Image Reference: Google Earth, Imagery Date: 11/20/2020, Accessed 11/30/2021

WOOD RODGERS
1361 Corporate Boulevard, Reno, NV 89502
Phone 775.823.4068 Fax 775.823.4066

SITE MAP

Geotechnical Investigation
LOMPA RANCH - PHASES B1 & B2
RYDER HOMES
CARSON CITY, NV

Project No.: 36210001
Date: 11/30/21

PLATE A-1b

Reference: Phase 2 Overall Layout, JK Architecture Engineering

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Phone 775.823.4068 Fax 775.823.4066

IMPROVEMENT MAP

Geotechnical Investigation
LOMPA RANCH - PHASES B1 & B2
RYDER HOMES
CARSON CITY, NV

Project No.: 36210001
Date: 11/30/21

PLATE A-1c

Wood Rodgers Inc.
1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-1

CLIENT Ryder Homes
PROJECT NAME Lompa Ranch - Phases B1 & B2
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 11/9/21 **COMPLETED** 11/9/21
GROUND ELEVATION 4638 ft **TEST PIT SIZE** 36 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo ECR 235
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Carson City Map Geo
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		CLAYEY SAND, (SC) medium dense, very moist, black brown, low plasticity	GB 1A					16.2	27	14	13	41.3
2.5		SILTY SAND, (SM) very dense, very moist, tan brown, nonplastic	GB 1B									
5.0		SILTY SAND, (SM) very dense, very moist, reddish brown, nonplastic	GB 1C									

Bottom of Test Pit at 6.0 Feet.

GEOTECH BH COLUMNS PLATE - GINT STD US LAB.GDT - 12/7/21 15:15 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\3621_LOMPA_RANCH\LOMPA_RANCH_OA\GEOTECH\GEOTECH\GINT\11.2021\LOMPA RANCH B1 AND B2.GPJ

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1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-2

CLIENT Ryder Homes
PROJECT NAME Lompa Ranch - Phases B1 & B2
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 11/9/21 **COMPLETED** 11/9/21
GROUND ELEVATION 4632 ft **TEST PIT SIZE** 36 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo ECR 235
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Carson City Map Geo
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		CLAYEY SAND, (SC) medium dense, very moist, black brown, low to medium plasticity	GB 2A									
2.5		CLAYEY SAND, (SC) very dense, slightly moist, gray brown, low plasticity	GB 2B									
5.0		CLAYEY SAND, (SC) very dense, very moist, brown, medium plasticity	GB 2C									
		SILTY SAND, (SM) very dense, very moist, brown, nonplastic										
7.5			GB 2D									
10.0		Bottom of Test Pit at 10.0 Feet.										

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1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-3

CLIENT Ryder Homes
PROJECT NAME Lompa Ranch - Phases B1 & B2
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 11/9/21 **COMPLETED** 11/9/21
GROUND ELEVATION 4635 ft **TEST PIT SIZE** 36 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo ECR 235
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Carson City Map Geo
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		CLAYEY SAND, (SC) medium dense, very moist, black brown, low to medium plasticity	GB 3A									
2.5		CLAYEY SAND, (SC) very dense, sligtly moist, light gray, low to medium plasticity	GB 3B									
5.0		SILTY SAND, (SM) very dense, very moist, brown, nonplastic	GB 3C									
7.5			GB 3D									
10.0		Bottom of Test Pit at 10.0 Feet.										

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1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-4

CLIENT Ryder Homes
PROJECT NAME Lompa Ranch - Phases B1 & B2
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 11/9/21 **COMPLETED** 11/9/21
GROUND ELEVATION 4638 ft **TEST PIT SIZE** 36 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo ECR 235
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Carson City Map Geo
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		CLAYEY SAND, (SC) medium dense, very moist, black brown, low to medium plasticity	GB 4A									
2.5		CLAYEY SAND, (SC) very dense, sligtly moist, light gray, low to medium plasticity, slightly cemented	GB 4B									
5.0		SILTY SAND, (SM) very dense, moist, tan, nonplastic	GB 4C									
7.5												
10.0		Bottom of Test Pit at 10.0 Feet.										

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1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-5

CLIENT Ryder Homes
PROJECT NAME Lompa Ranch - Phases B1 & B2
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 11/9/21 **COMPLETED** 11/9/21
GROUND ELEVATION 4633 ft **TEST PIT SIZE** 36 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo ECR 235
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Carson City Map Geo
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		CLAYEY SAND, (SC) medium dense, very moist, black brown, low to medium plasticity	SH 5A					13.3	32	17	15	45.4
		Very dense, sligtly moist, light gray, slightly cemented										
2.5			GB 5C									
		SILTY, CLAYEY SAND, (SC-SM) very dense, moist, brown, slightly plastic	GB 5D									
5.0												
7.5		FAT CLAY, (CH) very stiff, very moist, dark gray, high plasticity, rootlets encountered	GB 5E									
10.0		Bottom of Test Pit at 10.0 Feet.										

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1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-6

CLIENT Ryder Homes
PROJECT NAME Lompa Ranch - Phases B1 & B2
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 11/9/21 **COMPLETED** 11/9/21
GROUND ELEVATION 4630 ft **TEST PIT SIZE** 36 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo ECR 235
▽ **AT TIME OF EXCAVATION** 9.0 ft
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION ---
NOTES: Carson City Map Geo
AFTER EXCAVATION ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SILTY SAND, (SM) medium dense, very moist, black brown, medium plasticity	GB 6A					23.9	44	28	16	37.5
2.5		CLAYEY SAND, (SC) medium dense, sligtly moist, light gray, low plasticity	GB 6B									
5.0		SILTY, CLAYEY SAND, (SC-SM) very dense, brown, low plasticity, orange mottling at five feet	GB 6C									
7.5		SANDY FAT CLAY, (CH) very stiff, very moist, dark gray, medium to high plasticity, orange mottling observed	GB 6D									

▽

Bottom of Test Pit at 9.0 Feet.

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1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-7

CLIENT Ryder Homes
PROJECT NAME Lompa Ranch - Phases B1 & B2
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 11/9/21 **COMPLETED** 11/9/21
GROUND ELEVATION 4636 ft **TEST PIT SIZE** 36 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo ECR 235
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Carson City Map Geo
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SANDY LEAN CLAY, (CL) very stiff, very moist, black brown, medium plasticity	GB 7A									
2.5		CLAYEY SAND, (SC) very dense, slightly moist, light gray, low to medium plasticity, slightly cemented	GB 7B									
5.0		SILTY, CLAYEY SAND, (SC-SM) very dense, moist, brown, slightly plastic	GB 7C									
7.5		FAT CLAY WITH SAND, (CH) very stiff, very moist, dark gray brown, medium to high plasticity	GB 7D									
10.0		Bottom of Test Pit at 10.0 Feet.										

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Wood Rodgers Inc.
1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-8

CLIENT Ryder Homes
PROJECT NAME Lompa Ranch - Phases B1 & B2
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 11/9/21 **COMPLETED** 11/9/21
GROUND ELEVATION 4632 ft **TEST PIT SIZE** 36 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo ECR 235
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Carson City Map Geo
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SANDY LEAN CLAY, (CL) very stiff, very moist, black brown, medium plasticity	GB 8A									
2.5		CLAYEY SAND, (SC) very dense, slightly moist, light gray, low to medium plasticity, moiderately cemented	GB 8B									
5.0		SILTY, CLAYEY SAND, (SC-SM) very dense, moist, brown, slightly plastic	GB 8C									
7.5		FAT CLAY WITH SAND, (CH) very stiff, very moist, dark gray brown, high plasticity	GB 8D									
10.0		Bottom of Test Pit at 10.0 Feet.										

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1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-9

CLIENT Ryder Homes
PROJECT NAME Lompa Ranch - Phases B1 & B2
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 11/9/21 **COMPLETED** 11/9/21
GROUND ELEVATION 4629 ft **TEST PIT SIZE** 36 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo ECR 235
▽ **AT TIME OF EXCAVATION** 9.0 ft
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION ---
NOTES: Carson City Map Geo
AFTER EXCAVATION ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		LEAN CLAY WITH SAND, (CL) very stiff, very moist, black brown, medium plasticity	GB 9A									
		SANDY LEAN CLAY, (CL) very stiff, slightly moist, gray brown, low plasticity	GB 9B					15.6	32	20	12	53.3
2.5		CLAYEY SAND, (SC) very dense, very moist, brown, low to medium plasticity	GB 9C									
5.0		SILTY, CLAYEY SAND, (SC-SM) very dense, very moist, brown, slightly plastic	GB 9D									
7.5		SANDY LEAN CLAY, (CH) very stiff, very moist, dark gray brown, medium to high plasticity	GB 9E									

▽

Bottom of Test Pit at 9.0 Feet.

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Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-10

CLIENT Ryder Homes
PROJECT NAME Lompa Ranch - Phases B1 & B2
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 11/9/21 **COMPLETED** 11/9/21
GROUND ELEVATION 4632 ft **TEST PIT SIZE** 36 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo ECR 235
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Carson City Map Geo
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		LEAN CLAY WITH SAND, (CL) very stiff, very moist, dark brown, medium plasticity	GB 10A									
2.5		CLAYEY SAND, (SC) very dense, very moist, brown, low to medium plasticity	GB 10B									
5.0		SILTY, CLAYEY SAND, (SC-SM) very dense, very moist, brown, slightly plastic										

Bottom of Test Pit at 6.5 Feet.

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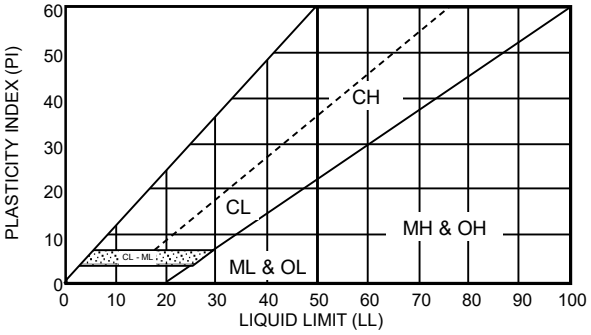
MAJOR DIVISION					TYPICAL NAMES
COARSED-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	**GRAVEL** MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES		GW	WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES		GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND
				GC	CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SAND MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES		SW	WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
				SP	POORLY GRADED SAND WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES		SM	SILTY SANDS WITH OR WITHOUT GRAVEL
				SC	CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	**SILT AND CLAY** LIQUID LIMIT 50% OR LESS			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
				OL	ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILT AND CLAY LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOLID, ELASTIC SILTS
				CH	INORGANIC CLAYS OR HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC SILTS OR CLAYS MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS



CONSISTENCY		RELATIVE DENSITY	
SILTS & CLAYS	SPT BLOW* COUNTS (N)	SANDS & GRAVELS	SPT BLOW* COUNTS (N)
VERY SOFT	0 - 2	VERY LOOSE	0 - 4
SOFT	3 - 4	LOOSE	5 - 10
MEDIUM STIFF	5 - 8	MEDIUM DENSE	11 - 30
STIFF	9 - 15	DENSE	31 - 50
VERY STIFF	16 - 30	VERY DENSE	50 +
HARD	30 +		

* The Standard Penetration Resistance (N) In blows per foot is obtained by the ASTM D1585 procedure using 2" O.D., 1 3/8" I.D. samplers.

DESCRIPTION OF ESTIMATED PERCENTAGES OF GRAVEL, SAND, AND FINES	
TRACE	Particles are present but est. < 5%
FEW	5% - 10%
LITTLE	15% - 20%
SOME	30% - 45%
MOSTLY	50% - 100%

NOTE: Percentages are presented within soil description for soil horizon with laboratory tested soil samples.

DEFINITIONS OF SOIL FRACTIONS	
SOIL COMPONENT	PARTICLE SIZE RANGE
COBBLES	ABOVE 3 INCHES
GRAVEL	3 IN. TO NO. 4 SIEVE
COARSE GRAVEL	3 IN. TO 3/4 IN.
FINE GRAVEL	3/4 IN. TO NO. 4 SIEVE
SAND	NO. 4 TO NO. 200
COARSE SAND	NO. 4 TO NO. 10
MEDIUM SAND	NO. 10 TO NO. 40
FINE SAND	NO. 40 TO NO. 200
FINES (SILT OR CLAY)	MINUS NO. 200 SIEVE

WOOD RODGERS
1361 Corporate Boulevard, Reno, NV 89502
Phone 775.823.4068 Fax 775.823.4066

UNIFIED SOIL CLASSIFICATION AND KEY TO SOIL DESCRIPTIONS

Geotechnical Investigation
LOMPA RANCH - PHASES B1 & B2
RYDER HOMES
CARSON CITY, NV

Project No.: 36210001
Date: 11/30/21

PLATE A-3

Wood Rodgers Inc.
1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

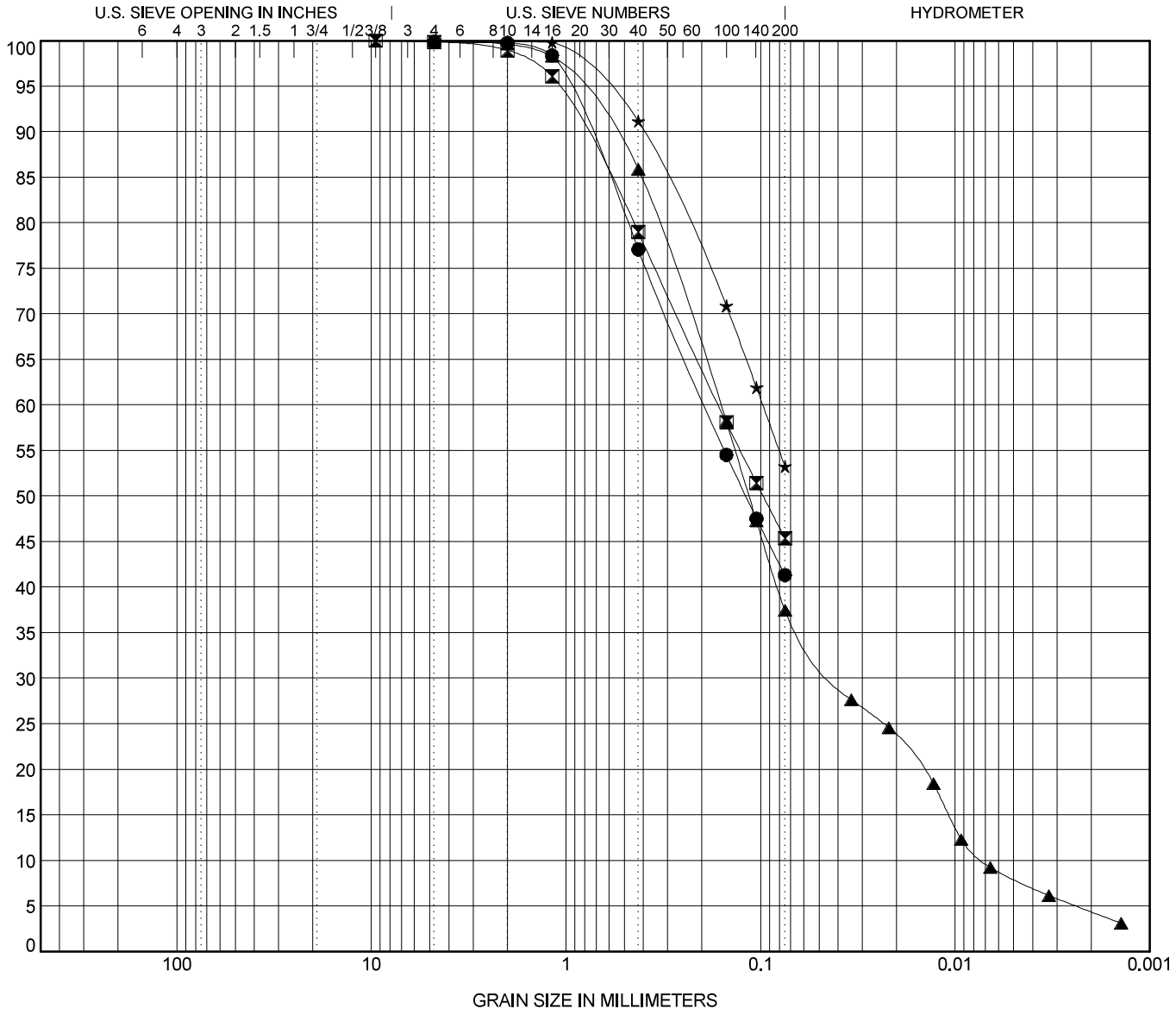
GRAIN SIZE DISTRIBUTION

CLIENT Ryder Homes

PROJECT NAME Lompa Ranch - Phases B1 & B2

PROJECT NUMBER 3621001

PROJECT LOCATION Carson City, Nevada



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	TEST PIT	MID-DEPTH	Classification	LL	PL	PI	Cc	Cu
●	TP-1	0.0	CLAYEY SAND(SC)	27	14	13		
⊠	TP-2,5,8	0.0	CLAYEY SAND(SC)	32	17	15		
▲	TP-6	0.0	SILTY SAND(SM)	44	28	16	1.48	22.25
★	TP-9	1.5	SANDY LEAN CLAY(CL)	32	20	12		

	TEST PIT	MID-DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	TP-1	0.0	4.75	0.193				58.6	41.3	
⊠	TP-5	0.0	9.5	0.165			0.1	54.5	45.4	
▲	TP-6	0.0	4.75	0.16	0.041	0.007	0.0	62.5	29.5	8.0
★	TP-9	1.5	4.75	0.097			0.0	46.7	53.3	

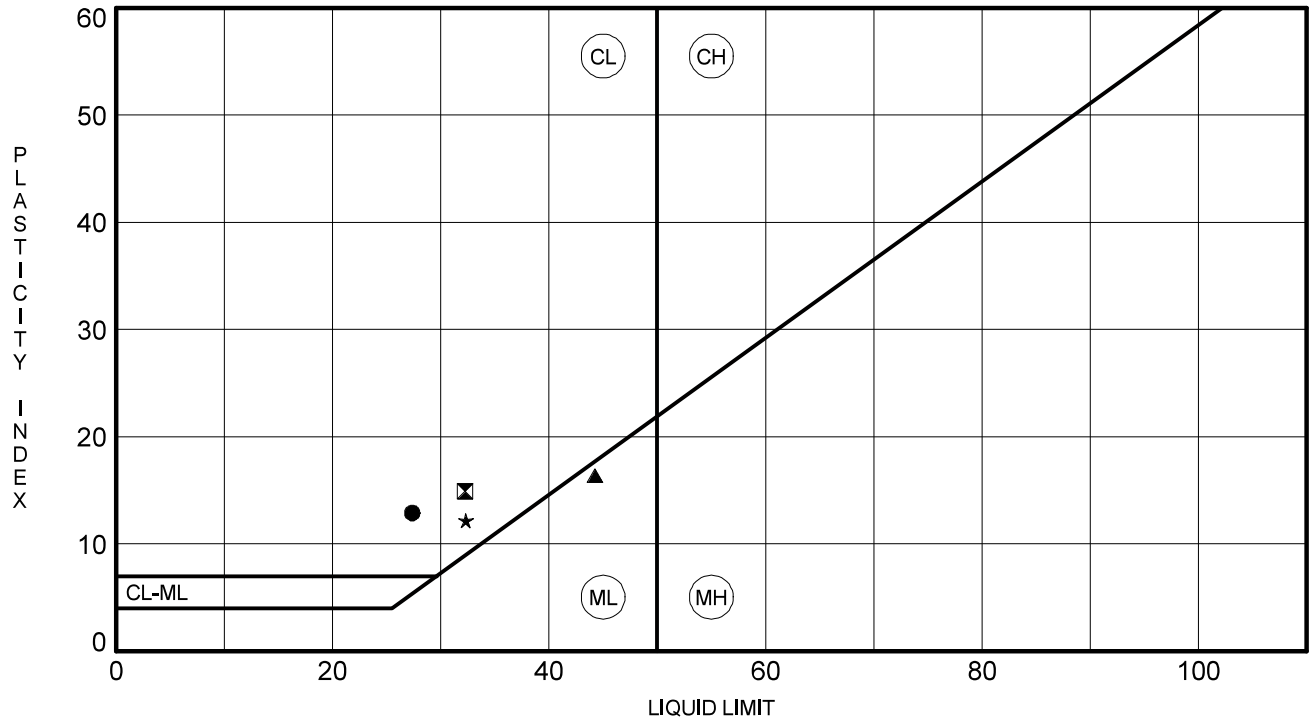
GRAIN SIZE - GINT STD US LAB.GDT - 11/23/21 09:16 - \\WOODRODGERS.LOC\PRODUCTIONDATA\JOBS-RENO\JOBS\3621_LOMPA_RANCH\LOMPA_RANCH_OA\GEOTECH\GEOTECH\GINT\11.2021\LOMPA RANCH B1 AND B2.GPJ

Wood Rodgers Inc.
1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

ATTERBERG LIMITS' RESULTS

CLIENT Ryder Homes **PROJECT NAME** Lompa Ranch - Phases B1 & B2

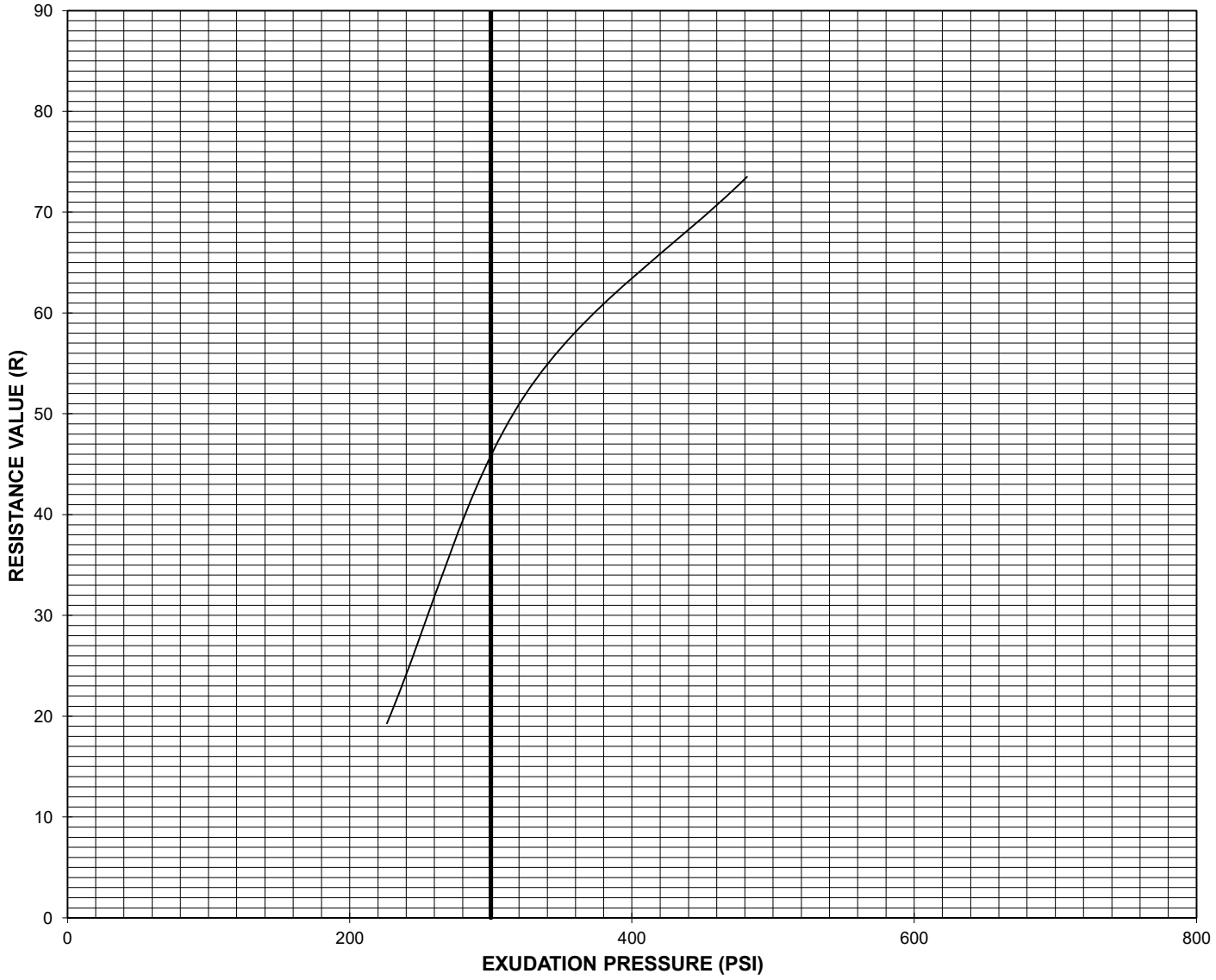
PROJECT NUMBER 3621001 **PROJECT LOCATION** Carson City, Nevada



	TEST PIT	MID-DEPTH	LL	PL	PI	Fines	Classification
●	**TP-1**	**0.0**	**27**	**14**	**13**	**41.3**	**CLAYEY SAND(SC)**
⊠	**TP-2,5,8**	**0.0**	**32**	**17**	**15**	**45.4**	**CLAYEY SAND(SC)**
▲	**TP-6**	**0.0**	**44**	**28**	**16**	**37.5**	**SILTY SAND(SM)**
★	**TP-9**	**1.5**	**32**	**20**	**12**	**53.3**	**SANDY LEAN CLAY(CL)**

ATTERBERG LIMITS - GINT STD US LAB.GDT - 11/23/21 09:16 - \\WOODRODGERS.LOC\PRODUCTIONDATA\JOBS-RENO\JOBS\3621_LOMPA_RANCH\LOMPA_RANCH_OA\GEOTECH\GEOTECH\GINT\11.2021\LOMPA RANCH B1 AND B2.GPJ

R-Value and Expansion Pressure of Compacted Soils AASHTO T190 / ASTM D2844



Lab Log #	Sample Source	Material	Expansion Pressure (psf) @ 300 (psi)	R-Value @ 300 (psi)
6144	Combined TP-2 @ 0-4.5, TP-5 @ 0-3.5, TP-8 @ 0-4	CLAYEY SAND (SC)	0	46

POINT #	WATER CONTENT (%)	DRY DENSITY (PCF)	EXUDATION PRESS. (PSI)	EXPANSION PRESS. (PSF)	RESISTANCE VALUE (R)
1	17.1	107.5	226	0	19
2	15.9	110.9	324	0	52
3	14.6	112.2	482	0	74
4					
5					

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Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

Lompa Ranch - Phase B1 & B2

AASHTO ACCREDITED

TESTED BY	JOB NUMBER	APPROVED	DATE	REVISED	DATE
BL	3621001		11/16/21		

SilverState Analytical Laboratories
Sierra Environmental Monitoring
Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

Analytical Report

Workorder#: **21110783**
Date Reported: **11/29/2021**

Client: Wood Rodgers
Project Name: 3621001/ TP-3 @ 0' - 1.5'
PO #: LAB 3961

Sampled By: Beau LaBarr

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
21110783-01	TP-3 @ 0' - 1.5'	11/12/2021 10:47	11/15/2021

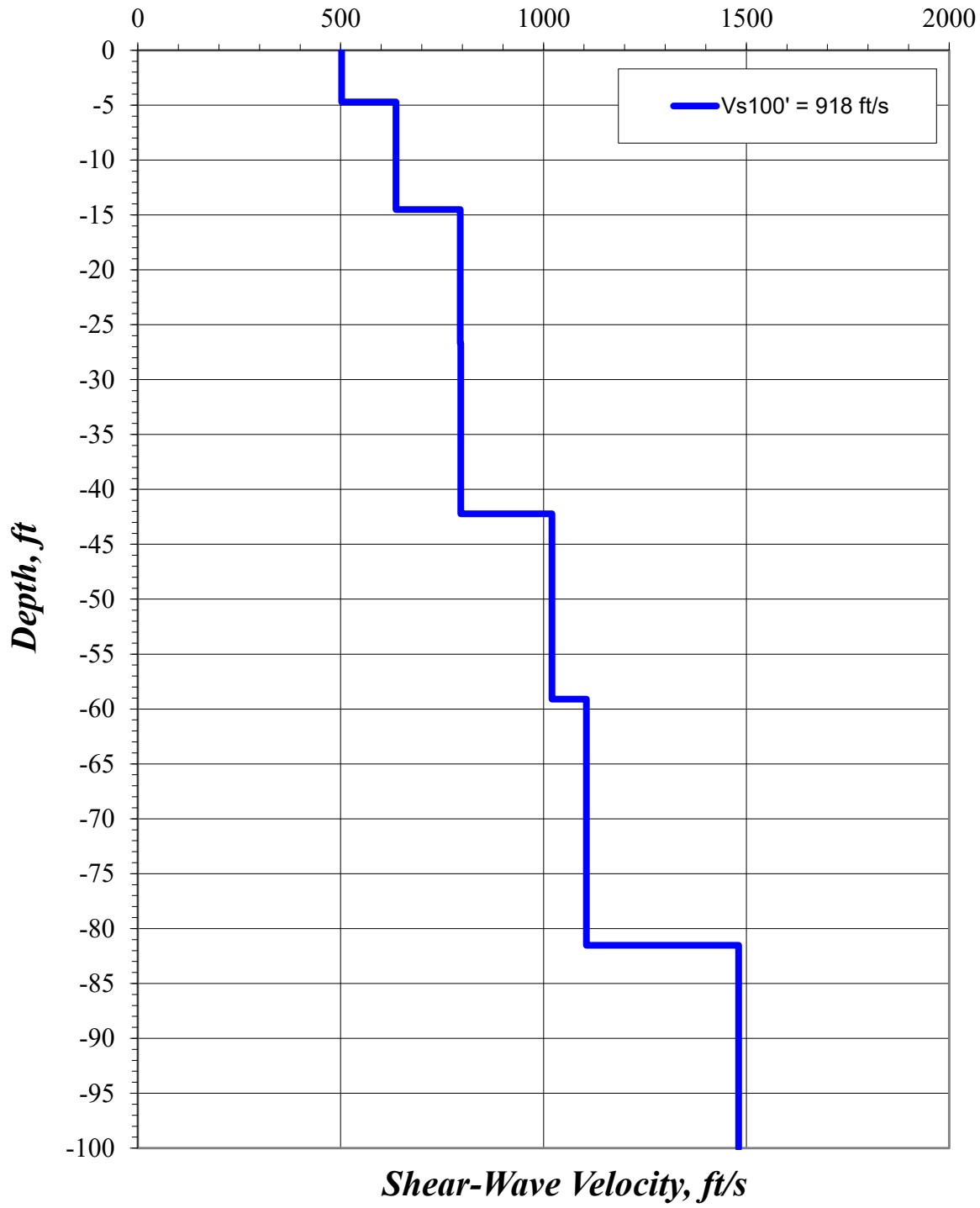
Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Sodium	ASTM D2791	< 0.01	%	0.01	AC	11/22/2021 8:06	
Sodium Sulfate as Na2SO4	Calculation	< 0.01	%	0.01	AC	11/22/2021 9:00	
Sulfate	SM4500 SO4E	< 0.01	%	0.01	AC	11/22/2021 8:12	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
21110783-02	TP-3 @ 1.5' - 3.5'	11/12/2021 10:47	11/15/2021

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chloride	EPA 9056	<50	mg/Kg	50	JF	11/23/2021 22:57	
Oxidation-Reduction Potential	SM 2580B	226	mV		AC	11/22/2021 9:02	
pH	SW-846 9045D	7.50	pH Units		AC	11/22/2021 8:09	
pH Temperature	SW-846 9045D	19.0	°C		AC	11/22/2021 8:09	
Resistivity	AASHTO T288	3900	Ohms-cm		AC	11/19/2021 8:53	
Sodium	ASTM D2791	< 0.01	%	0.01	AC	11/22/2021 8:06	
Sodium Sulfate as Na2SO4	Calculation	< 0.01	%	0.01	AC	11/22/2021 9:00	
Sulfate	SM4500 SO4E	< 0.01	%	0.01	AC	11/22/2021 8:12	
Sulfide	AWWA C105	Negative	POS/NEG		AC	11/22/2021 9:28	

Lompa Ranch B1,B2, 165': Vs Model



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1361 Corporate Boulevard, Reno, NV 89502
Phone 775.823.4068 Fax 775.823.4066

L1 - S-WAVE ReMi RESULTS

Geotechnical Investigation
LOMPA RANCH - PHASES B1 & B2
RYDER HOMES
CARSON CITY, NV

Project No.: 36210001
Date: 11/30/21

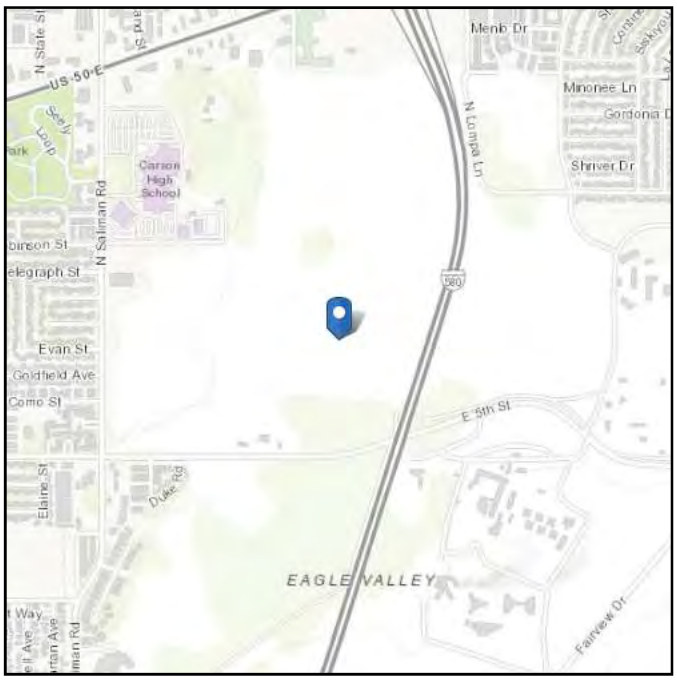
PLATE A-5

APPENDIX B
ASCE 7 HAZARDS REPORTS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-22	**Elevation:**	4631.54 ft (NAVD 88)
Risk Category:	II	**Latitude:**	39.1645
Soil Class:	D - Stiff Soil	**Longitude:**	-119.7425

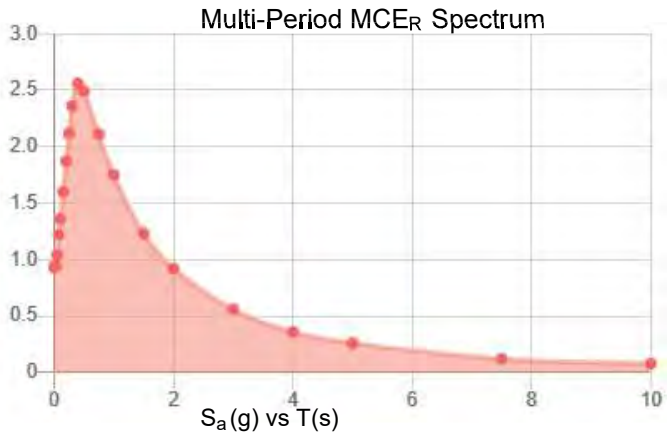


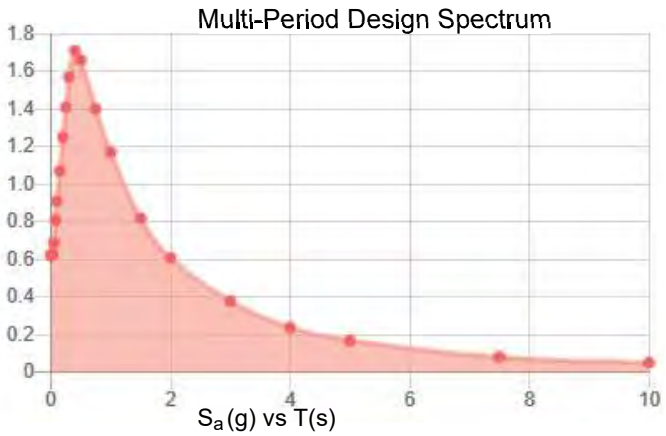
Seismic

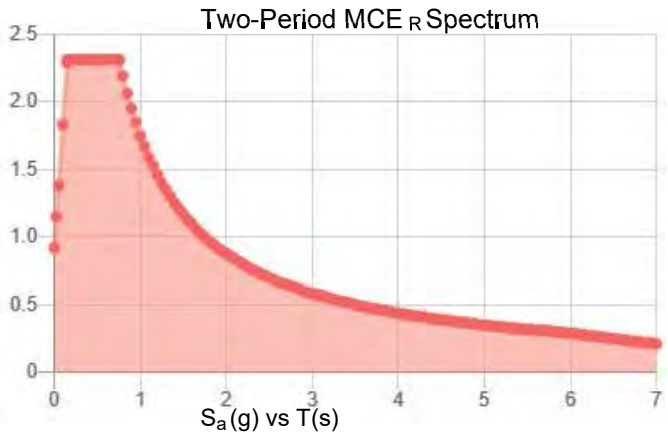
Site Soil Class:

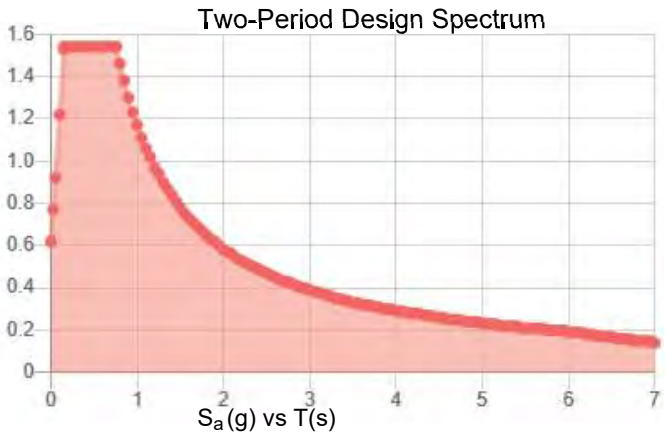
Results:

PGA_M :	0.78	T_L :	6
S_{MS} :	2.31	S_S :	2.38
S_{M1} :	1.75	S_1 :	0.76
S_{DS} :	1.54	S_{DC} :	
S_{D1} :	1.17	V_{S30} :	260









MCE_R Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Data Accessed: Tue Nov 30 2021

Date Source:
USGS Seismic Design Maps based on ASCE/SEI 7-22 and ASCE/SEI 7-22 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-22 Ch. 21 are available from USGS.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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APPENDIX C
PREVIOUS REPORT

Geotechnical Investigation

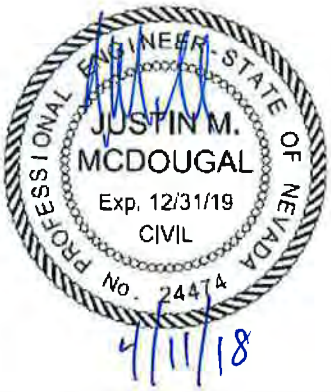
Lompa Ranch

Carson City, Nevada

Ms. Bobbie Merrigan
RYDER HOMES
985 Damonte Ranch Parkway, #140
Reno, Nevada 89521

Project No.: 3621001

Date: April 11, 2018



Justin M. McDougal, PE
PE Number – 24474 (NV)

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1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

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A-3 – Unified Soil Classification and Key to Soil Descriptions
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A-5 – ReMi Results

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Appendix C – VOLFLO Analyses

Appendix D – Liquefaction Screening Assessment

EXECUTIVE SUMMARY

The project consists of developing a single-family residential subdivision with 184 lots as well as a 336 unit apartment complex with associated parking and drive areas. The overall site, located in Carson City, Nevada, encompasses an area of approximately 62 acres and is identified by Accessor Parcel Numbers (APN's) 010-041-77 and 78. Buildings are anticipated to be wood-framed, and depending on grading approaches, will incorporate conventional foundations with slab-on-grade flooring or structural slab-on-grade foundations. Foundation loads are expected to light to moderate.

The project area is bordered by East Robinson Street to the north, undeveloped land to the east, East 5th Street to the south, North Saliman Road to the west and a single family residential home on the southeast corner. Furthermore, a church is located on the northwest corner of the property limits. Various natural drainage channels transect the property with the primary channels along the northern and southeast portions of the project site. Furthermore, an unlined channel is located along the southern perimeter of the project site. Vegetation is moderate to heavy and typically consists of grasses, brush and a few trees.

Soils encountered in our explorations typically consisted of medium plasticity clayey sand, silty sands, and sandy lean clays. Due to the clay soils encountered on the project site, specific separation requirements are presented in Table 3 regarding slabs, foundations, and pavements.

Free water or sidewall seepage was encountered in the majority of the exploratory test pits. The shallowest ground water level observed was 5 feet below the ground surface in both the northern and southern portion of the project area. The majority of the project site is located within the FEMA Flood Zone AE; Zone AO is present along the western portion of the site, and a floodway is located on the northern perimeter of the site.

With the incorporation of site preparation and grading requirements as recommended in this report, standard spread foundations or structural slab-on-grade foundations should perform adequately for the planned improvements.

1.0 INTRODUCTION

Presented herein are the results of Wood Rodgers' geotechnical exploration, laboratory testing, and associated geotechnical design recommendations for the proposed development to be located in Carson City, Nevada. The assessments and recommendations presented in this geotechnical report have been framed, in part, around the surface and subsurface conditions identified by our exploration program which was developed to be consistent with locally accepted industry practices regarding exploratory methods and geotechnical investigations for similar type projects. The proposed structures, topography, grading design, soils, and bedrock are all unique and therefore the engineering judgment employed by those in responsible charge of geotechnical design considerations, as defined by the State of Nevada, is considered the established and accepted standard of care for evaluation and analyses associated with this report.

This report has been prepared in consideration of the applicable provisions set forth in the International Building Code (IBC, 2012), ASCE 7, and the amendments and modifications adopted by Carson City. These documents establish the minimum level of structural integrity, life safety, fire safety and livability for inhabitants of dwelling units. Geotechnical considerations for public improvements have been formulated around the requirements of Carson City's Public Works Standards and the Standard Specifications for Public Works Construction. Performance standards around which our primary recommendations have been framed are based solely upon the requirements of the referenced documents; supplementary recommendations have been formulated to allow the builder the opportunity to weigh the benefit of higher performance standards against costs to achieve. Any expectations of performance inconsistent with, outside the purview of, or exceeding the requirements of the referenced documents are subjective, a function of materials, design, workmanship, and ownership and unless specifically stipulated or quantified herein are considered in excess to the scope and design standards of this report.

The objectives of this study were to:

1. Explore, test, and assess general soil, bedrock, and ground water conditions pertaining to design and construction considerations for the proposed development.
2. Provide recommendations associated with the design and construction of the project, as related to the identified geotechnical conditions and the stipulated design levels and performance standards established herein.

The area covered by this report is shown in Figure 1 and on Plate A-1b (Site Map) in Appendix A. Our study included field exploration, laboratory testing, and engineering analyses to identify the physical and mechanical properties of the various on-site materials. Results of our field exploration and testing programs are included in this report; in consideration of the stated design levels and performance standards, these results form the basis for all conclusions and recommendations.

2.0 PROJECT DESCRIPTION

The overall site, located in Carson City, Nevada, encompasses an area of approximately 62 acres and is identified by Accessor Parcel Numbers (APN's) 010-041-77 and 78. The project consists of constructing a single family residential development consisting of 184 lots as well as an additional 336 unit apartment complex. Buildings are anticipated to be wood-framed, and depending on grading approaches, will incorporate conventional foundations with slab-on-grade flooring or structural slab-on-grade foundations. Foundation loads are expected to be light to moderate.

All street improvements will be dedicated to Carson City. Underground utilities will be provided by a variety of public and private companies. Cuts and fills are anticipated to be less than five feet.

3.0 SITE CONDITIONS

As shown in Figure 1, the project area is bordered by East Robinson Street to the north, undeveloped land to the east, East 5th Street to the south, North Saliman Road to the west and a single family residential home on the southeast corner. Furthermore, a church is located on the northwest corner of the property limits.

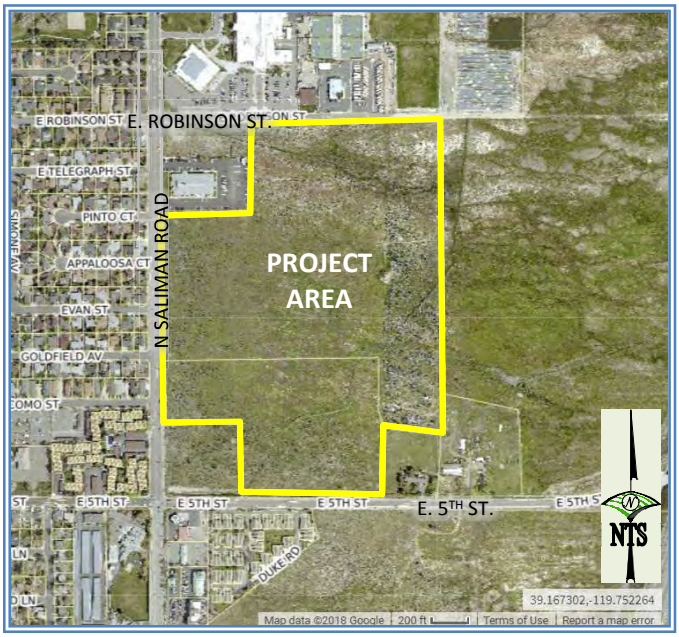

Figure 1 – Project Development Area

The topography of the project area is relatively flat, gently sloping to the southeast. Various natural drainage channels transect the property with the primary channels along the northern and southeast portions of the project site. Furthermore, an unlined channel is located along the southern perimeter of the project site. Vegetation is moderate to heavy and typically consists of grasses, brush and a few trees. Wood debris is locally present on the project site.

4.0 EXPLORATION

The project was explored on March 12, 2018, by excavating a series of 10 test pits using a Volvo YM5D63 trackhoe. The approximate locations of the test pits are shown on Plate A-1b – Site Map. The maximum depth of test pit advance was 11 feet below the existing ground surface. Bulk samples for index testing were collected from specific depths in targeted soil horizons.

Wood Rodgers' personnel examined and classified all soils in the field in general accordance with ASTM D 2488 (Description and Identification of Soils). During exploration, representative bulk samples were placed in sealed plastic bags and returned to our Reno, Nevada laboratory for testing. Additional soil

classifications, as well as verification of the field classifications, were subsequently performed in accordance with ASTM 2487 (Unified Soil Classification System [USCS]) upon completion of laboratory testing as described below in the Laboratory Testing section. Logs of the test pits are presented as Plate A-2. A USCS chart has been included as Plate A-3 - Unified Soil Classification and Key to Soil Descriptions.

Measurements of shear wave velocities to a maximum depth of 100-feet was also conducted. Shear wave velocity measurements have been relied upon for the development of geotechnical design characterization of soil stiffness. This information also aids in the determination of an appropriate Site Class (IBC, ASCE 7) and provides a screening tool for liquefaction potential. Plates A-5a and A-5b present the geophysical profiles.

5.0 LABORATORY TESTING

All soil testing performed in the Wood Rodgers' laboratory is conducted in accordance with the standards and methods described in Volume 4.08 (Soil and Rock; Dimension Stone; Geosynthetics) of the ASTM Standards. Samples of significant soil types were analyzed to determine their in-situ moisture contents (ASTM D 2216), grain size distributions (ASTM D6913 and D422), and plasticity indices (ASTM D 4318). Additional testing included chemical testing to indicate the potential for corrosion to concrete and steel elements. Results of these tests are shown in Appendix A on Plate A-4c. Table 1 also presents a summary of the test data. The test results were used to classify soils according to the USCS (ASTM D 2487) and to verify the field logs which were then updated.

Table 1 - Summary of Test Data

Test Hole	Depth (Ft.)	Moisture (%)	%Gravel (+ #4)	% Sand (#4-#200)	%Fines (-#200)	Liquid Limit	Plastic Index	R-Value	USCS
ASTM Standard		D2216	D6913, D422			D4318		D2844	D2487
TP-1	0-3.5	---	---	---	---	---	---	15	---
TP-2	0-2.5	17.6	1.3	57.7	41	24	10	---	SC
TP-2	3-6	12.0	0.5	63.6	35.9	37	24	---	SC
TP-3	0-2.5	---	---	---	---	---	---	10	---
TP-6	0-2	12.1	0	47.2	52.8	33	20	---	CL
TP-7	3-6	10.1	0	69.9	30.1	23	7	---	SC-SM
TP-10	2-3	7.8	0	65.2	34.8	28	16	---	SC

6.0 GEOLOGIC AND GENERAL SOIL AND GROUNDWATER CONDITIONS

Based on the USGS Geologic Map, presented in Figure 2, the site is mapped in an area of Quaternary Alluvium Plain Deposits (Qal), aged as middle to late Pleistocene and generally characterized as unbedded to poorly bedded, poorly to moderately sorted, yellowish brown to gray fine silty sand, sandy silt, granular muddy coarse sand, and minor sandy gravel. Natural Resources Conservation Service (NRCS) Soil Survey Maps indicates that the native material on the project site mostly consists of lean clays to a depth of 5 feet below the ground surface. Somewhat consistent to the geologic map and the NRCS soil survey map, the soils encountered in our explorations typically consisted of medium plasticity clayey sand, silty sands, and sandy lean clays.

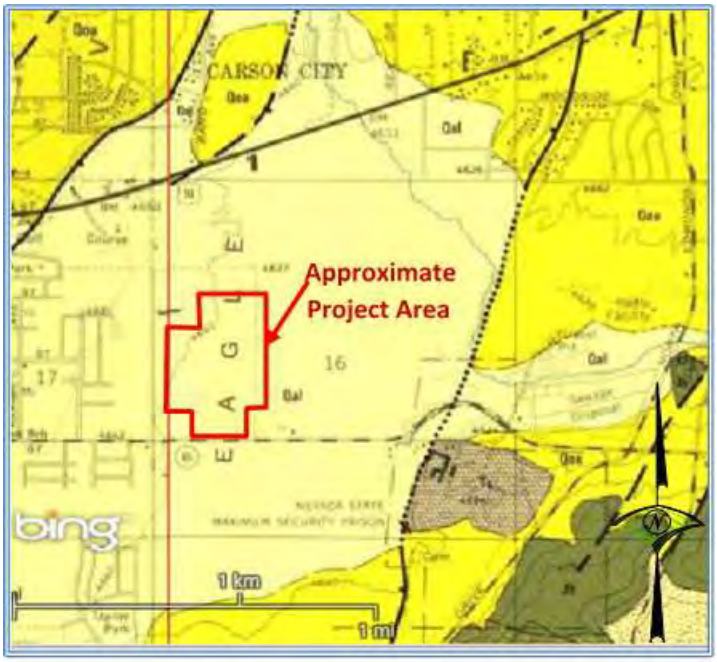

Figure 2: Geologic Map

Free water or sidewall seepage was encountered in the majority of the exploratory test pits. The shallowest ground water levels observed were 5 feet below the ground surface in the northern and southern portions of the project area. The majority of the project site is located within the FEMA Flood Zone AE; Zone AO is present along the western portion of the site, and a floodway is located on the northern extents of the site.

7.0 SEISMIC HAZARDS

The Truckee Meadows lies within the western extreme of the Basin and Range physiographic province sandwiched between the Pah Rah Range to the east and the Carson Range to the west. The Basin and Range province is characterized by a series of valleys bounded by north/south trending mountain ranges, byproducts of the seismically active zones of the Wasatch Front in Utah and the Sierra Nevada Mountains along the California/Nevada border. Faulting and seismic activity are integral to the formation of this series of alternating valleys and mountain ranges. As a consequence, the presence of faults, active and inactive, is common in western Nevada.

Surface Rupture

A criterion for evaluating earthquake faults has been formulated by a professional committee for the State of Nevada Earthquake Safety Council. The guidelines present that faults with evidence of

movement within the past 10,000 years (Holocene time) are considered Holocene Active. Faults with evidence of displacement within the last 130,000 years are considered Late Quaternary Active and faults with movement within the last 1.6 million years are considered Quaternary Active. The USGS Earthquake Hazards Program was accessed to review the proximity of any active faults as previously characterized. The Carson City fault, which is aged as latest Quaternary (<15 ka), is located approximately 0.4 miles north and 0.5 miles northwest of the project area; the New Empire Fault is located approximately 0.5 miles east and southeast of the project area and is aged as middle and late Quaternary (<750 ka). Both of the fault zones have a slip rate of less than 0.2 mm/year which translates to less than one inch of movement in a period of 100 years. These faults are sufficiently distant that offsets or additional considerations would not be required; surface rupture is considered unlikely.

Liquefaction

Liquefaction is a loss of soil shear strength that can occur during a seismic event as excessive pore water pressure between the soil grains is induced by cyclic shear stresses. This phenomenon is associated with saturated sandy and silty soils of low plasticity and density and typically occurs in cohesionless silt, sand, and fine-grained gravel deposits that are of Holocene to late Pleistocene age and the groundwater is shallower than approximately 50-feet. Cohesive soils with more than 15 percent clay content (particle size < 0.005 mm) are typically not considered susceptible to liquefaction. A liquefaction analysis was not performed as part of this study; however, Andrus and Stokoe (1997, 2000) utilized field measurements of shear wave velocities to develop liquefaction resistance criteria. Typically, soils with an overburden stress-corrected shear wave velocity (V_{s1}) greater than 700 feet per second are considered not prone to liquefaction. Based on our soil exploration data and geophysical survey, in situ soils are not anticipated to liquefy when subjected to the design seismic event. A liquefaction study incorporating a 50-foot boring should be performed if a critical facility such as a school or fire house become part of the overall project development. Our liquefaction screening assessment is presented in Appendix D.

