



TRANSPORTATION SAFETY & ADVISORY COMMISSION

CITY OF HARRISONBURG, VIRGINIA

TO: Transportation Safety & Advisory Commission Members, Council members, City Manager Kurt Hodgen

FROM: Brad Reed, Transportation Planner

DATE: March 4, 2011

RE: Transportation Safety & Advisory Commission Summary from March 2, 2011 Meeting

The Transportation Safety & Advisory Commission met on Wednesday March 2, 2011 at 9:00AM in City Council Chambers at the Community Development Building, 409 South Main Street.

Members and Advisory Members present included: Bill Blessing (Chair), Brad Reed (Public Works), Thanh Dang (Public Works), Drew Williams (Public Works), Len Van Wyk (citizen member), Russell Presnell (citizen member), MPO Greg Deeds (Police member), Sgt. William Keller (Police), Reggie Smith (Public Transportation), Dough Stader (DMV), Lee Eshelman (JMU),

Guests Present: Jeff Mellott (Daily News-Record)

Citizens are always provided the opportunity to voice their views/concerns about any item before the commission. It is the policy of the Commission to move the agenda item to the beginning of the meeting when citizens attend Commission meetings to avoid detaining citizens for the entire meeting. However, any citizen is welcome to stay for the entire meeting.

Welcome

New Business

1. Calvin Ferrell meeting day conflict

The Commission discussed how to handle Calvin's conflict with the Wednesday meeting day. It was decided that the meeting day will shift back to the first Thursday of each month beginning in June, as Mr. Van Wyk's conflict be no longer exist once JMU is out of session.

2. Central Avenue - citizen complaint

Ms. Dang reported that Public Works has received calls from a household living on Central Avenue near Vale Circle that has had accidents occur in front of their homes on three separate occasions by drivers traveling on Central Avenue. Public Works and Police staff reviewed these accidents and found that one of the accidents was caused by a driver traveling 65 mph; another was caused by a driver traveling 35 mph during a snow event; and the last was caused by a driver traveling 30 mph that was 'obviously drunk'.

Ms. Dang also reported that Sandy Bopp, a citizen, requested that the neighborhood traffic calming program be reopened for this neighborhood. The Pleasant Hill Acres neighborhood first became enrolled in the traffic calming program in 2002, with action taken in the form of increased fines for exceeding the speed limit in the neighborhood, and painted edge lines and double yellow line on Central Avenue.

City staff will perform a study of speeds and cut through traffic on Central Avenue and Emery Street to evaluate the existing traffic conditions. Results of the study will be reported at the next Commission meeting.

Mr. Williams explained that Public Works is developing a graduation process for neighborhoods in the traffic calming program. This will likely involve a comparison of traffic data before and after calming measures are implemented to evaluate whether or not the citizen concerns have been addressed. If all of the issues were to be deemed resolved, the neighborhood's status in the program would change to an inactive state. Staff will report their findings to the Commission once a draft policy has been created.

3. West Market Street - speed limit change

Mr. Reed reported that the speed limit on West Market Street between Dogwood Drive and Route 42 was raised from 25 mph to 35 mph in February. The change was made to improve travel time and meet driver expectancy on the corridor.

Prior to the speed limit change, staff presented the Commission with the following research via email:

85th percentile speeds

Eastbound: 37 mph

Westbound: 45 mph

Engineering guidelines dictate that speed limits should be set as near as possible to the 85th percentile speed to meet driver expectancy and avoid penalizing drivers that are traveling at a reasonable and prudent speed that matches the design of the roadway.

Accident History

Accident records were pulled for a one year period from November 2010. No accidents were found that were directly related to speeding problems.

Sight Distance

Sight distance was measured from all public streets in the study area and found to be in compliance with City standards. Sight distance never fell below 400 feet at any location. The City's Design and Construction Standards Manual requires 350 feet for a 35 mph zone. Please note that it did not appear that sight distance would be an issue at any of the private driveways either.

The Commission agreed with staff's recommendation and staff received approval from the Chief of Police to make the change.

4. North Liberty Street & West Gay Street - traffic signal removal study

Mr. Reed informed the Commission that Public Works performed a traffic signal study to determine the feasibility of removal this traffic signal. A signal warrant study (attached below) was completed and found that traffic volumes are too low to warrant signalized control of the intersection. No reported accidents were found in 2010 at the intersection and sight distance is very good for all approaches. Mr. Reed recommended that the traffic signal be removed after a 30-day flash period, as is standard procedure. Stop control would be placed on Liberty Street, while free flow would be given Gay Street. The Commission agreed with this recommendation. Staff will present the matter to City Council to obtain final approval for the action. The flash period would begin after being given Council approval.

5. Kratzer Road & North Liberty Street – request to change to yield control

Mr. Reed shared that Capt. Gregory of the Police Department requested that Public Works look into the feasibility of changing the traffic control on Kratzer Road at North Liberty Street from stop control to yield control. Staff reviewed this matter and recommended against the change due to the poor sight distance for vehicles on Kratzer Road looking north on Liberty Street. This problem is exacerbated by the high downhill speeds on Liberty Street (85th percentile speed is 36 mph) and the presence of a crosswalk on Liberty Street at the intersection. It was determined that Kratzer Road used to yield controlled, but was changed to stop control many years ago for unknown reasons. The Commission agreed with staff's recommendation and expressed discomfort with yield control in this location.

