# APPENDIX E-2
## Response to the City of Santa Clarita Review Sheet

LGC Valley, Inc.

Geotechnical Consulting

*RESPONSE TO THE CITY OF SANTA CLARITA*
*REVIEW SHEET DATED JUNE 11, 2021*
*TENTATIVE TRACT MAP 62803*
*CITY OF SANTA CLARITA, CALIFORNIA*

**Dated: December 14, 2021**

**Project No. 203003-01**

**Prepared For:**

*RENAUD AND SUE VELUZAT*
*800 Royal Oaks Drive, Suite 104*
*Monrovia, California 91016*

28532 Constellation Road • Valencia • CA 91355 • (661) 702-8474 • Fax (661) 702-8475

LGC Valley, Inc.

Geotechnical Consulting

December 14, 2021 Project No. 203003-01

***Mr. and Mrs. Renaud and Sue Veluzat***
***c/o Mr. Steve Hunter***
***Land Design Consultants, Inc.***
800 Royal Oaks Drive, Suite 104
Monrovia, California 91016

***Subject:*** ***Response to the City of Santa Clarita Review Sheet Dated June 11, 2021, Tentative Tract Map 68203, City of Santa Clarita, California***

***References:*** ***RTF&A, 2021, Review of LGC Valley, Inc. Geotechnical Report, Multi-Use Development, Tentative Tract Map 68203, dated November 19, 2020, Santa Clarita, California, Grading Plan Check No. 2021-006-650, Dated June 11, 2021.***

***LGC Valley, Inc., 2020, Geotechnical Report for Multi-Use Development, Tentative Tract Map 68203, City of Santa Clarita, California, Project No. 063005-01, dated November 19, 2020.***

## ***Introduction***

LGC Valley, Inc. (LGC) is pleased to present this response to the city of Santa Clarita, Engineering Services Division, geotechnical review sheet dated June 11, 2021 for the subject site. In addition to our responses to comments, we direct the reviewers to slight modifications to the site plan.

Generally, modifications to the plan include primarily local standard block retaining walls of six feet or less in height that have been added to the tops and toes of local slopes, commonly over relatively short lengths to increase pad area for buildings and parking. Most of the added walls surround the area of the proposed condominium area (Lot 3) which results in a slight shift to the access road. Two short block retaining walls are located adjacent to the 15-foot-wide access easement to the detention basin just past the end of the cul-de-sac of Lot 3. Two block retaining walls are proposed for the east side of Lot 1. Finally, two Keystone walls are proposed near Lot 1: at the end of the cul-de-sac and at the toe of slope. Both of these are within design fill zones.

Geology has been added to the geotechnical map, cross sections have been updated accordingly, slopes are shown with stability fills to reduce the potential of excessive surficial erosion of native cut soil and remedial removal depth estimates are provided. Dimensions for the stability fills are indicated on the site geotechnical map and associated cross sections. Additional information to respond to the referenced review comments are also provided on the geotechnical map and cross sections.

For ease of review, the comments are reiterated prior to each response. Copies of the City of Santa Clarita review sheet (RTF&A, 2021) is included in Appendix D of this response.

***Geologic Review Sheet***

**Comment No. 1**

"Geotechnical Map – Plate 1: The following review comments address issues and concerns related to data presented on Plate 1."

Comment No. 1a

"A review of geologic data presented in Leighton's 2006 As-Built Rough Grading Report for adjacent Tract 53419 indicates the presence of a questionable ancient landslide within Tract 53419 that encroaches into the eastern portion of TTM 68203 (northeast of LGC Test Pit TP-10 and in the area of LGC Cross Section Q-Q'). LGC has mapped this area as being underlain by bedrock units of the Sunshine Ranch Member of the Saugus Formation but has not conducted any subsurface exploration in this area to either confirm or dispute the existence of the questionable landslide. Conduct additional exploration within the Leighton mapped limits of the questionable landslide to ascertain the landslide existence within TTM 68203. The exploratory excavations should be of adequate quantity and depth to characterize the subsurface conditions and structure. Leighton's Geotechnical Cross Section DD-DD' suggests the landslide could be at least 70 feet deep beneath Tract 53419. In lieu of additional exploration provide verifiable documentation, such as exploratory excavations or investigation by other geotechnical consultants, demonstrating that a landslide does not exist within TTM 68203."

Response to Comment No. 1a

LGC has assumed the interpretations and findings as indicated within the Leighton 2006 report (L&A) are generally correct and transferred the data along the western edge of that report into the eastern margin of the subject site (Plate 1). Thus, we simply concur that the landslide exists in the northeastern corner of the site. However, we have modified the western edge of the Ancient Landslide (Qols) as presented in L&A, 2006 (landslide) to fit with site data and present the current interpretation on Plate 1. Basically, we conclude the landslide does not extend as far west as presumed in L&A 2006 due to the information within LGC-B-1, the information as mapped by L&A and based on review of recent cross sections prepared by us for this response.

To review our interpretation, several new cross sections were prepared (cross sections 1-1' through 4-4') which show good agreement of the interpretation to the data. Additionally, we updated cross section Q-Q' to aid in the interpretation of site conditions in this area.

Finally, we also transferred the L&A 2006 as-built keyway, basal rupture surface, numerous geologic attitudes, findings from borings and test pits, remedial removal bottoms and other geologic information from the 2006 report onto the subject map. This information presents a more coherent model of the geologic interpretation for the subject site.

Of note, we conclude the unit within the northern reaches of the site (cross sections E-E', R-R' and S-S') is bedrock of the Saugus formation. Field interpretations of test pits and the boring log performed by Allen E. Seward (AES, Appendix B), are muddled, questioned and not in line with expectations of the debris field at the toe of a landslide. As the area represented by the northern half of E-E' is not planned for modification, potential negative impacts are considered remote regardless of the mapped unit. This area will be field mapped and verified during site construction to confirm the interpretation given herein; additional mitigation upon inspection may be required.

To review potential slope instability, select cross sections (4-4' and Q-Q') were analyzed using shear strength values of various soil types from L&A 2003. We conclude the on-site landslide and other formational materials are the same as the adjacent site and thus the values used and approved for the adjacent site are valid for the subject site. Slope stability analyses are provided in Appendix C. From this analysis, a revised keyway was designed for the northeastern corner of the site as shown on the attached map and cross sections (Plates 1 and 2).

Comment No. 1b

"Structural geologic data (bedding) is limited to two locations within the entire site (Borings B-LGC-LB and LGC-LB-2). The paucity of bedding data does not adequately address potential geologic instabilities for all proposed TTM 68203 cut slopes. Additional structural data is needed to assess geologic conditions for the overall site. This could include data from past exploratory excavations onsite or from other consultants, if properly cited and referenced. Revise Cross Sections (Plate 2) accordingly to reflect additional structural data."

Response to Comment No1b

As indicated in our response to Comment No. 1a, we have transferred a significant amount of data from various L&A reports (References) that is useful and relevant to the subject site to aid with overall site interpretation of bedding orientation. The data indicates that bedding is typically striking to the northeast with relatively shallow dips to the northwest. The collected data is in good agreement with the overall structural orientation of bedrock in this area as presented by Dibblee (1996) and Saul and Wootton (1983) and our initial interpretation for the area.

Comment No. 1c

"Provide the logs for LGC's 2003 Borings LGC-1 and -2."

Response to Comment No. 1c

The requested logs are provided in Appendix B.

Comment No. 1d

"Identify the geologic unit in the northmost portion of TTM 68203 north of the alluvium (map unit "Qa;") and adjacent to Tract 30787."

Response to Comment No. 1d

Regional geologic maps (Appendix A) and our cursory review of the site leads us to interpret this area as bedrock of the Saugus formation, Sunshine Ranch member.

Comment No. 1e

"Please explain what is meant by "General Bedding Attitude". The reviewer understands "approximate bedding" or "questionable bedding" but is unclear what LGC is trying to convey with "General Bedding". This bedding data was presumably obtained from downhole logging of large-diameter exploratory borings where the bedding could be directly observed and measured, yet the description presented for bedding data on the Geotechnical Map implies a lack of confidence by LGC in the data. It is unclear how stability analyses for Cross Sections depicting "general bedding" can be considered conclusive analyses."

Response to Comment No. 1e

"General Bedding" is the same as "approximate bedding". This vernacular has been used by this firm for the past 18 years and was learned from a lengthy stay at Leighton and Associates where it was used thoroughly in numerous reports for at least several decades; the referenced L&A reports show this usage.

The term general bedding was used to indicate that bedding that could not be "hacked clean" to produce a flat, planar bedding surface upon which a Brunton or similar compass could be laid to garner a bedding attitude, though it represents bedding that is wholly indicative of the overall bedding trend.

Comment No. 1f

"Symbols for all borings on the Explanation should match the symbols for the respective borings on the Geotechnical Map."

Response to Comment No. 1f

The symbols on the map have been correlated to the Explanation.

**Comment No. 2**

"Cross Section – Plate 2: The following review comments address issues and concerns related to data presented on Plate 2.

Response to Comment No. 2

We have re-formatted the geotechnical cross sections for easier identification and read. Intersections where cross sections meet have been added. Additionally, cross sections 1-1' through 4-4' have been created and Q-Q' has been revised to adjust to the revised geologic interpretation in the northeastern area of the site. All relevant aspects of the previously prepared cross sections remain the same except as called out below.

Comment No.2a

"Cross Section C-C' does not depict map unit "Cf" as shown on Geotechnical Map, Plate 1.

Response to Comment No. 2a

The cross section has been corrected.

Comment No. 2b

"Subsurface unit below alluvium (unit "Qal") on Cross Section E-E' is not labeled. This unit also is unlabeled on Plate 1".

Response to Comment No. 2b

The cross section and map have been updated.

Comment No. 2c

"Unit "Qls" on Plate 1 is labeled as "Qal" on Cross Section F-F'. Unit "Afu" on Section F-F' is not shown on Plate 1. Correct map or section accordingly."

Response to Comment No. 2c

Cross sections and the geotechnical map have been updated accordingly.

Comment No. 2d

"Fix "Tsr" label on Cross Section H-H'.

Response to Comment No. 2d

Acknowledged. The label on cross section H-H' has been revised.

Comment No. 2e

"Cross Section I-I' does not depict map unit "Cf" as shown on Geotechnical Map, Plate 1.

Response to Comment No. 2e

Acknowledged. Cross section I-I' has been updated.

Comment No. 2f

"Unity "Afu" on Section N-N' is not shown on Plate 1. Correct map or section accordingly."

Response to Comment No. 2f

The drafting error has been corrected.

Comment No 2g

"Unit "Qal" on Cross Section P-P' not labeled."

Response to Comment No. 2g

Unit Qal has been added to the subject cross section.

Comment No. 2h

"Cross Section Q-Q' extends through area mapped as questionable ancient landslide by Leighton (2006). As discussed in Review Comment 1a above, evaluate possible landslide and revise Cross Section Q-Q' as needed."

Response to Comment No. 2h

Cross section Q-Q' has been updated to reflect the data indicated in the L&A 2006 report. The cross section has also been extended to the southeast for a better representation of site geologic conditions.

**Comment No. 3**

"Section 2.4 – Landslides: As discussed in Review Comment 1a above, conduct additional exploration within the mapped limits of the questionable landslide within eastern position of site to ascertain the landslide's existence within TTM 68203."

Response to Comment No. 3

Please see our response to Comment No. 1a. We accept the interpretations and existence of the ancient landslide as depicted in the Leighton and Associates reports, except as modified herein.

**Comment No. 4**

"Section 2.6 – Oil Wells: Show approximate location of Mobil Oil Corp. Well #4 on Geotechnical Map, Plate1."

Response to Comment No. 4

The approximate location of the subject well is indicated on Plate 1.

**Comment No. 5**

"Section 2.9 – Slope Stability: As discussed in Review Comment 1b above there is insufficient bedding data to justify the subsurface conditions depicted on Cross Section E-E' and Q-Q' and used in the respective analyses."

Response to Comment No. 5

With the addition of the data from the referenced reports, we conclude there is sufficient data and agreement with regard to overall geologic structure to present an interpretation for the site. We have revised slope stability analyses to reflect the additional data and interpretations derived therefrom. As there are no distinct changes to cross section E-E', our previous review of this cross section remains applicable.

However, we have revised the geologic interpretation for cross section Q-Q' (Plate 2). The results of the revised interpretation along with revised slope stability analysis results in the need for a 20-foot wide shear key along the north margin of the site (see Plate 1). Slope stability analysis supporting this design is provided in Appendix C of this response.

**Comment No. 6**

"Appendix B: Boring B-LGC-LB is labeled "B-LGC-LB" on Plates 1 and 2 but is designated in the logs as "LB-1". Correct the designation on Plates or log accordingly."

Response to Comment No. 6

The plates and logs have been corrected such that they are congruous.

**Comment No. 7**

"Review of the log for TP-4 appears to indicate that alluvium was encountered from 8 feet to the full trench depth of 13.5 feet. There is a note on TP-4 for total removal of all "Afu" and "Qal". The removal depths in the area of the other test pits also generally tend to confirm that complete removal of all "Qal" material is recommended. However, the recommended depth of removal indicated in the triangle in the vicinity of TP-4 is only 13 feet with the total depth of "Qal" apparently undetermined. If complete removal of "Qal" is recommended within the site grading limit it should be clearly shown on the plan or the required depth of removal of "Qal" should be clarified on the plan. In addition, the plan should be revised to indicate complete removal of all "Qal" material at TP-4 as recommended and indicated on the TP-4 test pit log.

Response to Comment No. 7

For clarity, all alluvium should be removed to competent soil which we conclude is either dense older landslide debris or bedrock. A note on the geotechnical map has been provided.

**Comment No. 8**

"For the slope stability calculations, the consultant appears to entirely rely on direct shear testing performed by others on a surrounding project. The only direct shear testing appears to have been done on a single shear remolded sample. Additional samples should be obtained for multi-shear direct shear testing of samples obtained from the subject site to verify the applicability of the utilized direct shear test parameters. Slope stability calculations should be updated, as appropriate, based on laboratory test results performed on site specific samples."

Response to Comment No. 8

Direct shear strength values used for slope stability calculations were based on approved values from RTF&A's January 6, 2003 report for grading near and into the subject site for compacted fills, alluvium, Saugus Formation cross-bedding strength, and clay bed along bedding strength. Based on our current review, additional data was used to update geologic conditions and interpret an older landslide in the northeastern portion of the site; therefore, we have used the approved shear strength values in L&A November 19, 2003 report for the subject site which consists of the same soils and units. The shear strength values used from L&A, 2003 are for the existing off-site fills, landslide plane/rupture surface, and landslide material. As the formational units are exactly the same, and these values have been approved for the immediately adjacent site, and the values appear reasonably conservative and in line with expectations for these units, we conclude they are acceptable for review of the subject site.

As a part of our geotechnical investigation in 2020, direct shear testing was performed on three bedrock samples, along with grain size distribution and Atterberg Limits performed on two clay/claystone bed samples collected from Boring LB-1. The direct shear testing of a sandstone bed at a depth of 50 feet in LB-1, resulted in a shear strength value of a Cohesion of 1,478 psf and a Friction Angle of 32 degrees for the ultimate strength. This value is greater than the values used in the slope stability analysis for bedrock cross-bedding strength of a cohesion of 600 psf and a Friction Angle of 32 degrees. Two direct shear tests, one of a siltstone sample and one of a claystone sample, resulted in an ultimate shear strength value of a cohesion ranging from 346 to 629 psf and a Friction Angle ranging from 20 to 25 degrees. These values are greater than the along bedding strength for clay beds used in the analysis of a cohesion of 250 psf, and a Friction Angle of 18 degrees. The direct shear plots are included in Appendix C.

Additionally, bag samples of clay/claystone layers collected from down hole logging of bucket auger boring LB-1 at depths of 22 and 36 feet were used to perform laboratory testing (Grain size distribution and Atterberg Limits) and strength correlations of Stark, Choi, and McCone (2005) to evaluate the fully softened secant friction angle for the residual shear strengths to confirm the values used in the slope stability for the along bedding strength. Based on the correlations, the values correlate very well and match the values used in the stability analysis of Cohesion of 250 psf, and Friction Angle of 18 degrees. The correlation plot is included in Appendix C.

Therefore, the values used in our analysis are considered applicable and the values are reasonably conservative and in line with expectations for these units, we conclude they are acceptable for review of the subject site.

**Comment No. 9**

The slope stability calculations should be revised, as appropriate, once the additional investigation and laboratory testing for the site is performed. Once the structural geologic conditions at the site are conclusively determined, additional review of the slope stability calculations will be performed."

Response to Comment No. 9

As we have not changed our geologic interpretations for most of the site, our previous slope stability analysis remains applicable.

However, additional slope stability analysis has been performed on representative cross-sections to evaluate the northeastern portion of the site with the interpreted existing older landslide configuration. Based on the revised geology in the northeastern portion of the site, four new cross-sections were developed, and one existing cross-section was updated, for site review of this area (Cross-sections 1-1' through 4-4' and Q-Q'). These cross-sections indicate the predominant geologic structure, the existing topography and the design profile and are presented on Plate 2. Of the five cross-sections, slope stability analyses were performed on two cross-sections that were considered representative and critical with regard to slope stability analysis. The results of the slope stability analysis are provided in Appendix C of this report; cross-sections 4-4' and Q-Q' were analyzed, while the remainder of the cross-sections were used to aid in the interpreted geology.

The slope stability analysis performed for Cross-Section 4-4' and Q-Q' considered potential failure surfaces along the landslide rupture surface and evaluated critical surfaces behind and in front of the key, along with the temporary stability of the proposed front and back cuts.

Slope stability analyses were conducted using the computer program Slope W. The Bishop's Method was used to analyze rotational failure modes and the Janbu or Spencer Method was used to analyze translational failure modes. A coefficient of horizontal acceleration of 0.15g (a factor-of-safety [FS] of 1.1) was used to evaluate the pseudostatic stability analyses.

Slope stability analyses performed for the site included an evaluation of the potential for translational and rotational modes of failure. For along bedding cases (generally for translational failure modes for out-of-slope bedding conditions), the along bedding clay beds strengths from previously approved reports and subsequently confirmed with correlations were used (Cohesion of 250 psf and Friction of 18 degrees – static case and 375 psf and 19 degrees for pseudostatic case). For the landslide rupture surface, a strength from the approved values used in L&A 2003 (cohesion of 100 psf and 8 degree angle of internal friction for static and 120 psf and 12 degrees for pseudostatic) were used.

Results of the slope stability analyses indicate adequate factors of safety greater than 1.5 and 1.1 (as applicable), for rotational and translational modes of failure, under static and pseudo-static loading conditions, respectively, *with* the design shear key recommendations provided herein. The attached Appendix C includes more detailed information with regard to shear strength parameters used in the slope stability analyses. Slope stability analysis results and documentation are also included in Appendix C.

Based on the analysis, we recommend that the a shear key having a 20 foot wide and approximately 25 to 45 foot deep (i.e. to a depth of a few feet below the rupture surface) key using a 2:1 (h:v) backcut, and 1:1 (h:v) front cut satisfies slope stability standards; based on the slope stability analysis with the keyway indicated above, a factor of safety (FS) greater than a 1.5 and 1.1 for static and pseud-static, respectively, is achieved.

However, review of the slope in front of the key (i.e. off-site area) indicates that critical surfaces do not meet standard criteria for the site and cannot be mitigated through other means. Thus, a structural setback (Factor of Safety equal to the 1.5/1.1 line) was established using cross-sections 4-4' and Q-Q'. This setback line is approximately 56 feet southward from the northern tract boundary in this area. The critical failure surface is included on cross-sections 4-4' and Q-Q'. In general, for any building encroaching into the structural setback (at this time one building in the northeastern corner is located in the structural setback) the building foundations should be deepened to be founded below the most critical failure surface associated with the structural setback line.

Finally, temporary slope stability analysis was performed for the proposed 2:1 (h:v) backcut and 1:1 (h:v) front cut, to determine that the temporary condition for the backcut results in a FS of greater than 1.25. Though the back cut meets this standard, review of the proposed 1:1 (h:v) front cut was found to be below a factor of safety of 1.25 for the temporary condition *with* complete excavation to the bottom of the keyway. Therefore, supplemental analysis was performed to determine the amount of material in the keyway that could be removed to still maintain a temporary factor of safety of 1.25.

Based on the supplemental analysis, the upper approximate 25 feet of the keyway excavation can be removed (to an approximate elevation of 1,586'). At this point, the remainder of the keyway should be excavated in slots, with a slot cut width of approximately 40-feet. This keyway for the slope defined by 4-4' and Q-Q' is approximately 200 feet in length. Side slopes for this notch should be at gradients of approximately 1:1 (h:v). For construction purposes, fill for each keyway slot should be brought back to an elevation 1,586 or higher prior to excavation of the next slot to reduce the time frame any backcut remains open during site construction.

As with all keyways, subdrains should be installed at the lowest possible elevation and then at intervals of 25-feet vertical or less, thereafter. Slope stability analysis results/graphical printouts are included in Appendix C.

***Closure***

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report. This response report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and/or project engineer and incorporated into the plans, and the necessary steps are taken to see that the contractor and/or subcontractor properly implements the recommendations in the field. The contractor and/or subcontractor should notify the owner if they consider any of the recommendations presented herein to be unsafe.

If you should have any questions, please do not hesitate to contact us. The undersigned can be reached at (661) 702-8474.

Respectfully submitted,

***LGC Valley, Inc.***

Basil Hattar, GE 2734
Principal Engineer

Matthew Hawley, CEG 2122
Principal Geologist

MCH/BIH

Attachments:

Plate 1 – Geotechnical Map
Plate 2 – Revised Geotechnical Cross Sections

Appendix A – References
Appendix B - Exploration Logs LGC 2003 and 2020, L&A 2003, and AES(Unpublished) from L&A 2003
Appendix C – Slope Stability Analysis and Direct Shear Data
Appendix D – City of Santa Clarita/RTF&A Review of LGC Valley, Inc. Geotechnical Report Multi-Use Development, Tentative Tract Map 68203, Dated November 19, 2020, Santa Clarita, California. Job Number 2021-006-650, Dated June 11, 2021.

Distribution: (1) Addressee, Via email

## ***APPENDIX A***
## ***REFERENCES***


Dibblee, 1996, Geologic Map of the Mint Canyon Quadrangle, Dibblee Geological Foundation Map #DF-57.

Lawson and Associates (LGC Valley), 2003, Report of Geotechnical Investigation for Veluzat Property, City of Santa Clarita, California, Project No. 033004-04, dated October 21, 2003.

Leighton and Associates, Inc., 2003a, Response to City of Santa Clarita Geotechnical Review Sheet prepared by R.T. Frankian & Associates, dated September 11, 2003, Proposed Golden Valley Estates Residential Development, Tract 53419, City of Santa Clarita, California, Project No. 06-0954-001, dated August 7, 2003.

_____, 2003b, Response to City of Santa Clarita Geotechnical Review Sheet prepared by R.T. Frankian & Associates, dated March 21, 2003, Proposed Golden Valley Estates Residential Development, Tract 53419, City of Santa Clarita, California, Project No. 06-0954-001, dated November 19, 2003.

_____, 2005, Review of Revised Rough Grading Plan for Tract 53419 and Summary of Conclusions and Recommendations for Proposed Residential Development, City of Santa Clarita, California, Project No. 061372-001, dated February 25, 2005.

_____, 2006, Geotechnical Report of As-Built Rough Grading, Lots 1 through 20 and 90 through 111, Tract 53419, Valle de Oro (Golden Valley Estates) Residential Development, Santa Clarita, California, Project No. 061372-006, dated December 11, 2006.

_____, 2007, Addendum Letter: Geotechnical Report of Rough Grading of the Proposed Recreation Area, Tract 53419, Valle de Oro (Golden Valley Estates) Residential Development, Santa Clarita, California, Project No. 061372-006, dated June 5, 2007.

LGC Valley, Inc., 2020, Geotechnical Report for Multi-Use Development, Tentative Tract Map 68203, City of Santa Clarita, California, Project No. 063005-01, dated November 19, 2020.

R.T. Frankian &Associates, 2003, Geotechnical Report of Observation and Testing As-Built Geologic Report, Rough Grading, Golden Valley Road Phase 1 and High School, Santa Clarita, California, Job No. 99-700-20, Vol. 1 and 2 of 2, dated January 6, 2003.

_____, 2005, Geotechnical Review of Leighton and Associates, Inc. Review of Revised Grading Plan for Tract 53419 and Summary of Conclusions and Recommendations for Proposed Residential Development, City of Santa Clarita, California, Report dated February 25, 2005, Project No. 061372-001, Santa Clarita, California, Job No. 2003-004-652, dated March 28, 2005.

_____, 2021, Review of LGC Valley, Inc. Geotechnical Report, Multi-Use Development, Tentative Tract Map 68203, dated November 19, 2020, Santa Clarita, California, Grading Plan Check No. 2021-006-650, Dated June 11, 2021.

Saul, R.B. and Wootton, 1983, Geology of the South Half of the Mint Canyon Quadrangle, Los Angeles County, California, CDMG, OFR 83-24 LA.

***APPENDIX B***

**Exploration Logs LGC 2003 and 2020, L&A 2003, and AES(Unpublished) from L&A 2003**

***Exploration Logs LGC, 2003***
***Borings B-LGC-1 and B-LGC-2***

# Geotechnical Boring Log B-LGC-1

| | | | |
|---|---|---|---|
| Date: | 10/13/2003 | | Page: 1 of 2 |
| Project Name: | Valuzat Property | | Project Number: 033004-04 |
| Drilling Company: | Roy Brothers | | Type of Rig: Cat 315B L Auger |
| Drive Weight: | N/A | | Drop: N/A Hole Dia: 24" |
| Elevation of Top of Hole: | 1,600' + | | Hole Location: See Geotechnical Map |

| Elevation (ft) | Depth (ft) | Graphic Log | Attitudes | Sample Number | Blow Count | Dry Density (pcf) | Moisture (%) | USCS Symbol | DESCRIPTION<br><br>Logged By: MCH<br>Sampled By: MCH |
|---|---|---|---|---|---|---|---|---|---|
| 1,600 | 0 | | | | | | | | @ Surface: Topsoil: Dark brown silty CLAY, dry to damp, stiff; minor roothairs; some desiccation cracks. |
| 1595 | 5 | | | R-1 | | | | | @5': Sespe Formation/Sunshine Ranch Member (Tsr): Greenish-brown silty SANDSTONE, damp, dense, fine to coarse-grained; weathered.<br>@5.5' Sample R-1, same as above. |
| 1590 | 10 | | | | | | | | @6.5': Gradational contact to sandy SILTSTONE, damp, stiff, massive; faint poorly-developed bedding dipping west at approximately 10°. |
| 1585 | 15 | | | | | | | | @18': Yellow-brown sandy CONGLOMERATE, damp to wet, very dense, silty sand matrix, gravel and cobbles; seepage zone around entire boring from 18' to 28'. |
| 1580 | 20 | | | R-2 | | | | | @19.5': Sample R-2; same as above. |
| 1575 | 25 | | | | | | | | @28': Base of conglomerate. Greenish-brown sandy SILTSTONE, moist, stiff; approximately 1" thick over brown gravelly SANDSTONE, damp to moist, dense; some cobbles. |
| 1570 | 30 | | | | | | | | |

LGC

LAWSON & ASSOCIATES
GEOTECHNICAL CONSULTING INC.

# Geotechnical Boring Log B-LGC-1

| | | | |
|---|---|---|---|
| Date: | 10/13/2003 | | Page: 2 of 2 |
| Project Name: | Veluzat Property | Project Number: 033004-04 | |
| Drilling Company: | Roy Brothers | Type of Rig: Cat 315B L Auger | |
| Drive Weight: | N/A | Drop: N/A | Hole Dia: 24" |
| Elevation of Top of Hole: | 1,600' ± | Hole Location: See Geotechnical Map | |

| Elevation (ft) | Depth (ft) | Graphic Log | Attitudes | Sample Number | Blow Count | Dry Density (pcf) | Moisture (%) | USCS Symbol | DESCRIPTION<br>Logged By: MCH<br>Sampled By: MCH |
|---|---|---|---|---|---|---|---|---|---|
| 1570 | 30 | | | | | | | | @31': Transition to greenish-blue unoxidized bedrock. Material appears same as above. |
| 1565 | 35 | | | | | | | | @35': Cobbles and gravel decrease significantly. Generally, greenish-blue silty SANDSTONE, damp, very dense; massive |
| 1560 | 40 | | | R-3 | | | | | |
| 1555 | 45 | | | | | | | | |
| 1550 | 50 | | | | | | | | Notes:<br>Total depth drilled: 48'<br>Seepage zone 18' to 28'.<br>No clay seams, clay beds or rupture surfaces observed.<br>Not logged below approximately 35 feet due to spalling soils.<br>Boring backfilled with cuttings |
| 1545 | 55 | | | | | | | | |
| 1540 | 60 | | | | | | | | |

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# Geotechnical Boring Log B-LGC-2

| | | | |
|---|---|---|---|
| Date: | 10/13/03 | | Page: 1 of 2 |
| Project Name: | Veluzat Property | | Project Number: 033004-04 |
| Drilling Company: | Roy Brothers | | Type of Rig: Cat 315B L Auger |
| Drive Weight: | N/A | | Drop: N/A Hole Dia: 24" |
| Elevation of Top of Hole: | 1,610' + | | Hole Location: See Geotechnical Map |

| Elevation (ft) | Depth (ft) | Graphic Log | Attitudes | Sample Number | Blow Count | Dry Density (pcf) | Moisture (%) | USCS Symbol | DESCRIPTION<br>Logged By: MCH<br>Sampled By: MCH |
|---|---|---|---|---|---|---|---|---|---|
| 1,610 | 0 | | | | | | | | @ Surface: **Topsoil**: Medium brown silty CLAY, dry, medium stiff; minor rootlairs; some desiccation cracks. |
| | | | | | | | | | @4.5': Light grey to white sandy CLAY, dry to damp, medium stiff; weathered bedrock. |
| 1605 | 5 | | | R-1 | | | | | @5.5': Sample R-1. Same as @4.5<br>@6': Becomes damp.<br>@6.5': **Sauqus Formation/Sunshine Ranch Member (Tsr)**: Greenish-brown sandy SILTSTONE, damp, dense; weathered; mottled with white. |
| 1600 | 10 | | | | | | | | @8': Greenish-brown silty SANDSTONE, damp, dense; massive; irregular gently westward dipping contact with sandy SILTSTONE above. |
| 1595 | 15 | | | | | | | | @15.5': Greenish-brown silty SANDSTONE, damp, dense, medium-grained |
| | | | | R-2 | | | | | |
| 1590 | 20 | | | | | | | | |
| 1585 | 25 | | | | | | | | @25': massive with no internal structure. |
| 1580 | 30 | | | | | | | | |

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# Geotechnical Boring Log B-LGC-2

| | | | |
|---|---|---|---|
| Date: | 10/13/03 | | Page: 2 of 2 |
| Project Name: | Veluzat Property | Project Number: 033004-04 | |
| Drilling Company: | Roy Brothers | Type of Rig: Cat 315B L Auger | |
| Drive Weight: | N/A | Drop: N/A | Hole Dia: 24" |
| Elevation of Top of Hole: | 1,600' + | Hole Location: See Geotechnical Map | |

| Elevation (ft) | Depth (ft) | Graphic Log | Attitudes | Sample Number | Blow Count | Dry Density (pcf) | Moisture (%) | USCS Symbol | DESCRIPTION<br>Logged By: MCH<br>Sampled By: MCH |
|---|---|---|---|---|---|---|---|---|---|
| 1580 | 30 | | | | | | | | @30': Transition to greenish-blue unoxidized bedrock. Material appears same as above. |
| 1575 | 35 | | | | | | | | |
| 1570 | 40 | | | R-3 | | | | | @40.5': Sample R-3: Greenish-blue silty SANDSTONE, damp to moist, dense; overall finer-grained than sandstone of R-2. |
| 1565 | 45 | | | | | | | | |
| 1560 | 50 | | | | | | | | Notes:<br>Total Depth: 48'<br>Seepage Zone @ approximately 47'.<br>No clay seams, clay beds or rupture surfaces observed.<br>Boring backfilled with cuttings |
| 1555 | 55 | | | | | | | | |
| 1550 | 60 | | | | | | | | |

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***APPENDIX B con't***

***Exploration Logs LGC, 2020***
***Borings LB-1, HS-1, HS-2, and HS-3, and Test Pits LGC-TP-1 thru LGC-TP-10***

# Geotechnical Boring Log LB-1

| | | | |
|---|---|---|---|
| **Date:** | 9/15/2020 | | **Page:** 1 of 3 |
| **Project Name:** | Veluzat/LDC-Golden Valley | | **Project Number:** 203003-01 |
| **Drilling Company:** | Tri-Valley | | **Type of Rig:** Bucket Auger |
| **Drive Weight:** | | | **Drop:** 12" **Hole Dia:** 24" |
| **Elevation of Top of Hole:** | 1716+/- | | **Hole Location:** |

| Elevation (ft) | Depth (ft) | Graphic Log | Attitudes | Sample Number | Blow Count | Dry Density (pcf) | Moisture (%) | USCS Symbol | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Logged By: NLK/MCH<br>Sampled By: NLK |
| 1716 | 0 | | | | | | | | **Top Soil:**<br>0'-Medium brown to dark brown, sandy SILT, dry, soft to medium stiff; roots, some gravel, porous.<br>**Saugus Formation/Sunshine Ranch Member (Tsr):** |
| | | | | Bulk 1 (1-5') | | | | | 1'- Pale yellow-brown SILTSTONE, dry, hard; granitic cobbles, roots present, weathered. |
| 1711 | 5 | | | R1 | 1<br>4 | 101.2 | 10.9 | | 5.5'- Same as above, caliche, root hairs. |
| | | | | | | | | | 7.5'- Medium brown SILTSTONE, dry, hard; gradational contact into CLAYSTONE with gravel and caliche, paleosol. |
| 1706 | 10 | | | R2 | 3<br>5 | 110.6 | 5.8 | | 9.0'- Pale yellow SILTSTONE, dry to damp, hard; grading into very fine to coarse SANDSTONE. |
| | | | Channel: N60E/34SE and N55E/36NW | Bulk 2 (10-15') | | | | | 11'- Orange-brown gravel SANDSTONE conglomerate, dry to damp, very dense; minor carbonate development. |
| | | | Channel: N10E/40NW and E/34S | | | | | | 13'- Dark gray clayey SILTSTONE, damp, hard; caliche, roots, channel attitudes:N55E/36NW N60E/34SE. |
| 1701 | 15 | | | R3 | 3<br>4 | 107.7 | 14.7 | | 14'- Pale gray medium to very coarse SANDSTONE, dry to damp, dense; roots, cross-cutting channel: N10E/40NW and E/34S. |
| | | | Channel: N47E/64NW and S55W/36SW | | | | | | 15.5'- Dark brown-gray clayey SILTSTONE with caliche.<br>17.5'- Pale yellow-orange medium to very coarse gravel SANDSTONE conglomerate: roots, cemented, gradational contact, channel attitudes: N47E/64NW and S55W/36SW. |
| 1696 | 20 | | | R4 | 4<br>6 | 108.6 | 11.3 | | 18.7'- Pale yellow SILTSTONE grading into dark brown-gray CLAYSTONE, damp, hard; pencil sized roots observed.<br>19.5'-Light brown sandy SILTSTONE with pebbles. |
| | | | B:N14E/7NW | B-1 | | | | | 20'- Very Dense/Hard; no roots observed.<br>21'- Caliche.<br>22'- Dark brown to reddish-brown CLAYSTONE; caliche, paleosol, gradational contact, B:N14E/7NW. |
| 1691 | 25 | | B:N20E/8SE | R5 | 10<br>13 for 1' | 119.9 | 3.8 | | 24'- Light gray, very coarse SANDSTONE; B: N20E/8SE. |
| | | | | Bulk 3 (22-27') | | | | | 26'- Light gray cemented gravel.<br>27'- Pale yellow-orange silty very fine sand grading into gravel/cobble conglomerate; cemented. |
| 1686 | 30 | | | | | | | | |

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# Geotechnical Boring Log LB-1

| | | | |
|---|---|---|---|
| Date: 9/15/2020 | | | Page: 2 of 3 |
| Project Name: | Veluzat/LDC-Golden Valley | | Project Number: 203003-01 |
| Drilling Company: Tri-Valley | | | Type of Rig: Bucket Auger |
| Drive Weight: | | | Drop: 12" Hole Dia: 24" |
| Elevation of Top of Hole: | 1716 | | Hole Location: |

| Elevation (ft) | Depth (ft) | Graphic Log | Attitudes | Sample Number | Blow Count | Dry Density (pcf) | Moisture (%) | USCS Symbol | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Logged By: NLK/MCH<br>Sampled By: NLK |
| 1686 | 30 | | | R6 | 23<br>27 for 3" | 115.2 | 3.1 | | 30'- Interbedded yellow-brown and orange fine to coarse SANDSTONES. |
| | | | | Bulk 4 (28-32') | | | | | |
| 1681 | 35 | | B:N40E/8NW | R7 | 11<br>21 | 123.8 | 12.3 | | 34.5'- Medium to dark brown clayey SILTSTONE; gradational contact, B: N40E/8NW. |
| | | | B:N12W/7SW | B-2 | | | | | 36.5'- Reddish-brown to red-purple CLAYSTONE, internally sheared, very steeply diping non plannar shears, B: N12W/7SW. |
| | | | | | | | | | 39.5'- Medium brown SILTSTONE. |
| 1676 | 40 | | | R8 | 13<br>40 | 128.9 | 9.1 | | 40.5'- Caliche. |
| | | | | Bulk 5 (35-40') | | | | | 42'- Yellow-brown very fine SANDSTONE. |
| | | | | | | | | | 43.5'- Caliche. |
| 1671 | 45 | | | R9 | 7<br>14 | 110.8 | 19.3 | | 44'- Medium brown-gray SILTSTONE. |
| | | | B:N30E/6NW | | | | | | 46'- Reddish-brown CLAYSTONE; caliche, paleosol, gradational contact, B: N30E/6NW. |
| | | | | | | | | | 47'- Brown-gray SILTSTONE. |
| | | | | | | | | | 48.5'- Caliche. |
| 1666 | 50 | | | R10 | 23<br>20 | 136.3 | 2.8 | | 50'- Pale yellow very fine SANDSTONE; cemented. |
| | | | | | | | | | 52'-Dark brown-gray SILTSTONE. |
| | | | B:N30E/14NW | | | | | | 53'- B:N30E/14NW |
| 1661 | 55 | | | R11 | 18<br>21 for 1" | 112 | 13.2 | | 56'- Yellow-gray silty fine SANDSTONE; gradational contact. |
| | | | | | | | | | 58'- Dark brown-gray clayey SILTSTONE; caliche. |
| 1656 | 60 | | | | | | | | |

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# Geotechnical Boring Log LB-1

| | | | |
|---|---|---|---|
| Date: | 9/15/2020 | | Page: 3 of 3 |
| Project Name: | Veluzat/LDC-Golden Valley | | Project Number: 203003-01 |
| Drilling Company: | Tri-Valley | | Type of Rig: Bucket Auger |
| Drive Weight: | | | Drop: 12" Hole Dia: 24" |
| Elevation of Top of Hole: | 1716 | | Hole Location: |

| Elevation (ft) | Depth (ft) | Graphic Log | Attitudes | Sample Number | Blow Count | Dry Density (pcf) | Moisture (%) | USCS Symbol | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Logged By: NLK/MCH<br>Sampled By: NLK |
| 1656 | 60 | | | R12 | 15<br>23 | 123.0 | 11.9 | | 60'- Interbedded yellow-gray and orange-brown fine to coarse SANDSTONE.<br>62'- Brown-gray SILTSTONE, caliche.<br>63.5'- Brown-gray silty CLAYSTONE transitioning to reddish gray color. |
| 1651 | 65 | | B:N35E/14NW | R13 | 8<br>25 | 106.2 | 21 | | 66'- Reddish brown silty CLAYSTONE; caliche at base, paleosol, transition to unoxidized, B: N35E/14NW.<br>67'- Blue-gray clayey SILTSTONE grading into dark brown-gray silty CLAYSTONE (4-6" thick). |
| 1646 | 70 | | | R14 | 13<br>34 | 127.9 | 7.9 | | 68'- Blue-gray SILTSTONE;damp, hard; unoxidized, darkening with depth, massive.<br>70'- Same as above with gravel. |
| 1641 | 75 | | | R15 | 16<br>32 | 124.2 | 11.5 | | 75'- Same as above, flecks of white. |
| 1636 | 80 | | | R16 | 22<br>32 | 115.8 | 16.7 | | 80'- Same as above. Dark blue-gray. |
| 1631 | 85 | | | | | | | | Total Depth 80.0'<br>No groundwater encountered<br>Backfilled 9/15/2020 |
| 1626 | 90 | | | | | | | | |

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# Geotechnical Boring Log HS-1

| | |
|---|---|
| **Date:** 10/6/2020 | **Page:** 1 of 1 |
| **Project Name:** Veluza/LDC Golden Valley | **Project Number:** 203003-01 |
| **Drilling Company:** Choice Drilling | **Type of Rig:** Hollow Stem |
| **Drive Weight:** 140lbs | **Drop:** 30" **Hole Dia:** 8" |
| **Elevation of Top of Hole:** 1583+/- | **Hole Location:** |

| Elevation (ft) | Depth (ft) | Graphic Log | Sample Number | Blow Count | Dry Density (pcf) | Moisture (%) | USCS Symbol | DESCRIPTION | Type of Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Logged By: NLK<br>Sampled By: NLK | |
| 1583 | 0 | | | | | | | Topsoil:<br>0'-Medium to dark brown sandy SILT with gravel, dry, soft; rooted | |
| | | | | | | | | Saugus Formation-Sunshine Ranch Member(Tsr):<br>2'- Pale yellow medium brown sandy SILTSTONE, dry, soft to medium stiff | |
| 1578 | 5 | | SPT1 | 5<br>7<br>11 | | | | 5'- Pale yellow brown silty fine to medium coarse SANDSTONE, dry, medium dense; some gravel | |
| | | | | | | | | 6'- Same as above with less gravel | |
| 1573 | 10 | | SPT2 | 50/6 | | | | 10'- Same as above, poor recovery, broken cobble in sampler, broken cobbles in cuttings, difficult to drill | |
| 1568 | 15 | | SPT3 | 11<br>8<br>7 | | | | 15'- Light to medium brown medium to very coarse SANDSTONE with some gravel, damp, medium dense | |
| | | | | | | | | 19'- Damp to moist | |
| 1563 | 20 | | SPT4 | 8<br>5<br>6 | | | | 20'- Same as above with caliche | |
| 1558 | 25 | | SPT5 | 5<br>12<br>14 | | | | 25'- Same as above, abundant caliche | |
| | | | | | | | | Total Depth 26.5'<br>No groundwater encounter, rechecked after 24hrs<br>Backfilled 10/7/2020 | |
| | 30 | | | | | | | | |

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# Geotechnical Boring Log HS-2

| | | | |
|---|---|---|---|
| **Date:** | 10/6/2020 | **Page:** 1 of 2 | |
| **Project Name:** | Veluza/LDC Golden Valley | **Project Number:** 203003-01 | |
| **Drilling Company:** | Choice Drilling | **Type of Rig:** Hollow Stem | |
| **Drive Weight:** 140lbs | | **Drop:** 30" | **Hole Dia:** 8" |
| **Elevation of Top of Hole:** | 1585+/- | **Hole Location:** | |

| Elevation (ft) | Depth (ft) | Graphic Log | Sample Number | Blow Count | Dry Density (pcf) | Moisture (%) | USCS Symbol | DESCRIPTION<br>Logged By: NLK<br>Sampled By: NLK | Type of Test |
|---|---|---|---|---|---|---|---|---|---|
| 1585 | 0 | | | | | | | Saugus Formation-Sunshine Ranch Member(Tsr):<br>0'- Pale yellow to light brown silty SANDSTONE | |
| 1580 | 5 | | R1 | 18<br>50/6" | | | | 5'- Pale yellow to medium brown sandy SILTSTONE, dry to damp, hard; roots present, some pores observed<br>7'- Same as above, broken cobbles in cuttings, difficult to drill | |
| 1575 | 10 | | R2 | 18<br>28<br>36 | | | | 10'- Light brown to olive gray SILSTONE, dry to damp, hard; abundant caliche, stains from decomposed roots, no pores observed | |
| 1570 | 15 | | R3 | 18<br>28<br>42 | | | | 15'- Same as above, no roots observed, some rust coloration | |
| 1565 | 20 | | R4 | 80/0" | | | | 20'- Olive green to gray clayey SILSTONE, damp to moist, hard; calich/ carbonate nodules, no pores observed | |
| 1560 | 25 | | R5 | 38<br>50/5" | | | | 25'- Same as above<br>27'- Dark brown to olive green CLAYSTONE, damp to moist, hard; abundant caliche | |
| 1555 | 30 | | | | | | | | |

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# Geotechnical Boring Log HS-3

| | |
|---|---|
| **Date:** 10/6/2020 | **Page:** 1 of 1 |
| **Project Name:** Veluza/LDC Golden Valley | **Project Number:** 203003-01 |
| **Drilling Company:** Choice Drilling | **Type of Rig:** Hollow Stem |
| **Drive Weight:** 140lbs | **Drop:** 30" **Hole Dia:** 8" |
| **Elevation of Top of Hole:** 1587+/- | **Hole Location:** |

| Elevation (ft) | Depth (ft) | Graphic Log | Sample Number | Blow Count | Dry Density (pcf) | Moisture (%) | USCS Symbol | DESCRIPTION<br>Logged By: NLK<br>Sampled By: NLK | Type of Test |
|---|---|---|---|---|---|---|---|---|---|
| 1587 | 0 | | | | | | | Saugus Formation-Sunshine Ranch Member(Tsr):<br>0'- Reddish to medium brown, sandy SILSTONE, dry ,soft to medium stiff; some gravel, roots present | |
| 1582 | 5 | | R1 | 28<br>38<br>43 | | | | 5'- Medium brown gravelly sandy SILTSTONE, dry to damp,hard; porous in top half of sampler, minor caliche | |
| | | | | | | | | 8'- same as above, color change to pale yellow to light brown; no pores observed | |
| 1577 | 10 | | R2 | 32<br>22<br>44 | | | | 10'- Pale yellow to light brown silty veryfine to medium SANDSTONE, dry to damp, dense | |
| 1572 | 15 | | R3 | 38<br>50/6" | | | | 15'- Pale yellow to very light gray mottled with rusty orange medium to very coarse SANDSTONE, dry to damp, very dense; cemented | |
| 1567 | 20 | | R4 | 50/6" | | | | 20'- Olive green to gray sandy SILSTONE or silty fine SANDSTONE, damp, hard/very dense, rusty orange stains, slightly cemented | |
| | 25 | | | | | | | Total Depth 20'<br>No groundwater observed<br>Percolation well set. 3" perforated PVC with gravel and bentonite cap at 17' and solid pvc to surface with native soil backfilled annulus to surface. | |
| | 30 | | | | | | | | |

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LOG OF TRENCH: LGC-TP-1

| | | | |
|---|---|---|---|
| Project Name: | Veluzat/LDC | Logged by: | NLK |
| Project Number: | 203083-01 | Elevation: | 1583'+/- |
| Equipment: | Backhoe | Location/Grid: | |

| GEOLOGIC ATTITUDES | DATE: 9/18/20 | DESCRIPTION: | Geologic Test Pit |
|---|---|---|---|

| GEOLOGIC UNIT | ENGINEERING PROPERTIES: USCS | Sample No. | Moisture (%) | Density (pcf) |
|---|---|---|---|---|
| Topsoil | | | | |
| Qal | | | | |
| Tsr | | | | |

Topsoil:
0-3.0': Dark brown to gray brown sandy SILT, dry, soft to medium stiff; heavily rooted, very porous

Quaternary Alluvium (Qal):
3.0-7.0': Medium to dark brown cobble-rich gravelly SAND, dry, medium dense to dense; abundant root hairs, very porous, weathered

Tertiary Saugus formation-Sunshine Ranch member (Tsr):
7.0-11.0': Pale brown interbedded sandy SILTSTONE and silty fine to medium SANDSTONE, approximately 4-6" beds, dump, hard/very dense; staining from decomposed roots, minor caliche

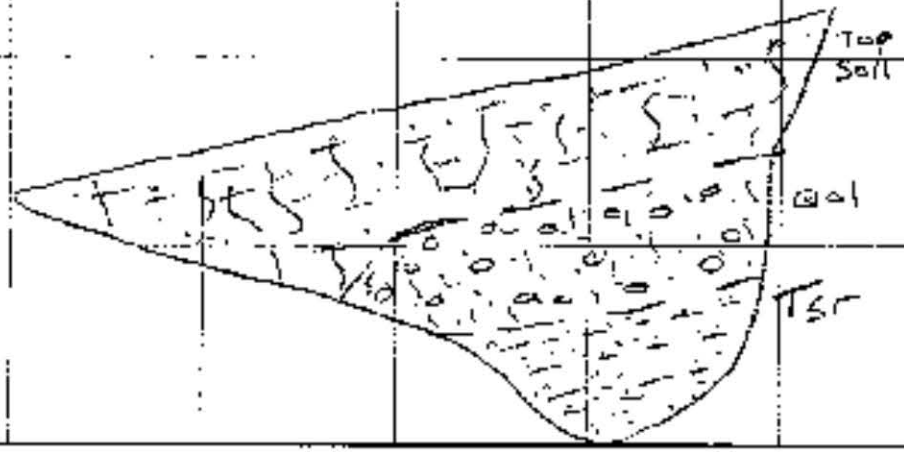
massive

9': no pores observed

GRAPHICAL REPRESENTATION: East side of test pit SCALE: 1"=5'

SURFACE SLOPE: 13N

TREND: N24W




Total Depth = 11 Feet
No Ground Water Encountered
Backfilled: 9/18/2020

LOG OF TRENCH: LGC-TP-2

| | | | | |
|---|---|---|---|---|
| Project Name: | Volvzat/LDC | Logged by: | NLK | ENGINEERING PROPERTIES |
| Project Number: | 203003-01 | Elevation: | 1580'+/- | |
| Equipment: | Backhoe | Location/Grid: | | |

| GEOLOGIC ATTITUDES | DATE: 9/18/20 | DESCRIPTION: Geologic Test Pit | GEOLOGIC UNIT | USCS | Sample No. | Moisture (%) | Density (pcf) |
|---|---|---|---|---|---|---|---|
| | Topsoil:<br>0-2'. Dark brown to gray medium to coarse sandy SILT, dry, soft; very porous, animal burrows, heavily rooted | | Topsoil | | | | |
| massive | Quaternary Alluvium (Qal):<br>2.0-T.D.: Pale yellow to medium brown interbedded silty SAND and sandy GRAVEL beds, dry to damp, firmness increases with depth, porous to bottom of trench<br><br>7': discontinuous cobble bed | | Qal | | | | |

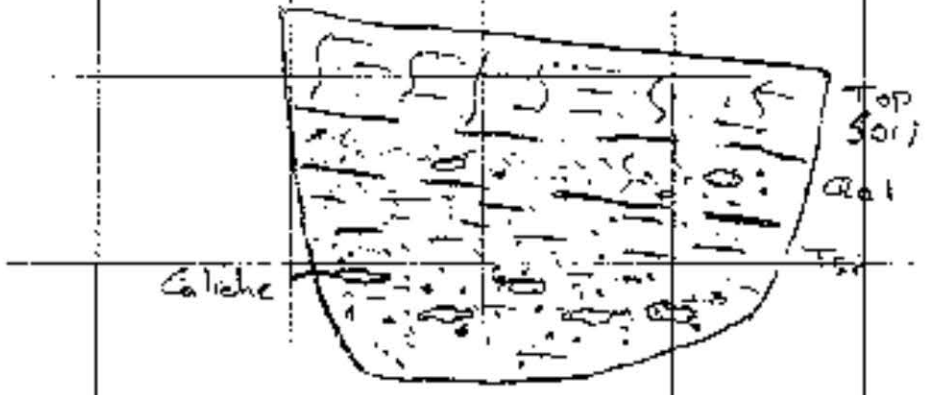
GRAPHICAL REPRESENTATION: West side of test pit | SCALE: 1"=5' | SURFACE SLOPE: 5N | TREND: N70W

Total Depth = 9 Feet
No Ground Water Encountered
Backfilled: 9/18/2020

LOG OF TRENCH: LGC-TP-3

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Project Name: | Velazet/LDC | Logged by: | NLK | ENGINEERING PROPERTIES | | | | |
| Project Number: | 203003-01 | Elevation: | 1585'+/- | | | | | |
| Equipment: | Backhoe | Location/Grid: | | | | | | |
| GEOLOGIC ATTITUDES | DATE: 9/18/20 | DESCRIPTION: | Geologic Test Pit | GEOLOGIC UNIT | USCS | Sample No. | Moisture (%) | Density (pcf) |
| massive | Topsoil:<br>0-2.5': Dark brown to gray brown sandy SILT, dry, soft to medium stiff; heavily rooted, very porous<br>Quaternary Alluvium (Qal):<br>2.5': Light brown silty SAND with gravel, dry medium stiff; porous, rooted, some cobbles present<br>Tertiary Sangus formation-Sunshine Ranch member (Tsr):<br>4.0': Light brown sandy SILT, dry to damp, medium stiff to stiff; some root hairs, porous, weathered<br>4.5': Density change noted by operator, less porous<br>6.0'-T.D.: Light brown to gray silty gravelly SANDSTONE, dry to damp, medium dense to dense; root hairs present, caliche, weathered, slightly porous<br>8.5': No pores observed | | | Topsoil<br>Qal<br>Tsr | | | | |

GRAPHICAL REPRESENTATION: West side of test pit | SCALE: 1"=5' | SURFACE SLOPE: 8N | TREND: N30W



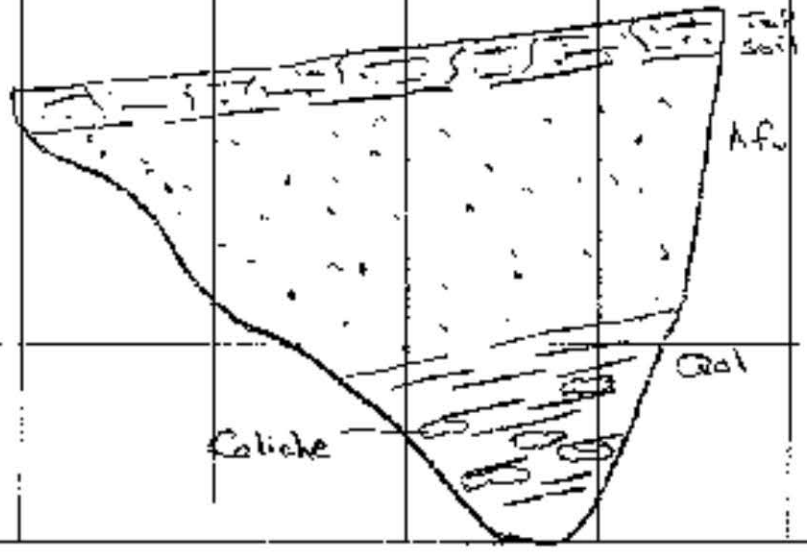

Total Depth = 9 Feet
No Ground Water Encountered
Backfilled: 9/18/2020

LOG OF TRENCH: LGC-TP-4

| | | | | |
|---|---|---|---|---|
| Project Name: | Veluzat/LDC | Logged by: | NLK | ENGINEERING PROPERTIES |
| Project Number: | 203003-01 | Elevation: | 1585' +/- | |
| Equipment: | Backhoe | Location/Grid: | | |

| GEOLOGIC ATTITUDES | DATE 9/18/20 DESCRIPTION: Geologic Test Pit | GEOLOGIC UNIT | USCS | Sample No. | Moisture (%) | Density (pcf) |
|---|---|---|---|---|---|---|
| | Topsoil:<br>0-1': Medium to dark brown, sandy SILT, dry very soft to soft; pebble rich, rooted, porous | Topsoil | | | | |
| | Artificial fill, undocumented (Afu):<br>1-8': Medium brown silty SAND with gravel; dry to damp, medium dense; abundant gypsum | Afu | | | | |
| | Quaternary Alluvium (Qal):<br>8.0-13.5': Mottled medium gray and dark brown silty sandy CLAY, moist; gypsum<br>9' T.D.: Abundant caliche | Qal | | | | |
| | Recommend total removal of all Afu and Qal | | | | | |

GRAPHICAL REPRESENTATION: East side of test pit | SCALE: 1"=5' | SURFACE SLOPE: 7N | TREND: N31E




Total Depth = 13.5 Feet
No Ground Water Encountered
Backfilled: 9/18/2020

LOG OF TRENCH: LGC-TP-5

| Project Name | Velaza/LDC | Logged by: | NLK |
|---|---|---|---|
| Project Number: | 200003-01 | Elevation: | 1590'+/- |
| Equipment: | Backhoe | Location/Grid: | |

| GEOLOGIC ATTITUDES | DATE: 9/18/20 | DESCRIPTION: Geologic Test Pit |
|---|---|---|

Topsoil:
0-2.5': Medium to dark brown, sandy silty CLAY, dry to damp, soft, blocky soils, heavily rooted, 16" cobbles present
Quaternary Alluvium (Qal):
2.5': Pale yellow to light gray SILT with caliche, damp to moist, soft to medium stiff; iron oxidation, root hairs, pores
4.5': Light orange to brown, very fine SAND, moist, medium dense; decomposed roots
5.0': Pale yellow to white-gray sandy silty CLAY with caliche, moist, soft, decomposed roots
5.5': Brown grey sandy SILT with caliche, moist medium stiff to stiff; pores present
Tertiary Sawgus formation-Sunshine Ranch member (Tsr):
8.5-T.D.: Mottled Orange and brown, silty medium to coarse SANDSTONE, moist, dense; no roots observed in cutting, very few pores, contractor noted density change: Minimum removal depth recommended 9'

| GEOLOGIC UNIT | USCS | Sample No | Moisture (%) | Density (pcf) |
|---|---|---|---|---|
| Topsoil | | | | |
| Qal | | | | |
| Tsr | | | | |

ENGINEERING PROPERTIES

GRAPHICAL REPRESENTATION: SCALE: 1"=5' SURFACE SLOPE: 9 N TREND: N5E

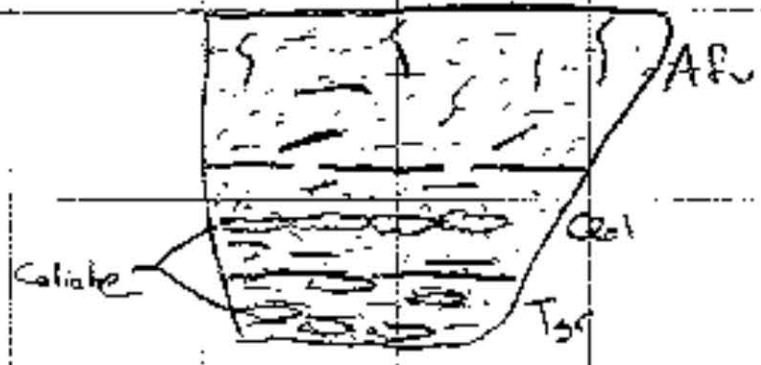
Total Depth = 9.5 Feet
No Ground Water Encountered
Backfilled: 9/18/2020

LOG OF TRENCH: LGC-TP-6

| Project Name: | Velazez/LDC | Logged by: | NLK | ENGINEERING PROPERTIES | | | |
|---|---|---|---|---|---|---|---|
| Project Number: | 203003-01 | Elevation: | 1595'+/- | | | | |
| Equipment: | Backhoe | Location/Grid: | | | | | |

| GEOLOGIC ATTITUDES | DATE: 9/18/20 DESCRIPTION: Geologic Test Pit | GEOLOGIC UNIT | USCS | Sample No. | Moisture (%) | Density (pcf) |
|---|---|---|---|---|---|---|
| | Artificial fill- undocumented (Afu):<br>0-4': Dark brown silty SAND, dry to damp, loose to medium dense; buried roots and brush | Afu | | | | |
| | Quaternary Alluvium (Qal):<br>4-6.5': Mottled pale yellow and light brown with gray gravel rich silty SAND with clay nodules, damp to moist, medium dense, cobble rich, abundant root hairs, porous<br><br>5.5': Caliche rich layer | Qal | | | | |
| massive | Tertiary Sauges formation-Sunshine Ranch member (Tsr):<br>6.5-T.D.: Medium gray to olive gray sandy SILTSTONE, damp to moist, hard, caliche rich,<br>7': No pores observed<br>Minimum recommended removal depth 7' | Tsr | | | | |

GRAPHICAL REPRESENTATION: West side of test pit | SCALE: 1"=5' | SURFACE SLOPE: Flat | TREND: N16W




Total Depth = 8.5 Feet
No Ground Water Encountered
Backfilled: 9/18/2020

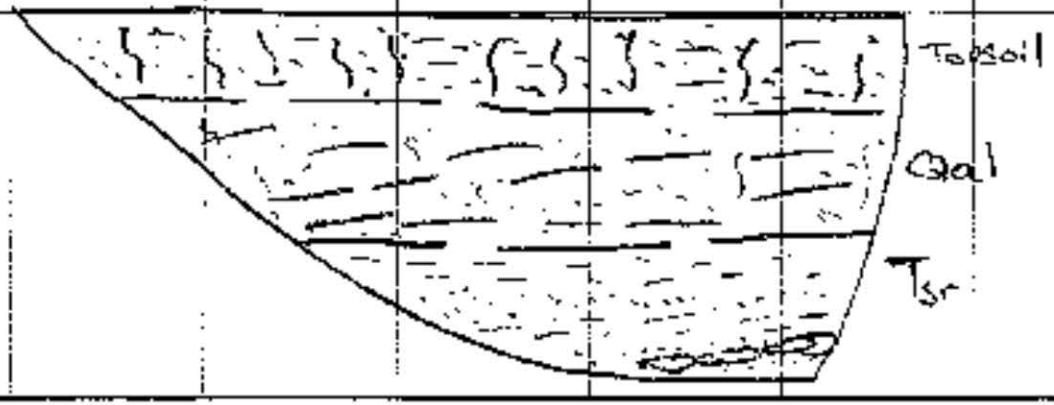
LOG OF TRENCH LGC-TT-7

| | | | |
|---|---|---|---|
| Project Name: | Velzzat/LDC | Logged by: | NLK |
| Project Number: | 203003-01 | Elevation: | 1605'+/- |
| Equipment: | Backhoe | Location/Grid: | |

ENGINEERING PROPERTIES

| GEOLOGIC ATTITUDES | DATE: 9/18/20 | DESCRIPTION: Geologic Test Pit | GEOLOGIC UNIT | USCS | Sample No. | Moisture (%) | Density (pcf) |
|---|---|---|---|---|---|---|---|
| | | Topsoil: | Topsoil | | | | |
| | | 0-2.5': Dark brown to dark gray clayey silty SAND, dry, loose to medium dense; heavily rooted, blocky | Qal | | | | |
| | | Quaternary Alluvium (Qal): | | | | | |
| | | 2.5': Dark brown to gray sandy CLAY, moist to wet, soft to medium stiff, calcium carbonate stringers, abundant root hairs, few pores observed, weathered | Tsr | | | | |
| | | Tertiary Sangus formation-Sunshine Ranch member (Tsr): | | | | | |
| | | 6.0'-9.5': Light brown to pale gray interbedded sandy SILTSTONE and medium to coarse SANDSTONE, damp to moist, hard/dense; no pores observed | | | | | |
| | | 8.0' -T.D.: Caliche rich lens | | | | | |
| | | Minimum removal depth recommended 7' | | | | | |

GRAPHICAL REPRESENTATION: East side of test pit | SCALE: 1"=5' | SURFACE SLOPE: Flat | TREND: N40E

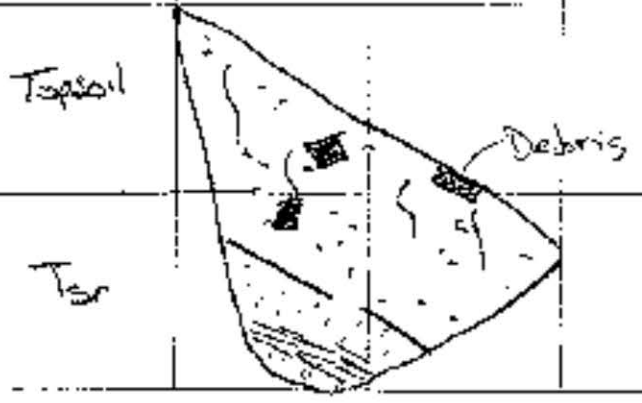



Total Depth = 9.5 Feet
No Ground Water Encountered
Backfilled 9/18/2020

LOG OF TRENCH: LGC-TP-8

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Project Name: | Veluzat/LDC | Logged by: | NLK | ENGINEERING PROPERTIES | | | | | |
| Project Number: | 203003-01 | Elevation: | 1695 +/- | | | | | | |
| Equipment: | Backhoe | Location/Grid: | | | | | | | |
| GEOLOGIC ATTITUDES | DATE: 9/18/20 | DESCRIPTION: | Geologic Test Pit | GEOLOGIC UNIT | USCS | Sample No. | Moisture (%) | Density (pcf) | |
| | Topsoil:<br>0-6.0': Brown to dark brown silty SAND, dry, medium dense to dense; heavily rooted, porous, abundant construction debris at surface and near surface | | | Topsoil | | | | | |
| massive | Tertiary Sauqus formation-Sunshine Ranch member (Tsr): 6-10'<br>6.0-10.0': Orange brown silty SANDSTONE, dry, dense to very dense; heavily weathered, few pores<br><br>8.0'- T.D.: Dark brown CLAYSTONE lars approximately 10inches thick, heavily weathered, stains from decomposed roots | | | Tsr | | | | | |

GRAPHICAL REPRESENTATION: East side of test pit | SCALE: 1"=5' | SURFACE SLOPE: 7N | TREND: N31E



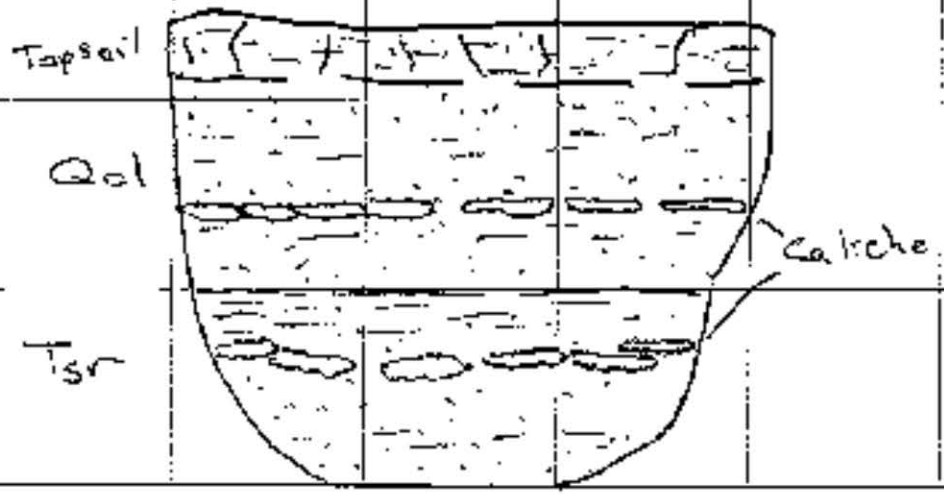

Total Depth = 10 Feet
No Ground Water Encountered
Backfilled: 9/18/2020

LOG OF TRENCH: LGC-TP-9

| | | | | |
|---|---|---|---|---|
| Project Name: | Velazat/LDC | Logged by: | NLK | ENGINEERING PROPERTIES |
| Project Number: | 203003-01 | Elevation: | 1615' +/- | |
| Equipment: | Backhoe | Location/Grid: | | |

| GEOLOGIC ATTITUDES | DATE: 9/18/20 | DESCRIPTION: Geologic Test Pit | GEOLOGIC UNIT | USCS | Sample No. | Moisture (%) | Density (pcf) |
|---|---|---|---|---|---|---|---|
| massive | <u>Topsoil:</u><br>0-1.5': Medium to dark brown sandy SILT, dry, soft to medium stiff; heavily rooted, very porous<br><u>Quaternary Alluvium (Qal):</u><br>1.5-7.0': Light brown interbedded sandy SILT and silty SANDS, dry to damp, medium stiff/medium dense; carbonate stringers, porous<br>5.0': Caliche rich cobble lens<br><u>Tertiary Sangre formation-Sunshine Ranch member (Tsr):</u><br>7.0 12.0': Light brown to olive gray interbedded sandy SILTSTONE and silty SANDSTONE, dry to damp, hard/very dense<br>8.0': Abundant caliche<br>10.0': Minor pores still present<br>11.5': No pores observed, some carbonate stringers present<br>Minimum recommended removal depth 12' | Topsoil<br>Qal<br>Tsr | | | | |

GRAPHICAL REPRESENTATION: West side of test pit | SCALE: 1"=5' | SURFACE SLOPE: Flat | TREND: N14W




Total Depth = 12 Feet
No Ground Water Encountered
Backfilled: 9/18/2020

LOG OF TRENCH: LGC-TP-10

| | | | |
|---|---|---|---|
| Project Name: | Veluzat/LDC | Logged by: | NLK |
| Project Number: | 203003-01 | Elevation: | 1605'+/- |
| Equipment: | Backhoe | Location/Grid: | |

DATE: 9/18/20 DESCRIPTION: Geologic Test Pit

| GEOLOGIC ATTITUDES | DESCRIPTION | GEOLOGIC UNIT | ENGINEERING PROPERTIES: USCS | Sample No. | Moisture (%) | Density (pcf) |
|---|---|---|---|---|---|---|
| | Topsoil:<br>0-2.0': Dark brown gravelly sandy SILT, dry, soft to medium stiff; heavily rooted, very porous, blocky soil | Topsoil | | | | |
| | Quaternary Alluvium (Qal):<br>2.0-6.0': Medium brown to olive-gray interbedded silty SAND and sandy SILT, damp, stiff/dense; root hairs, slightly porous | Qal | | | | |
| massive | Tertiary Sangus formation-Sunshine Ranch member (Tsr):<br>6.0-7.0': Medium brown to olive gray sandy SILTSTONE, damp, hard; caliche<br><br>7.0-10.0': Medium brown to olive gray SILTSTONE, damp, hard, weathered, abundant caliche at upper contact<br>Minimum recommended removal depth 7-8' | Tsr | | | | |

GRAPHICAL REPRESENTATION: East side of test pit SCALE: 1"=5' SURFACE SLOPE: 9% TREND: N20W

Total Depth = 11 Feet
No Ground Water Encountered
Backfilled: 9/18/2020

***APPENDIX B con't***

***Exploration Logs L&A, 2003***
***Borings B-1, B-2, and B-3, and***
***AES (unpublished) from L&A 2003-Boring B-7and Trench Log 28, 29, 30, and 40***

# GEOTECHNICAL BORING LOG B-1 (001)

Date 9-23-03 Sheet 1 of 3

Project T63419, Golden Valley Estates Project No. 060954-001

Drilling Co. Roy Brothers Drilling Type of Rig Flight Auger

Hole Diameter 24" Drive Weight 1787lbs(0-15ft), 1182(15-30), 757(30-45), 489(45-60) Drop 18"

Elevation Top of Hole 1633' Location

| Elevation Feet | Depth Feet | Graphic Log | Attitudes | Sample No. | Blows Per Foot | Dry Density pcf | Moisture Content, % | Soil Class (U.S.C.S.) | DESCRIPTION | Type of Tests |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Logged By GM, CAA<br>Sampled By CAA | |
| | 0 | N S | | | | | | | **Qvt-Quaternary Older Landslide** | |
| 1630 | | | | B-1 | | | | SP | @0-2.5 SANDSTONE CONGLOMERATE: Light yellow-pale brown, dry, loose, porous. | |
| | 5 | | B: N52E, 11NW | R-1 | 7 | | | CL | @2.5ft CLAY: Medium brown, low-medium dense, low-medium moist, caliche lined contact with overlying conglomerate, abundant caliche pods and stringers, locally blocky, waxy luster, approx. 12"-16" thick.<br>@4.0ft SANDY CLAYEY SILTSTONE: Olive-pale brown, low-medium moist, medium dense, few caliche stringers and coarse sand size grains. Gradational contact with overlying CLAY. | |
| 1625 | | | | | | | | | | |
| | 10 | | | R-2 | 11 | | | CL | @10ft CLAY: Medium brown, medium moist, medium dense, waxy luster, generally massive. | |
| 1620 | | | B: N48E, 10NW | | | | | | @12ft CLAY: Red-brown, SILTY, non-plastic, approx. 4-6" thick.<br>@12.5-15.0ft SILTY CLAY: Olive-light brown, abundant caliche pods, firm, dense, medium moist. | |
| | 15 | | B: N26E, 9NW | R-3 | 11 | | | SP | @15-18ft SANDSTONE with some GRAVEL: Yellow-orange, coarse grained very friable, generally massive. | |
| 1615 | | | B: N46E, 11NW | | | | | | @18ft CLAY: Olive green, SILTY, caliche pods, aprox. 2-3" thick.<br>@18.5, 19.0, and 20.5 LIMEY beds: Broken but continuous around bowing. | |
| | 20 | | | R-4 | 12 | | | CL | @20.5ft SANDY CLAY: Red-brown, medium dense, medium moist.<br>@20.5-25ft SANDY SILTSTONE: Yellow-pale brown, medium dense, medium moist. | |
| 1610 | | | | | | | | | | |
| | 25 | | B: N35E, 9NW | R-5 | 12 | | | CL | @25ft CLAY: Red-brown, waxy luster, non-plastic, bentonitic, locally blocky, abundant caliche pods, internally sheared, approx. 6-8" thick.<br>@26ft Grades to SILTY CLAY: Olive-light brown, medium dense, medium moist. | |
| 1605 | | | | | | | | | | |
| | 30 | | B: N38E | | | | | | @29ft CLAY: Blue-gray, waxy, bentonitic, un oxidized, caliche pods, internally sheared, internally 3-5" thick. | |

SAMPLE TYPES:
- S SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- CU TRIAXIAL SHEAR
- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

# GEOTECHNICAL BORING LOG B-1 (001)

Date 9-23-03 | Sheet 2 of 3

Project T53419, Golden Valley Estates | Project No. 060954-001

Drilling Co. Roy Brothers Drilling | Type of Rig Flight Auger

Hole Diameter 24" | Drive Weight 1767lbs(0-15ft), 1182(15-30), 757(30-45), 489(45-60) | Drop 18"

Elevation Top of Hole 1633' | Location

| Elevation Feet | Depth Feet | Graphic Log | Attitudes N S | Sample No. | Blows per Foot | Dry Density pcf | Moisture Content, % | Soil Class (U.S.C.S.) | DESCRIPTION | Type of Tests |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Logged By GIM, CAA<br>Sampled By CAA | |
| | 30 | | 12NW | R-6 | 15 | | | SP | @31ft CLAYEY SAND: Yellow-orange, iron stained, fine grained, gradational contact with overlying CLAY, moist-very moist. | |
| 1600 | | | B: N54E, 14NW | | | | | | @32.5-35ft Grades to coarse grained CLAYEY SAND. Minor caving, very moist, massive, increasingly conglomeratic at the basal contact. | |
| | 35 | | | R-7 | 15 | | | CL | @ 36ft CLAY: Red-brown, sandy, silty, waxy luster, locally blocky, approx. 6" thick | |
| 1595 | | | B: N28E, 7NW | | | | | | @37ft CLAYEY SAND with GRAVEL: Yellow-orange, sandstone conglomerate, GRAVEL up to 1/2" diameter, gradational contact with overlying CLAY. | |
| | 40 | | | R-8 | 68 | | | CL | @39.3ft CLAY: Blue-gray, unoxidized CLAY, moist, medium dense, generally massive. | |
| 1590 | | | | | | | | | @41.5ft CLAYEY SAND: Yellow-orange, coarse-very coarse, grading to GRAVELY @ the basal contact. | |
| | 45 | | B: N46E, 15NW | | | | | | @43ft CLAY: Blue-gray, approx 8"-1' thick, non-plastic, moist, dense. | |
| 1585 | | | | | | | | | @47ft CLAYEY SILTSTONE: Blue-gray, unoxidized, hard, dense, moist. | |
| | 50 | | | R-9 | 20 | | | ML | | |
| 1580 | | | | | | | | | | |
| | 55 | | | | | | | | | |
| 1575 | | | | | | | | | | |
| | 60 | | | | | | | | | |

SAMPLE TYPES:
- S SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- CU TRIAXIAL SHEAR
- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

# GEOTECHNICAL BORING LOG B-1 (001)

Date 9-23-03 Sheet 3 of 3

Project T53419, Golden Valley Estates Project No. D60954-001

Drilling Co. Roy Brothers Drilling Type of Rig Flight Auger

Hole Diameter 24" Drive Weight 1767lbs(0-15ft), 1182(16-30), 757(30-45), 489(46-80) Drop 18"

Elevation Top of Hole 1633' Location

Logged By GM, CAA

Sampled By CAA

| Elevation Feet | Depth Feet | Graphic Log | Attitudes | Sample No. | Blows Per Foot | Dry Density pcf | Moisture Content, % | Soil Class. (U.S.C.S.) | DESCRIPTION | Type of Tests |
|---|---|---|---|---|---|---|---|---|---|---|
| | 60 | N S | | | | | | | | |
| | | | | R-10 | 27 | | | ML | @60ft Color change: Blue-gray unox. to yellow-orange oxidized material. | |
| 1570 | | | | | | | | | @62ft CLAYEY SAND with GRAVEL: Blue-gray, coarse grained, very wet, SEEPAGE and CAVING. | |
| | 65 | | | | | | | | | |
| 1565 | | | | | | | | | | |
| | 70 | | | R-11 | 32 | | | SP | | |
| 1560 | | | | | | | | | | |
| | 75 | | | | | | | | Total depth drilled 70ft<br>Total depth sampled 71ft<br>Qwly to total depth<br>Seepage encountered at 62ft<br>Backfilled with cuttings<br><br>Downhole logged to total depth | |
| 1555 | | | | | | | | | | |
| | 80 | | | | | | | | | |
| 1550 | | | | | | | | | | |
| | 85 | | | | | | | | | |
| 1545 | | | | | | | | | | |
| | 90 | | | | | | | | | |

SAMPLE TYPES:
- S SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- CU TRIAXIAL SHEAR
- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

# GEOTECHNICAL BORING LOG B-2 (001)

Date 9-24-03 Sheet 1 of 3

Project T53419, Golden Valley Estates Project No. 060854-001

Drilling Co. Roy Brothers Drilling Type of Rig Flight Auger

Hole Diameter 24" Drive Weight 1787lbs(0-15ft), 1182(15-30), 757(30-45), 489(45-60) Drop 18"

Elevation Top of Hole 1634' Location

Logged By GIM, CAA

Sampled By CAA

| Elevation Feet | Depth Feet | Graphic Log | Attitudes | Sample No. | Blows Per Foot | Dry Density pcf | Moisture Content, % | Soil Class (U.S.C.S.) | DESCRIPTION | Type of Tests |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | | Qols-Quaternary Older Landslide | |
| | | | | | | | | | @0-6 SILTY CLAYSTONE: light to medium-brown, low moist, low dense, abundant calcium carbonate pods. | |
| | | | | B-1 | | | | ML | | |
| 1630 | | | | | | | | | | |
| | 5 | | | | | | | | @4.4ft Abrupt contact with gravelly coarse sand over medium-brown slightly clayey siltstone | |
| | | | B: N32E, 17NW | R-1 | 4 | | | ML | | |
| | | | | | | | | | @6.0-7.0ft increased sand content | |
| | | | | | | | | | p.f. 1623' | |
| 1625 | | | | | | | | | | |
| | 10 | | | | | | | | @10-10.5ft CLAY, RUPTURE SURFACE, : medium brown/orange, 1/4-1/2" thick, sheared along upper contact; upper contact carbonate-lined, lower contact lined with gypsum. | |
| | | | B: N43W, 10NE | R-2 | 9 | | | CL | @11-11.5ft SANDSTONE: light buff brown | |
| | | | C: N68E, 10NW | | | | | | @11.5ft high angle iron stained surface; CLAY: medium brown, sheared clay, gypsum crystals | |
| | | | S: N72E, 42NW | | | | | | @13ft SANDSTONE: yellow orange, abrupt contact with overlying clay, some iron staining, poor to medium consolidation | |
| 1620 | | | C: N52E, 14NW | | | | | | | |
| | 15 | | | | | | | | | |
| | | | | R-3 | 7 | | | SP | | |
| | | | | | | | | | @16.5ft CLAYEY SILTSTONE: light olive-brown, distinct upper contact | |
| | | | | | | | | | @17 & 18ft broken limey beds, continuous around hole | |
| 1615 | | | | | | | | | | |
| | 20 | | | | | | | | | |
| | | | S: N60W, 42NE | R-4 | 11 | | | ML | @20ft increased clay content; clayey sandstone | |
| | | | | | | | | | SHEAR: High angle gypsum filled shear forming an abrupt contact between SILTY CLAY and overlying SAND. | |
| 1610 | | | | | | | | | | |
| | 25 | | | | | | | | @24ft CLAYEY SAND: | |
| | | | | R-5 | 12 | | | SP | @25ft SHEARS: High angle, discontinuous around boring, truncating on the underlying CLAY. | |
| | | | AB: N68E, 10SW | | | | | | @26ft CLAY: Red-brown over blue-gray, wavy lustet, nonplastic, internally sheared, approx. 10"-1' thick | |
| | | | | | | | | | @27.5ft CLAYEY SILTSTONE: Blue gray, medium moist, dense, unoxidized with abundant caliche pods | |
| 1605 | | | | | | | | | | |
| | 30 | | | | | | | | | |

SAMPLE TYPES:

- S SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:

- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- CU TRIAXIAL SHEAR
- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

# GEOTECHNICAL BORING LOG B-2 (001)

Date 9-24-03 Sheet 2 of 3

Project T53419, Golden Valley Estates Project No. 060854-001

Drilling Co. Roy Brothers Drilling Type of Rig Flight Auger

Hole Diameter 24" Drive Weight 1767lbs(0-15ft), 1182(15-30), 757(30-45), 489(45-60) Drop 18"

Elevation Top of Hole 1634' Location

Logged By GM, CAA

Sampled By CAA

| Elevation Feet | Depth Feet | Graphic Log | Attitudes | Sample No. | Blows Per Foot | Dry Density pcf | Moisture Content, % | Soil Class (U.S.C.S.) | DESCRIPTION | Type of Tests |
|---|---|---|---|---|---|---|---|---|---|---|
| | 30 | | | R-6 | 13 | | | ML-CL | | |
| | | | | | | | | | @32ft CLAY: Blue-gray mottled with some red brown. Waxy luster, internally sheared, locally blocky, very similar to the CLAY at 26ft. | |
| 1600 | | | | | | | | | @33.5ft SILTSTONE: Blue-gray, dense, medium moist, same as interval from 27.5-32ft. Some crude bedding with alternating modal percentages of SAND and CLAY. | |
| | 35 | | | R-7 | 13 | | | ML | | |
| 1595 | | | | | | | | | | |
| | 40 | | | R-8 | 16 | | | CL | | |
| | | | B: N68E, 7NW | | | | | | @42ft GRAVEL bed. | |
| 1590 | | | | | | | | | | |
| | 45 | | B: N74E, 10NW | | | | | | @45ft GRAVEL bed.<br>@45-47ft Moist walls at coarse grained beds and medium grained sandstone lenses up to 3" thick that pinch out into CLAYEY SILT matrix. | |
| 1585 | | | | | | | | | | |
| | 50 | | | R-9 | 17 | | | ML | | |
| | | | B: N72E, 13NW | | | | | | @52ft GRAVEL/COBBLE bed. | |
| 1580 | | | | | | | | | | |
| | 55 | | | | | | | | | |
| 1575 | | | | | | | | | | |
| | 60 | | | | | | | | | |

SAMPLE TYPES:
S SPLIT SPOON
R RING SAMPLE
B BULK SAMPLE
T TUBE SAMPLE
G GRAB SAMPLE
SH SHELBY TUBE

TYPE OF TESTS:
DS DIRECT SHEAR
MD MAXIMUM DENSITY
CN CONSOLIDATION
CR CORROSION
SA SIEVE ANALYSIS
CU TRIAXIAL SHEAR
EI EXPANSION INDEX
RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

# GEOTECHNICAL BORING LOG B-2 (001)

Date 9-24-03 Sheet 3 of 3

Project T53419, Golden Valley Estates Project No. 060954-001

Drilling Co. Roy Brothers Drilling Type of Rig Flight Auger

Hole Diameter 24" Drive Weight 1767lbs(0-15ft), 1182(15-30), 757(30-45), 489(45-60) Drop 18"

Elevation Top of Hole 1634' Location

Logged By GIM, CAA

Sampled By CAA

| Elevation Feet | Depth Feet | Graphic Log | Attitudes | Sample No. | Blows Per Foot | Dry Density pcf | Moisture Content, % | Soil Class. (U.S.C.S.) | DESCRIPTION | Type of Tests |
|---|---|---|---|---|---|---|---|---|---|---|
| | 60 | | | R-10 | 22 | | | ML | | |
| 1570 | 65 | | | | | | | | @63ft LIMEY bed | |
| 1565 | 70 | | | R-11 | 27 | | | ML | | |
| 1560 | 75 | | | | | | | | Total depth drilled 70ft<br>Total depth sampled 71ft<br>Qalt to total depth<br>No seepage or groundwater encountered<br>Backfilled with cuttings<br><br>Downhole logged to total depth | |
| 1555 | 80 | | | | | | | | | |
| 1550 | 85 | | | | | | | | | |
| 1545 | 90 | | | | | | | | | |

SAMPLE TYPES:

- B SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:

- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- CU TRIAXIAL SHEAR
- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

# GEOTECHNICAL BORING LOG B-3 (001)

Date 9-25-03 Sheet 1 of 3

Project T53419, Golden Valley Estates Project No. 060954-001

Drilling Co. Roy Brothers Drilling Type of Rig Flight Auger

Hole Diameter 24" Drive Weight 1767lbs(0-15ft), 1182(15-30), 757(30-45), 489(45-60) Drop 18"

Elevation Top of Hole 1644' Location

Logged By GIM, CAA

Sampled By CAA

| Elevation Feet | Depth Feet | Graphic Log | Attitudes | Sample No. | Blows Per Foot | Dry Density pcf | Moisture Content, % | Soil Class. (U.S.C.S.) | DESCRIPTION | Type of Tests |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | | | Qcol-Quaternary Colluvium/Topsoil | |
| | | | | | | | | | SANDY SILTY CLAY: Medium brown, loose, dry. | |
| | | | | B-1 | | | | CL | Tsr-Tertiary Sespe Formation | |
| 1640 | | | | | | | | | CLAYEY SAND: Olive to light brown, low moisture, low density, abundant caliche at upper contact. | |
| | 5 | | | R-1 | 3 | | | SP | @5ft SANDY SILTSTONE: Olive to medium brown, loose, dry, porous, visible root pores, caliche pods and stringers. | |
| | | | | | | | | | @7.5ft CLAY: Olive to light brown, increased density and moisture, gradational upper contact. | |
| 1635 | 10 | | | R-2 | 6 | | | CL | @11ft LIMEY bed: Irregular, broken, continuous around boring. | |
| | | | | | | | | | @13ft SILTSTONE: Otherwise the same as above. | |
| 1630 | | | | | | | | | @14ft CLAYEY SAND: Otherwise the same as above | |
| | 15 | | | R-3 | 8 | | | SP | @15ft SILTSTONE: Firm, dense, otherwise the same as above. | |
| 1625 | | | | | | | | | @19ft LIMEY bed: Broken, continuous around boring. | |
| | 20 | | | R-4 | 9 | | | ML | @19.5ft SANDY SILTSTONE: Same as @ 15ft. | |
| 1620 | | | | | | | | | | |
| | 25 | | | R-5 | 12 | | | ML | | |
| | | | N30E, 16NW | | | | | | @26ft CLAYEY SANDSTONE CONGLOMERATE: Olive to light brown, coarse SAND and GRAVEL, subrounded, poorly interbedded. | |
| 1615 | 30 | | | | | | | | | |

SAMPLE TYPES:
- S SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- CU TRIAXIAL SHEAR
- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

# GEOTECHNICAL BORING LOG B-3 (001)

Date 9-25-03 Sheet 2 of 3

Project T53419, Golden Valley Estates Project No. 060954-001

Drilling Co. Roy Brothers Drilling Type of Rig Flight Auger

Hole Diameter 24" Drive Weight 1767lbs(0-15ft), 1182(15-30), 757(30-45), 489(45-60) Drop 18"

Elevation Top of Hole 1644' Location

Logged By GM, CAA

Sampled By CAA

| Elevation Feet | Depth Feet | Graphic Log | Attitudes | Sample No. | Blows Per Foot | Dry Density pcf | Moisture Content, % | Soil Class. (U.S.C.S.) | DESCRIPTION | Type of Tests |
|---|---|---|---|---|---|---|---|---|---|---|
| | 30 | N S | | R-6 | 13 | | | ML | @31ft CLAY: Olive, locally blocky, waxy luster, nonplastic, approx. 2" thick. | |
| | | | N35E, 15NW | | | | | | @ 31.5ft CLAYEY SILTSTONE: Olive, dense, medium moist, containing broken limey beds. | |
| 1610 | 35 | | N26E, 16NW | R-7 | 15 | | | SP | @35ft LIMEY bed at gradational contact with underlying SAND. @35.9ft SAND: Yellow-orange, iron stained, dense, moist fine grained with some interstitial CLAY. | |
| | | | N43E, 13NW | | | | | | | |
| 1605 | | | N10E, 14NW | | | | | | @39ft CLAY: Blue-gray, with white broken limey beds, jumbled, intensely sheared, waxy luster, locally blocky, gradational upper contact. | |
| | 40 | | | R-8 | 20 | | | CL | | |
| | | | | | | | | | @42.5ft SANDY CLAYEY SILTSTONE: Color change to gray brown, dense, moist. | |
| 1600 | | | | | | | | | @44ft Color change to blue-gray. | |
| | 45 | | | | | | | | @46ft Color change back to gray-brown. | |
| 1595 | | | | | | | | | @48.5ft CLAYEY SAND with GRAVEL: Yellow-light brown, dense, moist, fining up, with GRAVEL bed at the basal contact. | |
| | 50 | | N29E, 12NW | R-8 | 25 | | | ML | @50ft CLAY: Gray-brown over blue-gray, dense, moist, abundant concretionary pods, waxy luster, 2-4" thick. | |
| 1590 | | | | | | | | | @53ft CLAYEY SILTSTONE: Medium gray, dense, medium moist. | |
| | 55 | | | | | | | | | |
| 1585 | | | | | | | | | | |
| | 60 | | | | | | | | | |

SAMPLE TYPES:
- B SPLIT SPOON
- R RING SAMPLE
- G GRAB SAMPLE
- BU BULK SAMPLE
- SH SHELBY TUBE
- T TUBE SAMPLE

TYPE OF TESTS:
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
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- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

# GEOTECHNICAL BORING LOG B-3 (001)

Date 9-25-03 Sheet 3 of 3

Project T53419, Golden Valley Estates Project No. 060954-001

Drilling Co. Roy Brothers Drilling Type of Rig Flight Auger

Hole Diameter 24" Drive Weight 1767lbs(0-15ft), 1182(15-30), 757(30-46), 489(45-60) Drop 18"

Elevation Top of Hole 1644' Location

Logged By GIM, CAA

Sampled By CAA

| Elevation Feet | Depth Feet | Graphic Log | Attitudes | Sample No. | Blows Per Foot | Dry Density pcf | Moisture Content, % | Soil Class. (U.S.C.S.) | DESCRIPTION | Type of Tests |
|---|---|---|---|---|---|---|---|---|---|---|
| | 60 | N S | | R-9 | 30 | | | ML | @61ft LIMEY bed. | |
| 1580 | | | | | | | | | | |
| | 65 | | | R-10 | 34 | | | CL | | |
| 1575 | | | | | | | | | | |
| | 70 | | | | | | | | Total depth drilled 65ft.<br>Total depth sampled 66ft<br>Qnb to total depth<br>No seepage or groundwater encountered<br>Backfilled with cuttings<br>Downhole logged to total depth | |
| 1570 | | | | | | | | | | |
| | 75 | | | | | | | | | |
| 1565 | | | | | | | | | | |
| | 80 | | | | | | | | | |
| 1560 | | | | | | | | | | |
| | 85 | | | | | | | | | |
| 1555 | | | | | | | | | | |
| | 90 | | | | | | | | | |

SAMPLE TYPES:

- S SPLIT SPOON
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- SH SHELBY TUBE

TYPE OF TESTS:

- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- SA SIEVE ANALYSIS
- CU TRIAXIAL SHEAR
- EI EXPANSION INDEX
- RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

# DRILL HOLE LOG

BORING NO. B-7

PROJECT: Lewisville East — JOB NO.: 99-162-7

DATE:

DRILLING COMPANY/DRILLER: Tri Valley Drilling / DAVE

METHOD OF DRILLING/HOLE DIAMETER (in.): 24" Bucket Auger

HAMMER TYPE: Trailer Mtd. Rally Rig — AVERAGE DROP (in.): 12"

DRIVING WEIGHTS: Same As B-1 Thru 6

ELEVATION: — LOGGED BY: DGG/BNB/AES

| DEPTH (feet) | SAMPLE TYPE | BLOWS / 6" | GRAPHIC LOG | ATTITUDES | USCS SYMBOL | Description<br>Soils: description; consistency/density; moisture; color; other<br>Bedrock: color, lithology; hardness; moisture; other | Remarks |
|---|---|---|---|---|---|---|---|
| | | | | | | Soil (0-4') | Bring Bucket to surface to dump soil for 5/11/99 |
| | | | | | | 0-6" Light Brownish-Brown Fissile Sandy Silt; Firm; Slightly Damp; Root; Air Dry with Shale | |
| | | | | Strike/Dip: 185 | | Landslide: (6'-15') | @ 5' Bulk Sample |
| | | | | | | @ 6" Gray to Yellowish-Brown Sandy Siltstone with Shale; Slightly Soft and Weathered; Slightly Damp; Bedding Orientation Disturbed | @ 0-15' Mixed Bag Sample |
| | | | | | | @ 3' Dark Grayish-Brown Sandy Mudstone Interbedded by Disturbed Sandstone and Siltstone Fragments; Mudstone Slightly Sheared and Weathered | |
| | | | | | | @ 4.5' Mottled Olive-Gray to Yellowish-Brown Sandy Mudstone | |
| | | | | | | @ 6' Grades to Yellowish-Brown Pebbly Sandy Mudstone with Scattered Concretions & Fossils; Highly Slickenside Bedding | |
| | | | | | | @ 12' Grades Sandier; Still Slightly Soft and Irregular Fracture | |
| | | | | | | Landslide?; Bt3? (13'-75') | |
| | | | | | | @ 15' Irregular Contact with Mottled Olive-Gray to Yellowish-Brown Mudstone; Stiff; Dry; Small Concretions | No Distinct Top Plane |
| | | | | | | @ 17' Grades to Fine Silty Sandstone; Hard | |
| | | | | | | @ 18.5' Discontinuous Yellowish-Gray Sandstone Interbed | |
| | | | | | | @ 21' Discontinuous Sandstone Interbed with Bedding as Poorly Sorted Yellowish-Gray Silty Pebbly Sandstone; Slightly Damp | Discontinuous Sandstone Beds Appear to Be Fossiliferous Based on Sample Breakage |
| | | | | | | @ 23' Slightly Undulating Contact with Olive-Gray to Brown Fine Sandy Siltstone | |
| | | | | | | @ 24.5' Olive-Gray Silty Shale and Sandy Siltstone with Thin, Discontinuous, Yellowish-Gray Sandstone Stringers and Interbeds | |
| | | | | | | @ 28' Well Consolidated | |
| | | | | | | @ 31' Yellowish-Brown to Light-Olive-Gray Laminated Siltstone and Fine Sandy Siltstone; Subhorizontal to Wavy | |
| | | | | | | @ 34' Grades to Yellowish-Gray, Medium- to Coarse-Grained Sandstone | |
| | | | | | | @ 37' Fossiliferous Contact with Olive-Gray Fine Sandy Siltstone and Sandy Sandstone Shell and Fossil Fragments Above | |
| | | | | | | @ 38' Brown Pebbly Silty Sandstone; Bedding Subtle | |

PRELIMINARY LOG SUBJECT TO REVISION

Cl Sat Lse Dam Cg cc Sme Cly Sl (Sa.
Structure; pri-sec Firm Moderately Dense Moist Sltst - siltstone Cl(y) - Clay (clayey)
Induration Stiff Dense Wet Ms - mudstone
Moisture Hard Very Dense Saturated Sh - shale

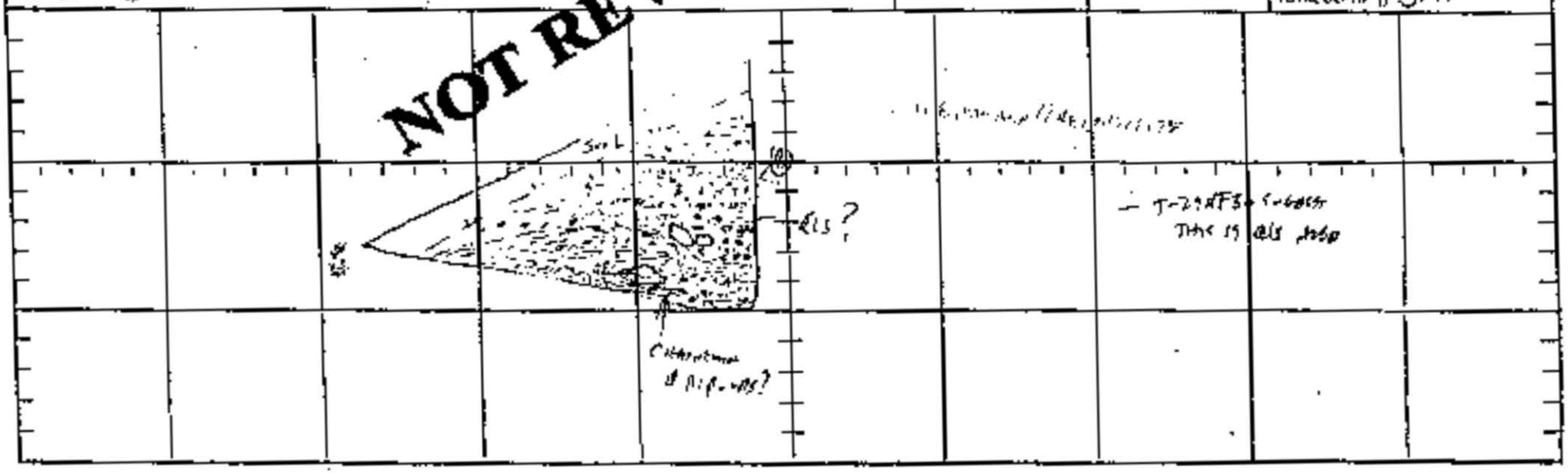
JOB NO. 99-162-5 PROJECT Towerline East Site

LOGGED BY BLS/AGS Trench Log No. 28 DATE

| LITHOLOGY | BEDDING | OTHER | COMMENTS |
|---|---|---|---|
| 0-1' SOIL; Brown SANDY PEBBLY MUD; FIRM; DAMP TO MOIST<br>1-8.5' [illegible] ?; QLS?, YELLOWISH-TO LIGHT-BROWNISH-GRAY SANDSTONE, PEBBLY SANDSTONE AND PEBBLE TO BOULDER CONGLOMERATE, AND CLAYEY-SILTY SANDSTONE AND SANDY MUDSTONE; UPPER 3 FT. WEATHERED AND CRUMBLY-FRIABLE, MODERATELY HARD BELOW; SLIGHTLY DAMP TO DAMP IN WEATHERED ZONE; | APX. N35E, 10 NW (Strike & Dip) | PRELIMINARY LOGGING SUBJECT TO REVISION | BEDDING IS INFERRED BY DISCONTINUOUS LAYER TYPE, BASED ON ORIENTATION AND DEPOSITIONAL PROCESSES ACROSS EXPOSURE<br>NO GROUNDWATER<br>NO CAVING<br>TOTAL DEPTH 8.5 FT. |

SCALE 1" = 5' N

NOT REVIEWED



Co..sit... s se amp s co..mer ..(y) Si.. .sil..
Structure) pri-sec Firm Moderately Dense Moist Sltst - siltstone Cl(y) - Clay (clayey)
Induration Stiff Dense Wet Ms - mudstone
Moisture Hard Very Dense Saturated Sh - shale

JOB NO. 99-1662-4 PROJECT Pumpkin East Site

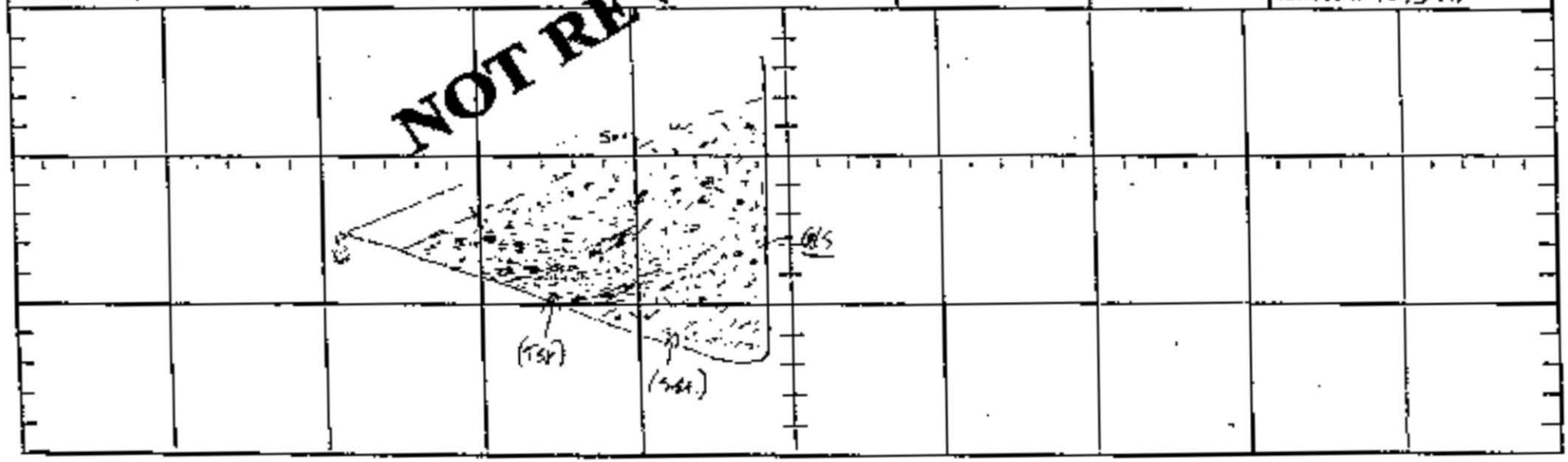
LOGGED BY GLS/AES Trench Log No. T9 DATE

| LITHOLOGY | BEDDING | OTHER | COMMENTS |
|---|---|---|---|
| 0-1.5' Soil; Orangish-brown Muddy pebbly sand; loose to firm, saturated damp to damp | | | GLS consists of disturbed and surface soil material; possible surface fracture |
| 1.5-10.5' Fanglomerate GLS, mixture of disrupted TSF lithologies, including light-brownish-gray to medium-brown moderately and well cemented sandstone and siltstone, and pinkish-gray to light-brownish-gray silty poorly sorted with small fossils and calcite veins; moderately dense to dense, slightly damp, with some hard zones in upper 3ft | | | No groundwater encountered Total depth 10.5 Ft |

SCALE 1" = 5'

North

NOT REVIEWED
PRELIMINARY
SUBJECT TO REVISION



Composition: Silt | Loose | Damp | Lg - conglomerate | Sdy(y) - Sand (sandy)
Structure; pri-sec: Firm | Moderately Dense | Moist | Sltst - siltstone | Cly(y) - Clay (clayey)
Induration: Stiff | Dense | Wet | Ms - mudstone
Moisture: Hard | Very Dense | Saturated | Sh - shale

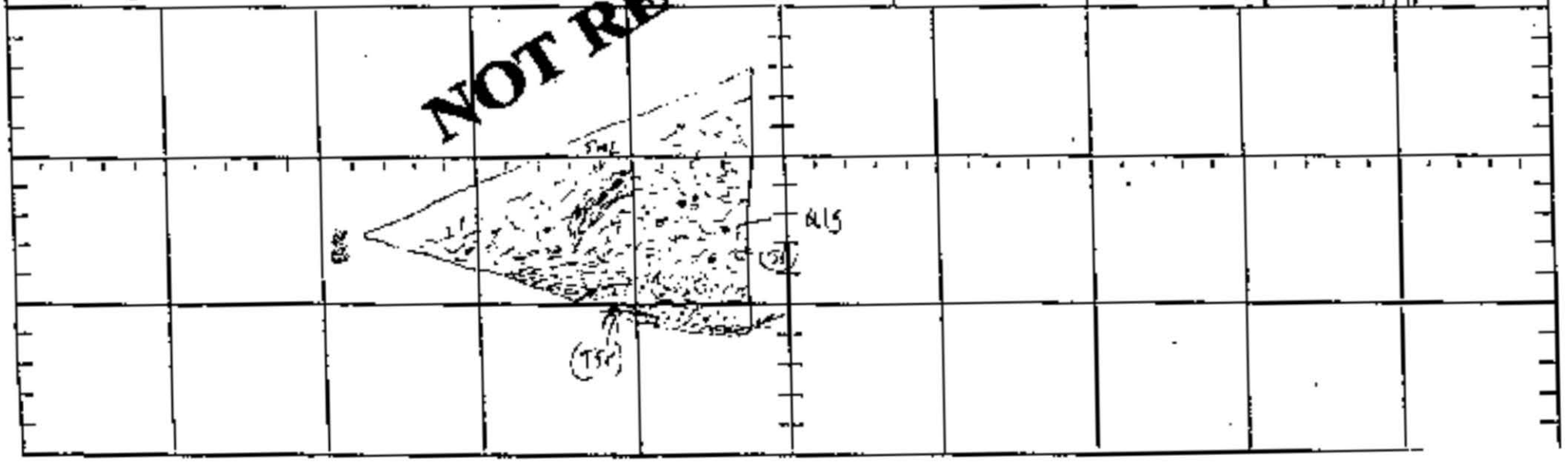
JOB NO. 99-1662-4 PROJECT Tunneling East Site

LOGGED BY GLS/PBS Trench Log No. 30 DATE

| LITHOLOGY | BEDDING | OTHER | COMMENTS |
|---|---|---|---|
| 0-1' SOIL; BROWN MUDDY PEBBLY SAND; SOFT; DAMP<br>1-9' LANDSLIDE; GLS; DISRUPTED MIX OF TSR LITHOLOGIES AND S-ASYAL MATERIAL INCLUDING GREENISH-GRAY SILTSTONE AND MUDSTONE AND REDDISH-GRAY SILTY SANDSTONE AND SANDSTONE AND YELLOWISH-BROWN SILTY PEBBLY SAND WITH LOCAL ARGILLIC AND OXIDATION ZONES; SLIGHTLY MOIST TO DAMP; FRACTURES ARE COMMON; BEDDING IS FAIRLY CLEAR AND DISRUPTED IN PLACES | | | NO GROUNDWATER<br>NO CAVING<br>TOTAL DEPTH 7' |

NOT REVIEWED
PRELIMINARY DRAFT
SUBJECT TO REVISION

SCALE 1" = 5' N42W



Composition — Soft / Firm / Stiff / Hard
Structure; pri-sec — Loose / Moderately Dense / Dense / Very Dense
Induration — Damp / Moist / Wet / Saturated
Moisture — Cg - conglomerate; Sltst - siltstone; Ms - mudstone; Sh - shale; (y) Sil. (silty); Cly) - Clay (clayey)

JOB NO. 19-1662-4 PROJECT Dumpstone East Site

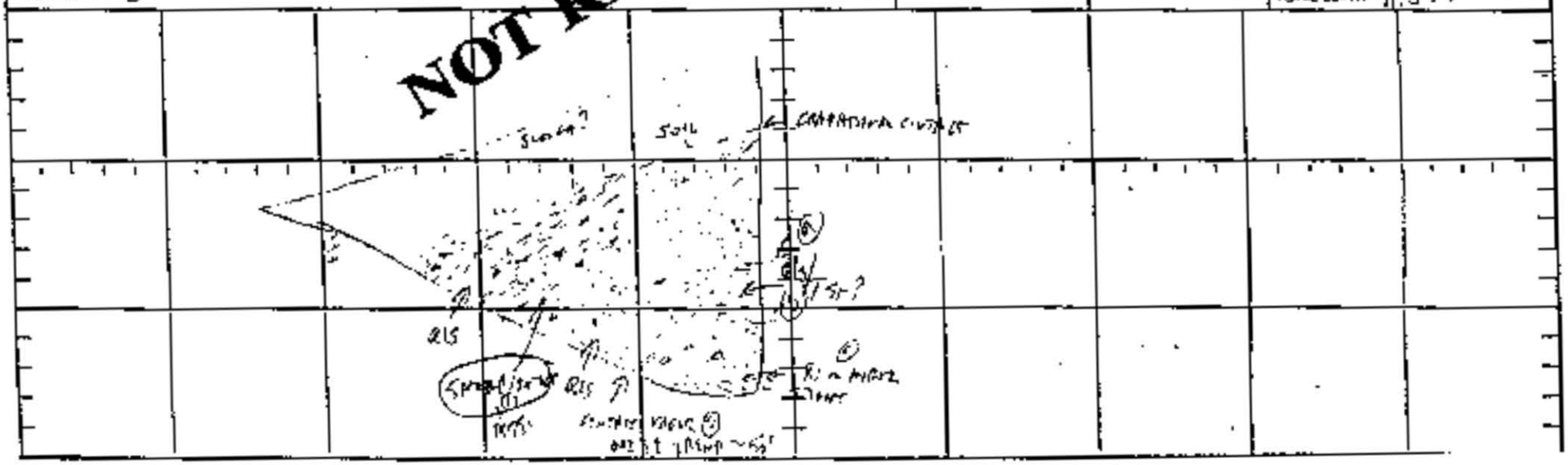
LOGGED BY BLS/MES Trench Log No. 10 DATE

| LITHOLOGY | BEDDING | OTHER | COMMENTS |
|---|---|---|---|
| 0 - 1' Slope?<br>1 - 2.5' Soil; Brown to moderate brown sandy mud; stiff; damp<br>2.5 - 5.5' Landslide; Qls; moderate brown moist to dry, massive to friable. Below shallow angle sandstone; moderately heavily bedded; moist to saturated near to base; damp; micaceous<br>5.5 - 11.5' Landslide? Qls? Sandstone; light gray with light gray clasts, yellowish-gray silty sandstone and yellowish-gray sandstone and pebble conglomerate w/ hard cobbles, dry to moderately hard; sandstone is friable; soft; damp | ① N75E, 4 NW<br>② N80E, 6 NW<br>③ Indeterminate | Direction ① N65E, 43 NW<br>Att ② N25E, 56 NW | Trenches 7 thru 10 examined with A. Tinsley and logged on 9/16/95<br>Bec Simple of Sandy material Qls?<br>No groundwater encountered<br>TOTAL DEPTH 11.5 ft |

SCALE 1" = 5'

NOT REVIEWED

PRELIMINARY DRAFT
SUBJECT TO REVISION


Slope?
Soil
Qls
Qls
Sandstone
Qls
Sandstone
Qls
Sandstone

## *APPENDIX C*

## *SLOPE STABILITY ANALYSIS*

### TABLE C-1
### Design Shear Strength Parameters for Slope Stability Analyses

| Material | Cohesion ($lb/ft^2$) | | Angle of Internal Friction (Degrees) | | Saturated Bulk Density ($lb/ft^3$) |
|---|---|---|---|---|---|
| | Ultimate | Peak | Ultimate | Peak | |
| Engineered Fill (Af)* | 325 | - | 30 | - | 120 |
| Alluvium (Qal)* | 350 | - | 28 | - | 120 |
| Existing Fill – Tract 53419** | 237 | - | 30 | - | 125 |
| Landslide Plane** | 100 | 8 | 120 | 12 | 120 |
| Landslide Material (Qols)** | 160 | 30 | 200 | 33 | 125 |
| *Bedrock/Saugus Formation (Tsr)* Along Bedding* | 250 | 375 | 18 | 19 | 125 |
| *Bedrock/Saugus Formation (Tsr)* Cross Bedding* | 600 | - | 32 | - | 125 |

*Values from RTF&A, January 6, 2003
**Values for off-site existing fill, landslide rupture surface, and landslide material from Leighton and Associates, Inc, November 19, 2003 report for Tract 53419

## ***TABLE C-2***

### ***Summary of Slope Stability Analyses***

| Cross-Section | Condition | Factor of Safety | Remarks |
|---|---|---|---|
| Q-Q’ | Global Stability, Rotational, Static | 1.93 | Modified Bishop Method |
| Q-Q’ | Global Stability, Rotational, Pseudostatic | 1.34 | Modified Bishop Method |
| Q-Q’ | Global Stability, Translational, Static | 2.20 | Simplified Janbu Method |
| Q-Q’ | Global Stability, Translational, Pseudostatic | 1.40 | Simplified Janbu Method |
| Q-Q’ | Lower Slope Stability, Translational, Static | 1.51 | Spencer Method |
| Q-Q’ | Lower Slope Stability, Translational, Pseudostatic | 1.13 | Spencer Method |
| Q-Q’ | Left Temporary Stability, Rotational, Static | 1.87 | Modified Bishop Method |
| Q-Q’ | Right Temporary Stability, Rotational, Static | 1.39 | Modified Bishop Method |
| Q-Q’ | Right Temporary Stability, Translational, Static | 1.26 | Spencer Method |
| 4-4’ | Global Stability, Rotational, Static | 1.89 | Modified Bishop Method |
| 4-4’ | Global Stability, Rotational, Pseudostatic | 1.41 | Modified Bishop Method |
| 4-4’ | Global Stability, Translational, Static | 1.52 | Spencer Method |
| 4-4’ | Global Stability, Translational, Pseudostatic | 1.12 | Spencer Method |
| 4-4’ | Behind Key Stability, Translational, Static | 1.93 | Simplified Janbu Method |
| 4-4’ | Behind Key Stability, Translational, Pseudostatic | 1.18 | Simplified Janbu Method |
| 4-4’ | Left Temporary Stability, Rotational, Static | 1.84 | Modified Bishop Method |
| 4-4’ | Left Temporary Stability, Translational, Static | 1.30 | Simplified Janbu Method |
| 4-4’ | Right Temporary Stability, Rotational, Static | 1.25 | Modified Bishop Method |

## FULLY SOFTENED SECANT FRICTION ANGLE

### STARK, CHOI, and Mccone (2005) Residual Strength Estimator

| Sample Location | | Stark & McCone (2001) | | | | | | FULLY SOFTENED SECANT FRICTION ANGLE | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Boring/Depth | Number | CF (ASTM) | LL (ASTM) | CF Conv. | LL Conv. | CF (ball) | LL (ball) | 1045 (50) | 2090 (100) | 8350 (400) |
| LB-1 @ 22' | 1 | 64 | 60 | 1.11 | 1.41 | 71.0 | 84.6 | 25.5 | 22.2 | 19 |
| LB-1 @ 36' | 2 | 71 | 61 | 1.11 | 1.41 | 78.8 | 86.2 | 25.6 | 22.4 | 19.1 |
| | | | | | | | | | | |
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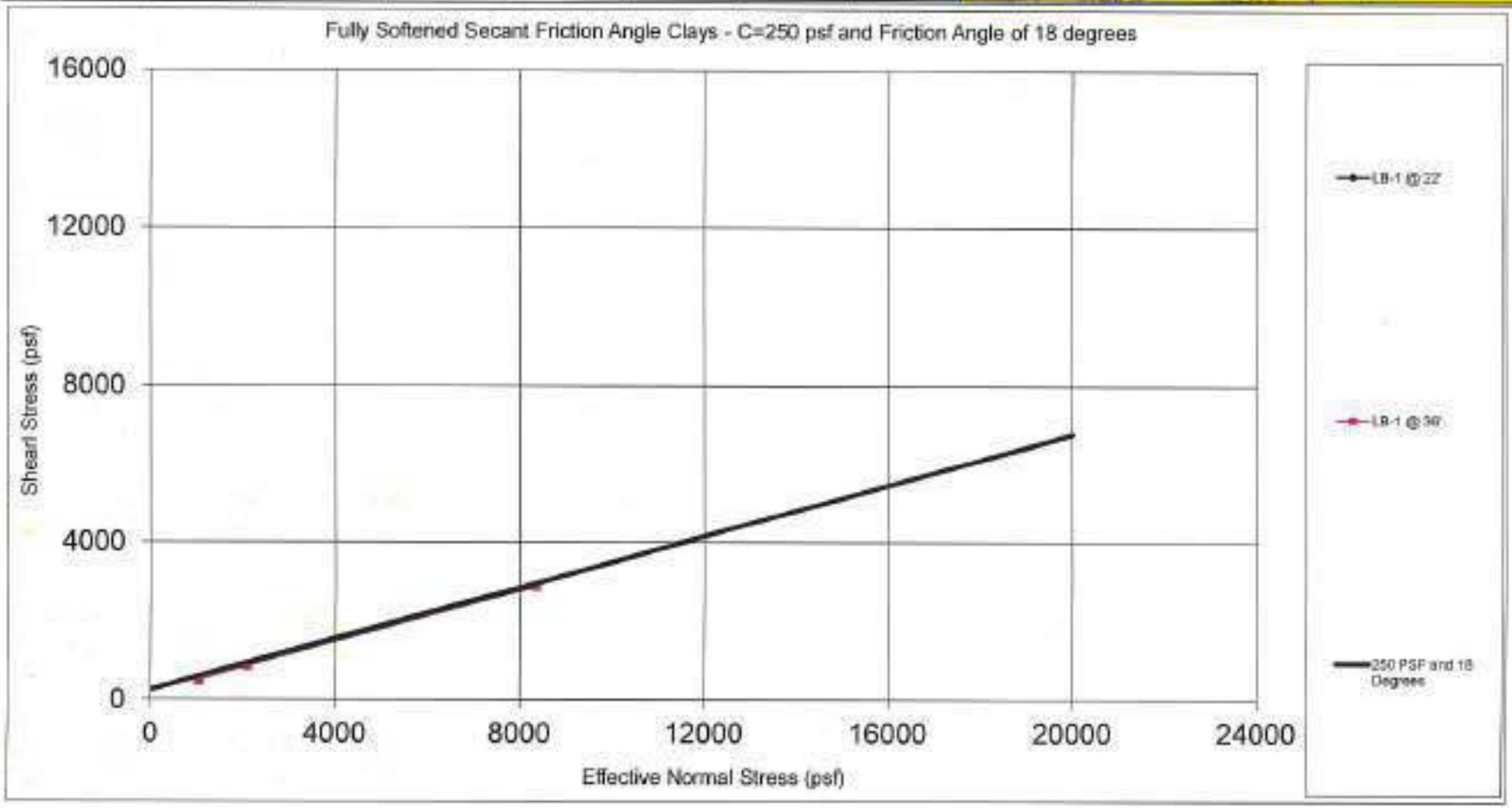
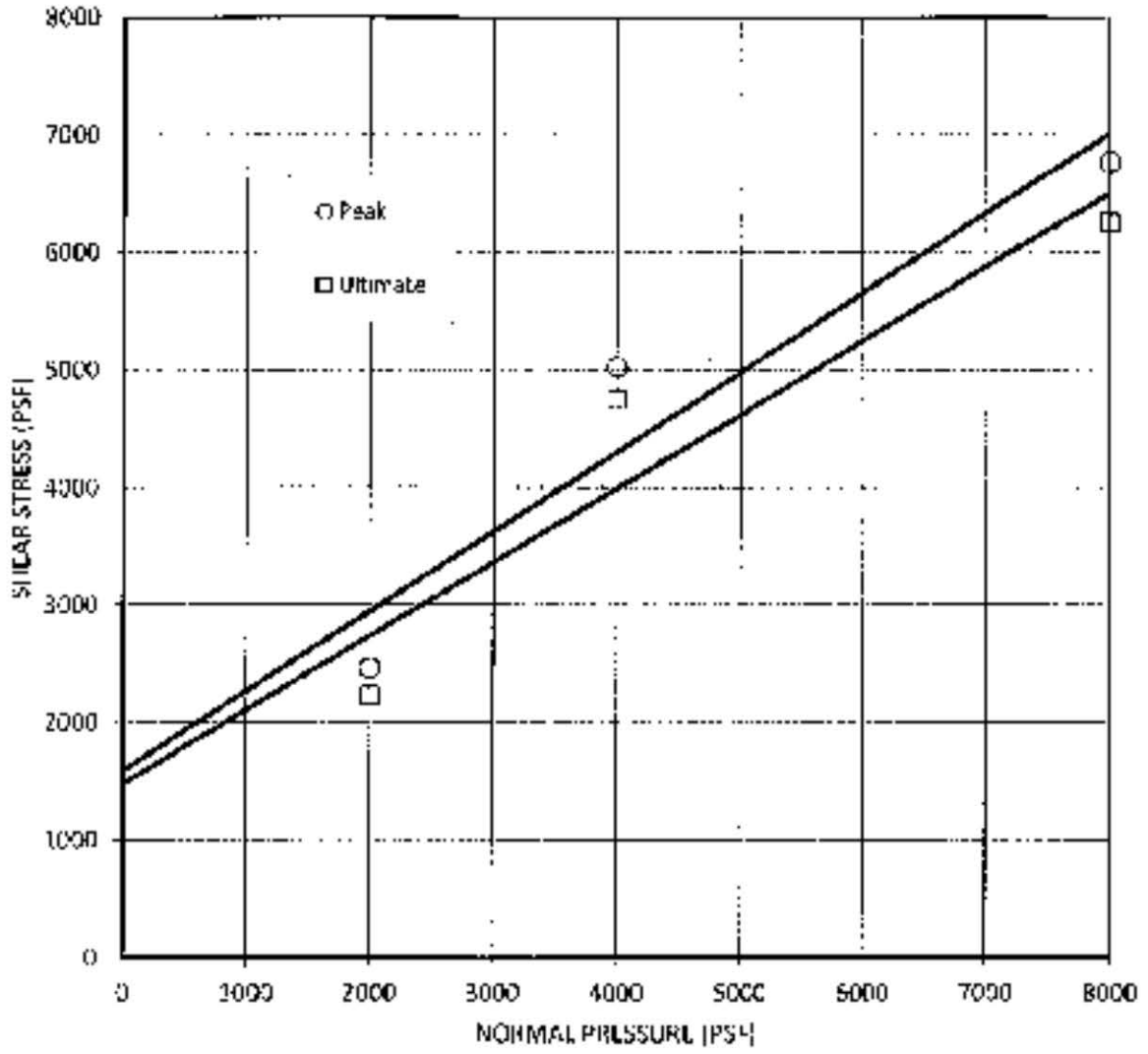





| Boring No. | Sample No. | Depth (ft) | Sample Type | Soil Type | Symbol | Cohesion (PSF) | Friction Angle |
|---|---|---|---|---|---|---|---|
| LB-1 | R-10 | 50.0 | Rock | Bedrock | ○ | 1590 | 34 |
| | | | | | □ | 1478 | 32 |

SANDSTONE

| Normal Stress (psf) | Initial Moisture (%) | Final Moisture (%) |
|---|---|---|
| 2000 | 2.8 | 14.5 |
| 4000 | 2.8 | 12.0 |
| 8000 | 2.8 | 11.3 |

**EGLAB, INC.**

Project Name: Volusia / LOC

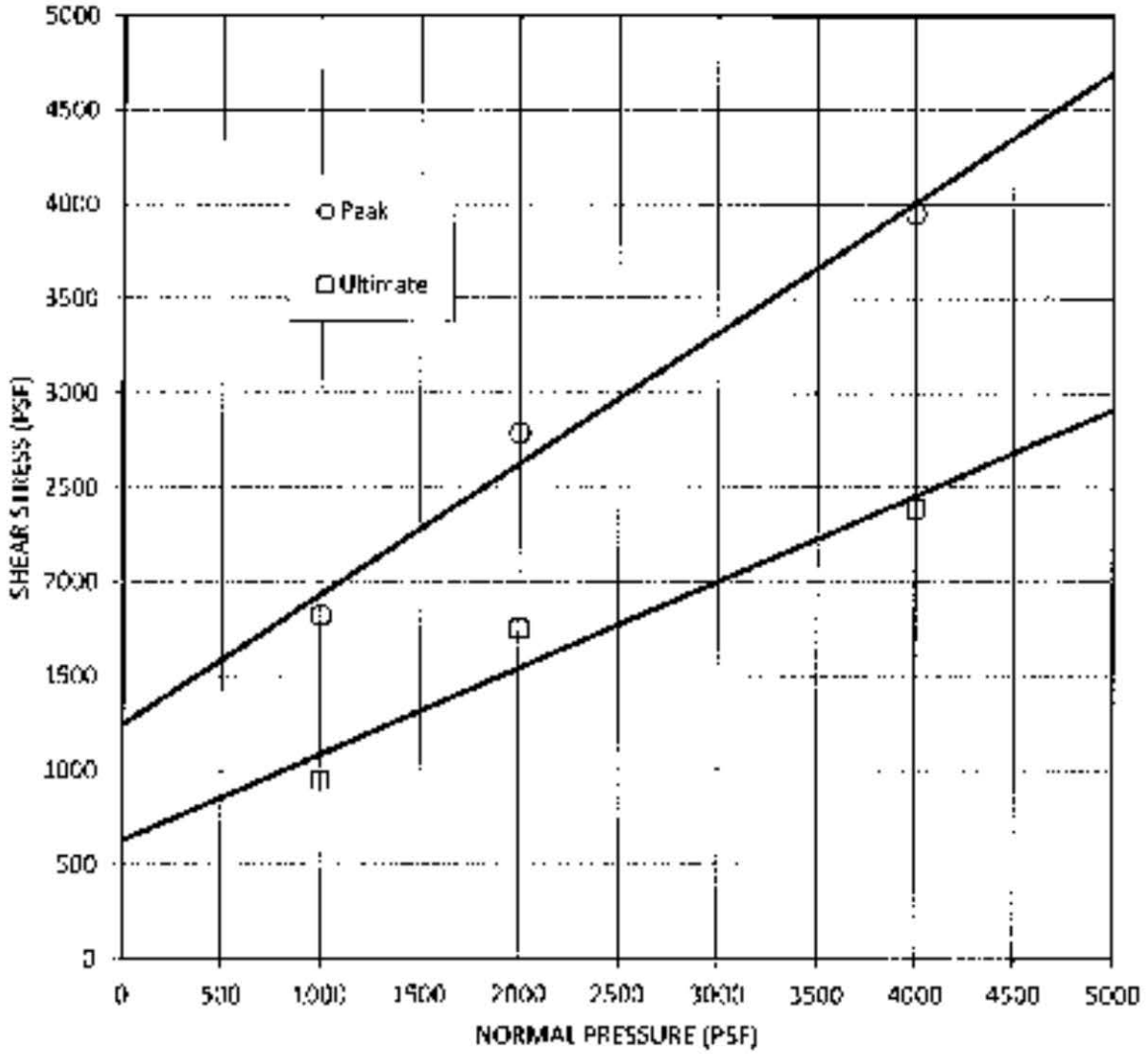
Client: LGC Valley, Inc.

Project No.: 309000-01

EGLAB Project No.: 20 009-011

## DIRECT SHEAR

10/20 (ASTM D3080) Figure




| Boring No. | Sample No. | Depth (ft) | Sample Type | Soil Type | Symbol | Cohesion (PSF) | Friction Angle |
|---|---|---|---|---|---|---|---|
| LB-1 | R-9 | 45.0 | Ring | Bedrock | ○ | 1242 | 35 |
| | | | | | □ | 629 | 25 |

SILTSTONE

| Normal Stress (psf) | Initial Moisture (%) | Final Moisture (%) |
|---|---|---|
| 1000 | 19.3 | 27.0 |
| 2000 | 19.3 | 23.7 |
| 4000 | 19.3 | 23.2 |

**EGLAB, INC.**

Project Name: Veluzat / LGC

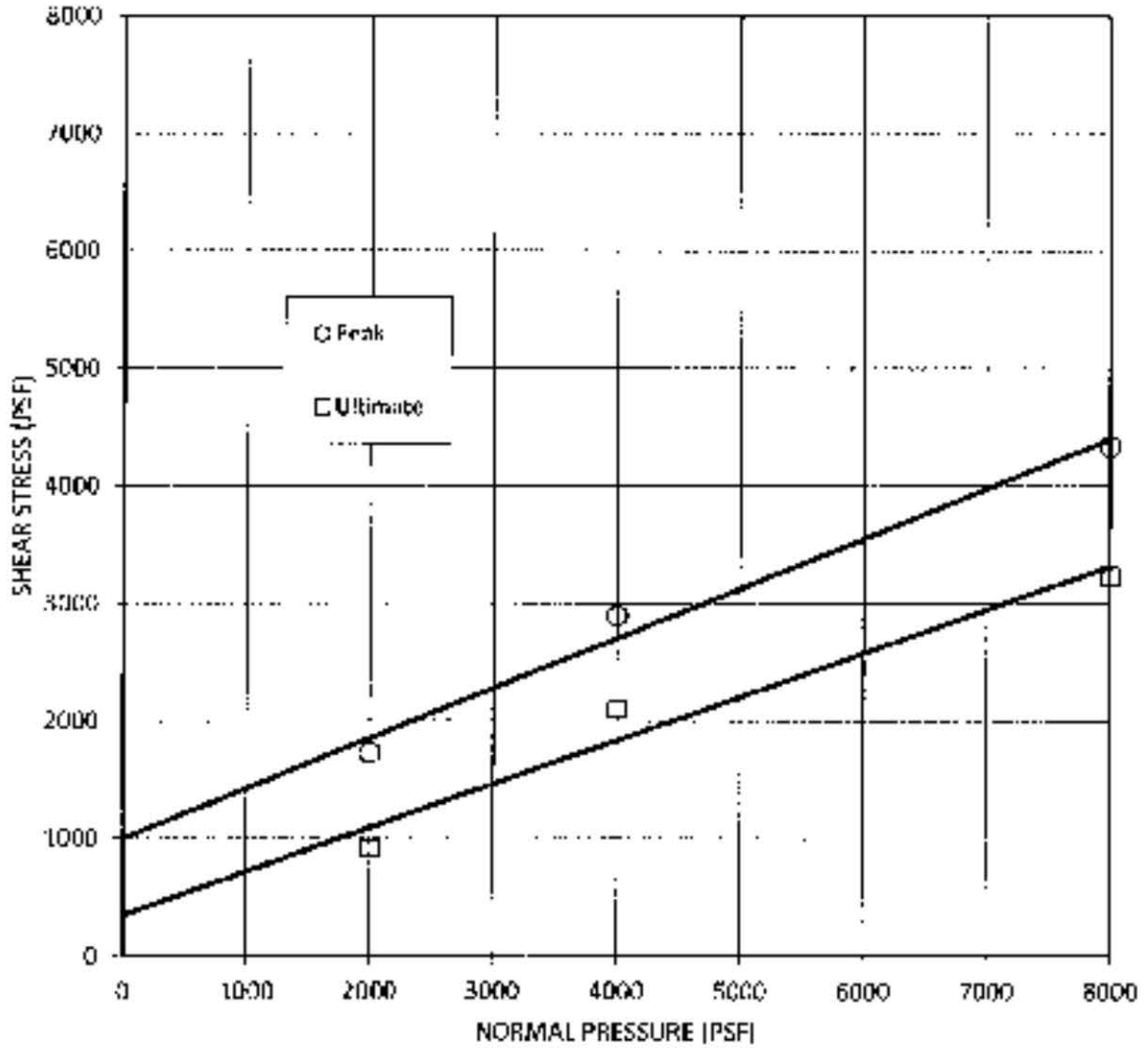
Client: LGC Valley, Inc.

Project No.: 205008-01

EGLAS Project No.: 20 060411

## DIRECT SHEAR

10/20 (ASTM D3080) Figure




| Boring No. | Sample No. | Depth (ft) | Sample Type | Soil Type | Symbol | Cohesion (PSF) | Friction Angle |
|---|---|---|---|---|---|---|---|
| LB-1 | R 13 | 65.0 | Ring | Bedrock | ○ | 1004 | 23 |
| | | | | | □ | 346 | 20 |

CLAY STONE

| Normal Stress (psf) | Initial Moisture (%) | Final Moisture (%) |
|---|---|---|
| 2000 | 21.0 | 30.9 |
| 4000 | 21.0 | 31.4 |
| 8000 | 21.0 | 27.8 |

**EGLAB, INC.**

Project Name: Vellejos / LDC

Client: UGI Valley, Inc.

Project No.: 203308.01

EGLAB Project No.: 20 059 011

## DIRECT SHEAR

10/20 (ASTM D3080) Figure

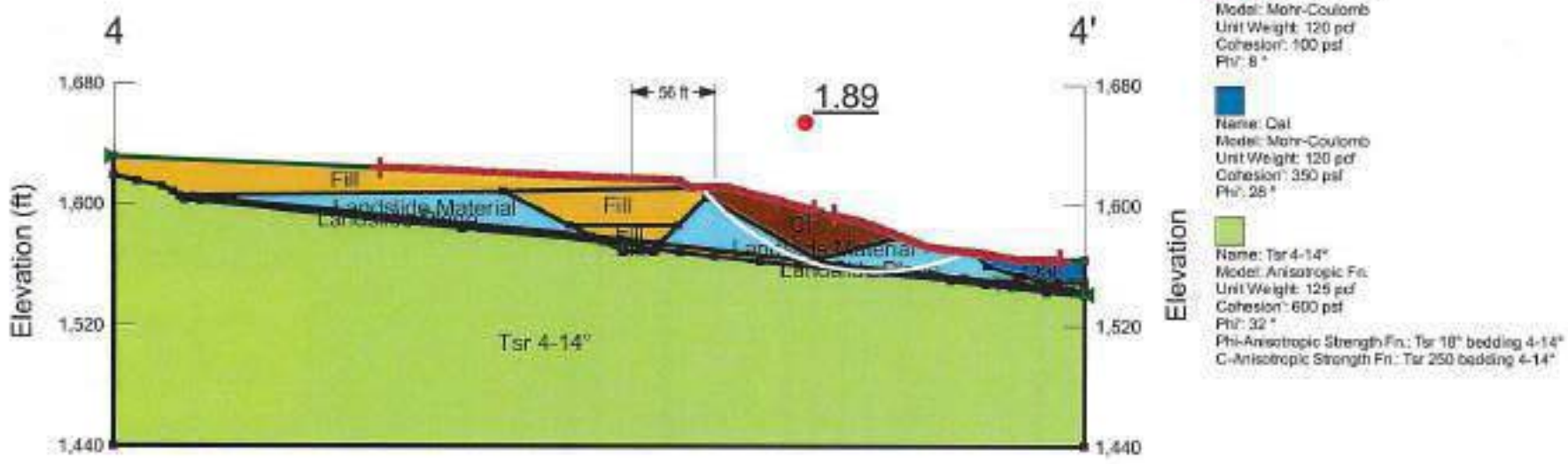
# Section 4-4 Tr 68203 SSA MW 12-2 B.gsz

Horz Seismic Coef.: 0

1 -Rotational Static Global

Section 4-4 Tr 68203 SSA MW 12-2 B.gsz 12/02/2021 09:00:33 AM

Method: Bishop




| | | | |
|---|---|---|---|
| **LGC** | **LGC Valley, Inc**<br>*GEOTECHNICAL CONSULTING*<br>28532 Constellation Rd, Valencia, CA 91355<br>Phone 661-702-8474, Fax 661-702-8475 | **Tentative Tract 68203**<br>**Santa Clarita, CA** | Project No: **203003-01**<br>Engineer: **BIH / MW**<br>Date: **Dec 2021** |

# 1 -Rotational Static Global

Project Name: Section A-A' Project Number: 5-180-004-0010 Project Description: Rotational Static Global

## File Information

File Version: 10.0.0
Title: Model
Created By: Michael Wilson
Last Revised By: Michael Wilson
Revision Number: 203
Date: 12/20/2023
Time: 09:00:33 AM
Tool Version: 10.0.0.17401
File Name: Section A-A' 08209 SSA.NEW 12.2.8.gsz
Directory: P:\PE\NA_PROJECTS\Western Goldfields\Valley Section\Analysis\Slide\
Last Solved Date: 12/22/2023
Last Solved Time: 09:09:42 AM

## Project Settings

Unit System: U.S. Customary Units

## Analysis Settings

### 1 -Rotational Static Global

Run: SLOPE/W
Method: Bishop
Settings
PWP Conditions from: (none)
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Optimize Critical Slip Surfaces: No
Tension Crack Option: (none)
Distribution
Slice Calculation Option: Constant
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 30
Factor of Safety Convergence Settings
Maximum Number of Iterations: 100
Tolerable difference in F of S: 0.001

## Materials





### Fill

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 225 psf
Phi: 30 °
Phi-B: 0 °

### Landslide Material

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 150 psf
Phi: 30 °
Phi-B: 0 °

### Landslide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 300 psf
Phi: 5 °
Phi-B: 0 °

### Tsr 4-14"

Model: Anisotropic Fn
Unit Weight: 125 pcf
Cohesion: 600 psf
Phi: 32 °
Phi-Anisotropic Strength Fn: Tsr 28° bedding 4-14"
D-A-Isotropic Strength Fn: Tsr 350 bedding 4-14"
Phi-B: 0 °

### Qal

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 450 psf
Phi: 28 °
Phi-B: 0 °

### Cf

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 237 psf
Phi: 30 °
Phi-B: 0 °

## Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (575,518.2, 1,024,141.2) ft
Left-Zone Right Coordinate: (607,305.83, 1,596.2828) ft
Left-Zone Increment: 30
Right Type: Range
Right-Zone Left Coordinate: (677,163.77, 1,592.807519) ft
Right-Zone Right Coordinate: (624.39845, 1,563.7) ft

Right Zone Increment: 80
Radius Increments: 16

## Slip Surface Limits

Left Coordinate: (40.24804, 1,631.6796) ft
Right Coordinate: (641.00817, 1,540.4281) ft

## Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

## Anisotropic Strength Functions

### Tsr 250 bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Points: Inclination (°), Modifier Factor
Data Point: (3.99, 1)
Data Point: (4, 0.6167)
Data Point: (14, 0.4167)
Data Point: (14.01, 1)

### Tsr 18° bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Points: Inclination (°), Modifier Factor
Data Point: (3.99, 1)
Data Point: (4, 0.5615)
Data Point: (14, 0.3875)
Data Point: (14.01, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 53.62088 ft | 1,611.9765 ft |
| Point 2 | -0.00371 ft | 1,619.1805 ft |
| Point 3 | 110.8173 ft | 1,643.1106 ft |
| Point 4 | 641.00417 ft | 1,440.0038 ft |
| Point 5 | 641.00417 ft | 1,540.428 ft |
| Point 6 | 615.74964 ft | 1,541.7550 ft |
| Point 7 | 575.40057 ft | 1,567.41 [illegible] ft |
| Point 8 | 552.23805 ft | 1,550.2826 ft |





| | | |
|---|---|---|
| Point 9 | 508.66435 ft | 1,550.3051 ft |
| Point 10 | 476.49747 ft | 1,557.8325 ft |
| Point 11 | 453.21595 ft | 1,560.3002 ft |
| Point 12 | 426.26243 ft | 1,562.7023 ft |
| Point 13 | 406.2331 ft | 1,564.0367 ft |
| Point 14 | 373.88573 ft | 1,568.8203 ft |
| Point 15 | 357.36[illegible].74 ft | 1,571.0083 ft |
| Point 16 | 343.74885 ft | 1,568.0529 ft |
| Point 17 | 329.57587 ft | 1,564.306 ft |
| Point 18 | 27.65409 ft | 1,601.7[illegible]6 ft |
| Point 19 | 46.86744 ft | 1,604.5564 ft |
| Point 20 | 29.23055 ft | 1,608.2571 ft |
| Point 21 | 15.41757 ft | 1,635.1354 ft |
| Point 22 | 48.24017 ft | 1,606.[illegible]02 ft |
| Point 23 | 70.53956 ft | 1,607.3499 ft |
| Point 24 | 52.5255 ft | 1,604.839 ft |
| Point 25 | 397.08526 ft | 1,611.6503 ft |
| Point 26 | 300.26727 ft | 1,574.2585 ft |
| Point 27 | 479.88467 ft | 1,560.0107 ft |
| Point 28 | 561.32444 ft | 1,551.9199 ft |
| Point 29 | 390.06015 ft | 1,548.8557 ft |
| Point 30 | 558.94254 ft | 1,557.7251 ft |
| Point 31 | 576.73492 ft | 1,559.9277 ft |
| Point 32 | 568.29258 ft | 1,568.308 ft |
| Point 33 | 558.[illegible]0.70 ft | 1,571.8128 ft |
| Point 34 | 538.63[illegible].84 ft | 1,578.0857 ft |
| Point 35 | 498.[illegible]0.32 ft | 1,580.9956 ft |
| Point 36 | 404.[illegible]960 ft | 1,611.2396 ft |
| Point 37 | 46.58[illegible]98 ft | 1,604.[illegible]51 ft |
| Point 38 | 641.00013 ft | 1,543.5286 ft |
| Point 39 | 596.71358 ft | 1,565.[illegible]007 ft |
| Point 40 | 641.00013 ft | 1,561.[illegible]017 ft |
| Point 41 | 641.[illegible]7 ft | 1,548.[illegible]503 ft |
| Point 42 | 623.99618 ft | 1,548.[illegible]504 ft |
| Point 43 | 612.80351 ft | 1,549.[illegible]019 ft |
| Point 44 | 598.[illegible]9 ft | 1,[illegible]9.2375 ft |
| Point 45 | 458.[illegible]9 ft | 1,564.[illegible]4 ft |
| Point 46 | 456.65914 ft | 1,564.5273 ft |
| Point 47 | 380.67181 ft | 1,511.2957 ft |
| Point 48 | 372.85938 ft | 1,[illegible]9.[illegible] ft |
| Point 49 | -0.24891 ft | 1,[illegible]7.[illegible] ft |
| Point 50 | 372.42616 ft | 1,586.6997 ft |
| Point 51 | 355.81187 ft | 1,569.0616 ft |
| Point 52 | 250.68715 ft | 1,[illegible]8.6108 ft |
| Point 53 | 300.0785 ft | 1,586.6357 ft |
| Point 54 | 315.13949 ft | 1,[illegible]5.[illegible] ft |
| Point 55 | 322.56921 ft | 1,[illegible]3.[illegible] ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | Tir 4-14° | 2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22 | 86 438 ft² |
| Region 2 | Landslide Material | 23,24,25,26,27,28,29 | 2,193.9 ft² |
| Region 3 | Landslide Material | 28,27,28,29,30,31,32,33,34,35,43,44,50 | 4,668.7 ft² |
| Region 4 | Landslide Plane | 23,30,37,38,37,50,24,24 | 819.73 ft² |
| Region 5 | Landslide Plane | 15,26,27,28,29,35,36,37,38,9,10,11,12,13,14 | 4,81.57 ft² |
| Region 6 | Dol | 32,39,40,41,42,44,50,33 | 928.76 ft² |
| Region 7 | Tir 4-14° | 29,50,43,47,31,26 | 173.0a ft² |
| Region 8 | Of | 45,44,45,46,36,35,36 | 2,588.4 ft² |
| Region 9 | Fill | 47,48,49,2,21,1,20,22,52 | 5,588.6 ft² |
| Region 10 | Fill | 54,55,35,20 | 327.18 ft² |
| Region 11 | Fill | 52,55,50,44,25,47 | 3,506.3 ft² |
| Region 12 | Fill | 55,16,53,35 | 104.19 ft² |
| Region 13 | Fill | 50,56,54,36 | 571.13 ft² |

## Slip Results

Slip Surfaces Analyzed: 58893 of 98415 converged

## Current Slip Surface

Slip Surface: 72,412
Factor of Safety: 1.39
Volume: 8,046.1378 ft³
Weight: 506,338.72 lb
Resisting Moment: 32,425,071 lbf ft
Activating Moment: 17,161,058 lbf ft
Slip Surface: Left 98,415 slip surfaces
Exit: (561.47979, 1,018.5003) ft
Entry: (387.79448, 1,011.4491) ft
Radius: 167.98764 ft
Center: (502.96809, 1,103.2396) ft

## Slip Slices

| | X | Y | PWP | Base Normal Stress | Frictional Strength | Cohesive Strength | Surface Strength | Base Material |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 389.97107 ft | 1,008.9589 ft | 0 psf | 72.136425 psf | 43.640684 psf | 325 psf | 0 psf | Fill |
| Slice 2 | 395.71558 ft | 1,004.5329 ft | 0 psf | 344.41357 psf | 334.81675 psf | 237 psf | 0 psf | Of |
| Slice 3 | 395.10758 ft | 1,001.7837 ft | 0 psf | 869.84106 psf | 590.45099 psf | 160 psf | 0 psf | Landslide Material |
| Slice 4 | 400.01468 ft | 1,007.4743 ft | 11 psf | 1,285.9764 psf | 744.1825 psf | 160 psf | 0 psf | Landslide Material |
| Slice 5 | 407.1655 ft | 1,364.4511 ft | 0 psf | 1,525.7221 psf | 1,034.6565 psf | 160 psf | 0 psf | Landslide |





| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 5 | ft | ft | | psf | psf | | | Material |
| Slice 6 | 413.10234 ft | 1,586.6128 ft | 0 psf | 2,305.5732 psf | 1,270.3885 psf | 160 psf | 0 psf | Landslide Material |
| Slice 7 | 410.04617 ft | 1,587.2594 ft | 0 psf | 2,547.8588 psf | 1,408.6076 psf | 160 psf | 0 psf | Landslide Material |
| Slice 8 | 424.99 ft | 1,578.481 ft | 11 psf | 2,583.7578 psf | 1,641.8414 psf | 160 psf | 0 psf | Landslide Material |
| Slice 9 | 430.93585 ft | 1,574.617 ft | 0 psf | 3,107.077 psf | 1,958.8737 psf | 160 psf | 0 psf | Landslide Material |
| Slice 10 | 436.87766 ft | 1,571.1616 ft | 0 psf | 3,515.902 psf | 1,975.4375 psf | 160 psf | 0 psf | Landslide Material |
| Slice 11 | 442.82149 ft | 1,568.8821 ft | 0 psf | 3,529.661 psf | 2,037.8362 psf | 160 psf | 0 psf | Landslide Material |
| Slice 12 | 448.76632 ft | 1,566.2181 ft | 0 psf | 3,491.8193 psf | 2,151.284 psf | 160 psf | 0 psf | Landslide Material |
| Slice 13 | 454.70815 ft | 1,564.1156 ft | 11 psf | 3,820.9954 psf | 2,205.6548 psf | 160 psf | 0 psf | Landslide Material |
| Slice 14 | 460.42843 ft | 1,562.2585 ft | 0 psf | 4,188.8688 psf | 568.20726 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 15 | 464.40946 ft | 1,560.9626 ft | 0 psf | 4,214.5318 psf | 592.17712 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 16 | 469.79147 ft | 1,559.7677 ft | 0 psf | 4,214.7467 psf | 592.04402 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 17 | 475.05614 ft | 1,558.4588 ft | 0 psf | 4,199.9778 psf | 589.77782 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 18 | 482.05638 ft | 1,557.4586 ft | 0 psf | 4,120.2773 psf | 579.09649 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 19 | 488.99999 ft | 1,556.6412 ft | 0 psf | 4,035.5978 psf | 567.19958 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 20 | 495.08561 ft | 1,556.2192 ft | 0 psf | 3,502.274 psf | 548.42864 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 21 | 502.25607 ft | 1,555.9014 ft | 0 psf | 3,668.0516 psf | 515.53155 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 22 | 508.13668 ft | 1,556.0601 ft | 0 psf | 3,376.0682 psf | 474.7784 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 23 | 514.07588 ft | 1,556.3689 ft | 0 psf | 3,050.89144 psf | 428.79445 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 24 | 517.81172 ft | 1,556.0909 ft | 0 psf | 2,912.0847 psf | 1,681.6808 psf | 160 psf | 0 psf | Landslide Material |
| Slice 25 | 521.04847 ft | 1,557.202 ft | 0 psf | 3,675.904 psf | 1,544.9085 psf | 160 psf | 0 psf | Landslide Material |
| Slice 26 | 526.5767 ft | 1,558.7267 ft | 0 psf | 3,784.4528 psf | 1,308.5821 psf | 160 psf | 0 psf | Landslide Material |
| Slice 27 | 536.29565 ft | 1,559.5488 ft | 0 psf | 3,903.2662 psf | 1,041.1165 psf | 160 psf | 0 psf | Landslide Material |
| Slice 28 | 541.67972 ft | 1,561.1356 ft | 0 psf | 3,408.5155 psf | 819.20653 psf | 160 psf | 0 psf | Landslide Material |
| Slice 29 | 547.87758 ft | 1,562.9816 ft | 0 psf | 3,066.7059 psf | 627.46154 psf | 160 psf | 0 psf | Landslide Material |
| Slice 30 | 554.11544 ft | 1,565.1134 ft | 0 psf | 732.84529 psf | 431.89914 psf | 160 psf | 0 psf | Landslide Material |
| Slide 31 | 560.35331 ft | 1,567.2452 ft | 0 psf | 238.64416 psf | 167.87528 psf | 160 psf | 0 psf | Landslide Material |

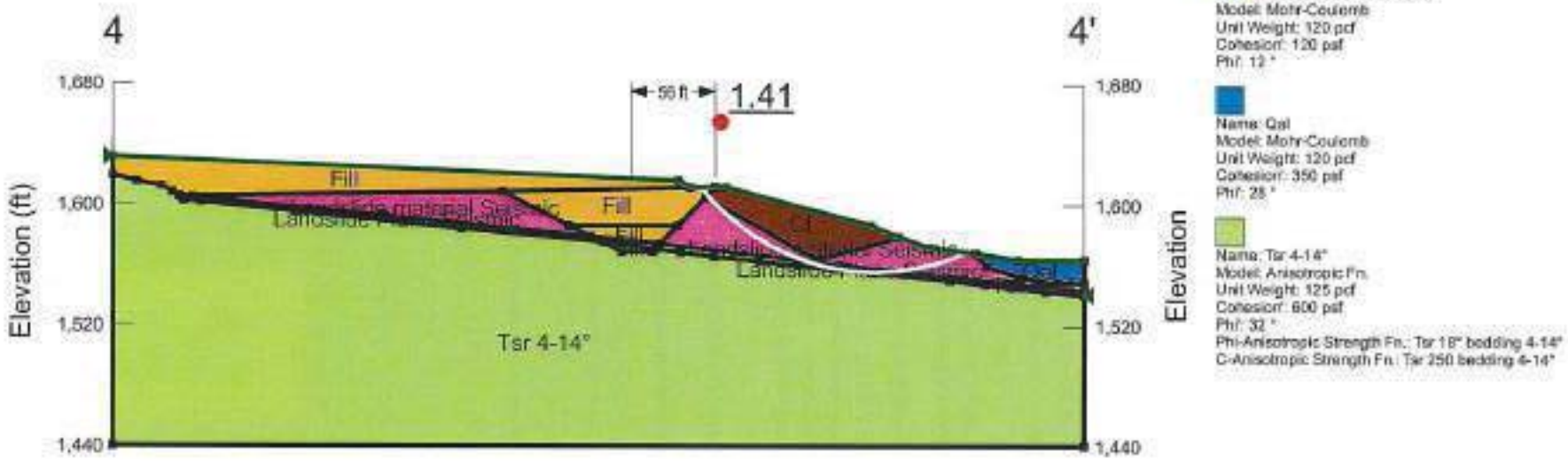
# Section 4-4 Tr 68203 SSA MW 12-2 B.gsz

Horz Seismic Coef.: 0.15

1 -Rotational Pseudostatic Global

Section 4-4 Tr 68203 SSA MW 12-2 B.gsz 12/02/2021 09:00:33 AM

Method: Bishop




Name: Cf
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 297 psf
Phi: 30 °

Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 325 psf
Phi: 30 °

Name: Landslide material Seismic
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 200 psf
Phi: 33 °

Name: Landslide Plane Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 120 psf
Phi: 12 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 350 psf
Phi: 28 °

Name: Tsr 4-14°
Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion: 600 psf
Phi: 32 °
Phi-Anisotropic Strength Fn.: Tsr 18° bedding 4-14°
C-Anisotropic Strength Fn.: Tsr 250 bedding 4-14°


**LGC Valley, Inc**

*GEOTECHNICAL CONSULTING*

28532 Constellation Rd, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

| | |
|---|---|
| Project No: | 203003-01 |
| Engineer: | BIH / MW |
| Date: | Dec 2021 |

# 1 -Rotational Pseudostatic Global

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## File Information

File Version: 10.0
Title: Valuga
Created By: Michel Wilson
Last Edited By: Michel Wilson
Revision Number: 203
Date: 12/02/2021
Time: 09:00:55 AM
Tool Version: 10.0.0.17401
File Name: Section 4-4 Tr 98203.SSA MW 12.2.Bgpx
Directory: P:\PROJECTS\Valuga Golden Valley Terra Hwy\Slope stability\Valuga\
Last Solved Date: 12/02/2021
Last Solved Time: 06:20:46 AM

## Project Settings

Unit System: U.S. Customary Units

## Analysis Settings

### 1 -Rotational Pseudostatic Global

Kind: SLOPE/W
Method: 1 -Rotational pseudostatic global
Settings
Pore Water Pressure Inside Tension Crack: None
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entire Slip Surface from Other
Critical slip surfaces saved: 1
Optimize Critical Slip Surface location: No
Tension Crack Option: (none)
Discretization
Left Side Discretization Option: Compare
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 30
Numerical Convergence Settings
Maximum Number of Iterations: 500
Tolerance: Difference in Factor of Safety: 0.01





## Materials

### Fill

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 375 psf
Phi: 30 °
Phi-B: 0 °

### Tst 4-14"

Model: Anisotropic Fn
Unit Weight: 125 pcf
Cohesion: 5021 psf
Phi: 32 °
Phi Anisotropic Strength Fn: Tst 33° bedding 4-14"
Cohesion Anisotropic Strength Fn: Tst 250 bedding 4-14"
Phi-B: 0 °

### Qal

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 350 psf
Phi: 28 °
Phi-B: 0 °

### Landslide material Seismic

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 200 psf
Phi: 22 °
Phi-B: 0 °

### Cf

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 237 psf
Phi: 30 °
Phi-B: 0 °

### Landslide Plane Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 125 psf
Phi: 17 °
Phi-B: 0 °

## Slip Surface Limits

Left Coordinate: (-0.24894, 1,621.6796) ft
Right Coordinate: (941.10001, 1,510.0361) ft

## Seismic Coefficients

Horizontal Seismic Coefficient: 0.15
Vertical Seismic Coefficient: 0

## Anisotropic Strength Functions

### Tsr 250 bedding 4-14°

Model: Spline Data Point Function
Function Modifier Factors vs. Inclination:
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-intercept: 1
Data Point Inclination (°), Modifier Factor
Data Point: (3.95, 1)
Data Point: (4, 0.4167)
Data Point: (14, 0.4167)
Data Point: (14.01, 1)

### Tsr 18° bedding 4-14°

Model: Spline Data Point Function
Function Modifier Factors vs. Inclination:
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-intercept: 1
Data Points: Inclination (°), Modifier Factor
Data Point: (3.95, 1)
Data Point: (4, 0.5625)
Data Point: (14, 0.5625)
Data Point: (14.01, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 31.88996 ft | 1,611.9789 ft |
| Point 2 | 41.80471 ft | 1,619.1815 ft |
| Point 3 | 0.00023 ft | 1,440.0147 ft |
| Point 4 | 641.04437 ft | 1,440.0028 ft |
| Point 5 | 641.00437 ft | 1,540.1426 ft |
| Point 6 | 615.74960 ft | 1,547.7576 ft |
| Point 7 | 575.79817 ft | 1,547.4116 ft |
| Point 8 | 562.23805 ft | 1,560.2826 ft |
| Point 9 | 501.05479 ft | 1,565.9681 ft |
| Point 10 | 476.89747 ft | 1,557.9326 ft |
| Point 11 | 481.22679 ft | 1,560.8002 ft |
| Point 12 | 426.25241 ft | 1,581.7311 ft |
| Point 13 | 396.71311 ft | 1,596.2767 ft |
| Point 14 | 375.88071 ft | 1,598.6201 ft |
| Point 15 | 357.59074 ft | 1,571.3083 ft |
| Point 16 | 335.91083 ft | 1,599.2519 ft |
| Point 17 | 329.67987 ft | 1,584.305 ft |
| Point 18 | 317.74414 ft | 1,602.7806 ft |
| Point 19 | 44.89249 ft | 1,604.5064 ft |
| Point 20 | 39.23095 ft | 1,608.7471 ft |
| Point 21 | 33.41757 ft | 1,615.1753 ft |
| Point 22 | 46.24387 ft | 1,605.002 ft |
| Point 23 | 78.51995 ft | 1,602.4489 ft |
| Point 24 | 82.52259 ft | 1,594.893 ft |
| Point 25 | 397.04636 ft | 1,661.6903 ft |
| Point 26 | 391.25737 ft | 1,646.2386 ft |
| Point 27 | 479.18847 ft | 1,560.6167 ft |
| Point 28 | 551.31444 ft | 1,561.4104 ft |
| Point 29 | 560.05015 ft | 1,548.8837 ft |
| Point 30 | 598.94253 ft | 1,567.5261 ft |
| Point 31 | 578.75483 ft | 1,618.9973 ft |
| Point 32 | 509.19778 ft | 1,566.308 ft |
| Point 33 | 538.52079 ft | 1,571.6258 ft |
| Point 34 | 518.65161 ft | 1,576.8853 ft |
| Point 35 | 429.97122 ft | 1,580.6956 ft |
| Point 36 | 429.18604 ft | 1,611.2396 ft |
| Point 37 | 46.38868 ft | 1,601.0251 ft |
| Point 38 | 641.00023 ft | 1,543.5736 ft |
| Point 39 | 526.71358 ft | 1,563.7007 ft |
| Point 40 | 641.00023 ft | 1,565.7007 ft |
| Point 41 | 640.98727 ft | 1,548.7503 ft |
| Point 42 | 623.39618 ft | 1,548.7503 ft |
| Point 43 | 612.80351 ft | 1,548.7503 ft |
| Point 44 | 390.72862 ft | 1,605.2279 ft |
| Point 45 | 486.14739 ft | 1,564.5273 ft |
| Point 46 | 488.65930 ft | 1,564.5273 ft |
| Point 47 | 380.67181 ft | 1,611.2957 ft |
| Point 48 | 372.85838 ft | 1,615.6779 ft |
| Point 49 | 412.66991 ft | 1,633.6796 ft |
| Point 50 | 372.42616 ft | 1,585.6997 ft |
| Point 51 | 355.87187 ft | 1,585.0618 ft |
| Point 52 | 356.04475 ft | 1,608.6108 ft |
| Point 53 | 360.6786 ft | 1,585.6357 ft |
| Point 54 | 435.13939 ft | 1,575.3481 ft |
| Point 55 | 322.55302 ft | 1,575.6656 ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | Tsr 9-14° | 2,3,4,5,6,7,8,9,10,11,12,13,14,15,51,16,48,17,18,47,19,22,20,1,21 | 60,458 ft² |
| Region 2 | Landslide material Seismic | 22,52,53,54,23,24 | 4,205.0 ft² |
| Region 3 | Landslide material Seismic | 26,27,28,29,30,31,32,33,34,46,35,44,50 | 3,608.7 ft² |
| Region 4 | Landslide Plane | 24,39,37,38,36,55,54,25 | 816.73 |

| | | | |
|---|---|---|---|
| Region 6 | Seismic<br>Landslide Plane Seismic | 15,26,27,28,29,30,5,6,7,8,9,10,31,32,33,34 | ft²<br>983,867 ft² |
| Region 8 | Opt | 32,39,40,41,42,43,50,51 | 828,75 ft² |
| Region 7 | Opt 4 | 33,44,45,46,47,48,18 | 1,711,114 ft² |
| Region 8 | Opt | 25,14,15,16,24,35,36 | 2,358,4 ft² |
| Region 9 | Fill | 47,48,49,2,3,1,20,52,52 | 5,386,6 ft² |
| Region 10 | Fill | 54,55,15,26 | 123,38 ft² |
| Region 11 | Fill | 52,53,50,44,23,4 | 2,936,3 ft² |
| Region 12 | Fill | 55,56,51,14 | 104,68 ft² |
| Region 13 | Fill | 56,53,54,22 | 121,47 ft² |

## Slip Results

Slip Surfaces Analyzed: 1 of 1 converged

## Current Slip Surface

Slip Surface: 1
Factor of Safety: 1.41
Volume: 4,676,7323 ft³
Weight: 706,339.71 lbf
Resisting Moment: 37,317,910 lbf-ft
Activating Moment: 26,554,004 lbf-ft
Slip Rank: 1 of 1 Slip Surfaces
Exit: (363,472.23, 1,561.0765) ft
Entry: (307.75958, 1,611.4495) ft
Radius: 347.20575 ft
Center: (304.95809, 1,001.2386) ft

### Slip Slices

| | X | Y | PWP | Base Normal Stress | Frictional Strength | Cohesive Strength | Suction Strength | Base Material |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 369.57302 ft | 1,608.0659 ft | 0 psf | 10.068815 psf | 10.074571 psf | 325 psf | 0 psf | Fill |
| Slice 3 | 399.71313 ft | 1,604.5153 ft | 0 psf | 468.42589 psf | 661.07035 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 5 | 426.26454 ft | 1,602.7437 ft | 0 psf | 721.20152 psf | 674.84857 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 4 | 400.61643 ft | 1,597.4545 ft | 0 psf | 1,115.1282 psf | 624.21617 psf | 200 psf | 0 psf | Landslide material Seismic |





| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Slice 5 | 407.15051 ft | 1,591.4511 ft | 0 psf | 1,513.0836 psf | 1,290.9148 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 6 | 413.10234 ft | 1,586.8171 ft | 0 psf | 1,978.6751 psf | 1,284.9686 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 7 | 419.04417 ft | 1,582.2031 ft | 0 psf | 2,306.3523 psf | 1,401.8215 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 8 | 424.98 ft | 1,578.941 ft | 0 psf | 2,502.3410 psf | 1,580.0836 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 9 | 430.88333 ft | 1,574.0271 ft | 0 psf | 2,806.9172 psf | 1,691.6457 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 10 | 436.87746 ft | 1,571.696 ft | 0 psf | 3,101.142 psf | 2,003.2051 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 11 | 442.87149 ft | 1,568.8923 ft | 0 psf | 3,305.4758 psf | 2,146.6031 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 12 | 448.76532 ft | 1,566.3243 ft | 0 psf | 3,450.0787 psf | 2,272.1830 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 13 | 454.70915 ft | 1,564.1156 ft | 0 psf | 3,636.334 psf | 2,454.2886 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 14 | 460.43643 ft | 1,562.2586 ft | 0 psf | 4,260.2846 psf | 868.72916 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 15 | 464.90346 ft | 1,561.0648 ft | 0 psf | 4,122.5796 psf | 838.28134 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 16 | 469.37047 ft | 1,559.7677 ft | 0 psf | 4,156.4656 psf | 809.06055 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 17 | 473.83614 ft | 1,558.4798 ft | 0 psf | 4,125.7177 psf | 696.94826 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 18 | 478.29718 ft | 1,557.1936 ft | 0 psf | 4,073.6425 psf | 885.87944 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 19 | 482.78586 ft | 1,555.9412 ft | 0 psf | 4,001.1035 psf | 870.17145 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 20 | 487.38963 ft | 1,555.2132 ft | 0 psf | 3,984.6707 psf | 866.59774 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 21 | 492.29507 ft | 1,555.0734 ft | 0 psf | 3,944.4833 psf | 778.94467 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 22 | 497.20586 ft | 1,554.9209 ft | 0 psf | 3,868.1058 psf | 763.87978 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 23 | 502.11586 ft | 1,554.7659 ft | 0 psf | 3,778.7419 psf | 746.27968 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 24 | 507.03772 ft | 1,554.6404 ft | 0 psf | 2,586.852 psf | 1,926.5534 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 25 | 511.94647 ft | 1,557.202 ft | 0 psf | 2,741.0757 psf | 1,782.8429 psf | 200 psf | 0 psf | Landslide material Seismic |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Slice 25 | 526.5263 ft | 1,558.2167 ft | 0 psf | 2,918.783 psf | 1,521.7199 psf | 200 psf | 0 psf | Candidate material Seismic |
| Slice 27 | 545.22563 ft | 1,660.5444 ft | 0 psf | 3,037.3721 psf | 1,225.6413 psf | 200 psf | 0 psf | Candidate material Seismic |
| Slice 28 | 543.62012 ft | 1,563.1555 ft | 0 psf | 1,690.0573 psf | 877.34893 psf | 200 psf | 0 psf | Candidate material Seismic |
| Slice 29 | 547.07758 ft | 1,262.9816 ft | 0 psf | 1,171.3621 psf | 760.60143 psf | 200 psf | 0 psf | Candidate material Seismic |
| Slice 30 | 546.17548 ft | 1,145.134 ft | 0 psf | 786.65852 psf | 510.88819 psf | 200 psf | 0 psf | Candidate material Seismic |
| Slice 31 | 550.3533 ft | 1,047.0073 ft | 0 psf | 331.28851 psf | 215.12655 psf | 200 psf | 0 psf | Candidate material Seismic |

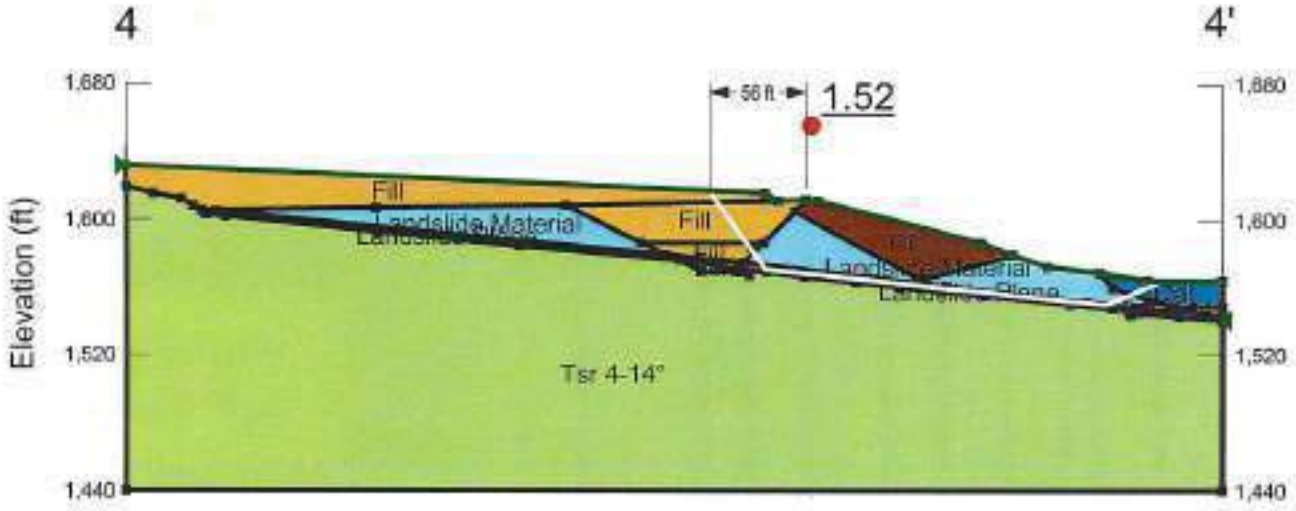
# Section 4-4 Tr 68203 SSA MW 12-2 B.gsz

Horz Seismic Coef.: 0

2 -Translational Static Global (2)

Section 4-4 Tr 68203 SSA MW 12-2 B.gsz 12/02/2021 09:33:05 AM

Method: Spencer




Name: Cf
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 237 psf
Phi': 30 °

Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 325 psf
Phi': 30 °

Name: Landslide Material
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 160 psf
Phi': 30 °

Name: Landslide Plane
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 100 psf
Phi': 8 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 350 psf
Phi': 28 °

Name: Tsr 4-14°
Model: Anisotropic Fn
Unit Weight: 125 pcf
Cohesion': 600 psf
Phi': 32 °
Phi-Anisotropic Strength Fn.: Tsr 18° bedding 4-14°
C-Anisotropic Strength Fn.: Tsr 250 bedding 4-14°


**LGC Valley, Inc**

*GEOTECHNICAL CONSULTING*

28532 Constellation Rd, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

| | |
|---|---|
| Project No: | 203003-01 |
| Engineer: | BIH / MW |
| Date: | Dec 2021 |

# 2 -Translational Static Global (2)

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## File Information

File Version: 10.00
Title: Volume
Created By: Michel Wilson
Last Edited By: Michel Wilson
Revision Number: 221
Date: 12/02/2021
Time: 09:33:06 AM
Tool Version: 10.0.8.17501
File Name: Section 4-4'(-88203.SEA.VW 12.2.8.gsz
Directory: P:\PINAL PROJECTS\Walnut Golden Valley Sierra Holdings\Slope stability\Vol.1220\
Last Solved Date: 12/02/2021
Last Solved Time: 09:33:08 AM

## Project Settings

Unit System: US Customary Units

## Analysis Settings

### 2 -Translational Static Global (2)

Analysis Type: 2D
Parent: 2 -Translational Static Global
Method: Sarma
Seismic
PWP Conditions from: (none)
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Circular Slip Surfaces from Grid
Circular slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack Option: (none)
Discretization
Left/Right Calculation Option: Constant
Advanced
Automatic Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 50
Factor of Safety Convergence Settings
Maximum Number of Iterations: 100
Tolerable error: 0.005
Solution Settings
Search Method: Linear Search
Maximum Interslice Force Angle Change: 0.2





Lambda
Lambda 1: 1
Lambda 2: 0.8
Lambda 3: 0.6
Lambda 4: 0.4
Lambda 5: 0.2
Lambda 6: 0
Lambda 7: 0.2
Lambda 8: 0.4
Lambda 9: 0.6
Lambda 10: 0.8
Lambda 11: 1

## Materials

### Fill

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 325 psf
Phi: 40°
Psi: 0°

### Landslide Material

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 365 psf
Phi: 30°
Psi: 0°

### Landslide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 100 psf
Phi: 8°
Psi: 0°

### Tcr (8-14°

Model: Anisotropic Fn
Unit Weight: 125 pcf
Cohesion: 500 psf
Phi: 45°
Phi Anisotropic Strength Fn.: (0° bedding 4-14°
Cohesion Strength Fn.: (0° bedding 4-14°
Psi: 0°

### Qal

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion: 350 psf
Phi: 28°
Psi: 0°

### Cf

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 237 psf
Phi': 30 °
Phi-B: 0 °

## Slip Surface Limits

Left Coordinate: (-0.24894, 1,631.6796) ft
Right Coordinate: (641.00417, 1,540.428) ft

## Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

## Anisotropic Strength Functions

### Tsr 250 bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Points: Inclination (°), Modifier Factor
Data Point: (3.99, 1)
Data Point: (4, 0.4167)
Data Point: (14, 0.4167)
Data Point: (14.01, 1)

### Tsr 18° bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Points: Inclination (°), Modifier Factor
Data Point: (3.99, 1)
Data Point: (4, 0.5625)
Data Point: (14, 0.5625)
Data Point: (14.01, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 31.83098 ft | 1,611.9785 ft |
| Point 2 | -0.00371 ft | 1,619.1805 ft |
| Point 3 | 0.00023 ft | 1,440.0147 ft |
| Point 4 | 641.00417 ft | 1,440.0028 ft |





| | | |
|---|---|---|
| Point 5 | 641.00417 ft | 1,540.428 ft |
| Point 6 | 615.74964 ft | 1,542.7559 ft |
| Point 7 | 575.78817 ft | 1,547.4116 ft |
| Point 8 | 552.23805 ft | 1,550.2826 ft |
| Point 9 | 501.90419 ft | 1,555.3651 ft |
| Point 10 | 476.49747 ft | 1,557.8326 ft |
| Point 11 | 451.21699 ft | 1,560.3002 ft |
| Point 12 | 426.26241 ft | 1,562.7211 ft |
| Point 13 | 396.2331 ft | 1,566.0267 ft |
| Point 14 | 378.88571 ft | 1,568.8201 ft |
| Point 15 | 357.59078 ft | 1,571.0083 ft |
| Point 16 | 335.79889 ft | 1,569.0519 ft |
| Point 17 | 229.67987 ft | 1,584.305 ft |
| Point 18 | 57.65414 ft | 1,601.7806 ft |
| Point 19 | 44.86249 ft | 1,604.5964 ft |
| Point 20 | 39.23095 ft | 1,608.2971 ft |
| Point 21 | 15.41757 ft | 1,613.1354 ft |
| Point 22 | 43.24087 ft | 1,605.662 ft |
| Point 23 | 78.51996 ft | 1,602.3489 ft |
| Point 24 | 52.5256 ft | 1,604.832 ft |
| Point 25 | 387.04626 ft | 1,611.6509 ft |
| Point 26 | 360.26777 ft | 1,574.2595 ft |
| Point 27 | 479.18847 ft | 1,560.6167 ft |
| Point 28 | 561.82446 ft | 1,551.9199 ft |
| Point 29 | 590.05015 ft | 1,548.8937 ft |
| Point 30 | 598.94254 ft | 1,552.5251 ft |
| Point 31 | 576.73483 ft | 1,559.8272 ft |
| Point 32 | 569.19258 ft | 1,568.308 ft |
| Point 33 | 538.52079 ft | 1,571.6228 ft |
| Point 34 | 518.63161 ft | 1,578.8857 ft |
| Point 35 | 499.30112 ft | 1,586.5956 ft |
| Point 36 | 404.1866 ft | 1,611.2336 ft |
| Point 37 | 46.38368 ft | 1,603.0251 ft |
| Point 38 | 641.00023 ft | 1,543.5239 ft |
| Point 39 | 596.71339 ft | 1,563.7007 ft |
| Point 40 | 641.00023 ft | 1,563.7007 ft |
| Point 41 | 640.98727 ft | 1,548.7503 ft |
| Point 42 | 623.39618 ft | 1,548.7503 ft |
| Point 43 | 612.80351 ft | 1,548.7503 ft |
| Point 44 | 390.72862 ft | 1,606.2275 ft |
| Point 45 | 483.14779 ft | 1,564.5273 ft |
| Point 46 | 466.65914 ft | 1,564.5273 ft |
| Point 47 | 380.67181 ft | 1,611.2957 ft |
| Point 48 | 372.85818 ft | 1,615.6776 ft |
| Point 49 | -0.24894 ft | 1,631.6796 ft |
| Point 50 | 372.42616 ft | 1,586.6397 ft |
| Point 51 | 355.81187 ft | 1,569.0616 ft |
| Point 52 | 256.66715 ft | 1,608.6108 ft |
| Point 53 | 300.6785 ft | 1,586.6357 ft |

| | | |
|---|---|---|
| Point 54 | 315.19949 ft | 1,579.3462 ft |
| Point 55 | 322.56302 ft | 1,575.6656 ft |
| Point 56 | 359.16633 ft | 1,568.9116 ft |
| Point 57 | 363.88936 ft | 1,567.0833 ft |
| Point 58 | 364.8077 ft | 1,583.9372 ft |
| Point 59 | 587.26023 ft | 1,543.2602 ft |
| Point 60 | 145.99305 ft | 1,606.6007 ft |
| Point 61 | 146.46109 ft | 1,591.5797 ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | Tsr 4-14' | 2,3,4,5,6,7,8,9,10,11,12,13,14,15,51,16,55,17,18,37,19,22,20,1,21 | 86,458 ft² |
| Region 2 | Landslide Material | 22,52,53,54,23,24 | 3,195.9 ft² |
| Region 3 | Landslide Material | 26,27,28,29,30,31,32,33,34,46,45,44,50 | 3,668.7 ft² |
| Region 4 | Landslide Plane | 22,19,37,18,17,55,54,24 | 819.73 ft² |
| Region 5 | Landslide Plane | 15,26,27,28,29,38,5,6,7,8,9,10,11,12,13,14 | 931.67 ft² |
| Region 6 | Qal | 32,39,40,41,42,43,30,31 | 828.76 ft² |
| Region 7 | Tsr 4-14' | 29,30,43,42,41,38 | 173.04 ft² |
| Region 8 | Cf | 25,44,45,46,34,35,36 | 2,388.4 ft² |
| Region 9 | Fill | 47,48,49,2,21,1,20,22,52 | 5,586.4 ft² |
| Region 10 | Fill | 54,55,15,26 | 127.38 ft² |
| Region 11 | Fill | 52,53,50,44,25,47 | 2,506.3 ft² |
| Region 12 | Fill | 55,16,51,15 | 104.48 ft² |
| Region 13 | Fill | 50,53,54,26 | 571.43 ft² |

## Slip Results

Slip Surfaces Analysed: 1 of 1 converged

## Current Slip Surface

Slip Surface: 1
Factor of Safety: 1.52
Volume: 7,354.6805 ft³
Weight: 912,195.49 lbf
Resisting Moment: 20,874,097 lbf-ft
Activating Moment: 13,675,798 lbf-ft
Resisting Force: 199,633.91 lbf
Activating Force: 131,749.65 lbf
Slip Rank: 1 of 1 slip surfaces
Exit: (606.08372, 1,563.7007) ft
Entry: (340.63515, 1,617.0596) ft
Radius: 117.82279 ft
Center: (481.40885, 1,630.3993) ft

## Slip Slices





| | X | Y | PWP | Base Normal Stress | Frictional Strength | Cohesive Strength | Suction Strength | Base Material |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 342.92198 ft | 1,613.7937 ft | 0 psf | 60.280831 psf | 34.803212 psf | 325 psf | 0 psf | Fill |
| Slice 2 | 349.39065 ft | 1,604.5556 ft | 0 psf | 707.83398 psf | 408.66814 psf | 325 psf | 0 psf | Fill |
| Slice 3 | 357.75405 ft | 1,592.6113 ft | 0 psf | 1,545.0831 psf | 892.05416 psf | 325 psf | 0 psf | Fill |
| Slice 4 | 364.11884 ft | 1,583.5214 ft | 0 psf | 2,182.2067 psf | 1,259.9207 psf | 325 psf | 0 psf | Fill |
| Slice 5 | 368.90441 ft | 1,576.6869 ft | 0 psf | 2,706.1099 psf | 1,597.0143 psf | 160 psf | 0 psf | Landslide Material |
| Slice 6 | 371.96055 ft | 1,572.3137 ft | 0 psf | 4,163.2843 psf | 585.11145 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 7 | 372.64217 ft | 1,571.3488 ft | 0 psf | 4,256.5074 psf | 598.2131 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 8 | 373.10937 ft | 1,570.6816 ft | 0 psf | 4,308.4368 psf | 605.5113 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 9 | 377.01618 ft | 1,569.9524 ft | 0 psf | 5,251.2515 psf | 738.01577 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 10 | 385.70022 ft | 1,569.0724 ft | 0 psf | 5,173.8459 psf | 727.13662 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 11 | 393.88744 ft | 1,568.2427 ft | 0 psf | 5,339.1484 psf | 750.36837 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 12 | 400.61643 ft | 1,567.5608 ft | 0 psf | 5,422.1444 psf | 762.0327 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 13 | 408.19811 ft | 1,566.7722 ft | 0 psf | 5,359.5206 psf | 753.23149 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 14 | 416.82114 ft | 1,565.9186 ft | 0 psf | 5,195.8563 psf | 730.22998 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 15 | 425.24417 ft | 1,565.065 ft | 0 psf | 5,032.192 psf | 707.22847 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 16 | 433.66719 ft | 1,564.2114 ft | 0 psf | 4,868.5278 psf | 684.22696 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 17 | 442.09022 ft | 1,563.3578 ft | 0 psf | 4,704.8635 psf | 661.22544 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 18 | 450.51325 ft | 1,562.5042 ft | 0 psf | 4,541.1992 psf | 638.22393 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 19 | 458.93628 ft | 1,561.6506 ft | 0 psf | 4,377.535 psf | 615.22242 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 20 | 464.90346 ft | 1,561.0459 ft | 0 psf | 4,261.3891 psf | 598.92729 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 21 | 472.92381 ft | 1,560.2331 ft | 0 psf | 4,105.7493 psf | 577.02543 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 22 | 484.21663 ft | 1,559.0887 ft | 0 psf | 3,886.1033 psf | 546.15621 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 23 | 494.27296 ft | 1,558.0606 ft | 0 psf | 3,690.2636 psf | 518.63272 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 24 | 504.13374 ft | 1,557.0703 ft | 0 psf | 3,414.6565 psf | 479.9043 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 25 | 513.79899 ft | 1,556.0908 ft | 0 psf | 3,059.4022 psf | 429.97095 psf | 100 psf | 0 psf | Landslide Plane |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Slice 26 | 523.6089 ft | 1,555.0972 ft | 0 psf | 2,716.5776 psf | 287.275.73 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 27 | 533.9485 ft | 1,554.0856 ft | 0 psf | 2,675.5239 psf | 336.66866 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 28 | 542.8224 ft | 1,553.2004 ft | 0 psf | 2,635.4657 psf | 315.45740 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 29 | 549.95261 ft | 1,552.4701 ft | 0 psf | 2,594.2087 psf | 312.59235 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 30 | 555.69361 ft | 1,551.8498 ft | 0 psf | 2,218.0618 psf | 311.72880 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 31 | 560.25851 ft | 1,550.8758 ft | 0 psf | 2,211.7758 psf | 310.84948 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 32 | 571.18788 ft | 1,550.2751 ft | 0 psf | 2,183.3035 psf | 306.86017 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 33 | 573.75843 ft | 1,550.2111 ft | 0 psf | 2,454.3734 psf | 345.48737 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 34 | 575.53425 ft | 1,550.0497 ft | 0 psf | 2,790.2019 psf | 1,025.1503 psf | 100 psf | 0 psf | Landslide Material |
| Slice 35 | 582.3435 ft | 1,550.0957 ft | 0 psf | 2,045.7942 psf | 1,210.0036 psf | 100 psf | 0 psf | Landslide Material |
| Slice 36 | 592.33158 ft | 1,550.0040 ft | 0 psf | 1,193.0034 psf | 634.33131 psf | 350 psf | 0 psf | Qal |
| Slice 37 | 601.30855 ft | 1,561.76 ft | 0 psf | 477.79821 psf | 253.78397 psf | 350 psf | 0 psf | Qal |

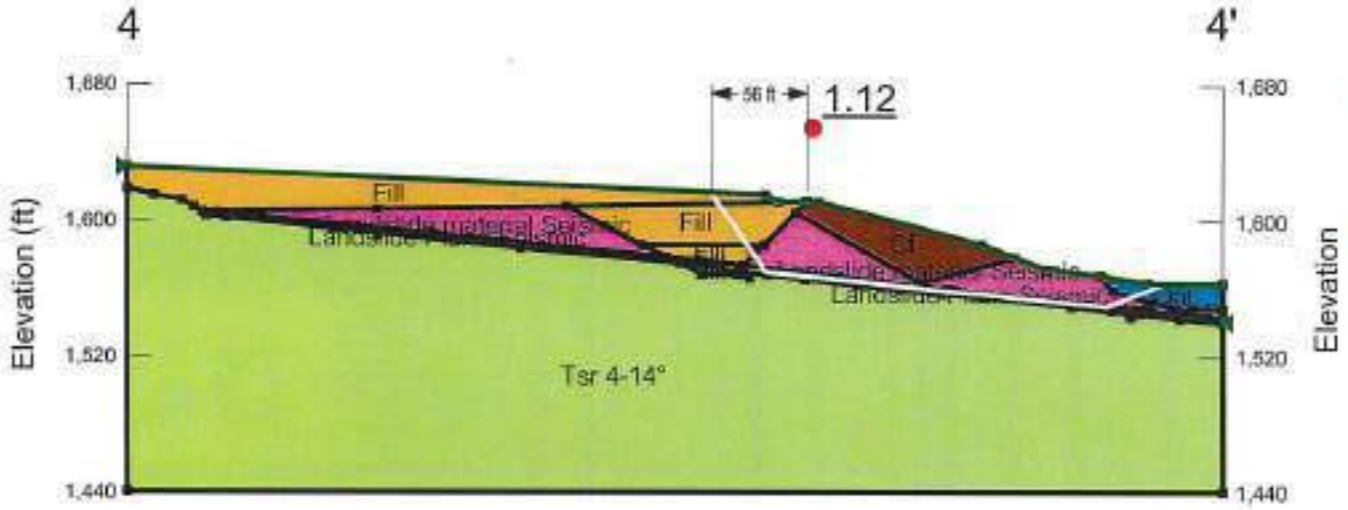
# Section 4-4 Tr 68203 SSA MW 12-2 B.gsz

Horz Seismic Coef.: 0.15

2 -Translational Pseudostatic Global (2)

Section 4-4 Tr 68203 SSA MW 12-2 B.gsz 12/02/2021 09:33:05 AM

Method: Spencer




Name: Cf
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 237 psf
Phi': 30 °

Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 325 psf
Phi': 30 °

Name: Landslide material Seismic
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 200 psf
Phi': 33 °

Name: Landslide Plane Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 120 psf
Phi': 12 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 350 psf
Phi': 28 °

Name: Tsr 4-14°
Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion': 600 psf
Phi': 32 °
Phi-Anisotropic Strength Fn.: Tsr 18° bedding 4-14°
C-Anisotropic Strength Fn.: Tsr 250 bedding 4-14°


**LGC Valley, Inc**

*GEOTECHNICAL CONSULTING*

28532 Constellation Rd, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

| | |
|---|---|
| Project No: | 203003-01 |
| Engineer: | BIH / MW |
| Date: | Dec 2021 |

# 2 -Translational Pseudostatic Global (2)

## File Information

File Version: 10.00
Title: Valmont
Created By: Michel Wilson
Last Modified By: Michel Wilson
Revision Number: 221
Date: 12/02/2021
Time: 09:11:05 AM
Tool Version: 10.0.1.1761
File Name: Section 4-4 Tr 8&20 SAR MW 12-2-0.gsz
Directory: P:\RIVAL PROJECTS\Valmont Golden Valley Sierra Grey\slope stability\Valmont\
Last Solved Date: 12/02/2021
Last Solved Time: 09:33:01 AM

## Project Settings

Unit System: U.S. Customary Units

## Analysis Settings

### 2 -Translational Pseudostatic Global (2)

Kmit: SLOPE/W
Parent: 2 -Translational Static Global
Method: Spencer
Settings
PWP Conditions from: (none)
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Optical Slip Surface from Grid
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack Option: (none)
Distribution
Slice Distribution Option: Constant
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 30
Factor of Safety Convergence Settings
Maximum Iterations: 500
Tolerance: 0.001
Solution Settings
Search Method: Linear Search
Min. Depth of Lambda Factor of Safety: 0.2





Lambda
Lambda 1: 1
Lambda 2: -0.3
Lambda 3: -0.6
Lambda 4: -0.4
Lambda 5: -0.7
Lambda 6: 0
Lambda 7: 0.2
Lambda 8: 0.4
Lambda 9: 0.6
Lambda 10: 0.8
Lambda 11: 1

## Materials

### Fill

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion: 325 psf
Phi: 30°
Psi: 0°

### Tar 4-14"

Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion: 600 psf
Phi: 32°
Tar-Anisotropic Strength Fn: Tar 135 bedding 4-14"
C-Anisotropic Strength Fn: Tar 250 bedding 4-14"
Psi: 0°

### Opl

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion: 350 psf
Phi: 28°
Psi: 0°

### Landslide material Seismic

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 200 psf
Phi: 33°
Psi: 0°

### Cf

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 75 psf
Phi: 30°
Psi: 0°

### Landslide Plane Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 120 psf
[illegible]

## Slip Surface Limits

Left Coordinate: (1,[illegible]
Right Coordinate: (641.03617, 1,540.4[illegible]) ft

## Seismic Coefficients

Horizontal Coefficient: 0.15
Vertical Seismic Coefficient: 0

## Anisotropic Strength Functions

### Tsr 250 bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Point Information (°), Modifier Factor
Data Point: (-90, 1)
Data Point: (4, 0.4167)
Data Point: (14, 0.4167)
Data Point: (14.01, 1)

### Tsr 18° bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Point Information (°), Modifier Factor
Data Point: (-90, 1)
Data Point: (4, 0.3611)
Data Point: (14, 0.3611)
Data Point: (14.01, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 31.33098 ft | 1,51[illegible] ft |
| Point 2 | 40.00375 ft | 1,619.1805 ft |
| Point 3 | 0.00000 ft | 1,440.2147 ft |
| Point 4 | 641.00417 ft | 1,440.2028 ft |





| | | |
|---|---|---|
| Point 5 | 641.50417 ft | 1,540.426 ft |
| Point 6 | 615.78904 ft | 1,542.7559 ft |
| Point 7 | 575.78817 ft | 1,547.4116 ft |
| Point 8 | 553.23603 ft | 1,550.2835 ft |
| Point 9 | 501.96415 ft | 1,556.1651 ft |
| Point 10 | 478.49747 ft | 1,557.8325 ft |
| Point 11 | 457.21699 ft | 1,560.3024 ft |
| Point 12 | 406.[illegible]93 ft | 1,567.[illegible] ft |
| Point 13 | 395.2931 ft | 1,566.0167 ft |
| Point 14 | 379.38573 ft | 1,568.8101 ft |
| Point 15 | 357.50024 ft | 1,571.[illegible] ft |
| Point 16 | 335.79889 ft | 1,559.05139 ft |
| Point 17 | 329.57587 ft | 1,594.306 ft |
| Point 18 | 57.65414 ft | 1,631.7[illegible] ft |
| Point 19 | 44.85249 ft | 1,[illegible] ft |
| Point 20 | 39.23855 ft | 1,638.2571 ft |
| Point 21 | 16.42757 ft | 1,635.1364 ft |
| Point 22 | 43.24067 ft | 1,636.662 ft |
| Point 23 | 76.51986 ft | 1,[illegible] ft |
| Point 24 | 92.5256 ft | 1,624.852 ft |
| Point 25 | 337.34626 ft | 1,611.6503 ft |
| Point 26 | 382.26577 ft | 1,[illegible] ft |
| Point 27 | 479.[illegible] ft | 1,560.0107 ft |
| Point 28 | 501.32491 ft | 1,561.9189 ft |
| Point 29 | 530.05215 ft | 1,[illegible] ft |
| Point 30 | 558.64251 ft | 1,[illegible] ft |
| Point 31 | 570.77488 ft | 1,559.9277 ft |
| Point 32 | 589.[illegible] ft | 1,5[illegible] ft |
| Point 33 | 598.57079 ft | 1,[illegible] ft |
| Point 34 | 618.67[illegible] ft | 1,[illegible] ft |
| Point 35 | 638.30112 ft | 1,586.9656 ft |
| Point 36 | 650.1866 ft | 1,611.2336 ft |
| Point 37 | 46.38[illegible] ft | 1,[illegible] ft |
| Point 38 | 641.[illegible] ft | 1,543.5288 ft |
| Point 39 | 596.71388 ft | 1,565.7007 ft |
| Point 40 | 641.00033 ft | 1,561.4027 ft |
| Point 41 | 640.98[illegible] ft | 1,548.[illegible] ft |
| Point 42 | 623.[illegible] ft | 1,548.7[illegible] ft |
| Point 43 | 612.90351 ft | 1,545.7503 ft |
| Point 44 | 590.73852 ft | 1,[illegible] ft |
| Point 45 | 663.14779 ft | 1,564.[illegible] ft |
| Point 46 | 636.65914 ft | 1,564.5273 ft |
| Point 47 | 590.67181 ft | 1,[illegible] ft |
| Point 48 | 572.65820 ft | 1,[illegible] ft |
| Point 49 | 0.24894 ft | 1,[illegible] ft |
| Point 50 | 571.42[illegible] ft | 1,[illegible] ft |
| Point 51 | 551.[illegible] ft | 1,[illegible] ft |
| Point 52 | 550.68775 ft | 1,[illegible] ft |
| Point 53 | 590.6785 ft | 1,[illegible] ft |

| | | |
|---|---|---|
| Point 54 | 316.399794 ft | 1,579.4481 ft |
| Point 55 | 323.56183 ft | 1,575.6696 ft |
| Point 56 | 359.10634 ft | 1,558.0116 ft |
| Point 57 | 361.88656 ft | 1,557.0073 ft |
| Point 58 | 391.8077 ft | 1,553.9372 ft |
| Point 59 | 587.20629 ft | 1,545.2662 ft |
| Point 60 | 345.50308 ft | 1,606.0067 ft |
| Point 61 | 346.49309 ft | 1,591.5797 ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | Tsr 4-1-47 | 7,8,4,7,6,5,7,8,9,10,11,12,13,14,15,51,15,50,17,18,47,19,20,50,4,21 | 81,468 ft² |
| Region 2 | Landslide Material Seismic | 22,52,53,54,23,24 | 5,486.9 ft² |
| Region 3 | Landslide Material Seismic | 26,27,28,29,30,31,32,33,34,46,45,44,57 | 5,686.7 ft² |
| Region 4 | Landslide Plane Seismic | 32,33,37,35,36,55,54,24 | 810.79 ft² |
| Region 5 | Landslide Plane Seismic | 35,36,37,38,39,34,5,6,7,8,9,10,11,12,13,14 | 991.07 ft² |
| Region 6 | Qal | 32,39,40,41,42,43,30,31 | 828.76 ft² |
| Region 7 | Tsr 4-1-47 | 20,30,43,42,41,58 | 376.04 ft² |
| Region 8 | Cf | 35,44,45,46,24,25,26 | 2,588.4 ft² |
| Region 9 | Fd | 47,48,49,2,21,1,20,22,50 | 5,580.4 ft² |
| Region 10 | Fs | 58,55,15,16 | 920.39 ft² |
| Region 11 | Fs | 54,56,59,44,25,47 | 7,505.3 ft² |
| Region 12 | Fs | 56,15,51,15 | 1,049.48 ft² |
| Region 13 | Fs | 50,53,54,26 | 572.43 ft² |

## Slip Results

Slip Surfaces Analyzed: 1 of 1 surfaces analyzed

## Current Slip Surface

Slip Surface: 1
Factor of Safety: 1.03
Volume: 7,354.6805 ft³
Weight: 512,195.45 lb
Resisting Moment: 25,981,629 lbf-ft
Activating Moment: 25,180,073 lbf-ft

Resisting Force: 368,729.75 lbf
Activating Force: 240,282.44 lbf
Slip Surface: 1 of 1 slip surfaces
Entry: (340.69515, 1,617.0986) ft
Radius: 117.82279 ft
Center: (451.42366, 1,630.5865) ft

## Slip Slices

| | X | Y | PWP | Base Normal Stress | Effective Strength | Cohesive Strength | Friction Strength | Base Material |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 340.47196 ft | 1,618.7957 ft | 0 psf | 20.010815 psf | 11.587901 psf | 525 psf | 0 psf | Fd |
| Slice 2 | 349.39025 ft | 1,604.5556 ft | 0 psf | 142.13555 psf | 119.60195 psf | 225 psf | 0 psf | Fd |
| Slice 3 | 357.77385 ft | 1,592.612 ft | 0 psf | 1,217.1355 psf | 702.73356 psf | 225 psf | 0 psf | Fd |
| Slice 4 | 364.11834 ft | 1,583.5214 ft | 0 psf | 1,740.8254 psf | 995.98153 psf | 225 psf | 0 psf | Fd |
| Slice 5 | 368.9044 ft | 1,576.6869 ft | 0 psf | 2,116.0372 psf | 1,174.1708 psf | 200 psf | 0 psf | Landslide Material Seismic |
| Slice 6 | 371.05635 ft | 1,573.5137 ft | 0 psf | 1,103.1579 psf | 658.59657 psf | 200 psf | 0 psf | Landslide Plane Seismic |
| Slice 7 | 372.63217 ft | 1,571.3488 ft | 0 psf | 1,172.1227 psf | 674.46808 psf | 200 psf | 0 psf | Landslide Plane Seismic |
| Slice 8 | 374.10987 ft | 1,570.8816 ft | 0 psf | 3,212.0852 psf | 682.75232 psf | 200 psf | 0 psf | Landslide Plane Seismic |
| Slice 9 | 377.01618 ft | 1,569.9514 ft | 0 psf | 5,127.8738 psf | 1,095.9543 psf | 1,01 psf | 0 psf | Landslide Plane Seismic |
| Slice 10 | 381.70322 ft | 1,568.3764 ft | 0 psf | 5,062.4709 psf | 1,078.0356 psf | 1,00 psf | 0 psf | Landslide Plane Seismic |
| Slice 11 | 393.89744 ft | 1,565.8417 ft | 0 psf | 5,219.4956 psf | 1,108.1025 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 12 | 406.81543 ft | 1,563.5608 ft | 0 psf | 5,294.3453 psf | 1,125.9478 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 13 | 418.38813 ft | 1,566.7732 ft | 0 psf | 5,233.3837 psf | 1,112.3861 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 14 | 416.82314 ft | 1,565.9186 ft | 0 psf | 5,073.5138 psf | 1,078.4937 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 15 | 425.24413 ft | 1,565.065 ft | 0 psf | 4,914.1829 psf | 1,044.6064 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 16 | 433.67719 ft | 1,564.2114 ft | 0 psf | 4,755.052 psf | 1,010.7175 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 17 | 442.10933 ft | 1,563.3578 ft | 0 psf | 4,595.9211 psf | 976.82958 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 18 | 450.51305 ft | 1,562.5042 ft | 0 psf | 4,436.7902 psf | 942.94177 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 19 | 458.93994 ft | 1,561.6506 ft | 0 psf | 4,277.7023 psf | 909.05389 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 20 | 467.90746 ft | 1,561.0459 ft | 0 psf | 4,168.8162 psf | 885.94645 psf | 120 psf | 0 psf | Landslide Plane Seismic |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Slice 21 | 472.02381 ft | 1,560.2331 ft | 0 psf | 4,012.0083 psf | 852.77869 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 22 | 484.21663 ft | 1,559.0887 ft | 0 psf | 3,798.0451 psf | 807.29941 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 23 | 494.27296 ft | 1,558.0696 ft | 0 psf | 3,607.2722 psf | 766.70957 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 24 | 504.13374 ft | 1,557.0703 ft | 0 psf | 3,336.8347 psf | 709.69122 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 25 | 513.79899 ft | 1,556.0908 ft | 0 psf | 2,992.7327 psf | 636.12497 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 26 | 523.6089 ft | 1,555.0973 ft | 0 psf | 2,661.7973 psf | 565.78247 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 27 | 533.5485 ft | 1,554.0894 ft | 0 psf | 2,346.0285 psf | 498.66374 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 28 | 542.3214 ft | 1,553.2004 ft | 0 psf | 2,185.1452 psf | 464.46695 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 29 | 549.92261 ft | 1,552.4301 ft | 0 psf | 2,179.1475 psf | 463.1921 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 30 | 557.52383 ft | 1,551.6598 ft | 0 psf | 2,173.1498 psf | 461.91725 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 31 | 565.25851 ft | 1,550.8759 ft | 0 psf | 2,167.0367 psf | 460.61787 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 32 | 571.18788 ft | 1,550.2751 ft | 0 psf | 2,130.0123 psf | 454.66109 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 33 | 573.75841 ft | 1,550.0111 ft | 0 psf | 2,811.0845 psf | 597.51445 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 34 | 575.53425 ft | 1,551.0467 ft | 0 psf | 4,146.9884 psf | 2,693.0857 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 35 | 582.3428 ft | 1,553.8667 ft | 0 psf | 3,159.9123 psf | 2,052.0711 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 36 | 592.33158 ft | 1,558.0044 ft | 0 psf | 1,707.7228 psf | 908.01232 psf | 350 psf | 0 psf | Qal |
| Slice 37 | 601.39855 ft | 1,561.76 ft | 0 psf | 784.69444 psf | 417.22944 psf | 350 psf | 0 psf | Qal |

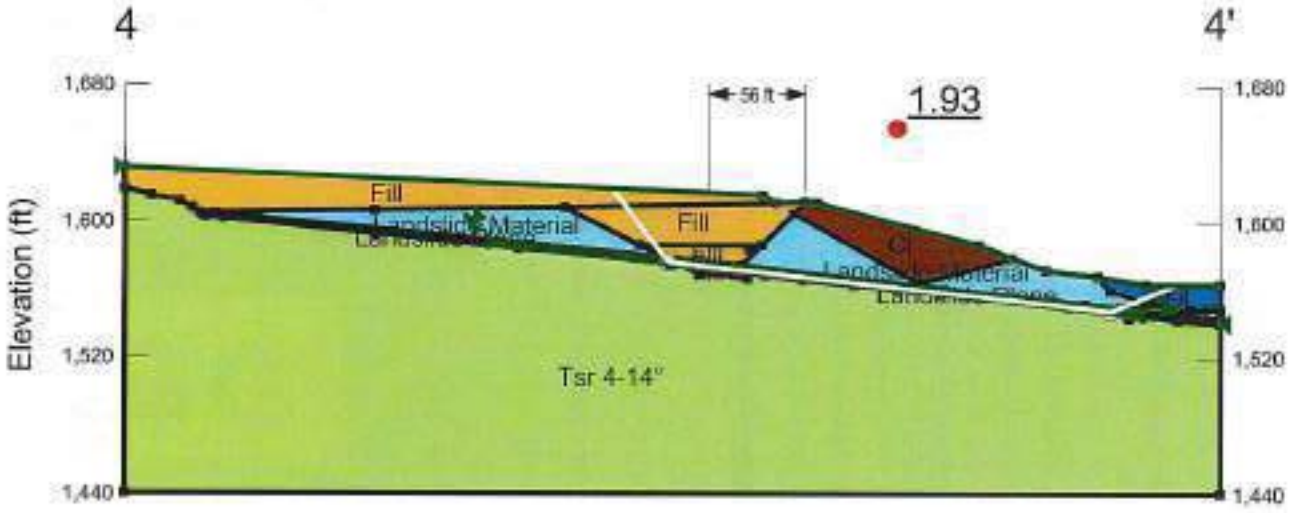
# Section 4-4 Tr 68203 SSA MW 12-2 B.gsz

Horz Seismic Coef.: 0

3 -Translational Static behind key

Section 4-4 Tr 68203 SSA MW 12-2 B.gsz 12/02/2021 02:52:46 PM

Method: Janbu




Name: Cf
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 237 psf
Phi': 30 °

Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 325 psf
Phi': 30 °

Name: Landslide Material
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 160 psf
Phi': 30 °

Name: Landslide Plane
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 100 psf
Phi': 8 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 350 psf
Phi': 28 °

Name: Tsr 4-14°
Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion': 600 psf
Phi': 32 °
Phi-Anisotropic Strength Fn.: Tsr 18° bedding 4-14°
C-Anisotropic Strength Fn.: Tsr 250 bedding 4-14°

| | | | |
|---|---|---|---|
| LGC | **LGC Valley, Inc**<br>*GEOTECHNICAL CONSULTING*<br>28532 Constellation Rd, Valencia, CA 91355<br>Phone 661-702-8474, Fax 661-702-8475 | **Tentative Tract 68203**<br>**Santa Clarita, CA** | Project No: **203003-01**<br>Engineer: **BIH / MW**<br>Date: **Dec 2021** |

# 3 -Translational Static behind key

## File Information

File Version: 10.00
Title: Valley
Created By: Mike Wilson
Last Edited By: Michael Wilson
Revision Number: 285
Date: 12/02/2021
Time: 08:32:46 PM
Tool Version: 10.0.1.17421
File Name: Section 4-4 Tr GB203 STA MW 12-2 B.gsz
Directory: P:\FINAL PROJECTS\Active\Golden Valley Sierra Phase 2\Stability\Analysis\
Last Solved Date: 12/02/2021
Last Solved Time: 08:32:46 PM

## Project Settings

Units System: U.S. Customary Units

## Analysis Settings

### 3 -Translational Static behind key

Slope: SLOPE/W
Method: Janbu
Settings
PWP Conditions from: (none)
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Block
Critical Slip Surfaces Saved: 1
Restrict Block Crossing: Yes
Optimize Critical Slip Surface Location: No
Tension Crack Option: (none)
Distribution
F of S Calculation Option: Constant
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Numerical Strips: 30
Factor of Safety Convergence Settings
Maximum Number of Iterations: 1,000
Tolerable difference in F of S: 0.01

## Materials

### Fill

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 350 psf
Phi: 30 °
Phi-b: 0 °

### Landslide Material

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 150 psf
Phi: 30 °
Phi-b: 0 °

### Landslide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 100 psf
Phi: 8 °
Phi-b: 0 °

### Tsr 4-14"

Model: Anisotropic Fn
Unit Weight: 125 pcf
Cohesion: 600 psf
Phi: 33 °
Phi (Isotropic Strength Fn.): Tsr 25° bedding 4-14"
Anisotropic Strength Fn.: Tsr 250 bedding 4-14"
Phi-b: 0 °

### Qal

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 350 psf
Phi: 28 °
Phi-b: 0 °

### Qf

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 217 psf
Phi: 30 °
Phi-b: 0 °

## Slip Surface Limits

Left Coordinate: (-0.24814, 3.83) ft
Right Coordinate: (541.00417, 1.500478) ft

## Slip Surface Block

Left Grid
- Upper Left: (217.44736, 1,596.7834) ft
- Lower Left: (237.14648, 1,586.8896) ft
- Lower Right: (32... 1482..., 1,574.1455) ft
- X Increments: 10
- Y Increments: 10
- Starting Angle: 115 °
- Ending Angle: 156 °
- Angle Increments: 5

Right Grid
- Upper Left: (305.55515, 1,648.4139) ft
- Lower Left: (295.0568, 1,610.6201) ft
- Lower Right: (320.25287, 1,573.6775) ft
- X Increments: 15
- Y Increments: 10
- Angle Increments: 2

## Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

## Anisotropic Strength Functions

### Tsr 250 bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factors vs. Inclination
- Curve Fit to Data: 100 %
- Segment Curvature: 0 %

Variesvsp: 1
Data Points: Inclination (°), Modifier Factor
- Data Point: (3.99, 1)
- Data Point: (4, 0.9167)
- Data Point: (14, 0.4167)
- Data Point: (14.01, 1)

### Tsr 16° bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factors vs. Inclination
- Curve Fit to Data: 100 %
- Segment Curvature: 0 %

Variesvsp: 1
Data Points: Inclination (°), Modifier Factor
- Data Point: (3.99, 1)
- Data Point: (4, 0.9625)
- Data Point: (14, 0.5625)
- Data Point: (14.01, 1)

