

**LODI CITY COUNCIL
SHIRTSLEEVE SESSION
CARNEGIE FORUM, 305 WEST PINE STREET
TUESDAY, AUGUST 12, 2014**

A. Roll Call by City Clerk

An Informal Informational Meeting ("Shirtsleeve" Session) of the Lodi City Council was held Tuesday, August 12, 2014, commencing at 7:00 a.m.

Present: Council Member Johnson, Council Member Nakanishi, and Mayor Pro Tempore Hansen

Absent: Council Member Mounce, and Mayor Katzakian

Also Present: City Manager Schwabauer, City Attorney Magdich, and City Clerk Robison

NOTE: Council Member Nakanishi arrived at 7:07 a.m.

B. Topic(s)

B-1 2014 Signal Priority Study (PW)

Deputy Public Works Director Charlie Swimley and Assistant Traffic Engineer Dorothy Kam provided a PowerPoint presentation regarding the 2014 signal priority study. Specific topics of discussion included overview, background, signal installations and upgrades, study methodology, existing traffic signals and study locations, study results, and typical signal design, construction, and maintenance costs.

In response to Mayor Pro Tempore Hansen, Ms. Kam responded that Lodi Avenue is the only coordinated intersection in Lodi, and Mr. Swimley added that it operates between 11 a.m. and 6 p.m. Transportation Manager Paula Fernandez explained that a coordinated intersection takes into consideration vehicle spacing, traffic flow, and volume and the reason for the coordinated intersection at Lodi Avenue was to improve traffic flow and reduce delays. Ms. Fernandez further explained that some intersections, including those along Lower Sacramento Road, are equipped to have the necessary conductors installed for a coordinated intersection, but they are not needed at this point because the traffic volume and spacing does not warrant it. Once they become necessary, staff would coordinate the project and apply for grants. In further response, Ms. Fernandez stated that all intersections, with the exception of those in the downtown area, have sensors to control the traffic signals.

In response to Council Member Johnson, Ms. Fernandez stated that video sensors work along the same method as loop detectors in that a car activates the controller, the signal has a controller box with a computer, and the light changes.

In response to Council Member Johnson, Ms. Fernandez stated that the City routinely uses Caltrans signal guidelines and when an intersection meets any one of the criteria it is placed on the list, although not every signal project will have funding in place.

In response to Council Member Nakanishi, Ms. Fernandez confirmed that, out of the 24 intersections that were studied, 13 met at least one of the criteria for a signal, after which staff prioritized the projects. The list was first prioritized in 1970 and is updated periodically.

Mayor Pro Tempore Hansen reminded Council that at one time it was considering a signal at the intersection of Elm Street and Mills Avenue, but decided against it because of the two schools nearby and the high volume of children crossing at that intersection, and he questioned why this

remained on the priority list. Mr. Swimley explained that it was ranked and placed near the top of the priority list for a variety of reasons; however, Council has the authority to either approve the signal installation or decide not to proceed with it. The list represents a ranking based on the study, this location met the criteria to be placed on the list, and the City can use its judgment to determine whether or not the signal should be installed.

In response to Council Member Johnson, Mr. Swimley stated that the City could potentially receive outside construction funding for the Turner Road and Highway 99 ramp project as it ties in with the scheduled corridor work and staff continues to meet with San Joaquin Council of Governments (SJCOG) regarding the design portion of the project. It is, however, premature at this point, and even though this project ranked number one on the list, it would not be considered until the Highway 99 study is complete.

Mayor Pro Tempore Hansen reported that SJCOG discussed this project at its recent meeting and it is expected that the widening of Highway 99 will go through Lodi. SJCOG representatives asked during the meeting if the abandoned railroad tracks over the freeway were planned to be removed as that could potentially reduce the cost of the construction project. In response, Public Works Director Wally Sandelin stated he would look into the matter.

Council Member Johnson suggested adding a subset to the prioritization list of intersections over which the City has control and keeping the other projects, which may require outside funding or are tied to another project, separate in order to move those projects higher on the list. Mr. Swimley stated that staff continually reevaluates intersections on the list if it receives citizen complaints or the number of collisions increases and intersections do not remain in limbo on the list until another study is completed.

In response to Mayor Pro Tempore Hansen, Mr. Swimley stated that the top three projects scheduled next for installation are the intersections of Victor Road and Guild Avenue, Lockeford and Stockton Streets, and Hutchins Street south of Harney Lane primarily because the funding is in place; however, Council has the ability to choose another priority if it wishes. City Manager Schwabauer added that the Hutchins Street intersection is tied to an agreement with the property owner. In further response, Mr. Swimley stated that the Lockeford and Stockton Street intersection has not been a priority for some time due to necessary studies on the project and it will most likely be tied to the widening and grading work scheduled for that area.

In response to Council Member Nakanishi, Mr. Swimley stated that funding is the major determining factor in when a signal will be installed; however, the City's goal is to do one every one to two years.

Mr. Sandelin stated that the signals are not always installed in the order they appear on the list, there is 100 percent funding through impact fees for the Victor Road and Guild Avenue intersection, and the Lockeford and Stockton Streets intersection will occur with the Lockeford Street widening project for which the grant funds have been committed. In response to Mayor Pro Tempore Hansen, Mr. Sandelin stated that the Lockeford Street intersection would likely be two years out, the project is designed, and the City needs to obtain a small portion of land from the railroad.

B-2 Roundabout Presentation (PW)

Deputy Public Works Director Charlie Swimley provided a PowerPoint presentation regarding roundabouts. Specific topics of discussion included history of the roundabout, reasons for and against a roundabout, Lodi's first roundabout, Rose Gate roundabout, roundabout geometry, and an example of a similar roundabout in the City of Oakdale.

In response to Mayor Pro Tempore Hansen, Mr. Swimley stated that roundabouts have crosswalks but they are further from the intersection and are uncontrolled. In further response, Mr. Swimley stated that the Rose Gate subdivision will have a reverse frontage wall along Lodi Avenue.

In response to Council Member Johnson, Mr. Swimley stated that the Lodi Avenue entrance to the subdivision was best suited for the roundabout based on anticipated traffic volumes, which would be higher than the entrance to the west.

In response to Council Member Nakanishi, Mr. Swimley stated that the Rose Gate subdivision will have three outlets with the main outlet being the roundabout on Lodi Avenue.

In response to Mayor Pro Tempore Hansen, Mr. Swimley stated that the proposed roundabout in Rose Gate will be larger than the roundabout in Woodbridge and vehicles would not be permitted to drive over the center. The roundabout is proposed to be 40 feet curb-to-curb, the developer is paying for the installation, and the Fire Department has provided its positive feedback on the roundabout.

In response to Council Member Nakanishi, Mr. Swimley stated that former City Manager Rad Bartlam first suggested the roundabout.

C. Comments by Public on Non-Agenda Items

None.

D. Adjournment

No action was taken by the City Council. The meeting was adjourned at 7:54 a.m.

ATTEST:

Jennifer M. Robison
City Clerk



CITY OF LODI
COUNCIL COMMUNICATION

AGENDA TITLE: 2014 Signal Priority Study
MEETING DATE: August 12, 2014 (Shirtsleeve Session)
PREPARED BY: Public Works Director

RECOMMENDED ACTION: 2014 Signal Priority Study

BACKGROUND INFORMATION: At the Shirtsleeve Session, the Public Works Department staff will present a summary of the City's Signal Priority Study. The following key items will be briefly discussed:

Primary Purpose – The Public Works Department began a program of studying non-signalized intersections with high volumes and accident history. The primary purpose of the program is to determine if any of these intersections meet the minimum traffic signal criteria established by Caltrans and, if so, in what order of priority they should be installed. It is necessary to prioritize the signal installations as the cost of installing traffic signals exceeds available construction funds.

Previous Intersections Installed Based on Past Signal Priority Studies – Since 2000, the City has installed 12 new signals throughout the City.

Caltrans Traffic Signal Guidelines – Caltrans has adopted nine traffic signal warrants that the City uses as a guideline to determine where signals are considered for installation.

Priority System Worksheet – After the Caltrans signal warrants and other factors are reviewed, the intersections are ranked using the priority system. Points are assigned for the traffic volumes entering the intersection, accident history, speed of traffic, proximity to nearest existing traffic signal, and special conditions.

Results – 13 of the 24 intersections studied satisfy the Caltrans guidelines. The scoring results are summarized in Table 1 below.

Funding – Staff has revenue for signal installation from the Congestion Mitigation and Air Quality Program (CMAQ), Regional Surface Transportation Program (RSTP), Gas Tax, and Local Development Impact Fees. There is \$400,000 budgeted in Fiscal Year 2014/15 CIP for one traffic signal installation.