Slope Instability

The site and surrounding topography are such that the potential for slope instability at the site due to seismic activity is considered remote.

Seismic Compression

Seismic compression is an accrual of volumetric strains during seismic events in unsaturated soil and is typically confined to loose engineering fills and Holocene soils. Therefore, the potential for significant settlement due to seismic compression is considered negligible.

8.0 DISCUSSION AND RECOMMENDATIONS

8.1 General Information

The following definitions characterize terms utilized in this report:

- Rock fill possesses more than 30-perent retained on the 3/4-inch sieve. Rock fill may or may not present oversize, i.e. particles greater than 6-inches.
- Fine-grained soil possesses more than 40 percent by weight passing the number 200 sieve and exhibits a plasticity index lower than 15.
- Clay soil possesses more than 30 percent passing the number 200 sieve and exhibits a plasticity index greater than 15.
- Granular soil does not meeting the above criteria and has a maximum particle size less than 6-inches.

The recommendations provided herein, particularly under Site Preparation, Grading and Filling, Foundations, Site Drainage, and Construction Observations and Testing Services are intended to reduce risks of structural distress related to consolidation or expansion of native soils and/or structural fills. These recommendations, along with proper design and construction of the planned structure(s) and associated improvements, work together as a system to improve overall performance. If any aspect of this system is ignored or poorly implemented, the performance of the project could suffer. Any evaluation of the site for the presence of surface or subsurface hazardous substances is beyond the scope of this study. When suspected hazardous substances are encountered during routine geotechnical investigations, they are noted in the exploration logs and reported to the client. No such substances were identified during our exploration.

The test pits were advanced at the approximate locations shown on the site plan. All test pits were backfilled upon completion of the field portion of our study. The backfill was compacted to the extent possible with the equipment on hand. However, the backfill was not compacted to the requirements presented in this report. If structures, concrete flatwork, pavement, utilities or other improvements are to be located in the vicinity of any of the test pits, the backfill should be removed and re-compacted in accordance with the requirements contained in the soils report. Failure to properly compact backfill could result in excessive settlement of improvements located over test pits.

It is our understanding dust control and the Stormwater Pollution Prevention Plan (SWPPP) will be the responsibility of the general contractor and/or owner. Recommendations presented herein regarding moisture conditioning are for the benefit of creating a targeted fill behavior. Moisture conditioning recommendations are not intended to direct the contractor in his means and methods for dust and SWPPP control.

Structural areas referred to in this report include all areas of buildings, concrete slabs, asphalt pavements, as well as pads for any minor structures. In addition, the structural zone shall be considered

to extend at a 1:1 (H:V) slope out from the structural area. All compaction requirements presented in this report are relative to ASTM D 1557[1].

8.2 Soil Profile Type Amplification Factors

In accordance with the Northern Nevada Amendments of the 2012 IBC, Site Class D has been assigned to the project. Based on a representative latitude and longitude of the site (39.165°N, -119.748°E), the USGS seismic design values based on ASCE 7-10 are presented in Table 2.

Table 2 - Summary of ASCE 7-10 Seismic Design Values

Lat.	Lon.	S_S	S_1	SDC	F_a	F_v	S_{MS}	S_{M1}	S_{DS}	S_{D1}	F_{PGA}	PGA_M
39.165	-119.748	2.371	0.834	E	1.0	1.5	2.371	1.251	1.581	0.834	1.0	0.897

8.3 Site Preparation

All vegetation and topsoil are to be stripped and grubbed from structural areas. A minimum stripping depth of 0.3 to 0.5 feet is anticipated. Localized deeper areas may be required in areas of large brush. Some vegetation could be placed in backyard non-structural fill areas at least 5 feet away from the structure footprint and in an area not likely to support a shed or structure developed by the homeowner. Concentration of the vegetation must be avoided since placing large concentrated layers of vegetation could lead to excessive settlement and subsequent surface depressions.

Clays to receive structural fill or structural loading should be densified between 88 and 92 percent relative compaction to a minimum depth of 12-inches and moisture conditioned to at least 3 percent over optimum moisture content in accordance with ASTM D1557. Higher moisture contents will be acceptable if the soil horizon is stable and density can be achieved in subsequent structural fill lifts. Granular or fine grained soils to receive structural fill or structural loading should be densified to a minimum depth of 6-inches to at least 90 percent relative compaction in accordance with ASTM D 1557. It is recommended that soils have moisture contents of plus or minus 3 percent of optimum moisture (ASTM D1557) prior to densification.

If pumping soils are encountered, the area may be scarified and allowed to dry or removed and replaced with a layer of clean, angular, 12-inch minus rock fill. The size of the rock could vary depending on the soil's consistency and depth of soft, saturated soils. Typically, a stabilization depth of 12 to 18-inches is adequate to develop a firm and relatively unyielding subgrade, but variations may exist. Depending on the amount of water and source, a separation geomembrane such as Mirafi 160N may be required. Subgrade stabilization is a trial and error process and is recommended to be conducted on a test section of suitable depth and length. The contractor should propose a stabilization protocol that is consistent with their readily available means and methods for review by the owner, the general contractor, and

[1] • Relative compaction refers to the ratio (percentage of the in-place density of a soil divided by the same soil's maximum dry density) as determined by the ASTM D 1557 laboratory test procedure. Optimum moisture content is the corresponding moisture content of the same soil at its maximum dry density.

grading inspector. For the design considerations presented in this report, subgrade stabilization is considered adequate if deflection is limited to less than 1-inch within the building envelopes and density can be achieved in subsequent fill lifts. For pavement areas subgrade stabilization is considered adequate if the roadbed is firm and relatively unyielding when proof-rolled with a fully loaded water truck. Subgrade stabilization is not required for walkways or private improvements subject solely to foot traffic providing the required compaction levels are achieved.

Please refer to Table 3 for minimum separation requirements between clay soils and specific improvements. These separation requirements do not include the prescribed base course thicknesses. Based on our explorations separation requirements may likely be mitigated where cuts are deeper than 2 ½ to 3 feet or where fills are greater than 4-feet. If the site is graded cut to fill, without the benefit of selective grading, it is likely the bulk of the soils placed as fill will consist of clay soils and structural foundations will be required.

The separation layer should consist of granular or fine-grained soil generated on site or imported structural fill as specified in Table 4. If an onsite source is selected, material should be dozed up and processed into a uniform stockpile prior to being sampled and tested. Verification testing shall be in accordance with ASTM D75, ASTM D 6913, and ASTM D4318 in order to qualify the material to present a maximum weighted plasticity of 4.5. Weighted plasticity is determined by multiplying the percent passing the #200 sieve (expressed as a decimal) by the plasticity index of the soil.

Table 3 - Separation Requirements for Clay Soils

Improvement	Minimum Separation (ft)
Post-tensioned (PT) Slabs-on-Grade	0.0
Standard Spread Footings	2.0
Non-PT Floor Slabs in Living Space[1]	1.5
Non-PT Floor Slabs in Garage[1]	1.5
Site Work (curbs, gutter, sidewalk, exterior slabs)[1]	1.0
Asphalt Pavements[1]	1.0

[1] Does not include the aggregate base course section

Overexcavation may be terminated once the required separation has been achieved or the clay soils have been penetrated. Wood Rodgers recommends that the owner secure the services of a land surveyor to stake the limits and depth of overexcavation to help assure that building pads and excavation depths are consistent with the requirements of this report.

Within the development area, where the drainage canals transect the subject property, the channels shall be abandoned. Soils lining the channels shall be excavated below the channel invert and into the sidewalls to the depths necessary to remove organics and soils disturbed due to channel activity.

Subgrade stabilization of the channel bottoms/ sidewalls may be required to develop an acceptably stable subgrade to receive structural fills.

8.4 Grading and Filling

Structural fill is defined as any material placed below structural elements and includes foundations, concrete slabs-on-grade, pavements, or any structure that derives support from the underlying soil. Granular and fine-grained soil generated on-site and free of vegetation, organic matter, and other deleterious material can be used as structural fill. Imported structural fill should be substantially free of organic matter, any deleterious material, and meet the requirements of Table 4.

Table 4 - Guideline Specification for Imported Structural Fill

Sieve Size (ASTM D6913)	Percent by Weight Passing Sieve
6 Inch	100
4 Inch	90 - 100
¾ Inch	70 - 100
No. 40	15-70
No. 200	5-30
Maximum Liquid Limit (ASTM D4318)(1)	40
Maximum Plasticity Index (ASTM D4318)(1)	15
Soluble Sulfate Level (ACI 318, Table 4.3.1)	Negligible
R-Value (ASTM D2844)	30 Min.

1. Dry Method

Adjustments to the recommended limits presented in Table 4 can be provided to allow the use of other granular or fine-grained, non-expansive material, including rock fills. Any such adjustments must be made and approved by the geotechnical engineer, in writing, prior to importing fill to the site. If structural slab-on-grade foundations are selected for use on the project, the native clay soils may be placed as structural fill beneath those foundations.

Structural fill should be moisture conditioned to within 3-percent of optimum, placed in maximum 12-inch thick (loose) lift and densified to at least 90 percent relative compaction (ASTM D1557). Higher moisture contents are acceptable if the soil lifts are stable and required relative compaction can be attained in the fill lift and subsequent fill lifts. If structural fills exceed 5 feet in thickness the minimum compaction requirement shall be increased to 95 percent. Nonstructural fill placed under elements such as backyards or landscaping areas shall be moisture conditioned to near optimum moisture content and compacted to no less than 85 percent of the soil's maximum dry density in accordance with ASTM D1557.

Mass grading and pad preparation shall be observed and tested under the full-time services of a materials testing and inspection firm accredited by AASHTO in ASTM E329. In addition, field testing and

inspection personnel shall be ICC certified in Soils or NAQTC certified in Sampling and Density. Field density testing shall be performed at a minimum rate of 1 test per 1,000 cubic yards of material placed and one test per 300 feet of trench for overexcavation of footings. The testing frequency shall be increased if the contractor is having difficulty achieving and maintaining the required moisture levels.

8.5 Trenching and Excavation

Regulations amended in Part 1926, Volume 54, Number 209 of the Federal Register (Table B-1, October 31, 1989) require that the temporary sidewall slopes be limited to maintain trench stability. Minimum sidewall slopes and acceptable trench configurations are also presented in the referenced register. Based on the results of our exploration program, it is our opinion that the bulk of the site soils appear to be predominately Type B, although variations exist. All fills should be considered Type C. All trenching should be performed and stabilized in accordance with local, state, and OSHA standards. Bank stability is the responsibility of the contractor, who is present at the site, able to observe changes in ground conditions, and has control over personnel and equipment.

Trench bedding and backfill shall be consistent with the requirements of Carson City's Public Works Design Manual and the requirements of the private utilities. Based on our testing program, the on-site soils do not meet the requirements of Class E backfill.

8.6 Foundations

8.6.1 Standard Spread Foundations

If standard spread foundations are selected, Table 5 presents bearing values for foundations provided the foundation soils have been prepared in accordance with the recommendations of this report.

Table 5 - Allowable Foundation Bearing Pressures

Loading Condition	Maximum Net Allowable Bearing Pressure (PSF)[1]
Dead Load Plus Full Time Live Load	3,000
Dead Load Plus Live Loads, Plus Transient Wind or Seismic Loads	4,000

[1] Net allowable bearing pressure is that pressure at the base of the footing in excess of the adjacent overburden pressure.

For frost protection, footings should all be set at least two feet below adjacent outside or unheated interior finish grades. Footings not located within frost prone areas should be placed at least 12 inches below surrounding ground or slab level for confinement. Regardless of loading, individual pad foundations and continuous spread foundations should be at least 18 and 12 inches wide, respectively, or as required by code.

Lateral loads, such as wind or seismic, may be resisted by passive soil pressure and friction on the bottom of the footing. Coefficients of base friction on the order 0.45 are typical to structural fills (this value has been reduced by a factor of 1.5 on the ultimate soil strength). Design values for active and passive equivalent fluid pressures are 40 and 350 pounds per square foot per foot of depth, respectively, can be assumed. However, in designing for passive pressure, the upper one-foot of the soil profile should not be included unless confined by a concrete slab, or pavement. These design values are based on spread footings bearing on native granular soils, native fine-grained soils, or structural fill and backfilled with structural fill.

If loose, soft, wet, or disturbed soils are encountered at the foundation subgrade, these soils should be removed to expose suitable foundation soils and the resulting over-excavation backfilled with compacted structural fill. The base of all excavations should be dry and free of loose materials at the time of concrete placement.

Total settlement for the structures is anticipated to be on the order of 1-inch, or less. Differential settlement between foundations with similar loads and sizes is anticipated to be ½ of the total settlement.

8.6.2 Structural Slab-on-Grade Foundations

The design values presented in Table 6 have been developed for use when considering design of structural foundations. The design profile relied upon to develop the values in Table 6 have been based on test pit number TP-2 of the 3/12/18 investigation. If significant time passes between preparing this geotechnical report and constructing foundations, it is important that additional analysis be performed to determine if the design soil moisture profile has changed appreciably.

Table 6 - Structural Slab-on-Grade Design Recommendations

Design Values	Condition		Center Lift	Edge Lift
Post-Tensioning Institute (PTI) (Vertical Barrier (Turn Down) < 2-feet)	Edge Moisture Variation - e_m (ft.)		9.0	5.0
	Differential Soil Movement - y_m (in.)		-0.87	1.28
Post-Tensioning Institute (PTI) (2-feet ≤ Vertical Barrier < 3-feet)	Edge Moisture Variation - e_m (ft.)		9.0	5.0
	Differential Soil Movement - y_m (in.)		-0.70	1.02
Post-Tensioning Institute (PTI) (Vertical Barrier ≥ 3-feet)	Edge Moisture Variation - e_m (ft.)		9.0	5.0
	Differential Soil Movement - y_m (in.)		-0.30	0.38
Post-Tensioning Institute (PTI) (Horizontal Barrier ≥ 2.5-feet)	Edge Moisture Variation - e_m (ft.)		6.5	2.5
	Differential Soil Movement - y_m (in.)		-0.58	0.47
Design Values	Effective P.I.	C_S	C_W	C_O
Wire Reinforcement Institute (WRI)	20	1	15	1

Soil chlorides shall be mitigated per Section 4.3.2.2 – Soil Chlorides from the referenced PTI manual. Test results obtained during our investigation have been attached with this report in Appendix C.

Moisture barriers must extend around the entire perimeter of the structure. Horizontal barriers must be protected against any damage; concrete, asphalt, or pavers (with a moisture barrier underlayer) may be used as an above-ground protective layer.

An allowable bearing value of 1,500 pounds per square foot may be utilized for design. This value may be increased by a factor of 1.33 when considering wind or seismic loading.

Turn downs for structural slabs must extend to a depth of 2-feet below finished adjacent exterior grade or be designed to resist the effects of frost-heave (such as insulation as presented in ASCE 32). It should be pointed out, however, that potential movement due to frost-heave would be in addition to edge-lift caused by clay activity and therefore the design edge-lift value should consider the cumulative effects of the two influences. Furthermore, the 2012 Northern Nevada Code Amendments require that deflection calculations "would need to show that the maximum combined frost and expansive soil heaving, as localized at slab edges, with resultant non-uniformly distributed deflections, as well as whole slab deflections would not result in super structure racking or excessive truss, roof, or wall frame movement." Minimum slab thickness and recommended turn-down should be established by the structural engineer. In addition, the project area is in a cold region for which special cold weather design considerations may be warranted for post-tensioned slabs and residences left unheated for an extended period of time.

The preferred slab profile has been selected to consist of a 15-mil moisture vapor barrier covered by a minimum two inch layer of compact Type 2 Class B aggregate base placed within 3-percent of optimum and compacted by at least 3-complete passes with a vibroplate. Per Figure R6.2 (PTI DC10.5-12), Table 7 presents the recommended coefficients of friction, μ, for first and average subsequent movements based on the design slab support profile. A sand layer or size No. 67 concrete aggregate is not recommended for direct slab support. If location of the polyethylene sheeting significantly impacts the design or tensioning protocol, we recommend placement of the barrier be indicated as a special inspection item. For the WRI protocol, pre-stress losses are not a factor; therefore, the coefficient of friction should be taken as 0.45 for WRI slabs cast on aggregate base. A k-value of 85 pci may be used for design.

Table 7 - Coefficient of Friction, μ, for 5-inch Slabs

Material	First Movement	Average Subsequent Movements
Aggregate Base	1.95	1.37
Structural Fill	1.72	0.88
Polyethylene Sheeting[1]	0.88	0.55

[1]For normal construction practice, μ = 0.75

Excessive shrinkage cracking can precipitate the need for changes in design considerations. When considering non-structural slabs, crack control joint spacing is typically limited to 10 to 12 feet in our locale due to the combined effects of our local aggregates and environmental considerations. If this spacing seems aggressive when considering shrinkage, PTI suggests the designer consider increasing the minimum pre-stress force. Post-tensioned foundations, when compared to conventionally reinforced slabs, are expected to deform. The flexibility of the slab distributes localized soil movement to a more uniform slab shape; however, it is important that other consultants be cognizant of this behavior so that their products and design can be made compatible with a flexible foundation system. Typically, roof trusses, load concentrations, architectural features spanning between the active and non-active zones, non-flexible exterior siding, brittle floor coverings, and areas that slope to drain and utility connections warrant closer scrutiny.

Post-construction practices must be incorporated to help ensure the successful performance of the structural slabs. To help minimize movements in soils due to post-construction factors, not climate related, the following maintenance procedures are required:

- Uniform landscaping should be provided adjacent to the perimeter of the foundation, and excellent drainage provided and maintained away from the residence. Never allow water to pond adjacent to the structure.
- Recommended positive drainage is a minimum of six inches of fall in ten feet, and impervious surfaces within ten feet of the building foundation should be sloped a minimum of two percent away from the foundation.
- Water should be applied in a uniform, systematic manner as equally as possible on all sides of the residence to keep the soil moist. Areas without ground cover may require more moisture due to the potential for increased evaporation.
- Soaker hoses, if used, should be placed 18" to 30" from foundation edge. Sprinklers should not be allowed to spray directly on foundation.
- Trees should not be planted within 10 feet of the structure.
- Check gutters and downspouts to be sure they are clear and water discharges a minimum of five feet from foundation.

- The foundation perimeter should be observed during extreme hot and dry periods to help insure that adequate watering is being provided to prevent the soil from separating from the foundation.

It is recommended that a yearly survey of foundations is conducted and any maintenance necessary to improve drainage and prevent ponding of water adjacent to these structures is performed. This is especially important during the first ten years after construction because that is usually when the most severe adjustment between the new foundation and supporting soil occurs. Following the above listed procedures should help limit detrimental foundation movement caused by expansive soils.

8.7 Retaining Walls

Lateral earth pressures for consideration in the design of retaining structures are presented in Table 8. Changes in earth pressures due to seismic influences were assessed via the AASHTO LRFD protocol that considers some component of cohesion will be maintained within the backfill. The presented values assume that some wall displacement is allowable due to the design event, and therefore the presented values have therefore been based on 70% of the USGS' predicted PGA. The values presented in Table 8 do not consider hydrostatic pressures or surcharge loading. Traffic loading should be modeled by increasing the wall backfill load by an additional height of two feet. Unless confined by slab or pavement, the surface foot of soil should be ignored when considering passive resistance.

Table 8 - Lateral Earth Pressures

Condition	Minimum Cohesion Modeled (psf)	Active (psf/f)		Passive (psf/f)		At Rest
		Static	Pseudo-Static	Static	Pseudo-Static	
Level	200	40	70	350	250	60

Excessive retaining wall pressures can be developed due to heavy compaction equipment proximate to the wall during backfill placement. Therefore, due care during placement and compaction of backfill is required. Backfill behind retaining structures should be compacted to not less than 90 percent of the soils' maximum dry density. French drains, a drainage backfill geotextile such as Mirafi 140 N, or a pre-manufactured drain system such as Tensor ® DC1200 may be utilized if buildup of hydrostatic pressure is possible. Soil preparation for retaining wall foundations and allowable bearing capacities shall be consistent with the Site Preparation and Grading and Filling sections of this report.

8.8 Erosion Control

Erosion potential is dependent on numerous factors involving grain size distribution, cohesion, moisture content, slope angle and the velocity of the water or wind on the ground surface. Erosion protection should be in accordance with Carson City's Public Works Design Manual.

Temporary (during construction) and permanent (after construction) erosion control will be required for all disturbed areas. The contractor shall prevent dust from being generated during construction in compliance with all applicable city, county, state and federal regulations, and shall submit an acceptable dust control plan to the Washoe County District Health Department prior to starting site preparation or earthwork. The project specifications should include an indemnification by the contractor of the owner and engineer for any dust generation during the construction period. The owner will be responsible for mitigation of dust after his acceptance of the project.

8.9 Site Drainage

Adequate surface drainage must be constructed and maintained away from the structures. The permanent finish slopes away from the structure should be sufficient to allow water to drain away quickly from and prevent any ponding of water adjacent to the structure. All runoff should be collected within permanent drainage paths that can convey water off the property. A system of roof gutters and downspouts is recommended to collect roof drainage and direct it away from the foundations.

Foundation and stem wall backfill should be densified to at least 90-percent relative compaction in accordance with the requirements given in the Grading and Filling Section. Compacting the backfill material decreases permeability and reduces the amount of irrigation and storm water available to enter under floor areas.

8.10 Concrete Slabs

A 4-inch minimum compacted base course (Type 2, Class B, Standard Specifications for Public Works Construction) compacted to 95% relative compaction is recommended beneath standard (non-post-tensioned) concrete slabs-on-grade subject solely to foot traffic. The recommended base course section should be increased to 6-inches where vehicle traffic is anticipated. All dedicated and public easement improvements shall be constructed in accordance with Carson City's standards and the Standard Specifications for Public Works Construction.

Wood Rodgers does not practice in the field of moisture vapor transmission evaluation/mitigation. Therefore, if a vapor retarder/barrier system more rigorous than the requirements of the IRC is desired, we recommend that a qualified person/firm be engaged/consulted with to evaluate the general and specific moisture vapor transmission paths and any impact on the proposed construction. This person/firm should provide recommendations for mitigation of potential adverse impact of moisture vapor transmission on various components of the structure as deemed appropriate. If special conditions do not exist, Wood Rodgers typically recommends a moisture vapor barrier, consisting of Stego Wrap (15 mil), or equal, be placed as part of the moisture vapor system.

All concrete placement and curing should be performed in accordance with procedures outlined by the American Concrete Institute. Special considerations should be given to concrete placed and cured

during hot or cold weather conditions. Proper control joints and reinforcing should be provided to minimize any damage resulting from shrinkage.

Western Nevada is a region with absorptive aggregates and exceptionally low relative humidity. As a consequence, concrete flatwork will shrink and curl in a manner which is not typical of other US regions. Proper sub-grade preparation and placement of reinforcement are imperative. Joint spacing, locally, is typically on 10 to 12 foot centers. Cracking that occurs within the slab on grade will often reflect through overlying improvements even if adequate substrate preparation has occurred.

Sulfate testing on the native soils in the immediate area yielded results in the negligible range. No special concrete provisions are required to address sulfate resistance. Additionally, ACI 318-11, Table 4.2.1 rates the severity of corrosion as Moderate or Exposure Class C1. The definition for Moderate or Exposure Class C1 is defined as *"Concrete exposed to moisture but not to external sources of chloride*s." External sources of chlorides include deicing chemicals, salt, brackish water, seawater, or spray from these sources. If any of these external sources are applicable to the project site, chloride exposure class will be upgraded to Severe or Exposure Class C2 which requires a minimum compressive strength of 5,000 psi and a maximum water to cement ratio of 0.40.

The on-site soils tested are not considered corrosive to steel reinforcement properly embedded within Portland Cement Concrete. However, the soils may be corrosive to unprotected metal.

Furthermore, resistivity, pH, oxidation-reduction potential, sulfides and moisture was used in determining that the soil is corrosive to ductile-iron pipe and protection against exterior corrosion should be provided. Polyethylene encasement alone may not be a viable corrosion protection system if the water table has the potential to be above the invert of the pipe.

Wood Rodgers, Inc. is not a corrosion engineering firm. Therefore, a corrosion engineer should be consulted if a more thorough soil corrosion potential at the proposed improvement areas is desired.

8.11 Asphaltic Concrete

Table 9 presents our minimum structural pavement sections for the development and based on planned use. Our structural pavement sections were based on a minimum R-Value of 15 (Weighted profile considering the 1-foot structural fill separation layer (Specified R-Value = 30) and 2-feet of subgrade presenting an R-Value of 10.)

Table 9 - Structural Pavement Sections

Condition	Pavement Thickness (In.)	Pavement Type[1]	Type II Class B Base Course Thickness (In.)[2]
Local Streets	3	Type 3 + Lime	6
Collector Streets	4	2" Type 3 + Lime / 2" Type 2	6
Parking and Automobile Traffic Driveways	3	Type 3 + Lime	6
Dumpster Aprons[3]	6	Reinforced Portland Cement Concrete	6

[1] Per the Standard Specifications for Public Works Construction
[2] Base Course thickness is in addition to structural fill separation requirements
[3] Dumpster aprons should extend far enough from the trash enclosure so that the wheel loads are confined to the reinforced concrete pad.

The minimum structural section for roadways within the Carson City is 3 inches of asphaltic concrete capping 6 inches of aggregate base. Please refer to the Carson City Standard Detail's Drawing Number C-5.1.8 – Roadway Section Urban Streets for additional requirements. Local streets may service a maximum Average Daily Traffic (A.D.T.) of 1,000 and collector streets may service a maximum A.D.T. of 8,000. Based on our analyses and site grading requirements, the minimum structural section is suitable for the local streets within the subdivision when the structural fill separation requirements of Table 3 have been met.

All roadway construction shall be in accordance with the approved plans and the Standard Specifications for Public Works Construction. Roadway subgrade shall be prepared in accordance with the requirements of this report. The Contractor should submit a pavement mix design to the Owner, for approval, at least 5 working days prior to paving. When pavement is placed directly adjacent to concrete flatwork, the finish compacted grade of the pavement should be at least ½ of an inch higher than the edge of adjacent concrete surface to allow adequate compaction of the pavement without damaging the concrete.

8.12 Asphalt Design Life

Maintenance is mandatory to long-term pavement performance. Maintenance refers to any activity performed on the pavement that is intended to preserve its original service life or load-carrying capacity. Examples of maintenance activities include patching, crack or joint sealing, and seal coats. If these maintenance activities are ignored or deferred, premature failure of the pavement will occur.

The cost associated with proper maintenance is generally much less than the cost for reconstruction due to the premature failure of the pavement. Therefore, since pavement quality is an integral consideration

in the formulation of our design recommendations, we strongly recommend the owner/project manager implement a pavement management program.

Premature failure of asphaltic concrete frequently occurs adjacent to poorly graded ponding areas and/or landscape areas. Failures may occur due to excessive precipitation, irrigation and landscaping water infiltrating into the subgrade soils causing subgrade failure. As such, in areas where saturation of the subgrade soils beneath asphaltic pavement may occur, we strongly recommend the owner/project manager install a subdrain system to eliminate the potential for saturation of subgrade soils. The subdrain system should discharge into a permanent drainage area that will not impede drainage flow to cause the system to back-up and/or clog. Appropriate maintenance procedures should be implemented to ensure the subdrain system does not plug and allow for proper drainage of surface and subsurface water beneath paved areas. Subdrain location and configuration should be evaluated once final grading and landscaping plans have been prepared. If the ultimate traffic exceeds the anticipated levels, it may be necessary to reevaluate and overlay the pavement at some time in the future.

9.0 CONSTRUCTION OBSERVATION AND TESTING SERVICES

The recommendations presented in this report are based on the assumption that the contractors perform their work as required by the project documents and that owner/project manager provides sufficient field-testing and construction review during all phases of construction. Prior to construction, the owner/project manager should schedule a pre-job conference including, but not limited to, the owner, architect, civil engineer, the general contractor, earthwork and materials subcontractors, building official, and geotechnical engineer. It is the owner's/project manager responsibility to set-up this meeting and contact all responsible parties. The conference will allow parties to review the project plans, specifications, and recommendations presented in this report, and discuss applicable material quality and mix design requirements. All quality control reports should be submitted to the owner/project manager for review and distributed to the appropriate parties.

During construction, Wood Rodgers Incorporated should have the opportunity to provide sufficient on-site observation of site preparation and grading, over-excavation, fill placement, foundation installation, and paving. These observations would allow us to document the geotechnical conditions are in fact just as anticipated and that the contractor's work meets with the criteria in the approved plans and specifications. Verification of horizontal and vertical control must be provided by whoever was responsible for establishing those boundaries and constructing associated improvements.

10.0 EXPECTATION OF PERFORMANCE

The planned residences will incorporate either a standard slab-on-grade foundation with perimeter footings extending to a minimum depth of 24 inches below finished exterior grade or a structural slab-on-grade foundation. It must be considered by the developer that site fills will be generated on site using cut-to-fill practices and may not be purchased from a commercial borrow source. Therefore, the potential exists that soils within various building pads may fall outside the specified limits of Select

Structural Fill (Table 4). This deviation should not be considered a failure to adhere to construction documents but should be considered a limitation to mass-grading when a natural, virgin material is used for a fill source. These inherent variations should not be considered to comprise a non-conformity with the project specifications unless the Weighted Plasticity (% of material passing the #200 sieve x Plasticity Index) of the weighted structural fill separation layer exceeds 5.5 for standard spread foundations.

Single family residential construction results in a complex composite of steel, concrete, lumber, and earth. Each element responds differently to loading and as a consequence cracking and distortion occur. Occurrence of cracking or distortion is not in and of itself evidence of the structure failing to meet a reasonable standard or level of performance. Repair of unsightly, non-structural, cracks should be considered part of the homeowner maintenance program. Cracks that continue to reappear or widen or propagate may be indicative of extenuating issues that require redress. Our design protocols and recommended construction testing procedures rely upon ASTM Standards and Guidelines, therefore any subsequent studies to evaluate completed product or construction practices shall be in accordance with ASTM E 141 AND shall employ the same testing means and methods available at the time of construction. Where access or testing limits do not allow continuity in testing methods, a correlation program must be performed that establishes that the testing and evaluation methods employed by the reviewing agency present results consistent with and comparable to the test methods prescribed by this report and employed during construction. Failure to follow these prescribed protocols would result in test data being compromised when compared to ASTM standards and requirements. In addition, failure to follow the referenced statistical and sampling ASTM assessment protocols would result in a forensic assessment program rife with inconsistencies and variations which would result in the forensic investigation failing to meet the level of precision necessary to accurately evaluate the site conditions.

11.0 STANDARD LIMITATION CLAUSE

This report has been prepared in accordance with generally accepted local geotechnical practices. The analyses and recommendations submitted are based upon field exploration performed and the conditions encountered as discussed in our report. This report does not reflect soil variations that may become evident during the construction period, at which time re-evaluation of the recommendations may be necessary. We recommend our firm be retained to perform construction observation in all phases of the project related to geotechnical factors to document compliance with our recommendations. The owner/project manager is responsible for distribution of this geotechnical report to all designers and contractors whose work is related to geotechnical factors.

It is the contractor's responsibility for the grading and construction of the designed improvements. This responsibility includes the means, methods, techniques, sequence, and procedures of construction and safety of construction at the site. All construction shall conform to the requirements of the most recently adopted version of the Standard Specifications for Public Works Construction and the requirements of Carson City. Failure to inspect the work shall not relieve the contractor from his

obligation to perform sound and reliable work as described herein and as described in the Standard Specifications for Public Works Construction.

All plans and specifications should be reviewed by the design engineer responsible for this geotechnical report to determine if they have been prepared in accordance with the recommendations contained in this report prior to submitting to the building department for review. It is the owner's/project manager responsibility to provide the plans and specifications to the engineer.

This report has been prepared to provide information allowing the architect and engineer to design the project. In the event of changes in the design, location, or ownership of the project after presentation of this report, our recommendations should be reviewed and possibly modified by the geotechnical engineer. If the geotechnical engineer is not accorded the privilege of making this recommended review, we can assume no responsibility for misinterpretation or misapplication of our recommendations or their validity in the event changes have been made in the original design concept without our prior review. The engineer makes no other warranties, either expressed or implied, as to the professional advice provided under the terms of this agreement and included in this report.

This report was prepared by Wood Rodgers, Inc. for the benefit of Ryder Homes. The material in it reflects Wood Rodgers' best judgment in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Wood Rodgers accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

12.0 REFERENCES

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APPENDIX A
GEOTECHNICAL PLATES

Image Reference: Google Earth, Accessed 3/23/18

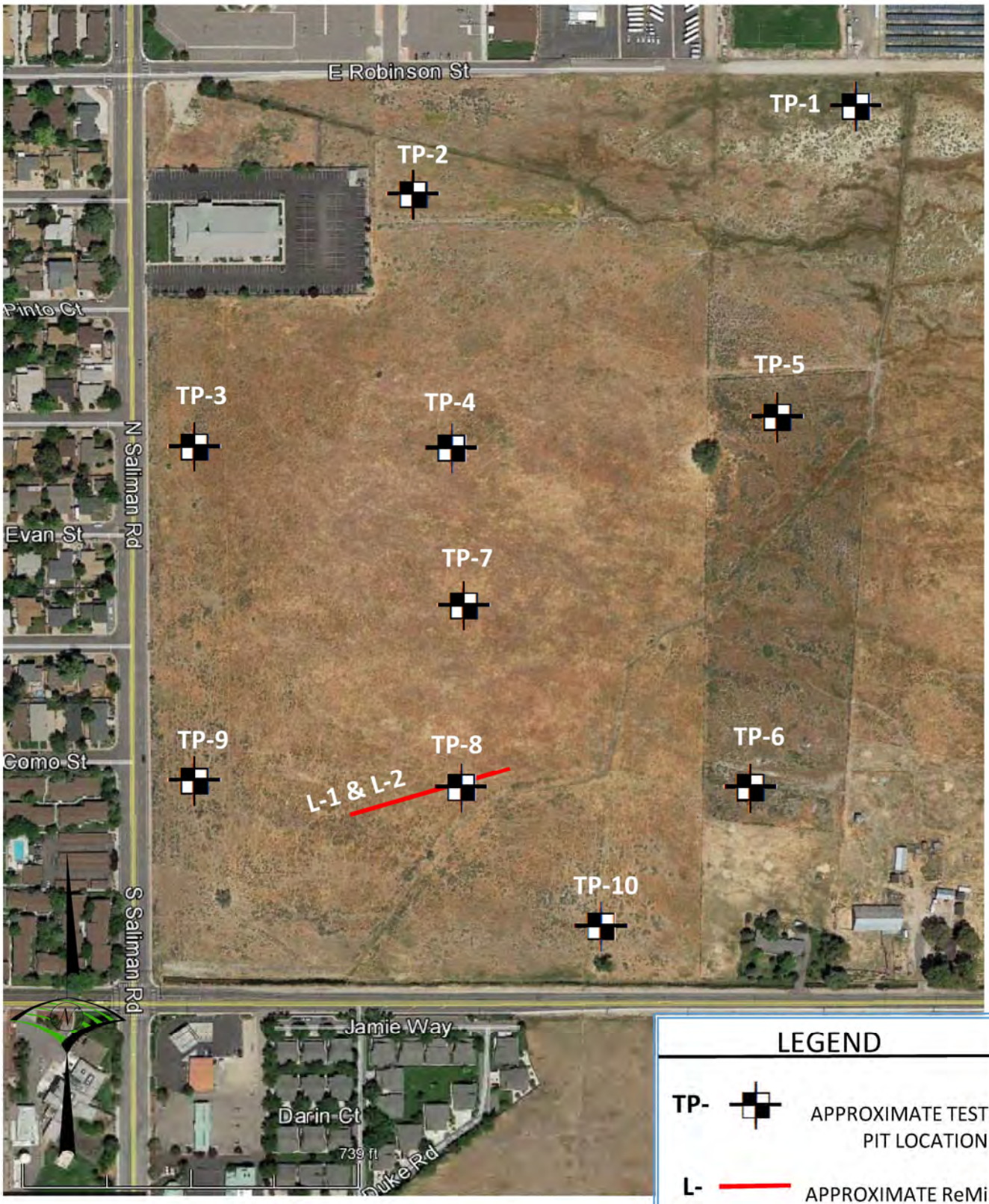
WOOD RODGERS
1361 Corporate Boulevard, Reno, NV 89502
Phone 775.823.4068 Fax 775.823.4066

VICINITY MAP

Geotechnical Investigation
Lompa Ranch
Ryder Homes
Carson City, Nevada

Project No.: 3621001
Date: 03/31/18

PLATE A-1a



LEGEND

TP- APPROXIMATE TEST PIT LOCATION

L- APPROXIMATE ReMi LINE LOCATION

Image Reference: Google Earth, Imagery Date: 8/11/2107, Accessed 3/31/18

WOOD RODGERS
1361 Corporate Boulevard, Reno, NV 89502
Phone 775.823.4068 Fax 775.823.4066

SITE MAP

Geotechnical Investigation
Lompa Ranch
Ryder Homes
Carson City, Nevada

Project No.: 3621001
Date: 03/31/18

PLATE A-1b

Wood Rodgers, Inc.
1361 Corporate Blvd.
Reno, NV 89502
Telephone: (775) 823-4068

TEST PIT NUMBER TP-1

CLIENT Ryder NV Management, LLC
PROJECT NAME Lompa Ranch
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 3/12/18 **COMPLETED** 3/12/18
GROUND ELEVATION ~4639 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo YMSD63
AT TIME OF EXCAVATION 5.0 ft
LOGGED BY Sandeep Pandey **CHECKED BY** Justin McDougal
AT END OF EXCAVATION 5.0 ft
NOTES:
AFTER EXCAVATION 5.0 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		CLAYEY SAND, (SC) loose to medium dense, very moist, dark brown, low to medium plasticity	GB 1A			15						
2.5		CLAYEY SAND, (SC) loose, wet, greyish brown, low to medium plasticity	GB 1B									
5.0		Bottom of Test Pit at 6.5 Feet.										

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Wood Rodgers, Inc.
1361 Corporate Blvd.
Reno, NV 89502
Telephone: (775) 823-4068

TEST PIT NUMBER TP-2

CLIENT Ryder NV Management, LLC
PROJECT NAME Lompa Ranch
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 3/12/18 **COMPLETED** 3/12/18
GROUND ELEVATION ~4643 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo YMSD63
AT TIME OF EXCAVATION 6.5 ft
LOGGED BY Sandeep Pandey **CHECKED BY** Justin McDougal
AT END OF EXCAVATION 6.5 ft
NOTES:
AFTER EXCAVATION 6.5 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		CLAYEY SAND, (SC) loose to medium dense, moist, dark brown, medium plasticity	GB 2A					11.2	24	14	10	41.0
2.5		CLAYEY SAND, (SC) medium dense, very moist to wet, tannish grey brown, medium to high plasticity	GB 2B					16.5	37	13	24	35.9
5.0		CLAYEY SAND TO SILTY SAND, (SC-SM) medium dense, very moist to wet, light brown, slightly plastic	GB 2C									
7.5												
10.0												

Bottom of Test Pit at 10.0 Feet.
Sloughing at 6 Feet.

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Wood Rodgers, Inc.
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Reno, NV 89502
Telephone: (775) 823-4068

TEST PIT NUMBER TP-3

CLIENT Ryder NV Management, LLC
PROJECT NAME Lompa Ranch
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 3/12/18 **COMPLETED** 3/12/18
GROUND ELEVATION ~4645 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo YMSD63
AT TIME OF EXCAVATION 10.0 ft
LOGGED BY Sandeep Pandey **CHECKED BY** Justin McDougal
AT END OF EXCAVATION 10.0 ft
NOTES:
AFTER EXCAVATION 10.0 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		CLAYEY SAND TO LEAN CLAY, (SC-CL) medium dense, slightly moist, dark brown to blackish brown, medium to high plasticity	GB 3A			10						
2.5		CLAYEY SAND TO SILTY SAND, (SC-SM) dense, moist to very moist, brown, low plasticity										
5.0			GB 3B									
7.5		SILTY SAND, (SM) dense, wet, tannish brown, slightly plastic	GB 3C									
10.0		Bottom of Test Pit at 10.0 Feet.										

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Wood Rodgers, Inc.
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Reno, NV 89502
Telephone: (775) 823-4068

TEST PIT NUMBER TP-4

CLIENT Ryder NV Management, LLC
PROJECT NAME Lompa Ranch
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 3/12/18 **COMPLETED** 3/12/18
GROUND ELEVATION ~4641 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo YMSD63
AT TIME OF EXCAVATION --- No Free Water Encountered
LOGGED BY Sandeep Pandey **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- No Free Water Encountered
NOTES:
AFTER EXCAVATION --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SANDY LEAN CLAY, (CL) medium stiff, slightly moist, black, medium to high plasticity	GB 4A									
2.5		SILTY SAND, (SM) medium dense to dense, moist, brown, slightly plastic	GB 4B									
5.0		SILTY SAND, (SM) dense, very moist, brown, non-plastic to slightly plastic										
7.5		Wet	GB 4C									
10.0		Bottom of Test Pit at 10.0 Feet.										

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Wood Rodgers, Inc.
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Telephone: (775) 823-4068

TEST PIT NUMBER TP-5

CLIENT Ryder NV Management, LLC
PROJECT NAME Lompa Ranch
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 3/12/18 **COMPLETED** 3/12/18
GROUND ELEVATION ~4638 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo YMSD63
AT TIME OF EXCAVATION --- No Free Water Encountered
LOGGED BY Sandeep Pandey **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- No Free Water Encountered
NOTES:
AFTER EXCAVATION --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SANDY LEAN CLAY, (CL) medium stiff, slightly moist, black, medium to high plasticity	GB 5A									
2.5		CLAYEY SAND, (SC) medium dense, slightly moist, light black, medium plasticity	GB 5B									
		SILTY SAND, (SM) dense, moist to very moist, brown, slightly plastic										
5.0			GB 5C									
7.5		Very moist to wet Note: Sidewall seepage at 8 feet.										
10.0		CLAYEY SAND, (SC) dense, wet, brown, low plasticity										

Bottom of Test Pit at 11.0 Feet.

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Wood Rodgers, Inc.
1361 Corporate Blvd.
Reno, NV 89502
Telephone: (775) 823-4068

TEST PIT NUMBER TP-6

CLIENT Ryder NV Management, LLC
PROJECT NAME Lompa Ranch
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 3/12/18 **COMPLETED** 3/12/18
GROUND ELEVATION ~4636 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo YMSD63
AT TIME OF EXCAVATION --- No Free Water Encountered
LOGGED BY Sandeep Pandey **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- No Free Water Encountered
NOTES:
AFTER EXCAVATION --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SANDY LEAN CLAY, (CL) medium stiff, slightly moist, black, medium to high plasticity	GB 6A					12.1	33	13	20	52.8
2.5		CLAYEY SAND, (SC) medium dense to dense, slightly moist to moist, black, medium to high plasticity										
5.0		SILTY SAND, (SM) dense, moist, light brown, slightly plastic										
		POORLY GRADED SAND TO SILTY SAND, (SP-SM) dense, very moist to wet, orange brown, non-plastic										
		Very moist Note: Sidewall seepage at 6 feet.	GB 6B									
7.5		Light grey										
10.0												

Bottom of Test Pit at 10.0 Feet.

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Wood Rodgers, Inc.
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TEST PIT NUMBER TP-7

CLIENT Ryder NV Management, LLC
PROJECT NAME Lompa Ranch
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 3/12/18 **COMPLETED** 3/12/18
GROUND ELEVATION ~4641 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo YMSD63
AT TIME OF EXCAVATION --- No Free Water Encountered
LOGGED BY Sandeep Pandey **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- No Free Water Encountered
NOTES:
AFTER EXCAVATION --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SANDY LEAN CLAY, (CL) stiff, slightly moist, grey, medium plasticity	GB 7A									
2.5		SILTY, CLAYEY SAND, (SC-SM) very dense, slightly moist, greyish brown, slight to very low plasticity	GB 7B					10.1	23	16	7	30.1
5.0		SILTY SAND, (SM) dense, very moist, brown, slightly plastic	GB 7C									
7.5		CLAYEY SAND, (SC) dense, very moist, brown, slightly plastic to low plasticity	GB 7D									
10.0		Bottom of Test Pit at 10.0 Feet.										

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Telephone: (775) 823-4068

TEST PIT NUMBER TP-8

CLIENT Ryder NV Management, LLC
PROJECT NAME Lompa Ranch
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 3/12/18 **COMPLETED** 3/12/18
GROUND ELEVATION ~4640 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo YMSD63
AT TIME OF EXCAVATION --- No Free Water Encountered
LOGGED BY Sandeep Pandey **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- No Free Water Encountered
NOTES:
AFTER EXCAVATION --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SANDY LEAN CLAY, (CL) medium stiff, slightly moist, black, medium to high plasticity										
2.5		CLAYEY SAND TO SILTY SAND, (SC-SM) dense, slightly moist, greyish brown, slightly plastic to low plasticity										
5.0												
7.5		SILTY SAND TO POORLY GRADED SAND, (SM-SP) dense, very moist, orange brown, non-plastic										
10.0												

Bottom of Test Pit at 10.0 Feet.

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Wood Rodgers, Inc.
1361 Corporate Blvd.
Reno, NV 89502
Telephone: (775) 823-4068

TEST PIT NUMBER TP-9

CLIENT Ryder NV Management, LLC
PROJECT NAME Lompa Ranch
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 3/12/18 **COMPLETED** 3/12/18
GROUND ELEVATION ~4644 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo YMSD63
AT TIME OF EXCAVATION --- No Free Water Encountered
LOGGED BY Sandeep Pandey **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- No Free Water Encountered
NOTES:
AFTER EXCAVATION --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SANDY LEAN CLAY, (CL) medium stiff, slightly moist, black, medium to high plasticity										
2.5		CLAYEY SAND TO SILTY SAND, (SC-SM) dense, slightly moist, greyish brown, slightly plastic to low plasticity										
5.0		SILTY SAND, (SM) medium dense, slightly moist, greyish brown, non-plastic to slightly plastic Very moist to wet										
7.5		Wet										
		CLAYEY SAND, (SC) dense, wet, tannish brown, slightly plastic										
10.0		Note: Sidewall seepage at 10 feet										

Bottom of Test Pit at 10.0 Feet.

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Wood Rodgers, Inc.
1361 Corporate Blvd.
Reno, NV 89502
Telephone: (775) 823-4068

TEST PIT NUMBER TP-10

CLIENT Ryder NV Management, LLC
PROJECT NAME Lompa Ranch
PROJECT NUMBER 3621001
PROJECT LOCATION Carson City, Nevada
DATE STARTED 3/12/18 **COMPLETED** 3/12/18
GROUND ELEVATION ~4638 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Volvo YMSD63
AT TIME OF EXCAVATION 5.0 ft
LOGGED BY Sandeep Pandey **CHECKED BY** Justin McDougal
AT END OF EXCAVATION 5.0 ft
NOTES:
AFTER EXCAVATION 5.0 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SANDY LEAN CLAY, (CL) medium stiff, slightly moist, black, medium plasticity	GB 10A									
2.5		CLAYEY SAND, (SC) dense, moist, brownish grey, medium plasticity	GB 10B					7.80	28	12	16	34.8
		Very moist to wet	GB 10C									
5.0		POORLY GRADED SAND TO SILTY SAND, (SP-SM) dense, wet, brown, non-plastic	GB 10D									
7.5		CLAYEY SAND, (SC) dense, wet, grayish brown, low plasticity	GB 10E									
10.0		Bottom of Test Pit at 10.0 Feet.										

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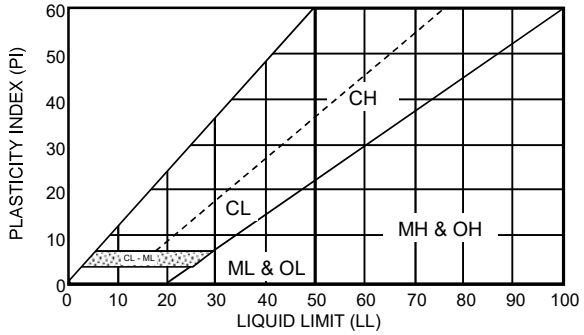
MAJOR DIVISION					TYPICAL NAMES
COARSED-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVEL MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES		GW	WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES		GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND
				GC	CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SAND MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES		SW	WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
				SP	POORLY GRADED SAND WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES		SM	SILTY SANDS WITH OR WITHOUT GRAVEL
				SC	CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILT AND CLAY LIQUID LIMIT 50% OR LESS			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
				OL	ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILT AND CLAY LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOLID, ELASTIC SILTS
				CH	INORGANIC CLAYS OR HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC SILTS OR CLAYS MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS



CONSISTENCY		RELATIVE DENSITY	
SILTS & CLAYS	SPT BLOW* COUNTS (N)	SANDS & GRAVELS	SPT BLOW* COUNTS (N)
VERY SOFT	0 - 2	VERY LOOSE	0 - 4
SOFT	3 - 4	LOOSE	5 - 10
MEDIUM STIFF	5 - 8	MEDIUM DENSE	11 - 30
STIFF	9 - 15	DENSE	31 - 50
VERY STIFF	16 - 30	VERY DENSE	50 +
HARD	30 +		

* The Standard Penetration Resistance (N) In blows per foot is obtained by the ASTM D1585 procedure using 2" O.D., 1 3/8" I.D. samplers.

DESCRIPTION OF ESTIMATED PERCENTAGES OF GRAVEL, SAND, AND FINES	
TRACE	Particles are present but est. < 5%
FEW	5% - 10%
LITTLE	15% - 20%
SOME	30% - 45%
MOSTLY	50% - 100%

NOTE: Percentages are presented within soil description for soil horizon with laboratory tested soil samples.

