

RESOLUTION NO. 771 (14)

**A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF
LOMPOC RECOMMENDING CITY COUNCIL APPROVAL OF A
REQUEST FOR AN ALTERNATIVE MITIGATION MEASURE,
AMENDMENT NO. 2 TO THE BURTON RANCH SPECIFIC PLAN,
AND ACCEPTANCE OF ADDENDUM TO THE
FINAL ENVIRONMENTAL IMPACT REPORT
(Planning Division File No. FEIR 02-01 /SP 04-01)**

WHEREAS, a request was received from Michel Towbes, on the behalf of Harris Grade Partners, L.P.; Patrick J. McCarthy and Bridget M. McCarthy; Donald M. Jensen and Lynn D. Gray; Lompoc Ranch Joint Venture; Joe A. Signorelli, Jr.; Adam Peter Signorelli; Gus Thomas Signorelli; and The Towbes Group, Inc., for Planning Commission review of an alternative mitigation for Mitigation Measure TRANS 1.2c. adopted with the Final Environmental Impact Report (FEIR 02-01) prepared and certified for the Burton Ranch Specific Plan ("BRSP") area project located at the intersection of State Highway Route 1, Purisima Road, and Harris Grade Road. (Assessor Parcel No. 97-250-002, -005, -040,-050, -051, -062, and -069)("Project").

WHEREAS, City Council certified FEIR 02-01, prepared by Science Applications International Corporation (SAIC), on February 7, 2006; and

WHEREAS, an Addendum has been prepared by Rincon Consultants, dated April 2014; and

WHEREAS, the request was considered by the Planning Commission at a duly-noticed public hearing on June 11, 2014; and

WHEREAS, at the meeting of June 11, 2014, Craig Zimmerman representing Harris Grade Partners and Derek Rapp Principal Traffic Engineer for Penfield & Smith, were present and available to answer Planning Commissioners' questions and address their concerns; and

WHEREAS, at the meeting of June 11, 2014, Merrell Brooks representing the Citizens Planning Association voiced concern regarding impacts from the project on residents in the unincorporated area; and

WHEREAS, this project is in accordance with Section 15164 of the CEQA Guidelines, where a lead agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 for the preparation of a subsequent EIR have occurred.

NOW, THEREFORE, THE PLANNING COMMISSION OF THE CITY OF LOMPOC RESOLVES AS FOLLOWS:

SECTION 1: After hearing testimony, reviewing the staff report, considering the evidence presented, and due deliberation of the matters presented the Planning Commission finds:

- A. The Alternative Mitigation proposed for Mitigation Measure TRANS 1.2c. adopted with the Final Environmental Impact Report (FEIR 02-01) for the Burton Ranch Specific Plan is based upon new information provided in the Penfield & Smith Traffic Analysis dated April 24, 2014 and is consistent with the objectives, polices, land uses, and programs specified in the City's General Plan and the BRSP;
- B. The Alternative Mitigation will not be detrimental to the health, safety and general welfare of persons residing in the BRSP area or the City of Lompoc;
- C. This addendum includes changes to transportation mitigations and conditions that the City has determined not to be substantial individually or cumulatively and therefore do not require circulation for public comment. However the applicant is hereby notified, that the City considers this change just short of the threshold of significance and additional changes to transportation mitigations or conditions beyond those described in this Addendum will likely be considered cumulatively significant, even if not individually substantial, and would likely require preparation of a Supplemental or Subsequent EIR to be circulated for public comment;
- D. Amendment No. 2 to the BRSP is necessary to assure conformity between the Specific Plan and the Mitigation Measures;
- E. The Conditions of Approval for the BRSP are amended to reflect the Alternative Mitigation as attached; and
- F. The attached draft Addendum to the BRSP FEIR 02-01 accurately documents the actions taken and is consistent with the regulations of CEQA and the City re-affirms the CEQA Findings of Fact made in adopting FEIR 02-01.

SECTION 2: The Planning Commission hereby recommends that the City Council:

- G. Accept the Alternative Mitigation Measure for TRANS 1.2c. based upon the new information provided in the Traffic Analysis prepared by Penfield & Smith, dated April 24, 2014;

- H. Approve the proposed Amendment No. 2 to the BRSP which proposes changes pertaining to TRANS-1.2c within Section VII, The Infrastructure Plan, Table 2 – Infrastructure Timing Schedule, and Section XI, Mitigation Measures; and
- I. Approve the attached draft Addendum to the Burton Ranch Specific Plan FEIR 02-01 prepared by Rincon Consultants, dated April 2014 as the appropriate environmental review for the request per CEQA Section No. 15162.

The foregoing resolution, on motion by Commissioner Fink, seconded by Commissioner Cioni, was adopted at the regular Planning Commission meeting of June 11, 2014, by the following vote:

AYES: Commissioners Leach, Cioni, Rodenhi, Fink

NOES: None

ABSENT: Commissioner Clark


Lucille T. Breese, AICP, Secretary



Ron Fink, Chair

Attachment: Exhibit A – Conditions of Approval
Exhibit B – Draft Addendum

**CONDITIONS OF APPROVAL
Burton Ranch Specific Plan Area
(Planning Division File No. FEIR 02-01 / SP 04-01)**

The following Conditions of Approval apply to the Burton Ranch Specific Plan (BRSP) reviewed by the Planning Commission on June 11, 2014.

I. PLANNING

Planning - General Conditions

- P1. All applicable provisions of the Lompoc City Code are made a part of these conditions of approval in their entirety, as if fully contained herein.

- P2. In conformity with Sections 8900, 8935, and 8936 of the Lompoc City Zoning Ordinance, the violation of any condition listed herein shall constitute a nuisance and a violation of the Lompoc City Zoning Ordinance and the Lompoc City Code. In conformity with Section 0107 and 0128 of the Lompoc City Code, a violation of the Lompoc City Code and the Lompoc City Zoning Ordinance is a misdemeanor and shall be punishable as provided by law. In addition to criminal penalties, the City may seek injunctive relief to specifically enforce the Conditions of Approval. The applicant agrees to pay for all attorney's fees and costs, including, but not limited to, staff time incurred by the City in obtaining injunctive relief against the applicant as a result of a failure of the applicant to fully perform and adhere to all of the Conditions of Approval.

- P3. Mitigation Measure (MM) Trans 1.2C, adopted by City Council Resolution No. 5299 (06) is hereby recommended for City Council acceptance of the proposed Alternative MM shown below:

Existing Language	Proposed Revised Language
<p>TRANS- 1.2c The applicant shall construct improvements that modify the southbound approach and exit lanes at the Harris Grade Road/Purisima Road intersection to provide two through lanes extending south of the intersection far enough to facilitate merging without creating congestion. The new southbound lane shall be 12-foot wide, consistent with HDM standards. The proposed taper that would gradually merge with traffic traveling south on State Highway 1 shall be extended, consistent with Caltrans specifications.</p>	<p>TRANS- 1.2c The applicant shall construct the following improvements at the State Route1/Harris Grade Road intersection prior to project occupancy:</p> <ul style="list-style-type: none"> • Restripe the northbound approach (dual left-turn lanes, one through lane and a right-turn lane). • Provide traffic signal improvements to change the existing split phasing to protected left-turn phasing on the northbound and southbound approaches and to protected-permissive left-turn phasing on the eastbound and westbound approaches in conformance with the future operation assumed in the 2030 General Plan Update EIR. • A Caltrans Encroachment Permit shall be obtained for this work. All work completed in the State Highway 1 right-of-way shall be done to Caltrans engineering and environmental standards, and at no cost to the State..

- P4. The Burton Ranch Specific Plan (SP 04-01) adopted by City Council Ordinance No. 1519 (06) and amended by City Council Ordinance No. 1547 (07) is recommended for City Council adoption of Amendment No. 2 as shown below:

Section VII: The Infrastructure Plan; Table 2 – Infrastructure Timing Schedule within (page 54 of the BRSP)

Existing Language	Proposed Revised Language
<p>Modify southbound approach and exit lanes to provide two through lanes extending south of the intersection far enough to facilitate merging.</p> <p>Add southbound through lane to Harris Grade Road.</p> <p>Extend Highway taper to gradually merge with southbound traffic.</p>	<p>Restripe the northbound approach (dual left-turn lanes, one through lane and a right-turn lane).</p> <p>Provide traffic signal improvements to change the existing split phasing to protected left-turn phasing on the northbound and southbound approaches and to protected-permissive left-turn phasing on the eastbound and westbound approaches.</p> <p>Caltrans Encroachment Permit to be received prior to approval of Final Map and Public Improvement Plan.</p> <p>County of Santa Barbara Encroachment Permit shall be applied for all work within the County right-of-way along Harris Grade Road prior to map recordation.</p>

Section XI: Mitigation Measures (page 142 of the BRSP)

Existing Language	Proposed Revised Language
<p>TRANS- 1.2c The applicant shall construct improvements that modify the southbound approach and exit lanes at the Harris Grade Road/Purisima Road intersection to provide two through lanes extending south of the intersection far enough to facilitate merging without creating congestion. The new southbound lane shall be 12-feet wide, consistent with HDM standards. The proposed taper that would gradually merge with traffic traveling south on State Highway 1 shall be extended, consistent with Caltrans specifications</p>	<p>TRANS- 1.2c The applicant shall construct the following improvements at the State Route1/Harris Grade Road intersection prior to project occupancy:</p> <ul style="list-style-type: none"> • Restripe the northbound approach (dual left-turn lanes, one through lane and a right-turn lane). • Provide traffic signal improvements to change the existing split phasing to protected left-turn phasing on the northbound and southbound approaches and to protected-permissive left-turn phasing on the eastbound and westbound approaches in conformance with the future operation assumed in the 2030 General Plan Update EIR.

	<ul style="list-style-type: none">• A Caltrans Encroachment Permit shall be obtained for this work. All work completed in the State Highway 1 right-of-way shall be done to Caltrans engineering and environmental standards, and at no cost to the State. The applicant shall apply for an Encroachment Permit with the County of Santa Barbara for all work proposed within the County right-of-way along Harris Grade Road.
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City of Lompoc

Burton Ranch Specific Plan

**Environmental
Impact Report
Addendum
SCH# 2002091045**



April 2014

**ENVIRONMENTAL IMPACT REPORT
ADDENDUM**

**BURTON RANCH
SPECIFIC PLAN**

Prepared by:

**City of Lompoc
Community Development Department
100 Civic Center Plaza
Lompoc, California 93438-8001
Contact: Ms. Lucille Breese, AICP**

Prepared with the assistance of:

**Rincon Consultants, Inc.
1530 Monterey Street, Suite D
San Luis Obispo, California 93401**

April 2014

This report prepared on 50% recycled paper with 50% post-consumer content.

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1.0 INTRODUCTION

This document is an Addendum to the Final Environmental Impact Report (EIR) for the Burton Ranch Specific Plan (State Clearinghouse #2002091045). The Specific Plan EIR, which was certified in 2005, evaluated the environmental impacts of a Specific Plan for the annexation and development of a 149-acre site located north of Lompoc, between State Highway 1 to the west and south, Harris Grade Road to the east, and the Burton Mesa Management Area (BMMA) to the north. The Specific Plan includes approximately 476 residential units, 8 acres of open space, a 3.3-acre passive park, and a 12-acre school site.

