

CHAPTER IV – SOUTHERN REGION TRANSPORTATION IMPROVEMENT PHASING

This chapter presents intersection and roadway analysis for each of the 5-year band development scenarios (Existing, Year 2010, Year 2015, Year 2020 and Year 2027) and the necessary transportation improvements required for each of the 5-year bands.

EXISTING CONDITIONS

Table 7 provides a summary of existing intersection AM and PM peak hour LOS and delay values and **Table 8** provides a summary of existing study roadway segments LOS on a daily basis.

**TABLE 7
EXISTING CONDITIONS INTERSECTIONS LEVEL OF SERVICE**

#	Intersection	Control	AM Peak Hour			PM Peak Hour		
			Delay	LOS	Warrant Met?	Delay	LOS	Warrant Met?
1	Gas Point Road / W. Anderson Drive	TWSC	10.7	B	no	11.5	B	no
2	Gas Point Road / Rhonda Road	AWSC	20.5	C	no	45.7	E	no
3	Gas Point Road / I-5 SB Ramps	TWSC	39.4	E	YES	24.1	C	YES
4	Gas Point Road / I-5 NB Ramps	TWSC	102.6	F	no	78.2	F	no
5	4 th Street / Main Street	AWSC	14.6	B	no	12.0	B	no
6	4 th Street / Locust Road	TWSC	10.1	B	no	9.8	A	no
7	4 th Street / Ball's Ferry Road	TWSC	9.9	A	no	9.7	A	no
8	1 st Street / Main Street	AWSC	10.3	B	no	8.5	A	no
9	1 st Street / Locust Road	TWSC	8.8	A	no	9.0	A	no
10	Balls Ferry Road / Panorama Point Road	TWSC	9.4	A	no	9.5	A	no
11	Main Street / I-5 SB Ramp	TWSC	9.8	A	no	10.9	B	no
12	Main Street / I-5 NB Ramp	TWSC	0.4	A	no	0.6	A	no

Notes: TWSC = Two Way Stop Controlled intersection, AWSC = All Way Stop Controlled intersection

Capacity conditions are expressed in terms of Level of Service (LOS), which provides a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection, or roadway segment, representing progressively worsening traffic conditions. In this analysis, a peak-hour LOS "C" is taken as the general threshold for City and County maintained facilities and LOS "D" for state facilities. Capacity and/or control based improvements/mitigation measures have been recommended for all intersections where the LOS exceeds the acceptable threshold.

As shown in the table above, the following intersections are currently operating at unacceptable level of service conditions under *Existing* conditions.

Gas Point Road / Rhonda Road:

This unsignalized all-way stop controlled intersection is found to operate at unacceptable LOS "E" during both the PM peak hour period. However, this intersection was not found to meet the peak hour volume signal warrant during any of the peak hour periods. Although this intersection is not found to meet the signal warrant, it is recommended that a signal be installed at this intersection, in-order to prevent vehicles from queuing on Gas Point Road and also due to its close proximity to the I-5 SB ramps on Gas Point Road. With the installation of a traffic signal at this location, acceptable LOS "C" is projected during both the AM and PM peak hour periods under *Existing* conditions.

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Gas Point Road / I-5 SB Ramps:

This unsignalized two-way stop controlled intersection is found to operate at unacceptable LOS “E” during the AM peak hour period. This intersection was also found to meet the peak hour volume signal warrant during both the peak hour periods. Therefore it is recommended that a signal be installed at this intersection. With the installation of a traffic signal at this location, acceptable LOS “C” is projected during both the AM and PM peak hour periods under *Existing* conditions.

Gas Point Road / I-5 NB Ramps:

This unsignalized two-way stop controlled intersection is found to operate at unacceptable LOS “F” during both the AM and PM peak hour periods. However, this intersection was not found to meet the peak hour volume signal warrant during any of the peak hour periods because of the low volume on the northbound off-ramp. Although this intersection is not found to meet the signal warrant, it is recommended that a signal be installed at this intersection, in-order to prevent vehicles from queuing on the northbound off-ramp. With the installation of a traffic signal at this location, acceptable LOS “C” is projected during both the AM and PM peak hour periods under *Existing* conditions.

**TABLE 8
EXISTING CONDITIONS: ROADWAY LEVELS-OF-SERVICE**

S. No	Roadway Segment	Capacity Configuration	No. of Lanes	HCM Threshold for Acceptable LOS	Average Daily Traffic (ADT) Volumes	HCM Level of Service
1	Gas Point Rd. – Happy Valley to W. Anderson Dr	2 Lane Arterial	2	12,000	3,926	A
2	Gas Point Rd. – W. Anderson Dr. to I-5	2 Lane Arterial	2	12,000	4,379	A
3	4 th St – I-5 to Ball’s Ferry Rd.	2 Lane Arterial	2	12,000	1,931	A
4	1 st St. – Greengate Rd. to I-5	2 Lane Collector	2	9,000	932	A
5	1 st St. - I-5 to Locust St.	2 Lane Collector	2	9,000	579	A
6	Main St. – County Line to 1 st St.	4 Lane Divided Arterial	4	29,000	5,363	A
7	Main St. – 1 st St. to Gas Point Rd.	4 Lane Divided Arterial	4	29,000	7,051	A
8	Main St. – Gas Point Rd to I-5	4 Lane Divided Arterial	4	29,000	5,387	A
9	Rhonda Rd. – Gas Point Rd. to SR 273	2 Lane Collector	2	9,000	1,853	A
10	W. Anderson Dr. – Gas Point Rd to Olinda Rd.	2 Lane Collector	2	9,000	968	A
11	Locust Rd. – 1 st St to 4 th St.	2 Lane Collector	2	9,000	273	A
12	Locust Rd. – 4 th St. to Kimberly Rd.	2 Lane Collector	2	9,000	764	A
13	Locust Rd. – Kimberly Rd. to Deschutes Rd.	2 Lane Collector	2	9,000	4,950	A
14	Ball’s Ferry Road – 1 st St. to 4 th St.	2 Lane Collector	2	9,000	1,714	A

Notes: The HCM threshold for acceptable LOS is “C”

As shown in the above table, all roadway facilities in the study region are currently operating at acceptable conditions.

