SUBJECT OF THE STUDY

The subject of this study is a 2.73 mile section of State Route 106 / US-431 (Lewisburg Pike), beginning at the intersection with State Route 248 (Goose Creek Bypass) and extending to State Route 397 (Mack Hatcher Parkway) and is located southeast of the City of Franklin, Williamson County. The purpose of this study is to assess the existing roadway and to provide recommendations for any improvements needed to accommodate future traffic anticipated along the facility.

PROJECT PURPOSE AND NEED

The primary needs along State Route 106 are to increase vehicular capacity and to improve safety. These needs were determined after studying traffic volumes, calculating levels of service and reviewing available crash data. Based upon the existing roadway laneage, the level of service for this facility operates at a LOS E for both the base (2013) and design year (2033).

The major causes of congestion in the study corridor as outlined in this TPR include: commercial/residential growth, rapid population increases that out-pace statewide averages and vehicular demand that exceeds the existing roadway capacity.

BACKGROUND INFORMATION

The Nashville Area Metropolitan Planning Organization (MPO) Travel Demand Model has identified the segment of State Route 106 from Henpeck Lane to State Route 397 as congested in the year 2030 because is exceeds the congestion threshold identified in the MPO’s *Congestion Management Process* (CMP) report (amended September 19, 2007) for the year 2030. The MPO included the proposed roadway improvements as a Near Horizon (2016) project in the 2030 Long Range Transportation Plan (LRTP). Prior to development of this TPR, a Tier 2 Analysis was completed and approved for the segment of State Route 106 from Henpeck Lane to State Route 397 (Mack Hatcher Parkway) as required by the Nashville Area MPO.

Existing land uses adjacent to Lewisburg Pike are primarily residential with churches and schools within the study area. Nissan North America’s recent decision to move its corporate headquarters to the Cool Springs area is expected to generate an additional 1,300 jobs. Several large mixed-use developments are also proposed in this area, including the Berry Farms development, which would be located in the area surrounding the State Route 248 and I-65 interchange. Phase I of this proposed development would contain over 600 households and over one million square feet of retail and office space.

TDOT historians indicate that there are two National Register listed resources within the project study corridor. The two locations include the Dr. Hezekiah Ogden House and the Mordecai Puryear House. However, the field survey conducted during the NEPA process may identify heretofore unrecorded or undocumented resources.

CORRIDOR OPTIONS

A 500 foot corridor was investigated for this study due to the fact that any necessary improvements are expected to occur along the existing route. Because of the need for increased vehicular capacity and improved safety conditions, two different build options were considered. Each of these options have advantages and disadvantages that were discussed during the study process. With either build option, the additional travel lanes (4 total) provide a LOS A based upon base and design year traffic volumes.

Option A contains four travel lanes and a two way left turn lane. There are many driveway and side-road connections along SR-106 and a two way left turn maintains access for these connections. There is also less right of way necessary compared to the other option. Disadvantages include higher crash rates due to the number of available conflict points and the increased opportunity for unsafe passing maneuvers using the center turn lane.
Estimated Cost - $23,991,000

Option B contains four travel lanes and raised median. The advantages are the additional room for landscaping, reduces headlight glare from opposing traffic, allows for a refuge area for pedestrians, and controls access points and left turn conflict points. The disadvantages are the increased amount of right of way needed and limited access for driveways and side-roads.
Estimated Cost - $31,456,000

RECOMMENDATIONS

The study corridor has been divided into three sections for construction and funding reasons.

Section 1 begins at the State Route 248 (Goose Creek By-Pass) and ends at the intersection of State Route 106 and Old Peytonsville Road. As stated previously in this study, the developer of the proposed Berry Farms development has committed to funding the construction of this section of State Route 106 and the Nashville MPO TIP for Fiscal Years 2008 – 2011 has been amended to include this segment of the project.

Section 2 begins at Old Peytonsville Road and extends 1.16 miles north to Bowman Road. Presently this segment of State Route 106 is not within the city limits of Franklin, but under the jurisdiction of Williamson County.

Section 3 begins at Bowman Road (southern boundary of Franklin City Limits) and ends 1.09 miles north at the intersection of State Route 397 (Mack Hatcher Parkway). The City of Franklin has plans to proceed with the survey and design for this segment of Lewisburg Pike and the environmental document for the entire study corridor.

It is recommended that the following options be carried forward in the NEPA process as the needed improvements in this corridor:

Option A: Four lane facility with a two-way left-turn lane,
Option B: Four lane facility with a variable width raised median, and
Option C: No-build option.

TRANSPORTATION PLANNING REPORT

STATE ROUTE 106 (U.S. 431) LEWISBURG PIKE

FROM STATE ROUTE 248 (GOOSE CREEK BYPASS)
TO STATE ROUTE 397 (MACK HATCHER PARKWAY)
IN FRANKLIN, WILLIAMSON COUNTY

PREPARED BY
CLINARD ENGINEERING ASSOCIATES, LLC

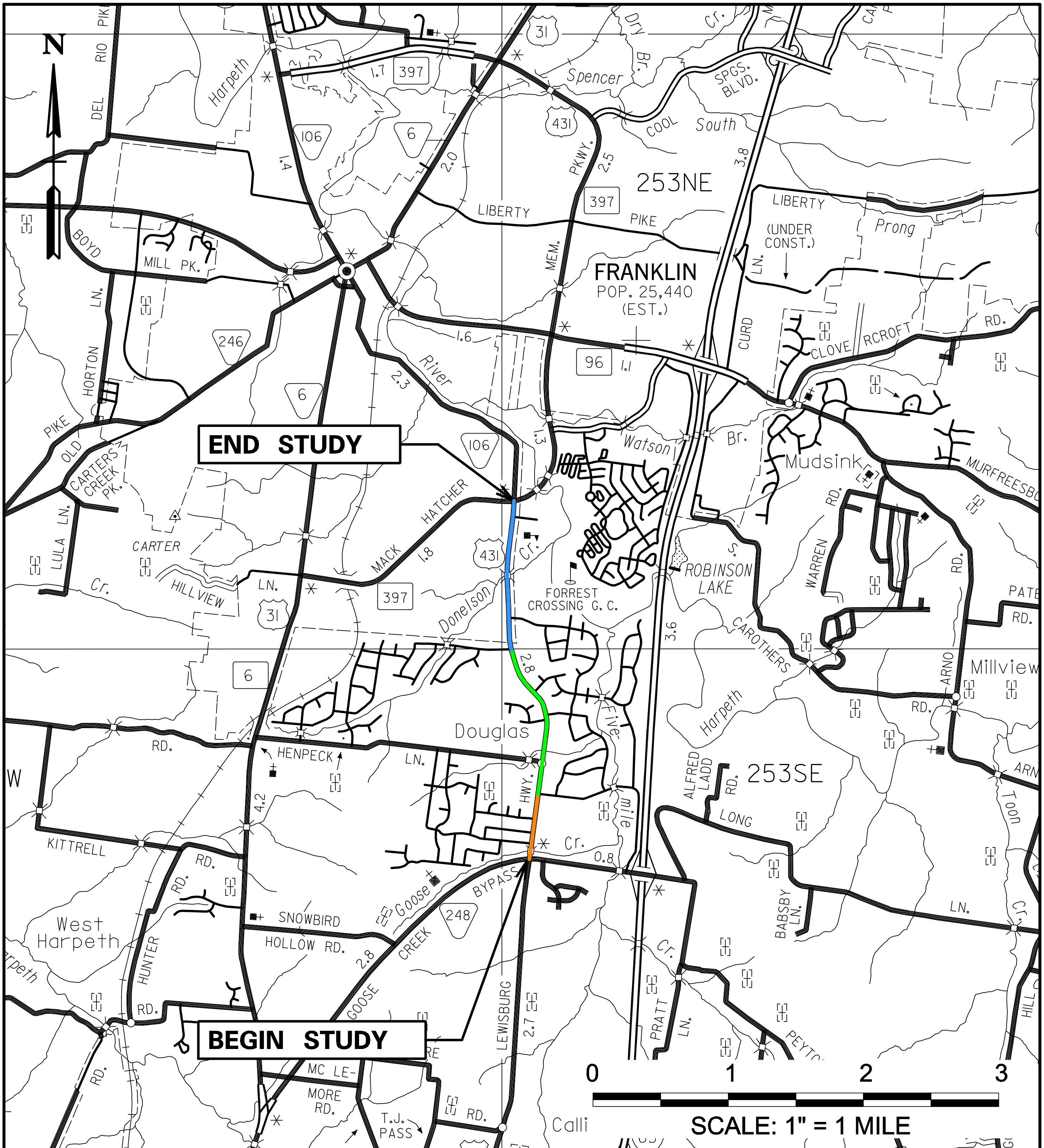
FOR THE CITY OF FRANKLIN

IN COOPERATION WITH THE
TENNESSEE DEPARTMENT OF TRANSPORTATION
PROJECT PLANNING DIVISION

Approved by:	Signature	DATE
CHIEF OF ENVIRONMENT AND PLANNING	Ed Cole	1/15/09
TRANSPORTATION DIRECTOR PROJECT PLANNING DIVISION	Steve Allen	1-15-09
TRANSPORTATION MANAGER 2 PROJECT PLANNING DIVISION	Bill Hart	1/14/09

TABLE OF CONTENTS

APPENDICES

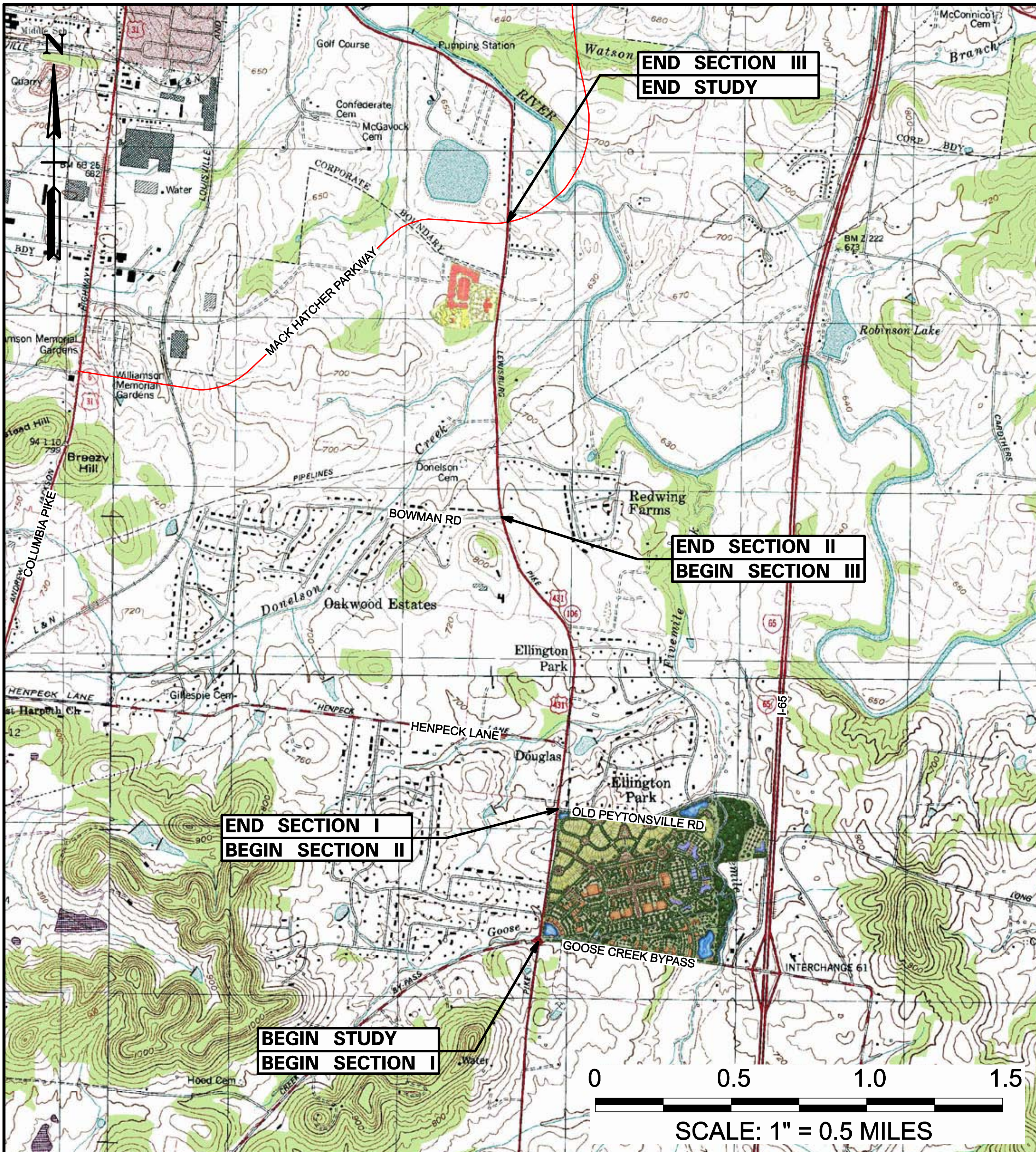


<u>LOCATION MAP</u>

SR-106 (US-431) LEWISBURG PIKE
FROM SR-248 (GOOSE CREEK BYPASS) TO
SR-397 (MACK HATCHER PARKWAY)

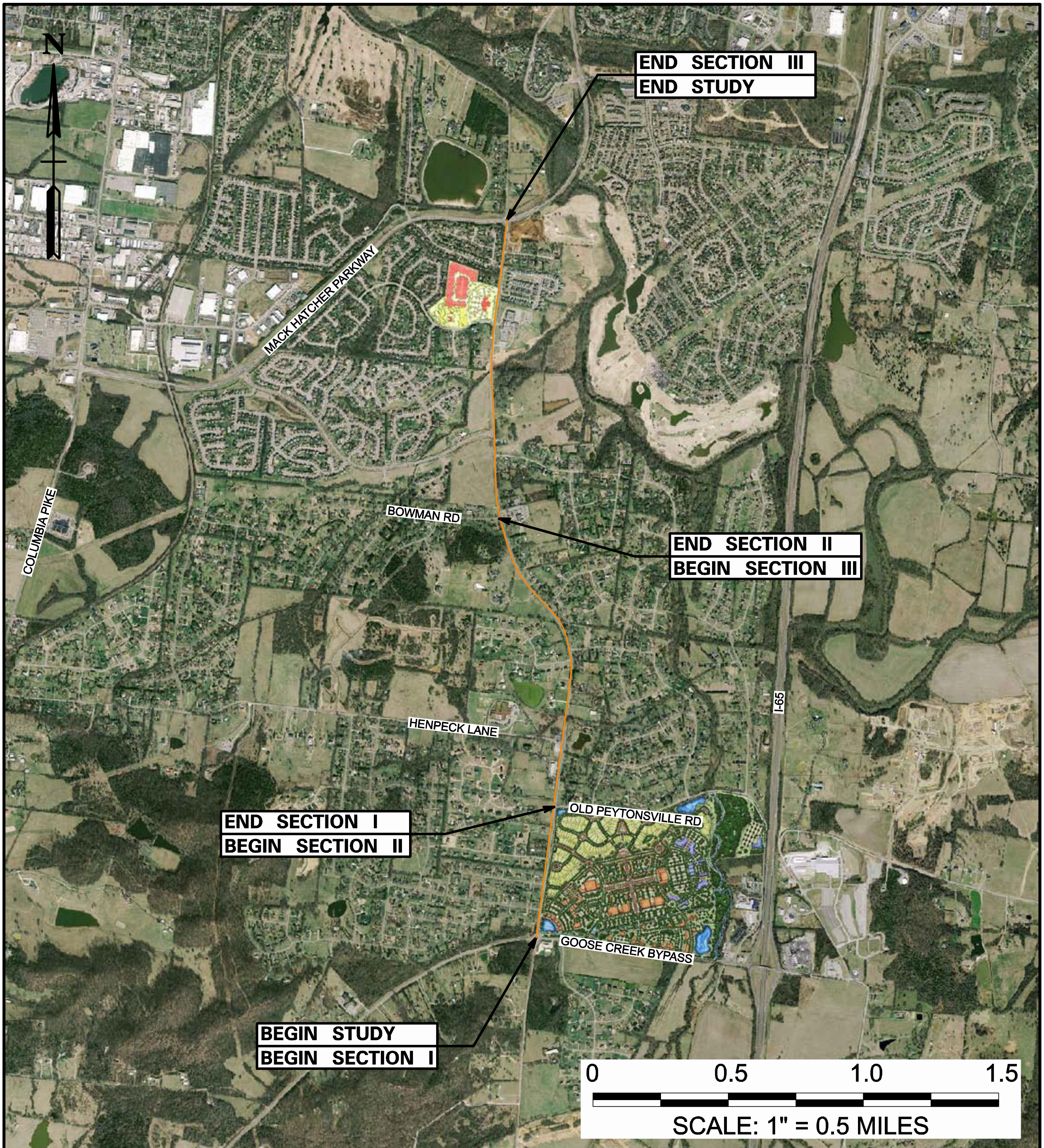
WILLIAMSON COUNTY

SECTION I
SECTION II
SECTION III



PROJECT MAP

SR-106 (US-431) LEWISBURG PIKE
FROM SR-248 (GOOSE CREEK BYPASS) TO
SR-397 (MACK HATCHER PARKWAY)
USGS "FRANKLIN" AND "BETHESDA" QUADS
WILLIAMSON COUNTY



AERIAL MAP

SR-106 (US-431) LEWISBURG PIKE
FROM SR-248 (GOOSE CREEK BYPASS) TO
SR-397 (MACK HATCHER PARKWAY)

WILLIAMSON COUNTY

1.0 SUBJECT OF STUDY

The subject of this Transportation Planning Report is State Route 106 / US-431 (Lewisburg Pike) located southeast of the City of Franklin, Williamson County. The City of Franklin in cooperation with the Tennessee Department of Transportation and the Nashville Area Metropolitan Planning Organization are studying the 2.73 mile section of Lewisburg Pike that extends from State Route 248 (Goose Creek Bypass) to State Route 397 (Mack Hatcher Parkway), to assess the existing roadway and provide recommendations for any improvements needed to accommodate future traffic anticipated along this facility. The report will evaluate the current capacity to assess congestion and crash data to ascertain roadway deficiencies. The report will then propose strategies to relieve projected congestion levels, improve travel times, and improve safety. In addition, a preliminary environmental review will be conducted to identify any known hazards or protected resources which may be present in the study corridor.

2.0 BACKGROUND

The City of Franklin is located approximately twenty-three (23) miles south of Nashville, Tennessee in Williamson County. As well as being the county seat, numerous commercial and service industries have located within the city and the outlying areas of Franklin. The census population numbers for the City of Franklin are listed in the table below. When compared to the average growth rate for the State of Tennessee, it is evident that the City of Franklin has experienced tremendous growth since the year 1990.

	City of Franklin			State of Tennessee		
Year	Pop.	Percent Change	Avg. Growth Rate	Pop.	Percent Change	Avg. Growth Rate
1990	20,098	-	-	4,880,000	-	-
2000	41,842	108%	7.61%	5,690,000	16.6%	1.55%
2005	53,311	27.4%	4.96%	5,960,000	4.7%	0.94%

Data Source: U.S. Census Bureau / City of Franklin

The Nashville Area Metropolitan Planning Organization (MPO) Travel Demand Model has identified the segment of State Route 106 from Henpeck Lane to State Route 397 as congested in the year 2030 because is exceeds the congestion threshold identified in the MPO's *Congestion Management Process* (CMP) report (amended September 19, 2007) for the year 2030. The MPO included the proposed roadway improvements as a Near Horizon (2016) project in the 2030 Long Range Transportation Plan (LRTP), but it was considered a placeholder until a Tier 2 Analysis could be completed and approved by the MPO. On March 5, 2008, the Technical Coordinating Committee of the MPO approved the completed Tier 2 Analysis for this portion of State Route 106.

Currently, this study section of State Route 106 is comprised of two eleven (11) foot travel lanes with four (4) foot shoulders within an existing right-of-way which varies from 40 to 120 feet. The functional classification of this segment of State Route 106 is an urban arterial with the posted speed limits varying from 40 to 45 miles per hour. The primary use of this portion of State Route 106 serves as commuter route to downtown Franklin as well as serving as a connection to I-65 from/to State Route 248 (Goose Creek Bypass) or State Route 96 via Mack Hatcher Parkway. State Route 106 additionally serves as an alternate route to Interstate 65 and is anticipated to be heavily utilized during the construction phase of the I-65 widening project which will provide additional travel lanes from State Route 840 to State Route 96. As part of this widening, the State Route 248 interchange will also be extensively modified for the additional lanes along I-65 as well as widening along State Route 248.

Existing land uses adjacent to Lewisburg Pike are primarily residential with churches and schools within the study area. The City of Franklin and this portion of Williamson County have seen explosive growth in recent years, with continued growth expected into the foreseeable future. Nissan North America's recent decision to move its corporate headquarters to the Cool Springs area is expected to generate an additional 1,300 jobs. Several large mixed-use developments are also proposed in this area, including the Berry Farms development, which would be located in the area surrounding the State Route 248 and I-65 interchange. Phase I of this proposed development may contain over 600 households and over one million square feet of retail and office space.

State Route 248 (Goose Creek) Area

The southern limit of the study is State Route 248. Presently, the intersection of SR-106 and SR-248 operates under traffic signalization. With the Berry Farms development located in the northeast quadrant of this intersection, substantial improvements will be incorporated as part of the development at this intersection, as well as along SR-106 northward to Old Peytonsville Road. These improvements will be funded by the developers of Berry Farms and include additional turn lanes on all approaches of the intersection as well as widening SR-106 from two (2) to four (4) travel lanes from SR-248 to near Old Peytonsville Road.

Intersection of SR-106 & SR-248

Future Location of Berry Farms

Henpeck Lane Area

The area surrounding Henpeck Lane along SR-106 includes some small commercial development including the Henpeck Market. Additionally, Oak View Elementary School is located along Henpeck Lane, west of SR-106.

The Shoppes at Henpeck

Henpeck Market (Gas Station)

Bowman Road Area (Southern City Limits Boundary)

Development within the area of Bowman Road along SR-106 is primarily residential with the southern city limits of Franklin located along Bowman Road. Oak Valley Baptist Church is also located in this area along the eastside of SR-106.

Bowman Road & State Route 106

Oak Valley Baptist Church

SR-397 (Mack Hatcher Parkway) Area

The intersection of SR-106 and SR-397 serves as the northern terminus of the study area and is presently operated under traffic signal operation. Development is primarily residential with the Harpeth Community Church under construction at the time of this study in the southeast quadrant of the intersection. In March of 2008, the City of Franklin approved a future development along the west side of SR-106 within the Dallas Downs subdivision for the construction of a 55,000 square foot church including an additional 24 single family homes. This development will be located across from Moore Elementary School in the northwest quadrant of SR-106 and Dallas Downs Boulevard.

Moore Elementary School **SR-106 & SR-397 Intersection**

3.0 TRANSPORTATION PLANS

As the City of Franklin continues to grow, it is important to provide an adequate transportation network for the increase in traffic. The Nashville Area Metropolitan Planning Organization's (MPO) 2030 Long Range Transportation Plan (LRTP) includes widening State Route 106 (Lewisburg Pike) from Henpeck Lane to State Route 397 (Mack Hatcher Parkway) from two (2) lanes to four (4) lanes in the year 2016 (Project #6032).

The LRTP also lists other projects in the Franklin area that could potentially have an impact on the flow of traffic along State Route 106 (Lewisburg Pike). State Route 397 (Mack Hatcher Parkway) is presently in various stages of widening and when completed will have a significant impact on the existing system. The widening of Interstate 65 (Project #6018) listed in the 2016 Horizon Year will add two (2) additional travel lanes in both the northbound and southbound directions between State Route 840 and State Route 96. Within this section of proposed widening is another project that could have an effect on traffic along State Route 106 (Lewisburg Pike). The LRTP recommends improving the interchange at State Route 248 (Goose Creek Bypass) (Project #6019 – 2016 Horizon Year).

The projects listed previously will provide improved alternative routes for those who wish to travel to Franklin, Nashville or other destinations north. Based upon the MPO Travel Demand Model, the improvements are expected to reduce the growth of traffic along State Route 106 within the study limits.

It is important to note, that in July of 2007, the widening of Lewisburg Pike from South of Goose Creek Bypass to North of Old Peytonsville Road was added to the Nashville MPO Transportation Improvement Program for Fiscal Years 2008 – 2011. The project cost as shown for TIP # 2006-14 is estimated at $4,255,000 and includes widening the existing roadway to four (4) travel lanes with a raised median. This improvement project cost would be paid for by the developer as part of the Berry Farms project located along State Route 106 near the State Route 248 intersection.

The map on page 10 and the table on page 9 were taken from the Nashville Area Metropolitan Planning Organization Long Range Transportation Plan Project Map and describe the recommended and committed projects in this area through the year 2030.

In addition to the MPO's LTRP, the following documents were utilized to provide insight into the corridor for preparation of this Transportation Planning Report. These documents include:

1) Franklin Major Thoroughfare Plan Update (August 2004)
2) Franklin Bicycle and Pedestrian Plan (Update 2003)
3) Franklin Local Street Plan (February 2007)
4) Franklin Design Standards (October 2005)
5) Tier 2 Analysis – State Route 106 (MPO Approved March 2008)
6) Tier 2 Analysis – State Route 248 (MPO Approved March 2008)
7) Berry Farms Development Plans
8) Dallas Downs- Kendall Hall Development Plans
9) SR-397 (Mack Hatcher) Transportation Planning Report / CSS Study
10) Interchange Modification Study at I-65 & SR-248

Table 1 Relevant Williamson County Projects listed in the Nashville Area 2030 Long Range Transportation Plan

Project #	Project Location	Termini	Length (mi.)	Year	Cost	Improvement	Project Description
68	SR-840	SR-6 to SR-106		2006		New Roadway	Construct new 4 lane roadway
6018	I-65	SR-840 to SR-96	6.0	2016	$27,230,000	Widening	Widen from 4 to 8 lanes
6019	I-65	SR-248 (Goose Creek)	-	2016	$16,000,000	Reconstruction	Reconstruct Interchange
6021	SR-106 (Lewisburg Pk)	Critz Lane to SR-248 (Goose Creek Bypass)	4.9	2025	$15,000,000	Widening	Widen from 2 to 4 lanes
6022	SR-6 (US-31)	Buckner Lane to Henpeck Lane	9.6	2016	$29,000,000	Widening	Widen from 2 to 4/5 lanes
6032	Lewisburg Pk (SR-106/US-431)	Henpeck Lane to Mack Hatcher	1.3	2016	$15,000,000	Widening	Widen from 2 to 4 lanes with bike lanes
6034	Goose Creek Bypass (SR-248)	SR-106 Lewisburg Pk to I-65	0.8	2016	$2,450,000	Widening	Widen to 4 lane median divided highway
6037	Goose Creek Bypass (SR-248)	New South Carothers Road to Peytonsville/Trinity Road	5.0	2025	$2,287,740	New Roadway	Construct new 3 lane roadway
6038	Goose Creek Bypass (SR-248)	SR-6 / US-31 to SR-106	2.8	2025	$11,000,000	Widening	Widen from 2 to 3 lanes
6048	Mack Hatcher East (SR-397) SE Quadrant	SR-6 (US-31) South of Franklin to SR-96 east of Franklin	3.0	2016	$18,300,000	Widening	Widen from 2 to 4 lanes as median divided highway
9016	South Carothers Road	Franklin Commons to proposed Goose Creek Bypass	4.3	2016	$4,830,000	Widening / New Roadway	Widen to 4 lane median divided with bike lanes and extend South Carothers to New Goose Creek Bypass
9017	SR-248 (Goose Creek Bypass)	I-65 to new South Carothers Road	0.8	2016	$442,260	New Roadway	Construct new 3 lane roadway

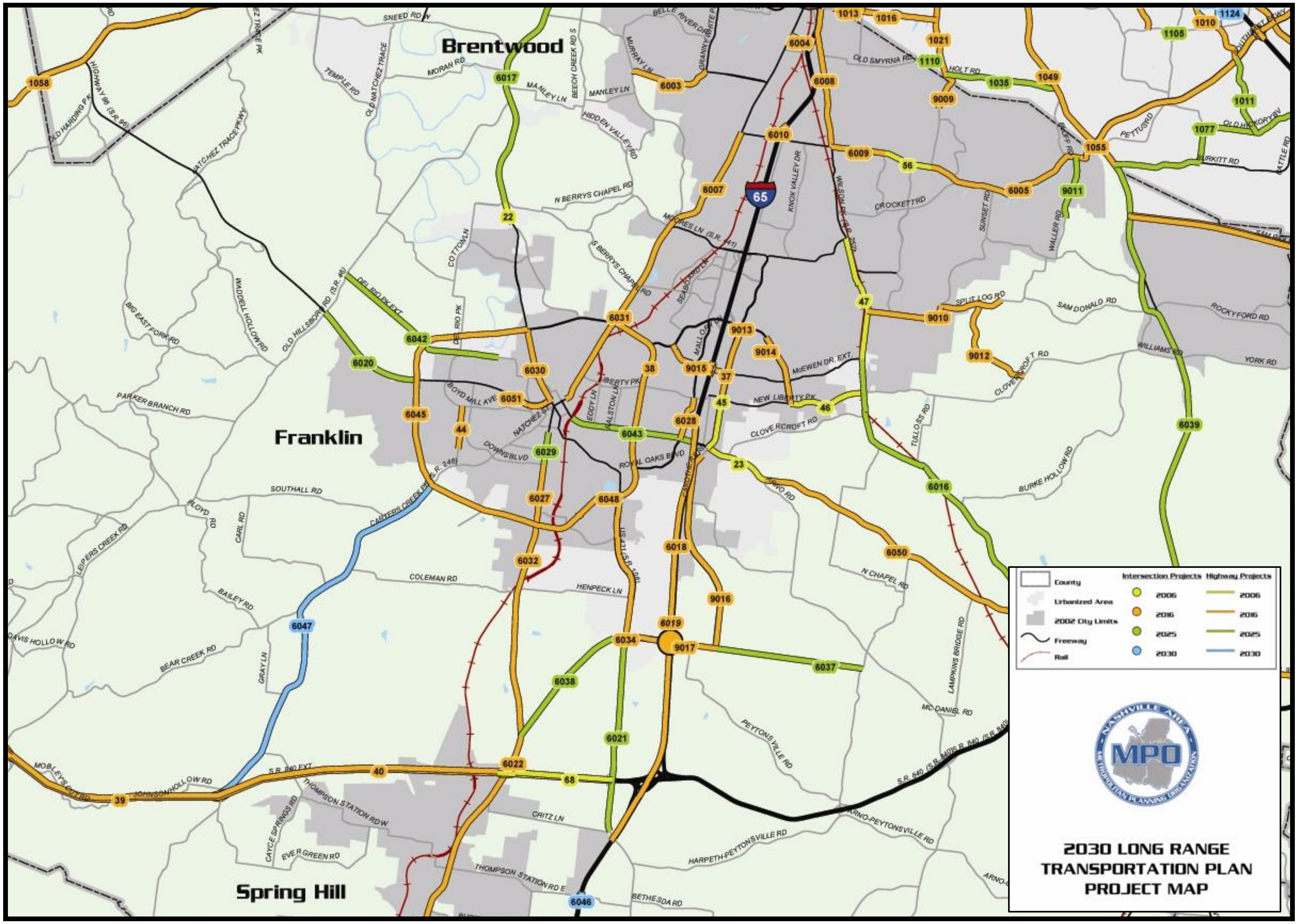


Figure 4 Vicinity Map of Nashville Area Metropolitan Planning Organization Long Range Transportation Plan Project Map

4.0 PURPOSE AND NEED

State Route 106 (US 431) / Lewisburg Pike is a major arterial route linking the City of Franklin, Tennessee to growing communities to the south such as Thompson Station and Spring Hill. Over the years as both residential and commercial development has occurred in this region, additional demands have been placed on the heavily traveled segment of State Route 106 from State Route 248 (Goose Creek Bypass) to State Route 397 (Mack Hatcher Parkway).

Recognizing the existing traffic congestion and future demands along this route, the Nashville Area Metropolitan Planning Organization (MPO) has included it in the 2030 Long Range Transportation Plan to be widened in the horizon year 2016. In addition to this roadway, numerous other projects discussed in this report are planned within this area of Williamson County in the year 2016.

At the request of the City of Franklin, this Transportation Planning Report (TPR) has been initiated as a first step in the project development process. It is important to note, that the City of Franklin has also included this project as part of their Major Thoroughfare Plan Update (MTPU) to be widened to four (4) travel lanes.

Prior to development of this report, a Tier 2 Analysis was completed and approved for the segment of State Route 106 from Henpeck Lane to State Route 397 (Mack Hatcher Parkway) as required by the Nashville Area MPO.

As outlined in the approved Tier 2 Analysis for State Route 106, a number of factors are tied to the congestion along this route, primarily:

1) Area growth and rapid population increases that out-pace statewide averages;

2) Traffic volume increases that are on-pace with the population growth occurring in the area; and

3) Vehicular demand that exceeds the existing roadway capacity.

While various strategies were identified that can be applied to improve congestion along State Route 106, such as: improved/ expanded transit service, traffic signal timing and operational improvements, provisions for bicycles and pedestrians, these strategies alone will not provide for a sufficient reduction of congestion along the route. Therefore, the proposed improvement is a multi-lane roadway section with provisions for bicycles and pedestrians combined with the additional strategies, will increase corridor capacity and reduce congestion, travel time and delay.

The primary needs along State Route 106 are to increase vehicular capacity and to improve safety. These needs were determined after studying traffic volumes, calculating levels of service, and reviewing available crash data, all of which is detailed in the following pages.

<u>Traffic Volumes</u>

Project traffic data has been developed in cooperation with the Tennessee Department of Transportation Project Planning Division for the years 2013 and 2033 using traffic counts and growth factors derived from the MPO’s Travel Demand Model. These Annual Average Daily Traffic (AADT) volumes range from 9,600 to 12,060 in 2013 and from 13,670 to 16,130 in 2033. Additionally, projected traffic along State Route 106 has also been coordinated with the future improvements along SR-248 and the I-65 widening / interchange project as well as the future widening of SR-397 (Mack Hatcher Parkway).

Level of Service

The base year (2013) and design year (2033) “Level of Service” (LOS) for the study segment was analyzed for this report. The proficiency of roads is described by their LOS which is a measure of the ability of roads to accommodate motor vehicle traffic and the subsequent physical and psychological comfort levels of drivers. The LOS analysis incorporates several factors including traffic volumes, number and width of lanes, terrain, percent no passing zones, directional split, heavy vehicles, and shoulder widths. The LOS is a qualitative measure that describes traffic conditions related to speed and travel time, freedom to maneuver, traffic interruptions, etc. There are six levels ranging from “A” to “F” with “F” being the worst. Each level represents a range of operating conditions. General descriptions of operating conditions for each of the levels of service are as follows:

LOS Traffic Flow Conditions

A Free flow operations. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The general level of physical and psychological comfort provided to the driver is high.

B Reasonably free flow operations. The ability to maneuver within the traffic stream is only slightly restricted and the general level of physical and psychological comfort provided to the driver is still high.

C Flow with speeds at or near free flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted and lane changes require more vigilance on the part of the driver. The driver notices an increase in tension 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 virtually no gaps in the traffic stream. There is little room to maneuver. The driver experiences poor levels of physical and psychological comfort.

F Breakdowns in traffic flow. The number of vehicles entering the highway section exceeds the capacity or ability of the highway to accommodate that number of vehicles. There is little or no room to maneuver. The driver experiences poor levels of physical and psychological comfort.

Segment	Description	2013 AADT	2013 2-Lane LOS	2033 AADT	2033 2-Lane LOS
1	SR-248 (Goose Creek Bypass) to Old Peytonsville Road	10,630	E	15,130	E
2	Old Peytonsville Road to Ellington Drive	9,740	E	13,870	E
3	Ellington Drive to Bowman Road	9,790	E	13,940	E
4	Bowman Road to Dallas Blvd.	9,600	E	13,670	E
5	Dallas Blvd. to SR-397 (Mack Hatcher Parkway)	12,060	E	16,130	E

Table 2 Existing Level of Service

Table 2 shows that the existing two (2) lane arterial is deficient in capacity to carry the base year and design year traffic at an acceptable level of service.

In addition to a level of service for a roadway segment, the Highway Capacity Manual provides a measure of intersection efficiency based on the average delay of traffic moving through the intersection. Table 3 lists the delays defined for each level of service at the intersections along the study corridor.

Level of Service	Signalized Intersection Expected Delay (seconds/vehicle)	Unsignalized Intersection Expected Delay (seconds/vehicle)
A	<= 10	<= 10
B	>10-20	>10-15
C	>20-35	>15-25
D	>35-55	>25-35
E	>55-80	>35-50
F	>80	>50

Table 3 Level of Service Criteria for Intersections

Based upon the projected traffic for the route and turning movement count data collected, intersection traffic data was analyzed to determine the existing operation for both the base and design year. Table 4 shows that the intersections of SR-106 and Dallas Boulevard and SR-397 will operate at an unacceptable LOS in the year 2013.

Intersection Location	Existing Signal	AM LOS	AM Delay (sec/veh)	PM LOS	PM Delay (sec/veh)
SR-248 (Goose Creek Bypass)	Yes	D	44.6	D	43.2
Moss Lane	No	C	22.5	C	18.5
Poplar Street	No	C	20.0	C	18.2
Soloman Drive	No	C	21.7	C	18.4
Old Peytonsville Road	No	C	16.6	B	13.8
Henpeck Lane	No	C	21.3	C	18.3
Douglas Glenn Lane	No	C	16.0	C	16.6
Ellington Drive	No	C	16.4	C	15.7
St. George's Way	No	C	16.0	B	11.8
Bowman Road	No	C	24.2	C	21.1
Holly Hill Drive	No	C	16.3	B	11.6
Donelson Creek Parkway	No	C	20.6	C	19.7
Dallas Boulevard	No	F	120.3	E	41.8
Moores Landing Subdivision	No	C	20.1	D	25.1
Essex Drive	No	D	29.0	C	20.2
Gardner Drive	No	C	18.6	C	22.3
SR-397 (Mack Hatcher Parkway)	Yes	C	29.2	F	107.7

Table 4   2013 Intersection Existing Level of Service

Table 5 below summarizes the existing operation at the intersections along SR-106 for the design year 2033. Based upon the analysis, only four (4) locations will operate at an acceptable level of service.

Intersection Location	Existing Signal	AM LOS	AM Delay (sec/veh)	PM LOS	PM Delay (sec/veh)
SR-248 (Goose Creek Bypass)	Yes	F	109.8	F	105.3
Moss Lane	No	F	65.6	E	35.3
Poplar Street	No	D	35.0	D	27.5
Soloman Drive	No	E	48.7	D	32.0
Old Peytonsville Road	No	D	28.0	C	20.5
Henpeck Lane	No	F	120.0	E	46.4
Douglas Glenn Lane	No	D	25.7	D	26.8
Ellington Drive	No	D	27.1	D	28.9
St. George's Way	No	D	26.1	C	15.1
Bowman Road	No	F	103.1	E	47.3
Holly Hill Drive	No	D	27.7	C	15.0
Donelson Creek Parkway	No	F	88.7	F	62.8
Dallas Boulevard	No	F	115.0	F	277.2
Moores Landing Subdivision	No	D	34.6	F	53.3
Essex Drive	No	F	108.5	E	37.9
Gardner Drive	No	D	29.0	E	38.0
SR-397 (Mack Hatcher Parkway)	Yes	F	274.0	F	241.1

Table 5 2033 Intersection Existing Level of Service

Crash Rates

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

Segment of Roadway	Length (Miles)	No of Crashes	Crash Rate	Statewide Avg. Crash Rate	Critical Crash Rate	Predominant Types of Crashes
From just south of Goose Creek Bypass to Gardner Drive	2.75	43	1.351	2.341	2.987	Rear-end & Angle
From Gardner Drive to just north of Mack Hatcher	0.14	5	3.417	2.652	6.127	Rear-end
Mack Hatcher Intersection	--	32	0.941	0.890	1.281	Rear-end & Angle

Table 6 Crashes for the Years 2004 through 2006

While the ratio of crash rates may not appear to be significant, there were numerous injury and property damage crashes. The majority of these occurred at intersection locations along the route with no adverse weather conditions. Rear-end crashes occur most frequently when a vehicle slows down to make a turn or stop and the following driver is unable to bring their vehicle to a stop. Angle crashes are commonly caused by a driver trying to merge into or cross a traffic stream. Both of these types of crashes are related to the number and frequency of roadway and driveway intersections along a roadway and gaps in the traffic stream. As traffic volumes increase so will congestion and it can be expected that the crash rates will increase.

<u>Bicycle and Pedestrian</u>

Bicycle lanes are not presently provided along State Route 106; however in many instances bicyclists will utilize the roadway shoulder for travel. Based upon the crash data there were no reported incidents where bicyclist and motorized vehicles collided.

While short segments of sidewalk exists along portions of the east and west side of State Route 106, no pedestrian crashes were reported. It is important to note that these existing facilities are located a safe distance from the roadway and includes a lawn and/or landscape buffer between the vehicles and pedestrians.

5.0 CORRIDOR OPTIONS

In order to improve the traffic operation of the study corridor and reduce congestion and delay, the route was analyzed as a four (4) lane facility, as defined in the 2030 MPO Long Range Transportation Plan. With the addition of either a two-way left turn lane in the center or a raised median, the level of service improves to a LOS A for both the base year and design year. Additionally, either the two-way left turn lane or the raised median should reduce the crash rates, particularly the rear-end crashes, which have been documented to occur along the route where turn lanes are presently not provided at particular side road locations.

Segment	Description	2013 4 Travel Lanes	2033 4 Travel Lanes
1	SR-248 (Goose Creek Bypass) to Old Peytonsville Road	A	A
2	Old Peytonsville Rd to Ellington Dr	A	A
3	Ellington Drive to Bowman Road	A	A
4	Bowman Road to Dallas Blvd.	A	A
5	Dallas Blvd. to SR-397 (Mack Hatcher Parkway)	A	A

Table 7 Proposed Level of Service

Both the two-way left-turn lane and a raised median have positive and negative aspects. A raised median has a slightly better safety record but restricts property access. A two-way left-turn lane provides better access to abutting properties but closely spaced offset intersections and driveways create conflicts for the same space. The following outlines both the advantages and disadvantages of these two types of typical sections.

Four Lane Median Divided Roadway
Advantages Requires less pavement than a five-lane roadway resulting in less runoff on the facility Allows additional room for landscaping Reduces headlight glare from opposing traffic Allows for a refuge area for pedestrians Controls Access points and left turn conflict points
Disadvantages Typically requires additional right-of-way; thus increased costs Doesn’t provide full access for driveways and business May increase the number of u-turns

Four Lane Roadway With Center Turn Lane
Advantages Provides additional storage for turning vehicles Maintains full access for driveways and businesses Typically can be constructed within less right-of-way than median facilities
Disadvantages Based upon studies, typically a higher crash rate than four lane median roadways Increases the opportunity for illegal passing using the center turn lane

For the purpose of this study, two options for improvement have been identified and evaluated. As shown on page 17, Option A is a four (4) lane roadway with a center left turn lane within a proposed right-of-way width of 97 feet. Included in this typical section, is the incorporation of a twelve (12) foot multi-use path for use by both pedestrians and bicyclists.

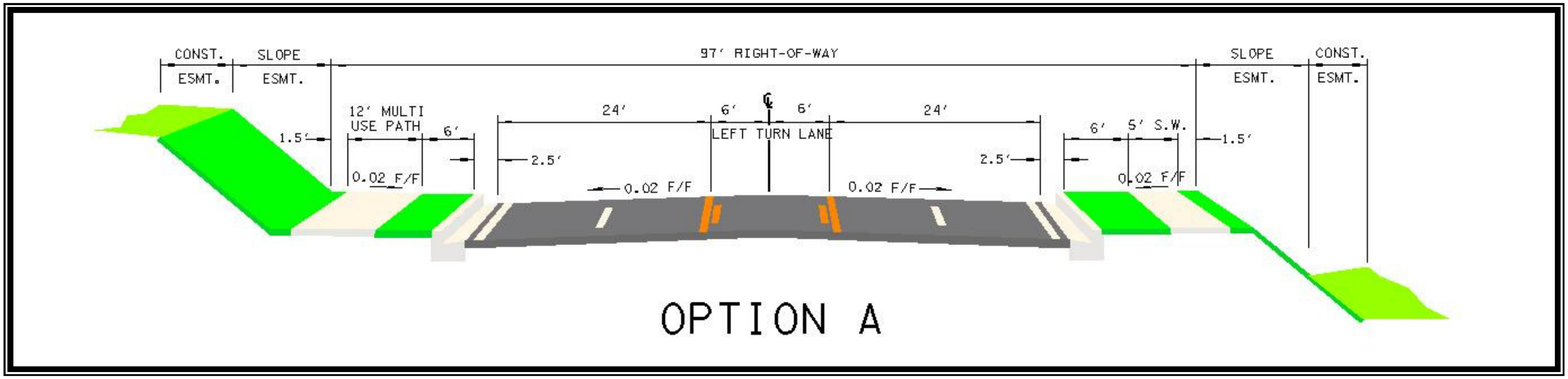
Option B is a four (4) travel lane facility with a center raised median varying in width from twelve (12) feet to forty (40) feet. As with Option A, this typical section includes a twelve (12) foot multi-use path. Proposed right-of-way requirement for this typical section is a maximum width of one-hundred and thirty (130) feet.

As with either option, curb and gutter is proposed, therefore additional slope and construction easements would be required and these impacts would also need to be evaluated during the development of the environmental document as part of the National Environmental Policy Act (NEPA) process.

It is recommended that the following options be considered during the NEPA process as a starting point for considering the needed improvements in this corridor:

A A four lane facility with a two-way left-turn lane,
B A four lane facility with a variable width raised median, and
C A no-build option.

Consideration may be given to blend the two (2) build options, as the type of access needed by retail establishments is different from that needed for residential areas. For instance, a raised median may be necessary in certain locations to provide a refuge area for pedestrians where a pedestrian signal is not warranted. The resultant option would have impacts that will be considered within the scope of consideration for the two (2) build options. The width of the raised median is shown as variable. The width should be considered during the NEPA process as further details and analysis is available to better identify constraints and impacts.



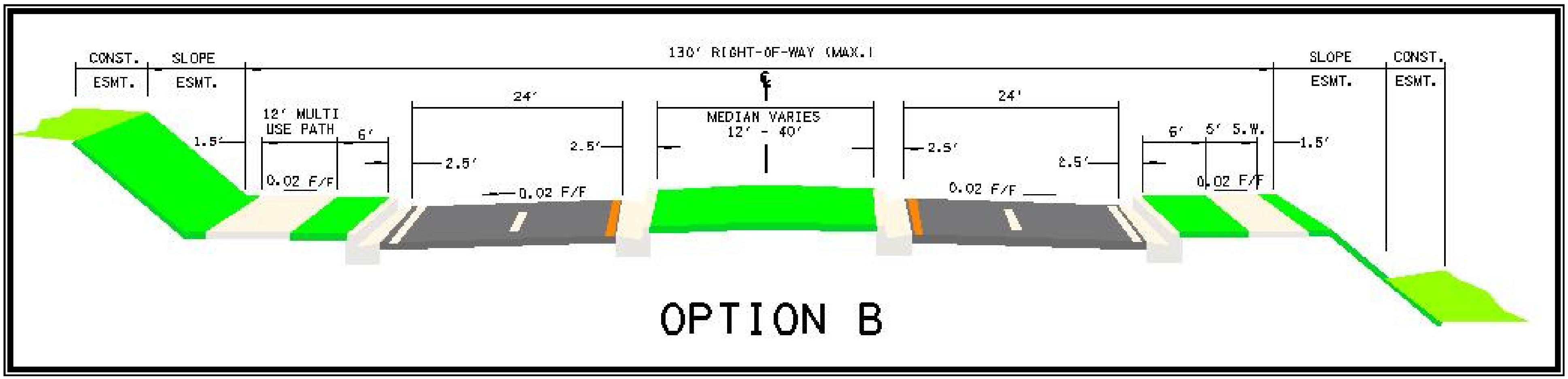


Figure 5 Schematics of Options

In addition to determining the mainline operation of State Route 106 with four (4) travel lanes, analysis was also performed for both the base year and design year for the intersections along the study corridor.

