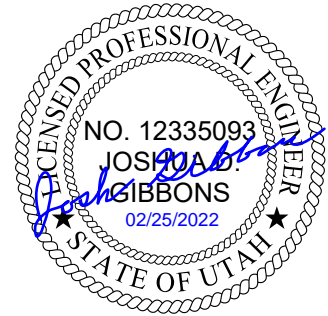


MEMORANDUM

Date: February 25, 2022
To: Guy Williams, Fawkes Consultants
From: Hales Engineering
Subject: **Eden Sundown Condominiums Traffic Study**



UT22-2135

Introduction

This memorandum discusses the traffic study completed for the proposed Sundown Condos development in Eden, Utah. A vicinity map of the proposed development is shown in Figure 1.



Figure 1: Vicinity map of the proposed development in Eden, Utah

Background

The proposed development is located just west of the Summit Pass Road / Powder Mountain Road (S.R. 158) intersection in Eden, Utah. The project includes condominium housing units. A site plan for the proposed development is included in Appendix A.

The proposed land use for the development has been identified as follows:

- Condominiums 72 units

Traffic Volumes

Saturday morning (8:00 to 10:00 a.m.) and evening (3:00 to 5:00 p.m.) peak period traffic counts were performed at the following intersections, as requested by UDOT:

- South Residential Access & Ski School Access / Powder Mountain Road (SR. 158)
- Summit Pass Road / Powder Mountain Road (S.R. 158)

The counts times were chosen based on the operational hours and peak times at the nearby Powder Mountain Resort. The counts were performed on Saturday, February 19, 2022. The morning peak hour was determined to be between 8:30 and 9:30 a.m., and the evening peak hour was determined to be between 3:30 and 4:30 p.m. The evening peak hour volumes were approximately 13% higher than the morning peak hour volumes. Detailed count volumes can be found in Appendix B of this report. It should be noted that these traffic volumes were collected over President's Day weekend. Typically, President's Day weekend is considered to be the peak operating period for ski resorts in Utah, so the counts collected will be higher than they would be if gathered on an average day during the ski season.

Counts were attempted at the North Residential Access / Powder Mountain Road (S.R. 158) intersection on the north side of the project but were not possible due to weather-related geometric constraints. Based on the Institute of Transportation Engineers (ITE) *Trip Generation (11th Edition, 2021)*, the four single-family dwelling units on the north side of the intersection would generate four trips (one entering and three exiting) in the morning peak hour and six trips (4 entering and 2 exiting) in the evening peak hour.

Trip Generation

Trip generation for the development was calculated using trip generation rates published in the ITE *Trip Generation (11th Edition, 2021)*. Currently, there are eight units constructed on-site. 12 additional condominium units are planned in phase 1 and an additional 60 units are planned in phase 2, totaling in 72 additional units. Trip generation for the remaining units in the proposed project is included in Table 1.

As shown in Table 1, it is anticipated that the proposed development will generate approximately 330 trips on an average Saturday, including 70 trips during the morning peak hour, and 74 trips during the evening peak hour.

It is not anticipated that these units will be owner-occupied or primary residences. Many of the units are anticipated to be rented or shared between tenants seasonally. Therefore, these trip generation estimates are conservative, assuming each unit is occupied. Since ITE does not have detailed data for Saturday morning and evening peak hours, the weekday morning and evening peak hour data were used to estimate these trips.

Table 1: Trip Generation

Trip Generation Eden - Sundown Condos TS								
Land Use ¹	# of Units	Unit Type	Trip Generation			New Trips		
			Total	% In	% Out	In	Out	Total
Saturday Daily								
Phase 1 Multifamily Housing (Low-Rise) (220)	12	DU	56	50%	50%	28	28	56
Phase 2 Multifamily Housing (Low-Rise) (220)	60	DU	274	50%	50%	137	137	274
TOTAL			330			165	165	330
AM Peak Hour								
Phase 1 Multifamily Housing (Low-Rise) (220)	12	DU	28	24%	76%	7	21	28
Phase 2 Multifamily Housing (Low-Rise) (220)	60	DU	42	24%	76%	10	32	42
TOTAL			70			17	53	70
PM Peak Hour								
Phase 1 Multifamily Housing (Low-Rise) (220)	12	DU	26	63%	37%	16	10	26
Phase 2 Multifamily Housing (Low-Rise) (220)	60	DU	48	63%	37%	30	18	48
TOTAL			74			46	28	74
1. Land Use Code from the Institute of Transportation Engineers (ITE) <i>Trip Generation</i> , 11th Edition, 2021. SOURCE: Hales Engineering, February 2022								

