3374

File Name : 7049-4 Louisville @ Catholic Church-Walmart

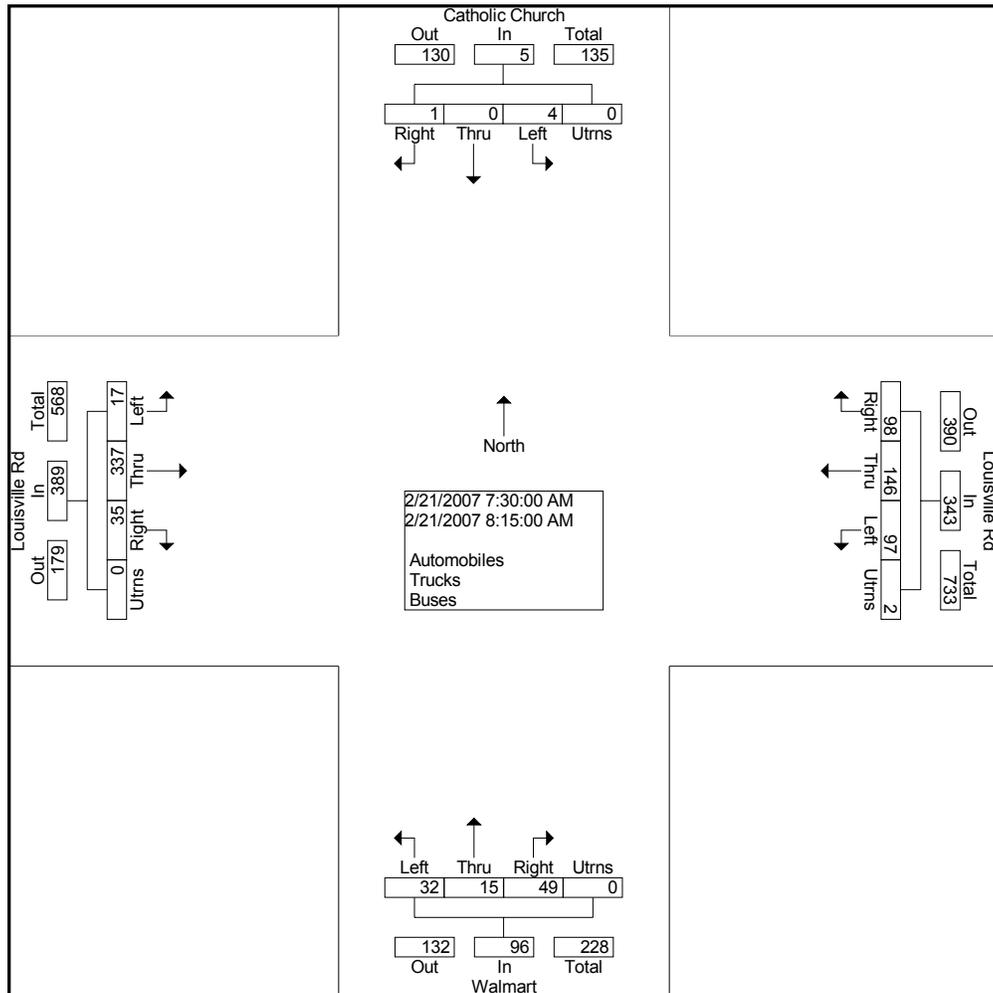
Site Code : 70490004

Start Date : 2/21/2007

Page No : 3

Louisville Rd @ Catholic Church/Walmart
Blount County, TN

Start Time	Catholic Church Southbound					Louisville Rd Westbound					Walmart Northbound					Louisville Rd Eastbound					Int. Total
	Left	Thru	Right	Utrns	App. Total	Left	Thru	Right	Utrns	App. Total	Left	Thru	Right	Utrns	App. Total	Left	Thru	Right	Utrns	App. Total	
Peak Hour From 07:00 to 09:45 - Peak 1 of 1																					
Intersection	07:30																				
Volume	4	0	1	0	5	97	146	98	2	343	32	15	49	0	96	17	337	35	0	389	833
Percent	80.	0.0	20.	0.0		28.	42.	28.	0.6		33.	15.	51.	0.0		4.4	86.	9.0	0.0		
07:45 Volume	1	0	0	0	1	29	34	51	1	115	8	11	8	0	27	10	98	7	0	115	258
Peak Factor	0.807																				
High Int. Volume	08:15					07:45					07:45					07:45					
Peak Factor	3	0	1	0	4	29	34	51	1	115	8	11	8	0	27	10	98	7	0	115	0.84
Peak Factor	0.31					0.74					0.88					0.84					6
Peak Factor	3					6					9					6					



Southern Traffic Services, Inc.