APPROVED:

Stephen Schwabauer, City Manager

TABLE 1

INTERSECTION	SCORE
1. Turner Road and Highway 99 Southbound Ramps	354
2. Victor Road (SR12) and Guild Avenue	348
3. Harney Lane and Mills Avenue	268
4. Elm Street and Mills Avenue	266
5. Turner Road and Highway 99 Northbound Ramps	220
6. Stockton Street and Century Boulevard	206
7. Turner Road and California Street / Edgewood Drive	184
8. Lockeford Street and Stockton Street	150
9. Stockton Street and Tokay Street	143
10. Turner Road and Sacramento Street	133
11. Ham Lane and Lodi Memorial Driveway	113
12. Century Boulevard and Mills Avenue	104
13. Cherokee Lane and Century Boulevard	51
14. Cherokee Lane and Elm Street	N/A, did not satisfy Caltrans warrants
15. Cherokee Lane and Pioneer Drive	N/A, did not satisfy Caltrans warrants
16. Cherokee Lane and Vine Street	N/A, did not satisfy Caltrans warrants
17. Church Street and Locust Street	N/A, did not satisfy Caltrans warrants
18. Church Street and Tokay Street	N/A, did not satisfy Caltrans warrants
19. Crescent Avenue and Tokay Street	N/A, did not satisfy Caltrans warrants
20. Elm Street and Pacific Avenue	N/A, did not satisfy Caltrans warrants
21. Lockeford Street and California Street	N/A, did not satisfy Caltrans warrants
22. Mills Avenue and Lockeford Street	N/A, did not satisfy Caltrans warrants
23. Pine Street and Stockton Street	N/A, did not satisfy Caltrans warrants
24. Turner Road and Loma Drive	N/A, did not satisfy Caltrans warrants

FISCAL IMPACT: Not applicable.

FUNDING AVAILABLE: Not applicable.



 F. Wally Sappdelin
 Public Works Director

Prepared by Dorothy Kam, Assistant Engineer
 FWS/DK/pmf
 cc: City Engineer/Deputy Public Works Director
 Transportation Manager/Senior Traffic Engineer

CITY OF LODI

PUBLIC WORKS DEPARTMENT

TRAFFIC SIGNAL PRIORITY STUDY (Abridged Edition)

July 2014

PREPARED BY:

Paula Fernandez, Transportation Manager/Senior Traffic Engineer
Dorothy Kam, Assistant Engineer

UNDER THE DIRECTION OF:

F. Wally Sandelin, Public Works Director
Charlie Swimley, Deput Public Works Director/City Engineer

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(Abridged Edition)

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I. SCOPE OF STUDY

In 1970, the Engineering Division began a program of studying high traffic volume and high accident non-signalized intersections within the City of Lodi. The primary purpose of these studies was to determine whether any of these intersections warranted the installation of traffic signals and, if so, in what order of priority should they be installed. The study is periodically updated with latest update performed in 2000.

II. THE WARRANTS

The warrants used for traffic control signals are those adopted by the State of California and published in the California Department of Transportation (Caltrans) "California Manual on Uniform Traffic Control Devices."

The satisfaction of a warrant is not necessarily justification for signals. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown. The City may also find it advantageous to install signals at one intersection ahead of another because of a scheduled street project or available funding.

The types of warrants are:

- Warrant 1 – Eight-hour vehicular volume
- Warrant 2 – Four-hour vehicular volume
- Warrant 3 – Peak hour
- Warrant 4 – Pedestrian volume
- Warrant 5 – School crossings
- Warrant 6 – Coordinated signal system
- Warrant 7 – Crash experience
- Warrant 8 – Roadway network
- Warrant 9 – Intersection near a grade crossing

III. THE PRIORITIES

When the cost of installing traffic signals exceeds available construction funds, it is necessary to determine a systematic method of prioritizing signal installation. Intersections meeting one or more of the Caltrans Warrants are assigned priority ranking based on a point system.

In 1985, the City Council and the former Highway and Transportation Committee of the Chamber of Commerce expressed concerns over the relative weighting of various factors, such as, accidents and speeds in the 1970 priority system. The priority system was revised based upon a study that compared five systems used by northern California cities, including Lodi.

In summary, the intersections that meet the Caltrans signal warrants would rate highest on the priority system if they have the following characteristics:

- a. High traffic volume entering the intersection;
- b. Large number of accidents of a type that could be corrected by the installation of signals;
- c. High approach speeds;
- d. Be located a considerable distance from another signalized intersection.

Exhibit A is an example of the priority worksheet. A more detailed description of each priority characteristic is provided below.

Traffic Volumes – Points are assigned using a combination of total approach volume and percentage of minor street traffic. More points are given as the total approach volumes increase. Some additional points are given as the minor street percentage increases. Points for vehicular volumes are taken from a volume table shown on the priority worksheets.

As an example, an intersection with a total of 12,000 vehicles daily entering from all four approaches and 2,400 (20%) vehicles entering from the two minor approaches, scores a point rating of 92. The closer the traffic from the minor street approaches 50% of the total volume entering the intersection, the higher the point rating. The same intersection with 4,800 vehicles (40%) entering from the minor approaches receives a point rating of 132.

Collisions – For this category, only collisions corrected by the installation of a signal are considered; such as right angle collisions and most pedestrian collisions. A four-year period is evaluated with 12 points per collision for the present year and 6 points per collision for the second to fourth years. Pedestrian collisions count as 1.5 points. Assigning more points for the most current year makes the system more responsive to recent changes.

Approach Speed – Points given for approach speeds range from 0 points for 25 mph to 150 points for 50 mph and more. More points are given as the approach speeds on the major street increases given the higher potential of a more critical high speed collision. Four-way stop sign controlled intersections are given 0 points.

Coordinated Movement – Negative points are given to intersections within 1,200 feet of another signalized intersection. The minimum distance between signalized intersections is 600 feet. When signalized intersections are properly located and timed, traffic can effectively flow through the intersections.

Special Conditions – This factor is applied to two-way controlled intersections unless the collision history indicates existing four-way stop control is insufficient. Additional factors may be considered such as traffic at adjacent intersections, unusual geometry or project scheduling requirements.

IV. THE INTERSECTIONS

Since 2000, the Engineering Division studied many intersections to determine whether they warranted a traffic signal installation. As a result of these studies and other development and improvement projects, signals have been installed at the following twelve intersections since 2000:

1. Cherokee Lane and Tokay Street
2. Century Boulevard and Ham Lane
3. Century Boulevard and Lower Sacramento Road
4. Ham Lane and Harney Lane
5. Harney Lane and Lower Sacramento Road
6. Harney Lane and Stockton Street
7. Harney Lane and Reynolds Ranch Parkway
8. Lebaron Boulevard and Reynolds Ranch Parkway
9. Lockeford Street and Sacramento Street
10. Lodi Avenue and Mills Avenue
11. Lower Sacramento Road and Tokay Street
12. Reynolds Ranch Parkway and Rocky Lane

The following 21 traffic signals have been modified by either adding left turn phases (arrows) and/or upgrading the signal cabinet/controller equipment:

1. Central Avenue and Lodi Avenue
2. Cherokee Lane and Lockeford Street
3. Cherokee Lane and Lodi Avenue
4. Cherokee Lane and Pine Street
5. Cherokee Lane and Victor Road
6. Church Street and Elm Street
7. Church Street and Lockeford Street
8. Church Street and Lodi Avenue
9. Church Street and Turner Road
10. Elm Street and Ham Lane
11. Elm Street and Lower Sacramento Road
12. Fairmont Avenue and Lodi Avenue
13. Ham Lane and Lockeford Street
14. Ham Lane and Lodi Avenue
15. Ham Lane and Turner Street
16. Harney Lane and Hutchins Street
17. Lodi Avenue and Sacramento Street
18. Lower Sacramento Road (N) and Turner Road
19. Lower Sacramento Road and Vine Street
20. Mills Avenue and Turner Road
21. Pine Street and Sacramento Street

The current studied intersections that satisfied one or more of the Caltrans warrant(s) for the consideration of a traffic signal have been prioritized. The intersections that warrant consideration of a traffic signal are listed below, in priority order.

1. Turner Road and Highway 99 SB ramps	354
2. Victor Road (SR12) and Guild Avenue	348
3. Harney Lane and Mills Avenue	268
4. Elm Street and Mills Avenue	266
5. Turner Road and Highway 99 NB ramps	220
6. Stockton Street and Century Boulevard	206
7. Turner Road and California Street / Edgewood Drive	184
8. Lockeford Street and Stockton Street	150
9. Stockton Street and Tokay Street	143
10. Turner Road and Sacramento Street	133
11. Ham Lane and Lodi Memorial driveway	113
12. Century Boulevard and Mills Avenue	104
13. Cherokee Lane and Century Boulevard	51

The Signal Priority Worksheets are presented in the Appendix; however, the signal warrant sheets, collision diagrams, and volume sheets for all of the intersections studied are not included in this abridged edition.

