

STREETS AND TRAFFIC SAFETY COMMITTEE MEETING

**Tuesday, May 12, 2015
6:15 p.m.**

NOTICE IS HEREBY GIVEN that the Streets and Traffic Safety Committee of Bountiful, Utah will hold a meeting in the Planning Conference room at City Hall, 790 South 100 East, Bountiful, Utah, at the time and on the date given above. The public is invited to the meeting. Persons who are disabled as defined by the Americans With Disabilities Act may request an accommodation by contacting the Public Works Director at 801.298.6125. Notification at least 24 hours prior to the meeting would be appreciated.

AGENDA

1. Review 2014 Traffic Volume and Traffic Accident Report.
2. Viewmont High Parking Update.
3. Speed Concerns on 900 South Between Main Street and 200 West
4. Misc. Reports.

Traffic Safety Committee Staff Report

Item # TSC 1

Subject: 2014 Traffic Volume and Accident Report
Author: City Engineer, Paul Rowland
Date: May 12, 2015



Background

We have completed the review of the traffic volumes and traffic accidents for the 2014 calendar year. Enclosed is a copy of the Traffic Volume Map and the Traffic Accident Table for 2014.

Analysis

TRAFFIC VOLUMES

On most streets the average traffic volumes in 2014 showed slight increases from the volumes experienced in 2013. The major east-west collectors that access I-15 all have had an increase with 500 South showing about a 10% increase. The other freeway access roads had smaller increases, but larger than most of the last decade. This is also the first year in many years that volumes have change on roads east of Orchard Drive/400 East. Bountiful Blvd. shows increases along the entire length except in the area right around the LDS Temple. Enclosed is a Traffic Volume Map for 2014. This map includes some of the updated traffic volumes on state highways, except that the counts we receive from the state DOT are always one year behind.

TRAFFIC SIGNALS, STUDIES AND CONSTRUCTION UPDATES:

In the past several months I have had one request for a signal at the intersection of Davis Blvd. and 1800 South. Several years ago this intersection was reviewed for the possibility of installing a signal but it did not meet the warrant requirements. Since this is a steep intersection meeting at an odd angle, we want to be very careful about the installation of any traffic control devices. The volume of traffic we counted last summer does not meet the warrant requirements, but the woman making the request said that the traffic is much greater while school is in session, so we are recounting the intersection traffic this spring before school is out for the summer. Another warrant study will be done if traffic volumes are significantly different.

The only other intersection with a significant change that warranted review for the installation of a traffic signal was 1500 South and Orchard Drive. While the traffic was up only slightly, the number of accidents jumped from 3 in 2013 to 6 in 2014. The warrant study based on traffic volume again didn't meet the warrant requirements under any criteria, but the increase in accidents made me wonder if something had changed. The accident history will be reviewed in the Traffic Accident Review section of this report.

Although our accidents and traffic volumes do not indicate any intersections approaching the need for a warrant study, there are three intersections that received signal improvements during the last year. All three are on state highways, and the work to be done is being conducted by the UDOT.

400 North Main Street is received new signal poles and a new controller (the computer that runs things). The signal poles at both the east signal and west signal were moved slightly to improve visibility and some of the islands were slightly reconfigured to improve movement.

400 North 500 West. Bountiful City and West Bountiful cosponsored and were awarded \$1.2 M for a project to have dedicated right turn lanes constructed in the east bound and north bound directions of this intersection . Bountiful and West Bountiful have shared the cost of having the environmental work done in preparation for this project and now the actual construction is being passed off to the UDOT. The work is just commencing in coordination with the 400 North overpass replacement and should be done in July.

500 South 500 West. This intersection is also getting dedicated right turn lanes and will be completed with the remainder of the I-15 HOV Lane project.

When any of the city's intersections are studied for the installation of a signal, there are nine different warrants in the MUTCD to guide the installation of traffic signals. They involve traffic volume, pedestrian volume, crash experience, railroad grade crossings and other things. The warrants we typically deal with involve the volume of traffic approaching an intersection and the delays that result. The main two warrants involved in this study are:

Eight Hour Vehicular Volume Warrant requires 500 approaching vehicles per hour on the major street (or 600 vph if major street has 2 approaching lanes as in this case) for an eight hour period and 150 vehicles per hour for the same eight hour period on one leg of the minor approach street traffic.