6. South High Street & Grace Street– pedestrian safety complain

Mr. Reed shared that a complaint was received from a JMU student about the pedestrian safety for those wishing to cross High Street. The individual has witnessed close calls between pedestrians in this crosswalk and vehicles traveling south on High Street making a right turn on red onto Grace Street.

The group noted that this is an issue that has not been expressed previously. This traffic signal was reconfigured last year (with the Commission's recommendation) to give the eastbound and westbound approaches on Grace Street separate, protected movements. This was done to eliminate the conflict between eastbound left turning vehicles and pedestrians crossing High Street on the north side of the intersection.

Sgt. Keller requested that Public Works staff call the individual to determine the times during which this problem occurred and report to him so that the Police Department can monitor the intersection. The Commission agreed with this course of action. Staff will report back with their findings at the next Commission meeting.

Old Business

7. Sheetz on Vine Street – left turn issue update

Mr. Reed reported that this matter was brought before City Council on February 22nd to inform them of Public Works' intention to installed delineators on Vine Street in front of the unsignalized Sheetz entrance to physically prevent ingress and egress left turns. Staff plans to install the devices by the second week of March.

8. Neighborhood Traffic Calming Program - Old Town update

Ms. Dang explained that Public Works and the Old Town neighborhood workgroup presented their Traffic Calming Plan to City Council on February 22nd. Council voted unanimously to adopt the Plan, but did not appropriate any funding for the improvements at that time. Council directed staff to integrate the plan into existing street and sidewalk program budgets and to report back in three months with an update.

9. Warsaw Avenue & Harrison Street - traffic signal study update

Mr. Reed reported that the signal study is complete and presented a recommended reconfiguration for the intersection to improve its efficiency and safety. Staff recommends keeping the traffic signal installed, but rephasing it as such: Warsaw Avenue is to be given a green ball in both directions for simultaneous flow; Harrison Street is to be restricted to making a right turn only onto Warsaw Avenue; and the pedestrian signal is to operate simultaneously with the right turn arrow for Harrison Street so that it is no longer an exclusive pedestrian phase. The left turn restriction on Harrison Street is recommended to prevent conflicts with pedestrians in the crosswalk and to discourage left turns off of Main Street onto Fairview Avenue. There are currently about 100 vehicles in the AM peak hour that turn left from Harrison Street towards the JMU parking deck. Almost all of these vehicles arrived on Harrison Street by taking a left turn onto Fairview Avenue from South Main Street near its intersection with Port Republic Road. These left turns onto and off of Fairview Avenue are sources of significant safety concerns, as vehicles must cross many lanes of traffic and often squeeze through queued vehicles at the South Main Street & Port Republic Road signal. Vehicles turning left off of Fairview Avenue have the addition problem of poor sight distance due to these queued vehicles. Understanding that advance notification of motorists is necessary to indicate

that the parking deck cannot be accessed from Harrison Street, staff will installed appropriate signage when the changes to the Warsaw Avenue & Harrison Street signal are implemented.

The Commission recommended that staff move forward to the proposed changes to the Warsaw Avenue & Harrison Street intersection. Staff plans to make the changeover during the summer. An agreement has been made with JMU to keep the signal in flash operation until this time.

The group also discussed how to restrict left turns at Fairview Avenue and South Main Street and Mr. Williams explained that the fire department is against previously proposed physical changes to accomplish this, expressing concern regarding accessibility by emergency vehicles. The Commission recommended that the fire department be petitioned to further discuss options of allowing a physical restriction of left turns by motorists at this location, while allowing fire vehicles to enter Fairview Drive in a nonconventional way (e.g. mountable curb, etc.). Mr. Blessing agreed to send a letter to them to that effect.

Other Business/ Announcements

10. May is Bike Month

Ms. Dang announced that May is National Bike Month and that there are a series of events being planned for in Harrisonburg by local advocacy groups. Bike to Work Week is May 16-20 and Bike to Work Day is Friday May 20.

Those wishing to volunteer for the public events are asked to contact Lara Mack at lcmack4286@gmail.com.

Ms. Dang also announced that she will be working in partnership with local advocacy groups on obtaining a \$500 'mini-grant' to purchase high quality rear bike lights to be given out selectively to those in need. The Harrisonburg-Rockingham Metropolitan Planning Organization has agreed to give \$500 towards this effort regardless of whether the grant is awarded.

11. DMV and Police News

Mr. Stader announced the following:

- Checkpoint Strike Force will be active for St. Patrick's Day on March 17th, with a couple of locations being in the City.
- April is Distracted Driver Awareness Month.
- Federal grant funding was received for increased enforcement efforts

MPO Deeds announced that the next "Click it or Ticket" campaign will take place in May and that the seat belt rate has stabilized around 80%, which is the highest it has even been. Sgt. Keller announced that the Police Department has greatly increased traffic enforcement over the past year and has seen a decrease in the crash rate.