Intersection Location	Proposed Signal	AM LOS	AM Delay (sec/veh)	PM LOS	PM Delay (sec/veh)
SR-248 (Goose Creek Bypass)	Modify	C	20.8	B	19.3
Moss Lane	No	C	15.9	B	14.8
Poplar Street	No	B	14.8	B	14.9
Soloman Drive	No	C	15.5	B	14.8
Old Peytonsville Road	No	B	13.1	B	11.4
Henpeck Lane	No	C	15.7	C	15.3
Douglas Glenn Lane	No	B	12.9	B	14.6
Ellington Drive	No	B	14.3	B	12.6
St. George's Way	No	B	13.1	B	10.2
Bowman Road	No	C	16.1	C	18.7
Holly Hill Drive	No	B	12.5	B	10.2
Donelson Creek Parkway	No	C	15.9	B	15.0
Dallas Boulevard	No	E	35.4	E	36.5
Moores Landing Subdivision	No	C	15.6	C	16.6
Essex Drive	No	C	17.3	C	15.4
Gardner Drive	No	B	14.8	C	15.6
SR-397 (Mack Hatcher Parkway)	Modify	B	15.4	C	26.1

Table 8   2013 Intersection Proposed Level of Service

As shown in Table 8, with four (4) mainline travel lanes, all the intersections are projected to operate at an acceptable LOS in the base year, with the exception of the Dallas Boulevard and State Route 106 intersection. In order for this location to operate at an acceptable LOS, it is likely that a future traffic signal will be needed.

Intersection Location	Proposed Signal	AM LOS	AM Delay (sec/veh)	PM LOS	PM Delay (sec/veh)
SR-248 (Goose Creek Bypass)	Modify	C	23.5	C	22.1
Moss Lane	No	D	27.0	C	23.2
Poplar Street	No	C	20.7	C	19.5
Soloman Drive	No	C	24.1	C	21.9
Old Peytonsville Road	No	C	19.2	B	14.2
Henpeck Lane	No	E	43.1	D	31.8
Douglas Glenn Lane	No	C	17.0	C	21.4
Ellington Drive	No	C	21.0	C	17.6
St. George's Way	No	C	18.4	B	11.6
Bowman Road	No	D	29.6	E	36.5
Holly Hill Drive	No	C	16.7	B	11.7
Donelson Creek Parkway	No	E	37.1	D	29.2
Dallas Boulevard	No	F	322.5	F	205.8
Moores Landing Subdivision	No	C	23.0	C	24.4

Essex Drive	No	D	29.3	C	23.7
Gardner Drive	No	C	20.7	C	21.1
SR-397 (Mack Hatcher Parkway)	Modify	C	23.4	C	32.2

Table 9 2033 Intersection Proposed Level of Service

Table 9 shows that in the design year Henpeck Lane, Bowman Road, Donelson Creek Parkway and Dallas Boulevard will operate at an unacceptable LOS. It is recommended that these locations be monitored and that traffic signal warrants be performed periodically to determine the operational need for a future traffic signal. The analysis shows that the majority of delay will occur on the side roads and not the mainline of SR-106.

6.0 PRELIMINARY ENVIRONMENTAL INVESTIGATION

A preliminary investigation into this project's possible environment impacts within the "Area of Potential Effects" (APE) is reflected on the attached "Preliminary Environmental Evaluation" checklist located on page 21. The APE is the geographic area in which an undertaking may directly or indirectly impact the environment. A more comprehensive analysis of the impacts will be completed at a later date to comply with the National Environmental Policy Act (NEPA). For study purposes, a corridor width of five hundred (500) feet along the existing alignment of State Route 106 has been established, as the future widening will occur along the roadway as opposed to a new route location.

TDOT historians have thus far consulted resources to research records maintained by the National Register of Historic Places. These sources indicate there are two National Register listed resources within the project study corridor. The two (2) locations include the Dr. Hezekiah Ogden House and the Mordecai Puryear House. However, the field survey conducted during the NEPA process may identify heretofore unrecorded or undocumented resources.

Dr. Hezekiah Ogden House

Mordecai Puryear House

Both of these locations have been identified and are shown in the Study Corridor Layout Sheets contained in the study Appendix.

Hazardous Material spills on highways are a potential source of water quality degradation and a possible public health hazard. The Tennessee Emergency Management Agency (TEMA) has the responsibility and authority for coordination of all state and local agencies during accidents involving hazardous materials. TEMA has demonstrated its ability to effectively manage such incidents. The project will be evaluated when preliminary right-of-way plans are completed to determine the impacts on any possible underground storage tank (UST) sites. TDOT has demonstrated its ability to deal with UST sites to minimize impacts on the environment. In the event hazardous substances/wastes are encountered within the proposed right-of-way, their disposition shall be subject to the applicable sections of the Federal Resource conservation and Recovery Act, as amended; and the Comprehensive Environmental Response, Compensation, and Liability Act, as amended; and the Tennessee Hazardous Waste Management Act of 1983.

EnviroMapper is a Web-based interactive mapping tool for viewing and querying environmental information. EnviroMapper generates maps of your geographic area that contain environmental information stored in EPA's Envirofacts Warehouse. The type of environmental information includes: Superfund sites, drinking water, toxic and air releases, hazardous waste, and water discharge permits. EnvironMapper revealed no sites within the study area that have or are using hazardous materials for industrial, commercial or medical uses.

Alterations to streams or other aquatic sites designated as waters of the State or waters of the United States require either individual or general Aquatic Resource Alteration Permits (ARAP) from the State of Tennessee, individual or Nationwide 404 U.S. Army Corps of Engineers permits, and, where applicable, a TVA 26a permit or letter of no objection. Construction projects disturbing one (1) or more acres of land require storm water control permits issued by the State of Tennessee pursuant to the National Pollutant Discharge Elimination System. For any project that affects water flowing into a sinkhole or cave, or for any impact that may affect the ground water via a sinkhole, a Class B Injection Well permit may be required. This process involves obtaining a permit before the project is let if sinkholes are known to exist. If other sinkholes are encountered after construction has begun, the appropriate TDOT offices will be notified and the appropriate steps taken to comply with laws, regulations, and permits. These or any other permit requirements identified in the project development process will be complied with. Within the study area of this document, three (3) streams / waterways will be crossed by both of the build options. Goose Creek and Donelson Creek cross the existing alignment of State Route 106 with both stream crossings utilizing box culverts. The third stream crossing is located north of Henpeck Lane and is an unnamed tributary to Five Mile Creek.

All wetland impacts require confirmation by, and coordination with, permitting agencies. All require either general or individual Aquatic Resource Alteration Permits (ARAP) from the State of Tennessee. Almost all require either nationwide or individual permits from the U.S. Army Corps of Engineers pursuant to Section 404 of the Clean water Act. Other agencies such as the U.S. Fish and Wildlife Service and the Environmental Protection Agency (EPA) may be involved in the permitting process. Wetland impacts which are subject to either State or Federal jurisdiction, and which do not meet criteria for either general or nationwide permits require individual permits; these typically require compensatory mitigation for impacts. Based upon preliminary environmental evaluation, it does not appear that any known wetlands would be impacted during construction of either of the build options.

A search of the Federal Emergency Management Agency's (FEMA) website for flood insurance maps revealed that the maps had recently been updated in January of 2007 and expanded the reach of probable flood stages. The maps indicate that both build concepts will encroach into the floodway and/or flood plain for Goose Creek and Donelson Creek. Drainage structures at these locations will need to be designed to minimize the impacts to the flood plains and mitigate any encroachments into the 100 year floodways if a build option is selected.

An archeological review was not conducted for inclusion in this document. It is evident from the historical nature of the area that artifacts may potentially be encountered during construction of the build concepts. A thorough investigation during the NEPA process will be conducted to identify sites that need evaluation.

Williamson County is in the Nashville Region of the EPA's non-attainment area for the 8-hour ozone standard and 1-hour ozone maintenance standard. As such it will be necessary to conduct a project specific air quality analysis during the development of the environmental document. Reducing the congestion within the corridor should offer some improvement in the area of the project.

A noise analysis will be required to ascertain the noise levels along the route. Since the build options are anticipated to be along the existing State Route 106 (Lewisburg Pike) corridor, it is expected that the noise levels will be comparable to the no-build option with the exception that the additional lanes will be moved closer to some residences.

Preliminary Environmental Evaluation

If preliminary field reviews indicate the presence of any of the following facilities and/or Economic, Social, and Environmental categories (ESE), place an "X" in the blank opposite the item. Where more than one option is to be considered, place its letter designation in the blank. A more comprehensive analysis of the impacts will be completed at a later date to comply with the National Environmental Policy Act (NEPA).

1.) Hazardous Material Site or Underground Storage Tanks............ A,B

2.) Floodplains.. A,B

3.) Historical, archaeological, cultural or natural landmarks, or cemeteries.. A,B

4.) Airport...

5.) Residential establishment... A,B

6.) Urban area, city, town, or community... A,B
(Dandridge – Jefferson County)

7.) Commercial area, shopping center.. A,B

8.) Institutional usages:
- a. School or other educational institution.......................... A,B
- b. Hospital or other medical facility................................. A,B
- c. Church or other religious institution............................. A,B
- d. Public Building, e.g., fire station.................................. A,B
- e. Defense installation...

9.) Agricultural land usage.. A,B

10.) Forested land... A,B

11.) Industrial park, factory.. A,B

12.) Recreational usages:
- a. Park or recreational area, State Natural Area............... A,B
- b. Wildlife refuge or wildlife management area...............

13.) Waterway:
- a. Lake...
- b. Pond... A,B
- c. River.. A,B
- d. Stream.. A,B
- e. Spring... A,B

14.) Railroad Crossings...

15.) Project coordinated with MPO/RPO and/or local officials............ A,B

16.) Other..

7.0 PROJECTED COSTS

The projected costs for the options are listed below. The study corridor has been divided into three sections.

Section 1 begins at the State Route 248 (Goose Creek By-Pass) and ends at the intersection of State Route 106 and Old Peytonsville Road. As stated previously in this study, the developer of the proposed Berry Farms development has committed to funding the construction of this section of State Route 106 and the Nashville MPO TIP for Fiscal Years 2008 – 2011 has been amended to include this segment of the project.

Section 2 begins at Old Peytonsville Road and extends 1.16 miles north to Bowman Road. Presently this segment of State Route 106 is not within the city limits of Franklin, but under the jurisdiction of Williamson County.

Section 3 begins at Bowman Road (southern boundary of Franklin City Limits) and ends 1.09 miles north at the intersection of State Route 397 (Mack Hatcher Parkway). The City of Franklin has plans to proceed with the survey and design for this segment of Lewisburg Pike and the environmental document for the entire study corridor.

Item	Option A			Option B		
	Section 1	Section 2	Section 3	Section 1	Section 2	Section 3
	From Goose Creek Bypass to Old Peytonsville Rd.	From Old Peytonsville Rd to Bowman Rd	From Bowman Rd to Mack Hatcher Pkwy	From Goose Creek Bypass to Old Peytonsville Rd.	From Old Peytonsville Rd to Bowman Rd	From Bowman Rd to Mack Hatcher Pkwy
Construction	$2,226,000	$5,117,000	$5,115,000	$2,632,000	$6,079,000	$5,636,000
Engineering and Continguencies	$202,000	$465,000	$465,000	$239,000	$553,000	$512,000
Preliminary Engineering	$202,000	$465,000	$465,000	$239,000	$553,000	$512,000
Right-of-Way	$948,000	$3,085,000	$2,448,000	$1,413,000	$4,197,000	$6,275,000
Utility Adjustment	$790,000	$1,605,000	$1,525,000	$790,000	$1,605,000	$1,525,000
Total Segment Costs	$4,166,000	$10,272,000	$9,553,000	$5,074,000	$12,434,000	$13,948,000
Section Length (Miles)	0.48	1.16	1.09	0.48	1.16	1.09
Cost per Mile	$8,679,167	$8,855,172	$8,764,220	$10,570,833	$10,718,966	$12,796,330
Total Option Costs	$23,991,000			$31,456,000		

Table 10 Projected Costs

As shown in Table 10, the estimated cost for Option A (four-lane with center turn lane) is approximately $24,000,000 while the estimated cost for Option B (four-lane with median) is approximately $31,500,000. The majority of the cost difference in the two (2) options is directly related to the additional right-of-way needs for the raised median typical section. For right-of-way budgeting purposes, the estimated costs were based upon symmetrical widening of the existing roadway for both Options A and B. During the environmental and preliminary engineering phases of the project, avoidance of identified constraints and minimizing residential relocations would be a primary objective.

For estimating purposes of this study, all utility relocations costs for the above ground utilities were assumed to remain above ground.

8.0 SEVEN GUIDING PRINCIPLES

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

Guiding Principle 1: Preserve and Manage the Existing Transportation System
Both build options as presented will increase the number of lanes, relieve congestion, enhance the safety characteristics of the route, and conform to the Nashville Area MPO Long Range Transportation Plan and the City of Franklin's Major Thoroughfare Plan. The route provides a connection between State Route 248 and State Route 347 and allows for access to Interstate 65 via SR-248 and SR-96 via SR-397 (Mack Hatcher Parkway). The improved route of SR-106 will also provide additional vehicular capacity for residents traveling to and from the downtown area of Franklin. By adopting either of the build options, the existing right-of-way will be used, thus reducing the amount of additional land that would be required if a new alignment corridor was chosen.

Guiding Principle 2: Move a Growing, Diverse, and Active Population
The U.S. Census Bureau estimates that the population in Williamson County and Franklin, Tennessee will continue to experience tremendous population growth through the year 2010 at nearly a rate of 23% from 2005 to 2010. Of the population who work outside the county, nearly 40% work in Davidson County. This puts a heavy strain on the transportation infrastructure connecting the two counties. The two primary routes connecting SR-106 to I-65 within the study area is SR-248 and SR-397 via SR-96. Therefore, it is vital to provide additional capacity to commuter routes such as Lewisburg Pike.

Two (2) schools are also present along the route as described previously. The increase in population will be reflected in the number of new trips generated by travel to and from the schools. Many times schedules for trips to and from schools overlap with the schedules of commuters who are often hindered and delayed due to school zone speed limits and additional traffic.

Guiding Principle 3: Support the State's Economy
The population of the City of Franklin and Williamson County are two of the fastest growing in the nation. Supplying materials, goods and services to support the population growth results in increased tax revenue, jobs, and wages. The low unemployment rate and expected large increase in population within the study area implies that the need for upgrading transportation facilities will increase at a faster rate than other parts of the state. Without adequate transportation facilities, economic expansion and job creation may be hindered and jobs lost to other locales.

Guiding Principle 4: Maximize Safety and Security
During the three (3) year period from 2004 through 2006, eighty (80) crashes were reported. As discussed earlier, the most frequent type was rear-end crashes which are indicative of the lack of protected storage space for vehicles slowing or stopping to complete turning movements. The second most frequent type was angle crashes which are indicative of vehicles trying to enter a traffic stream. As traffic volumes increase, gaps available for additional vehicles reduce in size and number resulting in drivers misjudging the time and space available to enter the traffic stream. By adding additional lanes to spread out the traffic stream and providing storage areas for turning vehicles, the anticipated crash rates should decrease. With the no-build option, it can be expected that the number of crashes will increase as volumes increase. In addition to an expected lower crash rate with the implementation of one of the build options, an

improved roadway should facilitate safer travel for emergency vehicles, both fire and ambulance.

Guiding Principle 5: Build Partnerships for Livable Communities
During the preparation of this report, a meeting was conducted with the City of Franklin officials, TDOT and MPO staff. The purpose was to provide an opportunity to discuss the preliminary analysis of this report and to ascertain whether there were any unknown issues that needed to be considered and that the recommended options were in accordance with the expectations of the City and MPO. Other options not identified in this study may arise or be suggested as the project progresses. The public involvement process will continue after this planning document is completed. Public hearings will be scheduled during the National Environmental Policy Act (NEPA) process and during the design phase of the project. Every effort will be made to mitigate any negative impacts to the local citizenry during the implementation of any build option. An improved transportation corridor that benefits the community with as few disruptions as possible is essential in providing for future planned growth of the region.

Guiding Principle 6: Promote Stewardship of the Environment
The United States Congress enacted the National Environmental Policy Act of 1969 (NEPA) to establish a national policy to protect the environment. NEPA requires federal agencies to consider environmental issues prior to making any major decisions on projects that have federal involvement (e.g., funding or permitting). To determine a project's potential benefit or harm to the environment, NEPA requires an assessment of environmental impacts and an evaluation of options to avoid any identified adverse impacts to the environment. The Council on Environmental Quality (CEQ) was created by NEPA to oversee the federal implementation of NEPA, by interpreting the law and developing regulations and guidance. NEPA procedures must ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The regulations also spell out the three categories of actions (Categorical Exclusions, Environmental Assessments, and Environmental Impact Statements), as well as documentation requirements and format, the commenting process and public involvement requirements, and document filing requirements. This project is subject to all of these regulations and the NEPA process will be enacted accordingly.

Guiding Principle 7: Promote Financial Responsibility
Cost estimates based on various roadway typical sections were calculated for this report. The cost estimates, as depicted in this report, are offered for comparison purposes and will fluctuate with inflation and any unexpected conditions. It is the Department's goal to follow a comprehensive transportation planning process, promote coordination among public and private operators of transportation systems, and support efforts to provide stable funding for the public component of the transportation system. This entails exercising financial responsibility in the development and implementation of roadway projects and minimizing costs to taxpayers.

<u>Field Review</u>

A meeting and field review of the site was made by the following individuals on May 20, 2008:

Mr. Joseph York	City of Franklin
Mr. Eric Gardner	City of Franklin
Mr. Jonathan Langley	City of Franklin
Ms. Erin Reinders	City of Franklin
Mr. Jamie Groce	City of Franklin
Mr. Dennis Cook	City of Franklin
Mr. Eddie Hood	Williamson County
Mr. Greg Ball	Williamson County
Mr. Bill Hart	TDOT Project Planning

Mr. Paul Lane	TDOT Project Planning
Mr. Tom Clinard	Clinard Engineering Associates
Mr. Sammie McCoy	Clinard Engineering Associates
Mr. Charlie Graves	Clinard Engineering Associates
Mr. Gary Fottrell	FHWA
Mr. Scott Johnson	TDOT Region 3 Office
Mr. Terry Arnold	TDOT Region 3 Office
Mr. David Thompson	TDOT Environmental Planning

Appendices

COST DATA SHEETS
BY SECTIONS
OPTION A & OPTION B

COST DATA SHEET

PROJECT: State Route 106 (Lewisburg Pike)
LOCATION: Williamson County, Franklin, Tennessee
SECTION LENGTH: 0.48 Miles
CROSS SECTION: 5-Lane C&G

RIGHT-OF-WAY				
Land, Improvements & Damages	(# Acres 4.54)		$792,000	
Incidentals	(# Tracts 12)		$156,000	
Relocation Payments	(Residences 0)		$0	
	(Businesses 0)		$0	
	(Non-Profits 0)			
	Total Right-Of-Way Cost			**$948,000**
UTILITY RELOCATION				
Reimbursable			$790,000	
Non-Reimbursable			$0	
	Total Utility Adjustment Cost			**$790,000**
CONSTRUCTION				
Clear and Grubbing			$9,000	
Earthwork			$164,000	
Pavement Removal			$15,000	
Drainage	(Erosion Control =	$38,000)	$341,000	
Structures			$0	
Railroad Crossing			$0	
Paving			$1,140,000	
Retaining Walls			$60,000	
Maintenance of Traffic			$20,000	
Topsoil			$3,000	
Seeding			$2,000	
Sodding			$14,000	
Signing			$5,000	
Signalization			$0	
Fence			$0	
Guardrail			$0	
Rip-rap or Slope Protection			$8,000	
Other Construction Items (8.5%)			$151,000	
Mobilization			$92,000	
10% Engineering and Contigencies			$202,000	
	Total Construction Cost			**$2,226,000**
	Preliminary Engineering (10% of Constr.)			**$202,000**

TOTAL ESTIMATED COST - SECTION IA **$4,166,000**

COST DATA SHEET

PROJECT:	State Route 106 (Lewisburg Pike)
LOCATION:	Williamson County, Franklin, Tennessee
SECTION LENGTH:	1.16 Miles
CROSS SECTION:	5-Lane C&G

RIGHT-OF-WAY				
Land, Improvements & Damages	(# Acres 10.64)	$1,665,000		
Incidentals	(# Tracts 40)	$520,000		
Relocation Payments	(Residences 2)	$900,000		
	(Businesses 0)	$0		
	(Non-Profits 0)			
	Total Right-Of-Way Cost		**$3,085,000**	
UTILITY RELOCATION				
Reimbursable		$1,605,000		
Non-Reimbursable		$0		
	Total Utility Adjustment Cost		**$1,605,000**	
CONSTRUCTION				
Clear and Grubbing		$21,000		
Earthwork		$406,000		
Pavement Removal		$45,000		
Drainage	(Erosion Control = $130,000)	$685,000		
Structures		$0		
Railroad Crossing		$0		
Paving		$2,371,000		
Retaining Walls		$360,000		
Maintenance of Traffic		$85,000		
Topsoil		$6,000		
Seeding		$4,000		
Sodding		$61,000		
Signing		$10,000		
Signalization		$0		
Fence		$0		
Guardrail		$30,000		
Rip-rap or Slope Protection		$15,000		
Other Construction Items (8.5%)		$348,000		
Mobilization		$205,000		
10% Engineering and Contigencies		$465,000		
	Total Construction Cost		**$5,117,000**	
	Preliminary Engineering (10% of Constr.)		**$465,000**	
TOTAL ESTIMATED COST - SECTION IIA			**$10,272,000**	

COST DATA SHEET

PROJECT: State Route 106 (Lewisburg Pike)
LOCATION: Williamson County, Franklin, Tennessee
SECTION LENGTH: 1.09 Miles
CROSS SECTION: 5-Lane C&G

RIGHT-OF-WAY				
Land, Improvements & Damages	(# Acres	10.22)	$1,573,000	
Incidentals	(# Tracts	38)	$875,000	
Relocation Payments	(Residences	0)	$0	
	(Businesses	0)	$0	
	(Non-Profits	0)		
Total Right-Of-Way Cost				**$2,448,000**
UTILITY RELOCATION				
Reimbursable			$1,525,000	
Non-Reimbursable			$0	
Total Utility Adjustment Cost				**$1,525,000**
CONSTRUCTION				
Clear and Grubbing			$20,000	
Earthwork			$340,000	
Pavement Removal			$40,000	
Drainage (Erosion Control =		$130,000)	$650,000	
Structures			$0	
Railroad Crossing			$0	
Paving			$2,345,000	
Retaining Walls			$240,000	
Maintenance of Traffic			$75,000	
Topsoil			$6,000	
Seeding			$4,000	
Sodding			$60,000	
Signing			$10,000	
Signalization			$25,000	
Fence			$0	
Guardrail			$30,000	
Rip-rap or Slope Protection			$20,000	
Other Construction Items (15%)			$580,000	
Mobilization			$205,000	
10% Engineering and Contigencies			$465,000	
Total Construction Cost				**$5,115,000**
Preliminary Engineering (10% of Constr.)				**$465,000**

TOTAL ESTIMATED COST - SECTION IIIA **$9,553,000**

COST DATA SHEET

PROJECT:	State Route 106 (Lewisburg Pike)
LOCATION:	Williamson County, Franklin, Tennessee
SECTION LENGTH:	0.48 Miles
CROSS SECTION:	4-Lane with Median

RIGHT-OF-WAY				
Land, Improvements & Damages	(# Acres	7.17)	$1,197,000	
Incidentals	(# Tracts	12)	$216,000	
Relocation Payments	(Residences	0)	$0	
	(Businesses	0)	$0	
	(Non-Profits	0)		
Total Right-Of-Way Cost				**$1,413,000**
UTILITY RELOCATION				
Reimbursable			$790,000	
Non-Reimbursable			$0	
Total Utility Adjustment Cost				**$790,000**
CONSTRUCTION				
Clear and Grubbing			$12,000	
Earthwork			$408,000	
Pavement Removal			$15,000	
Drainage (Erosion Control =	$42,000)		$375,000	
Structures			$0	
Railroad Crossing			$0	
Paving			$1,140,000	
Retaining Walls			$90,000	
Maintenance of Traffic			$20,000	
Topsoil			$3,000	
Seeding			$2,000	
Sodding			$28,000	
Signing			$5,000	
Signalization			$0	
Fence			$0	
Guardrail			$0	
Rip-rap or Slope Protection			$8,000	
Other Construction Items (8.5%)			$179,000	
Mobilization			$108,000	
10% Engineering and Contigencies			$239,000	
Total Construction Cost				**$2,632,000**
Preliminary Engineering (10% of Constr.)				**$239,000**

TOTAL ESTIMATED COST - SECTION IB **$5,074,000**

COST DATA SHEET

PROJECT: State Route 106 (Lewisburg Pike)
LOCATION: Williamson County, Franklin, Tennessee
SECTION LENGTH: 1.16 Miles
CROSS SECTION: 4-Lane with Median

RIGHT-OF-WAY				
Land, Improvements & Damages	(# Acres	16.82)	$2,577,000	
Incidentals	(# Tracts	40)	$720,000	
Relocation Payments	(Residences	2)	$900,000	
	(Businesses	0)	$0	
	(Non-Profits	0)		
Total Right-Of-Way Cost				**$4,197,000**
UTILITY RELOCATION				
Reimbursable			$1,605,000	
Non-Reimbursable			$0	
Total Utility Adjustment Cost				**$1,605,000**
CONSTRUCTION				
Clear and Grubbing			$34,000	
Earthwork			$806,000	
Pavement Removal			$45,000	
Drainage (Erosion Control =		$150,000)	$788,000	
Structures			$0	
Railroad Crossing			$0	
Paving			$2,381,000	
Retaining Walls			$480,000	
Maintenance of Traffic			$110,000	
Topsoil			$6,000	
Seeding			$4,000	
Sodding			$162,000	
Signing			$10,000	
Signalization			$0	
Fence			$0	
Guardrail			$30,000	
Rip-rap or Slope Protection			$15,000	
Other Construction Items (8.5%)			$414,000	
Mobilization			$241,000	
10% Engineering and Contigencies			$553,000	
Total Construction Cost				**$6,079,000**
Preliminary Engineering (10% of Constr.)				**$553,000**

TOTAL ESTIMATED COST - SECTION IIB **$12,434,000**

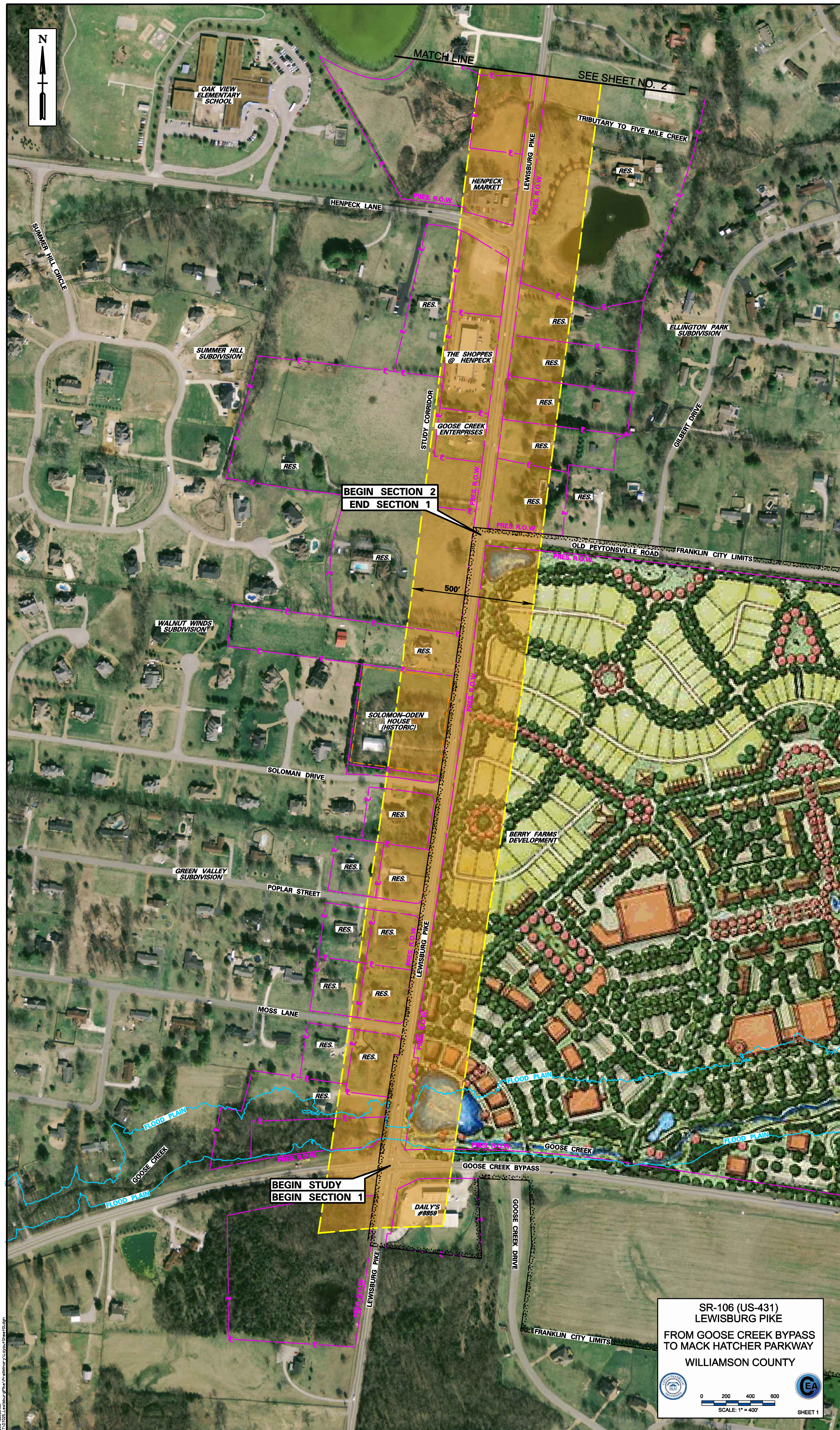
COST DATA SHEET

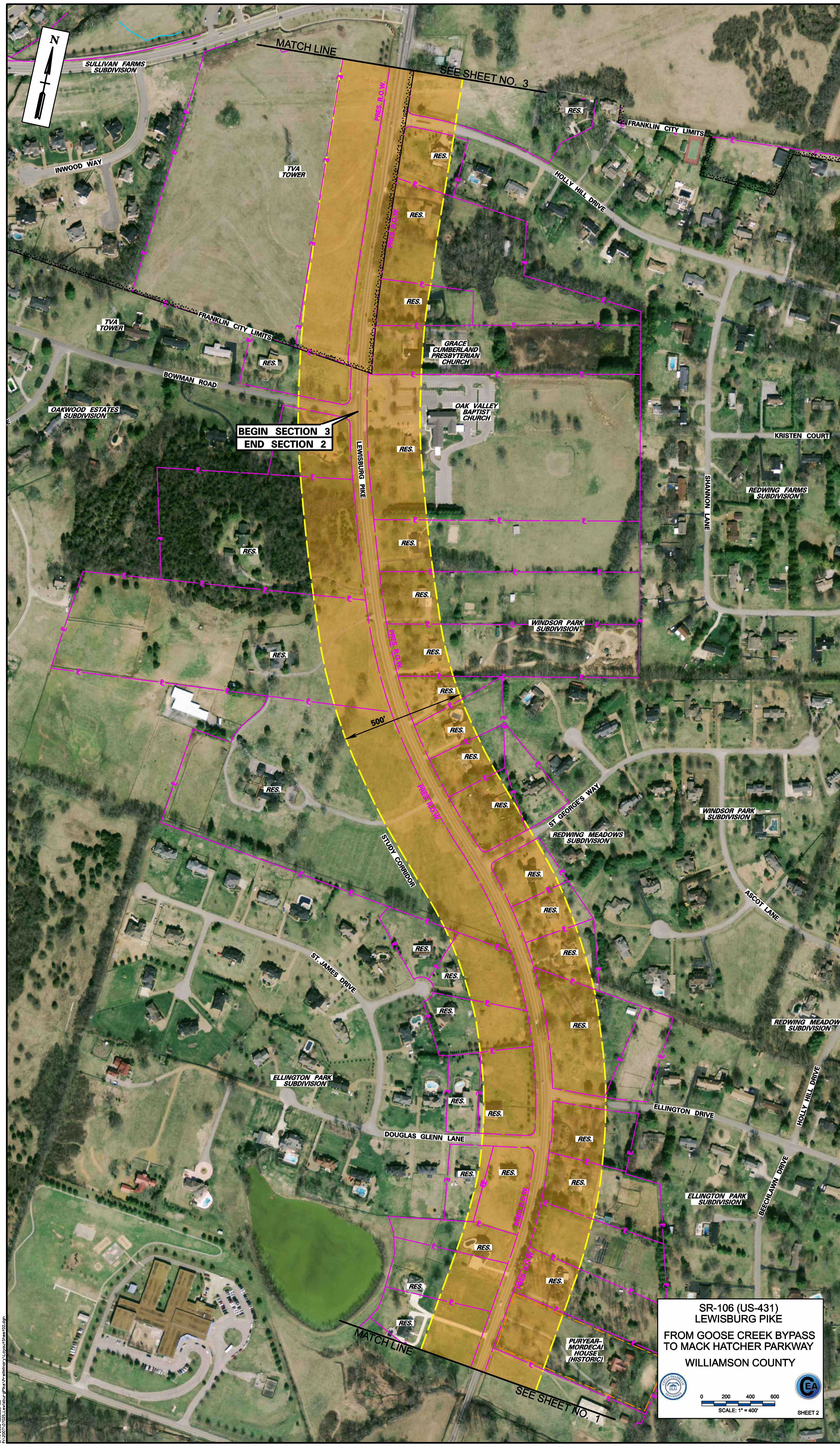
PROJECT:	State Route 106 (Lewisburg Pike)
LOCATION:	Williamson County, Franklin, Tennessee
SECTION LENGTH:	1.09 Miles
CROSS SECTION:	4-Lane with Median

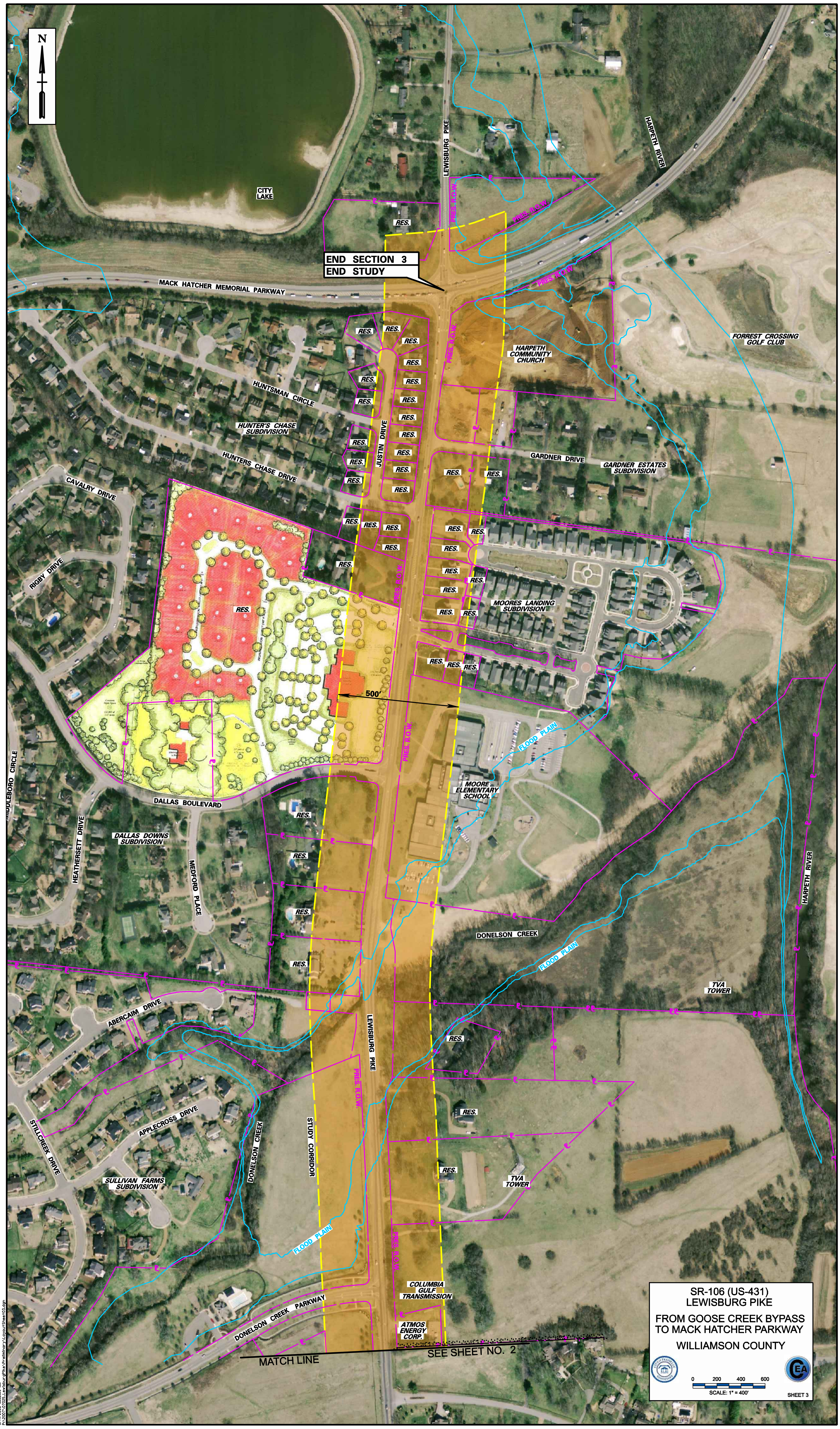
RIGHT-OF-WAY				
Land, Improvements & Damages	(# Acres	16.34)	$2,460,000	
Incidentals	(# Tracts	38)	$1,065,000	
Relocation Payments	(Residences	11)	$2,750,000	
	(Businesses	0)	$0	
	(Non-Profits	0)		
Total Right-Of-Way Cost				**$6,275,000**
UTILITY RELOCATION				
Reimbursable			$1,525,000	
Non-Reimbursable			$0	
Total Utility Adjustment Cost				**$1,525,000**
CONSTRUCTION				
Clear and Grubbing			$35,000	
Earthwork			$425,000	
Pavement Removal			$40,000	
Drainage (Erosion Control =	$162,000)		$750,000	
Structures			$0	
Railroad Crossing			$0	
Paving			$2,375,000	
Retaining Walls			$320,000	
Maintenance of Traffic			$100,000	
Topsoil			$6,000	
Seeding			$4,000	
Sodding			$120,000	
Signing			$10,000	
Signalization			$25,000	
Fence			$0	
Guardrail			$30,000	
Rip-rap or Slope Protection			$20,000	
Other Construction Items (15%)			$639,000	
Mobilization			$225,000	
10% Engineering and Contigencies			$512,000	
Total Construction Cost				**$5,636,000**
Preliminary Engineering (10% of Constr.)				**$512,000**

TOTAL ESTIMATED COST - SECTION IIIB **$13,948,000**

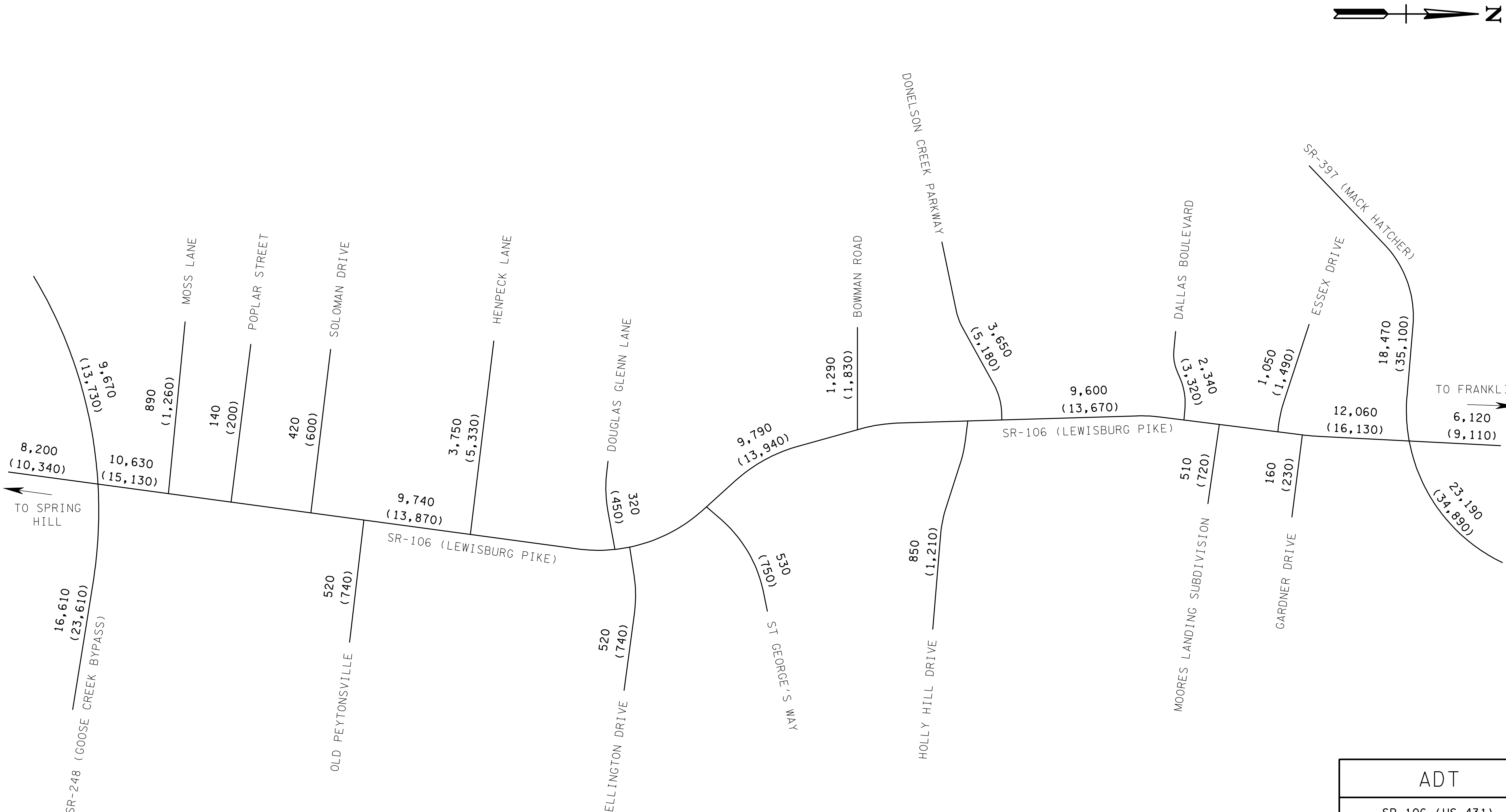
CORRIDOR LAYOUT SHEETS
(1" = 400')


N
MATCH LINE
SEE SHEET NO. 2
OAK VIEW ELEMENTARY SCHOOL
TRIBUTARY TO FIVE MILE CREEK
HENPECK MARKET
LEWISBURG PIKE
PRES. R.O.W.
HENPECK LANE
SUMMER HILL CIRCLE
RES.
ELLINGTON PARK SUBDIVISION
SUMMER HILL SUBDIVISION
THE SHOPPES @ HENPECK
GOOSE CREEK ENTERPRISES
STUDY CORRIDOR
GILBERT DRIVE
BEGIN SECTION 2
END SECTION 1
OLD PEYTONSVILLE ROAD
FRANKLIN CITY LIMITS
500'
WALNUT WINDS SUBDIVISION
SOLOMON-ODEN HOUSE (HISTORIC)
SOLOMAN DRIVE
BERRY FARMS DEVELOPMENT
GREEN VALLEY SUBDIVISION
POPLAR STREET
MOSS LANE
FLOOD PLAIN
GOOSE CREEK
GOOSE CREEK BYPASS
BEGIN STUDY
BEGIN SECTION 1
DAILY'S #8959
GOOSE CREEK DRIVE
SR-106 (US-431)
LEWISBURG PIKE
FROM GOOSE CREEK BYPASS
TO MACK HATCHER PARKWAY
WILLIAMSON COUNTY
0
200
400
600
SCALE: 1" = 400'
SHEET 1


MATCH LINE
SEE SHEET NO. 3
N
SULLIVAN FARMS SUBDIVISION
INWOOD WAY
TVA TOWER
PRES. R.O.W.
RES.
FRANKLIN CITY LIMITS
HOLLY HILL DRIVE
TVA TOWER
GRACE CUMBERLAND PRESBYTERIAN CHURCH
BOWMAN ROAD
OAKWOOD ESTATES SUBDIVISION
BEGIN SECTION 3
END SECTION 2
LEWISBURG PIKE
OAK VALLEY BAPTIST CHURCH
KRISTEN COURT
SHANNON LANE
REDWING FARMS SUBDIVISION
WINDSOR PARK SUBDIVISION
500'
ST GEORGE'S WAY
WINDSOR PARK SUBDIVISION
REDWING MEADOWS SUBDIVISION
STUDY CORRIDOR
ASCOT LANE
ST. JAMES DRIVE
REDWING MEADOWS SUBDIVISION
ELLINGTON PARK SUBDIVISION
ELLINGTON DRIVE
HOLLY HILL DRIVE
DOUGLAS GLENN LANE
BEECHLAWN DRIVE
ELLINGTON PARK SUBDIVISION
PURYEAR-MORDECAI HOUSE (HISTORIC)
MATCH LINE
SEE SHEET NO. 1
SR-106 (US-431)
LEWISBURG PIKE
FROM GOOSE CREEK BYPASS
TO MACK HATCHER PARKWAY
WILLIAMSON COUNTY
0 200 400 600
SCALE: 1" = 400'
SHEET 2


N
CITY LAKE
END SECTION 3
END STUDY
MACK HATCHER MEMORIAL PARKWAY
LEWISBURG PIKE
HARPETH RIVER
PRES. R.O.W.
RES.
HARPETH COMMUNITY CHURCH
FORREST CROSSING GOLF CLUB
HUNTSMAN CIRCLE
HUNTER'S CHASE SUBDIVISION
HUNTERS CHASE DRIVE
JUSTIN DRIVE
GARDNER DRIVE
GARDNER ESTATES SUBDIVISION
CAVALRY DRIVE
RIGBY DRIVE
MOORES LANDING SUBDIVISION
500'
FLOOD PLAIN
MOORE ELEMENTARY SCHOOL
MIDDLEBORO CIRCLE
DALLAS BOULEVARD
HEATHERSETT DRIVE
DALLAS DOWNS SUBDIVISION
MEDFORD PLACE
DONELSON CREEK
TVA TOWER
ABERCAIM DRIVE
APPLECROSS DRIVE
STILLCREEK DRIVE
SULLIVAN FARMS SUBDIVISION
STUDY CORRIDOR
COLUMBIA GULF TRANSMISSION
ATMOS ENERGY CORP.
DONELSON CREEK PARKWAY
MATCH LINE
SEE SHEET NO. 2
SR-106 (US-431)
LEWISBURG PIKE
FROM GOOSE CREEK BYPASS
TO MACK HATCHER PARKWAY
WILLIAMSON COUNTY
0 200 400 600
SCALE: 1" = 400'
SHEET 3

TRAFFIC ANALYSIS
EXISTING CONDITIONS
2013 AND 2033



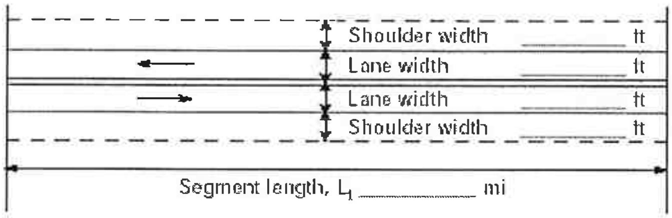
ADT

SR-106 (US-431)
LEWISBURG PIKE
FROM GOOSE CREEK BYPASS
TO MACK HATCHER PARKWAY
2013
(2033)
WILLIAMSON COUNTY
N.T.S.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		*Site Information*	
Analyst	Brian Gaffney	Highway	SR-106 Lewisburg Pike
Agency or Company	Clinard Engineering	From/To	SR-248 to Old Peytonsville
Date Performed	4/28/2008	Jurisdiction	Williamson County
Analysis Time Period	Existing	Analysis Year	2013

Input Data



☑ Class I highway ☐ Class II highway

Terrain	☑ Level ☐ Rolling
Two-way hourly volume	1063 veh/h
Directional split	65 / 35
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	3 %
% Recreational vehicles, P_R	0%
Access points/ mi	16

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.994
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	1162
v_p * highest directional split proportion[2] (pc/h)	755

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	45.0 mi/h
Observed volume, V_f	veh/h	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	1.3 mi/h
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	39.7 mi/h	Adj. for access points, f_A (Exhibit 20-6)	4.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	39.7 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	2.2
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	28.5

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.997
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	1159
v_p * highest directional split proportion[2] (pc/h)	753
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	63.9
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	10.7
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	74.6

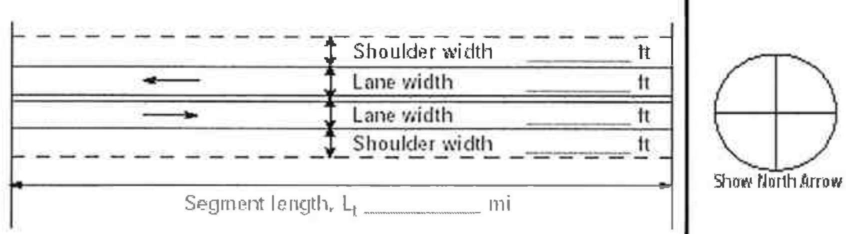
Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio v/c $v/c=V_p/3,200$	0.36
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	144
	532

Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}= VMT_{15}/ATS$	5.1
Notes	
1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.	