2911 Westfield Rd

Gulf Breeze, FL 32563

1-800-786-3374

File Name : 7049-4 Louisville @ Catholic Church-Walmart

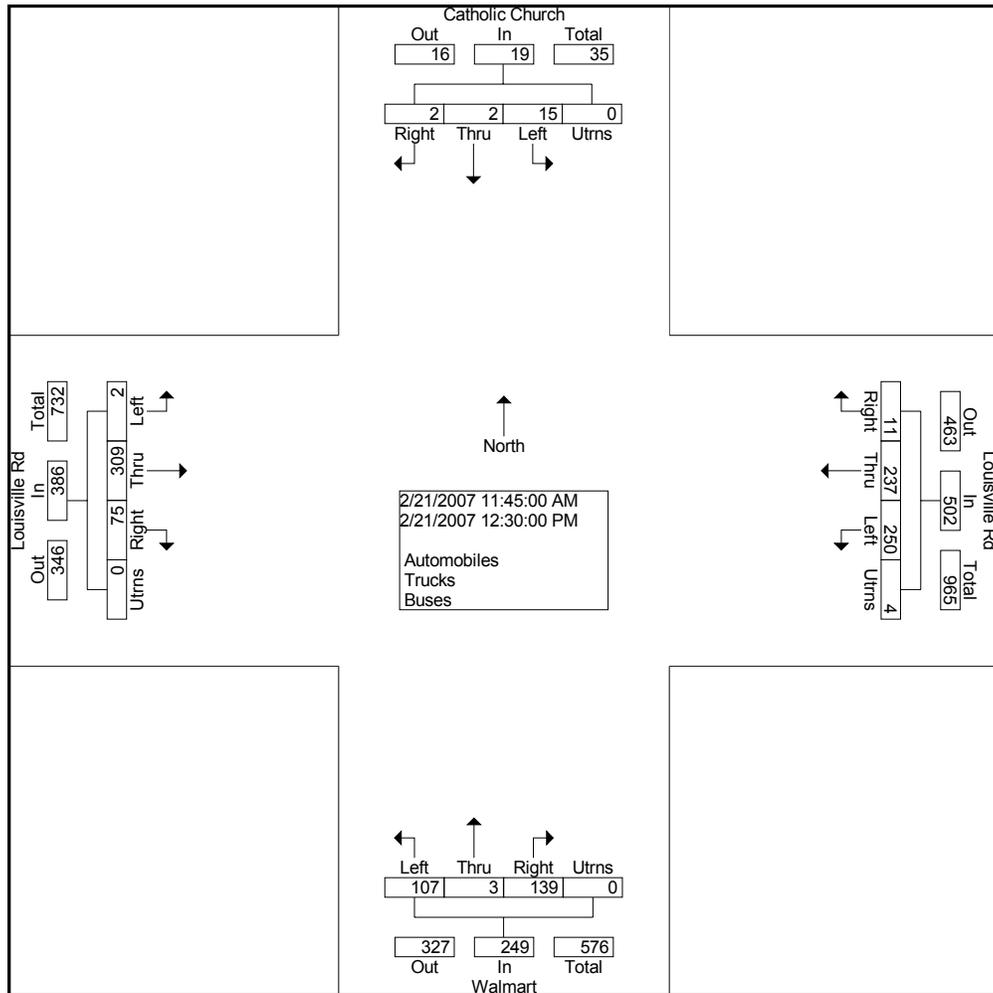
Site Code : 70490004

Start Date : 2/21/2007

Page No : 4

Louisville Rd @ Catholic Church/Walmart
Blount County, TN

Start Time	Catholic Church Southbound					Louisville Rd Westbound					Walmart Northbound					Louisville Rd Eastbound					Int. Total
	Left	Thru	Rght	Utrns	App. Total	Left	Thru	Rght	Utrns	App. Total	Left	Thru	Rght	Utrns	App. Total	Left	Thru	Rght	Utrns	App. Total	
Peak Hour From 10:00 to 13:45 - Peak 1 of 1																					
Intersection	11:45																				
Volume	15	2	2	0	19	250	237	11	4	502	107	3	139	0	249	2	309	75	0	386	1156
Percent	78.9	10.5	10.5	0.0		49.8	47.2	2.2	0.8		43.0	1.2	55.8	0.0		0.5	80.1	19.4	0.0		
12:30 Volume	1	1	1	0	3	67	52	4	1	124	38	1	36	0	75	0	87	13	0	100	302
Peak Factor																					
High Int.	12:00																				
Volume	8	1	0	0	9	74	71	1	0	146	38	1	36	0	75	1	80	23	0	104	0.957
Peak Factor	0.528										0.830					0.928					



Southern Traffic Services, Inc.

