Planning Commission
Staff Report

PARK CITY 1884
PLANNING DEPARTMENT

Subject: Treasure
Project #: PL-08-00370
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Date: 09 August 2017
Type of Item: Administrative – Conditional Use Permit
Traffic Mitigation

Summary Recommendations

Staff recommends that the Planning Commission review the Treasure Hill Traffic Study Addendum #7 dated July 26, 2017, submitted to the City in draft/incomplete form on July 21, 2017, and in final form on July 27, 2017, as analyzed by the City in this staff report. As noticed, a public hearing should be held. Staff recommends that the Planning Commission continue the item to the September 12, 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
Zoning:	Estate (E) District – Master Planned Development
Adjacent Land Use:	Ski resort area and residential
Topic of Discussion:	Final Transportation/Traffic Update
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

Traffic and transportation are massive areas of importance to the review of this project. The applicant originally proposed a goal of completing the Transportation/Traffic Study addendum in February 2017; however, the applicant was not able to conclude their update until early May 2017. The applicant introduced this update on May 10, 2017. During the June 14, 2017 Planning Commission meeting staff provided to the Commission preliminary comments in response to the submitted Transportation/Traffic Study introduced in May 2017. The Treasure Hill Traffic Study Addendum #7 dated July 26, 2017, submitted to the City in draft/incomplete form on July 21, 2017, and in final form on July 27, 2017. See Exhibit A - Treasure Hill Traffic Study Addendum #7. On July 19, 2017 the Planning Department received a review commission by the City prepared by LSC Transportation Consultants. See Exhibit B - City's Independent Review of Treasure Hill Transportation Impacts Analysis (TIA).

Transportation Studies/Documents

The following list in chronological order (document date - name of document - company that prepared the document) contains the various different traffic studies:

- 2003.12.18 - TH Traffic Opinion Summary - PEC
- 2004.07.01 - TH Traffic Impact Analysis - PEC
- 2004.07.31 - Addendum One - PEC
- 2005.04.06 - Second Addendum to the TH Traffic Impact Analysis, July 2004 - Traffic Count President's Day Weekend - PEC
- 2005 .07.20 - Technical Memorandum TH Traffic Review - Fehr & Peers
- 2005.12.09 - Summary of Findings & Recommendations of the TH Traffic Report – Fehr & Peers
- 2006.02.24 - TH Response to Park City Planning Commission Questions - PEC
- 2008.01.07 - Third Addendum to the TH Traffic Impact Analysis, July 2004 - Lowell Ave. Sidewalk and Improvements - PEC
- 2009.02.24 - Letter to the Applicant – Park City Municipal Corporation
- 2009.03.31 - Walkability Study / Recommended Improvements - PEC
- 2009.04.02 - Sweeney Letter to the City – MPE
- 2009.04.02 - TH CUP Review Lowell Avenue Improvements Opinion Summary - Alta Engineering
- 2009.04.02 - TH Traffic Impact Analysis Addendum Four - PEC
- 2009.04.15 - Parking Count Numbers - Alta Engineering
- 2009.04.19 - Treasure Lowell Avenue Improvements - Alta Engineering
- 2009.06.18 - Fifth Addendum to the TH Traffic Analysis, July 200 - Parking Generation Study - PEC
- 2009.06.18 - Revised Letter TH Walkability Study / Recommended Improvements and Effects on Traffic of Proposed Roadway Section on Empire Ave. - PEC

- 2009.06.25 - Sixth Addendum to the TH Traffic Impact Analysis, July 2004 - Intersection Operations Limiting Development Traffic on Empire Ave. - PEC
- 2009.07.16 - Proposed Parking and Traffic Operations – MPE Incorporated
- 2009.07.22 - Updated Treasure Lowell Avenue Improvements - Alta Engineering
- 2017.01.05 - Treasure Hill Traffic Study Summary - Triton Engineering
- 2017.05.04 - Treasure Hill Traffic Study DRAFT Addendum #7 - Triton Engineering
- 2017.07.19 – Review of Treasure Hill Development TIA – LSC Transportation Consultants
- 2017.07.26 – Treasure Hill Traffic Study Addendum #7 – Triton Engineering

Since the last Planning Commission meeting held on July 12, 2017, the applicant submitted the following items regarding the final Traffic Study:

- TH Traffic Study Addendum #7 Draft (dated July 20, 2017), no appendix
  - Submitted via e-mail Friday July 21, 2017 12:15 PM
- TH Traffic Study Addendum #7 (dated July 26, 2017), no appendix
  - Submitted via e-mail Thursday July 27, 2017 11:36 AM
- TH Traffic Study Addendum #7 Appendix A – F only
  - Submitted via e-mail Thursday July 27, 2017 8:40 PM
- TH Traffic Study Addendum #7 (dated July 26, 2017), with appendix
  - Submitted via e-mail Friday July 28, 2017 11:31 AM

Analysis

The Planning Department worked closely with the City Engineer and the City Transportation Planning Manager preparing this staff report and reviewed the applicant's traffic study. The objective is to synthesize the current and previous Planning Commission discussions regarding traffic related impacts.

The Planning Commission is responsible of reviewing the applicant's submittal to identify the impacts of the proposal. Once the impacts are identified, the Planning Commission analyzes the effects of the proposed/justified mitigation which includes an evaluation of the projected outcome of the applicant's studies, and adds qualitative discussions regarding impacts to Park City. The last step includes providing ongoing mitigation monitoring and reporting program that evaluates the adequacy and effectiveness of proposed mitigations strategies.

The City conducted an independent analysis, concentrating on the validity of the assumptions, and accuracy of predictions, including the target level of service (LOS), potential mitigation strategies, possible recommendations, etc. See Exhibit B - City's

Independent Review of Treasure Hill TIA.

The City Engineer and Transportation Manager continue to review the applicant's traffic study. At this time, the City Engineer and Transportation Manager have concluded the analysis presented is adequate for the analysis of impacts and mitigations. A final determination of all assumptions and data; however, is yet to be made. Generally, the City Engineer and Transportation Planning Manager will opine that the traffic model appears to be correct in terms of levels of service. The appropriateness of certain assumptions in the model and applicant mitigations is still under review.

Based on the review or the Applicant's traffic Study, the City Engineer preliminarily calculates that after completion of the Treasure Hill project, the portion of the delay at the intersection of Empire and Silver King (assuming the predicted Level of Service F, and a standard Level of Service of D), the Treasure project would be responsible for approximately 36% of the difference in delay from Level of Service D to Level of Service F. Using the same calculations, Lowell and Silver King are predicted to fail at Level of Service F at peak hour departure with the Treasure Project. Treasure is responsible for approximately 52% of the delay for Level of Service D to Level of Service F.

Shown below is the applicant's proposed traffic demand management (TDM) strategies and traffic mitigation:

> ***TRAFFIC DEMAND MANAGEMENT***
> *The Treasure Hill project has been assisting with various Traffic Demand Management (TDM) strategies and will continue to implement TDM strategies that will improve traffic operations.*
>
> 1. *Sweeney Land Company, co-owner of the Treasure Hill Parcel, conveyed at no cost to PCMC the land that enabled the "loop" connection for the Lowell and Empire roadways.*
>
> 2. *The various Sweeney entities were instrumental in the creation of the Town Lift System, including its original approval and construction, connections to Upper Old Town (Upper Norfolk, King Road, and Sampson), conveyance to the City at no charge of portions of the Crescent Walkway and Lower Norfolk Avenue, and providing the opportunity for the Main Street Bridge.*
>
> 3. *MPE (the CUP applicant) provided funds for the study of Lowell Avenue to create a roadway that will accommodate the existing traffic volumes and future traffic volumes.*
>   - Staff comment: Staff is unaware of the provided funds that the applicant claims to have contributed for the study of Lowell Avenue. Staff requests verification from the application regarding this TDM strategy.

4. *MPE provided funds for the design and construction of Lowell Avenue to create a roadway that will accommodate the existing traffic volumes and future traffic volumes, particularly construction traffic.*
    - Staff comment: As indicated on the approved 1986 master plan, it was identified that during construction the roads would carry heavy traffic. The 1986 master plan provided an option to the applicant to contribute incremental additional cost of additional pavement thickness (approximately 3 additional inches of asphalt over the entire length of Lowell/Empire south of Manor Way), which payment would be deducted from future impact fees paid to the City; otherwise, the developer would be required to reconstruct the entire length of Lowell/Empire south of Manor Way at their cost.

5. *Applying a mixed-use development that will create between 107 to 154 vehicle trips in the peak hours instead of single family homes on approximately 4 miles of new city streets connecting to Upper Old Town and possibly beyond that would likely generate more vehicle trips in the peak hours.*
    - Staff comment: Staff does not consider the project mixed-use development, but rather a destination development based on the transient nature of the proposal, amount of proposed retail, etc.

6. *The construction of the cabriolet is a significant TDM strategy that provides a transportation system that removes vehicles on the roadway, while creating the ability for visitors and residents of the development to access Main Street. While only a 10% reduction in vehicles (12 cars in the morning and 17 cars in the evening) it is assumed for the cabriolet, it will have a greater impact when combined with the ski resort operations. This provides also the ability for employees who use the Park City Transit system to arrive on site by using the cabriolet.*
    - Staff comment: TDM strategy needs to be quantified, not assumed.

7. *Another TDM commitment is the construction of ski runs for beginner and intermediate skiers that will provide an all-ability-levels connection to the Resort. The same ski run terrain will provide trail connections during the summer months of the year. This reduces the likelihood of visitors and residents staying at the Treasure Hill project of driving to the resort main base area or other resorts in the area.*
    - Staff comment: TDM strategy needs to be quantified, not assumed.

8. *Another TDM strategy is the inclusion of employee housing dedicated for Treasure Hill on-site.*
    - Staff comment: Applicant proposes less than 7,000 square feet of employee housing onsite. City's employee generation study estimates 300 to 500 total employees and 100 to 300 employees per shift.

9. *The addition of on-site commercial elements also provides a reduction in trips. 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).*

10. *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 direct and incentivize such employees to use public transportation and/or the cabriolet to access the site to reduce the traffic load on the intersections.*
    - Staff comment: TDM strategy needs to go further, not just during winter and special events.

11. *Another TDM strategy that will be implemented during the winter ski season (including the Sundance Film Festival) and other busy times 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.*
    - Staff comment: TDM strategy needs to go further, not just during winter and special events. Shuttle can certainly fluctuate depending on the season.

12. *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 with the combination of the cabriolet, when it is complete, to get to the site. Flexibility regarding this strategy is necessary to accommodate the many aspects of construction.*
    - Staff comment: TDM strategy needs to go further, all construction workers need to park somewhere else, not just some. Need to understand exactly where they will park. Richardson Flat parking lot does not allocate a specific number of parking spaces for this project. Need to understand how the construction workers will impact the current transit system.

TRAFFIC MITIGATION

The Treasure Hill project shall implement the following items to mitigate traffic on the roadways.

1. *With a clustered mixed-use development, the result is 110 plus acres of open space instead of additional miles of roadways that the city would have to maintain.*
    - Staff comment: Clustering the project in the Mid-Station and Creole-Gulch sites is a requirement of the master plan, as proposed by the applicant and approved by the City (1986).

2. *The Treasure Hill project will provide a cabriolet system that will connect the project to Main Street. The cabriolet will traverse between Main Street and Treasure Hill with a one-way capacity of approximately 2500 passengers per hour.*
    - Staff comment: This proposed mitigation lacks specificity as to how the cabriolet riders will get the cabriolet, where they will park their vehicles, how they will affect traffic, how they will affect the current transit system, etc.

3. *The hours of operation of the cabriolet will start around 6:45 am and extend until 10 pm during the winter ski months and summer. During the spring and the fall season, the cabriolet will be out of operation at times to accommodate maintenance needs. Treasure Hill will adjust these hours in cooperation with PCMC city-wide TDM strategies.*
    - Staff comment: Refer to comment on cabriolet TDM (no. 6).

4. *Treasure Hill will construct ski runs for beginner and intermediate skiers with convenient connections to the Resort. The same ski run terrain will provide trail connections during the summer months of the year. This will reduce trips by not only visitors and residents of the development by nearby neighbors as well.*
    - Staff comment: Refer to comment on ski run TDM (no. 7).

5. *Treasure Hill will have dedicated employee housing on-site.*
    - Staff comment: Refer to comment on employee house TDM (no. 8).

6. *For employees not living in on-site, during the winter ski season and other times when hotel occupancy exceeds 70% and other special events like Sundance Film Festival, the Treasure Hill development will direct, use monetary incentives and other mechanisms, as necessary, to encourage employees to use public transportation and / or the cabriolet to access the site.*
    - Staff comment: Refer to comment employees not on-site TDM (no. 10). It is not effective to simply encourage employees to use public transportation and the cabriolet. Specificity needs to be added to measure effectiveness.

7. *To decrease the impact of vehicles during the peak hour the Treasure Hill development will utilize work shifts that begin and end outside the AM and PM peak hour of travel.*
    - Staff comment: Specificity is required in order to develop a potential qualifying standard.

8. *During the winter ski season, other busy times, and special events like Sundance Film Festival, Treasure Hill will implement a shuttle system 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.

- Staff comment: Specificity is required in order to develop a potential qualifying standard.

9. *Treasure Hill will require all parking related to Treasure Hill to be on site.*
   - Staff comment: Onsite parking is required for all projects. The master plan further reiterated that required parking are to be readily be provided on-site and in enclosed structures.

10. *During the construction phase of the project employees that do not require a vehicle to perform their trade will be shuttled to the site or to the cabriolet when it is operational.*
    - Staff comment: Refer to comment on construction phase parking TDM (No. 12).

11. *Treasure Hill development will pay for its portion of the improvements at Park Ave / Deer Valley and Empire Ave / Silver King intersection improvements as may be implemented by any special improvement district or similar entity.*

The City Engineer and Transportation Manager have begun creating mechanisms to define and/or quantify the applicant's proposed mitigations. In suggesting these metrics, staff is attempting to provide specificity to the mitigation measures proposed by the project applicant as to ensure each measure is implemented, maintained, monitored, and reported on in terms of effectiveness. The initial draft elements of the mechanism referred as Potential Qualifying Standards (PQS) are outlined below in terms of construction and development impacts.