YEAR 2010 CONDITIONS

Year 2010 conditions levels of service at study intersections and roadway segments are shown in **Table 9** and **Table 10**. It is noted that the improvements recommended under *Existing* conditions are assumed to be in place by Year 2010.

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**TABLE 9
YEAR 2010 CONDITIONS INTERSECTIONS LEVEL OF SERVICE**

#	Intersection	Control	AM Peak Hour			PM Peak Hour		
			Delay	LOS	Warrant Met?	Delay	LOS	Warrant Met?
1	Gas Point Road / W. Anderson Drive	TWSC	11.8	B	no	12.7	B	no
2	Gas Point Road / Rhonda Road	Signal	48.8	D	-	113.2	F	-
3	Gas Point Road / I-5 SB Ramps	Signal	25.3	C	-	65.6	E	-
4	Gas Point Road / I-5 NB Ramps	Signal	39.4	D	-	49.6	D	-
5	4 th Street / Main Street	AWSC	16.3	C	no	14.2	B	no
6	4 th Street / Locust Road	TWSC	10.4	B	no	10.1	B	no
7	4 th Street / Ball's Ferry Road	TWSC	9.9	A	no	9.7	A	no
8	1 st Street / Main Street	AWSC	10.3	B	no	8.5	A	no
9	1 st Street / Locust Road	TWSC	8.8	A	no	9.0	A	no
10	Balls Ferry Road / Panorama Point Road	TWSC	9.4	A	no	9.6	A	no
11	Deschutes Road / I-5 NB Ramps / Locust Road	Roundabout	2.0	A	-	3.6	A	-
11	Main Street / I-5 SB Ramp	TWSC	9.8	A	no	10.9	B	no
12	Main Street / I-5 NB Ramp	TWSC	0.4	A	no	0.6	A	no

Notes: TWSC = Two Way Stop Controlled intersection, AWSC = All Way Stop Controlled intersection

As shown in the table above, the following intersections are projected to operate at unacceptable LOS conditions under *Year 2010* with the improvements recommended under *Existing* conditions assumed to be in place.

Gas Point Road / Rhonda Road:

This intersection is found to operate at unacceptable LOS “D” during both the AM and PM peak hour periods under *Year 2010* conditions. This unacceptable LOS is caused by the increased traffic volume using the Gas Point Road interchange. In order to mitigate to acceptable LOS conditions, it is recommended that the interim improvements shown on **Figure 9** be constructed in order to improve the capacity at the Gas Point Road interchange. In addition, it is recommended that the Main Street half interchange be improved to provide additional capacity.

The improvements at Main Street interchange include extension of Main Street to the west over the freeway, reconstruction of Rhonda Road to form the south leg of the I-5 / Main Street SB off-ramp intersection and constructing roundabouts at the two ramp intersections on Main Street. These improvements would provide access to I-5 north for development north of Gas Point Road thus reducing the traffic at Gas Point Road interchange. With these improvements, acceptable LOS “C” are projected during both the AM and PM peak hour conditions.

Gas Point Road / I-5 SB Ramps:

This intersection is found to operate at unacceptable LOS “D” during the PM peak hour period under *Year 2010* conditions. However, with the improvements recommended at the Main Street interchange acceptable LOS “B” and LOS “C” are found during the AM and PM peak hour periods under *Year 2010* conditions.

Gas Point Road / I-5 NB Ramps:

This intersection that was recommended to be signalized under *Existing* conditions is found to operate at unacceptable LOS “D” during the PM peak hour period under *Year 2010* conditions. Acceptable LOS “C” conditions are projected during both the AM and PM peak hour periods under *Year 2010* conditions with interim improvements at Gas Point Road interchange improvements.

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Deschutes Road / I-5 SB Ramps:

This signalized intersection is found to operate at unacceptable LOS “D” during the PM peak hour period under *Year 2010* conditions. In order to achieve acceptable LOS at this intersection it is recommended that a roundabout be constructed at this location in accordance with the PSR study for the Deschutes Road interchange that is currently in progress. It is noted that Deschutes Road interchange improvements are covered by separate City/County fee program and therefore the cost of Deschutes Road improvements are not included in this fee study.