12. Stone Spring Road bridge work

Mr. Williams announced that work on the Stone Spring Road bridge is scheduled to take place next week, March 8-9, to set beams. The left northbound and southbound lanes of I-81, at mile marker 245, will be closed the evenings of March 8 and March 9, from 8 p.m. to 7 a.m. each night. Both northbound and southbound lanes of I-81, from mile markers 240.5 to 250.5, will have rolling lane closures the evenings of March 8 and March 9, from 10 p.m. to 6 a.m. each night. This project is being administered by the City of Harrisonburg as part of the City's major east to west connector project, Stone Spring Road-Erickson Avenue, which stretches 3.1 miles from west city limits to east city limits in the southern portion of the City.

Adjourn

Warrants Summary Report

1: N Liberty St & W Gay St

Federal 2003 2/25/2011

	Major Street	Minor Street
Street Name	W Gay St	N Liberty St
Direction	EB/WB	NB/SB
Number of Lanes	1	1
Approach Speed	25	25

Warrant	Met?	Notes
Warrant 1, Eight-Hour Vehicular Volume	No	
Condition A or B Met?	No	0 Hours met (8 required)
Condition A and B Met?	No	0 Hours met (8 required)
Warrant 2, Four-Hour Vehicular Volume	No	0 Hours met (4 required)
Warrant 3, Peak Hour	No	
Condition A Met?	No	0 Hours met (1 required)
Condition B Met?	No	0 Hours met (1 required)
Warrant 6, Coordinated Signal System	No	
Warrant 7, Crash Experience	No	
Traffic Volume Condition?	No	0 Hours met (8 required)
Ped Condition?	No	0 Hours met (8 required)
Warrant 8, Roadway Network	No	

Site Information

1: N Liberty St & W Gay St

2/25/2011

Present Intersection

Community Population < 10,000?	No
Pedestrian Crossing Speed	3.5
Crashes Correctable by Signal Within 12-Month Period	0
Alternatives Failed to Reduce Crash Frequency?	No
New Signal will Restrict Flow of Traffic?	No
Student Crossing Time Interval (minutes)	0
Measures to Reduce Student Ped Danger Considered?	No

Projected Intersection

Total Entering Volume Growth Percentage (per year)	3.00
Projected Time Period (in years)	10.00

Approach Information

	EB	WB	NB	SB	SEB	NWB	NEB	SWB
Include in Analyses	Yes	Yes	Yes	Yes	No	No	No	No
Name	W Gay St	W Gay St	N Liberty St	N Liberty St				
Major	Yes	Yes	No	No	No	No	No	No
Acceptable Platooning	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. Coord. Signal	Yes	Yes	No	No	No	No	No	No
Adj. Intersection Dist.	295.00	610.00	1822.00	382.00	0.00	0.00	0.00	0.00
Median Refuge	No	No	No	No	No	No	No	No
Speed Limit	25	25	25	25	30	30	30	30
85th Percentile Speed	31.91	25.98	25.75	35.91	0.00	0.00	0.00	0.00

Warrant 1: Eight-hour Vehicular Volume

1: N Liberty St & W Gay St

Federal 2003

2/25/2011

Major Street **W Gay St**
 Major Direction **EB/WB**
 Minor Direction **NB/SB**

Warrant 1 Met? No

Condition A or B Met? **No** 0 Hours met (8 required)

Condition A and B Met? **No** 0 Hours met (8 required)

Hour	Major Street Vehicles (total of both approaches)	Condition A		Condition B		High-volume Minor Approach Vehicles	Condition A		Condition B		100% Standard Met? Cond. A OR Cond. B		80% Standard Met? Cond. A AND Cond. B	
		Volume >= 100% column (500)?	Volume >= 80% column (400)?	Volume >= 100% column (750)?	Volume >= 80% column (600)?		Volume >= 100% column (150)?	Volume >= 80% column (120)?	Volume >= 100% column (75)?	Volume >= 80% column (60)?	Condition A 100% Column	Condition B 100% Column	Condition A 80% Column	Condition B 80% Column
		00:00 to 01:00	37	No	No		No	No	8	No	No	No	No	No
00:15 to 01:15	36	No	No	No	No	7	No	No	No	No	No	No	No	No
00:30 to 01:30	38	No	No	No	No	11	No	No	No	No	No	No	No	No
00:45 to 01:45	31	No	No	No	No	9	No	No	No	No	No	No	No	No
01:00 to 02:00	29	No	No	No	No	7	No	No	No	No	No	No	No	No
01:15 to 02:15	30	No	No	No	No	7	No	No	No	No	No	No	No	No
01:30 to 02:30	25	No	No	No	No	4	No	No	No	No	No	No	No	No
01:45 to 02:45	28	No	No	No	No	3	No	No	No	No	No	No	No	No
02:00 to 03:00	31	No	No	No	No	7	No	No	No	No	No	No	No	No
02:15 to 03:15	30	No	No	No	No	10	No	No	No	No	No	No	No	No
02:30 to 03:30	31	No	No	No	No	8	No	No	No	No	No	No	No	No
02:45 to 03:45	30	No	No	No	No	9	No	No	No	No	No	No	No	No
03:00 to 04:00	24	No	No	No	No	10	No	No	No	No	No	No	No	No
03:15 to 04:15	27	No	No	No	No	11	No	No	No	No	No	No	No	No
03:30 to 04:30	32	No	No	No	No	13	No	No	No	No	No	No	No	No
03:45 to 04:45	28	No	No	No	No	14	No	No	No	No	No	No	No	No
04:00 to 05:00	30	No	No	No	No	13	No	No	No	No	No	No	No	No
04:15 to 05:15	35	No	No	No	No	17	No	No	No	No	No	No	No	No
04:30 to 05:30	39	No	No	No	No	22	No	No	No	No	No	No	No	No
04:45 to 05:45	63	No	No	No	No	25	No	No	No	No	No	No	No	No
05:00 to 06:00	71	No	No	No	No	32	No	No	No	No	No	No	No	No
05:15 to 06:15	85	No	No	No	No	38	No	No	No	No	No	No	No	No
05:30 to 06:30	89	No	No	No	No	42	No	No	No	No	No	No	No	No
05:45 to 06:45	105	No	No	No	No	53	No	No	No	No	No	No	No	No
06:00 to 07:00	131	No	No	No	No	52	No	No	No	No	No	No	No	No
06:15 to 07:15	139	No	No	No	No	61	No	No	No	Yes	No	No	No	No
06:30 to 07:30	186	No	No	No	No	83	No	No	Yes	Yes	No	No	No	No
06:45 to 07:45	214	No	No	No	No	83	No	No	Yes	Yes	No	No	No	No
07:00 to 08:00	238	No	No	No	No	101	No	No	Yes	Yes	No	No	No	No
07:15 to 08:15	265	No	No	No	No	104	No	No	Yes	Yes	No	No	No	No
07:30 to 08:30	257	No	No	No	No	91	No	No	Yes	Yes	No	No	No	No
07:45 to 08:45	256	No	No	No	No	98	No	No	Yes	Yes	No	No	No	No
08:00 to 09:00	249	No	No	No	No	84	No	No	Yes	Yes	No	No	No	No
08:15 to 09:15	247	No	No	No	No	73	No	No	No	Yes	No	No	No	No
08:30 to 09:30	252	No	No	No	No	65	No	No	No	Yes	No	No	No	No
08:45 to 09:45	238	No	No	No	No	68	No	No	No	Yes	No	No	No	No
09:00 to 10:00	231	No	No	No	No	76	No	No	Yes	Yes	No	No	No	No
09:15 to 10:15	238	No	No	No	No	76	No	No	Yes	Yes	No	No	No	No
09:30 to 10:30	226	No	No	No	No	86	No	No	Yes	Yes	No	No	No	No