Four Hour Vehicular Volume Warrant requires the vehicular volume on the two intersecting streets exceed an amount defined by a mathematical equation spelled out in the MUTCD.

New Signals Completed in 2014

No new signals were added in 2014.

TRAFFIC ACCIDENT REVIEW

All of the 2014 reportable accidents for which a police report was generated have been plotted on a Traffic Accident Map which is on file in the City Engineers Office. The total reportable accidents for 2014 were 612 which is down by 8 from 2013. This is also

down slightly from the 631 accidents reported in 2011, up slightly from the recent low 591 reported in 2012, and much less than the peak year 1994 when 882 accidents were reported.

The highest accident months were September and December, while February was the lowest accident month. These months change every year showing just how random traffic accidents are.

Jan.	---	51 accidents
Feb.	---	35 accidents
Mar.	---	53 accidents
April	---	43 accidents
May	---	40 accidents
June	---	51 accidents
July	---	62 accidents
Aug.	---	54 accidents
Sept.	---	63 accidents
Oct.	---	52 accidents
Nov.	---	49 accidents
Dec.	---	63 accidents

I have tabulated all intersections which have three or more accidents on the Intersection Accident Table, which is enclosed. (We do not tabulate intersections with less than three accidents because the number is insufficient to establish an accident pattern and usually indicates chance occurrences.) This year the number of intersections with 3 or more accidents was up a little to 21, which is still in the normal range. Also, we had a large number of rear-end type accidents on 500 South and 500 West between the lights. These accidents are not included with the intersection accidents because, for the most part, they are caused by inattention when approaching a traffic signal.

The Intersection Accident Table for 2014 lists the intersections numerically in order of their accident rate (column 7). This rate is established by dividing the total number of accidents (column 4) by the volume of vehicles in millions per year (column 6). A statistical analysis of each intersection is then made to determine the high critical rate (column 8) and the low critical rate (column 9). This analysis is based upon the traffic volumes and the accidents of the intersections with 5 or more accidents. When the accident rate is above the high critical rate, the intersection is considered "out of control" and immediate steps should be taken to correct the intersection. The Critical Rates are tabulated as follows:

Critical Rates

The Critical Accident Rate of any intersection is calculated based on the average accident rate for all intersections in the study area. If the actual accident rate is greater than the Critical Accident Rate, the deviation is probably not due to chance occurrences

but to an unfavorable characteristic of the location that warrants study. The Critical High Accident Rate is:

$$R_c = R_A + K \sqrt{R_A} / M + 1 / 2M$$

R_c = Critical Accident Rate
 R_A = Average of All Accidents Rates in the Study Area
 K = Probability Constant (use 1.5)
 M = Millions of vehicles entering intersection per year.

The Critical Low Accident Rate is:

$$R_c = R_A - K \sqrt{R_A} / M - 1 / 2M$$

Traffic Engineering Handbook P.P. 390 - 391

Note: Only consider those intersections with 5 or more accidents in determining the average of all accident rates in the study area (R_A).
Intersections below 5 accidents are untrustworthy. (Handbook P.P. 387)

Reviewed Intersections

The following is the analysis of the intersections that have shown a significant or unusual increase in accidents over 2014, or show a trend that would lead us to believe that there is a problem with the intersection that is contributing to the accidents. It should be noted that none of the intersections are operating in a statistically “out of control” condition or have an accident rate above the critical high rate.

1. 500 South and Davis Blvd.

This intersection typically has 1 or 2 accidents but it has been several years since it was in the “over 3” list. The three accidents all involved driver inattention with one being a run Stop sign, another being a left turn in front of oncoming traffic and the third being a proper stop, followed by an improper go...in front of a car driving up 500 South. There are no structural improvements that would have prevented any of these accidents.

2. 1500 South Orchard Drive.