The Final EIR required several mitigation measures that were incorporated into the adopted Specific Plan as conditions of approval. To reduce potentially significant Specific Plan traffic impacts on the intersection of State Route 1/Harris Grade Road, Mitigation Measure TRANS-1.2c required implementation of a second southbound lane on Harris Grade Road/H Street (SR 1). Based on review of the design of a second southbound lane on Harris Grade Road and H Street (SR 1), Caltrans indicated that substitute mitigation consisting of protected left turn phasing and restriping of the northbound approach to two left turn lanes and a single through lane would appropriately mitigate project impacts and would be considered reasonable replacement mitigation (refer to Appendix A). In accordance with Section 15164 of the State CEQA Guidelines, this Addendum to the Burton Ranch Specific Plan Final EIR is being prepared to evaluate the substitution of Mitigation Measure TRANS-1.2c for a measure of equivalent effectiveness involving restriping of the northbound approach and traffic signal improvements, based on revised traffic analysis provided by Penfield & Smith (March 25, 2014); refer to Appendix B).

In accordance with State CEQA Guidelines, a lead agency is required to circulate additional environmental analysis following certification of the EIR when significant new information is added to the EIR that shows any of the following:

- a) *The project will have one or more significant effects not discussed in the previous EIR or negative declaration;*
- b) *Significant effects previously examined will be substantially more severe than shown in the previous EIR;*
- c) *Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or*
- d) *Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.*

As used in this section, the term "information" can include changes in the project or environmental setting as well as additional data or other information. The proposed project is substantially similar to the Burton Ranch Specific Plan as analyzed in the Final EIR. There would not be any new environmental impacts in addition to those identified in the Final EIR, nor would there be a substantial increase in the magnitude or severity of any impact identified in the Final EIR. This EIR Addendum does not require circulation because it does not provide significant new information that changes the original EIR in a way that deprives the public of a



meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect.

This EIR Addendum contains this Introduction and an Environmental Impact Analysis section that describes the proposed modification to the project to remove the identified mitigation measure and addresses each of the environmental issues that has the potential to change as a result.

The City of Lompoc shall consider the Addendum with the Final EIR prior to making a decision on the revised Specific Plan. The Final EIR for the Burton Ranch Specific Plan is available for review at the Planning Division of the City of Lompoc Community Development Department, 100 Civic Center Plaza, Lompoc, CA 93438.



2.0 ENVIRONMENTAL IMPACT ANALYSIS

This section describes the proposed modification to the project to replace Mitigation Measure TRANS 1-2c with a new mitigation measure of equivalent effectiveness, and addresses whether environmental issues have the potential to change as a result. This section compares the effects of the revised project currently proposed to those of the approved project that was the subject of the previous CEQA document, the 2005 Final EIR. In accordance with Section 15131 of the *State CEQA Guidelines*, this analysis focuses on the physical environmental changes of the revised project.

Burton Ranch Specific Plan Final EIR Analysis

The Final EIR evaluated the environmental impacts of a Specific Plan for the annexation and development of a 149-acre site located north of Lompoc, between State Highway 1 to the west and south, Harris Grade Road to the east, and the Burton Mesa Management area (BMMA) to the north. As described in the Final EIR, Impact TRANS-1.2 stated that the proposed project would result in additional traffic within intersections in close proximity to the project area, and specifically identified that the intersection of State Route 1/Harris Grade Road would be impacted and operate at a deficient Level of Service (LOS) D during both the AM and PM peak hours under baseline + Specific Plan conditions. In addition, the Final EIR determined that the intersection would operate at a deficient LOS E during the AM peak hour and LOS F during the PM peak hour under General Plan Buildout + Specific Plan conditions. The Final EIR identified the following mitigation for this impact:

- TRANS-1.2a:** State Highway 1 shall be improved adjacent to the project site in conjunction with the proposed development, as specified by the City of Lompoc and approved by Caltrans. These shall include the following at the State Highway 1/project site entrance intersection:
- a. Increase the amount of storage at the left-turn channelization for southbound traffic.
 - b. Includes right-turn channelization for traffic traveling northbound.

Any improvements within the State Highway 1 right-of-way shall require an Encroachment Permit, which shall meet Caltrans requirements as set forth in the Highway Design Manual (Caltrans 2002). The applicant shall coordinate with Caltrans and obtain an Encroachment Permit prior to initiating any improvements along State Highway 1. All work completed in the State Highway 1 right-of-way shall be done to Caltrans engineering and environmental standards, and at no cost to the State.

- TRANS-1.2b:** The project applicant shall be responsible for dedicating right-of-way and constructing improvements to Harris Grade Road



adjacent to the project site, as specified by the City of Lompoc. These improvements shall include a 14-foot median lane, left turn lanes, and sidewalk at all site access points on Harris Grade Road.

TRANS-1.2c: The applicant shall construct improvements that modify the southbound approach and exit lanes at the Harris Grade Road/Purisima Road intersection to provide two through lanes extending south of the intersection far enough to facilitate merging without creating congestion. The new southbound lane shall be 12-feet wide, consistent with HDM standards. The proposed taper that would gradually merge with traffic traveling south on State Highway 1 shall be extended, consistent with Caltrans specifications. A Caltrans Encroachment Permit shall be obtained for this work. All work completed in the State Highway 1 right-of-way shall be done to Caltrans engineering and environmental standards, and at no cost to the State. The applicant shall apply for an Encroachment Permit with the County of Santa Barbara for all work proposed within the County right-of-way along Harris Grade Road.

TRANS-1.2d: The applicant shall be responsible for contributing 50 percent of the costs for the design and construction of dual northbound and southbound left-turn lanes at the "H" Street/Central Avenue intersection. The new dual northbound and southbound left-turn lanes shall be 12-feet wide, consistent with HDM standards, and utilize existing Caltrans right-of-way along each side of "H Street" (State Highway 1) or from the median. All work completed in the State Highway 1 right-of-way shall be done to Caltrans engineering and environmental standards, and at no cost to the State.

TRANS-1.2e: The following improvements shall be required at off-site key intersections to mitigate the impact of project related traffic and maintain acceptable LOS upon General Plan buildout Year 2015. The applicant shall pay transportation fees to the City of Lompoc to mitigate the off-site impacts of project related traffic, based upon the level of service requirements, specified by the City of Lompoc. The applicant shall contribute on a "fair share" basis to the intersection improvements as follows:

- a. Harris Grade Road/Purisima Road: add westbound left-turn lane. Project Share of Traffic Increase = 28.13%.
- b. "H" Street/Central Avenue: add northbound right turn-lane. Project Share of Traffic Increase = 23.18%.
- c. Purisima Road/State Route 246: signalize intersection. Project Share of Traffic Increase = 17.62% (to be provided to Caltrans).



TRANS-1.2f: A development fee of \$3,926 per single family dwelling unit and \$2,756 per multi-family unit, subject to change based on the Lompoc Impact Fee Study Report, or as approved by the City Council, shall be paid to the City of Lompoc to provide funding for street improvements, installing traffic signals of region-wide benefit, and bikeways.

TRANS-1.2g: The applicant shall install bus stops along project frontages consistent with City of Lompoc Public Works Department standards as required by the Public Works Department during the development review process for each development phase.

The Final EIR concluded that implementation of these mitigation measures would reduce Specific Plan impacts related to generation of additional traffic within intersections in close proximity to the project area to a less than significant level.

While the majority of these mitigation measures would be retained to address the identified impact, mitigation measure TRANS-1.2c would be replaced.

Proposed Project Modification

The original Specific Plan evaluated in the Final EIR included approximately 476 residential units, 8 acres of open space, a 3.3-acre passive park, and a 12-acre school site. In lieu of a school site, due to the school district's lack of interest in developing a school on the 4-acre site, the project applicant currently plans to construct a 12-acre park and 476 total residential units.

In addition, Mitigation Measure TRANS-1.2c is proposed for replacement in the EIR and Specific Plan with the following mitigation measure:

"The applicant shall construct the following improvements at the State Route 1/Harris Grade Road intersection prior to project occupancy:

- *Restripe of the northbound approach (dual left-turn lanes, one through lane and a right-turn lane), and;*
- *Provide traffic signal improvements to change the existing split phasing to protected left-turn phasing on the northbound and southbound approaches and to protected-permissive left-turn phasing on the eastbound and westbound approaches in conformance with the future operation assumed in the 2030 General Plan Update EIR."*

Caltrans determined that the scope and cost to complete improvements per mitigation measure TRANS-1.2c, would exceed the type of improvement typically handled under an encroachment permit and requires that the project be reviewed under a Highway Improvement Agreement (HIA), which would require additional time and cost. In summary, the combination of adding a second southbound lane on H Street and the existing merge lane creates a dual lane merging situation that requires:



- Realignment and widening of approximately 1,500 lineal feet of H Street and the right turn ramp from southbound SR 1.
- Construction of 550 feet of 9.5-foot maximum height retaining wall/concrete barrier.
- Construction of 1,500 lineal feet of concrete median barrier.

Figure 2-1 shows the difference in work area required by implementation of Mitigation Measure TRANS-1.2c with and without the presence of the eastbound to southbound sweeping right-turn lane. Following the review of the design of a second southbound lane and corresponding traffic analysis, Caltrans indicated that the substitute mitigation measure would be equally effective when compared to Mitigation Measure TRANS-1.2c.

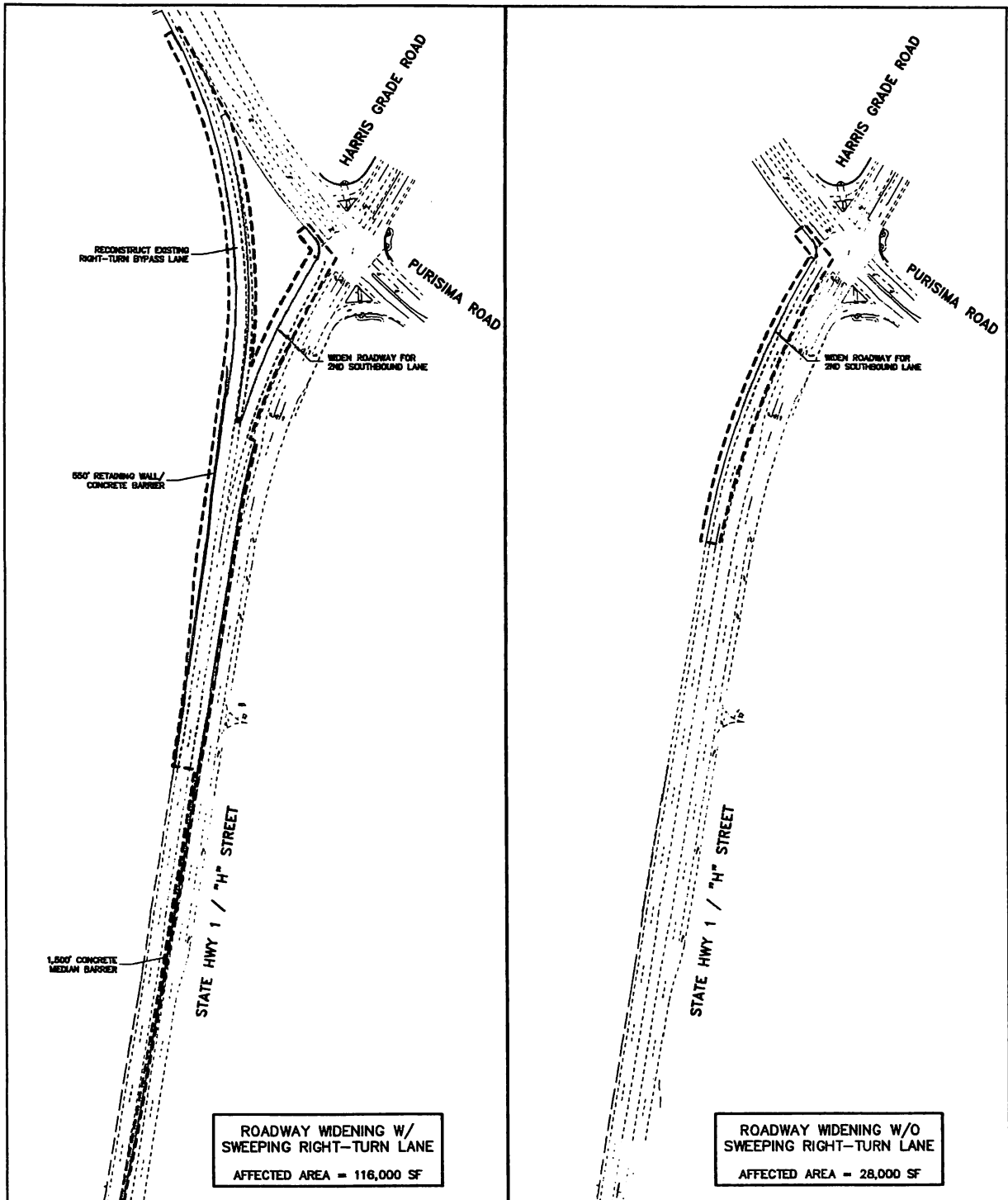
Comparison of Revised Project Impacts to the Burton Ranch Specific Plan Final EIR

