Planning Commission
Staff Report

PARK CITY 1884
PLANNING DEPARTMENT

Subject: **Treasure**
Project #: **PL-08-00370**
Author: **Francisco Astorga, AICP, Senior Planner**
Date: **10 May 2017**
Type of Item: **Administrative – Conditional Use Permit**
Transportation/Traffic Update- Open House

Summary Recommendations

Staff recommends that the applicant present the Treasure Hill Traffic Study Addendum #7 (Transportation/Traffic Update) submitted to the City on May 4, 2017. Despite a goal of completing their study in February 2017, the applicant's consultant was not able to conclude their study update until early May. Having already pushed the scheduled meeting back and re-arranged some other topic reviews, staff and the applicant agreed another continuance would do more harm than good. However, due to the short notice, the City is just beginning to review the document and will provide analysis, comments, questions, etc., during the following upcoming meetings.

In order to provide the information as quickly as possible to the Planning Commission, neighbors, stakeholders and public at large, staff suggested publishing the study update for this meeting but limiting the meeting item to an "open house" format. As such, the applicant will simply explain their submittal material and data. Staff recommends that the Planning Commission hear the applicant's presentation and due to the short notice Staff does not recommend that the Planning Commission engage in deliberations without the benefit of additional public comment nor a published staff report with the technical assistance of the Planning Department and its transportation experts which will be provided in the upcoming meetings.

As noticed, a public hearing should be held. Staff recommends that the Planning Commission continue the item to the June 14, 2017 Planning Commission meeting.

Description

Property Owner:	Sweeney Land Company and Park City II, LLC represented by Patrick Sweeney
Location:	Creole Gulch and Mid-station Sites Sweeney Properties Master Plan (SPMP)
Zoning:	Estate (E) District – Master Planned Development (MPD)
Adjacent Land Use:	Ski resort area and residential
Topic of Discussion:	Transportation
Reason for Review:	Conditional Use Permits are required for development per the Sweeney Properties Master Plan. Conditional Use Permits are reviewed by the Park City Planning Commission

Background

On May 4, 2017, the applicant submitted the Treasure Hill Traffic Study Addendum #7 (Transportation/Traffic Update) as they have indicated that they have been working on it since the January 2017. Updated traffic counts were conducted in mid-February 2017 and this is their initial update to be presented to the Planning Commission

Exhibits

Exhibit A - Treasure Hill Traffic Study Addendum #7 (Transportation/Traffic Update)

Hyperlinks

Link A - Public Comments
Link B - Approved Sweeney Properties Master Plan (Narrative)
Link C - Approved MPD Plans
Link D - Proposed Plans – Visualization Drawings1

- Sheet BP-01 The Big Picture
- Sheet V-1 Illustrative Plan
- Sheet V-2 Illustrative Pool Plaza Plan
- Sheet V-3 Upper Area 5 Pathways
- Sheet V-4 Plaza and Street Entry Plan
- Sheet V-5 Building 4b Cliffscape Area
- Sheet V-6 Exterior Circulation Plan
- Sheet V-7 Parking and Emergency Vehicular Access
- Sheet V-8 Internal Emergency Access Plan
- Sheet V-9 Internal Service Circulation
- Sheet V-10 Site Amenities Plan
- Sheet V-11 Usable Open Space with Development Parcels
- Sheet V-12 Separation-Fencing, Screening & Landscaping
- Sheet V-13 Noise Mitigation Diagrams
- Sheet V-14 Signage & Lighting
- Sheet V-15 Contextual Site Sections - Sheet 1
- Sheet V-16 Contextual Site Sections - Sheet 2

Link E - Proposed Plans – Visualization Drawings2

- Sheet V-17 Cliffscapes
- Sheet V-18 Retaining Systems
- Sheet V-19 Selected Views of 3D Model - 1
- Sheet V-20 Selected Views of 3D Model – 2
- Sheet V-21 Viewpoints Index
- Sheet V-22 Camera Viewpoints 1 & 2
- Sheet V-23 Camera Viewpoints 3 & 4
- Sheet V-24 Camera Viewpoints 5 & 6
- Sheet V-25 Camera Viewpoints 7 & 8
- Sheet V-26 Camera Viewpoints 9 & 10
- Sheet V-27 Camera Viewpoint 11
- Sheet V-28 Illustrative Plan – Setback

Link F - Proposed Plans – Architectural/Engineering Drawings 1a

Sheet VM-1 Vicinity & Proposed Ski Run Map
Sheet EC.1 Existing Conditions
Sheet SP.1 Site & Circulation Plan Sheet
Sheet GP.1 Grading Plan
Sheet HL.1 Height Limits Plan
Sheet HL.2 Roof Heights Relative to Existing Grade
Sheet FD.1 Fire Department Access Plan

Link G - Proposed Plans – Architectural/Engineering Drawings 1b

Sheet P.1 Level 1 Use Plan
Sheet P.2 Level 2 Use Plan
Sheet P.3 Level 3 Use Plan
Sheet P.4 Level 4 Use Plan
Sheet P.5 Level 5 Use Plan
Sheet P.6 Level 6 Use Plan
Sheet P.7 Level 7 Use Plan
Sheet P.8 Level 8 Use Plan
Sheet P.9 Level 9 Use Plan
Sheet P.10 Level 10 Use Plan
Sheet P.11 Level 11 Use Plan
Sheet P.12 Level 12 Use Plan
Sheet P.13 Level 13 Use Plan
Sheet P.14 Level 14 Use Plan
Sheet P.15 Level 15 Use Plan
Sheet P.16 Area, Unit Equivalent & Parking Calculations

Link H – Proposed Plans – Architectural/Engineering Drawings 2

Sheet E.1AC2.1 Buildings 1A, 1C& 2 Exterior Elevations
Sheet E.1B.1 Building 1B Exterior Elevations
Sheet E.3A.1 Building & Parking Garage Exterior Elevations
Sheet E.3BC.1 Building 3BC Exterior Elevations
Sheet E.3BC.2 Building 3BC Exterior Elevations
Sheet E.3BC.3 Building 3BC Exterior Elevations
Sheet E.4A.1 Building 4A Exterior Elevations
Sheet E.4A.2 Building 4A Exterior Elevations
Sheet E.4B.1 Building 4B Exterior Elevations
Sheet E.4B.2 Building 4B Exterior Elevations
Sheet E.4B.3 Building 4B Exterior Elevations
Sheet E.4B.4 Building 4B Exterior Elevations
Sheet E.5A.1 Building 5A Exterior Elevations
Sheet E.5B.1 Building 5B Exterior Elevations
Sheet E.5C.1 Building 5C Exterior Elevations
Sheet E.5C.2 Building 5C Exterior Elevations
Sheet E.5D.1 Building 5D Exterior Elevations
Sheet S.1 Cross Section
Sheet S.2 Cross Section
Sheet S.3 Cross Section
Sheet S.4 Cross Section

Sheet S.5	Cross Section
Sheet S.6	Cross Section
Sheet S.7	Cross Section
Sheet S.8	Cross Section
Sheet S.9	Cross Section
Sheet UP.1	Concept Utility Plan

Link I – Applicant's Written & Pictorial Explanation
Link J – Fire Protection Plan (Appendix A-2)
Link K – Utility Capacity Letters (Appendix A-4)
Link L – Soils Capacity Letters (Appendix A-5)
Link M – Mine Waste Mitigation Plan (Appendix (A-6)
Link N – Employee Housing Contribution (Appendix A-7)
Link O – Proposed Finish Materials (Appendix A-9)
Link P – Economic Impact Analysis (Appendix A-10)
Link Q – Signage & Lighting (appendix A-13)
Link R – LEED (Appendix A-14)
Link S – Worklist (Appendix A-15)
Link T – Excavation Management Plan (Appendix A-16)
Link U – Project Mitigators (Appendix A-18)
Link V – Outside The Box (Appendix A-20)

Additional Hyperlinks
2009.04.22 Jody Burnett MPD Vesting Letter
Staff Reports and Minutes 2016
Staff Reports and Minutes 2009-2010
Staff Reports and Minutes 2006
Staff Reports and Minutes 2005
Staff Reports and Minutes 2004
2004 LMC 50th Edition
1997 General Plan
1986.10.16 City Council Minutes
1985.12.18 Planning Commission Minutes
1986 Comprehensive Plan
1985 Minutes
1985 LMC 3rd Edition
1983 Park City Historic District Design Guidelines
Parking, Traffic Reports and Documents
MPD Amendments:
- October 14, 1987 - Woodside (ski) Trail
- December 30, 1992 - Town Lift Base
- November 7, 1996 – Town Bridge

Exhibit A

Treasure Hill Traffic Study DRAFT Addendum #7

Submitted To:

MPE, Inc.
P.O. Box 2429
Park City, Utah 84060

Submitted By:

Triton Engineering
954 East Oakridge Road South
Park City, Utah 84098

Table of Contents **Page**

List of Figures **Page**

List of Tables **Page**

EXECUTIVE SUMMARY

This study addresses the traffic impacts associated with the proposed Treasure Hill development located in Park City, Utah. The proposed land use consists of a mixed-use development that includes hotel, condominiums, employee housing, and limited commercial.

At full buildout, the Treasure Hill site is expected to generate 109 AM peak hour trips and 160 PM peak hour trips.