2911 Westfield Rd

Gulf Breeze, FL 32563

1-800-786-3374

File Name : 7049-4 Louisville @ Catholic Church-Walmart

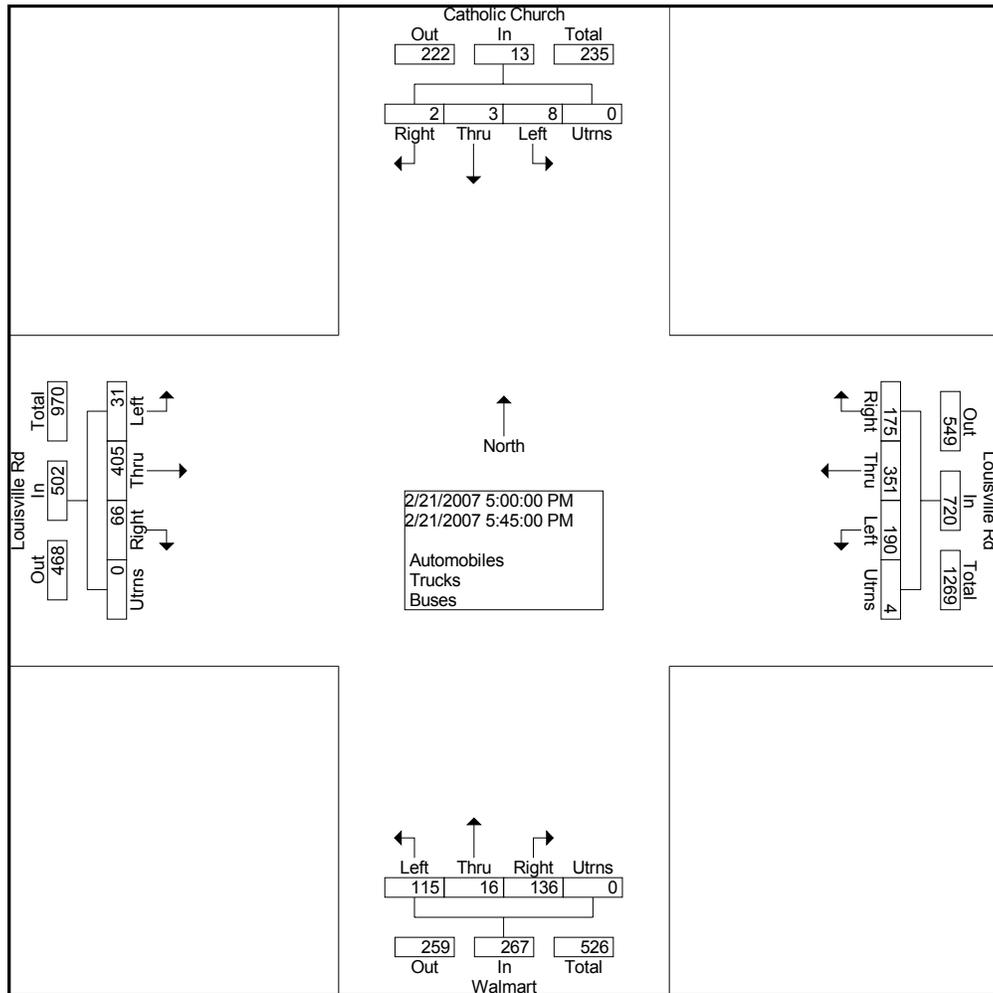
Site Code : 70490004

Start Date : 2/21/2007

Page No : 5

Louisville Rd @ Catholic Church/Walmart
Blount County, TN

Start Time	Catholic Church Southbound					Louisville Rd Westbound					Walmart Northbound					Louisville Rd Eastbound					Int. Total
	Left	Thru	Rght	Utrns	App. Total	Left	Thru	Rght	Utrns	App. Total	Left	Thru	Rght	Utrns	App. Total	Left	Thru	Rght	Utrns	App. Total	
Peak Hour From 14:00 to 17:45 - Peak 1 of 1																					
Intersecti on	17:00																				
Volume	8	3	2	0	13	190	351	175	4	720	115	16	136	0	267	31	405	66	0	502	1502
Percent	61.5	23.1	15.4	0.0		26.4	48.8	24.3	0.6		43.1	6.0	50.9	0.0		6.2	80.7	13.1	0.0		
17:45 Volume	2	2	0	0	4	44	68	122	0	234	39	7	23	0	69	20	100	21	0	141	448
Peak Factor																					
High Int.	17:00																				
Volume	6	0	0	0	6	44	68	122	0	234	32	1	44	0	77	20	100	21	0	141	0.838
Peak Factor	0.54					0.76					0.86					0.89					0





Appendix C – Capacity Analysis Worksheets

**CAPACITY ANALYSIS WORKSHEETS
OPTION 1 – WEAVE ANALYSIS**

HCS+: Freeway Weaving Release 5.21

Operational Analysis

Analyst: FTG
 Agency/Co.: FTG
 Date Performed: June 2007
 Analysis Time Period: AM Peak Hour
 Freeway/Dir of Travel: SB SR 115
 Weaving Location: btw Louisville Road and retail
 Jurisdiction: Alcoa, TN
 Analysis Year: Year 2012
 Description: 10360

Inputs

Freeway free-flow speed, SFF	55	mph
Weaving number of lanes, N	3	
Weaving segment length, L	660	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	A	
Volume ratio, VR	0.25	
Weaving ratio, R	0.46	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	V	V	V	V	
	A-C	B-D	A-D	B-C	
Volume, V	1015	0	179	154	veh/h
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	267	0	47	41	v
Trucks and buses	4	4	4	4	%
Recreational vehicles	1	1	1	1	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.978	0.978	0.978	0.978	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	1091	0	192	165	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.15	0.0035
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	0.54	0.20
Weaving and non-weaving speeds, Si	44.18	52.50
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		0.87
Maximum number of lanes, Nw (max) (Exhibit 24-7)		1.40
Type of operation is		Unconstrained

Weavig Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	50.17	mph
Weaving segment density, D	9.62	pc/mi/ln
Level of service, LOS	A	
Capacity of base condition, cb	4668	pc/h
Capacity as a 15-minute flow rate, c	4568	pc/h
Capacity as a full-hour volume, ch	4340	pc/h

Limitations on Weaving Segments

	Analzyed	If Max Exceeded	See Note
		Maximum	Note
Weaving flow rate, Vw	357	2800	a
Average flow rate (pcphpl)	482	2250	b
Volume ratio, VR	0.25	0.45	c
Weaving ratio, R	0.46	N/A	d
Weaving length (ft)	660	2500	e

Notes:

- a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- b. Capacity constrained by basic freeway capacity.
- c. Capacity occurs under constrained operating conditions.
- d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

HCS+: Freeway Weaving Release 5.21

Operational Analysis

Analyst: FTG
 Agency/Co.: FTG
 Date Performed: June 2007
 Analysis Time Period: PM Peak Hour
 Freeway/Dir of Travel: SB SR 115
 Weaving Location: btw Louisville Road and retail
 Jurisdiction: Alcoa, TN
 Analysis Year: Year 2012
 Description: 10360