The analysis below is limited to the CEQA environmental issue area of "Transportation and Circulation," as it is the only issue area with impacts that could change as a result of replacement of the mitigation measure that previously required improvements to the Harris Grade Road/ Purisima Road intersection to provide two through lanes extending south of the intersection far enough to facilitate merging without creating congestion.

Penfield & Smith completed a revised traffic analysis for the Purisima Road - State Route 1/Harris Grade Road intersection (March 25, 2014; refer to Appendix B to this Addendum). The revised analysis included updated project trip generation estimates that reflect project land use changes that have occurred since the completion of the *Burton Ranch Specific Plan FEIR* in 2005, updated the traffic analyses for baseline and buildout conditions, and identified alternative intersection improvements that may be implemented in order to improve intersection operations to an acceptable level of service under City of Lompoc and Caltrans impact thresholds.

The original project analyzed in the 2005 FEIR included 476 total residential units, including 397 single family dwellings (SFD) and 79 apartments, 8 acres open space, a 3-3 acre passive park, and a K-8 school site (12-acres). In lieu of a school site, due to the school district's lack of interest in developing a school on the 4-acre site, Burton developers plan to construct a 12-acre park. The revised traffic analysis includes the original number and mix of residential units analyzed in the FEIR (476 units). The updated Burton Ranch Project is expected to generate a total of 4,340 ADT, including 340 total AM peak hour trips and 452 total PM peak hour trips (Table 2-1). This is a reduction of 880 ADT compared to the previously approved Specific Plan evaluated in the 2005 Final EIR.





Source: Penfield & Smith, March 2014

State Route 1/Harris Grade Road
Roadway Widening Comparison

Figure 2-1
City of Lompoc

Table 2-1 Burton Ranch Project Revised Project Trip Generation Estimates

Land Use	Size	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
			In	Out	Total	In	Out	Total
Single Family Residential	397 units	3,800	74	223	297	257	144	401
Apartments	79 units	520	6	34	40	33	16	49
Park (SANDAG)	4 acres	20	2	1	3	1	1	2
TOTAL		4,340	82	258	340	291	161	452
<i>Burton Ranch Specific Plan FEIR (2005)</i>		5,220	243	377	620	374	258	632

Source: Penfield & Smith, Revised Traffic Analysis, Burton Ranch Project, March 25, 2014.

Revised Traffic Study Methodology. The revised traffic analysis uses the same Level of Service (LOS) calculation methodology as the original traffic analysis, which involves using LOS calculation methods used in the 2030 General Plan Update EIR and assumes the existing intersection geometry and traffic signal phasing. Project trip distribution was based on the distribution percentages developed in the *Burton Ranch Specific Plan Traffic Report* (FEIR, Figure 2-1, Appendix H-1) and includes the updated project-added AM and PM peak hour traffic volumes at the Purisima Road - for the State Route 1/Harris Grade Road intersection (refer to Figure 2-2). These updated project traffic volumes were then added to updated baseline traffic conditions using the most recent (2009) AM and PM peak hour traffic volumes collected at the intersection (original traffic study used baseline traffic conditions contained in the *Burton Ranch Specific Plan FEIR*).

Revised Traffic Study Baseline + Project Analysis. The revised traffic analysis summarized in Table 2-2 indicates that the intersection is projected to operate in the LOS C range during the AM and PM peak hours under Baseline + Project conditions, which meets the City of Lompoc and Caltrans LOS standard for intersections (LOS C). Based on the revised analysis, the project would not generate a project-specific impact at the State Route 1/Harris Grade Road intersection.

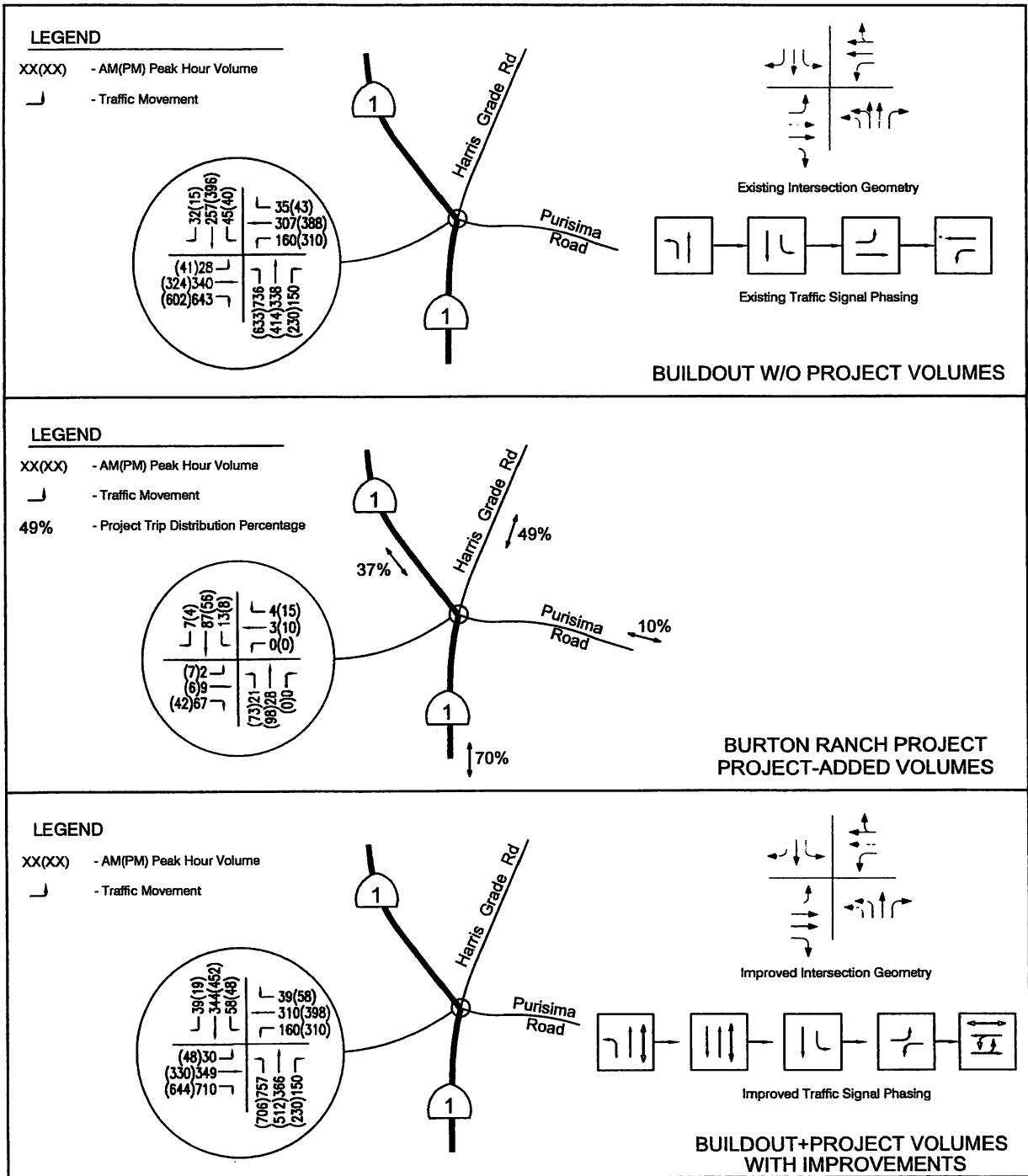
**Table 2-2 State Route 1/ Harris Grade Road Intersection
 Baseline + Project AM and PM Peak Hour Levels of Service**

Traffic Scenario	AM Peak Hour Delay/LOS	PM Peak Hour Delay/LOS
<i>Burton Ranch Specific Plan FEIR Baseline + Project</i>	39.0 sec./LOS D	53.4 sec./LOS D
Baseline + Project: Updated	25.9 sec./LOS C	31.7 sec./LOS C

Source: Penfield & Smith, Revised Traffic Analysis, Burton Ranch Project, March 25, 2014.

Revised Traffic Study City of Lompoc General Plan Buildout Analysis. The revised traffic analysis also provides a more accurate assessment of potential project impacts under buildout conditions using the more recently adopted buildout traffic volumes contained in the 2030 General Plan EIR, certified in 2010, rather than the General Plan Buildout (Year 2015) conditions analysis used in the FEIR. Figure 2-3 summarizes revised buildout traffic forecasts for both buildout without - subtraction of original project peak hour traffic volumes and buildout with -updated project-added volumes with buildout added to the buildout without project volumes.





Source: Penfield & Smith, March 2014

State Route 1/Harris Grade Road
 Buildout Conditions
 Peak Hour Intersection Volumes

Figure 2-3
 City of Lompoc

Penfield & Smith calculated LOS for both buildout without and buildout with project conditions assuming the existing intersection geometry, as well as for buildout with project conditions assuming the implementation of the alternate mitigation measure to TRANS-1.2c. Table 2-3 summarizes the resulting LOS calculations, which show that the intersection would continue to operate in the LOS C-D range under buildout with project conditions. With implementation of the proposed alternate mitigation measure to TRANS-1.2c, the intersection would operate at LOS C, which is considered acceptable based on the City of Lompoc and Caltrans level of service standards. Therefore, the substitute mitigation would be equally effective when compared to the previous mitigation measure.

**Table 2-3 State Route 1/Harris Grade Road Intersection
 General Plan (GP) Buildout AM and PM Peak Hour Levels of Service**

Traffic Scenario	AM Peak Hour Delay/LOS	PM Peak Hour Delay/LOS
<i>Burton Ranch Specific Plan FEIR Buildout (2015)</i>	34.9 sec./LOS C	50.3 sec./LOS D
<i>Burton Ranch Specific Plan FEIR Buildout + Project (2015)</i>	68.4 sec./LOS E	>80.0 sec./LOS F
2030 GP Buildout without Project - Updated	25.7 sec./LOS C	36.0 sec./LOS D
2030 GP Buildout + Project – Updated	28.8 sec./LOS C	44.8 sec./LOS D
2030 GP Buildout + Project – Updated (Mitigated)	24.4 sec./LOS C	34.1 sec./LOS C

Source: Penfield & Smith, Revised Traffic Analysis, Burton Ranch Project, March 25, 2014.