Intersections studied not meeting any warrant from the traffic signal warrant guidelines are as follows:

1. Cherokee Lane and Elm Street
2. Cherokee Lane and Pioneer Drive
3. Cherokee Lane and Vine Street
4. Church Street and Locust Street
5. Church Street and Tokay Street
6. Crescent Avenue and Tokay Street
7. Elm Street and Pacific Avenue
8. Lockeford Street and California Street
9. Mills Avenue and Lockeford Street
10. Pine Street and Stockton Street
11. Turner Road and Loma Drive

Appendix



CITY OF LODI
Public Works Department

TRAFFIC SIGNAL PRIORITY
WORKSHEET

Major St: Turner Rd
Minor St: Hwy 99 SB Ramps

Volume: 12.3
Volume: 4.4 % of Total 26
Total Volume: 16.7 (Volumes in 1000's)

FACTOR	COMPUTATIONS	POINTS			
Volume	<u>Minor Street</u> % 8 9 10 11 12 13 14 15 16 17 18 19 20 5 4 5 6 8 10 12 15 18 21 24 27 30 33 10 10 12 15 18 22 26 30 34 41 48 55 62 70 15 25 31 37 45 53 62 71 80 93 106 119 132 145 20 42 51 60 76 92 108 124 140 160 180 200 220 240 25 51 62 72 90 107 125 142 160 180 208 232 256 280 30 61 73 85 104 123 142 161 180 208 236 264 292 320 35 63 75 87 108 128 148 169 188 210 249 278 308 338 40 65 77 89 111 132 154 176 196 229 261 292 323 355 45 67 79 91 114 137 160 183 206 240 273 306 338 372 50 68 80 95 117 141 165 190 215 250 285 320 353 389	236			
	Do not interpolate - use next highest value				
	Accidents		12 points per accident for recent year $\frac{0}{1} \times 12 = \frac{0}{6}$	6	
			6 points per accident for second to fourth year (Pedestrian accidents count as 1.5) $\frac{1}{6} \times 6 = \frac{6}{6}$ TOTAL		
	Speed		Use highest 85 percentile approach speed (4-way stop =0) Speed (mph) 26 28 30 32 34 36 38 40 42 44 46 48 50 Points 4 12 20 28 36 46 58 70 82 96 112 130 150	112	
	Coordinated Movement		Distance from proposed signal to nearest existing signal. (Minimum distance is 600 feet) Distance (ft) 1200 1000 900 800 700 600 Points 0 -20 -35 -50 -65 -80	0	
	Special Conditions		Apply to two-way stop controlled intersections unless accident history indicates existing four-way stop control is insufficient.	0	
			<u>CONDITION</u>		<u>POINTS</u>
			Signal warranted under Caltrans pedestrian or school crossing warrant		100
			Meets 50% of above requirements		75
			Intersection adjacent to school, major pedestrian generator or RR tracks within intersection		50
	On school or major generator route or RR tracks adjacent to intersection		25		
	Other _____				
	(Describe) _____				
	By: <u>Dorothy Kam</u> Date: <u>June 10, 2014</u>		TOTAL POINTS 354		



CITY OF LODI
Public Works Department

**TRAFFIC SIGNAL PRIORITY
WORKSHEET**

Major St: Victor Rd
Minor St: Guild Ave

Volume: 10.6
Volume: 4.4 % of Total 29
Total Volume: 15.0 (Volumes in 1000's)

FACTOR	COMPUTATIONS	POINTS																																																																																																																																																										
Volume	<p><u>Minor Street</u></p> <p><u>Total Entering Intersection</u></p> <table border="1"> <tr> <td>%</td> <td>8</td> <td>9</td> <td>10</td> <td>11</td> <td>12</td> <td>13</td> <td>14</td> <td>15</td> <td>16</td> <td>17</td> <td>18</td> <td>19</td> <td>20</td> </tr> <tr> <td>5</td> <td>4</td> <td>5</td> <td>6</td> <td>8</td> <td>10</td> <td>12</td> <td>15</td> <td>18</td> <td>21</td> <td>24</td> <td>27</td> <td>30</td> <td>33</td> </tr> <tr> <td>10</td> <td>10</td> <td>12</td> <td>15</td> <td>18</td> <td>22</td> <td>26</td> <td>30</td> <td>34</td> <td>41</td> <td>48</td> <td>55</td> <td>62</td> <td>70</td> </tr> <tr> <td>15</td> <td>25</td> <td>31</td> <td>37</td> <td>45</td> <td>53</td> <td>62</td> <td>71</td> <td>80</td> <td>93</td> <td>106</td> <td>119</td> <td>132</td> <td>145</td> </tr> <tr> <td>20</td> <td>42</td> <td>51</td> <td>60</td> <td>76</td> <td>92</td> <td>108</td> <td>124</td> <td>140</td> <td>160</td> <td>180</td> <td>200</td> <td>220</td> <td>240</td> </tr> <tr> <td>25</td> <td>51</td> <td>62</td> <td>72</td> <td>90</td> <td>107</td> <td>125</td> <td>142</td> <td>160</td> <td>180</td> <td>208</td> <td>232</td> <td>256</td> <td>280</td> </tr> <tr> <td>30</td> <td>61</td> <td>73</td> <td>85</td> <td>104</td> <td>123</td> <td>142</td> <td>161</td> <td>180</td> <td>208</td> <td>236</td> <td>264</td> <td>292</td> <td>320</td> </tr> <tr> <td>35</td> <td>63</td> <td>75</td> <td>87</td> <td>108</td> <td>128</td> <td>148</td> <td>169</td> <td>188</td> <td>210</td> <td>249</td> <td>278</td> <td>308</td> <td>338</td> </tr> <tr> <td>40</td> <td>65</td> <td>77</td> <td>89</td> <td>111</td> <td>132</td> <td>154</td> <td>176</td> <td>196</td> <td>229</td> <td>261</td> <td>292</td> <td>323</td> <td>355</td> </tr> <tr> <td>45</td> <td>67</td> <td>79</td> <td>91</td> <td>114</td> <td>137</td> <td>160</td> <td>183</td> <td>206</td> <td>240</td> <td>273</td> <td>306</td> <td>338</td> <td>372</td> </tr> <tr> <td>50</td> <td>68</td> <td>80</td> <td>95</td> <td>117</td> <td>141</td> <td>165</td> <td>190</td> <td>215</td> <td>250</td> <td>285</td> <td>320</td> <td>353</td> <td>389</td> </tr> </table> <p>Do not interpolate - use next highest value</p>	%	8	9	10	11	12	13	14	15	16	17	18	19	20	5	4	5	6	8	10	12	15	18	21	24	27	30	33	10	10	12	15	18	22	26	30	34	41	48	55	62	70	15	25	31	37	45	53	62	71	80	93	106	119	132	145	20	42	51	60	76	92	108	124	140	160	180	200	220	240	25	51	62	72	90	107	125	142	160	180	208	232	256	280	30	61	73	85	104	123	142	161	180	208	236	264	292	320	35	63	75	87	108	128	148	169	188	210	249	278	308	338	40	65	77	89	111	132	154	176	196	229	261	292	323	355	45	67	79	91	114	137	160	183	206	240	273	306	338	372	50	68	80	95	117	141	165	190	215	250	285	320	353	389	180
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CITY OF LODI
Public Works Department

**TRAFFIC SIGNAL PRIORITY
WORKSHEET**

Major St: Harney Ln
Minor St: Mills Ave

Volume: 8.7
Volume: 1.6 % of Total 16
Total Volume: 10.3 (Volumes in 1000's)