Potential Qualifying Standards will be delivered to the Planning Commission for all of the CUP criteria. The Planning Commission can review and discuss PQS as part of their deliberations. The intent is to use the PQS as a tool for the Planning Commission to efficiently assess impacts of portions of the proposal to determine if the proposed mitigation measures the items listed Land Management Code (LMC) § 15-1-10 to adequately mitigate and/or eliminate detrimental impacts. Any conditions of approval established in a Final Action will include the Planning Commission identified Qualifying Standards.

The Qualifying Standards differ from Conditions of Approval, in that the potentially Qualifying Standards are brought to the Planning Commission when impacts and applicant mitigation are under discussion rather than at the end of the review. Planning staff developed this approach after reviewing mitigation plans with other large projects over the past two (2) years. Examples of the Planning Commission reviews have been parking and traffic mitigation at St. Regis, Empire Pass traffic mitigation plans, etc.

A comprehensive set of standards will be part of any final recommendation from staff. Staff also is in the process of developing "Goals" from the comments of the Planning Commission and controlling documents (identified previously) to measure the ultimate effects of an applicant proposed mitigation and potentially QS. In addition, staff is reviewing other, similar large project construction and transportation mitigation measures for successful and unsuccessful approaches to mitigation, implementation, etc. Staff suggests the following outline to assist the Planning Commission in identifying the impact and the implementation of the applicant's proposed mitigation.

Construction Impacts:

- Impact: Employee Access
  Description: Trips and parking impacts from employees access to the site.

  Initial potential qualifying standards:
  - All employees shuttled into the site
  - Sub-contractors allowed to drop off tool boxes and material but also shuttle in employees

  Goal: No net increase in trips

- Impact: Material Access
  Description: Moving material into/out of the project site.

  Initial potential qualifying standards:
  - Number of delivery per day set
  - 50% of all material delivery during shoulder season from March 15 to June 15 and from Labor Day (early September) to November 15
  - White noise alarms

  Goal: Trips generated during non-peak time periods

- Impact: Routing to Site
  Description: Other than Lowell, What route is used?

  Initial potential qualifying standards:
  - Route to be Empire Avenue to Manor Way to Lowell Avenue
  - Manor Way to be reconfigured to allow construction vehicles
  - Manor Way to be rebuilt after construction

  Goal: No Trips in front of PCMR and on Empire

- Impact: Timing
  Description: When will construction occur?

  Initial potential qualifying standards:

- No concrete, excavation, structural work between November 15 to March 15
- No work during major events

Goal: No impactful winter work

- Impact: External Construction
  Description: Off-site utilities

  Initial potential qualifying standards:
  - Construction only during shoulder season
  - No White noise alarms

  Goal: Impacts during shoulder season

Development Impacts:

- Impact: Deliveries
  Description: Minimize impacts of deliveries

  Initial potential qualifying standards:
  - Deliveries from 7 to noon (9-2 during ski season)
  - Delivery to be on Lowell
  - White noise back-up alarms

  Goal: Deliveries during non-peak periods

- Impact: Employees
  Description: Minimize impacts of additional employee trips

  Initial potential qualifying standards:
  - No employee parking on site except for those living on site

  Goal: No net increase in trips

- Impact: Operational Maintenance

  Description: Manage snow and parking along Lowell and Empire Avenue

  Initial potential qualifying standards:
  - Widen snow removal along Lowell

  Goal: No emergency situations

- Impact: Long Term Trip
  Description: Minimize overall trips

Initial potential qualifying standards:

- Post Monitoring program to show achieving trip reduction for shuttles, cabriolet, etc.
- Cabriolet, shuttle program, car rental
- Participate in Empire/Silver King upgrade

Goal: 100% increase in trips from current trips (today around 400- 500 AADT

- Impact: External Trips
  Description: General public driving up to the site

  Initial potential qualifying standards:
  - Valet to park internal cars
  - No public parking
  - Internal Parking permit program

  Goal: No net increase in trips

Potential Community and Environmental Effects of the Project
This section seeks to extrapolate and consolidate the traffic and transportation related impacts identified in the "Treasure Hill Traffic Analysis – Addendum #7" as well as any associated mitigation measure proposed by the applicant, the goal of the mitigation measure, and categorize as temporary construction related impact or permanent/ongoing that is a result of the project operations.

Construction/Temporary Impacts:

- **Impact T- 1 – Construction Worker Access**
  Description: Trips generated/induced to the site from construction related activities from construction workers

  Goal: Reduce construction related trips to a less than significant level during all construction activities

  Qualifying Standard (QS) T-1a: During construction any and all activities for all phases project proponent and/or their prime and subcontractors shall procure an offsite parking location outside the Park City limits that is adequate for all construction employees and provide direct shuttle access from said lot to the project site.

  QS T-1b: Prior to construction, project proponent shall demonstrate they have legal authority to occupy the parking lot, demonstrate the proposed shuttle service has adequate capacity to transport the workers that are estimated to require access to the site during peak construction activities

QS T-1c: All contractors shall deliver and store appropriate materials and trade tools on the site as to facilitate shuttle access to the site

QS T-1d: Cabriolet shall be constructed during Phase 1 of construction as to provide construction access to the site during the entire duration of construction

- **Impact T-2 – Construction Material Delivery**
  Description – T-2: Trips generated/induced by the delivery of construction related materials and exportation of construction related waste

  Goal: Minimize impacts to neighborhood associated with delivery and off haul of construction related materials including but not limited to traffic, noise, and safety

  QS T-2a: The project proponent shall quantify maximum number of deliveries per day and develop a delivery plan with routes and set times of day for deliveries that avoid the AM and PM peak periods identified in the Traffic Analysis. These shall be adjusted based on winter and summer seasons. No deliveries shall occur on weekends and/or holidays. All construction access routes shall be approved by the City Engineer. No routes shall pass through the Park City Mountain via Lowell Ave.

  QS T-2b: Contractor shall be required to equip all delivery and onsite construction equipment with "white noise" back-up alarms

  QS T-2c: Prior to each winter construction access routes shall be evaluated and repaired, if necessary, to the satisfaction of the City Engineering. Following construction, all access routes shall be repaired and/or reconstructed to a "state of good repair" as determined by the City Engineer.

  QS T-2d – QS T-1c: and QS T-1d shall apply to further mitigate this impact.

- **Impact T-3 – Winter Construction Access and Activities**
  Description: Winter access to and around the site is constrained due to skier traffic and winter maintenance operations. Additionally, the site is on steep slopes that can be prone to erosion and instability posing threats to the environment and public safety.

  Goal: Minimize potential adverse impacts to environment, the economy, and public safety during the winter season when skiers are accessing the Park City base and when soils are prone to erosion and transport.

  QS T-3a: Construction activities related to concrete pumping, major excavation (50 cubic yards), and clearing and grubbing shall be prohibited from Nov 15th – April 15th. Major construction activities shall also be prohibited during summer holidays and major summer events.

Permanent Ongoing Project Related Impacts:

- **Impact P-1 – Service and Supply Deliveries**
  Description: Routine deliveries to the site associated with the operation of the development following construction have the potential to adversely impact neighborhood quality of life, traffic operations, and City infrastructure

  Goal: Minimize impact of deliveries to the project site associated with ongoing operations of the development

  QS P – 1a: Non ski season deliveries (April 15 – November 15) shall only occur from 7 a.m. to 12 p.m. while ski season (November 16 – April 14) deliveries shall only occur from 10 a.m. to 2 p.m. shall access the site via Lowell Ave. south of the Park City Mountain base.

  QS P – 1b: All delivery vehicles shall be equipped with "white noise" backup alarms regardless of size.

- **Impact P-2 – Employee Access and Trips**
  Description: Employees required for the day to day operations of the development have potential to generate additional daily vehicle trips to the site. Given the 24 hour nature of the operations additional trips have the potential to occur with shift changes.

  Goal: Minimize adverse impacts to air quality, energy consumption, and traffic operations associated with trips generated by day to day operations of the development.

  QS P – 2a: The project applicant shall develop a Transportation Demand Management Plan for submittal and approval by the Park City Planning Director. Plan shall include strategies to reduce both visitor and employee trips and shall include the designation of a Transportation Demand Manager.

  QS P – 2b: The project applicant shall procure an offsite park and ride location and to transportation all employees not living via mass transit. Shuttle shall operate to accommodate all shifts and shift changes.

  QS P – 2c: The project applicant and/or future operator shall operate the Cabriolet from 7 a.m. to 1 a.m. to reduce trips by employees and visitors

- **Impact P-3 – Residential and Emergency Access**
  Description: Trips generated to and from the site, including deliveries, have the potential to impact both residential and emergency access to and adjacent to the project site.

  Goal: Minimize access impacts to the site and adjacent commercial and

residential properties, especially during winter months and snow events

QS P-3: Project applicant shall manage snow removal along Lowell from Manor to the Project site to the satisfaction of the Park City Fire District, City Engineer, and Park City Police Department. These operations can be provided by the project applicant or by the City through a request for an elevated level of service and payment of the associated cost.

- **Impact P-4 – Visitor Access and Trips**
  Description: Trips by visitors arriving, departing, and conducting discretionary activities (ski, shopping, eating/drinking, etc.) have the potential to adversely impact air quality, energy consumption and traffic operations.

  Goal: Reduce trips to and from the site via mass transit, Cabriolet, and transportation demand strategies and programs

  QS P-4a: Project applicant and/or future operator shall provide dedicated airport shuttle during peak arrival and departure times associated with both the development and the Salt Lake City International Airport.

  QS P-4b: Project applicant and/or future operator shall provide onsite alternative transportation options including but not limited to local courtesy shuttles, car share, and bike share for local trips and/or connections to Park City Transit's fixed route system

  QS P- 4c: Project applicant, in cooperation with Park City Municipal and Vail Resorts, shall contribute their "fair-share" to the construction of intersection and operational improvements to the Empire/Silver King intersection when deemed warranted by Park City Municipal

  QS P-4d: Qualifying Standard P 2a and P-2c shall apply to further mitigate this impact

- **Impact P-5 – External Trips**
  Description: Accessory uses have the potential to generate external trips by people attempting to access the development for uses such as eating and drinking, spa services, and shopping.

  Goal: Develop and implement programs and strategies to disincentivize, manage, and/or restrict external trips generated by proposed accessory uses.

  QS P – 5a: Project applicant and/or future operator shall provide valet parking for guests to manage parking, including the flow of arrivals and departures, as well as to restrict any public parking

  QS P -5b: Project applicant and/or future operator shall implement and manage

an internal parking permit program limited to guests, management, and employees living on site.

Mitigation Effectiveness Monitoring and Reporting

The Transportation Planning and Engineering Departments recommend the adoption of a reporting or monitoring program for changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment. This Mitigation Monitoring and Reporting Program is recommended for the proposed project because project has potentially adverse impacts related to construction and implementation activities, and mitigation measures have been identified to reduce all of those impacts to a less-than-significant level.

Discussion requested: Staff requests that the Planning Commission review the applicant's Traffic Study Addendum #7 paying special attention to the proposed mitigation. The Planning Commission may request additional clarification of the applicants report or conclusions.

As staff has begun creating mechanisms to implement the applicant's proposed mitigations, and prepared the initial draft of the mechanism referred as Potential Qualifying Standards, Planning Commission should indicate if they concur with the outlined approach found in the staff report. A comprehensive set of standards will be part of any final recommendation from staff.

1986 Sweeney Properties Master Plan Development Parameters and Conditions

The section is intended to assist the Planning Commission in finding related transportation/traffic/parking related text from the 1986 Master Plan. This text is copied from the Sweeney Properties Master Plan (SPMP) narrative titled Section III. Development Parameters and Conditions:

III. DEVELOPMENT PARAMETERS and CONDITIONS

The staff's recommendation that the Sweeney Properties Large Scale Master Planned Development be approved by the Planning Commission, and subsequently by the City Council, is predicated upon the following terms and conditions. Upon approval, MPE Inc./Sweeney Land Company, its successors or assignees, shall become bound by and obligated for the performance of the following:

[…]

3. The approved densities are those attached as an Exhibit, and shall be limited to the maximums identified thereon. Parking shall be provided on-site in enclosed structures and reviewed in accordance with either the table on the approved Restrictions and Requirements Exhibit or the adopted ordinances at the time of project approval. All support commercial

uses shall be oriented and provide convenient service to those residing within the project and not designed to serve off-site or attract customers from other areas.

4. Access to the Town Lift and Creole sites shall be provided by a private roadway with acceptable emergency access and utility easements provided. No city maintenance of these streets is expected. All utility lines shall be provided underground with private maintenance required wherever located in inaccessible locations or outside approved easements.

[…]

7. All easements, deeds, and/or rights-of-way shall be provided without cost to the City and in accordance with the Master Plan documents and phasing plan approved. Likewise, it shall be the developer's sole responsibility to secure all easements necessary for the provision of utility services to the project.