Conclusion

The replacement of Mitigation Measure TRANS-1.2c with substitute mitigation of equivalent effectiveness would not create new significant impacts or cause any of the impacts identified in the Final EIR to increase in magnitude from the original Final EIR. No additional mitigation measures are required.



3.0 REFERENCES

Caltrans (California Department of Transportation). May 17, 2010. Letter to Derek Rapp, Penfield & Smith from Frank Boyle, Transportation Engineer, Caltrans.

Caltrans (California Department of Transportation). 2002. *Highway Design Manual*.

Martin Farrell Homes, Inc. and The Towbes Group. *Burton Ranch Specific Plan*. February 2006.

Penfield & Smith. *Burton Ranch Project - Revised Traffic Analysis for the State Route 1/Harris Grade Road Intersection*. March 25, 2014.

SAIC. *Burton Ranch Specific Plan Revised Final EIR*. September 2005.



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Appendix A

Caltrans Letter of June 8, 2010

DEPARTMENT OF TRANSPORTATION

50 HIGUERA STREET
SAN LUIS OBISPO, CA 93401-5415
PHONE (805) 549-3101
FAX (805) 549-3329
TTY 711
<http://www.dot.ca.gov/dist05/>



*Flex your power!
Be energy efficient!*

June 8, 2010

Derek Rapp
Penfield & Smith
111 East Victoria St
Santa Barbara, Ca 91111

Dear Mr. Rapp:

This letter is in regards to the proposed transportation mitigation improvements, at the intersection of Harris Grade and SR 1, for the Burton Ranch Development project.

The measure of effectiveness, delay each vehicle is expected to experience at an intersection, is a function of multiple variables allowing for an array of varying improvements capable of achieving the same desired LOS improvements. Caltrans has reviewed the different alternatives proposed to mitigate impacts to the intersection of Harris Grade and SR 1. Caltrans recognizes that both alternatives appropriately mitigate impacts to this intersection by achieving appropriate level-of-Service (LOS) conditions. After review of the newly proposed improvements Caltrans agrees with the assertion that impacts are mitigated through protected left turn phasing and restriping of the northbound approach to two left turn lanes and a single through lane, as an alternate to the second southbound lane. Penfield & Smith submitted this alternative analysis to Caltrans via a letter dated May 6, 2010. Caltrans has reviewed and agrees with the findings of this analysis and deems the proposed alternate mitigation a reasonable substitute to the mitigation originally proposed in the EIR for the project.

Sincerely,

A handwritten signature in cursive script that reads "Frank Boyle".

Frank Boyle
Traffic Operations

Appendix B

*Burton Ranch Project Revised Traffic Analysis for the
State Route 1/Harris Grade Road Intersection*



Penfield & Smith

111 East Victoria Street
Santa Barbara, CA 93101

tel 805-963-9532
fax 805-966-9801

www.penfieldsmith.com

Santa Barbara
Camarillo
Santa Maria
Lancaster

W.O. 16156.20A

March 25, 2014

Ms. Lucille Breese
City Planner
City of Lompoc
100 Civic Center Plaza
Lompoc, CA 93438-8001

**Subject: Burton Ranch Project - Revised Traffic Analysis for the
State Route 1 / Harris Grade Road Intersection**

Dear Ms. Breese:

Penfield & Smith has completed the following revised traffic analysis for the State Route 1/Harris Grade Road intersection. The revised analysis includes updated project trip generation estimates that reflect project land use changes that have occurred since the completion of the *Wye Specific Plan FEIR* in 2005. It also updates the traffic analyses for baseline and buildout conditions and identifies alternative improvements to mitigation measure TRANS 1.2c, which calls for a second southbound lane on Harris Grade Road and H Street, in order to maintain intersection operations at an acceptable level of service under City of Lompoc and Caltrans level of service impact thresholds.

Penfield & Smith prepared a design for the second southbound lane mitigation TRANS 1.2c, as contained in the 2005 project FEIR. Under typical conditions, this improvement would involve roadway widening for several hundred feet north and south of the intersection, tapering back into the existing roadway. However, at this intersection, a sweeping right turn from southbound State Route (SR) 1 merges onto H Street south of the intersection. The combination of adding a second southbound lane on H Street and the existing merge lane creates a dual lane merging situation that requires:

- Realignment and widening of approximately 1,500 lineal feet of H Street and the right turn ramp from southbound SR 1.
- Construction of 550 lineal feet of 9.5-foot maximum height retaining wall/concrete barrier.
- Construction of 1,500 lineal feet of concrete median barrier.

Civil Engineering

Land Surveying

Land Use Planning

Construction
Management & Inspection

Traffic & Transportation
Engineering

Transportation Planning

Structural Engineering

Water Resources
Engineering

GIS

Exhibit A provides a visual representation of the difference in work area required by implementation of TRANS 1.2c with and without the presence of the eastbound to southbound sweeping right-turn lane. The additional cost associated with this expanded work area and scope is estimated at \$1.3 million. Caltrans has indicated that the scope and cost to add this second southbound lane exceeds the type of improvement typically handled under an encroachment permit and requires that the project be reviewed under a Highway Improvement Agreement (HIA), which could require additional time and cost. A revised traffic analysis with an alternate mitigation was therefore completed at the suggestion of Caltrans, following their review of the design of a second southbound lane.

Traffic Analysis

Level of Service Criteria: The City of Lompoc and Caltrans level of service standard for intersections is level of service (LOS) C.

Level of Service Calculation Methodology: AM and PM peak hour levels of service were calculated for the State Route 1/Harris Grade Road intersection using the same level of service calculation methods used in the *2030 General Plan Update EIR*¹.

Baseline Conditions: Peak hour levels of service were calculated for the intersection for baseline conditions. The baseline traffic conditions contained in the *Wye Specific Plan FEIR* were updated using the most recent (2009) AM and PM peak hour traffic volumes collected at the intersection². The 2009 traffic counts are attached for reference and illustrated in the attached Exhibit B.

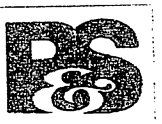
The calculations assume the existing lane geometry and traffic signal phasing. Level of service calculation worksheets are attached for reference. Table 1 shows the baseline levels of service. As shown, the intersection currently operates in the LOS C range during both the AM and PM peak hours under baseline conditions,

Table 1
State Route 1 / Harris Grade Road intersection
Baseline AM and PM Peak Hour Levels of Service

Traffic Scenario	AM Peak Hour Delay/LOS	PM Peak Hour Delay/LOS
<i>Wye Specific Plan FEIR Baseline</i>	27.8 sec./LOS C	32.7 sec./LOS C
Baseline – Updated	23.6 sec./LOS C	26.8 sec./LOS C

¹ Final Environmental Impact Report (EIR 09-01) for the City of Lompoc Comprehensive General Plan Update, City of Lompoc, adopted October 19, 2010.

² California Space Center, Revised Traffic, Circulation and Parking Study, ATE, August 2009.



Project Trip Generation - The updated trip generation estimates are summarized in Table 2.

**Table 2
 Burton Ranch project
 Revised Project Trip Generation Estimates**

Land Use	Size	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
			In	Out	Total	In	Out	Total
Single Family Residential	397 units	3,800	74	223	297	257	144	401
Apartments	79 units	520	6	34	40	33	16	49
Park (SANDAG)	4 acres	20	2	1	3	1	1	2
TOTAL		4,340	82	258	340	291	161	452
<i>Wye Specific Plan FEIR (2005)</i>		<i>5,220</i>	<i>243</i>	<i>377</i>	<i>620</i>	<i>374</i>	<i>258</i>	<i>632</i>

As shown, the updated Burton Ranch Project is expected to generate 4,340 ADT, with 340 trips in the AM peak hour and 452 trips in the PM peak hour.

Project Trip Distribution: Project traffic was assigned to the roadway network based on the distribution percentages developed in the *Wye Specific Plan Traffic Report* (FEIR, Figure 4-1, Appendix H-1) for the project. The attached Exhibit B shows the updated project-added AM and PM peak hour traffic volumes at the Purisima Road - State Route 1/Harris Grade Road intersection.

Baseline plus Project Analysis: Project traffic was added to the updated baseline (Year 2009) traffic volumes. The baseline + project traffic volumes are illustrated in the attached Exhibit B. Levels of service were recalculated for the intersection assuming the existing intersection geometry and traffic signal phasing. The level of service calculation worksheets are attached for reference and the level of service calculation results are summarized in Table 3. The FEIR baseline (Year 2008) and FEIR baseline plus project levels of service are also shown for comparison.



**Table 3
 State Route 1 / Harris Grade Road intersection
 Baseline AM and PM Peak Hour Levels of Service**

Traffic Scenario	AM Peak Hour Delay/LOS	PM Peak Hour Delay/LOS
<i>Wye Specific Plan FEIR Baseline + Project</i>	<i>39.0 sec./LOS D</i>	<i>53.4 sec./LOS D</i>
Baseline + Project - Updated	25.9 sec./LOS C	31.7 sec./LOS C

Table 3 indicates that the intersection is projected to operate in the LOS C range during the AM and PM peak hours under updated baseline plus project conditions, which is acceptable based on City of Lompoc and Caltrans level of service standards. The revised analysis shows that the project does not generate a project-specific impact at the State Route 1/Harris Grade Road intersection.

City of Lompoc General Plan Buildout Analysis: To provide an accurate assessment of potential project impacts under buildout conditions, the General Plan Buildout (Year 2015) conditions analysis contained in the FEIR was updated using the buildout traffic volumes contained in the *2030 General Plan EIR*, adopted in 2010. The 2030 General Plan EIR volumes include anticipated land use changes in the City of Lompoc through 2030, including anticipated growth of Hancock College, such as the recent opening of the Public Safety Training Center Complex in the area.

Because the buildout traffic forecasts include traffic generated by the original project, buildout *without* project volumes were developed by subtracting the original project peak hour traffic volumes. The updated project-added traffic volumes were then added to the buildout *without* project volumes to develop buildout *with* project peak hour traffic volumes. Buildout without and with project peak hour traffic volumes are illustrated in the attached Exhibit C.

Levels of service were calculated for both buildout without project and buildout with project conditions assuming the existing intersection geometry. In addition, a separate level of service calculation was completed for buildout with project conditions assuming the following proposed intersection improvements developed as an alternate mitigation to TRANS 1.2c:

- Restripe of the northbound approach (dual left-turn lanes, one through lane and a right-turn lane), and;
- Traffic signal improvements to change the existing split phasing to protected left-turn phasing on the northbound and southbound approaches and to protected-permissive left-turn phasing on the eastbound and westbound approaches in conformance with the future operation assumed in the 2030 General Plan Update EIR.

The calculations are summarized in Table 4. The original FEIR buildout (Year 2015) and FEIR buildout plus project levels of service are also shown for comparison.