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		***Site Information***	
Analyst	Brian Gaffney	Highway	SR-106 Lewisburg Pike
Agency or Company	Clinard Engineering	From/To	Old Peytonsville to Henpeck Ln
Date Performed	4/28/2008	Jurisdiction	Williamson County
Analysis Time Period	Existing	Analysis Year	2013

Input Data



☑ Class I highway	☐ Class II highway
Terrain	☑ Level ☐ Rolling
Two-way hourly volume	974 veh/h
Directional split	65 / 35
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	3 %
% Recreational vehicles, P_R	0%
Access points/ mi	28

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	0.994
Two-way flow rate[1], v_p (pc/h) v_p=V/ (PHF * f_G * f_{HV})	1065
v_p * highest directional split proportion[2] (pc/h)	692

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	45.0 mi/h
Observed volume, V_f	veh/h	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	1.3 mi/h
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	36.7 mi/h	Adj. for access points, f_A (Exhibit 20-6)	7.0 mi/h
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	36.7 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	2.4
Average travel speed, ATS (mi/h) ATS=FFS-0.00776v_p-f_{np}	26.0

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, f_{HV} f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	0.997
Two-way flow rate[1], v_p (pc/h) v_p=V/ (PHF * f_G * f_{HV})	1062
v_p * highest directional split proportion[2] (pc/h)	690
Base percent time-spent-following, BPTSF(%) BPTSF=100(1-$e^{-0.000879v_p}$)	60.7
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	11.7
Percent time-spent-following, PTSF(%) PTSF=BPTSF+$f_{d/np}$	72.4

Level of Service and Other Performance Measures

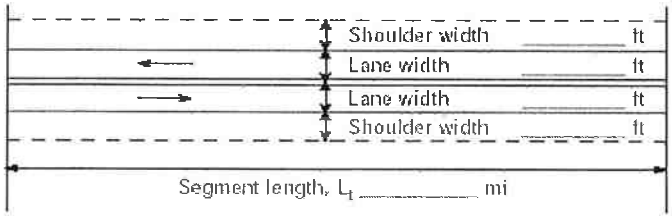
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio v/c v/c=V_p/ 3,200	0.33
Peak 15-min veh-miles of travel,VMT_{15} (veh- mi) VMT_{15}= 0.25L_t(V/PHF)	61
	224

Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}= VMT_{15}/ATS$	2.3
Notes	
1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.	

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	Brian Gaffney	Highway	SR-106 Lewisburg Pike
Agency or Company	Clinard Engineering	From/To	Henpeck Ln to Bowman Rd
Date Performed	4/28/2008	Jurisdiction	Williamson County
Analysis Time Period	Existing	Analysis Year	2013

Input Data



☑ Class I highway ☐ Class II highway

Terrain	☑ Level ☐ Rolling
Two-way hourly volume	979 veh/h
Directional split	70 / 30
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	3 %
% Recreational vehicles, P_R	0%
Access points/ mi	34

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	0.994
Two-way flow rate[1], v_p (pc/h) v_p=V/ (PHF * f_G * f_{HV})	1071
v_p * highest directional split proportion[2] (pc/h)	750

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	45.0 mi/h
Observed volume, V_f	veh/h	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	1.3 mi/h
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	35.2 mi/h	Adj. for access points, f_A (Exhibit 20-6)	8.5 mi/h
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	35.2 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	2.4
Average travel speed, ATS (mi/h) ATS=FFS-0.00776v_p-f_{np}	24.5

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, f_{HV} f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	0.997
Two-way flow rate[1], v_p (pc/h) v_p=V/ (PHF * f_G * f_{HV})	1067
v_p * highest directional split proportion[2] (pc/h)	747
Base percent time-spent-following, BPTSF(%) BPTSF=100(1-$e^{-0.000879v_p}$)	60.9
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	11.8
Percent time-spent-following, PTSF(%) PTSF=BPTSF+$f_{d/np}$	72.7

Level of Service and Other Performance Measures

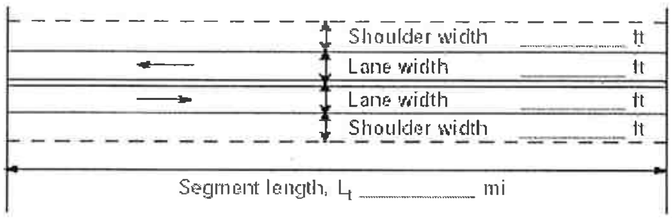
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio v/c v/c=V_p/ 3,200	0.33
Peak 15-min veh-miles of travel,VMT_{15} (veh- mi) VMT_{15}= 0.25L_t(V/PHF)	239
	881

Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}= VMT_{15}/ATS$	9.8
Notes	
1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.	

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		*Site Information*	
Analyst	Brian Gaffney	Highway	SR-106 Lewisburg Pike
Agency or Company	Clinard Engineering	From/To	Bowman Rd to Dallas Blvd
Date Performed	4/24/2008	Jurisdiction	Williamson County
Analysis Time Period	Existing	Analysis Year	2013

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	960 veh/h
Directional split	70 / 30
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	3 %
% Recreational vehicles, P_R	0%
Access points/ mi	26

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	0.994
Two-way flow rate[1], v_p (pc/h) v_p=V/ (PHF * f_G * f_{HV})	1050
v_p * highest directional split proportion[2] (pc/h)	735

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	45.0 mi/h
Observed volume, V_f	veh/h	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	1.3 mi/h
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	37.2 mi/h	Adj. for access points, f_A (Exhibit 20-6)	6.5 mi/h
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	37.2 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	2.5
Average travel speed, ATS (mi/h) ATS=FFS-0.00776v_p-f_{np}	26.6

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, f_{HV} f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	0.997
Two-way flow rate[1], v_p (pc/h) v_p=V/ (PHF * f_G * f_{HV})	1047
v_p * highest directional split proportion[2] (pc/h)	733
Base percent time-spent-following, BPTSF(%) BPTSF=100(1-$e^{-0.000879v_p}$)	60.2
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	12.0
Percent time-spent-following, PTSF(%) PTSF=BPTSF+$f_{d/np}$	72.2

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio v/c v/c=V_p/ 3,200	0.33
Peak 15-min veh-miles of travel,VMT_{15} (veh- mi) VMT_{15}= 0.25L_t(V/PHF)	183
	672

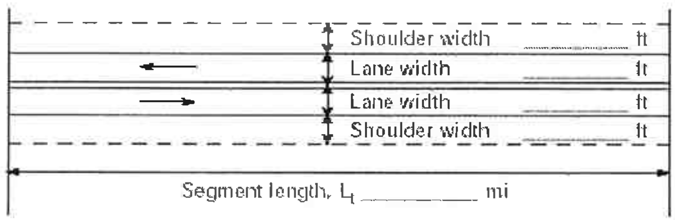
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V^{*}L_{t}$	
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}= VMT_{15}/ATS$	6.9
Notes	
1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.	

*HCS2000*TM Version 4.1d

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	Brian Gaffney	Highway	SR-106 Lewisburg Pike
Agency or Company	Clinard Engineering	From/To	Dallas Blvd to SR-397
Date Performed	4/28/2008	Jurisdiction	Williamson County
Analysis Time Period	Existing	Analysis Year	2013

Input Data



☑ Class I highway ☐ Class II highway

Terrain	☑ Level ☐ Rolling
Two-way hourly volume	1206 veh/h
Directional split	70 / 30
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	3 %
% Recreational vehicles, P_R	0%
Access points/ mi	11

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.997
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	1315
v_p * highest directional split proportion[2] (pc/h)	921

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	45.0 mi/h
Observed volume, V_f	veh/h	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	1.3 mi/h
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	41.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.8 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	41.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	1.9
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	28.9

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	1311
v_p * highest directional split proportion[2] (pc/h)	918
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	68.4
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	9.2
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	77.6

Level of Service and Other Performance Measures

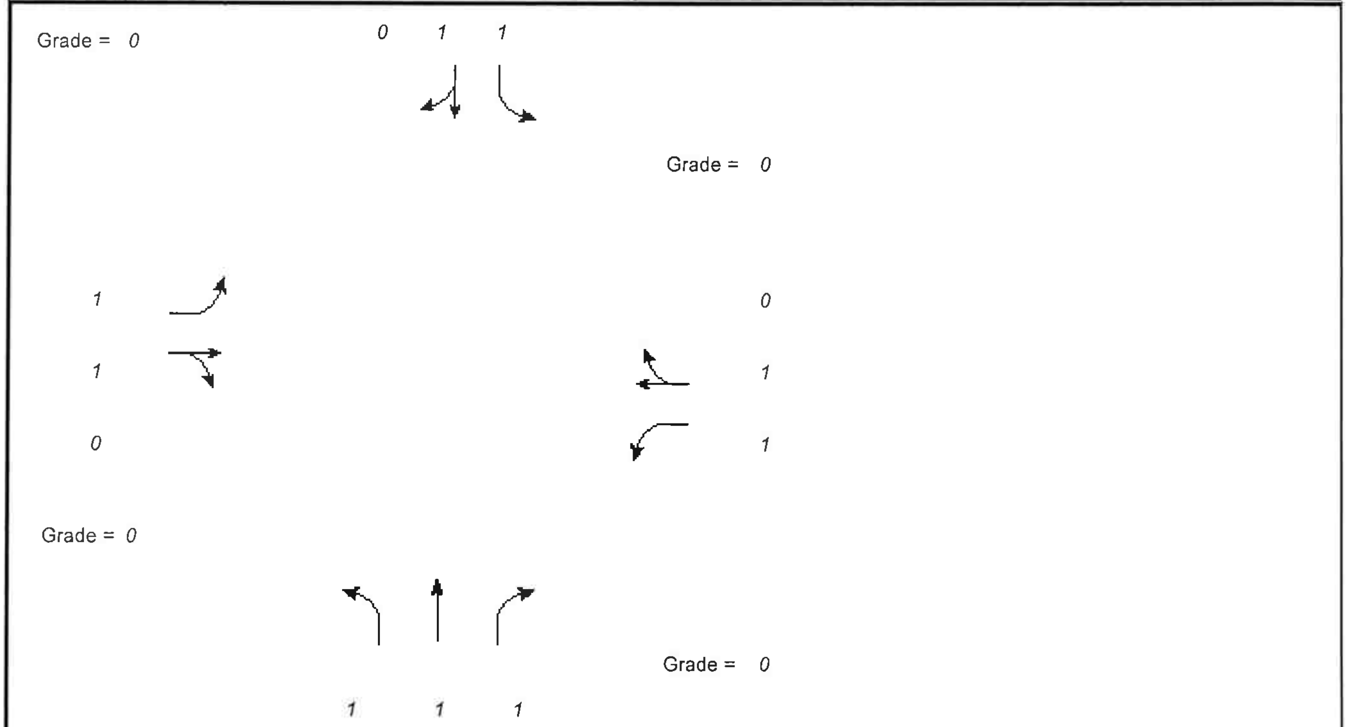
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio v/c $v/c=V_p/3,200$	0.41
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	131
	482

Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V^*L_t$	
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}= VMT_{15}/ATS$	4.5
Notes	
1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F.	2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR 106 & SR-248*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*4/23/2008*	Jurisdiction	*City of Franklin*
Time Period	*AM*	Analysis Year	*2013*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	163	459	6	35	198	349	11	352	171	182	123	67
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3		3	3		3	3	3	3	3	
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0		0	0		0	0	0	0	0	
Ped timing		3.2			3.2			3.2			3.2	

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 5.0	G = 35.0	G =	G =	G = 5.0	G = 15.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25					Cycle Length C = 80.0			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	163	459	6	35	198	349	11	352	171	182	123	67
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow Rate	181	510	7	39	220	388	12	391	190	202	137	74
Lane Group	L	TR		L	TR		L	T	R	L	TR	
Adj. flow rate	181	517		39	608		12	391	190	202	211	
Prop. LT or RT	0.000	--	0.014	0.000	--	0.638	0.000	--	0.000	0.000	--	0.351

Saturation Flow Rate

	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Base satflow	1900	1900		1900	1900		1900	1900	1900	1900	1900	
Num. of lanes	1	1	0	1	1	0	1	1	1	1	1	0
fW	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fHV	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fg	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fp	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fbb	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fa	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
fLU	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.185		--	0.258		--	0.356		--	0.200		--
fRT	--	0.998		--	0.904		--	1.000	0.850	--	0.947	
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000		--	1.000		--	1.000	1.000	--	1.000	
Adj. satflow	1805	1896		1805	1718		1805	1900	1615	1805	1800	
Sec. adj. satflow	352		--	491		--	676		--	380		--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	L	TR		L	TR		L	T	R	L	TR	
Adj. flow rate	181	517		39	608		12	391	190	202	211	
Satflow rate	1805	1896		1805	1718		1805	1900	1615	1805	1800	
Lost time	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Green ratio	0.56	0.44		0.56	0.44		0.31	0.19	0.31	0.31	0.19	
Lane group cap.	289	830		359	752		282	356	505	208	338	
v/c ratio	0.63	0.62		0.11	0.81		0.04	1.10	0.38	0.97	0.62	
Flow ratio		0.27			0.35			0.19	0.12		0.12	
Crit. lane group	N	N		N	Y		N	N	N	N	N	
Sum flow ratios	0.71											
Lost time/cycle	15.00											
Critical v/c ratio	0.88											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	L	TR		L	TR		L	T	R	L	TR	
Adj. flow rate	181	517		39	608		12	391	190	202	211	
Lane group cap.	289	830		359	752		282	356	505	208	338	
v/c ratio	0.63	0.62		0.11	0.81		0.04	1.10	0.38	0.97	0.62	
Green ratio	0.56	0.44		0.56	0.44		0.31	0.19	0.31	0.31	0.19	
Unif. delay d1	12.7	17.4		10.0	19.6		19.5	32.5	21.4	26.2	29.9	
Delay factor k	0.50	0.50		0.50	0.50		0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	9.9	3.5		0.6	9.1		0.3	76.8	2.1	55.3	8.4	
PF factor	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
Control delay	22.6	20.9		10.6	28.7		19.8	109.3	23.6	81.5	38.3	
Lane group LOS	C	C		B	C		B	F	C	F	D	
Apprch. delay	21.3			27.6			80.0			59.4		
Approach LOS	C			C			F			E		
Intersec. delay	44.6			Intersection LOS						D		

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

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*80.0*			
Prot. phase eff. green intvl, g (s)	*5.0*	*5.0*	*5.0*	*5.0*
Opposed queue eff. green intvl, g_q (s)	*22.95*	*18.13*	*8.63*	*16.00*
Unopposed green intvl, g_u (s)	*17.05*	*21.87*	*11.37*	*4.00*
Red time, r(s)	*35.0*	*35.0*	*55.0*	*55.0*
Arrival rate, q_a (veh/s)	*0.05*	*0.01*	*0.00*	*0.06*
Prot. phase departure rate, s_p (veh/s)	*0.501*	*0.501*	*0.501*	*0.501*
Perm. phase departure rate, s_s (veh/s)	*0.23*	*0.25*	*0.33*	*0.53*
X_{perm}	*0.51*	*0.08*	*0.02*	*0.53*
X_{prot} (N/A for lagging left-turns)	*0.80*	*0.17*	*0.08*	*1.34*
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a	*1.76*	*0.38*	*0.18*	*3.09*
Queue at start of unsaturated green, Q_u	*1.15*	*0.20*	*0.03*	*1.63*
Residual queue, Q_r	*0.00*	*0.00*	*0.00*	*0.86*
Uniform delay, d_1	*12.7*	*10.0*	*19.5*	*26.2*

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	TR		L	TR		L	T	R	L	TR	
Init. queue/lane	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Flow rate/lane	181	517		39	608		12	391	190	202	211	
Satflow per lane	513	1896		637	1718		902	1900	1615	665	1800	
Capacity/lane	289	830		359	752		282	356	505	208	338	
Flow ratio	0.35	0.27		0.06	0.35		0.01	0.21	0.12	0.30	0.12	
v/c ratio	0.63	0.62		0.11	0.81		0.04	1.10	0.38	0.97	0.62	
I factor	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
Arrival type	3	3		3	3		3	3	3	3	3	
Platoon ratio	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
PF factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Q_1	1.8	8.9		0.4	11.8		0.2	8.7	3.3	3.3	4.3	
k_B	0.4	0.9		0.5	0.9		0.4	0.5	0.7	0.4	0.5	
Q_2	0.7	1.5		0.1	3.1		0.0	7.6	0.4	2.6	0.8	
Q avg.	2.5	10.4		0.4	14.9		0.2	16.3	3.7	5.9	5.1	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	2.2	1.7		2.5	1.7		2.6	1.6	2.1	1.9	2.0	
BOQ, $Q_{\%}$	5.6	17.9		1.1	24.5		0.5	26.8	7.6	11.3	10.0	

Queue Storage Ratio

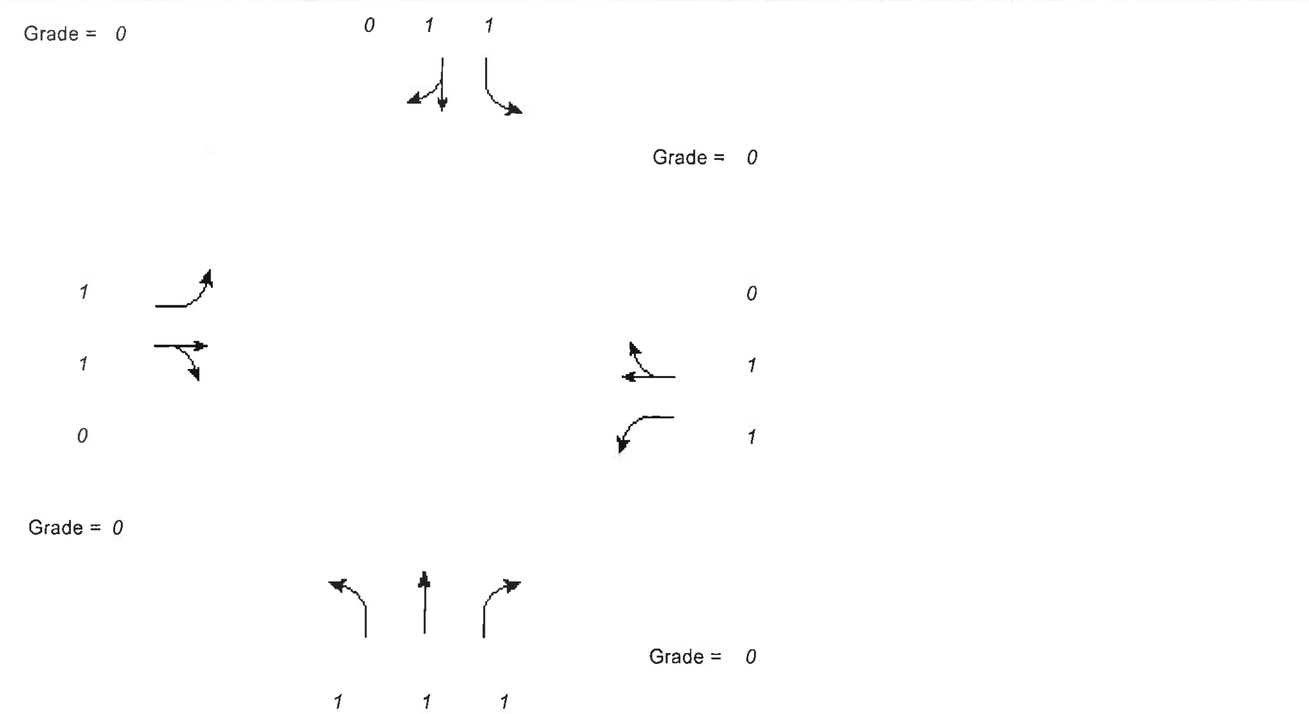
Q spacing	25.0	25.0		25.0	25.0		25.0	25.0	25.0	25.0	25.0	
Q storage	0	0		0	0		0	0	0	0	0	
Avg. R_Q												
95% $R_{Q\%}$												

HCS2000™ Version 4.1d

LONG REPORT

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	SR 106 & SR-248
Agency or Co.	Clinard Engineering Associates	Area Type	All other areas
Date Performed	4/23/2008	Jurisdiction	City of Franklin
Time Period	PM	Analysis Year	2013

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	233	365	31	105	221	256	32	378	123	126	201	45
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3		3	3		3	3	3	3	3	
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0		0	0		0	0	0	0	0	
Ped timing	3.2			3.2			3.2			3.2		

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 15.0	G = 30.0	G =	G =	G = 5.0	G = 20.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25					Cycle Length C = 90.0			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	233	365	31	105	221	256	32	378	123	126	201	45
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow Rate	259	406	34	117	246	284	36	420	137	140	223	50
Lane Group	L	TR		L	TR		L	T	R	L	TR	
Adj. flow rate	259	440		117	530		36	420	137	140	273	
Prop. LT or RT	0.000	--	0.077	0.000	--	0.536	0.000	--	0.000	0.000	--	0.183

Saturation Flow Rate

	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Base satflow	1900	1900		1900	1900		1900	1900	1900	1900	1900	
Num. of lanes	1	1	0	1	1	0	1	1	1	1	1	0
fW	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fHV	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fg	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fp	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fbb	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fa	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
fLU	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.133		--	0.226		--	0.295		--	0.160		--
fRT	--	0.988		--	0.920		--	1.000	0.850	--	0.973	
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000		--	1.000		--	1.000	1.000	--	1.000	
Adj. satflow	1805	1878		1805	1747		1805	1900	1615	1805	1848	
Sec. adj. satflow	253		--	429		--	561		--	304		--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	L	TR		L	TR		L	T	R	L	TR	
Adj. flow rate	259	440		117	530		36	420	137	140	273	
Satflow rate	1805	1878		1805	1747		1805	1900	1615	1805	1848	
Lost time	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Green ratio	0.56	0.33		0.56	0.33		0.33	0.22	0.44	0.33	0.22	
Lane group cap.	399	626		468	582		256	422	718	184	411	
v/c ratio	0.65	0.70		0.25	0.91		0.14	1.00	0.19	0.76	0.66	
Flow ratio		0.23			0.30			0.22	0.08		0.15	
Crit. lane group	N	N		N	Y		N	Y	N	N	N	
Sum flow ratios	0.72											
Lost time/cycle	20.00											
Critical v/c ratio	0.93											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	L	TR		L	TR		L	T	R	L	TR	
Adj. flow rate	259	440		117	530		36	420	137	140	273	
Lane group cap.	399	626		468	582		256	422	718	184	411	
v/c ratio	0.65	0.70		0.25	0.91		0.14	1.00	0.19	0.76	0.66	
Green ratio	0.56	0.33		0.56	0.33		0.33	0.22	0.44	0.33	0.22	
Unif. delay d1	15.7	26.1		11.9	28.7		21.3	35.0	15.2	24.0	31.9	
Delay factor k	0.50	0.50		0.50	0.50		0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	7.9	6.5		1.3	20.8		1.1	42.7	0.6	25.2	8.2	
PF factor	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
Control delay	23.7	32.6		13.2	49.5		22.5	77.6	15.8	49.2	40.2	
Lane group LOS	C	C		B	D		C	E	B	D	D	
Apprch. delay	29.3			42.9			60.0			43.2		
Approach LOS	C			D			E			D		
Intersec. delay	43.2			Intersection LOS						D		

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

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*90.0*			
Prot. phase eff. green intvl, g (s)	*15.0*	*15.0*	*5.0*	*5.0*
Opposed queue eff. green intvl, g_q (s)	*25.04*	*19.41*	*12.51*	*21.00*
Unopposed green intvl, g_u (s)	*9.96*	*15.59*	*12.49*	*4.00*
Red time, r(s)	*40.0*	*40.0*	*60.0*	*60.0*
Arrival rate, q_a (veh/s)	*0.07*	*0.03*	*0.01*	*0.04*
Prot. phase departure rate, s_p (veh/s)	*0.501*	*0.501*	*0.501*	*0.501*
Perm. phase departure rate, s_s (veh/s)	*0.25*	*0.27*	*0.31*	*0.53*
X_{perm}	*1.02*	*0.27*	*0.06*	*0.46*
X_{prot} (N/A for lagging left-turns)	*0.53*	*0.24*	*0.26*	*1.01*
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a	*2.94*	*1.30*	*0.60*	*2.33*
Queue at start of unsaturated green, Q_u	*1.80*	*0.63*	*0.13*	*0.71*
Residual queue, Q_r	*0.06*	*0.00*	*0.00*	*0.02*
Uniform delay, d_1	*15.7*	*11.9*	*21.3*	*24.0*

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	TR		L	TR		L	T	R	L	TR	
Init. queue/lane	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Flow rate/lane	259	440		117	530		36	420	137	140	273	
Satflow per lane	719	1878		842	1747		768	1900	1615	554	1848	
Capacity/lane	399	626		468	582		256	422	718	184	411	
Flow ratio	0.36	0.23		0.14	0.30		0.05	0.22	0.08	0.25	0.15	
v/c ratio	0.65	0.70		0.25	0.91		0.14	1.00	0.19	0.76	0.66	
I factor	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
Arrival type	3	3		3	3		3	3	3	3	3	
Platoon ratio	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
PF factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Q_1	3.2	9.6		1.4	12.7		0.6	10.5	2.1	2.4	6.2	
k_B	0.6	0.8		0.7	0.8		0.4	0.6	0.9	0.4	0.6	
Q_2	1.0	1.8		0.2	4.6		0.1	5.6	0.2	0.9	1.1	
Q avg.	4.3	11.4		1.6	17.3		0.7	16.1	2.3	3.4	7.4	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	2.0	1.7		2.3	1.6		2.5	1.6	2.2	2.1	1.8	
BOQ, $Q_{\%}$	8.7	19.4		3.7	28.3		1.7	26.4	5.1	7.1	13.5	
Queue Storage Ratio												
Q spacing	25.0	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	0	
Avg. R_Q												
95% $R_{Q\%}$												

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Moss*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*

East/West Street: *Moss Lane*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*14*	*677*	*0*	*0*	*388*	*8*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*15*	*735*	*0*	*0*	*421*	*8*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*38*	*0*	*20*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*41*	*0*	*21*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*15*						*62*	
C (m) (vph)	*1141*						*267*	
v/c	*0.01*						*0.23*	
95% queue length	*0.04*						*0.88*	
Control Delay	*8.2*						*22.5*	
LOS	*A*						*C*	
Approach Delay	--	--				*22.5*		
Approach LOS	--	--				*C*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Moss*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*

East/West Street: *Moss Lane*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*7*	*365*	*0*	*0*	*720*	*15*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*7*	*396*	*0*	*0*	*782*	*16*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*11*	*0*	*20*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*11*	*0*	*21*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*7*						*32*	
C (m) (vph)	*833*						*298*	
v/c	*0.01*						*0.11*	
95% queue length	*0.03*						*0.36*	
Control Delay	*9.4*						*18.5*	
LOS	*A*						*C*	
Approach Delay	--	--				*18.5*		
Approach LOS	--	--				*C*		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Poplar*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Poplar Street*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	15	720	0	0	393	8
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	16	782	0	0	427	8
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	6	0	3
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	6	0	3
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	16						9	
C (m) (vph)	1135						249	
v/c	0.01						0.04	
95% queue length	0.04						0.11	
Control Delay	8.2						20.0	
LOS	A						C	
Approach Delay	--	--				20.0		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Poplar*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*	
East/West Street: *Poplar Street*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	8	388	0	0	730	15
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	8	421	0	0	793	16
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	2	0	3
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	2	0	3
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	8						5	
C (m) (vph)	825						277	
v/c	0.01						0.02	
95% queue length	0.03						0.06	
Control Delay	9.4						18.2	
LOS	A						C	
Approach Delay	--	--				18.2		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Soloman*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Soloman Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*15*	*730*	*0*	*0*	*401*	*8*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*16*	*793*	*0*	*0*	*435*	*8*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*18*	*0*	*10*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*19*	*0*	*10*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (vph)	*16*						*29*	
C (m) (vph)	*1128*						*245*	
v/c	*0.01*						*0.12*	
95% queue length	*0.04*						*0.40*	
Control Delay	*8.2*						*21.7*	
LOS	*A*						*C*	
Approach Delay	--	--				*21.7*		
Approach LOS	--	--				*C*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Soloman*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Soloman Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*8*	*393*	*0*	*0*	*745*	*15*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*8*	*427*	*0*	*0*	*809*	*16*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*5*	*0*	*10*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*5*	*0*	*10*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (vph)	*8*						*15*	
C (m) (vph)	*814*						*283*	
v/c	*0.01*						*0.05*	
95% queue length	*0.03*						*0.17*	
Control Delay	*9.5*						*18.4*	
LOS	*A*						*C*	
Approach Delay	--	--				*18.4*		
Approach LOS	--	--				*C*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Peytonsville*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Old Peytonsville Rd*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*737*	*23*	*37*	*303*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*801*	*24*	*40*	*329*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*3*	*0*	*15*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*3*	*0*	*16*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (vph)		*40*		*19*				
C (m) (vph)		*814*		*329*				
v/c		*0.05*		*0.06*				
95% queue length		*0.15*		*0.18*				
Control Delay		*9.7*		*16.6*				
LOS		*A*		*C*				
Approach Delay	--	--	*16.6*					
Approach LOS	--	--	*C*					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Peytonsville*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Old Peytonsville Rd*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*401*	*8*	*13*	*620*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*435*	*8*	*14*	*673*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*8*	*0*	*26*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*8*	*0*	*28*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (vph)		*14*		*36*				
C (m) (vph)		*1128*		*443*				
v/c		*0.01*		*0.08*				
95% queue length		*0.04*		*0.26*				
Control Delay		*8.2*		*13.8*				
LOS		*A*		*B*				
Approach Delay	--	--	*13.8*					
Approach LOS	--	--	*B*					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Henpeck*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Henpeck Lane*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	75	266	11	18	547	48
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	81	289	0	0	594	52
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L	T				TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	6	52	0	116
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	56	0	126
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	81					56		126
C (m) (vph)	949					226		492
v/c	0.09					0.25		0.26
95% queue length	0.28					0.95		1.01
Control Delay	9.1					26.1		14.8
LOS	A					D		B
Approach Delay	--	--				18.3		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Ellington
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2013
Analysis Time Period	AM		
Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Ellington Drive	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	45	582	12	3	277	22
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	632	13	3	301	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	20	0	16	12	0	16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	21	0	17	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		3		38				
C (m) (vph)		950		354				
v/c		0.00		0.11				
95% queue length		0.01		0.36				
Control Delay		8.8		16.4				
LOS		A		C				
Approach Delay	--	--	16.4					
Approach LOS	--	--	C					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Douglas Glenn*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*	
East/West Street: *Douglas Glenn Lane*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*12*	*582*	*0*	*0*	*314*	*6*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*13*	*632*	*0*	*0*	*341*	*6*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*11*	*0*	*6*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*11*	*0*	*6*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (vph)	*13*						*17*	
C (m) (vph)	*1223*						*343*	
v/c	*0.01*						*0.05*	
95% queue length	*0.03*						*0.16*	
Control Delay	*8.0*						*16.0*	
LOS	*A*						*C*	
Approach Delay	--	--				*16.0*		
Approach LOS	--	--				*C*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Douglas Glenn*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Douglas Glenn Lane*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*6*	*314*	*0*	*0*	*582*	*12*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*6*	*341*	*0*	*0*	*632*	*13*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*9*	*0*	*5*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*9*	*0*	*5*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (vph)	*6*						*14*	
C (m) (vph)	*950*						*323*	
v/c	*0.01*						*0.04*	
95% queue length	*0.02*						*0.14*	
Control Delay	*8.8*						*16.6*	
LOS	*A*						*C*	
Approach Delay	--	--				*16.6*		
Approach LOS	--	--				*C*		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Ellington*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*
East/West Street: *Ellington Drive*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*45*	*307*	*13*	*20*	*634*	*22*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*333*	*14*	*21*	*689*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*8*	*0*	*7*	*12*	*0*	*16*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*8*	*0*	*7*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (vph)		*21*		*15*				
C (m) (vph)		*1223*		*350*				
v/c		*0.02*		*0.04*				
95% queue length		*0.05*		*0.13*				
Control Delay		*8.0*		*15.7*				
LOS		*A*		*C*				
Approach Delay	--	--		*15.7*				
Approach LOS	--	--		*C*				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & St Georges*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*St. George's Way*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	45	647	7	6	288	22
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	703	7	6	313	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	11	0	26	12	0	16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	11	0	28	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		6		39				
C (m) (vph)		899		367				
v/c		0.01		0.11				
95% queue length		0.02		0.35				
Control Delay		9.0		16.0				
LOS		A		C				
Approach Delay	--	--	16.0					
Approach LOS	--	--	C					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & St Georges*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*	
East/West Street: *St. George's Way*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	45	275	6	21	665	22
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	298	6	22	722	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	3	0	13	12	0	16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	3	0	14	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		22		17				
C (m) (vph)		1268		546				
v/c		0.02		0.03				
95% queue length		0.05		0.10				
Control Delay		7.9		11.8				
LOS		A		B				
Approach Delay	--	--	11.8					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Bowman
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2013
Analysis Time Period	AM		
Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Bowman Road	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	7	678	4	0	289	12
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	7	736	0	0	314	13
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	14	72	0	18
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	78	0	19
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	7						97	
C (m) (vph)	1244						283	
v/c	0.01						0.34	
95% queue length	0.02						1.47	
Control Delay	7.9						24.2	
LOS	A						C	
Approach Delay	--	--				24.2		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Bowman*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Bowman Road*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*9*	*285*	*4*	*0*	*660*	*42*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*9*	*309*	*0*	*0*	*717*	*45*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*6*	*0*	*14*	*32*	*0*	*7*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*34*	*0*	*7*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (vph)	*9*						*41*	
C (m) (vph)	*859*						*264*	
v/c	*0.01*						*0.16*	
95% queue length	*0.03*						*0.54*	
Control Delay	*9.2*						*21.1*	
LOS	*A*						*C*	
Approach Delay	--	--				*21.1*		
Approach LOS	--	--				*C*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Holly Hill
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2013
Analysis Time Period	AM		
Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Holly Hill Drive	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	695	7	14	265	7
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	755	7	15	288	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	7	0	49	32	0	8
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	7	0	53	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		15		60				
C (m) (vph)		859		379				
v/c		0.02		0.16				
95% queue length		0.05		0.56				
Control Delay		9.3		16.3				
LOS		A		C				
Approach Delay	--	--	16.3					
Approach LOS	--	--	C					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Holly Hill*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Holly Hill Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	295	6	33	618	7
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	320	6	35	671	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	4	0	26	32	0	8
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	4	0	28	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		35		32				
C (m) (vph)		1245		579				
v/c		0.03		0.06				
95% queue length		0.09		0.18				
Control Delay		8.0		11.6				
LOS		A		B				
Approach Delay	--	--		11.6				
Approach LOS	--	--		B				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Donelson
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2013
Analysis Time Period	AM		

Project Description State Route 106 (Lewisburg Pike) TPR

East/West Street: Donelson Creek Parkway	North/South Street: Lewisburg Pike
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	130	521	4	9	256	32
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	141	566	0	0	278	34
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	1
Configuration	L	T			T	R
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	3	0	24	63	0	65
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	68	0	70
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	141					68		70
C (m) (vph)	1260					203		766
v/c	0.11					0.33		0.09
95% queue length	0.38					1.40		0.30
Control Delay	8.2					31.4		10.2
LOS	A					D		B
Approach Delay	--	--				20.6		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Donelson*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*
East/West Street: *Donelson Creek Parkway*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*61*	*218*	*4*	*9*	*605*	*67*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*66*	*236*	*0*	*0*	*657*	*72*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*	*T*			*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*3*	*0*	*24*	*55*	*0*	*183*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*59*	*0*	*198*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (vph)	*66*					*59*		*198*
C (m) (vph)	*884*					*243*		*468*
v/c	*0.07*					*0.24*		*0.42*
95% queue length	*0.24*					*0.92*		*2.07*
Control Delay	*9.4*					*24.5*		*18.2*
LOS	*A*					*C*		*C*
Approach Delay	--	--				*19.7*		
Approach LOS	--	--				*C*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Dallas
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2013
Analysis Time Period	AM		

Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Dallas Blvd/ School Entrance	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	7	659	7	105	239	18
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	7	716	7	114	259	19
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	2	0	47	116	0	48
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	2	0	51	126	0	52
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (vph)	7	114		53		126		52
C (m) (vph)	1296	889		395		120		785
v/c	0.01	0.13		0.13		1.05		0.07
95% queue length	0.02	0.44		0.46		7.26		0.21
Control Delay	7.8	9.6		15.5		165.8		9.9
LOS	A	A		C		F		A
Approach Delay	--	--	15.5			120.3		
Approach LOS	--	--	C			F		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Dallas*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Dallas Blvd/ School Entrance*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	23	262	3	42	718	84
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	24	284	3	45	780	91
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5	0	56	54	0	16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	5	0	60	58	0	17
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (vph)	24	45		65		58		17
C (m) (vph)	783	1287		561		136		399
v/c	0.03	0.03		0.12		0.43		0.04
95% queue length	0.09	0.11		0.39		1.87		0.13
Control Delay	9.7	7.9		12.3		49.8		14.4
LOS	A	A		B		E		B
Approach Delay	--	--	12.3			41.8		
Approach LOS	--	--	B			E		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Moores Landin*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Moores Landing Subd.*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*836*	*8*	*11*	*355*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*908*	*8*	*11*	*385*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*1*	*1*	*0*
Configuration			*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	
Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*7*	*0*	*16*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*7*	*0*	*17*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (vph)		*11*		*24*				
C (m) (vph)		*753*		*262*				
v/c		*0.01*		*0.09*				
95% queue length		*0.04*		*0.30*				
Control Delay		*9.9*		*20.1*				
LOS		*A*		*C*				
Approach Delay	--	--	*20.1*					
Approach LOS	--	--	*C*					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Moores Landin*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Moores Landing Subd.*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*358*	*4*	*26*	*828*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*389*	*4*	*28*	*899*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*1*	*1*	*0*
Configuration			*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*20*	*0*	*8*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*21*	*0*	*8*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (vph)		*28*		*29*				
C (m) (vph)		*1177*		*208*				
v/c		*0.02*		*0.14*				
95% queue length		*0.07*		*0.48*				
Control Delay		*8.1*		*25.1*				
LOS		*A*		*D*				
Approach Delay	--	--	*25.1*					
Approach LOS	--	--	*D*					

HCS2000™ Version 4.1d

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Essex*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*

East/West Street: *Essex Drive*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*9*	*845*	*0*	*0*	*343*	*11*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*9*	*918*	*0*	*0*	*372*	*11*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*48*	*0*	*20*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*52*	*0*	*21*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (vph)	*9*						*73*	
C (m) (vph)	*1187*						*222*	
v/c	*0.01*						*0.33*	
95% queue length	*0.02*						*1.37*	
Control Delay	*8.1*						*29.0*	
LOS	*A*						*D*	
Approach Delay	--	--				*29.0*		
Approach LOS	--	--				*D*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Essex*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*

East/West Street: *Essex Drive*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*4*	*362*	*0*	*0*	*801*	*25*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*4*	*393*	*0*	*0*	*870*	*27*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*11*	*0*	*26*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*11*	*0*	*28*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (vph)	*4*						*39*	
C (m) (vph)	*765*						*276*	
v/c	*0.01*						*0.14*	
95% queue length	*0.02*						*0.49*	
Control Delay	*9.7*						*20.2*	
LOS	*A*						*C*	
Approach Delay	--	--				*20.2*		
Approach LOS	--	--				*C*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Gardner*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Gardner Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*818*	*8*	*11*	*351*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*889*	*8*	*11*	*381*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*1*	*1*	*0*
Configuration			*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*2*	*0*	*5*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*2*	*0*	*5*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (vph)		*11*		*7*				
C (m) (vph)		*765*		*271*				
v/c		*0.01*		*0.03*				
95% queue length		*0.04*		*0.08*				
Control Delay		*9.8*		*18.6*				
LOS		*A*		*C*				
Approach Delay	--	--	*18.6*					
Approach LOS	--	--	*C*					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Gardner*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Gardner Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*350*	*4*	*25*	*819*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*380*	*4*	*27*	*890*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*1*	*1*	*0*
Configuration			*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*5*	*0*	*2*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*5*	*0*	*2*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (vph)		*27*		*7*				
C (m) (vph)		*1186*		*215*				
v/c		*0.02*		*0.03*				
95% queue length		*0.07*		*0.10*				
Control Delay		*8.1*		*22.3*				
LOS		*A*		*C*				
Approach Delay	--	--	*22.3*					
Approach LOS	--	--	*C*					

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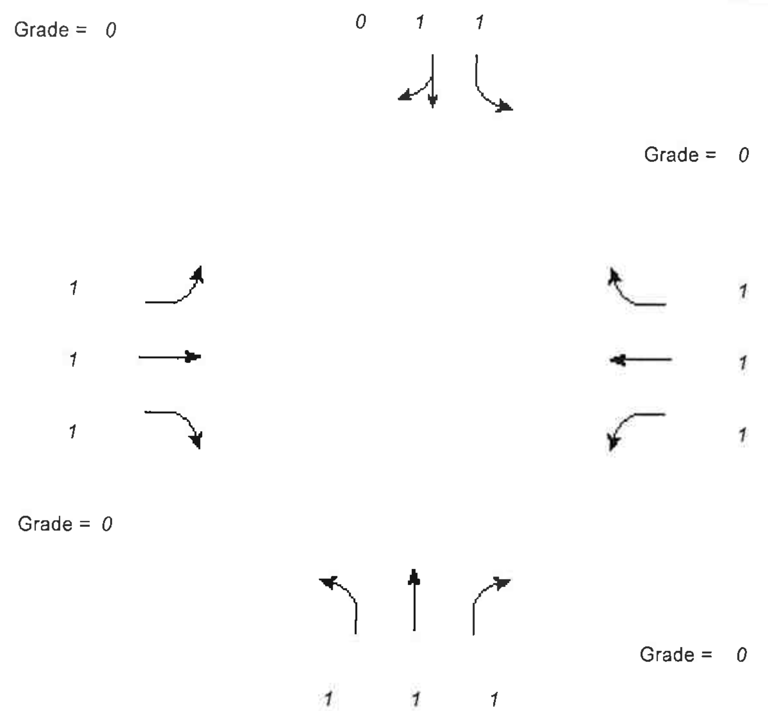
LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR 106 & Mack Hatcher*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*4/23/2008*	Jurisdiction	*City of Franklin*
Time Period	*AM*	Analysis Year	*2013*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	6	614	26	377	935	196	25	203	616	108	70	6
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	
Ped timing	3.2			3.2			3.2			3.2		

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 5.0	G = 80.0	G =	G =	G = 5.0	G = 15.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 125.0		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	6	614	26	377	935	196	25	203	616	108	70	6
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow Rate	7	667	28	410	1016	213	27	221	670	117	76	7
Lane Group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	7	667	28	410	1016	213	27	221	670	117	83	
Prop. LT or RT	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000	0.000	--	0.084
Saturation Flow Rate												
Base satflow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Num. of lanes	1	1	1	1	1	1	1	1	1	1	1	0
fW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fHV	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fg	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fp	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fbb	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fa	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
fLU	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.093		--	0.283		--	0.516		--	0.200		--
fRT	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850	--	0.987	
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	
Adj. satflow	1805	1900	1615	1805	1900	1615	1805	1900	1615	1805	1876	
Sec. adj. satflow	177		--	538		--	981		--	380		--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	7	667	28	410	1016	213	27	221	670	117	83	
Satflow rate	1805	1900	1615	1805	1900	1615	1805	1900	1615	1805	1876	
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Green ratio	0.72	0.64	0.88	0.72	0.64	0.88	0.20	0.12	0.88	0.20	0.12	
Lane group cap.	192	1216	1421	438	1216	1421	229	228	1421	133	225	
v/c ratio	0.04	0.55	0.02	0.94	0.84	0.15	0.12	0.97	0.47	0.88	0.37	
Flow ratio		0.35	0.02		0.53	0.13		0.12	0.41		0.04	
Crit. lane group	N	N	N	N	N	N	N	N	N	N	N	
Sum flow ratios	0.83											
Lost time/cycle	10.00											
Critical v/c ratio	0.90											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	7	667	28	410	1016	213	27	221	670	117	83	
Lane group cap.	192	1216	1421	438	1216	1421	229	228	1421	133	225	
v/c ratio	0.04	0.55	0.02	0.94	0.84	0.15	0.12	0.97	0.47	0.88	0.37	
Green ratio	0.72	0.64	0.88	0.72	0.64	0.88	0.20	0.12	0.88	0.20	0.12	
Unif. delay d1	18.7	12.5	0.9	28.2	17.4	1.0	40.7	54.8	1.5	48.1	50.6	
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	0.4	1.8	0.0	29.6	6.9	0.2	1.0	52.2	1.1	51.0	4.6	
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	19.0	14.3	0.9	57.9	24.3	1.3	41.8	106.9	2.7	99.1	55.2	
Lane group LOS	B	B	A	E	C	A	D	F	A	F	E	
Apprch. delay	13.8			29.7			28.9			80.9		
Approach LOS	B			C			C			F		
Intersec. delay	29.2			Intersection LOS						C		

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

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*125.0*			
Prot. phase eff. green intvl, g (s)	*5.0*	*5.0*	*5.0*	*5.0*
Opposed queue eff. green intvl, g_q (s)	*58.32*	*26.49*	*5.32*	*15.40*
Unopposed green intvl, g_u (s)	*26.68*	*58.51*	*14.68*	*4.60*
Red time, r(s)	*35.0*	*35.0*	*100.0*	*100.0*
Arrival rate, q_a (veh/s)	*0.00*	*0.11*	*0.01*	*0.03*
Prot. phase departure rate, s_p (veh/s)	*0.501*	*0.501*	*0.501*	*0.501*
Perm. phase departure rate, s_s (veh/s)	*0.16*	*0.22*	*0.37*	*0.46*
X_{perm}	*0.04*	*0.76*	*0.03*	*0.31*
X_{prot} (N/A for lagging left-turns)	*0.03*	*1.82*	*0.31*	*1.36*

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a	*0.07*	*3.99*	*0.75*	*3.25*
Queue at start of unsaturated green, Q_u	*0.11*	*6.49*	*0.04*	*1.62*
Residual queue, Q_r	*0.00*	*2.05*	*0.00*	*0.91*
Uniform delay, d_1	*18.7*	*28.2*	*40.7*	*48.1*

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Init. queue/lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Flow rate/lane	7	667	28	410	1016	213	27	221	670	117	83	
Satflow per lane	267	1900	1615	608	1900	1615	1146	1900	1615	665	1876	
Capacity/lane	192	1216	1421	438	1216	1421	229	228	1421	133	225	
Flow ratio	0.03	0.35	0.02	0.67	0.53	0.13	0.02	0.12	0.41	0.18	0.04	
v/c ratio	0.04	0.55	0.02	0.94	0.84	0.15	0.12	0.97	0.47	0.88	0.37	
I factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Q_1	0.1	12.8	0.1	4.1	27.3	1.0	0.8	7.6	4.8	3.4	2.7	
k_B	0.5	1.6	1.8	0.8	1.6	1.8	0.5	0.5	1.8	0.4	0.5	
Q_2	0.0	1.9	0.0	4.9	6.6	0.3	0.1	3.3	1.6	1.5	0.3	
Q avg.	0.1	14.8	0.2	9.1	33.9	1.3	0.8	11.0	6.4	4.8	2.9	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	2.6	1.7	2.6	1.8	1.6	2.4	2.4	1.7	1.9	2.0	2.2	
BOQ, $Q_{\%}$	0.2	24.4	0.4	16.0	54.3	3.2	2.0	18.8	12.0	9.6	6.3	
Queue Storage Ratio												
Q spacing	25.0	25.0	25.0	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	0	0	0	
Avg. R_Q												
95% $R_{Q\%}$												