**TABLE 10
YEAR 2010 CONDITIONS: ROADWAY LEVELS-OF-SERVICE**

S. No	Roadway Segment	Capacity Configuration	No. of Lanes	HCM Threshold for Acceptable LOS	Average Daily Traffic (ADT) Volumes	HCM Level of Service
1	Gas Point Rd. – Happy Valley to W. Anderson Dr	2 Lane Arterial	2	12,000	4,329	A
2	Gas Point Rd. – W. Anderson Dr. to I-5	2 Lane Arterial	2	12,000	10,597	B
3	4 th St – I-5 to Ball’s Ferry Rd.	2 Lane Arterial	2	12,000	3,012	A
4	1 st St. – Greengate Rd. to I-5	2 Lane Collector	2	9,000	932	A
5	1 st St. - I-5 to Locust St.	2 Lane Collector	2	9,000	582	A
6	Main St. – County Line to 1 st St.	4 Lane Divided Arterial	4	29,000	5,369	A
7	Main St. – 1 st St. to Gas Point Rd.	4 Lane Divided Arterial	4	29,000	7,060	A
8	Main St. – Gas Point Rd to I-5	4 Lane Divided Arterial	4	29,000	6,406	A
9	Rhonda Rd. – Gas Point Rd. to SR 273	2 Lane Collector	2	9,000	7,754	C
10	W. Anderson Dr. – Gas Point Rd to Olinda Rd.	2 Lane Collector	2	9,000	2132	A
11	Locust Rd. – 1 st St to 4 th St.	2 Lane Collector	2	9,000	273	A
12	Locust Rd. – 4 th St. to Kimberly Rd.	2 Lane Collector	2	9,000	992	A
13	Locust Rd. – Kimberly Rd. to Deschutes Rd.	2 Lane Collector	2	9,000	5,030	A
14	Balls Ferry Road – 1 st St. to 4 th St.	2 Lane Collector	2	9,000	1,717	A

Notes: The HCM threshold for acceptable LOS is “C”

As shown in the above table, all roadway facilities are projected to operate at acceptable LOS conditions on a daily basis under *Year 2010* conditions.

In addition to the recommendations discussed above, it is recommended that all the improvements mentioned under Year 2010 in **Table 19** be constructed in order to improve the accessibility to the Main Street interchange. Improvements to the Main Street interchange are illustrated on **Figure 10**.

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YEAR 2015 CONDITIONS

Year 2015 conditions levels of service at study intersections and roadway segments are shown in **Table 11** and **Table 12**. It is noted that the improvements recommended under *Existing* conditions and Year 2010 conditions are assumed to be in place by Year 2015.

**TABLE 11
YEAR 2015 CONDITIONS INTERSECTIONS LEVEL OF SERVICE**

#	Intersection	Control	AM Peak Hour			PM Peak Hour		
			Delay	LOS	Warrant Met?	Delay	LOS	Warrant Met?
1	Gas Point Road / W. Anderson Drive	TWSC	11.4	B	no	12.5	B	no
2	Gas Point Road / Rhonda Road	Signal	28.4	C	-	31.8	C	-
3	Gas Point Road / I-5 SB Ramps	Signal	13.5	B	-	12.3	B	-
4	Gas Point Road / I-5 NB Ramps	Signal	18.1	B	-	23.8	C	-
5	4 th Street / Main Street	AWSC	18.8	C	no	19.2	C	no
6	4 th Street / Locust Road	TWSC	10.4	B	no	10.3	B	no
7	4 th Street / Ball's Ferry Road	TWSC	10.0	B	no	9.7	A	no
8	1 st Street / Main Street	AWSC	10.3	B	no	8.5	A	no
9	1 st Street / Locust Road	TWSC	8.9	A	no	9.0	A	no
10	Balls Ferry Road / Panorama Point Road	TWSC	9.4	A	no	9.6	A	no
11	Main Street / I-5 SB Ramp	Roundabout	3.3	A	-	3.4	A	-
12	Main Street / I-5 NB Ramp	Roundabout	4.9	A	-	5.4	A	-

Notes: TWSC = Two Way Stop Controlled intersection, AWSC = All Way Stop Controlled intersection

As shown in the above table, all intersections are projected to operate at acceptable conditions under *Year 2015* conditions.

**TABLE 12
YEAR 2015 CONDITIONS: ROADWAY LEVELS-OF-SERVICE**

S. No	Roadway Segment	Capacity Configuration	No. of Lanes	HCM Threshold for Acceptable LOS	Average Daily Traffic (ADT) Volumes	HCM Level of Service
1	Gas Point Rd. – Happy Valley to W. Anderson Dr	2 Lane Arterial	2	12,000	4,530	A
2	Gas Point Rd. – W. Anderson Dr. to I-5	2 Lane Arterial	2	12,000	10,351	B
3	4 th St – I-5 to Ball's Ferry Rd.	2 Lane Arterial	2	12,000	4,343	A
4	1 st St. – Greengate Rd. to I-5	2 Lane Collector	2	9,000	932	A
5	1 st St. - I-5 to Locust St.	2 Lane Collector	2	9,000	584	A
6	Main St. – County Line to 1 st St.	4 Lane Divided Arterial	4	29,000	5,375	A
7	Main St. – 1 st St. to Gas Point Rd.	4 Lane Divided Arterial	4	29,000	7,068	A
8	Main St. – Gas Point Rd to I-5	4 Lane Divided Arterial	4	29,000	7,677	A
9	Rhonda Rd. – Gas Point Rd. to SR 273	2 Lane Collector	2	9,000	3,773	A
10	W. Anderson Dr. – Gas Point Rd to Olinda Rd.	2 Lane Collector	2	9,000	1,504	A
11	Locust Rd. – 1 st St to 4 th St.	2 Lane Collector	2	9,000	273	A
12	Locust Rd. – 4 th St. to Kimberly Rd.	2 Lane Collector	2	9,000	1,066	A
13	Locust Rd. – Kimberly Rd. to Deschutes Rd.	2 Lane Collector	2	9,000	4,956	A
14	Balls Ferry Road – 1 st St. to 4 th St.	2 Lane Collector	2	9,000	1,719	A

Notes: The HCM threshold for acceptable LOS is "C"

As shown in the above table, all roadway segments in the study area are projected to operate at acceptable LOS conditions on a daily basis.