FACTOR	COMPUTATIONS	POINTS																																																																																																																																																																																					
Volume	<table border="0"> <tr> <td><u>Minor Street</u></td> <td colspan="14"><u>Total Entering Intersection</u></td> <td></td> </tr> <tr> <td>%</td> <td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td> <td></td> </tr> <tr> <td>5</td> <td>4</td><td>5</td><td>6</td><td>8</td><td>10</td><td>12</td><td>15</td><td>18</td><td>21</td><td>24</td><td>27</td><td>30</td><td>33</td> <td></td> </tr> <tr> <td>10</td> <td>10</td><td>12</td><td>15</td><td>18</td><td>22</td><td>26</td><td>30</td><td>34</td><td>41</td><td>48</td><td>55</td><td>62</td><td>70</td> <td></td> </tr> <tr> <td>15</td> <td>25</td><td>31</td><td>37</td><td>45</td><td>53</td><td>62</td><td>71</td><td>80</td><td>93</td><td>106</td><td>119</td><td>132</td><td>145</td> <td></td> </tr> <tr> <td>20</td> <td>42</td><td>51</td><td>60</td><td>76</td><td>92</td><td>108</td><td>124</td><td>140</td><td>160</td><td>180</td><td>200</td><td>220</td><td>240</td> <td></td> </tr> <tr> <td>25</td> <td>51</td><td>62</td><td>72</td><td>90</td><td>107</td><td>125</td><td>142</td><td>160</td><td>180</td><td>208</td><td>232</td><td>256</td><td>280</td> <td></td> </tr> <tr> <td>30</td> <td>61</td><td>73</td><td>85</td><td>104</td><td>123</td><td>142</td><td>161</td><td>180</td><td>208</td><td>236</td><td>264</td><td>292</td><td>320</td> <td></td> </tr> <tr> <td>35</td> <td>63</td><td>75</td><td>87</td><td>108</td><td>128</td><td>148</td><td>169</td><td>188</td><td>210</td><td>249</td><td>278</td><td>308</td><td>338</td> <td></td> </tr> <tr> <td>40</td> <td>65</td><td>77</td><td>89</td><td>111</td><td>132</td><td>154</td><td>176</td><td>196</td><td>229</td><td>261</td><td>292</td><td>323</td><td>355</td> <td></td> </tr> <tr> <td>45</td> <td>67</td><td>79</td><td>91</td><td>114</td><td>137</td><td>160</td><td>183</td><td>206</td><td>240</td><td>273</td><td>306</td><td>338</td><td>372</td> <td></td> </tr> <tr> <td>50</td> <td>68</td><td>80</td><td>95</td><td>117</td><td>141</td><td>165</td><td>190</td><td>215</td><td>250</td><td>285</td><td>320</td><td>353</td><td>389</td> <td></td> </tr> </table>	<u>Minor Street</u>	<u>Total Entering Intersection</u>															%	8	9	10	11	12	13	14	15	16	17	18	19	20		5	4	5	6	8	10	12	15	18	21	24	27	30	33		10	10	12	15	18	22	26	30	34	41	48	55	62	70		15	25	31	37	45	53	62	71	80	93	106	119	132	145		20	42	51	60	76	92	108	124	140	160	180	200	220	240		25	51	62	72	90	107	125	142	160	180	208	232	256	280		30	61	73	85	104	123	142	161	180	208	236	264	292	320		35	63	75	87	108	128	148	169	188	210	249	278	308	338		40	65	77	89	111	132	154	176	196	229	261	292	323	355		45	67	79	91	114	137	160	183	206	240	273	306	338	372		50	68	80	95	117	141	165	190	215	250	285	320	353	389		76
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CITY OF LODI
Public Works Department

TRAFFIC SIGNAL PRIORITY
WORKSHEET

Major St: Elm St
Minor St: Mills Ave

Volume: 7.8
Volume: 6.8 % of Total 47
Total Volume: 14.6 (Volumes in 1000's)

FACTOR	COMPUTATIONS													POINTS														
Volume	<u>Minor Street</u>													215														
	<u>Total Entering Intersection</u>																											
	%	8	9	10	11	12	13	14	15	16	17	18	19		20													
	5	4	5	6	8	10	12	15	18	21	24	27	30		33													
	10	10	12	15	18	22	26	30	34	41	48	55	62		70													
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	20	42	51	60	76	92	108	124	140	160	180	200	220		240													
	25	51	62	72	90	107	125	142	160	180	208	232	256		280													
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	35	63	75	87	108	128	148	169	188	210	249	278	308		338													
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By: <u>Dorothy Kam</u>												Date: <u>June 11, 2014</u>	TOTAL POINTS	266														



CITY OF LODI
Public Works Department

**TRAFFIC SIGNAL PRIORITY
WORKSHEET**

Major St: Turner Rd
Minor St: Hwy 99 NB Ramps

Volume: 7.3
Volume: 3.7 % of Total 34
Total Volume: 11.0 (Volumes in 1000's)

FACTOR	COMPUTATIONS	POINTS																																																																																																																																																										
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CITY OF LODI
Public Works Department

**TRAFFIC SIGNAL PRIORITY
WORKSHEET**

Major St: Stockton St
Minor St: Century Blvd

Volume: 9.2
Volume: 1.2 % of Total 12
Total Volume: 10.4 (Volumes in 1000's)

FACTOR	COMPUTATIONS	POINTS																																																																																																																																																																																			
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CITY OF LODI
Public Works Department

**TRAFFIC SIGNAL PRIORITY
WORKSHEET**

Major St: Turner Rd Volume: 14.6
 Minor St: California St / Edgewood Dr Volume: 1.6 % of Total 10
 Total Volume: 16.2 (Volumes in 1000's)

FACTOR	COMPUTATIONS	POINTS																																																																																																																																																																								
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CITY OF LODI
Public Works Department

**TRAFFIC SIGNAL PRIORITY
WORKSHEET**

Major St: Lockeford St
Minor St: Stockton St

Volume: 9.7
Volume: 3.8 % of Total 28
Total Volume: 13.5 (Volumes in 1000's)

FACTOR	COMPUTATIONS	POINTS		
Volume	<u>Minor Street</u> % 8 9 10 11 12 13 14 15 16 17 18 19 20 5 4 5 6 8 10 12 15 18 21 24 27 30 33 10 10 12 15 18 22 26 30 34 41 48 55 62 70 15 25 31 37 45 53 62 71 80 93 106 119 132 145 20 42 51 60 76 92 108 124 140 160 180 200 220 240 25 51 62 72 90 107 125 142 160 180 208 232 256 280 30 61 73 85 104 123 142 161 180 208 236 264 292 320 35 63 75 87 108 128 148 169 188 210 249 278 308 338 40 65 77 89 111 132 154 176 196 229 261 292 323 355 45 67 79 91 114 137 160 183 206 240 273 306 338 372 50 68 80 95 117 141 165 190 215 250 285 320 353 389	161		
	Do not interpolate - use next highest value			
	Accidents		12 points per accident for recent year $\frac{1}{2} \times 12 = \frac{12}{2}$	24
			6 points per accident for second to fourth year (Pedestrian accidents count as 1.5) $\frac{12}{2} = 6$ TOTAL	
	Speed		Use highest 85 percentile approach speed (4-way stop =0) Speed (mph) 26 28 30 32 34 36 38 40 42 44 46 48 50 Points 4 12 20 28 36 46 58 70 82 96 112 130 150	0
	Coordinated Movement		Distance from proposed signal to nearest existing signal. (Minimum distance is 600 feet) Distance (ft) 1200 1000 900 800 700 600 Points 0 -20 -35 -50 -65 -80	-35
	Special Conditions		Apply to two-way stop controlled intersections unless accident history indicates existing four-way stop control is insufficient.	
			<u>CONDITION</u>	<u>POINTS</u>
			Signal warranted under Caltrans pedestrian or school crossing warrant	100
			Meets 50% of above requirements	75
			Intersection adjacent to school, major pedestrian generator or RR tracks within intersection	50
	On school or major generator route or RR tracks adjacent to intersection		25	
	Other _____			
	(Describe) _____			
	0			
By: <u>Dorothy Kam</u> Date: <u>June 23, 2014</u>		TOTAL POINTS 150		



CITY OF LODI
Public Works Department

**TRAFFIC SIGNAL PRIORITY
WORKSHEET**

Major St: Stockton St
Minor St: Tokay St

Volume: 6.8
Volume: 5.1 % of Total 43
Total Volume: 11.9 (Volumes in 1000's)