Over the past several years this intersection has had between 3-5 accidents per year, but this year the number jumped to 6. There has been concern in years past about landscaping on the adjacent properties preventing drivers approaching east bound on 1500 South from seeing north and south bound Orchard Drive traffic. This was not the case in any of the accidents this year. Again driver inattention is the most common cause of accidents, along with one snow storm accident. Distracted or speeding drivers that run stop signs are hard to prevent by changing the signage or making other changes. As traffic volume on 1500 South increases with further development at Renaissance Town Center, this intersection will eventually need a traffic signal, which is currently in the 10 year capitol plan.

3. 500 South 100 West

This intersection took a large jump in accident count from 3 in 2013 to 9 in 2014, making it statistically one of our more dangerous intersections. Of the nine accidents, eight involved drivers running a red light, and only one involving a driver failing to yield to oncoming traffic while making a left turn. Two of the light runners blamed the sun in their eyes, which in the spring and fall is a very real issue. The signal is timed with the entire 500 South corridor from 400 East to 500 West to allow for more efficient traffic movement during peak morning and evening hours. Interestingly, none of the drivers running the red light were north bound or south bound, only east and west in a rush to get up and down 500 South. I will watch this carefully this year to see if there is something we can do to the signal heads to make them more visible.

4. 500 South Main

The bigger question for this intersection is not why did the number of accidents jump this year, rather it should be, "why was the accident rate so low last year". Showing that most of these accidents are truly random events, the count in 2011 was 3 and 2012 was 4, so having 0 in 2013 was a welcome, but unusual event. Even though there was a large increase from 2013 to 2014, the intersection is still operating in the statistically safe range and is not in need of any structural changes.

Auto Pedestrian Accidents

This year we had a slight increase in auto pedestrian accidents, from 18 to 24. Of the 24 accidents, 11 involved bicycles, 5 were in parking lots, 11 occurred in x-walks and one bicycle was hit by the bumper that came off of a car during a crash in the nearby intersection. Reviewing the accidents does not show any changes or additions the City could make to the streets, crosswalks or signing that could prevent these types of accidents.

SUMMARY

This was a typical year for traffic accidents here in Bountiful City. With no exceptions, all of the intersections in the city are operating at what is considered a statically safe condition. However, if there is something that the City can do to further improve vehicular and pedestrian safety, it is important that we take those steps.

Department Review

This has been reviewed by the Engineering Department.

Significant Impacts

There are no significant impacts as a result of this report.

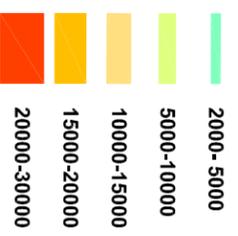
Recommended Action

No actions by the Traffic Safety Committee are required. The Engineering Department will continue to watch the accident rates at the intersections listed above to see if a trend develops that requires an external fix.