Inputs

Freeway free-flow speed, SFF	55	mph
Weaving number of lanes, N	3	
Weaving segment length, L	660	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	A	
Volume ratio, VR	0.28	
Weaving ratio, R	0.45	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	V	V	V	V	
	A-C	B-D	A-D	B-C	
Volume, V	1646	0	290	351	veh/h
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	433	0	76	92	v
Trucks and buses	4	4	4	4	%
Recreational vehicles	1	1	1	1	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.978	0.978	0.978	0.978	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	1770	0	311	377	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.15	0.0035
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	0.96	0.44
Weaving and non-weaving speeds, Si	37.96	46.20
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		1.00
Maximum number of lanes, Nw (max) (Exhibit 24-7)		1.40
Type of operation is		Unconstrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	43.55	mph
Weaving segment density, D	18.81	pc/mi/ln
Level of service, LOS	B	
Capacity of base condition, cb	4548	pc/h
Capacity as a 15-minute flow rate, c	4450	pc/h
Capacity as a full-hour volume, ch	4227	pc/h

Limitations on Weaving Segments

	Analzyed	If Max Exceeded	See Note
		Maximum	Note
Weaving flow rate, Vw	688	2800	a
Average flow rate (pcphpl)	819	2250	b
Volume ratio, VR	0.28	0.45	c
Weaving ratio, R	0.45	N/A	d
Weaving length (ft)	660	2500	e

Notes:

- a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- b. Capacity constrained by basic freeway capacity.
- c. Capacity occurs under constrained operating conditions.
- d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

HCS+: Freeway Weaving Release 5.21

Operational Analysis

Analyst: FTG
 Agency/Co.: FTG
 Date Performed: June 2007
 Analysis Time Period: AM Peak Hour
 Freeway/Dir of Travel: SB SR 115
 Weaving Location: btw Louisville Road and retail
 Jurisdiction: Alcoa, TN
 Analysis Year: Year 2032
 Description: 10360

Inputs

Freeway free-flow speed, SFF	55	mph
Weaving number of lanes, N	3	
Weaving segment length, L	660	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	A	
Volume ratio, VR	0.25	
Weaving ratio, R	0.46	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	V	V	V	V	
	A-C	B-D	A-D	B-C	
Volume, V	1217	0	215	185	veh/h
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	320	0	57	49	v
Trucks and buses	4	4	4	4	%
Recreational vehicles	1	1	1	1	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.978	0.978	0.978	0.978	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	1309	0	231	199	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.15	0.0035
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	0.65	0.25
Weaving and non-weaving speeds, Si	42.30	50.88
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		0.89
Maximum number of lanes, Nw (max) (Exhibit 24-7)		1.40
Type of operation is		Unconstrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	48.45	mph
Weaving segment density, D	11.96	pc/mi/ln
Level of service, LOS	B	
Capacity of base condition, cb	4666	pc/h
Capacity as a 15-minute flow rate, c	4566	pc/h
Capacity as a full-hour volume, ch	4338	pc/h

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	430	2800	a
Average flow rate (pcphpl)	579	2250	b
Volume ratio, VR	0.25	0.45	c
Weaving ratio, R	0.46	N/A	d
Weaving length (ft)	660	2500	e

Notes:

- a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- b. Capacity constrained by basic freeway capacity.
- c. Capacity occurs under constrained operating conditions.
- d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

HCS+: Freeway Weaving Release 5.21

Operational Analysis

Analyst: FTG
 Agency/Co.: FTG
 Date Performed: June 2007
 Analysis Time Period: PM Peak Hour
 Freeway/Dir of Travel: SB SR 115
 Weaving Location: btw Louisville Road and retail
 Jurisdiction: Alcoa, TN
 Analysis Year: Year 2032
 Description: 10360

Inputs

Freeway free-flow speed, SFF	55	mph
Weaving number of lanes, N	3	
Weaving segment length, L	660	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	A	
Volume ratio, VR	0.28	
Weaving ratio, R	0.45	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	V	V	V	V	
	A-C	B-D	A-D	B-C	
Volume, V	1975	0	349	421	veh/h
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	520	0	92	111	v
Trucks and buses	4	4	4	4	%
Recreational vehicles	1	1	1	1	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.978	0.978	0.978	0.978	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2124	0	375	452	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.15	0.0035
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	1.15	0.56
Weaving and non-weaving speeds, Si	35.96	43.82
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		1.02
Maximum number of lanes, Nw (max) (Exhibit 24-7)		1.40
Type of operation is		Unconstrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	41.29	mph
Weaving segment density, D	23.82	pc/mi/ln
Level of service, LOS	C	
Capacity of base condition, cb	4547	pc/h
Capacity as a 15-minute flow rate, c	4449	pc/h
Capacity as a full-hour volume, ch	4227	pc/h

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	827	2800	a
Average flow rate (pcphpl)	983	2250	b
Volume ratio, VR	0.28	0.45	c
Weaving ratio, R	0.45	N/A	d
Weaving length (ft)	660	2500	e

Notes:

- a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- b. Capacity constrained by basic freeway capacity.
- c. Capacity occurs under constrained operating conditions.
- d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

**CAPACITY ANALYSIS WORKSHEETS
OPTION 2**

**EXISTING LANEAGE
OPTION 2**

HCS+: Signalized Intersections Release 5.21

Analyst: FTG Inter.: SR 115 and Louisville Road
 Agency: FTG Area Type: All other areas
 Date: April 2007 Jurisd: Alcoa, TN
 Period: AM Peak Hour Year : 2012 DHVs
 Project ID: 10360
 E/W St: Louisville Road N/S St: SR 115 (US 29)

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	2	0	1	2	0	2	2	0	2	2	0
LGConfig	L	T		L	T		L	T		L	T	
Volume	312	316		47	357		177	2008		215	1147	
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vol												

uration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
WB Left		A			SB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		10.0	10.0			10.0	66.0	
Yellow		4.0	4.0			4.0	4.0	
All Red		2.0	2.0			2.0	2.0	