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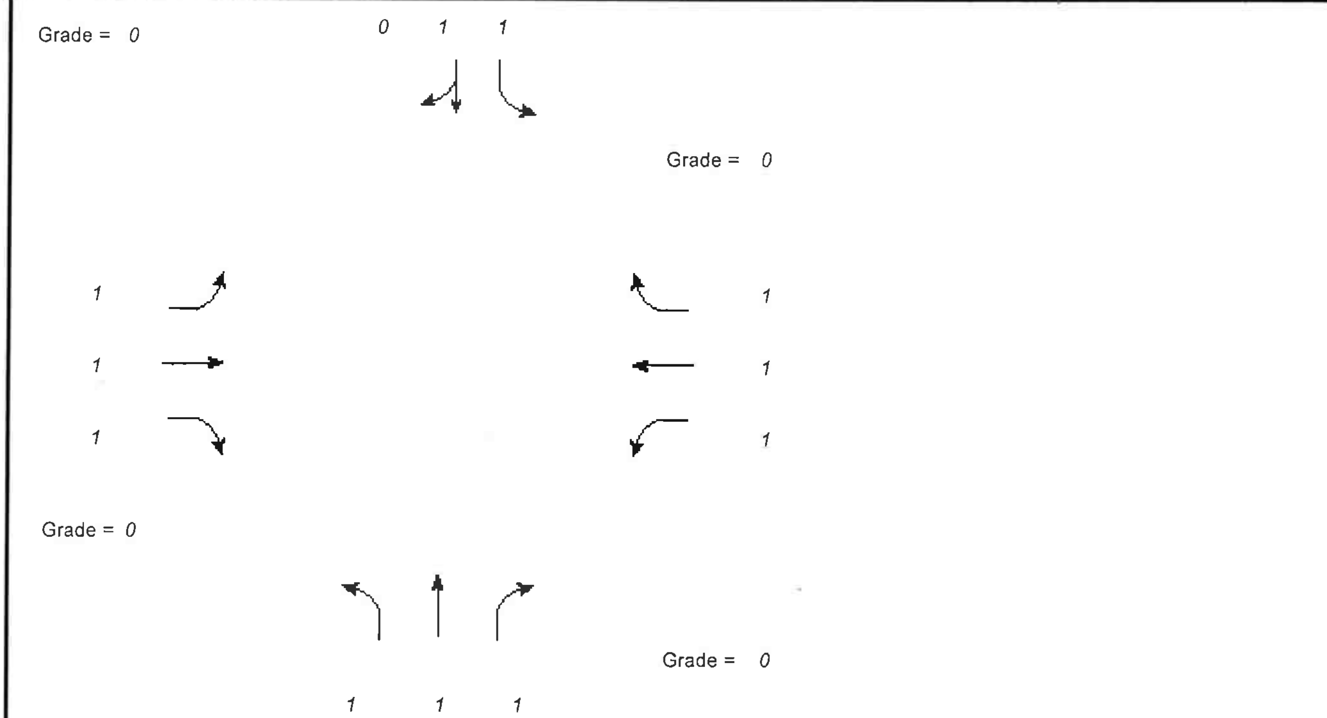
LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR 106 & Mack Hatcher*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*4/23/2008*	Jurisdiction	*City of Franklin*
Time Period	*PM*	Analysis Year	*2013*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	24	1068	108	357	406	49	33	62	268	116	291	21
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	
Ped timing		3.2			3.2			3.2			3.2	

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 15.0	G = 50.0	G =	G =	G = 5.0	G = 15.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 105.0		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	24	1068	108	357	406	49	33	62	268	116	291	21
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow Rate	26	1161	117	388	441	53	36	67	291	126	316	23
Lane Group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	26	1161	117	388	441	53	36	67	291	126	339	
Prop. LT or RT	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000	0.000	--	0.068

Saturation Flow Rate

	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Base satflow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Num. of lanes	1	1	1	1	1	1	1	1	1	1	1	0
fW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fHV	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fg	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fp	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fbb	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fa	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
fLU	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.342		--	0.073		--	0.200		--	0.535		--
fRT	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850	--	0.990	
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	
Adj. satflow	1805	1900	1615	1805	1900	1615	1805	1900	1615	1805	1881	
Sec. adj. satflow	651		--	138		--	380		--	1017		--

CAPACITY AND LOS WORKSHEET

General Information

Project Description State Route 106 (Lewisburg PIke) TPR

Capacity Analysis

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	26	1161	117	388	441	53	36	67	291	126	339	
Satflow rate	1805	1900	1615	1805	1900	1615	1805	1900	1615	1805	1881	
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Green ratio	0.67	0.48	0.76	0.67	0.48	0.76	0.24	0.14	0.86	0.24	0.14	
Lane group cap.	599	905	1230	330	905	1230	158	271	1384	280	269	
v/c ratio	0.04	1.28	0.10	1.18	0.49	0.04	0.23	0.25	0.21	0.45	1.26	
Flow ratio		0.48	0.07		0.23	0.03		0.04	0.18		0.14	
Crit. lane group	N	N	N	N	N	N	N	N	N	N	Y	
Sum flow ratios	1.28											
Lost time/cycle	15.00											
Critical v/c ratio	1.49											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	26	1161	117	388	441	53	36	67	291	126	339	
Lane group cap.	599	905	1230	330	905	1230	158	271	1384	280	269	
v/c ratio	0.04	1.28	0.10	1.18	0.49	0.04	0.23	0.25	0.21	0.45	1.26	
Green ratio	0.67	0.48	0.76	0.67	0.48	0.76	0.24	0.14	0.86	0.24	0.14	
Unif. delay d1	7.5	27.5	3.2	35.2	18.8	3.1	32.3	40.0	1.3	34.5	45.0	
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	0.1	135.8	0.2	106.3	1.9	0.1	3.3	2.2	0.3	5.2	143.5	
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	7.6	163.3	3.4	141.5	20.6	3.1	35.7	42.2	1.7	39.7	188.5	
Lane group LOS	A	F	A	F	C	A	D	D	A	D	F	
Apprch. delay	145.8			72.8			11.6			148.2		
Approach LOS	F			E			B			F		
Intersec. delay	107.7			Intersection LOS						F		

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

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*105.0*			
Prot. phase eff. green intvl, g (s)	*15.0*	*15.0*	*5.0*	*5.0*
Opposed queue eff. green intvl, g_q (s)	*17.85*	*51.00*	*16.00*	*5.00*
Unopposed green intvl, g_u (s)	*37.15*	*4.00*	*4.00*	*15.00*
Red time, r(s)	*35.0*	*35.0*	*80.0*	*80.0*
Arrival rate, q_a (veh/s)	*0.01*	*0.09*	*0.01*	*0.04*
Prot. phase departure rate, s_p (veh/s)	*0.501*	*0.501*	*0.501*	*0.501*
Perm. phase departure rate, s_s (veh/s)	*0.27*	*0.53*	*0.53*	*0.38*
X_{perm}	*0.04*	*2.39*	*0.09*	*0.12*
X_{prot} (N/A for lagging left-turns)	*0.05*	*0.61*	*0.34*	*1.19*
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a	*0.25*	*6.14*	*0.80*	*2.80*
Queue at start of unsaturated green, Q_u	*0.13*	*4.68*	*0.16*	*1.27*
Residual queue, Q_r	*0.00*	*2.93*	*0.00*	*0.47*
Uniform delay, d_1	*7.5*	*35.2*	*32.3*	*34.5*

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

Average Back of Queue

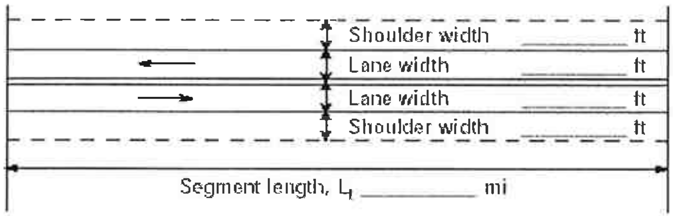
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Init. queue/lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Flow rate/lane	26	1161	117	388	441	53	36	67	291	126	339	
Satflow per lane	898	1900	1615	495	1900	1615	665	1900	1615	1175	1881	
Capacity/lane	599	905	1230	330	905	1230	158	271	1384	280	269	
Flow ratio	0.03	0.61	0.07	0.78	0.23	0.03	0.05	0.04	0.18	0.11	0.18	
v/c ratio	0.04	1.28	0.10	1.18	0.49	0.04	0.23	0.25	0.21	0.45	1.26	
I factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Q_1	0.3	33.9	0.9	4.4	8.8	0.4	0.8	1.7	1.5	2.9	9.9	
k_B	0.9	1.2	1.5	0.6	1.2	1.5	0.4	0.5	1.6	0.5	0.5	
Q_2	0.0	36.7	0.2	10.1	1.1	0.1	0.1	0.2	0.4	0.4	10.7	
Q avg.	0.3	70.6	1.0	14.5	9.9	0.4	0.9	1.9	1.9	3.3	20.6	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	2.5	1.6	2.4	1.7	1.7	2.5	2.4	2.3	2.3	2.1	1.6	
BOQ, $Q_{\%}$	0.7	113	2.5	24.0	17.2	1.1	2.2	4.3	4.3	6.9	33.4	
Queue Storage Ratio												
Q spacing	25.0	25.0	25.0	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	0	0	0	
Avg. R_Q												
95% $R_{Q\%}$												

HCS2000™ Version 4.1d

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	Brian Gaffney	Highway	SR-106 Lewisburg Pike
Agency or Company	Clinard Engineering	From/To	SR-248 to Old Peytonsville
Date Performed	4/28/2008	Jurisdiction	Williamson County
Analysis Time Period	Existing	Analysis Year	2033

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	1513 veh/h
Directional split	65 / 35
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	3 %
% Recreational vehicles, P_R	0%
Access points/ mi	16

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	0.997
Two-way flow rate[1], v_p (pc/h) v_p=V/ (PHF * f_G * f_{HV})	1649
v_p * highest directional split proportion[2] (pc/h)	1072

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	45.0 mi/h
Observed volume, V_f	veh/h	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	1.3 mi/h
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	39.7 mi/h	Adj. for access points, f_A (Exhibit 20-6)	4.0 mi/h
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	39.7 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	1.5
Average travel speed, ATS (mi/h) ATS=FFS-0.00776v_p-f_{np}	25.5

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, f_{HV} f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	1.000
Two-way flow rate[1], v_p (pc/h) v_p=V/ (PHF * f_G * f_{HV})	1645
v_p * highest directional split proportion[2] (pc/h)	1069
Base percent time-spent-following, BPTSF(%) BPTSF=100(1-$e^{-0.000879v_p}$)	76.4
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	6.6
Percent time-spent-following, PTSF(%) PTSF=BPTSF+$f_{d/np}$	83.0

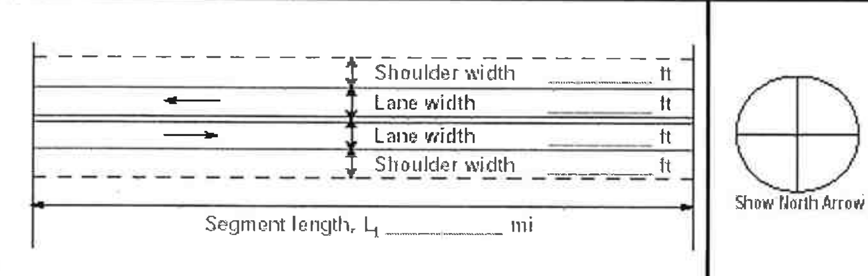
Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio v/c v/c=V_p/ 3,200	0.52
Peak 15-min veh-miles of travel,VMT_{15} (veh- mi) VMT_{15}= 0.25L_t(V/PHF)	206
	757

Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}= VMT_{15}/ATS$	8.1
Notes	
1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.	

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		***Site Information***	
Analyst	Brian Gaffney	Highway	SR-106 Lewisburg Pike
Agency or Company	Clinard Engineering	From/To	Old Peytonsville to Henpeck Ln
Date Performed	4/28/2008	Jurisdiction	Williamson County
Analysis Time Period	Existing	Analysis Year	2033

Input Data



☑ Class I highway	☐ Class II highway
Terrain ☑ Level	☐ Rolling
Two-way hourly volume	1387 veh/h
Directional split	65 / 35
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	3 %
% Recreational vehicles, P_R	0%
Access points/ mi	28

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.997
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	1512
v_p * highest directional split proportion[2] (pc/h)	983

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	45.0 mi/h
Observed volume, V_f	veh/h	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	1.3 mi/h
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	36.7 mi/h	Adj. for access points, f_A (Exhibit 20-6)	7.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	36.7 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	1.6
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	23.4

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	1508
v_p * highest directional split proportion[2] (pc/h)	980
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	73.4
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	7.5
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	80.9

Level of Service and Other Performance Measures

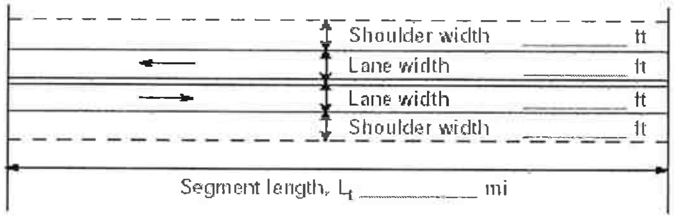
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio v/c $v/c=V_p/3,200$	0.47
Peak 15-min veh-miles of travel,VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	87
	319

Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V^{*}L_t$	
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}= VMT_{15}/ATS$	3.7
Notes	
1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.	

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	Brian Gaffney	Highway	SR-106 Lewisburg Pike
Agency or Company	Clinard Engineering	From/To	Henpeck Ln to Bowman Rd
Date Performed	4/28/2008	Jurisdiction	Williamson County
Analysis Time Period	Existing	Analysis Year	2033

Input Data



☑ Class I highway	☐ Class II highway
Terrain	☑ Level ☐ Rolling
Two-way hourly volume	1394 veh/h
Directional split	70 / 30
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	3 %
% Recreational vehicles, P_R	0%
Access points/ mi	34

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	0.997
Two-way flow rate[1], v_p (pc/h) v_p=V/ (PHF * f_G * f_{HV})	1520
v_p * highest directional split proportion[2] (pc/h)	1064

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	45.0 mi/h
Observed volume, V_f	veh/h	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	1.3 mi/h
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	35.2 mi/h	Adj. for access points, f_A (Exhibit 20-6)	8.5 mi/h
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	35.2 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	1.6
Average travel speed, ATS (mi/h) ATS=FFS-0.00776v_p-f_{np}	21.8

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, f_{HV} f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	1.000
Two-way flow rate[1], v_p (pc/h) v_p=V/ (PHF * f_G * f_{HV})	1515
v_p * highest directional split proportion[2] (pc/h)	1061
Base percent time-spent-following, BPTSF(%) BPTSF=100(1-$e^{-0.000879v_p}$)	73.6
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	7.5
Percent time-spent-following, PTSF(%) PTSF=BPTSF+$f_{d/np}$	81.1

Level of Service and Other Performance Measures

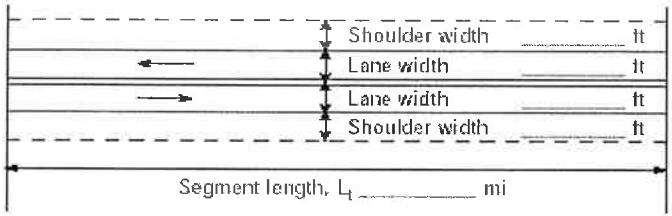
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio v/c v/c=V_p/ 3,200	0.47
Peak 15-min veh-miles of travel,VMT_{15} (veh- mi) VMT_{15}= 0.25L_t(V/PHF)	341
	1255

Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}= VMT_{15}/ATS$	15.6
Notes	
1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.	

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	Brian Gaffney	Highway	SR-106 Lewisburg Pike
Agency or Company	Clinard Engineering	From/To	Bowman Rd to Dallas Blvd
Date Performed	4/24/2008	Jurisdiction	Williamson County
Analysis Time Period	Existing	Analysis Year	2033

Input Data



☑ Class I highway ☐ Class II highway

Terrain	☑ Level ☐ Rolling
Two-way hourly volume	1367 veh/h
Directional split	70 / 30
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	3 %
% Recreational vehicles, P_R	0%
Access points/ mi	26

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	0.997
Two-way flow rate[1], v_p (pc/h) v_p=V/ (PHF * f_G * f_{HV})	1490
v_p * highest directional split proportion[2] (pc/h)	1043

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	45.0 mi/h
Observed volume, V_f	veh/h	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	1.3 mi/h
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	37.2 mi/h	Adj. for access points, f_A (Exhibit 20-6)	6.5 mi/h
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	37.2 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	1.6
Average travel speed, ATS (mi/h) ATS=FFS-0.00776v_p-f_{np}	24.0

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, f_{HV} f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	1.000
Two-way flow rate[1], v_p (pc/h) v_p=V/ (PHF * f_G * f_{HV})	1486
v_p * highest directional split proportion[2] (pc/h)	1040
Base percent time-spent-following, BPTSF(%) BPTSF=100(1-$e^{-0.000879v_p}$)	72.9
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	7.7
Percent time-spent-following, PTSF(%) PTSF=BPTSF+$f_{d/np}$	80.6

Level of Service and Other Performance Measures

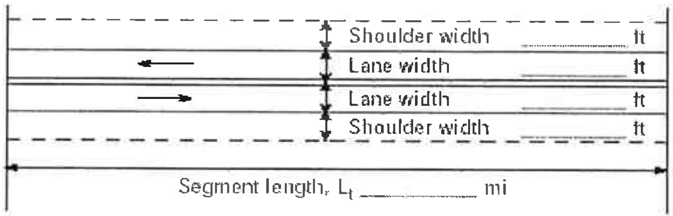
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio v/c v/c=V_p/ 3,200	0.47
Peak 15-min veh-miles of travel,VMT_{15} (veh- mi) VMT_{15}= 0.25L_t(V/PHF)	260
	957

Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}= VMT_{15}/ATS$	10.8
Notes	
1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.	

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	Brian Gaffney	Highway	SR-106 Lewisburg Pike
Agency or Company	Clinard Engineering	From/To	Dallas Blvd to SR-397
Date Performed	4/28/2008	Jurisdiction	Williamson County
Analysis Time Period	Existing	Analysis Year	2033

Input Data



☑ Class I highway ☐ Class II highway

Terrain	☑ Level ☐ Rolling
Two-way hourly volume	1613 veh/h
Directional split	70 / 30
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	3 %
% Recreational vehicles, P_R	0%
Access points/ mi	11

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	0.997
Two-way flow rate[1], v_p (pc/h) v_p=V/ (PHF * f_G * f_{HV})	1759
v_p * highest directional split proportion[2] (pc/h)	1231

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	45.0 mi/h
Observed volume, V_f	veh/h	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	1.3 mi/h
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	41.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.8 mi/h
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	41.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	1.3
Average travel speed, ATS (mi/h) ATS=FFS-0.00776v_p-f_{np}	26.0

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, f_{HV} f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	1.000
Two-way flow rate[1], v_p (pc/h) v_p=V/ (PHF * f_G * f_{HV})	1753
v_p * highest directional split proportion[2] (pc/h)	1227
Base percent time-spent-following, BPTSF(%) BPTSF=100(1-$e^{-0.000879 v_p}$)	78.6
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	5.9
Percent time-spent-following, PTSF(%) PTSF=BPTSF+$f_{d/np}$	84.5

Level of Service and Other Performance Measures

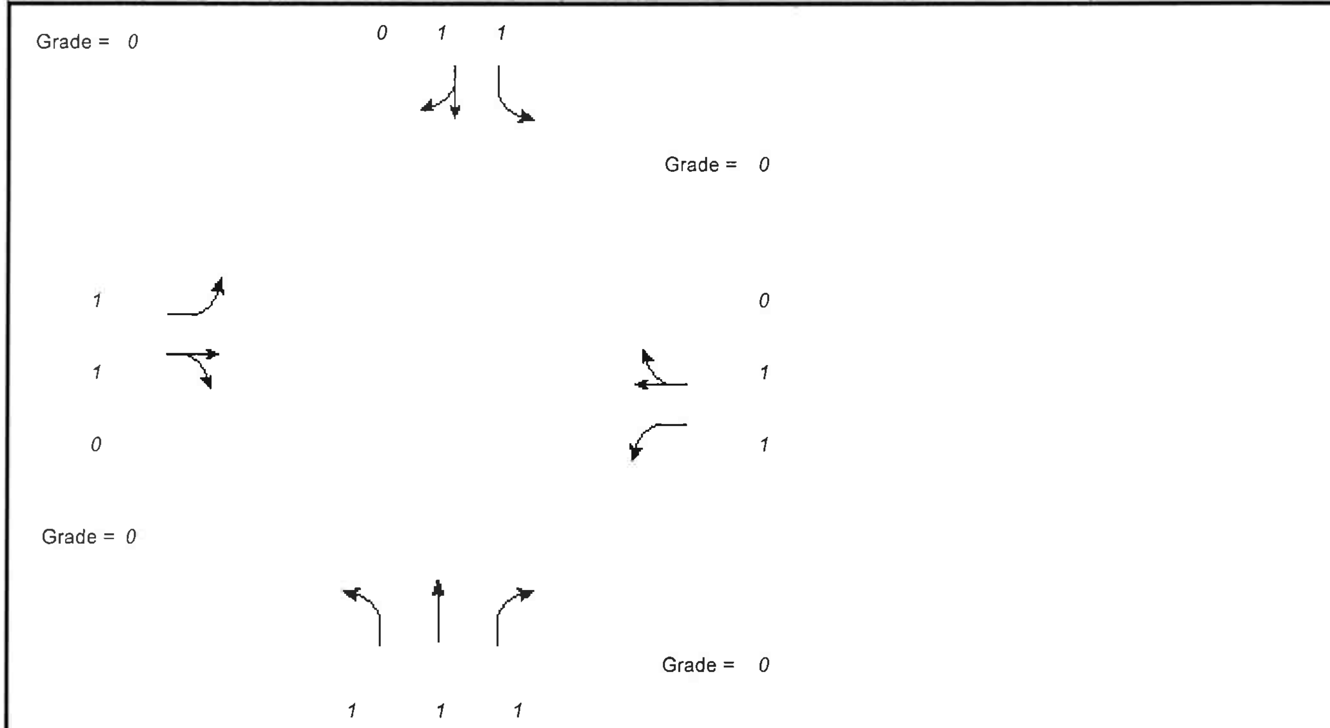
Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio v/c v/c=V_p/ 3,200	0.55
Peak 15-min veh-miles of travel,VMT_{15} (veh- mi) VMT_{15}= 0.25L_t(V/PHF)	175
	645

Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}= VMT_{15}/ATS$	6.7
Notes	
1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.	

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR 106 & SR-248*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*4/23/2008*	Jurisdiction	*City of Franklin*
Time Period	*AM*	Analysis Year	*2033*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	232	651	9	50	281	496	13	444	215	259	175	95
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3		3	3		3	3	3	3	3	
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0		0	0		0	0	0	0	0	
Ped timing	3.2			3.2			3.2			3.2		

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 5.0	G = 35.0	G =	G =	G = 5.0	G = 15.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25					Cycle Length C = 80.0			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	232	651	9	50	281	496	13	444	215	259	175	95
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow Rate	258	723	10	56	312	551	14	493	239	288	194	106
Lane Group	L	TR		L	TR		L	T	R	L	TR	
Adj. flow rate	258	733		56	863		14	493	239	288	300	
Prop. LT or RT	0.000	--	0.014	0.000	--	0.638	0.000	--	0.000	0.000	--	0.353

Saturation Flow Rate

	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Base satflow	1900	1900		1900	1900		1900	1900	1900	1900	1900	
Num. of lanes	1	1	0	1	1	0	1	1	1	1	1	0
fW	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fHV	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fg	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fp	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fbb	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fa	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
fLU	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.100		--	0.100		--	0.202		--	0.200		--
fRT	--	0.998		--	0.904		--	1.000	0.850	--	0.947	
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000		--	1.000		--	1.000	1.000	--	1.000	
Adj. satflow	1805	1896		1805	1718		1805	1900	1615	1805	1799	
Sec. adj. satflow	190		--	190		--	384		--	380		--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	L	TR		L	TR		L	T	R	L	TR	
Adj. flow rate	258	733		56	863		14	493	239	288	300	
Satflow rate	1805	1896		1805	1718		1805	1900	1615	1805	1799	
Lost time	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Green ratio	0.56	0.44		0.56	0.44		0.31	0.19	0.31	0.31	0.19	
Lane group cap.	208	830		208	752		209	356	505	208	337	
v/c ratio	1.24	0.88		0.27	1.15		0.07	1.38	0.47	1.38	0.89	
Flow ratio		0.39			0.44			0.19	0.15		0.17	
Crit. lane group	N	N		N	N		N	N	N	N	N	
Sum flow ratios	1.35											
Lost time/cycle	10.00											
Critical v/c ratio	1.54											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	L	TR		L	TR		L	T	R	L	TR	
Adj. flow rate	258	733		56	863		14	493	239	288	300	
Lane group cap.	208	830		208	752		209	356	505	208	337	
v/c ratio	1.24	0.88		0.27	1.15		0.07	1.38	0.47	1.38	0.89	
Green ratio	0.56	0.44		0.56	0.44		0.31	0.19	0.31	0.31	0.19	
Unif. delay d1	19.5	20.6		14.3	22.5		20.1	32.5	22.2	26.5	31.7	
Delay factor k	0.50	0.50		0.50	0.50		0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	142.2	13.1		3.2	81.6		0.6	189.8	3.2	200.0	27.7	
PF factor	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
Control delay	161.6	33.7		17.5	104.1		20.7	222.3	25.3	226.6	59.4	
Lane group LOS	F	C		B	F		C	F	C	F	E	
Apprch. delay	67.0			98.8			155.4			141.3		
Approach LOS	E			F			F			F		
Intersec. delay	109.8			Intersection LOS						F		

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

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*80.0*			
Prot. phase eff. green intvl, g (s)	*5.0*	*5.0*	*5.0*	*5.0*
Opposed queue eff. green intvl, g_q (s)	*36.00*	*30.91*	*13.00*	*16.00*
Unopposed green intvl, g_u (s)	*4.00*	*9.09*	*7.00*	*4.00*
Red time, r(s)	*35.0*	*35.0*	*55.0*	*55.0*
Arrival rate, q_a (veh/s)	*0.06*	*0.02*	*0.00*	*0.06*
Prot. phase departure rate, s_p (veh/s)	*0.501*	*0.501*	*0.501*	*0.501*
Perm. phase departure rate, s_s (veh/s)	*0.53*	*0.23*	*0.30*	*0.53*
X_{perm}	*1.09*	*0.29*	*0.04*	*0.55*
X_{prot} (N/A for lagging left-turns)	*0.92*	*0.25*	*0.09*	*1.38*

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a	*2.22*	*0.54*	*0.21*	*3.18*
Queue at start of unsaturated green, Q_u	*2.08*	*0.48*	*0.05*	*1.75*
Residual queue, Q_r	*0.20*	*0.00*	*0.00*	*0.96*
Uniform delay, d_1	*19.5*	*14.3*	*20.1*	*26.5*

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

Average Back of Queue

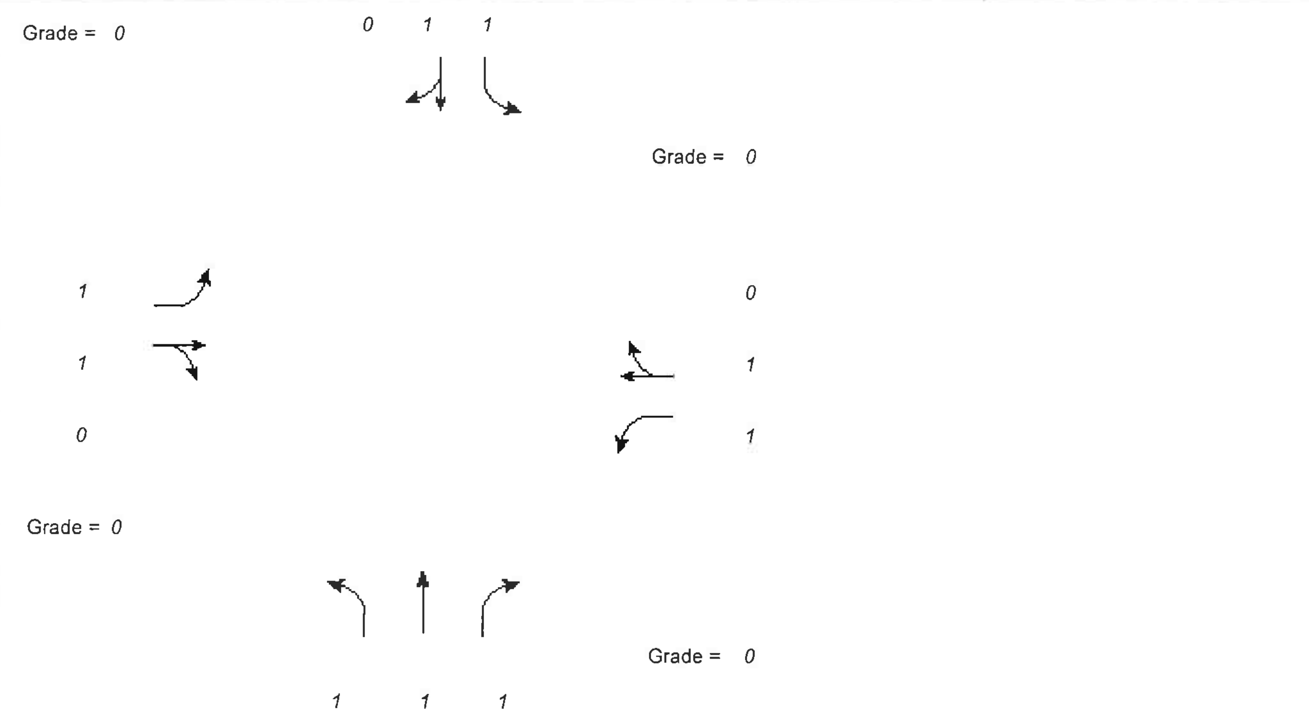
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	TR		L	TR		L	T	R	L	TR	
Init. queue/lane	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Flow rate/lane	258	733		56	863		14	493	239	288	300	
Satflow per lane	369	1896		369	1718		668	1900	1615	665	1799	
Capacity/lane	208	830		208	752		209	356	505	208	337	
Flow ratio	0.70	0.39		0.15	0.50		0.02	0.26	0.15	0.43	0.17	
v/c ratio	1.24	0.88		0.27	1.15		0.07	1.38	0.47	1.38	0.89	
I factor	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
Arrival type	3	3		3	3		3	3	3	3	3	
Platoon ratio	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
PF factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Q_1	2.7	14.9		0.6	19.2		0.2	11.0	4.3	4.7	6.5	
k_B	0.3	0.9		0.3	0.9		0.4	0.5	0.7	0.4	0.5	
Q_2	7.7	5.0		0.1	18.8		0.0	18.8	0.6	11.1	2.6	
Q avg.	10.4	19.9		0.7	38.0		0.2	29.8	4.9	15.8	9.1	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	1.7	1.6		2.5	1.6		2.6	1.6	2.0	1.6	1.8	
BOQ, $Q_{\%}$	17.9	32.2		1.7	60.8		0.6	47.7	9.6	26.0	16.0	
Queue Storage Ratio												
Q spacing	25.0	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	0	
Avg. R_Q												
95% $R_{Q\%}$												

HCS2000™ Version 4.1d

LONG REPORT

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	SR 106 & SR-248
Agency or Co.	Clinard Engineering Associates	Area Type	All other areas
Date Performed	4/23/2008	Jurisdiction	City of Franklin
Time Period	PM	Analysis Year	2033

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	330	518	45	149	314	364	40	477	155	180	286	64
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3		3	3		3	3	3	3	3	
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0		0	0		0	0	0	0	0	
Ped timing	3.2			3.2			3.2			3.2		

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 15.0	G = 30.0	G =	G =	G = 5.0	G = 20.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25					Cycle Length C = 90.0			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	330	518	45	149	314	364	40	477	155	180	286	64
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow Rate	367	576	50	166	349	404	44	530	172	200	318	71
Lane Group	L	TR		L	TR		L	T	R	L	TR	
Adj. flow rate	367	626		166	753		44	530	172	200	389	
Prop. LT or RT	0.000	--	0.080	0.000	--	0.537	0.000	--	0.000	0.000	--	0.183

Saturation Flow Rate

	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Base satflow	1900	1900		1900	1900		1900	1900	1900	1900	1900	
Num. of lanes	1	1	0	1	1	0	1	1	1	1	1	0
fW	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fHV	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fg	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fp	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fbb	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
fa	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
fLU	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.114		--	0.114		--	0.160		--	0.160		--
fRT	--	0.988		--	0.920		--	1.000	0.850	--	0.973	
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000		--	1.000		--	1.000	1.000	--	1.000	
Adj. satflow	1805	1877		1805	1747		1805	1900	1615	1805	1848	
Sec. adj. satflow	217		--	217		--	304		--	304		--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	L	TR		L	TR		L	T	R	L	TR	
Adj. flow rate	367	626		166	753		44	530	172	200	389	
Satflow rate	1805	1877		1805	1747		1805	1900	1615	1805	1848	
Lost time	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Green ratio	0.56	0.33		0.56	0.33		0.33	0.22	0.44	0.33	0.22	
Lane group cap.	385	626		385	582		184	422	718	184	411	
v/c ratio	0.95	1.00		0.43	1.29		0.24	1.26	0.24	1.09	0.95	
Flow ratio		0.33			0.33			0.22	0.11		0.21	
Crit. lane group	N	Y		N	N		N	N	N	N	N	
Sum flow ratios	0.88											
Lost time/cycle	15.00											
Critical v/c ratio	1.06											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	L	TR		L	TR		L	T	R	L	TR	
Adj. flow rate	367	626		166	753		44	530	172	200	389	
Lane group cap.	385	626		385	582		184	422	718	184	411	
v/c ratio	0.95	1.00		0.43	1.29		0.24	1.26	0.24	1.09	0.95	
Green ratio	0.56	0.33		0.56	0.33		0.33	0.22	0.44	0.33	0.22	
Unif. delay d1	25.8	30.0		15.6	30.0		22.6	35.0	15.5	28.7	34.5	
Delay factor k	0.50	0.50		0.50	0.50		0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	35.5	36.0		3.5	144.7		3.0	133.3	0.8	91.5	32.8	
PF factor	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
Control delay	61.3	66.0		19.1	174.7		25.7	168.3	16.3	120.1	67.3	
Lane group LOS	E	E		B	F		C	F	B	F	E	
Apprch. delay	64.2			146.6			124.8			85.2		
Approach LOS	E			F			F			F		
Intersec. delay	105.3			Intersection LOS						F		

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

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	90.0			
Prot. phase eff. green intvl, g (s)	15.0	15.0	5.0	5.0
Opposed queue eff. green intvl, g_q (s)	31.00	31.00	19.30	21.00
Unopposed green intvl, g_u (s)	4.00	4.00	5.70	4.00
Red time, r(s)	40.0	40.0	60.0	60.0
Arrival rate, q_a (veh/s)	0.10	0.05	0.01	0.05
Prot. phase departure rate, s_p (veh/s)	0.501	0.501	0.501	0.501
Perm. phase departure rate, s_s (veh/s)	0.53	0.53	0.37	0.53
X_{perm}	1.69	0.76	0.14	0.61
X_{prot} (N/A for lagging left-turns)	0.75	0.34	0.32	1.33

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a	5.54	1.84	0.73	3.07
Queue at start of unsaturated green, Q_u	3.16	1.43	0.24	1.76
Residual queue, Q_r	1.46	0.00	0.00	0.82
Uniform delay, d_1	25.8	15.6	22.6	28.7

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	TR		L	TR		L	T	R	L	TR	
Init. queue/lane	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Flow rate/lane	367	626		166	753		44	530	172	200	389	
Satflow per lane	693	1877		693	1747		554	1900	1615	554	1848	
Capacity/lane	385	626		385	582		184	422	718	184	411	
Flow ratio	0.53	0.33		0.24	0.43		0.08	0.28	0.11	0.36	0.21	
v/c ratio	0.95	1.00		0.43	1.29		0.24	1.26	0.24	1.09	0.95	
I factor	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	
Arrival type	3	3		3	3		3	3	3	3	3	
Platoon ratio	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
PF factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Q_1	4.8	15.6		2.0	18.8		0.7	13.3	2.7	3.5	9.6	
k_B	0.6	0.8		0.6	0.8		0.4	0.6	0.9	0.4	0.6	
Q_2	4.2	8.0		0.4	24.4		0.1	16.1	0.3	4.1	4.3	
Q avg.	9.0	23.7		2.4	43.2		0.9	29.3	3.0	7.7	13.8	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	1.8	1.6		2.2	1.6		2.4	1.6	2.2	1.8	1.7	
BOQ, $Q_{\%}$	15.9	38.1		5.4	69.2		2.1	47.0	6.4	13.9	23.0	
Queue Storage Ratio												
Q spacing	25.0	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	0	
Avg. R_Q												
95% $R_{Q\%}$												

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Moss*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*			
East/West Street: *Moss Lane*		North/South Street: *Lewisburg Pike*	
Intersection Orientation: *North-South*		Study Period (hrs): *0.25*	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*20*	*964*	*0*	*0*	*552*	*11*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*21*	*1047*	*0*	*0*	*599*	*11*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*53*	*0*	*29*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*57*	*0*	*31*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*21*						*88*	
C (m) (vph)	*979*						*141*	
v/c	*0.02*						*0.62*	
95% queue length	*0.07*						*3.32*	
Control Delay	*8.8*						*65.6*	
LOS	*A*						*F*	
Approach Delay	--	--				*65.6*		
Approach LOS	--	--				*F*		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Moss
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	PM		

Project Description State Route 106 (Lewisburg Pike) TPR	
East/West Street: Moss Lane	North/South Street: Lewisburg Pike
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	11	519	0	0	1025	21
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	11	564	0	0	1114	22
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L	T				TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	15	0	29
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	16	0	31
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L						LR	
v (vph)	11						47	
C (m) (vph)	622						165	
v/c	0.02						0.28	
95% queue length	0.05						1.11	
Control Delay	10.9						35.3	
LOS	B						E	
Approach Delay	--	--				35.3		
Approach LOS	--	--				E		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Poplar
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	AM		

Project Description State Route 106 (Lewisburg Pike) TPR	
East/West Street: Poplar Street	North/South Street: Lewisburg Pike
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	21	1025	0	0	559	11
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	22	1114	0	0	607	11
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	8	0	5
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	8	0	5
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	22						13	
C (m) (vph)	972						133	
v/c	0.02						0.10	
95% queue length	0.07						0.32	
Control Delay	8.8						35.0	
LOS	A						D	
Approach Delay	--	--				35.0		
Approach LOS	--	--				D		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Poplar*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Poplar Street*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*11*	*552*	*0*	*0*	*1038*	*21*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*11*	*599*	*0*	*0*	*1128*	*22*
Percent Heavy Vehicles	*0*	*--*	*--*	*0*	*--*	*--*
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*2*	*0*	*5*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*2*	*0*	*5*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (vph)	*11*						*7*	
C (m) (vph)	*615*						*167*	
v/c	*0.02*						*0.04*	
95% queue length	*0.05*						*0.13*	
Control Delay	*11.0*						*27.5*	
LOS	*B*						*D*	
Approach Delay	*--*	*--*				*27.5*		
Approach LOS	*--*	*--*				*D*		

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*Brian Gaffney*
Agency/Co.	*Clinard Engineering*
Date Performed	*4/23/2008*
Analysis Time Period	*AM*

Site Information

Intersection	*Lewisburg Pike & Soloman*
Jurisdiction	*City of Franklin*
Analysis Year	*2033*

Project Description *State Route 106 (Lewisburg Pike) TPR*

East/West Street: *Soloman Drive* | North/South Street: *Lewisburg Pike*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*21*	*1038*	*0*	*0*	*571*	*12*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*22*	*1128*	*0*	*0*	*620*	*13*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*25*	*0*	*14*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*27*	*0*	*15*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (vph)	*22*						*42*	
C (m) (vph)	*960*						*123*	
v/c	*0.02*						*0.34*	
95% queue length	*0.07*						*1.37*	
Control Delay	*8.8*						*48.7*	
LOS	*A*						*E*	
Approach Delay	--	--				*48.7*		
Approach LOS	--	--				*E*		

HCS2000™ Version 4.1d

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Soloman*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Soloman Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*11*	*559*	*0*	*0*	*1060*	*22*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*11*	*607*	*0*	*0*	*1152*	*23*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*7*	*0*	*14*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*7*	*0*	*15*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (vph)	*11*						*22*	
C (m) (vph)	*602*						*155*	
v/c	*0.02*						*0.14*	
95% queue length	*0.06*						*0.48*	
Control Delay	*11.1*						*32.0*	
LOS	*B*						*D*	
Approach Delay	--	--				*32.0*		
Approach LOS	--	--				*D*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Peytonsville*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*

East/West Street:	*Old Peytonsville Rd*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	1047	32	53	432	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	1138	34	57	469	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5	0	21	0	0	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	5	0	22	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		57		27				
C (m) (vph)		603		183				
v/c		0.09		0.15				
95% queue length		0.31		0.51				
Control Delay		11.6		28.0				
LOS		B		D				
Approach Delay	--	--	28.0					
Approach LOS	--	--	D					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Peytonsville
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	PM		

Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Old Peytonsville Rd	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	569	12	18	884	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	618	13	19	960	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	11	0	37	0	0	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	11	0	40	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		19		51				
C (m) (vph)		961		283				
v/c		0.02		0.18				
95% queue length		0.06		0.65				
Control Delay		8.8		20.5				
LOS		A		C				
Approach Delay	--	--	20.5					
Approach LOS	--	--	C					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Henpeck
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	AM		
Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Henpeck Lane	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	135	766	11	18	386	68
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	146	832	0	0	419	73
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L	T				TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	6	126	0	167
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	136	0	181
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	146					136		181
C (m) (vph)	1082					105		609
v/c	0.13					1.30		0.30
95% queue length	0.47					9.34		1.24
Control Delay	8.8					261.9		13.4
LOS	A					F		B
Approach Delay	--	--				120.0		
Approach LOS	--	--				F		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Henpeck
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	PM		

Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Henpeck Lane	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	107	379	11	18	776	67
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	116	411	0	0	843	72
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L	T				TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	6	74	0	165
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	80	0	179
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	116					80		179
C (m) (vph)	754					112		350
v/c	0.15					0.71		0.51
95% queue length	0.54					3.83		2.78
Control Delay	10.6					93.1		25.6
LOS	B					F		D
Approach Delay	--	--				46.4		
Approach LOS	--	--				E		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Douglas Glenn*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*	
East/West Street: *Douglas Glenn Lane*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*17*	*828*	*0*	*0*	*446*	*9*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*18*	*899*	*0*	*0*	*484*	*9*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*16*	*0*	*9*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*17*	*0*	*9*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (vph)	*18*						*26*	
C (m) (vph)	*1081*						*200*	
v/c	*0.02*						*0.13*	
95% queue length	*0.05*						*0.44*	
Control Delay	*8.4*						*25.7*	
LOS	*A*						*D*	
Approach Delay	--	--				*25.7*		
Approach LOS	--	--				*D*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Douglas Glenn*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Douglas Glenn Lane*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	9	446	0	0	828	17
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	9	484	0	0	899	18
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	13	0	7
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	14	0	7
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	9						21	
C (m) (vph)	752						186	
v/c	0.01						0.11	
95% queue length	0.04						0.38	
Control Delay	9.8						26.8	
LOS	A						D	
Approach Delay	--	--				26.8		
Approach LOS	--	--				D		

HCS2000™ Version 4.1d

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Ellington
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	AM		

Project Description: State Route 106 (Lewisburg Pike) TPR

East/West Street: Ellington Drive — North/South Street: Lewisburg Pike

Intersection Orientation: North-South — Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	45	827	17	4	394	22
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	898	18	4	428	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	28	0	23	12	0	16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	30	0	24	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		4		54				
C (m) (vph)		753		216				
v/c		0.01		0.25				
95% queue length		0.02		0.95				
Control Delay		9.8		27.1				
LOS		A		D				
Approach Delay	--	--		27.1				
Approach LOS	--	--		D				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Ellington*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*
East/West Street: *Ellington Drive*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	45	436	18	28	900	22
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	473	19	30	978	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	27	0	25	12	0	16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	29	0	27	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		30		56				
C (m) (vph)		1082		206				
v/c		0.03		0.27				
95% queue length		0.09		1.06				
Control Delay		8.4		28.9				
LOS		A		D				
Approach Delay	--	--	28.9					
Approach LOS	--	--	D					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & St Georges*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*St. George's Way*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*45*	*919*	*9*	*8*	*410*	*22*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*998*	*9*	*8*	*445*	*0*
Percent Heavy Vehicles	*0*	*--*	*--*	*0*	*--*	*--*
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*15*	*0*	*37*	*12*	*0*	*16*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*16*	*0*	*40*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (vph)		*8*		*56*				
C (m) (vph)		*696*		*226*				
v/c		*0.01*		*0.25*				
95% queue length		*0.03*		*0.95*				
Control Delay		*10.2*		*26.1*				
LOS		*B*		*D*				
Approach Delay	*--*	*--*	*26.1*					
Approach LOS	*--*	*--*	*D*					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & St Georges*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*
East/West Street: *St. George's Way*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	45	390	8	29	947	22
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	423	8	31	1029	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	4	0	19	12	0	16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	4	0	20	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		31		24				
C (m) (vph)		1139		382				
v/c		0.03		0.06				
95% queue length		0.08		0.20				
Control Delay		8.2		15.1				
LOS		A		C				
Approach Delay	--	--	15.1					
Approach LOS	--	--	C					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Bowman
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	AM		

Project Description State Route 106 (Lewisburg Pike) TPR

East/West Street:	Bowman Road	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10	966	4	0	410	17
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	10	1049	0	0	445	18
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	14	102	0	26
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	110	0	28
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	10						138	
C (m) (vph)	1109						155	
v/c	0.01						0.89	
95% queue length	0.03						6.21	
Control Delay	8.3						103.1	
LOS	A						F	
Approach Delay	--	--				103.1		
Approach LOS	--	--				F		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Bowman*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Bowman Road*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	13	406	4	0	937	60
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	14	441	0	0	1018	65
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	14	46	0	9
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	49	0	9
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	14						58	
C (m) (vph)	652						141	
v/c	0.02						0.41	
95% queue length	0.07						1.79	
Control Delay	10.6						47.3	
LOS	B						E	
Approach Delay	--	--				47.3		
Approach LOS	--	--				E		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Holly Hill*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*
East/West Street: *Holly Hill Drive*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*4*	*987*	*10*	*20*	*376*	*7*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*1072*	*10*	*21*	*408*	*0*
Percent Heavy Vehicles	*0*	*--*	*--*	*0*	*--*	*--*
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*9*	*0*	*69*	*32*	*0*	*8*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*9*	*0*	*74*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (vph)		*21*		*83*				
C (m) (vph)		*652*		*240*				
v/c		*0.03*		*0.35*				
95% queue length		*0.10*		*1.48*				
Control Delay		*10.7*		*27.7*				
LOS		*B*		*D*				
Approach Delay	*--*	*--*	*27.7*					
Approach LOS	*--*	*--*	*D*					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Holly Hill
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	PM		
Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Holly Hill Drive	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	419	9	46	878	7
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	455	9	49	954	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	36	32	0	8
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	6	0	39	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		49		45				
C (m) (vph)		1108		404				
v/c		0.04		0.11				
95% queue length		0.14		0.37				
Control Delay		8.4		15.0				
LOS		A		C				
Approach Delay	--	--	15.0					
Approach LOS	--	--	C					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Donelson
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	AM		

Project Description: State Route 106 (Lewisburg Pike) TPR

East/West Street: Donelson Creek Parkway	North/South Street: Lewisburg Pike
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	185	740	4	9	365	45
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	201	804	0	0	396	48
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	1
Configuration	L	T			T	R
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	3	0	24	89	0	92
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	96	0	99
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	201					96		99
C (m) (vph)	1127					97		658
v/c	0.18					0.99		0.15
95% queue length	0.65					5.94		0.53
Control Delay	8.9					168.4		11.4
LOS	A					F		B
Approach Delay	--	--				88.7		
Approach LOS	--	--				F		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Donelson
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	PM		

Project Description State Route 106 (Lewisburg Pike) TPR

East/West Street: Donelson Creek Parkway	North/South Street: Lewisburg Pike
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	87	309	4	9	861	96
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	94	335	0	0	935	104
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	1
Configuration	L	T			T	R
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	3	0	24	77	0	259
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	83	0	281
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	94					83		281
C (m) (vph)	677					124		325
v/c	0.14					0.67		0.86
95% queue length	0.48					3.58		7.88
Control Delay	11.2					79.1		58.0
LOS	B					F		F
Approach Delay	--	--				62.8		
Approach LOS	--	--				F		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Dallas*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Dallas Blvd/ School Entrance*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10	938	10	140	319	24
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	10	1019	10	152	346	26
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	4	0	68	165	0	67
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	4	0	73	179	0	72
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (vph)	10	152		77		179		72
C (m) (vph)	1198	683		232		43		702
v/c	0.01	0.22		0.33		4.16		0.10
95% queue length	0.03	0.85		1.39		20.31		0.34
Control Delay	8.0	11.8		28.0		1615		10.7
LOS	A	B		D		F		B
Approach Delay	--	--	28.0			1155		
Approach LOS	--	--	D			F		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Dallas
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	PM		