This study analyzes project traffic impacts at the following intersections:

- Park Ave / Deer Valley
- Empire Ave / Shadow Ridge
- Empire Ave / Crescent Tram
- Lowell Ave / Manor Way
- Park Ave / Silver King
- Park Ave / Crescent Tram (8th Street)
- Park Ave/ Silver King
- Empire Ave / Manor Way
- Lowell Ave / Shadow Ridge
- Lowell Ave / North Star
- Park Ave / 14th Street
- Empire Ave / 14 Street

The Treasure Hill site will be accessed by the Empire Avenue and Lowell Avenue roadway loop. For this study, it was estimated that 50% of the traffic would enter and exit from Lowell Avenue and 50% from Empire Avenue.

Existing Conditions

The intersection of Empire Ave / Silver King currently operates at a level of service ("LOS") LOS C in the AM peak hour and LOS F in the PM peak hour. The remaining intersections operate an acceptable LOS in both the AM and PM peak hours.

Future Conditions Without Project

In the year 2037, without taking into account the proposed development, the intersections are projected to operate at an acceptable LOS during both the AM and PM peak hours except for the Empire Ave / Silver King and the Lowell Ave / Silver King intersection during the PM peak hour. The delays experienced at the Lowell Ave / Silver King intersection are the result of vehicles queuing from the Empire Ave / Silver King intersection. The Park Ave / Deer Valley intersection operates at an LOS of D which is an acceptable LOS. There are minor traffic signal timing efforts that can be implemented to improve the LOS for each of the turning movements at the Park Ave / Deer Valley intersection.

For traffic operations to improve at the Empire Ave / Silver King intersection, installation of a traffic signal or a roundabout is required. For a traffic signal to operate efficiently and safely, separate turn lanes in the northbound and southbound direction are necessary. The Lowell Ave / Silver King intersection delays are resolved with the improvement at the Empire Ave / Silver King intersection.

Future Conditions With Project

With the implementation of the above mitigation/improvement measures, with the Treasure Hill Project built as proposed, all the intersections will operate at an acceptable LOS during both the AM and PM peak hours.

Conclusion

As reflected in the original Traffic Impact Analysis by PEC in July 2004 (the "Original Report"), Addenda 1-6 thereto, issued between 2004 and 2009 (the "Six Addenda," the Original Report and the Six Addenda, collectively the "Original Studies") and this addendum, the roadway network can facilitate the traffic needs for (a) existing traffic and (b) traffic anticipated from the Treasure Hill Project. Implementation of the improvements at the Empire Ave / Silver King intersection, which will be necessary regardless of the impacts of the Treasure Hill development, will allow the intersections and roadways in the study area, even with the Treasure Hill development, to operate at an acceptable level of service in the future.

Traffic Demand Management ("TDM") strategies will reduce the traffic impact of Treasure Hill. These strategies include:

- Installation of a cabriolet system.
- Installation of beginner/intermediate ski runs that connect with the Park City Mountain Resort ("Resort").
- Implementation of a mixed-use development that includes employee housing and commercial facilities on site.
- During the busy winter season and special events, encouragement of employees not living on site to use public transportation to access the site.
- During the busy winter season and special events, implementing a shuttle service to and from the airport.
- During the construction phase of the project, off-site parking and shuttles to the site for construction workers at the Richardson Flats or similar park and ride. Nonetheless, it is recognized there will be employees that need to drive to the site in order to fulfill job responsibilities including delivery services.

INTRODUCTION

The purpose of this addendum is to update the Original Studies to take into account traffic conditions in 2017 as well as to determine the potential impacts upon traffic conditions due to the completion of the proposed Treasure Hill development in Park City, Utah. The development is proposed to consist of 60,323 square feet (sq-ft) of commercial space that includes 16, 127 sq-ft of meeting space. The development will also have 200,000 sq-ft of hotel space (202 rooms), 45,153 sq-ft or 18 units of three story condominiums, 6,369 sq-ft or 3 units of two story condominiums, 220,164 sq-ft or 82 units of one story condominiums, and 6,669 sq. ft. of employee housing dormitory style.

Figure 1 depicts the site plan and **Figure 2** a vicinity map along with the study intersections. The intersections under study and analysis scenarios were determined with Park City Municipal Corporation ("PCMC") staff.

This addendum will address:

- 2017 traffic conditions in the study area.
- Future 2037 traffic conditions in the study area, also known as background.
- Future 2037 traffic conditions in the study with additional traffic from the proposed Treasure Hill development.
- Proposed TDM strategies to mitigate the increase of traffic generated by the proposed Treasure Hill development.
- Proposed mitigation measures to maintain appropriate traffic operations at the intersections for each traffic condition.

Study Area

In collaboration with PCMC, the study area was modified for the 2017 traffic conditions and additional intersections were included that expanded the original study area. The following intersections were analyzed for traffic operations. The study area intersections are also highlighted in **Figure 2**.

- Park Ave / Deer Valley
- Empire Ave / Shadow Ridge
- Empire Ave / Crescent Tram
- Lowell Ave / Manor Way
- Park Ave / Silver King
- Park Ave / Crescent Tram (8th Street)
- Project access One / Lowell Ave
- Park Ave/ Silver King
- Empire Ave / Manor Way
- Lowell Ave / Shadow Ridge
- Lowell Ave / North Star
- Park Ave / 14th Street
- Empire Ave / 14 Street
- Project access Two / Empire Ave

Figure 1
Project Site Plan

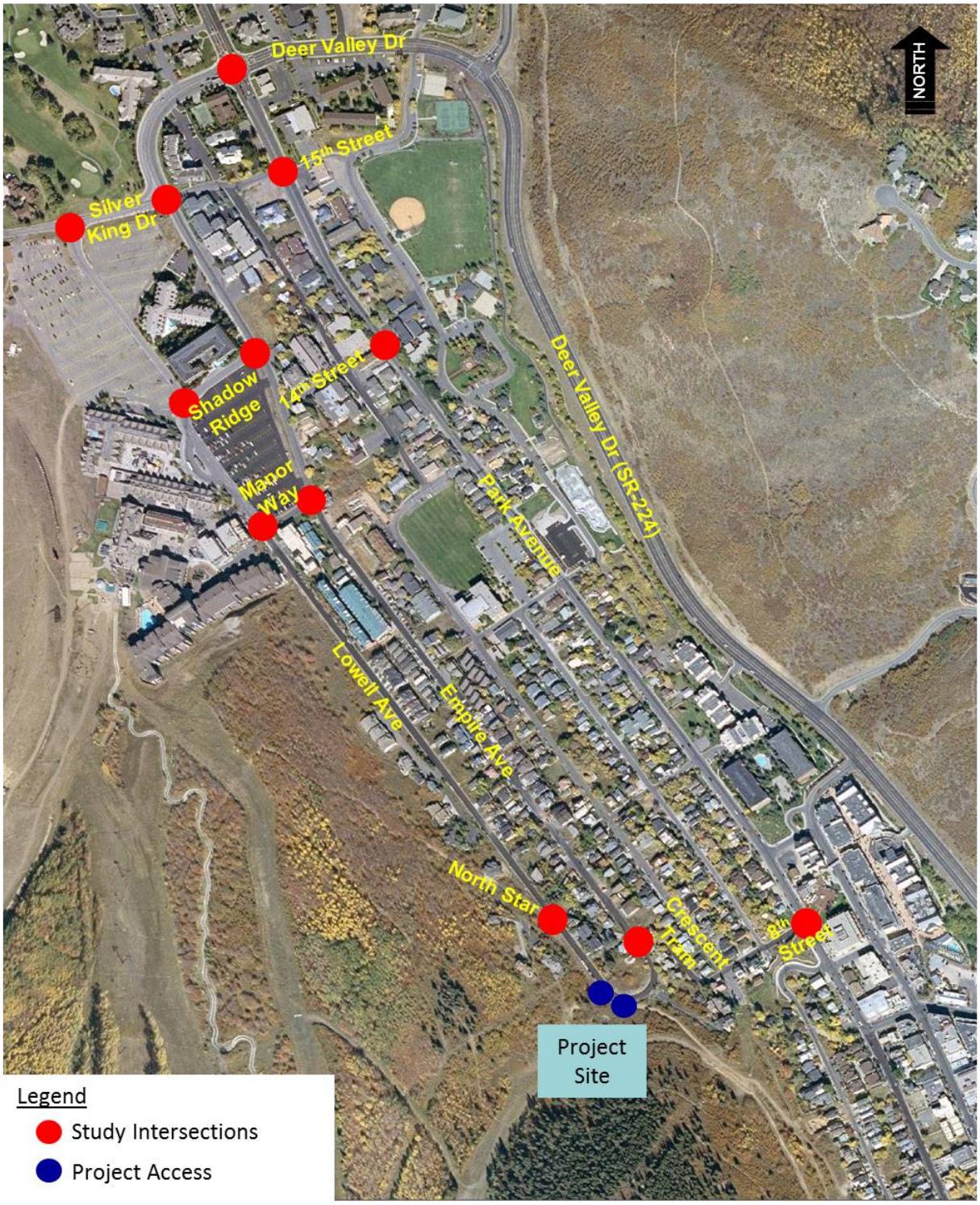

Figure 2
Project Location & Study Intersections

EXISTING (2017) TRAFFIC VOLUMES

Traffic counts at the intersections under study, as listed above, were collected to establish a baseline of existing conditions and allow for analysis of traffic operation in the area. For this addendum to reflect similar baseline conditions as the Original Studies, the volumes were gathered on Saturday, February 18, 2017, over President's Day Weekend. At the intersections, AM peak period traffic counts were recorded from 8:00 AM until 10:00 AM and PM peak period traffic counts were recorded from 3:00 PM to 6:00 PM. These hours were obtained from the Original Report and the Six Addenda, and they reflect the peak operating hours for the proposed Treasure Hill development and the largest volume of traffic on the roadways. The dates were selected because President's Day weekend represents one of the busiest ski times and therefore high traffic volumes on the intersections and roadways in the study area.