Trip Distribution and Assignment

Project traffic is assigned to the roadway network based on the type of trip and the proximity of project access points to major streets, high population densities, and regional trip attractions. Existing travel patterns observed during data collection also provide helpful guidance to establishing these distribution percentages, especially near the site. The resulting distribution of project generated trips during the peak hour is shown in Table 2.

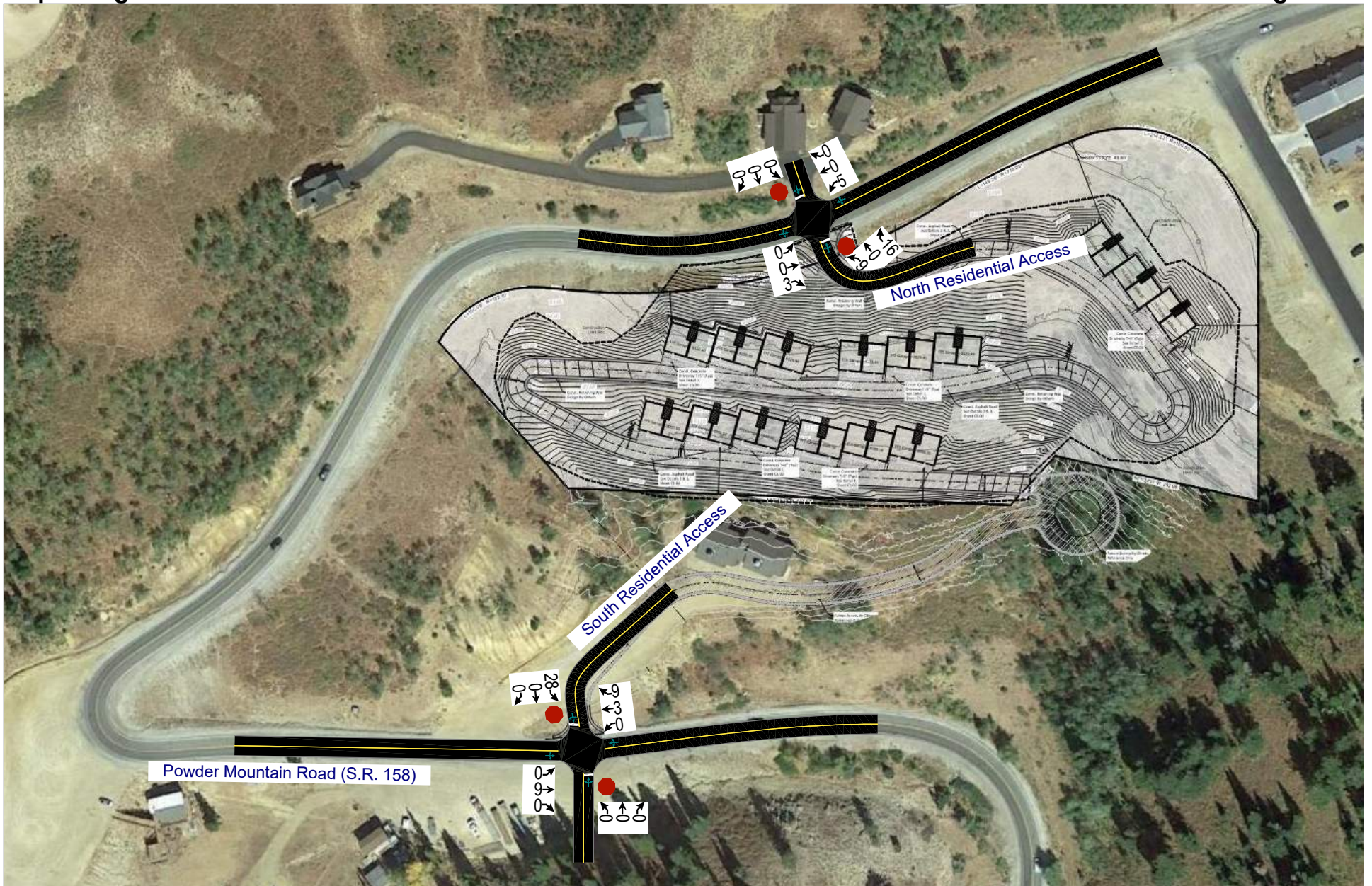
Table 2: Trip Distribution

Direction	% To/From Project
Southwest on S.R. 158	70%
East to Summit Pass Road	30%