DEFINITIONS OF SOIL FRACTIONS	
SOIL COMPONENT	PARTICLE SIZE RANGE
COBBLES	ABOVE 3 INCHES
GRAVEL	3 IN. TO NO. 4 SIEVE
COARSE GRAVEL	3 IN. TO 3/4 IN.
FINE GRAVEL	3/4 IN. TO NO. 4 SIEVE
SAND	NO. 4 TO NO. 200
COARSE SAND	NO. 4 TO NO. 10
MEDIUM SAND	NO. 10 TO NO. 40
FINE SAND	NO. 40 TO NO. 200
FINES (SILT OR CLAY)	MINUS NO. 200 SIEVE

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UNIFIED SOIL CLASSIFICATION AND KEY TO SOIL DESCRIPTIONS

Geotechnical Investigation
Lompa Ranch
Ryder Homes
Carson City, Nevada

Project No.: 3621001
Date: 03/31/18

PLATE A-3

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Reno, Nevada 89502
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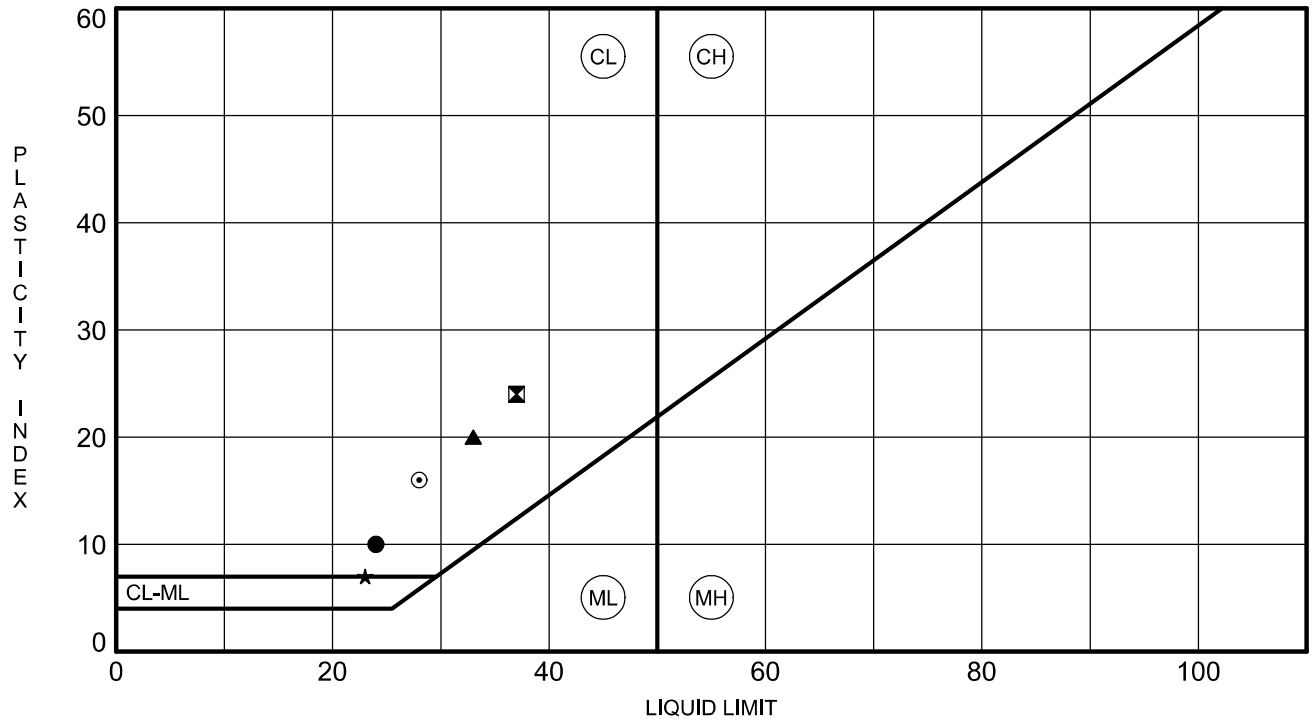
Fax: 775-823-4066

ATTERBERG LIMITS' RESULTS

CLIENT Ryder NV Management, LLC **PROJECT NAME** Lompa Ranch

PROJECT NUMBER 3621001 **PROJECT LOCATION** Carson City, Nevada



	TEST PIT	DEPTH	LL	PL	PI	Fines	Classification
●	TP-2	0.0	24	14	10	41	CLAYEY SAND(SC)
⊠	TP-2	3.0	37	13	24	36	CLAYEY SAND(SC)
▲	TP-6	0.0	33	13	20	53	SANDY LEAN CLAY(CL)
★	TP-7	3.0	23	16	7	30	SILTY, CLAYEY SAND(SC-SM)
⊙	TP-10	2.0	28	12	16	35	CLAYEY SAND(SC)

ATTERBERG LIMITS - GINT STD US LAB.GDT - 3/27/18 08:20 - \\WOODRODGERS.LOC\PRODUCTIONDATA\JOBS-RENO\JOBS\3621_LOMPA_RANCH\LOMPA_RANCH_OA\GEOTECH\GEOTECH\GINT\LOMPA RANCH.GPJ

Wood Rodgers, Inc
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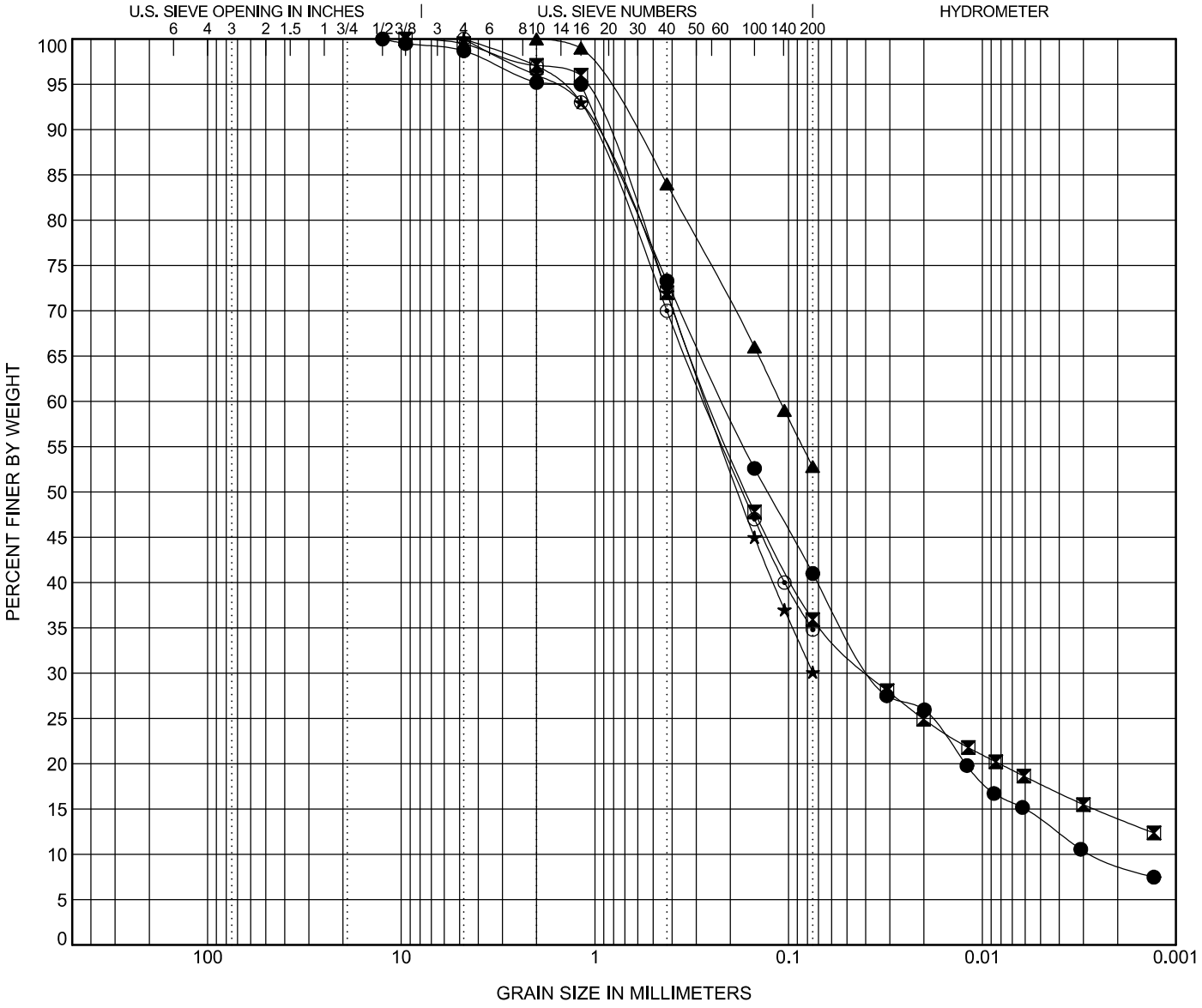
Reno, Nevada 89502
Telephone: 775-823-4068
Fax: 775-823-4066

GRAIN SIZE DISTRIBUTION

CLIENT Ryder NV Management, LLC **PROJECT NAME** Lompa Ranch

PROJECT NUMBER 3621001 **PROJECT LOCATION** Carson City, Nevada



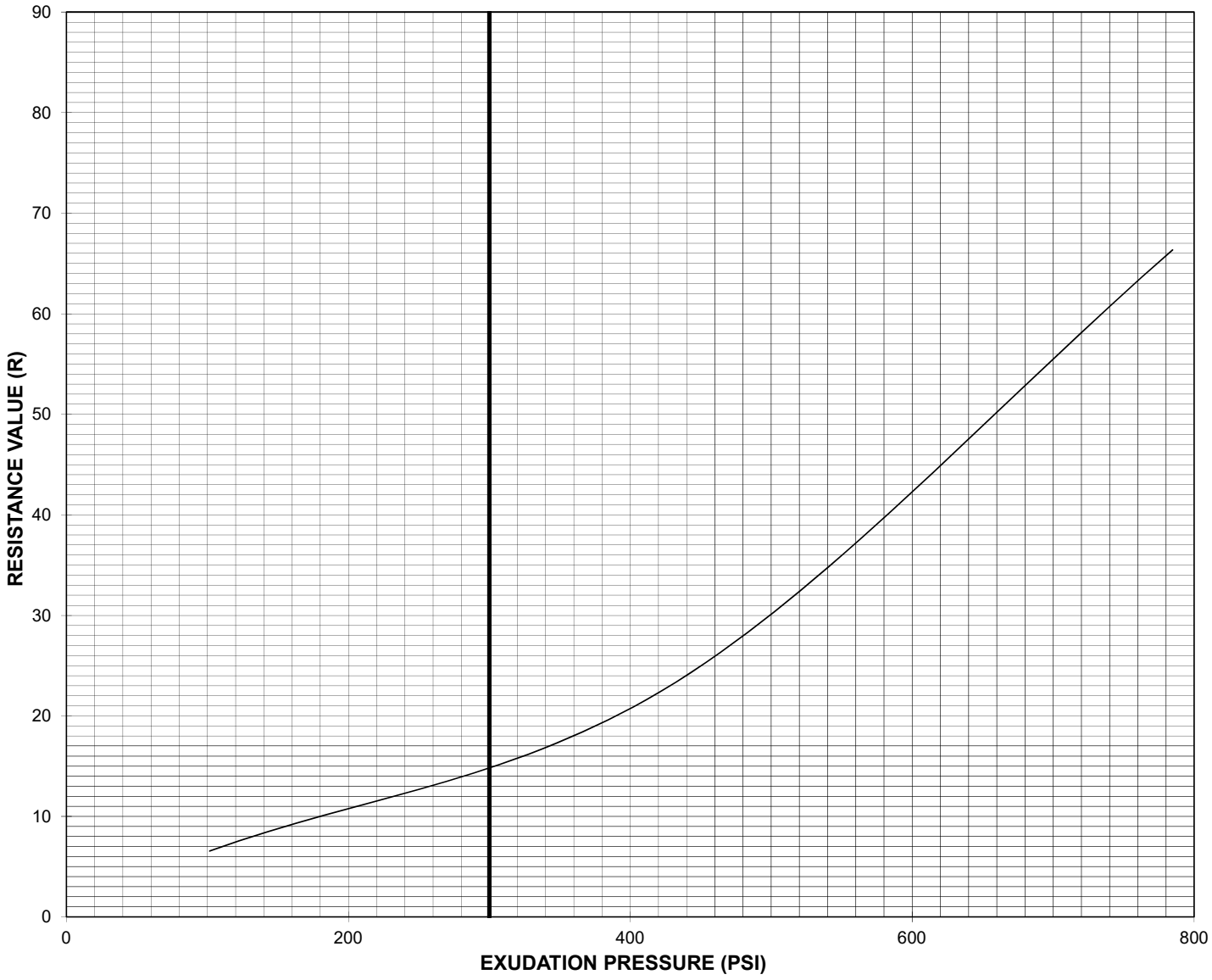
COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	TEST PIT	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	TP-2	0.0	CLAYEY SAND(SC)	24	14	10	2.33	82.24
⊠	TP-2	3.0	CLAYEY SAND(SC)	37	13	24		
▲	TP-6	0.0	SANDY LEAN CLAY(CL)	33	13	20		
★	TP-7	3.0	SILTY, CLAYEY SAND(SC-SM)	23	16	7		
⊙	TP-10	2.0	CLAYEY SAND(SC)	28	12	16		

	TEST PIT	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	TP-2	0.0	12.5	0.218	0.037	0.003	1.3	57.7	27.3	13.7
⊠	TP-2	3.0	9.5	0.254	0.039		0.5	63.6	18.1	17.8
▲	TP-6	0.0	2	0.11			0.0	47.2	52.8	
★	TP-7	3.0	4.75	0.268			0.0	69.9	30.1	
⊙	TP-10	2.0	4.75	0.27			0.0	65.2	34.8	

GRAIN SIZE - GINT STD US LAB.GDT - 3/27/18 08:20 - \\WOODRODGERS.LOC\PRODUCTIONDATA\JOBS-RENOJOBS\3621_LOMPA_RANCH\LOMPA_RANCH_OA\GEOTECH\GEOTECH\GINT\LOMPA RANCH.GPJ

R-Value and Expansion Pressure of Compacted Soils AASHTO T190 / ASTM D2844



Lab Log #	Sample Source	Material	Expansion Pressure (psf) @ 300 (psi)	R-Value @ 300 (psi)
4473	TP-1 @ 0 - 3.5'	Medium Brown Clayey Sand	0	15

POINT #	WATER CONTENT (%)	DRY DENSITY (PCF)	EXUDATION PRESS. (PSI)	EXPANSION PRESS. (PSF)	RESISTANCE VALUE (R)
1	18.9	106.9	102	0	7
2	13.9	112.6	432	0	23
3	9.4	117.8	785	0	66
4					
5					

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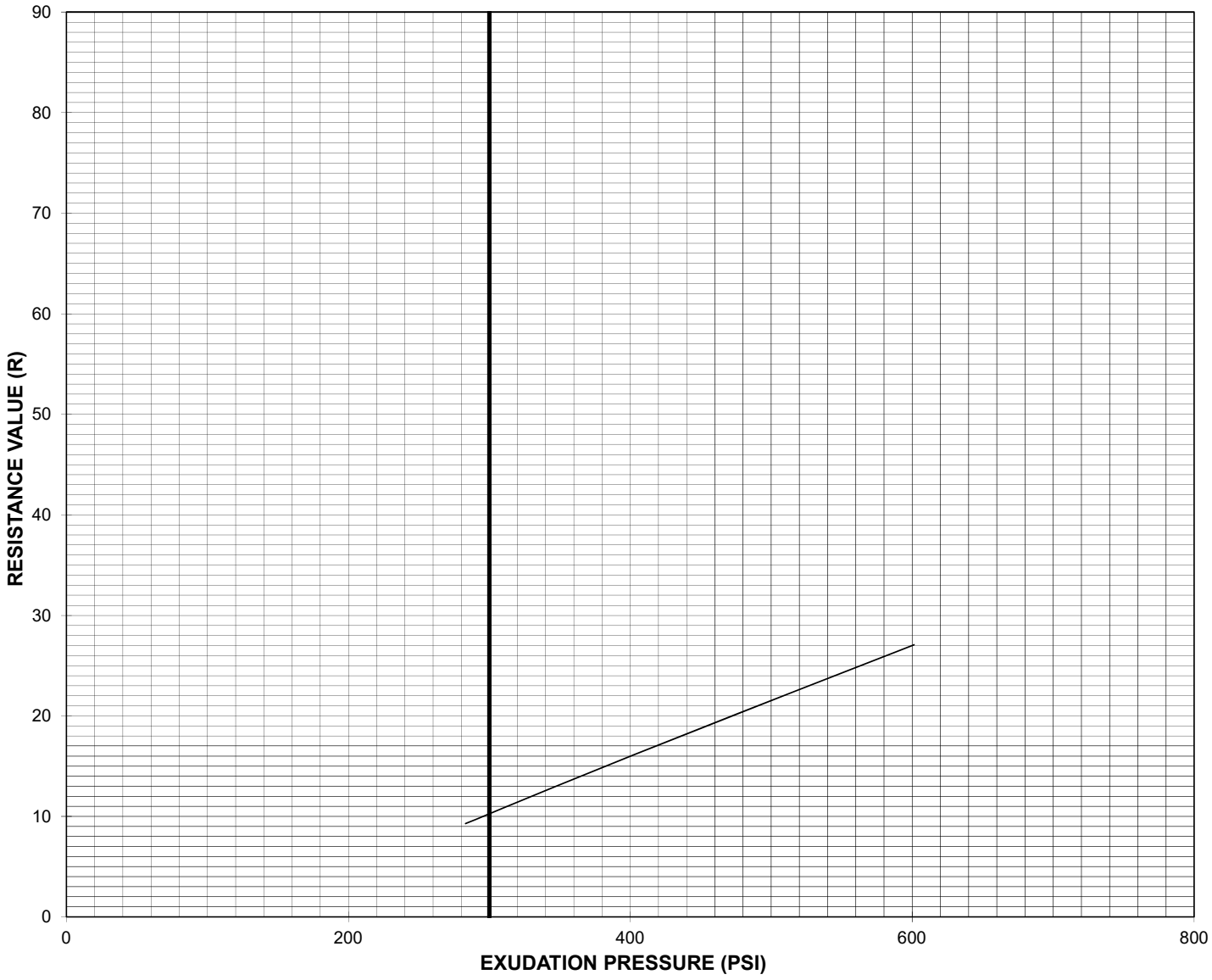
Lompa Ranch
Medium Brown Clayey Sand

TESTED BY	JOB NUMBER	APPROVED	DATE	REVISED	DATE
BC	3621.001		3/22/2018		

R-Value and Expansion Pressure of Compacted Soils AASHTO T190 / ASTM D2844



Lab Log #	Sample Source	Material	Expansion Pressure (psf) @ 300 (psi)	R-Value @ 300 (psi)
4473	TP-3 @ 0 - 2.5'	Medium Brown Clayey Sand	0	10

POINT #	WATER CONTENT (%)	DRY DENSITY (PCF)	EXUDATION PRESS. (PSI)	EXPANSION PRESS. (PSF)	RESISTANCE VALUE (R)
1	11.2	122.8	601	0	27
2	11.8	120.4	408	0	16
3	12.7	115.5	283	0	9
4					
5					

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Lompa Ranch
Medium Brown Clayey Sand

TESTED BY	JOB NUMBER	APPROVED	DATE	REVISED	DATE
BC	3126.001		3/22/2018		

SilverState Analytical Laboratories
Sierra Environmental Monitoring
Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

Analytical Report

Workorder#: 18030738
Date Reported: 3/28/2018

Client: Wood Rodgers
Project Name: Lompa Ranch
PO #: 3261001

Sampled By: B. LaBarr

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
18030738-01	Lompa Ranch	03/14/2018 15:32	3/15/2018

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chloride	EPA 300.0	93	mg/Kg	10	JF	03/19/2018 15:02	
Oxidation-Reduction Potential	SM 2580B	398	mV		LRB	03/16/2018 11:42	
pH	SW-846 9045D	8.19	pH Units		LRB	03/21/2018 12:03	
pH Temperature	SW-846 9045D	22.0	°C		LRB	03/21/2018 12:03	
Resistivity	AASHTO T288	1400	Ohms-cm		LRB	03/27/2018 12:41	
Sodium	ASTM D2791	0.02	%	0.01	LRB	03/20/2018 12:03	
Sodium Sulfate as Na2SO4	Calculation	< 0.01	%	0.01	LRB	03/20/2018 12:48	
Sulfate	SM4500 SO4E	< 0.01	%	0.01	LRB	03/20/2018 12:24	
Sulfide	AWWA C105	Negative	POS/NEG		LRB	03/16/2018 11:34	

Summary of Water Potential

Sample Number	Moisture Content (%, g/g)	Water Potential (-cm water)	Water Potential (pF)
TP-2 (0'-2.5') (7.1%)	7.1	37,937	4.58
TP-2 (0'-2.5') (14.5%)	14.5	4,181	3.62
TP-2 (0'-2.5') (20.8%)	20.8	1,122	3.05
TP-2 (3'-6') (7.4%)	7.4	17,643	4.25
TP-2 (3'-6') (14.8%)	14.8	4,487	3.65
TP-2 (3'-6') (20.9%)	20.9	2,550	3.41

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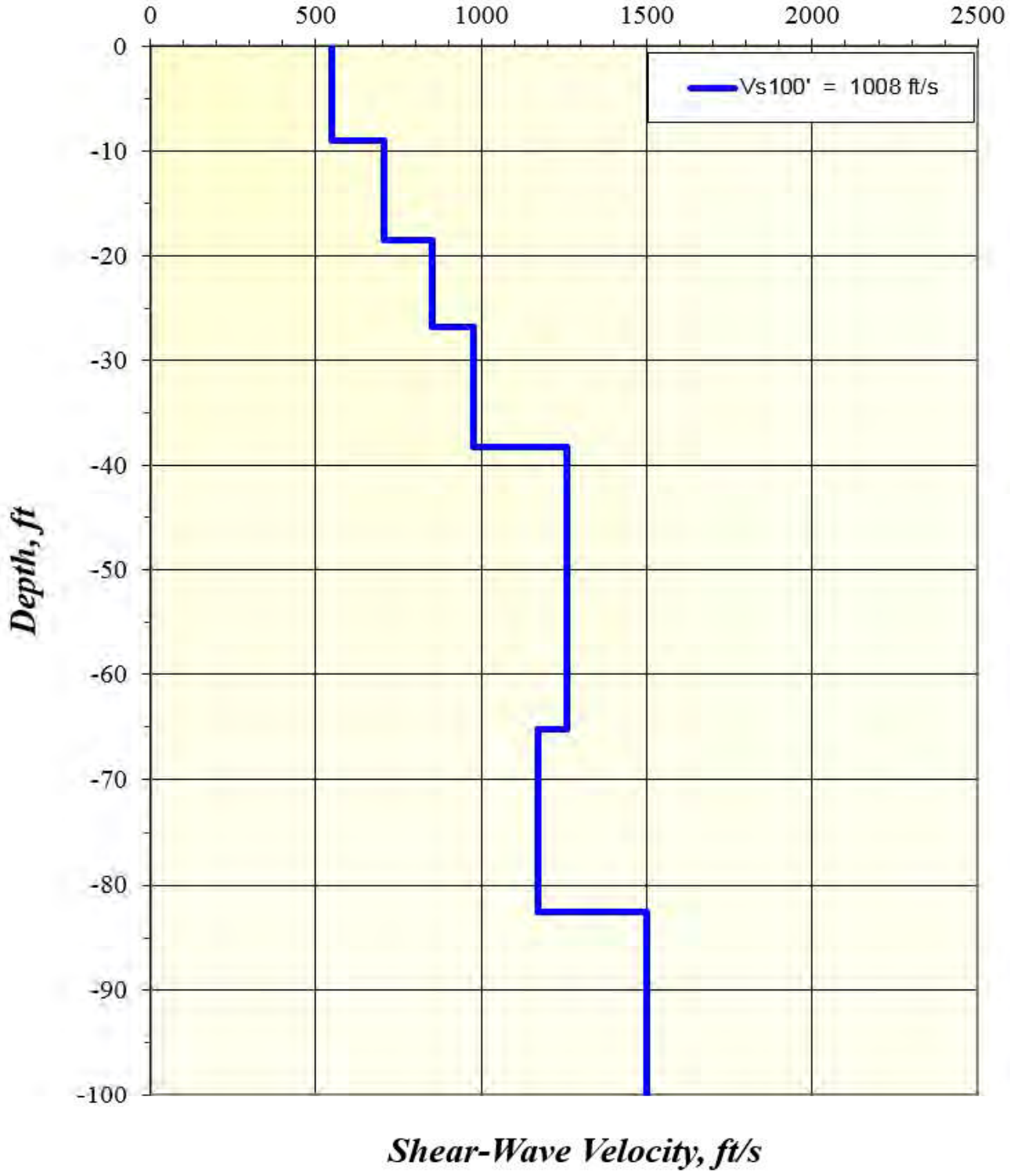
SOIL SUCTION TESTING RESULTS

Geotechnical Investigation
Lompa Ranch
Ryder Homes
Carson City, Nevada
Project No.: 3621001
Date: 03/31/18

PLATE A-4f

Lompa Ranch, 165': Vs Model



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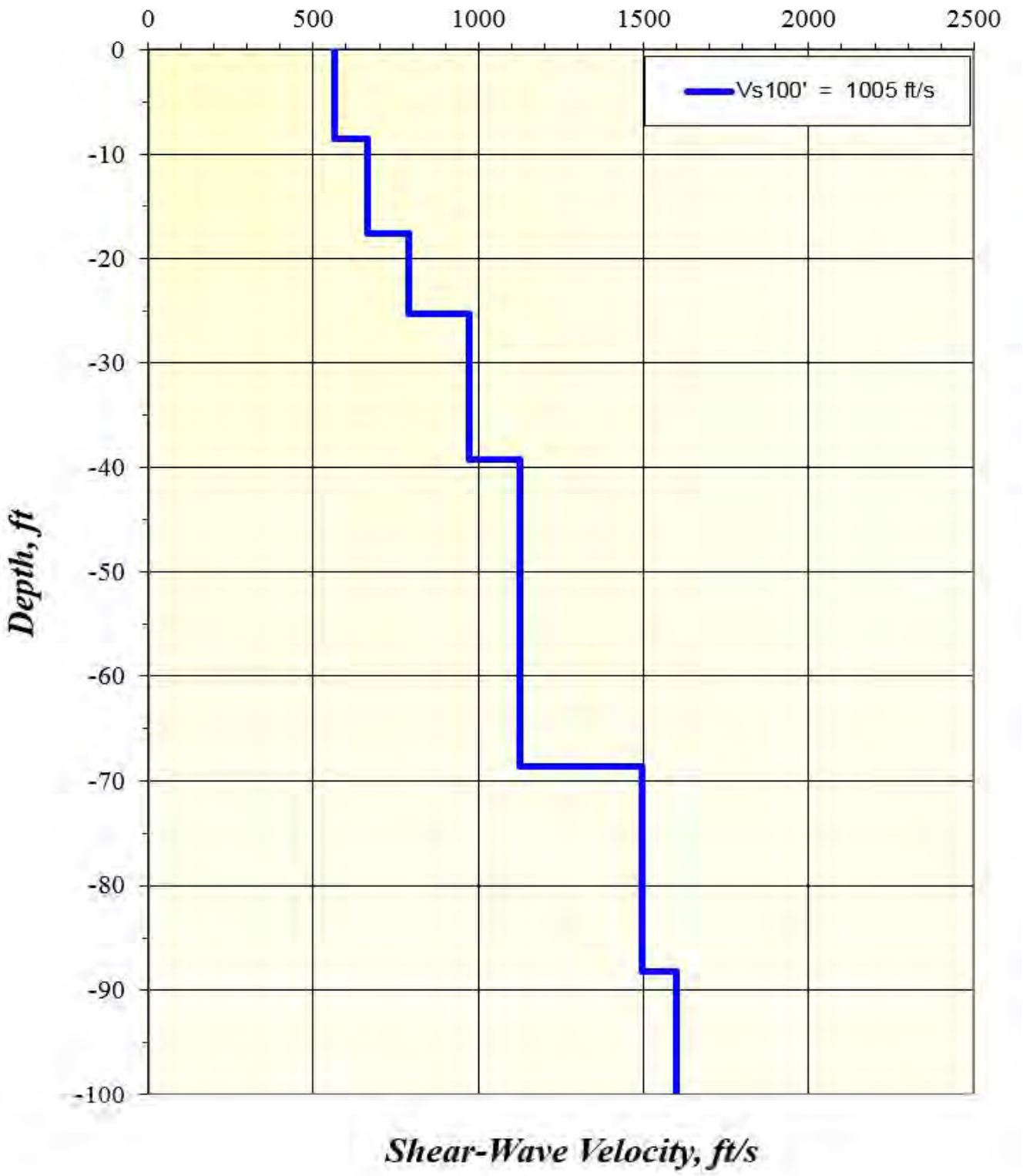
ReMi
RESULTS

Geotechnical Investigation
Lompa Ranch
Ryder Homes
Carson City, Nevada

Project No.: 3621001
Date: 03/31/18

PLATE
A-5a

Lompa Ranch, 300': Vs Model



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ReMi
RESULTS

Geotechnical Investigation
Lompa Ranch
Ryder Homes
Carson City, Nevada

Project No.: 3621001
Date: 03/31/18

PLATE A-5b

APPENDIX B
USGS DESIGN MAPS DETAILED REPORT

USGS Design Maps Detailed Report

ASCE 7-10 Standard (39.165°N, 119.74798°W)

Site Class D – "Stiff Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1] S_S = 2.371 g

From Figure 22-2 [2] S_1 = 0.834 g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\overline{v}_s$	$\overline{N}$ or $\overline{N}_{ch}$	$\overline{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index *PI* > 20, • Moisture content *w* ≥ 40%, and • Undrained shear strength $\overline{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \le 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \ge 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = D and S_S = 2.371 g, F_a = 1.000

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \le 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \ge 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 0.834 g, F_v = 1.500

Equation (11.4–1): $S_{MS} = F_a S_S = 1.000 \times 2.371 = 2.371$ g

Equation (11.4–2): $S_{M1} = F_v S_1 = 1.500 \times 0.834 = 1.251$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

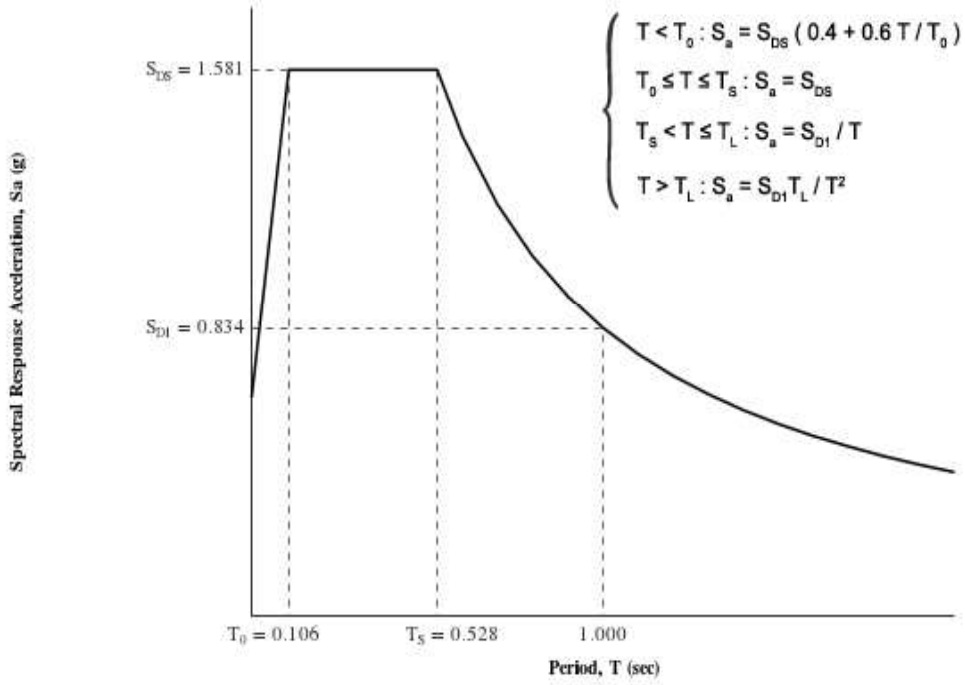
Equation (11.4–3): $S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 2.371 = 1.581$ g

Equation (11.4–4): $S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 1.251 = 0.834$ g

Section 11.4.5 — Design Response Spectrum

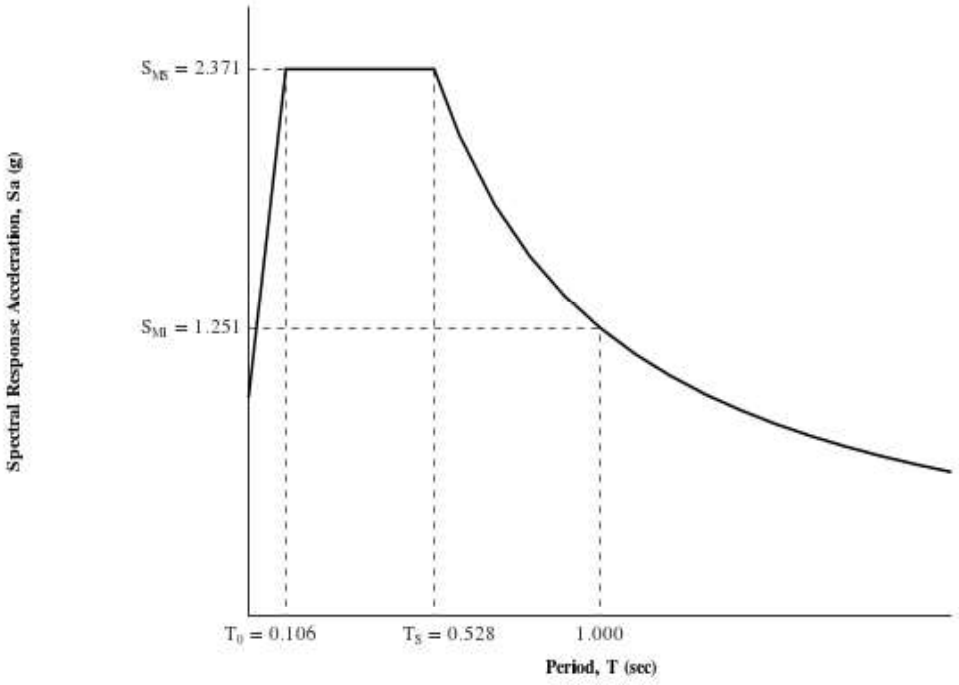
From Figure 22-12 [3] $T_L = 6$ seconds

Figure 11.4–1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 0.897

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 1.000 \times 0.897 = 0.897$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = D and PGA = 0.897 g, F_{PGA} = 1.000

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.898

From Figure 22-18 [6] C_{R1} = 0.879

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.581 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.834 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

APPENDIX C
VOLFLO ANALYSES

VOLFLO 1.5

Geostructural Tool Kit, Inc.

Registered To : Wood Rodgers

Serial Number : 200-100-086

Project Title : Lompa Ranch
Project Engineer : J. McDougal

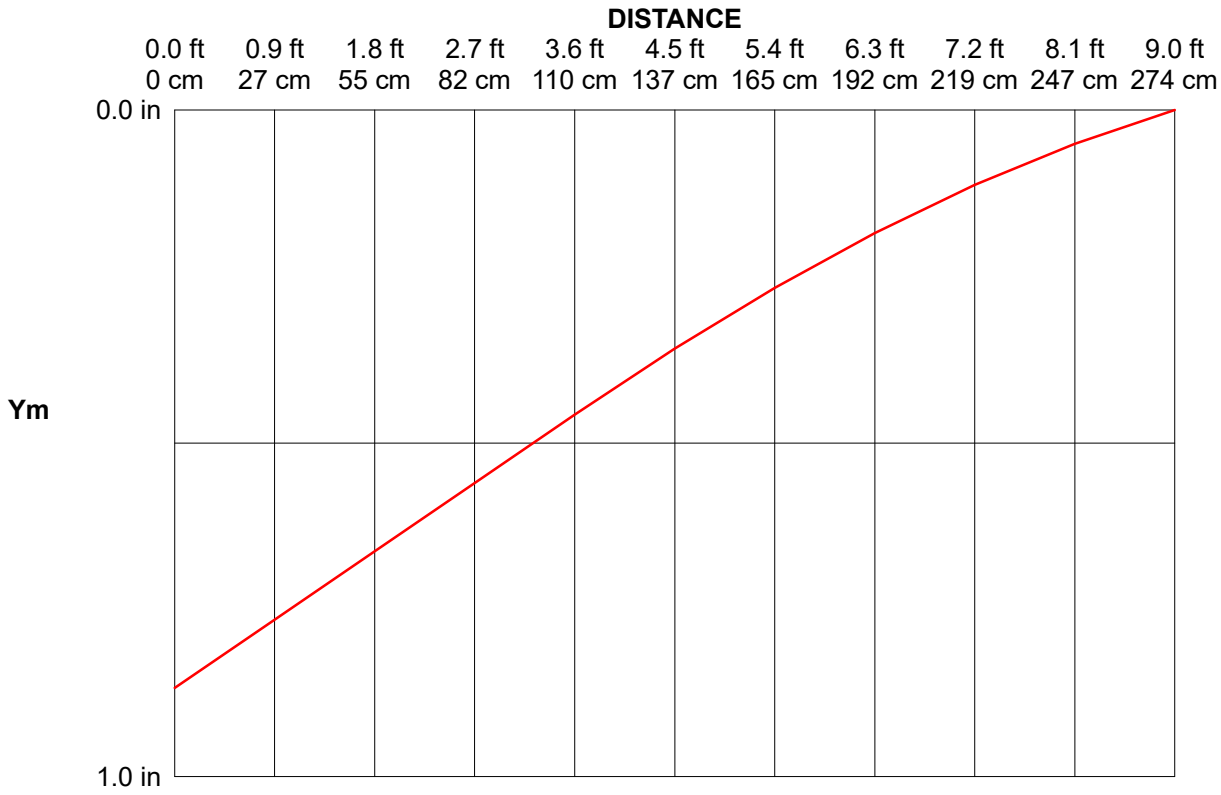
Geotechnical Report : Wood Rodgers, Inc.

Project Number : 3621001
Project Date : April, 2018
Report Date : April, 2018
Report Number :

SHRINK CALCULATION

Ym Center (Shrink) = -0.87 inches (-2.20 centimeters)

Em Center = 9.00 feet (274.32 centimeters)



	Shrink at Slab Edge	Shrink at distance X from edge of slab									Shrink at Em
	0.0 ft 0 cm	0.9 ft 27 cm	1.8 ft 55 cm	2.7 ft 82 cm	3.6 ft 110 cm	4.5 ft 137 cm	5.4 ft 165 cm	6.3 ft 192 cm	7.2 ft 219 cm	8.1 ft 247 cm	9.0 ft 274 cm
inches	-0.87	-0.76	-0.66	-0.56	-0.46	-0.36	-0.27	-0.18	-0.11	-0.05	0.00
cm	-2.20	-1.94	-1.68	-1.42	-1.16	-0.91	-0.68	-0.47	-0.29	-0.13	0.00

VOLFLO 1.5

Geostructural Tool Kit, Inc.

Registered To : Wood Rodgers

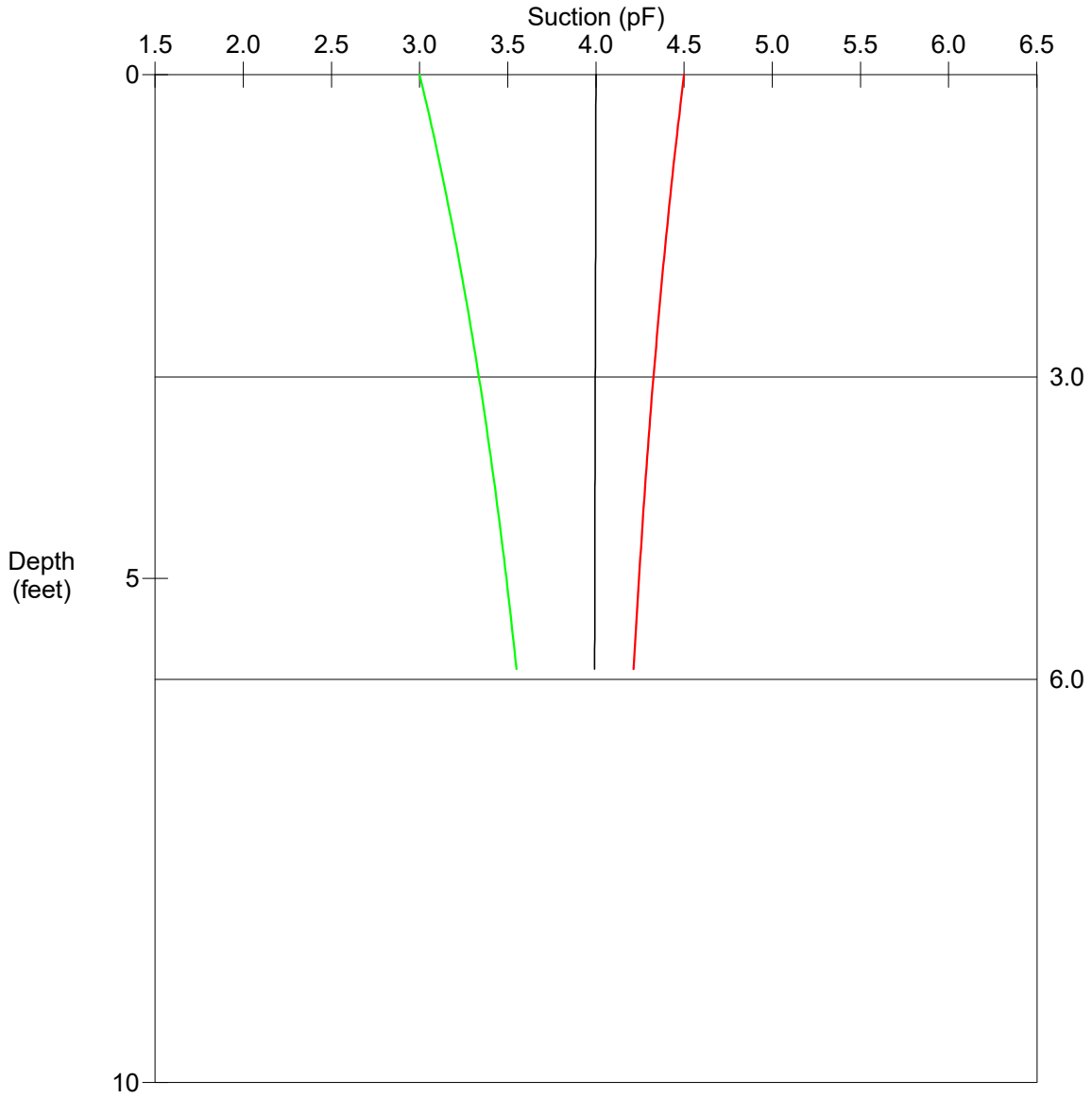
Serial Number : 200-100-086

Project Title : Lompa Ranch
Project Engineer : J. McDougal

Geotechnical Report : Wood Rodgers, Inc.

Project Number : 3621001
Project Date : April, 2018
Report Date : April, 2018
Report Number :

SUCTION PROFILES



Initial suction at edge of slab

Final suction at edge of slab

Constant Suction

VOLFLO 1.5

Geostructural Tool Kit, Inc.

Registered To : Wood Rodgers

Serial Number : 200-100-086

Project Title : Lompa Ranch
Project Engineer : J. McDougal

Geotechnical Report : Wood Rodgers, Inc.

Project Number : 3621001
Project Date : April, 2018
Report Date : April, 2018
Report Number :

LAYER GEOTECHNICAL PROPERTIES

Layer	Gamma0 (Mean)	Fine Clay Cor. Fact.	Coarse-Grain Cor. Fact.	GammaH (Mean)	GammaH (Shrink)	GammaH (Swell)
1	0.070	0.379	1.000	0.027	0.026	0.027
2	0.080	0.417	1.000	0.033	0.032	0.034

Layer	Alpha (Mean)	Alpha (Shrink)	Alpha (Swell)	S	P	KoHo
1	0.004826	0.004835	0.004818	-13.887	0.000668	0.000290
2	0.004904	0.004918	0.004890	-14.882	0.000633	0.000275

Gamma0 Determination Per PTI 3rd Edition Manual

Layer	% Fine Clay	PI	PI/ %fc	LL	LL/ %fc	Zone Chart	Gamma0 (Mean)
1	37.88	20	0.53	33	0.87	1	0.070
2	41.67	24	0.58	37	0.89	1	0.080

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SUMMARY OF INPUT DATA - Soil Properties

Layer Thickness and description

Layer Number	Layer Thickness	Depth to Bottom	Layer Description
1	3.0 ft	3.0 ft	Dark Brown SC/CL
2	3.0 ft	6.0 ft	SC

Layer Geotechnical Properties

Layer Number	Liquid Limit	Plastic Limit	% Pass. #200	% Finer 2 mic.	Dry Den. (lb/ft^3)	Gamma 100	Ko Drying	Ko Wetting	Fabric Factor
1	33	13	52.8	20.0	120.0	CALC	0.33	0.67	1.0
2	37	13	36.0	15.0	120.0	CALC	0.33	0.67	1.0

	Coarse-Grained Soil Correction		
Layer Number	% Pass. #10	(Gs) coarse	Wet Den. (lb/ft^3)
1	Not Calculated		
2	Not Calculated		

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SUMMARY OF INPUT DATA - Suction at Edge of Slab

Initial Suction Profile ---- Default Wet Design Envelope

Suction value at surface :	3.0 pF

Final Suction Profile ---- Default Dry Design Envelope

Suction Value at Surface :	4.5 pF

Constant Suction

Constant suction :	4.0 pF
Depth to constant suction :	5.9 ft

Moisture Barriers

Vertical barrier depth :	0.0 ft
Apply vertical barrier to :	Neither Profile
Horizontal barrier length :	0.0 ft

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SUMMARY OF INPUT DATA - Em

Em Distance

Determined per Modified PTI method
Thornthwaite Moisture Index -40

Suction Profile at Em ---- Constant Suction Profile

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Suction Profiles

Depth (ft)	Initial Suction @ Edge	Suction	Final Suction @ Edge	Shrink (in)
0.0	3.00	4.00	4.50	0.00
0.1	3.01	4.00	4.49	-0.02
0.2	3.03	4.00	4.49	-0.02
0.3	3.04	4.00	4.48	-0.02
0.4	3.05	4.00	4.47	-0.02
0.5	3.07	4.00	4.47	-0.02
0.6	3.08	4.00	4.46	-0.02
0.7	3.09	4.00	4.45	-0.02
0.8	3.10	4.00	4.45	-0.02
0.9	3.12	4.00	4.44	-0.02
1.0	3.13	4.00	4.43	-0.02
1.1	3.14	4.00	4.43	-0.02
1.2	3.15	4.00	4.42	-0.02
1.3	3.16	4.00	4.42	-0.02
1.4	3.17	4.00	4.41	-0.02
1.5	3.19	4.00	4.40	-0.02
1.6	3.20	4.00	4.40	-0.02
1.7	3.21	4.00	4.39	-0.02
1.8	3.22	4.00	4.39	-0.02
1.9	3.23	4.00	4.38	-0.02
2.0	3.24	4.00	4.38	-0.02
2.1	3.25	4.00	4.37	-0.02
2.2	3.26	4.00	4.37	-0.02
2.3	3.27	4.00	4.36	-0.02
2.4	3.28	4.00	4.36	-0.02
2.5	3.29	4.00	4.35	-0.02
2.6	3.30	4.00	4.35	-0.02
2.7	3.31	4.00	4.34	-0.02
2.8	3.32	4.00	4.34	-0.01
2.9	3.33	4.00	4.33	-0.01
3.0	3.34	4.00	4.33	-0.02
3.1	3.34	4.00	4.32	-0.02
3.2	3.35	4.00	4.32	-0.02
3.3	3.36	4.00	4.31	-0.02
3.4	3.37	4.00	4.31	-0.02
3.5	3.38	4.00	4.30	-0.01
3.6	3.39	4.00	4.30	-0.01
3.7	3.40	4.00	4.29	-0.01
3.8	3.40	3.99	4.29	-0.01
3.9	3.41	3.99	4.29	-0.01

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Suction Profiles

Depth (ft)	Initial Suction @ Edge	Suction	Final Suction @ Edge	Shrink (in)
4.0	3.42	3.99	4.28	-0.01
4.1	3.43	3.99	4.28	-0.01
4.2	3.43	3.99	4.27	-0.01
4.3	3.44	3.99	4.27	-0.01
4.4	3.45	3.99	4.27	-0.01
4.5	3.46	3.99	4.26	-0.01
4.6	3.46	3.99	4.26	-0.01
4.7	3.47	3.99	4.25	-0.01
4.8	3.48	3.99	4.25	-0.01
4.9	3.49	3.99	4.25	-0.01
5.0	3.49	3.99	4.24	-0.01
5.1	3.50	3.99	4.24	-0.01
5.2	3.51	3.99	4.24	-0.01
5.3	3.51	3.99	4.23	-0.01
5.4	3.52	3.99	4.23	-0.01
5.5	3.52	3.99	4.23	-0.01
5.6	3.53	3.99	4.22	-0.01
5.7	3.54	3.99	4.22	-0.01
5.8	3.54	3.99	4.22	-0.01
5.9	3.55	3.99	4.21	-0.01

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INITIAL SUCTION PROFILES

Depth (cm)	Depth (ft)	0.0 ft 0 cm	0.9 ft 27 cm	1.8 ft 55 cm	2.7 ft 82 cm	3.6 ft 110 cm	4.5 ft 137 cm	5.4 ft 165 cm	6.3 ft 192 cm	7.2 ft 219 cm	8.1 ft 247 cm	9.0 ft 274 cm
0	0.0	3.00	3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90	4.00
3	0.1	3.01	3.11	3.21	3.31	3.41	3.51	3.61	3.70	3.80	3.90	4.00
6	0.2	3.03	3.12	3.22	3.32	3.42	3.51	3.61	3.71	3.81	3.90	4.00
9	0.3	3.04	3.14	3.23	3.33	3.42	3.52	3.62	3.71	3.81	3.90	4.00
12	0.4	3.05	3.15	3.24	3.34	3.43	3.53	3.62	3.72	3.81	3.90	4.00
15	0.5	3.07	3.16	3.25	3.35	3.44	3.53	3.63	3.72	3.81	3.91	4.00
18	0.6	3.08	3.17	3.26	3.36	3.45	3.54	3.63	3.72	3.82	3.91	4.00
21	0.7	3.09	3.18	3.27	3.36	3.45	3.55	3.64	3.73	3.82	3.91	4.00
24	0.8	3.10	3.19	3.28	3.37	3.46	3.55	3.64	3.73	3.82	3.91	4.00
27	0.9	3.12	3.20	3.29	3.38	3.47	3.56	3.65	3.73	3.82	3.91	4.00
30	1.0	3.13	3.22	3.30	3.39	3.48	3.56	3.65	3.74	3.82	3.91	4.00
34	1.1	3.14	3.23	3.31	3.40	3.48	3.57	3.66	3.74	3.83	3.91	4.00
37	1.2	3.15	3.24	3.32	3.41	3.49	3.57	3.66	3.74	3.83	3.91	4.00
40	1.3	3.16	3.25	3.33	3.41	3.50	3.58	3.66	3.75	3.83	3.91	4.00
43	1.4	3.17	3.26	3.34	3.42	3.50	3.59	3.67	3.75	3.83	3.92	4.00
46	1.5	3.19	3.27	3.35	3.43	3.51	3.59	3.67	3.75	3.84	3.92	4.00
49	1.6	3.20	3.28	3.36	3.44	3.52	3.60	3.68	3.76	3.84	3.92	4.00
52	1.7	3.21	3.29	3.37	3.44	3.52	3.60	3.68	3.76	3.84	3.92	4.00
55	1.8	3.22	3.30	3.37	3.45	3.53	3.61	3.69	3.76	3.84	3.92	4.00
58	1.9	3.23	3.31	3.38	3.46	3.54	3.61	3.69	3.77	3.84	3.92	4.00
61	2.0	3.24	3.32	3.39	3.47	3.54	3.62	3.69	3.77	3.85	3.92	4.00
64	2.1	3.25	3.32	3.40	3.47	3.55	3.62	3.70	3.77	3.85	3.92	4.00
67	2.2	3.26	3.33	3.41	3.48	3.55	3.63	3.70	3.78	3.85	3.92	4.00
70	2.3	3.27	3.34	3.42	3.49	3.56	3.63	3.71	3.78	3.85	3.92	4.00
73	2.4	3.28	3.35	3.42	3.49	3.57	3.64	3.71	3.78	3.85	3.93	4.00
76	2.5	3.29	3.36	3.43	3.50	3.57	3.64	3.71	3.78	3.86	3.93	4.00
79	2.6	3.30	3.37	3.44	3.51	3.58	3.65	3.72	3.79	3.86	3.93	4.00
82	2.7	3.31	3.38	3.45	3.51	3.58	3.65	3.72	3.79	3.86	3.93	4.00
85	2.8	3.32	3.39	3.45	3.52	3.59	3.66	3.72	3.79	3.86	3.93	4.00
88	2.9	3.33	3.39	3.46	3.53	3.59	3.66	3.73	3.80	3.86	3.93	4.00
91	3.0	3.34	3.40	3.47	3.53	3.60	3.67	3.73	3.80	3.86	3.93	4.00
94	3.1	3.34	3.41	3.48	3.54	3.61	3.67	3.74	3.80	3.87	3.93	4.00
98	3.2	3.35	3.42	3.48	3.55	3.61	3.67	3.74	3.80	3.87	3.93	4.00
101	3.3	3.36	3.43	3.49	3.55	3.62	3.68	3.74	3.81	3.87	3.93	4.00
104	3.4	3.37	3.43	3.50	3.56	3.62	3.68	3.75	3.81	3.87	3.93	4.00
107	3.5	3.38	3.44	3.50	3.56	3.63	3.69	3.75	3.81	3.87	3.93	4.00
110	3.6	3.39	3.45	3.51	3.57	3.63	3.69	3.75	3.81	3.87	3.93	4.00
113	3.7	3.40	3.46	3.52	3.58	3.64	3.70	3.76	3.82	3.88	3.94	4.00
116	3.8	3.40	3.46	3.52	3.58	3.64	3.70	3.76	3.82	3.88	3.94	3.99
119	3.9	3.41	3.47	3.53	3.59	3.64	3.70	3.76	3.82	3.88	3.94	3.99

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INITIAL SUCTION PROFILES (cont.)