Table 1 below summarizes the data gathered from President's Day Weekend 2017 compared to what was estimated in the Original Report in 2004 and what was gathered over President's Day Weekend 2005. A detail of the traffic counts for February 18, 2017, can be found in the Appendix.

Table 1 Existing Traffic Count Summary

Intersection	*Estimated Traffic From Original Report*		*Actual Counts February 19th 2005*		*Actual Counts February 18th 2017*	
	AM	*PM*	*AM*	*PM*	*AM*	*PM*
Park Ave / Deer Valley	2392	3868	2302	3503	2438	3069
Empire Ave / Silver King	624	1003	314	438	1545	1418
Empire Ave / Shadow Ridge	431	694	188	303	927	937
Empire Ave / Manor Way	277	435	120	190	471	641
Empire Ave / Crescent Tram	84	140	37	123	53	95
Lowell Ave / Shadow Ridge	201	230	82	101	535	396
Lowell Ave / Manor Way	170	637	74	139	416	579
Lowell Ave / North Star	96	197	21	41	27	48
Park Ave / Silver King	NA	NA	NA	NA	470	975
Park Ave / 14th Street	NA	NA	NA	NA	454	946
Park Ave / 8th Street	NA	NA	NA	NA	276	611
Empire Ave / 14 Street	NA	NA	NA	NA	573	765
Note: The numbers depict the total volume at the intersection during one peak hour.						

As detailed in **Table 1,** most of the intersections have seen growth in overall traffic in the study area over the past twelve years except for the PM peak at the Park Ave / Deer Valley intersection. Since the traffic counts in 2005, various TDM strategies/improvements have been implemented that could have had an impact on the time and methods utilized by skiers when leaving the Resort. **Figure 3** depicts the existing traffic volumes, intersection geometry, and the traffic control measures currently used for each of the study intersections.

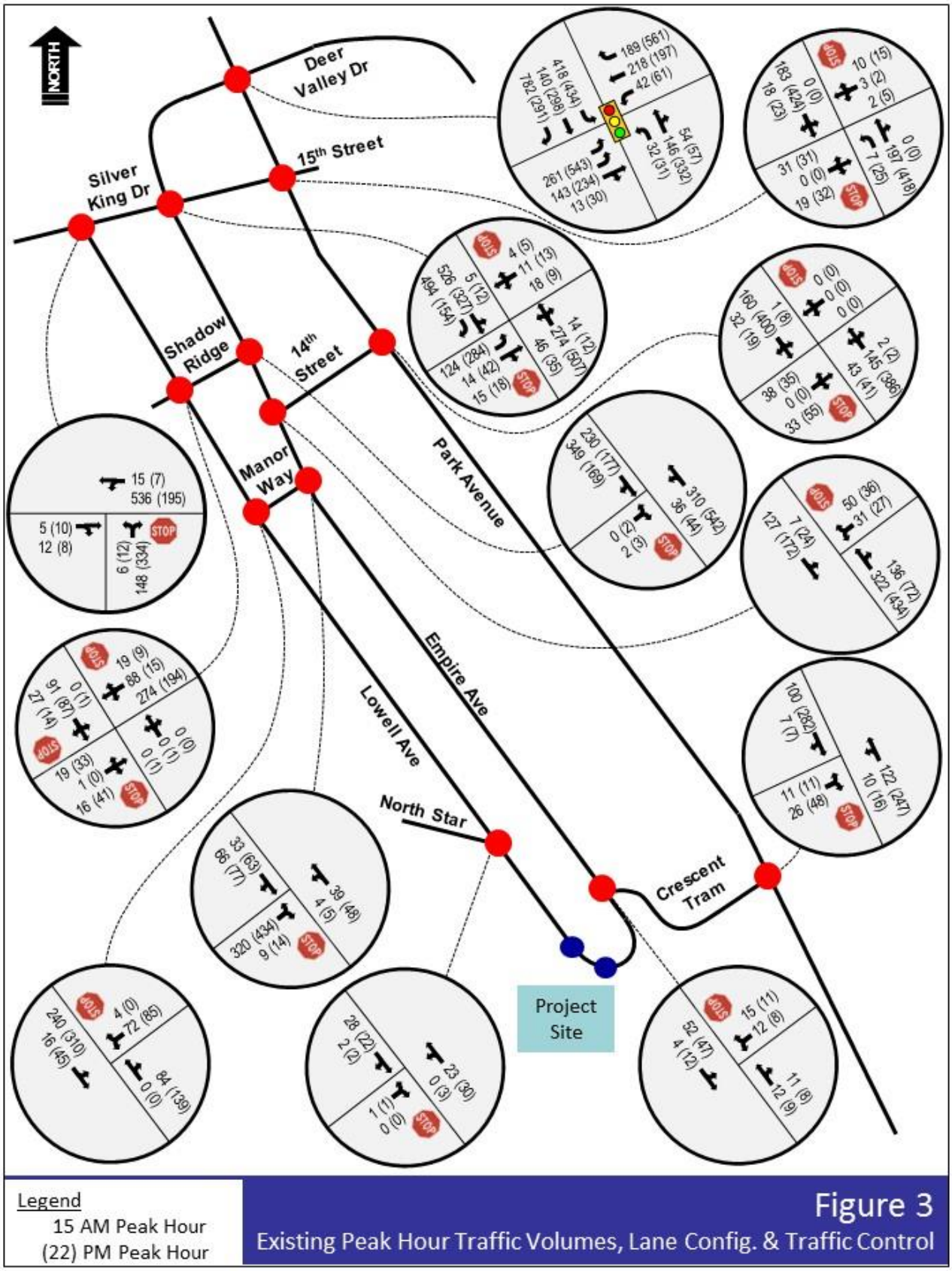

Figure 3
Existing Peak Hour Traffic Volumes, Lane Config. & Traffic Control

FUTURE (2037) TRAFFIC VOLUMES

The purpose of the future 2037 background conditions analysis is to evaluate the intersections under study during the AM and PM peak travel period, utilizing the projected 2037 traffic volumes. This analysis provides a baseline condition for the year 2037, which can be used to determine future project impacts.

Summit County, with the support of Park City and the Utah Department of Transportation, has created a traffic model to analyze future traffic conditions throughout Summit County, including Park City. As part of that model, future traffic volumes are created based on demographics associated with land use plans approved by Park City and Summit County. The land use plans provide the best estimate of future population along with the associated traffic. **Table 2** depicts the anticipated traffic volumes for Summit County and Park City.

Table 2 Anticipated Population Growth

	2015	2037	Growth
Resident Population Summit County	41,133	60,138	46.2%
Resident Population Park City	7,309	9,197	25.8%

Along with population, vehicle miles traveled ("VMT") is factored into the traffic model. Historically VMTs in Park City and Summit County have grown at a greater rate than population. However, Park City and Summit County are implementing TDM strategies to reduce the number of single occupancy vehicles and reduce the VMTs throughout the City and the County. Nonetheless and to be conservative, the population growth of 25.8% expected for Park City was applied to the existing traffic volumes to determine future traffic volumes in the study area. The 25.8% figure reflects a growth of approximately 1.1% per year of traffic growth.

Table 3 Existing vs. Future Traffic Volume Summary

Intersection	***Actual Counts February 18th 2017***		***Future Traffic Volumes 2037***	
	AM	***PM***	***AM***	***PM***
Park Ave / Deer Valley	2438	3069	3067	3861
Empire Ave / Silver King Dr.	1545	1418	1944	1784
Empire Ave / Shadow Ridge	927	937	1166	1178
Empire Ave / Manor Way	471	641	593	806
Empire Ave / Crescent Tram	53	95	67	120
Lowell Ave / Shadow Ridge	535	396	673	498
Lowell Ave / Manor Way	416	579	523	728
Lowell Ave / North Star	27	48	34	60
Park Ave / Silver King	470	975	591	1227
Park Ave / 14th Street	454	946	571	1190
Park Ave / 8th Street	276	611	347	768
Empire Ave / 14 Street	573	765	721	962
Note: The numbers depict the total volume at the intersection during one peak hour.				

In connection with the evaluation of future traffic volumes, Park City staff requested MPE, Inc., the Conditional Use Permit applicant, to consider a cumulative 20-year forecast that includes entitled projects which reflect the approved Park City Master Plan. In discussions with staff, there are two entitled developments that will have a direct effect on the roadways and intersections in the study area.

On April 2, 2015, Park City retained a consultant to complete a traffic model on Lowell Avenue that included details regarding the one of the entitled properties in the Park City Master Plan. From that study:

> *"*The Bamberger property is a large piece of land to the west of Lowell Avenue and to the south of the current PCMR base area. For the analysis, it was assumed that development of the Bamberger property would not resemble the typical Old Town street and parcel layout originally platted for the property. Approximately 60 percent of the 20 acre Bamberger property is now zoned as Open Space with only the corner of the property near the PCMR base being zoned for development. Thus, it was assumed that the number of residential units that were originally platted for the entire property would be developed as equivalent resort-type development in the Resort Commercial zoned area near the existing PCMR base. Access to Bamberger property development was assumed to be located on Lowell Avenue adjacent to the PCMR base area."