Warrant 1: Eight-hour Vehicular Volume

1: N Liberty St & W Gay St

Federal 2003

2/25/2011

09:45 to 10:45	227	No	No	No	No	73	No	No	No	Yes	No	No	No	No
10:00 to 11:00	236	No	No	No	No	73	No	No	No	Yes	No	No	No	No
10:15 to 11:15	224	No	No	No	No	78	No	No	Yes	Yes	No	No	No	No
10:30 to 11:30	250	No	No	No	No	79	No	No	Yes	Yes	No	No	No	No
10:45 to 11:45	252	No	No	No	No	78	No	No	Yes	Yes	No	No	No	No
11:00 to 12:00	269	No	No	No	No	82	No	No	Yes	Yes	No	No	No	No
11:15 to 12:15	279	No	No	No	No	93	No	No	Yes	Yes	No	No	No	No
11:30 to 12:30	268	No	No	No	No	91	No	No	Yes	Yes	No	No	No	No
11:45 to 12:45	291	No	No	No	No	94	No	No	Yes	Yes	No	No	No	No
12:00 to 13:00	289	No	No	No	No	94	No	No	Yes	Yes	No	No	No	No
12:15 to 13:15	307	No	No	No	No	92	No	No	Yes	Yes	No	No	No	No
12:30 to 13:30	318	No	No	No	No	109	No	No	Yes	Yes	No	No	No	No
12:45 to 13:45	324	No	No	No	No	117	No	No	Yes	Yes	No	No	No	No
13:00 to 14:00	322	No	No	No	No	114	No	No	Yes	Yes	No	No	No	No
13:15 to 14:15	305	No	No	No	No	109	No	No	Yes	Yes	No	No	No	No
13:30 to 14:30	313	No	No	No	No	98	No	No	Yes	Yes	No	No	No	No
13:45 to 14:45	296	No	No	No	No	108	No	No	Yes	Yes	No	No	No	No
14:00 to 15:00	311	No	No	No	No	107	No	No	Yes	Yes	No	No	No	No
14:15 to 15:15	318	No	No	No	No	118	No	No	Yes	Yes	No	No	No	No
14:30 to 15:30	315	No	No	No	No	115	No	No	Yes	Yes	No	No	No	No
14:45 to 15:45	332	No	No	No	No	112	No	No	Yes	Yes	No	No	No	No
15:00 to 16:00	344	No	No	No	No	107	No	No	Yes	Yes	No	No	No	No
15:15 to 16:15	364	No	No	No	No	110	No	No	Yes	Yes	No	No	No	No
15:30 to 16:30	368	No	No	No	No	117	No	No	Yes	Yes	No	No	No	No
15:45 to 16:45	393	No	No	No	No	114	No	No	Yes	Yes	No	No	No	No
16:00 to 17:00	378	No	No	No	No	116	No	No	Yes	Yes	No	No	No	No
16:15 to 17:15	401	No	Yes	No	No	107	No	No	Yes	Yes	No	No	No	No
16:30 to 17:30	407	No	Yes	No	No	100	No	No	Yes	Yes	No	No	No	No
16:45 to 17:45	378	No	No	No	No	85	No	No	Yes	Yes	No	No	No	No
17:00 to 18:00	393	No	No	No	No	83	No	No	Yes	Yes	No	No	No	No
17:15 to 18:15	346	No	No	No	No	84	No	No	Yes	Yes	No	No	No	No
17:30 to 18:30	320	No	No	No	No	77	No	No	Yes	Yes	No	No	No	No
17:45 to 18:45	292	No	No	No	No	77	No	No	Yes	Yes	No	No	No	No
18:00 to 19:00	255	No	No	No	No	66	No	No	No	Yes	No	No	No	No
18:15 to 19:15	242	No	No	No	No	48	No	No	No	No	No	No	No	No
18:30 to 19:30	219	No	No	No	No	38	No	No	No	No	No	No	No	No
18:45 to 19:45	209	No	No	No	No	33	No	No	No	No	No	No	No	No
19:00 to 20:00	191	No	No	No	No	32	No	No	No	No	No	No	No	No
19:15 to 20:15	188	No	No	No	No	28	No	No	No	No	No	No	No	No
19:30 to 20:30	186	No	No	No	No	26	No	No	No	No	No	No	No	No
19:45 to 20:45	187	No	No	No	No	26	No	No	No	No	No	No	No	No
20:00 to 21:00	170	No	No	No	No	36	No	No	No	No	No	No	No	No
20:15 to 21:15	151	No	No	No	No	29	No	No	No	No	No	No	No	No
20:30 to 21:30	142	No	No	No	No	31	No	No	No	No	No	No	No	No
20:45 to 21:45	121	No	No	No	No	27	No	No	No	No	No	No	No	No
21:00 to 22:00	109	No	No	No	No	17	No	No	No	No	No	No	No	No
21:15 to 22:15	98	No	No	No	No	25	No	No	No	No	No	No	No	No
21:30 to 22:30	94	No	No	No	No	20	No	No	No	No	No	No	No	No
21:45 to 22:45	74	No	No	No	No	20	No	No	No	No	No	No	No	No
22:00 to 23:00	76	No	No	No	No	22	No	No	No	No	No	No	No	No
22:15 to 23:15	76	No	No	No	No	17	No	No	No	No	No	No	No	No
22:30 to 23:30	61	No	No	No	No	18	No	No	No	No	No	No	No	No