8. Master Planned Development approval only conceptually established the ability of local utility service providers to supply service to the projects. It does not constitute any formal approval per se. The applicant has been notified that substantial off-site improvements will be necessary and that the burden is on the future developer(s) to secure various easements and upsize whatever utility lines may be necessary in order to serve this project. Prior to resale of this property in which this MPD approval is carried forward, or prior to any conditional use application for any portion of the MPD, a utility plan addressing water, fire flows, and sanitary sewer, storm drainage, cable utilities, and natural gas shall be prepared for review and approval by City Staff and the Snyderville Basin Sewer Improvement District. Part of the plan shall be cost estimates for each item of utility construction as it is anticipated that major costs for these utilities will be necessary. All such costs shall be paid by the developer unless otherwise provided. If further subdivision of the MPD property occurs, the necessary utility and access improvements (see below) will need to be guaranteed in roads, and access questions which will need to be resolved or upgraded by the developers at their cost (in addition to impact fees, water development and connection fees, and all other fees required by City Ordinances are as follows:

(a) Empire Avenue and Lowell Avenue will be the main access routes to the Creole Gulch site. As such, during construction these roads will need to carry heavy traffic, probably in the vicinity of up to 300 heavy trucks per day. At the present time and until the Creole Gulch site develops, Empire and Lowell south of Manor Way are and will be low-volume residential streets, with a pavement quality, width, and

thickness that won't support that type of truck traffic. The City will continue to maintain the streets as low-volume residential streets, including pavement overlays and/or reconstruction. None of that work will be designed for the heavy truck traffic, but in order to save money for the developer of the Creole Gulch site, he or she is encouraged to keep the City Public Works Director notified as to the timetable of construction at Creole Gulch. If the City is notified that the construction is pending such that an improved pavement section can be incorporated into normal City maintenance projects, then it is anticipated that the incremental additional cost of the additional pavement thickness (which is likely to be in the vicinity of 3 additional inches of asphalt over the entire 4,6000 linear feet [25-foot asphalt width] of Lowell/Empire south of Manor Way, or approximately $80,000 additional cost in 1986 dollars) could be paid by the developer with said amount deducted from future impact fees paid to the City as long as it did not exceed the total future impact fees. However, if the increased pavement section is not coordinated with the City by the developer such that the pavement of Lowell and Empire south of Manor Way remains inadequate at the time the Creole Gulch site is developed, then the developer shall essentially reconstruct the entire 4,600-foot length of Lowell and Empire south of Manor Way at his or her cost, which with excavation and reconstruction of an anticipated 6-inch asphalt thickness on top of 10 inches of road base, plus all other normal construction items and costs, would be in the approximately cost range of $300,000 to $400,000 in 1986 dollars. Further, because that reconstruction would be inconvenient to residents and the City, and because delays, impacts, and potential safety hazards would be created over and above normal City maintenance of existing streets, that action by the developer would be a new impact on City residents and the cost therefore would not be deductible from any developer impact fees.

(b) Contribute to the Park City Village, or other water tanks, determined to be necessary by the City Engineer in order to serve the project with culinary and fire storage. Based on a Type 1 fire resistive construction, it is assumed that the contribution would be on the order of 500,000 gallons at a cost of approximately $300,000, although the exact figures would need to be determined in a detailed study using adopted City standards.

(c) Construct pumped pressure system(s) with backup emergency power to provide a means of delivery of fire flows to the project. Construct a meter vault at the edge of the road adjacent to the project, beyond which all water facilities would be privately maintained. It is anticipated that in the vicinity of 2,500 feet of 12-inch water line with appurtenances may be required. Such pipe would cost about $70,000

in 1986 dollars exclusive of the pumps and backup power, which are even more expensive.

(d) Provide an easement, or pay all costs related to condemnation by Park City of an easement, suitable for construction and maintenance of a storm drain from the project site to Silver Creek or McLeod Creek. All City streets and any public utility drainage easements normally provided in the course of other private development shall be available for utility construction related to this MPD subject to reasonable construction techniques and City standards.

(e) Pay for downstream detention basin construction costs in accordance with the ratio of increased runoff from the project during the 50-year flood event to the total design volume of the basin. (Note: The City Engineer will require runoff to meet the current standard. The detention basin must be able to hold the difference between pre and post development based on a 100 year storm event.)

(f) Construct a storm drain line to Silver Creek or McLeod Creek adequate to contain the runoff running through and off the site during the 50-year flood event. It is assumed that a minimum of 36-inch concrete storm drain line will need to be installed solely for Creole Gulch drainage. It is further assumed that special clean-out boxes and inlet boxes will need to be designed to address difficult hydraulic problems. Such boxes are expensive. (Note: the City Engineer will require that the storm drain meet the current standard. The size of the storm drain line should be able to handle the difference between pre and post development. This must be calculated and submitted to the City for review.)

(g) Provide re-vegetation over all on-site and off-site areas disturbed for project-related utilities.

(h) Sanitary sewer improvements are assumed to involve replacing in the vicinity of 3,000 feet of sewer line, with new manholes included. Such construction will cost in the vicinity of $100,000, is subject to the approval of SBSID (now SBWRD), and is further subject to all District fees and agreements necessary for extension of lines.

9. To minimize additional construction traffic impacts, on-site material stockpiling/staging and parking shall be provided during the course of construction. Similarly, cut and fill shall be balanced and distributed on-site whenever practicable, with any waste material to be hauled over City specified routes. Also at the time of conditional use review/approval, individual projects or phases shall provide detailed landscaping, vegetation protection, and construction staging plans.

[…]

1986 Sweeney Properties Master Plan Major Issues

The section is intended to assist the Planning Commission in finding related transportation/traffic/parking related text from the 1986 Master Plan. This text is copied from the SPMP narrative titled Section VI. Major Issues:

VI. Major Issues

Many concerns were raised and issues identified through the review process. A project of this scale and complexity would pose similar and considerable consternation no matter where it was proposed to be built. Because this particular site is located both within and adjacent to the Historic District, many of the concerns expressed related to the more subjective kinds of considerations. The Master Planned Development procedure attempts to deal with the general concept of the proposed development and defer or relegate the very detailed project review elements to the conditional use stage of review. At conditional use review, the following issues will be examined in considerable detail with technical solutions sought.

[…]

Access - All of the different concepts reviewed would result in similar access concerns. The Coalition properties along Park Avenue have excellent access as a result and efforts were, therefore, limited to combining driveways to minimize the number of curb cuts (i.e: ingress/egress points). The development of the Hillside Properties will undoubtedly impact not only Empire and Lowell Avenues but other local streets as well. While certain assumptions could be made as to the type or character of development proposed and possible corresponding differences in traffic patterns, many of the questions raised would remain unanswered. While it is true that the Norfolk Avenue extended alternative would best deal with the current problem of poor access to that area, it would not have solved all of the access issues. The proposed Master Plan will provide sufficient ground, to be dedicated to the city, for purposes of developing a reasonable turnaround for Upper Norfolk.

[…]

Traffic - Any form of development proposed in this area of town would certainly impact existing streets. Although the majority of traffic generated will use Empire and Lowell Avenues, other roads will also be affected. The concept of extending Norfolk Avenue would have improved access to the south end of old town, but would also have added additional traffic to

Empire and Lowell as a result. It is expected that both Empire and Lowell will be improved in several years in order to facilitate traffic movement in general. Even without this project, some upgrading has been planned as identified through the development of the Streets Master Plan.

In evaluating traffic impacts, both construction and future automobile demand are considered. Many related issues also come into play, such as efforts to minimize site grading and waste export. The Master Plan review process affords the opportunity to address these issues in considerable detail whereas other reviews would not. Several of the conditions proposed deal with the issue of traffic and efforts directed at mitigating the impacts created. Traffic within the project will be handled on private roadways with minimal impact.

[…]

Circulation - Circulation within the primary development sites will be on foot. Private roadways/drives access the project parking areas with vehicular circulation provided between projects and for service/delivery, construction, and emergency purposes. Pedestrian circulation within the projects will be provided via walkways and plazas with off-site improvements made to facilitate area-wide access. Several nearby stairways will be (re)constructed in accordance with the approved phasing and project plans.

Easements/Rights-of-Way - The Sweeneys have included the dedication and and/or deeding of several easements and sections of rights-of-way to Improve the city's title. As a part of the Master Plan, several roadway sections and utility/access corridors will be deeded over. In addition, a right-of-way will be supplied for the construction of a hammerhead-type turnaround for Upper Norfolk Avenue.

Norfolk Avenue - Although several staff members supported the idea of extending Norfolk Avenue through to Empire-Lowell, the consensus was in support of the clustering approach to development. Technical as well as fiscal concerns were discussed relative to the access benefits that would result. Similarly, although the resultant scale of HR-1 development that would have been likely is closer to that prevalent in the Historic District today, the spreading-out of the impacts of road and development construction would have been exacerbated. In lieu of extending Norfolk Avenue, the Sweeney's have consented to deed to the city sufficient land for a turnaround and to participate in the formation of a special improvement district for roadway improvements (in addition to providing an easement for the existing water line).

[…]

Fire Safety - The clustering of development proposed affords better overall fire protection capabilities than would a more scattered form. Buildings will be equipped with sprinkler systems and typical "high-rise" fire protection requirements will be implemented. The proposed development concept locates buildings in areas to avoid cutting and removing significant evergreens existing on the site. Specific parameters have been recommended by the staff with actual details proposed to be deferred until conditional use review.

[…]

Trails - The proposed phasing plan identifies the timing of construction for summertime hiking trails and related pedestrian connections. Trails, stairways, and sidewalks accessing or traversing the various properties will be required in accordance with both the approved phasing plan and at the time of conditional use review/approval.

Past Traffic/Transportation/Parking Meetings

The section is intended to assist the Planning Commission in finding related transportation/traffic related Planning Commission meetings and minutes:

- 2009.02.11 Planning Commission Staff Report
- 2009.02.11 Planning Commission Work Session meeting minutes
- 2009.02.11 Planning Commission Regular meeting minutes

  Summary: *Park City Municipal Corporation Traffic Staff provided the Planning Commission with an outline of the previous Planning Commission meetings regarding traffic. Staff outlined four (4) issues raised within the previous Planning Commission review followed with specific questions. The topics were proposed use and traffic generation, pedestrian circulation, on-site parking, and displaced parking.*

- 2009.04.22 Planning Commission Staff Report
- 2009.04.22 Planning Commission Regular meeting minutes

  Summary: *Attorney Jody Burnett, who had been retained as independent counsel to render an advisory opinion on the issue of vested rights for the Sweeney MPD presented his findings. Next, the applicant responded to concerns raised by the Planning Commission during the February 11, 2009 meeting that were outlined by Staff in a letter. In general, the Planning Commission expressed concern that the proposed mitigation was creating too much of a burden on the adjacent neighborhood and that mitigation to Empire Avenue had not been*

addressed.

- 2009.07.22 Planning Commission Staff Report
- 2009.07.22 Planning Commission Work Session meeting minutes
- 2009.07.22 Planning Commission Regular meeting minutes

Summary: *Staff provided an overview of the proposed traffic mitigation, which was recently updated by the applicant, specifically for Empire Avenue, and L*owell/Manor Way:

Empire Avenue

- *All sections 31 feet wide including curb.*
- *Anticipate future public process involving all impacted properties to arrive at detailed design customizing sections to meet individual neighbor needs based on the three sections provided (Options A - C).*
- *Accommodate snow storage equivalent to present conditions.*
- *Suggest permit parking for residents and guests.*
- *All current right-of-way parallel, perpendicular, and driveway parking maintained, and located outside of the two travel lanes.*
- *Suggest 15 mph speed limit.*
- *Signs to limit truck traffic on Empire (subject to fine).*
- *Encourage traffic from Treasure project to utilize Lowell Avenue with left turn only sign.*

Lowell Avenue and Manor Way

- *Four foot sidewalk from Manor up Empire on downhill (east) side. The sidewalk will continue in front of Treasure and around to Lowell Avenue. In this section it will be 5 feet wide. The sidewalk will continue down Lowell on the uphill (west) side at 4 feet wide down to Manor Way.*
- *Removed previous proposal to construct 10th street stair between Lowell and Empire.*
- *Removed snow storage location on the project site.*
- *Cross walks added at Empire and Lowell.*
- *Do not support prohibiting parking between 2 – 6 am for snow removal. Suggest occasional snow emergencies where residents are noticed to move their cars for a period of time for snow removal as happens in the rest of Old Town.*
- *Additional cost of maintenance will be covered by project tax base.*
- *Agree to participate in cost of improvements north of Manor based on the projects pro rata share of traffic as determined by studies.*

The applicant provided mitigation to decrease trips from the project after guest/residents arrival. Applicant submitted a proposal to decrease the demand

to the site: 2009.07.16 - Proposed Parking and Traffic Operations – MPE Incorporated. The Planning Department explained the recommended on-street parking management plan and snow management plan, which there were disagreements with the applicant. Staff provided recommendations regarding sidewalk and snow storage placement. Staff summarized emergency vehicle access on Empire Avenue. Regarding the location and amount of off-street parking Staff analyzed the written language on the Master Plan, the effects of the employee housing, and adequacy of the proposed parking, including possible reduction. It was noted that the internal vehicular circulation system would be further analyzed during mass and scale of the building as the Planning Commission was focused on the traffic patterns offsite. Control of delivery and service vehicles was analyzed during the traffic portion of the review. The applicant proposed utilization of signs to prohibit through truck traffic and also to improve Empire Avenue with a sidewalk, landscaping, and parking to preserve the residential experience of the street and slow down through traffic. Staff was skeptical of the of the applicant's proposal in that access to and from the project on Empire will not be encumbered by Stop signs while the route utilizing Lowell has a three-way Stop at Lowell and Manor Way and a Stop sign on Manor onto Empire. Further, unenforced signs have no effect and frequent delivery trucks will quickly utilize the fastest route to and from the project which will continue to be Empire Avenue.

The meeting minutes reflect ample discussion regarding these various topics from the City's transportation/traffic experts as well as the applicant's consultants. The record indicates that that all the Commissioners concurred with the Staff analysis. Commissioner Wintzer submitted a letter that was included as part of the record. The Planning Department commented on the MPD parking calculation, specifically, that the commercial was never considered in the MPD parking calculation. Input was considered from the City's Transportation Manager and the City Engineer regarding snow removal and having a no parking regulation between 2:00-6:00 a.m. There was also a discussion about snow removal costs, street aesthetic relating to proposed parking, road lanes (width), and sidewalk, including proposed improvements to Manor Way. A discussion took place about intermediate stop signs along Empire Avenue to discourage traffic as well as discussion of the Empire Crescent Tram connection to Main Street. A discussion also took place regarding the sidewalk location, minimum travel width, and the need of employee parking management plan for adequacy. The Planning Commission concurred that they would like to see an effort for reducing the parking below 366 spaces.

After the July 22, 2009 Planning Commission meeting, there was a site meeting that took place on August 26, 2009. On September 23, 2009 the focus of review was CUP criteria 8, 11, and 15 (mass, scale, and compatibility). On October 10, 2009 there was another scheduled site visit which was canceled due to the weather. On February 02, 2010 the applicant presented their physical model, and no new information, other than the model, was received by the Planning Staff, where the City re-published their last staff report

dated September 23, 2009.