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YEAR 2020 CONDITIONS

Year 2020 conditions levels of service at study intersections and roadway segments are shown in **Table 13** and **Table 14**. It is noted that the improvements recommended under *Existing* conditions, Year 2010 and Year 2015 conditions are assumed to be in place by Year 2020.

**TABLE 13
YEAR 2020 CONDITIONS INTERSECTIONS LEVEL OF SERVICE**

#	Intersection	Control	AM Peak Hour			PM Peak Hour		
			Delay	LOS	Warrant Met?	Delay	LOS	Warrant Met?
1	Gas Point Road / W. Anderson Drive	TWSC	12.2	B	no	13.3	B	no
2	Gas Point Road / Rhonda Road	Signal	28.9	C	-	138.4	F	-
3	Gas Point Road / I-5 SB Ramps	Signal	16.9	B	-	51.0	D	-
4	Gas Point Road / I-5 NB Ramps	Signal	23.7	C	-	84.7	F	-
5	4th Street / Main Street	AWSC	24.1	C	no	33.6	D	no
6	4 th Street / Locust Road	TWSC	10.5	B	no	10.5	B	no
7	4 th Street / Ball's Ferry Road	TWSC	10.0	A	no	9.8	A	no
8	1 st Street / Main Street	AWSC	10.3	B	no	8.5	A	no
9	1 st Street / Locust Road	TWSC	8.9	A	no	9.0	A	no
10	Balls Ferry Road / Panorama Point Road	TWSC	9.4	A	no	9.6	A	no
11	Main Street / I-5 SB Ramp	Roundabout	5.1	A	-	4.9	A	-
12	Main Street / I-5 NB Ramp	Roundabout	6.2	A	-	6.4	A	-

Notes: TWSC = Two Way Stop Controlled intersection, AWSC = All Way Stop Controlled intersection

As shown in the above table, The following study intersection are projected to operate at unacceptable level of service conditions during the PM peak hour period:

Gas Point Road/Rhonda Road

This signalized intersection is projected to operate at unacceptable LOS “F” during the PM peak hour period. In order to mitigate this unacceptable LOS to acceptable conditions, it would be required to construct the ultimate improvements at Gas Point road as shown on **Figure 11**. The ultimate improvements on Gas Point Road include, reconstructing the I-5 over crossing to include a five lane structure. With the ultimate improvements at Gas Point Road constructed by Year 2027, acceptable LOS “C” is projected during the PM peak hour period. It is noted that in addition to the two alternatives provided in this report, Caltrans is interested in maintaining the option of a higher capacity interchange alternative like a partial clover leaf interchange at Gas Point Road.

Gas Point Road/ I-5 SB Ramps

This signalized intersection is projected to operate at unacceptable LOS “D” during the PM peak hour period under *Year 2020* conditions. With the ultimate improvements constructed at Gas Point Road, acceptable LOS “C” is projected at this intersection under *Year 2020* conditions.

Gas Point road/ I-5 NB Ramps

This signalized intersection is projected to operate at unacceptable LOS “F” during the Pm peak hour period under *Year 2020* conditions. With the ultimate improvements at Gas Point Road constructed by Year 2020, acceptable LOS “C” is projected during the PM peak hour period under *Year 2020* conditions.

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4th Street/ Main Street

This all-way stop controlled intersection is projected to operate at unacceptable LOS “D” during the Pm peak hour period under *Year 2020* conditions. With the ultimate improvements at Gas Point Road constructed by Year 2020, acceptable LOS “C” is projected during the PM peak hour period under *Year 2020* conditions.

**TABLE 14
YEAR 2020 CONDITIONS: ROADWAY LEVELS-OF-SERVICE**

S. No	Roadway Segment	Capacity Configuration	No. of Lanes	HCM Threshold for Acceptable LOS	Average Daily Traffic (ADT) Volumes	HCM Level of Service
1	Gas Point Rd. – Happy Valley to W. Anderson Dr	2 Lane Arterial	2	12,000	4,694	A
2	Gas Point Rd. – W. Anderson Dr. to I-5	2 Lane Divided Arterial	2	14,500	22,076	F
3	4 th St – I-5 to Ball’s Ferry Rd.	2 Lane Arterial	2	12,000	5,769	A
4	1 st St. – Greengate Rd. to I-5	2 Lane Collector	2	9,000	932	A
5	1 st St. - I-5 to Locust St.	2 Lane Collector	2	9,000	587	A
6	Main St. – County Line to 1 st St.	4 Lane Divided Arterial	4	29,000	5,381	A
7	Main St. – 1 st St. to Gas Point Rd.	4 Lane Divided Arterial	4	29,000	7,077	A
8	Main St. – Gas Point Rd to I-5	4 Lane Divided Arterial	4	29,000	9,033	A
9	Rhonda Rd. – Gas Point Rd. to SR 273	2 Lane Collector	2	9,000	7,522	C
10	W. Anderson Dr. – Gas Point Rd to Olinda Rd.	2 Lane Collector	2	9,000	2,309	A
11	Locust Rd. – 1 st St to 4 th St.	2 Lane Collector	2	9,000	273	A
12	Locust Rd. – 4 th St. to Kimberly Rd.	2 Lane Collector	2	9,000	1,208	A
13	Locust Rd. – Kimberly Rd. to Deschutes Rd.	2 Lane Collector	2	9,000	4,950	A
14	Balls Ferry Road – 1 st St. to 4 th St.	2 Lane Collector	2	9,000	1,722	A

Notes: The HCM threshold for acceptable LOS is “C”

As shown in the above table, the following roadway segment in the study area is projected to operate at unacceptable LOS conditions on a daily basis.