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	292	3505	1.12	0.08	145.1	F		
T	302	3618	1.10	0.08	137.2	F	141.1	F
Westbound								
L	150	1805	0.33	0.08	53.1	D		
T	302	3618	1.25	0.08	190.0	F	174.2	F
Northbound								
L	292	3505	0.64	0.08	57.8	E		
T	1990	3618	1.06	0.55	66.1	E	65.4	E
Southbound								
L	292	3505	0.77	0.08	66.1	E		
T	1990	3618	0.61	0.55	18.8	B	26.2	C

Intersection Delay = 73.7 (sec/veh) Intersection LOS = E

BACK OF QUEUE WORKSHEET

	Eastbound			Westbound			Northbound			Southbound		
	L	T		L	T		L	T		L	T	
LaneGroup												
Init Queue	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Flow Rate	168	174		49	197		95	1110		116	633	
So	1900	1900		1900	1900		1900	1900		1900	1900	
No.Lanes	2	2	0	1	2	0	2	2	0	2	2	0
SL	1805	1900		1805	1900		1805	1900		1805	1900	
LnCapacity	150	158		150	158		150	1045		150	1045	
Flow Ratio	0.1	0.1		0.0	0.1		0.1	0.6		0.1	0.3	
v/c Ratio	1.12	1.10		0.33	1.25		0.63	1.06		0.77	0.61	
Grn Ratio	0.08	0.08		0.08	0.08		0.08	0.55		0.08	0.55	
I Factor		1.000			1.000			1.000			1.000	
AT or PVG	3	3		3	3		3	3		3	3	
Pltn Ratio	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
PF2	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Q1	5.6	5.8		1.5	6.6		3.1	37.0		3.8	14.2	
kB	0.3	0.3		0.3	0.3		0.3	0.8		0.3	0.8	
Q2	3.7	3.6		0.1	6.0		0.4	15.6		0.8	1.3	
Q Average	9.3	9.4		1.7	12.6		3.5	52.6		4.5	15.5	
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	
Q S Ratio												
70th Percentile Output:												
fB%	1.2	1.2		1.2	1.2		1.2	1.1		1.2	1.2	
BOQ	11.0	11.1		2.0	14.7		4.2	59.3		5.4	18.1	
QSRatio												
85th Percentile Output:												
fB%	1.5	1.5		1.6	1.5		1.6	1.4		1.6	1.5	
BOQ	14.2	14.3		2.6	18.8		5.5	71.1		7.1	22.9	
QSRatio												
90th Percentile Output:												
fB%	1.7	1.6		1.8	1.6		1.7	1.4		1.7	1.6	
BOQ	15.4	15.6		2.9	20.3		6.1	75.2		7.8	24.6	
QSRatio												
95th Percentile Output:												
fB%	1.9	1.9		2.0	1.8		2.0	1.5		2.0	1.8	
BOQ	17.3	17.5		3.4	22.6		7.0	80.6		8.9	27.2	
QSRatio												
98th Percentile Output:												
fB%	2.2	2.2		2.6	2.1		2.5	1.7		2.4	2.0	
BOQ	20.4	20.6		4.3	26.1		8.6	90.4		10.9	31.1	
QSRatio												

HCS+: Signalized Intersections Release 5.21

Analyst: FTG Inter.: SR 115 and Louisville Road
 Agency: FTG Area Type: All other areas
 Date: April 2007 Jurisd: Alcoa, TN
 Period: PM Peak Hour Year : 2012 DHVs
 Project ID: 10360
 E/W St: Louisville Road N/S St: SR 115 (US 29)

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	2	0	1	2	0	2	2	0	2	2	0
LGConfig	L	T		L	T		L	T		L	T	
Volume	334	742		203	952		314	1308		210	1733	
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vol												

uration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
WB Left		A			SB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		10.0	12.0			10.0	64.0	
Yellow		4.0	4.0			4.0	4.0	
All Red		2.0	2.0			2.0	2.0	

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	292	3505	1.21	0.08	175.3	F		
T	362	3618	2.16	0.10	584.0	F	457.0	F
Westbound								
L	150	1805	1.43	0.08	281.1	F		
T	362	3618	2.77	0.10	857.3	F	755.9	F
Northbound								
L	292	3505	1.13	0.08	148.7	F		
T	1930	3618	0.71	0.53	22.4	C	46.8	D
Southbound								
L	292	3505	0.76	0.08	64.6	E		
T	1930	3618	0.95	0.53	36.7	D	39.7	D

Intersection Delay = 261.9 (sec/veh) Intersection LOS = F

HCS+: Signalized Intersections Release 5.21

Analyst: FTG Inter.: SR 115 and Louisville Road
 Agency: FTG Area Type: All other areas
 Date: April 2007 Jurisd: Alcoa, TN
 Period: AM Peak Hour Year : 2032 DHVs
 Project ID: 10360
 E/W St: Louisville Road N/S St: SR 115 (US 29)

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	2	0	1	2	0	2	2	0	2	2	0
LGConfig	L	T		L	T		L	T		L	T	
Volume	374	379		56	428		212	2410		258	1376	
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vol												

uration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
WB Left		A			SB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		10.0	10.0			10.0	66.0	
Yellow		4.0	4.0			4.0	4.0	
All Red		2.0	2.0			2.0	2.0	