Attachments

1. 2014 Traffic Volume Map for Bountiful
2. Traffic Accident Analysis Table

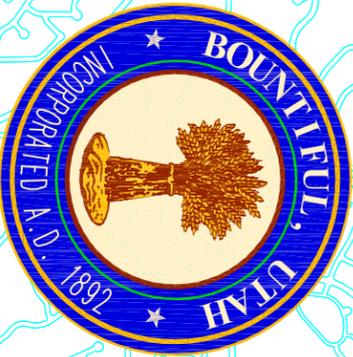
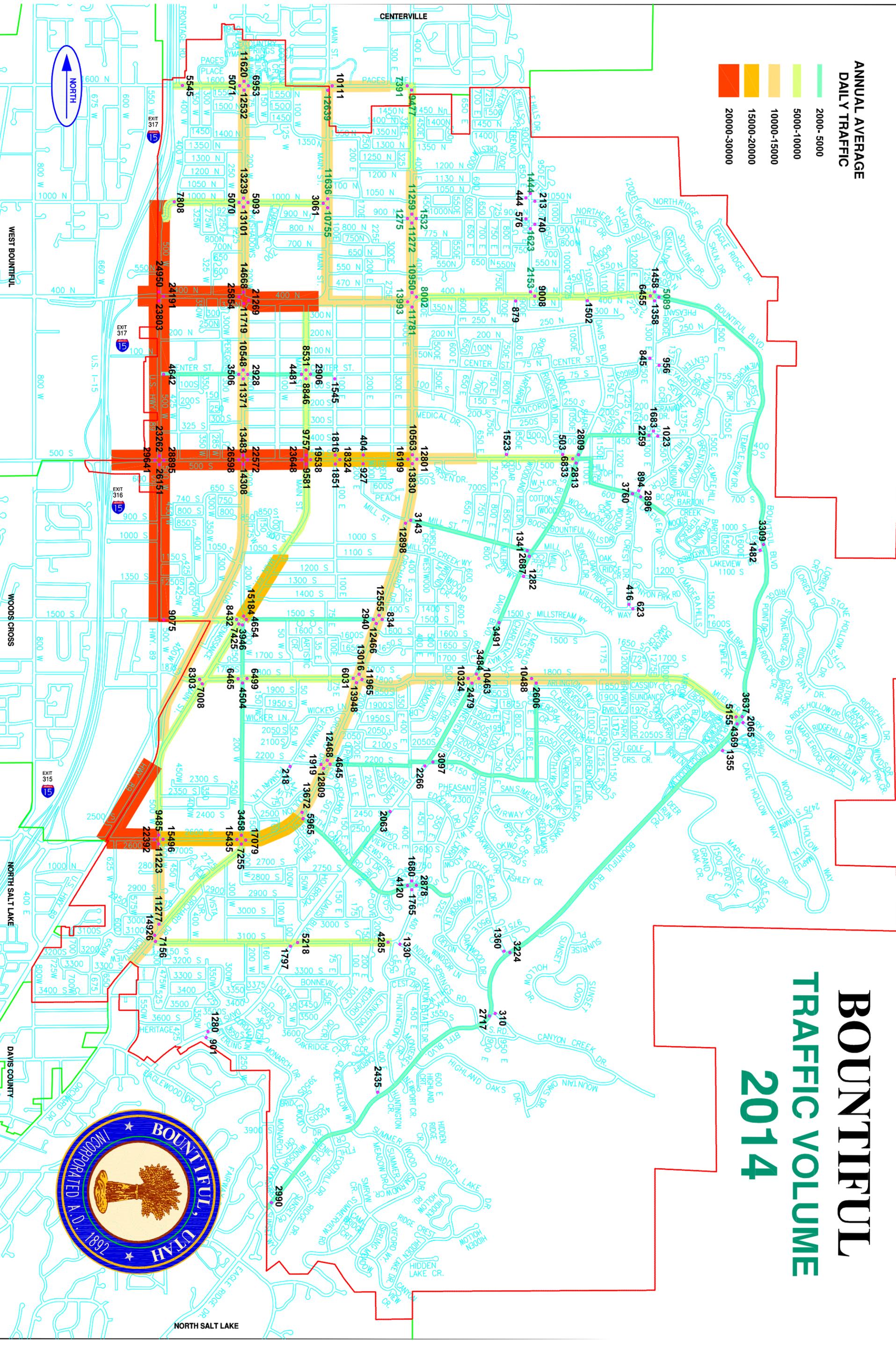
**ANNUAL AVERAGE
DAILY TRAFFIC**