FACTOR	COMPUTATIONS	POINTS																																																																																																																																																										
Volume	<p><u>Minor Street</u></p> <p><u>Total Entering Intersection</u></p> <table border="1"> <thead> <tr> <th>%</th> <th>8</th> <th>9</th> <th>10</th> <th>11</th> <th>12</th> <th>13</th> <th>14</th> <th>15</th> <th>16</th> <th>17</th> <th>18</th> <th>19</th> <th>20</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>4</td> <td>5</td> <td>6</td> <td>8</td> <td>10</td> <td>12</td> <td>15</td> <td>18</td> <td>21</td> <td>24</td> <td>27</td> <td>30</td> <td>33</td> </tr> <tr> <td>10</td> <td>10</td> <td>12</td> <td>15</td> <td>18</td> <td>22</td> <td>26</td> <td>30</td> <td>34</td> <td>41</td> <td>48</td> <td>55</td> <td>62</td> <td>70</td> </tr> <tr> <td>15</td> <td>25</td> <td>31</td> <td>37</td> <td>45</td> <td>53</td> <td>62</td> <td>71</td> <td>80</td> <td>93</td> <td>106</td> <td>119</td> <td>132</td> <td>145</td> </tr> <tr> <td>20</td> <td>42</td> <td>51</td> <td>60</td> <td>76</td> <td>92</td> <td>108</td> <td>124</td> <td>140</td> <td>160</td> <td>180</td> <td>200</td> <td>220</td> <td>240</td> </tr> <tr> <td>25</td> <td>51</td> <td>62</td> <td>72</td> <td>90</td> <td>107</td> <td>125</td> <td>142</td> <td>160</td> <td>180</td> <td>208</td> <td>232</td> <td>256</td> <td>280</td> </tr> <tr> <td>30</td> <td>61</td> <td>73</td> <td>85</td> <td>104</td> <td>123</td> <td>142</td> <td>161</td> <td>180</td> <td>208</td> <td>236</td> <td>264</td> <td>292</td> <td>320</td> </tr> <tr> <td>35</td> <td>63</td> <td>75</td> <td>87</td> <td>108</td> <td>128</td> <td>148</td> <td>169</td> <td>188</td> <td>210</td> <td>249</td> <td>278</td> <td>308</td> <td>338</td> </tr> <tr> <td>40</td> <td>65</td> <td>77</td> <td>89</td> <td>111</td> <td>132</td> <td>154</td> <td>176</td> <td>196</td> <td>229</td> <td>261</td> <td>292</td> <td>323</td> <td>355</td> </tr> <tr> <td>45</td> <td>67</td> <td>79</td> <td>91</td> <td>114</td> <td>137</td> <td>160</td> <td>183</td> <td>206</td> <td>240</td> <td>273</td> <td>306</td> <td>338</td> <td>372</td> </tr> <tr> <td>50</td> <td>68</td> <td>80</td> <td>95</td> <td>117</td> <td>141</td> <td>165</td> <td>190</td> <td>215</td> <td>250</td> <td>285</td> <td>320</td> <td>353</td> <td>389</td> </tr> </tbody> </table> <p>Do not interpolate - use next highest value</p>	%	8	9	10	11	12	13	14	15	16	17	18	19	20	5	4	5	6	8	10	12	15	18	21	24	27	30	33	10	10	12	15	18	22	26	30	34	41	48	55	62	70	15	25	31	37	45	53	62	71	80	93	106	119	132	145	20	42	51	60	76	92	108	124	140	160	180	200	220	240	25	51	62	72	90	107	125	142	160	180	208	232	256	280	30	61	73	85	104	123	142	161	180	208	236	264	292	320	35	63	75	87	108	128	148	169	188	210	249	278	308	338	40	65	77	89	111	132	154	176	196	229	261	292	323	355	45	67	79	91	114	137	160	183	206	240	273	306	338	372	50	68	80	95	117	141	165	190	215	250	285	320	353	389	137
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CITY OF LODI
Public Works Department

**TRAFFIC SIGNAL PRIORITY
WORKSHEET**

Major St: Turner Rd
Minor St: Sacramento St

Volume: 15.2
Volume: 1.1 % of Total 6
Total Volume: 16.3 (Volumes in 1000's)

FACTOR	COMPUTATIONS	POINTS														
Volume	<u>Minor Street</u> % 8 9 10 11 12 13 14 15 16 17 18 19 20 5 4 5 6 8 10 12 15 18 21 24 27 30 33 10 10 12 15 18 22 26 30 34 41 48 55 62 70 15 25 31 37 45 53 62 71 80 93 106 119 132 145 20 42 51 60 76 92 108 124 140 160 180 200 220 240 25 51 62 72 90 107 125 142 160 180 208 232 256 280 30 61 73 85 104 123 142 161 180 208 236 264 292 320 35 63 75 87 108 128 148 169 188 210 249 278 308 338 40 65 77 89 111 132 154 176 196 229 261 292 323 355 45 67 79 91 114 137 160 183 206 240 273 306 338 372 50 68 80 95 117 141 165 190 215 250 285 320 353 389	48														
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(Describe) _____																
By: <u>Dorothy Kam</u> Date: <u>June 23, 2014</u> TOTAL POINTS		133														



CITY OF LODI
Public Works Department

TRAFFIC SIGNAL PRIORITY
WORKSHEET

Major St: Ham Ln
Minor St: Lodi Memorial Dwy

Volume: 13.8
Volume: 1.5 % of Total 10
Total Volume: 15.3 (Volumes in 1000's)

FACTOR	COMPUTATIONS	POINTS																																																																																																																																																																																																	
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CITY OF LODI
Public Works Department

**TRAFFIC SIGNAL PRIORITY
WORKSHEET**

Major St: Century Blvd
Minor St: Mills Ave

Volume: 4.8
Volume: 4.2 % of Total 47
Total Volume: 9.0 (Volumes in 1000's)

FACTOR	COMPUTATIONS													POINTS																																																																																																																																																										
Volume	<p><u>Minor Street</u> <u>Total Entering Intersection</u></p> <table border="1"> <tr> <td>%</td> <td>8</td> <td>9</td> <td>10</td> <td>11</td> <td>12</td> <td>13</td> <td>14</td> <td>15</td> <td>16</td> <td>17</td> <td>18</td> <td>19</td> <td>20</td> </tr> <tr> <td>5</td> <td>4</td> <td>5</td> <td>6</td> <td>8</td> <td>10</td> <td>12</td> <td>15</td> <td>18</td> <td>21</td> <td>24</td> <td>27</td> <td>30</td> <td>33</td> </tr> <tr> <td>10</td> <td>10</td> <td>12</td> <td>15</td> <td>18</td> <td>22</td> <td>26</td> <td>30</td> <td>34</td> <td>41</td> <td>48</td> <td>55</td> <td>62</td> <td>70</td> </tr> <tr> <td>15</td> <td>25</td> <td>31</td> <td>37</td> <td>45</td> <td>53</td> <td>62</td> <td>71</td> <td>80</td> <td>93</td> <td>106</td> <td>119</td> <td>132</td> <td>145</td> </tr> <tr> <td>20</td> <td>42</td> <td>51</td> <td>60</td> <td>76</td> <td>92</td> <td>108</td> <td>124</td> <td>140</td> <td>160</td> <td>180</td> <td>200</td> <td>220</td> <td>240</td> </tr> <tr> <td>25</td> <td>51</td> <td>62</td> <td>72</td> <td>90</td> <td>107</td> <td>125</td> <td>142</td> <td>160</td> <td>180</td> <td>208</td> <td>232</td> <td>256</td> <td>280</td> </tr> <tr> <td>30</td> <td>61</td> <td>73</td> <td>85</td> <td>104</td> <td>123</td> <td>142</td> <td>161</td> <td>180</td> <td>208</td> <td>236</td> <td>264</td> <td>292</td> <td>320</td> </tr> <tr> <td>35</td> <td>63</td> <td>75</td> <td>87</td> <td>108</td> <td>128</td> <td>148</td> <td>169</td> <td>188</td> <td>210</td> <td>249</td> <td>278</td> <td>308</td> <td>338</td> </tr> <tr> <td>40</td> <td>65</td> <td>77</td> <td>89</td> <td>111</td> <td>132</td> <td>154</td> <td>176</td> <td>196</td> <td>229</td> <td>261</td> <td>292</td> <td>323</td> <td>355</td> </tr> <tr> <td>45</td> <td>67</td> <td>79</td> <td>91</td> <td>114</td> <td>137</td> <td>160</td> <td>183</td> <td>206</td> <td>240</td> <td>273</td> <td>306</td> <td>338</td> <td>372</td> </tr> <tr> <td>50</td> <td>68</td> <td>80</td> <td>95</td> <td>117</td> <td>141</td> <td>165</td> <td>190</td> <td>215</td> <td>250</td> <td>285</td> <td>320</td> <td>353</td> <td>389</td> </tr> </table> <p>Do not interpolate - use next highest value</p>													%	8	9	10	11	12	13	14	15	16	17	18	19	20	5	4	5	6	8	10	12	15	18	21	24	27	30	33	10	10	12	15	18	22	26	30	34	41	48	55	62	70	15	25	31	37	45	53	62	71	80	93	106	119	132	145	20	42	51	60	76	92	108	124	140	160	180	200	220	240	25	51	62	72	90	107	125	142	160	180	208	232	256	280	30	61	73	85	104	123	142	161	180	208	236	264	292	320	35	63	75	87	108	128	148	169	188	210	249	278	308	338	40	65	77	89	111	132	154	176	196	229	261	292	323	355	45	67	79	91	114	137	160	183	206	240	273	306	338	372	50	68	80	95	117	141	165	190	215	250	285	320	353	389	80
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By: <u>Dorothy Kam</u> Date: <u>February 6, 2014</u>												TOTAL POINTS	104																																																																																																																																																											



CITY OF LODI
Public Works Department

**TRAFFIC SIGNAL PRIORITY
WORKSHEET**

Major St: Cherokee Ln
Minor St: Century Blvd

Volume: 7.4
Volume: 1.6 % of Total 18
Total Volume: 9.0 (Volumes in 1000's)