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	292	3505	1.35	0.08	233.2	F		
T	302	3618	1.32	0.08	220.9	F	227.0	F
Westbound								
L	150	1805	0.39	0.08	53.8	D		
T	302	3618	1.49	0.08	293.8	F	266.0	F
Northbound								
L	292	3505	0.76	0.08	65.2	E		
T	1990	3618	1.27	0.55	154.8	F	147.5	F
Southbound								
L	292	3505	0.93	0.08	89.7	F		
T	1990	3618	0.73	0.55	21.6	C	32.4	C

Intersection Delay = 134.6 (sec/veh) Intersection LOS = F

BACK OF QUEUE WORKSHEET

	Eastbound			Westbound			Northbound			Southbound		
	L	T		L	T		L	T		L	T	
LaneGroup												
Init Queue	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Flow Rate	202	209		59	236		114	1332		140	760	
So	1900	1900		1900	1900		1900	1900		1900	1900	
No.Lanes	2	2	0	1	2	0	2	2	0	2	2	0
SL	1805	1900		1805	1900		1805	1900		1805	1900	
LnCapacity	150	158		150	158		150	1045		150	1045	
Flow Ratio	0.1	0.1		0.0	0.1		0.1	0.7		0.1	0.4	
v/c Ratio	1.35	1.32		0.39	1.49		0.76	1.27		0.93	0.73	
Grn Ratio	0.08	0.08		0.08	0.08		0.08	0.55		0.08	0.55	
I Factor		1.000			1.000			1.000			1.000	
AT or PVG	3	3		3	3		3	3		3	3	
Pltn Ratio	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
PF2	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Q1	6.7	7.0		1.9	7.9		3.7	44.4		4.6	19.0	
kB	0.3	0.3		0.3	0.3		0.3	0.8		0.3	0.8	
Q2	7.4	7.3		0.2	10.5		0.7	39.4		1.6	2.1	
Q Average	14.1	14.3		2.0	18.4		4.4	83.8		6.2	21.1	
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	
Q S Ratio												
70th Percentile Output:												
fB%	1.2	1.2		1.2	1.2		1.2	1.1		1.2	1.2	
BOQ	16.5	16.7		2.4	21.4		5.3	93.2		7.4	24.5	
QSRatio												
85th Percentile Output:												
fB%	1.5	1.5		1.6	1.5		1.6	1.3		1.5	1.4	
BOQ	21.0	21.3		3.2	26.9		6.9	111		9.6	30.6	
QSRatio												
90th Percentile Output:												
fB%	1.6	1.6		1.8	1.6		1.7	1.4		1.7	1.5	
BOQ	22.6	22.8		3.6	28.7		7.6	118		10.6	32.5	
QSRatio												
95th Percentile Output:												
fB%	1.8	1.8		2.0	1.7		2.0	1.5		1.9	1.7	
BOQ	25.1	25.3		4.1	31.5		8.7	126		12.0	35.6	
QSRatio												
98th Percentile Output:												
fB%	2.0	2.0		2.6	1.9		2.4	1.7		2.3	1.9	
BOQ	28.8	29.1		5.2	35.7		10.7	143		14.5	40.1	
QSRatio												

HCS+: Signalized Intersections Release 5.21

Analyst: FTG
 Agency: FTG
 Date: April 2007
 Period: PM Peak Hour
 Project ID: 10360
 E/W St: Louisville Road

Inter.: SR 115 and Louisville Road
 Area Type: All other areas
 Jurisd: Alcoa, TN
 Year : 2032 DHVs
 N/S St: SR 115 (US 29)

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	2	0	1	2	0	2	2	0	2	2	0
LGConfig	L	T		L	T		L	T		L	T	
Volume	401	890		244	1143		377	1570		252	2080	
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vol												

uration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
WB Left		A			SB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		10.0	12.0			10.0	64.0	
Yellow		4.0	4.0			4.0	4.0	
All Red		2.0	2.0			2.0	2.0	

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	292	3505	1.45	0.08	273.7	F		
T	362	3618	2.59	0.10	776.8	F	620.6	F
Westbound								
L	150	1805	1.71	0.08	402.6	F		
T	362	3618	3.32	0.10	1107	F	982.6	F
Northbound								
L	292	3505	1.36	0.08	237.5	F		
T	1930	3618	0.86	0.53	28.1	C	68.7	E
Southbound								
L	292	3505	0.91	0.08	84.6	F		
T	1930	3618	1.13	0.53	95.4	F	94.3	F

Intersection Delay = 361.9 (sec/veh) Intersection LOS = F

**WITH EASTBOUND AND WESTBOUND RIGHT TURNS SIGNALIZED
OPTION 2**

HCS+: Signalized Intersections Release 5.21

Analyst: FTG Inter.: SR 115 and Louisville Road
 Agency: FTG Area Type: All other areas
 Date: June 2007 Jurisd: Alcoa, TN
 Period: AM Peak Hour Year : 2012 DHVs
 Project ID: 10360
 E/W St: Louisville Road N/S St: SR 115 (US 29)

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	2	1	1	2	1	2	2	0	2	2	0
LGConfig	L	T	R	L	T	R	L	T		L	T	
Volume	312	316	154	47	357	419	177	2008		215	1147	
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						

uration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
WB Left		A			SB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
NB Right					EB Right	A		
SB Right					WB Right	A		
Green		10.0	10.0			10.0	66.0	
Yellow		4.0	4.0			4.0	4.0	
All Red		2.0	2.0			2.0	2.0	

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	292	3505	1.12	0.08	145.1	F		
T	302	3618	1.10	0.08	137.2	F	151.9	F
R	135	1615	1.20	0.08	196.0	F		
Westbound								
L	150	1805	0.33	0.08	53.1	D		
T	302	3618	1.25	0.08	190.0	F	642.5	F
R	135	1615	3.27	0.08	1094	F		
Northbound								
L	292	3505	0.64	0.08	57.8	E		
T	1990	3618	1.06	0.55	66.1	E	65.4	E
Southbound								
L	292	3505	0.77	0.08	66.1	E		
T	1990	3618	0.61	0.55	18.8	B	26.2	C