Project Description *State Route 106 (Lewisburg Pike) TPR*

East/West Street: *Dallas Blvd/ School Entrance* — North/South Street: *Lewisburg Pike*

Intersection Orientation: *North-South* — Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	33	373	4	56	960	113
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	35	405	4	60	1043	122
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	8	0	79	77	0	23
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	8	0	85	83	0	24
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (vph)	35	60		93		83		24
C (m) (vph)	607	1161		352		61		281
v/c	0.06	0.05		0.26		1.36		0.09
95% queue length	0.18	0.16		1.04		7.12		0.28
Control Delay	11.3	8.3		18.9		351.9		19.0
LOS	B	A		C		F		C
Approach Delay	--	--	18.9			277.2		
Approach LOS	--	--	C			F		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Moores Landin*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Moores Landing Subd.*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	1118	11	15	476	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	1215	11	16	517	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration			TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	10	0	23	0	0	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	10	0	24	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		16		34				
C (m) (vph)		576		155				
v/c		0.03		0.22				
95% queue length		0.09		0.80				
Control Delay		11.4		34.6				
LOS		B		D				
Approach Delay	--	--	34.6					
Approach LOS	--	--	D					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Moores Landin
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	PM		

Project Description State Route 106 (Lewisburg Pike) TPR	
East/West Street: Moores Landing Subd.	North/South Street: Lewisburg Pike
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	479	5	34	1110	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	520	5	36	1206	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration			TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	28	0	12	0	0	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	30	0	13	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		36		43				
C (m) (vph)		1052		116				
v/c		0.03		0.37				
95% queue length		0.11		1.52				
Control Delay		8.5		53.3				
LOS		A		F				
Approach Delay	--	--	53.3					
Approach LOS	--	--	F					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Essex*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Essex Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*11*	*1133*	*0*	*0*	*460*	*14*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*11*	*1231*	*0*	*0*	*499*	*15*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*68*	*0*	*29*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*73*	*0*	*31*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (vph)	*11*						*104*	
C (m) (vph)	*1062*						*124*	
v/c	*0.01*						*0.84*	
95% queue length	*0.03*						*5.12*	
Control Delay	*8.4*						*108.5*	
LOS	*A*						*F*	
Approach Delay	--	--				*108.5*		
Approach LOS	--	--				*F*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Essex*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Essex Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*5*	*486*	*0*	*0*	*1074*	*33*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*5*	*528*	*0*	*0*	*1167*	*35*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*16*	*0*	*37*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*17*	*0*	*40*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (vph)	*5*						*57*	
C (m) (vph)	*588*						*165*	
v/c	*0.01*						*0.35*	
95% queue length	*0.03*						*1.43*	
Control Delay	*11.2*						*37.9*	
LOS	*B*						*E*	
Approach Delay	--	--				*37.9*		
Approach LOS	--	--				*E*		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Gardner*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*	
East/West Street: *Gardner Drive*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*1096*	*11*	*15*	*468*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*1191*	*11*	*16*	*508*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*1*	*1*	*0*
Configuration			*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*3*	*0*	*7*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*3*	*0*	*7*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (vph)		*16*		*10*				
C (m) (vph)		*588*		*160*				
v/c		*0.03*		*0.06*				
95% queue length		*0.08*		*0.20*				
Control Delay		*11.3*		*29.0*				
LOS		*B*		*D*				
Approach Delay	--	--	*29.0*					
Approach LOS	--	--	*D*					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Gardner
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	PM		

Project Description	State Route 106 (Lewisburg Pike) TPR
East/West Street: Gardner Drive	North/South Street: Lewisburg Pike
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	470	5	34	1095	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	510	5	36	1190	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration			TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	7	0	3	0	0	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	7	0	3	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

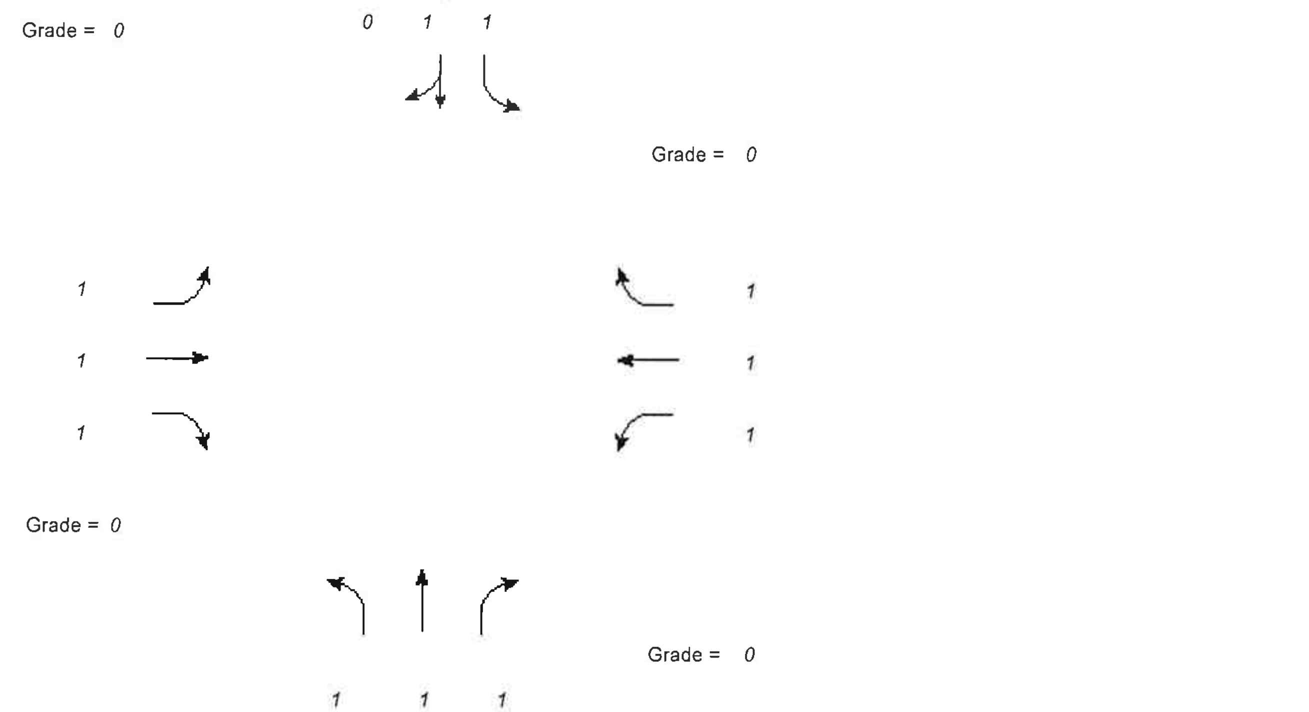
Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		36		10				
C (m) (vph)		1061		119				
v/c		0.03		0.08				
95% queue length		0.11		0.27				
Control Delay		8.5		38.0				
LOS		A		E				
Approach Delay	--	--	38.0					
Approach LOS	--	--	E					

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR 106 & Mack Hatcher*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*4/23/2008*	Jurisdiction	*City of Franklin*
Time Period	*AM*	Analysis Year	*2033*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	12	1167	49	567	1406	295	34	271	824	161	104	8
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	
Ped timing	3.2			3.2			3.2			3.2		

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 5.0	G = 80.0	G =	G =	G = 5.0	G = 15.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25					Cycle Length C = 125.0			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	12	1167	49	567	1406	295	34	271	824	161	104	8
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow Rate	13	1268	53	616	1528	321	37	295	896	175	113	9
Lane Group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	13	1268	53	616	1528	321	37	295	896	175	122	
Prop. LT or RT	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000	0.000	--	0.074

Saturation Flow Rate

	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Base satflow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Num. of lanes	1	1	1	1	1	1	1	1	1	1	1	0
fW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fHV	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fg	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fp	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fbb	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fa	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
fLU	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.047		--	0.047		--	0.407		--	0.200		--
fRT	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850	--	0.989	
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	
Adj. satflow	1805	1900	1615	1805	1900	1615	1805	1900	1615	1805	1879	
Sec. adj. satflow	89		--	89		--	774		--	380		--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

Capacity Analysis

	EB			WB			NB			SB	
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*
Adj. flow rate	*13*	*1268*	*53*	*616*	*1528*	*321*	*37*	*295*	*896*	*175*	*122*
Satflow rate	*1805*	*1900*	*1615*	*1805*	*1900*	*1615*	*1805*	*1900*	*1615*	*1805*	*1879*
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Green ratio	*0.72*	*0.64*	*0.88*	*0.72*	*0.64*	*0.88*	*0.20*	*0.12*	*0.88*	*0.20*	*0.12*
Lane group cap.	*133*	*1216*	*1421*	*133*	*1216*	*1421*	*196*	*228*	*1421*	*133*	*225*
v/c ratio	*0.10*	*1.04*	*0.04*	*4.63*	*1.26*	*0.23*	*0.19*	*1.29*	*0.63*	*1.32*	*0.54*
Flow ratio		*0.64*	*0.03*		*0.64*	*0.20*		*0.12*	*0.55*		*0.06*
Crit. lane group	*N*	*N*	*N*	*N*	*N*	*N*	*N*	*N*	*N*	*N*	*N*
Sum flow ratios	*6.46*										
Lost time/cycle	*10.00*										
Critical v/c ratio	*7.03*										

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB	
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*
Adj. flow rate	*13*	*1268*	*53*	*616*	*1528*	*321*	*37*	*295*	*896*	*175*	*122*
Lane group cap.	*133*	*1216*	*1421*	*133*	*1216*	*1421*	*196*	*228*	*1421*	*133*	*225*
v/c ratio	*0.10*	*1.04*	*0.04*	*4.63*	*1.26*	*0.23*	*0.19*	*1.29*	*0.63*	*1.32*	*0.54*
Green ratio	*0.72*	*0.64*	*0.88*	*0.72*	*0.64*	*0.88*	*0.20*	*0.12*	*0.88*	*0.20*	*0.12*
Unif. delay d1	*31.4*	*22.5*	*0.9*	*42.0*	*22.5*	*1.1*	*41.1*	*55.0*	*2.0*	*49.0*	*51.8*
Delay factor k	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*
Increm. delay d2	*1.5*	*37.7*	*0.0*	*1651*	*122.3*	*0.4*	*2.1*	*160.8*	*2.1*	*185.3*	*9.1*
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
Control delay	*32.8*	*60.2*	*1.0*	*1693*	*144.8*	*1.5*	*43.2*	*215.8*	*4.2*	*234.4*	*60.8*
Lane group LOS	*C*	*E*	*A*	*F*	*F*	*A*	*D*	*F*	*A*	*F*	*E*
Apprch. delay	*57.6*			*513.1*			*56.2*			*163.1*	
Approach LOS	*E*			*F*			*E*			*F*	
Intersec. delay	*274.0*			Intersection LOS						*F*	

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

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*125.0*			
Prot. phase eff. green intvl, g (s)	*5.0*	*5.0*	*5.0*	*5.0*
Opposed queue eff. green intvl, g_q (s)	*81.00*	*81.00*	*8.00*	*16.00*
Unopposed green intvl, g_u (s)	*4.00*	*4.00*	*12.00*	*4.00*
Red time, r(s)	*35.0*	*35.0*	*100.0*	*100.0*
Arrival rate, q_a (veh/s)	*0.00*	*0.04*	*0.01*	*0.04*
Prot. phase departure rate, s_p (veh/s)	*0.501*	*0.501*	*0.501*	*0.501*
Perm. phase departure rate, s_s (veh/s)	*0.53*	*0.53*	*0.36*	*0.53*
X_{perm}	*0.15*	*1.49*	*0.05*	*0.35*
X_{prot} (N/A for lagging left-turns)	*0.06*	*0.59*	*0.43*	*1.55*

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a	*0.13*	*2.33*	*1.03*	*3.69*
Queue at start of unsaturated green, Q_u	*0.29*	*2.99*	*0.08*	*1.83*
Residual queue, Q_r	*0.00*	*1.04*	*0.00*	*1.37*
Uniform delay, d_1	*31.4*	*42.0*	*41.1*	*49.0*

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

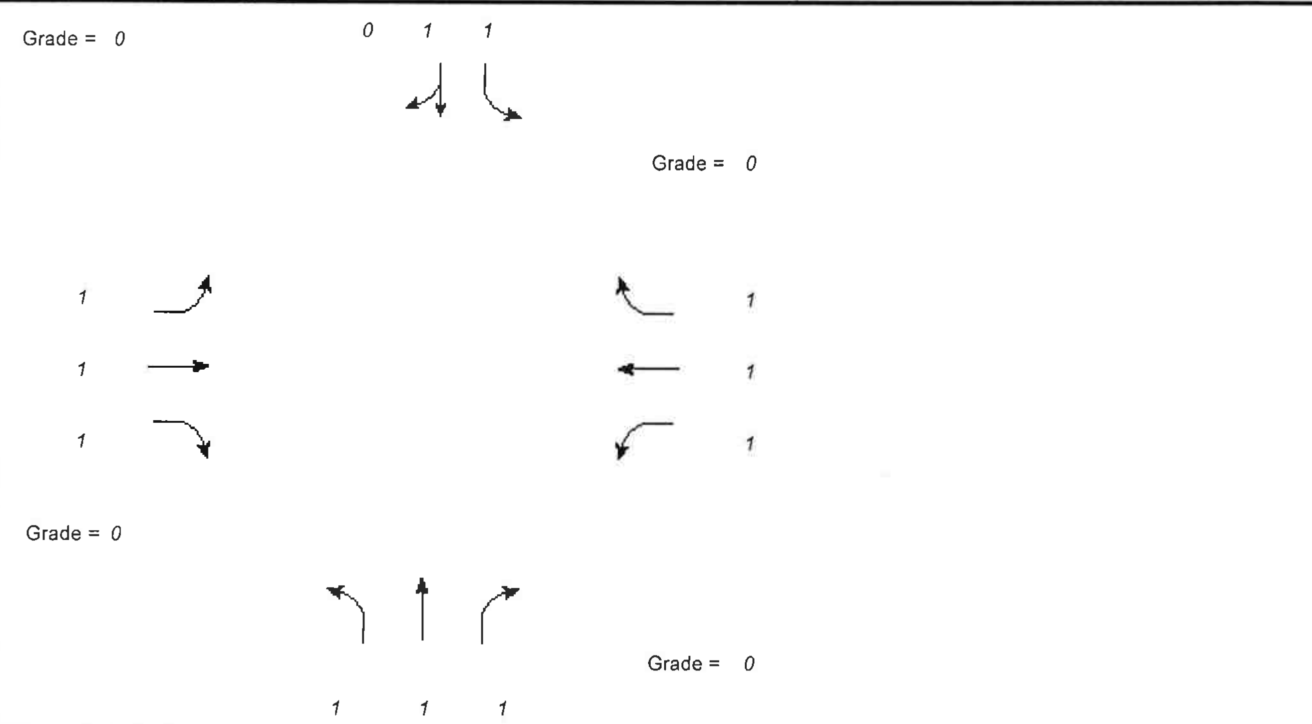
Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Init. queue/lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Flow rate/lane	13	1268	53	616	1528	321	37	295	896	175	122	
Satflow per lane	184	1900	1615	184	1900	1615	980	1900	1615	665	1879	
Capacity/lane	133	1216	1421	133	1216	1421	196	228	1421	133	225	
Flow ratio	0.07	0.67	0.03	3.35	0.80	0.20	0.04	0.16	0.55	0.26	0.06	
v/c ratio	0.10	1.04	0.04	4.63	1.26	0.23	0.19	1.29	0.63	1.32	0.54	
I factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Q_1	0.1	44.0	0.2	6.2	53.1	1.7	1.0	10.2	8.4	5.1	4.0	
k_B	0.3	1.6	1.8	0.3	1.6	1.8	0.5	0.5	1.8	0.4	0.5	
Q_2	0.0	19.7	0.1	60.8	45.9	0.5	0.1	10.2	3.0	6.4	0.6	
Q avg.	0.2	63.8	0.3	67.1	98.9	2.2	1.1	20.5	11.4	11.5	4.6	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	2.6	1.6	2.5	1.6	1.6	2.2	2.4	1.6	1.7	1.7	2.0	
BOQ, $Q_{\%}$	0.4	102	0.8	107	158	4.9	2.7	33.1	19.4	19.6	9.1	
Queue Storage Ratio												
Q spacing	25.0	25.0	25.0	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	0	0	0	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR 106 & Mack Hatcher*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*4/23/2008*	Jurisdiction	*City of Franklin*
Time Period	*PM*	Analysis Year	*2033*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	46	2031	205	537	611	73	44	82	358	172	434	32
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	
Ped timing		3.2			3.2			3.2			3.2	

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 15.0	G = 50.0	G =	G =	G = 5.0	G = 15.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 105.0		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	46	2031	205	537	611	73	44	82	358	172	434	32
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow Rate	50	2208	223	584	664	79	48	89	389	187	472	35
Lane Group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	50	2208	223	584	664	79	48	89	389	187	507	
Prop. LT or RT	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000	0.000	--	0.069

Saturation Flow Rate

	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Base satflow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Num. of lanes	1	1	1	1	1	1	1	1	1	1	1	0
fW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fHV	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fg	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fp	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fbb	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fa	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
fLU	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.171		--			--	0.200		--	0.524		--
fRT	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850	--	0.990	
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	
Adj. satflow	1805	1900	1615	1805	1900	1615	1805	1900	1615	1805	1880	
Sec. adj. satflow	326		--			--	380		--	996		--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	50	2208	223	584	664	79	48	89	389	187	507	
Satflow rate	1805	1900	1615	1805	1900	1615	1805	1900	1615	1805	1880	
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Green ratio	0.67	0.48	0.76	0.67	0.48	0.76	0.24	0.14	0.86	0.24	0.14	
Lane group cap.	429	905	1230		905	1230	158	271	1384	276	269	
v/c ratio	0.12	2.44	0.18		0.73	0.06	0.30	0.33	0.28	0.68	1.88	
Flow ratio		0.48	0.14		0.35	0.05		0.05	0.24		0.14	
Crit. lane group	N	N	N	N	N	N	N	N	N	N	N	
Sum flow ratios	0.00											
Lost time/cycle	0.00											
Critical v/c ratio	0.00											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	50	2208	223	584	664	79	48	89	389	187	507	
Lane group cap.	429	905	1230		905	1230	158	271	1384	276	269	
v/c ratio	0.12	2.44	0.18		0.73	0.06	0.30	0.33	0.28	0.68	1.88	
Green ratio	0.67	0.48	0.76	0.67	0.48	0.76	0.24	0.14	0.86	0.24	0.14	
Unif. delay d1	11.3	27.5	3.5		22.1	3.1	32.6	40.5	1.4	37.7	45.0	
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	0.6	651.3	0.3		5.2	0.1	4.9	3.2	0.5	12.6	411.9	
PF factor	1.000	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	11.8	678.8	3.8		27.4	3.2	37.5	43.7	1.9	50.4	456.9	
Lane group LOS	B	F	A		C	A	D	D	A	D	F	
Apprch. delay	604.6						12.2			347.4		
Approach LOS	F						B			F		
Intersec. delay				Intersection LOS								

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

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*105.0*			
Prot. phase eff. green intvl, g (s)	*15.0*	*15.0*	*5.0*	*5.0*
Opposed queue eff. green intvl, g_q (s)	*32.15*		*16.00*	*5.00*
Unopposed green intvl, g_u (s)	*22.85*		*4.00*	*15.00*
Red time, r(s)	*35.0*		*80.0*	*80.0*
Arrival rate, q_a (veh/s)	*0.01*		*0.01*	*0.05*
Prot. phase departure rate, s_p (veh/s)	*0.501*	*0.501*	*0.501*	*0.501*
Perm. phase departure rate, s_s (veh/s)	*0.22*		*0.53*	*0.37*
X_{perm}	*0.15*		*0.13*	*0.19*
X_{prot} (N/A for lagging left-turns)	*0.09*		*0.45*	*1.76*
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a	*0.49*		*1.07*	*4.16*
Queue at start of unsaturated green, Q_u	*0.45*		*0.21*	*2.83*
Residual queue, Q_r	*0.00*		*0.00*	*1.91*
Uniform delay, d_1	*11.3*		*32.6*	*37.7*

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Init. queue/lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Flow rate/lane	50	2208	223	584	664	79	48	89	389	187	507	
Satflow per lane	643	1900	1615		1900	1615	665	1900	1615	1158	1880	
Capacity/lane	429	905	1230		905	1230	158	271	1384	276	269	
Flow ratio	0.08	1.16	0.14		0.35	0.05	0.07	0.05	0.24	0.16	0.27	
v/c ratio	0.12	2.44	0.18		0.73	0.06	0.30	0.33	0.28	0.68	1.88	
I factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Q_1	0.5	64.4	1.8		15.6	0.6	1.1	2.3	2.1	4.3	14.8	
k_B	0.7	1.2	1.5		1.2	1.5	0.4	0.5	1.6	0.5	0.5	
Q_2	0.1	164.9	0.3		3.0	0.1	0.2	0.2	0.6	1.0	30.8	
Q avg.	0.6	229.3	2.1		18.6	0.7	1.2	2.6	2.8	5.3	45.6	

Percentile Back of Queue (95th percentile)

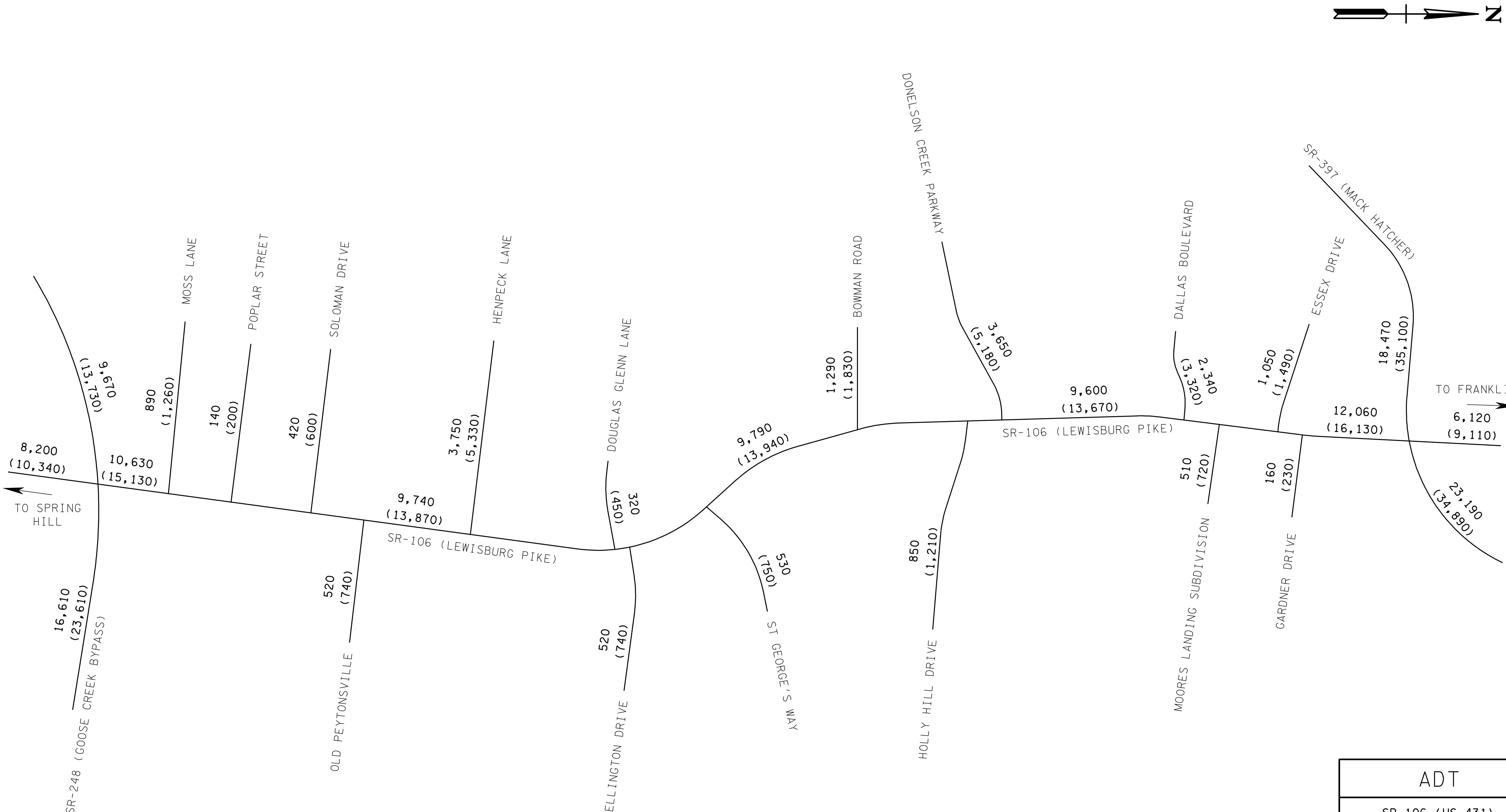
	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
$f_{B\%}$	2.5	1.6	2.3		1.6	2.5	2.4	2.2	2.2	1.9	1.6	
BOQ, $Q_{\%}$	1.5	367	4.8		30.2	1.7	2.9	5.7	6.0	10.3	72.9	

Queue Storage Ratio

	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Q spacing	25.0	25.0	25.0	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	0	0	0	
Avg. R_Q												
95% $R_{Q\%}$												

HCS2000™ Version 4.1d

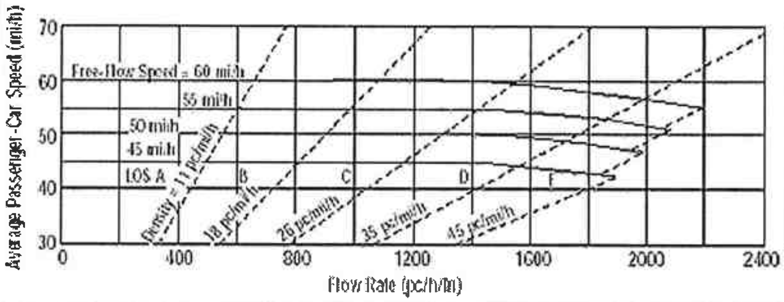
TRAFFIC ANALYSIS
PROPOSED CONDITIONS
2013 AND 2033



ADT

SR-106 (US-431)
LEWISBURG PIKE
FROM GOOSE CREEK BYPASS
TO MACK HATCHER PARKWAY
2013
(2033)
WILLIAMSON COUNTY
N.T.S.

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	SR 248 to old Peytonsville
Jurisdiction	Williamson County
Analysis Year	2013

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	691	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	9
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	2.3
f_M (mi/h)	0.0
FFS (mi/h)	46.8

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	381
Speed, S (mi/h)	46.8
D (pc/mi/ln)	8.1
LOS	A

Design

Design (N)

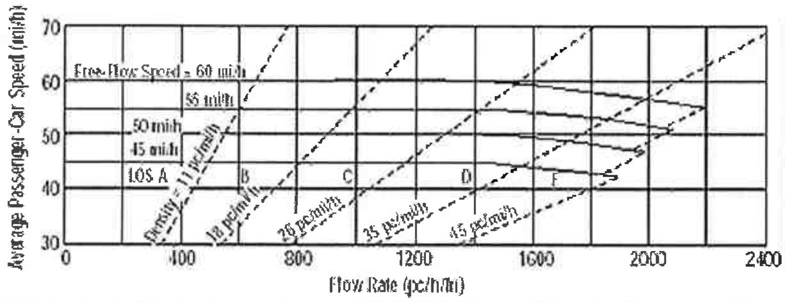
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	SR 248 to old Peytonsville
Jurisdiction	Williamson County
Analysis Year	2013

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	372	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	9
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	2.3
f_M (mi/h)	0.0
FFS (mi/h)	46.8

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	205
Speed, S (mi/h)	46.8
D (pc/mi/ln)	4.4
LOS	A

Design

Design (N)

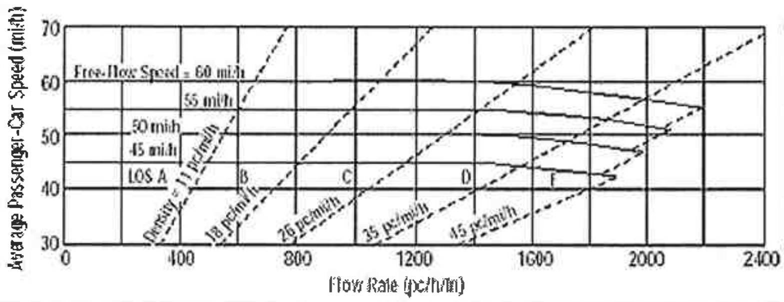
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	old Peytonsville to Henpeck Ln
Jurisdiction	Williamson County
Analysis Year	2013

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	633	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	14
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	3.5
f_M (mi/h)	0.0
FFS (mi/h)	45.6

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	349
Speed, S (mi/h)	45.6
D (pc/mi/ln)	7.7
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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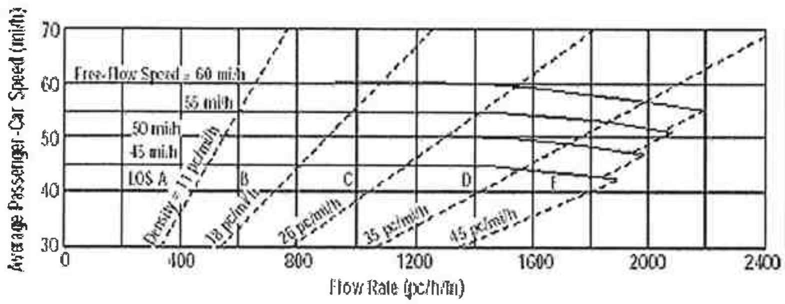
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	old Peytonsville to Henpeck Ln
Jurisdiction	Williamson County
Analysis Year	2013

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	341	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	14
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	3.5
f_M (mi/h)	0.0
FFS (mi/h)	45.6

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	188
Speed, S (mi/h)	45.6
D (pc/mi/ln)	4.1
LOS	A

Design

Design (N)

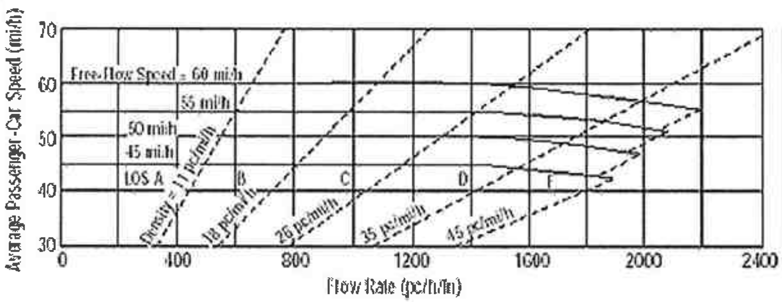
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	Henpeck Ln to Bowman Rd
Jurisdiction	Williamson County
Analysis Year	2013

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	685	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	17
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	4.3
f_M (mi/h)	0.0
FFS (mi/h)	44.8

Operations

Operational (LOS)

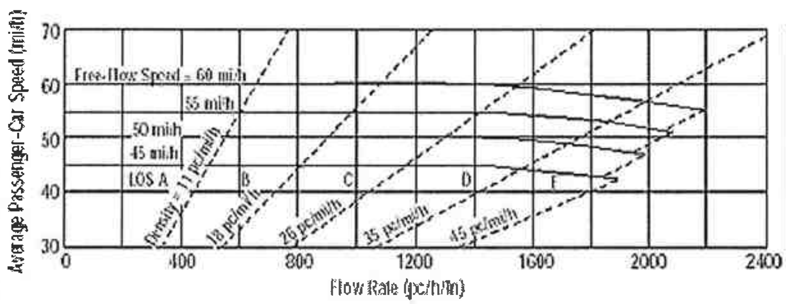
Flow Rate, v_p (pc/h/ln)	377
Speed, S (mi/h)	
D (pc/mi/ln)	
LOS	

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	Henpeck Ln to Bowman Rd
Jurisdiction	Williamson County
Analysis Year	2013

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	294	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	17
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	4.3
f_M (mi/h)	0.0
FFS (mi/h)	44.8

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	162
Speed, S (mi/h)	
D (pc/mi/ln)	
LOS	

Design

Design (N)

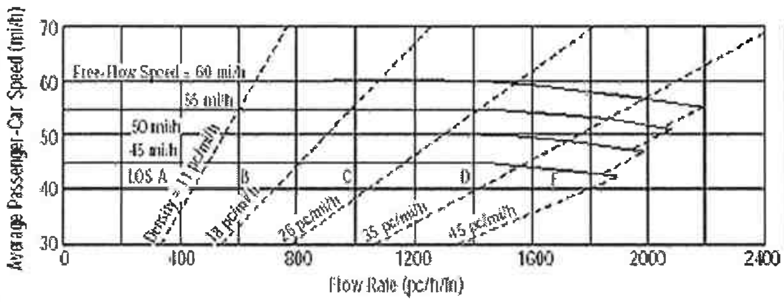
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	Bowman Rd to Dallas Blvd
Jurisdiction	Williamson County
Analysis Year	2013

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	672	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	13
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	3.3
f_M (mi/h)	0.0
FFS (mi/h)	45.8

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	370
Speed, S (mi/h)	45.8
D (pc/mi/ln)	8.1
LOS	A

Design

Design (N)

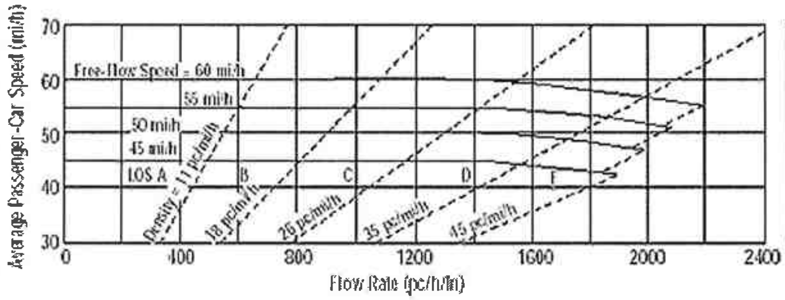
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	Bowman Rd to Dallas Blvd
Jurisdiction	Williamson County
Analysis Year	2013

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	288	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	13
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	3.3
f_M (mi/h)	0.0
FFS (mi/h)	45.8

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	158
Speed, S (mi/h)	45.8
D (pc/mi/ln)	3.4
LOS	A

Design

Design (N)

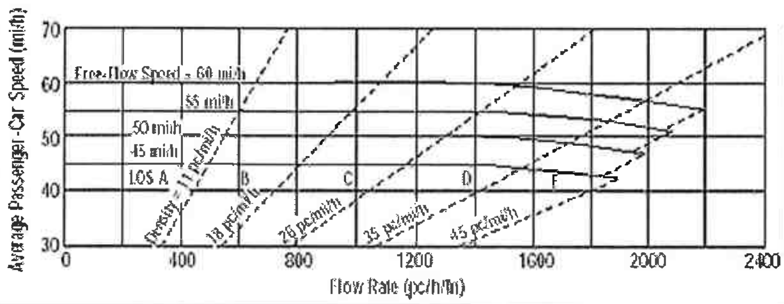
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	Dallas Blvd to SR-397
Jurisdiction	Williamson County
Analysis Year	2013

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	844	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	5
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	1.3
f_M (mi/h)	0.0
FFS (mi/h)	47.8

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	465
Speed, S (mi/h)	47.8
D (pc/mi/ln)	9.7
LOS	A

Design

Design (N)

Required Number of Lanes, N
Flow Rate, v_p (pc/h)
Max Service Flow Rate (pc/h/ln)
Design LOS

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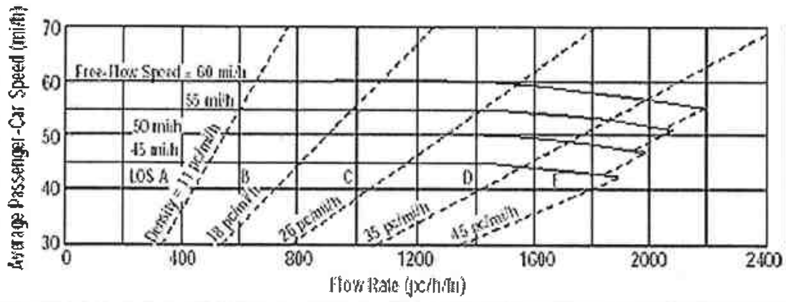
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	Dallas Blvd to SR-397
Jurisdiction	Williamson County
Analysis Year	2013

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	362	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	5
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	1.3
f_M (mi/h)	0.0
FFS (mi/h)	47.8

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	199
Speed, S (mi/h)	47.8
D (pc/mi/ln)	4.2
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

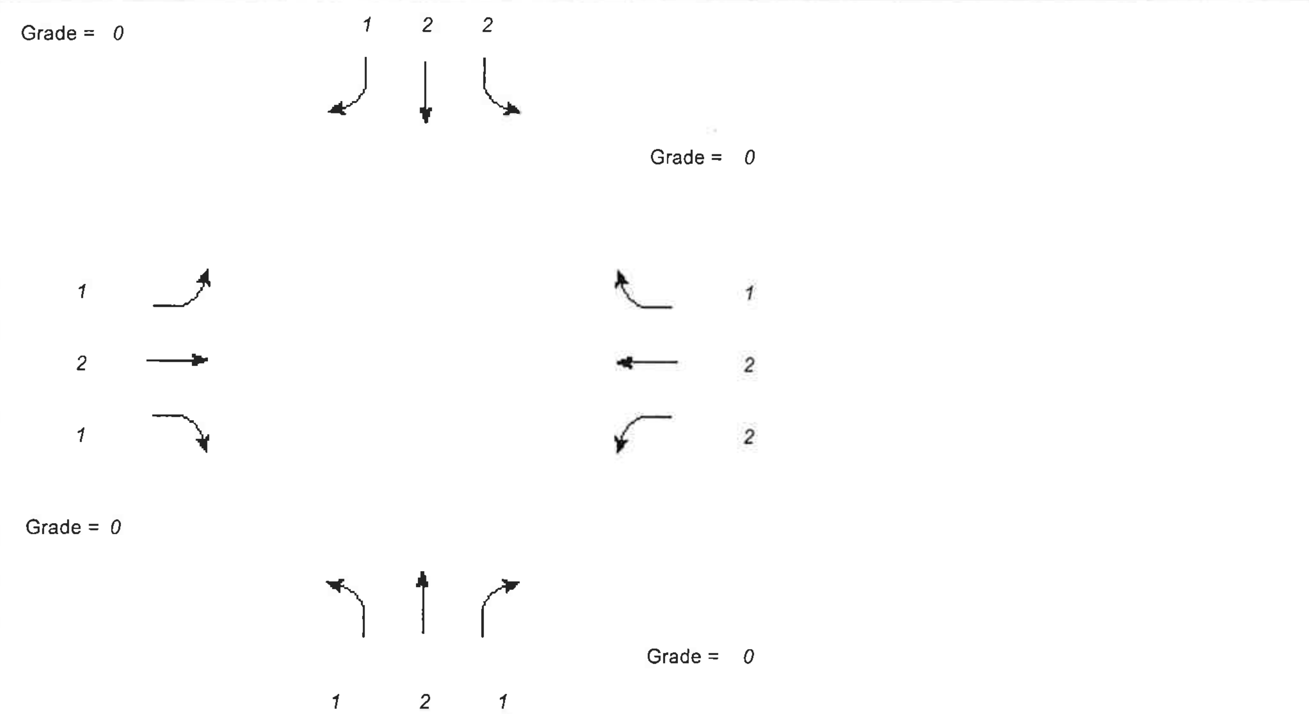
Max Service Flow Rate (pc/h/ln)

Design LOS

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR 106 & SR-248*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*4/23/2008*	Jurisdiction	*City of Franklin*
Time Period	*AM Proposed*	Analysis Year	*2013*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	163	459	6	35	198	349	11	352	171	182	123	67
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0
Ped timing		3.2			3.2			3.2			3.2	

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 5.0	G = 35.0	G =	G =	G = 5.0	G = 15.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25					Cycle Length C = 80.0			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	163	459	6	35	198	349	11	352	171	182	123	67
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow Rate	181	510	7	39	220	388	12	391	190	202	137	74
Lane Group	L	T	R	L	T	R	L	T	R	L	T	R
Adj. flow rate	181	510	7	39	220	388	12	391	190	202	137	74
Prop. LT or RT	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000

Saturation Flow Rate

	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Base satflow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Num. of lanes	1	2	1	2	2	1	1	2	1	2	2	1
fW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fHV	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fg	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fp	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fbb	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fa	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
fLU	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.537		--	0.204		--	0.499		--	0.394		--
fRT	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000
Adj. satflow	1805	3610	1615	3502	3610	1615	1805	3610	1615	3502	3610	1615
Sec. adj. satflow	1021		--	754		--	948		--	1454		--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Adj. flow rate	181	510	7	39	220	388	12	391	190	202	137	74
Satflow rate	1805	3610	1615	3502	3610	1615	1805	3610	1615	3502	3610	1615
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Green ratio	0.56	0.44	0.44	0.56	0.44	0.44	0.31	0.19	0.31	0.31	0.19	0.19
Lane group cap.	624	1579	707	596	1579	707	350	677	505	583	677	303
v/c ratio	0.29	0.32	0.01	0.07	0.14	0.55	0.03	0.58	0.38	0.35	0.20	0.24
Flow ratio		0.14	0.00		0.06	0.24		0.11	0.12		0.04	0.05
Crit. lane group	N	N	N	N	N	Y	N	Y	N	N	N	N
Sum flow ratios	0.47											
Lost time/cycle	20.00											
Critical v/c ratio	0.63											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Adj. flow rate	181	510	7	39	220	388	12	391	190	202	137	74
Lane group cap.	624	1579	707	596	1579	707	350	677	505	583	677	303
v/c ratio	0.29	0.32	0.01	0.07	0.14	0.55	0.03	0.58	0.38	0.35	0.20	0.24
Green ratio	0.56	0.44	0.44	0.56	0.44	0.44	0.31	0.19	0.31	0.31	0.19	0.19
Unif. delay d1	8.7	14.7	12.7	8.1	13.5	16.7	19.2	29.6	21.4	20.5	27.4	27.7
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Increm. delay d2	1.2	0.5	0.0	0.2	0.2	3.1	0.2	3.6	2.1	1.6	0.7	1.9
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	9.9	15.3	12.7	8.4	13.7	19.7	19.4	33.2	23.6	22.2	28.1	29.6
Lane group LOS	A	B	B	A	B	B	B	C	C	C	C	C
Apprch. delay	13.9			17.0			29.8			25.5		
Approach LOS	B			B			C			C		
Intersec. delay	20.8			Intersection LOS						C		

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

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*80.0*			
Prot. phase eff. green intvl, g (s)	*5.0*	*5.0*	*5.0*	*5.0*
Opposed queue eff. green intvl, g_q (s)	*5.00*	*7.89*	*5.00*	*8.39*
Unopposed green intvl, g_u (s)	*35.00*	*32.11*	*15.00*	*11.61*
Red time, r(s)	*35.0*	*35.0*	*55.0*	*55.0*
Arrival rate, q_a (veh/s)	*0.05*	*0.01*	*0.00*	*0.06*
Prot. phase departure rate, s_p (veh/s)	*0.501*	*0.973*	*0.501*	*0.973*
Perm. phase departure rate, s_s (veh/s)	*0.32*	*0.26*	*0.35*	*0.70*
X_{perm}	*0.18*	*0.05*	*0.01*	*0.14*
X_{prot} (N/A for lagging left-turns)	*0.80*	*0.09*	*0.08*	*0.69*
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a	*1.76*	*0.38*	*0.18*	*3.09*
Queue at start of unsaturated green, Q_u	*0.25*	*0.09*	*0.02*	*0.47*
Residual queue, Q_r	*0.00*	*0.00*	*0.00*	*0.00*
Uniform delay, d_1	*8.7*	*8.1*	*19.2*	*20.5*

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

Average Back of Queue

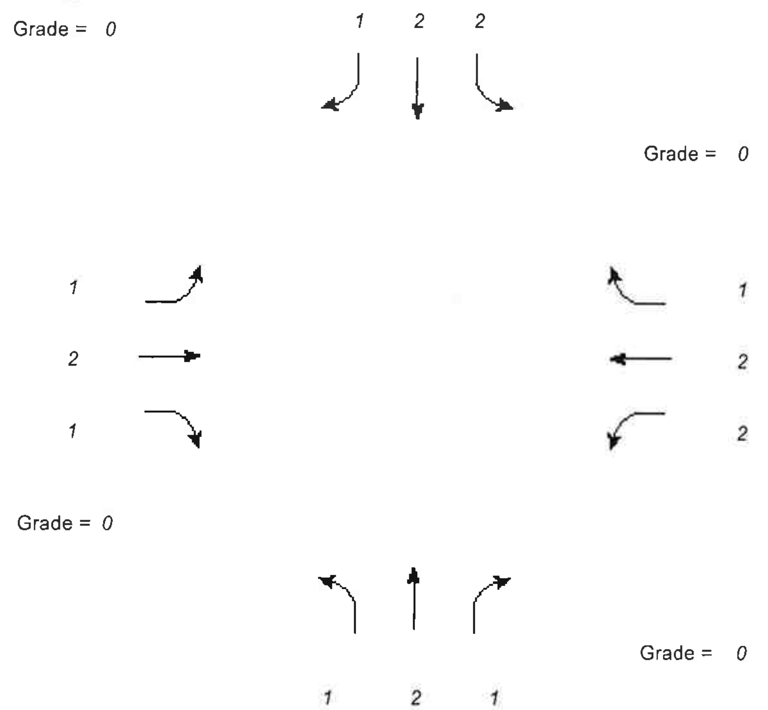
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Init. queue/lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow rate/lane	181	510	7	39	220	388	12	391	190	202	137	74
Satflow per lane	1108	1900	1615	546	1900	1615	1119	1900	1615	961	1900	1615
Capacity/lane	624	1579	707	596	1579	707	350	677	505	583	677	303
Flow ratio	0.16	0.14	0.00	0.04	0.06	0.24	0.01	0.11	0.12	0.11	0.04	0.05
v/c ratio	0.29	0.32	0.01	0.07	0.14	0.55	0.03	0.58	0.38	0.35	0.20	0.24
I factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Q_1	1.8	3.9	0.1	0.2	1.5	6.4	0.2	4.1	3.3	1.6	1.4	1.4
k_B	0.8	0.9	0.8	0.5	0.9	0.8	0.5	0.5	0.7	0.5	0.5	0.5
Q_2	0.3	0.4	0.0	0.0	0.1	1.0	0.0	0.7	0.4	0.2	0.1	0.1
Q avg.	2.1	4.3	0.1	0.2	1.7	7.4	0.2	4.8	3.7	1.9	1.5	1.5
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	2.3	2.0	2.6	2.6	2.3	1.8	2.6	2.0	2.1	2.3	2.3	2.3
BOQ, $Q_{\%}$	4.7	8.8	0.2	0.6	3.9	13.5	0.5	9.5	7.6	4.3	3.5	3.6
Queue Storage Ratio												
Q spacing	25.0	25.0	25.0	25.0	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	0	0	0	0
Avg. R_Q												
95% $R_{Q\%}$												

HCS2000™ Version 4.1d

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR 106 & SR-248*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*4/23/2008*	Jurisdiction	*City of Franklin*
Time Period	*PM Proposed*	Analysis Year	*2013*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	233	365	31	105	221	256	32	378	123	126	201	45
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0
Ped timing		3.2			3.2			3.2			3.2	

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 5.0	G = 25.0	G =	G =	G = 5.0	G = 15.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 70.0		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	233	365	31	105	221	256	32	378	123	126	201	45
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow Rate	259	406	34	117	246	284	36	420	137	140	223	50
Lane Group	L	T	R	L	T	R	L	T	R	L	T	R
Adj. flow rate	259	406	34	117	246	284	36	420	137	140	223	50
Prop. LT or RT	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000