Depth (cm)	Depth (ft)	0.0 ft 0 cm	0.9 ft 27 cm	1.8 ft 55 cm	2.7 ft 82 cm	3.6 ft 110 cm	4.5 ft 137 cm	5.4 ft 165 cm	6.3 ft 192 cm	7.2 ft 219 cm	8.1 ft 247 cm	9.0 ft 274 cm
122	4.0	3.42	3.48	3.53	3.59	3.65	3.71	3.76	3.82	3.88	3.94	3.99
125	4.1	3.43	3.48	3.54	3.60	3.65	3.71	3.77	3.82	3.88	3.94	3.99
128	4.2	3.43	3.49	3.55	3.60	3.66	3.71	3.77	3.83	3.88	3.94	3.99
131	4.3	3.44	3.50	3.55	3.61	3.66	3.72	3.77	3.83	3.88	3.94	3.99
134	4.4	3.45	3.50	3.56	3.61	3.67	3.72	3.78	3.83	3.89	3.94	3.99
137	4.5	3.46	3.51	3.56	3.62	3.67	3.73	3.78	3.83	3.89	3.94	3.99
140	4.6	3.46	3.52	3.57	3.62	3.68	3.73	3.78	3.83	3.89	3.94	3.99
143	4.7	3.47	3.52	3.58	3.63	3.68	3.73	3.78	3.84	3.89	3.94	3.99
146	4.8	3.48	3.53	3.58	3.63	3.68	3.74	3.79	3.84	3.89	3.94	3.99
149	4.9	3.49	3.54	3.59	3.64	3.69	3.74	3.79	3.84	3.89	3.94	3.99
152	5.0	3.49	3.54	3.59	3.64	3.69	3.74	3.79	3.84	3.89	3.94	3.99
155	5.1	3.50	3.55	3.60	3.65	3.70	3.75	3.80	3.84	3.89	3.94	3.99
158	5.2	3.51	3.55	3.60	3.65	3.70	3.75	3.80	3.85	3.90	3.94	3.99
162	5.3	3.51	3.56	3.61	3.66	3.70	3.75	3.80	3.85	3.90	3.94	3.99
165	5.4	3.52	3.57	3.61	3.66	3.71	3.76	3.80	3.85	3.90	3.95	3.99
168	5.5	3.52	3.57	3.62	3.67	3.71	3.76	3.81	3.85	3.90	3.95	3.99
171	5.6	3.53	3.58	3.62	3.67	3.72	3.76	3.81	3.85	3.90	3.95	3.99
174	5.7	3.54	3.58	3.63	3.67	3.72	3.76	3.81	3.86	3.90	3.95	3.99
177	5.8	3.54	3.59	3.63	3.68	3.72	3.77	3.81	3.86	3.90	3.95	3.99
180	5.9	3.55	3.59	3.64	3.68	3.73	3.77	3.81	3.86	3.90	3.95	3.99

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FINAL SUCTION PROFILES

Depth (cm)	Depth (ft)	0.0 ft 0 cm	0.9 ft 27 cm	1.8 ft 55 cm	2.7 ft 82 cm	3.6 ft 110 cm	4.5 ft 137 cm	5.4 ft 165 cm	6.3 ft 192 cm	7.2 ft 219 cm	8.1 ft 247 cm	9.0 ft 274 cm
0	0.0	4.50	4.45	4.40	4.35	4.30	4.25	4.20	4.15	4.10	4.05	4.00
3	0.1	4.49	4.44	4.39	4.35	4.30	4.25	4.20	4.15	4.10	4.05	4.00
6	0.2	4.49	4.44	4.39	4.34	4.29	4.24	4.19	4.15	4.10	4.05	4.00
9	0.3	4.48	4.43	4.38	4.34	4.29	4.24	4.19	4.14	4.10	4.05	4.00
12	0.4	4.47	4.43	4.38	4.33	4.28	4.24	4.19	4.14	4.09	4.05	4.00
15	0.5	4.47	4.42	4.37	4.33	4.28	4.23	4.19	4.14	4.09	4.05	4.00
18	0.6	4.46	4.41	4.37	4.32	4.28	4.23	4.18	4.14	4.09	4.05	4.00
21	0.7	4.45	4.41	4.36	4.32	4.27	4.23	4.18	4.14	4.09	4.04	4.00
24	0.8	4.45	4.40	4.36	4.31	4.27	4.22	4.18	4.13	4.09	4.04	4.00
27	0.9	4.44	4.40	4.35	4.31	4.26	4.22	4.18	4.13	4.09	4.04	4.00
30	1.0	4.43	4.39	4.35	4.30	4.26	4.22	4.17	4.13	4.09	4.04	4.00
34	1.1	4.43	4.38	4.34	4.30	4.26	4.21	4.17	4.13	4.08	4.04	4.00
37	1.2	4.42	4.38	4.34	4.29	4.25	4.21	4.17	4.13	4.08	4.04	4.00
40	1.3	4.42	4.37	4.33	4.29	4.25	4.21	4.17	4.12	4.08	4.04	4.00
43	1.4	4.41	4.37	4.33	4.29	4.25	4.20	4.16	4.12	4.08	4.04	4.00
46	1.5	4.40	4.36	4.32	4.28	4.24	4.20	4.16	4.12	4.08	4.04	4.00
49	1.6	4.40	4.36	4.32	4.28	4.24	4.20	4.16	4.12	4.08	4.04	4.00
52	1.7	4.39	4.35	4.31	4.27	4.23	4.20	4.16	4.12	4.08	4.04	4.00
55	1.8	4.39	4.35	4.31	4.27	4.23	4.19	4.15	4.11	4.08	4.04	4.00
58	1.9	4.38	4.34	4.30	4.27	4.23	4.19	4.15	4.11	4.07	4.04	4.00
61	2.0	4.38	4.34	4.30	4.26	4.22	4.19	4.15	4.11	4.07	4.04	4.00
64	2.1	4.37	4.33	4.30	4.26	4.22	4.18	4.15	4.11	4.07	4.03	4.00
67	2.2	4.37	4.33	4.29	4.26	4.22	4.18	4.14	4.11	4.07	4.03	4.00
70	2.3	4.36	4.32	4.29	4.25	4.22	4.18	4.14	4.11	4.07	4.03	4.00
73	2.4	4.36	4.32	4.28	4.25	4.21	4.18	4.14	4.10	4.07	4.03	4.00
76	2.5	4.35	4.31	4.28	4.24	4.21	4.17	4.14	4.10	4.07	4.03	4.00
79	2.6	4.35	4.31	4.28	4.24	4.21	4.17	4.14	4.10	4.07	4.03	4.00
82	2.7	4.34	4.31	4.27	4.24	4.20	4.17	4.13	4.10	4.07	4.03	4.00
85	2.8	4.34	4.30	4.27	4.23	4.20	4.17	4.13	4.10	4.06	4.03	4.00
88	2.9	4.33	4.30	4.26	4.23	4.20	4.16	4.13	4.10	4.06	4.03	4.00
91	3.0	4.33	4.29	4.26	4.23	4.19	4.16	4.13	4.10	4.06	4.03	4.00
94	3.1	4.32	4.29	4.26	4.22	4.19	4.16	4.13	4.09	4.06	4.03	4.00
98	3.2	4.32	4.28	4.25	4.22	4.19	4.16	4.12	4.09	4.06	4.03	4.00
101	3.3	4.31	4.28	4.25	4.22	4.19	4.15	4.12	4.09	4.06	4.03	4.00
104	3.4	4.31	4.28	4.25	4.21	4.18	4.15	4.12	4.09	4.06	4.03	4.00
107	3.5	4.30	4.27	4.24	4.21	4.18	4.15	4.12	4.09	4.06	4.03	4.00
110	3.6	4.30	4.27	4.24	4.21	4.18	4.15	4.12	4.09	4.06	4.03	4.00
113	3.7	4.29	4.26	4.23	4.20	4.17	4.14	4.11	4.08	4.06	4.03	4.00
116	3.8	4.29	4.26	4.23	4.20	4.17	4.14	4.11	4.08	4.05	4.02	3.99
119	3.9	4.29	4.26	4.23	4.20	4.17	4.14	4.11	4.08	4.05	4.02	3.99

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Geostructural Tool Kit, Inc.

Registered To : Wood Rodgers

Serial Number : 200-100-086

Project Title : Lompa Ranch
Project Engineer : J. McDougal

Geotechnical Report : Wood Rodgers, Inc.

Project Number : 3621001
Project Date : April, 2018
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FINAL SUCTION PROFILES (cont.)

Depth (cm)	Depth (ft)	0.0 ft 0 cm	0.9 ft 27 cm	1.8 ft 55 cm	2.7 ft 82 cm	3.6 ft 110 cm	4.5 ft 137 cm	5.4 ft 165 cm	6.3 ft 192 cm	7.2 ft 219 cm	8.1 ft 247 cm	9.0 ft 274 cm
122	4.0	4.28	4.25	4.22	4.20	4.17	4.14	4.11	4.08	4.05	4.02	3.99
125	4.1	4.28	4.25	4.22	4.19	4.16	4.14	4.11	4.08	4.05	4.02	3.99
128	4.2	4.27	4.25	4.22	4.19	4.16	4.13	4.11	4.08	4.05	4.02	3.99
131	4.3	4.27	4.24	4.22	4.19	4.16	4.13	4.10	4.08	4.05	4.02	3.99
134	4.4	4.27	4.24	4.21	4.18	4.16	4.13	4.10	4.08	4.05	4.02	3.99
137	4.5	4.26	4.24	4.21	4.18	4.16	4.13	4.10	4.07	4.05	4.02	3.99
140	4.6	4.26	4.23	4.21	4.18	4.15	4.13	4.10	4.07	4.05	4.02	3.99
143	4.7	4.25	4.23	4.20	4.18	4.15	4.12	4.10	4.07	4.05	4.02	3.99
146	4.8	4.25	4.23	4.20	4.17	4.15	4.12	4.10	4.07	4.05	4.02	3.99
149	4.9	4.25	4.22	4.20	4.17	4.15	4.12	4.10	4.07	4.04	4.02	3.99
152	5.0	4.24	4.22	4.19	4.17	4.14	4.12	4.09	4.07	4.04	4.02	3.99
155	5.1	4.24	4.22	4.19	4.17	4.14	4.12	4.09	4.07	4.04	4.02	3.99
158	5.2	4.24	4.21	4.19	4.16	4.14	4.11	4.09	4.07	4.04	4.02	3.99
162	5.3	4.23	4.21	4.19	4.16	4.14	4.11	4.09	4.07	4.04	4.02	3.99
165	5.4	4.23	4.21	4.18	4.16	4.14	4.11	4.09	4.06	4.04	4.02	3.99
168	5.5	4.23	4.20	4.18	4.16	4.13	4.11	4.09	4.06	4.04	4.02	3.99
171	5.6	4.22	4.20	4.18	4.15	4.13	4.11	4.08	4.06	4.04	4.02	3.99
174	5.7	4.22	4.20	4.17	4.15	4.13	4.11	4.08	4.06	4.04	4.02	3.99
177	5.8	4.22	4.19	4.17	4.15	4.13	4.10	4.08	4.06	4.04	4.01	3.99
180	5.9	4.21	4.19	4.17	4.15	4.13	4.10	4.08	4.06	4.04	4.01	3.99

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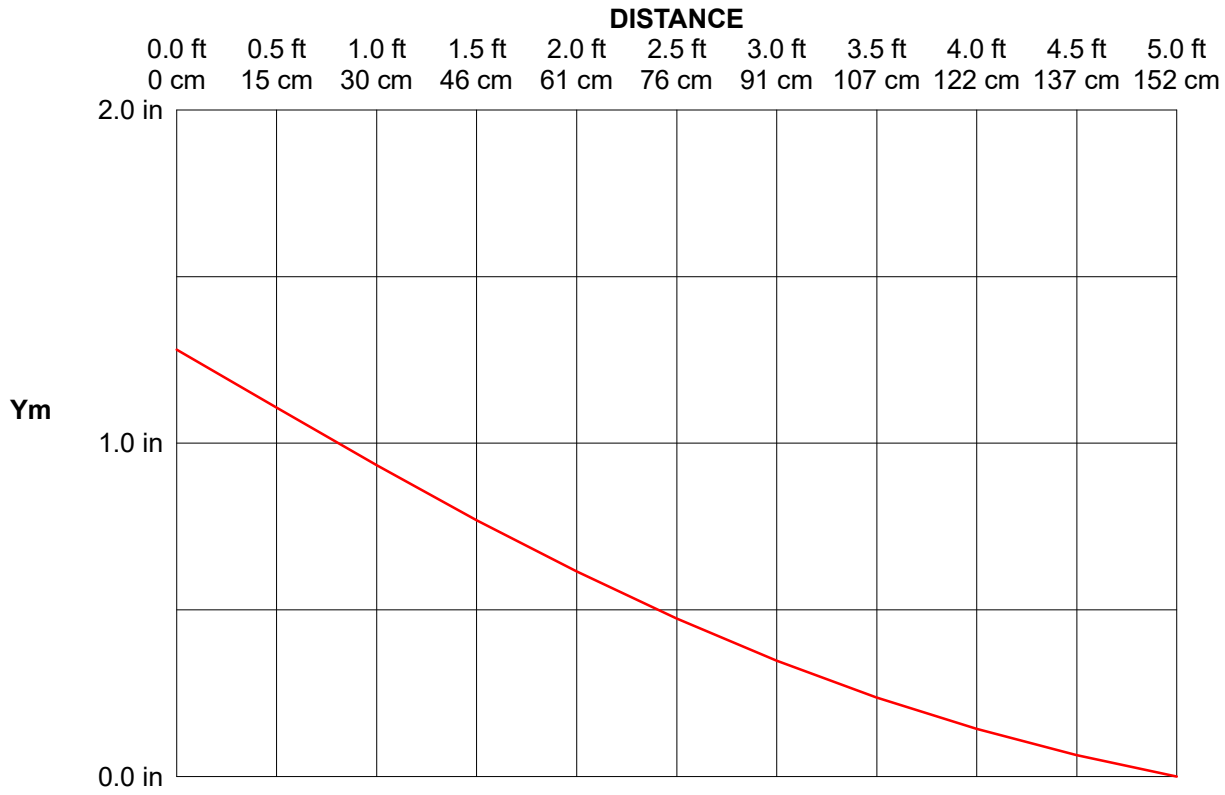
SWELL CALCULATION

Ym Edge (Swell) = 1.28 inches (3.25 centimeters)
Em Edge = 5.00 feet (152.40 centimeters)



	Swell at Slab Edge	Swell at distance X from edge of slab									Swell at Em
	0.0 ft 0 cm	0.5 ft 15 cm	1.0 ft 30 cm	1.5 ft 46 cm	2.0 ft 61 cm	2.5 ft 76 cm	3.0 ft 91 cm	3.5 ft 107 cm	4.0 ft 122 cm	4.5 ft 137 cm	5.0 ft 152 cm
inches	1.28	1.11	0.93	0.77	0.62	0.47	0.35	0.24	0.14	0.06	0.00
cm	3.25	2.81	2.37	1.95	1.56	1.21	0.88	0.60	0.36	0.16	0.00

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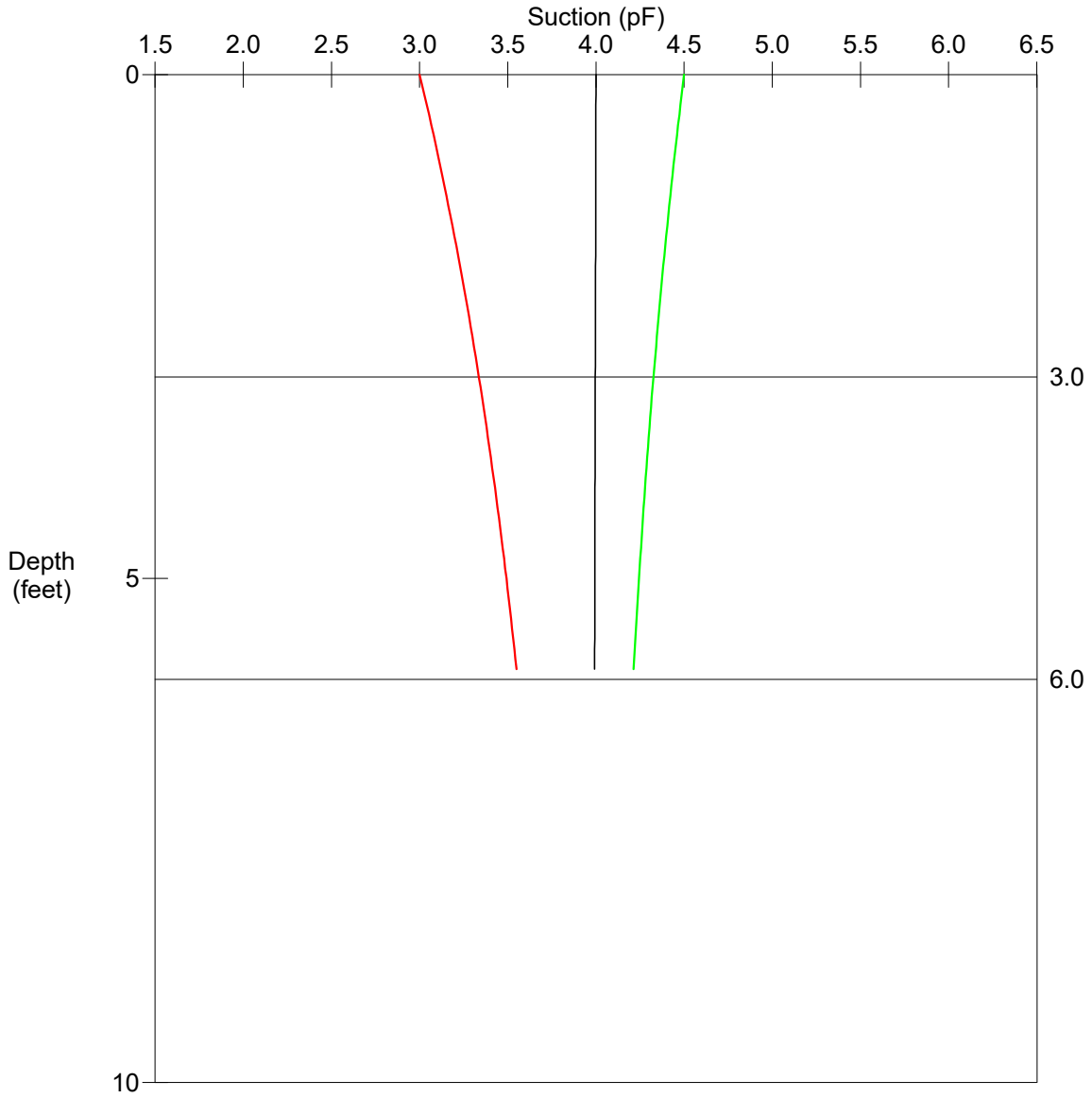
SUCTION PROFILES



Initial suction at edge of slab

Final suction at edge of slab

Constant Suction

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Geostructural Tool Kit, Inc.

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LAYER GEOTECHNICAL PROPERTIES

Layer	Gamma0 (Mean)	Fine Clay Cor. Fact.	Coarse-Grain Cor. Fact.	GammaH (Mean)	GammaH (Shrink)	GammaH (Swell)
1	0.070	0.379	1.000	0.027	0.026	0.027
2	0.080	0.417	1.000	0.033	0.032	0.034

Layer	Alpha (Mean)	Alpha (Shrink)	Alpha (Swell)	S	P	KoHo
1	0.004826	0.004835	0.004818	-13.887	0.000668	0.000290
2	0.004904	0.004918	0.004890	-14.882	0.000633	0.000275

Gamma0 Determination Per PTI 3rd Edition Manual

Layer	% Fine Clay	PI	PI/ %fc	LL	LL/ %fc	Zone Chart	Gamma0 (Mean)
1	37.88	20	0.53	33	0.87	1	0.070
2	41.67	24	0.58	37	0.89	1	0.080

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SUMMARY OF INPUT DATA - Soil Properties

Layer Thickness and description

Layer Number	Layer Thickness	Depth to Bottom	Layer Description
1	3.0 ft	3.0 ft	Dark Brown SC/CL
2	3.0 ft	6.0 ft	SC

Layer Geotechnical Properties

Layer Number	Liquid Limit	Plastic Limit	% Pass. #200	% Finer 2 mic.	Dry Den. (lb/ft^3)	Gamma 100	Ko Drying	Ko Wetting	Fabric Factor
1	33	13	52.8	20.0	120.0	CALC	0.33	0.67	1.0
2	37	13	36.0	15.0	120.0	CALC	0.33	0.67	1.0

	Coarse-Grained Soil Correction		
Layer Number	% Pass. #10	(Gs) coarse	Wet Den. (lb/ft^3)
1	Not Calculated		
2	Not Calculated		

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Geostructural Tool Kit, Inc.

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SUMMARY OF INPUT DATA - Suction at Edge of Slab

Initial Suction Profile ---- Default Dry Design Envelope

Suction value at surface :	4.5 pF

Final Suction Profile ---- Default Wet Design Envelope

Suction value at surface	3.0 pF

Constant Suction

Constant suction :	4.0 pF
Depth to constant suction :	5.9 ft

Moisture Barriers

Vertical barrier depth :	0.0 ft
Apply vertical barrier to :	Neither Profile
Horizontal barrier length :	0.0 ft

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Geostructural Tool Kit, Inc.

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SUMMARY OF INPUT DATA - Em

Em Distance

Determined per Modified PTI method
Thornthwaite Moisture Index -40

Suction Profile at Em ---- Constant Suction Profile

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Geostructural Tool Kit, Inc.

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Suction Profiles

Depth (ft)	Initial Suction @ Edge	Suction	Final Suction @ Edge	Swell (in)
0.0	4.50	4.00	3.00	0.00
0.1	4.49	4.00	3.01	0.04
0.2	4.49	4.00	3.03	0.04
0.3	4.48	4.00	3.04	0.04
0.4	4.47	4.00	3.05	0.04
0.5	4.47	4.00	3.07	0.04
0.6	4.46	4.00	3.08	0.04
0.7	4.45	4.00	3.09	0.04
0.8	4.45	4.00	3.10	0.04
0.9	4.44	4.00	3.12	0.03
1.0	4.43	4.00	3.13	0.03
1.1	4.43	4.00	3.14	0.03
1.2	4.42	4.00	3.15	0.03
1.3	4.42	4.00	3.16	0.03
1.4	4.41	4.00	3.17	0.03
1.5	4.40	4.00	3.19	0.03
1.6	4.40	4.00	3.20	0.03
1.7	4.39	4.00	3.21	0.03
1.8	4.39	4.00	3.22	0.03
1.9	4.38	4.00	3.23	0.03
2.0	4.38	4.00	3.24	0.03
2.1	4.37	4.00	3.25	0.03
2.2	4.37	4.00	3.26	0.03
2.3	4.36	4.00	3.27	0.02
2.4	4.36	4.00	3.28	0.02
2.5	4.35	4.00	3.29	0.02
2.6	4.35	4.00	3.30	0.02
2.7	4.34	4.00	3.31	0.02
2.8	4.34	4.00	3.32	0.02
2.9	4.33	4.00	3.33	0.02
3.0	4.33	4.00	3.34	0.02
3.1	4.32	4.00	3.34	0.02
3.2	4.32	4.00	3.35	0.02
3.3	4.31	4.00	3.36	0.02
3.4	4.31	4.00	3.37	0.02
3.5	4.30	4.00	3.38	0.02
3.6	4.30	4.00	3.39	0.02
3.7	4.29	4.00	3.40	0.02
3.8	4.29	3.99	3.40	0.02
3.9	4.29	3.99	3.41	0.02

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Report Number :

Suction Profiles

Depth (ft)	Initial Suction @ Edge	Suction	Final Suction @ Edge	Swell (in)
4.0	4.28	3.99	3.42	0.02
4.1	4.28	3.99	3.43	0.02
4.2	4.27	3.99	3.43	0.01
4.3	4.27	3.99	3.44	0.01
4.4	4.27	3.99	3.45	0.01
4.5	4.26	3.99	3.46	0.01
4.6	4.26	3.99	3.46	0.01
4.7	4.25	3.99	3.47	0.01
4.8	4.25	3.99	3.48	0.01
4.9	4.25	3.99	3.49	0.01
5.0	4.24	3.99	3.49	0.01
5.1	4.24	3.99	3.50	0.01
5.2	4.24	3.99	3.51	0.01
5.3	4.23	3.99	3.51	0.01
5.4	4.23	3.99	3.52	0.01
5.5	4.23	3.99	3.52	0.01
5.6	4.22	3.99	3.53	0.01
5.7	4.22	3.99	3.54	0.01
5.8	4.22	3.99	3.54	0.00
5.9	4.21	3.99	3.55	0.00

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Project Title : Lompa Ranch
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Geotechnical Report : Wood Rodgers, Inc.

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INITIAL SUCTION PROFILES

Depth (cm)	Depth (ft)	0.0 ft 0 cm	0.5 ft 15 cm	1.0 ft 30 cm	1.5 ft 46 cm	2.0 ft 61 cm	2.5 ft 76 cm	3.0 ft 91 cm	3.5 ft 107 cm	4.0 ft 122 cm	4.5 ft 137 cm	5.0 ft 152 cm
0	0.0	4.50	4.45	4.40	4.35	4.30	4.25	4.20	4.15	4.10	4.05	4.00
3	0.1	4.49	4.44	4.39	4.35	4.30	4.25	4.20	4.15	4.10	4.05	4.00
6	0.2	4.49	4.44	4.39	4.34	4.29	4.24	4.19	4.15	4.10	4.05	4.00
9	0.3	4.48	4.43	4.38	4.34	4.29	4.24	4.19	4.14	4.10	4.05	4.00
12	0.4	4.47	4.43	4.38	4.33	4.28	4.24	4.19	4.14	4.09	4.05	4.00
15	0.5	4.47	4.42	4.37	4.33	4.28	4.23	4.19	4.14	4.09	4.05	4.00
18	0.6	4.46	4.41	4.37	4.32	4.28	4.23	4.18	4.14	4.09	4.05	4.00
21	0.7	4.45	4.41	4.36	4.32	4.27	4.23	4.18	4.14	4.09	4.04	4.00
24	0.8	4.45	4.40	4.36	4.31	4.27	4.22	4.18	4.13	4.09	4.04	4.00
27	0.9	4.44	4.40	4.35	4.31	4.26	4.22	4.18	4.13	4.09	4.04	4.00
30	1.0	4.43	4.39	4.35	4.30	4.26	4.22	4.17	4.13	4.09	4.04	4.00
34	1.1	4.43	4.38	4.34	4.30	4.26	4.21	4.17	4.13	4.08	4.04	4.00
37	1.2	4.42	4.38	4.34	4.29	4.25	4.21	4.17	4.13	4.08	4.04	4.00
40	1.3	4.42	4.37	4.33	4.29	4.25	4.21	4.17	4.12	4.08	4.04	4.00
43	1.4	4.41	4.37	4.33	4.29	4.25	4.20	4.16	4.12	4.08	4.04	4.00
46	1.5	4.40	4.36	4.32	4.28	4.24	4.20	4.16	4.12	4.08	4.04	4.00
49	1.6	4.40	4.36	4.32	4.28	4.24	4.20	4.16	4.12	4.08	4.04	4.00
52	1.7	4.39	4.35	4.31	4.27	4.23	4.20	4.16	4.12	4.08	4.04	4.00
55	1.8	4.39	4.35	4.31	4.27	4.23	4.19	4.15	4.11	4.08	4.04	4.00
58	1.9	4.38	4.34	4.30	4.27	4.23	4.19	4.15	4.11	4.07	4.04	4.00
61	2.0	4.38	4.34	4.30	4.26	4.22	4.19	4.15	4.11	4.07	4.04	4.00
64	2.1	4.37	4.33	4.30	4.26	4.22	4.18	4.15	4.11	4.07	4.03	4.00
67	2.2	4.37	4.33	4.29	4.26	4.22	4.18	4.14	4.11	4.07	4.03	4.00
70	2.3	4.36	4.32	4.29	4.25	4.22	4.18	4.14	4.11	4.07	4.03	4.00
73	2.4	4.36	4.32	4.28	4.25	4.21	4.18	4.14	4.10	4.07	4.03	4.00
76	2.5	4.35	4.31	4.28	4.24	4.21	4.17	4.14	4.10	4.07	4.03	4.00
79	2.6	4.35	4.31	4.28	4.24	4.21	4.17	4.14	4.10	4.07	4.03	4.00
82	2.7	4.34	4.31	4.27	4.24	4.20	4.17	4.13	4.10	4.07	4.03	4.00
85	2.8	4.34	4.30	4.27	4.23	4.20	4.17	4.13	4.10	4.06	4.03	4.00
88	2.9	4.33	4.30	4.26	4.23	4.20	4.16	4.13	4.10	4.06	4.03	4.00
91	3.0	4.33	4.29	4.26	4.23	4.19	4.16	4.13	4.10	4.06	4.03	4.00
94	3.1	4.32	4.29	4.26	4.22	4.19	4.16	4.13	4.09	4.06	4.03	4.00
98	3.2	4.32	4.28	4.25	4.22	4.19	4.16	4.12	4.09	4.06	4.03	4.00
101	3.3	4.31	4.28	4.25	4.22	4.19	4.15	4.12	4.09	4.06	4.03	4.00
104	3.4	4.31	4.28	4.25	4.21	4.18	4.15	4.12	4.09	4.06	4.03	4.00
107	3.5	4.30	4.27	4.24	4.21	4.18	4.15	4.12	4.09	4.06	4.03	4.00
110	3.6	4.30	4.27	4.24	4.21	4.18	4.15	4.12	4.09	4.06	4.03	4.00
113	3.7	4.29	4.26	4.23	4.20	4.17	4.14	4.11	4.08	4.06	4.03	4.00
116	3.8	4.29	4.26	4.23	4.20	4.17	4.14	4.11	4.08	4.05	4.02	3.99
119	3.9	4.29	4.26	4.23	4.20	4.17	4.14	4.11	4.08	4.05	4.02	3.99

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Geostructural Tool Kit, Inc.

Project Title : Lompa Ranch
Project Engineer : J. McDougal

Project Number : 3621001
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Geotechnical Report : Wood Rodgers, Inc.

INITIAL SUCTION PROFILES (cont.)

Depth (cm)	Depth (ft)	0.0 ft 0 cm	0.5 ft 15 cm	1.0 ft 30 cm	1.5 ft 46 cm	2.0 ft 61 cm	2.5 ft 76 cm	3.0 ft 91 cm	3.5 ft 107 cm	4.0 ft 122 cm	4.5 ft 137 cm	5.0 ft 152 cm
122	4.0	4.28	4.25	4.22	4.20	4.17	4.14	4.11	4.08	4.05	4.02	3.99
125	4.1	4.28	4.25	4.22	4.19	4.16	4.14	4.11	4.08	4.05	4.02	3.99
128	4.2	4.27	4.25	4.22	4.19	4.16	4.13	4.11	4.08	4.05	4.02	3.99
131	4.3	4.27	4.24	4.22	4.19	4.16	4.13	4.10	4.08	4.05	4.02	3.99
134	4.4	4.27	4.24	4.21	4.18	4.16	4.13	4.10	4.08	4.05	4.02	3.99
137	4.5	4.26	4.24	4.21	4.18	4.16	4.13	4.10	4.07	4.05	4.02	3.99
140	4.6	4.26	4.23	4.21	4.18	4.15	4.13	4.10	4.07	4.05	4.02	3.99
143	4.7	4.25	4.23	4.20	4.18	4.15	4.12	4.10	4.07	4.05	4.02	3.99
146	4.8	4.25	4.23	4.20	4.17	4.15	4.12	4.10	4.07	4.05	4.02	3.99
149	4.9	4.25	4.22	4.20	4.17	4.15	4.12	4.10	4.07	4.04	4.02	3.99
152	5.0	4.24	4.22	4.19	4.17	4.14	4.12	4.09	4.07	4.04	4.02	3.99
155	5.1	4.24	4.22	4.19	4.17	4.14	4.12	4.09	4.07	4.04	4.02	3.99
158	5.2	4.24	4.21	4.19	4.16	4.14	4.11	4.09	4.07	4.04	4.02	3.99
162	5.3	4.23	4.21	4.19	4.16	4.14	4.11	4.09	4.07	4.04	4.02	3.99
165	5.4	4.23	4.21	4.18	4.16	4.14	4.11	4.09	4.06	4.04	4.02	3.99
168	5.5	4.23	4.20	4.18	4.16	4.13	4.11	4.09	4.06	4.04	4.02	3.99
171	5.6	4.22	4.20	4.18	4.15	4.13	4.11	4.08	4.06	4.04	4.02	3.99
174	5.7	4.22	4.20	4.17	4.15	4.13	4.11	4.08	4.06	4.04	4.02	3.99
177	5.8	4.22	4.19	4.17	4.15	4.13	4.10	4.08	4.06	4.04	4.01	3.99
180	5.9	4.21	4.19	4.17	4.15	4.13	4.10	4.08	4.06	4.04	4.01	3.99

VOLFLO 1.5

Geostructural Tool Kit, Inc.

Registered To : Wood Rodgers

Serial Number : 200-100-086

Project Title : Lompa Ranch
Project Engineer : J. McDougal

Project Number : 3621001
Project Date : April, 2018

Geotechnical Report : Wood Rodgers, Inc.

Report Date : April, 2018
Report Number :

FINAL SUCTION PROFILES

Depth (cm)	Depth (ft)	0.0 ft 0 cm	0.5 ft 15 cm	1.0 ft 30 cm	1.5 ft 46 cm	2.0 ft 61 cm	2.5 ft 76 cm	3.0 ft 91 cm	3.5 ft 107 cm	4.0 ft 122 cm	4.5 ft 137 cm	5.0 ft 152 cm
0	0.0	3.00	3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90	4.00
3	0.1	3.01	3.11	3.21	3.31	3.41	3.51	3.61	3.70	3.80	3.90	4.00
6	0.2	3.03	3.12	3.22	3.32	3.42	3.51	3.61	3.71	3.81	3.90	4.00
9	0.3	3.04	3.14	3.23	3.33	3.42	3.52	3.62	3.71	3.81	3.90	4.00
12	0.4	3.05	3.15	3.24	3.34	3.43	3.53	3.62	3.72	3.81	3.90	4.00
15	0.5	3.07	3.16	3.25	3.35	3.44	3.53	3.63	3.72	3.81	3.91	4.00
18	0.6	3.08	3.17	3.26	3.36	3.45	3.54	3.63	3.72	3.82	3.91	4.00
21	0.7	3.09	3.18	3.27	3.36	3.45	3.55	3.64	3.73	3.82	3.91	4.00
24	0.8	3.10	3.19	3.28	3.37	3.46	3.55	3.64	3.73	3.82	3.91	4.00
27	0.9	3.12	3.20	3.29	3.38	3.47	3.56	3.65	3.73	3.82	3.91	4.00
30	1.0	3.13	3.22	3.30	3.39	3.48	3.56	3.65	3.74	3.82	3.91	4.00
34	1.1	3.14	3.23	3.31	3.40	3.48	3.57	3.66	3.74	3.83	3.91	4.00
37	1.2	3.15	3.24	3.32	3.41	3.49	3.57	3.66	3.74	3.83	3.91	4.00
40	1.3	3.16	3.25	3.33	3.41	3.50	3.58	3.66	3.75	3.83	3.91	4.00
43	1.4	3.17	3.26	3.34	3.42	3.50	3.59	3.67	3.75	3.83	3.92	4.00
46	1.5	3.19	3.27	3.35	3.43	3.51	3.59	3.67	3.75	3.84	3.92	4.00
49	1.6	3.20	3.28	3.36	3.44	3.52	3.60	3.68	3.76	3.84	3.92	4.00
52	1.7	3.21	3.29	3.37	3.44	3.52	3.60	3.68	3.76	3.84	3.92	4.00
55	1.8	3.22	3.30	3.37	3.45	3.53	3.61	3.69	3.76	3.84	3.92	4.00
58	1.9	3.23	3.31	3.38	3.46	3.54	3.61	3.69	3.77	3.84	3.92	4.00
61	2.0	3.24	3.32	3.39	3.47	3.54	3.62	3.69	3.77	3.85	3.92	4.00
64	2.1	3.25	3.32	3.40	3.47	3.55	3.62	3.70	3.77	3.85	3.92	4.00
67	2.2	3.26	3.33	3.41	3.48	3.55	3.63	3.70	3.78	3.85	3.92	4.00
70	2.3	3.27	3.34	3.42	3.49	3.56	3.63	3.71	3.78	3.85	3.92	4.00
73	2.4	3.28	3.35	3.42	3.49	3.57	3.64	3.71	3.78	3.85	3.93	4.00
76	2.5	3.29	3.36	3.43	3.50	3.57	3.64	3.71	3.78	3.86	3.93	4.00
79	2.6	3.30	3.37	3.44	3.51	3.58	3.65	3.72	3.79	3.86	3.93	4.00
82	2.7	3.31	3.38	3.45	3.51	3.58	3.65	3.72	3.79	3.86	3.93	4.00
85	2.8	3.32	3.39	3.45	3.52	3.59	3.66	3.72	3.79	3.86	3.93	4.00
88	2.9	3.33	3.39	3.46	3.53	3.59	3.66	3.73	3.80	3.86	3.93	4.00
91	3.0	3.34	3.40	3.47	3.53	3.60	3.67	3.73	3.80	3.86	3.93	4.00
94	3.1	3.34	3.41	3.48	3.54	3.61	3.67	3.74	3.80	3.87	3.93	4.00
98	3.2	3.35	3.42	3.48	3.55	3.61	3.67	3.74	3.80	3.87	3.93	4.00
101	3.3	3.36	3.43	3.49	3.55	3.62	3.68	3.74	3.81	3.87	3.93	4.00
104	3.4	3.37	3.43	3.50	3.56	3.62	3.68	3.75	3.81	3.87	3.93	4.00
107	3.5	3.38	3.44	3.50	3.56	3.63	3.69	3.75	3.81	3.87	3.93	4.00
110	3.6	3.39	3.45	3.51	3.57	3.63	3.69	3.75	3.81	3.87	3.93	4.00
113	3.7	3.40	3.46	3.52	3.58	3.64	3.70	3.76	3.82	3.88	3.94	4.00
116	3.8	3.40	3.46	3.52	3.58	3.64	3.70	3.76	3.82	3.88	3.94	3.99
119	3.9	3.41	3.47	3.53	3.59	3.64	3.70	3.76	3.82	3.88	3.94	3.99

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Geotechnical Report : Wood Rodgers, Inc.

FINAL SUCTION PROFILES (cont.)

Depth (cm)	Depth (ft)	0.0 ft 0 cm	0.5 ft 15 cm	1.0 ft 30 cm	1.5 ft 46 cm	2.0 ft 61 cm	2.5 ft 76 cm	3.0 ft 91 cm	3.5 ft 107 cm	4.0 ft 122 cm	4.5 ft 137 cm	5.0 ft 152 cm
122	4.0	3.42	3.48	3.53	3.59	3.65	3.71	3.76	3.82	3.88	3.94	3.99
125	4.1	3.43	3.48	3.54	3.60	3.65	3.71	3.77	3.82	3.88	3.94	3.99
128	4.2	3.43	3.49	3.55	3.60	3.66	3.71	3.77	3.83	3.88	3.94	3.99
131	4.3	3.44	3.50	3.55	3.61	3.66	3.72	3.77	3.83	3.88	3.94	3.99
134	4.4	3.45	3.50	3.56	3.61	3.67	3.72	3.78	3.83	3.89	3.94	3.99
137	4.5	3.46	3.51	3.56	3.62	3.67	3.73	3.78	3.83	3.89	3.94	3.99
140	4.6	3.46	3.52	3.57	3.62	3.68	3.73	3.78	3.83	3.89	3.94	3.99
143	4.7	3.47	3.52	3.58	3.63	3.68	3.73	3.78	3.84	3.89	3.94	3.99
146	4.8	3.48	3.53	3.58	3.63	3.68	3.74	3.79	3.84	3.89	3.94	3.99
149	4.9	3.49	3.54	3.59	3.64	3.69	3.74	3.79	3.84	3.89	3.94	3.99
152	5.0	3.49	3.54	3.59	3.64	3.69	3.74	3.79	3.84	3.89	3.94	3.99
155	5.1	3.50	3.55	3.60	3.65	3.70	3.75	3.80	3.84	3.89	3.94	3.99
158	5.2	3.51	3.55	3.60	3.65	3.70	3.75	3.80	3.85	3.90	3.94	3.99
162	5.3	3.51	3.56	3.61	3.66	3.70	3.75	3.80	3.85	3.90	3.94	3.99
165	5.4	3.52	3.57	3.61	3.66	3.71	3.76	3.80	3.85	3.90	3.95	3.99
168	5.5	3.52	3.57	3.62	3.67	3.71	3.76	3.81	3.85	3.90	3.95	3.99
171	5.6	3.53	3.58	3.62	3.67	3.72	3.76	3.81	3.85	3.90	3.95	3.99
174	5.7	3.54	3.58	3.63	3.67	3.72	3.76	3.81	3.86	3.90	3.95	3.99
177	5.8	3.54	3.59	3.63	3.68	3.72	3.77	3.81	3.86	3.90	3.95	3.99
180	5.9	3.55	3.59	3.64	3.68	3.73	3.77	3.81	3.86	3.90	3.95	3.99

APPENDIX D
LIQUEFACTION SCREENING ASSESSMENT

Depth to GW = 5 feet Atmospheric Pressure, P_a = 2088 psf

z (ft)		Mid (ft)	Mid (m)	Vs	σ'_v	σ_v	v_{s1}
0	1	0.5	0.15	549	59	59	1339
1	2	1.5	0.46	549	177	177	1017
2	3	2.5	0.76	549	295	295	895
3	4	3.5	1.07	549	413	413	823
4	5	4.5	1.37	549	531	531	773
5	6	5.5	1.68	549	629	660	741
6	7	6.5	1.98	549	706	800	720
7	8	7.5	2.29	549	784	940	701
8	9	8.5	2.59	549	862	1080	685
9	10	9.5	2.90	704	939	1220	860
10	11	10.5	3.20	704	1017	1360	843
11	12	11.5	3.51	704	1094	1500	827
12	13	12.5	3.81	704	1172	1640	813
13	14	13.5	4.12	704	1250	1780	800
14	15	14.5	4.42	704	1327	1920	788
15	16	15.5	4.73	704	1405	2060	777
16	17	16.5	5.03	704	1482	2200	767
17	18	17.5	5.34	704	1560	2340	757
18	19	18.5	5.64	704	1638	2480	748
19	20	19.5	5.95	853	1715	2620	896
20	21	20.5	6.25	853	1793	2760	886
21	22	21.5	6.55	853	1870	2900	877
22	23	22.5	6.86	853	1948	3040	868
23	24	23.5	7.16	853	2026	3180	859
24	25	24.5	7.47	853	2103	3320	851
25	26	25.5	7.77	853	2181	3460	844
26	27	26.5	8.08	853	2258	3600	836
27	28	27.5	8.38	978	2336	3740	951
28	29	28.5	8.69	978	2414	3880	943
29	30	29.5	8.99	978	2491	4020	936
30	31	30.5	9.30	978	2569	4160	929
31	32	31.5	9.60	978	2646	4300	922
32	33	32.5	9.91	978	2724	4440	915
33	34	33.5	10.21	978	2802	4580	909
34	35	34.5	10.52	978	2879	4720	903
35	36	35.5	10.82	978	2957	4860	897
36	37	36.5	11.13	978	3034	5000	891
37	38	37.5	11.43	978	3112	5140	885
38	39	38.5	11.74	1261	3190	5280	1134
39	40	39.5	12.04	1261	3267	5420	1127
40	41	40.5	12.35	1261	3345	5560	1121
41	42	41.5	12.65	1261	3422	5700	1114
42	43	42.5	12.96	1261	3500	5840	1108
43	44	43.5	13.26	1261	3578	5980	1102
44	45	44.5	13.57	1261	3655	6120	1096
45	46	45.5	13.87	1261	3733	6260	1091
46	47	46.5	14.18	1261	3810	6400	1085
47	48	47.5	14.48	1261	3888	6540	1079
48	49	48.5	14.79	1261	3966	6680	1074
49	50	49.5	15.09	1261	4043	6820	1069

γ_{moist} = 118 pcf

γ_{sat} = 140 pcf

WOOD RODGERS
1361 Corporate Boulevard, Reno, NV 89502
Phone 775.823.4068 Fax 775.823.4066

Liquefaction Screening Assessment

Geotechnical Investigation
Lompa Ranch
Ryder Homes
Carson City, Nevada

Project No.: 3621001
Date: 03/31/18

PLATE D-1

HEADWAY TRANSPORTATION

Digitally signed by Dylan Axtell
Date: 2023.04.03 09:36:32 -07'00'

Date: April 3, 2023

To: Chris Martinovich, PE, Carson City Public Works

From: Dylan Axtell, PE, Senior Engineer

Subject: ***Analysis Update Explanation - Lompa Ranch Phase 2 TIA***

This memorandum explains the analysis adjustments between the *Traffic Impact Study for Lompa Ranch Phase 2* (Headway Transportation, August 2021) and the *Traffic Impact Study Update for Lompa Ranch Phase 2* (Headway Transportation, March 2023). This memorandum is presented as an explanation of the revisions and adjustments within the traffic impact study update and is not intended to supplement the study with additional analysis. Please refer to the above traffic study update for detailed background information and assumptions.

The following is a list of analysis revisions and updates between the two traffic impact studies:

- Updated HCM Methodology from 6th edition to the 7th edition.
- Updated signal timings per Carson City Staff.
  - Signal timings were updated from fixed coordinated operation to free-running operation during the peak hours which decreased delay.
- Collected new existing traffic volumes (vehicle turning movement counts, peak hour factors, bicycle and pedestrian counts etc.) in August 2021 & January 2023.
  - The prior study used traffic volumes from 2019 due to COVID-19 impacts.
  - The August 2021 counts were collected for the north residential phase and were not used in the original traffic impact study.
- Included anticipated modifications at the William Street / Saliman Road intersection consistent with the ongoing East William Complete Street project.
- Forecasted new future traffic volumes using the latest CAMPO travel demand model.
  - The latest CAMPO travel demand model indicates lower background growth rates.
- The 2025 and Future scenarios include Lompa Ranch West as proposed to date (137 units for the north residential phase with no north connection). Please refer to the *Traffic Analysis Supplement – Lompa Ranch North Residential (Including School & Park)* (Headway Transportation, November 2021) for detailed information.

The above revisions and updates are indicated with bold italic text in the traffic impact study update. The above changes in volumes, signal timings, and methodologies all affect the level of service calculations and results, some leading to reduced delay. However, the overall recommendations and conclusions are unchanged from the prior report.

Headway Transportation, LLC
5482 Longley Lane, Suite B, Reno, Nevada 89511
775.322.4300
www.HeadwayTransportation.com

TRAFFIC IMPACT STUDY UPDATE

for

Blackstone Ranch Phase 2

March 15, 2023

PREPARED FOR:

Ryder Homes

PREPARED BY:

Headway Transportation, LLC
5482 Longley Lane, Suite B, Reno, Nevada 89511
775.322.4300
www.HeadwayTransportation.com

YOUR QUESTIONS ANSWERED QUICKLY

Why did you perform this study?

This Traffic Impact Study evaluates the potential traffic impacts associated with development of the Blackstone Ranch Phase 2 residential development within Lompa Ranch West in Carson City, NV. ***This study was undertaken to provide an analysis update for the proposed project, identify any potential impacts, and develop recommendations to mitigate impacts, if any are found. Revisions and updates from the Traffic Impact Study for Lompa Ranch Phase 2 dated August 27, 2021 are indicated with bold italic text.***

What does the project consist of?

The proposed project consists of 204 single-family dwelling units.

How much traffic will the project generate?

The project is anticipated to generate approximately 1,926 Daily trips, 151 AM peak hour trips, ***151 afternoon peak hour trips,*** and 202 PM peak hour new trips.

Does this project cause any traffic impacts?

With the addition of project traffic, all study intersections are anticipated to operate at acceptable level of service conditions (LOS "D" or better) ***except for the unsignalized Saliman Road / Robinson Street intersection under Future Plus Project Conditions***. ***Future phases within Lompa Ranch West will construct a traffic signal improvement at the subject intersection when warrants are met. Specifically, the Lompa Ranch North project is conditioned to provide the traffic signal improvements.*** The proposed project is in conformance with the Lompa Ranch West Masterplan and phasing plan conditions.

Are any improvements recommended?

Following is a list of the proposed improvements:

- The project will construct curb, gutter, and sidewalk on the north side of 5th Street between the Lompa Ranch multifamily project and the existing sidewalk on the east edge of the project.
- The project will construct two westbound lanes on 5th Street from Matterhorn Lane to the previous widening conditioned with the Lompa Ranch Multifamily project.
- The project will construct Matterhorn Lane between 5th Street and Robinson Street.
- The project will extend Robinson Street to Matterhorn Lane.
- The project will construct two legs of the Matterhorn Lane / Robinson Street intersection as a single-lane roundabout as identified in the Lompa Ranch West Masterplan (the future north and east legs will be constructed by the future North phase).
- The project will construct bike lanes and a separated multi-use path on Robinson Street and Matterhorn Lane.

- The project will construct the Matterhorn Lane / 5th Street intersection as side-street STOP controlled with two exit lanes and separate left and right turn inbound lanes (see **Figure 2** for lane configurations). The project will dedicate appropriate right-of-way to accommodate a traffic signal or roundabout in the future.

LIST OF FIGURES

1. Study Area
2. Preliminary Site Plan
3. 2025 Conditions Traffic Volumes, Lane Configurations, and Controls
4. Future Year Traffic Volumes, Lane Configurations, and Controls
5. Project Trip Distribution and Assignment
6. 2025 Conditions Plus Project Traffic Volumes, Lane Configurations, and Controls
7. Future Year Plus Project Traffic Volumes, Lane Configurations, and Controls

LIST OF APPENDICES

A. NDOT Crash Data
B. 2025 Conditions LOS Calculations
C. Future Year LOS Calculations
D. 2025 Plus Project LOS Calculations
E. Future Year Plus Project LOS Calculations

INTRODUCTION

This report summarizes the results of a Traffic Impact Study completed to assess the potential impacts to the local roadway network associated with the Blackstone Ranch Phase 2 residential development in Carson City, NV. The proposed project consists of 204 single-family dwelling units. ***Revisions and updates from the Traffic Impact Study for Lompa Ranch Phase 2 dated August 27, 2021 are indicated with bold italic text.***

Study Area and Evaluated Scenarios

The proposed project is generally located west of I-580 between 5th Street and Robinson Street. The project site is situated on the southeast corner of the Lompa Ranch West development, as shown on **Figure 1**. The preliminary site plan is shown on **Figure 2**.

Study Intersections

The following intersections are evaluated in this analysis:

- William Street / Saliman Road
- Saliman Road / Robinson Street
- Saliman Road / 5th Street
- 5th Street / Matterhorn Lane

Study Scenarios

This study includes analysis of intersections during the weekday AM (7-9 AM), ***afternoon (2-4 PM),*** and PM (4-6 PM) peak hours as these are the periods of time in which peak traffic is anticipated to occur. The evaluated development scenarios are:

- ***2025 Conditions – evaluates existing traffic conditions plus Lompa Ranch Phase 1, Lompa Ranch Multifamily phase, Lompa Ranch North, Little Lane Village, and Carson Lofts.***
- ***2025 Plus Project Conditions – evaluates 2025 conditions plus the proposed Phase 2 residential phase.***
- ***Future Year Conditions – evaluates 20-year horizon traffic conditions including Lompa Ranch Phase 1, Lompa Ranch Multifamily phase, Lompa Ranch North, Little Lane Village, and Carson Lofts. The Lompa Ranch East, Blackstone Ranch South, and development of the Lompa remainder parcel south of 5th Street (APN 010-041-82) are included in the travel demand model growth in this scenario. In addition, this scenario includes the contemplated middle school and park sites (future phases) for sensitivity.***
- ***Future Year Plus Project Conditions – evaluates future year traffic conditions plus the proposed Phase 2 residential phase. This scenario includes the contemplated middle school and park sites (future phases) for sensitivity.***

ANALYSIS METHODOLOGY

Level of service (LOS) is a term commonly used by transportation practitioners to measure and describe the operational characteristics of intersections, roadway segments, and other facilities. This term equates seconds of delay per vehicle at intersections to letter grades "A" through "F" with "A" representing optimum conditions and "F" representing breakdown or over capacity flows.

Intersections

Intersection level of service methodology is established in the ***Highway Capacity Manual (HCM), 7th Edition*** published by the Transportation Research Board (TRB). The methodology for signalized intersections determines the level of service by comparing the average control delay for the overall intersection to the delay thresholds in **Table 1**. Level of service at unsignalized (side-street stop controlled) intersections is determined by comparing the average control delay for the worst movement/approach to the delay thresholds in **Table 1.**

Table 1: Level of Service Definition for Intersections

Level of Service	Brief Description	Average Delay (seconds per vehicle)	
		Signalized Intersections	Unsignalized Intersections
A	Free flow conditions.	< 10	< 10
B	Stable conditions with some affect from other vehicles.	10 to 20	10 to 15
C	Stable conditions with significant affect from other vehicles.	20 to 35	15 to 25
D	High density traffic conditions still with stable flow.	35 to 55	25 to 35
E	At or near capacity flows.	55 to 80	35 to 50
F	Over capacity conditions.	> 80	> 50

Source: Highway Capacity Manual 7th Edition

Level of service calculations were performed using the ***Vistro 2023*** software package with results reported in accordance with the current ***HCM 7th Edition*** methodology.

Level of Service Policies

Carson City

The Carson City Code of Ordinances Section 18.12.13 establishes Level of Service (LOS) "D" as the citywide level of service standard. The policy does not specifically address unique situations at minor street approaches. It is important to note that there is commonly a side-street volume which causes exceedance of LOS "D", but does not warrant a traffic signal or other improvement. Special consideration of the analysis and situation is needed in these cases.

EXISTING TRANSPORTATION FACILITIES

Roadway Facilities

A brief description of the key roadways in the study area is provided below:

E. William Street is a five-lane roadway with two travel lanes in each direction and a center turn lane that runs generally in the east-west direction. The posted speed limit is 40 miles per hour (mph) in the project area.

Saliman Road is a five-lane roadway with two travel lanes in each direction and a center-turn-lane that runs generally in the north-south direction. The posted speed limit is 35 mph in the project area. There is an existing school zone on Saliman Road with a 15 mph speed requirement, when flashing, between William Street and Robinson Street.