## Points





| | X | Y |
|---|---|---|
| Point: 1 | 31.89098 ft | 1,615.9783 ft |
| Point: 2 | 6.20372 ft | 1,616.1218 ft |
| Point: 3 | 0.000013 ft | 1,610.0349 ft |
| Point: 4 | 641.00417 ft | 1,610.0028 ft |
| Point: 5 | 641.00417 ft | 1,610.428 ft |
| Point: 6 | 635.74051 ft | 1,592.7309 ft |
| Point: 7 | 575.28817 ft | 1,5... 4.116 ft |
| Point: 8 | 552.23820 ft | 1,550.2626 ft |
| Point: 9 | 501.96418 ft | 1,535.9603 ft |
| Point: 10 | 476.49347 ft | 1,527.8329 ft |
| Point: 11 | 451.21696 ft | 1,550.3003 ft |
| Point: 12 | 426.26245 ft | 1,562.7713 ft |
| Point: 13 | 396.7531 ft | 1,568.0367 ft |
| Point: 14 | 373.98571 ft | 1,568.8010 ft |
| Point: 15 | 357.59074 ft | 1,571.0083 ft |
| Point: 16 | 335.72889 ft | 1,569.0619 ft |
| Point: 17 | 239.67937 ft | 1,566.4... ft |
| Point: 18 | 5... 6.14 ft | 1,601.7... ft |
| Point: 19 | 44.86249 ft | 1,604.5664 ft |
| Point: 20 | 39.25086 ft | 1,605.2571 ft |
| Point: 21 | 19.41757 ft | 1,615.1354 ft |
| Point: 22 | 11.24387 ft | 1,615.867 ft |
| Point: 23 | 35.51995 ft | 1,601.3480 ft |
| Point: 24 | 52.5256 ft | 1,604.827 ft |
| Point: 25 | 297.04026 ft | 1,611.0x03 ft |
| Point: 26 | 350.26277 ft | 1,574.2x6x ft |
| Point: 27 | 470.11847 ft | 1,560.6157 ft |
| Point: 28 | 551.23446 ft | 1,551.9139 ft |
| Point: 29 | 590.050115 ft | 1,545.8857 ft |
| Point: 30 | 598.34264 ft | 1,504.5251 ft |
| Point: 31 | 576.73466 ft | 1,565.0277 ft |
| Point: 32 | 569.14758 ft | 1,564.166 ft |
| Point: 33 | 538.53079 ft | 1,572.6228 ft |
| Point: 34 | 518.03181 ft | 1,575.8857 ft |
| Point: 35 | 499.40137 ft | 1,580.1936 ft |
| Point: 36 | 476.1466 ft | 1,583.2936 ft |
| Point: 37 | 65.38368 ft | 1,603.0031 ft |
| Point: 38 | 641.00045 ft | 1,603.9219 ft |
| Point: 39 | 596.73114 ft | 1,603.7007 ft |
| Point: 40 | 641.00023 ft | 1,562.1007 ft |
| Point: 41 | 610.98727 ft | 1,548.3509 ft |
| Point: 42 | 623.30638 ft | 1,548.0539 ft |
| Point: 43 | 633.02771 ft | 1,548.7509 ft |
| Point: 44 | 590.72862 ft | 1,505.2275 ft |
| Point: 45 | 462.14779 ft | 1,564.5273 ft |
| Point: 46 | 465.6691 4 ft | 1,564.3273 ft |
| Point: 47 | 396.07181 ft | 1,611.2957 ft |
| Point: 48 | 372.55818 ft | 1,615.4776 ft |

| | | |
|---|---|---|
| Point 49 | 48.48894 ft | 1,591.6791 ft |
| Point 50 | 502.49616 ft | 1,586.6397 ft |
| Point 51 | 554.81187 ft | 1,585.0616 ft |
| Point 52 | 756.65715 ft | 1,588.6103 ft |
| Point 53 | 800.67855 ft | 1,588.6953 ft |
| Point 54 | 815.13948 ft | 1,575.3465 ft |
| Point 55 | 827.74302 ft | 1,575.6458 ft |
| Point 56 | 850.15623 ft | 1,586.9716 ft |
| Point 57 | 863.88936 ft | 1,587.2853 ft |
| Point 58 | 864.8277 ft | 1,583.9372 ft |
| Point 59 | 887.25023 ft | 1,583.7602 ft |
| Point 60 | 945.01905 ft | 1,601.0007 ft |
| Point 61 | 946.40109 ft | 1,591.5797 ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | Till 4-24 | 4,5,6,7,8,9,10,11,12,13,14,15,51,26,55,17,18,57,16,22,20,21,23 | 85,496.69 ft² |
| Region 2 | Landslide Material | 23,52,53,54,23,24 | 3,195.6 ft² |
| Region 3 | Landslide Material | 26,27,28,29,30,31,48,49,46,47,45,44,50 | 3,663.7 ft² |
| Region 4 | Landslide Plane | 23,24,37,38,39,55,54,23 | 820.75 ft² |
| Region 5 | Landslide Plane | 35,36,37,38,39,58,57,56,0,10,11,12,13,34 | 931.67 ft² |
| Region 6 | Fill | 32,33,40,41,42,43,59,31 | 828.76 ft² |
| Region 7 | Till 4-24 | 29,30,41,42,41,28 | 172.94 ft² |
| Region 8 | Fill | 35,34,45,44,35,36 | 2,385.4 ft² |
| Region 9 | Fill | 42,46,45,2,21,1,20,22,59 | 5,586.9 ft² |
| Region 10 | Fill | 34,35,15,26 | 127.38 ft² |
| Region 11 | Fill | 52,53,54,44,24,42 | 3,526.3 ft² |
| Region 12 | Fill | 51,10,53,15 | 104.48 ft² |
| Region 13 | Fill | 50,52,54,26 | 571.43 ft² |

## Slip Results

Slip Surfaces Analyzed: 622 of 16868 converged

## Current Slip Surface

Slip Surface: 22,097
Factor of safety: 1.25
Volume: 10,097.971 ft³
Weight: 1,241,810.6 lbf
Resisting Force: 332,161.76 lbf
Activating Force: 175,526.1 lbf
FS Ratio: 1 of 34,848 stress values
Center: (1,186.7007, 1,186.7007) ft
Entry: (284.90392, 1,615.4498) ft





Radius: 139.46546 ft
Center: (457.9139, 1,651.3877) ft

## Slip Slices

| | X | Y | PWP | Base Normal Stress | Frictional Strength | Cohesive Strength | Surface Strength | Base Material |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 285.6857 ft | 1,614.4479 ft | 0 psf | 256.59016 psf | 149.35495 psf | 325 psf | 0 psf | Fill |
| Slice 2 | 296.77831 ft | 1,605.8185 ft | 0 psf | 2,157.1392 psf | 654.03338 psf | 325 psf | 0 psf | Fill |
| Slice 3 | 305.54044 ft | 1,599.8047 ft | 0 psf | 2,691.109 psf | 1,210.1895 psf | 325 psf | 0 psf | Fill |
| Slice 4 | 314.57457 ft | 1,593.9951 ft | 0 psf | 3,071.5956 psf | 1,658.2901 psf | 325 psf | 0 psf | Fill |
| Slice 5 | 326.30265 ft | 1,587.9209 ft | 0 psf | 4,384.48648 psf | 829.77574 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 6 | 335.60715 ft | 1,585.2386 ft | 0 psf | 4,060.5408 psf | 867.17257 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 7 | 338.70102 ft | 1,584.3019 ft | 0 psf | 4,884.5475 psf | 2,935.5798 psf | 325 psf | 0 psf | Fill |
| Slice 8 | 340.13176 ft | 1,583.9877 ft | 0 psf | 5,090.8765 psf | 3,281.4851 psf | 325 psf | 0 psf | Fill |
| Slice 9 | 350.37788 ft | 1,582.5835 ft | 0 psf | 5,087.7066 psf | 3,067.8209 psf | 325 psf | 0 psf | Fill |
| Slice 10 | 360.30309 ft | 1,581.6067 ft | 0 psf | 5,250.4779 psf | 743.81344 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 11 | 370.90797 ft | 1,580.9984 ft | 0 psf | 5,378.9216 psf | 765.96813 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 12 | 376.26499 ft | 1,580.8098 ft | 0 psf | 5,250.0019 psf | 772.28587 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 13 | 385.70022 ft | 1,580.8676 ft | 0 psf | 5,200.9405 psf | 730.94732 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 14 | 395.88744 ft | 1,580.9489 ft | 0 psf | 5,376.246 psf | 751.05737 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 15 | 450.63643 ft | 1,557.0579 ft | 0 psf | 5,466.2949 psf | 708.10503 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 16 | 460.00277 ft | 1,556.7414 ft | 0 psf | 5,384.1387 psf | 756.50195 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 17 | 469.87498 ft | 1,556.4351 ft | 0 psf | 5,106.7503 psf | 726.61101 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 18 | 480.68719 ft | 1,556.5092 ft | 0 psf | 4,903.3684 psf | 686.35067 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 19 | 495.45943 ft | 1,562.1932 ft | 0 psf | 4,737.0847 psf | 668.88253 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 20 | 457.25157 ft | 1,560.8771 ft | 0 psf | 4,521.6003 psf | 634.64999 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 21 | 464.90596 ft | 1,560.0301 ft | 0 psf | 4,380.8258 psf | 615.94605 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 22 | 477.47481 ft | 1,559.126 ft | 0 psf | 4,236.5499 psf | 595.88706 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 23 | 484.31563 ft | 1,557.9077 ft | 0 psf | 4,025.5659 psf | 566.35021 psf | 100 psf | 0 psf | Landslide Plane |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Slice 24 | 494.27296 ft | 1,556.0698 ft | 0 psf | 3,845.7467 psf | 540.48445 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 25 | 504.33374 ft | 1,555.6448 ft | 0 psf | 3,881.4304 psf | 505.53777 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 26 | 513.74859 ft | 1,555.0661 ft | 0 psf | 3,236.9139 psf | 474.913 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 27 | 521.6035 ft | 1,554.4718 ft | 0 psf | 2,908.1885 psf | 408.71625 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 28 | 535.5485 ft | 1,552.382 ft | 0 psf | 2,560.7614 psf | 364.73796 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 29 | 546.04474 ft | 1,551.1064 ft | 0 psf | 2,341.3845 psf | 345.01433 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 30 | 557.05566 ft | 1,549.7039 ft | 0 psf | 2,446.8817 psf | 343.81552 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 31 | 565.29851 ft | 1,548.823 ft | 0 psf | 2,449.7344 psf | 344.2849 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 32 | 572.95371 ft | 1,547.963 ft | 0 psf | 2,457.1525 psf | 328.74535 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 33 | 579.46846 ft | 1,548.6282 ft | 0 psf | 2,295.5643 psf | 423.61376 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 34 | 587.84439 ft | 1,552.0787 ft | 0 psf | 1,859.6134 psf | 1,075.9671 psf | 100 psf | 0 psf | Landslide Material |
| Slice 35 | 595.07984 ft | 1,555.0338 ft | 0 psf | 1,955.4141 psf | 882.08386 psf | 350 psf | 0 psf | Bal |
| Slice 36 | 601.93952 ft | 1,557.708 ft | 0 psf | 896.21027 psf | 426.52556 psf | 350 psf | 0 psf | Bal |
| Slice 37 | 610.18098 ft | 1,561.7031 ft | 0 psf | 855.16079 psf | 168.24334 psf | 350 psf | 0 psf | Bal |

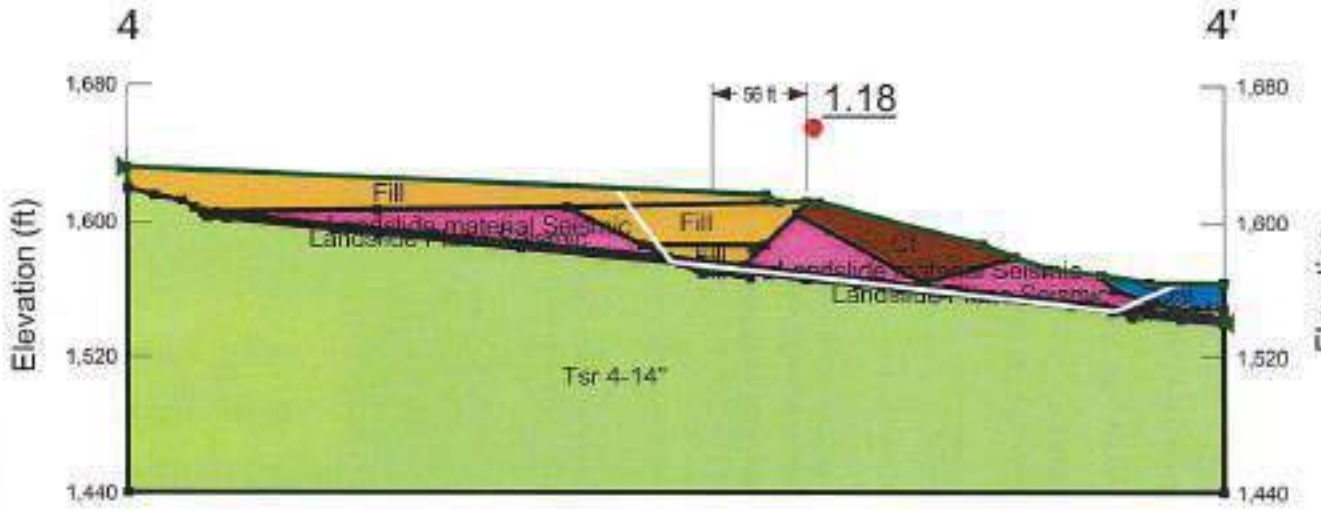
# Section 4-4 Tr 68203 SSA MW 12-2 B.gsz

Horz Seismic Coef.: 0.15

3 -Translational Pseudostatic behind key

Section 4-4 Tr 68203 SSA MW 12-2 B.gsz 12/02/2021 02:52:46 PM

Method: Janbu




Name: Cl
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 237 psf
Phi': 30 °

Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 325 psf
Phi': 30 °

Name: Landslide material Seismic
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 200 psf
Phi': 33 °

Name: Landslide Plane Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 120 psf
Phi': 12 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 350 psf
Phi': 25 °

Name: Tsr 4-14"
Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion': 600 psf
Phi': 32 °
Phi-Anisotropic Strength Fn.: Tsr 18° bedding 4-14"
C-Anisotropic Strength Fn.: Tsr 250 bedding 4-14"


**LGC Valley, Inc**
*GEOTECHNICAL CONSULTING*
28532 Constellation Rd, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

| | |
|---|---|
| Project No: | 203003-01 |
| Engineer: | BIH / MW |
| Date: | Dec 2021 |

# 3 -Translational Pseudostatic behind key

## File Information

File Version: 10.00
Title: Manual
Created By: Michael Wilson
Last Edited By: Michael Wilson
Revision Number: 238
Date: 12/03/2021
Time: 07:52:46 PM
Tool Version: 10.010.0.3401
File Name: Section A-A Tr FB203 SSA NEW 12-2-21.gsz
Directory: P:\FINAL PROJECTS\Walnut Golden Valley Sierra Pointe\slope stability\Walnut\
Last Solved Date: 12/3/2021
Last Solved Time: 7:52:51 PM

## Project Settings

Unit System: US Customary Units

## Analysis Settings

### 3 -Translational Pseudostatic behind key

Kind: SLOPE/W
Param: 3 -Translational Static behind key
Method: Janbu
Settings
PWP Conditions from: [none]
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Grid to Slip Surfaces from Other
Grid: slip surface Grid 1
Optimize Critical Slip Surface Location: No
Tension Crack Option: [none]
Slices
Slices Discretization Option: Constant
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 30
Factor of Safety Convergence Settings
Maximum Number of Iterations: 100
Tolerable Convergence: Default: 0.01





## Materials

### Fill

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 325 psf
Phi: 30 °
Phi-B: 0 °

### Tsr 4-14"

Model: Anisotropic
Unit Weight: 125 pcf
Cohesion: 600 psf
Phi: 32 °
Phi-Anisotropic Strength Ratio for 30° bedding: 4-14"
Phi-Anisotropic Strength Ratio for 150 bedding: 4-14"
Phi-B: 0 °

### Qal

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 350 psf
Phi: 28 °
Phi-B: 0 °

### Landslide material Seismic

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 200 psf
Phi: 25 °
Phi-B: 0 °

### Qf

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 287 psf
Phi: 30 °
Phi-B: 0 °

### Landslide Plane Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 120 psf
Phi: 17 °
Phi-B: 0 °

## Slip Surface Limits

Left Coordinate: (-0.24954, 1,631.6785) ft
Right Coordinate: (691.2867, 1,430.0284) ft

## Seismic Coefficients

Horiz Seismic Coef.: 0.15

Vert Seismic Coef.: 0

## Anisotropic Strength Functions

### Tsr 250 bedding 4-14°

Model: Spline Data Point Function

Function: Modifier Factor vs. Inclination

Curve Fit to Data: 100 %

Segment Curvature: 0 %

Y-Intercept: 1

Data Points: (Inclination [°], Modifier Factor)

Data Point: (3.99, 1)

Data Point: (4, 0.4167)

Data Point: (14, 0.4167)

Data Point: (24.01, 1)

### Tsr 18° bedding 4-14°

Model: Spline Data Point Function

Function: Modifier Factor vs. Inclination

Curve Fit to Data: 100 %

Segment Curvature: 0 %

Y-Intercept: 1

Data Points: (Inclination [°], Modifier Factor)

Data Point: (3.99, 1)

Data Point: (4, 0.5625)

Data Point: (14, 0.5625)

Data Point: (24.01, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 31.85098 ft | 1,631.07795 ft |
| Point 2 | -0.281471 ft | 1,634.18054 ft |
| Point 3 | 0.749023 ft | 1,640.0127 ft |
| Point 4 | 641.00417 ft | 1,640.0128 ft |
| Point 5 | 641.00417 ft | 1,540.425 ft |
| Point 6 | 671.74834 ft | 1,542.7559 ft |
| Point 7 | 575.78813 ft | 1,547.8116 ft |
| Point 8 | 552.23805 ft | 1,550.2926 ft |
| Point 9 | 501.06419 ft | 1,555.3651 ft |
| Point 10 | 470.49747 ft | 1,557.9826 ft |
| Point 11 | 451.21502 ft | 1,559.3062 ft |
| Point 12 | 416.26834 ft | 1,562.7213 ft |
| Point 13 | 396.2941 ft | 1,564.0262 ft |
| Point 14 | 374.28871 ft | 1,566.2003 ft |
| Point 15 | 357.59074 ft | 1,571.0082 ft |
| Point 16 | 335.79169 ft | 1,569.0315 ft |
| Point 17 | 329.07367 ft | 1,584.905 ft |
| Point 18 | 57.654414 ft | 1,601.7906 ft |
| Point 19 | 43.86249 ft | 1,604.5961 ft |
| Point 20 | 29.39045 ft | 1,608.2971 ft |
| Point 21 | 19.41757 ft | 1,615.1354 ft |
| Point 22 | 43.24087 ft | 1,605.567 ft |
| Point 23 | 28.51998 ft | 1,610.3488 ft |
| Point 24 | 52.5256 ft | 1,604.562 ft |
| Point 25 | 397.04626 ft | 1,561.564 ft |
| Point 26 | 360.45777 ft | 1,571.2494 ft |
| Point 27 | 674.18947 ft | 1,589.6142 ft |
| Point 28 | 561.32444 ft | 1,551.3499 ft |
| Point 29 | 590.05015 ft | 1,548.8037 ft |
| Point 30 | 508.94256 ft | 1,553.9291 ft |
| Point 31 | 570.73483 ft | 1,559.3077 ft |
| Point 32 | 569.19258 ft | 1,568.306 ft |
| Point 33 | 538.52079 ft | 1,571.5238 ft |
| Point 34 | 518.67161 ft | 1,578.8857 ft |
| Point 35 | 499.30112 ft | 1,583.5056 ft |
| Point 36 | 404.1306 ft | 1,611.4336 ft |
| Point 37 | 46.38194 ft | 1,603.0951 ft |
| Point 38 | 641.09023 ft | 1,543.5259 ft |
| Point 39 | 590.70339 ft | 1,553.7007 ft |
| Point 40 | 641.00025 ft | 1,553.7007 ft |
| Point 41 | 642.88727 ft | 1,548.7503 ft |
| Point 42 | 673.39616 ft | 1,548.7503 ft |
| Point 43 | 617.90561 ft | 1,548.7503 ft |
| Point 44 | 590.72661 ft | 1,551.7775 ft |
| Point 45 | 403.14779 ft | 1,561.5179 ft |
| Point 46 | 465.59974 ft | 1,564.5279 ft |
| Point 47 | 280.57381 ft | 1,611.1957 ft |
| Point 48 | 371.85616 ft | 1,615.8726 ft |
| Point 49 | -0.24894 ft | 1,631.8796 ft |
| Point 50 | 372.42616 ft | 1,586.8382 ft |
| Point 51 | 350.81187 ft | 1,589.0818 ft |
| Point 52 | 358.88715 ft | 1,608.6108 ft |
| Point 53 | 300.5785 ft | 1,586.8367 ft |
| Point 54 | 313.19549 ft | 1,599.3461 ft |
| Point 55 | 321.56305 ft | 1,575.0756 ft |
| Point 56 | 350.10603 ft | 1,568.9116 ft |
| Point 57 | 309.88536 ft | 1,567.0835 ft |
| Point 58 | 284.3077 ft | 1,583.0372 ft |
| Point 59 | 287.10923 ft | 1,543.2662 ft |
| Point 60 | 345.99305 ft | 1,606.6007 ft |
| Point 61 | 346.46108 ft | 1,550.8707 ft |

## Regions

| Name | Points | Area |
|---|---|---|

| | | | |
|---|---|---|---|
| Region 1 | Tsr 4-14" | 1,3 4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22 | 86,458 ft² |
| Region 2 | Landslide material, Seismic | 22,32,53,54,23,44 | 5,165.9 ft² |
| Region 3 | Landslide material, Seismic | 26,27,28,29,30,31,32,33,34,44,45,44,50 | 5,668.7 ft² |
| Region 4 | Landslide Plane Seismic | 37,38,39,38,37,51,58,24 | 519.73 ft² |
| Region 5 | Landslide Plane Seismic | 35,36,37,38,39,38,5,6,7,8,9,10,11,12,13,14 | 991.67 ft² |
| Region 6 | Cpl | 32,39,40,41,42,43,50,21 | 828.75 ft² |
| Region 7 | Tsl 4-14" | 29,30,42,42,41,46 | 179.04 ft² |
| Region 8 | CP | 75,44,45,46,34,35,36 | 4,388.4 ft² |
| Region 9 | Fill | 47,48,49,1,2,3,4,5,6,7,8,9,10 | 5,585.4 ft² |
| Region 10 | Fill | 50,55,15,48 | 237.38 ft² |
| Region 11 | Fill | 52,53,50,63,25,47 | 2,305.3 ft² |
| Region 12 | Fill | 55,16,53,55 | 304.48 ft² |
| Region 13 | Fill | 50,58,64,26 | 571.44 ft² |

## Slip Results

Slip Surfaces Analyzed: 1 of 1 surfaces

## Current Slip Surface

Slip Surface: 1
Factor of Safety: 1.18
Volume: 10,017.071 ft³
Weight: 1,241,917.2 lbf
Resisting Force: 466,505.78 lbf
Activating Force: 344,104.19 lbf
Slip Rank: 1 of 1 slip surfaces
Exit: (616.0035, 1,565.7007) ft
Entry: (584.90393, 1,619.4408) ft
Radius: 135.40564 ft
Center: (457.4938, 1,683.3871) ft

### Slip Slices

| | X | Y | PWP | Base Normal Stress | Frictional Strength | Cohesive Strength | Seismic Strength | Base Material |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 288.6957 ft | 1,610.5179 ft | 0 psf | 134.13011 psf | 77.474869 psf | 325 psf | 0 psf | Fill |
| Slice 2 | 296.77381 ft | 1,603.3966 ft | 0 psf | 890.55519 psf | 514.51274 psf | 325 psf | 0 psf | Fill |





| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2 | ft | ft | | psf | psf | | | |
| Slice 4 | 505.34484 ft | 1,592.3237 ft | 0 psf | 2,016.3179 psf | 977.59734 psf | 325 psf | 0 psf | Fill |
| Slice 6 | 512.87452 ft | 1,587.0855 ft | 0 psf | 2,353.4234 psf | 1,257.5834 psf | 325 psf | 0 psf | Fill |
| Slice 5 | 516.19485 ft | 1,577.4089 ft | 0 psf | 3,787.2098 psf | 804.0963 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 6 | 519.00945 ft | 1,576.2395 ft | 0 psf | 4,687.4663 psf | 1,040.868 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 7 | 525.00229 ft | 1,575.3019 ft | 0 psf | 4,785.4947 psf | 2,787.9056 psf | 325 psf | 0 psf | Fill |
| Slice 8 | 540.13726 ft | 1,573.9477 ft | 0 psf | 4,880.2905 psf | 2,843.3 psf | 325 psf | 0 psf | Fill |
| Slice 9 | 552.27133 ft | 1,572.9634 ft | 0 psf | 4,675.3044 psf | 9,977.4993 psf | 325 psf | 0 psf | Fill |
| Slice 10 | 563.80509 ft | 1,571.8063 ft | 0 psf | 5,718.9167 psf | 1,109.2051 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 11 | 566.51257 ft | 1,570.8984 ft | 0 psf | 5,213.573 psf | 1,028.8609 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 12 | 575.75499 ft | 1,569.0593 ft | 0 psf | 5,213.1053 psf | 1,204.3227 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 13 | 585.70022 ft | 1,568.8635 ft | 0 psf | 5,334.3844 psf | 1,091.4746 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 14 | 593.88764 ft | 1,567.9481 ft | 0 psf | 5,309.7297 psf | 1,029.1889 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 15 | 600.61645 ft | 1,567.3874 ft | 0 psf | 5,394.1169 psf | 1,167.6176 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 16 | 610.38174 ft | 1,566.2414 ft | 0 psf | 5,316.2254 psf | 1,179.9569 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 17 | 621.67485 ft | 1,564.9253 ft | 0 psf | 5,209.1591 psf | 1,084.7087 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 18 | 633.86779 ft | 1,563.5092 ft | 0 psf | 4,890.2758 psf | 1,039.4864 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 19 | 645.45943 ft | 1,562.1532 ft | 0 psf | 4,677.4025 psf | 994.21217 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 20 | 657.35307 ft | 1,560.7771 ft | 0 psf | 4,464.5242 psf | 948.96991 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 21 | 669.30348 ft | 1,559.4031 ft | 0 psf | 4,326.3022 psf | 919.63806 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 22 | 677.70383 ft | 1,556.128 ft | 0 psf | 4,191.5071 psf | 828.82802 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 23 | 684.21663 ft | 1,557.8837 ft | 0 psf | 3,977.5245 psf | 845.64476 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 24 | 691.47335 ft | 1,556.7453 ft | 0 psf | 3,795.9515 psf | 806.7448 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 25 | 698.353 ft | 1,555.8446 ft | 0 psf | 3,534.3156 psf | 751.24153 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 26 | 703.79899 ft | 1,554.5661 ft | 0 psf | 3,159.8142 psf | 678.86624 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 27 | 708.6039 ft | 1,553.4718 ft | 0 psf | 2,958.0193 psf | 905.80662 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 28 | 538.5485 ft | 1,552.362 ft | 0 psf | 2,519.9154 psf | 964.18398 psf | 120 psf | 0 psf | Landslide Plane Seismic |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Slice 31 | 585.89414 ft | 1,551.0064 ft | 0 psf | 2,417.5464 psf | 515.70581 psi | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 30 | 597.09566 ft | 1,549.9839 ft | 0 psf | 2,412.4852 psf | 512.3856 psi | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 29 | 603.23851 ft | 1,548.829 ft | 0 psf | 2,415.7314 psf | 513.48975 psf | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 32 | 572.96371 ft | 1,547.063 ft | 0 psf | 4,376.0996 psf | 504.01139 psi | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 33 | 571.49845 ft | 1,546.0292 ft | 0 psf | 2,409.0876 psf | 512.25968 psi | 120 psf | 0 psf | Landslide Plane Seismic |
| Slice 34 | 567.84418 ft | 1,553.0867 ft | 0 psf | 2,157.7703 psf | 1,401.2724 psi | 700 psf | 0 psf | Landslide material Seismic |
| Slice 35 | 585.37984 ft | 1,555.0338 ft | 0 psf | 1,407.3627 psf | 780.2212 psf | 350 psf | 0 psf | Qal |
| Slice 36 | 601.53592 ft | 1,557.706 ft | 0 psf | 1,033.0439 psf | 540.2702 psf | 350 psf | 0 psf | Qal |
| Slice 37 | 611.18489 ft | 1,561.7081 ft | 0 psf | 444.32866 psf | 326.27309 psi | 350 psf | 0 psf | Qal |

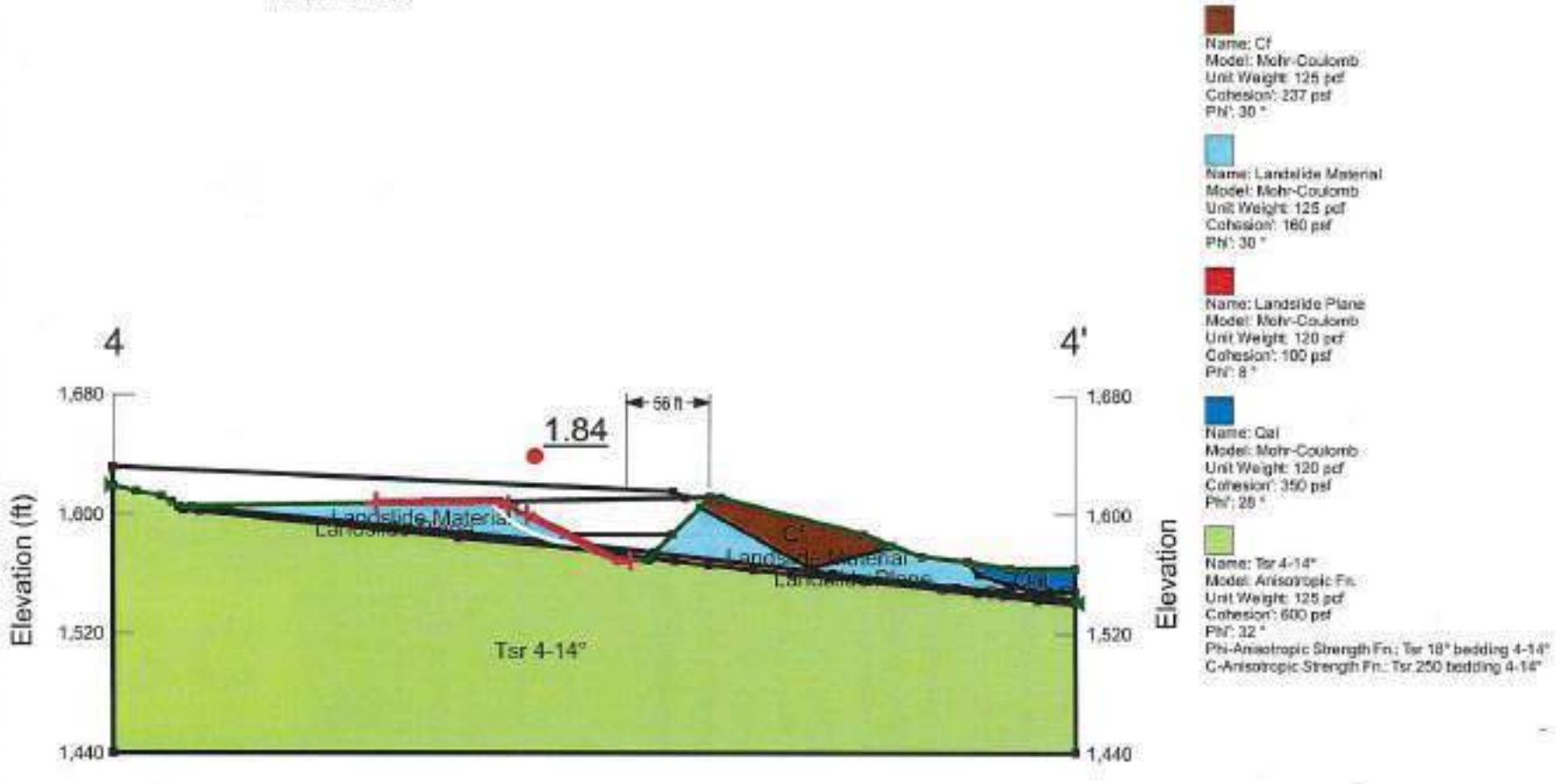
# Section 4-4 Tr 68203 SSA MW 12-2 B.gsz

Horz Seismic Coef.: 0

4 -Rotational Static Temp Left

Section 4-4 Tr 68203 SSA MW 12-2 B.gsz 12/02/2021 08:08:37 AM

Method: Bishop





**LGC Valley, Inc**

*GEOTECHNICAL CONSULTING*

28532 Constellation Rd, Valencia, CA 91355

Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

| | |
|---|---|
| Project No: | 203003-01 |
| Engineer: | BIH / MW |
| Date: | Dec 2021 |

# 4 -Rotational Static Temp Left

Report generated using RocScience Slide2 model version 9.036

## File Information

File Version: 10.09
Units: Imperial
Created By: Michal Wilson
Last Edited By: Michal Wilson
Revision Number: 190
Date: 12/02/2021
Time: 09:05:37 AM
Tool Version: 10.0.0.17401
Slide Model Section: 1-1 in NAD83 UTM Zone 12 N.gpk
Directory: P:\PMG\PROJECTS\Mitchell Golden Valley Sierra Hwy\slope stability\Warrior\
Last Solved Date: 12/02/2021
Last Solved Time: 09:05:37 AM

## Project Settings

Unit System: U.S. Customary Units

## Analysis Settings

### 4 -Rotational Static Temp Left

Name: SLOPE/W
Method: Bishop
Settings
PWP Conditions from: (none)
Unit Weight of Water: 57.4 pcf
Slip Surface
Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack: Option: (none)
Distributed
FoS Calculation Option: Constant
Advanced
Discretization
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 30
Factor of Safety Convergence Settings
Maximum Number of Iterations: 100
Tolerance: Reference FoS: 0.001

## Materials





### Landslide Material

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 150 psf
Phi': 30 °
Phi-B: 0 °

### Landslide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 100 psf
Phi': 8 °
Phi-B: 0 °

### Tsr 4-14°

Model: Anisotropic Fn
Unit Weight: 125 pcf
Cohesion': 600 psf
Phi': 52 °
Phi-Fn Isotropic Strength Fn: "Tsr 14° bedding 4-14"
Phi-Fn Isotropic Strength Fn: "Tsr 204 bedding 4-14"
Phi-B: 0 °

### Qal

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion': 350 psf
Phi': 28 °
Phi-B: 0 °

### Qf

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 312 psf
Phi': 30 °
Phi-B: 0 °

## Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (174.8088, 1,607.4755) ft
Left-Zone Right Coordinate: (262.89539, 1,605.0095) ft
Left-Zone Increments: 60
Right Type: Range
Right-Zone Left Coordinate: (271.20158, 1,599.6417) ft
Right-Zone Right Coordinate: (340.81045, 1,598.0058) ft
Right-Zone Increments: 60
Radius Increments: 10

## Slip Surface Limits

Left Coordinate: (-0.00031, 1,630.1884) ft
Right Coordinate: (581.05417, 1,540.4258) ft

## Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

## Anisotropic Strength Functions

### Tsr 250 bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y Intercept: 1
Data Points: Inclination [°], Modifier Factor
Data Point: (2.59, 1)
Data Point: (4, 0.8264)
Data Point: (14, 0.6417)
Data Point: (14.01, 1)

### Tsr 18° bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y Intercept: 1
Data Points: Inclination [°], Modifier Factor
Data Point: (3.59, 1)
Data Point: (4, 0.9075)
Data Point: (14, 0.5625)
Data Point: (14.01, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 31.85098 ft | 1,611.9785 ft |
| Point 2 | 0.20371 ft | 1,619.1805 ft |
| Point 3 | 16.08074 ft | 1,611.0147 ft |
| Point 4 | 641.70417 ft | 1,440.6028 ft |
| Point 5 | 641.70417 ft | 1,540.6028 ft |
| Point 6 | 615.74664 ft | 1,542.7559 ft |
| Point 7 | 575.78611 ft | 1,547.4116 ft |
| Point 8 | 552.27805 ft | 1,550.2826 ft |
| Point 9 | 501.86419 ft | 1,555.3661 ft |
| Point 10 | 470.45307 ft | 1,557.3936 ft |
| Point 11 | 451.31494 ft | 1,559.3062 ft |
| Point 12 | 436.20261 ft | 1,559.7213 ft |
| Point 13 | 396.2531 ft | 1,559.0207 ft |
| Point 14 | 373.88871 ft | 1,558.8001 ft |
| Point 15 | 357.30074 ft | 1,557.1068 ft |
| Point 16 | 335.70855 ft | 1,560.0716 ft |
| Point 17 | 229.07557 ft | 1,584.309 ft |





| | | |
|---|---|---|
| Point 18 | 27.664314 ft | 1,601.7806 ft |
| Point 19 | 44.86249 ft | 1,601.2364 ft |
| Point 20 | 59.29249 ft | 1,600.9931 ft |
| Point 21 | 85.41757 ft | 1,601.1956 ft |
| Point 22 | 92.24007 ft | 1,601.602 ft |
| Point 23 | 78.51996 ft | 1,602.3488 ft |
| Point 24 | 52.0156 ft | 1,604.853 ft |
| Point 25 | 497.04626 ft | 1,611.6809 ft |
| Point 26 | 360.16777 ft | 1,574.0945 ft |
| Point 27 | 479.1884 ft | 1,580.6167 ft |
| Point 28 | 561.32414 ft | 1,555.5159 ft |
| Point 29 | 549.05015 ft | 1,548.8937 ft |
| Point 30 | 598.94756 ft | 1,552.3251 ft |
| Point 31 | 570.74455 ft | 1,555.5277 ft |
| Point 32 | 559.19258 ft | 1,568.306 ft |
| Point 33 | 538.52079 ft | 1,571.6228 ft |
| Point 34 | 518.63143 ft | 1,578.8857 ft |
| Point 35 | 492.30112 ft | 1,586.2966 ft |
| Point 36 | 464.1866 ft | 1,611.2336 ft |
| Point 37 | 46.38368 ft | 1,609.6291 ft |
| Point 38 | 503.00023 ft | 1,548.5238 ft |
| Point 39 | 580.71539 ft | 1,563.7007 ft |
| Point 40 | 641.00025 ft | 1,563.7007 ft |
| Point 41 | 540.08727 ft | 1,548.7503 ft |
| Point 42 | 521.20616 ft | 1,568.7503 ft |
| Point 43 | 512.80551 ft | 1,548.7503 ft |
| Point 44 | 390.72884 ft | 1,611.2275 ft |
| Point 45 | 461.14779 ft | 1,564.5773 ft |
| Point 46 | 466.65914 ft | 1,564.5773 ft |
| Point 47 | 360.67181 ft | 1,611.2957 ft |
| Point 48 | 503.65618 ft | 1,615.4736 ft |
| Point 49 | -0.24894 ft | 1,651.6796 ft |
| Point 50 | 372.42615 ft | 1,586.6807 ft |
| Point 51 | 355.82387 ft | 1,560.0616 ft |
| Point 52 | 356.58715 ft | 1,564.4186 ft |
| Point 53 | 370.0785 ft | 1,586.6814 ft |
| Point 54 | 315.19949 ft | 1,539.3461 ft |
| Point 55 | 352.56502 ft | 1,575.6656 ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | Tsr 4-14° | 1,2,4,5,6,7,8,9,10,11,12,13,14,15,51,16,55,17,18,37,19,20,21 | 26,458 ft² |
| Region 2 | Candidate Material | 22,52,53,54,23,24 | 4,270.9 ft² |
| Region 3 | Candidate Material | 26,27,28,29,30,31,32,33,34,35,36,50 | 3,568.1 ft² |
| Region 4 | Candidate Plane | 22,15,37,38,17,56,54,24 | 410.15 ft² |
| Region 5 | Candidate Plane | 35,25,27,28,25,38,5,6,7,8,9,10,11,12,13,14 | 491.6 ft² |
| Region 6 | Oil | 3,1,2,40,41,42,43,44,45 | 928.76 ft² |

| | | | |
|---|---|---|---|
| Region 7 | Spline[CF | 28.30,35,42,41,48 | 175.04 ft² |
| Region 8 | CF | 25.44,35,45,34,35,36 | 2,358.4 ft² |
| Region 9 | | 47,38,42,2,27,1,29,22,52 | 5,556.1 ft² |
| Region 10 | | 54,55,15,23 | 127.36 ft² |
| Region 11 | | 52.53,53,44,25,23 | 2,506.3 ft² |
| Region 12 | | 55,36,51,15 | 172.38 ft² |
| Region 13 | | 50,54,54,25 | 571.45 ft² |

## Slip Results

Slip Surfaces Analyzed: 29059 of 59415 converged

## Current Slip Surface

Slip Surface: 84 Slid
Factor of Safety: 1.84
Volume: 451,97284 ft³
Weight: 56,496,606 lbf
Resisting Moment: 3,151,691.3 lbf-ft
Activating Moment: 1,717,641.1 lbf-ft
Slip Rank: 1 of 59,415 slip surfaces
Exit: (315.08879, 1,566.4207) ft
Entry: (291.21984, 1,608.3353) ft
Radius: 75.125402 ft
Center: (309.86952, 1,615.4575) ft

### Slip Slices

| | X | Y | PWP | Raw Normal Stress | Mobilized Strength | Cohesive Strength | Suction Strength | Slice Material |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 282.13106 ft | 1,607.4801 ft | 0 psf | 24.794751 psf | 34.315279 psi | 100 psf | 0 psf | Landslide Material |
| Slice 2 | 283.95349 ft | 1,606.1364 ft | 0 psf | 238.91514 psf | 330.10422 psi | 100 psf | 0 psf | Landslide Material |
| Slice 3 | 285.77691 ft | 1,604.8042 ft | 0 psf | 635.61617 psf | 285.79172 psi | 100 psf | 0 psf | Landslide Material |
| Slice 4 | 287.73656 ft | 1,601.406 ft | 0 psf | 576.98627 psf | 333.12216 psi | 100 psf | 0 psf | Landslide Material |
| Slice 5 | 289.82939 ft | 1,599.409 ft | 0 psf | 679.74009 psf | 387.43365 psi | 100 psf | 0 psf | Landslide Material |
| Slice 6 | 291.93412 ft | 1,597.6535 ft | 0 psf | 730.32958 psf | 444.75305 psi | 100 psf | 0 psf | Landslide Material |
| Slice 7 | 294.01955 ft | 1,595.9366 ft | 0 psf | 808.2619 psf | 493.33803 psi | 100 psf | 0 psf | Landslide Material |
| Slice 8 | 296.11357 ft | 1,594.0177 ft | 0 psf | 907.16408 psf | 529.12493 psi | 100 psf | 0 psf | Landslide Material |
| Slice 9 | 298.20029 ft | 1,592.3075 ft | 0 psf | 974.39642 psf | 502.56886 psi | 100 psf | 0 psf | Landslide Material |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Slice 10 | 300.30252 ft | 1,590.5196 ft | 0 psf | 1,021.3408 psf | 589.6887 psf | 100 psf | 0 psf | Landslide Material |
| Slice 11 | 302.39885 ft | 1,588.867 ft | 0 psf | 1,058.4281 psf | 611.08572 psf | 100 psf | 0 psf | Landslide Material |
| Slice 12 | 304.49417 ft | 1,587.2041 ft | 0 psf | 1,085.8648 psf | 626.91891 psf | 100 psf | 0 psf | Landslide Material |
| Slice 13 | 306.5884 ft | 1,585.1264 ft | 0 psf | 1,104.8967 psf | 637.89408 psf | 100 psf | 0 psf | Landslide Material |
| Slice 14 | 308.68282 ft | 1,587.1318 ft | 0 psf | 1,117.7037 psf | 645.30385 psf | 100 psf | 0 psf | Landslide Material |
| Slice 15 | 310.77765 ft | 1,585.2133 ft | 0 psf | 1,112.625 psf | 642.37665 psf | 100 psf | 0 psf | Landslide Material |
| Slice 16 | 312.87348 ft | 1,585.3672 ft | 0 psf | 1,109.8352 psf | 637.13638 psf | 100 psf | 0 psf | Landslide Material |
| Slice 17 | 314.9679 ft | 1,584.5851 ft | 0 psf | 1,085.3065 psf | 626.040026 psf | 100 psf | 0 psf | Landslide Material |
| Slice 18 | 317.06213 ft | 1,583.8826 ft | 0 psf | 1,059.5253 psf | 611.21729 psf | 100 psf | 0 psf | Landslide Material |
| Slice 19 | 319.15595 ft | 1,583.2578 ft | 0 psf | 1,024.552 psf | 591.02465 psf | 100 psf | 0 psf | Landslide Material |
| Slice 20 | 321.25173 ft | 1,582.6887 ft | 0 psf | 981.05459 psf | 565.93466 psf | 100 psf | 0 psf | Landslide Material |
| Slice 21 | 323.34502 ft | 1,582.184 ft | 0 psf | 938.90335 psf | 541.59707 psf | 100 psf | 0 psf | Landslide Material |
| Slice 22 | 325.44104 ft | 1,581.7977 ft | 0 psf | 898.35185 psf | 518.14506 psf | 100 psf | 0 psf | Landslide Material |
| Slice 23 | 327.53625 ft | 1,581.3623 ft | 0 psf | 799.156 psf | 461.09467 psf | 100 psf | 0 psf | Landslide Material |
| Slice 24 | 329.63103 ft | 1,581.0433 ft | 0 psf | 721.36755 psf | 416.48682 psf | 100 psf | 0 psf | Landslide Material |
| Slice 25 | 331.71353 ft | 1,580.7856 ft | 0 psf | 635.036 psf | 366.62241 psf | 100 psf | 0 psf | Landslide Material |
| Slice 26 | 333.78357 ft | 1,580.5678 ft | 0 psf | 540.2577 psf | 311.81104 psf | 100 psf | 0 psf | Landslide Material |
| Slice 27 | 335.85682 ft | 1,580.4477 ft | 0 psf | 418.7009 psf | 241.6407 psf | 100 psf | 0 psf | Landslide Material |
| Slice 28 | 337.92387 ft | 1,580.3648 ft | 0 psf | 324.27021 psf | 187.21522 psf | 100 psf | 0 psf | Landslide Material |
| Slice 29 | 339.98917 ft | 1,580.3395 ft | 0 psf | 202.72555 psf | 117.04365 psf | 100 psf | 0 psf | Landslide Material |
| Slice 30 | 342.06104 ft | 1,580.3707 ft | 0 psf | 77.400816 psf | 44.688862 psf | 100 psf | 0 psf | Landslide Material |

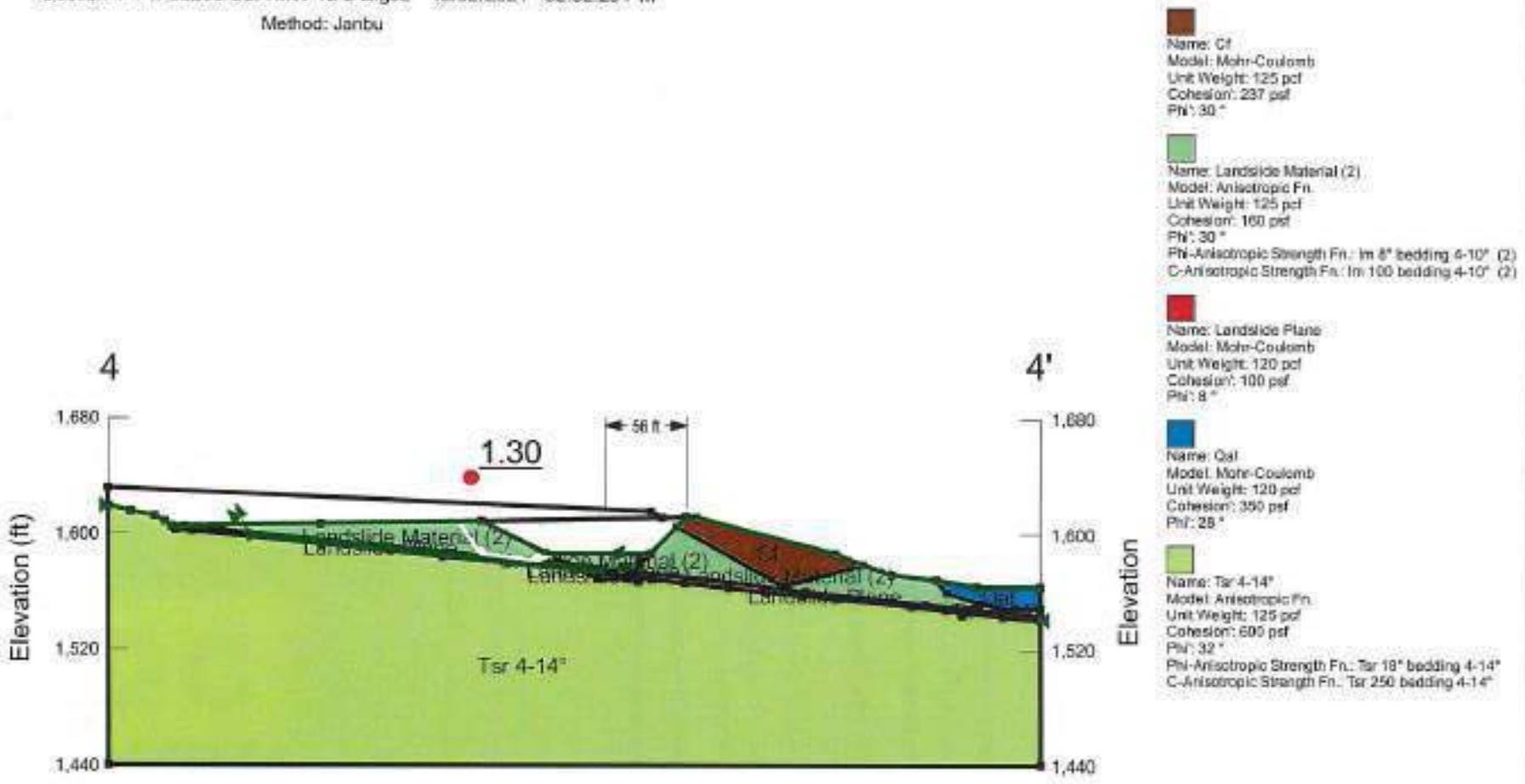
# Section 4-4 Tr 68203 SSA MW 12-2 B.gsz

Horz Seismic Coef.: 0

6 -Translational Static Temp Left

Section 4-4 Tr 68203 SSA MW 12-2 B.gsz 12/02/2021 02:52:29 PM

Method: Janbu





LGC

**LGC Valley, Inc**

*GEOTECHNICAL CONSULTING*

28532 Constellation Rd, Valencia, CA 91355

Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

| | |
|---|---|
| Project No: | **203003-01** |
| Engineer: | **BIH / MW** |
| Date: | **Dec 2021** |

# 6 -Translational Static Temp Left

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## File Information

File Version: 1.0.0.2
Title: Version
Created By: Michel Watson
Last Edited By: Michel Watson
Revision Number: 237
Date: 12/01/2021
Time: 02:52:28 PM
RSC Version: 1.0.0.0 (1748)
File Name: Section 4-4 Tr(6200 SSA MW 12 2 8.gsz
Directory: P:\S\GAL PROJECTS\Valley Sierra Hwy\slope stability\Volume1\
Last Solved Date: 12/01/2021
Last Solved Time: 02:52:35 PM

## Project Settings

Units System: U.S. Customary Units

## Analysis Settings

### 6 -Translational Static Temp Left

Kind: SLOPE/W
Method: Janbu
Settings
PWP Conditions from: (none)
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Block
Critical slip surfaces saved: 2
Restrict Block Crossings: Yes
Optimize Critical Slip Surface Location: No
Tension Crack Option: (none)
Distributed
F of S Distribution Option: Constant
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 30
Factor of Safety Convergence Settings
Maximum Number of Iterations: 100
Tolerable difference in F of S: 0.01





## Materials

### Landslide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 400 psf
Phi: 8 °
Phi-b: 0 °

### Tsr 4-14°

Model: Anisotropic Fn
Unit Weight: 125 pcf
Cohesion: 660 psf
Phi: 32 °
Phi-Anisotropic Strength Fn: Tsr 18° bedding 4-14°
Cohesion-Anisotropic Strength Fn: Tsr 220 bedding 4-14°
Phi-b: 0 °

### Qal

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 350 psf
Phi: 28 °
Phi-b: 0 °

### Cf

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 287 psf
Phi: 30 °
Phi-b: 0 °

### Landslide Material (2)

Model: Anisotropic Fn
Unit Weight: 125 pcf
Cohesion: 360 psf
Phi: 30 °
Phi-Anisotropic Strength Fn: Tsr 18° bedding 4-14° (2)
Cohesion-Anisotropic Strength Fn: Tsr 100 bedding 4-14° (2)
Phi-b: 0 °

## Slip Surface Limits

Left Coordinate: (-6,000.171, 1,515.380) ft
Right Coordinate: (641.000417, 1,540.428) ft

## Slip Surface Block

Left Grid
Upper Left: (96.111221, 1,601.041) ft
Lower Left: (96.111081, 1,556.820) ft
Lower Right: (274.068841, 1,579.779) ft

Y Increments: 10
X Increments: 10
Starting Angle: 135°
Ending Angle: 135°
Angle Increments: 1
Right Grid
Upper Left: (275.42273, 1,583.5582) ft
Lower Left: (275.42273, 1,573.0785) ft
Lower Right: (340.7139, 1,573.0785) ft
X Increments: 10
Y Increments: 10
Angle Increments: 1

## Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

## Anisotropic Strength Functions

### Tsr 250 bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y Increments: 1
Data Points: Inclination (°), Modifier Factor
Data Point: (-90, 1)
Data Point: (-1, 0.0357)
Data Point: (14, 0.4167)
Data Point: (14.01, 1)

### Tsr 10° bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y Increments: 1
Data Points: Inclination (°), Modifier Factor
Data Point: (-90, 1)
Data Point: (-1, 0.5625)
Data Point: (13, 0.5625)
Data Point: (14.01, 1)

### Im 100 bedding 4-10° (2)

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y Increments: 1
Data Points: Inclination (°), Modifier Factor
Data Points: (-90, 1)





Data Points: (-13, 0.525)
Data Points: (-1, 0.675)
Data Points: (0, 1)

### Im 8° bedding 4-10° (2)

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y Increments: 1
Data Points: Inclination (°), Modifier Factor
Data Points: (-90, 1)
Data Points: (-10, 0.26)
Data Points: (-8.1, 0.26)
Data Points: (0, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 31.88098 ft | 1,611.7785 ft |
| Point 2 | 0.00871 ft | 1,610.9815 ft |
| Point 3 | 0.00025 ft | 1,610.0187 ft |
| Point 4 | 542.00417 ft | 1,440.0028 ft |
| Point 5 | 541.00417 ft | 1,540.428 ft |
| Point 6 | 515.74564 ft | 1,542.7559 ft |
| Point 7 | 505.79857 ft | 1,542.4116 ft |
| Point 8 | 502.79896 ft | 1,550.2926 ft |
| Point 9 | 501.96419 ft | 1,556.3651 ft |
| Point 10 | 476.49067 ft | 1,557.8076 ft |
| Point 11 | 451.21599 ft | 1,560.5202 ft |
| Point 12 | 426.26241 ft | 1,562.7211 ft |
| Point 13 | 396.3361 ft | 1,556.0267 ft |
| Point 14 | 371.88971 ft | 1,568.8201 ft |
| Point 15 | 342.59074 ft | 1,571.0782 ft |
| Point 16 | 333.70889 ft | 1,550.0519 ft |
| Point 17 | 325.67087 ft | 1,581.335 ft |
| Point 18 | 57.65824 ft | 1,601.7806 ft |
| Point 19 | 44.86248 ft | 1,600.5364 ft |
| Point 20 | 39.23026 ft | 1,608.2273 ft |
| Point 21 | 35.43257 ft | 1,615.0364 ft |
| Point 22 | 47.24087 ft | 1,606.602 ft |
| Point 23 | 78.31996 ft | 1,602.3489 ft |
| Point 24 | 52.3355 ft | 1,604.892 ft |
| Point 25 | 337.00626 ft | 1,621.6503 ft |
| Point 26 | 360.26771 ft | 1,594.2595 ft |
| Point 27 | 475.38853 ft | 1,560.8167 ft |
| Point 28 | 468.12444 ft | 1,551.9149 ft |
| Point 29 | 590.20915 ft | 1,548.8837 ft |
| Point 30 | 598.94254 ft | 1,582.5751 ft |
| Point 31 | 376.73483 ft | 1,559.9277 ft |

| | | |
|---|---|---|
| Point 52 | 569.58258 ft | 1,568.306 ft |
| Point 53 | 568.52007 ft | 1,573.6779 ft |
| Point 54 | 578.4401 ft | 1,578.8853 ft |
| Point 55 | 499.30112 ft | 1,586.5955 ft |
| Point 56 | 409.1866 ft | 1,601.2116 ft |
| Point 57 | 406.98268 ft | 1,608.8751 ft |
| Point 58 | 401.00029 ft | 1,548.5735 ft |
| Point 59 | 396.71339 ft | 1,548.7307 ft |
| Point 60 | 442.00023 ft | 1,548.7307 ft |
| Point 61 | 442.99727 ft | 1,548.7503 ft |
| Point 62 | 628.99618 ft | 1,548.7503 ft |
| Point 63 | 632.80351 ft | 1,548.7306 ft |
| Point 64 | 390.72802 ft | 1,605.2275 ft |
| Point 65 | 463.24729 ft | 1,568.5372 ft |
| Point 66 | 466.60914 ft | 1,564.5275 ft |
| Point 67 | 360.67181 ft | 1,611.2967 ft |
| Point 68 | 372.259832 ft | 1,615.6776 ft |
| Point 69 | 372.24824 ft | 1,611.6736 ft |
| Point 70 | 372.42616 ft | 1,566.6387 ft |
| Point 71 | 356.81287 ft | 1,569.1061 ft |
| Point 72 | 356.66711 ft | 1,608.6308 ft |
| Point 73 | 300.6786 ft | 1,586.6367 ft |
| Point 74 | 315.19849 ft | 1,579.9961 ft |
| Point 75 | 322.56302 ft | 1,575.6556 ft |
| Point 76 | 350.16633 ft | 1,568.9116 ft |
| Point 77 | 353.89136 ft | 1,567.0434 ft |
| Point 78 | 364.8077 ft | 1,562.9172 ft |
| Point 79 | 367.26023 ft | 1,543.2603 ft |
| Point 80 | 145.99305 ft | 1,606.6301 ft |
| Point 81 | 146.46178 ft | 1,551.5777 ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | Typ 4-14" | 2,5,4,6,7,8,9,10,11,12,13,14,15,5,16,55,17,18,37,19,20,21,1 | 80,378 ft² |
| Region 2 | Landslide Material (2) | 22,53,54,23,24 | 3,195.9 ft² |
| Region 3 | Landslide Material (2) | 36,27,28,29,30,31,32,33,34,35,40,41,26 | 3,668.7 ft² |
| Region 4 | Landslide Plane | 22,14,52,13,12,51,54,24 | 819.73 ft² |
| Region 5 | Landslide Plane | 15,75,77,78,79,80,5,6,7,8,9,10,11,12,13,14 | 983.67 ft² |
| Region 6 | Ost | 32,39,40,41,42,43,30,31 | 878.70 ft² |
| Region 7 | Typ 8-14" | 29,30,43,42,41,28 | 1,133.04 ft² |
| Region 8 | Ot | 25,44,45,46,34,36,26 | 2,382.4 ft² |





| | | | |
|---|---|---|---|
| Region 9 | | 47,45,49,2,21,1,20,22,52 | 1,554.4 ft² |
| Region 10 | Landslide Plane | 50,55,15,26 | 227.38 ft² |
| Region 11 | | 52,54,50,44,25,47 | 2,518.3 ft² |
| Region 12 | Landslide Plane | 55,16,51,15 | 704.28 ft² |
| Region 13 | Landslide Material (2) | 30,33,34,26 | 572.43 ft² |

## Slip Results

Slip Surfaces Analyzed: 1076 of 11979 converged

## Current Slip Surface

Slip Surface: 905
Factor of Safety: 1.30
Volume: 810.5752648 ft³
Weight: 378,466.89 lbf
Resisting Force: 29,194,862 lbf
Activating Force: 22,425,471 lbf
Slip Point: 8 of 11,979 slip surfaces
Exit: (306.92075, 1,582.455) ft
Entry: (240.14672, 1,608.3623) ft
Radius: 36.141706 ft
Center: (279.84659, 1,615.8384) ft

### Slip Slices

| | X | Y | Pwp | Base Normal Stress | Frictional Strength | Cohesive Strength | Shear Strength | Base Material |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 241.16667 ft | 1,606.7508 ft | 0 psf | 11,143.8837 psf | 2,479.2743 psf | 141 psf | 0 psf | Landslide Material (2) |
| Slice 2 | 243.50562 ft | 1,603.5838 ft | 0 psf | 269.24512 psf | 151.40725 psf | 160 psf | 0 psf | Landslide Material (2) |
| Slice 3 | 247.24057 ft | 1,600.3849 ft | 0 psf | 508.53841 psf | 286.8363 psf | 160 psf | 0 psf | Landslide Material (2) |
| Slice 4 | 247.28652 ft | 1,597.1859 ft | 0 psf | 756.4337 psf | 426.78514 psf | 160 psf | 0 psf | Landslide Material (2) |
| Slice 5 | 250.22545 ft | 1,593.9869 ft | 0 psf | 1,002.328 psf | 578.60459 psf | 160 psf | 0 psf | Landslide Material (2) |
| Slice 6 | 252.4654 ft | 1,590.788 ft | 0 psf | 1,248.0223 psf | 728.17939 psf | 160 psf | 0 psf | Landslide Material (2) |
| Slice 7 | 254.70652 ft | 1,587.589 ft | 0 psf | 1,495.7166 psf | 877.97376 psf | 160 psf | 0 psf | Landslide Material (2) |
| Slice 8 | 256.25623 ft | 1,584.3916 ft | 0 psf | 2,794.4905 psf | 382.38603 psf | 100 psf | 0 psf | Landslide Material (2) |
| Slice 9 | 257.31678 ft | 1,581.7884 ft | 0 psf | 2,748.2467 psf | 375.91908 psf | 100 psf | 0 psf | Landslide Material (2) |
| Slice | 260.05685 | 1,586.3101 | 0 psf | 2,636.4644 | 361.1503 | 100 psf | 0 psf | Landslide |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| [illegible] | ft | ft | | psf | psf | | | Material [2] |
| Slice 11 | 263.80510 ft | 1,586.2693 ft | 0 psf | 2,529.6825 psf | 946.28636 psf | 100 psf | 0 psf | Landslide Material [2] |
| Slice 12 | 264.54979 ft | 1,585.0193 ft | 0 psf | 2,420.8593 psf | 831.62202 psf | 100 psf | 0 psf | Landslide Material [2] |
| Slice 13 | 266.75626 ft | 1,584.7593 ft | 0 psf | 2,313.1745 psf | 719.35764 psf | 100 psf | 0 psf | Landslide Material [2] |
| Slice 14 | 268.04273 ft | 1,584.52 ft | 0 psf | 2,205.2361 psf | 602.09138 psf | 100 psf | 0 psf | Landslide Material [2] |
| Slice 15 | 270.2892 ft | 1,584.2702 ft | 0 psf | 2,097.5529 psf | 487.329 psf | 100 psf | 0 psf | Landslide Material [2] |
| Slice 16 | 272.53568 ft | 1,584.0201 ft | 0 psf | 1,989.7706 psf | 372.56856 psf | 100 psf | 0 psf | Landslide Material [2] |
| Slice 17 | 274.78214 ft | 1,583.7706 ft | 0 psf | 1,881.9883 psf | 257.80932 psf | 100 psf | 0 psf | Landslide Material [2] |
| Slice 18 | 278.02861 ft | 1,583.5205 ft | 0 psf | 1,774.2059 psf | 143.05008 psf | 100 psf | 0 psf | Landslide Material [2] |
| Slice 19 | 280.27508 ft | 1,583.271 ft | 0 psf | 1,666.4236 psf | 28.291084 psf | 100 psf | 0 psf | Landslide Material [2] |
| Slice 20 | 282.52155 ft | 1,583.0215 ft | 0 psf | 1,558.6413 psf | 213.5073 psf | 100 psf | 0 psf | Landslide Material [2] |
| Slice 21 | 284.76802 ft | 1,582.7715 ft | 0 psf | 1,450.859 psf | 198.74286 psf | 100 psf | 0 psf | Landslide Material [2] |
| Slice 22 | 287.01449 ft | 1,582.5217 ft | 0 psf | 1,343.0767 psf | 183.97852 psf | 100 psf | 0 psf | Landslide Material [2] |
| Slice 23 | 285.26096 ft | 1,582.2718 ft | 0 psf | 1,235.2944 psf | 169.21418 psf | 100 psf | 0 psf | Landslide Material [2] |
| Slice 24 | 291.50743 ft | 1,581.0221 ft | 0 psf | 1,127.5121 psf | 154.44984 psf | 100 psf | 0 psf | Landslide Material [2] |
| Slice 25 | 295.7539 ft | 1,581.7722 ft | 0 psf | 1,019.7298 psf | 139.6855 psf | 100 psf | 0 psf | Landslide Material [2] |
| Slice 26 | 295.84405 ft | 1,582.0475 ft | 0 psf | 1,136.812 psf | 656.01291 psf | 160 psf | 0 psf | Landslide Material [2] |
| Slice 27 | 297.77782 ft | 1,582.8485 ft | 0 psf | 865.40719 psf | 494.65457 psf | 160 psf | 0 psf | Landslide Material [2] |
| Slice 28 | 299.71161 ft | 1,583.6495 ft | 0 psf | 594.0374 psf | 333.29623 psf | 160 psf | 0 psf | Landslide Material [2] |
| Slice 29 | 302.08924 ft | 1,584.6348 ft | 0 psf | 309.53423 psf | 213.35814 psf | 160 psf | 0 psf | Landslide Material [2] |
| Slice 30 | 304.46686 ft | 1,585.6201 ft | 0 psf | 225.03062 psf | 130.27367 psf | 160 psf | 0 psf | Landslide Material [2] |
| Slice 31 | 306.84561 ft | 1,586.6054 ft | 0 psf | 113.08984 psf | 63.978838 psf | 160 psf | 0 psf | Landslide Material [2] |

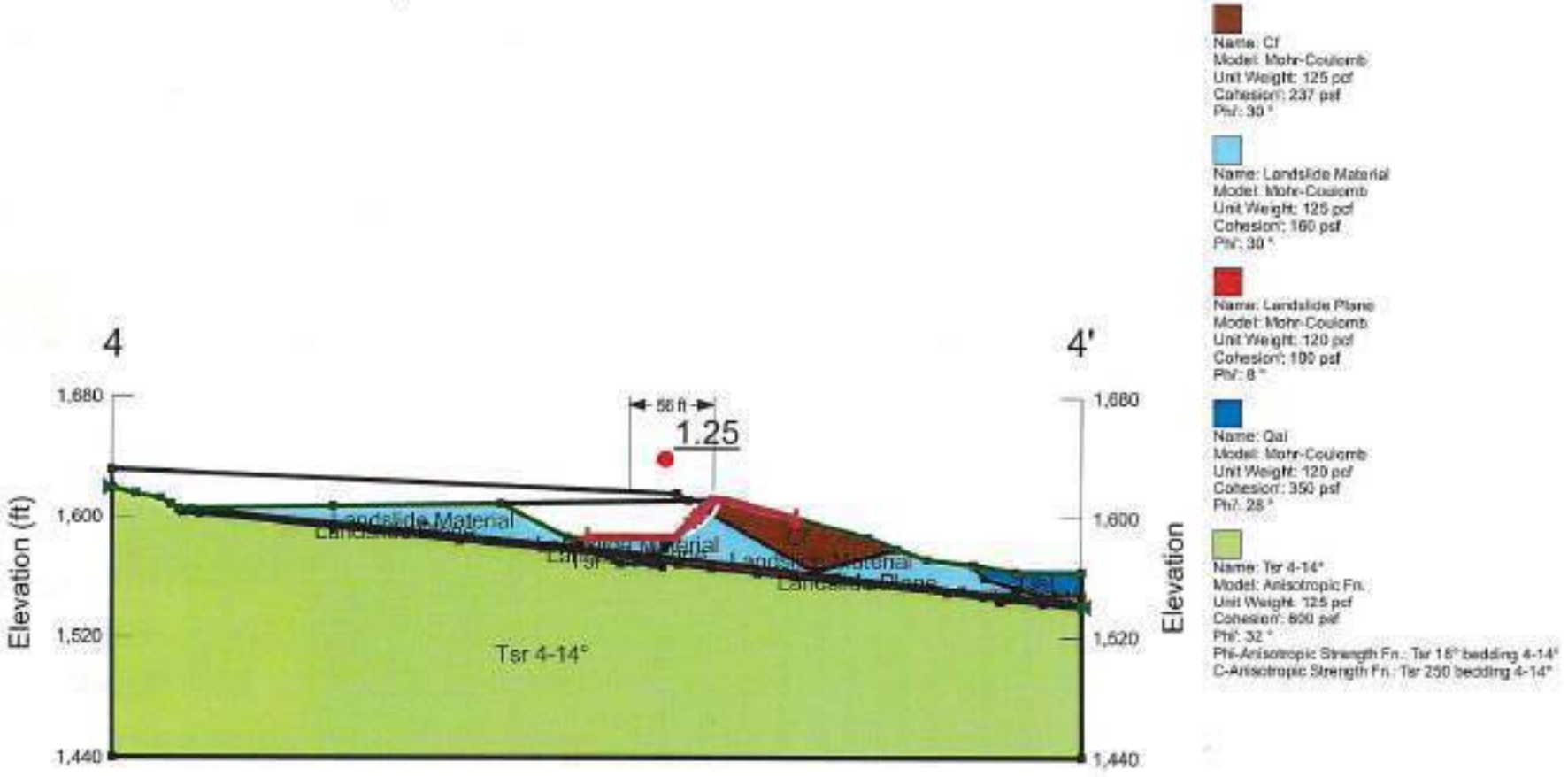
# Section 4-4 Tr 68203 SSA MW 12-2 B.gsz

Horz Seismic Coef.: 0

7 -Rotational Static Temp Right

Section 4-4 Tr 68203 SSA MW 12-2 B.gsz 12/02/2021 03:08:59 PM

Method: Bishop





LGC

**LGC Valley, Inc**

*GEOTECHNICAL CONSULTING*

28532 Constellation Rd, Valencia, CA 91355

Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

| | |
|---|---|
| Project No: | **203003-01** |
| Engineer: | **BIH / MW** |
| Date: | **Dec 2021** |

# 7 -Rotational Static Temp Right

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## File Information

File Version: 10.001
Date: 1/4/2023
Created By: Michel Wilson
Last Saved By: Michel Wilson
Revision Number: 249
Date: 12/22/2023
Time: 05:08:59 PM
Tool Version: 10.0.0.17401
File Name: Section 4-4 Tr 08253 SSA MW 12-8 Right
Directory: D:\FINAL PROJECTS\Volcan Golden Valley Sierra Bay\slope stability\volcan\
Last Solved Date: 12/07/2023
Last Solved Time: 02:05:10 PM

## Project Settings

Unit System: U.S. Customary Units

## Analysis Settings

### 7 -Rotational Static Temp Right

Kind: SLOPE/W
Method: Bishop
Settings
PWP Conditions from: (none)
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of Movement: Right to Left
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical Slip Surfaces Saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack Option: (none)
Groundwater
Ru Calculation Option: Constant
Advanced
Search Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 30
Factor of Safety Convergence Settings
Maximum Number of Iterations: 100
Tolerable Difference in F of S: 0.01

## Materials





### Landslide Material

Model: Mohr-Coulomb
Unit Weight: 135 pcf
Cohesion: 100 psf
Phi: 30 °
Phi-B: 0 °

### Landslide Plane

Model: Mohr-Coulomb
Unit Weight: 135 pcf
Cohesion: 100 psf
Phi: 8 °
Phi-B: 0 °

### Tsr 4-14"

Model: Anisotropic Fn
Unit Weight: 135 pcf
Cohesion: 600 psf
Phi: 30 °
Phi-Anisotropic Strength Fn: Tsr 180 bedding 4-14"
Anisotropic Strength Fn: Tsr 250 bedding 4-14"
Phi-B: 0 °

### Qal

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion: 350 psf
Phi: 28 °
Phi-B: 0 °

### Cl

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 200 psf
Phi: 30 °
Phi-B: 0 °

## Slip Surface Entry and Exit

Left Type: Range
Left Zone Left Coordinate: (514,855.06, 1,598,638.84) ft
Left Zone Right Coordinate: (514,910.48, 1,599,022.2) ft
Left Zone Increment: 80
Right Type: Range
RightZone Left Coordinate: (518,073.65, 1,602,288.6) ft
RightZone Right Coordinate: (518,164.27, 1,598,940.61) ft
Right Zone Increment: 80
Radius Increments: 10

## Slip Surface Limits

Left Coordinate: (-0.00371, 1,610,1805) ft
Right Coordinate: (641,00417, 1,540,428) ft

## Seismic Coefficients

Horz Seismic Coef.: 0

Vert Seismic Coef.: 0

## Anisotropic Strength Functions

### Tsr 250 bedding 4-14°

Model: Spline Data Point Function

Function Modifier Factor vs. Inclination

Curve Fit to Data: 100%

Segment Curvature: 0%

Y Intercept: 1

Data Points: (Inclination (°), Modifier Factor)

Data Point: (-5.99, 1)

Data Point: (4, 0.4167)

Data Point: (14, 0.4167)

Data Point: (14.01, 1)

### Tsr 18° bedding 4-14°

Model: Spline Data Point Function

Function Modifier Factor vs. Inclination

Curve Fit to Data: 100%

Segment Curvature: 0%

Y Intercept: 1

Data Points: (Inclination (°), Modifier Factor)

Data Point: (-5.99, 1)

Data Point: (4, 0.4583)

Data Point: (14, 0.5625)

Data Point: (14.01, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 31.89098 ft | 1,613.9755 ft |
| Point 2 | -0.03573 ft | 1,614.1803 ft |
| Point 3 | 0.07023 ft | 1,440.0014 ft |
| Point 4 | 641.00423 ft | 1,440.0018 ft |
| Point 5 | 641.00413 ft | 1,540.4426 ft |
| Point 6 | 575.74964 ft | 1,562.7559 ft |
| Point 7 | 575.78817 ft | 1,547.4136 ft |
| Point 8 | 552.23805 ft | 1,550.2826 ft |
| Point 9 | 501.96410 ft | 1,556.3651 ft |
| Point 10 | 476.65747 ft | 1,557.6306 ft |
| Point 11 | 451.21599 ft | 1,560.3002 ft |
| Point 12 | 426.06143 ft | 1,562.7321 ft |
| Point 13 | 396.2981 ft | 1,566.0267 ft |
| Point 14 | 373.6877 ft | 1,568.6201 ft |
| Point 15 | 357.59554 ft | 1,571.6083 ft |
| Point 16 | 338.70389 ft | 1,569.0519 ft |
| Point 17 | 325.67067 ft | 1,568.335 ft |

| | | |
|---|---|---|
| Point 18 | 37.65414 ft | 1,601.7806 ft |
| Point 19 | 44.86649 ft | 1,604.5964 ft |
| Point 20 | 49.24894 ft | 1,608.2971 ft |
| Point 21 | 55.47757 ft | 1,615.1354 ft |
| Point 22 | 63.24035 ft | 1,605.662 ft |
| Point 23 | 76.57446 ft | 1,602.3489 ft |
| Point 24 | 97.5256 ft | 1,601.832 ft |
| Point 25 | 397.04606 ft | 1,611.6503 ft |
| Point 26 | 380.76677 ft | 1,594.2595 ft |
| Point 27 | 479.18827 ft | 1,560.6167 ft |
| Point 28 | 561.82444 ft | 1,551.9395 ft |
| Point 29 | 580.05015 ft | 1,548.8997 ft |
| Point 30 | 599.64756 ft | 1,559.5251 ft |
| Point 31 | 576.73483 ft | 1,580.0777 ft |
| Point 32 | 560.10258 ft | 1,568.206 ft |
| Point 33 | 538.52079 ft | 1,571.0226 ft |
| Point 34 | 518.68161 ft | 1,578.8857 ft |
| Point 35 | 496.30112 ft | 1,586.5566 ft |
| Point 36 | 484.0830 ft | 1,611.2436 ft |
| Point 37 | 46.58868 ft | 1,603.0251 ft |
| Point 38 | 641.00013 ft | 1,545.5291 ft |
| Point 39 | 590.71158 ft | 1,545.7017 ft |
| Point 40 | 641.00423 ft | 1,563.2007 ft |
| Point 41 | 640.98727 ft | 1,548.7503 ft |
| Point 42 | 629.39018 ft | 1,548.7303 ft |
| Point 43 | 612.80352 ft | 1,548.7301 ft |
| Point 44 | 590.47817 ft | 1,565.2375 ft |
| Point 45 | 603.14779 ft | 1,564.9213 ft |
| Point 46 | 466.65914 ft | 1,564.5273 ft |
| Point 47 | 380.67181 ft | 1,611.4917 ft |
| Point 48 | 102.85818 ft | 1,615.0376 ft |
| Point 49 | -0.26484 ft | 1,631.0799 ft |
| Point 50 | 372.42636 ft | 1,585.5307 ft |
| Point 51 | 355.03147 ft | 1,589.7016 ft |
| Point 52 | 256.68715 ft | 1,569.5138 ft |
| Point 53 | 300.6785 ft | 1,565.6317 ft |
| Point 54 | 315.19849 ft | 1,570.2481 ft |
| Point 55 | 332.54372 ft | 1,575.8056 ft |
| Point 56 | 359.15073 ft | 1,586.3116 ft |
| Point 57 | 368.83036 ft | 1,587.2893 ft |
| Point 58 | 364.8077 ft | 1,583.6932 ft |
| Point 59 | 347.21013 ft | 1,593.2092 ft |
| Point 60 | 345.99965 ft | 1,606.5002 ft |
| Point 61 | 346.46109 ft | 1,620.5757 ft |

## Regions

| Material | Points | Area |
|---|---|---|

| | | | |
|---|---|---|---|
| Region 1 | Tor A-34" | 4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25 | 86,450 ft² |
| Region 2 | Landslide Material | 21,22,23,24,25,26 | 1,286.8 ft² |
| Region 3 | Landslide Material | 25,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46 | 3,386.7 ft² |
| Region 4 | Landslide Mate | 22,28,27,26,25,24,23 | 800.75 ft² |
| Region 5 | Landslide Mate | 13,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100,101,102,103,104,105,106,107,108,109,110,111,112,113,114,115,116,117,118,119,120,121,122,123,124,125,126,127,128,129,130,131,132,133,134,135,136,137,138,139,140,141,142,143,144,145,146,147,148,149,150,151,152,153,154,155,156,157,158,159,160,161,162,163,164,165,166,167,168,169,170,171,172,173,174,175,176,177,178,179,180,181,182,183,184,185,186,187,188,189,190,191,192,193,194,195,196,197,198,199,200,201,202,203,204,205,206,207,208,209,210,211,212,213,214,215,216,217,218,219,220,221,222,223,224,225,226,227,228,229,230,231,232,233,234,235,236,237,238,239,240,241,242,243,244,245,246,247,248,249,250,251,252,253,254,255,256,257,258,259,260,261,262,263,264,265,266,267,268,269,270,271,272,273,274,275,276,277,278,279,280,281,282,283,284,285,286,287,288,289,290,291,292,293,294,295,296,297,298,299,300,301,302,303,304,305,306,307,308,309,310,311,312,313,314,315,316,317,318,319,320,321,322,323,324,325,326,327,328,329,330,331,332,333,334,335,336,337,338,339,340,341,342,343,344,345,346,347,348,349,350,351,352,353,354,355,356,357,358,359,360,361,362,363,364,365,366,367,368,369,370,371,372,373,374,375,376,377,378,379,380,381,382,383,384,385,386,387,388,389,390,391,392,393,394,395,396,397,398,399,400,401,402,403,404,405,406,407,408,409,410,411,412,413,414,415,416,417,418,419,420,421,422,423,424,425,426,427,428,429,430,431,432,433,434,435,436,437,438,439,440,441,442,443,444,445,446,447,448,449,450,451,452,453,454,455,456,457,458,459,460,461,462,463,464,465,466,467,468,469,470,471,472,473,474,475,476,477,478,479,480,481,482,483,484,485,486,487,488,489,490,491,492,493,494,495,496,497,498,499,500,501,502,503,504,505,506,507,508,509,510,511,512,513,514,515,516,517,518,519,520,521,522,523,524,525,526,527,528,529,530,531,532,533,534,535,536,537,538,539,540,541,542,543,544,545,546,547,548,549,550,551,552,553,554,555,556,557,558,559,560,561,562,563,564,565,566,567,568,569,570,571,572,573,574,575,576,577,578,579,580,581,582,583,584,585,586,587,588,589,590,591,592,593,594,595,596,597,598,599,600,601,602,603,604,605,606,607,608,609,610,611,612,613,614,615,616,617,618,619,620,621,622,623,624,625,626,627,628,629,630,631,632,633,634,635,636,637,638,639,640,641,642,643,644,645,646,647,648,649,650,651,652,653,654,655,656,657,658,659,660,661,662,663,664,665,666,667,668,669,670,671,672,673,674,675,676,677,678,679,680,681,682,683,684,685,686,687,688,689,690,691,692,693,694,695,696,697,698,699,700,701,702,703,704,705,706,707,708,709,710,711,712,713,714,715,716,717,718,719,720,721,722,723,724,725,726,727,728,729,730,731,732,733,734,735,736,737,738,739,740,741,742,743,744,745,746,747,748,749,750,751,752,753,754,755,756,757,758,759,760,761,762,763,764,765,766,767,768,769,770,771,772,773,774,775,776,777,778,779,780,781,782,783,784,785,786,787,788,789,790,791,792,793,794,795,796,797,798,799,800,801,802,803,804,805,806,807,808,809,810,811,812,813,814,815,816,817,818,819,820,821,822,823,824,825,826,827,828,829,830,831,832,833,834,835,836,837,838,839,840,841,842,843,844,845,846,847,848,849,850,851,852,853,854,855,856,857,858,859,860,861,862,863,864,865,866,867,868,869,870,871,872,873,874,875,876,877,878,879,880,881,882,883,884,885,886,887,888,889,890,891,892,893,894,895,896,897,898,899,900,901,902,903,904,905,906,907,908,909,910,911,912,913,914,915,916,917,918,919,920,921,922,923,924,925,926,927,928,929,930,931,932,933,934,935,936,937,938,939,940,941,942,943,944,945,946,947,948,949,950,951,952,953,954,955,956,957,958,959,960,961,962,963,964,965,966,967,968,969,970,971,972,973,974,975,976,977,978,979,980,981,982,983,984,985,986,987,988,989,990,991,992,993,994,995,996,997,998,999,1000,1001,1002,1003,1004,1005,1006,1007,1008,1009,1010,1011,1012,1013,1014,1015,1016,1017,1018,1019,1020,1021,1022,1023,1024,1025,1026,1027,1028,1029,1030,1031,1032,1033,1034,1035,1036,1037,1038,1039,1040,1041,1042,1043,1044,1045,1046,1047,1048,1049,1050,1051,1052,1053,1054,1055,1056,1057,1058,1059,1060,1061,1062,1063,1064,1065,1066,1067,1068,1069,1070,1071,1072,1073,1074,1075,1076,1077,1078,1079,1080,1081,1082,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1109,1110,1111,1112,1113,1114,1115,1116,1117,1118,1119,1120,1121,1122,1123,1124,1125,1126,1127,1128,1129,1130,1131,1132,1133,1134,1135,1136,1137,1138,1139,1140,1141,1142,1143,1144,1145,1146,1147,1148,1149,1150,1151,1152,1153,1154,1155,1156,1157,1158,1159,1160,1161,1162,1163,1164,1165,1166,1167,1168,1169,1170,1171,1172,1173,1174,1175,1176,1177,1178,1179,1180,1181,1182,1183,1184,1185,1186,1187,1188,1189,1190,1191,1192,1193,1194,1195,1196,1197,1198,1199,1200,1201,1202,1203,1204,1205,1206,1207,1208,1209,1210,1211,1212,1213,1214,1215,1216,1217,1218,1219,1220,1221,1222,1223,1224,1225,1226,1227,1228,1229,1230,1231,1232,1233,1234,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5235,5236,5237,5238,5239,5240,5241,5242,5243,5244,5245,5246,5247,5248,5249,5250,5251,5252,5253,5254,5255,5256,5257,5258,5259,5260,5261,5262,5263,5264,5265,5266,5267,5268,5269,5270,5271,5272,5273,5274,5275,5276,5277,5278,5279,5280,5281,5282,5283,5284,5285,5286,5287,5288,5289,5290,5291,5292,5293,5294,5295,5296,5297,5298,5299,5300,5301,5302,5303,5304,5305,5306,5307,5308,5309,5310,5311,5312,5313,5314,5315,5316,5317,5318,5319,5320,5321,5322,5323,5324,5325,5326,5327,5328,5329,5330,5331,5332,5333,5334,5335,5336,5337,5338,5339,5340,5341,5342,5343,5344,5345,5346,5347,5348,5349,5350,5351,5352,5353,5354,5355,5356,5357,5358,5359,5360,5361,5362,5363,5364,5365,5366,5367,5368,5369,5370,5371,5372,5373,5374,5375,5376,5377,5378,5379,5380,5381,5382,5383,5384,5385,5386,5387,5388,5389,5390,5391,5392,5393,5394,5395,5396,5397,5398,5399,5400,5401,5402,5403,5404,5405,5406,5407,5408,5409,5410,5411,5412,5413,5414,5415,5416,5417,5418,5419,5420,5421,5422,5423,5424,5425,5426,5427,5428,5429,5430,5431,5432,5433,5434,5435,5436,5437,5438,5439,5440,5441,5442,5443,5444,5445,5446,5447,5448,5449,5450,5451,5452,5453,5454,5455,5456,5457,5458,5459,5460,5461,5462,5463,5464,5465,5466,5467,5468,5469,5470,5471,5472,5473,5474,5475,5476,5477,5478,5479,5480,5481,5482,5483,5484,5485,5486,5487,5488,5489,5490,5491,5492,5493,5494,5495,5496,5497,5498,5499,5500,5501,5502,5503,5504,5505,5506,5507,5508,5509,5510,5511,5512,5513,5514,5515,5516,5517,5518,5519,5520,5521,5522,5523,5524,5525,5526,5527,5528,5529,5530,5531,5532,5533,5534,5535,5536,5537,5538,5539,5540,5541,5542,5543,5544,5545,5546,5547,5548,5549,5550,5551,5552,5553,5554,5555,5556,5557,5558,5559,5560,5561,5562,5563,5564,5565,5566,5567,5568,5569,5570,5571,5572,5573,5574,5575,5576,5577,5578,5579,5580,5581,5582,5583,5584,5585,5586,5587,5588,5589,5590,5591,5592,5593,5594

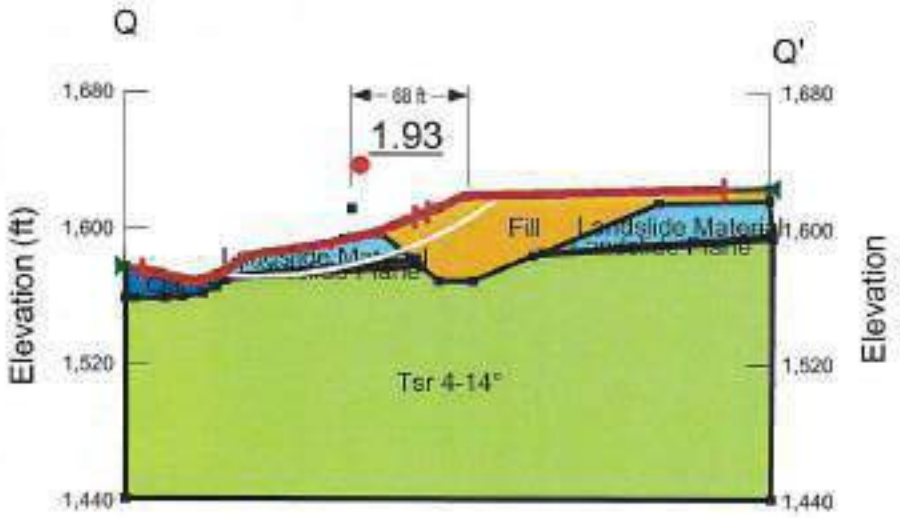
# Section Q-Q Tr 68203 SSA.gsz

1 -Rotational Static Global

Section Q-Q Tr 68203 SSA.gsz 12/02/2021 11:01:15 AM

Horz Seismic Coef.: 0

Method: Bishop




Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 325 psf
Phi': 30 °

Name: Landslide Material
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 160 psf
Phi': 30 °

Name: Landslide Plane
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 100 psf
Phi': 8 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 350 psf
Phi': 28 °

Name: Tsr 4-14°
Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion': 600 psf
Phi': 32 °
Phi-Anisotropic Strength Fn.: Tsr 18° bedding 4-14°
C-Anisotropic Strength Fn.: Tsr 250 bedding 4-14°


**LGC Valley, Inc**

*GEOTECHNICAL CONSULTING*

28532 Constellation Rd, Valencia, CA 91355

Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

Project No: **203003-01**
Engineer: **BIH / MW**
Date: **Dec 2021**

# 1 -Rotational Static Global

Slope stability analysis performed by Rocscience Inc.

## File Information

File Version: 10.00
Title: Slope Stability Analysis Cross-Section A-A'
Last Edited By: Scarlet Wagar
Revision Number: 307
Date: 12/02/2021
Time: 11:01:15 AM
Tool Version: 10.0.0.17401
File Name: Section A-A' 11-8-2021 SM.gsz
Directory: P:\FINAL PROJECTS\Vail and Golden Valley Sand Pit\Pit\Slope Stability\Vail\
Last Solved Date: 12/02/2021
Last Solved Time: 11:02:00 AM

## Project Settings

Unit System: U.S. Customary Units

## Analysis Settings

### 1 -Rotational Static Global

Mode: SLOPE/W
Method: Bishop
Settings
Pore Condition Input: [None]
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Right to Left
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Number of Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack Option: [none]
Distribution
Slice Discretization Option: Constant
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 30
Factor of Safety Convergence Settings
Maximum number of iterations: 100
Tolerable difference in FoS: 0.001

## Materials





### Fill

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 325 psf
Phi: 33 °
Phi-B: 0 °

### Landslide Material

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 100 psf
Phi: 30 °
Phi-B: 0 °

### Landslide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 100 psf
Phi: 8 °
Phi-B: 0 °

### Tyr 4-14"

Model: Anisotropic Fn
Unit Weight: 121 pcf
Cohesion: 600 psf
Phi: 32 °
Phi-B: Isotropic Strength From Tyr 36" bedding 4-14"
Cohesion Strength From Tyr 250 bedding 4-14"
Phi-B: 0 °

### Qal

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion: 350 psf
Phi: 28 °
Phi-B: 0 °

## Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (10,126.52, 1,475.0709) ft
Left-Zone Right Coordinate: (661.1416, 1,606.403) ft
Left Zone Increments: 80
Right Type: Range
Right-Zone Left Coordinate: (376.56661, 1,608.4597) ft
Right-Zone Right Coordinate: (950.00716, 1,672.4466) ft
Right-Zone Increments: 80
Radius Increments: 14

## Slip Surface Limits

Left Coordinate: (0.40013, 1,577.10921) ft
Right Coordinate: (377.18468, 1,623.2981) ft

## Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

## Anisotropic Strength Functions

### Tsr 250 bedding 4-14°

Model: Spline Data Point Function
Function Modifier Factors vs. Inclination
Curve Fit to Data: 100%
Segment Curvature: 0%
Y-Intercept: 1
Data Points: Inclination (°), Modifier Factor
Data Point: (0.00, 1)
Data Point: (4, 0.4167)
Data Point: (14, 0.1667)
Data Point: (14.01, 1)

### Tsr 18° bedding 4-14°

Model: Spline Data Point Function
Function Modifier Factors vs. Inclination
Curve Fit to Data: 100%
Segment Curvature: 0%
Y-Intercept: 1
Data Points: Inclination (°), Modifier Factor
Data Point: (0.00, 1)
Data Point: (4, 0.5625)
Data Point: (14, 0.5625)
Data Point: (14.01, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 373.18469 ft | 1,583.1981 ft |
| Point 2 | 377.62903 ft | 1,445.4794 ft |
| Point 3 | 0.6003 ft | 1,441.4571 ft |
| Point 4 | 0.40013 ft | 1,577.1032 ft |
| Point 5 | 91.45527 ft | 1,585.317 ft |
| Point 6 | 101.2256 ft | 1,587.7736 ft |
| Point 7 | 118.88445 ft | 1,590.8225 ft |
| Point 8 | 126.16607 ft | 1,593.3129 ft |
| Point 9 | 146.38773 ft | 1,597.0540 ft |
| Point 10 | 189.48481 ft | 1,612.1044 ft |
| Point 11 | 200.36811 ft | 1,618.9615 ft |
| Point 12 | 69.26368 ft | 1,585.7547 ft |
| Point 13 | 75.03741 ft | 1,583.3239 ft |
| Point 14 | 65.46957 ft | 1,579.2585 ft |
| Point 15 | 39.38023 ft | 1,574.2573 ft |
| Point 16 | 52.62533 ft | 1,572.0565 ft |
| Point 17 | 370.87902 ft | 1,610.2245 ft |
| Point 18 | 10.52065 ft | 1,574.4027 ft |
| Point 19 | 20.98987 ft | 1,577.7848 ft |
| Point 20 | 37.16047 ft | 1,569.85 ft |
| Point 21 | 40.72588 ft | 1,568.8069 ft |
| Point 22 | 46.94806 ft | 1,568.0778 ft |
| Point 24 | 59.39023 ft | 1,569.7502 ft |
| Point 26 | 72.63774 ft | 1,565.1545 ft |
| Point 25 | 46.12224 ft | 1,561.7918 ft |
| Point 28 | 43.80782 ft | 1,559.4433 ft |
| Point 29 | 24.07714 ft | 1,558.3515 ft |
| Point 30 | 3.70797 ft | 1,558.3515 ft |
| Point 26 | 0.40013 ft | 1,559.1375 ft |
| Point 31 | 27.4089 ft | 1,571.0581 ft |
| Point 32 | 30.39023 ft | 1,571.0412 ft |
| Point 33 | 370.61775 ft | 1,598.2618 ft |
| Point 34 | 308.08641 ft | 1,591.7751 ft |
| Point 35 | 117.48279 ft | 1,594.1591 ft |
| Point 36 | 153.48332 ft | 1,569.0091 ft |
| Point 37 | 208.4937 ft | 1,569.0091 ft |
| Point 38 | 132.4874 ft | 1,61[illegible].635 ft |
| Point 39 | 148.77659 ft | 1,598.1047 ft |
| Point 40 | 172.06129 ft | 1,577.7341 ft |
| Point 41 | 238.49251 ft | 1,584.1564 ft |
| Point 42 | 244.24975 ft | 1,586.1214 ft |
| Point 43 | 159.1307 ft | 1,581.6425 ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | Fill | 17,1,11,10,38,43,40,35,36,41,42,34 | 3,736.8 ft² |
| Region 2 | Soil | 4,29,28,27,26,25,24,23,31,15,16,27,21,20,30,19,18 | 591.48 ft² |
| Region 3 | Tsr 4-14° | 24,25,26,27,28,29,0,2,33,41,36,35,40,23 | 31,909 ft² |
| Region 4 | Landslide Plane | 23,40,43,31 | 324 ft² |
| Region 5 | Landslide Material | 17,30,42,32 | 2,227 ft² |
| Region 6 | Landslide Plane | 32,42,41,33 | 314.98 ft² |
| Region 7 | Landslide Material | 38,3,34,8,7,6,5,12,13,14,15,31,43 | 1,973.3 ft² |

## Slip Results

Slip Surfaces Analyzed: 97480 of 98415 converged

## Current Slip Surface

Slip Surface: 27,049
Factor of Safety: 1.93
Volume: 2,380.9788 ft³
Weight: 297,000 [illegible] lbf
Resisting Moment: 32,179,231 lbf-ft

Activating Moment: 16,625,502 lbf·ft
Slip Rank: 1 of 98,415 slip surfaces
Exit: (54.768925, 1,572.4928) ft
Entry: (221.02472, 1,619.4564) ft
Radius: 242.97533 ft
Center: (76.161262, 1,814.5246) ft

## Slip Slices

| | X | Y | PWP | Base Normal Stress | Frictional Strength | Cohesive Strength | Suction Strength | Base Material |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 57.079578 ft | 1,572.3108 ft | 0 psf | 145.09132 psf | 77.146423 psf | 350 psf | 0 psf | Qal |
| Slice 2 | 60.017384 ft | 1,572.087 ft | 0 psf | 348.58907 psf | 201.25799 psf | 160 psf | 0 psf | Landslide Material |
| Slice 3 | 63.057054 ft | 1,571.9149 ft | 0 psf | 675.91116 psf | 94.993119 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 4 | 69.42349 ft | 1,571.6749 ft | 0 psf | 1,202.2705 psf | 168.9681 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 5 | 75.848977 ft | 1,571.5621 ft | 0 psf | 1,537.0564 psf | 216.01919 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 6 | 80.792113 ft | 1,571.606 ft | 0 psf | 1,676.8938 psf | 235.67205 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 7 | 87.359475 ft | 1,571.8421 ft | 0 psf | 1,752.6197 psf | 246.31463 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 8 | 93.897703 ft | 1,572.2099 ft | 0 psf | 1,782.6648 psf | 250.5372 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 9 | 98.787567 ft | 1,572.617 ft | 0 psf | 1,818.8419 psf | 255.62156 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 10 | 104.16824 ft | 1,573.187 ft | 0 psf | 1,852.8171 psf | 260.39646 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 11 | 110.05473 ft | 1,573.9432 ft | 0 psf | 1,881.7832 psf | 264.46738 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 12 | 115.94121 ft | 1,574.8464 ft | 0 psf | 1,898.175 psf | 266.0684 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 13 | 121.20608 ft | 1,575.7727 ft | 0 psf | 1,916.5838 psf | 269.35828 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 14 | 125.84634 ft | 1,576.6953 ft | 0 psf | 1,955.147 psf | 274.77799 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 15 | 129.79263 ft | 1,577.548 ft | 0 psf | 1,967.174 psf | 276.46828 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 16 | 131.95029 ft | 1,578.0414 ft | 0 psf | 1,855.9994 psf | 1,071.5618 psf | 160 psf | 0 psf | Landslide Material |
| Slice 17 | 134.79986 ft | 1,578.7433 ft | 0 psf | 1,834.8508 psf | 1,059.3516 psf | 160 psf | 0 psf | Landslide Material |
| Slice 18 | 139.43501 ft | 1,579.9448 ft | 0 psf | 1,793.7173 psf | 1,035.6031 psf | 160 psf | 0 psf | Landslide Material |
| Slice 19 | 144.07016 ft | 1,581.2446 ft | 0 psf | 1,741.566 psf | 1,005.4936 psf | 160 psf | 0 psf | Landslide Material |
| Slice 20 | 147.58181 ft | 1,582.2865 ft | 0 psf | 1,723.1761 psf | 994.87617 psf | 160 psf | 0 psf | Landslide Material |
| Slice 21 | 152.03313 ft | 1,583.7244 ft | 0 psf | 1,735.1276 psf | 1,001.7764 psf | 160 psf | 0 psf | Landslide Material |





| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Slice 22 | 158.54762 ft | 1,585.9693 ft | 0 psf | 1,726.3542 psf | 996.71108 psf | 160 psf | 0 psf | Landslide Material |
| Slice 23 | 164.51486 ft | 1,588.2014 ft | 0 psf | 1,683.3885 psf | 971.80469 psf | 325 psf | 0 psf | Fill |
| Slice 24 | 169.93484 ft | 1,590.3932 ft | 0 psf | 1,667.4617 psf | 962.70945 psf | 325 psf | 0 psf | Fill |
| Slice 25 | 175.35483 ft | 1,592.7891 ft | 0 psf | 1,634.9507 psf | 943.93923 psf | 325 psf | 0 psf | Fill |
| Slice 26 | 180.77482 ft | 1,595.244 ft | 0 psf | 1,585.6765 psf | 915.49074 psf | 325 psf | 0 psf | Fill |
| Slice 27 | 186.2987 ft | 1,597.9679 ft | 0 psf | 1,517.9522 psf | 876.39011 psf | 325 psf | 0 psf | Fill |
| Slice 28 | 191.92647 ft | 1,600.9241 ft | 0 psf | 1,430.8586 psf | 826.10674 psf | 325 psf | 0 psf | Fill |
| Slice 29 | 197.55424 ft | 1,604.0722 ft | 0 psf | 1,324.8763 psf | 764.91767 psf | 325 psf | 0 psf | Fill |
| Slice 30 | 202.95019 ft | 1,607.275 ft | 0 psf | 1,105.4651 psf | 638.24058 psf | 325 psf | 0 psf | Fill |
| Slice 31 | 208.11434 ft | 1,610.5248 ft | 0 psf | 776.36965 psf | 448.23723 psf | 325 psf | 0 psf | Fill |
| Slice 32 | 213.27849 ft | 1,613.9602 ft | 0 psf | 434.04523 psf | 250.59613 psf | 325 psf | 0 psf | Fill |
| Slice 33 | 218.44264 ft | 1,617.5909 ft | 0 psf | 78.298871 psf | 45.205874 psf | 325 psf | 0 psf | Fill |

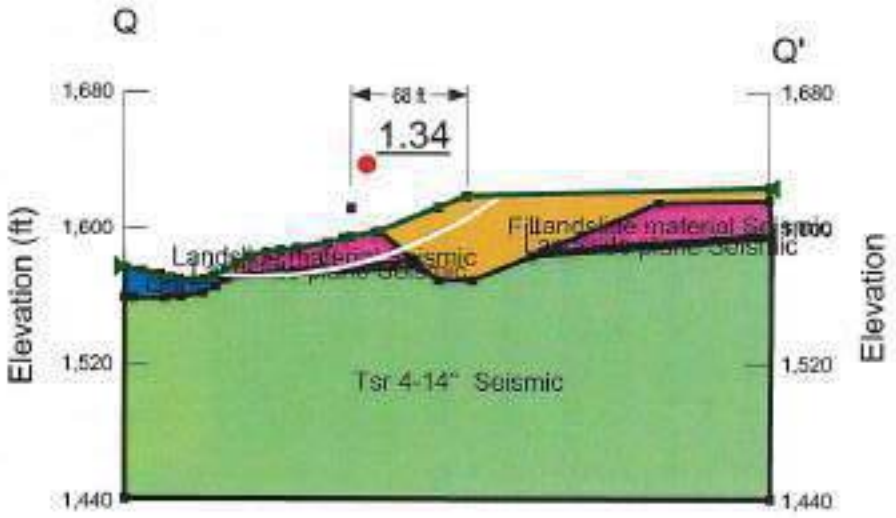
# Section Q-Q Tr 68203 SSA.gsz

1 -Rotational Pseudostatic Global

Section Q-Q Tr 68203 SSA.gsz 12/02/2021 11:01:15 AM

Horz Seismic Coef.: 0.15

Method: Bishop




Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 325 psf
Phi': 30 °

Name: Landslide material Seismic
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 200 psf
Phi': 33 °

Name: Landslide plane Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 120 psf
Phi': 12 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 350 psf
Phi': 28 °

Name: Tsr 4-14° Seismic
Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion': 600 psf
Phi': 32 °
Phi-Anisotropic Strength Fn.: Tsr 19° bedding 4-14° (Seismic)
C-Anisotropic Strength Fn.: Tsr 375 bedding 4-14° (Seismic)


LGC

**LGC Valley, Inc**

*GEOTECHNICAL CONSULTING*

28532 Constellation Rd, Valencia, CA 91355

Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

| | |
|---|---|
| Project No: | **203003-01** |
| Engineer: | **BIH / MW** |
| Date: | **Dec 2021** |

# 1 -Rotational Pseudostatic Global

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## File Information

File Version: 10.0C
Title: Slope Stability Analysis Cross-Section A-A'
Last Edited By: Michael Wilson
Revision Number: 762
Date: 12/02/2021
Time: 11:01:15 AM
Tool Version: 10.010.1401
File Name: Section Q-Q' in 85215 Model.gsz
Directory: P:\CIVIL PROJECTS\Active Cases\Golden Valley Storm Recovery\Slope Stability\Wilson\
Last Solved Date: 12/02/2021
Last Solved Time: 11:02:26 AM

## Project Settings

Unit System: US Customary Units

## Analysis Settings

### 1 -Rotational Pseudostatic Global

Kind: SLOPE/W
Param: 1 -Rotational Pseudostatic Global
Method: Bishop
Settings
PWP Conditions from: [none]
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Right to Left
Use Passive Mode: No
Slip Surface Option: Critical Slip Surfaces from Either
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack Option: [none]
Discretization
FoS Calculation Option: Constant
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 25
Factor of Safety Convergence Settings
Maximum Number of Iterations: 100
Tolerable Difference in FoS: 0.001

## Materials





### Fill

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion: 125 psf
Phi: 30°
Phi-B: 0°

### Tsr 4-14' Seismic

Model: Anisotropic Fn
Unit Weight: 125 pcf
Cohesion: 500 psf
Phi: 32°
Phi-Anisotropic Strength Fn: Tsr 35° bedding 4-14' (Seismic)
C-Anisotropic Strength Fn: Tsr 35° bedding 4-14' (Seismic)
Phi-B: 0°

### Qal

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 350 psf
Phi: 28°
Phi-B: 0°

### Landslide material Seismic

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 200 psf
Phi: 18°
Phi-B: 0°

### Landslide plane Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 170 psf
Phi: 12°
Phi-B: 0°

## Slip Surface Limits

Left Coordinate: (0.00115, 1,577.10612) ft
Right Coordinate: (377.13659, 1,674.19881) ft

## Seismic Coefficients

Horz Seismic Coef.: 0.15
Vert Seismic Coef.: 0

## Anisotropic Strength Functions

### Tsr 35° bedding 4-14' (Seismic)

Model: Spline Data Point Function

Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Points: Inclination (°), Modifier Factor
Data Point: (3.99, 1)
Data Point: (4, 0.5938)
Data Point: (14, 0.5938)
Data Point: (14.01, 1)

### Tsr 375 bedding 4-14° (Seismic)

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Points: Inclination (°), Modifier Factor
Data Point: (3.99, 1)
Data Point: (4, 0.625)
Data Point: (14, 0.625)
Data Point: (14.01, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 577.18469 ft | 1,623.1981 ft |
| Point 2 | 577.62811 ft | 1,440.679 ft |
| Point 3 | 0.40013 ft | 1,441.6571 ft |
| Point 4 | 0.40013 ft | 1,577.1092 ft |
| Point 5 | 91.45527 ft | 1,586.317 ft |
| Point 6 | 101.225 ft | 1,587.7728 ft |
| Point 7 | 118.88445 ft | 1,590.8225 ft |
| Point 8 | 128.16697 ft | 1,593.3129 ft |
| Point 9 | 146.38773 ft | 1,597.0549 ft |
| Point 10 | 183.48481 ft | 1,612.1044 ft |
| Point 11 | 200.36812 ft | 1,618.9613 ft |
| Point 12 | 83.26368 ft | 1,585.7347 ft |
| Point 13 | 73.37741 ft | 1,583.3239 ft |
| Point 14 | 65.46957 ft | 1,579.2885 ft |
| Point 15 | 59.39023 ft | 1,574.2573 ft |
| Point 16 | 53.62533 ft | 1,572.0562 ft |
| Point 17 | 376.97992 ft | 1,616.2249 ft |
| Point 18 | 10.52665 ft | 1,574.9827 ft |
| Point 19 | 20.96962 ft | 1,572.7898 ft |
| Point 20 | 32.16047 ft | 1,569.85 ft |
| Point 21 | 40.70588 ft | 1,568.8089 ft |
| Point 22 | 46.93606 ft | 1,569.6778 ft |
| Point 23 | 59.39023 ft | 1,569.7502 ft |
| Point 24 | 53.67774 ft | 1,565.1645 ft |
| Point 25 | 46.12224 ft | 1,561.758 ft |
| Point 26 | 33.80632 ft | 1,559.4433 ft |





| | | |
|---|---|---|
| Point 27 | 24.06714 ft | 1,558.9515 ft |
| Point 28 | 5.76797 ft | 1,558.3515 ft |
| Point 29 | 0.40013 ft | 1,559.1376 ft |
| Point 30 | 27.4092 ft | 1,571.0981 ft |
| Point 31 | 59.39023 ft | 1,571.9412 ft |
| Point 32 | 379.01775 ft | 1,596.3618 ft |
| Point 33 | 378.98641 ft | 1,593.7713 ft |
| Point 34 | 132.48229 ft | 1,594.1991 ft |
| Point 35 | 183.49392 ft | 1,569.0091 ft |
| Point 36 | 203.4987 ft | 1,569.0091 ft |
| Point 37 | 132.4874 ft | 1,611.855 ft |
| Point 38 | 148.77589 ft | 1,598.0237 ft |
| Point 39 | 312.48593 ft | 1,614.7808 ft |
| Point 40 | 173.06129 ft | 1,577.7341 ft |
| Point 41 | 238.49261 ft | 1,583.7056 ft |
| Point 42 | 244.24075 ft | 1,586.1213 ft |
| Point 43 | 169.11071 ft | 1,581.0425 ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | Fill | 17,1,11,10,38,43,40,35,36,41,42,39 | 5,236.8 ft² |
| Region 2 | Qal | 4,29,28,27,26,25,24,23,31,15,16,22,21,20,30,19,18 | 691.49 ft² |
| Region 3 | Tsr 4-14° Seismic | 24,25,26,27,28,29,3,2,33,41,36,35,40,23 | 51,405 ft² |
| Region 4 | Landslide plane Seismic | 23,40,43,31 | 324 ft² |
| Region 5 | Landslide material Seismic | 17,39,42,32 | 2,223.8 ft² |
| Region 6 | Landslide plane Seismic | 32,42,41,33 | 314.98 ft² |
| Region 7 | Landslide material Seismic | 38,9,34,8,7,6,5,12,13,14,15,31,43 | 1,327.2 ft² |

## Slip Results

Slip Surfaces Analysed: 1 of 1 converged

## Current Slip Surface

Slip Surface: 1
Factor of Safety: 1.34
Volume: 2,180.0788 ft³
Weight: 267,666.15 lbf
Resisting Moment: 34,398,825 lbf-ft
Activating Moment: 25,607,568 lbf-ft
Slip Rank: 1 of 1 slip surfaces
Exit: (54.768925, 1,572.4928) ft
Entry: (221.02472, 1,619.4564) ft
Radius: 242.97533 ft
Center: (76.161262, 1,814.5246) ft

### Slip Slices

| | X | Y | PWP | Base Normal | Frictional Strength | Cohesive Strength | Suction Strength | Base Material |
|---|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 57.079578 ft | 1,577.4308 ft | 0 psf | 132.96508 psf | 51.332076 psf | 350 psf | 0 psf | Soil |
| Slice 2 | 80.017164 ft | 1,577.087 ft | 0 psf | 357.35328 psf | 281.13778 psf | 700 psf | 0 psf | Landslide material Seismic |
| Slice 3 | 69.057051 ft | 1,571.3149 ft | 0 psf | 681.09086 psf | 344.77224 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 4 | 69.42359 ft | 1,571.5749 ft | 0 psf | 1,206.177 psf | 776.33083 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 5 | 45.848077 ft | 1,571.3641 ft | 0 psf | 1,557.3734 psf | 826.75755 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 6 | 80.707178 ft | 1,571.588 ft | 0 psf | 1,673.4593 psf | 835.75475 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 7 | 87.359403 ft | 1,571.8421 ft | 0 psf | 1,744.0444 psf | 870.73604 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 8 | 93.887708 ft | 1,572.2069 ft | 0 psf | 1,788.0335 psf | 875.96845 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 9 | 96.782567 ft | 1,572.617 ft | 0 psf | 1,801.6726 psf | 855.03985 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 10 | 104.15809 ft | 1,573.182 ft | 0 psf | 1,830.612 psf | 885.03793 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 11 | 110.05473 ft | 1,573.9492 ft | 0 psf | 1,854.4683 psf | 884.17939 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 12 | 125.94121 ft | 1,574.8464 ft | 0 psf | 1,850.0525 psf | 881.53574 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 13 | 121.20608 ft | 1,575.7527 ft | 0 psf | 1,839.7252 psf | 881.54056 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 14 | 125.84634 ft | 1,576.6551 ft | 0 psf | 1,915.7967 psf | 880.79855 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 15 | 129.79209 ft | 1,577.548 ft | 0 psf | 1,922.2734 psf | 905.58122 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 16 | 131.07029 ft | 1,578.0414 ft | 0 psf | 1,768.52 psf | 1,143.1302 psf | 400 psf | 0 psf | Landslide material Seismic |
| Slice 17 | 146.79485 ft | 1,578.7433 ft | 0 psf | 1,745.0523 psf | 1,133.2201 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 18 | 139.43501 ft | 1,579.9443 ft | 0 psf | 1,669.0084 psf | 1,105.5406 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 19 | 144.07016 ft | 1,581.2406 ft | 0 psf | 1,642.7935 psf | 1,086.8036 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 20 | 147.58181 ft | 1,582.7869 ft | 0 psf | 1,617.5993 psf | 1,070.2972 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 21 | 152.03113 ft | 1,584.7264 ft | 0 psf | 1,629.0058 psf | 1,065.0807 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 22 | 158.54767 ft | 1,586.0698 ft | 0 psf | 1,668.6241 psf | 1,044.4639 psf | 200 psf | 0 psf | Landslide material Seismic |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Slice 23 | 164.31466 ft | 1,588.2014 ft | 0 psf | 1,585.0781 psf | 815.14525 psf | 325 psf | 0 psf | Fill |
| Slice 24 | 169.03461 ft | 1,590.3872 ft | 0 psf | 1,559.9129 psf | 802.02554 psf | 325 psf | 0 psf | Fill |
| Slice 25 | 170.45484 ft | 1,592.7891 ft | 0 psf | 1,527.0055 psf | 881.62161 psf | 325 psf | 0 psf | Fill |
| Slice 26 | 181.71483 ft | 1,595.264 ft | 0 psf | 1,474.3095 psf | 853.19011 psf | 325 psf | 0 psf | Fill |
| Slice 27 | 186.2987 ft | 1,597.9679 ft | 0 psf | 1,404.2487 psf | 814.74415 psf | 325 psf | 0 psf | Fill |
| Slice 28 | 191.93647 ft | 1,600.9201 ft | 0 psf | 1,330.1115 psf | 795.8573 psf | 325 psf | 0 psf | Fill |
| Slice 29 | 197.55424 ft | 1,604.0727 ft | 0 psf | 1,230.6281 psf | 696.95665 psf | 325 psf | 0 psf | Fill |
| Slice 30 | 202.99619 ft | 1,607.275 ft | 0 psf | 989.63006 psf | 579.14623 psf | 325 psf | 0 psf | Fill |
| Slice 31 | 208.31458 ft | 1,610.5248 ft | 0 psf | 867.63858 psf | 506.98563 psf | 325 psf | 0 psf | Fill |
| Slice 32 | 213.37843 ft | 1,613.9602 ft | 0 psf | 805.06112 psf | 470.07173 psf | 325 psf | 0 psf | Fill |
| Slice 33 | 218.44264 ft | 1,617.5969 ft | 0 psf | 92.01228 psf | 18.462238 psf | 325 psf | 0 psf | Fill |

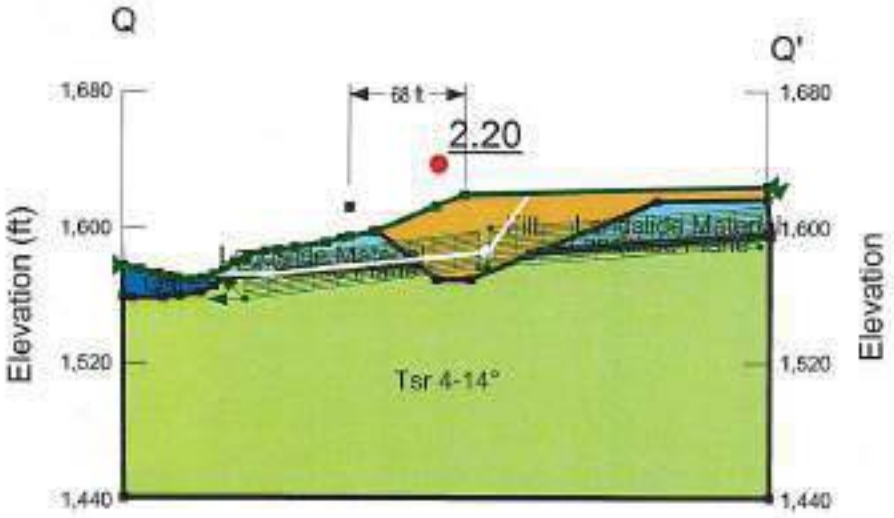
# Section Q-Q Tr 68203 SSA.gsz

2 -Translational Static Global

Section Q-Q Tr 68203 SSA.gsz 12/02/2021 11:01:15 AM

Horz Seismic Coef.: 0

Method: Janbu




Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 325 psf
Phi': 30 °

Name: Landslide Material
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 160 psf
Phi': 30 °

Name: Landslide Plane
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 100 psf
Phi': 9 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 350 psf
Phi': 28 °

Name: Tsr 4-14°
Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion': 600 psf
Phi': 32 °
Phi-Anisotropic Strength Fn.: Tsr 18° bedding 4-14°
C-Anisotropic Strength Fn.: Tsr 250 bedding 4-14°


**LGC Valley, Inc**
*GEOTECHNICAL CONSULTING*
28532 Constellation Rd, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

Project No: **203003-01**
Engineer: **BIH / MW**
Date: **Dec 2021**

# 2 -Translational Static Global

Input Data and Analysis Results for Slide2 Model, © 1990-2021 Rocscience Inc.

## File Information

File version: 10.00
Title: Slope Stability Analysis, Cross-Section A-A'
Last Saved By: Michael Wilson
Session Number: 262
Date: 12/02/2021
Time: 11:03:15 AM
Slide Version: 10.0.0.17403
File Name: Section A-A' for 88301556.gsz
Directory: P:\FINAL PROJECTS\Wilson Golden Valley Sierra Bay\Slope stability\wilson\
Last Solved Date: 12/02/2021
Last Solved Time: 11:03:19 AM

## Project Settings

Unit System: U.S. Customary Units

## Analysis Settings

### 2 -Translational Static Global

Slide: SLOPE/W
Method: Janbu
Settings
PWP Conditions From: (none)
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Right to Left
Use Passive Mode: No
Slip Surface Option: Block
Critical slip surfaces saved: 1
Restrict Block Crossing: No
Optimize Critical Slip Surface location: No
Tension Crack Option: (none)
Distribution
FoS Calculation Option: Constant
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 50
Factor of Safety Convergence Settings
Maximum Number of Iterations: 100
Tolerable Tolerance: FoS: 0.001

## Materials





### Fill

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 325 psf
Phi: 35 °
Phi-b: 0 °

### Landslide Material

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 100 psf
Phi: 30 °
Phi-b: 0 °

### Landslide Plane

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion: 100 psf
Phi: 8 °
Phi-b: 0 °

### Tsr 4-14'

Model: Anisotropic S
Unit Weight: 125 pcf
Cohesion: 600 psf
Phi: 30 °
Phi Anisotropic Strength Fu: 30 °, 15° bedding 4-14'
Cohesion Anisotropic Strength Fu: 30 psf, bedding 4-14'
Phi-b: 0 °

### Qal

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion: 450 psf
Phi: 25 °
Phi-b: 0 °

## Slip Surface Limits

Left Coordinate: (0.40021, 1,577.10921) ft
Right Coordinate: (377.18469, 1,523.19891) ft

## Slip Surface Block

Left Grid
Upper Left: (71.77135, 1,570.05121) ft
Lower Left: (71.19404, 1,557.61941) ft
Lower Right: (208.24638, 1,575.56831) ft
X Increments: 10
Y Increments: 10
Starting Angle: 135 °
Ending Angle: 180 °
Angle Increments: 2

Right Grid:
Upper Left: (234.85706, 1,539.05161) ft
Lower Left: (311.5427, 1,575.7704) ft
Lower Right: (372.4378, 1,558.098) ft
X Increments: 10
Y Increments: 10
Angle Increment: 2

## Seismic Coefficients

Horizontal Load: 0
Vertical Load: 0

## Anisotropic Strength Functions

### Tsr 250 bedding 4-14°

Mode: Spline Data Point Function
Function: Modifier Factor vs Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y Intercept: 1
Data Points: (Inclination [°], Modifier Factor)
Data Point: (-9.99, 1)
Data Point: (4, 0.4167)
Data Point: (14, 0.4) [87]
Data Point: (14.01, 1)

### Tsr 18° bedding 4-14°

Mode: Spline Data Point Function
Function: Modifier Factor vs Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y Intercept: 1
Data Points: (Inclination [°], Modifier Factor)
Data Point: (-9.99, 1)
Data Point: (4, 0.5625)
Data Point: (14, 0.5625)
Data Point: (14.01, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 377.18482 ft | 1,445.1981 ft |
| Point 2 | 372.6281 ft | 1,440.675 ft |
| Point 3 | 0.40014 ft | 1,441.6571 ft |
| Point 4 | 11.40014 ft | 1,537.1042 ft |
| Point 5 | 91.65327 ft | 1,586.317 ft |
| Point 6 | 101.225 ft | 1,587.7723 ft |
| Point 7 | 118.86449 ft | 1,593.8225 ft |
| Point 8 | 128.16697 ft | 1,593.5549 ft |
| Point 9 | 164.36773 ft | 1,587.0569 ft |





| | | |
|---|---|---|
| Point 20 | 185.48481 ft | 1,512.1044 ft |
| Point 21 | 200.36812 ft | 1,508.5015 ft |
| Point 22 | 61.16769 ft | 1,565.7347 ft |
| Point 23 | 73.37743 ft | 1,582.2238 ft |
| Point 24 | 65.46957 ft | 1,574.1865 ft |
| Point 25 | 29.39023 ft | 1,574.4573 ft |
| Point 26 | 53.62533 ft | 1,572.0664 ft |
| Point 27 | 376.97015 ft | 1,516.2249 ft |
| Point 28 | 30.52686 ft | 1,574.5827 ft |
| Point 29 | 20.90562 ft | 1,572.7898 ft |
| Point 30 | 31.16497 ft | 1,561.65 ft |
| Point 31 | 40.70568 ft | 1,548.8194 ft |
| Point 32 | 46.09685 ft | 1,565.6778 ft |
| Point 33 | 59.64023 ft | 1,569.7502 ft |
| Point 34 | 53.57774 ft | 1,561.1845 ft |
| Point 35 | 46.32109 ft | 1,551.7584 ft |
| Point 36 | 34.88692 ft | 1,556.4483 ft |
| Point 37 | 28.06714 ft | 1,568.5535 ft |
| Point 38 | 5.75797 ft | 1,568.4535 ft |
| Point 39 | 3.40014 ft | 1,545.1376 ft |
| Point 40 | 27.4052 ft | 1,571.0981 ft |
| Point 41 | 59.39023 ft | 1,577.5412 ft |
| Point 42 | 370.01775 ft | 1,496.1638 ft |
| Point 43 | 378.89641 ft | 1,588.7738 ft |
| Point 44 | 132.48229 ft | 1,594.1091 ft |
| Point 45 | 188.49501 ft | 1,603.0091 ft |
| Point 46 | 301.4537 ft | 1,609.0091 ft |
| Point 47 | 332.4974 ft | 1,611.456 ft |
| Point 48 | 345.77589 ft | 1,598.0237 ft |
| Point 49 | 312.48505 ft | 1,614.7868 ft |
| Point 50 | 372.56126 ft | 1,577.7741 ft |
| Point 51 | 238.48201 ft | 1,583.7016 ft |
| Point 52 | 244.24975 ft | 1,566.1213 ft |
| Point 53 | 284.11471 ft | 1,587.0425 ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | Fill | 27,3,31,30,38,43,40,35,36,41,42,39 | 5,246.8 ft² |
| Region 2 | Clay | 4,26,28,27,26,25,24,23,21,15,15,22,21,20,30,19,18 | 981.40 ft² |
| Region 3 | Tsr c 14° | 24,25,25,22,28,29,5,2,35,41,36,35,40,23 | 31,405 ft² |
| Region 4 | Landside Plane | 23,43,44,31 | 324 ft² |
| Region 5 | Landside Material | 22,30,42,32 | 2,220.4 ft² |
| Region 6 | Landside Plane | 32,42,41,33 | 3,4 98 ft² |
| Region 7 | Landside Material | 33,5,3,1,8,7,6,9,12,13,14,15,31,45 | 1,327.2 ft² |

## Slip Results

Slip Surfaces Analyzed: 105565 of 105565 surfaces

## Current Slip Surface

Slip Surface: 74,823
Factor of Safety: 2.20
Volume: 3,128,888 ft³
Weight: 432,284,xx lbf
Resisting Force: 178,315,211 lbf
Activating Force: 80,988,927 lbf
Slip Rank: 1 of 131,760 slip surfaces
Exit: (94,987159, 1,572.1545) ft
Entry: (287.8157, 1,639.3580) ft
Radius: 85.07467 ft
Center: (-86.63288, 1,581.74601) ft

## Slip Slices

| | X | Y | PWP | Base Normal Stress | Frictional Strength | Cohesive Strength | Suction Strength | Base Material |
|---|---|---|---|---|---|---|---|---|
| Slice 2 | 56.6843454 ft | 1,572.1943 ft | 0 psf | 323.773 psf | 65.851 6558 psf | 500 psf | 0 psf | Dirt |
| Slice 3 | 50.916152 ft | 1,572.1943 ft | 0 psf | 415.7254 psf | 240.03601 psf | 160 psf | 0 psf | Landslide Material |
| Slice 3 | 63.956822 ft | 1,573.1943 ft | 0 psf | 729.54557 psf | 102.58259 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 4 | 69.47349 ft | 1,573.1943 ft | 11 psf | 1,135.0857 psf | 159.05643 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 5 | 75.849977 ft | 1,573.1943 ft | 0 psf | 1,460.8407 psf | 205.40405 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 6 | 80.792113 ft | 1,573.1943 ft | 0 psf | 1,649.6858 psf | 328.42381 psf | 100 psf | 11 psf | Landslide Plane |
| Slice 7 | 84.254723 ft | 1,573.1943 ft | 0 psf | 1,620.303 psf | 237.81768 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 8 | 88.311918 ft | 1,573.1943 ft | 0 psf | 1,674.262 psf | 235.30218 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 9 | 93.827724 ft | 1,573.1943 ft | 0 psf | 1,678.0987 psf | 235.84154 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 10 | 98.782557 ft | 1,573.1943 ft | 0 psf | 1,737.9415 psf | 240.28455 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 11 | 104.16824 ft | 1,574.0944 ft | 0 psf | 1,749.5807 psf | 235.87829 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 12 | 110.05478 ft | 1,574.0834 ft | 0 psf | 1,832.7773 psf | 254.60385 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 13 | 115.94121 ft | 1,575.2801 ft | 0 psf | 1,856.0539 psf | 260.85137 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 14 | 121.82808 ft | 1,575.8794 ft | 0 psf | 1,931.2488 psf | 271.41537 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 15 | 125.84634 ft | 1,576.2756 ft | 0 psf | 2,028.362 psf | 285.06788 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 16 | 130.82466 ft | 1,576.7262 ft | 0 psf | 4,305.2012 psf | 299.46079 psf | 200 psf | 0 psf | Landslide Plane |
| Slice 17 | 135.95905 ft | 1,577.2025 ft | 0 psf | 4,479.0566 psf | 300.24943 psf | 100 psf | 0 psf | Landslide Plane |
| Slice | 142.95137 | 1,577.9814 | 11 psf | 2,370.3579 | 319.09635 | 100 psf | 0 psf | Landslide |





| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 18 | ft | ft | | psf | psf | | | Plane |
| Slice 19 | 147.56181 ft | 1,578.4605 ft | 0 psf | 2,161.1365 psf | 321.83589 psf | 200 psf | 0 psf | Landslide Plane |
| Slice 20 | 152.14503 ft | 1,578.8417 ft | 0 psf | 2,516.5304 psf | 353.3695 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 21 | 156.94031 ft | 1,579.0091 ft | 11 psf | 2,791.0626 psf | 383.68527 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 22 | 161.42557 ft | 1,580.2987 ft | 0 psf | 2,845.7047 psf | 414.60164 psf | 100 psf | 11 psf | Landslide Plane |
| Slice 23 | 169.33855 ft | 1,580.8475 ft | 0 psf | 3,061.7941 psf | 430.39726 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 24 | 173.03789 ft | 1,581.02 ft | 0 psf | 3,324.524 psf | 1,309.94aR psf | 125 psf | 0 psf | fill |
| Slice 25 | 180.0625 ft | 1,581.9203 ft | 0 psf | 3,379.0159 psf | 1,347.4116 psf | 525 psf | 0 psf | fill |
| Slice 26 | 186.2587 ft | 1,582.3171 ft | 11 psf | 3,387.8527 psf | 2,077.1693 psf | 525 psf | 0 psf | fill |
| Slice 27 | 191.97647 ft | 1,583.0189 ft | 11 psf | 3,295.8044 psf | 2,169.4931 psf | 525 psf | 11 psf | fill |
| Slice 28 | 197.55424 ft | 1,583.4846 ft | 0 psf | 3,300.0151 psf | 2,309.4104 psf | 175 psf | 0 psf | fill |
| Slice 29 | 203.64284 ft | 1,584.0257 ft | 0 psf | 4,071.2480 psf | 2,310.5565 psf | 325 psf | 0 psf | fill |
| Slice 30 | 210.10757 ft | 1,584.2561 ft | 0 psf | 4,012.6139 psf | 2,316.6826 psf | 325 psf | 0 psf | fill |
| Slice 31 | 216.52119 ft | 1,584.6417 ft | 0 psf | 3,480.2048 psf | 1,420.296 psf | 425 psf | 0 psf | fill |
| Slice 32 | 222.19645 ft | 1,585.2448 ft | 0 psf | 1,713.3975 psf | 989.23453 psf | 325 psf | 0 psf | fill |
| Slice 33 | 228.58571 ft | 1,600.6184 ft | 0 psf | 956.77031 psf | 553.3451 psf | 325 psf | 0 psf | fill |
| Slice 34 | 234.77301 ft | 1,615.512 ft | 0 psf | 820.14338 psf | 327.79567 psf | 325 psf | 0 psf | fill |

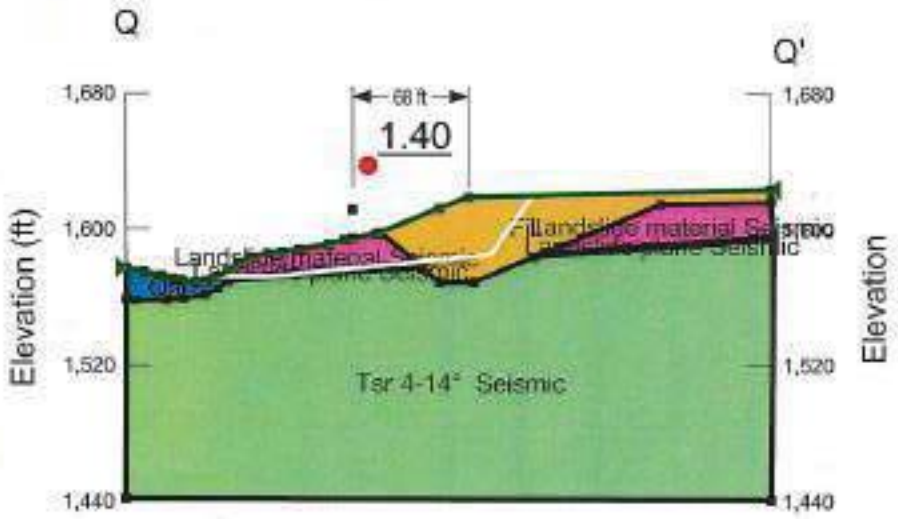
# Section Q-Q Tr 68203 SSA.gsz

2 -Translational Pseudostatic Global

Section Q-Q Tr 68203 SSA.gsz 12/02/2021 11:01:15 AM

Horz Seismic Coef.: 0.15

Method: Janbu




Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 325 psf
Phi': 30 °

Name: Landslide material Seismic
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 200 psf
Phi': 33 °

Name: Landslide plane Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 120 psf
Phi': 12 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 350 psf
Phi': 28 °

Name: Tsr 4-14° Seismic
Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion': 600 psf
Phi': 32 °
Phi-Anisotropic Strength Fn.: Tsr 19° bedding 4-14° (Seismic)
C-Anisotropic Strength Fn.: Tsr 375 bedding 4-14° (Seismic)


LGC

**LGC Valley, Inc**

*GEOTECHNICAL CONSULTING*

28532 Constellation Rd, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

| | |
|---|---|
| Project No: | **203003-01** |
| Engineer: | **BIH / MW** |
| Date: | **Dec 2021** |

# 2 -Translational Pseudostatic Global

Slope Stability Analysis (Pseudostatic) using Spencer's Method with Pore Water Pressures

## File Information

Created with Slide2 Version 9.030
Type: Slope Stability Analysis (Cross-Section 4-4')
Last Edited By: Michal Valvano
Revision Number: 203
Date: 12/02/2021
Time: 11:02:15 AM
Tool Version: 9.030.17401
File Name: Section 4-4' 7-68203 SEA.gsz
Directory: P:\FINAL\PROJECTS\Walnut Golden Valley Sierra Ranch\Slope stability\Version 5
Last Solved Date: 12/02/2021
Last Solved Time: 11:02:20 AM

## Project Settings

Unit System: U.S. Customary Units

## Analysis Settings

### 2 -Translational Pseudostatic Global

Kind: SLOPE/W
Parent: 2 -Translational Static Global
Method: Janbu
Settings
PWP Conditions from: (none)
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of Movement: Right to Left
Use Passe Mode: Inc
Slip Surface Option: Grid and Tangent Surfaces from Lines
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack Option: (none)
Distribution
Pore Pressure Option: Constant
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 30
Factor of Safety Convergence Settings
Maximum Number of Iterations: 100
Tolerable Difference in F of S: 0.001

## Materials





### Fill

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion: 325 psf
Phi: 35 °
Phi-B: 0 °

### Tsr 4-14° Seismic

Model: Anisotropic Fn
Unit Weight: 135 pcf
Cohesion: 600 psf
Phi: 32 °
Phi-Anisotropic Strength Fn.: Tsr 19° bedding 4-14° (Seismic)
Cohesion-Anisotropic Strength Fn.: Tsr 375 bedding 4-14° (Seismic)
Phi-B: 0 °

### Qal

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 350 psf
Phi: 28 °
Phi-B: 0 °

### Landslide material Seismic

Model: Mohr-Coulomb
Unit Weight: 135 pcf
Cohesion: 300 psf
Phi: 33 °
Phi-B: 0 °

### Landslide plane Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 120 psf
Phi: 17 °
Phi-B: 0 °

## Slip Surface Limits

Left Coordinate: (0.49903, 1,577.10921) ft
Right Coordinate: (577.28469, 1,622.10981) ft

## Seismic Coefficients

Horz Seismic Coef.: 0.15
Vert Seismic Coef.: 0

## Anisotropic Strength Functions

### Tsr 19° bedding 4-14° (Seismic)

Model: Spline Data Point Function

Function: Modifier Factor vs. Elevation
Curve File Name: Data
Segment Curvature: 0%
Material: 1
Data Points: Elevation (ft), Modifier Factor
(Data Point: (3.95, 1)
(Data Point: (4, 0.9658)
(Data Point: (14, 0.9918)
(Data Point: (16.01, 1)

### Tsr 375 bedding 4-14° [Seismic]

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve File Name: Data
Segment Curvature: 0%
Material: 1
Data Points: Inclination (°), Modifier Factor
(Data Point: (3.91, 1)
(Data Point: (4, 0.945)
(Data Point: (14, 0.825)
(Data Point: (14.01, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 377.18458 ft | 1,625.1987 ft |
| Point 2 | 377.61811 ft | 1,442.679 ft |
| Point 3 | 0.40013 ft | 1,441.6111 ft |
| Point 4 | 0.40013 ft | 1,577.1092 ft |
| Point 5 | 91.48523 ft | 1,585.317 ft |
| Point 6 | 101.215 ft | 1,597.7728 ft |
| Point 7 | 128.85415 ft | 1,593.8225 ft |
| Point 8 | 128.15657 ft | 1,593.8159 ft |
| Point 9 | 145.35778 ft | 1,597.2542 ft |
| Point 10 | 183.48481 ft | 1,612.1044 ft |
| Point 11 | 200.9581 ft | 1,618.9615 ft |
| Point 12 | 83.20386 ft | 1,585.7347 ft |
| Point 13 | 70.17701 ft | 1,583.9235 ft |
| Point 14 | 65.40957 ft | 1,579.7981 ft |
| Point 15 | 59.39023 ft | 1,574.7141 ft |
| Point 16 | 51.67551 ft | 1,572.7552 ft |
| Point 17 | 376.87952 ft | 1,615.2249 ft |
| Point 18 | 376.52665 ft | 1,574.3827 ft |
| Point 19 | 376.97463 ft | 1,572.7688 ft |
| Point 20 | 377.18458 ft | 1,582.85 ft |
| Point 21 | 40.70482 ft | 1,568.3050 ft |
| Point 22 | 46.95836 ft | 1,569.5778 ft |
| Point 23 | 59.39023 ft | 1,574.7141 ft |
| Point 24 | 53.677 ft | 1,566.3645 ft |
| Point 25 | 40.72224 ft | 1,551.75 ft |
| Point 26 | 35.80632 ft | 1,550.4415 ft |





| | | |
|---|---|---|
| Point 27 | 24.007114 ft | 1,558.3615 ft |
| Point 28 | 5.76797 ft | 1,558.3545 ft |
| Point 29 | 0.40013 ft | 1,560.1176 ft |
| Point 30 | 27.4098 ft | 1,571.0961 ft |
| Point 31 | 39.59003 ft | 1,571.9412 ft |
| Point 32 | 379.01173 ft | 1,605.3512 ft |
| Point 33 | 378.08841 ft | 1,603.7707 ft |
| Point 34 | 132.48775 ft | 1,564.1901 ft |
| Point 35 | 183.49392 ft | 1,569.0011 ft |
| Point 36 | 203.4956 ft | 1,569.0041 ft |
| Point 37 | 152.48674 ft | 1,611.655 ft |
| Point 38 | 168.77585 ft | 1,568.0237 ft |
| Point 39 | 312.48598 ft | 1,614.7806 ft |
| Point 40 | 174.06139 ft | 1,577.7324 ft |
| Point 41 | 248.4936 ft | 1,583.7066 ft |
| Point 42 | 264.29075 ft | 1,586.1213 ft |
| Point 43 | 160.810 ft | 1,581.0524 ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | FIG | 17,1,11,12,38,43,40,36,16,41,42,39 | 5,296.8 ft² |
| Region 2 | Qal | 4,19,28,27,26,25,24,23,21,15,16,22,21,20,30,19,18 | 681.69 ft² |
| Region 3 | Tsr 4-14° Seismic | 24,25,29,37,38,25,3,2,33,41,34,35,40,24 | 51,409 ft² |
| Region 4 | Landslide plane Seismic | 23,40,43,31 | 624 ft² |
| Region 5 | Landslide material Seismic | 17,35,42,32 | 2,223.6 ft² |
| Region 6 | Landslide plane Search | 17,6,7,45,39 | 814.38 ft² |
| Region 7 | Landslide material Seismic | 36,9,34,8,7,6,5,12,13,14,15,31,43 | 3,627.2 ft² |

## Slip Results

Slip Surfaces Analyzed: 1 of 1 converged

## Current Slip Surface

Slip Surface: 1
Factor of Safety: 1.49
Volume: 3,528.434 ft³
Weight: 440,054.65 lbs
Resisting Force: 190,194.91 lbf
Activating Force: 136,067.35 lbf
Slip Surface Left Side Points
Left: (53.387258, 1,572.1393) ft
Entry: (287.5167, 1,610.8586) ft
Radius: 86.8155802 ft
Center: (356.69286, 1,631.2759) ft

### Slip Slices

| | X | Y | PWP | User Normal | Fractional Strength | Cohesive Strength | Suction Strength | Base Material |
|---|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 98.648691 ft | 1,572.3943 ft | 0 psf | 579.773 psf | 69.813998 psf | 350 psf | 0 psf | Ok! |
| Slice 2 | 60.916152 ft | 1,572.3943 ft | 0 psf | 411.77174 psf | 358.97399 psf | 200 psf | 0 psf | Landslide material Seismic |
| Slice 3 | 63.951623 ft | 1,572.1943 ft | 0 psf | 723.54557 psf | 155.2687 psf | 150 psf | 0 psf | Landslide plane Seismic |
| Slice 4 | 68.42349 ft | 1,572.1943 ft | 0 psf | 1,335.0857 psf | 242.48247 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 5 | 75.348977 ft | 1,572.1943 ft | 0 psf | 1,460.9707 psf | 410.03892 psf | 170 psf | 0 psf | Landslide plane Seismic |
| Slice 6 | 80.732113 ft | 1,572.1943 ft | 0 psf | 1,818.9459 psf | 442.1301 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 7 | 84.254721 ft | 1,572.1943 ft | 0 psf | 1,882.805 psf | 358.71011 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 8 | 88.350318 ft | 1,572.0007 ft | 0 psf | 2,051.6488 psf | 351.51603 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 9 | 94.997703 ft | 1,573.0641 ft | 0 psf | 2,659.4451 psf | 352.72764 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 10 | 98.782567 ft | 1,573.5652 ft | 0 psf | 3,149.3104 psf | 414.03535 psf | 170 psf | 0 psf | Landslide plane Seismic |
| Slice 11 | 104.14024 ft | 1,574.0976 ft | 0 psf | 3,273.2306 psf | 367.77159 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 12 | 110.09473 ft | 1,574.0884 ft | 0 psf | 3,788.3423 psf | 378.59758 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 13 | 115.94121 ft | 1,573.5831 ft | 0 psf | 3,636.8541 psf | 350.22283 psf | 170 psf | 0 psf | Landslide plane Seismic |
| Slice 14 | 121.20508 ft | 1,573.5093 ft | 0 psf | 3,910.3036 psf | 406.08649 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 15 | 125.64534 ft | 1,573.4758 ft | 0 psf | 4,008.5687 psf | 476.57897 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 16 | 130.34463 ft | 1,573.4251 ft | 0 psf | 4,082.8267 psf | 442.73847 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 17 | 135.96405 ft | 1,573.2925 ft | 0 psf | 4,356.9975 psf | 458.27392 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 18 | 142.91137 ft | 1,573.1803 ft | 0 psf | 4,745.3859 psf | 477.48448 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 19 | 147.58187 ft | 1,573.4609 ft | 0 psf | 4,386.6257 psf | 464.64537 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 20 | 152.16503 ft | 1,573.4217 ft | 0 psf | 4,485.4849 psf | 508.93679 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 21 | 156.6458 ft | 1,573.8851 ft | 0 psf | 4,782.2543 psf | 574.17754 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 22 | 160.72567 ft | 1,580.2815 ft | 0 psf | 2,519.2637 psf | 619.82849 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 23 | 164.13315 ft | 1,580.4876 ft | 0 psf | 3,031.2011 psf | 644.25938 psf | 320 psf | 0 psf | Landslide plane Seismic |
| Slice 24 | 173.03098 ft | 1,581.02 ft | 0 psf | 3,070.8666 psf | 1,772.9674 psf | 325 psf | 0 psf | Ok |
| Slice 25 | 180.0095 ft | 1,581.7203 ft | 0 psf | 3,315.7498 psf | 1,014.34b3 psf | 325 psf | 0 psf | Ok |
| Slice | 186.2587 | 1,582.3533 | 0 psf | 3,517.2717 | 2,042.2407 | 325 psf | 0 psf | Ok |





| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 26 | ft | ft | | psf | psf | | | |
| Slice 27 | 191.92647 ft | 1,581.90.80 ft | 0 psf | 3,755.4432 psf | 2,156.8615 psf | 325 psf | 0 psf | Ok! |
| Slice 28 | 197.56424 ft | 1,583.4866 ft | 0 psf | 3,983.0228 psf | 2,271.6782 psf | 325 psf | 0 psf | Ok! |
| Slice 29 | 203.64.844 ft | 1,588.0967 ft | 0 psf | 4,003.9589 psf | 2,311.5059 psf | 325 psf | 0 psf | Ok! |
| Slice 30 | 210.19.757 ft | 1,584.7551 ft | 0 psf | 3,945.0358 psf | 2,278.2446 psf | 325 psf | 0 psf | Ok! |
| Slice 31 | 216.51.105 ft | 1,589.4312 ft | 0 psf | 7,045.4446 psf | 1,267.9536 psf | 325 psf | 0 psf | Ok! |
| Slice 32 | 222.56839 ft | 1,595.1242 ft | 0 psf | 3,405.016 psf | 931.16616 psf | 325 psf | 0 psf | Ok! |
| Slice 33 | 225.08571 ft | 1,606.6381 ft | 0 psf | 358.51724 psf | 858.51932 psf | 325 psf | 0 psf | Ok! |
| Slice 34 | 134.77904 ft | 1,615.557 ft | 0 psf | 734.05681 psf | 65.853882 psf | 325 psf | 0 psf | Ok! |

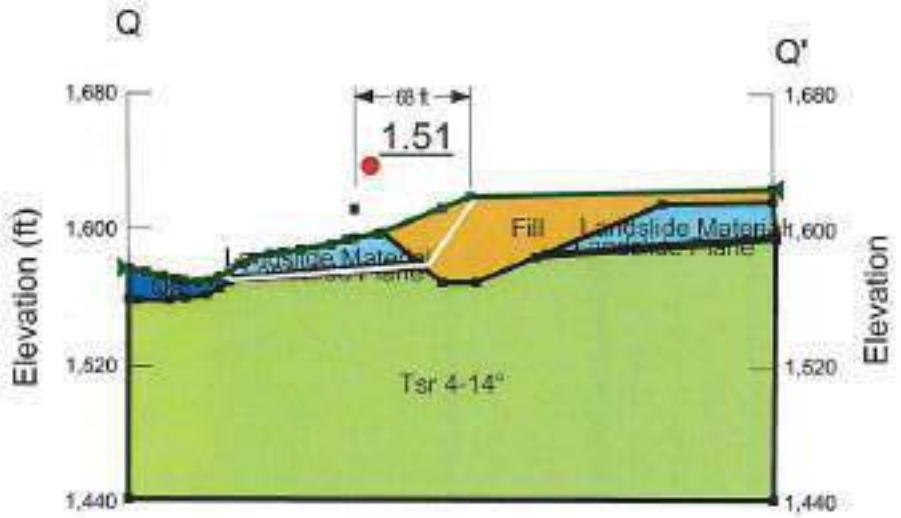
# Section Q-Q Tr 68203 SSA.gsz

3 -Translational Static Lower Slope (2)

Section Q-Q Tr 68203 SSA.gsz 12/02/2021 11:17:44 AM

Horz Seismic Coef.: 0

Method: Spencer




Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 325 psf
Phi': 30 °

Name: Landslide Material
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 160 psf
Phi': 30 °

Name: Landslide Plane
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 100 psf
Phi': 8 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 350 psf
Phi': 28 °

Name: Tsr 4-14°
Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion': 600 psf
Phi': 32 °
Phi-Anisotropic Strength Fn.: Tsr 18° bedding 4-14°
C-Anisotropic Strength Fn.: Tsr 250 bedding 4-14°


LGC

**LGC Valley, Inc**

*GEOTECHNICAL CONSULTING*

26532 Constellation Rd, Valencia, CA 91355

Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

| | |
|---|---|
| Project No: | **203003-01** |
| Engineer: | **BIH / MW** |
| Date: | **Dec 2021** |

# 3 -Translational Static Lower Slope (2)

Rocscience Inc. 54 Saint Patrick Street, Toronto, Ontario, Canada, M5T 1V1 Tel: (416) 673-1190 www.rocscience.com

## File Information

File Version: 10.00
Title: Slope Stability Analysis Cross-Section A-A'
Last Edited By: Michael Wilson
Revision Number: 780
Date: 12/02/2021
Time: 11:17:44 AM
Tool Version: 10.022.17401
File Name: Section D-D'(T-38200 SSA).gsz
Directory: P:\FINAL PROJECTS\Walnut Golden Valley Sierra Way\slope stability\Revised\
Last Solved Date: 12/01/2021
Last Solved Time: 11:17:58 AM

## Project Settings

Units System: U.S. Customary Units

## Analysis Settings

### 3 -Translational Static Lower Slope (2)

Slope: SLOPE/W
Analysis: 3 -Translational Static Lower Slope
Method: Spencer
Settings
PWP Conditions from: (none)
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Right to Left
Use Passive Mode: No
Slip Surface Option: Grid and Tangent Lines
Number of Grid Lines: 20
Number of Tangent Lines: 20
Optimize Critical Slip Surface Location: No
Tension Crack Option: (none)
Discretization
FoS Calculation Option: Constant
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 50
Factor of Safety Convergence Settings
Maximum Number of Iterations: 100
Tolerable Difference in FoS: 0.001
Solution Settings
Search Method: Linear Search
Max. Optimal Lambda Factor of Safety: 0.7
Lambda





Lambda 1: 1
Lambda 2: 0.8
Lambda 3: 0.6
Lambda 4: 0.4
Lambda 5: 0.2
Lambda 6: 0
Lambda 7: 0.2
Lambda 8: 0.4
Lambda 9: 0.6
Lambda 10: 0.8
Lambda 11: 1

## Materials

### Fill

Model: Mohr-Coulomb
Unit Weight: 126 pcf
Cohesion: 100 psf
Phi: 30°
Phi-B: 0°

### Landslide Material

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 140 psf
Phi: 30°
Phi-B: 0°

### Landslide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 100 psf
Phi: 15°
Phi-B: 0°

### Tsr 4-14"

Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion: 1000 psf
Phi: 32°
Phi-Anisotropic Strength Fn. for 15° bedding: 4-14"
Cohesion-Anisotropic Strength Fn. for 250 bedding: 4-14"
Phi-B: 0°

### Qal

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 350 psf
Phi: 28°
Phi-B: 0°

## Slip Surface Limits

Left Coordinate: (0.40013, 1,577.1092) ft
Right Coordinate: (377.18469, 1,623.1981) ft

## Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

## Anisotropic Strength Functions

### Tsr 250 bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Points: Inclination (°), Modifier Factor
Data Point: (3.99, 1)
Data Point: (4, 0.4167)
Data Point: (14, 0.4167)
Data Point: (14.01, 1)

### Tsr 18° bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Points: Inclination (°), Modifier Factor
Data Point: (3.99, 1)
Data Point: (4, 0.5625)
Data Point: (14, 0.5625)
Data Point: (14.01, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 377.18469 ft | 1,623.1981 ft |
| Point 2 | 377.62811 ft | 1,440.679 ft |
| Point 3 | 0.40013 ft | 1,441.6571 ft |
| Point 4 | 0.40013 ft | 1,577.1092 ft |
| Point 5 | 91.45527 ft | 1,585.317 ft |
| Point 6 | 101.225 ft | 1,587.7728 ft |
| Point 7 | 118.88445 ft | 1,590.8225 ft |
| Point 8 | 128.16697 ft | 1,593.3129 ft |
| Point 9 | 146.38773 ft | 1,597.0649 ft |
| Point 10 | 183.48481 ft | 1,612.1044 ft |
| Point 11 | 200.36812 ft | 1,618.9615 ft |
| Point 12 | 83.26368 ft | 1,585.7347 ft |





| | | |
|---|---|---|
| Point 13 | 75.37741 ft | 1,583.3139 ft |
| Point 14 | 65.46857 ft | 1,579.2885 ft |
| Point 15 | 59.39023 ft | 1,574.2573 ft |
| Point 16 | 59.62533 ft | 1,572.0562 ft |
| Point 17 | 376.97992 ft | 1,616.2249 ft |
| Point 18 | 10.52665 ft | 1,574.9827 ft |
| Point 19 | 20.96962 ft | 1,572.7898 ft |
| Point 20 | 32.16047 ft | 1,569.85 ft |
| Point 21 | 40.70588 ft | 1,568.8039 ft |
| Point 22 | 46.93606 ft | 1,569.6778 ft |
| Point 23 | 59.39023 ft | 1,569.7502 ft |
| Point 24 | 53.67774 ft | 1,565.1645 ft |
| Point 25 | 46.12224 ft | 1,561.758 ft |
| Point 26 | 33.80632 ft | 1,559.4433 ft |
| Point 27 | 24.06714 ft | 1,558.3515 ft |
| Point 28 | 5.76797 ft | 1,558.3515 ft |
| Point 29 | 0.40013 ft | 1,559.1376 ft |
| Point 30 | 27.4092 ft | 1,571.0981 ft |
| Point 31 | 59.39023 ft | 1,571.9412 ft |
| Point 32 | 379.01775 ft | 1,596.3618 ft |
| Point 33 | 378.98641 ft | 1,593.7733 ft |
| Point 34 | 152.48229 ft | 1,594.1991 ft |
| Point 35 | 183.49392 ft | 1,569.0091 ft |
| Point 36 | 203.4937 ft | 1,569.0091 ft |
| Point 37 | 132.4874 ft | 1,611.655 ft |
| Point 38 | 148.77589 ft | 1,598.0237 ft |
| Point 39 | 312.48593 ft | 1,614.7808 ft |
| Point 40 | 173.06129 ft | 1,577.7341 ft |
| Point 41 | 238.49261 ft | 1,583.7056 ft |
| Point 42 | 244.24975 ft | 1,586.1213 ft |
| Point 43 | 169.11071 ft | 1,581.0425 ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | Fill | 37,1,11,10,38,43,40,35,36,41,42,39 | 5,236.8 ft² |
| Region 2 | Qal | 4,29,28,27,26,25,24,23,31,15,16,22,21,20,30,19,18 | 691.49 ft² |
| Region 3 | Tsr 4-14° | 24,25,26,27,28,29,3,2,33,41,36,35,40,23 | 51,405 ft² |
| Region 4 | Landslide Plane | 23,40,41,31 | 324 ft² |
| Region 5 | Landslide Material | 17,39,42,32 | 2,223.8 ft² |
| Region 6 | Landslide Plane | 32,42,41,33 | 334.98 ft² |
| Region 7 | Landslide Material | 38,9,34,8,7,6,5,12,13,14,15,31,43 | 1,327.2 ft² |

## Slip Results

Slip Surfaces Analysed: 1 of 1 converged

## Current Slip Surface

Slip Surface: 1
Factor of Safety: 1.51
Volume: 2,439.8865 ft³
Weight: 299,420.01 lbf
Resisting Moment: 6,363,599.2 lbf-ft
Activating Moment: 4,223,909.3 lbf-ft
Resisting Force: 80,084.012 lbf
Activating Force: 53,284.984 lbf
Slip Rank: 1 of 1 slip surfaces
Exit: (55.19029, 1,572.6537) ft
Entry: (203.66079, 1,619.0399) ft
Radius: 75.956626 ft
Center: (118.54485, 1,630.6385) ft

### Slip Slices

| | X | Y | PWP | Base Normal Stress | Frictional Strength | Cohesive Strength | Suction Strength | Base Material |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 57.29026 ft | 1,571.7839 ft | 0 psf | 530.43849 psf | 282.03915 psf | 350 psf | 0 psf | Qal |
| Slice 2 | 60.228211 ft | 1,570.5659 ft | 0 psf | 698.00697 psf | 98.098082 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 3 | 63.267881 ft | 1,570.393 ft | 0 psf | 882.54536 psf | 124.03366 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 4 | 67.44653 ft | 1,570.7216 ft | 0 psf | 1,194.0812 psf | 167.81717 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 5 | 71.40045 ft | 1,571.0325 ft | 0 psf | 1,486.5463 psf | 197.6772 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 6 | 75.848977 ft | 1,571.3823 ft | 0 psf | 1,563.5778 psf | 219.74653 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 7 | 80.792113 ft | 1,571.7711 ft | 0 psf | 1,665.1755 psf | 234.02516 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 8 | 85.311577 ft | 1,572.1265 ft | 0 psf | 1,714.0041 psf | 240.88756 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 9 | 89.407373 ft | 1,572.4486 ft | 0 psf | 1,710.0633 psf | 240.33375 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 10 | 93.897703 ft | 1,572.8017 ft | 0 psf | 1,729.4454 psf | 243.0577 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 11 | 98.782567 ft | 1,573.1858 ft | 0 psf | 1,772.1503 psf | 249.05948 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 12 | 103.43243 ft | 1,573.5515 ft | 0 psf | 1,819.3114 psf | 255.68754 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 13 | 107.84729 ft | 1,573.8986 ft | 0 psf | 1,870.9287 psf | 262.94188 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 14 | 112.26216 ft | 1,574.2458 ft | 0 psf | 1,922.546 psf | 270.19622 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 15 | 116.67702 ft | 1,574.593 ft | 0 psf | 1,974.1633 psf | 277.45056 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 16 | 121.20508 ft | 1,574.9491 ft | 0 psf | 2,054.7305 psf | 288.77853 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 17 | 125.84634 ft | 1,575.3141 ft | 0 psf | 2,164.2474 psf | 304.16514 psf | 100 psf | 0 psf | Landslide Plane |





| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Slice 18 | 130.32463 ft | 1,575.6662 ft | 0 psf | 2,253.0101 psf | 316.63993 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 19 | 134.79886 ft | 1,576.0182 ft | 0 psf | 2,323.5421 psf | 326.55254 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 20 | 139.43501 ft | 1,576.3827 ft | 0 psf | 2,396.5975 psf | 336.81982 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 21 | 144.07016 ft | 1,576.7472 ft | 0 psf | 2,469.653 psf | 347.08709 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 22 | 147.58181 ft | 1,577.0233 ft | 0 psf | 2,554.7853 psf | 359.05166 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 23 | 151.31774 ft | 1,577.3171 ft | 0 psf | 2,691.1485 psf | 378.21626 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 24 | 156.40145 ft | 1,577.7169 ft | 0 psf | 2,866.6657 psf | 402.8836 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 25 | 161.48515 ft | 1,578.1166 ft | 0 psf | 3,042.183 psf | 427.55093 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 26 | 166.56886 ft | 1,578.5164 ft | 0 psf | 3,217.7002 psf | 452.21827 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 27 | 170.38035 ft | 1,578.8162 ft | 0 psf | 3,355.0997 psf | 471.52851 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 28 | 173.71138 ft | 1,579.0781 ft | 0 psf | 3,686.9915 psf | 2,128.6855 psf | 325 psf | 0 psf | Fill |
| Slice 29 | 177.70075 ft | 1,581.9937 ft | 0 psf | 1,709.8512 psf | 987.18303 psf | 325 psf | 0 psf | Fill |
| Slice 30 | 181.55679 ft | 1,587.5007 ft | 0 psf | 1,447.0203 psf | 835.43755 psf | 325 psf | 0 psf | Fill |
| Slice 31 | 186.2987 ft | 1,594.2728 ft | 0 psf | 1,123.8957 psf | 648.88149 psf | 325 psf | 0 psf | Fill |
| Slice 32 | 191.92647 ft | 1,602.3101 ft | 0 psf | 740.47746 psf | 427.51486 psf | 325 psf | 0 psf | Fill |
| Slice 33 | 197.55424 ft | 1,610.3474 ft | 0 psf | 357.05921 psf | 206.14823 psf | 325 psf | 0 psf | Fill |
| Slice 34 | 202.00446 ft | 1,616.703 ft | 0 psf | 12.177042 psf | 7.0304187 psf | 325 psf | 0 psf | Fill |

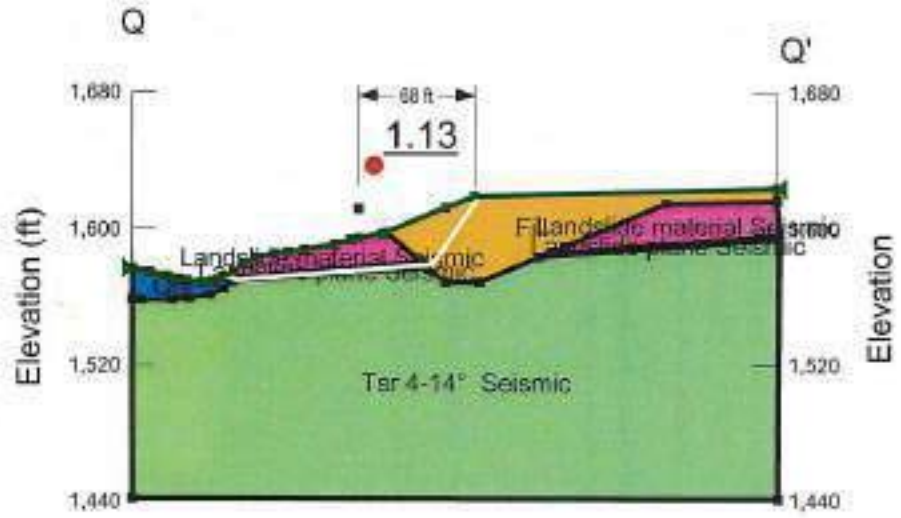
# Section Q-Q Tr 68203 SSA.gsz

3 -Translational Pseudostatic Lower Slope

Section Q-Q Tr 68203 SSA.gsz 12/02/2021 11:17:44 AM

Horz Seismic Coef.: 0.15

Method: Spencer




Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 325 psf
Phi': 30 °

Name: Landslide material Seismic
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 200 psf
Phi': 33 °

Name: Landslide plane Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 120 psf
Phi': 12 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 350 psf
Phi': 28 °

Name: Tsr 4-14° Seismic
Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion': 600 psf
Phi': 32 °
Phi-Anisotropic Strength Fn.: Tsr 19° bedding 4-14° (Seismic)
C-Anisotropic Strength Fn.: Tsr 375 bedding 4-14° (Seismic)


LGC

**LGC Valley, Inc**

*GEOTECHNICAL CONSULTING*

28532 Constellation Rd, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

| | |
|---|---|
| Project No: | **203003-01** |
| Engineer: | **BIH / MW** |
| Date: | **Dec 2021** |

# 3 -Translational Pseudostatic Lower Slope

Report generated using GeoStudio 2020.1 (Compute @ Build 12.1.1.40118) on 12/22/2021 at 3:58 PM

## File Information

File Version: 10.00
Title: Slope Stability Analysis Cross Section A-A'
Last Edited By: Michael Wilson
Revision Number: 760
Date: 12/07/2021
Time: 11:17:54 AM
Tool Version: 10.0.1.17410
File Name: Section G GLTR 02209 SSA.gsz
Directory: J:\FINAL PROJECTS\Walnut Golden Valley Storm Analysis\slope stability\Walnut\
Last Solved Date: 12/07/2021
Last Solved Time: 11:17:58 AM

## Project Settings

Unit System: U.S. Customary Units

## Analysis Settings

### 3 -Translational Pseudostatic Lower Slope

Kind: SLOPE/W
Parent: 3 -Translational Static Lower Slope
Method: Spencer
Settings
PWP Conditions from: Ignore
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Right to Left
Use Passes: No
Slip Surface Option: Critical Slip Surfaces from Other
Critical Slip Surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack Option: (none)
Distribution
1 of 5 Equation Option: Constant
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Number of slices: 30
Factor of Safety Convergence Settings
Maximum number of iterations: 100
Tolerable difference in F of S: 0.01
Solution Settings
Search Method: Grid Search
Multi-Stage at Lambda Factor of Safety: 0.2
Lambda:





Lambda 1: 1
Lambda 2: -0.8
Lambda 3: -0.6
Lambda 4: -0.4
Lambda 5: -0.2
Lambda 6: 0
Lambda 7: 0.2
Lambda 8: 0.4
Lambda 9: 0.6
Lambda 10: 0.8
Lambda 11: 1

## Materials

### Fill

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion: 375 psf
Phi: 30°
Phi-B: 0°

### Tsr 4-14° Seismic

Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion: 200 psf
Phi: 32°
Phi-B: Anisotropic Strength Fn: Tsr 19° bedding & 14° (Seismic)
Anisotropic Strength Fn: Tsr 375 bedding 4-14° Seismic
Phi-B: 0°

### Qal

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion: 350 psf
Phi: 28°
Phi-B: 0°

### Landslide material Seismic

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 200 psf
Phi: 32°
Phi-B: 0°

### Landslide plane Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 120 psf
Phi: 22°
Phi-B: 0°

## Slip Surface Limits

Left Coordinate: (0.40013, 1,577.10892) ft
Right Coordinate: (377.15466, 1,623.13611) ft

## Seismic Coefficients

Horizontal Seismic Coefficient: 0.15
Vertical Seismic Coefficient: 0

## Anisotropic Strength Functions

### Tsr 19° bedding 4-14° [Seismic]

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Point Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Points, Inclination (°), Modifier Factor
Data Point: (-90, 1)
Data Point: (4, 0.5938)
Data Point: (14, 0.4918)
Data Point: (14.01, 1)

### Tsr 375 bedding 4-14° [Seismic]

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Point Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Points, Inclination (°), Modifier Factor
Data Point: (-90, 1)
Data Point: (4, 0.625)
Data Point: (14, 0.625)
Data Point: (14.01, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 377.15466 ft | 1,623.1361 ft |
| Point 2 | 377.62811 ft | 1,619.6[illegible] ft |
| Point 3 | 0.40013 ft | 1,[illegible] ft |
| Point 4 | 0.40013 ft | 1,577.10892 ft |
| Point 5 | 91.65537 ft | 1,[illegible] ft |
| Point 6 | 101.2[illegible] ft | 1,587.7776 ft |
| Point 7 | 118.86446 ft | 1,[illegible] ft |
| Point 8 | 128.15657 ft | 1,589.3319 ft |
| Point 9 | 146.39779 ft | 1,587.3545 ft |
| Point 10 | 183.48451 ft | 1,612.1044 ft |
| Point 11 | 202.96812 ft | 1,615.[illegible] ft |
| Point 12 | 83.26368 ft | 1,585.7347 ft |





| | | |
|---|---|---|
| Point 13 | 69.37741 ft | 1,583.2449 ft |
| Point 14 | 66.4[illegible] ft | 1,579.2885 ft |
| Point 15 | 59.39023 ft | 1,574.7973 ft |
| Point 16 | 59.42583 ft | 1,572.0662 ft |
| Point 17 | 376.0709[illegible] ft | 1,[illegible] ft |
| Point 18 | 10.[illegible] ft | 1,574.9827 ft |
| Point 19 | 30.96962 ft | 1,572.7808 ft |
| Point 20 | 32.[illegible] ft | 1,[illegible] ft |
| Point 21 | 40.70583 ft | 1,568.8039 ft |
| Point 22 | 40.69606 ft | 1,569.6778 ft |
| Point 23 | 58.39023 ft | 1,569.7567 ft |
| Point 24 | 61.[illegible] ft | 1,566.1646 ft |
| Point 25 | 40.[illegible] ft | 1,561.[illegible] ft |
| Point 26 | 33.80632 ft | 1,[illegible] ft |
| Point 27 | 34.06714 ft | 1,[illegible] ft |
| Point 28 | 1.76757 ft | 1,[illegible] ft |
| Point 29 | 0.40013 ft | 1,[illegible] ft |
| Point 30 | 2.[illegible] ft | 1,[illegible] ft |
| Point 31 | [illegible] ft | 1,571.9[illegible] ft |
| Point 32 | 376.01775 ft | 1,596.3618 ft |
| Point 33 | 376.[illegible] ft | 1,[illegible] ft |
| Point 34 | 353.[illegible] ft | 1,[illegible] ft |
| Point 35 | 181.69193 ft | 1,[illegible] ft |
| Point 36 | 203.6937 ft | 1,[illegible] ft |
| Point 37 | 232.4874 ft | 1,[illegible] ft |
| Point 38 | [illegible] ft | 1,[illegible] ft |
| Point 39 | 312.48593 ft | 1,[illegible] ft |
| Point 40 | 272.06126 ft | 1,[illegible] ft |
| Point 41 | 228.49102 ft | 1,583.7[illegible] ft |
| Point 42 | 244.24973 ft | 1,[illegible] ft |
| Point 43 | 268.31071 ft | 1,[illegible] ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | [illegible] | 17,1,31,10,38,43,40,35,26,41,42,39 | 5,226.6 ft² |
| Region 2 | Qal | 4,29,28,27,25,24,33,31,15,16,22,21,20,30,19,18 | 691.49 ft² |
| Region 3 | Tsr 4-14° Seismic | 29,25,26,[illegible],[illegible],[illegible],[illegible],40,23 | 51,[illegible] ft² |
| Region 4 | [illegible] plane Seismic | 13,44,45,[illegible] | 324 ft² |
| Region 5 | [illegible] material Seismic | 17,39,47,[illegible] | 2,223.8 ft² |
| Region 6 | [illegible] plane Seismic | 32,46,42,23 | 314.98 ft² |
| Region 7 | [illegible] material Seismic | 38,0,34,8,7,6,5,12,13,14,15,21,47 | 1,[illegible] ft² |

## Slip Results

Slip Surfaces Analyzed: 1 of 1 converged

## Current Slip Surface

Slip Surface: 1
Factor of Safety: 3.13
Volume: 2,435.8665 ft³
Weight: 299,470.01 lbf
Resisting Moment: 7,124,059,454 lbf-ft
Activating Moment: 2,277,147,616 lbf-ft
Resisting Force: 97,991,812 lbf
Activating Force: 31,317,661 lbf
Slip Method: GLE/Morgenstern-Price
Slip Surface: 1 of 1,515 surfaces
Depth: 35.13029 ft, 1,572.6537 ft
Entry: 1,638.6401 ft, 1,620.0329 ft
Radius: 15.556626 ft
Center: (1,616.5485, 1,649.6161) ft

## Slip Slices

| | X | Y | Force | Base Normal Stress | Effective Strength | Cohesion Strength | Suction Strength | Base Material |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 57.20926 ft | 1,571.7829 ft | 0 lbf | 1,402.2833 psf | 747.87725 psf | 840 psf | 0 psf | Fill |
| Slice 2 | 60.126231 ft | 1,570.1869 ft | 0 lbf | 1,655.7866 psf | 794.86018 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 3 | 63.267881 ft | 1,570.398 ft | 0 lbf | 868.22918 psf | 190.9345 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 4 | 66.440637 ft | 1,570.7216 ft | 0 lbf | 1,157.704 psf | 256.57984 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 5 | 71.47085 ft | 1,571.0525 ft | 0 lbf | 1,401.0436 psf | 307.00295 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 6 | 75.849019 ft | 1,571.3895 ft | 0 lbf | 1,552.8067 psf | 333.07617 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 7 | 80.092113 ft | 1,571.7151 ft | 0 lbf | 1,630.5601 psf | 350.89736 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 8 | 85.313572 ft | 1,572.1305 ft | 0 lbf | 1,697.4983 psf | 360.91439 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 9 | 89.497038 ft | 1,572.4489 ft | 0 lbf | 1,699.7101 psf | 360.3052 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 10 | 93.687703 ft | 1,572.8017 ft | 0 lbf | 1,717.3418 psf | 363.06149 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 11 | 98.383567 ft | 1,573.1858 ft | 0 lbf | 1,765.4954 psf | 373.59577 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 12 | 103.46245 ft | 1,573.5515 ft | 0 lbf | 1,798.7787 psf | 382.31158 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 13 | 107.84739 ft | 1,573.8268 ft | 0 lbf | 1,840.0470 psf | 392.87642 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 14 | 112.25916 ft | 1,574.2456 ft | 0 lbf | 1,857.9660 psf | 403.42525 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 15 | 116.67702 ft | 1,574.559 ft | 0 psf | 1,947.5564 psf | 413.07209 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 16 | 121.26548 ft | 1,574.9401 ft | 0 psf | 2,025.1119 psf | 430.14417 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice | 125.94634 | 1,575.3543 | 0 psf | 2,143.6307 | 457.81251 | 120 psf | 0 psf | Landslide |





| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Slice 17 | 130.52963 ft | 1,575.7662 ft | 0 psf | 2,215.6369 psf | 470.94077 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 18 | 134.79586 ft | 1,576.1362 ft | 0 psf | 2,283.4383 psf | 485.39978 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 19 | 138.43301 ft | 1,576.3827 ft | 0 psf | 2,359.6896 psf | 500.78702 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 20 | 141.07016 ft | 1,576.7639 ft | 0 psf | 2,429.8025 psf | 515.21426 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 21 | 147.58161 ft | 1,577.2233 ft | 0 psf | 2,506.759 psf | 532.60014 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 22 | 151.41774 ft | 1,577.7171 ft | 0 psf | 2,656.813 psf | 560.4729 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 23 | 156.40148 ft | 1,577.9164 ft | 0 psf | 2,809.4951 psf | 596.9349 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 24 | 161.48515 ft | 1,578.3166 ft | 0 psf | 2,978.3573 psf | 632.1975 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 25 | 166.56886 ft | 1,578.5164 ft | 0 psf | 3,142.5794 psf | 668.0e+00 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 26 | 171.78083 ft | 1,578.8162 ft | 0 psf | 3,276.0505 psf | 696.19503 psf | 120 psf | 0 psf | Landslide plane Seismic |
| Slice 27 | 173.71136 ft | 1,579.2261 ft | 0 psf | 4,287.3277 psf | 2,435.2898 psf | 825 psf | 0 psf | Fill |
| Slice 28 | 177.70075 ft | 1,581.3917 ft | 0 psf | 3,248.4651 psf | 716.18281 psf | 975 psf | 0 psf | Fill |
| Slice 29 | 181.35679 ft | 1,587.5857 ft | 0 psf | 3,049.0187 psf | 605.17086 psf | 825 psf | 0 psf | Fill |
| Slice 30 | 186.2987 ft | 1,564.2726 ft | 0 psf | 2,850.06587 psf | 470.92202 psf | 825 psf | 0 psf | Fill |
| Slice 31 | 191.02647 ft | 1,602.3101 ft | 0 psf | 2,717.09148 psf | 410.43632 psf | 975 psf | 0 psf | Fill |
| Slice 32 | 197.05454 ft | 1,611.3674 ft | 0 psf | 259.71208 psf | 145.99561 psf | 825 psf | 0 psf | Fill |
| Slice 33 | 202.09846 ft | 1,616.703 ft | 0 psf | 0.6604608 psf | 5.5847502 psf | 825 psf | 0 psf | Fill |

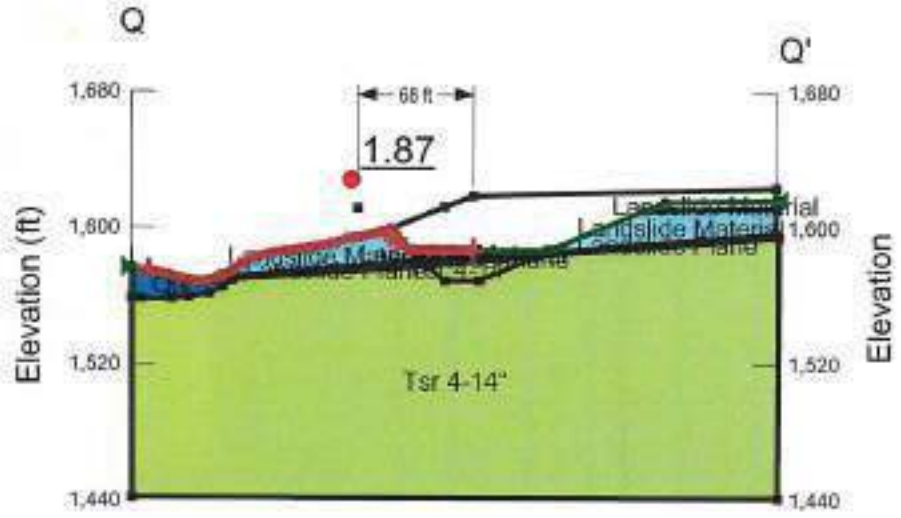
# Section Q-Q Tr 68203 SSA.gsz

4 -Rotational Static Temp Left

Section Q-Q Tr 68203 SSA.gsz 12/02/2021 12:26:00 PM

Horz Seismic Coef.: 0

Method: Bishop




Name: Landslide Material
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 160 psf
Phi': 30 °

Name: Landslide Plane
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 100 psf
Phi': 8 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 350 psf
Phi': 28 °

Name: Tsr 4-14°
Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion': 600 psf
Phi': 32 °
Phi-Anisotropic Strength Fn.: Tsr 18° bedding 4-14°
C-Anisotropic Strength Fn.: Tsr 250 bedding 4-14°


**LGC Valley, Inc**
*GEOTECHNICAL CONSULTING*
28532 Constellation Rd, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

| | |
|---|---|
| Project No: | **203003-01** |
| Engineer: | **BIH / MW** |
| Date: | **Dec 2021** |

# 4 -Rotational Static Temp Left

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## File Information

File Version: 10.02
Title: Slope Stability Analysis Cross Section A-A'
Last Saved by: Michal Wilson
Project Number: 264
Date: 12/22/2021
Time: 12:26:00 PM
Tool Version: 10.0.0.17401
File Name: Section C-C Tr 68203 554.gsz
Directory: P:\PUBLIC PROJECTS\Natural Station Valley Santa Ana\Slope Stability\Revised\
Last Solved Date: 12/22/2021
Last Solved Time: 12:26:12 PM

## Project Settings

Units System: U.S. Customary Units

## Analysis Settings

### 4 -Rotational Static Temp Left

Kind: SLOPE/W
Method: Bishop
Settings
PWP Conditions from: (none)
Unit Weight of Water: 62.6 pcf
Slip Surface
Direction of movement: Left to Right
Use Passed Mode: No
Slip Surface Option: Entry and Exit
Number of slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack Method: (none)
Discretization
FoS Calculation Option: Constant
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 30
Factor of Safety Convergence Settings
Maximum Number of Iterations: 100
Tolerable Difference in FoS: 0.001

## Materials





### Landslide Material

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 260 psf
Phi: 30 °
Psi: 0 °

### Landslide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 100 psf
Phi: 34 °
Psi: 0 °

### Tsr 4-14"

Model: Anisotropic
Unit Weight: 125 pcf
Cohesion: 500 psf
Phi: 32 °
Phi-Anisotropic Strength Ratio: Tsr 18" bedding 4-14"
Cohesion-Isotropic Strength Ratio: Tsr 150 bedding 4-14"
Psi: 0 °

### Qal

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 350 psf
Phi: 28 °
Psi: 0 °

## Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (10.10652, 1,575.07069) ft
Left-Zone Right Coordinate: (151.54883, 1,595.87114) ft
Left-Zone Increment: 20
Right Type: Range
Right-Zone Left Coordinate: (554.77477, 1,491.015) ft
Right-Zone Right Coordinate: (591.59422, 1,502.57271) ft
Right-Zone Increment: 30
Radius Increment: 20

## Slip Surface Limits

Left Coordinate: (0.42013, 1,577.10821) ft
Right Coordinate: (377.84041, 1,626.22467) ft

## Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

## Anisotropic Strength Functions

### Tsr 250 bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100%
Segment Curvature: 0%
Interpolation:
Data Points: Inclination (°), Modifier Factor
Data Point: [3.99, 1]
Data Point: [4, 0.41667]
Data Point: [14, 0.41667]
Data Point: [14.01, 1]

### Tsr 18° bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100%
Segment Curvature: 0%
Interpolation:
Data Points: Inclination (°), Modifier Factor
Data Point: [3.99, 1]
Data Point: [4, 0.36842]
Data Point: [14, 0.3625]
Data Point: [14.01, 1]

## Points

| | X | Y |
|---|---|---|
| Point 1 | 577.13463 ft | 1,523.2961 ft |
| Point 2 | 575.62811 ft | 1,440.679 ft |
| Point 3 | [illegible] | [illegible] |
| Point 4 | 577.9013 ft | 1,577.1092 ft |
| Point 5 | 81.46523 ft | 1,586.317 ft |
| Point 6 | 101.225 ft | 1,587.3718 ft |
| Point 7 | 118.83415 ft | 1,588.3275 ft |
| Point 8 | 128.16647 ft | 1,588.8124 ft |
| Point 9 | 146.58778 ft | 1,589.7549 ft |
| Point 10 | 193.48431 ft | 1,591.2044 ft |
| Point 11 | 200.76813 ft | 1,591.5015 ft |
| Point 12 | 93.26388 ft | 1,585.7347 ft |
| Point 13 | 93.37741 ft | 1,583.1239 ft |
| Point 14 | 56.46057 ft | 1,579.3855 ft |
| Point 15 | 57.89079 ft | 1,574.2573 ft |
| Point 16 | 58.63553 ft | 1,572.6552 ft |
| Point 17 | 577.84041 ft | 1,636.2248 ft |
| Point 18 | 20.52616 ft | 1,574.5827 ft |
| Point 19 | 20.95962 ft | 1,572.7836 ft |
| Point 20 | 21.19047 ft | 1,569.85 ft |
| Point 21 | 40.70588 ft | 1,568.8039 ft |





| | | |
|---|---|---|
| Point 22 | 46.93668 ft | 1,569.6778 ft |
| Point 23 | 50.39023 ft | 1,569.7261 ft |
| Point 24 | 58.67749 ft | 1,569.8445 ft |
| Point 25 | 481.17774 ft | 1,561.758 ft |
| Point 26 | 71.80737 ft | 1,559.4439 ft |
| Point 27 | 24.06716 ft | 1,558.8816 ft |
| Point 28 | 5.70289 ft | 1,558.6513 ft |
| Point 29 | 0.4859 ft | 1,559.1375 ft |
| Point 30 | 27.4082 ft | 1,571.0981 ft |
| Point 31 | 365.80825 ft | 1,573.9412 ft |
| Point 32 | 379.90082 ft | 1,596.3616 ft |
| Point 33 | 378.98641 ft | 1,593.7734 ft |
| Point 34 | 152.48229 ft | 1,546.1981 ft |
| Point 35 | 184.49487 ft | 1,569.0081 ft |
| Point 36 | 233.4937 ft | 1,569.0081 ft |
| Point 37 | 152.48574 ft | 1,621.6156 ft |
| Point 38 | 146.79599 ft | 1,598.0232 ft |
| Point 39 | 317.89593 ft | 1,614.7802 ft |
| Point 40 | 173.06129 ft | 1,577.7347 ft |
| Point 41 | 283.49261 ft | 1,585.8296 ft |
| Point 42 | 248.74575 ft | 1,586.1213 ft |
| Point 43 | 159.11071 ft | 1,581.0495 ft |
| Point 44 | 152.30821 ft | 1,586.648 ft |
| Point 45 | 246.525 ft | 1,586.0571 ft |
| Point 46 | 377.02192 ft | 1,610.5626 ft |
| Point 47 | 370.31956 ft | 1,606.2257 ft |
| Point 48 | 377.023 ft | 1,611.56 ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | Tsr | 4,29,28,27,26,25,24,23,31,15,16,22,21,20,30,19,18 | 883.44 ft² |
| Region 2 | Tsr 4-14° | 24,25,26,27,28,29,3,2,33,41,36,35,40,23 | 13.479 ft² |
| Region 3 | Landslide Plane | 45,40,41,11 | 224 ft² |
| Region 4 | Landslide Material | 48,17,39,47,24 | 396.34 ft² |
| Region 5 | Landslide Plane | 32,42,43,35 | 823.67 ft² |
| Region 6 | Landslide Material | 38,9,34,8,7,6,5,12,13,14,15,31,43,44 | 1,027.2 ft² |
| Region 7 | Landslide Material | 44,43,42,45 | 249.91 ft² |
| Region 8 | | 1,2,11,10,38,46,45,47,39 | 2,330.7 ft² |
| Region 9 | Tsr 4-14° | 35,35,42,10 | 467.66 ft² |
| Region 10 | Landslide Plane | 43,40,41,42 | 336.17 ft² |
| Region 11 | Landslide Material | 47,45,42,37,48,46 | 1,664.7 ft² |

## Slip Results

Slip Surfaces Analyzed: 32874 of 32925 surfaces

# Current Slip Surface

Slip Surface: 99,819
Factor of Safety: 1.87
Volume: 53.324885 ft³
Weight: 6,665.6106 lbf
Resisting Moment: 113,225.93 lbf-ft
Activating Moment: 60,475.438 lbf-ft
Slip Rank: 1 of 98,415 slip surfaces
Exit: (162.3969, 1,586.6491) ft
Entry: (146.74133, 1,597.1983) ft
Radius: 17.180604 ft
Center: (162.59103, 1,603.8286) ft

## Slip Slices

| | X | Y | PWP | Base Normal Stress | Frictional Strength | Cohesive Strength | Suction Strength | Base Material |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 146.99565 ft | 1,596.6461 ft | 0 psf | -61.865926 psf | -35.718909 psf | 160 psf | 0 psf | Landslide Material |
| Slice 2 | 147.50429 ft | 1,595.6262 ft | 0 psf | 50.072301 psf | 28.909256 psf | 160 psf | 0 psf | Landslide Material |
| Slice 3 | 148.01293 ft | 1,594.75 ft | 0 psf | 156.37683 psf | 90.284205 psf | 160 psf | 0 psf | Landslide Material |
| Slice 4 | 148.52157 ft | 1,593.9784 ft | 0 psf | 257.74396 psf | 148.80855 psf | 160 psf | 0 psf | Landslide Material |
| Slice 5 | 149.03783 ft | 1,593.2786 ft | 0 psf | 327.02733 psf | 188.80933 psf | 160 psf | 0 psf | Landslide Material |
| Slice 6 | 149.56172 ft | 1,592.6371 ft | 0 psf | 362.28364 psf | 209.16456 psf | 160 psf | 0 psf | Landslide Material |
| Slice 7 | 150.0856 ft | 1,592.054 ft | 0 psf | 391.15407 psf | 225.83291 psf | 160 psf | 0 psf | Landslide Material |
| Slice 8 | 150.60949 ft | 1,591.5208 ft | 0 psf | 414.37435 psf | 239.23914 psf | 160 psf | 0 psf | Landslide Material |
| Slice 9 | 151.13337 ft | 1,591.0313 ft | 0 psf | 432.51289 psf | 249.71143 psf | 160 psf | 0 psf | Landslide Material |
| Slice 10 | 151.65726 ft | 1,590.5806 ft | 0 psf | 446.01882 psf | 257.50909 psf | 160 psf | 0 psf | Landslide Material |
| Slice 11 | 152.18114 ft | 1,590.1648 ft | 0 psf | 455.25334 psf | 262.84064 psf | 160 psf | 0 psf | Landslide Material |
| Slice 12 | 152.70503 ft | 1,589.7809 ft | 0 psf | 460.51088 psf | 265.87608 psf | 160 psf | 0 psf | Landslide Material |
| Slice 13 | 153.22891 ft | 1,589.4263 ft | 0 psf | 462.0339 psf | 266.75539 psf | 160 psf | 0 psf | Landslide Material |
| Slice 14 | 153.7528 ft | 1,589.0989 ft | 0 psf | 460.02355 psf | 265.59472 psf | 160 psf | 0 psf | Landslide Material |
| Slice 15 | 154.27668 ft | 1,588.7968 ft | 0 psf | 454.64751 psf | 262.49086 psf | 160 psf | 0 psf | Landslide Material |
| Slice 16 | 154.80057 ft | 1,588.5186 ft | 0 psf | 446.04576 psf | 257.52464 psf | 160 psf | 0 psf | Landslide Material |
| Slice 17 | 155.32445 ft | 1,588.263 ft | 0 psf | 434.33506 psf | 250.76346 psf | 160 psf | 0 psf | Landslide Material |
| Slice | 155.84834 | 1,588.029 | 0 psf | 419.61234 | 242.2633 | 160 psf | 0 psf | Landslide |





| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 18 | ft | ft | | psf | psf | | | Material |
| Slice 19 | 156.37222 ft | 1,587.8155 ft | 0 psf | 401.95731 psf | 232.07016 psf | 160 psf | 0 psf | Landslide Material |
| Slice 20 | 156.89611 ft | 1,587.6217 ft | 0 psf | 381.43447 psf | 220.2213 psf | 160 psf | 0 psf | Landslide Material |
| Slice 21 | 157.41999 ft | 1,587.447 ft | 0 psf | 358.09472 psf | 206.74608 psf | 160 psf | 0 psf | Landslide Material |
| Slice 22 | 157.94388 ft | 1,587.2907 ft | 0 psf | 331.9765 psf | 191.66672 psf | 160 psf | 0 psf | Landslide Material |
| Slice 23 | 158.46776 ft | 1,587.1523 ft | 0 psf | 303.10875 psf | 174.99826 psf | 160 psf | 0 psf | Landslide Material |
| Slice 24 | 158.99165 ft | 1,587.0314 ft | 0 psf | 271.50148 psf | 156.75145 psf | 160 psf | 0 psf | Landslide Material |
| Slice 25 | 159.51553 ft | 1,586.9276 ft | 0 psf | 237.16623 psf | 136.92799 psf | 160 psf | 0 psf | Landslide Material |
| Slice 26 | 160.03942 ft | 1,586.8406 ft | 0 psf | 200.0963 psf | 115.52565 psf | 160 psf | 0 psf | Landslide Material |
| Slice 27 | 160.5633 ft | 1,586.7701 ft | 0 psf | 160.27673 psf | 92.535834 psf | 160 psf | 0 psf | Landslide Material |
| Slice 28 | 161.08719 ft | 1,586.716 ft | 0 psf | 117.6822 psf | 67.943847 psf | 160 psf | 0 psf | Landslide Material |
| Slice 29 | 161.61107 ft | 1,586.678 ft | 0 psf | 72.276656 psf | 41.728947 psf | 160 psf | 0 psf | Landslide Material |
| Slice 30 | 162.13496 ft | 1,586.6561 ft | 0 psf | 24.012837 psf | 13.863818 psf | 160 psf | 0 psf | Landslide Material |

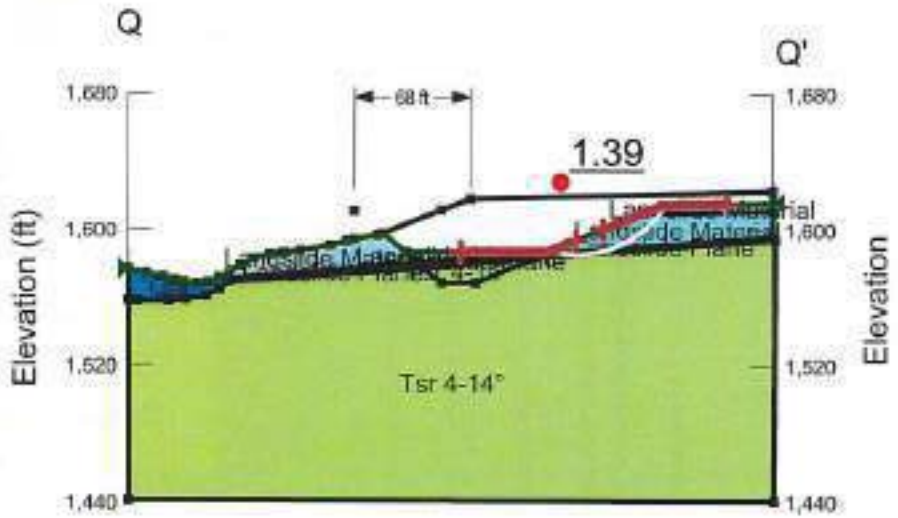
# Section Q-Q Tr 68203 SSA.gsz

5 -Rotational Static Temp Right

Section Q-Q Tr 68203 SSA.gsz 12/02/2021 12:26:00 PM

Horz Seismic Coef.: 0

Method: Bishop




Name: Landslide Material
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 160 psf
Phi': 30 °

Name: Landslide Plane
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 100 psf
Phi': 8 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 350 psf
Phi': 28 °

Name: Tsr 4-14°
Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion': 600 psf
Phi': 32 °
Phi-Anisotropic Strength Fn.: Tsr 18° bedding 4-14°
C-Anisotropic Strength Fn.: Tsr 250 bedding 4-14°


LGC

**LGC Valley, Inc**

*GEOTECHNICAL CONSULTING*

28532 Constellation Rd, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

| | |
|---|---|
| Project No: | **203003-01** |
| Engineer: | **BIH / MW** |
| Date: | **Dec 2021** |

# 5 -Rotational Static Temp Right

Report generated using GeoStudio 2023.1.0 build 12345 (Academic Version)

## File Information

File version: 10.00
Title: Slope Stability Analysis Cross-Section 6-6'
Last Edited By: Mitchell Wilson
Revision Number: 254
Date: 12/01/2023
Time: 12:25:30 PM
Tool Version: 10.0.0.12400
File Name: Section C-C' Tsr 6&22-SSA.gsz
Directory: P:\FINAL PROJECTS\Vail Golden Valley Slope Stability\Vail\
Last Solved Date: 12/02/2023
Last Solved Time: 12:26:33 PM

## Project Settings

Unit System: U.S. Customary Units

## Analysis Settings

### 5 -Rotational Static Temp Right

Kind: SLOPE/W
Method: Bishop
Settings
PWP Conditions from: Interp
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Right to Left
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slips per Search Grid: 1
Optimize Critical Slip Surface Location: No
Tension Crack Option: (none)
Distribution
1 of 5 Data Points Option: Constant
Advanced
Locations Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 30
Factor of Safety Convergence Settings
Maximum Number of Iterations: 100
Tolerable difference in FoS: 0.001

## Materials





### Landslide Material

Model: Mohr-Coulomb
Unit Weight: 145 pcf
Cohesion: 150 psf
Phi: 30 °
Phi-B: 0 °

### Landslide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 100 psf
Phi: 8 °
Phi-B: 0 °

### Tsr 4+14*

Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion: 600 psf
Phi: 37 °
Phi-Anisotropic Strength Fn: For 37° bedding 4+14*
Cohesion-Anisotropic Strength Fn: For 7x11 bedding 4+14*
Phi-B: 0 °

### Qal

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion: 250 psf
Phi: 28 °
Phi-B: 0 °

## Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (134,760.76, 1,558,648.15) ft
Left-Zone Right Coordinate: (262,008.56, 1,593,481.1) ft
Left-Zone Increment: 80
Right Type: Range
Right-Zone Left Coordinate: (377,277.18, 1,599,996.6) ft
Right-Zone Right Coordinate: (350,157.41, 1,615,619.2) ft
Right-Zone Increment: 150
Radius Increments: 14

## Slip Surface Limits

Left Coordinate: (0,400.13, 1,577.1092) ft
Right Coordinate: (377,840.41, 1,616.7249) ft

## Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

## Anisotropic Strength Functions

### Tsr 250 bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Points: Inclination° (°), Modifier Factor
Data Point: (0.99, 1)
Data Point: (4, 0.9167)
Data Point: (14, 0.4167)
Data Point: (14.01, 1)

### Tsr 18° bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Points: Inclination° (°), Modifier Factor
Data Point: (0.99, 1)
Data Point: (4, 0.5625)
Data Point: (14, 0.3125)
Data Point: (14.01, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 577.18480 ft | 1,525.1681 ft |
| Point 2 | 577.69381 ft | 1,440.679 ft |
| Point 3 | 0.40013 ft | 1,441.6672 ft |
| Point 4 | 0.40013 ft | 1,527.1042 ft |
| Point 5 | 93.455727 ft | 1,586.727 ft |
| Point 6 | 102.225 ft | 1,587.7728 ft |
| Point 7 | 138.88445 ft | 1,590.0729 ft |
| Point 8 | 138.16697 ft | 1,593.3125 ft |
| Point 9 | 146.36479 ft | 1,597.0509 ft |
| Point 10 | 183.48451 ft | 1,613.1044 ft |
| Point 11 | 200.35832 ft | 1,618.9115 ft |
| Point 12 | 80.20365 ft | 1,581.7347 ft |
| Point 13 | 78.37741 ft | 1,581.3238 ft |
| Point 14 | 65.46957 ft | 1,578.2883 ft |
| Point 15 | 59.30202 ft | 1,574.2373 ft |
| Point 16 | 59.025 ft | 1,572.0962 ft |
| Point 17 | 577.85041 ft | 1,615.2268 ft |
| Point 18 | 315.0668 ft | 1,574.2827 ft |
| Point 19 | 30.90467 ft | 1,572.7098 ft |
| Point 20 | 32.60047 ft | 1,569.85 ft |
| Point 21 | 40.70568 ft | 1,568.8194 ft |





| | | |
|---|---|---|
| Point 22 | 49.59906 ft | 1,569.1778 ft |
| Point 23 | 50.38023 ft | 1,568.7562 ft |
| Point 24 | 53.67774 ft | 1,565.7645 ft |
| Point 25 | 48.12214 ft | 1,561.7258 ft |
| Point 26 | 23.83032 ft | 1,559.1433 ft |
| Point 27 | 20.26714 ft | 1,554.3515 ft |
| Point 28 | 5.76737 ft | 1,553.35.5 ft |
| Point 29 | 0.40013 ft | 1,554.1376 ft |
| Point 30 | 27.4294 ft | 1,571.0981 ft |
| Point 31 | 59.39073 ft | 1,571.9412 ft |
| Point 32 | 379.96593 ft | 1,596.36.8 ft |
| Point 33 | 375.99641 ft | 1,595.7765 ft |
| Point 34 | 332.48724 ft | 1,591.1451 ft |
| Point 35 | 181.44142 ft | 1,564.0051 ft |
| Point 36 | 201.4937 ft | 1,569.0081 ft |
| Point 37 | 332.4874 ft | 1,631.256 ft |
| Point 38 | 346.77589 ft | 1,588.6913 ft |
| Point 39 | 417.68503 ft | 1,613.7808 ft |
| Point 40 | 174.90129 ft | 1,547.7341 ft |
| Point 41 | 238.40761 ft | 1,565.7486 ft |
| Point 42 | 231.79275 ft | 1,586.1213 ft |
| Point 43 | 309.31077 ft | 1,581.0425 ft |
| Point 44 | 362.38821 ft | 1,597.648 ft |
| Point 45 | 245.52596 ft | 1,588.6973 ft |
| Point 46 | 377.20192 ft | 1,611.5426 ft |
| Point 47 | 300.41966 ft | 1,629.715 ft |
| Point 48 | 377.633 ft | 1,612.5673 ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | Cpt | 4,29,28,27,26,25,24,23,31,15,16,22,21,20,30,38 | 601.49 ft² |
| Region 2 | Tsr 4-14° | 24,25,26,27,28,29,3,2,38,41,36,19,48,37 | 51,405 ft² |
| Region 3 | Sandstone Plank | 30,40,41,31 | 324 ft² |
| Region 4 | Sandstone Mongrel | 48,37,39,47,46 | 436.84 ft² |
| Region 5 | Sandstone Perm | 32,42,43,33 | 722.07 ft² |
| Region 6 | Sandstone Material | 38,5,34,8,7,6,5,12,13,14,15,44,45,46 | 1,327.2 ft² |
| Region 7 | Sandstone Material | 44,45,43,46 | 249.91 ft² |
| Region 8 | | 37,1,31,30,28,48,45,47,39 | 4,380.7 ft² |
| Region 9 | Tsr 4-14° | 35,36,41,40 | 468.56 ft² |
| Region 10 | Sandstone Plank | 43,40,41,31 | 186.13 ft² |
| Region 11 | Sandstone Material | 47,45,44,34,48,46 | 1,804.7 ft² |

## Slip Results

Slip Surfaces Analyzed: 91667 of 98415 converged.