Triton Engineering contacted a representative of the Bamberger property and was informed that the owner is currently preparing to propose a development that will include 27 (twenty-seven) single family homes, 25 (twenty-five) condominiums, 7 (seven) townhomes, and 18 (eighteen) 900 sq. ft., 2 bedroom units for employee housing.

While no imminent development plans are known for the Resort, there is a Development Agreement between PCMC and the Resort that entitles the Resort to 491.78 maximum unit equivalents. The specific details of what is defined as a unit equivalent are set forth in the Development Agreement.

The ITE Trip Generation Manual, 9th Edition, was used to estimate the number of peak hour trips that are expected to be generated by the Bamberger property and the Resort's potential development. Because the exact plans are unknown at this time for the Resort's development, a variety of mixed land uses equaling a maximum of 491.78 equivalent units was assumed.

The projected traffic volumes for the combination of both developments ranged between 187 to 363 during the AM Peak Hour and 332 to 462 during the PM Peak Hour. The range of trips is dependent upon the type of development that is proposed at the Resort and how much trip reduction can be applied. (Methodologies for trip generation and trip reductions are detailed in the Project Traffic Volumes). From **Table 3** on the Park Ave / Deer Valley intersection, it is anticipated there will be an additional 629 vehicles in the AM Peak Hour and 800 vehicles in the PM Peak based on background growth in the area. The anticipated trips generated from the Bamberger and Resort developments fall well within the anticipated range of growth. Thus, the volumes in **Table 3** and depicted in **Figure 4** will be used to evaluate the study intersections for the baseline condition 2037 without the proposed Treasure Hill development.

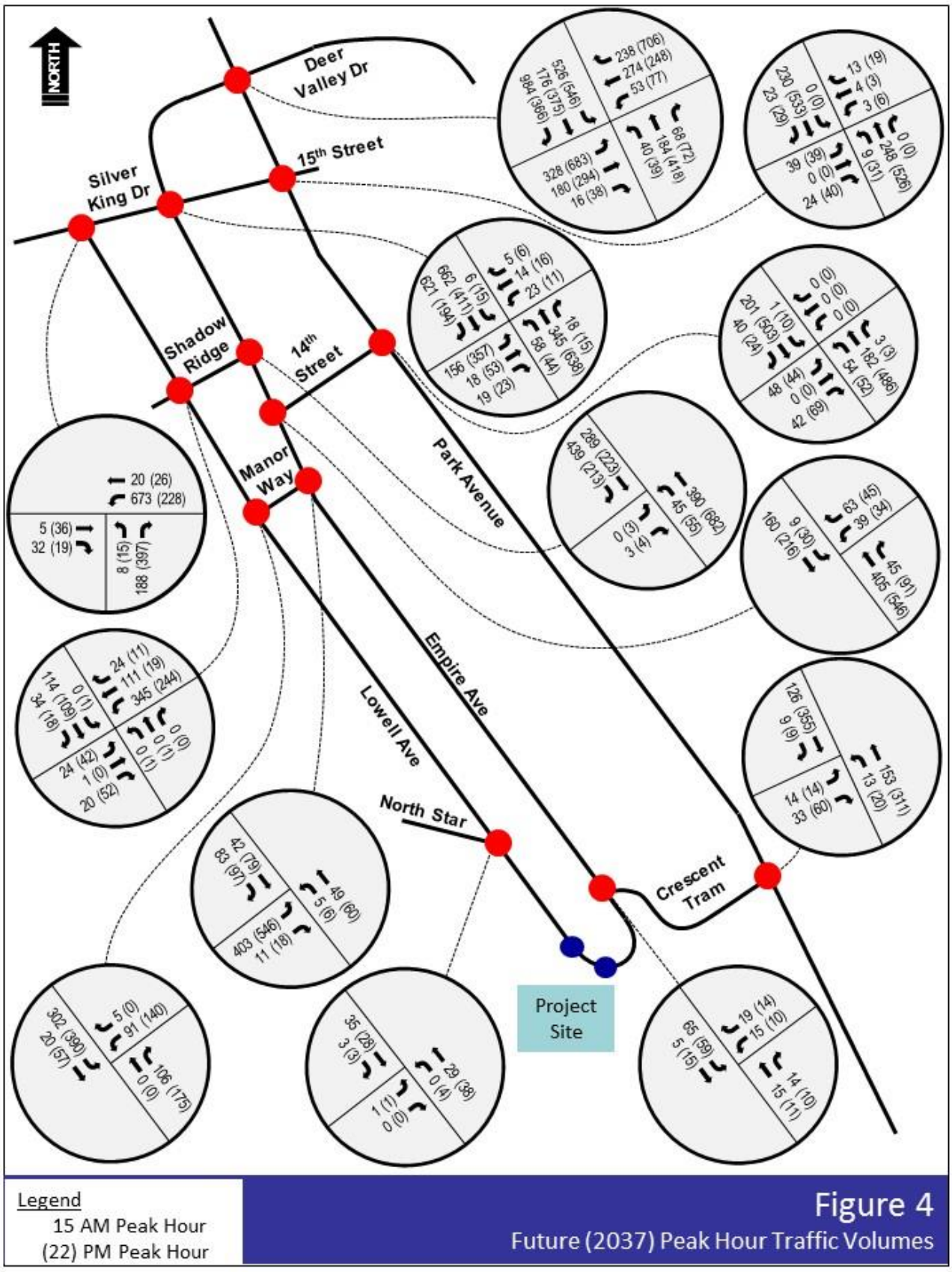

Figure 4
Future (2037) Peak Hour Traffic Volumes

PROJECT TRAFFIC VOLUMES

The ITE Trip Generation Manual, 9th Edition, was used to estimate the number of AM and PM peak hour trips that are expected to be generated by the Treasure Hill development. To calculate the anticipated trips from each element of the Treasure Hill development, the following land uses were applied;

- For the proposed hotel, ITE Land Use 310 was utilized, and it was assumed the hotel was 83% occupied for the initial trip generation rates, as recommended in the ITE Trip Generation Manual. The ITE Trip Generation manual states: "Hotels are places of lodging that provide sleeping accommodations and supporting facilities such as restaurants, cocktail lounges, meeting and banquet rooms, limited recreational facilities (pool), and/or other retail space and service shops." The layout and design of the meeting space and a portion of the commercial for the proposed development were therefore included in the hotel trip generation rates because they fit the description above as support commercial to the hotel space and other housing amenities. However, a portion of the commercial, 17,470 sq-ft, is not integrated with the hotel building and therefore this portion of the commercial space is anticipated to spur trips to the Treasure Hill development as discussed below. A layout of the hotel, commercial and meeting space can be found in the Appendix.
- The employee housing element of the proposed development is dormitory type housing with an average size of 250 square feet (sq-ft). 6669 sq-ft of proposed employee housing space results in approximately 25 units. There is not a dormitory land use in ITE, so ITE Land Use 220, Apartments, was selected to represent this land use type/intensity.
- For the proposed condominiums/townhouses, ITE Land Use 230 dwelling unit alternative was utilized. The ITE Trip Generation manual states: "Both condominiums and townhouses are included in this land use." It was assumed that a portion of the condominium or townhouses would be used as rental properties. The ITE Trip Generation Manual makes no distinction between condominiums or townhouses that are owner occupied and those that are used for nightly rental. Therefore, ITE Land Use 230 was applied.
- As noted above, a portion of the commercial space (17,470 sq-ft) may spur trips to the Treasure Hill Project. To calculate those trips, ITE Land Use 826, Specialty Retail Center, and ITE Land Use 931, Quality Restaurant were selected by applying the sq-ft of usable building area from the Trip Generation Manual. 8,735 sq-ft was applied towards Specialty Retail Center Land Use and 8,735 sq-ft was also applied towards the Quality Restaurant Land Use.

Table 4 provides the results of the trip generation for each of the individual land uses.

Table 4 Land Use Specific Trip Generation

Land Use (ITE Reference)	Size	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Hotel	122,225 sq-ft or 202 units	70	57	127	81	61	142
Employee Housing	6,669 sq-ft or 30 units	5	11	16	18	12	30
Condominium/Townhouse	103 units	10	42	52	45	26	71
Commercial	17,470 sq-ft	27	29	56	64	45	109
Total		111	139	250	209	144	353

Trip Reduction

The ITE Trip Generation Manual provides trip generation rates for a hotel, which can be discounted based on occupancy rate. The occupancy rate for the project hotel was originally calculated at 83% using the occupancy rate from the ITE Trip Generation Manual. However, the average annual hotel rate was instead reduced to 65% based on peak hotel occupancy rates for 2014 reported by the Park City Chamber of Commerce Convention & Visitors Bureau Economic Profile. This information from the Park City Chamber of Commerce can be found in the Appendix.

The next reduction to trip generation arises from the internal capture rate that accounts for trips between various land uses located within the same development (hotel, employee housing, residential and commercial). These trips use only internal roads, and therefore, do not represent new trips external to the site. The layout of the Treasure Hill development is specifically designed to create this benefit. Internal interaction among the various land uses reduces the total number of external trips traveling to and from the project site. ITE outlines a method for estimating the expected amount of internal reduction.