Intersection Delay = 160.4 (sec/veh) Intersection LOS = F

HCS+: Signalized Intersections Release 5.21

Analyst: FTG Inter.: SR 115 and Louisville Road
 Agency: FTG Area Type: All other areas
 Date: June 2007 Jurisd: Alcoa, TN
 Period: PM Peak Hour Year : 2012 DHVs
 Project ID: 10360
 E/W St: Louisville Road N/S St: SR 115 (US 29)

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	2	1	1	2	1	2	2	0	2	2	0
LGConfig	L	T	R	L	T	R	L	T		L	T	
Volume	334	742	351	203	952	279	314	1308		210	1733	
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						

uration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
WB Left		A			SB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
NB Right					EB Right	A		
SB Right					WB Right	A		
Green		10.0	12.0			10.0	64.0	
Yellow		4.0	4.0			4.0	4.0	
All Red		2.0	2.0			2.0	2.0	

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	292	3505	1.21	0.08	175.3	F		
T	362	3618	2.16	0.10	584.0	F	554.9	F
R	135	1615	2.73	0.08	855.5	F		
Westbound								
L	150	1805	1.43	0.08	281.1	F		
T	362	3618	2.77	0.10	857.3	F	727.2	F
R	135	1615	2.18	0.08	608.6	F		
Northbound								
L	292	3505	1.13	0.08	148.7	F		
T	1930	3618	0.71	0.53	22.4	C	46.8	D
Southbound								
L	292	3505	0.76	0.08	64.6	E		
T	1930	3618	0.95	0.53	36.7	D	39.7	D

Intersection Delay = 309.3 (sec/veh) Intersection LOS = F

HCS+: Signalized Intersections Release 5.21

Analyst: FTG Inter.: SR 115 and Louisville Road
 Agency: FTG Area Type: All other areas
 Date: June 2007 Jurisd: Alcoa, TN
 Period: AM Peak Hour Year : 2032 DHVs
 Project ID: 10360
 E/W St: Louisville Road N/S St: SR 115 (US 29)

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	2	1	1	2	1	2	2	0	2	2	0
LGConfig	L	T	R	L	T	R	L	T		L	T	
Volume	374	379	185	56	428	503	212	2410		258	1376	
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						

uration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
WB Left		A			SB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
NB Right					EB Right	A		
SB Right					WB Right	A		
Green		10.0	10.0			10.0	66.0	
Yellow		4.0	4.0			4.0	4.0	
All Red		2.0	2.0			2.0	2.0	

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	292	3505	1.35	0.08	233.2	F		
T	302	3618	1.32	0.08	220.9	F	239.8	F
R	135	1615	1.44	0.08	291.6	F		
Westbound								
L	150	1805	0.39	0.08	53.8	D		
T	302	3618	1.49	0.08	293.8	F	836.3	F
R	135	1615	3.92	0.08	1386	F		
Northbound								
L	292	3505	0.76	0.08	65.2	E		
T	1990	3618	1.27	0.55	154.8	F	147.5	F
Southbound								
L	292	3505	0.93	0.08	89.7	F		
T	1990	3618	0.73	0.55	21.6	C	32.4	C

Intersection Delay = 241.1 (sec/veh) Intersection LOS = F

HCS+: Signalized Intersections Release 5.21

Analyst: FTG Inter.: SR 115 and Louisville Road
 Agency: FTG Area Type: All other areas
 Date: June 2007 Jurisd: Alcoa, TN
 Period: PM Peak Hour Year : 2032 DHVs
 Project ID: 10360
 E/W St: Louisville Road N/S St: SR 115 (US 29)

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	2	1	1	2	1	2	2	0	2	2	0
LGConfig	L	T	R	L	T	R	L	T		L	T	
Volume	401	890	421	244	1143	335	377	1570		252	2080	
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						

uration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
WB Left		A			SB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		10.0	12.0			10.0	64.0	
Yellow		4.0	4.0			4.0	4.0	
All Red		2.0	2.0			2.0	2.0	

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	292	3505	1.45	0.08	273.7	F		
T	362	3618	2.59	0.10	776.8	F		
R	0	1615		0.00				
Westbound								
L	150	1805	1.71	0.08	402.6	F		
T	362	3618	3.32	0.10	1107	F		
R	0	1615		0.00				
Northbound								
L	292	3505	1.36	0.08	237.5	F		
T	1930	3618	0.86	0.53	28.1	C	68.7	E
Southbound								
L	292	3505	0.91	0.08	84.6	F		
T	1930	3618	1.13	0.53	95.4	F	94.3	F

Intersection Delay = (sec/veh) Intersection LOS =

**WITH DOUBLE EASTBOUND AND WESTBOUND RIGHT TURNS SIGNALIZED
OPTION 2**

HCS+: Signalized Intersections Release 5.21

Analyst: FTG Inter.: SR 115 and Louisville Road
 Agency: FTG Area Type: All other areas
 Date: June 2007 Jurisd: Alcoa, TN
 Period: AM Peak Hour Year : 2012 DHVs
 Project ID: 10360
 E/W St: Louisville Road N/S St: SR 115 (US 29)

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	2	2	1	2	2	2	2	0	2	2	0
LGConfig	L	T	R	L	T	R	L	T		L	T	
Volume	312	316	154	47	357	419	177	2008		215	1147	
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						

uration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
WB Left		A			SB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
NB Right					EB Right	A		
SB Right					WB Right	A		
Green		10.0	10.0			10.0	66.0	
Yellow		4.0	4.0			4.0	4.0	
All Red		2.0	2.0			2.0	2.0	