## Current Slip Surface

Slip Surface: 75,968
Factor of Safety: 1.30
Volume: 628.3208 ft³
Weight: 75,820.8 lbs/ft
Resisting Moment: 2,129,133.4 lb-ft
Overturning Moment: 1,630,786.7 lb-ft
Slip Surface: 1 of 98,475 slip surfaces
Left: (247.7687ft, 1,587.5997) ft
Entry: (314.1288, 1,614.2171) ft
Radius: 59.4834ft
Center: (262.9902ft, 1,645.1191) ft

### Slip Slices

| | X | Y | Pore Pressure | Base Normal Stress | Frictional Strength | Cohesive Strength | Suction Strength | Base Material |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 248.75027 ft | 1,587.3866 ft | 0 psf | 326.76624 psf | 71.052037 psf | 160 psf | 0 psf | Landslide Material |
| Slice 2 | 250.75934 ft | 1,586.006 ft | 0 psf | 991.37401 psf | 168.68787 psf | 160 psf | 0 psf | Landslide Material |
| Slice 3 | 252.6756 ft | 1,584.7062 ft | 0 psf | 821.49981 psf | 58.33795 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 4 | 254.57775 ft | 1,583.1651 ft | 0 psf | 576.42279 psf | 81.07284 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 5 | 257.31 ft | 1,581.5101 ft | 0 psf | 719.77283 psf | 101.15752 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 6 | 259.54225 ft | 1,580.1451 ft | 0 psf | 851.33579 psf | 119.73516 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 7 | 261.7745 ft | 1,578.7801 ft | 0 psf | 977.7967 psf | 136.73937 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 8 | 264.00675 ft | 1,577.4325 ft | 0 psf | 1,082.7628 psf | 152.12269 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 9 | 266.239 ft | 1,576.1349 ft | 0 psf | 1,181.4867 psf | 166.10615 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 10 | 268.47125 ft | 1,574.9648 ft | 0 psf | 1,270.2647 psf | 178.62215 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 11 | 270.7035 ft | 1,573.853 ft | 0 psf | 1,347.7742 psf | 189.5273 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 12 | 272.93575 ft | 1,572.8069 ft | 0 psf | 1,414.4429 psf | 198.78699 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 13 | 275.168 ft | 1,571.814 ft | 0 psf | 1,470.1481 psf | 206.61545 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 14 | 277.40025 ft | 1,570.8242 ft | 0 psf | 1,514.7336 psf | 212.89192 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 15 | 279.63251 ft | 1,569.8344 ft | 0 psf | 1,547.966 psf | 217.55524 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 16 | 281.86476 ft | 1,568.7954 ft | 0 psf | 1,569.6785 psf | 220.70704 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 17 | 284.09701 ft | 1,567.5018 ft | 0 psf | 1,579.2448 psf | 222.05005 psf | 100 psf | 0 psf | Landslide Material |
| Slice | 286.29405 | 1,590.403 | 0 psf | 1,378.077 | 796.60424 | 150 psf | 0 psf | Landslide |





| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 18 | ft | ft | | psf | psf | | | Material |
| Slice 19 | 288.4303 ft | 1,581.5644 ft | 0 psf | 1,249.4510 psf | 775.64213 psf | 160 psf | 0 psf | Landslide Material |
| Slice 20 | 290.6.035 ft | 1,582.0744 ft | 0 psf | 1,297.3179 psf | 769.00697 psf | 160 psf | 0 psf | Landslide Material |
| Slice 21 | 292.79039 ft | 1,582.6478 ft | 0 psf | 1,339.3582 psf | 735.54434 psf | 160 psf | 0 psf | Landslide Material |
| Slice 22 | 294.97804 ft | 1,583.009 ft | 0 psf | 1,369.233 psf | 679.05.00 psf | 160 psf | 0 psf | Landslide Material |
| Slice 23 | 297.14989 ft | 1,583.4722 ft | 0 psf | 1,386.5162 psf | 625.33043 psf | 160 psf | 0 psf | Landslide Material |
| Slice 24 | 299.32974 ft | 1,583.883 ft | 0 psf | 1,387.18838 psf | 571.5245 psf | 160 psf | 0 psf | Landslide Material |
| Slice 25 | 301.47066 ft | 1,584.8382 ft | 0 psf | 1,384.4209 psf | 508.99064 psf | 160 psf | 0 psf | Landslide Material |
| Slice 26 | 303.67267 ft | 1,585.8968 ft | 0 psf | 1,364.3696 psf | 441.13952 psf | 160 psf | 0 psf | Landslide Material |
| Slice 27 | 305.87468 ft | 1,587.7667 ft | 0 psf | 1,321.75865 psf | 364.15566 psf | 160 psf | 0 psf | Landslide Material |
| Slice 28 | 307.97668 ft | 1,590.0589 ft | 0 psf | 1,262.5918 psf | 278.9366 psf | 160 psf | 0 psf | Landslide Material |
| Slice 29 | 309.87869 ft | 1,608.6675 ft | 0 psf | 1,217.07999 psf | 193.09567 psf | 160 psf | 0 psf | Landslide Material |
| Slice 30 | 311.70781 ft | 1,613.0941 ft | 0 psf | 1,151.11239 psf | 93.093734 psf | 160 psf | 0 psf | Landslide Material |
| Slice 31 | 313.39735 ft | 1,616.6161 ft | 0 psf | 1,111.002171 psf | -7.5210935 psf | 160 psf | 0 psf | Landslide Material |

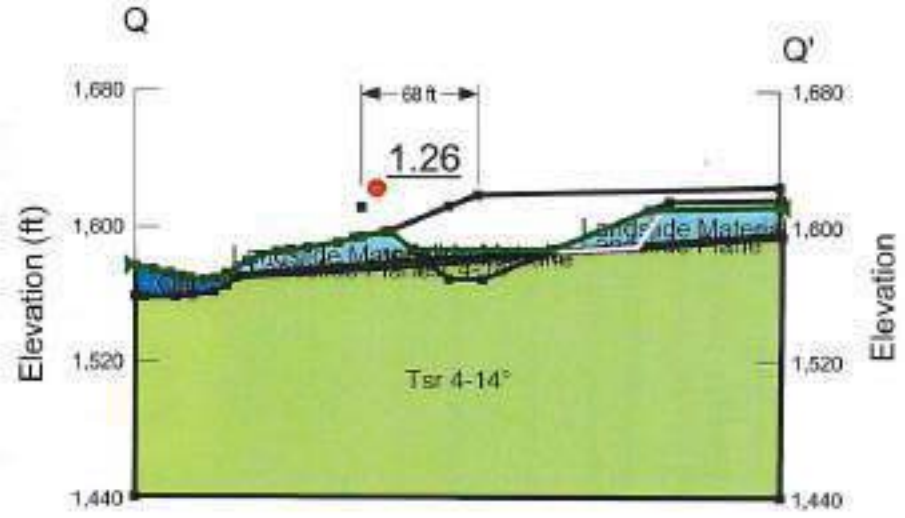
# Section Q-Q Tr 68203 SSA.gsz

6 -Translational Static Temp Right (2)

Section Q-Q Tr 68203 SSA.gsz 12/02/2021 01:06:11 PM

Horz Seismic Coef.: 0

Method: Spencer




Name: Landslide Material
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 160 psf
Phi': 30 °

Name: Landslide Plane
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 100 psf
Phi': 8 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 350 psf
Phi': 28 °

Name: Tsr 4-14°
Model: Anisotropic Fn.
Unit Weight: 125 pcf
Cohesion': 600 psf
Phi': 32 °
Phi-Anisotropic Strength Fn.: Tsr 18° bedding 4-14°
C-Anisotropic Strength Fn.: Tsr 250 bedding 4-14°


LGC

**LGC Valley, Inc**

*GEOTECHNICAL CONSULTING*

28532 Constellation Rd, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475


**Tentative Tract 68203**
**Santa Clarita, CA**

| | |
|---|---|
| Project No: | **203003-01** |
| Engineer: | **BIH / MW** |
| Date: | **Dec 2021** |

# 6 -Translational Static Temp Right (2)

A post-processing program for the analysis of slope stability using the Morgenstern-Price, Spencer, or GLE/Sarma methods

## File Information

File Version: 10.00
Title: Slope Stability Analysis Cross-Section A-A'
Last Edited By: Michael Wilson
Revision Number: 758
Date: 12/02/2021
Time: 01:06:11 PM
Tool Version: 10.0.0.17401
File Name: Section C-C' Tr 68200 SSA.gsz
Directory: P:\PINNACLE PROJECTS\Pinnacle Golden Valley Siena - Hwy\slope stability\Volume1\
Last Solved Date: 12/02/2021
Last Solved Time: 01:08:38 PM

## Project Settings

Unit System: U.S. Customary Units

## Analysis Settings

### 6 -Translational Static Temp Right (2)

Kind: SLOPE/W
Method: 6 -Translational Static Temp Right
Settings
PWP Conditions from: None
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Right to Left
Use Passed Mode: No
Slip Surface Option: Other Slip Surfaces from Other
Optimized slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack Option: (none)
Discretization
Full Slice Calculation Options: Corrected
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 30
Factor of Safety Convergence Settings
Maximum Number of Iterations: 150
Tolerable difference in F of S: 0.01
Solution Settings
Solver Method: Linear Search
Slice Check at Lambda Factor of Safety: 0.2
Lambda: 0.35
Lambda 1: 1
Lambda 2: -0.8
Lambda 3: -0.6
Lambda 4: -0.4
Lambda 5: -0.2
Lambda 6: 0
Lambda 7: 0.2
Lambda 8: 0.4
Lambda 9: 0.6
Lambda 10: 0.8
Lambda 11: 1

## Materials

### Landslide Material

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 160 psf
Phi: 30°
Phi-B: 0°

### Landslide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 100 psf
Phi: 0°
Phi-B: 0°

### Tsr 4-14"

Model: Anisotropic Fn
Unit Weight: 125 pcf
Cohesion: 600 psf
Phi: 32°
Phi-Anisotropic Strength Fn: Tsr 18" bedding 4-14"
Cohesion-Anisotropic Strength Fn: Tsr 25C bedding 4-14"
Phi-B: 0°

### Qal

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion: 350 psf
Phi: 28°
Phi-B: 0°

## Slip Surface Limits

Left Coordinate: (0.49013, 1,577.1205) ft
Right Coordinate: (577.871, 1,681.9575) ft

## Seismic Coefficients

Horz Seismic Coef.: 0

Vert Seismic Coef.: 0

## Anisotropic Strength Functions

### Tsr 250 bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Points: Inclination (°), Modifier Factor
Data Point: (3.99, 1)
Data Point: (4, 0.4167)
Data Point: (14, 0.4167)
Data Point: (14.01, 1)

### Tsr 18° bedding 4-14°

Model: Spline Data Point Function
Function: Modifier Factor vs. Inclination
Curve Fit to Data: 100 %
Segment Curvature: 0 %
Y-Intercept: 1
Data Points: Inclination (°), Modifier Factor
Data Point: (3.99, 1)
Data Point: (4, 0.5625)
Data Point: (14, 0.5625)
Data Point: (14.01, 1)

## Points

| | X | Y |
|---|---|---|
| Point 1 | 377.18469 ft | 1,623.1981 ft |
| Point 2 | 377.62811 ft | 1,440.679 ft |
| Point 3 | 0.40013 ft | 1,441.6571 ft |
| Point 4 | 0.40013 ft | 1,577.1092 ft |
| Point 5 | 91.45527 ft | 1,586.317 ft |
| Point 6 | 101.225 ft | 1,587.7728 ft |
| Point 7 | 118.88445 ft | 1,590.8225 ft |
| Point 8 | 128.16697 ft | 1,593.3129 ft |
| Point 9 | 146.38773 ft | 1,597.0549 ft |
| Point 10 | 183.48481 ft | 1,612.1044 ft |
| Point 11 | 200.38812 ft | 1,618.9815 ft |
| Point 12 | 83.26368 ft | 1,585.7347 ft |
| Point 13 | 73.37741 ft | 1,583.3239 ft |
| Point 14 | 65.46957 ft | 1,579.2885 ft |
| Point 15 | 59.39023 ft | 1,574.2573 ft |
| Point 16 | 53.62533 ft | 1,572.0562 ft |
| Point 17 | 377.84041 ft | 1,616.2249 ft |
| Point 18 | 10.52665 ft | 1,574.9827 ft |
| Point 19 | 20.96962 ft | 1,572.7898 ft |





| | | |
|---|---|---|
| Point 20 | 32.16047 ft | 1,569.85 ft |
| Point 21 | 40.70588 ft | 1,568.8039 ft |
| Point 22 | 46.93606 ft | 1,569.6778 ft |
| Point 23 | 59.39023 ft | 1,569.7502 ft |
| Point 24 | 53.67774 ft | 1,565.1645 ft |
| Point 25 | 46.12224 ft | 1,561.758 ft |
| Point 26 | 33.80632 ft | 1,559.4433 ft |
| Point 27 | 24.06714 ft | 1,558.3515 ft |
| Point 28 | 5.76797 ft | 1,558.3515 ft |
| Point 29 | 0.40013 ft | 1,559.1376 ft |
| Point 30 | 27.4092 ft | 1,571.0981 ft |
| Point 31 | 59.39023 ft | 1,571.9412 ft |
| Point 32 | 376.95582 ft | 1,596.3618 ft |
| Point 33 | 378.98641 ft | 1,593.7713 ft |
| Point 34 | 132.48329 ft | 1,594.1991 ft |
| Point 35 | 183.49392 ft | 1,569.0091 ft |
| Point 36 | 203.4937 ft | 1,569.0091 ft |
| Point 37 | 132.4874 ft | 1,611.455 ft |
| Point 38 | 148.77585 ft | 1,598.0237 ft |
| Point 39 | 312.48593 ft | 1,614.7808 ft |
| Point 40 | 173.06129 ft | 1,577.7341 ft |
| Point 41 | 238.49261 ft | 1,583.7056 ft |
| Point 42 | 244.24975 ft | 1,586.1213 ft |
| Point 43 | 169.11071 ft | 1,581.0425 ft |
| Point 44 | 162.39821 ft | 1,586.648 ft |
| Point 45 | 245.52536 ft | 1,586.6571 ft |
| Point 46 | 377.02192 ft | 1,611.5626 ft |
| Point 47 | 300.41966 ft | 1,609.7157 ft |
| Point 48 | 377.633 ft | 1,611.5675 ft |

## Regions

| | Material | Points | Area |
|---|---|---|---|
| Region 1 | Qal | 4,29,28,27,26,25,24,23,31,15,16,22,21,20,30,19,18 | 691.49 ft² |
| Region 2 | Tsr 4-14° | 24,25,26,27,28,29,3,2,33,41,36,35,40,23 | 51,405 ft² |
| Region 3 | Landslide Plane | 23,40,43,31 | 324 ft² |
| Region 4 | | 48,17,39,47,46 | 336.04 ft² |
| Region 5 | Landslide Plane | 32,42,41,33 | 322.87 ft² |
| Region 6 | Landslide Material | 38,9,34,8,7,6,5,12,13,14,15,31,43,44 | 1,327.2 ft² |
| Region 7 | Landslide Material | 44,43,42,45 | 249.91 ft² |
| Region 8 | | 17,1,11,10,38,44,45,47,39 | 4,330.7 ft² |
| Region 9 | Tsr 4-14° | 35,36,41,40 | 463.56 ft² |
| Region 10 | Landslide Plane | 43,40,41,42 | 196.17 ft² |
| Region 11 | Landslide Material | 47,45,42,32,48,46 | 1,864.7 ft² |

## Slip Results

Slip Surfaces Analysed: 1 of 1 converged

## Current Slip Surface

Slip Surface: 1
Factor of Safety: 1.26
Volume: 619.63512 ft³
Weight: 77,207.35 lbf
Resisting Moment: 803,332 lbf-ft
Activating Moment: 638,997.43 lbf-ft
Resisting Force: 20,280.093 lbf
Activating Force: 16,176.912 lbf
Slip Rank: 1 of 1 slip surfaces
Exit: (245.41542, 1,586.6571) ft
Entry: (308.86269, 1,601.9191) ft
Radius: 55.860416 ft
Center: (270.74245, 1,615.7348) ft

### Slip Slices

| | X | Y | PWP | Base Normal Stress | Frictional Strength | Cohesive Strength | Suction Strength | Base Material |
|---|---|---|---|---|---|---|---|---|
| Slice 1 | 245.44309 ft | 1,586.6456 ft | 0 psf | 146.31086 psf | 84.472615 psf | 160 psf | 0 psf | Landslide Material |
| Slice 2 | 245.45806 ft | 1,586.6229 ft | 0 psf | 151.14371 psf | 87.262859 psf | 160 psf | 0 psf | Landslide Material |
| Slice 3 | 245.92405 ft | 1,586.4464 ft | 0 psf | 224.1209 psf | 129.39626 psf | 160 psf | 0 psf | Landslide Material |
| Slice 4 | 246.92148 ft | 1,586.0333 ft | 0 psf | 247.10027 psf | 34.73611 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 5 | 248.57276 ft | 1,585.8459 ft | 0 psf | 275.98261 psf | 38.786826 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 6 | 250.67783 ft | 1,585.9671 ft | 0 psf | 371.84858 psf | 52.25991 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 7 | 252.7829 ft | 1,586.0884 ft | 0 psf | 467.71456 psf | 65.732995 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 8 | 254.88798 ft | 1,586.2097 ft | 0 psf | 563.58054 psf | 79.206079 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 9 | 256.99305 ft | 1,586.3309 ft | 0 psf | 659.44651 psf | 92.679163 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 10 | 259.09813 ft | 1,586.4522 ft | 0 psf | 755.31249 psf | 106.15225 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 11 | 261.2032 ft | 1,586.5734 ft | 0 psf | 851.17846 psf | 119.62533 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 12 | 263.30827 ft | 1,586.6947 ft | 0 psf | 947.04444 psf | 133.09842 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 13 | 265.41335 ft | 1,586.816 ft | 0 psf | 1,042.9104 psf | 146.5715 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 14 | 267.51842 ft | 1,586.9372 ft | 0 psf | 1,138.7764 psf | 160.04458 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 15 | 269.6235 ft | 1,587.0585 ft | 0 psf | 1,234.6424 psf | 173.51767 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 16 | 271.72857 ft | 1,587.1798 ft | 0 psf | 1,330.5083 psf | 186.99075 psf | 100 psf | 0 psf | Landslide Plane |
| Slice | 273.83364 | 1,587.301 | 0 psf | 1,426.3743 | 200.46384 | 100 psf | 0 psf | Landslide |





| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 17 | ft | ft | | psf | psf | | | Plane |
| Slice 18 | 275.93872 ft | 1,587.4223 ft | 0 psf | 1,522.2403 psf | 213.93602 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 19 | 278.04379 ft | 1,587.5435 ft | 0 psf | 1,618.1063 psf | 227.41001 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 20 | 280.14887 ft | 1,587.6648 ft | 0 psf | 1,713.9722 psf | 240.88309 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 21 | 282.25394 ft | 1,587.7861 ft | 0 psf | 1,809.8382 psf | 254.35617 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 22 | 284.35901 ft | 1,587.9073 ft | 0 psf | 1,905.7042 psf | 267.82926 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 23 | 286.46409 ft | 1,588.0286 ft | 0 psf | 2,001.5702 psf | 281.30234 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 24 | 288.56916 ft | 1,588.1498 ft | 0 psf | 2,097.4361 psf | 294.77543 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 25 | 290.67424 ft | 1,588.2711 ft | 0 psf | 2,193.3021 psf | 308.24851 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 26 | 292.77931 ft | 1,588.3924 ft | 0 psf | 2,289.1681 psf | 321.72159 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 27 | 294.88492 ft | 1,589.2439 ft | 0 psf | 1,440.7042 psf | 202.48339 psf | 100 psf | 0 psf | Landslide Plane |
| Slice 28 | 295.89161 ft | 1,591.3375 ft | 0 psf | 1,007.7699 psf | 581.83621 psf | 160 psf | 0 psf | Landslide Material |
| Slice 29 | 297.67883 ft | 1,593.9471 ft | 0 psf | 886.27719 psf | 511.69237 psf | 160 psf | 0 psf | Landslide Material |
| Slice 30 | 299.50605 ft | 1,596.5566 ft | 0 psf | 764.7845 psf | 441.54854 psf | 160 psf | 0 psf | Landslide Material |
| Slice 31 | 301.47504 ft | 1,599.3686 ft | 0 psf | 606.30422 psf | 350.0499 psf | 160 psf | 0 psf | Landslide Material |
| Slice 32 | 303.58579 ft | 1,602.3811 ft | 0 psf | 410.88635 psf | 237.19647 psf | 160 psf | 0 psf | Landslide Material |
| Slice 33 | 305.69655 ft | 1,605.3976 ft | 0 psf | 215.36847 psf | 124.34305 psf | 160 psf | 0 psf | Landslide Material |
| Slice 34 | 307.80731 ft | 1,608.412 ft | 0 psf | 19.900604 psf | 11.489619 psf | 160 psf | 0 psf | Landslide Material |

***APPENDIX D***

**RTF&A, Review of LGC Valley, Inc. Geotechnical Report, Multi-Use Development, Tentative Tract Map 68203, dated November 19, 2020, Santa Clarita, California, Grading Plan Check No. 2021-006-650, Dated June 11, 2021.**

GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

June 11, 2021

City of Santa Clarita
Engineering Services Division
23920 Valencia Boulevard
Valencia, California 91355

Job No. 2021-006-650

Attention: Mr. Balvinder Sandhu
Senior Engineer

Subject: Review of LGC Valley, Inc. Geotechnical Report
Multi-Use Development
Tentative Tract Map 68203
Dated November 19, 2021
Santa Clarita, California

References: See attached

Ladies/Gentlemen:

R.T. Frankian & Associates (RTF&A) has prepared this report presenting the results of our review of the LGC Valley, Inc. (LGC), report titled *Geotechnical Report for Multi-Use Development, Tentative Tract Map 68203, City of Santa Clarita, California*, dated November 19, 2021. The LGC report was prepared for Renaud and Sue Veluzat to evaluate the proposed project from a geotechnical engineering standpoint, and to determine geotechnical constraints associated with the proposed development.

Based on our review of the LGC report, we recommend that the above referenced report and remedial plans for the subject site not be approved by the City of Santa Clarita, from a geologic and geotechnical standpoint.

Our professional services have been performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has been prepared for the City of Santa Clarita and is based solely on review of the referenced documents and plans provided by the City of

Santa Clarita and the Project Geotechnical Consultant for the subject site, without the benefit of subsurface exploration or geotechnical laboratory testing.

## REVIEW COMMENTS

As part of the review of the LGC report RTF&A also reviewed other geotechnical/geologic reports pertinent to Tentative Tract Map 68203 (TTM 68203) and surrounding properties. Significant to TTM 68203 are geotechnical reports prepared by Leighton and Associates, Inc. (Leighton) for Tract 53419 (Valle di Oro) located immediately east of TTM 68203. RTF&A provided peer review of the Leighton Tract 53419 reports for the City of Santa Clarita. The various reports reviewed in preparation of this letter are listed in the attached References.

1. **Geotechnical Map – Plate 1**: The following review comments address issues and concerns related to data presented on Plate 1.

    a. A review of geologic data presented in Leighton's 2006 As-Built Rough Grading Report for adjacent Tract 53419 indicates the presence of a questionable ancient landslide within Tract 53419 that encroaches into the eastern portion of TTM 68203 (northeast of LGC Test Pit TP-10 and in the area of LGC Cross Section Q-Q'). LGC has mapped this area as being underlain by bedrock units of the Sunshine Ranch Member of the Saugus Formation but has not conducted any subsurface exploration in this area to either confirm or dispute the existence of the questionable landslide. Conduct additional exploration within the Leighton mapped limits of the questionable landslide to ascertain the landslide existence within TTM 68203. The exploratory excavations should be of adequate quantity and depth to characterize the subsurface conditions and structure. Leighton's Geotechnical Cross Section DD-DD' suggests the landslide could be at least 70 feet deep beneath Tract 53419. In lieu of additional exploration provide verifiable documentation, such as exploratory excavations or investigations by other geotechnical consultants, demonstrating that a landslide does not exist within TTM 68203.

    b. Structural geologic data (bedding) is limited to two locations within the entire site (Borings B-LGC-LB and LGC-LB-2). The paucity of bedding data does not adequately address potential geologic instabilities for all proposed TTM 68203 cut slopes. Additional structural data is needed to assess geologic conditions for the overall site. This could include data from past exploratory excavations onsite or from other consultants, if properly cited and referenced. Revise Cross Sections (Plate 2) accordingly to reflect additional structural data.

c. Provide the logs for LGC's 2003 Borings LGC-1 and -2.

d. Identify the geologic unit in the northernmost portion of TTM 68203 north of the alluvium (map unit "Qal") and adjacent to Tract 30787.

e. Please explain what is meant by "General Bedding Attitude". The reviewer understands "approximate bedding" or "questionable bedding" but is unclear what LGC is trying to convey with "General Bedding". This bedding data was presumably obtained from downhole logging of large-diameter exploratory borings where the bedding could be directly observed and measured, yet the description presented for bedding data on the Geotechnical Map implies a lack confidence by LGC in the data. It is unclear how stability analyses for Cross Sections depicting "general bedding" can be considered conclusive analyses.

f. Symbols for all borings on the "Explanation" should match the symbols for the respective borings on the Geotechnical Map.

2. **Cross Sections – Plate 2**: The following review comments address issues and concerns related to data presented on Plate 2.

a. Cross Section C-C' does not depict map unit "Cf" as shown on Geotechnical Map, Plate 1.

b. Subsurface unit below alluvium (unit "Qal") on Cross Section E-E' is not labeled. This unit also is unlabeled on Plate 1.

c. Unit "Qls" on Plate 1 is labeled as "Qal" on Cross Section F-F'. Unit "Afu" on Section F-F' is not shown on Plate 1. Correct map or section accordingly.

d. Fix "Tsr" label on Cross Section H-H'.

e. Cross Section I'I' does not depict map unit "Cf" as shown on Geotechnical Map, Plate 1.

f. Unit "Afu" on Section N-N' is not shown on Plate 1. Correct map or section accordingly.

g. Unit "Qal" on Cross Section P-P' not labeled.

h. Cross Section Q-Q' extends through area mapped as questionable ancient landslide by Leighton (2006). As discussed in Review Comment 1a above, evaluate possible landslide and revise Cross Section Q-Q' as needed.

3. **Section 2.4 – Landslides**: As discussed in Review Comment 1a above, conduct additional exploration within the mapped limits of the questionable landslide within eastern portion of site to ascertain the landslide's existence within TTM 68203.

4. **Section 2.6 – Oil Wells**: Show approximate location of Mobil Oil Corp. Well #4 on Geotechnical Map, Plate 1.

5. **Section 2.9 – Slope Stability**: As discussed in Review Comment 1b above there is insufficient bedding data to justify the subsurface conditions depicted on Cross Sections E-E' and Q-Q' and used in the respective analyses.

6. **Appendix B**: Boring B-LGC-LB is labeled "B-LGC-LB" on Plates 1 and 2 but is designated in the logs as "LB-1". Correct the designation on Plates or log accordingly.

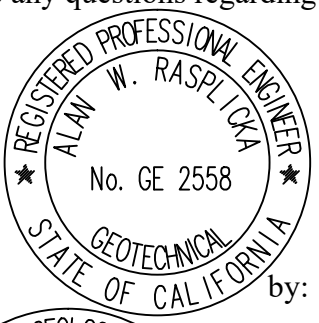
7. Review of the log for TP-4 appears to indicate that alluvium was encountered from 8 feet to the full trench depth of 13.5 feet. There is a note on TP-4 for total removal of all "Afu" and "Qal". The removal depths in the area of the other tests pits also generally tend to confirm that complete removal of all "Qal" material is recommended. However, the recommended depth of removal indicated in the triangle in the vicinity of TP-4 is only 13 feet with the total depth of "Qal" apparently undetermined. If complete removal of "Qal" is recommended within the site grading limit it should be clearly shown on the plan or the required depth of removal of "Qal" should be clarified on the plan. In addition, the plan should be revised to indicate complete removal of all "Qal" material at TP-4 as recommended and indicated on theTP-4 test pit log.

8. For the slope stability calculations, the consultant appears to entirely rely on direct shear testing performed by others on a surrounding project. The only direct shear testing appears to have been done on single shear remolded samples. Additional samples should be obtained for multi-shear direct shear testing of samples obtained from the subject site to verify the applicabililty of the utilized direct shear test parameters. Slope stability calculations should be updated, as appropriate, based on the laboratory test results performed on site specific samples.

9. The slope stability calculations should be revised, as appropriate, once the additional investigation and laboratory testing for the site is performed. Once the structural geologic

conditions at the site are conclusively determined, additional review of the slope stability calculations will be performed.

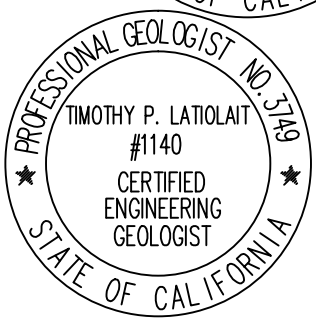
Should you have any questions regarding this review, please do not hesitate to call our office.




Respectfully submitted,

R. T. FRANKIAN & ASSOCIATES

by: Alan W. Rasplicka
Principal Geotechnical Engineer




and: Timothy P. Latiolait
Principal Engineering Geologist

TPL/AWR/jh

Attachment: References

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

## REFERENCES

Dibblee, T. W., Jr., 1996, "Geologic Map of the Mint Canyon Quadrangle, Los Angeles County, California," Dibblee Geological Foundation Map DF-57.

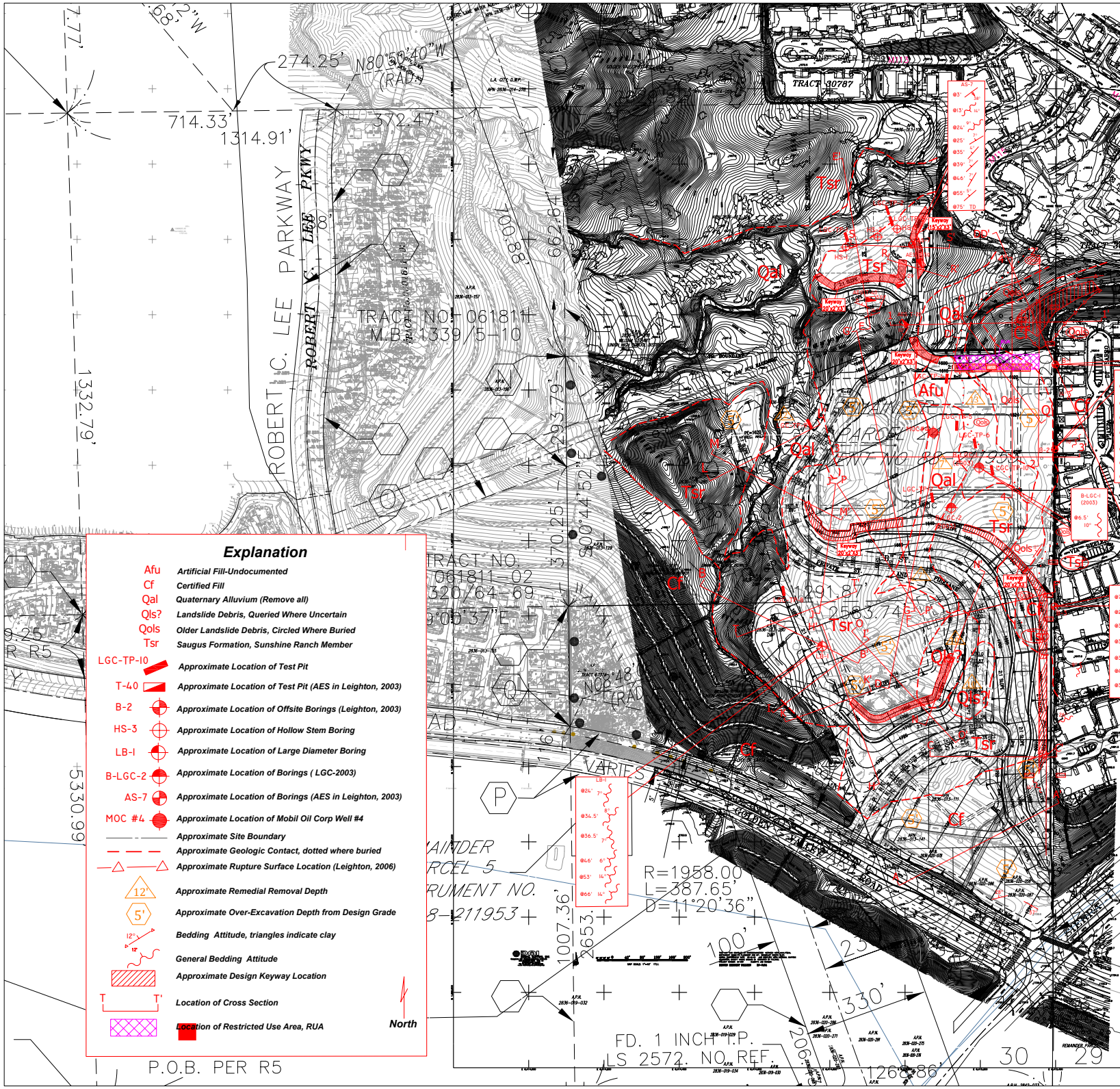
LGC Valley, Inc., 2021, "Geotechnical Report for Multi-Use Development, Tentative Tract Map 68203, City of Santa Clarita, California," for Renaud and Sue Veluzat, Project No. 203003-01.

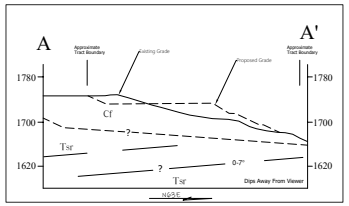
Leighton and Associates, Inc., 2003, "Response to City of Santa Clarita Geotechnical Review Sheet Prepared by R.T. Frankian & Associates, Dated March 21, 2003, Proposed Golden Valley Estates Residential Development, Tract 53419, City of Santa Clarita, California, Project Number 06-0954-001, dated August 7, 2003."

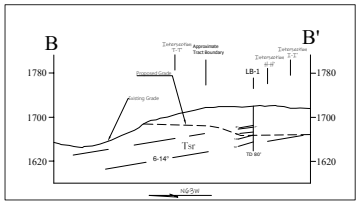
Leighton and Associates, Inc., 2005, "Review of Revised Rough Grading Plan for Tract 53419 and Summary of Conclusions and Recommendations for Proposed Residential Development, City of Santa Clarita, California, Project Number 061372-001, dated February 25, 2005.

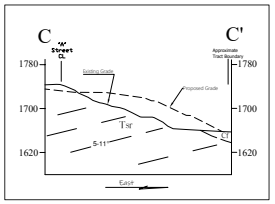
Leighton and Associates, Inc., 2006, "Geotechnical Report of As-Built Rough Grading, Lots 1 through 20 and 90 through 111, Tract 53419, Valle di Oro (Golden Valley Estates) Residential Development, Santa Clarita, California," for Trimark Pacific Homes, L.P., dated December 11, 2006, Project No. 061372-006.

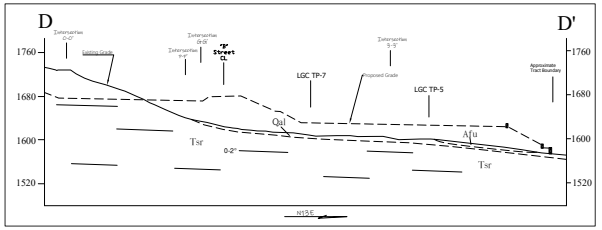
Saul, R.B., and Wooten, T.M., 1983, "Geology of the South Half of the Mint Canyon Quadrangle, Los Angeles County, California," California Division of Mines and Geology Open File Report 83-24LA.

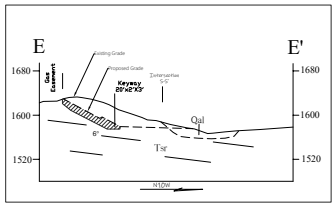

Explanation
Afu Artificial Fill-Undocumented
Cf Certified Fill
Qal Quaternary Alluvium (Remove all)
Qls? Landslide Debris, Queried Where Uncertain
Qols Older Landslide Debris, Circled Where Buried
Tsr Saugus Formation, Sunshine Ranch Member
LGC-TP-10 Approximate Location of Test Pit
T-40 Approximate Location of Test Pit (AES in Leighton, 2003)
B-2 Approximate Location of Offsite Borings (Leighton, 2003)
HS-3 Approximate Location of Hollow Stem Boring
LB-1 Approximate Location of Large Diameter Boring
B-LGC-2 Approximate Location of Borings ( LGC-2003)
AS-7 Approximate Location of Borings (AES in Leighton, 2003)
MOC #4 Approximate Location of Mobil Oil Corp Well #4
Approximate Site Boundary
Approximate Geologic Contact, dotted where buried
Approximate Rupture Surface Location (Leighton, 2006)
12' Approximate Remedial Removal Depth
5' Approximate Over-Excavation Depth from Design Grade
Bedding Attitude, triangles indicate clay
General Bedding Attitude
Approximate Design Keyway Location
T T' Location of Cross Section
Location of Restricted Use Area, RUA
North
ROBERT C. LEE PARKWAY
TRACT NO. 061811
M.B. 1339/5-10
TRACT NO. 061811-02
320/64-69
TRACT 30787
274.25'
N80°50'40"W
(RAD)
714.33'
1314.91'
372.47'
662.87'
1332.79'
5330.99'
1291.87'
2583.74'
1007.36'
2653.
R=1958.00'
L=387.65'
D=11°20'36"
100'
330'
1260.86'
P.O.B. PER R5
FD. 1 INCH I.P.
LS 2572. NO REF.
PARCEL 2
REMAINDER PARCEL 5
INSTRUMENT NO.
VARIES
30
29

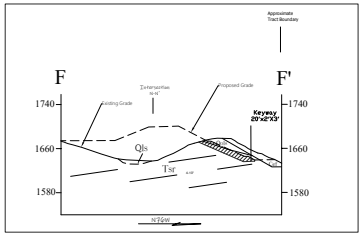


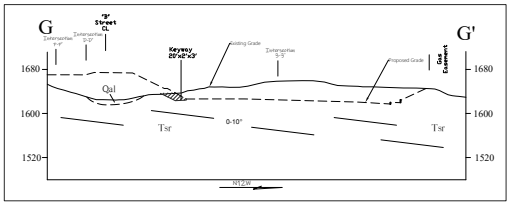



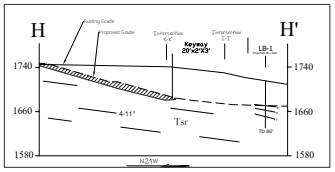



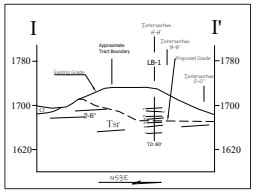



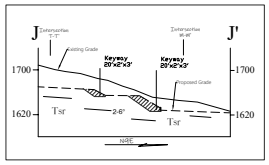



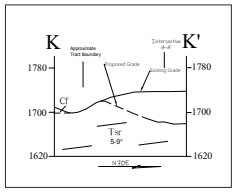



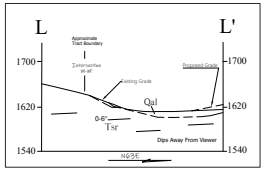



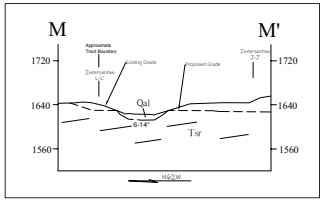



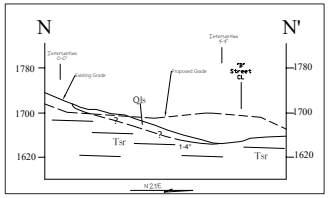



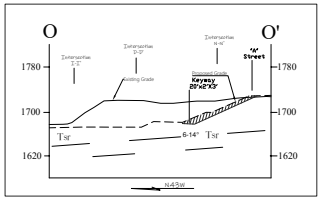



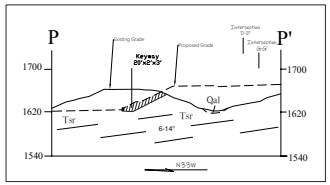



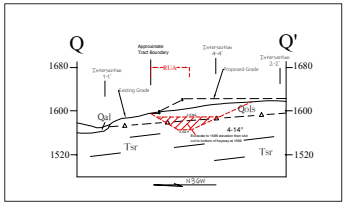



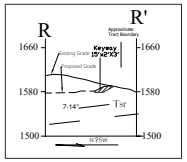



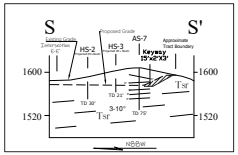



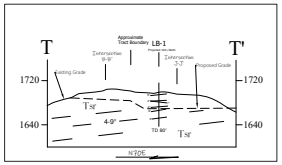



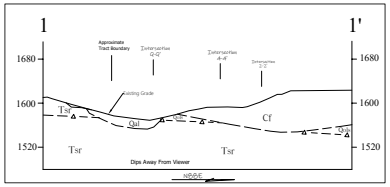



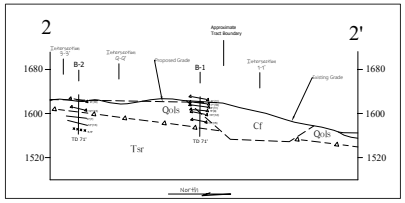



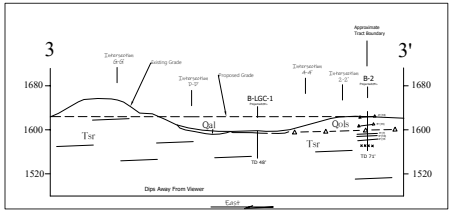



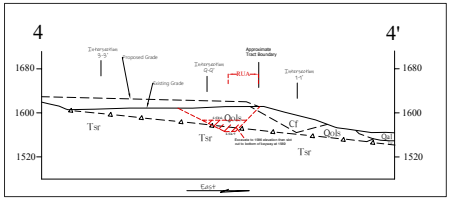




| | | | | | |
|---|---|---|---|---|---|
| **LGC Valley, Inc.**<br>28532 Constellation Road<br>Valencia, CA 91355<br>TEL. (661) 702-8474 FAX (661) 702-8475 | ***Geologic Cross Sections A-A', through T-T' and 1-1' through 4-4'*** | *CLIENT:*<br>Valuzat | *CIVIL ENGINEER:*<br>LDC | PROJECT NAME | TTM 68203 |
| | | | | PROJECT NO. | 203003-01 |
| | | | | ENG. / GEOL. | BIH/MCH |
| | | | | SCALE | 1" = 80' |
| | | | | DATE | November 2021 |
| | | | | | **PLATE 2** |

# APPENDIX F
# Hydrology Report

# *HYDROLOGY REPORT*

## *FOR*

# *Tentative Tract No. 68203*

# *Santa Clarita, CA ESTU2024000177 HYD24-00002*

*PREPARED FOR:*

*VELUZAT PRODUCTIONS*
*24715 OAK CREEK*
*NEWHALL, CA 91321*

*DATE:*
*10/29/2024*

LDC project # 92020-019

**LAND DESIGN CONSULTANTS, INC.**
*Land Planning, Civil Engineering, Surveying & Environmental Services*

800 Royal Oaks Drive, Suite 104, Monrovia, CA 91016, Tel. (626) 578-7000 Fax (626) 578-7373

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*PRE-DEVELOPMENT IMPERVIOUSNESS TABLE*

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*DRAFT TENTATIVE TRACT MAP No. 68203 SITE PLAN*

*(FOR INFORMATION PURPOSES ONLY, NOT FOR APPROVAL)*

## *INTRODUCTION*

*Tentative Tract No. 68203 is a proposed development in the City of Santa Clarita consisting of 3 major Pads/Lots; Hotel Lot, Senior Assistant Lot, and Condominium Lot, on approximately 27 acres. The proposed Tract is bounded by single family homes to the north, east & west, and Golden Valley Road & Sierra Highway to the south.*

***Hydrology Report:***

*This report has been prepared for the Hydrology Report for the above-described development. This report addresses the issues of hydromodification and whether. mitigation measures for any increases in runoff flow rates, increases in flow velocity, etc., will be required for this project.*

*The "L.I.D. Report" will be separate from this report submitted during the engineering phase. It will address all issues regarding the retention and infiltration of SWQDv , pre-treatment of storm water BMPs and related issues.*

*For purposes of analysis, the total existing drainage area can be divided into three major drainage basins and five additional minor drainage basins:*

*Major Drainage Basin 1:*

*In the pre-developed condition, (Subareas 1A-6A) the runoff from the 16.68 acres of drainage area consists of a combination of on-site and off-site areas. These areas surface flow along the natural canyon through the tract boundary which then outlet into an offsite existing 60" inlet (PD 1453) at the northeastern side of the site at point #1.*

***In the pre-developed condition, the 50-year burned and bulked flow is 79.30 cfs.***

*In the post-developed condition, (Subareas 1A-39A) the runoff from the 26.32 acres of drainage area from the roadway, the assisted living site, the western portion of the condominium site, and the surrounding slopes are to be collected in a privately maintained storm drain system which includes an underground detention facility with a storage volume of 2.7817 ac.-ft. to meet the hydromodification requirements.*

*This privately maintained storm drain system will outlet to the natural canyon which will then continue to outlet to the offsite existing 60" inlet (PD 1453) at the northeastern side of the site at point #1. The proposed storm drain system with the underground detention facilities is not eligible for transfer to Los Angeles County Flood Control*

*District. The LACFCD requires upstream and downstream control over their storm drain system. (LACDPW email 7/24/24).*

***In the post-developed condition, based on preliminary routing calculations through the proposed detention facility, the 50-year burned and bulked flow is expected to be 74.62 cfs.*** *This analysis shows that the hydromodification requirement is met for Major Drainage Basin 1 with the proposed detention facility.*

*The final detention facility calculations and design shall be prepared and reviewed during final engineering and the design shall ensure that the post-developed condition flowrates shall be less than the flowrates in pre-developed condition.*

*Major Drainage Basin 2:*

*In the pre-developed condition, (Subarea 1B) the runoff from the 11.10 acres surface flows through a natural canyon thru the tract boundary which then outlets offsite into an existing 36" inlet (PD 1453) at the mid northeastern side of the site at point #2.*

***In the pre-developed condition, the 50-year burned and bulked flow is 50.65 cfs.***

*In the post-developed condition, (Subareas 1I-5I) the runoff from the 4.48 acres of drainage area from the eastern portion of the condominium site and the surrounding slopes are to be collected in a privately maintained storm drain system which will outlet to the natural canyon which will then continue to outlet to the offsite existing 36" inlet (PD 1453) at the mid northeastern side of the site at point #2.*

***In the post-developed condition, the 50-year clear flow is 16.48 cfs.*** *This analysis shows that the hydromodification requirement is met without the need for detention storage upstream of point #2.*

*Major Drainage Basin 3:*

*In the pre-developed condition, (Subarea 1C) the runoff from the 5.35 acres surface flows through a natural canyon which then outlets onsite into an existing 36" inlet (MTD 1699) at the southeastern side of the site at point #3.*

***In the pre-developed condition, the 50-year burned and bulked flow is 27.24 cfs.***

*In the post-developed condition, (Subareas 1J-4J) the runoff from the 3.55 acres of drainage area from the hotel site and the surrounding slopes are to be collected in a*

*privately maintained storm drain system which will outlet directly into proposed re-aligned (MTD 1699) at the southeastern side of the site at point #3.*

***In the post-developed condition, the 50-year clear flow is 15.81 cfs.*** *This analysis shows that the hydromodification requirement is met without the need for detention storage upstream of point #3.*

*With this report we are requesting permission to realign and connect to the existing public storm drain system (MTD 1699).*

*Minor Drainage Basin 4:*

*In the pre-developed condition, (Subarea 1D) the runoff from the 0.58 acres surface flows through a natural canyon which then outlets offsite into an existing offsite 36" x 48" inlet (Tr. 53419 rough grading plan) at the south mid-eastern side of the site at point #4.*

***In the pre-developed condition, the 50-year burned and bulked flow is 2.90 cfs.***

*In the post-developed condition, (Subarea 1K) the runoff from 0.46 acres of drainage area from a portion of the proposed developed slope easterly of the cul-de-sac of 'A St." are to be collected in a privately maintained slope drain which will outlet offsite into an existing offsite 36" x 48" inlet (Tr. 53419 rough grading plan) at the south mid-eastern side of the site at point #4.*

***In the post-developed condition, the 50-year clear flow is 1.66 cfs.***
*This analysis shows that the hydromodification requirement is met without the need for detention storage upstream of point #4.*

*Minor Drainage Basin 5:*

*In the pre-developed condition, (Subarea 1E) the runoff from the 0.45 acres surface flows through a natural canyon which then outlets offsite into an existing offsite inlet (Tr. 53419 rough grading plan) at the south mid-eastern side of the site at point #4.*

***In the pre-developed condition, the 50-year burned and bulked flow is 1.66 cfs.***

*In the post-developed condition, (Subarea 1L) the runoff from 0.19 acres of drainage area from a portion of the proposed developed slope northeasterly of the cul-de-sac of 'A St." are to be collected in a privately maintained slope drain which will outlet offsite*

*into an existing offsite inlet (Tr. 53419 rough grading plan) at the south mid-eastern side of the site at point #5.*

***In the post-developed condition, the 50-year clear flow is 0.69 cfs.***
*This analysis shows that the hydromodification requirement is met without the need for detention storage upstream of point #5.*

*Minor Drainage Basin 6:*

*In the pre-developed condition, (Subarea 1F) the runoff from the 0.42 acres surface flows through an existing ditch along the north side of Golden Valley Road on the south east side of the site which then outlets offsite at point #6 and then enters Sierra Highway along the frontage of adjacent Tract 53419.*

***In the pre-developed condition, the 50-year burned and bulked flow is 1.92 cfs.***

***In the post-developed condition, no flow is proposed to outlet to point #6.***

*Minor Drainage Basin 7:*

*In the pre-developed condition, (Subarea 1G) the runoff from the 0.44 acres surface flows through an existing ditch along the easterly tract boundary which then outlets offsite at point #7.*

***In the pre-developed condition, the 50-year burned and bulked flow is 2.01 cfs.***

***In the post-developed condition, no flow is proposed to outlet to point #7.***

*Minor Drainage Basin 8:*

*In the pre-developed condition, (Subarea 1H) the runoff from the 0.63 acres surface flows through a natural canyon which then outlets offsite into an existing offsite inlet (Tr. 30787) at the most northly side of the site at point #8.*

***In the pre-developed condition, the 50-year burned and bulked flow is 3.16 cfs.***

*In the post-developed condition, (Subarea 1M) the runoff from 0.63 acres of drainage area will remain undeveloped and will continue to flow through a natural canyon which then outlets offsite into an existing offsite inlet (Tr. 30787) at the most northly side of the site at point #8.*

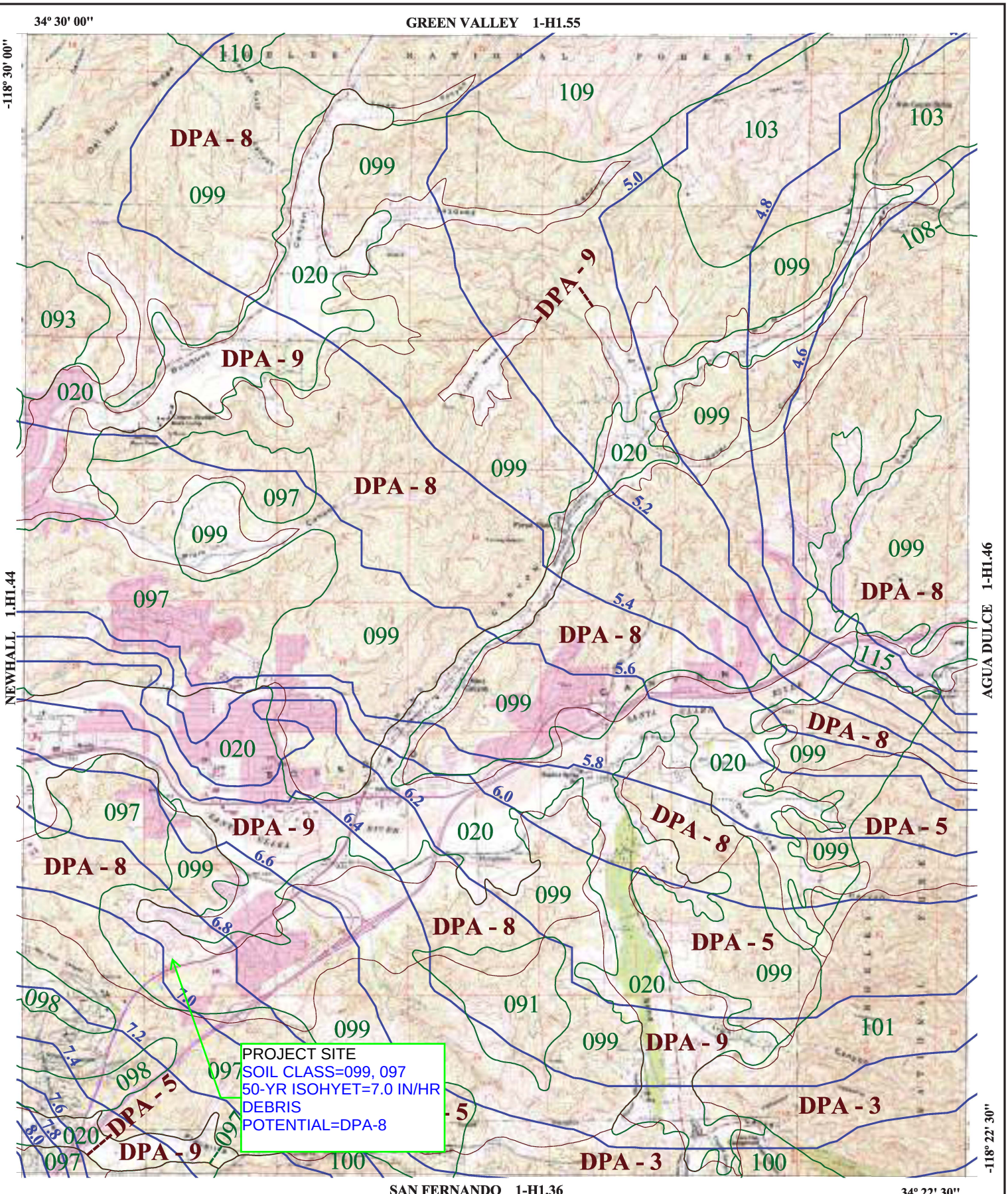
***In the post-developed condition, the 50-year clear flow shall remain 3.16 cfs.***

*The hydrologic data used in this report is based on the LACDPW's Hydrology and Sedimentation Manual. The manual guidelines require that the developed areas shall be designed for 25-year frequency. LACDPW's computer program, HydroCalc was utilized to calculate the time of concentration and peak flows. Other hydrological parameters are the site soil classification of 099 and 50-year isohyets are 7.0 inches of rainfall.*

*The draft Tentative Tract Map No. 68203 Site Plan has been included in Appendix F for information purposes only and is not for approval.*

# Appendix A

# HYDROLOGIC REFERENCES




N
W E
S

016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

# MINT CANYON
# 50-YEAR 24-HOUR ISOHYET

1-H1.45

PUBLIC WORKS

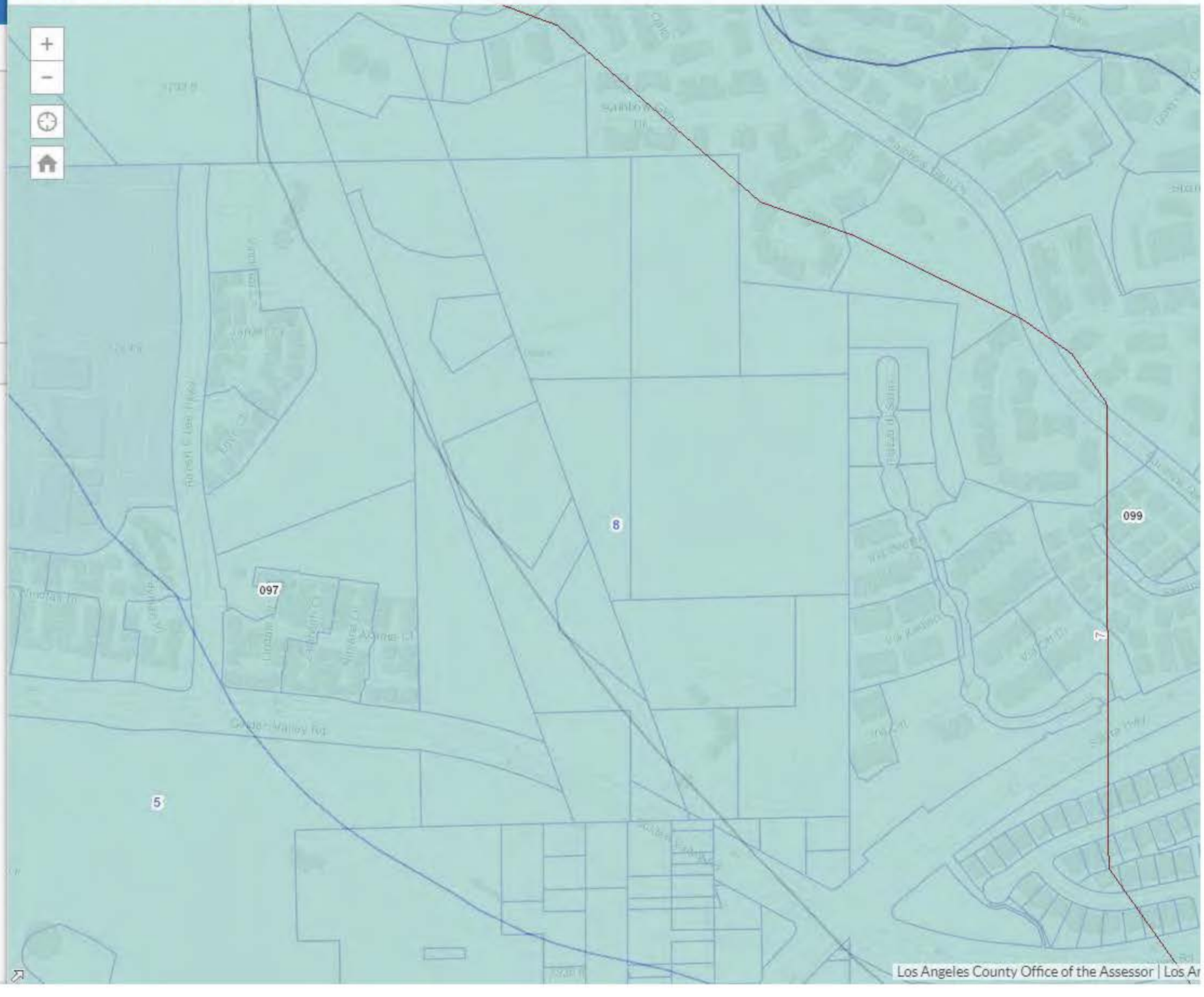
lacounty.maps.arcgis.com/apps/PublicInformation/index.html?appid=cd5ec68b636f4e47bbba5b8e9307be1e

About | Legend | Layers

## Layers

- [x] Hydrology GIS
  - [x] 50yr Two Tenths (Rainfall)
  - [x] DPA Zones
  - [x] Soils 2004
  - [ ] Final 85th Percentile, 24-hr Rainfall
  - [ ] 1-year, 1-hour Rainfall Intensity
  - [ ] Final 95th Percentile, 24-hr Rainfall
- [x] LA County Parcels

# LA County Hydrology Map

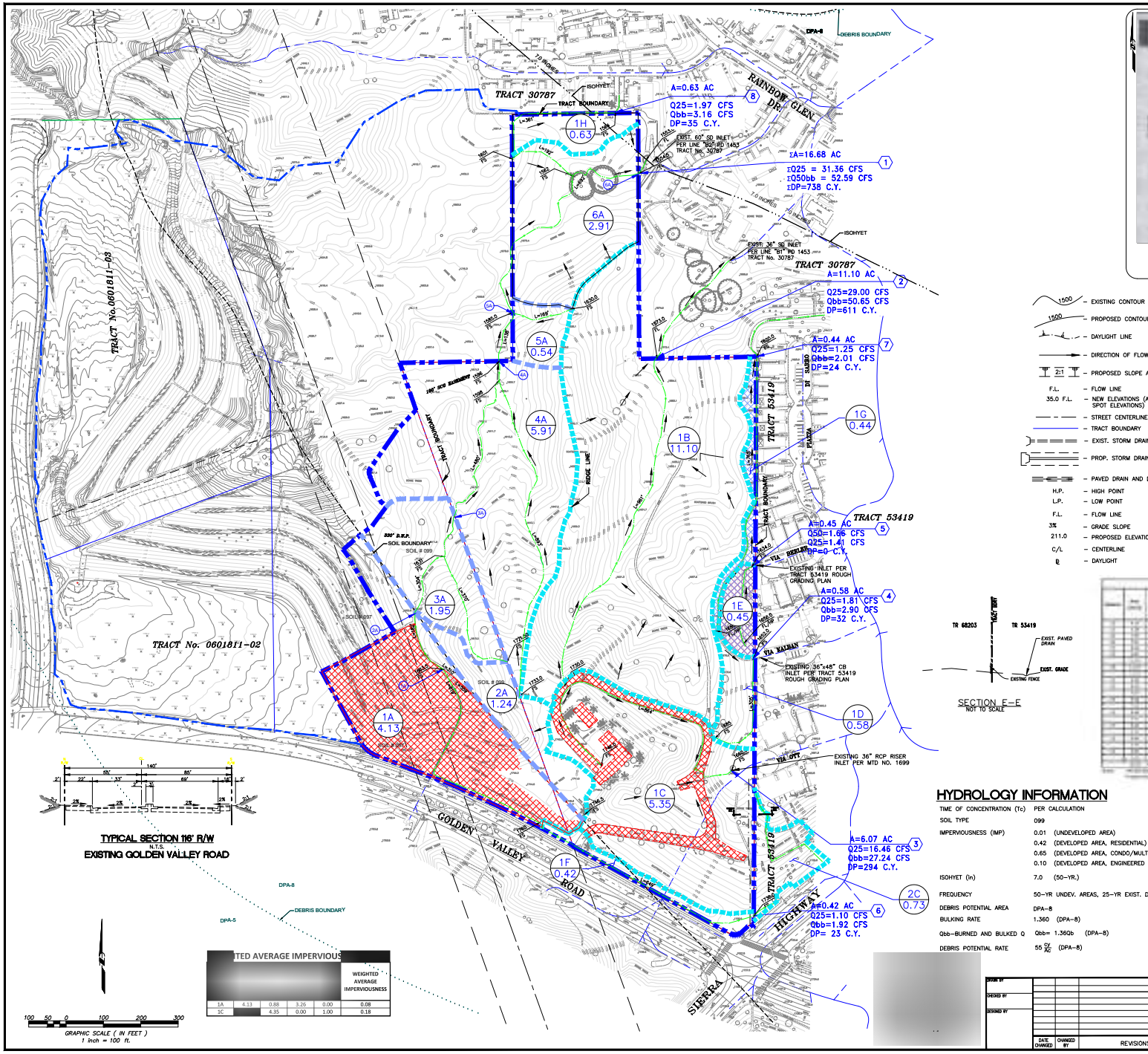


# Appendix B

## PRE-DEVELOPMENT HYDROLOGY MAP

## PRE-DEVELOPMENT HYDROLOGY TABLE

## PRE-DEVELOPMENT IMPERVIOUSNESS TABLE




## HYDROLOGY INFORMATION

| | | |
|---|---|---|
| TIME OF CONCENTRATION (Tc) | PER CALCULATION | |
| SOIL TYPE | 099 | |
| IMPERVIOUSNESS (IMP) | 0.01 | (UNDEVELOPED AREA) |
| | 0.42 | (DEVELOPED AREA, RESIDENTIAL) |
| | 0.65 | (DEVELOPED AREA, CONDO/MULT |
| | 0.10 | (DEVELOPED AREA, ENGINEERED |
| ISOHYET (in) | 7.0 | (50-YR.) |
| FREQUENCY | 50-YR UNDEV. AREAS, 25-YR EXIST. D | |
| DEBRIS POTENTIAL AREA | DPA-8 | |
| BULKING RATE | 1.360 | (DPA-8) |
| Qbb-BURNED AND BULKED Q | Qbb= 1.36Qb | (DPA-8) |
| DEBRIS POTENTIAL RATE | 55 CY/AC | (DPA-8) |

| | | | | | |
|---|---|---|---|---|---|
| 1A | 4.13 | 0.88 | 3.26 | 0.00 | 0.08 |
| 1C | | 4.35 | 0.00 | 1.00 | 0.18 |

| DRAWN BY | | | |
|---|---|---|---|
| CHECKED BY | | | |
| DESIGNED BY | | | |
| DATE CHANGED | CHANGED BY | REVISIONS | |

J:\Civil 3D Projects\0202009\P\3D_Sheet Sets\01_Hydrology\PREC-DEV-DRAIN.dwg Oct 29, 2024 3:07 pm LSOBOL

# ON-SITE PRE-DEVELOPMENT HYDROLOGY TABLE:

| Subarea | Area (acres) | %imp | Soil Type | Length (ft) | Slope (ft/ft) | Tc-calculated 25 yr (min.) | Q25 (cfs) | Tc-calculated 50 yr (min.) | Q50* clear (cfs) | Q50* Burned (cfs) | Q50* Burned and bulked (cfs) | Debris Production (CY) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1A | 4.13 | 0.08 | 97 | 619 | 0.156 | 5 | 11.66 | 5 | 13.51 | 14.04 | 19.09 | **48 |
| 2A | 1.24 | 0.01 | 99 | 559 | 0.149 | 5 | 3.87 | 5 | 4.46 | 4.56 | 6.20 | 68 |
| 3A | 1.95 | 0.01 | 99 | 370 | 0.245 | 5 | 6.09 | 5 | 7.02 | 7.18 | 9.76 | 107 |
| 4A | 5.91 | 0.01 | 99 | 893 | 0.151 | 6 | 16.78 | 6 | 19.37 | 19.83 | 26.97 | 325 |
| 5A | 0.54 | 0.01 | 99 | 169 | 0.266 | 5 | 1.69 | 5 | 1.94 | 1.99 | 2.71 | 30 |
| 6A | 2.91 | 0.01 | 99 | 192 | 0.203 | 5 | 9.09 | 5 | 10.47 | 10.71 | 14.57 | 160 |
| | 16.68 | Totals to Local Watershed Outlet Point #1 | | | | | **49.18** | | 56.77 | **58.31** | **79.30** | **738** |
| 1B | 11.10 | 0.01 | 99 | 961 | 0.163 | 7 | 29.00 | 6 | 36.38 | 37.24 | 50.65 | 611 |
| | 11.10 | Totals to Local Watershed Outlet Point #2 | | | | | **29.00** | | 36.38 | **37.24** | **50.65** | **611** |
| 1C | 5.35 | 0.18 | 99 | 864 | 0.100 | 7 | 14.17 | 6 | 17.69 | 18.09 | 24.60 | 294 |
| 2C | 0.73 | 0.10 | 99 | 359 | 0.200 | 5 | 2.29 | 5 | 2.64 | 2.64 | 2.64 | N.A. |
| | **6.07** | Totals to Local Watershed Outlet Point #3 | | | | | **16.46** | | **20.33** | **20.73** | **27.24** | **294** |
| 1D | 0.58 | 0.01 | 99 | 305 | 0.108 | 5 | 1.81 | 5 | 2.09 | 2.13 | 2.90 | 294 |
| | 0.58 | Totals to Local Watershed Outlet Point #4 | | | | | **1.81** | | 2.09 | **2.13** | **2.90** | **294** |
| 1E | 0.45 | 0.10 | 99 | 224 | 0.100 | 5 | 1.41 | 5 | 1.62 | 1.66 | N.A. | N.A. |
| | 0.45 | Totals to Local Watershed Outlet Point #5 | | | | | **1.41** | | 1.62 | **1.66** | N.A. | N.A. |
| 1F | 0.42 | 0.01 | 99 | 649 | 0.036 | 7 | 1.10 | 6 | 1.38 | 1.41 | 1.92 | 23 |
| | 0.42 | Totals to Local Watershed Outlet Point #6 | | | | | **1.10** | | 1.38 | **1.41** | **1.92** | **23** |
| 1G | 0.44 | 0.01 | 99 | 765 | 0.078 | 6 | 1.25 | 6 | 1.44 | 1.48 | 2.01 | 24 |
| | 0.44 | Totals to Local Watershed Outlet Point #7 | | | | | **1.25** | | 1.44 | **1.48** | **2.01** | **24** |
| 1H | 0.63 | 0.01 | 99 | 361 | 0.103 | 5 | 1.97 | 5 | 2.27 | 2.32 | 3.16 | 35 |
| | 0.63 | Totals to Local Watershed Outlet Point #8 | | | | | **1.97** | | 2.27 | **2.32** | **3.16** | **35** |

36.38 **=Total Site Drainage Area**

Notes: * All Q50 flowrates are clear flows for existing developed areas and are burned flows or burned and bulked flows for undeveloped areas.

** Debris Production for Subarea 1A is based on an Undeveloped Area = 0.88 Ac.

# WEIGHTED AVERAGE IMPERVIOUSNESS:

| Subarea | Area (acres) | AREA UN. DEV. 0.01 (AC.) | AREA DEV. SLOPE 0.10 (AC.) | AREA DEV. ROADS 0.90 (AC.) | WEIGHTED AVERAGE IMPERVIOUSNESS |
|---|---|---|---|---|---|
| 1A | 4.13 | 0.88 | 3.26 | 0.00 | 0.08 |
| 1C | 5.35 | 4.35 | 0.00 | 1.00 | 0.18 |

Appendix C

POST-DEVELOPMENT HYDROLOGY MAP

POST-DEVELOPMENT HYDROLOGY TABLE

POST-DEVELOPMENT IMPERVIOUSNESS TABLE

HYDROMODIFICATION COMPARISON & SUMMARY TABLE

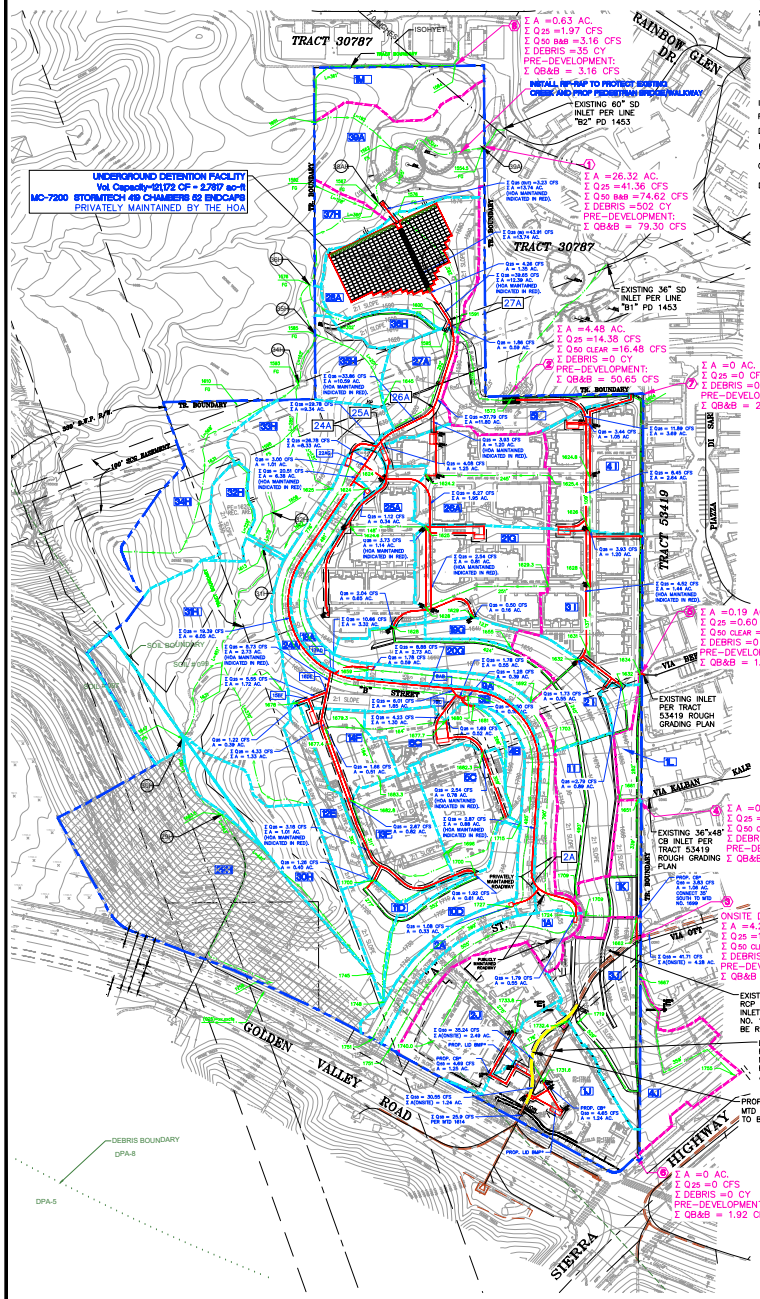
*MTD 1614 AND MTD 1699 ON-SITE FLOW COMPARISON TABLE*

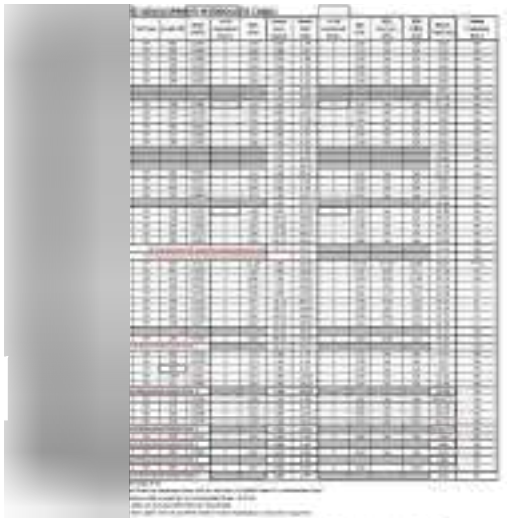
## HYDROLOGY INFORMATION

| | |
|---|---|
| TIME OF CONCENTRATION (Tc) | PER CALCULATION |
| SOIL TYPES | 099, 097 |
| IMPERVIOUSNESS (IMP) | 0.01 (UNDEVELOPED AREA)<br>0.90 (DEVELOPED ST/ROADS)<br>0.96 (DEVELOPED AREA, HOTEL)<br>0.74 (DEVELOPED AREA, ASSISTED LIVING)<br>0.86 (DEVELOPED AREA, CONDOMINIUM)<br>0.10 (DEVELOPED AREA, ENGINEERED SLOPES)<br>0.10 (DEVELOPED AREA, PARK) |
| ISOHYET (in) | 7.0 (50-YR.) |
| FREQUENCY | 50-YR. |
| DEBRIS POTENTIAL AREA | DPA-8 |
| BULKING RATE | 1.360 (DPA-8) |
| Qbb-BURNED AND BULKED Q | Qbb= 1.36Qb (DPA-8) |
| DEBRIS POTENTIAL RATE | 55 CY/AC (DPA-8) |

## LEGEND:

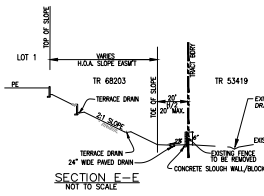
- EXISTING CONTOUR LINE
- PROPOSED CONTOUR LINE
- DAYLIGHT LINE
- DIRECTION OF FLOW
- PROPOSED SLOPE
- F.L. – FLOW LINE
- 35.0 F.L. – NEW ELEVATIONS
- STREET CENTERLINE
- TRACT BOUNDARY
- EXIST. STORM DRAIN
- PAVED DRAIN AND DOWNDRAIN
- H.P. – HIGH POINT
- L.P. – LOW POINT
- F.L. – FLOW LINE
- 3% – GRADE SLOPE
- 211.0 – PROPOSED ELEVATION
- C/L – CENTERLINE
- ℄ – DAYLIGHT
- LOCAL WATERSHED OUTLET POINT AT TRACT BOUNDARY
- PROP. CB* – PROPOSED PRIVATELY MAINTAINED CATCH BASIN
- PROP. LID BMP* – PROPOSED PRIVATELY MAINTAINED LID BMP
- PROP. STORM DRAIN TO BE MAINTAINED BY LACFCD
- PROP. STORM DRAIN TO BE PRIVATELY MAINTAINED BY THE HOMEOWNERS ASSOCIATION
- DRAINAGE AREA BOUNDARY
- SUBAREA OF LOCAL WATERSHED
- LOCAL WATERSHED BOUNDARY
- 1.0 AC – DRAINAGE AREA DIVERSION
- ΣQ – SUM OF Q (c.f.s.)
- ΣA – SUM OF AREA (AC)
- 3A – SUB-AREA ACREAGE
- Q25 – 25 YR. DEVELOPED Q (c.f.s.)
- Q50 – 50 YR. DEVELOPED Q (c.f.s.)
- Q50bb – 50 YR. BURNED AND BULKED Q (c.f.s.)
- Q50 – 50 YR. DEVELOPED Q (c.f.s.)
- DP – DEBRIS POTENTIAL (C.Y.)
- EXIST. DEVELOPED AREA



### MTD 1614 AND MTD 1699 ON-SITE FLOW COMPARISON SUMMARY TABLE

| 50-YR | | | 50-YR (BURNED FOR UNDEV. AREAS) | | | 50-YR (B&B FOR UNDEV. AREAS) | | |
|---|---|---|---|---|---|---|---|---|
| EXISTING CONDITION | PROPOSED CONDITION | COMPARISON | EXISTING CONDITION | PROPOSED CONDITION | COMPARISON | EXISTING CONDITION | PROPOSED CONDITION | COMPARISON |
| FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) |
| 20.33 | 15.81 | -4.52 | 20.73 | 15.81 | -4.9200 | 27.24 | 15.81 | -11.43 |




SECTION E-E
NOT TO SCALE

NOTES:

1. THE HYDROMODIFICA PROJECTS STORM WAT WATERSHED OUTLET I
2. LID MAP, CALCULATIC
3. NOT WITHIN A FEMA F
4. NOT WITHIN COUNTY
5. EXCEPT FOR THE REAL (MTD 1614) (INDICATE INFRASTRUCTURE ARI ASSOCIATION (HOA) (I

| DRAWN BY | | | |
|---|---|---|---|
| CHECKED BY | | | |
| DESIGNED BY | | | |
| DATE CHANGED | CHANGED BY | REVISIONS | |

## POST DEVELOPMENT HYDROLOGY TABLE:

| Subarea | Area (acres) | %imp or (W.A.I.) | Soil Type | Length (ft) | Slope (ft/ft) | Tc-25 calculated (min.) | Q25 (cfs) | Reach Area (acres) | Reach Q25 (cfs) | Tc-50 calculated (min.) | Q50 (cfs) | Q50 (burned) (cfs) | Q50 (b&b) (cfs) | Reach *Q50 (cfs) | Debris Production (C.Y.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1A | 0.55 | 0.76 | 99 | 491 | 0.053 | 5 | 1.79 | 0.55 | 1.79 | 5 | 2.05 | NA | NA | 2.05 | NA |
| 2A | 0.33 | 0.90 | 99 | 399 | 0.060 | 5 | 1.08 | 0.88 | 2.87 | 5 | 1.24 | NA | NA | 3.29 | NA |
| 3B | 0.39 | 0.90 | 99 | 495 | 0.095 | 5 | 1.28 | 0.39 | 1.28 | 5 | 1.46 | NA | NA | 1.46 | NA |
| 4B | 0.16 | 0.10 | 99 | 266 | 0.128 | 5 | 0.50 | 0.55 | 1.78 | 5 | 0.58 | NA | NA | 2.04 | NA |
| 5C | 0.78 | 0.74 | 99 | 309 | 0.044 | 5 | 2.54 | 0.78 | 2.54 | 5 | 2.90 | NA | NA | 2.90 | NA |
| 6C | 0.52 | 0.74 | 99 | 164 | 0.010 | 5 | 1.69 | 1.30 | 4.23 | 5 | 1.93 | NA | NA | 4.83 | NA |
| 7BC | | | | | | | | 1.85 | 6.01 | | | | | 6.87 | NA |
| 8AB | | | | | | | | 2.73 | 8.88 | | | | | 10.16 | NA |
| 9A | 0.59 | 0.90 | 99 | 790 | 0.082 | 6 | 1.78 | 3.32 | 10.66 | 6 | 2.03 | NA | NA | 12.19 | NA |
| 10D | 0.61 | 0.10 | 99 | 352 | 0.136 | 5 | 1.92 | 0.61 | 1.92 | 5 | 2.20 | NA | NA | 2.20 | NA |
| 11D | 0.40 | 0.10 | 99 | 277 | 0.173 | 5 | 1.26 | 1.01 | 3.18 | 5 | 1.45 | NA | NA | 3.65 | NA |
| 12E | 0.39 | 0.10 | 99 | 392 | 0.056 | 5 | 1.22 | 0.39 | 1.22 | 5 | 1.41 | NA | NA | 1.41 | NA |
| 13F | 0.82 | 0.74 | 99 | 311 | 0.043 | 5 | 2.67 | 0.82 | 2.67 | 5 | 3.05 | NA | NA | 3.05 | NA |
| 14F | 0.51 | 0.74 | 99 | 184 | 0.032 | 5 | 1.66 | 1.33 | 4.33 | 5 | 1.90 | NA | NA | 4.95 | NA |
| 15EF | | | | | | | | 1.72 | 5.55 | | | | | 6.36 | NA |
| 16DE | | | | | | | | 2.73 | 8.73 | | | | | 10.01 | NA |
| 17AD | | | | | | | | 6.05 | 19.39 | | | | | 22.20 | NA |
| 18A | 0.34 | 0.90 | 99 | 481 | 0.073 | 5 | 1.12 | 6.38 | 20.51 | 5 | 1.27 | NA | NA | 23.47 | NA |
| 19G | 0.16 | 0.10 | 99 | 123 | 0.211 | 5 | 0.50 | 0.16 | 0.50 | 5 | 0.58 | NA | NA | 0.58 | NA |
| 20G | 0.65 | 0.10 | 99 | 424 | 0.151 | 5 | 2.04 | 0.81 | 2.54 | 5 | 2.35 | NA | NA | 2.93 | NA |
| 21G | 1.14 | 0.86 | 99 | 251 | 0.005 | 5 | 3.73 | 1.95 | 6.27 | 5 | 4.26 | NA | NA | 7.19 | NA |
| 22AG | | | | | | | | 8.33 | 26.78 | | | | | 30.66 | NA |
| 24A | 1.01 | 0.67 | 99 | 776 | 0.072 | 6 | 3.00 | 9.34 | 29.78 | 6 | 3.43 | NA | NA | 34.09 | NA |
| 25A | 1.25 | 0.81 | 99 | 148 | 0.005 | 5 | 4.08 | 10.59 | 33.86 | 5 | 4.66 | NA | NA | 38.75 | NA |
| 26A | 1.20 | 0.86 | 99 | 245 | 0.005 | 5 | 3.93 | 11.80 | 37.79 | 5 | 4.48 | NA | NA | 43.23 | NA |
| 27A | 0.59 | 0.21 | 99 | 292 | 0.170 | 5 | 1.86 | 12.39 | 39.65 | 5 | 2.14 | NA | NA | 45.37 | NA |
| 28A | 1.35 | 0.17 | 99 | 282 | 0.053 | 5 | 4.26 | 13.74 | 43.91 | 5 | 4.89 | NA | NA | 50.26 | NA |
| 28A IN | IN Downstream UG Detention System(HydroCalc): | | | | | | | 13.74 | 43.91 | | | | | 50.26 | NA |
| 28A OUT | OUT Downstream UG Detention System(HydroCad): | | | | | | | | 3.23 | | | | | 13.11 | NA |
| 29H | 4.04 | 0.08 | 97 | 443 | 0.213 | 5 | 11.40 | 4.04 | 11.40 | 5 | 13.22 | 13.73 | 18.67 | 18.67 | **32 |
| 30H | 0.82 | 0.01 | 99 | 441 | 0.183 | 5 | 2.56 | 4.85 | 13.96 | 5 | 2.95 | 3.02 | 4.11 | 22.78 | 45 |
| 31H | 2.58 | 0.01 | 99 | 451 | 0.075 | 5 | 8.06 | 7.43 | 22.02 | 5 | 9.29 | 9.50 | 12.92 | 35.70 | 142 |
| 32H | 0.31 | 0.14 | 99 | 228 | 0.101 | 5 | 0.98 | 7.75 | 23.00 | 5 | 1.12 | 1.15 | 1.56 | 37.26 | 17 |
| 33H | 1.28 | 0.03 | 99 | 131 | 0.195 | 5 | 4.00 | 9.02 | 27.00 | 5 | 4.61 | 4.72 | 6.42 | 43.68 | 70 |
| 34H | 1.11 | 0.01 | 99 | 568 | 0.166 | 5 | 3.47 | 10.13 | 30.47 | 5 | 4.00 | 4.09 | 5.56 | 49.25 | 61 |
| 35H | 0.44 | 0.01 | 99 | 201 | 0.298 | 5 | 1.37 | 10.57 | 31.84 | 5 | 1.58 | 1.62 | 2.20 | 51.45 | 24 |
| 36H | 0.26 | 0.09 | 99 | 302 | 0.098 | 5 | 0.82 | 10.83 | 32.66 | 5 | 0.94 | 0.96 | 1.31 | 52.75 | 14 |
| 37H | 0.31 | 0.01 | 99 | 128 | 0.117 | 5 | 0.97 | 11.14 | 33.63 | 5 | 1.12 | 1.14 | 1.55 | 54.30 | 17 |
| 38AH | | | | | | | | 24.88 | 36.86 | | | | | 67.41 | 423 |
| 39A | 1.44 | 0.01 | 99 | 192 | 0.203 | 5 | 4.50 | 26.32 | 41.36 | 5 | 5.18 | 5.30 | 7.21 | 74.62 | 79 |
| | | Totals to Local Watershed Outlet Point 1 | | | | | | 26.32 | 41.36 | | | | | 74.62 | 502 |
| 1I | 0.89 | 0.10 | 99 | 493 | 0.156 | 5 | 2.79 | 0.89 | 2.79 | 5 | 3.22 | NA | NA | 3.22 | NA |
| 2I | 0.55 | 0.10 | 99 | 245 | 0.290 | 5 | 1.73 | 1.44 | 4.52 | 5 | 1.99 | NA | NA | 5.21 | NA |
| 3I | 1.20 | 0.86 | 99 | 137 | 0.017 | 5 | 3.93 | 2.64 | 8.45 | 5 | 4.48 | NA | NA | 9.69 | NA |
| 4I | 1.05 | 0.86 | 99 | 109 | 0.017 | 5 | 3.44 | 3.69 | 11.89 | 5 | 3.92 | NA | NA | 13.61 | NA |
| 5I | 0.79 | 0.18 | 99 | 211 | 0.085 | 5 | 2.49 | 4.48 | 14.38 | 5 | 2.87 | NA | NA | 16.48 | NA |
| | | Totals to Local Watershed Outlet Point 2 | | | | | | 4.48 | 14.38 | | | | | 16.48 | NA |
| 1J | 1.24 | 0.96 | 99 | 176 | 0.005 | 5 | 4.08 | 1.24 | 4.08 | 5 | 4.65 | NA | NA | 30.55*** | NA |
| 2J | 1.25 | 0.96 | 99 | 275 | 0.022 | 5 | 4.12 | 2.49 | 8.20 | 5 | 4.69 | NA | NA | 35.24 | NA |
| 3J | 1.06 | 0.10 | 99 | 529 | 0.108 | 5 | 3.33 | 3.55 | 11.53 | 5 | 3.83 | NA | NA | 39.07 | NA |
| 4J | 0.73 | 0.10 | 99 | 359 | 0.250 | 5 | 2.29 | 4.28 | 13.82 | 5 | 2.64 | NA | NA | 41.71 | NA |
| | | Totals to Local Watershed Outlet Point 3 | | | | | | 4.28 | 13.82 | | | | | 15.81**** | NA |
| 1K | 0.46 | 0.10 | 99 | 339 | 0.171 | 5 | 1.44 | 0.46 | 1.44 | 5 | 1.66 | NA | NA | 1.66 | NA |
| | | Totals to Local Watershed Outlet Point 4 | | | | | | 0.46 | 1.44 | | | | | 1.66 | NA |
| 1L | 0.19 | 0.10 | 99 | 282 | 0.092 | 5 | 0.60 | 0.19 | 0.60 | 5 | 0.69 | NA | NA | 0.69 | NA |
| | | Totals to Local Watershed Outlet Point 5 | | | | | | 0.19 | 0.60 | | | | | 0.69 | NA |
| 1M | 0.63 | 0.01 | 99 | 361 | 0.103 | 5 | 1.97 | 0.63 | 1.97 | 5 | 2.32 | | 3.16 | 3.16 | 35 |
| | | Totals to Local Watershed Outlet Point 8 | | | | | | 0.63 | 1.97 | | | | | 3.16 | 35 |

3.55 =Total Site Drainage Area

NOTES: * All Q50 flowrates are clear flows for developed areas and are burned and bulked flows for undeveloped areas.

** Debris Production for Subarea 29H is based on an Undeveloped Area = 0.57 Ac.

***Added Upstream Exist. Q50= 25.9 cfs per MTD 1614 for Reach Q50.

****subtracted Upstream Exist. Q50= 25.9 cfs per MTD 1614 for hydromodification comparison at point 3.

# WEIGHTED AVERAGE IMPERVIOUSNESS:

| Subarea | Area (acres) | AREA DEV. SLOPE 0.10 (AC.) | AREA SENIOR ASSIST. 0.74 (AC.) | AREA CONDO 0.86 (AC.) | AREA RD. 0.90 (AC.) | AREA UNDEV. 0.01 (AC.) | AREA PARK 0.10 (AC.) | WEIGHTED AVERAGE IMPERVIOUSNESS |
|---|---|---|---|---|---|---|---|---|
| 1A | 0.55 | 0.10 | 0.00 | 0.00 | 0.45 | 0.00 | 0.00 | 0.76 |
| 24A | 1.01 | 0.29 | 0.00 | 0.00 | 0.72 | 0.00 | 0.00 | 0.67 |
| 25A | 1.25 | 0.09 | 0.00 | 1.17 | 0.00 | 0.00 | 0.00 | 0.81 |
| 27A | 0.59 | 0.16 | 0.00 | 0.00 | 0.11 | 0.32 | 0.00 | 0.21 |
| 28A | 1.35 | 0.42 | 0.00 | 0.00 | 0.13 | 0.00 | 0.81 | 0.17 |
| 29H | 4.04 | 3.21 | 0.00 | 0.00 | 0.00 | 0.83 | 0.00 | 0.08 |
| 32H | 0.31 | 0.15 | 0.00 | 0.00 | 0.02 | 0.00 | 0.14 | 0.14 |
| 33H | 1.28 | 0.27 | 0.00 | 0.00 | 0.00 | 1.01 | 0.00 | 0.03 |
| 36H | 0.26 | 0.24 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.09 |
| 5H | 0.79 | 0.56 | 0.00 | 0.00 | 0.09 | 0.14 | 0.00 | 0.18 |

# HYDROMODIFICATION COMPARISON TABLE

| STORM FREQUENCY | 25-YR | | 50-YR (B&B FOR UNDEV. AREAS) | |
|---|---|---|---|---|
| CONDITION | EXISTING CONDITION | POST-DEVELOPMENT CONDITION | EXISTING CONDITION | POST-DEVELOPMENT CONDITION |
| LOCAL WATERSHED OUTLET POINT | FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) |
| 1 | 49.18 | 41.36 | 79.30 | 74.62 |
| 2 | 29.00 | 14.38 | 50.65 | 16.48 |
| 3 | 16.46 | 13.82 | 27.24 | 15.81 |
| 4 | 1.81 | 1.44 | 2.90 | 1.66 |
| 5 | 1.41 | 0.60 | 1.66 | 0.69 |
| 6 | 1.10 | 0.00 | 1.92 | 0.00 |
| 7 | 1.25 | 0.00 | 2.01 | 0.00 |
| 8 | 1.97 | 1.97 | 3.16 | 3.16 |

# *MTD 1614 AND MTD 1699 ON-SITE FLOW COMPARISON SUMMARY TABLE*

| 50-YR | | | 50-YR (BURNED FOR UNDEV. AREAS) | | | 50-YR (B&B FOR UNDEV. AREAS) | | |
|---|---|---|---|---|---|---|---|---|
| EXISTING CONDITION | PROPOSED CONDITION | COMPARISON | EXISTING CONDITION | PROPOSED CONDITION | COMPARISON | EXISTING CONDITION | PROPOSED CONDITION | COMPARISON |
| FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) | FLOWRATE (cfs) |
| 20.33 | 15.81 | -4.52 | 20.73 | 15.81 | -4.9200 | 27.24 | 15.81 | -11.43 |

# Appendix D

# HYDROCALC PRINT-OUTS FOR PRE-DEVELOPMENT CONDITION

# Peak Flow Hydrologic Analysis

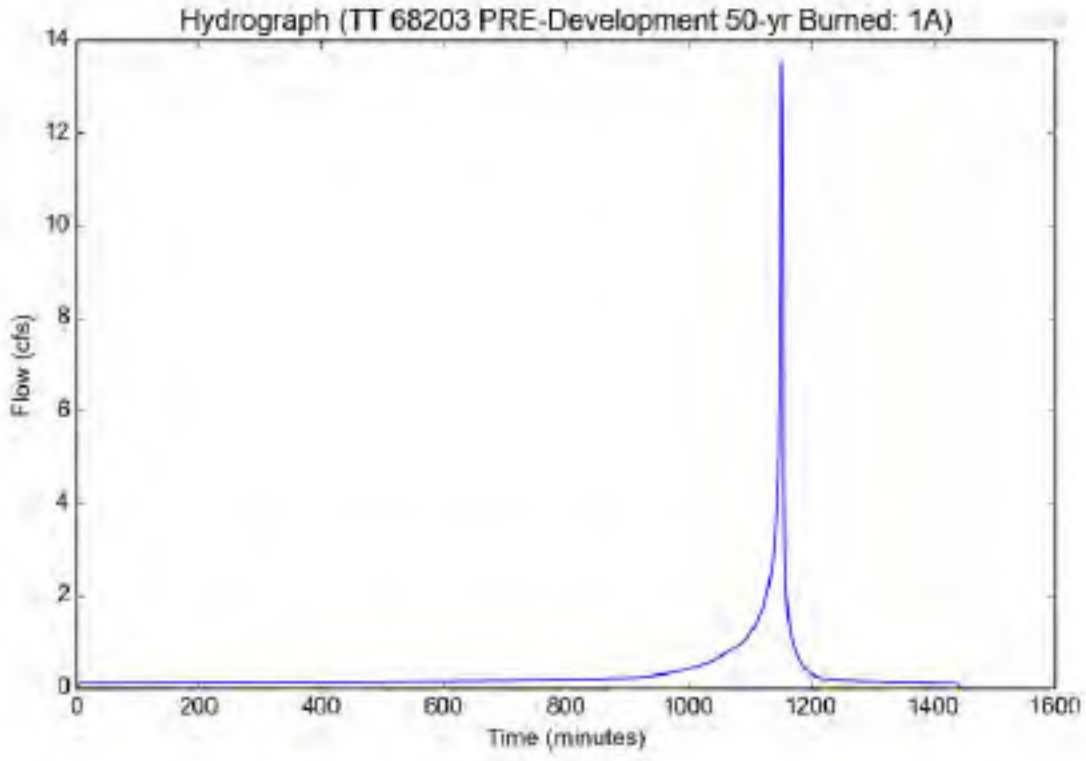
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 50-yr Burned |
| Subarea ID | 1A |
| Area (ac) | 4.13 |
| Flow Path Length (ft) | 619.0 |
| Flow Path Slope (vft/hft) | 0.156 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.08 |
| Soil Type | 97 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.7731 |
| Developed Runoff Coefficient (Cd) | 0.7832 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 13.5097 |
| Burned Peak Flow Rate (cfs) | 14.0371 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.6734 |
| 24-Hr Clear Runoff Volume (cu-ft) | 29331.9888 |



# Peak Flow Hydrologic Analysis

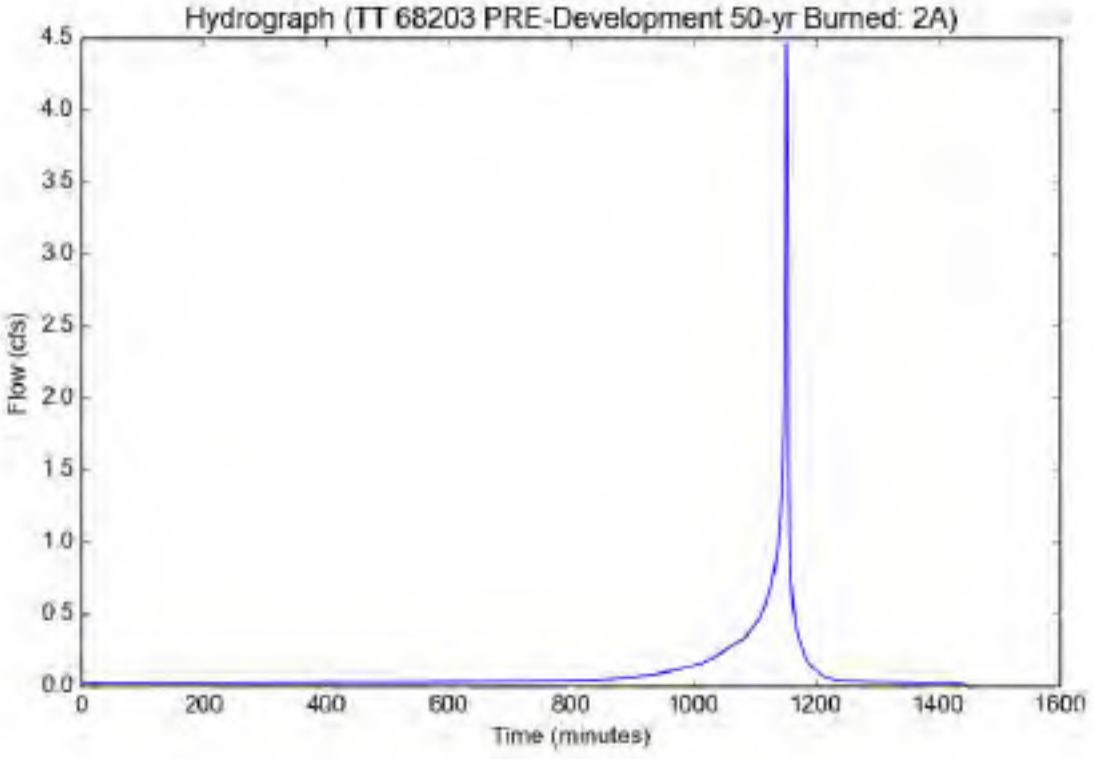
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 50-yr Burned |
| Subarea ID | 2A |
| Area (ac) | 1.24 |
| Flow Path Length (ft) | 559.0 |
| Flow Path Slope (vft/hft) | 0.149 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8619 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 4.4635 |
| Burned Peak Flow Rate (cfs) | 4.5644 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.2024 |
| 24-Hr Clear Runoff Volume (cu-ft) | 8815.446 |



# Peak Flow Hydrologic Analysis

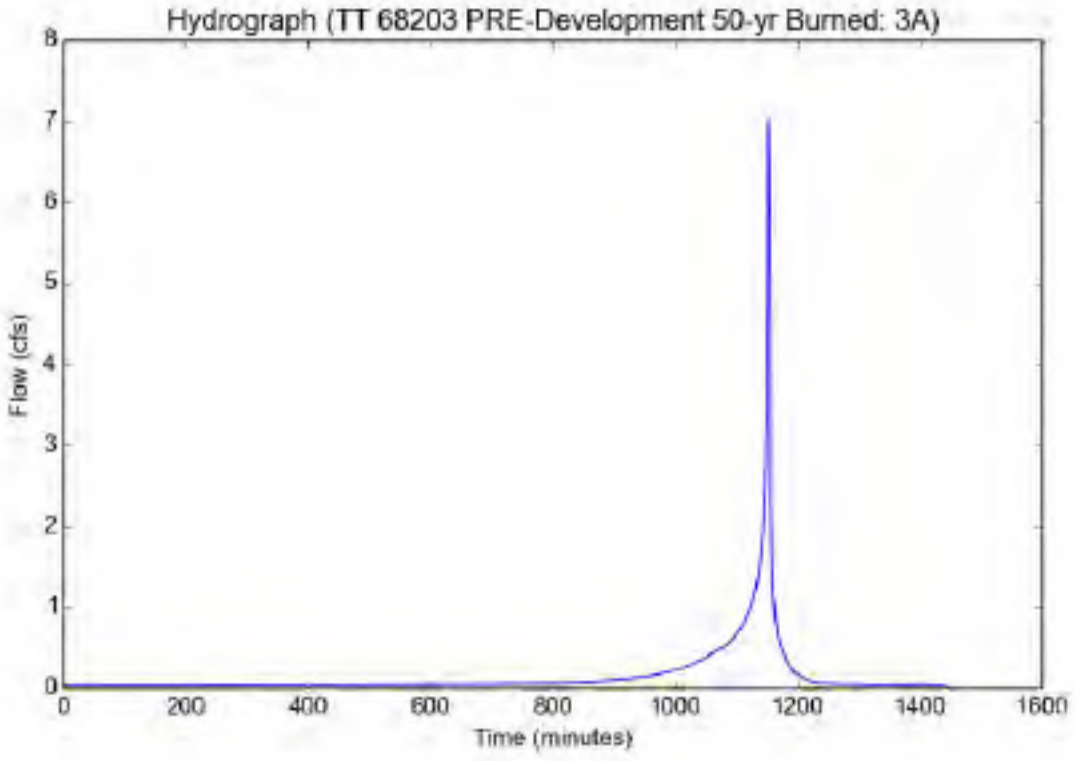
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 50-yr Burned |
| Subarea ID | 3A |
| Area (ac) | 1.95 |
| Flow Path Length (ft) | 370.0 |
| Flow Path Slope (vft/hft) | 0.245 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8619 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 7.0192 |
| Burned Peak Flow Rate (cfs) | 7.1778 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.3183 |
| 24-Hr Clear Runoff Volume (cu-ft) | 13862.9998 |



# Peak Flow Hydrologic Analysis

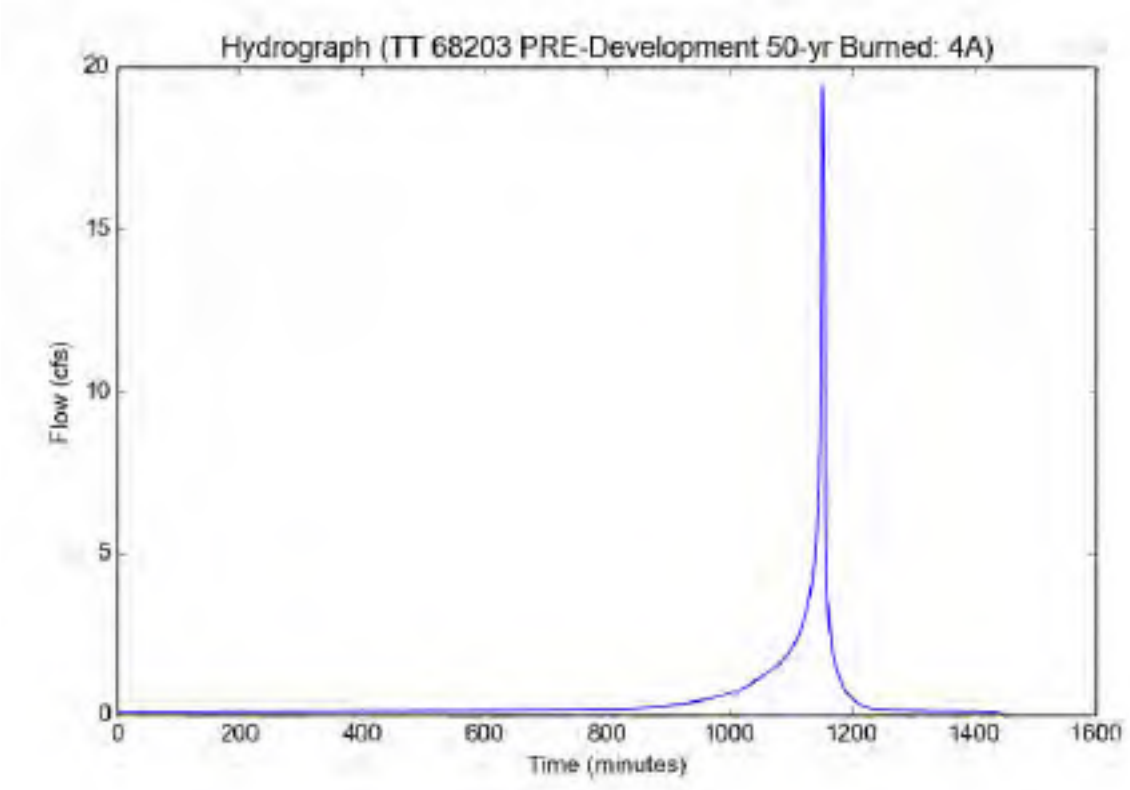
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 50-yr Burned |
| Subarea ID | 4A |
| Area (ac) | 5.91 |
| Flow Path Length (ft) | 893.0 |
| Flow Path Slope (vft/hft) | 0.151 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 3.8334 |
| Undeveloped Runoff Coefficient (Cu) | 0.8546 |
| Developed Runoff Coefficient (Cd) | 0.8551 |
| Time of Concentration (min) | 6.0 |
| Clear Peak Flow Rate (cfs) | 19.3718 |
| Burned Peak Flow Rate (cfs) | 19.8292 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.9645 |
| 24-Hr Clear Runoff Volume (cu-ft) | 42012.2325 |



# Peak Flow Hydrologic Analysis

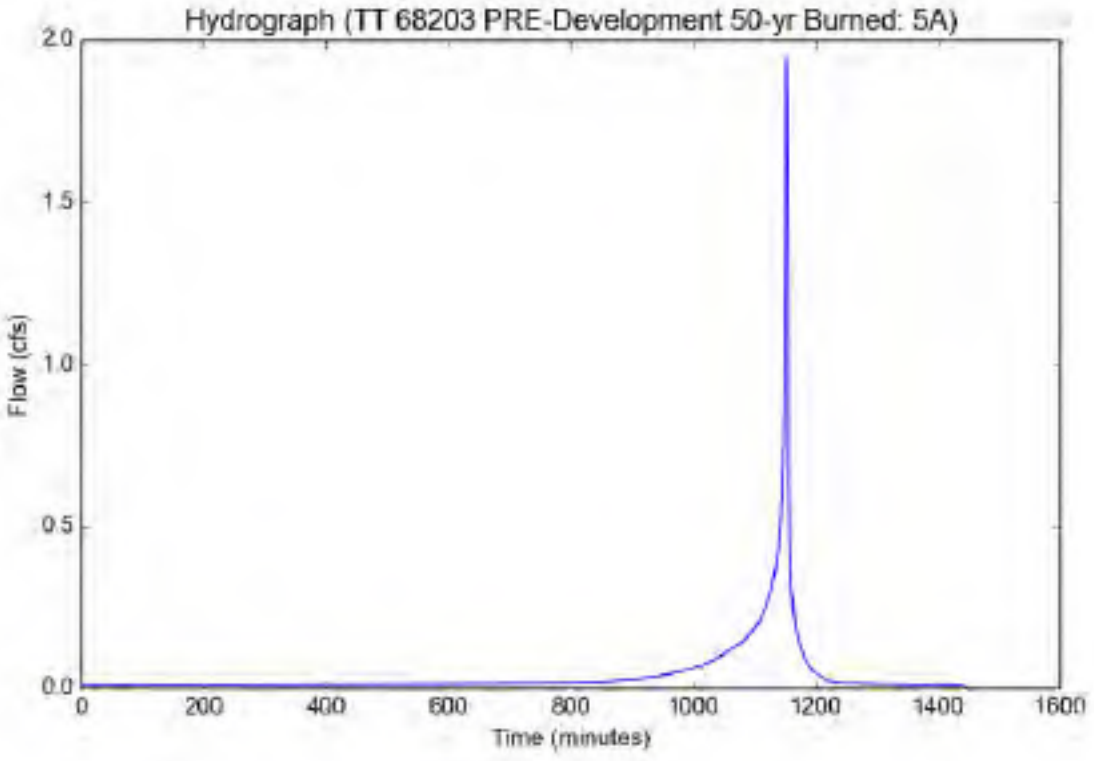
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 50-yr Burned |
| Subarea ID | 5A |
| Area (ac) | 0.54 |
| Flow Path Length (ft) | 169.0 |
| Flow Path Slope (vft/hft) | 0.266 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8619 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.9438 |
| Burned Peak Flow Rate (cfs) | 1.9877 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0881 |
| 24-Hr Clear Runoff Volume (cu-ft) | 3838.9846 |



# Peak Flow Hydrologic Analysis

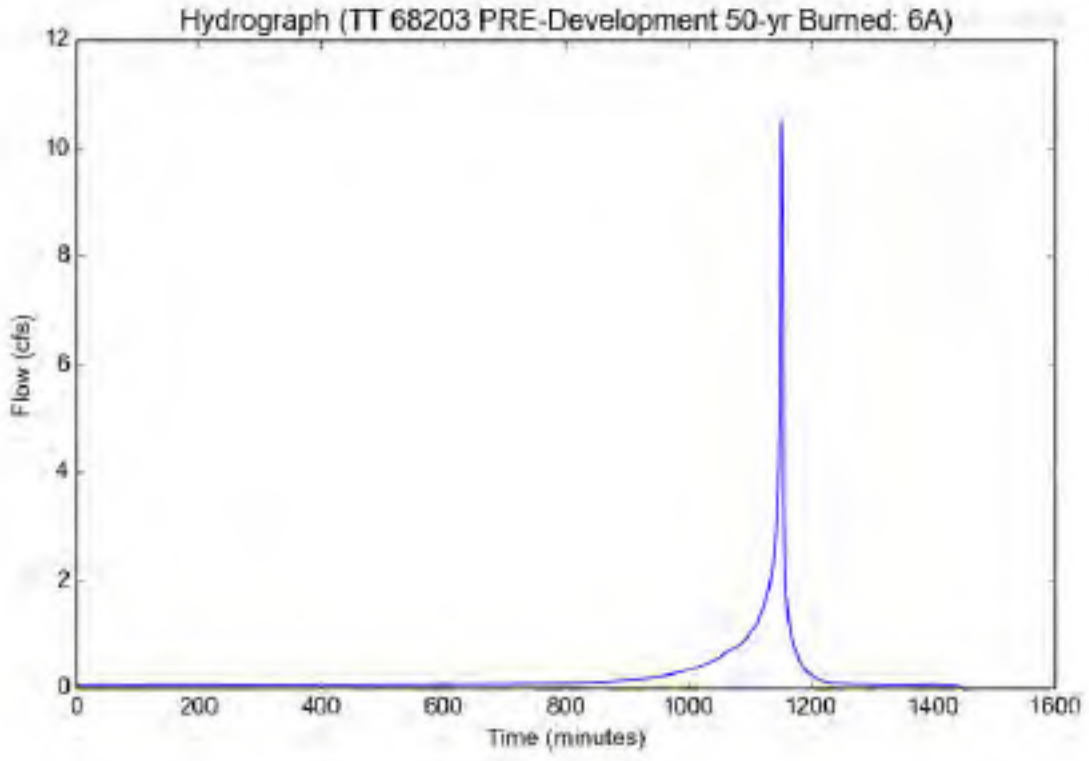
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 50-yr Burned |
| Subarea ID | 6A |
| Area (ac) | 2.91 |
| Flow Path Length (ft) | 192.0 |
| Flow Path Slope (vft/hft) | 0.203 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8619 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 10.4748 |
| Burned Peak Flow Rate (cfs) | 10.7115 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.4749 |
| 24-Hr Clear Runoff Volume (cu-ft) | 20687.8612 |



# Peak Flow Hydrologic Analysis

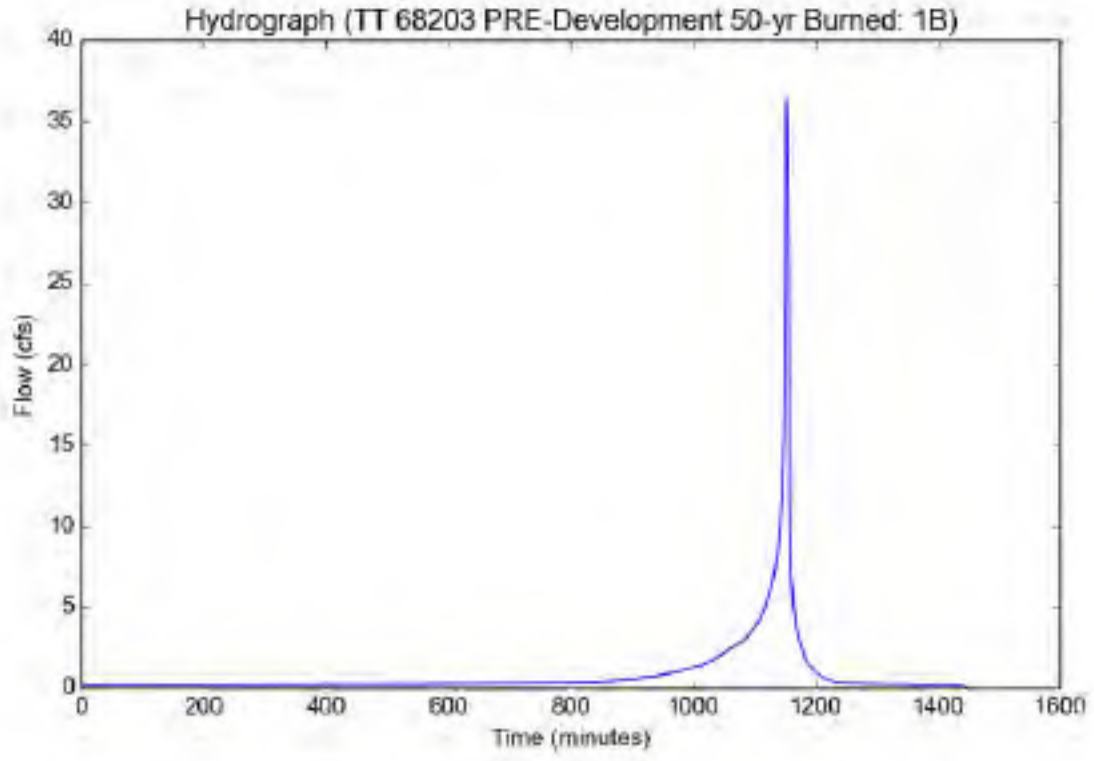
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 50-yr Burned |
| Subarea ID | 1B |
| Area (ac) | 11.1 |
| Flow Path Length (ft) | 961.0 |
| Flow Path Slope (vft/hft) | 0.163 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 3.8334 |
| Undeveloped Runoff Coefficient (Cu) | 0.8546 |
| Developed Runoff Coefficient (Cd) | 0.8551 |
| Time of Concentration (min) | 6.0 |
| Clear Peak Flow Rate (cfs) | 36.3835 |
| Burned Peak Flow Rate (cfs) | 37.2426 |
| 24-Hr Clear Runoff Volume (ac-ft) | 1.8114 |
| 24-Hr Clear Runoff Volume (cu-ft) | 78906.2234 |



# Peak Flow Hydrologic Analysis

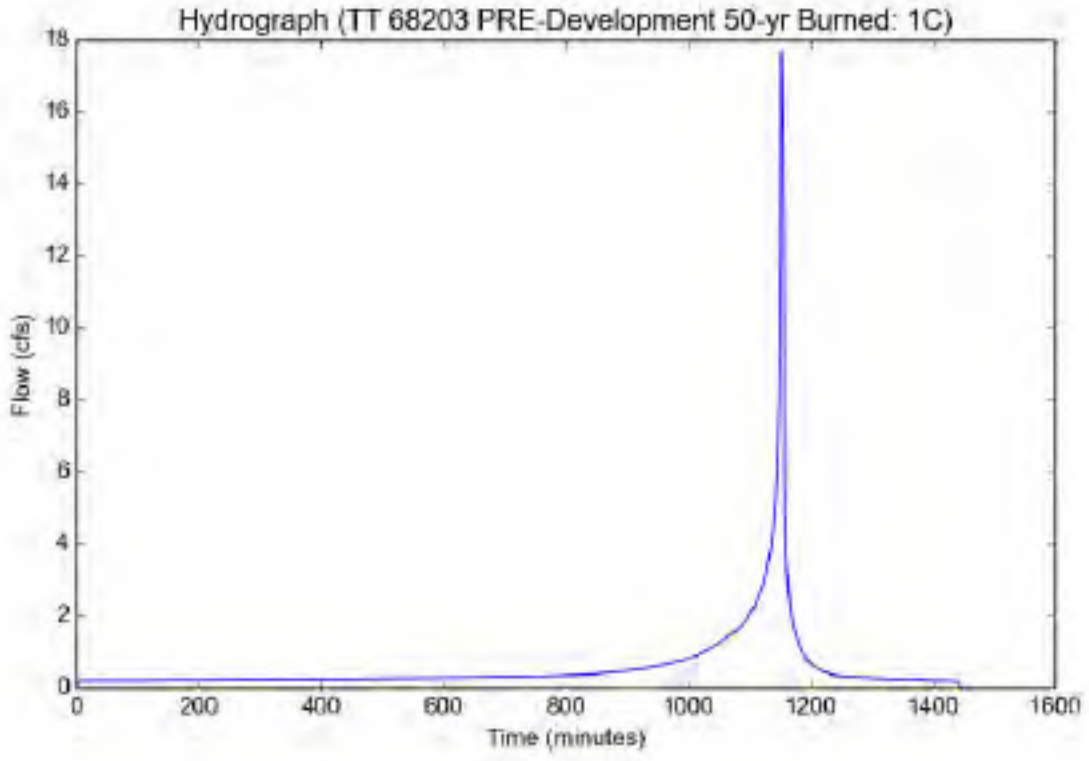
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 50-yr Burned |
| Subarea ID | 1C |
| Area (ac) | 5.35 |
| Flow Path Length (ft) | 864.0 |
| Flow Path Slope (vft/hft) | 0.1 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.18 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 3.8334 |
| Undeveloped Runoff Coefficient (Cu) | 0.8546 |
| Developed Runoff Coefficient (Cd) | 0.8628 |
| Time of Concentration (min) | 6.0 |
| Clear Peak Flow Rate (cfs) | 17.6945 |
| Burned Peak Flow Rate (cfs) | 18.0865 |
| 24-Hr Clear Runoff Volume (ac-ft) | 1.2015 |
| 24-Hr Clear Runoff Volume (cu-ft) | 52336.5649 |



# Peak Flow Hydrologic Analysis

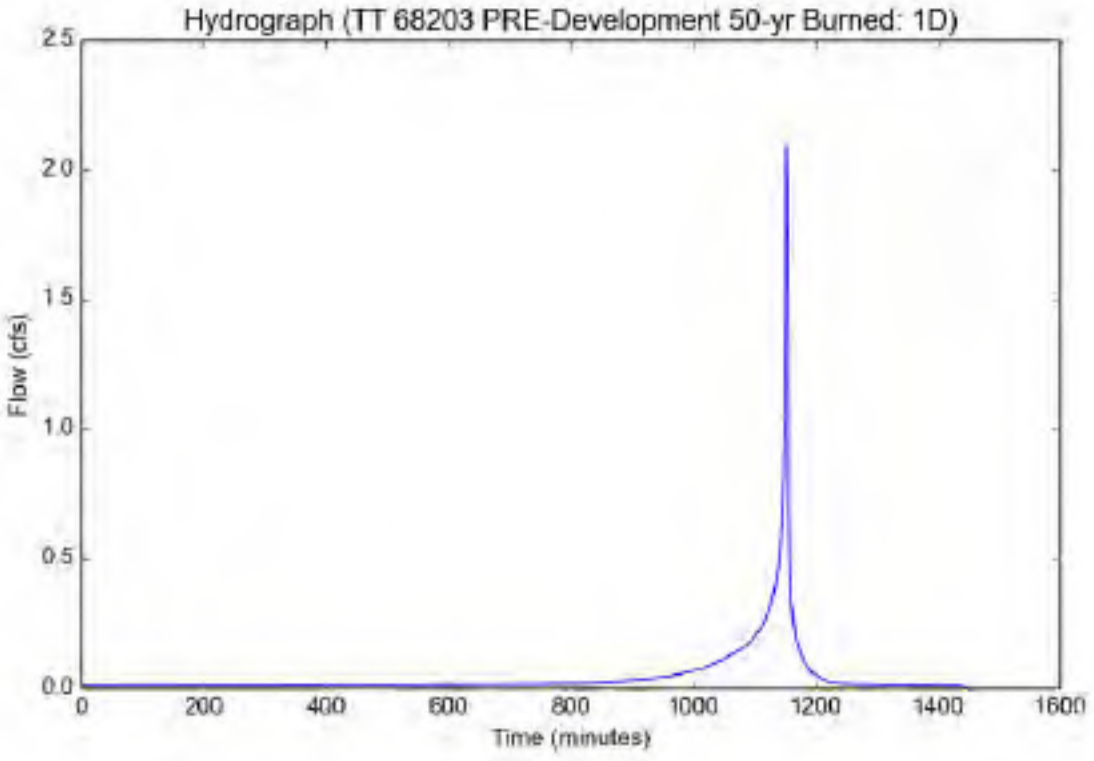
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 50-yr Burned |
| Subarea ID | 1D |
| Area (ac) | 0.58 |
| Flow Path Length (ft) | 305.0 |
| Flow Path Slope (vft/hft) | 0.108 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8619 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.0878 |
| Burned Peak Flow Rate (cfs) | 2.1349 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0947 |
| 24-Hr Clear Runoff Volume (cu-ft) | 4123.3538 |



# Peak Flow Hydrologic Analysis

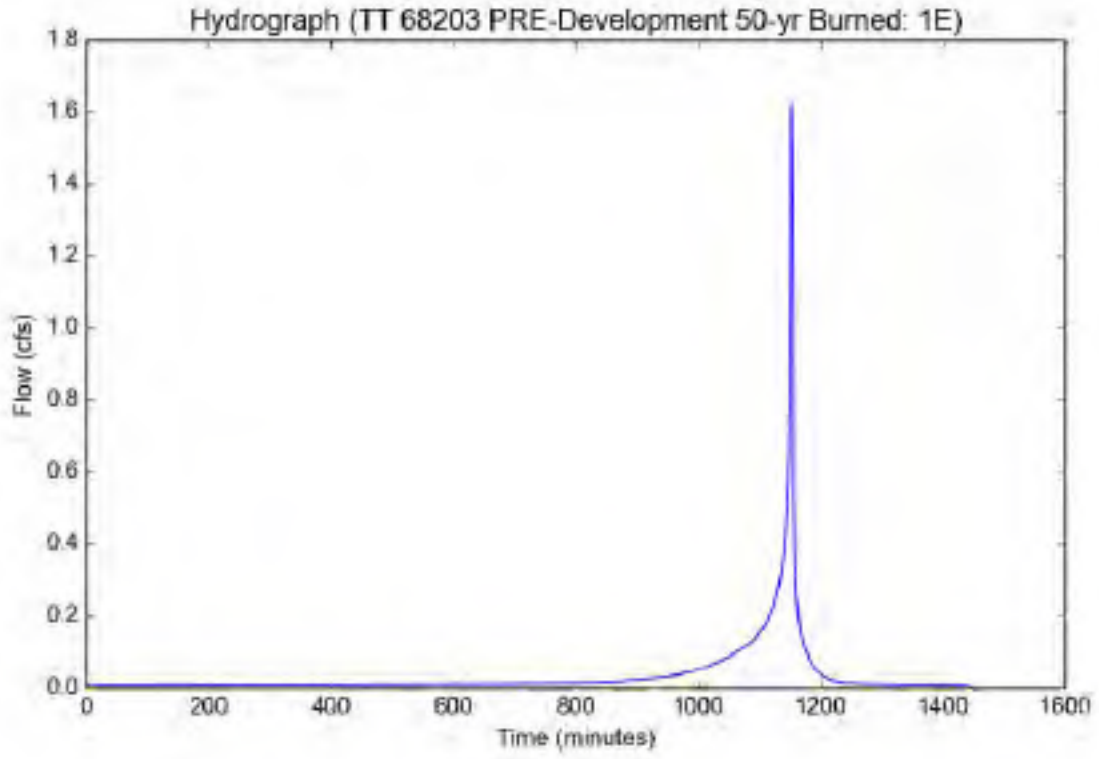
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 50-yr Burned |
| Subarea ID | 1E |
| Area (ac) | 0.45 |
| Flow Path Length (ft) | 224.0 |
| Flow Path Slope (vft/hft) | 0.1 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8619 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.6198 |
| Burned Peak Flow Rate (cfs) | 1.6564 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0734 |
| 24-Hr Clear Runoff Volume (cu-ft) | 3199.1538 |



# Peak Flow Hydrologic Analysis

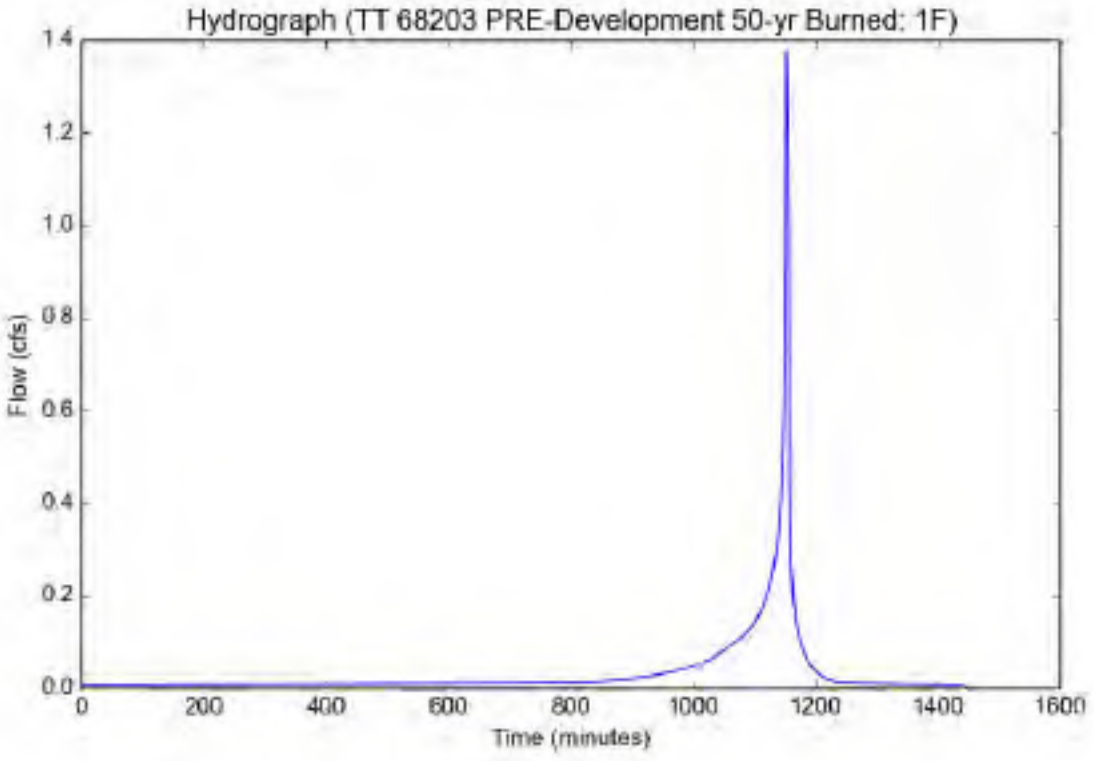
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 50-yr Burned |
| Subarea ID | 1F |
| Area (ac) | 0.42 |
| Flow Path Length (ft) | 649.0 |
| Flow Path Slope (vft/hft) | 0.036 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 3.8334 |
| Undeveloped Runoff Coefficient (Cu) | 0.8546 |
| Developed Runoff Coefficient (Cd) | 0.8551 |
| Time of Concentration (min) | 6.0 |
| Clear Peak Flow Rate (cfs) | 1.3767 |
| Burned Peak Flow Rate (cfs) | 1.4092 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0685 |
| 24-Hr Clear Runoff Volume (cu-ft) | 2985.6409 |



# Peak Flow Hydrologic Analysis

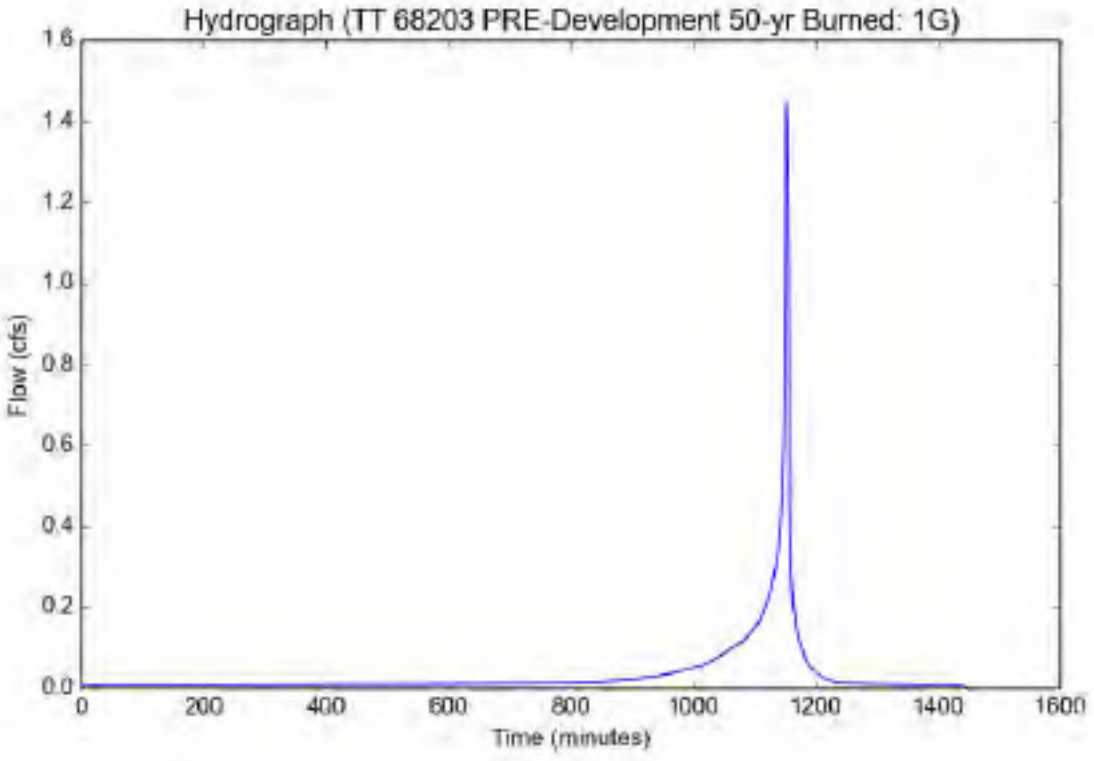
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 50-yr Burned |
| Subarea ID | 1G |
| Area (ac) | 0.44 |
| Flow Path Length (ft) | 765.0 |
| Flow Path Slope (vft/hft) | 0.078 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 3.8334 |
| Undeveloped Runoff Coefficient (Cu) | 0.8546 |
| Developed Runoff Coefficient (Cd) | 0.8551 |
| Time of Concentration (min) | 6.0 |
| Clear Peak Flow Rate (cfs) | 1.4422 |
| Burned Peak Flow Rate (cfs) | 1.4763 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0718 |
| 24-Hr Clear Runoff Volume (cu-ft) | 3127.8143 |



# Peak Flow Hydrologic Analysis

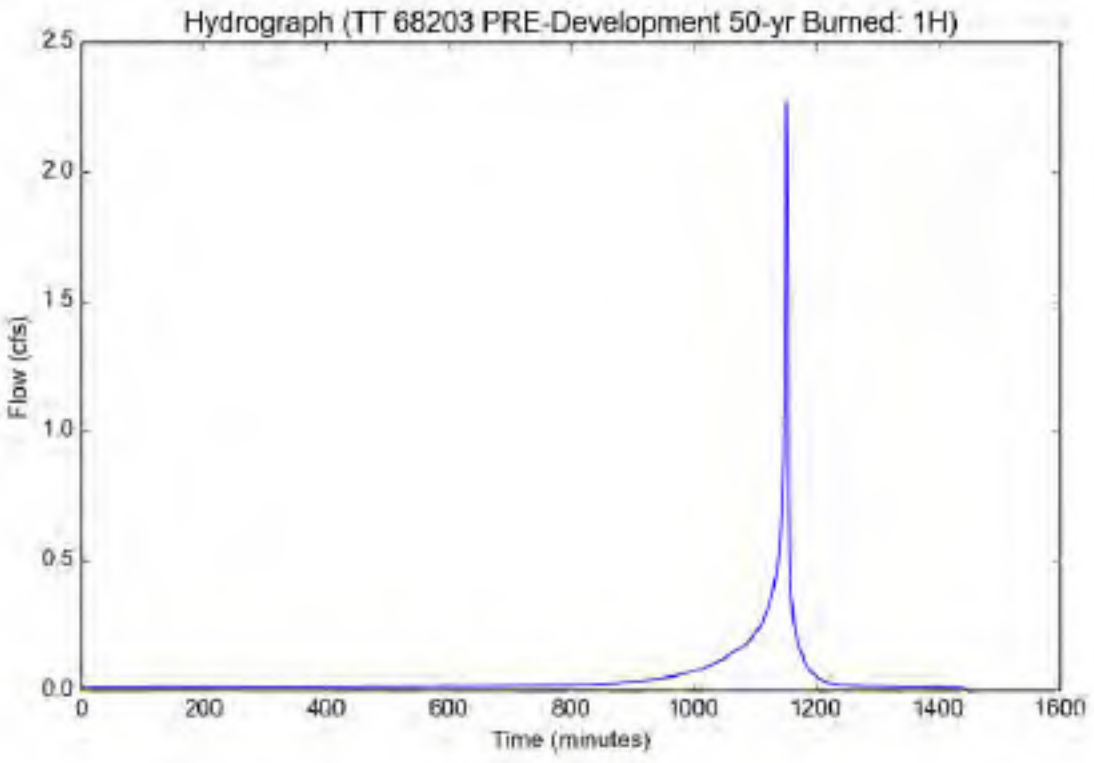
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 50-yr Burned |
| Subarea ID | 1H |
| Area (ac) | 0.63 |
| Flow Path Length (ft) | 361.0 |
| Flow Path Slope (vft/hft) | 0.103 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8619 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.2677 |
| Burned Peak Flow Rate (cfs) | 2.319 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1028 |
| 24-Hr Clear Runoff Volume (cu-ft) | 4478.8153 |



# Peak Flow Hydrologic Analysis

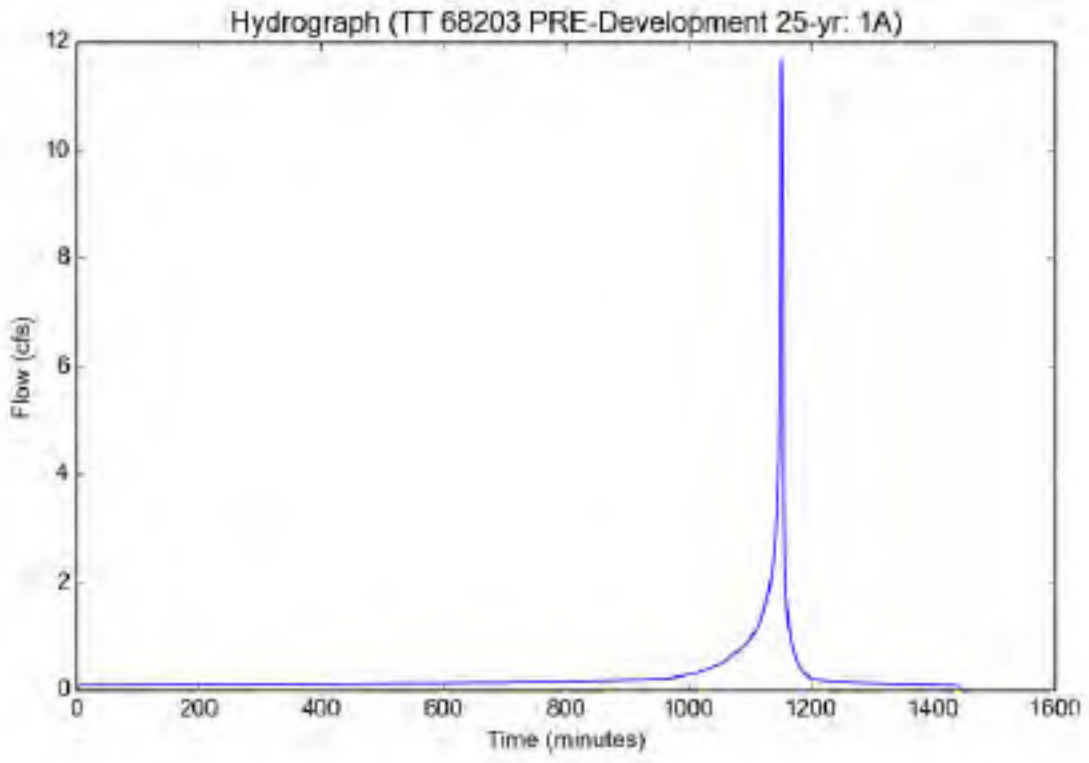
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 25-yr |
| Subarea ID | 1A |
| Area (ac) | 4.13 |
| Flow Path Length (ft) | 619.0 |
| Flow Path Slope (vft/hft) | 0.156 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.08 |
| Soil Type | 97 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.7583 |
| Developed Runoff Coefficient (Cd) | 0.7697 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 11.656 |
| Burned Peak Flow Rate (cfs) | 11.656 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.5572 |
| 24-Hr Clear Runoff Volume (cu-ft) | 24273.6987 |



# Peak Flow Hydrologic Analysis

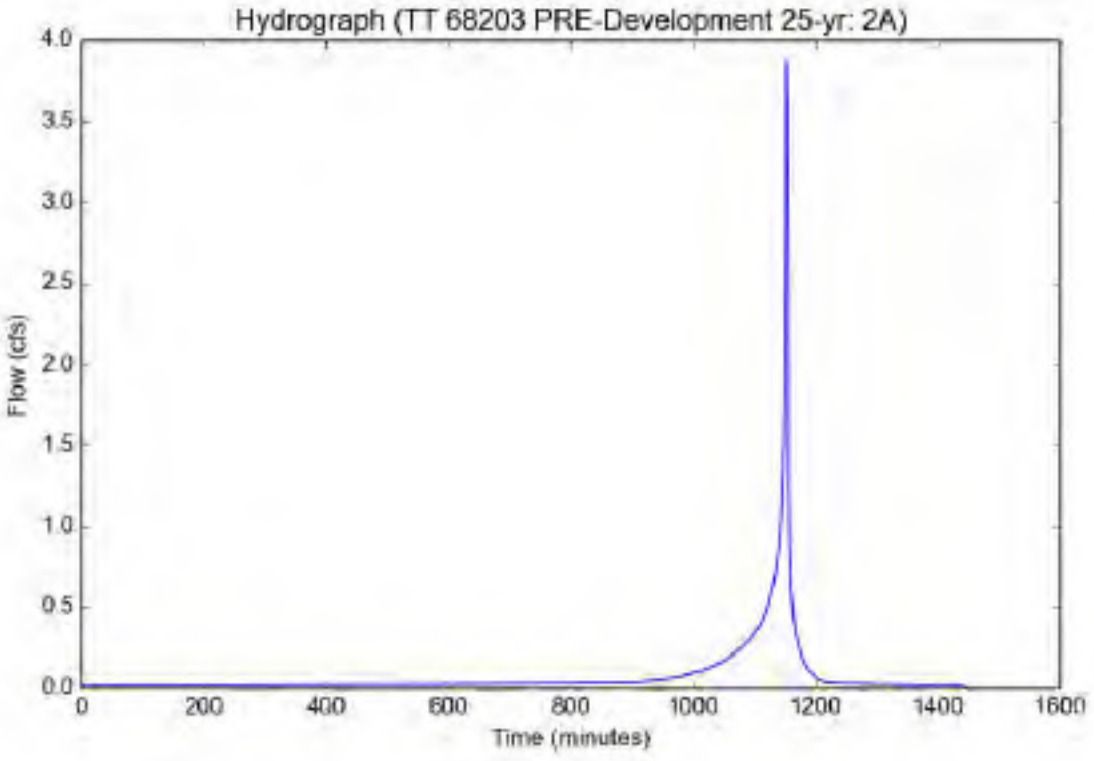
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 25-yr |
| Subarea ID | 2A |
| Area (ac) | 1.24 |
| Flow Path Length (ft) | 559.0 |
| Flow Path Slope (vft/hft) | 0.149 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8517 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 3.8728 |
| Burned Peak Flow Rate (cfs) | 3.8728 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1627 |
| 24-Hr Clear Runoff Volume (cu-ft) | 7087.2252 |



# Peak Flow Hydrologic Analysis

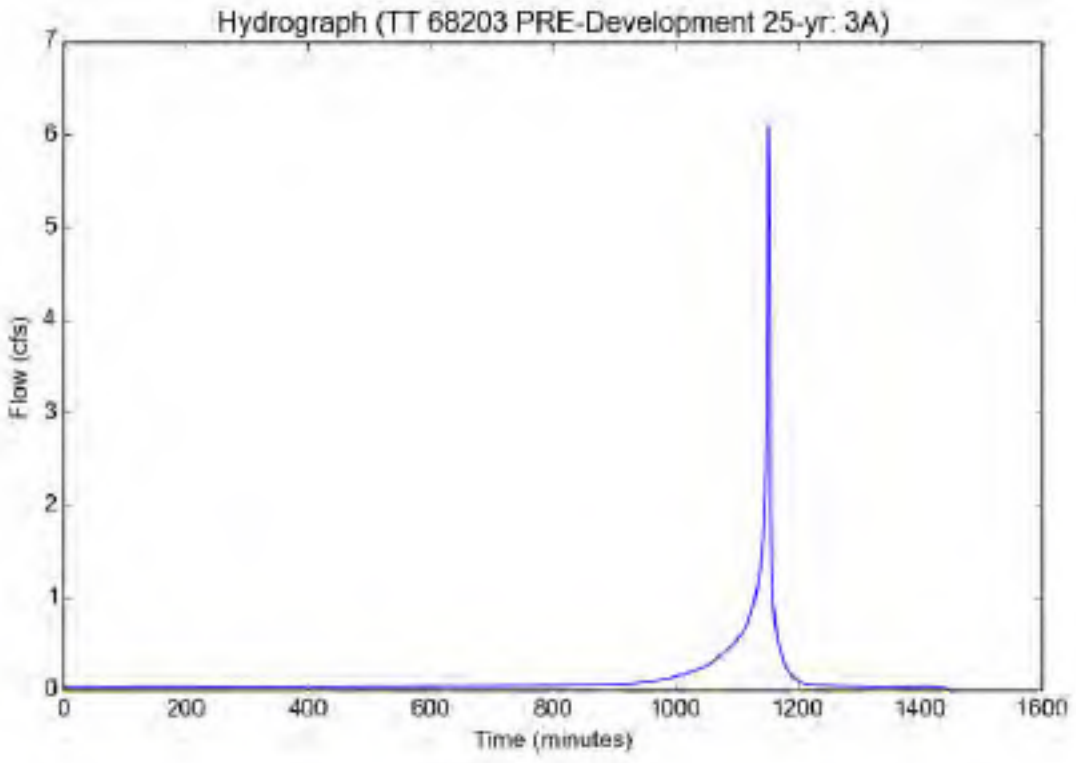
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 25-yr |
| Subarea ID | 3A |
| Area (ac) | 1.95 |
| Flow Path Length (ft) | 370.0 |
| Flow Path Slope (vft/hft) | 0.245 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8517 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 6.0903 |
| Burned Peak Flow Rate (cfs) | 6.0903 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.2559 |
| 24-Hr Clear Runoff Volume (cu-ft) | 11145.2332 |



# Peak Flow Hydrologic Analysis

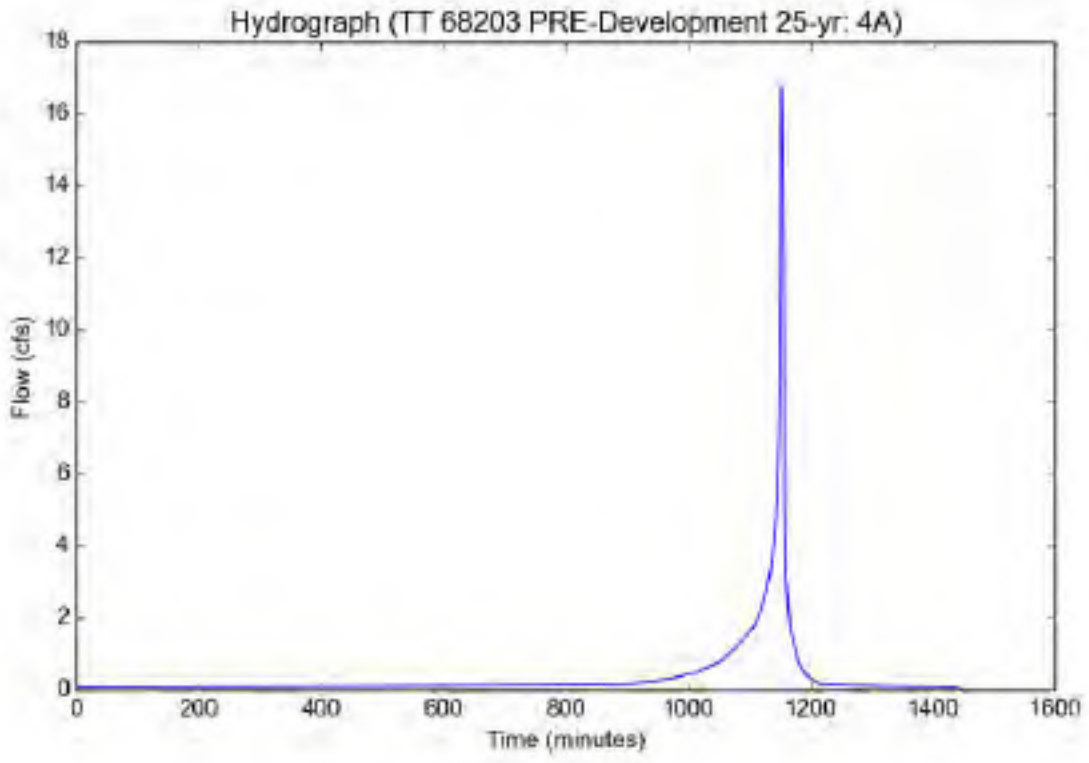
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 25-yr |
| Subarea ID | 4A |
| Area (ac) | 5.91 |
| Flow Path Length (ft) | 893.0 |
| Flow Path Slope (vft/hft) | 0.151 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.3657 |
| Undeveloped Runoff Coefficient (Cu) | 0.8428 |
| Developed Runoff Coefficient (Cd) | 0.8434 |
| Time of Concentration (min) | 6.0 |
| Clear Peak Flow Rate (cfs) | 16.7763 |
| Burned Peak Flow Rate (cfs) | 16.7763 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.7752 |
| 24-Hr Clear Runoff Volume (cu-ft) | 33767.9736 |



# Peak Flow Hydrologic Analysis

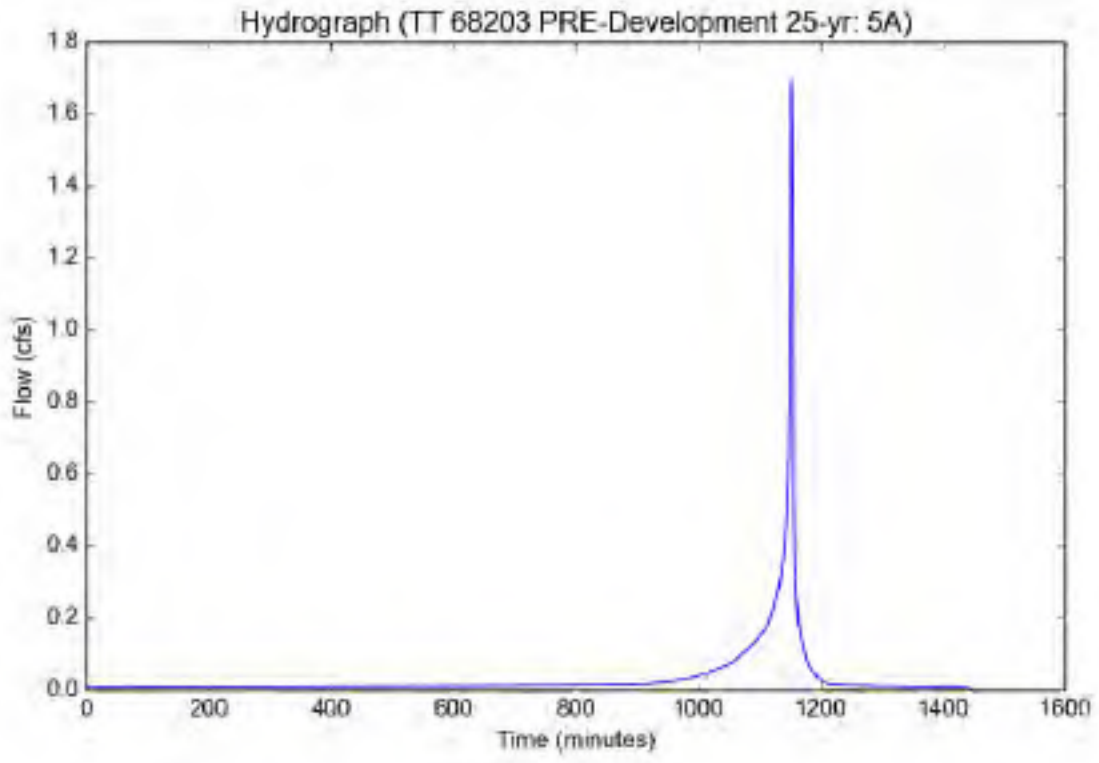
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 25-yr |
| Subarea ID | 5A |
| Area (ac) | 0.54 |
| Flow Path Length (ft) | 169.0 |
| Flow Path Slope (vft/hft) | 0.266 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8517 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.6865 |
| Burned Peak Flow Rate (cfs) | 1.6865 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0709 |
| 24-Hr Clear Runoff Volume (cu-ft) | 3086.3723 |



# Peak Flow Hydrologic Analysis

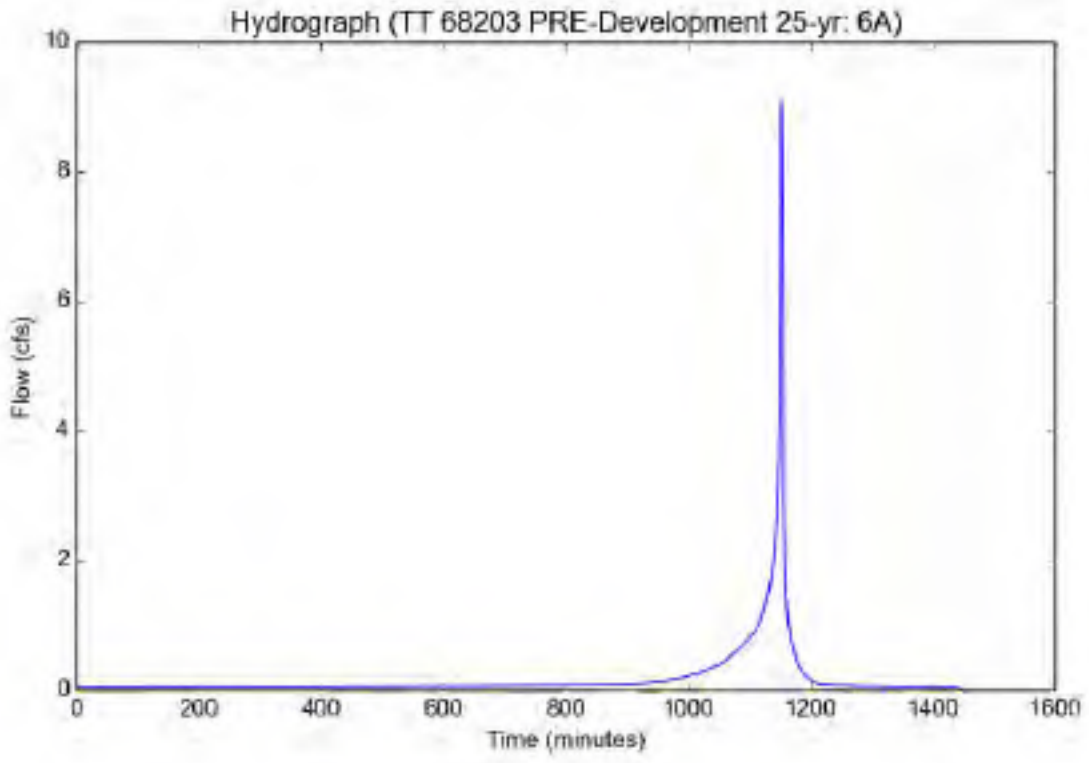
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 25-yr |
| Subarea ID | 6A |
| Area (ac) | 2.91 |
| Flow Path Length (ft) | 192.0 |
| Flow Path Slope (vft/hft) | 0.203 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8517 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 9.0886 |
| Burned Peak Flow Rate (cfs) | 9.0886 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.3818 |
| 24-Hr Clear Runoff Volume (cu-ft) | 16632.1172 |



# Peak Flow Hydrologic Analysis

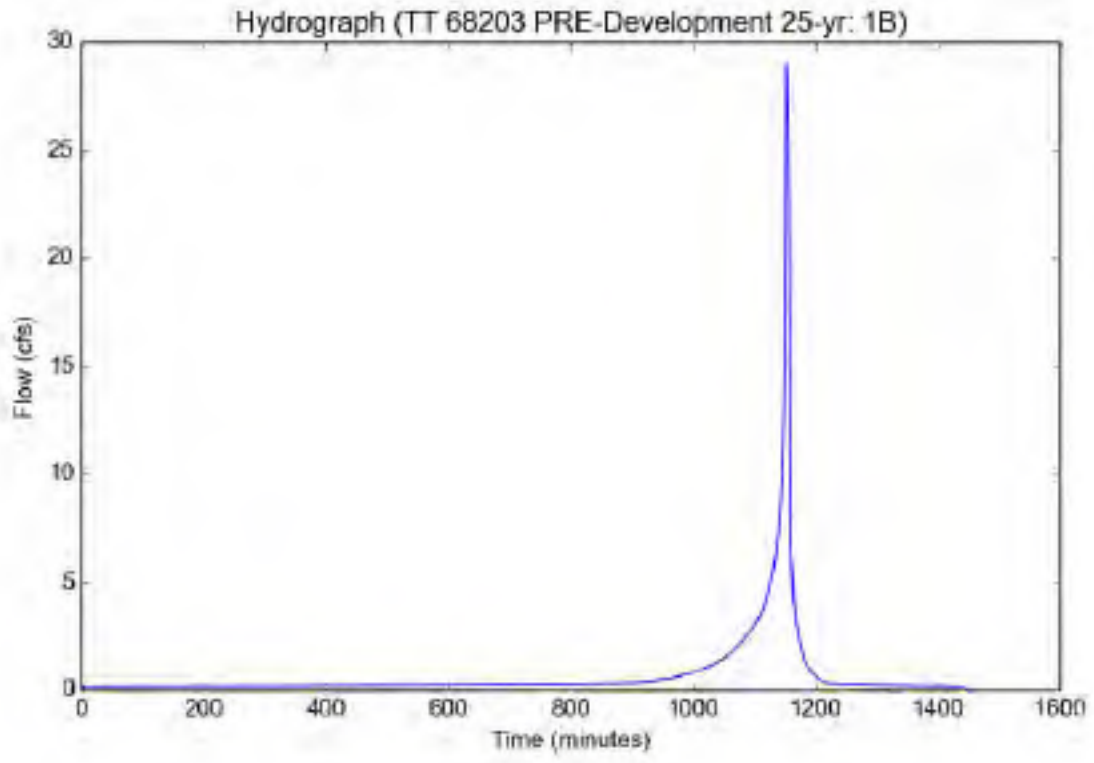
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 25-yr |
| Subarea ID | 1B |
| Area (ac) | 11.1 |
| Flow Path Length (ft) | 961.0 |
| Flow Path Slope (vft/hft) | 0.163 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.1305 |
| Undeveloped Runoff Coefficient (Cu) | 0.8339 |
| Developed Runoff Coefficient (Cd) | 0.8346 |
| Time of Concentration (min) | 7.0 |
| Clear Peak Flow Rate (cfs) | 29.0003 |
| Burned Peak Flow Rate (cfs) | 29.0003 |
| 24-Hr Clear Runoff Volume (ac-ft) | 1.4555 |
| 24-Hr Clear Runoff Volume (cu-ft) | 63402.2397 |



# Peak Flow Hydrologic Analysis

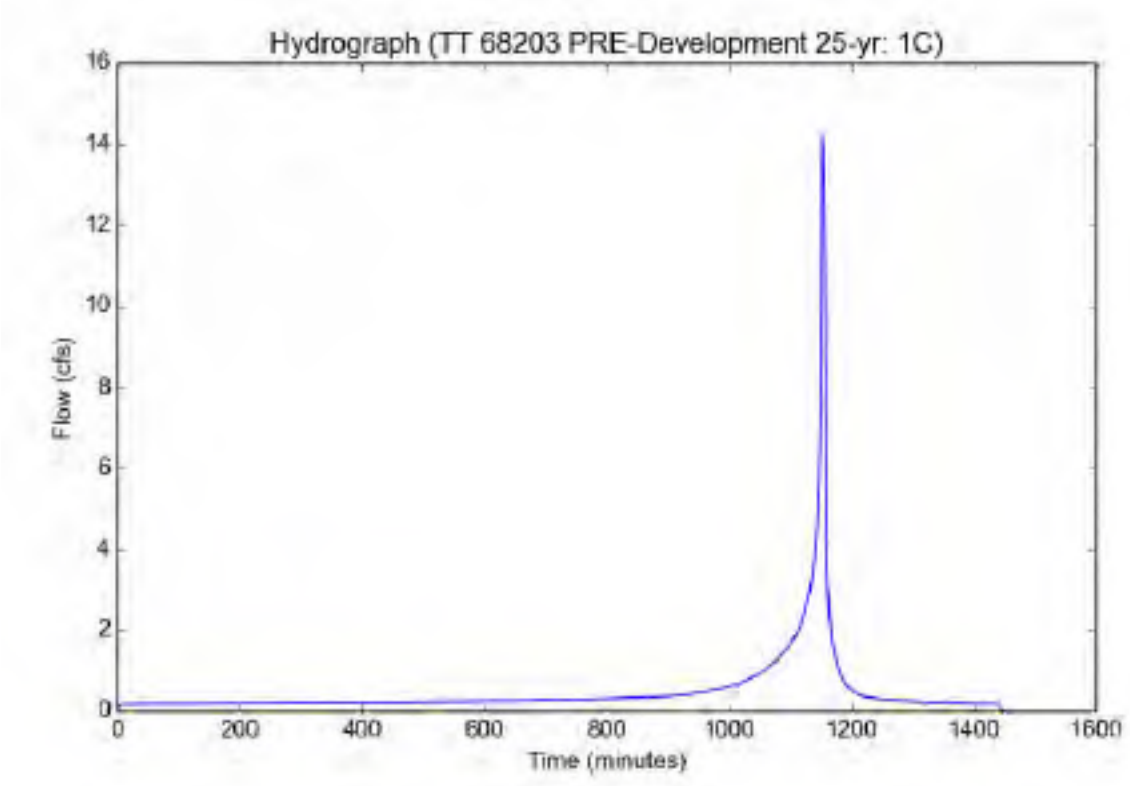
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 25-yr |
| Subarea ID | 1C |
| Area (ac) | 5.35 |
| Flow Path Length (ft) | 864.0 |
| Flow Path Slope (vft/hft) | 0.1 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.18 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.1305 |
| Undeveloped Runoff Coefficient (Cu) | 0.8339 |
| Developed Runoff Coefficient (Cd) | 0.8458 |
| Time of Concentration (min) | 7.0 |
| Clear Peak Flow Rate (cfs) | 14.1658 |
| Burned Peak Flow Rate (cfs) | 14.1658 |
| 24-Hr Clear Runoff Volume (ac-ft) | 1.001 |
| 24-Hr Clear Runoff Volume (cu-ft) | 43605.1369 |



# Peak Flow Hydrologic Analysis

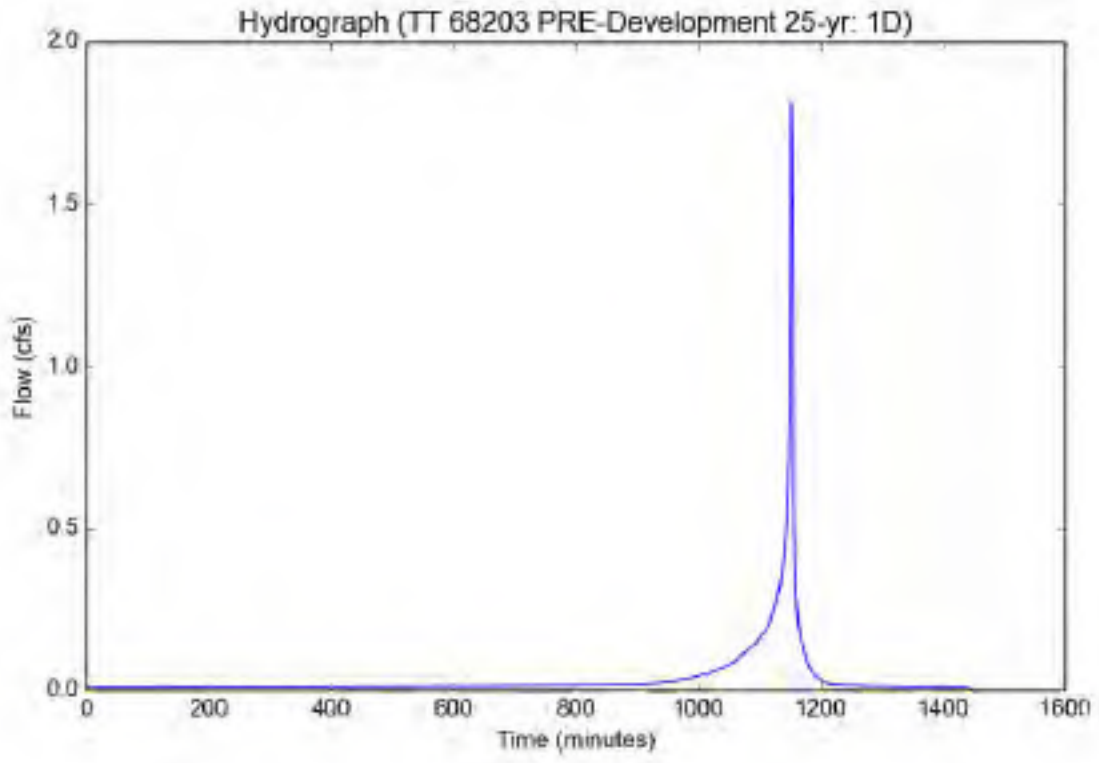
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 25-yr |
| Subarea ID | 1D |
| Area (ac) | 0.58 |
| Flow Path Length (ft) | 305.0 |
| Flow Path Slope (vft/hft) | 0.108 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8517 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.8115 |
| Burned Peak Flow Rate (cfs) | 1.8115 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0761 |
| 24-Hr Clear Runoff Volume (cu-ft) | 3314.9924 |



# Peak Flow Hydrologic Analysis

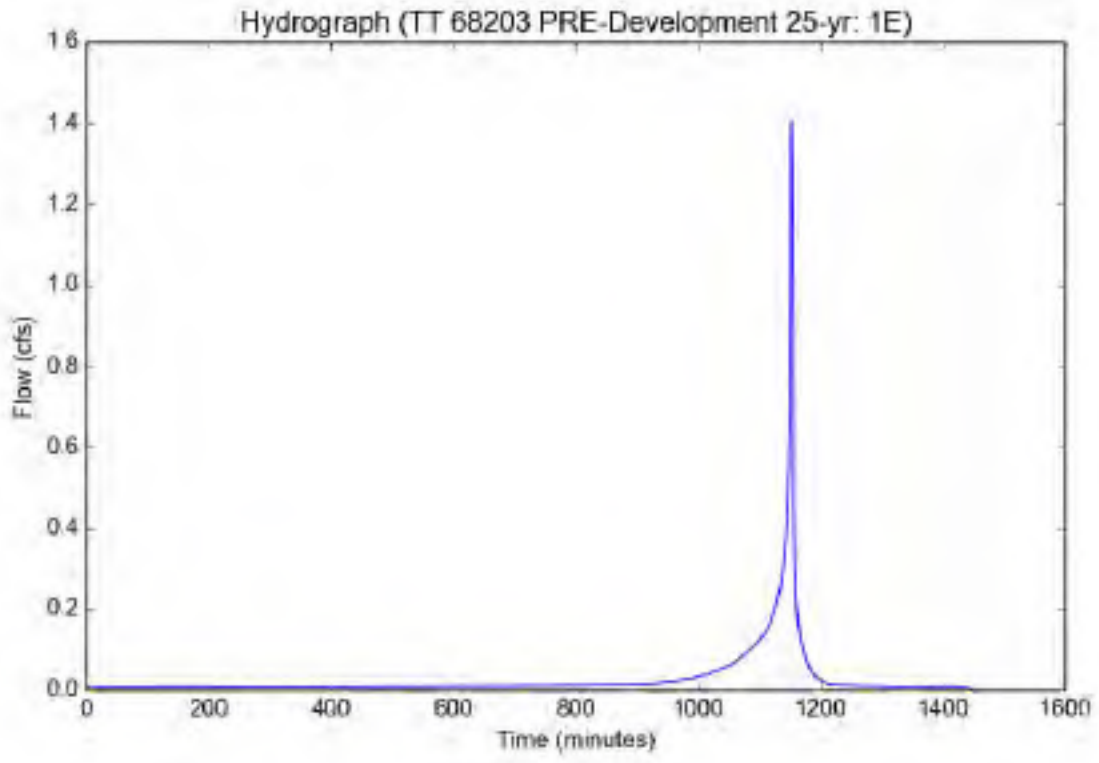
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 25-yr |
| Subarea ID | 1E |
| Area (ac) | 0.45 |
| Flow Path Length (ft) | 224.0 |
| Flow Path Slope (vft/hft) | 0.1 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8517 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.4055 |
| Burned Peak Flow Rate (cfs) | 1.4055 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.059 |
| 24-Hr Clear Runoff Volume (cu-ft) | 2571.9769 |



# Peak Flow Hydrologic Analysis

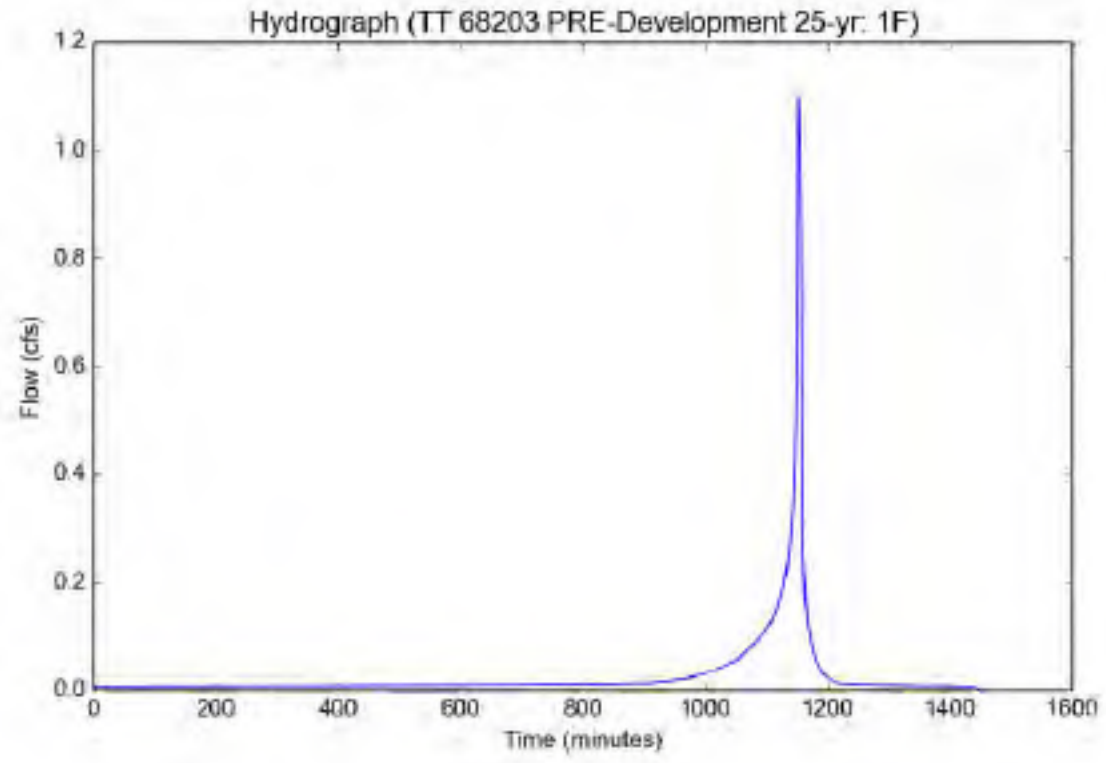
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 25-yr |
| Subarea ID | 1F |
| Area (ac) | 0.42 |
| Flow Path Length (ft) | 649.0 |
| Flow Path Slope (vft/hft) | 0.036 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.1305 |
| Undeveloped Runoff Coefficient (Cu) | 0.8339 |
| Developed Runoff Coefficient (Cd) | 0.8346 |
| Time of Concentration (min) | 7.0 |
| Clear Peak Flow Rate (cfs) | 1.0973 |
| Burned Peak Flow Rate (cfs) | 1.0973 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0551 |
| 24-Hr Clear Runoff Volume (cu-ft) | 2399.0037 |



# Peak Flow Hydrologic Analysis

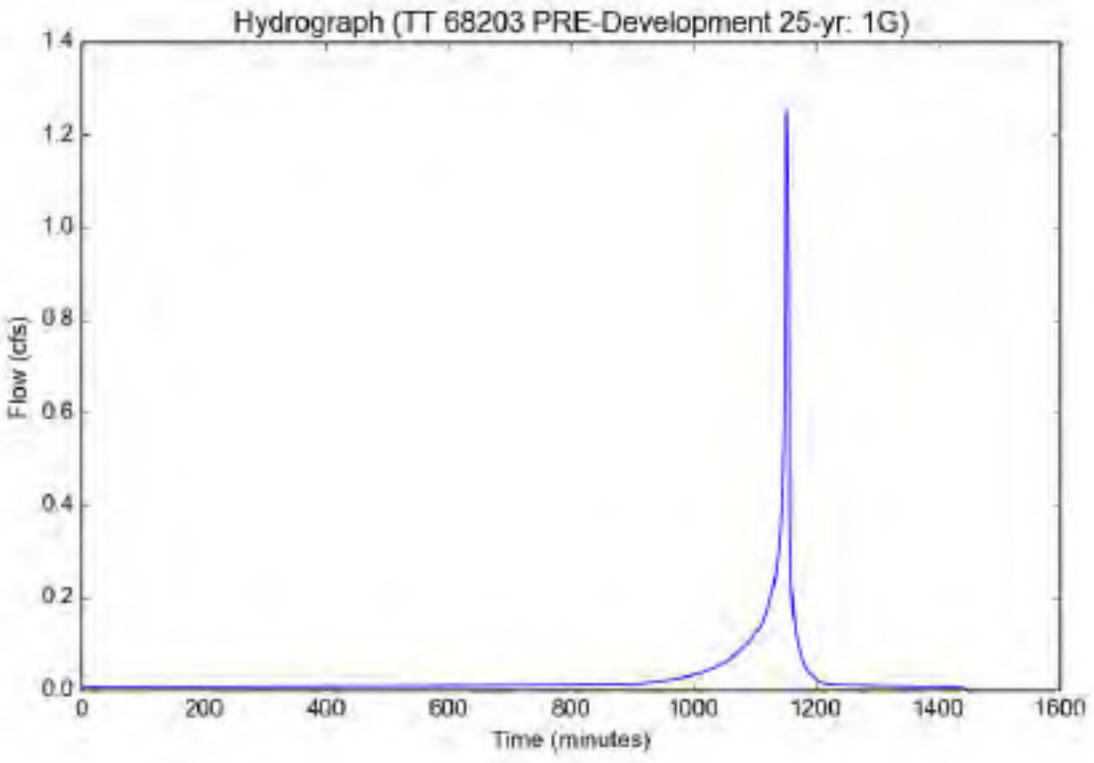
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 25-yr |
| Subarea ID | 1G |
| Area (ac) | 0.44 |
| Flow Path Length (ft) | 765.0 |
| Flow Path Slope (vft/hft) | 0.078 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.3657 |
| Undeveloped Runoff Coefficient (Cu) | 0.8428 |
| Developed Runoff Coefficient (Cd) | 0.8434 |
| Time of Concentration (min) | 6.0 |
| Clear Peak Flow Rate (cfs) | 1.249 |
| Burned Peak Flow Rate (cfs) | 1.249 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0577 |
| 24-Hr Clear Runoff Volume (cu-ft) | 2514.0285 |



# Peak Flow Hydrologic Analysis

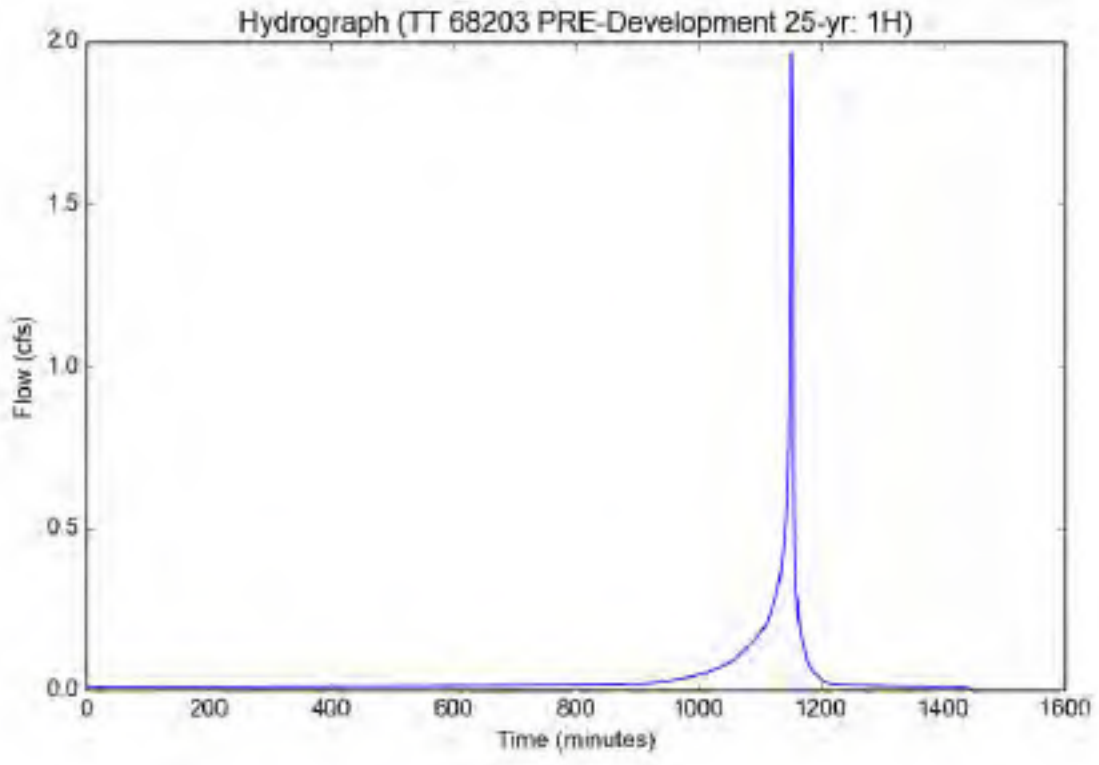
File location: E:/LS_Civil 3d Projects/92020-019 Santa Clarita G V Rd and Sierra Hwy/Hydrology/Hydrocalc/TT 68203 PRE-Development Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 PRE-Development 25-yr |
| Subarea ID | 1H |
| Area (ac) | 0.63 |
| Flow Path Length (ft) | 361.0 |
| Flow Path Slope (vft/hft) | 0.103 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8517 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.9676 |
| Burned Peak Flow Rate (cfs) | 1.9676 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0827 |
| 24-Hr Clear Runoff Volume (cu-ft) | 3600.7676 |



# Appendix E:

# HYDROCALC PRINT-OUTS FOR POST-DEVELOPMENT CONDITION

# Peak Flow Hydrologic Analysis

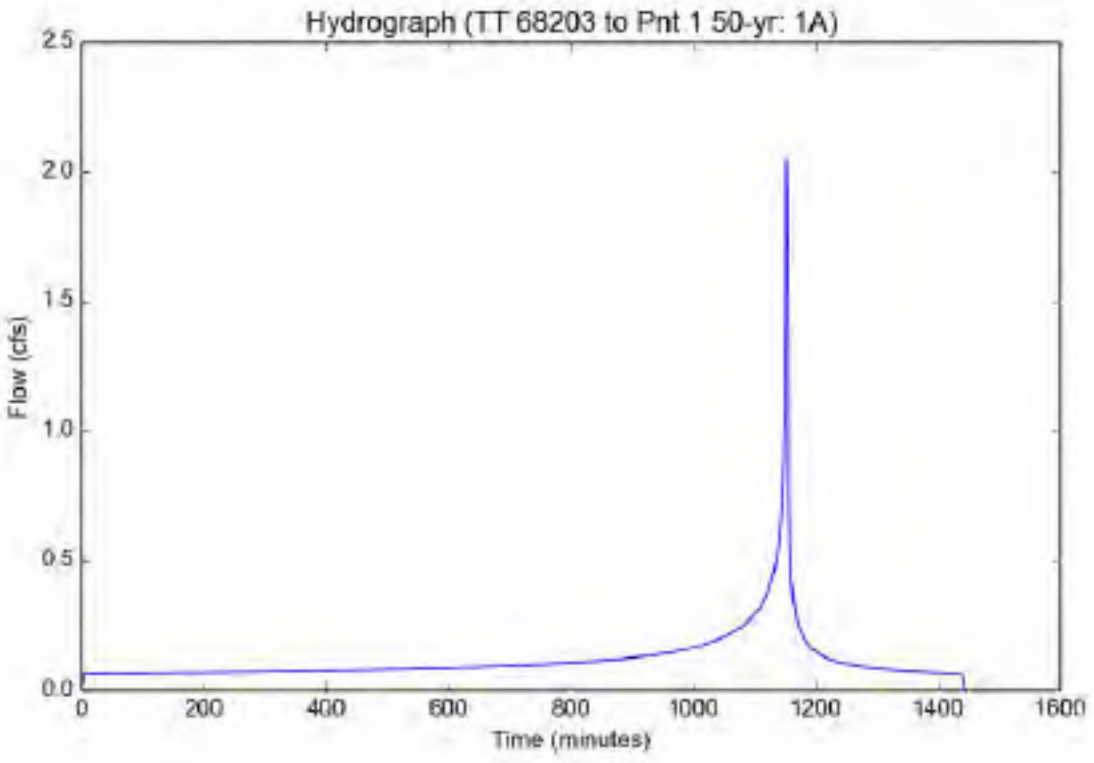
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 1A |
| Area (ac) | 0.55 |
| Flow Path Length (ft) | 491.0 |
| Flow Path Slope (vft/hft) | 0.053 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.76 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8908 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.0461 |
| Burned Peak Flow Rate (cfs) | 2.0461 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.2387 |
| 24-Hr Clear Runoff Volume (cu-ft) | 10397.9004 |



# Peak Flow Hydrologic Analysis

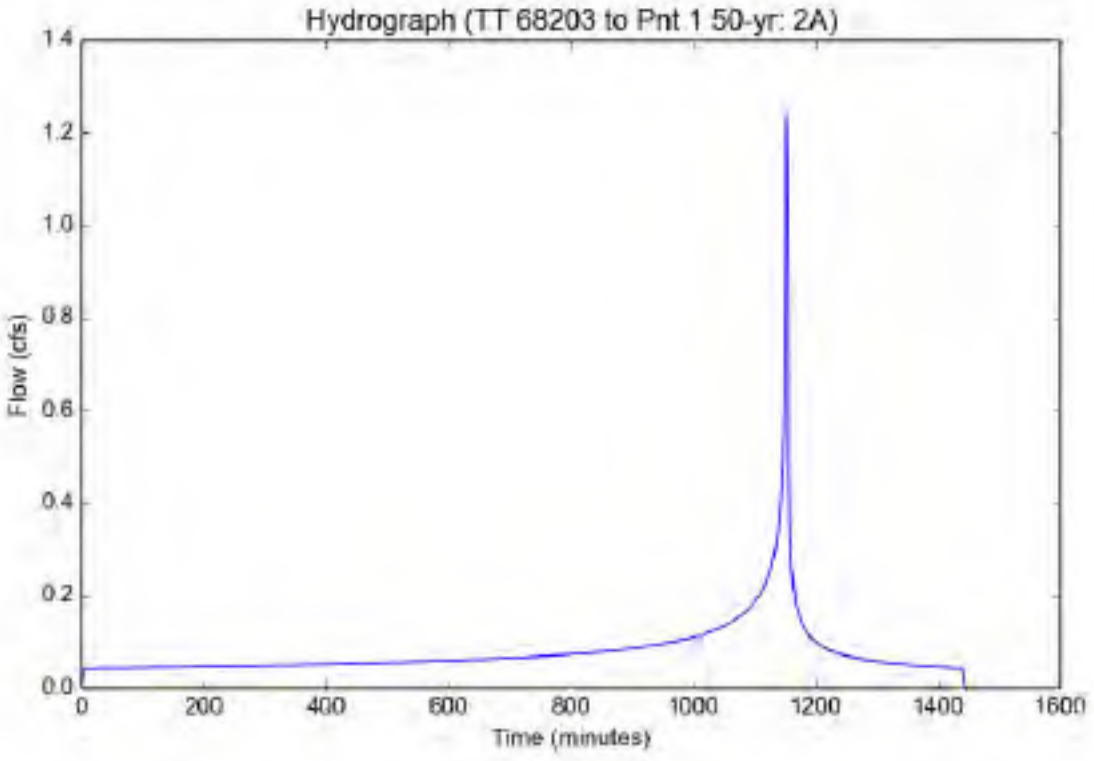
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 2A |
| Area (ac) | 0.33 |
| Flow Path Length (ft) | 399.0 |
| Flow Path Slope (vft/hft) | 0.06 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.9 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8962 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.2351 |
| Burned Peak Flow Rate (cfs) | 1.2351 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1599 |
| 24-Hr Clear Runoff Volume (cu-ft) | 6965.3765 |



# Peak Flow Hydrologic Analysis

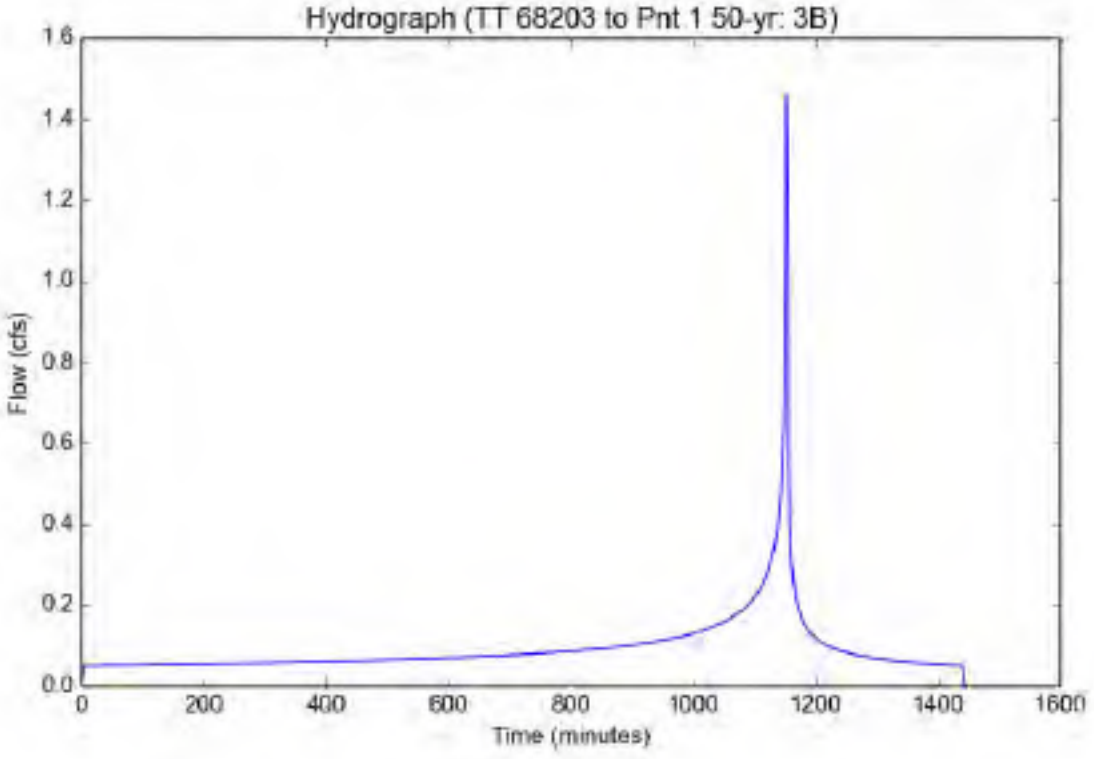
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 3B |
| Area (ac) | 0.39 |
| Flow Path Length (ft) | 495.0 |
| Flow Path Slope (vft/hft) | 0.095 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.9 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8962 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.4596 |
| Burned Peak Flow Rate (cfs) | 1.4596 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.189 |
| 24-Hr Clear Runoff Volume (cu-ft) | 8231.8085 |



# Peak Flow Hydrologic Analysis

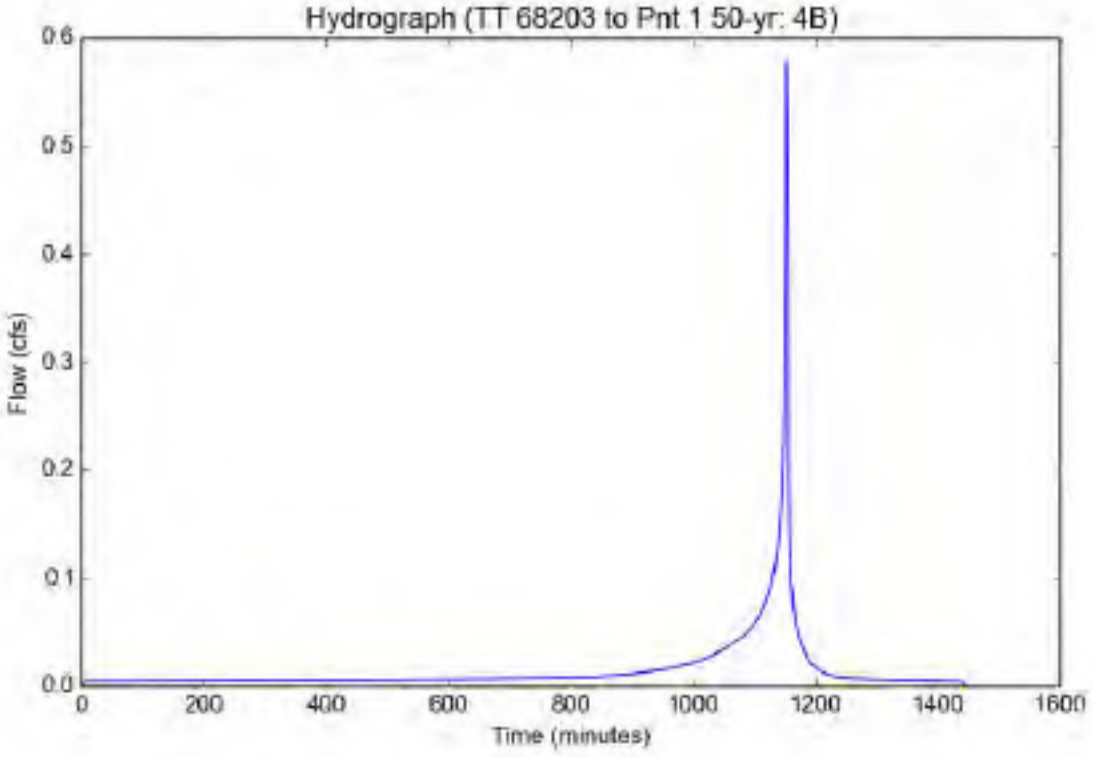
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 4B |
| Area (ac) | 0.16 |
| Flow Path Length (ft) | 266.0 |
| Flow Path Slope (vft/hft) | 0.128 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8654 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 0.5782 |
| Burned Peak Flow Rate (cfs) | 0.5782 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0313 |
| 24-Hr Clear Runoff Volume (cu-ft) | 1363.9609 |



# Peak Flow Hydrologic Analysis

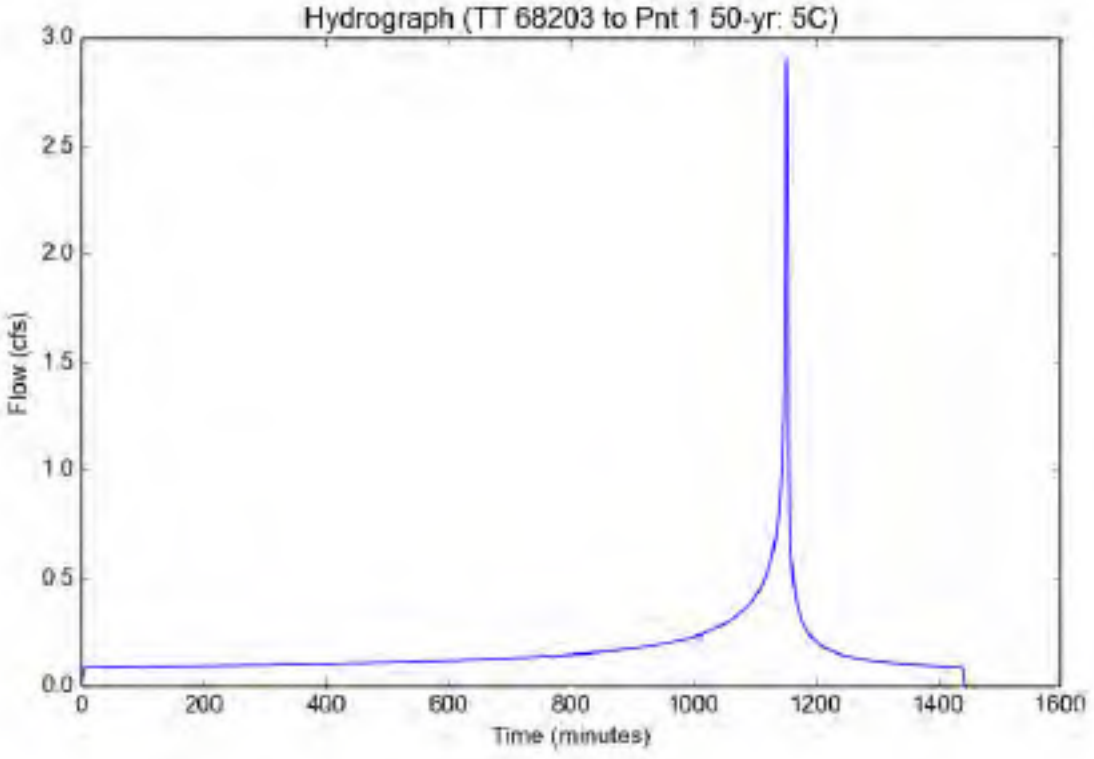
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 5C |
| Area (ac) | 0.78 |
| Flow Path Length (ft) | 309.0 |
| Flow Path Slope (vft/hft) | 0.044 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.74 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.89 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.8992 |
| Burned Peak Flow Rate (cfs) | 2.8992 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.3329 |
| 24-Hr Clear Runoff Volume (cu-ft) | 14500.7556 |



# Peak Flow Hydrologic Analysis

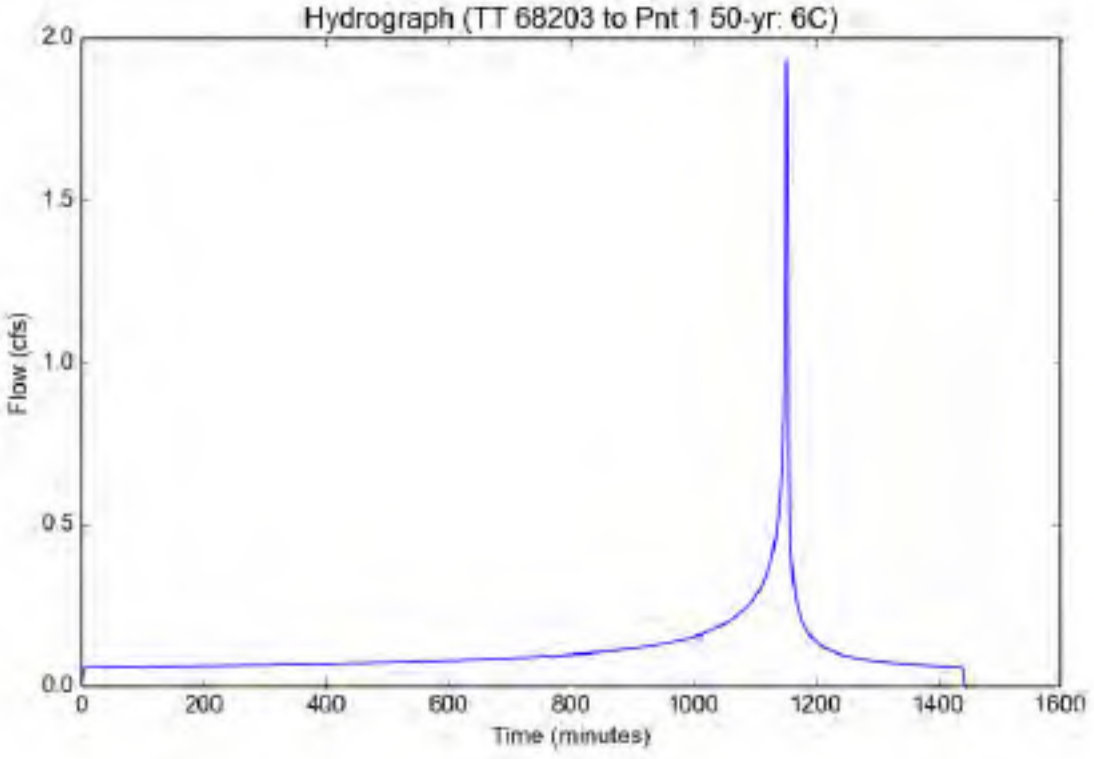
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 6C |
| Area (ac) | 0.52 |
| Flow Path Length (ft) | 164.0 |
| Flow Path Slope (vft/hft) | 0.01 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.74 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.89 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.9328 |
| Burned Peak Flow Rate (cfs) | 1.9328 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.2219 |
| 24-Hr Clear Runoff Volume (cu-ft) | 9667.1704 |



# Peak Flow Hydrologic Analysis

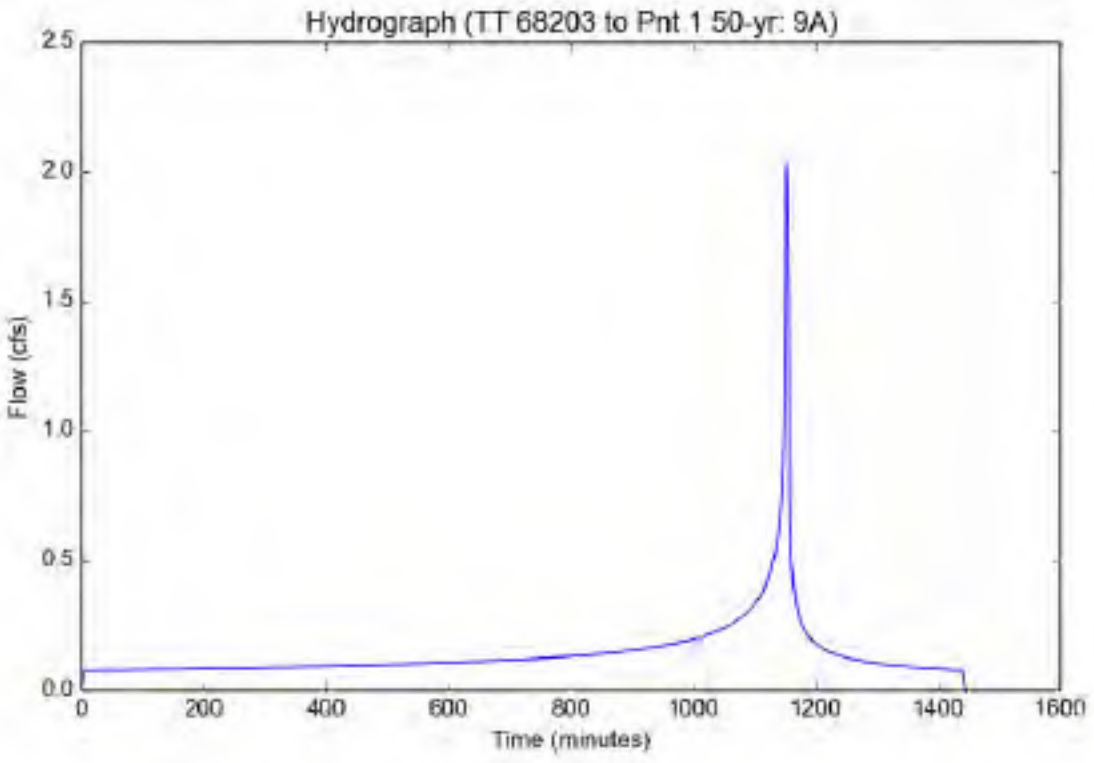
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 9A |
| Area (ac) | 0.59 |
| Flow Path Length (ft) | 790.0 |
| Flow Path Slope (vft/hft) | 0.082 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.9 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 3.8334 |
| Undeveloped Runoff Coefficient (Cu) | 0.8546 |
| Developed Runoff Coefficient (Cd) | 0.8955 |
| Time of Concentration (min) | 6.0 |
| Clear Peak Flow Rate (cfs) | 2.0253 |
| Burned Peak Flow Rate (cfs) | 2.0253 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.2859 |
| 24-Hr Clear Runoff Volume (cu-ft) | 12453.217 |



# Peak Flow Hydrologic Analysis

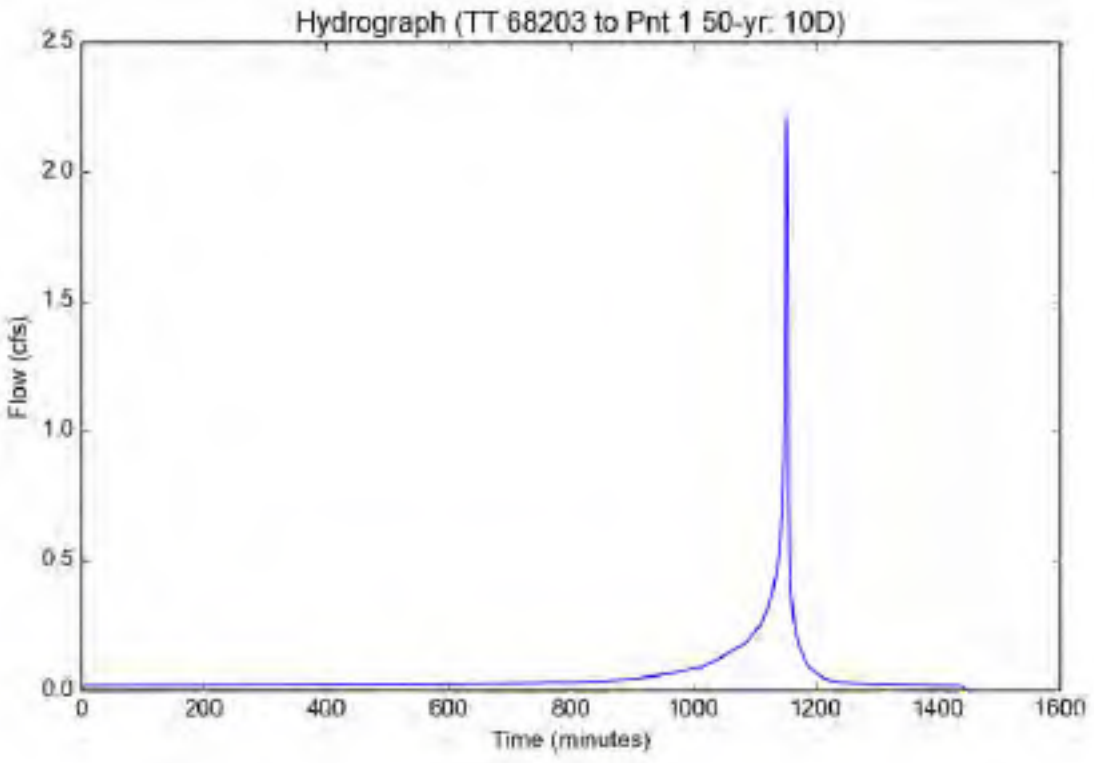
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 10D |
| Area (ac) | 0.61 |
| Flow Path Length (ft) | 352.0 |
| Flow Path Slope (vft/hft) | 0.136 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8654 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.2046 |
| Burned Peak Flow Rate (cfs) | 2.2046 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1194 |
| 24-Hr Clear Runoff Volume (cu-ft) | 5200.101 |



# Peak Flow Hydrologic Analysis

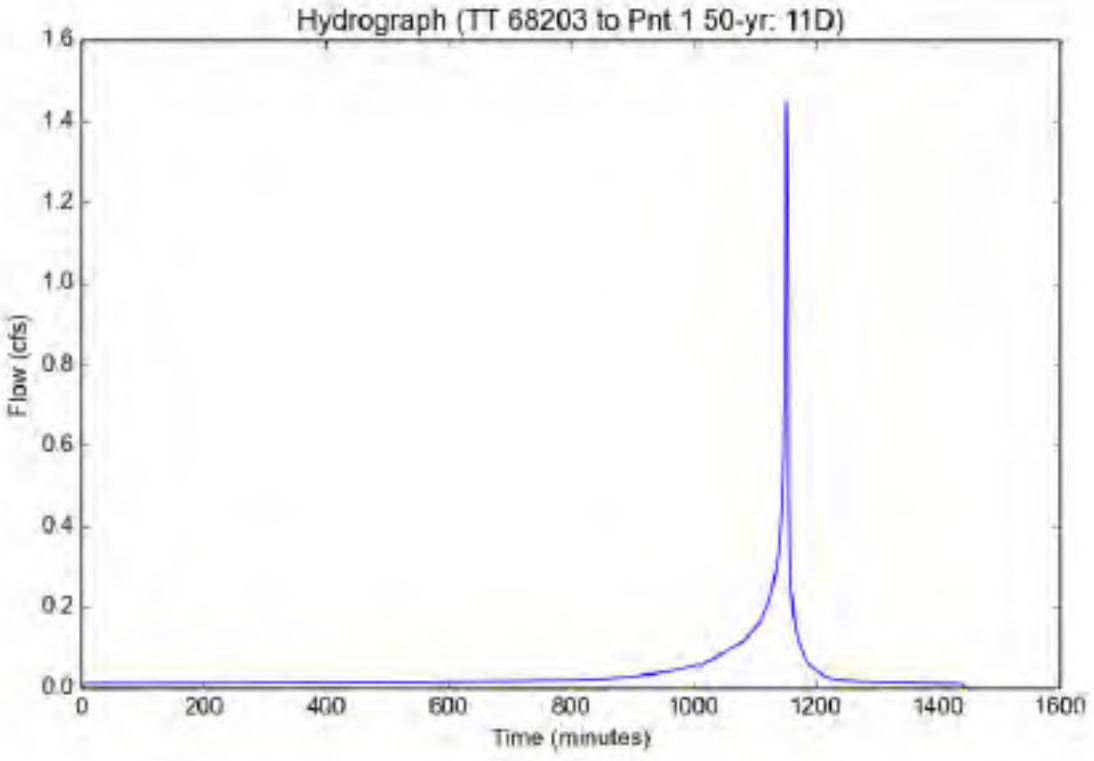
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 11D |
| Area (ac) | 0.4 |
| Flow Path Length (ft) | 277.0 |
| Flow Path Slope (vft/hft) | 0.173 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8654 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.4456 |
| Burned Peak Flow Rate (cfs) | 1.4456 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0783 |
| 24-Hr Clear Runoff Volume (cu-ft) | 3409.9023 |



# Peak Flow Hydrologic Analysis

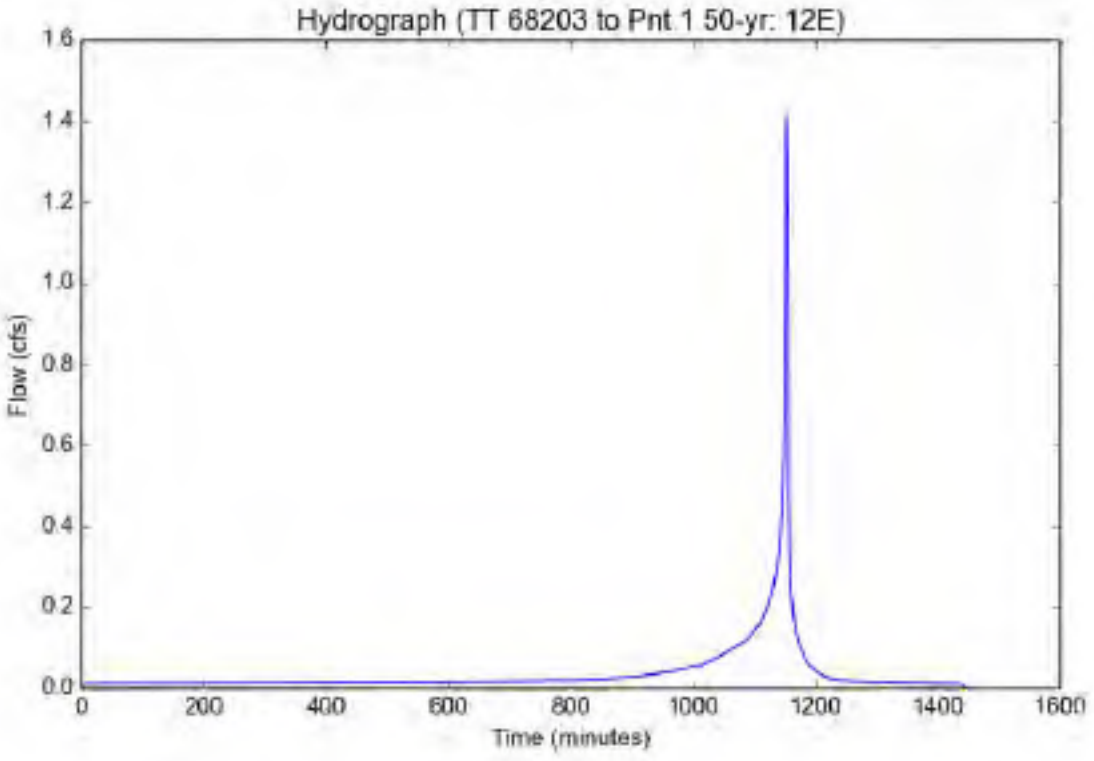
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 12E |
| Area (ac) | 0.39 |
| Flow Path Length (ft) | 392.0 |
| Flow Path Slope (vft/hft) | 0.056 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8654 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.4095 |
| Burned Peak Flow Rate (cfs) | 1.4095 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0763 |
| 24-Hr Clear Runoff Volume (cu-ft) | 3324.6548 |



# Peak Flow Hydrologic Analysis

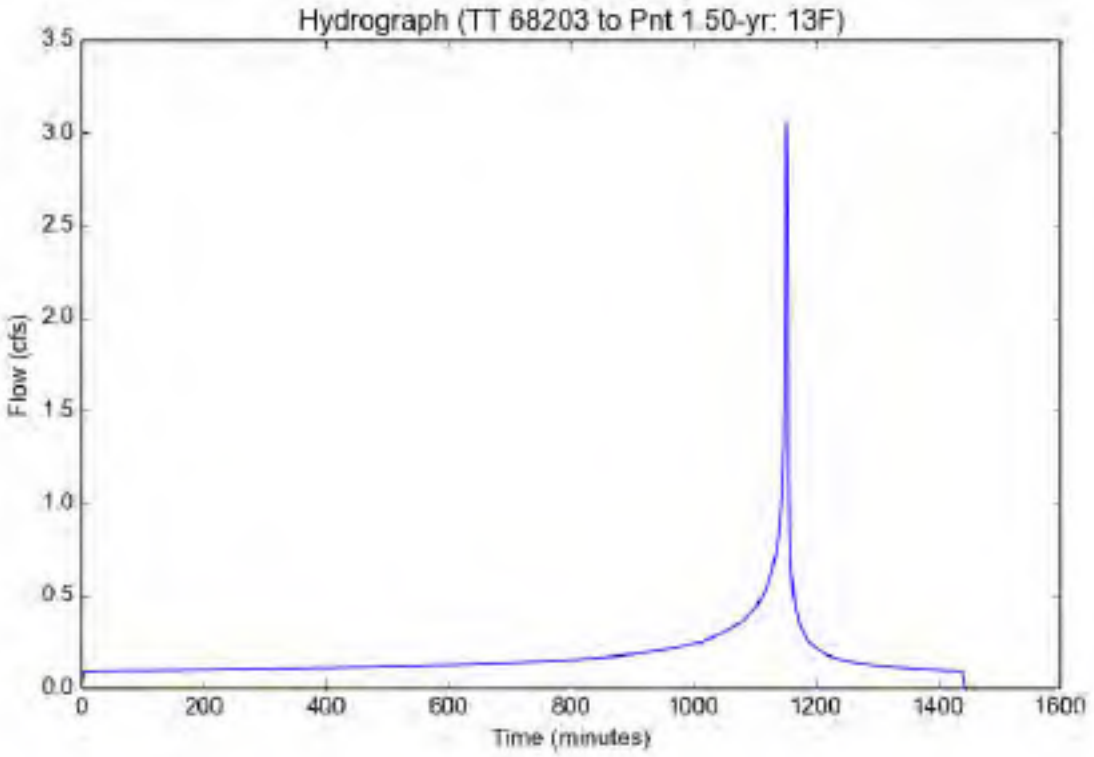
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 13F |
| Area (ac) | 0.82 |
| Flow Path Length (ft) | 311.0 |
| Flow Path Slope (vft/hft) | 0.043 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.74 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.89 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 3.0479 |
| Burned Peak Flow Rate (cfs) | 3.0479 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.35 |
| 24-Hr Clear Runoff Volume (cu-ft) | 15244.3841 |



# Peak Flow Hydrologic Analysis

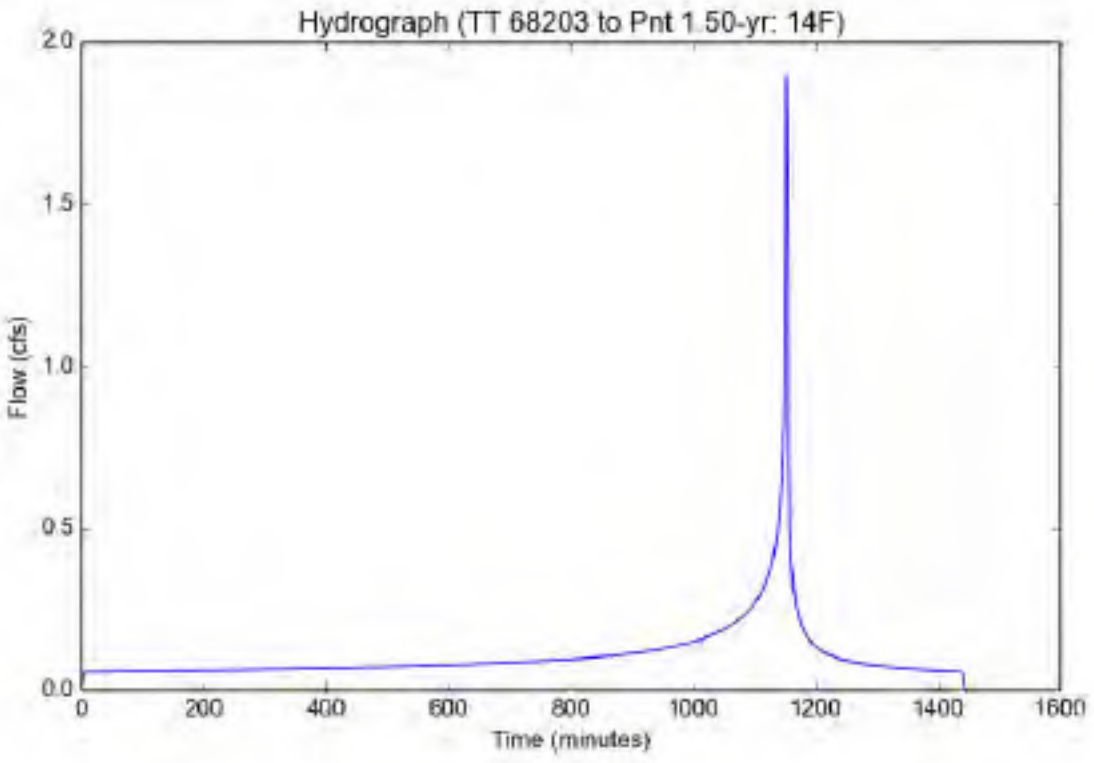
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 14F |
| Area (ac) | 0.51 |
| Flow Path Length (ft) | 184.0 |
| Flow Path Slope (vft/hft) | 0.032 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.74 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.89 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.8956 |
| Burned Peak Flow Rate (cfs) | 1.8956 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.2177 |
| 24-Hr Clear Runoff Volume (cu-ft) | 9481.2633 |



# Peak Flow Hydrologic Analysis

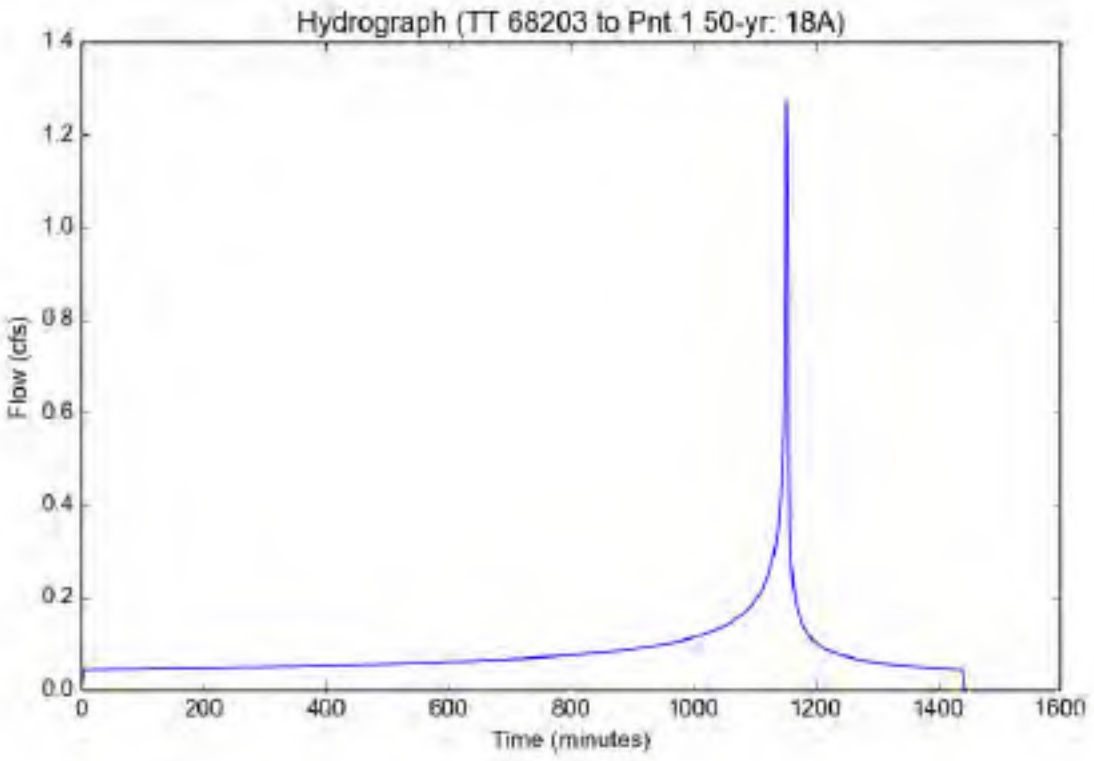
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 18A |
| Area (ac) | 0.34 |
| Flow Path Length (ft) | 481.0 |
| Flow Path Slope (vft/hft) | 0.073 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.9 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8962 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.2725 |
| Burned Peak Flow Rate (cfs) | 1.2725 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1647 |
| 24-Hr Clear Runoff Volume (cu-ft) | 7176.4485 |