On January 11, 2017, Staff presented the following:

- all of the transportation documents,
- an outline of the development parameters and conditions, and major issues related to transportation/traffic/parking listed on the 1986 Sweeney Properties Master Plan,
- an outline and summary of the 2009 transportation/traffic/parking meetings,
- the City's 2011 Traffic & Transportation Master Plan, Old Town local road designation construction recommendation,

During the January 11, 2017, the applicant presented their Traffic Study Summary, response to issues raised, and executive summary to issues raised. Please see the January 11, 2017 Planning Commission staff report and meeting minutes:

- 2017.01.11 Planning Commission Staff Report

- 2017.01.11 Planning Commission Meeting Minutes

On May 10, 2017, the applicant presented to the Planning Commission the Treasure Hill Traffic Study DRAFT Addendum #7 (Transportation/Traffic Update) submitted to the City on May 4, 2017:

- 2017.05.10 Planning Commission Staff Report

- 2017.05.10 Planning Commission Meeting Minutes

On June 14, 2017, staff presented to the Planning Commission an outline of several issues identified by staff on the recently submitted addendum #7 which included general transportation/traffic issues, trip reduction questions/request for information, and a summary/conclusions:

- 2017.06.14 Planning Commission Staff Report

- 2017.06.14 Planning Commission Meeting Minutes

On July 12, 2017, the applicant presented to the Planning Commission the applicant's submitted Constructability Assessment Report and Refinement 17.1 and 17.2 as partially completed. Staff focused on the lack of specificity provided by the applicant, The Planning Commission concurred with staff.

- 2017.07.12 Planning Commission Staff Report

- 2017.07.12 Planning Commission Meeting Minutes

Notice
The property was posted and notice was mailed to property owners within 300 feet on May 11, 2016 for the initial meeting held on June 8, 2106. Legal notice was published in the Park Record according to requirements of the Land Management Code prior to every meeting.

Public Input
Public input has been received by the time of this report. See the following hyperlink: Link A - Public Comments with public input received as of April 2016. All public comments are forwarded to the Planning Commission via the staff report link above and kept on file at the Planning Office. Planning staff will not typically respond directly to the public comments, but may choose to address substantive review issues in subsequent staff reports. There are four (4) methods for public input to the Planning Commission:

- Attending the Planning Commission meetings and giving comments in the public hearing portion of the meeting
- Preparing comments in an e-mail to treasure.comments@parkcity.org
- Visiting the Planning office and filling out a Treasure CUP project Comment Card
- Preparing a letter and mailing/delivering it to the Planning Office

Summary Recommendations
Staff recommends that the Planning Commission review the Treasure Hill Traffic Study Addendum #7 dated July 26, 2017, submitted to the City in draft/incomplete form on July 21, 2017, and in final form on July 27, 2017, as analyzed by the City in this staff report. As noticed, a public hearing should be held. Staff recommends that the Planning Commission continue the item to the September 12, 2017 Planning Commission meeting.

Exhibits (printed)
Exhibit A - Treasure Hill Traffic Study Addendum #7 (report printed only)
Exhibit B - City's Independent Review of Treasure Hill TIA
Exhibit C - THINC TH Traffic Study Review Memo

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 2017
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

Treasure Hill Traffic Study Addendum #7

July 26, 2017

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

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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 145 AM peak hour trips and 199 PM peak hour trips. The AM peak hour is between the hours of 8 AM and 10 AM. The PM peak hour is between the hours of 3 PM and 6 PM. These times were selected because the peak traffic days coincide with day skier traffic to Park City Mountain Resort ("Resort" or "PCMR").

This study analyzes project traffic impacts at the following intersections:

- Park Ave / Deer Valley
- Empire Ave / Silver King
- Empire Ave / Shadow Ridge
- Empire Ave / Manor Way
- Empire Ave / Crescent Tram
- Lowell Ave / Shadow Ridge
- Lowell Ave / Manor Way
- Project access One / Lowell Ave
- Lowell Ave / North Star
- Park Ave / 15th Street
- Park Ave / 14th Street
- Park Ave / 8th Street
- Empire Ave / 14th Street
- Lowell Ave / Silver King
- Project access Two / Empire Ave

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 considering 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 Report, the Six Addenda and this addendum, the roadway network can facilitate the traffic needs for existing and future traffic, including 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, employees not living on site will be directed and incentivized to use public transportation to access the site.
- During the busy winter season, other busy times, and special events, implementation of shuttle service to and from the airport.
- During the construction phase of the project, directing construction workers who do not need to access the construction site with vehicles to park off site at the Richardson Flats, or similar park and ride lots, and shuttle them to the site.

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 gross square feet (sq-ft) of commercial space that includes 16, 127 sq-ft of meeting space. The development will also have 122,225 net sq-ft of hotel space (202 rooms), 45,153 net sq-ft or 18 units of three story condominiums, 6,369 net sq-ft or 3 units of two story condominiums, 220,164 net sq-ft or 82 units of one story condominiums, and 6,669 gross 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 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.
- Operational capacity of the intersections in the study area in winter conditions
- Proposed TDM strategies to mitigate the increase of traffic generated by the proposed Treasure Hill development.
- Proposed traffic mitigation measures to maintain appropriate traffic operations at the intersections for each traffic condition.
- Proposed monitoring program to evaluate traffic conditions after the Treasure Hill development is constructed and occupied.
- Treasure Hill parking analysis.

Study Area

In collaboration with Park City Municipal Corporation (“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 in the latest study at the PCMC’s direction. The study area intersections are also highlighted in **Figure 2**.

- Park Ave / Deer Valley
- Empire Ave / Silver King
- Empire Ave / Shadow Ridge
- Empire Ave / Manor Way
- Empire Ave / Crescent Tram
- Lowell Ave / Shadow Ridge
- Lowell Ave / Manor Way
- Project access One / Lowell Ave
- Lowell Ave / North Star
- Park Ave / 15th Street
- Park Ave / 14th Street
- Park Ave / 8th Street
- Empire Ave / 14th Street
- Lowell Ave / Silver King
- Project access Two / Empire Ave

Figure 1
Project Site Plan

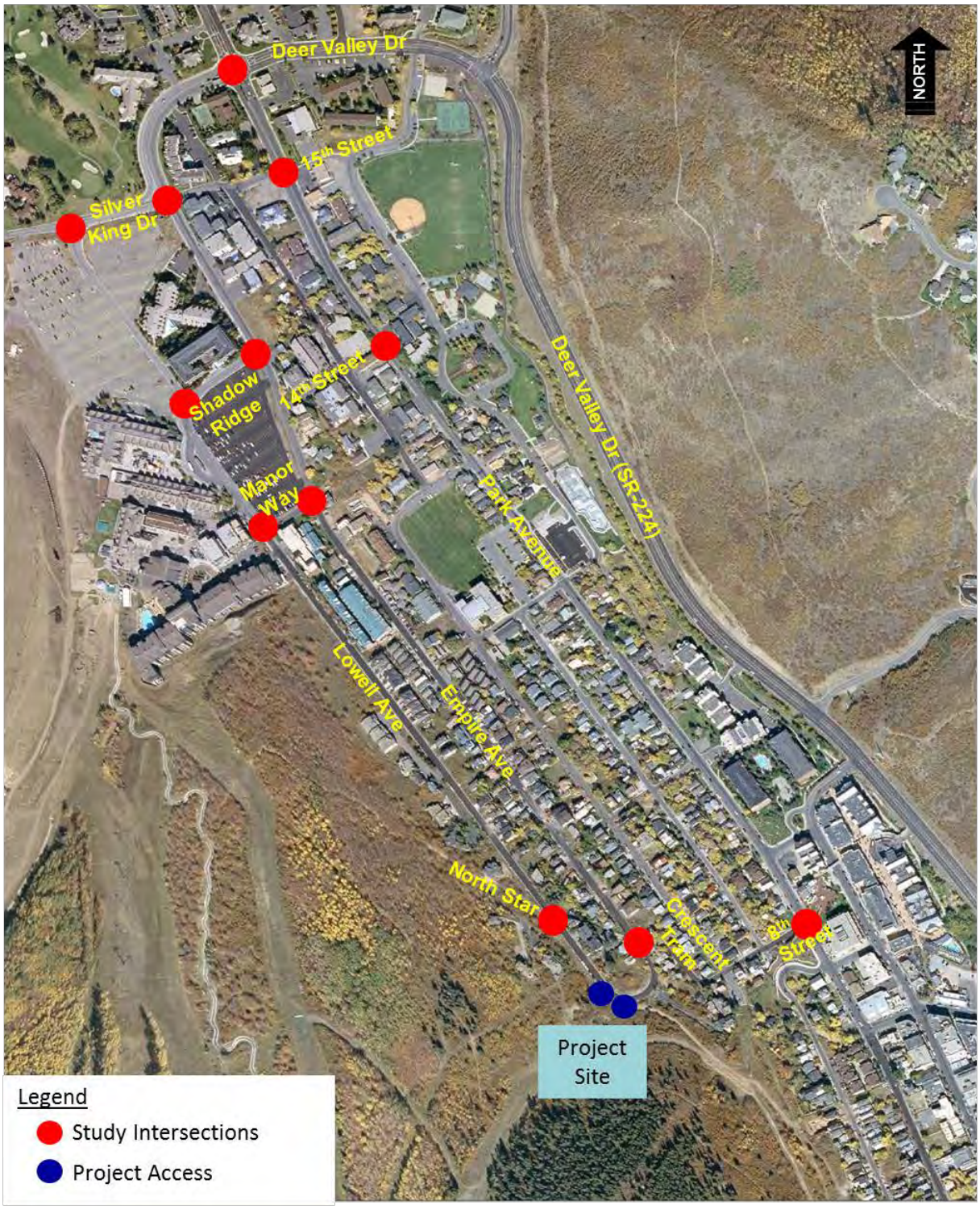


Figure 2
Project Location & Study Intersections

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.

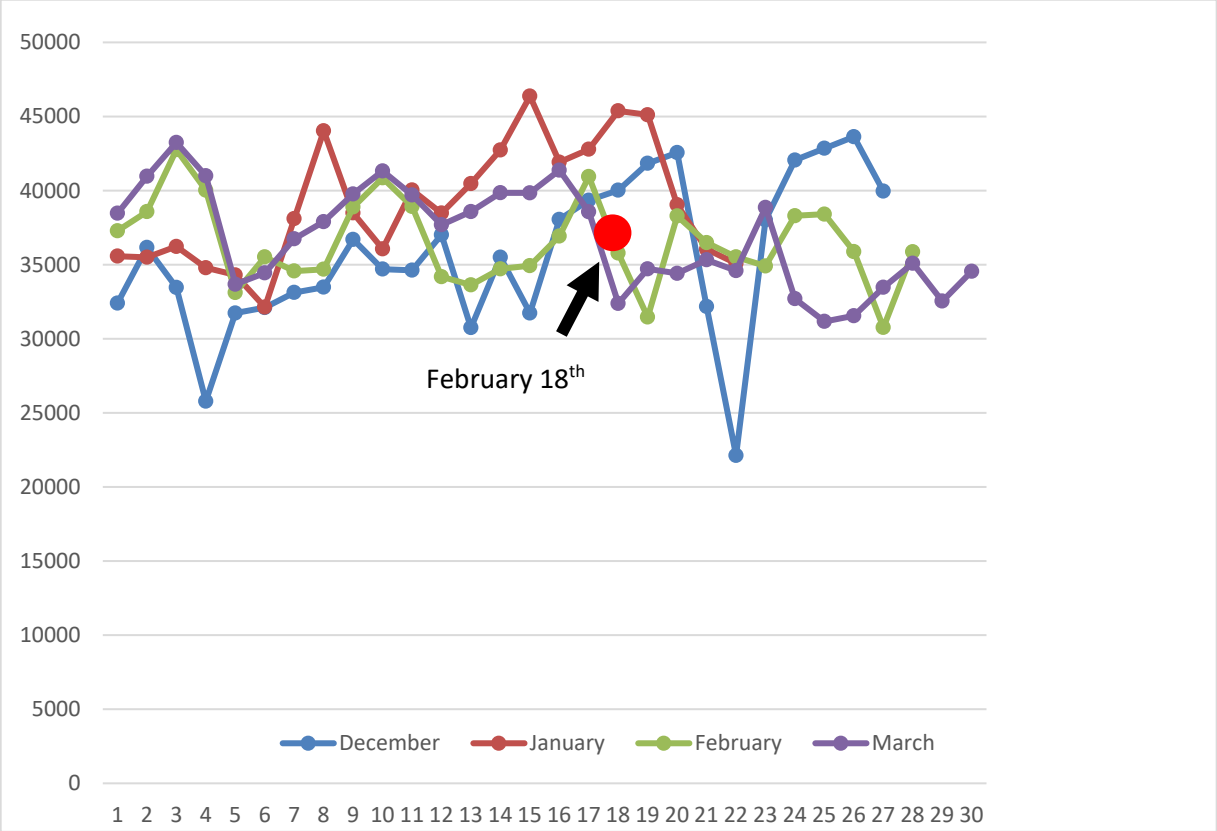
Table 1 below summarizes the data gathered from President's Day Weekend 2017 compared to what was estimated in the Original Report in 2004 and what was gathered over President's Day Weekend 2005. A detail of the traffic counts for February 18, 2017, can be found in the Appendix.

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 / 15th Street	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 / 14th Street	NA	NA	NA	NA	573	765
Lowell Ave / Silver King	NA	NA	NA	NA	816	641
Note: The numbers depict the total volume at the intersection during one peak hour.						

Saturday, February 18th was selected because President's Day weekend represents one of the busiest ski times and therefore a representative winter day for traffic conditions in Park City. To verify the traffic counts gathered for the study area information was gathered from a Utah Department of Transportation (UDOT) traffic counter on SR-224. The traffic counter is located 0.1 miles north of Canyons Resort Drive. **Table 2** depicts the daily two-way traffic volumes gathered from December 2016 through March of 2017, a typical ski season in Park City.

Table 2 SR-224 Traffic Count Summary – Winter 2017



After analyzing the data gathered from the UDOT traffic counter it was determined that February 18th was identified as the 43rd percentile during the 2016 to 2017 winter ski season. A further analysis of the data found that by increasing the traffic volumes actually counted on February 18 by 12.8% the traffic volumes would reflect the 85th percentile winter ski day. Therefore, to accurately depict a busy day of traffic during the winter ski season, the traffic volumes collected at all the intersections in the study area were increased by 12.8%.