5th Street is an east-west roadway with three lanes (one lane in each direction and a center-turn-lane) west of Saliman Road and three lanes starting just east of Saliman Road (the two eastbound lanes merge into one lane approximately 800' east of Saliman Road). The posted speed limit on 5th Street is 30 miles per hour (mph) west of Saliman Road and 40 mph east of Saliman Road. Improvements are planned on 5th Street with the multifamily phase. The subject Phase 2 project will build from those in-progress improvements.

Robinson Street is an east-west roadway with three lanes (one lane in each direction and a center-turn-lane) east of Saliman Road. The posted speed limit is 25 mph west of Saliman Road and 15 mph east of Saliman Road.

Crash History

Crash data was obtained from the *Nevada Department of Transportation (NDOT)* for the latest 5-year period (January 2015 to January 2020) for the following existing intersections:

- William Street / Saliman Road
- Saliman Road / Robinson Street
- Saliman Road / 5th Street

64, 15, and 22 total crashes were reported at the William Street / Saliman Road, Saliman Road / Robinson Street, and Saliman Road / 5th Street intersections within the 5-year period, respectively. No fatalities were reported at any of the three intersections. The most common type of reported crashes were angle, rear-end, and sideswipe. **Table 2** shows a brief summary and complete crash data is provided in **Appendix A**. It is not anticipated that this project would cause any significant impact on the safety of the local roadway network.

Table 2. NDOT Crash Data Summary

ID	Intersection	Total	Fatalities	Injuries	PDO	Angle	Rear-End	Side-Swipe
1	William Street / Saliman Rd	64	0	20	44	16	28	15
	Percentage (%)	100%	0%	31%	69%	25%	44%	23%
2	Saliman Rd / Robinson St	15	0	5	10	6	4	3
	Percentage (%)	100%	0%	33%	67%	40%	27%	20%
4	Saliman Rd / 5th St	22	0	4	18	11	3	3
	Percentage (%)	100%	0%	18%	82%	50%	14%	14%

Alternative Mode Facilities

Within the project vicinity, sidewalks are present on both sides of Saliman Road, on the south side of 5th Street east of Saliman Road, and on the north side of 5th Street east of the project. Marked bicycle lanes exist on both sides of Saliman Road and 5th Street. Fixed transit routes are not provided within the project vicinity.

The multifamily phase is in the process of constructing sidewalk on the north side of 5th Street to its eastern edge.

2025 CONDITIONS

Traffic Volumes

Vehicle turning movement, pedestrian, and bicycle volumes were previously collected on August 18, 2021 and August 19, 2021 with Carson High School in regular session at the following intersections:

- ***William Street / Saliman Road***
- ***Saliman Road / Robinson Street***
- ***Saliman Road / 5th Street***

Since Carson City requires traffic volumes to be collected within the past 12 month period, traffic volumes were recollected on January 26, 2023 with Carson High School in regular session. It was found that the recollected traffic volumes at the study intersections were slightly lower (5%-10%) compared to the previous 2021 counts. Therefore, it was determined that the prior 2021 counts were still valid and no existing traffic volume adjustments were made. It is important to note that this study considers the build-out of Lompa Ranch West which adds far greater volumes than minor year-to-year traffic volume variations.

The projects included in the 2025 scenario are the following:

- ***Lompa Ranch Phase 1***
- ***Lompa Ranch Multifamily***
- ***Lompa Ranch North***
- ***Little Lane Village***
- ***Carson Lofts***

Time of day distribution for single-family residential sites was obtained from the Institute of Transportation Engineers (ITE) online website and is provided in Appendix B. It was determined that the 2-3 PM afternoon peak hour is approximately 27 percent less intense than the PM peak hour. To be conservative, the afternoon peak hour uses a trip generation rate that is 75 percent that of the PM peak hour.

Existing traffic volumes were factored higher by 1% (0.5% per year) to account for any background traffic growth between 2023 and 2025. Traffic volumes for the anticipated near-term projects listed above were manually added to the baseline traffic volumes (existing plus 1%) to obtain 2025 Condition traffic volumes. The 2025 Condition lane configurations, intersection controls, and peak hour traffic volumes are shown in Figure 3. As presented, the 2025 Condition traffic volumes and analysis is very conservative.

Signal Timings

Existing signal timing was obtained from Carson City for the William Street / Saliman Road and Saliman Road / 5th Street intersections. Both intersections operate as "free-running uncoordinated" during the school peak hours. Analysis using free-running operations at the William Street / Saliman Road intersection resulted in optimistic traffic operations and level of service results (less delay and shorter queues). Therefore, signal timing was approximated during the school hours based on video recording collected for the counts. A 150 second cycle was used with the most highly utilized crosswalks (east and south legs) being activated (forced on) every cycle for conservative analysis purposes. The William Street / Saliman Road intersection operates in a coordinated system during the PM peak hours and city timings were used for this period. Note that planned (90% design) signal improvements under the Williams Complete Street Project at the William Street / Saliman Road intersection are included in this report.

Intersection Level of Service Analysis

Table 3 presents the level of service analysis for the 2025 conditions and the calculation sheets are provided in **Appendix B**, attached. Note that the Saliman Road / 5th Street analysis incorporates the signal modification improvements being implemented by the multifamily phase.

Table 3: 2025 Conditions Intersection Level of Service

ID	Intersection	Intersection Control	Movement	AM Peak		Afternoon		PM Peak	
				LOS	Delay[2]	LOS	Delay[2]	LOS	Delay[2]
1	William St / Saliman Rd	Signalized	Overall	***C***	***34.7***	***D***	***38.5***	***C***	***32.9***
2	Saliman Rd / Robinson St	All-Way STOP	Overall	***C***	***16.7***	***C***	***17.1***	***B***	***14.4***
3	Saliman Rd / 5th St	Signalized	Overall	***B***	***15.5***	***B***	***14.0***	***B***	***14.5***
4	Robinson St / Matterhorn Ln	Roundabout	Overall Delay	***A***	***3.1***	***A***	***3.2***	***A***	***3.2***
			Overall v/c Ratio		***0.1***		***0.1***		***0.1***
5	5th St / Matterhorn Ln	Side-Street STOP	Southbound Left	***C***	***21.3***	***C***	***15.4***	***C***	***19.3***
			Southbound Right	***B***	***13.6***	***B***	***10.4***	***B***	***10.6***
			Eastbound Left	***A***	***9.0***	***A***	***8.1***	***A***	***8.2***

Source: Headway Transportation, 2023

Under 2025 conditions, all study intersections are anticipated to operate at acceptable levels of service (LOS "D" or better).

Saliman Road / Robinson Street Traffic Signal Consideration

A future traffic signal is identified in the Lompa Ranch West Masterplan when either of the following conditions are met:

- The AM peak hour bidirectional traffic volume on Robinson Street east of Saliman Road reaching 600 total vehicles.
- The completion of 460 housing units that contribute trips directly to Robinson Street (Phases A2 and A3 in the southwest corner of the property are not considered contributors to Robinson Street).
- The traffic signal shall not be constructed until MUTCD traffic signal warrant criteria are formally met, which is anticipated prior to reaching the triggers stated above.

As shown in **Figure 6**, it is anticipated that the AM peak hour bidirectional traffic volume will be **463** vehicles under the 2025 Plus Project scenario and will not meet the 600 bidirectional volume condition for a traffic signal. Additionally, the Saliman Road / Robinson Street intersection will operate at acceptable level of service conditions with All-Way Stop Control. Therefore, a signal at the Saliman Road / Robinson Street intersection is not needed at this time and should be evaluated with future phases within Lompa Ranch West.

FUTURE YEAR CONDITIONS

Traffic Volumes

Future Year (20-year horizon) background traffic volumes were developed to assess potential impacts on the future transportation system. It is expected that anticipated development and planned roadway projects will generally increase volumes and shift traffic patterns by the Future Year scenario. To obtain Future Year traffic volumes, background growth rates and factors were obtained from the most recent

(April 2021) CAMPO travel demand model. The CAMPO Model (without a north connection to William Street) indicates that the Lompa Ranch West project area will generate approximately 8,633 daily trips in the 2050 horizon.

The currently proposed Lompa Ranch West development, including the proposed north residential phase, and buildout with a future school, is estimated to generate approximately 8,731 daily trips as shown in Table 4. This demonstrates that the Lompa Ranch West project at the currently proposed levels is sufficiently loaded into the travel demand model.

Table 4: Planned/Contemplated Development Phases

Land Use Mix (ITE Code)	Quantity	Weekday	AM Peak			Afternoon			PM Peak		
			Total	Entry	Exit	Total	Entry	Exit	Total	Entry	Exit
Phase 1 (210)	189 S.F. Units	1,784	140	35	105	140	88	52	187	118	69
Internal Reduction		-39	-8	-4	-4	-7	-4	-3	-4	-2	-2
Phase 2 (210)	204 S.F. Units	1,926	151	38	113	151	95	56	202	127	75
Internal Reduction		-42	-9	-4	-5	-8	-4	-4	-6	-3	-3
MF Site - Ryder (220)	360 M.F. Units	2,635	166	38	128	151	95	56	202	127	75
Internal Reduction		-73	-15	-7	-8	-13	-7	-6	-8	-4	-4
North Residential (210)	137 S.F Units	1,293	101	25	76	102	64	38	136	85	51
Internal Reduction		-29	-6	-3	-3	-6	-3	-3	-4	-2	-2
Middle School Site (522)	650 Students	1,364	455	250	205	234	108	126	98	47	51
Internal Reduction		-136	-38	-20	-18	-23	-10	-13	-11	-5	-6
Public Park (411)	10 Acres	95	0	0	0	23	13	10	23	13	10
Internal Reduction		-47	0	0	0	-11	-6	-5	-11	-6	-5
Total Trips		9,097	1,013	386	627	801	463	338	848	517	331
Internal Trips		-366	-76	-38	-38	-68	-34	-34	-44	-22	-22
Total External Trips		**8,731**	**937**	**348**	**589**	**733**	**429**	**304**	**804**	**495**	**309**

Notes: Proposed Project

Table 5 shows the future growth rate calculations for the study area.

Table 5: CAMPO Growth Rates

Location -->	Williams W/O Saliman	Williams E/O Saliman	Saliman S/O Williams	Robinson W/O Saliman	Robinson E/O Saliman	Saliman N/O 5th	Saliman S/O 5th	5th W/O Saliman	5th E/O Matterhorn
1. Demand Model Volumes									
2020 CAMPO	18,931	25,573	11,768	2,624	989	11,095	10,557	8,241	5,273
2050 CAMPO	22,477	29,458	15,884	3,291	2,892	15,027	14,563	9,324	6,792
Model Difference	3,546	3,885	4,116	667	1,903	3,932	4,006	1,083	1,519
2. Growth Rate Method									
30 Years % Change	19%	15%	35%	25%	192%	35%	38%	13%	29%
% per year	0.6%	0.5%	1.2%	0.8%	6.4%	1.2%	1.3%	0.4%	1.0%
Adjusted %/year	0.6%	0.5%	1.2%	0.8%	6.4%	1.2%	1.3%	0.4%	1.0%
20 years growth factor	**1.12**	**1.10**	**1.23**	**1.17**	**2.28**	**1.24**	**1.25**	**1.09**	**1.19**

As shown in Table 5, it is estimated from less impacted roadways (Williams Street west of Saliman and 5th Street west of Saliman) that the background growth rate is approximately 0.5% per year between 2020 and 2050. Therefore, the Future Year (20-year horizon) traffic volumes were developed using the following methodology:

- ***Apply a 1.1 growth factor (approximately 0.5% per year for 20 years) to the 2021 existing traffic volumes.***
  - ***Blackstone Ranch South, Lompa Ranch East, and the remaining Lompa parcel south of 5th Street (equivalent to 83 single-family homes) are included in the model.***
- ***Assign anticipated project traffic volumes to the study intersections for the following projects:***
  - ***Lompa Ranch Phase 1***
  - ***Lompa Ranch Multifamily***
  - ***Lompa Ranch North***
  - ***Little Lane Village (Not included in CAMPO Model)***
  - ***Carson Lofts (Not included in CAMPO Model)***
  - ***Future Phase - Lompa Ranch Public Park (Not included in CAMPO Model)***
  - ***Future Phase - Lompa Ranch Middle School Site (Included in CAMPO Model)***

Table 6 compares the resultant peak hour growth rates to the projected growth rates from the CAMPO Travel Demand model.

Table 6. Growth Rate Comparison

Location -->	Williams W/O Saliman	Williams E/O Saliman	Saliman S/O Williams	Robinson W/O Saliman	Robinson E/O Saliman	Saliman N/O 5th	Saliman S/O 5th	5th W/O Saliman	5th E/O Matterhorn
2. Growth Rate Method									
20 years growth factor	**1.12**	**1.10**	**1.23**	**1.17**	**2.28**	**1.24**	**1.25**	**1.09**	**1.19**
3. Resultant Peak Hour Segment Volumes									
Existing AM	1597	1843	1237	278	204	729	694	726	805
Existing PM	1609	2055	838	158	140	705	746	807	782
2040 AM	1894	2339	1799	342	686	991	996	908	1063
2040 PM	1881	2513	1274	198	445	947	1087	993	948
AM Growth Rate	1.19	1.27	1.45	1.23	3.36	1.36	1.44	1.25	1.32
PM Growth Rate	1.17	1.22	1.52	1.25	3.18	1.34	1.46	1.23	1.21
Resultant Growth Rate	**1.18**	**1.25**	**1.49**	**1.24**	**3.27**	**1.35**	**1.45**	**1.24**	**1.27**

As shown in the table, this methodology is more conservative on all study segments than what is anticipated within the CAMPO Travel Demand Model.

Intersection Level of Service Analysis

Table 7 shows the Future Year (20-year horizon) conditions level of service analysis results. The technical calculations are provided in **Appendix C**.

Table 7: Future Year Intersection Level of Service

ID	Intersection	Intersection Control	Movement	AM Peak		Afternoon		PM Peak	
				LOS	Delay[2]	LOS	Delay[2]	LOS	Delay[2]
1	William St / Saliman Rd	Signalized	Overall	***D***	***38.0***	***D***	***42.1***	***C***	***34.6***
2	Saliman Rd / Robinson St	All-Way STOP	Overall	***D***	***26.4***	***C***	***23.1***	***C***	***16.2***
		Signalized[1]	Overall	***C***	***34.3***	***C***	***28.6***	***B***	***17.3***
3	Saliman Rd / 5th St	Signalized	Overall	***B***	***17.3***	***B***	***14.9***	***B***	***15.3***
4	Robinson St / Matterhorn Ln	Roundabout	Overall Delay	***A***	***4.9***	***A***	***4.0***	***A***	***3.5***
			Worst v/c Ratio		***0.3***		***0.2***		***0.1***
5	5th St / Matterhorn Ln	Side-Street STOP	Southbound Left	***D***	***29.8***	***C***	***16.9***	***C***	***20.4***
			Southbound Right	***B***	***14.9***	***B***	***10.7***	***B***	***10.7***
			Eastbound Left	***A***	***9.5***	***A***	***8.2***	***A***	***8.3***
		Signalized[1]	Overall	***B***	***12.2***	***B***	***10.7***	***A***	***8.5***

Source: Headway Transportation, 2023
Note: 1. Traffic signals to be funded and constructed by future developments

Under Future Year conditions (without Phase 2), all studied intersections operate at acceptable levels of service (LOS "D" or better).

PROJECT CONDITIONS

Project Description

The proposed 204 unit single-family residential project is located in the southeast corner of the Lompa Ranch West development generally north of 5th Street and west of I-580, as shown in **Figure 2**, attached. The project proposes to construct the following improvements:

- The project will construct curb, gutter, and sidewalk on the north side of 5th Street between the Lompa Ranch multifamily project and the existing sidewalk on the east edge of the project.
- The project will construct two westbound lanes on 5th Street from Matterhorn Lane to the previous widening conditioned with the Lompa Ranch Multifamily project.
- The project will construct Matterhorn Lane between 5th Street and Robinson Street.
- The project will extend Robinson Street to Matterhorn Lane.
- The project will construct two legs of the Robinson Street / Matterhorn Lane intersection as a single-lane roundabout as identified in the Lompa Ranch West Masterplan (the future north and east legs will be constructed by future phases).
- The project will construct bike lanes and a separated multi-use path on Robinson Street and Matterhorn Lane.
- The project will construct the 5th Street / Matterhorn Lane intersection as side-street STOP controlled with two exit lanes and separate left and right turn inbound lanes (see **Figure 2** for lane configurations). The project will dedicate appropriate right-of-way to accommodate a traffic signal or roundabout in the future.

Trip Generation

Vehicular trip generation rates for the proposed project were obtained from the *Trip Generation Manual, 10th Edition*, published by the Institute of Transportation Engineers (ITE). **Table 8** provides the Daily, AM Peak Hour, afternoon peak hour, and PM Peak Hour trip generation calculations for the proposed project.

Table 8: Vehicular Trip Generation Estimates

(ITE #) Land Use	Quantity	Daily	AM Peak			Afternoon			PM Peak		
			Total	In	Out	Total	In	Out	Total	In	Out
Single-Family Detached Housing (210)	204 units	1,926	151	38	113	***151***	***95***	***56***	202	127	75

As shown in the table, the project is anticipated to generate approximately 1,926 Daily trips, 151 AM peak hour trips, ***151 afternoon peak hour trips***, and 202 PM peak hour trips.

Project Access

Access to/from the Phase 2 project is proposed via Robinson Street and Matterhorn Lane south to 5th Street. The Saliman Road / Robinson Street intersection is currently All-Way STOP controlled. The project will construct the north leg of the 5th Street / Matterhorn Lane intersection with side street STOP control.

2025 PLUS PROJECT CONDITIONS

Trip Distribution

Traffic generated by the project was distributed to the road network based on the location of the project in relation to major activity centers and the roadway network. The project trips for this scenario were distributed as follows:

- 25% to/from the south via Saliman Road
- 15% to/from the north via I-580
- 15% to/from the east via William Street
- 15% to/from the west via William Street
- 10% to/from the west via 5th Street
- 10% to/from the east via 5th Street
- 5% to/from the south via I-580
- 5% to/from the west via Robinson Street

The project trip distribution and assignment is shown on **Figure 5**.

Traffic Volumes

2025 Plus Project traffic volumes were developed by adding the project generated trips (**Figure 5**) to the 2025 traffic volumes (**Figure 3**). The 2025 Plus Project lane configurations, controls and peak hour turning movement volumes are shown in **Figure 6,** attached.

Intersection Level of Service Analysis

Table 9 shows the 2025 Plus Project intersection level of service results for the AM, afternoon, and PM peak hours. The technical calculations are provided in **Appendix D**.

Table 9: 2025 Plus Project Intersection Level of Service

ID	Intersection	Intersection Control	Movement	AM Peak		Afternoon		PM Peak	
				LOS	Delay[2]	LOS	Delay[2]	LOS	Delay[2]
1	William St / Saliman Rd	Signalized	Overall	***D***	***35.3***	***D***	***39.5***	***C***	***34.1***
2	Saliman Rd / Robinson St	All-Way STOP	Overall	***C***	***18.3***	***C***	***18.8***	***C***	***15.8***
3	Saliman Rd / 5th St	Signalized	Overall	***B***	***15.8***	***B***	***14.2***	***B***	***14.8***
4	Robinson St / Matterhorn Ln	Roundabout	Overall Delay	***A***	***3.4***	***A***	***3.5***	***A***	***3.6***
			Worst v/c Ratio		***0.1***		***0.1***		***0.1***
5	5th St / Matterhorn Ln	Side-Street STOP	Southbound Left	***C***	***23.0***	***C***	***16.4***	***C***	***21.4***
			Southbound Right	***B***	***14.1***	***B***	***10.5***	***B***	***10.7***
			Eastbound Left	***A***	***9.1***	***A***	***8.2***	***A***	***8.3***

Source: Headway Transportation, 2023

With the addition of project traffic, all study intersections are anticipated to operate at acceptable levels of service (LOS "D" or better).

FUTURE YEAR PLUS PROJECT CONDITIONS

Traffic Volumes

Future Year Plus Project traffic volumes were developed by adding the project generated trips (**Figure 7**) to the Future Year traffic volumes (**Figure 4**). The Future Year lane configurations, controls and peak hour turning movement volumes are shown in **Figure 8,** attached.

Intersection Level of Service Analysis

Table 10 shows the Future Year Plus Project condition level of service analysis results. The technical calculations are provided in **Appendix E**.

Table 10: Future Year Plus Project Intersection Level of Service

ID	Intersection	Intersection Control	Movement	AM Peak		Afternoon		PM Peak	
				LOS	Delay[2]	LOS	Delay[2]	LOS	Delay[2]
1	William St / Saliman Rd	Signalized	Overall	***D***	***39.7***	***D***	***43.5***	***D***	***35.9***
2	Saliman Rd / Robinson St	All-Way STOP	Overall	***E***	***35.6***	***D***	***27.9***	***C***	***18.4***
		Signalized[1]	Overall	***D***	***36.6***	***C***	***30.3***	***B***	***18.0***
3	Saliman Rd / 5th St	Signalized	Overall	***B***	***17.7***	***B***	***15.1***	***B***	***15.6***
4	Robinson St / Matterhorn Ln	Roundabout	Overall Delay	***A***	***5.3***	***A***	***4.4***	***A***	***3.9***
			Worst v/c Ratio		***0.3***		***0.2***		***0.2***
5	5th St / Matterhorn Ln	Side-Street STOP	Southbound Left	***D***	***33.7***	***C***	***18.0***	***C***	***22.8***
			Southbound Right	***C***	***15.5***	***B***	***10.8***	***B***	***10.8***
			Eastbound Left	***A***	***9.5***	***A***	***8.3***	***A***	***8.4***
		Signalized[1]	Overall	***B***	***13.1***	***B***	***10.7***	***A***	***8.9***

Source: Headway Transportation, 2023
Note: 1. Traffic signals to be funded and constructed by future phase(s)

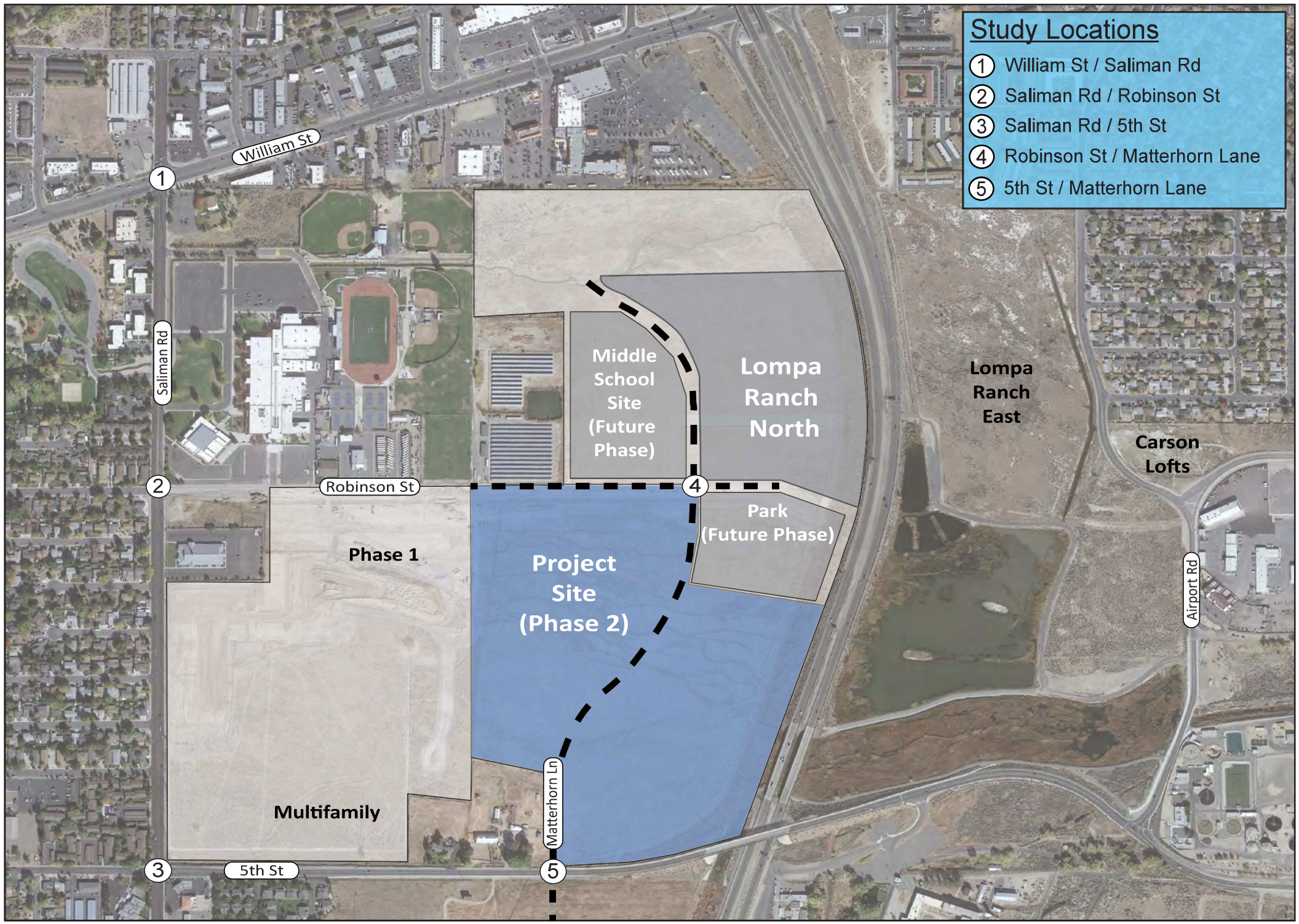
Under Future Year Plus Project conditions, all study intersections are anticipated to operate at acceptable level of service conditions (LOS "D" or better) ***except for the unsignalized Saliman Road / Robinson Street intersection under Future Plus Project Conditions***. ***Future phases (Lompa Ranch North) within Lompa Ranch West will construct a traffic signal improvement at the subject intersection when warrants are met. With the traffic signal improvement, the Saliman Road / Robinson Street intersection is anticipated to operate within level of service policy***.

CONCLUSIONS & RECOMMENDATIONS

The following is a list of key findings and recommendations:

- The proposed 204 unit single-family residential phase is anticipated to generate 1,926 Daily trips, 151 AM peak hour trips, and 202 PM peak hour trips.
- Access to/from the project is proposed via Robinson Street and Matterhorn Lane south to 5th Street.
- Under 2025 and Future Year conditions, all study intersections operate at acceptable levels of service (LOS "D" or better) with or without the project.
- With addition of the project, all study intersections are anticipated to operate at acceptable levels of service (LOS "D" or better) under 2025 Plus Project and Future Year Plus Project scenarios.
- The project will construct curb, gutter, and sidewalk on the north side of 5th Street between the Lompa Ranch multifamily project and the existing sidewalk on the east edge of the project.
- The project will construct two westbound lanes on 5th Street from Matterhorn Lane to the previous widening conditioned with the Lompa Ranch Multifamily project.
- The project will construct Matterhorn Lane between 5th Street and Robinson Street.
- The project will extend Robinson Street to Matterhorn Lane.

- The project will construct two legs of the Robinson Street / Matterhorn Lane intersection as a single-lane roundabout as identified in the Lompa Ranch West Masterplan (the future north and east legs will be constructed by future phases).
- The project will construct bike lanes and a separated multi-use path on Robinson Street and Matterhorn Lane.
- The project will construct the 5th Street / Matterhorn Lane intersection as side-street STOP controlled with two exit lanes and separate left and right turn inbound lanes (see **Figure 2** for lane configurations). The project will dedicate appropriate right-of-way to accommodate a traffic signal or roundabout in the future.
- A traffic signal at the Saliman Road / Robinson Street intersection is not triggered by this phase and should be evaluated with future phases within Lompa Ranch West.
- The proposed project is in conformance with the Lompa Ranch West Masterplan.



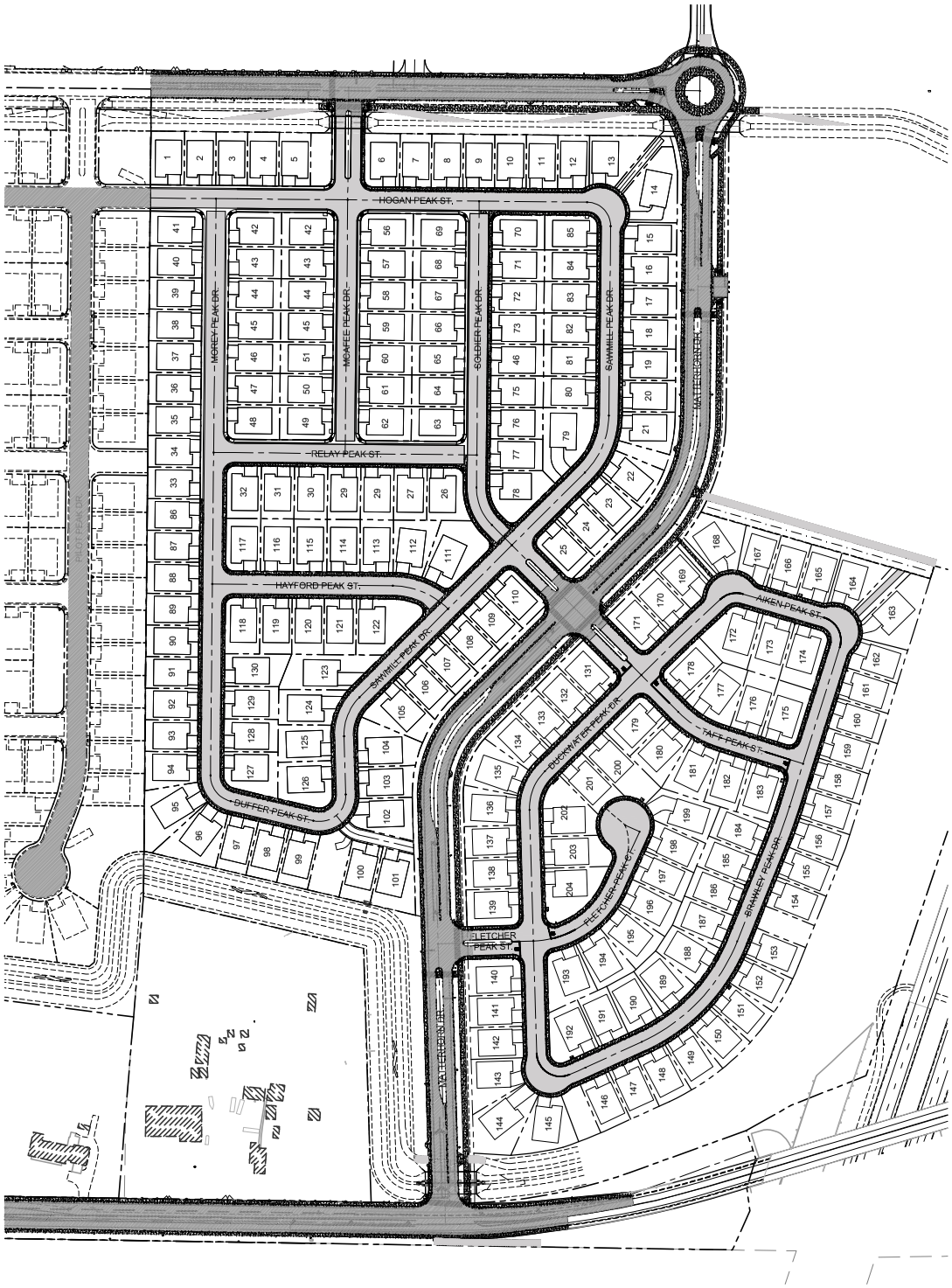
NO SCALE

Study Intersection

Project Site

Future Collector Roadway

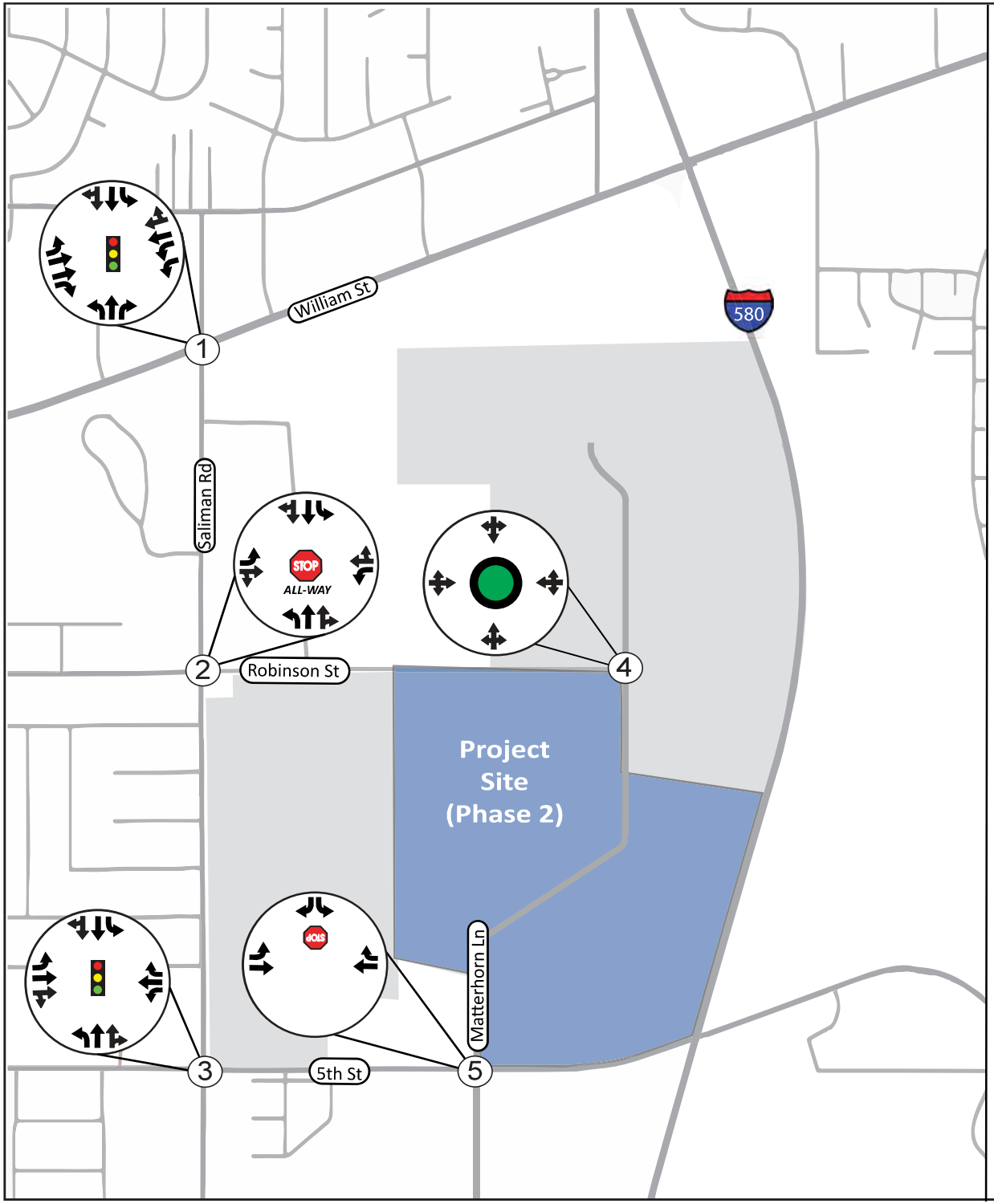
Figure 1
Blackstone Ranch Phase 2
Traffic Impact Study
Study Area



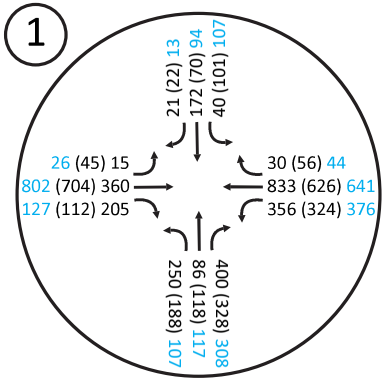
HEADWAY TRANSPORTATION

NO SCALE

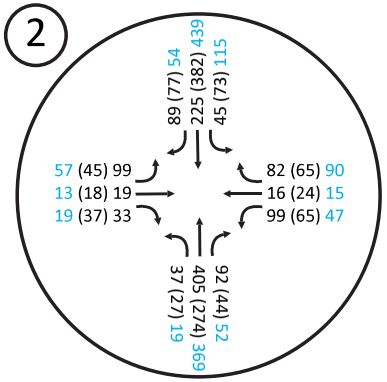
Figure 2
Blackstone Ranch Phase 2
Traffic Impact Study
Preliminary Site Plan



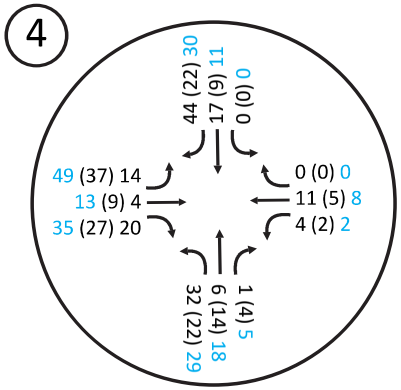
William St / Saliman Rd



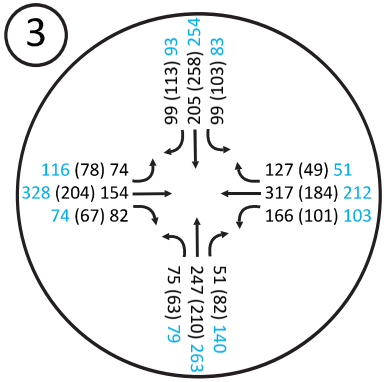
Saliman Rd / Robinson St



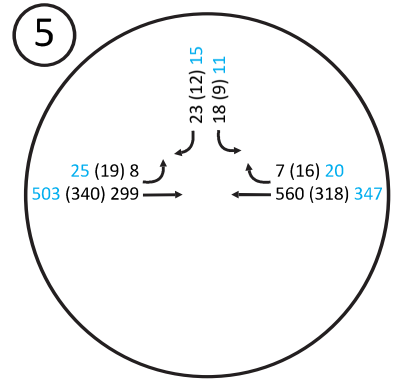
Robinson St / Matterhorn Ln



Saliman Rd / 5th St



5th St / Matterhorn Ln



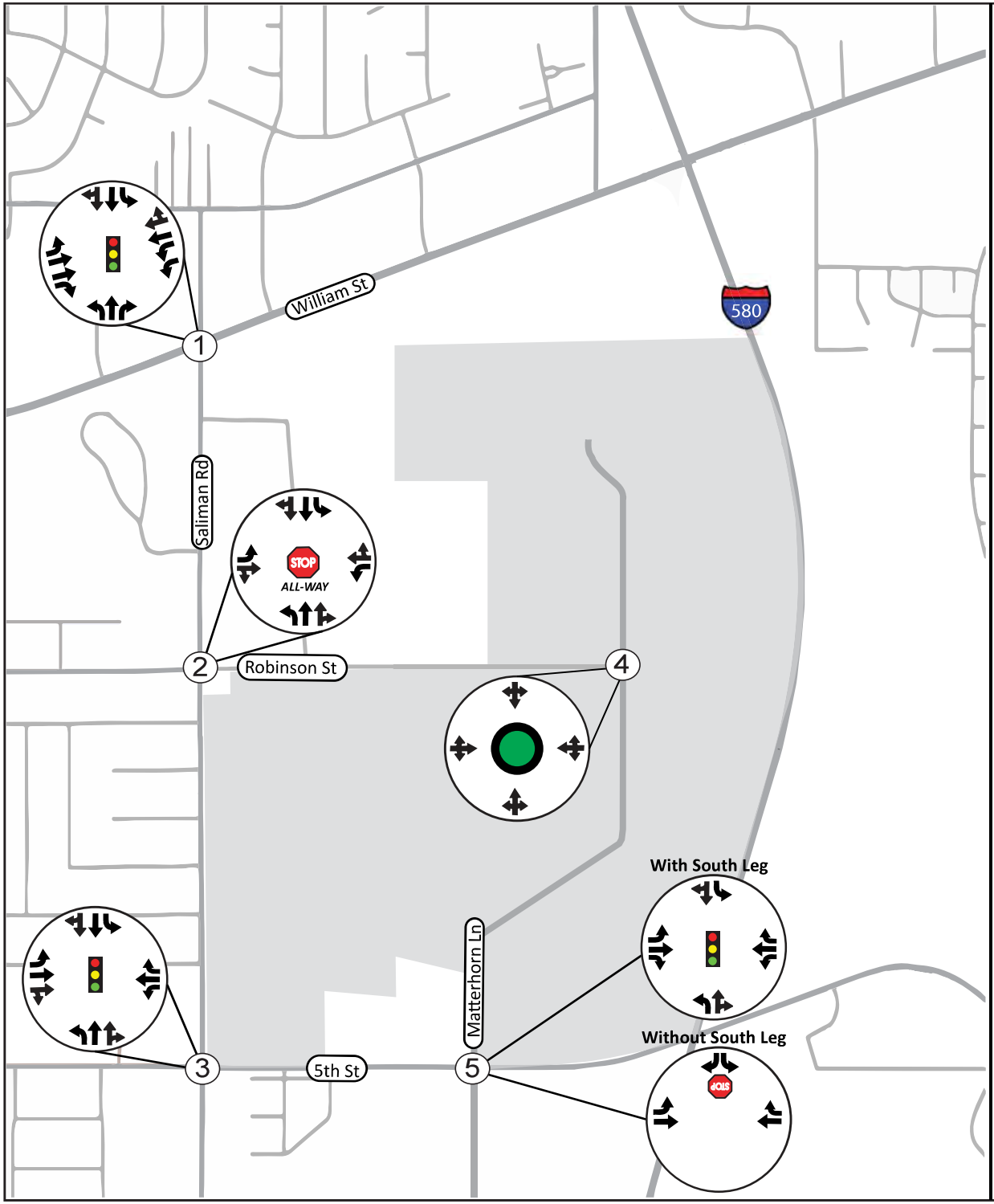
HEADWAY TRANSPORTATION

NO SCALE

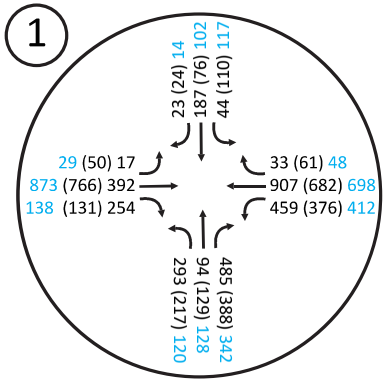
AM Peak Hour Volume
(Afternoon Peak Hour Volume) (#) Study Intersection - Project Site - Stop - Traffic Signal - Roundabout
PM Peak Hour Volume

Figure 3
Blackstone Ranch Phase 2
Traffic Impact Study

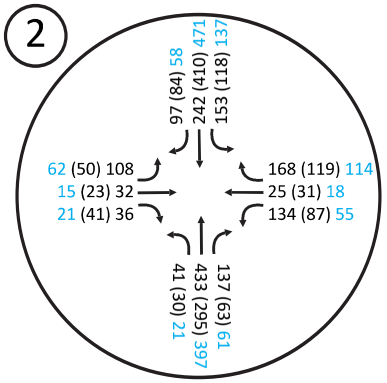
2025 Conditions Traffic Volumes, Lane Configurations, and Controls



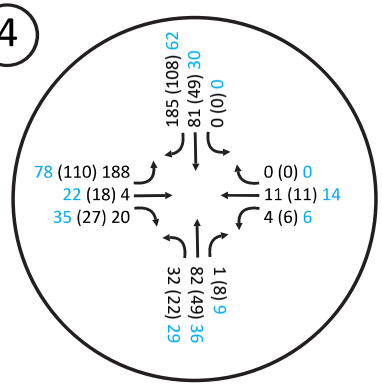
William St / Saliman Rd



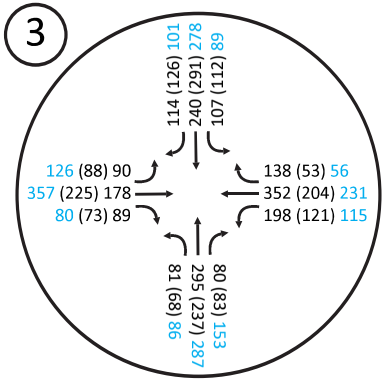
Saliman Rd / Robinson St



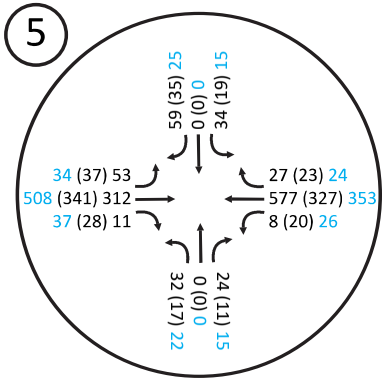
Robinson St / Matterhorn Ln



Saliman Rd / 5th St



5th St / Matterhorn Ln



HEADWAY TRANSPORTATION

NO SCALE

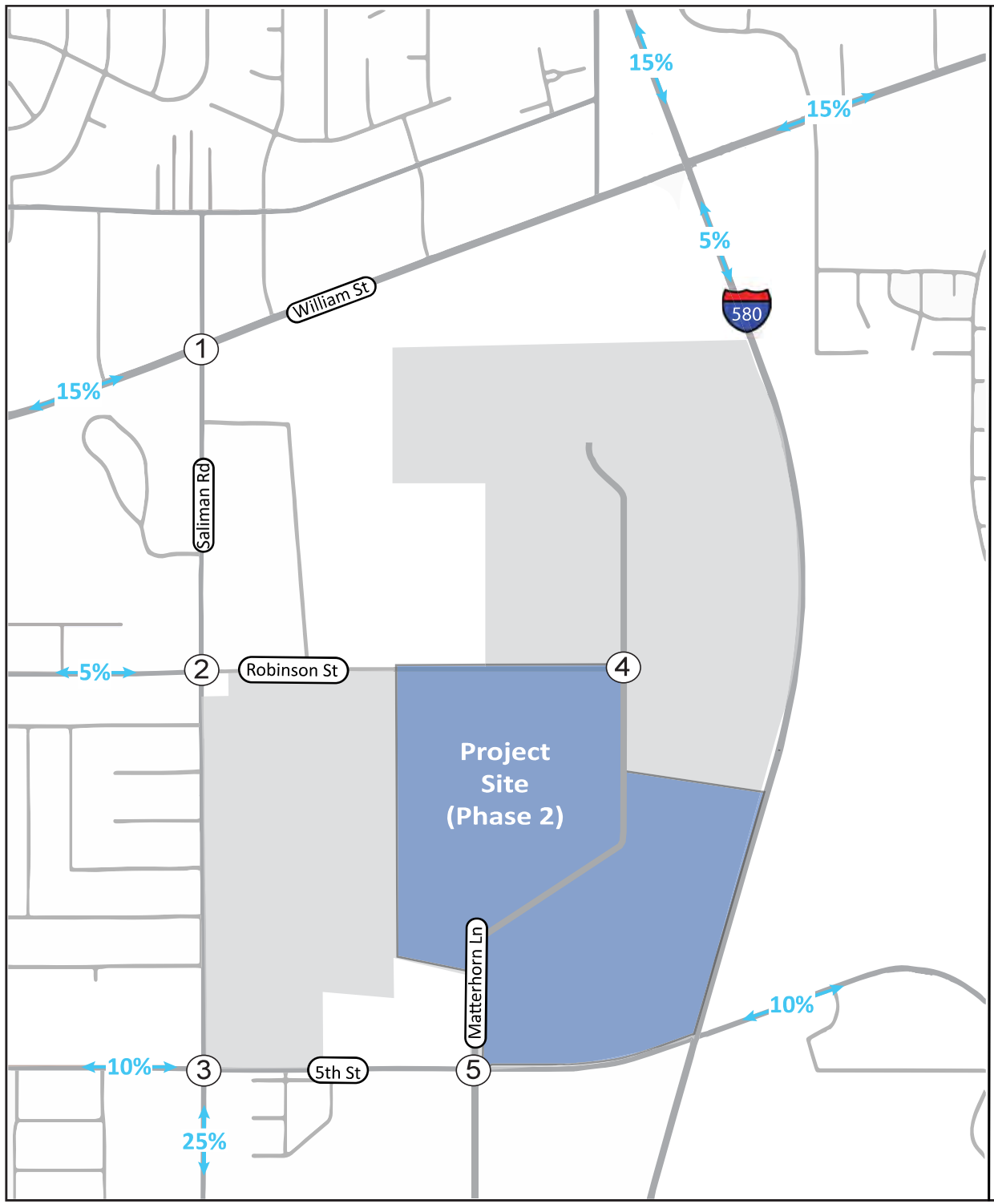
AM Peak Hour Volume
(Afternoon Peak Hour Volume)
PM Peak Hour Volume

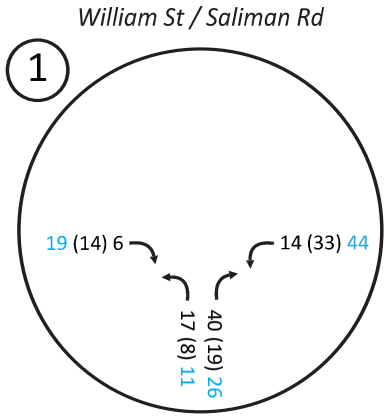
(#) Study Intersection

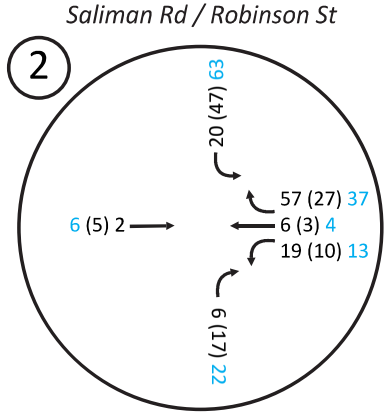
- Project Site
- Stop
- Traffic Signal
- Roundabout

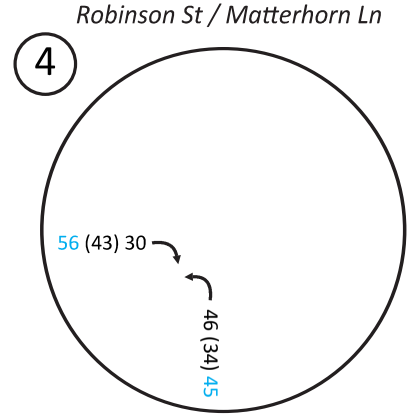
Figure 4
Blackstone Ranch Phase 2
Traffic Impact Study

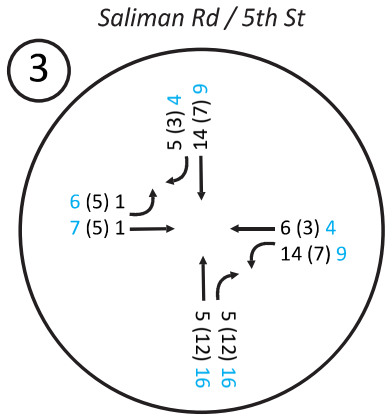
Future Year Traffic Volumes, Lane Configurations, and Controls