# Peak Flow Hydrologic Analysis

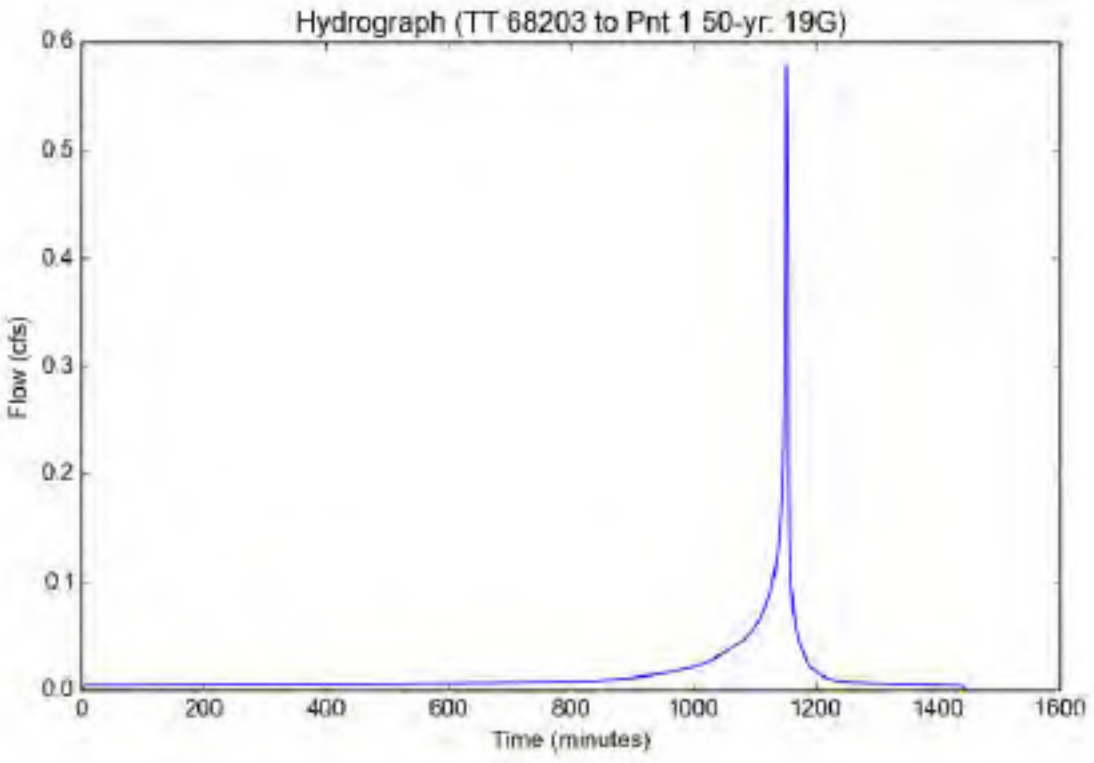
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 19G |
| Area (ac) | 0.16 |
| Flow Path Length (ft) | 123.0 |
| Flow Path Slope (vft/hft) | 0.211 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8654 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 0.5782 |
| Burned Peak Flow Rate (cfs) | 0.5782 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0313 |
| 24-Hr Clear Runoff Volume (cu-ft) | 1363.9609 |



# Peak Flow Hydrologic Analysis

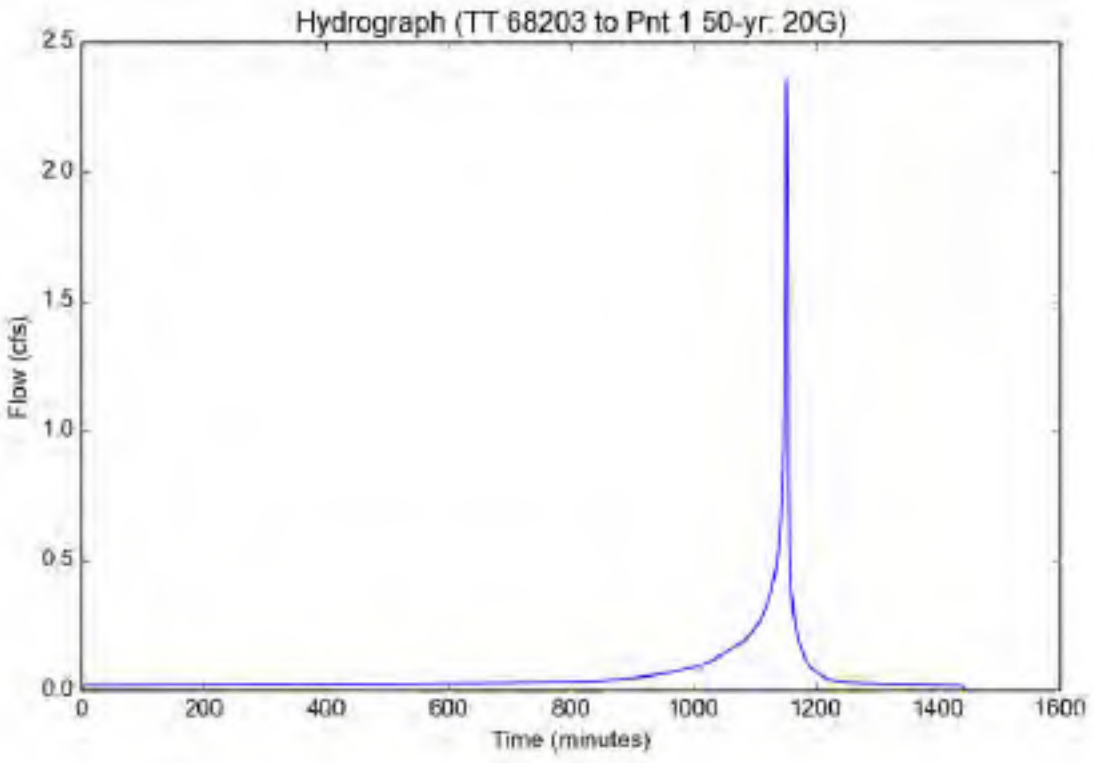
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 20G |
| Area (ac) | 0.65 |
| Flow Path Length (ft) | 424.0 |
| Flow Path Slope (vft/hft) | 0.151 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8654 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.3491 |
| Burned Peak Flow Rate (cfs) | 2.3491 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1272 |
| 24-Hr Clear Runoff Volume (cu-ft) | 5541.0913 |



# Peak Flow Hydrologic Analysis

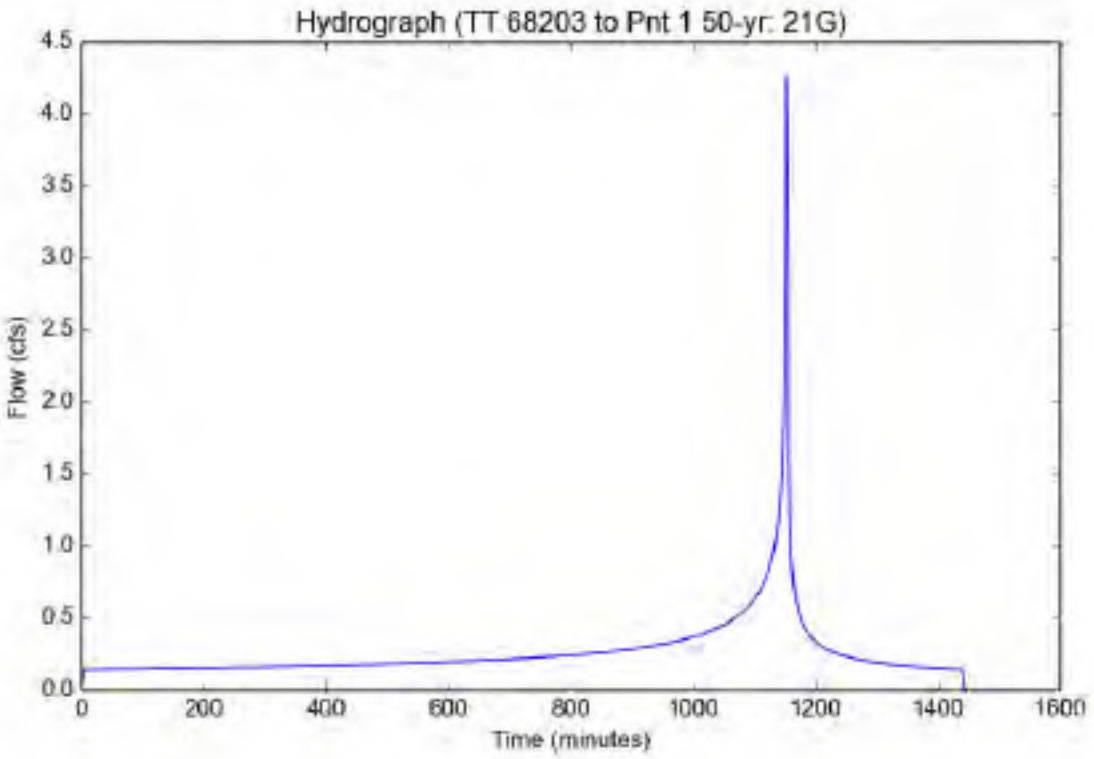
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 21G |
| Area (ac) | 1.14 |
| Flow Path Length (ft) | 251.0 |
| Flow Path Slope (vft/hft) | 0.005 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.86 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8946 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 4.2593 |
| Burned Peak Flow Rate (cfs) | 4.2593 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.5359 |
| 24-Hr Clear Runoff Volume (cu-ft) | 23345.0102 |



# Peak Flow Hydrologic Analysis

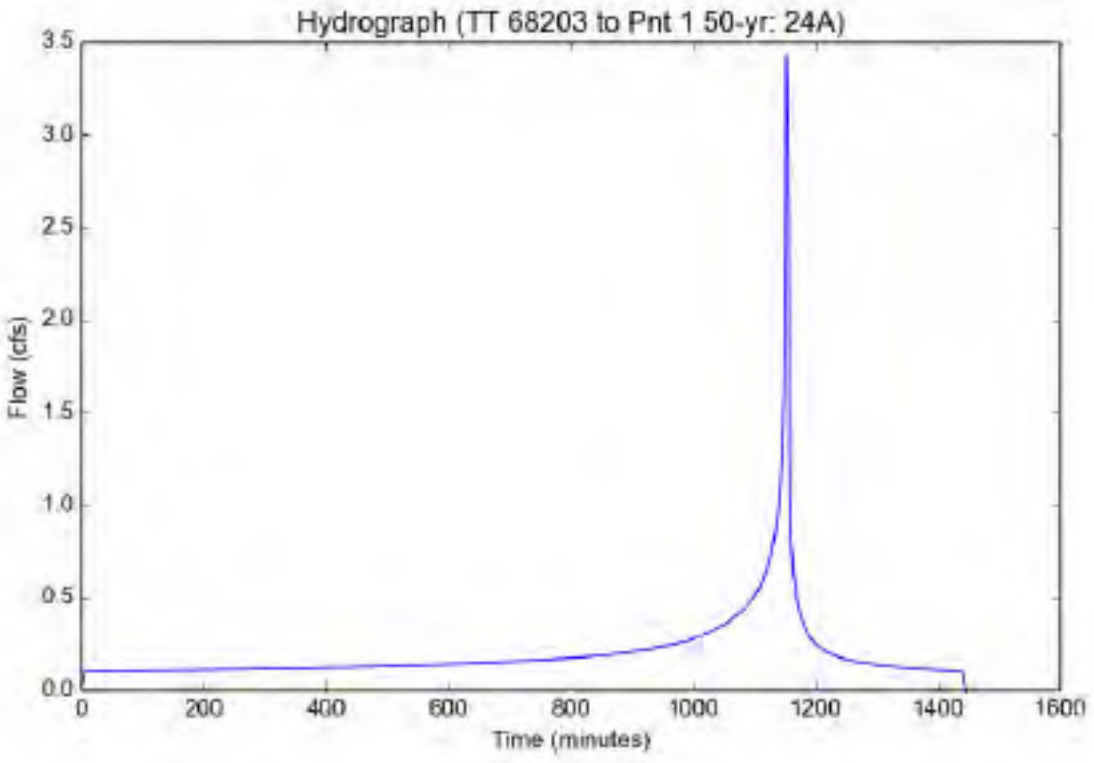
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 24A |
| Area (ac) | 1.01 |
| Flow Path Length (ft) | 776.0 |
| Flow Path Slope (vft/hft) | 0.072 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.67 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 3.8334 |
| Undeveloped Runoff Coefficient (Cu) | 0.8546 |
| Developed Runoff Coefficient (Cd) | 0.885 |
| Time of Concentration (min) | 6.0 |
| Clear Peak Flow Rate (cfs) | 3.4266 |
| Burned Peak Flow Rate (cfs) | 3.4266 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.4055 |
| 24-Hr Clear Runoff Volume (cu-ft) | 17664.4587 |



# Peak Flow Hydrologic Analysis

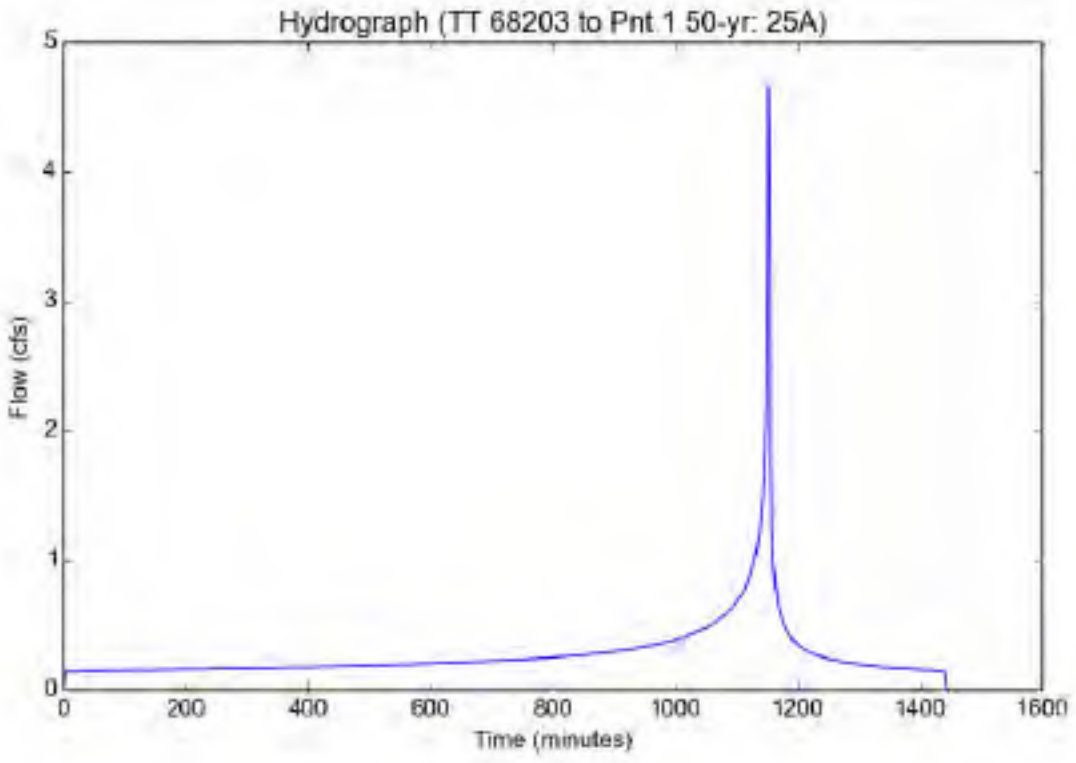
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 25A |
| Area (ac) | 1.25 |
| Flow Path Length (ft) | 148.0 |
| Flow Path Slope (vft/hft) | 0.005 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.81 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8927 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 4.6603 |
| Burned Peak Flow Rate (cfs) | 4.6603 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.5651 |
| 24-Hr Clear Runoff Volume (cu-ft) | 24614.5953 |



# Peak Flow Hydrologic Analysis

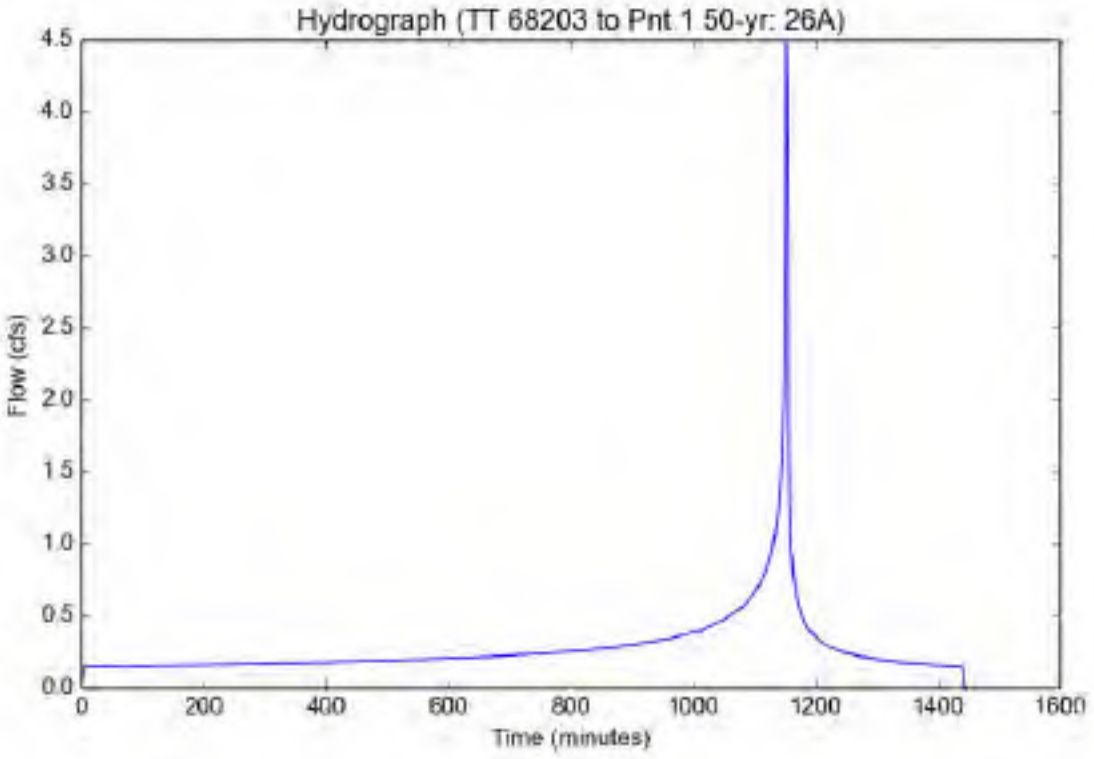
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 26A |
| Area (ac) | 1.2 |
| Flow Path Length (ft) | 245.0 |
| Flow Path Slope (vft/hft) | 0.005 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.86 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8946 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 4.4835 |
| Burned Peak Flow Rate (cfs) | 4.4835 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.5641 |
| 24-Hr Clear Runoff Volume (cu-ft) | 24573.6949 |



# Peak Flow Hydrologic Analysis

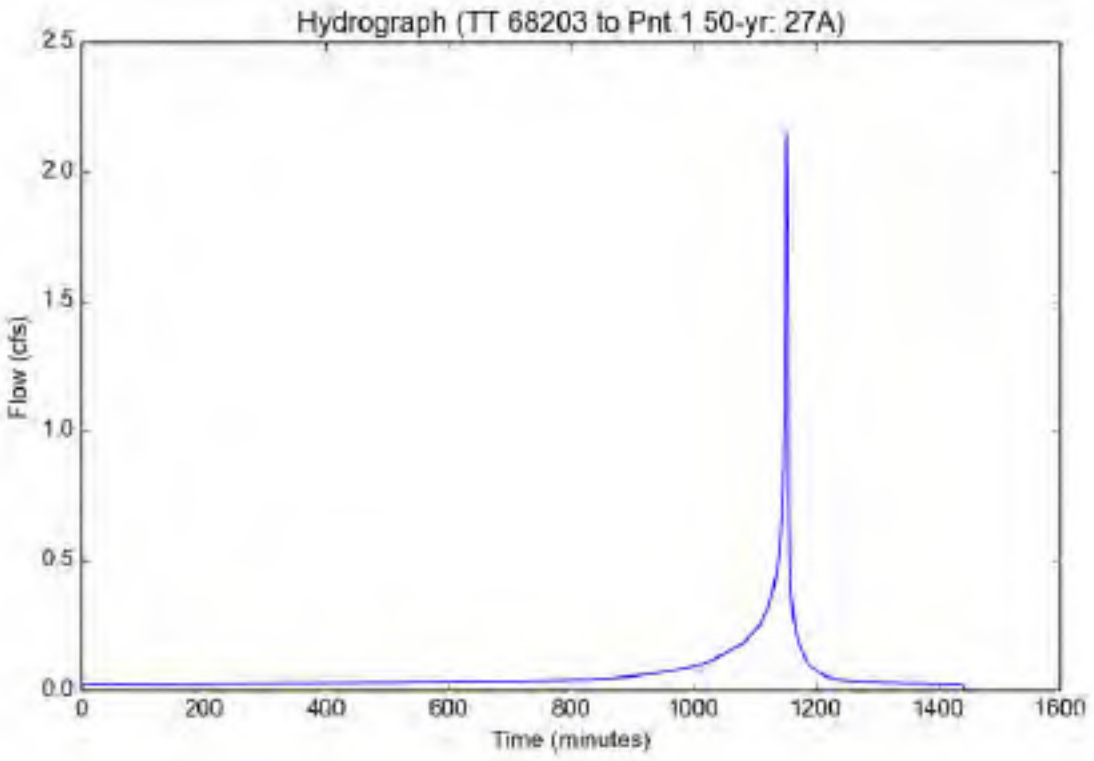
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 27A |
| Area (ac) | 0.59 |
| Flow Path Length (ft) | 292.0 |
| Flow Path Slope (vft/hft) | 0.17 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.18 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8684 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.1399 |
| Burned Peak Flow Rate (cfs) | 2.1399 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1325 |
| 24-Hr Clear Runoff Volume (cu-ft) | 5771.9702 |



# Peak Flow Hydrologic Analysis

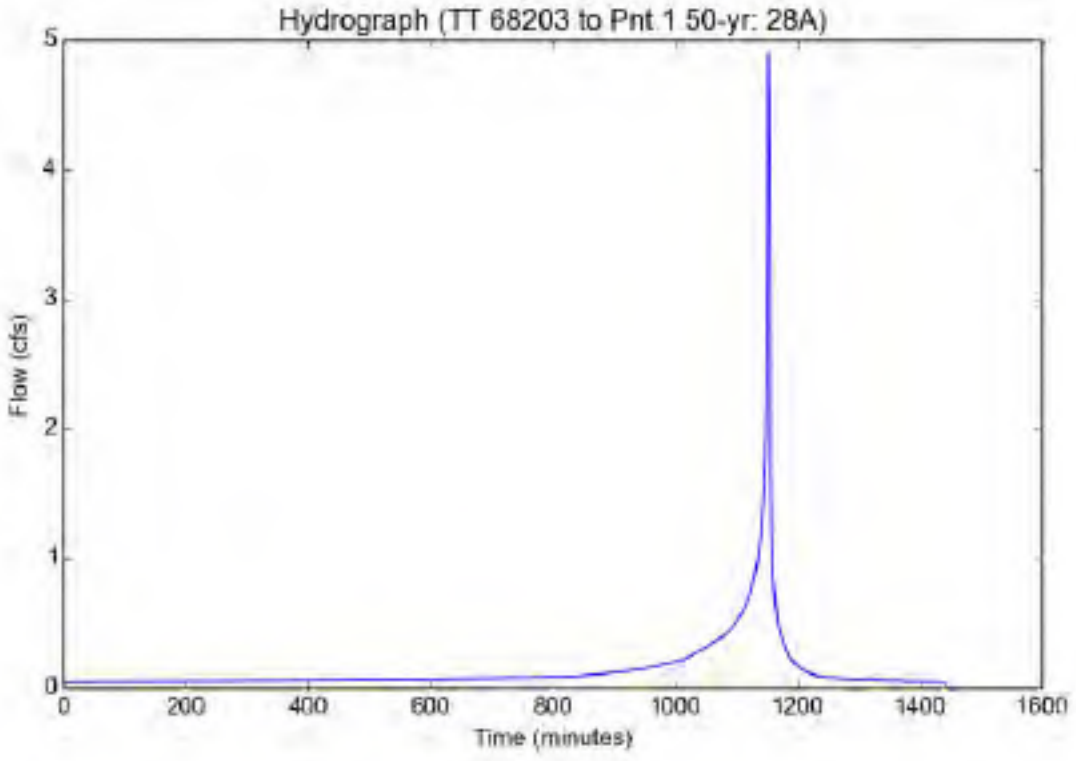
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 28A |
| Area (ac) | 1.35 |
| Flow Path Length (ft) | 282.0 |
| Flow Path Slope (vft/hft) | 0.053 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.17 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.868 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 4.8942 |
| Burned Peak Flow Rate (cfs) | 4.8942 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.2983 |
| 24-Hr Clear Runoff Volume (cu-ft) | 12994.7217 |



# Peak Flow Hydrologic Analysis

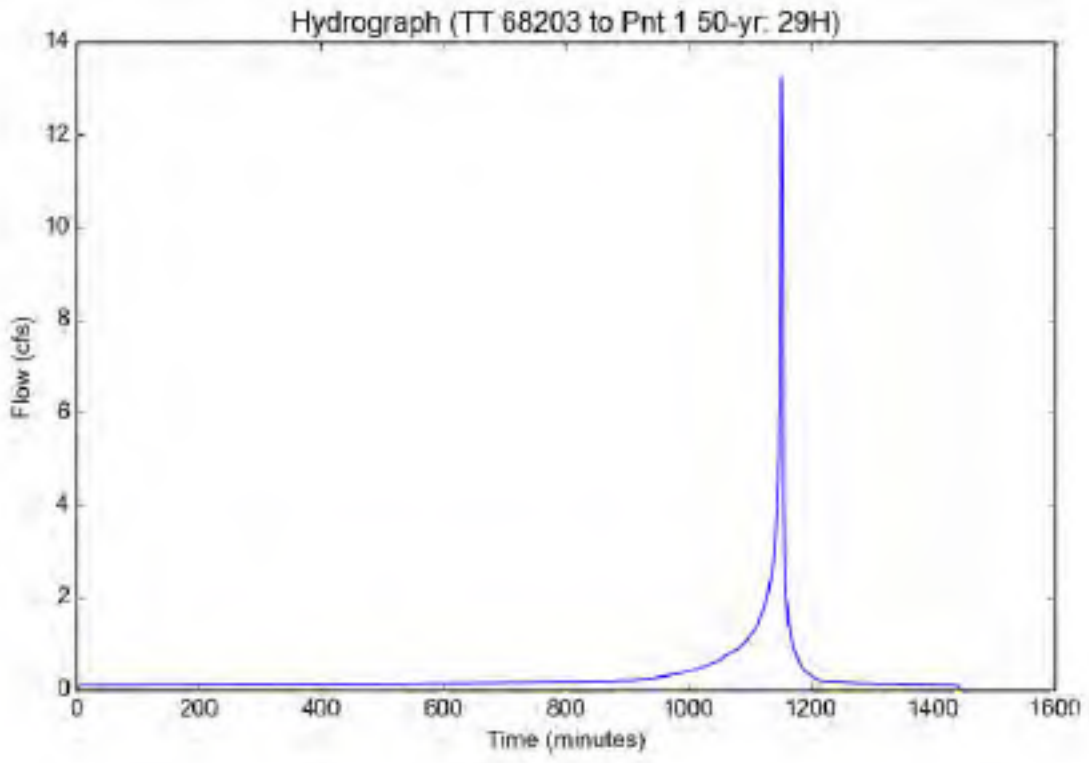
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 29H |
| Area (ac) | 4.04 |
| Flow Path Length (ft) | 443.0 |
| Flow Path Slope (vft/hft) | 0.213 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.08 |
| Soil Type | 97 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.7731 |
| Developed Runoff Coefficient (Cd) | 0.7832 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 13.2153 |
| Burned Peak Flow Rate (cfs) | 13.7312 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.6587 |
| 24-Hr Clear Runoff Volume (cu-ft) | 28692.7929 |



# Peak Flow Hydrologic Analysis

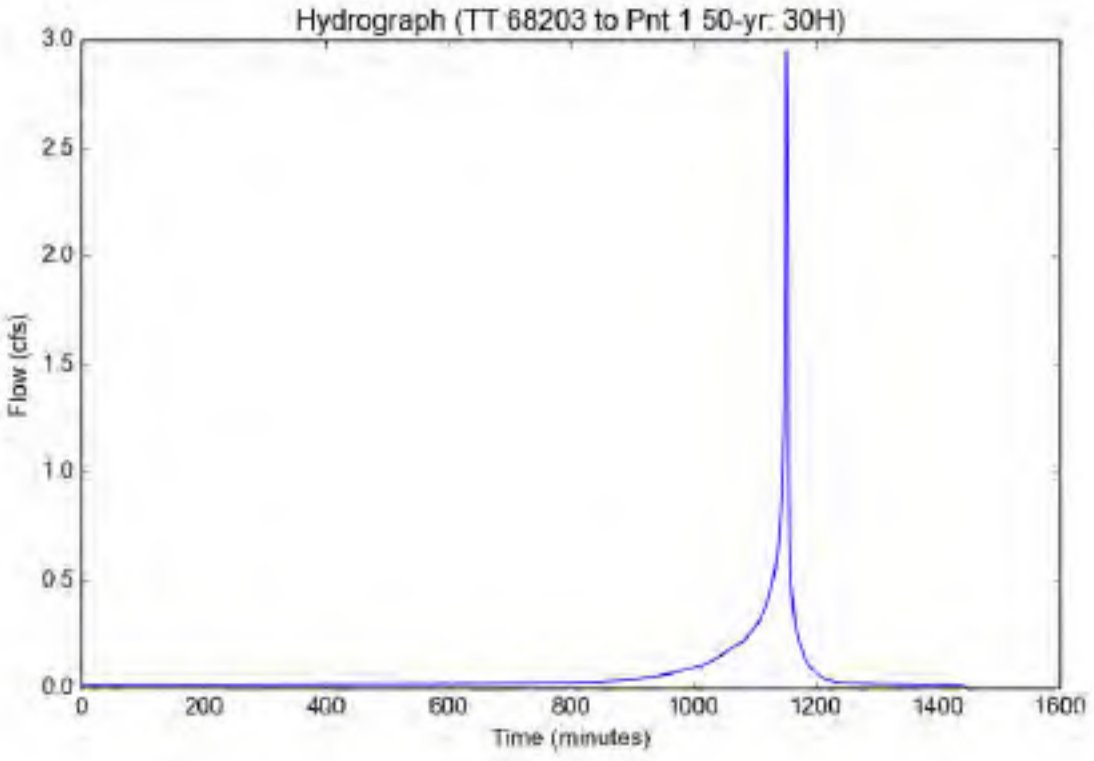
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 30H |
| Area (ac) | 0.82 |
| Flow Path Length (ft) | 441.0 |
| Flow Path Slope (vft/hft) | 0.183 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8619 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.9517 |
| Burned Peak Flow Rate (cfs) | 3.0184 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1338 |
| 24-Hr Clear Runoff Volume (cu-ft) | 5829.5691 |



# Peak Flow Hydrologic Analysis

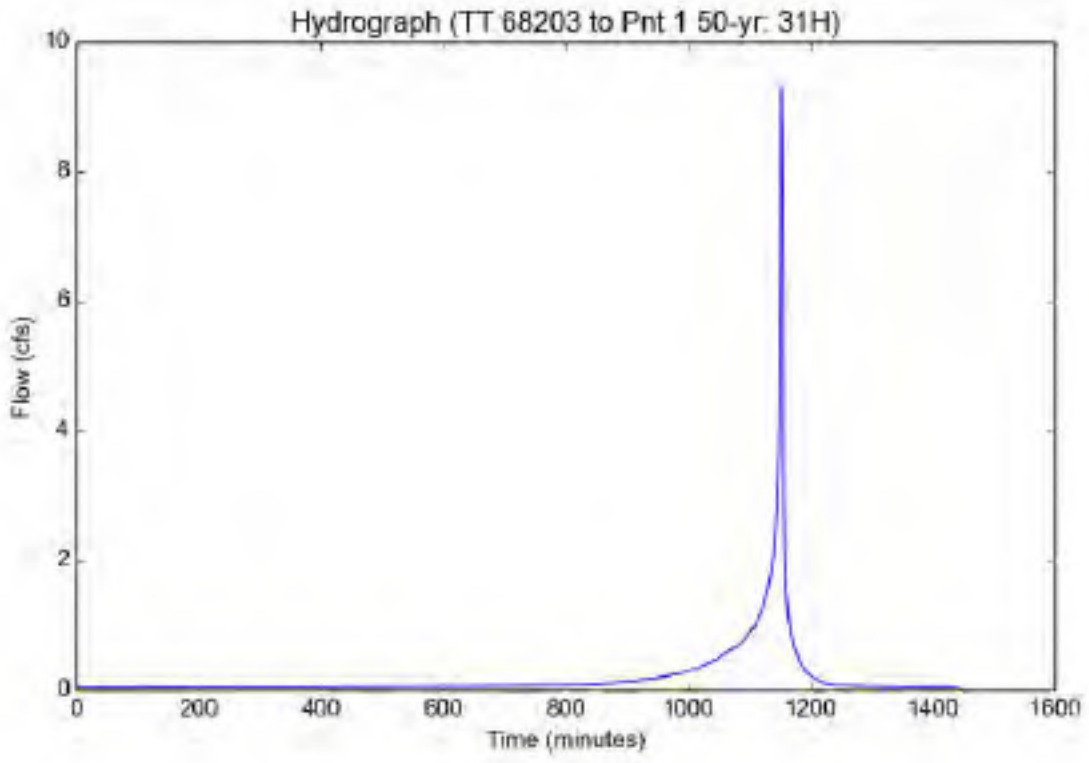
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 31H |
| Area (ac) | 2.58 |
| Flow Path Length (ft) | 451.0 |
| Flow Path Slope (vft/hft) | 0.075 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8619 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 9.2869 |
| Burned Peak Flow Rate (cfs) | 9.4968 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.4211 |
| 24-Hr Clear Runoff Volume (cu-ft) | 18341.8151 |



# Peak Flow Hydrologic Analysis

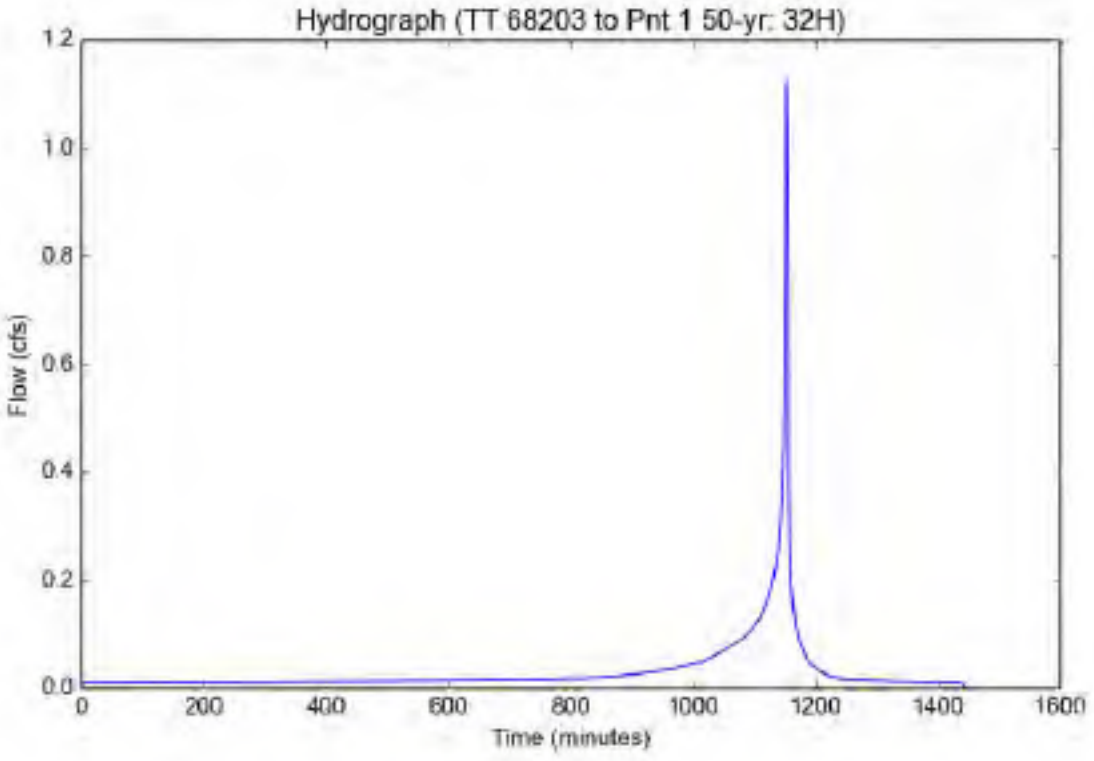
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 32H |
| Area (ac) | 0.31 |
| Flow Path Length (ft) | 228.0 |
| Flow Path Slope (vft/hft) | 0.101 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.14 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8669 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.1223 |
| Burned Peak Flow Rate (cfs) | 1.1467 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0651 |
| 24-Hr Clear Runoff Volume (cu-ft) | 2837.7022 |



# Peak Flow Hydrologic Analysis

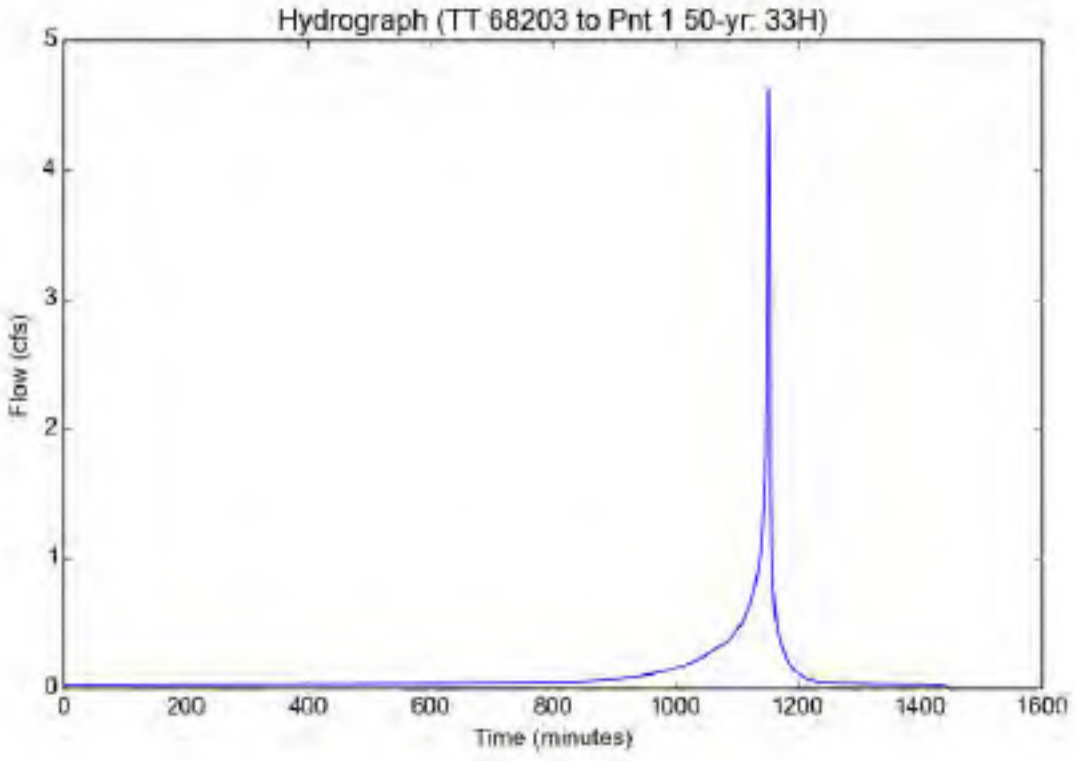
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 33H |
| Area (ac) | 1.28 |
| Flow Path Length (ft) | 131.0 |
| Flow Path Slope (vft/hft) | 0.195 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.03 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8627 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 4.6116 |
| Burned Peak Flow Rate (cfs) | 4.7151 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.2181 |
| 24-Hr Clear Runoff Volume (cu-ft) | 9502.4535 |



# Peak Flow Hydrologic Analysis

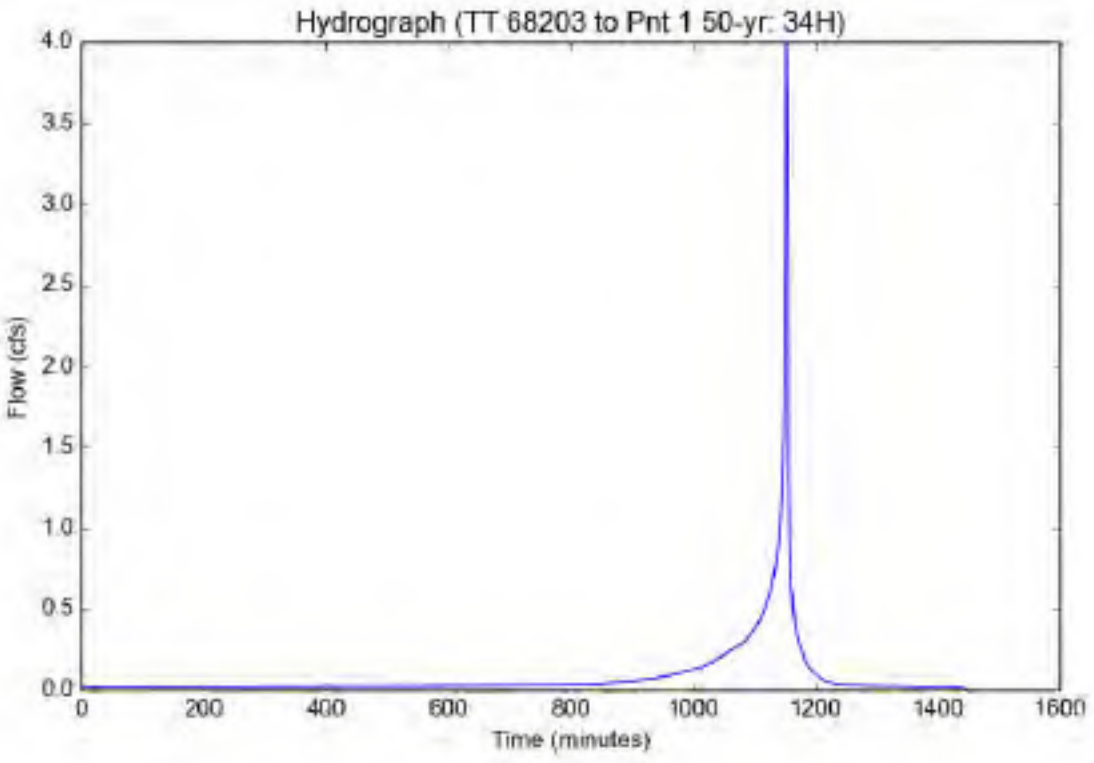
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 34H |
| Area (ac) | 1.11 |
| Flow Path Length (ft) | 568.0 |
| Flow Path Slope (vft/hft) | 0.166 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8619 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 3.9955 |
| Burned Peak Flow Rate (cfs) | 4.0858 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1812 |
| 24-Hr Clear Runoff Volume (cu-ft) | 7891.246 |



# Peak Flow Hydrologic Analysis

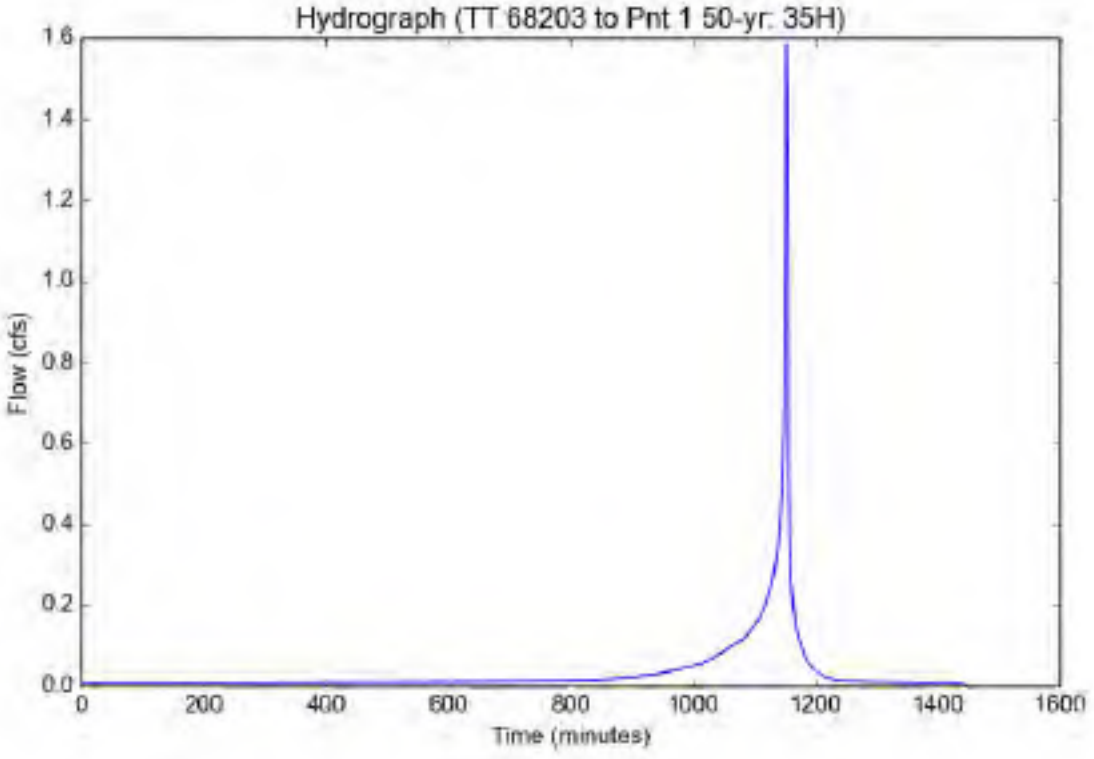
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 35H |
| Area (ac) | 0.44 |
| Flow Path Length (ft) | 201.0 |
| Flow Path Slope (vft/hft) | 0.298 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8619 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.5838 |
| Burned Peak Flow Rate (cfs) | 1.6196 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0718 |
| 24-Hr Clear Runoff Volume (cu-ft) | 3128.0615 |



# Peak Flow Hydrologic Analysis

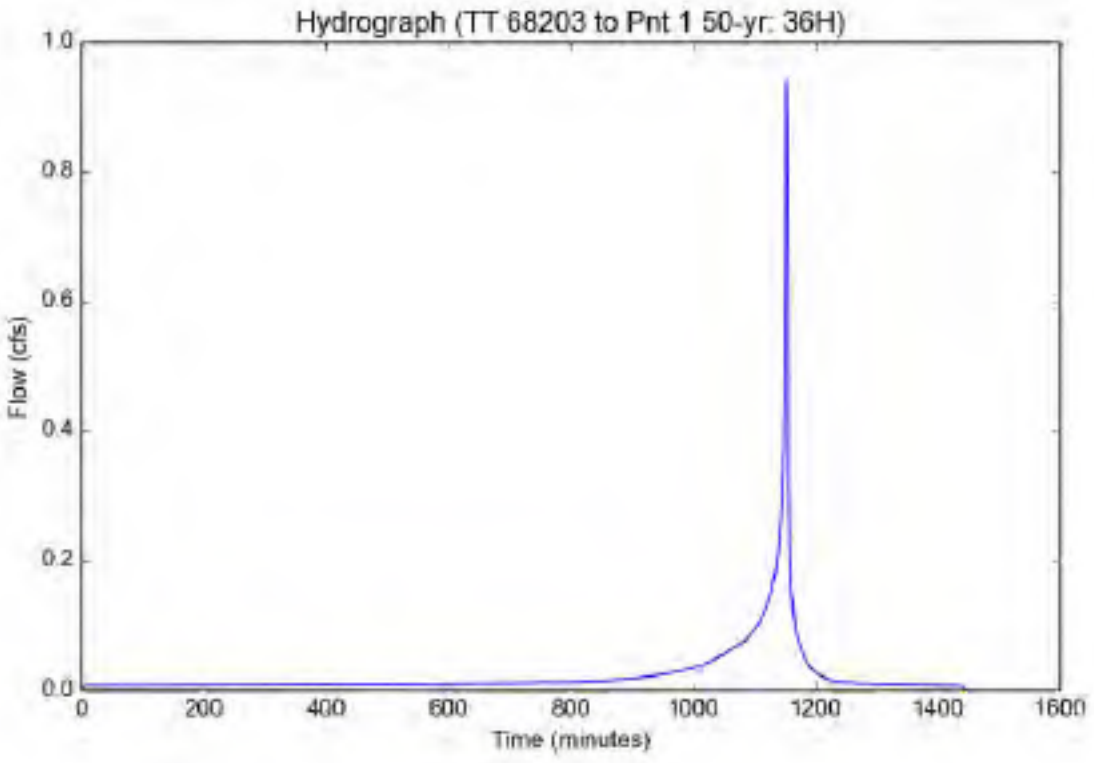
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 36H |
| Area (ac) | 0.26 |
| Flow Path Length (ft) | 302.0 |
| Flow Path Slope (vft/hft) | 0.098 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.09 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.865 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 0.9392 |
| Burned Peak Flow Rate (cfs) | 0.9599 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0499 |
| 24-Hr Clear Runoff Volume (cu-ft) | 2175.5436 |



# Peak Flow Hydrologic Analysis

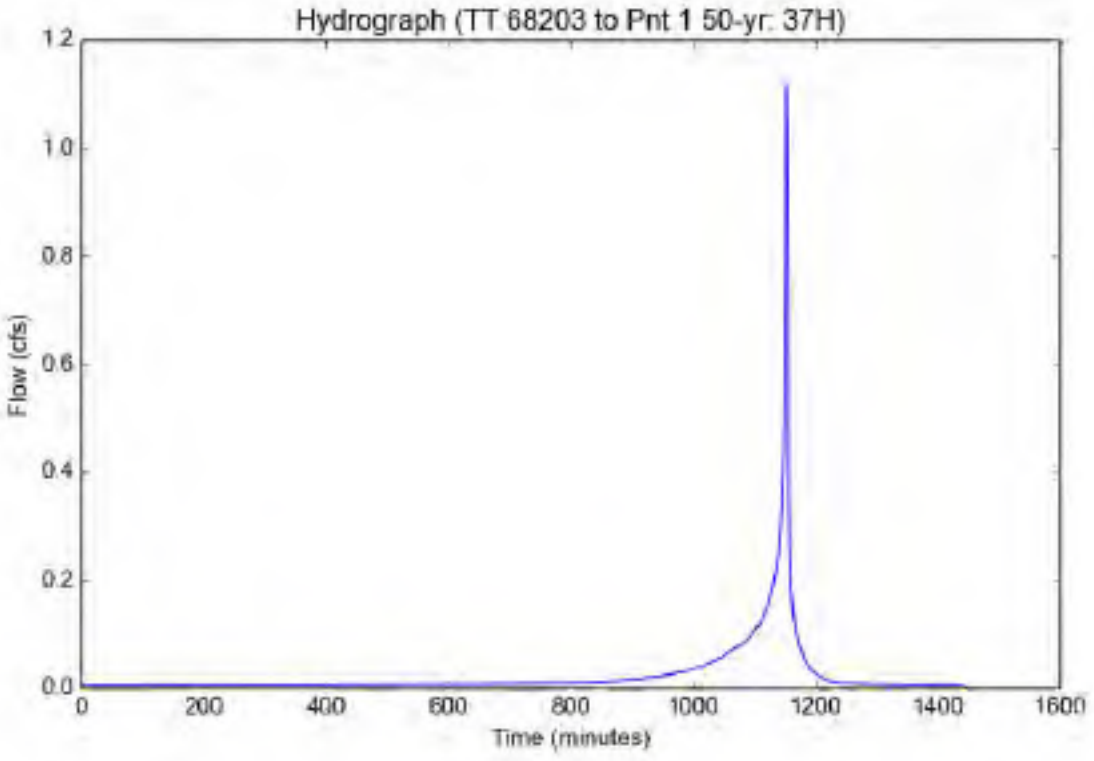
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 37H |
| Area (ac) | 0.31 |
| Flow Path Length (ft) | 128.0 |
| Flow Path Slope (vft/hft) | 0.117 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8619 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.1159 |
| Burned Peak Flow Rate (cfs) | 1.1411 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0506 |
| 24-Hr Clear Runoff Volume (cu-ft) | 2203.8615 |



# Peak Flow Hydrologic Analysis

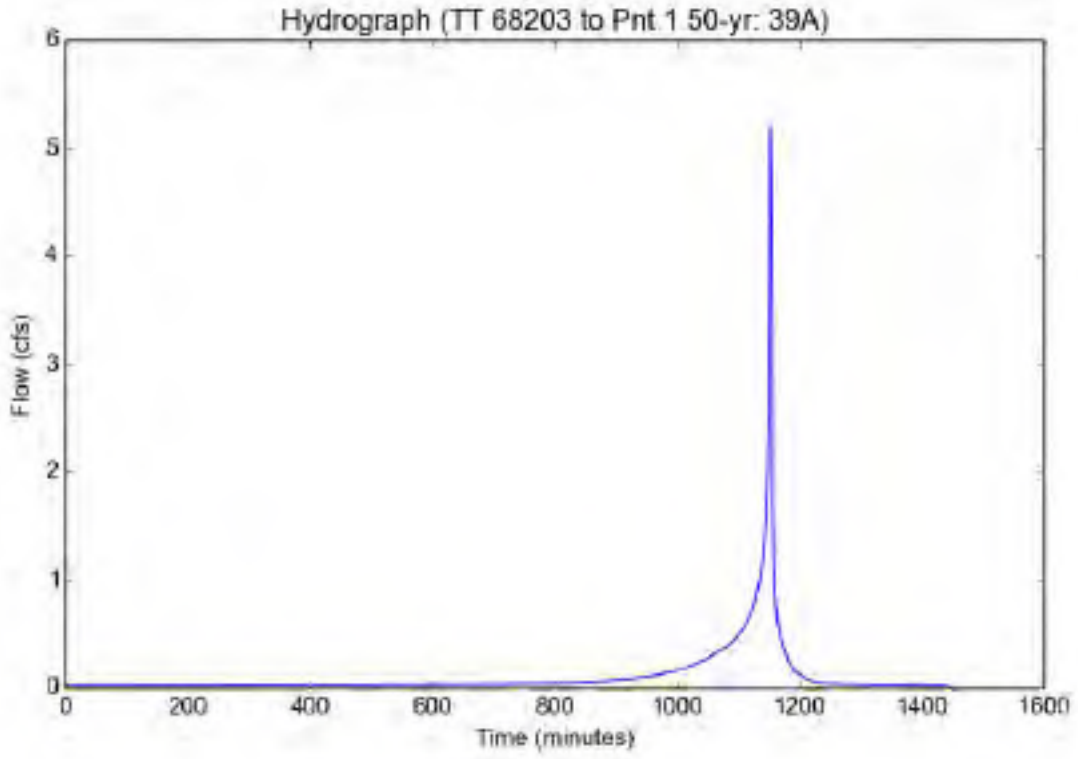
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 50-yr |
| Subarea ID | 39A |
| Area (ac) | 1.44 |
| Flow Path Length (ft) | 192.0 |
| Flow Path Slope (vft/hft) | 0.203 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8619 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 5.1834 |
| Burned Peak Flow Rate (cfs) | 5.3006 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.235 |
| 24-Hr Clear Runoff Volume (cu-ft) | 10237.2922 |



# Peak Flow Hydrologic Analysis

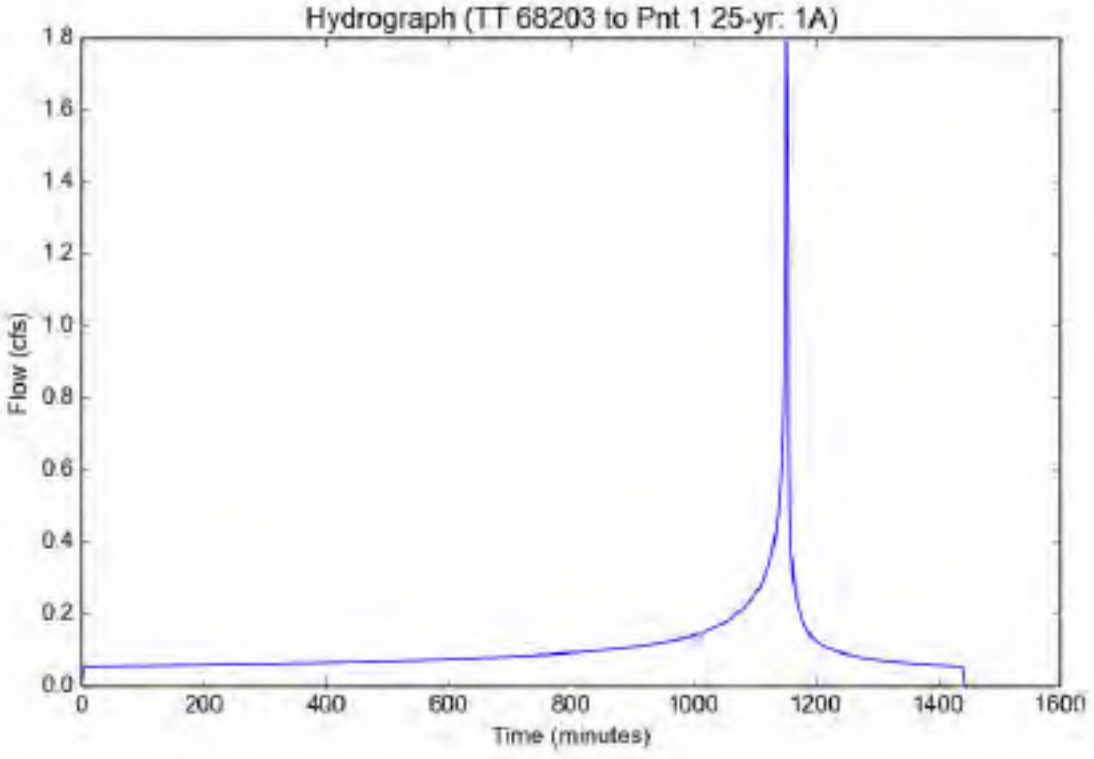
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 1A |
| Area (ac) | 0.55 |
| Flow Path Length (ft) | 491.0 |
| Flow Path Slope (vft/hft) | 0.053 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.76 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8883 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.7915 |
| Burned Peak Flow Rate (cfs) | 1.7915 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.208 |
| 24-Hr Clear Runoff Volume (cu-ft) | 9059.1698 |



# Peak Flow Hydrologic Analysis

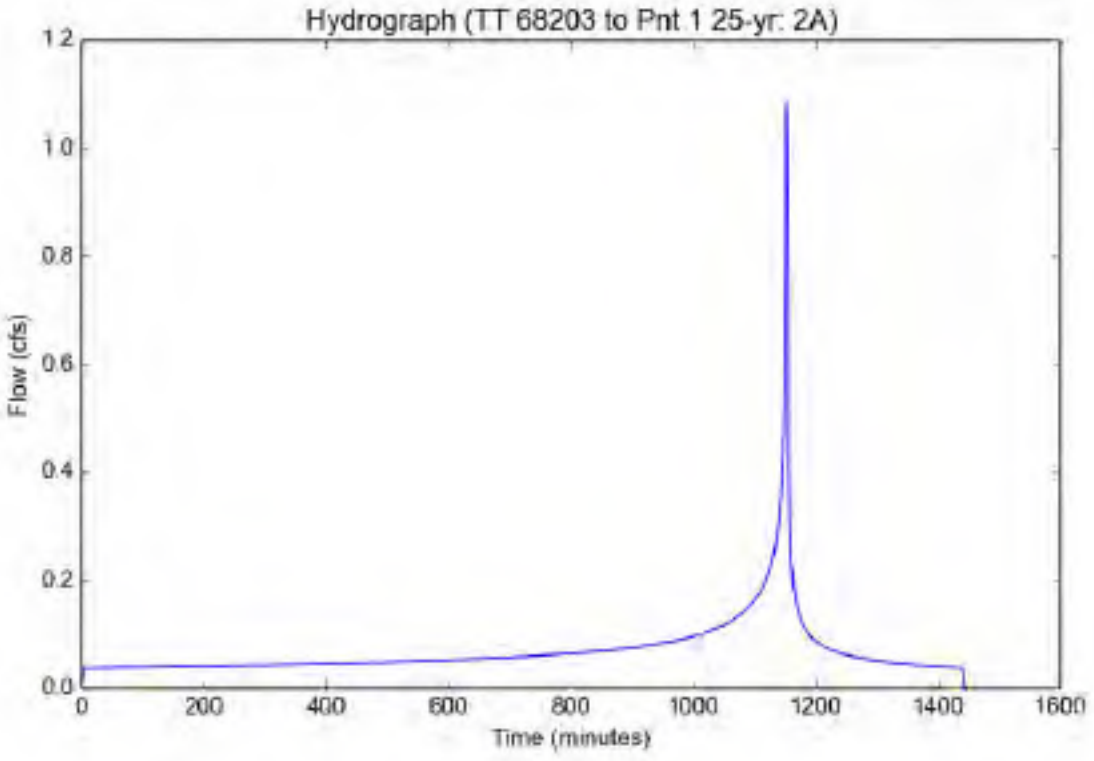
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 2A |
| Area (ac) | 0.33 |
| Flow Path Length (ft) | 399.0 |
| Flow Path Slope (vft/hft) | 0.06 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.9 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8951 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.0832 |
| Burned Peak Flow Rate (cfs) | 1.0832 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.14 |
| 24-Hr Clear Runoff Volume (cu-ft) | 6098.0539 |



# Peak Flow Hydrologic Analysis

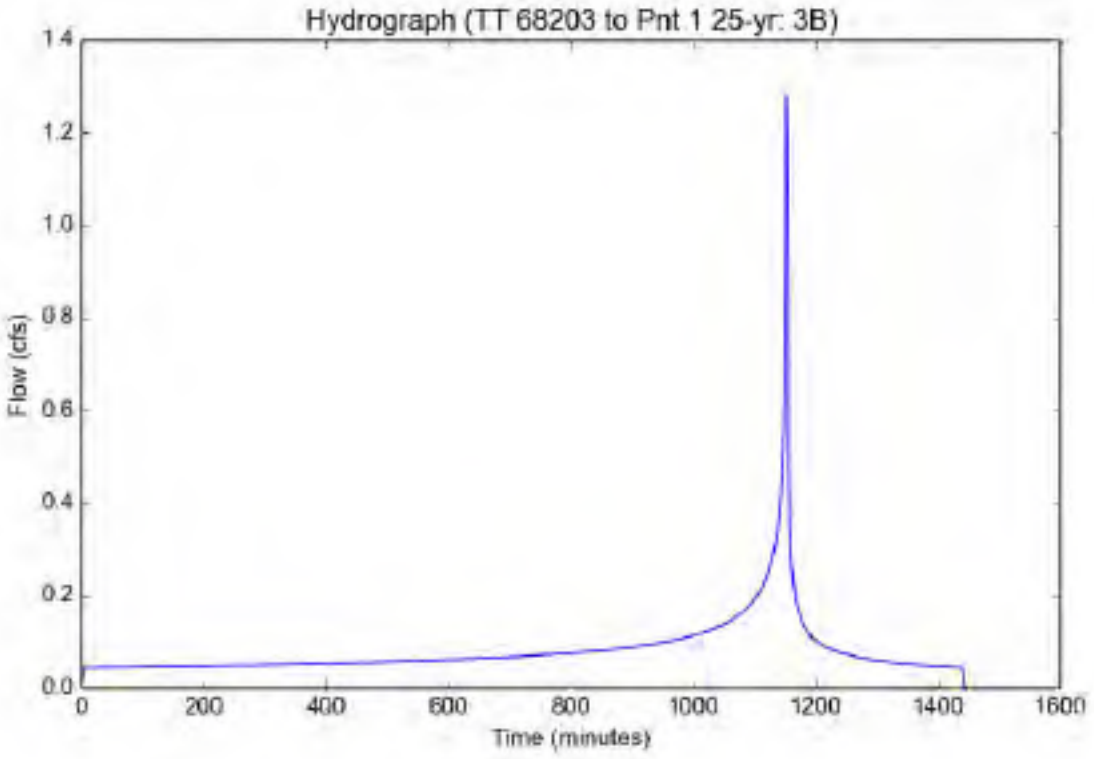
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 3B |
| Area (ac) | 0.39 |
| Flow Path Length (ft) | 495.0 |
| Flow Path Slope (vft/hft) | 0.095 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.9 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8951 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.2801 |
| Burned Peak Flow Rate (cfs) | 1.2801 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1654 |
| 24-Hr Clear Runoff Volume (cu-ft) | 7206.7909 |



# Peak Flow Hydrologic Analysis

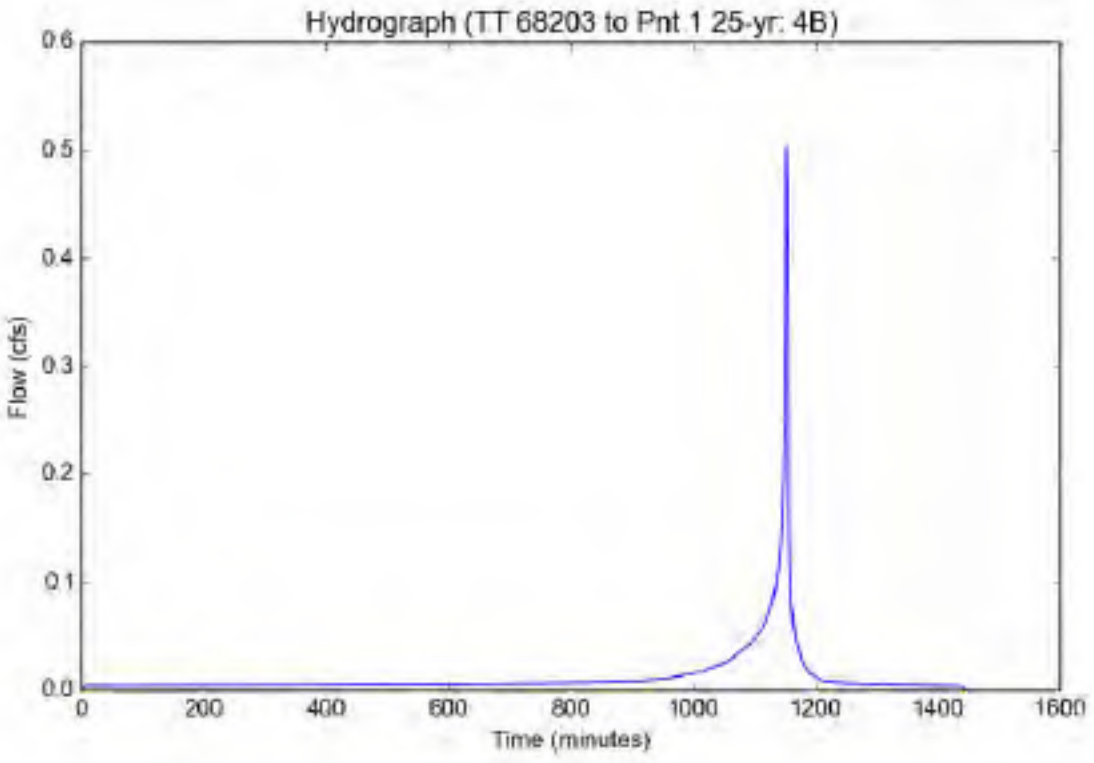
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 4B |
| Area (ac) | 0.16 |
| Flow Path Length (ft) | 266.0 |
| Flow Path Slope (vft/hft) | 0.128 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8561 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 0.5023 |
| Burned Peak Flow Rate (cfs) | 0.5023 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0257 |
| 24-Hr Clear Runoff Volume (cu-ft) | 1120.9904 |



# Peak Flow Hydrologic Analysis

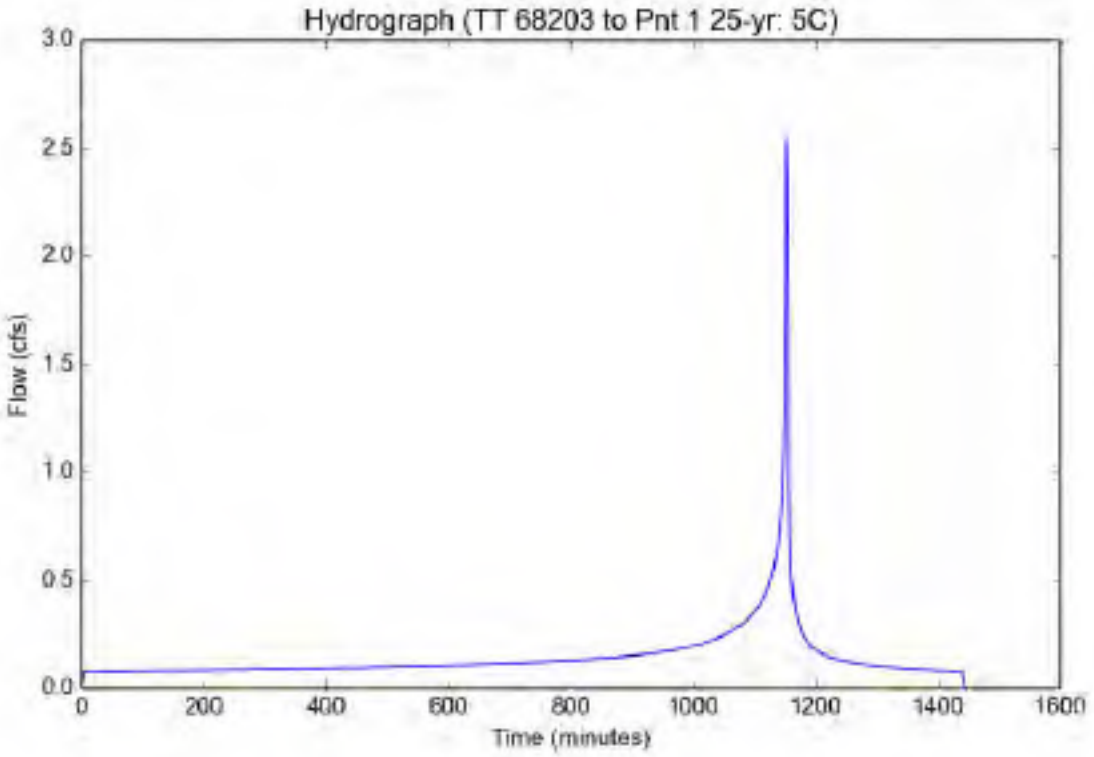
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 5C |
| Area (ac) | 0.78 |
| Flow Path Length (ft) | 309.0 |
| Flow Path Slope (vft/hft) | 0.044 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.74 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8873 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.5379 |
| Burned Peak Flow Rate (cfs) | 2.5379 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.2898 |
| 24-Hr Clear Runoff Volume (cu-ft) | 12623.8311 |



# Peak Flow Hydrologic Analysis

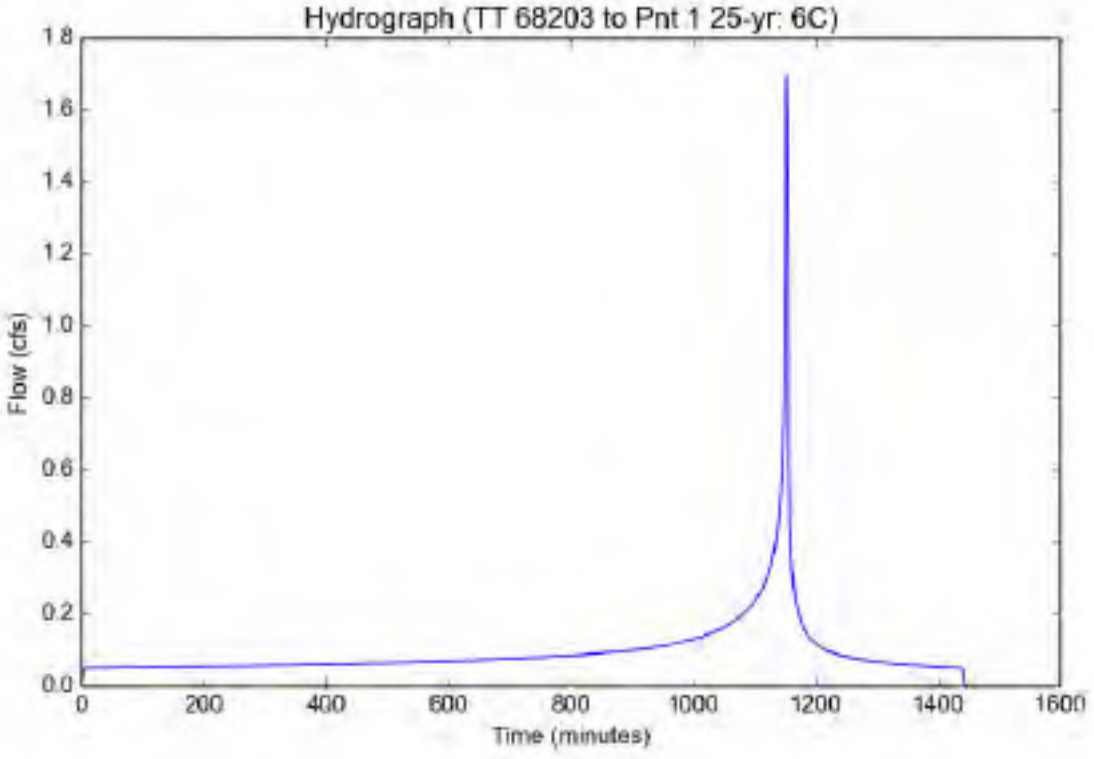
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 6C |
| Area (ac) | 0.52 |
| Flow Path Length (ft) | 164.0 |
| Flow Path Slope (vft/hft) | 0.01 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.74 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8873 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.6919 |
| Burned Peak Flow Rate (cfs) | 1.6919 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1932 |
| 24-Hr Clear Runoff Volume (cu-ft) | 8415.8874 |



# Peak Flow Hydrologic Analysis

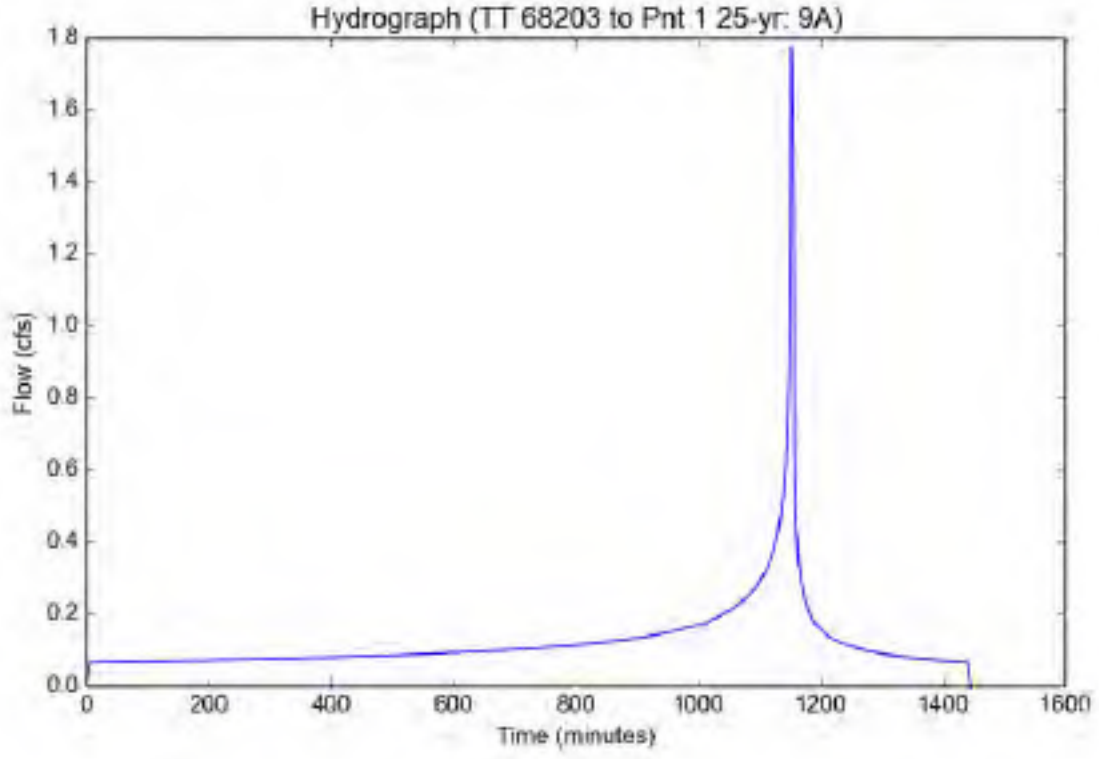
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 9A |
| Area (ac) | 0.59 |
| Flow Path Length (ft) | 790.0 |
| Flow Path Slope (vft/hft) | 0.082 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.9 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.3657 |
| Undeveloped Runoff Coefficient (Cu) | 0.8428 |
| Developed Runoff Coefficient (Cd) | 0.8943 |
| Time of Concentration (min) | 6.0 |
| Clear Peak Flow Rate (cfs) | 1.7759 |
| Burned Peak Flow Rate (cfs) | 1.7759 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.2503 |
| 24-Hr Clear Runoff Volume (cu-ft) | 10902.4751 |



# Peak Flow Hydrologic Analysis

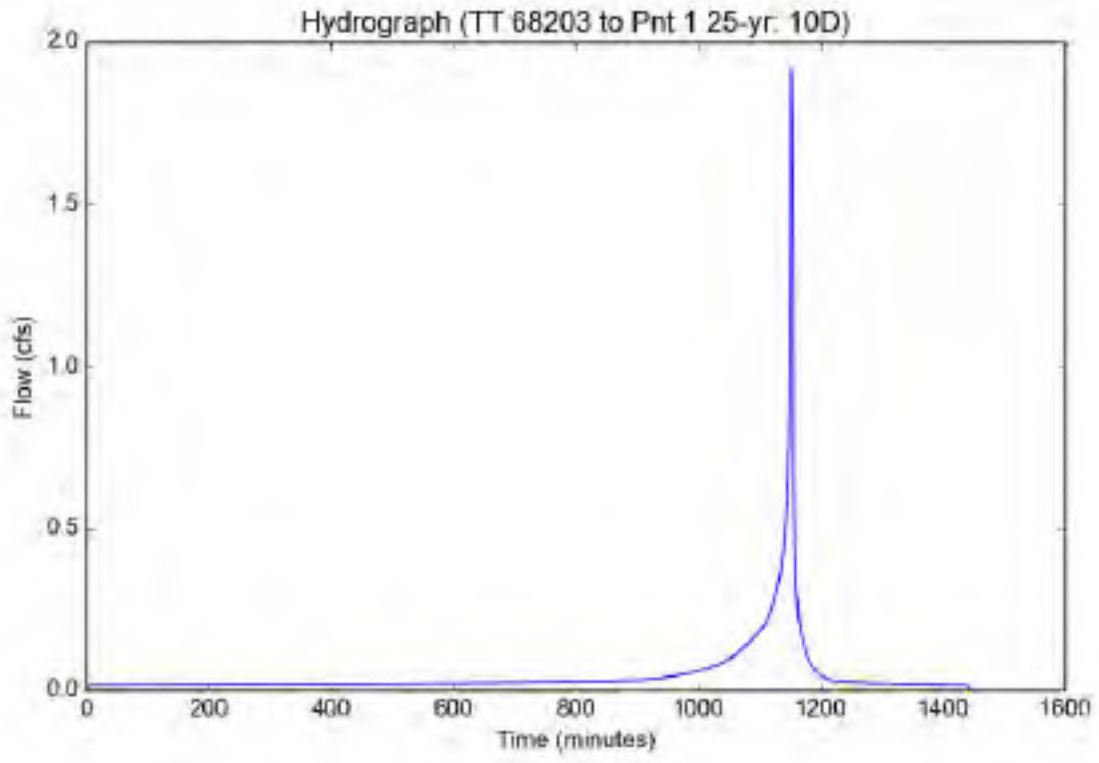
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 10D |
| Area (ac) | 0.61 |
| Flow Path Length (ft) | 352.0 |
| Flow Path Slope (vft/hft) | 0.136 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8561 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.915 |
| Burned Peak Flow Rate (cfs) | 1.915 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0981 |
| 24-Hr Clear Runoff Volume (cu-ft) | 4273.7758 |



# Peak Flow Hydrologic Analysis

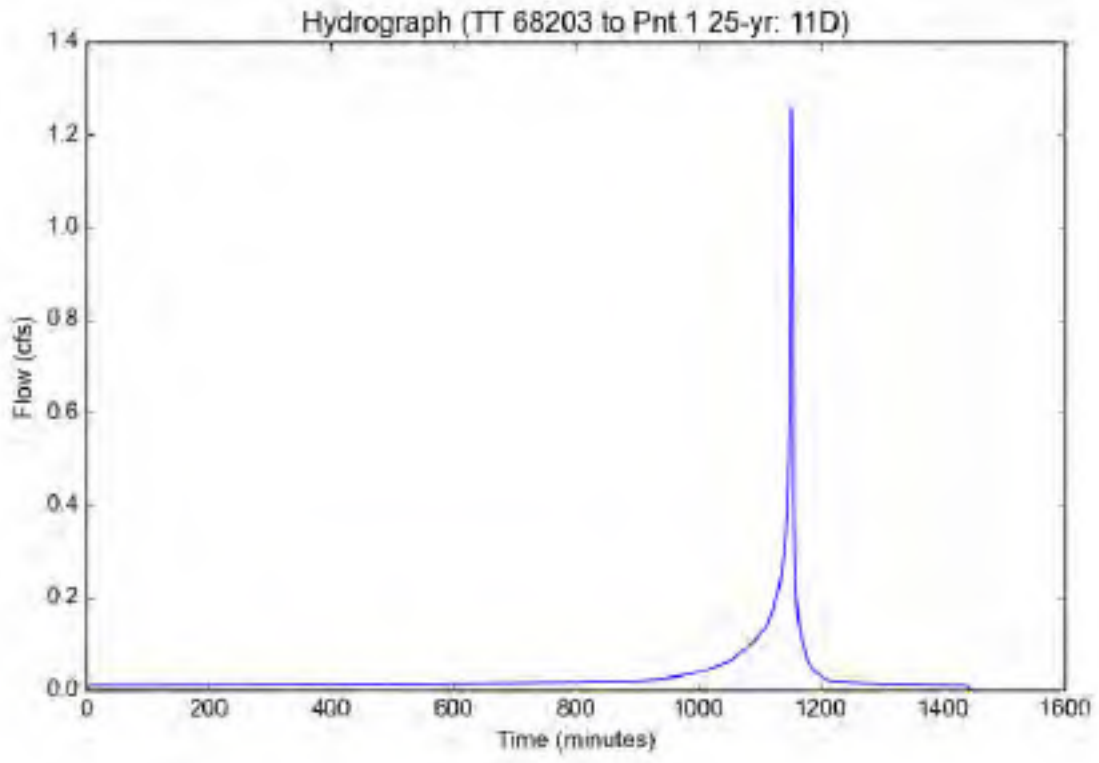
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 11D |
| Area (ac) | 0.4 |
| Flow Path Length (ft) | 277.0 |
| Flow Path Slope (vft/hft) | 0.173 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8561 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.2557 |
| Burned Peak Flow Rate (cfs) | 1.2557 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0643 |
| 24-Hr Clear Runoff Volume (cu-ft) | 2802.4759 |



# Peak Flow Hydrologic Analysis

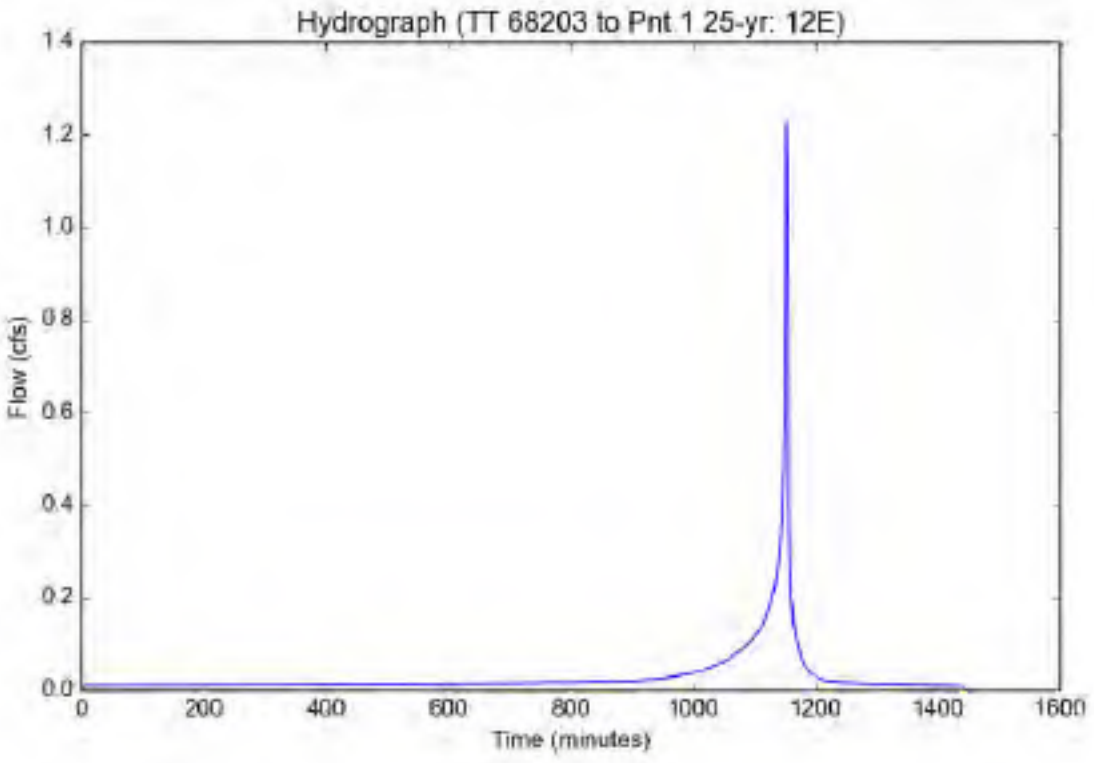
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 12E |
| Area (ac) | 0.39 |
| Flow Path Length (ft) | 392.0 |
| Flow Path Slope (vft/hft) | 0.056 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8561 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.2243 |
| Burned Peak Flow Rate (cfs) | 1.2243 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0627 |
| 24-Hr Clear Runoff Volume (cu-ft) | 2732.414 |



# Peak Flow Hydrologic Analysis

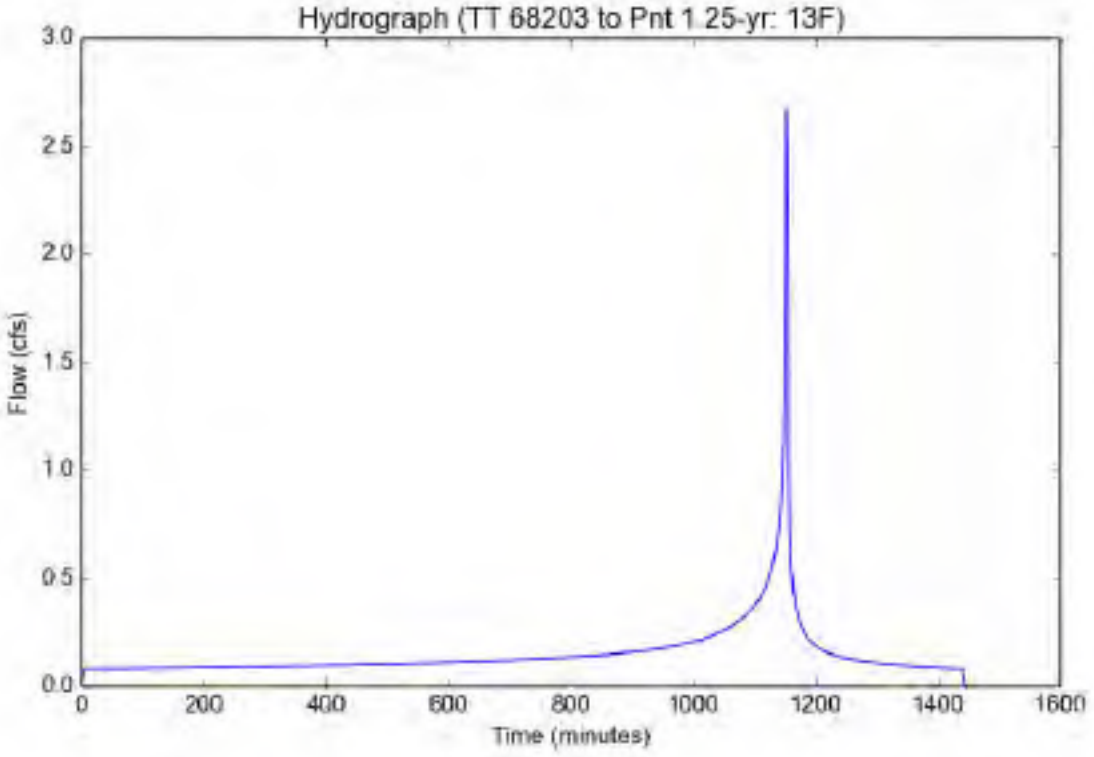
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 13F |
| Area (ac) | 0.82 |
| Flow Path Length (ft) | 311.0 |
| Flow Path Slope (vft/hft) | 0.043 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.74 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8873 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.668 |
| Burned Peak Flow Rate (cfs) | 2.668 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.3047 |
| 24-Hr Clear Runoff Volume (cu-ft) | 13271.207 |



# Peak Flow Hydrologic Analysis

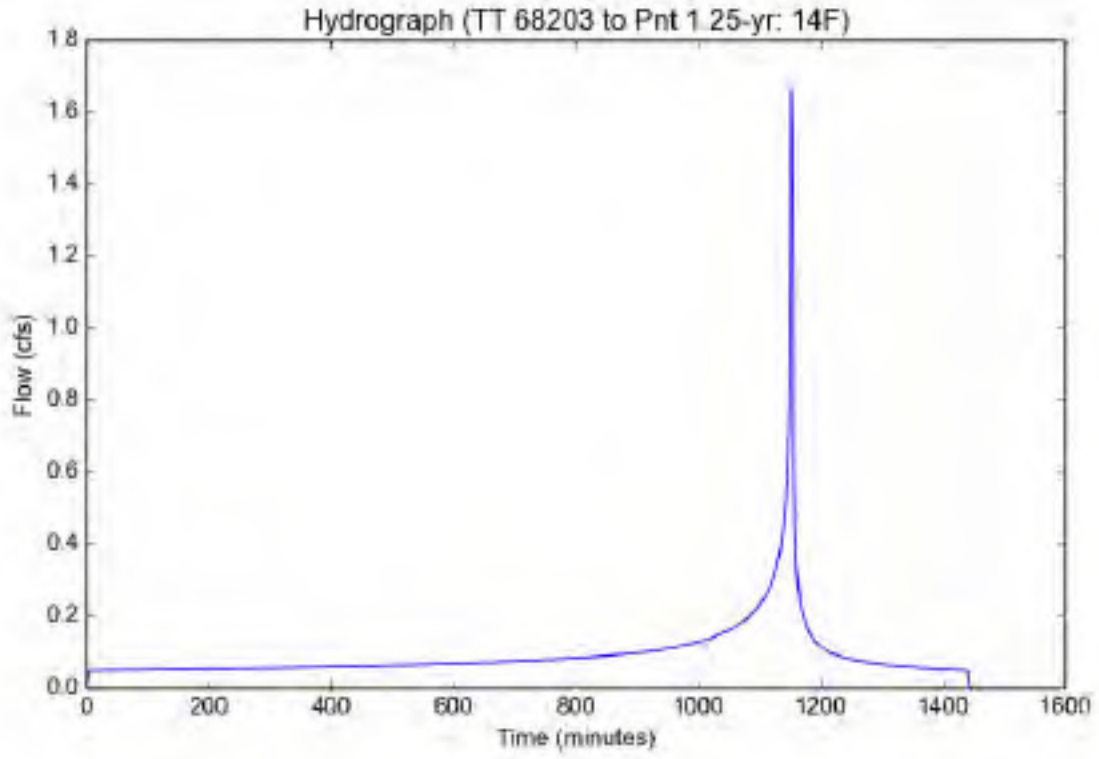
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 14F |
| Area (ac) | 0.51 |
| Flow Path Length (ft) | 184.0 |
| Flow Path Slope (vft/hft) | 0.032 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.74 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8873 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.6594 |
| Burned Peak Flow Rate (cfs) | 1.6594 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1895 |
| 24-Hr Clear Runoff Volume (cu-ft) | 8254.0434 |



# Peak Flow Hydrologic Analysis

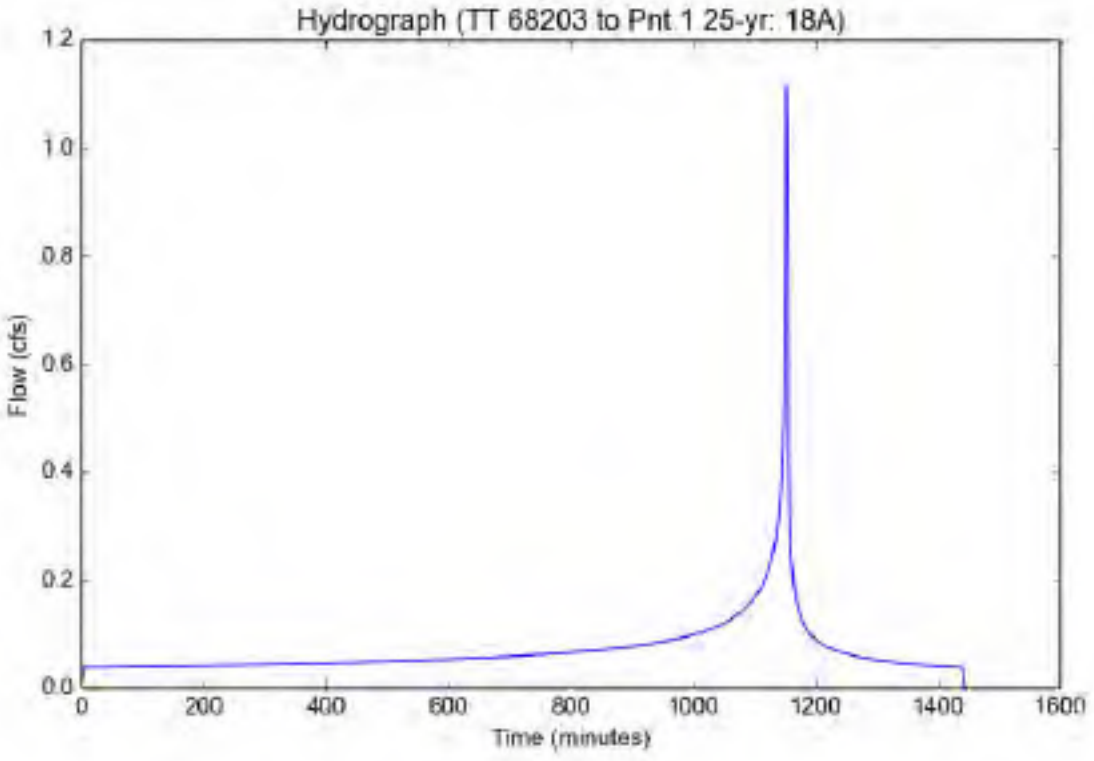
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 18A |
| Area (ac) | 0.34 |
| Flow Path Length (ft) | 481.0 |
| Flow Path Slope (vft/hft) | 0.073 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.9 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8951 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.116 |
| Burned Peak Flow Rate (cfs) | 1.116 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1442 |
| 24-Hr Clear Runoff Volume (cu-ft) | 6282.8434 |



# Peak Flow Hydrologic Analysis

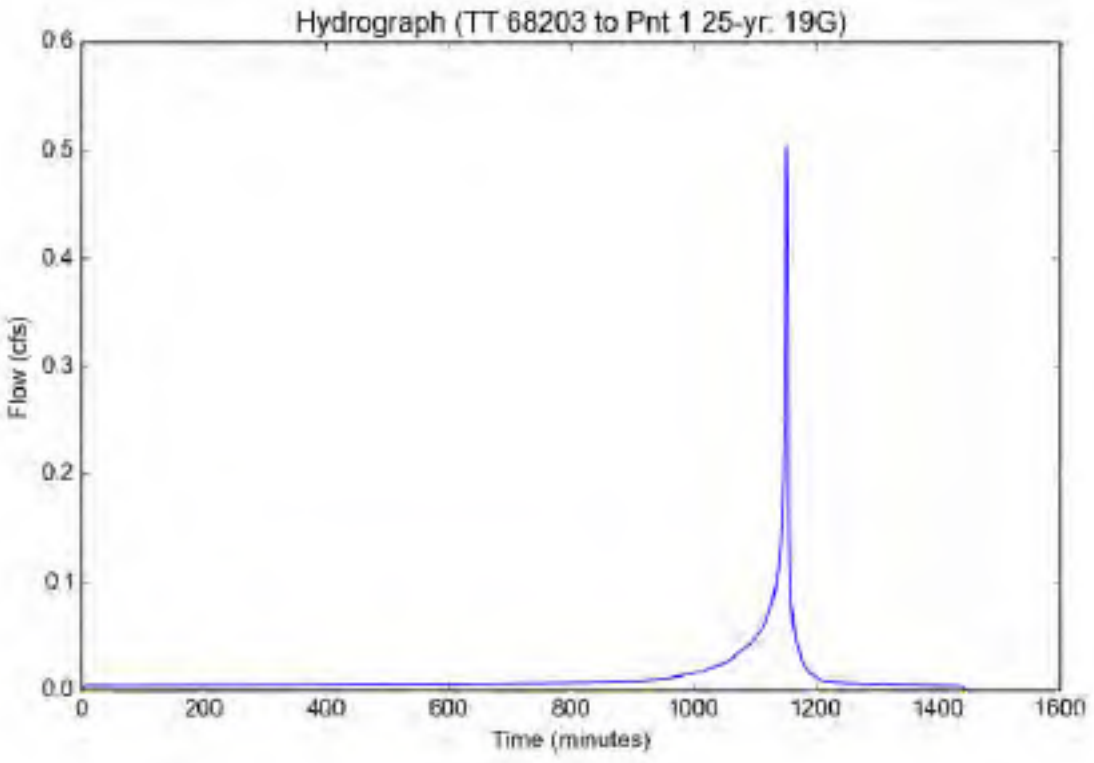
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 19G |
| Area (ac) | 0.16 |
| Flow Path Length (ft) | 123.0 |
| Flow Path Slope (vft/hft) | 0.211 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8561 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 0.5023 |
| Burned Peak Flow Rate (cfs) | 0.5023 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0257 |
| 24-Hr Clear Runoff Volume (cu-ft) | 1120.9904 |



# Peak Flow Hydrologic Analysis

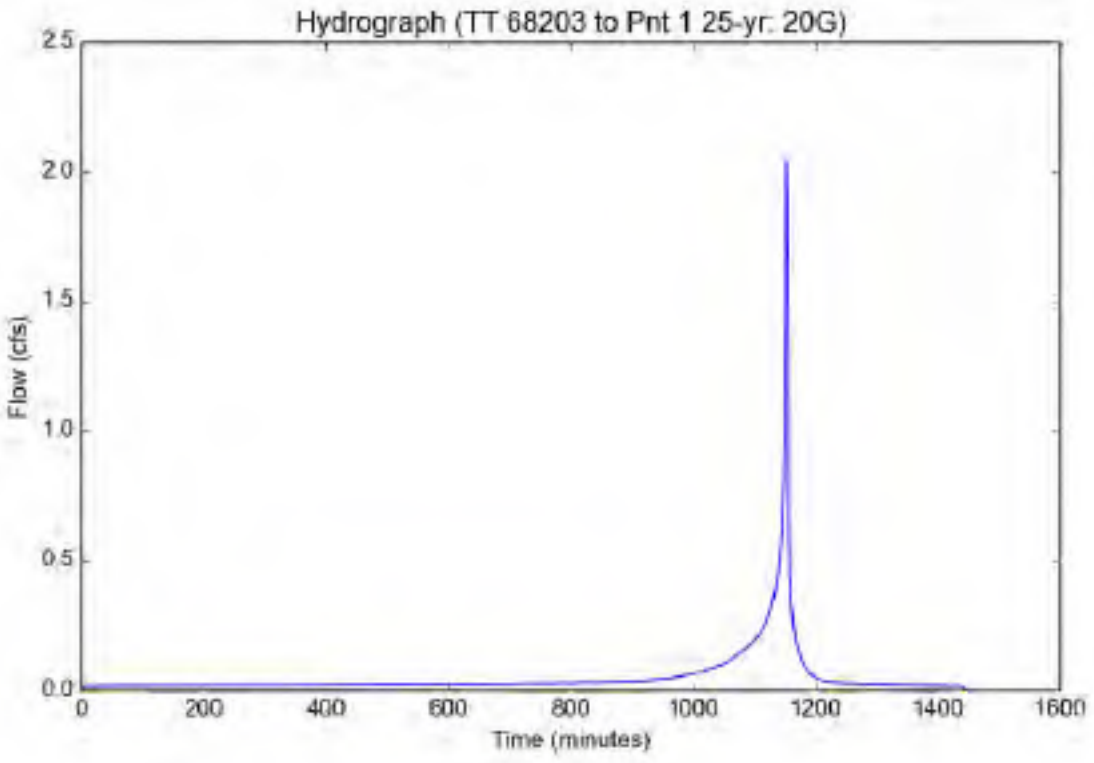
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 20G |
| Area (ac) | 0.65 |
| Flow Path Length (ft) | 424.0 |
| Flow Path Slope (vft/hft) | 0.151 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8561 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.0406 |
| Burned Peak Flow Rate (cfs) | 2.0406 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1045 |
| 24-Hr Clear Runoff Volume (cu-ft) | 4554.0234 |



# Peak Flow Hydrologic Analysis

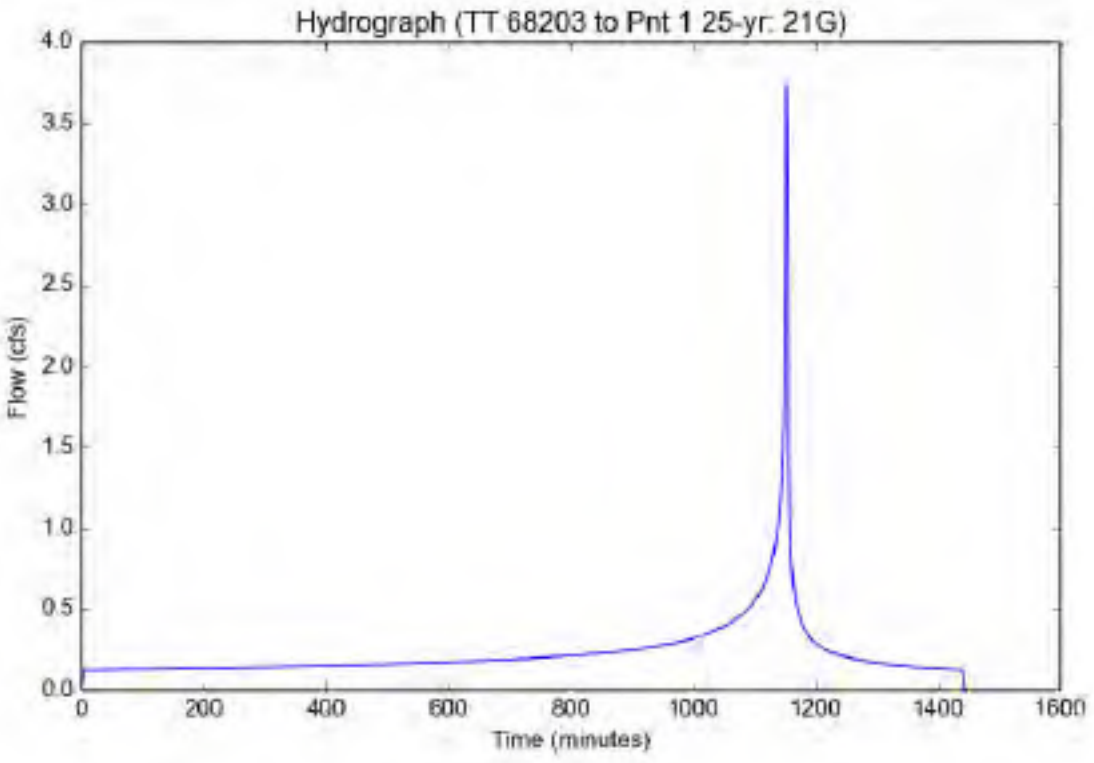
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 21G |
| Area (ac) | 1.14 |
| Flow Path Length (ft) | 251.0 |
| Flow Path Slope (vft/hft) | 0.005 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.86 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8932 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 3.7337 |
| Burned Peak Flow Rate (cfs) | 3.7337 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.4686 |
| 24-Hr Clear Runoff Volume (cu-ft) | 20412.0568 |



# Peak Flow Hydrologic Analysis

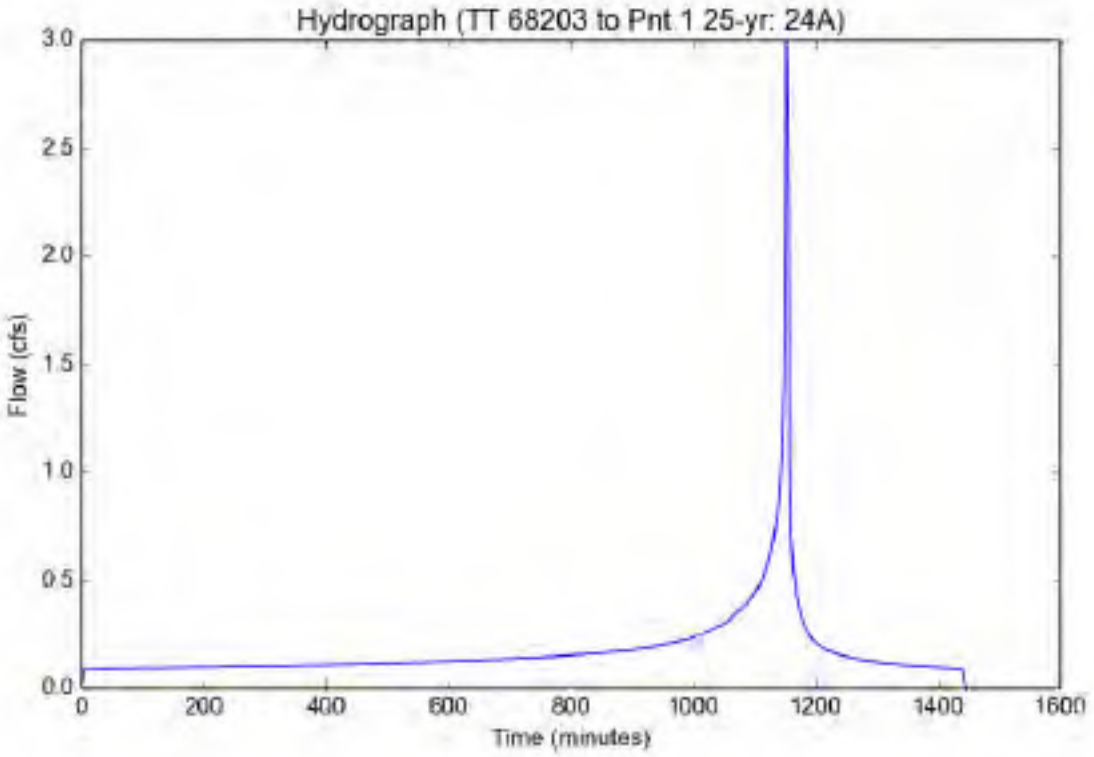
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 24A |
| Area (ac) | 1.01 |
| Flow Path Length (ft) | 776.0 |
| Flow Path Slope (vft/hft) | 0.072 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.67 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.3657 |
| Undeveloped Runoff Coefficient (Cu) | 0.8428 |
| Developed Runoff Coefficient (Cd) | 0.8811 |
| Time of Concentration (min) | 6.0 |
| Clear Peak Flow Rate (cfs) | 2.9953 |
| Burned Peak Flow Rate (cfs) | 2.9953 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.352 |
| 24-Hr Clear Runoff Volume (cu-ft) | 15331.7324 |



# Peak Flow Hydrologic Analysis

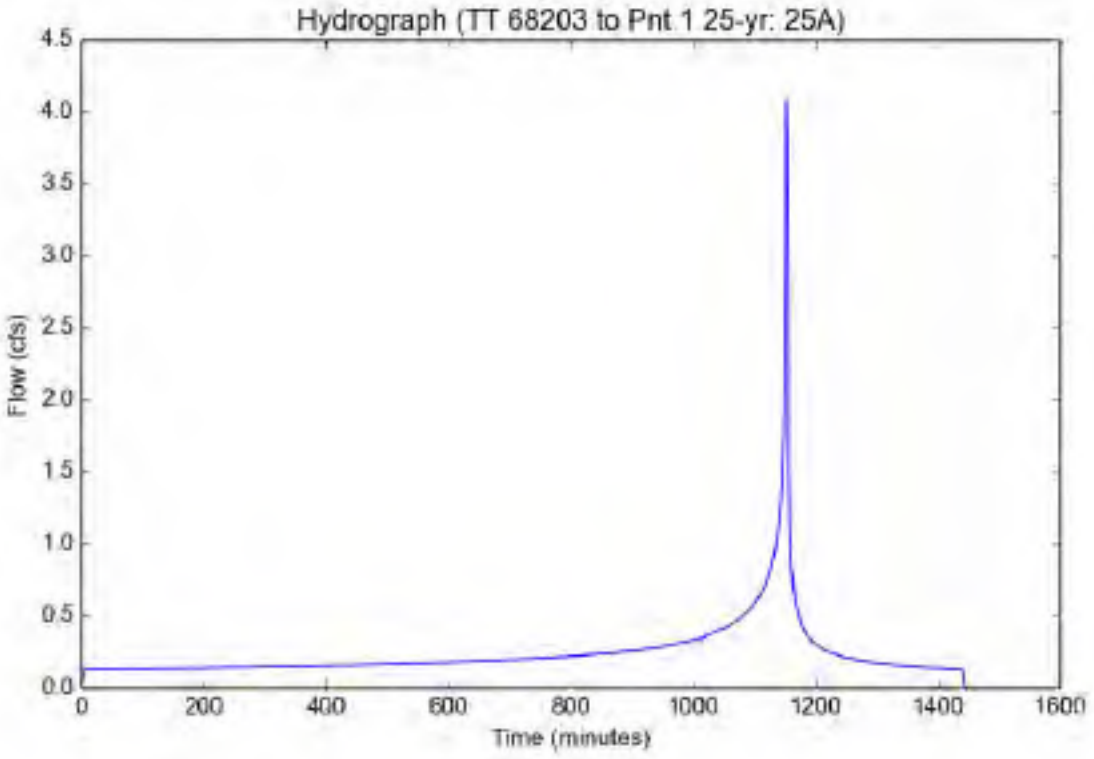
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 25A |
| Area (ac) | 1.25 |
| Flow Path Length (ft) | 148.0 |
| Flow Path Slope (vft/hft) | 0.005 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.81 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8907 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 4.0828 |
| Burned Peak Flow Rate (cfs) | 4.0828 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.4932 |
| 24-Hr Clear Runoff Volume (cu-ft) | 21485.3318 |



# Peak Flow Hydrologic Analysis

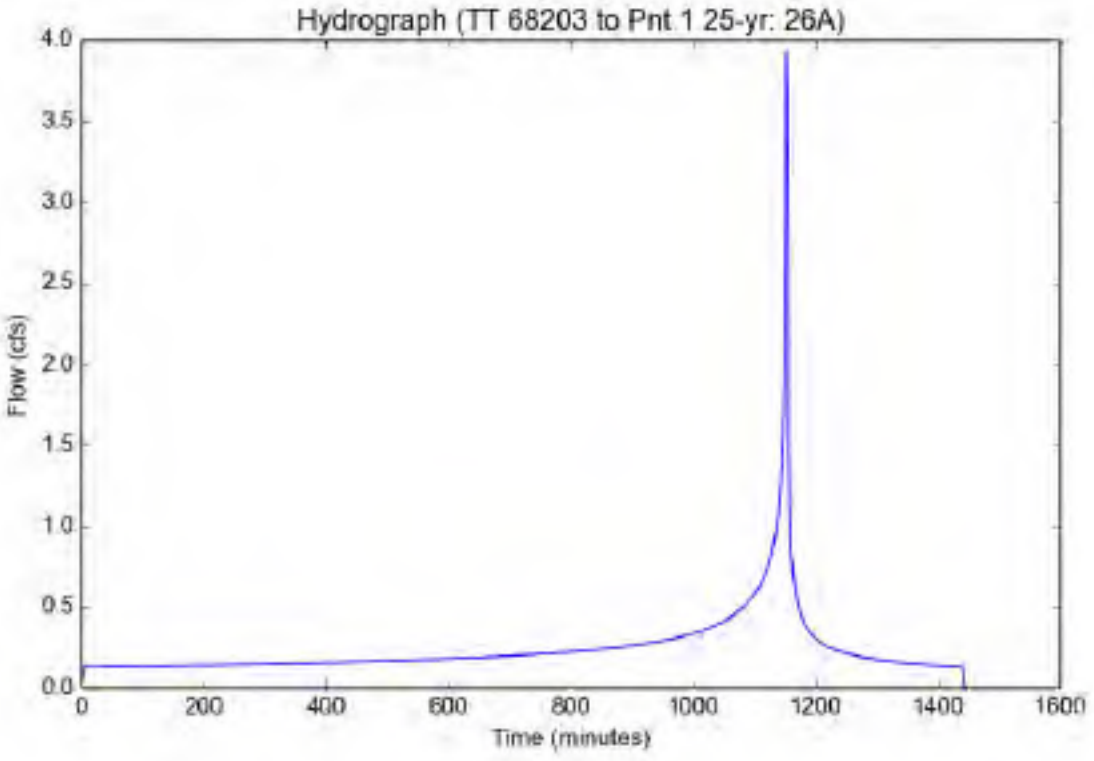
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 26A |
| Area (ac) | 1.2 |
| Flow Path Length (ft) | 245.0 |
| Flow Path Slope (vft/hft) | 0.005 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.86 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8932 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 3.9302 |
| Burned Peak Flow Rate (cfs) | 3.9302 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.4933 |
| 24-Hr Clear Runoff Volume (cu-ft) | 21486.3756 |



# Peak Flow Hydrologic Analysis

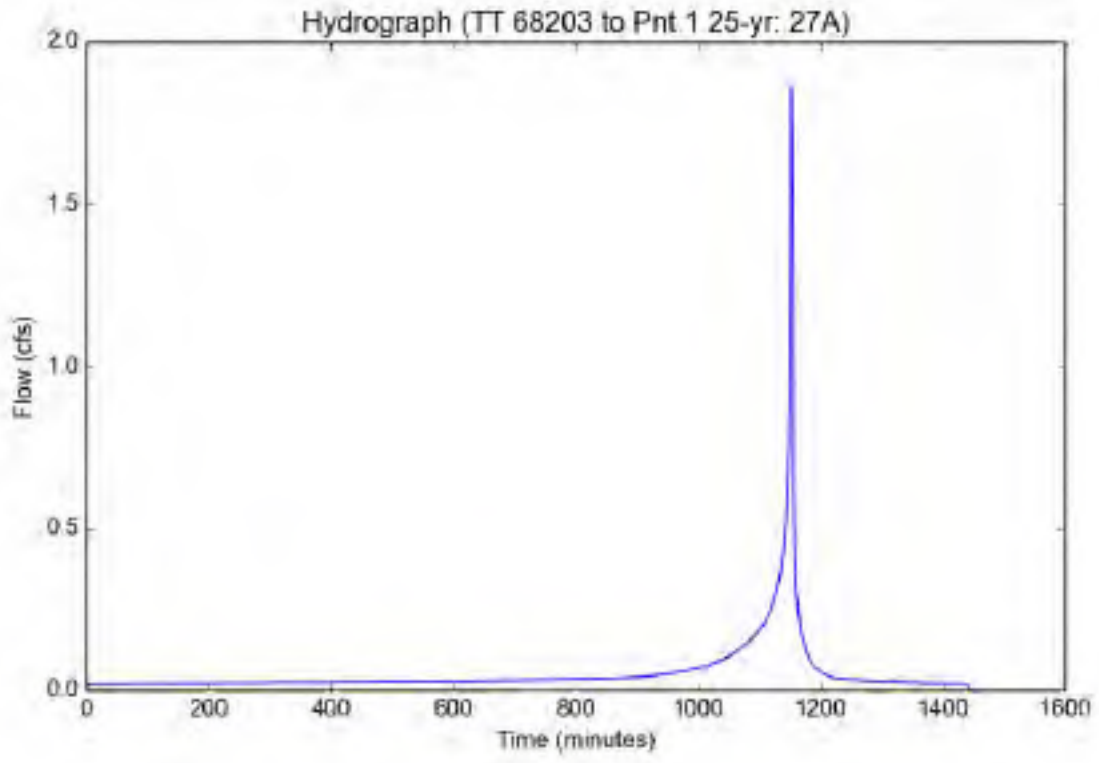
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 27A |
| Area (ac) | 0.59 |
| Flow Path Length (ft) | 292.0 |
| Flow Path Slope (vft/hft) | 0.17 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.18 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.86 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.8606 |
| Burned Peak Flow Rate (cfs) | 1.8606 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1104 |
| 24-Hr Clear Runoff Volume (cu-ft) | 4810.5449 |



# Peak Flow Hydrologic Analysis

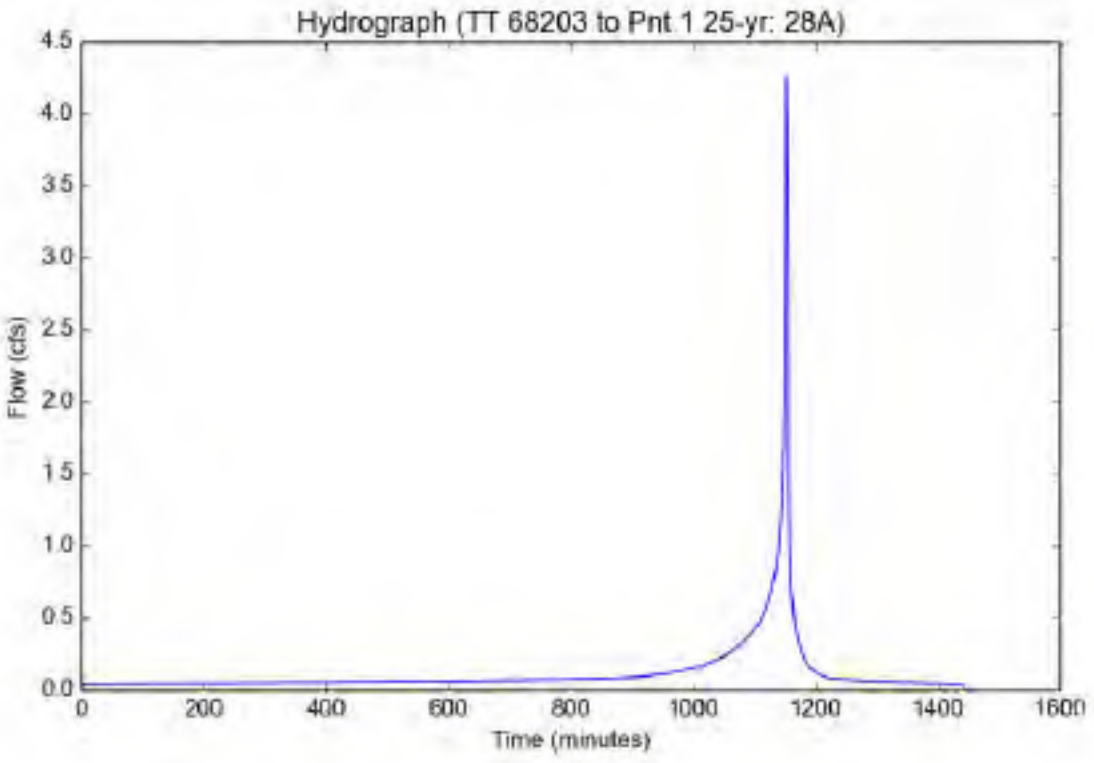
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 28A |
| Area (ac) | 1.35 |
| Flow Path Length (ft) | 282.0 |
| Flow Path Slope (vft/hft) | 0.053 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.17 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8595 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 4.255 |
| Burned Peak Flow Rate (cfs) | 4.255 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.2482 |
| 24-Hr Clear Runoff Volume (cu-ft) | 10813.5762 |



# Peak Flow Hydrologic Analysis

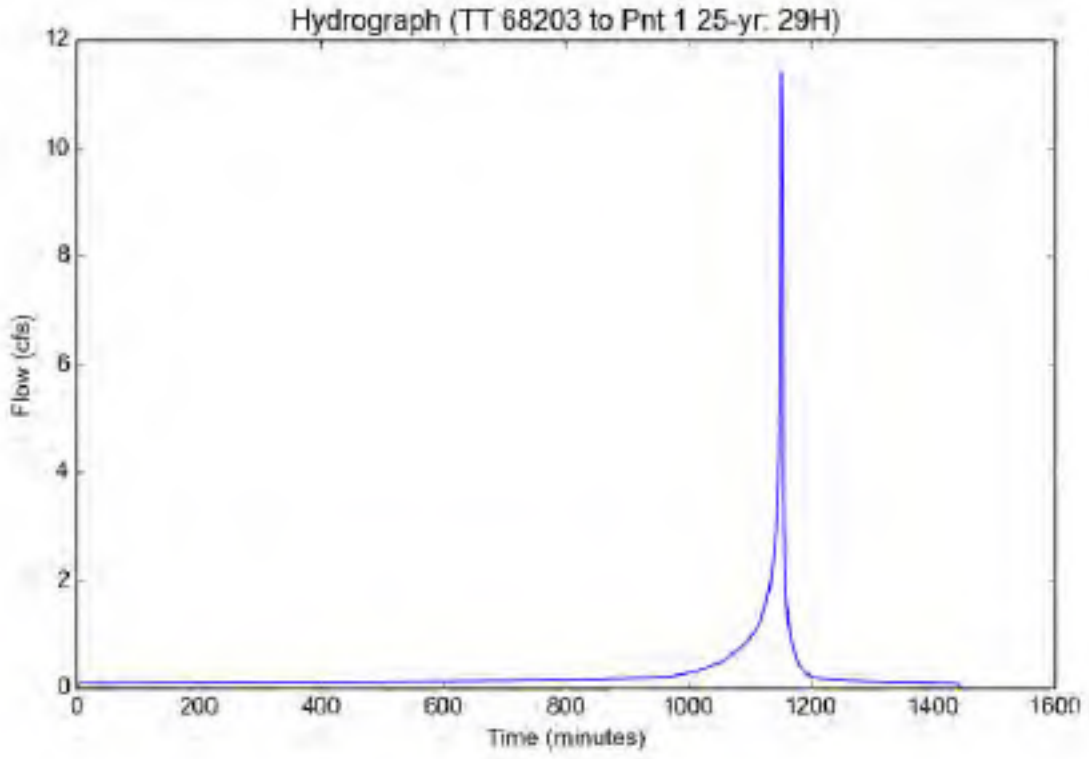
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 29H |
| Area (ac) | 4.04 |
| Flow Path Length (ft) | 443.0 |
| Flow Path Slope (vft/hft) | 0.213 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.08 |
| Soil Type | 97 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.7583 |
| Developed Runoff Coefficient (Cd) | 0.7697 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 11.4019 |
| Burned Peak Flow Rate (cfs) | 11.4019 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.5451 |
| 24-Hr Clear Runoff Volume (cu-ft) | 23744.7319 |



# Peak Flow Hydrologic Analysis

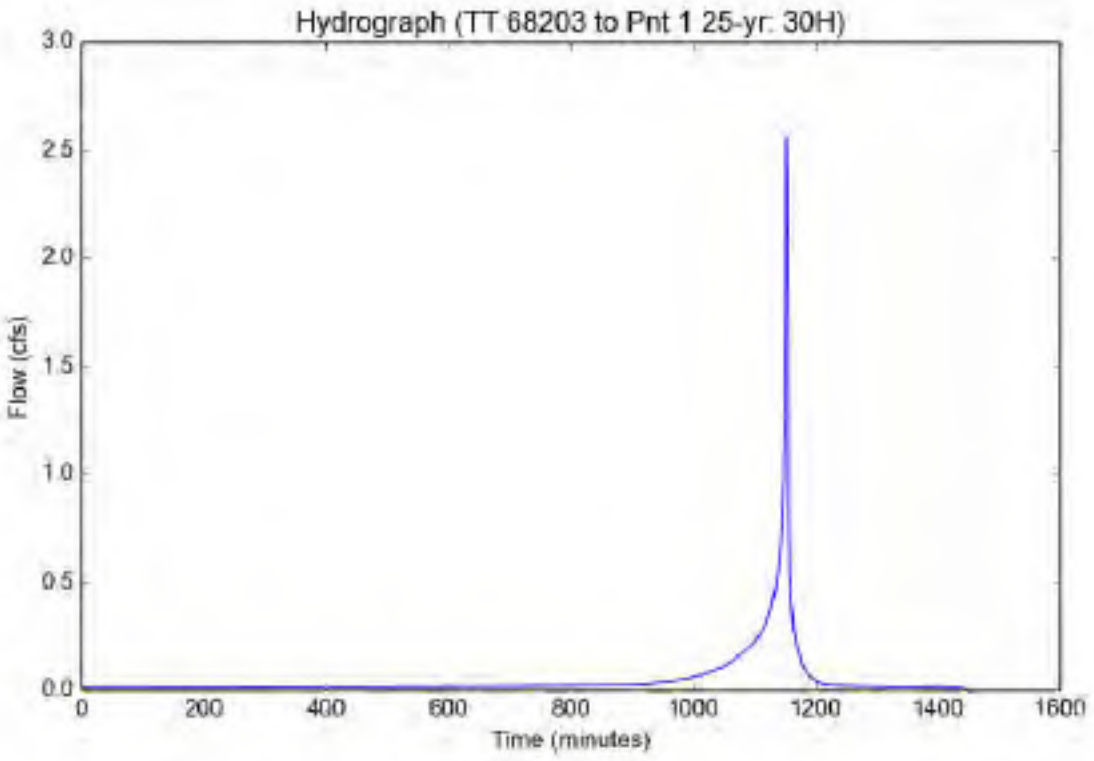
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 30H |
| Area (ac) | 0.82 |
| Flow Path Length (ft) | 441.0 |
| Flow Path Slope (vft/hft) | 0.183 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8517 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.561 |
| Burned Peak Flow Rate (cfs) | 2.561 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1076 |
| 24-Hr Clear Runoff Volume (cu-ft) | 4686.7134 |



# Peak Flow Hydrologic Analysis

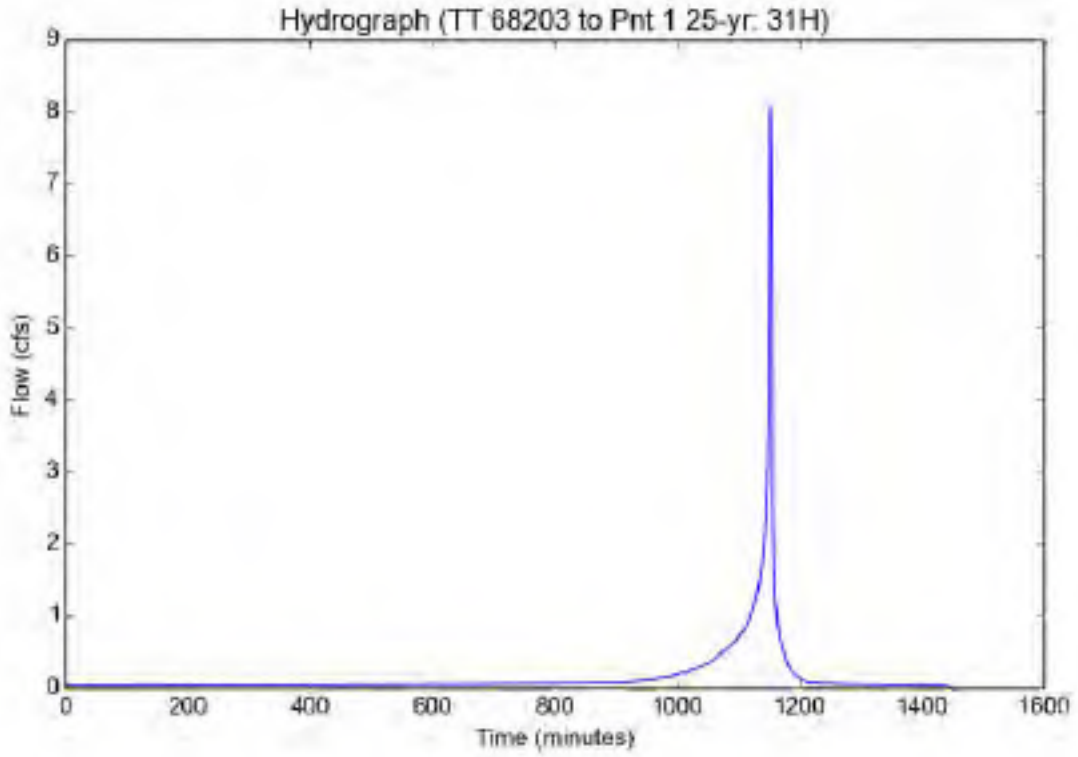
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 31H |
| Area (ac) | 2.58 |
| Flow Path Length (ft) | 451.0 |
| Flow Path Slope (vft/hft) | 0.075 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8517 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 8.0579 |
| Burned Peak Flow Rate (cfs) | 8.0579 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.3385 |
| 24-Hr Clear Runoff Volume (cu-ft) | 14746.0008 |



# Peak Flow Hydrologic Analysis

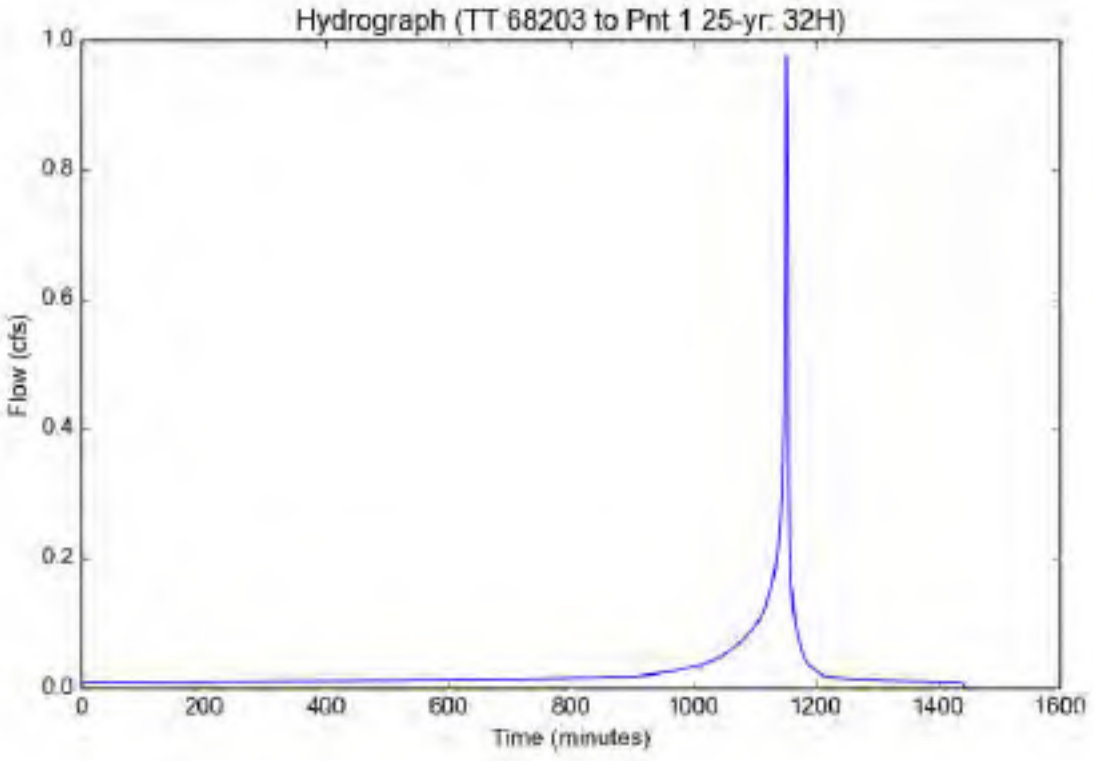
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 32H |
| Area (ac) | 0.31 |
| Flow Path Length (ft) | 228.0 |
| Flow Path Slope (vft/hft) | 0.101 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.14 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8581 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 0.9754 |
| Burned Peak Flow Rate (cfs) | 0.9754 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0539 |
| 24-Hr Clear Runoff Volume (cu-ft) | 2349.7466 |



# Peak Flow Hydrologic Analysis

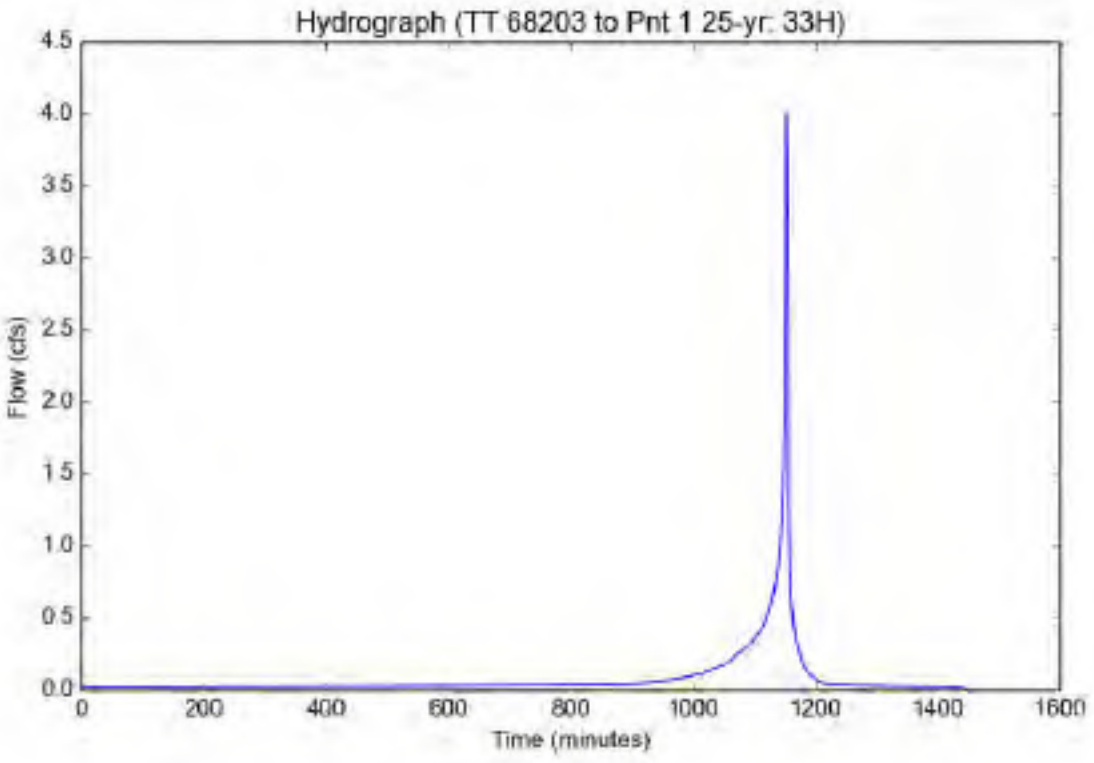
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 33H |
| Area (ac) | 1.28 |
| Flow Path Length (ft) | 131.0 |
| Flow Path Slope (vft/hft) | 0.195 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.03 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8527 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 4.0023 |
| Burned Peak Flow Rate (cfs) | 4.0023 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1764 |
| 24-Hr Clear Runoff Volume (cu-ft) | 7682.9737 |



# Peak Flow Hydrologic Analysis

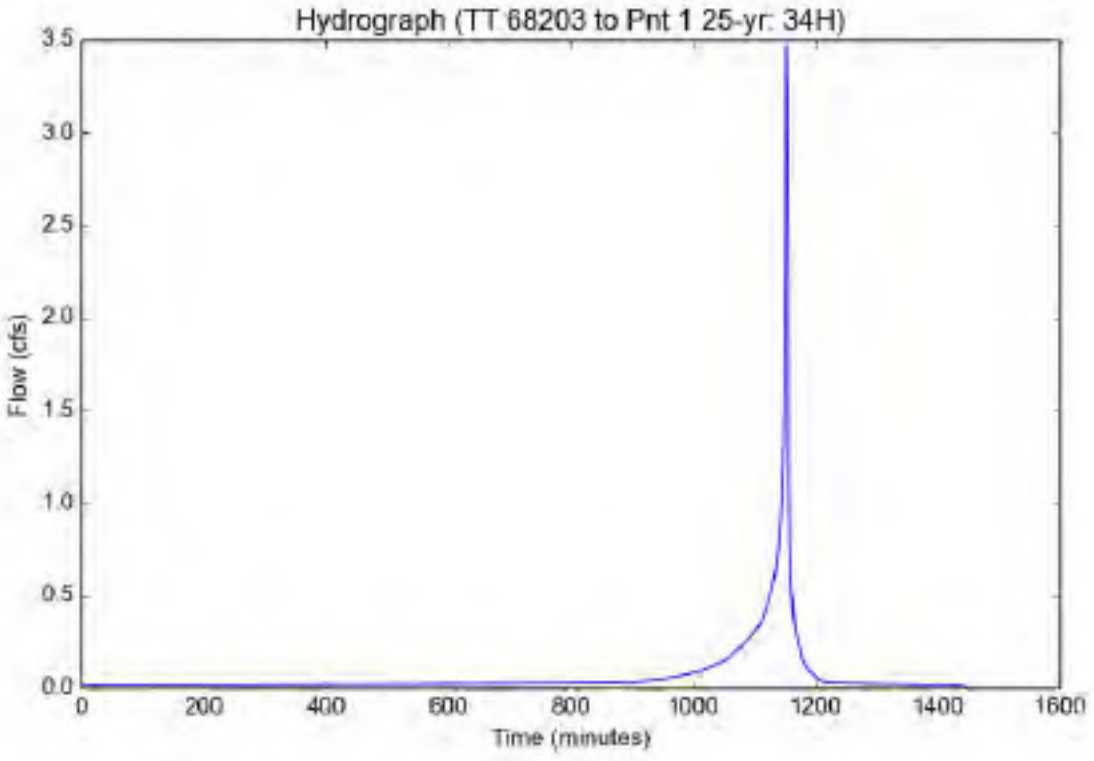
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 34H |
| Area (ac) | 1.11 |
| Flow Path Length (ft) | 568.0 |
| Flow Path Slope (vft/hft) | 0.166 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8517 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 3.4668 |
| Burned Peak Flow Rate (cfs) | 3.4668 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1456 |
| 24-Hr Clear Runoff Volume (cu-ft) | 6344.2097 |



# Peak Flow Hydrologic Analysis

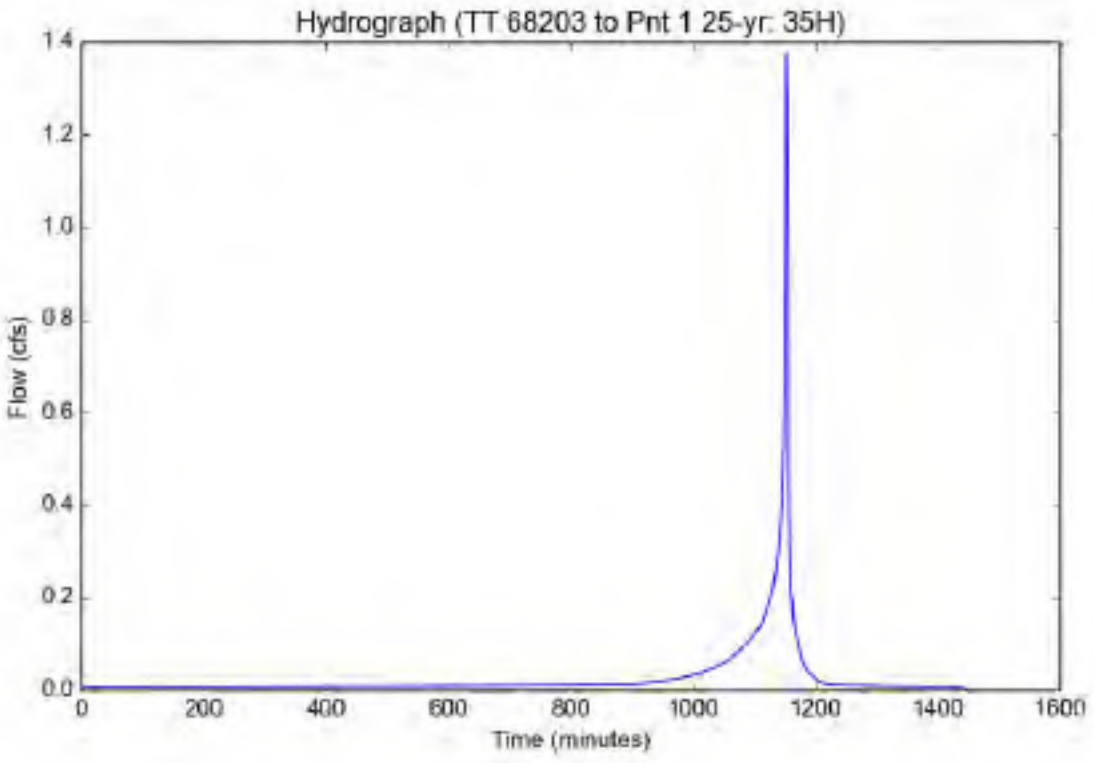
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 35H |
| Area (ac) | 0.44 |
| Flow Path Length (ft) | 201.0 |
| Flow Path Slope (vft/hft) | 0.298 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8517 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.3742 |
| Burned Peak Flow Rate (cfs) | 1.3742 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0577 |
| 24-Hr Clear Runoff Volume (cu-ft) | 2514.8218 |



# Peak Flow Hydrologic Analysis

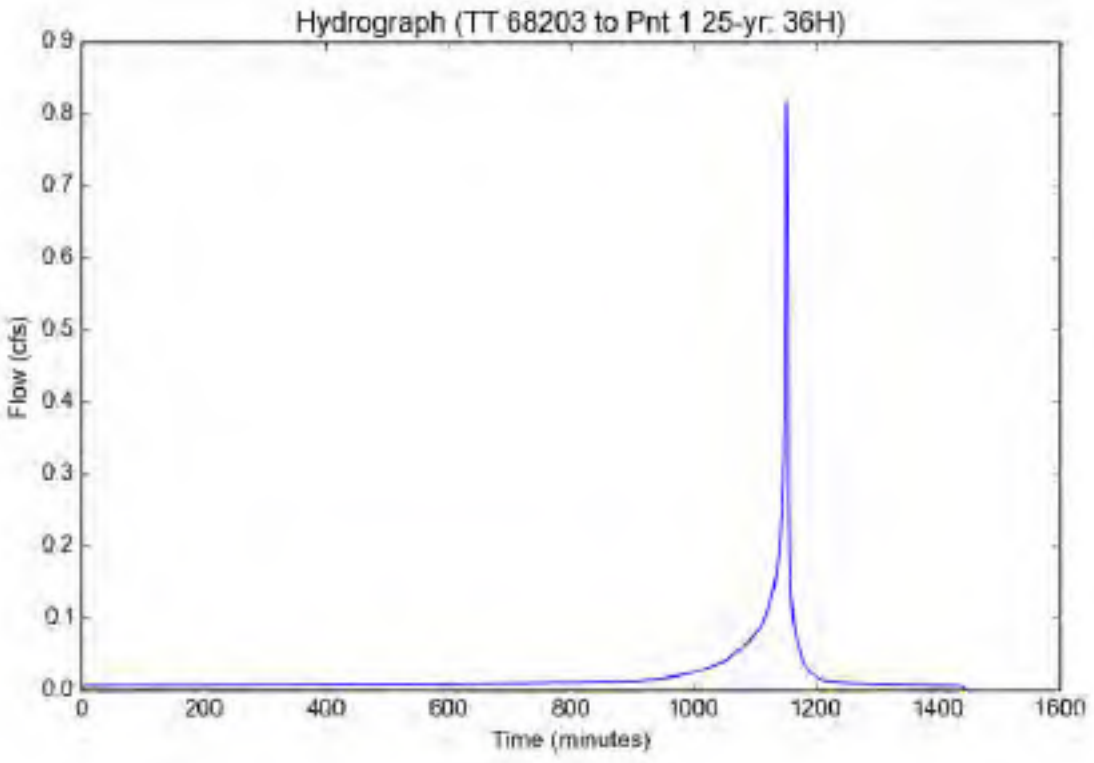
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 36H |
| Area (ac) | 0.26 |
| Flow Path Length (ft) | 302.0 |
| Flow Path Slope (vft/hft) | 0.098 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.09 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8556 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 0.8158 |
| Burned Peak Flow Rate (cfs) | 0.8158 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.041 |
| 24-Hr Clear Runoff Volume (cu-ft) | 1784.3229 |



# Peak Flow Hydrologic Analysis

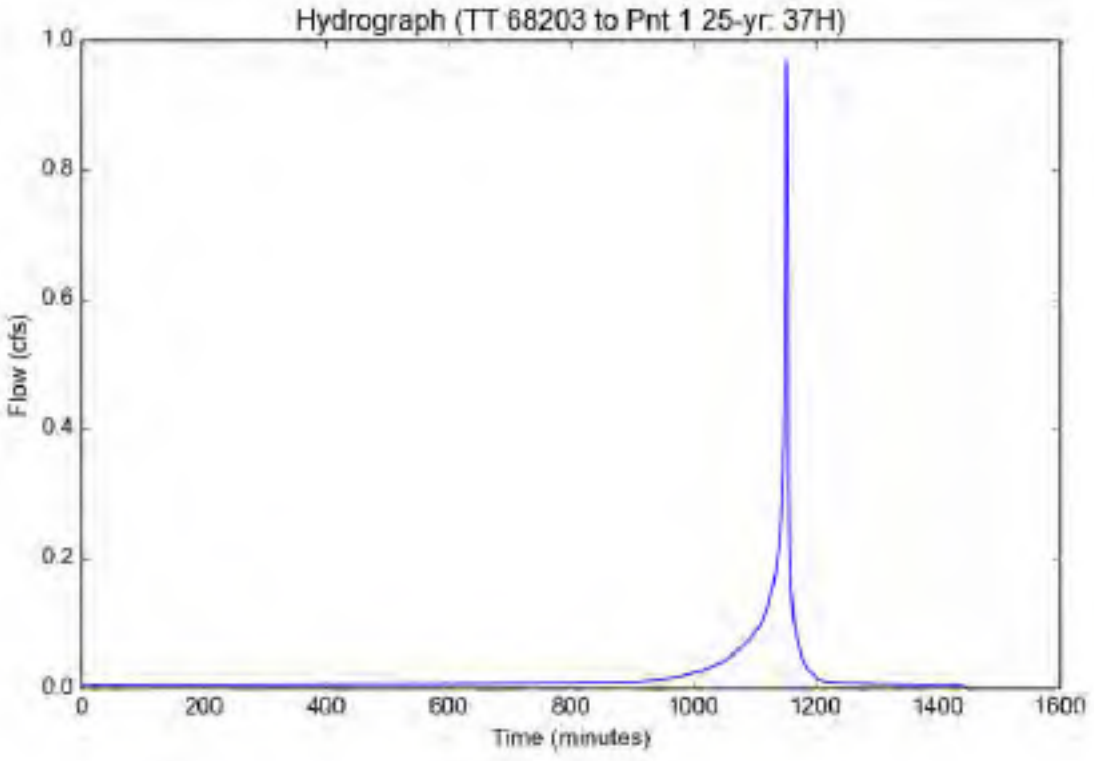
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 37H |
| Area (ac) | 0.31 |
| Flow Path Length (ft) | 128.0 |
| Flow Path Slope (vft/hft) | 0.117 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8517 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 0.9682 |
| Burned Peak Flow Rate (cfs) | 0.9682 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0407 |
| 24-Hr Clear Runoff Volume (cu-ft) | 1771.8063 |



# Peak Flow Hydrologic Analysis

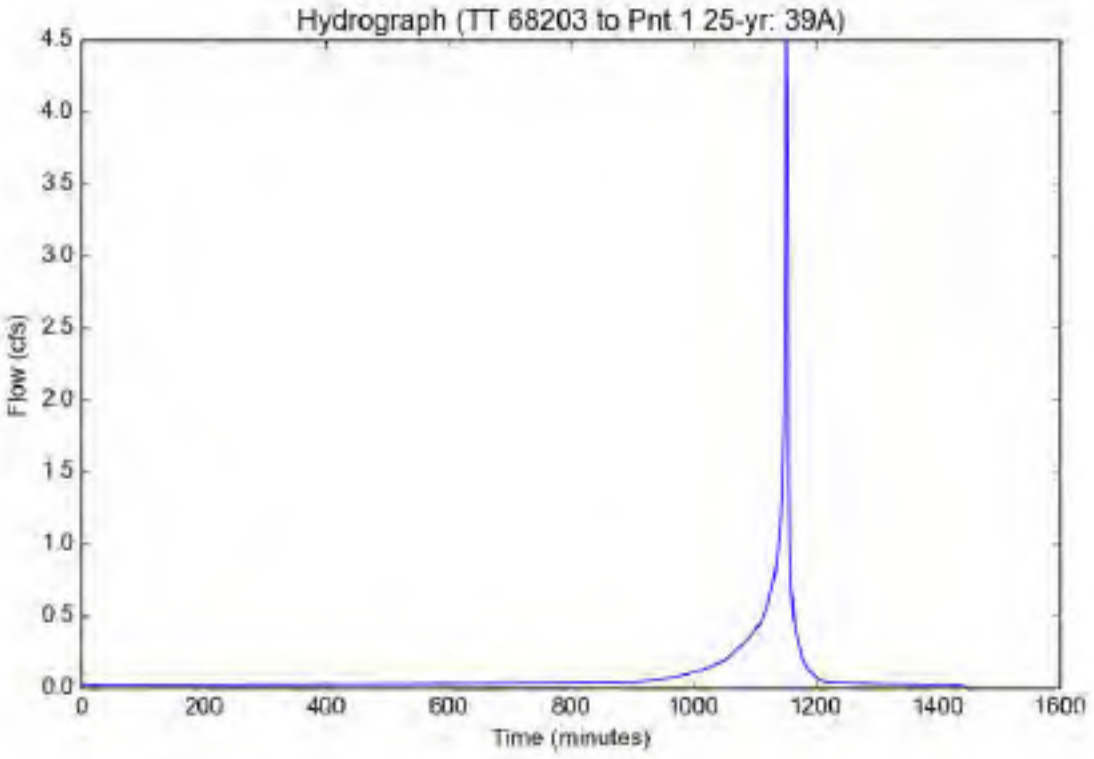
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 1 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to Pnt 1 25-yr |
| Subarea ID | 39A |
| Area (ac) | 1.44 |
| Flow Path Length (ft) | 192.0 |
| Flow Path Slope (vft/hft) | 0.203 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8517 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 4.4974 |
| Burned Peak Flow Rate (cfs) | 4.4974 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1889 |
| 24-Hr Clear Runoff Volume (cu-ft) | 8230.326 |



# Peak Flow Hydrologic Analysis

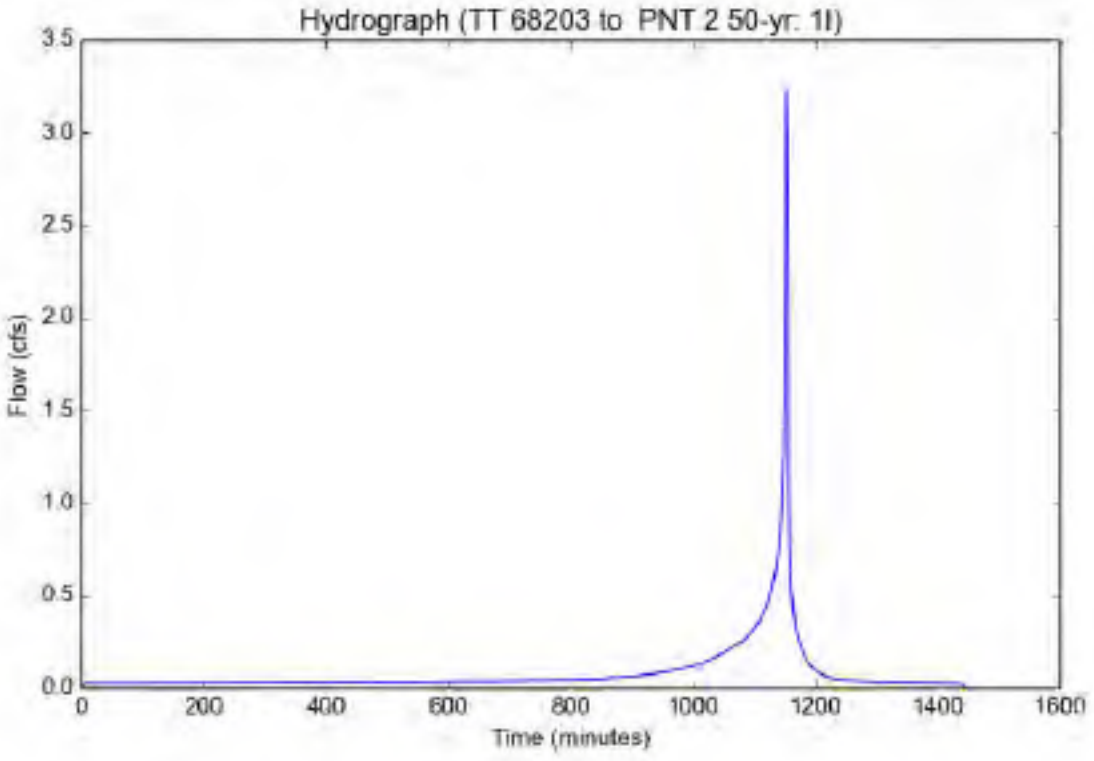
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 2 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 2 50-yr |
| Subarea ID | 1I |
| Area (ac) | 0.89 |
| Flow Path Length (ft) | 493.0 |
| Flow Path Slope (vft/hft) | 0.156 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8654 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 3.2165 |
| Burned Peak Flow Rate (cfs) | 3.2165 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1742 |
| 24-Hr Clear Runoff Volume (cu-ft) | 7587.0327 |



# Peak Flow Hydrologic Analysis

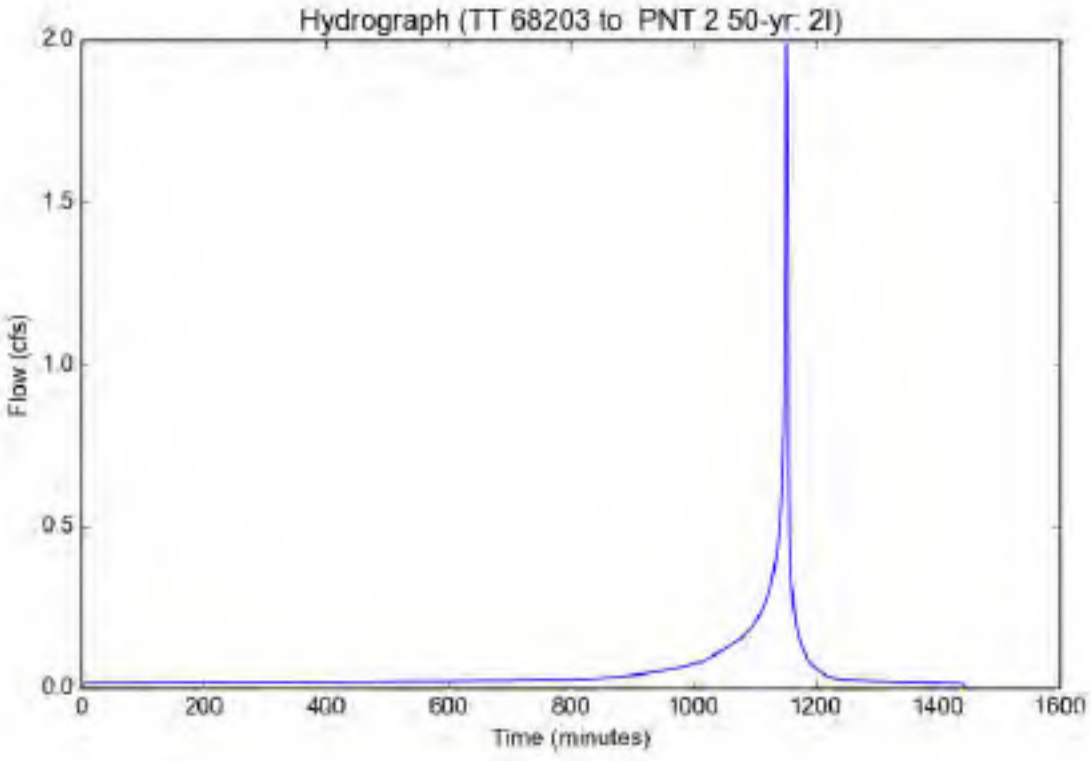
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 2 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 2 50-yr |
| Subarea ID | 2I |
| Area (ac) | 0.55 |
| Flow Path Length (ft) | 245.0 |
| Flow Path Slope (vft/hft) | 0.29 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8654 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.9877 |
| Burned Peak Flow Rate (cfs) | 1.9877 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1076 |
| 24-Hr Clear Runoff Volume (cu-ft) | 4688.6157 |



# Peak Flow Hydrologic Analysis

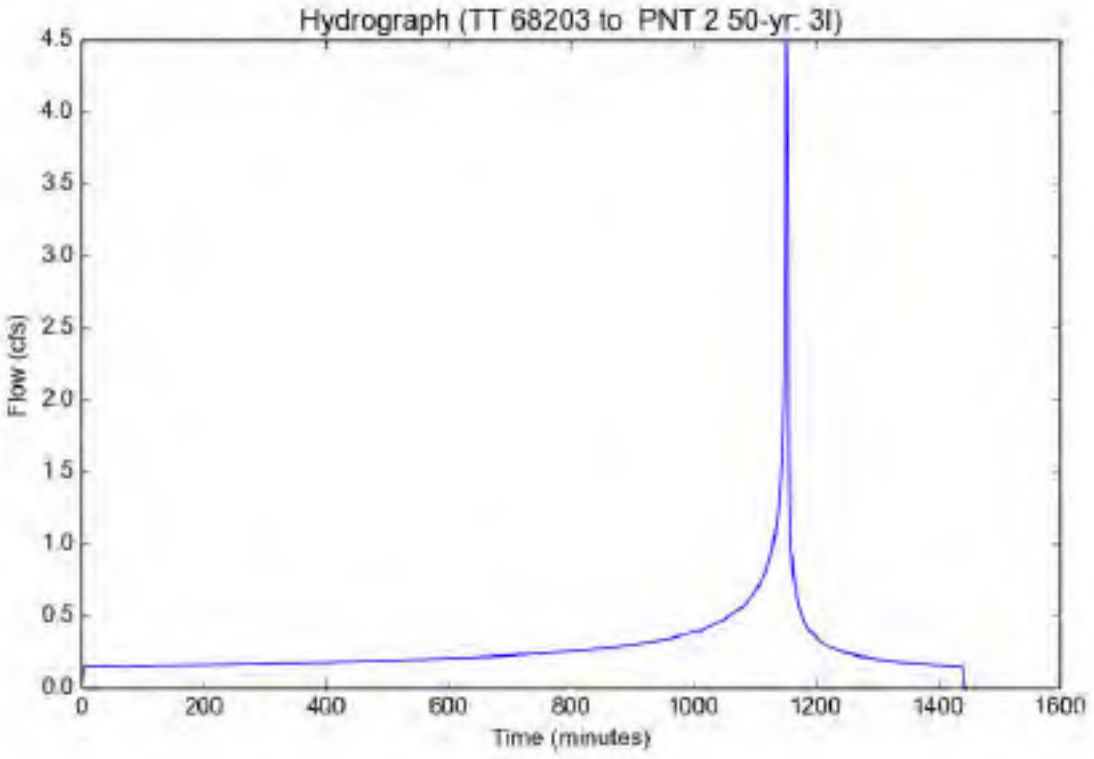
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 2 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 2 50-yr |
| Subarea ID | 3I |
| Area (ac) | 1.2 |
| Flow Path Length (ft) | 137.0 |
| Flow Path Slope (vft/hft) | 0.017 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.86 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8946 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 4.4835 |
| Burned Peak Flow Rate (cfs) | 4.4835 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.5641 |
| 24-Hr Clear Runoff Volume (cu-ft) | 24573.6949 |



# Peak Flow Hydrologic Analysis

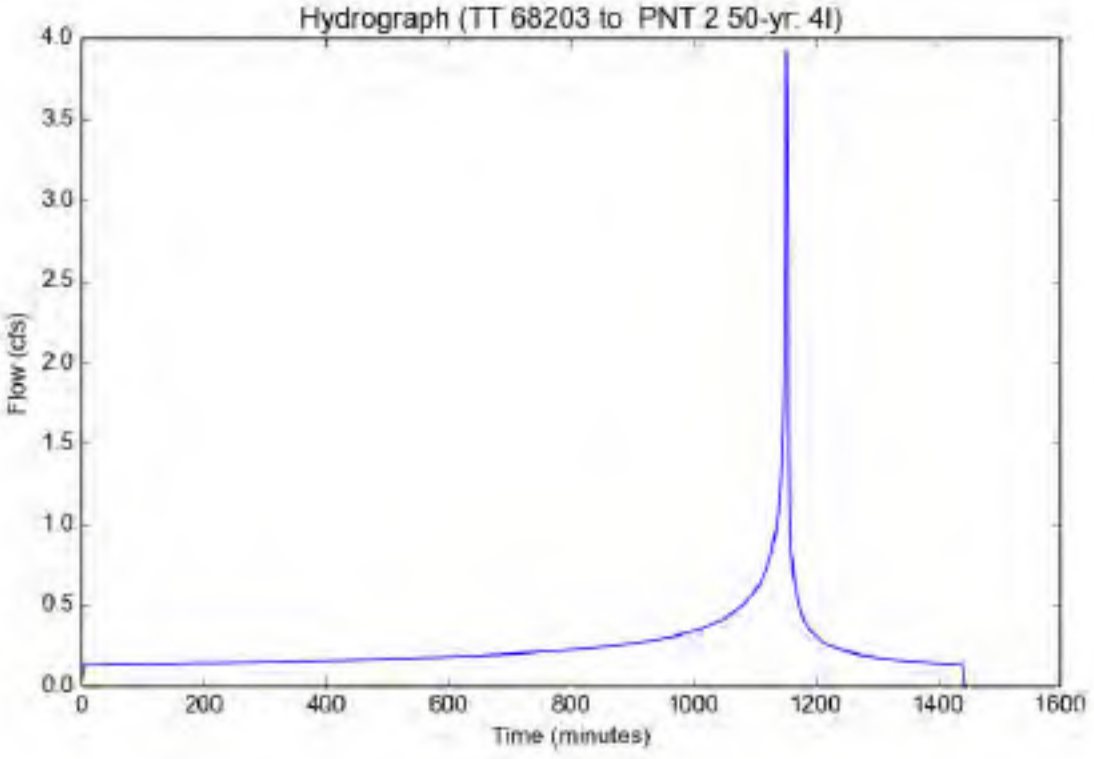
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 2 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 2 50-yr |
| Subarea ID | 4I |
| Area (ac) | 1.05 |
| Flow Path Length (ft) | 109.0 |
| Flow Path Slope (vft/hft) | 0.017 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.86 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8946 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 3.9231 |
| Burned Peak Flow Rate (cfs) | 3.9231 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.4936 |
| 24-Hr Clear Runoff Volume (cu-ft) | 21501.9831 |



# Peak Flow Hydrologic Analysis

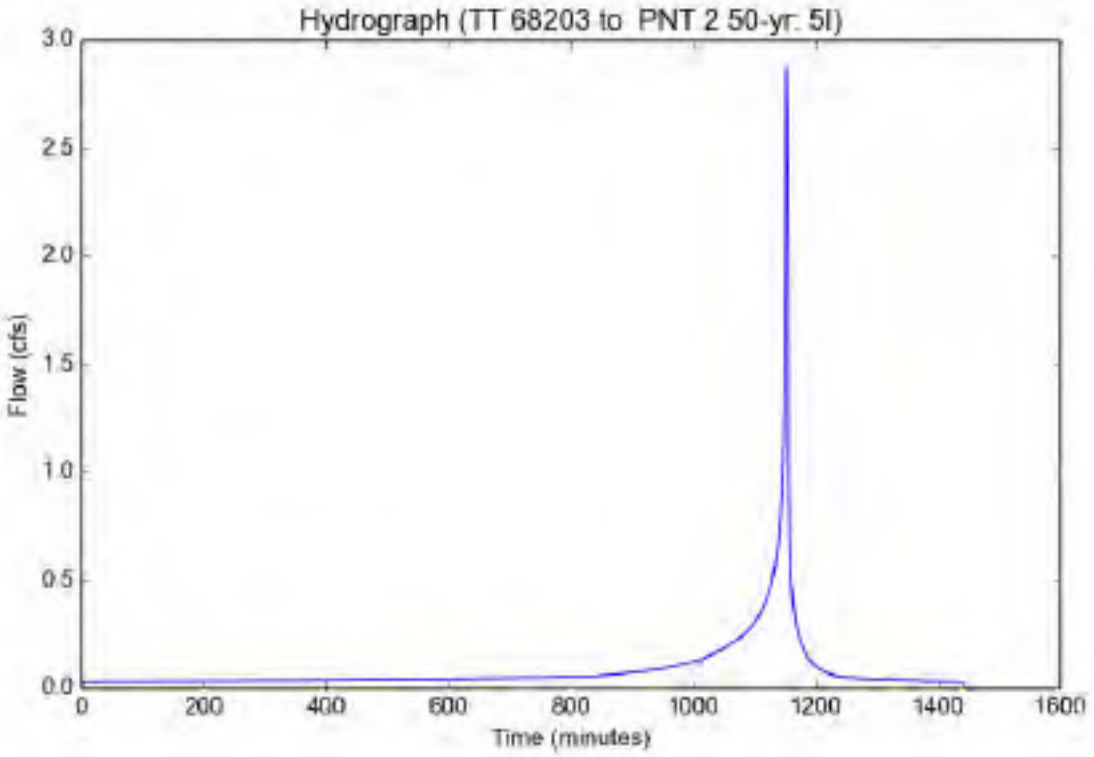
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 2 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 2 50-yr |
| Subarea ID | 5I |
| Area (ac) | 0.79 |
| Flow Path Length (ft) | 211.0 |
| Flow Path Slope (vft/hft) | 0.085 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.18 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8684 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.8653 |
| Burned Peak Flow Rate (cfs) | 2.8653 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1774 |
| 24-Hr Clear Runoff Volume (cu-ft) | 7728.5703 |



# Peak Flow Hydrologic Analysis

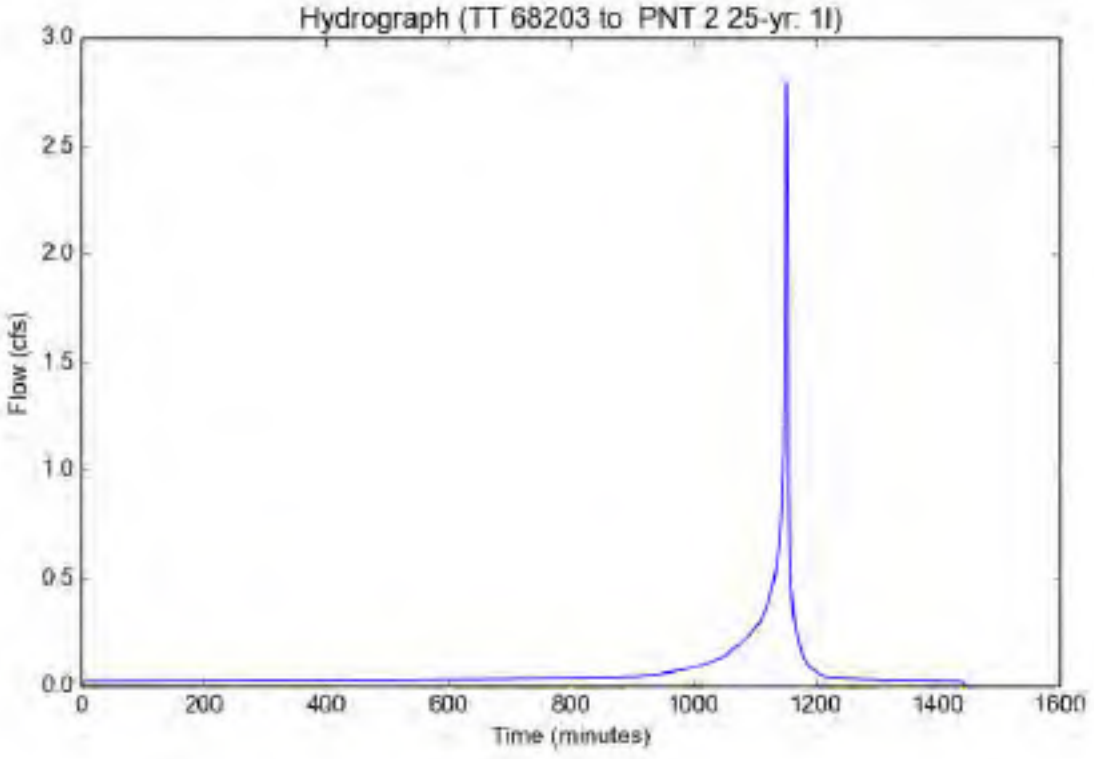
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 2 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 2 25-yr |
| Subarea ID | 1I |
| Area (ac) | 0.89 |
| Flow Path Length (ft) | 493.0 |
| Flow Path Slope (vft/hft) | 0.156 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8561 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.794 |
| Burned Peak Flow Rate (cfs) | 2.794 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1431 |
| 24-Hr Clear Runoff Volume (cu-ft) | 6235.509 |



# Peak Flow Hydrologic Analysis

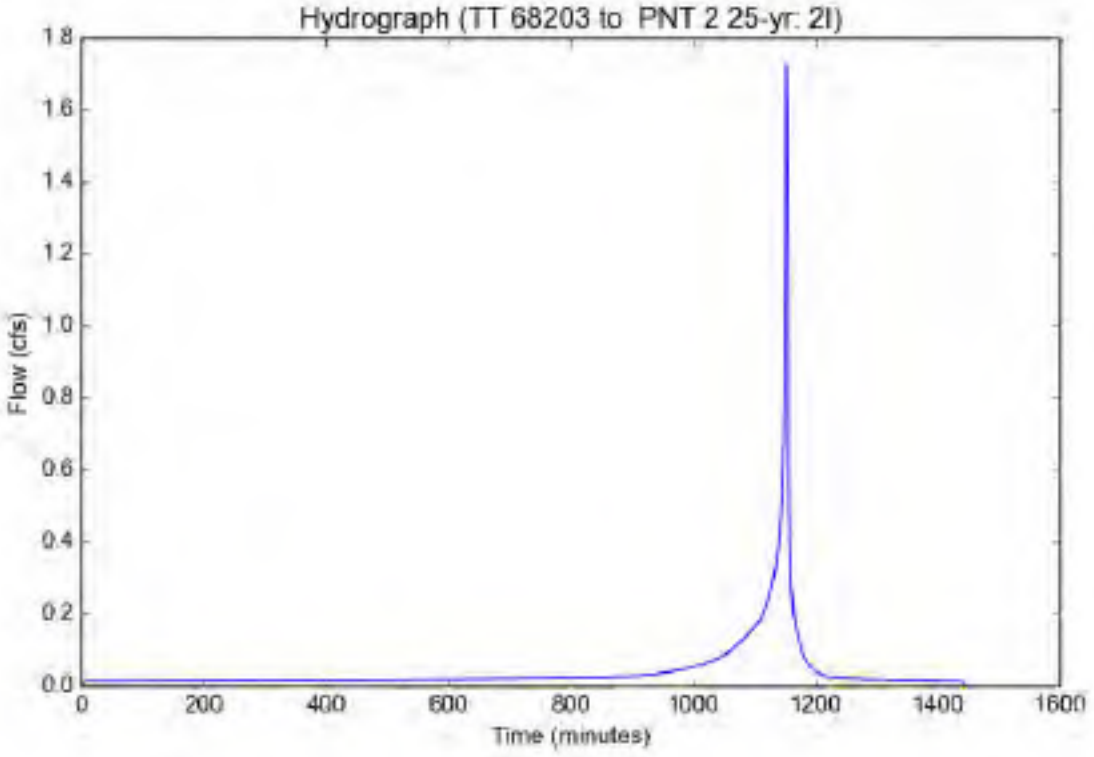
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 2 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 2 25-yr |
| Subarea ID | 2I |
| Area (ac) | 0.55 |
| Flow Path Length (ft) | 245.0 |
| Flow Path Slope (vft/hft) | 0.29 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8561 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.7266 |
| Burned Peak Flow Rate (cfs) | 1.7266 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0885 |
| 24-Hr Clear Runoff Volume (cu-ft) | 3853.4044 |



# Peak Flow Hydrologic Analysis

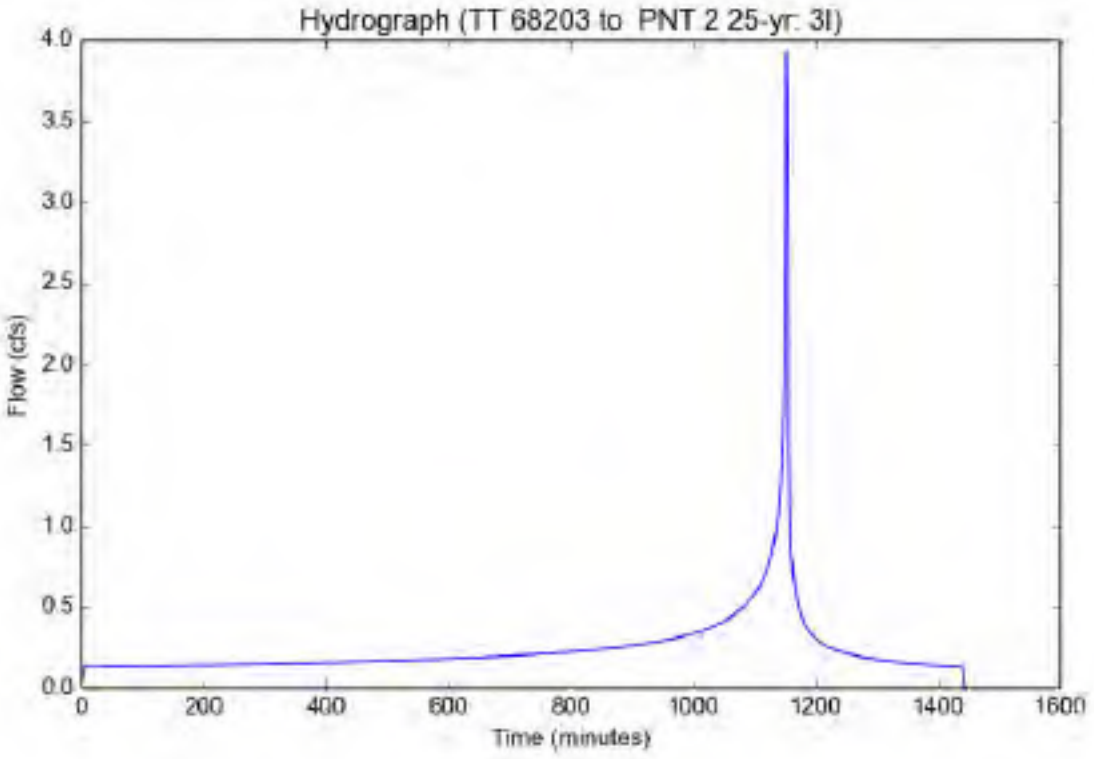
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 2 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 2 25-yr |
| Subarea ID | 3I |
| Area (ac) | 1.2 |
| Flow Path Length (ft) | 137.0 |
| Flow Path Slope (vft/hft) | 0.017 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.86 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8932 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 3.9302 |
| Burned Peak Flow Rate (cfs) | 3.9302 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.4933 |
| 24-Hr Clear Runoff Volume (cu-ft) | 21486.3756 |



# Peak Flow Hydrologic Analysis

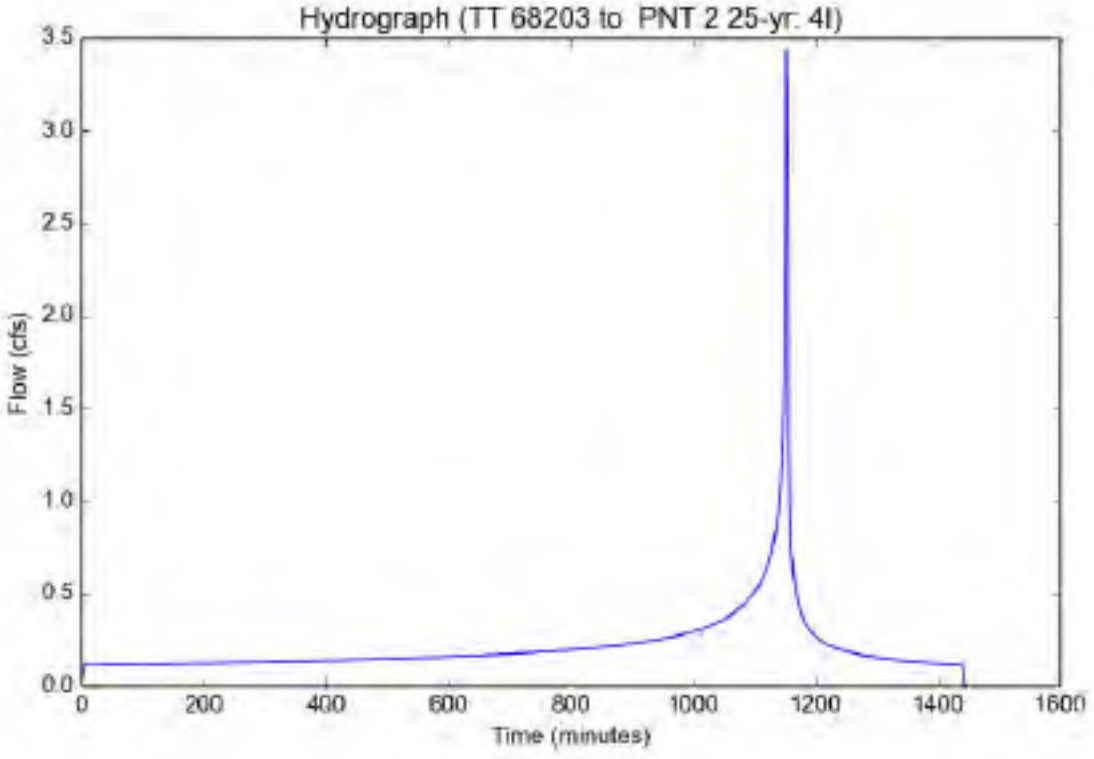
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 2 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 2 25-yr |
| Subarea ID | 4I |
| Area (ac) | 1.05 |
| Flow Path Length (ft) | 109.0 |
| Flow Path Slope (vft/hft) | 0.017 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.86 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8932 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 3.4389 |
| Burned Peak Flow Rate (cfs) | 3.4389 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.4316 |
| 24-Hr Clear Runoff Volume (cu-ft) | 18800.5787 |



# Peak Flow Hydrologic Analysis

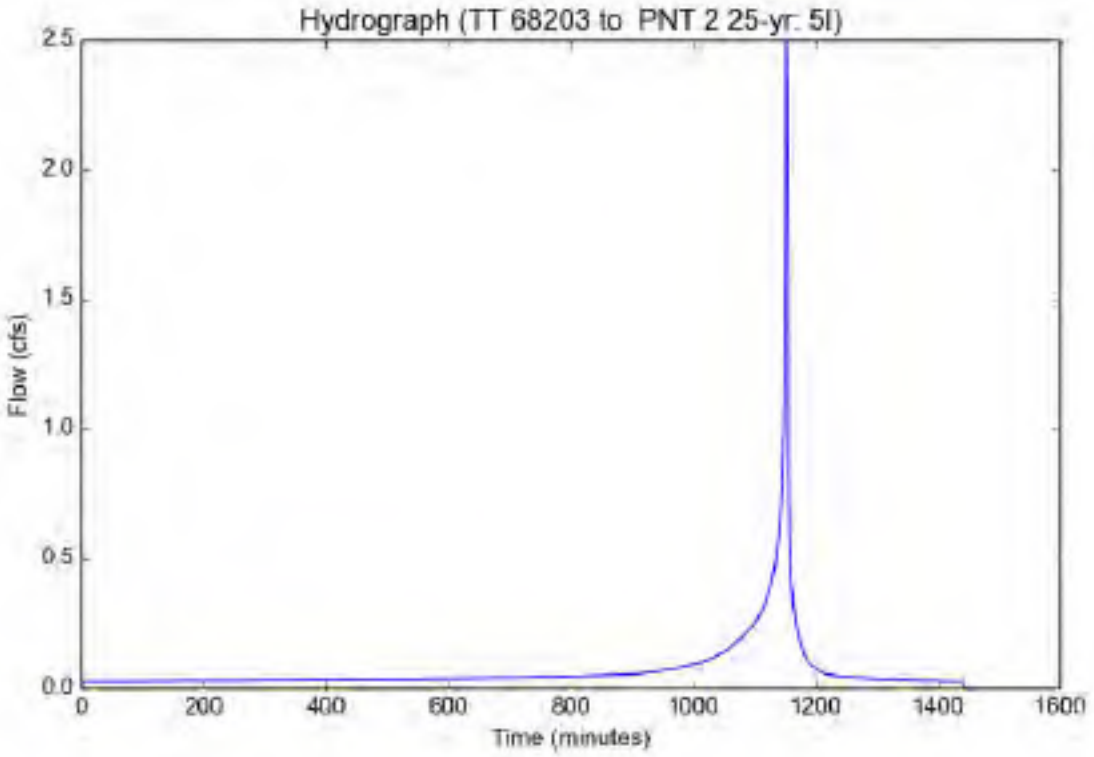
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 2 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 2 25-yr |
| Subarea ID | 5I |
| Area (ac) | 0.79 |
| Flow Path Length (ft) | 211.0 |
| Flow Path Slope (vft/hft) | 0.085 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.18 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.86 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.4914 |
| Burned Peak Flow Rate (cfs) | 2.4914 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1479 |
| 24-Hr Clear Runoff Volume (cu-ft) | 6441.2381 |



# Peak Flow Hydrologic Analysis

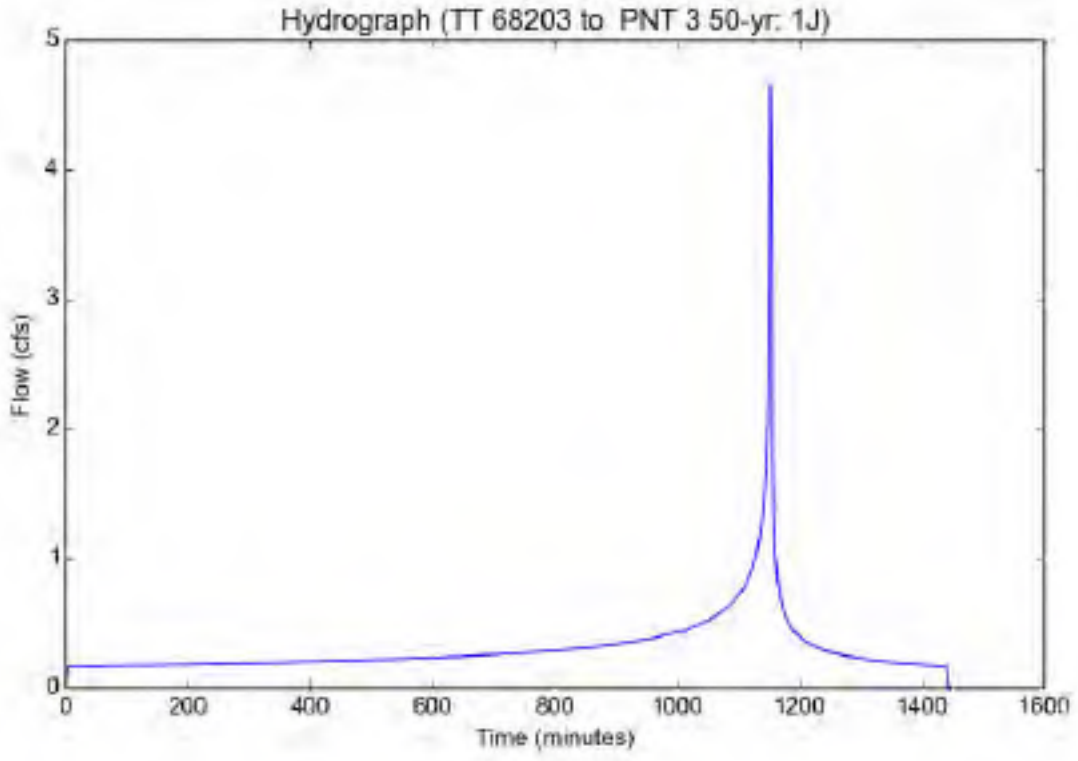
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 3 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 3 50-yr |
| Subarea ID | 1J |
| Area (ac) | 1.24 |
| Flow Path Length (ft) | 176.0 |
| Flow Path Slope (vft/hft) | 0.005 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.96 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8985 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 4.6529 |
| Burned Peak Flow Rate (cfs) | 4.6529 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.6277 |
| 24-Hr Clear Runoff Volume (cu-ft) | 27343.0972 |



# Peak Flow Hydrologic Analysis

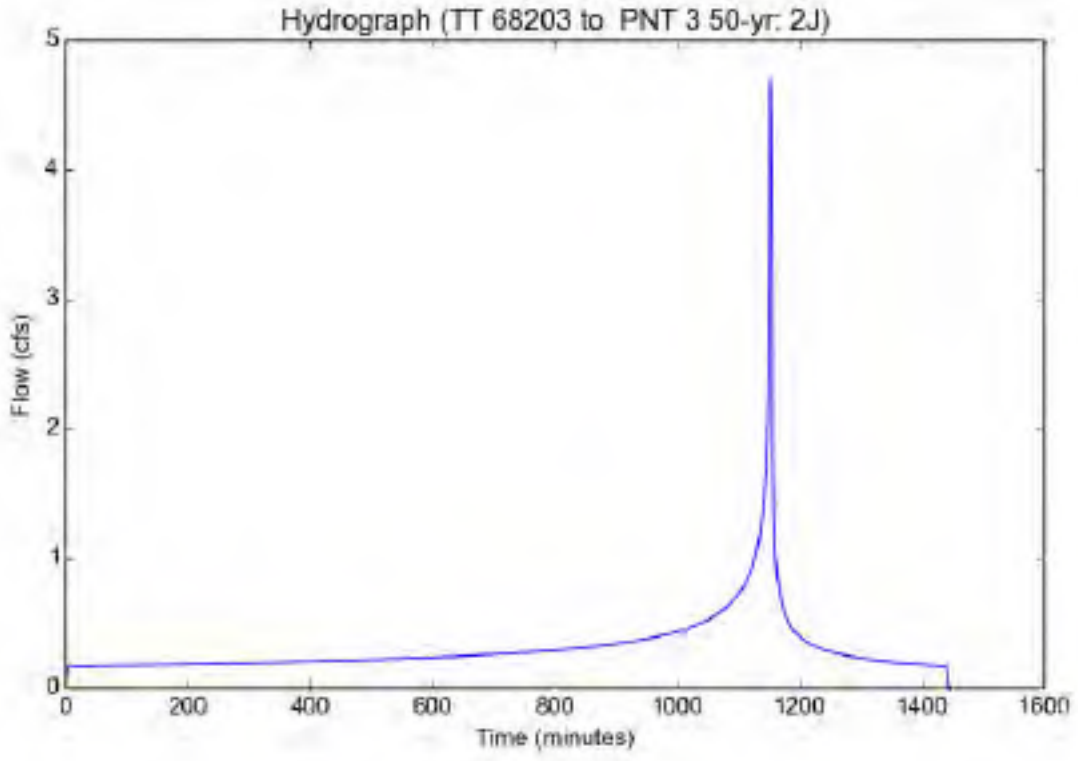
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 3 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 3 50-yr |
| Subarea ID | 2J |
| Area (ac) | 1.25 |
| Flow Path Length (ft) | 275.0 |
| Flow Path Slope (vft/hft) | 0.022 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.96 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8985 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 4.6904 |
| Burned Peak Flow Rate (cfs) | 4.6904 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.6328 |
| 24-Hr Clear Runoff Volume (cu-ft) | 27563.606 |



# Peak Flow Hydrologic Analysis

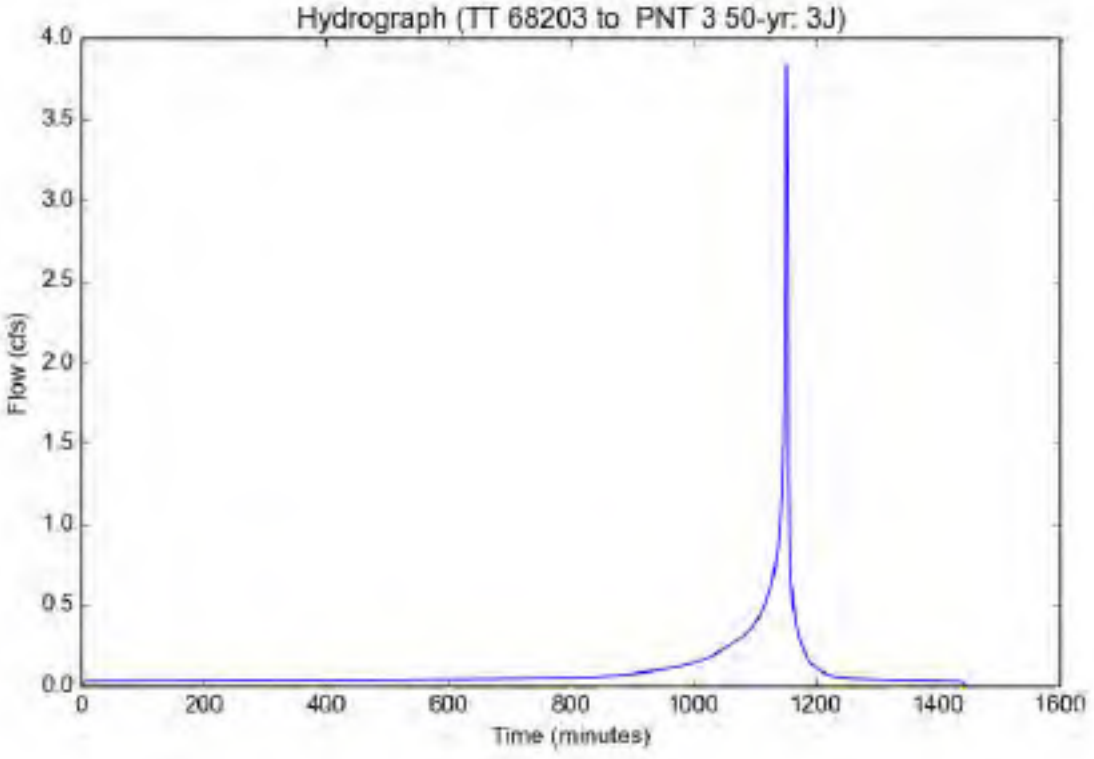
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 3 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 3 50-yr |
| Subarea ID | 3J |
| Area (ac) | 1.06 |
| Flow Path Length (ft) | 529.0 |
| Flow Path Slope (vft/hft) | 0.108 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8654 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 3.8309 |
| Burned Peak Flow Rate (cfs) | 3.8309 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.2074 |
| 24-Hr Clear Runoff Volume (cu-ft) | 9036.2411 |



# Peak Flow Hydrologic Analysis

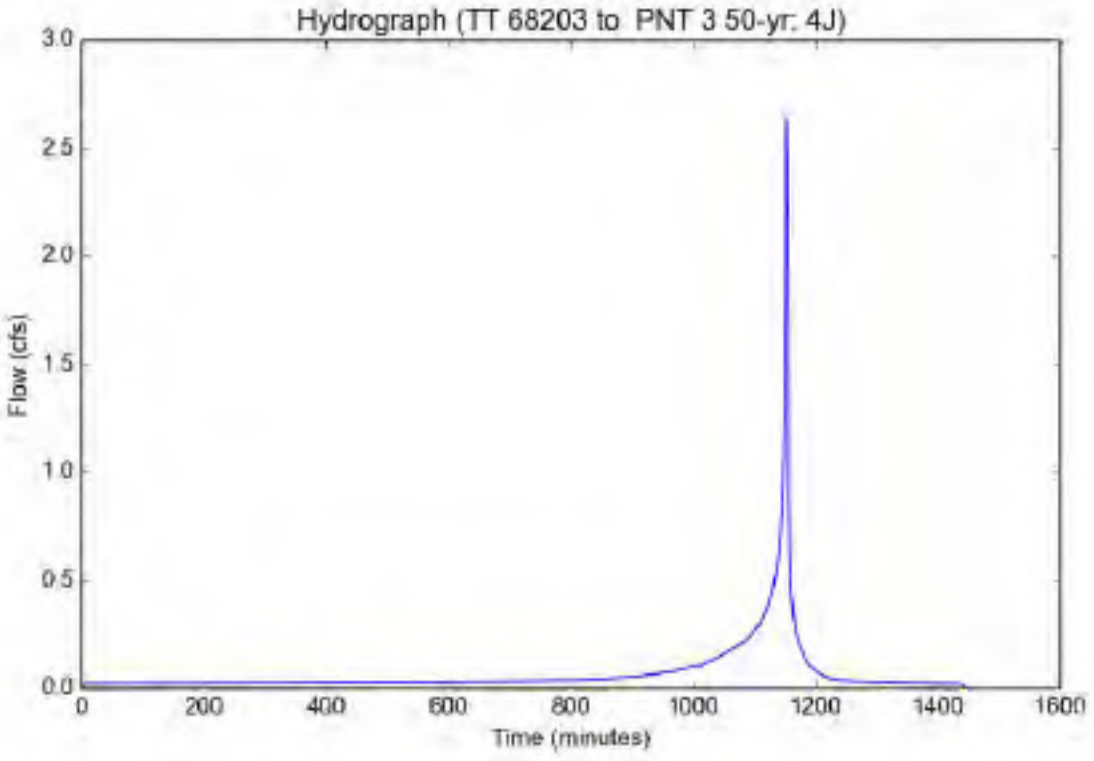
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 3 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 3 50-yr |
| Subarea ID | 4J |
| Area (ac) | 0.73 |
| Flow Path Length (ft) | 359.0 |
| Flow Path Slope (vft/hft) | 0.25 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8654 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.6383 |
| Burned Peak Flow Rate (cfs) | 2.6383 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1429 |
| 24-Hr Clear Runoff Volume (cu-ft) | 6223.0717 |



# Peak Flow Hydrologic Analysis

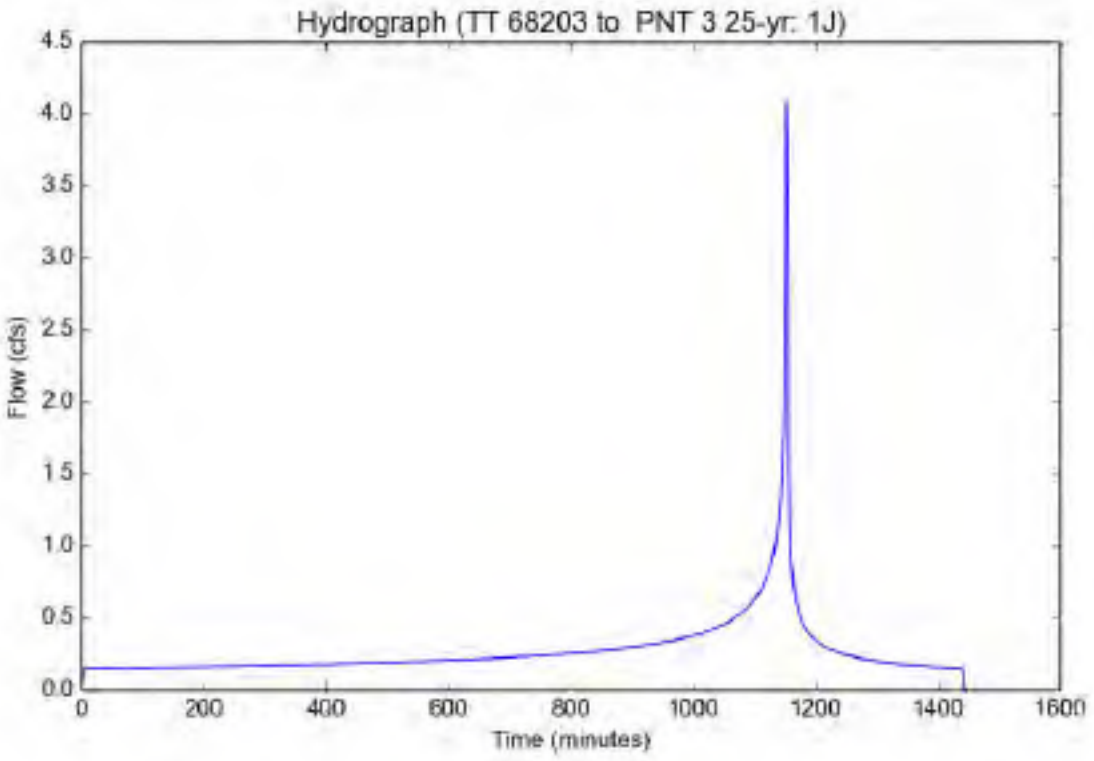
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 3 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 3 25-yr |
| Subarea ID | 1J |
| Area (ac) | 1.24 |
| Flow Path Length (ft) | 176.0 |
| Flow Path Slope (vft/hft) | 0.005 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.96 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8981 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 4.0834 |
| Burned Peak Flow Rate (cfs) | 4.0834 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.5505 |
| 24-Hr Clear Runoff Volume (cu-ft) | 23980.8661 |



# Peak Flow Hydrologic Analysis

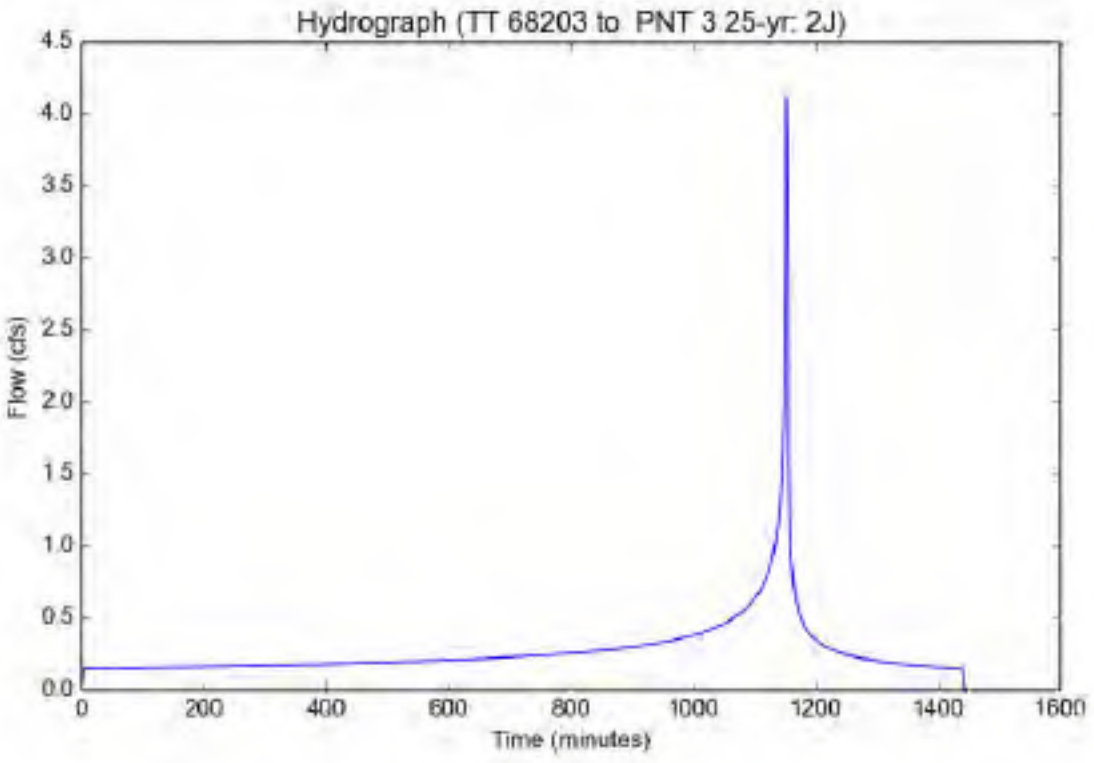
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 3 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 3 25-yr |
| Subarea ID | 2J |
| Area (ac) | 1.25 |
| Flow Path Length (ft) | 275.0 |
| Flow Path Slope (vft/hft) | 0.022 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.96 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8981 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 4.1163 |
| Burned Peak Flow Rate (cfs) | 4.1163 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.555 |
| 24-Hr Clear Runoff Volume (cu-ft) | 24174.2602 |



# Peak Flow Hydrologic Analysis

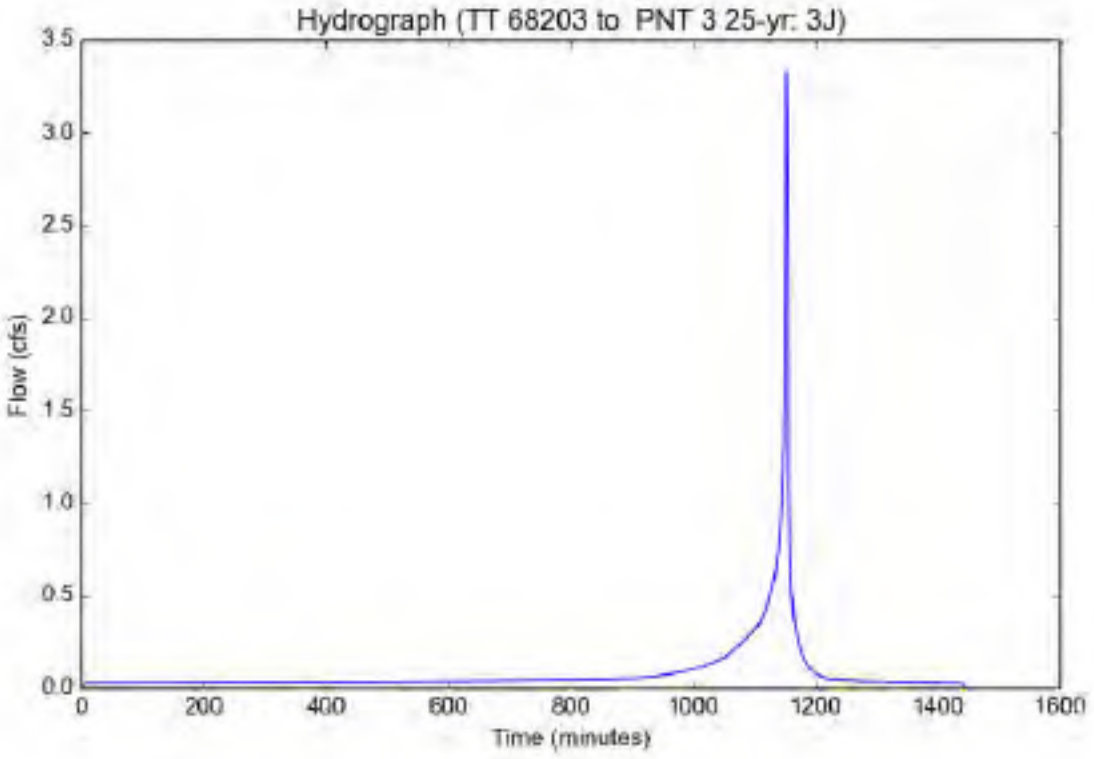
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 3 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 3 25-yr |
| Subarea ID | 3J |
| Area (ac) | 1.06 |
| Flow Path Length (ft) | 529.0 |
| Flow Path Slope (vft/hft) | 0.108 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8561 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 3.3277 |
| Burned Peak Flow Rate (cfs) | 3.3277 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1705 |
| 24-Hr Clear Runoff Volume (cu-ft) | 7426.5612 |



# Peak Flow Hydrologic Analysis

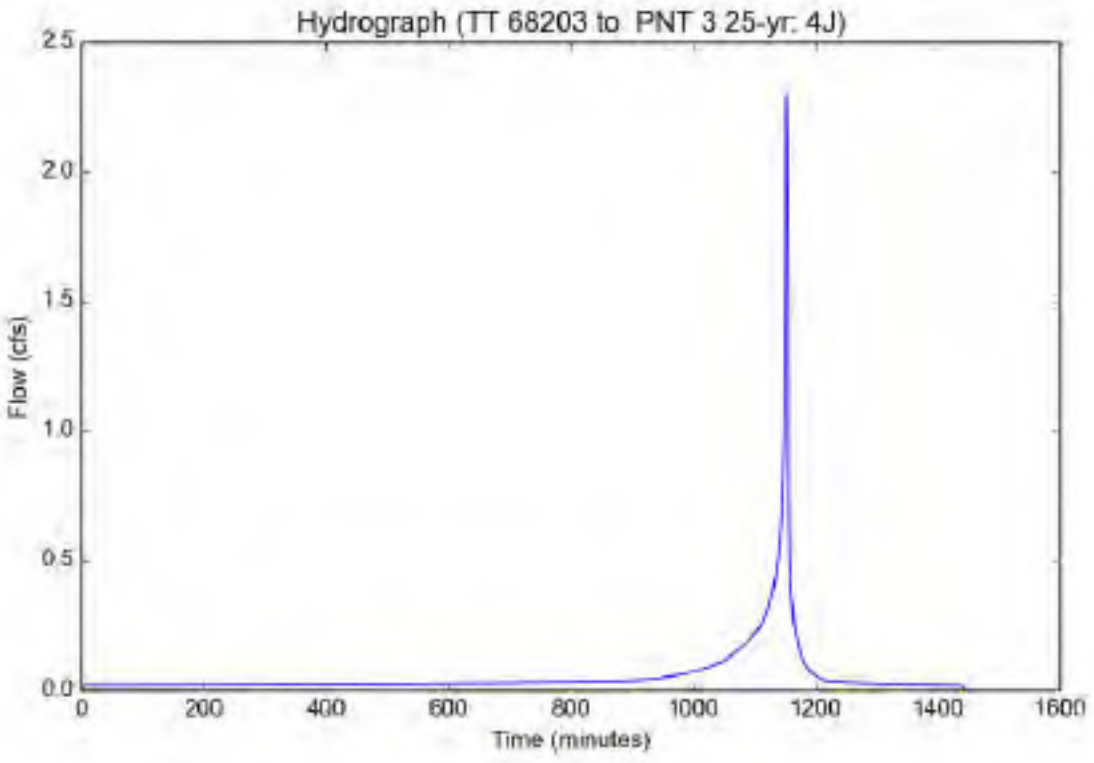
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL to  PNT 3 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 to  PNT 3 25-yr |
| Subarea ID | 4J |
| Area (ac) | 0.73 |
| Flow Path Length (ft) | 359.0 |
| Flow Path Slope (vft/hft) | 0.25 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8561 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.2917 |
| Burned Peak Flow Rate (cfs) | 2.2917 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1174 |
| 24-Hr Clear Runoff Volume (cu-ft) | 5114.5186 |