Table 3 Existing Traffic with Factored Increase

Intersection	***Actual Counts* February 18th 2017**		***12.8% Factored Counts* February 18th 2017**	
	AM	***PM***	***AM***	***PM***
Park Ave / Deer Valley	2438	3069	2756	3467
Empire Ave / Silver King Dr.	1545	1418	1748	1605
Empire Ave / Shadow Ridge	927	937	1048	1057
Empire Ave / Manor Way	471	641	534	726
Empire Ave / Crescent Tram	54	95	64	107
Lowell Ave / Shadow Ridge	535	396	609	447
Lowell Ave / Manor Way	471	579	472	653
Lowell Ave / North Star	29	48	35	57
Park Ave / 15th Street	470	975	530	1104
Park Ave / 14th Street	454	946	517	1073
Park Ave / 8th Street	276	611	314	693
Empire Ave / 14th Street	573	765	649	867
Lowell Ave / Silver King	712	559	816	641
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.

It is important to note that the traffic volumes between intersections in Figure 3 may not balance. This is due to vehicles leaving the roadway network to access parking areas or vehicles leaving the parking areas to access the roadway network. This happens the most in between Shadow Ridge Road and Manor Way because this is where the main parking for PCMR is located.

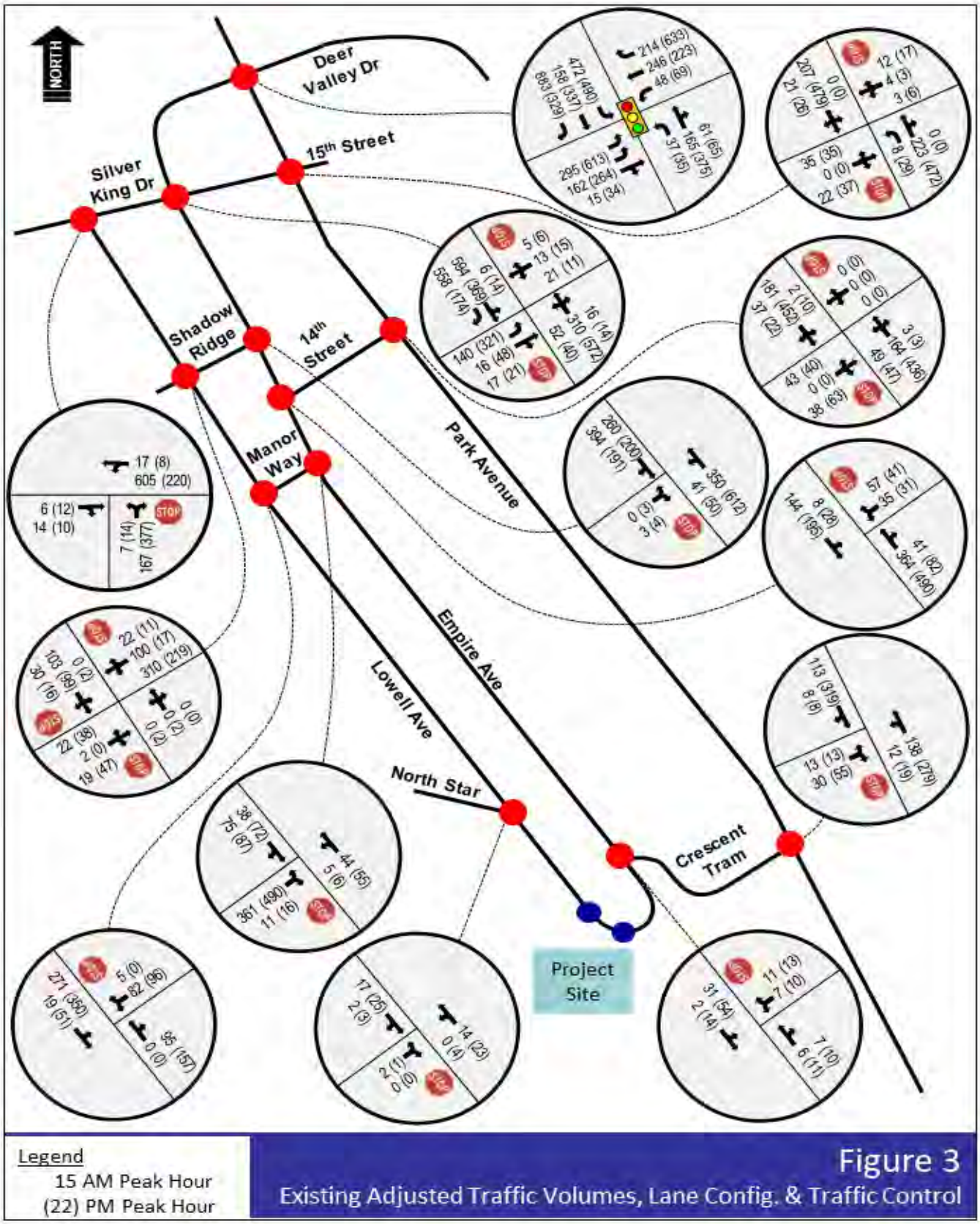


Figure 3
Existing Adjusted Traffic Volumes, Lane Config. & Traffic Control

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 PCMC 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 PCMC and Summit County. The land use plans provide the best estimate of future population along with the associated traffic. **Table 4** depicts the anticipated traffic volumes for Summit County and Park City.

Table 4 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 5 Existing vs. Future Traffic Volume Summary

Intersection	***12.8% Factored Counts February 18th 2017***		***Future Traffic Volumes 2037***	
	AM	***PM***	***AM***	***PM***
Park Ave / Deer Valley	2756	3467	3472	4367
Empire Ave / Silver King Dr.	1748	1605	2206	2024
Empire Ave / Shadow Ridge	1048	1057	1321	1336
Empire Ave / Manor Way	534	726	675	917
Empire Ave / Crescent Tram	64	107	82	143
Lowell Ave / Shadow Ridge	609	447	768	575
Lowell Ave / Manor Way	472	653	675	825
Lowell Ave / North Star	35	57	46	74
Park Ave / 15th Street	530	1104	679	1393
Park Ave / 14th Street	517	1073	654	1354
Park Ave / 8th Street	314	693	399	875
Empire Ave / 14th Street	649	867	820	1094
Lowell Ave / Silver King	816	641	1030	750
Note: The numbers depict the total volume at the intersection during one peak hour.				

In connection with the evaluation of future traffic volumes, PCMC 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, PCMC 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 (Resort) 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 PCMR main base area, there is a Development Agreement between PCMC and the Resort that entitles PCMR to 491.78 maximum unit equivalents in this area. 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 PCMR potential development. Because the exact development is unknown now for the PCMR, development variety of mixed land uses that equaled 491.78 equivalent units or less was assumed. A trip reduction factor was also applied to the PCMR trip generation as was applied for Treasure Hill due to the mixed land use and ski access opportunities.

In the same Development Agreement between PCMC and PCMR there is also the potential of 600 new parking stalls. In the Development Agreement, it was assumed 160 stalls would be occupied by employees thus creating 440 net new skier parking spaces. It is assumed that 50% of those stalls would enter or leave the parking lot during the AM and PM peak hour thus creating an additional 220 vehicles in the study area during the AM and PM peak hour.

The projected traffic volumes for the combination of both developments ranged between 448 to 583 during the AM peak hour and 595 to 944 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 5** on the Park Ave / Deer Valley intersection, it is anticipated there will be an additional 716

vehicles in the AM peak hour and 895 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 except for the PM peak, therefore the future volumes in the study area are dependent upon the potential development in the area. With the speculative nature of the development at PCMR it was determined to apply the volumes in **Table 5** and depicted in **Figure 4** to be used to evaluate the study intersections for the baseline condition 2037 without the proposed Treasure Hill development.

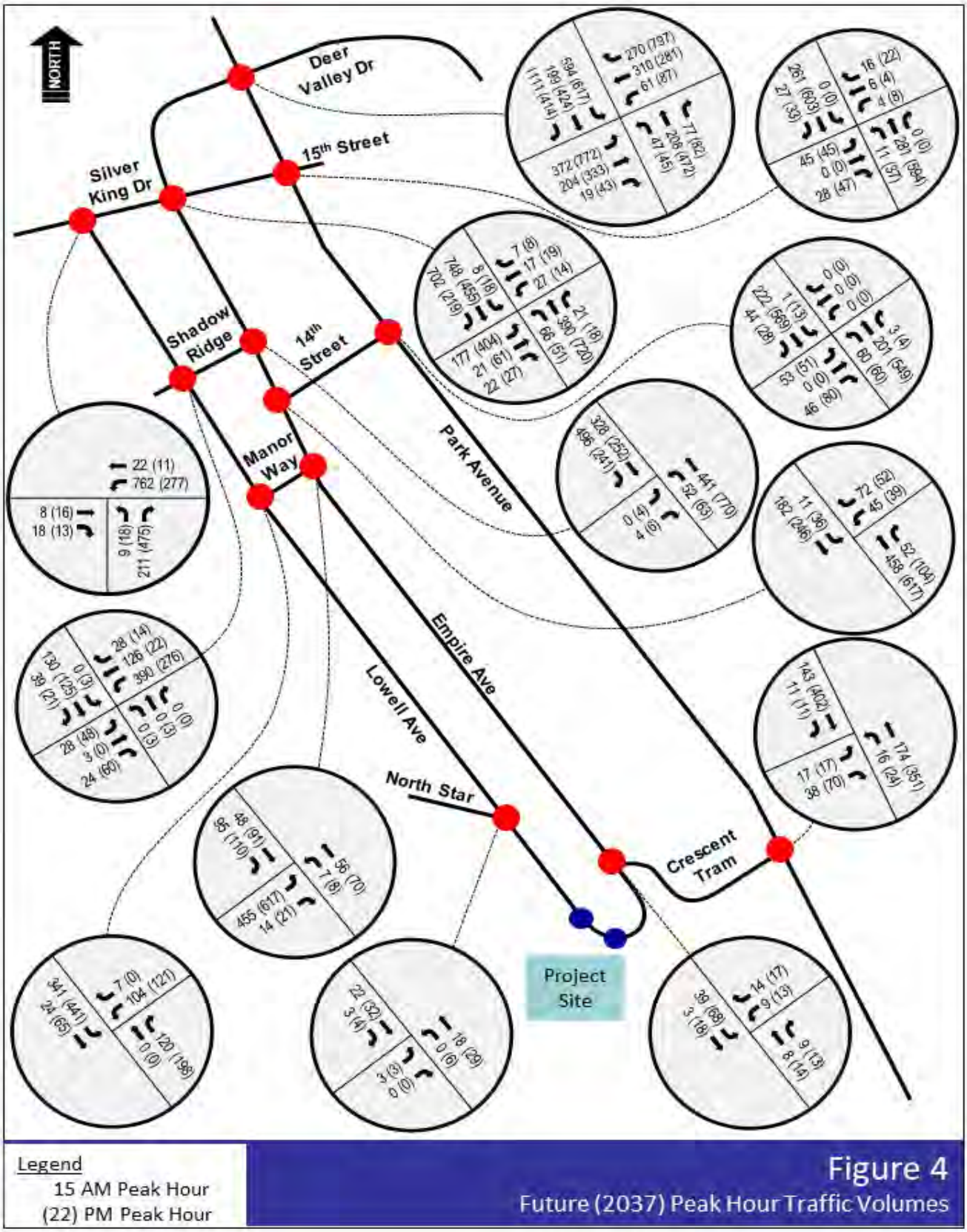


Figure 4
Future (2037) Peak Hour Traffic Volumes

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 330 was utilized, and it was assumed the hotel was 85% occupied. This occupancy rate was based on a recent study completed at the Canyons resort area ("The Canyons") that is also a mixed-use development that connects to the same ski resort as the proposed Treasure Hill development. The ITE Trip Generation manual states: "Resort hotels are similar to hotels (Land Use 310) in that they provide sleeping accommodations, restaurants, cocktail lounges, retail shops and guest services. The primary difference is that resort hotels cater to the tourist and vacation industry, often providing a wide variety of recreational facilities/programs (golf courses, tennis courts, beach access, or other amenities) rather than convention and meeting business." 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 as integrated with the hotel building and therefore, to be conservative, 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. Since this housing is exclusively for on-site employees, it is not expected to contribute to peak hour traffic volumes.
- 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, to be conservative, we have assumed that a portion of the commercial space (17,470 sq-ft) may spur trips to the Treasure Hill development. 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 6 provides the results of the trip generation for each of the individual land uses.

Table 6 Land Use Specific Trip Generation

Land Use (ITE Reference)	Independent Variable	Size	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Resort Hotel (330)	Occupied Rooms	172 units	55	45	100	92	69	162
Employee Housing (220)	Dwelling Units	6,669 sq-ft or 30 units	5	11	16	18	12	30
Condominium/Townhouse (230)	Dwelling Units	103 units	10	42	52	45	26	71
Specialty Retail Center (826) &Quality Restaurant (931)	1000 Square Feet	17,470 sq-ft	27	29	56	64	45	109
Total			111	139	250	209	144	353

Trip Reduction

The independent variable used to calculate the trip generation for Resort Hotel was “Occupied Rooms”. As reported by Canyons in their annual report, the hotel occupancy rate for the 2016 to 2017 ski season was found to be 85%. There is a total of 202 hotel rooms planned for Treasure Hill, therefore the total number of occupied rooms used for this study was 172 (85% of 202 total rooms). This was applied in the initial calculation; therefore, no trip reduction was applied.

A reduction to trip generation arises from the internal capture rate that accounts for trips between various land uses located within the same development. 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. For the Treasure Hill development, the following internal capture rates were considered.

- Trips between Specialty Restaurant and Condominium/Townhomes
- Trips between Quality Restaurant and Specialty Retail Center.
- Trips between Specialty Retail Center and Condominium/Townhomes.

Using the method outlined by ITE, the total number of trips generated by Condominiums/Townhomes, Specialty Retail Center and Quality Restaurant were reduced by 11% in the am peak hour and 22% in the pm peak hour. The appendix contains the ITE worksheet used to calculate the reduction.