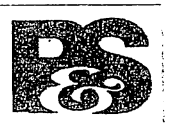


Table 4
State Route 1 / Harris Grade Road intersection
General Plan (GP) Buildout AM and PM Peak Hour Levels of Service

Traffic Scenario	AM Peak Hour Delay/LOS	PM Peak Hour Delay/LOS
<i>Wye Specific Plan FEIR Buildout (2015)</i>	<i>34.9 sec./LOS C</i>	<i>50.3 sec./LOS D</i>
<i>Wye Specific Plan FEIR Buildout + Project (2015)</i>	<i>68.4 sec./LOS E</i>	<i>>80.0 sec./LOS F</i>
2030 GP Buildout without Project - Updated	25.7 sec./LOS C	36.0 sec./LOS D
2030 GP Buildout + Project - Updated	28.8 sec./LOS C	44.8 sec./LOS D
2030 GP Buildout + Project - Updated (Mitigated)	24.4 sec./LOS C	34.1 sec./LOS C

The level of service data in Table 4 shows that the intersection is forecast to operate in the LOS C-D range under General Plan Buildout *without* project traffic. The intersection would continue to operate in the LOS C-D range under buildout *with* project conditions. The proposed mitigation measures developed as an alternate mitigation to TRANS 1.2c will improve the level of service to LOS C, which is considered acceptable based on City of Lompoc and Caltrans level of service standards.

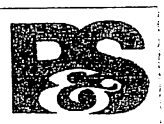
Conclusions:

Mitigation TRANS 1.2c in the Wye Specific Plan FEIR required a widening of H Street (SR 1)/Harris Grade Road to provide two lanes in the southbound direction. At that time, no preliminary roadway layout was performed to determine the full scope of the required improvements. During design, it quickly became apparent that these improvements would involve far more scope and cost (\$1.3 million) than a conventional road widening. Caltrans, District 5 reviewed the design and concluded that the scope and associated cost of this improvement was too large to be permitted under their encroachment permit process. They supported exploring alternative mitigations that would maintain an acceptable intersection level of service.

The first step in the development of the alternate mitigation involved demonstrating that the 2005 Wye Specific Plan FEIR overstated baseline traffic volumes, and as result, overstated impacts to the intersection of State Route 1/Harris Grade Road. A comparison of actual counts collected in 2009 with the FEIR's 2008 baseline traffic volume projections showed that the 2008 FEIR projections were significantly higher than actual 2009 counts.

The FEIR Buildout traffic volumes were derived from the baseline volume projections and were therefore also overstated. In addition, the FEIR assumed a larger project, including a K-8 school site and additional housing units that are no longer part of the project. In total, the background and project added traffic is significantly lower than what was assumed in the original FEIR.

Levels of service were calculated for the intersection using methodologies that are



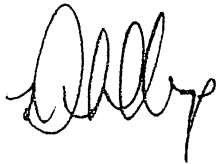
consistent with the methodologies used to calculate intersection levels of service in the 2030 *General Plan Update EIR*. The revised project-specific and buildout traffic analyses for the Burton Ranch Project indicate that the State Route 1/Harris Grade Road intersection would operate at LOS C, under baseline plus project conditions with no improvements; and in the LOS C range under buildout plus project conditions with implementation of the following mitigations:

- Restripe of the northbound approach (dual left-turn lanes, one through lane and a right-turn lane), and;
- Traffic signal improvements to change the existing split phasing to protected left-turn phasing on the northbound and southbound approaches and to protected-permissive left-turn phasing on the eastbound and westbound approaches in conformance with the future operation assumed in the 2030 General Plan Update EIR.

The revised traffic analysis concludes that the proposed alternate improvements adequately mitigate the revised project's traffic impacts based on City level of service thresholds.

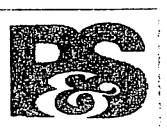
This concludes the revised analysis for the State Route 1/Harris Grade Road intersection. If you have questions regarding the analysis, please contact me at (805) 963-9538, extension 157.

PENFIELD & SMITH



Derek Rapp, T.E.
Principal Traffic Engineer

Attachments



Intersection Peak Hour Traffic Counts (California Space Center)

**CALIFORNIA SPACE CENTER PROJECT
VANDENBERG AIR FORCE BASE, SANTA BARBARA COUNTY, CALIFORNIA**

REVISED TECHNICAL APPENDIX

August 10, 2009

ATE Project #08064.01

Prepared for:

Tetra Tech
3201 Airport Drive, Suite 108
Santa Maria, CA 93455



ASSOCIATED TRANSPORTATION ENGINEERS

100 N. Hope Avenue, Suite 4, Santa Barbara, CA 93110 • (805) 687-4418 • FAX (805) 682-8509

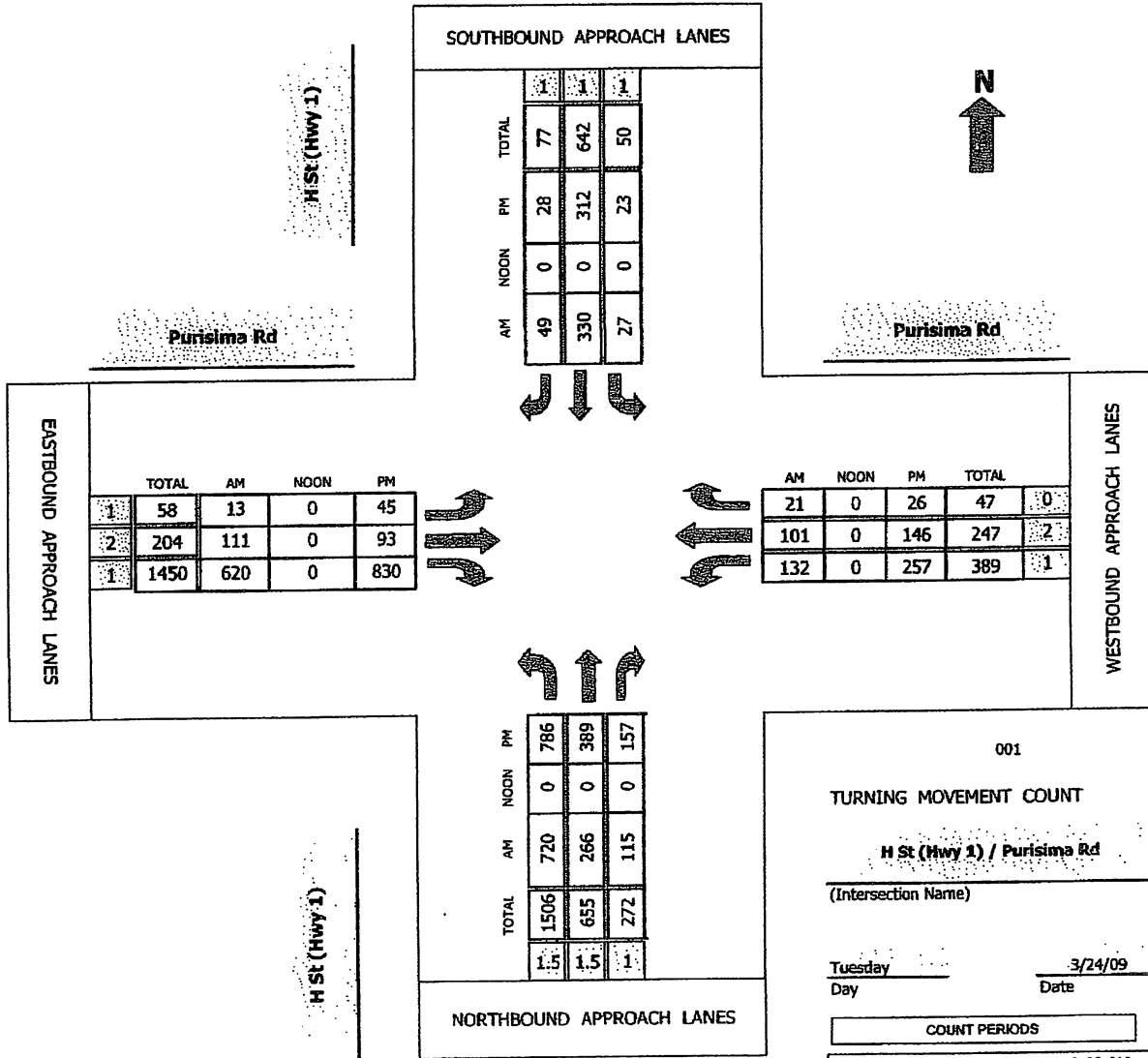
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of H St (Hwy 1)/Purisima Rd

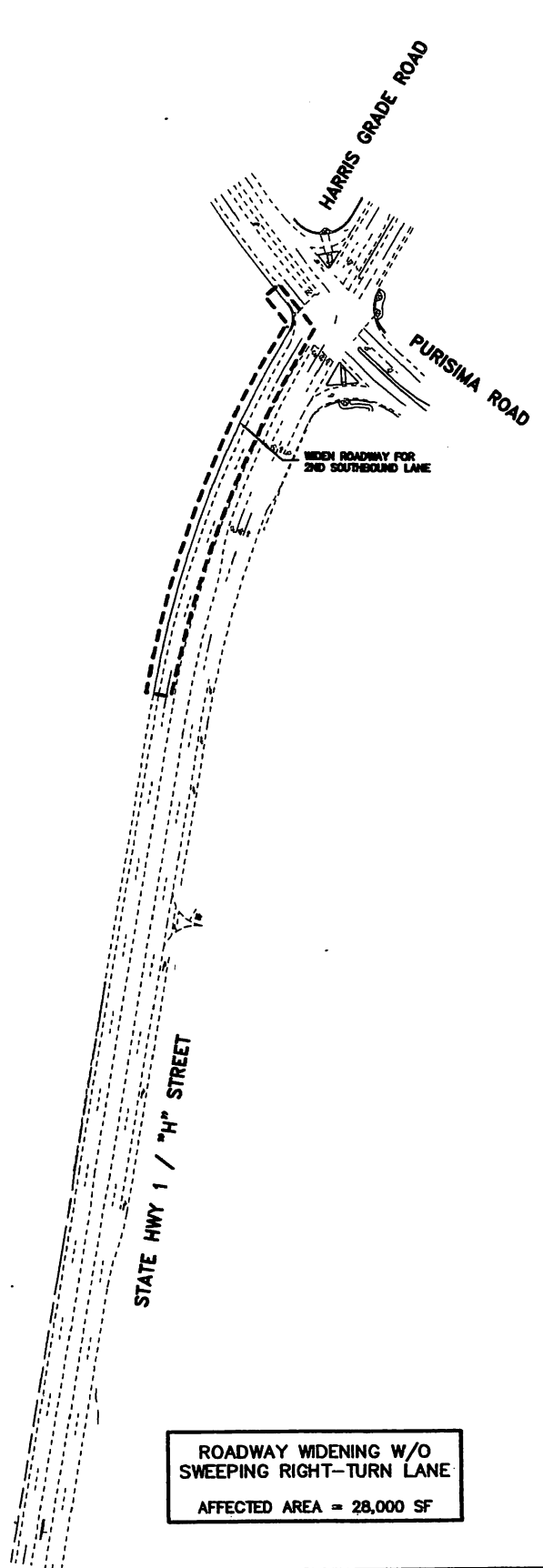
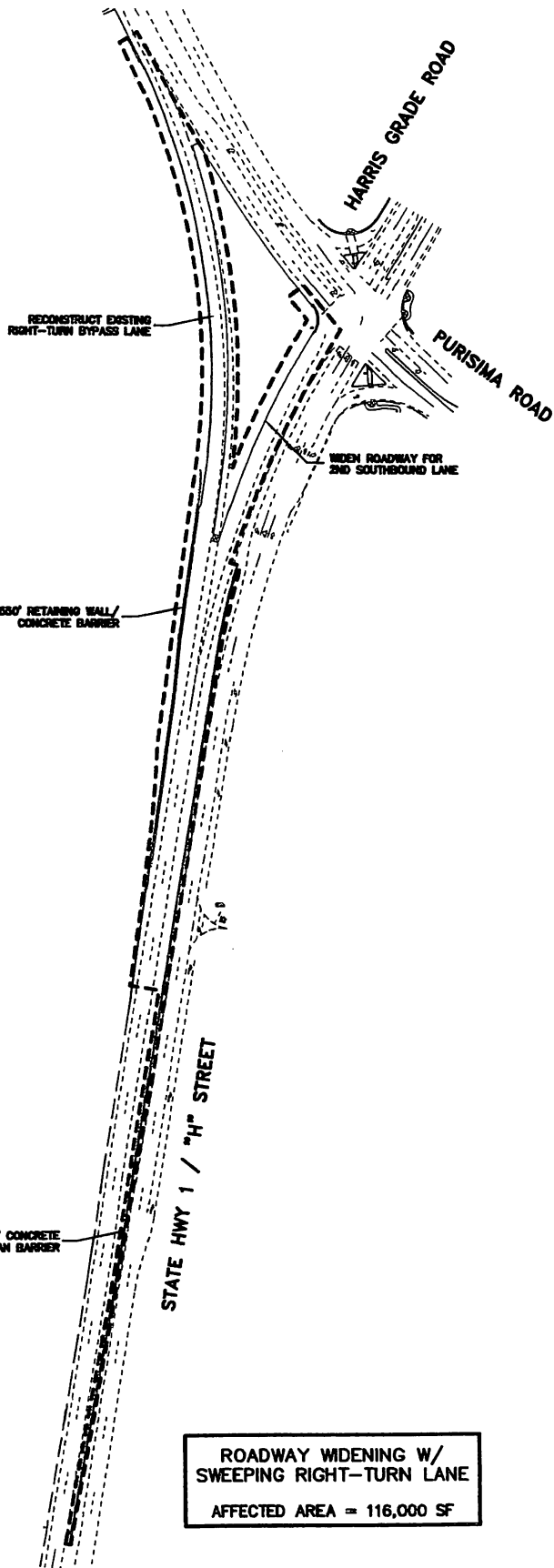
Project #: 09-8021-001