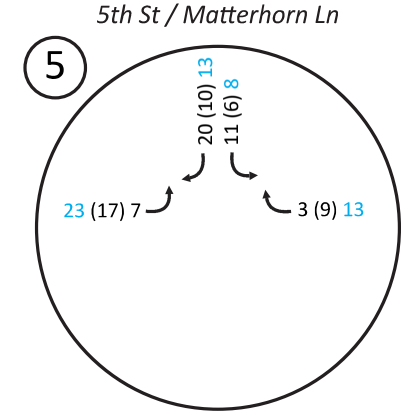












HEADWAY TRANSPORTATION

NO SCALE

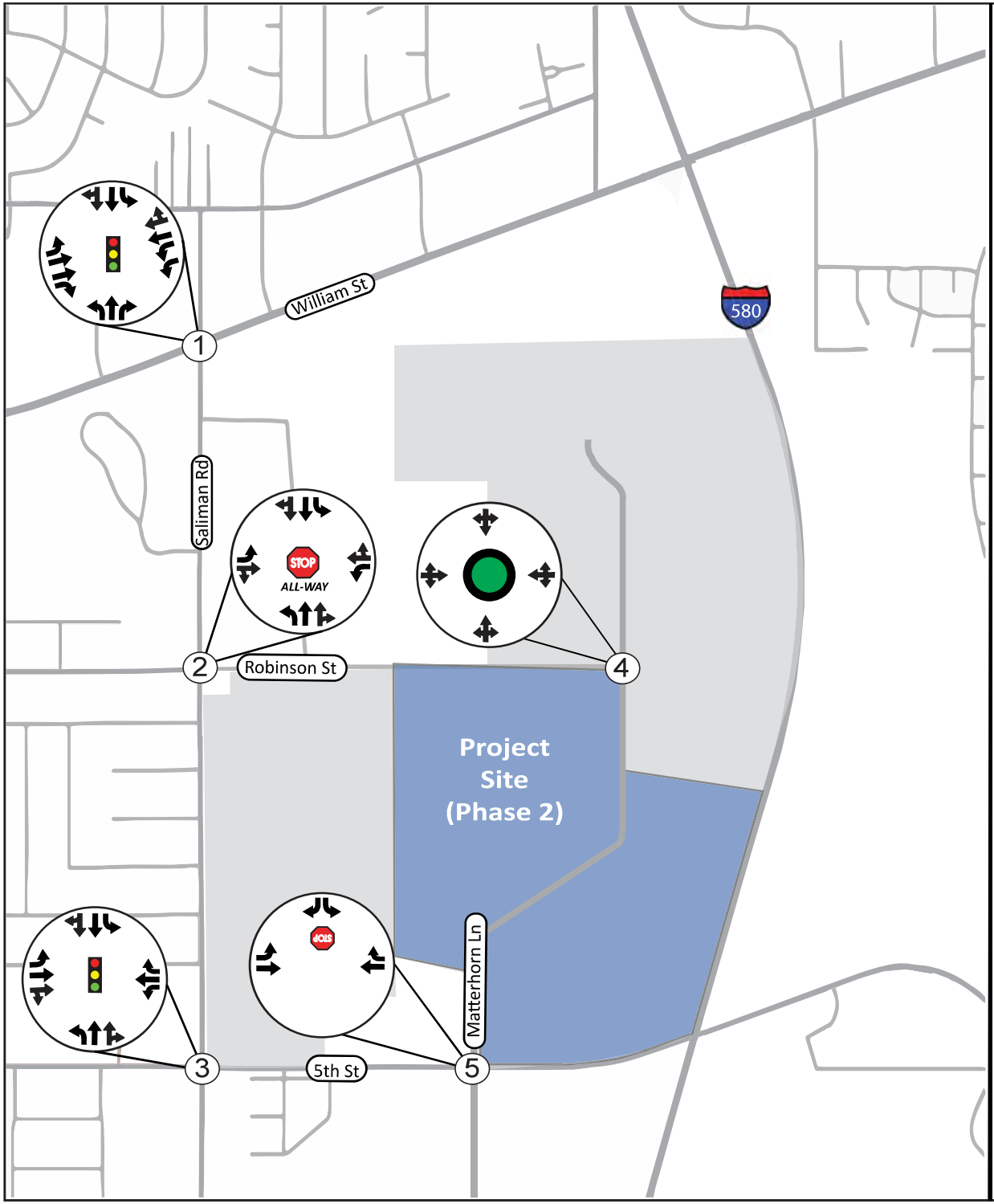
AM Peak Hour Volume
(Afternoon Peak Hour Volume)
PM Peak Hour Volume

(#) Study Intersection

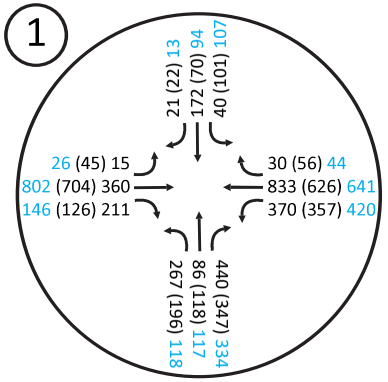
Project Site

XX% Trip Distribution

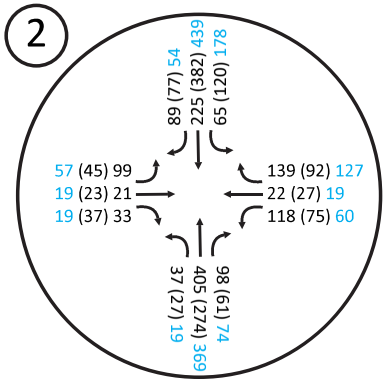
Figure 5
Blackstone Ranch Phase 2
Traffic Impact Study
Project Trip Distribution and Assignment



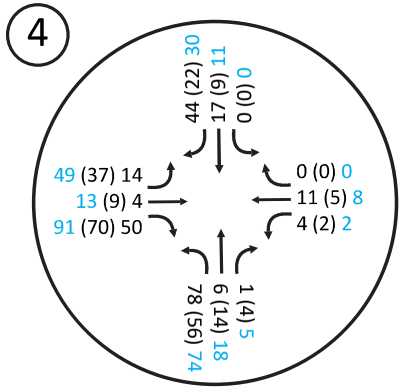
William St / Saliman Rd



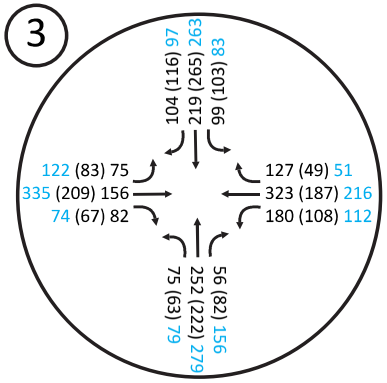
Saliman Rd / Robinson St



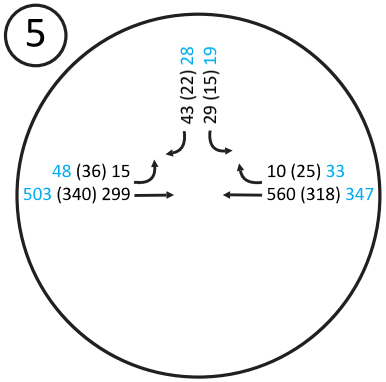
Robinson St / Matterhorn Ln



Saliman Rd / 5th St



5th St / Matterhorn Ln



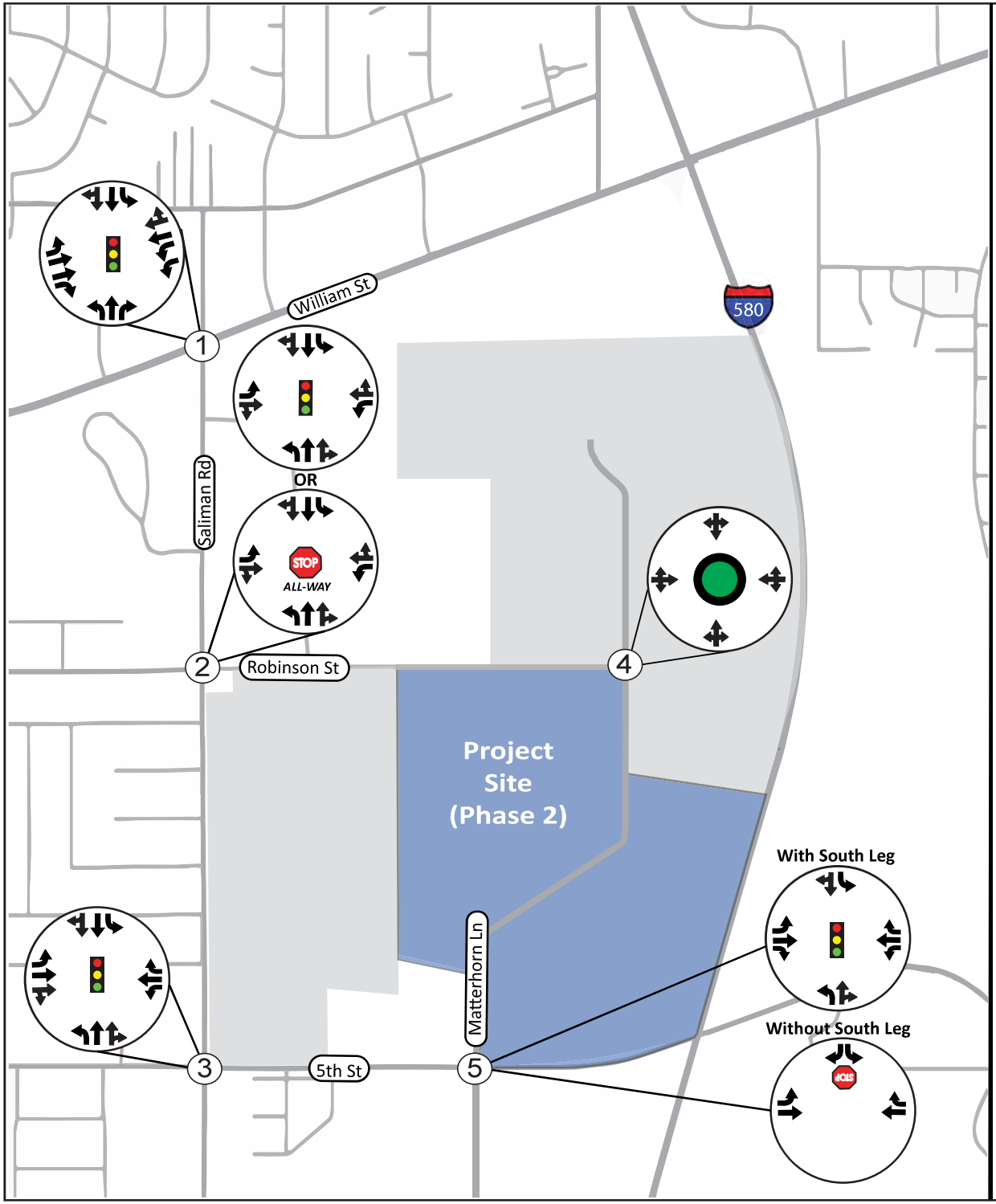
HEADWAY TRANSPORTATION

NO SCALE

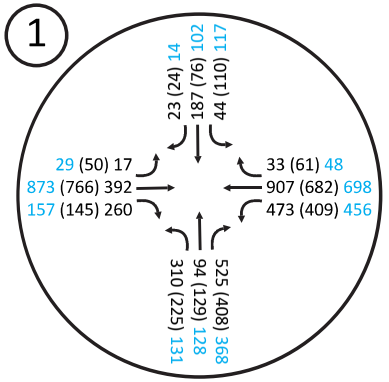
AM Peak Hour Volume
(Afternoon Peak Hour Volume) # Study Intersection - Project Site - Stop - Traffic Signal - Roundabout
PM Peak Hour Volume

Figure 6
Blackstone Ranch Phase 2
Traffic Impact Study

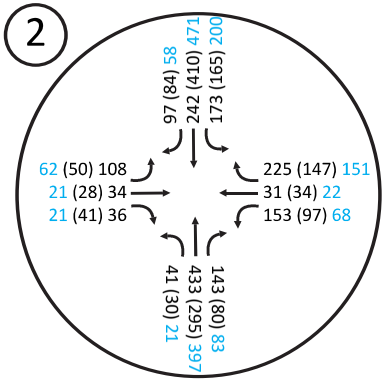
2025 Conditions Plus Project Traffic Volumes, Lane Configurations, and Controls



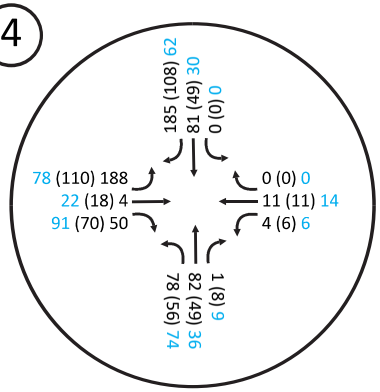
William St / Saliman Rd



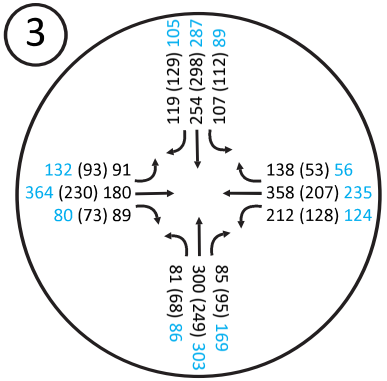
Saliman Rd / Robinson St



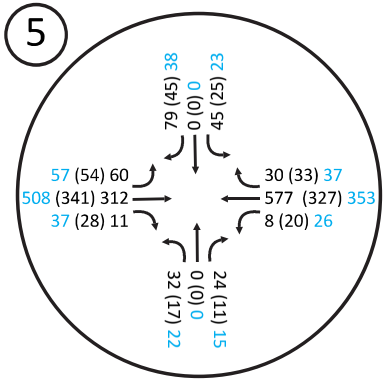
Robinson St / Matterhorn Ln



Saliman Rd / 5th St



5th St / Matterhorn Ln



HEADWAY TRANSPORTATION

NO SCALE

AM Peak Hour Volume
(Afternoon Peak Hour Volume)
PM Peak Hour Volume

(#) Study Intersection

- Project Site
- Stop
- Traffic Signal
- Roundabout

Figure 7

Blackstone Ranch Phase 2
Traffic Impact Study

Future Year Plus Project Traffic Volumes, Lane Configurations, and Controls

Appendix A
NDOT Crash Data

INTERSECTION DETAIL
N SALIMAN RD @ E WILLIAM ST
01 JAN 15 - 01 JAN 20
COUNTY: CARSON CITY

Crash Severity	Crash Date	Crash Year	Crash Time	Primary Street	Distance	Dir	Secondary Street	Weather	Fatalities	Injured	Property Damage Only	Injury Type	Crash Type	Total Vehicles	V1 Type
INJURY ACCIDENT	9-Mar-2018	2018	12:10 PM	E WILLIAM ST	400	E	N SALIMAN RD	CLOUDY		2		B	ANGLE	2	SEDAN, 4 DOOR
INJURY ACCIDENT	3-Jun-2019	2019	01:50 PM	E WILLIAM ST	300	E	N SALIMAN RD	RAIN		1		C	ANGLE	2	CARRY-ALL
PROPERTY DAMAGE ONLY	20-Apr-2018	2018	09:56 AM	E WILLIAM ST	209	E	N SALIMAN RD	CLEAR			PDO		ANGLE	2	HARDTOP, 4 DOOR
INJURY ACCIDENT	10-Oct-2015	2015	11:11 AM	E WILLIAM ST	144	E	N SALIMAN RD	CLEAR		1		B	REAR-END	2	MOTORCYCLE
INJURY ACCIDENT	4-Feb-2019	2019	11:12 AM	E WILLIAM ST	80	E	N SALIMAN RD	FOG, SMOG, SMOKE		1		C	REAR-END	2	HARDTOP, 2 DOOR
PROPERTY DAMAGE ONLY	4-Nov-2015	2015	05:17 PM	E WILLIAM ST	50	E	N SALIMAN RD	CLOUDY			PDO		SIDESWIPE, MEETING	2	FLATBED OR PLATFORM
PROPERTY DAMAGE ONLY	28-Jun-2019	2019	11:30 AM	E WILLIAM ST	15	E	N SALIMAN RD	CLEAR			PDO		ANGLE	2	HARDTOP, 4 DOOR
PROPERTY DAMAGE ONLY	28-Dec-2017	2017	12:19 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR			PDO		SIDESWIPE, MEETING	2	SEMI
PROPERTY DAMAGE ONLY	3-Jan-2019	2019	09:04 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR			PDO		REAR-END	2	SEDAN, 2 DOOR
PROPERTY DAMAGE ONLY	24-Apr-2018	2018	05:11 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR			PDO		REAR-END	2	HATCHBACK, 4 DOOR
PROPERTY DAMAGE ONLY	15-May-2018	2018	01:43 PM	E WILLIAM ST		AT INT	N SALIMAN RD	RAIN			PDO		REAR-END	2	UTILITY
PROPERTY DAMAGE ONLY	20-Mar-2018	2018	03:41 PM	E WILLIAM ST		AT INT	N SALIMAN RD	RAIN			PDO		ANGLE	2	HATCHBACK, 4 DOOR
PROPERTY DAMAGE ONLY	2-May-2019	2019	06:44 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR			PDO		SIDESWIPE, MEETING	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	18-Jun-2019	2019	04:36 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR			PDO		REAR-END	2	CARRY-ALL
INJURY ACCIDENT	18-Nov-2019	2019	12:41 PM	E WILLIAM ST		AT INT	N SALIMAN RD			1		C	REAR-END	2	CARRY-ALL
PROPERTY DAMAGE ONLY	20-Nov-2019	2019	06:36 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLOUDY			PDO		SIDESWIPE, OVERTAKING	2	CARRY-ALL
PROPERTY DAMAGE ONLY	2-Dec-2019	2019	01:15 PM	E WILLIAM ST		AT INT	N SALIMAN RD	RAIN			PDO		REAR-END	2	HATCHBACK, 4 DOOR
INJURY ACCIDENT	7-Apr-2019	2019	08:13 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR		2		C	REAR-END	2	SEDAN, 4 DOOR
INJURY ACCIDENT	20-Dec-2016	2016	02:17 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR		2		C	REAR-END	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	6-Dec-2016	2016	07:26 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR			PDO		REAR-END	2	VAN
INJURY ACCIDENT	27-Jun-2017	2017	12:14 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR		1		C	ANGLE	3	PICKUP
INJURY ACCIDENT	23-Apr-2017	2017	04:30 AM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR		1		C	NON-COLLISION	1	HATCHBACK, 4 DOOR
INJURY ACCIDENT	19-Apr-2015	2015	07:31 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR		1		B	ANGLE	1	SEDAN, 4 DOOR
INJURY ACCIDENT	2-Jan-2015	2015	02:20 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR		1		C	SIDESWIPE, MEETING	2	HARDTOP, 4 DOOR
INJURY ACCIDENT	9-Jan-2015	2015	10:34 AM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR		1		C	REAR-END	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	10-Aug-2015	2015	11:39 AM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR			PDO		ANGLE	2	HATCHBACK, 4 DOOR
PROPERTY DAMAGE ONLY	22-Nov-2015	2015	08:34 AM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR			PDO		ANGLE	2	UTILITY
INJURY ACCIDENT	30-Nov-2015	2015	04:44 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR		1		C	REAR-END	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	21-Feb-2016	2016	01:40 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLOUDY			PDO		REAR-END	2	PICKUP
PROPERTY DAMAGE ONLY	26-Feb-2016	2016	06:52 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR			PDO		REAR-END	2	CARRY-ALL
INJURY ACCIDENT	15-Jul-2018	2018	06:13 PM	E WILLIAM ST		AT INT	N SALIMAN RD	CLEAR		1		C	REAR-END	2	HARDTOP, 4 DOOR
PROPERTY DAMAGE ONLY	14-Sep-2018	2018	11:15 AM	E WILLIAM ST		AT INT	N SALIMAN RD	CLOUDY			PDO		SIDESWIPE, OVERTAKING	4	HATCHBACK, 4 DOOR
INJURY ACCIDENT	18-May-2017	2017	03:18 PM	E WILLIAM ST	100	W	N SALIMAN RD	CLEAR		1		C	REAR-END	3	PICKUP
PROPERTY DAMAGE ONLY	16-Apr-2015	2015	02:52 PM	E WILLIAM ST	205	W	N SALIMAN RD	CLEAR			PDO		REAR-END	2	HARDTOP, 4 DOOR
PROPERTY DAMAGE ONLY	19-Oct-2018	2018	09:15 AM	E WILLIAM ST	240	W	N SALIMAN RD	CLEAR			PDO		NON-COLLISION	1	HARDTOP, 4 DOOR
PROPERTY DAMAGE ONLY	8-Feb-2017	2017	02:26 PM	N SALIMAN RD	200	N	E WILLIAM ST	CLOUDY: RAIN			PDO		SIDESWIPE, MEETING	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	19-Oct-2017	2017	05:23 PM	N SALIMAN RD		AT INT	E WILLIAM ST	CLEAR			PDO		SIDESWIPE, MEETING	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	21-Nov-2017	2017	12:45 PM	N SALIMAN RD		AT INT	E WILLIAM ST	CLEAR			PDO		REAR-END	2	SEDAN, 4 DOOR
INJURY ACCIDENT	28-Jun-2018	2018	05:28 PM	N SALIMAN RD		AT INT	E WILLIAM ST	CLEAR		1		B	REAR-END	2	VAN
INJURY ACCIDENT	6-Nov-2018	2018	03:26 PM	N SALIMAN RD		AT INT	E WILLIAM ST	CLEAR		1		A	ANGLE	1	PICKUP
PROPERTY DAMAGE ONLY	6-May-2019	2019	07:26 AM	N SALIMAN RD		AT INT	E WILLIAM ST	CLEAR			PDO		SIDESWIPE, MEETING	2	HARDTOP, 4 DOOR
INJURY ACCIDENT	2-Dec-2016	2016	12:28 PM	N SALIMAN RD		AT INT	E WILLIAM ST	CLEAR		1		B	ANGLE	3	PICKUP
PROPERTY DAMAGE ONLY	10-Oct-2016	2016	07:48 AM	N SALIMAN RD		AT INT	E WILLIAM ST	CLEAR			PDO		HEAD-ON	2	VAN
PROPERTY DAMAGE ONLY	27-Oct-2016	2016	09:32 PM	N SALIMAN RD		AT INT	E WILLIAM ST	RAIN			PDO		BACKING	2	CARRY-ALL
PROPERTY DAMAGE ONLY	9-Feb-2017	2017	08:39 PM	N SALIMAN RD		AT INT	E WILLIAM ST	RAIN			PDO		ANGLE	2	VAN
PROPERTY DAMAGE ONLY	9-Feb-2017	2017	07:43 PM	N SALIMAN RD		AT INT	E WILLIAM ST	RAIN			PDO		REAR-END	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	25-Aug-2017	2017	12:10 PM	N SALIMAN RD		AT INT	E WILLIAM ST	CLEAR			PDO		REAR-END	2	SEDAN, 4 DOOR
INJURY ACCIDENT	20-Jan-2015	2015	02:18 PM	N SALIMAN RD		AT INT	E WILLIAM ST	CLEAR		1		C	NON-COLLISION	1	HATCHBACK, 4 DOOR
PROPERTY DAMAGE ONLY	12-Apr-2015	2015	01:15 PM	N SALIMAN RD		AT INT	E WILLIAM ST	CLEAR			PDO		REAR-END	2	PICKUP
PROPERTY DAMAGE ONLY	29-Jul-2016	2016	03:07 PM	N SALIMAN RD		AT INT	E WILLIAM ST	CLEAR			PDO		REAR-END	2	CARRY-ALL
PROPERTY DAMAGE ONLY	28-Sep-2018	2018	04:51 PM	N SALIMAN RD		AT INT	E WILLIAM ST	CLEAR			PDO		ANGLE	2	SEDAN
PROPERTY DAMAGE ONLY	6-May-2017	2017	01:42 PM	N SALIMAN RD	10	S	E WILLIAM ST	RAIN			PDO		SIDESWIPE, MEETING	2	CARRY-ALL
PROPERTY DAMAGE ONLY	28-Sep-2017	2017	01:23 PM	N SALIMAN RD	30	S	E WILLIAM ST	CLEAR			PDO		REAR-END	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	22-Oct-2015	2015	08:10 AM	N SALIMAN RD	75	S	E WILLIAM ST	CLOUDY			PDO		REAR-END	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	27-Jan-2015	2015	02:09 PM	N SALIMAN RD	100	S	E WILLIAM ST	CLEAR			PDO		SIDESWIPE, MEETING	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	18-Jun-2015	2015	01:08 PM	N SALIMAN RD	102	S	E WILLIAM ST	CLEAR			PDO		SIDESWIPE, MEETING	2	CARRY-ALL
PROPERTY DAMAGE ONLY	12-May-2017	2017	01:17 PM	N SALIMAN RD	200	S	E WILLIAM ST	CLEAR			PDO		ANGLE	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	29-Jan-2016	2016	02:17 PM	N SALIMAN RD	200	S	E WILLIAM ST	BLOWING SAND, SOIL, DIRT, SNOW			PDO		REAR-END	2	HARDTOP
INJURY ACCIDENT	24-Jan-2018	2018	02:17 PM	N SALIMAN RD	292	S	E WILLIAM ST	CLEAR		1		C	SIDESWIPE, MEETING	2	CARRY-ALL
PROPERTY DAMAGE ONLY	4-Nov-2016	2016	02:05 PM	N SALIMAN RD	300	S	E WILLIAM ST	CLEAR			PDO		ANGLE	1	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	21-Jan-2015	2015	02:24 PM	N SALIMAN RD	309	S	E WILLIAM ST	CLEAR			PDO		REAR-END	3	HATCHBACK, 4 DOOR
PROPERTY DAMAGE ONLY	28-Dec-2016	2016	04:31 PM	N SALIMAN RD	320	S	E WILLIAM ST	CLEAR			PDO		ANGLE	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	12-May-2015	2015	02:13 PM	N SALIMAN RD	379	S	E WILLIAM ST	CLOUDY			PDO		SIDESWIPE, OVERTAKING	2	HARDTOP, 4 DOOR
PROPERTY DAMAGE ONLY	1-May-2015	2015	02:25 PM	N SALIMAN RD	400	S	E WILLIAM ST	CLEAR			PDO		SIDESWIPE, MEETING	2	PICKUP
									Sum: 0	Sum: 23	Count: 44				
									Count: 0	Count: 20					
									Total:	64					

V1 Dir	V1 Driver Age	V1 Lane Num	V1 Action	V1 Driver Factors	V1 Driver Distracted	V1 Vehicle Factors	V1 Most Harmful Event
E	18		TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY: MADE AN IMPROPER TURN	
S	22	1	TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT
E	49	1	TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT
E	55	1	GOING STRAIGHT	APPARENTLY NORMAL		UNKNOWN	
W	32	2	GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	MOTOR VEHICLE IN TRANSPORT
E	47	1	GOING STRAIGHT	APPARENTLY NORMAL		UNKNOWN	
W		1	CHANGING LANES	APPARENTLY NORMAL		UNSAFE LANE CHANGE	MOTOR VEHICLE IN TRANSPORT
E	53		TURNING LEFT	APPARENTLY NORMAL		FAILURE TO KEEP IN PROPER LANE OR RUNNING OFF ROAD: UNSAFE LANE CHANGE	
E		1	GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	SLOW/STOPPED VEHICLE
E	39	2	GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	MOTOR VEHICLE IN TRANSPORT
E	61	1	GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	
N	72		MAKING U-TURN	OTHER IMPROPER DRIVING		OTHER IMPROPER DRIVING	
W		1	CHANGING LANES	APPARENTLY NORMAL		OTHER IMPROPER DRIVING	MOTOR VEHICLE IN TRANSPORT
W		1	GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	MOTOR VEHICLE IN TRANSPORT
S	56	1	GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	MOTOR VEHICLE IN TRANSPORT
E	71	2	LEAVING LANE	APPARENTLY NORMAL		UNSAFE LANE CHANGE	CROSS CENTERLINE
W	30	L2	GOING STRAIGHT	APPARENTLY NORMAL		DRIVING TOO FAST FOR CONDITIONS	MOTOR VEHICLE IN TRANSPORT
E	55	1	GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	MOTOR VEHICLE IN TRANSPORT
W	17		GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	
E	40		GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	
W	76		GOING STRAIGHT	APPARENTLY NORMAL		DISREGARDED TRAFFIC SIGNS, SIGNALS, ROAD MARKINGS	
E	30		GOING STRAIGHT	HAD BEEN DRINKING		RAN OFF ROAD	
N	18		TURNING RIGHT	INATTENTION/DISTRACTED	UNKNOWN	FAILED TO YIELD RIGHT OF WAY	
N	33		TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	
W	31		GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	
E	62		TURNING RIGHT			UNKNOWN	
W	81		GOING STRAIGHT	APPARENTLY NORMAL		DISREGARDED TRAFFIC SIGNS, SIGNALS, ROAD MARKINGS	
E	16		GOING STRAIGHT	INATTENTION/DISTRACTED	RADIO/CD PLAYER	FOLLOWED TOO CLOSELY	
W	50		GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	
W	24		NOT REPORTED	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	
W	25	1	STOPPED	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	MOTOR VEHICLE IN TRANSPORT
E	60	R1	TURNING RIGHT	APPARENTLY NORMAL		MADE AN IMPROPER TURN	MOTOR VEHICLE IN TRANSPORT
W		1	GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	
E	18		GOING STRAIGHT	INATTENTION/DISTRACTED	EATING	FOLLOWED TOO CLOSELY	
W	24	2	GOING STRAIGHT	FELL ASLEEP, FAINTED, FATIGUED, ETC.		FAILURE TO KEEP IN PROPER LANE OR RUNNING OFF ROAD	RAN OFF ROAD RIGHT
S			TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	
E			CHANGING LANES	APPARENTLY NORMAL		UNSAFE LANE CHANGE	
N			TURNING RIGHT	INATTENTION/DISTRACTED	UNKNOWN	FAILED TO YIELD RIGHT OF WAY	
N		2	TURNING RIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	MOTOR VEHICLE IN TRANSPORT
N	19	1	GOING STRAIGHT	APPARENTLY NORMAL			PEDAL CYCLE
E	18	R1	TURNING RIGHT	APPARENTLY NORMAL		MADE AN IMPROPER TURN	MOTOR VEHICLE IN TRANSPORT
N	35		GOING STRAIGHT	ILLNESS			
N	78		GOING STRAIGHT	APPARENTLY NORMAL			
S	58	1	BACKING UP	APPARENTLY NORMAL		UNSAFE BACKING	
N			TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	
W			GOING STRAIGHT	HAD BEEN DRINKING		FOLLOWED TOO CLOSELY	
N			TURNING RIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	
N	16		TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	
N	70		GOING STRAIGHT			FOLLOWED TOO CLOSELY	
N	32		GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	
S		2	TURNING LEFT	APPARENTLY NORMAL		FAILURE TO KEEP IN PROPER LANE OR RUNNING OFF ROAD	MOTOR VEHICLE IN TRANSPORT
N	49	2	UNKNOWN	APPARENTLY NORMAL		UNKNOWN	
N			GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	
N	27		GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	
N	19		NOT REPORTED	OTHER IMPROPER DRIVING		FAILED TO YIELD RIGHT OF WAY	
S	81	2	CHANGING LANES	APPARENTLY NORMAL		UNSAFE LANE CHANGE	
W			TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	
S	16		NOT REPORTED	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	
W	18	1	TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	
N	17		GOING STRAIGHT	APPARENTLY NORMAL			
N	16	2	GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	
E	68	1	NOT REPORTED	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	
W	18	1	TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	
S	18	1	NOT REPORTED	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	

V1 All Events	V2 Type	V2 Dir	V2 Driver Age	V2 Lane Num	V2 Action	V2 Driver Factors	V2 Driver Distracted	V2 Vehicle Factors	V2 Most Harmful Event
NOT REPORTED	HATCHBACK, 4 DOOR	W	79		GOING STRAIGHT	APPARENTLY NORMAL			
	CARRY-ALL	W	38	1	GOING STRAIGHT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT
	SEDAN, 4 DOOR	W	57	L2	GOING STRAIGHT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT
SLOW/STOPPED VEHICLE	MOTORCYCLE	E	47	1	GOING STRAIGHT	APPARENTLY NORMAL		UNKNOWN	
	HARDTOP, 4 DOOR	W	47	2	GOING STRAIGHT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT
	PICKUP	W	27	1	STOPPED	APPARENTLY NORMAL		UNKNOWN	
	SEDAN, 4 DOOR	W		2	GOING STRAIGHT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT
SLOW/STOPPED VEHICLE	VAN	W	72		TURNING LEFT	APPARENTLY NORMAL			
SLOW/STOPPED VEHICLE	SEDAN, 4 DOOR	E		1	STOPPED	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT
SLOW/STOPPED VEHICLE	HATCHBACK, 4 DOOR	E	39	2	STOPPED	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT
NOT REPORTED	HATCHBACK, 4 DOOR	E	20	1	GOING STRAIGHT	APPARENTLY NORMAL			
NOT REPORTED	PICKUP	E			GOING STRAIGHT	APPARENTLY NORMAL			
	PICKUP	W		1	TURNING LEFT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT
SLOW/STOPPED VEHICLE: SLOW/STOPPED VEHICLE	SEDAN, 4 DOOR	W		1	GOING STRAIGHT	APPARENTLY NORMAL			SLOW/STOPPED VEHICLE
	CARRY-ALL	S	41	1	GOING STRAIGHT	APPARENTLY NORMAL			
CROSS CENTERLINE	CARRY-ALL	E	58	1	GOING STRAIGHT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT
	PICKUP	W	56	L2	STOPPED	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT
	SEDAN, 4 DOOR	E	54	1	GOING STRAIGHT	APPARENTLY NORMAL		UNKNOWN	MOTOR VEHICLE IN TRANSPORT
SLOW/STOPPED VEHICLE	SEDAN, 4 DOOR	W	36		GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	
SLOW/STOPPED VEHICLE	HARDTOP, 4 DOOR	E	50		STOPPED	APPARENTLY NORMAL			
SLOW/STOPPED VEHICLE	CARRY-ALL	N	55		GOING STRAIGHT	APPARENTLY NORMAL			
RAN OFF ROAD RIGHT									
OTHER NON-COLLISION									
SLOW/STOPPED VEHICLE	HARDTOP, 4 DOOR	S	72		GOING STRAIGHT	APPARENTLY NORMAL			
SLOW/STOPPED VEHICLE	HATCHBACK, 4 DOOR	W	76		STOPPED	APPARENTLY NORMAL			
	HATCHBACK, 4 DOOR	E	79		GOING STRAIGHT			UNKNOWN	
NOT REPORTED	HATCHBACK, 4 DOOR	S	65		GOING STRAIGHT	APPARENTLY NORMAL			
	PICKUP	E	55		GOING STRAIGHT			UNKNOWN	
	HARDTOP, 4 DOOR	W	28		GOING STRAIGHT	APPARENTLY NORMAL			
	CARRY-ALL	W	35		STOPPED	APPARENTLY NORMAL			
	HARDTOP, 4 DOOR	W	57	1	GOING STRAIGHT	HAD BEEN DRINKING		FOLLOWED TOO CLOSELY	MOTOR VEHICLE IN TRANSPORT
	PICKUP	E	57	1	GOING STRAIGHT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT
	HARDTOP, 4 DOOR	W	24	1	GOING STRAIGHT	APPARENTLY NORMAL			
	VAN	E	59		STOPPED	APPARENTLY NORMAL		UNKNOWN	
RAN OFF ROAD RIGHT									
	HARDTOP, 4 DOOR	N			GOING STRAIGHT	APPARENTLY NORMAL			
	SEDAN, 2 DOOR	E			GOING STRAIGHT	APPARENTLY NORMAL			
SLOW/STOPPED VEHICLE	SEDAN, 4 DOOR	N			STOPPED	APPARENTLY NORMAL		UNKNOWN	
SLOW/STOPPED VEHICLE	CARRY-ALL	N	49	2	TURNING RIGHT	APPARENTLY NORMAL			SLOW/STOPPED VEHICLE
PEDAL CYCLE									
SLOW/STOPPED VEHICLE	BUS	N	53	1	STOPPED	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT
	SEDAN, 4 DOOR	N	59		GOING STRAIGHT	APPARENTLY NORMAL			
	SEDAN, 4 DOOR	S	21		TURNING LEFT	APPARENTLY NORMAL		DISREGARDED TRAFFIC SIGNS, SIGNALS, ROAD MARKINGS	
	SEDAN, 4 DOOR	S	16	1	GOING STRAIGHT	APPARENTLY NORMAL			
	HATCHBACK, 4 DOOR	S			GOING STRAIGHT	APPARENTLY NORMAL			
SLOW/STOPPED VEHICLE	VAN	W			GOING STRAIGHT	APPARENTLY NORMAL			
SLOW/STOPPED VEHICLE	SEDAN, 4 DOOR	N			TURNING RIGHT	APPARENTLY NORMAL			
SLOW/STOPPED VEHICLE									
SLOW/STOPPED VEHICLE	HATCHBACK, 4 DOOR	N	43		STOPPED			UNKNOWN	
	HATCHBACK/FASTBACK	N	53		TURNING RIGHT	APPARENTLY NORMAL			
	PICKUP	S		1	TURNING LEFT	APPARENTLY NORMAL		FAILURE TO KEEP IN PROPER LANE OR RUNNING OFF ROAD	MOTOR VEHICLE IN TRANSPORT
	CARRY-ALL	N	28	2	UNKNOWN	APPARENTLY NORMAL		UNKNOWN	
SLOW/STOPPED VEHICLE	PICKUP	N			STOPPED	APPARENTLY NORMAL			
	WAGON	N	49		STOPPED	APPARENTLY NORMAL			
	SEDAN, 4 DOOR	N	43		GOING STRAIGHT	APPARENTLY NORMAL		UNKNOWN	
	HATCHBACK, 4 DOOR	S	21	2	GOING STRAIGHT	APPARENTLY NORMAL			
SLOW/STOPPED VEHICLE	PICKUP				GOING STRAIGHT				
	HARDTOP	S	17		NOT REPORTED	APPARENTLY NORMAL			
SLOW/STOPPED VEHICLE	SEDAN, 4 DOOR	N	17	1	GOING STRAIGHT	APPARENTLY NORMAL			
	PICKUP	N	16	2	GOING STRAIGHT	APPARENTLY NORMAL			
	PICKUP	N	57	1	GOING STRAIGHT	APPARENTLY NORMAL			
	HARDTOP, 2 DOOR	N	15	1	GOING STRAIGHT	APPARENTLY NORMAL			
SLOW/STOPPED VEHICLE	HARDTOP, 4 DOOR	S	26	1	GOING STRAIGHT	APPARENTLY NORMAL			

V2 All Events	First Harmful Event	Nonmotorist Factors	Factors Roadway	Lighting	HWY Factors	Agency	Accident Rec Num
NOT REPORTED			DRY	DAYLIGHT	NONE	CCSO	2518075
	MOTOR VEHICLE IN TRANSPORT		WET	DAYLIGHT	VISUAL OBSTRUCTION(S)	CCSO	3014784
	MOTOR VEHICLE IN TRANSPORT		DRY	DAYLIGHT	NONE	CCSO	3078043
SLOW/STOPPED VEHICLE			DRY	DAYLIGHT	NONE	CCSO	2308908
	MOTOR VEHICLE IN TRANSPORT		ICE	DAYLIGHT	WET, ICY, SNOW, SLUSH	CCSO	3066662
SLOW/STOPPED VEHICLE			DRY	DARK - CONTINUOUS LIGHTING	NONE	CCSO	2308934
						CCSO	3014819
SLOW/STOPPED VEHICLE			DRY	DAYLIGHT	NONE	CCSO	2404753
SLOW/STOPPED VEHICLE						CCSO	3062390
SLOW/STOPPED VEHICLE	MOTOR VEHICLE IN TRANSPORT		DRY	DAYLIGHT	NONE	CCSO	3079324
NOT REPORTED			DRY	DAYLIGHT	NONE	CCSO	2518094
NOT REPORTED			DRY	DAYLIGHT	UNKNOWN	NHP	2521914
						CCSO	3014757
SLOW/STOPPED VEHICLE: SLOW/STOPPED VEHICLE						CCSO	3014802
	MOTOR VEHICLE IN TRANSPORT		DRY	DAYLIGHT	NONE	CCSO	3038994
	MOTOR VEHICLE IN TRANSPORT		WET	DARK - CONTINUOUS LIGHTING	NONE	CCSO	3038999
	MOTOR VEHICLE IN TRANSPORT		WET	DAYLIGHT	NONE	CCSO	3039041
	MOTOR VEHICLE IN TRANSPORT		DRY	DARK - CONTINUOUS LIGHTING	ANIMAL IN ROADWAY	CCSO	3122151
SLOW/STOPPED VEHICLE			DRY	DAYLIGHT	NONE	CCSO	2332446
SLOW/STOPPED VEHICLE			DRY	DARK - SPOT LIGHTING	NONE	CCSO	2332497
SLOW/STOPPED VEHICLE			DRY	DAWN	NONE	CCSO	2372721
			DRY	DARK - CONTINUOUS LIGHTING	NONE	CCSO	2372660
		UNKNOWN	DRY	DUSK	NONE	CCSO	2308759
			DRY	DAYLIGHT	NONE	CCSO	2309155
SLOW/STOPPED VEHICLE			DRY	DAYLIGHT	NONE	CCSO	2309129
			DRY	DAYLIGHT	NONE	CCSO	2308844
			DRY	DAYLIGHT	OTHER ENVIRONMENTAL	CCSO	2308957
			DRY	DUSK	NONE	CCSO	2308971
			DRY	DAYLIGHT	NONE	CCSO	2309234
			DRY	DARK - CONTINUOUS LIGHTING	NONE	CCSO	2309241
	MOTOR VEHICLE IN TRANSPORT		DRY	DAYLIGHT	NONE	CCSO	3090351
	MOTOR VEHICLE IN TRANSPORT		DRY	DAYLIGHT	NONE	CCSO	3099271
			DRY	DAYLIGHT	NONE	CCSO	2372686
			DRY	DAYLIGHT	NONE	CCSO	2308755
	MOTOR VEHICLE IN TRANSPORT		DRY	DAYLIGHT	NONE	CCSO	3103824
						CCSO	2361612
						CCSO	2404685
						CCSO	2404711
SLOW/STOPPED VEHICLE	MOTOR VEHICLE IN TRANSPORT		DRY	DAYLIGHT		CCSO	3088644
	MOTOR VEHICLE IN TRANSPORT	IMPROPER CROSSING	DRY	DAYLIGHT	NONE	NHP	3108790
SLOW/STOPPED VEHICLE	MOTOR VEHICLE IN TRANSPORT		DRY	DAYLIGHT	NONE	CCSO	3014759
			DRY	DAYLIGHT	NONE	CCSO	2332494
			DRY	DAYLIGHT	NONE	CCSO	2332373
			DRY	DARK - CONTINUOUS LIGHTING	WEATHER	CCSO	2332392
						CCSO	2361603
SLOW/STOPPED VEHICLE						CCSO	2361602
SLOW/STOPPED VEHICLE: SLOW/STOPPED VEHICLE						CCSO	2387397
		UNKNOWN	DRY	DAYLIGHT	NONE	CCSO	2309165
			DRY	DAYLIGHT	NONE	CCSO	2308752
SLOW/STOPPED VEHICLE			DRY	DAYLIGHT	NONE	CCSO	2316118
						CCSO	3101206
			DRY	DAYLIGHT	NONE	CCSO	2372674
SLOW/STOPPED VEHICLE						CCSO	2387427
			DRY	DAYLIGHT	NONE	CCSO	2309201
			DRY	DAYLIGHT	NONE	CCSO	2309184
			DRY	DAYLIGHT	NONE	CCSO	2309153
						CCSO	2372682
			DRY	DAYLIGHT	NONE	CCSO	2309097
			DRY	DAYLIGHT		CCSO	2404791
			DRY	DAYLIGHT	NONE	CCSO	2404682
			DRY	DAYLIGHT	NONE	CCSO	2308835
			DRY	DUSK	NONE	CCSO	2332451
			DRY	DAYLIGHT	NONE	CCSO	2308775
			DRY	DAYLIGHT	NONE	CCSO	2309137

INTERSECTION DETAIL
N SALIMAN RD @ E ROBINSON ST
01 JAN 15 - 01 JAN 20
COUNTY: CARSON CITY

Crash Severity	Crash Date	Crash Year	Crash Time	Primary Street	Distance	Dir	Secondary Street	Weather	Fatalities	Injured	Property Damage Only	Injury Type	Crash Type	Total Vehicles	V1 Type
INJURY ACCIDENT	30-Aug-2017	2017	07:30 AM	E ROBINSON ST	118	E	N SALIMAN RD	CLEAR		2		C	SIDESWIPE, MEETING	1	HATCHBACK, 4 DOOR
PROPERTY DAMAGE ONLY	29-Dec-2017	2017	09:45 AM	E ROBINSON ST		AT INT	N SALIMAN RD	CLEAR			PDO		ANGLE	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	1-Nov-2019	2019	07:30 AM	E ROBINSON ST	160	W	N SALIMAN RD	CLEAR			PDO		ANGLE	2	HATCHBACK, 2 DOOR
PROPERTY DAMAGE ONLY	3-Oct-2017	2017	02:21 PM	E ROBINSON ST	300	W	N SALIMAN RD	CLEAR			PDO		SIDESWIPE, MEETING	2	CARRY-ALL
INJURY ACCIDENT	30-Dec-2018	2018	09:25 PM	E ROBINSON ST	340	W	N SALIMAN RD	CLEAR		1		B	ANGLE	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	28-Oct-2017	2017	02:04 PM	N SALIMAN RD	133	N	E ROBINSON ST	CLEAR			PDO		NON-COLLISION	1	PICKUP
PROPERTY DAMAGE ONLY	6-Nov-2017	2017	07:38 AM	N SALIMAN RD		AT INT	E ROBINSON ST	CLEAR			PDO		REAR-END	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	28-Aug-2019	2019	03:29 PM	N SALIMAN RD		AT INT	E ROBINSON ST	CLEAR			PDO		REAR-END	2	SEDAN, 4 DOOR
INJURY ACCIDENT	15-Sep-2019	2019	10:13 PM	N SALIMAN RD		AT INT	E ROBINSON ST	CLEAR		1		C	REAR-END	2	PICKUP
INJURY ACCIDENT	14-Aug-2015	2015	12:16 PM	N SALIMAN RD		AT INT	E ROBINSON ST	CLEAR		1		C	REAR-END	2	HATCHBACK, 4 DOOR
PROPERTY DAMAGE ONLY	5-Oct-2015	2015	11:19 AM	N SALIMAN RD		AT INT	E ROBINSON ST	CLOUDY			PDO		SIDESWIPE, MEETING	2	STATION WAGON
PROPERTY DAMAGE ONLY	27-Jul-2016	2016	09:04 PM	N SALIMAN RD		AT INT	E ROBINSON ST	CLEAR			PDO		REAR-END	2	COUPE
PROPERTY DAMAGE ONLY	12-Jun-2017	2017	12:07 PM	N SALIMAN RD		AT INT	E ROBINSON ST	CLOUDY			PDO		REAR-END	2	SEDAN, 4 DOOR
PROPERTY DAMAGE ONLY	27-Aug-2017	2017	07:40 PM	N SALIMAN RD		AT INT	E ROBINSON ST	CLEAR			PDO		NON-COLLISION	1	SEDAN, 4 DOOR
INJURY ACCIDENT	27-Sep-2018	2018	07:19 AM	N SALIMAN RD	117	S	E ROBINSON ST	CLEAR		1		C	ANGLE	2	MOTORCYCLE
									Sum: 0	Sum: 6	Count: 10				
									Count: 0	Count: 5					
									Total:	15					

V1 Dir	V1 Driver Age	V1 Lane Num	V1 Action	V1 Driver Factors	V1 Driver Distracted	V1 Vehicle Factors	V1 Most Harmful Event
E	54	1	GOING STRAIGHT	APPARENTLY NORMAL			
E	55	1	BACKING UP	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	
E	17	1	MAKING U-TURN	OTHER IMPROPER DRIVING		MADE AN IMPROPER TURN	MOTOR VEHICLE IN TRANSPORT
E			TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	
W	17	1	LEAVING LANE	INATTENTION/DISTRACTED	CELL PHONE (TALKING)	OTHER IMPROPER DRIVING	MOTOR VEHICLE IN TRANSPORT
N	25		GOING STRAIGHT	HAD BEEN DRINKING		FAILURE TO KEEP IN PROPER LANE OR RUNNING OFF ROAD: OPERATING VEHICLE IN ERRATIC, RECKLESS, CARELESS, NEGLIGENT OR AGGRESSIVE MANNER: OVER-CO	
N	18	2	STOPPED	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	
N	24	1	GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	MOTOR VEHICLE IN TRANSPORT
S	50		GOING STRAIGHT	HAD BEEN DRINKING		FOLLOWED TOO CLOSELY	MOTOR VEHICLE IN TRANSPORT
N	48		GOING STRAIGHT	APPARENTLY NORMAL		OTHER IMPROPER DRIVING	
E	17		TURNING RIGHT	OTHER IMPROPER DRIVING		FAILED TO YIELD RIGHT OF WAY	
N			GOING STRAIGHT	APPARENTLY NORMAL			
N			GOING STRAIGHT	APPARENTLY NORMAL		DRIVING TOO FAST FOR CONDITIONS	
S	18		GOING STRAIGHT	PHYSICAL IMPAIRMENT		HIT AND RUN	
N	55	SL	TURNING RIGHT	APPARENTLY NORMAL		OTHER IMPROPER DRIVING	MOTOR VEHICLE IN TRANSPORT

V1 All Events	V2 Type	V2 Dir	V2 Driver Age	V2 Lane Num	V2 Action	V2 Driver Factors	V2 Driver Distracted	V2 Vehicle Factors	V2 Most Harmful Event	V2 All Events
	HATCHBACK, 2 DOOR	E	17	1	GOING STRAIGHT	APPARENTLY NORMAL				
	SEDAN, 4 DOOR	E		SL	PARKED				PARKED MOTOR VEHICLE	PARKED MOTOR VEHICLE
	PICKUP	E			GOING STRAIGHT					
	HATCHBACK, 2 DOOR	U		1	PARKED				MOTOR VEHICLE IN TRANSPORT	PARKED MOTOR VEHICLE
RAN OFF ROAD RIGHT: UTILITY POLE: OVERTURN/ROLLOVER										
	SEDAN, 4 DOOR	N	18	2	STOPPED	APPARENTLY NORMAL				
SLOW/STOPPED VEHICLE	OTHER	N		1		UNKNOWN		UNKNOWN	SLOW/STOPPED VEHICLE	SLOW/STOPPED VEHICLE
	HATCHBACK, 4 DOOR	S	16		GOING STRAIGHT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT	
SLOW/STOPPED VEHICLE	SEDAN, 4 DOOR	N	52		STOPPED	APPARENTLY NORMAL				SLOW/STOPPED VEHICLE
	SEDAN, 4 DOOR	S	17		GOING STRAIGHT	APPARENTLY NORMAL				
SLOW/STOPPED VEHICLE	COUPE	N			STOPPED	APPARENTLY NORMAL				SLOW/STOPPED VEHICLE
	CARRY-ALL	N			STOPPED	APPARENTLY NORMAL				SLOW/STOPPED VEHICLE
RAN OFF ROAD RIGHT										
	HATCHBACK, 4 DOOR	N	49	2	STOPPED	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT	

First Harmful Event	Nonmotorist Factors	Factors Roadway	Lighting	HWY Factors	Agency	Accident Rec Num
	IMPROPER CROSSING: IMPROPER CROSSING	DRY	DAYLIGHT	NONE	CCSO	2387403
		DRY	DAYLIGHT	NONE	CCSO	2404755
MOTOR VEHICLE IN TRANSPORT		DRY	DAYLIGHT	NONE	CCSO	3036106
					CCSO	2387430
MOTOR VEHICLE IN TRANSPORT		DRY	DARK - SPOT LIGHTING	NONE	CCSO	3115950
		DRY	DAYLIGHT	NONE	CCSO	2404692
		DRY	DAYLIGHT	NONE	CCSO	2404824
MOTOR VEHICLE IN TRANSPORT		DRY	DAYLIGHT	NONE	CCSO	3071669
MOTOR VEHICLE IN TRANSPORT		DRY	DARK - NO LIGHTING	NONE	CCSO	3162296
		DRY	DAYLIGHT	NONE	CCSO	2308849
		DRY	DAYLIGHT	NONE	CCSO	2309192
					CCSO	2316115
					CCSO	2372708
		DRY	DUSK	NONE	CCSO	2387400
MOTOR VEHICLE IN TRANSPORT		DRY	DAYLIGHT	NONE	CCSO	3101212