Ski runs will be constructed to allow visitors to access PCMR directly from Treasure Hill. These ski runs will reduce the number of trips to the Treasure Hill development because visitors will not need to access the local street network to gain access to PCMR. The Park City Chamber of Commerce Convention and Visitors Bureau reports that the average length of stay for visitors is 6.7 nights. The average days that visitors ski and snowboard when they visit is 5.8 (See Appendix). By dividing the average number of days skied (5.8) by the average length of stay (6.7) it was determined that 86.7% of the time visitors will be skiing. It is assumed that 50% of the visitors will ski at PCMR and 50% will ski at Deer Valley, Snow Basin or at a ski resorts in the cottonwood canyons. Therefore, a trip reduction rate of 43.3% (86.7% X 50%) was applied to 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.

Because of the many variables involved with accurately predicting an appropriate trip reduction for the cabriolet, it was assumed that the cabriolet would reduce trip generation by 10% 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 the 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 predicted 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 for these alternatives.

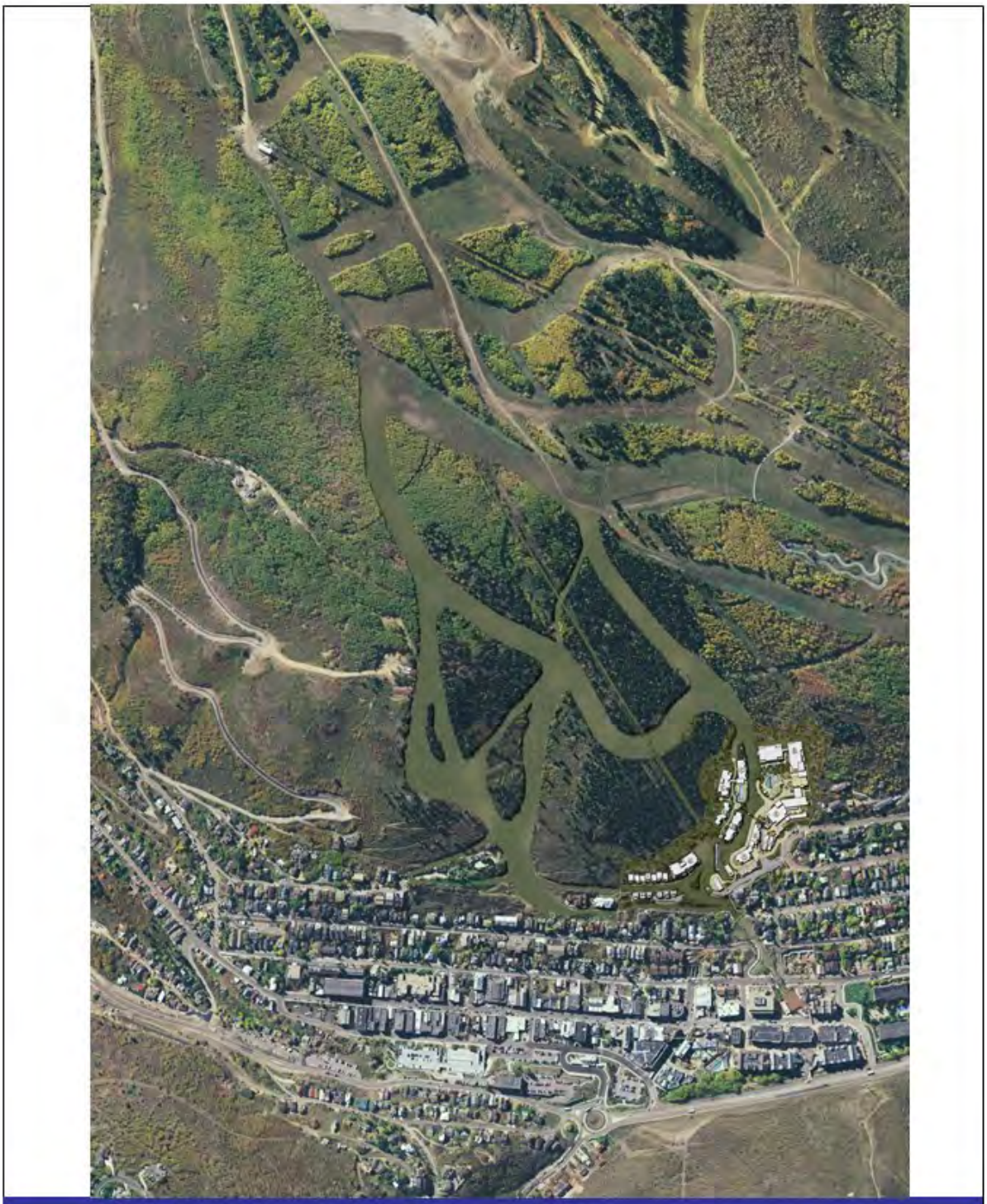


Figure 5
Ski and Trail Concept Plans

Table 7 provides the results of the trip generation traffic volumes after all the trip reductions have been applied.

Table 7 Trip Generation after Trip Reduction

Land Use (ITE Reference)	Independent Variable	Size	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Resort Hotel (330)	Occupied Rooms	172 units	22	18	42	29	22	51
Employee Housing (220)	Dwelling Units	6,669 sq-ft or 30 units	0	0	0	0	0	0
Condominium/Townhouse (230)	Dwelling Units	103 units	5	20	25	19	11	30
Specialty Retail Center (826) &Quality Restaurant (931)	1000 Square Feet	17,470 sq-ft	20	22	42	43	29	72
Total			47	60	107	92	63	153

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 7**.

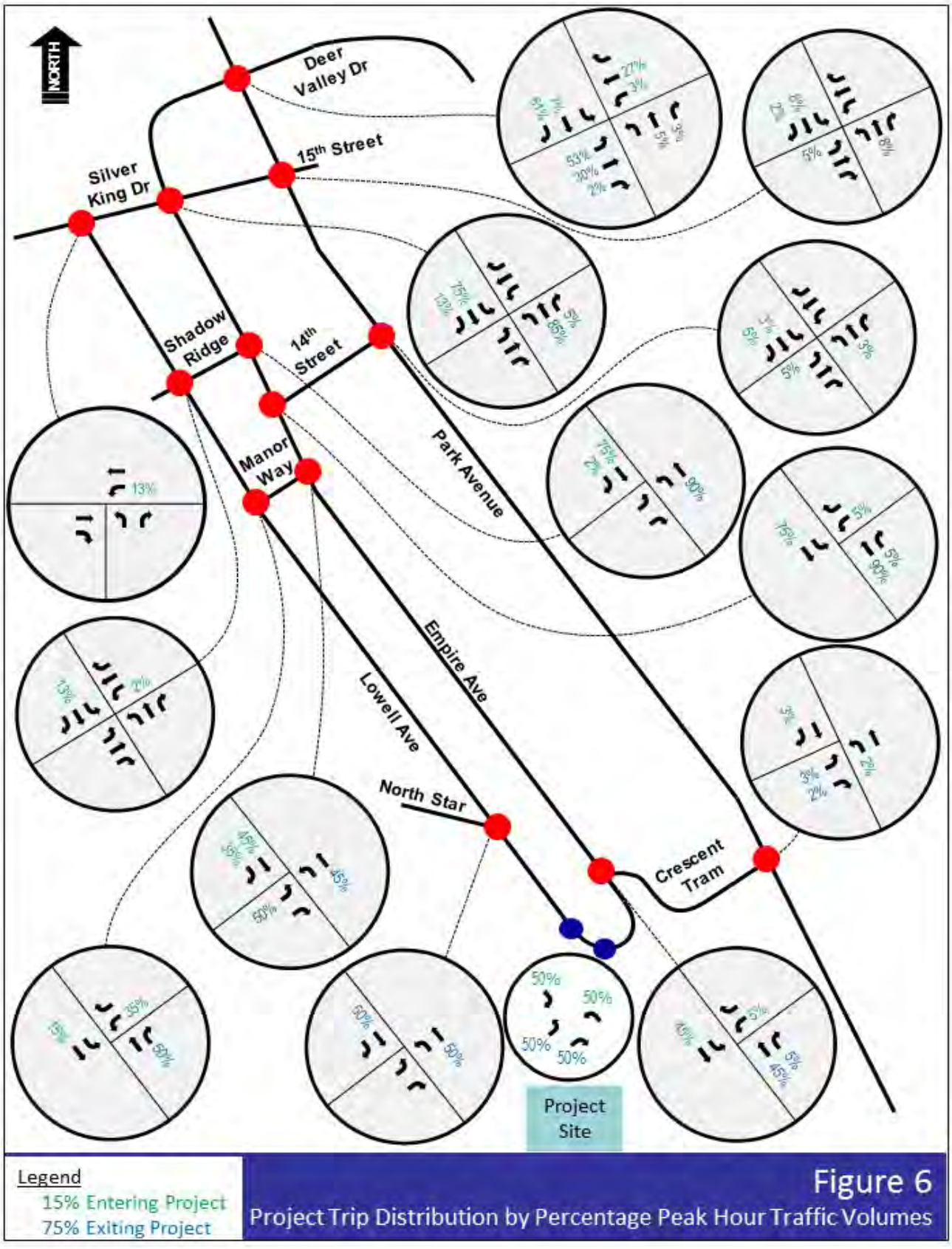


Figure 6
Project Trip Distribution by Percentage Peak Hour Traffic Volumes

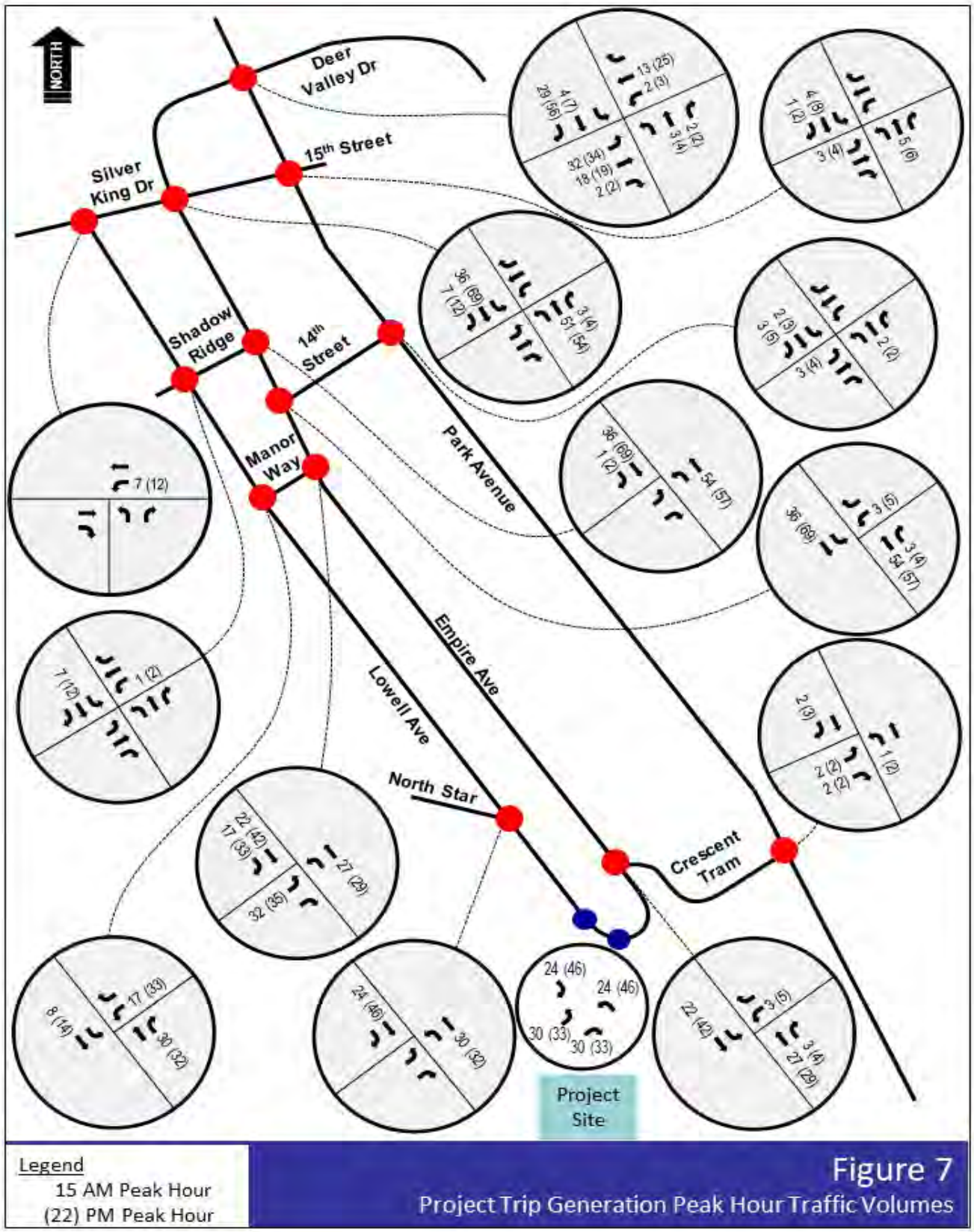


Figure 7
Project Trip Generation Peak Hour Traffic Volumes

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.