FACTOR	COMPUTATIONS	POINTS															
Volume	<u>Minor Street</u> % 8 9 10 11 12 13 14 15 16 17 18 19 20 5 4 5 6 8 10 12 15 18 21 24 27 30 33 10 10 12 15 18 22 26 30 34 41 48 55 62 70 15 25 31 37 45 53 62 71 80 93 106 119 132 145 20 42 51 60 76 92 108 124 140 160 180 200 220 240 25 51 62 72 90 107 125 142 160 180 208 232 256 280 30 61 73 85 104 123 142 161 180 208 236 264 292 320 35 63 75 87 108 128 148 169 188 210 249 278 308 338 40 65 77 89 111 132 154 176 196 229 261 292 323 355 45 67 79 91 114 137 160 183 206 240 273 306 338 372 50 68 80 95 117 141 165 190 215 250 285 320 353 389 Do not interpolate - use next highest value	51															
	Accidents 12 points per accident for recent year $\frac{0}{0} \times 12 = \frac{0}{0}$ 6 points per accident for second to fourth year $\frac{0}{0} \times 6 = \frac{0}{0}$ (Pedestrian accidents count as 1.5) TOTAL		0														
	Speed Use highest 85 percentile approach speed (4-way stop =0) Speed (mph) 26 28 30 32 34 36 38 40 42 44 46 48 50 Points 4 12 20 28 36 46 58 70 82 96 112 130 150		0														
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	Other _____																
	(Describe) _____																
	By: <u>Dorothy Kam</u> Date: <u>June 23, 2014</u>		TOTAL POINTS	51													

The City of Lodi
Public Works



Shirtsleeve Session
Signal Priority Study
August 12, 2014

Overview

- Background
- Signal Installations / Upgrades since 2000
- Study Methodology
- Study Results
- Typical Signal Costs
- Questions

Background

- 4 updates since 1970
- Last update in 2000
- Purpose: Evaluate need / priority
- 24 Intersections Studied
 - High Traffic Volumes
 - High Collision Rates
 - Non-Signalized

Signal Installation / Upgrade



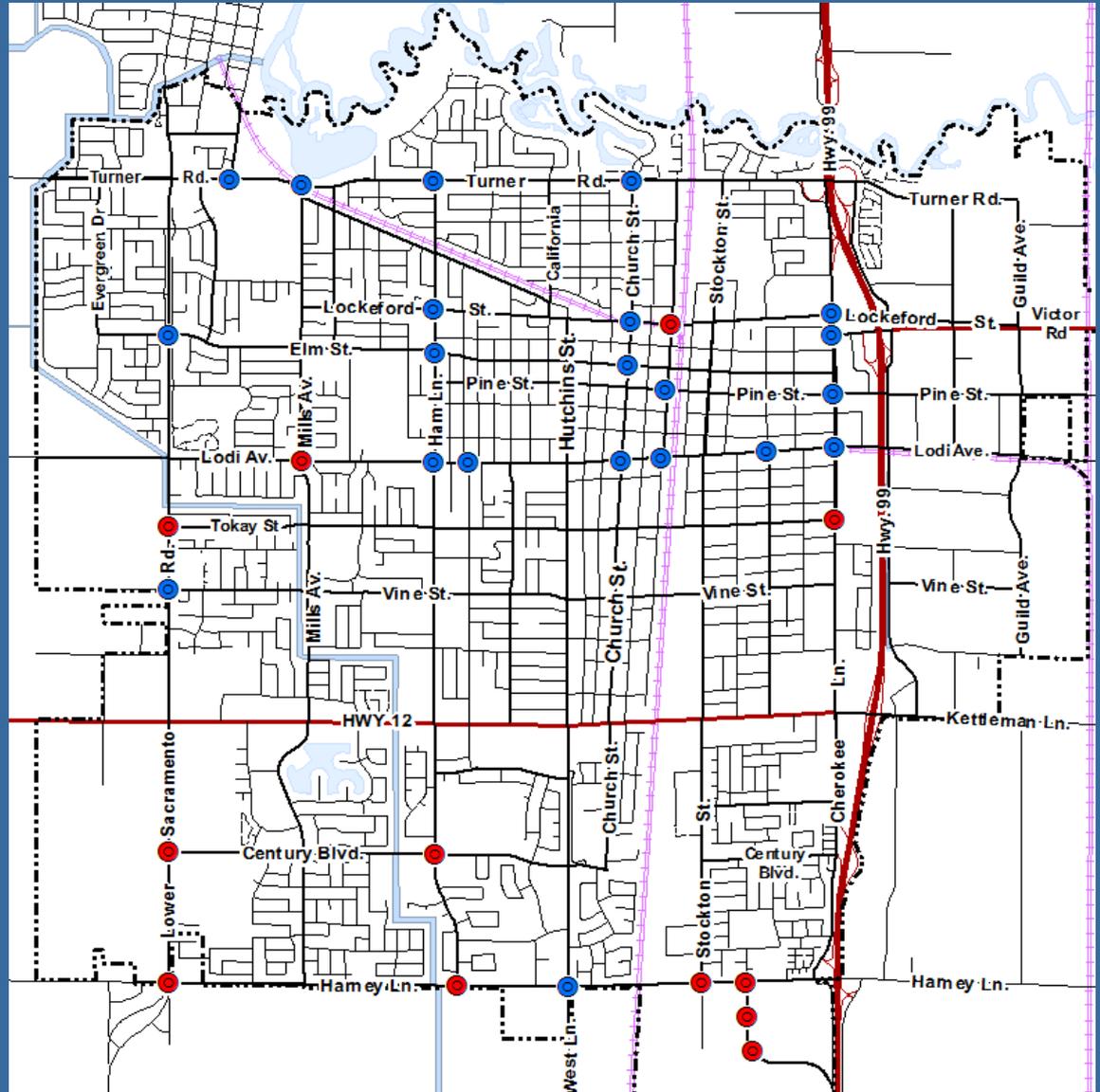
- 12 new signals installed since 2000
 - 3 Private Development (Reynolds Ranch)
 - 9 City Installed
- 21 signals upgraded
 - Left turn phase and/or
 - Upgrade signal cabinet / controller equipment

Signal Installations / Upgrades



Signals Installations & Upgrades Since 2000

- Signal Installations (12)
- Signal Upgrades (21)



Study Methodology



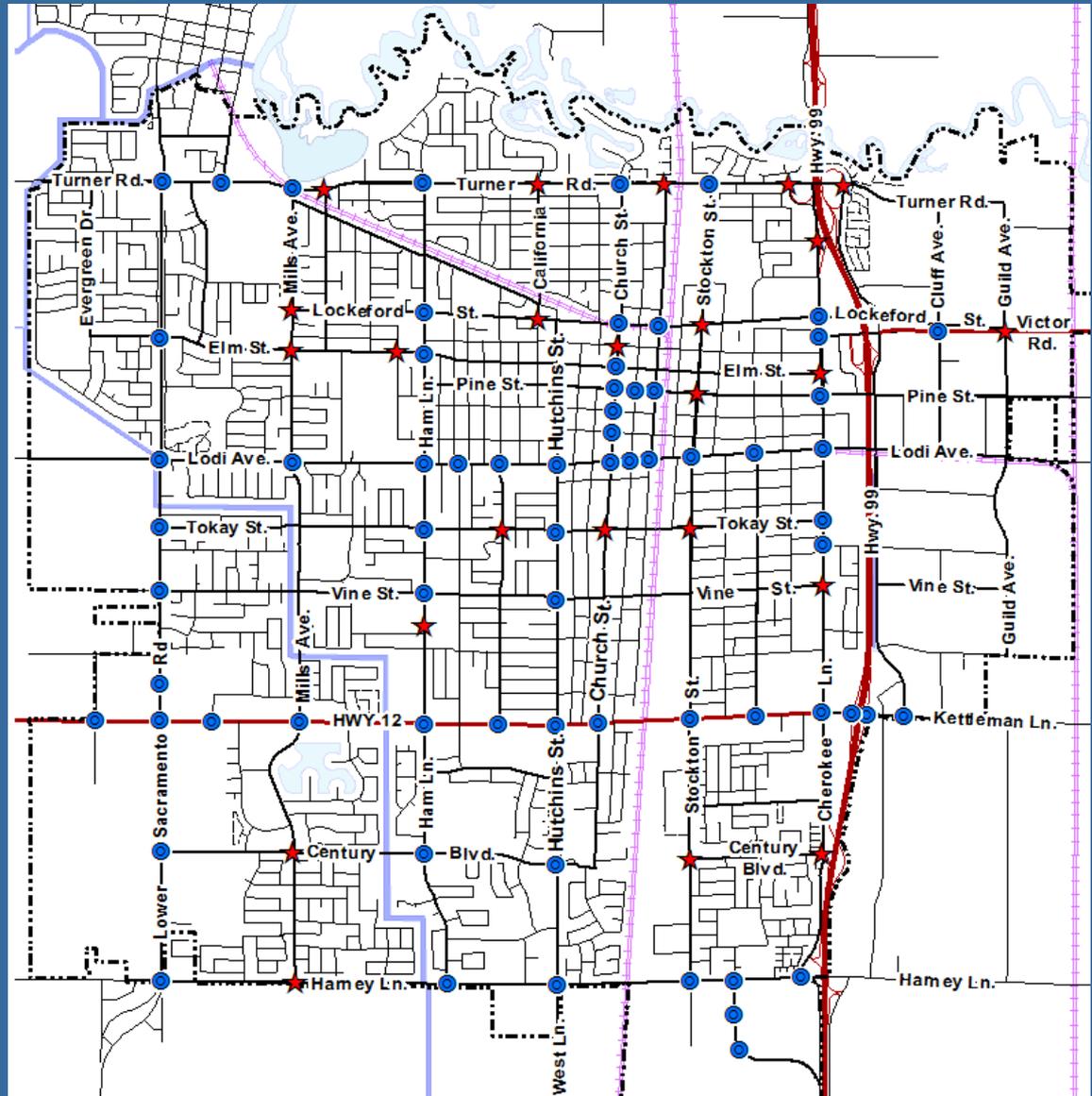
- Volume Counts
- Collisions
- Approach Speed
- Coordinated Movement
- Special Conditions