Warrant 1: Eight-hour Vehicular Volume

1: N Liberty St & W Gay St

Federal 2003

2/25/2011

22:45 to 23:45	61	No	No	No	No	16	No						
23:00 to 00:00	44	No	No	No	No	9	No						
23:15 to 00:15	21	No	No	No	No	5	No						
23:30 to 00:30	9	No	No	No	No	2	No						
23:45 to 00:45	0	No	No	No	No	0	No						

Warrant 2: Four-hour Vehicular Volume

1: N Liberty St & W Gay St

Federal 2003

2/25/2011

	Major Street	Minor Street
Street Name	W Gay St	N Liberty St
Direction	EB/WB	NB/SB
Number of Lanes	1	1
Approach Speed	25	25

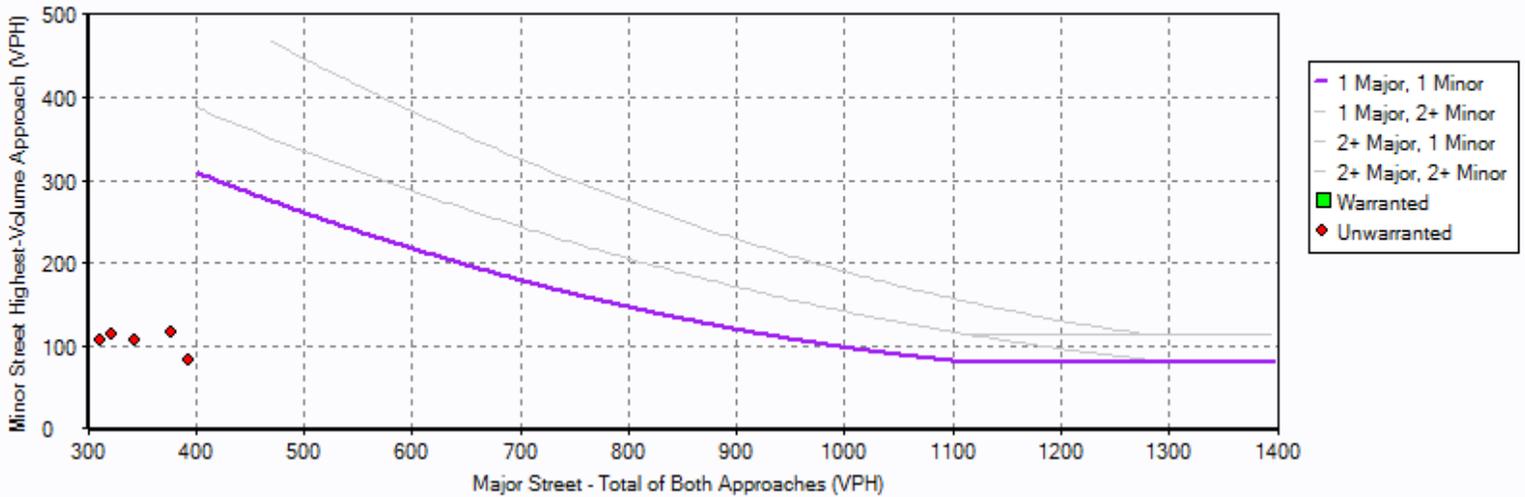
Warrant 2 Met?