BOUNTIFFUL

TRAFFIC VOLUME

2014



INTERSECTION ACCIDENT TABLE FOR 2014 PREPARED MARCH 11, 2015

1	2	3	4	5	6	7	8	9	
ACC. RATE ORDER	INTERSECTION LOCATION	ACCIDENTS 2013	ACCIDENTS 2014	TRAFFIC VOL. ADT	VOL/YEAR (MILLION)	ACC. RATE PER MILL.	CRITICAL RATE-HIGH	CRITICAL RATE-LOW	
1	1500 SOUTH ORCHARD	3	6	14,400	5.26	1.14	1.09	0.11	
2	500 SOUTH DAVIS	2	3	8,130	2.97	1.01	1.32	-0.07	
3	500 SOUTH 100 WEST	SIGNAL	3	26,600	9.71	0.93	0.92	0.24	
4	200 SOUTH 400 EAST	2	4	14,180	5.18	0.77	1.10	0.11	
5	400 NORTH MAIN (EAST)	(STATE)	SIGNAL	7	27,274	9.96	0.70	0.92	0.24
6	1500 SOUTH MAIN	R ABOUT	4	19,820	7.23	0.69	0.99	0.18	
7	400 NORTH 500 WEST	(STATE)	SIGNAL	11	48,376	17.66	0.68	0.81	0.32
8	400 NORTH 200 WEST	(STATE)	SIGNAL	2	36,750	13.41	0.60	0.86	0.29
9	500 SOUTH 500 WEST	(STATE)	SIGNAL	9	53,975	19.70	0.56	0.79	0.33
10	400 NORTH 400 EAST	SIGNAL	3	22,363	8.16	0.49	0.96	0.21	
11	1800 SOUTH ORCHARD	SIGNAL	4	22,480	8.21	0.49	0.96	0.21	
12	500 WEST 1000 NORTH	(STATE)	3	28,850	10.53	0.47	0.90	0.25	
13	200 WEST PAGES LANE	SIGNAL	1	18,088	6.60	0.45	1.02	0.17	
14	500 SOUTH MAIN	SIGNAL	0	31,262	11.41	0.44	0.89	0.26	
15	500 WEST CENTER	(STATE)	5	25,850	9.44	0.42	0.93	0.23	
16	500 SOUTH 400 EAST	SIGNAL	1	26,700	9.75	0.41	0.92	0.24	
17	400 NORTH MAIN (WEST)	(STATE)	SIGNAL	1	27,300	9.96	0.40	0.92	0.24
18	2600 SOUTH 200 WEST	SIGNAL	5	21,613	7.89	0.38	0.97	0.20	
19	400 NORTH 100 WEST	(STATE)	3	23,270	8.49	0.35	0.95	0.22	
20	2600 SOUTH HWY 89	(STATE)	SIGNAL	4	40,400	14.75	0.27	0.84	0.30
21	500 SOUTH 200 WEST	(STATE)	SIGNAL	3	38,480	14.05	0.21	0.85	0.29

76 111 0.63 Average for all intersections

* INDICATES INTERSECTIONS WITH A SUBSTANTIAL INCREASE IN ACCIDENTS

AVERAGE ACCIDENT RATE FOR INTERSECTIONS WITH 5 OR MORE ACCIDENTS = 0.52

NOTES:

1. WHERE THE ACCIDENT RATE IS ABOVE THE HIGH CRITICAL RATE THE INTERSECTION IS OUT OF CONTROL.
2. WHERE THE ACCIDENT RATE IS BELOW THE LOW CRITICAL RATE THE INTERSECTION IS UNUSUALLY SAFE.

LAST YEARS ACCIDENT INTERSECTIONS REMOVED DUE TO LOW NUMBERS						INTERSECTIONS ADDED THIS YEAR		2013	2014	
				2013	2014					
1	1500 SOUTH SR 68	(STATE)	SIGNAL	3	0	1	200 WEST PAGES LANE	SIGNAL	1	3
2	500 SOUTH 425 WEST	(STATE)		4	1	2	500 SOUTH MAIN	SIGNAL	0	5
3	1800 SOUTH 200 WEST			3	2	3	400 NORTH 200 WEST	SIGNAL	2	8
4	1800 SOUTH DAVIS			3	2	4	500 SOUTH DAVIS		2	3
5						5	500 SOUTH 400 EAST	SIGNAL	1	4
6						6	200 SOUTH 400 EAST		2	4
						7	400 NORTH MAIN (WEST)	SIGNAL	1	4

Traffic Safety Committee Staff Report

Item # TSC 2

Subject: Off Site Parking Issues Around Viewmont High School
Author: City Engineer, Paul Rowland
Date: May 12, 2015



Background

For the past several decades Bountiful City has faced the annual problem of Viewmont High School students parking on the surrounding public streets. Chief Ross has met with the school district and has information to share. This item is being placed on the agenda as a discussion item.