These trip distribution assumptions were used to assign the peak hour generated traffic at the study intersections to create trip assignment for the proposed development. Trip assignment for the development is shown in Figure 2.

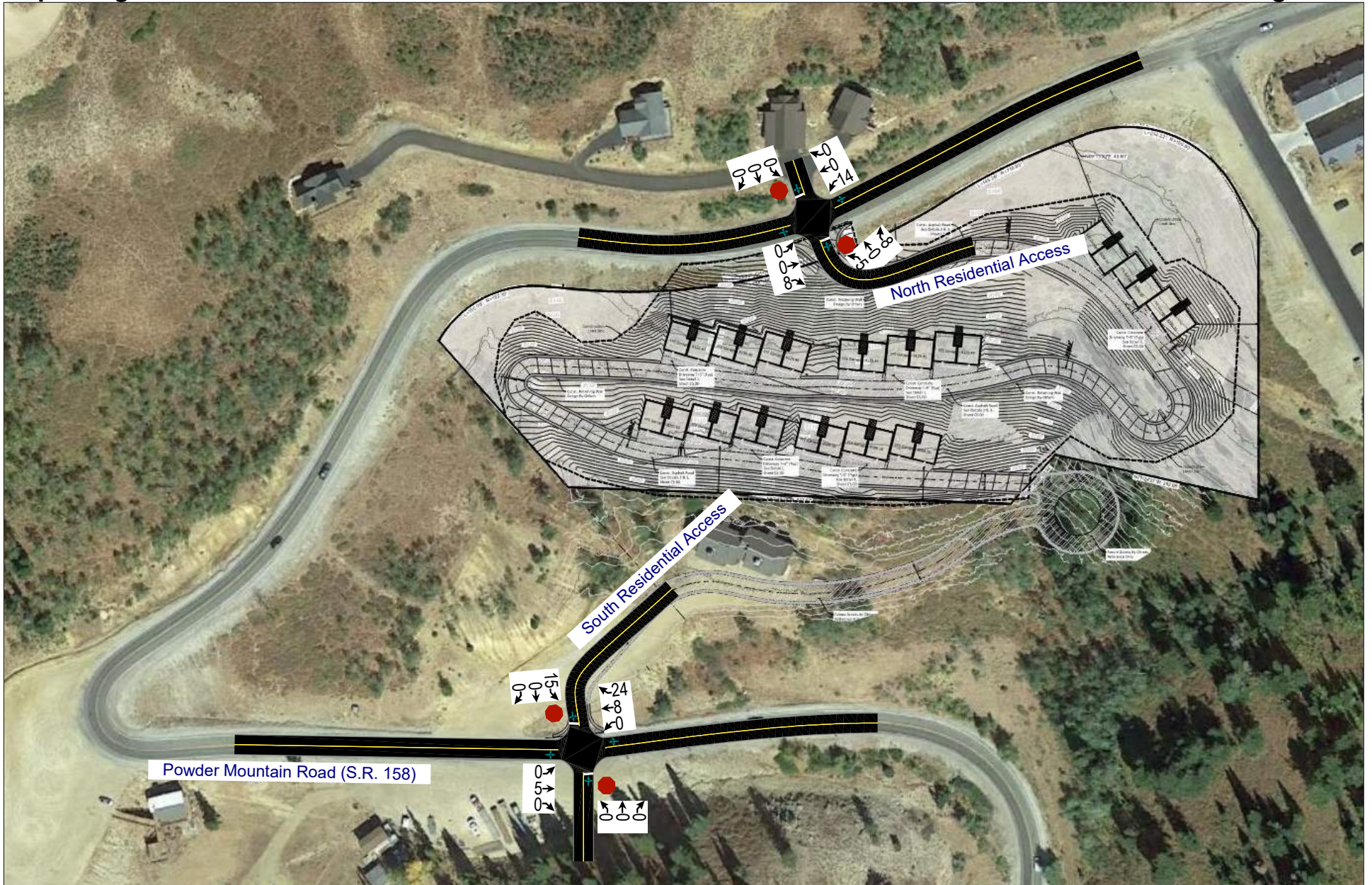
Eden - Sundown Condos TS
Trip Assignment