- Trips from retail (commercial) to residential which are generated by employee housing and condominium/townhouses were reduced by 31%. While the ITE Trip Generation Manual does not specify a hotel use in this regard, it is reasonable to assume there would be a reduction in trips from the commercial to the hotel as well. Because the hotel land use was not specifically identified in the manual, a conservative approach was taken, such that hotel trip generation was reduced only by 16%, half that of the residential.
- Trips from retail (commercial) to retail (commercial) were reduced 20%.

As an alternative to motorists traveling from Treasure Hill, along Empire Avenue, Lowell Avenue, and other roadways in the study area to reach the Resort, ski runs for beginner and intermediate skiers will

be constructed to connect them with Park City Mountain Resort. This is another significant trip reduction improvement specific to the Treasure Hill development that is expected to reduce trip generation by 10% for both the hotel and condominium/townhouses. While this study is focused on winter conditions, there will be trails that provide a similar benefit other times of the year. **Figure 5** below reflects the proposed ski runs and trails.

The final trip reduction specific to the Treasure Hill development is the cabriolet that will connect Treasure Hill development to amenities on Main Street. The gondola will traverse between Main Street and Treasure with a one-way capacity of approximately 2,500 passengers per hour and a transit time of approximately one minute. The hours of operation will start before the AM peak hour and extend beyond the PM peak hour. With the focus on trip reduction during the peak hours and the existing traffic congestion at a portion of the intersections in the study area, it is reasonable to estimate that many people departing or arriving from the hotel or residences during the peak hour will use the cabriolet. The cabriolet will provide convenient access to Main Street for shopping and restaurants. On Main Street and Park Avenue there is convenient opportunity to use the Park City Transit System and therefore residents, guests and employees are anticipated to use this alternate method of transportation. Accordingly, it was assumed that the cabriolet would reduce trip generation by 30% for all land uses.

An additional trip reduction could have been achieved due to pass-by trips, which account for trips to and from the development by motorists already traveling on the adjacent streets and from adjacent neighborhoods within the study area. These trips do not represent new trips to the external roads. It is anticipated that adjacent neighborhood visitors and residents may use the ski facilities, amenities and cabriolet at the Treasure Hill development, thus reducing overall traffic on the surrounding roadways. Although we anticipate some reduction due to pass-by trips, we chose not to apply it to the proposed trip generation in order to represent a more conservative condition as it relates to overall traffic impacts.

Another potential for trip reduction results from individuals choosing to walk or bike to the surrounding amenities. While it is, anticipated people will sometimes choose these alternative methods of travel, once again to be conservative, no trip reductions were applied.

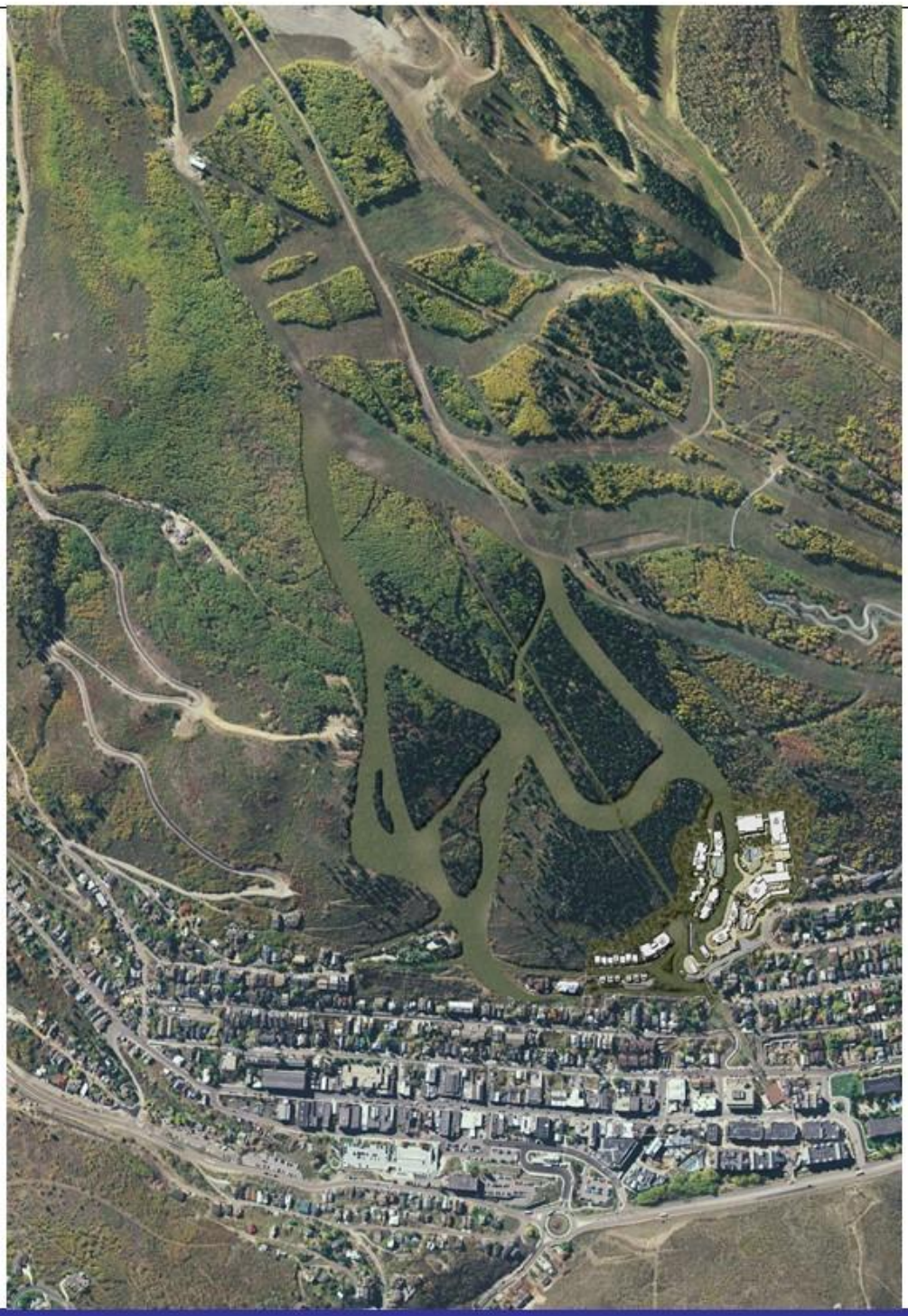

Figure 5
Ski and Trail Concept Plans

Table 5 provides the results of the trip generation traffic volumes after all the trip reductions have been applied.

Table 5 Trip Generation after Trip Reduction

Land Use (ITE Reference)	Size	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Hotel	122,225 sq-ft or 202 units	27	22	49	31	24	55
Employee Housing	6,669 sq-ft or 30 units	3	5	8	9	6	15
Condominium/Townhouse	103 units	4	17	21	19	10	29
Commercial	17,470 sq-ft	15	16	31	36	25	61
Total		48	61	109	95	65	160

Trip Distribution & Assignment

Project Trip Distribution is the assignment of traffic generated by the Treasure Hill development to the various intersections and roadways throughout the study area. To determine the distribution of the Treasure Hill generated traffic three main elements were taken into consideration: major traffic corridors, traffic count data, and the natural flow of traffic in the area. A benefit of the project location is the ability for travelers to enter the project site either from Lowell Avenue or from Empire Avenue, aided by modern technologies that provide the fastest route to enter the project. In any event, for sake of analysis, it was assumed that 50% of the traffic will enter using the Access Point 1 (Lowell) and the remaining 50% will enter using the Access Point 2 (lower/Empire Loop) and that vehicles leaving the project will do likewise, albeit in the opposite direction.

Figure 6 shows the project trip distribution during AM and PM peak hours for the access points and the study area intersections. **Figure 7** displays the project trip traffic volumes during the AM and PM peak hours based on the trip distribution in **Figure 5** combined with the trip generation traffic volumes from **Table 5**.