# Peak Flow Hydrologic Analysis

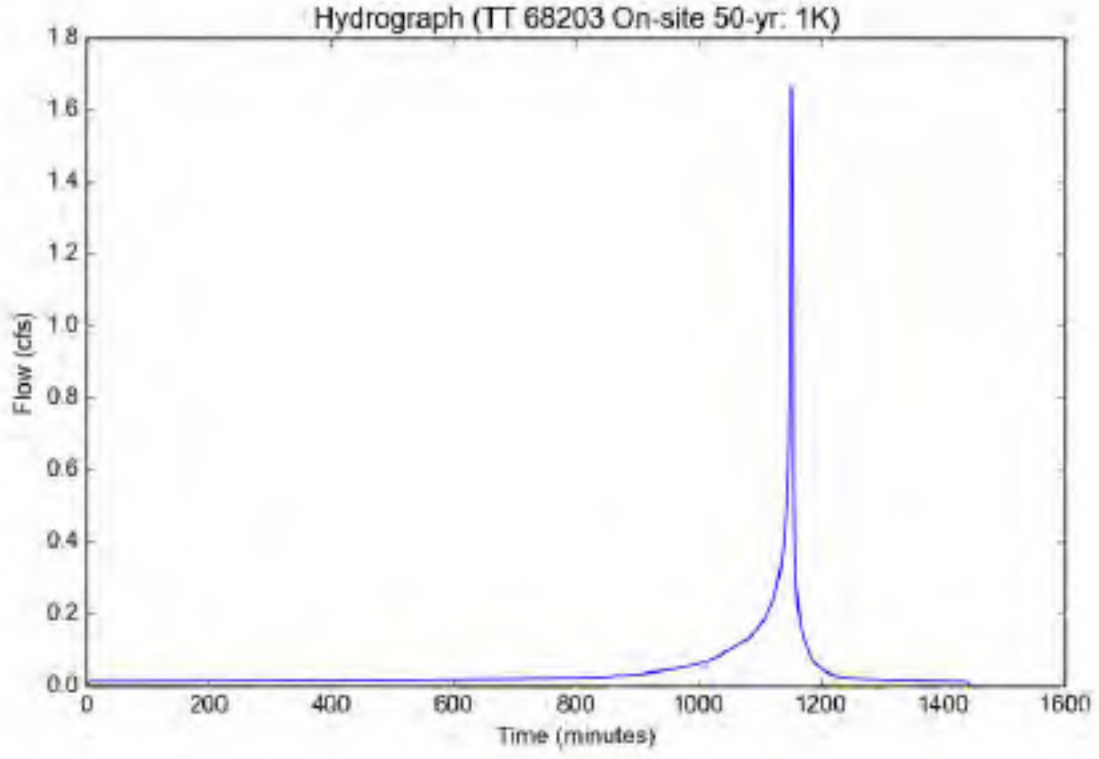
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL  PNT 4 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 On-site 50-yr |
| Subarea ID | 1K |
| Area (ac) | 0.46 |
| Flow Path Length (ft) | 339.0 |
| Flow Path Slope (vft/hft) | 0.171 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8654 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.6625 |
| Burned Peak Flow Rate (cfs) | 1.6625 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.09 |
| 24-Hr Clear Runoff Volume (cu-ft) | 3921.3877 |



# Peak Flow Hydrologic Analysis

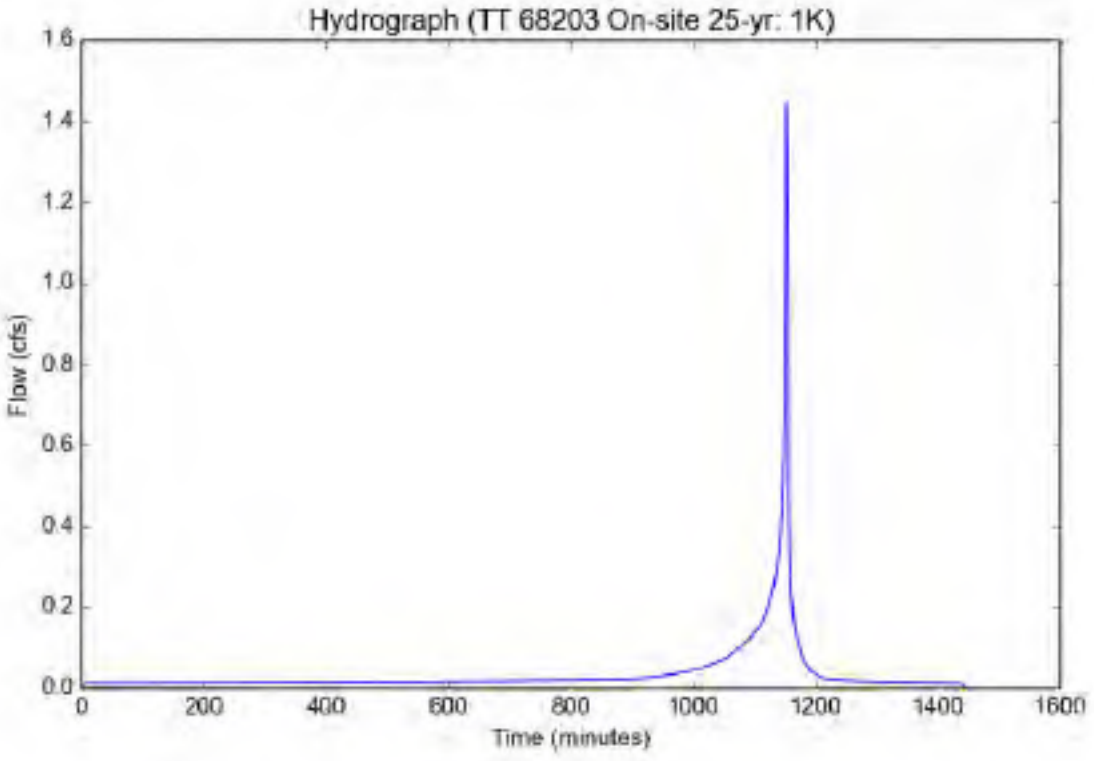
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL  PNT 4 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 On-site 25-yr |
| Subarea ID | 1K |
| Area (ac) | 0.46 |
| Flow Path Length (ft) | 339.0 |
| Flow Path Slope (vft/hft) | 0.171 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8561 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.4441 |
| Burned Peak Flow Rate (cfs) | 1.4441 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.074 |
| 24-Hr Clear Runoff Volume (cu-ft) | 3222.8473 |



# Peak Flow Hydrologic Analysis

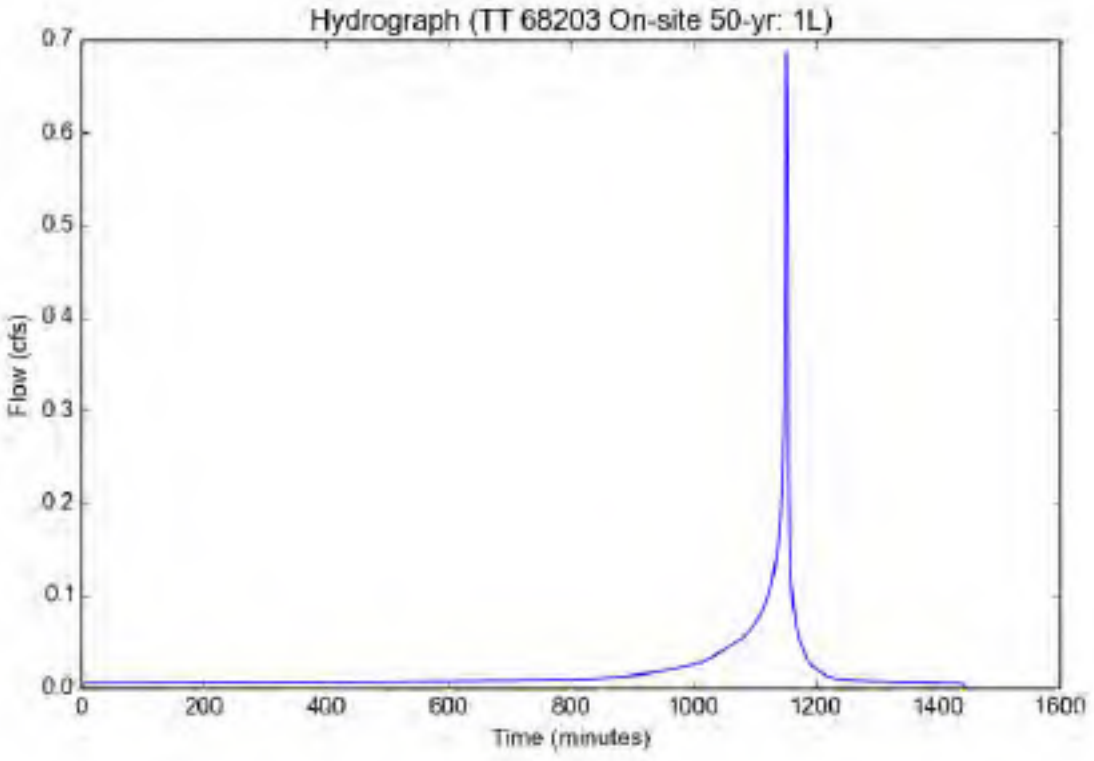
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL PNT 5 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 On-site 50-yr |
| Subarea ID | 1L |
| Area (ac) | 0.19 |
| Flow Path Length (ft) | 282.0 |
| Flow Path Slope (vft/hft) | 0.092 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8654 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 0.6867 |
| Burned Peak Flow Rate (cfs) | 0.6867 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0372 |
| 24-Hr Clear Runoff Volume (cu-ft) | 1619.7036 |



# Peak Flow Hydrologic Analysis

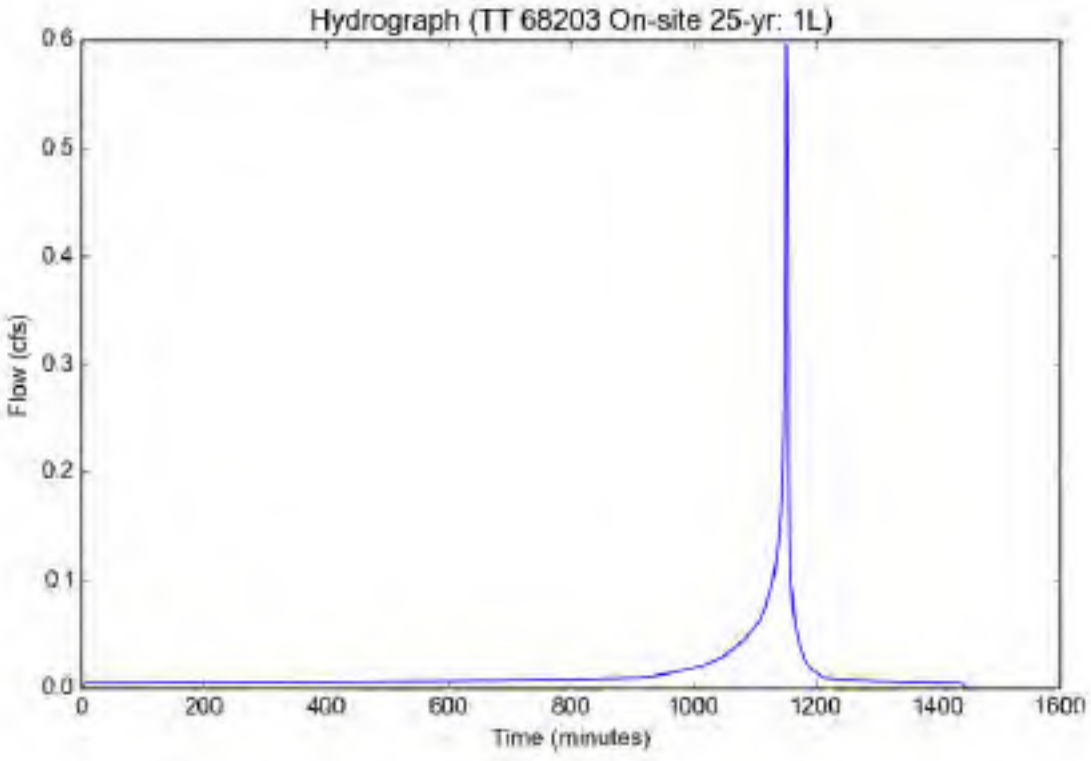
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL PNT 5 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 On-site 25-yr |
| Subarea ID | 1L |
| Area (ac) | 0.19 |
| Flow Path Length (ft) | 282.0 |
| Flow Path Slope (vft/hft) | 0.092 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8561 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 0.5965 |
| Burned Peak Flow Rate (cfs) | 0.5965 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0306 |
| 24-Hr Clear Runoff Volume (cu-ft) | 1331.1761 |



# Peak Flow Hydrologic Analysis

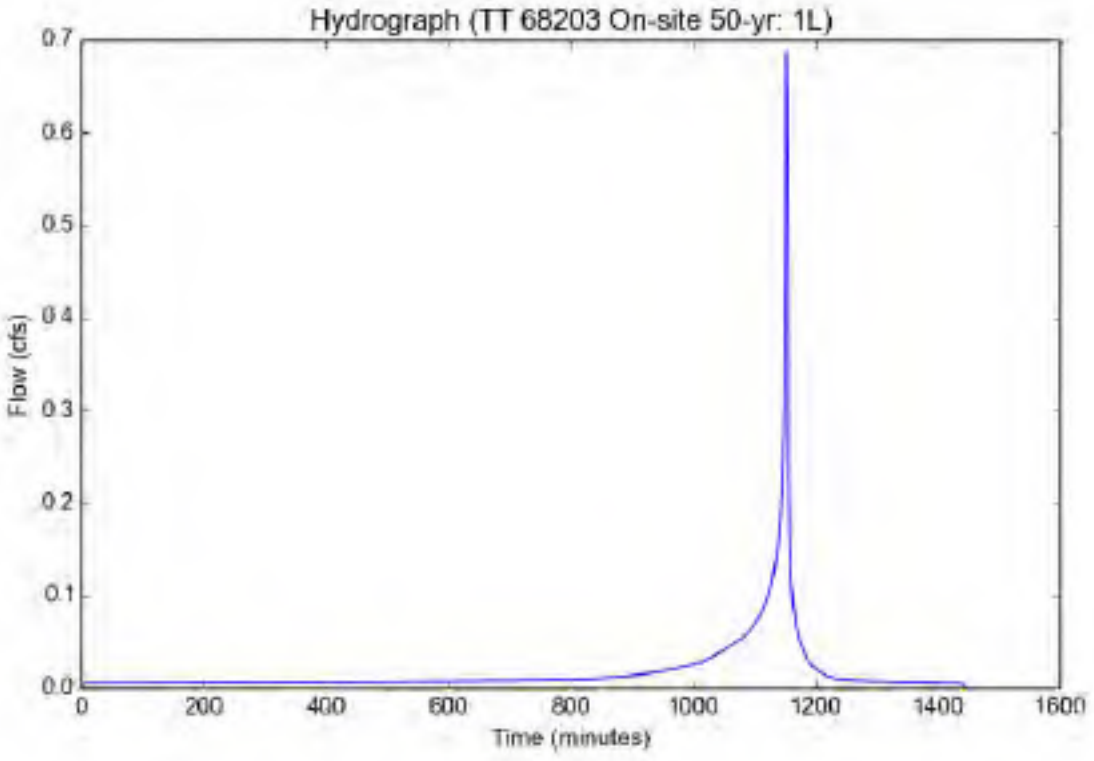
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL PNT 5 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 On-site 50-yr |
| Subarea ID | 1L |
| Area (ac) | 0.19 |
| Flow Path Length (ft) | 240.0 |
| Flow Path Slope (vft/hft) | 0.04 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8654 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 0.6867 |
| Burned Peak Flow Rate (cfs) | 0.6867 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0372 |
| 24-Hr Clear Runoff Volume (cu-ft) | 1619.7036 |



# Peak Flow Hydrologic Analysis

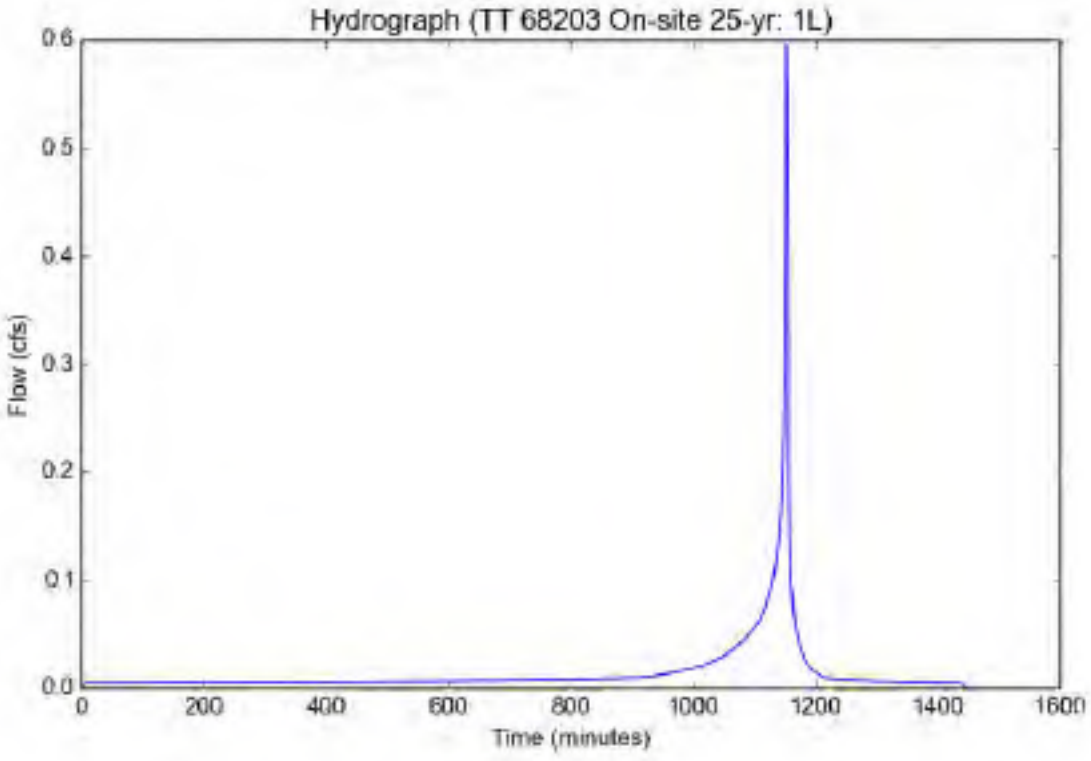
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL PNT 5 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 On-site 25-yr |
| Subarea ID | 1L |
| Area (ac) | 0.19 |
| Flow Path Length (ft) | 240.0 |
| Flow Path Slope (vft/hft) | 0.04 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.1 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8561 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 0.5965 |
| Burned Peak Flow Rate (cfs) | 0.5965 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0306 |
| 24-Hr Clear Runoff Volume (cu-ft) | 1331.1761 |



# Peak Flow Hydrologic Analysis

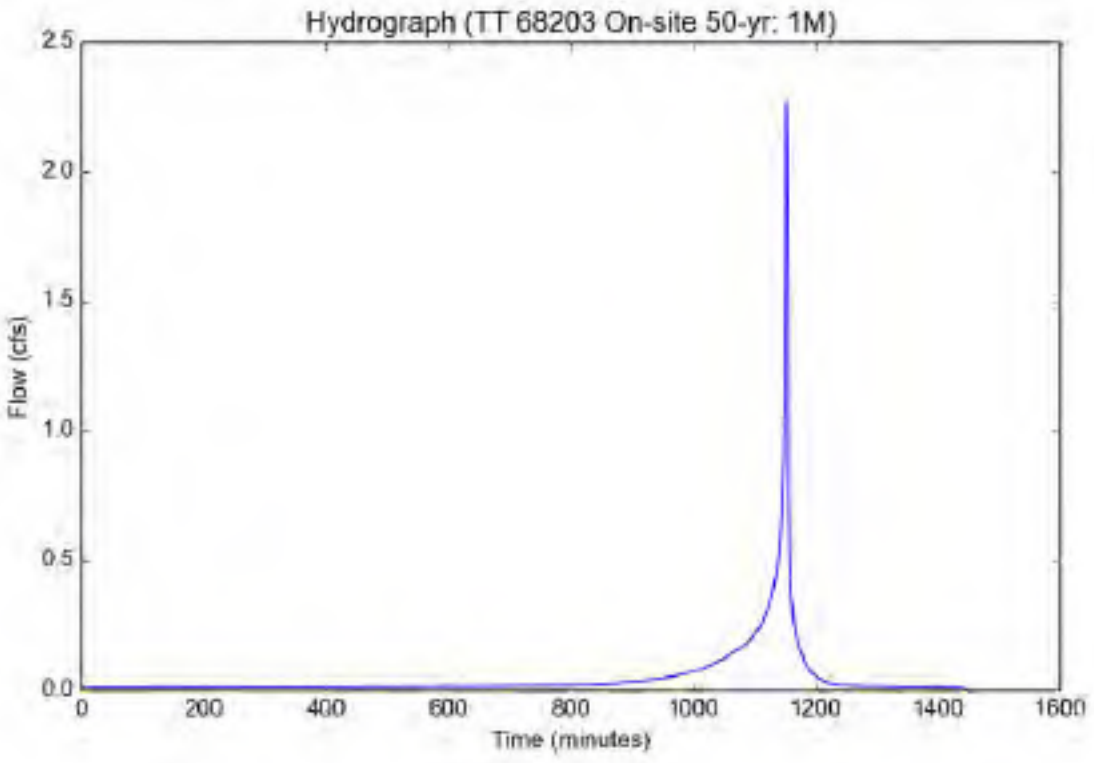
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL PNT 8 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 On-site 50-yr |
| Subarea ID | 1M |
| Area (ac) | 0.63 |
| Flow Path Length (ft) | 361.0 |
| Flow Path Slope (vft/hft) | 0.103 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 50-yr |
| Fire Factor | scr |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (50-yr) Rainfall Depth (in) | 7.0 |
| Peak Intensity (in/hr) | 4.1764 |
| Undeveloped Runoff Coefficient (Cu) | 0.8615 |
| Developed Runoff Coefficient (Cd) | 0.8619 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 2.2677 |
| Burned Peak Flow Rate (cfs) | 2.319 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.1028 |
| 24-Hr Clear Runoff Volume (cu-ft) | 4478.8153 |



# Peak Flow Hydrologic Analysis

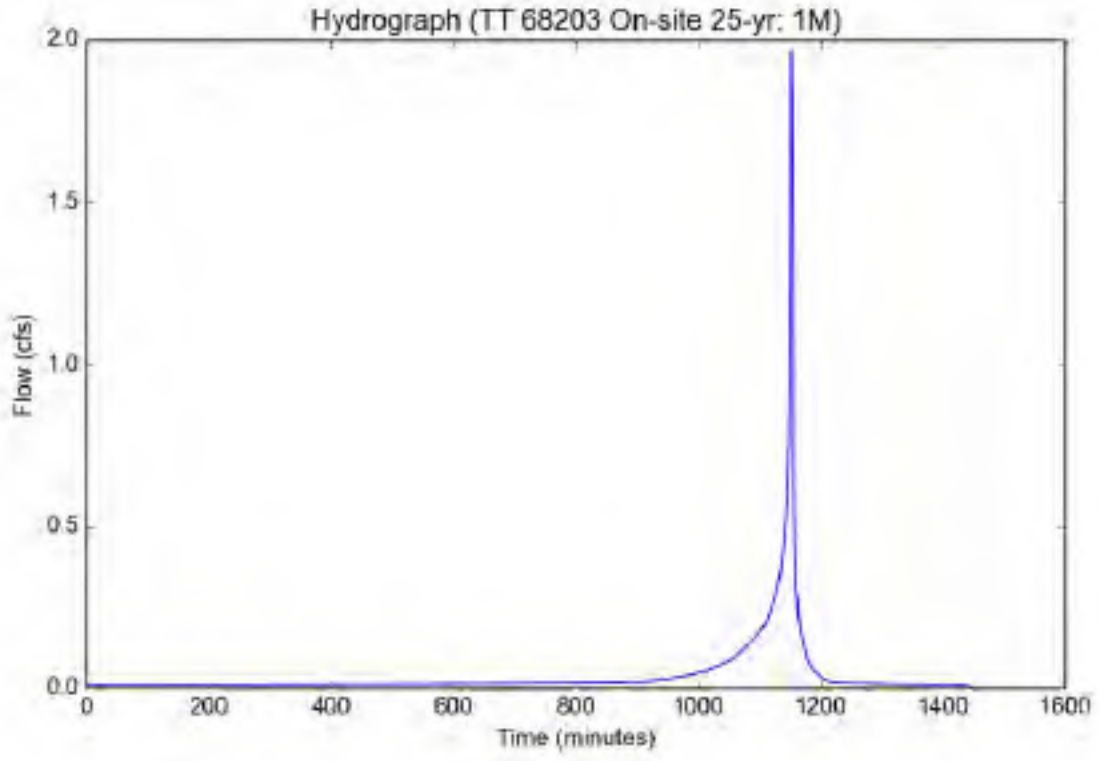
File location: J:/Civil 3D Projects/92020019/50_Sheet Sets/10_Hydrology/Hydrocalc/TT 68203 POST TOTAL PNT 8 Report.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | TT 68203 On-site 25-yr |
| Subarea ID | 1M |
| Area (ac) | 0.63 |
| Flow Path Length (ft) | 361.0 |
| Flow Path Slope (vft/hft) | 0.103 |
| 50-yr Rainfall Depth (in) | 7.0 |
| Percent Impervious | 0.01 |
| Soil Type | 99 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.146 |
| Peak Intensity (in/hr) | 3.6669 |
| Undeveloped Runoff Coefficient (Cu) | 0.8513 |
| Developed Runoff Coefficient (Cd) | 0.8517 |
| Time of Concentration (min) | 5.0 |
| Clear Peak Flow Rate (cfs) | 1.9676 |
| Burned Peak Flow Rate (cfs) | 1.9676 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0827 |
| 24-Hr Clear Runoff Volume (cu-ft) | 3600.7676 |



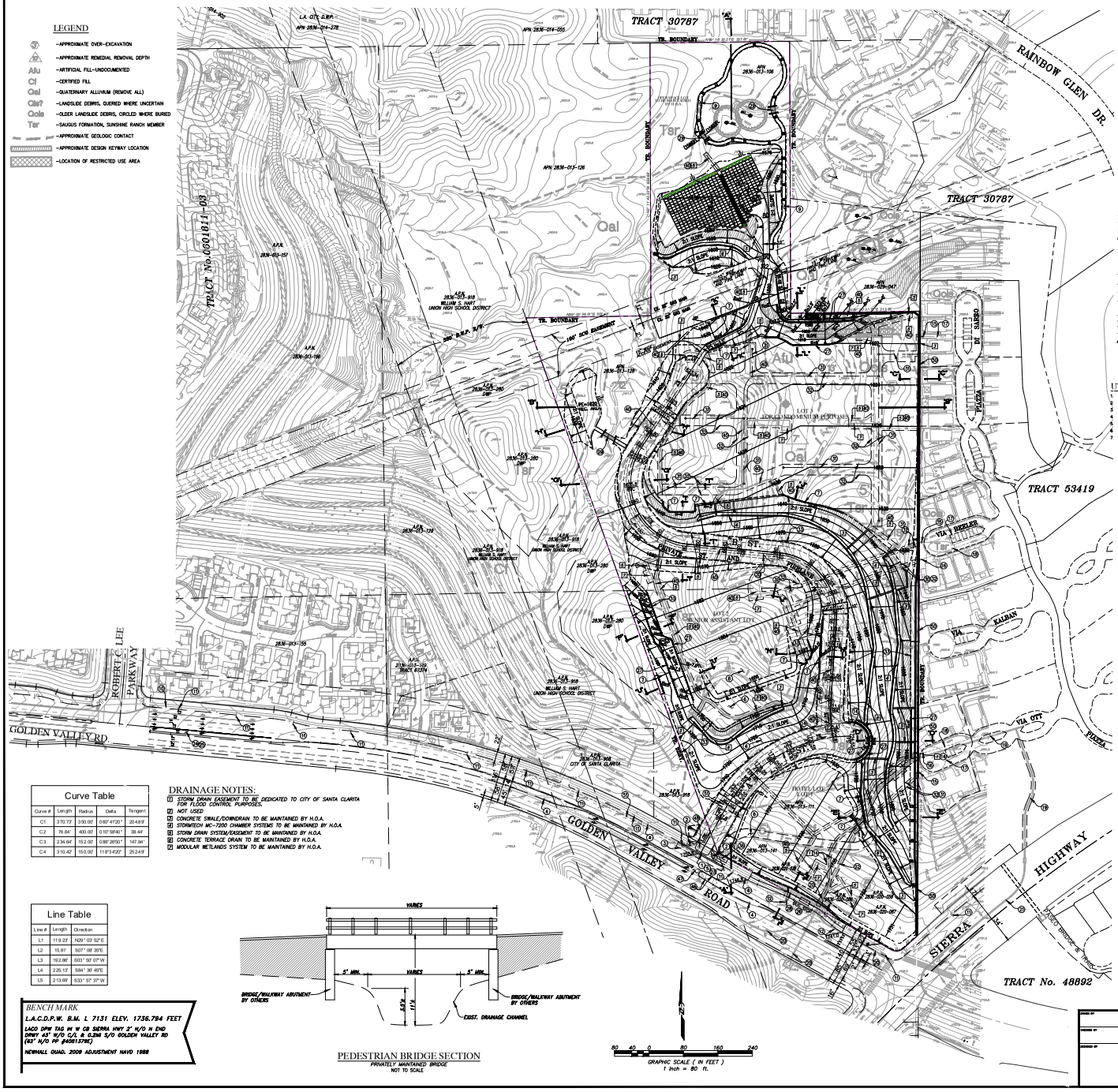
# Appendix F:

# DRAFT TENTATIVE TRACT MAP No. 68203 SITE PLAN

# (FOR INFORMATION PURPOSES ONLY, NOT FOR APPROVAL)

# TENTATIVE TRACT MAP No. 68203

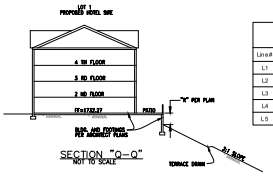
LOCATED IN THE CITY OF SANTA CLARITA
STATE OF CALIFORNIA



# TENTATIVE TRACT MAP No. 68203

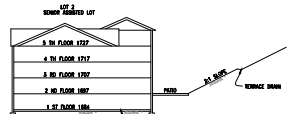
LOCATED IN THE CITY OF SANTA CLARITA
STATE OF CALIFORNIA

| PARKING SUMMARY | | | | | | |
|---|---|---|---|---|---|---|
| DESCRIPTION | REQUIRED | PROVIDED | PROVIDED | | | |
| | | | STANDARD | COMPACT | ACCESSIBLE (VAN) | ACCESSIBLE |
| HOTEL, LOT 2(60 ROOMS) | 60 | 107 | 103 | 4 | 0 | 0 |
| SENIOR ASSISTANT LOT (59 UNITS) | 79 | 79 | 67 | 6 | 3 | 3 |
| CONDOMINIUM LOT (10 UNITS) | 20 | 20 | 10 | 8 | 1 | 1 |
| TOTAL | 159 | 206 | 180 | 18 | 4 | 4 |

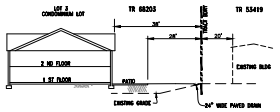



SECTION "O-O"
NOT TO SCALE

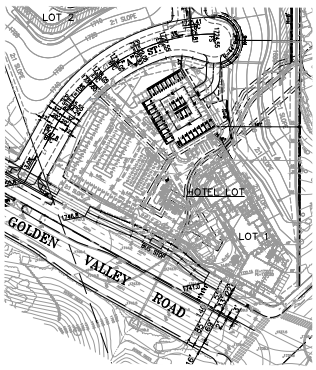
| Line Table | | |
|---|---|---|
| Line # | Length | Direction |
| L1 | 119.23' | N29° 03' 52"E |
| L2 | 15.81' | S07° 08' 35"E |
| L3 | 192.86' | S03° 00' 07"W |
| L4 | 225.13' | S84° 36' 45"E |
| L5 | 213.69' | S33° 57' 37"W |



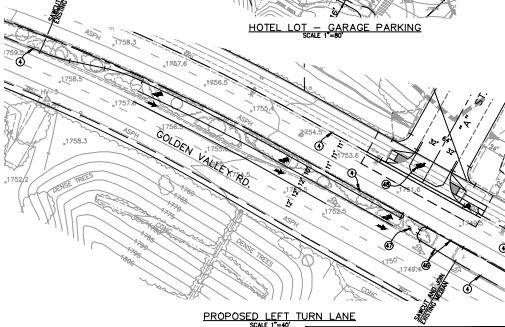

SECTION "S-S"
NOT TO SCALE




SECTION V-V
NOT TO SCALE




HOTEL LOT - GARAGE PARKING
SCALE 1"=80'




PROPOSED LEFT TURN LANE
SCALE 1"=40'

NOTES:

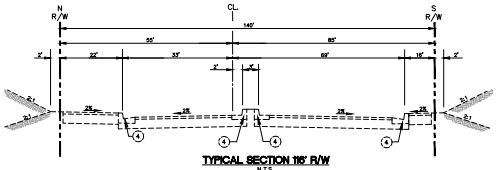
4. EXISTING CURB AND GUTTER TO REMAIN
7. PROPOSED RETAINING WALL (HEIGHT PER PLAN)
15. PROPOSED SEWER CONNECTION TO PC. 02-13
17. EXISTING 8" VCP SEWER PER PC. 02-13
18. PROPOSED BUS STOP WITH 10'x25' CONCRETE PASSENGER WAITING PAD BEHIND SIDEWALK WITH SHELTER, BENCH AND TRASH RECEPTACLE. SHALL BE APPROVED BY CITY TRANSIT STAFF. (BUS STOP TURNOUT/PULLOUT DIMENSIONS TO BE DETERMINED BY CITY TRANSIT STAFF, DEPARTMENT OF PUBLIC WORKS AND THE CITY TRANSIT DIVISION)
27. PROPOSED KEYSTONE WALL WITH WALL DRAIN
28. PROPOSED STREET DEDICATION
29. PROPOSED PEDESTRIAN BRIDGE/WALKWAY
33. SLOPE TO BE MAINTAINED BY H.O.A.
35. PROPOSED PARKING STALLS (9'x18')
38. PROPOSED DELIVERY/LOADING STALLS (12'x20')
41. PROPOSED EV STATION
42. PROPOSED LONG TERM/SHORT TERM BICYCLE PARKING
43. PROPOSED EMPLOYEES' BREAK AREA
44. PROPOSED TRASH ENCLOSURE
45. PROPOSED DROPOFF AREA
46. REMOVE EXISTING OPENING, CONST. CURB AND GUTTER
47. PROPOSED 20' WIDE LEFT TURN OPENING OR PER TRAFFIC ENGINEER RECOMMENDATION
48. RIGHT TURN ONLY
49. PROPOSED PUBLIC 6"x4"x2 1/2" FIRE HYDRANT PER AMERICAN WATERWORKS ASSOCIATION STANDARDS (600 FIRE FLOW REQUIREMENT 4000 GPM @ 20 PSI FOR 4 HOURS

80 40 0 80 160 240
GRAPHIC SCALE ( IN FEET )
1 inch = 80 ft.

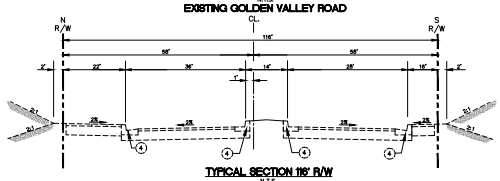
| DRAWN BY | | | |
|---|---|---|---|
| CHECKED BY | | | |
| DESIGNED BY | | | |
| DATE CHANGED | CHANGED BY | | REV |

# TENTATIVE TRACT MAP No. 68203

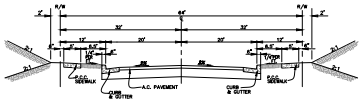
LOCATED IN THE CITY OF SANTA CLARITA
STATE OF CALIFORNIA



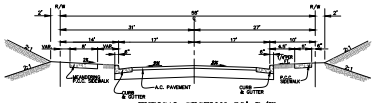
TYPICAL SECTION 116' R/W
N.T.S.
EXISTING GOLDEN VALLEY ROAD



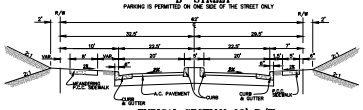
TYPICAL SECTION 116' R/W
N.T.S.
EXISTING GOLDEN VALLEY ROAD



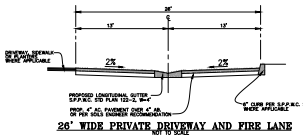
TYPICAL SECTION 64' R/W
NOT TO SCALE
"A" STREET



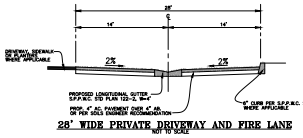
TYPICAL SECTION 58' R/W
PRIVATE DRIVEWAY & FIRE LANE
"B" STREET
NOT TO SCALE
PARKING IS PERMITTED ON ONE SIDE OF THE STREET ONLY



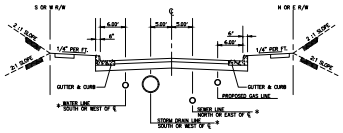
TYPICAL SECTION 62' R/W
PRIVATE DRIVEWAY & FIRE LANE
"B" STREET
NOT TO SCALE



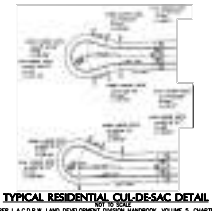
26' WIDE PRIVATE DRIVEWAY AND FIRE LANE
NOT TO SCALE



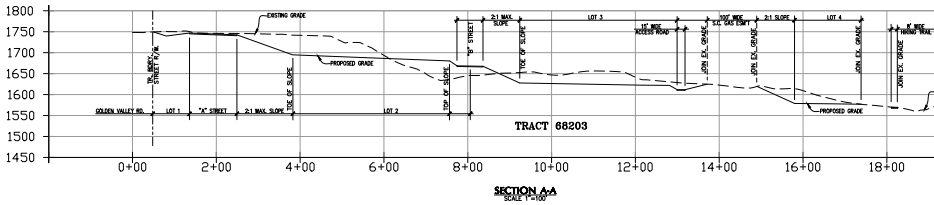
28' WIDE PRIVATE DRIVEWAY AND FIRE LANE
NOT TO SCALE



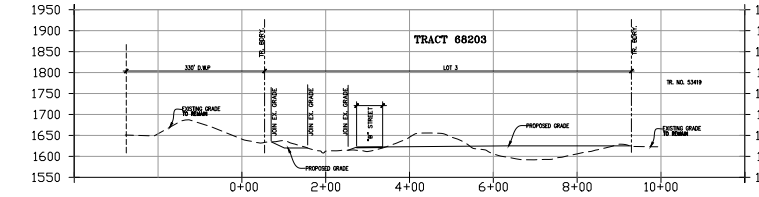
TYPICAL UTILITY LOCATION
NOT TO SCALE
* PIPE SIZE AND DEPTH PER ENGINEERING



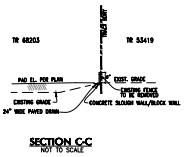
TYPICAL RESIDENTIAL CUL-DE-SAC DETAIL
NOT TO SCALE
PER L.A.C.D.P.W. LAND DEVELOPMENT DIVISION HANDBOOK, VOLUME 5, CHAPTER 44, PAGE 44-38



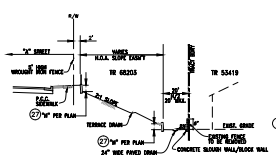

SECTION A-A
SCALE 1"=100'



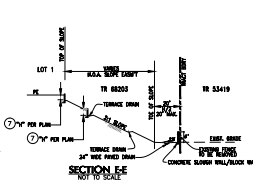

SECTION B-B
SCALE 1"=100'



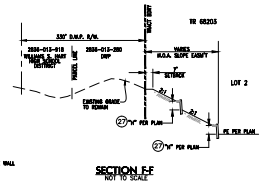
SECTION C-C
NOT TO SCALE



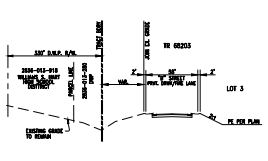
SECTION D-D
NOT TO SCALE



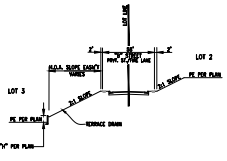
SECTION E-E
NOT TO SCALE



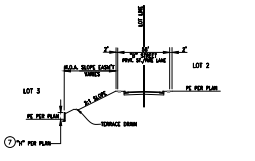
SECTION F-F
NOT TO SCALE



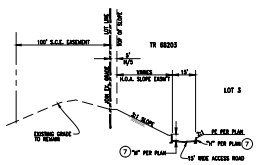
SECTION G-G
NOT TO SCALE



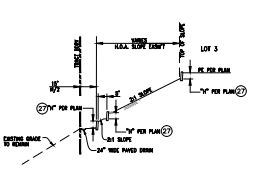
SECTION H-H
NOT TO SCALE



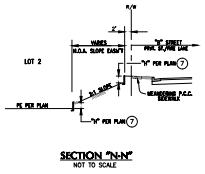
SECTION J-J
NOT TO SCALE



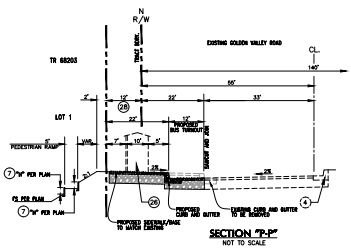
SECTION K-K
NOT TO SCALE



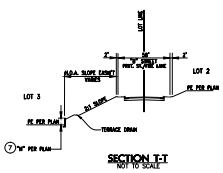
SECTION L-L
NOT TO SCALE



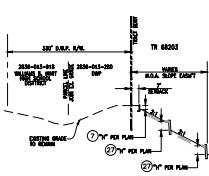
SECTION "N-N"
NOT TO SCALE



SECTION "P-P"
NOT TO SCALE



SECTION T-T
NOT TO SCALE



SECTION U-U
NOT TO SCALE

| DRAWN BY | | | |
|---|---|---|---|
| CHECKED BY | | | |
| DESIGNED BY | | | |
| | DATE CHANGED | CHANGED BY | REVISIONS |

# TENTATIVE TRACT MAP No. 68203
# EASEMENTS AND LEASES

LOCATED IN THE CITY OF SANTA CLARITA
STATE OF CALIFORNIA

## EASEMENT AND LEASE NOTES

(6) AN EASEMENT FOR WATER RIGHTS FOR MINING AGRICULTURAL MANUFACTURING OR OTHER PURPOSES AND RIGHTS TO CANALS TO DITCHES AND RESERVOIRS USED IN CONNECTION WITH SUCH WATER RIGHTS AND INCIDENTAL PURPOSES, RECORDED NOVEMBER 26, 1923 AS BOOK 2873, PAGE 145 OF OFFICIAL RECORDS. IN FAVOR OF: THE UNITED STATES OF AMERICA

(7) AN OIL AND GAS LEASE EXECUTED BY T. M. FREV, JR., A SINGLE MAN, AUGUSTA FERRIER AND MARY FERRIER, HIS WIFE AND ALBERT C. SMALL AND NOBEL S. SMALL, HIS WIFE AS LESSOR AND W. V. STABLER AS LESSEE, RECORDED JULY 26, 1926 AS INSTRUMENT NO. 767 IN BOOK 4646, PAGE 365 OF OFFICIAL RECORDS.

THE EFFECT OF A DOCUMENT ENTITLED "INTERLOCUTORY JUDGMENT AND FINAL ORDER OF CONDEMNATION", RECORDED MAY 08, 2002 AS INSTRUMENT NOS. 02-1067607 AND 02-1067608 OF OFFICIAL RECORDS.

DEFECTS, LIENS, ENCUMBRANCES OR OTHER MATTERS AFFECTING THE LEASEHOLD ESTATE, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS ARE NOT SHOWN HEREIN.

(8) AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JUNE 23, 1930 AS INSTRUMENT NO. 711 IN BOOK 10081, PAGE 181 OF OFFICIAL RECORDS. IN FAVOR OF: THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY, A CORPORATION AFFECTS: AS DESCRIBED THEREIN

THE LOCATION OF THE EASEMENT CANNOT BE DETERMINED FROM RECORD INFORMATION.

(10) AN EASEMENT FOR PUBLIC HIGHWAY, EMBANKMENT SLOPES AND INCIDENTAL PURPOSES, RECORDED DECEMBER 30, 1937 AS INSTRUMENT NO. 614 OF OFFICIAL RECORDS. IN FAVOR OF: STATE OF CALIFORNIA AFFECTS: AS DESCRIBED THEREIN

THE LOCATION OF THE EASEMENT CANNOT BE DETERMINED FROM RECORD INFORMATION.

(11) A SUBSURFACE OIL AND GAS LEASE, EXECUTED BY THOMAS M. FREV AND CLARA G. FREV, HUSBAND AND WIFE AS LESSOR AND SAN LEE CROSS AS LESSEE, RECORDED MAY 27, 1941 AS INSTRUMENT NO. 1560 OF OFFICIAL RECORDS, AFFECTING THE LAND LYING BELOW A DEPTH OF 0ND SHOWN FEET FROM THE SURFACE THEREOF, WITHOUT THE RIGHT OF SURFACE ENTRY.

DEFECTS, LIENS, ENCUMBRANCES OR OTHER MATTERS AFFECTING THE LEASEHOLD ESTATE, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS ARE NOT SHOWN HEREIN.

(12) A SUBSURFACE OIL AND GAS LEASE, EXECUTED BY HAROLD STUCKMAN, ETAL, AS LESSOR AND INDEPENDANT EXPLORATION COMPANY, A CALIFORNIA CORPORATION AS LESSEE, RECORDED JANUARY 11, 1949 AS INSTRUMENT NO. 306 IN BOOK 29039, PAGE 121 RECORDED FEBRUARY 18, 1949 AS INSTRUMENT NO. 2466 IN BOOK 29415, PAGE 64; RECORDED NOVEMBER 29, 1949 AS INSTRUMENT NO. 2836 IN BOOK 30593, PAGE 323 AND 329; RECORDED DECEMBER 28, 1949 AS INSTRUMENT NO. 2898 IN BOOK 30804, PAGE 245, ALL OF OFFICIAL RECORDS, AFFECTING THE LAND BELOW A DEPTH OF 0NDT SHOWN FEET FROM THE SURFACE THEREOF, WITHOUT THE RIGHT OF SURFACE ENTRY.

THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "DECLARATION OF POOLING" RECORDED MAY 19, 1993 AS INSTRUMENT NO. 93-810360 OF OFFICIAL RECORDS.

THE EFFECT OF A DOCUMENT ENTITLED "INTERLOCUTORY JUDGMENT AND FINAL ORDER OF CONDEMNATION", RECORDED MAY 8, 2002 AS INSTRUMENT NO. 02-1067609 OF OFFICIAL RECORDS.

THE EFFECT OF A DOCUMENT ENTITLED "FINAL ORDER OF CONDEMNATION", RECORDED SEPTEMBER 18, 2003 AS INSTRUMENT NO. 03-2761989 OF OFFICIAL RECORDS.

THE LESSOR'S INTEREST UNDER THE LEASE HAS BEEN ASSIGNED TO PAUL RENAUD VELUZAT AND CAROL SUE VELUZAT, TRUSTEES OF THE VELUZAT TRUST DATED MAY 30, 2013, AS COMMUNITY PROPERTY BY ASSIGNMENT RECORDED AUGUST 2, 2013 AS INSTRUMENT NO. 20131395644 OF OFFICIAL RECORDS.

DEFECTS, LIENS, ENCUMBRANCES OR OTHER MATTERS AFFECTING THE LEASEHOLD ESTATE, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS ARE NOT SHOWN HEREIN.

(13) A SUBSURFACE OIL AND GAS LEASE, EXECUTED BY M.R. YANT AND GENEVA F. YANT, HIS WIFE AS LESSOR AND J. RAMON SONAVIA AND JUANITA DE L. SONAVIA, HIS WIFE AS LESSEE, RECORDED FEBRUARY 16, 1949 AS INSTRUMENT NO. 1486 BOOK 29081, PAGE 43 OF OFFICIAL RECORDS, AFFECTING THE LAND LYING BELOW A DEPTH OF 0NDT SHOWNO FEET FROM THE SURFACE THEREOF.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED MARCH 10, 1949 AS BOOK 29536, PAGE 205 AND RECORDED APRIL 7, 1949 IN BOOK 29788, PAGE 194, BOTH OF OFFICIAL RECORDS.

DEFECTS, LIENS, ENCUMBRANCES OR OTHER MATTERS AFFECTING THE LEASEHOLD ESTATE, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS ARE NOT SHOWN HEREIN.

(14) A SUBSURFACE OIL AND GAS LEASE, EXECUTED BY JULIUS R. SCHWARTZ, MARRIED MAN AND ANNA R. SCHWARTZ, HIS WIFE AS LESSOR AND HARRY S. ROTHSCHILD AND JOSEPHINE E. ROTHSCHILD, HUSBAND AND WIFE, DBA ROTHSCHILD OIL COMPANY AS LESSEE, RECORDED MARCH 30, 1949 AS BOOK 29716, PAGE 185 AS INSTRUMENT NO. 2702 OF OFFICIAL RECORDS, AFFECTING THE LAND LYING BELOW A DEPTH OF 0NDT SHOWNO FEET FROM THE SURFACE THEREOF.

DEFECTS, LIENS, ENCUMBRANCES OR OTHER MATTERS AFFECTING THE LEASEHOLD ESTATE WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS ARE NOT SHOWN HEREIN.

(15) A SUBSURFACE OIL AND GAS LEASE, EXECUTED BY D. L. ASHLEY AS LESSOR AND O. D. YOKE AS LESSEE, RECORDED JUNE 3, 1949 AS INSTRUMENT NO. 2154 IN BOOK 30217, PAGE 9 OF OFFICIAL RECORDS, AFFECTING THE LAND LYING BELOW A DEPTH OF 0NDT SHOWNO FEET FROM THE SURFACE THEREOF.

THE LESSOR'S INTEREST UNDER THE LEASE HAS BEEN ASSIGNED TO PAUL RENAUD VELUZAT AND CAROL SUE VELUZAT, TRUSTEES OF THE VELUZAT TRUST DATED MAY 30, 2013, AS COMMUNITY PROPERTY BY ASSIGNMENT RECORDED AUGUST 2, 2013 AS INSTRUMENT NO. 20131395644 OF OFFICIAL RECORDS.

DEFECTS, LIENS, ENCUMBRANCES OR OTHER MATTERS AFFECTING THE LEASEHOLD ESTATE, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS ARE NOT SHOWN HEREIN.

(16) THE EFFECT OF A RECITAL CONTAINED IN VARIOUS DEEDS OF RECORD EXECUTED BY M. R. YANT AS FOLLOWS:

"TOGETHER WITH FULL RIGHTS OF INGRESS AND EGRESS GRANTED TO ALL ADJOINING LANDOWNER' ONE OF WHICH DEED WAS RECORDED JULY 25, 1949 AS INSTRUMENT NO. 1570 IN BOOK 30613, PAGE 137 OF OFFICIAL RECORDS.

AFFECTS: THE LAND AND OTHER PROPERTY.

(18) THE EFFECT OF AN AGREEMENT DATED NOVEMBER 28, 1949, EXECUTED BY DOUGLAS OIL CO. OF CALIFORNIA, AND M. R. YANT, ETAL., REGARDING MINERALS AND ROYALTIES DERIVED FROM THE PRODUCTION THEREOF, RECORDED MARCH 7, 1950 AS INSTRUMENT NO. 3085 IN BOOK 32497, PAGE 250 OF OFFICIAL RECORDS.

(20) AN EASEMENT FOR ROAD AND INCIDENTAL PURPOSES, RECORDED FEBRUARY 26, 1954 AS INSTRUMENT NO. 3116 IN BOOK 43945, PAGE 366 OF OFFICIAL RECORDS. IN FAVOR OF: C. W. ROBECKER AFFECTS: AS DESCRIBED THEREIN

THE LOCATION OF THE EASEMENT CANNOT BE DETERMINED FROM RECORD INFORMATION.

(21) AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 14, 1956 AS INSTRUMENT NO. 5017 IN BOOK 52308, PAGE 76 OF OFFICIAL RECORDS. IN FAVOR OF: SOUTHERN CALIFORNIA GAS COMPANY. AFFECTS: AS DESCRIBED THEREIN

(22) AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED OCTOBER 9, 1962 AS INSTRUMENT NO. 3391 IN BOOK 11783, PAGE 463 OF OFFICIAL RECORDS. IN FAVOR OF: THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY, A CORPORATION AFFECTS: AS DESCRIBED THEREIN

(23) AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED APRIL 27, 1965 AS INSTRUMENT NO. 4329 IN BOOK D-2883, PAGE 596 OF OFFICIAL RECORDS. IN FAVOR OF: SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION AFFECTS: AS DESCRIBED THEREIN

(25) AN EASEMENT FOR INGRESS AND EGRESS AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 12, 1979 AS INSTRUMENT NO. 79-1016411 OF OFFICIAL RECORDS. IN FAVOR OF: ELAINE L. MOFFATT AND ROBERT PRENTICE AFFECTS: AS DESCRIBED THEREIN

THE LOCATION OF THE EASEMENT CANNOT BE DETERMINED FROM RECORD INFORMATION.

(26) AN EASEMENT FOR INGRESS AND EGRESS AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 12, 1979 AS INSTRUMENT NO. 79-1016412 OF OFFICIAL RECORDS. IN FAVOR OF: ELAINE L. MOFFATT AND ROBERT PRENTICE AFFECTS: AS DESCRIBED THEREIN

THE LOCATION OF THE EASEMENT CANNOT BE DETERMINED FROM RECORD INFORMATION.

(27) AN EASEMENT FOR INGRESS AND EGRESS AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 12, 1979 AS INSTRUMENT NO. 79-1016413 OF OFFICIAL RECORDS. IN FAVOR OF: ELAINE L. MOFFATT AND ROBERT PRENTICE AFFECTS: AS DESCRIBED THEREIN

THE LOCATION OF THE EASEMENT CANNOT BE DETERMINED FROM RECORD INFORMATION.

(29) A DEED OF TRUST TO SECURE AN ORIGINAL INDEBTEDNESS OF $75,000.00 RECORDED NOVEMBER 21, 1979 AS INSTRUMENT NO. 79-1313490 OF OFFICIAL RECORDS.
DATED: OCTOBER 30, 1979
TRUSTOR: TVA REAL ESTATE INVESTMENTS, INC.
TRUSTEE: MAJOR ASSURANCE CORP., A CALIFORNIA CORPORATION
BENEFICIARY: CLARA H. RIDER, A WIDOW

AFFECTS: THE LAND AND OTHER PROPERTY.

(30) AN EASEMENT FOR INGRESS AND EGRESS AND INCIDENTAL PURPOSES, RECORDED FEBRUARY 22, 1980 AS INSTRUMENT NO. 80-184203 OF OFFICIAL RECORDS.
IN FAVOR OF: TVA REAL ESTATE INVESTMENTS, INC.
AFFECTS: AS DESCRIBED THEREIN

(33) A DEED OF TRUST TO SECURE AN ORIGINAL INDEBTEDNESS OF $280,000.00 RECORDED NOVEMBER 2, 1984 AS INSTRUMENT NO. 84-1313389 OF OFFICIAL RECORDS.
DATED: OCTOBER 30, 1984
TRUSTOR: RENAUD VELUZAT AND SUE VELUZAT, HUSBAND AND WIFE AS JOINT TENANTS

TRUSTEE: NEWHALL FINANCIAL CORPORATION, A CALIFORNIA CORPORATION
BENEFICIARY: CLARA H. RIDER, A WIDOW

(AFFECTS PARCELS 3 AND 4)

(35) A DEED OF TRUST TO SECURE AN ORIGINAL INDEBTEDNESS OF $33,000.00 RECORDED FEBRUARY 10, 1988 AS INSTRUMENT NO. 88-211954 OF OFFICIAL RECORDS.
DATED: FEBRUARY 10, 1988
TRUSTOR: RENAULD VELUZAT AND SUE VELUZAT
TRUSTEE: TRUSTORS SECURITY SERVICE, A CALIFORNIA CORPORATION
BENEFICIARY: MOSHE PEREG

AFFECTS: THE LAND AND OTHER PROPERTY.

(40) THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "RESOLUTION NO. 91-127, A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SANTA CLARA CONFIRMING THE BOUQUET CANYON AND ROUTE 126 BRIDGE AND MAJOR THOROUGHFARE INSTRUCTION FEE DISTRICT FEE REVISIONS" RECORDED OCTOBER 9, 1991 AS INSTRUMENT NO. 91-1581844 OF OFFICIAL RECORDS.

(41) THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "RESOLUTION NO. 91-106, A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SANTA CLARA CONFIRMING THE BOUQUET CAYNON AND ROUTE 126 BRIDGE AND MAJOR THOROUGHFARE CONSTRUCTION FEE DISTRICT FEE REVISIONS" RECORDED OCTOBER 9, 1991 AS INSTRUMENT NO. 91-1581845 OF OFFICIAL RECORDS.

(43) A SUBSURFACE OIL AND GAS LEASE, EXECUTED BY HERMAN RASSP AND BEVERLY A. RASSP, AS CO-TRUSTEES OF THE RASSP TRUST OF 1986 (AN UNDIVIDED ONE-THIRD INTEREST); HERMAN RASSP, AS TRUSTEE OF THE ADELA STANFORD TRUST UNDER THE ANNA P. SCHWARTZ TRUST OF 1984 (AN UNDIVIDED ONE-THIRD INTEREST); HERMAN RASSP, AS TRUSTEE OF THE ADELA ROLLAND TRUST UNDER THE ANNA P. SCHWARTZ TRUST OF 1984 (AN UNDIVIDED ONE-THIRD INTEREST) AS LESSOR AND CALTICO OIL CORPORATION AS LESSEE, RECORDED APRIL 26, 1993 AS INSTRUMENT NO. 93-734929 OF OFFICIAL RECORDS, AFFECTING THE LAND LYING BELOW A DEPTH OF 300 FEET FROM THE SURFACE THEREOF.

DEFECTS, LIENS, ENCUMBRANCES OR OTHER MATTERS AFFECTING THE LEASEHOLD ESTATE, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS ARE NOT SHOWN HEREIN.

(44) A SUBSURFACE OIL AND GAS LEASE, EXECUTED BY HERMAN RASSP AND BEVERLY A. RASSP, AS CO-TRUSTEES OF THE RASSP TRUST OF 1986 (4A) AS LESSOR AND CALTICO OIL CORPORATION AS LESSEE, RECORDED APRIL 26, 1993 AS INSTRUMENT NO. 93-734931 OF OFFICIAL RECORDS, AFFECTING THE LAND LYING BELOW A DEPTH OF 300 FEET FROM THE SURFACE THEREOF.

DEFECTS, LIENS, ENCUMBRANCES OR OTHER MATTERS AFFECTING THE LEASEHOLD ESTATE, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS ARE NOT SHOWN HEREIN.

(45) AN POWERLINE OIL AND GAS LEASE EXECUTED BY ROBERT K. CANFIELD AS LESSOR AND CALTICO OIL CORPORATION AS LESSEE, RECORDED AUGUST 26, 1993 AS INSTRUMENT NO. 93-1669339 OF OFFICIAL RECORDS.

DEFECTS, LIENS, ENCUMBRANCES OR OTHER MATTERS AFFECTING THE LEASEHOLD ESTATE, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS ARE NOT SHOWN HEREIN.

(46) AN OIL AND GAS LEASE EXECUTED BY SHIRLY PHILLIPS, FORMERLY SHIRLY R. MOORE, A WIDOW AS LESSOR AND ATLANTIC RICHFIELD COMPANY, A DELAWARE CORPORATION AS LESSEE, RECORDED JULY 18, 1995 AS INSTRUMENT NO. 95-1160339 OF OFFICIAL RECORDS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED APRIL 29, 1999 AS INSTRUMENT NO. 9907693 OF OFFICIAL RECORDS.

DEFECTS, LIENS, ENCUMBRANCES OR OTHER MATTERS AFFECTING THE LEASEHOLD ESTATE, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS ARE NOT SHOWN HEREIN.

(47) AN OIL AND GAS LEASE EXECUTED BY ROGER MOORE, A MARRIED MAN DEALING WITH HIS SOLE AND SEPARATE PROPERTY AS LESSOR AND ATLANTIC RICHFIELD COMPANY, A DELAWARE CORPORATION AS LESSEE, RECORDED JULY 18, 1995 AS INSTRUMENT NO. 95-1160340 OF OFFICIAL RECORDS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED APRIL 29, 1999 AS INSTRUMENT NO. 9907693082 OF OFFICIAL RECORDS.

DEFECTS, LIENS, ENCUMBRANCES OR OTHER MATTERS AFFECTING THE LEASEHOLD ESTATE, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS ARE NOT SHOWN HEREIN.

(48) A DEED OF TRUST TO SECURE AN ORIGINAL INDEBTEDNESS OF $140,000.00 RECORDED SEPTEMBER 21, 1999 AS INSTRUMENT NO. 99-1649990 OF OFFICIAL RECORDS.
DATED: AUGUST 17, 1999
TRUSTOR: PAUL VELUZAT AND CAROL SUE VELUZAT, HUSBAND AND WIFE
TRUSTEE: FIRST AMERICAN TITLE COMPANY, A CALIFORNIA CORPORATION
BENEFICIARY: SHIRLEY PHILLIPS, TRUSTEE OF THE SHIRLEY PHILLIPS TRUST DATED 2-20-96 AS TO AN UNDIVIDED 50% INTEREST AND ROGER MOORE AND BOBBIE MOORE, TRUSTEE UNDER DECLARATION OF TRUST DATED DECEMBER 3, 1996, AS TO AN UNDIVIDED 50% INTEREST, TENANTS IN COMMON

(AFFECTS PARCEL 1)

(49) THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "MEMORANDUM OF OFF-SITE GRADING AND DEVELOPMENT AGREEMENT" RECORDED OCTOBER 12, 2001 AS INSTRUMENT NO. 01-1797178 OF OFFICIAL RECORDS.

(50) AN EASEMENT FOR STORM DRAIN PURPOSES, RECORDED APRIL 22, 2002 AS INSTRUMENT NO. 02-0933501 OF OFFICIAL RECORDS.
IN FAVOR OF: CITY OF SANTA CLARA, CALIFORNIA

(51) AN EASEMENT FOR COVERED STORM DRAIN AND APPURTENANT STRUCTURE PURPOSES, THE RIGHT FOR INGRESS/EGRESS, RECORDED APRIL 22, 2002 AS INSTRUMENT NO. 020933503 OF OFFICIAL RECORDS.
IN FAVOR OF: CITY OF SANTA CLARA, CALIFORNIA
AFFECTS: AS DESCRIBED THEREIN

(52) AN EASEMENT FOR FUTURE PUBLIC ROAD PURPOSES, RECORDED NOVEMBER 19, 2002 AS INSTRUMENT NO. 02-2796053 OF OFFICIAL RECORDS.
IN FAVOR OF: THE CITY OF SANTA CLARITA
AFFECTS: AS DESCRIBED THEREIN

THE LOCATION OF THE EASEMENT CANNOT BE DETERMINED FROM RECORD INFORMATION.

(53) AN EASEMENT FOR STORM DRAIN PURPOSES, RECORDED JANUARY 29, 2004 AS INSTRUMENT NO. 04-0211428 OF OFFICIAL RECORDS.
IN FAVOR OF: CITY OF SANTA CLARA, CALIFORNIA
AFFECTS: AS DESCRIBED THEREIN

(54) AN EASEMENT FOR STORM DRAIN PURPOSES, RECORDED NOVEMBER 15, 2005 AS INSTRUMENT NO. 05-2748964 OF OFFICIAL RECORDS.
IN FAVOR OF: CITY OF SANTA CLARA, A MUNICIPAL CORPORATION
AFFECTS: AS DESCRIBED THEREIN

*DATA FROM FIRST AMERICAN TITLE INSURANCE COMPANY*
*ORDER NO: NCS-801358-ONT1*
*FEBRUARY 25, 2021*

## EASEMENT LEGEND

| | | |
|---|---|---|
| (6) | NOVEMBER 26, 1923<br>BOOK 2873 PAGE 145<br>OFFICIAL RECORDS | IN FAVOR OF: UNITED STATES OF AMERICA<br>DITCHES OR CANALS, AND TRANSMISSION LINES |
| (8) | JUNE 23, 1930<br>INSTRUMENT NO. 711<br>BOOK 10081 PAGE 181<br>OFFICIAL RECORDS | IN FAVOR OF: THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY<br>PUBLIC UTILITIES AND INCIDENTAL PURPOSES |
| (10) | DECEMBER 30, 1937<br>INSTRUMENT NO. 614<br>BOOK 15526 PAGE 114<br>OFFICIAL RECORDS | IN FAVOR OF: STATE OF CALIFORNIA<br>PUBLIC HIGHWAY AND INCIDENTAL PUPOSES |
| (21) | SEPTEMBER 14, 1956<br>INSTRUMENT NO. 5017<br>BOOK 52308 PAGE 76<br>OFFICIAL RECORDS | IN FAVOR OF: SOUTHER CALIFORNIA GAS COMPANY<br>PIPELINE |
| (23) | APRIL 27, 1965<br>INSTRUMENT NO. 4329<br>BOOK D-2883 PAGE 596<br>OFFICIAL RECORDS | IN FAVOR OF: SOUTHERN CALIFORNIA EDISON<br>AERIAL AND UNDERGROUND ELECTRIC LINES AND COMMUNICATION LINES |
| (25) (26) (27) | SEPTEMBER 12, 1979<br>INSTRUMENT NO. 79-1016411<br>INSTRUMENT NO. 79-1016412<br>INSTRUMENT NO. 79-1016413<br>OFFICIAL RECORDS | IN FAVOR OF: ELAINE L. MOFFATT AND ROBERT PRENTICE<br>INGRESS AND EGRESS AND INCIDENTAL PURPOSE |
| (30) | FEBRUARY 22, 1980<br>INSTRUMENT NO. 80-184203<br>OFFICIAL RECORDS | IN FAVOR OF: TVA REAL ESTATES INVESTMENTS INC.<br>INGRESS AND EGRESS AND INCIDENTAL PURPOSES |
| (50) | APRIL 22, 2002<br>02-0933501<br>OFFICIAL RECORDS | IN FAVOR OF: CITY OF SANTA CLARITA<br>STORM DRAIN AND INCIDENTAL PURPOSES |
| (51) | APRIL 22, 2002<br>02-0933503<br>OFFICIAL RECORDS | IN FAVOR OF: CITY OF SANTA CLARITA<br>COVERED STORM DRAIN AND APPURTENANT STRUCTURE<br>INGRESS AND EGRESS |
| (52) | NOVEMBER 19, 2002<br>INSTRUMENT NO. 02-2796053<br>OFFICIAL RECORDS | IN FAVOR OF: CITY OF SANTA CLARITA<br>RDAD AND INCIDENTAL PURPOSES |
| (53) | JANUARY 29, 2004<br>INSTRUMENT NO. 04-0211428<br>OFFICIAL RECORDS | IN FAVOR OF: CITY OF SANTA CLARITA<br>STORM DRAIN AND INCIDENTAL PURPOSES |

## LEASE LEGEND

| | | |
|---|---|---|
| (7) | JULY 26, 1926<br>INSTRUMENT NO. 767<br>BOOK 4646 PAGE 365<br>OFFICIAL RECORDS | (7) (11) (13) SUBSURFACES<br>OIL AND GAS LEASES |
| (11) | MAY 27, 1941<br>INSTRUMENT NO. 1560<br>OFFICIAL RECORDS | |
| (13) | FEBRUARY 16, 1949<br>INSTRUMENT NO. 1486<br>BOOK 29081 PAGE 43<br>OFFICIAL RECORDS | |
| (15) | JUNE 1, 1949<br>INSTRUMENT NO. 2154<br>OFFICIAL RECORDS | (15) SUBSURFACES<br>OIL AND GAS LEASE |
| (43) | APRIL 20, 1993<br>INSTRUMENT NO. 93-734929<br>OFFICIAL RECORDS | (43) (47) OIL AND GAS LEASES |
| (47) | APRIL 29, 1999<br>INSTRUMENT NO. 95-1160340<br>OFFICIAL RECORDS | |

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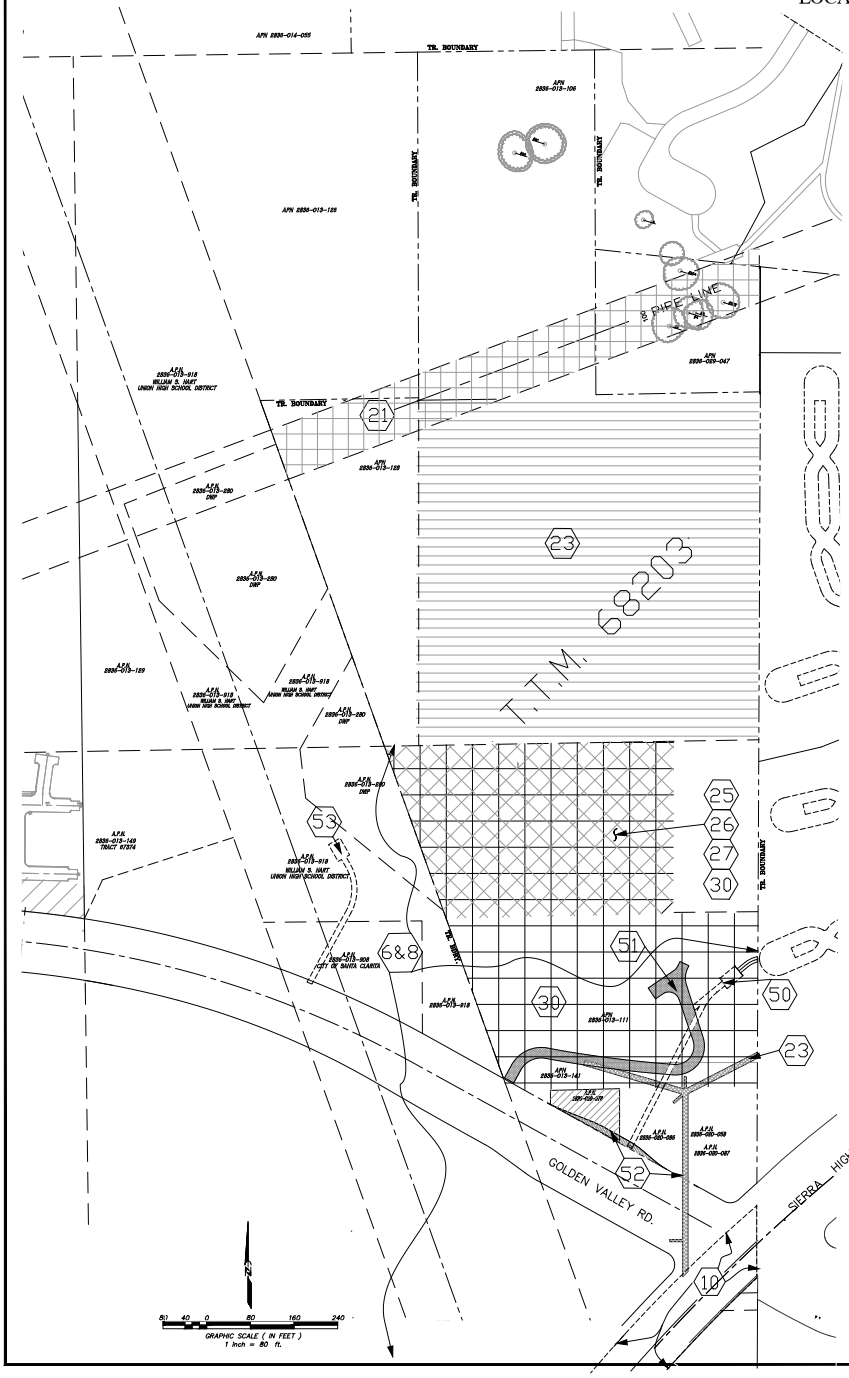
# TENTATIVE TRACT MAP No. 68203
# EASEMENTS

LOCATED IN THE CITY OF SANTA CLARITA
STATE OF CALIFORNIA




## EASEMENT LEGEND

| | | |
|---|---|---|
| 6 | NOVEMBER 26, 1923<br>BOOK 2873 PAGE 145<br>OFFICIAL RECORDS | IN FAVOR OF: UNITED STATES OF AMERICA<br>DITCHES OR CANALS, AND TRANSMISSION LINES |
| 8 | JUNE 23, 1930<br>INSTRUMENT NO. 711<br>BOOK 10081 PAGE 181<br>OFFICIAL RECORDS | IN FAVOR OF: THE PACIFIC TELEPHONE AND TELEGRAPH<br>PUBLIC UTILITIES AND INCIDENTAL PURPOSES |
| 10 | DECEMBER 30, 1937<br>INSTRUMENT NO. 614<br>BOOK 15526 PAGE 114<br>OFFICIAL RECORDS | IN FAVOR OF: STATE OF CALIFORNIA<br>PUBLIC HIGHWAY AND INCIDENTAL PUPOSES |
| 21 | SEPTEMBER 14, 1956<br>INSTRUMENT NO. 5017<br>BOOK 52308 PAGE 76<br>OFFICIAL RECORDS | IN FAVOR OF: SOUTHER CALIFORNIA GAS COMPANY<br>PIPELINE |
| 23 | APRIL 27, 1965<br>INSTRUMENT NO. 4329<br>BOOK D-2883 PAGE 596<br>OFFICIAL RECORDS | IN FAVOR OF: SOUTHERN CALIFORNIA EDISON<br>AERIAL AND UNDERGROUND ELECTRIC LINES AND COMMU |
| 25 26 27 | SEPTEMBER 12, 1979<br>INSTRUMENT NO. 79-1016411<br>INSTRUMENT NO. 79-1016412<br>INSTRUMENT NO. 79-1016413<br>OFFICIAL RECORDS | IN FAVOR OF: ELAINE L MOFFATT AND ROBERT PRENTIC<br>INGRESS AND EGRESS AND INCIDENTAL PURPOSE |
| 30 | FEBRUARY 22, 1980<br>INSTRUMENT NO. 80-184203<br>OFFICIAL RECORDS | IN FAVOR OF: TWA REAL ESTATES INVESTMENTS INC.<br>INGRESS AND EGRESS AND INCIDENTAL PURPOSES |
| 50 | APRIL 22, 2002<br>02-0933501<br>OFFICIAL RECORDS | IN FAVOR OF: CITY OF SANTA CLARITA<br>STORM DRAIN AND INCIDENTAL PURPOSES |
| 51 | APRIL 22, 2002<br>02-0933503<br>OFFICIAL RECORDS | IN FAVOR OF: CITY OF SANTA CLARITA<br>COVERED STORM DRAIN AND APPURTENANT STRUCTURE<br>INGRESS AND EGRESS |
| 52 | NOVEMBER 19, 2002<br>INSTRUMENT NO. 02-2796053<br>OFFICIAL RECORDS | IN FAVOR OF: CITY OF SANTA CLARITA<br>ROAD AND INCIDENTAL PURPOSES |
| 53 | JANUARY 29, 2004<br>INSTRUMENT NO. 04-0211428<br>OFFICIAL RECORDS | IN FAVOR OF: CITY OF SANTA CLARITA<br>STORM DRAIN AND INCIDENTAL PURPOSES |

*DATA FROM FIRST AMERICAN TITLE INSURANCE COMPANY*
*ORDER NO: NCS-801358-ONT1*
*FEBRUARY 25, 2021*

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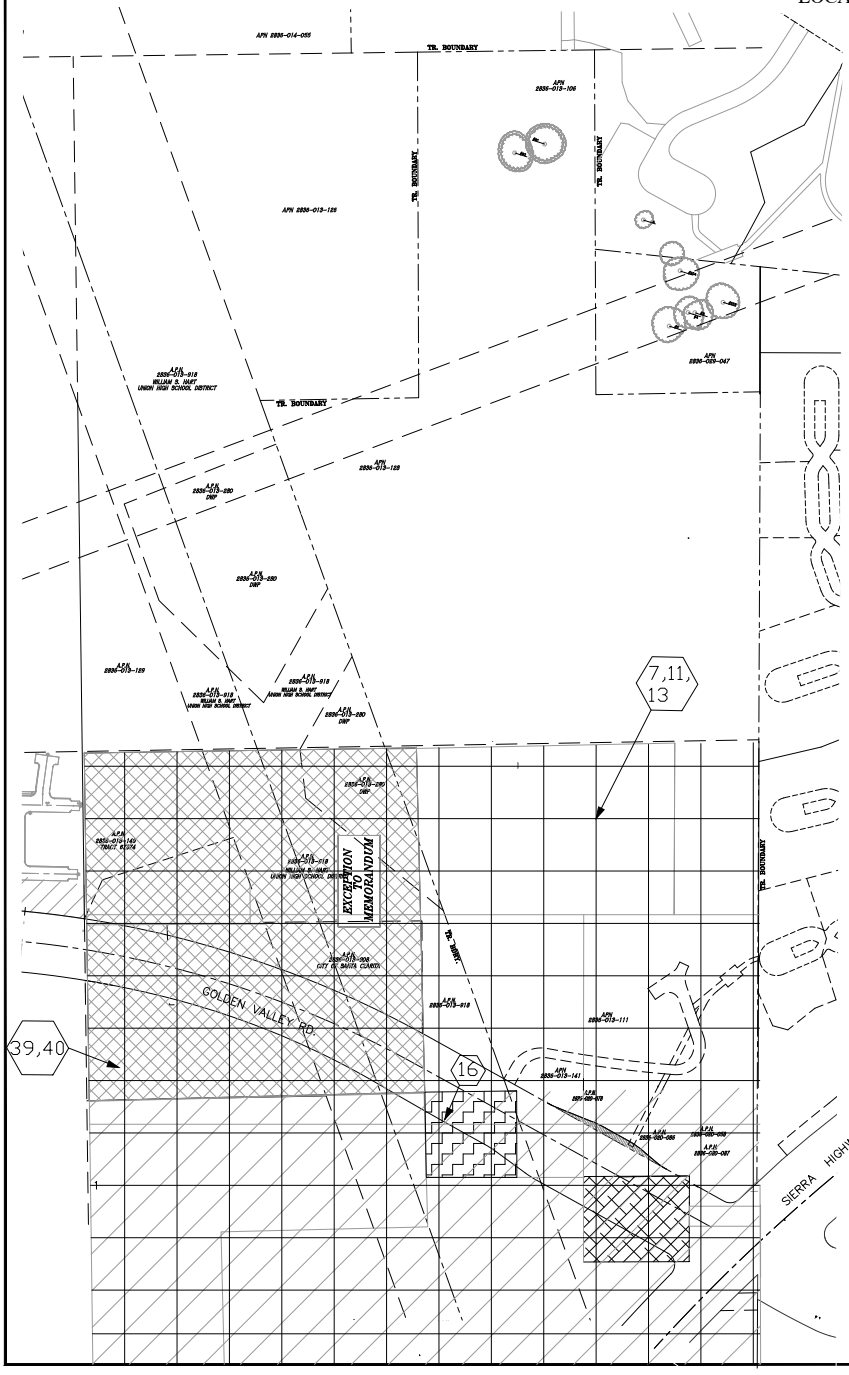
# TENTATIVE TRACT MAP No. 68203
# LEASES

LOCATED IN THE CITY OF SANTA CLARITA
STATE OF CALIFORNIA




LEASE LEGEND

| | | |
|---|---|---|
| 7 | JULY 26, 1926<br>INSTRUMENT NO. 767<br>BOOK 4646, PAGE 365<br>OFFICIAL RECORDS | 7, 11, 13 — SUBSURFACES OIL AND GAS |
| 11 | MAY 27, 1941<br>INSTRUMENT NO. 1560<br>OFFICIAL RECORDS | |
| 13 | FEBRUARY 16, 1949<br>INSTRUMENT NO. 1486<br>BOOK 29381 PAGE 43<br>OFFICIAL RECORDS | |
| 15 | JUNE 1, 1949<br>INSTRUMENT NO. 2154<br>OFFICIAL RECORDS | 15 — SUBSURFACES OIL AND GAS |
| 43 | APRIL 20, 1993<br>INSTRUMENT NO. 93-734929<br>OFFICIAL RECORDS | 43, 47 — OIL AND GAS |
| 47 | APRIL 29, 1999<br>INSTRUMENT NO. 95-1160340<br>OFFICIAL RECORDS | |

*DATA FROM FIRST AMERICAN TITLE INSURANCE COMPANY*
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# APPENDIX G
# Noise and Vibration Technical Report

# Golden Valley-Sierra Highway Mixed-Use Project

## *Noise and Vibration Technical Report*

**July 2024**

**Prepared for:**

Renaud and Sue Veluzat
Melody Ranch Studio
24715 Oak Creek
Newhall, CA 91321

**Prepared by:**

Impact Sciences, Inc.
811 W. 7th Street, Suite 200
Los Angeles, CA 90017
Contact: Brett Pomeroy, Associate Principal

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A – Noise and Vibration Technical Appendix


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# 1.0 INTRODUCTION

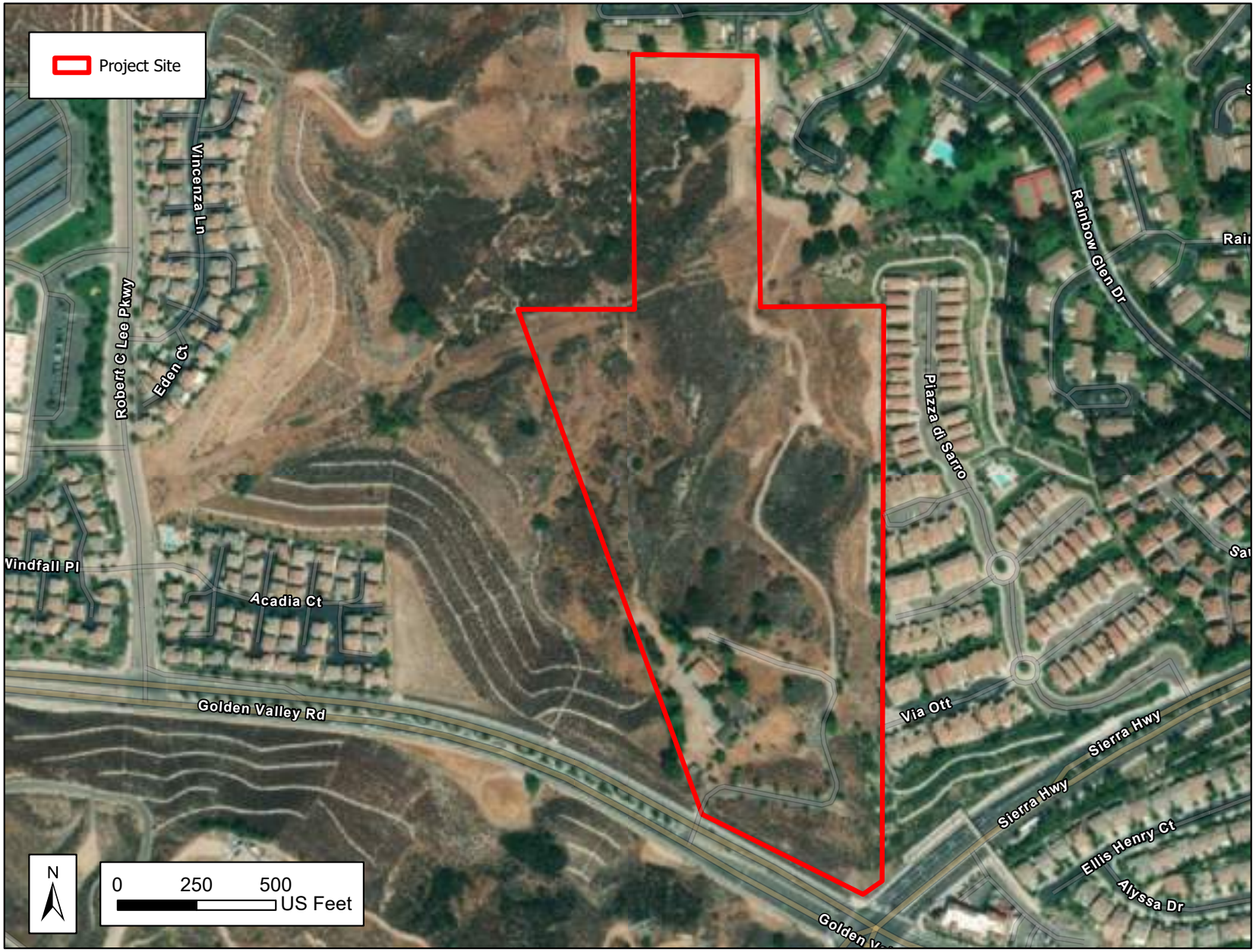
The purpose of this report is to evaluate the potential for noise and groundborne vibration impacts resulting from implementation of the proposed Golden Valley-Sierra Highway Mixed-Use Project (Project) in the City of Santa Clarita (City). This report includes an evaluation of potential impacts associated with substantial temporary and permanent increases in ambient noise levels in the vicinity of the Project Site; exposure of people in the vicinity of the Project Site to excessive noise or groundborne vibration levels; and whether exposure is in excess of standards established in the City's General Plan or Noise Ordinance. This report has been prepared by Impact Sciences, Inc., in support of the environmental documentation being prepared pursuant to the California Environmental Quality Act (CEQA).

## 1.1 PROJECT LOCATION

The 28.13-acre Project Site is located at the northwest corner of Golden Valley Road and Sierra Highway, in the City. Currently, the majority of the site is vacant except for the single-family residence and accessory structures that are located near the southerly portion of the property near Golden Valley Road. The Project Site is designated as Mixed-Use Neighborhood Planned Development Overlay Zone (MX-N (PD)). The proposed uses are consistent with the City General Plan, Unified Development Code, and Zoning designations. Adjacent uses include residential uses to the immediate north and east, vacant land to the south, and residential uses/Golden Valley High School to the west. The surrounding uses along Golden Valley Road and Sierra Highway consist of mostly established residential uses, schools, and neighborhood commercial retail centers. See **Figure 1, Aerial Photograph of the Project Site**.

## 1.2 PROJECT DESCRIPTION

The Project involves the demolition of the existing single-family residence and associated debris, and development of a mixed-use project consisting of 151 senior assisted living units, 73 residential units, a 60-room hotel (with 2,544 square feet (sf) of banquet space, 3,315 sf of retail space, and 2,360 sf of restaurant space), and 5.83 acres of open space. See **Figure 2, Project Site Plan.** The Project Site would be graded with a volume totaling 360,000 cubic yards of cut and fill to be balanced on site. No soil import or export is anticipated at this time.




**SOURCE:** Esri, 2022

FIGURE **1**

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Aerial Photo of the Project Site

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**SOURCE:** Land Design Consultants Inc., 2024

FIGURE **2**

IMPACT SCIENCES

Project Site Plan

1415.001•07/24

# 2.0 ENVIRONMENTAL SETTING

## 2.1 FUNDAMENTALS OF NOISE & VIBRATION

### Noise

Noise is usually defined as unwanted sound that is an undesirable byproduct of society's normal day-to-day activities. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm, and/or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). The human ear does not respond uniformly to sounds at all frequencies. For example, the human ear is less sensitive to low and high frequencies than medium frequencies, which more closely correspond with human speech. In response to the sensitivity of the human ear to different frequencies, the A-weighted noise level (or scale), which corresponds better with people's subjective judgment of sound levels, has been developed. This A-weighted sound level, referenced in units of dB(A), is measured on a logarithmic scale such that a doubling of sound energy results in a 3 dB(A) increase in noise level. Typically, changes in a community noise level of less than 3 dB(A) are not noticed by the human ear.[1] Changes from 3 to 5 dB(A) may be noticed by some individuals who are sensitive to changes in noise. A greater than 5 dB(A) increase is readily noticeable, while the human ear perceives a 10 dB(A) increase in sound level to be a doubling of sound.

On the A-weighted scale, the range of human hearing extends from approximately 3 to 140 dB(A). **Table 1, A-Weighted Decibel Scale**, provides examples of A-weighted noise levels from common sources. Noise sources occur in two forms: (1) point sources, such as stationary equipment or individual motor vehicles; and (2) line sources, such as a roadway with a large number of point sources (motor vehicles). Sound generated by a point source typically diminishes (attenuates) at a rate of 6 dB(A) for each doubling of distance from the source to the receptor at acoustically "hard" sites and 7.5 dB(A) at acoustically "soft" sites.[2] For example, if a noise source produces a noise level of 89 dB(A) at a reference distance of 50 feet, the noise level would be 83 dB(A) at a distance of 100 feet from the noise source, 77 dB(A) at a distance of 200 feet, and so on. Noise generated by a mobile source will decrease by approximately 3 dB(A) over hard surfaces and 4.5 dB(A) over soft surfaces for each doubling of distance.

---

1 California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, 2013.

2 Federal Highway Administration, *Highway Noise Fundamentals*, (1980) 97. Examples of "hard" or reflective sites include asphalt, concrete, and hard and sparsely vegetated soils. Examples of acoustically "soft" or absorptive sites include soft, sand, plowed farmland, grass, crops, heavy ground cover, etc.

**Table 1**
**A-Weighted Decibel Scale**

| Typical A-Weighted Sound Levels | Sound Level (dB(A), Leq) |
|---|---|
| Threshold of Pain | 140 |
| Jet Takeoff at 100 Meters | 125 |
| Jackhammer at 15 Meters | 95 |
| Heavy Diesel Truck at 15 Meters | 85 |
| Conversation at 1 Meter | 60 |
| Soft Whisper at 2 Meters | 35 |

*Source: United States Occupational Safety & Health Administration, Noise and Hearing Conservation Technical Manual, 1999.*

Sound levels also can be attenuated by man-made or natural barriers (e.g., sound walls, berms, ridges), as well as elevational differences. Noise is most audible when traveling by direct line-of-sight, an interrupted visual path between the noise source and noise receptor. Barriers, such as walls or buildings that break the line-of-sight between the source and the receiver, can greatly reduce noise levels from the source since sound can only reach the receiver by diffraction. However, if a barrier is not high or long enough to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced.

Solid walls and berms may reduce noise levels by 5 to 10 dB(A) depending on their height and distance relative to the noise source and the noise receptor.[3] Sound levels may also be attenuated 3 dB(A) by a first row of houses and 1.5 dB(A) for each additional row of houses.[4] The minimum noise attenuation provided by typical structures in California is provided in **Table 2, Building Noise Reduction Factors**.

3 Federal Highway Administration, *Highway Noise Mitigation*, (1980) 18.

4 California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, 2013.

**Table 2**
**Building Noise Reduction Factors**

| Building Type | Window Condition | Noise Reduction Due to Exterior of the Structure (dB(A)) |
|---|---|---|
| All | Open | 10 |
| Light Frame | Ordinary Sash (closed) | 20 |
| | Storm Windows | 25 |
| Masonry | Single Glazed | 25 |
| | Double Glazed | 35 |

*Source: Federal Highway Administration, Highway Traffic Noise: Analysis and Abatement Guidance. December 2011.*

## *Sound Rating Scales*

Various rating scales approximate the human subjective assessment to the "loudness" or "noisiness" of a sound. Noise metrics have been developed to account for additional parameters, such as duration and cumulative effect of multiple events. Noise metrics are categorized as single event metrics and cumulative metrics, as summarized below.

In order to simplify the measurement and computation of sound loudness levels, frequency weighted networks have obtained wide acceptance. The A-weighted scale, discussed above, has become the most prominent of these scales and is widely used in community noise analysis. Its advantages are that it has shown good correlation with community response and is easily measured. The metrics used in this analysis are all based upon the dB(A) scale.

**Equivalent Noise Level**

Equivalent Noise Level (Leq) is the sound level corresponding to a steady-state A-weighted sound level containing the same total energy as several single event noise exposure level events during a given sample period. Leq is the "acoustic energy" average noise level during the period of the sample. It is based on the observation that the potential for noise annoyance is dependent on the total acoustical energy content of the noise. The equivalent noise level is expressed in units of dB(A). Leq can be measured for any period, but is typically measured for 15 minutes, 1 hour, or 24 hours. Leq for a 1-hour period is used by the Federal Highway Administration (FHWA) for assessing highway noise impacts. Leq for 1 hour is referred to as the Hourly Noise Level (HNL) in the California Airport Noise Regulations and is used to develop Community

Noise Equivalent Level values for aircraft operations. Construction noise levels and ambient noise measurements in this section use the Leq scale.

**Community Noise Equivalent Level**

Community Noise Equivalent Level (CNEL) is a 24-hour, time-weighted energy average noise level based on the A-weighted decibel. It is a measure of the overall noise experienced during an entire day. The term "time-weighted" refers to the penalties attached to noise events occurring during certain sensitive periods. In the CNEL scale, 5 dB are added to measured noise levels occurring between the hours of 7 P.M. and 10 P.M. For measured noise levels occurring between the hours of 10 P.M. and 7 A.M., 10 dB are added. These decibel adjustments are an attempt to account for the higher sensitivity to noise in the evening and nighttime hours and the expected lower ambient noise levels during these periods. Existing and projected future traffic noise levels in this section use the CNEL scale.

**Day-Night Average Noise Level**

The day-night average sound level (Ldn) is another average noise level over a 24-hour period. Noise levels occurring between the hours of 10 P.M. and 7 A.M. are increased by 10 decibels (dB). This noise is weighted to take into account the decrease in community background noise of 10 dB(A) during this period. Noise levels measured using the Ldn scale are typically similar to CNEL measurements.

## *Adverse Effects of Noise Exposure*

Noise is known to have several adverse effects on humans, which has led to laws and standards being set to protect public health and safety, and to ensure compatibility between land uses and activities. Adverse effects of noise on people include hearing loss, communication interference, sleep interference, physiological responses, and annoyance. Each of these potential noise impacts on people is briefly discussed in the following narrative.

**Hearing Loss**

Hearing loss is generally not a community noise concern, even near a major airport or a major freeway. The potential for noise-induced hearing loss is more commonly associated with occupational noise exposures in heavy industry, very noisy work environments with long-term exposure, or certain very loud recreational activities (e.g., target shooting and motorcycle or car racing). The Occupational Safety and Health Administration (OSHA) identifies a noise exposure limit of 90 dB(A) for 8 hours per day to protect from hearing loss (higher limits are allowed for shorter duration exposures). Noise levels in neighborhoods, even in very noisy neighborhoods, are not sufficiently loud enough to cause hearing loss.

**Communication Interference**

Communication interference is one of the primary concerns in environmental noise. Communication interference includes speech disturbance and intrusion with activities such as watching television. Noise can also interfere with communications such as within school classrooms. Normal conversational speech is in the range of 60 to 65 dB(A) and any noise in this range or louder may interfere with speech.

**Sleep Interference**

Noise can make it difficult to fall asleep, create momentary disturbances of natural sleep patterns by causing shifts from deep to lighter stages, and cause awakening. Noise may even cause awakening that a person may or may not be able to recall.

**Physiological Responses**

Physiological responses are those measurable effects of noise on people that are realized as changes in pulse rate, blood pressure, and other physical changes. Studies to determine whether exposure to high noise levels can adversely affect human health have concluded that, while a relationship between noise and health effects seems plausible, there is no empirical evidence of the relationship.

**Annoyance**

Annoyance is an individual characteristic and can vary widely from person to person. Noise that one person considers tolerable can be unbearable to another of equal hearing capability. The level of annoyance depends both on the characteristics of the noise (including loudness, frequency, time, and duration), and how much activity interference (such as speech interference and sleep interference) results from the noise. However, the level of annoyance is also a function of the attitude of the receiver. Personal sensitivity to noise varies widely. It has been estimated that 2% to 10% of the population is highly susceptible to annoyance from any noise not of their own making, while approximately 20% are unaffected by noise.[5] Attitudes may also be affected by the relationship between the person affected and the source of noise, and whether attempts have been made to abate the noise.

## Vibration

Vibration consists of waves transmitted through solid material. Groundborne vibration propagates from a source through the ground to adjacent buildings by surface waves. Vibration may comprise a single pulse, a series of pulses, or a continuous oscillatory motion. The frequency of a vibrating object describes how

5 Wayne County Airport Authority. *Background information on noise & its measurement, 2009.*

rapidly it is oscillating and is measured in hertz (Hz). Most environmental vibrations consist of a composite, or "spectrum" of many frequencies, and are generally classified as broadband or random vibrations. The normal frequency range of most groundborne vibration that can be felt generally starts from a low frequency of less than one Hz to a high of about 200 Hz. Vibration is often measured in terms of the peak particle velocity (PPV) in inches per second (in/sec) when considering impacts on buildings or other structures, as PPV represents the maximum instantaneous peak of vibration that can stress buildings. Because it is a representation of acute vibration, PPV is often used to measure the temporary impacts of short-term construction activities that could instantaneously damage-built structures. Vibration is often also measured by the Root Mean Squared (RMS) because it best correlates with human perception and response. Specifically, RMS represents "smoothed" vibration levels over an extended period of time and is often used to gauge the long-term chronic impact of a Project's operation on the adjacent environment. RMS amplitude is the average of a signal's squared amplitude. It is most commonly measured in decibel notation (VdB).

Vibration energy attenuates as it travels through the ground, causing the vibration amplitude to decrease with distance away from the source. High frequency vibrations reduce much more rapidly than low frequencies, so that in the far-field from a source, the low frequencies tend to dominate. Soil properties also affect the propagation of vibration. When groundborne vibration interacts with a building, there is usually a ground-to-foundation coupling loss (i.e., the foundation of the structure does not move in sync with the ground vibration), but the vibration can also be amplified by the structural resonances of the walls and floors. Vibration in buildings is typically perceived as rattling of windows or items on shelves, or the motion of building surfaces. At high levels, vibration can result in damage to structures.

Manmade groundborne vibration is generally limited to areas within a few hundred feet of certain types of construction activities, especially pile driving. Road vehicles rarely create enough groundborne vibration to be perceptible to humans unless the road surface is poorly maintained and there are potholes or bumps. If traffic induces perceptible vibration in buildings, such as window rattling or shaking of small loose items (typically caused by heavy trucks in passing), then it is most likely an effect of low-frequency airborne noise or ground characteristics. Human annoyance by vibration is related to the number and duration of events. The more events or the greater the duration, the more annoying it will be to humans.

Construction vibration damage criteria are assessed based on structural category (e.g., reinforced-concrete, steel, or timber). The Federal Transit Administration (FTA) guidelines consider 0.2 inch/sec PPV to be the significant impact level for non-engineered timber and masonry buildings. Structures or buildings constructed of reinforced concrete, steel, or timber have a vibration damage criterion of 0.5 inch/sec PPV

pursuant to FTA Guidelines.[6] The FTA Guidelines include a table showing the vibration damage criteria based on structural category and is presented below in **Table 3, Construction Vibration Damage Criteria.**

**Table 3**
**Construction Vibration Damage Criteria**

| Building/Structural Category | PPV, in/sec |
|---|---|
| I. Reinforced-concrete, steel, or timber (no plaster) | 0.5 |
| II. Engineered concrete and masonry (no plaster) | 0.3 |
| III. Non-engineered timber and masonry buildings | 0.2 |
| IV. Buildings extremely susceptible to vibration damage | 0.12 |

*Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual. September 2018.*

## 2.2 NOISE SENSITIVE RECEPTORS

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses. The closest noise-sensitive receptors to the Project Site include adjacent residences to the north, adjacent residences to the east, residences to the southeast (approximately 395 feet), residences to the west (approximately 700 feet), and Golden Valley High School to the west (approximately 1,000 feet). See **Figure 3, Noise Monitoring and Sensitive Receptor Location Map.**

## 2.3 EXISTING CONDITIONS

### Measured Ambient Noise Levels

To establish baseline noise conditions, existing noise levels were monitored at four locations in the vicinity of the Project Site. The locations of where the noise measurements were taken are depicted in **Figure 3, Noise Monitoring and Sensitive Receptor Location Map**. The noise survey was conducted in January 2022 using the Larson Davis SoundTrack LxT (Type 1) sound level meter, which conforms to industry standards

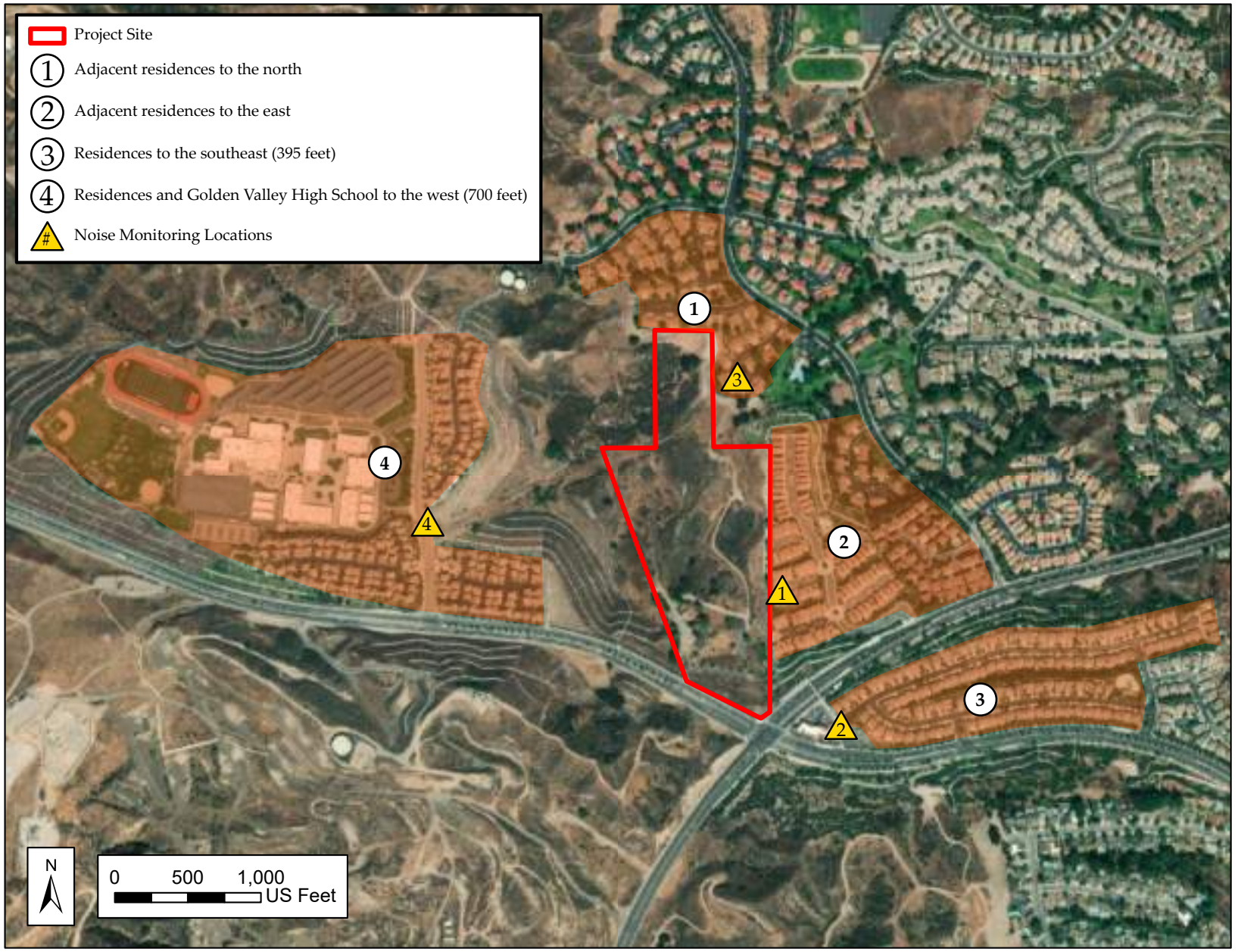
6 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual. September 2018.

set forth in ANSI S1.4-1983 (R2006) – Specification for Sound Level Meters/Type 1, and is consistent with the sound level meter definition established in the SCMC. This instrument was calibrated and operated according to the manufacturer's written specifications. At the measurement sites, the microphone was placed at a height of approximately five feet above grade. The results of the measurements are summarized in **Table 4, Existing Noise Levels in the Vicinity of the Project Site**. As shown in **Table 4**, the daytime ambient noise levels ranged from 42.5 dBA Leq to 56.1 dBA Leq in the vicinity the Project Site. Based on this data, the calculated CNEL for Location 1 is 45.7 dBA.

**Table 4**
**Existing Noise Levels in the Vicinity of the Project Site**

| Noise Monitoring Locations | Primary Noise Sources | Noise Levels (dBA) | | |
|---|---|---|---|---|
| | | Leq | Lmin | Lmax |
| **Daytime Measurements (between 7:00 a.m. and 7:00 p.m.)** | | | | |
| 1. Eastern boundary of Project Site, near residences | Traffic, Parking, Neighborhood Activity | 42.5 | 34.5 | 59.3 |
| 2. Residential area southeast of Project Site | Traffic & Commercial Uses Activity | 54.2 | 41.4 | 64.0 |
| 3. Residential area northeast of Project Site | Traffic, Parking, Neighborhood Activity | 49.4 | 35.8 | 58.9 |
| 4. Residential area west of Project Site | Traffic & Neighborhood Activity | 56.1 | 37.8 | 69.9 |
| **Evening Measurement (between 7:00 p.m. and 10:00 p.m.)** | | | | |
| 1. Eastern boundary of Project Site, near residences | Traffic, Parking, Neighborhood Activity | 45.1 | 36.1 | 66.7 |
| **Nighttime Measurement (between 10:00 p.m. and 7:00 a.m.)** | | | | |
| 1. Eastern boundary of Project Site, near residences | Traffic, Parking, Neighborhood Activity | 36.1 | 33.1 | 47.0 |

*Source: Impact Sciences, Inc., March 2022. See Appendix A – Noise and Vibration Technical Data.*




**SOURCE:** Esri, 2022

FIGURE **3**

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Noise Monitoring and Sensitive Receptor Location Map

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## Existing Modeled Roadway Noise Levels

Existing roadway noise levels were calculated for primary roadway segments located in proximity to the Project Site. The roadway segments selected for analysis are considered to be those that are expected to be most directly impacted by project-related traffic, which, for the purpose of this analysis, include the roadways that are nearest to the Project Site and had the most project-generated trips. These roadways, when compared to roadways located further away from the Project site, would experience the greatest percentage increase in traffic generated by the Project.

Calculation of the existing roadway noise levels was based on the Federal Highway Administration Highway Noise Prediction Model (FHWA-RD-77-108) and traffic volumes from the Project's traffic analysis.[7] The model calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site environmental conditions. The average vehicle noise rates (energy rates) utilized in the FHWA Model have been modified to reflect average vehicle noise rates identified for California by Caltrans. The Caltrans data show that California automobile noise is 0.8 to 1.0 dBA higher than national levels and that medium and heavy truck noise is 0.3 to 3.0 dBA lower than national levels. The average daily noise levels along study area roadway segments are presented in **Table 5, Existing Roadway Noise Levels**.

**Table 5**
**Existing Roadway Noise Levels**

| Roadway | Roadway Segment | Predominant Existing Land Use Along Segment | dBA CNEL |
|---|---|---|---|
| Golden Valley Road | West of Sierra Highway | Residential | 73.6 |
| | East of Sierra Highway | Residential/Commercial | 71.0 |
| Sierra Highway | South of Golden Valley Road | Residential/Open Space | 73.0 |
| | North of Golden Valley Road | Residential/Commercial | 71.6 |

*Source*
*Traffic data: Traffic Impact Analysis, Santa Clarita Mixed-Use, City of Santa Clarita, TJW Engineering, Inc., December 2, 2021.*
*Calculations provided in Appendix A to this report.*

## Existing Groundborne Vibration Levels

The main sources of groundborne vibration near the Project Site are heavy-duty vehicular travel (e.g., refuse trucks, delivery trucks, and transit buses) on local roadways. Trucks and buses typically generate

7 Traffic Impact Analysis, Santa Clarita Mixed-Use, City of Santa Clarita, prepared by TJW Engineering, Inc., December 2, 2021.

groundborne vibration velocity levels of around 63 VdB at 50 feet, and these levels could reach 72 VdB where trucks and buses pass over bumps in the road.[8] In terms of PPV levels, a heavy-duty vehicle traveling at a distance of 50 feet can result in a vibration level of approximately 0.001 inch per second.

8 FTA, Transit Noise and Vibration Impact Assessment Manual, September 2018.

# 3.0 REGULATORY FRAMEWORK

## 3.1 STATE REGULATIONS

### Title 24, California Code of Regulations

The California Noise Insulation Standards of 1988 (California Code of Regulations Title 24, Section 3501 et seq.) require that interior noise levels from the exterior sources not exceed 45 dBA Ldn/community noise equivalent level (CNEL)[9] in any habitable room of a multi-residential use facility (e.g., hotels, motels, dormitories, long-term care facilities, and apartment houses and other dwellings, except detached single-family dwellings) with doors and windows closed. Where exterior noise levels exceed 60 dBA CNEL/Ldn, an acoustical analysis is required to show that the building construction achieves an interior noise level of 45 dBA CNEL/Ldn or less.

## 3.2 LOCAL PLANS AND POLICIES

### City of Santa Clarita General Plan Noise Element

The Noise Element of the General Plan is a comprehensive program for including noise management in the planning process, providing a tool for planners to use in achieving and maintaining land uses that are compatible with existing and future environmental noise levels. The Noise Element identifies current noise conditions within the planning area, and projects future noise impacts resulting from continued growth allowed by the Land Use Element. The element identifies noise-sensitive land uses and noise sources and defines areas of noise impact for the purpose of developing programs to ensure that residents in the Santa Clarita Valley will be protected from excessive noise intrusion. As development proposals are reviewed in the future, the City and County will evaluate each proposal with respect to the Noise Element to ensure that noise impacts are reduced through planning and project design. Through implementation of the policies and programs of the Noise Element, current and future adverse noise impacts will be reduced or avoided in order to protect the general health, safety, and welfare of the community.

The most basic planning strategy to minimize adverse impacts on new land uses due to noise is to avoid designating sensitive land uses in areas that are subject to high levels of noise. Uses such as schools, hospitals, child care, senior care, congregate care, churches, and all types of residential use should be located outside of any area anticipated to exceed acceptable noise levels as defined by the Noise and Land Use Compatibility Guidelines, or should be protected from noise through sound attenuation measures such as site and architectural design and sound walls. The City of Santa Clarita and the County of Los Angeles

9 Measurements are based on Ldn or CNEL.

have adopted the State's guidelines[10] in a modified form as a basis for planning decisions based on noise considerations. Modifications were made to eliminate overlap between categories in the table, in order to make the guidelines easier for applicants and decision makers to interpret and apply to planning decisions. These guidelines are shown in **Table 6, Noise and Land Use Compatibility Guidelines (City Noise Element)**. Additional considerations in the determination of noise compatible land uses include the following:

**A. Noise Exposure Information Desired**. Where sufficient data exists, evaluate land use suitability with respect to a worst-case value of CNEL. Usually, a future projection of noise levels represents the worst case. Existing and future noise contours for freeway, roadway, airport and railroads are provided in the Noise Element.

**B. Noise Source Characteristics.** The land use-noise compatibility recommendations should be viewed in relation to the specific source of the noise. For example, aircraft and railroad noise is normally made up of higher single noise events than auto traffic but occurs less frequently. Therefore, different sources yielding the same composite noise exposure do not necessarily create the same noise environment. The State Aeronautics Act uses 65 dB CNEL as the criterion which airports must eventually meet to protect existing residential communities from unacceptable exposure to aircraft noise. In order to facilitate the purposes of the Act, one of which is to encourage land uses compatible with the 65 dB CNEL criterion wherever possible, and in order to facilitate the ability of airports to comply with the Act, residential uses located in areas with an aircraft noise level greater than 65 CNEL should be discouraged and considered located within normally unacceptable areas.

**C. Suitable Interior Environments.** One objective of locating residential units relative to a known noise source is to maintain a suitable interior noise environment at no greater than 45 dB CNEL. This requirement, coupled with the measured or calculated noise reduction performance of the type of structure under consideration, should govern the minimum acceptable distance to a noise source.

**D. Acceptable Outdoor Environments.** Another consideration, which in some communities is an overriding factor, is the desire for an acceptable outdoor noise environment. The acceptable outdoor noise level is 65 CNEL for rear yard areas, neighborhood parks, and pool recreation areas at multi-family developments.

10 California Office of Planning and Research, General Plan Guidelines 2003, Appendix C.

**Table 6**
**Noise and Land Use Compatibility Guidelines (City Noise Element)**

| Land Use | Normally Acceptable[a] | Conditionally Acceptable[b] | Normally Unacceptable[c] | Clearly Unacceptable[d] |
|---|---|---|---|---|
| Residential – Low Density Single-Family, Duplex, Mobile Homes | 50 – 60 | 60 – 70 | 70 – 75 | above 75 |
| Residential - Multi-Family Homes | 50 – 60 | 60 – 70 | 70 – 75 | above 75 |
| Transient Lodging – Motels, Hotels | 50 – 60 | 60 – 70 | 70 – 80 | above 80 |
| Schools, Libraries, Churches, Hospitals, Nursing Homes | 50 – 60 | 60 – 70 | 70 – 80 | above 80 |
| Auditoriums, Concert Halls, Amphitheaters | --- | 50 – 65 | --- | above 65 |
| Sports Arena, Outdoor Spectator Sports | --- | 50 – 75 | --- | above 75 |
| Playgrounds, Neighborhood Parks | 50 – 65 | --- | 65 – 75 | above 75 |
| Golf Courses, Riding Stables, Water Recreation, Cemeteries | 50 – 75 | --- | 70 – 80 | above 80 |
| Office Buildings, Business and Professional Commercial | 50 – 70 | 70-75 | above 75 | --- |
| Industrial, Manufacturing, Utilities, Agriculture | 50 – 75 | 75 – 80 | above 80 | --- |

*Notes:*
*[a] Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.*
*[b] Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.*
*[c] Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Sound walls, window upgrades, and site design modifications may be needed in order to achieve City standards.*
*[d] Clearly Unacceptable: New construction or development should generally not be undertaken.*
*Source: City of Santa Clarita General Plan Noise Element, Exhibit N-8: Noise and Land Use Compatibility Guidelines, June 2010.*

Applicable goals and policies from the General Plan Noise Element are listed below.

*Goal N 1: A healthy and safe noise environment for Santa Clarita Valley residents, employees, and visitors.*

*Objective N 1.1: Protect the health and safety of the residents of the Santa Clarita Valley by the elimination, mitigation, and prevention of significant existing and future noise levels.*

*Policy N 1.1.1: Use the Noise and Land Use Compatibility Guidelines contained on Exhibit N-8, which are consistent with State guidelines, as a policy basis for decisions on land use and development proposals related to noise.*

*Policy N 1.1.2: Continue to implement the adopted Noise Ordinance and other applicable code provisions, consistent with state and federal standards, which establish noise impact thresholds for noise abatement and attenuation, in order to reduce potential health hazards associated with high noise levels.*

*Policy N 1.1.3: Include consideration of potential noise impacts in land use planning and development review decisions.*

*Policy N 1.1.4: Control noise sources adjacent to residential, recreational, and community facilities, and those land uses classified as noise sensitive.*

*Goal N 2: Protect residents and sensitive receptors from traffic-generated noise.*

*Objective N 2.1: Prevent and mitigate adverse effects of noise generated from traffic on arterial streets and highways through implementing noise reduction standards and programs.*

*Policy N 2.1.1: Encourage owners of existing noise-sensitive uses, and require owners of proposed noise sensitive land uses, to construct sound barriers to protect users from significant noise levels, where feasible and appropriate.*

*Policy N 2.1.2: Encourage the use of noise absorbing barriers, where appropriate.*

*Goal N 3: Protect residential neighborhoods from excessive noise.*

*Objective N 3.1: Prevent and mitigate significant noise levels in residential neighborhoods.*

*Policy N 3.1.1: Require that developers of new single-family and multi-family residential neighborhoods in areas where the ambient noise levels exceed 60 CNEL provide mitigation measures for the new residences to reduce interior noise levels to 45 CNEL, based on future traffic and railroad noise levels.*

*Policy N 3.1.2: Require that developers of new single-family and multi-family residential neighborhoods in areas where the projected noise levels exceed 65 CNEL provide mitigation measures (which may include noise barriers, setbacks, and site design) for new residences to reduce outdoor noise levels to 65 CNEL, based on future traffic conditions. This requirement would apply to rear yard areas for single-family developments, and to private open space and common recreational and open space areas for multifamily developments.*

*Policy N 3.1.3: Through enforcement of the applicable Noise Ordinance, protect residential neighborhoods from noise generated by machinery or activities that produce significant discernable noise exceeding recommended levels for residential uses.*

*Policy N 3.1.4: Require that those responsible for construction activities develop techniques to mitigate or minimize the noise impacts on residences, and adopt standards that regulate noise from construction activities that occur in or near residential neighborhoods.*

*Policy N 3.1.5: Require that developers of private schools, childcare centers, senior housing, and other noise sensitive uses in areas where the ambient noise level exceeds 65 dBA (day), provide mitigation measures for these uses to reduce interior noise to acceptable levels.*

*Policy N 3.1.7: Ensure that design of parks, recreational facilities, and schools minimize noise impacts to residential neighborhoods.*

*Policy N 3.1.9: Implement a buyer and renter notification program for new residential developments where appropriate, to educate and inform potential buyers and renters of the sources of noise in the area and/or new sources of noise that may occur in the future. As determined by the reviewing authority, notification may be appropriate in the following areas:*

*c. Within 200 feet of commercial uses in mixed-use developments, potential buyers and renters should receive notice that the commercial uses within the mixed use developments may generate noise in excess of levels typically found in residential areas, that the commercial uses may change over time, and the associated noise levels and frequency of noise events may change along with the use.*

## City of Santa Clarita Municipal Code

The City of Santa Clarita Municipal Code (SCMC) Noise Ordinance provides exterior noise standards within the City, which are applicable to the Project:

*11.44.040 Noise Limits*

*A. It shall be unlawful for any person within the City to produce or cause or allow to be produced noise which is received on property occupied by another person within the designated region, in excess of the following levels, except as expressly provided otherwise herein:*

| Region | Time | Sound Level dB |
|---|---|---|
| Residential Zone | Day | 65 |
| Residential Zone | Night | 55 |
| Commercial and Manufacturing | Day | 80 |
| Commercial and Manufacturing | Night | 70 |

*At the boundary line between a residential property and a commercial and manufacturing property, the noise level of the quieter zone shall be used.*

*B. Corrections to Noise Limits. The numerical limits given in subsection (A) of this section shall be adjusted by the following corrections, where the following noise conditions exist:*

| Noise Condition | Correction (in dB) |
|---|---|
| (1) Repetitive impulsive noise | -5 |
| (2) Steady whine, screech or hum | -5 |
| (3) Noise occurring more than 5 but less than 15 minutes per hour | +5 |
| (4) Noise occurring more than 1 but less than 5 minutes per hour | +10 |
| (5) Noise occurring less than 1 minute per hour | +20 |

*11.44.060 Special Noise Sources – Radios, Television Sets and Similar Devices*

*A. Use Restricted. It shall be unlawful for any person within the City to use or operate any radio receiving set, musical instrument, phonograph, television set, or other machine or device for the producing or reproducing of sound at anytime in such a manner as to produce noise levels on residential land which would disturb the peace, quiet and comfort of neighboring residents or any reasonable person of normal sensitivity residing in the area.*

*B. Prima Facie Violation. Any noise exceeding the ambient noise limits as set forth in Section 11.44.040 at the property line of any residential land (or if a condominium or apartment house, within any adjoining apartment) by more than five (5) decibels shall be deemed to be prima facie evidence of a violation of the provisions of this section.*

*11.44.070 Special Noise Sources – Machinery, Fans, and Other Mechanical Devices*

*Any noise level from the use or operation of any machinery, equipment, pump, fan, air conditioning apparatus, refrigerating equipment, motor vehicle, or other mechanical or electrical device, or in repairing or rebuilding any motor vehicle, which exceeds the noise limits as set forth in SCMC Section 11.44.040 at any property line, or, if a condominium or rental units, within any condominium unit or rental unit within the complex, shall be a violation of this chapter.*

*11.44.080 Special Noise Sources – Construction and Building*

*No person shall engage in any construction work which requires a building permit from the City on sites within three hundred (300) feet of a residentially zoned property except between the hours of seven a.m. to seven p.m., Monday through Friday, and eight a.m. to six p.m. on Saturday. Further, no work shall be performed on the following public holidays: New Year's Day, Independence Day, Thanksgiving, Christmas, Memorial Day, and Labor Day.*

*Emergency work as defined in Section 11.44.020(D) is permitted at all times. The Department of Community Development may issue a permit for work to be done "after hours"; provided, that containment of construction noises is provided.*

# 4.0 NOISE ANALYSIS

## 4.1 THRESHOLDS OF SIGNIFICANCE

The impacts of the proposed Project related to noise and vibration would be considered significant if they would exceed any of the following Standards of Significance, in accordance with Appendix G of the *California Environmental Quality Act (CEQA) Guidelines*:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project Site in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Generation of excessive ground-borne vibration or ground-borne noise levels; and
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels.

The Project Site is not located within the vicinity of a private airstrip or an airport land use plan and is not located within 2 miles of a public airport or public-use airport. Therefore, no impacts with respect to airstrip or airport related noise would occur and no further analysis is required.

**Construction Noise Threshold**

The City does not have specific limitations on construction noise levels. Instead, construction noise is regulated by limiting construction activity to the less noise sensitive daytime hours. Specifically, as stated previously, Section 11.44.080 of the SCMC states no person shall engage in any construction work which requires a building permit from the City on sites within three hundred (300) feet of a residentially zoned property except between the hours of seven a.m. to seven p.m., Monday through Friday, and eight a.m. to six p.m. on Saturday. As the Project would comply with the daytime construction hours established in the SCMC, this analysis uses the FTA's general construction noise criteria of 90 dBA Leq (1-hour).[11] In addition to the FTA guidance, this approach is also consistent with many jurisdictions within the State including Beverly Hills, Fresno, Pasadena, and Caltrans which use absolute (fixed) construction noise thresholds.[12]

11 *FTA, Transit Noise and Vibration Impact Assessment Manual, Table 7-2 (General Assessment Construction Noise Criteria), September 2018.*

12 City of Beverly Hills Municipal Code Section 5-1-205; City of Fresno Municipal Code Section 10-109; City of Pasadena Municipal Code Chapter 9.36.07; Caltrans Traffic Noise Analysis Protocol Chapter 3.2.

**Construction Vibration Thresholds**

The *State CEQA Guidelines* do not define the levels at which groundborne vibration or groundborne noises are considered "excessive." Thus, in terms of construction-related vibration impacts on buildings, the adopted guidelines and recommendations by the FTA to limit groundborne vibration based on the age and/or condition of the structures that are located in close proximity to construction activity are used in this analysis to evaluate potential groundborne vibration impacts. Based on the FTA criteria, construction impacts relative to groundborne vibration would be considered significant if the following were to occur:

- Project construction activities would cause a PPV groundborne vibration level to exceed 0.5 inches per second at any building that is constructed with reinforced-concrete, steel, or timber;
- Project construction activities would cause a PPV groundborne vibration level to exceed 0.3 inches per second at any engineered concrete and masonry buildings;
- Project construction activities would cause a PPV groundborne vibration level to exceed 0.2 inches per second at any non-engineered timber and masonry buildings; or
- Project construction activities would cause a PPV ground-borne vibration level to exceed 0.12 inches per second at any historical building or building that is extremely susceptible to vibration damage.

In terms of groundborne vibration impacts associated with human annoyance, this analysis uses the FTA's vibration impact criteria for sensitive buildings, residences, and institutional land uses under conditions where there are a frequent number of events per day, which would provide for the most conservative vibration analysis. These criteria are 65 VdB at buildings where vibration would interfere with interior operations, 72 VdB at residences and buildings where people normally sleep, and 75 VdB at other institutional buildings.[13] The 65 VdB criterion applies to typical land uses where vibration would interfere with interior operations, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, and normal optical microscopes. The 72 VdB criterion applies to all residential land uses and any buildings where people sleep, such as hotels and hospitals. The 75 VdB criterion applies to institutional land uses such as schools, churches, and doctors' offices. Commercial or industrial locations including office buildings are not included in this category unless there is vibration-sensitive activity or equipment within the building.

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13 *FTA, Transit Noise and Vibration Impact Assessment Manual, September 2018.*

**Operational Noise Threshold**

The *State CEQA Guidelines* do not define the levels at which noise would be considered substantial increases. Thus, for purposes of this analysis, the Project would normally have a significant impact on noise levels from project operations if the project causes the ambient noise level measured at the property line of affected uses to increase by 3 dBA if the total ambient noise levels without the Project exceed the City's General Plan exterior noise standards, or any 5 dBA or greater noise increase when total ambient noise levels without the Project are within the City's General Plan exterior noise standards (see "conditionally acceptable" column in **Table 6** earlier in this report).

## 4.2 METHODOLOGY

Noise levels associated with project-related construction activities were calculated using the FHWA Roadway Construction Noise Model (RCNM). Noise levels were compared to the FTA's criteria in consideration with the City's noise ordinance which includes provisions regarding allowable construction hours.

An analysis of traffic noise was conducted to determine if the project would have a perceptible increase in traffic related noise. Studies have shown that a 3 dB(A) increase in sound level pressure is barely detectable by the human ear. A 3 dB(A) increase in roadway noise levels requires an approximate doubling of roadway traffic volume, assuming that travel speeds and fleet mix remain constant.[14]

The project's potential to result in significant noise impacts from on-site operational noise sources was assessed by identifying sources of on-site noise sources and considering the impact that they could produce given the nature of the source (i.e., loudness and whether noise would be produced during daytime or more-sensitive nighttime hours), distances to nearby sensitive receptors, surrounding ambient noise levels, the presence of similar noise sources in the vicinity, and maximum allowable noise levels permitted by the SCMC.

14 California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Protocol.* September 2013.

## 4.3 IMPACT ANALYSIS

**Impact NOI-1** **Would the proposed Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project Site in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? *(Less than Significant).***

### Construction Impacts

Construction of the Project would require the use of heavy equipment for demolition, grading/site preparation, installation of utilities, building fabrication, and finishing. Construction activities would also involve the use of smaller power tools, generators, and other sources of noise. During each stage of construction, several types of equipment potentially could be operating concurrently and noise levels would vary based on the amount of equipment in operation and the location of the activity. The Federal Highway Administration's (FHWA) Roadway Construction Noise Model (RCNM) has compiled data regarding the noise-generating characteristics of specific types of construction equipment and typical construction activities.

With the use of the RCNM, as detailed in Appendix A to this report,[15] the construction noise levels forecasted for the sensitive receptors are presented in **Table 7, Estimated Exterior Construction Noise at Sensitive Receptors.** Noise levels would diminish notably with distance from the construction site at a rate of 6 dBA per doubling of distance (noise from stationary or point sources is reduced by about 6 dBA for every doubling of distance at acoustically hard locations). For example, a noise level of 86 dBA $L_{eq}$ measured at 50 feet from the noise source to the receptor would decline to 80 dBA $L_{eq}$ at 100 feet from the source to the receptor and fall by another 6 dBA $L_{eq}$ to 74 dBA $L_{eq}$ at 200 feet from the source to the receptor. These noise attenuation rates assume a flat and unobstructed distance between the noise generator and the receptor. Intervening structures and vegetation would further attenuate (reduce) the noise. Furthermore, it should be noted that increases in noise levels at sensitive receptors during construction would be intermittent and temporary and would not generate continuously high noise levels. In addition, the construction noise experienced at sensitive receptors during the initial periods of construction (i.e., demolition and grading) typically would be reduced in the later construction periods (i.e., interior building construction). As the structures are built, the noise from interior construction work would be reduced at off-site locations because the proposed structures would break the line-of-sight noise transmission from the interior construction areas to the exterior areas of sensitive receptors.

15 Project construction noise levels were calculated based on the Project's anticipated mix of construction equipment with the FHWA RCNM Version 1.1.

**Table 7**
**Estimated Exterior Construction Noise at Sensitive Receptors**

| Sensitive Land Uses[a] | Distance to Project Site (feet) | Estimated Peak Construction Noise Levels (dBA 1-Hour Leq) | Exceed FTA 90 dBA 1-Hour Leq Criteria? |
|---|---|---|---|
| 1. Residential uses to north | Adjacent[b] | 89.1 | No |
| 2. Residential uses to east | Adjacent[b] | 89.1 | No |
| 3. Residential uses to southeast | 395 | 65.9 | No |
| 3. Residential uses & Golden Valley High School to west | 700 | 60.9 | No |

[a] *See Figure 3 (Noise Monitoring and Sensitive Receptor Location Map).*
[b] *See Appendix A to this report for details associated with equipment and distance assumptions for each phase of construction. This table summarizes the highest noise level at each receptor during any of the construction phases.*
*Source: Impact Sciences, Inc., December 2022. See Appendix A to this report.*

The City does not have specific limitation on construction noise levels. Instead, construction noise is regulated by limiting construction activity to the less noise sensitive daytime hours. Specifically, as stated previously, Section 11.44.080 of the SCMC states no person shall engage in any construction work which requires a building permit from the City on sites within three hundred (300) feet of a residentially zoned property except between the hours of seven a.m. to seven p.m., Monday through Friday, and eight a.m. to six p.m. on Saturday. Further, no work shall be performed on the following public holidays: New Year's Day, Independence Day, Thanksgiving, Christmas, Memorial Day and Labor Day. While construction activity would increase noise levels in the vicinity of the Project Site, the Project's construction activities would not exceed the FTA's general construction noise criteria of 90 dBA Leq (1-hour) at any of the sensitive receptors. Furthermore, Project construction would not occur during restricted periods, and thus, the Project would be consistent with the criteria set forth in the City's Noise Ordinance. As such, construction noise impacts would be less than significant and no mitigation is required. Although not required by CEQA, the Project would also include best management practices to reduce construction noise levels to the maximum extent feasible (see below).

## *Construction Best Management Practices*

1. Noise and groundborne vibration construction activities whose specific location on the Project Site may be flexible (e.g., operation of compressors and generators, cement mixing, general truck idling) shall be conducted as far as possible from the nearest off-site land uses.

2. When possible, construction activities shall be scheduled so as to avoid operating several pieces of equipment simultaneously, which causes high noise levels.

3. Flexible sound control curtains shall be placed around all drilling apparatuses, drill rigs, and jackhammers when in use.

4. The Project contractor shall use power construction equipment with state-of-the-art noise shielding and muffling devices.

5. Barriers such as flexible sound control curtains shall be erected around heavy equipment to minimize the amount of noise on the surrounding land uses to the maximum extent feasible during construction.

6. All construction truck traffic shall be restricted to truck routes approved by the City, which shall avoid residential areas and other sensitive receptors to the extent feasible.

7. A construction notice shall be prepared and shall include the following information: job site address, permit number, name and phone number of the contractor and owner or owner's agent, hours of construction allowed by code or any discretionary approval for the site, and City telephone numbers where violations can be reported. The notice shall be posted and maintained at the construction site prior to the start of construction and displayed in a location that is readily visible to the public and approved by the City.

## Operational Impacts

### *Permanent Operational Traffic Noise*

The increase in traffic resulting from implementation of the Project would increase ambient noise levels at off-site locations in the Project vicinity. These concerns were addressed using the FHWA TNM model, which calculates the CNEL noise level for a particular reference set of input conditions, based on site-specific traffic volumes, distances, speeds and/or noise barriers. Based on the traffic analysis prepared for the Project in combination with an analysis of the surrounding land uses, roadway noise levels were forecasted to determine if the Project's vehicular traffic would result in a significant impact at off-site locations.

Off-site locations in the Project vicinity would experience an increase in noise resulting from the additional traffic generated by the Project. The Project-related increases in noise levels at the primary roadway segments located in proximity to the Project Site are identified in **Table 8, Project Roadway Noise Levels**. As shown in **Table 8**, the Project would increase local noise levels by a maximum of 0.2 dBA CNEL during project-level buildout scenarios and 0.4 dBA CNEL during cumulative buildout scenarios, which would be less than the 3 dBA and 5 dBA CNEL thresholds identified previously. As such, the Project's traffic-related

noise level increases would not exceed thresholds of significance, and off-site traffic noise levels associated with the Project would be less than significant.

**Table 8**
**Project Roadway Noise Levels**

| | | dBA CNEL | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Roadway** | **Roadway Segment** | **Existing [1]** | **Existing Plus Project [2]** | **Project Net Increase [2] – [1]** | **Future Without Project [3]** | **Future With Project [4]** | **Project Net Increase [4] – [3]** | **Cumulative Net Increase [4] –[1]** |
| Golden Valley Road | West of Sierra Highway | 73.6 | 73.7 | ***0.1*** | 73.8 | 73.9 | ***0.1*** | ***0.3*** |
| | East of Sierra Highway | 71.0 | 71.1 | ***0.1*** | 71.2 | 71.4 | ***0.2*** | ***0.4*** |
| Sierra Highway | South of Golden Valley Road | 73.0 | 73.1 | ***0.1*** | 73.2 | 73.2 | ***0.0*** | ***0.2*** |
| | North of Golden Valley Road | 71.6 | 71.6 | ***0.0*** | 71.8 | 71.9 | ***0.1*** | ***0.3*** |

*Note:*
*Traffic data: Traffic Impact Analysis, Santa Clarita Mixed-Use, City of Santa Clarita, TJW Engineering, Inc., December 2, 2021. Noise levels calculated from the nearest receptor location to the roadway centerline.*
*Calculations provided in Appendix A to this report.*

### *Parking Noise*

Various noise events would occur periodically from the Project's parking uses. Such periodic events would include activation of car alarms, sounding of car horns, slamming of car doors, engine revs, and tire squeals. Automobile movements would comprise the most continuous noise source and would generate a noise level of approximately 65 dBA at a distance of 25 feet. Car alarm and horn noise events generate sound levels as high as 75 dBA at a reference distance of 25 feet, however these noise sources would be sporadic. It should also be noted that the existing urban environment of the Project Site currently generates noise levels associated with parking and vehicular noise sources identified above. Although the Project would increase the number of vehicles parking in the area, the types of noise would be similar to those currently occurring in the vicinity of the Project Site. While periodic noise levels from car alarms, horns, slamming of doors, etc., would increase as a result of the Project, these events would not occur consistently over a 24-hour period and thus would not have the potential to increase ambient noise levels at off-site locations by 5 dBA CNEL or more, nor exceed the City's exterior noise standards at off-site locations. As such, noise impacts from the parking areas would be considered less than significant.

### *Stationary Noise Sources*

As part of the Project, new mechanical equipment, HVAC units, and exhaust fans could be installed on the roof or near the proposed new structures. Although the operation of this equipment would generate noise,

the design of these on-site HVAC units and exhaust fans would be required to comply with the regulations of the SCMC. Specifically, Section 11.44.070 of the SCMC states any noise level from the use or operation of any machinery, equipment, pump, fan, air conditioning apparatus, refrigerating equipment, motor vehicle, or other mechanical or electrical device, or in repairing or rebuilding any motor vehicle, which exceeds the noise limits as set forth in Section 11.44.040 at any property line, or, if a condominium or rental units, within any condominium unit or rental unit within the complex, shall be a violation of this chapter. Similarly, Section 11.44.060 of the SCMC states any noise level from the use or operation any radio receiving set, musical instrument, phonograph, television set, or other machine or device for the producing or reproducing of sound at any time in such a manner as to produce noise levels on residential land which would disturb the peace, quiet and comfort of neighboring residents or any reasonable person of normal sensitivity residing in the area shall be unlawful. In addition to these requirements, the Project will screen mechanical equipment as feasible and necessary to meet City noise standards. As such, compliance with Section 11.44.070 of the SCMC would ensure noise from stationary sources would be less than significant.

## Land Use Compatibility

### *Exposure to Noise Levels*

While agencies subject to CEQA are not required to analyze or mitigate the impact of existing environmental conditions on a project's future users or residents, the following discussion is included for informational purposes. With respect to the Project's placement of residential uses on the Project Site and exposure to noise levels, ambient measured noise levels on the Project Site are approximately 45.7 dBA CNEL.[16] As such, it is anticipated on-site residences would experience exterior noise levels that are consistent the City's exterior noise standard of 65 dBA CNEL. With respect to interior noise levels, consistent with State and City standards, all habitable spaces associated with the Project would be required to provide indoor noise levels of 45 dBA CNEL or less. As discussed previously, the exterior-to-interior noise reduction of newer residential buildings can reach more than 30 dBA depending on the type of building materials and methods used. This is based in part on mandatory compliance with CCR Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, which requires substantial building insulation, improving exterior-to-interior noise reductions. As exterior noise levels on the Project Site are approximately 45.7 dBA CNEL, exterior-to-interior noise reductions from current construction standards would ensure the Project is consistent with State and City interior noise level standards.

16 See **Appendix A** to this report for calculated CNEL at Noise Monitoring Location 1, which is representative of the location of the proposed placement of residential uses for the Project.

### *Mixed-Use Projects*

As stated in the City's Noise Element, mixed-use developments may generate noise in excess of levels typically found in residential areas, that the commercial uses may change over time, and the associated noise levels and frequency of noise events may change along with the use. As such, and consistent with Policy N 3.1.9 of the City's Noise Element, the Project would implement a buyer and renter notification program for residences where appropriate, to educate and inform potential buyers and renters of the sources of noise in the area and/or new sources of noise that may occur in the future.

**Impact NOI-2** **Would the proposed Project result in the generation of excessive groundborne vibration or groundborne noise levels? *(Less than Significant).***

The FTA provides ground-born vibration impact criteria with respect to building damage during construction activities. PPV, expressed in inches per second, is used to measure building vibration damage. Construction vibration damage criteria are assessed based on structural category (e.g., reinforced-concrete, steel, or timber). FTA guidelines consider 0.2 inch/sec PPV to be the significant impact level for non-engineered timber and masonry buildings. Structures or buildings constructed of reinforced concrete, steel, or timber have a vibration damage criterion of 0.5 inch/sec PPV pursuant to FTA guidelines.[17]

The City has not adopted any thresholds associated with human annoyance for groundborne vibration impacts. Therefore, this analysis uses the FTA's vibration impact criteria as thresholds for human annoyance. These criteria utilized the root mean square (RMS) velocity to describe human response is measured using vibration decibels (VdB). The FTA criteria include 72 VdB at residences and buildings where people normally sleep and 75 VdB at institutional buildings such as schools or churches. No criteria for human annoyance have been adopted or recommended for commercial and office uses.

The vibration levels at nearby sensitive receptors are shown below in **Table 9, Vibration Levels at Off-Site Sensitive Uses from Project Construction.**

17 Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*. September 2018.

**Table 9**
**Vibration Levels at Off-Site Sensitive Uses from Project Construction**

| Sensitive Uses Off-Site[a] | Distance to Project Site (ft.) | Receptor Significance Threshold PPV (in./sec)/RMS (VdB) | Estimated PPV (in/sec)/RMS (VdB) |
|---|---|---|---|
| 1. Adjacent Residences to the north | Adjacent[b] | 0.5/72 | 0.191/94 |
| 2. Adjacent Residences to the east | Adjacent[b] | 0.5/72 | 0.191/94 |
| 3. Residences to the southeast | 395 | 0.5/72 | 0.001/51 |
| 4. Residences & Golden Valley High School to the west | 700 | 0.5/72 | 0.001/44 |

[a] *See **Figure 3** (Noise Monitoring and Sensitive Receptor Location Map).*
[b] *While the Project includes construction activity up to the property lines of adjacent receptors, this analysis assumes that not all equipment would operate closer than 15 feet from the residential uses during peak activities.*
*Source: Impact Sciences, Inc., March 2022. See Appendix A to this report.*

The vibration velocities predicted to occur at the nearest sensitive receptors adjacent to the Project Site would be 0.191 in/sec PPV. These nearby structures are considered to be a constructed of reinforced concrete, steel, or timber which have a vibration damage criterion of 0.5 inch/sec PPV pursuant to FTA guidelines. As shown in **Table 9**, Project construction vibration levels would not have the potential exceed this standard and this impact would be less than significant.

With regard to human annoyance, vibration levels at the adjacent residences could reach 94 VdB under a worst-case scenario. As such, the 72 VdB residential annoyance standard could be exceeded during a worst-case construction activity. However, it should be noted that vibration levels experienced in the Project vicinity would be temporary and intermittent and would be reduced when construction activities are located toward the center portion of the Project Site. The construction best management practices listed previously would also serve to reduce construction vibration levels to the maximum extent feasible. Furthermore, the Project would be consistent with Section 11.44.080 of the SCMC (Special Noise Sources—Construction and Building), which regulates construction activity in the City. While this section of the SCMC is applicable to construction noise, it would also ensure any annoyance impacts related to construction vibration would not occur during sensitive hours. Therefore, the Project would be constructed in accordance with all applicable provisions of the SCMC and vibration impacts with respect to human annoyance would be less than significant.

# 5.0 REFERENCES


California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, 2013.

California Office of Planning and Research. General Plan Guidelines and Technical Advisories. Appendix D: Noise Element Guidelines. Available at: https://opr.ca.gov/docs/OPR_Appendix_D_final.pdf

City of Santa Clarita. 2011. General Plan Noise Element. Available at: https://www.codepublishing.com/CA/SantaClarita/html/SantaClaritaGP/5%20-%20Noise%20Element.pdf

Federal Highway Administration, *Highway Noise Fundamentals*, (1980).

Federal Highway Administration, *Highway Noise Mitigation*, (1980).

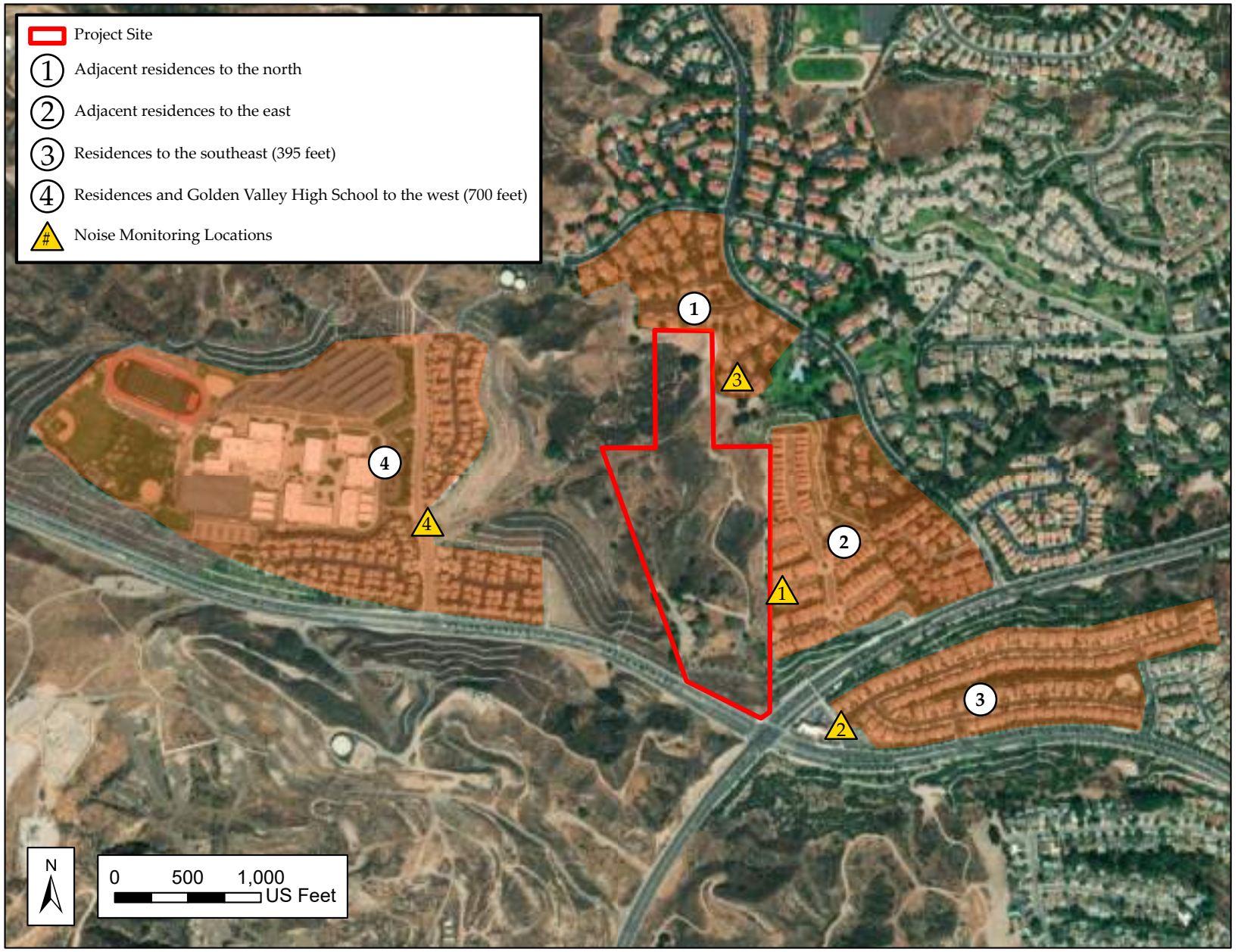
Federal Highway Administration, *Highway Traffic Noise: Analysis and Abatement Guidance*. December 2011.

Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual. September* 2018

Wayne County Airport Authority. *Background information on noise & its measurement, 2009*

# APPENDIX A

## Noise and Vibration Technical Appendix




**SOURCE:** Esri, 2022

IMPACT SCIENCES

Noise Monitoring and Sensitive Receptor Location Map

1415.001•02/22

# NOISE MONITORING FIELD REPORT

**Site Map**

**Project Name**: Golden Valley

Monitoring Location: 19877 Via Kalban

Date: 01/27/2022 Site Number: 1 (Daytime)

Measured By: Raul Castillo

Measurement Start Time: 6:36 p.m.

Measurement End Time: 6:51 p.m.

Total Measurement Time: 15 min.

Noise Meter Model: Larson Davis Soundtrack LxT Calibration: 94.0 (dBA)

Meter Setting: A-Weighted Sound Level (SLOW)

Session File Name: LxT_Data.138

Primary Noise Sources: Traffic, parking

**Data Summary**

| Noise Scale | Noise Level (dBA) |
|---|---|
| $L_{eq}$ | 42.5 |
| $L_{max}$ | 59.3 |
| $L_{min}$ | 34.5 |

**Other Noise Sources During Monitoring**

1. _____ Time: _____
2. _____ Time: _____
3. _____ Time: _____
4. _____ Time: _____
5. _____ Time: _____

Additional Notes:

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IMPACT SCIENCES

# Measurement Report

## Report Summary

| | | | |
|---|---|---|---|
| Meter's File Name | LxT_Data.138.s | Computer's File Name | LxT_0005667-20220127 183645-LxT_Data.138.ldbin |
| Meter | LxT1 0005667 | | |
| Firmware | 2.302 | | |
| User | | Location | |
| Job Description | | | |
| Note | | | |
| Start Time | 2022-01-27 18:36:45 | Duration | 0:15:00.0 |
| End Time | 2022-01-27 18:51:45 | Run Time | 0:15:00.0 |
| Pause Time | 0:00:00.0 | | |

## Results

### Overall Metrics

| | | | |
|---|---|---|---|
| $LA_{eq}$ | 42.5 dB | | |
| LAE | 72.1 dB | SEA | --- dB |
| EA | 1.8 µPa²h | | |
| EA8 | 57.0 µPa²h | | |
| EA40 | 285.2 µPa²h | | |
| $LA_{peak}$ | 89.1 dB | 2022-01-27 18:48:54 | |
| $LAS_{max}$ | 59.3 dB | 2022-01-27 18:40:16 | |
| $LAS_{min}$ | 34.5 dB | 2022-01-27 18:41:38 | |
| $LA_{eq}$ | 42.5 dB | | |
| $LC_{eq}$ | 57.7 dB | $LC_{eq}$ - $LA_{eq}$ | 15.2 dB |
| $LAI_{eq}$ | 50.1 dB | $LAI_{eq}$ - $LA_{eq}$ | 7.5 dB |

### Exceedances

| | Count | Duration |
|---|---|---|
| LAS > 85.0 dB | 0 | 0:00:00.0 |
| LAS > 115.0 dB | 0 | 0:00:00.0 |
| LApeak > 135.0 dB | 0 | 0:00:00.0 |
| LApeak > 137.0 dB | 0 | 0:00:00.0 |
| LApeak > 140.0 dB | 0 | 0:00:00.0 |

### Community Noise

| LDN | LDay | LNight |
|---|---|---|
| --- dB | --- dB | 0.0 dB |

| LDEN | LDay | LEve | LNight |
|---|---|---|---|
| --- dB | --- dB | --- dB | --- dB |

### Any Data

| | A | | C | | Z | |
|---|---|---|---|---|---|---|
| | Level | Time Stamp | Level | Time Stamp | Level | Time Stamp |
| $L_{eq}$ | 42.5 dB | | 57.7 dB | | --- dB | |
| $L_{S(max)}$ | 59.3 dB | 2022-01-27 18:40:16 | --- dB | | --- dB | |
| $L_{S(min)}$ | 34.5 dB | 2022-01-27 18:41:38 | --- dB | | --- dB | |
| $L_{Peak(max)}$ | 89.1 dB | 2022-01-27 18:48:54 | --- dB | | --- dB | |

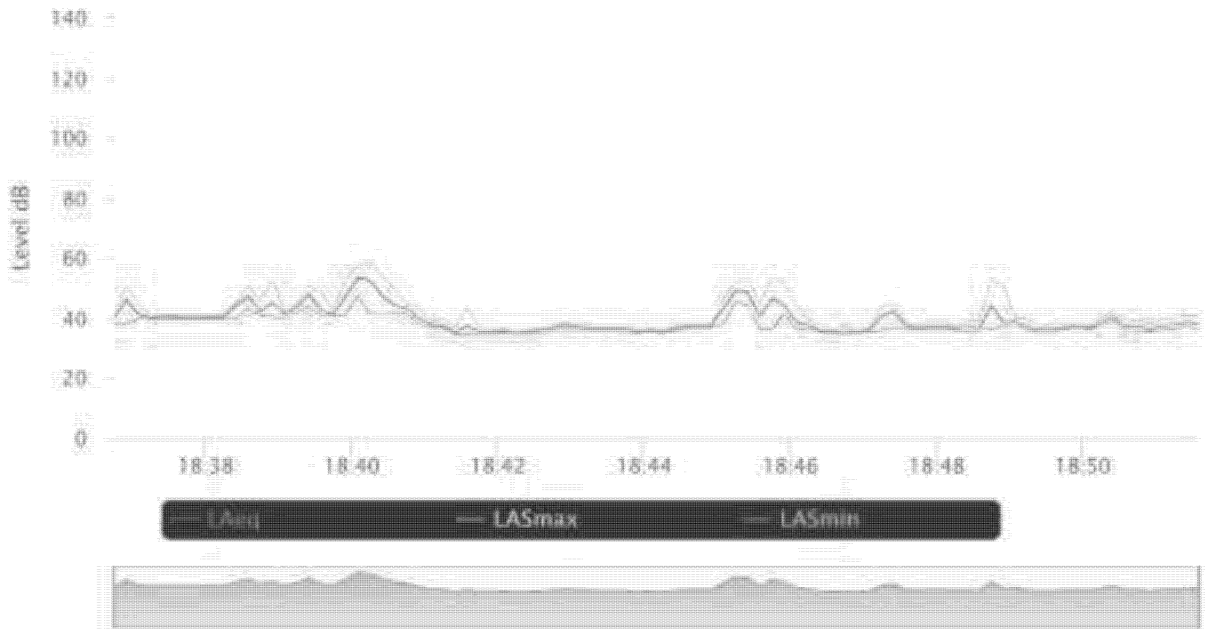
### Overloads

| Count | Duration | OBA Count | OBA Duration |
|---|---|---|---|
| 0 | 0:00:00.0 | 0 | 0:00:00.0 |

### Statistics

| | |
|---|---|
| LAS 0.0 | --- dB |
| LAS 0.0 | --- dB |
| LAS 10.0 | 45.0 dB |
| LAS 33.3 | 40.3 dB |
| LAS 66.7 | 36.9 dB |
| LAS 90.0 | 35.7 dB |

## Time History



# NOISE MONITORING FIELD REPORT

**Site Map**

**Project Name**: Golden Valley

Monitoring Location: 19877 Via Kalban

Date: 01/27/2022 Site Number: 1 (Evening)

Measured By: Raul Castillo

Measurement Start Time: 7:00 p.m.

Measurement End Time: 7:15 p.m.

Total Measurement Time: 15 min.

Noise Meter Model: Larson Davis Soundtrack LxT Calibration: 94.0 (dBA)

Meter Setting: A-Weighted Sound Level (SLOW)

Session File Name: LxT_Data.139

Primary Noise Sources: Traffic, parking

**Data Summary**

| Noise Scale | Noise Level (dBA) |
|---|---|
| $L_{eq}$ | 45.1 |
| $L_{max}$ | 66.7 |
| $L_{min}$ | 36.1 |

**Other Noise Sources During Monitoring**

1. _____ Time: _____
2. _____ Time: _____
3. _____ Time: _____
4. _____ Time: _____
5. _____ Time: _____

Additional Notes:

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IMPACT SCIENCES

# Measurement Report

## Report Summary

| | | | |
|---|---|---|---|
| Meter's File Name | LxT_Data.139.s | Computer's File Name | LxT_0005667-20220127 190038-LxT_Data.139.ldbin |
| Meter | LxT1 0005667 | | |
| Firmware | 2.302 | | |
| User | | Location | |
| Job Description | | | |
| Note | | | |
| Start Time | 2022-01-27 19:00:38 | Duration | 0:15:00.0 |
| End Time | 2022-01-27 19:15:38 | Run Time | 0:15:00.0 |
| Pause Time | 0:00:00.0 | | |

## Results

### Overall Metrics

| | | | |
|---|---|---|---|
| $LA_{eq}$ | 45.1 dB | | |
| LAE | 74.6 dB | SEA | --- dB |
| EA | 3.2 µPa²h | | |
| EA8 | 102.7 µPa²h | | |
| EA40 | 513.5 µPa²h | | |
| $LA_{peak}$ | 86.6 dB | 2022-01-27 19:06:39 | |
| $LAS_{max}$ | 66.7 dB | 2022-01-27 19:06:39 | |
| $LAS_{min}$ | 36.1 dB | 2022-01-27 19:01:18 | |
| $LA_{eq}$ | 45.1 dB | | |
| $LC_{eq}$ | 59.4 dB | $LC_{eq}$ - $LA_{eq}$ | 14.3 dB |
| $LAI_{eq}$ | 51.2 dB | $LAI_{eq}$ - $LA_{eq}$ | 6.1 dB |

### Exceedances

| | Count | Duration |
|---|---|---|
| LAS > 85.0 dB | 0 | 0:00:00.0 |
| LAS > 115.0 dB | 0 | 0:00:00.0 |
| LApeak > 135.0 dB | 0 | 0:00:00.0 |
| LApeak > 137.0 dB | 0 | 0:00:00.0 |
| LApeak > 140.0 dB | 0 | 0:00:00.0 |

### Community Noise

| LDN | LDay | LNight |
|---|---|---|
| --- dB | --- dB | 0.0 dB |

| LDEN | LDay | LEve | LNight |
|---|---|---|---|
| --- dB | --- dB | --- dB | --- dB |

### Any Data

| | A | | C | | Z | |
|---|---|---|---|---|---|---|
| | Level | Time Stamp | Level | Time Stamp | Level | Time Stamp |
| $L_{eq}$ | 45.1 dB | | 59.4 dB | | --- dB | |
| $L_{S(max)}$ | 66.7 dB | 2022-01-27 19:06:39 | --- dB | | --- dB | |
| $L_{S(min)}$ | 36.1 dB | 2022-01-27 19:01:18 | --- dB | | --- dB | |
| $L_{Peak(max)}$ | 86.6 dB | 2022-01-27 19:06:39 | --- dB | | --- dB | |

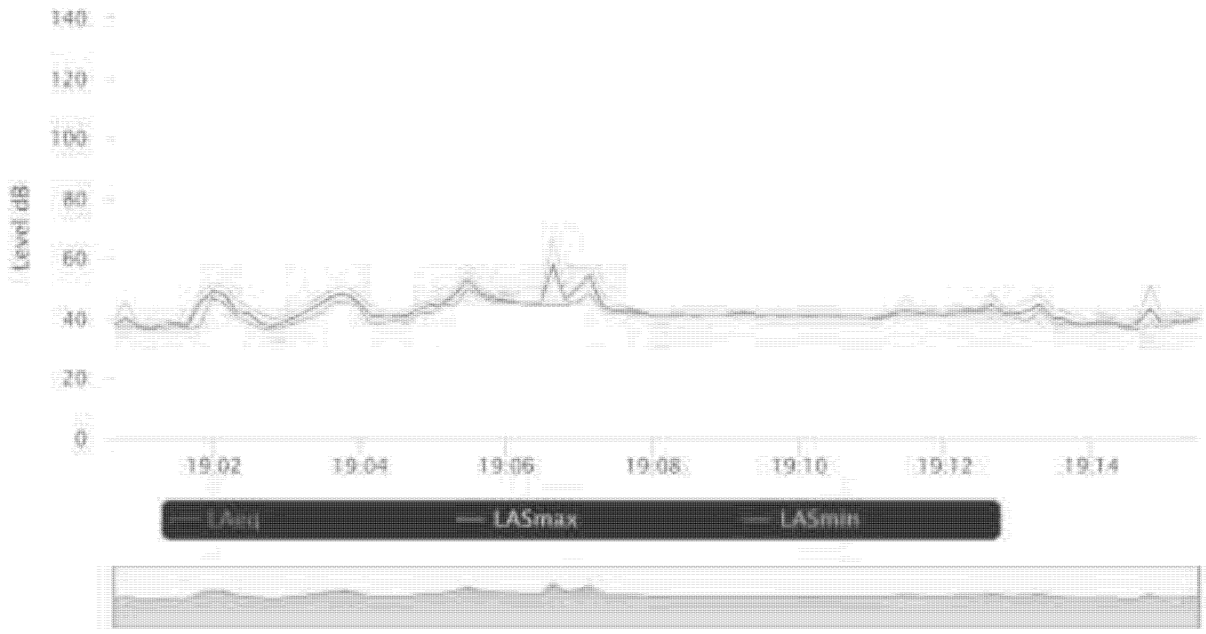
### Overloads

| Count | Duration | OBA Count | OBA Duration |
|---|---|---|---|
| 0 | 0:00:00.0 | 0 | 0:00:00.0 |

### Statistics

| | |
|---|---|
| LAS 0.0 | --- dB |
| LAS 0.0 | --- dB |
| LAS 10.0 | 47.0 dB |
| LAS 33.3 | 42.6 dB |
| LAS 66.7 | 40.8 dB |
| LAS 90.0 | 38.0 dB |

## Time History



# NOISE MONITORING FIELD REPORT

**Site Map**

**Project Name**: Golden Valley

Monitoring Location: 19877 Via Kalban

Date: 01/27/2022 Site Number: 1 (Night)

Measured By: Raul Castillo

Measurement Start Time: 10:00 p.m.

Measurement End Time: 10:15 p.m.

Total Measurement Time: 15 min.

Noise Meter Model: Larson Davis Soundtrack LxT Calibration: 94.0 (dBA)

Meter Setting: A-Weighted Sound Level (SLOW)

Session File Name: LxT_Data.140

Primary Noise Sources: Traffic, parking

**Data Summary**

| Noise Scale | Noise Level (dBA) |
|---|---|
| $L_{eq}$ | 36.1 |
| $L_{max}$ | 47.0 |
| $L_{min}$ | 33.1 |

**Other Noise Sources During Monitoring**

1. _____ Time: _____
2. _____ Time: _____
3. _____ Time: _____
4. _____ Time: _____
5. _____ Time: _____

Additional Notes:

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IMPACT SCIENCES

# Measurement Report

## Report Summary

| | | | |
|---|---|---|---|
| Meter's File Name | LxT_Data.140.s | Computer's File Name | LxT_0005667-20220127 220047-LxT_Data.140.ldbin |
| Meter | LxT1 0005667 | | |
| Firmware | 2.302 | | |
| User | | Location | |
| Job Description | | | |
| Note | | | |
| Start Time | 2022-01-27 22:00:47 | Duration | 0:15:00.0 |
| End Time | 2022-01-27 22:15:47 | Run Time | 0:15:00.0 |
| Pause Time | 0:00:00.0 | | |

## Results

### Overall Metrics

| | | | |
|---|---|---|---|
| $LA_{eq}$ | 36.1 dB | | |
| LAE | 65.7 dB | SEA | --- dB |
| EA | 0.4 µPa²h | | |
| EA8 | 13.2 µPa²h | | |
| EA40 | 65.9 µPa²h | | |
| $LA_{peak}$ | 82.3 dB | 2022-01-27 22:15:40 | |
| $LAS_{max}$ | 47.0 dB | 2022-01-27 22:15:40 | |
| $LAS_{min}$ | 33.1 dB | 2022-01-27 22:07:19 | |
| $LA_{eq}$ | 36.1 dB | | |
| $LC_{eq}$ | 51.8 dB | $LC_{eq}$ - $LA_{eq}$ | 15.6 dB |
| $LAI_{eq}$ | 39.6 dB | $LAI_{eq}$ - $LA_{eq}$ | 3.4 dB |

| Exceedances | Count | Duration |
|---|---|---|
| LAS > 85.0 dB | 0 | 0:00:00.0 |
| LAS > 115.0 dB | 0 | 0:00:00.0 |
| LApeak > 135.0 dB | 0 | 0:00:00.0 |
| LApeak > 137.0 dB | 0 | 0:00:00.0 |
| LApeak > 140.0 dB | 0 | 0:00:00.0 |

| Community Noise | LDN | LDay | LNight |
|---|---|---|---|
| | --- dB | --- dB | 0.0 dB |

| | LDEN | LDay | LEve | LNight |
|---|---|---|---|---|
| | --- dB | --- dB | --- dB | --- dB |

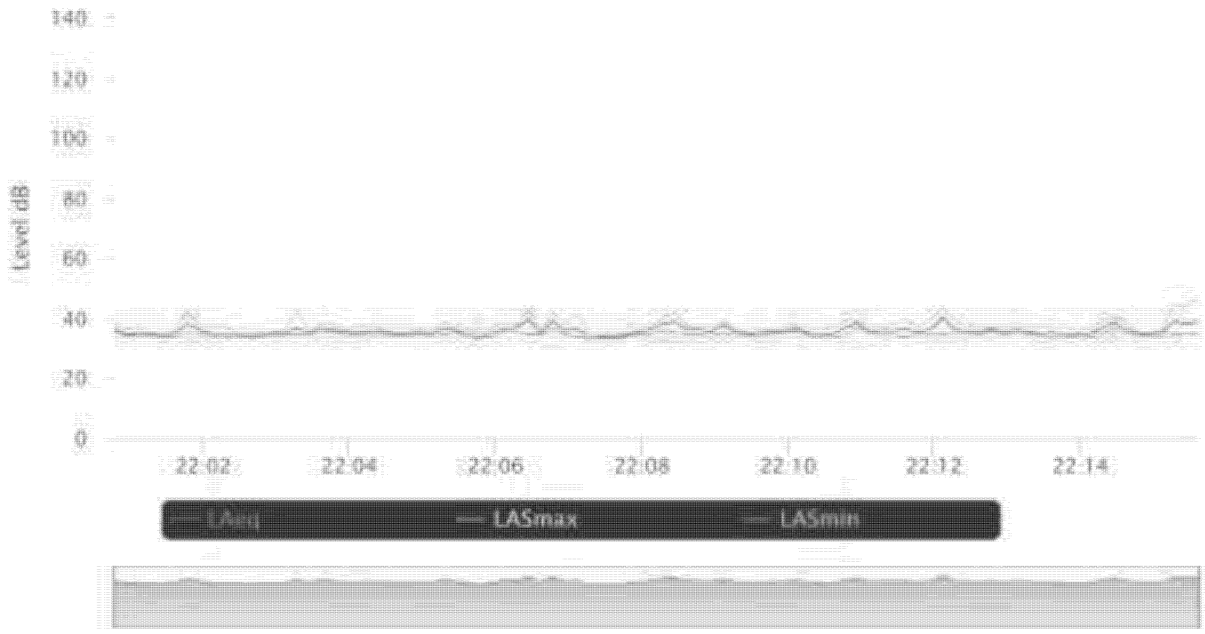
| Any Data | A | | C | | Z | |
|---|---|---|---|---|---|---|
| | Level | Time Stamp | Level | Time Stamp | Level | Time Stamp |
| $L_{eq}$ | 36.1 dB | | 51.8 dB | | --- dB | |
| $L_{S(max)}$ | 47.0 dB | 2022-01-27 22:15:40 | --- dB | | --- dB | |
| $L_{S(min)}$ | 33.1 dB | 2022-01-27 22:07:19 | --- dB | | --- dB | |
| $L_{Peak(max)}$ | 82.3 dB | 2022-01-27 22:15:40 | --- dB | | --- dB | |

| Overloads | Count | Duration | OBA Count | OBA Duration |
|---|---|---|---|---|
| | 0 | 0:00:00.0 | 0 | 0:00:00.0 |

### Statistics

| | |
|---|---|
| LAS 0.0 | --- dB |
| LAS 0.0 | --- dB |
| LAS 10.0 | 37.9 dB |
| LAS 33.3 | 36.0 dB |
| LAS 66.7 | 34.9 dB |
| LAS 90.0 | 34.2 dB |

## Time History



# NOISE MONITORING FIELD REPORT

**Site Map**

**Project Name**: Golden Valley

Monitoring Location: 19845 Ellis Henry Ave.

Date: 01/27/2022 Site Number: 2

Measured By: Raul Castillo

Measurement Start Time: 6:15 p.m.

Measurement End Time: 6:30 p.m.

Total Measurement Time: 15 min.

Noise Meter Model: Larson Davis Soundtrack LxT Calibration: 94.0 (dBA)

Meter Setting: A-Weighted Sound Level (SLOW)

Session File Name: LxT_Data.137

Primary Noise Sources: Traffic, commercial uses

**Data Summary**

| Noise Scale | Noise Level (dBA) |
|---|---|
| $L_{eq}$ | 54.2 |
| $L_{max}$ | 64.0 |
| $L_{min}$ | 41.4 |

**Other Noise Sources During Monitoring**

1. _____ Time: _____
2. _____ Time: _____
3. _____ Time: _____
4. _____ Time: _____
5. _____ Time: _____

Additional Notes:

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IMPACT SCIENCES

# Measurement Report

## Report Summary

| | | | |
|---|---|---|---|
| Meter's File Name | LxT_Data.137.s | Computer's File Name | LxT_0005667-20220127 181545-LxT_Data.137.ldbin |
| Meter | LxT1 0005667 | | |
| Firmware | 2.302 | | |
| User | | Location | |
| Job Description | | | |
| Note | | | |
| Start Time | 2022-01-27 18:15:45 | Duration | 0:15:00.0 |
| End Time | 2022-01-27 18:30:45 | Run Time | 0:15:00.0 |
| Pause Time | 0:00:00.0 | | |

## Results

### Overall Metrics

| | | | |
|---|---|---|---|
| $LA_{eq}$ | 54.2 dB | | |
| LAE | 83.7 dB | SEA | --- dB |
| EA | 26.2 µPa²h | | |
| EA8 | 839.8 µPa²h | | |
| EA40 | 4.2 mPa²h | | |
| $LA_{peak}$ | 80.0 dB | 2022-01-27 18:29:52 | |
| $LAS_{max}$ | 64.0 dB | 2022-01-27 18:17:39 | |
| $LAS_{min}$ | 41.4 dB | 2022-01-27 18:22:30 | |
| $LA_{eq}$ | 54.2 dB | | |
| $LC_{eq}$ | 68.0 dB | $LC_{eq}$ - $LA_{eq}$ | 13.8 dB |
| $LAI_{eq}$ | 55.6 dB | $LAI_{eq}$ - $LA_{eq}$ | 1.4 dB |

### Exceedances

| | Count | Duration |
|---|---|---|
| LAS > 85.0 dB | 0 | 0:00:00.0 |
| LAS > 115.0 dB | 0 | 0:00:00.0 |
| LApeak > 135.0 dB | 0 | 0:00:00.0 |
| LApeak > 137.0 dB | 0 | 0:00:00.0 |
| LApeak > 140.0 dB | 0 | 0:00:00.0 |

### Community Noise

| LDN | LDay | LNight |
|---|---|---|
| --- dB | --- dB | 0.0 dB |

| LDEN | LDay | LEve | LNight |
|---|---|---|---|
| --- dB | --- dB | --- dB | --- dB |

### Any Data

| | A | | C | | Z | |
|---|---|---|---|---|---|---|
| | Level | Time Stamp | Level | Time Stamp | Level | Time Stamp |
| $L_{eq}$ | 54.2 dB | | 68.0 dB | | --- dB | |
| $L_{S(max)}$ | 64.0 dB | 2022-01-27 18:17:39 | --- dB | | --- dB | |
| $L_{S(min)}$ | 41.4 dB | 2022-01-27 18:22:30 | --- dB | | --- dB | |
| $L_{Peak(max)}$ | 80.0 dB | 2022-01-27 18:29:52 | --- dB | | --- dB | |

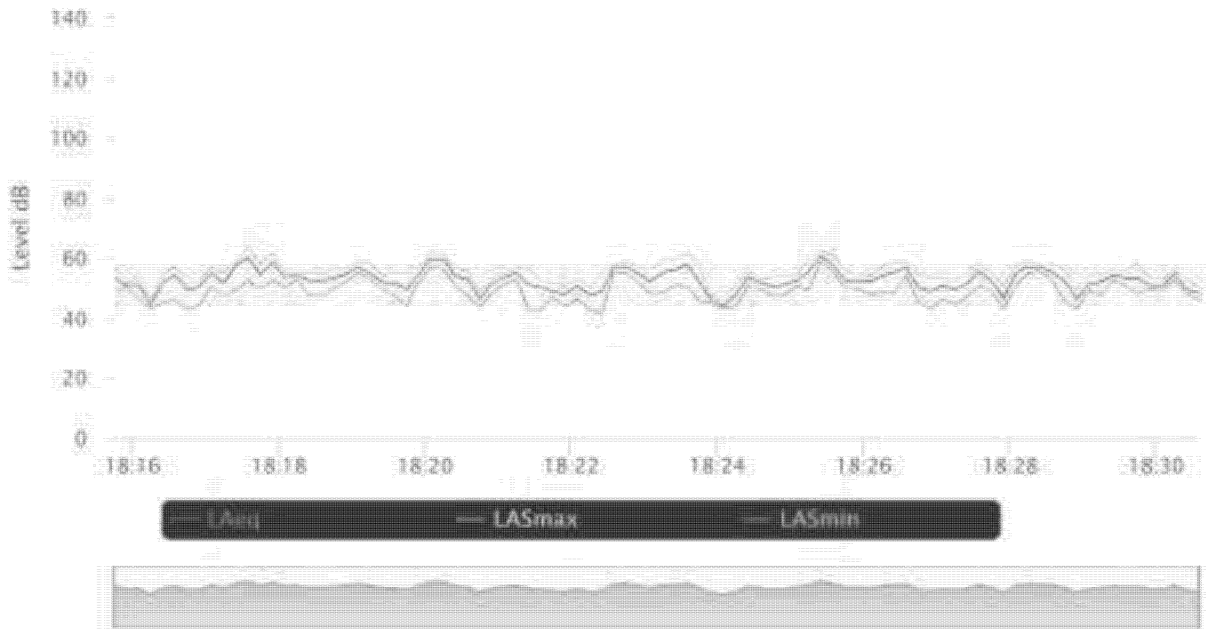
### Overloads

| Count | Duration | OBA Count | OBA Duration |
|---|---|---|---|
| 0 | 0:00:00.0 | 0 | 0:00:00.0 |

### Statistics

| | |
|---|---|
| LAS 0.0 | --- dB |
| LAS 0.0 | --- dB |
| LAS 10.0 | 57.6 dB |
| LAS 33.3 | 54.3 dB |
| LAS 66.7 | 50.6 dB |
| LAS 90.0 | 46.2 dB |

## Time History



# NOISE MONITORING FIELD REPORT

**Site Map**

**Project Name**: Golden Valley

Monitoring Location: 26271 Rainbow Glen Dr.

Date: 01/27/2022 Site Number: 3

Measured By: Raul Castillo

Measurement Start Time: 5:52 p.m.

Measurement End Time: 6:07 p.m.

Total Measurement Time: 15 min.

Noise Meter Model: Larson Davis Soundtrack LxT Calibration: 94.0 (dBA)

Meter Setting: A-Weighted Sound Level (SLOW)

Session File Name: LxT_Data.136

Primary Noise Sources: Traffic, parking noise

**Data Summary**

| Noise Scale | Noise Level (dBA) |
|---|---|
| $L_{eq}$ | 49.4 |
| $L_{max}$ | 58.9 |
| $L_{min}$ | 35.8 |

**Other Noise Sources During Monitoring**

1. _____ Time: _____
2. _____ Time: _____
3. _____ Time: _____
4. _____ Time: _____
5. _____ Time: _____

Additional Notes:

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IMPACT SCIENCES

# Measurement Report

## Report Summary

| | | | |
|---|---|---|---|
| Meter's File Name | LxT_Data.136.s | Computer's File Name | LxT_0005667-20220127 175235-LxT_Data.136.ldbin |
| Meter | LxT1 0005667 | | |
| Firmware | 2.302 | | |
| User | | Location | |
| Job Description | | | |
| Note | | | |
| Start Time | 2022-01-27 17:52:35 | Duration | 0:15:00.0 |
| End Time | 2022-01-27 18:07:35 | Run Time | 0:15:00.0 |
| Pause Time | 0:00:00.0 | | |

## Results

### Overall Metrics

| | | | |
|---|---|---|---|
| $LA_{eq}$ | 49.4 dB | | |
| LAE | 78.9 dB | SEA | --- dB |
| EA | 8.7 µPa²h | | |
| EA8 | 277.7 µPa²h | | |
| EA40 | 1.4 mPa²h | | |
| $LA_{peak}$ | 85.1 dB | 2022-01-27 17:55:26 | |
| $LAS_{max}$ | 58.9 dB | 2022-01-27 17:59:00 | |
| $LAS_{min}$ | 35.8 dB | 2022-01-27 18:05:36 | |
| $LA_{eq}$ | 49.4 dB | | |
| $LC_{eq}$ | 62.0 dB | $LC_{eq}$ - $LA_{eq}$ | 12.6 dB |
| $LAI_{eq}$ | 51.9 dB | $LAI_{eq}$ - $LA_{eq}$ | 2.5 dB |

| Exceedances | Count | Duration |
|---|---|---|
| LAS > 85.0 dB | 0 | 0:00:00.0 |
| LAS > 115.0 dB | 0 | 0:00:00.0 |
| LApeak > 135.0 dB | 0 | 0:00:00.0 |
| LApeak > 137.0 dB | 0 | 0:00:00.0 |
| LApeak > 140.0 dB | 0 | 0:00:00.0 |

| Community Noise | LDN | LDay | LNight |
|---|---|---|---|
| | --- dB | --- dB | 0.0 dB |

| | LDEN | LDay | LEve | LNight |
|---|---|---|---|---|
| | --- dB | --- dB | --- dB | --- dB |

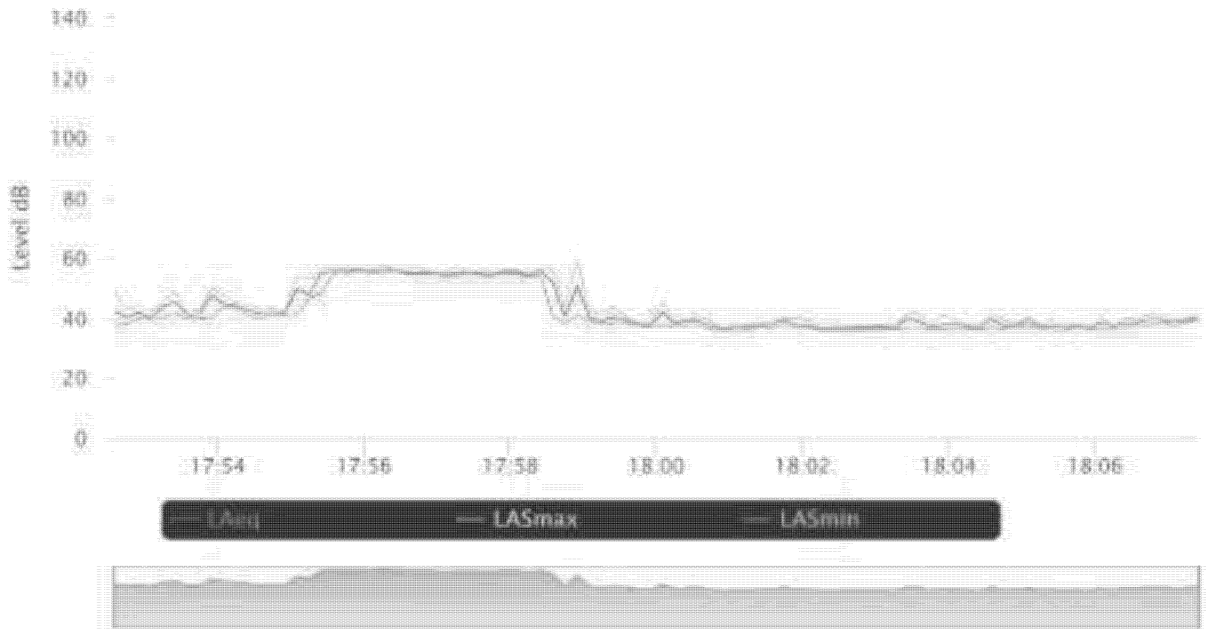
| Any Data | A | | C | | Z | |
|---|---|---|---|---|---|---|
| | Level | Time Stamp | Level | Time Stamp | Level | Time Stamp |
| $L_{eq}$ | 49.4 dB | | 62.0 dB | | --- dB | |
| $L_{S(max)}$ | 58.9 dB | 2022-01-27 17:59:00 | --- dB | | --- dB | |
| $L_{S(min)}$ | 35.8 dB | 2022-01-27 18:05:36 | --- dB | | --- dB | |
| $L_{Peak(max)}$ | 85.1 dB | 2022-01-27 17:55:26 | --- dB | | --- dB | |

| Overloads | Count | Duration | OBA Count | OBA Duration |
|---|---|---|---|---|
| | 0 | 0:00:00.0 | 0 | 0:00:00.0 |

### Statistics

| | |
|---|---|
| LAS 0.0 | --- dB |
| LAS 0.0 | --- dB |
| LAS 10.0 | 55.4 dB |
| LAS 33.3 | 42.3 dB |
| LAS 66.7 | 38.2 dB |
| LAS 90.0 | 36.8 dB |

## Time History



# NOISE MONITORING FIELD REPORT

**Site Map**

**Project Name**: Golden Valley

Monitoring Location: Robert C. Lee Pkwy

Date: 01/27/2022 Site Number: 4

Measured By: Raul Castillo

Measurement Start Time: 5:25 p.m.

Measurement End Time: 5:40 p.m.

Total Measurement Time: 15 min.

Noise Meter Model: Larson Davis Soundtrack LxT Calibration: 94.0 (dBA)

Meter Setting: A-Weighted Sound Level (SLOW)

Session File Name: LxT_Data.135

Primary Noise Sources: Traffic

**Data Summary**

| Noise Scale | Noise Level (dBA) |
|---|---|
| $L_{eq}$ | 56.1 |
| $L_{max}$ | 69.9 |
| $L_{min}$ | 37.8 |

**Other Noise Sources During Monitoring**

1. _____ Time: _____
2. _____ Time: _____
3. _____ Time: _____
4. _____ Time: _____
5. _____ Time: _____

Additional Notes:

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IMPACT SCIENCES

# Measurement Report

## Report Summary

| | | | |
|---|---|---|---|
| Meter's File Name | LxT_Data.135.s | Computer's File Name | LxT_0005667-20220127 172508-LxT_Data.135.ldbin |
| Meter | LxT1 0005667 | | |
| Firmware | 2.302 | | |
| User | | Location | |
| Job Description | | | |
| Note | | | |
| Start Time | 2022-01-27 17:25:08 | Duration | 0:15:00.0 |
| End Time | 2022-01-27 17:40:08 | Run Time | 0:15:00.0 |
| Pause Time | 0:00:00.0 | | |

## Results

### Overall Metrics

| | | | |
|---|---|---|---|
| $LA_{eq}$ | 56.1 dB | | |
| LAE | 85.7 dB | SEA | --- dB |
| EA | 41.1 µPa²h | | |
| EA8 | 1.3 mPa²h | | |
| EA40 | 6.6 mPa²h | | |
| $LA_{peak}$ | 89.4 dB | 2022-01-27 17:33:30 | |
| $LAS_{max}$ | 69.9 dB | 2022-01-27 17:31:53 | |
| $LAS_{min}$ | 37.8 dB | 2022-01-27 17:33:51 | |
| $LA_{eq}$ | 56.1 dB | | |
| $LC_{eq}$ | 67.9 dB | $LC_{eq}$ - $LA_{eq}$ | 11.7 dB |
| $LAI_{eq}$ | 59.0 dB | $LAI_{eq}$ - $LA_{eq}$ | 2.8 dB |

### Exceedances

| | Count | Duration |
|---|---|---|
| LAS > 85.0 dB | 0 | 0:00:00.0 |
| LAS > 115.0 dB | 0 | 0:00:00.0 |
| LApeak > 135.0 dB | 0 | 0:00:00.0 |
| LApeak > 137.0 dB | 0 | 0:00:00.0 |
| LApeak > 140.0 dB | 0 | 0:00:00.0 |

### Community Noise

| LDN | LDay | LNight |
|---|---|---|
| --- dB | --- dB | 0.0 dB |

| LDEN | LDay | LEve | LNight |
|---|---|---|---|
| --- dB | --- dB | --- dB | --- dB |

### Any Data

| | A | | C | | Z | |
|---|---|---|---|---|---|---|
| | Level | Time Stamp | Level | Time Stamp | Level | Time Stamp |
| $L_{eq}$ | 56.1 dB | | 67.9 dB | | --- dB | |
| $L_{S(max)}$ | 69.9 dB | 2022-01-27 17:31:53 | --- dB | | --- dB | |
| $L_{S(min)}$ | 37.8 dB | 2022-01-27 17:33:51 | --- dB | | --- dB | |
| $L_{Peak(max)}$ | 89.4 dB | 2022-01-27 17:33:30 | --- dB | | --- dB | |

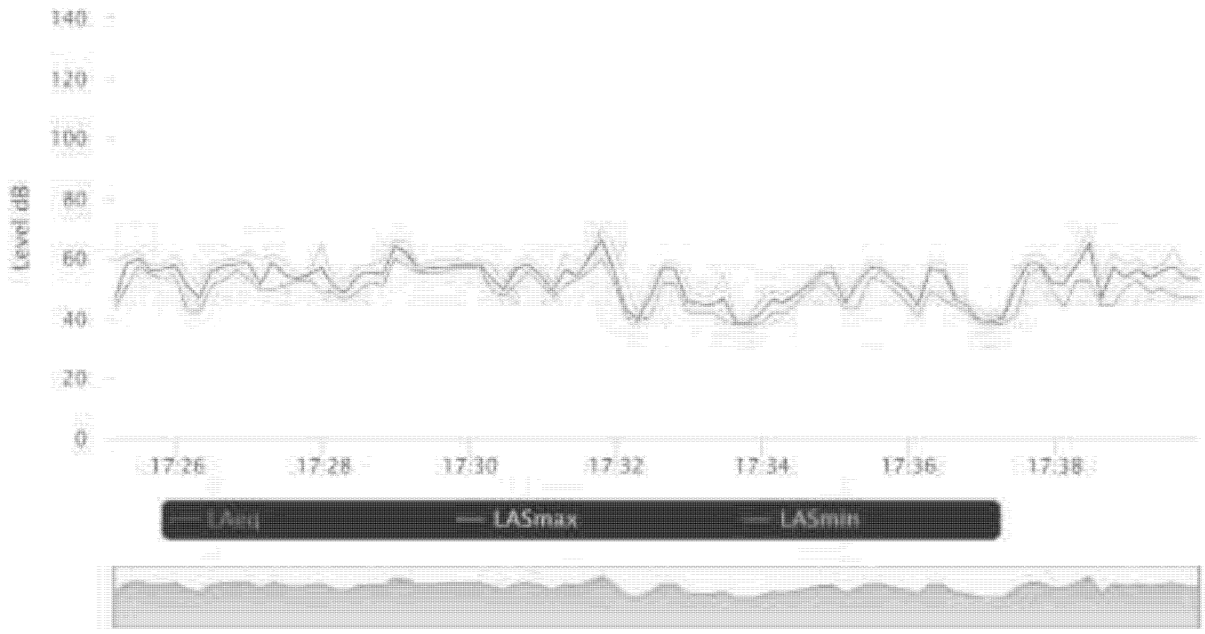
### Overloads

| Count | Duration | OBA Count | OBA Duration |
|---|---|---|---|
| 0 | 0:00:00.0 | 0 | 0:00:00.0 |

### Statistics

| | |
|---|---|
| LAS 0.0 | --- dB |
| LAS 0.0 | --- dB |
| LAS 10.0 | 59.1 dB |
| LAS 33.3 | 55.9 dB |
| LAS 66.7 | 49.9 dB |
| LAS 90.0 | 42.2 dB |

## Time History



| Estimated Project Site Vicinity CNEL (Location 1) | | |
|---|---|---|
| **Hour of Day** | **dBA Leq** | **With CNEL Penalty** |
| 12:00 AM | 36.1 | 46.1 |
| 1:00 AM | 36.1 | 46.1 |
| 2:00 AM | 36.1 | 46.1 |
| 3:00 AM | 36.1 | 46.1 |
| 4:00 AM | 36.1 | 46.1 |
| 5:00 AM | 36.1 | 46.1 |
| 6:00 AM | 36.1 | 46.1 |
| 7:00 AM | 42.5 | 42.5 |
| 8:00 AM | 42.5 | 42.5 |
| 9:00 AM | 42.5 | 42.5 |
| 10:00 AM | 42.5 | 42.5 |
| 11:00 AM | 42.5 | 42.5 |
| 12:00 PM | 42.5 | 42.5 |
| 1:00 PM | 42.5 | 42.5 |
| 2:00 PM | 42.5 | 42.5 |
| 3:00 PM | 42.5 | 42.5 |
| 4:00 PM | 42.5 | 42.5 |
| 5:00 PM | 42.5 | 42.5 |
| 6:00 PM | 42.5 | 42.5 |
| 7:00 PM | 45.1 | 50.1 |
| 8:00 PM | 45.1 | 50.1 |
| 9:00 PM | 45.1 | 50.1 |
| 10:00 PM | 36.1 | 46.1 |
| 11:00 PM | 36.1 | 46.1 |
| | **Calculated CNEL:** | **45.7** |

| | |
|---|---|
| **Daytime Hours:** | 7:00 AM - 7:00 PM |
| **Evening Hours:** | 7:00 PM - 10:00 PM |
| **Nighttime Hours:** | 10:00 PM - 7:00 AM |

*Note: Calculation based on representative Leq measurements collected for daytime, evening and nighttime periods at Location 1. See noise monitoring data.*

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/8/2022
Case Description: Demoltion

---- Receptor #1 ----

| | | Baselines (dBA) | | |
|---|---|---|---|---|
| Description | Land Use | Daytime | Evening | Night |
| Adjacent residences to the north | Residential | 55 | 55 | 55 |

| | | | Equipment | | | |
|---|---|---|---|---|---|---|
| | | | Spec | Actual | Receptor | Estimated |
| | Impact | | Lmax | Lmax | Distance | Shielding |
| Description | Device | Usage(%) | (dBA) | (dBA) | (feet) | (dBA) |
| Concrete Saw | No | 20 | | 89.6 | 1100 | 0 |
| Dozer | No | 40 | | 81.7 | 1100 | 0 |

Note: Distance estimated from receptor to anticipated demolition areas of existing structures.

Results

| | | Calculated (dBA) | | Noise Limits (dBA) | | | | | | Noise Limit Exceedance (dBA) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Day | | Evening | | Night | | Day | | Evening | | Night | |
| Equipment | | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Concrete Saw | | 62.7 | 55.7 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Dozer | | 54.8 | 50.8 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | Total | 62.7 | 57 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

| | | Baselines (dBA) | | |
|---|---|---|---|---|
| Description | Land Use | Daytime | Evening | Night |
| Adjacent residences to the east | Residential | 55 | 55 | 55 |

| | | | Equipment | | | |
|---|---|---|---|---|---|---|
| | | | Spec | Actual | Receptor | Estimated |
| | Impact | | Lmax | Lmax | Distance | Shielding |
| Description | Device | Usage(%) | (dBA) | (dBA) | (feet) | (dBA) |
| Concrete Saw | No | 20 | | 89.6 | 380 | 0 |
| Dozer | No | 40 | | 81.7 | 380 | 0 |

Note: Distance estimated from receptor to anticipated demolition areas of existing structures.

Results

| | | Calculated (dBA) | | Noise Limits (dBA) | | | | | | Noise Limit Exceedance (dBA) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Day | | Evening | | Night | | Day | | Evening | | Night | |
| Equipment | | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Concrete Saw | | 72 | 65 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Dozer | | 64.1 | 60.1 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | Total | 72 | 66.2 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

| | | Baselines (dBA) | | |
|---|---|---|---|---|
| Description | Land Use | Daytime | Evening | Night |
| Residences to the southeast | Residential | 55 | 55 | 55 |

| | | | Equipment | | | |
|---|---|---|---|---|---|---|
| | | | Spec | Actual | Receptor | Estimated |
| | Impact | | Lmax | Lmax | Distance | Shielding |
| Description | Device | Usage(%) | (dBA) | (dBA) | (feet) | (dBA) |
| Concrete Saw | No | 20 | | 89.6 | 395 | 0 |
| Dozer | No | 40 | | 81.7 | 395 | 0 |

Results

| | | Calculated (dBA) | | Noise Limits (dBA) | | | | | | Noise Limit Exceedance (dBA) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Day | | Evening | | Night | | Day | | Evening | | Night | |
| Equipment | | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Concrete Saw | | 71.6 | 64.6 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Dozer | | 63.7 | 59.7 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | Total | 71.6 | 65.9 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

| | | Baselines (dBA) | | |
|---|---|---|---|---|
| Description | Land Use | Daytime | Evening | Night |
| Residences and GVHS to west | Residential | 55 | 55 | 55 |

| | | | Equipment | | | |
|---|---|---|---|---|---|---|
| | | | Spec | Actual | Receptor | Estimated |
| | Impact | | Lmax | Lmax | Distance | Shielding |
| Description | Device | Usage(%) | (dBA) | (dBA) | (feet) | (dBA) |
| Concrete Saw | No | 20 | | 89.6 | 700 | 0 |
| Dozer | No | 40 | | 81.7 | 700 | 0 |

Results

| | | Calculated (dBA) | | Noise Limits (dBA) | | | | | | Noise Limit Exceedance (dBA) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Day | | Evening | | Night | | Day | | Evening | | Night | |
| Equipment | | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Concrete Saw | | 66.7 | 59.7 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Dozer | | 58.7 | 54.8 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | Total | 66.7 | 60.9 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/8/2022
Case Description: Grading

---- Receptor #1 ----

| | | Baselines (dBA) | | |
|---|---|---|---|---|
| Description | Land Use | Daytime | Evening | Night |
| Adjacent residences to the north | Residential | 55 | 55 | 55 |

| | | | Equipment | | | |
|---|---|---|---|---|---|---|
| | | | Spec | Actual | Receptor | Estimated |
| | Impact | | Lmax | Lmax | Distance | Shielding |
| Description | Device | Usage(%) | (dBA) | (dBA) | (feet) | (dBA) |
| Scraper | No | 40 | | 83.6 | 25 | 0 |
| Dozer | No | 40 | | 81.7 | 25 | 0 |

Note: Given the dynamic nature of mobile grading equipment, distance estimate assumes grading equipment would not operate closer than an average of 25 feet during a one-hour period. Said another way, it is assumed equipment could operate within 25 feet for some part of 1 hour, but would also operate farther than 25 feet during a 1-hour period.

Results

| | Calculated (dBA) | | Noise Limits (dBA) | | | | | | Noise Limit Exceedance (dBA) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | | Evening | | Night | | Day | | Evening | | Night | |
| Equipment | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Scraper | 89.6 | 85.6 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Dozer | 87.7 | 83.7 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Total | 89.6 | 87.8 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

| | | Baselines (dBA) | | |
|---|---|---|---|---|
| Description | Land Use | Daytime | Evening | Night |
| Adjacent residences to the east | Residential | 55 | 55 | 55 |

| | | | Equipment | | | |
|---|---|---|---|---|---|---|
| | | | Spec | Actual | Receptor | Estimated |
| | Impact | | Lmax | Lmax | Distance | Shielding |
| Description | Device | Usage(%) | (dBA) | (dBA) | (feet) | (dBA) |
| Scraper | No | 40 | | 83.6 | 25 | 0 |
| Dozer | No | 40 | | 81.7 | 25 | 0 |

Note: Given the dynamic nature of mobile grading equipment, distance estimate assumes grading equipment would not operate closer than an average of 25 feet during a one-hour period. Said another way, it is assumed equipment could operate within 25 feet for some part of 1 hour, but would also operate farther than 25 feet during a 1-hour period.

Results

| | Calculated (dBA) | | Noise Limits (dBA) | | | | | | Noise Limit Exceedance (dBA) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | | Evening | | Night | | Day | | Evening | | Night | |
| Equipment | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Scraper | 89.6 | 85.6 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Dozer | 87.7 | 83.7 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Total | 89.6 | 87.8 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

| | | Baselines (dBA) | | |
|---|---|---|---|---|
| Description | Land Use | Daytime | Evening | Night |
| Residences to the southeast | Residential | 55 | 55 | 55 |

| | | | Equipment | | | |
|---|---|---|---|---|---|---|
| | | | Spec | Actual | Receptor | Estimated |
| | Impact | | Lmax | Lmax | Distance | Shielding |
| Description | Device | Usage(%) | (dBA) | (dBA) | (feet) | (dBA) |
| Scraper | No | 40 | | 83.6 | 395 | 0 |
| Dozer | No | 40 | | 81.7 | 395 | 0 |

Results

| | Calculated (dBA) | | Noise Limits (dBA) | | | | | | Noise Limit Exceedance (dBA) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | | Evening | | Night | | Day | | Evening | | Night | |
| Equipment | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Scraper | 65.6 | 61.6 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Dozer | 63.7 | 59.7 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Total | 65.6 | 63.8 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

| | | Baselines (dBA) | | |
|---|---|---|---|---|
| Description | Land Use | Daytime | Evening | Night |
| Residences and GVHS to west | Residential | 55 | 55 | 55 |

| | | | Equipment | | | |
|---|---|---|---|---|---|---|
| | | | Spec | Actual | Receptor | Estimated |
| | Impact | | Lmax | Lmax | Distance | Shielding |
| Description | Device | Usage(%) | (dBA) | (dBA) | (feet) | (dBA) |
| Scraper | No | 40 | | 83.6 | 700 | 0 |
| Dozer | No | 40 | | 81.7 | 700 | 0 |

Results

| | Calculated (dBA) | | Noise Limits (dBA) | | | | | | Noise Limit Exceedance (dBA) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | | Evening | | Night | | Day | | Evening | | Night | |
| Equipment | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Scraper | 60.7 | 56.7 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Dozer | 58.7 | 54.8 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Total | 60.7 | 58.8 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/8/2022
Case Description: Building Construction

---- Receptor #1 ----

| Description | Land Use | Baselines (dBA) Daytime | Evening | Night |
|---|---|---|---|---|
| Adjacent residences to the north | Residential | 55 | 55 | 55 |

| Description | Impact Device | Usage(%) | Equipment Spec Lmax (dBA) | Actual Lmax (dBA) | Receptor Distance (feet) | Estimated Shielding (dBA) |
|---|---|---|---|---|---|---|
| Crane | No | 16 | | 80.6 | 25 | 0 |
| Generator | No | 50 | | 80.6 | 25 | 0 |

Note: Based on the Project Site Plan, building construction equipment would not be required within 25 feet.

Results

| | | Calculated (dBA) | | Noise Limits (dBA) Day | | Evening | | Night | | Noise Limit Exceedance (dBA) Day | | Evening | | Night | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Crane | | 86.6 | 78.6 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Generator | | 86.7 | 83.6 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | Total | 86.7 | 84.8 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

| Description | Land Use | Baselines (dBA) Daytime | Evening | Night |
|---|---|---|---|---|
| Adjacent residences to the east | Residential | 55 | 55 | 55 |

| Description | Impact Device | Usage(%) | Equipment Spec Lmax (dBA) | Actual Lmax (dBA) | Receptor Distance (feet) | Estimated Shielding (dBA) |
|---|---|---|---|---|---|---|
| Crane | No | 16 | | 80.6 | 25 | 0 |
| Generator | No | 50 | | 80.6 | 25 | 0 |

Note: Based on the Project Site Plan, building construction equipment would not be required within 25 feet.

Results

| | | Calculated (dBA) | | Noise Limits (dBA) Day | | Evening | | Night | | Noise Limit Exceedance (dBA) Day | | Evening | | Night | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Crane | | 86.6 | 78.6 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Generator | | 86.7 | 83.6 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | Total | 86.7 | 84.8 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

| Description | Land Use | Baselines (dBA) Daytime | Evening | Night |
|---|---|---|---|---|
| Residences to the southeast | Residential | 55 | 55 | 55 |

| Description | Impact Device | Usage(%) | Equipment Spec Lmax (dBA) | Actual Lmax (dBA) | Receptor Distance (feet) | Estimated Shielding (dBA) |
|---|---|---|---|---|---|---|
| Crane | No | 16 | | 80.6 | 395 | 0 |
| Generator | No | 50 | | 80.6 | 395 | 0 |

Results

| | | Calculated (dBA) | | Noise Limits (dBA) Day | | Evening | | Night | | Noise Limit Exceedance (dBA) Day | | Evening | | Night | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Crane | | 62.6 | 54.6 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Generator | | 62.7 | 59.7 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | Total | 62.7 | 60.9 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

| Description | Land Use | Baselines (dBA) Daytime | Evening | Night |
|---|---|---|---|---|
| Residences and GVHS to west | Residential | 55 | 55 | 55 |

| Description | Impact Device | Usage(%) | Equipment Spec Lmax (dBA) | Actual Lmax (dBA) | Receptor Distance (feet) | Estimated Shielding (dBA) |
|---|---|---|---|---|---|---|
| Crane | No | 16 | | 80.6 | 700 | 0 |
| Generator | No | 50 | | 80.6 | 700 | 0 |

Results

| | | Calculated (dBA) | | Noise Limits (dBA) Day | | Evening | | Night | | Noise Limit Exceedance (dBA) Day | | Evening | | Night | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Crane | | 57.6 | 49.7 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Generator | | 57.7 | 54.7 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | Total | 57.7 | 55.9 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/8/2022
Case Description: Paving

---- Receptor #1 ----

| Description | Land Use | Baselines (dBA) Daytime | Evening | Night |
|---|---|---|---|---|
| Adjacent residences to the north | Residential | 55 | 55 | 55 |

| Description | Impact Device | Usage(%) | Equipment Spec Lmax (dBA) | Actual Lmax (dBA) | Receptor Distance (feet) | Estimated Shielding (dBA) |
|---|---|---|---|---|---|---|
| Paver | No | 50 | | 77.2 | 25 | 0 |
| Pavement Scarafier | No | 20 | | 89.5 | 25 | 0 |

Note: Given the dynamic nature of mobile paving equipment, distance estimate assumes paving equipment would not operate closer than an average of 25 feet during a one-hour period. Said another way, it is assumed equipment could operate within 25 feet for some part of 1 hour, but would also operate farther than 25 feet during a 1-hour period.

Results

| | Calculated (dBA) | | Noise Limits (dBA) Day | | Evening | | Night | | Noise Limit Exceedance (dBA) Day | | Evening | | Night | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Paver | 83.2 | 80.2 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Pavement Scarafier | 95.5 | 88.5 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Total | 95.5 | 89.1 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

| Description | Land Use | Baselines (dBA) Daytime | Evening | Night |
|---|---|---|---|---|
| Adjacent residences to the east | Residential | 55 | 55 | 55 |

| Description | Impact Device | Usage(%) | Equipment Spec Lmax (dBA) | Actual Lmax (dBA) | Receptor Distance (feet) | Estimated Shielding (dBA) |
|---|---|---|---|---|---|---|
| Paver | No | 50 | | 77.2 | 25 | 0 |
| Pavement Scarafier | No | 20 | | 89.5 | 25 | 0 |

Note: Given the dynamic nature of mobile paving equipment, distance estimate assumes paving equipment would not operate closer than an average of 25 feet during a one-hour period. Said another way, it is assumed equipment could operate within 25 feet for some part of 1 hour, but would also operate farther than 25 feet during a 1-hour period.

Results

| | Calculated (dBA) | | Noise Limits (dBA) Day | | Evening | | Night | | Noise Limit Exceedance (dBA) Day | | Evening | | Night | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Paver | 83.2 | 80.2 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Pavement Scarafier | 95.5 | 88.5 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Total | 95.5 | 89.1 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

| Description | Land Use | Baselines (dBA) Daytime | Evening | Night |
|---|---|---|---|---|
| Residences to the southeast | Residential | 55 | 55 | 55 |

| Description | Impact Device | Usage(%) | Equipment Spec Lmax (dBA) | Actual Lmax (dBA) | Receptor Distance (feet) | Estimated Shielding (dBA) |
|---|---|---|---|---|---|---|
| Paver | No | 50 | | 77.2 | 395 | 0 |
| Pavement Scarafier | No | 20 | | 89.5 | 395 | 0 |

Results

| | Calculated (dBA) | | Noise Limits (dBA) Day | | Evening | | Night | | Noise Limit Exceedance (dBA) Day | | Evening | | Night | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Paver | 59.3 | 56.3 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Pavement Scarafier | 71.5 | 64.6 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Total | 71.5 | 65.2 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

| Description | Land Use | Baselines (dBA) Daytime | Evening | Night |
|---|---|---|---|---|
| Residences and GVHS to west | Residential | 55 | 55 | 55 |

| Description | Impact Device | Usage(%) | Equipment Spec Lmax (dBA) | Actual Lmax (dBA) | Receptor Distance (feet) | Estimated Shielding (dBA) |
|---|---|---|---|---|---|---|
| Paver | No | 50 | | 77.2 | 700 | 0 |
| Pavement Scarafier | No | 20 | | 89.5 | 700 | 0 |

Results

| | Calculated (dBA) | | Noise Limits (dBA) Day | | Evening | | Night | | Noise Limit Exceedance (dBA) Day | | Evening | | Night | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Paver | 54.3 | 51.3 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Pavement Scarafier | 66.6 | 59.6 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Total | 66.6 | 60.2 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

Golden Valley Project — Adjacent residences to the north

Ref= Reference vibration level (PPV)

RefD= Reference distance for Reference vibration level (Feet)

| | | |
|---|---|---|
| Vibration PPV | | |
| Ref= | 0.089 | Based on type of equipment |
| RefD= | 25 | |
| D= | 15 | Distance from equipment to sensitive receptor |
| Equip= | 0.191 | |
| Annoyance VdB | | |
| Ref= | 87 | Based on type of equipment |
| RefD= | 25 | |
| D= | 15 | Distance from equipment to sensitive receptor |
| Equip= | 94 | |

Peak demolition vibration based on utilizing a large bulldozer.

Source: FTA Tranist Noise and Vibration Impact Assessment, 2006.

Golden Valley Project — Adjacent residences to the east

Ref= Reference vibration level (PPV)

RefD= Reference distance for Reference vibration level (Feet)

| | | |
|---|---|---|
| Vibration PPV | | |
| Ref= | 0.089 | Based on type of equipment |
| RefD= | 25 | |
| D= | 15 | Distance from equipment to sensitive receptor |
| Equip= | 0.191 | |
| Annoyance VdB | | |
| Ref= | 87 | Based on type of equipment |
| RefD= | 25 | |
| D= | 15 | Distance from equipment to sensitive receptor |
| Equip= | 94 | |

Peak demolition vibration based on utilizing a large bulldozer.

Source: FTA Tranist Noise and Vibration Impact Assessment, 2006.

Golden Valley Project — Residences to southeast

Ref= Reference vibration level (PPV)

RefD= Reference distance for Reference vibration level (Feet)

| | | |
|---|---|---|
| Vibration PPV | | |
| Ref= | 0.089 | Based on type of equipment |
| RefD= | 25 | |
| D= | 395 | Distance from equipment to sensitive receptor |
| Equip= | 0.001 | |
| Annoyance VdB | | |
| Ref= | 87 | Based on type of equipment |
| RefD= | 25 | |
| D= | 395 | Distance from equipment to sensitive receptor |
| Equip= | 51 | |

Peak demolition vibration based on utilizing a large bulldozer.

Source: FTA Tranist Noise and Vibration Impact Assessment, 2006.

Golden Valley Project — Residences and GVHS to west

Ref= Reference vibration level (PPV)

RefD= Reference distance for Reference vibration level (Feet)

| | | |
|---|---|---|
| Vibration PPV | | |
| Ref= | 0.089 | Based on type of equipment |
| RefD= | 25 | |
| D= | 700 | Distance from equipment to sensitive receptor |
| Equip= | 0.001 | |
| Annoyance VdB | | |
| Ref= | 87 | Based on type of equipment |
| RefD= | 25 | |
| D= | 700 | Distance from equipment to sensitive receptor |
| Equip= | 44 | |

Peak demolition vibration based on utilizing a large bulldozer.

Source: FTA Tranist Noise and Vibration Impact Assessment, 2006.