Morning Peak Hour
Figure 2a



Eden - Sundown Condos TS
Trip Assignment

Evening Peak Hour
Figure 2b



Auxiliary Lane Requirements

UDOT Administrative Rule R930-6 outlines minimum turn volumes (measured in vehicles per hour) to warrant auxiliary lanes on a UDOT “Community – Rural Importance” (Access Category 7) roadway. It is not anticipated that auxiliary lanes are required for the project accesses, as shown in Table 3 and Table 4. The measured turning movement values include the trip assignment and the existing turning movement counts from the data collection.

Table 3: Auxiliary Lane Summary – North Residential Access / S.R. 158

Auxiliary Lane Type		Minimum Requirement	Measure (AM, PM)	Met?
Left turn	Deceleration (WB-to-SB)	25 vph	5 vph, 14 vph	No
Right turn	Deceleration (EB-to-SB)	50 vph	3 vph, 8 vph	No

Table 4: Auxiliary Lane Summary – South Residential Access / S.R. 158

Auxiliary Lane Type		Minimum Requirement	Measure	Met?
Left turn	Deceleration (EB-to-NB)	25 vph	1 vph, 2 vph	No
Right turn	Deceleration (WB-to-NB)	50 vph	14 vph, 26 vph	No

Conclusions

The findings of this study are as follows:

- The proposed development includes the addition of 72 condominium units. It is anticipated that the project will have two accesses onto Powder Mountain Road (S.R. 158).
- Saturday turning movement counts were collected as requested by UDOT.
- It is anticipated that the proposed project will generate approximately 330 trips on an average Saturday, including 70 trips during the morning peak hour, and 74 trips during the evening peak hour. These trip generation estimates assume full occupancy of the condominium units.
- It is not anticipated that auxiliary lanes will be required at either of the project accesses onto Powder Mountain Road (S.R. 158).

If you have any questions regarding this memorandum, please contact us at 801.766.4343.