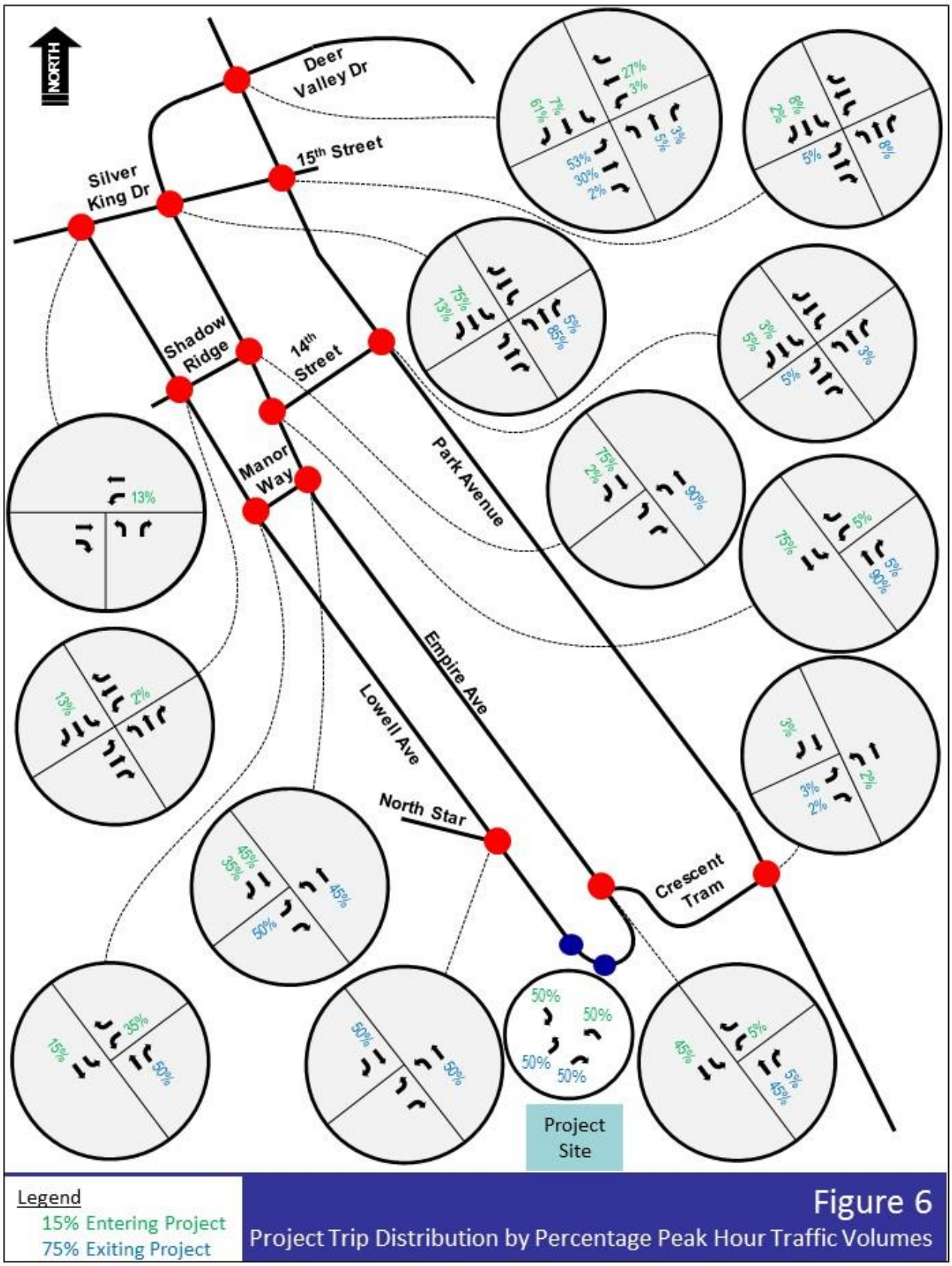

Figure 6
Project Trip Distribution by Percentage Peak Hour Traffic Volumes

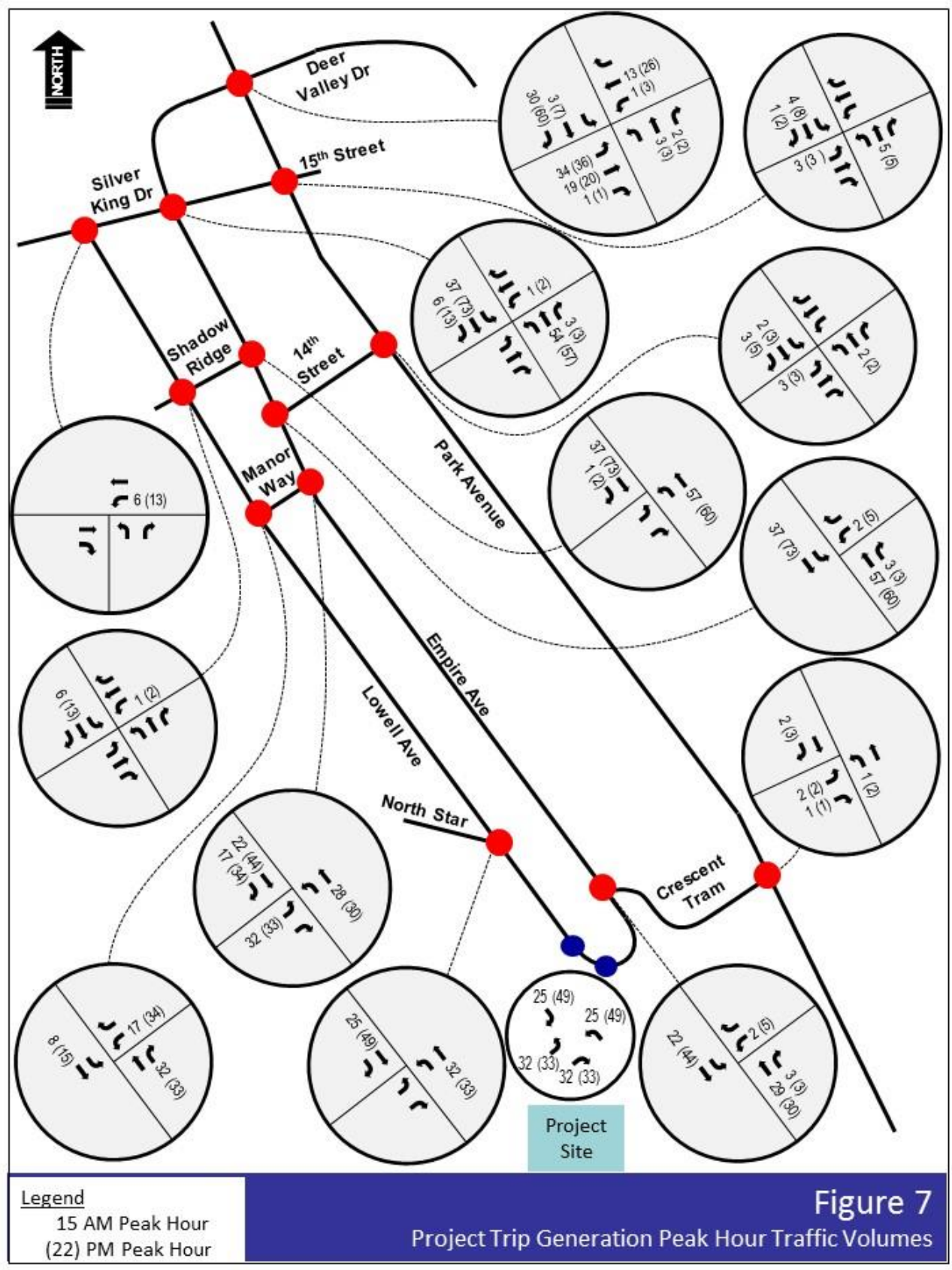

Figure 7
Project Trip Generation Peak Hour Traffic Volumes

FUTURE (2037) PLUS PROJECT TRAFFIC VOLUMES

The projected-generated traffic was added to the future traffic volumes to obtain the future plus project traffic volumes at the site driveways and study intersections. **Figure 8** shows the existing plus project traffic volumes.