Existing Traffic Signals & Study Locations



Existing Traffic Signals & Study Locations

- Existing Traffic Signals (67)
- ★ Study Locations (24)



Study Results



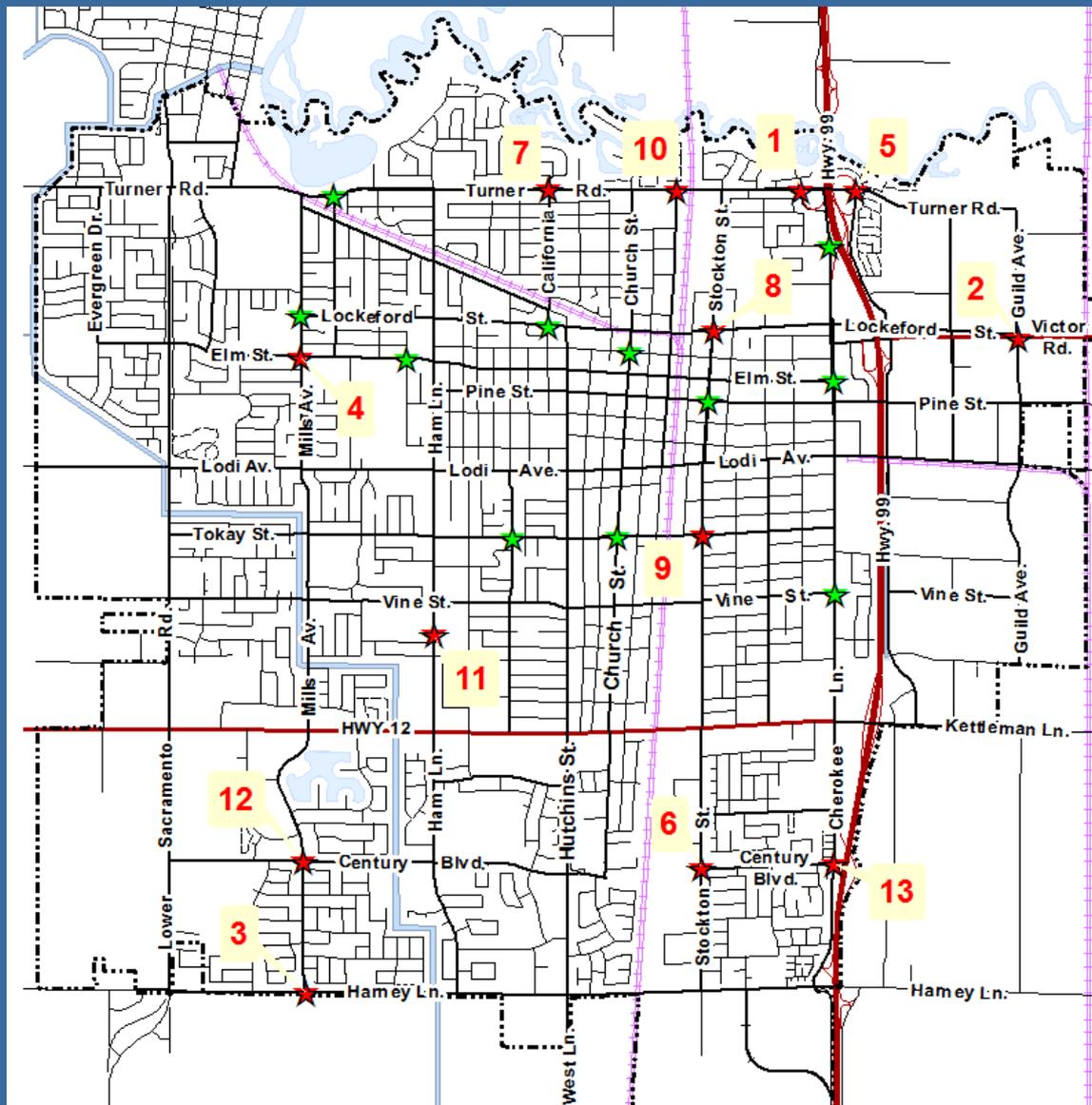
- 13 of the 24 intersections studied met Caltrans Signal Criteria
- Ranked using the City's Traffic Signal Priority Worksheet

Study Results



Study Locations

- ★ Meets Signal Criteria (13)
- ★ Does Not Meet Signal Criteria (11)

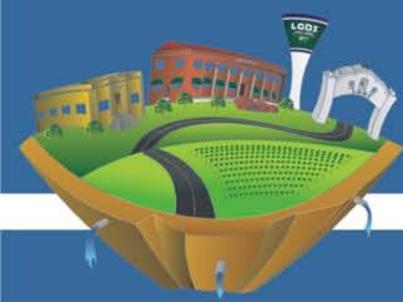


Study Results



	LOCATION	RANKING SCORE	2000 Study Ranking
1.	Turner Rd & Hwy 99 SB Ramps	354	New
2.	Victor Rd (SR12) & Guild Ave	348	New
3.	Harney Ln & Mills Ave	268	New
4.	Elm St & Mills Ave	266	9
5.	Turner Rd & Hwy 99 NB Ramps	220	New
6.	Stockton St & Century Blvd	206	New
7.	Turner Rd & California St / Edgewood Dr	184	10
8.	Lockeford St & Stockton St	150	4
9.	Stockton St & Tokay St	143	7
10.	Turner Rd & Sacramento	133	13
11.	Ham Ln & Lodi Memorial	113	New
12.	Century Blvd & Mills Ave	104	New
13.	Cherokee Ln & Century Blvd	51	New
*	Hutchins St S/ Harney Ln & EW street	N/A	New

Typical Signal Design, Construction and Maintenance Cost



- Design cost - \$50,000 +/-
- Construction/Construction Inspection cost - \$300,000 to 350,000
- Maintenance Cost (Inspection/Energy Expenses/Equipment Replacement) - \$770 per signal



Questions



**CITY OF LODI
COUNCIL COMMUNICATION**

TM

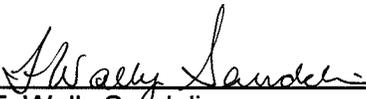
AGENDA TITLE: Roundabout Presentation
MEETING DATE: August 12, 2014 (Shirtsleeve Session)
PREPARED BY: Public Works Director

RECOMMENDED ACTION: Roundabout presentation

BACKGROUND INFORMATION: At the Shirtsleeve Session, the Public Works Department staff will present information regarding the history, pros and cons of roundabouts, future roundabout locations in our community and a Mythbusters video clip of four-way stop vs. roundabout.

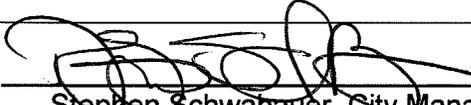
FISCAL IMPACT: Not applicable.

FUNDING AVAILABLE: Not applicable.



F. Wally Sandelin
Public Works Director

Prepared by Dorothy Kam, Assistant Engineer
FWS/DK/pmf
cc: City Engineer/Deputy Public Works Director
Transportation Manage/Senior Traffic Engineer

APPROVED: 

Stephen Schwabauer, City Manager

The City of Lodi
Public Works



Shirtsleeve Session
Roundabout
August 12, 2014



The Roundabout

- One-way circular intersection without traffic signals
 - Yield control for entering traffic
 - Low speeds (Generally less than 30 mph)
 - Central island to separate traffic
- Often confused with:
 - Traffic Circle (much smaller)
 - Rotary (much larger)



Columbus Circle

New York



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History of the Roundabout

- 1963 First roundabout constructed in England
- 1990 First roundabout constructed in United States (Las Vegas)
- 1995 First freeway roundabout constructed at I-70 in Vail, Colorado
- Today, over 3,700 roundabouts in the U.S.