## TRAFFIC NOISE LEVELS

**Project Name:** Golden Valley-Sierra Hwy Mixed-Use Project

### Background Information

| | |
|---|---|
| Model Description: | FHWA Highway Noise Prediction Model with California Vehicle Noise (CALVENO) Emission Levels. |
| Analysis Scenario(s): | Existing, Existing Plus Project, Future Without Project, Future With Project |
| Source of Traffic Volumes: | Traffic Impact Analysis, Santa Clarita Mixed-Use, City of Santa Clarita, TJW Engineering, Inc., December 2, 2021 |
| Community Noise Descriptor: | X |

| Assumed 24-Hour Traffic Distribution: | (Ldn) Day | Evening | (CNEL) Night |
|---|---|---|---|
| Total ADT Volumes | 77.70% | 12.70% | 9.60% |
| Medium-Duty Trucks | 87.43% | 5.05% | 7.52% |
| Heavy-Duty Trucks | 89.10% | 2.84% | 8.06% |

### Traffic Noise Levels

| Analysis Condition / Roadway Name / Roadway Segment | Lanes | Median Width | Peak Hour Volume | ADT Volume | Design Speed (mph) | Dist. from Center to Receptor[1] | Alpha Factor | Barrier Attn. dB(A) | Vehicle Mix: Medium Trucks | Vehicle Mix: Heavy Trucks | Peak Hour dB(A) $L_{eq}$ | 24-Hour dB(A) CNEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Existing Traffic Noise** | | | | | | | | | | | | |
| Golden Valley Rd. | | | | | | | | | | | | |
| west of Sierra Hwy | 4 | 10 | 3,455 | 27,636 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 75.3 | 73.6 |
| east of Sierra Hwy | 4 | 10 | 1,881 | 15,044 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 72.7 | 71.0 |
| Sierra Hwy | | | | | | | | | | | | |
| south of Golden Valley Rd. | 4 | 10 | 3,035 | 24,280 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 74.8 | 73.0 |
| north of Golden Valley Rd. | 4 | 10 | 2,176 | 17,408 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 73.3 | 71.6 |
| **Existing Plus Project Traffic Noise** | | | | | | | | | | | | |
| Golden Valley Rd. | | | | | | | | | | | | |
| west of Sierra Hwy | 4 | 10 | 3,551 | 28,408 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 75.4 | 73.7 |
| east of Sierra Hwy | 4 | 10 | 1,941 | 15,528 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 72.8 | 71.1 |
| Sierra Hwy | | | | | | | | | | | | |
| south of Golden Valley Rd. | 4 | 10 | 3,047 | 24,372 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 74.8 | 73.1 |
| north of Golden Valley Rd. | 4 | 10 | 2,201 | 17,604 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 73.4 | 71.6 |
| **Future Without Project Traffic Noise** | | | | | | | | | | | | |
| Golden Valley Rd. | | | | | | | | | | | | |
| west of Sierra Hwy | 4 | 10 | 3,632 | 29,052 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 75.5 | 73.8 |
| east of Sierra Hwy | 4 | 10 | 2,006 | 16,048 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 73.0 | 71.2 |
| Sierra Hwy | | | | | | | | | | | | |
| south of Golden Valley Rd. | 4 | 10 | 3,164 | 25,308 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 74.9 | 73.2 |
| north of Golden Valley Rd. | 4 | 10 | 2,282 | 18,256 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 73.5 | 71.8 |
| **Future With Project Traffic Noise** | | | | | | | | | | | | |
| Golden Valley Rd. | | | | | | | | | | | | |
| west of Sierra Hwy | 4 | 10 | 3,728 | 29,824 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 75.7 | 73.9 |
| east of Sierra Hwy | 4 | 10 | 2,067 | 16,532 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 73.1 | 71.4 |
| Sierra Hwy | | | | | | | | | | | | |
| south of Golden Valley Rd. | 4 | 10 | 3,175 | 25,400 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 75.0 | 73.2 |
| north of Golden Valley Rd. | 4 | 10 | 2,307 | 18,452 | 50 | 50 | 0 | 0 | 1.8% | 0.7% | 73.6 | 71.9 |

[1] Distance in feet from the roadway centerline to nearest receptor location.

# APPENDIX H
# Santa Clarita Mixed Use Traffic Impact Analysis

# Santa Clarita Mixed Use Traffic Impact Analysis

*City of Santa Clarita, California*

December 2, 2021

Prepared by:

TJW ENGINEERING, INC.
9841 Irvine Center Drive, Suite 200
Irvine, CA 92618
949.878.3509 | www.tjwengineering.com

TJW ENGINEERING, INC.
TRAFFIC ENGINEERING & TRANSPORTATION PLANNING CONSULTANTS

December 2, 2021

Renaud and Sue Veluzat
*VELUZAT PRODUCTIONS*
24715 Oak Creek
Newhall, CA 91321

**Subject: Traffic Impact Analysis - Santa Clarita Mixed Use, City of Santa Clarita**

Dear Mr. and Mrs. Veluzat:

*TJW ENGINEERING, INC.* (TJW) is pleased to present you with this traffic impact analysis for the proposed Santa Clarita Mixed Use project located at the northwest corner of the intersection of Golden Valley Road and Sierra Highway in the City of Santa Clarita.

This traffic study has been prepared to meet the traffic study requirements for the City of Santa Clarita and assesses the forecast traffic operations associated with the proposed project and its impact on the local street network. This report is being submitted to you for review and forwarding to the City of Santa Clarita.

Please contact us at (949) 878-3509 if you have any questions regarding this analysis.

Sincerely,

Thomas Wheat, PE, TE
President

David Chew, PTP
Transportation Planner

Registered Civil Engineer *#69467*
Registered Traffic Engineer *#2565*

Jeffrey Chinchilla, PE
Project Engineer

# Santa Clarita Mixed Use Traffic Impact Analysis

*City of Santa Clarita, California*

December 2, 2021

Prepared for:
Renaud and Sue Veluzat
*VELUZAT PRODUCTIONS*
24715 Oak Creek
Newhall, CA 91321

Prepared by:
Thomas Wheat, PE, TE
David Chew, PTP
Jeffrey Chinchilla, PE

TJW ENGINEERING, INC.
9841 Irvine Center Drive, Suite 200
Irvine, CA 92618
949.878.3509 | www.tjwengineering.com

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# 1.0 EXECUTIVE SUMMARY

This traffic impact analysis (TIA) analyzes the projected traffic operations associated with the proposed Santa Clarita Mixed Use project located at the northwest corner of the intersection of Golden Valley Road and Sierra Highway in the City of Santa Clarita. The purpose of this TIA is to evaluate potential circulation system deficiencies that may result from development of the proposed project, and to recommend improvements to achieve acceptable operations, if applicable. This analysis has been prepared in coordination with the City of Santa Clarita via a scoping agreement (See **Appendix A**) and is pursuant to applicable City of Santa Clarita and Caltrans traffic impact analysis guidelines.

The proposed project consists of the following land uses:

- 151 Unit Senior Assisted Living Units
- 73 Multi-Family Condominium Units
- 60 Room Hotel with 3,315 sf of retail space and 2,360 sf of restaurant space.

Site access is planned via one left-in, right-in, right-out driveway on Golden Valley Road. The site is currently zoned as Mixed-Use Neighborhood (MX-N) and classified as Mixed-Use Neighborhood in the City of Santa Clarita General Plan Land Use Plan. The project site is currently vacant. The proposed project land use will not require a zone change or General Plan amendment.

The proposed project is anticipated to be built and generating trips in 2023. A growth rate of 2% was used to account for 2023 volumes.

The proposed project is projected to generate 1,787 daily trips, 104 AM peak hour trips, and 133 PM peak hour trips.

The following seven (7) intersections in the vicinity of the project site have been included in the intersection level of service (LOS) analysis:

1. Golden Valley Rd/Centre Pointe Pkwy;
2. Golden Valley Rd/Robert C Lee Pkwy;
3. Golden Valley Rd/Sierra Hwy;
4. Golden Valley Rd/SB-14 Ramp;
5. Golden Valley Rd/NB-14 Ramp;
6. Sierra Hwy/Friendly Valley Pkwy; and
7. Sierra Hwy/Via Princessa.

The study intersections are analyzed for the following study scenarios:

- Existing Conditions;
- Existing Plus Project;
- Project Opening Year (Cumulative); and
- Project Opening Year Plus Project.

## 1.1 SUMMARY OF LEVEL OF SERVICE ANALYSIS RESULTS

**Table ES-1** summarizes the results of the intersection level of service analysis based on the City of Santa Clarita thresholds of significance for analyzing transportation deficiencies.

**Table ES-1**
Summary of Transportation Deficiencies at Study Intersections

| Intersection | | | Opening Year Plus Project | Future Year Plus Project |
|---|---|---|---|---|
| 1 | Golden Valley | Centre Pointe | No Deficiencies | No Deficiencies |
| 2 | Golden Valley | Robert C Lee | No Deficiencies | No Deficiencies |
| 3 | Golden Valley | Sierra | No Deficiencies | No Deficiencies |
| 4 | Golden Valley | SB SR-14 | No Deficiencies | No Deficiencies |
| 5 | Golden Valley | NB SR-14 | No Deficiencies | No Deficiencies |
| 6 | Sierra | Friendly Valley | No Deficiencies | No Deficiencies |
| 7 | Sierra | Via Princessa | No Deficiencies | No Deficiencies |

Existing Conditions

The study intersections are projected to operate at an acceptable LOS during the AM and PM peak hours for existing conditions with the exception of the following intersections:

- #1 – Golden Valley Rd/Centre Pointe (LOS E PM Peak Hour); and
- #3 – Golden Valley Rd/Sierra Hwy (LOS E AM Peak Hour).

Existing Plus Project Conditions

The study intersections are projected to operate at an acceptable LOS during the AM and PM peak hours for existing plus project (EP) conditions with the exception of the following intersections:

- #1 – Golden Valley Rd/Centre Pointe (LOS E PM Peak Hour); and
- #3 – Golden Valley Rd/Sierra Hwy (LOS E AM Peak Hour).

Per City of Santa Clarita Guidelines, the proposed project does not create a transportation deficiency.

Project Opening Year Cumulative Conditions

The study intersections are projected to operate at an acceptable LOS during the AM and PM peak hours for project opening year cumulative (OYC) conditions with the exception of the following intersections:

- #1 – Golden Valley Rd/Centre Pointe (LOS E PM Peak Hour); and
- #3 – Golden Valley Rd/Sierra Hwy (LOS E AM Peak Hour).

Project Opening Year Cumulative Plus Project Conditions

The study intersections are projected to operate at an acceptable LOS during the AM and PM peak hours for project opening year cumulative (OYC) conditions with the exception of the following intersections:

- #1 – Golden Valley Rd/Centre Pointe (LOS E PM Peak Hour); and
- #3 – Golden Valley Rd/Sierra Hwy (LOS E AM Peak Hour).

Per City of Santa Clarita Guidelines, the proposed project does not create a transportation deficiency.

## 1.2 ON-SITE ROADWAY AND SITE ACCESS IMPROVEMENTS

Wherever necessary, roadways adjacent to the proposed project site and site access points will be constructed in compliance with recommended roadway classifications and respective cross-sections in the City of Santa Clarita General Plan or as directed by the City Engineer.

Sight distance at each project access point should be reviewed with respect to standard Caltrans and City sight distance standards at the time of final grading, landscaping and street improvement plans.

Signing/striping should be implemented in conjunction with detailed construction plans for the project site.

## 1.3 SUMMARY OF DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

Based on City of Santa Clarita thresholds, no off-site improvements were identified since the proposed project is projected to result in no deficiencies at the study intersections for all analysis scenarios.

# 2.0 INTRODUCTION

This traffic impact analysis (TIA) analyzes the projected traffic operations associated with the proposed Santa Clarita Mixed Use project located at the northwest corner of the intersection of Golden Valley Road and Sierra Highway in the City of Santa Clarita. The purpose of this TIA is to evaluate potential circulation system deficiencies that may result from development of the proposed project, and to recommend improvements to achieve acceptable operations, if applicable. This analysis has been prepared in coordination with the City of Santa Clarita via a scoping agreement (See **Appendix A**) and is pursuant to applicable City of Santa Clarita and Caltrans traffic impact analysis guidelines.

## 2.1 PROJECT DESCRIPTION

The proposed project consists of the following land uses:

- 151 Unit Senior Assisted Living Units
- 73 Multi-Family Condominium Units
- 60 Room Hotel with 3,315 sf of retail space and 2,360 sf of restaurant space.

Site access is planned via one left-in, right-in, right-out driveway on Golden Valley Road. The site is currently zoned as Mixed-Use Neighborhood (MX-N) and classified as Mixed-Use Neighborhood in the City of Santa Clarita General Plan Land Use Plan. The project site is currently vacant. The proposed project land use will not require a zone change or General Plan amendment. The proposed project is anticipated to be built and generating trips in 2023. A growth rate of 2% was used to account for 2023 volumes.

**Exhibit 1** shows the project site location. **Exhibit 2** shows the proposed project site plan.

## 2.2 STUDY AREA

In addition to project driveways, the following seven (7) intersections in the vicinity of the project site have been included in the intersection level of service (LOS) analysis:

8. Golden Valley Rd/Centre Pointe Pkwy;
9. Golden Valley Rd/Robert C Lee Pkwy;
10. Golden Valley Rd/Sierra Hwy;
11. Golden Valley Rd/SB-14 Ramp;
12. Golden Valley Rd/NB-14 Ramp;
13. Sierra Hwy/Friendly Valley Pkwy; and
14. Sierra Hwy/Via Princessa.

The study intersections are all located within the City of Santa Clarita.

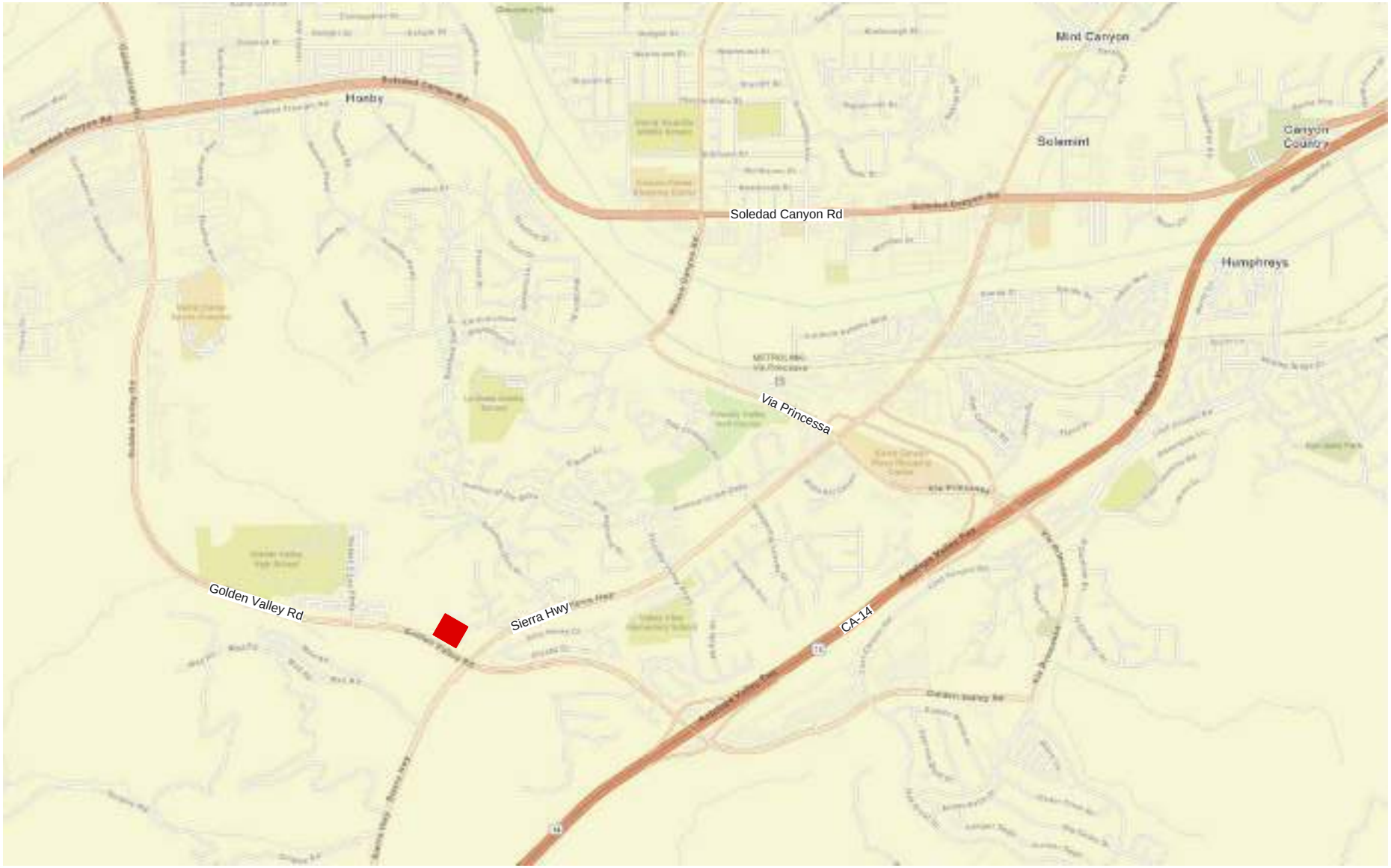



Exhibit 1: Project Location

Exhibit 2: Proposed Project Site Plan

This traffic analysis follows the *Transportation Analysis Updates in Santa Clarita (May 2020)* and the *Caltrans Guidelines for the Preparation of Traffic Impact Studies (December, 2002)*.

**Exhibit 3** shows the location of the study intersections which are analyzed for the following study scenarios:

- Existing Conditions;
- Existing Plus Project;
- Project Opening Year (Cumulative); and
- Project Opening Year Plus Project.

Traffic operations are evaluated for the following time periods:

- Weekday AM Peak Hour occurring within 7:00 AM to 9:00 AM; and
- Weekday PM Peak Hour occurring within 4:00 PM to 6:00 PM.

## 2.3 ANALYSIS METHODOLOGY

### *2.3.1 Intersection Analysis Methodology*

Level of Service (LOS) is commonly used to describe the quality of flow on roadways and at intersections using a range of LOS from LOS A (free flow with little congestion) to LOS F (severely congested conditions). The definitions for LOS for interruption of traffic flow differ depending on the type of traffic control (traffic signal, unsignalized intersection with side street stops, unsignalized intersection with all-way stops). The *Highway Capacity Manual (HCM) 6* (Transportation Research Board, 2016) methodology expresses the LOS of an intersection in terms of delay time for the intersection approaches. The HCM methodology utilizes different procedures for different types of intersection control.

The City of Santa Clarita and Caltrans traffic impact study guidelines require signalized intersection operations be analyzed utilizing the HCM 6$^{th}$ Edition methodology. Intersection LOS for signalized intersections is based on the intersections average control delay for all movements at the intersection during the peak hour. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

**Table 1** describes the general characteristics of traffic flow and accompanying delay ranges at signalized intersections.

Legend:

Project Site

Study Intersection Location

Exhibit 3: Proposed TIA Study Area



Not to Scale

**Table 1**

HCM – LOS & Delay Ranges – Signalized Intersections

| Level of Service | Description | Delay (in seconds) |
|---|---|---|
| A | Very favorable progression; most vehicles arrive during green signal and do not stop. Short cycle lengths. | 0 – 10.00 |
| B | Good progression, short cycle lengths. More vehicles stop than for LOS A. | 10.01 – 20.00 |
| C | Fair progression; longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant, though many vehicles still pass through without stopping. | 20.01 – 35.00 |
| D | Progression less favorable, longer cycle length and high flow/capacity ratio. The proportion of vehicles that pass through without stopping diminishes. Individual cycle failures are obvious. | 35.01 – 55.00 |
| E | Severe congestion with some long-standing queues on critical approaches. Poor progression, long cycle lengths and high flow/capacity ratio. Individual cycle failures are frequent. | 55.01 – 80.00 |
| F | Very poor progression, long cycle lengths and many individual cycle failures. Arrival flow rates exceed capacity of intersection. | > 80.01 |

Source: Transportation Research Board, *Highway Capacity Manual*, HCM6 Edition (Washington D.C., 2016).

Collected peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. It is a common practice in LOS analysis to conservatively use a peak 15-minute flow rate applied to the entire hour to derive flow rates in vehicles per hour that are used in the LOS analysis. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume. PHF = [Hourly Volume]/ [4 * Peak 15-Minute Volume]. The use of a 15-minute PHF produces a more detailed and conservative analysis compared to analyzing vehicles per hour. Existing PHFs, obtained from the existing traffic counts have been used for all analysis scenarios in this study.

The City of Santa Clarita traffic study guidelines also require unsignalized intersection operations be analyzed utilizing the HCM 6$^{th}$ Edition methodology. Intersection operation for unsignalized intersections is based on the weighted average control delay expressed in seconds per vehicle.

At a two-way or side-street stop-controlled intersection, LOS is calculated for each stop-controlled minor street movement, for the left-turn movement(s) from the major street, and for the intersection as a whole. For approaches consisting of a single lane, the delay is calculated as the average of all movements in that lane. For all-way stop-controlled intersection, LOS is computed for the intersection as a whole.

**Table 2** describes the general characteristics of traffic flow and accompanying delay ranges at unsignalized intersections.

**Table 2**

HCM – LOS & Delay Ranges – Unsignalized Intersections

| Level of Service | Description | Delay (in seconds) |
|---|---|---|
| A | Little or no delays. | 0 – 10.00 |
| B | Short traffic delays. | 10.01 – 15.00 |
| C | Average traffic delays. | 15.01 – 25.00 |
| D | Long traffic delays. Multiple vehicles in queue. | 25.01 – 35.00 |
| E | Very long delays. Demand approaching capacity of intersection | 35.01 – 50.00 |
| F | Very constrained flow with extreme delays and intersection capacity exceeded. | > 50.01 |

Source: Transportation Research Board, *Highway Capacity Manual*, HCM6 Edition (Washington D.C., 2016).

This analysis utilizes *PTV Vistro 2022* analysis software for all signalized and unsignalized intersections. *Vistro* is a macroscopic traffic software program that is based on the signalized intersection capacity analysis specified in Chapter 16 of the HCM. The level of service and capacity analysis performed within *Vistro* takes the optimization and coordination of signalized intersections within a network into consideration.

## 2.4 PERFORMANCE CRITERIA

### *2.4.1 City of Santa Clarita*

The City of Santa Clarita has established level of service "D" or better as acceptable LOS for all intersections along the designated street and highway system in the City's General Plan Circulation Element.

For the purposes of analyzing transportation deficiencies, the City of Santa Clarita identifies deficiencies through a comparison of "without project" and "with project" traffic conditions. An intersection is considered to be affected if the project would:

- Worsen and intersection maintained by the City of Santa Clarita from LOS D or better to LOS E or F
- Cause the following increase in delay at an intersection maintained by the City of Santa Clarita that operated (with the project) at LOS D or worse
    - LOS D with the project: more than 4-seond increase in delay is deficient
    - LOS E or F with the project: more than 2-second increase in delay is deficient

### *2.4.2 Caltrans*

Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State Highway facilities, although Caltrans acknowledges that this may not always be feasible. If an existing State Highway facility is operating at less than this target LOS, the existing LOS should be maintained. In general, the region-wide goal for acceptable LOS on all freeways, roadway segments and intersections is LOS "D". Consistent with the City of Santa Clarita LOS threshold, LOS "D" will be used as the target LOS for state highway intersection in this analysis.

# 3.0 EXISTING CONDITIONS

## 3.1 EXISTING CIRCULATION NETWORK/STUDY AREA CONDITIONS

The characteristics of the roadway system in the vicinity of the proposed project site are described in **Table 3.**

**Table 3**
Roadway Characteristics within Study Area

| Roadway | Classification[1] | Jurisdiction | Direction | Existing Travel Lanes | Median Type[2] | Speed Limit (mph) | On-Street Parking |
|---|---|---|---|---|---|---|---|
| Sierra Hwy | Major Highway | Santa Clarita | North-South | 4 | PM-RM | 55 | No |
| Via Princessa | Major Highway | Santa Clarita | East-West | 6 | PM-RM | 55 | No |
| Golden Valley | Major Highway | Santa Clarita | East-West | 4 | RM | 55 | No |
| Centre Pointe | Collector | Santa Clarita | East-West | 2 | TWLTL | 35 | Yes |
| Robert C Lee | Collector | Santa Clarita | North-South | 4 | TWLTL | 35 | Yes |
| Friendly Valley | Collector | Santa Clarita | East-West | 2 | NM | 25 | Yes |

1: Sources: City of Santa Clarita General Plan (November, 2005)
2: TWLTL = Two-Way Left-Turn Lane, RM= Raised Median, PM = Painted Median, NM = No Median.

**Exhibit 4** show existing conditions study area intersection and roadway geometry.

## 3.2 CITY OF SANTA CLARITA GENERAL PLAN CIRCULATION ELEMENT

The proposed project site is located within the City of Santa Clarita. **Appendix A** contains the current *City of Santa Clarita General Plan Circulation Plan* and an explanation of roadway cross sections.

## 3.3 EXISTING BICYCLE AND PEDESTRIAN FACILITIES

Within the study area, Class I bike lanes exist on Golden Valley Road between McKeon Way and Green Mountain Drive. Class II bike lanes exist on Robert C. Lee Parkway north of Golden Valley Road and on Centre Pointe Parkway West of Ruether Ave.

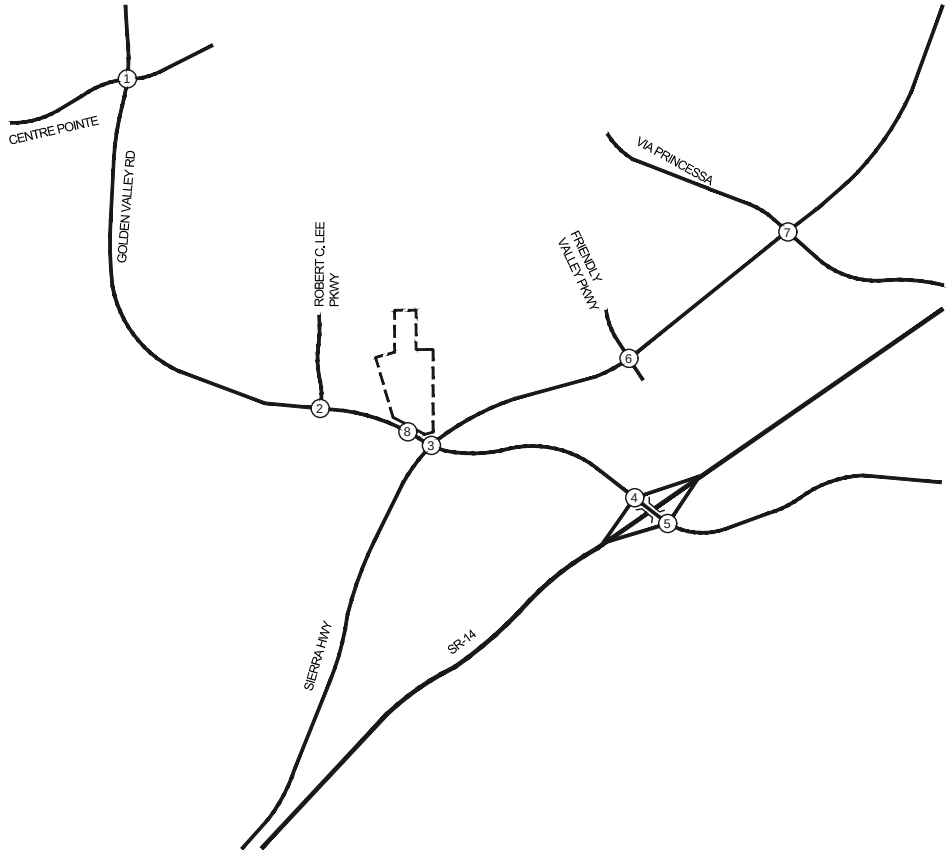



Exhibit 4: Existing Lane Geometry and Intersection Controls

According to the *City of Santa Clarita Bikeway Master Plan,* class II bike lanes and class III bike routes are planned along Sierra Highway.

**Appendix A** contains the *City of Santa Clarita Bikeway Master Plan*.

## 3.4 EXISTING PUBLIC TRANSIT SERVICES

The City of Santa Clarita is served by Santa Clarita Transit which provides bus service throughout the City of Santa Clarita. **Exhibit 5** shows the Santa Clarita Transit routes in the vicinity of the project site.

The nearest transit service is Santa Clarita Route 12 with stops at the intersections of Golden Valley Road and Sierra Highway. Route 12 runs between Whites Canyon and the McBean Regional Transit Center with headways of approximately 30 minutes.

## 3.5 EXISTING TRAFFIC VOLUMES

To determine the existing operation of the study intersections, AM and PM peak period traffic volumes were estimated based on new traffic counts collected on October 28, 2021. Detailed traffic count data is provided in **Appendix B**.

**Exhibit 6** and **Exhibit 7** show existing AM and PM peak hour volumes at the study intersections.

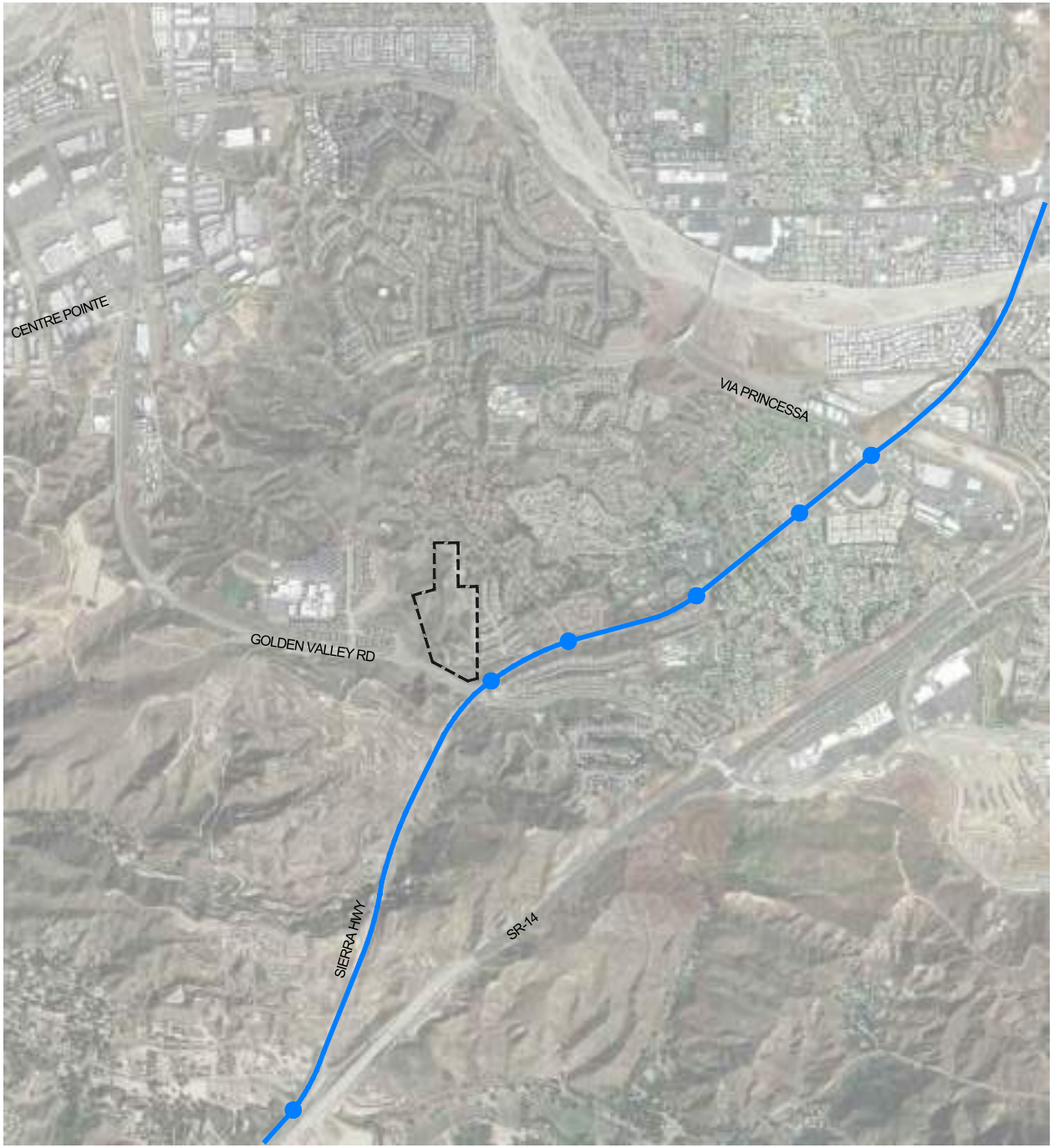
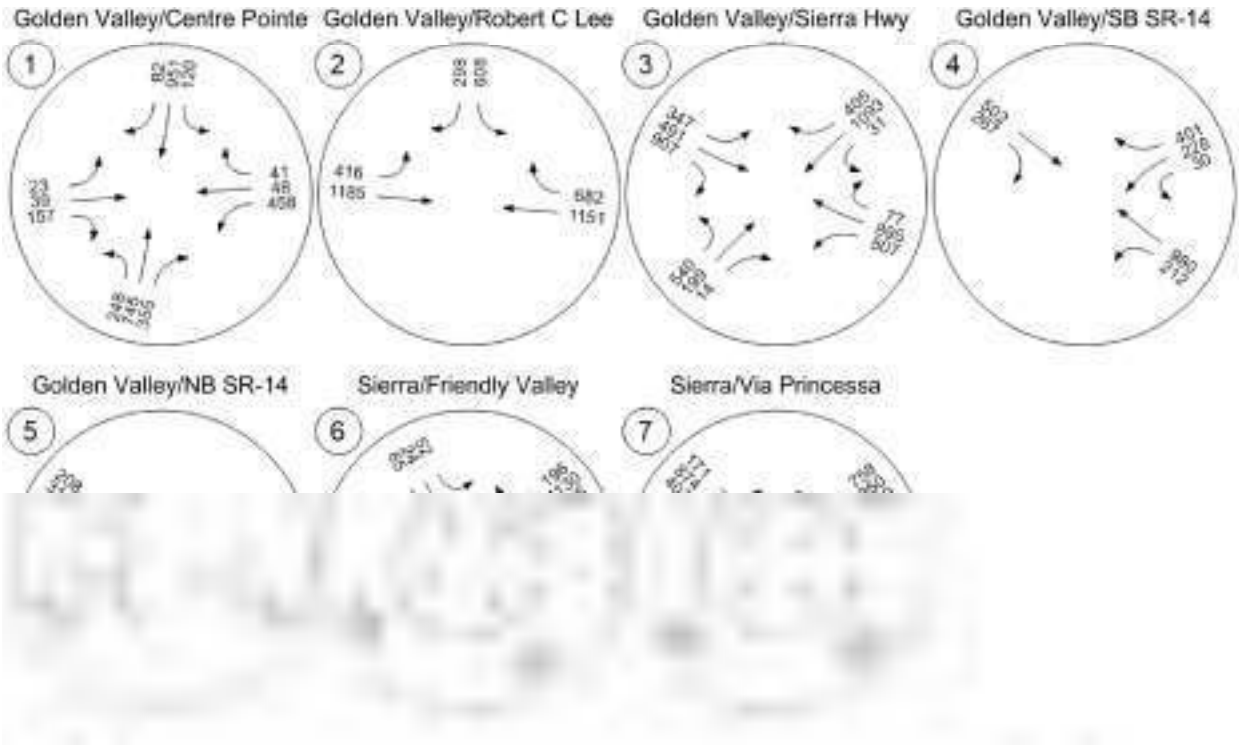



Exhibit 5: Existing Transit Services



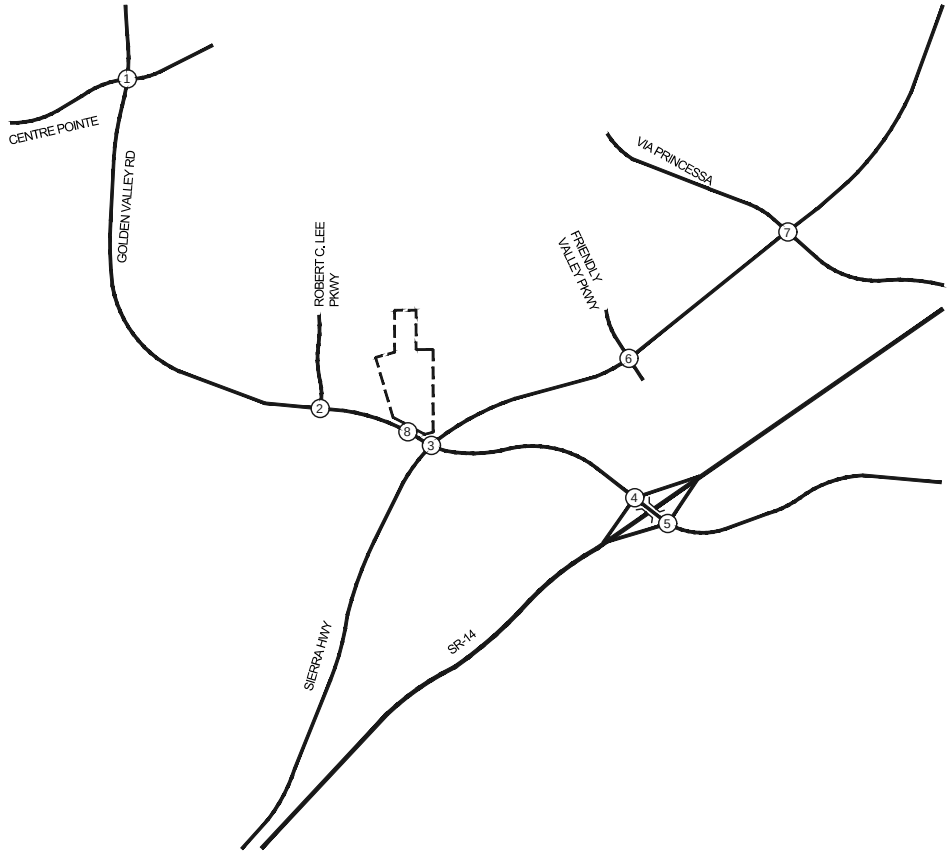




Exhibit 6: Existing AM Peak Hour Volumes

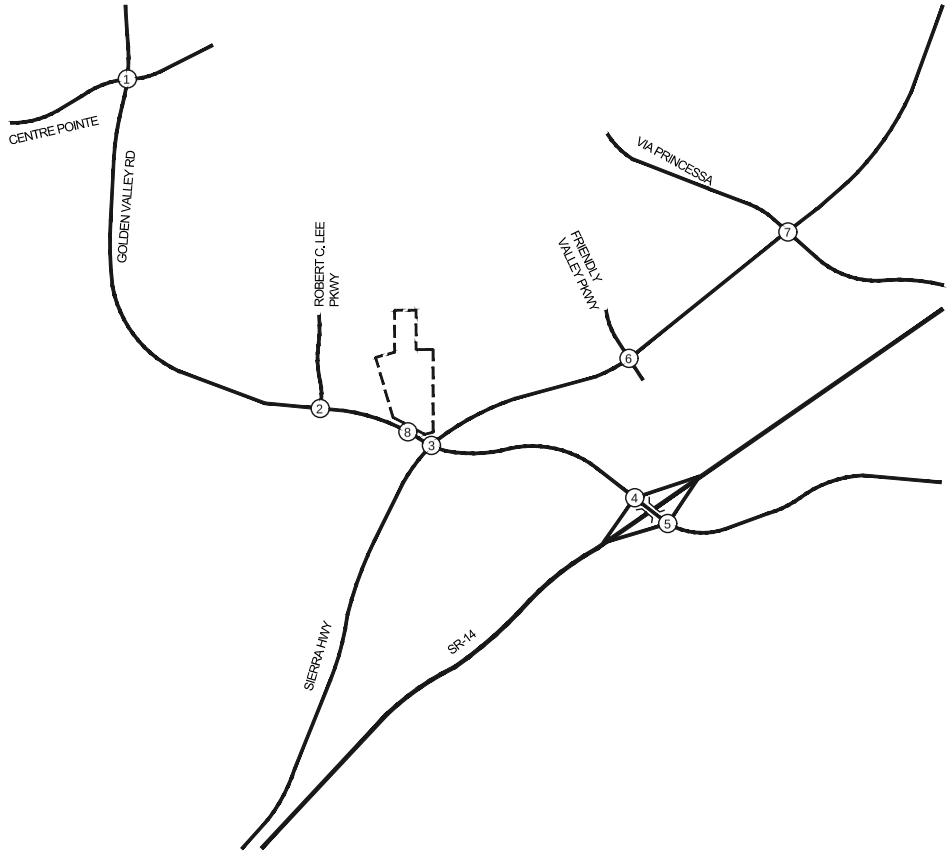



Exhibit 7: Existing PM Peak Hour Volumes

## 3.6 EXISTING CONDITIONS INTERSECTION LEVEL OF SERVICE ANALYSIS

Existing conditions AM and PM peak hour intersection analysis is shown in **Table 4**. Calculations are based on the existing geometrics at the study area intersections as shown in **Exhibit 4.** HCM analysis sheets are provided in **Appendix C**.

**Table 4**
Intersection Analysis – Existing Conditions

| Intersection | | | Control Type | Peak Hour | Existing Conditions | |
|---|---|---|---|---|---|---|
| | | | | | Delay[1] | LOS |
| 1 | Golden Valley | Centre Pointe | Signal | AM | 35.8 | D |
| | | | | PM | **55.6** | **E** |
| 2 | Golden Valley | Robert C Lee | Signal | AM | 24.7 | C |
| | | | | PM | 8.8 | A |
| 3 | Golden Valley | Sierra | Signal | AM | **61.8** | **E** |
| | | | | PM | 44.1 | D |
| 4 | Golden Valley | SB SR-14 | Signal | AM | 31.1 | C |
| | | | | PM | 30.7 | C |
| 5 | Golden Valley | NB SR-14 | Signal | AM | 21.5 | C |
| | | | | PM | 27.0 | C |
| 6 | Sierra | Friendly Valley | Signal | AM | 25.1 | C |
| | | | | PM | 22.5 | C |
| 7 | Sierra | Via Princessa | Signal | AM | 39.1 | D |
| | | | | PM | 41.0 | D |

Note: Delay shown in seconds per vehicle.
1 = Per the Highway Capacity Manual 6th Edition, overall average delay and LOS are shown for signalized intersections.

As shown in **Table 4**, the study intersections are currently operating at an acceptable LOS during the AM and PM peak hours for existing conditions with the exception of the following intersections:

- #1 – Golden Valley Rd/Centre Pointe (LOS E PM Peak Hour); and
- #3 – Golden Valley Rd/Sierra Hwy (LOS E AM Peak Hour).

# 4.0 PROPOSED PROJECT

## 4.1 PROJECT DESCRIPTION

The proposed project consists of the following land uses:

- 151 Unit Senior Assisted Living Units
- 73 Multi-Family Condominium Units
- 60 Room Hotel with 3,315 sf of retail space and 2,360 sf of restaurant space.

Site access is planned via one left-in, right-in, right-out driveway on Golden Valley Road. The site is currently zoned as Mixed-Use Neighborhood (MX-N) and classified as Mixed-Use Neighborhood in the City of Santa Clarita General Plan Land Use Plan. The project site is currently vacant. The proposed project land use will not require a zone change or General Plan amendment.

**Exhibit 2** previously showed the proposed project site plan.

## 4.2 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic, both inbound and outbound, produced by a development. Determining trip generation for a proposed project is based on projecting the amount of traffic that the specific land uses being proposed will produce. Industry standard *Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017)* trip generation rates were used to determine trip generation of for most of the proposed project land uses.

**Table 5** summarizes the projected AM peak hour, PM peak hour and daily trip generation of the proposed project. The proposed project is projected to generate 1,787 daily trips, 104 AM peak hour trips, and 133 PM peak hour trips.

**Table 5**

Proposed Project Trip Generation

| Proposed Land Use[1] | Qty | Unit[2] | Daily Trips (ADTs) | | AM Peak Hour | | | | | PM Peak Hour | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Rate | Volume | Rate | In:Out Split | Volume | | | Rate | In:Out Split | Volume | | |
| | | | | | | | In | Out | Total | | | In | Out | Total |
| Multi-Family Residential (ITE 220) | 73.00 | DU | 7.32 | 534 | 0.46 | 23:77 | 8 | 26 | 34 | 0.56 | 63:37 | 26 | 15 | 41 |
| Assisted Senior Living (ITE 254) | 151.00 | Beds | 2.60 | 393 | 0.19 | 63:37 | 18 | 11 | 29 | 0.26 | 38:62 | 15 | 24 | 39 |
| Hotel (ITE 310) | 60.00 | Rooms | 14.34 | 860 | 0.67 | 60:40 | 25 | 16 | 41 | 0.89 | 54:46 | 29 | 24 | 53 |
| Total | | | | 1,787 | | | 51 | 53 | 104 | | | 70 | 63 | 133 |

1: Rates from ITE Trip Generation (10th Edition, 2017)

2: DU = Dwelling Units

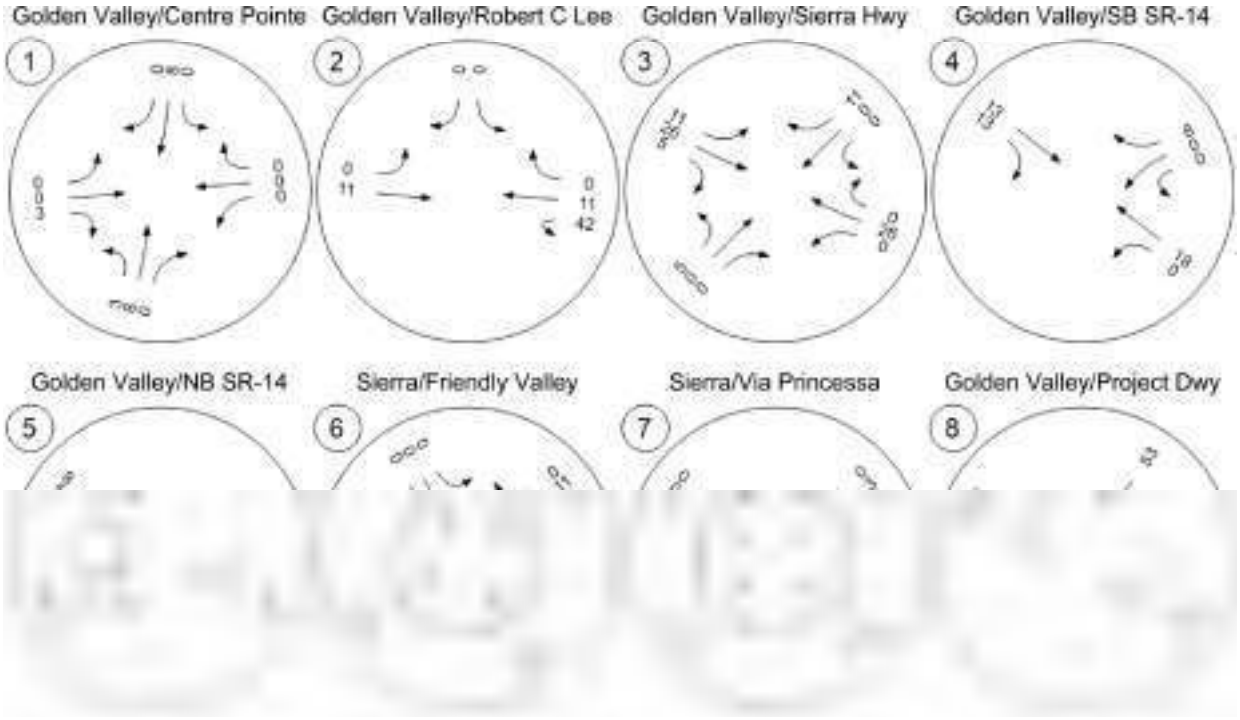
## 4.3 PROJECT TRIP DISTRIBUTION

Projecting trip distribution involves the process of identifying probable destinations and traffic routes that will be utilized by the proposed project's traffic. The potential interaction between the proposed land use and surrounding regional access routes are considered to identify the probable routes onto which project traffic would distribute. The projected trip distribution for the proposed project is based on anticipated travel patterns to and from the project site.

**Exhibit 8** and **Exhibit 9** show the projected trip distribution of proposed project trips.

## 4.4 MODAL SPLIT

The traffic reducing potential of public transit, walking and bicycling have not been considered in this analysis since transit facilities in the study area are limited.



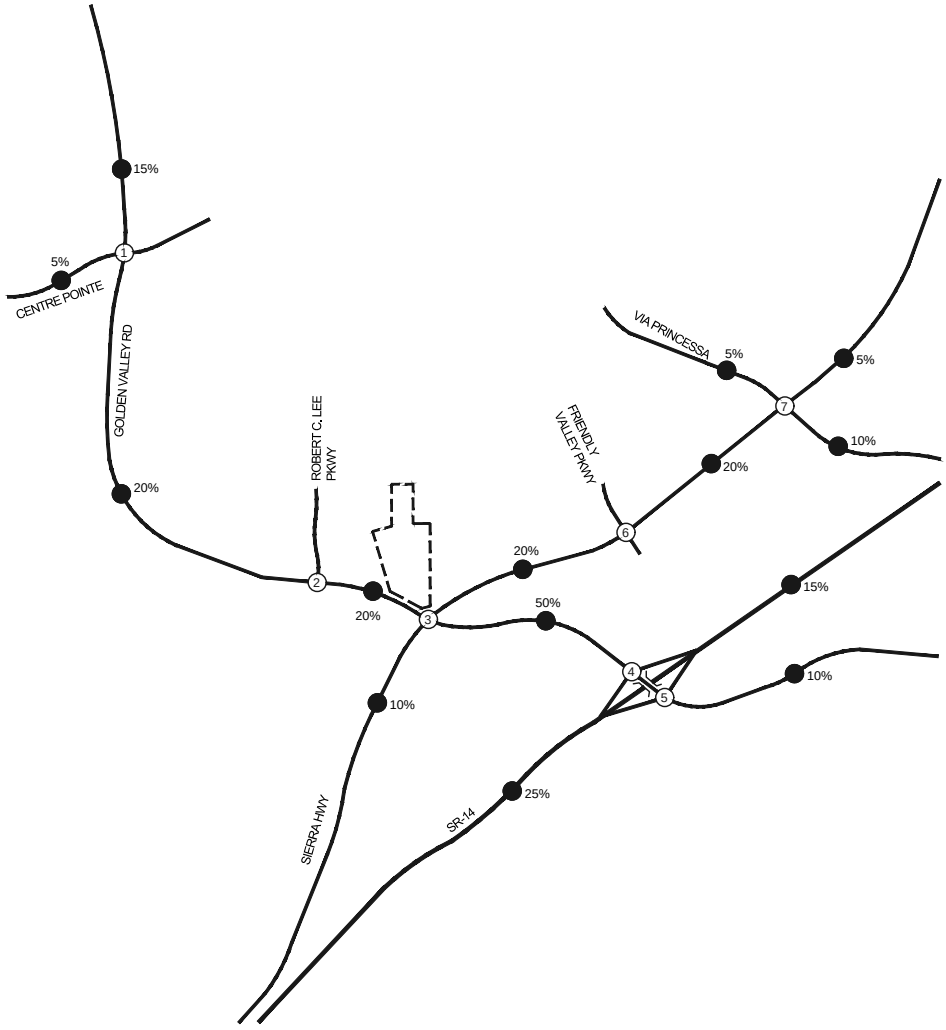
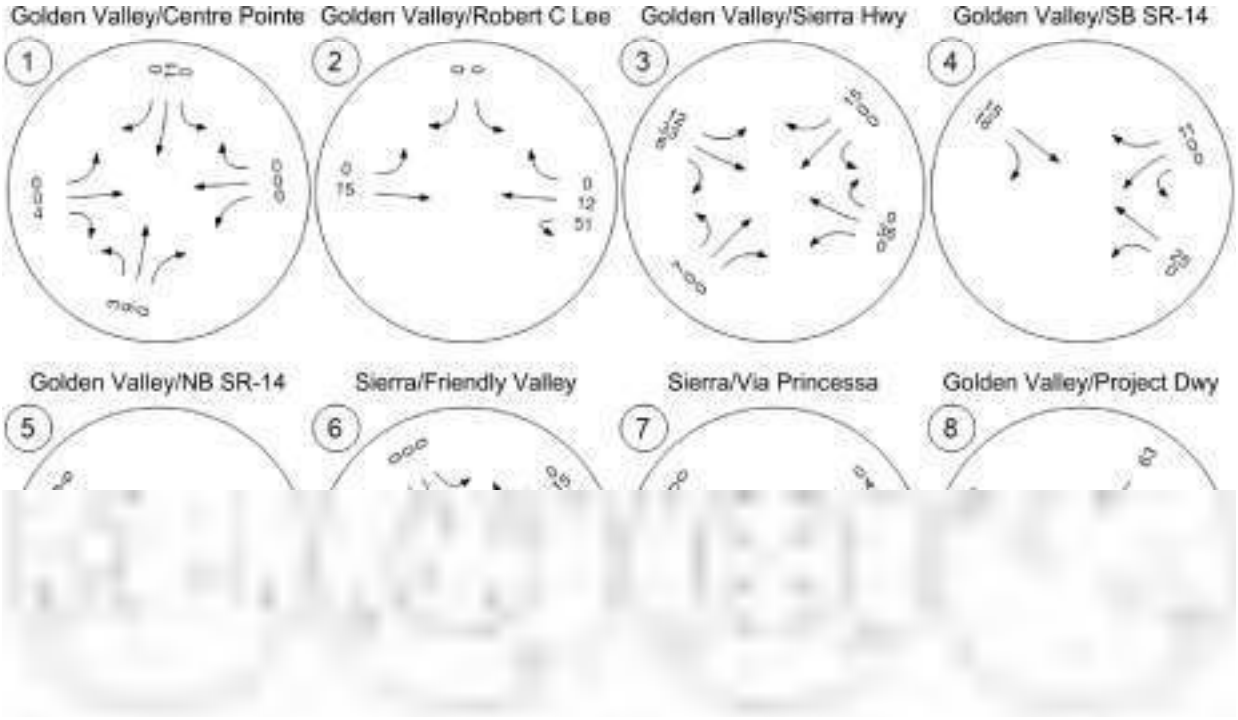




Exhibit 8: Trip Distribution of Proposed Project AM Trips at Study Intersections



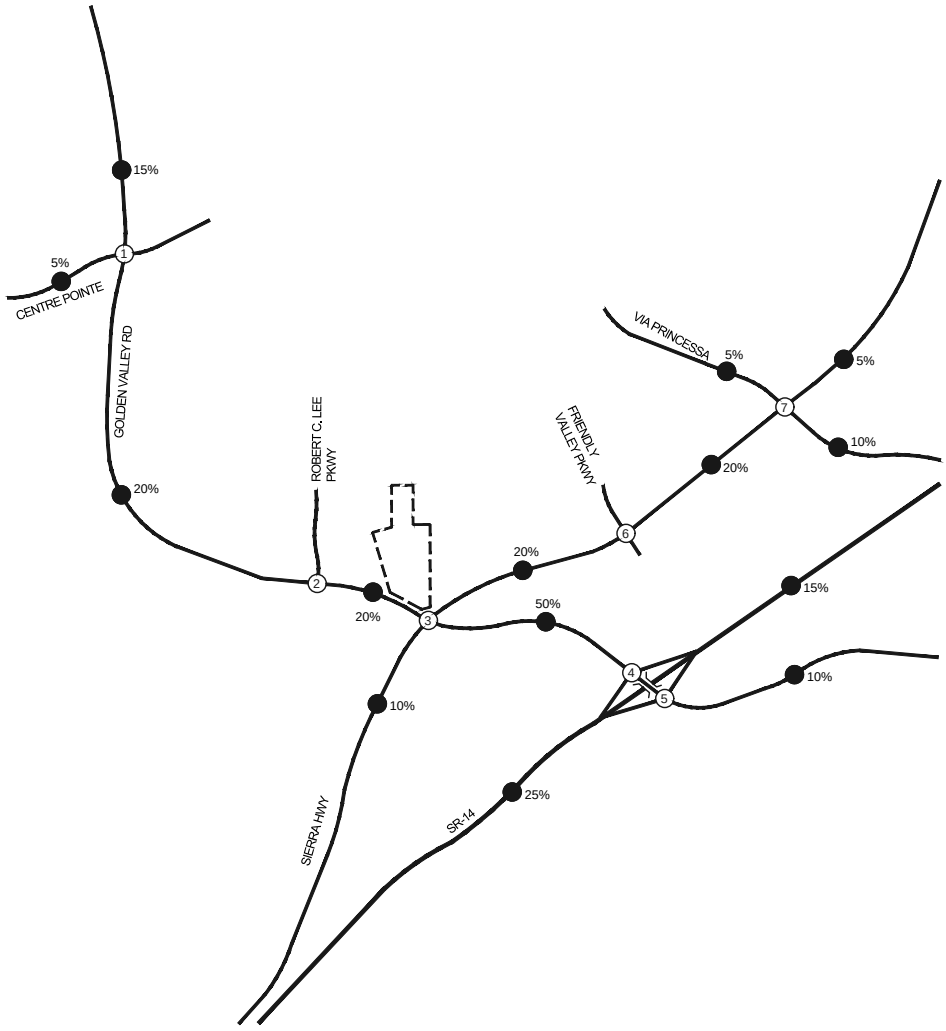




Exhibit 9: Trip Distribution of Proposed Project PM Trips at Study Intersections

# 5.0 EXISTING PLUS PROJECT CONDITIONS

Existing plus project (EP) traffic conditions analysis is intended to identify baseline conditions in the near-term with the proposed project.

## 5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for the existing plus project (EP) scenario are consistent with those previously shown in **Exhibit 4**. The proposed project will be adding a new left-in, right-in, right-out driveway along Golden Valley Road and will be modifying the intersection of Golden Valley Road and Robert C. Lee Parkway to include a designated westbound U-turn lane.

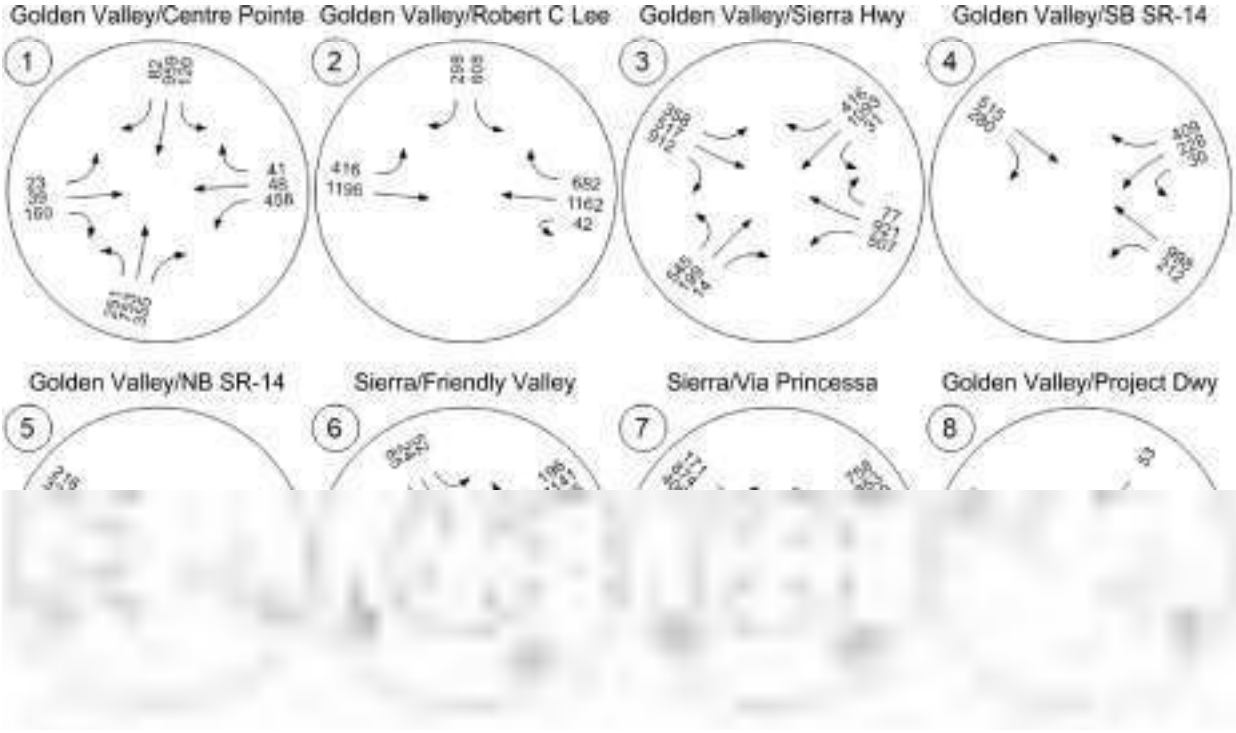
## 5.2 EXISTING PLUS PROJECT TRAFFIC VOLUMES

Existing plus project (EP) volumes include existing traffic volumes and the addition of project traffic volumes.

**Exhibit 10** and **Exhibit 11**how existing plus project AM and PM peak hour volumes at the study intersections.

## 5.3 EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE ANALYSIS

Existing plus project (EP) AM and PM peak hour intersection analysis is shown in **Table 6**. Calculations are based on the existing geometrics at the study area intersections as shown in **Exhibit 3.** HCM analysis sheets are provided in **Appendix C**.



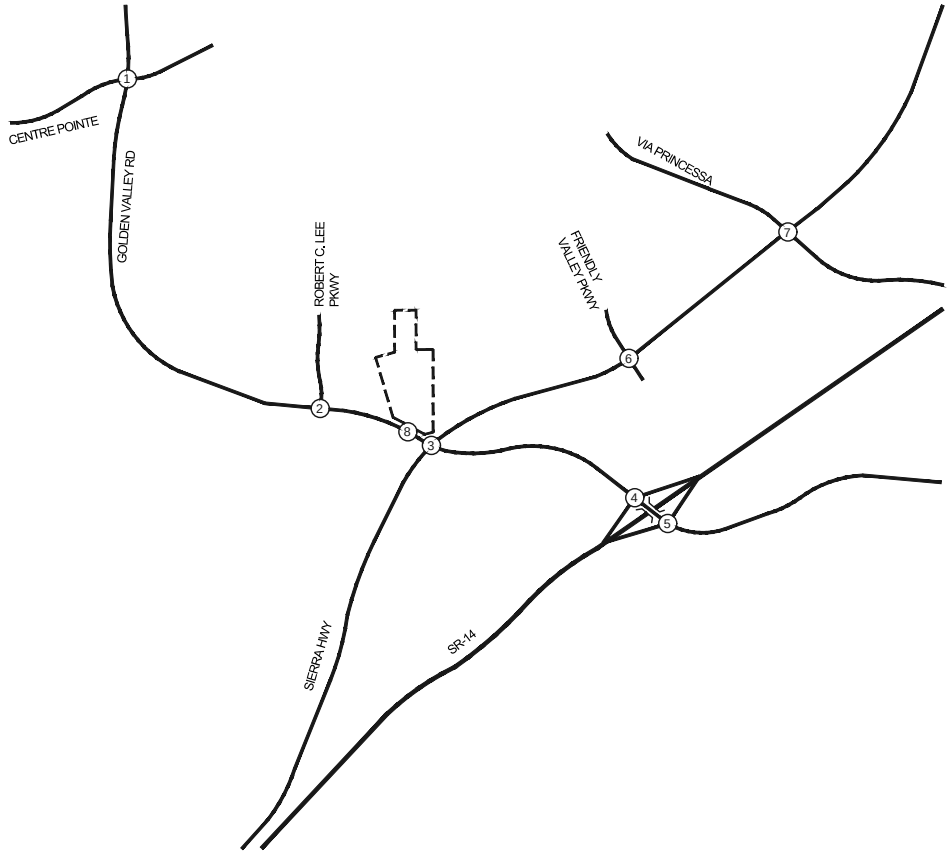
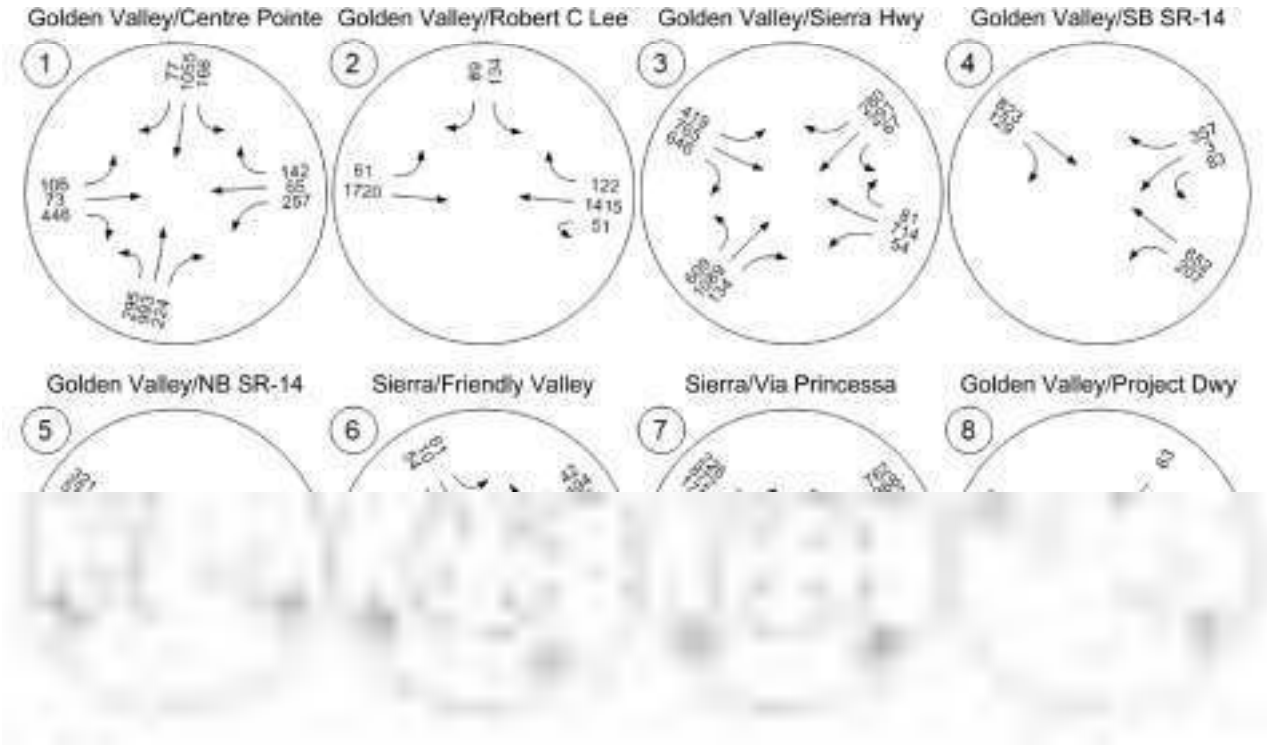




Exhibit 10: Existing Plus Project AM Peak Hour Volumes



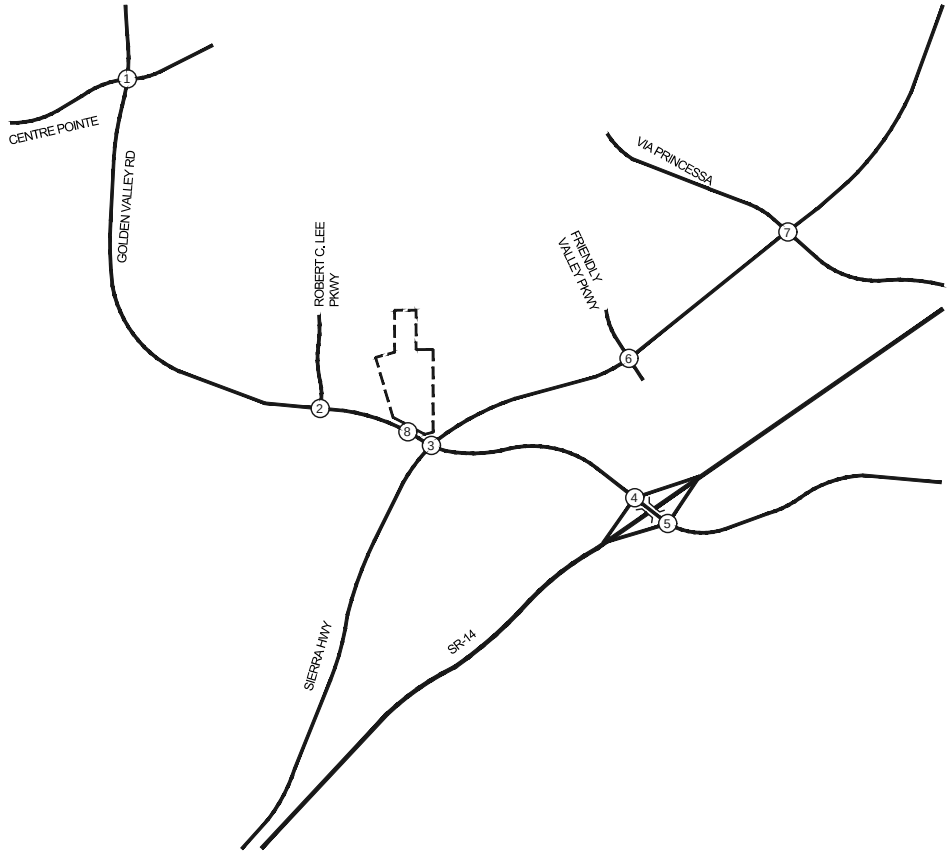




Exhibit 11: Existing Plus Project PM Peak Hour Volumes

**Table 6**

Intersection Analysis – Existing Plus Project (EP) Conditions

| Intersection | | | Control Type | Peak Hour | Existing Conditions | | EP Conditions | | Change | Deficient? |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Delay[1] | LOS | Delay[1] | LOS | | |
| 1 | Golden Valley | Centre Pointe | Signal | AM | 35.8 | D | 36.2 | D | 0.4 | No |
| | | | | PM | **55.6** | **E** | **57.0** | **E** | 1.4 | No |
| 2 | Golden Valley | Robert C Lee | Signal | AM | 24.7 | C | 27.1 | C | 2.4 | No |
| | | | | PM | 8.8 | A | 12.1 | B | 3.3 | No |
| 3 | Golden Valley | Sierra | Signal | AM | **61.8** | **E** | **63.3** | **E** | 1.5 | No |
| | | | | PM | 44.1 | D | 45.9 | D | 1.8 | No |
| 4 | Golden Valley | SB SR-14 | Signal | AM | 31.1 | C | 31.2 | C | 0.1 | No |
| | | | | PM | 30.7 | C | 30.8 | C | 0.1 | No |
| 5 | Golden Valley | NB SR-14 | Signal | AM | 21.5 | C | 21.8 | C | 0.3 | No |
| | | | | PM | 27.0 | C | 27.2 | C | 0.2 | No |
| 6 | Sierra | Friendly Valley | Signal | AM | 25.1 | C | 25.1 | C | 0.0 | No |
| | | | | PM | 22.5 | C | 22.6 | C | 0.1 | No |
| 7 | Sierra | Via Princessa | Signal | AM | 39.1 | D | 39.2 | D | 0.1 | No |
| | | | | PM | 41.0 | D | 42.3 | D | 1.3 | No |
| 8 | Golden Valley | Dwy 1 | OWSC | AM | - | - | 25.5 | D | - | No |
| | | | | PM | - | - | 21.2 | C | - | No |

Note: OWSC = One-Way Stop-Control; Delay shown in seconds per vehicle.

1 = Per the Highway Capacity Manual 6th Edition, overall average delay and LOS are shown for signalized intersections. For intersections with one-or-two-way stop-control, the delay and LOS for the worst individual approach is shown.

As shown in **Table 6**, the study intersections are projected to continue to operate at an acceptable LOS during the AM and PM peak hours for existing plus project (EP) conditions with the exception of the following intersections:

- #1 – Golden Valley Rd/Centre Pointe (LOS E PM Peak Hour); and
- #3 – Golden Valley Rd/Sierra Hwy (LOS E AM Peak Hour).

Per City of Santa Clarita Guidelines, the proposed project does not create a transportation deficiency.

# 6.0 PROJECT OPENING YEAR CUMULATIVE CONDITIONS

Project opening year cumulative (OYC) traffic conditions analysis is intended identify baseline conditions in the near-term with cumulative projects and without the proposed project.

## 6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for the project opening year cumulative (OYC) scenario are consistent with those previously shown in **Exhibit 4**.

## 6.2 CUMULATIVE PROJECTS TRAFFIC

Coordination with the City of Santa Clarita was conducted to determine approved projects within the surrounding area. **Exhibit 12** shows the location of nearby cumulative developments. A summary of cumulative projects land uses is shown in **Table 7**.

## 6.3 PROJECT OPENING YEAR CUMULATIVE (OYC) TRAFFIC VOLUMES

Project opening year cumulative (OYC) volumes include background traffic plus the addition of traffic projected to be generated by nearby cumulative projects. Since the proposed project is expected to be built and generating trips in 2023, project opening year cumulative (OYC) volumes include a growth rate of 2% per year for two years, applied to existing volumes.

Project Opening Year Cumulative Volumes = (Existing (2021) Counts * 1.02^2) + Cumulative Traffic

**Exhibit 13** and **Exhibit 14** show project opening year cumulative (OYC) AM and PM peak hour volumes at the study intersections.

## 6.4 PROJECT OPENING YEAR CUMULATIVE (OYC) INTERSECTION LEVEL OF SERVICE ANALYSIS

Project opening year cumulative (OYC) conditions AM and PM peak hour intersection analysis is shown in **Table 8** HCM analysis sheets are provided in **Appendix C.**

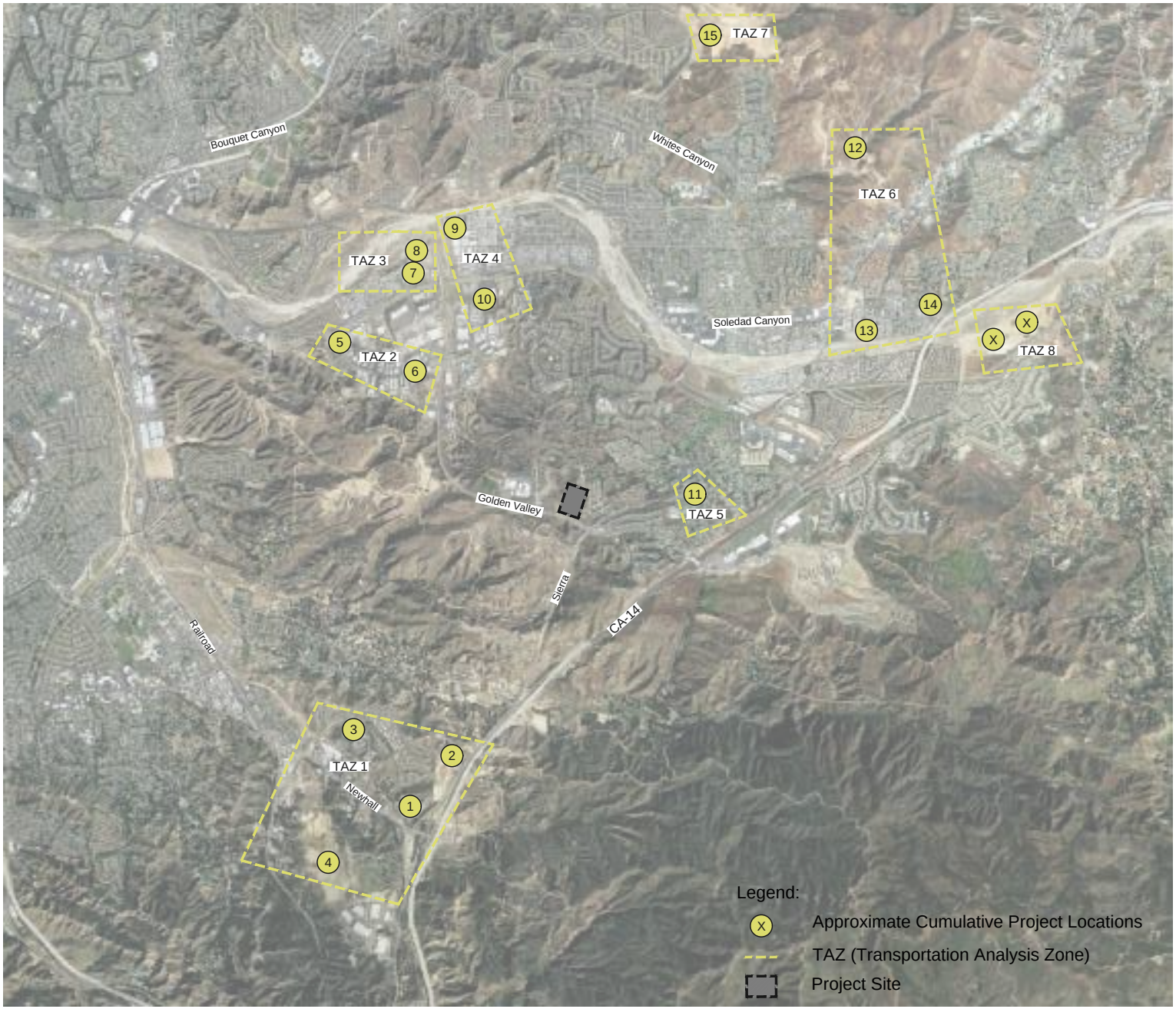
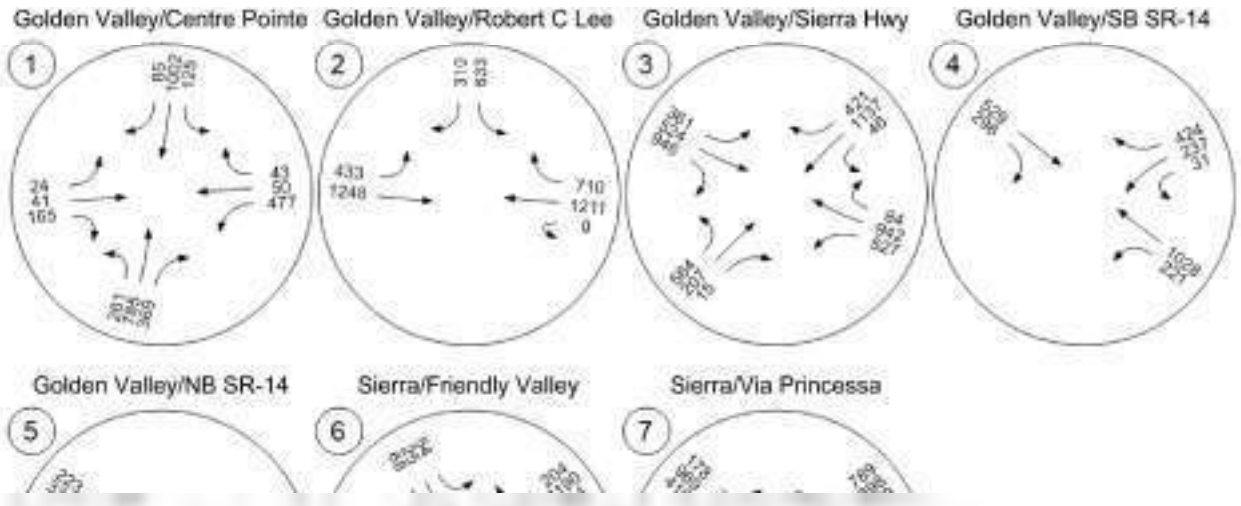



Exhibit 12: Proposed Study Area and Trip Distribution

**Table 7**
Cumulative Projects List

| TAZ | Project | Land Use | Qty | Units | AM Peak Hour | | | PM Peak Hour | | | Daily |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | In | Out | Total | In | Out | Total | |
| 1 | Sierra West Assisted Living | Assisted Living | 61.74 | TSF | 18 | 6 | 23 | 9 | 20 | 30 | 259 |
| | 21046 Dockweiler Dr | Single Family Detached | 93.00 | DU | 17 | 48 | 65 | 55 | 32 | 87 | 877 |
| | 21726 Placerita Canyon Rd | Single Family Detached | 42.00 | DU | 8 | 22 | 29 | 25 | 15 | 39 | 396 |
| | Needham Ranch Phase 2 | Strip Retail (<40k TSF) | 904.00 | TSF | 497 | 90 | 588 | 118 | 470 | 588 | 5,424 |
| | Subtotal | | | | 540 | 166 | 705 | 207 | 537 | 744 | 6,956 |
| 2 | Prima Way Commercial | Commercial | 6.31 | TSF | 9 | 6 | 15 | 21 | 21 | 42 | 344 |
| | Salazar Self Storage | Mini-Warehouse | 111.76 | TSF | 6 | 4 | 10 | 8 | 9 | 17 | 162 |
| | Subtotal | | | | 15 | 10 | 25 | 29 | 30 | 59 | 506 |
| 3 | Valley Center Skilled Nursing | Nursing Home | 51.00 | TSF | 22 | 6 | 28 | 12 | 18 | 30 | 344 |
| | Valley Center Self Storage | Mini-Warehouse | 156.06 | TSF | 8 | 6 | 14 | 11 | 12 | 23 | 226 |
| | Subtotal | | | | 30 | 12 | 42 | 23 | 30 | 53 | 570 |
| 4 | Rent A Bin Recycling | Mini-Warehouse | 51.00 | TSF | 3 | 2 | 5 | 4 | 4 | 8 | 74 |
| | 20600 Golden Triangle | Multifamily Low Rise | 164.00 | DU | 16 | 50 | 66 | 53 | 31 | 84 | 1,105 |
| | Subtotal | | | | 19 | 52 | 71 | 57 | 35 | 92 | 1,179 |
| 5 | Friendly Valley Gas Station | Convenience/Gas Station | 3.00 | TSF | 85 | 85 | 170 | 82 | 82 | 164 | 2,101 |
| 6 | Skyline Ranch | Single Family Detached | 678.00 | DU | 123 | 351 | 475 | 402 | 236 | 637 | 6,394 |
| | 18300 Soledad Canyon | Multifamily Low Rise | 136.00 | DU | 13 | 41 | 54 | 44 | 26 | 69 | 917 |
| | Soledad Assisting Living | Assisted Living | 100.00 | TSF | 29 | 10 | 38 | 15 | 33 | 48 | 419 |
| | Subtotal | | | | 165 | 402 | 567 | 461 | 295 | 754 | 7,730 |
| 7 | Sierra Victoria | Single Family Detached | 48.00 | DU | 9 | 25 | 34 | 28 | 17 | 45 | 453 |
| 8 | Vista Canyon | Multifamily Mid Rise | 477.00 | DU | 41 | 136 | 176 | 113 | 73 | 186 | 2,166 |
| | Metro Walk | Multifamily Mid Rise | 498.00 | DU | 42 | 142 | 184 | 118 | 76 | 194 | 2,261 |
| | Subtotal | | | | 83 | 278 | 360 | 231 | 149 | 380 | 4,427 |
| | | | | **Total** | **946** | **1,030** | **1,974** | **1,118** | **1,175** | **2,291** | **23,922** |

1: Rates from ITE Trip Generation (10th Edition, 2017)
2: DU = Dwelling Units, TSF = Thousand Square Feet



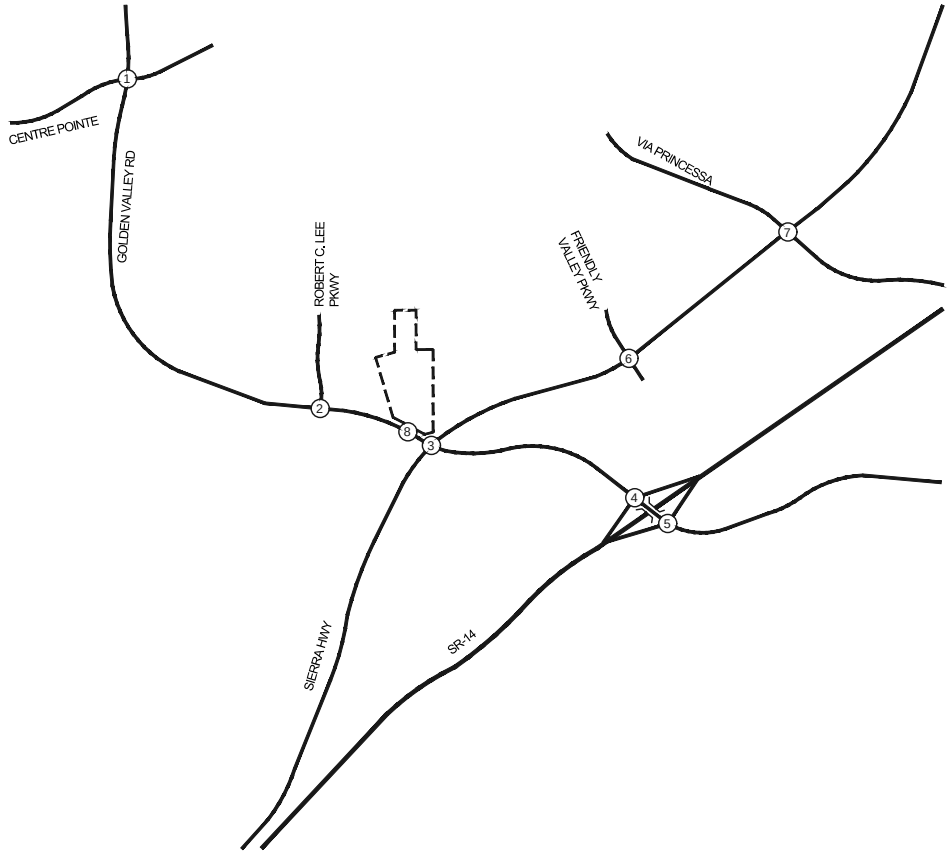
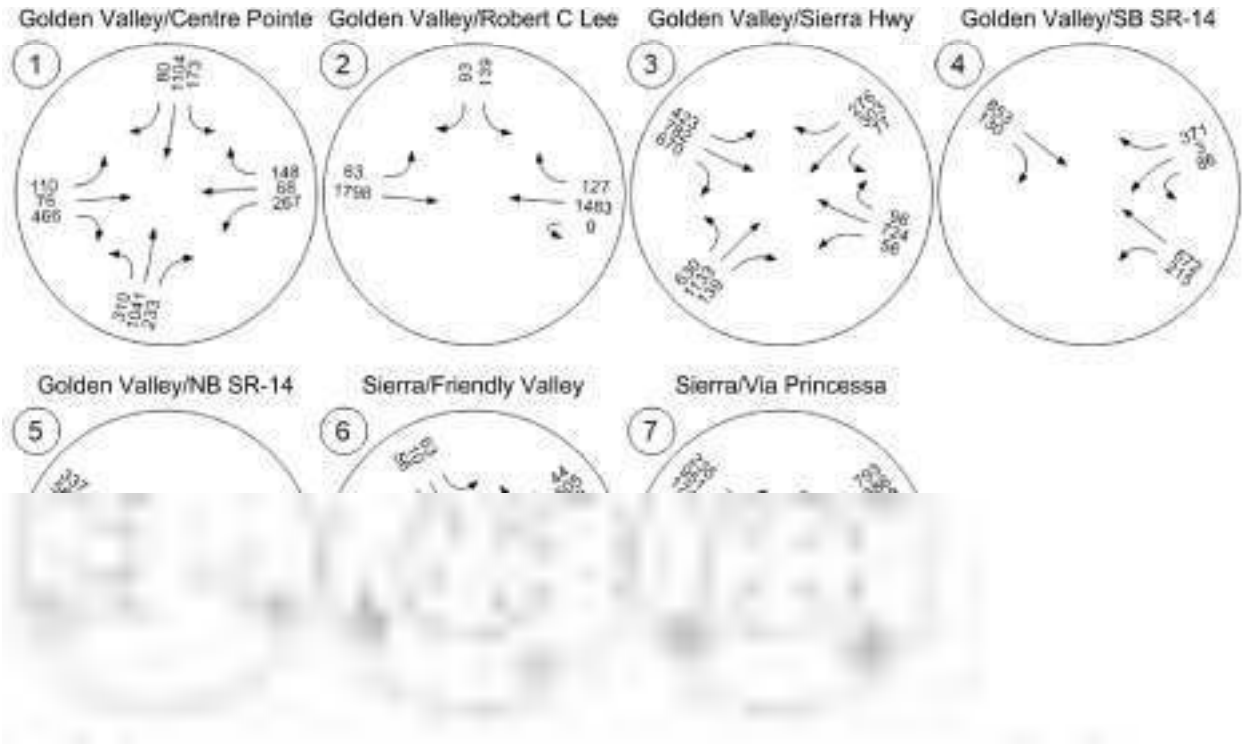




Exhibit 13: Project Opening Year Cumulative AM Peak Hour Volumes



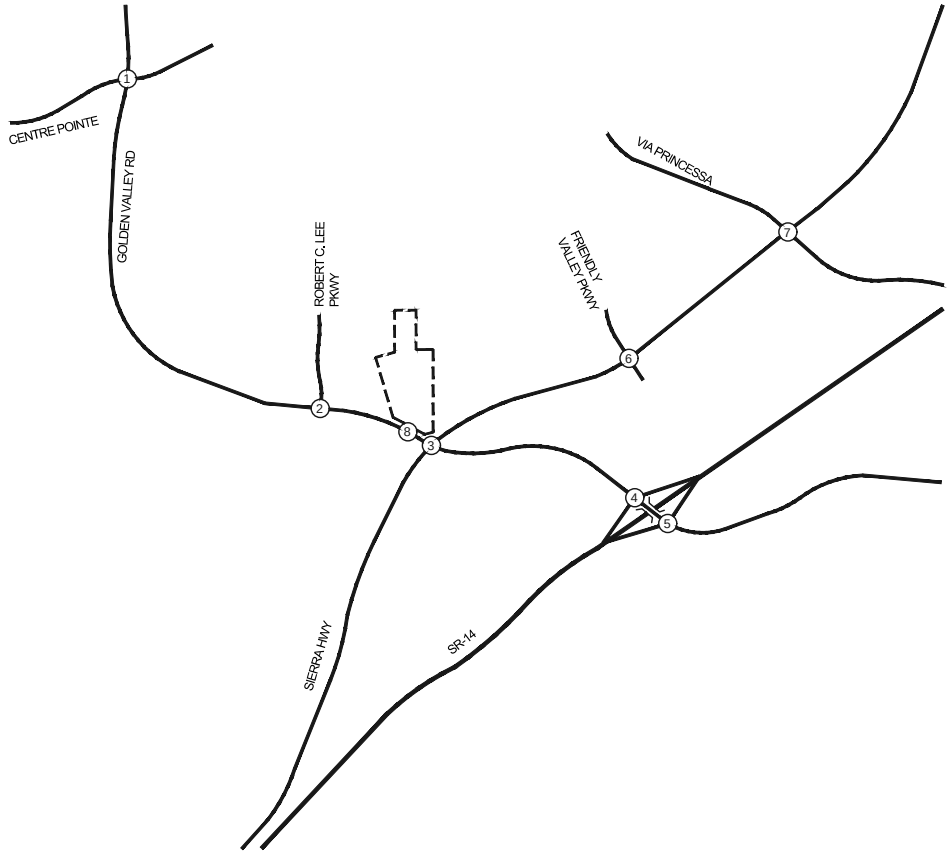




Exhibit 14: Project Opening Year Cumulative PM Peak Hour Volumes

**Table 8**
Intersection Analysis – Project Opening Year Cumulative (OYC) Conditions

| Intersection | | | Control Type | Peak Hour | OYC Conditions | |
|---|---|---|---|---|---|---|
| | | | | | Delay[1] | LOS |
| 1 | Golden Valley | Centre Pointe | Signal | AM | 39.6 | D |
| | | | | PM | **66.4** | **E** |
| 2 | Golden Valley | Robert C Lee | Signal | AM | 26.9 | C |
| | | | | PM | 10.5 | B |
| 3 | Golden Valley | Sierra | Signal | AM | **73.9** | **E** |
| | | | | PM | 49.0 | D |
| 4 | Golden Valley | SB SR-14 | Signal | AM | 31.5 | C |
| | | | | PM | 31.1 | C |
| 5 | Golden Valley | NB SR-14 | Signal | AM | 22.3 | C |
| | | | | PM | 28.0 | C |
| 6 | Sierra | Friendly Valley | Signal | AM | 25.9 | C |
| | | | | PM | 22.5 | C |
| 7 | Sierra | Via Princessa | Signal | AM | 40.3 | D |
| | | | | PM | 43.2 | D |

Note: Delay shown in seconds per vehicle.
1 = Per the Highway Capacity Manual 6th Edition, overall average delay and LOS are shown for signalized intersections.

As shown in **Table 8**, the study intersections are projected to continue to operate at an acceptable LOS during the AM and PM peak hours for project opening year cumulative (OYC) conditions with the exception of the following intersections:

- #1 – Golden Valley Rd/Centre Pointe (LOS E PM Peak Hour); and
- #3 – Golden Valley Rd/Sierra Hwy (LOS E AM Peak Hour).

# 7.0 PROJECT OPENING YEAR CUMULATIVE PLUS PROJECT CONDITIONS

Project opening year cumulative plus project (OYCWP) conditions analysis is intended to identify the project-related impacts on both the existing and planned near-term circulation system.

## 7.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for the project opening year cumulative plus project (OYCWP) scenario are consistent with those previously shown in **Exhibit 4.** The proposed project will be adding a new left-in, right-in, right-out driveway along Golden Valley Road and will be modifying the intersection of Golden Valley Road and Robert C. Lee Parkway to include a designated westbound U-turn lane.

## 7.2 PROJECT OPENING YEAR CUMULATIVE PLUS PROJECT (OYWCP) TRAFFIC VOLUMES

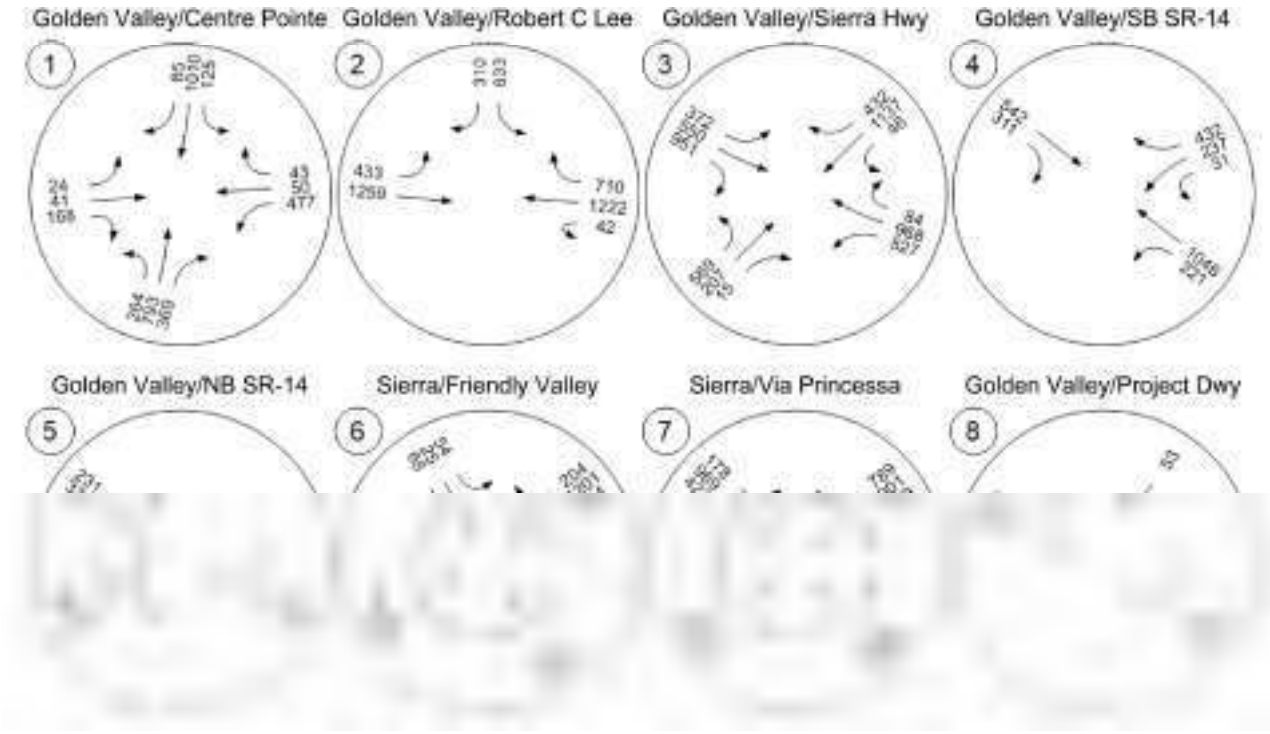
Project opening year cumulative plus project (OYCWP) volumes include background traffic plus the addition of traffic projected to be generated by nearby cumulative projects and the addition the traffic projected to be generated by the proposed project. Since the proposed project is expected to be built and generating trips in 2021, project opening year cumulative plus project (OYCWP) volumes include a growth rate of 2% per year for two year, applied to existing base volumes.

Project Opening Year Cumulative Plus Project (OYCWP) = (Existing (2021) Counts * 1.02^2) + Cumulative Project Volume + Project Volume

**Exhibit 15** and **Exhibit 16** show project opening year cumulative plus project (OYCWP) AM and PM peak hour volumes at the study intersections.

## 7.3 PROJECT OPENING YEAR CUMULATIVE PLUS PROJECT (OYWCP) INTERSECTION LEVEL OF SERVICE ANALYSIS

Project opening year cumulative plus project (OYCWP) conditions AM and PM peak hour intersection analysis is shown in **Table 9**. HCM analysis sheets are provided in **Appendix C**.



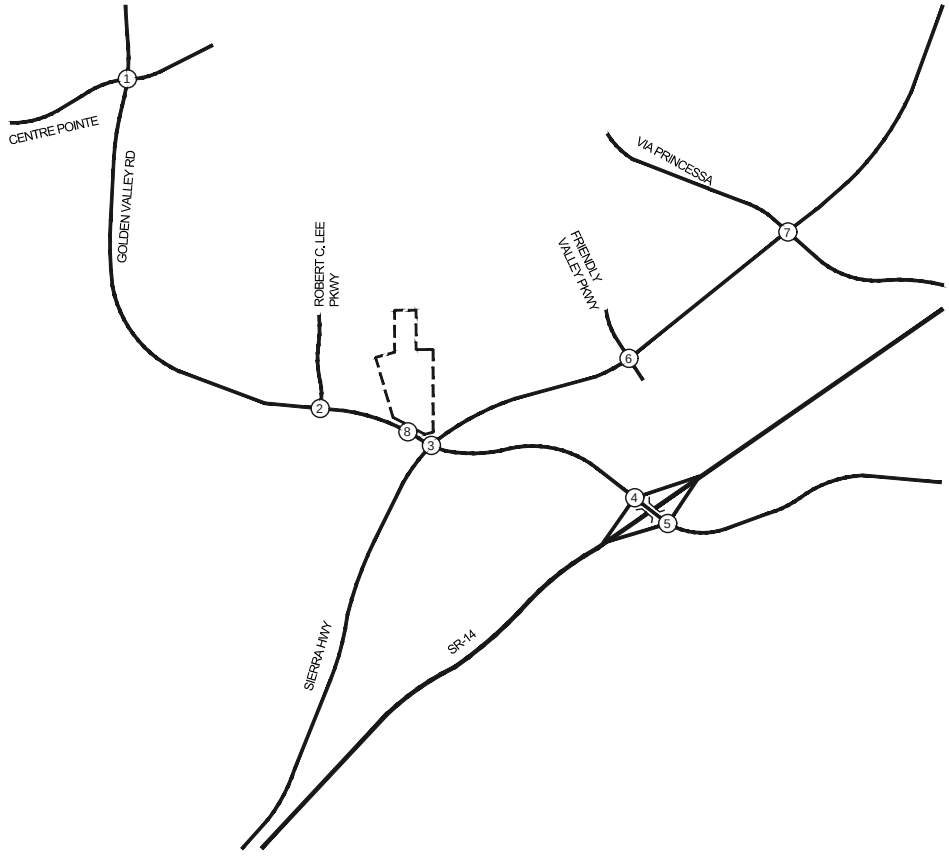
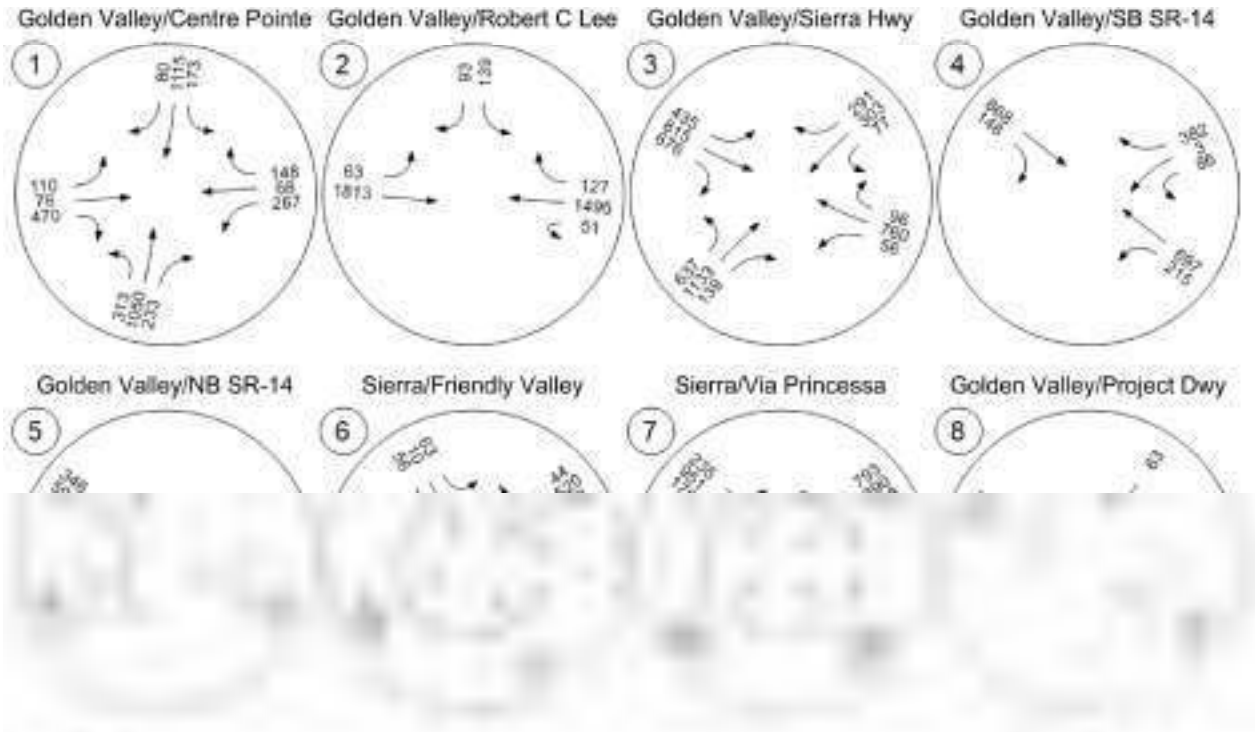




Exhibit 15: Project Opening Year Cumulative plus Project AM Peak Hour Volumes



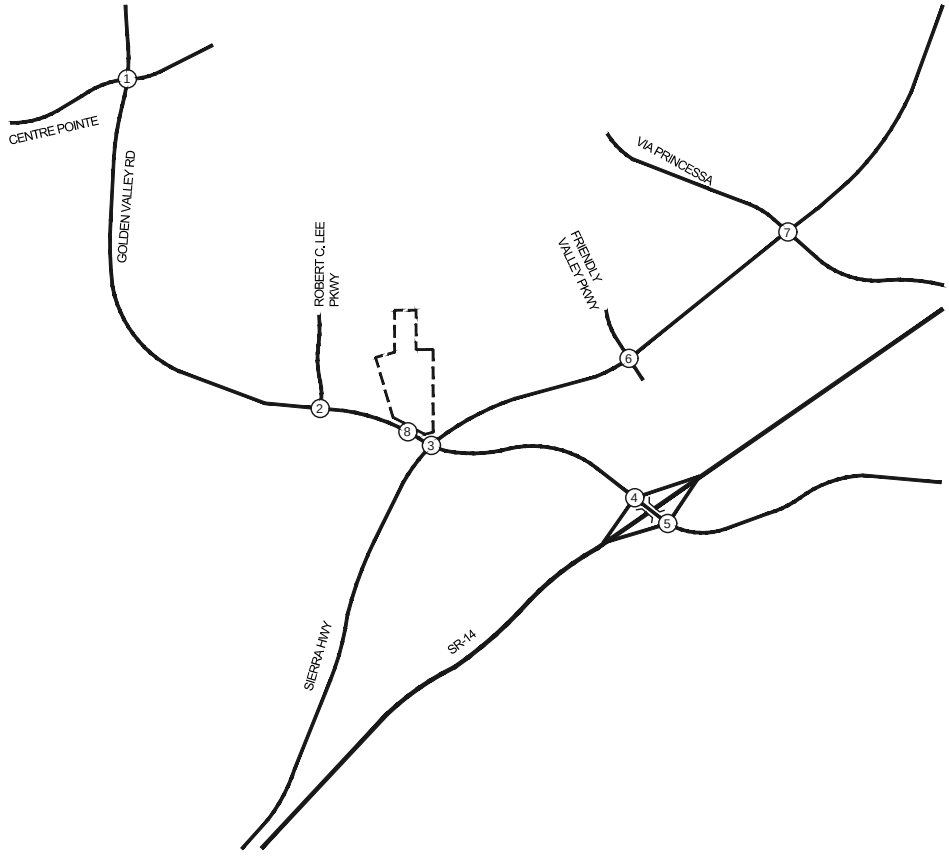




Exhibit 16: Project Opening Year Cumulative plus Project PM Peak Hour Volumes

**Table 9**

Intersection Analysis – Project Opening Year Cumulative Plus Project (OYCWP) Conditions

| Intersection | | | Control Type | Peak Hour | OYC Conditions | | OYCWP Conditions | | Change | Deficient? |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Delay[1] | LOS | Delay[1] | LOS | | |
| 1 | Golden Valley | Centre Pointe | Signal | AM | 39.6 | D | 40.2 | D | 0.6 | No |
| | | | | PM | **66.4** | **E** | **68.2** | **E** | 1.8 | No |
| 2 | Golden Valley | Robert C Lee | Signal | AM | 26.9 | C | 28.4 | C | 1.5 | No |
| | | | | PM | 10.5 | B | 12.9 | B | 2.4 | No |
| 3 | Golden Valley | Sierra | Signal | AM | **73.9** | **E** | **75.8** | **E** | 1.9 | No |
| | | | | PM | 49.0 | D | 50.6 | D | 1.6 | No |
| 4 | Golden Valley | SB SR-14 | Signal | AM | 31.5 | C | 31.8 | C | 0.3 | No |
| | | | | PM | 31.1 | C | 31.4 | C | 0.3 | No |
| 5 | Golden Valley | NB SR-14 | Signal | AM | 22.3 | C | 22.6 | C | 0.3 | No |
| | | | | PM | 28.0 | C | 28.2 | C | 0.2 | No |
| 6 | Sierra | Friendly Valley | Signal | AM | 25.9 | C | 26.0 | C | 0.1 | No |
| | | | | PM | 22.5 | C | 22.6 | C | 0.1 | No |
| 7 | Sierra | Via Princessa | Signal | AM | 40.3 | D | 40.5 | D | 0.2 | No |
| | | | | PM | 43.2 | D | 43.4 | D | 0.2 | No |
| 8 | Golden Valley | Dwy 1 | OWSC | AM | - | - | 27.3 | D | - | No |
| | | | | PM | - | - | 22.6 | C | - | No |

Note: OWSC = One-Way Stop-Control; Delay shown in seconds per vehicle.

1 = Per the Highway Capacity Manual 6th Edition, overall average delay and LOS are shown for signalized intersections. For intersections with one-or-two-way stop-control, the delay and LOS for the worst individual approach is shown.

As shown in **Table 9** the study intersections are projected to continue to operate at an acceptable LOS during the AM and PM peak hours for project opening year cumulative (OYC) conditions with the exception of the following intersections:

- #1 – Golden Valley Rd/Centre Pointe (LOS E PM Peak Hour); and
- #3 – Golden Valley Rd/Sierra Hwy (LOS E AM Peak Hour).

Per City of Santa Clarita Guidelines, the proposed project does not create a transportation deficiency.

# APPENDIX

# APPENDIX A

SCOPING AGREEMENT
CITY OF SANTA CLARITA GENERAL PLAN CIRCULATION ELEMENT

## Scoping Agreement for Traffic Impact Analysis

This form acknowledges the requirements for the traffic impact analysis of the following project. The analysis will follow the local jurisdiction's traffic impact analysis guidelines.

| | |
|---|---|
| Project Name: | Santa Clarita Mixed-Use Development (TTM 68203) |
| Project Address: | Northwest Corner of Sierra Hwy/Golden Valley Road |
| Project Description: | 151 Unit Senior Assistant Living, 73 Condominium Units, 60 Room Hotel with 3,3315 Square Feet of Retail, 2,360 SF of Restaurant (see attached site plan) |

| | Consultant | Developer |
|---|---|---|
| Name: | TJW Engineering | Jimmy Lee |
| Address: | 9841 Irvine Center Dr, #200 | 800 Royal Oaks Dr, Suite 104 |
| | Irvine, CA 92618 | Monrovia, CA 91016 |
| Telephone: | 949-878-3509 | 626-578-7000 x2112 |
| Email: | jeffrey@tjwengineering.com | jlee@ldcla.com |

Trip Generation Source: ITE Trip Generation Manual, 10th Edition (2017)

| | | | |
|---|---|---|---|
| Current GP Land Use: | Mixed Use Neighborhood | Proposed Land Use: | Mixed Use Neighborhood |
| Current Zoning: | MX-N | Proposed Zoning: | MX-N |

Is the project screened from LOS analysis? [ ] Yes [X] No

| | |
|---|---|
| Justification: | |

Is the project screened from VMT analysis? [ ] Yes [X] No

| | |
|---|---|
| Justification: | The project is not screened out per the Transportation Analysis Updates (May, 19 2020)<br>- Project Size Screening – Exceeds daily trip limit of 110 trips<br>- Low VMT Area Screening – Project location is between 15% below City baseline and City baseline<br>- Transit Priority Screening – Project is not located within a transit priority area |

| | Existing Trip Generation | | | Proposed Trip Generation | | |
|---|---|---|---|---|---|---|
| | In | Out | Total | In | Out | Total |
| AM Trips | - | - | - | 51 | 53 | 104 |
| PM Trips | - | - | - | 70 | 63 | 133 |
| Daily | | | - | | | 1,787 |

Internal Trip Capture: [ ] Yes [X] No - % Trip Discount

Pass-By Allowance: [ ] Yes [X] No - % Trip Discount

Trip Distribution: See attached exhibit

Project Build-out Year: 2023 Annual Ambient Growth Rate: 2%

Study Intersections:

| | | | |
|---|---|---|---|
| 1. | Golden Valley Rd/ Centre Pointe Pkwy | 6. | Sierra Hwy/Friendly Valley Pkwy |
| 2. | Golden Valley Rd/Robert C Lee Pkwy | 7. | Sierra Hwy/Via Princessa |
| 3. | Golden Valley Rd/Sierra Hwy | 8. | |
| 4. | Golden Valley Rd/SB-14 Ramp | 9. | |
| 5. | Golden Valley Rd/NB-14 Ramp | 10. | |

Study Roadway Segments:

| | | | |
|---|---|---|---|
| 1. | | 3. | |
| 2. | | 4. | |

Analysis Scenarios:

| | | | |
|---|---|---|---|
| 1. | Existing | 6. | |
| 2. | Existing Plus Project | 7. | |
| 3. | Project Opening Year (Cumulative) | 8. | |
| 4. | Project Opening Year Plus Project | 9. | |
| 5. | | 10. | |

| | |
|---|---|
| Additional Notes: | TJW Engineering requests a list of recently approved projects within the vicinity of the proposed project. These projects will be included in the Background Conditions scenarios. |

Signatures:

| | |
|---|---|
| (Jeffrey Chinchilla) | |
| Consultant's Representative | City (Approved By) |
| October 7, 2021 | |
| Date | Date |

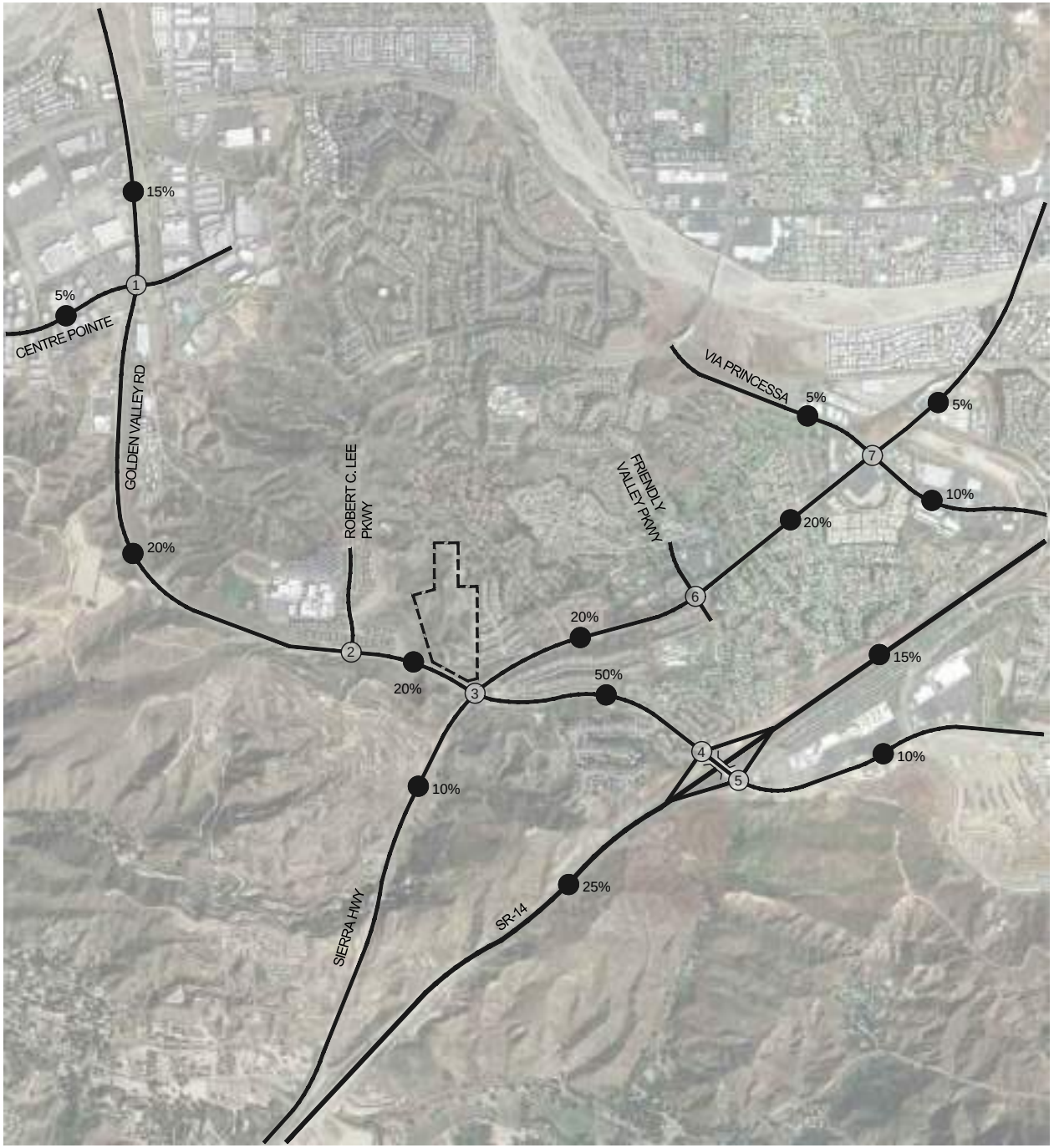
**Table 1**
Proposed Project Trip Generation

| Proposed Land Use[1] | Qty | Unit[2] | Daily Trips (ADTs) | | AM Peak Hour | | | | | PM Peak Hour | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Rate | Volume | Rate | In:Out Split | Volume | | | Rate | In:Out Split | Volume | | |
| | | | | | | | In | Out | Total | | | In | Out | Total |
| Multi-Family Residential (ITE 220) | 73.00 | DU | 7.32 | 534 | 0.46 | 23:77 | 8 | 26 | 34 | 0.56 | 63:37 | 26 | 15 | 41 |
| Assisted Senior Living (ITE 254) | 151.00 | Beds | 2.60 | 393 | 0.19 | 63:37 | 18 | 11 | 29 | 0.26 | 38:62 | 15 | 24 | 39 |
| Hotel (ITE 310) | 60.00 | Rooms | 14.34 | 860 | 0.67 | 60:40 | 25 | 16 | 41 | 0.89 | 54:46 | 29 | 24 | 53 |
| Total | | | | 1,787 | | | 51 | 53 | 104 | | | 70 | 63 | 133 |

1: Rates from ITE Trip Generation (10th Edition, 2017)

2: DU = Dwelling Units

Exhibit 1: Proposed Project Site Plan



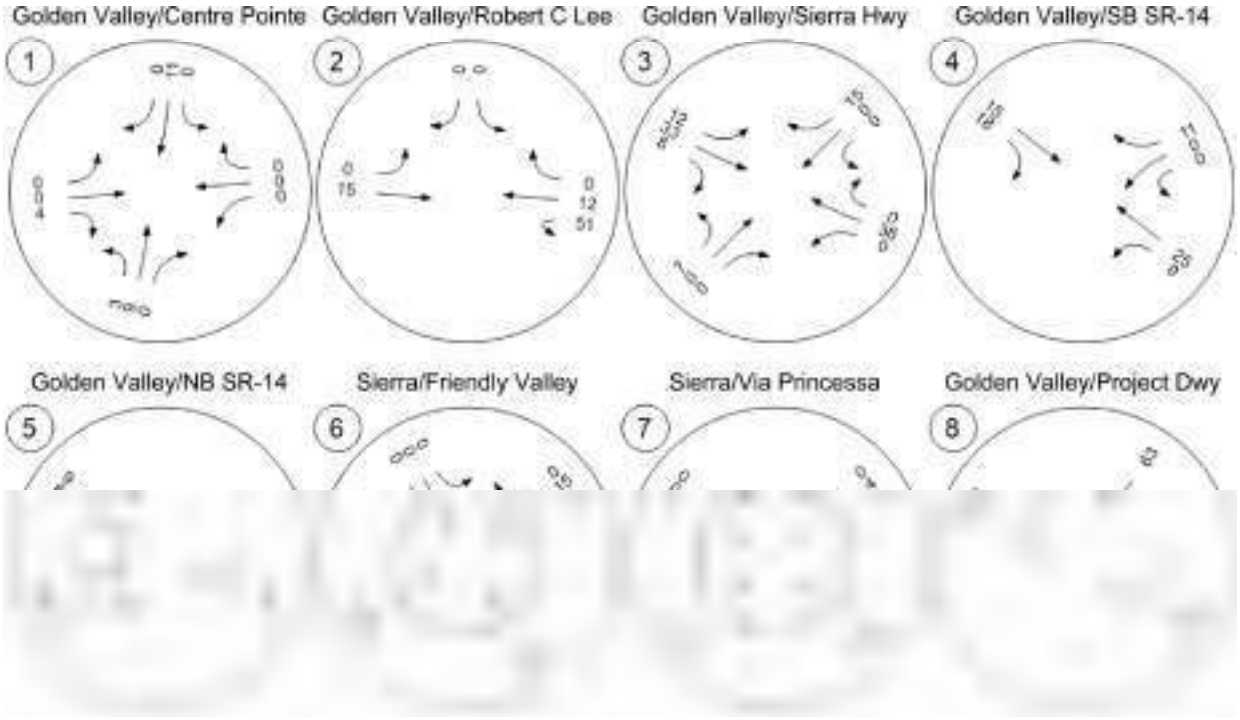

Legend:

- Project Site
- ○ Study Intersection Location
- XX% Percent Trip Distribution

Exhibit 2: Proposed Study Area and Trip Distribution



Not to Scale



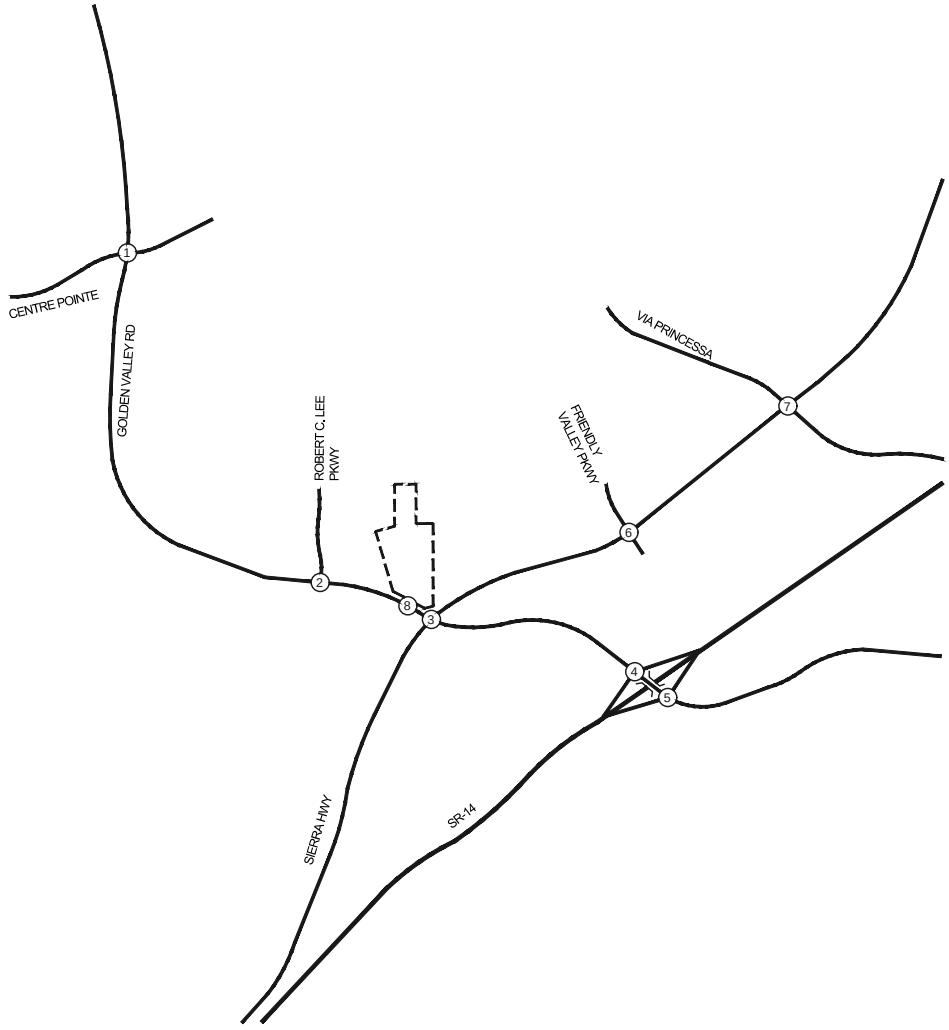
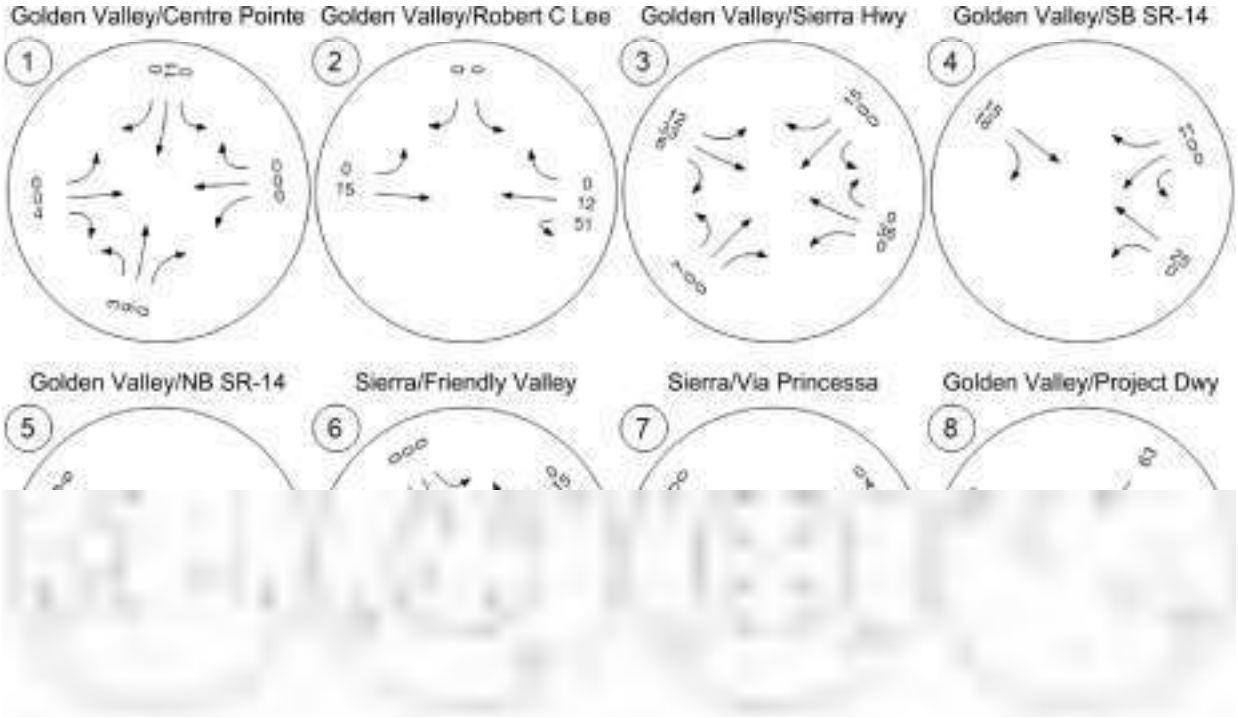




Exhibit 3: Trip Distribution of Proposed Project AM Trips at Study Intersections



Not to Scale



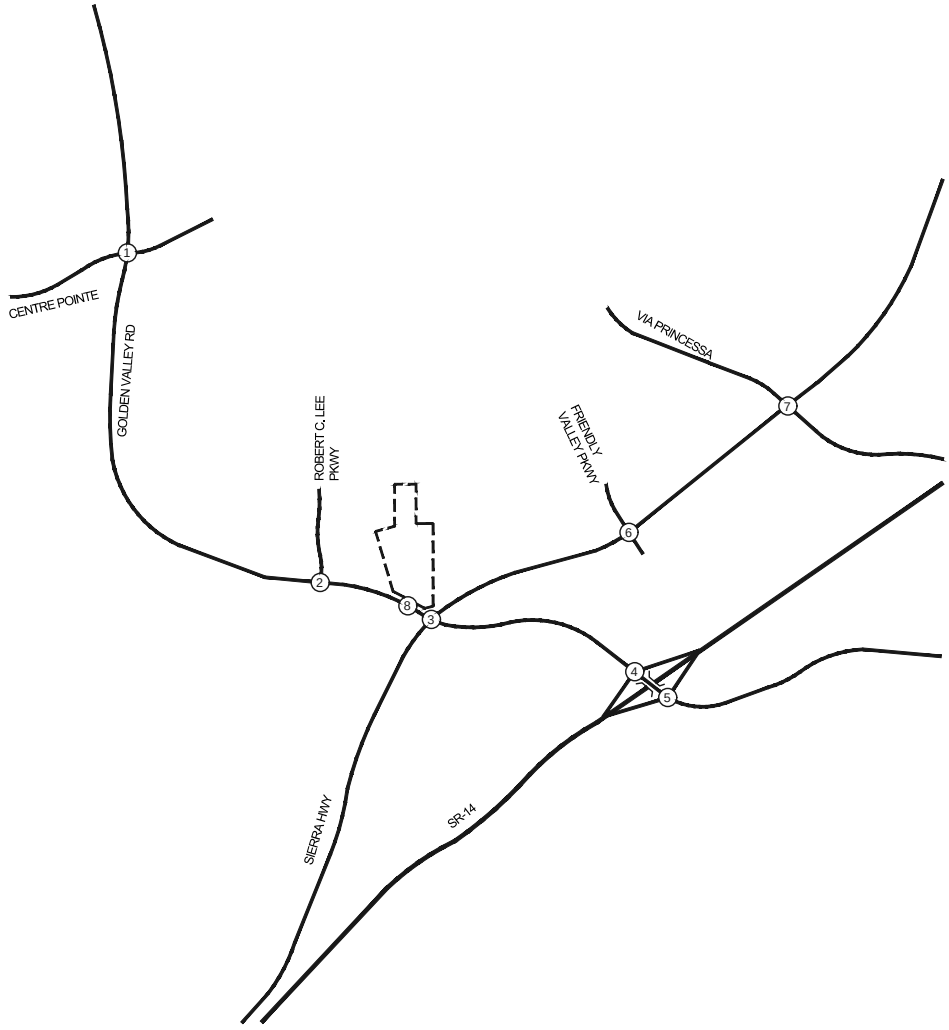
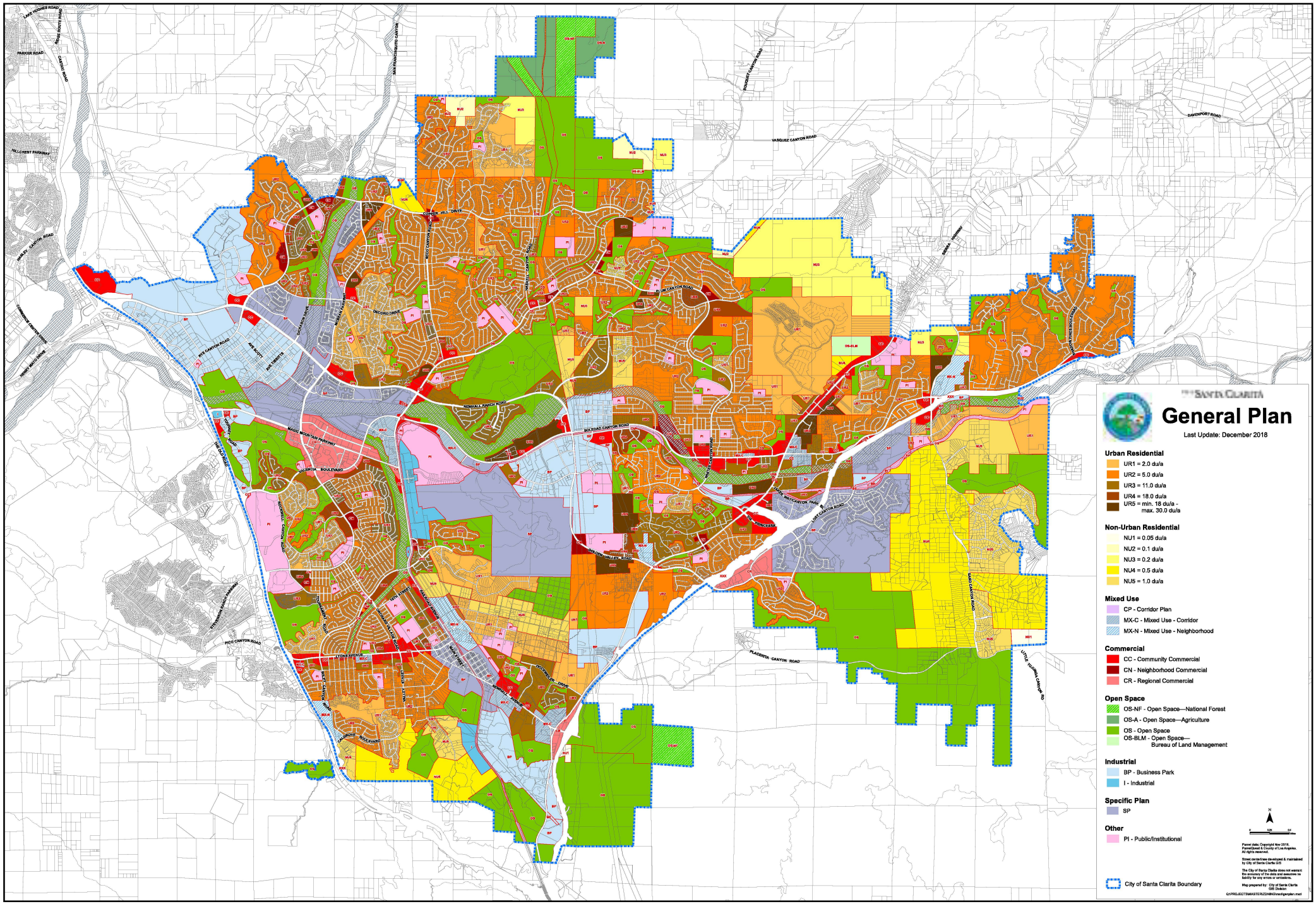




Exhibit 4: Trip Distribution of Proposed Project PM Trips at Study Intersections



Not to Scale

[illegible]


The Santa Clarita
General Plan
Last Update: December 2018
Urban Residential
UR1 = 2.0 du/a
UR2 = 5.0 du/a
UR3 = 11.0 du/a
UR4 = 18.0 du/a
UR5 = min. 18 du/a - max. 30.0 du/a
Non-Urban Residential
NU1 = 0.05 du/a
NU2 = 0.1 du/a
NU3 = 0.2 du/a
NU4 = 0.5 du/a
NU5 = 1.0 du/a
Mixed Use
CP - Corridor Plan
MX-C - Mixed Use - Corridor
MX-N - Mixed Use - Neighborhood
Commercial
CC - Community Commercial
CN - Neighborhood Commercial
CR - Regional Commercial
Open Space
OS-NF - Open Space—National Forest
OS-A - Open Space—Agriculture
OS - Open Space
OS-BLM - Open Space—Bureau of Land Management
Industrial
BP - Business Park
I - Industrial
Specific Plan
SP
Other
PI - Public/Institutional
City of Santa Clarita Boundary
SOLEDAD CANYON ROAD
VASQUEZ CANYON ROAD
NEWHALL RANCH ROAD
MAGIC MOUNTAIN PARKWAY
VALENCIA BOULEVARD
PLACERITA CANYON ROAD
SAN FRANCISQUITO CANYON ROAD
SAND CANYON ROAD
SIERRA HIGHWAY
DAWENPORT ROAD
BOUQUET CANYON ROAD
PARKER ROAD
LAKE HUGHES ROAD
ROUTE 138
CASTAIC ROAD
HILLCREST PARKWAY
SAN FRANCISQUITO CANYON ROAD
COPPER HILL DRIVE
PLUM CANYON ROAD
DECORO DRIVE
GOLDEN VALLEY ROAD
RYE CANYON ROAD
DEL PRADO
PICO CANYON ROAD
LYONS AVENUE
NEWHALL AVENUE
MAIN STREET
CALGROVE BOULEVARD
WILDWOOD CANYON ROAD
HASLEY CANYON ROAD
CROQUEVILLE DRIVE
SOLEMINT ROAD
SOLEDAD CANYON ROAD
SAN FRANCISQUITO CANYON ROAD
SIERRA HIGHWAY
VASQUEZ CANYON ROAD
PLACERITA CANYON ROAD
SAND CANYON ROAD

8. Cruzan Mesa Road from Whites Canyon Road to Sierra Highway – Remove planned limited secondary highway.

The following roadway alignments were recommended to be realigned as a result of the traffic analysis:

1. Sand Canyon Road from the Northern Santa Clarita City boundary to Sierra Highway – Realign planned secondary highway along the existing driven roadway.
2. Long Canyon Road/Potrero Canyon Road/Valencia Boulevard at planned intersection – Realign to make Long Canyon Road/Valencia Boulevard the continuous roadway.
3. Chiquito Canyon Road/Long Canyon Road at State Route 126 – Revise alignments to create a continuous north/south roadway.
4. Whites Canyon Road from Plum Canyon Road to Vasquez Canyon Road – Revise alignment to connect from Plum Canyon Road to Sierra Highway (as the proposed Skyline Ranch Road).

Table C-2 indicates the designation of all General Plan roadways within the planning area. It should be noted that local and collector streets are not included on the Highway Plan, which contains only major and secondary highways, expressways, and parkways.

**Table C-2: Highway Plan Roadways in the Planning Area**

| Roadway Classification | Roadway Segments in Planning Area |
|---|---|
| **Expressways** | SR-126 |
| **Major Highways** | Avenue Scott (from Rye Canyon to Avenue Tibbitts)<br>Avenue Tibbitts<br>Bouquet Canyon Road (from Plum Canyon Road to Magic Mountain Parkway)<br>Castaic Road (from Lake Hughes Road to Parker Road)<br>Commerce Center Drive<br>Copper Hill Drive (from Newhall Ranch Road to Seco Canyon Road)<br>Golden Valley Road (from Newhall Ranch Road to SR-14 freeway)<br>Hasley Canyon Road (from Commerce Center Drive to I-5 freeway)<br>Lake Hughes Road (from The Old Road to Ridge Route Road)<br>Long Canyon Road (from SR-126 to Valencia Boulevard)<br>Lost Canyon Road (from Jakes Way to Via Princessa)<br>Lyons Avenue<br>Magic Mountain Parkway (from Commerce Center Drive to Via Princessa)<br>McBean Parkway (from I-5 freeway to Copper Hill Drive)<br>Newhall Avenue (from Railroad Avenue to SR-14 freeway)<br>Newhall Ranch Road<br>Orchard Village Road<br>Parker Road (from The Old Road to Castaic Road)<br>Pico Canyon Road<br>Plum Canyon Road<br>Railroad Avenue (from Magic Mountain Parkway to Lyons Avenue)<br>Rye Canyon Road<br>Sand Canyon Road (from Soledad Canyon Road to Lost Canyon Road) |

| Roadway Classification | Roadway Segments in Planning Area |
|---|---|
| | Santa Clarita Parkway (from Bouquet Canyon Road to Sierra Highway)<br>Sierra Highway<br>Soledad Canyon Road<br>Stevenson Ranch Parkway<br>The Old Road (from Hasley Canyon Road to Lyons Avenue)<br>The Old Road (from Calgrove Boulevard to Sierra Highway)<br>Valencia Boulevard<br>Via Princessa (from Wiley Canyon Road to Lost Canyon Road)<br>Whites Canyon Road<br>Wiley Canyon Road (from Lyons Avenue to Via Princessa) |
| **Secondary Highways** | 16th Street (from Orchard Village Road to Newhall Avenue)<br>Agua Dulce Canyon Road<br>Avenue Scott (from Avenue Tibbitts to McBean Parkway)<br>Bouquet Canyon Road (from Plum Canyon Road to Angeles National Forest boundary)<br>Calgrove Boulevard<br>Canyon Park Boulevard<br>Copper Hill Drive (from Seco Canyon Road to Bouquet Canyon Road)<br>Davenport Road<br>Decoro Drive<br>Dickason Drive<br>Dockweiler Drive<br>Escondido Canyon Road<br>Golden Valley Road (from Newhall Ranch Road to Plum Canyon Road)<br>Golden Valley Road (from SR-14 freeway to Via Princessa)<br>Haskell Canyon Road (from Copper Hill Drive to Bouquet Canyon Road)<br>Hasley Canyon Road (from Del Valle Road to Commerce Center Drive)<br>Hillcrest Parkway<br>Long Canyon Road (from Chiquito Canyon Road to SR-126)<br>Lost Canyon Road (from Jakes Way to Sand Canyon Road)<br>Magic Mountain Parkway (from Long Canyon Road to Commerce Center Drive)<br>Newhall Avenue (from 16th Street to Railroad Avenue)<br>Placerita Canyon Road (from Sierra Highway to Sand Canyon Road)<br>Potrero Canyon Road<br>Railroad Avenue (from Lyons Avenue to Newhall Avenue)<br>Ridge Route Road (from approximately ¾ mile north of Northlake Hills elementary school to Castaic Road)<br>Rockwell Canyon Road<br>Sand Canyon Road (from Sierra Highway to Soledad Canyon Road)<br>Seco Canyon (from Copper Hill Drive to Bouquet Canyon Road)<br>Shadow Pines Boulevard<br>Sloan Canyon Road (from The Old Road to Quail Valley Road)<br>The Old Road (from Oak Valley Road to Hasley Canyon Road)<br>The Old Road (from Pico Canyon Road to Calgrove Boulevard)<br>Tourney Road<br>Valley Street |

| Roadway Classification | Roadway Segments in Planning Area |
|---|---|
| | Via Princessa (from Lost Canyon Road to Golden Valley Road)<br>Wiley Canyon Road (from Lyons Avenue to Calgrove Boulevard) |
| **Limited Secondary Highways** | Bouquet Canyon (from Angeles National Forest Boundary to Elizabeth Lake Road)<br>Chiquito Canyon Road (from Del Valle Road to Long Canyon Road)<br>Del Valle Road (from Chiquito Canyon Road to Hasley Canyon Road)<br>Hasley Canyon Road (from Sloan Canyon Road to Del Valle Road)<br>Jakes Way<br>Lake Hughes Road (from Ridge Route Road to Pine Canyon Road)<br>Lost Canyon Road (from Sand Canyon Road to Oak Springs Canyon Road)<br>McBean Parkway (from San Francisquito Canyon Road to Copper Hill Drive)<br>Ridge Route Road (from Templin Highway to approximately ¾ mile north of Northlake Hills elementary school)<br>San Francisquito Canyon Road (from McBean Parkway to Elizabeth Lake Road)<br>Sand Canyon Road (from Lost Canyon Road to Little Tujunga Canyon Road)<br>Seco Canyon (from Discovery Ridge Drive to Copper Hill Drive)<br>Skyline Ranch Road<br>Sloan Canyon Road (from Hillcrest Parkway to Hasley Canyon Road)<br>Sloan Canyon Road (from Quail Valley Road to Tract 46443)<br>Tick Canyon Road<br>Tournament Road<br>Vasquez Canyon Road |
| **Parkways** | Henry Mayo Drive (from Commerce Center Drive to The Old Road) |

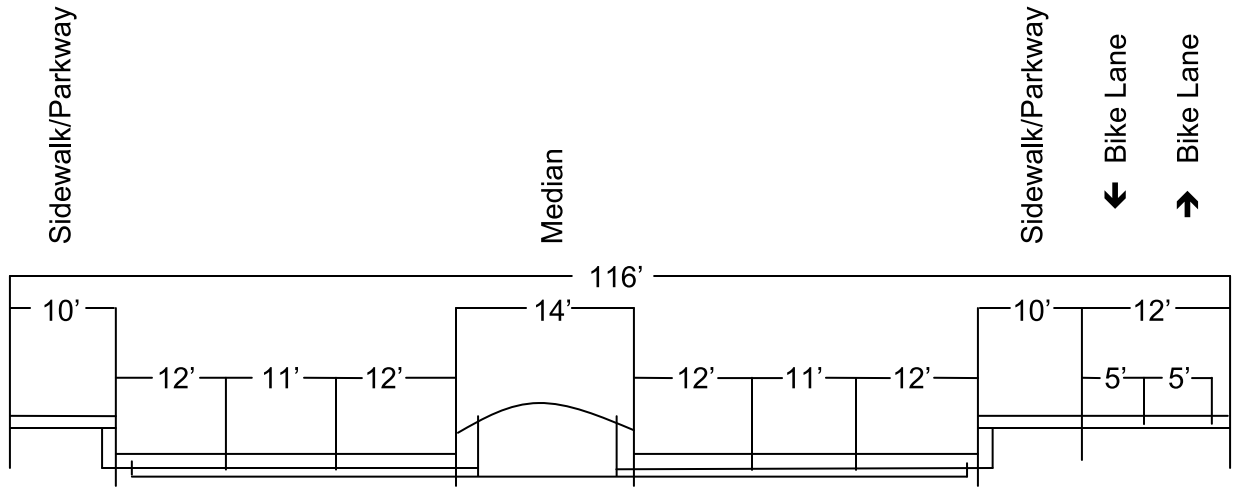
A complete listing of the future roadway improvements needed to implement the recommended Highway Plan is provided in Table C-3.

**Table C-3: Roadway Improvements Needed For Build-Out of Highway Plan**

| Roadway/Segment | Improvement | Comments |
|---|---|---|
| **Agua Dulce Canyon Road** | | |
| Between Sierra Highway and Escondido Canyon Road | Widen roadway from 2 lanes to a 4 lane Secondary Highway | |
| Between Escondido Canyon Road and Davenport Road | Construct new 4 lane Secondary Highway | Gap closure segment |
| Between Davenport Road and Soledad Canyon Road | Widen roadway from 2 lanes to a 4 lane Secondary Highway | |
| **Avenue Scott** | | |
| Between Rye Canyon Road and Avenue Tibbitts | Re-stripe roadway from 4 lanes to 6 lanes | |

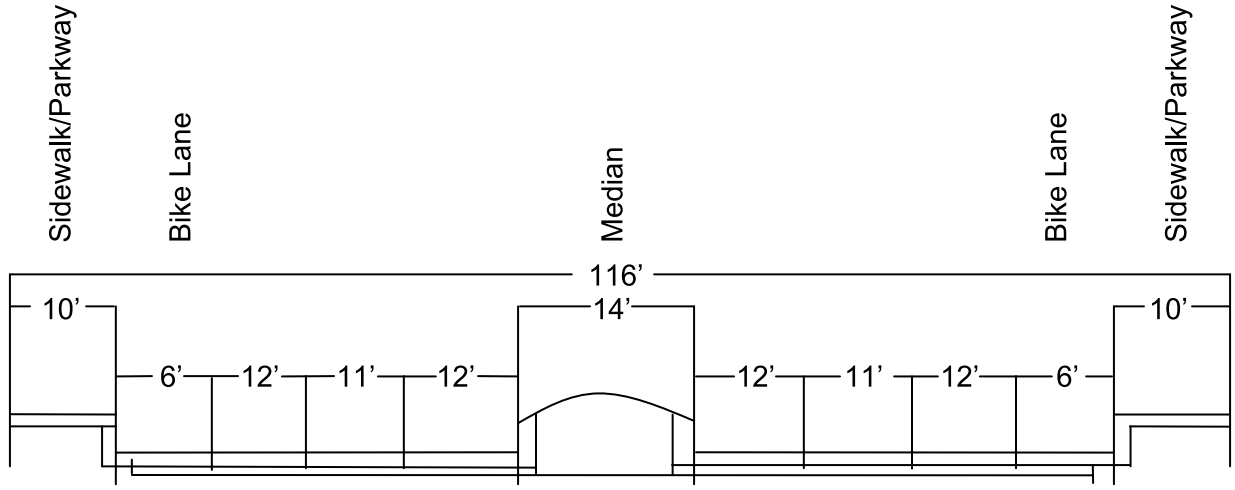
**Exhibit C-3: Standard Roadway Cross Sections**

**Major Highway with Bike Trail Detail**




Three Lanes in Each Direction With Raised Landscape Median, No On-Street Parking

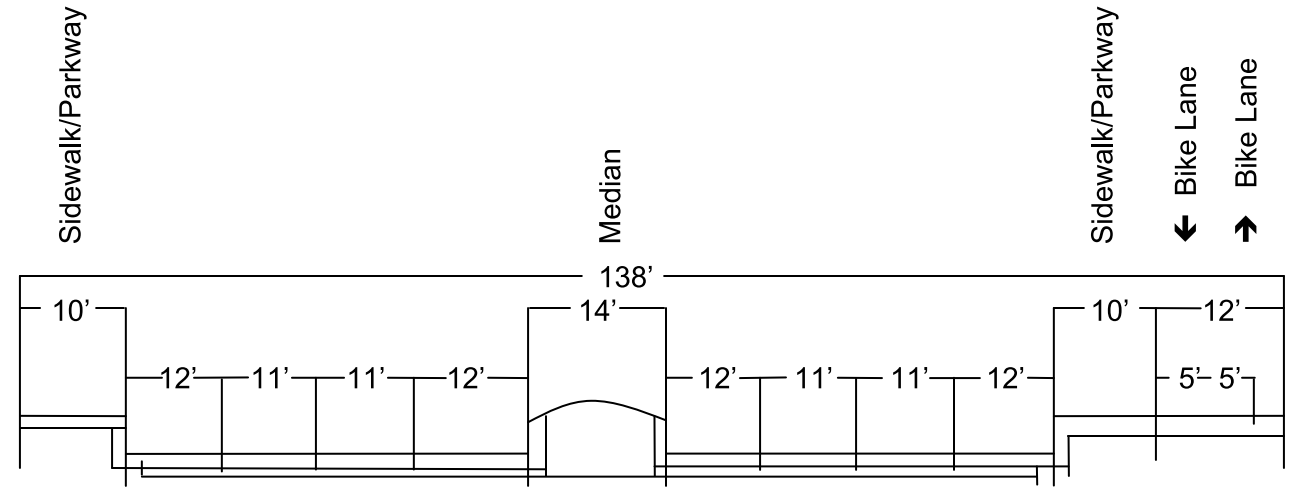
**Major Highway with Bike Lane Detail**




Three Lanes in Each Direction With Raised Landscape Median, No On-Street Parking

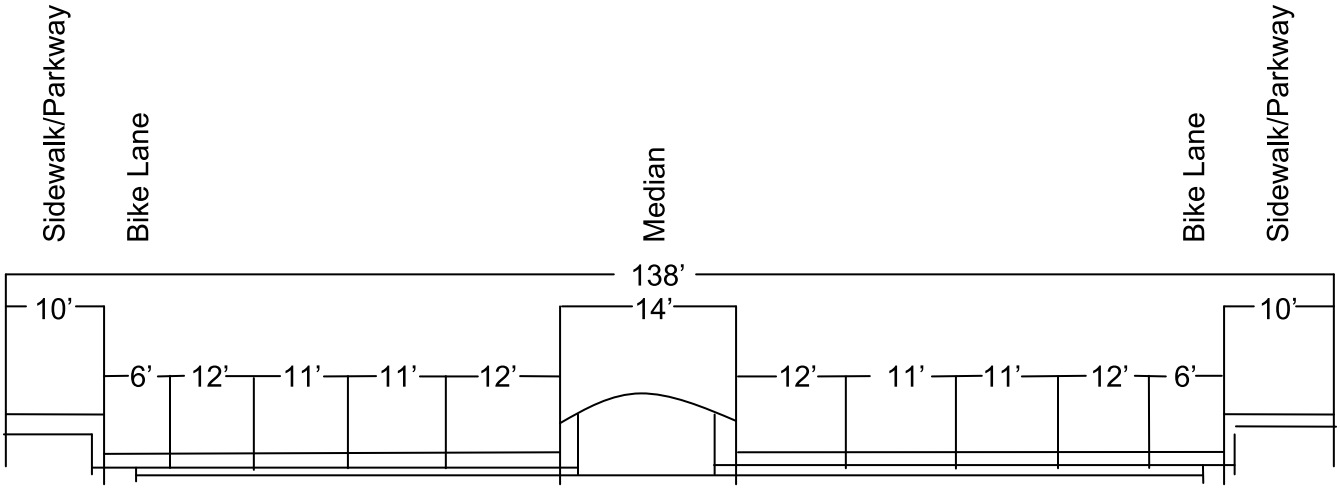
**Exhibit C-3: Standard Roadway Cross Sections, Continued**

**Major Highway 8-Lane Alternative with Bike Trail Detail**




Four Lanes in Each Direction With Raised Landscape Median, No On-Street Parking

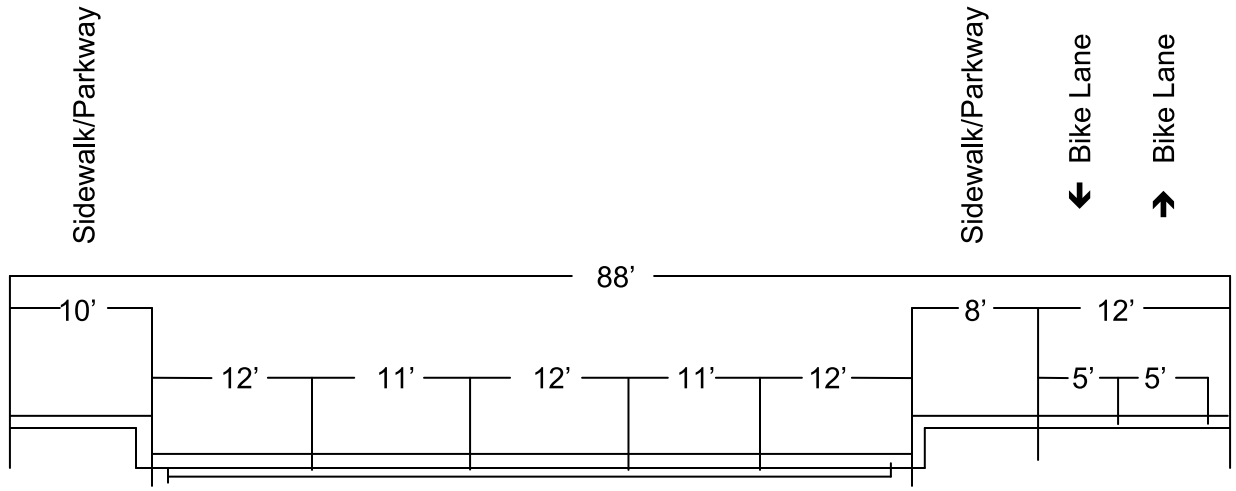
**Major Highway 8-Lane Alternative with Bike Lane Detail**




Four Lanes in Each Direction With Raised Landscape Median, No On-Street Parking

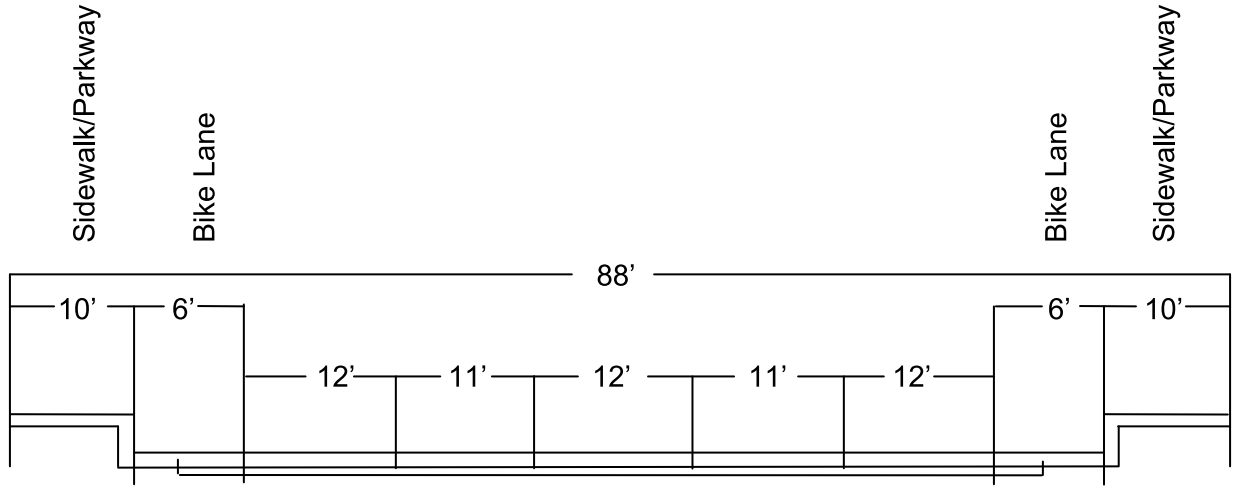
**Exhibit C-3: Standard Roadway Cross Sections, Continued**

**Urban Secondary Highway with Bike Trail Detail**




Two Lanes in Each Direction With Two Way Left Turn Lane, No On-Street Parking

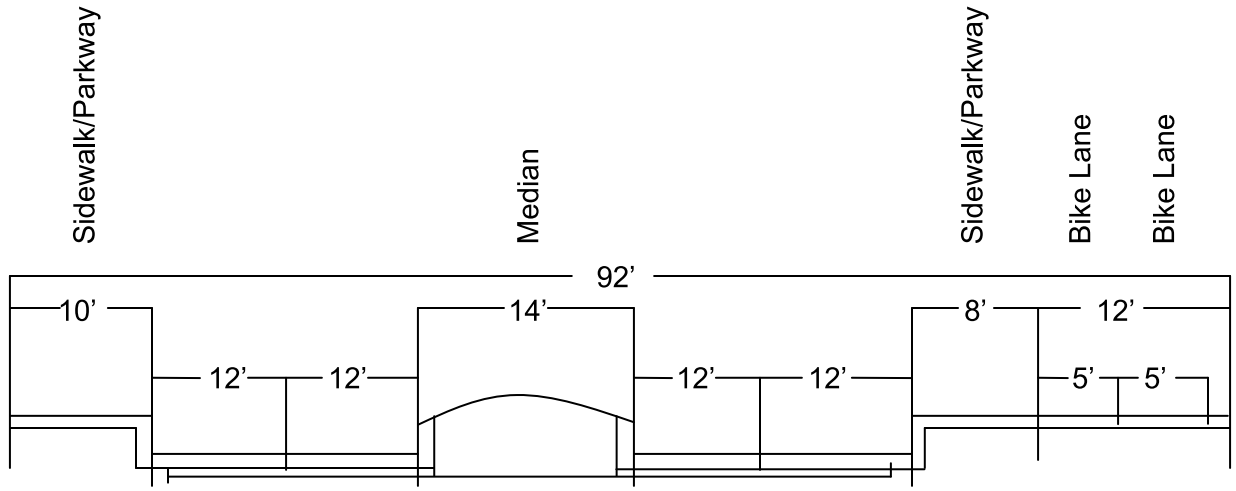
**Urban Secondary Highway with Bike Lane Detail**




Two Lanes in Each Direction With Two Way Left Turn Lane, No On-Street Parking

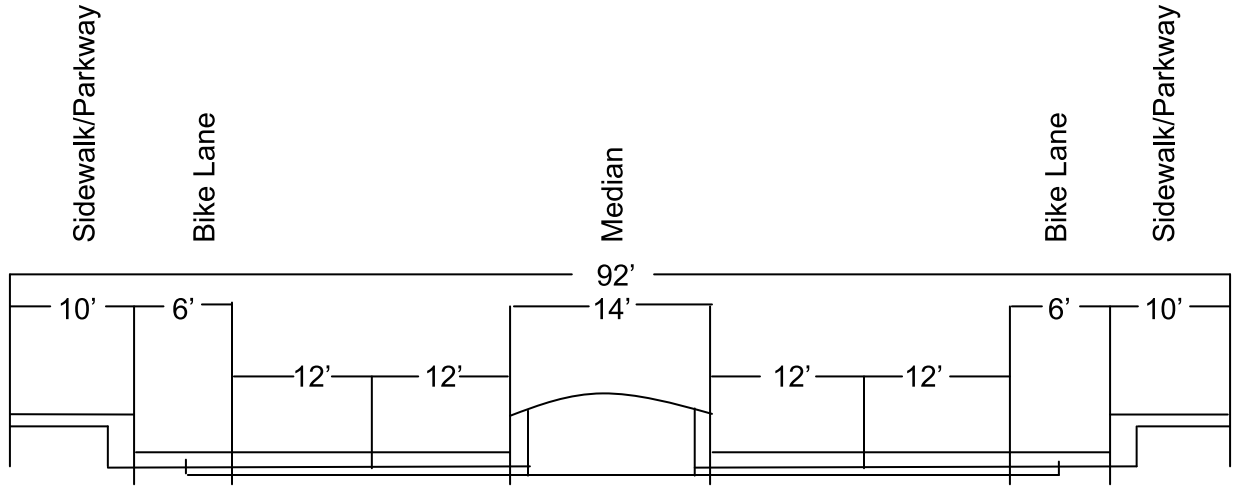
**Exhibit C-3: Standard Roadway Cross Sections, Continued**

**Sub-Urban Secondary Highway with Bike Trail Detail**




Two Lanes in Each Direction With Raised Landscape Median, No On-Street Parking

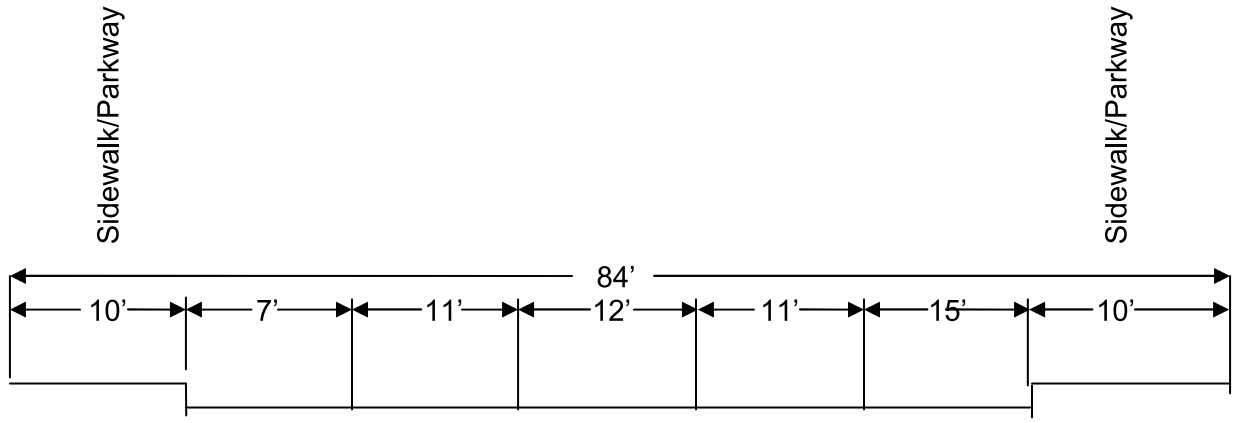
**Sub-Urban Secondary Highway with Bike Lane Detail**




Two Lanes in Each Direction With Raised Landscape Median

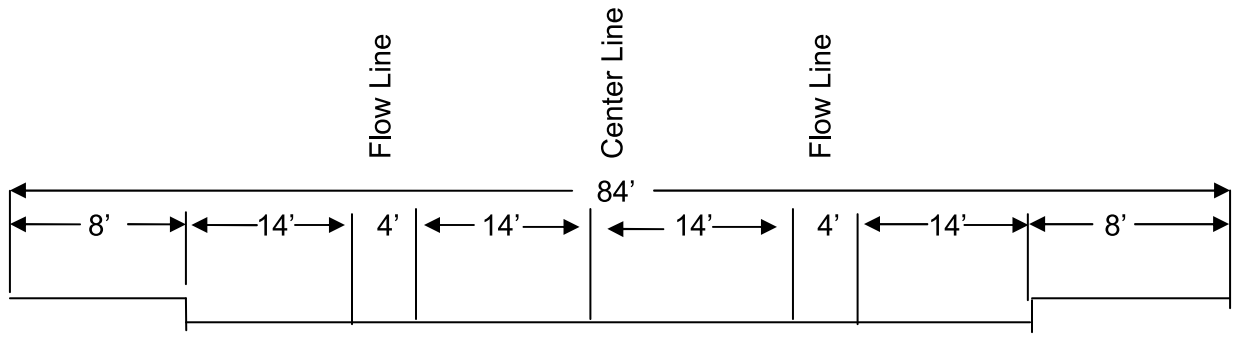
**Exhibit C-3: Standard Roadway Cross Sections, Continued**

**Limited Secondary Arterial Highway- Two Lanes in Each Direction**




Two lanes in each direction with no on-street parking.

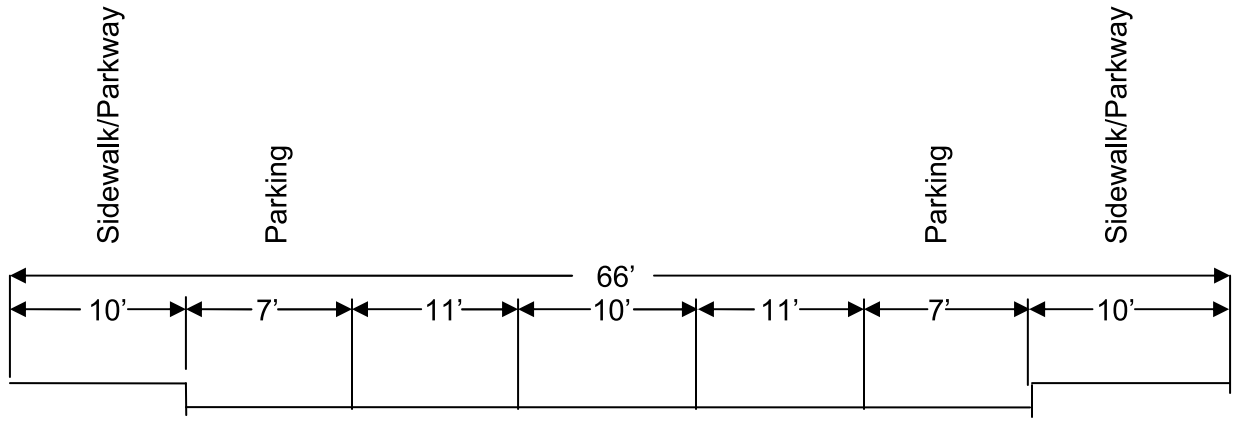
**Limited Secondary Arterial Highway-One Lane in Each Direction**



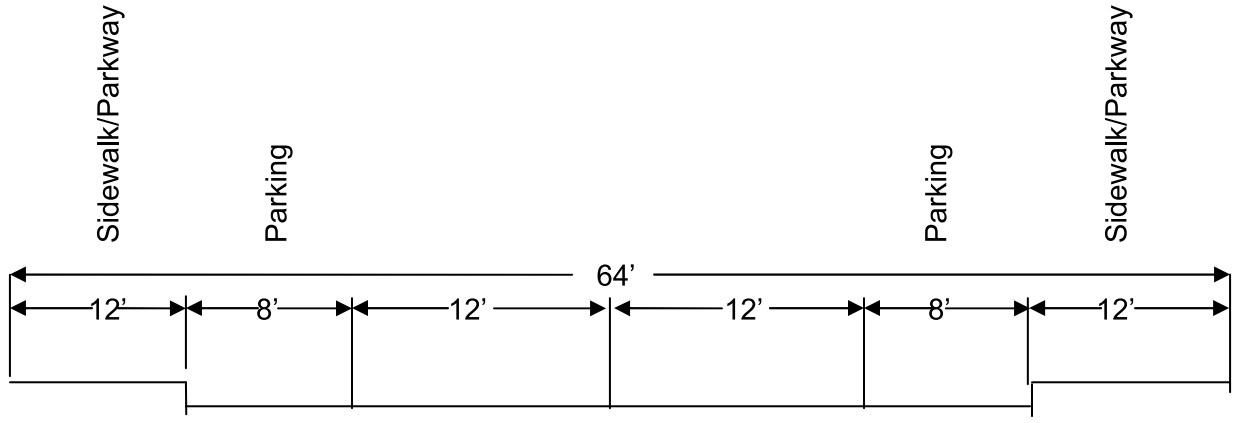

Two lanes in each direction with no on-street parking.

**Exhibit C-3: Standard Roadway Cross Sections, Continued**

**Industrial/Commercial Cul-de-sac**

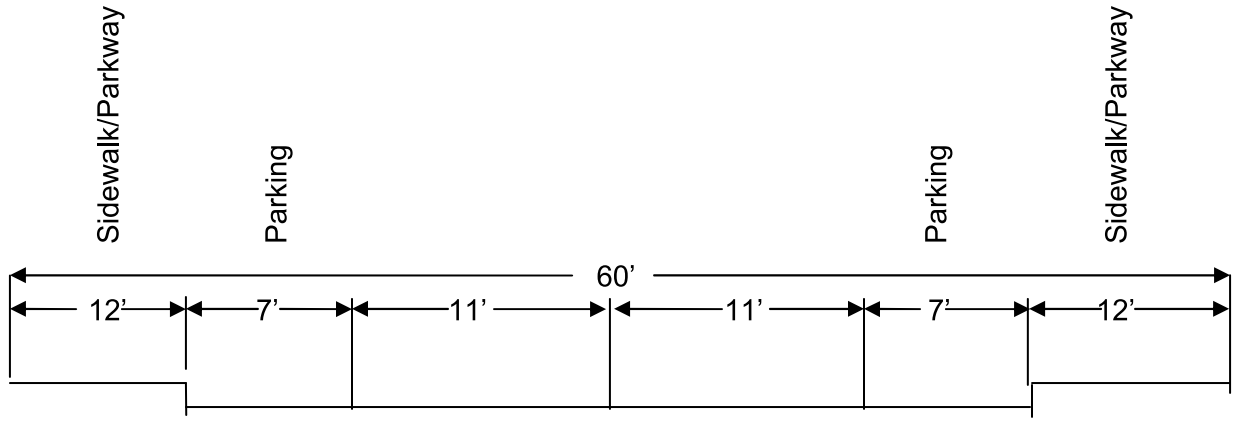



**Residential Collector**



## Exhibit C-3: Standard Roadway Cross Sections, Continued

### Residential Through Street




### Residential Cul-de-sac

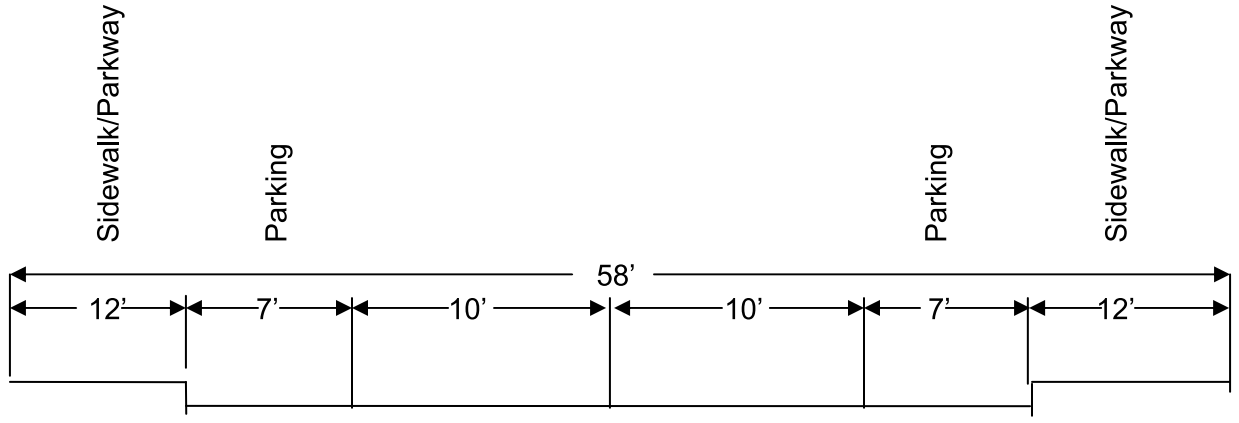
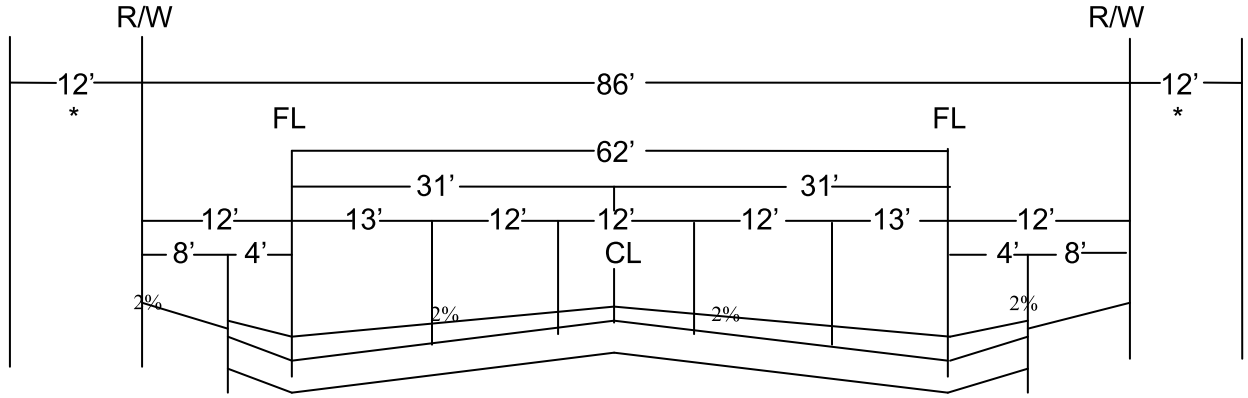
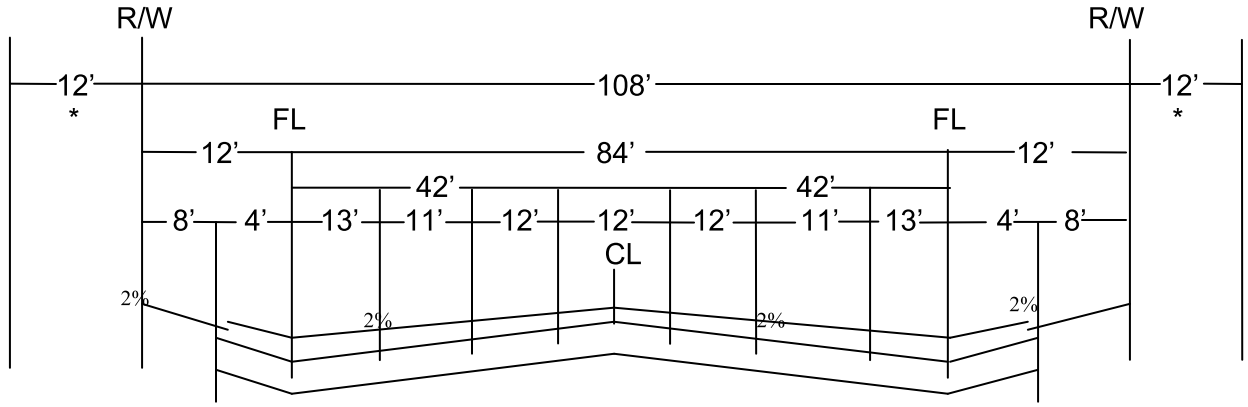


**Exhibit C-3: Standard Roadway Cross Sections, Continued**

**Rural Secondary Highway**




**Rural Major Highway**




* Master Plan Multi-Purpose Riding and Hiking Trail per Santa Clarita Area Plan.

Final design of rural highways to be approved by Los Angeles County Department of Public Works.

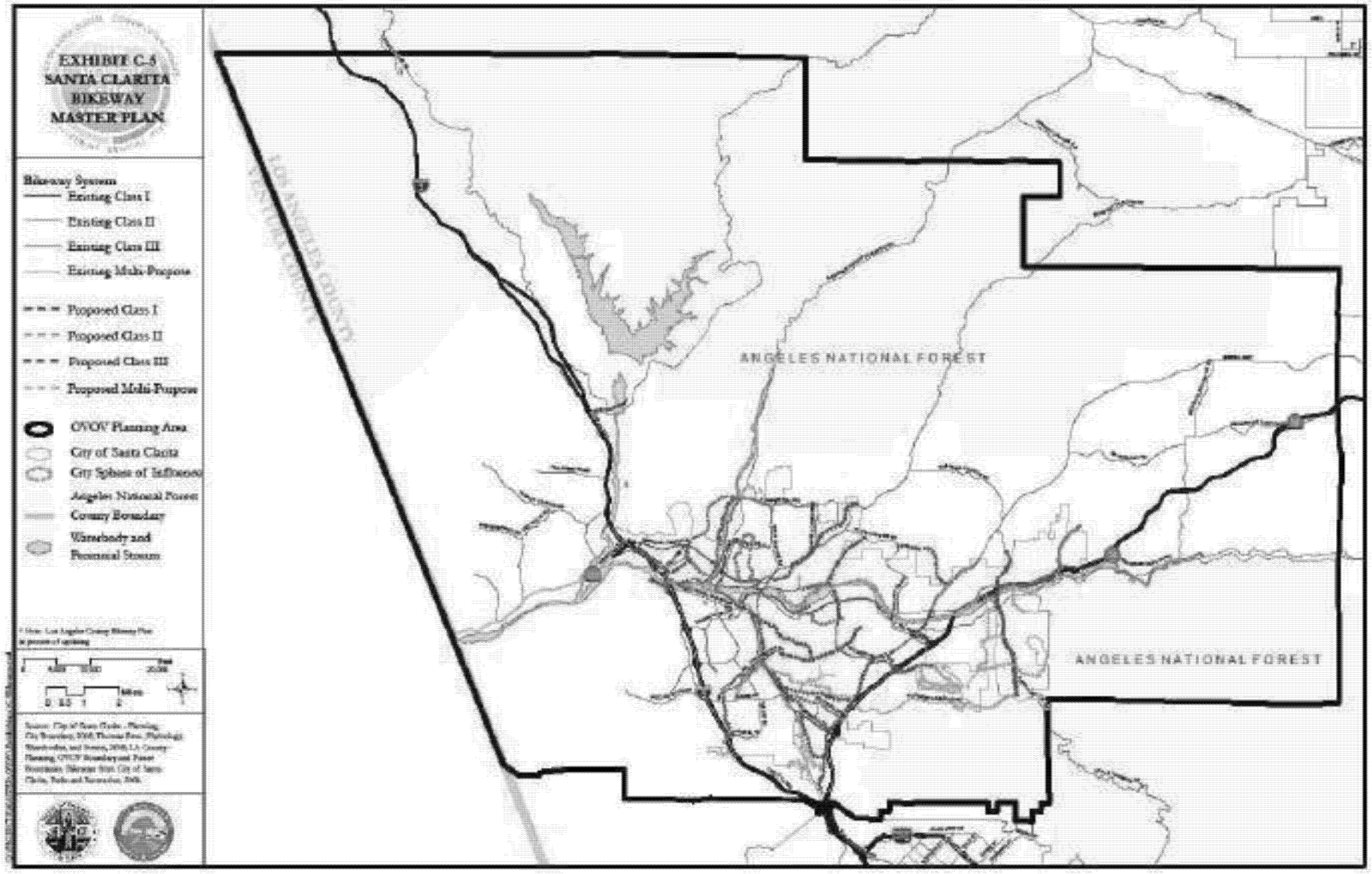


EXHIBIT C-5
SANTA CLARITA
BIKEWAY
MASTER PLAN
Bikeway System
Existing Class I
Existing Class II
Existing Class III
Existing Multi-Purpose
Proposed Class I
Proposed Class II
Proposed Class III
Proposed Multi-Purpose
OVOV Planning Area
City of Santa Clarita
City Sphere of Influence
Angeles National Forest
County Boundary
Waterbody and
Perennial Stream
ANGELES NATIONAL FOREST
ANGELES NATIONAL FOREST

# APPENDIX B

EXISTING TRAFFIC COUNTS

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

City of Santa Clarita
N/S: Sierra Highway
E/W: Golden Valley Road
Weather: Clear

File Name : 03_SCL_Sierra_Golden AM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 1

Groups Printed- Total Volume

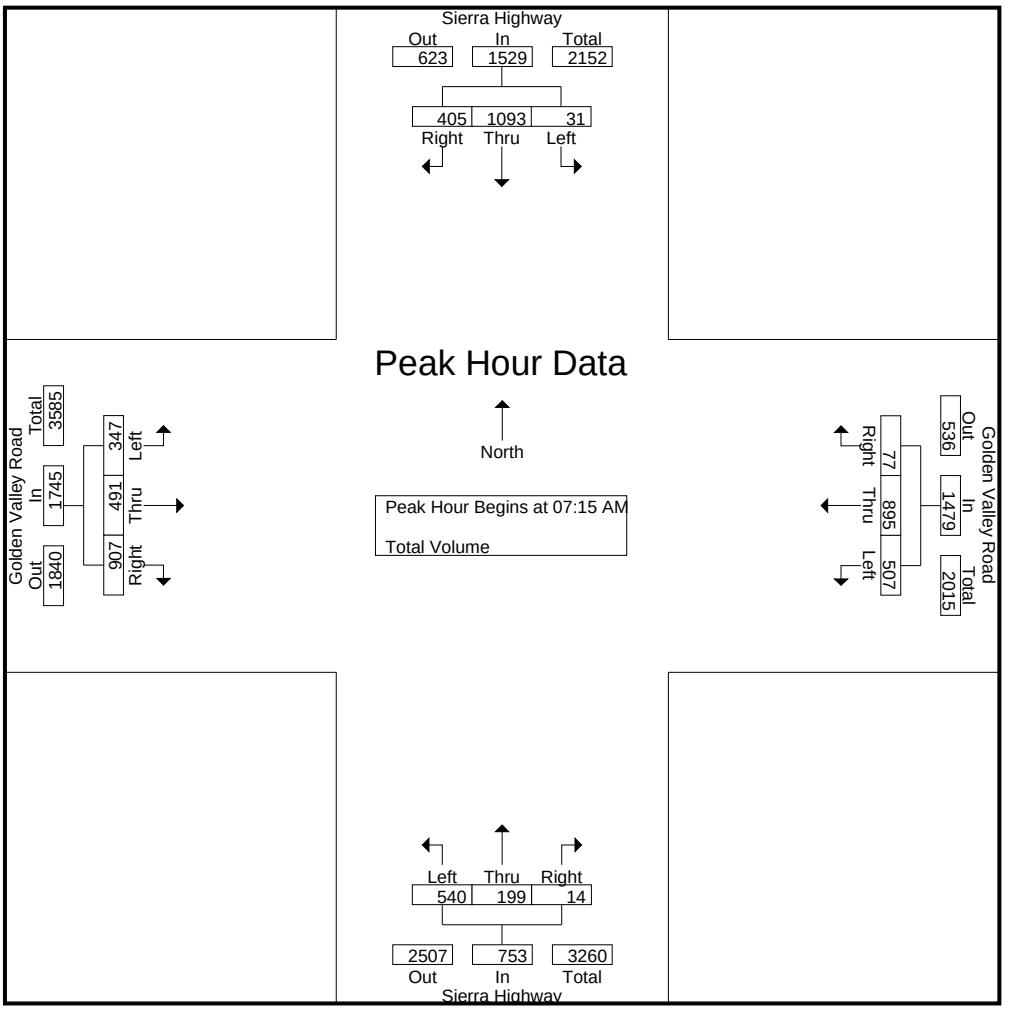
| | Sierra Highway Southbound | | | | Golden Valley Road Westbound | | | | Sierra Highway Northbound | | | | Golden Valley Road Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 5 | 318 | 29 | 352 | 150 | 143 | 7 | 300 | 105 | 26 | 4 | 135 | 36 | 92 | 247 | 375 | 1162 |
| 07:15 AM | 5 | 328 | 93 | 426 | 138 | 228 | 15 | 381 | 108 | 35 | 0 | 143 | 40 | 105 | 237 | 382 | 1332 |
| 07:30 AM | 12 | 240 | 93 | 345 | 122 | 235 | 13 | 370 | 144 | 44 | 5 | 193 | 71 | 124 | 243 | 438 | 1346 |
| 07:45 AM | 10 | 240 | 143 | 393 | 115 | 241 | 26 | 382 | 166 | 51 | 8 | 225 | 103 | 136 | 206 | 445 | 1445 |
| Total | 32 | 1126 | 358 | 1516 | 525 | 847 | 61 | 1433 | 523 | 156 | 17 | 696 | 250 | 457 | 933 | 1640 | 5285 |
| | | | | | | | | | | | | | | | | | |
| 08:00 AM | 4 | 285 | 76 | 365 | 132 | 191 | 23 | 346 | 122 | 69 | 1 | 192 | 133 | 126 | 221 | 480 | 1383 |
| 08:15 AM | 8 | 246 | 51 | 305 | 148 | 187 | 24 | 359 | 111 | 53 | 3 | 167 | 81 | 95 | 203 | 379 | 1210 |
| 08:30 AM | 10 | 298 | 55 | 363 | 155 | 154 | 37 | 346 | 93 | 55 | 3 | 151 | 36 | 63 | 183 | 282 | 1142 |
| 08:45 AM | 8 | 287 | 60 | 355 | 161 | 163 | 26 | 350 | 82 | 36 | 7 | 125 | 50 | 76 | 167 | 293 | 1123 |
| Total | 30 | 1116 | 242 | 1388 | 596 | 695 | 110 | 1401 | 408 | 213 | 14 | 635 | 300 | 360 | 774 | 1434 | 4858 |
| | | | | | | | | | | | | | | | | | |
| Grand Total | 62 | 2242 | 600 | 2904 | 1121 | 1542 | 171 | 2834 | 931 | 369 | 31 | 1331 | 550 | 817 | 1707 | 3074 | 10143 |
| Apprch % | 2.1 | 77.2 | 20.7 | | 39.6 | 54.4 | 6 | | 69.9 | 27.7 | 2.3 | | 17.9 | 26.6 | 55.5 | | |
| Total % | 0.6 | 22.1 | 5.9 | 28.6 | 11.1 | 15.2 | 1.7 | 27.9 | 9.2 | 3.6 | 0.3 | 13.1 | 5.4 | 8.1 | 16.8 | 30.3 | |

| | Sierra Highway Southbound | | | | Golden Valley Road Westbound | | | | Sierra Highway Northbound | | | | Golden Valley Road Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:15 AM | | | | | | | | | | | | | | | | | |
| 07:15 AM | 5 | **328** | 93 | **426** | **138** | 228 | 15 | 381 | 108 | 35 | 0 | 143 | 40 | 105 | 237 | 382 | 1332 |
| 07:30 AM | **12** | 240 | 93 | 345 | 122 | 235 | 13 | 370 | 144 | 44 | 5 | 193 | 71 | 124 | **243** | 438 | 1346 |
| 07:45 AM | 10 | 240 | **143** | 393 | 115 | **241** | **26** | **382** | **166** | 51 | **8** | **225** | 103 | **136** | 206 | 445 | **1445** |
| 08:00 AM | 4 | 285 | 76 | 365 | 132 | 191 | 23 | 346 | 122 | **69** | 1 | 192 | **133** | 126 | 221 | **480** | 1383 |
| Total Volume | 31 | 1093 | 405 | 1529 | 507 | 895 | 77 | 1479 | 540 | 199 | 14 | 753 | 347 | 491 | 907 | 1745 | 5506 |
| % App. Total | 2 | 71.5 | 26.5 | | 34.3 | 60.5 | 5.2 | | 71.7 | 26.4 | 1.9 | | 19.9 | 28.1 | 52 | | |
| PHF | .646 | .833 | .708 | .897 | .918 | .928 | .740 | .968 | .813 | .721 | .438 | .837 | .652 | .903 | .933 | .909 | .953 |

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

City of Santa Clarita
N/S: Sierra Highway
E/W: Golden Valley Road
Weather: Clear

File Name : 03_SCL_Sierra_Golden AM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 2




Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

| | 07:15 AM | | | | 07:15 AM | | | | 07:30 AM | | | | 07:15 AM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +0 mins. | 5 | **328** | 93 | **426** | **138** | 228 | 15 | 381 | 144 | 44 | 5 | 193 | 40 | 105 | 237 | 382 |
| +15 mins. | **12** | 240 | 93 | 345 | 122 | 235 | 13 | 370 | **166** | 51 | **8** | **225** | 71 | 124 | **243** | 438 |
| +30 mins. | 10 | 240 | **143** | 393 | 115 | **241** | **26** | **382** | 122 | **69** | 1 | 192 | 103 | **136** | 206 | 445 |
| +45 mins. | 4 | 285 | 76 | 365 | 132 | 191 | 23 | 346 | 111 | 53 | 3 | 167 | **133** | 126 | 221 | **480** |
| Total Volume | 31 | 1093 | 405 | 1529 | 507 | 895 | 77 | 1479 | 543 | 217 | 17 | 777 | 347 | 491 | 907 | 1745 |
| % App. Total | 2 | 71.5 | 26.5 | | 34.3 | 60.5 | 5.2 | | 69.9 | 27.9 | 2.2 | | 19.9 | 28.1 | 52 | |
| PHF | .646 | .833 | .708 | .897 | .918 | .928 | .740 | .968 | .818 | .786 | .531 | .863 | .652 | .903 | .933 | .909 |

Counts Unlimited, Inc.
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City of Santa Clarita
N/S: Sierra Highway
E/W: Golden Valley Road
Weather: Clear

File Name : 03_SCL_Sierra_Golden PM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 1

Groups Printed- Total Volume

| | Sierra Highway Southbound | | | | Golden Valley Road Westbound | | | | Sierra Highway Northbound | | | | Golden Valley Road Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 18 | 80 | 60 | 158 | 9 | 184 | 24 | 217 | 123 | 168 | 26 | 317 | 114 | 184 | 184 | 482 | 1174 |
| 04:15 PM | 17 | 66 | 83 | 166 | 14 | 163 | 20 | 197 | 150 | 290 | 33 | 473 | 100 | 196 | 150 | 446 | 1282 |
| 04:30 PM | 20 | 71 | 57 | 148 | 14 | 175 | 24 | 213 | 155 | 258 | 35 | 448 | 101 | 223 | 170 | 494 | 1303 |
| 04:45 PM | 18 | 86 | 58 | 162 | 15 | 169 | 18 | 202 | 148 | 262 | 37 | 447 | 96 | 197 | 138 | 431 | 1242 |
| Total | 73 | 303 | 258 | 634 | 52 | 691 | 86 | 829 | 576 | 978 | 131 | 1685 | 411 | 800 | 642 | 1853 | 5001 |
| | | | | | | | | | | | | | | | | | |
| 05:00 PM | 12 | 68 | 67 | 147 | 11 | 171 | 19 | 201 | 149 | 279 | 29 | 457 | 110 | 176 | 182 | 468 | 1273 |
| 05:15 PM | 13 | 63 | 62 | 138 | 13 | 167 | 22 | 202 | 191 | 264 | 45 | 500 | 89 | 183 | 158 | 430 | 1270 |
| 05:30 PM | 8 | 71 | 77 | 156 | 16 | 166 | 23 | 205 | 144 | 295 | 38 | 477 | 90 | 168 | 148 | 406 | 1244 |
| 05:45 PM | 9 | 76 | 66 | 151 | 12 | 175 | 22 | 209 | 165 | 285 | 44 | 494 | 92 | 170 | 118 | 380 | 1234 |
| Total | 42 | 278 | 272 | 592 | 52 | 679 | 86 | 817 | 649 | 1123 | 156 | 1928 | 381 | 697 | 606 | 1684 | 5021 |
| | | | | | | | | | | | | | | | | | |
| Grand Total | 115 | 581 | 530 | 1226 | 104 | 1370 | 172 | 1646 | 1225 | 2101 | 287 | 3613 | 792 | 1497 | 1248 | 3537 | 10022 |
| Apprch % | 9.4 | 47.4 | 43.2 | | 6.3 | 83.2 | 10.4 | | 33.9 | 58.2 | 7.9 | | 22.4 | 42.3 | 35.3 | | |
| Total % | 1.1 | 5.8 | 5.3 | 12.2 | 1 | 13.7 | 1.7 | 16.4 | 12.2 | 21 | 2.9 | 36.1 | 7.9 | 14.9 | 12.5 | 35.3 | |

| | Sierra Highway Southbound | | | | Golden Valley Road Westbound | | | | Sierra Highway Northbound | | | | Golden Valley Road Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:15 PM | | | | | | | | | | | | | | | | | |
| 04:15 PM | 17 | 66 | **83** | **166** | 14 | 163 | 20 | 197 | 150 | **290** | 33 | **473** | 100 | 196 | 150 | 446 | 1282 |
| 04:30 PM | **20** | 71 | 57 | 148 | 14 | **175** | **24** | **213** | **155** | 258 | 35 | 448 | 101 | **223** | 170 | **494** | **1303** |
| 04:45 PM | 18 | **86** | 58 | 162 | **15** | 169 | 18 | 202 | 148 | 262 | **37** | 447 | 96 | 197 | 138 | 431 | 1242 |
| 05:00 PM | 12 | 68 | 67 | 147 | 11 | 171 | 19 | 201 | 149 | 279 | 29 | 457 | **110** | 176 | **182** | 468 | 1273 |
| Total Volume | 67 | 291 | 265 | 623 | 54 | 678 | 81 | 813 | 602 | 1089 | 134 | 1825 | 407 | 792 | 640 | 1839 | 5100 |
| % App. Total | 10.8 | 46.7 | 42.5 | | 6.6 | 83.4 | 10 | | 33 | 59.7 | 7.3 | | 22.1 | 43.1 | 34.8 | | |
| PHF | .838 | .846 | .798 | .938 | .900 | .969 | .844 | .954 | .971 | .939 | .905 | .965 | .925 | .888 | .879 | .931 | .979 |

Counts Unlimited, Inc.
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(951)268-6268

City of Santa Clarita
N/S: Sierra Highway
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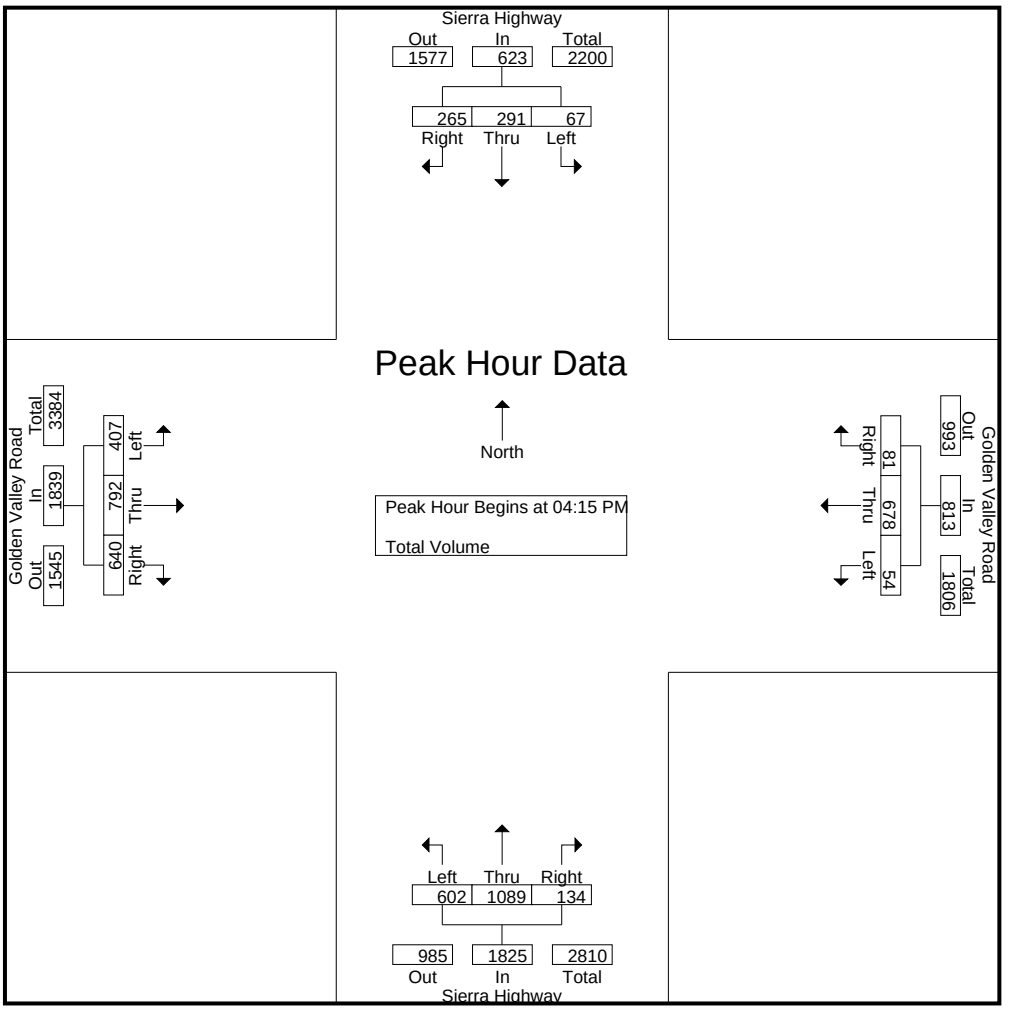
Weather: Clear

File Name : 03_SCL_Sierra_Golden PM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 2




Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

| | 04:00 PM | | | | 04:00 PM | | | | 05:00 PM | | | | 04:00 PM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +0 mins. | 18 | 80 | 60 | 158 | 9 | **184** | **24** | **217** | 149 | 279 | 29 | 457 | **114** | 184 | **184** | 482 |
| +15 mins. | 17 | 66 | **83** | **166** | 14 | 163 | 20 | 197 | **191** | 264 | **45** | **500** | 100 | 196 | 150 | 446 |
| +30 mins. | **20** | 71 | 57 | 148 | 14 | 175 | 24 | 213 | 144 | **295** | 38 | 477 | 101 | **223** | 170 | **494** |
| +45 mins. | 18 | **86** | 58 | 162 | **15** | 169 | 18 | 202 | 165 | 285 | 44 | 494 | 96 | 197 | 138 | 431 |
| Total Volume | 73 | 303 | 258 | 634 | 52 | 691 | 86 | 829 | 649 | 1123 | 156 | 1928 | 411 | 800 | 642 | 1853 |
| % App. Total | 11.5 | 47.8 | 40.7 | | 6.3 | 83.4 | 10.4 | | 33.7 | 58.2 | 8.1 | | 22.2 | 43.2 | 34.6 | |
| PHF | .913 | .881 | .777 | .955 | .867 | .939 | .896 | .955 | .849 | .952 | .867 | .964 | .901 | .897 | .872 | .938 |

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

City of Santa Clarita
N/S: Golden Valley Road
E/W: SR-14 Southbound Ramps
Weather: Clear

File Name : 04_SCL_Golden_14S AM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 1

Groups Printed- Total Volume

| | Golden Valley Road Southbound | | | | SR-14 Southbound Off Ramp Westbound | | | | Golden Valley Road Northbound | | | | SR-14 Southbound On Ramp Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 0 | 72 | 66 | 138 | 1 | 71 | 100 | 172 | 66 | 208 | 0 | 274 | 0 | 0 | 0 | 0 | 584 |
| 07:15 AM | 0 | 80 | 76 | 156 | 11 | 54 | 82 | 147 | 54 | 288 | 0 | 342 | 0 | 0 | 0 | 0 | 645 |
| 07:30 AM | 0 | 130 | 73 | 203 | 8 | 55 | 95 | 158 | 61 | 293 | 0 | 354 | 0 | 0 | 0 | 0 | 715 |
| 07:45 AM | 0 | 155 | 77 | 232 | 4 | 57 | 99 | 160 | 52 | 182 | 0 | 234 | 0 | 0 | 0 | 0 | 626 |
| Total | 0 | 437 | 292 | 729 | 24 | 237 | 376 | 637 | 233 | 971 | 0 | 1204 | 0 | 0 | 0 | 0 | 2570 |
| | | | | | | | | | | | | | | | | | |
| 08:00 AM | 0 | 137 | 41 | 178 | 7 | 62 | 125 | 194 | 45 | 217 | 0 | 262 | 0 | 0 | 0 | 0 | 634 |
| 08:15 AM | 0 | 99 | 26 | 125 | 8 | 59 | 120 | 187 | 41 | 189 | 0 | 230 | 0 | 0 | 0 | 0 | 542 |
| 08:30 AM | 0 | 75 | 33 | 108 | 10 | 49 | 118 | 177 | 38 | 184 | 0 | 222 | 0 | 0 | 0 | 0 | 507 |
| 08:45 AM | 0 | 90 | 39 | 129 | 9 | 49 | 149 | 207 | 38 | 192 | 0 | 230 | 0 | 0 | 0 | 0 | 566 |
| Total | 0 | 401 | 139 | 540 | 34 | 219 | 512 | 765 | 162 | 782 | 0 | 944 | 0 | 0 | 0 | 0 | 2249 |
| | | | | | | | | | | | | | | | | | |
| Grand Total | 0 | 838 | 431 | 1269 | 58 | 456 | 888 | 1402 | 395 | 1753 | 0 | 2148 | 0 | 0 | 0 | 0 | 4819 |
| Apprch % | 0 | 66 | 34 | | 4.1 | 32.5 | 63.3 | | 18.4 | 81.6 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 17.4 | 8.9 | 26.3 | 1.2 | 9.5 | 18.4 | 29.1 | 8.2 | 36.4 | 0 | 44.6 | 0 | 0 | 0 | 0 | |

| | Golden Valley Road Southbound | | | | SR-14 Southbound Off Ramp Westbound | | | | Golden Valley Road Northbound | | | | SR-14 Southbound On Ramp Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:15 AM | | | | | | | | | | | | | | | | | |
| 07:15 AM | 0 | 80 | 76 | 156 | **11** | 54 | 82 | 147 | 54 | 288 | 0 | 342 | 0 | 0 | 0 | 0 | 645 |
| 07:30 AM | 0 | 130 | 73 | 203 | 8 | 55 | 95 | 158 | **61** | **293** | 0 | **354** | 0 | 0 | 0 | 0 | **715** |
| 07:45 AM | 0 | **155** | **77** | **232** | 4 | 57 | 99 | 160 | 52 | 182 | 0 | 234 | 0 | 0 | 0 | 0 | 626 |
| 08:00 AM | 0 | 137 | 41 | 178 | 7 | **62** | **125** | **194** | 45 | 217 | 0 | 262 | 0 | 0 | 0 | 0 | 634 |
| Total Volume | 0 | 502 | 267 | 769 | 30 | 228 | 401 | 659 | 212 | 980 | 0 | 1192 | 0 | 0 | 0 | 0 | 2620 |
| % App. Total | 0 | 65.3 | 34.7 | | 4.6 | 34.6 | 60.8 | | 17.8 | 82.2 | 0 | | 0 | 0 | 0 | | |
| PHF | .000 | .810 | .867 | .829 | .682 | .919 | .802 | .849 | .869 | .836 | .000 | .842 | .000 | .000 | .000 | .000 | .916 |

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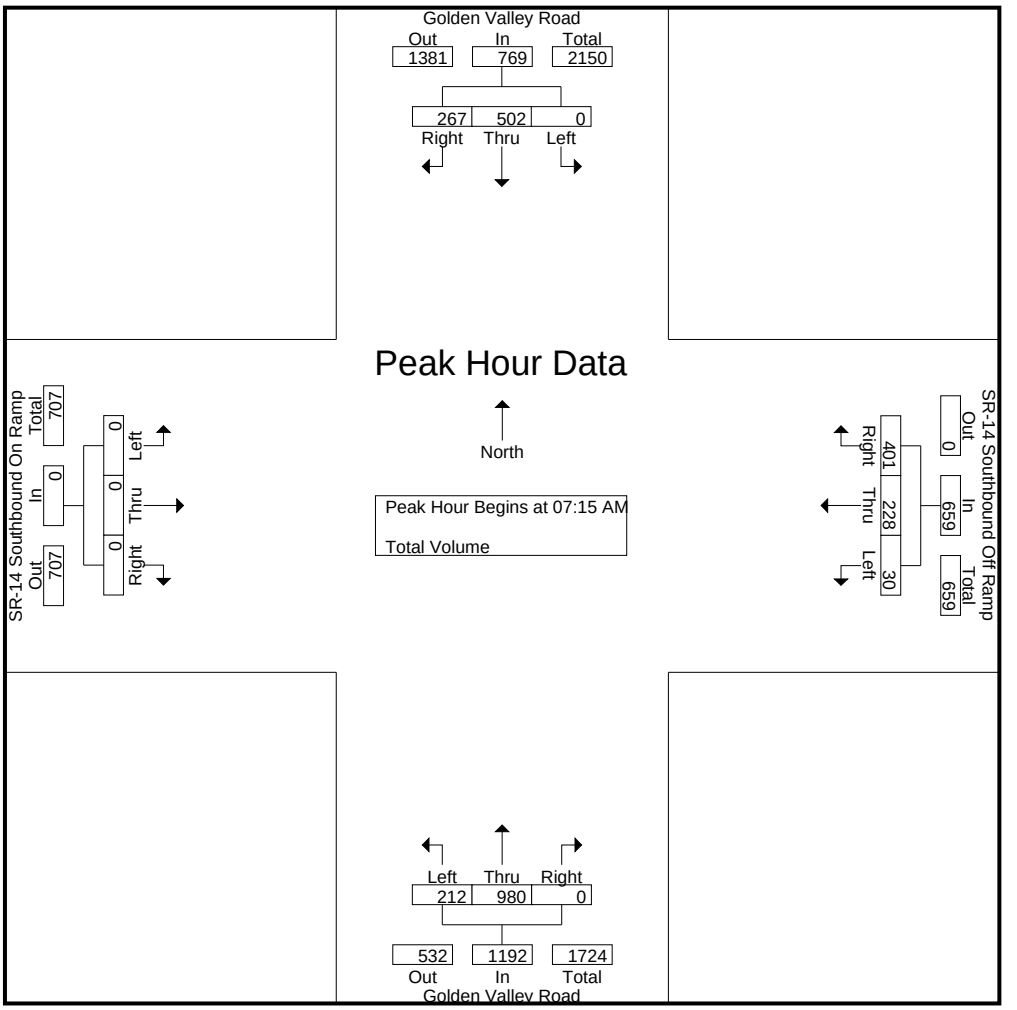
City of Santa Clarita
N/S: Golden Valley Road
E/W: SR-14 Southbound Ramps
Weather: Clear

File Name : 04_SCL_Golden_14S AM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 2




Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

| | 07:15 AM | | | | 08:00 AM | | | | 07:00 AM | | | | 07:00 AM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +0 mins. | 0 | 80 | 76 | 156 | 7 | **62** | 125 | 194 | **66** | 208 | 0 | 274 | 0 | 0 | 0 | 0 |
| +15 mins. | 0 | 130 | 73 | 203 | 8 | 59 | 120 | 187 | 54 | 288 | 0 | 342 | 0 | 0 | 0 | 0 |
| +30 mins. | 0 | **155** | **77** | **232** | **10** | 49 | 118 | 177 | 61 | **293** | 0 | **354** | 0 | 0 | 0 | 0 |
| +45 mins. | 0 | 137 | 41 | 178 | 9 | 49 | **149** | **207** | 52 | 182 | 0 | 234 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 502 | 267 | 769 | 34 | 219 | 512 | 765 | 233 | 971 | 0 | 1204 | 0 | 0 | 0 | 0 |
| % App. Total | 0 | 65.3 | 34.7 | | 4.4 | 28.6 | 66.9 | | 19.4 | 80.6 | 0 | | 0 | 0 | 0 | |
| PHF | .000 | .810 | .867 | .829 | .850 | .883 | .859 | .924 | .883 | .828 | .000 | .850 | .000 | .000 | .000 | .000 |

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

City of Santa Clarita
N/S: Golden Valley Road
E/W: SR-14 Southbound Ramps
Weather: Clear

File Name : 04_SCL_Golden_14S PM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 1

Groups Printed- Total Volume

| | Golden Valley Road Southbound | | | | SR-14 Southbound Off Ramp Westbound | | | | Golden Valley Road Northbound | | | | SR-14 Southbound On Ramp Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 0 | 230 | 26 | 256 | 15 | 0 | 110 | 125 | 44 | 118 | 0 | 162 | 0 | 0 | 0 | 0 | 543 |
| 04:15 PM | 0 | 218 | 29 | 247 | 17 | 1 | 99 | 117 | 54 | 128 | 0 | 182 | 0 | 0 | 0 | 0 | 546 |
| 04:30 PM | 0 | 245 | 37 | 282 | 23 | 0 | 88 | 111 | 36 | 126 | 0 | 162 | 0 | 0 | 0 | 0 | 555 |
| 04:45 PM | 0 | 192 | 34 | 226 | 15 | 1 | 92 | 108 | 46 | 132 | 0 | 178 | 0 | 0 | 0 | 0 | 512 |
| Total | 0 | 885 | 126 | 1011 | 70 | 2 | 389 | 461 | 180 | 504 | 0 | 684 | 0 | 0 | 0 | 0 | 2156 |
| 05:00 PM | 0 | 197 | 30 | 227 | 19 | 2 | 78 | 99 | 56 | 157 | 0 | 213 | 0 | 0 | 0 | 0 | 539 |
| 05:15 PM | 0 | 188 | 36 | 224 | 23 | 0 | 81 | 104 | 53 | 157 | 0 | 210 | 0 | 0 | 0 | 0 | 538 |
| 05:30 PM | 0 | 218 | 24 | 242 | 23 | 0 | 89 | 112 | 58 | 158 | 0 | 216 | 0 | 0 | 0 | 0 | 570 |
| 05:45 PM | 0 | 205 | 21 | 226 | 18 | 1 | 98 | 117 | 40 | 155 | 0 | 195 | 0 | 0 | 0 | 0 | 538 |
| Total | 0 | 808 | 111 | 919 | 83 | 3 | 346 | 432 | 207 | 627 | 0 | 834 | 0 | 0 | 0 | 0 | 2185 |
| Grand Total | 0 | 1693 | 237 | 1930 | 153 | 5 | 735 | 893 | 387 | 1131 | 0 | 1518 | 0 | 0 | 0 | 0 | 4341 |
| Apprch % | 0 | 87.7 | 12.3 | | 17.1 | 0.6 | 82.3 | | 25.5 | 74.5 | 0 | | 0 | 0 | 0 | | |
| Total % | 0 | 39 | 5.5 | 44.5 | 3.5 | 0.1 | 16.9 | 20.6 | 8.9 | 26.1 | 0 | 35 | 0 | 0 | 0 | 0 | |

| | Golden Valley Road Southbound | | | | SR-14 Southbound Off Ramp Westbound | | | | Golden Valley Road Northbound | | | | SR-14 Southbound On Ramp Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 0 | 197 | 30 | 227 | 19 | **2** | 78 | 99 | 56 | 157 | 0 | 213 | 0 | 0 | 0 | 0 | 539 |
| 05:15 PM | 0 | 188 | **36** | 224 | **23** | 0 | 81 | 104 | 53 | 157 | 0 | 210 | 0 | 0 | 0 | 0 | 538 |
| 05:30 PM | 0 | **218** | 24 | **242** | 23 | 0 | 89 | 112 | **58** | **158** | 0 | **216** | 0 | 0 | 0 | 0 | **570** |
| 05:45 PM | 0 | 205 | 21 | 226 | 18 | 1 | **98** | **117** | 40 | 155 | 0 | 195 | 0 | 0 | 0 | 0 | 538 |
| Total Volume | 0 | 808 | 111 | 919 | 83 | 3 | 346 | 432 | 207 | 627 | 0 | 834 | 0 | 0 | 0 | 0 | 2185 |
| % App. Total | 0 | 87.9 | 12.1 | | 19.2 | 0.7 | 80.1 | | 24.8 | 75.2 | 0 | | 0 | 0 | 0 | | |
| PHF | .000 | .927 | .771 | .949 | .902 | .375 | .883 | .923 | .892 | .992 | .000 | .965 | .000 | .000 | .000 | .000 | .958 |