Analysis

Since at least 1994, Bountiful City has been dealing with parking problems around Viewmont High. In the late '90's, the Bountiful City Council agreed to post the area around Chapel Drive as "No Parking During School Hours". That prohibition was expanded to 200 West Street, west of the school, in June of 1999. Bountiful High's Mill Street got in the act a year or so later with and then both asked for and received extensions of the No Parking areas.

The problem is that there is just not enough parking places available for the number of students driving by the fourth term of the school year. Chief Ross has met with several of the residents living in the area who are requesting further action by the City. The Chief and I feel that we may have reached a point where the only real solution is with the school district. The Chief and I are prepared to discuss some of the history and things we see as possible solutions.

This item is for discussion only.

Department Review

This has been reviewed by the City Engineer and Police Chief.

Significant Impacts

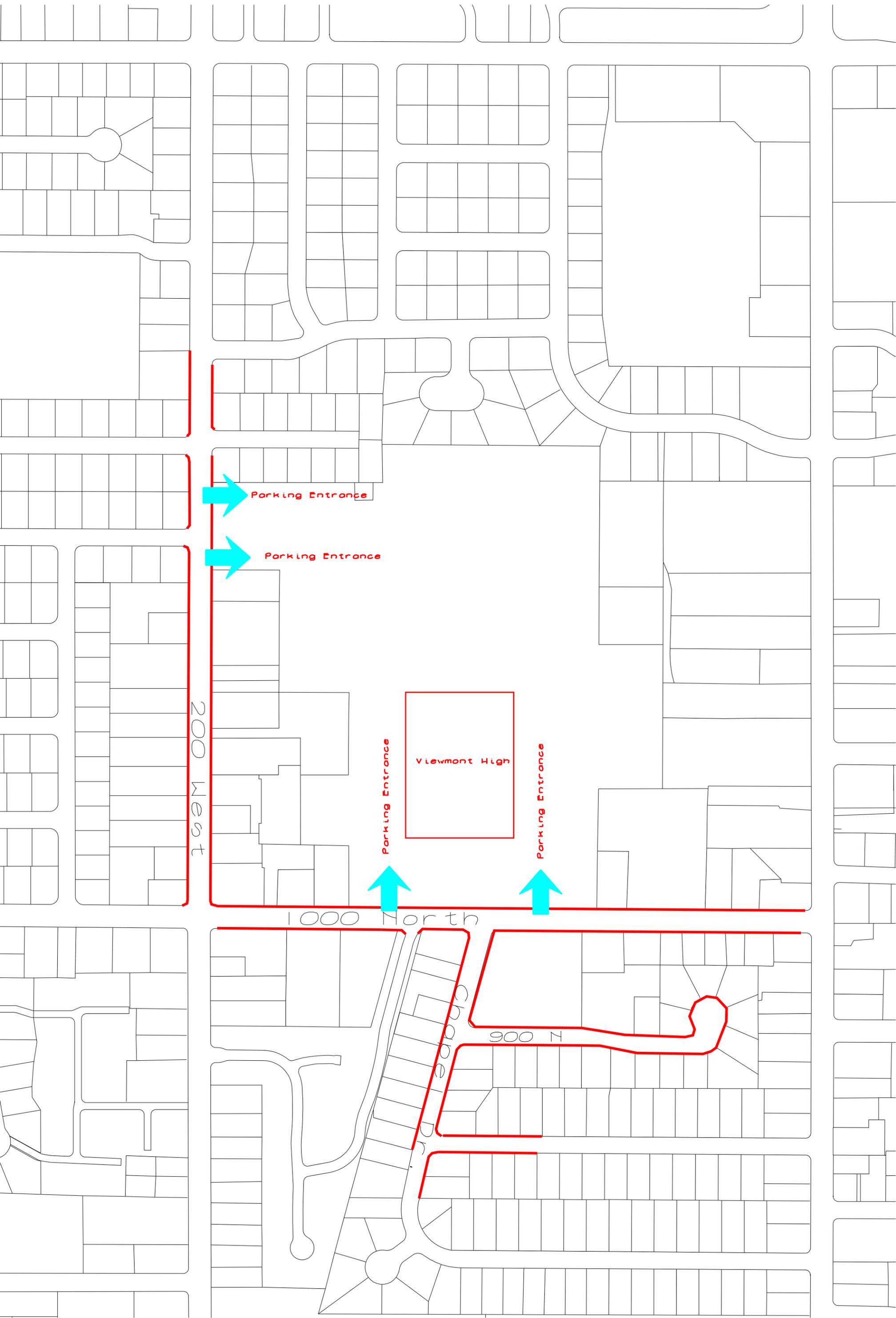
None.