INTERSECTION DETAIL
S SALIMAN RD @ E 5TH ST
01 JAN 15 - 01 JAN 20
COUNTY: CARSON CITY

Crash Severity	Crash Date	Crash Year	Crash Time	Primary Street	Distance	Dir	Secondary Street	Weather	Fatalities	Injured	Property Damage Only	Injury Type	Crash Type	Total Vehicles	V1 Type	V1 Dir
PROPERTY DAMAGE ONLY	19-Aug-2018	2018	08:33 PM	E 5TH ST	10	N	S SALIMAN RD	CLEAR			PDO		ANGLE	2	SEDAN, 4 DOOR	S
PROPERTY DAMAGE ONLY	14-Apr-2019	2019	02:00 PM	E 5TH ST		AT INT	S SALIMAN RD	CLOUDY			PDO		ANGLE	2	SEDAN, 4 DOOR	W
INJURY ACCIDENT	21-Jan-2019	2019	03:38 PM	E 5TH ST		AT INT	S SALIMAN RD	CLEAR		1		C	ANGLE	2	PICKUP	W
PROPERTY DAMAGE ONLY	25-Oct-2018	2018	08:08 AM	E 5TH ST		AT INT	S SALIMAN RD	CLEAR			PDO		REAR-END	2	PICKUP	E
PROPERTY DAMAGE ONLY	10-Mar-2018	2018	01:24 PM	E 5TH ST		AT INT	S SALIMAN RD	CLOUDY			PDO		ANGLE	2	SEDAN, 4 DOOR	S
INJURY ACCIDENT	23-Aug-2019	2019	03:55 PM	E 5TH ST		AT INT	S SALIMAN RD	CLEAR		1		B	SIDESWIPE, MEETING	2	PICKUP	W
INJURY ACCIDENT	28-Apr-2015	2015	06:07 PM	E 5TH ST		AT INT	S SALIMAN RD	CLEAR		1		A	NON-COLLISION	1	MOTORCYCLE	W
PROPERTY DAMAGE ONLY	29-Oct-2015	2015	08:14 AM	E 5TH ST		AT INT	S SALIMAN RD	CLEAR			PDO		ANGLE	2	CARRY-ALL	N
PROPERTY DAMAGE ONLY	9-Nov-2015	2015	07:23 AM	E 5TH ST		AT INT	S SALIMAN RD	CLEAR			PDO		REAR-TO-REAR	2	CARRY-ALL	W
PROPERTY DAMAGE ONLY	17-Apr-2016	2016	06:20 PM	E 5TH ST		AT INT	S SALIMAN RD	CLEAR			PDO		REAR-END	2	HARDTOP, 4 DOOR	W
PROPERTY DAMAGE ONLY	31-Jan-2016	2016	02:22 PM	S SALIMAN RD		AT INT	E 5TH ST	SNOW			PDO		SIDESWIPE, MEETING	2	STATION WAGON	W
PROPERTY DAMAGE ONLY	10-Jul-2016	2016	08:47 PM	S SALIMAN RD		AT INT	E 5TH ST	CLEAR			PDO		ANGLE	2	SEDAN, 4 DOOR	W
PROPERTY DAMAGE ONLY	9-May-2019	2019	07:33 AM	S SALIMAN RD		AT INT	E 5TH ST	CLEAR			PDO		ANGLE	2	HARDTOP, 4 DOOR	W
PROPERTY DAMAGE ONLY	16-Oct-2019	2019	06:55 AM	S SALIMAN RD		AT INT	E 5TH ST	CLEAR			PDO		ANGLE	2	CARRY-ALL	S
INJURY ACCIDENT	31-Aug-2019	2019	07:24 PM	S SALIMAN RD		AT INT	E 5TH ST	CLEAR		1		A	NON-COLLISION	1	SEDAN, 4 DOOR	E
PROPERTY DAMAGE ONLY	4-Sep-2018	2018	02:35 PM	S SALIMAN RD		AT INT	E 5TH ST	CLEAR			PDO		ANGLE	2	CARRY-ALL	S
PROPERTY DAMAGE ONLY	26-Dec-2019	2019	06:38 PM	S SALIMAN RD	65	S	E 5TH ST	CLEAR			PDO		NON-COLLISION	1	SEDAN, 2 DOOR	N
PROPERTY DAMAGE ONLY	2-Sep-2019	2019	03:04 PM	S SALIMAN RD	80	S	E 5TH ST	CLEAR			PDO		REAR-END	2	SEDAN, 4 DOOR	N
PROPERTY DAMAGE ONLY	14-Jul-2017	2017	12:08 PM	S SALIMAN RD	100	S	E 5TH ST	CLEAR			PDO		ANGLE	2	HATCHBACK, 4 DOOR	W
PROPERTY DAMAGE ONLY	21-Oct-2015	2015	07:01 AM	S SALIMAN RD	121	S	E 5TH ST	CLEAR			PDO		ANGLE	2	SEDAN, 4 DOOR	S
PROPERTY DAMAGE ONLY	9-May-2017	2017	02:45 AM	S SALIMAN RD	300	S	E 5TH ST	CLEAR			PDO		SIDESWIPE, MEETING	2	CARRY-ALL	N
PROPERTY DAMAGE ONLY	8-May-2017	2017	02:50 PM	S SALIMAN RD	500	S	E 5TH ST	CLEAR			PDO		NON-COLLISION	1	HATCHBACK, 4 DOOR	N
									Sum: 0	Sum: 4	Count: 18					
									Count: 0	Count: 4						
									Total:	22						

V1 Driver Age	V1 Lane Num	V1 Action	V1 Driver Factors	V1 Driver Distracted	V1 Vehicle Factors	V1 Most Harmful Event	V1 All Events
	1	TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT	
39	1	ENTERING LANE	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT	
59	1	GOING STRAIGHT	APPARENTLY NORMAL		DISREGARDED TRAFFIC SIGNS, SIGNALS, ROAD MARKINGS	MOTOR VEHICLE IN TRANSPORT	
42		GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	MOTOR VEHICLE IN TRANSPORT	
		GOING STRAIGHT	APPARENTLY NORMAL		DISREGARDED TRAFFIC SIGNS, SIGNALS, ROAD MARKINGS		NOT REPORTED
18	L1	TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT	
19		GOING STRAIGHT	APPARENTLY NORMAL		OTHER IMPROPER DRIVING		
57	2	GOING STRAIGHT	FELL ASLEEP, FAINTED, FATIGUED, ETC.		UNSAFE LANE CHANGE		
42	1	GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY		
68		GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY		
68		GOING STRAIGHT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY		
23		TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY		
54	1	GOING STRAIGHT	APPARENTLY NORMAL	UNKNOWN	DISREGARDED TRAFFIC SIGNS, SIGNALS, ROAD MARKINGS	MOTOR VEHICLE IN TRANSPORT	
71	1	TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT	
66	1	GOING STRAIGHT	APPARENTLY NORMAL		UNKNOWN	MOTOR VEHICLE IN TRANSPORT	
	1	LEAVING LANE	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT	
36	1	TURNING LEFT	HAD BEEN DRINKING		DRIVING TOO FAST FOR CONDITIONS	FENCE/WALL	CURB: FENCE/WALL
	1	GOING STRAIGHT	APPARENTLY NORMAL		FOLLOWED TOO CLOSELY	MOTOR VEHICLE IN TRANSPORT	
		TURNING LEFT	APPARENTLY NORMAL		FAILED TO YIELD RIGHT OF WAY		SLOW/STOPPED VEHICLE
45	1	STOPPED	APPARENTLY NORMAL		OTHER IMPROPER DRIVING		PEDESTRIAN: SLOW/STOPPED VEHICLE
62	2	CHANGING LANES	APPARENTLY NORMAL		FAILURE TO KEEP IN PROPER LANE OR RUNNING OFF ROAD: UNSAFE LANE CHANGE		
		NOT REPORTED	FELL ASLEEP, FAINTED, FATIGUED, ETC.		DROVE LEFT OF CENTER		RAN OFF ROAD LEFT

V2 Type	V2 Dir	V2 Driver Age	V2 Lane Num	V2 Action	V2 Driver Factors	V2 Driver Distracted	V2 Vehicle Factors	V2 Most Harmful Event	V2 All Events	First Harmful Event
SEDAN, 4 DOOR	N		1	GOING STRAIGHT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT		
HARDTOP, 2 DOOR	E	51		GOING STRAIGHT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT		MOTOR VEHICLE IN TRANSPORT
CARRY-ALL	N	33	1	GOING STRAIGHT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT		MOTOR VEHICLE IN TRANSPORT
PICKUP	E	38	1	GOING STRAIGHT	APPARENTLY NORMAL		OTHER	MOTOR VEHICLE IN TRANSPORT		MOTOR VEHICLE IN TRANSPORT
HATCHBACK, 4 DOOR	W			GOING STRAIGHT	APPARENTLY NORMAL				NOT REPORTED	
SEDAN	E	34	2	GOING STRAIGHT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT		MOTOR VEHICLE IN TRANSPORT
SEDAN, 4 DOOR	N	20	2	GOING STRAIGHT	FELL ASLEEP, FAINTED, FATIGUED, ETC.					
CARRY-ALL	W	45	1	STOPPED	APPARENTLY NORMAL		UNKNOWN			
HARDTOP, 2 DOOR	W	68		GOING STRAIGHT	APPARENTLY NORMAL					
SEDAN, 4 DOOR	S	25		GOING STRAIGHT	APPARENTLY NORMAL					
MOTORCYCLE	E	40		GOING STRAIGHT	APPARENTLY NORMAL		UNKNOWN			
CARRY-ALL	S	24	2	GOING STRAIGHT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT		MOTOR VEHICLE IN TRANSPORT
PICKUP	E	42	1	GOING STRAIGHT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT		MOTOR VEHICLE IN TRANSPORT
										PEDAL CYCLE
SEDAN, 4 DOOR	S		2	GOING STRAIGHT	APPARENTLY NORMAL			MOTOR VEHICLE IN TRANSPORT		
										FENCE/WALL
CARRY-ALL	N		1	STOPPED	APPARENTLY NORMAL			SLOW/STOPPED VEHICLE	SLOW/STOPPED VEHICLE	
HATCHBACK, 4 DOOR	N			GOING STRAIGHT	APPARENTLY NORMAL					
VAN	S	52	1	GOING STRAIGHT	APPARENTLY NORMAL					
SEDAN, 4 DOOR	N	25	2	GOING STRAIGHT	APPARENTLY NORMAL		UNKNOWN			

Nonmotorist Factors	Factors Roadway	Lighting	HWY Factors	Agency	Accident Rec Num
				CCSO	3095711
	DRY	DAYLIGHT	NONE	CCSO	3123978
	DRY	DAYLIGHT	NONE	CCSO	3064435
	DRY	DAYLIGHT	GLARE: VISUAL OBSTRUCTION(S)	CCSO	3106261
				CCSO	2518038
	DRY	DAYLIGHT	NONE	CCSO	3062401
	DRY	DAYLIGHT	NONE	CCSO	2308768
	DRY	DAYLIGHT	NONE	CCSO	2308926
	DRY	DAYLIGHT	NONE	CCSO	2309207
	DRY	DAYLIGHT	NONE	CCSO	2309062
	DRY	DAYLIGHT	WET, ICY, SNOW, SLUSH	CCSO	2309260
	DRY	DARK - SPOT LIGHTING	NONE	CCSO	2316178
	DRY	DAYLIGHT	NONE	CCSO	3014760
	DRY	DUSK	NONE	CCSO	3013301
FAILURE TO OBEY TRAFFIC SIGNS, SIGNALS, OR OFFICER	DRY	DAYLIGHT	NONE	CCSO	3072782
				CCSO	3097415
	DRY	DARK - CONTINUOUS LIGHTING	NONE	CCSO	3043242
				CCSO	3162281
				CCSO	2387356
	DRY	DAYLIGHT	NONE	CCSO	2309200
	DRY	DAYLIGHT	NONE	CCSO	2372741
				CCSO	2372679

Appendix B
2025 Conditions LOS Calculations

Intersection Level Of Service Report
Intersection 1: William Street / Saliman Road

Control Type:	Signalized	Delay (sec / veh):	34.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.500

Intersection Setup

Name	Saliman Rd			Saliman Road			William Street			William Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	10.00	10.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	10.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	2	0	0
Entry Pocket Length [ft]	275.00	100.00	100.00	160.00	100.00	100.00	215.00	100.00	225.00	325.00	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]	15.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Road			William Street			William Street		
Base Volume Input [veh/h]	256	86	414	40	172	21	15	360	207	361	833	30
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
Proportion of CAVs [%]	0.00											
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]	-6	0	-14	0	0	0	0	0	-2	-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	120	0	0	11	0	0	107	0	0	16
Total Hourly Volume [veh/h]	250	86	280	40	172	10	15	360	98	356	833	14
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
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	25	80	11	49	3	4	103	28	102	239	4
Total Analysis Volume [veh/h]	287	99	322	46	198	11	17	414	113	409	957	16
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	4			11			8			45		
v_di, Inbound Pedestrian Volume crossing m	45			8			11			4		
v_co, Outbound Pedestrian Volume crossing	5			2			11			0		
v_ci, Inbound Pedestrian Volume crossing mi	11			0			5			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			4			3			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Isolated
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	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	37	0	5	5	0	5	30	0	5	10	0
Maximum Green [s]	40	40	0	40	42	0	20	35	0	30	35	0
Amber [s]	3.0	3.4	0.0	3.0	3.4	0.0	3.6	4.5	0.0	3.5	4.4	0.0
All red [s]	2.5	3.0	0.0	2.5	3.0	0.0	4.1	1.0	0.0	4.1	1.0	0.0
Split [s]	26	53	0	22	49	0	15	41	0	34	60	0
Vehicle Extension [s]	1.9	2.0	0.0	1.9	2.0	0.0	1.7	2.7	0.0	1.7	2.7	0.0
Walk [s]	0	9	0	0	14	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	28	0	0	28	0	0	21	0	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	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	4.4	0.0	3.5	4.4	0.0	5.7	3.5	0.0	5.6	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
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	C	L	C	R	L	C	C
C, Cycle Length [s]	117	117	117	117	117	117	117	117	117	117	117	117
L, Total Lost Time per Cycle [s]	6.40	6.40	6.40	6.40	6.40	6.40	7.70	5.50	5.50	7.60	5.40	5.40
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]	0.00	4.40	4.40	0.00	4.40	4.40	5.70	3.50	3.50	5.60	3.40	3.40
g_i, Effective Green Time [s]	46	37	37	46	25	25	2	35	35	16	49	49
g / C, Green / Cycle	0.40	0.32	0.32	0.40	0.21	0.21	0.02	0.30	0.30	0.14	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.20	0.05	0.21	0.04	0.06	0.06	0.01	0.12	0.07	0.12	0.26	0.26
s, saturation flow rate [veh/h]	1428	1870	1516	1097	1870	1826	1781	3560	1542	3459	1870	1858
c, Capacity [veh/h]	603	591	479	491	399	390	33	1065	461	474	781	776
d1, Uniform Delay [s]	25.52	28.88	34.30	21.91	38.34	38.37	56.90	32.52	30.94	49.41	26.85	26.86
k, delay calibration	0.07	0.04	0.10	0.04	0.04	0.04	0.04	0.50	0.50	0.04	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]	0.37	0.05	1.45	0.03	0.13	0.13	4.52	1.07	1.26	1.86	3.75	3.79
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	0.48	0.17	0.67	0.09	0.26	0.27	0.51	0.39	0.24	0.86	0.62	0.63
d, Delay for Lane Group [s/veh]	25.88	28.93	35.74	21.94	38.47	38.51	61.41	33.59	32.20	51.27	30.60	30.65
Lane Group LOS	C	C	D	C	D	D	E	C	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.00	2.10	8.26	0.80	2.56	2.54	0.53	4.71	2.52	5.85	11.09	11.05
50th-Percentile Queue Length [ft/ln]	150.10	52.43	206.59	20.08	63.92	63.45	13.28	117.65	63.08	146.26	277.16	276.15
95th-Percentile Queue Length [veh/ln]	10.02	3.78	12.98	1.45	4.60	4.57	0.96	8.26	4.54	9.82	16.55	16.50
95th-Percentile Queue Length [ft/ln]	250.56	94.38	324.45	36.14	115.06	114.21	23.91	206.59	113.55	245.42	413.67	412.42

Movement, Approach, & Intersection Results

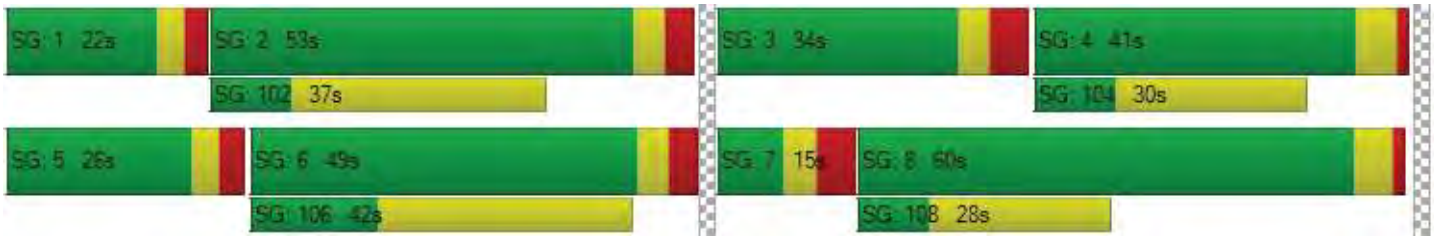
d_M, Delay for Movement [s/veh]	25.88	28.93	35.74	21.94	38.48	38.51	61.41	33.59	32.20	51.27	30.62	30.65
Movement LOS	C	C	D	C	D	D	E	C	C	D	C	C
d_A, Approach Delay [s/veh]	30.79			35.50			34.17			36.73		
Approach LOS	C			D			C			D		
d_I, Intersection Delay [s/veh]	34.69											
Intersection LOS	C											
Intersection V/C	0.500											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	18.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	473.52	3927.96	613.80	126.93
d_p, Pedestrian Delay [s]	46.18	47.07	41.84	46.18
l_p,int, Pedestrian LOS Score for Intersectio	2.643	2.395	3.122	3.007
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	797	729	607	934
d_b, Bicycle Delay [s]	21.14	23.66	28.39	16.62
l_b,int, Bicycle LOS Score for Intersection	2.926	1.779	2.097	2.713
Bicycle LOS	C	A	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 2: Saliman Road / Robinson Street

Control Type:	All-way stop	Delay (sec / veh):	16.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name	Saliman Rd			Saliman Rd			Robinson St			Robinson St		
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	11.00	11.00	11.00	11.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	125.00	100.00	100.00	150.00	100.00	100.00	60.00	100.00	100.00	100.00	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]	15.00			15.00			15.00			15.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Rd			Robinson St			Robinson St		
Base Volume Input [veh/h]	37	405	94	52	225	89	99	20	33	104	18	102
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 [%]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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	-2	-7	0	0	0	-1	0	-5	-2	-20
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
Total Hourly Volume [veh/h]	37	405	92	45	225	89	99	19	33	99	16	82
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
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	130	29	14	72	29	32	6	11	32	5	26
Total Analysis Volume [veh/h]	47	519	118	58	288	114	127	24	42	127	21	105
Pedestrian Volume [ped/h]	106			98			17			200		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	467	499	517	443	472	497	448	501	447	509
Degree of Utilization, x	0.10	0.64	0.62	0.13	0.43	0.40	0.28	0.13	0.28	0.25

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.33	4.43	4.13	0.45	2.10	1.94	1.15	0.45	1.16	0.97
95th-Percentile Queue Length [ft]	8.34	110.80	103.22	11.19	52.47	48.40	28.82	11.28	28.97	24.18
Approach Delay [s/veh]	20.34			14.92			12.88		13.01	
Approach LOS	C			B			B		B	
Intersection Delay [s/veh]	16.70									
Intersection LOS	C									

Intersection Level Of Service Report
Intersection 3: Saliman Road / 5th Street

Control Type:	Signalized	Delay (sec / veh):	15.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.314

Intersection Setup

Name	Saliman Rd			Saliman Rd			5th St			5th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	10.00	10.00	12.00	11.00	11.00	11.00	11.00	10.00	11.00	11.00	10.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	175.00	100.00	100.00	160.00	100.00	100.00	130.00	100.00	130.00	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]	35.00			35.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Rd			5th St			5th St		
Base Volume Input [veh/h]	75	249	53	99	209	100	74	155	82	171	319	127
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
Proportion of CAVs [%]	0.00											
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	-2	-2	0	-4	-1	0	-1	0	-5	-2	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	27	0	0	51	0	0	43	0	0	66
Total Hourly Volume [veh/h]	75	247	24	99	205	48	74	154	39	166	317	61
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
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]	23	75	7	30	63	15	23	47	12	51	97	19
Total Analysis Volume [veh/h]	91	301	29	121	250	59	90	188	48	202	387	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			4			3			0		
v_di, Inbound Pedestrian Volume crossing m	3			0			0			4		
v_co, Outbound Pedestrian Volume crossing	7			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			7		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	4			1			0			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
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	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	20	30	0	20	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.1	0.0	3.2	4.1	0.0	0.0	3.7	0.0	0.0	3.7	0.0
All red [s]	2.4	2.4	0.0	2.3	2.4	0.0	0.0	2.2	0.0	0.0	2.2	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.0	1.8	0.0	2.0	1.8	0.0	0.0	2.0	0.0	0.0	1.8	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	23	0	0	12	0	0	17	0	0	23	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]	3.6	4.5	0.0	3.5	4.5	0.0	0.0	3.9	0.0	0.0	3.9	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	C	L	C	C	L	C	R
C, Cycle Length [s]	52	52	52	52	52	52	52	52	52	52	52	52
L, Total Lost Time per Cycle [s]	6.05	6.50	6.50	6.00	6.50	6.50	5.90	5.90	5.90	5.90	5.90	5.90
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.50	4.50	0.00	4.50	4.50	3.90	3.90	3.90	3.90	3.90	3.90
g_i, Effective Green Time [s]	23	12	12	23	12	12	18	18	18	18	18	18
g / C, Green / Cycle	0.43	0.23	0.23	0.44	0.24	0.24	0.35	0.35	0.35	0.35	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09	0.09	0.08	0.08	0.09	0.10	0.06	0.07	0.18	0.21	0.05
s, saturation flow rate [veh/h]	1453	1870	1804	1456	1870	1730	930	1870	1740	1142	1870	1563
c, Capacity [veh/h]	584	434	418	585	446	413	262	647	602	433	647	541
d1, Uniform Delay [s]	13.01	16.92	16.94	13.55	16.54	16.59	21.70	11.95	11.97	17.44	14.09	11.72
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
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]	0.05	0.21	0.22	0.06	0.18	0.20	0.29	0.05	0.06	0.29	0.33	0.04
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	0.16	0.38	0.39	0.21	0.35	0.37	0.34	0.19	0.19	0.47	0.60	0.14
d, Delay for Lane Group [s/veh]	13.05	17.13	17.16	13.61	16.72	16.79	21.98	12.00	12.03	17.73	14.43	11.77
Lane Group LOS	B	B	B	B	B	B	C	B	B	B	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.50	1.50	1.47	0.67	1.40	1.34	0.99	0.86	0.83	1.86	3.06	0.48
50th-Percentile Queue Length [ft/ln]	12.48	37.51	36.81	16.82	34.99	33.55	24.65	21.49	20.71	46.40	76.59	12.10
95th-Percentile Queue Length [veh/ln]	0.90	2.70	2.65	1.21	2.52	2.42	1.78	1.55	1.49	3.34	5.51	0.87
95th-Percentile Queue Length [ft/ln]	22.47	67.52	66.26	30.28	62.98	60.40	44.38	38.68	37.27	83.51	137.86	21.79

Movement, Approach, & Intersection Results

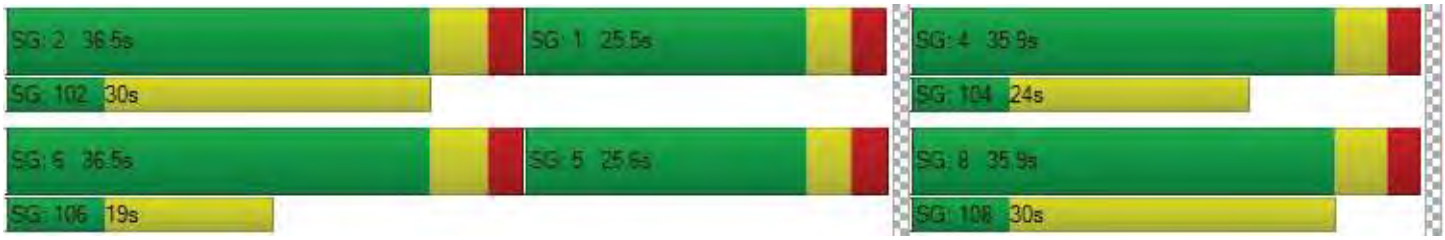
d_M, Delay for Movement [s/veh]	13.05	17.14	17.16	13.61	16.75	16.79	21.98	12.01	12.03	17.73	14.43	11.77
Movement LOS	B	B	B	B	B	B	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	16.26			15.87			14.77			15.13		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	15.50											
Intersection LOS	B											
Intersection V/C	0.314											

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]	5058.73	4199.83	7911.73	2440.54
d_p, Pedestrian Delay [s]	16.33	16.33	16.33	16.33
l_p,int, Pedestrian LOS Score for Intersectio	2.820	2.700	2.494	2.778
Crosswalk LOS	C	B	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1146	1146	1146	1146
d_b, Bicycle Delay [s]	4.78	4.77	4.77	4.77
l_b,int, Bicycle LOS Score for Intersection	1.929	1.956	1.864	2.762
Bicycle LOS	A	A	A	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Robinson St / Matterhorn Ln

Control Type:	Roundabout	Delay (sec / veh):	3.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Matterhorn Ln			Matterhorn Ln			Robinson St			Robinson St		
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	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	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			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Matterhorn Ln			Matterhorn Ln			Robinson St			Robinson St		
Base Volume Input [veh/h]	78	0	0	0	0	0	0	0	50	0	0	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
Proportion of CAVs [%]	0.00											
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	6	1	0	17	44	14	4	0	4	11	0
Diverted Trips [veh/h]	-46	0	0	0	0	0	0	0	-30	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
Total Hourly Volume [veh/h]	32	6	1	0	17	44	14	4	20	4	11	0
Peak Hour Factor	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000
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]	10	2	0	0	5	14	4	1	6	1	3	0
Total Analysis Volume [veh/h]	40	8	1	0	21	55	18	5	25	5	14	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	23			60			27			67		
Exiting Flow Rate [veh/h]	52			27			111			6		
Demand Flow Rate [veh/h]	32	6	1	0	17	44	14	4	20	4	11	0
Adjusted Demand Flow Rate [veh/h]	40	8	1	0	21	55	18	5	25	5	14	0

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	50	78	49	20
Capacity of Entry and Bypass Lanes [veh/h]	1348	1298	1344	1289
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1321	1273	1317	1264
X, volume / capacity	0.04	0.06	0.04	0.02

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.12	0.19	0.11	0.05
95th-Percentile Queue Length [ft]	2.89	4.76	2.84	1.15
Approach Delay [s/veh]	3.02	3.31	3.02	2.97
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	3.13			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 5: 5th Street / Matterhorn Ln

Control Type:	Two-way stop	Delay (sec / veh):	21.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.091

Intersection Setup

Name	Matterhorn Ln		5th Street		5th Street	
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	0	0	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Matterhorn Ln		5th Street		5th Street	
Base Volume Input [veh/h]	21	30	11	299	560	7
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]	-3	-7	-3	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
Total Hourly Volume [veh/h]	18	23	8	299	560	7
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	7	2	91	171	2
Total Analysis Volume [veh/h]	22	28	10	365	683	9
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	0.09	0.06	0.01	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	21.30	13.55	9.03	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.30	0.20	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	7.40	4.97	0.84	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	16.96		0.24		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.84					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 1: William Street / Saliman Road

Control Type:	Signalized	Delay (sec / veh):	38.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.576

Intersection Setup

Name	Saliman Rd			Saliman Road			William Street			William Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	10.00	10.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	10.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	2	0	0
Entry Pocket Length [ft]	275.00	100.00	100.00	160.00	100.00	100.00	215.00	100.00	225.00	325.00	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]	15.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Road			William Street			William Street		
Base Volume Input [veh/h]	190	118	335	101	70	22	45	704	116	335	626	56
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 [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Proportion of CAVs [%]	0.00											
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]	-2	0	-7	0	0	0	0	0	-4	-11	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	98	0	0	11	0	0	58	0	0	29
Total Hourly Volume [veh/h]	188	118	230	101	70	11	45	704	54	324	626	27
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
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]	57	36	69	30	21	3	14	212	16	98	189	8
Total Analysis Volume [veh/h]	227	142	277	122	84	13	54	848	65	390	754	33
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	39			2			20			1		
v_di, Inbound Pedestrian Volume crossing m	1			20			2			39		
v_co, Outbound Pedestrian Volume crossing	31			3			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			31			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Isolated
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	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	37	0	5	5	0	5	30	0	5	10	0
Maximum Green [s]	40	40	0	40	42	0	20	35	0	26	35	0
Amber [s]	3.0	3.4	0.0	3.0	3.4	0.0	3.6	4.5	0.0	3.5	4.4	0.0
All red [s]	2.5	3.0	0.0	2.5	3.0	0.0	4.1	1.0	0.0	4.1	1.0	0.0
Split [s]	26	52	0	23	49	0	15	41	0	34	60	0
Vehicle Extension [s]	1.9	2.0	0.0	1.9	2.0	0.0	1.7	2.7	0.0	1.7	2.7	0.0
Walk [s]	0	9	0	0	14	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	28	0	0	28	0	0	21	0	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	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	4.4	0.0	3.5	4.4	0.0	5.7	3.5	0.0	5.6	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
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	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.40	6.40	6.40	6.40	6.40	6.40	7.70	5.50	5.50	7.60	5.40	5.40
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]	0.00	4.40	4.40	0.00	4.40	4.40	5.70	3.50	3.50	5.60	3.40	3.40
g_i, Effective Green Time [s]	50	37	37	50	32	32	5	35	35	16	46	46
g / C, Green / Cycle	0.41	0.31	0.31	0.41	0.26	0.26	0.04	0.29	0.29	0.13	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.15	0.08	0.18	0.11	0.03	0.03	0.03	0.24	0.04	0.11	0.21	0.21
s, saturation flow rate [veh/h]	1466	1885	1521	1153	1885	1777	1795	3589	1527	3486	1885	1857
c, Capacity [veh/h]	673	582	469	513	498	470	72	1047	446	455	721	710
d1, Uniform Delay [s]	23.51	31.00	34.65	22.23	33.31	33.35	57.00	39.38	31.35	51.06	28.96	28.97
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.50	0.50	0.04	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]	0.11	0.08	0.44	0.09	0.03	0.03	5.89	6.77	0.69	1.85	3.00	3.05
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	0.34	0.24	0.59	0.24	0.10	0.10	0.75	0.81	0.15	0.86	0.55	0.55
d, Delay for Lane Group [s/veh]	23.62	31.08	35.09	22.31	33.34	33.38	62.89	46.15	32.03	52.91	31.96	32.02
Lane Group LOS	C	C	D	C	C	C	E	D	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.50	3.20	7.01	2.21	1.10	1.08	1.71	12.20	1.45	5.74	9.23	9.11
50th-Percentile Queue Length [ft/ln]	112.59	80.08	175.37	55.29	27.50	27.02	42.75	305.04	36.35	143.47	230.72	227.76
95th-Percentile Queue Length [veh/ln]	7.98	5.77	11.36	3.98	1.98	1.95	3.08	17.93	2.62	9.67	14.21	14.06
95th-Percentile Queue Length [ft/ln]	199.59	144.14	283.96	99.53	49.50	48.63	76.95	448.25	65.43	241.69	355.27	351.52

Movement, Approach, & Intersection Results

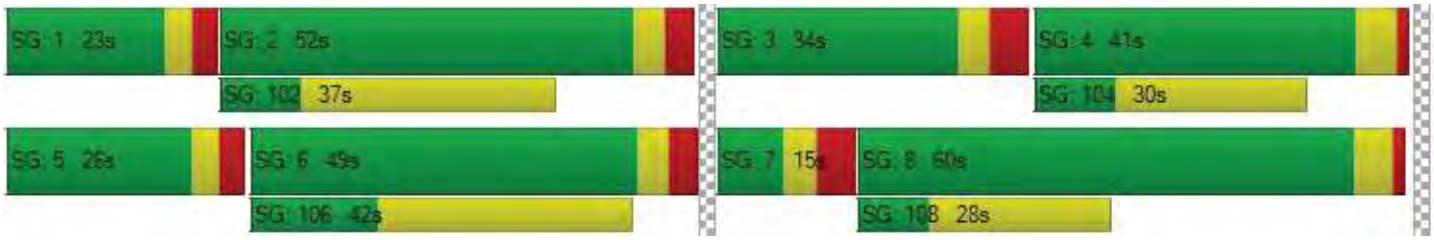
d_M, Delay for Movement [s/veh]	23.62	31.08	35.09	22.31	33.36	33.38	62.89	46.15	32.03	52.91	31.99	32.02
Movement LOS	C	C	D	C	C	C	E	D	C	D	C	C
d_A, Approach Delay [s/veh]	30.18			27.21			46.14			38.92		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	38.51											
Intersection LOS	D											
Intersection V/C	0.576											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	18.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	229.28	2500.07	516.18	154.29
d_p, Pedestrian Delay [s]	47.58	48.47	43.23	47.58
l_p,int, Pedestrian LOS Score for Intersectio	2.582	2.408	3.074	3.116
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	762	712	593	912
d_b, Bicycle Delay [s]	22.97	24.89	29.65	17.72
l_b,int, Bicycle LOS Score for Intersection	2.787	1.749	2.405	2.555
Bicycle LOS	C	A	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 2: Saliman Road / Robinson Street

Control Type:	All-way stop	Delay (sec / veh):	17.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.653

Intersection Setup

Name	Saliman Rd			Saliman Rd			Robinson St			Robinson St		
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	11.00	11.00	11.00	11.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	125.00	100.00	100.00	150.00	100.00	100.00	60.00	100.00	100.00	100.00	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]	15.00			15.00			15.00			15.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Rd			Robinson St			Robinson St		
Base Volume Input [veh/h]	27	274	50	88	382	77	45	20	37	68	25	74
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 [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
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	-6	-15	0	0	0	-2	0	-3	-1	-9
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
Total Hourly Volume [veh/h]	27	274	44	73	382	77	45	18	37	65	24	65
Peak Hour Factor	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900
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]	10	99	16	26	138	28	16	7	13	24	9	24
Total Analysis Volume [veh/h]	39	397	64	106	554	112	65	26	54	94	35	94
Pedestrian Volume [ped/h]	6			154			50			79		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	453	482	495	477	510	527	443	496	444	501
Degree of Utilization, x	0.09	0.48	0.47	0.22	0.65	0.63	0.15	0.16	0.21	0.26

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.28	2.54	2.44	0.84	4.67	4.36	0.51	0.57	0.79	1.02
95th-Percentile Queue Length [ft]	7.04	63.57	60.92	21.08	116.69	109.09	12.74	14.24	19.78	25.45
Approach Delay [s/veh]	16.10			20.09			11.73		12.62	
Approach LOS	C			C			B		B	
Intersection Delay [s/veh]	17.12									
Intersection LOS	C									

Intersection Level Of Service Report
Intersection 3: Saliman Road / 5th Street

Control Type:	Signalized	Delay (sec / veh):	14.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.224

Intersection Setup

Name	Saliman Rd			Saliman Rd			5th St			5th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	10.00	10.00	12.00	11.00	11.00	11.00	11.00	10.00	11.00	11.00	10.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	175.00	100.00	100.00	160.00	100.00	100.00	130.00	100.00	130.00	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]	35.00			35.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Rd			5th St			5th St		
Base Volume Input [veh/h]	63	214	74	103	260	114	80	206	67	103	185	49
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 [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00											
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	-4	-4	0	-2	-1	-2	-2	0	-2	-1	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	36	0	0	59	0	0	35	0	0	25
Total Hourly Volume [veh/h]	63	210	34	103	258	54	78	204	32	101	184	24
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
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]	18	59	10	29	72	15	22	57	9	28	52	7
Total Analysis Volume [veh/h]	71	236	38	116	290	61	88	229	36	113	207	27
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	7			1			3			11		
v_di, Inbound Pedestrian Volume crossing m	3			11			7			1		
v_co, Outbound Pedestrian Volume crossing	2			1			33			12		
v_ci, Inbound Pedestrian Volume crossing mi	12			33			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			4			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
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	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	20	30	0	20	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.1	0.0	3.2	4.1	0.0	0.0	3.7	0.0	0.0	3.7	0.0
All red [s]	2.4	2.4	0.0	2.3	2.4	0.0	0.0	2.2	0.0	0.0	2.2	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.0	1.8	0.0	2.0	1.8	0.0	0.0	2.0	0.0	0.0	1.8	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	23	0	0	12	0	0	17	0	0	23	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]	3.6	4.5	0.0	3.5	4.5	0.0	0.0	3.9	0.0	0.0	3.9	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	C	L	C	C	L	C	R
C, Cycle Length [s]	46	46	46	46	46	46	46	46	46	46	46	46
L, Total Lost Time per Cycle [s]	6.05	6.50	6.50	6.00	6.50	6.50	5.90	5.90	5.90	5.90	5.90	5.90
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.50	4.50	0.00	4.50	4.50	3.90	3.90	3.90	3.90	3.90	3.90
g_i, Effective Green Time [s]	22	12	12	22	12	12	13	13	13	13	13	13
g / C, Green / Cycle	0.48	0.26	0.26	0.48	0.26	0.26	0.27	0.27	0.27	0.27	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.08	0.08	0.10	0.10	0.08	0.07	0.07	0.10	0.11	0.02
s, saturation flow rate [veh/h]	1425	1855	1751	1471	1855	1681	1129	1855	1763	1098	1855	1536
c, Capacity [veh/h]	629	473	446	668	487	441	309	506	481	342	506	419
d1, Uniform Delay [s]	10.50	13.82	13.86	10.12	13.88	13.96	18.67	13.14	13.16	17.75	13.72	12.40
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
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]	0.03	0.13	0.14	0.05	0.17	0.21	0.19	0.10	0.11	0.21	0.20	0.02
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	0.11	0.29	0.30	0.17	0.37	0.39	0.28	0.27	0.27	0.33	0.41	0.06
d, Delay for Lane Group [s/veh]	10.53	13.95	14.00	10.17	14.05	14.17	18.86	13.24	13.27	17.96	13.91	12.42
Lane Group LOS	B	B	B	B	B	B	B	B	B	B	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.27	0.99	0.96	0.45	1.29	1.24	0.80	0.95	0.92	0.94	1.42	0.17
50th-Percentile Queue Length [ft/ln]	6.79	24.65	24.04	11.31	32.15	31.00	19.96	23.70	23.09	23.55	35.57	4.18
95th-Percentile Queue Length [veh/ln]	0.49	1.77	1.73	0.81	2.31	2.23	1.44	1.71	1.66	1.70	2.56	0.30
95th-Percentile Queue Length [ft/ln]	12.22	44.37	43.28	20.35	57.87	55.80	35.93	42.65	41.56	42.39	64.03	7.53

Movement, Approach, & Intersection Results

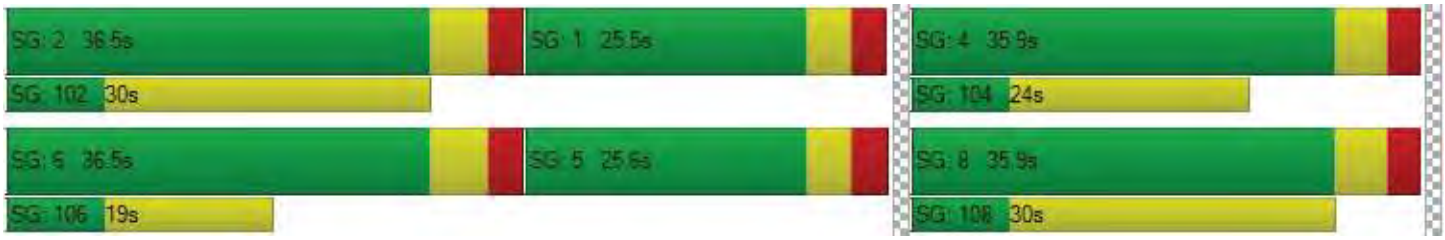
d_M, Delay for Movement [s/veh]	10.53	13.97	14.00	10.17	14.10	14.17	18.86	13.25	13.27	17.96	13.91	12.42
Movement LOS	B	B	B	B	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	13.26			13.13			14.65			15.11		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	13.97											
Intersection LOS	B											
Intersection V/C	0.224											

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]	1891.52	1652.38	539.46	1393.03
d_p, Pedestrian Delay [s]	13.43	13.43	13.43	13.43
l_p,int, Pedestrian LOS Score for Intersectio	2.668	2.676	2.409	2.623
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1298	1298	1298	1298
d_b, Bicycle Delay [s]	2.85	2.86	2.85	2.85
l_b,int, Bicycle LOS Score for Intersection	1.874	1.994	1.880	2.173
Bicycle LOS	A	A	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Robinson St / Matterhorn Ln

Control Type:	Roundabout	Delay (sec / veh):	3.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Matterhorn Ln			Matterhorn Ln			Robinson St			Robinson St		
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	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	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			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Matterhorn Ln			Matterhorn Ln			Robinson St			Robinson St		
Base Volume Input [veh/h]	56	0	0	0	0	0	0	0	70	0	0	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
Proportion of CAVs [%]	0.00											
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	14	4	0	9	22	37	9	0	2	5	0
Diverted Trips [veh/h]	-34	0	0	0	0	0	0	0	-43	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
Total Hourly Volume [veh/h]	22	14	4	0	9	22	37	9	27	2	5	0
Peak Hour Factor	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000
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]	7	4	1	0	3	7	12	3	8	1	2	0
Total Analysis Volume [veh/h]	28	18	5	0	11	28	46	11	34	3	6	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	58			38			14			94		
Exiting Flow Rate [veh/h]	49			65			63			16		
Demand Flow Rate [veh/h]	22	14	4	0	9	22	37	9	27	2	5	0
Adjusted Demand Flow Rate [veh/h]	28	18	5	0	11	28	46	11	34	3	6	0

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	53	40	93	10
Capacity of Entry and Bypass Lanes [veh/h]	1301	1328	1361	1255
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1276	1302	1334	1230
X, volume / capacity	0.04	0.03	0.07	0.01

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.12	0.09	0.22	0.02
95th-Percentile Queue Length [ft]	3.12	2.31	5.49	0.55
Approach Delay [s/veh]	3.14	3.00	3.24	2.99
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	3.15			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 5: 5th Street / Matterhorn Ln

Control Type:	Two-way stop	Delay (sec / veh):	15.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.028

Intersection Setup

Name	Matterhorn Ln		5th Street		5th Street	
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	0	0	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Matterhorn Ln		5th Street		5th Street	
Base Volume Input [veh/h]	11	15	25	340	318	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00
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]	-2	-3	-6	0	0	-2
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]	9	12	19	340	318	16
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	3	5	96	89	4
Total Analysis Volume [veh/h]	10	13	21	382	357	18
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	0.03	0.02	0.02	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	15.42	10.36	8.11	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.09	0.06	0.05	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	2.17	1.45	1.36	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.56		0.42		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.57					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 1: William Street / Saliman Road

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.557

Intersection Setup

Name	Saliman Rd			Saliman Road			William Street			William Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	10.00	10.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	10.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	2	0	0
Entry Pocket Length [ft]	275.00	100.00	100.00	160.00	100.00	100.00	215.00	100.00	225.00	325.00	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]	15.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Road			William Street			William Street		
Base Volume Input [veh/h]	110	117	317	107	94	13	26	802	133	390	641	44
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 [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Proportion of CAVs [%]	0.00											
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	0	-9	0	0	0	0	0	-6	-14	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	92	0	0	7	0	0	66	0	0	23
Total Hourly Volume [veh/h]	107	117	216	107	94	6	26	802	61	376	641	21
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
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]	29	31	58	29	25	2	7	216	16	101	172	6
Total Analysis Volume [veh/h]	115	126	232	115	101	6	28	862	66	404	689	23
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	8			6			5			0		
v_di, Inbound Pedestrian Volume crossing m	0			5			6			8		
v_co, Outbound Pedestrian Volume crossing	1			0			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	4			1			3			3		

Intersection Settings

Located in CBD	No
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	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	10	0	5	10	0
Maximum Green [s]	40	40	0	40	40	0	20	35	0	26	35	0
Amber [s]	3.0	3.4	0.0	3.0	3.4	0.0	3.6	4.5	0.0	3.5	4.4	0.0
All red [s]	2.5	3.0	0.0	2.5	3.0	0.0	4.1	1.0	0.0	4.1	1.0	0.0
Split [s]	26	35	0	20	29	0	16	40	0	25	49	0
Vehicle Extension [s]	1.9	2.0	0.0	1.9	2.0	0.0	1.7	2.7	0.0	1.7	2.7	0.0
Walk [s]	0	9	0	0	14	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	19	0	0	8	0	0	21	0	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	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	4.4	0.0	3.5	4.4	0.0	5.7	3.5	0.0	5.6	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
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	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.40	6.40	6.40	6.40	6.40	6.40	7.70	5.50	5.50	7.60	5.40	5.40
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]	0.00	4.40	4.40	0.00	4.40	4.40	5.70	3.50	3.50	5.60	3.40	3.40
g_i, Effective Green Time [s]	34	21	21	34	21	21	3	51	51	16	64	64
g / C, Green / Cycle	0.28	0.17	0.17	0.28	0.17	0.17	0.03	0.42	0.42	0.13	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.08	0.07	0.15	0.09	0.03	0.03	0.02	0.24	0.04	0.12	0.19	0.19
s, saturation flow rate [veh/h]	1464	1885	1553	1288	1885	1840	1795	3589	1578	3486	1885	1862
c, Capacity [veh/h]	476	324	267	396	324	316	46	1509	664	467	997	984
d1, Uniform Delay [s]	33.00	44.17	48.20	33.19	42.42	42.44	57.94	26.56	21.04	50.97	16.47	16.48
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.50	0.50	0.04	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]	0.10	0.28	3.43	0.15	0.09	0.09	4.74	1.58	0.30	1.92	1.01	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	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	0.24	0.39	0.87	0.29	0.17	0.17	0.61	0.57	0.10	0.87	0.36	0.36
d, Delay for Lane Group [s/veh]	33.10	44.46	51.63	33.33	42.51	42.53	62.69	28.13	21.34	52.90	17.48	17.50
Lane Group LOS	C	D	D	C	D	D	E	C	C	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.68	3.46	7.15	2.63	1.39	1.38	0.89	9.38	1.15	5.97	5.74	5.68
50th-Percentile Queue Length [ft/ln]	67.04	86.50	178.85	65.75	34.73	34.47	22.26	234.56	28.84	149.13	143.46	142.00
95th-Percentile Queue Length [veh/ln]	4.83	6.23	11.54	4.73	2.50	2.48	1.60	14.41	2.08	9.97	9.67	9.59
95th-Percentile Queue Length [ft/ln]	120.68	155.70	288.52	118.35	62.51	62.05	40.06	360.14	51.91	249.27	241.67	239.71

Movement, Approach, & Intersection Results

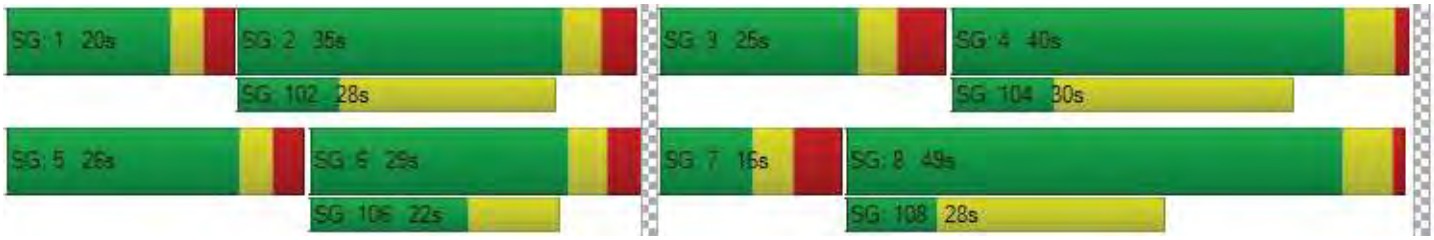
d_M, Delay for Movement [s/veh]	33.10	44.46	51.63	33.33	42.52	42.53	62.69	28.13	21.34	52.90	17.49	17.50
Movement LOS	C	D	D	C	D	D	E	C	C	D	B	B
d_A, Approach Delay [s/veh]	45.21			37.76			28.68			30.31		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	32.89											
Intersection LOS	C											
Intersection V/C	0.557											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	18.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	3907.15	7578.61	1066.26	833.62
d_p, Pedestrian Delay [s]	47.74	48.64	43.39	47.74
l_p,int, Pedestrian LOS Score for Intersectio	2.560	2.393	2.984	3.057
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	476	376	575	726
d_b, Bicycle Delay [s]	34.91	39.59	30.54	24.39
l_b,int, Bicycle LOS Score for Intersection	2.492	1.749	2.403	2.499
Bicycle LOS	B	A	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 2: Saliman Road / Robinson Street

Control Type:	All-way stop	Delay (sec / veh):	14.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.513

Intersection Setup

Name	Saliman Rd			Saliman Rd			Robinson St			Robinson St		
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	11.00	11.00	11.00	11.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	125.00	100.00	100.00	150.00	100.00	100.00	60.00	100.00	100.00	100.00	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]	15.00			15.00			15.00			15.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Rd			Robinson St			Robinson St		
Base Volume Input [veh/h]	19	369	59	135	439	54	57	15	19	50	16	102
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 [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	-7	-20	0	0	0	-2	0	-3	-1	-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
Total Hourly Volume [veh/h]	19	369	52	115	439	54	57	13	19	47	15	90
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
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]	5	104	15	32	123	15	16	4	5	13	4	25
Total Analysis Volume [veh/h]	21	415	58	129	493	61	64	15	21	53	17	101
Pedestrian Volume [ped/h]	4			2			4			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	486	520	534	502	539	552	454	508	456	525
Degree of Utilization, x	0.04	0.45	0.44	0.26	0.51	0.50	0.14	0.07	0.12	0.22

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.14	2.35	2.25	1.01	2.91	2.79	0.49	0.23	0.39	0.86
95th-Percentile Queue Length [ft]	3.38	58.63	56.33	25.37	72.67	69.80	12.19	5.70	9.78	21.40
Approach Delay [s/veh]	14.79			15.22			11.36		11.57	
Approach LOS	B			C			B		B	
Intersection Delay [s/veh]	14.38									
Intersection LOS	B									

Intersection Level Of Service Report
Intersection 3: Saliman Road / 5th Street

Control Type:	Signalized	Delay (sec / veh):	14.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.240

Intersection Setup

Name	Saliman Rd			Saliman Rd			5th St			5th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	10.00	10.00	12.00	11.00	11.00	11.00	11.00	10.00	11.00	11.00	10.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	175.00	100.00	100.00	160.00	100.00	100.00	130.00	100.00	130.00	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]	35.00			35.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Rd			5th St			5th St		
Base Volume Input [veh/h]	79	268	146	83	256	94	118	331	74	106	214	51
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 [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Proportion of CAVs [%]	0.00											
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	-5	-6	0	-2	-1	-2	-3	0	-3	-2	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	73	0	0	48	0	0	38	0	0	27
Total Hourly Volume [veh/h]	79	263	67	83	254	45	116	328	36	103	212	24
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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]	22	73	19	23	71	13	32	91	10	29	59	7
Total Analysis Volume [veh/h]	88	292	74	92	282	50	129	364	40	114	236	27
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	1			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			1			0		
v_co, Outbound Pedestrian Volume crossing	1			0			2			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			2			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
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	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	20	30	0	20	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.1	0.0	3.2	4.1	0.0	0.0	3.7	0.0	0.0	3.7	0.0
All red [s]	2.4	2.4	0.0	2.3	2.4	0.0	0.0	2.2	0.0	0.0	2.2	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.0	1.8	0.0	2.0	1.8	0.0	0.0	2.0	0.0	0.0	1.8	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	23	0	0	12	0	0	17	0	0	23	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]	3.6	4.5	0.0	3.5	4.5	0.0	0.0	3.9	0.0	0.0	3.9	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	C	L	C	C	L	C	R
C, Cycle Length [s]	47	47	47	47	47	47	47	47	47	47	47	47
L, Total Lost Time per Cycle [s]	6.05	6.50	6.50	6.00	6.50	6.50	5.90	5.90	5.90	5.90	5.90	5.90
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.50	4.50	0.00	4.50	4.50	3.90	3.90	3.90	3.90	3.90	3.90
g_i, Effective Green Time [s]	21	11	11	21	11	11	14	14	14	14	14	14
g / C, Green / Cycle	0.45	0.23	0.23	0.45	0.23	0.23	0.31	0.31	0.31	0.31	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.06	0.10	0.10	0.06	0.09	0.09	0.11	0.11	0.11	0.12	0.13	0.02
s, saturation flow rate [veh/h]	1480	1885	1755	1472	1885	1786	1125	1885	1814	988	1885	1581
c, Capacity [veh/h]	609	434	404	602	439	416	338	580	558	329	580	486
d1, Uniform Delay [s]	11.58	15.31	15.34	11.92	15.05	15.08	18.41	12.51	12.53	17.83	12.75	11.34
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
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]	0.04	0.25	0.28	0.04	0.21	0.22	0.26	0.14	0.14	0.23	0.17	0.02
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	0.14	0.43	0.44	0.15	0.39	0.39	0.38	0.35	0.36	0.35	0.41	0.06
d, Delay for Lane Group [s/veh]	11.62	15.56	15.62	11.96	15.25	15.30	18.67	12.65	12.67	18.06	12.92	11.36
Lane Group LOS	B	B	B	B	B	B	B	B	B	B	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.38	1.46	1.39	0.40	1.29	1.25	1.18	1.42	1.38	0.97	1.55	0.16
50th-Percentile Queue Length [ft/ln]	9.60	36.50	34.82	10.00	32.31	31.26	29.60	35.51	34.60	24.13	38.68	3.93
95th-Percentile Queue Length [veh/ln]	0.69	2.63	2.51	0.72	2.33	2.25	2.13	2.56	2.49	1.74	2.78	0.28
95th-Percentile Queue Length [ft/ln]	17.29	65.70	62.68	18.00	58.16	56.26	53.28	63.92	62.29	43.44	69.62	7.07

Movement, Approach, & Intersection Results

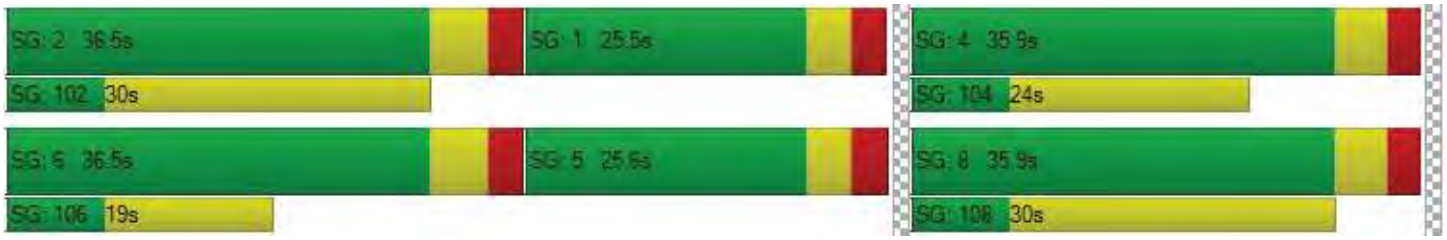
d_M, Delay for Movement [s/veh]	11.62	15.58	15.62	11.96	15.27	15.30	18.67	12.66	12.67	18.06	12.92	11.36
Movement LOS	B	B	B	B	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	14.82			14.56			14.11			14.36		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	14.45											
Intersection LOS	B											
Intersection V/C	0.240											