Reasons For A Roundabout

- Reduced overall delay
- Free flow of vehicles and bicycles
- Reduced collisions
 - collisions are less severe at lower speeds
- Reduced noise and air pollution
- Less expensive to construct and maintain
- Reduced speeds / safe U-turns
- Encouraged in General Plan



Reasons Against A Roundabout

- May require more right-of-way
- Unfamiliar maneuver at first
- Pedestrian crossings/crosswalks located further from intersection and uncontrolled
- Additional landscaping maintenance
- Bicyclists travel with vehicles through intersection



Lodi's First Roundabout

- Entrance to Rose Gate Subdivision
- Lodi Avenue – 6,700 vpd
- Capacity of 2 lane arterials – 10,500 to 17,500 vpd
- Roundabout capacity – Over 15,000 vpd
- Class II bicycle facility



Rose Gate Roundabout

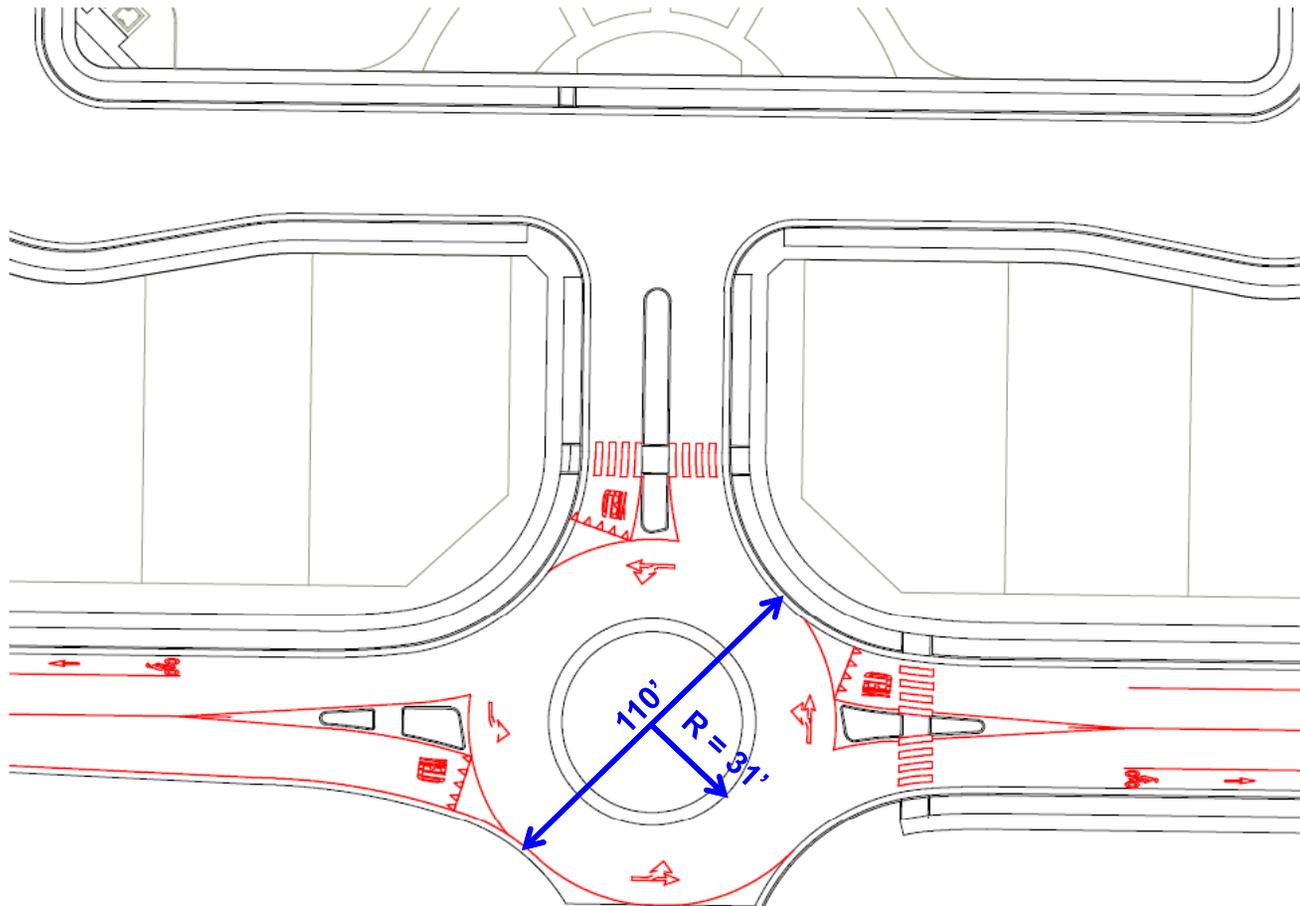
Rose Gate Subdivision





Roundabout Geometry

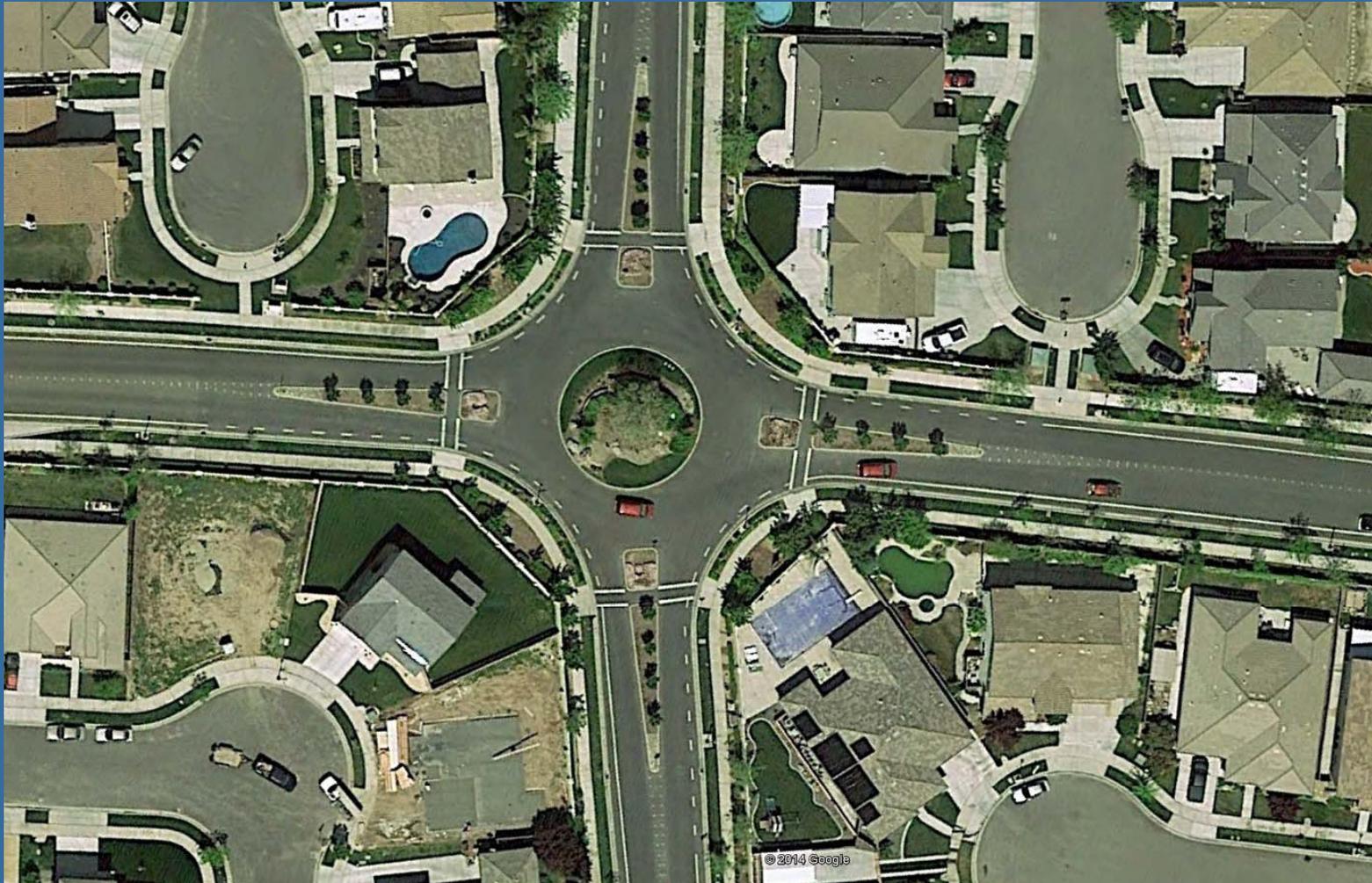
Rose Gate Roundabout





City of Oakdale

Bridle Ridge Wy-Greger St / Willowwood Dr





City of Oakdale

Bridle Ridge Wy-Greger St / Willowwood Dr





Questions