Recommended Action

This item is for discussion only and is not ready for a recommended action.

Attachments

1. Map showing current school hour restricted parking areas.



200 West

Viewmont High

1000 North

900 N

Chaparral Dr.

Parking Entrance

Parking Entrance

Parking Entrance

Parking Entrance

Traffic Safety Committee Staff Report

Item # TSC 3

Subject: Speed Concerns on 900 South Between Main Street and 200 West Street
Author: City Engineer, Paul Rowland
Date: May 12, 2015



Background

900 South Street is a very bendy route that connects 200 West with Main Street through two 90 degree intersections and two 90 degree bends . In the spring of 2014 I was contacted by a resident living along this stretch of 900 South concerned about speeding on the street, so, on June 12, 2014, the Engineering Department conducted a 24 hour speed study. After the results were reported to the resident, no further contacts were made until the resident approached the Police Department earlier this year with the same complaint.

Analysis

900 is a local residential street with about 30 residences along the stretch between Main Street and 200 West. While the street connects between Main Street and 200 West, it has 4-90degree bends in a very short distance making it an inconvenient way to get between the two arterials. The speed study conducted in the summer of 2014 proves that out with only 274 vehicles in a 24 hour period. That is equivalent to a very lightly traveled local residential street. By comparison, there are as many vehicles up and down 500 South in one day as travel this street in 3½ months.

The speed limit is not posted along the route, as with almost all of our residential streets, making the speed limit 25 MPH. The speed study showed that the 85th percentile speed was 26.4 MPH, showing that vehicles traveling on the street are in fact going the speed limit. The many curves make it almost impossible to go much faster. A review of traffic accidents since 1995 shows that there have been two accidents along the street, one of which was in the intersection with 175 West.

Even with the measured data, at least the neighbors perceives that there is a traffic volume and speed problem and has requested additional measures be taken. Unfortunately additional signs will not further slow the speed at which vehicles are navigating the street. The bends in the road provide the best traffic calming possible.

If the TSC did feel the need to provide some type of sign, Chief Ross made the reasonable suggestion that a "Horizontal Alignment Warning Sign" could be placed with a 20 MPH advisory speed plaque below. The sign will probably not have much effect on the travel speed and the advisory speed is not enforceable. A picture of the W1-2 sign with a 20 MPH advisory plaque is shown below. Chief Ross rightfully believes that this may help the neighborhood feel better about warning outside travelers of the dangers of the curvy road.

Department Review

This has been reviewed by the City Engineer and Police Chief.

Significant Impacts

None.

Recommended Action

Because there is no data warranting the installation of signs along this route, and because there are dozens of other locations in the city operating with more traffic and a similar accident history which have no such warning signs, I recommend the TSC deny the installation of further speed limit or warning signs. That being said, Chief Ross respectfully disagrees with my assessment and recommends that the Horizontal Alignment Warning Signs be placed with the advisory speed plaque below. Either way, I recommend that the Traffic Safety Committee give this item thoughtful review.