Saturation Flow Rate

	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Base satflow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Num. of lanes	1	2	1	2	2	1	1	2	1	2	2	1
fW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fHV	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fg	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fp	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fbb	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fa	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
fLU	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.499		--	0.254		--	0.459		--	0.391		--
fRT	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000
Adj. satflow	1805	3610	1615	3502	3610	1615	1805	3610	1615	3502	3610	1615
Sec. adj. satflow	949		--	937		--	873		--	1441		--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Adj. flow rate	259	406	34	117	246	284	36	420	137	140	223	50
Satflow rate	1805	3610	1615	3502	3610	1615	1805	3610	1615	3502	3610	1615
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Green ratio	0.50	0.36	0.36	0.50	0.36	0.36	0.36	0.21	0.36	0.36	0.21	0.21
Lane group cap.	536	1289	577	652	1289	577	378	774	577	662	774	346
v/c ratio	0.48	0.31	0.06	0.18	0.19	0.49	0.10	0.54	0.24	0.21	0.29	0.14
Flow ratio		0.11	0.02		0.07	0.18		0.12	0.08		0.06	0.03
Crit. lane group	N	N	N	N	N	Y	N	Y	N	N	N	N
Sum flow ratios	0.40											
Lost time/cycle	20.00											
Critical v/c ratio	0.57											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Adj. flow rate	259	406	34	117	246	284	36	420	137	140	223	50
Lane group cap.	536	1289	577	652	1289	577	378	774	577	662	774	346
v/c ratio	0.48	0.31	0.06	0.18	0.19	0.49	0.10	0.54	0.24	0.21	0.29	0.14
Green ratio	0.50	0.36	0.36	0.50	0.36	0.36	0.36	0.21	0.36	0.36	0.21	0.21
Unif. delay d1	12.3	16.3	14.8	9.3	15.5	17.5	14.9	24.5	15.8	15.5	23.0	22.3
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Increm. delay d2	3.1	0.6	0.2	0.6	0.3	3.0	0.5	2.7	1.0	0.7	0.9	0.9
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	15.4	16.9	15.0	9.9	15.9	20.5	15.4	27.2	16.8	16.2	24.0	23.2
Lane group LOS	B	B	B	A	B	C	B	C	B	B	C	C
Apprch. delay	16.3			16.8			24.1			21.3		
Approach LOS	B			B			C			C		
Intersec. delay	19.3			Intersection LOS						B		

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

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*70.0*			
Prot. phase eff. green intvl, g (s)	*5.0*	*5.0*	*5.0*	*5.0*
Opposed queue eff. green intvl, g_q (s)	*5.00*	*6.06*	*5.00*	*7.70*
Unopposed green intvl, g_u (s)	*25.00*	*23.94*	*15.00*	*12.30*
Red time, r(s)	*35.0*	*35.0*	*45.0*	*45.0*
Arrival rate, q_a (veh/s)	*0.07*	*0.03*	*0.01*	*0.04*
Prot. phase departure rate, s_p (veh/s)	*0.501*	*0.973*	*0.501*	*0.973*
Perm. phase departure rate, s_s (veh/s)	*0.32*	*0.33*	*0.32*	*0.65*
X_{perm}	*0.27*	*0.12*	*0.04*	*0.10*
X_{prot} (N/A for lagging left-turns)	*1.15*	*0.27*	*0.20*	*0.40*
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a	*2.52*	*1.14*	*0.45*	*1.75*
Queue at start of unsaturated green, Q_u	*1.66*	*0.20*	*0.05*	*0.30*
Residual queue, Q_r	*0.37*	*0.00*	*0.00*	*0.00*
Uniform delay, d_1	*12.3*	*9.3*	*14.9*	*15.5*

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Init. queue/lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow rate/lane	259	406	34	117	246	284	36	420	137	140	223	50
Satflow per lane	1071	1900	1615	672	1900	1615	1059	1900	1615	955	1900	1615
Capacity/lane	536	1289	577	652	1289	577	378	774	577	662	774	346
Flow ratio	0.24	0.11	0.02	0.09	0.07	0.18	0.03	0.12	0.08	0.08	0.06	0.03
v/c ratio	0.48	0.31	0.06	0.18	0.19	0.49	0.10	0.54	0.24	0.21	0.29	0.14
I factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Q_1	2.6	3.0	0.4	0.6	1.7	4.3	0.5	3.8	1.9	0.9	1.9	0.8
k_B	0.6	0.7	0.7	0.4	0.7	0.7	0.5	0.5	0.7	0.5	0.5	0.5
Q_2	0.6	0.3	0.0	0.1	0.2	0.6	0.1	0.6	0.2	0.1	0.2	0.1
Q avg.	3.2	3.3	0.5	0.7	1.9	4.9	0.5	4.4	2.1	1.0	2.1	0.9
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	2.1	2.1	2.5	2.5	2.3	2.0	2.5	2.0	2.3	2.4	2.3	2.4
BOQ, $Q_{\%}$	6.8	7.0	1.2	1.7	4.3	9.7	1.3	8.9	4.7	2.5	4.8	2.1
Queue Storage Ratio												
Q spacing	25.0	25.0	25.0	25.0	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	0	0	0	0
Avg. R_Q												
95% $R_{Q\%}$												

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Moss*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*

East/West Street: *Moss Lane*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*14*	*677*	*0*	*0*	*388*	*8*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*15*	*735*	*0*	*0*	*421*	*8*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*38*	*0*	*20*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*41*	*0*	*21*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*15*						*62*	
C (m) (vph)	*1141*						*393*	
v/c	*0.01*						*0.16*	
95% queue length	*0.04*						*0.55*	
Control Delay	*8.2*						*15.9*	
LOS	*A*						*C*	
Approach Delay	--	--				*15.9*		
Approach LOS	--	--				*C*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Moss*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Moss Lane*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*7*	*365*	*0*	*0*	*720*	*15*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*7*	*396*	*0*	*0*	*782*	*16*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*11*	*0*	*20*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*11*	*0*	*21*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*7*						*32*	
C (m) (vph)	*833*						*399*	
v/c	*0.01*						*0.08*	
95% queue length	*0.03*						*0.26*	
Control Delay	*9.4*						*14.8*	
LOS	*A*						*B*	
Approach Delay	--	--				*14.8*		
Approach LOS	--	--				*B*		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Poplar
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2013
Analysis Time Period	AM		

Project Description State Route 106 (Lewisburg Pike) TPR	
East/West Street: Poplar Street	North/South Street: Lewisburg Pike
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	15	720	0	0	393	8
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	16	782	0	0	427	8
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	6	0	3
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	6	0	3
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L						LR	
v (vph)	16						9	
C (m) (vph)	1135						376	
v/c	0.01						0.02	
95% queue length	0.04						0.07	
Control Delay	8.2						14.8	
LOS	A						B	
Approach Delay	--	--				14.8		
Approach LOS	--	--				B		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Poplar*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Poplar Street*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*8*	*388*	*0*	*0*	*730*	*15*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*8*	*421*	*0*	*0*	*793*	*16*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*2*	*0*	*3*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*2*	*0*	*3*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*8*						*5*	
C (m) (vph)	*825*						*368*	
v/c	*0.01*						*0.01*	
95% queue length	*0.03*						*0.04*	
Control Delay	*9.4*						*14.9*	
LOS	*A*						*B*	
Approach Delay	--	--				*14.9*		
Approach LOS	--	--				*B*		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Soloman*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*	
East/West Street: *Soloman Drive*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*15*	*730*	*0*	*0*	*401*	*8*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*16*	*793*	*0*	*0*	*435*	*8*
Percent Heavy Vehicles	*0*	*--*	*--*	*0*	*--*	*--*
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*18*	*0*	*10*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*19*	*0*	*10*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*16*						*29*	
C (m) (vph)	*1128*						*373*	
v/c	*0.01*						*0.08*	
95% queue length	*0.04*						*0.25*	
Control Delay	*8.2*						*15.5*	
LOS	*A*						*C*	
Approach Delay	--	--				*15.5*		
Approach LOS	--	--				*C*		

HCS2000™ Version 4.1d

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Soloman*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*

East/West Street: *Soloman Drive*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*8*	*393*	*0*	*0*	*745*	*15*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*8*	*427*	*0*	*0*	*809*	*16*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*5*	*0*	*10*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*5*	*0*	*10*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*8*						*15*	
C (m) (vph)	*814*						*384*	
v/c	*0.01*						*0.04*	
95% queue length	*0.03*						*0.12*	
Control Delay	*9.5*						*14.8*	
LOS	*A*						*B*	
Approach Delay	--	--				*14.8*		
Approach LOS	--	--				*B*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Peytonsville*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM Proposed*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Old Peytonsville Rd*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*737*	*23*	*37*	*303*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*801*	*24*	*40*	*329*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*3*	*0*	*15*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*3*	*0*	*16*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (vph)		*40*		*19*				
C (m) (vph)		*814*		*464*				
v/c		*0.05*		*0.04*				
95% queue length		*0.15*		*0.13*				
Control Delay		*9.7*		*13.1*				
LOS		*A*		*B*				
Approach Delay	--	--		*13.1*				
Approach LOS	--	--		*B*				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Peytonsville
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2013
Analysis Time Period	PM Proposed		

Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Old Peytonsville Rd	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	401	8	13	620	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	435	8	14	673	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	8	0	26	0	0	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	8	0	28	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		14		36				
C (m) (vph)		1128		595				
v/c		0.01		0.06				
95% queue length		0.04		0.19				
Control Delay		8.2		11.4				
LOS		A		B				
Approach Delay	--	--	11.4					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Henpeck
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2013
Analysis Time Period	AM Proposed		
Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Henpeck Lane	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	95	538	11	18	272	48
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	103	584	0	0	295	52
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	6	89	0	118
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	96	0	128
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	103					96		128
C (m) (vph)	1223					291		846
v/c	0.08					0.33		0.15
95% queue length	0.28					1.40		0.53
Control Delay	8.2					23.3		10.0
LOS	A					C		B
Approach Delay	--	--				15.7		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Henpeck
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2013
Analysis Time Period	PM Proposed		
Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Henpeck Lane	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	75	266	11	18	547	48
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	81	289	0	0	594	52
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	6	52	0	116
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	56	0	126
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	81					56		126
C (m) (vph)	949					248		679
v/c	0.09					0.23		0.19
95% queue length	0.28					0.85		0.68
Control Delay	9.1					23.7		11.5
LOS	A					C		B
Approach Delay	--	--				15.3		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Douglas Glenn*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Douglas Glenn Lane*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*12*	*582*	*0*	*0*	*314*	*6*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*13*	*632*	*0*	*0*	*341*	*6*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*11*	*0*	*6*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*11*	*0*	*6*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*13*						*17*	
C (m) (vph)	*1223*						*474*	
v/c	*0.01*						*0.04*	
95% queue length	*0.03*						*0.11*	
Control Delay	*8.0*						*12.9*	
LOS	*A*						*B*	
Approach Delay	--	--				*12.9*		
Approach LOS	--	--				*B*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Douglas Glenn
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2013
Analysis Time Period	PM		

Project Description	State Route 106 (Lewisburg Pike) TPR
East/West Street: Douglas Glenn Lane	North/South Street: Lewisburg Pike
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	6	314	0	0	582	12
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	6	341	0	0	632	13
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	9	0	5
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	9	0	5
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L						LR	
v (vph)	6						14	
C (m) (vph)	950						390	
v/c	0.01						0.04	
95% queue length	0.02						0.11	
Control Delay	8.8						14.6	
LOS	A						B	
Approach Delay	--	--				14.6		
Approach LOS	--	--				B		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Ellington*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM Proposed*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Ellington Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	45	582	12	3	277	22
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	632	13	3	301	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	20	0	16	12	0	16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	21	0	17	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		3		38				
C (m) (vph)		950		427				
v/c		0.00		0.09				
95% queue length		0.01		0.29				
Control Delay		8.8		14.3				
LOS		A		B				
Approach Delay	--	--	14.3					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Ellington
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2013
Analysis Time Period	PM Proposed		
Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Ellington Drive	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	45	307	13	20	634	22
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	333	14	21	689	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	8	0	7	12	0	16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	8	0	7	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		21		15				
C (m) (vph)		1223		490				
v/c		0.02		0.03				
95% queue length		0.05		0.09				
Control Delay		8.0		12.6				
LOS		A		B				
Approach Delay	--	--	12.6					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & St Georges*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM Proposed*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*St. George's Way*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*45*	*647*	*7*	*6*	*288*	*22*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*703*	*7*	*6*	*313*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*11*	*0*	*26*	*12*	*0*	*16*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*11*	*0*	*28*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (vph)		*6*		*39*				
C (m) (vph)		*899*		*481*				
v/c		*0.01*		*0.08*				
95% queue length		*0.02*		*0.26*				
Control Delay		*9.0*		*13.1*				
LOS		*A*		*B*				
Approach Delay	--	--	*13.1*					
Approach LOS	--	--	*B*					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & St Georges*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM Proposed*		

Project Description *State Route 106 (Lewisburg Pike) TPR*	
East/West Street: *St. George's Way*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	45	275	6	21	665	22
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	298	6	22	722	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	3	0	13	12	0	16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	3	0	14	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		22		17				
C (m) (vph)		1268		703				
v/c		0.02		0.02				
95% queue length		0.05		0.07				
Control Delay		7.9		10.2				
LOS		A		B				
Approach Delay	--	--	10.2					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Bowman*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM Proposed*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Bowman Road*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*7*	*678*	*4*	*0*	*289*	*12*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*7*	*736*	*0*	*0*	*314*	*13*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*6*	*0*	*14*	*72*	*0*	*18*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*78*	*0*	*19*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*7*						*97*	
C (m) (vph)	*1244*						*421*	
v/c	*0.01*						*0.23*	
95% queue length	*0.02*						*0.88*	
Control Delay	*7.9*						*16.1*	
LOS	*A*						*C*	
Approach Delay	--	--				*16.1*		
Approach LOS	--	--				*C*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Bowman*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM Proposed*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Bowman Road*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	9	285	4	0	660	42
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	9	309	0	0	717	45
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	14	32	0	7
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	34	0	7
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L						LR	
v (vph)	9						41	
C (m) (vph)	859						303	
v/c	0.01						0.14	
95% queue length	0.03						0.46	
Control Delay	9.2						18.7	
LOS	A						C	
Approach Delay	--	--				18.7		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Holly Hill*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM Proposed*		

Project Description *State Route 106 (Lewisburg Pike) TPR*

East/West Street: *Holly Hill Drive*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	695	7	14	265	7
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	755	7	15	288	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	7	0	49	32	0	8
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	7	0	53	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		15		60				
C (m) (vph)		859		538				
v/c		0.02		0.11				
95% queue length		0.05		0.37				
Control Delay		9.3		12.5				
LOS		A		B				
Approach Delay	--	--	12.5					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Holly Hill*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM Proposed*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Holly Hill Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*4*	*295*	*6*	*33*	*618*	*7*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*320*	*6*	*35*	*671*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*4*	*0*	*26*	*32*	*0*	*8*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*4*	*0*	*28*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (vph)		*35*		*32*				
C (m) (vph)		*1245*		*728*				
v/c		*0.03*		*0.04*				
95% queue length		*0.09*		*0.14*				
Control Delay		*8.0*		*10.2*				
LOS		*A*		*B*				
Approach Delay	--	--		*10.2*				
Approach LOS	--	--		*B*				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Donelson
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2013
Analysis Time Period	AM Proposed		

Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Donelson Creek Parkway	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	130	521	4	9	256	32
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	141	566	0	0	278	34
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	0	2	1
Configuration	L	T			T	R
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	3	0	24	63	0	65
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	68	0	70
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	141					68		70
C (m) (vph)	1260					273		890
v/c	0.11					0.25		0.08
95% queue length	0.38					0.96		0.26
Control Delay	8.2					22.5		9.4
LOS	A					C		A
Approach Delay	--	--				15.9		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Donelson
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2013
Analysis Time Period	PM Proposed		

Project Description	State Route 106 (Lewisburg Pike) TPR
East/West Street: Donelson Creek Parkway	North/South Street: Lewisburg Pike
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	61	218	4	9	605	67
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	66	236	0	0	657	72
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	0	2	1
Configuration	L	T			T	R
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	3	0	24	55	0	183
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	59	0	198
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	66					59		198
C (m) (vph)	884					258		674
v/c	0.07					0.23		0.29
95% queue length	0.24					0.86		1.22
Control Delay	9.4					23.0		12.5
LOS	A					C		B
Approach Delay	--	--				15.0		
Approach LOS	--	--				B		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Dallas
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2013
Analysis Time Period	AM		
Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Dallas Blvd/ School Entrance	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	7	659	7	105	239	18
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	7	716	7	114	259	19
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	L	T	TR	L	T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	2	0	47	116	0	48
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	2	0	51	126	0	52
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (vph)	7	114		53		126		52
C (m) (vph)	1296	889		568		207		890
v/c	0.01	0.13		0.09		0.61		0.06
95% queue length	0.02	0.44		0.31		3.47		0.19
Control Delay	7.8	9.6		12.0		46.2		9.3
LOS	A	A		B		E		A
Approach Delay	--	--	12.0			35.4		
Approach LOS	--	--	B			E		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Dallas*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM Proposed*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*
East/West Street: *Dallas Blvd/ School Entrance*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	23	262	3	42	718	84
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	24	284	3	45	780	91
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	L	T	TR	L	T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5	0	56	54	0	16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	5	0	60	58	0	17
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (vph)	24	45		65		58		17
C (m) (vph)	783	1287		741		149		574
v/c	0.03	0.03		0.09		0.39		0.03
95% queue length	0.09	0.11		0.29		1.67		0.09
Control Delay	9.7	7.9		10.3		43.8		11.5
LOS	A	A		B		E		B
Approach Delay	--	--	10.3			36.5		
Approach LOS	--	--	B			E		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Moores Landin
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2013
Analysis Time Period	AM		

Project Description *State Route 106 (Lewisburg Pike) TPR*

East/West Street: *Moores Landing Subd.*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	836	8	11	355	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	908	8	11	385	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	7	0	16	0	0	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	7	0	17	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		11		24				
C (m) (vph)		753		365				
v/c		0.01		0.07				
95% queue length		0.04		0.21				
Control Delay		9.9		15.6				
LOS		A		C				
Approach Delay	--	--	15.6					
Approach LOS	--	--	C					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Moores Landin*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*	
East/West Street: *Moores Landing Subd.*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	358	4	26	828	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	389	4	28	899	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	20	0	8	0	0	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	21	0	8	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		28		29				
C (m) (vph)		1177		339				
v/c		0.02		0.09				
95% queue length		0.07		0.28				
Control Delay		8.1		16.6				
LOS		A		C				
Approach Delay	--	--		16.6				
Approach LOS	--	--		C				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Essex*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Essex Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*9*	*845*	*0*	*0*	*343*	*11*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*9*	*918*	*0*	*0*	*372*	*11*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*48*	*0*	*20*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*52*	*0*	*21*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*9*						*73*	
C (m) (vph)	*1187*						*366*	
v/c	*0.01*						*0.20*	
95% queue length	*0.02*						*0.73*	
Control Delay	*8.1*						*17.3*	
LOS	*A*						*C*	
Approach Delay	--	--				*17.3*		
Approach LOS	--	--				*C*		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Essex*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Essex Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*4*	*362*	*0*	*0*	*801*	*25*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*4*	*393*	*0*	*0*	*870*	*27*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*11*	*0*	*26*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*11*	*0*	*28*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*4*						*39*	
C (m) (vph)	*765*						*384*	
v/c	*0.01*						*0.10*	
95% queue length	*0.02*						*0.34*	
Control Delay	*9.7*						*15.4*	
LOS	*A*						*C*	
Approach Delay	--	--				*15.4*		
Approach LOS	--	--				*C*		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Gardner*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*AM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Gardner Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*818*	*8*	*11*	*351*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*889*	*8*	*11*	*381*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*2*	*0*	*5*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*2*	*0*	*5*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (vph)		*11*		*7*				
C (m) (vph)		*765*		*376*				
v/c		*0.01*		*0.02*				
95% queue length		*0.04*		*0.06*				
Control Delay		*9.8*		*14.8*				
LOS		*A*		*B*				
Approach Delay	--	--	*14.8*					
Approach LOS	--	--	*B*					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Gardner*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2013*
Analysis Time Period	*PM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Gardner Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*350*	*4*	*25*	*819*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*380*	*4*	*27*	*890*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*5*	*0*	*2*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*5*	*0*	*2*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

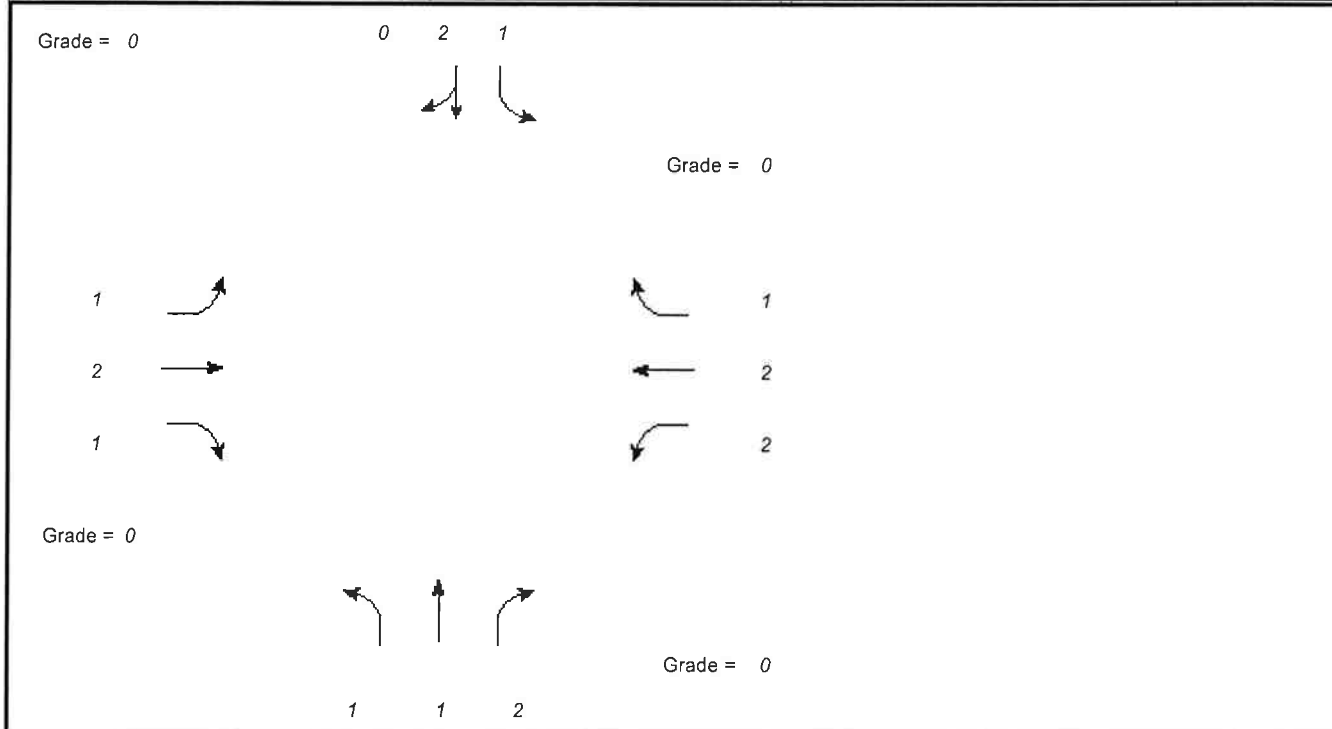
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (vph)		*27*		*7*				
C (m) (vph)		*1186*		*348*				
v/c		*0.02*		*0.02*				
95% queue length		*0.07*		*0.06*				
Control Delay		*8.1*		*15.6*				
LOS		*A*		*C*				
Approach Delay	--	--	*15.6*					
Approach LOS	--	--	*C*					

HCS2000™ Version 4.1d

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR 106 & Mack Hatcher*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*4/23/2008*	Jurisdiction	*City of Franklin*
Time Period	*AM Proposed*	Analysis Year	*2013*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	6	614	26	377	935	196	25	203	616	108	70	6
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	
Ped timing	3.2			3.2			3.2			3.2		

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 5.0	G = 45.0	G =	G =	G = 5.0	G = 15.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25					Cycle Length C = 90.0			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description State Route 106 (Lewisburg PIke) TPR

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	6	614	26	377	935	196	25	203	616	108	70	6
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow Rate	7	667	28	410	1016	213	27	221	670	117	76	7
Lane Group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	7	667	28	410	1016	213	27	221	670	117	83	
Prop. LT or RT	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000	0.000	--	0.084

Saturation Flow Rate

	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Base satflow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Num. of lanes	1	2	1	2	2	1	1	1	2	1	2	0
fW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fHV	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fg	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fp	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fbb	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fa	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
fLU	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00	0.88	1.00	0.95	
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.175		--	0.181		--	0.525		--	0.295		--
fRT	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850	--	0.987	
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	
Adj. satflow	1805	3610	1615	3502	3610	1615	1805	1900	2842	1805	3564	
Sec. adj. satflow	332		--	667		--	998		--	560		--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	7	667	28	410	1016	213	27	221	670	117	83	
Satflow rate	1805	3610	1615	3502	3610	1615	1805	1900	2842	1805	3564	
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Green ratio	0.61	0.50	0.83	0.61	0.50	0.83	0.28	0.17	0.83	0.28	0.17	
Lane group cap.	284	1805	1346	566	1805	1346	322	317	2368	224	594	
v/c ratio	0.02	0.37	0.02	0.72	0.56	0.16	0.08	0.70	0.28	0.52	0.14	
Flow ratio		0.18	0.02		0.28	0.13		0.12	0.24		0.02	
Crit. lane group	N	N	N	N	N	N	N	Y	N	N	N	
Sum flow ratios	0.55											
Lost time/cycle	15.00											
Critical v/c ratio	0.66											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	7	667	28	410	1016	213	27	221	670	117	83	
Lane group cap.	284	1805	1346	566	1805	1346	322	317	2368	224	594	
v/c ratio	0.02	0.37	0.02	0.72	0.56	0.16	0.08	0.70	0.28	0.52	0.14	
Green ratio	0.61	0.50	0.83	0.61	0.50	0.83	0.28	0.17	0.83	0.28	0.17	
Unif. delay d1	8.9	13.8	1.3	9.0	15.7	1.4	24.0	35.4	1.6	25.8	32.0	
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	0.2	0.6	0.0	7.9	1.3	0.3	0.5	12.0	0.3	8.5	0.5	
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	9.0	14.4	1.3	16.8	16.9	1.7	24.5	47.4	1.9	34.2	32.5	
Lane group LOS	A	B	A	B	B	A	C	D	A	C	C	
Apprch. delay	13.8			14.9			13.5			33.5		
Approach LOS	B			B			B			C		
Intersec. delay	15.4			Intersection LOS						B		

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

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*90.0*			
Prot. phase eff. green intvl, g (s)	*5.0*	*5.0*	*5.0*	*5.0*
Opposed queue eff. green intvl, g_q (s)	*19.02*	*10.90*	*5.00*	*10.50*
Unopposed green intvl, g_u (s)	*30.98*	*39.10*	*15.00*	*9.50*
Red time, r(s)	*35.0*	*35.0*	*65.0*	*65.0*
Arrival rate, q_a (veh/s)	*0.00*	*0.11*	*0.01*	*0.03*
Prot. phase departure rate, s_p (veh/s)	*0.501*	*0.973*	*0.501*	*0.501*
Perm. phase departure rate, s_s (veh/s)	*0.15*	*0.24*	*0.37*	*0.33*
X_{perm}	*0.02*	*0.61*	*0.03*	*0.21*
X_{prot} (N/A for lagging left-turns)	*0.03*	*0.94*	*0.21*	*0.91*

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a	*0.07*	*3.99*	*0.49*	*2.11*
Queue at start of unsaturated green, Q_u	*0.04*	*1.24*	*0.04*	*0.34*
Residual queue, Q_r	*0.00*	*0.00*	*0.00*	*0.00*
Uniform delay, d_1	*8.9*	*9.0*	*24.0*	*25.8*

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Init. queue/lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Flow rate/lane	7	667	28	410	1016	213	27	221	670	117	83	
Satflow per lane	466	1900	1615	477	1900	1615	1159	1900	1615	809	1875	
Capacity/lane	284	1805	1346	566	1805	1346	322	317	2368	224	594	
Flow ratio	0.02	0.18	0.02	0.44	0.28	0.13	0.02	0.12	0.24	0.14	0.02	
v/c ratio	0.02	0.37	0.02	0.72	0.56	0.16	0.08	0.70	0.28	0.52	0.14	
I factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Q_1	0.1	5.4	0.1	2.1	9.3	1.0	0.5	5.2	2.1	2.2	0.9	
k_B	0.5	1.1	1.4	0.5	1.1	1.4	0.5	0.5	1.4	0.4	0.5	
Q_2	0.0	0.6	0.0	1.1	1.4	0.3	0.0	1.1	0.6	0.4	0.1	
Q avg.	0.1	6.0	0.1	3.3	10.7	1.3	0.5	6.3	2.6	2.6	1.0	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	2.6	1.9	2.6	2.1	1.7	2.4	2.5	1.9	2.2	2.2	2.4	
BOQ, $Q_{\%}$	0.2	11.4	0.4	6.9	18.3	3.1	1.3	11.8	5.7	5.7	2.4	

Queue Storage Ratio

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

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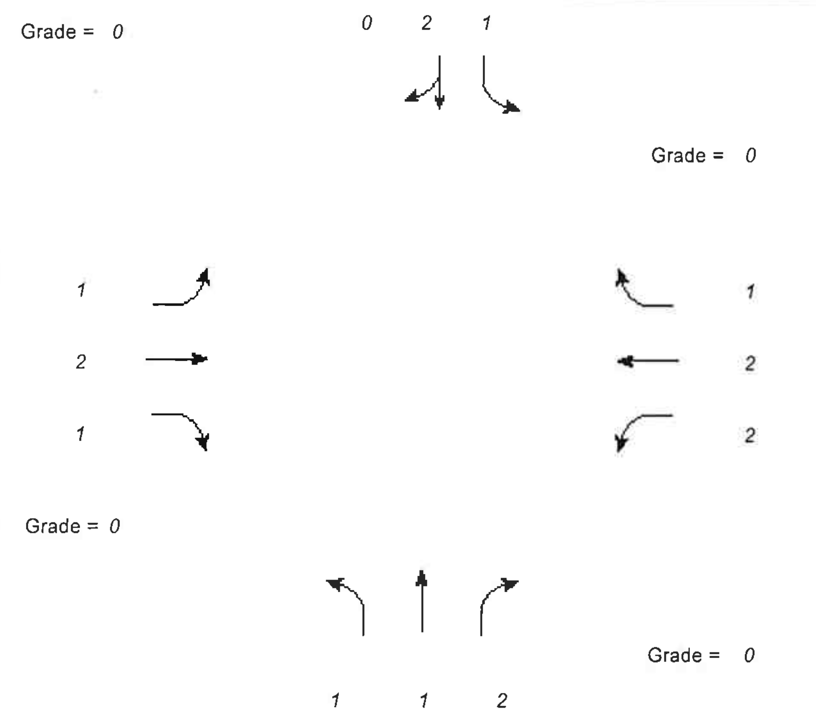
LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR 106 & Mack Hatcher*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*4/23/2008*	Jurisdiction	*City of Franklin*
Time Period	*PM Proposed*	Analysis Year	*2013*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	24	1068	108	357	406	49	33	62	268	116	291	21
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	
Ped timing		3.2			3.2			3.2			3.2	

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 5.0	G = 95.0	G =	G =	G = 5.0	G = 25.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 150.0		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	24	1068	108	357	406	49	33	62	268	116	291	21
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow Rate	26	1161	117	388	441	53	36	67	291	126	316	23
Lane Group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	26	1161	117	388	441	53	36	67	291	126	339	
Prop. LT or RT	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000	0.000	--	0.068

Saturation Flow Rate

	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Base satflow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Num. of lanes	1	2	1	2	2	1	1	1	2	1	2	0
fW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fHV	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fg	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fp	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fbb	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fa	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
fLU	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00	0.88	1.00	0.95	
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.456		--	0.132		--	0.297		--	0.594		--
fRT	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850	--	0.990	
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	
Adj. satflow	1805	3610	1615	3502	3610	1615	1805	1900	2842	1805	3573	
Sec. adj. satflow	866		--	486		--	564		--	1129		--

CAPACITY AND LOS WORKSHEET												
General Information												
Project Description	*State Route 106 (Lewisburg Plke) TPR*											
Capacity Analysis												
	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*26*	*1161*	*117*	*388*	*441*	*53*	*36*	*67*	*291*	*126*	*339*	
Satflow rate	*1805*	*3610*	*1615*	*3502*	*3610*	*1615*	*1805*	*1900*	*2842*	*1805*	*3573*	
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Green ratio	*0.70*	*0.63*	*0.90*	*0.70*	*0.63*	*0.90*	*0.23*	*0.17*	*0.90*	*0.23*	*0.17*	
Lane group cap.	*637*	*2286*	*1453*	*441*	*2286*	*1453*	*173*	*317*	*2558*	*286*	*596*	
v/c ratio	*0.04*	*0.51*	*0.08*	*0.88*	*0.19*	*0.04*	*0.21*	*0.21*	*0.11*	*0.44*	*0.57*	
Flow ratio		*0.32*	*0.07*		*0.12*	*0.03*		*0.04*	*0.10*		*0.09*	
Crit. lane group	*N*	*N*	*N*	*N*	*N*	*N*	*N*	*N*	*N*	*N*	*Y*	
Sum flow ratios	*0.72*											
Lost time/cycle	*15.00*											
Critical v/c ratio	*0.80*											
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*26*	*1161*	*117*	*388*	*441*	*53*	*36*	*67*	*291*	*126*	*339*	
Lane group cap.	*637*	*2286*	*1453*	*441*	*2286*	*1453*	*173*	*317*	*2558*	*286*	*596*	
v/c ratio	*0.04*	*0.51*	*0.08*	*0.88*	*0.19*	*0.04*	*0.21*	*0.21*	*0.11*	*0.44*	*0.57*	
Green ratio	*0.70*	*0.63*	*0.90*	*0.70*	*0.63*	*0.90*	*0.23*	*0.17*	*0.90*	*0.23*	*0.17*	
Unif. delay d1	*7.1*	*14.9*	*0.8*	*36.2*	*11.5*	*0.8*	*45.6*	*54.0*	*0.8*	*50.5*	*57.5*	
Delay factor k	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	
Increm. delay d2	*0.1*	*0.8*	*0.1*	*21.4*	*0.2*	*0.0*	*2.7*	*1.5*	*0.1*	*4.9*	*3.9*	
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Control delay	*7.2*	*15.7*	*0.9*	*57.6*	*11.7*	*0.8*	*48.3*	*55.5*	*0.9*	*55.4*	*61.4*	
Lane group LOS	*A*	*B*	*A*	*E*	*B*	*A*	*D*	*E*	*A*	*E*	*E*	
Apprch. delay	*14.2*			*31.2*			*14.5*			*59.8*		
Approach LOS	*B*			*C*			*B*			*E*		
Intersec. delay	*26.1*			Intersection LOS						*C*		

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

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*150.0*			
Prot. phase eff. green intvl, g (s)	*5.0*	*5.0*	*5.0*	*5.0*
Opposed queue eff. green intvl, g_q (s)	*8.14*	*28.27*	*13.75*	*5.00*
Unopposed green intvl, g_u (s)	*91.86*	*71.73*	*16.25*	*25.00*
Red time, r(s)	*45.0*	*45.0*	*115.0*	*115.0*
Arrival rate, q_a (veh/s)	*0.01*	*0.11*	*0.01*	*0.04*
Prot. phase departure rate, s_p (veh/s)	*0.501*	*0.973*	*0.501*	*0.501*
Perm. phase departure rate, s_s (veh/s)	*0.26*	*0.19*	*0.29*	*0.38*
X_{perm}	*0.03*	*0.80*	*0.06*	*0.11*
X_{prot} (N/A for lagging left-turns)	*0.14*	*1.11*	*0.48*	*1.68*
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a	*0.32*	*4.85*	*1.15*	*4.03*
Queue at start of unsaturated green, Q_u	*0.06*	*7.49*	*0.14*	*2.49*
Residual queue, Q_r	*0.00*	*0.53*	*0.00*	*1.69*
Uniform delay, d_1	*7.1*	*36.2*	*45.6*	*50.5*

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Init. queue/lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Flow rate/lane	26	1161	117	388	441	53	36	67	291	126	339	
Satflow per lane	911	1900	1615	325	1900	1615	741	1900	1615	1226	1880	
Capacity/lane	637	2286	1453	441	2286	1453	173	317	2558	286	596	
Flow ratio	0.03	0.32	0.07	0.61	0.12	0.03	0.05	0.04	0.10	0.10	0.09	
v/c ratio	0.04	0.51	0.08	0.88	0.19	0.04	0.21	0.21	0.11	0.44	0.57	
I factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Q_1	0.3	13.8	0.5	2.6	4.0	0.2	1.2	2.4	0.8	4.1	6.8	
k_B	1.2	1.9	2.1	0.6	1.9	2.1	0.5	0.7	2.1	0.7	0.7	
Q_2	0.1	1.9	0.2	2.4	0.4	0.1	0.1	0.2	0.3	0.5	0.9	
Q avg.	0.4	15.6	0.7	5.0	4.5	0.3	1.3	2.6	1.0	4.6	7.7	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	2.5	1.6	2.5	2.0	2.0	2.5	2.4	2.2	2.4	2.0	1.8	
BOQ, $Q_{\%}$	1.0	25.7	1.8	9.8	9.0	0.8	3.0	5.7	2.5	9.2	14.0	
Queue Storage Ratio												
Q spacing	25.0	25.0	25.0	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	0	0	0	
Avg. R_Q												
95% $R_{Q\%}$												

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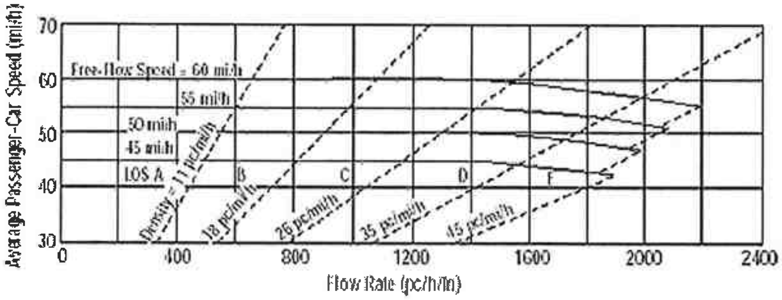
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	SR 248 to old Peytonsville
Jurisdiction	Williamson County
Analysis Year	2033

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	983	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	9
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	2.3
f_M (mi/h)	0.0
FFS (mi/h)	46.8

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	542
Speed, S (mi/h)	46.8
D (pc/mi/ln)	11.6
LOS	B

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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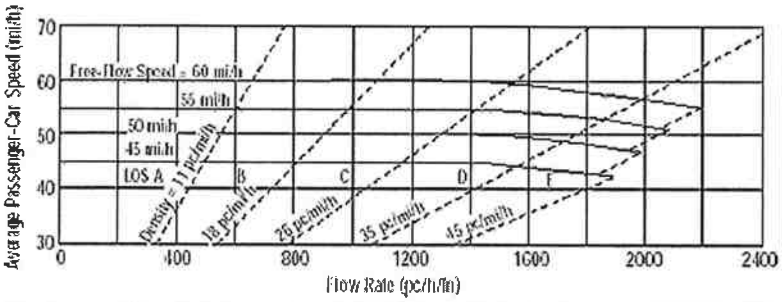
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	SR 248 to old Peytonsville
Jurisdiction	Williamson County
Analysis Year	2033

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	530	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	9
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	2.3
f_M (mi/h)	0.0
FFS (mi/h)	46.8

Operations

Operational (LOS)

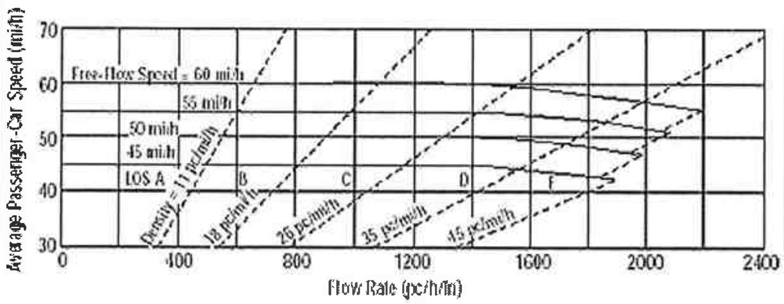
Flow Rate, v_p (pc/h/ln)	292
Speed, S (mi/h)	46.8
D (pc/mi/ln)	6.2
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	old Peytonsville to Henpeck Ln
Jurisdiction	Williamson County
Analysis Year	2033

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	902	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	14
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	3.5
f_M (mi/h)	0.0
FFS (mi/h)	45.6

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	497
Speed, S (mi/h)	45.6
D (pc/mi/ln)	10.9
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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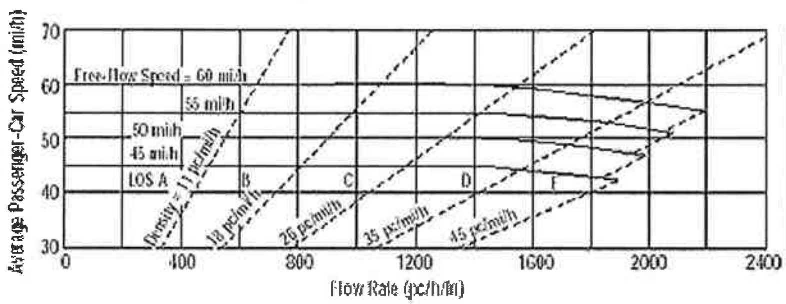
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	old Peytonsville to Henpeck Ln
Jurisdiction	Williamson County
Analysis Year	2033

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	485	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	14
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	3.5
f_M (mi/h)	0.0
FFS (mi/h)	45.6

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	267
Speed, S (mi/h)	45.6
D (pc/mi/ln)	5.9
LOS	A

Design

Design (N)

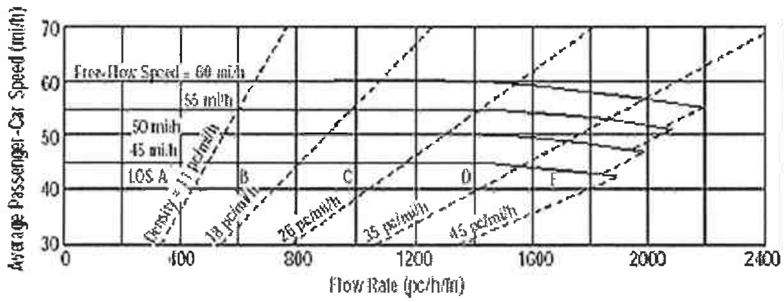
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	Henpeck Ln to Bowman Rd
Jurisdiction	Williamson County
Analysis Year	2033

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	976	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	17
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	4.3
f_M (mi/h)	0.0
FFS (mi/h)	44.8

Operations

Operational (LOS)

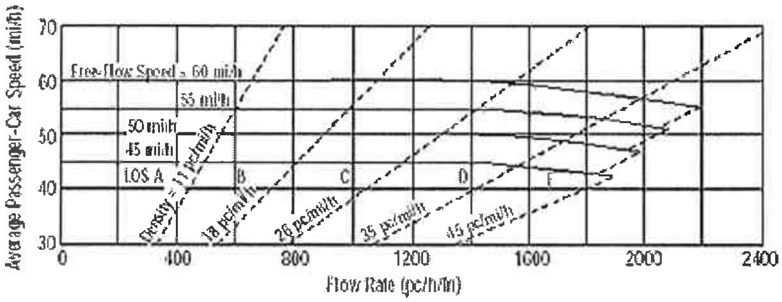
Flow Rate, v_p (pc/h/ln)	538
Speed, S (mi/h)	
D (pc/mi/ln)	
LOS	

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	Henpeck Ln to Bowman Rd
Jurisdiction	Williamson County
Analysis Year	2033

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	418	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	17
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	4.3
f_M (mi/h)	0.0
FFS (mi/h)	44.8

Operations

Operational (LOS)

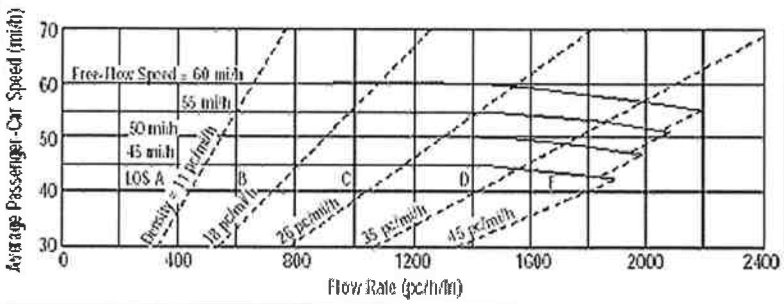
Flow Rate, v_p (pc/h/ln)	230
Speed, S (mi/h)	
D (pc/mi/ln)	
LOS	

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	Bowman Rd to Dallas Blvd
Jurisdiction	Williamson County
Analysis Year	2033

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	957	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	13
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	3.3
f_M (mi/h)	0.0
FFS (mi/h)	45.8

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	527
Speed, S (mi/h)	45.8
D (pc/mi/ln)	11.5
LOS	B

Design

Design (N)

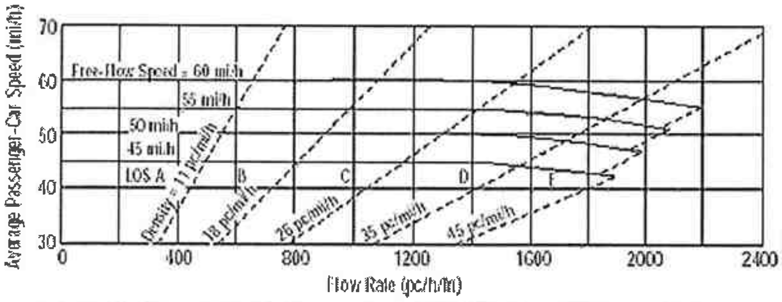
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	Bowman Rd to Dallas Blvd
Jurisdiction	Williamson County
Analysis Year	2033

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	410	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	13
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	3.3
f_M (mi/h)	0.0
FFS (mi/h)	45.8

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	226
Speed, S (mi/h)	45.8
D (pc/mi/ln)	4.9
LOS	A

Design

Design (N)

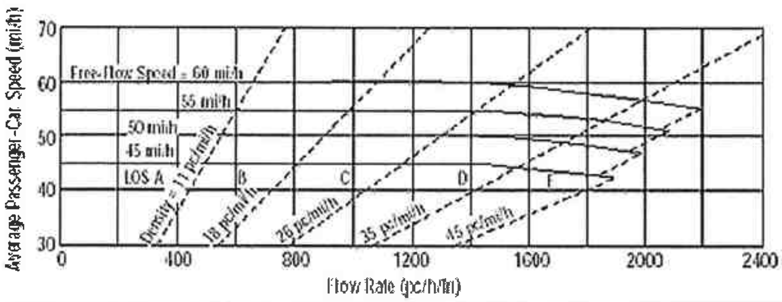
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	Dallas Blvd to SR-397
Jurisdiction	Williamson County
Analysis Year	2033

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1129	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	5
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	1.3
f_M (mi/h)	0.0
FFS (mi/h)	47.8

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	622
Speed, S (mi/h)	47.8
D (pc/mi/ln)	13.0
LOS	B

Design

Design (N)

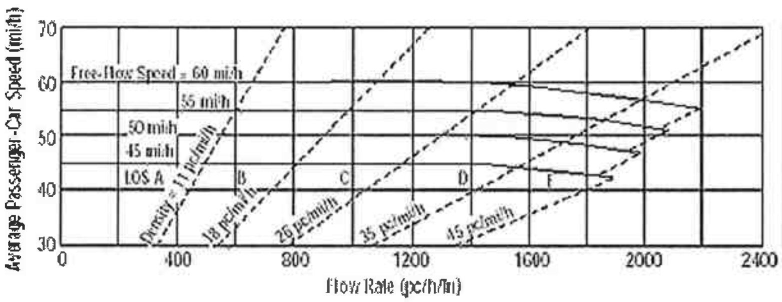
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	Brian Gaffney
Agency or Company	Clinard Engineering
Date Performed	4/28/2008
Analysis Time Period	Proposed

Site Information

Highway/Direction to Travel	SR 106
From/To	Dallas Blvd to SR-397
Jurisdiction	Williamson County
Analysis Year	2033

Project Description SR 106 (Lewisburg Pike)

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	484	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.985

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearence, LC (ft)	8.0
Access Points, A (A/mi)	5
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.9
f_A (mi/h)	1.3
f_M (mi/h)	0.0
FFS (mi/h)	47.8

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	266
Speed, S (mi/h)	47.8
D (pc/mi/ln)	5.6
LOS	A