Gas Point Road – West Anderson Drive to I-5

This roadway segment is projected to operate at unacceptable LOS “F” on daily basis under *Year 2020* conditions. With the ultimate improvements at Gas Point Road constructed, which included widening the Gas Point Road over crossing to a five lane structure, acceptable LOS “A” is projected on this roadway segment.

YEAR 2027 CONDITIONS

Year 2027 conditions levels of service at study intersections and roadway segments are shown in **Table 15** and **Table 16**. It is noted that the improvements recommended under *Existing* conditions, Year 2010 and Year 2015 conditions are assumed to be in place by Year 2027.

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**TABLE 15
YEAR 2027 CONDITIONS INTERSECTIONS LEVEL OF SERVICE**

#	Intersection	Control	AM Peak Hour			PM Peak Hour		
			Delay	LOS	Warrant Met?	Delay	LOS	Warrant Met?
1	Gas Point Road / W. Anderson Drive	TWSC	13.3	B	no	14.4	B	no
2	Gas Point Road / Rhonda Road	Signal	24.6	C	-	33.0	C	-
3	Gas Point Road / I-5 SB Ramps	Signal	13.8	B	-	17.9	B	-
4	Gas Point Road / I-5 NB Ramps	Signal	21.5	C	-	33.9	C	-
5	4th Street / Main Street	AWSC	20.4	C	no	35.2	E	YES
6	4 th Street / Locust Road	TWSC	10.5	B	no	10.8	B	no
7	4 th Street / Ball's Ferry Road	TWSC	10.0	A	no	9.8	A	no
8	1 st Street / Main Street	AWSC	10.3	B	no	8.5	A	no
9	1 st Street / Locust Road	TWSC	8.9	A	no	9.0	A	no
10	Balls Ferry Road / Panorama Point Road	TWSC	9.4	A	no	9.6	A	no
11	Main Street / I-5 SB Ramp	Roundabout	7.2	A	-	6.1	A	-
12	Main Street / I-5 NB Ramp	Roundabout	7.7	A	-	7.8	A	-

Notes: TWSC = Two Way Stop Controlled intersection, AWSC = All Way Stop Controlled intersection
Intersection delays and Levels of service for intersections 11, 12 and 13 are quoted from the I-5/Deschutes Road Interchange PSR/PR

As shown in the above table, the following intersection is projected to operate at unacceptable LOS conditions in Year 2027.

4th Street/ Main Street

This all way stop controlled intersection is projected to operate at unacceptable LOS “E” during the PM peak hour conditions under Year 2027 even with the ultimate improvements on Gas Point Road in place. This intersection is also found to meet the peak hour volume warrant signal. With the installation of a traffic signal at this location, acceptable LOS “C” is projected during the PM peak hour period under Year 2027 conditions.

**TABLE 16
YEAR 2027 CONDITIONS: ROADWAY LEVELS-OF-SERVICE**

S. No	Roadway Segment	Capacity Configuration	No. of Lanes	HCM Threshold for Acceptable LOS	Average Daily Traffic (ADT) Volumes	HCM Level of Service
1	Gas Point Rd. – Happy Valley to W. Anderson Dr	2 Lane Divided Arterial	2	14,500	4,880	A
2	Gas Point Rd. – W. Anderson Dr. to I-5	4 Lane Divided Arterial	2	29,000	25,499	C
3	4 th St – I-5 to Ball's Ferry Rd.	2 Lane Arterial	2	12,000	7,050	A
4	1 st St. – Greengate Rd. to I-5	2 Lane Collector	2	9,000	932	A
5	1 st St. - I-5 to Locust St.	2 Lane Collector	2	9,000	590	A
6	Main St. – County Line to 1 st St.	4 Lane Divided Arterial	4	29,000	5,387	A
7	Main St. – 1 st St. to Gas Point Rd.	4 Lane Divided Arterial	4	29,000	7,086	A
8	Main St. – Gas Point Rd to I-5	4 Lane Divided Arterial	4	29,000	10,250	A
9	Rhonda Rd. – Gas Point Rd. to SR 273	2 Lane Collector	2	9,000	8,871	C
10	W. Anderson Dr. – Gas Point Rd to Olinda Rd.	2 Lane Collector	2	9,000	3,131	A
11	Locust Rd. – 1 st St to 4 th St.	2 Lane Collector	2	9,000	273	A
12	Locust Rd. – 4 th St. to Kimberly Rd.	2 Lane Collector	2	9,000	1,356	A
13	Locust Rd. – Kimberly Rd. to Deschutes Rd.	2 Lane Collector	2	9,000	4,950	A
14	Balls Ferry Road – 1 st St. to 4 th St.	2 Lane Collector	2	9,000	1,725	A

Notes: The HCM threshold for acceptable LOS is “C”

As shown in the above table, all roadway segments are projected to operate at acceptable daily LOS.

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It is noted that this report does not present any analysis of the I-5 mainline segments. However, based upon other planning studies, I-5 will need to be widened from a 6-lane freeway to an 8-lane freeway in the next 20 years.

The cost estimates for all the improvements in the southern regions are shown in **Table 17**. The cost estimates included in Table 17 are the costs associated with partial improvements to the facilities in the southern region. Partial improvements are the improvements that are required to be constructed by Year 2027. **Table 18** shows the costs associated with full/ultimate improvements. Ultimate improvements are improvements that would be required beyond Year 2027. It is noted that some of the costs shown in the partial improvements cost estimates table are included in the fee for the southern region.