No

0 Hours met (4 required)

Low Population? **No**

Four-Hour Vehicular Volume
Community Population Greater Than 10,000 and Major Street Approach Speed Below 40 mph



Warranted / Unwarranted		
Hour	Major Street Total of both approaches (VPH)	Minor Street Highest volume approach (VPH)
0:00	37	8
1:00	29	7
2:00	31	7
3:00	24	10
4:00	30	13
5:00	71	32
6:00	131	52
7:00	238	101
8:00	249	84
9:00	231	76
10:00	236	73
11:00	269	82
12:00	289	94
13:00	322	114
14:00	311	107
15:00	344	107
16:00	378	116
17:00	393	83
18:00	255	66
19:00	191	32

Warrant 2: Four-hour Vehicular Volume

1: N Liberty St & W Gay St

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2/25/2011

20:00	170	36
21:00	109	17
22:00	76	22
23:00	44	9

Warrant 3: Peak Hour

1: N Liberty St & W Gay St

Federal 2003 2/25/2011

Major Street

Minor Street

Street Name
Direction
Number of Lanes
Approach Speed

W Gay St
EB/WB
1
25

N Liberty St
NB/SB
1
25

Warrant 3 Met? No

Low Population? **No**

Condition A Met? **No** 0 Hours met (1 required)

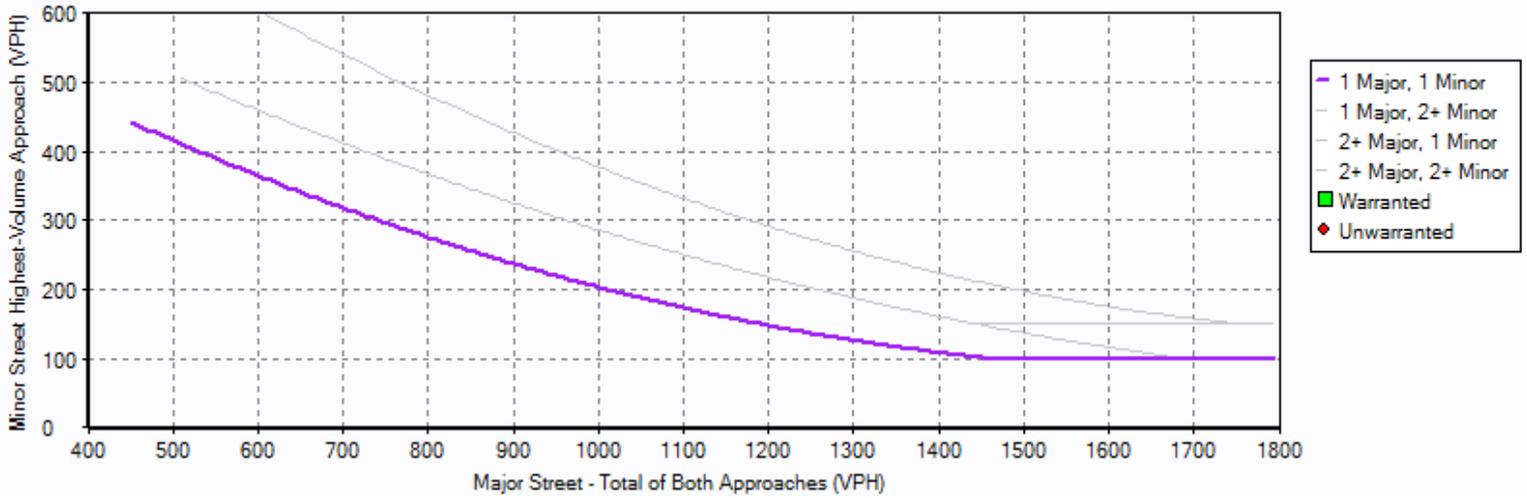
Minor Approach Time Delay Condition **Not Met**

Minor Approach Volume Condition **Met**

Total Entering Intersection Volume Condition **Not Met**

Condition B Met? **No** 0 Hours met (1 required)

Peak Hour Vehicular Volume
Community Population Greater Than 10,000 and Major Street Approach Speed Below 40 mph



Warranted / Unwarranted		
Hour	Major Street Total of both approaches (VPH)	Minor Street Highest volume approach (VPH)
0:00	37	8
1:00	29	7
2:00	31	7
3:00	24	10
4:00	30	13
5:00	71	32
6:00	131	52
7:00	238	101
8:00	249	84
9:00	231	76
10:00	236	73
11:00	269	82
12:00	289	94
13:00	322	114
14:00	311	107
15:00	344	107
16:00	378	116

Warrant 3: Peak Hour

1: N Liberty St & W Gay St

Federal 2003 2/25/2011

17:00	393	83
18:00	255	66
19:00	191	32
20:00	170	36
21:00	109	17
22:00	76	22
23:00	44	9