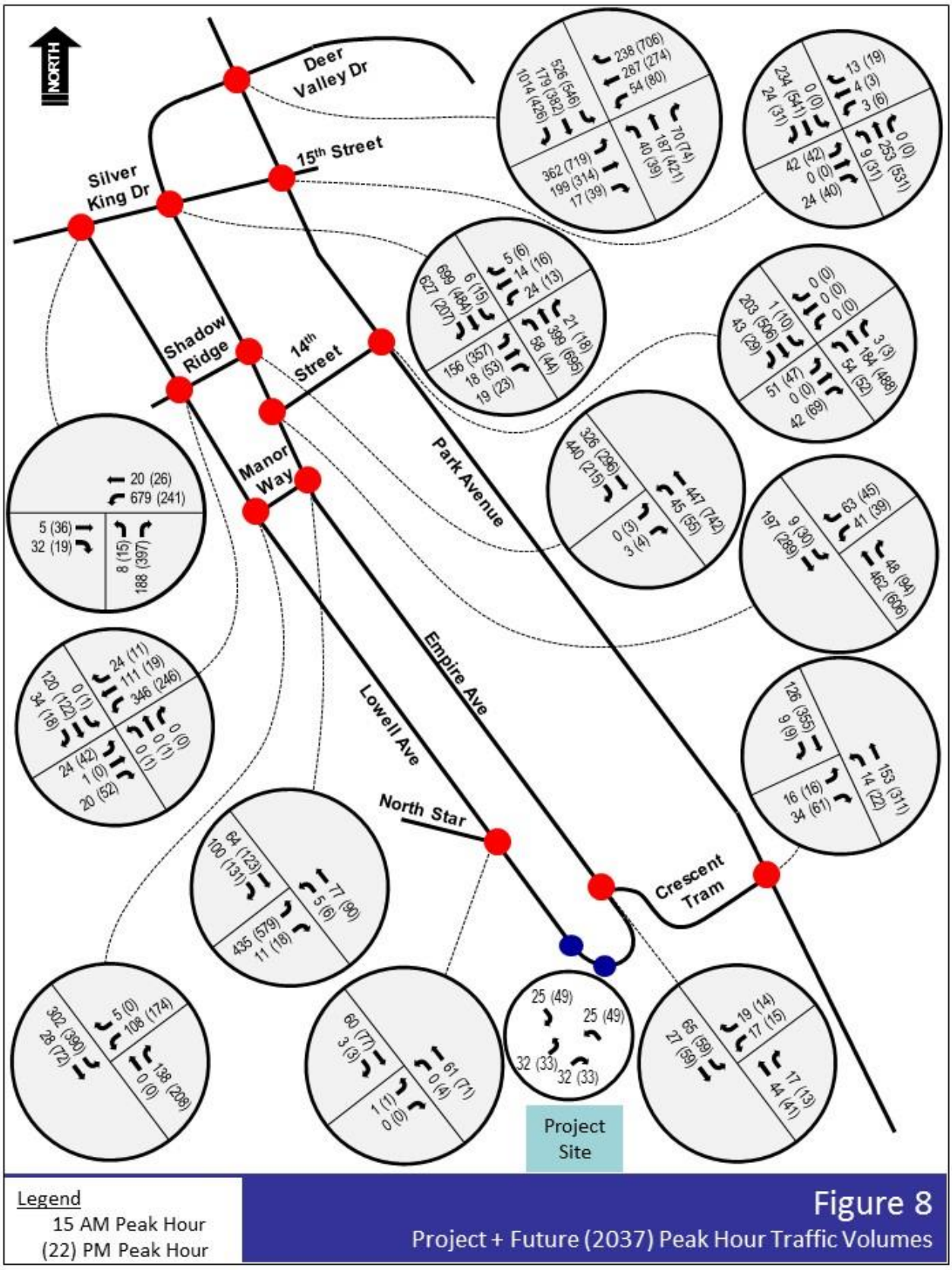

Figure 8
Project + Future (2037) Peak Hour Traffic Volumes

TRAFFIC ANALYSIS

Methodology

Traffic operations for the study area for existing and future traffic conditions were included. The Highway Capacity Manual 2010 ("HCM 2010") and Transportation Research Board methodology was applied to remain consistent with customary practice in the traffic engineering industry and professional standards. LOS from HCM is a qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or pedestrians. A LOS definition generally describes these conditions in terms of factors such as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. There are six levels of service describing these conditions, ranging from A to F, which have been standardized by the Transportation Research Board. LOS A represents a free-flowing traffic condition where motorists are affected very little by other motorists; a high degree of freedom to select desired speeds and the level of comfort and convenience to the motorist is excellent. LOS F is characterized by congested flow conditions with stoppages; the amount of traffic approaching a point exceeds the amount that can pass that point. **Table 6** provides a description of each LOS letter designation and an accompanying average delay per vehicle for unsignalized and signalized intersections.

All the traffic analysis used Synchro/SimTraffic Software, which follow the Highway Capacity Manual (HCM) 2010 methodology, to evaluate study intersections and obtain the LOS listed in **Table 6**. Multiple runs of SimTraffic were used to provide a statistical evaluation of the interaction between the intersections. These results serve as a base for the analysis. Detailed traffic operations outputs are included in the Appendix.

The traffic analysis for all of the intersections in the study area are evaluated for the AM and PM peak hour. The AM and PM peak hour is defined by a one hour period when the traffic volumes were the highest at each intersection in the study area.

Table 6 Level of Service Descriptions

LOS	Description of Delay	Unsignalized Intersections Average Delay (1)	Signalized Intersections Average Delay (2)	Graphical Representation of Delay
A	Free Flow	0 to 10	0 than 10	
B	Stable Flow (slight delays)	10 to 15	10 to 20	
C	Stable Flow (acceptable delays)	15 to 25	20 to 35	
D	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)	25 to 35	35 to 55	
E	Unstable flow (intolerable delay)	35 to 50	55 to 80	
F	Forced flow (congested and queues fail to clear)	Greater than 50	Greater than 80	

Notes:

(1) Worst approach LOS and delay measured (seconds/vehicle).

(2) Overall intersection LOS and average delay (seconds/vehicle) for all approaches.

Existing Levels of Service

Table 7 shows the level of service and corresponding delay (sec/veh) at each of the study intersections for the existing traffic conditions.

Table 7 Existing Levels of Service

Intersection	Control	Worst Approach[1] LOS AM / PM	Worst Approach[1] Approach AM / PM	Overall Intersection[2] LOS AM / PM
Park Ave / Deer Valley	Signal			B (19.9) / C (24.3)
Empire Ave / Silver King Dr	Stop	C (19.2) / F (56.0)	EB / EB	
Empire Ave / Shadow Ridge	Stop	A (7.4) / A (9.8)	NB / EB	
Empire Ave / Manor Way	Stop	A (5.2) / A (6.1)	EB / EB	
Empire Ave / Crescent Tram	Stop	A (4.2) / A (3.8)	WB / WB	
Empire Ave / 14 Street	Stop	A (8.5) / A (9.5)	EB / EB	
Lowell Ave / Silver King	Stop	B (13.7) / B (14.4)	NB / NB	
Lowell Ave / Manor Way	Stop	A (3.9) / A (6.8)	WB / SB	
Lowell Ave / North Star	Stop	A (4.4) / A (3.7)	EB / EB	
Lowell Ave / Shadow Ridge	Stop	A (8.9) / A (5.4)	EB / WB	
Park Ave / 15th	Stop	A (7.0) / B (12.7)	EB / EB	
Park Ave / 14th Street	Stop	A (6.3) / B (11.0)	EB / EB	
Park Ave / 8th	Stop	A (4.6) / A (6.6)	EB / EB	

Notes:

(1) The level of service and delay for worst approach is shown for stop-controlled intersections only.

(2) The overall intersection level of service is shown for signalized intersections only

As shown in **Table 7**, all the intersections currently operate at an acceptable LOS during both the AM and PM peak hours except for the Empire Ave / Silver King intersection during the PM peak hour. The eastbound left turning movement at the Empire Ave / Silver King intersection experiences excessive delays during a typical winter ski day as the motorists leave the Resort.

Future (2037) Levels of Service

Table 8 shows the level of service and corresponding delay (sec/veh) at each of the study intersections for the future traffic conditions without the Treasure Hill development.

Table 8 Future Levels of Service

Intersection	Control	Worst Approach[1] LOS AM / PM	Worst Approach[1] Approach AM / PM	Overall Intersection[2] LOS AM / PM
Park Ave / Deer Valley	Signal			D (35.6) / D (53.3)
Empire Ave / Silver King	Stop	F (51.9) / F (164.1)	EB / EB	
Empire Ave / Shadow Ridge	Stop	B (13.4) / D (25.6)	NB / EB	
Empire Ave / Manor Way	Stop	A (6.0) / A (8.3)	EB / EB	
Empire Ave / Crescent Tram	Stop	A (4.2) / A (4.1)	WB / WB	
Empire Ave / 14 Street	Stop	B (11.4) / C (15.4)	WB / WB	
Lowell Ave / Silver King	Stop	B (19.2) / F (205.1)	NB / NB	
Lowell Ave / Manor Way	Stop	A (6.2) / B (10.0)	SB / SB	
Lowell Ave / North Star	Stop	A (3.1) / A (1.6)	EB / SB	
Lowell Ave / Shadow Ridge	Stop	A (7.0) / A (6.7)	WB / WB	
Park Ave / 15th	Stop	B (10.1) / C (15.8)	WB / WB	
Park Ave / 14th Street	Stop	A (6.8) / B (14.4)	EB / EB	
Park Ave / Crescent Tram	Stop	A (5.6) / A (8.1)	EB / EB	

Notes:

(1) The level of service and delay for worst approach is shown for stop-controlled intersections only.

(2) The overall intersection level of service is shown for signalized intersections only

As shown in **Table 8**, the intersections are expected to operate at an acceptable LOS during both the AM and PM peak hours except for the Empire Ave / Silver King and the Lowell Ave / Silver King intersection during the PM peak hour. The delays experienced at the Lowell Ave / Silver King intersection result from vehicles queuing from the Empire Ave / Silver King intersection.

The eastbound left turning movement in the AM peak hour and all the eastbound movements experience excessive delays at the Empire Ave / Silver King due to the volume of vehicles.

Future Levels of Service Without Project

With the intersections in the study area operating in the future at undesirable levels of service even without taking into account the impact of the Treasure Hill project, expected mitigation/improvement measures were applied and analyzed. **Table 9** shows the level of service and corresponding delay (sec/veh) at specific intersections for the future traffic conditions without the Treasure Hill development.

Table 9 Future Mitigated Levels of Service

		Worst Approach[1]		Overall Intersection[2]
Intersection	Control	LOS AM / PM	Approach AM / PM	LOS
Park Ave / Deer Valley	Signal			D (43.8) / D (53.5)
Empire Ave / Silver King	Roundabout or Signal			A (7.1) / B (11.9)
Lowell Ave / Silver King	Stop	A (7.1) / B (10.6)	WB / NB	

Notes:

(1) The level of service and delay for worst approach is shown for stop-controlled intersections only.

(2) The overall intersection level of service is shown for signalized intersections only

As shown in **Table 9**, to improve the traffic operations for the Empire Ave / Silver King intersection, installation of a traffic signal or a roundabout is required. For a traffic signal to operate efficiently and safely, separate turn lanes in the northbound and southbound direction are necessary.

The Lowell Ave / Silver King intersection delays are resolved with the improvement at the Empire Ave / Silver King intersection.

While the Park Ave / Deer Valley intersection operates at an acceptable LOS, certain traffic movements experience excessive delays. Retiming the existing traffic signal will remove excessive delays and still provide an acceptable LOS for the intersection.

Future Levels of Service With Project

Table 10 shows the level of service and corresponding delay (sec/veh) at each of the study intersections for the future traffic conditions, with the Treasure Hill development applying the same mitigation/improvement measures applied in the future conditions, as applied in **Table 9**.