Attachments

1. June 2014 Speed Study



MetroCount Traffic Executive Speed Statistics by Hour

SpeedStatHour-86 -- English (ENU)

Datasets:

Site: [900S100W] 900 South 100 West speed

Direction: 8 - East bound A>B, West bound B>A. Lane: 0

Survey Duration: 10:19 Thursday, June 12, 2014 => 7:15 Monday, June 16, 2014

Zone:

File: 900S100W16Jun2014.EC0 (Plus)

Identifier: FE66SD8J MC56-L5 [MC55] (c)Microcom 19Oct04

Algorithm: Factory default (v3.21 - 15315)

Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 10:30 Thursday, June 12, 2014 => 10:30 Friday, June 13, 2014

Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

Speed range: 5 - 100 mph.

Direction: North, East, South, West (bound)

Separation: All - (Headway)

Name: Default Profile

Scheme: Vehicle classification (ARX)

Units: Non metric (ft, mi, ft/s, mph, lb, ton)

In profile: Vehicles = 274 / 290 (94.48%)

Speed Statistics by Hour

SpeedStatHour-86

900S100W.0.0EW

Description: 900 South 100 West speed

Filter time: 10:30 Thursday, June 12, 2014 => 10:30 Friday, June 13, 2014

Scheme: Vehicle classification (ARX)

Filter: CIs(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(5,100) Headway(>0)

Vehicles = 274

Posted speed limit = 25 mph, Exceeding = 67 (24.45%), Mean Exceeding = 27.67 mph

Maximum = 35.7 mph, Minimum = 6.7 mph, Mean = 21.6 mph

85% Speed = 26.4 mph, 95% Speed = 28.6 mph, Median = 21.9 mph

10 mph Pace = 16 - 26, Number In Pace = 196 (71.53%)

Variance = 23.06, Standard Deviation = 4.80 mph

Hour Bins

Time	Bin	Min	Max	Mean	Median	85%	95%	>PSL 25 mph
0000	1	0.4%	26.1	26.1	25.9	25.9	25.9	1 100.0%
0100	0	0.0%	0.0	0.0	0.0	0.0	0.0	0 0.0%
0200	0	0.0%	0.0	0.0	0.0	0.0	0.0	0 0.0%
0300	0	0.0%	0.0	0.0	0.0	0.0	0.0	0 0.0%
0400	1	0.4%	20.4	20.4	20.4	20.4	20.4	0 0.0%
0500	1	0.4%	27.5	27.5	27.3	27.3	27.3	1 100.0%
0600	3	1.1%	16.6	23.2	18.6	23.0	23.0	0 0.0%
0700	9	3.3%	10.3	26.0	18.1	25.5	25.9	2 22.2%
0800	14	5.1%	17.5	27.6	23.3	24.6	25.7	2 14.3%
0900	17	6.2%	11.8	35.7	22.9	28.0	29.5	8 47.1%
1000	15	5.5%	13.8	30.6	21.1	23.9	25.3	2 13.3%
1100	19	6.9%	15.1	30.6	22.9	26.6	28.6	7 36.8%
1200	17	6.2%	11.1	29.6	21.2	22.6	27.1	3 17.6%
1300	30	10.9%	6.7	34.2	22.5	23.5	26.4	9 30.0%
1400	20	7.3%	11.6	30.6	21.8	26.2	28.0	6 30.0%
1500	20	7.3%	12.0	31.1	22.4	26.2	30.0	7 35.0%
1600	26	9.5%	14.9	32.6	22.4	26.2	32.4	6 23.1%
1700	14	5.1%	14.8	27.0	19.8	26.6	26.8	3 21.4%
1800	19	6.9%	11.9	29.4	21.2	24.4	28.0	2 10.5%
1900	21	7.7%	14.3	28.5	20.6	24.4	26.6	3 14.3%
2000	16	5.8%	14.4	25.3	20.0	23.5	24.8	1 6.3%
2100	6	2.2%	14.5	27.3	20.8	25.9	27.3	2 33.3%
2200	4	1.5%	15.7	25.9	20.9	23.0	25.7	1 25.0%
2300	1	0.4%	25.2	25.2	25.1	25.1	25.1	1 100.0%
----	274	100.0%	6.7	35.7	21.6	21.9	26.4	67 24.5%