Design

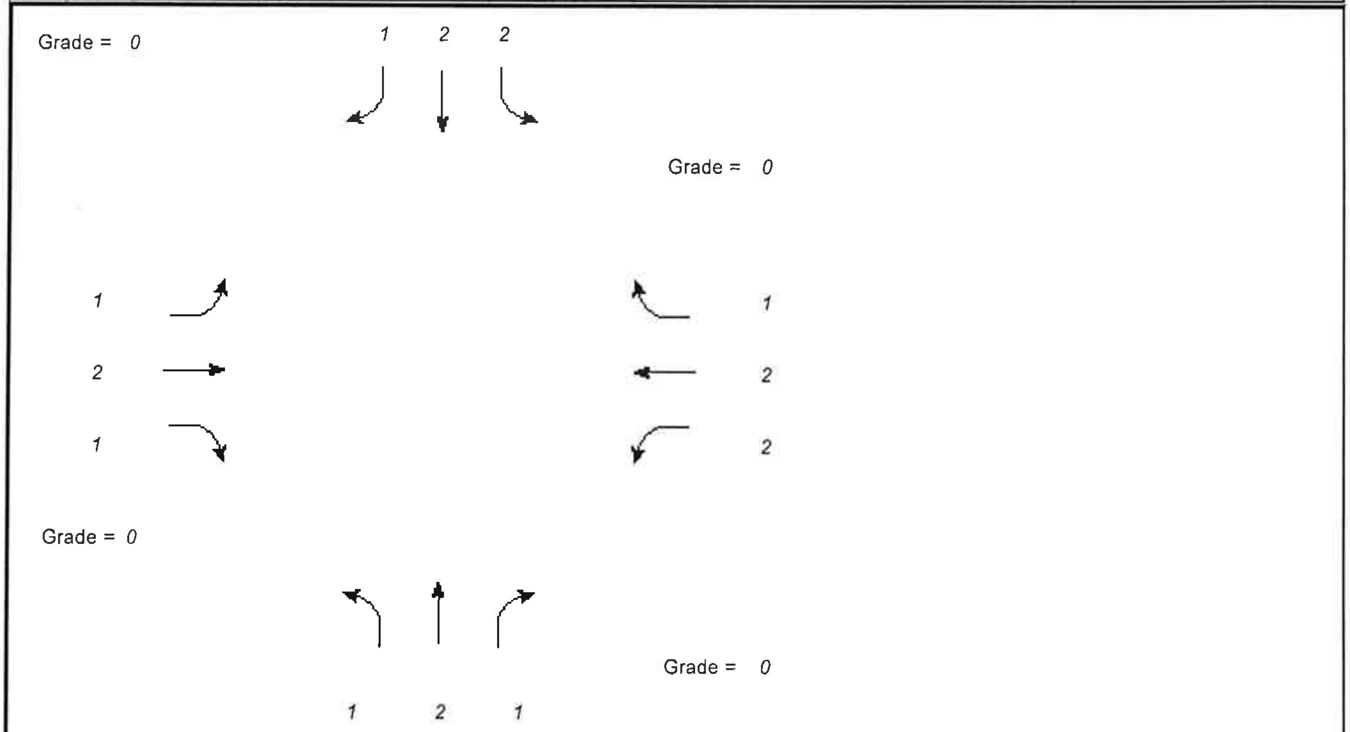
Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR 106 & SR-248*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*4/23/2008*	Jurisdiction	*City of Franklin*
Time Period	*AM Proposed*	Analysis Year	*2033*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	232	651	9	50	281	496	13	444	215	259	175	95
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0
Ped timing	3.2			3.2			3.2			3.2		

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 5.0	G = 35.0	G =	G =	G = 5.0	G = 15.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 80.0		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET												
General Information												
Project Description	*State Route 106 (Lewisburg PIke) TPR*											
Volume Adjustment												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	232	651	9	50	281	496	13	444	215	259	175	95
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow Rate	258	723	10	56	312	551	14	493	239	288	194	106
Lane Group	L	T	R	L	T	R	L	T	R	L	T	R
Adj. flow rate	258	723	10	56	312	551	14	493	239	288	194	106
Prop. LT or RT	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000
Saturation Flow Rate												
Base satflow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Num. of lanes	1	2	1	2	2	1	1	2	1	2	2	1
fW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fHV	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fg	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fp	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fbb	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fa	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
fLU	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.492		--	0.235		--	0.472		--	0.435		--
fRT	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000
Adj. satflow	1805	3610	1615	3502	3610	1615	1805	3610	1615	3502	3610	1615
Sec. adj. satflow	935		--	868		--	897		--	1603		--

CAPACITY AND LOS WORKSHEET												
General Information												
Project Description	*State Route 106 (Lewisburg Pike) TPR*											
Capacity Analysis												
	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Adj. flow rate	258	723	10	56	312	551	14	493	239	288	194	106
Satflow rate	1805	3610	1615	3502	3610	1615	1805	3610	1615	3502	3610	1615
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Green ratio	0.56	0.44	0.44	0.56	0.44	0.44	0.31	0.19	0.31	0.31	0.19	0.19
Lane group cap.	581	1579	707	653	1579	707	337	677	505	620	677	303
v/c ratio	0.44	0.46	0.01	0.09	0.20	0.78	0.04	0.73	0.47	0.46	0.29	0.35
Flow ratio		0.20	0.01		0.09	0.34		0.14	0.15		0.05	0.07
Crit. lane group	N	N	N	N	N	Y	N	Y	N	N	N	N
Sum flow ratios	0.60											
Lost time/cycle	20.00											
Critical v/c ratio	0.80											
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Adj. flow rate	258	723	10	56	312	551	14	493	239	288	194	106
Lane group cap.	581	1579	707	653	1579	707	337	677	505	620	677	303
v/c ratio	0.44	0.46	0.01	0.09	0.20	0.78	0.04	0.73	0.47	0.46	0.29	0.35
Green ratio	0.56	0.44	0.44	0.56	0.44	0.44	0.31	0.19	0.31	0.31	0.19	0.19
Unif. delay d1	11.0	15.8	12.7	8.7	13.9	19.2	19.2	30.6	22.2	21.4	27.9	28.3
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Increm. delay d2	2.5	1.0	0.0	0.3	0.3	8.3	0.2	6.8	3.2	2.5	1.1	3.2
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	13.4	16.8	12.8	9.0	14.1	27.5	19.4	37.3	25.3	23.9	29.0	31.4
Lane group LOS	B	B	B	A	B	C	B	D	C	C	C	C
Apprch. delay	15.9			21.8			33.2			26.9		
Approach LOS	B			C			C			C		
Intersec. delay	23.5			Intersection LOS						C		

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

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*80.0*			
Prot. phase eff. green intvl, g (s)	*5.0*	*5.0*	*5.0*	*5.0*
Opposed queue eff. green intvl, g_q (s)	*5.00*	*12.06*	*5.00*	*10.95*
Unopposed green intvl, g_u (s)	*35.00*	*27.94*	*15.00*	*9.05*
Red time, r(s)	*35.0*	*35.0*	*55.0*	*55.0*
Arrival rate, q_a (veh/s)	*0.07*	*0.02*	*0.00*	*0.08*
Prot. phase departure rate, s_p (veh/s)	*0.501*	*0.973*	*0.501*	*0.973*
Perm. phase departure rate, s_s (veh/s)	*0.30*	*0.35*	*0.33*	*0.98*
X_{perm}	*0.28*	*0.06*	*0.02*	*0.18*
X_{prot} (N/A for lagging left-turns)	*1.14*	*0.13*	*0.09*	*0.99*

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a	*2.51*	*0.54*	*0.21*	*4.40*
Queue at start of unsaturated green, Q_u	*1.74*	*0.19*	*0.02*	*0.88*
Residual queue, Q_r	*0.36*	*0.00*	*0.00*	*0.00*
Uniform delay, d_1	*11.0*	*8.7*	*19.2*	*21.4*

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

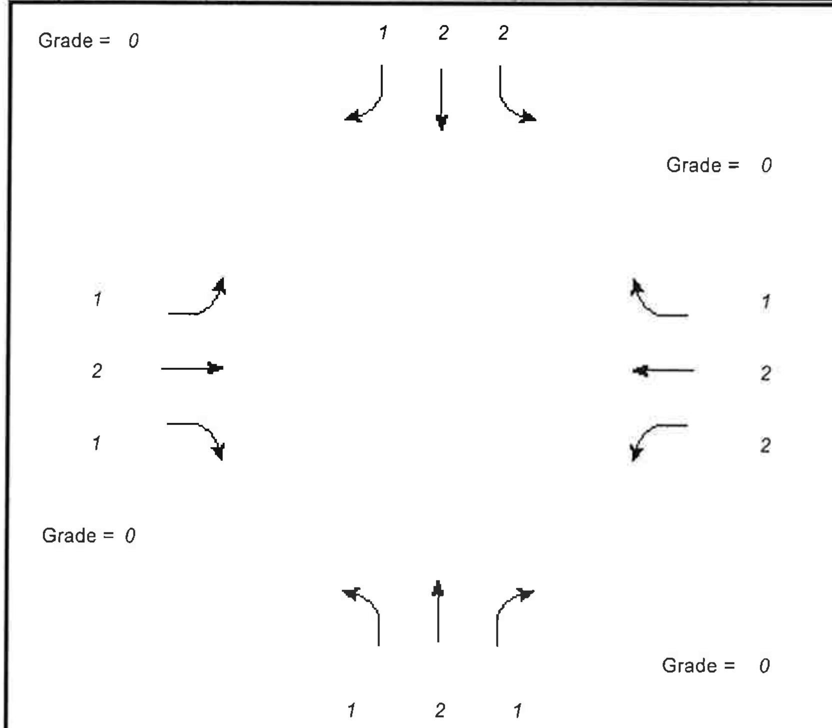
Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Init. queue/lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow rate/lane	258	723	10	56	312	551	14	493	239	288	194	106
Satflow per lane	1032	1900	1615	598	1900	1615	1079	1900	1615	1022	1900	1615
Capacity/lane	581	1579	707	653	1579	707	337	677	505	620	677	303
Flow ratio	0.25	0.20	0.01	0.05	0.09	0.34	0.01	0.14	0.15	0.14	0.05	0.07
v/c ratio	0.44	0.46	0.01	0.09	0.20	0.78	0.04	0.73	0.47	0.46	0.29	0.35
I factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Q_1	2.6	5.9	0.1	0.3	2.2	10.5	0.2	5.4	4.3	2.3	1.9	2.0
k_B	0.7	0.9	0.8	0.5	0.9	0.8	0.5	0.5	0.7	0.5	0.5	0.5
Q_2	0.6	0.8	0.0	0.0	0.2	2.6	0.0	1.2	0.6	0.4	0.2	0.2
Q avg.	3.1	6.7	0.1	0.3	2.5	13.0	0.2	6.7	4.9	2.7	2.1	2.3
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	2.1	1.9	2.6	2.5	2.2	1.7	2.6	1.9	2.0	2.2	2.3	2.2
BOQ, $Q_{\%}$	6.7	12.5	0.4	0.8	5.5	21.8	0.6	12.4	9.6	6.0	4.8	5.1
Queue Storage Ratio												
Q spacing	25.0	25.0	25.0	25.0	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	0	0	0	0
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR 106 & SR-248*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*4/23/2008*	Jurisdiction	*City of Franklin*
Time Period	*PM Proposed*	Analysis Year	*2033*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	330	518	45	149	314	364	40	477	155	180	286	64
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0
Ped timing		3.2			3.2			3.2			3.2	

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 5.0	G = 25.0	G =	G =	G = 5.0	G = 15.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 70.0		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description	*State Route 106 (Lewisburg PIke) TPR*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	330	518	45	149	314	364	40	477	155	180	286	64
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow Rate	367	576	50	166	349	404	44	530	172	200	318	71
Lane Group	L	T	R	L	T	R	L	T	R	L	T	R
Adj. flow rate	367	576	50	166	349	404	44	530	172	200	318	71
Prop. LT or RT	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000

Saturation Flow Rate

	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Base satflow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Num. of lanes	1	2	1	2	2	1	1	2	1	2	2	1
fW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fHV	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fg	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fp	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fbb	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fa	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
fLU	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.450		--	0.283		--	0.401		--	0.429		--
fRT	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000
Adj. satflow	1805	3610	1615	3502	3610	1615	1805	3610	1615	3502	3610	1615
Sec. adj. satflow	855		--	1045		--	763		--	1580		--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Adj. flow rate	367	576	50	166	349	404	44	530	172	200	318	71
Satflow rate	1805	3610	1615	3502	3610	1615	1805	3610	1615	3502	3610	1615
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Green ratio	0.50	0.36	0.36	0.50	0.36	0.36	0.36	0.21	0.36	0.36	0.21	0.21
Lane group cap.	495	1289	577	698	1289	577	347	774	577	701	774	346
v/c ratio	0.74	0.45	0.09	0.24	0.27	0.70	0.13	0.68	0.30	0.29	0.41	0.21
Flow ratio		0.16	0.03		0.10	0.25		0.15	0.11		0.09	0.04
Crit. lane group	N	N	N	N	N	N	N	Y	N	N	N	N
Sum flow ratios	0.55											
Lost time/cycle	15.00											
Critical v/c ratio	0.70											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Adj. flow rate	367	576	50	166	349	404	44	530	172	200	318	71
Lane group cap.	495	1289	577	698	1289	577	347	774	577	701	774	346
v/c ratio	0.74	0.45	0.09	0.24	0.27	0.70	0.13	0.68	0.30	0.29	0.41	0.21
Green ratio	0.50	0.36	0.36	0.50	0.36	0.36	0.36	0.21	0.36	0.36	0.21	0.21
Unif. delay d1	16.1	17.2	14.9	9.9	16.0	19.3	15.1	25.3	16.2	16.1	23.7	22.6
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Increm. delay d2	9.6	1.1	0.3	0.8	0.5	6.9	0.8	4.9	1.3	1.0	1.6	1.3
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	25.7	18.3	15.2	10.7	16.5	26.2	15.8	30.2	17.5	17.1	25.3	23.9
Lane group LOS	C	B	B	B	B	C	B	C	B	B	C	C
Apprch. delay	20.9			19.7			26.4			22.4		
Approach LOS	C			B			C			C		
Intersec. delay	22.1			Intersection LOS						C		

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

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*70.0*			
Prot. phase eff. green intvl, g (s)	*5.0*	*5.0*	*5.0*	*5.0*
Opposed queue eff. green intvl, g_q (s)	*5.11*	*9.11*	*5.64*	*10.09*
Unopposed green intvl, g_u (s)	*24.89*	*20.89*	*14.36*	*9.91*
Red time, r(s)	*35.0*	*35.0*	*45.0*	*45.0*
Arrival rate, q_a (veh/s)	*0.10*	*0.05*	*0.01*	*0.06*
Prot. phase departure rate, s_p (veh/s)	*0.501*	*0.973*	*0.501*	*0.973*
Perm. phase departure rate, s_s (veh/s)	*0.29*	*0.42*	*0.30*	*0.89*
X_{perm}	*0.43*	*0.16*	*0.06*	*0.13*
X_{prot} (N/A for lagging left-turns)	*1.63*	*0.38*	*0.24*	*0.57*

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a	*3.57*	*1.61*	*0.55*	*2.50*
Queue at start of unsaturated green, Q_u	*3.17*	*0.42*	*0.07*	*0.56*
Residual queue, Q_r	*1.57*	*0.00*	*0.00*	*0.00*
Uniform delay, d_1	*16.1*	*9.9*	*15.1*	*16.1*

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Init. queue/lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow rate/lane	367	576	50	166	349	404	44	530	172	200	318	71
Satflow per lane	991	1900	1615	720	1900	1615	971	1900	1615	1013	1900	1615
Capacity/lane	495	1289	577	698	1289	577	347	774	577	701	774	346
Flow ratio	0.37	0.16	0.03	0.12	0.10	0.25	0.05	0.15	0.11	0.10	0.09	0.04
v/c ratio	0.74	0.45	0.09	0.24	0.27	0.70	0.13	0.68	0.30	0.29	0.41	0.21
I factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Q_1	3.8	4.5	0.6	0.8	2.5	6.7	0.6	5.0	2.4	1.3	2.8	1.1
k_B	0.6	0.7	0.7	0.5	0.7	0.7	0.5	0.5	0.7	0.5	0.5	0.5
Q_2	1.5	0.6	0.1	0.1	0.3	1.4	0.1	1.0	0.3	0.2	0.4	0.1
Q avg.	5.3	5.1	0.7	1.0	2.8	8.2	0.6	6.0	2.7	1.5	3.1	1.3

Percentile Back of Queue (95th percentile)

$f_{B\%}$	1.9	2.0	2.5	2.4	2.2	1.8	2.5	1.9	2.2	2.3	2.1	2.4
BOQ, $Q_{\%}$	10.3	10.0	1.7	2.4	6.1	14.7	1.5	11.4	5.9	3.5	6.7	3.0

Queue Storage Ratio

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

HCS2000™ Version 4.1d

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Moss*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Moss Lane*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*20*	*964*	*0*	*0*	*552*	*11*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*21*	*1047*	*0*	*0*	*599*	*11*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*53*	*0*	*29*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*57*	*0*	*31*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*21*						*88*	
C (m) (vph)	*979*						*250*	
v/c	*0.02*						*0.35*	
95% queue length	*0.07*						*1.52*	
Control Delay	*8.8*						*27.0*	
LOS	*A*						*D*	
Approach Delay	--	--				*27.0*		
Approach LOS	--	--				*D*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Moss*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*
East/West Street: *Moss Lane*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*11*	*519*	*0*	*0*	*1025*	*21*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*11*	*564*	*0*	*0*	*1114*	*22*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*15*	*0*	*29*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*16*	*0*	*31*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*11*						*47*	
C (m) (vph)	*622*						*244*	
v/c	*0.02*						*0.19*	
95% queue length	*0.05*						*0.70*	
Control Delay	*10.9*						*23.2*	
LOS	*B*						*C*	
Approach Delay	--	--				*23.2*		
Approach LOS	--	--				*C*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Poplar*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*

East/West Street: *Poplar Street*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*21*	*1025*	*0*	*0*	*559*	*11*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*22*	*1114*	*0*	*0*	*607*	*11*
Percent Heavy Vehicles	*0*	*--*	*--*	*0*	*--*	*--*
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*8*	*0*	*5*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*8*	*0*	*5*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*22*						*13*	
C (m) (vph)	*972*						*243*	
v/c	*0.02*						*0.05*	
95% queue length	*0.07*						*0.17*	
Control Delay	*8.8*						*20.7*	
LOS	*A*						*C*	
Approach Delay	--	--				*20.7*		
Approach LOS	--	--				*C*		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Poplar
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	PM		

Project Description *State Route 106 (Lewisburg Pike) TPR*

East/West Street: *Poplar Street*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	11	552	0	0	1038	21
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	11	599	0	0	1128	22
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	2	0	5
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	2	0	5
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L						LR	
v (vph)	11						7	
C (m) (vph)	615						256	
v/c	0.02						0.03	
95% queue length	0.05						0.08	
Control Delay	11.0						19.5	
LOS	B						C	
Approach Delay	--	--				19.5		
Approach LOS	--	--				C		

HCS2000™ Version 4.1d

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Soloman
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	AM		
Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Soloman Drive	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	21	1038	0	0	571	12
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	22	1128	0	0	620	13
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	25	0	14
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	27	0	15
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L						LR	
v (vph)	22						42	
C (m) (vph)	960						230	
v/c	0.02						0.18	
95% queue length	0.07						0.65	
Control Delay	8.8						24.1	
LOS	A						C	
Approach Delay	--	--				24.1		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Soloman*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM*		

Project Description *State Route 106 (Lewisburg Pike) TPR*	
East/West Street: *Soloman Drive*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*11*	*559*	*0*	*0*	*1060*	*22*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*11*	*607*	*0*	*0*	*1152*	*23*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*7*	*0*	*14*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*7*	*0*	*15*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*11*						*22*	
C (m) (vph)	*602*						*235*	
v/c	*0.02*						*0.09*	
95% queue length	*0.06*						*0.31*	
Control Delay	*11.1*						*21.9*	
LOS	*B*						*C*	
Approach Delay	--	--				*21.9*		
Approach LOS	--	--				*C*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Peytonsville*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM Proposed*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Old Peytonsville Rd*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*1047*	*32*	*53*	*432*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*1138*	*34*	*57*	*469*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*5*	*0*	*21*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*5*	*0*	*22*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (vph)		*57*		*27*				
C (m) (vph)		*603*		*280*				
v/c		*0.09*		*0.10*				
95% queue length		*0.31*		*0.32*				
Control Delay		*11.6*		*19.2*				
LOS		*B*		*C*				
Approach Delay	--	--		*19.2*				
Approach LOS	--	--		*C*				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Peytonsville*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM Proposed*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*
East/West Street: *Old Peytonsville Rd*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	569	12	18	884	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	618	13	19	960	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	11	0	37	0	0	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	11	0	40	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		19		51				
C (m) (vph)		961		442				
v/c		0.02		0.12				
95% queue length		0.06		0.39				
Control Delay		8.8		14.2				
LOS		A		B				
Approach Delay	--	--	14.2					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Henpeck
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	AM Proposed		

Project Description State Route 106 (Lewisburg Pike) TPR

East/West Street:	Henpeck Lane	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	135	766	11	18	386	68
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	146	832	0	0	419	73
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	6	126	0	167
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	136	0	181
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	146					136		181
C (m) (vph)	1082					165		760
v/c	0.13					0.82		0.24
95% queue length	0.47					5.56		0.93
Control Delay	8.8					85.5		11.2
LOS	A					F		B
Approach Delay	--	--				43.1		
Approach LOS	--	--				E		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Henpeck*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM Proposed*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Henpeck Lane*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	107	379	11	18	776	67
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	116	411	0	0	843	72
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	6	74	0	165
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	80	0	179
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	116					80		179
C (m) (vph)	754					129		555
v/c	0.15					0.62		0.32
95% queue length	0.54					3.21		1.39
Control Delay	10.6					70.3		14.5
LOS	B					F		B
Approach Delay	--	--				31.8		
Approach LOS	--	--				D		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Douglas Glenn*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Douglas Glenn Lane*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*17*	*828*	*0*	*0*	*446*	*9*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*18*	*899*	*0*	*0*	*484*	*9*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*16*	*0*	*9*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*17*	*0*	*9*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*18*						*26*	
C (m) (vph)	*1081*						*325*	
v/c	*0.02*						*0.08*	
95% queue length	*0.05*						*0.26*	
Control Delay	*8.4*						*17.0*	
LOS	*A*						*C*	
Approach Delay	--	--				*17.0*		
Approach LOS	--	--				*C*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Douglas Glenn
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	PM		

Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Douglas Glenn Lane	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	9	446	0	0	828	17
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	9	484	0	0	899	18
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	13	0	7
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	14	0	7
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L						LR	
v (vph)	9						21	
C (m) (vph)	752						240	
v/c	0.01						0.09	
95% queue length	0.04						0.28	
Control Delay	9.8						21.4	
LOS	A						C	
Approach Delay	--	--				21.4		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Ellington*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM Proposed*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Ellington Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	45	827	17	4	394	22
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	898	18	4	428	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	28	0	23	12	0	16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	30	0	24	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		4		54				
C (m) (vph)		753		279				
v/c		0.01		0.19				
95% queue length		0.02		0.70				
Control Delay		9.8		21.0				
LOS		A		C				
Approach Delay	--	--	21.0					
Approach LOS	--	--	C					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Ellington*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM Proposed*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Ellington Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	45	436	18	28	900	22
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	473	19	30	978	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	27	0	25	12	0	16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	29	0	27	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		30		56				
C (m) (vph)		1082		342				
v/c		0.03		0.16				
95% queue length		0.09		0.58				
Control Delay		8.4		17.6				
LOS		A		C				
Approach Delay	--	--	17.6					
Approach LOS	--	--	C					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & St Georges
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	AM Proposed		

Project Description *State Route 106 (Lewisburg Pike) TPR*

East/West Street: *St. George's Way*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	45	919	9	8	410	22
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	998	9	8	445	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	15	0	37	12	0	16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	16	0	40	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		8		56				
C (m) (vph)		696		325				
v/c		0.01		0.17				
95% queue length		0.03		0.61				
Control Delay		10.2		18.4				
LOS		B		C				
Approach Delay	--	--	18.4					
Approach LOS	--	--	C					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & St Georges*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM Proposed*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*St. George's Way*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*45*	*390*	*8*	*29*	*947*	*22*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*423*	*8*	*31*	*1029*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*4*	*0*	*19*	*12*	*0*	*16*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*4*	*0*	*20*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (vph)		*31*		*24*				
C (m) (vph)		*1139*		*569*				
v/c		*0.03*		*0.04*				
95% queue length		*0.08*		*0.13*				
Control Delay		*8.2*		*11.6*				
LOS		*A*		*B*				
Approach Delay	--	--	*11.6*					
Approach LOS	--	--	*B*					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Bowman*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM Proposed*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Bowman Road*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10	966	4	0	410	17
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	10	1049	0	0	445	18
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	14	102	0	26
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	110	0	28
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L						LR	
v (vph)	10						138	
C (m) (vph)	1109						281	
v/c	0.01						0.49	
95% queue length	0.03						2.54	
Control Delay	8.3						29.6	
LOS	A						D	
Approach Delay	--	--				29.6		
Approach LOS	--	--				D		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Bowman*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM Proposed*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Bowman Road*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	13	406	4	0	937	60
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	14	441	0	0	1018	65
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	14	46	0	9
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	49	0	9
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L						LR	
v (vph)	14						58	
C (m) (vph)	652						171	
v/c	0.02						0.34	
95% queue length	0.07						1.40	
Control Delay	10.6						36.5	
LOS	B						E	
Approach Delay	--	--				36.5		
Approach LOS	--	--				E		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Holly Hill
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	AM Proposed		
Project Description	State Route 106 (Lewisburg Pike) TPR		
East/West Street:	Holly Hill Drive	North/South Street:	Lewisburg Pike
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	987	10	20	376	7
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	1072	10	21	408	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	9	0	69	32	0	8
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	9	0	74	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		21		83				
C (m) (vph)		652		390				
v/c		0.03		0.21				
95% queue length		0.10		0.79				
Control Delay		10.7		16.7				
LOS		B		C				
Approach Delay	--	--	16.7					
Approach LOS	--	--	C					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Holly Hill*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM Proposed*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Holly Hill Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	419	9	46	878	7
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	455	9	49	954	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	0	36	32	0	8
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	6	0	39	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		49		45				
C (m) (vph)		1108		581				
v/c		0.04		0.08				
95% queue length		0.14		0.25				
Control Delay		8.4		11.7				
LOS		A		B				
Approach Delay	--	--	11.7					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Donelson*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM Proposed*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Donelson Creek Parkway*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*185*	*740*	*4*	*9*	*365*	*45*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*201*	*804*	*0*	*0*	*396*	*48*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*1*
Configuration	*L*	*T*			*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*3*	*0*	*24*	*89*	*0*	*92*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*96*	*0*	*99*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (vph)	*201*					*96*		*99*
C (m) (vph)	*1127*					*149*		*816*
v/c	*0.18*					*0.64*		*0.12*
95% queue length	*0.65*					*3.54*		*0.41*
Control Delay	*8.9*					*64.9*		*10.0*
LOS	*A*					*F*		*B*
Approach Delay	--	--				*37.1*		
Approach LOS	--	--				*E*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Donelson*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM Proposed*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*
East/West Street: *Donelson Creek Parkway*	North/South Street: *Lewisburg Pike*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	87	309	4	9	861	96
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	94	335	0	0	935	104
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	0	2	1
Configuration	L	T			T	R
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	3	0	24	77	0	259
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	0	0	83	0	281
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	94					83		281
C (m) (vph)	677					136		547
v/c	0.14					0.61		0.51
95% queue length	0.48					3.18		2.91
Control Delay	11.2					66.1		18.3
LOS	B					F		C
Approach Delay	--	--				29.2		
Approach LOS	--	--				D		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Dallas*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM Proposed*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Dallas Blvd/ School Entrance*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10	938	10	140	319	24
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	10	1019	10	152	346	26
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	L	T	TR	L	T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	4	0	68	165	0	67
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	4	0	73	179	0	72
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (vph)	10	152		77		179		72
C (m) (vph)	1198	683		371		102		831
v/c	0.01	0.22		0.21		1.75		0.09
95% queue length	0.03	0.85		0.77		14.31		0.28
Control Delay	8.0	11.8		17.2		448.3		9.7
LOS	A	B		C		F		A
Approach Delay	--	--	17.2			322.5		
Approach LOS	--	--	C			F		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	Lewisburg Pike & Dallas
Agency/Co.	Clinard Engineering	Jurisdiction	City of Franklin
Date Performed	4/23/2008	Analysis Year	2033
Analysis Time Period	PM Proposed		

Project Description State Route 106 (Lewisburg Pike) TPR

East/West Street: Dallas Blvd/ School Entrance	North/South Street: Lewisburg Pike
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	33	373	4	56	960	113
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	35	405	4	60	1043	122
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	L	T	TR	L	T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	8	0	79	77	0	23
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	8	0	85	83	0	24
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (vph)	35	60		93		83		24
C (m) (vph)	607	1161		578		71		461
v/c	0.06	0.05		0.16		1.17		0.05
95% queue length	0.18	0.16		0.57		6.38		0.16
Control Delay	11.3	8.3		12.4		261.4		13.2
LOS	B	A		B		F		B
Approach Delay	--	--	12.4			205.8		
Approach LOS	--	--	B			F		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Moores Landin*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Moores Landing Subd.*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*1118*	*11*	*15*	*476*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*1215*	*11*	*16*	*517*	*0*
Percent Heavy Vehicles	*0*	*--*	*--*	*0*	*--*	*--*
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*10*	*0*	*23*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*10*	*0*	*24*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (vph)		*16*		*34*				
C (m) (vph)		*576*		*234*				
v/c		*0.03*		*0.15*				
95% queue length		*0.09*		*0.50*				
Control Delay		*11.4*		*23.0*				
LOS		*B*		*C*				
Approach Delay	*--*	*--*	*23.0*					
Approach LOS	*--*	*--*	*C*					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Moores Landin*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Moores Landing Subd.*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*479*	*5*	*34*	*1110*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*520*	*5*	*36*	*1206*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*28*	*0*	*12*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*30*	*0*	*13*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (vph)		*36*		*43*				
C (m) (vph)		*1052*		*228*				
v/c		*0.03*		*0.19*				
95% queue length		*0.11*		*0.68*				
Control Delay		*8.5*		*24.4*				
LOS		*A*		*C*				
Approach Delay	--	--		*24.4*				
Approach LOS	--	--		*C*				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Essex*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*AM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Essex Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*11*	*1133*	*0*	*0*	*460*	*14*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*11*	*1231*	*0*	*0*	*499*	*15*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*68*	*0*	*29*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*73*	*0*	*31*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*11*						*104*	
C (m) (vph)	*1062*						*250*	
v/c	*0.01*						*0.42*	
95% queue length	*0.03*						*1.93*	
Control Delay	*8.4*						*29.3*	
LOS	*A*						*D*	
Approach Delay	--	--				*29.3*		
Approach LOS	--	--				*D*		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Essex*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM*		

Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Essex Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*5*	*486*	*0*	*0*	*1074*	*33*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*5*	*528*	*0*	*0*	*1167*	*35*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*16*	*0*	*37*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*17*	*0*	*40*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (vph)	*5*						*57*	
C (m) (vph)	*588*						*249*	
v/c	*0.01*						*0.23*	
95% queue length	*0.03*						*0.86*	
Control Delay	*11.2*						*23.7*	
LOS	*B*						*C*	
Approach Delay	--	--				*23.7*		
Approach LOS	--	--				*C*		

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*Brian Gaffney*
Agency/Co.	*Clinard Engineering*
Date Performed	*4/23/2008*
Analysis Time Period	*AM*

Site Information

Intersection	*Lewisburg Pike & Gardner*
Jurisdiction	*City of Franklin*
Analysis Year	*2033*

Project Description *State Route 106 (Lewisburg Pike) TPR*

East/West Street: *Gardner Drive* | North/South Street: *Lewisburg Pike*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	1096	11	15	468	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	0	1191	11	16	508	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	3	0	7	0	0	0
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR	3	0	7	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		16		10				
C (m) (vph)		588		240				
v/c		0.03		0.04				
95% queue length		0.08		0.13				
Control Delay		11.3		20.7				
LOS		B		C				
Approach Delay	--	--	20.7					
Approach LOS	--	--	C					

HCS2000™ Version 4.1d

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*Lewisburg Pike & Gardner*
Agency/Co.	*Clinard Engineering*	Jurisdiction	*City of Franklin*
Date Performed	*4/23/2008*	Analysis Year	*2033*
Analysis Time Period	*PM*		
Project Description	*State Route 106 (Lewisburg Pike) TPR*		
East/West Street:	*Gardner Drive*	North/South Street:	*Lewisburg Pike*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*470*	*5*	*34*	*1095*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*0*	*510*	*5*	*36*	*1190*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*7*	*0*	*3*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*7*	*0*	*3*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (vph)		*36*		*10*				
C (m) (vph)		*1061*		*233*				
v/c		*0.03*		*0.04*				
95% queue length		*0.11*		*0.13*				
Control Delay		*8.5*		*21.1*				
LOS		*A*		*C*				
Approach Delay	--	--	*21.1*					
Approach LOS	--	--	*C*					

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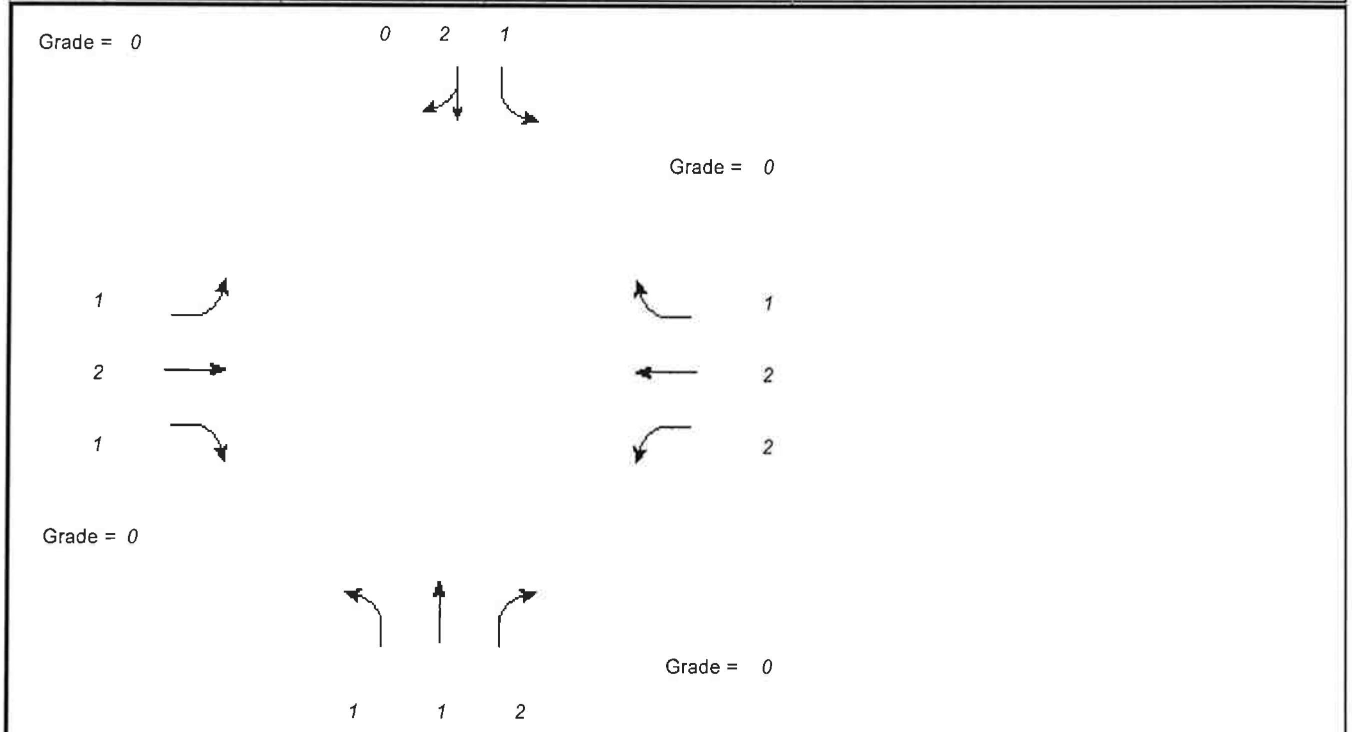
LONG REPORT

General Information		Site Information	
Analyst	*Brian Gaffney*	Intersection	*SR 106 & Mack Hatcher*
Agency or Co.	*Clinard Engineering Associates*	Area Type	*All other areas*
Date Performed	*4/23/2008*	Jurisdiction	*City of Franklin*
Time Period	*AM Proposed*	Analysis Year	*2033*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	12	1167	49	567	1406	295	34	271	824	161	104	8
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	
Ped timing		3.2			3.2			3.2			3.2	

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 5.0	G = 45.0	G =	G =	G = 5.0	G = 15.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25					Cycle Length C = 90.0			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	12	1167	49	567	1406	295	34	271	824	161	104	8
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow Rate	13	1268	53	616	1528	321	37	295	896	175	113	9
Lane Group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	13	1268	53	616	1528	321	37	295	896	175	122	
Prop. LT or RT	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000	0.000	--	0.074

Saturation Flow Rate

	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Base satflow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Num. of lanes	1	2	1	2	2	1	1	1	2	1	2	0
fW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fHV	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fg	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fp	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fbb	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fa	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
fLU	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00	0.88	1.00	0.95	
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.080		--	0.293		--	0.506		--	0.200		--
fRT	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850	--	0.989	
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	
Adj. satflow	1805	3610	1615	3502	3610	1615	1805	1900	2842	1805	3570	
Sec. adj. satflow	152		--	1080		--	961		--	380		--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	13	1268	53	616	1528	321	37	295	896	175	122	
Satflow rate	1805	3610	1615	3502	3610	1615	1805	1900	2842	1805	3570	
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Green ratio	0.61	0.50	0.83	0.61	0.50	0.83	0.28	0.17	0.83	0.28	0.17	
Lane group cap.	184	1805	1346	795	1805	1346	314	317	2368	184	595	
v/c ratio	0.07	0.70	0.04	0.77	0.85	0.24	0.12	0.93	0.38	0.95	0.21	
Flow ratio		0.35	0.03		0.42	0.20		0.16	0.32		0.03	
Crit. lane group	N	N	N	N	Y	N	N	N	N	N	N	
Sum flow ratios	0.73											
Lost time/cycle	15.00											
Critical v/c ratio	0.88											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	13	1268	53	616	1528	321	37	295	896	175	122	
Lane group cap.	184	1805	1346	795	1805	1346	314	317	2368	184	595	
v/c ratio	0.07	0.70	0.04	0.77	0.85	0.24	0.12	0.93	0.38	0.95	0.21	
Green ratio	0.61	0.50	0.83	0.61	0.50	0.83	0.28	0.17	0.83	0.28	0.17	
Unif. delay d1	14.4	17.3	1.3	21.5	19.5	1.6	24.1	37.0	1.8	32.3	32.4	
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	0.7	2.3	0.1	7.3	5.1	0.4	0.8	35.6	0.5	54.6	0.8	
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	15.1	19.7	1.3	28.8	24.6	2.0	24.9	72.6	2.3	87.0	33.1	
Lane group LOS	B	B	A	C	C	A	C	E	A	F	C	
Apprch. delay	18.9			22.7			19.9			64.9		
Approach LOS	B			C			B			E		
Intersec. delay	23.4			Intersection LOS						C		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES				
General Information				
Project Description *State Route 106 (Lewisburg PIke) TPR*				
v/c Ratio Computation				
	EB	WB	NB	SB
Cycle length, C (s)	*90.0*			
Prot. phase eff. green intvl, g (s)	*5.0*	*5.0*	*5.0*	*5.0*
Opposed queue eff. green intvl, g_q (s)	*36.34*	*26.51*	*5.00*	*14.70*
Unopposed green intvl, g_u (s)	*13.66*	*23.49*	*15.00*	*5.30*
Red time, r(s)	*35.0*	*35.0*	*65.0*	*65.0*
Arrival rate, q_a (veh/s)	*0.00*	*0.17*	*0.01*	*0.05*
Prot. phase departure rate, s_p (veh/s)	*0.501*	*0.973*	*0.501*	*0.501*
Perm. phase departure rate, s_s (veh/s)	*0.15*	*0.64*	*0.36*	*0.40*
X_{perm}	*0.09*	*0.57*	*0.04*	*0.46*
X_{prot} (N/A for lagging left-turns)	*0.06*	*1.41*	*0.29*	*1.36*
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a	*0.13*	*5.99*	*0.67*	*3.16*
Queue at start of unsaturated green, Q_u	*0.13*	*8.19*	*0.05*	*2.13*
Residual queue, Q_r	*0.00*	*1.98*	*0.00*	*0.90*
Uniform delay, d_1	*14.4*	*21.5*	*24.1*	*32.3*

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Pike) TPR*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Init. queue/lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Flow rate/lane	13	1268	53	616	1528	321	37	295	896	175	122	
Satflow per lane	302	1900	1615	670	1900	1615	1130	1900	1615	665	1878	
Capacity/lane	184	1805	1346	795	1805	1346	314	317	2368	184	595	
Flow ratio	0.04	0.35	0.03	0.47	0.42	0.20	0.03	0.16	0.32	0.26	0.03	
v/c ratio	0.07	0.70	0.04	0.77	0.85	0.24	0.12	0.93	0.38	0.95	0.21	
I factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Q_1	0.1	12.8	0.2	3.2	17.4	1.7	0.7	7.3	3.1	3.3	1.4	
k_B	0.3	1.1	1.4	0.6	1.1	1.4	0.5	0.5	1.4	0.4	0.5	
Q_2	0.0	2.4	0.1	1.8	4.8	0.4	0.1	3.2	0.8	2.3	0.1	
Q avg.	0.2	15.3	0.3	5.0	22.2	2.1	0.7	10.5	3.9	5.6	1.5	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	2.6	1.6	2.5	2.0	1.6	2.3	2.5	1.7	2.1	1.9	2.3	
BOQ, $Q_{\%}$	0.4	25.2	0.7	9.9	35.8	4.8	1.8	18.0	8.1	10.8	3.5	

Queue Storage Ratio

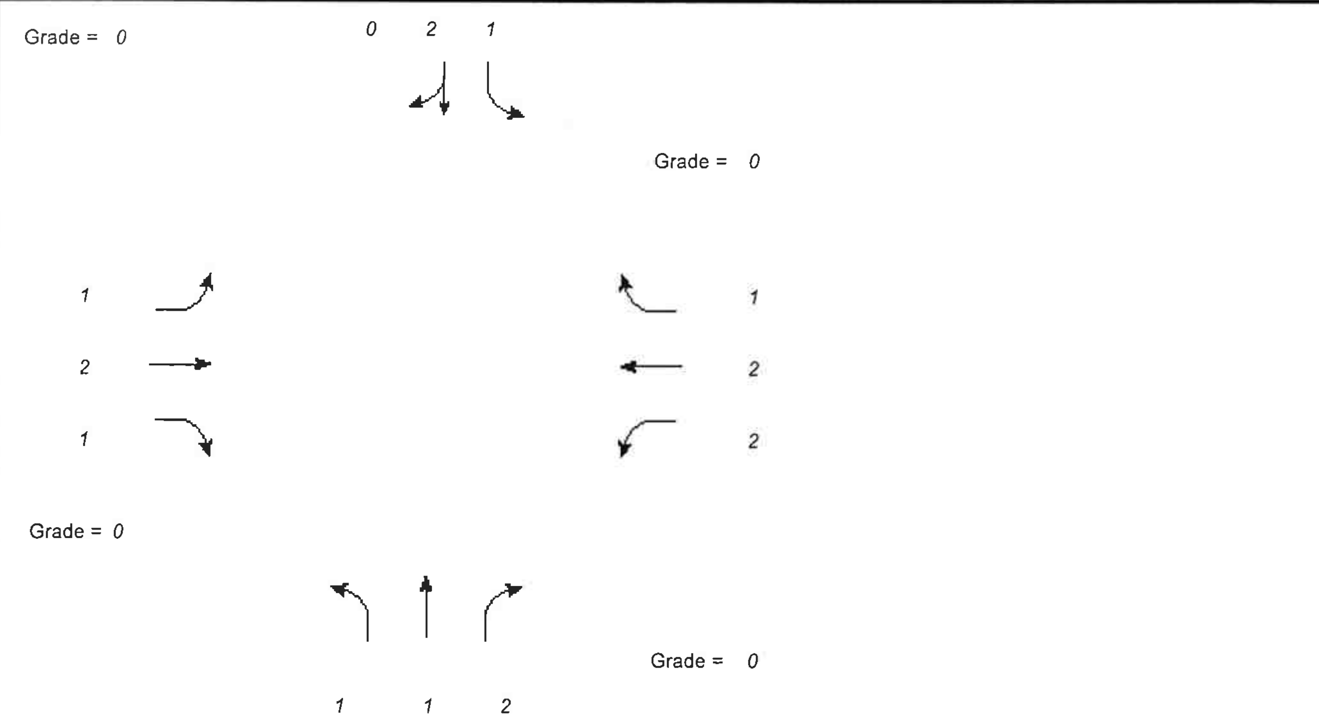
Q spacing	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	
Q storage	0	0	0	0	0	0	0	0	0	0	0	
Avg. R_Q												
95% $R_{Q\%}$												

HCS2000™ Version 4.1d

LONG REPORT

General Information		Site Information	
Analyst	Brian Gaffney	Intersection	SR 106 & Mack Hatcher
Agency or Co.	Clinard Engineering Associates	Area Type	All other areas
Date Performed	4/23/2008	Jurisdiction	City of Franklin
Time Period	PM Proposed	Analysis Year	2033

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	46	2031	205	537	611	73	44	82	358	172	434	32
% Heavy veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking (Y or N)	N		N	N		N	N		N	N		N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	
Ped timing	3.2			3.2			3.2			3.2		

	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = 5.0	G = 95.0	G =	G =	G = 5.0	G = 25.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis (hrs) = 0.25					Cycle Length C = 150.0			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	46	2031	205	537	611	73	44	82	358	172	434	32
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow Rate	50	2208	223	584	664	79	48	89	389	187	472	35
Lane Group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	50	2208	223	584	664	79	48	89	389	187	507	
Prop. LT or RT	0.000	--	0.000	0.000	--	0.000	0.000	--	0.000	0.000	--	0.069

Saturation Flow Rate

	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Base satflow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Num. of lanes	1	2	1	2	2	1	1	1	2	1	2	0
fW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fHV	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fg	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fp	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fbb	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
fa	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
fLU	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00	0.88	1.00	0.95	
fLT	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--	0.950	1.000	--
Secondary fLT	0.346		--	0.477		--	0.133		--	0.548		--
fRT	--	1.000	0.850	--	1.000	0.850	--	1.000	0.850	--	0.990	
fLpb	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--
fRpb	--	1.000	1.000	--	1.000	1.000	--	1.000	1.000	--	1.000	
Adj. satflow	1805	3610	1615	3502	3610	1615	1805	1900	2842	1805	3573	
Sec. adj. satflow	658		--	1759		--	253		--	1041		--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg Plke) TPR*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	50	2208	223	584	664	79	48	89	389	187	507	
Satflow rate	1805	3610	1615	3502	3610	1615	1805	1900	2842	1805	3573	
Lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Green ratio	0.70	0.63	0.90	0.70	0.63	0.90	0.23	0.17	0.90	0.23	0.17	
Lane group cap.	499	2286	1453	1290	2286	1453	111	317	2558	268	596	
v/c ratio	0.10	0.97	0.15	0.45	0.29	0.05	0.43	0.28	0.15	0.70	0.85	
Flow ratio		0.61	0.14		0.18	0.05		0.05	0.14		0.14	
Crit. lane group	N	Y	N	N	N	N	N	N	N	N	Y	
Sum flow ratios	0.82											
Lost time/cycle	20.00											
Critical v/c ratio	0.95											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Adj. flow rate	50	2208	223	584	664	79	48	89	389	187	507	
Lane group cap.	499	2286	1453	1290	2286	1453	111	317	2558	268	596	
v/c ratio	0.10	0.97	0.15	0.45	0.29	0.05	0.43	0.28	0.15	0.70	0.85	
Green ratio	0.70	0.63	0.90	0.70	0.63	0.90	0.23	0.17	0.90	0.23	0.17	
Unif. delay d1	7.6	26.0	0.9	14.2	12.4	0.8	47.0	54.6	0.9	55.2	60.7	
Delay factor k	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Increm. delay d2	0.4	12.4	0.2	1.1	0.3	0.1	11.8	2.2	0.1	14.1	14.2	
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	8.0	38.3	1.1	15.4	12.7	0.9	58.8	56.8	1.0	69.3	74.9	
Lane group LOS	A	D	A	B	B	A	E	E	A	E	E	
Apprch. delay	34.4			13.2			15.7			73.4		
Approach LOS	C			B			B			E		
Intersec. delay	32.2			Intersection LOS						C		

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

General Information

Project Description	*State Route 106 (Lewisburg Pike) TPR*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*150.0*			
Prot. phase eff. green intvl, g (s)	*5.0*	*5.0*	*5.0*	*5.0*
Opposed queue eff. green intvl, g_q (s)	*13.25*	*96.00*	*21.76*	*6.50*
Unopposed green intvl, g_u (s)	*86.75*	*4.00*	*8.24*	*23.50*
Red time, r(s)	*45.0*	*45.0*	*115.0*	*115.0*
Arrival rate, q_a (veh/s)	*0.01*	*0.16*	*0.01*	*0.05*
Prot. phase departure rate, s_p (veh/s)	*0.501*	*0.973*	*0.501*	*0.501*
Perm. phase departure rate, s_s (veh/s)	*0.21*	*12.22*	*0.26*	*0.37*
X_{perm}	*0.08*	*0.33*	*0.19*	*0.18*
X_{prot} (N/A for lagging left-turns)	*0.28*	*1.67*	*0.64*	*2.49*