Table 19 shows the revised 5 year band cost estimates. Only costs associated with partial construction is included in Table 19. The table shows cost estimates for improvements that will be required in each of 5 years. The table also shows the funding that will be available from various sources, including State/Federal funding and local development construction. As summarized in the table, approximately \$10,000,000 is expected to be available from State and Federal funding. Fifty percent of the State/Federal funding is assumed to be available for the Main Street interchange improvements and another fifty percent is assumed to be available for the Gas Point Road interchange improvements. It is also assumed that the local development will construct improvements worth approximately \$11,000,000 as shown in Table 4. The total cost of improvements to be included in the fee program is \$36,612,720.

It is noted that the cost of Deschutes Road interchange improvements are covered by separate City/County fee program and therefore not included in the southern region fee calculations.

**TABLE 17
PARTIAL IMPROVEMENTS PRELIMINARY COST ESTIMATES**

Facility	Limits	Roadway Classification (per Shasta County Stds)	Right-of-Way ft	Year 2025 Improvements	Length of section	Average Construction Width	Total Area	Construction Unit Cost ⁶	Construction Total Cost	Existing R/W	Existing Prescriptive R/W	Additional R/W Required	Approx. R/W Area	R/W Unit Cost ⁶	R/W Total Cost ⁹	Estimated Total Cost
					ft	ft	ft ²	\$/ft ²	\$			ft	ft ²	\$/ft ²	\$	\$
Roadway Segments																
Gas Point Rd ¹	Happy Valley Rd to Joanne Ln	2-Lane Rural Arterial	60	4' shoulder widening	5,300	12	63,600	\$10	\$636,000	0	40	20	106,000	\$3	\$334,000	\$970,000
Gas Point Rd ¹	Joanne Ln. to New N-S Arterial	4-Lane Rural Arterial	84	widen to add 12' TWLTL & 6' shoulders	25,080	24	601,920	\$10	\$6,019,200	0	40	44	1,103,520	\$1	\$1,147,000	\$7,166,200
Gas Point Rd ¹	New N-S Arterial to Rhonda Rd	4-Lane Urban Arterial	96	widen to 5-12' lanes & 8' shoulders	4,350	52	226,200	\$10	\$2,262,000	0	40	56	243,600	\$2	\$469,000	\$2,731,000
N-S Arterial ²	First St to Gas Point Rd	4-Lane Rural Arterial	84	construct 2-12' lanes & 8' shoulders	1,160	40	46,400	\$8	\$1,191,200	0	0	84	97,440	\$2	\$194,880	\$1,386,080
N-S Arterial ³	Gas Point Rd to E-W Arterial	4-Lane Rural Arterial	84	construct 3-12' lanes & 8' shoulders	6,400	52	332,800	\$8	\$3,462,400	0	0	84	537,600	\$2	\$1,075,200	\$4,687,600
N-S Arterial ⁴	New E-W Arterial to Rhonda Rd	4-Lane Rural Arterial	84	construct 3-12' lanes & 8' shoulders	8,950	52	465,400	\$8	\$6,523,200	0	0	84	751,800	\$2	\$751,800	\$7,275,000
E-W Arterial	Oak Ranch Estates west limits to Main St Interchange	2-Lane Urban Arterial	76	construct 3-12' lanes & 8' shoulders	4,150	52	215,800	\$8	\$1,726,400	0	0	76	315,400	\$2	\$630,800	\$2,357,200
Rhonda Rd (widen) ⁵	Gas Point Rd to E-W Arterial	2-Lane Urban Arterial	76	widen to add 12' TWLTL & 10' shoulders	7,450	32	238,400	\$10	\$2,384,000	40	0	36	268,200	\$2	\$536,400	\$3,920,400
Rhonda Rd (minor realignment)	New E-W Arterial to New N-S Arterial	2-Lane Rural Arterial	60	construct 2-12' lanes & 8' shoulders	2,000	40	80,000	\$8	\$640,000	0	0	60	120,000	\$2	\$240,000	\$880,000
First St (widen)	N-S Arterial to Exist Overcrossing @ SR 5	2-Lane Rural Arterial	60	4' shoulder widening	3,350	12	40,200	\$10	\$402,000	0	40	20	67,000	\$2	\$160,800	\$562,800
Interchange Locations																
Main Street/Route 5 Interchange (Roundabout Option 1) ⁷															\$9,781,000	
Gas Point Road/Route 5 Interchange - Interim Improvements															\$3,789,000	
Gas Point Road/Route 5 Interchange (Ultimate - Signalized Intersections Alternative) ⁸															\$12,235,000	
Intersection Locations																
Signal at Gas Point Road/Rhonda Road (Existing Deficiency)															\$150,000	
Signal at Gas Point Road/I-5 SB Ramps (Existing Deficiency)															\$150,000	
Signal at Gas Point Road/I-5 NB Ramps (Existing Deficiency)															\$150,000	
															\$58,191,280	

Notes:

- 1) R/W needs determined by Shasta County DPW from existing data
- 2) The total cost estimate for this section of the roadway segment includes a cost of \$820,000 for a potential new reinforced concrete double box culvert at the A.C.I.D. canal crossing.
- 3) The total cost estimate for this section of the roadway segment includes a cost of \$800,000 for a potential new bridge and a cost of \$150,000 associated with signalizing the Gas Point Road/New N/S Arterial
- 4) The total cost estimate for this section of roadway segment includes a cost of \$2,800,000 for a potential new bridge.
- 5) The total cost estimate for this section of roadway segment includes a cost of \$1,000,000 for a potential new bridge.
- 6) Source: Shasta County Department of Public Works
- 7) The cost estimate for this improvement includes the cost of \$1,600,000 associated with right-of-way acquisition for the SB on ramp and NB off ramp beyond Year 2027
- 8) The cost estimate for this improvement include the cost of \$235,000 associated with ramp metering of the SB and NB on ramps.
- 9) Cost include acquisition of prescriptive R/W at \$0.2 per square foot.