APPENDIX A

Site Plan

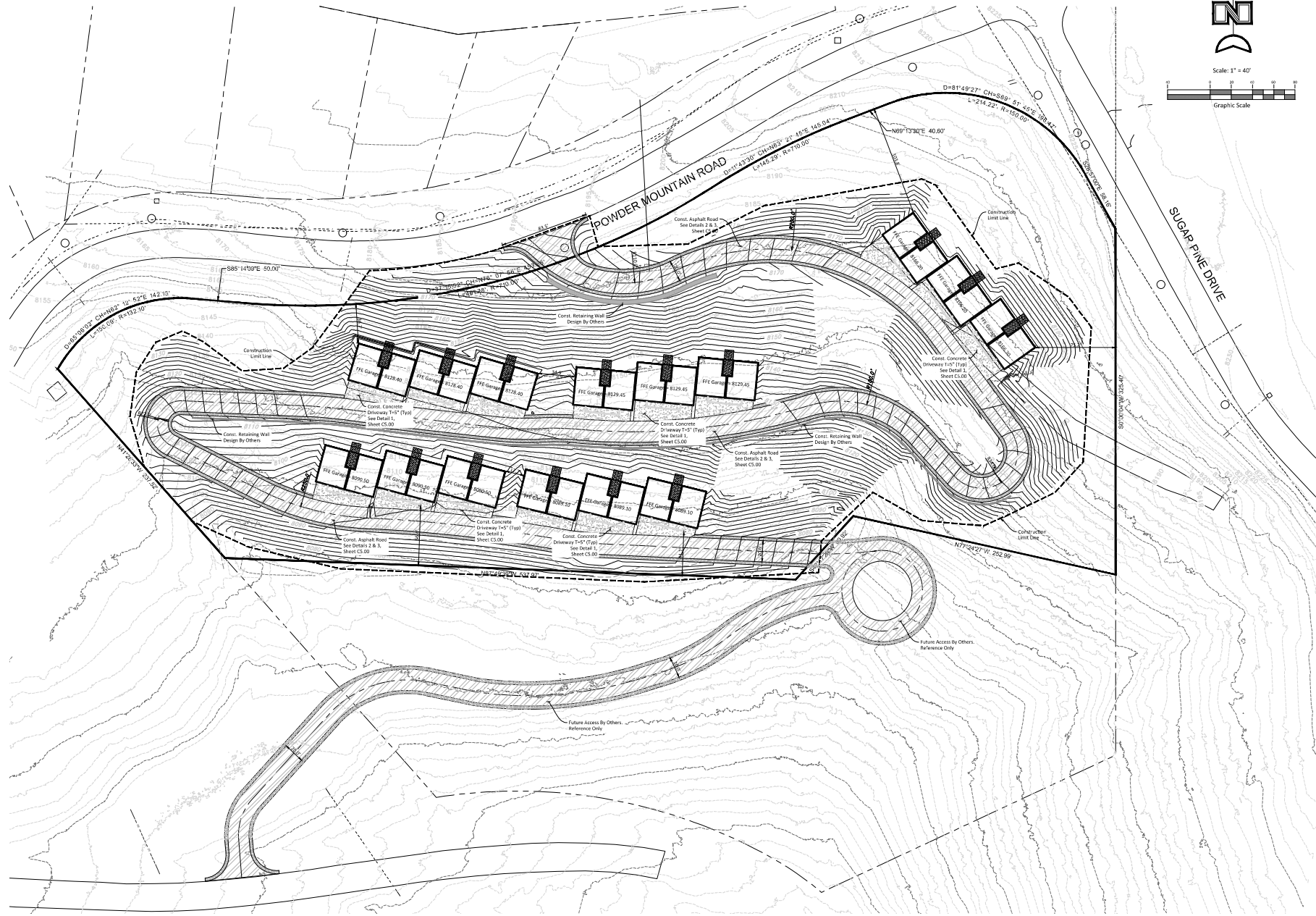
Sundown Condos at Powder Mountain PRUD



Scale: 1" = 40'



Graphic Scale



Revisions:



Fawkes Consultants
 Jordan J. Williams, P.E.
 2701 N. Thanksgiving Way, Suite 100
 Lehi, Utah 84043
 jwilliams@fawkesconsultants.com

Revisions:

Sundown Condos
 Approx. 6550 N. Powder Mountain Road
 Lehi, Utah 84043

Sheet Title:

Site Plan

Date: 1/16/2022
 Design: GHV
 Drawn: GHV
 Chkd: GHV

21.000 - VS.dwg
C2.00
 Sheet No.
3/10

PRELIMINARY-NOT FOR CONSTRUCTION OR RECORDING

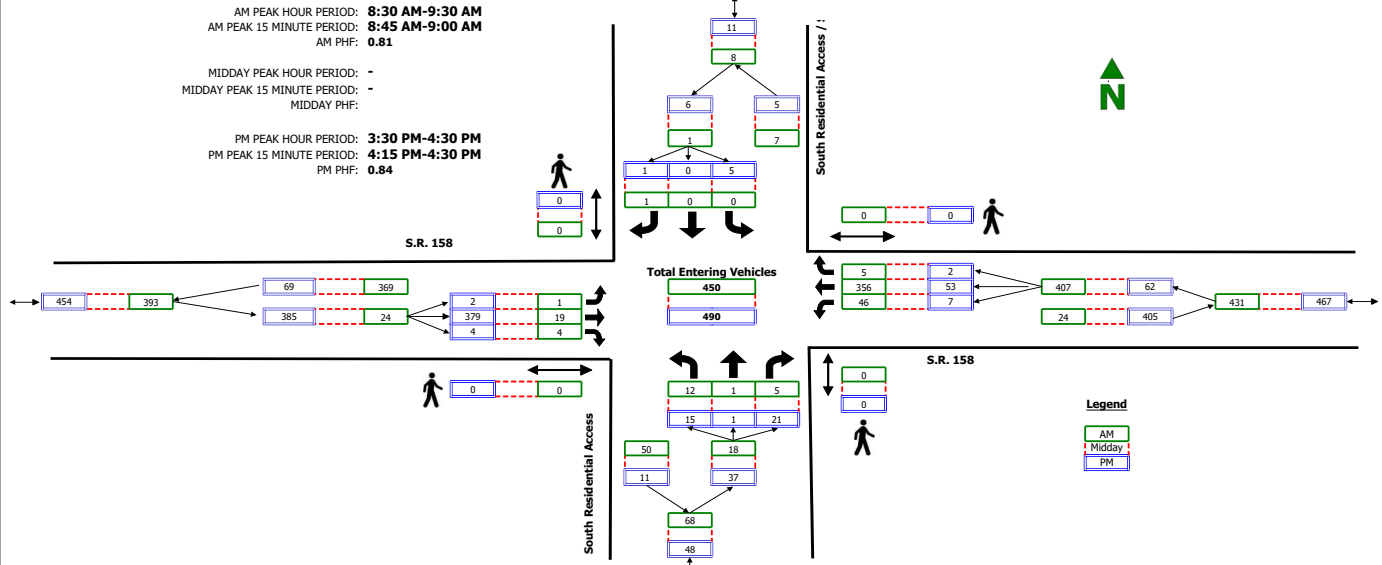
APPENDIX B

Turning Movement Counts

Intersection Turning Movement Summary

Intersection: South Residential Access / Ski School Access / S.R. 158
North/South: South Residential Access / Ski School Access
East/West: S.R. 158
Jurisdiction: Eden
Project Title: Eden Sundown Condos TS
Project No: UT22-2135
Weather: Clear