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	292	3505	1.12	0.08	145.1	F		
T	302	3618	1.10	0.08	137.2	F	125.4	F
R	238	2859	0.68	0.08	61.1	E		
Westbound								
L	150	1805	0.33	0.08	53.1	D		
T	302	3618	1.25	0.08	190.0	F	317.0	F
R	238	2859	1.85	0.08	454.6	F		
Northbound								
L	292	3505	0.64	0.08	57.8	E		
T	1990	3618	1.06	0.55	66.1	E	65.4	E
Southbound								
L	292	3505	0.77	0.08	66.1	E		
T	1990	3618	0.61	0.55	18.8	B	26.2	C

Intersection Delay = 104.3 (sec/veh) Intersection LOS = F

HCS+: Signalized Intersections Release 5.21

Analyst: FTG Inter.: SR 115 and Louisville Road
 Agency: FTG Area Type: All other areas
 Date: June 2007 Jurisd: Alcoa, TN
 Period: PM Peak Hour Year : 2012 DHVs
 Project ID: 10360
 E/W St: Louisville Road N/S St: SR 115 (US 29)

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	2	2	1	2	2	2	2	0	2	2	0
LGConfig	L	T	R	L	T	R	L	T		L	T	
Volume	334	742	351	203	952	279	314	1308		210	1733	
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						

uration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
WB Left		A			SB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
NB Right					EB Right	A		
SB Right					WB Right	A		
Green		10.0	12.0			10.0	64.0	
Yellow		4.0	4.0			4.0	4.0	
All Red		2.0	2.0			2.0	2.0	

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	292	3505	1.21	0.08	175.3	F		
T	362	3618	2.16	0.10	584.0	F	423.9	F
R	238	2859	1.55	0.08	322.4	F		
Westbound								
L	150	1805	1.43	0.08	281.1	F		
T	362	3618	2.77	0.10	857.3	F	646.0	F
R	238	2859	1.24	0.08	191.6	F		
Northbound								
L	292	3505	1.13	0.08	148.7	F		
T	1930	3618	0.71	0.53	22.4	C	46.8	D
Southbound								
L	292	3505	0.76	0.08	64.6	E		
T	1930	3618	0.95	0.53	36.7	D	39.7	D

Intersection Delay = 262.2 (sec/veh) Intersection LOS = F

HCS+: Signalized Intersections Release 5.21

Analyst: FTG Inter.: SR 115 and Louisville Road
 Agency: FTG Area Type: All other areas
 Date: June 2007 Jurisd: Alcoa, TN
 Period: AM Peak Hour Year : 2032 DHVs
 Project ID: 10360
 E/W St: Louisville Road N/S St: SR 115 (US 29)

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	2	2	1	2	2	2	2	0	2	2	0
LGConfig	L	T	R	L	T	R	L	T		L	T	
Volume	374	379	185	56	428	503	212	2410		258	1376	
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						

uration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
WB Left		A			SB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
NB Right					EB Right	A		
SB Right					WB Right	A		
Green		10.0	10.0			10.0	66.0	
Yellow		4.0	4.0			4.0	4.0	
All Red		2.0	2.0			2.0	2.0	

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	292	3505	1.35	0.08	233.2	F		
T	302	3618	1.32	0.08	220.9	F	196.8	F
R	238	2859	0.82	0.08	73.9	E		
Westbound								
L	150	1805	0.39	0.08	53.8	D		
T	302	3618	1.49	0.08	293.8	F	445.6	F
R	238	2859	2.22	0.08	618.6	F		
Northbound								
L	292	3505	0.76	0.08	65.2	E		
T	1990	3618	1.27	0.55	154.8	F	147.5	F
Southbound								
L	292	3505	0.93	0.08	89.7	F		
T	1990	3618	0.73	0.55	21.6	C	32.4	C

Intersection Delay = 172.2 (sec/veh) Intersection LOS = F

HCS+: Signalized Intersections Release 5.21

Analyst: FTG Inter.: SR 115 and Louisville Road
 Agency: FTG Area Type: All other areas
 Date: June 2007 Jurisd: Alcoa, TN
 Period: PM Peak Hour Year : 2032 DHVs
 Project ID: 10360
 E/W St: Louisville Road N/S St: SR 115 (US 29)

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	2	2	1	2	2	2	2	0	2	2	0
LGConfig	L	T	R	L	T	R	L	T		L	T	
Volume	401	890	421	244	1143	335	377	1570		252	2080	
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						

uration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
WB Left		A			SB Left	A		
Thru			A		Thru		A	
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		10.0	12.0			10.0	64.0	
Yellow		4.0	4.0			4.0	4.0	
All Red		2.0	2.0			2.0	2.0	

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group Delay LOS		Approach Delay LOS	
			v/c	g/C				
Eastbound								
L	292	3505	1.45	0.08	273.7	F		
T	362	3618	2.59	0.10	776.8	F		
R	0	2859		0.00				
Westbound								
L	150	1805	1.71	0.08	402.6	F		
T	362	3618	3.32	0.10	1107	F		
R	0	2859		0.00				
Northbound								
L	292	3505	1.36	0.08	237.5	F		
T	1930	3618	0.86	0.53	28.1	C	68.7	E
Southbound								
L	292	3505	0.91	0.08	84.6	F		
T	1930	3618	1.13	0.53	95.4	F	94.3	F

Intersection Delay = (sec/veh) Intersection LOS =