Counts Unlimited, Inc.
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Corona, CA 92878
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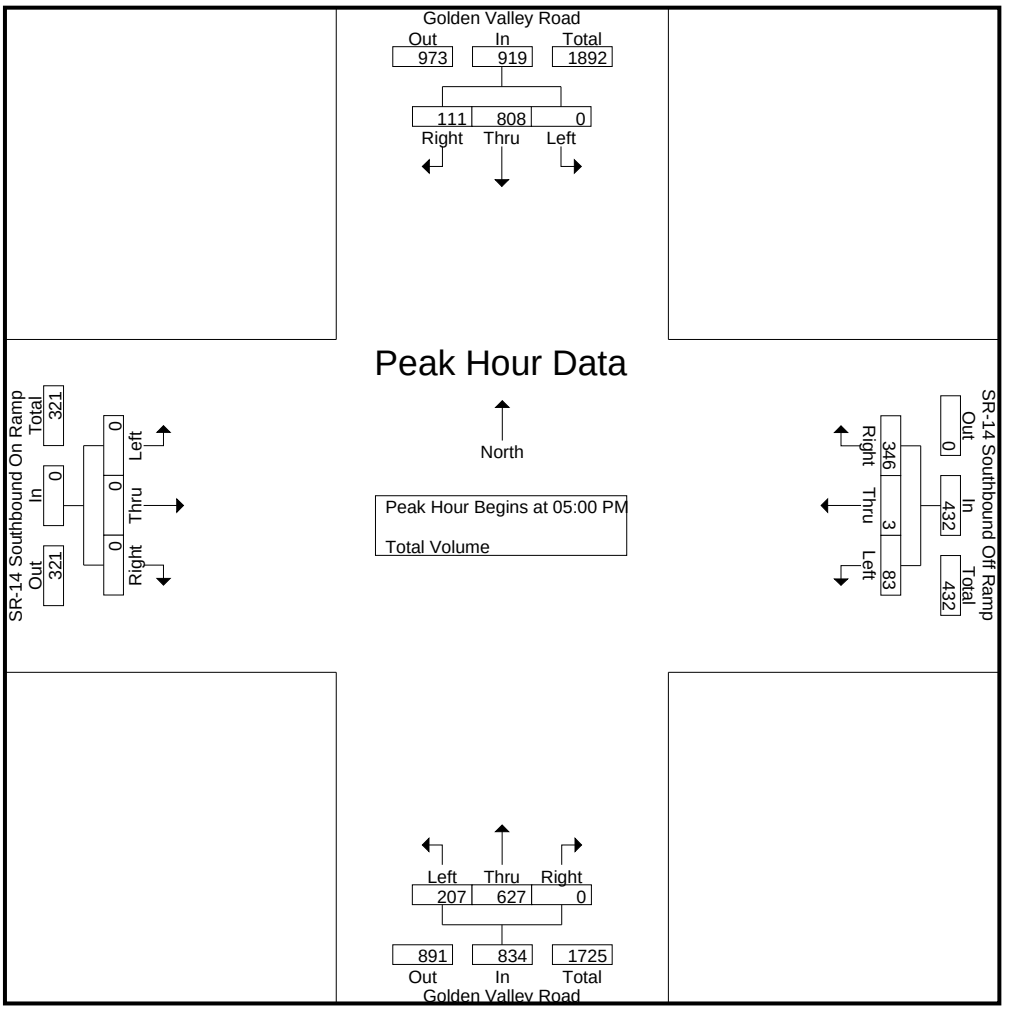
City of Santa Clarita
N/S: Golden Valley Road
E/W: SR-14 Southbound Ramps
Weather: Clear

File Name : 04_SCL_Golden_14S PM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 2




Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

| | 04:00 PM | | | | 04:00 PM | | | | 05:00 PM | | | | 04:00 PM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +0 mins. | 0 | 230 | 26 | 256 | 15 | 0 | **110** | **125** | 56 | 157 | 0 | 213 | 0 | 0 | 0 | 0 |
| +15 mins. | 0 | 218 | 29 | 247 | 17 | **1** | 99 | 117 | 53 | 157 | 0 | 210 | 0 | 0 | 0 | 0 |
| +30 mins. | 0 | **245** | **37** | **282** | **23** | 0 | 88 | 111 | **58** | **158** | 0 | **216** | 0 | 0 | 0 | 0 |
| +45 mins. | 0 | 192 | 34 | 226 | 15 | 1 | 92 | 108 | 40 | 155 | 0 | 195 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 885 | 126 | 1011 | 70 | 2 | 389 | 461 | 207 | 627 | 0 | 834 | 0 | 0 | 0 | 0 |
| % App. Total | 0 | 87.5 | 12.5 | | 15.2 | 0.4 | 84.4 | | 24.8 | 75.2 | 0 | | 0 | 0 | 0 | |
| PHF | .000 | .903 | .851 | .896 | .761 | .500 | .884 | .922 | .892 | .992 | .000 | .965 | .000 | .000 | .000 | .000 |

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City of Santa Clarita
N/S: Golden Valley Road
E/W: SR-14 Northbound Ramps
Weather: Clear

File Name : 05_SCL_Golden_14N AM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 1

Groups Printed- Total Volume

| | Golden Valley Road Southbound | | | | SR-14 Northbound On Ramp Westbound | | | | Golden Valley Road Northbound | | | | SR-14 Northbound Off Ramp Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 52 | 26 | 0 | 78 | 0 | 0 | 0 | 0 | 0 | 224 | 15 | 239 | 54 | 1 | 36 | 91 | 408 |
| 07:15 AM | 39 | 40 | 0 | 79 | 0 | 0 | 0 | 0 | 0 | 315 | 12 | 327 | 31 | 0 | 25 | 56 | 462 |
| 07:30 AM | 67 | 68 | 0 | 135 | 0 | 0 | 0 | 0 | 0 | 313 | 24 | 337 | 36 | 0 | 48 | 84 | 556 |
| 07:45 AM | 54 | 107 | 0 | 161 | 0 | 0 | 0 | 0 | 0 | 193 | 19 | 212 | 43 | 1 | 57 | 101 | 474 |
| Total | 212 | 241 | 0 | 453 | 0 | 0 | 0 | 0 | 0 | 1045 | 70 | 1115 | 164 | 2 | 166 | 332 | 1900 |
| | | | | | | | | | | | | | | | | | |
| 08:00 AM | 48 | 103 | 0 | 151 | 0 | 0 | 0 | 0 | 0 | 209 | 16 | 225 | 47 | 0 | 50 | 97 | 473 |
| 08:15 AM | 46 | 61 | 0 | 107 | 0 | 0 | 0 | 0 | 0 | 180 | 19 | 199 | 49 | 0 | 31 | 80 | 386 |
| 08:30 AM | 35 | 50 | 0 | 85 | 0 | 0 | 0 | 0 | 0 | 181 | 16 | 197 | 45 | 1 | 51 | 97 | 379 |
| 08:45 AM | 39 | 60 | 0 | 99 | 0 | 0 | 0 | 0 | 0 | 187 | 20 | 207 | 43 | 0 | 44 | 87 | 393 |
| Total | 168 | 274 | 0 | 442 | 0 | 0 | 0 | 0 | 0 | 757 | 71 | 828 | 184 | 1 | 176 | 361 | 1631 |
| | | | | | | | | | | | | | | | | | |
| Grand Total | 380 | 515 | 0 | 895 | 0 | 0 | 0 | 0 | 0 | 1802 | 141 | 1943 | 348 | 3 | 342 | 693 | 3531 |
| Apprch % | 42.5 | 57.5 | 0 | | 0 | 0 | 0 | | 0 | 92.7 | 7.3 | | 50.2 | 0.4 | 49.4 | | |
| Total % | 10.8 | 14.6 | 0 | 25.3 | 0 | 0 | 0 | 0 | 0 | 51 | 4 | 55 | 9.9 | 0.1 | 9.7 | 19.6 | |

| | Golden Valley Road Southbound | | | | SR-14 Northbound On Ramp Westbound | | | | Golden Valley Road Northbound | | | | SR-14 Northbound Off Ramp Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:15 AM | | | | | | | | | | | | | | | | | |
| 07:15 AM | 39 | 40 | 0 | 79 | 0 | 0 | 0 | 0 | 0 | **315** | 12 | 327 | 31 | 0 | 25 | 56 | 462 |
| 07:30 AM | **67** | 68 | 0 | 135 | 0 | 0 | 0 | 0 | 0 | 313 | **24** | **337** | 36 | 0 | 48 | 84 | **556** |
| 07:45 AM | 54 | **107** | 0 | **161** | 0 | 0 | 0 | 0 | 0 | 193 | 19 | 212 | 43 | **1** | **57** | **101** | 474 |
| 08:00 AM | 48 | 103 | 0 | 151 | 0 | 0 | 0 | 0 | 0 | 209 | 16 | 225 | **47** | 0 | 50 | 97 | 473 |
| Total Volume | 208 | 318 | 0 | 526 | 0 | 0 | 0 | 0 | 0 | 1030 | 71 | 1101 | 157 | 1 | 180 | 338 | 1965 |
| % App. Total | 39.5 | 60.5 | 0 | | 0 | 0 | 0 | | 0 | 93.6 | 6.4 | | 46.4 | 0.3 | 53.3 | | |
| PHF | .776 | .743 | .000 | .817 | .000 | .000 | .000 | .000 | .000 | .817 | .740 | .817 | .835 | .250 | .789 | .837 | .884 |

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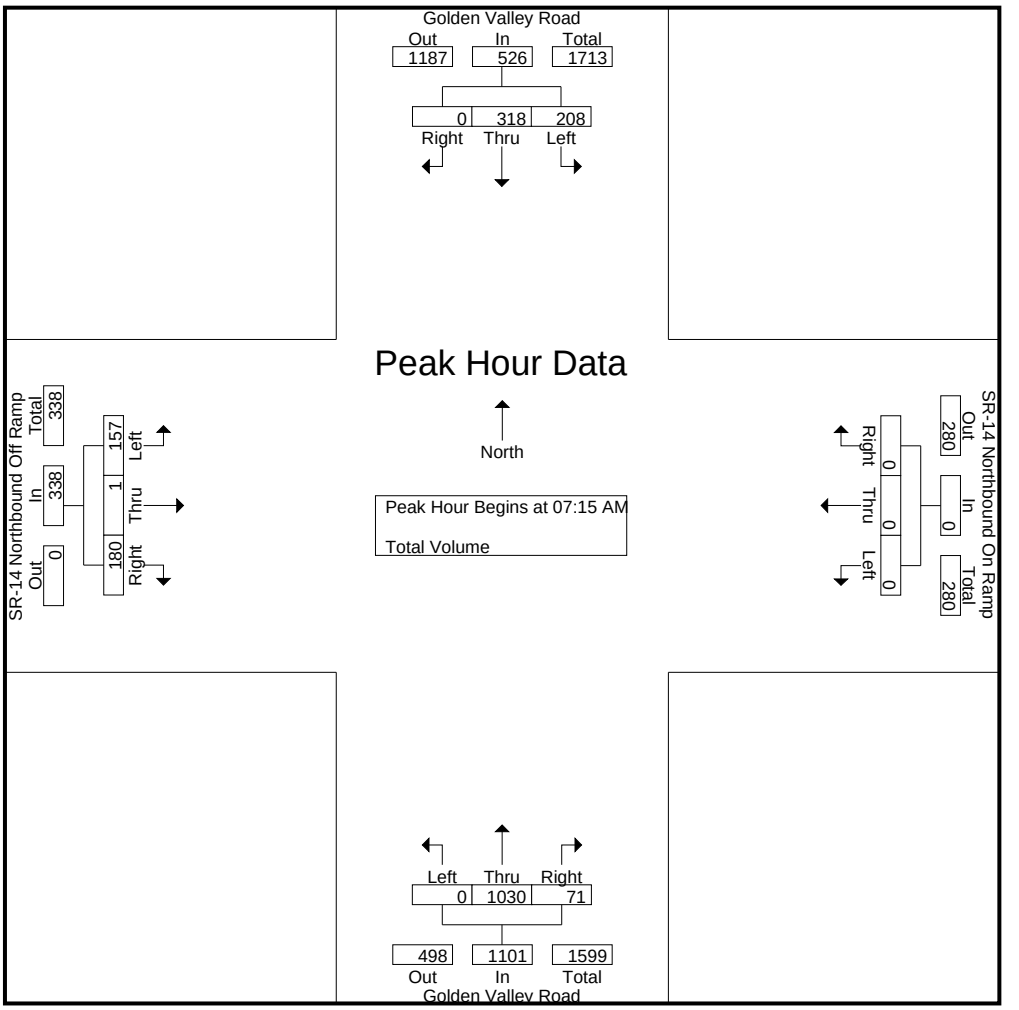
Corona, CA 92878
(951)268-6268

City of Santa Clarita
N/S: Golden Valley Road
E/W: SR-14 Northbound Ramps
Weather: Clear

File Name : 05_SCL_Golden_14N AM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 2




Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

| | 07:30 AM | | | | 07:00 AM | | | | 07:00 AM | | | | 07:45 AM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +0 mins. | **67** | 68 | 0 | 135 | 0 | 0 | 0 | 0 | 0 | 224 | 15 | 239 | 43 | **1** | **57** | **101** |
| +15 mins. | 54 | **107** | 0 | **161** | 0 | 0 | 0 | 0 | 0 | **315** | 12 | 327 | 47 | 0 | 50 | 97 |
| +30 mins. | 48 | 103 | 0 | 151 | 0 | 0 | 0 | 0 | 0 | 313 | **24** | **337** | **49** | 0 | 31 | 80 |
| +45 mins. | 46 | 61 | 0 | 107 | 0 | 0 | 0 | 0 | 0 | 193 | 19 | 212 | 45 | 1 | 51 | 97 |
| Total Volume | 215 | 339 | 0 | 554 | 0 | 0 | 0 | 0 | 0 | 1045 | 70 | 1115 | 184 | 2 | 189 | 375 |
| % App. Total | 38.8 | 61.2 | 0 | | 0 | 0 | 0 | | 0 | 93.7 | 6.3 | | 49.1 | 0.5 | 50.4 | |
| PHF | .802 | .792 | .000 | .860 | .000 | .000 | .000 | .000 | .000 | .829 | .729 | .827 | .939 | .500 | .829 | .928 |

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City of Santa Clarita
N/S: Golden Valley Road
E/W: SR-14 Northbound Ramps
Weather: Clear

File Name : 05_SCL_Golden_14N PM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 1

Groups Printed- Total Volume

| | Golden Valley Road Southbound | | | | SR-14 Northbound On Ramp Westbound | | | | Golden Valley Road Northbound | | | | SR-14 Northbound Off Ramp Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 102 | 138 | 0 | 240 | 0 | 0 | 0 | 0 | 0 | 109 | 61 | 170 | 49 | 0 | 82 | 131 | 541 |
| 04:15 PM | 112 | 123 | 0 | 235 | 0 | 0 | 0 | 0 | 0 | 127 | 57 | 184 | 51 | 0 | 73 | 124 | 543 |
| 04:30 PM | 125 | 134 | 0 | 259 | 0 | 0 | 0 | 0 | 0 | 125 | 52 | 177 | 49 | 2 | 81 | 132 | 568 |
| 04:45 PM | 86 | 137 | 0 | 223 | 0 | 0 | 0 | 0 | 0 | 116 | 51 | 167 | 46 | 0 | 90 | 136 | 526 |
| Total | 425 | 532 | 0 | 957 | 0 | 0 | 0 | 0 | 0 | 477 | 221 | 698 | 195 | 2 | 326 | 523 | 2178 |
| | | | | | | | | | | | | | | | | | |
| 05:00 PM | 77 | 127 | 0 | 204 | 0 | 0 | 0 | 0 | 0 | 160 | 57 | 217 | 65 | 1 | 92 | 158 | 579 |
| 05:15 PM | 70 | 145 | 0 | 215 | 0 | 0 | 0 | 0 | 0 | 139 | 45 | 184 | 60 | 2 | 102 | 164 | 563 |
| 05:30 PM | 97 | 150 | 0 | 247 | 0 | 0 | 0 | 0 | 0 | 137 | 54 | 191 | 68 | 1 | 116 | 185 | 623 |
| 05:45 PM | 68 | 142 | 0 | 210 | 0 | 0 | 0 | 0 | 0 | 144 | 49 | 193 | 55 | 1 | 85 | 141 | 544 |
| Total | 312 | 564 | 0 | 876 | 0 | 0 | 0 | 0 | 0 | 580 | 205 | 785 | 248 | 5 | 395 | 648 | 2309 |
| | | | | | | | | | | | | | | | | | |
| Grand Total | 737 | 1096 | 0 | 1833 | 0 | 0 | 0 | 0 | 0 | 1057 | 426 | 1483 | 443 | 7 | 721 | 1171 | 4487 |
| Apprch % | 40.2 | 59.8 | 0 | | 0 | 0 | 0 | | 0 | 71.3 | 28.7 | | 37.8 | 0.6 | 61.6 | | |
| Total % | 16.4 | 24.4 | 0 | 40.9 | 0 | 0 | 0 | 0 | 0 | 23.6 | 9.5 | 33.1 | 9.9 | 0.2 | 16.1 | 26.1 | |

| | Golden Valley Road Southbound | | | | SR-14 Northbound On Ramp Westbound | | | | Golden Valley Road Northbound | | | | SR-14 Northbound Off Ramp Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 77 | 127 | 0 | 204 | 0 | 0 | 0 | 0 | 0 | **160** | **57** | **217** | 65 | 1 | 92 | 158 | 579 |
| 05:15 PM | 70 | 145 | 0 | 215 | 0 | 0 | 0 | 0 | 0 | 139 | 45 | 184 | 60 | **2** | 102 | 164 | 563 |
| 05:30 PM | **97** | **150** | 0 | **247** | 0 | 0 | 0 | 0 | 0 | 137 | 54 | 191 | **68** | 1 | **116** | **185** | **623** |
| 05:45 PM | 68 | 142 | 0 | 210 | 0 | 0 | 0 | 0 | 0 | 144 | 49 | 193 | 55 | 1 | 85 | 141 | 544 |
| Total Volume | 312 | 564 | 0 | 876 | 0 | 0 | 0 | 0 | 0 | 580 | 205 | 785 | 248 | 5 | 395 | 648 | 2309 |
| % App. Total | 35.6 | 64.4 | 0 | | 0 | 0 | 0 | | 0 | 73.9 | 26.1 | | 38.3 | 0.8 | 61 | | |
| PHF | .804 | .940 | .000 | .887 | .000 | .000 | .000 | .000 | .000 | .906 | .899 | .904 | .912 | .625 | .851 | .876 | .927 |

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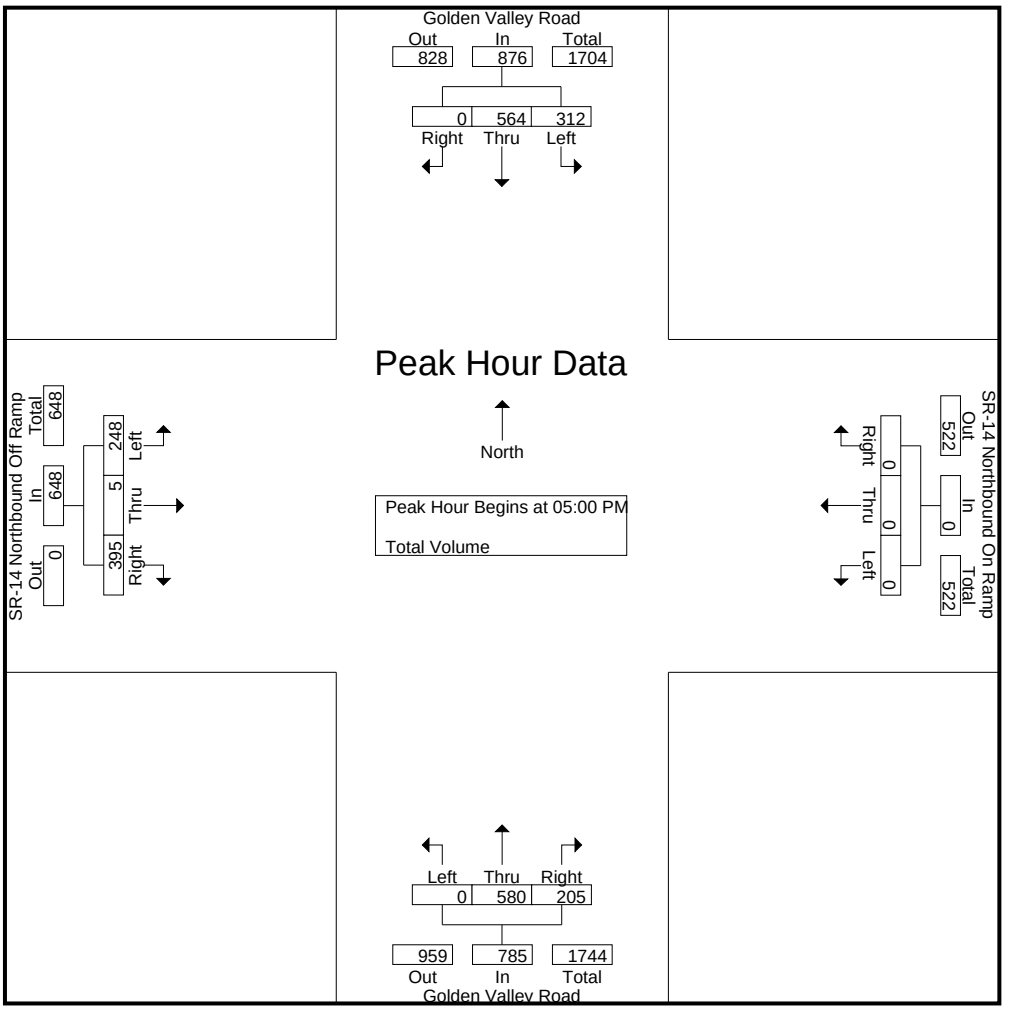
City of Santa Clarita
N/S: Golden Valley Road
E/W: SR-14 Northbound Ramps
Weather: Clear

File Name : 05_SCL_Golden_14N PM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 2




Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

| | 04:00 PM | | | | 04:00 PM | | | | 05:00 PM | | | | 05:00 PM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +0 mins. | 102 | **138** | 0 | 240 | 0 | 0 | 0 | 0 | 0 | **160** | **57** | **217** | 65 | 1 | 92 | 158 |
| +15 mins. | 112 | 123 | 0 | 235 | 0 | 0 | 0 | 0 | 0 | 139 | 45 | 184 | 60 | **2** | 102 | 164 |
| +30 mins. | **125** | 134 | 0 | **259** | 0 | 0 | 0 | 0 | 0 | 137 | 54 | 191 | **68** | 1 | **116** | **185** |
| +45 mins. | 86 | 137 | 0 | 223 | 0 | 0 | 0 | 0 | 0 | 144 | 49 | 193 | 55 | 1 | 85 | 141 |
| Total Volume | 425 | 532 | 0 | 957 | 0 | 0 | 0 | 0 | 0 | 580 | 205 | 785 | 248 | 5 | 395 | 648 |
| % App. Total | 44.4 | 55.6 | 0 | | 0 | 0 | 0 | | 0 | 73.9 | 26.1 | | 38.3 | 0.8 | 61 | |
| PHF | .850 | .964 | .000 | .924 | .000 | .000 | .000 | .000 | .000 | .906 | .899 | .904 | .912 | .625 | .851 | .876 |

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Corona, CA 92878
(951)268-6268

City of Santa Clarita
N/S: Friendly Valley Parkway
E/W: Sierra Highway
Weather: Clear

File Name : 06_SCL_Friendly_SierraAM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 1

Groups Printed- Total Volume

| | Friendly Valley Parkway Southbound | | | | Sierra Highway Westbound | | | | Friendly Valley Parkway Northbound | | | | Sierra Highway Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 10 | 8 | 11 | 29 | 26 | 352 | 8 | 386 | 3 | 3 | 10 | 16 | 6 | 55 | 3 | 64 | 495 |
| 07:15 AM | 4 | 9 | 21 | 34 | 33 | 334 | 16 | 383 | 10 | 3 | 9 | 22 | 6 | 58 | 0 | 64 | 503 |
| 07:30 AM | 3 | 3 | 22 | 28 | 9 | 306 | 15 | 330 | 6 | 1 | 5 | 12 | 3 | 118 | 9 | 130 | 500 |
| 07:45 AM | 8 | 1 | 17 | 26 | 16 | 321 | 9 | 346 | 4 | 2 | 7 | 13 | 9 | 120 | 14 | 143 | 528 |
| Total | 25 | 21 | 71 | 117 | 84 | 1313 | 48 | 1445 | 23 | 9 | 31 | 63 | 24 | 351 | 26 | 401 | 2026 |
| | | | | | | | | | | | | | | | | | |
| 08:00 AM | 8 | 3 | 16 | 27 | 29 | 289 | 16 | 334 | 11 | 6 | 14 | 31 | 16 | 153 | 19 | 188 | 580 |
| 08:15 AM | 14 | 8 | 18 | 40 | 58 | 268 | 14 | 340 | 9 | 3 | 30 | 42 | 16 | 96 | 29 | 141 | 563 |
| 08:30 AM | 13 | 11 | 20 | 44 | 72 | 279 | 11 | 362 | 27 | 6 | 63 | 96 | 4 | 79 | 36 | 119 | 621 |
| 08:45 AM | 17 | 2 | 11 | 30 | 37 | 294 | 13 | 344 | 22 | 3 | 60 | 85 | 8 | 70 | 3 | 81 | 540 |
| Total | 52 | 24 | 65 | 141 | 196 | 1130 | 54 | 1380 | 69 | 18 | 167 | 254 | 44 | 398 | 87 | 529 | 2304 |
| | | | | | | | | | | | | | | | | | |
| Grand Total | 77 | 45 | 136 | 258 | 280 | 2443 | 102 | 2825 | 92 | 27 | 198 | 317 | 68 | 749 | 113 | 930 | 4330 |
| Apprch % | 29.8 | 17.4 | 52.7 | | 9.9 | 86.5 | 3.6 | | 29 | 8.5 | 62.5 | | 7.3 | 80.5 | 12.2 | | |
| Total % | 1.8 | 1 | 3.1 | 6 | 6.5 | 56.4 | 2.4 | 65.2 | 2.1 | 0.6 | 4.6 | 7.3 | 1.6 | 17.3 | 2.6 | 21.5 | |

| | Friendly Valley Parkway Southbound | | | | Sierra Highway Westbound | | | | Friendly Valley Parkway Northbound | | | | Sierra Highway Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 08:00 AM | | | | | | | | | | | | | | | | | |
| 08:00 AM | 8 | 3 | 16 | 27 | 29 | 289 | **16** | 334 | 11 | **6** | 14 | 31 | **16** | **153** | 19 | **188** | 580 |
| 08:15 AM | 14 | 8 | 18 | 40 | 58 | 268 | 14 | 340 | 9 | 3 | 30 | 42 | 16 | 96 | 29 | 141 | 563 |
| 08:30 AM | 13 | **11** | **20** | **44** | **72** | 279 | 11 | **362** | **27** | 6 | **63** | **96** | 4 | 79 | **36** | 119 | **621** |
| 08:45 AM | **17** | 2 | 11 | 30 | 37 | **294** | 13 | 344 | 22 | 3 | 60 | 85 | 8 | 70 | 3 | 81 | 540 |
| Total Volume | 52 | 24 | 65 | 141 | 196 | 1130 | 54 | 1380 | 69 | 18 | 167 | 254 | 44 | 398 | 87 | 529 | 2304 |
| % App. Total | 36.9 | 17 | 46.1 | | 14.2 | 81.9 | 3.9 | | 27.2 | 7.1 | 65.7 | | 8.3 | 75.2 | 16.4 | | |
| PHF | .765 | .545 | .813 | .801 | .681 | .961 | .844 | .953 | .639 | .750 | .663 | .661 | .688 | .650 | .604 | .703 | .928 |

Counts Unlimited, Inc.
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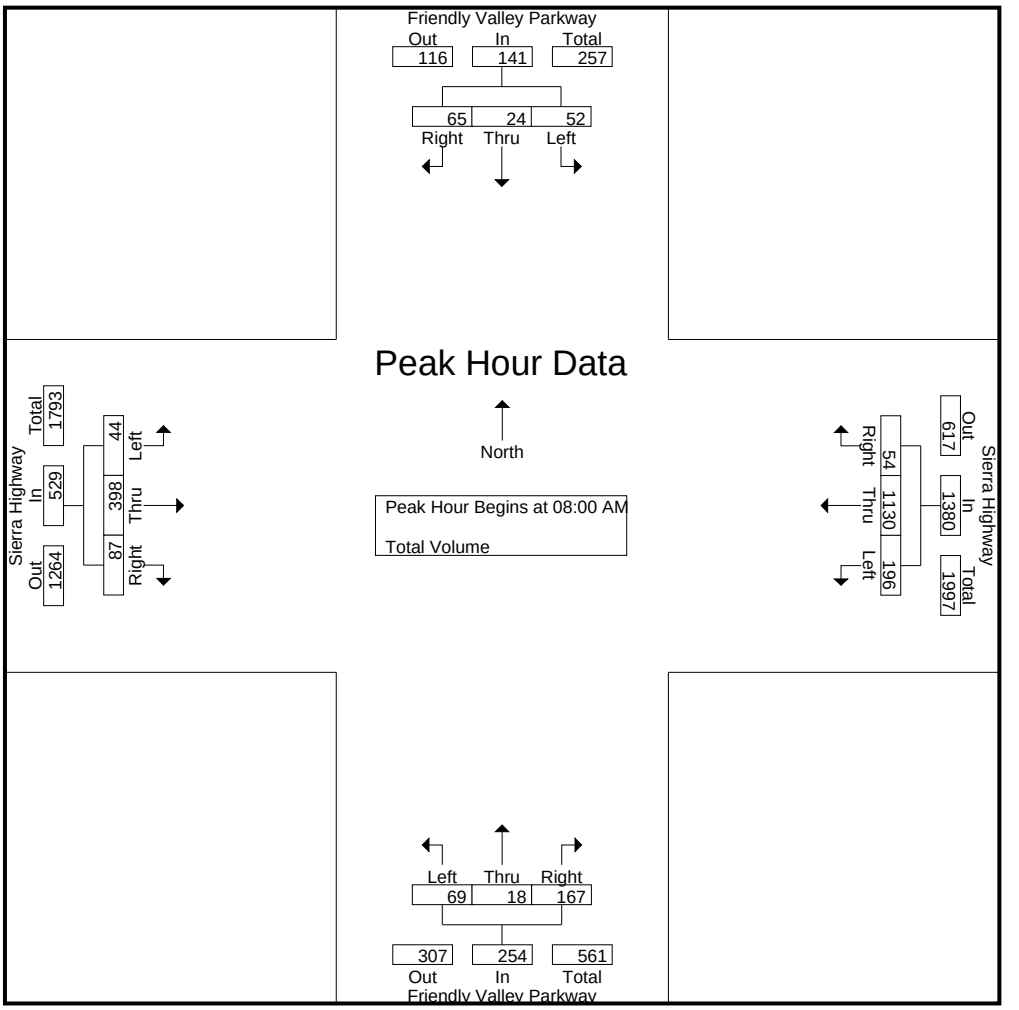
Corona, CA 92878
(951)268-6268

City of Santa Clarita
N/S: Friendly Valley Parkway
E/W: Sierra Highway
Weather: Clear

File Name : 06_SCL_Friendly_SierraAM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 2




Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

| | 08:00 AM | | | | 07:00 AM | | | | 08:00 AM | | | | 07:30 AM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +0 mins. | 8 | 3 | 16 | 27 | 26 | **352** | 8 | **386** | 11 | **6** | 14 | 31 | 3 | 118 | 9 | 130 |
| +15 mins. | 14 | 8 | 18 | 40 | **33** | 334 | **16** | 383 | 9 | 3 | 30 | 42 | 9 | 120 | 14 | 143 |
| +30 mins. | 13 | **11** | **20** | **44** | 9 | 306 | 15 | 330 | **27** | 6 | **63** | **96** | **16** | **153** | 19 | **188** |
| +45 mins. | **17** | 2 | 11 | 30 | 16 | 321 | 9 | 346 | 22 | 3 | 60 | 85 | 16 | 96 | **29** | 141 |
| Total Volume | 52 | 24 | 65 | 141 | 84 | 1313 | 48 | 1445 | 69 | 18 | 167 | 254 | 44 | 487 | 71 | 602 |
| % App. Total | 36.9 | 17 | 46.1 | | 5.8 | 90.9 | 3.3 | | 27.2 | 7.1 | 65.7 | | 7.3 | 80.9 | 11.8 | |
| PHF | .765 | .545 | .813 | .801 | .636 | .933 | .750 | .936 | .639 | .750 | .663 | .661 | .688 | .796 | .612 | .801 |

Counts Unlimited, Inc.
PO Box 1178
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City of Santa Clarita
N/S: Friendly Valley Parkway
E/W: Sierra Highway
Weather: Clear

File Name : 06_SCL_Friendly_Sierra PM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 1

Groups Printed- Total Volume

| | Friendly Valley Parkway Southbound | | | | Sierra Highway Westbound | | | | Friendly Valley Parkway Northbound | | | | Sierra Highway Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 12 | 6 | 19 | 37 | 11 | 127 | 7 | 145 | 9 | 7 | 11 | 27 | 23 | 283 | 17 | 323 | 532 |
| 04:15 PM | 6 | 5 | 15 | 26 | 16 | 107 | 12 | 135 | 5 | 5 | 12 | 22 | 28 | 314 | 11 | 353 | 536 |
| 04:30 PM | 7 | 3 | 5 | 15 | 15 | 110 | 10 | 135 | 5 | 5 | 17 | 27 | 31 | 303 | 12 | 346 | 523 |
| 04:45 PM | 22 | 4 | 13 | 39 | 20 | 132 | 10 | 162 | 12 | 8 | 17 | 37 | 30 | 315 | 13 | 358 | 596 |
| Total | 47 | 18 | 52 | 117 | 62 | 476 | 39 | 577 | 31 | 25 | 57 | 113 | 112 | 1215 | 53 | 1380 | 2187 |
| | | | | | | | | | | | | | | | | | |
| 05:00 PM | 16 | 2 | 13 | 31 | 13 | 129 | 11 | 153 | 11 | 4 | 17 | 32 | 22 | 330 | 10 | 362 | 578 |
| 05:15 PM | 11 | 0 | 12 | 23 | 21 | 106 | 7 | 134 | 9 | 3 | 11 | 23 | 24 | 312 | 13 | 349 | 529 |
| 05:30 PM | 12 | 4 | 16 | 32 | 22 | 112 | 14 | 148 | 10 | 5 | 23 | 38 | 22 | 323 | 14 | 359 | 577 |
| 05:45 PM | 12 | 1 | 12 | 25 | 22 | 119 | 13 | 154 | 7 | 9 | 15 | 31 | 13 | 350 | 6 | 369 | 579 |
| Total | 51 | 7 | 53 | 111 | 78 | 466 | 45 | 589 | 37 | 21 | 66 | 124 | 81 | 1315 | 43 | 1439 | 2263 |
| | | | | | | | | | | | | | | | | | |
| Grand Total | 98 | 25 | 105 | 228 | 140 | 942 | 84 | 1166 | 68 | 46 | 123 | 237 | 193 | 2530 | 96 | 2819 | 4450 |
| Apprch % | 43 | 11 | 46.1 | | 12 | 80.8 | 7.2 | | 28.7 | 19.4 | 51.9 | | 6.8 | 89.7 | 3.4 | | |
| Total % | 2.2 | 0.6 | 2.4 | 5.1 | 3.1 | 21.2 | 1.9 | 26.2 | 1.5 | 1 | 2.8 | 5.3 | 4.3 | 56.9 | 2.2 | 63.3 | |

| | Friendly Valley Parkway Southbound | | | | Sierra Highway Westbound | | | | Friendly Valley Parkway Northbound | | | | Sierra Highway Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:45 PM | | | | | | | | | | | | | | | | | |
| 04:45 PM | **22** | **4** | 13 | **39** | 20 | **132** | 10 | **162** | **12** | **8** | 17 | 37 | **30** | 315 | 13 | 358 | **596** |
| 05:00 PM | 16 | 2 | 13 | 31 | 13 | 129 | 11 | 153 | 11 | 4 | 17 | 32 | 22 | **330** | 10 | **362** | 578 |
| 05:15 PM | 11 | 0 | 12 | 23 | 21 | 106 | 7 | 134 | 9 | 3 | 11 | 23 | 24 | 312 | 13 | 349 | 529 |
| 05:30 PM | 12 | 4 | **16** | 32 | **22** | 112 | **14** | 148 | 10 | 5 | **23** | **38** | 22 | 323 | **14** | 359 | 577 |
| Total Volume | 61 | 10 | 54 | 125 | 76 | 479 | 42 | 597 | 42 | 20 | 68 | 130 | 98 | 1280 | 50 | 1428 | 2280 |
| % App. Total | 48.8 | 8 | 43.2 | | 12.7 | 80.2 | 7 | | 32.3 | 15.4 | 52.3 | | 6.9 | 89.6 | 3.5 | | |
| PHF | .693 | .625 | .844 | .801 | .864 | .907 | .750 | .921 | .875 | .625 | .739 | .855 | .817 | .970 | .893 | .986 | .956 |

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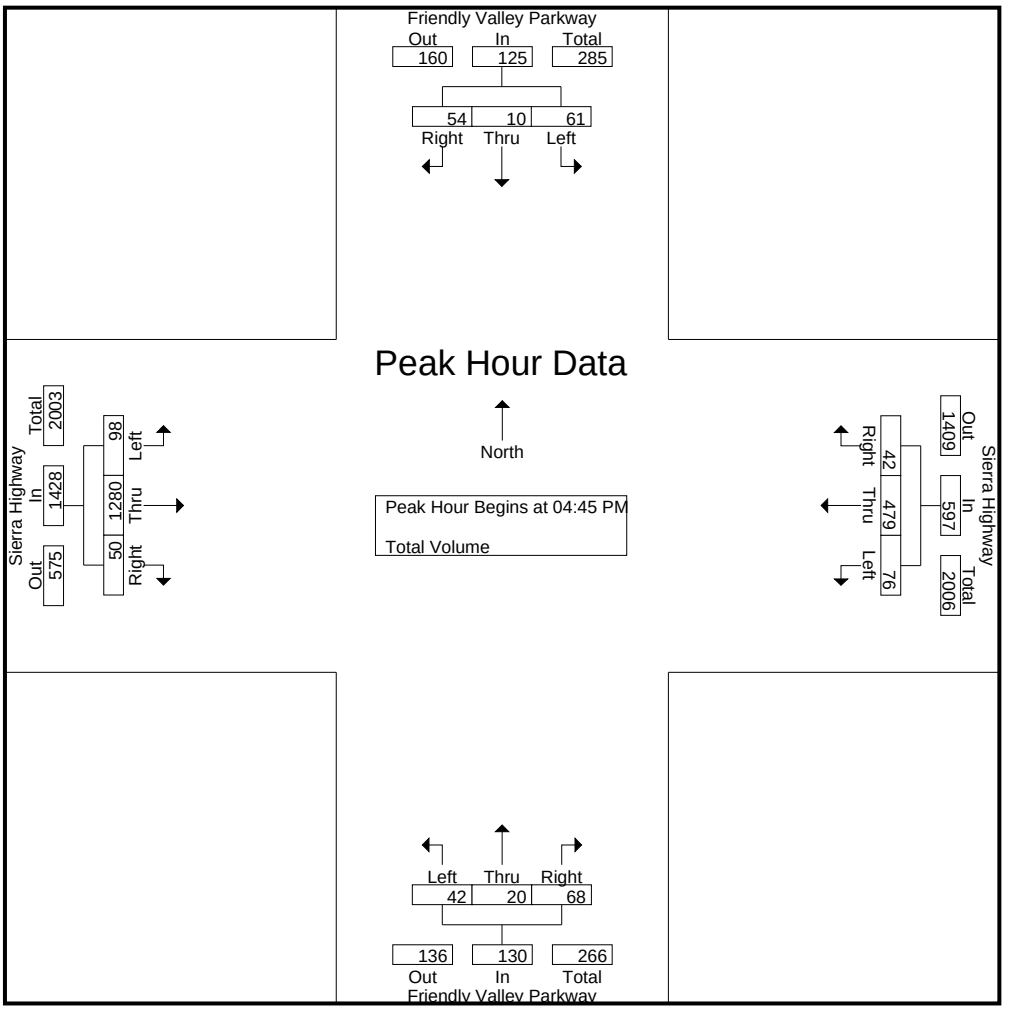
City of Santa Clarita
N/S: Friendly Valley Parkway
E/W: Sierra Highway
Weather: Clear

File Name : 06_SCL_Friendly_Sierra PM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 2




Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

| | 04:45 PM | | | | 04:45 PM | | | | 04:45 PM | | | | 05:00 PM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +0 mins. | **22** | **4** | 13 | **39** | 20 | **132** | 10 | **162** | **12** | **8** | 17 | 37 | 22 | 330 | 10 | 362 |
| +15 mins. | 16 | 2 | 13 | 31 | 13 | 129 | 11 | 153 | 11 | 4 | 17 | 32 | **24** | 312 | 13 | 349 |
| +30 mins. | 11 | 0 | 12 | 23 | 21 | 106 | 7 | 134 | 9 | 3 | 11 | 23 | 22 | 323 | **14** | 359 |
| +45 mins. | 12 | 4 | **16** | 32 | **22** | 112 | **14** | 148 | 10 | 5 | **23** | **38** | 13 | **350** | 6 | **369** |
| Total Volume | 61 | 10 | 54 | 125 | 76 | 479 | 42 | 597 | 42 | 20 | 68 | 130 | 81 | 1315 | 43 | 1439 |
| % App. Total | 48.8 | 8 | 43.2 | | 12.7 | 80.2 | 7 | | 32.3 | 15.4 | 52.3 | | 5.6 | 91.4 | 3 | |
| PHF | .693 | .625 | .844 | .801 | .864 | .907 | .750 | .921 | .875 | .625 | .739 | .855 | .844 | .939 | .768 | .975 |

Counts Unlimited, Inc.
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City of Santa Clarita
N/S: Via Princessa
E/W: Sierra Highway
Weather: Clear

File Name : 07_SCL_Via P_SierraAM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 1

Groups Printed- Total Volume

| | Via Princessa Southbound | | | | Sierra Highway Westbound | | | | Via Princessa Northbound | | | | Sierra Highway Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 8 | 132 | 96 | 236 | 28 | 330 | 175 | 533 | 56 | 105 | 16 | 177 | 50 | 28 | 10 | 88 | 1034 |
| 07:15 AM | 16 | 148 | 84 | 248 | 33 | 312 | 229 | 574 | 53 | 182 | 13 | 248 | 39 | 29 | 20 | 88 | 1158 |
| 07:30 AM | 15 | 138 | 92 | 245 | 27 | 248 | 242 | 517 | 71 | 233 | 12 | 316 | 89 | 50 | 33 | 172 | 1250 |
| 07:45 AM | 31 | 160 | 96 | 287 | 44 | 200 | 215 | 459 | 58 | 236 | 14 | 308 | 92 | 79 | 28 | 199 | 1253 |
| Total | 70 | 578 | 368 | 1016 | 132 | 1090 | 861 | 2083 | 238 | 756 | 55 | 1049 | 270 | 186 | 91 | 547 | 4695 |
| | | | | | | | | | | | | | | | | | |
| 08:00 AM | 41 | 251 | 98 | 390 | 33 | 204 | 193 | 430 | 76 | 267 | 24 | 367 | 78 | 101 | 24 | 203 | 1390 |
| 08:15 AM | 48 | 245 | 105 | 398 | 52 | 241 | 189 | 482 | 81 | 211 | 21 | 313 | 105 | 76 | 33 | 214 | 1407 |
| 08:30 AM | 51 | 218 | 104 | 373 | 40 | 205 | 161 | 406 | 80 | 220 | 19 | 319 | 76 | 75 | 42 | 193 | 1291 |
| 08:45 AM | 38 | 173 | 75 | 286 | 42 | 184 | 124 | 350 | 85 | 173 | 27 | 285 | 53 | 98 | 29 | 180 | 1101 |
| Total | 178 | 887 | 382 | 1447 | 167 | 834 | 667 | 1668 | 322 | 871 | 91 | 1284 | 312 | 350 | 128 | 790 | 5189 |
| | | | | | | | | | | | | | | | | | |
| Grand Total | 248 | 1465 | 750 | 2463 | 299 | 1924 | 1528 | 3751 | 560 | 1627 | 146 | 2333 | 582 | 536 | 219 | 1337 | 9884 |
| Apprch % | 10.1 | 59.5 | 30.5 | | 8 | 51.3 | 40.7 | | 24 | 69.7 | 6.3 | | 43.5 | 40.1 | 16.4 | | |
| Total % | 2.5 | 14.8 | 7.6 | 24.9 | 3 | 19.5 | 15.5 | 38 | 5.7 | 16.5 | 1.5 | 23.6 | 5.9 | 5.4 | 2.2 | 13.5 | |

| | Via Princessa Southbound | | | | Sierra Highway Westbound | | | | Via Princessa Northbound | | | | Sierra Highway Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 AM | | | | | | | | | | | | | | | | | |
| 07:45 AM | 31 | 160 | 96 | 287 | 44 | 200 | **215** | 459 | 58 | 236 | 14 | 308 | 92 | 79 | 28 | 199 | 1253 |
| 08:00 AM | 41 | **251** | 98 | 390 | 33 | 204 | 193 | 430 | 76 | **267** | **24** | **367** | 78 | **101** | 24 | 203 | 1390 |
| 08:15 AM | 48 | 245 | **105** | **398** | **52** | **241** | 189 | **482** | **81** | 211 | 21 | 313 | **105** | 76 | 33 | **214** | **1407** |
| 08:30 AM | **51** | 218 | 104 | 373 | 40 | 205 | 161 | 406 | 80 | 220 | 19 | 319 | 76 | 75 | **42** | 193 | 1291 |
| Total Volume | 171 | 874 | 403 | 1448 | 169 | 850 | 758 | 1777 | 295 | 934 | 78 | 1307 | 351 | 331 | 127 | 809 | 5341 |
| % App. Total | 11.8 | 60.4 | 27.8 | | 9.5 | 47.8 | 42.7 | | 22.6 | 71.5 | 6 | | 43.4 | 40.9 | 15.7 | | |
| PHF | .838 | .871 | .960 | .910 | .813 | .882 | .881 | .922 | .910 | .875 | .813 | .890 | .836 | .819 | .756 | .945 | .949 |

Counts Unlimited, Inc.
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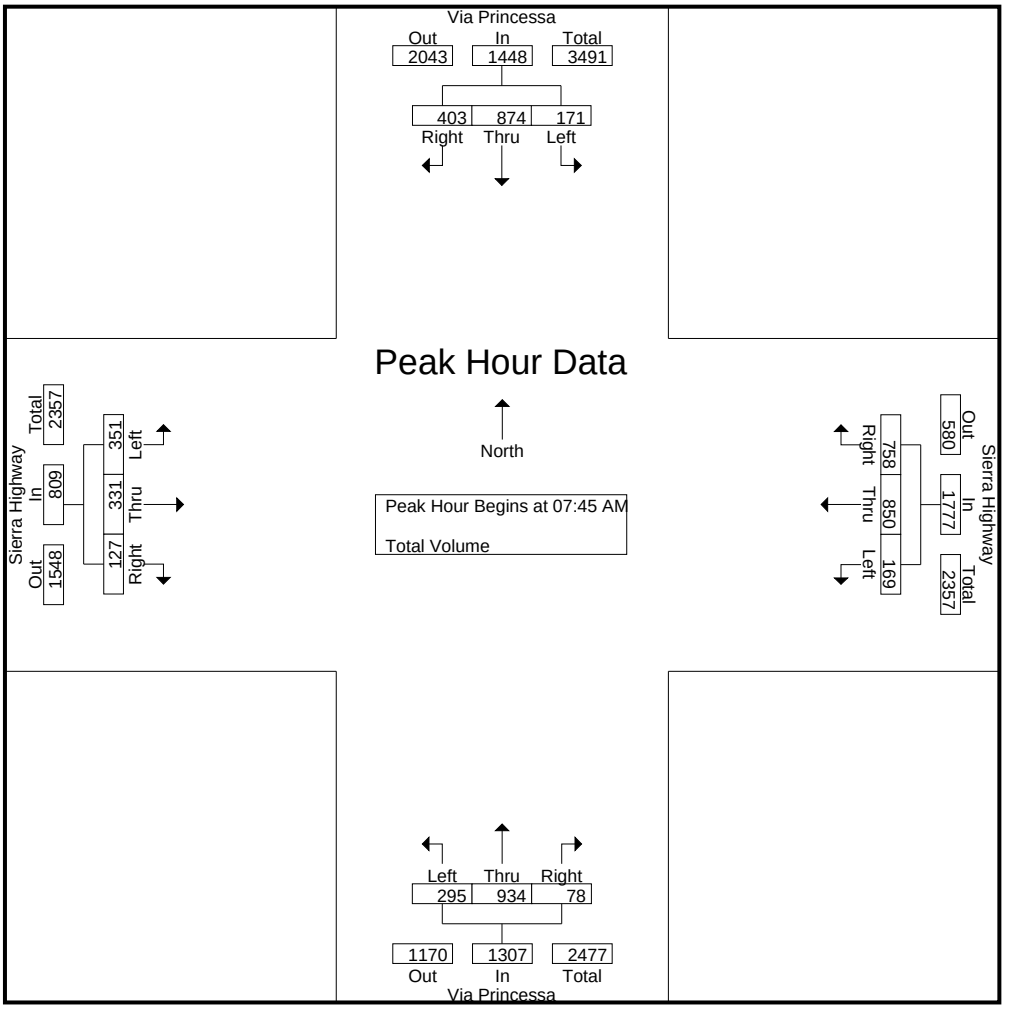
City of Santa Clarita
N/S: Via Princessa
E/W: Sierra Highway
Weather: Clear

File Name : 07_SCL_Via P_SierraAM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 2




Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

| | 07:45 AM | | | | 07:00 AM | | | | 07:45 AM | | | | 07:45 AM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +0 mins. | 31 | 160 | 96 | 287 | 28 | **330** | 175 | 533 | 58 | 236 | 14 | 308 | 92 | 79 | 28 | 199 |
| +15 mins. | 41 | **251** | 98 | 390 | 33 | 312 | 229 | **574** | 76 | **267** | **24** | **367** | 78 | **101** | 24 | 203 |
| +30 mins. | 48 | 245 | **105** | **398** | 27 | 248 | **242** | 517 | **81** | 211 | 21 | 313 | **105** | 76 | 33 | **214** |
| +45 mins. | **51** | 218 | 104 | 373 | **44** | 200 | 215 | 459 | 80 | 220 | 19 | 319 | 76 | 75 | **42** | 193 |
| Total Volume | 171 | 874 | 403 | 1448 | 132 | 1090 | 861 | 2083 | 295 | 934 | 78 | 1307 | 351 | 331 | 127 | 809 |
| % App. Total | 11.8 | 60.4 | 27.8 | | 6.3 | 52.3 | 41.3 | | 22.6 | 71.5 | 6 | | 43.4 | 40.9 | 15.7 | |
| PHF | .838 | .871 | .960 | .910 | .750 | .826 | .889 | .907 | .910 | .875 | .813 | .890 | .836 | .819 | .756 | .945 |

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City of Santa Clarita
N/S: Via Princessa
E/W: Sierra Highway
Weather: Clear

File Name : 07_SCL_Via P_Sierra PM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 1

Groups Printed- Total Volume

| | Via Princessa Southbound | | | | Sierra Highway Westbound | | | | Via Princessa Northbound | | | | Sierra Highway Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 62 | 198 | 51 | 311 | 59 | 93 | 156 | 308 | 65 | 199 | 52 | 316 | 110 | 187 | 57 | 354 | 1289 |
| 04:15 PM | 44 | 182 | 32 | 258 | 54 | 85 | 154 | 293 | 46 | 167 | 53 | 266 | 124 | 226 | 59 | 409 | 1226 |
| 04:30 PM | 46 | 194 | 38 | 278 | 66 | 94 | 190 | 350 | 38 | 189 | 50 | 277 | 103 | 216 | 57 | 376 | 1281 |
| 04:45 PM | 39 | 204 | 48 | 291 | 56 | 101 | 129 | 286 | 43 | 196 | 49 | 288 | 123 | 207 | 69 | 399 | 1264 |
| Total | 191 | 778 | 169 | 1138 | 235 | 373 | 629 | 1237 | 192 | 751 | 204 | 1147 | 460 | 836 | 242 | 1538 | 5060 |
| | | | | | | | | | | | | | | | | | |
| 05:00 PM | 50 | 216 | 45 | 311 | 54 | 87 | 205 | 346 | 51 | 201 | 58 | 310 | 105 | 225 | 49 | 379 | 1346 |
| 05:15 PM | 63 | 231 | 27 | 321 | 45 | 79 | 169 | 293 | 52 | 198 | 66 | 316 | 102 | 209 | 53 | 364 | 1294 |
| 05:30 PM | 56 | 214 | 47 | 317 | 68 | 97 | 186 | 351 | 39 | 191 | 46 | 276 | 107 | 244 | 56 | 407 | 1351 |
| 05:45 PM | 57 | 211 | 48 | 316 | 50 | 101 | 202 | 353 | 48 | 179 | 38 | 265 | 126 | 252 | 56 | 434 | 1368 |
| Total | 226 | 872 | 167 | 1265 | 217 | 364 | 762 | 1343 | 190 | 769 | 208 | 1167 | 440 | 930 | 214 | 1584 | 5359 |
| | | | | | | | | | | | | | | | | | |
| Grand Total | 417 | 1650 | 336 | 2403 | 452 | 737 | 1391 | 2580 | 382 | 1520 | 412 | 2314 | 900 | 1766 | 456 | 3122 | 10419 |
| Apprch % | 17.4 | 68.7 | 14 | | 17.5 | 28.6 | 53.9 | | 16.5 | 65.7 | 17.8 | | 28.8 | 56.6 | 14.6 | | |
| Total % | 4 | 15.8 | 3.2 | 23.1 | 4.3 | 7.1 | 13.4 | 24.8 | 3.7 | 14.6 | 4 | 22.2 | 8.6 | 16.9 | 4.4 | 30 | |

| | Via Princessa Southbound | | | | Sierra Highway Westbound | | | | Via Princessa Northbound | | | | Sierra Highway Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 50 | 216 | 45 | 311 | 54 | 87 | **205** | 346 | 51 | **201** | 58 | 310 | 105 | 225 | 49 | 379 | 1346 |
| 05:15 PM | **63** | **231** | 27 | **321** | 45 | 79 | 169 | 293 | **52** | 198 | **66** | **316** | 102 | 209 | 53 | 364 | 1294 |
| 05:30 PM | 56 | 214 | 47 | 317 | **68** | 97 | 186 | 351 | 39 | 191 | 46 | 276 | 107 | 244 | **56** | 407 | 1351 |
| 05:45 PM | 57 | 211 | **48** | 316 | 50 | **101** | 202 | **353** | 48 | 179 | 38 | 265 | **126** | **252** | 56 | **434** | **1368** |
| Total Volume | 226 | 872 | 167 | 1265 | 217 | 364 | 762 | 1343 | 190 | 769 | 208 | 1167 | 440 | 930 | 214 | 1584 | 5359 |
| % App. Total | 17.9 | 68.9 | 13.2 | | 16.2 | 27.1 | 56.7 | | 16.3 | 65.9 | 17.8 | | 27.8 | 58.7 | 13.5 | | |
| PHF | .897 | .944 | .870 | .985 | .798 | .901 | .929 | .951 | .913 | .956 | .788 | .923 | .873 | .923 | .955 | .912 | .979 |

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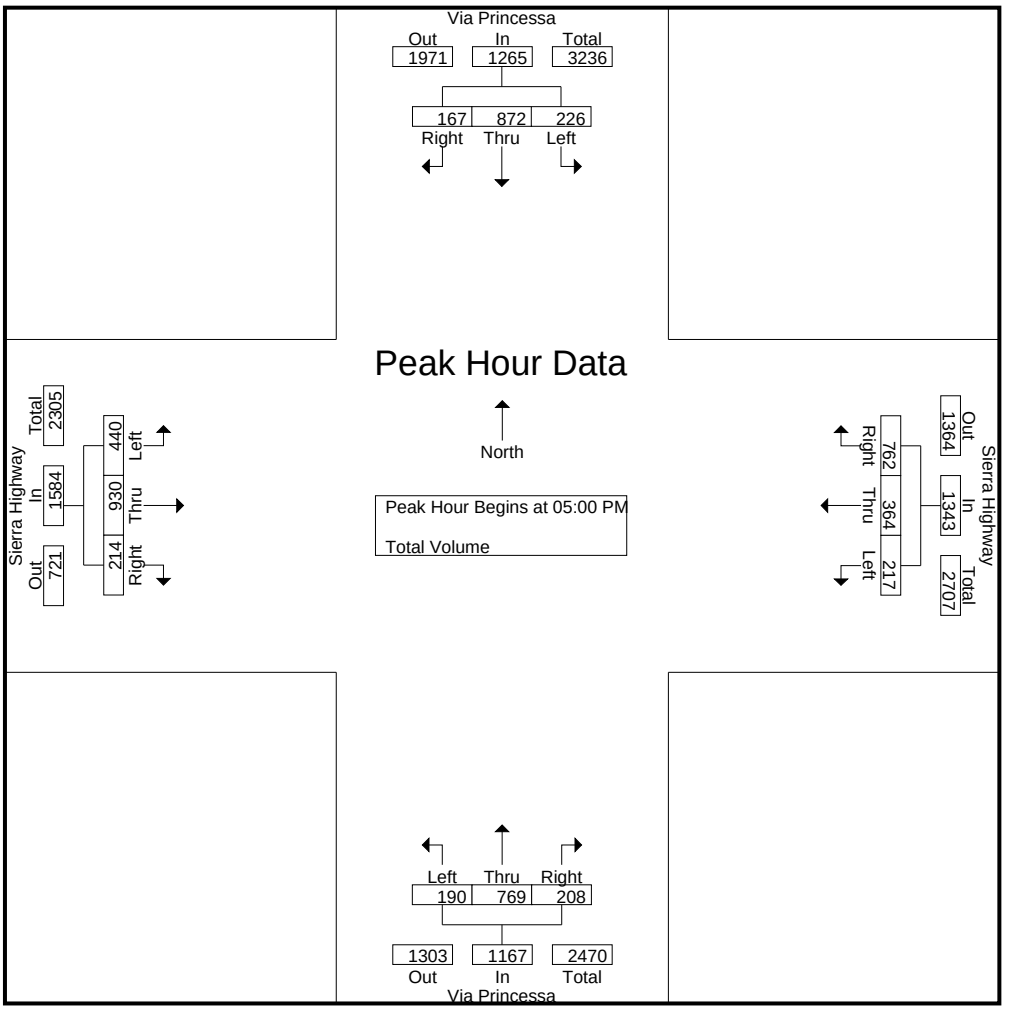
City of Santa Clarita
N/S: Via Princessa
E/W: Sierra Highway
Weather: Clear

File Name : 07_SCL_Via P_Sierra PM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 2




Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

| | 05:00 PM | | | | 05:00 PM | | | | 04:30 PM | | | | 05:00 PM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +0 mins. | 50 | 216 | 45 | 311 | 54 | 87 | **205** | 346 | 38 | 189 | 50 | 277 | 105 | 225 | 49 | 379 |
| +15 mins. | **63** | **231** | 27 | **321** | 45 | 79 | 169 | 293 | 43 | 196 | 49 | 288 | 102 | 209 | 53 | 364 |
| +30 mins. | 56 | 214 | 47 | 317 | **68** | 97 | 186 | 351 | 51 | **201** | 58 | 310 | 107 | 244 | **56** | 407 |
| +45 mins. | 57 | 211 | **48** | 316 | 50 | **101** | 202 | **353** | **52** | 198 | **66** | **316** | **126** | **252** | 56 | **434** |
| Total Volume | 226 | 872 | 167 | 1265 | 217 | 364 | 762 | 1343 | 184 | 784 | 223 | 1191 | 440 | 930 | 214 | 1584 |
| % App. Total | 17.9 | 68.9 | 13.2 | | 16.2 | 27.1 | 56.7 | | 15.4 | 65.8 | 18.7 | | 27.8 | 58.7 | 13.5 | |
| PHF | .897 | .944 | .870 | .985 | .798 | .901 | .929 | .951 | .885 | .975 | .845 | .942 | .873 | .923 | .955 | .912 |

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

City of Santa Clarita
N/S: Golden Valley Road
E/W: Centre Pointe Parkway
Weather: Clear

File Name : 01_SCL_Golden_Centre AM
Site Code : 99921611
Start Date : 10/28/2021


Groups Printed- Total Volume

| | Golden Valley Road Southbound | | | | Centre Pointe Parkway Westbound | | | | Golden Valley Road Northbound | | | | Centre Pointe Parkway Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 9 | 162 | 16 | 187 | 105 | 11 | 17 | 133 | 44 | 123 | 63 | 230 | 7 | 4 | 31 | 42 | 592 |
| 07:15 AM | 14 | 277 | 20 | 311 | 131 | 8 | 5 | 144 | 41 | 160 | 56 | 257 | 4 | 5 | 36 | 45 | 757 |
| 07:30 AM | 27 | 263 | 11 | 301 | 156 | 8 | 9 | 173 | 40 | 184 | 84 | 308 | 5 | 9 | 56 | 70 | 852 |
| 07:45 AM | 41 | 217 | 21 | 279 | 108 | 14 | 16 | 138 | 62 | 209 | 110 | 381 | 4 | 8 | 30 | 42 | 840 |
| Total | 91 | 919 | 68 | 1078 | 500 | 41 | 47 | 588 | 187 | 676 | 313 | 1176 | 20 | 26 | 153 | 199 | 3041 |
| | | | | | | | | | | | | | | | | | |
| 08:00 AM | 38 | 194 | 30 | 262 | 63 | 18 | 11 | 92 | 105 | 192 | 105 | 402 | 10 | 17 | 35 | 62 | 818 |
| 08:15 AM | 28 | 178 | 28 | 234 | 78 | 18 | 11 | 107 | 69 | 193 | 62 | 324 | 7 | 6 | 38 | 51 | 716 |
| 08:30 AM | 19 | 171 | 17 | 207 | 54 | 12 | 13 | 79 | 58 | 159 | 48 | 265 | 4 | 7 | 29 | 40 | 591 |
| 08:45 AM | 29 | 198 | 23 | 250 | 51 | 17 | 13 | 81 | 55 | 169 | 43 | 267 | 6 | 6 | 49 | 61 | 659 |
| Total | 114 | 741 | 98 | 953 | 246 | 65 | 48 | 359 | 287 | 713 | 258 | 1258 | 27 | 36 | 151 | 214 | 2784 |
| | | | | | | | | | | | | | | | | | |
| Grand Total | 205 | 1660 | 166 | 2031 | 746 | 106 | 95 | 947 | 474 | 1389 | 571 | 2434 | 47 | 62 | 304 | 413 | 5825 |
| Apprch % | 10.1 | 81.7 | 8.2 | | 78.8 | 11.2 | 10 | | 19.5 | 57.1 | 23.5 | | 11.4 | 15 | 73.6 | | |
| Total % | 3.5 | 28.5 | 2.8 | 34.9 | 12.8 | 1.8 | 1.6 | 16.3 | 8.1 | 23.8 | 9.8 | 41.8 | 0.8 | 1.1 | 5.2 | 7.1 | |

| | Golden Valley Road Southbound | | | | Centre Pointe Parkway Westbound | | | | Golden Valley Road Northbound | | | | Centre Pointe Parkway Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:15 AM | | | | | | | | | | | | | | | | | |
| 07:15 AM | 14 | **277** | 20 | **311** | 131 | 8 | 5 | 144 | 41 | 160 | 56 | 257 | 4 | 5 | 36 | 45 | 757 |
| 07:30 AM | 27 | 263 | 11 | 301 | **156** | 8 | 9 | **173** | 40 | 184 | 84 | 308 | 5 | 9 | **56** | **70** | **852** |
| 07:45 AM | **41** | 217 | 21 | 279 | 108 | 14 | **16** | 138 | 62 | **209** | **110** | 381 | 4 | 8 | 30 | 42 | 840 |
| 08:00 AM | 38 | 194 | **30** | 262 | 63 | **18** | 11 | 92 | **105** | 192 | 105 | **402** | **10** | **17** | 35 | 62 | 818 |
| Total Volume | 120 | 951 | 82 | 1153 | 458 | 48 | 41 | 547 | 248 | 745 | 355 | 1348 | 23 | 39 | 157 | 219 | 3267 |
| % App. Total | 10.4 | 82.5 | 7.1 | | 83.7 | 8.8 | 7.5 | | 18.4 | 55.3 | 26.3 | | 10.5 | 17.8 | 71.7 | | |
| PHF | .732 | .858 | .683 | .927 | .734 | .667 | .641 | .790 | .590 | .891 | .807 | .838 | .575 | .574 | .701 | .782 | .959 |

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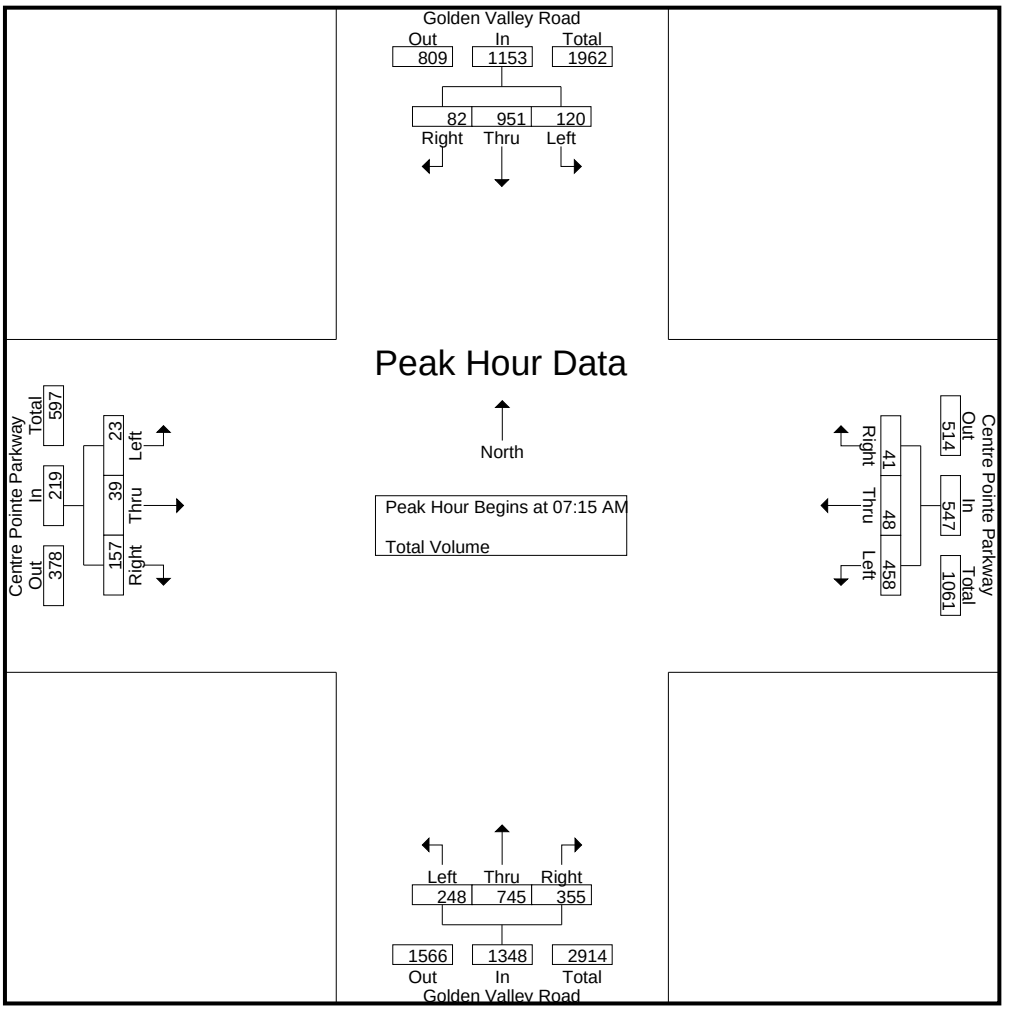
City of Santa Clarita
N/S: Golden Valley Road
E/W: Centre Pointe Parkway
Weather: Clear

File Name : 01_SCL_Golden_Centre AM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 2




Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

| | 07:15 AM | | | | 07:00 AM | | | | 07:30 AM | | | | 07:30 AM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +0 mins. | 14 | **277** | 20 | **311** | 105 | 11 | **17** | 133 | 40 | 184 | 84 | 308 | 5 | 9 | **56** | **70** |
| +15 mins. | 27 | 263 | 11 | 301 | 131 | 8 | 5 | 144 | 62 | **209** | **110** | 381 | 4 | 8 | 30 | 42 |
| +30 mins. | **41** | 217 | 21 | 279 | **156** | 8 | 9 | **173** | **105** | 192 | 105 | **402** | **10** | **17** | 35 | 62 |
| +45 mins. | 38 | 194 | **30** | 262 | 108 | **14** | 16 | 138 | 69 | 193 | 62 | 324 | 7 | 6 | 38 | 51 |
| Total Volume | 120 | 951 | 82 | 1153 | 500 | 41 | 47 | 588 | 276 | 778 | 361 | 1415 | 26 | 40 | 159 | 225 |
| % App. Total | 10.4 | 82.5 | 7.1 | | 85 | 7 | 8 | | 19.5 | 55 | 25.5 | | 11.6 | 17.8 | 70.7 | |
| PHF | .732 | .858 | .683 | .927 | .801 | .732 | .691 | .850 | .657 | .931 | .820 | .880 | .650 | .588 | .710 | .804 |

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Weather: Clear

File Name : 01_SCL_Golden_Centre PM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 1

Groups Printed- Total Volume

| | Golden Valley Road Southbound | | | | Centre Pointe Parkway Westbound | | | | Golden Valley Road Northbound | | | | Centre Pointe Parkway Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 37 | 279 | 28 | 344 | 69 | 21 | 73 | 163 | 68 | 255 | 47 | 370 | 41 | 25 | 117 | 183 | 1060 |
| 04:15 PM | 33 | 273 | 13 | 319 | 47 | 18 | 31 | 96 | 83 | 262 | 67 | 412 | 19 | 8 | 106 | 133 | 960 |
| 04:30 PM | 46 | 240 | 11 | 297 | 84 | 11 | 21 | 116 | 76 | 226 | 62 | 364 | 20 | 22 | 116 | 158 | 935 |
| 04:45 PM | 50 | 252 | 25 | 327 | 57 | 15 | 17 | 89 | 65 | 241 | 48 | 354 | 26 | 18 | 103 | 147 | 917 |
| Total | 166 | 1044 | 77 | 1287 | 257 | 65 | 142 | 464 | 292 | 984 | 224 | 1500 | 106 | 73 | 442 | 621 | 3872 |
| | | | | | | | | | | | | | | | | | |
| 05:00 PM | 32 | 245 | 21 | 298 | 77 | 13 | 34 | 124 | 71 | 227 | 64 | 362 | 39 | 21 | 122 | 182 | 966 |
| 05:15 PM | 43 | 300 | 10 | 353 | 47 | 12 | 35 | 94 | 74 | 314 | 47 | 435 | 19 | 14 | 92 | 125 | 1007 |
| 05:30 PM | 48 | 272 | 14 | 334 | 52 | 15 | 28 | 95 | 63 | 244 | 47 | 354 | 19 | 12 | 96 | 127 | 910 |
| 05:45 PM | 41 | 243 | 17 | 301 | 45 | 11 | 28 | 84 | 81 | 274 | 78 | 433 | 17 | 14 | 92 | 123 | 941 |
| Total | 164 | 1060 | 62 | 1286 | 221 | 51 | 125 | 397 | 289 | 1059 | 236 | 1584 | 94 | 61 | 402 | 557 | 3824 |
| | | | | | | | | | | | | | | | | | |
| Grand Total | 330 | 2104 | 139 | 2573 | 478 | 116 | 267 | 861 | 581 | 2043 | 460 | 3084 | 200 | 134 | 844 | 1178 | 7696 |
| Apprch % | 12.8 | 81.8 | 5.4 | | 55.5 | 13.5 | 31 | | 18.8 | 66.2 | 14.9 | | 17 | 11.4 | 71.6 | | |
| Total % | 4.3 | 27.3 | 1.8 | 33.4 | 6.2 | 1.5 | 3.5 | 11.2 | 7.5 | 26.5 | 6 | 40.1 | 2.6 | 1.7 | 11 | 15.3 | |

| | Golden Valley Road Southbound | | | | Centre Pointe Parkway Westbound | | | | Golden Valley Road Northbound | | | | Centre Pointe Parkway Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:00 PM | | | | | | | | | | | | | | | | | |
| 04:00 PM | 37 | **279** | **28** | **344** | 69 | **21** | **73** | **163** | 68 | 255 | 47 | 370 | **41** | **25** | **117** | **183** | **1060** |
| 04:15 PM | 33 | 273 | 13 | 319 | 47 | 18 | 31 | 96 | **83** | **262** | **67** | **412** | 19 | 8 | 106 | 133 | 960 |
| 04:30 PM | 46 | 240 | 11 | 297 | **84** | 11 | 21 | 116 | 76 | 226 | 62 | 364 | 20 | 22 | 116 | 158 | 935 |
| 04:45 PM | **50** | 252 | 25 | 327 | 57 | 15 | 17 | 89 | 65 | 241 | 48 | 354 | 26 | 18 | 103 | 147 | 917 |
| Total Volume | 166 | 1044 | 77 | 1287 | 257 | 65 | 142 | 464 | 292 | 984 | 224 | 1500 | 106 | 73 | 442 | 621 | 3872 |
| % App. Total | 12.9 | 81.1 | 6 | | 55.4 | 14 | 30.6 | | 19.5 | 65.6 | 14.9 | | 17.1 | 11.8 | 71.2 | | |
| PHF | .830 | .935 | .688 | .935 | .765 | .774 | .486 | .712 | .880 | .939 | .836 | .910 | .646 | .730 | .944 | .848 | .913 |

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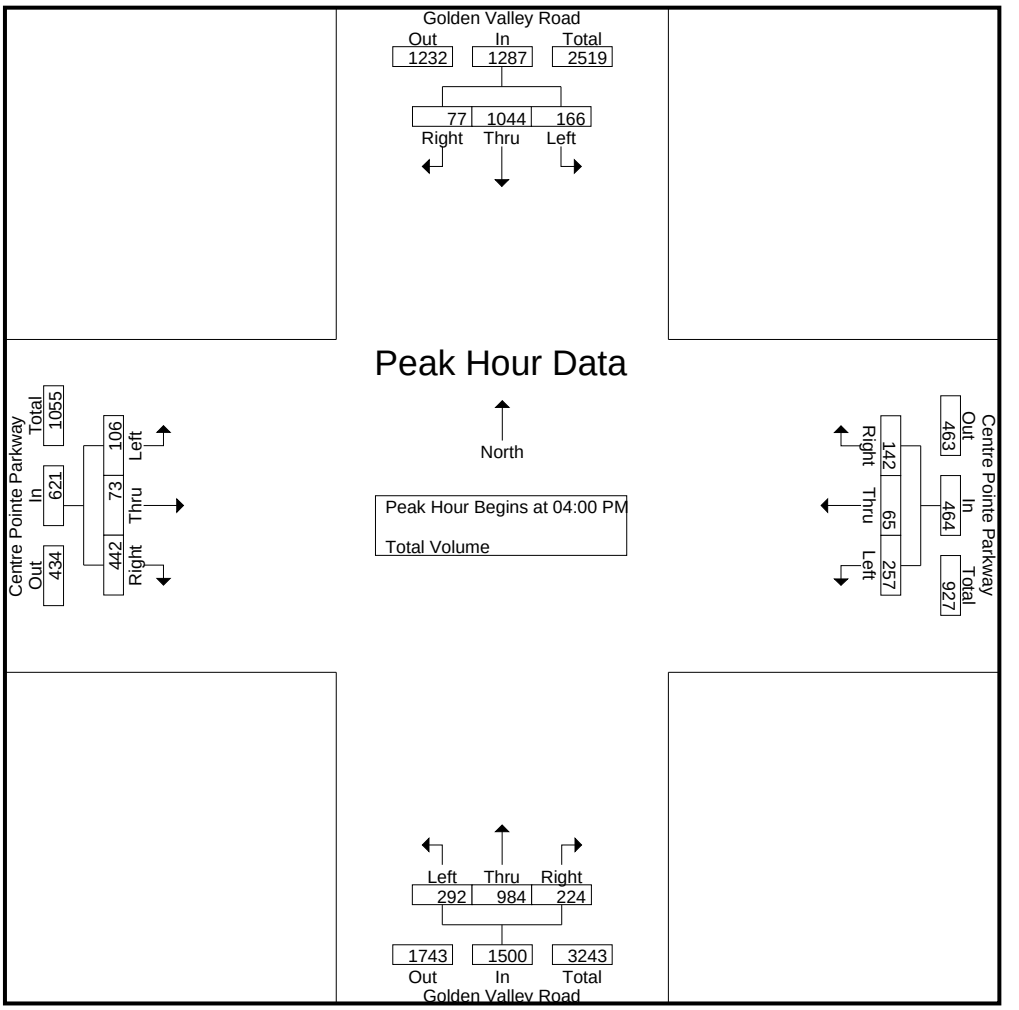
File Name : 01_SCL_Golden_Centre PM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 2




Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

| | 04:45 PM | | | | 04:00 PM | | | | 05:00 PM | | | | 04:00 PM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +0 mins. | **50** | 252 | **25** | 327 | 69 | **21** | **73** | **163** | 71 | 227 | 64 | 362 | **41** | **25** | **117** | **183** |
| +15 mins. | 32 | 245 | 21 | 298 | 47 | 18 | 31 | 96 | 74 | **314** | 47 | **435** | 19 | 8 | 106 | 133 |
| +30 mins. | 43 | **300** | 10 | **353** | **84** | 11 | 21 | 116 | 63 | 244 | 47 | 354 | 20 | 22 | 116 | 158 |
| +45 mins. | 48 | 272 | 14 | 334 | 57 | 15 | 17 | 89 | **81** | 274 | **78** | 433 | 26 | 18 | 103 | 147 |
| Total Volume | 173 | 1069 | 70 | 1312 | 257 | 65 | 142 | 464 | 289 | 1059 | 236 | 1584 | 106 | 73 | 442 | 621 |
| % App. Total | 13.2 | 81.5 | 5.3 | | 55.4 | 14 | 30.6 | | 18.2 | 66.9 | 14.9 | | 17.1 | 11.8 | 71.2 | |
| PHF | .865 | .891 | .700 | .929 | .765 | .774 | .486 | .712 | .892 | .843 | .756 | .910 | .646 | .730 | .944 | .848 |

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E/W: Golden Valley Road
Weather: Clear

File Name : 02_SCL_Robert_Golden AM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 1

Groups Printed- Total Volume

| | Robert C. Lee Parkway Southbound | | | Golden Valley Road Westbound | | | Golden Valley Road Eastbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total | Int. Total |
| 07:00 AM | 54 | 30 | 84 | 199 | 70 | 269 | 37 | 297 | 334 | 687 |
| 07:15 AM | 102 | 48 | 150 | 242 | 168 | 410 | 101 | 307 | 408 | 968 |
| 07:30 AM | 146 | 85 | 231 | 265 | 208 | 473 | 154 | 297 | 451 | 1155 |
| 07:45 AM | 154 | 87 | 241 | 347 | 203 | 550 | 124 | 287 | 411 | 1202 |
| Total | 456 | 250 | 706 | 1053 | 649 | 1702 | 416 | 1188 | 1604 | 4012 |
| | | | | | | | | | | |
| 08:00 AM | 206 | 78 | 284 | 297 | 103 | 400 | 37 | 294 | 331 | 1015 |
| 08:15 AM | 42 | 14 | 56 | 314 | 45 | 359 | 11 | 313 | 324 | 739 |
| 08:30 AM | 26 | 9 | 35 | 258 | 33 | 291 | 13 | 260 | 273 | 599 |
| 08:45 AM | 33 | 4 | 37 | 283 | 33 | 316 | 8 | 274 | 282 | 635 |
| Total | 307 | 105 | 412 | 1152 | 214 | 1366 | 69 | 1141 | 1210 | 2988 |
| | | | | | | | | | | |
| Grand Total | 763 | 355 | 1118 | 2205 | 863 | 3068 | 485 | 2329 | 2814 | 7000 |
| Apprch % | 68.2 | 31.8 | | 71.9 | 28.1 | | 17.2 | 82.8 | | |
| Total % | 10.9 | 5.1 | 16 | 31.5 | 12.3 | 43.8 | 6.9 | 33.3 | 40.2 | |

| | Robert C. Lee Parkway Southbound | | | Golden Valley Road Westbound | | | Golden Valley Road Eastbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:15 AM | | | | | | | | | | |
| 07:15 AM | 102 | 48 | 150 | 242 | 168 | 410 | 101 | **307** | 408 | 968 |
| 07:30 AM | 146 | 85 | 231 | 265 | **208** | 473 | **154** | 297 | **451** | 1155 |
| 07:45 AM | 154 | **87** | 241 | **347** | 203 | **550** | 124 | 287 | 411 | **1202** |
| 08:00 AM | **206** | 78 | **284** | 297 | 103 | 400 | 37 | 294 | 331 | 1015 |
| Total Volume | 608 | 298 | 906 | 1151 | 682 | 1833 | 416 | 1185 | 1601 | 4340 |
| % App. Total | 67.1 | 32.9 | | 62.8 | 37.2 | | 26 | 74 | | |
| PHF | .738 | .856 | .798 | .829 | .820 | .833 | .675 | .965 | .887 | .903 |

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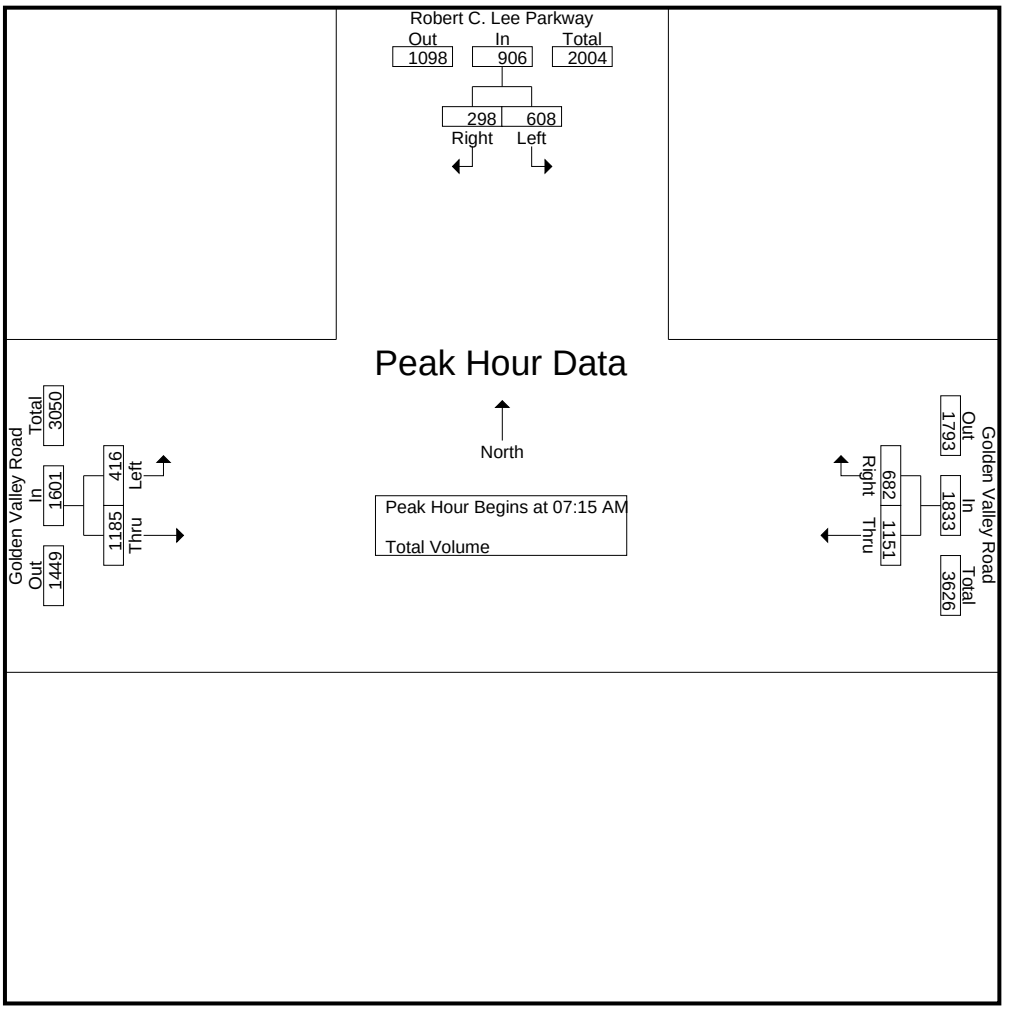
File Name : 02_SCL_Robert_Golden AM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 2




Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

| | 07:15 AM | | | 07:15 AM | | | 07:00 AM | | |
|---|---|---|---|---|---|---|---|---|---|
| +0 mins. | 102 | 48 | 150 | 242 | 168 | 410 | 37 | 297 | 334 |
| +15 mins. | 146 | 85 | 231 | 265 | **208** | 473 | 101 | **307** | 408 |
| +30 mins. | 154 | **87** | 241 | **347** | 203 | **550** | **154** | 297 | **451** |
| +45 mins. | **206** | 78 | **284** | 297 | 103 | 400 | 124 | 287 | 411 |
| Total Volume | 608 | 298 | 906 | 1151 | 682 | 1833 | 416 | 1188 | 1604 |
| % App. Total | 67.1 | 32.9 | | 62.8 | 37.2 | | 25.9 | 74.1 | |
| PHF | .738 | .856 | .798 | .829 | .820 | .833 | .675 | .967 | .889 |

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E/W: Golden Valley Road
Weather: Clear

File Name : 02_SCL_Robert_Golden PM
Site Code : 99921611
Start Date : 10/28/2021
Page No : 1

Groups Printed- Total Volume

| | Robert C. Lee Parkway Southbound | | | Golden Valley Road Westbound | | | Golden Valley Road Eastbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total | Int. Total |
| 04:00 PM | 32 | 29 | 61 | 329 | 36 | 365 | 30 | 443 | 473 | 899 |
| 04:15 PM | 36 | 26 | 62 | 364 | 28 | 392 | 7 | 423 | 430 | 884 |
| 04:30 PM | 38 | 16 | 54 | 357 | 30 | 387 | 10 | 442 | 452 | 893 |
| 04:45 PM | 28 | 18 | 46 | 353 | 28 | 381 | 14 | 397 | 411 | 838 |
| Total | 134 | 89 | 223 | 1403 | 122 | 1525 | 61 | 1705 | 1766 | 3514 |
| | | | | | | | | | | |
| 05:00 PM | 26 | 15 | 41 | 363 | 31 | 394 | 12 | 440 | 452 | 887 |
| 05:15 PM | 17 | 12 | 29 | 390 | 26 | 416 | 11 | 429 | 440 | 885 |
| 05:30 PM | 30 | 9 | 39 | 357 | 29 | 386 | 23 | 383 | 406 | 831 |
| 05:45 PM | 21 | 17 | 38 | 377 | 44 | 421 | 19 | 361 | 380 | 839 |
| Total | 94 | 53 | 147 | 1487 | 130 | 1617 | 65 | 1613 | 1678 | 3442 |
| | | | | | | | | | | |
| Grand Total | 228 | 142 | 370 | 2890 | 252 | 3142 | 126 | 3318 | 3444 | 6956 |
| Apprch % | 61.6 | 38.4 | | 92 | 8 | | 3.7 | 96.3 | | |
| Total % | 3.3 | 2 | 5.3 | 41.5 | 3.6 | 45.2 | 1.8 | 47.7 | 49.5 | |

| | Robert C. Lee Parkway Southbound | | | Golden Valley Road Westbound | | | Golden Valley Road Eastbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:00 PM | | | | | | | | | | |
| 04:00 PM | 32 | **29** | 61 | 329 | **36** | 365 | **30** | **443** | **473** | **899** |
| 04:15 PM | 36 | 26 | **62** | **364** | 28 | **392** | 7 | 423 | 430 | 884 |
| 04:30 PM | **38** | 16 | 54 | 357 | 30 | 387 | 10 | 442 | 452 | 893 |
| 04:45 PM | 28 | 18 | 46 | 353 | 28 | 381 | 14 | 397 | 411 | 838 |
| Total Volume | 134 | 89 | 223 | 1403 | 122 | 1525 | 61 | 1705 | 1766 | 3514 |
| % App. Total | 60.1 | 39.9 | | 92 | 8 | | 3.5 | 96.5 | | |
| PHF | .882 | .767 | .899 | .964 | .847 | .973 | .508 | .962 | .933 | .977 |

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File Name : 02_SCL_Robert_Golden PM
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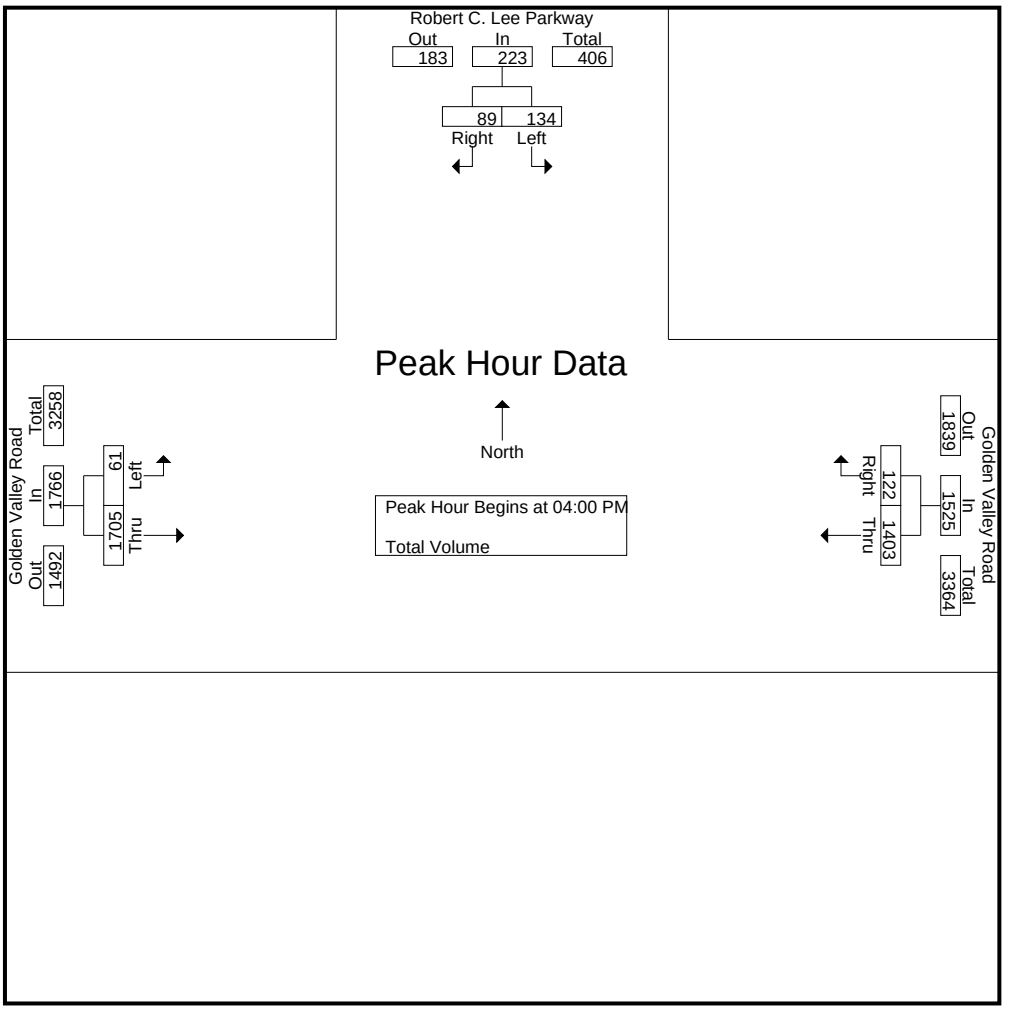
Page No : 2




Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

| | 04:00 PM | | | 05:00 PM | | | 04:00 PM | | |
|---|---|---|---|---|---|---|---|---|---|
| +0 mins. | 32 | **29** | 61 | 363 | 31 | 394 | **30** | **443** | **473** |
| +15 mins. | 36 | 26 | **62** | **390** | 26 | 416 | 7 | 423 | 430 |
| +30 mins. | **38** | 16 | 54 | 357 | 29 | 386 | 10 | 442 | 452 |
| +45 mins. | 28 | 18 | 46 | 377 | **44** | **421** | 14 | 397 | 411 |
| Total Volume | 134 | 89 | 223 | 1487 | 130 | 1617 | 61 | 1705 | 1766 |
| % App. Total | 60.1 | 39.9 | | 92 | 8 | | 3.5 | 96.5 | |
| PHF | .882 | .767 | .899 | .953 | .739 | .960 | .508 | .962 | .933 |

# APPENDIX C

HCM ANALYSIS WORKSHEETS

# EXISTING CONDITIONS

**Intersection Level Of Service Report**
**Intersection 1: Golden Valley/Centre Pointe**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 35.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.718 |

**Intersection Setup**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 400.00 | 100.00 | 350.00 | 700.00 | 100.00 | 100.00 | 260.00 | 100.00 | 260.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 40.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 248 | 745 | 355 | 120 | 951 | 82 | 23 | 39 | 157 | 458 | 48 | 41 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 248 | 745 | 355 | 120 | 951 | 82 | 23 | 39 | 157 | 458 | 48 | 41 |
| Peak Hour Factor | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 65 | 194 | 93 | 31 | 248 | 21 | 6 | 10 | 41 | 119 | 13 | 11 |
| Total Analysis Volume [veh/h] | 259 | 777 | 370 | 125 | 992 | 86 | 24 | 41 | 164 | 478 | 50 | 43 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Split | Split | Overlap | Split | Split | Split |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 6 | 5 | 2 | 0 | 0 | 8 | 8 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | 6 | | | | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 10 | 5 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 3.2 | 4.7 | 4.7 | 3.2 | 4.7 | 0.0 | 0.0 | 3.9 | 3.9 | 0.0 | 3.6 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 21 | 39 | 39 | 14 | 32 | 0 | 0 | 15 | 15 | 0 | 32 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 17 | 17 | 0 | 17 | 0 | 0 | 10 | 10 | 0 | 20 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.2 | 3.7 | 3.7 | 2.2 | 3.7 | 0.0 | 0.0 | 2.9 | 2.9 | 0.0 | 2.6 | 0.0 |
| Minimum Recall | No | No | No | No | No | | | No | No | | No | |
| Maximum Recall | No | No | No | No | No | | | No | No | | No | |
| Pedestrian Recall | No | No | No | No | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.20 | 5.70 | 5.70 | 4.20 | 5.70 | 5.70 | 4.90 | 4.90 | 4.20 | 4.60 | 4.60 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 3.70 | 3.70 | 2.20 | 3.70 | 3.70 | 2.90 | 2.90 | 0.00 | 2.60 | 2.60 |
| g_i, Effective Green Time [s] | 17 | 43 | 43 | 9 | 36 | 36 | 10 | 10 | 32 | 18 | 18 |
| g / C, Green / Cycle | 0.17 | 0.43 | 0.43 | 0.09 | 0.36 | 0.36 | 0.10 | 0.10 | 0.32 | 0.18 | 0.18 |
| (v / s)_i Volume / Saturation Flow Rate | 0.16 | 0.24 | 0.26 | 0.08 | 0.31 | 0.06 | 0.01 | 0.02 | 0.11 | 0.15 | 0.06 |
| s, saturation flow rate [veh/h] | 1603 | 3204 | 1431 | 1603 | 3204 | 1431 | 1603 | 1683 | 1431 | 3113 | 1556 |
| c, Capacity [veh/h] | 270 | 1374 | 613 | 152 | 1138 | 508 | 161 | 169 | 454 | 568 | 284 |
| d1, Uniform Delay [s] | 41.32 | 21.58 | 22.05 | 44.51 | 30.16 | 22.15 | 41.15 | 41.54 | 26.34 | 39.54 | 35.59 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 17.81 | 1.69 | 4.36 | 10.53 | 9.26 | 0.72 | 0.42 | 0.74 | 0.48 | 3.46 | 0.67 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.96 | 0.57 | 0.60 | 0.82 | 0.87 | 0.17 | 0.15 | 0.24 | 0.36 | 0.84 | 0.33 |
| d, Delay for Lane Group [s/veh] | 59.13 | 23.27 | 26.41 | 55.04 | 39.42 | 22.87 | 41.57 | 42.28 | 26.83 | 43.00 | 36.26 |
| Lane Group LOS | E | C | C | E | D | C | D | D | C | D | D |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | Yes | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 7.31 | 6.51 | 6.76 | 3.34 | 11.60 | 1.39 | 0.55 | 0.95 | 2.96 | 5.82 | 1.99 |
| 50th-Percentile Queue Length [ft/ln] | 182.66 | 162.69 | 169.03 | 83.60 | 290.06 | 34.83 | 13.68 | 23.64 | 73.97 | 145.38 | 49.85 |
| 95th-Percentile Queue Length [veh/ln] | 11.74 | 10.69 | 11.03 | 6.02 | 17.19 | 2.51 | 0.98 | 1.70 | 5.33 | 9.77 | 3.59 |
| 95th-Percentile Queue Length [ft/ln] | 293.49 | 267.28 | 275.63 | 150.47 | 429.71 | 62.69 | 24.62 | 42.55 | 133.14 | 244.25 | 89.72 |

**Movement, Approach, & Intersection Results**

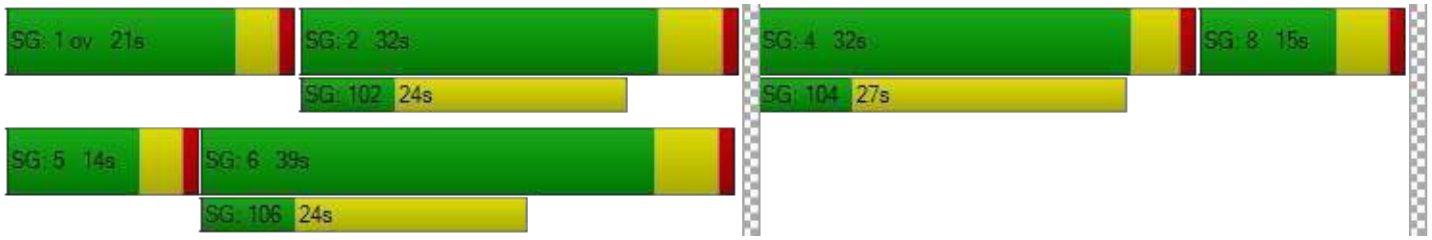
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 59.13 | 23.27 | 26.41 | 55.04 | 39.42 | 22.87 | 41.57 | 42.28 | 26.83 | 43.00 | 36.26 | 36.26 |
| Movement LOS | E | C | C | E | D | C | D | D | C | D | D | D |
| d_A, Approach Delay [s/veh] | 30.70 | | | 39.86 | | | 31.14 | | | 41.90 | | |
| Approach LOS | C | | | D | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 35.84 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.718 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 39.64 | 39.64 | 39.64 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.012 | 2.339 | 2.451 |
| Crosswalk LOS | F | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 665 | 526 | 202 | 548 |
| d_b, Bicycle Delay [s] | 22.28 | 27.19 | 40.45 | 26.39 |
| l_b,int, Bicycle LOS Score for Intersection | 2.720 | 2.552 | 1.937 | 2.502 |
| Bicycle LOS | B | B | A | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 2: Golden Valley/Robert C Lee**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.749 |

**Intersection Setup**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 170.00 | 100.00 | 450.00 | 100.00 | 100.00 | 275.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 50.00 | | 50.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | Yes | | Yes | | No | |

**Volumes**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 608 | 298 | 416 | 1185 | 1151 | 682 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 608 | 298 | 416 | 1185 | 1151 | 682 |
| Peak Hour Factor | 0.9030 | 0.9030 | 0.9030 | 0.9030 | 0.9030 | 0.9030 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 168 | 83 | 115 | 328 | 319 | 189 |
| Total Analysis Volume [veh/h] | 673 | 330 | 461 | 1312 | 1275 | 755 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Protected | Permissive | Permissive | Overlap |
|---|---|---|---|---|---|---|
| Signal Group | 7 | 0 | 5 | 2 | 6 | 6 |
| Auxiliary Signal Groups | | | | | | 6,7 |
| Lead / Lag | Lead | - | Lead | - | - | - |
| Minimum Green [s] | 5 | 0 | 5 | 10 | 10 | 10 |
| Maximum Green [s] | 30 | 0 | 30 | 30 | 30 | 30 |
| Amber [s] | 3.2 | 0.0 | 3.2 | 4.7 | 4.7 | 4.7 |
| All red [s] | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Split [s] | 32 | 0 | 38 | 68 | 30 | 30 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 7 | 0 | 0 | 5 | 7 | 7 |
| Pedestrian Clearance [s] | 20 | 0 | 0 | 10 | 17 | 17 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 2.2 | 0.0 | 2.2 | 3.7 | 3.7 | 3.7 |
| Minimum Recall | No | | No | No | No | No |
| Maximum Recall | No | | No | No | No | No |
| Pedestrian Recall | No | | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | C | R |
|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.20 | 4.20 | 4.20 | 5.70 | 5.70 | 4.20 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 2.20 | 2.20 | 3.70 | 3.70 | 0.00 |
| g_i, Effective Green Time [s] | 28 | 28 | 18 | 62 | 41 | 74 |
| g / C, Green / Cycle | 0.28 | 0.28 | 0.18 | 0.62 | 0.41 | 0.74 |
| (v / s)_i Volume / Saturation Flow Rate | 0.22 | 0.23 | 0.15 | 0.41 | 0.28 | 0.53 |
| s, saturation flow rate [veh/h] | 3113 | 1431 | 3113 | 3204 | 4584 | 1431 |
| c, Capacity [veh/h] | 865 | 398 | 547 | 1996 | 1858 | 1059 |
| d1, Uniform Delay [s] | 33.26 | 33.88 | 39.88 | 12.04 | 24.51 | 7.14 |
| k, delay calibration | 0.11 | 0.28 | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.55 | 10.74 | 3.62 | 1.71 | 2.09 | 4.09 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.78 | 0.83 | 0.84 | 0.66 | 0.69 | 0.71 |
| d, Delay for Lane Group [s/veh] | 34.80 | 44.62 | 43.51 | 13.75 | 26.59 | 11.24 |
| Lane Group LOS | C | D | D | B | C | B |
| Critical Lane Group | No | Yes | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 7.46 | 8.46 | 5.45 | 7.89 | 7.85 | 6.67 |
| 50th-Percentile Queue Length [ft/ln] | 186.53 | 211.39 | 136.14 | 197.37 | 196.30 | 166.79 |
| 95th-Percentile Queue Length [veh/ln] | 11.94 | 13.22 | 9.27 | 12.50 | 12.45 | 10.91 |
| 95th-Percentile Queue Length [ft/ln] | 298.52 | 330.61 | 231.81 | 312.58 | 311.19 | 272.68 |

**Movement, Approach, & Intersection Results**

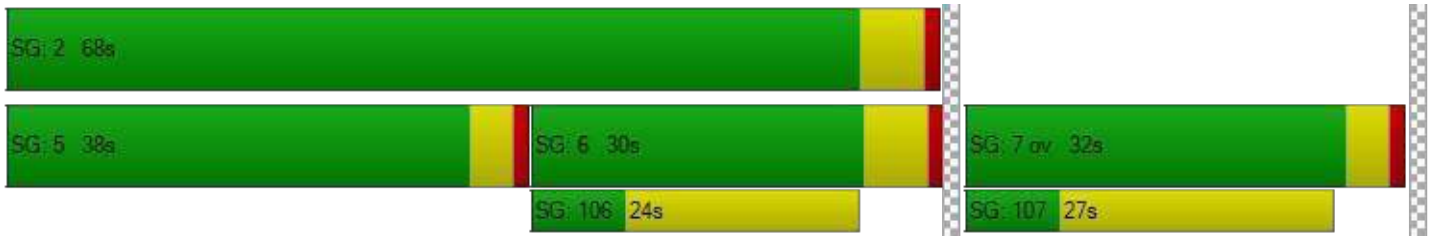
| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 34.80 | 44.62 | 43.51 | 13.75 | 26.59 | 11.24 |
| Movement LOS | C | D | D | B | C | B |
| d_A, Approach Delay [s/veh] | 38.03 | | 21.48 | | 20.88 | |
| Approach LOS | D | | C | | C | |
| d_I, Intersection Delay [s/veh] | 24.68 | | | | | |
| Intersection LOS | C | | | | | |
| Intersection V/C | 0.749 | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.810 | 3.383 | 0.000 |
| Crosswalk LOS | C | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 556 | 1246 | 486 |
| d_b, Bicycle Delay [s] | 26.07 | 7.11 | 28.66 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 3.022 | 2.676 |
| Bicycle LOS | A | C | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 3: Golden Valley/Sierra Hwy**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 61.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.945 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 2 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 430.00 | 100.00 | 100.00 | 415.00 | 100.00 | 500.00 | 285.00 | 100.00 | 325.00 | 285.00 | 100.00 | 295.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 540 | 199 | 14 | 31 | 1093 | 405 | 347 | 491 | 907 | 507 | 895 | 77 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 540 | 199 | 14 | 31 | 1093 | 405 | 347 | 491 | 907 | 507 | 895 | 77 |
| Peak Hour Factor | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 142 | 52 | 4 | 8 | 287 | 106 | 91 | 129 | 238 | 133 | 235 | 20 |
| Total Analysis Volume [veh/h] | 567 | 209 | 15 | 33 | 1147 | 425 | 364 | 515 | 952 | 532 | 939 | 81 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 2 | 3 | 8 | 8 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | 2,3 | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 24 | 55 | 0 | 9 | 40 | 40 | 18 | 34 | 34 | 22 | 38 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 25 | 0 | 0 | 25 | 25 | 0 | 10 | 10 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 20 | 57 | 57 | 3 | 40 | 58 | 14 | 24 | 48 | 20 | 30 | 30 |
| g / C, Green / Cycle | 0.17 | 0.48 | 0.48 | 0.03 | 0.34 | 0.49 | 0.12 | 0.20 | 0.40 | 0.16 | 0.25 | 0.25 |
| (v / s)_i Volume / Saturation Flow Rate | 0.18 | 0.07 | 0.07 | 0.02 | 0.36 | 0.30 | 0.12 | 0.16 | 0.38 | 0.17 | 0.20 | 0.06 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1644 | 1603 | 3204 | 1431 | 3113 | 3204 | 2532 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 519 | 800 | 781 | 45 | 1079 | 696 | 363 | 643 | 1015 | 506 | 1131 | 353 |
| d1, Uniform Delay [s] | 50.00 | 17.70 | 17.70 | 57.90 | 39.80 | 22.50 | 53.00 | 45.67 | 34.53 | 50.24 | 42.82 | 36.09 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.27 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 49.26 | 0.37 | 0.38 | 20.94 | 45.92 | 3.96 | 22.45 | 2.36 | 10.50 | 33.73 | 1.65 | 0.33 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.09 | 0.14 | 0.14 | 0.74 | 1.06 | 0.61 | 1.00 | 0.80 | 0.94 | 1.05 | 0.83 | 0.23 |
| d, Delay for Lane Group [s/veh] | 99.26 | 18.07 | 18.08 | 78.84 | 85.72 | 26.46 | 75.45 | 48.03 | 45.02 | 83.97 | 44.47 | 36.42 |
| Lane Group LOS | F | B | B | E | F | C | F | D | D | F | D | D |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 11.02 | 1.75 | 1.71 | 1.22 | 21.78 | 8.82 | 6.41 | 7.23 | 13.83 | 9.66 | 8.56 | 1.86 |
| 50th-Percentile Queue Length [ft/ln] | 275.41 | 43.65 | 42.72 | 30.60 | 544.46 | 220.61 | 160.17 | 180.63 | 345.81 | 241.38 | 214.02 | 46.55 |
| 95th-Percentile Queue Length [veh/ln] | 17.16 | 3.14 | 3.08 | 2.20 | 30.66 | 13.70 | 10.57 | 11.63 | 19.93 | 15.10 | 13.36 | 3.35 |
| 95th-Percentile Queue Length [ft/ln] | 428.95 | 78.58 | 76.90 | 55.07 | 766.38 | 342.40 | 264.17 | 290.84 | 498.30 | 377.48 | 333.98 | 83.79 |

**Movement, Approach, & Intersection Results**

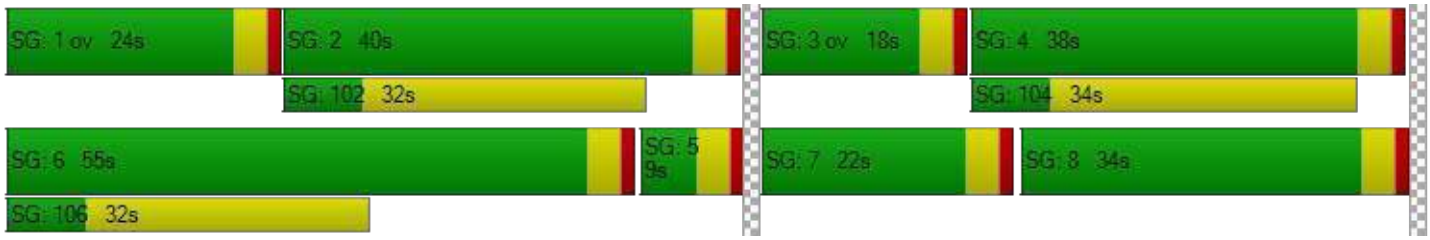
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 99.26 | 18.08 | 18.08 | 78.84 | 85.72 | 26.46 | 75.45 | 48.03 | 45.02 | 83.97 | 44.47 | 36.42 |
| Movement LOS | F | B | B | E | F | C | F | D | D | F | D | D |
| d_A, Approach Delay [s/veh] | 76.27 | | | 69.89 | | | 51.92 | | | 57.59 | | |
| Approach LOS | E | | | E | | | D | | | E | | |
| d_I, Intersection Delay [s/veh] | 61.77 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.945 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 49.51 | 49.51 | 49.51 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.078 | 3.542 | 3.245 |
| Crosswalk LOS | F | C | D | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 850 | 600 | 500 | 567 |
| d_b, Bicycle Delay [s] | 19.84 | 29.40 | 33.75 | 30.82 |
| l_b,int, Bicycle LOS Score for Intersection | 2.212 | 2.884 | 3.070 | 2.413 |
| Bicycle LOS | B | C | C | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 4: Golden Valley/SB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 31.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.654 |

**Intersection Setup**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 100.00 | 100.00 | 270.00 | 200.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 45.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 30 | 228 | 401 | 0 | 502 | 267 | 212 | 980 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 30 | 228 | 401 | 0 | 502 | 267 | 212 | 980 | 0 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 0.9160 | 0.9160 | 0.9160 | 1.0000 | 0.9160 | 0.9160 | 0.9160 | 0.9160 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 8 | 62 | 109 | 0 | 137 | 73 | 58 | 267 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 33 | 249 | 438 | 0 | 548 | 291 | 231 | 1070 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 0.0 | 0.0 | 4.7 | 0.0 | 3.2 | 4.7 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 55 | 0 | 0 | 26 | 0 | 19 | 45 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 7 | 0 | 0 | 14 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 0.0 | 0.0 | 3.7 | 0.0 | 2.2 | 3.7 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | | 4.60 | 4.60 | 4.60 | 5.70 | 5.70 | 4.20 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.60 | 2.60 | 2.60 | 3.70 | 3.70 | 2.20 | 3.70 |
| g_i, Effective Green Time [s] | | 46 | 46 | 46 | 23 | 23 | 16 | 44 |
| g / C, Green / Cycle | | 0.46 | 0.46 | 0.46 | 0.23 | 0.23 | 0.16 | 0.44 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.02 | 0.15 | 0.31 | 0.17 | 0.20 | 0.14 | 0.33 |
| s, saturation flow rate [veh/h] | | 1603 | 1683 | 1431 | 3204 | 1431 | 1603 | 3204 |
| c, Capacity [veh/h] | | 734 | 771 | 655 | 743 | 332 | 265 | 1407 |
| d1, Uniform Delay [s] | | 15.00 | 17.24 | 21.17 | 35.60 | 37.04 | 40.74 | 23.63 |
| k, delay calibration | | 0.50 | 0.50 | 0.50 | 0.11 | 0.19 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.12 | 1.11 | 5.35 | 1.45 | 12.05 | 8.75 | 0.87 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | | 0.04 | 0.32 | 0.67 | 0.74 | 0.88 | 0.87 | 0.76 |
| d, Delay for Lane Group [s/veh] | | 15.12 | 18.35 | 26.52 | 37.05 | 49.09 | 49.49 | 24.50 |
| Lane Group LOS | | B | B | C | D | D | D | C |
| Critical Lane Group | | No | No | Yes | No | Yes | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 0.41 | 3.59 | 8.22 | 5.95 | 7.52 | 5.88 | 9.65 |
| 50th-Percentile Queue Length [ft/ln] | | 10.26 | 89.82 | 205.51 | 148.77 | 188.05 | 147.06 | 241.31 |
| 95th-Percentile Queue Length [veh/ln] | | 0.74 | 6.47 | 12.92 | 9.95 | 12.02 | 9.86 | 14.75 |
| 95th-Percentile Queue Length [ft/ln] | | 18.47 | 161.67 | 323.07 | 248.79 | 300.50 | 246.50 | 368.70 |

**Movement, Approach, & Intersection Results**

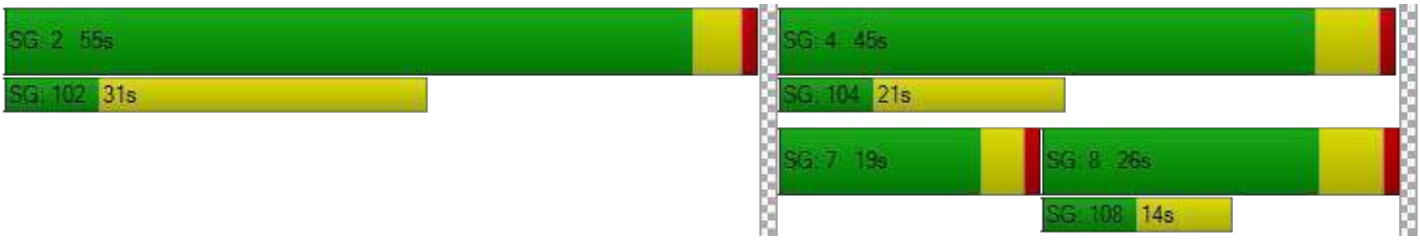
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 15.12 | 18.35 | 26.52 | 0.00 | 37.05 | 49.09 | 49.49 | 24.50 | 0.00 |
| Movement LOS | | | | B | B | C | | D | D | D | C | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 23.17 | | | 41.23 | | | 28.94 | | |
| Approach LOS | A | | | C | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 31.09 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.654 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.096 | 2.399 | 3.144 | 0.000 |
| Crosswalk LOS | B | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 1008 | 406 | 786 |
| d_b, Bicycle Delay [s] | 50.01 | 12.31 | 31.77 | 18.43 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 2.748 | 2.252 | 2.633 |
| Bicycle LOS | D | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 5: Golden Valley/NB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 21.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.582 |

**Intersection Setup**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 185.00 | 100.00 | 100.00 | 100.00 | 250.00 | 100.00 | 100.00 | 100.00 | 100.00 | 360.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 30.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | Yes | | |

**Volumes**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 157 | 1 | 180 | 0 | 0 | 0 | 208 | 318 | 0 | 0 | 1030 | 71 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 157 | 1 | 180 | 0 | 0 | 0 | 208 | 318 | 0 | 0 | 1030 | 71 |
| Peak Hour Factor | 0.8840 | 0.8840 | 0.8840 | 1.0000 | 1.0000 | 1.0000 | 0.8840 | 0.8840 | 1.0000 | 1.0000 | 0.8840 | 0.8840 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 44 | 0 | 51 | 0 | 0 | 0 | 59 | 90 | 0 | 0 | 291 | 20 |
| Total Analysis Volume [veh/h] | 178 | 1 | 204 | 0 | 0 | 0 | 235 | 360 | 0 | 0 | 1165 | 80 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 8 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 0 | 0 | 0 | 5 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.6 | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 4.7 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 45 | 0 | 0 | 0 | 0 | 15 | 55 | 0 | 0 | 40 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.6 | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 3.7 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 4.60 | 4.60 | | 4.60 | 5.70 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 2.60 | 2.60 | | 2.60 | 3.70 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 17 | 17 | 17 | | 9 | 73 | 59 | 59 |
| g / C, Green / Cycle | 0.17 | 0.17 | 0.17 | | 0.09 | 0.73 | 0.59 | 0.59 |
| (v / s)_i Volume / Saturation Flow Rate | 0.06 | 0.06 | 0.14 | | 0.08 | 0.11 | 0.36 | 0.06 |
| s, saturation flow rate [veh/h] | 1603 | 1604 | 1431 | | 3113 | 3204 | 3204 | 1431 |
| c, Capacity [veh/h] | 269 | 269 | 240 | | 296 | 2337 | 1885 | 841 |
| d1, Uniform Delay [s] | 36.68 | 36.68 | 40.40 | | 44.30 | 4.13 | 13.32 | 8.98 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.72 | 0.72 | 8.19 | | 4.83 | 0.14 | 1.53 | 0.22 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.33 | 0.33 | 0.85 | | 0.79 | 0.15 | 0.62 | 0.10 |
| d, Delay for Lane Group [s/veh] | 37.40 | 37.40 | 48.59 | | 49.14 | 4.27 | 14.85 | 9.21 |
| Lane Group LOS | D | D | D | | D | A | B | A |
| Critical Lane Group | No | No | Yes | | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 1.91 | 1.91 | 5.20 | | 2.91 | 0.80 | 7.39 | 0.70 |
| 50th-Percentile Queue Length [ft/ln] | 47.68 | 47.70 | 129.98 | | 72.82 | 20.03 | 184.74 | 17.49 |
| 95th-Percentile Queue Length [veh/ln] | 3.43 | 3.43 | 8.94 | | 5.24 | 1.44 | 11.85 | 1.26 |
| 95th-Percentile Queue Length [ft/ln] | 85.82 | 85.86 | 223.47 | | 131.07 | 36.05 | 296.20 | 31.48 |

**Movement, Approach, & Intersection Results**

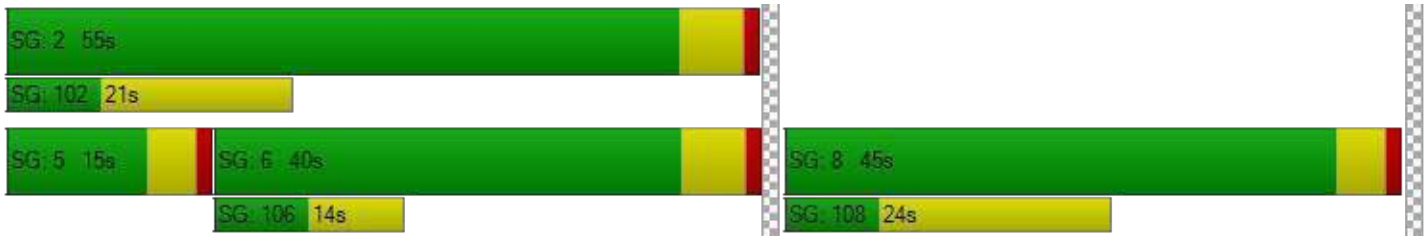
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 37.40 | 37.40 | 48.59 | 0.00 | 0.00 | 0.00 | 49.14 | 4.27 | 0.00 | 0.00 | 14.85 | 9.21 |
| Movement LOS | D | D | D | | | | D | A | | | B | A |
| d_A, Approach Delay [s/veh] | 43.36 | | | 0.00 | | | 21.99 | | | 14.49 | | |
| Approach LOS | D | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 21.47 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.582 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.276 | 1.874 | 0.000 | 2.893 |
| Crosswalk LOS | B | A | F | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 808 | 0 | 986 | 686 |
| d_b, Bicycle Delay [s] | 17.76 | 50.00 | 12.86 | 21.59 |
| l_b,int, Bicycle LOS Score for Intersection | 2.192 | 4.132 | 2.050 | 2.587 |
| Bicycle LOS | B | D | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 6: Sierra/Friendly Valley**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 25.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.547 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 125.00 | 100.00 | 100.00 | 135.00 | 100.00 | 400.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 25.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 44 | 398 | 87 | 196 | 1130 | 196 | 52 | 24 | 65 | 69 | 18 | 167 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 44 | 398 | 87 | 196 | 1130 | 196 | 52 | 24 | 65 | 69 | 18 | 167 |
| Peak Hour Factor | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 12 | 107 | 23 | 53 | 304 | 53 | 14 | 6 | 18 | 19 | 5 | 45 |
| Total Analysis Volume [veh/h] | 47 | 429 | 94 | 211 | 1218 | 211 | 56 | 26 | 70 | 74 | 19 | 180 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 22 | 23 | 0 | 45 | 46 | 0 | 0 | 32 | 0 | 0 | 32 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 14 | 0 | 0 | 17 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 5.70 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 3.70 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 4 | 43 | 43 | 15 | 54 | 54 | 28 | 28 | 28 | 28 |
| g / C, Green / Cycle | 0.04 | 0.43 | 0.43 | 0.15 | 0.54 | 0.54 | 0.28 | 0.28 | 0.28 | 0.28 |
| (v / s)_i Volume / Saturation Flow Rate | 0.03 | 0.16 | 0.16 | 0.13 | 0.38 | 0.15 | 0.12 | 0.05 | 0.06 | 0.14 |
| s, saturation flow rate [veh/h] | 1603 | 1683 | 1580 | 1603 | 3204 | 1431 | 657 | 1431 | 1169 | 1451 |
| c, Capacity [veh/h] | 59 | 717 | 673 | 245 | 1737 | 776 | 243 | 398 | 142 | 404 |
| d1, Uniform Delay [s] | 47.81 | 19.60 | 19.64 | 41.33 | 16.91 | 12.30 | 36.16 | 27.38 | 47.19 | 30.18 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 21.58 | 1.49 | 1.62 | 8.69 | 2.39 | 0.87 | 0.81 | 0.21 | 2.95 | 0.93 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.80 | 0.37 | 0.38 | 0.86 | 0.70 | 0.27 | 0.34 | 0.18 | 0.52 | 0.49 |
| d, Delay for Lane Group [s/veh] | 69.39 | 21.10 | 21.26 | 50.03 | 19.30 | 13.16 | 36.97 | 27.59 | 50.14 | 31.11 |
| Lane Group LOS | E | C | C | D | B | B | D | C | D | C |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 1.52 | 4.55 | 4.34 | 5.66 | 10.48 | 2.68 | 1.87 | 1.28 | 1.95 | 4.06 |
| 50th-Percentile Queue Length [ft/ln] | 37.97 | 113.69 | 108.58 | 141.60 | 262.05 | 67.05 | 46.81 | 32.11 | 48.75 | 101.43 |
| 95th-Percentile Queue Length [veh/ln] | 2.73 | 8.05 | 7.76 | 9.57 | 15.79 | 4.83 | 3.37 | 2.31 | 3.51 | 7.30 |
| 95th-Percentile Queue Length [ft/ln] | 68.34 | 201.13 | 194.02 | 239.18 | 394.79 | 120.69 | 84.25 | 57.80 | 87.76 | 182.57 |

**Movement, Approach, & Intersection Results**

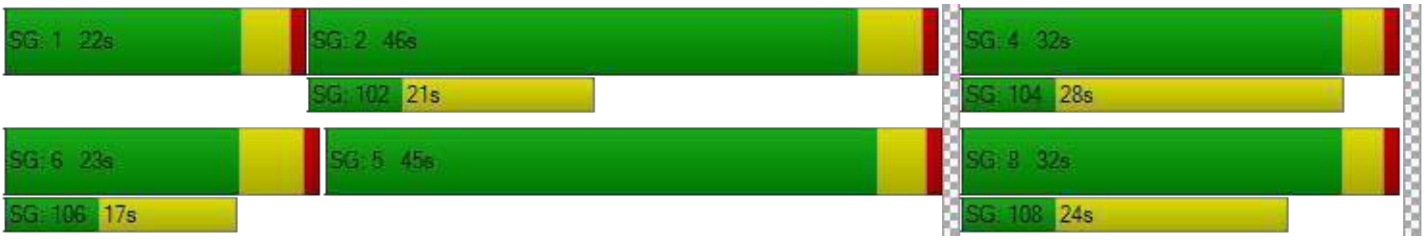
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 69.39 | 21.16 | 21.26 | 50.03 | 19.30 | 13.16 | 36.97 | 36.97 | 27.59 | 50.14 | 31.11 | 31.11 |
| Movement LOS | E | C | C | D | B | B | D | D | C | D | C | C |
| d_A, Approach Delay [s/veh] | 25.15 | | | 22.46 | | | 32.65 | | | 36.27 | | |
| Approach LOS | C | | | C | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 25.06 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.547 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.724 | 2.849 | 2.240 | 2.141 |
| Crosswalk LOS | B | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 346 | 806 | 560 | 560 |
| d_b, Bicycle Delay [s] | 34.20 | 17.82 | 25.92 | 25.92 |
| l_b,int, Bicycle LOS Score for Intersection | 2.030 | 2.913 | 1.810 | 2.010 |
| Bicycle LOS | B | C | A | B |

## Sequence

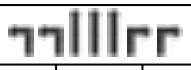
| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 7: Sierra/Via Princessa**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 39.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.748 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 200.00 | 100.00 | 250.00 | 360.00 | 100.00 | 630.00 | 200.00 | 100.00 | 300.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 351 | 331 | 127 | 169 | 850 | 758 | 171 | 874 | 403 | 295 | 934 | 78 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 351 | 331 | 127 | 169 | 850 | 758 | 171 | 874 | 403 | 295 | 934 | 78 |
| Peak Hour Factor | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 92 | 87 | 33 | 45 | 224 | 200 | 45 | 230 | 106 | 78 | 246 | 21 |
| Total Analysis Volume [veh/h] | 370 | 349 | 134 | 178 | 896 | 799 | 180 | 921 | 425 | 311 | 984 | 82 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 4 | 5 | 2 | 2 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4,5 | | | 2,3 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 20 | 46 | 0 | 15 | 41 | 41 | 18 | 41 | 41 | 18 | 41 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 28 | 0 | 0 | 28 | 28 | 0 | 28 | 28 | 0 | 28 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 15 | 35 | 35 | 9 | 29 | 48 | 13 | 42 | 63 | 13 | 42 | 42 |
| g / C, Green / Cycle | 0.13 | 0.29 | 0.29 | 0.07 | 0.24 | 0.40 | 0.11 | 0.35 | 0.52 | 0.11 | 0.35 | 0.35 |
| (v / s)_i Volume / Saturation Flow Rate | 0.12 | 0.08 | 0.09 | 0.06 | 0.20 | 0.32 | 0.06 | 0.20 | 0.30 | 0.10 | 0.21 | 0.06 |
| s, saturation flow rate [veh/h] | 3113 | 4584 | 1431 | 3113 | 4584 | 2532 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 402 | 1346 | 420 | 232 | 1096 | 1010 | 350 | 1595 | 750 | 350 | 1595 | 498 |
| d1, Uniform Delay [s] | 51.72 | 32.45 | 33.08 | 54.58 | 43.25 | 31.70 | 50.22 | 31.98 | 19.33 | 52.56 | 32.54 | 27.11 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 8.97 | 0.10 | 0.43 | 5.25 | 1.56 | 1.43 | 1.17 | 1.53 | 3.09 | 7.60 | 1.80 | 0.71 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.92 | 0.26 | 0.32 | 0.77 | 0.82 | 0.79 | 0.51 | 0.58 | 0.57 | 0.89 | 0.62 | 0.16 |
| d, Delay for Lane Group [s/veh] | 60.69 | 32.56 | 33.52 | 59.83 | 44.81 | 33.14 | 51.38 | 33.51 | 22.42 | 60.17 | 34.34 | 27.82 |
| Lane Group LOS | E | C | C | E | D | C | D | C | C | E | C | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 5.81 | 2.50 | 2.97 | 2.73 | 8.17 | 9.69 | 2.52 | 7.12 | 7.94 | 4.83 | 7.76 | 1.66 |
| 50th-Percentile Queue Length [ft/ln] | 145.16 | 62.50 | 74.28 | 68.18 | 204.26 | 242.28 | 63.09 | 177.99 | 198.48 | 120.78 | 194.00 | 41.48 |
| 95th-Percentile Queue Length [veh/ln] | 9.76 | 4.50 | 5.35 | 4.91 | 12.86 | 14.80 | 4.54 | 11.50 | 12.56 | 8.44 | 12.33 | 2.99 |
| 95th-Percentile Queue Length [ft/ln] | 243.95 | 112.50 | 133.71 | 122.73 | 321.45 | 369.92 | 113.55 | 287.39 | 314.00 | 210.90 | 308.21 | 74.67 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 60.69 | 32.56 | 33.52 | 59.83 | 44.81 | 33.14 | 51.38 | 33.51 | 22.42 | 60.17 | 34.34 | 27.82 |
| Movement LOS | E | C | C | E | D | C | D | C | C | E | C | C |
| d_A, Approach Delay [s/veh] | 44.91 | | | 41.26 | | | 32.53 | | | 39.78 | | |
| Approach LOS | D | | | D | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 39.08 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.748 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 49.54 | 49.54 | 49.54 | 49.54 |
| l_p,int, Pedestrian LOS Score for Intersection | 3.312 | 3.384 | 3.527 | 3.334 |
| Crosswalk LOS | C | C | D | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 671 | 588 | 588 | 588 |
| d_b, Bicycle Delay [s] | 26.50 | 29.93 | 29.93 | 29.93 |
| l_b,int, Bicycle LOS Score for Intersection | 2.029 | 2.590 | 2.399 | 2.317 |
| Bicycle LOS | B | B | B | B |

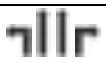
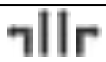
## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 1: Golden Valley/Centre Pointe**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 55.6 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.864 |

**Intersection Setup**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 400.00 | 100.00 | 350.00 | 700.00 | 100.00 | 100.00 | 260.00 | 100.00 | 260.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 40.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 292 | 984 | 224 | 166 | 1044 | 77 | 106 | 73 | 442 | 257 | 65 | 142 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 292 | 984 | 224 | 166 | 1044 | 77 | 106 | 73 | 442 | 257 | 65 | 142 |
| Peak Hour Factor | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 80 | 269 | 61 | 45 | 286 | 21 | 29 | 20 | 121 | 70 | 18 | 39 |
| Total Analysis Volume [veh/h] | 320 | 1078 | 245 | 182 | 1143 | 84 | 116 | 80 | 484 | 281 | 71 | 156 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Split | Split | Overlap | Split | Split | Split |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 6 | 5 | 2 | 0 | 0 | 8 | 8 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | 6 | | | | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 10 | 5 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 3.2 | 4.7 | 4.7 | 3.2 | 4.7 | 0.0 | 0.0 | 3.9 | 3.9 | 0.0 | 3.6 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 29 | 57 | 57 | 19 | 47 | 0 | 0 | 15 | 15 | 0 | 29 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 15 | 15 | 0 | 15 | 0 | 0 | 10 | 10 | 0 | 17 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.2 | 3.7 | 3.7 | 2.2 | 3.7 | 0.0 | 0.0 | 2.9 | 2.9 | 0.0 | 2.6 | 0.0 |
| Minimum Recall | No | No | No | No | No | | | No | No | | No | |
| Maximum Recall | No | No | No | No | No | | | No | No | | No | |
| Pedestrian Recall | No | No | No | No | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.20 | 5.70 | 5.70 | 4.20 | 5.70 | 5.70 | 4.90 | 4.90 | 4.20 | 4.60 | 4.60 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 3.70 | 3.70 | 2.20 | 3.70 | 3.70 | 2.90 | 2.90 | 0.00 | 2.60 | 2.60 |
| g_i, Effective Green Time [s] | 25 | 51 | 51 | 15 | 41 | 41 | 14 | 14 | 44 | 20 | 20 |
| g / C, Green / Cycle | 0.21 | 0.43 | 0.43 | 0.12 | 0.35 | 0.35 | 0.12 | 0.12 | 0.36 | 0.17 | 0.17 |
| (v / s)_i Volume / Saturation Flow Rate | 0.20 | 0.34 | 0.17 | 0.11 | 0.36 | 0.06 | 0.07 | 0.05 | 0.34 | 0.09 | 0.15 |
| s, saturation flow rate [veh/h] | 1603 | 3204 | 1431 | 1603 | 3204 | 1431 | 1603 | 1683 | 1431 | 3113 | 1501 |
| c, Capacity [veh/h] | 331 | 1374 | 613 | 198 | 1108 | 494 | 185 | 194 | 519 | 531 | 256 |
| d1, Uniform Delay [s] | 47.20 | 29.51 | 23.63 | 52.01 | 39.27 | 27.30 | 50.61 | 49.29 | 36.80 | 45.39 | 48.66 |
| k, delay calibration | 0.30 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.50 | 0.11 | 0.15 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 30.72 | 4.56 | 1.94 | 15.62 | 35.60 | 0.74 | 3.45 | 1.39 | 25.76 | 0.82 | 13.35 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.97 | 0.78 | 0.40 | 0.92 | 1.03 | 0.17 | 0.63 | 0.41 | 0.93 | 0.53 | 0.89 |
| d, Delay for Lane Group [s/veh] | 77.92 | 34.07 | 25.57 | 67.63 | 74.88 | 28.05 | 54.06 | 50.68 | 62.56 | 46.22 | 62.00 |
| Lane Group LOS | E | C | C | E | F | C | D | D | E | D | E |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 11.89 | 13.27 | 4.84 | 6.08 | 20.75 | 1.71 | 3.44 | 2.27 | 16.79 | 3.85 | 7.51 |
| 50th-Percentile Queue Length [ft/ln] | 297.13 | 331.77 | 121.10 | 152.01 | 518.65 | 42.81 | 86.11 | 56.74 | 419.78 | 96.29 | 187.85 |
| 95th-Percentile Queue Length [veh/ln] | 17.54 | 19.25 | 8.45 | 10.12 | 28.83 | 3.08 | 6.20 | 4.08 | 23.51 | 6.93 | 12.01 |
| 95th-Percentile Queue Length [ft/ln] | 438.48 | 481.13 | 211.33 | 253.10 | 720.69 | 77.05 | 155.00 | 102.12 | 587.79 | 173.32 | 300.23 |

**Movement, Approach, & Intersection Results**

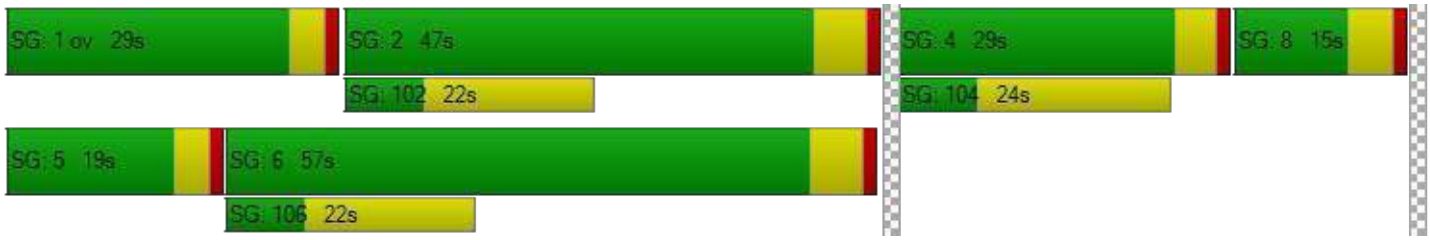
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 77.92 | 34.07 | 25.57 | 67.63 | 74.88 | 28.05 | 54.06 | 50.68 | 62.56 | 46.22 | 62.00 | 62.00 |
| Movement LOS | E | C | C | E | F | C | D | D | E | D | E | E |
| d_A, Approach Delay [s/veh] | 41.34 | | | 71.15 | | | 59.71 | | | 53.27 | | |
| Approach LOS | D | | | E | | | E | | | D | | |
| d_I, Intersection Delay [s/veh] | 55.62 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.864 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 49.51 | 49.51 | 49.51 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.214 | 2.520 | 2.434 |
| Crosswalk LOS | F | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 855 | 688 | 168 | 407 |
| d_b, Bicycle Delay [s] | 19.67 | 25.82 | 50.33 | 38.09 |
| l_b,int, Bicycle LOS Score for Intersection | 2.915 | 2.722 | 2.682 | 2.398 |
| Bicycle LOS | C | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 2: Golden Valley/Robert C Lee**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 8.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.608 |

**Intersection Setup**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 170.00 | 100.00 | 450.00 | 100.00 | 100.00 | 275.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 50.00 | | 50.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | Yes | | Yes | | No | |

**Volumes**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 134 | 89 | 61 | 1705 | 1403 | 122 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 134 | 89 | 61 | 1705 | 1403 | 122 |
| Peak Hour Factor | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 34 | 23 | 16 | 436 | 359 | 31 |
| Total Analysis Volume [veh/h] | 137 | 91 | 62 | 1745 | 1436 | 125 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Protected | Permissive | Permissive | Overlap |
|---|---|---|---|---|---|---|
| Signal Group | 7 | 0 | 5 | 2 | 6 | 6 |
| Auxiliary Signal Groups | | | | | | 6,7 |
| Lead / Lag | Lead | - | Lead | - | - | - |
| Minimum Green [s] | 5 | 0 | 5 | 10 | 10 | 10 |
| Maximum Green [s] | 30 | 0 | 30 | 30 | 30 | 30 |
| Amber [s] | 3.2 | 0.0 | 3.2 | 4.7 | 4.7 | 4.7 |
| All red [s] | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Split [s] | 60 | 0 | 10 | 40 | 30 | 30 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 7 | 0 | 0 | 5 | 7 | 7 |
| Pedestrian Clearance [s] | 20 | 0 | 0 | 10 | 17 | 17 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 2.2 | 0.0 | 2.2 | 3.7 | 3.7 | 3.7 |
| Minimum Recall | No | | No | No | No | No |
| Maximum Recall | No | | No | No | No | No |
| Pedestrian Recall | No | | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | C | R |
|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.20 | 4.20 | 4.20 | 5.70 | 5.70 | 4.20 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 2.20 | 2.20 | 3.70 | 3.70 | 0.00 |
| g_i, Effective Green Time [s] | 9 | 9 | 4 | 81 | 73 | 87 |
| g / C, Green / Cycle | 0.09 | 0.09 | 0.04 | 0.81 | 0.73 | 0.87 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.06 | 0.02 | 0.54 | 0.31 | 0.09 |
| s, saturation flow rate [veh/h] | 3113 | 1431 | 3113 | 3204 | 4584 | 1431 |
| c, Capacity [veh/h] | 286 | 131 | 131 | 2593 | 3324 | 1250 |
| d1, Uniform Delay [s] | 43.15 | 44.05 | 46.82 | 4.00 | 5.50 | 0.87 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.25 | 6.40 | 2.64 | 1.41 | 0.41 | 0.16 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.48 | 0.69 | 0.47 | 0.67 | 0.43 | 0.10 |
| d, Delay for Lane Group [s/veh] | 44.40 | 50.45 | 49.46 | 5.41 | 5.91 | 1.03 |
| Lane Group LOS | D | D | D | A | A | A |
| Critical Lane Group | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 1.63 | 2.38 | 0.77 | 3.38 | 2.79 | 0.06 |
| 50th-Percentile Queue Length [ft/ln] | 40.87 | 59.59 | 19.25 | 84.56 | 69.75 | 1.39 |
| 95th-Percentile Queue Length [veh/ln] | 2.94 | 4.29 | 1.39 | 6.09 | 5.02 | 0.10 |
| 95th-Percentile Queue Length [ft/ln] | 73.57 | 107.26 | 34.66 | 152.21 | 125.55 | 2.50 |

**Movement, Approach, & Intersection Results**

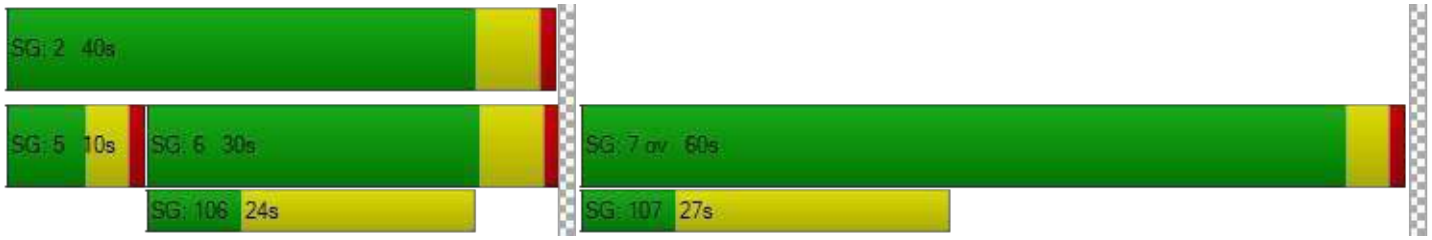
| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 44.40 | 50.45 | 49.46 | 5.41 | 5.91 | 1.03 |
| Movement LOS | D | D | D | A | A | A |
| d_A, Approach Delay [s/veh] | 46.81 | | 6.92 | | 5.52 | |
| Approach LOS | D | | A | | A | |
| d_I, Intersection Delay [s/veh] | 8.84 | | | | | |
| Intersection LOS | A | | | | | |
| Intersection V/C | 0.608 | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersection | 2.399 | 3.373 | 0.000 |
| Crosswalk LOS | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1116 | 686 | 486 |
| d_b, Bicycle Delay [s] | 9.77 | 21.59 | 28.66 |
| I_b,int, Bicycle LOS Score for Intersection | 1.560 | 3.050 | 2.418 |
| Bicycle LOS | A | C | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 3: Golden Valley/Sierra Hwy**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 44.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.712 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 2 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 430.00 | 100.00 | 100.00 | 415.00 | 100.00 | 500.00 | 285.00 | 100.00 | 325.00 | 285.00 | 100.00 | 295.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 602 | 1089 | 134 | 67 | 291 | 265 | 407 | 732 | 640 | 54 | 678 | 81 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 602 | 1089 | 134 | 67 | 291 | 265 | 407 | 732 | 640 | 54 | 678 | 81 |
| Peak Hour Factor | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 154 | 278 | 34 | 17 | 74 | 68 | 104 | 187 | 163 | 14 | 173 | 21 |
| Total Analysis Volume [veh/h] | 615 | 1112 | 137 | 68 | 297 | 271 | 416 | 748 | 654 | 55 | 693 | 83 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 2 | 3 | 8 | 8 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | 2,3 | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 27 | 53 | 0 | 10 | 36 | 36 | 19 | 48 | 48 | 9 | 38 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 25 | 0 | 0 | 25 | 25 | 0 | 10 | 10 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 23 | 61 | 61 | 6 | 44 | 63 | 15 | 32 | 60 | 4 | 22 | 22 |
| g / C, Green / Cycle | 0.19 | 0.51 | 0.51 | 0.05 | 0.37 | 0.53 | 0.13 | 0.27 | 0.50 | 0.03 | 0.18 | 0.18 |
| (v / s)_i Volume / Saturation Flow Rate | 0.20 | 0.37 | 0.38 | 0.04 | 0.09 | 0.19 | 0.13 | 0.23 | 0.26 | 0.02 | 0.15 | 0.06 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1620 | 1603 | 3204 | 1431 | 3113 | 3204 | 2532 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 597 | 860 | 827 | 81 | 1185 | 756 | 390 | 869 | 1257 | 106 | 824 | 257 |
| d1, Uniform Delay [s] | 48.52 | 22.89 | 23.34 | 56.49 | 26.29 | 16.47 | 52.50 | 41.58 | 20.52 | 57.03 | 47.57 | 42.87 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 25.44 | 5.39 | 6.26 | 19.30 | 0.51 | 1.32 | 41.12 | 2.65 | 0.34 | 3.92 | 2.41 | 0.72 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.03 | 0.73 | 0.75 | 0.84 | 0.25 | 0.36 | 1.07 | 0.86 | 0.52 | 0.52 | 0.84 | 0.32 |
| d, Delay for Lane Group [s/veh] | 73.96 | 28.28 | 29.60 | 75.79 | 26.79 | 17.80 | 93.62 | 44.23 | 20.86 | 60.95 | 49.98 | 43.59 |
| Lane Group LOS | F | C | C | E | C | B | F | D | C | E | D | D |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 10.66 | 13.77 | 14.08 | 2.42 | 2.90 | 4.27 | 7.89 | 10.33 | 5.80 | 0.85 | 6.59 | 2.13 |
| 50th-Percentile Queue Length [ft/ln] | 266.55 | 344.21 | 352.12 | 60.38 | 72.55 | 106.71 | 197.33 | 258.30 | 144.95 | 21.32 | 164.80 | 53.15 |
| 95th-Percentile Queue Length [veh/ln] | 16.26 | 19.85 | 20.24 | 4.35 | 5.22 | 7.66 | 12.83 | 15.60 | 9.75 | 1.53 | 10.80 | 3.83 |
| 95th-Percentile Queue Length [ft/ln] | 406.53 | 496.34 | 506.00 | 108.69 | 130.59 | 191.41 | 320.77 | 390.09 | 243.68 | 38.37 | 270.06 | 95.68 |

**Movement, Approach, & Intersection Results**

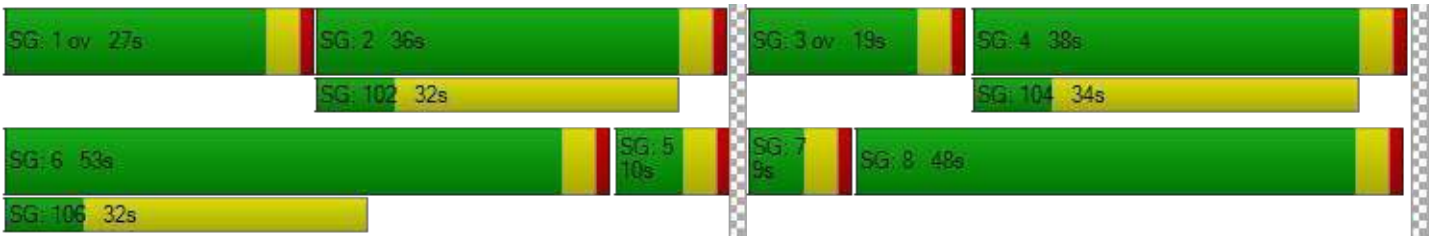
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 73.96 | 28.86 | 29.60 | 75.79 | 26.79 | 17.80 | 93.62 | 44.23 | 20.86 | 60.95 | 49.98 | 43.59 |
| Movement LOS | F | C | C | E | C | B | F | D | C | E | D | D |
| d_A, Approach Delay [s/veh] | 43.79 | | | 28.20 | | | 47.12 | | | 50.07 | | |
| Approach LOS | D | | | C | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 44.05 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.712 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 49.52 | 49.52 | 49.52 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.075 | 3.476 | 3.185 |
| Crosswalk LOS | F | C | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 816 | 533 | 733 | 567 |
| d_b, Bicycle Delay [s] | 21.02 | 32.28 | 24.08 | 30.83 |
| l_b,int, Bicycle LOS Score for Intersection | 3.097 | 2.084 | 3.059 | 2.017 |
| Bicycle LOS | C | B | C | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 4: Golden Valley/SB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 30.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.650 |

**Intersection Setup**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 100.00 | 100.00 | 270.00 | 200.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 45.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 83 | 3 | 346 | 0 | 808 | 111 | 207 | 627 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 83 | 3 | 346 | 0 | 808 | 111 | 207 | 627 | 0 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 0.9580 | 0.9580 | 0.9580 | 1.0000 | 0.9580 | 0.9580 | 0.9580 | 0.9580 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 22 | 1 | 90 | 0 | 211 | 29 | 54 | 164 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 87 | 3 | 361 | 0 | 843 | 116 | 216 | 654 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 0.0 | 0.0 | 4.7 | 0.0 | 3.2 | 4.7 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 45 | 0 | 0 | 32 | 0 | 23 | 55 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 7 | 0 | 0 | 14 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 0.0 | 0.0 | 3.7 | 0.0 | 2.2 | 3.7 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | | 4.60 | 4.60 | 4.60 | 5.70 | 5.70 | 4.20 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.60 | 2.60 | 2.60 | 3.70 | 3.70 | 2.20 | 3.70 |
| g_i, Effective Green Time [s] | | 42 | 42 | 42 | 28 | 28 | 16 | 48 |
| g / C, Green / Cycle | | 0.42 | 0.42 | 0.42 | 0.28 | 0.28 | 0.16 | 0.48 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.03 | 0.03 | 0.25 | 0.26 | 0.08 | 0.13 | 0.20 |
| s, saturation flow rate [veh/h] | | 1603 | 1608 | 1431 | 3204 | 1431 | 1603 | 3204 |
| c, Capacity [veh/h] | | 666 | 668 | 594 | 910 | 406 | 250 | 1544 |
| d1, Uniform Delay [s] | | 17.60 | 17.60 | 22.88 | 34.78 | 27.90 | 41.21 | 16.88 |
| k, delay calibration | | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.20 | 0.20 | 4.58 | 4.68 | 0.38 | 8.76 | 0.19 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | | 0.07 | 0.07 | 0.61 | 0.93 | 0.29 | 0.87 | 0.42 |
| d, Delay for Lane Group [s/veh] | | 17.79 | 17.79 | 27.45 | 39.47 | 28.28 | 49.97 | 17.06 |
| Lane Group LOS | | B | B | C | D | C | D | B |
| Critical Lane Group | | No | No | Yes | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 0.62 | 0.62 | 6.87 | 9.80 | 2.08 | 5.52 | 4.40 |
| 50th-Percentile Queue Length [ft/ln] | | 15.55 | 15.59 | 171.82 | 245.02 | 51.89 | 137.97 | 110.03 |
| 95th-Percentile Queue Length [veh/ln] | | 1.12 | 1.12 | 11.17 | 14.93 | 3.74 | 9.37 | 7.84 |
| 95th-Percentile Queue Length [ft/ln] | | 27.98 | 28.07 | 279.31 | 373.37 | 93.39 | 234.28 | 196.04 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 17.79 | 17.79 | 27.45 | 0.00 | 39.47 | 28.28 | 49.97 | 17.06 | 0.00 |
| Movement LOS | | | | B | B | C | | D | C | D | B | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 25.52 | | | 38.12 | | | 25.23 | | |
| Approach LOS | A | | | C | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 30.71 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.650 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 1.883 | 2.301 | 3.057 | 0.000 |
| Crosswalk LOS | A | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 808 | 526 | 986 |
| d_b, Bicycle Delay [s] | 50.01 | 17.77 | 27.17 | 12.86 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 2.304 | 2.351 | 2.277 |
| Bicycle LOS | D | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 5: Golden Valley/NB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 27.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.601 |

**Intersection Setup**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 185.00 | 100.00 | 100.00 | 100.00 | 250.00 | 100.00 | 100.00 | 100.00 | 100.00 | 360.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 30.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | Yes | | |

**Volumes**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 248 | 5 | 395 | 0 | 0 | 0 | 312 | 564 | 0 | 0 | 580 | 205 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 248 | 5 | 395 | 0 | 0 | 0 | 312 | 564 | 0 | 0 | 580 | 205 |
| Peak Hour Factor | 0.9270 | 0.9270 | 0.9270 | 1.0000 | 1.0000 | 1.0000 | 0.9270 | 0.9270 | 1.0000 | 1.0000 | 0.9270 | 0.9270 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 67 | 1 | 107 | 0 | 0 | 0 | 84 | 152 | 0 | 0 | 156 | 55 |
| Total Analysis Volume [veh/h] | 268 | 5 | 426 | 0 | 0 | 0 | 337 | 608 | 0 | 0 | 626 | 221 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 8 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 0 | 0 | 0 | 5 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.6 | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 4.7 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 62 | 0 | 0 | 0 | 0 | 18 | 38 | 0 | 0 | 20 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.6 | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 3.7 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 4.60 | 4.60 | | 4.60 | 5.70 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 2.60 | 2.60 | | 2.60 | 3.70 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 32 | 32 | 32 | | 13 | 57 | 40 | 40 |
| g / C, Green / Cycle | 0.32 | 0.32 | 0.32 | | 0.13 | 0.57 | 0.40 | 0.40 |
| (v / s)_i Volume / Saturation Flow Rate | 0.09 | 0.09 | 0.30 | | 0.11 | 0.19 | 0.20 | 0.15 |
| s, saturation flow rate [veh/h] | 1603 | 1606 | 1431 | | 3113 | 3204 | 3204 | 1431 |
| c, Capacity [veh/h] | 521 | 522 | 465 | | 396 | 1833 | 1278 | 571 |
| d1, Uniform Delay [s] | 24.91 | 24.91 | 32.46 | | 42.71 | 11.30 | 22.46 | 21.37 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.26 | 0.26 | 7.64 | | 5.18 | 0.49 | 1.34 | 1.98 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.26 | 0.26 | 0.92 | | 0.85 | 0.33 | 0.49 | 0.39 |
| d, Delay for Lane Group [s/veh] | 25.18 | 25.18 | 40.11 | | 47.90 | 11.78 | 23.80 | 23.35 |
| Lane Group LOS | C | C | D | | D | B | C | C |
| Critical Lane Group | No | No | Yes | | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 2.30 | 2.31 | 10.20 | | 4.15 | 3.16 | 5.26 | 3.69 |
| 50th-Percentile Queue Length [ft/ln] | 57.58 | 57.66 | 255.06 | | 103.77 | 79.01 | 131.43 | 92.15 |
| 95th-Percentile Queue Length [veh/ln] | 4.15 | 4.15 | 15.44 | | 7.47 | 5.69 | 9.02 | 6.63 |
| 95th-Percentile Queue Length [ft/ln] | 103.64 | 103.78 | 386.02 | | 186.79 | 142.21 | 225.44 | 165.87 |

**Movement, Approach, & Intersection Results**

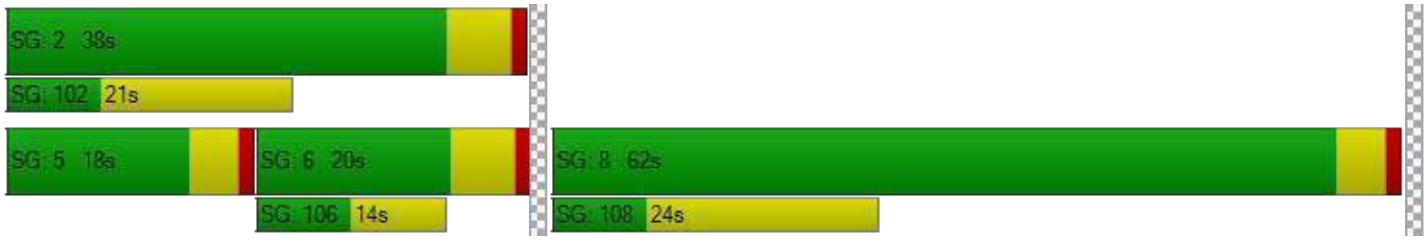
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 25.18 | 25.18 | 40.11 | 0.00 | 0.00 | 0.00 | 47.90 | 11.78 | 0.00 | 0.00 | 23.80 | 23.35 |
| Movement LOS | C | C | D | | | | D | B | | | C | C |
| d_A, Approach Delay [s/veh] | 34.28 | | | 0.00 | | | 24.66 | | | 23.69 | | |
| Approach LOS | C | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 27.03 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.601 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.391 | 1.994 | 0.000 | 2.916 |
| Crosswalk LOS | B | A | F | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1148 | 0 | 646 | 286 |
| d_b, Bicycle Delay [s] | 9.08 | 50.00 | 22.92 | 36.73 |
| l_b,int, Bicycle LOS Score for Intersection | 2.713 | 4.132 | 2.339 | 2.258 |
| Bicycle LOS | B | D | B | B |

## Sequence

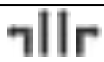
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 6: Sierra/Friendly Valley**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 22.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.559 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 125.00 | 100.00 | 100.00 | 135.00 | 100.00 | 400.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 25.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 98 | 1280 | 50 | 76 | 479 | 42 | 61 | 10 | 54 | 42 | 20 | 68 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 98 | 1280 | 50 | 76 | 479 | 42 | 61 | 10 | 54 | 42 | 20 | 68 |
| Peak Hour Factor | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 26 | 335 | 13 | 20 | 125 | 11 | 16 | 3 | 14 | 11 | 5 | 18 |
| Total Analysis Volume [veh/h] | 103 | 1339 | 52 | 79 | 501 | 44 | 64 | 10 | 56 | 44 | 21 | 71 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 41 | 48 | 0 | 20 | 27 | 0 | 0 | 32 | 0 | 0 | 32 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 14 | 0 | 0 | 17 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 5.70 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 3.70 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 8 | 58 | 58 | 6 | 56 | 56 | 21 | 21 | 21 | 21 |
| g / C, Green / Cycle | 0.08 | 0.58 | 0.58 | 0.06 | 0.56 | 0.56 | 0.21 | 0.21 | 0.21 | 0.21 |
| (v / s)_i Volume / Saturation Flow Rate | 0.06 | 0.42 | 0.42 | 0.05 | 0.16 | 0.03 | 0.09 | 0.04 | 0.04 | 0.06 |
| s, saturation flow rate [veh/h] | 1603 | 1683 | 1661 | 1603 | 3204 | 1431 | 797 | 1431 | 1202 | 1481 |
| c, Capacity [veh/h] | 129 | 980 | 967 | 99 | 1806 | 806 | 237 | 305 | 136 | 315 |
| d1, Uniform Delay [s] | 45.19 | 14.91 | 14.95 | 46.31 | 11.28 | 9.82 | 38.95 | 32.23 | 46.54 | 33.02 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 10.77 | 4.41 | 4.52 | 13.62 | 0.38 | 0.13 | 0.74 | 0.29 | 1.37 | 0.51 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.80 | 0.71 | 0.72 | 0.80 | 0.28 | 0.05 | 0.31 | 0.18 | 0.32 | 0.29 |
| d, Delay for Lane Group [s/veh] | 55.96 | 19.32 | 19.48 | 59.93 | 11.67 | 9.95 | 39.69 | 32.52 | 47.91 | 33.53 |
| Lane Group LOS | E | B | B | E | B | A | D | C | D | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.90 | 11.88 | 11.82 | 2.32 | 2.90 | 0.46 | 1.71 | 1.13 | 1.12 | 1.91 |
| 50th-Percentile Queue Length [ft/ln] | 72.62 | 296.96 | 295.53 | 57.97 | 72.58 | 11.45 | 42.67 | 28.27 | 28.04 | 47.67 |
| 95th-Percentile Queue Length [veh/ln] | 5.23 | 17.53 | 17.46 | 4.17 | 5.23 | 0.82 | 3.07 | 2.04 | 2.02 | 3.43 |
| 95th-Percentile Queue Length [ft/ln] | 130.71 | 438.27 | 436.50 | 104.35 | 130.65 | 20.61 | 76.80 | 50.88 | 50.47 | 85.80 |

**Movement, Approach, & Intersection Results**

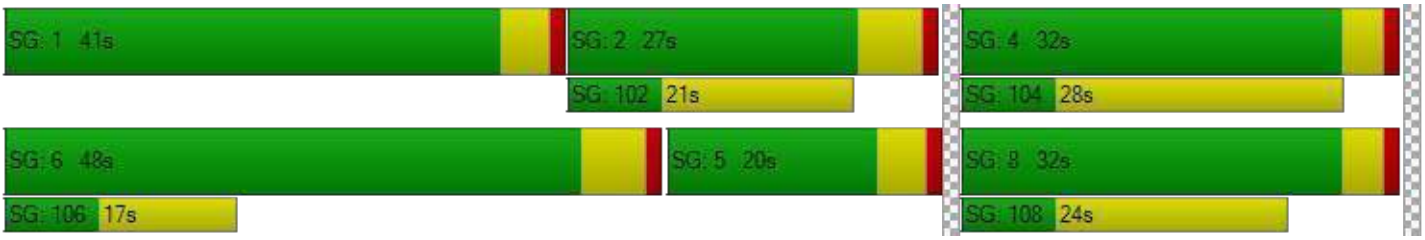
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 55.96 | 19.40 | 19.48 | 59.93 | 11.67 | 9.95 | 39.69 | 39.69 | 32.52 | 47.91 | 33.53 | 33.53 |
| Movement LOS | E | B | B | E | B | A | D | D | C | D | C | C |
| d_A, Approach Delay [s/veh] | 21.92 | | | 17.65 | | | 36.60 | | | 38.18 | | |
| Approach LOS | C | | | B | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 22.53 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.559 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.708 | 2.833 | 2.209 | 2.035 |
| Crosswalk LOS | B | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 846 | 426 | 560 | 560 |
| d_b, Bicycle Delay [s] | 16.65 | 30.97 | 25.92 | 25.92 |
| l_b,int, Bicycle LOS Score for Intersection | 2.792 | 2.074 | 1.774 | 1.784 |
| Bicycle LOS | C | B | A | A |

## Sequence

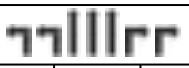
| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 7: Sierra/Via Princessa**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 41.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.634 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 200.00 | 100.00 | 250.00 | 360.00 | 100.00 | 630.00 | 200.00 | 100.00 | 300.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 440 | 930 | 214 | 217 | 364 | 762 | 226 | 872 | 167 | 190 | 769 | 208 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 440 | 930 | 214 | 217 | 364 | 762 | 226 | 872 | 167 | 190 | 769 | 208 |
| Peak Hour Factor | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 112 | 237 | 55 | 55 | 93 | 195 | 58 | 223 | 43 | 49 | 196 | 53 |
| Total Analysis Volume [veh/h] | 449 | 950 | 219 | 222 | 372 | 778 | 231 | 891 | 171 | 194 | 785 | 212 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 4 | 5 | 2 | 2 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4,5 | | | 2,3 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 22 | 48 | 0 | 15 | 41 | 41 | 16 | 41 | 41 | 16 | 41 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 28 | 0 | 0 | 28 | 28 | 0 | 28 | 28 | 0 | 28 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 17 | 29 | 29 | 10 | 22 | 39 | 11 | 50 | 73 | 9 | 48 | 48 |
| g / C, Green / Cycle | 0.15 | 0.24 | 0.24 | 0.09 | 0.19 | 0.33 | 0.10 | 0.42 | 0.61 | 0.08 | 0.40 | 0.40 |
| (v / s)_i Volume / Saturation Flow Rate | 0.14 | 0.21 | 0.15 | 0.07 | 0.08 | 0.31 | 0.07 | 0.19 | 0.12 | 0.06 | 0.17 | 0.15 |
| s, saturation flow rate [veh/h] | 3113 | 4584 | 1431 | 3113 | 4584 | 2532 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 452 | 1116 | 348 | 272 | 850 | 832 | 297 | 1918 | 874 | 247 | 1844 | 575 |
| d1, Uniform Delay [s] | 51.25 | 43.34 | 40.57 | 53.86 | 43.36 | 39.09 | 53.05 | 25.20 | 10.31 | 54.29 | 25.89 | 25.19 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 18.02 | 1.93 | 1.87 | 5.98 | 0.36 | 5.67 | 4.36 | 0.81 | 0.50 | 5.50 | 0.72 | 1.81 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.99 | 0.85 | 0.63 | 0.82 | 0.44 | 0.94 | 0.78 | 0.46 | 0.20 | 0.79 | 0.43 | 0.37 |
| d, Delay for Lane Group [s/veh] | 69.27 | 45.28 | 42.44 | 59.84 | 43.71 | 44.76 | 57.41 | 26.01 | 10.81 | 59.78 | 26.61 | 27.01 |
| Lane Group LOS | E | D | D | E | D | D | E | C | B | E | C | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 7.61 | 8.76 | 5.72 | 3.41 | 3.18 | 11.11 | 3.47 | 5.89 | 1.90 | 2.97 | 5.21 | 4.30 |
| 50th-Percentile Queue Length [ft/ln] | 190.37 | 219.05 | 143.10 | 85.28 | 79.57 | 277.73 | 86.77 | 147.16 | 47.48 | 74.33 | 130.33 | 107.56 |
| 95th-Percentile Queue Length [veh/ln] | 12.14 | 13.62 | 9.65 | 6.14 | 5.73 | 16.58 | 6.25 | 9.87 | 3.42 | 5.35 | 8.96 | 7.70 |
| 95th-Percentile Queue Length [ft/ln] | 303.51 | 340.42 | 241.19 | 153.50 | 143.22 | 414.38 | 156.18 | 246.63 | 85.46 | 133.79 | 223.95 | 192.60 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 69.27 | 45.28 | 42.44 | 59.84 | 43.71 | 44.76 | 57.41 | 26.01 | 10.81 | 59.78 | 26.61 | 27.01 |
| Movement LOS | E | D | D | E | D | D | E | C | B | E | C | C |
| d_A, Approach Delay [s/veh] | 51.55 | | | 46.92 | | | 29.61 | | | 32.09 | | |
| Approach LOS | D | | | D | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 40.97 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.634 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 49.52 | 49.52 | 49.52 | 49.52 |
| l_p,int, Pedestrian LOS Score for Intersection | 3.288 | 3.430 | 3.460 | 3.319 |
| Crosswalk LOS | C | C | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 705 | 588 | 588 | 588 |
| d_b, Bicycle Delay [s] | 25.17 | 29.91 | 29.91 | 29.91 |
| l_b,int, Bicycle LOS Score for Intersection | 2.450 | 2.314 | 2.271 | 2.215 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

# EXISTING PLUS PROJECT CONDITIONS

**Intersection Level Of Service Report**
**Intersection 1: Golden Valley/Centre Pointe**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 36.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.724 |

**Intersection Setup**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 400.00 | 100.00 | 350.00 | 700.00 | 100.00 | 100.00 | 260.00 | 100.00 | 260.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 40.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 248 | 745 | 355 | 120 | 951 | 82 | 23 | 39 | 157 | 458 | 48 | 41 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 3 | 8 | 0 | 0 | 8 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 251 | 753 | 355 | 120 | 959 | 82 | 23 | 39 | 160 | 458 | 48 | 41 |
| Peak Hour Factor | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 65 | 196 | 93 | 31 | 250 | 21 | 6 | 10 | 42 | 119 | 13 | 11 |
| Total Analysis Volume [veh/h] | 262 | 785 | 370 | 125 | 1000 | 86 | 24 | 41 | 167 | 478 | 50 | 43 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Split | Split | Overlap | Split | Split | Split |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 6 | 5 | 2 | 0 | 0 | 8 | 8 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | 6 | | | | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 10 | 5 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 3.2 | 4.7 | 4.7 | 3.2 | 4.7 | 0.0 | 0.0 | 3.9 | 3.9 | 0.0 | 3.6 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 21 | 39 | 39 | 14 | 32 | 0 | 0 | 15 | 15 | 0 | 32 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 17 | 17 | 0 | 17 | 0 | 0 | 10 | 10 | 0 | 20 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.2 | 3.7 | 3.7 | 2.2 | 3.7 | 0.0 | 0.0 | 2.9 | 2.9 | 0.0 | 2.6 | 0.0 |
| Minimum Recall | No | No | No | No | No | | | No | No | | No | |
| Maximum Recall | No | No | No | No | No | | | No | No | | No | |
| Pedestrian Recall | No | No | No | No | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.20 | 5.70 | 5.70 | 4.20 | 5.70 | 5.70 | 4.90 | 4.90 | 4.20 | 4.60 | 4.60 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 3.70 | 3.70 | 2.20 | 3.70 | 3.70 | 2.90 | 2.90 | 0.00 | 2.60 | 2.60 |
| g_i, Effective Green Time [s] | 17 | 43 | 43 | 9 | 36 | 36 | 10 | 10 | 32 | 18 | 18 |
| g / C, Green / Cycle | 0.17 | 0.43 | 0.43 | 0.09 | 0.36 | 0.36 | 0.10 | 0.10 | 0.32 | 0.18 | 0.18 |
| (v / s)_i Volume / Saturation Flow Rate | 0.16 | 0.24 | 0.26 | 0.08 | 0.31 | 0.06 | 0.01 | 0.02 | 0.12 | 0.15 | 0.06 |
| s, saturation flow rate [veh/h] | 1603 | 3204 | 1431 | 1603 | 3204 | 1431 | 1603 | 1683 | 1431 | 3113 | 1556 |
| c, Capacity [veh/h] | 270 | 1374 | 613 | 152 | 1138 | 508 | 161 | 169 | 454 | 568 | 284 |
| d1, Uniform Delay [s] | 41.41 | 21.65 | 22.05 | 44.51 | 30.27 | 22.16 | 41.14 | 41.54 | 26.40 | 39.54 | 35.59 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 20.23 | 1.73 | 4.36 | 10.53 | 9.72 | 0.72 | 0.42 | 0.74 | 0.50 | 3.46 | 0.67 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.97 | 0.57 | 0.60 | 0.82 | 0.88 | 0.17 | 0.15 | 0.24 | 0.37 | 0.84 | 0.33 |
| d, Delay for Lane Group [s/veh] | 61.65 | 23.38 | 26.41 | 55.04 | 39.99 | 22.88 | 41.57 | 42.28 | 26.90 | 43.00 | 36.26 |
| Lane Group LOS | E | C | C | E | D | C | D | D | C | D | D |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | Yes | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 7.57 | 6.60 | 6.76 | 3.34 | 11.80 | 1.39 | 0.55 | 0.95 | 3.02 | 5.82 | 1.99 |
| 50th-Percentile Queue Length [ft/ln] | 189.26 | 164.99 | 169.03 | 83.60 | 294.89 | 34.83 | 13.68 | 23.64 | 75.51 | 145.38 | 49.85 |
| 95th-Percentile Queue Length [veh/ln] | 12.08 | 10.81 | 11.03 | 6.02 | 17.43 | 2.51 | 0.98 | 1.70 | 5.44 | 9.77 | 3.59 |
| 95th-Percentile Queue Length [ft/ln] | 302.07 | 270.32 | 275.64 | 150.47 | 435.70 | 62.69 | 24.62 | 42.55 | 135.92 | 244.25 | 89.72 |

**Movement, Approach, & Intersection Results**

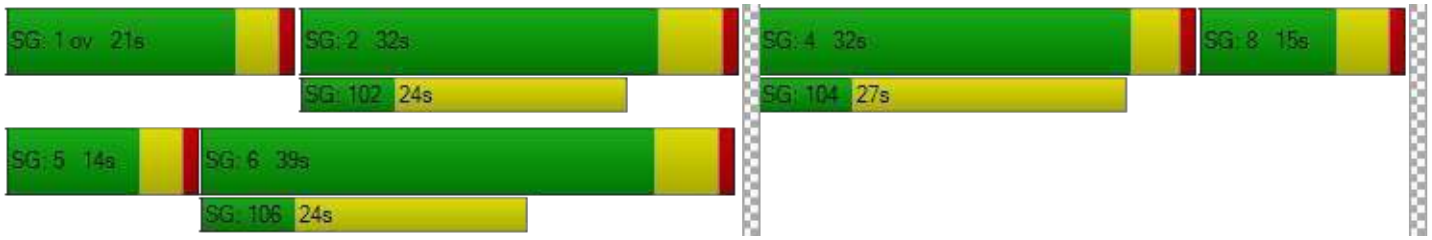
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 61.65 | 23.38 | 26.41 | 55.04 | 39.99 | 22.88 | 41.57 | 42.28 | 26.90 | 43.00 | 36.26 | 36.26 |
| Movement LOS | E | C | C | E | D | C | D | D | C | D | D | D |
| d_A, Approach Delay [s/veh] | 31.25 | | | 40.33 | | | 31.14 | | | 41.90 | | |
| Approach LOS | C | | | D | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 36.22 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.724 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 39.64 | 39.64 | 39.64 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.016 | 2.341 | 2.451 |
| Crosswalk LOS | F | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 665 | 526 | 202 | 548 |
| d_b, Bicycle Delay [s] | 22.28 | 27.19 | 40.45 | 26.39 |
| l_b,int, Bicycle LOS Score for Intersection | 2.729 | 2.559 | 1.942 | 2.502 |
| Bicycle LOS | B | B | A | B |

## Sequence

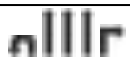
| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 2: Golden Valley/Robert C Lee**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 27.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.749 |

**Intersection Setup**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | | |
|---|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | | |
| Lane Configuration | | | | |  | | |
| Turning Movement | Left | Right | Left | Thru | U-turn | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 170.00 | 100.00 | 450.00 | 100.00 | 150.00 | 100.00 | 275.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 50.00 | | 50.00 | | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | | |
| Curb Present | No | | No | | No | | |
| Crosswalk | Yes | | Yes | | No | | |

**Volumes**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | | |
|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 608 | 298 | 416 | 1185 | 0 | 1151 | 682 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 11 | 42 | 11 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 608 | 298 | 416 | 1196 | 42 | 1162 | 682 |
| Peak Hour Factor | 0.9030 | 0.9030 | 0.9030 | 0.9030 | 0.9030 | 0.9030 | 0.9030 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 168 | 83 | 115 | 331 | 12 | 322 | 189 |
| Total Analysis Volume [veh/h] | 673 | 330 | 461 | 1324 | 47 | 1287 | 755 |
| Presence of On-Street Parking | No | No | No | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Protected | Permissive | Protected | Permissive | Overlap |
|---|---|---|---|---|---|---|---|
| Signal Group | 7 | 0 | 5 | 2 | 1 | 6 | 6 |
| Auxiliary Signal Groups | | | | | | | 6,7 |
| Lead / Lag | Lead | - | Lead | - | Lead | - | - |
| Minimum Green [s] | 5 | 0 | 5 | 10 | 5 | 10 | 10 |
| Maximum Green [s] | 30 | 0 | 30 | 30 | 30 | 30 | 30 |
| Amber [s] | 3.2 | 0.0 | 3.2 | 4.7 | 3.2 | 4.7 | 4.7 |
| All red [s] | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Split [s] | 32 | 0 | 38 | 42 | 26 | 30 | 30 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 7 | 0 | 0 | 5 | 0 | 7 | 7 |
| Pedestrian Clearance [s] | 20 | 0 | 0 | 10 | 0 | 17 | 17 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 2.2 | 0.0 | 2.2 | 3.7 | 2.2 | 3.7 | 3.7 |
| Minimum Recall | No | | No | No | No | No | No |
| Maximum Recall | No | | No | No | No | No | No |
| Pedestrian Recall | No | | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | L | C | R |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.20 | 4.20 | 4.20 | 5.70 | 4.20 | 5.70 | 4.20 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 2.20 | 2.20 | 3.70 | 2.20 | 3.70 | 0.00 |
| g_i, Effective Green Time [s] | 28 | 28 | 18 | 54 | 4 | 41 | 74 |
| g / C, Green / Cycle | 0.28 | 0.28 | 0.18 | 0.54 | 0.04 | 0.41 | 0.74 |
| (v / s)_i Volume / Saturation Flow Rate | 0.22 | 0.23 | 0.15 | 0.41 | 0.03 | 0.28 | 0.53 |
| s, saturation flow rate [veh/h] | 3113 | 1431 | 3113 | 3204 | 1603 | 4584 | 1431 |
| c, Capacity [veh/h] | 865 | 398 | 547 | 1742 | 60 | 1858 | 1059 |
| d1, Uniform Delay [s] | 33.26 | 33.88 | 39.88 | 17.76 | 47.73 | 24.59 | 7.14 |
| k, delay calibration | 0.11 | 0.28 | 0.11 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.55 | 10.74 | 3.62 | 3.18 | 19.39 | 2.15 | 4.09 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.78 | 0.83 | 0.84 | 0.76 | 0.78 | 0.69 | 0.71 |
| d, Delay for Lane Group [s/veh] | 34.80 | 44.62 | 43.51 | 20.94 | 67.12 | 26.75 | 11.24 |
| Lane Group LOS | C | D | D | C | E | C | B |
| Critical Lane Group | No | Yes | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 7.46 | 8.46 | 5.45 | 10.78 | 1.44 | 7.96 | 6.67 |
| 50th-Percentile Queue Length [ft/ln] | 186.53 | 211.39 | 136.14 | 269.53 | 35.89 | 199.02 | 166.79 |
| 95th-Percentile Queue Length [veh/ln] | 11.94 | 13.22 | 9.27 | 16.17 | 2.58 | 12.59 | 10.91 |
| 95th-Percentile Queue Length [ft/ln] | 298.52 | 330.61 | 231.81 | 404.16 | 64.60 | 314.70 | 272.68 |

**Movement, Approach, & Intersection Results**

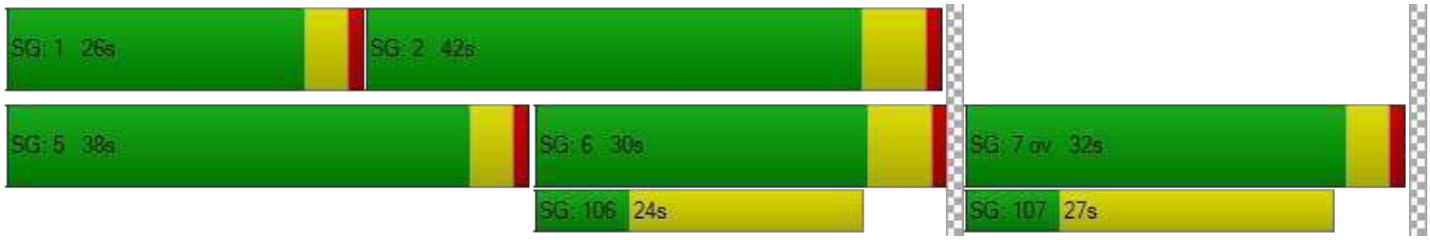
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 34.80 | 44.62 | 43.51 | 20.94 | 67.12 | 26.75 | 11.24 |
| Movement LOS | C | D | D | C | E | C | B |
| d_A, Approach Delay [s/veh] | 38.03 | | 26.77 | | 22.05 | | |
| Approach LOS | D | | C | | C | | |
| d_I, Intersection Delay [s/veh] | 27.06 | | | | | | |
| Intersection LOS | C | | | | | | |
| Intersection V/C | 0.749 | | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.810 | 3.388 | 0.000 |
| Crosswalk LOS | C | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 556 | 726 | 486 |
| d_b, Bicycle Delay [s] | 26.07 | 20.29 | 28.66 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 3.032 | 2.709 |
| Bicycle LOS | A | C | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 3: Golden Valley/Sierra Hwy**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 63.3 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.957 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 2 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 430.00 | 100.00 | 100.00 | 415.00 | 100.00 | 500.00 | 285.00 | 100.00 | 325.00 | 285.00 | 100.00 | 295.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 540 | 199 | 14 | 31 | 1093 | 405 | 347 | 491 | 907 | 507 | 895 | 77 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 5 | 0 | 0 | 0 | 0 | 11 | 11 | 26 | 5 | 0 | 26 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 545 | 199 | 14 | 31 | 1093 | 416 | 358 | 517 | 912 | 507 | 921 | 77 |
| Peak Hour Factor | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 143 | 52 | 4 | 8 | 287 | 109 | 94 | 136 | 239 | 133 | 242 | 20 |
| Total Analysis Volume [veh/h] | 572 | 209 | 15 | 33 | 1147 | 437 | 376 | 542 | 957 | 532 | 966 | 81 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 2 | 3 | 8 | 8 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | 2,3 | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 25 | 54 | 0 | 9 | 38 | 38 | 19 | 36 | 36 | 21 | 38 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 25 | 0 | 0 | 25 | 25 | 0 | 10 | 10 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 21 | 57 | 57 | 3 | 39 | 58 | 15 | 25 | 50 | 19 | 29 | 29 |
| g / C, Green / Cycle | 0.18 | 0.47 | 0.47 | 0.03 | 0.33 | 0.48 | 0.13 | 0.21 | 0.42 | 0.15 | 0.24 | 0.24 |
| (v / s)_i Volume / Saturation Flow Rate | 0.18 | 0.07 | 0.07 | 0.02 | 0.36 | 0.31 | 0.12 | 0.17 | 0.38 | 0.17 | 0.21 | 0.06 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1644 | 1603 | 3204 | 1431 | 3113 | 3204 | 2532 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 545 | 797 | 778 | 45 | 1046 | 694 | 389 | 676 | 1061 | 481 | 1101 | 344 |
| d1, Uniform Delay [s] | 49.50 | 17.83 | 17.83 | 57.90 | 40.42 | 22.93 | 52.25 | 44.98 | 32.54 | 50.74 | 43.89 | 36.72 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.27 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 32.79 | 0.37 | 0.38 | 20.94 | 58.07 | 4.31 | 14.58 | 2.28 | 7.26 | 55.39 | 2.42 | 0.35 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.05 | 0.14 | 0.14 | 0.74 | 1.10 | 0.63 | 0.97 | 0.80 | 0.90 | 1.11 | 0.88 | 0.24 |
| d, Delay for Lane Group [s/veh] | 82.29 | 18.20 | 18.21 | 78.84 | 98.48 | 27.24 | 66.82 | 47.25 | 39.80 | 106.13 | 46.30 | 37.07 |
| Lane Group LOS | F | B | B | E | F | C | E | D | D | F | D | D |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 10.31 | 1.75 | 1.72 | 1.22 | 22.93 | 9.25 | 6.21 | 7.56 | 13.06 | 10.62 | 9.03 | 1.88 |
| 50th-Percentile Queue Length [ft/ln] | 257.70 | 43.84 | 42.90 | 30.60 | 573.19 | 231.31 | 155.34 | 189.04 | 326.42 | 265.62 | 225.75 | 47.05 |
| 95th-Percentile Queue Length [veh/ln] | 15.95 | 3.16 | 3.09 | 2.20 | 32.66 | 14.24 | 10.30 | 12.07 | 18.98 | 16.72 | 13.96 | 3.39 |
| 95th-Percentile Queue Length [ft/ln] | 398.66 | 78.91 | 77.22 | 55.07 | 816.50 | 356.02 | 257.54 | 301.78 | 474.58 | 417.94 | 348.96 | 84.69 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 82.29 | 18.21 | 18.21 | 78.84 | 98.48 | 27.24 | 66.82 | 47.25 | 39.80 | 106.13 | 46.30 | 37.07 |
| Movement LOS | F | B | B | E | F | C | E | D | D | F | D | D |
| d_A, Approach Delay [s/veh] | 64.25 | | | 78.83 | | | 47.37 | | | 65.99 | | |
| Approach LOS | E | | | E | | | D | | | E | | |
| d_I, Intersection Delay [s/veh] | 63.34 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.957 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 49.51 | 49.51 | 49.51 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.085 | 3.558 | 3.255 |
| Crosswalk LOS | F | C | D | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 833 | 567 | 533 | 567 |
| d_b, Bicycle Delay [s] | 20.42 | 30.82 | 32.27 | 30.82 |
| l_b,int, Bicycle LOS Score for Intersection | 2.216 | 2.894 | 3.106 | 2.428 |
| Bicycle LOS | B | C | C | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 4: Golden Valley/SB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 31.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.670 |

**Intersection Setup**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 100.00 | 100.00 | 270.00 | 200.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 45.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 30 | 228 | 401 | 0 | 502 | 267 | 212 | 980 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 13 | 13 | 0 | 18 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 30 | 228 | 409 | 0 | 515 | 280 | 212 | 998 | 0 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 0.9160 | 0.9160 | 0.9160 | 1.0000 | 0.9160 | 0.9160 | 0.9160 | 0.9160 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 8 | 62 | 112 | 0 | 141 | 76 | 58 | 272 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 33 | 249 | 447 | 0 | 562 | 306 | 231 | 1090 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 0.0 | 0.0 | 4.7 | 0.0 | 3.2 | 4.7 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 55 | 0 | 0 | 26 | 0 | 19 | 45 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 7 | 0 | 0 | 14 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 0.0 | 0.0 | 3.7 | 0.0 | 2.2 | 3.7 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | | 4.60 | 4.60 | 4.60 | 5.70 | 5.70 | 4.20 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.60 | 2.60 | 2.60 | 3.70 | 3.70 | 2.20 | 3.70 |
| g_i, Effective Green Time [s] | | 45 | 45 | 45 | 24 | 24 | 16 | 45 |
| g / C, Green / Cycle | | 0.45 | 0.45 | 0.45 | 0.24 | 0.24 | 0.16 | 0.45 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.02 | 0.15 | 0.31 | 0.18 | 0.21 | 0.14 | 0.34 |
| s, saturation flow rate [veh/h] | | 1603 | 1683 | 1431 | 3204 | 1431 | 1603 | 3204 |
| c, Capacity [veh/h] | | 718 | 754 | 641 | 775 | 346 | 265 | 1438 |
| d1, Uniform Delay [s] | | 15.55 | 17.87 | 22.15 | 34.87 | 36.58 | 40.74 | 23.03 |
| k, delay calibration | | 0.50 | 0.50 | 0.50 | 0.11 | 0.21 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.12 | 1.17 | 6.18 | 1.31 | 13.56 | 8.75 | 0.84 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | | 0.05 | 0.33 | 0.70 | 0.73 | 0.88 | 0.87 | 0.76 |
|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | | 15.67 | 19.05 | 28.33 | 36.19 | 50.14 | 49.49 | 23.87 |
| Lane Group LOS | | B | B | C | D | D | D | C |
| Critical Lane Group | | No | No | Yes | No | Yes | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 0.42 | 3.68 | 8.74 | 6.03 | 8.03 | 5.88 | 9.69 |
| 50th-Percentile Queue Length [ft/ln] | | 10.50 | 92.01 | 218.58 | 150.72 | 200.70 | 147.06 | 242.32 |
| 95th-Percentile Queue Length [veh/ln] | | 0.76 | 6.62 | 13.59 | 10.06 | 12.67 | 9.86 | 14.80 |
| 95th-Percentile Queue Length [ft/ln] | | 18.90 | 165.62 | 339.81 | 251.39 | 316.87 | 246.50 | 369.96 |

**Movement, Approach, & Intersection Results**

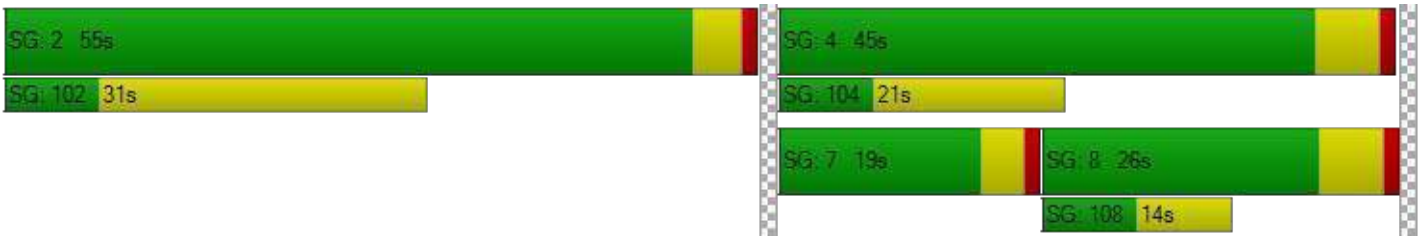
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 15.67 | 19.05 | 28.33 | 0.00 | 36.19 | 50.14 | 49.49 | 23.87 | 0.00 |
| Movement LOS | | | | B | B | C | | D | D | D | C | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 24.59 | | | 41.11 | | | 28.35 | | |
| Approach LOS | A | | | C | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 31.20 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.670 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.103 | 2.402 | 3.157 | 0.000 |
| Crosswalk LOS | B | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 1008 | 406 | 786 |
| d_b, Bicycle Delay [s] | 50.01 | 12.31 | 31.77 | 18.43 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 2.762 | 2.276 | 2.649 |
| Bicycle LOS | D | C | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 5: Golden Valley/NB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 21.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.586 |

**Intersection Setup**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 185.00 | 100.00 | 100.00 | 100.00 | 250.00 | 100.00 | 100.00 | 100.00 | 100.00 | 360.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 30.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | Yes | | |

**Volumes**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 157 | 1 | 180 | 0 | 0 | 0 | 208 | 318 | 0 | 0 | 1030 | 71 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 13 | 0 | 0 | 0 | 0 | 0 | 8 | 5 | 0 | 0 | 5 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 170 | 1 | 180 | 0 | 0 | 0 | 216 | 323 | 0 | 0 | 1035 | 71 |
| Peak Hour Factor | 0.8840 | 0.8840 | 0.8840 | 1.0000 | 1.0000 | 1.0000 | 0.8840 | 0.8840 | 1.0000 | 1.0000 | 0.8840 | 0.8840 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 48 | 0 | 51 | 0 | 0 | 0 | 61 | 91 | 0 | 0 | 293 | 20 |
| Total Analysis Volume [veh/h] | 192 | 1 | 204 | 0 | 0 | 0 | 244 | 365 | 0 | 0 | 1171 | 80 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 8 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 0 | 0 | 0 | 5 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.6 | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 4.7 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 45 | 0 | 0 | 0 | 0 | 15 | 55 | 0 | 0 | 40 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.6 | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 3.7 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 4.60 | 4.60 | | 4.60 | 5.70 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 2.60 | 2.60 | | 2.60 | 3.70 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 17 | 17 | 17 | | 10 | 73 | 59 | 59 |
| g / C, Green / Cycle | 0.17 | 0.17 | 0.17 | | 0.10 | 0.73 | 0.59 | 0.59 |
| (v / s)_i Volume / Saturation Flow Rate | 0.06 | 0.06 | 0.14 | | 0.08 | 0.11 | 0.37 | 0.06 |
| s, saturation flow rate [veh/h] | 1603 | 1604 | 1431 | | 3113 | 3204 | 3204 | 1431 |
| c, Capacity [veh/h] | 269 | 269 | 240 | | 304 | 2336 | 1875 | 837 |
| d1, Uniform Delay [s] | 36.83 | 36.83 | 40.37 | | 44.18 | 4.15 | 13.56 | 9.11 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.80 | 0.80 | 8.10 | | 4.92 | 0.14 | 1.58 | 0.23 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.36 | 0.36 | 0.85 | | 0.80 | 0.16 | 0.62 | 0.10 |
| d, Delay for Lane Group [s/veh] | 37.63 | 37.63 | 48.47 | | 49.09 | 4.29 | 15.14 | 9.34 |
| Lane Group LOS | D | D | D | | D | A | B | A |
| Critical Lane Group | No | No | Yes | | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 2.07 | 2.07 | 5.19 | | 3.02 | 0.82 | 7.53 | 0.71 |
| 50th-Percentile Queue Length [ft/ln] | 51.68 | 51.70 | 129.81 | | 75.62 | 20.38 | 188.34 | 17.67 |
| 95th-Percentile Queue Length [veh/ln] | 3.72 | 3.72 | 8.93 | | 5.44 | 1.47 | 12.04 | 1.27 |
| 95th-Percentile Queue Length [ft/ln] | 93.02 | 93.06 | 223.24 | | 136.11 | 36.69 | 300.88 | 31.81 |

**Movement, Approach, & Intersection Results**

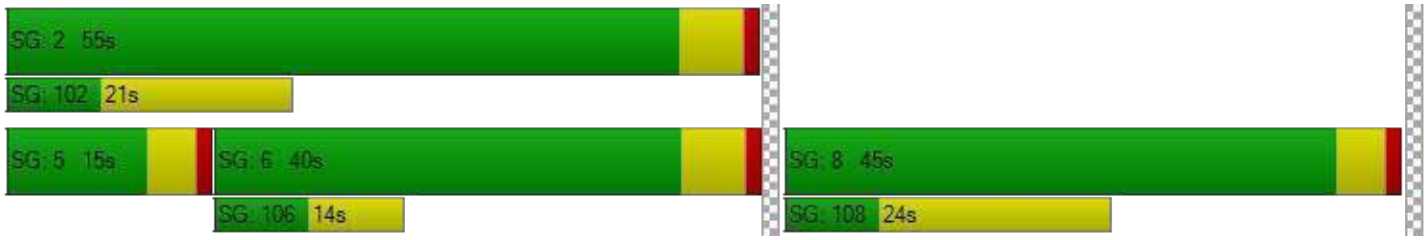
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 37.63 | 37.63 | 48.47 | 0.00 | 0.00 | 0.00 | 49.09 | 4.29 | 0.00 | 0.00 | 15.14 | 9.34 |
| Movement LOS | D | D | D | | | | D | A | | | B | A |
| d_A, Approach Delay [s/veh] | 43.20 | | | 0.00 | | | 22.24 | | | 14.77 | | |
| Approach LOS | D | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 21.78 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.586 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.281 | 1.878 | 0.000 | 2.896 |
| Crosswalk LOS | B | A | F | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 808 | 0 | 986 | 686 |
| d_b, Bicycle Delay [s] | 17.76 | 50.00 | 12.86 | 21.59 |
| l_b,int, Bicycle LOS Score for Intersection | 2.215 | 4.132 | 2.062 | 2.592 |
| Bicycle LOS | B | D | B | B |

## Sequence

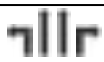
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 6: Sierra/Friendly Valley**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 25.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.550 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 125.00 | 100.00 | 100.00 | 135.00 | 100.00 | 400.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 25.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 44 | 398 | 87 | 196 | 1130 | 196 | 52 | 24 | 65 | 69 | 18 | 167 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 11 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 44 | 409 | 87 | 196 | 1141 | 196 | 52 | 24 | 65 | 69 | 18 | 167 |
| Peak Hour Factor | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 12 | 110 | 23 | 53 | 307 | 53 | 14 | 6 | 18 | 19 | 5 | 45 |
| Total Analysis Volume [veh/h] | 47 | 441 | 94 | 211 | 1230 | 211 | 56 | 26 | 70 | 74 | 19 | 180 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 22 | 23 | 0 | 45 | 46 | 0 | 0 | 32 | 0 | 0 | 32 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 14 | 0 | 0 | 17 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 5.70 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 3.70 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 4 | 43 | 43 | 15 | 54 | 54 | 28 | 28 | 28 | 28 |
| g / C, Green / Cycle | 0.04 | 0.43 | 0.43 | 0.15 | 0.54 | 0.54 | 0.28 | 0.28 | 0.28 | 0.28 |
| (v / s)_i Volume / Saturation Flow Rate | 0.03 | 0.16 | 0.16 | 0.13 | 0.38 | 0.15 | 0.12 | 0.05 | 0.06 | 0.14 |
| s, saturation flow rate [veh/h] | 1603 | 1683 | 1582 | 1603 | 3204 | 1431 | 657 | 1431 | 1169 | 1451 |
| c, Capacity [veh/h] | 59 | 717 | 674 | 245 | 1737 | 776 | 243 | 398 | 142 | 404 |
| d1, Uniform Delay [s] | 47.81 | 19.69 | 19.73 | 41.33 | 17.01 | 12.30 | 36.16 | 27.38 | 47.19 | 30.18 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 21.58 | 1.55 | 1.67 | 8.69 | 2.47 | 0.87 | 0.81 | 0.21 | 2.95 | 0.93 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.80 | 0.38 | 0.39 | 0.86 | 0.71 | 0.27 | 0.34 | 0.18 | 0.52 | 0.49 |
| d, Delay for Lane Group [s/veh] | 69.39 | 21.24 | 21.40 | 50.03 | 19.48 | 13.16 | 36.97 | 27.59 | 50.14 | 31.11 |
| Lane Group LOS | E | C | C | D | B | B | D | C | D | C |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 1.52 | 4.67 | 4.47 | 5.66 | 10.66 | 2.68 | 1.87 | 1.28 | 1.95 | 4.06 |
| 50th-Percentile Queue Length [ft/ln] | 37.97 | 116.84 | 111.63 | 141.60 | 266.48 | 67.05 | 46.81 | 32.11 | 48.75 | 101.43 |
| 95th-Percentile Queue Length [veh/ln] | 2.73 | 8.22 | 7.93 | 9.57 | 16.01 | 4.83 | 3.37 | 2.31 | 3.51 | 7.30 |
| 95th-Percentile Queue Length [ft/ln] | 68.34 | 205.48 | 198.26 | 239.18 | 400.34 | 120.69 | 84.25 | 57.80 | 87.76 | 182.57 |

**Movement, Approach, & Intersection Results**

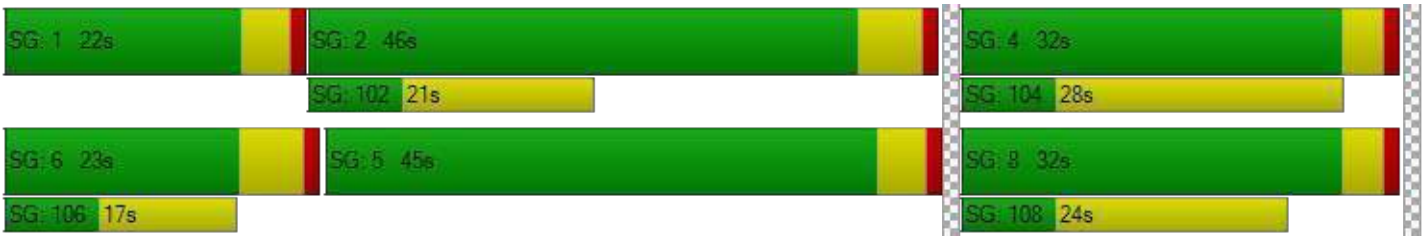
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 69.39 | 21.30 | 21.40 | 50.03 | 19.48 | 13.16 | 36.97 | 36.97 | 27.59 | 50.14 | 31.11 | 31.11 |
| Movement LOS | E | C | C | D | B | B | D | D | C | D | C | C |
| d_A, Approach Delay [s/veh] | 25.20 | | | 22.58 | | | 32.65 | | | 36.27 | | |
| Approach LOS | C | | | C | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 25.13 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.550 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.728 | 2.853 | 2.240 | 2.141 |
| Crosswalk LOS | B | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 346 | 806 | 560 | 560 |
| d_b, Bicycle Delay [s] | 34.20 | 17.82 | 25.92 | 25.92 |
| l_b,int, Bicycle LOS Score for Intersection | 2.040 | 2.923 | 1.810 | 2.010 |
| Bicycle LOS | B | C | A | B |

## Sequence

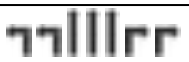
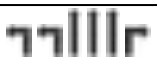
| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 7: Sierra/Via Princessa**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 39.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.752 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 200.00 | 100.00 | 250.00 | 360.00 | 100.00 | 630.00 | 200.00 | 100.00 | 300.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 351 | 331 | 127 | 169 | 850 | 758 | 171 | 874 | 403 | 295 | 934 | 78 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 3 | 3 | 5 | 0 | 3 | 0 | 0 | 0 | 3 | 5 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 354 | 334 | 132 | 169 | 853 | 758 | 171 | 874 | 406 | 300 | 934 | 78 |
| Peak Hour Factor | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 93 | 88 | 35 | 45 | 225 | 200 | 45 | 230 | 107 | 79 | 246 | 21 |
| Total Analysis Volume [veh/h] | 373 | 352 | 139 | 178 | 899 | 799 | 180 | 921 | 428 | 316 | 984 | 82 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 4 | 5 | 2 | 2 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4,5 | | | 2,3 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 20 | 42 | 0 | 19 | 41 | 41 | 18 | 41 | 41 | 18 | 41 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 28 | 0 | 0 | 28 | 28 | 0 | 28 | 28 | 0 | 28 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 15 | 35 | 35 | 9 | 29 | 48 | 13 | 42 | 63 | 13 | 42 | 42 |
| g / C, Green / Cycle | 0.13 | 0.29 | 0.29 | 0.07 | 0.24 | 0.40 | 0.11 | 0.35 | 0.52 | 0.11 | 0.35 | 0.35 |
| (v / s)_i Volume / Saturation Flow Rate | 0.12 | 0.08 | 0.10 | 0.06 | 0.20 | 0.32 | 0.06 | 0.20 | 0.30 | 0.10 | 0.21 | 0.06 |
| s, saturation flow rate [veh/h] | 3113 | 4584 | 1431 | 3113 | 4584 | 2532 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 402 | 1344 | 419 | 235 | 1098 | 1012 | 350 | 1592 | 749 | 350 | 1592 | 497 |
| d1, Uniform Delay [s] | 51.77 | 32.52 | 33.25 | 54.46 | 43.22 | 31.64 | 50.22 | 32.03 | 19.44 | 52.66 | 32.59 | 27.15 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 9.63 | 0.10 | 0.46 | 4.92 | 1.57 | 1.42 | 1.17 | 1.54 | 3.15 | 8.53 | 1.81 | 0.71 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.93 | 0.26 | 0.33 | 0.76 | 0.82 | 0.79 | 0.51 | 0.58 | 0.57 | 0.90 | 0.62 | 0.17 |
| d, Delay for Lane Group [s/veh] | 61.40 | 32.62 | 33.71 | 59.37 | 44.78 | 33.06 | 51.38 | 33.57 | 22.59 | 61.19 | 34.40 | 27.87 |
| Lane Group LOS | E | C | C | E | D | C | D | C | C | E | C | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 5.89 | 2.53 | 3.10 | 2.72 | 8.20 | 9.68 | 2.52 | 7.13 | 8.04 | 4.96 | 7.77 | 1.66 |
| 50th-Percentile Queue Length [ft/ln] | 147.30 | 63.13 | 77.43 | 67.88 | 204.94 | 241.97 | 63.09 | 178.20 | 200.91 | 123.90 | 194.22 | 41.53 |
| 95th-Percentile Queue Length [veh/ln] | 9.87 | 4.55 | 5.58 | 4.89 | 12.89 | 14.78 | 4.54 | 11.51 | 12.69 | 8.61 | 12.34 | 2.99 |
| 95th-Percentile Queue Length [ft/ln] | 246.82 | 113.64 | 139.38 | 122.19 | 322.33 | 369.52 | 113.55 | 287.66 | 317.13 | 215.18 | 308.50 | 74.75 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 61.40 | 32.62 | 33.71 | 59.37 | 44.78 | 33.06 | 51.38 | 33.57 | 22.59 | 61.19 | 34.40 | 27.87 |
| Movement LOS | E | C | C | E | D | C | D | C | C | E | C | C |
| d_A, Approach Delay [s/veh] | 45.22 | | | 41.18 | | | 32.59 | | | 40.14 | | |
| Approach LOS | D | | | D | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 39.22 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.752 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 49.54 | 49.54 | 49.54 | 49.54 |
| l_p,int, Pedestrian LOS Score for Intersection | 3.316 | 3.385 | 3.528 | 3.336 |
| Crosswalk LOS | C | C | D | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 605 | 588 | 588 | 588 |
| d_b, Bicycle Delay [s] | 29.23 | 29.93 | 29.93 | 29.93 |
| l_b,int, Bicycle LOS Score for Intersection | 2.035 | 2.591 | 2.401 | 2.320 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 8: Golden Valley/Project Dwy**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 31.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.076 |

**Intersection Setup**

| Name | Project Dwy | | Golden Valley | | Golden Valley | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**Volumes**

| Name | Project Dwy | | Golden Valley | | Golden Valley | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 1185 | 1833 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 53 | 11 | 42 | 0 | 42 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 53 | 11 | 1227 | 1833 | 42 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 13 | 3 | 307 | 458 | 11 |
| Total Analysis Volume [veh/h] | 0 | 53 | 11 | 1227 | 1833 | 42 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.23 | 0.08 | 0.01 | 0.02 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 25.47 | 31.92 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | D | D | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.87 | 0.24 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 21.81 | 6.08 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 25.47 | | 0.28 | | 0.00 | |
| Approach LOS | D | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.54 | | | | | |
| Intersection LOS | D | | | | | |

**Intersection Level Of Service Report**
**Intersection 1: Golden Valley/Centre Pointe**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 57.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.870 |