Date: 2-19-22, Sat
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

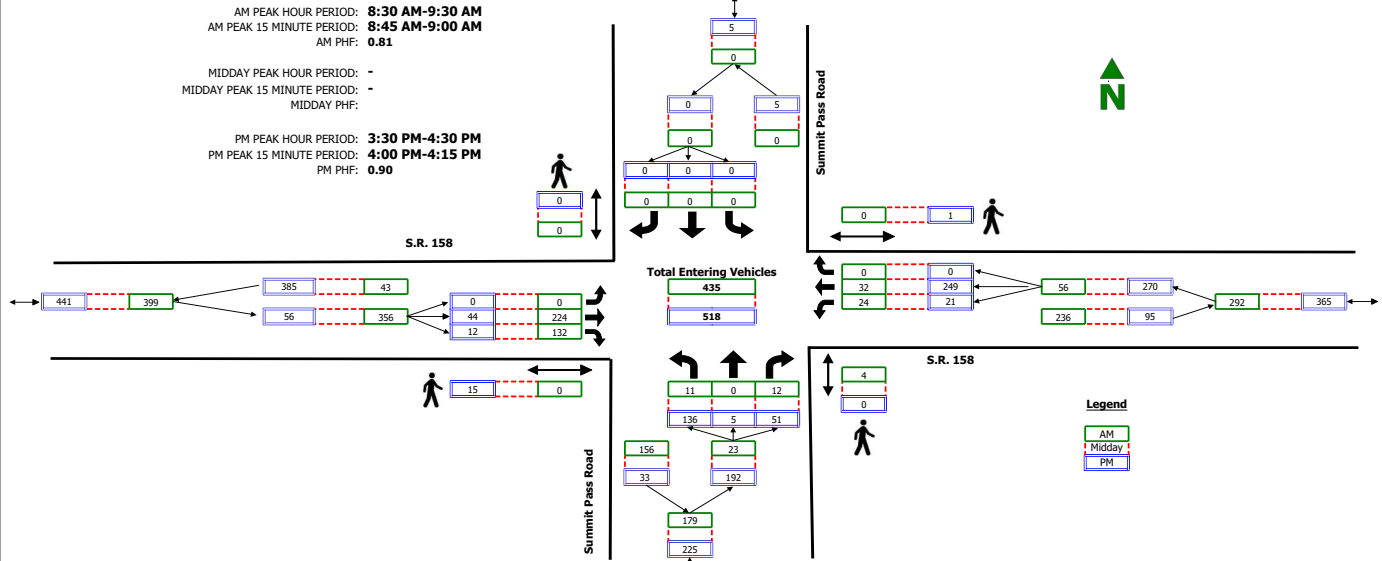


RAW COUNT SUMMARIES	Residential Access / Ski School				Residential Access / Ski School				S.R. 158 Northbound				S.R. 158 Eastbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
AM PERIOD COUNTS																	
Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
8:00 - 8:15	1	0	1	0	0	0	0	0	0	2	2	0	1	34	3	0	44
8:15 - 8:30	3	0	1	0	0	0	1	0	0	1	3	0	5	37	0	0	51
8:30 - 8:45	2	0	1	0	0	0	0	0	1	2	1	0	16	76	2	0	101
8:45 - 9:00	3	0	1	0	0	0	0	0	0	5	2	0	11	115	2	0	139
9:00 - 9:15	1	1	2	0	0	0	0	1	0	3	1	0	10	99	1	0	119
9:15 - 9:30	6	0	1	0	0	0	0	0	0	9	0	0	9	66	0	0	91
9:30 - 9:45	6	0	0	0	0	0	0	0	0	5	0	0	4	76	1	0	92
9:45 - 10:00	5	0	0	0	2	0	0	0	0	5	0	0	1	58	0	0	71
MIDDAY PERIOD COUNTS																	
Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM PERIOD COUNTS																	
Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
15:00 - 15:15	5	0	2	0	1	0	1	0	0	38	0	0	2	21	0	0	70
15:15 - 15:30	2	0	7	0	0	0	0	0	1	49	0	0	2	20	1	0	82
15:30 - 15:45	6	1	6	0	1	0	0	0	1	65	1	0	4	14	1	0	100
15:45 - 16:00	5	0	3	0	0	0	0	0	0	91	2	0	3	19	1	0	124
16:00 - 16:15	3	0	6	0	4	0	0	0	1	93	0	0	0	14	0	0	121
16:15 - 16:30	1	0	6	0	0	0	1	0	0	130	1	0	0	6	0	0	145
16:30 - 16:45	2	0	9	0	1	0	0	0	0	66	1	0	0	11	0	0	90
16:45 - 17:00	2	0	5	0	1	0	0	0	0	54	0	0	0	9	0	0	71

Intersection Turning Movement Summary

Intersection: Summit Pass Road / S.R. 158
North/South: Summit Pass Road
East/West: S.R. 158
Jurisdiction: Eden
Project Title: Eden Sundown Condos TS
Project No: UT22-2135
Weather: Clear

Date: 2-19-22, Sat
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0



RAW COUNT SUMMARIES	Summit Pass Road Northbound				Summit Pass Road Southbound				S.R. 158 Eastbound				S.R. 158 Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
AM PERIOD COUNTS																	
Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
8:00 - 8:15	1	0	5	0	0	0	0	0	0	27	5	0	6	6	0	0	50
8:15 - 8:30	1	0	1	1	0	0	0	0	0	30	11	0	4	7	0	0	54
8:30 - 8:45	0	0	7	0	0	0	0	0	0	49	24	0	6	11	0	0	97
8:45 - 9:00	4	0	1	0	0	0	0	0	0	68	47	0	8	7	0	0	135
9:00 - 9:15	2	0	2	4	0	0	0	0	0	66	36	0	2	9	0	0	117
9:15 - 9:30	5	0	2	0	0	0	0	0	0	41	25	0	8	5	0	0	86
9:30 - 9:45	3	0	1	0	0	0	0	0	0	40	31	0	3	7	0	0	85
9:45 - 10:00	5	0	3	0	0	0	0	0	0	41	20	4	6	4	0	0	79
MIDDAY PERIOD COUNTS																	
Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM PERIOD COUNTS																	
Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
15:00 - 15:15	27	0	8	0	0	0	0	7	0	14	4	0	8	28	0	0	85
15:15 - 15:30	31	0	12	0	0	0	0	0	0	19	4	0	1	32	0	0	99
15:30 - 15:45	29	0	9	0	0	0	0	0	0	10	5	3	3	49	0	0	105
15:45 - 16:00	25	0	12	0	0	0	0	0	0	17	4	6	6	62	0	1	126
16:00 - 16:15	39	1	21	0	0	0	0	0	0	11	3	2	7	62	0	0	144
16:15 - 16:30	43	4	9	0	0	0	0	0	0	6	0	4	5	76	0	0	143
16:30 - 16:45	13	0	9	0	0	0	0	0	0	7	7	0	4	57	0	0	97
16:45 - 17:00	7	0	11	0	0	0	0	0	0	7	4	4	1	43	0	0	73