General Notes:

- A) Cost(s) do not include potential slope and utility easements that may be required on one or both sides of R/W.
- B) Construction and R/W costs are approximate only. Information shown is for cost estimating purposes only and not accurate for determining construction units or R/W acquisitions.
- C) Cost Estimates presented in this table are based upon Year 2005 dollars.
- D) The total cost estimated for the ultimate improvements at Gas Point Road interchange is \$14,000,000 as shown in the Appendix. This table shows a cost of \$12,000,000 as approximately \$2,000,000 of the interim improvements at the Gas Point Road interchan
- E) \$450,000 associated with the cost of signalizing the I-5 NB Ramps, SB Ramps and Rhonda Road intersections on Gas Point Road, treated as existing deficiencies is removed from the total cost of \$4,239,000 associated with the Interim improvements at Gas
- F) Average Construction width assume 2:1 fill slopes

Abbreviations:

- TWLTL: Two-way left turn lane
- R/W: Right-of-Way
- N-S: North to South
- E-W: East to West
- Const.: Construction

TABLE 18
ULTIMATE IMPROVEMENTS PRELIMINARY COST ESTIMATES

Facility	Limits	Roadway Classification (per Shasta County Stds)	Right-of-Way ft	Year 2025 Improvements	Length of section ft	Average Construction Width ft	Total Area ft ²	Construction Unit Cost ⁶ \$/ft ²	Construction Total Cost \$	Existing R/W	Existing Prescriptive R/W	Additional R/W Required ft	Approx. R/W Area ft ²	R/W Unit Cost ⁶ \$/ft ²	R/W Total Cost ⁹ \$	Estimated Total Cost \$
Roadway Segments																
Gas Point Rd ¹	Happy Valley Rd to Joanne Ln	2-Lane Rural Arterial	60	4' shoulder widening	5,300	12	63,600	\$10	\$636,000	0	40	20	106,000	\$3	\$334,000	\$970,000
Gas Point Rd ¹	Joanne Ln. to New N-S Arterial	4-Lane Rural Arterial	84	widen to add 12' TWLTL & 6' shoulders	25,080	24	601,920	\$10	\$6,019,200	0	40	44	1,103,520	\$1	\$1,147,000	\$7,166,200
Gas Point Rd ¹	New N-S Arterial to Rhonda Rd	4-Lane Urban Arterial	96	widen to 5-12' lanes & 8' shoulders	4,350	52	226,200	\$10	\$2,262,000	0	40	56	243,600	\$2	\$469,000	\$2,731,000
N-S Arterial ²	First St to Gas Point Rd	4-Lane Rural Arterial	84	construct 4-12' lanes & 8' shoulders	1,160	64	74,240	\$8	\$1,413,920	0	0	84	97,440	\$2	\$194,880	\$1,608,800
N-S Arterial ³	Gas Point Rd to E-W Arterial	4-Lane Rural Arterial	84	construct 5-12' lanes & 8' shoulders	6,400	76	486,400	\$8	\$4,691,200	0	0	84	537,600	\$2	\$1,075,200	\$5,916,400
N-S Arterial ⁴	New E-W Arterial to Rhonda Rd	4-Lane Rural Arterial	84	construct 5-12' lanes & 8' shoulders	8,950	76	680,200	\$8	\$8,241,600	0	0	84	751,800	\$2	\$751,800	\$8,993,400
E-W Arterial	Oak Ranch Estates west limits to Main St Interchange	2-Lane Urban Arterial	76	construct 3-12' lanes & 8' shoulders	4,150	52	215,800	\$8	\$1,726,400	0	0	76	315,400	\$2	\$630,800	\$2,357,200
Rhonda Rd (widen) ⁵	Gas Point Rd to E-W Arterial	2-Lane Urban Arterial	76	widen to add 12' TWLTL & 10' shoulders	7,450	32	238,400	\$10	\$2,384,000	40	0	36	268,200	\$2	\$536,400	\$3,920,400
Rhonda Rd (minor realignment)	New E-W Arterial to New N-S Arterial	2-Lane Rural Arterial	60	construct 2-12' lanes & 8' shoulders	2,000	40	80,000	\$8	\$640,000	0	0	60	120,000	\$2	\$240,000	\$880,000
First St (widen)	N-S Arterial to Exist Overcrossing @ SR 5	2-Lane Rural Arterial	60	4' shoulder widening	3,350	12	40,200	\$10	\$402,000	0	40	20	67,000	\$2	\$160,800	\$562,800
Interchange Locations																
Main Street/Route 5 Interchange (Roundabout Option 1) ⁷															\$9,781,000	
Gas Point Road/Route 5 Interchange - Interim Improvements															\$3,789,000	
Gas Point Road/Route 5 Interchange (Ultimate - Signalized Intersections Alternative) ⁸															\$12,235,000	
Intersection Locations																
Signal at Gas Point Road/Rhonda Road (Existing Deficiency)															\$150,000	
Signal at Gas Point Road/I-5 SB Ramps (Existing Deficiency)															\$150,000	
Signal at Gas Point Road/I-5 NB Ramps (Existing Deficiency)															\$150,000	
															\$61,361,200	