Table 10 Future Plus Project Levels of Service

Intersection	Control	Worst Approach[1] LOS AM / PM	Worst Approach[1] Approach AM / PM	Overall Intersection[2] LOS AM / PM
Park Ave / Deer Valley	Signal			D (47.7) / D (53.9)
Empire Ave. / Silver King	Roundabout or Signal			A (7.1) / B (12.1)
Empire Ave / Shadow Ridge	Stop	C (15.4) / C (24.0)	NB / EB	
Empire Ave / Manor Way	Stop	A (6.9) / B (11.6)	EB / EB	
Empire Ave / Crescent Tram	Stop	A (4.6) / A (4.7)	WB / WB	
Empire Ave / 14 Street	Stop	B (11.7) / C (16.7)	WB / WB	
Lowell Ave / Silver King	Stop	A (7.1) / B (10.6)	WB / NB	
Lowell Ave / Manor Way	Stop	A (6.4) / B (11.2)	SB / SB	
Lowell Ave / North Star	Stop	A (4.2) / A (8.2)	EB / EB	
Lowell Ave / Shadow Ridge	Stop	A (7.2) / A (6.1)	WB / WB	
Park Ave / 15th	Stop	A (10.0) / D (28.7)	WB / WB	
Park Ave / 14th Street	Stop	A (7.2) / B (19.2)	EB / EB	
Park Ave / 8th	Stop	A (5.6) / A (8.3)	EB / EB	
Access 1 / Empire Ave	Stop	A (2.5) / A (2.6)	NB / NB	
Access 2 / Lowell Ave	Stop	A (3.8) / A (3.9)	EB / EB	

Notes:

(1) The level of service and delay for worst approach is shown for stop-controlled intersections only.

(2) The overall intersection level of service is shown for signalized intersections only

As shown in **Table 10**, with the implementation of the mitigation/improvement measures applied in **Table 9**, in the future, all the intersections will operate at an acceptable LOS during both the AM and PM peak hours with the Treasure Hill Project.

TRAFFIC DEMAND MANAGEMENT / TRAFFIC MITIGATION

The Treasure Hill project will implement various Traffic Demand Management (TDM) strategies.

- A very significant TDM strategy is the creation of a transportation system that does not put additional vehicles on the roadways. The Treasure Hill project is committed to providing a cabriolet system that will connect the project to Main Street. The gondola will traverse between Main Street and Treasure Hill with a one-way capacity of approximately 2,500 passengers per hour and a transit time of approximately one minute. The hours of operation will start before the AM peak hour and extend beyond the PM peak hour. The cabriolet will allow employees and visitors from the project to access the Park City transit system without using a private vehicle or hired vehicle. This cabriolet will also be available to ride for residents living near the project, resulting in fewer vehicles on the roadway.
- Another TDM commitment is the construction of ski runs for beginner and intermediate skiers that will provide connection to Park City Mountain Resort. The same ski run terrain will provide trail connections during the summer months of the year.
- Another TDM strategy is the inclusion of employee housing and on-site commercial. Recent studies have found there are significant trip reductions for trips between various land uses located within the same development (hotel, employee housing, residential and commercial).
- For employees not living in on-site employee housing, during the winter ski season and other special events like Sundance Film Festival, the Treasure Hill development will incentivize such employees to use public transportation and / or the cabriolet to access the site to reduce the traffic load on the intersections.
- Another TDM strategy that will be implemented during the winter ski season and other special events like Sundance Film Festival is the use of a shuttle that will pick up visitors from the airport and deliver them to the Treasure Hill development. This shuttle system might be specific to Treasure Hill or in combination with existing private transportation services.
- During the construction phase of the project, some construction workers will park at the Richardson Flats park and ride lot (or other park and ride lots) and be shuttled to the site, or they will use the Park City Transit System to get to the site. Flexibility regarding this strategy is necessary to accommodate the many aspects of construction.

PARKING ANALYSIS

As part of this addendum, a parking generation study was completed to estimate parking demand that the Treasure Hill project would be expected to create. Forecasts of vehicle parking demand for the proposed development were calculated using the 4th edition of *Parking Generation*, published by the Institute of Transportation Engineers ("ITE"). Land use codes that matched the codes defined above in the updated traffic impact analysis were used to estimate the parking generation by the facility, one exception being Specialty Retail Center which is not currently a use category in *Parking Generation*. For this use, Land use code 820, Shopping Center was substituted.

Table 11 Parking Generation

Land Use (ITE Reference)	Size or Units	Weekday Parking Generation	Weekend Parking Generation
Hotel	122,225 sq-ft or 202 units	129	182
Employee Housing	6,669 sq-ft or 30 units	36	32
Condominium/Townhouse	103 units	142	88
Commercial	17,470 sq-ft	178	184
Total		485	486

Details on how each land use was applied in this analysis include:

- Land Use 310: Hotel, Urban – Actual parking generation data was available for the weekday and Saturday peak period. Therefore, the Saturday rate was applied for the weekend rates. As noted above in the traffic analysis section of this addendum, it was assumed that a portion of the commercial space is complementary to the hotel and therefore it was also included in the hotel parking generation analysis.
- Land Use 221: Low/Mid-Rise Apartment, Urban (used for employee housing) – This land use was chosen as best representing the parking generation for the employee housing. As noted in the traffic analysis section, it was assumed that 6,669 sq-ft, with units of 250 sq-ft of space (dormitory style) would approximate the parking generation of one urban low/mid-rise apartment, resulting in 30 units for analysis purposes. The weekday urban peak period and Saturday urban peak period from *Parking Generation* were used.
- Land Use 230: Residential Condominium/Townhouse, Suburban and Urban – Actual parking generation data was available for the weekday (suburban) and Saturday (urban) peak period. Therefore, the Saturday rate was applied for the weekend rates.
- Land Use 820: Shopping Center & Land Use 931: Quality Restaurant (used for the commercial) – As with the trip generation analysis, half of the commercial building space was applied using the shopping center Parking Generation land use and the other half was applied using the Quality Restaurant land use. Actual parking generation data was available for the weekday, Saturday and Sunday peak period. The highest value for the Saturday and Sunday peak period was applied to determine the parking generation for the weekend rates.

As with the updated traffic impact analysis, the raw estimated parking demand was calculated assuming no interaction or internal sharing of trips by the different land uses. This is unlikely, considering the mixed-use nature of the development and the high probability of shared trips between the different land uses. In the traffic impact analysis, a reduction was made to the calculated trips to account for the trips that are made internal to the development. In addition, trips were further reduced to account for

the addition of on-site employee housing. Similarly, a portion of the parking demand is expected to be shared among the different land uses.

However, the reduction in parking demand due to shared land use is not expected to be as high as the reduction in vehicle trips. In some instances, the reduction in vehicle trips does not correlate to a similar reduction in parking demand. Some examples of this could include patrons of the hotel who access Main Street via the gondola and employees who live on site and walk to work, Main Street, etc. In both examples, there is justification for reducing the number of vehicle trips. However, the demand for parking still exists since, in both cases, the patron and employee still have a car parked in the project. The mitigating factors that allow for parking reduction (compared to the raw numbers) is the internal capture rate because of the proposed mixed-use development. For the reasons stated above, however, the reduction in parking generation is expected to be somewhat less.

The assumed reductions for each of the land uses are as described below:

- Residential Uses (Condominium/Townhouse and Employee Housing) – While vehicle trips for these land uses are greatly reduced by the ability to ride the cabriolet, the reduction in parking demand is expected to be modest. For purposes of this study, a 10% reduction was assumed.
- Hotel/Resort Commercial – The 20% reduction applied in the trip reduction was also applied in the parking generation analysis. As noted above, the commercial space integrated with the hotel is intended primarily for the use of hotel patrons. However, realistically, some parking will be used by visitors to the hotel. Nonetheless, no parking generation was applied for the commercial space that is integrated with the hotel. A portion of the parking will be needed for managers, employees living off-site, and service needs, but the manual accounts for this in the hotel parking generation.

The reduced parking generation is shown in **Table 12**.

Table 12 Reduced Parking Generation

Land Use (ITE Reference)	Size or Units	Weekday Parking Generation	Weekend Parking Generation
Hotel	122,225 sq-ft or 202 units	129	182
Employee Housing	6,669 sq-ft or 30 units	32	29
Condominium/Townhouse	103 units	128	79
Commercial	17,470 sq-ft	142	147
Total		432	437

It is anticipated the Treasure Hill development will require on a typical weekend approximately 437 parking stalls and on a typical weekday, 432 stalls.

SUMMARY AND CONCLUSIONS

As reflected in the Original Report, the Six Addenda and this addendum, the roadway network can facilitate the traffic needs for existing traffic and the traffic anticipated from the Treasure Hill project. Implementing the improvements at the Empire Ave / Silver King and Park Ave / Deer Valley intersections, which will ultimately be necessary regardless of the impact of the Treasure Hill development, will allow the intersections and roadways in the study area, including the Treasure Hill development, to operate at an acceptable level of service in the future.

While the intersections and roadways can operate at an acceptable level of service with the Treasure Hill development by implementing the proposed traffic improvement measures, nonetheless, it is important to implement the TDM strategies as well. These strategies include:

- Installation of the cabriolet system.
- Installation of beginner and intermediate ski runs that connect with the remainder of the Resort.
- Implementation of the mixed-use development that includes employee housing and commercial on site.
- During the busy winter season and special events, encouragement of employees not living on site to use public transportation to access the site.
- During the busy winter season and special events, implementation of shuttle service to and from the airport.
- During the construction phase of the project, making arrangements for some construction workers to park off site at the Richardson Flats, or similar park and ride lots and shuttle them to the site.