CONTROL: Signalized

AM PEAK HOUR 715 AM
NOON PEAK HOUR 0 AM
PM PEAK HOUR 430 PM

Exhibits A through C



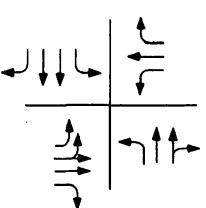
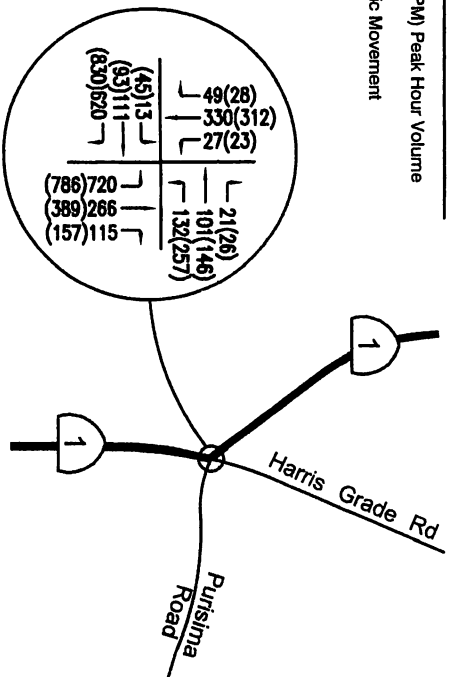
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Phone: (805) 963-9532 Fax: (805) 966-9801

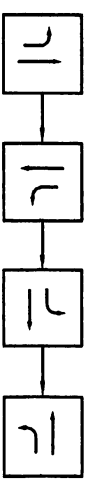
EXHIBIT A
STATE ROUTE 1 / HARRIS GRADE RD
ROADWAY WIDENING COMPARISON

- LEGEND**
- XX(XX) - AM(PM) Peak Hour Volume
 - └ - Traffic Movement



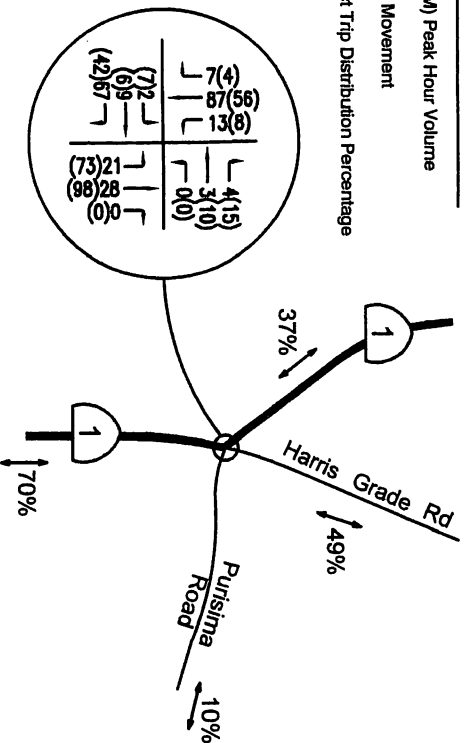
Existing Intersection Geometry

Existing Traffic Signal Phasing



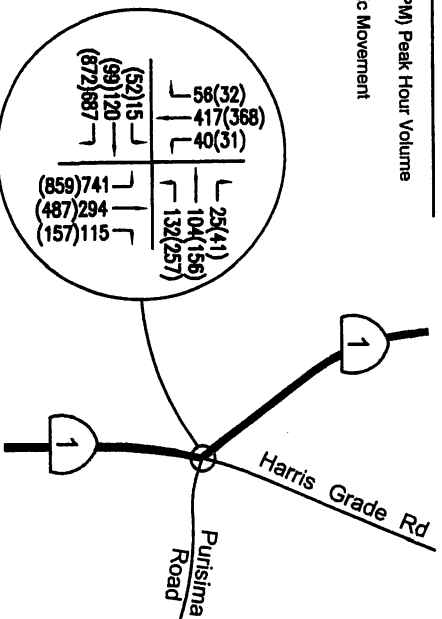
YEAR 2009 VOLUMES

- LEGEND**
- XX(XX) - AM(PM) Peak Hour Volume
 - └ - Traffic Movement
 - 49% - Project Trip Distribution Percentage



BURTON RANCH PROJECT
PROJECT-ADDED VOLUMES

- LEGEND**
- XX(XX) - AM(PM) Peak Hour Volume
 - └ - Traffic Movement



YEAR 2009+PROJECT VOLUMES



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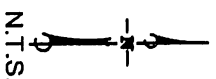
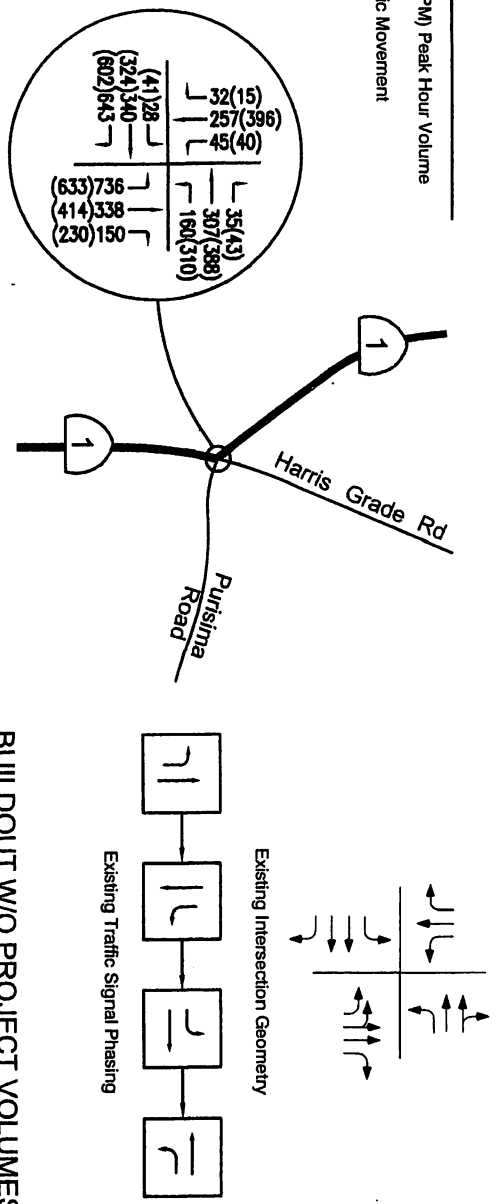


EXHIBIT B
STATE ROUTE 1 / HARRIS GRADE RD
YEAR 2009 CONDITIONS
PEAK HOUR INTERSECTION VOLUMES

LEGEND

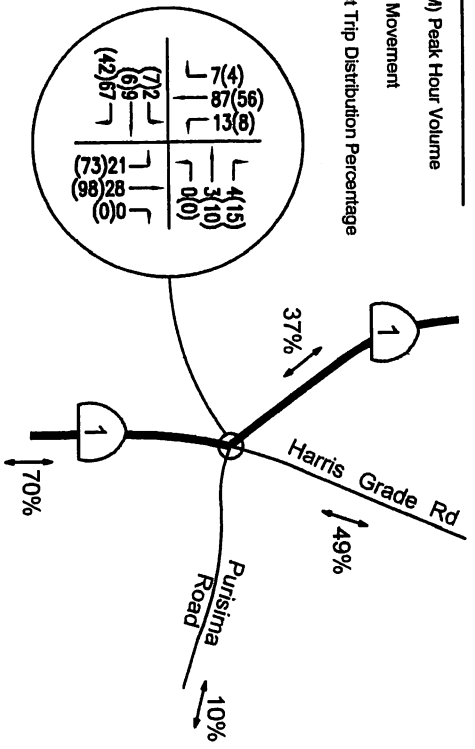
- XX(XX) - AM(PM) Peak Hour Volume
- └ Traffic Movement



BUILDOUT W/O PROJECT VOLUMES

LEGEND

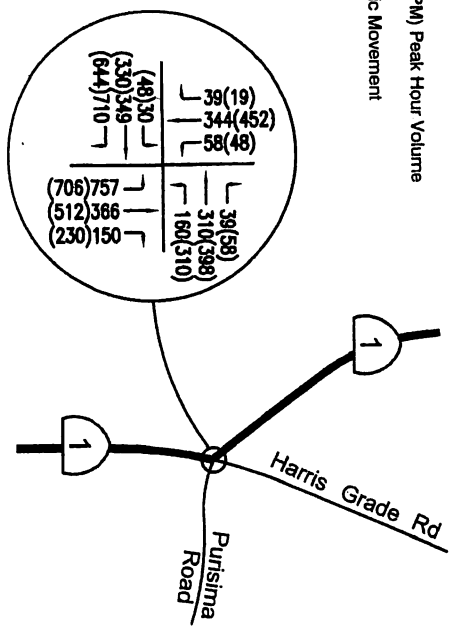
- XX(XX) - AM(PM) Peak Hour Volume
- └ Traffic Movement
- Project Trip Distribution Percentage