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a	*0.63*	*7.30*	*1.53*	*5.97*
Queue at start of unsaturated green, Q_u	*0.18*	*0.00*	*0.29*	*4.73*
Residual queue, Q_r	*0.00*	*3.25*	*0.00*	*3.73*
Uniform delay, d_1	*7.6*	*14.2*	*47.0*	*55.2*

Uniform Queue Size and Delay Equations

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

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *State Route 106 (Lewisburg PIke) TPR*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	L	T	R	L	T	R	L	T	R	L	TR	
Init. queue/lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Flow rate/lane	50	2208	223	584	664	79	48	89	389	187	507	
Satflow per lane	713	1900	1615	949	1900	1615	475	1900	1615	1150	1880	
Capacity/lane	499	2286	1453	1290	2286	1453	111	317	2558	268	596	
Flow ratio	0.07	0.61	0.14	0.32	0.18	0.05	0.10	0.05	0.14	0.16	0.14	
v/c ratio	0.10	0.97	0.15	0.45	0.29	0.05	0.43	0.28	0.15	0.70	0.85	
I factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	
Platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Q_1	0.6	45.7	1.1	3.8	6.5	0.3	1.6	3.2	1.1	6.1	10.8	
k_B	1.0	1.9	2.1	1.2	1.9	2.1	0.4	0.7	2.1	0.7	0.7	
Q_2	0.1	14.1	0.4	1.0	0.8	0.1	0.3	0.3	0.4	1.3	2.8	
Q avg.	0.7	59.8	1.5	4.8	7.3	0.5	1.8	3.5	1.4	7.4	13.5	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	2.5	1.6	2.3	2.0	1.8	2.5	2.3	2.1	2.3	1.8	1.7	
BOQ, $Q_{\%}$	1.8	95.7	3.4	9.5	13.4	1.2	4.2	7.4	3.4	13.6	22.6	
Queue Storage Ratio												
Q spacing	25.0	25.0	25.0	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	0	0	0	
Avg. R_Q												
95% $R_{Q\%}$												

HCS2000™ Version 4.1d

TRIMS DATA
(PROVIDED BY TDOT)

ROUTE FEATURE DESCRIPTION LISTING

WILLIAMSON County - SR106

COUNTY: WILLIAMSON **COUNTY NO.** 94

ROUTE: SR106 **SPECIAL CASE:** None **CTY SEQ:** 1

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
9.030	2	BRIDGE [94SR1060027]: BRANCH Two Lane	231
9.040	1	ENTER NASHVILLE URBAN BOUNDARY	140
9.320	9	BEGIN SPEED LIMIT 45 MPH	932
9.730	9	TRAFFIC SIGNAL	905
9.730	3	SR-248 GOOSE CREEK BYPASS RT. & LT.	310
9.750	2	BRIDGE [94SR1060009]: GOOSE CREEK	221
9.830	5	A500 MOSS LN. LT.	530
9.930	5	A502 POPLAR ST. LT.	530
10.020	5	B776 SOLOMON DR. LT.	530
10.220	5	A245 OLD PEYTONSVILLE RD. RT.	520
10.450	5	A311 HENPECK LN. LT.	530
10.580	2	BRIDGE [94SR1060029]: BRANCH	231
10.770	5	B772 DOUGLAS GLEN LN. LT.	530
10.800	5	A496 ELLINGTON DR. RT.	520
10.990	5	B120 ST. GEORGES WAY RT.	520
11.350	9	OAK VALLEY BAPTIST CHURCH RT.	912
11.360	5	A654 BOWMAN RD. LT.	530
11.390	1	ENTER FRANKLIN CITY LIMITS	130
11.390	0	BEGIN LEWISBURG AV	920
11.410	9	GRACE CUMBERLAND PRESBYTERIAN CHURCH RT.	912
11.590	5	A517 HOLLY HILL DR. RT.	520
11.630	9	BEGIN SPEED LIMIT 40 MPH	932
11.680	5	C449 DONELSON CREEK PKWY.) LT.	530
11.880	9	BEGIN 15 MPH SCHOOL ZONE	933
11.900	2	BRIDGE [94SR1060011]: DONELSON CREEK	221
12.080	9	SCHOOL MOORE ELEMENTARY RT.	915

ROUTE FEATURE DESCRIPTION LISTING

WILLIAMSON County - SR106

COUNTY: WILLIAMSON **COUNTY NO.** 94

ROUTE: SR106 **SPECIAL CASE:** None **CTY SEQ:** 1

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
12.080	5	B406 DALLAS BLVD. LT.	530
12.190	0	C462 SPRING CABIN LN. RT.	999
12.250	9	END 15 MPH SCHOOL ZONE	934
12.290	5	B049 HUNTERS CHASE DR. LT.	530
12.350	5	A516 GARDNER DR. RT. 12.36 TURN LANE	520
12.460	9	TRAFFIC SIGNAL	905
12.460	3	SR-397 MACK HATCHER MEMORIAL PKWY. RT. & LT.	310

TENNESSEE DEPARTMENT OF TRANSPORTATION

COUNTY	= Williamson	Date:	9/27/2007
Route	= SR 106		
Location	= From just south of Goose Creek ByPass to Gardner Dr		
Highway Type	= Urban two lane		
FUNCTIONAL CLAS	Urban minor arterial		
DATA YEARS	= 2004 - 2006		
ADT YEARS USED=	2007 Trims		
COMMENTS =			
ANALYZED BY =	dh		

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

BLM	ELM	Length	Average AADT	VMT
9.60	9.73	0.13	7,560	983
9.73	12.35	2.62	10,720	28,086
0.00		0.00		0
0.00	0.00	0.00	0	0
0.00	0.00	0.00	0	0
0.00	0.00	0.00	0	0
0.00	0.00	0.00	0	0
		2.75	10,571	29,069

INTERSECTION

Log Mile = 0

Leg		Traffic AADT
North	=	0
East	=	0
South	=	0
West	=	0
Entering AADT =		0

2007 Trims

Urban Two Lane

2004 - 2006

		Total	Fatal	Incap. Injury	*Severe Crashes	Other Injury
No. of Crashes	=	43	0	0	0	12
No. of Years	=	3				
SW avg. rate	=	2.341	0.017	0.083	0.099	0.599
03-05 S/W Rates						
Exposure (E)	=	31.8308				
Crash Rate (A)	=	1.351	0.000	0.000	0.000	0.377
Critical Rate (C)	=	2.987				
Severity Index (SI)	=	0.2791				
Actual Rate/SW Average	=	0.58	0.00	0.00	0.00	0.63
Ratio of A/C	=	0.45				

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

Revised 4/3/2007

Crash Summary Report

Date: 09/27/2007

County:	WILLIAMSON	**Route:**	SR106	**Spcl Cse:**	0-NONE	**Cnty Seq:**	1
Begin LogMile:	9.6	**End LogMile:**	12.35	**Begin Date:**	01/01/2004	**End Date:**	12/31/2006

Statistics

Fatal Crashes:	0
Total Killed:	0
Incap Injury Crashes:	0
Total Incap Injuries:	0
Other Injury Crashes:	12
Total Other Injuries:	17
Prop Damage Crashes:	31
Total Crashes:	43

Weather Conditions

No Adverse Conditions:	38	Sleet and Fog:	0
Rain:	4	Smog, Smoke:	0
Sleet and Hail:	0	Severe Crosswind:	0
Snow:	0	Other:	0
Foggy:	0	Unknown:	0
Rain and Fog:	1	Blowing Sand, Soil, Dirt, or Snow:	0

Crashes Involving

Pedestrians:	0
Hazardous Cargo:	1
Construction Zones:	0
Fixed Objects:	5
Heavy Trucks:	0
Bicycles:	0

Manner of Collision

Rear End:	25
Head On:	2
Rear-to-Rear:	0
Angle:	11
Sideswipe Same Dir:	0
Sideswipe Opp. Dir:	2
Unknown:	0

Road Conditions

Ice:	0
Snow or Slush:	0
Sand, Mud, Dirt or Oil:	0
Wet:	1
Dry:	14
Other:	0
Unknown:	0

Crash Location

Along Roadway:	13
At Intersection:	30
Railroad Crossing:	0
Bridge:	0
Underpass:	0
Ramp:	0
Private Property:	0
Other:	0

First Harmful Event

Pedestrian:	0
Pedalcycle:	0
Railway Train:	0
Deer (Animal):	0
Other Animal:	0
Motor Vehicle in Transport:	23
Motor Vehicle in Transport in Other Rdway:	0
Parked Motor Vehicle:	0
Other Type Non-Motorist:	0
Fixed Object:	5
Other Object (not fixed):	0
Non Collision:	0

Lighting Conditions

Dawn:	0
Daylight:	34
Dusk:	1
Dark/Lighted:	2
Dark/Not Lighted:	6
Not Indicated:	0

TENNESSEE DEPARTMENT OF TRANSPORTATION

COUNTY = Williamson — Date: 9/27/2007

Route = SR 106

Location = From Gardner to just north of Mack Hatcher Parkway

Does not include crashes located at Mack Hatcher Parkway

Highway Type = Two lane urban with turn lane

FUNCTIONAL CLAS Urban other principal arterial

DATA YEARS = 2004 - 2006

ADT YEARS USED= 2007 trims

COMMENTS =

ANALYZED BY = dh

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

BLM	ELM	Length	Average AADT	VMT
12.36	12.46	0.10	10,720	1,072
12.46	12.50	0.04	6,610	264
0.00		0.00		0
0.00	0.00	0.00	0	0
0.00	0.00	0.00	0	0
0.00	0.00	0.00	0	0
0.00	0.00	0.00	0	0
		0.14	9,546	1,336

INTERSECTION

Log Mile = 0

Leg		Traffic AADT
North	=	0
East	=	0
South	=	0
West	=	0
Entering AADT =		0

2007 Trims

Two Lane Urban With Turn Lane

2004 - 2006

		Total	Fatal	Incap. Injury	*Severe Crashes	Other Injury
No. of Crashes	=	5	0	0	0	0
No. of Years	=	3				
SW avg. rate	=	2.652	0.012	0.081	0.093	0.592
03-05 S/W Rates						
Exposure (E)	=	1.4634				
Crash Rate (A)	=	3.417	0.000	0.000	0.000	0.000
Critical Rate (C)	=	6.127				
Severity Index (SI)	=	0.0000				
Actual Rate/SW Average	=	1.29	0.00	0.00	0.00	0.00
Ratio of A/C	=	0.56				

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

Revised 4/3/2007

Crash Summary Report

Date: 09/27/2007

County:	WILLIAMSON	**Route:**	SR106	**Spcl Cse:**	0-NONE	**Cnty Seq:**	1
Begin LogMile:	12.36	**End LogMile:**	12.45	**Begin Date:**	01/01/2004	**End Date:**	12/31/2006

Statistics

Fatal Crashes:	0
Total Killed:	0
Incap Injury Crashes:	0
Total Incap Injuries:	0
Other Injury Crashes:	0
Total Other Injuries:	0
Prop Damage Crashes:	5
Total Crashes:	5

Weather Conditions

No Adverse Conditions:	5	Sleet and Fog:	0
Rain:	0	Smog, Smoke:	0
Sleet and Hail:	0	Severe Crosswind:	0
Snow:	0	Other:	0
Foggy:	0	Unknown:	0
Rain and Fog:	0	Blowing Sand, Soil, Dirt, or Snow:	0

Crashes Involving

Pedestrians:	0
Hazardous Cargo:	0
Construction Zones:	0
Fixed Objects:	0
Heavy Trucks:	0
Bicycles:	0

Manner of Collision

Rear End:	5
Head On:	0
Rear-to-Rear:	0
Angle:	0
Sideswipe Same Dir:	0
Sideswipe Opp. Dir:	0
Unknown:	0

Road Conditions

Ice:	0
Snow or Slush:	0
Sand, Mud, Dirt or Oil:	0
Wet:	0
Dry:	3
Other:	0
Unknown:	0

Crash Location

Along Roadway:	5
At Intersection:	0
Railroad Crossing:	0
Bridge:	0
Underpass:	0
Ramp:	0
Private Property:	0
Other:	0

First Harmful Event

Pedestrian:	0
Pedalcycle:	0
Railway Train:	0
Deer (Animal):	0
Other Animal:	0
Motor Vehicle in Transport:	2
Motor Vehicle in Transport in Other Rdway:	0
Parked Motor Vehicle:	0
Other Type Non-Motorist:	0
Fixed Object:	0
Other Object (not fixed):	0
Non Collision:	0

Lighting Conditions

Dawn:	0
Daylight:	4
Dusk:	0
Dark/Lighted:	0
Dark/Not Lighted:	1
Not Indicated:	0

TENNESSEE DEPARTMENT OF TRANSPORTATION

COUNTY	= Williamson	Date:	9/27/2007
Route	= SR 106		
Location	= Intersection with SR 397 Mack Hatcher Memorial Parkway		
Highway Type	= Two lane urban with turn lane		
FUNCTIONAL CLAS	Urban other principal arterial		
DATA YEARS	= 2004 - 2006		
ADT YEARS USED	= 2007 trims		
COMMENTS	=		
ANALYZED BY	= dh		

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

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

INTERSECTION

Log Mile = 12.46

Leg		Traffic AADT
North	=	6,610
East	=	25,590
South	=	10,720
West	=	19,210
Entering AADT =		31,065

2007 Trims

Two Lane Urban With Turn Lane

2004 - 2006

		Total	Fatal	Incap. Injury	*Severe Crashes	Other Injury
No. of Crashes	=	32	0	1	1	11
No. of Years	=	3				
SW avg. rate	=	0.890	0.002	0.015	0.017	0.218
03-05 S/W Rates						
Exposure (E)	=	34.0162				
Crash Rate (A)	=	0.941	0.000	0.029	0.029	0.323
Critical Rate (C)	=	1.281				
Severity Index (SI)	=	0.4063				
Actual Rate/SW Average	=	1.06	0.00	1.96	1.73	1.48
Ratio of A/C	=	0.73				

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

Revised 4/3/2007

Crash Summary Report

Date: 09/27/2007

County: WILLIAMSON **Route:** SR106 **Spcl Cse:** 0-NONE **Cnty Seq:** 1

Begin LogMile: 12.46 **End LogMile:** 12.46 **Begin Date:** 01/01/2004 **End Date:** 12/31/2006

Statistics

Fatal Crashes:	0
Total Killed:	0
Incap Injury Crashes:	1
Total Incap Injuries:	1
Other Injury Crashes:	11
Total Other Injuries:	14
Prop Damage Crashes:	20
Total Crashes:	32

Weather Conditions

No Adverse Conditions:	26	Sleet and Fog:	0
Rain:	6	Smog, Smoke:	0
Sleet and Hail:	0	Severe Crosswind:	0
Snow:	0	Other:	0
Foggy:	0	Unknown:	0
Rain and Fog:	0	Blowing Sand, Soil, Dirt, or Snow:	0

Crashes Involving

Pedestrians:	0
Hazardous Cargo:	1
Construction Zones:	0
Fixed Objects:	0
Heavy Trucks:	3
Bicycles:	0

Manner of Collision

Rear End:	16
Head On:	0
Rear-to-Rear:	0
Angle:	12
Sideswipe Same Dir:	3
Sideswipe Opp. Dir:	1
Unknown:	0

Road Conditions

Ice:	0
Snow or Slush:	0
Sand, Mud, Dirt or Oil:	0
Wet:	4
Dry:	11
Other:	0
Unknown:	0

Crash Location

Along Roadway:	0
At Intersection:	32
Railroad Crossing:	0
Bridge:	0
Underpass:	0
Ramp:	0
Private Property:	0
Other:	0

First Harmful Event

Pedestrian:	0
Pedalcycle:	0
Railway Train:	0
Deer (Animal):	0
Other Animal:	0
Motor Vehicle in Transport:	17
Motor Vehicle in Transport in Other Rdway:	0
Parked Motor Vehicle:	0
Other Type Non-Motorist:	0
Fixed Object:	0
Other Object (not fixed):	0
Non Collision:	0

Lighting Conditions

Dawn:	0
Daylight:	25
Dusk:	0
Dark/Lighted:	7
Dark/Not Lighted:	0
Not Indicated:	0

County	Route	Log Mile	Date of Crash	Time of	Total Killed	Total Inj	Type of Crash	Location	Total Veh	Driver Actions	Most Harmful Event	Manner of First Collision	Weather Cond	Case Number
WILLIAMSON	SR106	9.630	10/25/2004	735	0	0	Prop Damage (over)	ALONG ROADWAY	2	No Contributing Actions	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	7938857
WILLIAMSON	SR106	9.630	11/30/2004	700	0	0	Prop Damage (over)	ALONG ROADWAY	2	No Contributing Actions	VEHICLE IN TRANSPORT	Head-On	Rain	7938862
WILLIAMSON	SR106	9.630	09/01/2004	1620	0	2	Non-Incap Injury	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	8376549
WILLIAMSON	SR106	9.730	05/10/2004	940	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7916416
WILLIAMSON	SR106	9.730	03/03/2004	1830	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Following Improperly	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7938626
WILLIAMSON	SR106	9.730	10/26/2004	1520	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7939897
WILLIAMSON	SR106	9.730	04/27/2004	950	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Following Improperly	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	8214442
WILLIAMSON	SR106	9.730	04/21/2004	1625	0	2	Non-Incap Injury	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Angle	Rain	8259781
WILLIAMSON	SR106	9.730	12/05/2006	720	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	8916786
WILLIAMSON	SR106	9.770	02/08/2005	1715	0	0	Prop Damage (over)	ALONG ROADWAY	2	Driving Left of Center	VEHICLE IN TRANSPORT	Head-On	No Adverse Cond.	7916699
WILLIAMSON	SR106	9.830	01/27/2005	1600	0	2	Non-Incap Injury	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	9653957
WILLIAMSON	SR106	10.020	12/27/2004	800	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7916682
WILLIAMSON	SR106	10.020	11/01/2004	1715	0	1	Non-Incap Injury	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	9680010
WILLIAMSON	SR106	10.030	12/08/2006	1500	0	0	Prop Damage (over)	ALONG ROADWAY	2	No Contributing Actions	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	8919652
WILLIAMSON	SR106	10.220	12/14/2006	731	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	8916787
WILLIAMSON	SR106	10.220	08/26/2005	9	0	2	Non-Incap Injury	AT AN INTERSECTION	1	Other (Narrative)	Fence	No Collision w/ Vehicle	No Adverse Cond.	8937503
WILLIAMSON	SR106	10.220	01/27/2006	750	0	1	Non-Incap Injury	AT AN INTERSECTION	2	Failure to Yield Right of Way	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	9712141
WILLIAMSON	SR106	10.450	10/22/2004	700	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Angle	Rain and Fog	7916523
WILLIAMSON	SR106	10.450	07/24/2004	810	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	8214207
WILLIAMSON	SR106	10.450	06/04/2005	745	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Careless or Erratic Driving	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	8214460
WILLIAMSON	SR106	10.460	12/06/2005	1604	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7939939
WILLIAMSON	SR106	10.550	04/19/2005	1557	0	1	Prop Damage (over)	ALONG ROADWAY	3	Following Improperly	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	8373520
WILLIAMSON	SR106	10.550	03/18/2006	605	0	1	Non-Incap Injury	ALONG ROADWAY	1	LANE DEPARTURE	Culvert	No Collision w/ Vehicle	No Adverse Cond.	9095620
WILLIAMSON	SR106	10.550	08/11/2005	254	0	1	Non-Incap Injury	ALONG ROADWAY	1	LANE DEPARTURE	Wall	No Collision w/ Vehicle	No Adverse Cond.	9680151
WILLIAMSON	SR106	10.770	10/23/2005	1453	0	2	Non-Incap Injury	AT AN INTERSECTION	2	Failure to Yield Right of Way	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	7939740
WILLIAMSON	SR106	10.850	05/19/2004	2125	0	0	Prop Damage (over)	ALONG ROADWAY	1	LANE DEPARTURE	Ditch	Angle	No Adverse Cond.	7938527
WILLIAMSON	SR106	11.090	05/18/2005	735	0	1	Non-Incap Injury	ALONG ROADWAY	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	8936084
WILLIAMSON	SR106	11.350	03/14/2004	1110	0	0	Prop Damage (over)	ALONG ROADWAY	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	Rain	7904707
WILLIAMSON	SR106	11.360	05/17/2004	745	0	0	Prop Damage (over)	AT AN INTERSECTION	3	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7938551
WILLIAMSON	SR106	11.360	12/26/2004	1443	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Driving Left of Center	VEHICLE IN TRANSPORT	Sideswipe, Opposite Dir	No Adverse Cond.	8214219
WILLIAMSON	SR106	11.490	11/03/2005	1656	0	0	Prop Damage (over)	ALONG ROADWAY	2	No Contributing Actions	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	9283782
WILLIAMSON	SR106	11.680	08/17/2005	715	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Improper Turn	VEHICLE IN TRANSPORT	Sideswipe, Opposite Dir	No Adverse Cond.	7899948
WILLIAMSON	SR106	11.680	09/20/2006	1530	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Following Improperly	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	9741152
WILLIAMSON	SR106	11.680	12/20/2005	649	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	9741237
WILLIAMSON	SR106	11.680	02/16/2006	1450	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Failure to Yield Right of Way	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	9741465
WILLIAMSON	SR106	11.700	05/13/2004	2040	0	0	Prop Damage (over)	ALONG ROADWAY	1	LANE DEPARTURE	Utility Pole	Angle	No Adverse Cond.	7997996

County	Route	Log Mile	Date of Crash	Time of	Total Killed	Total Inj	Type of Crash	Location	Total Veh	Driver Actions	Most Harmful Event	Manner of First Collision	Weather Cond	Case Number
WILLIAMSON	SR106	12.080	03/29/2005	725	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Following Improperly	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7999592
WILLIAMSON	SR106	12.080	12/20/2006	840	0	1	Non-Incap Injury	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	8915825
WILLIAMSON	SR106	12.260	08/17/2004	1739	0	1	Non-Incap Injury	ALONG ROADWAY	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7916464
WILLIAMSON	SR106	12.290	06/04/2005	1350	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Following Improperly	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7998846
WILLIAMSON	SR106	12.290	11/17/2004	1821	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7999281
WILLIAMSON	SR106	12.350	02/02/2005	1240	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	Rain	7999645
WILLIAMSON	SR106	12.350	04/20/2005	815	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	9740151
WILLIAMSON	SR106	12.360	08/17/2004	1517	0	0	Prop Damage (over)	ALONG ROADWAY	2	Following Improperly	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7997860
WILLIAMSON	SR106	12.380	11/17/2006	1041	0	0	Prop Damage (over)	ALONG ROADWAY	2	Failure to Yield Right of Way	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	8916465
WILLIAMSON	SR106	12.420	08/18/2006	1543	0	0	Prop Damage (over)	ALONG ROADWAY	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	8916966
WILLIAMSON	SR106	12.420	04/04/2006	1651	0	0	Prop Damage (over)	ALONG ROADWAY	2	Following Improperly	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	9741430
WILLIAMSON	SR106	12.450	01/13/2004	2123	0	0	Prop Damage (over)	ALONG ROADWAY	2	Other (Narrative)	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7904915
WILLIAMSON	SR106	12.460	11/06/2006	1700	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	Rain	7903997
WILLIAMSON	SR106	12.460	01/11/2005	1324	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	7904266
WILLIAMSON	SR106	12.460	07/10/2004	1220	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Improper Turn	VEHICLE IN TRANSPORT	Angle	Rain	7904719
WILLIAMSON	SR106	12.460	06/20/2004	1655	0	1	Non-Incap Injury	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	7904923
WILLIAMSON	SR106	12.460	02/06/2006	1447	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	7905247
WILLIAMSON	SR106	12.460	04/20/2004	1705	0	2	Non-Incap Injury	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	7997986
WILLIAMSON	SR106	12.460	04/29/2004	1643	0	1	Non-Incap Injury	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7997989
WILLIAMSON	SR106	12.460	08/27/2006	1343	0	1	Non-Incap Injury	AT AN INTERSECTION	3	Failure to Obey Traffic Controls	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	7998374
WILLIAMSON	SR106	12.460	09/14/2004	1645	0	1	Non-Incap Injury	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	7998697
WILLIAMSON	SR106	12.460	08/22/2004	1807	0	1	Non-Incap Injury	AT AN INTERSECTION	2	Operator Inexperience	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7998930
WILLIAMSON	SR106	12.460	01/10/2005	1625	0	1	Non-Incap Injury	AT AN INTERSECTION	2	ntive (Eating, Reading, Talking	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	7998940
WILLIAMSON	SR106	12.460	04/01/2005	850	0	1	Non-Incap Injury	AT AN INTERSECTION	2	ntive (Eating, Reading, Talking	VEHICLE IN TRANSPORT	Rear-End	Rain	7999164
WILLIAMSON	SR106	12.460	11/13/2004	1825	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7999206
WILLIAMSON	SR106	12.460	04/25/2005	1640	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Following Improperly	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7999222
WILLIAMSON	SR106	12.460	03/30/2005	1546	0	0	Prop Damage (over)	AT AN INTERSECTION	3	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	7999299
WILLIAMSON	SR106	12.460	12/22/2004	2316	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Improper Passing	VEHICLE IN TRANSPORT	Sideswipe, Same Dir	Rain	7999459
WILLIAMSON	SR106	12.460	03/05/2005	855	0	0	Prop Damage (over)	AT AN INTERSECTION	2	LANE DEPARTURE	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	7999622
WILLIAMSON	SR106	12.460	02/24/2005	1910	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	7999906
WILLIAMSON	SR106	12.460	08/02/2006	1349	0	0	Prop Damage (over)	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Sideswipe, Opposite Dir	No Adverse Cond.	8915450
WILLIAMSON	SR106	12.460	10/08/2006	1550	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Following Improperly	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	8916158
WILLIAMSON	SR106	12.460	02/27/2006	1625	0	0	Prop Damage (over)	AT AN INTERSECTION	2	rating Without Required Equipr	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	8916404
WILLIAMSON	SR106	12.460	06/06/2006	1318	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Improper Backing	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	8916538
WILLIAMSON	SR106	12.460	06/16/2006	1710	0	2	Non-Incap Injury	AT AN INTERSECTION	4	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	8916654
WILLIAMSON	SR106	12.460	05/20/2006	2030	0	1	Non-Incap Injury	AT AN INTERSECTION	2	Following Improperly	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	8916695

County	Route	Log Mile	Date of Crash	Time of	Total Killed	Total Inj	Type of Crash	Location	Total Veh	Driver Actions	Most Harmful Event	Manner of First Collision	Weather Cond	Case Number
WILLIAMSON	SR106	12.460	05/21/2006	1948	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Failure to Yield Right of Way	VEHICLE IN TRANSPORT	Angle	No Adverse Cond.	8916696
WILLIAMSON	SR106	12.460	11/15/2006	902	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Improper Lane Changing	VEHICLE IN TRANSPORT	Sideswipe, Same Dir	Rain	8916972
WILLIAMSON	SR106	12.460	07/03/2005	1750	0	1	Non-Incap Injury	AT AN INTERSECTION	2	No Contributing Actions	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	9740259
WILLIAMSON	SR106	12.460	03/05/2006	1935	0	2	Incap Injury	AT AN INTERSECTION	2	Unknown Action	VEHICLE IN TRANSPORT	Angle	Rain	9740292
WILLIAMSON	SR106	12.460	10/24/2005	1320	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Improper Lane Changing	VEHICLE IN TRANSPORT	Sideswipe, Same Dir	No Adverse Cond.	9740838
WILLIAMSON	SR106	12.460	11/14/2005	650	0	0	Prop Damage (over)	AT AN INTERSECTION	2	Following Improperly	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	9740845
WILLIAMSON	SR106	12.460	07/10/2006	738	0	0	Prop Damage (over)	AT AN INTERSECTION	2	ntive (Eating, Reading, Talking	VEHICLE IN TRANSPORT	Rear-End	No Adverse Cond.	9741591

TRIMS ROAD SEGMENT REPORT

WILLIAMSON County - SR106

COUNTY: WILLIAMSON

COUNTY NO: 94

ROUTE NBR	SPEC CASE	CTY SEQ	BEG LOG MILE	END LOG MILE	SP SY	SP SY2	SP SY3	US RTE	US RTE2	FUNCTIONAL CLASS	ADM SYS	URB AREA	INC AREA	GOV CON	ROAD NAME	HPMS SEC_ID
SR106	0	1	0.000	1.880	23			431		R / MAJ COL	STP STATE RURAL			STATE HWAY	LEWISBURG PK	
SR106	0	1	1.880	4.570	40	23		431		R / MAJ COL	STP STATE RURAL			STATE HWAY	LEWISBURG PK	9401S1060188
SR106	0	1	4.570	9.040	23			431		R / MAJ COL	STP STATE RURAL			STATE HWAY	LEWISBURG PK	
SR106	0	1	9.040	11.390	23			431		U / MIN ART	STP STATE URBAN	210		STATE HWAY	LEWISBURG PK	
SR106	0	1	11.390	14.610	23			431		U / MIN ART	STP STATE URBAN	210	103	STATE HWAY	LEWISBURG AV	
SR106	0	1	14.610	14.850	23			431		U / MIN ART	STP STATE URBAN	210	103	STATE HWAY	5TH AV S	
SR106	0	1	14.850	15.290	01			431		U / MIN ART	STP STATE URBAN	210	103	STATE HWAY	5TH AV N	
SR106	0	1	15.290	16.270	01			431		U / MIN ART	STP STATE URBAN	210	103	STATE HWAY	HILLSBORO RD	
SR106	0	1	16.270	17.700	01			431		U OTH PRIN ART	STP STATE URBAN	210	103	STATE HWAY	HILLSBORO RD	
SR106	0	1	17.700	17.800	01			431		U OTH PRIN ART	STP STATE URBAN	210		STATE HWAY	HILLSBORO RD	
SR106	0	1	17.800	18.360	01			431		R / MIN ART	STP STATE RURAL			STATE HWAY	HILLSBORO RD	
SR106	0	1	18.360	18.790	01			431		U OTH PRIN ART	STP STATE URBAN	210		STATE HWAY	HILLSBORO RD	
SR106	0	1	18.790	19.990	40			431		R / MIN ART	STP STATE RURAL			STATE HWAY	HILLSBORO RD	9401S1061865
SR106	0	1	19.990	20.270	01			431		R / MIN ART	STP STATE RURAL			STATE HWAY	HILLSBORO RD	
SR106	0	1	20.270	21.610	01			431		U OTH PRIN ART	STP STATE URBAN	210		STATE HWAY	HILLSBORO RD	
SR106	0	1	21.610	23.300	01			431		R / MIN ART	STP STATE RURAL			STATE HWAY	HILLSBORO RD	
SR106	0	1	23.300	23.370	01			431		U OTH PRIN ART	STP STATE URBAN	210		STATE HWAY	HILLSBORO RD	
SR106	0	1	23.370	23.810	01			431		U OTH PRIN ART	STP STATE URBAN	210	32	STATE HWAY	HILLSBORO RD	

TRIMS TRAFFIC REPORT

WILLIAMSON County - SR106

COUNTY: WILLIAMSON

ROUTE	SC	CO SQ	BEG LOG MILE	END LOG MILE	YR OF TRAFFIC	AVERAGE DAILY TRAFFIC	PEAK HOUR %	DESIGN HOUR VOLUME	DIRECT DIST %	% PASS CARS	% SINGLE UNIT TRUCKS	% MULTI UNIT TRUCKS	CYCLE COUNTS STATION NBR	CYCLE COUNTS COUNTY	CLASS COUNTS STATION NBR	CLASS COUNTS COUNTY	IS CLASS COUNT?
SR106		1	4.570	9.730	2007	7560	13	15	65	95	3	2	83	94	[illegible]	94	[illegible]
SR106		1	[illegible]	12.460	[illegible]	10720	[illegible]	11	[illegible]	97	[illegible]	2	[illegible]	94	[illegible]	94	[illegible]
SR106		1	[illegible]	13.870	[illegible]	6610	[illegible]	12	[illegible]	93	[illegible]	6	[illegible]	94	[illegible]	94	[illegible]

ROUTE FEATURE DESCRIPTION LISTING

WILLIAMSON County - SR397

COUNTY: WILLIAMSON **COUNTY NO.** 94

ROUTE: SR397 **SPECIAL CASE:** None **CTY SEQ:** 1

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
1.450	1	B642 POLK PLACE DR. LT.	199
1.820	9	TRAFFIC SIGNAL	905
1.820	3	SR-106 LEWISBURG AVE. RT. & LT.	310
2.000	2	BRIDGE [94SR3970003]: HARPETH RIVER	251

09/27/2007

TRIMS TRAFFIC REPORT

WILLIAMSON County - SR397

COUNTY: WILLIAMSON

ROUTE	SC	CO SQ	BEG LOG MILE	END LOG MILE	YR OF TRAFFIC	AVERAGE DAILY TRAFFIC	PEAK HOUR %	DESIGN HOUR VOLUME	DIRECT DIST %	% PASS CARS	% SINGLE UNIT TRUCKS	% MULTI UNIT TRUCKS	CYCLE COUNTS STATION NBR	CYCLE COUNTS COUNTY	CLASS COUNTS STATION NBR	CLASS COUNTS COUNTY	IS CLASS COUNT?
SR397		1	0.000	1.820	2007	19210	8	10	65	91	5	4	142	94	142C	94	
SR397		1		3.200		25590		10	65	94	3	3	144	94	144C	94	

GEOMETRIC REPORT

WILLIAMSON County - SR106

County: WILLIAMSON (94) ***Route No.*** SR106 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information Seq. #	Type	Width	Composition
9.500	9.620	60	0-NONE	2-TWO WAY	NO		45		2-ROLLING	0-RURAL	2	2	1	DRAINAGE		DITCH
		60									2	2	2	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
		60									2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE
		60									2	2	4	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
		60									2	2	5	DRAINAGE		DITCH
9.620	9.810	120	0-NONE	2-TWO WAY	NO		45		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	1	DRAINAGE		DITCH
		120									2	2	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		120									2	2	3	PAVEMENT	24.0	ASPHALT CONCRETE
		120									2	2	4	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		120									2	2	5	DRAINAGE		DITCH
9.810	10.380	60	0-NONE	2-TWO WAY	NO		45		2-ROLLING	0-RURAL	2	2	1	DRAINAGE		DITCH
		60									2	2	2	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
		60									2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE
		60									2	2	4	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
		60									2	2	5	DRAINAGE		DITCH
10.380	10.410	60	0-NONE	2-TWO WAY	NO		45		2-ROLLING	0-RURAL	2	2	1	DRAINAGE		DITCH
		60									2	2	2	SHOULDER (OUTSIDE)	8.0	ASPHALT CONCRETE
		60									2	2	3	PAVEMENT	12.0	ASPHALT CONCRETE
		60									2	2	4	MEDIAN	12.0	PAINTED
		60									2	2	5	PAVEMENT	12.0	ASPHALT CONCRETE

GEOMETRIC REPORT

WILLIAMSON County - SR106

County: WILLIAMSON (94) ***Route No.*** SR106 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information Seq. #	Type	Width	Composition
10.380	10.410	60	0-NONE	2-TWO WAY	NO		45		2-ROLLING	0-RURAL	2	2	6	SHOULDER (OUTSIDE)	8.0	ASPHALT CONCRETE
		60									2	2	7	DRAINAGE		DITCH
10.410	10.520	60	0-NONE	2-TWO WAY	NO		45		2-ROLLING	0-RURAL	2	2	1	DRAINAGE		CURB AND GUTTER
		60									2	2	2	SHOULDER (OUTSIDE)	8.0	ASPHALT CONCRETE
		60									2	2	3	PAVEMENT	12.0	ASPHALT CONCRETE
		60									2	2	4	MEDIAN	12.0	PAINTED
		60									2	2	5	PAVEMENT	12.0	ASPHALT CONCRETE
		60									2	2	6	SHOULDER (OUTSIDE)	8.0	ASPHALT CONCRETE
		60									2	2	7	DRAINAGE		CURB AND GUTTER
10.520	11.630	60	0-NONE	2-TWO WAY	NO		45		2-ROLLING	0-RURAL	2	2	9	DRAINAGE		DITCH
		60									2	2	11	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
		60									2	2	13	PAVEMENT	22.0	ASPHALT CONCRETE
		60									2	2	15	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
		60									2	2	17	DRAINAGE		DITCH
11.630	11.830	60	0-NONE	2-TWO WAY	NO		40		2-ROLLING	0-RURAL	2	2	9	DRAINAGE		DITCH
		60									2	2	11	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
		60									2	2	13	PAVEMENT	22.0	ASPHALT CONCRETE
		60									2	2	15	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
		60									2	2	17	DRAINAGE		DITCH
11.830	11.880	100	0-NONE	2-TWO WAY	NO		40		2-ROLLING	0-RURAL	2	2	1	DRAINAGE		DITCH

GEOMETRIC REPORT

WILLIAMSON County - SR106

County: WILLIAMSON (94) ***Route No.*** SR106 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information Seq. #	Type	Width	Composition
11.830	11.880	100	0-NONE	2-TWO WAY	NO		40		2-ROLLING	0-RURAL	2	2	2	SHOULDER (OUTSIDE)	7.0	ASPHALT CONCRETE
		100									2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE
		100									2	2	4	SHOULDER (OUTSIDE)	7.0	ASPHALT CONCRETE
		100									2	2	5	DRAINAGE		DITCH
11.880	11.930	100	0-NONE	2-TWO WAY	NO	15	40		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	1	DRAINAGE		DITCH
		100									2	2	2	SHOULDER (OUTSIDE)	7.0	ASPHALT CONCRETE
		100									2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE
		100									2	2	4	SHOULDER (OUTSIDE)	7.0	ASPHALT CONCRETE
		100									2	2	5	DRAINAGE		DITCH
11.930	11.990	100	0-NONE	2-TWO WAY	NO	15	40		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	-6	DRAINAGE		DITCH
		100									2	2	-5	SHOULDER (OUTSIDE)	7.0	ASPHALT CONCRETE
		100									2	2	-4	PAVEMENT	11.0	ASPHALT CONCRETE
		100									2	2	-3	MEDIAN	11.0	PAINTED
		100									2	2	-2	PAVEMENT	11.0	ASPHALT CONCRETE
		100									2	2	-1	SHOULDER (OUTSIDE)	7.0	ASPHALT CONCRETE
		100									2	2	0	DRAINAGE		DITCH
11.990	12.170	80	0-NONE	2-TWO WAY	NO	15	40		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	1	DRAINAGE		SIDEWALK ONLY
		80									2	2	2	SHOULDER (OUTSIDE)	4.0	GRAVEL
		80									2	2	3	PAVEMENT	12.0	ASPHALT CONCRETE
		80									2	2	4	MEDIAN	12.0	PAINTED

GEOMETRIC REPORT

WILLIAMSON County - SR106

County: WILLIAMSON (94) ***Route No.*** SR106 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information Seq. #	Type	Width	Composition
11.990	12.170	80	0-NONE	2-TWO WAY	NO	15	40		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	5	PAVEMENT	12.0	ASPHALT CONCRETE
		80									2	2	6	SHOULDER (OUTSIDE)	4.0	ASPHALT CONCRETE
		80									2	2	7	DRAINAGE		SIDEWALK ONLY
12.170	12.250	80	0-NONE	2-TWO WAY	NO	15	40		2-ROLLING	4-FRINGE (MIX RES. COMM.)	2	2	1	DRAINAGE		SIDEWALK ONLY
		80									2	2	2	SHOULDER (OUTSIDE)	2.0	GRAVEL
		80									2	2	3	PAVEMENT	12.0	ASPHALT CONCRETE
		80									2	2	4	MEDIAN	12.0	PAINTED
		80									2	2	5	PAVEMENT	12.0	ASPHALT CONCRETE
		80									2	2	6	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		80									2	2	7	DRAINAGE		SIDEWALK ONLY
12.250	12.280	40	0-NONE	2-TWO WAY	NO		40		2-ROLLING	7-RESIDENTIAL	2	2	1	DRAINAGE		SIDEWALK ONLY
		40									2	2	2	SHOULDER (OUTSIDE)	2.0	GRAVEL
		40									2	2	3	PAVEMENT	12.0	ASPHALT CONCRETE
		40									2	2	4	MEDIAN	12.0	PAINTED
		40									2	2	5	PAVEMENT	12.0	ASPHALT CONCRETE
		40									2	2	6	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		40									2	2	7	DRAINAGE		SIDEWALK ONLY
12.280	12.360	40	0-NONE	2-TWO WAY	NO		40		2-ROLLING	7-RESIDENTIAL	2	2	1	DRAINAGE		DITCH
		40									2	2	2	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		40									2	2	3	PAVEMENT	22.0	ASPHALT CONCRETE

WILLIAMSON County - SR106

County: WILLIAMSON (94) ***Route No.*** SR106 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Seq. #	Type	Width	Composition
12.280	12.360	40	0-NONE	2-TWO WAY	NO		40		2-ROLLING	7-RESIDENTIAL	2	2	4	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		40									2	2	5	DRAINAGE		DITCH
12.360	12.600	60	0-NONE	2-TWO WAY	NO		40		2-ROLLING	7-RESIDENTIAL	2	2	1	DRAINAGE		CURB AND GUTTER
		60									2	2	2	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		60									2	2	3	PAVEMENT	12.0	ASPHALT CONCRETE
		60									2	2	4	LEFT TURN LANE	12.0	ASPHALT CONCRETE
		60									2	2	5	PAVEMENT	12.0	ASPHALT CONCRETE
		60									2	2	6	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		60									2	2	7	DRAINAGE		CURB AND GUTTER
12.600		60	0-NONE	2-TWO WAY	NO		40		2-ROLLING	7-RESIDENTIAL	2	2	1	DRAINAGE		CURB AND GUTTER
		60									2	2	1	DRAINAGE		DITCH
		60									2	2	2	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		60									2	2	2	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		60									2	2	3	PAVEMENT	24.0	ASPHALT CONCRETE
		60									2	2	3	PAVEMENT	12.0	ASPHALT CONCRETE
		60									2	2	4	LEFT TURN LANE	12.0	ASPHALT CONCRETE
		60									2	2	4	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE
		60									2	2	5	DRAINAGE		DITCH
		60									2	2	5	PAVEMENT	12.0	ASPHALT CONCRETE
		60									2	2	6	SHOULDER (OUTSIDE)	2.0	ASPHALT CONCRETE

GEOMETRIC REPORT

WILLIAMSON County - SR106

County: WILLIAMSON (94) ***Route No.*** SR106 ***Special Case*** 0-NONE ***County Sequence*** 1

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
12.600	12.600	60	0-NONE	2-TWO WAY	NO		40		2-ROLLING	7-RESIDENTIAL	2	2	7	DRAINAGE		CURB AND GUTTER

HISTORICAL PROPERTY INFORMATION
(PROVIDED BY TDOT)

Dr. Hezekiah Oden House
Common Name: Walnut Winds
Lewisburg Pike
Franklin, Tennessee

Property #289

Hezekiah Oden House: unusual recessed central entrance on Greek Revival residence

The Dr. Hezekiah Oden House, also known as Walnut Winds, is a one-story frame Greek Revival influenced residence constructed ca. 1850. The home was built in a simple central-passage plan with a recessed central entrance. This design is unusual in the county, with most Greek Revival-style homes displaying a projecting portico on the main facade.

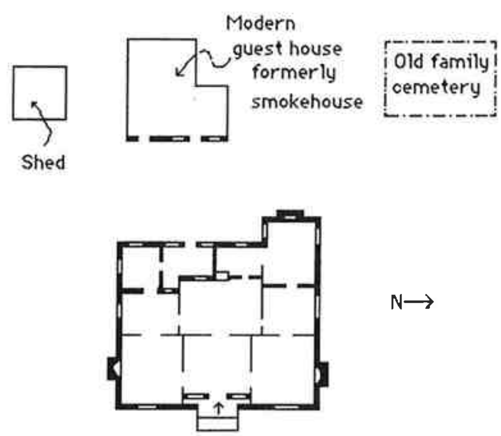
In 1813, Solomon Oden moved to Williamson County from Virginia and settled near Thompson Station. One of the Oden children, Hezekiah, became a prominent physician and constructed this house around 1850. His home was built with both Greek Revival and Italianate designs and featured an ornate central recessed entrance.

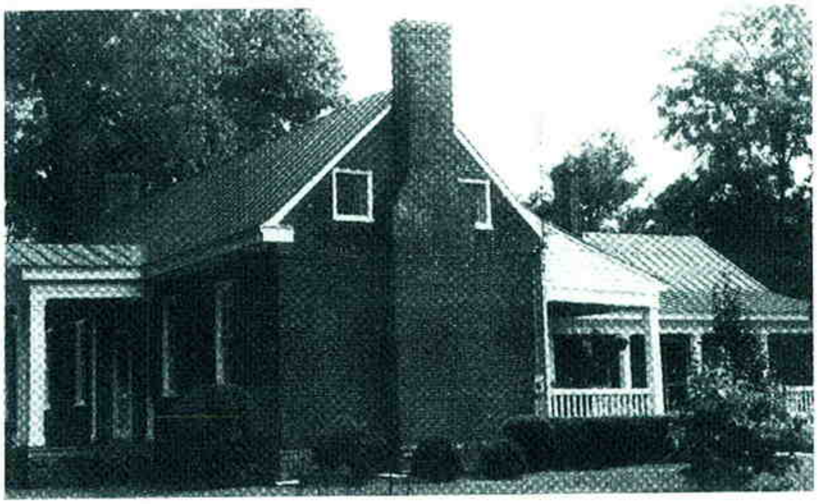
Both Dr. Oden and his wife died on the property during the Civil War. Mrs. Oden's sister, Mary Susan Reams, moved here to look after the Oden children. Several skirmishes during the war took place near the house and Miss Reams nursed several wounded soldiers back to health in 1864. The Oden family continued to own the house during the late 19th and early 20th centuries. In 1949 the home was purchased and restored by Edward Stalcup.

The recessed entrance on the main facade of the Oden House consists of original double doors with raised rectangular panels in the surround and two-light sidelights. Over the sidelights are small single lights and over the door is a two-light transom. Dividing the door and sidelights are Doric-motif pilasters. At the cornice are paired Italianate brackets with drop pendants.

At the rear of the house are three original ell additions of which two retain their original brick chimneys. The interior of the house has not been altered and retains original architrave molding around the doors and windows and Greek Revival influenced mantles with similar molding. Interior doors have two-light transoms.

The Dr. Hezekiah Oden House has not been significantly altered since its construction and displays its original form, detailing and setting. The home was placed on the National Register of Historic Places in 1988.





Mordecai Puryear House
Lewisburg Pike
Franklin, Tennessee

Property #287

Mordecai Puryear House: early Federal plantation home

The Mordecai Puryear House is a one-story Federal influenced brick residence constructed ca. 1830. The residence was typical of the period with its central-hall plan, exterior brick chimneys and central doorway.

Mordecai Puryear was born in 1806 and was the son of Major Hezekiah Puryear, an early settler who moved to the county from Virginia. The family owned a large amount of land along the Lewisburg Pike in the area known as the Douglas community. Around 1830 Mordecai Puryear constructed his brick home plus a detached kitchen that has since been razed.

The Puryear farm was one of the first self-supporting plantations of the early 19th century. On the property was a cotton gin, mill and other buildings. In 1860, Puryear was listed as owning several hundred acres valued at $17,000 and personal estate valued at $26,000. During the Civil War many of the outbuildings were destroyed, but the main house was not significantly damaged.

Puryear owned the house until his death in 1883, and it remained in the family until 1907, when it was bought by Louis Dedman. The Dedman family made several changes at the rear of the house, including the addition of a brick wing and porch. The house continued to be owned by the Dedman family until 1942. Since then the home has had several owners.

On the main facade of the Puryear House is a one-story frame gable roof porch added ca. 1907. The porch has plain detailing and square Doric-motif columns. The main entrance has an original door and four-light transom. Flanking the door are Doric-motif pilasters. Windows on this facade have brick jack arching and wood sills.

At the rear of the house is a one-story brick addition ca. 1907. This ell has a one-story frame porch with square Doric-motif columns and balusters on the railing. The interior of the Puryear House features Federal influenced fluted mantles, chair railing and a staircase with a simple newel post and square balusters. Adjacent to the house is a ca. 1850 one-story brick carriage house which has been converted into a garage.

The Mordecai Puryear House is a fine example of the early Federal influenced homes built in Williamson County and has not been significantly altered since the 1907 additions. This property was placed on the National Register of Historic Places in 1988.