Notes:

- 1) R/W needs determined by Shasta County DPW from existing data
- 2) The total cost estimate for this section of the roadway segment includes a cost of \$820,000 for a potential new reinforced concrete double box culvert at the A.C.I.D. canal crossing.
- 3) The total cost estimate for this section of the roadway segment includes a cost of \$800,000 for a potential new bridge and a cost of \$150,000 associated with signalizing the Gas Point Road/New N/S Arterial
- 4) The total cost estimate for this section of roadway segment includes a cost of \$2,800,000 for a potential new bridge.
- 5) The total cost estimate for this section of roadway segment includes a cost of \$1,00,000 for a potential new bridge.
- 6) Source: Shasta County Department of Public Works
- 7) The cost estimate for this improvement includes the cost of \$1,600,000 associated with right-of-way acquisition for the SB on ramp and NB off ramp beyond Year 2027
- 8) The cost estimate for this improvement include the cost of \$235,000 associated with ramp metering of the SB and NB on ramps.
- 9) Cost include acquisition of prescriptive R/W at \$0.2 per square foot.

General Notes:

- A) Cost(s) do not include potential slope and utility easements that may be required on one or both sides of R/W.
- B) Construction and R/W costs are approximate only. Information shown is for cost estimating purposes only and not accurate for determining construction units or R/W acquisitions.
- C) Cost Estimates presented in this table are based upon Year 2005 dollars.
- D) The total cost estimated for the ultimate improvements at Gas Point Road interchange is \$14,000,000 as shown in the Appendix. This table shows a cost of \$12,000,000 as approximately \$2,000,000 of the interim improvements at the Gas Point Road interchan
- E) \$450,000 associated with the cost of signalizing the I-5 NB Ramps, SB Ramps and Rhonda Road intersections on Gas Point Road, treated as existing deficiencies is removed from the total cost of \$4,239,000 associated with the Interim improvements at Gas
- F) Average Construction width assume 2:1 fill slopes

Abbreviations:

- TWLTL: Two-way left turn lane
- R/W: Right-of-Way
- N-S: North to South
- E-W: East to West
- Const.: Construction

CHAPTER IV – SOUTHERN REGION TRANSPORTATION IMPROVEMENT PHASING

**TABLE 19
5-YEAR BAND TRANSPORTATION IMPROVEMENTS AND COST ESTIMATES**

YEAR	Cost	Other Funding		Total Cost to be included in Fee Program
		State & Federal Funding	Facilities to be constructed by Local development	
YEAR 2010				
Interim Improvements at Gas Point Road Interchange	\$3,789,000			\$3,789,000
Gas Point Road - N/S Arterial to Rhonda Road	\$2,731,000			\$2,731,000
Rhonda Road (widen) - Gas Point Road to E-W Arterial	\$3,920,400		\$3,282,400	\$638,000
Rhonda Road (Realign) - north of E/W Arterial	\$880,000			\$880,000
First Street (widen) - N/S Arterial to existing overcrossing @ I-5	\$562,800			\$562,800
Main Street Interchange Improvements	\$9,781,000	\$5,000,000		\$4,781,000
New N/S Arterial - Gas Point Road to New E/W Arterial ¹	\$4,687,600		\$4,687,600	
New N/S Arterial - First Street to Gas Point Road ²	\$1,386,080		\$1,191,200	\$194,880
New E/W Arterial - New N/S Arterial to Main Street Interchange	\$2,357,200		\$2,357,200	
Year 2010 Total Cost	\$30,095,080		\$11,518,400	\$13,576,680
YEAR 2015				
Gas Point Rd - Happy Valley Road to Joanne Lane	\$970,000		\$0	\$970,000
Gas Point Rd - Joanne Lane to N/S Arterial	\$7,166,200		\$0	\$7,166,200
New N/S Arterial - New E/W Arterial to Rhonda Road (N) ³	\$7,275,000		\$0	\$7,275,000
Year 2015 Total Cost	\$45,506,280		\$11,518,400	\$28,987,880
YEAR 2020				
Gas Point Road Interchange Improvements	\$12,235,000	\$5,000,000	\$0	\$7,235,000
State & Federal Funding			\$0	
Year 2020 Total Cost	\$57,741,280		\$11,518,400	\$36,222,880
YEAR 2027				
No Improvements	\$0	\$0	\$0	\$0
Year 2027 Total Cost	\$57,741,280	\$10,000,000	\$11,518,400	\$36,222,880
<i>Note:</i>				
1) The cost of constructing this facility is not included in the fee program as it is assumed that this facility will be constructed by local development in the area				
2) Only the Right-of-way cost associated with constructing this facility is included in the fee program. The actual cost of constructing this facility is assumed to be funded by local development				
3) The total cost of constructing this facility, both the construction cost and right-of-way acquisition cost is included in the fee program				
4) The interim improvements at Gas Point Road interchange does not include the cost of signaling the Gas Point Road/Rhonda Road, Gas Point Road/I-5 SB Ramps and Gas Point Road/I-5 NB ramp intersections as they are considered as existing deficiencies. The cost associated with these existing deficiencies is approximately \$450,000. As noted in the footnote of Table 17, the \$450,000 associated with signaling these three intersection is removed from the total improvement costs of \$ 4,239,000 at the Gas Point Rd interchange				