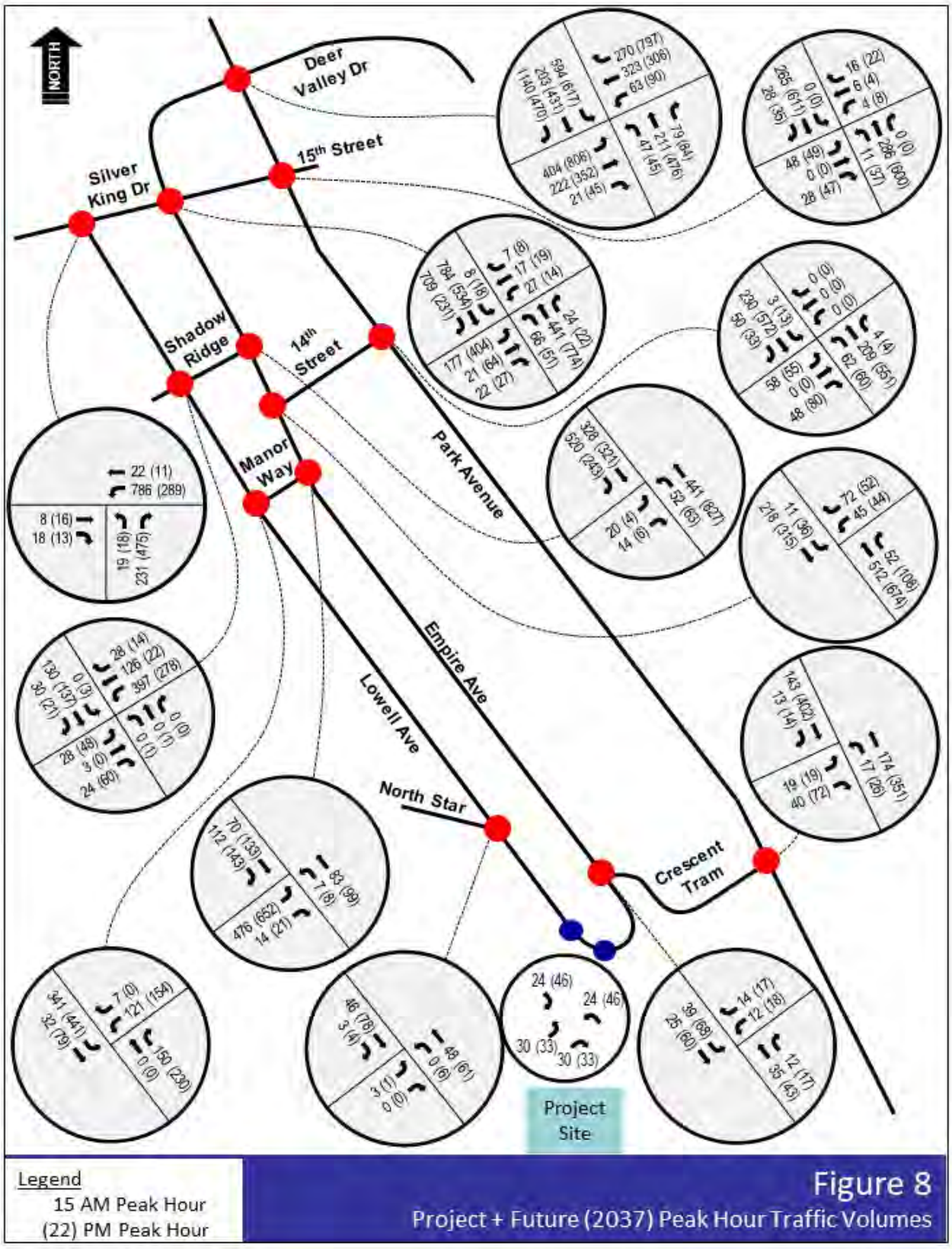


Figure 8
Project + Future (2037) Peak Hour Traffic Volumes

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 8** 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 8**. 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 8 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 9 shows the level of service and corresponding delay (sec/veh) at each of the study intersections for the existing traffic conditions with the factored increase in traffic volumes.

Table 9 Existing Levels of Service

		Worst Approach[1]		Overall Intersection[2]
Intersection	Control	LOS AM / PM	Approach AM / PM	LOS AM / PM
Park Ave / Deer Valley	Signal			C (32.5) / D (50.9)
Empire Ave / Silver King Dr	Stop	E (36.6) / F (137.5)	EB / EB	
Empire Ave / Shadow Ridge	Stop	A (9.4) / A (6.8)	NB / EB	
Empire Ave / Manor Way	Stop	A (5.5) / A (7.3)	EB / EB	
Empire Ave / Crescent Tram	Stop	A (4.1) / A (4.4)	WB / WB	
Empire Ave / 14 Street	Stop	A (9.2) / B (11.4)	WB / WB	
Lowell Ave / Silver King	Stop	C (22.0) / F (122.0)	NB / NB	
Lowell Ave / Manor Way	Stop	A (6.0) / A (7.7)	SB / SB	
Lowell Ave / North Star	Stop	A (4.7) / A (3.6)	EB / EB	
Lowell Ave / Shadow Ridge	Stop	A (6.7) / A (5.8)	WB / WB	
Park Ave / 15th	Stop	A (9.1) / C (15.5)	WB / WB	
Park Ave / 14th Street	Stop	A (6.7) / B (12.7)	EB / EB	
Park Ave / 8th	Stop	A (5.1) / A (8.2)	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 9**, all the intersections currently operate at an acceptable LOS during both the AM and PM peak hours except for the Empire Ave / Silver King and Lowell Ave / Silver King intersections.

Future (2037) Levels of Service

Table 10 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 10 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			F (133.8) / F (117.5)
Empire Ave / Silver King	Stop	F (147.1) / F (175.6)	EB / EB	
Empire Ave / Shadow Ridge	Stop	B (13.0) / C (19.8)	NB / EB	
Empire Ave / Manor Way	Stop	A (6.5) / A (9.4)	EB / EB	
Empire Ave / Crescent Tram	Stop	A (4.0) / A (4.5)	WB / WB	
Empire Ave / 14 Street	Stop	B (12.5) / C (18.0)	WB / WB	
Lowell Ave / Silver King	Stop	F (100.8) / F (195.4)	NB / NB	
Lowell Ave / Manor Way	Stop	A (6.4) / B (10.7)	SB / SB	
Lowell Ave / North Star	Stop	A (3.6) / A (4.7)	EB / EB	
Lowell Ave / Shadow Ridge	Stop	A (7.4) / A (6.9)	WB / WB	
Park Ave / 15th	Stop	A (8.3) / C (17.0)	WB / EB	
Park Ave / 14th Street	Stop	A (8.1) / C (18.8)	EB / EB	
Park Ave / Crescent Tram	Stop	A (5.0) / A (8.4)	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**, the intersections are expected to operate at an acceptable LOS during both the AM and PM peak hours except for the Park Ave / Deer Valley, Empire Ave / Silver King and the Lowell Ave / Silver King intersections. The delays experienced at the Lowell Ave / Silver King intersection result from vehicles queuing from the Empire Ave / Silver King intersection.

Future Levels of Service Without Project

With the intersections in the study area operating in the future at undesirable levels of service even without considering the impact of the Treasure Hill project, expected mitigation/improvement measures were applied and analyzed. **Table 11** shows the level of service and corresponding delay (sec/veh) at specific intersections for the future traffic conditions without the Treasure Hill development, but with expected mitigation/improvement measures applied.

Table 11 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			C (29.1) / E (68.9)
Empire Ave / Silver King	Roundabout or Signal			A (8.4) / C (20.0)
Lowell Ave / Silver King	Stop	D (28.0) / B (12.5)	NB / 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 11**, 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.

To maintain acceptable levels of operation at the Park Ave / Deer Valley intersection it requires the following improvements.

- An additional southbound left turn lane and providing free right turn movements from Park Avenue (SR-224) onto Empire Avenue.

While a LOS of E is not the target additional improvements could have significant impact on the existing vertical buildings around this intersection. For most times of the year the LOS will be D or better. Instead of additional physical roadway improvements one way to handle these traffic bottlenecks is with human traffic control as often provided for major sporting events.

Future Levels of Service With Project

Table 12 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 11**.

Table 12 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			C (29.1) / E (75.7)
Empire Ave. / Silver King	Signal			B (10.8) / C (20.4)
Empire Ave / Shadow Ridge	Stop	D (33.9) / C (23.0)	EB / EB	
Empire Ave / Manor Way	Stop	A (7.4) / C (15.1)	EB / EB	
Empire Ave / Crescent Tram	Stop	A (3.9) / A (4.5)	WB / WB	
Empire Ave / 14 Street	Stop	C (15.7) / C (21.6)	WB / WB	
Lowell Ave / Silver King	Stop	D (34.6) / B (11.2)	NB / NB	
Lowell Ave / Manor Way	Stop	A (7.0) / C (23.4)	SB / SB	
Lowell Ave / North Star	Stop	A (3.9) / A (6.0)	EB / EB	
Lowell Ave / Shadow Ridge	Stop	A (7.4) / A (6.8)	WB / WB	
Park Ave / 15th	Stop	B (10.1) / D (29.7)	WB / WB	
Park Ave / 14th Street	Stop	A (8.2) / C (22.6)	EB / EB	
Park Ave / 8th	Stop	A (5.7) / A (9.5)	EB / EB	
Access 1 / Empire Ave	Stop	A (4.1) / A (2.6)	NB / NB	
Access 2 / Lowell Ave	Stop	A (3.9) / A (3.8)	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 12**, with the implementation of the mitigation/improvement measures applied in **Table 11**, 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.

Operational Capacity During Winter Conditions

PCMC has designed and is presently constructing improvements along Lowell Avenue from Manor Way to the curve heading down to Empire Avenue. During the planning phase of the project, a traffic model was created and a memorandum of the results of that study were issued on April 2, 2015. The traffic model examined future traffic volumes on Lowell Avenue using the travel demand model developed for the Park City Transportation Master Plan update in 2011. The traffic model included existing conditions

and build out conditions for Treasure Hill Project and the Bamberger property. The conclusion of the study was that even with the addition of the Treasure Hill Project and potential Bamberger property development Lowell Avenue can facilitate the existing and future traffic needs with the "Local Road – Old Town" typical section depicted below.

From the presentation of the Treasure Hill original traffic study to Planning Commission, public comments received throughout this process, and in discussions with the staff, concerns have been expressed about the capacity of the street networks during winter conditions. While the City has chosen to construct Lowell Avenue according to the "Local Road-Old Town" typical section based on the April 2015 study, it is not clear whether the study or its recommended design of Lowell Avenue addressed all the concerns that have been mentioned throughout the Treasure Hill traffic analysis process. The elements that influence the capacity of the roadways within the study area during the winter include;

- Quantity of snow,
- Duration of snow events,
- How the streets are plowed and maintained,
- Where and how individuals elect to park,
- How diligent PCMC enforces its parking regulations,
- Service delivery needs (garbage pickup, express mail delivery, etc.), and
- Pedestrian usage.

These elements currently exist and are accommodated with a variety of practices. It has been mentioned by the citizens in the area how the roadways in the winter effectively operate as one lane roads. Also during winter conditions many times the streets are plowed and parking maintained to accommodate one lane of travel. Therefore, a traffic analysis was conducted applying a one-way road system. This system would apply a southbound direction of traffic along Lowell Avenue and northbound direction of traffic along Empire Avenue. It was assumed all the cross streets still accommodate two-way traffic. With a one-way traffic circulation, it would allow for a reduced 12-foot travel lane, 7.5 feet of parking on one side, and still provide room for pedestrian use and snow storage within the "Local Road-Old Town" typical section. The analysis was conducted for future conditions with the Treasure Hill project. **Table 13** summarizes the results of that analysis.

Table 13 One-Way Traffic Operations (Operational Capacity During Winter Conditions)

		Worst Approach[1]		Overall Intersection[2]
Intersection	Control	LOS AM / PM	Approach AM / PM	LOS AM / PM
Park Ave / Deer Valley	Signal			D (36.9) / E (61.9)
Empire Ave. / Silver King	Signal			A (7.3) / A (7.9)
Empire Ave / Shadow Ridge	Stop	A (1.9) / A (1.8)	EB / EB	
Empire Ave / Manor Way	Stop	A (6.7) / A (8.9)	EB / EB	
Empire Ave / Crescent Tram	Stop	A (2.7) / A (2.8)	WB / WB	
Empire Ave / 14 Street	Stop	A (4.1) / A (4.4)	WB / WB	
Lowell Ave / Silver King	Stop	A (8.2) / A (5.6)	WB / WB	
Lowell Ave / Manor Way	Stop	A (6.5) / A (8.6)	SB / SB	
Lowell Ave / North Star	Stop	A (1.8) / A (3.3)	EB / EB	
Lowell Ave / Shadow Ridge	Stop	A (6.6) / A (8.6)	EB / SB	
Park Ave / 15th	Stop	A (8.5) / C (22.5)	WB / WB	
Park Ave / 14th Street	Stop	A (7.6) / C (24.4)	EB / EB	
Park Ave / 8th	Stop	A (4.9) / B (10.1)	EB / EB	
Access 1 / Empire Ave	Stop	A (2.4) / A (2.4)	NB / NB	
Access 2 / Lowell Ave	Stop	A (.1) / A (.4)	SB / SB	

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 13**, with the implementation of the one-way traffic scenario described above, all intersections will continue to operate at an acceptable LOS in both the AM and PM peak hour. Most intersections, including the intersection of Empire Ave / Silver King will operate and a better level of service. The intersection of Park Ave / Deer Valley Drive will continue to operate at essentially the same level of service. This is because most traffic at this intersection will not be affected by the one-way traffic.

With the proposed one-way traffic operations, the following information should be considered.

- Emergency vehicle response – During emergency situations, emergency vehicles are not required to adhere to one-way traffic requirements.
- Out of direction travel for residents and visitors – one-way traffic operation is only proposed for the winter ski season when snow plow operations struggle to keep two-way travel lanes available.
- Out of direction travel time for residents and visitors - it is estimated that the out of direction travel time for some residents could be up to 30 seconds. However, based on current operations there is more than 30 seconds lost when there are two-way traffic conflicts.

TRAFFIC DEMAND MANAGEMENT

The Treasure Hill project has been assisting with various Traffic Demand Management (TDM) strategies and will continue to implement TDM strategies that will improve traffic operations.