**Intersection Setup**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 400.00 | 100.00 | 350.00 | 700.00 | 100.00 | 100.00 | 260.00 | 100.00 | 260.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 40.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 292 | 984 | 224 | 166 | 1044 | 77 | 106 | 73 | 442 | 257 | 65 | 142 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 3 | 9 | 0 | 0 | 11 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 295 | 993 | 224 | 166 | 1055 | 77 | 106 | 73 | 446 | 257 | 65 | 142 |
| Peak Hour Factor | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 81 | 272 | 61 | 45 | 289 | 21 | 29 | 20 | 122 | 70 | 18 | 39 |
| Total Analysis Volume [veh/h] | 323 | 1088 | 245 | 182 | 1156 | 84 | 116 | 80 | 488 | 281 | 71 | 156 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Split | Split | Overlap | Split | Split | Split |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 6 | 5 | 2 | 0 | 0 | 8 | 8 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | 6 | | | | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 10 | 5 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 3.2 | 4.7 | 4.7 | 3.2 | 4.7 | 0.0 | 0.0 | 3.9 | 3.9 | 0.0 | 3.6 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 29 | 57 | 57 | 19 | 47 | 0 | 0 | 15 | 15 | 0 | 29 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 15 | 15 | 0 | 15 | 0 | 0 | 10 | 10 | 0 | 17 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.2 | 3.7 | 3.7 | 2.2 | 3.7 | 0.0 | 0.0 | 2.9 | 2.9 | 0.0 | 2.6 | 0.0 |
| Minimum Recall | No | No | No | No | No | | | No | No | | No | |
| Maximum Recall | No | No | No | No | No | | | No | No | | No | |
| Pedestrian Recall | No | No | No | No | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.20 | 5.70 | 5.70 | 4.20 | 5.70 | 5.70 | 4.90 | 4.90 | 4.20 | 4.60 | 4.60 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 3.70 | 3.70 | 2.20 | 3.70 | 3.70 | 2.90 | 2.90 | 0.00 | 2.60 | 2.60 |
| g_i, Effective Green Time [s] | 25 | 51 | 51 | 15 | 41 | 41 | 14 | 14 | 44 | 20 | 20 |
| g / C, Green / Cycle | 0.21 | 0.43 | 0.43 | 0.12 | 0.35 | 0.35 | 0.12 | 0.12 | 0.36 | 0.17 | 0.17 |
| (v / s)_i Volume / Saturation Flow Rate | 0.20 | 0.34 | 0.17 | 0.11 | 0.36 | 0.06 | 0.07 | 0.05 | 0.34 | 0.09 | 0.15 |
| s, saturation flow rate [veh/h] | 1603 | 3204 | 1431 | 1603 | 3204 | 1431 | 1603 | 1683 | 1431 | 3113 | 1501 |
| c, Capacity [veh/h] | 331 | 1374 | 613 | 198 | 1108 | 494 | 185 | 194 | 519 | 531 | 256 |
| d1, Uniform Delay [s] | 47.31 | 29.65 | 23.63 | 52.01 | 39.27 | 27.30 | 50.61 | 49.29 | 36.96 | 45.39 | 48.66 |
| k, delay calibration | 0.30 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.50 | 0.11 | 0.15 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 32.92 | 4.74 | 1.94 | 15.62 | 39.17 | 0.74 | 3.45 | 1.39 | 27.03 | 0.82 | 13.35 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | 0.97 | 0.79 | 0.40 | 0.92 | 1.04 | 0.17 | 0.63 | 0.41 | 0.94 | 0.53 | 0.89 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | 80.22 | 34.40 | 25.57 | 67.63 | 78.45 | 28.05 | 54.06 | 50.68 | 63.98 | 46.22 | 62.00 |
| Lane Group LOS | F | C | C | E | F | C | D | D | E | D | E |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 12.19 | 13.48 | 4.84 | 6.08 | 21.29 | 1.71 | 3.44 | 2.27 | 17.14 | 3.85 | 7.51 |
| 50th-Percentile Queue Length [ft/ln] | 304.85 | 337.02 | 121.10 | 152.01 | 532.37 | 42.81 | 86.11 | 56.74 | 428.45 | 96.29 | 187.85 |
| 95th-Percentile Queue Length [veh/ln] | 17.92 | 19.50 | 8.45 | 10.12 | 29.71 | 3.08 | 6.20 | 4.08 | 23.93 | 6.93 | 12.01 |
| 95th-Percentile Queue Length [ft/ln] | 448.02 | 487.55 | 211.33 | 253.10 | 742.78 | 77.05 | 155.00 | 102.12 | 598.18 | 173.32 | 300.23 |

**Movement, Approach, & Intersection Results**

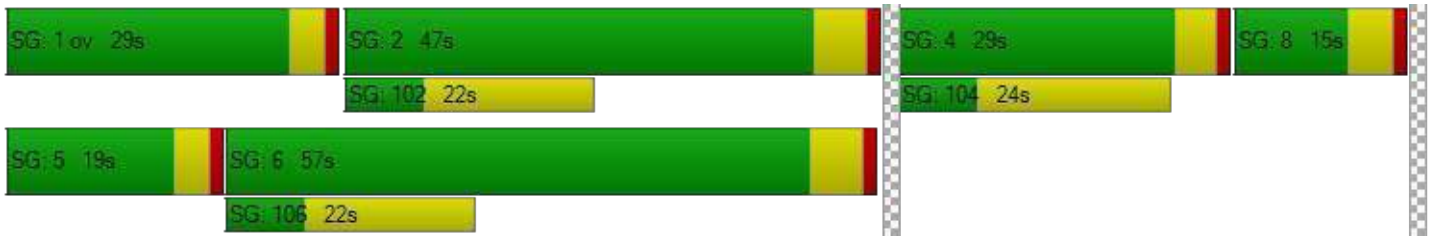
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 80.22 | 34.40 | 25.57 | 67.63 | 78.45 | 28.05 | 54.06 | 50.68 | 63.98 | 46.22 | 62.00 | 62.00 |
| Movement LOS | F | C | C | E | F | C | D | D | E | D | E | E |
| d_A, Approach Delay [s/veh] | 42.03 | | | 74.08 | | | 60.75 | | | 53.27 | | |
| Approach LOS | D | | | E | | | E | | | D | | |
| d_I, Intersection Delay [s/veh] | 57.04 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.870 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 49.51 | 49.51 | 49.51 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.220 | 2.523 | 2.434 |
| Crosswalk LOS | F | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 855 | 688 | 168 | 407 |
| d_b, Bicycle Delay [s] | 19.67 | 25.82 | 50.33 | 38.09 |
| l_b,int, Bicycle LOS Score for Intersection | 2.926 | 2.733 | 2.688 | 2.398 |
| Bicycle LOS | C | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 2: Golden Valley/Robert C Lee**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 12.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.645 |

**Intersection Setup**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | | |
|---|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | | |
| Lane Configuration | | | | | | | |
| Turning Movement | Left | Right | Left | Thru | U-turn | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 170.00 | 100.00 | 450.00 | 100.00 | 100.00 | 100.00 | 275.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 50.00 | | 50.00 | | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | | |
| Curb Present | No | | No | | No | | |
| Crosswalk | Yes | | Yes | | No | | |

**Volumes**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | | |
|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 134 | 89 | 61 | 1705 | 0 | 1403 | 122 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 15 | 51 | 12 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 134 | 89 | 61 | 1720 | 51 | 1415 | 122 |
| Peak Hour Factor | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 34 | 23 | 16 | 440 | 13 | 362 | 31 |
| Total Analysis Volume [veh/h] | 137 | 91 | 62 | 1760 | 52 | 1448 | 125 |
| Presence of On-Street Parking | No | No | No | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Protected | Permissive | Protected | Permissive | Overlap |
|---|---|---|---|---|---|---|---|
| Signal Group | 7 | 0 | 5 | 2 | 1 | 6 | 6 |
| Auxiliary Signal Groups | | | | | | | 6,7 |
| Lead / Lag | Lead | - | Lead | - | Lead | - | - |
| Minimum Green [s] | 5 | 0 | 5 | 10 | 5 | 10 | 10 |
| Maximum Green [s] | 30 | 0 | 30 | 30 | 30 | 30 | 30 |
| Amber [s] | 3.2 | 0.0 | 3.2 | 4.7 | 3.2 | 4.7 | 4.7 |
| All red [s] | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Split [s] | 32 | 0 | 10 | 42 | 26 | 58 | 58 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 7 | 0 | 0 | 5 | 0 | 7 | 7 |
| Pedestrian Clearance [s] | 20 | 0 | 0 | 10 | 0 | 17 | 17 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 2.2 | 0.0 | 2.2 | 3.7 | 2.2 | 3.7 | 3.7 |
| Minimum Recall | No | | No | No | No | No | No |
| Maximum Recall | No | | No | No | No | No | No |
| Pedestrian Recall | No | | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | L | C | R |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.20 | 4.20 | 4.20 | 5.70 | 4.20 | 5.70 | 4.20 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 2.20 | 2.20 | 3.70 | 2.20 | 3.70 | 0.00 |
| g_i, Effective Green Time [s] | 9 | 9 | 4 | 73 | 4 | 73 | 87 |
| g / C, Green / Cycle | 0.09 | 0.09 | 0.04 | 0.73 | 0.04 | 0.73 | 0.87 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.06 | 0.02 | 0.55 | 0.03 | 0.32 | 0.09 |
| s, saturation flow rate [veh/h] | 3113 | 1431 | 3113 | 3204 | 1603 | 4584 | 1431 |
| c, Capacity [veh/h] | 283 | 130 | 131 | 2329 | 66 | 3328 | 1250 |
| d1, Uniform Delay [s] | 43.23 | 44.13 | 46.82 | 8.28 | 47.51 | 5.49 | 0.87 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.28 | 6.63 | 2.64 | 2.34 | 18.29 | 0.42 | 0.16 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.48 | 0.70 | 0.47 | 0.76 | 0.79 | 0.44 | 0.10 |
| d, Delay for Lane Group [s/veh] | 44.51 | 50.77 | 49.46 | 10.62 | 65.80 | 5.90 | 1.03 |
| Lane Group LOS | D | D | D | B | E | A | A |
| Critical Lane Group | No | Yes | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 1.64 | 2.39 | 0.77 | 8.13 | 1.56 | 2.81 | 0.06 |
| 50th-Percentile Queue Length [ft/ln] | 40.94 | 59.81 | 19.25 | 203.17 | 39.10 | 70.19 | 1.39 |
| 95th-Percentile Queue Length [veh/ln] | 2.95 | 4.31 | 1.39 | 12.80 | 2.81 | 5.05 | 0.10 |
| 95th-Percentile Queue Length [ft/ln] | 73.69 | 107.66 | 34.66 | 320.05 | 70.37 | 126.33 | 2.50 |

**Movement, Approach, & Intersection Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 44.51 | 50.77 | 49.46 | 10.62 | 65.80 | 5.90 | 1.03 |
| Movement LOS | D | D | D | B | E | A | A |
| d_A, Approach Delay [s/veh] | 47.01 | | 11.94 | | 7.45 | | |
| Approach LOS | D | | B | | A | | |
| d_I, Intersection Delay [s/veh] | 12.13 | | | | | | |
| Intersection LOS | B | | | | | | |
| Intersection V/C | 0.645 | | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.399 | 3.379 | 0.000 |
| Crosswalk LOS | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 556 | 726 | 1046 |
| d_b, Bicycle Delay [s] | 26.07 | 20.29 | 11.38 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 3.063 | 2.453 |
| Bicycle LOS | A | C | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 3: Golden Valley/Sierra Hwy**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 45.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.723 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 2 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 430.00 | 100.00 | 100.00 | 415.00 | 100.00 | 500.00 | 285.00 | 100.00 | 325.00 | 285.00 | 100.00 | 295.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 602 | 1089 | 134 | 67 | 291 | 265 | 407 | 732 | 640 | 54 | 678 | 81 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 7 | 0 | 0 | 0 | 0 | 15 | 12 | 33 | 6 | 0 | 36 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 609 | 1089 | 134 | 67 | 291 | 280 | 419 | 765 | 646 | 54 | 714 | 81 |
| Peak Hour Factor | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 156 | 278 | 34 | 17 | 74 | 72 | 107 | 195 | 165 | 14 | 182 | 21 |
| Total Analysis Volume [veh/h] | 622 | 1112 | 137 | 68 | 297 | 286 | 428 | 781 | 660 | 55 | 729 | 83 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 2 | 3 | 8 | 8 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | 2,3 | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 26 | 52 | 0 | 10 | 36 | 36 | 20 | 48 | 48 | 10 | 38 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 25 | 0 | 0 | 25 | 25 | 0 | 10 | 10 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 22 | 59 | 59 | 6 | 43 | 63 | 16 | 34 | 60 | 4 | 23 | 23 |
| g / C, Green / Cycle | 0.18 | 0.50 | 0.50 | 0.05 | 0.36 | 0.53 | 0.13 | 0.29 | 0.50 | 0.03 | 0.19 | 0.19 |
| (v / s)_i Volume / Saturation Flow Rate | 0.20 | 0.37 | 0.38 | 0.04 | 0.09 | 0.20 | 0.14 | 0.24 | 0.26 | 0.02 | 0.16 | 0.06 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1620 | 1603 | 3204 | 1431 | 3113 | 3204 | 2532 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 571 | 832 | 801 | 81 | 1159 | 756 | 416 | 919 | 1275 | 108 | 861 | 269 |
| d1, Uniform Delay [s] | 49.02 | 24.43 | 24.92 | 56.49 | 26.95 | 16.66 | 52.00 | 40.37 | 20.00 | 56.96 | 47.09 | 42.04 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 47.12 | 6.23 | 7.31 | 19.30 | 0.53 | 1.44 | 28.11 | 2.31 | 0.33 | 3.71 | 2.42 | 0.65 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.09 | 0.75 | 0.78 | 0.84 | 0.26 | 0.38 | 1.03 | 0.85 | 0.52 | 0.51 | 0.85 | 0.31 |
| d, Delay for Lane Group [s/veh] | 96.14 | 30.66 | 32.22 | 75.79 | 27.49 | 18.10 | 80.11 | 42.68 | 20.33 | 60.67 | 49.51 | 42.69 |
| Lane Group LOS | F | C | C | E | C | B | F | D | C | E | D | D |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 11.93 | 14.45 | 14.82 | 2.42 | 2.95 | 4.56 | 7.65 | 10.62 | 5.76 | 0.85 | 6.92 | 2.10 |
| 50th-Percentile Queue Length [ft/ln] | 298.36 | 361.18 | 370.41 | 60.38 | 73.66 | 114.02 | 191.35 | 265.56 | 143.99 | 21.26 | 173.07 | 52.51 |
| 95th-Percentile Queue Length [veh/ln] | 18.35 | 20.68 | 21.13 | 4.35 | 5.30 | 8.06 | 12.34 | 15.97 | 9.70 | 1.53 | 11.24 | 3.78 |
| 95th-Percentile Queue Length [ft/ln] | 458.78 | 517.02 | 528.22 | 108.69 | 132.58 | 201.58 | 308.44 | 399.18 | 242.38 | 38.26 | 280.95 | 94.53 |

**Movement, Approach, & Intersection Results**

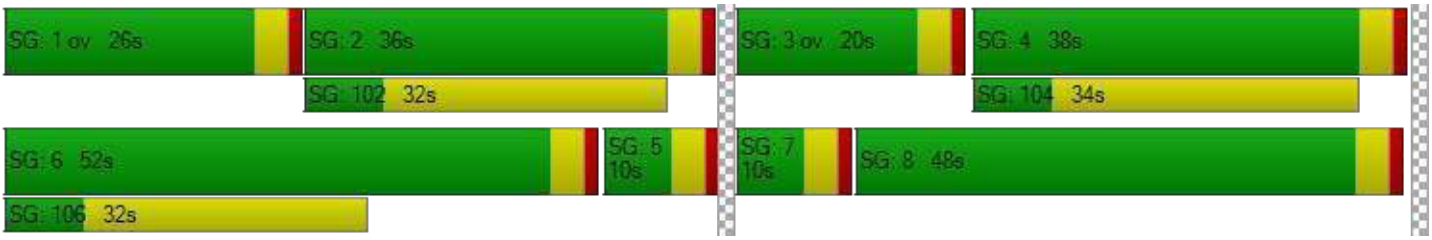
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 96.14 | 31.34 | 32.22 | 75.79 | 27.49 | 18.10 | 80.11 | 42.68 | 20.33 | 60.67 | 49.51 | 42.69 |
| Movement LOS | F | C | C | E | C | B | F | D | C | E | D | D |
| d_A, Approach Delay [s/veh] | 52.95 | | | 28.41 | | | 43.36 | | | 49.56 | | |
| Approach LOS | D | | | C | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 45.94 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.723 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 49.52 | 49.52 | 49.52 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.083 | 3.496 | 3.198 |
| Crosswalk LOS | F | C | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 800 | 533 | 733 | 567 |
| d_b, Bicycle Delay [s] | 21.61 | 32.28 | 24.08 | 30.83 |
| l_b,int, Bicycle LOS Score for Intersection | 3.103 | 2.097 | 3.102 | 2.036 |
| Bicycle LOS | C | B | C | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 4: Golden Valley/SB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 30.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.664 |

**Intersection Setup**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 100.00 | 100.00 | 270.00 | 200.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 45.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 83 | 3 | 346 | 0 | 808 | 111 | 207 | 627 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 15 | 18 | 0 | 25 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 83 | 3 | 357 | 0 | 823 | 129 | 207 | 652 | 0 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 0.9580 | 0.9580 | 0.9580 | 1.0000 | 0.9580 | 0.9580 | 0.9580 | 0.9580 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 22 | 1 | 93 | 0 | 215 | 34 | 54 | 170 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 87 | 3 | 373 | 0 | 859 | 135 | 216 | 681 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 0.0 | 0.0 | 4.7 | 0.0 | 3.2 | 4.7 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 45 | 0 | 0 | 32 | 0 | 23 | 55 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 7 | 0 | 0 | 14 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 0.0 | 0.0 | 3.7 | 0.0 | 2.2 | 3.7 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | | 4.60 | 4.60 | 4.60 | 5.70 | 5.70 | 4.20 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.60 | 2.60 | 2.60 | 3.70 | 3.70 | 2.20 | 3.70 |
| g_i, Effective Green Time [s] | | 41 | 41 | 41 | 29 | 29 | 16 | 49 |
| g / C, Green / Cycle | | 0.41 | 0.41 | 0.41 | 0.29 | 0.29 | 0.16 | 0.49 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.03 | 0.03 | 0.26 | 0.27 | 0.09 | 0.13 | 0.21 |
| s, saturation flow rate [veh/h] | | 1603 | 1608 | 1431 | 3204 | 1431 | 1603 | 3204 |
| c, Capacity [veh/h] | | 659 | 661 | 588 | 923 | 412 | 250 | 1557 |
| d1, Uniform Delay [s] | | 17.83 | 17.83 | 23.45 | 34.64 | 27.99 | 41.21 | 16.80 |
| k, delay calibration | | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.20 | 0.20 | 5.14 | 4.88 | 0.46 | 8.76 | 0.19 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | | 0.07 | 0.07 | 0.63 | 0.93 | 0.33 | 0.87 | 0.44 |
|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | | 18.03 | 18.03 | 28.59 | 39.52 | 28.45 | 49.97 | 16.99 |
| Lane Group LOS | | B | B | C | D | C | D | B |
| Critical Lane Group | | No | No | Yes | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 0.63 | 0.63 | 7.29 | 10.01 | 2.44 | 5.52 | 4.58 |
| 50th-Percentile Queue Length [ft/ln] | | 15.68 | 15.73 | 182.20 | 250.22 | 60.90 | 137.97 | 114.61 |
| 95th-Percentile Queue Length [veh/ln] | | 1.13 | 1.13 | 11.72 | 15.20 | 4.38 | 9.37 | 8.10 |
| 95th-Percentile Queue Length [ft/ln] | | 28.23 | 28.31 | 292.89 | 379.93 | 109.62 | 234.28 | 202.40 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 18.03 | 18.03 | 28.59 | 0.00 | 39.52 | 28.45 | 49.97 | 16.99 | 0.00 |
| Movement LOS | | | | B | B | C | | D | C | D | B | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 26.54 | | | 38.02 | | | 24.93 | | |
| Approach LOS | A | | | C | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 30.77 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.664 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 1.892 | 2.305 | 3.074 | 0.000 |
| Crosswalk LOS | A | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 808 | 526 | 986 |
| d_b, Bicycle Delay [s] | 50.01 | 17.77 | 27.17 | 12.86 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 2.324 | 2.380 | 2.300 |
| Bicycle LOS | D | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 5: Golden Valley/NB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 27.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.606 |

**Intersection Setup**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 185.00 | 100.00 | 100.00 | 100.00 | 250.00 | 100.00 | 100.00 | 100.00 | 100.00 | 360.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 30.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | Yes | | |

**Volumes**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 248 | 5 | 395 | 0 | 0 | 0 | 312 | 564 | 0 | 0 | 580 | 205 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 18 | 0 | 0 | 0 | 0 | 0 | 9 | 6 | 0 | 0 | 7 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 266 | 5 | 395 | 0 | 0 | 0 | 321 | 570 | 0 | 0 | 587 | 205 |
| Peak Hour Factor | 0.9270 | 0.9270 | 0.9270 | 1.0000 | 1.0000 | 1.0000 | 0.9270 | 0.9270 | 1.0000 | 1.0000 | 0.9270 | 0.9270 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 72 | 1 | 107 | 0 | 0 | 0 | 87 | 154 | 0 | 0 | 158 | 55 |
| Total Analysis Volume [veh/h] | 287 | 5 | 426 | 0 | 0 | 0 | 346 | 615 | 0 | 0 | 633 | 221 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 8 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 0 | 0 | 0 | 5 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.6 | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 4.7 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 62 | 0 | 0 | 0 | 0 | 18 | 38 | 0 | 0 | 20 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.6 | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 3.7 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 4.60 | 4.60 | | 4.60 | 5.70 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 2.60 | 2.60 | | 2.60 | 3.70 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 33 | 33 | 33 | | 13 | 57 | 40 | 40 |
| g / C, Green / Cycle | 0.33 | 0.33 | 0.33 | | 0.13 | 0.57 | 0.40 | 0.40 |
| (v / s)_i Volume / Saturation Flow Rate | 0.09 | 0.09 | 0.30 | | 0.11 | 0.19 | 0.20 | 0.15 |
| s, saturation flow rate [veh/h] | 1603 | 1605 | 1431 | | 3113 | 3204 | 3204 | 1431 |
| c, Capacity [veh/h] | 521 | 522 | 465 | | 404 | 1832 | 1269 | 566 |
| d1, Uniform Delay [s] | 25.05 | 25.05 | 32.43 | | 42.60 | 11.35 | 22.74 | 21.58 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.29 | 0.29 | 7.57 | | 5.29 | 0.50 | 1.40 | 2.02 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.28 | 0.28 | 0.92 | | 0.86 | 0.34 | 0.50 | 0.39 |
| d, Delay for Lane Group [s/veh] | 25.34 | 25.34 | 40.00 | | 47.89 | 11.84 | 24.14 | 23.60 |
| Lane Group LOS | C | C | D | | D | B | C | C |
| Critical Lane Group | No | No | Yes | | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 2.48 | 2.48 | 10.19 | | 4.26 | 3.21 | 5.37 | 3.71 |
| 50th-Percentile Queue Length [ft/ln] | 61.97 | 62.05 | 254.70 | | 106.62 | 80.23 | 134.19 | 92.77 |
| 95th-Percentile Queue Length [veh/ln] | 4.46 | 4.47 | 15.42 | | 7.65 | 5.78 | 9.17 | 6.68 |
| 95th-Percentile Queue Length [ft/ln] | 111.55 | 111.68 | 385.57 | | 191.28 | 144.42 | 229.18 | 166.99 |

**Movement, Approach, & Intersection Results**

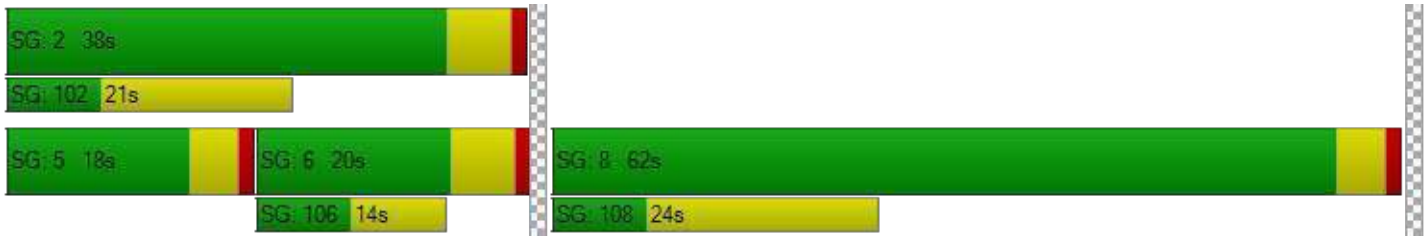
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 25.34 | 25.34 | 40.00 | 0.00 | 0.00 | 0.00 | 47.89 | 11.84 | 0.00 | 0.00 | 24.14 | 23.60 |
| Movement LOS | C | C | D | | | | D | B | | | C | C |
| d_A, Approach Delay [s/veh] | 34.04 | | | 0.00 | | | 24.82 | | | 24.00 | | |
| Approach LOS | C | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 27.16 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.606 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.398 | 1.999 | 0.000 | 2.921 |
| Crosswalk LOS | B | A | F | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1148 | 0 | 646 | 286 |
| d_b, Bicycle Delay [s] | 9.08 | 50.00 | 22.92 | 36.73 |
| l_b,int, Bicycle LOS Score for Intersection | 2.744 | 4.132 | 2.352 | 2.264 |
| Bicycle LOS | B | D | B | B |

## Sequence

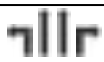
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 6: Sierra/Friendly Valley**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 22.6 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.563 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 125.00 | 100.00 | 100.00 | 135.00 | 100.00 | 400.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 25.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 98 | 1280 | 50 | 76 | 479 | 42 | 61 | 10 | 54 | 42 | 20 | 68 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 12 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 98 | 1292 | 50 | 76 | 494 | 42 | 61 | 10 | 54 | 42 | 20 | 68 |
| Peak Hour Factor | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 26 | 338 | 13 | 20 | 129 | 11 | 16 | 3 | 14 | 11 | 5 | 18 |
| Total Analysis Volume [veh/h] | 103 | 1351 | 52 | 79 | 517 | 44 | 64 | 10 | 56 | 44 | 21 | 71 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 41 | 48 | 0 | 20 | 27 | 0 | 0 | 32 | 0 | 0 | 32 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 14 | 0 | 0 | 17 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 5.70 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 3.70 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 8 | 58 | 58 | 6 | 56 | 56 | 21 | 21 | 21 | 21 |
| g / C, Green / Cycle | 0.08 | 0.58 | 0.58 | 0.06 | 0.56 | 0.56 | 0.21 | 0.21 | 0.21 | 0.21 |
| (v / s)_i Volume / Saturation Flow Rate | 0.06 | 0.42 | 0.42 | 0.05 | 0.16 | 0.03 | 0.09 | 0.04 | 0.04 | 0.06 |
| s, saturation flow rate [veh/h] | 1603 | 1683 | 1661 | 1603 | 3204 | 1431 | 797 | 1431 | 1202 | 1481 |
| c, Capacity [veh/h] | 129 | 980 | 967 | 99 | 1806 | 806 | 237 | 305 | 136 | 315 |
| d1, Uniform Delay [s] | 45.19 | 15.00 | 15.05 | 46.31 | 11.35 | 9.82 | 38.95 | 32.23 | 46.54 | 33.02 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 10.77 | 4.54 | 4.66 | 13.62 | 0.40 | 0.13 | 0.74 | 0.29 | 1.37 | 0.51 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | 0.80 | 0.72 | 0.72 | 0.80 | 0.29 | 0.05 | 0.31 | 0.18 | 0.32 | 0.29 |
|---|---|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | 55.96 | 19.54 | 19.70 | 59.93 | 11.75 | 9.95 | 39.69 | 32.52 | 47.91 | 33.53 |
| Lane Group LOS | E | B | B | E | B | A | D | C | D | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.90 | 12.07 | 12.02 | 2.32 | 3.01 | 0.46 | 1.71 | 1.13 | 1.12 | 1.91 |
| 50th-Percentile Queue Length [ft/ln] | 72.62 | 301.72 | 300.40 | 57.97 | 75.36 | 11.45 | 42.67 | 28.27 | 28.04 | 47.67 |
| 95th-Percentile Queue Length [veh/ln] | 5.23 | 17.77 | 17.70 | 4.17 | 5.43 | 0.82 | 3.07 | 2.04 | 2.02 | 3.43 |
| 95th-Percentile Queue Length [ft/ln] | 130.71 | 444.15 | 442.53 | 104.35 | 135.65 | 20.61 | 76.80 | 50.88 | 50.47 | 85.80 |

**Movement, Approach, & Intersection Results**

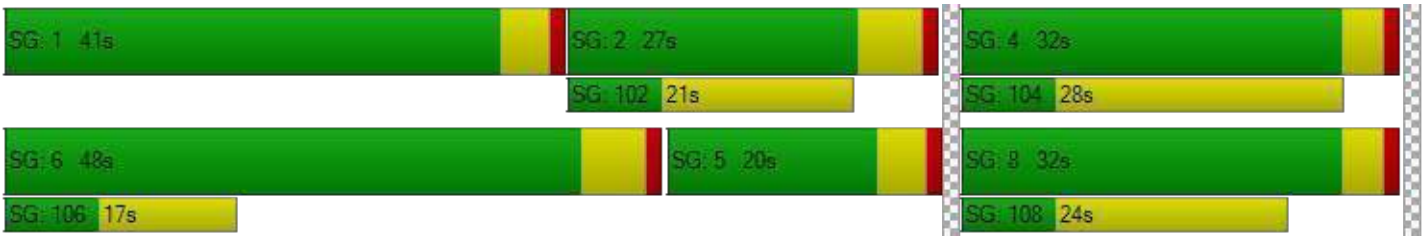
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 55.96 | 19.62 | 19.70 | 59.93 | 11.75 | 9.95 | 39.69 | 39.69 | 32.52 | 47.91 | 33.53 | 33.53 |
| Movement LOS | E | B | B | E | B | A | D | D | C | D | C | C |
| d_A, Approach Delay [s/veh] | 22.11 | | | 17.57 | | | 36.60 | | | 38.18 | | |
| Approach LOS | C | | | B | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 22.59 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.563 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.712 | 2.837 | 2.209 | 2.035 |
| Crosswalk LOS | B | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 846 | 426 | 560 | 560 |
| d_b, Bicycle Delay [s] | 16.65 | 30.97 | 25.92 | 25.92 |
| l_b,int, Bicycle LOS Score for Intersection | 2.802 | 2.088 | 1.774 | 1.784 |
| Bicycle LOS | C | B | A | A |

## Sequence

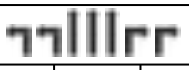
| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 7: Sierra/Via Princessa**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 42.3 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.642 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 200.00 | 100.00 | 250.00 | 360.00 | 100.00 | 630.00 | 200.00 | 100.00 | 300.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 440 | 930 | 214 | 217 | 364 | 762 | 226 | 872 | 167 | 190 | 769 | 208 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 3 | 3 | 6 | 0 | 4 | 0 | 0 | 0 | 4 | 7 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 443 | 933 | 220 | 217 | 368 | 762 | 226 | 872 | 171 | 197 | 769 | 208 |
| Peak Hour Factor | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 113 | 238 | 56 | 55 | 94 | 195 | 58 | 223 | 44 | 50 | 196 | 53 |
| Total Analysis Volume [veh/h] | 453 | 953 | 225 | 222 | 376 | 778 | 231 | 891 | 175 | 201 | 785 | 212 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 4 | 5 | 2 | 2 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4,5 | | | 2,3 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 22 | 41 | 0 | 24 | 43 | 43 | 14 | 41 | 41 | 14 | 41 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 28 | 0 | 0 | 28 | 28 | 0 | 28 | 28 | 0 | 28 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 17 | 29 | 29 | 11 | 23 | 38 | 9 | 50 | 73 | 9 | 50 | 50 |
| g / C, Green / Cycle | 0.15 | 0.24 | 0.24 | 0.09 | 0.19 | 0.32 | 0.08 | 0.41 | 0.61 | 0.08 | 0.41 | 0.41 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.21 | 0.16 | 0.07 | 0.08 | 0.31 | 0.07 | 0.19 | 0.12 | 0.06 | 0.17 | 0.15 |
| s, saturation flow rate [veh/h] | 3113 | 4584 | 1431 | 3113 | 4584 | 2532 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 452 | 1123 | 350 | 281 | 870 | 801 | 246 | 1899 | 868 | 246 | 1899 | 593 |
| d1, Uniform Delay [s] | 51.32 | 43.22 | 40.62 | 53.51 | 42.93 | 40.51 | 55.02 | 25.56 | 10.56 | 54.45 | 24.85 | 24.18 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 20.03 | 1.89 | 1.97 | 4.95 | 0.34 | 9.50 | 15.68 | 0.83 | 0.52 | 6.58 | 0.67 | 1.68 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.00 | 0.85 | 0.64 | 0.79 | 0.43 | 0.97 | 0.94 | 0.47 | 0.20 | 0.82 | 0.41 | 0.36 |
| d, Delay for Lane Group [s/veh] | 71.34 | 45.11 | 42.59 | 58.45 | 43.26 | 50.01 | 70.70 | 26.40 | 11.08 | 61.03 | 25.52 | 25.86 |
| Lane Group LOS | F | D | D | E | D | D | E | C | B | E | C | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 7.80 | 8.77 | 5.90 | 3.37 | 3.20 | 11.74 | 3.89 | 5.94 | 1.98 | 3.12 | 5.08 | 4.19 |
| 50th-Percentile Queue Length [ft/ln] | 194.93 | 219.36 | 147.56 | 84.17 | 79.97 | 293.48 | 97.37 | 148.50 | 49.46 | 77.95 | 126.97 | 104.70 |
| 95th-Percentile Queue Length [veh/ln] | 12.38 | 13.63 | 9.89 | 6.06 | 5.76 | 17.36 | 7.01 | 9.94 | 3.56 | 5.61 | 8.77 | 7.54 |
| 95th-Percentile Queue Length [ft/ln] | 309.62 | 340.81 | 247.17 | 151.50 | 143.95 | 433.95 | 175.27 | 248.42 | 89.04 | 140.30 | 219.36 | 188.46 |

**Movement, Approach, & Intersection Results**

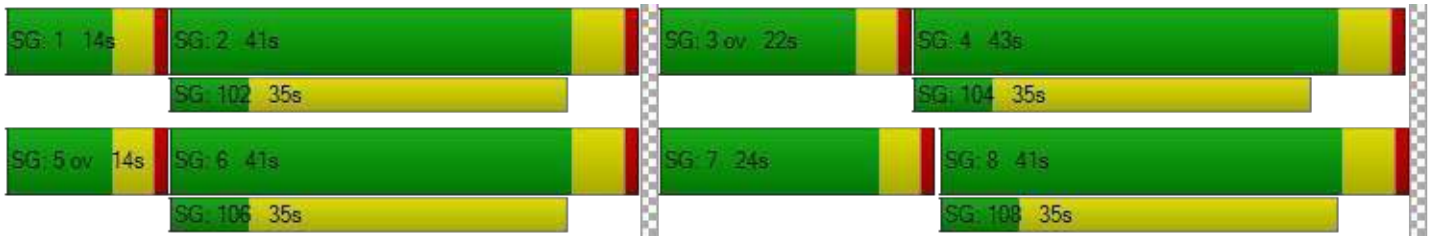
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 71.34 | 45.11 | 42.59 | 58.45 | 43.26 | 50.01 | 70.70 | 26.40 | 11.08 | 61.03 | 25.52 | 25.86 |
| Movement LOS | F | D | D | E | D | D | E | C | B | E | C | C |
| d_A, Approach Delay [s/veh] | 52.05 | | | 49.53 | | | 32.22 | | | 31.54 | | |
| Approach LOS | D | | | D | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 42.28 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.642 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 49.52 | 49.52 | 49.52 | 49.52 |
| l_p,int, Pedestrian LOS Score for Intersection | 3.293 | 3.431 | 3.461 | 3.321 |
| Crosswalk LOS | C | C | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 588 | 621 | 588 | 588 |
| d_b, Bicycle Delay [s] | 29.91 | 28.52 | 29.91 | 29.91 |
| l_b,int, Bicycle LOS Score for Intersection | 2.457 | 2.316 | 2.273 | 2.219 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 8: Golden Valley/Project Dwy**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 24.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.074 |

**Intersection Setup**

| Name | Project Dwy | | Golden Valley | | Golden Valley | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**Volumes**

| Name | Project Dwy | | Golden Valley | | Golden Valley | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 1705 | 1525 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 63 | 15 | 51 | 0 | 58 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 63 | 15 | 1756 | 1525 | 58 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 16 | 4 | 439 | 381 | 15 |
| Total Analysis Volume [veh/h] | 0 | 63 | 15 | 1756 | 1525 | 58 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.22 | 0.07 | 0.02 | 0.02 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 21.17 | 24.18 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | C | C | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.83 | 0.24 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 20.66 | 5.94 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 21.17 | | 0.20 | | 0.00 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.50 | | | | | |
| Intersection LOS | C | | | | | |

# PROJECT OPENING YEAR CUMULATIVE CONDITIONS

**Intersection Level Of Service Report**
**Intersection 1: Golden Valley/Centre Pointe**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 39.6 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.752 |

**Intersection Setup**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 400.00 | 100.00 | 350.00 | 700.00 | 100.00 | 100.00 | 260.00 | 100.00 | 260.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 40.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 248 | 745 | 355 | 120 | 951 | 82 | 23 | 39 | 157 | 458 | 48 | 41 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 3 | 10 | 0 | 0 | 13 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 261 | 785 | 369 | 125 | 1002 | 85 | 24 | 41 | 165 | 477 | 50 | 43 |
| Peak Hour Factor | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 68 | 205 | 96 | 33 | 261 | 22 | 6 | 11 | 43 | 124 | 13 | 11 |
| Total Analysis Volume [veh/h] | 272 | 819 | 385 | 130 | 1045 | 89 | 25 | 43 | 172 | 497 | 52 | 45 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Split | Split | Overlap | Split | Split | Split |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 6 | 5 | 2 | 0 | 0 | 8 | 8 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | 6 | | | | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 10 | 5 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 3.2 | 4.7 | 4.7 | 3.2 | 4.7 | 0.0 | 0.0 | 3.9 | 3.9 | 0.0 | 3.6 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 22 | 42 | 42 | 14 | 34 | 0 | 0 | 15 | 15 | 0 | 29 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 15 | 15 | 0 | 15 | 0 | 0 | 10 | 10 | 0 | 17 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.2 | 3.7 | 3.7 | 2.2 | 3.7 | 0.0 | 0.0 | 2.9 | 2.9 | 0.0 | 2.6 | 0.0 |
| Minimum Recall | No | No | No | No | No | | | No | No | | No | |
| Maximum Recall | No | No | No | No | No | | | No | No | | No | |
| Pedestrian Recall | No | No | No | No | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.20 | 5.70 | 5.70 | 4.20 | 5.70 | 5.70 | 4.90 | 4.90 | 4.20 | 4.60 | 4.60 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 3.70 | 3.70 | 2.20 | 3.70 | 3.70 | 2.90 | 2.90 | 0.00 | 2.60 | 2.60 |
| g_i, Effective Green Time [s] | 18 | 42 | 42 | 10 | 34 | 34 | 10 | 10 | 33 | 19 | 19 |
| g / C, Green / Cycle | 0.18 | 0.42 | 0.42 | 0.10 | 0.34 | 0.34 | 0.10 | 0.10 | 0.33 | 0.19 | 0.19 |
| (v / s)_i Volume / Saturation Flow Rate | 0.17 | 0.26 | 0.27 | 0.08 | 0.33 | 0.06 | 0.02 | 0.03 | 0.12 | 0.16 | 0.06 |
| s, saturation flow rate [veh/h] | 1603 | 3204 | 1431 | 1603 | 3204 | 1431 | 1603 | 1683 | 1431 | 3113 | 1556 |
| c, Capacity [veh/h] | 286 | 1350 | 603 | 157 | 1093 | 488 | 161 | 169 | 468 | 581 | 291 |
| d1, Uniform Delay [s] | 40.73 | 22.53 | 22.95 | 44.34 | 32.27 | 23.19 | 41.18 | 41.60 | 25.75 | 39.41 | 35.32 |
| k, delay calibration | 0.13 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 17.84 | 2.03 | 5.12 | 10.50 | 18.53 | 0.82 | 0.45 | 0.79 | 0.48 | 3.73 | 0.67 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.95 | 0.61 | 0.64 | 0.83 | 0.96 | 0.18 | 0.16 | 0.25 | 0.37 | 0.86 | 0.33 |
| d, Delay for Lane Group [s/veh] | 58.57 | 24.56 | 28.07 | 54.84 | 50.80 | 24.01 | 41.62 | 42.38 | 26.23 | 43.15 | 35.99 |
| Lane Group LOS | E | C | C | D | D | C | D | D | C | D | D |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | Yes | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 7.66 | 7.13 | 7.32 | 3.47 | 14.06 | 1.49 | 0.57 | 0.99 | 3.07 | 6.07 | 2.07 |
| 50th-Percentile Queue Length [ft/ln] | 191.44 | 178.24 | 182.99 | 86.77 | 351.54 | 37.21 | 14.26 | 24.84 | 76.67 | 151.76 | 51.81 |
| 95th-Percentile Queue Length [veh/ln] | 12.20 | 11.51 | 11.76 | 6.25 | 20.21 | 2.68 | 1.03 | 1.79 | 5.52 | 10.11 | 3.73 |
| 95th-Percentile Queue Length [ft/ln] | 304.90 | 287.72 | 293.92 | 156.18 | 505.29 | 66.97 | 25.67 | 44.71 | 138.01 | 252.78 | 93.25 |

**Movement, Approach, & Intersection Results**

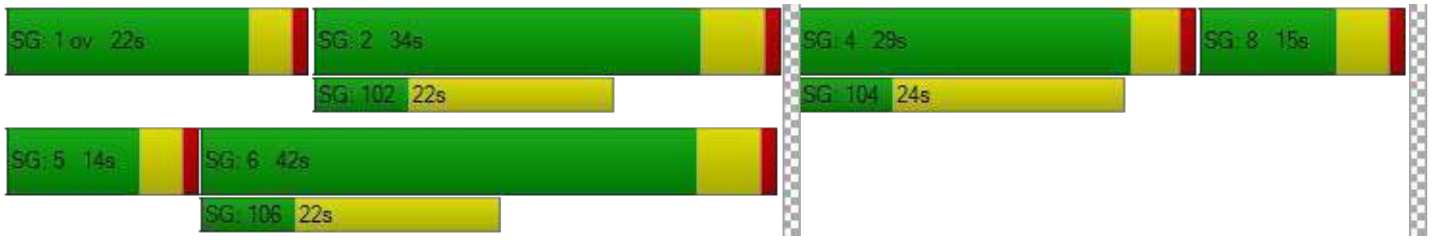
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 58.57 | 24.56 | 28.07 | 54.84 | 50.80 | 24.01 | 41.62 | 42.38 | 26.23 | 43.15 | 35.99 | 35.99 |
| Movement LOS | E | C | C | D | D | C | D | D | C | D | D | D |
| d_A, Approach Delay [s/veh] | 31.74 | | | 49.33 | | | 30.73 | | | 41.98 | | |
| Approach LOS | C | | | D | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 39.59 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.752 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 39.64 | 39.64 | 39.64 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.041 | 2.348 | 2.464 |
| Crosswalk LOS | F | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 725 | 566 | 202 | 488 |
| d_b, Bicycle Delay [s] | 20.32 | 25.74 | 40.45 | 28.61 |
| l_b,int, Bicycle LOS Score for Intersection | 2.777 | 2.602 | 1.956 | 2.540 |
| Bicycle LOS | C | B | A | B |

## Sequence

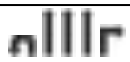
| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 2: Golden Valley/Robert C Lee**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 26.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.780 |

**Intersection Setup**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | | |
|---|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | | |
| Lane Configuration | | | | |  | | |
| Turning Movement | Left | Right | Left | Thru | U-turn | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 170.00 | 100.00 | 450.00 | 100.00 | 150.00 | 100.00 | 275.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 50.00 | | 50.00 | | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | | |
| Curb Present | No | | No | | No | | |
| Crosswalk | Yes | | Yes | | No | | |

**Volumes**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | | |
|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 608 | 298 | 416 | 1185 | 0 | 1151 | 682 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 15 | 0 | 13 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 633 | 310 | 433 | 1248 | 0 | 1211 | 710 |
| Peak Hour Factor | 0.9030 | 0.9030 | 0.9030 | 0.9030 | 0.9030 | 0.9030 | 0.9030 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 175 | 86 | 120 | 346 | 0 | 335 | 197 |
| Total Analysis Volume [veh/h] | 701 | 343 | 480 | 1382 | 0 | 1341 | 786 |
| Presence of On-Street Parking | No | No | No | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Protected | Permissive | Protected | Permissive | Overlap |
|---|---|---|---|---|---|---|---|
| Signal Group | 7 | 0 | 5 | 2 | 1 | 6 | 6 |
| Auxiliary Signal Groups | | | | | | | 6,7 |
| Lead / Lag | Lead | - | Lead | - | Lead | - | - |
| Minimum Green [s] | 5 | 0 | 5 | 10 | 5 | 10 | 10 |
| Maximum Green [s] | 30 | 0 | 30 | 30 | 30 | 30 | 30 |
| Amber [s] | 3.2 | 0.0 | 3.2 | 4.7 | 3.2 | 4.7 | 4.7 |
| All red [s] | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Split [s] | 32 | 0 | 38 | 42 | 26 | 30 | 30 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 7 | 0 | 0 | 5 | 0 | 7 | 7 |
| Pedestrian Clearance [s] | 20 | 0 | 0 | 10 | 0 | 17 | 17 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 2.2 | 0.0 | 2.2 | 3.7 | 2.2 | 3.7 | 3.7 |
| Minimum Recall | No | | No | No | No | No | No |
| Maximum Recall | No | | No | No | No | No | No |
| Pedestrian Recall | No | | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | L | C | R |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.20 | 4.20 | 4.20 | 5.70 | 4.20 | 5.70 | 4.20 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 2.20 | 2.20 | 3.70 | 2.20 | 3.70 | 0.00 |
| g_i, Effective Green Time [s] | 28 | 28 | 18 | 58 | 0 | 40 | 73 |
| g / C, Green / Cycle | 0.28 | 0.28 | 0.18 | 0.58 | 0.00 | 0.40 | 0.73 |
| (v / s)_i Volume / Saturation Flow Rate | 0.23 | 0.24 | 0.15 | 0.43 | 0.00 | 0.29 | 0.55 |
| s, saturation flow rate [veh/h] | 3113 | 1431 | 3113 | 3204 | 1603 | 4584 | 1431 |
| c, Capacity [veh/h] | 865 | 398 | 567 | 1858 | 2 | 1829 | 1050 |
| d1, Uniform Delay [s] | 33.64 | 34.29 | 39.56 | 15.53 | 0.00 | 25.54 | 7.86 |
| k, delay calibration | 0.11 | 0.30 | 0.11 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.87 | 13.89 | 3.61 | 2.75 | 0.00 | 2.65 | 4.89 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.81 | 0.86 | 0.85 | 0.74 | 0.00 | 0.73 | 0.75 |
| d, Delay for Lane Group [s/veh] | 35.52 | 48.18 | 43.17 | 18.27 | 0.00 | 28.18 | 12.75 |
| Lane Group LOS | D | D | D | B | A | C | B |
| Critical Lane Group | No | Yes | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 7.89 | 9.18 | 5.66 | 10.26 | 0.00 | 8.60 | 7.70 |
| 50th-Percentile Queue Length [ft/ln] | 197.28 | 229.51 | 141.41 | 256.58 | 0.00 | 214.99 | 192.47 |
| 95th-Percentile Queue Length [veh/ln] | 12.50 | 14.15 | 9.56 | 15.52 | 0.00 | 13.41 | 12.25 |
| 95th-Percentile Queue Length [ft/ln] | 312.46 | 353.73 | 238.93 | 387.93 | 0.00 | 335.23 | 306.23 |

**Movement, Approach, & Intersection Results**

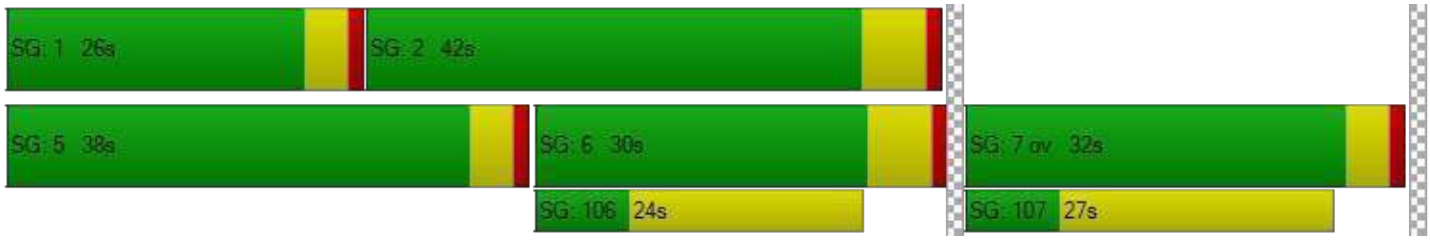
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 35.52 | 48.18 | 43.17 | 18.27 | 0.00 | 28.18 | 12.75 |
| Movement LOS | D | D | D | B | A | C | B |
| d_A, Approach Delay [s/veh] | 39.68 | | 24.69 | | 22.48 | | |
| Approach LOS | D | | C | | C | | |
| d_I, Intersection Delay [s/veh] | 26.86 | | | | | | |
| Intersection LOS | C | | | | | | |
| Intersection V/C | 0.780 | | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.830 | 3.422 | 0.000 |
| Crosswalk LOS | C | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 556 | 726 | 486 |
| d_b, Bicycle Delay [s] | 26.07 | 20.29 | 28.66 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 3.096 | 2.729 |
| Bicycle LOS | A | C | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 3: Golden Valley/Sierra Hwy**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 73.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.997 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 2 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 430.00 | 100.00 | 100.00 | 415.00 | 100.00 | 500.00 | 285.00 | 100.00 | 325.00 | 285.00 | 100.00 | 295.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 540 | 199 | 14 | 31 | 1093 | 405 | 347 | 491 | 907 | 507 | 895 | 77 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 0 | 0 | 14 | 0 | 0 | 0 | 13 | 2 | 0 | 11 | 4 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 564 | 207 | 15 | 46 | 1137 | 421 | 361 | 524 | 946 | 527 | 942 | 84 |
| Peak Hour Factor | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 148 | 54 | 4 | 12 | 298 | 110 | 95 | 137 | 248 | 138 | 247 | 22 |
| Total Analysis Volume [veh/h] | 592 | 217 | 16 | 48 | 1193 | 442 | 379 | 550 | 993 | 553 | 988 | 88 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 2 | 3 | 8 | 8 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | 2,3 | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 25 | 54 | 0 | 9 | 38 | 38 | 19 | 36 | 36 | 21 | 38 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 25 | 0 | 0 | 25 | 25 | 0 | 10 | 10 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 21 | 55 | 55 | 4 | 39 | 58 | 15 | 27 | 52 | 17 | 29 | 29 |
| g / C, Green / Cycle | 0.18 | 0.46 | 0.46 | 0.04 | 0.32 | 0.48 | 0.13 | 0.22 | 0.43 | 0.15 | 0.24 | 0.24 |
| (v / s)_i Volume / Saturation Flow Rate | 0.19 | 0.07 | 0.07 | 0.03 | 0.37 | 0.31 | 0.12 | 0.17 | 0.39 | 0.18 | 0.22 | 0.06 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1643 | 1603 | 3204 | 1431 | 3113 | 3204 | 2532 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 545 | 776 | 758 | 60 | 1036 | 689 | 389 | 717 | 1094 | 450 | 1115 | 348 |
| d1, Uniform Delay [s] | 49.50 | 18.73 | 18.73 | 57.35 | 40.60 | 23.32 | 52.30 | 43.66 | 31.85 | 51.33 | 43.80 | 36.62 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.29 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 46.49 | 0.41 | 0.43 | 21.79 | 79.43 | 4.54 | 15.82 | 1.76 | 7.95 | 107.20 | 2.58 | 0.38 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.09 | 0.15 | 0.15 | 0.81 | 1.15 | 0.64 | 0.97 | 0.77 | 0.91 | 1.23 | 0.89 | 0.25 |
| d, Delay for Lane Group [s/veh] | 95.99 | 19.14 | 19.15 | 79.14 | 120.03 | 27.86 | 68.12 | 45.42 | 39.80 | 158.52 | 46.39 | 36.99 |
| Lane Group LOS | F | B | B | E | F | C | E | D | D | F | D | D |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 11.35 | 1.88 | 1.84 | 1.76 | 25.80 | 9.49 | 6.33 | 7.52 | 13.60 | 13.20 | 9.26 | 2.05 |
| 50th-Percentile Queue Length [ft/ln] | 283.65 | 47.12 | 46.07 | 44.02 | 644.92 | 237.34 | 158.26 | 187.91 | 339.96 | 330.04 | 231.61 | 51.16 |
| 95th-Percentile Queue Length [veh/ln] | 17.56 | 3.39 | 3.32 | 3.17 | 37.26 | 14.55 | 10.46 | 12.01 | 19.65 | 20.89 | 14.26 | 3.68 |
| 95th-Percentile Queue Length [ft/ln] | 438.91 | 84.81 | 82.93 | 79.24 | 931.56 | 363.67 | 261.41 | 300.32 | 491.15 | 522.27 | 356.40 | 92.08 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 95.99 | 19.15 | 19.15 | 79.14 | 120.03 | 27.86 | 68.12 | 45.42 | 39.80 | 158.52 | 46.39 | 36.99 |
| Movement LOS | F | B | B | E | F | C | E | D | D | F | D | D |
| d_A, Approach Delay [s/veh] | 74.29 | | | 94.66 | | | 46.99 | | | 83.95 | | |
| Approach LOS | E | | | F | | | D | | | F | | |
| d_I, Intersection Delay [s/veh] | 73.89 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.997 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 49.51 | 49.51 | 49.51 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.108 | 3.575 | 3.268 |
| Crosswalk LOS | F | C | D | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 833 | 567 | 533 | 567 |
| d_b, Bicycle Delay [s] | 20.42 | 30.82 | 32.27 | 30.82 |
| l_b,int, Bicycle LOS Score for Intersection | 2.240 | 2.948 | 3.145 | 2.456 |
| Bicycle LOS | B | C | C | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 4: Golden Valley/SB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 31.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.701 |

**Intersection Setup**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 100.00 | 100.00 | 270.00 | 200.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 45.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 30 | 228 | 401 | 0 | 502 | 267 | 212 | 980 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 20 | 0 | 8 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 31 | 237 | 424 | 0 | 529 | 298 | 221 | 1028 | 0 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 0.9160 | 0.9160 | 0.9160 | 1.0000 | 0.9160 | 0.9160 | 0.9160 | 0.9160 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 8 | 65 | 116 | 0 | 144 | 81 | 60 | 281 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 34 | 259 | 463 | 0 | 578 | 325 | 241 | 1122 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 0.0 | 0.0 | 4.7 | 0.0 | 3.2 | 4.7 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 55 | 0 | 0 | 26 | 0 | 19 | 45 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 7 | 0 | 0 | 14 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 0.0 | 0.0 | 3.7 | 0.0 | 2.2 | 3.7 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | | 4.60 | 4.60 | 4.60 | 5.70 | 5.70 | 4.20 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.60 | 2.60 | 2.60 | 3.70 | 3.70 | 2.20 | 3.70 |
| g_i, Effective Green Time [s] | | 43 | 43 | 43 | 25 | 25 | 17 | 47 |
| g / C, Green / Cycle | | 0.43 | 0.43 | 0.43 | 0.25 | 0.25 | 0.17 | 0.47 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.02 | 0.15 | 0.32 | 0.18 | 0.23 | 0.15 | 0.35 |
| s, saturation flow rate [veh/h] | | 1603 | 1683 | 1431 | 3204 | 1431 | 1603 | 3204 |
| c, Capacity [veh/h] | | 689 | 723 | 615 | 813 | 363 | 275 | 1497 |
| d1, Uniform Delay [s] | | 16.61 | 19.22 | 24.04 | 33.97 | 36.03 | 40.42 | 21.85 |
| k, delay calibration | | 0.50 | 0.50 | 0.50 | 0.11 | 0.24 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.14 | 1.38 | 8.30 | 1.16 | 15.55 | 8.76 | 0.77 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | | 0.05 | 0.36 | 0.75 | 0.71 | 0.89 | 0.88 | 0.75 |
|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | | 16.75 | 20.60 | 32.34 | 35.14 | 51.58 | 49.18 | 22.62 |
| Lane Group LOS | | B | C | C | D | D | D | C |
| Critical Lane Group | | No | No | Yes | No | Yes | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 0.45 | 4.03 | 9.81 | 6.10 | 8.69 | 6.12 | 9.67 |
| 50th-Percentile Queue Length [ft/ln] | | 11.30 | 100.80 | 245.36 | 152.61 | 217.31 | 153.12 | 241.86 |
| 95th-Percentile Queue Length [veh/ln] | | 0.81 | 7.26 | 14.95 | 10.16 | 13.53 | 10.18 | 14.78 |
| 95th-Percentile Queue Length [ft/ln] | | 20.34 | 181.44 | 373.80 | 253.91 | 338.19 | 254.59 | 369.38 |

**Movement, Approach, & Intersection Results**

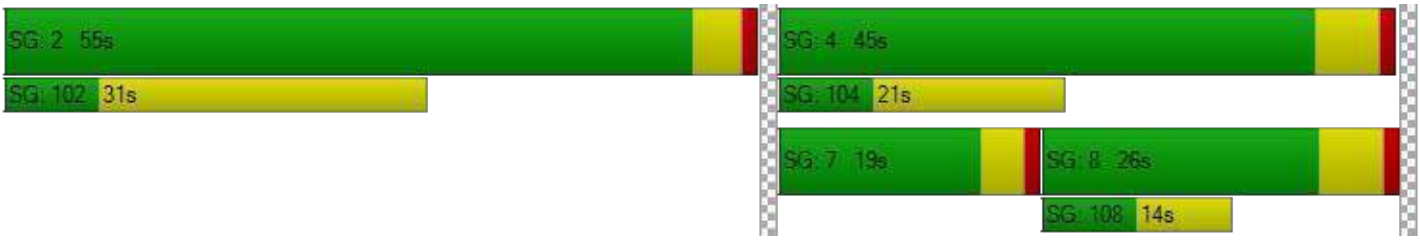
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 16.75 | 20.60 | 32.34 | 0.00 | 35.14 | 51.58 | 49.18 | 22.62 | 0.00 |
| Movement LOS | | | | B | C | C | | D | D | D | C | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 27.62 | | | 41.05 | | | 27.32 | | |
| Approach LOS | A | | | C | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 31.50 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.701 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.122 | 2.412 | 3.176 | 0.000 |
| Crosswalk LOS | B | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 1008 | 406 | 786 |
| d_b, Bicycle Delay [s] | 50.01 | 12.31 | 31.77 | 18.43 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 2.807 | 2.305 | 2.684 |
| Bicycle LOS | D | C | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 5: Golden Valley/NB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 22.3 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.608 |

**Intersection Setup**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 185.00 | 100.00 | 100.00 | 100.00 | 250.00 | 100.00 | 100.00 | 100.00 | 100.00 | 360.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 30.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | Yes | | |

**Volumes**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 157 | 1 | 180 | 0 | 0 | 0 | 208 | 318 | 0 | 0 | 1030 | 71 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 8 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 171 | 1 | 187 | 0 | 0 | 0 | 223 | 331 | 0 | 0 | 1072 | 74 |
| Peak Hour Factor | 0.8840 | 0.8840 | 0.8840 | 1.0000 | 1.0000 | 1.0000 | 0.8840 | 0.8840 | 1.0000 | 1.0000 | 0.8840 | 0.8840 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 48 | 0 | 53 | 0 | 0 | 0 | 63 | 94 | 0 | 0 | 303 | 21 |
| Total Analysis Volume [veh/h] | 193 | 1 | 212 | 0 | 0 | 0 | 252 | 374 | 0 | 0 | 1213 | 84 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 8 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 0 | 0 | 0 | 5 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.6 | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 4.7 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 45 | 0 | 0 | 0 | 0 | 15 | 55 | 0 | 0 | 40 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.6 | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 3.7 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 4.60 | 4.60 | | 4.60 | 5.70 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 2.60 | 2.60 | | 2.60 | 3.70 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 17 | 17 | 17 | | 10 | 72 | 58 | 58 |
| g / C, Green / Cycle | 0.17 | 0.17 | 0.17 | | 0.10 | 0.72 | 0.58 | 0.58 |
| (v / s)_i Volume / Saturation Flow Rate | 0.06 | 0.06 | 0.15 | | 0.08 | 0.12 | 0.38 | 0.06 |
| s, saturation flow rate [veh/h] | 1603 | 1604 | 1431 | | 3113 | 3204 | 3204 | 1431 |
| c, Capacity [veh/h] | 278 | 278 | 248 | | 312 | 2318 | 1850 | 826 |
| d1, Uniform Delay [s] | 36.35 | 36.35 | 40.09 | | 44.07 | 4.33 | 14.38 | 9.49 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.75 | 0.74 | 8.11 | | 4.99 | 0.15 | 1.83 | 0.25 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.35 | 0.35 | 0.85 | | 0.81 | 0.16 | 0.66 | 0.10 |
| d, Delay for Lane Group [s/veh] | 37.09 | 37.09 | 48.20 | | 49.06 | 4.48 | 16.21 | 9.74 |
| Lane Group LOS | D | D | D | | D | A | B | A |
| Critical Lane Group | No | No | Yes | | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 2.06 | 2.06 | 5.39 | | 3.12 | 0.87 | 8.22 | 0.77 |
| 50th-Percentile Queue Length [ft/ln] | 51.49 | 51.51 | 134.66 | | 78.11 | 21.79 | 205.51 | 19.13 |
| 95th-Percentile Queue Length [veh/ln] | 3.71 | 3.71 | 9.19 | | 5.62 | 1.57 | 12.92 | 1.38 |
| 95th-Percentile Queue Length [ft/ln] | 92.68 | 92.72 | 229.82 | | 140.60 | 39.22 | 323.07 | 34.44 |

**Movement, Approach, & Intersection Results**

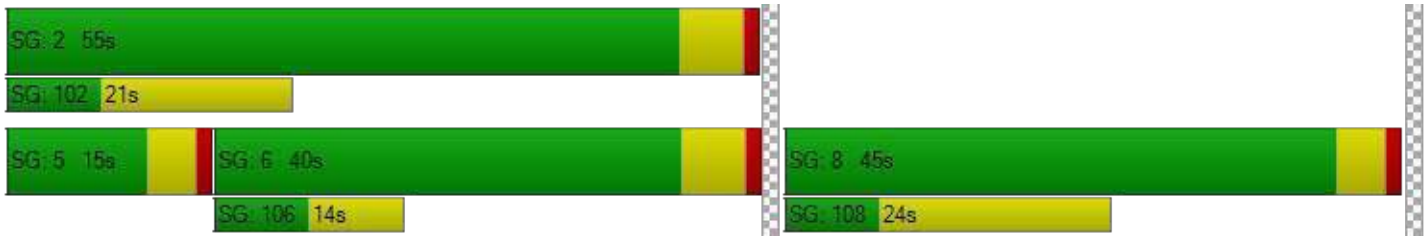
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 37.09 | 37.09 | 48.20 | 0.00 | 0.00 | 0.00 | 49.06 | 4.48 | 0.00 | 0.00 | 16.21 | 9.74 |
| Movement LOS | D | D | D | | | | D | A | | | B | A |
| d_A, Approach Delay [s/veh] | 42.89 | | | 0.00 | | | 22.43 | | | 15.79 | | |
| Approach LOS | D | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 22.30 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.608 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.284 | 1.884 | 0.000 | 2.917 |
| Crosswalk LOS | B | A | F | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 808 | 0 | 986 | 686 |
| d_b, Bicycle Delay [s] | 17.76 | 50.00 | 12.86 | 21.59 |
| l_b,int, Bicycle LOS Score for Intersection | 2.230 | 4.132 | 2.076 | 2.630 |
| Bicycle LOS | B | D | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 6: Sierra/Friendly Valley**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 25.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.575 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 125.00 | 100.00 | 100.00 | 135.00 | 100.00 | 400.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 25.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 44 | 398 | 87 | 196 | 1130 | 196 | 52 | 24 | 65 | 69 | 18 | 167 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 4 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 46 | 418 | 91 | 204 | 1190 | 204 | 54 | 25 | 68 | 72 | 19 | 174 |
| Peak Hour Factor | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 12 | 113 | 25 | 55 | 321 | 55 | 15 | 7 | 18 | 19 | 5 | 47 |
| Total Analysis Volume [veh/h] | 50 | 450 | 98 | 220 | 1282 | 220 | 58 | 27 | 73 | 78 | 20 | 188 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 22 | 23 | 0 | 45 | 46 | 0 | 0 | 32 | 0 | 0 | 32 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 14 | 0 | 0 | 17 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 5.70 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 3.70 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 4 | 42 | 42 | 16 | 54 | 54 | 28 | 28 | 28 | 28 |
| g / C, Green / Cycle | 0.04 | 0.42 | 0.42 | 0.16 | 0.54 | 0.54 | 0.28 | 0.28 | 0.28 | 0.28 |
| (v / s)_i Volume / Saturation Flow Rate | 0.03 | 0.17 | 0.17 | 0.14 | 0.40 | 0.15 | 0.14 | 0.05 | 0.07 | 0.14 |
| s, saturation flow rate [veh/h] | 1603 | 1683 | 1580 | 1603 | 3204 | 1431 | 627 | 1431 | 1165 | 1451 |
| c, Capacity [veh/h] | 62 | 707 | 664 | 254 | 1730 | 772 | 235 | 398 | 131 | 404 |
| d1, Uniform Delay [s] | 47.68 | 20.18 | 20.22 | 41.04 | 17.64 | 12.51 | 36.81 | 27.45 | 48.08 | 30.40 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 20.68 | 1.67 | 1.81 | 8.65 | 2.90 | 0.93 | 0.94 | 0.22 | 4.26 | 1.02 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | 0.80 | 0.40 | 0.40 | 0.87 | 0.74 | 0.28 | 0.36 | 0.18 | 0.59 | 0.51 |
|---|---|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | 68.36 | 21.85 | 22.02 | 49.69 | 20.55 | 13.43 | 37.74 | 27.67 | 52.34 | 31.42 |
| Lane Group LOS | E | C | C | D | C | B | D | C | D | C |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 1.60 | 4.88 | 4.65 | 5.89 | 11.54 | 2.84 | 1.97 | 1.34 | 2.10 | 4.28 |
| 50th-Percentile Queue Length [ft/ln] | 39.96 | 121.98 | 116.34 | 147.34 | 288.40 | 70.89 | 49.16 | 33.57 | 52.42 | 106.89 |
| 95th-Percentile Queue Length [veh/ln] | 2.88 | 8.50 | 8.19 | 9.87 | 17.11 | 5.10 | 3.54 | 2.42 | 3.77 | 7.67 |
| 95th-Percentile Queue Length [ft/ln] | 71.93 | 212.54 | 204.79 | 246.87 | 427.65 | 127.61 | 88.49 | 60.42 | 94.36 | 191.67 |

**Movement, Approach, & Intersection Results**

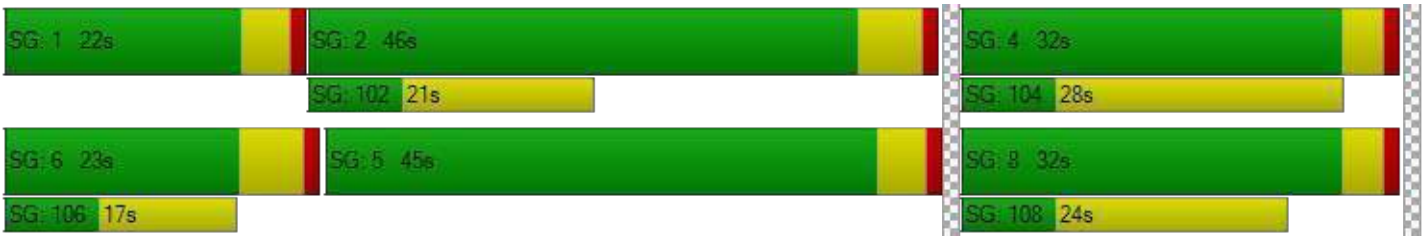
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 68.36 | 21.92 | 22.02 | 49.69 | 20.55 | 13.43 | 37.74 | 37.74 | 27.67 | 52.34 | 31.42 | 31.42 |
| Movement LOS | E | C | C | D | C | B | D | D | C | D | C | C |
| d_A, Approach Delay [s/veh] | 25.82 | | | 23.36 | | | 33.09 | | | 37.13 | | |
| Approach LOS | C | | | C | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 25.87 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.575 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.746 | 2.868 | 2.245 | 2.150 |
| Crosswalk LOS | B | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 346 | 806 | 560 | 560 |
| d_b, Bicycle Delay [s] | 34.20 | 17.82 | 25.92 | 25.92 |
| l_b,int, Bicycle LOS Score for Intersection | 2.053 | 2.980 | 1.820 | 2.032 |
| Bicycle LOS | B | C | A | B |

## Sequence

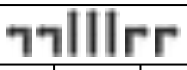
| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 7: Sierra/Via Princessa**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 40.3 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.777 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 200.00 | 100.00 | 250.00 | 360.00 | 100.00 | 630.00 | 200.00 | 100.00 | 300.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 351 | 331 | 127 | 169 | 850 | 758 | 171 | 874 | 403 | 295 | 934 | 78 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 4 | 0 | 3 | 14 | 0 | 0 | 60 | 0 | 0 | 25 | 1 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 365 | 348 | 132 | 179 | 898 | 789 | 178 | 969 | 419 | 307 | 997 | 82 |
| Peak Hour Factor | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 96 | 92 | 35 | 47 | 237 | 208 | 47 | 255 | 110 | 81 | 263 | 22 |
| Total Analysis Volume [veh/h] | 385 | 367 | 139 | 189 | 946 | 831 | 188 | 1021 | 442 | 323 | 1051 | 86 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 4 | 5 | 2 | 2 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4,5 | | | 2,3 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 20 | 42 | 0 | 19 | 41 | 41 | 18 | 41 | 41 | 18 | 41 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 28 | 0 | 0 | 28 | 28 | 0 | 28 | 28 | 0 | 28 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 15 | 36 | 36 | 9 | 30 | 49 | 13 | 41 | 62 | 13 | 41 | 41 |
| g / C, Green / Cycle | 0.13 | 0.30 | 0.30 | 0.08 | 0.25 | 0.41 | 0.11 | 0.34 | 0.51 | 0.11 | 0.34 | 0.34 |
| (v / s)_i Volume / Saturation Flow Rate | 0.12 | 0.08 | 0.10 | 0.06 | 0.21 | 0.33 | 0.06 | 0.22 | 0.31 | 0.10 | 0.23 | 0.06 |
| s, saturation flow rate [veh/h] | 3113 | 4584 | 1431 | 3113 | 4584 | 2532 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 402 | 1370 | 428 | 246 | 1141 | 1035 | 350 | 1549 | 736 | 350 | 1549 | 483 |
| d1, Uniform Delay [s] | 52.00 | 32.11 | 32.71 | 54.24 | 42.71 | 31.25 | 50.35 | 33.88 | 20.49 | 52.79 | 34.16 | 28.02 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 13.05 | 0.10 | 0.44 | 4.97 | 1.62 | 1.59 | 1.28 | 2.21 | 3.60 | 10.13 | 2.41 | 0.80 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.96 | 0.27 | 0.33 | 0.77 | 0.83 | 0.80 | 0.54 | 0.66 | 0.60 | 0.92 | 0.68 | 0.18 |
| d, Delay for Lane Group [s/veh] | 65.05 | 32.21 | 33.15 | 59.22 | 44.33 | 32.84 | 51.63 | 36.09 | 24.09 | 62.92 | 36.57 | 28.82 |
| Lane Group LOS | E | C | C | E | D | C | D | D | C | E | D | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 6.28 | 2.62 | 3.07 | 2.88 | 8.61 | 10.08 | 2.65 | 8.32 | 8.67 | 5.15 | 8.65 | 1.78 |
| 50th-Percentile Queue Length [ft/ln] | 156.99 | 65.40 | 76.63 | 72.02 | 215.33 | 251.95 | 66.14 | 208.02 | 216.73 | 128.66 | 216.35 | 44.51 |
| 95th-Percentile Queue Length [veh/ln] | 10.39 | 4.71 | 5.52 | 5.19 | 13.43 | 15.28 | 4.76 | 13.05 | 13.50 | 8.87 | 13.48 | 3.20 |
| 95th-Percentile Queue Length [ft/ln] | 259.73 | 117.72 | 137.94 | 129.64 | 335.66 | 382.10 | 119.05 | 326.28 | 337.45 | 221.67 | 336.96 | 80.12 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 65.05 | 32.21 | 33.15 | 59.22 | 44.33 | 32.84 | 51.63 | 36.09 | 24.09 | 62.92 | 36.57 | 28.82 |
| Movement LOS | E | C | C | E | D | C | D | D | C | E | D | C |
| d_A, Approach Delay [s/veh] | 46.55 | | | 40.90 | | | 34.65 | | | 41.95 | | |
| Approach LOS | D | | | D | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 40.27 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.777 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 49.54 | 49.54 | 49.54 | 49.54 |
| l_p,int, Pedestrian LOS Score for Intersection | 3.333 | 3.404 | 3.570 | 3.370 |
| Crosswalk LOS | C | C | D | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 605 | 588 | 588 | 588 |
| d_b, Bicycle Delay [s] | 29.23 | 29.93 | 29.93 | 29.93 |
| l_b,int, Bicycle LOS Score for Intersection | 2.050 | 2.641 | 2.468 | 2.363 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 1: Golden Valley/Centre Pointe**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 66.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.898 |

**Intersection Setup**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 400.00 | 100.00 | 350.00 | 700.00 | 100.00 | 100.00 | 260.00 | 100.00 | 260.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 40.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 292 | 984 | 224 | 166 | 1044 | 77 | 106 | 73 | 442 | 257 | 65 | 142 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 6 | 17 | 0 | 0 | 18 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 310 | 1041 | 233 | 173 | 1104 | 80 | 110 | 76 | 466 | 267 | 68 | 148 |
| Peak Hour Factor | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 85 | 285 | 64 | 47 | 302 | 22 | 30 | 21 | 128 | 73 | 19 | 41 |
| Total Analysis Volume [veh/h] | 340 | 1140 | 255 | 189 | 1209 | 88 | 120 | 83 | 510 | 292 | 74 | 162 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Split | Split | Overlap | Split | Split | Split |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 6 | 5 | 2 | 0 | 0 | 8 | 8 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | 6 | | | | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 10 | 5 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 3.2 | 4.7 | 4.7 | 3.2 | 4.7 | 0.0 | 0.0 | 3.9 | 3.9 | 0.0 | 3.6 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 30 | 57 | 57 | 19 | 46 | 0 | 0 | 15 | 15 | 0 | 29 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 15 | 15 | 0 | 15 | 0 | 0 | 10 | 10 | 0 | 17 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.2 | 3.7 | 3.7 | 2.2 | 3.7 | 0.0 | 0.0 | 2.9 | 2.9 | 0.0 | 2.6 | 0.0 |
| Minimum Recall | No | No | No | No | No | | | No | No | | No | |
| Maximum Recall | No | No | No | No | No | | | No | No | | No | |
| Pedestrian Recall | No | No | No | No | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.20 | 5.70 | 5.70 | 4.20 | 5.70 | 5.70 | 4.90 | 4.90 | 4.20 | 4.60 | 4.60 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 3.70 | 3.70 | 2.20 | 3.70 | 3.70 | 2.90 | 2.90 | 0.00 | 2.60 | 2.60 |
| g_i, Effective Green Time [s] | 26 | 51 | 51 | 15 | 40 | 40 | 13 | 13 | 44 | 21 | 21 |
| g / C, Green / Cycle | 0.22 | 0.43 | 0.43 | 0.12 | 0.34 | 0.34 | 0.11 | 0.11 | 0.37 | 0.18 | 0.18 |
| (v / s)_i Volume / Saturation Flow Rate | 0.21 | 0.36 | 0.18 | 0.12 | 0.38 | 0.06 | 0.07 | 0.05 | 0.36 | 0.09 | 0.16 |
| s, saturation flow rate [veh/h] | 1603 | 3204 | 1431 | 1603 | 3204 | 1431 | 1603 | 1683 | 1431 | 3113 | 1501 |
| c, Capacity [veh/h] | 345 | 1374 | 613 | 198 | 1081 | 482 | 176 | 185 | 523 | 548 | 264 |
| d1, Uniform Delay [s] | 46.94 | 30.40 | 23.84 | 52.27 | 39.78 | 28.09 | 51.38 | 50.00 | 37.50 | 44.97 | 48.35 |
| k, delay calibration | 0.34 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.50 | 0.11 | 0.17 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 36.58 | 5.93 | 2.07 | 20.55 | 66.09 | 0.83 | 4.54 | 1.69 | 33.47 | 0.81 | 14.80 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.99 | 0.83 | 0.42 | 0.95 | 1.12 | 0.18 | 0.68 | 0.45 | 0.97 | 0.53 | 0.89 |
| d, Delay for Lane Group [s/veh] | 83.52 | 36.33 | 25.91 | 72.82 | 105.87 | 28.92 | 55.91 | 51.69 | 70.97 | 45.78 | 63.15 |
| Lane Group LOS | F | D | C | E | F | C | E | D | E | D | E |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 13.16 | 14.64 | 5.09 | 6.58 | 24.86 | 1.83 | 3.63 | 2.38 | 18.96 | 3.99 | 7.91 |
| 50th-Percentile Queue Length [ft/ln] | 328.96 | 366.01 | 127.28 | 164.48 | 621.48 | 45.73 | 90.87 | 59.60 | 473.93 | 99.67 | 197.71 |
| 95th-Percentile Queue Length [veh/ln] | 19.11 | 20.92 | 8.79 | 10.79 | 35.51 | 3.29 | 6.54 | 4.29 | 26.10 | 7.18 | 12.52 |
| 95th-Percentile Queue Length [ft/ln] | 477.69 | 522.89 | 219.79 | 269.65 | 887.85 | 82.32 | 163.57 | 107.27 | 652.44 | 179.40 | 313.01 |

**Movement, Approach, & Intersection Results**

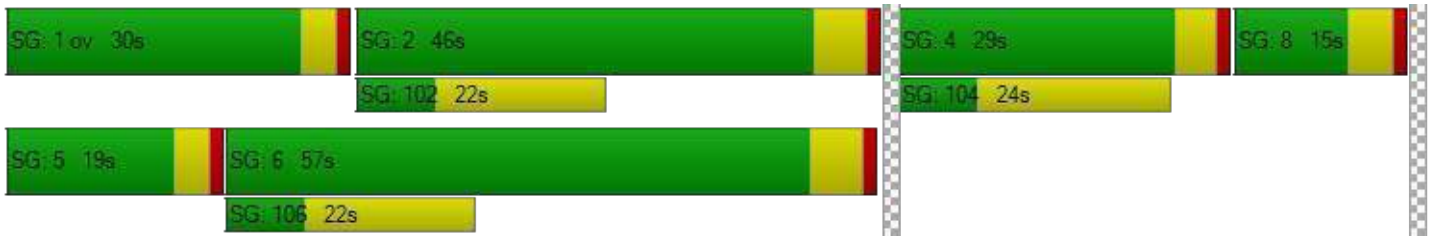
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 83.52 | 36.33 | 25.91 | 72.82 | 105.87 | 28.92 | 55.91 | 51.69 | 70.97 | 45.78 | 63.15 | 63.15 |
| Movement LOS | F | D | C | E | F | C | E | D | E | D | E | E |
| d_A, Approach Delay [s/veh] | 44.05 | | | 97.11 | | | 66.19 | | | 53.54 | | |
| Approach LOS | D | | | F | | | E | | | D | | |
| d_I, Intersection Delay [s/veh] | 66.38 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.898 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 49.51 | 49.51 | 49.51 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.254 | 2.540 | 2.445 |
| Crosswalk LOS | F | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 855 | 672 | 168 | 407 |
| d_b, Bicycle Delay [s] | 19.67 | 26.48 | 50.33 | 38.09 |
| l_b,int, Bicycle LOS Score for Intersection | 2.991 | 2.786 | 2.736 | 2.431 |
| Bicycle LOS | C | C | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 2: Golden Valley/Robert C Lee**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 10.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.641 |

**Intersection Setup**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | | |
|---|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | | |
| Lane Configuration | | | | | | | |
| Turning Movement | Left | Right | Left | Thru | U-turn | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 170.00 | 100.00 | 450.00 | 100.00 | 100.00 | 100.00 | 275.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 50.00 | | 50.00 | | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | | |
| Curb Present | No | | No | | No | | |
| Crosswalk | Yes | | Yes | | No | | |

**Volumes**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | | |
|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 134 | 89 | 61 | 1705 | 0 | 1403 | 122 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 24 | 0 | 23 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 139 | 93 | 63 | 1798 | 0 | 1483 | 127 |
| Peak Hour Factor | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 36 | 24 | 16 | 460 | 0 | 379 | 32 |
| Total Analysis Volume [veh/h] | 142 | 95 | 64 | 1840 | 0 | 1518 | 130 |
| Presence of On-Street Parking | No | No | No | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Protected | Permissive | Protected | Permissive | Overlap |
|---|---|---|---|---|---|---|---|
| Signal Group | 7 | 0 | 5 | 2 | 1 | 6 | 6 |
| Auxiliary Signal Groups | | | | | | | 6,7 |
| Lead / Lag | Lead | - | Lead | - | Lead | - | - |
| Minimum Green [s] | 5 | 0 | 5 | 10 | 5 | 10 | 10 |
| Maximum Green [s] | 30 | 0 | 30 | 30 | 30 | 30 | 30 |
| Amber [s] | 3.2 | 0.0 | 3.2 | 4.7 | 3.2 | 4.7 | 4.7 |
| All red [s] | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Split [s] | 32 | 0 | 10 | 42 | 26 | 58 | 58 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 7 | 0 | 0 | 5 | 0 | 7 | 7 |
| Pedestrian Clearance [s] | 20 | 0 | 0 | 10 | 0 | 17 | 17 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 2.2 | 0.0 | 2.2 | 3.7 | 2.2 | 3.7 | 3.7 |
| Minimum Recall | No | | No | No | No | No | No |
| Maximum Recall | No | | No | No | No | No | No |
| Pedestrian Recall | No | | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | L | C | R |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.20 | 4.20 | 4.20 | 5.70 | 4.20 | 5.70 | 4.20 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 2.20 | 2.20 | 3.70 | 2.20 | 3.70 | 0.00 |
| g_i, Effective Green Time [s] | 9 | 9 | 4 | 76 | 0 | 72 | 87 |
| g / C, Green / Cycle | 0.09 | 0.09 | 0.04 | 0.76 | 0.00 | 0.72 | 0.87 |
| (v / s)_i Volume / Saturation Flow Rate | 0.05 | 0.07 | 0.02 | 0.57 | 0.00 | 0.33 | 0.09 |
| s, saturation flow rate [veh/h] | 3113 | 1431 | 3113 | 3204 | 1603 | 4584 | 1431 |
| c, Capacity [veh/h] | 293 | 135 | 133 | 2448 | 2 | 3312 | 1249 |
| d1, Uniform Delay [s] | 43.01 | 43.97 | 46.80 | 6.55 | 0.00 | 5.76 | 0.88 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.25 | 6.62 | 2.71 | 2.18 | 0.00 | 0.46 | 0.17 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.49 | 0.71 | 0.48 | 0.75 | 0.00 | 0.46 | 0.10 |
| d, Delay for Lane Group [s/veh] | 44.25 | 50.59 | 49.51 | 8.74 | 0.00 | 6.22 | 1.05 |
| Lane Group LOS | D | D | D | A | A | A | A |
| Critical Lane Group | No | Yes | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh/ln] | 1.69 | 2.49 | 0.80 | 6.67 | 0.00 | 3.09 | 0.06 |
| 50th-Percentile Queue Length [ft/ln] | 42.30 | 62.32 | 19.89 | 166.83 | 0.00 | 77.22 | 1.45 |
| 95th-Percentile Queue Length [veh/ln] | 3.05 | 4.49 | 1.43 | 10.91 | 0.00 | 5.56 | 0.10 |
| 95th-Percentile Queue Length [ft/ln] | 76.15 | 112.17 | 35.79 | 272.74 | 0.00 | 138.99 | 2.61 |

**Movement, Approach, & Intersection Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 44.25 | 50.59 | 49.51 | 8.74 | 0.00 | 6.22 | 1.05 |
| Movement LOS | D | D | D | A | A | A | A |
| d_A, Approach Delay [s/veh] | 46.79 | | 10.11 | | 5.81 | | |
| Approach LOS | D | | B | | A | | |
| d_I, Intersection Delay [s/veh] | 10.53 | | | | | | |
| Intersection LOS | B | | | | | | |
| Intersection V/C | 0.641 | | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 |
| I_p,int, Pedestrian LOS Score for Intersection | 2.403 | 3.415 | 0.000 |
| Crosswalk LOS | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 556 | 726 | 1046 |
| d_b, Bicycle Delay [s] | 26.07 | 20.29 | 11.38 |
| I_b,int, Bicycle LOS Score for Intersection | 1.560 | 3.130 | 2.466 |
| Bicycle LOS | A | C | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 3: Golden Valley/Sierra Hwy**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 49.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.750 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 2 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 430.00 | 100.00 | 100.00 | 415.00 | 100.00 | 500.00 | 285.00 | 100.00 | 325.00 | 285.00 | 100.00 | 295.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 602 | 1089 | 134 | 67 | 291 | 265 | 407 | 732 | 640 | 54 | 678 | 81 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 4 | 0 | 0 | 7 | 0 | 0 | 0 | 20 | 4 | 0 | 19 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 630 | 1133 | 139 | 77 | 303 | 276 | 423 | 782 | 670 | 56 | 724 | 96 |
| Peak Hour Factor | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 161 | 289 | 35 | 20 | 77 | 70 | 108 | 200 | 171 | 14 | 185 | 25 |
| Total Analysis Volume [veh/h] | 644 | 1157 | 142 | 79 | 309 | 282 | 432 | 799 | 684 | 57 | 740 | 98 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 2 | 3 | 8 | 8 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | 2,3 | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 26 | 52 | 0 | 10 | 36 | 36 | 20 | 48 | 48 | 10 | 38 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 25 | 0 | 0 | 25 | 25 | 0 | 10 | 10 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 22 | 59 | 59 | 6 | 43 | 63 | 16 | 35 | 61 | 4 | 23 | 23 |
| g / C, Green / Cycle | 0.18 | 0.49 | 0.49 | 0.05 | 0.36 | 0.53 | 0.13 | 0.29 | 0.51 | 0.04 | 0.19 | 0.19 |
| (v / s)_i Volume / Saturation Flow Rate | 0.21 | 0.39 | 0.40 | 0.05 | 0.10 | 0.20 | 0.14 | 0.25 | 0.27 | 0.02 | 0.16 | 0.07 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1620 | 1603 | 3204 | 1431 | 3113 | 3204 | 2532 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 571 | 828 | 797 | 81 | 1150 | 753 | 416 | 927 | 1281 | 109 | 873 | 273 |
| d1, Uniform Delay [s] | 49.02 | 25.25 | 25.88 | 56.90 | 27.30 | 16.80 | 52.00 | 40.40 | 20.07 | 56.95 | 46.91 | 42.23 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 62.87 | 7.37 | 8.98 | 39.66 | 0.57 | 1.43 | 31.09 | 2.52 | 0.36 | 3.85 | 2.39 | 0.80 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.13 | 0.78 | 0.81 | 0.97 | 0.27 | 0.37 | 1.04 | 0.86 | 0.53 | 0.52 | 0.85 | 0.36 |
| d, Delay for Lane Group [s/veh] | 111.88 | 32.63 | 34.86 | 96.56 | 27.87 | 18.22 | 83.09 | 42.92 | 20.43 | 60.80 | 49.30 | 43.03 |
| Lane Group LOS | F | C | C | F | C | B | F | D | C | E | D | D |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 13.18 | 15.59 | 16.22 | 3.21 | 3.10 | 4.51 | 7.83 | 10.93 | 6.01 | 0.88 | 7.02 | 2.50 |
| 50th-Percentile Queue Length [ft/ln] | 329.59 | 389.67 | 405.48 | 80.30 | 77.39 | 112.86 | 195.66 | 273.19 | 150.35 | 22.05 | 175.44 | 62.53 |
| 95th-Percentile Queue Length [veh/ln] | 20.28 | 22.06 | 22.82 | 5.78 | 5.57 | 8.00 | 12.61 | 16.35 | 10.04 | 1.59 | 11.36 | 4.50 |
| 95th-Percentile Queue Length [ft/ln] | 507.10 | 551.54 | 570.60 | 144.54 | 139.30 | 199.98 | 315.33 | 408.72 | 250.90 | 39.69 | 284.05 | 112.56 |

**Movement, Approach, & Intersection Results**

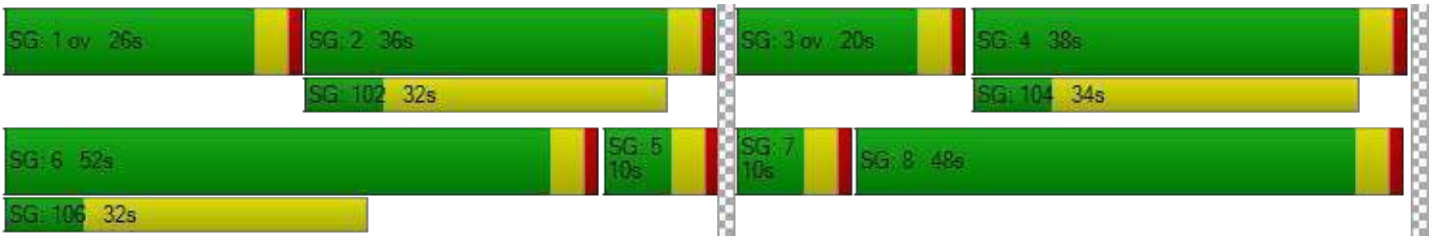
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 111.88 | 33.60 | 34.86 | 96.56 | 27.87 | 18.22 | 83.09 | 42.92 | 20.43 | 60.80 | 49.30 | 43.03 |
| Movement LOS | F | C | C | F | C | B | F | D | C | E | D | D |
| d_A, Approach Delay [s/veh] | 59.64 | | | 31.91 | | | 43.95 | | | 49.34 | | |
| Approach LOS | E | | | C | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 48.97 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.750 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 49.52 | 49.52 | 49.52 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.105 | 3.510 | 3.209 |
| Crosswalk LOS | F | C | D | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 800 | 533 | 733 | 567 |
| d_b, Bicycle Delay [s] | 21.61 | 32.28 | 24.08 | 30.83 |
| l_b,int, Bicycle LOS Score for Intersection | 3.163 | 2.112 | 3.139 | 2.052 |
| Bicycle LOS | C | B | C | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 4: Golden Valley/SB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 31.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.688 |

**Intersection Setup**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 100.00 | 100.00 | 270.00 | 200.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 45.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 83 | 3 | 346 | 0 | 808 | 111 | 207 | 627 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 12 | 15 | 0 | 20 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 86 | 3 | 371 | 0 | 853 | 130 | 215 | 672 | 0 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 0.9580 | 0.9580 | 0.9580 | 1.0000 | 0.9580 | 0.9580 | 0.9580 | 0.9580 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 22 | 1 | 97 | 0 | 223 | 34 | 56 | 175 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 90 | 3 | 387 | 0 | 890 | 136 | 224 | 701 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 0.0 | 0.0 | 4.7 | 0.0 | 3.2 | 4.7 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 45 | 0 | 0 | 32 | 0 | 23 | 55 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 7 | 0 | 0 | 14 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 0.0 | 0.0 | 3.7 | 0.0 | 2.2 | 3.7 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | | 4.60 | 4.60 | 4.60 | 5.70 | 5.70 | 4.20 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.60 | 2.60 | 2.60 | 3.70 | 3.70 | 2.20 | 3.70 |
| g_i, Effective Green Time [s] | | 40 | 40 | 40 | 29 | 29 | 16 | 50 |
| g / C, Green / Cycle | | 0.40 | 0.40 | 0.40 | 0.29 | 0.29 | 0.16 | 0.50 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.03 | 0.03 | 0.27 | 0.28 | 0.10 | 0.14 | 0.22 |
| s, saturation flow rate [veh/h] | | 1603 | 1608 | 1431 | 3204 | 1431 | 1603 | 3204 |
| c, Capacity [veh/h] | | 640 | 642 | 571 | 945 | 422 | 258 | 1595 |
| d1, Uniform Delay [s] | | 18.58 | 18.58 | 24.74 | 34.42 | 27.47 | 40.96 | 16.15 |
| k, delay calibration | | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.22 | 0.22 | 6.34 | 5.48 | 0.44 | 8.76 | 0.19 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | | 0.07 | 0.07 | 0.68 | 0.94 | 0.32 | 0.87 | 0.44 |
| d, Delay for Lane Group [s/veh] | | 18.80 | 18.80 | 31.08 | 39.90 | 27.91 | 49.72 | 16.35 |
| Lane Group LOS | | B | B | C | D | C | D | B |
| Critical Lane Group | | No | No | Yes | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 0.67 | 0.67 | 7.96 | 10.45 | 2.43 | 5.71 | 4.61 |
| 50th-Percentile Queue Length [ft/ln] | | 16.65 | 16.70 | 199.07 | 261.30 | 60.63 | 142.82 | 115.16 |
| 95th-Percentile Queue Length [veh/ln] | | 1.20 | 1.20 | 12.59 | 15.75 | 4.37 | 9.63 | 8.13 |
| 95th-Percentile Queue Length [ft/ln] | | 29.97 | 30.06 | 314.77 | 393.86 | 109.14 | 240.82 | 203.15 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 18.80 | 18.80 | 31.08 | 0.00 | 39.90 | 27.91 | 49.72 | 16.35 | 0.00 |
| Movement LOS | | | | B | B | C | | D | C | D | B | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 28.70 | | | 38.31 | | | 24.43 | | |
| Approach LOS | A | | | C | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 31.13 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.688 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 1.897 | 2.311 | 3.090 | 0.000 |
| Crosswalk LOS | A | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 808 | 526 | 986 |
| d_b, Bicycle Delay [s] | 50.01 | 17.77 | 27.17 | 12.86 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 2.352 | 2.406 | 2.323 |
| Bicycle LOS | D | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 5: Golden Valley/NB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 28.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.629 |

**Intersection Setup**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 185.00 | 100.00 | 100.00 | 100.00 | 250.00 | 100.00 | 100.00 | 100.00 | 100.00 | 360.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 30.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | Yes | | |

**Volumes**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 248 | 5 | 395 | 0 | 0 | 0 | 312 | 564 | 0 | 0 | 580 | 205 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 20 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 278 | 5 | 411 | 0 | 0 | 0 | 337 | 587 | 0 | 0 | 603 | 213 |
| Peak Hour Factor | 0.9270 | 0.9270 | 0.9270 | 1.0000 | 1.0000 | 1.0000 | 0.9270 | 0.9270 | 1.0000 | 1.0000 | 0.9270 | 0.9270 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 75 | 1 | 111 | 0 | 0 | 0 | 91 | 158 | 0 | 0 | 163 | 57 |
| Total Analysis Volume [veh/h] | 300 | 5 | 443 | 0 | 0 | 0 | 364 | 633 | 0 | 0 | 650 | 230 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 8 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 0 | 0 | 0 | 5 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.6 | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 4.7 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 62 | 0 | 0 | 0 | 0 | 18 | 38 | 0 | 0 | 20 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.6 | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 3.7 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 4.60 | 4.60 | | 4.60 | 5.70 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 2.60 | 2.60 | | 2.60 | 3.70 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 34 | 34 | 34 | | 13 | 56 | 38 | 38 |
| g / C, Green / Cycle | 0.34 | 0.34 | 0.34 | | 0.13 | 0.56 | 0.38 | 0.38 |
| (v / s)_i Volume / Saturation Flow Rate | 0.10 | 0.10 | 0.31 | | 0.12 | 0.20 | 0.20 | 0.16 |
| s, saturation flow rate [veh/h] | 1603 | 1605 | 1431 | | 3113 | 3204 | 3204 | 1431 |
| c, Capacity [veh/h] | 540 | 541 | 482 | | 419 | 1794 | 1215 | 543 |
| d1, Uniform Delay [s] | 24.28 | 24.28 | 31.82 | | 42.42 | 12.08 | 24.17 | 22.96 |
| k, delay calibration | 0.11 | 0.11 | 0.12 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.28 | 0.28 | 8.27 | | 5.64 | 0.55 | 1.69 | 2.42 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.28 | 0.28 | 0.92 | | 0.87 | 0.35 | 0.53 | 0.42 |
| d, Delay for Lane Group [s/veh] | 24.56 | 24.56 | 40.10 | | 48.06 | 12.62 | 25.86 | 25.38 |
| Lane Group LOS | C | C | D | | D | B | C | C |
| Critical Lane Group | No | No | Yes | | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 2.54 | 2.55 | 10.64 | | 4.50 | 3.46 | 5.77 | 4.05 |
| 50th-Percentile Queue Length [ft/ln] | 63.58 | 63.65 | 265.91 | | 112.58 | 86.58 | 144.15 | 101.22 |
| 95th-Percentile Queue Length [veh/ln] | 4.58 | 4.58 | 15.99 | | 7.98 | 6.23 | 9.70 | 7.29 |
| 95th-Percentile Queue Length [ft/ln] | 114.44 | 114.56 | 399.63 | | 199.59 | 155.85 | 242.60 | 182.20 |

**Movement, Approach, & Intersection Results**

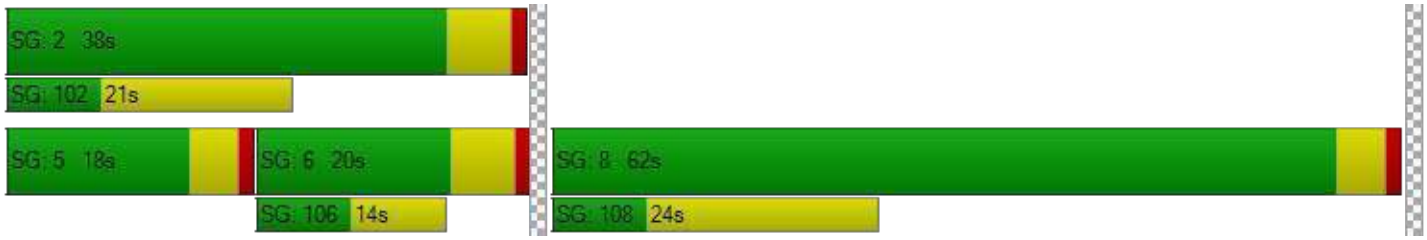
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 24.56 | 24.56 | 40.10 | 0.00 | 0.00 | 0.00 | 48.06 | 12.62 | 0.00 | 0.00 | 25.86 | 25.38 |
| Movement LOS | C | C | D | | | | D | B | | | C | C |
| d_A, Approach Delay [s/veh] | 33.76 | | | 0.00 | | | 25.56 | | | 25.73 | | |
| Approach LOS | C | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 27.95 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.629 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.409 | 2.012 | 0.000 | 2.940 |
| Crosswalk LOS | B | B | F | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1148 | 0 | 646 | 286 |
| d_b, Bicycle Delay [s] | 9.08 | 50.00 | 22.92 | 36.73 |
| l_b,int, Bicycle LOS Score for Intersection | 2.794 | 4.132 | 2.382 | 2.286 |
| Bicycle LOS | C | D | B | B |

## Sequence

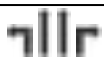
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 6: Sierra/Friendly Valley**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 22.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.585 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 125.00 | 100.00 | 100.00 | 135.00 | 100.00 | 400.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 25.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 98 | 1280 | 50 | 76 | 479 | 42 | 61 | 10 | 54 | 42 | 20 | 68 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 12 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 102 | 1344 | 52 | 79 | 505 | 44 | 63 | 10 | 56 | 44 | 21 | 71 |
| Peak Hour Factor | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 27 | 351 | 14 | 21 | 132 | 12 | 16 | 3 | 15 | 12 | 5 | 19 |
| Total Analysis Volume [veh/h] | 107 | 1406 | 54 | 83 | 528 | 46 | 66 | 10 | 59 | 46 | 22 | 74 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 41 | 48 | 0 | 20 | 27 | 0 | 0 | 32 | 0 | 0 | 32 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 14 | 0 | 0 | 17 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 5.70 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 3.70 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 8 | 59 | 59 | 6 | 58 | 58 | 20 | 20 | 20 | 20 |
| g / C, Green / Cycle | 0.08 | 0.59 | 0.59 | 0.06 | 0.58 | 0.58 | 0.20 | 0.20 | 0.20 | 0.20 |
| (v / s)_i Volume / Saturation Flow Rate | 0.07 | 0.44 | 0.44 | 0.05 | 0.16 | 0.03 | 0.10 | 0.04 | 0.04 | 0.06 |
| s, saturation flow rate [veh/h] | 1603 | 1683 | 1661 | 1603 | 3204 | 1431 | 795 | 1431 | 1198 | 1481 |
| c, Capacity [veh/h] | 133 | 999 | 986 | 104 | 1843 | 823 | 225 | 284 | 138 | 294 |
| d1, Uniform Delay [s] | 45.03 | 14.62 | 14.67 | 46.13 | 10.80 | 9.32 | 39.94 | 33.50 | 46.39 | 34.34 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 10.55 | 4.77 | 4.91 | 13.13 | 0.39 | 0.13 | 0.88 | 0.36 | 1.39 | 0.64 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.80 | 0.73 | 0.74 | 0.80 | 0.29 | 0.06 | 0.34 | 0.21 | 0.33 | 0.33 |
| d, Delay for Lane Group [s/veh] | 55.58 | 19.39 | 19.59 | 59.25 | 11.19 | 9.45 | 40.81 | 33.86 | 47.79 | 34.98 |
| Lane Group LOS | E | B | B | E | B | A | D | C | D | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh/ln] | 3.01 | 12.53 | 12.50 | 2.42 | 2.99 | 0.46 | 1.78 | 1.22 | 1.17 | 2.04 |
| 50th-Percentile Queue Length [ft/ln] | 75.15 | 313.25 | 312.56 | 60.49 | 74.77 | 11.61 | 44.52 | 30.51 | 29.26 | 51.03 |
| 95th-Percentile Queue Length [veh/ln] | 5.41 | 18.34 | 18.30 | 4.36 | 5.38 | 0.84 | 3.21 | 2.20 | 2.11 | 3.67 |
| 95th-Percentile Queue Length [ft/ln] | 135.27 | 458.38 | 457.53 | 108.88 | 134.59 | 20.89 | 80.13 | 54.93 | 52.68 | 91.85 |

**Movement, Approach, & Intersection Results**

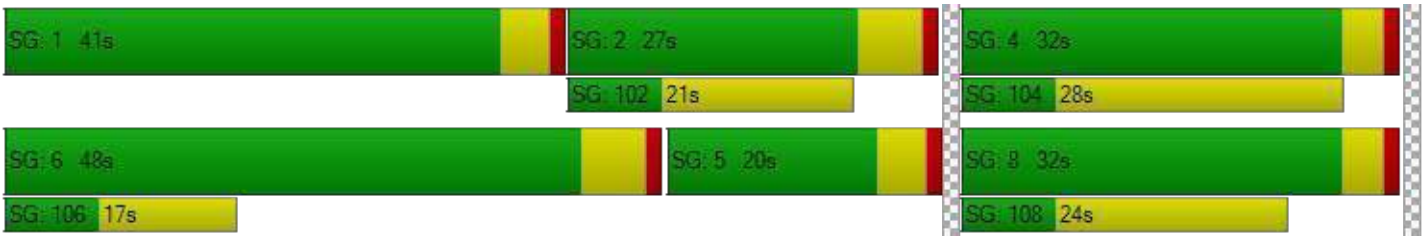
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 55.58 | 19.48 | 19.59 | 59.25 | 11.19 | 9.45 | 40.81 | 40.81 | 33.86 | 47.79 | 34.98 | 34.98 |
| Movement LOS | E | B | B | E | B | A | D | D | C | D | C | C |
| d_A, Approach Delay [s/veh] | 21.95 | | | 17.14 | | | 37.77 | | | 39.13 | | |
| Approach LOS | C | | | B | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 22.52 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.585 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.728 | 2.850 | 2.211 | 2.039 |
| Crosswalk LOS | B | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 846 | 426 | 560 | 560 |
| d_b, Bicycle Delay [s] | 16.65 | 30.97 | 25.92 | 25.92 |
| l_b,int, Bicycle LOS Score for Intersection | 2.852 | 2.102 | 1.782 | 1.794 |
| Bicycle LOS | C | B | A | A |

## Sequence

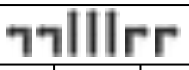
| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 7: Sierra/Via Princessa**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 43.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.679 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 200.00 | 100.00 | 250.00 | 360.00 | 100.00 | 630.00 | 200.00 | 100.00 | 300.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 440 | 930 | 214 | 217 | 364 | 762 | 226 | 872 | 167 | 190 | 769 | 208 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 12 | 0 | 2 | 7 | 0 | 0 | 44 | 0 | 0 | 69 | 3 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 458 | 980 | 223 | 228 | 386 | 793 | 235 | 951 | 174 | 198 | 869 | 219 |
| Peak Hour Factor | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 117 | 250 | 57 | 58 | 99 | 203 | 60 | 243 | 44 | 51 | 222 | 56 |
| Total Analysis Volume [veh/h] | 468 | 1001 | 228 | 233 | 394 | 810 | 240 | 971 | 178 | 202 | 888 | 224 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 4 | 5 | 2 | 2 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4,5 | | | 2,3 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 22 | 41 | 0 | 24 | 43 | 43 | 14 | 41 | 41 | 14 | 41 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 28 | 0 | 0 | 28 | 28 | 0 | 28 | 28 | 0 | 28 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 17 | 31 | 31 | 11 | 25 | 40 | 9 | 48 | 71 | 9 | 48 | 48 |
| g / C, Green / Cycle | 0.15 | 0.26 | 0.26 | 0.09 | 0.20 | 0.33 | 0.08 | 0.40 | 0.59 | 0.08 | 0.40 | 0.40 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.22 | 0.16 | 0.07 | 0.09 | 0.32 | 0.08 | 0.21 | 0.12 | 0.06 | 0.19 | 0.16 |
| s, saturation flow rate [veh/h] | 3113 | 4584 | 1431 | 3113 | 4584 | 2532 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 452 | 1173 | 366 | 292 | 937 | 838 | 246 | 1833 | 848 | 246 | 1833 | 572 |
| d1, Uniform Delay [s] | 51.32 | 42.54 | 39.55 | 53.29 | 41.58 | 39.53 | 55.19 | 27.44 | 11.38 | 54.47 | 26.82 | 25.64 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 29.28 | 1.88 | 1.74 | 4.98 | 0.30 | 8.62 | 21.63 | 1.10 | 0.56 | 6.74 | 0.92 | 2.01 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.03 | 0.85 | 0.62 | 0.80 | 0.42 | 0.97 | 0.98 | 0.53 | 0.21 | 0.82 | 0.48 | 0.39 |
| d, Delay for Lane Group [s/veh] | 80.59 | 44.41 | 41.29 | 58.26 | 41.88 | 48.15 | 76.82 | 28.54 | 11.95 | 61.21 | 27.74 | 27.66 |
| Lane Group LOS | F | D | D | E | D | D | E | C | B | E | C | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 8.38 | 9.18 | 5.88 | 3.53 | 3.29 | 12.04 | 4.24 | 6.84 | 2.12 | 3.14 | 6.10 | 4.62 |
| 50th-Percentile Queue Length [ft/ln] | 209.45 | 229.46 | 146.97 | 88.26 | 82.35 | 301.06 | 105.99 | 170.97 | 53.00 | 78.47 | 152.57 | 115.55 |
| 95th-Percentile Queue Length [veh/ln] | 13.33 | 14.15 | 9.86 | 6.35 | 5.93 | 17.73 | 7.62 | 11.13 | 3.82 | 5.65 | 10.15 | 8.15 |
| 95th-Percentile Queue Length [ft/ln] | 333.14 | 353.67 | 246.39 | 158.86 | 148.23 | 443.33 | 190.41 | 278.20 | 95.40 | 141.24 | 253.86 | 203.69 |

**Movement, Approach, & Intersection Results**

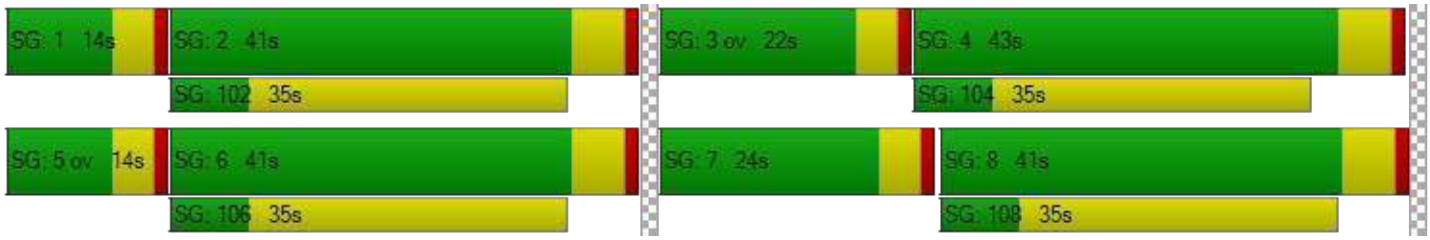
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 80.59 | 44.41 | 41.29 | 58.26 | 41.88 | 48.15 | 76.82 | 28.54 | 11.95 | 61.21 | 27.74 | 27.66 |
| Movement LOS | F | D | D | E | D | D | E | C | B | E | C | C |
| d_A, Approach Delay [s/veh] | 53.97 | | | 48.07 | | | 34.76 | | | 32.87 | | |
| Approach LOS | D | | | D | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 43.20 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.679 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 49.52 | 49.52 | 49.52 | 49.52 |
| l_p,int, Pedestrian LOS Score for Intersection | 3.309 | 3.452 | 3.505 | 3.359 |
| Crosswalk LOS | C | C | D | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 588 | 621 | 588 | 588 |
| d_b, Bicycle Delay [s] | 29.91 | 28.52 | 29.91 | 29.91 |
| l_b,int, Bicycle LOS Score for Intersection | 2.493 | 2.350 | 2.324 | 2.282 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



PROJECT OPENING YEAR CUMULAITVE PLUS PROJECT CONDITIONS

**Intersection Level Of Service Report**
**Intersection 1: Golden Valley/Centre Pointe**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 40.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.758 |

**Intersection Setup**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 400.00 | 100.00 | 350.00 | 700.00 | 100.00 | 100.00 | 260.00 | 100.00 | 260.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 40.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 248 | 745 | 355 | 120 | 951 | 82 | 23 | 39 | 157 | 458 | 48 | 41 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 6 | 18 | 0 | 0 | 21 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 264 | 793 | 369 | 125 | 1010 | 85 | 24 | 41 | 168 | 477 | 50 | 43 |
| Peak Hour Factor | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 69 | 207 | 96 | 33 | 263 | 22 | 6 | 11 | 44 | 124 | 13 | 11 |
| Total Analysis Volume [veh/h] | 275 | 827 | 385 | 130 | 1053 | 89 | 25 | 43 | 175 | 497 | 52 | 45 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Split | Split | Overlap | Split | Split | Split |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 6 | 5 | 2 | 0 | 0 | 8 | 8 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | 6 | | | | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 10 | 5 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 3.2 | 4.7 | 4.7 | 3.2 | 4.7 | 0.0 | 0.0 | 3.9 | 3.9 | 0.0 | 3.6 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 22 | 42 | 42 | 14 | 34 | 0 | 0 | 15 | 15 | 0 | 29 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 15 | 15 | 0 | 15 | 0 | 0 | 10 | 10 | 0 | 17 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.2 | 3.7 | 3.7 | 2.2 | 3.7 | 0.0 | 0.0 | 2.9 | 2.9 | 0.0 | 2.6 | 0.0 |
| Minimum Recall | No | No | No | No | No | | | No | No | | No | |
| Maximum Recall | No | No | No | No | No | | | No | No | | No | |
| Pedestrian Recall | No | No | No | No | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.20 | 5.70 | 5.70 | 4.20 | 5.70 | 5.70 | 4.90 | 4.90 | 4.20 | 4.60 | 4.60 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 3.70 | 3.70 | 2.20 | 3.70 | 3.70 | 2.90 | 2.90 | 0.00 | 2.60 | 2.60 |
| g_i, Effective Green Time [s] | 18 | 42 | 42 | 10 | 34 | 34 | 10 | 10 | 33 | 19 | 19 |
| g / C, Green / Cycle | 0.18 | 0.42 | 0.42 | 0.10 | 0.34 | 0.34 | 0.10 | 0.10 | 0.33 | 0.19 | 0.19 |
| (v / s)_i Volume / Saturation Flow Rate | 0.17 | 0.26 | 0.27 | 0.08 | 0.33 | 0.06 | 0.02 | 0.03 | 0.12 | 0.16 | 0.06 |
| s, saturation flow rate [veh/h] | 1603 | 3204 | 1431 | 1603 | 3204 | 1431 | 1603 | 1683 | 1431 | 3113 | 1556 |
| c, Capacity [veh/h] | 286 | 1350 | 603 | 157 | 1093 | 488 | 161 | 169 | 468 | 581 | 291 |
| d1, Uniform Delay [s] | 40.82 | 22.60 | 22.95 | 44.34 | 32.39 | 23.19 | 41.18 | 41.60 | 25.81 | 39.41 | 35.32 |
| k, delay calibration | 0.13 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 19.98 | 2.08 | 5.12 | 10.50 | 19.75 | 0.82 | 0.44 | 0.79 | 0.49 | 3.73 | 0.67 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.96 | 0.61 | 0.64 | 0.83 | 0.96 | 0.18 | 0.16 | 0.25 | 0.37 | 0.86 | 0.33 |
| d, Delay for Lane Group [s/veh] | 60.81 | 24.69 | 28.07 | 54.84 | 52.14 | 24.01 | 41.62 | 42.38 | 26.30 | 43.15 | 35.99 |
| Lane Group LOS | E | C | C | D | D | C | D | D | C | D | D |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | Yes | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 7.91 | 7.23 | 7.32 | 3.47 | 14.38 | 1.49 | 0.57 | 0.99 | 3.13 | 6.07 | 2.07 |
| 50th-Percentile Queue Length [ft/ln] | 197.77 | 180.70 | 183.00 | 86.77 | 359.38 | 37.21 | 14.26 | 24.84 | 78.21 | 151.76 | 51.81 |
| 95th-Percentile Queue Length [veh/ln] | 12.52 | 11.64 | 11.76 | 6.25 | 20.59 | 2.68 | 1.03 | 1.79 | 5.63 | 10.11 | 3.73 |
| 95th-Percentile Queue Length [ft/ln] | 313.09 | 290.93 | 293.92 | 156.18 | 514.83 | 66.97 | 25.67 | 44.71 | 140.77 | 252.78 | 93.25 |

**Movement, Approach, & Intersection Results**

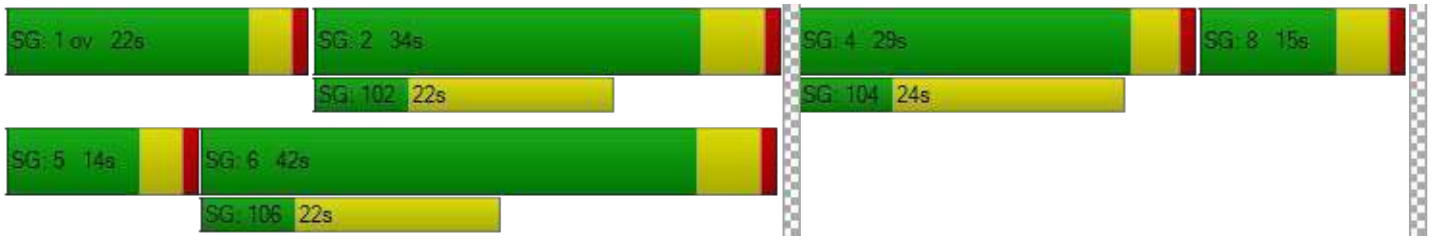
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 60.81 | 24.69 | 28.07 | 54.84 | 52.14 | 24.01 | 41.62 | 42.38 | 26.30 | 43.15 | 35.99 | 35.99 |
| Movement LOS | E | C | C | D | D | C | D | D | C | D | D | D |
| d_A, Approach Delay [s/veh] | 32.24 | | | 50.44 | | | 30.73 | | | 41.98 | | |
| Approach LOS | C | | | D | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 40.19 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.758 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 39.64 | 39.64 | 39.64 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.045 | 2.350 | 2.464 |
| Crosswalk LOS | F | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 725 | 566 | 202 | 488 |
| d_b, Bicycle Delay [s] | 20.32 | 25.74 | 40.45 | 28.61 |
| l_b,int, Bicycle LOS Score for Intersection | 2.786 | 2.609 | 1.961 | 2.540 |
| Bicycle LOS | C | B | A | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 2: Golden Valley/Robert C Lee**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 28.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.780 |

**Intersection Setup**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | | |
|---|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | | |
| Lane Configuration | | | | | | | |
| Turning Movement | Left | Right | Left | Thru | U-turn | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 170.00 | 100.00 | 450.00 | 100.00 | 150.00 | 100.00 | 275.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 50.00 | | 50.00 | | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | | |
| Curb Present | No | | No | | No | | |
| Crosswalk | Yes | | Yes | | No | | |

**Volumes**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | | |
|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 608 | 298 | 416 | 1185 | 0 | 1151 | 682 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 26 | 42 | 24 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 633 | 310 | 433 | 1259 | 42 | 1222 | 710 |
| Peak Hour Factor | 0.9030 | 0.9030 | 0.9030 | 0.9030 | 0.9030 | 0.9030 | 0.9030 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 175 | 86 | 120 | 349 | 12 | 338 | 197 |
| Total Analysis Volume [veh/h] | 701 | 343 | 480 | 1394 | 47 | 1353 | 786 |
| Presence of On-Street Parking | No | No | No | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Protected | Permissive | Protected | Permissive | Overlap |
|---|---|---|---|---|---|---|---|
| Signal Group | 7 | 0 | 5 | 2 | 1 | 6 | 6 |
| Auxiliary Signal Groups | | | | | | | 6,7 |
| Lead / Lag | Lead | - | Lead | - | Lead | - | - |
| Minimum Green [s] | 5 | 0 | 5 | 10 | 5 | 10 | 10 |
| Maximum Green [s] | 30 | 0 | 30 | 30 | 30 | 30 | 30 |
| Amber [s] | 3.2 | 0.0 | 3.2 | 4.7 | 3.2 | 4.7 | 4.7 |
| All red [s] | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Split [s] | 32 | 0 | 38 | 42 | 26 | 30 | 30 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 7 | 0 | 0 | 5 | 0 | 7 | 7 |
| Pedestrian Clearance [s] | 20 | 0 | 0 | 10 | 0 | 17 | 17 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 2.2 | 0.0 | 2.2 | 3.7 | 2.2 | 3.7 | 3.7 |
| Minimum Recall | No | | No | No | No | No | No |
| Maximum Recall | No | | No | No | No | No | No |
| Pedestrian Recall | No | | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | L | C | R |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.20 | 4.20 | 4.20 | 5.70 | 4.20 | 5.70 | 4.20 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 2.20 | 2.20 | 3.70 | 2.20 | 3.70 | 0.00 |
| g_i, Effective Green Time [s] | 28 | 28 | 18 | 54 | 4 | 40 | 73 |
| g / C, Green / Cycle | 0.28 | 0.28 | 0.18 | 0.54 | 0.04 | 0.40 | 0.73 |
| (v / s)_i Volume / Saturation Flow Rate | 0.23 | 0.24 | 0.15 | 0.44 | 0.03 | 0.30 | 0.55 |
| s, saturation flow rate [veh/h] | 3113 | 1431 | 3113 | 3204 | 1603 | 4584 | 1431 |
| c, Capacity [veh/h] | 865 | 398 | 567 | 1742 | 60 | 1829 | 1050 |
| d1, Uniform Delay [s] | 33.64 | 34.29 | 39.56 | 18.45 | 47.73 | 25.63 | 7.86 |
| k, delay calibration | 0.11 | 0.30 | 0.11 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.87 | 13.89 | 3.61 | 3.97 | 19.39 | 2.73 | 4.89 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.81 | 0.86 | 0.85 | 0.80 | 0.78 | 0.74 | 0.75 |
| d, Delay for Lane Group [s/veh] | 35.52 | 48.18 | 43.17 | 22.42 | 67.12 | 28.37 | 12.75 |
| Lane Group LOS | D | D | D | C | E | C | B |
| Critical Lane Group | No | Yes | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 7.89 | 9.18 | 5.66 | 11.91 | 1.44 | 8.72 | 7.70 |
| 50th-Percentile Queue Length [ft/ln] | 197.28 | 229.51 | 141.41 | 297.71 | 35.89 | 217.95 | 192.47 |
| 95th-Percentile Queue Length [veh/ln] | 12.50 | 14.15 | 9.56 | 17.57 | 2.58 | 13.56 | 12.25 |
| 95th-Percentile Queue Length [ft/ln] | 312.46 | 353.73 | 238.93 | 439.20 | 64.60 | 339.01 | 306.23 |

**Movement, Approach, & Intersection Results**

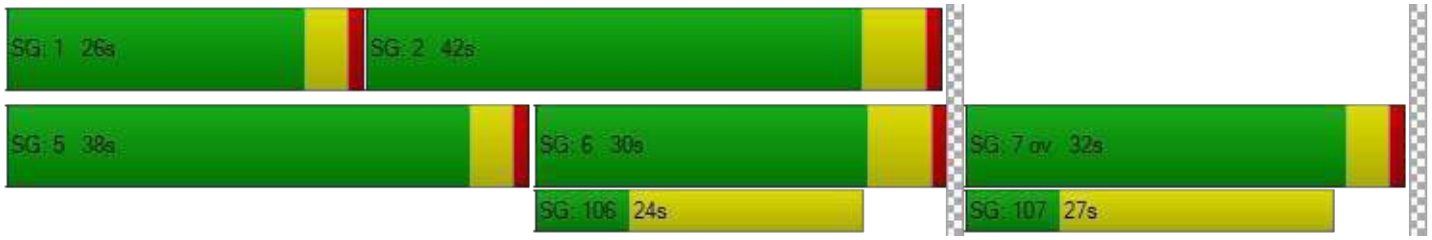
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 35.52 | 48.18 | 43.17 | 22.42 | 67.12 | 28.37 | 12.75 |
| Movement LOS | D | D | D | C | E | C | B |
| d_A, Approach Delay [s/veh] | 39.68 | | 27.73 | | 23.58 | | |
| Approach LOS | D | | C | | C | | |
| d_I, Intersection Delay [s/veh] | 28.40 | | | | | | |
| Intersection LOS | C | | | | | | |
| Intersection V/C | 0.780 | | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.830 | 3.427 | 0.000 |
| Crosswalk LOS | C | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 556 | 726 | 486 |
| d_b, Bicycle Delay [s] | 26.07 | 20.29 | 28.66 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 3.106 | 2.762 |
| Bicycle LOS | A | C | C |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 3: Golden Valley/Sierra Hwy**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 75.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.004 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 2 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 430.00 | 100.00 | 100.00 | 415.00 | 100.00 | 500.00 | 285.00 | 100.00 | 325.00 | 285.00 | 100.00 | 295.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 540 | 199 | 14 | 31 | 1093 | 405 | 347 | 491 | 907 | 507 | 895 | 77 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 7 | 0 | 0 | 14 | 0 | 11 | 11 | 39 | 7 | 0 | 37 | 4 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 569 | 207 | 15 | 46 | 1137 | 432 | 372 | 550 | 951 | 527 | 968 | 84 |
| Peak Hour Factor | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 149 | 54 | 4 | 12 | 298 | 113 | 98 | 144 | 249 | 138 | 254 | 22 |
| Total Analysis Volume [veh/h] | 597 | 217 | 16 | 48 | 1193 | 453 | 390 | 577 | 998 | 553 | 1016 | 88 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 2 | 3 | 8 | 8 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | 2,3 | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 25 | 54 | 0 | 9 | 38 | 38 | 19 | 36 | 36 | 21 | 38 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 25 | 0 | 0 | 25 | 25 | 0 | 10 | 10 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 21 | 55 | 55 | 4 | 38 | 57 | 15 | 27 | 52 | 17 | 30 | 30 |
| g / C, Green / Cycle | 0.18 | 0.46 | 0.46 | 0.04 | 0.32 | 0.48 | 0.13 | 0.23 | 0.44 | 0.15 | 0.25 | 0.25 |
| (v / s)_i Volume / Saturation Flow Rate | 0.19 | 0.07 | 0.07 | 0.03 | 0.37 | 0.32 | 0.13 | 0.18 | 0.39 | 0.18 | 0.22 | 0.06 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1643 | 1603 | 3204 | 1431 | 3113 | 3204 | 2532 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 545 | 767 | 749 | 60 | 1019 | 681 | 389 | 734 | 1108 | 450 | 1140 | 356 |
| d1, Uniform Delay [s] | 49.50 | 19.11 | 19.11 | 57.35 | 40.93 | 24.08 | 52.50 | 43.49 | 31.34 | 51.33 | 43.52 | 36.09 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.30 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 50.13 | 0.43 | 0.44 | 21.79 | 87.58 | 5.07 | 21.66 | 1.91 | 7.49 | 107.20 | 2.65 | 0.36 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.10 | 0.15 | 0.15 | 0.81 | 1.17 | 0.66 | 1.00 | 0.79 | 0.90 | 1.23 | 0.89 | 0.25 |
| d, Delay for Lane Group [s/veh] | 99.64 | 19.53 | 19.54 | 79.14 | 128.51 | 29.15 | 74.16 | 45.40 | 38.83 | 158.52 | 46.17 | 36.45 |
| Lane Group LOS | F | B | B | E | F | C | F | D | D | F | D | D |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 11.62 | 1.91 | 1.87 | 1.76 | 26.54 | 10.02 | 6.82 | 7.91 | 13.50 | 13.20 | 9.53 | 2.03 |
| 50th-Percentile Queue Length [ft/ln] | 290.54 | 47.73 | 46.66 | 44.02 | 663.49 | 250.44 | 170.38 | 197.79 | 337.38 | 330.04 | 238.16 | 50.71 |
| 95th-Percentile Queue Length [veh/ln] | 17.98 | 3.44 | 3.36 | 3.17 | 38.55 | 15.21 | 11.11 | 12.52 | 19.52 | 20.89 | 14.59 | 3.65 |
| 95th-Percentile Queue Length [ft/ln] | 449.57 | 85.91 | 83.99 | 79.24 | 963.67 | 380.21 | 277.64 | 313.11 | 488.00 | 522.27 | 364.71 | 91.27 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 99.64 | 19.54 | 19.54 | 79.14 | 128.51 | 29.15 | 74.16 | 45.40 | 38.83 | 158.52 | 46.17 | 36.45 |
| Movement LOS | F | B | B | E | F | C | F | D | D | F | D | D |
| d_A, Approach Delay [s/veh] | 77.15 | | | 100.54 | | | 47.77 | | | 83.15 | | |
| Approach LOS | E | | | F | | | D | | | F | | |
| d_I, Intersection Delay [s/veh] | 75.82 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 1.004 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 49.51 | 49.51 | 49.51 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.114 | 3.591 | 3.278 |
| Crosswalk LOS | F | C | D | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 833 | 567 | 533 | 567 |
| d_b, Bicycle Delay [s] | 20.42 | 30.82 | 32.27 | 30.82 |
| l_b,int, Bicycle LOS Score for Intersection | 2.244 | 2.957 | 3.181 | 2.471 |
| Bicycle LOS | B | C | C | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 4: Golden Valley/SB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 31.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.718 |

**Intersection Setup**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 100.00 | 100.00 | 270.00 | 200.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 45.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 30 | 228 | 401 | 0 | 502 | 267 | 212 | 980 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 20 | 33 | 0 | 26 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 31 | 237 | 432 | 0 | 542 | 311 | 221 | 1046 | 0 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 0.9160 | 0.9160 | 0.9160 | 1.0000 | 0.9160 | 0.9160 | 0.9160 | 0.9160 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 8 | 65 | 118 | 0 | 148 | 85 | 60 | 285 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 34 | 259 | 472 | 0 | 592 | 340 | 241 | 1142 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 0.0 | 0.0 | 4.7 | 0.0 | 3.2 | 4.7 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 55 | 0 | 0 | 26 | 0 | 19 | 45 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 7 | 0 | 0 | 14 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 0.0 | 0.0 | 3.7 | 0.0 | 2.2 | 3.7 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | | 4.60 | 4.60 | 4.60 | 5.70 | 5.70 | 4.20 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.60 | 2.60 | 2.60 | 3.70 | 3.70 | 2.20 | 3.70 |
| g_i, Effective Green Time [s] | | 42 | 42 | 42 | 26 | 26 | 17 | 48 |
| g / C, Green / Cycle | | 0.42 | 0.42 | 0.42 | 0.26 | 0.26 | 0.17 | 0.48 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.02 | 0.15 | 0.33 | 0.18 | 0.24 | 0.15 | 0.36 |
| s, saturation flow rate [veh/h] | | 1603 | 1683 | 1431 | 3204 | 1431 | 1603 | 3204 |
| c, Capacity [veh/h] | | 674 | 708 | 602 | 843 | 376 | 275 | 1527 |
| d1, Uniform Delay [s] | | 17.16 | 19.85 | 25.06 | 33.31 | 35.62 | 40.42 | 21.30 |
| k, delay calibration | | 0.50 | 0.50 | 0.50 | 0.11 | 0.27 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.14 | 1.46 | 9.89 | 1.08 | 17.20 | 8.76 | 0.75 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | | 0.05 | 0.37 | 0.78 | 0.70 | 0.90 | 0.88 | 0.75 |
|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | | 17.30 | 21.31 | 34.95 | 34.39 | 52.83 | 49.18 | 22.05 |
| Lane Group LOS | | B | C | C | C | D | D | C |
| Critical Lane Group | | No | No | Yes | No | Yes | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 0.46 | 4.12 | 10.47 | 6.18 | 9.24 | 6.12 | 9.71 |
| 50th-Percentile Queue Length [ft/ln] | | 11.54 | 103.02 | 261.86 | 154.57 | 230.98 | 153.12 | 242.67 |
| 95th-Percentile Queue Length [veh/ln] | | 0.83 | 7.42 | 15.78 | 10.26 | 14.22 | 10.18 | 14.82 |
| 95th-Percentile Queue Length [ft/ln] | | 20.77 | 185.43 | 394.56 | 256.52 | 355.60 | 254.59 | 370.41 |

**Movement, Approach, & Intersection Results**

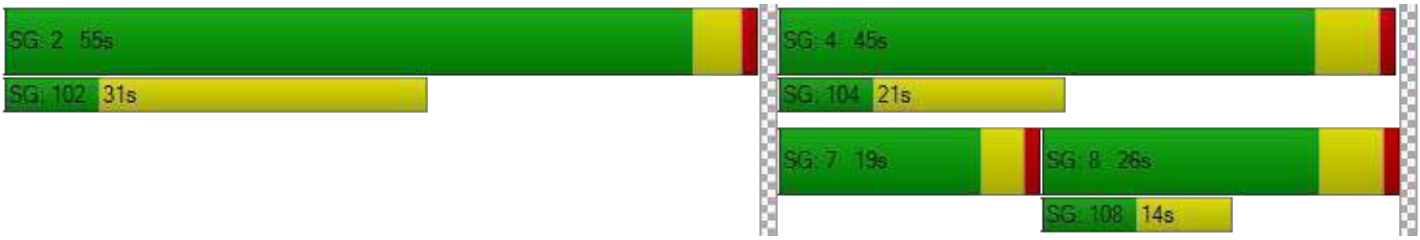
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 17.30 | 21.31 | 34.95 | 0.00 | 34.39 | 52.83 | 49.18 | 22.05 | 0.00 |
| Movement LOS | | | | B | C | C | | C | D | D | C | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 29.55 | | | 41.11 | | | 26.78 | | |
| Approach LOS | A | | | C | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 31.80 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.718 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.129 | 2.416 | 3.190 | 0.000 |
| Crosswalk LOS | B | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 1008 | 406 | 786 |
| d_b, Bicycle Delay [s] | 50.01 | 12.31 | 31.77 | 18.43 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 2.822 | 2.329 | 2.701 |
| Bicycle LOS | D | C | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 5: Golden Valley/NB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 22.6 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.612 |

**Intersection Setup**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 185.00 | 100.00 | 100.00 | 100.00 | 250.00 | 100.00 | 100.00 | 100.00 | 100.00 | 360.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 30.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | Yes | | |

**Volumes**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 157 | 1 | 180 | 0 | 0 | 0 | 208 | 318 | 0 | 0 | 1030 | 71 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 21 | 0 | 0 | 0 | 0 | 0 | 15 | 5 | 0 | 0 | 5 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 184 | 1 | 187 | 0 | 0 | 0 | 231 | 336 | 0 | 0 | 1077 | 74 |
| Peak Hour Factor | 0.8840 | 0.8840 | 0.8840 | 1.0000 | 1.0000 | 1.0000 | 0.8840 | 0.8840 | 1.0000 | 1.0000 | 0.8840 | 0.8840 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 52 | 0 | 53 | 0 | 0 | 0 | 65 | 95 | 0 | 0 | 305 | 21 |
| Total Analysis Volume [veh/h] | 208 | 1 | 212 | 0 | 0 | 0 | 261 | 380 | 0 | 0 | 1218 | 84 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 8 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 0 | 0 | 0 | 5 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.6 | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 4.7 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 45 | 0 | 0 | 0 | 0 | 15 | 55 | 0 | 0 | 40 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.6 | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 3.7 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 4.60 | 4.60 | | 4.60 | 5.70 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 2.60 | 2.60 | | 2.60 | 3.70 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 17 | 17 | 17 | | 10 | 72 | 57 | 57 |
| g / C, Green / Cycle | 0.17 | 0.17 | 0.17 | | 0.10 | 0.72 | 0.57 | 0.57 |
| (v / s)_i Volume / Saturation Flow Rate | 0.07 | 0.07 | 0.15 | | 0.08 | 0.12 | 0.38 | 0.06 |
| s, saturation flow rate [veh/h] | 1603 | 1604 | 1431 | | 3113 | 3204 | 3204 | 1431 |
| c, Capacity [veh/h] | 279 | 279 | 249 | | 320 | 2317 | 1840 | 822 |
| d1, Uniform Delay [s] | 36.50 | 36.50 | 40.06 | | 43.95 | 4.35 | 14.62 | 9.63 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.83 | 0.83 | 8.02 | | 5.09 | 0.15 | 1.89 | 0.25 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.37 | 0.37 | 0.85 | | 0.82 | 0.16 | 0.66 | 0.10 |
| d, Delay for Lane Group [s/veh] | 37.34 | 37.34 | 48.08 | | 49.03 | 4.50 | 16.51 | 9.88 |
| Lane Group LOS | D | D | D | | D | A | B | A |
| Critical Lane Group | No | No | Yes | | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 2.23 | 2.23 | 5.38 | | 3.24 | 0.89 | 8.37 | 0.77 |
| 50th-Percentile Queue Length [ft/ln] | 55.78 | 55.80 | 134.48 | | 80.93 | 22.23 | 209.13 | 19.32 |
| 95th-Percentile Queue Length [veh/ln] | 4.02 | 4.02 | 9.18 | | 5.83 | 1.60 | 13.11 | 1.39 |
| 95th-Percentile Queue Length [ft/ln] | 100.40 | 100.44 | 229.57 | | 145.68 | 40.02 | 327.71 | 34.78 |

**Movement, Approach, & Intersection Results**

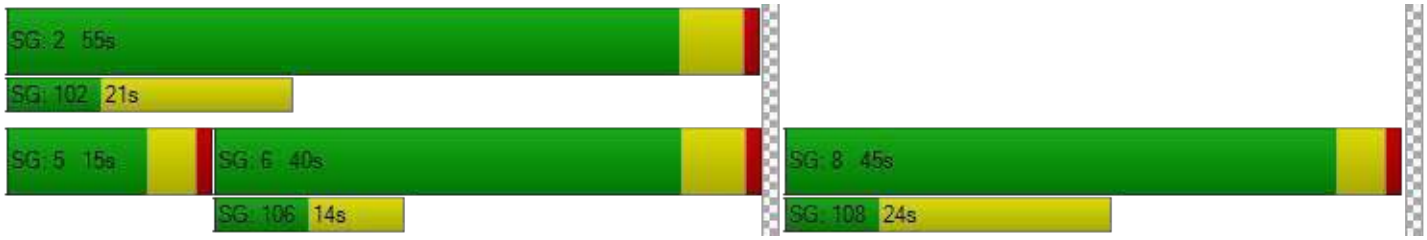
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 37.34 | 37.34 | 48.08 | 0.00 | 0.00 | 0.00 | 49.03 | 4.50 | 0.00 | 0.00 | 16.51 | 9.88 |
| Movement LOS | D | D | D | | | | D | A | | | B | A |
| d_A, Approach Delay [s/veh] | 42.75 | | | 0.00 | | | 22.64 | | | 16.08 | | |
| Approach LOS | D | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 22.61 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.612 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.290 | 1.888 | 0.000 | 2.920 |
| Crosswalk LOS | B | A | F | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 808 | 0 | 986 | 686 |
| d_b, Bicycle Delay [s] | 17.76 | 50.00 | 12.86 | 21.59 |
| l_b,int, Bicycle LOS Score for Intersection | 2.254 | 4.132 | 2.088 | 2.634 |
| Bicycle LOS | B | D | B | B |

## Sequence

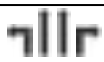
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 6: Sierra/Friendly Valley**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 26.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.578 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 125.00 | 100.00 | 100.00 | 135.00 | 100.00 | 400.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 25.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 44 | 398 | 87 | 196 | 1130 | 196 | 52 | 24 | 65 | 69 | 18 | 167 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 15 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 46 | 429 | 91 | 204 | 1201 | 204 | 54 | 25 | 68 | 72 | 19 | 174 |
| Peak Hour Factor | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 12 | 116 | 25 | 55 | 324 | 55 | 15 | 7 | 18 | 19 | 5 | 47 |
| Total Analysis Volume [veh/h] | 50 | 462 | 98 | 220 | 1294 | 220 | 58 | 27 | 73 | 78 | 20 | 188 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 22 | 23 | 0 | 45 | 46 | 0 | 0 | 32 | 0 | 0 | 32 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 14 | 0 | 0 | 17 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 5.70 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 3.70 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 4 | 42 | 42 | 16 | 54 | 54 | 28 | 28 | 28 | 28 |
| g / C, Green / Cycle | 0.04 | 0.42 | 0.42 | 0.16 | 0.54 | 0.54 | 0.28 | 0.28 | 0.28 | 0.28 |
| (v / s)_i Volume / Saturation Flow Rate | 0.03 | 0.17 | 0.17 | 0.14 | 0.40 | 0.15 | 0.14 | 0.05 | 0.07 | 0.14 |
| s, saturation flow rate [veh/h] | 1603 | 1683 | 1583 | 1603 | 3204 | 1431 | 627 | 1431 | 1165 | 1451 |
| c, Capacity [veh/h] | 62 | 707 | 665 | 254 | 1730 | 772 | 235 | 398 | 131 | 404 |
| d1, Uniform Delay [s] | 47.68 | 20.27 | 20.30 | 41.04 | 17.75 | 12.51 | 36.81 | 27.45 | 48.08 | 30.40 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 20.68 | 1.73 | 1.87 | 8.65 | 3.01 | 0.93 | 0.94 | 0.22 | 4.26 | 1.02 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.80 | 0.41 | 0.41 | 0.87 | 0.75 | 0.28 | 0.36 | 0.18 | 0.59 | 0.51 |
| d, Delay for Lane Group [s/veh] | 68.36 | 22.00 | 22.17 | 49.69 | 20.76 | 13.43 | 37.74 | 27.67 | 52.34 | 31.42 |
| Lane Group LOS | E | C | C | D | C | B | D | C | D | C |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 1.60 | 5.01 | 4.78 | 5.89 | 11.73 | 2.84 | 1.97 | 1.34 | 2.10 | 4.28 |
| 50th-Percentile Queue Length [ft/ln] | 39.96 | 125.24 | 119.50 | 147.34 | 293.27 | 70.89 | 49.16 | 33.57 | 52.42 | 106.89 |
| 95th-Percentile Queue Length [veh/ln] | 2.88 | 8.68 | 8.37 | 9.87 | 17.35 | 5.10 | 3.54 | 2.42 | 3.77 | 7.67 |
| 95th-Percentile Queue Length [ft/ln] | 71.93 | 217.01 | 209.14 | 246.87 | 433.70 | 127.61 | 88.49 | 60.42 | 94.36 | 191.67 |

**Movement, Approach, & Intersection Results**

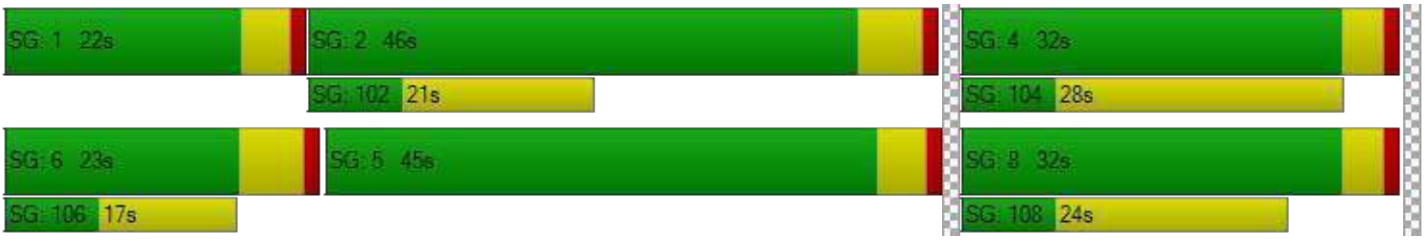
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 68.36 | 22.06 | 22.17 | 49.69 | 20.76 | 13.43 | 37.74 | 37.74 | 27.67 | 52.34 | 31.42 | 31.42 |
| Movement LOS | E | C | C | D | C | B | D | D | C | D | C | C |
| d_A, Approach Delay [s/veh] | 25.88 | | | 23.50 | | | 33.09 | | | 37.13 | | |
| Approach LOS | C | | | C | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 25.96 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.578 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.750 | 2.871 | 2.245 | 2.150 |
| Crosswalk LOS | B | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 346 | 806 | 560 | 560 |
| d_b, Bicycle Delay [s] | 34.20 | 17.82 | 25.92 | 25.92 |
| l_b,int, Bicycle LOS Score for Intersection | 2.063 | 2.990 | 1.820 | 2.032 |
| Bicycle LOS | B | C | A | B |

## Sequence

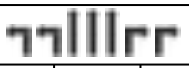
| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 7: Sierra/Via Princessa**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 40.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.782 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 200.00 | 100.00 | 250.00 | 360.00 | 100.00 | 630.00 | 200.00 | 100.00 | 300.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 351 | 331 | 127 | 169 | 850 | 758 | 171 | 874 | 403 | 295 | 934 | 78 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 3 | 7 | 5 | 3 | 17 | 0 | 0 | 60 | 3 | 5 | 25 | 1 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 368 | 351 | 137 | 179 | 901 | 789 | 178 | 969 | 422 | 312 | 997 | 82 |
| Peak Hour Factor | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 | 0.9490 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 97 | 92 | 36 | 47 | 237 | 208 | 47 | 255 | 111 | 82 | 263 | 22 |
| Total Analysis Volume [veh/h] | 388 | 370 | 144 | 189 | 949 | 831 | 188 | 1021 | 445 | 329 | 1051 | 86 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 4 | 5 | 2 | 2 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4,5 | | | 2,3 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 20 | 42 | 0 | 19 | 41 | 41 | 18 | 41 | 41 | 18 | 41 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 28 | 0 | 0 | 28 | 28 | 0 | 28 | 28 | 0 | 28 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 15 | 36 | 36 | 9 | 30 | 49 | 13 | 41 | 62 | 13 | 41 | 41 |
| g / C, Green / Cycle | 0.13 | 0.30 | 0.30 | 0.08 | 0.25 | 0.41 | 0.11 | 0.34 | 0.51 | 0.11 | 0.34 | 0.34 |
| (v / s)_i Volume / Saturation Flow Rate | 0.12 | 0.08 | 0.10 | 0.06 | 0.21 | 0.33 | 0.06 | 0.22 | 0.31 | 0.11 | 0.23 | 0.06 |
| s, saturation flow rate [veh/h] | 3113 | 4584 | 1431 | 3113 | 4584 | 2532 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 402 | 1373 | 428 | 246 | 1143 | 1037 | 350 | 1547 | 735 | 350 | 1547 | 483 |
| d1, Uniform Delay [s] | 52.06 | 32.08 | 32.79 | 54.24 | 42.69 | 31.19 | 50.35 | 33.93 | 20.60 | 52.90 | 34.22 | 28.06 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 14.15 | 0.10 | 0.46 | 4.97 | 1.63 | 1.58 | 1.28 | 2.23 | 3.68 | 11.88 | 2.42 | 0.81 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.97 | 0.27 | 0.34 | 0.77 | 0.83 | 0.80 | 0.54 | 0.66 | 0.61 | 0.94 | 0.68 | 0.18 |
| d, Delay for Lane Group [s/veh] | 66.21 | 32.18 | 33.25 | 59.22 | 44.31 | 32.77 | 51.63 | 36.16 | 24.27 | 64.78 | 36.64 | 28.87 |
| Lane Group LOS | E | C | C | E | D | C | D | D | C | E | D | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 6.39 | 2.64 | 3.19 | 2.88 | 8.64 | 10.07 | 2.65 | 8.33 | 8.77 | 5.33 | 8.66 | 1.78 |
| 50th-Percentile Queue Length [ft/ln] | 159.76 | 65.92 | 79.64 | 72.02 | 216.02 | 251.63 | 66.14 | 208.25 | 219.33 | 133.20 | 216.59 | 44.56 |
| 95th-Percentile Queue Length [veh/ln] | 10.54 | 4.75 | 5.73 | 5.19 | 13.46 | 15.27 | 4.76 | 13.06 | 13.63 | 9.11 | 13.49 | 3.21 |
| 95th-Percentile Queue Length [ft/ln] | 263.40 | 118.65 | 143.36 | 129.64 | 336.54 | 381.71 | 119.05 | 326.58 | 340.77 | 227.84 | 337.27 | 80.20 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 66.21 | 32.18 | 33.25 | 59.22 | 44.31 | 32.77 | 51.63 | 36.16 | 24.27 | 64.78 | 36.64 | 28.87 |
| Movement LOS | E | C | C | E | D | C | D | D | C | E | D | C |
| d_A, Approach Delay [s/veh] | 46.99 | | | 40.87 | | | 34.72 | | | 42.50 | | |
| Approach LOS | D | | | D | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 40.49 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.782 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 49.54 | 49.54 | 49.54 | 49.54 |
| l_p,int, Pedestrian LOS Score for Intersection | 3.337 | 3.405 | 3.572 | 3.372 |
| Crosswalk LOS | C | C | D | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 605 | 588 | 588 | 588 |
| d_b, Bicycle Delay [s] | 29.23 | 29.93 | 29.93 | 29.93 |
| l_b,int, Bicycle LOS Score for Intersection | 2.056 | 2.643 | 2.469 | 2.366 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 8: Golden Valley/Project Dwy**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 35.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.084 |

**Intersection Setup**

| Name | Project Dwy | | Golden Valley | | Golden Valley | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**Volumes**

| Name | Project Dwy | | Golden Valley | | Golden Valley | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 1185 | 1833 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 53 | 11 | 57 | 13 | 42 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 53 | 11 | 1290 | 1920 | 42 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 13 | 3 | 323 | 480 | 11 |
| Total Analysis Volume [veh/h] | 0 | 53 | 11 | 1290 | 1920 | 42 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|---|---|---|---|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.00 | 0.25 | 0.08 | 0.01 | 0.02 | 0.00 |
| d_M, Delay for Movement [s/veh] | 0.00 | 27.33 | 35.05 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | D | E | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.95 | 0.27 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 23.64 | 6.77 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 27.33 | | 0.30 | | 0.00 | |
| Approach LOS | D | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.55 | | | | | |
| Intersection LOS | E | | | | | |

**Intersection Level Of Service Report**
**Intersection 1: Golden Valley/Centre Pointe**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 68.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.903 |

**Intersection Setup**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 400.00 | 100.00 | 350.00 | 700.00 | 100.00 | 100.00 | 260.00 | 100.00 | 260.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 40.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Golden Valley | | | Golden Valley | | | Centre Pointe | | | Centre Pointe | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 292 | 984 | 224 | 166 | 1044 | 77 | 106 | 73 | 442 | 257 | 65 | 142 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 9 | 26 | 0 | 0 | 29 | 0 | 0 | 0 | 10 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 313 | 1050 | 233 | 173 | 1115 | 80 | 110 | 76 | 470 | 267 | 68 | 148 |
| Peak Hour Factor | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 86 | 288 | 64 | 47 | 305 | 22 | 30 | 21 | 129 | 73 | 19 | 41 |
| Total Analysis Volume [veh/h] | 343 | 1150 | 255 | 189 | 1221 | 88 | 120 | 83 | 515 | 292 | 74 | 162 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Split | Split | Overlap | Split | Split | Split |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 6 | 5 | 2 | 0 | 0 | 8 | 8 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | 6 | | | | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 10 | 5 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 3.2 | 4.7 | 4.7 | 3.2 | 4.7 | 0.0 | 0.0 | 3.9 | 3.9 | 0.0 | 3.6 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 30 | 57 | 57 | 19 | 46 | 0 | 0 | 15 | 15 | 0 | 29 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 15 | 15 | 0 | 15 | 0 | 0 | 10 | 10 | 0 | 17 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.2 | 3.7 | 3.7 | 2.2 | 3.7 | 0.0 | 0.0 | 2.9 | 2.9 | 0.0 | 2.6 | 0.0 |
| Minimum Recall | No | No | No | No | No | | | No | No | | No | |
| Maximum Recall | No | No | No | No | No | | | No | No | | No | |
| Pedestrian Recall | No | No | No | No | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.20 | 5.70 | 5.70 | 4.20 | 5.70 | 5.70 | 4.90 | 4.90 | 4.20 | 4.60 | 4.60 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 3.70 | 3.70 | 2.20 | 3.70 | 3.70 | 2.90 | 2.90 | 0.00 | 2.60 | 2.60 |
| g_i, Effective Green Time [s] | 26 | 51 | 51 | 15 | 40 | 40 | 13 | 13 | 44 | 21 | 21 |
| g / C, Green / Cycle | 0.22 | 0.43 | 0.43 | 0.12 | 0.34 | 0.34 | 0.11 | 0.11 | 0.37 | 0.18 | 0.18 |
| (v / s)_i Volume / Saturation Flow Rate | 0.21 | 0.36 | 0.18 | 0.12 | 0.38 | 0.06 | 0.07 | 0.05 | 0.36 | 0.09 | 0.16 |
| s, saturation flow rate [veh/h] | 1603 | 3204 | 1431 | 1603 | 3204 | 1431 | 1603 | 1683 | 1431 | 3113 | 1501 |
| c, Capacity [veh/h] | 345 | 1374 | 613 | 198 | 1081 | 482 | 176 | 185 | 523 | 548 | 264 |
| d1, Uniform Delay [s] | 47.05 | 30.55 | 23.84 | 52.27 | 39.78 | 28.09 | 51.38 | 50.00 | 37.70 | 44.97 | 48.35 |
| k, delay calibration | 0.34 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.50 | 0.11 | 0.17 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 38.93 | 6.21 | 2.07 | 20.55 | 70.43 | 0.83 | 4.54 | 1.69 | 35.54 | 0.81 | 14.80 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | 1.00 | 0.84 | 0.42 | 0.95 | 1.13 | 0.18 | 0.68 | 0.45 | 0.98 | 0.53 | 0.89 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | 85.99 | 36.76 | 25.91 | 72.82 | 110.20 | 28.92 | 55.91 | 51.69 | 73.25 | 45.78 | 63.15 |
| Lane Group LOS | F | D | C | E | F | C | E | D | E | D | E |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | No | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 13.49 | 14.88 | 5.09 | 6.58 | 25.51 | 1.83 | 3.63 | 2.38 | 19.48 | 3.99 | 7.91 |
| 50th-Percentile Queue Length [ft/ln] | 337.30 | 371.96 | 127.28 | 164.48 | 637.74 | 45.73 | 90.87 | 59.60 | 486.88 | 99.67 | 197.71 |
| 95th-Percentile Queue Length [veh/ln] | 19.52 | 21.20 | 8.79 | 10.79 | 36.54 | 3.29 | 6.54 | 4.29 | 26.71 | 7.18 | 12.52 |
| 95th-Percentile Queue Length [ft/ln] | 487.90 | 530.11 | 219.79 | 269.65 | 913.60 | 82.32 | 163.57 | 107.27 | 667.82 | 179.40 | 313.01 |

**Movement, Approach, & Intersection Results**

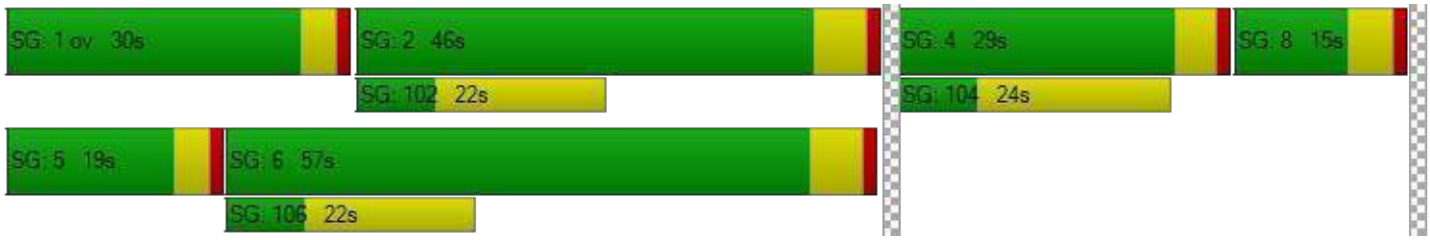
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 85.99 | 36.76 | 25.91 | 72.82 | 110.20 | 28.92 | 55.91 | 51.69 | 73.25 | 45.78 | 63.15 | 63.15 |
| Movement LOS | F | D | C | E | F | C | E | D | E | D | E | E |
| d_A, Approach Delay [s/veh] | 44.84 | | | 100.71 | | | 67.86 | | | 53.54 | | |
| Approach LOS | D | | | F | | | E | | | D | | |
| d_I, Intersection Delay [s/veh] | 68.17 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.903 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 49.51 | 49.51 | 49.51 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.260 | 2.542 | 2.445 |
| Crosswalk LOS | F | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 855 | 672 | 168 | 407 |
| d_b, Bicycle Delay [s] | 19.67 | 26.48 | 50.33 | 38.09 |
| l_b,int, Bicycle LOS Score for Intersection | 3.002 | 2.795 | 2.744 | 2.431 |
| Bicycle LOS | C | C | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 2: Golden Valley/Robert C Lee**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 12.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.678 |

**Intersection Setup**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | | |
|---|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | | |
| Lane Configuration | | | | | | | |
| Turning Movement | Left | Right | Left | Thru | U-turn | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 170.00 | 100.00 | 450.00 | 100.00 | 100.00 | 100.00 | 275.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 50.00 | | 50.00 | | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | | |
| Curb Present | No | | No | | No | | |
| Crosswalk | Yes | | Yes | | No | | |

**Volumes**

| Name | Robert C Lee | | Golden Valley | | Golden Valley | | |
|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 134 | 89 | 61 | 1705 | 0 | 1403 | 122 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 39 | 51 | 35 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 139 | 93 | 63 | 1813 | 51 | 1495 | 127 |
| Peak Hour Factor | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 36 | 24 | 16 | 464 | 13 | 383 | 32 |
| Total Analysis Volume [veh/h] | 142 | 95 | 64 | 1856 | 52 | 1530 | 130 |
| Presence of On-Street Parking | No | No | No | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Protected | Permissive | Protected | Permissive | Overlap |
|---|---|---|---|---|---|---|---|
| Signal Group | 7 | 0 | 5 | 2 | 1 | 6 | 6 |
| Auxiliary Signal Groups | | | | | | | 6,7 |
| Lead / Lag | Lead | - | Lead | - | Lead | - | - |
| Minimum Green [s] | 5 | 0 | 5 | 10 | 5 | 10 | 10 |
| Maximum Green [s] | 30 | 0 | 30 | 30 | 30 | 30 | 30 |
| Amber [s] | 3.2 | 0.0 | 3.2 | 4.7 | 3.2 | 4.7 | 4.7 |
| All red [s] | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Split [s] | 32 | 0 | 10 | 42 | 26 | 58 | 58 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 7 | 0 | 0 | 5 | 0 | 7 | 7 |
| Pedestrian Clearance [s] | 20 | 0 | 0 | 10 | 0 | 17 | 17 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 2.2 | 0.0 | 2.2 | 3.7 | 2.2 | 3.7 | 3.7 |
| Minimum Recall | No | | No | No | No | No | No |
| Maximum Recall | No | | No | No | No | No | No |
| Pedestrian Recall | No | | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | L | C | R |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.20 | 4.20 | 4.20 | 5.70 | 4.20 | 5.70 | 4.20 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.20 | 2.20 | 2.20 | 3.70 | 2.20 | 3.70 | 0.00 |
| g_i, Effective Green Time [s] | 9 | 9 | 4 | 72 | 4 | 72 | 87 |
| g / C, Green / Cycle | 0.09 | 0.09 | 0.04 | 0.72 | 0.04 | 0.72 | 0.87 |
| (v / s)_i Volume / Saturation Flow Rate | 0.05 | 0.07 | 0.02 | 0.58 | 0.03 | 0.33 | 0.09 |
| s, saturation flow rate [veh/h] | 3113 | 1431 | 3113 | 3204 | 1603 | 4584 | 1431 |
| c, Capacity [veh/h] | 293 | 135 | 133 | 2319 | 66 | 3312 | 1249 |
| d1, Uniform Delay [s] | 43.01 | 43.97 | 46.80 | 9.07 | 47.51 | 5.78 | 0.88 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.25 | 6.62 | 2.71 | 3.01 | 18.29 | 0.47 | 0.17 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.49 | 0.71 | 0.48 | 0.80 | 0.79 | 0.46 | 0.10 |
| d, Delay for Lane Group [s/veh] | 44.25 | 50.59 | 49.51 | 12.07 | 65.80 | 6.25 | 1.05 |
| Lane Group LOS | D | D | D | B | E | A | A |
| Critical Lane Group | No | Yes | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 1.69 | 2.49 | 0.80 | 9.48 | 1.56 | 3.13 | 0.06 |
| 50th-Percentile Queue Length [ft/ln] | 42.30 | 62.32 | 19.89 | 237.09 | 39.10 | 78.14 | 1.45 |
| 95th-Percentile Queue Length [veh/ln] | 3.05 | 4.49 | 1.43 | 14.53 | 2.81 | 5.63 | 0.10 |
| 95th-Percentile Queue Length [ft/ln] | 76.15 | 112.17 | 35.79 | 363.35 | 70.37 | 140.66 | 2.61 |

**Movement, Approach, & Intersection Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 44.25 | 50.59 | 49.51 | 12.07 | 65.80 | 6.25 | 1.05 |
| Movement LOS | D | D | D | B | E | A | A |
| d_A, Approach Delay [s/veh] | 46.79 | | 13.32 | | 7.66 | | |
| Approach LOS | D | | B | | A | | |
| d_I, Intersection Delay [s/veh] | 12.87 | | | | | | |
| Intersection LOS | B | | | | | | |
| Intersection V/C | 0.678 | | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.403 | 3.422 | 0.000 |
| Crosswalk LOS | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 556 | 726 | 1046 |
| d_b, Bicycle Delay [s] | 26.07 | 20.29 | 11.38 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 3.144 | 2.501 |
| Bicycle LOS | A | C | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 3: Golden Valley/Sierra Hwy**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 50.6 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.762 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 2 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 430.00 | 100.00 | 100.00 | 415.00 | 100.00 | 500.00 | 285.00 | 100.00 | 325.00 | 285.00 | 100.00 | 295.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 602 | 1089 | 134 | 67 | 291 | 265 | 407 | 732 | 640 | 54 | 678 | 81 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 11 | 0 | 0 | 7 | 0 | 15 | 12 | 53 | 10 | 0 | 55 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 637 | 1133 | 139 | 77 | 303 | 291 | 435 | 815 | 676 | 56 | 760 | 96 |
| Peak Hour Factor | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 163 | 289 | 35 | 20 | 77 | 74 | 111 | 208 | 173 | 14 | 194 | 25 |
| Total Analysis Volume [veh/h] | 651 | 1157 | 142 | 79 | 309 | 297 | 444 | 832 | 691 | 57 | 776 | 98 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 2 | 3 | 8 | 8 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | 2,3 | | | 1,8 | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 26 | 52 | 0 | 10 | 36 | 36 | 20 | 48 | 48 | 10 | 38 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 5 | 5 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 25 | 0 | 0 | 25 | 25 | 0 | 10 | 10 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 22 | 58 | 58 | 6 | 42 | 62 | 16 | 36 | 62 | 4 | 24 | 24 |
| g / C, Green / Cycle | 0.18 | 0.48 | 0.48 | 0.05 | 0.35 | 0.52 | 0.13 | 0.30 | 0.51 | 0.04 | 0.20 | 0.20 |
| (v / s)_i Volume / Saturation Flow Rate | 0.21 | 0.39 | 0.40 | 0.05 | 0.10 | 0.21 | 0.14 | 0.26 | 0.27 | 0.02 | 0.17 | 0.07 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1620 | 1603 | 3204 | 1431 | 3113 | 3204 | 2532 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 571 | 813 | 783 | 81 | 1123 | 740 | 416 | 954 | 1303 | 109 | 912 | 285 |
| d1, Uniform Delay [s] | 49.02 | 26.10 | 26.75 | 56.90 | 28.03 | 17.63 | 52.00 | 39.99 | 19.46 | 56.95 | 46.36 | 41.35 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.12 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 68.02 | 8.06 | 9.90 | 39.66 | 0.61 | 1.62 | 40.97 | 2.66 | 0.37 | 3.85 | 2.34 | 0.72 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.14 | 0.80 | 0.83 | 0.97 | 0.28 | 0.40 | 1.07 | 0.87 | 0.53 | 0.52 | 0.85 | 0.34 |
| d, Delay for Lane Group [s/veh] | 117.04 | 34.16 | 36.65 | 96.56 | 28.63 | 19.25 | 92.97 | 42.64 | 19.82 | 60.80 | 48.71 | 42.06 |
| Lane Group LOS | F | C | D | F | C | B | F | D | B | E | D | D |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 13.59 | 16.02 | 16.70 | 3.21 | 3.15 | 4.94 | 8.40 | 11.38 | 5.96 | 0.88 | 7.33 | 2.47 |
| 50th-Percentile Queue Length [ft/ln] | 339.82 | 400.46 | 417.60 | 80.30 | 78.71 | 123.54 | 209.95 | 284.56 | 149.01 | 22.05 | 183.28 | 61.67 |
| 95th-Percentile Queue Length [veh/ln] | 20.92 | 22.58 | 23.41 | 5.78 | 5.67 | 8.59 | 13.52 | 16.92 | 9.96 | 1.59 | 11.77 | 4.44 |
| 95th-Percentile Queue Length [ft/ln] | 522.96 | 564.56 | 585.17 | 144.54 | 141.68 | 214.69 | 337.88 | 422.89 | 249.11 | 39.69 | 294.30 | 111.00 |

**Movement, Approach, & Intersection Results**

| d_M, Delay for Movement [s/veh] | 117.04 | 35.25 | 36.65 | 96.56 | 28.63 | 19.25 | 92.97 | 42.64 | 19.82 | 60.80 | 48.71 | 42.06 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement LOS | F | D | D | F | C | B | F | D | B | E | D | D |
| d_A, Approach Delay [s/veh] | 62.66 | | | 32.40 | | | 45.99 | | | 48.75 | | |
| Approach LOS | E | | | C | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 50.65 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.762 | | | | | | | | | | | |

**Other Modes**

| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 11.0 | 11.0 |
|---|---|---|---|---|
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 49.52 | 49.52 | 49.52 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 3.112 | 3.529 | 3.221 |
| Crosswalk LOS | F | C | D | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 800 | 533 | 733 | 567 |
| d_b, Bicycle Delay [s] | 21.61 | 32.28 | 24.08 | 30.83 |
| l_b,int, Bicycle LOS Score for Intersection | 3.168 | 2.125 | 3.182 | 2.072 |
| Bicycle LOS | C | B | C | B |

## Sequence

| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 4: Golden Valley/SB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 31.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.701 |

**Intersection Setup**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 100.00 | 100.00 | 270.00 | 200.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 45.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | SR14 SB Ramp | | | SR14 SB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 83 | 3 | 346 | 0 | 808 | 111 | 207 | 627 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 27 | 33 | 0 | 45 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 86 | 3 | 382 | 0 | 868 | 148 | 215 | 697 | 0 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 0.9580 | 0.9580 | 0.9580 | 1.0000 | 0.9580 | 0.9580 | 0.9580 | 0.9580 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 22 | 1 | 100 | 0 | 227 | 39 | 56 | 182 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 90 | 3 | 399 | 0 | 906 | 154 | 224 | 728 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 0.0 | 0.0 | 4.7 | 0.0 | 3.2 | 4.7 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 45 | 0 | 0 | 32 | 0 | 23 | 55 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 7 | 0 | 0 | 14 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 0.0 | 0.0 | 3.7 | 0.0 | 2.2 | 3.7 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | | 4.60 | 4.60 | 4.60 | 5.70 | 5.70 | 4.20 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.60 | 2.60 | 2.60 | 3.70 | 3.70 | 2.20 | 3.70 |
| g_i, Effective Green Time [s] | | 40 | 40 | 40 | 30 | 30 | 16 | 50 |
| g / C, Green / Cycle | | 0.40 | 0.40 | 0.40 | 0.30 | 0.30 | 0.16 | 0.50 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.03 | 0.03 | 0.28 | 0.28 | 0.11 | 0.14 | 0.23 |
| s, saturation flow rate [veh/h] | | 1603 | 1608 | 1431 | 3204 | 1431 | 1603 | 3204 |
| c, Capacity [veh/h] | | 635 | 637 | 567 | 956 | 427 | 258 | 1605 |
| d1, Uniform Delay [s] | | 18.79 | 18.79 | 25.30 | 34.34 | 27.60 | 40.96 | 16.12 |
| k, delay calibration | | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.22 | 0.22 | 7.18 | 5.91 | 0.51 | 8.76 | 0.20 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | | 0.07 | 0.07 | 0.70 | 0.95 | 0.36 | 0.87 | 0.45 |
| d, Delay for Lane Group [s/veh] | | 19.01 | 19.01 | 32.48 | 40.25 | 28.11 | 49.72 | 16.32 |
| Lane Group LOS | | B | B | C | D | C | D | B |
| Critical Lane Group | | No | No | Yes | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 0.67 | 0.67 | 8.44 | 10.70 | 2.77 | 5.71 | 4.79 |
| 50th-Percentile Queue Length [ft/ln] | | 16.77 | 16.82 | 210.91 | 267.57 | 69.28 | 142.82 | 119.82 |
| 95th-Percentile Queue Length [veh/ln] | | 1.21 | 1.21 | 13.20 | 16.07 | 4.99 | 9.63 | 8.38 |
| 95th-Percentile Queue Length [ft/ln] | | 30.19 | 30.27 | 330.00 | 401.71 | 124.70 | 240.82 | 209.58 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 19.01 | 19.01 | 32.48 | 0.00 | 40.25 | 28.11 | 49.72 | 16.32 | 0.00 |
| Movement LOS | | | | B | B | C | | D | C | D | B | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 29.93 | | | 38.49 | | | 24.18 | | |
| Approach LOS | A | | | C | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 31.36 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.701 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 1.905 | 2.316 | 3.106 | 0.000 |
| Crosswalk LOS | A | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 808 | 526 | 986 |
| d_b, Bicycle Delay [s] | 50.01 | 17.77 | 27.17 | 12.86 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 2.371 | 2.434 | 2.345 |
| Bicycle LOS | D | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Intersection Level Of Service Report**
**Intersection 5: Golden Valley/NB SR-14**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 28.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.635 |

**Intersection Setup**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 185.00 | 100.00 | 100.00 | 100.00 | 250.00 | 100.00 | 100.00 | 100.00 | 100.00 | 360.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 30.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | Yes | | |

**Volumes**

| Name | SR14 NB Ramp | | | SR14 NB Ramp | | | Golden Valley | | | Golden Valley | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 248 | 5 | 395 | 0 | 0 | 0 | 312 | 564 | 0 | 0 | 580 | 205 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 38 | 0 | 0 | 0 | 0 | 0 | 21 | 6 | 0 | 0 | 7 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 296 | 5 | 411 | 0 | 0 | 0 | 346 | 593 | 0 | 0 | 610 | 213 |
| Peak Hour Factor | 0.9270 | 0.9270 | 0.9270 | 1.0000 | 1.0000 | 1.0000 | 0.9270 | 0.9270 | 1.0000 | 1.0000 | 0.9270 | 0.9270 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 80 | 1 | 111 | 0 | 0 | 0 | 93 | 160 | 0 | 0 | 165 | 57 |
| Total Analysis Volume [veh/h] | 319 | 5 | 443 | 0 | 0 | 0 | 373 | 640 | 0 | 0 | 658 | 230 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 8 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 0 | 0 | 0 | 5 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.6 | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 4.7 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 62 | 0 | 0 | 0 | 0 | 18 | 38 | 0 | 0 | 20 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.6 | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 3.7 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 4.60 | 4.60 | | 4.60 | 5.70 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 2.60 | 2.60 | | 2.60 | 3.70 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 34 | 34 | 34 | | 13 | 56 | 38 | 38 |
| g / C, Green / Cycle | 0.34 | 0.34 | 0.34 | | 0.13 | 0.56 | 0.38 | 0.38 |
| (v / s)_i Volume / Saturation Flow Rate | 0.10 | 0.10 | 0.31 | | 0.12 | 0.20 | 0.21 | 0.16 |
| s, saturation flow rate [veh/h] | 1603 | 1605 | 1431 | | 3113 | 3204 | 3204 | 1431 |
| c, Capacity [veh/h] | 541 | 542 | 483 | | 419 | 1793 | 1214 | 542 |
| d1, Uniform Delay [s] | 24.41 | 24.41 | 31.79 | | 42.55 | 12.13 | 24.28 | 22.99 |
| k, delay calibration | 0.11 | 0.11 | 0.12 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.31 | 0.31 | 8.19 | | 6.64 | 0.56 | 1.74 | 2.43 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.30 | 0.30 | 0.92 | | 0.89 | 0.36 | 0.54 | 0.42 |
| d, Delay for Lane Group [s/veh] | 24.72 | 24.72 | 39.99 | | 49.19 | 12.68 | 26.02 | 25.41 |
| Lane Group LOS | C | C | D | | D | B | C | C |
| Critical Lane Group | No | No | Yes | | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 2.72 | 2.72 | 10.62 | | 4.68 | 3.52 | 5.86 | 4.05 |
| 50th-Percentile Queue Length [ft/ln] | 67.97 | 68.03 | 265.53 | | 116.97 | 87.89 | 146.59 | 101.31 |
| 95th-Percentile Queue Length [veh/ln] | 4.89 | 4.90 | 15.97 | | 8.23 | 6.33 | 9.83 | 7.29 |
| 95th-Percentile Queue Length [ft/ln] | 122.34 | 122.45 | 399.15 | | 205.65 | 158.20 | 245.87 | 182.36 |

**Movement, Approach, & Intersection Results**

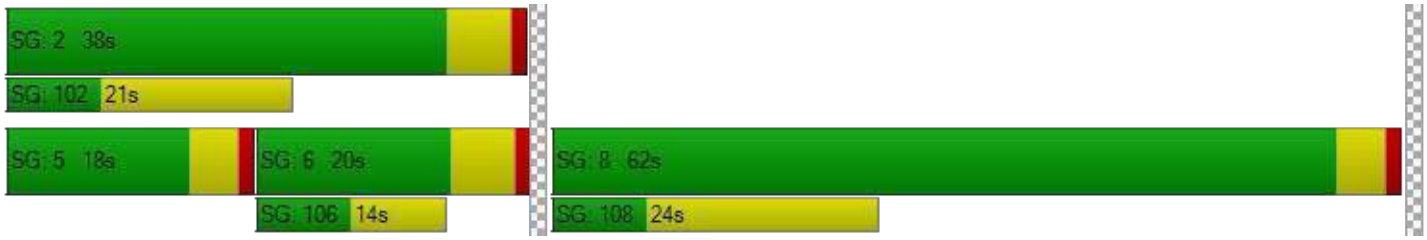
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 24.72 | 24.72 | 39.99 | 0.00 | 0.00 | 0.00 | 49.19 | 12.68 | 0.00 | 0.00 | 26.02 | 25.41 |
| Movement LOS | C | C | D | | | | D | B | | | C | C |
| d_A, Approach Delay [s/veh] | 33.54 | | | 0.00 | | | 26.13 | | | 25.86 | | |
| Approach LOS | C | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 28.17 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.635 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 0.00 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.416 | 2.016 | 0.000 | 2.945 |
| Crosswalk LOS | B | B | F | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1148 | 0 | 646 | 286 |
| d_b, Bicycle Delay [s] | 9.08 | 50.00 | 22.92 | 36.73 |
| l_b,int, Bicycle LOS Score for Intersection | 2.825 | 4.132 | 2.395 | 2.292 |
| Bicycle LOS | C | D | B | B |

## Sequence

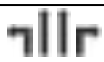
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 6: Sierra/Friendly Valley**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 22.6 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.589 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 125.00 | 100.00 | 100.00 | 135.00 | 100.00 | 400.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 25.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Friendly Valley Pkwy | | | Friendly Valley Pkwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 98 | 1280 | 50 | 76 | 479 | 42 | 61 | 10 | 54 | 42 | 20 | 68 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 24 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 102 | 1356 | 52 | 79 | 520 | 44 | 63 | 10 | 56 | 44 | 21 | 71 |
| Peak Hour Factor | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 27 | 355 | 14 | 21 | 136 | 12 | 16 | 3 | 15 | 12 | 5 | 19 |
| Total Analysis Volume [veh/h] | 107 | 1418 | 54 | 83 | 544 | 46 | 66 | 10 | 59 | 46 | 22 | 74 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lag | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 41 | 48 | 0 | 20 | 27 | 0 | 0 | 32 | 0 | 0 | 32 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 14 | 0 | 0 | 17 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 5.70 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 3.70 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 8 | 59 | 59 | 6 | 58 | 58 | 20 | 20 | 20 | 20 |
| g / C, Green / Cycle | 0.08 | 0.59 | 0.59 | 0.06 | 0.58 | 0.58 | 0.20 | 0.20 | 0.20 | 0.20 |
| (v / s)_i Volume / Saturation Flow Rate | 0.07 | 0.44 | 0.44 | 0.05 | 0.17 | 0.03 | 0.10 | 0.04 | 0.04 | 0.06 |
| s, saturation flow rate [veh/h] | 1603 | 1683 | 1661 | 1603 | 3204 | 1431 | 795 | 1431 | 1198 | 1481 |
| c, Capacity [veh/h] | 133 | 999 | 986 | 104 | 1843 | 823 | 225 | 284 | 138 | 294 |
| d1, Uniform Delay [s] | 45.03 | 14.71 | 14.77 | 46.13 | 10.87 | 9.32 | 39.94 | 33.50 | 46.39 | 34.34 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 10.55 | 4.91 | 5.06 | 13.13 | 0.41 | 0.13 | 0.88 | 0.36 | 1.39 | 0.64 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.80 | 0.74 | 0.74 | 0.80 | 0.30 | 0.06 | 0.34 | 0.21 | 0.33 | 0.33 |
| d, Delay for Lane Group [s/veh] | 55.58 | 19.62 | 19.83 | 59.25 | 11.28 | 9.45 | 40.81 | 33.86 | 47.79 | 34.98 |
| Lane Group LOS | E | B | B | E | B | A | D | C | D | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh/ln] | 3.01 | 12.73 | 12.71 | 2.42 | 3.10 | 0.46 | 1.78 | 1.22 | 1.17 | 2.04 |
| 50th-Percentile Queue Length [ft/ln] | 75.15 | 318.24 | 317.71 | 60.49 | 77.52 | 11.61 | 44.52 | 30.51 | 29.26 | 51.03 |
| 95th-Percentile Queue Length [veh/ln] | 5.41 | 18.58 | 18.55 | 4.36 | 5.58 | 0.84 | 3.21 | 2.20 | 2.11 | 3.67 |
| 95th-Percentile Queue Length [ft/ln] | 135.27 | 464.53 | 463.87 | 108.88 | 139.53 | 20.89 | 80.13 | 54.93 | 52.68 | 91.85 |

**Movement, Approach, & Intersection Results**

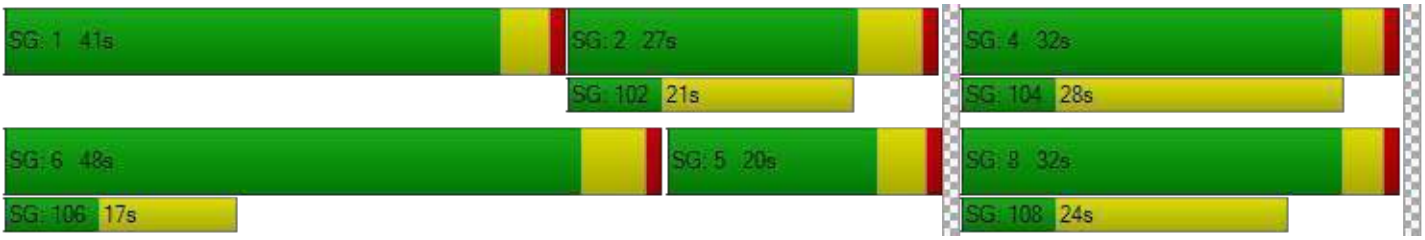
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 55.58 | 19.72 | 19.83 | 59.25 | 11.28 | 9.45 | 40.81 | 40.81 | 33.86 | 47.79 | 34.98 | 34.98 |
| Movement LOS | E | B | B | E | B | A | D | D | C | D | C | C |
| d_A, Approach Delay [s/veh] | 22.15 | | | 17.07 | | | 37.77 | | | 39.13 | | |
| Approach LOS | C | | | B | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 22.59 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.589 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 39.61 | 39.61 | 39.61 | 39.61 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.732 | 2.854 | 2.211 | 2.039 |
| Crosswalk LOS | B | C | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 846 | 426 | 560 | 560 |
| d_b, Bicycle Delay [s] | 16.65 | 30.97 | 25.92 | 25.92 |
| l_b,int, Bicycle LOS Score for Intersection | 2.862 | 2.115 | 1.782 | 1.794 |
| Bicycle LOS | C | B | A | A |

## Sequence

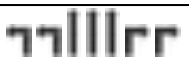
| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 7: Sierra/Via Princessa**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 43.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.683 |

**Intersection Setup**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 200.00 | 100.00 | 100.00 | 200.00 | 100.00 | 250.00 | 360.00 | 100.00 | 630.00 | 200.00 | 100.00 | 300.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 50.00 | | | 50.00 | | | 50.00 | | | 50.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Sierra Hwy | | | Sierra Hwy | | | Via Princessa | | | Via Princessa | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 440 | 930 | 214 | 217 | 364 | 762 | 226 | 872 | 167 | 190 | 769 | 208 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 3 | 15 | 6 | 2 | 11 | 0 | 0 | 44 | 4 | 7 | 69 | 3 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 461 | 983 | 229 | 228 | 390 | 793 | 235 | 951 | 178 | 205 | 869 | 219 |
| Peak Hour Factor | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 | 0.9790 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 118 | 251 | 58 | 58 | 100 | 203 | 60 | 243 | 45 | 52 | 222 | 56 |
| Total Analysis Volume [veh/h] | 471 | 1004 | 234 | 233 | 398 | 810 | 240 | 971 | 182 | 209 | 888 | 224 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 4 | 5 | 2 | 2 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4,5 | | | 2,3 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.6 | 4.7 | 0.0 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 4.7 | 3.6 | 4.7 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 22 | 41 | 0 | 24 | 43 | 43 | 14 | 41 | 41 | 14 | 41 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 28 | 0 | 0 | 28 | 28 | 0 | 28 | 28 | 0 | 28 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.6 | 3.7 | 0.0 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 3.7 | 2.6 | 3.7 | 0.0 |
| Minimum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.60 | 5.70 | 5.70 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 4.60 | 4.60 | 5.70 | 5.70 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.60 | 3.70 | 3.70 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 0.00 | 2.60 | 3.70 | 3.70 |
| g_i, Effective Green Time [s] | 17 | 31 | 31 | 11 | 25 | 40 | 9 | 48 | 71 | 9 | 48 | 48 |
| g / C, Green / Cycle | 0.15 | 0.26 | 0.26 | 0.09 | 0.20 | 0.33 | 0.08 | 0.40 | 0.59 | 0.08 | 0.40 | 0.40 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.22 | 0.16 | 0.07 | 0.09 | 0.32 | 0.08 | 0.21 | 0.13 | 0.07 | 0.19 | 0.16 |
| s, saturation flow rate [veh/h] | 3113 | 4584 | 1431 | 3113 | 4584 | 2532 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 452 | 1177 | 367 | 292 | 941 | 840 | 246 | 1829 | 847 | 246 | 1829 | 571 |
| d1, Uniform Delay [s] | 51.32 | 42.48 | 39.66 | 53.29 | 41.53 | 39.44 | 55.19 | 27.51 | 11.46 | 54.60 | 26.90 | 25.71 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 31.41 | 1.87 | 1.84 | 4.98 | 0.30 | 8.31 | 21.63 | 1.11 | 0.58 | 8.04 | 0.92 | 2.02 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.04 | 0.85 | 0.64 | 0.80 | 0.42 | 0.96 | 0.98 | 0.53 | 0.21 | 0.85 | 0.49 | 0.39 |
| d, Delay for Lane Group [s/veh] | 82.73 | 44.35 | 41.50 | 58.26 | 41.84 | 47.75 | 76.82 | 28.62 | 12.05 | 62.64 | 27.82 | 27.74 |
| Lane Group LOS | F | D | D | E | D | D | E | C | B | E | C | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 8.51 | 9.20 | 6.06 | 3.53 | 3.33 | 11.99 | 4.24 | 6.85 | 2.18 | 3.29 | 6.11 | 4.63 |
| 50th-Percentile Queue Length [ft/ln] | 212.81 | 230.03 | 151.55 | 88.26 | 83.17 | 299.82 | 105.99 | 171.27 | 54.52 | 82.28 | 152.84 | 115.75 |
| 95th-Percentile Queue Length [veh/ln] | 13.54 | 14.18 | 10.10 | 6.35 | 5.99 | 17.67 | 7.62 | 11.14 | 3.93 | 5.92 | 10.17 | 8.16 |
| 95th-Percentile Queue Length [ft/ln] | 338.46 | 354.39 | 252.49 | 158.86 | 149.70 | 441.80 | 190.41 | 278.59 | 98.14 | 148.10 | 254.21 | 203.98 |

**Movement, Approach, & Intersection Results**

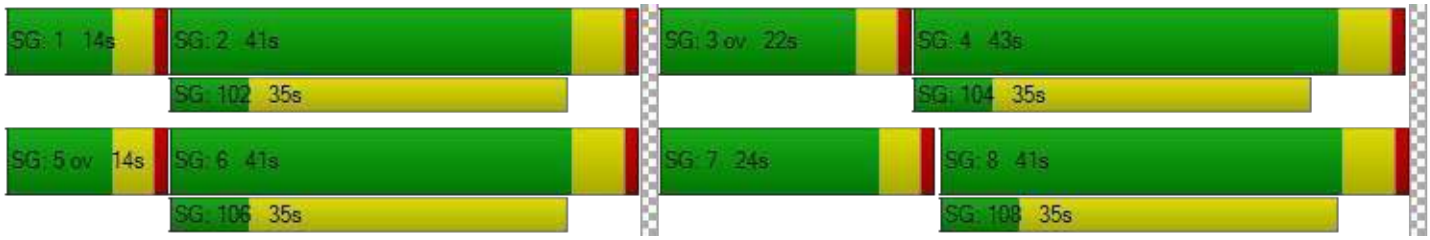
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 82.73 | 44.35 | 41.50 | 58.26 | 41.84 | 47.75 | 76.82 | 28.62 | 12.05 | 62.64 | 27.82 | 27.74 |
| Movement LOS | F | D | D | E | D | D | E | C | B | E | C | C |
| d_A, Approach Delay [s/veh] | 54.54 | | | 47.82 | | | 34.76 | | | 33.32 | | |
| Approach LOS | D | | | D | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 43.41 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.683 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 49.52 | 49.52 | 49.52 | 49.52 |
| l_p,int, Pedestrian LOS Score for Intersection | 3.314 | 3.453 | 3.506 | 3.361 |
| Crosswalk LOS | C | C | D | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 588 | 621 | 588 | 588 |
| d_b, Bicycle Delay [s] | 29.91 | 28.52 | 29.91 | 29.91 |
| l_b,int, Bicycle LOS Score for Intersection | 2.500 | 2.352 | 2.326 | 2.286 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 8: Golden Valley/Project Dwy**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 26.3 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.082 |

**Intersection Setup**

| Name | Project Dwy | | Golden Valley | | Golden Valley | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**Volumes**

| Name | Project Dwy | | Golden Valley | | Golden Valley | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 1705 | 1525 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 | 1.0404 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 63 | 15 | 75 | 23 | 58 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 63 | 15 | 1849 | 1610 | 58 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 16 | 4 | 462 | 403 | 15 |
| Total Analysis Volume [veh/h] | 0 | 63 | 15 | 1849 | 1610 | 58 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.24 | 0.08 | 0.02 | 0.02 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 22.57 | 26.32 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | C | D | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.89 | 0.26 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 22.34 | 6.58 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 22.57 | | 0.21 | | 0.00 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.51 | | | | | |
| Intersection LOS | D | | | | | |

# APPENDIX I
# Golden Valley Road Mixed-Use Vehicle Miles Traveled Analysis

November 14, 2023

TJW ENGINEERING, INC.
TRAFFIC ENGINEERING & TRANSPORTATION PLANNING CONSULTANTS

Mr. Ian Pari, Senior Traffic Engineer
*CITY OF SANTA CLARITA*
23920 Valencia Boulevard, Suite 300
Santa Clarita, CA 91355

**SUBJECT: Golden Valley Road Mixed-Use Vehicle Miles Traveled (VMT) Analysis**

Dear Mr. Pari,

*TJW Engineering, Inc. (*TJW*)* is pleased to submit this Vehicle Miles Traveled (VMT) Analysis for the proposed mixed-use project located at the northwest corner of Golden Valley Road and Sierra Highway in the City of Santa Clarita. The purpose of this memorandum is to satisfy the requirements for disclosure of potential impacts and mitigation measures per the California Environmental Quality Act (CEQA). This analysis has been conducted using guidance from the City of Santa Clarita presented in *Transportation Analysis Updates in Santa Clarita* (May 2020).

## PROJECT DESCRIPTION

The proposed project is located at the northwest corner of Golden Valley Road and Sierra Highway in the City of Santa Clarita. The proposed project will include the following uses:

- 151 senior assisted living dwelling units
- Hotel with 60 rooms, a 2,544 square foot banquet facility, 3,315 square feet of retail, and 2,360 square feet of restaurant space
- 73 condominiums

Project access will be provided via Golden Valley Road. Based on information provided by the project owner and discussion with the City, the hotel is anticipated to have 24 employees and the assisted living facility is anticipated to have 42 employees. The project is anticipated to have 308 residents based on the characteristics of the project zone. The assisted living portion of the proposed project will have 151 residents and the condominiums will have 157 residents.

## BACKGROUND

Senate Bill 743 (SB-743), which was codified in Public Resources Code section 21099, was signed by the Governor in 2013 and directed the Governor's OPR to identify alternative metrics for evaluating transportation impacts under CEQA. Based on this, delay-based analysis (level of service) has been replaced by VMT. Pursuant to Section 21099, the criteria for determining the significance of transportation impacts must "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." Recently adopted changes to the CEQA Guidelines in response to Section 21099 include a new section (15064.3) that specifies that VMT is the most appropriate measure of transportation impacts. A separate Technical Advisory issued by OPR provides additional technical details on calculating VMT and assessing transportation impacts for various types of projects.

## THRESHOLDS

If a project within the City of Santa Clarita does not screen out and a VMT analysis is required, the Guidelines require that VMT be estimated using the Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Travel Demand Forecast Model. VMT is required to be reported as Home-Based VMT per Capita for residential projects and Home-Based Work VMT per Employee for office projects. Total VMT or VMT per Service Population can be reported for area plans, large-scale retail projects, or other project types, such as special event venues. Transportation demand management strategies to be included as project design features should be considered in the estimation of a project's daily vehicle trips and VMT. A project has a potentially significant VMT impact if it meets one or more of the criteria listed below:

- **Residential Projects.** Project exceeds 15% below citywide Baseline VMT for Home-Based VMT per Capita**.**
- **Employment (Commercial or Industrial) Projects.** Project exceeds 15% below citywide Baseline VMT for Home-Based Work VMT per Employee.
- **Regional Retail Projects.** Project results in a net increase in total VMT in comparison to the citywide Baseline VMT.
- **Mixed-Use Projects.** Evaluate each project land use component separately using the criteria above.
- **Land Use Plans.** Plan exceeds 15% below citywide Baseline VMT for Total VMT per service population.
- **Other land use types.** Project exceeds 15% below citywide Baseline VMT. For land use types not listed above, the City can determine the appropriate VMT metric depending on the project characteristics. For projects that are generally producing job-related travel, the employment generating VMT (Home-Based Work VMT per Employee) can be compared to the Baseline. For

other projects, the total VMT per service population can be compared to the citywide Baseline, or the net change in Total VMT can be estimated.

- **Transportation Projects.** Project results in an increase in VMT in the study area in comparison to Baseline conditions.

## ANALYSIS METHODOLOGY & FINDINGS

This analysis was conducted based on the City's Guidelines and in discussion with City staff. The analysis was conducted using the SCAG Regional Transportation Plan Model. Since the project is a mixed-use project, each land use (residential and employment) was analyzed separately as directed by City staff.

Although the thresholds in the Guidelines are based on interpolation between the 2016 and 2040 models to obtain 2020 VMT, the model was run using the 2020 socio-economic dataset (SED) released by SCAG. To present an apples-to-apples comparison, the VMT comparison was conducted for the no-project and with project conditions using the same version of the model and SED. The proposed project is located in traffic analysis zone (TAZ, Tier 2) 20255100. The project was coded into the model with the condominiums in TAZ 20255000, assisted senior living in TAZ 20255000, and the hotel in TAZ 20255000. The existing SED from the zone was moved to the adjacent TAZ 20257100.

### *Model Outputs*

**Table A** summarizes the findings of the model runs for the proposed project and the City of Santa Clarita.

*Table A: Model VMT Summary*

| | Proposed Project | City of Santa Clarita[1] |
|---|---|---|
| Total Households | 224 | 80,297 |
| Total Population | 308 | 236,531 |
| Total Employment | 66 | 84,969 |
| Total Service Population | 374 | 321,500 |
| Total Homebased VMT (HB) VMT | 4,409 | 5,286,676 |
| Total Homebased Work (HBW) VMT | 1,131 | 1,692,308 |
| Total PA VMT | 12,297 | 10,561,501 |
| VMT per Capita | 14.3 | 22.4 |
| VMT per Employee | 17.1 | 19.9 |
| Total PA VMT per Service Population | 32.8 | 32.9 |
| **VMT per Capita Threshold (15% Lower)** | | **19.0** |
| **VMT per Employee Threshold (15% Lower)** | | **16.9** |

Source: *Golden Valley Road – VMT Analysis* (Translutions, November 2023).
1: Estimated from 2020 No Project model run by Translutions.

As seen in **Table A**, the project would have a less than significant impact for the residential portion of the project, however, there is a significant impact for the employment portion of the project based on the VMT/employee metric. However, based on prior discussion with City staff, since the project is an employment generating use whereas a majority of the City residents have to leave the City for work, the metric of net change in work VMT was applied to the project. The baseline home-based work (HBW) VMT for the City was calculated to be 1,692,308 miles under without project conditions, which would decrease to 1,584,617 miles when the project is constructed. In addition, the total home-based VMT for the City under without project conditions was calculated to be 6,978,984 miles under without project conditions, which is anticipated to decrease to 6,929,836 miles after the project is in operation. The analysis shows that the project reduces both the home-based work VMT as well as the overall home-based VMT for the City. **Table B** summarizes this finding of the analysis.

*Table B: Project VMT Summary*

| | City of Santa Clarita (With Project) | City of Santa Clarita (Without Project) |
|---|---|---|
| Total Employment | 83,035 | 84,969 |
| Total Home-Based Work VMT | 1,584,617 | 1,692,308 |
| VMT Per Employee | 18.63 | 19.92 |
| Total Employee + Population (SP) | 320,334 | 319,960 |
| Total Home-Based VMT | 6,929,836 | 6,978,984 |
| Home-Based VMT/SP | 21.63 | 21.81 |

Source: *Golden Valley Road – VMT Analysis* (Translutions, November 2023).

As seen in Table B, the project reduces VMT for employment and residential uses within the City, and therefore, the employment portion of the project also has a less than significant impact.

The City's Guidelines indicate if a less than significant impact is determined under baseline conditions, a less than significant impact would occur under cumulative conditions as well. Therefore, the project's impacts under cumulative conditions are also anticipated to be less than significant.

## CONCLUSION

The residential and employment portion of the project would have a less than significant impact. Therefore, the project's impacts are considered less than significant.

Please contact us at (949) 878-3509 if you have any questions regarding this analysis.

Sincerely,

Thomas Wheat, PE, TE
President

David Chew, PTP
Transportation Planner

Registered Civil Engineer *#69467*
Registered Traffic Engineer *#2565*

**2020**

| **TTM 68203 (Condos)** | | | **TTM 68203 (SeniorHH)** | | |
|---|---|---|---|---|---|
| TAZ | 1 | 20255100 | TAZ | 1 | 20255200 |
| TAZ_TIER1 | 1 | 20255000 | TAZ_TIER1 | 1 | 20255000 |
| TAZ_ID | 1 | 20255100 | TAZ_ID | 1 | 20255200 |
| POP | 1 | 157 | POP | 1 | 151 |
| RES | 1 | 157 | RES | 1 | 151 |
| HH | 1 | 73 | HH | 1 | 151 |
| GN | 1 | - | GN | 1 | - |
| K12 | 1 | - | K12 | 1 | - |
| COLLEGE | 1 | - | COLLEGE | 1 | - |
| MEDIAN | 1 | 42,553 | MEDIAN | 1 | 52,179 |
| TOT_EMP | 1 | - | TOT_EMP | 1 | - |
| Internal_Sequence_ | 1 | 775 | Internal_Se | 1 | 776 |
| HBW_A_VMT | 1 | - | HBW_A_VM | 1 | - |
| HB_P_VMT | 1 | 1,534 | HB_P_VMT | 1 | 1,609 |
| TOT_P_VMT | 1 | 1,703 | TOT_P_VM | 1 | 1,958 |
| TOT_A_VMT | 1 | 375 | TOT_A_VM | 1 | 861 |
| | | | | | |
| Tot HBP_VMT | | 1,534 | Tot HBP_VMT | | 1,609 |
| TotHBWA_VMT | | - | TotHBWA_VMT | | - |
| TotPA_VMT | | 2,078 | TotPA_VMT | | 2,819 |
| TotOD_VMT | | | TotOD_VMT | | |
| Tot_SerPop | | 157 | Tot_SerPop | | 151 |
| | | | | | |
| VMT/Cap | | 9.7 | VMT/Cap | | 10.7 |
| VMT/Emp | | #DIV/0! | VMT/Emp | | #DIV/0! |
| PAVMT/Serpop | | 13.2 | PAVMT/Serpop | | 18.7 |

**2020**

| TTM 68203 (Hotel+Assited Living Employe | | | TTM 68203 (Total Proj) | | |
|---|---|---|---|---|---|
| TAZ | 1 | 20255300 | TAZ | 1 | |
| TAZ_TIER1 | 1 | 20255000 | TAZ_TIER1 | 1 | |
| TAZ_ID | 1 | 20255300 | TAZ_ID | 1 | |
| POP | 1 | - | POP | 1 | 308 |
| RES | 1 | - | RES | 1 | 308 |
| HH | 1 | - | HH | 1 | 224 |
| GN | 1 | - | GN | 1 | - |
| K12 | 1 | - | K12 | 1 | - |
| COLLEGE | 1 | - | COLLEGE | 1 | - |
| MEDIAN | 1 | 54,650 | MEDIAN | 1 | 149,382 |
| TOT_EMP | 1 | 66 | TOT_EMP | 1 | 66 |
| Internal_Se | 1 | 777 | Internal_Se | 1 | 2,328 |
| HBW_A_VI | 1 | 1,131 | HBW_A_VI | 1 | 1,131 |
| HB_P_VMT | 1 | - | HB_P_VMT | 1 | 4,409 |
| TOT_P_VM | 1 | 858 | TOT_P_VM | 1 | 5,924 |
| TOT_A_VM | 1 | 4,828 | TOT_A_VM | 1 | 6,373 |
| | | | | | |
| Tot HBP_VMT | | - | Tot HBP_VMT | | 4,409 |
| TotHBWA_VMT | | 1,131 | TotHBWA_VMT | | 1,131 |
| TotPA_VMT | | 5,686 | TotPA_VMT | | 12,297 |
| TotOD_VMT | | | TotOD_VMT | | |
| Tot_SerPop | | 66 | Tot_SerPop | | 374 |
| | | | | | |
| VMT/Cap | | #DIV/0! | VMT/Cap | | 14.3 |
| VMT/Emp | | 17.1 | VMT/Emp | | 17.1 |
| PAVMT/Serpop | | 86.2 | PAVMT/Serpop | | 32.8 |

**2020**

| City of SantaClarita (No Project) | | |
|---|---|---|
| TAZ | 101 | 2045157400 |
| TAZ_TIER1 | 101 | 2045137000 |
| TAZ_ID | 101 | 2045157400 |
| POP | 101 | 240,935 |
| RES | 101 | 239,246 |
| HH | 101 | 82,282 |
| GN | 101 | 1,156 |
| K12 | 101 | 43,926 |
| COLLEGE | 101 | 21,488 |
| | | |
| TOT_EMP | 101 | 85,458 |
| Internal_Seque | 101 | 76,688 |
| HBW_A_VMT | 101 | 1,701,590 |
| HB_P_VMT | 101 | 5,410,498 |
| TOT_P_VMT | 101 | 6,415,746 |
| TOT_A_VMT | 101 | 4,312,912 |
| | | |
| Tot HBP_VMT | | 5,410,498 |
| TotHBWA_VMT | | 1,701,590 |
| TotPA_VMT | | 10,728,658 |
| TotOD_VMT | | |
| Tot_SerPop | | 324,704 |
| | | |
| VMT/Cap | | 22.6 |
| VMT/Emp | | 19.9 |
| PAVMT/Serpop | | 33.0 |

| City of SantaClarita (With Project) | | |
|---|---|---|
| TAZ | 101 | 2045157400 |
| TAZ_TIER1 | 101 | 2045137000 |
| TAZ_ID | 101 | 2045157400 |
| POP | 101 | 241,243 |
| RES | 101 | 239,554 |
| HH | 101 | 82,506 |
| GN | 101 | 1,156 |
| K12 | 101 | 43,926 |
| COLLEGE | 101 | 21,488 |
| MEDIAN | 101 | 6756536 |
| TOT_EMP | 101 | 85,491 |
| Internal_Se | 101 | 76,688 |
| HBW_A_VI | 101 | 1,592,178 |
| HB_P_VMT | 101 | 5,472,151 |
| TOT_P_VM | 101 | 6,160,984 |
| TOT_A_VM | 101 | 4,127,078 |
| | | |
| Tot HBP_VMT | | 5,472,151 |
| TotHBWA_VMT | | 1,592,178 |
| TotPA_VMT | | 10,288,062 |
| TotOD_VMT | | |
| Tot_SerPop | | 325,046 |
| | | |
| VMT/Cap | | 22.8 |
| VMT/Emp | | 18.6 |
| PAVMT/Serpop | | 31.7 |

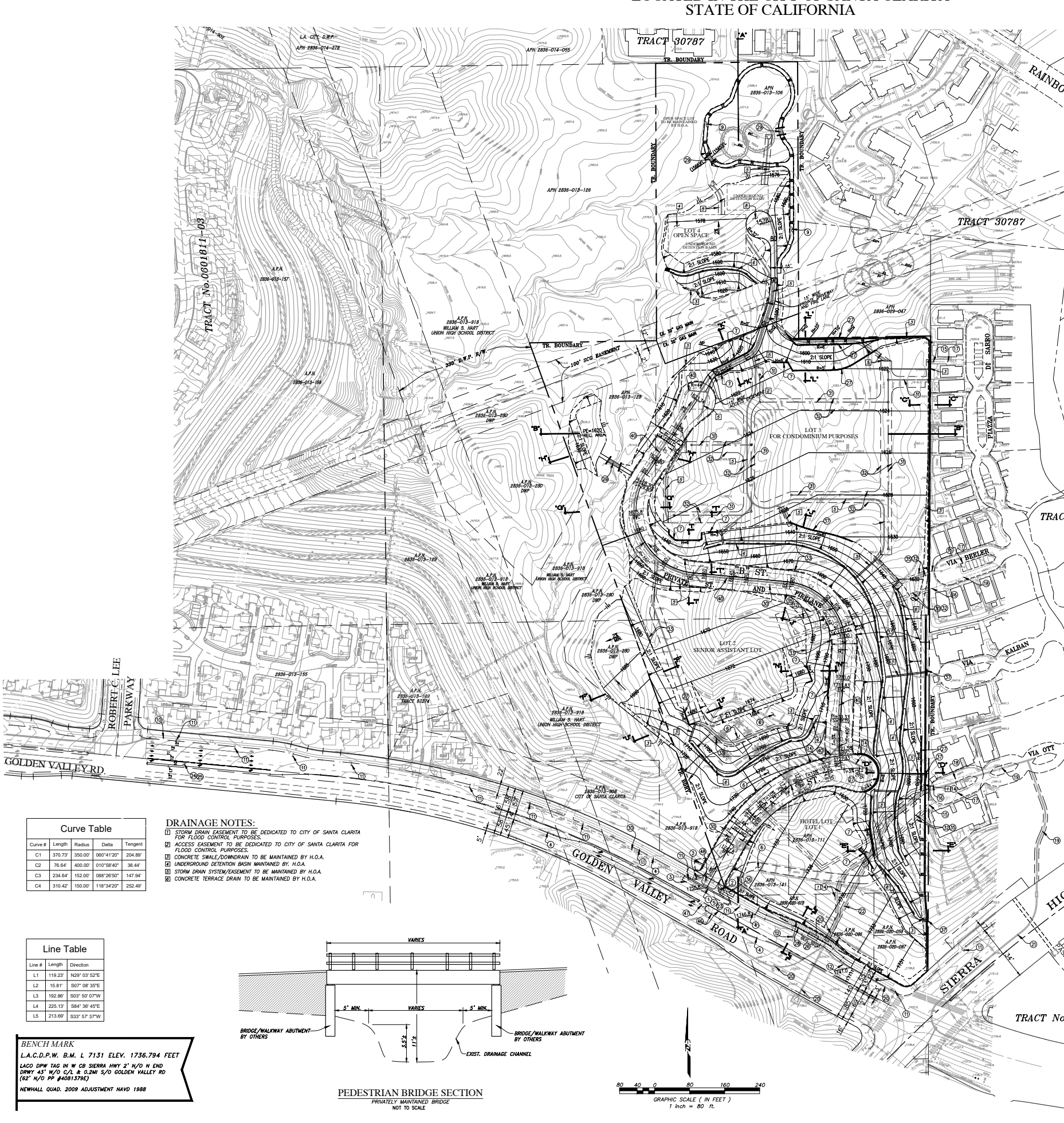
**2020**

| City of SantaClarita (No Project) | | |
|---|---|---|
| TAZ | 100 | 2024891400 |
| TAZ_TIER1 | 100 | 2024871000 |
| TAZ_ID | 100 | 2024891400 |
| POP | 100 | 236,531 |
| RES | 100 | 234,991 |
| HH | 100 | 80,927 |
| GN | 100 | 1,156 |
| K12 | 100 | 43,628 |
| COLLEGE | 100 | 21,488 |
| | | |
| TOT_EMP | 100 | 84,969 |
| Internal_Se | 100 | 75,892 |
| HBW_A_VM | 100 | 1,692,308 |
| HB_P_VMT | 100 | 5,286,676 |
| TOT_P_VM | 100 | 6,277,682 |
| TOT_A_VM | 100 | 4,283,819 |
| | | |
| Tot HBP_VMT | | 5,286,676 |
| TotHBWA_VMT | | 1,692,308 |
| TotPA_VMT | | 10,561,501 |
| TotOD_VMT | | |
| Tot_SerPop | | 319,960 |
| | | |
| VMT/Cap | | 22.5 |
| VMT/Emp | | 19.9 |
| PAVMT/Serpop | | 33.0 |

| City of SantaClarita (With Project) | | |
|---|---|---|
| TAZ | 100 | 2024891400 |
| TAZ_TIER1 | 100 | 2024871000 |
| TAZ_ID | 100 | 2024891400 |
| POP | 100 | 236,839 |
| RES | 100 | 235,299 |
| HH | 100 | 81,151 |
| GN | 100 | 1,156 |
| K12 | 100 | 43,628 |
| COLLEGE | 100 | 21,488 |
| MEDIAN | 100 | 6642784 |
| TOT_EMP | 100 | 85,035 |
| Internal_Se | 100 | 75,892 |
| HBW_A_VM | 100 | 1,584,617 |
| HB_P_VMT | 100 | 5,345,219 |
| TOT_P_VM | 100 | 6,027,779 |
| TOT_A_VM | 100 | 4,102,504 |
| | | |
| Tot HBP_VMT | | 5,345,219 |
| TotHBWA_VMT | | 1,584,617 |
| TotPA_VMT | | 10,130,283 |
| TotOD_VMT | | |
| Tot_SerPop | | 320,334 |
| | | |
| VMT/Cap | | 22.7 |
| VMT/Emp | | 18.6 |
| PAVMT/Serpop | | 31.6 |

# TENTATIVE TRACT MAP No. 68

LOCATED IN THE CITY OF SANTA CLARITA
STATE OF CALIFORNIA




| Curve Table | | | | |
|---|---|---|---|---|
| Curve # | Length | Radius | Delta | Tangent |
| C1 | 370.73' | 350.00' | 060°41'20" | 204.89' |
| C2 | 76.64' | 400.00' | 010°58'40" | 38.44' |
| C3 | 234.64' | 152.00' | 088°26'50" | 147.94' |
| C4 | 310.42' | 150.00' | 118°34'20" | 252.49' |

| Line Table | | |
|---|---|---|
| Line # | Length | Direction |
| L1 | 119.23' | N29° 03' 52"E |
| L2 | 15.81' | S07° 08' 35"E |
| L3 | 192.86' | S03° 50' 07"W |
| L4 | 225.13' | S84° 36' 45"E |
| L5 | 213.69' | S33° 57' 37"W |

## DRAINAGE NOTES:

1. STORM DRAIN EASEMENT TO BE DEDICATED TO CITY OF SANTA CLARITA FOR FLOOD CONTROL PURPOSES.
2. ACCESS EASEMENT TO BE DEDICATED TO CITY OF SANTA CLARITA FOR FLOOD CONTROL PURPOSES.
3. CONCRETE SWALE/DOWNDRAIN TO BE MAINTAINED BY H.O.A.
4. UNDERGROUND DETENTION BASIN MAINTAINED BY. H.O.A.
5. STORM DRAIN SYSTEM/EASEMENT TO BE MAINTAINED BY H.O.A.
6. CONCRETE TERRACE DRAIN TO BE MAINTAINED BY H.O.A.

*BENCH MARK*

*L.A.C.D.P.W. B.M. L 7131 ELEV. 1736.794 FEET*

*LACO DPW TAG IN W CB SIERRA HWY 2' N/O N END DRWY 43' W/O C/L & 0.2MI S/O GOLDEN VALLEY RD (62' N/O PP #4081379E)*

*NEWHALL QUAD. 2009 ADJUSTMENT NAVD 1988*




PEDESTRIAN BRIDGE SECTION
*PRIVATELY MAINTAINED BRIDGE*
NOT TO SCALE




J:\Civil 3D Projects\20220019\00_Xtnn\Xtnn.dwg Oct 19, 2021 11:44 am MERINI