**BURTON RANCH PROJECT
PROJECT-ADDED VOLUMES**

LEGEND

- XX(XX) - AM(PM) Peak Hour Volume
- └ Traffic Movement



**BUILDOUT+PROJECT VOLUMES
WITH IMPROVEMENTS**



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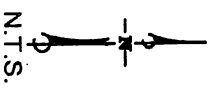


EXHIBIT C
STATE ROUTE 1 / HARRIS GRADE RD
BUILDOUT CONDITIONS
PEAK HOUR INTERSECTION VOLUMES

Level of Service Calculation Worksheets – HCM Methodology

HCM Signalized Intersection Capacity Analysis
 Highway 1 & Harris Grade Rd

2009

	↑	↑	↖	↙	↓	↘	↗	↖	↙	↘	↗	↖
Movement	NBC	NET	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations	↖	↖↖	↖	↖	↑	↖	↖	↖↖	↖	↖	↖↖	↖
Volume (vph)	720	266	115	27	330	49	13	111	620	132	101	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	12	12	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1579	3232	1708	1562	1827	1708	1736	3471	1553	1736	3381	
Flt Permitted	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1579	3232	1708	1562	1827	1708	1736	3471	1553	1736	3381	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	783	289	125	29	359	53	14	121	674	143	110	23
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	18	0
Lane Group Flow (vph)	391	681	125	29	359	53	14	121	674	143	115	0
Parking (#/hr)				0								
Turn Type	Split		Free	Split		Free	Split		Free	Split		
Protected Phases	2	2		6	6		4	4		8	8	
Permitted Phases			Free			Free			Free			
Actuated Green, G (s)	33.6	33.6	97.0	25.0	25.0	97.0	4.0	4.0	97.0	10.4	10.4	
Effective Green, g (s)	35.6	35.6	97.0	27.0	27.0	97.0	6.0	6.0	97.0	12.4	12.4	
Actuated g/C Ratio	0.37	0.37	1.00	0.28	0.28	1.00	0.06	0.06	1.00	0.13	0.13	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	580	1186	1708	435	509	1708	107	215	1553	222	432	
v/s Ratio Prot	c0.25	0.21		0.02	c0.20		0.01	0.03		c0.08	0.03	
v/s Ratio Perm			0.07			0.03			c0.43			
v/c Ratio	0.67	0.57	0.07	0.07	0.71	0.03	0.13	0.56	0.43	0.64	0.27	
Uniform Delay, d1	25.8	24.6	0.0	25.7	31.4	0.0	43.0	44.2	0.0	40.2	38.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.2	2.0	0.1	0.3	8.0	0.0	0.6	3.3	0.9	6.3	0.3	
Delay (s)	32.0	26.6	0.1	26.0	39.4	0.0	43.6	47.6	0.9	46.5	38.5	
Level of Service	C	C	A	C	D	A	D	D	A	D	D	
Approach Delay (s)		25.6			33.8			8.6			42.6	
Approach LOS		C			C			A			D	

Intersection Summary

HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	97.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		
Description: Purisima Rd			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 Highway 1 & Harris Grade Rd

2009



























Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEB	SET	SER	NWL	NWT	NWR
Lane Configurations	↙	↕	↗	↙	↕	↗	↙	↕	↗	↙	↕	↗
Volume (vph)	786	389	157	23	312	28	45	93	830	257	146	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	12	12	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	0.98
Flt Protected	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1579	3244	1708	1736	1827	1708	1736	3471	1553	1736	3393	3393
Flt Permitted	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1579	3244	1708	1736	1827	1708	1736	3471	1553	1736	3393	3393
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	854	423	171	25	339	30	49	101	902	279	159	28
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	15	0
Lane Group Flow (vph)	427	850	171	25	339	30	49	101	902	279	172	0
Turn Type	Split		Free	Split		Free	Split		Free	Split		
Protected Phases	2	2		6	6		4	4		8	8	
Permitted Phases			Free			Free			Free			
Actuated Green, G (s)	32.1	32.1	97.0	20.6	20.6	97.0	3.0	3.0	97.0	17.3	17.3	
Effective Green, g (s)	34.1	34.1	97.0	22.6	22.6	97.0	5.0	5.0	97.0	19.3	19.3	
Actuated g/C Ratio	0.35	0.35	1.00	0.23	0.23	1.00	0.05	0.05	1.00	0.20	0.20	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	555	1140	1708	404	426	1708	89	179	1553	345	675	
v/s Ratio Prot	c0.27	0.26		0.01	c0.19		0.03	0.03		c0.16	0.05	
v/s Ratio Perm			0.10			0.02			c0.58			
v/c Ratio	0.77	0.75	0.10	0.06	0.80	0.02	0.55	0.56	0.58	0.81	0.25	
Uniform Delay, d1	28.0	27.6	0.0	29.0	35.0	0.0	44.9	44.9	0.0	37.1	32.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	9.9	4.5	0.1	0.3	14.3	0.0	7.2	4.0	1.6	13.0	0.2	
Delay (s)	37.8	32.1	0.1	29.2	49.3	0.0	52.1	49.0	1.6	50.1	33.0	
Level of Service	D	C	A	C	D	A	D	D	A	D	C	
Approach Delay (s)		30.0			44.3			8.5			43.2	
Approach LOS		C			D			A			D	

Intersection Summary

HCM Average Control Delay	26.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	97.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		
Description: Purisima Rd			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 Highway 1 & Harris Grade Rd

2009 + Project

												
Movement	NBL	NBT	NBR	SBL	SBT	SEB	SEL	SET	SEB	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	741	294	115	40	417	56	15	120	687	132	104	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	12	12	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	0.97
Flt Protected	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1579	3235	1708	1562	1827	1708	1736	3471	1553	1736	3371	3371
Flt Permitted	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1579	3235	1708	1562	1827	1708	1736	3471	1553	1736	3371	3371
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	805	320	125	43	453	61	16	130	747	143	113	27
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	21	0
Lane Group Flow (vph)	402	723	125	43	453	61	16	130	747	143	119	0
Parking (#/hr)				0								
Turn Type	Split		Free	Split		Free	Split		Free	Split		
Protected Phases	2	2		6	6		4	4		8	8	
Permitted Phases			Free			Free			Free			
Actuated Green, G (s)	31.3	31.3	97.0	28.0	28.0	97.0	4.0	4.0	97.0	9.7	9.7	
Effective Green, g (s)	33.3	33.3	97.0	30.0	30.0	97.0	6.0	6.0	97.0	11.7	11.7	
Actuated g/C Ratio	0.34	0.34	1.00	0.31	0.31	1.00	0.06	0.06	1.00	0.12	0.12	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	542	1111	1708	483	565	1708	107	215	1553	209	407	
w/s Ratio Prot	c0.25	0.22		0.03	c0.25		0.01	0.04		c0.08	0.04	
w/s Ratio Perm			0.07			0.04			c0.48			
w/c Ratio	0.74	0.65	0.07	0.09	0.80	0.04	0.15	0.60	0.48	0.68	0.29	
Uniform Delay, d1	28.1	26.9	0.0	23.8	30.8	0.0	43.1	44.3	0.0	40.9	38.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.9	3.0	0.1	0.4	11.4	0.0	0.6	4.7	1.1	8.9	0.4	
Delay (s)	36.9	29.9	0.1	24.2	42.2	0.0	43.7	49.1	1.1	49.8	39.3	
Level of Service	D	C	A	C	D	A	D	D	A	D	D	
Approach Delay (s)		29.2			36.2			8.8			44.6	
Approach LOS		C			D			A			D	

Intersection Summary

HCM Average Control Delay	25.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	97.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
Description: Purisima Rd			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
Highway 1 & Harris Grade Rd

2009 + Updated Project

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SEB	NWL	NWT	NWB
Lane Configurations												
Volume (vph)	859	487	157	31	368	32	52	99	872	257	156	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	12	12	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	0.97
Flt Protected	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1579	3250	1708	1736	1827	1708	1736	3471	1553	1736	3362	3362
Flt Permitted	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1579	3250	1708	1736	1827	1708	1736	3471	1553	1736	3362	3362
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	934	529	171	34	400	35	57	108	948	279	170	45
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	24	0
Lane Group Flow (vph)	476	987	171	34	400	35	57	108	948	279	191	0
Turn Type	Split		Free	Split		Free	Split		Free	Split		
Protected Phases	2	2		6	6		4	4		6	8	
Permitted Phases			Free			Free			Free			
Actuated Green, G (s)	32.1	32.1	97.0	22.0	22.0	97.0	3.0	3.0	97.0	15.9	15.9	
Effective Green, g (s)	34.1	34.1	97.0	24.0	24.0	97.0	5.0	5.0	97.0	17.9	17.9	
Actuated g/C Ratio	0.35	0.35	1.00	0.25	0.25	1.00	0.05	0.05	1.00	0.18	0.18	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	555	1143	1708	430	452	1708	89	179	1553	320	620	
ws Ratio Prot	0.30	c0.30		0.02	c0.22		0.03	0.03		c0.16	0.06	
ws Ratio Perm			0.10			0.02			c0.61			
wc Ratio	0.86	0.86	0.10	0.08	0.88	0.02	0.64	0.60	0.61	0.87	0.31	
Uniform Delay, d1	29.2	29.3	0.0	28.0	35.2	0.0	45.1	45.0	0.0	38.4	34.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.7	8.7	0.1	0.4	21.6	0.0	14.7	5.6	1.8	22.0	0.3	
Delay (s)	44.9	38.0	0.1	28.4	56.8	0.0	59.8	50.7	1.8	60.4	34.5	
Level of Service	D	D	A	C	E	A	E	D	A	E	C	
Approach Delay (s)		36.0			50.5			9.5			49.1	
Approach LOS		D			D			A			D	

Performance Summary			
HCM Average Control Delay	31.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	97.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		
Description: Purisima Rd			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
Highway 1 & Harris Grade Rd

GP Buildout w/o Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	28	340	643	160	307	35	736	338	150	45	257	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	15	12	12	15
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.91	0.91	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	3471	1553	1736	3418		1579	3241	1708	1736	1827	1708
Flt Permitted	0.53	1.00	1.00	0.28	1.00		0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	969	3471	1553	503	3418		1579	3241	1708	1736	1827	1708
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	370	699	174	334	38	800	367	163	49	279	35
RTCR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	0	0
Lane Group Flow (vph)	30	370	699	174	363	0	400	767	163	49	279	35
Turn Type	pm+pt		Free	pm+pt			Split		Free	Split		Free
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		Free	8					Free			Free
Actuated Green, G (s)	17.0	14.3	97.0	27.6	19.6		31.7	31.7	97.0	19.0	19.0	97.0
Effective Green, g (s)	21.0	16.3	97.0	30.3	21.6		33.7	33.7	97.0	21.0	21.0	97.0
Actuated g/C Ratio	0.22	0.17	1.00	0.31	0.22		0.35	0.35	1.00	0.22	0.22	1.00
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	247	583	1553	284	761		549	1126	1708	376	396	1708
v/s Ratio Prot	0.01	0.11		c0.06	0.11		c0.25	0.24		0.03	c0.15	
v/s Ratio Perm	0.02		c0.45	c0.13					0.10			0.02
v/c Ratio	0.12	0.63	0.45	0.61	0.48		0.73	0.68	0.10	0.13	0.70	0.02
Uniform Delay, d1	30.3	37.6	0.0	26.1	32.8		27.7	27.1	0.0	30.6	35.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	2.3	0.9	3.9	0.5		8.2	3.3	0.1	0.7	10.1	0.0
Delay (s)	30.5	39.8	0.9	30.0	33.3		35.9	30.4	0.1	31.4	45.2	0.0
Level of Service	C	D	A	C	C		D	C	A	C	D	A
Approach Delay (s)		14.8			32.2			28.3			39.0	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	97.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
Description: Purisima Rd			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
Highway 1 & Harris Grade Rd