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]	9332.86	0.00	9097.77	19090.44
d_p, Pedestrian Delay [s]	13.63	13.63	13.63	13.63
l_p,int, Pedestrian LOS Score for Intersectio	2.756	2.729	2.483	2.659
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1285	1285	1285	1285
d_b, Bicycle Delay [s]	2.98	2.98	2.98	2.98
l_b,int, Bicycle LOS Score for Intersection	1.994	1.949	2.031	2.226
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Robinson St / Matterhorn Ln

Control Type:	Roundabout	Delay (sec / veh):	3.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Matterhorn Ln			Matterhorn Ln			Robinson St			Robinson St		
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	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	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			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Matterhorn Ln			Matterhorn Ln			Robinson St			Robinson St		
Base Volume Input [veh/h]	74	0	0	0	0	0	0	0	91	0	0	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 [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Proportion of CAVs [%]	0.00											
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	18	5	0	11	30	49	13	0	2	8	0
Diverted Trips [veh/h]	-45	0	0	0	0	0	0	0	-56	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
Total Hourly Volume [veh/h]	29	18	5	0	11	30	49	13	35	2	8	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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]	8	5	1	0	3	8	14	4	10	1	2	0
Total Analysis Volume [veh/h]	32	20	6	0	12	33	54	14	39	2	9	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	69			43			14			107		
Exiting Flow Rate [veh/h]	54			75			75			20		
Demand Flow Rate [veh/h]	29	18	5	0	11	30	49	13	35	2	8	0
Adjusted Demand Flow Rate [veh/h]	32	20	6	0	12	33	54	14	39	2	9	0

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.99	0.99	0.99	0.99
Entry Flow Rate [veh/h]	59	46	109	12
Capacity of Entry and Bypass Lanes [veh/h]	1287	1321	1361	1238
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1274	1308	1347	1225
X, volume / capacity	0.05	0.03	0.08	0.01

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.14	0.11	0.26	0.03
95th-Percentile Queue Length [ft]	3.57	2.67	6.46	0.68
Approach Delay [s/veh]	3.19	3.02	3.30	3.01
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	3.20			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 5: 5th Street / Matterhorn Ln

Control Type:	Two-way stop	Delay (sec / veh):	19.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.045

Intersection Setup

Name	Matterhorn Ln		5th Street		5th Street	
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	0	0	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Matterhorn Ln		5th Street		5th Street	
Base Volume Input [veh/h]	14	20	34	503	347	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00
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]	-3	-6	-9	0	0	-4
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]	11	14	25	503	347	20
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	4	7	140	96	6
Total Analysis Volume [veh/h]	12	16	28	559	386	22
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	0.05	0.02	0.02	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	19.30	10.56	8.19	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.14	0.07	0.07	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	3.56	1.85	1.86	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	14.30		0.39		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.62					
Intersection LOS	C					

Appendix C
Future Year LOS Calculations

Intersection Level Of Service Report
Intersection 1: William Street / Saliman Road

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.573

Intersection Setup

Name	Saliman Rd			Saliman Rd			William St			William St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	10.00	10.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	10.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	2	0	0
Entry Pocket Length [ft]	275.00	100.00	100.00	160.00	100.00	100.00	215.00	100.00	225.00	325.00	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]	15.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Rd			William St			William St		
Base Volume Input [veh/h]	310	94	525	44	187	23	17	392	260	473	907	33
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
Proportion of CAVs [%]	0.00											
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]	-17	0	-40	0	0	0	0	0	-6	-14	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	146	0	0	12	0	0	132	0	0	17
Total Hourly Volume [veh/h]	293	94	339	44	187	11	17	392	122	459	907	16
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
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]	84	27	97	13	54	3	5	113	35	132	261	5
Total Analysis Volume [veh/h]	337	108	390	51	215	13	20	451	140	528	1043	18
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	4			11			8			45		
v_di, Inbound Pedestrian Volume crossing m	45			8			11			4		
v_co, Outbound Pedestrian Volume crossing	5			2			11			0		
v_ci, Inbound Pedestrian Volume crossing mi	11			0			5			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			4			3			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Isolated
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	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	37	0	5	5	0	5	30	0	5	10	0
Maximum Green [s]	40	40	0	30	42	0	20	35	0	26	35	0
Amber [s]	3.0	3.4	0.0	3.5	3.4	0.0	3.6	4.5	0.0	3.5	4.4	0.0
All red [s]	2.5	3.0	0.0	1.5	3.0	0.0	4.1	1.0	0.0	4.1	1.0	0.0
Split [s]	26	60	0	15	49	0	15	41	0	34	60	0
Vehicle Extension [s]	1.9	2.0	0.0	3.0	2.0	0.0	1.7	2.7	0.0	1.7	2.7	0.0
Walk [s]	0	9	0	0	14	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	28	0	0	28	0	0	21	0	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	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	4.4	0.0	3.0	4.4	0.0	5.7	3.5	0.0	5.6	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
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	C	L	C	R	L	C	C
C, Cycle Length [s]	121	121	121	121	121	121	121	121	121	121	121	121
L, Total Lost Time per Cycle [s]	6.40	6.40	6.40	6.40	6.40	6.40	7.70	5.50	5.50	7.60	5.40	5.40
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]	0.00	4.40	4.40	0.00	4.40	4.40	5.70	3.50	3.50	5.60	3.40	3.40
g_i, Effective Green Time [s]	46	37	37	46	21	21	2	35	35	21	53	53
g / C, Green / Cycle	0.38	0.31	0.31	0.38	0.17	0.17	0.02	0.29	0.29	0.17	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.23	0.06	0.26	0.05	0.06	0.06	0.01	0.13	0.09	0.15	0.28	0.29
s, saturation flow rate [veh/h]	1473	1870	1513	1036	1870	1820	1781	3560	1541	3459	1870	1858
c, Capacity [veh/h]	586	571	462	446	319	310	37	1027	444	588	819	814
d1, Uniform Delay [s]	28.95	31.09	38.81	24.07	44.49	44.54	58.86	35.18	33.69	49.31	26.78	26.81
k, delay calibration	0.16	0.04	0.23	0.11	0.04	0.04	0.04	0.50	0.50	0.04	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]	1.28	0.06	8.61	0.11	0.25	0.27	4.59	1.37	1.85	2.05	3.96	4.02
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	0.57	0.19	0.84	0.11	0.36	0.37	0.54	0.44	0.32	0.90	0.65	0.65
d, Delay for Lane Group [s/veh]	30.24	31.15	47.43	24.18	44.74	44.81	63.45	36.54	35.54	51.36	30.74	30.83
Lane Group LOS	C	C	D	C	D	D	E	D	D	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.96	2.44	12.05	0.97	3.11	3.08	0.65	5.52	3.39	7.84	12.47	12.45
50th-Percentile Queue Length [ft/ln]	199.00	60.94	301.34	24.24	77.66	77.01	16.16	137.95	84.84	195.96	311.86	311.35
95th-Percentile Queue Length [veh/ln]	12.59	4.39	17.75	1.74	5.59	5.54	1.16	9.37	6.11	12.43	18.27	18.24
95th-Percentile Queue Length [ft/ln]	314.67	109.70	443.69	43.62	139.79	138.61	29.10	234.26	152.71	310.75	456.67	456.04

Movement, Approach, & Intersection Results

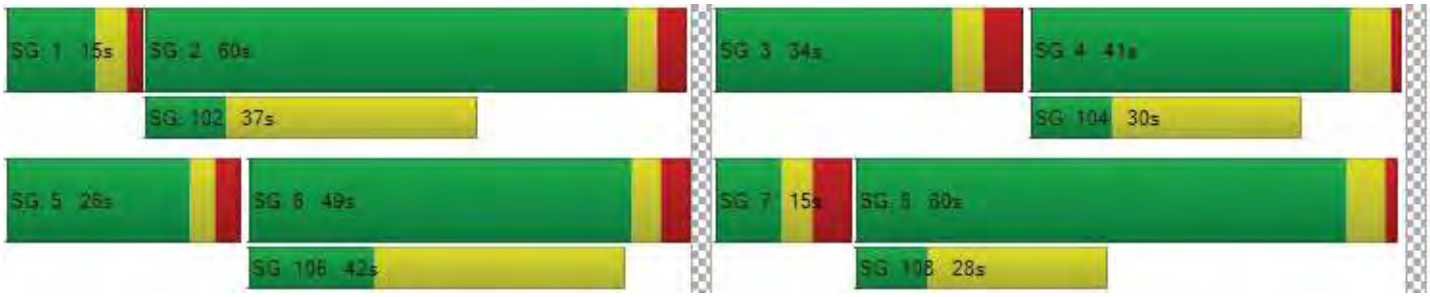
d_M, Delay for Movement [s/veh]	30.24	31.15	47.43	24.18	44.77	44.81	63.45	36.54	35.54	51.36	30.78	30.83
Movement LOS	C	C	D	C	D	D	E	D	D	D	C	C
d_A, Approach Delay [s/veh]	38.38			41.01			37.19			37.62		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	38.02											
Intersection LOS	D											
Intersection V/C	0.573											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	18.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	437.91	3775.23	591.21	109.71
d_p, Pedestrian Delay [s]	48.31	49.21	43.95	48.31
l_p,int, Pedestrian LOS Score for Intersectio	2.715	2.404	3.205	3.086
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	884	703	586	901
d_b, Bicycle Delay [s]	18.87	25.55	30.36	18.33
l_b,int, Bicycle LOS Score for Intersection	3.178	1.800	2.173	2.885
Bicycle LOS	C	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Saliman Road / Robinson Street

Control Type:	All-way stop	Delay (sec / veh):	26.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.847

Intersection Setup

Name	Saliman Rd			Saliman Rd			Robinson St			Robinson St		
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	11.00	11.00	11.00	11.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	125.00	100.00	100.00	150.00	100.00	100.00	60.00	100.00	100.00	100.00	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]	15.00			15.00			15.00			15.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Rd			Robinson St			Robinson St		
Base Volume Input [veh/h]	41	433	143	173	242	97	108	34	36	153	31	225
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 [%]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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	-6	-20	0	0	0	-2	0	-19	-6	-57
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
Total Hourly Volume [veh/h]	41	433	137	153	242	97	108	32	36	134	25	168
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
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]	13	139	44	49	78	31	35	10	12	43	8	54
Total Analysis Volume [veh/h]	53	555	176	196	310	124	138	41	46	172	32	215
Pedestrian Volume [ped/h]	106			98			17			225		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	408	432	449	386	407	427	408	444	402	452
Degree of Utilization, x	0.13	0.85	0.81	0.51	0.53	0.51	0.34	0.20	0.43	0.55

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.44	8.29	7.61	2.77	3.03	2.81	1.47	0.72	2.09	3.21
95th-Percentile Queue Length [ft]	11.09	207.35	190.21	69.32	75.82	70.19	36.76	17.97	52.19	80.29
Approach Delay [s/veh]	38.24			20.65			14.73		19.15	
Approach LOS	E			C			B		C	
Intersection Delay [s/veh]	26.40									
Intersection LOS	D									

Intersection Level Of Service Report
Intersection 3: Saliman Road / 5th Street

Control Type:	Signalized	Delay (sec / veh):	17.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.357

Intersection Setup

Name	Saliman Rd			Saliman Rd			5th St			5th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	10.00	10.00	12.00	11.00	11.00	11.00	11.00	10.00	11.00	11.00	10.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	175.00	100.00	100.00	160.00	100.00	100.00	130.00	100.00	130.00	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]	35.00			35.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Rd			5th St			5th St		
Base Volume Input [veh/h]	81	300	85	107	254	119	91	180	89	212	358	138
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
Proportion of CAVs [%]	0.00											
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	-5	-5	0	-14	-5	-1	-2	0	-14	-6	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	42	0	0	59	0	0	46	0	0	72
Total Hourly Volume [veh/h]	81	295	38	107	240	55	90	178	43	198	352	66
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
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]	25	90	12	33	73	17	27	54	13	60	107	20
Total Analysis Volume [veh/h]	99	360	46	130	293	67	110	217	52	241	429	80
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			4			3			0		
v_di, Inbound Pedestrian Volume crossing m	3			0			0			4		
v_co, Outbound Pedestrian Volume crossing	7			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			7		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	4			1			0			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
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	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	20	30	0	20	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.1	0.0	3.2	4.1	0.0	0.0	3.7	0.0	0.0	3.7	0.0
All red [s]	2.4	2.4	0.0	2.3	2.4	0.0	0.0	2.2	0.0	0.0	2.2	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.0	1.8	0.0	2.0	1.8	0.0	0.0	2.0	0.0	0.0	1.8	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	23	0	0	12	0	0	17	0	0	23	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]	3.6	4.5	0.0	3.5	4.5	0.0	0.0	3.9	0.0	0.0	3.9	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	C	L	C	C	L	C	R
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	6.05	6.50	6.50	6.00	6.50	6.50	5.90	5.90	5.90	5.90	5.90	5.90
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.50	4.50	0.00	4.50	4.50	3.90	3.90	3.90	3.90	3.90	3.90
g_i, Effective Green Time [s]	26	15	15	26	15	15	23	23	23	23	23	23
g / C, Green / Cycle	0.43	0.24	0.24	0.43	0.25	0.25	0.38	0.38	0.38	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.07	0.11	0.11	0.09	0.10	0.10	0.12	0.07	0.08	0.22	0.23	0.05
s, saturation flow rate [veh/h]	1392	1870	1786	1388	1870	1733	889	1870	1746	1108	1870	1564
c, Capacity [veh/h]	543	459	438	537	476	441	259	704	657	444	704	589
d1, Uniform Delay [s]	15.49	19.11	19.14	16.53	18.41	18.47	24.27	12.53	12.56	19.13	15.07	12.22
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
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]	0.06	0.26	0.28	0.09	0.19	0.22	0.41	0.05	0.06	0.38	0.32	0.04
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	0.18	0.45	0.46	0.24	0.39	0.40	0.42	0.20	0.20	0.54	0.61	0.14
d, Delay for Lane Group [s/veh]	15.55	19.36	19.42	16.61	18.60	18.68	24.68	12.58	12.61	19.51	15.38	12.26
Lane Group LOS	B	B	B	B	B	B	C	B	B	B	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.67	2.21	2.15	0.90	1.92	1.84	1.42	1.11	1.07	2.63	3.95	0.59
50th-Percentile Queue Length [ft/ln]	16.87	55.33	53.80	22.49	48.10	45.97	35.54	27.80	26.71	65.72	98.71	14.86
95th-Percentile Queue Length [veh/ln]	1.21	3.98	3.87	1.62	3.46	3.31	2.56	2.00	1.92	4.73	7.11	1.07
95th-Percentile Queue Length [ft/ln]	30.36	99.59	96.84	40.48	86.58	82.75	63.97	50.04	48.07	118.29	177.68	26.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.55	19.39	19.42	16.61	18.63	18.68	24.68	12.59	12.61	19.51	15.38	12.26
Movement LOS	B	B	B	B	B	B	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	18.64			18.10			16.10			16.38		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	17.26											
Intersection LOS	B											
Intersection V/C	0.357											

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]	4114.90	3547.09	6681.10	2066.38
d_p, Pedestrian Delay [s]	19.87	19.87	19.87	19.87
l_p,int, Pedestrian LOS Score for Intersectio	2.948	2.784	2.548	2.851
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1005	1005	1005	1005
d_b, Bicycle Delay [s]	7.41	7.39	7.39	7.40
l_b,int, Bicycle LOS Score for Intersection	2.011	2.013	1.910	2.916
Bicycle LOS	B	B	A	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Robinson Street / Matterhorn Lane

Control Type:	Roundabout	Delay (sec / veh):	4.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Matterhorn Ln			Matterhorn Ln			Robinson St			Robinson St		
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	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	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			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Matterhorn Ln			Matterhorn Ln			Robinson St			Robinson St		
Base Volume Input [veh/h]	78	82	1	0	81	185	188	4	50	4	11	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
Proportion of CAVs [%]	0.00											
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]	-46	0	0	0	0	0	0	0	-30	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
Total Hourly Volume [veh/h]	32	82	1	0	81	185	188	4	20	4	11	0
Peak Hour Factor	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000
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]	10	26	0	0	25	58	59	1	6	1	3	0
Total Analysis Volume [veh/h]	40	103	1	0	101	231	235	5	25	5	14	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	245			60			108			386		
Exiting Flow Rate [veh/h]	134			345			291			6		
Demand Flow Rate [veh/h]	32	82	1	0	81	185	188	4	20	4	11	0
Adjusted Demand Flow Rate [veh/h]	40	103	1	0	101	231	235	5	25	5	14	0

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	147	339	271	20
Capacity of Entry and Bypass Lanes [veh/h]	1076	1298	1236	932
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1054	1273	1212	914
X, volume / capacity	0.14	0.26	0.22	0.02

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.47	1.05	0.83	0.06
95th-Percentile Queue Length [ft]	11.82	26.24	20.85	1.59
Approach Delay [s/veh]	4.64	5.13	4.89	4.13
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	4.93			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 5: 5th Street / Matterhorn Lane

Control Type:	Signalized	Delay (sec / veh):	12.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.490

Intersection Setup

Name	South Lompa Access			Matterhorn Ln			5th St			5th St		
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	0	1	0	0	1	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	150.00
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			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	South Lompa Access			Matterhorn Ln			5th St			5th St		
Base Volume Input [veh/h]	32	0	24	45	0	79	60	312	11	8	577	30
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	-11	0	-20	-7	0	0	0	0	-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	12	0	0	31	0	0	6	0	0	14
Total Hourly Volume [veh/h]	32	0	12	34	0	28	53	312	5	8	577	13
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
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]	10	0	4	10	0	9	16	95	2	2	176	4
Total Analysis Volume [veh/h]	39	0	15	41	0	34	65	380	6	10	704	16
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	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
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	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	20	30	0	20	30	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	0.0	2.5	0.0	0.0	2.5	0.0	2.5	2.5	0.0	2.5	2.5	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	17	0	0	10	0	0	10	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]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	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	R	L	C	R	L	C	R
C, Cycle Length [s]	42	42	42	42	42	42	42	42	42	42
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	3	3	3	3	27	20	20	27	18	18
g / C, Green / Cycle	0.08	0.08	0.08	0.08	0.64	0.48	0.48	0.64	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.03	0.01	0.09	0.02	0.07	0.20	0.00	0.01	0.38	0.01
s, saturation flow rate [veh/h]	1374	1589	432	1589	992	1870	1589	1130	1870	1589
c, Capacity [veh/h]	171	128	204	128	638	903	767	849	809	687
d1, Uniform Delay [s]	21.26	18.16	20.82	18.38	5.57	7.14	5.71	3.14	10.99	6.92
k, delay calibration	0.11	0.11	0.11	0.11	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
d2, Incremental Delay [s]	0.67	0.40	0.48	1.10	0.07	0.31	0.00	0.01	3.08	0.01
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
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	0.23	0.12	0.20	0.27	0.10	0.42	0.01	0.01	0.87	0.02
d, Delay for Lane Group [s/veh]	21.94	18.56	21.30	19.48	5.64	7.45	5.71	3.15	14.06	6.93
Lane Group LOS	C	B	C	B	A	A	A	A	B	A
Critical Lane Group	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.40	0.14	0.40	0.32	0.08	1.40	0.02	0.01	4.50	0.06
50th-Percentile Queue Length [ft/ln]	9.95	3.46	10.01	8.08	1.92	35.09	0.44	0.27	112.44	1.43
95th-Percentile Queue Length [veh/ln]	0.72	0.25	0.72	0.58	0.14	2.53	0.03	0.02	7.98	0.10
95th-Percentile Queue Length [ft/ln]	17.91	6.22	18.02	14.55	3.45	63.17	0.79	0.49	199.40	2.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.94	18.56	18.56	21.30	21.30	19.48	5.64	7.45	5.71	3.15	14.06	6.93
Movement LOS	C	B	B	C	C	B	A	A	A	A	B	A
d_A, Approach Delay [s/veh]	21.00			20.47			7.17			13.76		
Approach LOS	C			C			A			B		
d_I, Intersection Delay [s/veh]	12.17											
Intersection LOS	B											
Intersection V/C	0.490											

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]	11.66	11.66	11.66	11.66
l_p,int, Pedestrian LOS Score for Intersectio	1.944	2.039	2.649	2.553
Crosswalk LOS	A	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1412	1412	1412	1412
d_b, Bicycle Delay [s]	1.83	1.83	1.83	1.83
l_b,int, Bicycle LOS Score for Intersection	1.669	1.735	2.314	2.787
Bicycle LOS	A	A	B	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Saliman Road / Robinson Street

Control Type:	Signalized	Delay (sec / veh):	34.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.536

Intersection Setup

Name	Saliman Rd			Saliman Rd			Robinson St			Robinson St		
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	11.00	11.00	11.00	11.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	125.00	100.00	100.00	150.00	100.00	100.00	60.00	100.00	100.00	100.00	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]	15.00			15.00			15.00			15.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Rd			Robinson St			Robinson St		
Base Volume Input [veh/h]	41	433	143	173	242	97	108	34	36	153	31	225
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 [%]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
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	-6	-20	0	0	0	-2	0	-19	-6	-57
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	71	0	0	50	0	0	19	0	0	50
Total Hourly Volume [veh/h]	41	433	66	153	242	47	108	32	17	134	25	118
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
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]	13	139	21	49	78	15	35	10	5	43	8	38
Total Analysis Volume [veh/h]	53	555	85	196	310	60	138	41	22	172	32	151
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	53			49			53			49		
v_di, Inbound Pedestrian Volume crossing m	53			49			53			49		
v_co, Outbound Pedestrian Volume crossing	112			8			9			113		
v_ci, Inbound Pedestrian Volume crossing mi	113			9			8			112		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
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	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	15	40	0	24	49	0	17	34	0	22	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	16	0	0	16	0	0	22	0	0	22	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	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes		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	C	L	C	C	L	C	L	C
C, Cycle Length [s]	88	88	88	88	88	88	88	88	88	88
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
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
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	4	23	23	12	31	31	9	22	11	24
g / C, Green / Cycle	0.04	0.26	0.26	0.14	0.36	0.36	0.10	0.25	0.12	0.28
(v / s)_i Volume / Saturation Flow Rate	0.03	0.18	0.22	0.11	0.10	0.10	0.08	0.04	0.10	0.13
s, saturation flow rate [veh/h]	1752	1840	1425	1752	1840	1722	1752	1642	1752	1459
c, Capacity [veh/h]	73	479	371	239	654	612	176	418	213	403
d1, Uniform Delay [s]	41.78	29.34	30.92	37.04	20.44	20.49	38.75	25.48	37.72	26.44
k, delay calibration	0.11	0.11	0.18	0.11	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
d2, Incremental Delay [s]	12.81	1.72	8.25	6.83	0.24	0.27	7.46	0.16	7.00	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
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	0.73	0.68	0.84	0.82	0.29	0.30	0.78	0.15	0.81	0.45
d, Delay for Lane Group [s/veh]	54.59	31.06	39.16	43.87	20.69	20.75	46.21	25.65	44.72	27.24
Lane Group LOS	D	C	D	D	C	C	D	C	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.42	6.53	7.22	4.63	2.91	2.78	3.33	1.07	4.09	3.33
50th-Percentile Queue Length [ft/ln]	35.49	163.37	180.40	115.70	72.63	69.51	83.24	26.71	102.26	83.30
95th-Percentile Queue Length [veh/ln]	2.56	10.73	11.62	8.16	5.23	5.00	5.99	1.92	7.36	6.00
95th-Percentile Queue Length [ft/ln]	63.89	268.18	290.54	203.90	130.73	125.11	149.84	48.08	184.06	149.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.59	34.39	39.16	43.87	20.71	20.75	46.21	25.65	25.65	44.72	27.24	27.24
Movement LOS	D	C	D	D	C	C	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	36.52			28.74			39.77			35.71		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	34.29											
Intersection LOS	C											
Intersection V/C	0.536											

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]	99.91	91.63	554.54	38.79
d_p, Pedestrian Delay [s]	33.69	33.69	33.69	33.69
l_p,int, Pedestrian LOS Score for Intersectio	2.525	2.517	2.033	2.139
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	795	1000	659	773
d_b, Bicycle Delay [s]	15.97	11.00	19.78	16.57
l_b,int, Bicycle LOS Score for Intersection	2.190	2.068	1.923	2.228
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: 5th Street / Matterhorn Lane

Control Type:	Two-way stop	Delay (sec / veh):	29.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.221

Intersection Setup

Name	Matterhorn Ln		5th St		5th St	
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]	150.00	100.00	150.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Matterhorn Ln		5th St		5th St	
Base Volume Input [veh/h]	45	79	60	312	577	30
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]	-11	-20	-7	0	0	-3
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]	34	59	53	312	577	27
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	18	16	95	176	8
Total Analysis Volume [veh/h]	41	72	65	380	704	33
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	0.22	0.16	0.07	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	29.82	14.86	9.48	0.00	0.00	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.81	0.58	0.24	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	20.36	14.61	6.05	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	20.29		1.38		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	2.25					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 1: William Street / Saliman Road

Control Type:	Signalized	Delay (sec / veh):	42.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.653

Intersection Setup

Name	Saliman Rd			Saliman Rd			William St			William St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	10.00	10.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	10.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	2	0	0
Entry Pocket Length [ft]	275.00	100.00	100.00	160.00	100.00	100.00	215.00	100.00	225.00	325.00	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]	15.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Rd			William St			William St		
Base Volume Input [veh/h]	225	129	408	110	76	24	50	766	145	409	682	61
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 [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Proportion of CAVs [%]	0.00											
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]	-8	0	-19	0	0	0	0	0	-14	-33	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	117	0	0	12	0	0	68	0	0	32
Total Hourly Volume [veh/h]	217	129	272	110	76	12	50	766	63	376	682	29
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
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	39	82	33	23	4	15	231	19	113	205	9
Total Analysis Volume [veh/h]	261	155	328	133	92	14	60	923	76	453	822	35
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	39			2			20			1		
v_di, Inbound Pedestrian Volume crossing m	1			20			2			39		
v_co, Outbound Pedestrian Volume crossing	31			3			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			31			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Isolated
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	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	37	0	5	5	0	5	30	0	5	10	0
Maximum Green [s]	40	40	0	30	42	0	20	35	0	26	35	0
Amber [s]	3.0	3.4	0.0	3.5	3.4	0.0	3.6	4.5	0.0	3.5	4.4	0.0
All red [s]	2.5	3.0	0.0	1.5	3.0	0.0	4.1	1.0	0.0	4.1	1.0	0.0
Split [s]	26	60	0	15	49	0	15	40	0	35	60	0
Vehicle Extension [s]	1.9	2.0	0.0	3.0	2.0	0.0	1.7	2.7	0.0	1.7	2.7	0.0
Walk [s]	0	9	0	0	14	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	28	0	0	28	0	0	21	0	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	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	4.4	0.0	3.0	4.4	0.0	5.7	3.5	0.0	5.6	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
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	C	L	C	R	L	C	C
C, Cycle Length [s]	123	123	123	123	123	123	123	123	123	123	123	123
L, Total Lost Time per Cycle [s]	6.40	6.40	6.40	6.40	6.40	6.40	7.70	5.50	5.50	7.60	5.40	5.40
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]	0.00	4.40	4.40	0.00	4.40	4.40	5.70	3.50	3.50	5.60	3.40	3.40
g_i, Effective Green Time [s]	50	37	37	50	30	30	5	35	35	18	48	48
g / C, Green / Cycle	0.41	0.30	0.30	0.41	0.24	0.24	0.04	0.29	0.29	0.15	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.18	0.08	0.22	0.12	0.03	0.03	0.03	0.26	0.05	0.13	0.23	0.23
s, saturation flow rate [veh/h]	1479	1885	1519	1113	1885	1777	1795	3589	1526	3486	1885	1858
c, Capacity [veh/h]	662	569	459	485	459	433	78	1024	435	514	733	723
d1, Uniform Delay [s]	25.17	32.58	37.60	23.47	36.14	36.18	58.04	42.18	32.89	51.24	29.68	29.70
k, delay calibration	0.04	0.04	0.13	0.11	0.04	0.04	0.04	0.50	0.50	0.04	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]	0.14	0.10	2.49	0.30	0.04	0.05	5.70	12.53	0.87	2.00	3.44	3.50
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	0.39	0.27	0.72	0.27	0.12	0.12	0.77	0.90	0.17	0.88	0.59	0.59
d, Delay for Lane Group [s/veh]	25.31	32.67	40.09	23.77	36.18	36.23	63.74	54.72	33.77	53.24	33.12	33.20
Lane Group LOS	C	C	D	C	D	D	E	D	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.51	3.66	9.21	2.55	1.28	1.25	1.94	14.82	1.78	6.83	10.46	10.35
50th-Percentile Queue Length [ft/ln]	137.63	91.40	230.21	63.83	31.94	31.35	48.46	370.55	44.50	170.83	261.52	258.66
95th-Percentile Queue Length [veh/ln]	9.35	6.58	14.19	4.60	2.30	2.26	3.49	21.14	3.20	11.12	15.77	15.62
95th-Percentile Queue Length [ft/ln]	233.83	164.52	354.63	114.89	57.50	56.44	87.24	528.40	80.10	278.01	394.13	390.54

Movement, Approach, & Intersection Results

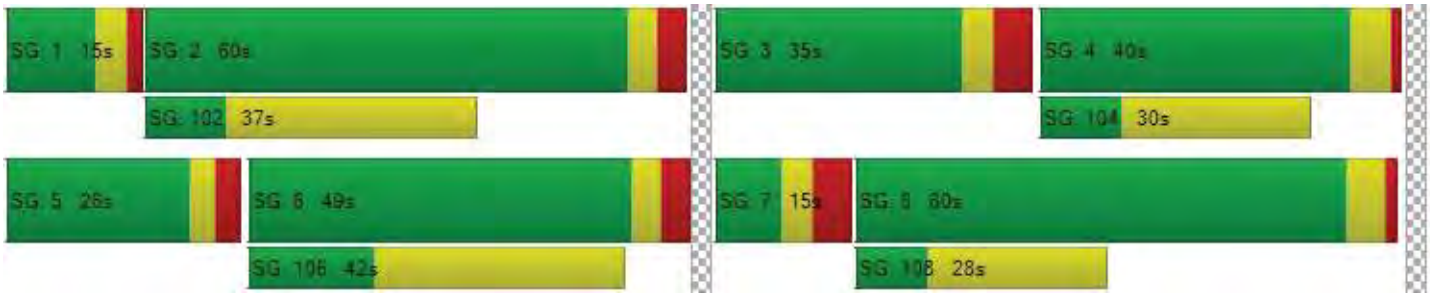
d_M, Delay for Movement [s/veh]	25.31	32.67	40.09	23.77	36.20	36.23	63.74	54.72	33.77	53.24	33.16	33.20
Movement LOS	C	C	D	C	D	D	E	D	C	D	C	C
d_A, Approach Delay [s/veh]	33.36			29.29			53.72			40.11		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	42.14											
Intersection LOS	D											
Intersection V/C	0.653											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	18.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	220.43	2433.49	501.88	139.06
d_p, Pedestrian Delay [s]	48.98	49.87	44.61	48.98
l_p,int, Pedestrian LOS Score for Intersectio	2.631	2.418	3.140	3.188
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	875	695	563	891
d_b, Bicycle Delay [s]	19.42	26.13	31.66	18.85
l_b,int, Bicycle LOS Score for Intersection	2.980	1.767	2.489	2.667
Bicycle LOS	C	A	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 2: Saliman Road / Robinson Street

Control Type:	All-way stop	Delay (sec / veh):	23.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	Saliman Rd			Saliman Rd			Robinson St			Robinson St		
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	11.00	11.00	11.00	11.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	125.00	100.00	100.00	150.00	100.00	100.00	60.00	100.00	100.00	100.00	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]	15.00			15.00			15.00			15.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Rd			Robinson St			Robinson St		
Base Volume Input [veh/h]	30	295	80	165	410	84	50	28	41	97	34	147
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 [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
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	-17	-47	0	0	0	-5	0	-10	-3	-27
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
Total Hourly Volume [veh/h]	30	295	63	118	410	84	50	23	41	87	31	120
Peak Hour Factor	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900
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]	11	107	23	43	149	30	18	8	15	32	11	43
Total Analysis Volume [veh/h]	43	428	91	171	594	122	72	33	59	126	45	174
Pedestrian Volume [ped/h]	10			179			50			79		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	408	431	443	433	461	475	410	452	411	461
Degree of Utilization, x	0.11	0.60	0.58	0.39	0.78	0.75	0.18	0.20	0.31	0.47

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.35	3.85	3.65	1.85	6.84	6.41	0.63	0.75	1.28	2.51
95th-Percentile Queue Length [ft]	8.79	96.21	91.20	46.32	171.10	160.18	15.75	18.86	31.99	62.65
Approach Delay [s/veh]	21.52			28.58			12.98		16.60	
Approach LOS	C			D			B		C	
Intersection Delay [s/veh]	23.14									
Intersection LOS	C									

Intersection Level Of Service Report
Intersection 3: Saliman Road / 5th Street

Control Type:	Signalized	Delay (sec / veh):	14.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.252

Intersection Setup

Name	Saliman Rd			Saliman Rd			5th St			5th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	10.00	10.00	12.00	11.00	11.00	11.00	11.00	10.00	11.00	11.00	10.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	175.00	100.00	100.00	160.00	100.00	100.00	130.00	100.00	130.00	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]	35.00			35.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Rd			5th St			5th St		
Base Volume Input [veh/h]	68	249	95	112	298	129	93	230	73	128	207	53
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 [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00											
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	-12	0	-7	-3	-5	-5	0	-7	-3	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	43	0	0	66	0	0	38	0	0	28
Total Hourly Volume [veh/h]	68	237	40	112	291	60	88	225	35	121	204	25
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
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]	19	67	11	31	82	17	25	63	10	34	57	7
Total Analysis Volume [veh/h]	76	266	45	126	327	67	99	253	39	136	229	28
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	7			1			3			11		
v_di, Inbound Pedestrian Volume crossing m	3			11			7			1		
v_co, Outbound Pedestrian Volume crossing	2			1			33			12		
v_ci, Inbound Pedestrian Volume crossing mi	12			33			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			4			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
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	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	20	30	0	20	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.1	0.0	3.2	4.1	0.0	0.0	3.7	0.0	0.0	3.7	0.0
All red [s]	2.4	2.4	0.0	2.3	2.4	0.0	0.0	2.2	0.0	0.0	2.2	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.0	1.8	0.0	2.0	1.8	0.0	0.0	2.0	0.0	0.0	1.8	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	23	0	0	12	0	0	17	0	0	23	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]	3.6	4.5	0.0	3.5	4.5	0.0	0.0	3.9	0.0	0.0	3.9	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	C	L	C	C	L	C	R
C, Cycle Length [s]	50	50	50	50	50	50	50	50	50	50	50	50
L, Total Lost Time per Cycle [s]	6.05	6.50	6.50	6.00	6.50	6.50	5.90	5.90	5.90	5.90	5.90	5.90
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.50	4.50	0.00	4.50	4.50	3.90	3.90	3.90	3.90	3.90	3.90
g_i, Effective Green Time [s]	24	13	13	24	14	14	15	15	15	15	15	15
g / C, Green / Cycle	0.48	0.27	0.27	0.48	0.27	0.27	0.29	0.29	0.29	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.05	0.09	0.09	0.09	0.11	0.11	0.09	0.08	0.08	0.13	0.12	0.02
s, saturation flow rate [veh/h]	1389	1855	1747	1434	1855	1686	1106	1855	1765	1072	1855	1538
c, Capacity [veh/h]	603	493	464	642	500	454	311	543	517	345	543	450
d1, Uniform Delay [s]	11.73	14.70	14.74	11.32	14.94	15.03	19.76	13.55	13.58	18.85	14.23	12.69
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
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]	0.03	0.14	0.15	0.05	0.20	0.23	0.22	0.10	0.11	0.27	0.19	0.02
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	0.13	0.32	0.33	0.20	0.40	0.42	0.32	0.27	0.28	0.39	0.42	0.06
d, Delay for Lane Group [s/veh]	11.77	14.84	14.89	11.38	15.14	15.26	19.97	13.65	13.68	19.12	14.42	12.72
Lane Group LOS	B	B	B	B	B	B	B	B	B	B	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.34	1.24	1.21	0.57	1.62	1.56	0.99	1.13	1.10	1.26	1.72	0.19
50th-Percentile Queue Length [ft/ln]	8.42	31.09	30.21	14.28	40.46	38.92	24.66	28.29	27.51	31.56	43.03	4.68
95th-Percentile Queue Length [veh/ln]	0.61	2.24	2.18	1.03	2.91	2.80	1.78	2.04	1.98	2.27	3.10	0.34
95th-Percentile Queue Length [ft/ln]	15.15	55.97	54.38	25.71	72.83	70.06	44.40	50.92	49.52	56.80	77.46	8.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.77	14.86	14.89	11.38	15.18	15.26	19.97	13.66	13.68	19.12	14.42	12.72
Movement LOS	B	B	B	B	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	14.26			14.27			15.26			15.93		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	14.88											
Intersection LOS	B											
Intersection V/C	0.252											

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]	1699.62	1506.91	489.51	1264.93
d_p, Pedestrian Delay [s]	15.23	15.23	15.23	15.23
l_p,int, Pedestrian LOS Score for Intersectio	2.742	2.730	2.444	2.671
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1199	1199	1199	1199
d_b, Bicycle Delay [s]	4.01	4.02	4.01	4.01
l_b,int, Bicycle LOS Score for Intersection	1.914	2.043	1.914	2.254
Bicycle LOS	A	B	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Robinson Street / Matterhorn Lane

Control Type:	Roundabout	Delay (sec / veh):	4.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Matterhorn Ln			Matterhorn Ln			Robinson St			Robinson St		
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	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	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			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Matterhorn Ln			Matterhorn Ln			Robinson St			Robinson St		
Base Volume Input [veh/h]	55	49	8	0	49	108	110	18	70	6	11	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
Proportion of CAVs [%]	0.00											
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]	-34	0	0	0	0	0	0	0	-43	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
Total Hourly Volume [veh/h]	21	49	8	0	49	108	110	18	27	6	11	0
Peak Hour Factor	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000
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]	7	15	3	0	15	34	34	6	8	2	3	0
Total Analysis Volume [veh/h]	26	61	10	0	61	135	138	23	34	8	14	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	164			49			70			230		
Exiting Flow Rate [veh/h]	105			203			179			34		
Demand Flow Rate [veh/h]	21	49	8	0	49	108	110	18	27	6	11	0
Adjusted Demand Flow Rate [veh/h]	26	61	10	0	61	135	138	23	34	8	14	0

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	99	200	199	23
Capacity of Entry and Bypass Lanes [veh/h]	1168	1313	1285	1092
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1145	1288	1260	1071
X, volume / capacity	0.08	0.15	0.15	0.02

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.28	0.54	0.55	0.06
95th-Percentile Queue Length [ft]	6.93	13.42	13.69	1.57
Approach Delay [s/veh]	3.86	4.06	4.16	3.54
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	4.04			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 5: 5th Street / Matterhorn Lane

Control Type:	Signalized	Delay (sec / veh):	10.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.229

Intersection Setup

Name				Matterhorn Ln			5th St			5th St		
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	0	1	0	0	1	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	150.00
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]	30.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Matterhorn Ln			5th St			5th St		
Base Volume Input [veh/h]	17	0	11	25	0	45	54	341	28	20	327	33
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	3.00	2.00	3.00	3.00	3.00	2.00	2.00	3.00	3.00
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	-6	0	-10	-17	0	0	0	0	-9
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	6	0	0	18	0	0	15	0	0	12
Total Hourly Volume [veh/h]	17	0	5	19	0	17	37	341	13	20	327	12
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
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]	5	0	1	5	0	5	10	96	4	6	92	3
Total Analysis Volume [veh/h]	19	0	6	21	0	19	42	383	15	22	367	13
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	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
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	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	20	30	0	20	30	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	0.0	2.5	0.0	0.0	2.5	0.0	2.5	2.5	0.0	2.5	2.5	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	17	0	0	10	0	0	10	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]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	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	L	C	L	C	R	L	C	R
C, Cycle Length [s]	29	29	29	29	29	29	29	29	29	29
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	1	1	1	1	15	8	8	15	8	8
g / C, Green / Cycle	0.05	0.05	0.05	0.05	0.53	0.29	0.29	0.53	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.02	0.01	0.03	0.21	0.01	0.02	0.20	0.01
s, saturation flow rate [veh/h]	1393	1589	1398	1589	1272	1855	1589	1238	1855	1577
c, Capacity [veh/h]	253	78	253	78	877	544	466	859	504	428
d1, Uniform Delay [s]	14.33	13.00	14.33	13.11	3.67	9.01	7.22	3.64	9.48	7.67
k, delay calibration	0.11	0.11	0.11	0.11	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
d2, Incremental Delay [s]	0.12	0.41	0.14	1.58	0.02	1.67	0.03	0.01	2.04	0.03
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	0.08	0.08	0.08	0.24	0.05	0.70	0.03	0.03	0.73	0.03
d, Delay for Lane Group [s/veh]	14.45	13.41	14.47	14.69	3.69	10.69	7.25	3.66	11.52	7.70
Lane Group LOS	B	B	B	B	A	B	A	A	B	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.11	0.04	0.12	0.13	0.02	1.35	0.04	0.01	1.41	0.04
50th-Percentile Queue Length [ft/ln]	2.65	0.92	3.05	3.21	0.55	33.79	0.95	0.28	35.15	0.89
95th-Percentile Queue Length [veh/ln]	0.19	0.07	0.22	0.23	0.04	2.43	0.07	0.02	2.53	0.06
95th-Percentile Queue Length [ft/ln]	4.77	1.66	5.49	5.77	0.98	60.82	1.71	0.51	63.28	1.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.45	13.41	13.41	14.47	14.69	14.69	3.69	10.69	7.25	3.66	11.52	7.70
Movement LOS	B	B	B	B	B	B	A	B	A	A	B	A
d_A, Approach Delay [s/veh]	14.20			14.57			9.90			10.97		
Approach LOS	B			B			A			B		
d_I, Intersection Delay [s/veh]	10.70											
Intersection LOS	B											
Intersection V/C	0.229											

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]	5.39	5.39	5.39	5.39
l_p,int, Pedestrian LOS Score for Intersectio	1.912	1.945	2.501	2.373
Crosswalk LOS	A	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2102	2102	2102	2102
d_b, Bicycle Delay [s]	0.04	0.04	0.04	0.04
l_b,int, Bicycle LOS Score for Intersection	1.611	1.655	2.310	2.243
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Saliman Road / Robinson Street

Control Type:	Signalized	Delay (sec / veh):	28.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.389

Intersection Setup

Name	Saliman Rd			Saliman Rd			Robinson St			Robinson St		
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	11.00	11.00	11.00	11.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	125.00	100.00	100.00	150.00	100.00	100.00	60.00	100.00	100.00	100.00	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]	15.00			15.00			15.00			15.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Rd			Robinson St			Robinson St		
Base Volume Input [veh/h]	30	295	80	165	410	84	50	28	41	97	34	147
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 [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
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	-17	-47	0	0	0	-5	0	-10	-3	-27
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	33	0	0	44	0	0	21	0	0	36
Total Hourly Volume [veh/h]	30	295	30	118	410	40	50	23	20	87	31	84
Peak Hour Factor	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900
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]	11	107	11	43	149	14	18	8	7	32	11	30
Total Analysis Volume [veh/h]	43	428	43	171	594	58	72	33	29	126	45	122
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	5			90			5			89		
v_di, Inbound Pedestrian Volume crossing m	5			89			5			90		
v_co, Outbound Pedestrian Volume crossing	39			25			25			40		
v_ci, Inbound Pedestrian Volume crossing mi	40			25			25			39		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
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	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	24	33	0	32	41	0	13	34	0	21	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	16	0	0	16	0	0	22	0	0	22	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	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes		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	C	L	C	C	L	C	L	C
C, Cycle Length [s]	79	79	79	79	79	79	79	79	79	79
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
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
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	3	19	19	10	25	25	4	23	7	26
g / C, Green / Cycle	0.04	0.24	0.24	0.12	0.32	0.32	0.05	0.30	0.09	0.33
(v / s)_i Volume / Saturation Flow Rate	0.02	0.13	0.13	0.10	0.18	0.18	0.04	0.04	0.07	0.12
s, saturation flow rate [veh/h]	1767	1855	1724	1767	1855	1767	1767	1705	1767	1434
c, Capacity [veh/h]	69	440	409	216	594	566	95	503	164	479
d1, Uniform Delay [s]	37.44	26.41	26.61	33.75	22.25	22.34	36.90	20.41	35.04	19.87
k, delay calibration	0.11	0.11	0.11	0.11	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
d2, Incremental Delay [s]	8.85	1.04	1.25	6.43	0.82	0.90	11.32	0.11	7.29	0.43
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	0.62	0.54	0.57	0.79	0.56	0.57	0.75	0.12	0.77	0.35
d, Delay for Lane Group [s/veh]	46.28	27.46	27.86	40.18	23.07	23.23	48.22	20.52	42.33	20.30
Lane Group LOS	D	C	C	D	C	C	D	C	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.00	4.10	4.05	3.61	5.25	5.13	1.69	0.87	2.73	2.40
50th-Percentile Queue Length [ft/ln]	25.03	102.54	101.15	90.35	131.37	128.14	42.30	21.69	68.32	60.03
95th-Percentile Queue Length [veh/ln]	1.80	7.38	7.28	6.51	9.01	8.84	3.05	1.56	4.92	4.32
95th-Percentile Queue Length [ft/ln]	45.06	184.57	182.08	162.63	225.35	220.96	76.15	39.05	122.98	108.06

Movement, Approach, & Intersection Results

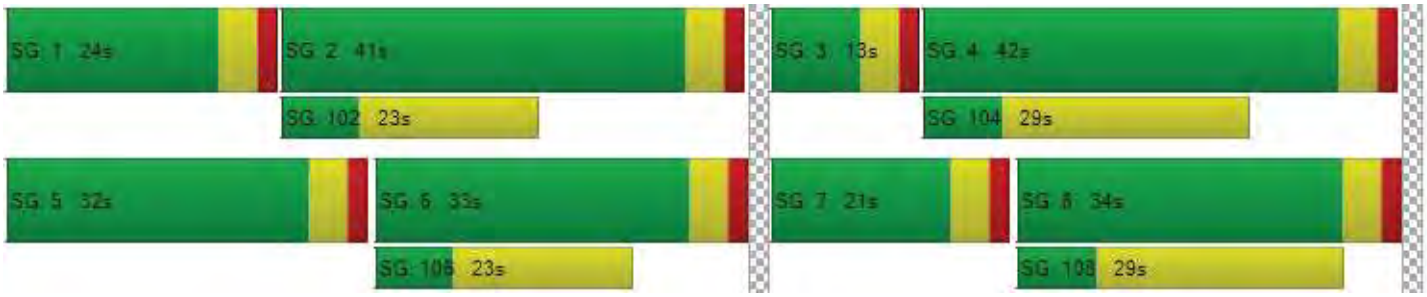
d_M, Delay for Movement [s/veh]	46.28	27.63	27.86	40.18	23.14	23.23	48.22	20.52	20.52	42.33	20.30	20.30
Movement LOS	D	C	C	D	C	C	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	29.21			26.69			35.40			29.78		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	28.60											
Intersection LOS	C											
Intersection V/C	0.389											

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]	1187.98	58.77	212.29	137.02
d_p, Pedestrian Delay [s]	29.24	29.24	29.24	29.24
l_p,int, Pedestrian LOS Score for Intersectio	2.468	2.504	2.019	2.083
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	709	912	735	937
d_b, Bicycle Delay [s]	16.44	11.69	15.80	11.15
l_b,int, Bicycle LOS Score for Intersection	2.011	2.275	1.815	2.102
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: 5th Street / Matterhorn Lane

Control Type:	Two-way stop	Delay (sec / veh):	16.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.065

Intersection Setup

Name	Matterhorn Ln		5th St		5th St	
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	0	0	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Matterhorn Ln		5th St		5th St	
Base Volume Input [veh/h]	25	45	54	341	327	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00
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]	-6	-10	-17	0	0	-9
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]	19	35	37	341	327	24
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	10	10	96	92	7
Total Analysis Volume [veh/h]	21	39	42	383	367	27
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	0.06	0.06	0.04	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	16.86	10.65	8.22	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.21	0.18	0.11	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	5.16	4.58	2.82	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.82		0.81		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.27					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 1: William Street / Saliman Road

Control Type:	Signalized	Delay (sec / veh):	34.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.609

Intersection Setup

Name	Saliman Rd			Saliman Rd			William St			William St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	10.00	10.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	10.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	2	0	0
Entry Pocket Length [ft]	275.00	100.00	100.00	160.00	100.00	100.00	215.00	100.00	225.00	325.00	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]	15.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Saliman Rd			Saliman Rd			William St			William St		
Base Volume Input [veh/h]	131	128	368	117	102	14	29	873	157	456	698	48
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 [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Proportion of CAVs [%]	0.00											
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]	-11	0	-26	0	0	0	0	0	-19	-44	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	103	0	0	7	0	0	72	0	0	25
Total Hourly Volume [veh/h]	120	128	239	117	102	7	29	873	66	412	698	23
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
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]	32	34	64	31	27	2	8	235	18	111	188	6
Total Analysis Volume [veh/h]	129	138	257	126	110	8	31	939	71	443	751	25
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	8			6			5			0		
v_di, Inbound Pedestrian Volume crossing m	0			5			6			8		
v_co, Outbound Pedestrian Volume crossing	1			0			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	4			1			3			3		

Intersection Settings

Located in CBD	No
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	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	10	0	5	10	0
Maximum Green [s]	40	40	0	30	40	0	20	35	0	26	35	0
Amber [s]	3.0	3.4	0.0	3.5	3.4	0.0	3.6	4.5	0.0	3.5	4.4	0.0
All red [s]	2.5	3.0	0.0	1.5	3.0	0.0	4.1	1.0	0.0	4.1	1.0	0.0
Split [s]	26	44	0	15	33	0	15	38	0	23	46	0
Vehicle Extension [s]	1.9	2.0	0.0	3.0	2.0	0.0	1.7	2.7	0.0	1.7	2.7	0.0
Walk [s]	0	9	0	0	14	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	28	0	0	12	0	0	21	0	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	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	4.4	0.0	3.0	4.4	0.0	5.7	3.5	0.0	5.6	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
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	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.40	6.40	6.40	6.40	6.40	6.40	7.70	5.50	5.50	7.60	5.40	5.40
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]	0.00	4.40	4.40	0.00	4.40	4.40	5.70	3.50	3.50	5.60	3.40	3.40
g_i, Effective Green Time [s]	37	23	23	37	23	23	3	47	47	17	61	61
g / C, Green / Cycle	0.31	0.19	0.19	0.31	0.19	0.19	0.03	0.39	0.39	0.14	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.09	0.07	0.17	0.10	0.03	0.03	0.02	0.26	0.04	0.13	0.21	0.21
s, saturation flow rate [veh/h]	1451	1885	1556	1246	1885	1832	1795	3589	1578	3486	1885	1862
c, Capacity [veh/h]	502	365	302	411	357	346	49	1388	610	506	951	939
d1, Uniform Delay [s]	31.22	42.13	46.51	31.37	40.78	40.81	57.85	30.60	23.64	50.31	18.59	18.60
k, delay calibration	0.04	0.04	0.04	0.11	0.04	0.04	0.04	0.50	0.50	0.04	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]	0.10	0.24	2.65	0.42	0.08	0.08	4.98	2.66	0.39	1.95	1.31	1.33
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	0.26	0.38	0.85	0.31	0.17	0.17	0.63	0.68	0.12	0.88	0.41	0.41
d, Delay for Lane Group [s/veh]	31.32	42.37	49.16	31.79	40.86	40.89	62.83	33.27	24.03	52.25	19.90	19.93
Lane Group LOS	C	D	D	C	D	D	E	C	C	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.93	3.70	7.78	2.83	1.50	1.49	0.99	11.38	1.34	6.53	6.82	6.76
50th-Percentile Queue Length [ft/ln]	73.19	92.55	194.56	70.69	37.55	37.19	24.65	284.46	33.38	163.22	170.50	168.89
95th-Percentile Queue Length [veh/ln]	5.27	6.66	12.36	5.09	2.70	2.68	1.77	16.91	2.40	10.72	11.10	11.02
95th-Percentile Queue Length [ft/ln]	131.74	166.59	308.94	127.24	67.59	66.94	44.37	422.77	60.08	267.98	277.57	275.45