Warrant 7: Crash Experience

1: N Liberty St & W Gay St

Federal 2003 2/25/2011

14:45 to 15:45	332	112	No	No	0	No	0	No
15:00 to 16:00	344	107	No	No	0	No	0	No
15:15 to 16:15	364	110	No	No	0	No	0	No
15:30 to 16:30	368	117	No	No	0	No	0	No
15:45 to 16:45	393	114	No	No	0	No	0	No
16:00 to 17:00	378	116	No	No	0	No	0	No
16:15 to 17:15	401	107	No	No	0	No	0	No
16:30 to 17:30	407	100	No	No	0	No	0	No
16:45 to 17:45	378	85	No	No	0	No	0	No
17:00 to 18:00	393	83	No	No	0	No	0	No
17:15 to 18:15	346	84	No	No	0	No	0	No
17:30 to 18:30	320	77	No	No	0	No	0	No
17:45 to 18:45	292	77	No	No	0	No	0	No
18:00 to 19:00	255	66	No	No	0	No	0	No
18:15 to 19:15	242	48	No	No	0	No	0	No
18:30 to 19:30	219	38	No	No	0	No	0	No
18:45 to 19:45	209	33	No	No	0	No	0	No
19:00 to 20:00	191	32	No	No	0	No	0	No
19:15 to 20:15	188	28	No	No	0	No	0	No
19:30 to 20:30	186	26	No	No	0	No	0	No
19:45 to 20:45	187	26	No	No	0	No	0	No
20:00 to 21:00	170	36	No	No	0	No	0	No
20:15 to 21:15	151	29	No	No	0	No	0	No
20:30 to 21:30	142	31	No	No	0	No	0	No
20:45 to 21:45	121	27	No	No	0	No	0	No
21:00 to 22:00	109	17	No	No	0	No	0	No
21:15 to 22:15	98	25	No	No	0	No	0	No
21:30 to 22:30	94	20	No	No	0	No	0	No
21:45 to 22:45	74	20	No	No	0	No	0	No
22:00 to 23:00	76	22	No	No	0	No	0	No
22:15 to 23:15	76	17	No	No	0	No	0	No
22:30 to 23:30	61	18	No	No	0	No	0	No
22:45 to 23:45	61	16	No	No	0	No	0	No
23:00 to 00:00	44	9	No	No	0	No	0	No
23:15 to 00:15	21	5	No	No	0	No	0	No
23:30 to 00:30	9	2	No	No	0	No	0	No
23:45 to 00:45	0	0	No	No	0	No	0	No

Warrant 8: Roadway Network

1: N Liberty St & W Gay St

Federal 2003

2/25/2011

Major Street Name **W Gay St**
Major Direction **EB/WB**
Minor Direction **NB/SB**

Warrant 8 Met? (A or B) **No**

Growth Rates (per year)

	<u>EB</u>	<u>WB</u>	<u>NB</u>	<u>SB</u>
L	3.00%	L 3.00%	L 3.00%	L 3.00%
T	3.00%	T 3.00%	T 3.00%	T 3.00%
R	3.00%	R 3.00%	R 3.00%	R 3.00%

Condition A, Total Entering Volume

Existing Peak Hour **523**
Years **10.00**
Future Peak Hour **703**
Warrant 1 in 5 Years? **No**
Warrant 2 in 5 Years? **No**
Warrant 3 in 5 Years? **No**

Condition B, Non-normal Business Day

Existing

Highest Hour **0**
Second Highest Hour **0**
Third Highest Hour **0**
Fourth Highest Hour **0**
Fifth Highest Hour **0**

Yearly Growth Rate **3.00%**
Years **10.00**

Future

Highest Hour **0**
Second Highest Hour **0**
Third Highest Hour **0**
Fourth Highest Hour **0**
Fifth Highest Hour **0**