GP Buildout w/o Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	41	324	602	310	388	43	633	414	230	40	396	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	15	12	12	15
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.91	0.91	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1735	3471	1553	1736	3419		1579	3258	1708	1736	1827	1708
Flt Permitted	0.48	1.00	1.00	0.27	1.00		0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	882	3471	1553	487	3419		1579	3258	1708	1736	1827	1708
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	300%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	134	352	654	337	422	47	688	450	250	43	430	16
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	0	0
Lane Group Flow (vph)	134	352	654	337	460	0	372	766	250	43	430	16
Turn Type	pm+pt		Free	pm+pt			Split		Free	Split		Free
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		Free	8					Free			Free
Actuated Green, G (s)	13.9	9.0	97.0	29.0	18.1		27.0	27.0	97.0	23.0	23.0	97.0
Effective Green, g (s)	17.9	11.0	97.0	31.0	20.1		29.0	29.0	97.0	25.0	25.0	97.0
Actuated g/C Ratio	0.18	0.11	1.00	0.32	0.21		0.30	0.30	1.00	0.26	0.26	1.00
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	224	394	1553	362	708		472	974	1708	447	471	1708
v/s Ratio Prot	0.04	0.10		c0.15	0.13		c0.24	0.24		0.02	c0.24	
v/s Ratio Perm	0.07		0.42	c0.14					0.15			0.01
v/c Ratio	0.60	0.89	0.42	0.93	0.65		0.79	0.79	0.15	0.10	0.91	0.01
Uniform Delay, d1	35.0	42.4	0.0	28.5	35.2		31.2	31.2	0.0	27.4	34.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.3	21.7	0.8	30.2	2.1		12.5	6.4	0.2	0.4	24.6	0.0
Delay (s)	39.2	64.1	0.8	58.7	37.4		43.7	37.5	0.2	27.8	59.6	0.0
Level of Service	D	E	A	E	D		D	D	A	C	E	A
Approach Delay (s)		24.9			46.3			32.5			54.8	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	36.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	97.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		
Description: Purisima Rd			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 Highway 1 & Harris Grade Rd

GP Buildout with Updated Project



Movement	EBD	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗	↘	↘	↗		↘	↗	↘	↘	↗	↘
Volume (vph)	30	349	710	160	310	39	757	366	150	58	344	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	15	12	12	15
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.91	0.91	1.00	1.00	1.00	1.00
Fr't	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	3471	1553	1736	3413		1579	3243	1708	1736	1827	1708
Flt Permitted	0.51	1.00	1.00	0.26	1.00		0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	928	3471	1553	477	3413		1579	3243	1708	1736	1827	1708
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	379	772	174	337	42	823	398	163	63	374	42
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	0	0
Lane Group Flow (vph)	33	379	772	174	370	0	411	810	163	63	374	42
Turn Type	pm+pt		Free	pm+pt			Split		Free	Split		Free
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		Free	8					Free			Free
Actuated Green, G (s)	16.7	14.0	97.0	26.5	18.9		28.4	28.4	97.0	23.0	23.0	97.0
Effective Green, g (s)	20.7	16.0	97.0	29.6	20.9		30.4	30.4	97.0	25.0	25.0	97.0
Actuated g/C Ratio	0.21	0.16	1.00	0.31	0.22		0.31	0.31	1.00	0.26	0.26	1.00
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	237	573	1553	270	735		495	1016	1708	447	471	1708
v/s Ratio Prot	0.01	0.11		c0.06	0.11		c0.26	0.25		0.04	c0.20	
v/s Ratio Perm	0.02		c0.50	c0.13					0.10			0.02
v/c Ratio	0.14	0.63	0.50	0.64	0.50		0.83	0.80	0.10	0.14	0.79	0.02
Uniform Delay, d1	30.6	38.0	0.0	26.7	33.5		30.9	30.5	0.0	27.7	33.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	2.9	1.1	5.2	0.5		14.9	6.5	0.1	0.7	12.9	0.0
Delay (s)	30.9	40.8	1.1	31.9	34.0		45.8	37.0	0.1	28.4	46.5	0.0
Level of Service	C	D	A	C	C		D	D	A	C	D	A
Approach Delay (s)		14.7			33.3			35.3			40.1	
Approach LOS		B			C			D			D	

SUMMARY		
HCM Average Control Delay	28.8	HCM Level of Service C
HCM Volume to Capacity ratio	0.72	
Actuated Cycle Length (s)	97.0	Sum of lost time (s) 8.0
Intersection Capacity Utilization	71.4%	ICU Level of Service C
Analysis Period (min)	15	
Description: Purisima Rd		
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
Highway 1 & Harris Grade Rd

GP Buildout with Updated Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑		↘	↑↑	↗	↘	↑	↗
Volume (vph)	48	330	644	310	388	58	706	512	230	48	452	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	15	12	12	15
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.91	0.91	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	3471	1553	1736	3405		1579	3263	1708	1736	1827	1708
Flt Permitted	0.37	1.00	1.00	0.27	1.00		0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	677	3471	1553	494	3405		1579	3263	1708	1736	1827	1708
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	300%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	157	359	700	337	433	63	767	557	250	52	491	21
RTCR Reduction (vph)	0	0	0	0	12	0	0	0	0	0	0	0
Lane Group Flow (vph)	157	359	700	337	484	0	430	894	250	52	491	21
Turn Type	pm+pt		Free	pm+pt			Split		Free	Split		Free
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		Free	8					Free			Free
Actuated Green, G (s)	15.4	8.8	97.0	27.8	15.2		26.2	26.2	97.0	25.0	25.0	97.0
Effective Green, g (s)	19.4	10.8	97.0	29.8	17.2		28.2	28.2	97.0	27.0	27.0	97.0
Actuated g/C Ratio	0.20	0.11	1.00	0.31	0.18		0.29	0.29	1.00	0.28	0.28	1.00
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	229	386	1553	344	604		459	949	1708	483	509	1708
v/s Ratio Prot	0.06	0.10		c0.15	0.14		0.27	c0.27		0.03	c0.27	
v/s Ratio Perm	0.08		0.45	c0.15					0.15			0.01
w/c Ratio	0.69	0.93	0.45	0.98	0.80		0.94	0.94	0.15	0.11	0.96	0.01
Uniform Delay, d1	34.2	42.7	3.0	30.2	38.3		33.5	33.6	0.0	26.0	34.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.2	28.8	0.9	42.5	7.6		28.9	18.2	0.2	0.4	32.0	0.0
Delay (s)	42.4	71.5	0.9	72.7	45.8		62.4	51.8	0.2	26.5	66.6	0.0
Level of Service	D	E	A	E	D		E	D	A	C	E	A
Approach Delay (s)		27.1			56.7			46.5			60.4	
Approach LOS		C			E			D			E	

Intersection Summary			
HCM Average Control Delay	44.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	97.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
Description: Purisima Rd			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 Highway 1 & Harris Grade Rd

GP Buildout w/ Updated Project
 with Proposed NB Restripe & Signal Modification



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑		↘↗	↑	↗	↘	↑	↗
Volume (vph)	30	349	710	160	310	39	757	366	150	58	344	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	15	12	12	15
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	3471	1553	1736	3413		3367	1827	1708	1736	1827	1708
Flt Permitted	0.44	1.00	1.00	0.36	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	798	3471	1553	663	3413		3367	1827	1708	1736	1827	1708
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	300%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	98	379	772	174	337	42	823	398	163	63	374	42
RTOR Reduction (vph)	0	0	0	0	12	0	0	0	0	0	0	0
Lane Group Flow (vph)	98	379	772	174	367	0	823	398	163	63	374	42
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			Free
Actuated Green, G (s)	17.2	13.6	80.0	19.6	14.8		20.8	31.6	80.0	6.0	16.8	80.0
Effective Green, g (s)	21.2	15.6	80.0	23.6	16.8		22.8	33.6	80.0	8.0	18.8	80.0
Actuated g/C Ratio	0.26	0.19	1.00	0.30	0.21		0.29	0.42	1.00	0.10	0.24	1.00
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	277	676	1553	286	716		959	767	1708	173	429	1708
w/s Ratio Prot	0.02	0.11		0.05	0.11		c0.24	0.22		0.04	c0.20	
w/s Ratio Perm	0.07		c0.50	c0.13					0.10			0.02
w/c Ratio	0.35	0.56	0.50	0.61	0.51		0.86	0.52	0.10	0.36	0.87	0.02
Uniform Delay, d1	23.0	29.1	0.0	22.3	28.0		27.1	17.2	0.0	33.6	29.4	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	1.1	1.1	3.6	0.6		9.8	2.5	0.1	5.8	20.9	0.0
Delay (s)	23.7	30.2	1.1	25.9	28.6		36.9	19.7	0.1	39.5	50.4	0.0
Level of Service	C	C	A	C	C		D	B	A	D	D	A
Approach Delay (s)		11.7			27.8			27.6			44.5	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		
Description: Purisima Rd			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 Highway 1 & Harris Grade Rd

GP Buildout w/ Updated Project
 with Proposed NB Restripe & Signal Modification



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖		↖↖	↑	↖	↖	↑	↖
Volume (vph)	48	330	644	310	398	58	706	512	230	48	452	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	15	12	12	15
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	1.00	1.00	1.00
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	1.00	1.00	1.00	1.00	0.85
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	3471	1553	1736	3405		3367	1827	1708	1736	1827	1708
Flt Permitted	0.39	1.00	1.00	0.28	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	721	3471	1553	515	3405		3367	1827	1708	1736	1827	1708
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	300%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	157	359	700	337	433	63	767	557	250	52	491	21
RTOR Reduction (vph)	0	0	0	0	15	0	0	0	0	0	0	0
Lane Group Flow (vph)	157	359	700	337	481	0	767	557	250	52	491	21
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			Free
Actuated Green, G (s)	12.7	8.2	80.0	23.3	13.5		17.2	33.5	80.0	4.5	20.8	80.0
Effective Green, g (s)	16.7	10.2	80.0	26.0	15.5		19.2	35.5	80.0	6.5	22.8	80.0
Actuated g/C Ratio	0.21	0.13	1.00	0.32	0.19		0.24	0.44	1.00	0.08	0.29	1.00
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	232	442	1553	347	659		808	810	1708	141	520	1708
v/s Ratio Prot	0.05	0.10		c0.14	0.14		c0.23	0.30		0.03	c0.27	
v/s Ratio Perm	0.09		0.45	c0.17					0.15			0.01
v/c Ratio	0.68	0.81	0.45	0.97	0.73		0.95	0.69	0.15	0.37	0.94	0.01
Uniform Delay, d1	27.6	34.0	0.0	23.9	30.3		29.9	17.8	0.0	34.8	28.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.6	10.9	0.9	40.4	4.2		21.5	4.7	0.2	7.3	27.8	0.0
Delay (s)	35.1	44.8	0.9	64.4	34.5		51.4	22.5	0.2	42.1	55.8	0.0
Level of Service	D	D	A	E	C		D	C	A	D	E	A
Approach Delay (s)		18.3			46.6			33.1			52.4	
Approach LOS		B			D			C			D	

Intersection Summary

HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		
Description: Purisima Rd			
c Critical Lane Group			