Condition A Met? **No**

Condition B Met? **No**

Raw Volumes

1: N Liberty St & W Gay St

2/25/2011

Time	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
00:00	0	4	0	0	2	0	0	0	0	0	1	0
00:15	0	7	0	0	0	0	0	0	0	0	1	0
00:30	0	7	0	0	8	0	0	0	0	0	4	0
00:45	0	7	0	0	2	0	0	0	0	0	2	0
01:00	0	2	0	0	3	0	0	0	0	0	0	0
01:15	0	4	0	0	5	0	0	1	0	0	5	0
01:30	0	7	0	0	1	0	0	0	0	0	2	0
01:45	0	5	0	0	2	0	0	1	0	0	0	0
02:00	0	4	0	0	2	0	0	0	0	0	0	0
02:15	0	3	0	0	1	0	0	0	0	0	2	0
02:30	0	11	0	0	0	0	0	0	0	0	1	0
02:45	0	10	0	0	0	0	0	0	0	0	4	0
03:00	0	3	0	0	2	0	0	0	0	0	3	0
03:15	0	4	0	0	1	0	0	0	0	0	0	0
03:30	0	7	0	0	3	0	0	0	0	0	2	0
03:45	0	3	0	0	1	0	0	0	0	0	5	0
04:00	0	5	0	0	3	0	0	0	0	0	4	0
04:15	0	3	0	0	7	0	0	0	0	0	2	0
04:30	0	3	0	0	3	0	0	0	0	0	3	0
04:45	0	6	0	0	0	0	0	0	0	0	4	0
05:00	0	9	0	0	4	0	0	0	0	0	8	0
05:15	0	11	0	0	3	0	0	0	0	0	7	0
05:30	0	24	0	0	6	0	0	0	0	0	6	0
05:45	0	10	0	0	4	0	0	3	0	0	11	0
06:00	0	19	0	0	8	0	0	0	0	0	14	0
06:15	0	15	0	0	3	0	0	0	0	0	11	0
06:30	0	30	0	0	16	0	0	1	0	0	17	0
06:45	0	26	0	0	14	0	0	3	0	0	10	0
07:00	0	21	0	0	14	0	0	0	0	0	23	0
07:15	0	55	0	0	10	0	0	1	0	0	33	0
07:30	0	50	0	0	24	0	0	3	0	0	17	0
07:45	0	46	0	0	18	0	0	1	0	0	28	0
08:00	0	50	0	0	12	0	0	3	0	0	26	0
08:15	0	43	0	0	14	0	0	4	0	0	20	0
08:30	0	48	0	0	25	0	0	2	0	0	24	0
08:45	0	39	0	0	18	0	0	3	0	0	14	0
09:00	0	39	0	0	21	0	0	0	0	0	15	0
09:15	0	37	0	0	25	0	0	2	0	0	12	0
09:30	0	43	0	0	16	0	0	1	0	0	27	0
09:45	0	26	0	0	24	0	0	1	0	0	22	0
10:00	0	45	0	0	22	0	0	1	0	0	15	0
10:15	0	29	0	0	21	0	0	1	0	0	22	0
10:30	0	37	0	0	23	0	0	3	0	0	14	0
10:45	0	36	0	0	23	0	0	2	0	0	22	0
11:00	0	35	0	0	20	0	0	0	0	0	20	0
11:15	0	47	0	0	29	0	0	4	0	0	23	0
11:30	0	39	0	0	23	0	0	0	0	0	13	0
11:45	0	49	0	0	27	0	0	1	0	0	26	0
12:00	0	39	0	0	26	0	0	1	0	0	31	0
12:15	0	42	0	0	23	0	0	1	0	0	21	0
12:30	0	45	0	0	40	0	0	2	0	0	16	0
12:45	0	57	0	0	17	0	0	4	0	0	26	0
13:00	0	47	0	0	36	0	0	1	0	0	29	0
13:15	0	55	0	0	21	0	0	2	0	0	38	0
13:30	0	54	0	0	37	0	0	2	0	0	24	0
13:45	0	43	0	0	29	0	0	3	0	0	23	0
14:00	0	36	0	0	30	0	0	0	0	0	24	0
14:15	0	56	0	0	28	0	0	3	0	0	27	0

Raw Volumes

1: N Liberty St & W Gay St

2/25/2011

14:30	0	44	0	0	30	0	0	0	0	0	34	0
14:45	0	49	0	0	38	0	0	1	0	0	22	0
15:00	0	40	0	0	33	0	0	3	0	0	35	0
15:15	0	56	0	0	25	0	0	3	0	0	24	0
15:30	0	54	0	0	37	0	0	8	0	0	31	0
15:45	0	54	0	0	45	0	0	3	0	0	17	0
16:00	0	61	0	0	32	0	0	4	0	0	38	0
16:15	0	50	0	0	35	0	0	4	0	0	31	0
16:30	0	69	0	0	47	0	0	1	0	0	28	0
16:45	0	54	0	0	30	0	0	5	0	0	19	0
17:00	0	67	0	0	49	0	0	5	0	0	29	0
17:15	0	54	0	0	37	0	0	0	0	0	24	0
17:30	0	51	0	0	36	0	0	2	0	0	13	0
17:45	0	58	0	0	41	0	0	3	0	0	17	0
18:00	0	44	0	0	25	0	0	0	0	0	30	0
18:15	0	36	0	0	29	0	0	1	0	0	17	0
18:30	0	28	0	0	31	0	0	2	0	0	13	0
18:45	0	37	0	0	25	0	0	1	0	0	6	0
19:00	0	29	0	0	27	0	0	3	0	0	12	0
19:15	0	29	0	0	13	0	0	1	0	0	7	0
19:30	0	30	0	0	19	0	0	2	0	0	8	0
19:45	0	25	0	0	19	0	0	1	0	0	5	0
20:00	0	30	0	0	23	0	0	0	0	0	8	0
20:15	0	24	0	0	16	0	0	2	0	0	5	0
20:30	0	32	0	0	18	0	0	1	0	0	8	0
20:45	0	16	0	0	11	0	0	1	0	0	15	0
21:00	0	16	0	0	18	0	0	0	0	0	1	0
21:15	0	15	0	0	16	0	0	0	0	0	7	0
21:30	0	18	0	0	11	0	0	1	0	0	4	0
21:45	0	7	0	0	8	0	0	0	0	0	5	0
22:00	0	13	0	0	10	0	0	0	0	0	9	0
22:15	0	20	0	0	7	0	0	0	0	0	2	0
22:30	0	3	0	0	6	0	0	0	0	0	4	0
22:45	0	9	0	0	8	0	0	0	0	0	7	0
23:00	0	17	0	0	6	0	0	0	0	0	4	0
23:15	0	10	0	0	2	0	0	0	0	0	3	0
23:30	0	4	0	0	5	0	0	1	0	0	2	0
23:45	0	7	0	0	4	0	0	0	0	0	2	0