- Sweeney Land Company, co-owner of the Treasure Hill Parcel, conveyed at no cost to PCMC the land that enabled the "loop" connection for the Lowell and Empire roadways.
- The various Sweeney entities were instrumental in the creation of the Town Lift System, including its original approval and construction, connections to Upper Old Town (Upper Norfolk, King Road, and Sampson), conveyance to the City at no charge of portions of the Crescent Walkway and Lower Norfolk Avenue, and providing the opportunity for the Main Street Bridge.
- MPE (the CUP applicant) provided funds for the study of Lowell Avenue to create a roadway that will accommodate the existing traffic volumes and future traffic volumes.
- MPE provided funds for the design and construction of Lowell Avenue to create a roadway that will accommodate the existing traffic volumes and future traffic volumes, particularly construction traffic.
- Applying a mixed-use development that will create between 107 to 154 vehicle trips in the peak hours instead of single family homes on approximately 4 miles of new city streets connecting to Upper Old Town and possibly beyond that would likely generate more vehicle trips in the peak hours.
- The construction of the cabriolet is a significant TDM strategy that provides a transportation system that removes vehicles on the roadway, while creating the ability for visitors and residents of the development to access Main Street. While only a 10% reduction in vehicles (12 cars in the morning and 17 cars in the evening) it is assumed for the cabriolet, it will have a greater impact when combined with the ski resort operations. This provides also the ability for employees who use the Park City Transit system to arrive on site by using the cabriolet.
- Another TDM commitment is the construction of ski runs for beginner and intermediate skiers that will provide an all-ability-levels connection to the Resort. The same ski run terrain will provide trail connections during the summer months of the year. This reduces the likelihood of visitors and residents staying at the Treasure Hill project of driving to the resort main base area or other resorts in the area.
- Another TDM strategy is the inclusion of employee housing dedicated for Treasure Hill on-site.
- The addition of on-site commercial elements also provides a reduction in trips. 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 direct and

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 (including the Sundance Film Festival) and other busy times 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 with the combination of the cabriolet, when it is complete, to get to the site. Flexibility regarding this strategy is necessary to accommodate the many aspects of construction.

TRAFFIC MITIGATION

The Treasure Hill project shall implement the following items to mitigate traffic on the roadways.

- With a clustered mixed-use development, the result is 110 plus acres of open space instead of additional miles of roadways that the city would have to maintain.
- The Treasure Hill project will provide a cabriolet system that will connect the project to Main Street. The cabriolet will traverse between Main Street and Treasure Hill with a one-way capacity of approximately 2500 passengers per hour.
- The hours of operation of the cabriolet will start around 6:45 am and extend until 10 pm during the winter ski months and summer. During the spring and the fall season, the cabriolet will be out of operation at times to accommodate maintenance needs. Treasure Hill will adjust these hours in cooperation with PCMC city-wide TDM strategies.
- Treasure Hill will construct ski runs for beginner and intermediate skiers with convenient connections to the Resort. The same ski run terrain will provide trail connections during the summer months of the year. This will reduce trips by not only visitors and residents of the development by nearby neighbors as well.
- Treasure Hill will have dedicated employee housing on-site.
- For employees not living in on-site, during the winter ski season and other times when hotel occupancy exceeds 70% and other special events like Sundance Film Festival, the Treasure Hill development will direct, use monetary incentives and other mechanisms, as necessary, to encourage employees to use public transportation and / or the cabriolet to access the site.
- To decrease the impact of vehicles during the peak hour the Treasure Hill development will utilize work shifts that begin and end outside the AM and PM peak hour of travel.
- During the winter ski season, other busy times, and special events like Sundance Film Festival, Treasure Hill will implement a shuttle system 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.
- Treasure Hill will require all parking related to Treasure Hill to be on site.
- During the construction phase of the project employees that do not require a vehicle to perform their trade will be shuttled to the site or to the cabriolet when it is operational.
- Treasure Hill development will pay for its portion of the improvements at Park Ave / Deer Valley and Empire Ave / Silver King intersection improvements as may be implemented by any special improvement district or similar entity.

MONITORING PROGRAM

After the Treasure Hill project is constructed a monitoring program will be employed to evaluate and verify TDM strategies. The TDM strategies and traffic mitigation measures will be evaluated one year after completion and then three more times, at three-year intervals. This will provide a total of four evaluations spanning a ten-year period after construction is complete.

PARKING ANALYSIS

As part of this addendum, a parking generation study was completed to estimate parking demand that the Treasure Hill development will 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 14 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 cabriolet 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/commercial. 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 15**.

Table 15 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.

ORIGINAL STUDY AND ADDENDUMS ONE THROUGH SIX

This study is intended to address the original study and subsequent addendums. Below is a summary of the original study and subsequent addendums and their relevance because of Addendum #7.

Original Traffic Impact Analysis – July 2004

Addendum #7 updates the original study and provides the best understanding of the traffic conditions in the study area and therefore replaces the original traffic impact analysis.

Addendum #1, Wayfinding Sign Study – Summer 2004

This study identified locations where wayfinding signs could be placed to direct motorists to Treasure and reduce unnecessary out of direction travel. The information provided in this addendum is still valid.

Addendum #2, Winter Traffic Counts – April 2005

Addendum #7 provides the most recent winter condition traffic counts and therefore replaces addendum #2.

Addendum #3, Lowell Ave Sidewalk Improvements – January 2008

Addendum #3a (update to Addendum #3) Walkability Study Update – June 2009

The purpose of addendum #3 and #3a was two-fold: present a walkability study and revisions to that study. There are elements addendum #3 and #3a that are still recommended.

- Install signs and paint crosswalks in eight (8) locations in the Park City Mountain Resort Area. These installations will help increase the safety of pedestrians using the area and their locations have the least amount of impact on vehicle traffic. Because of the current pedestrian habits of walking these roads freely, once the crosswalks are established it may be necessary for the City to enforce the crossing restrictions in order to realize safer traffic and pedestrian interaction.

- There are currently two (2) locations where sidewalk/stair improvements are warranted to provide adequate access for future growth. These improvements were understood to possibly be scheduled for completion by others but, in any event, the Treasure Hill development will complete the improvements. They are from Woodside to Treasure Hill on 6th Street and Woodside Avenue to Treasure Hill on 8th Street.

Since the walkability study was completed PCMC has completed improvements on Empire Avenue and currently making improvements along Lowell Ave. These improvements did not include designated sidewalks.

Addendum #4, Refined Land Use and Trip Generation – April 2009

Addendum #7 provides the best understanding of the traffic conditions and therefore replaces addendum #4.

Addendum #5, Parking Generation Study – June 2009

Addendum #7 provides the best understanding of the parking conditions and therefore replaces addendum #5.

Addendum #6, Intersection Operations Limiting Development Traffic on Empire Ave – June 2009

Addendum #7 provides the best understanding of the traffic conditions and therefore replaces addendum #6.

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 and future traffic, including the traffic anticipated from the Treasure Hill development. 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, employees not living on site will be directed and incentivized to use public transportation to access the site.
- During the busy winter season, other busy times, and special events, implementation of shuttle service to and from the airport.
- During the construction phase of the project, directing construction workers who do not need to access the construction site with vehicles to park off site at the Richardson Flats, or similar park and ride lots, and shuttle them to the site.

Appendix

Appendix A – Existing Count Documentation

Appendix B – Trip Generation and Trip Reduction

Appendix C – Existing traffic Analysis

Appendix D – Future Traffic Analysis without Project

Appendix E – Future Traffic Analysis with Project

Appendix F – One Way Traffic Analysis

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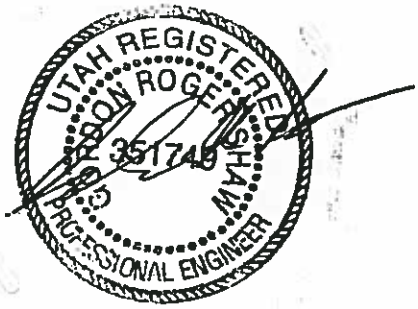
MEMORANDUM

To: Alfred Knotts, Park City Transportation Planning Manager

From: Gordon Shaw, PE, AICP, LSC Transportation Consultants, Inc.

Date: June 27, 2017

RE: Review of Treasure Hill Development TIA



This memo presents a review of the *Treasure Hill Traffic Study Draft Addendum #7* (Triton Engineering, May 4 2017). My review is based on long experience in transportation studies Park City, including work for the 2002 Olympics transportation planning, Park City Mountain Resort base area development planning, Park City Transportation Demand Management Study, a Deer Valley Drive intersection improvement study, and peer review of traffic studies for the Montage project and many transit studies. In addition, I have directed many traffic studies for proposals similar to Treasure Hill in other resort communities, including lodging/residential/commercial projects in Aspen, Snowmass Village, Mammoth Lakes, Northstar, South Lake Tahoe and Squaw Valley.

Specific comments on individual portions of the document are presented below.

Page 10, Final Paragraph

This discussion regarding future background traffic growth compares the growth resulting from a simple application of population growth rates with growth associated with the PCMR base area and Bamberger development. It concludes that since the population growth methodology results in a greater growth in traffic at the Park Avenue/Deer Valley intersection (800 in the PM peak-hour) than does the trip generation of PCMR/Bamberger development (462), simply using the forecasts based on population growth is appropriate. However, this does not consider that traffic growth at the Park Avenue/Deer Valley intersection will be generated by other growth in the community beyond these two projects. In addition, the population-based growth at other intersections nearer the PCMR/Bamberger development areas is substantially lower (such as 149 additional PM peak-hour trips at Lowell Avenue/Manor Way. At these locations, the traffic growth from PCMR/Bamberger development may well

exceed the population-growth traffic increase, depending on specific land uses and access patterns for the two developments. In turn, LOS may well be worse than reported in the Treasure Hill study at these nearby intersections[1]. Whether this additional future traffic growth would cause LOS standards to be exceeded would require more detailed analysis (though the relatively good LOS A and B conditions identified in the current study indicates that there is some additional capacity before LOS would be exceeded).

Page 12, Final Bullet

The trip generation for the commercial land uses (not considered to be supporting the hotel) is calculated with a simple assumption that half of the 17,470 square feet of commercial is retail (using the Specialty Retail rate) and the other half is restaurant (using the Quality Restaurant rate). However, the attachments to the report including Partial Plan P-2, which shows specific land uses for the individual components of this 17,470 square feet. The following table shows the results of applying the appropriate ITE rates to the specific land uses.

Treasure Hill Commercial Trip Generation

Excluding Support Commercial

			Total PM Peak-Hour Trip Generation	
Land Use	ITE Code	Floor Area	Rate	Trips
Bar	925	5,278	15.49	82
Clothing	826	2,215	5.02	11
Coffee	936	780	25.81	20
Sporting Goods	826	4,054	5.02	20
Restaurant (1)	931	3,746	9.02	34
Convenience Store	852	1,397	36.22	51
Total		17,470		218

Note 1: Assumed to be Quality Restaurant

Comparing the total of 218 peak-hour trips for the specific land uses with the 109 trips identified in Table 4 of the traffic study, the study underestimates the commercial trip generation by 50%, or 109 trips.

Page 13, 1st Paragraph

The traffic study adjusts the hotel trip generation to assume a 65 percent occupancy rate, justifying this figure by citing the Park City Chamber's data indicating 65 percent occupancy during the highest-occupancy month of the year (February). However, it is

[1] Given the limitations on other development potential in the Park City area, LSC agrees that the population growth-based traffic forecasts are conservatively appropriate at the Park Avenue/Deer Valley Drive intersection.

important to note that this figure represents the average occupancy over all days of the month, rather than some peak or relatively busy day of the month. It is important to note, therefore, that the traffic study reflects conditions on the average day in February (including some off-peak days).

This issue reflects the question of what the Municipal Corporation's desired "design day" should be. There is a long-standing engineering principle to design facilities for a busy but not 100% peak condition. For instance, the American Association of State Highway and Transportation Officials recommends designing roadway elements for the 30th-highest peak hour of the year. The question for mountain resort communities is how to translate this to an appropriate level of ski/lodging activity, given the large variation in activity levels over the course of the season and the year. In general, the mountain resort jurisdictions that LSC works in typically require that traffic studies consider the 5th or 10th busiest day of the winter season, which is undoubtedly higher than the average day in February[2]. I would expect that the Treasure Hill *pro forma* assumes at least 10 days of 100 percent occupancy, which would indicate that the traffic study should reflect 100 percent hotel occupancy. The requirement that 100 percent occupancy be assumed is the consistent requirement of the other mountain resort jurisdictions in which LSC has conducted hotel traffic studies.

In addition, the traffic counts used as a basis for the study should be reviewed and adjusted as appropriate to reflect the "design day".

Page 13, 2nd Paragraph

The current version of the ITE *Trip Generation Handbook* (August 2014) provides a much more robust analysis procedure for internal trips within a mixed use development than is presented in the 7th addendum. This procedure is based on the *National Cooperative Highway Research Program Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Development* (TRB, 2011). This methodology has the benefit of including internal trip capture rates for hotel uses, as well as being based on a broader and more up-to-date dataset. LSC applied this methodology for the PM peak-hour, as shown in the attached sheets. Note that this assumes the revised trip generation for retail and restaurant land uses shown in the table presented above, but does not adjust for changes in the hotel rates. We also did not adjust for reductions associated with the ski area access or cabriolet. As shown, this methodology estimates that the base total PM peak-hour one-way vehicle-trips of 461 would be reduced to 309 due to mixed use reductions – a reduction of 33.0 percent.[3] As this is a reasonable overall figure given the mix of land uses, it is recommended that this methodology be used to identify appropriate mixed use internal reduction rates.

Page 13, Bottom Paragraph

The 10 percent reduction applied to the hotel and residential trip generation that is a result of the direct ski area access is appropriate given the site's location, expected

[2] Particularly as the occupancy rates in January and March are just below those in February.
[3] Note that a different reduction factor would apply to the AM peak-hour.

distribution of trips by trip purpose, and the assumption that guests and residents of the market rate units with an interest in skiing at PCMR will tend to choose this development. However, the rate should not be applied to the employee housing units, as many employees will not be accessing the mountain during the peak hours.

Page 14, 1st Full Paragraph

The traffic study assumes the cabriolet providing access between Treasure Hill and Main Street will reduce the trip generation for all land uses by 30 percent, with little justification for this figure other than the fact that the capacity would be well in excess of that needed, and that Main Street is a hub for shopping and restaurants. While both of these facts are true, there are other factors that should be considered:

- Transit planners typically consider a quarter-mile walk distance to be the limit to how far most people are willing to walk. A quarter mile walk from the cabriolet base station near Park Avenue/Osborne Street only encompasses the portion of Main Street north of 5th Street. As a trip to the upper portion of Main Street (such as to the Egyptian Theater) would require either a long walk or waiting for a Par City Transit vehicle, some guests/residents may choose to drive, even given the disincentive of the paid parking program.

- The dining and shopping opportunities in the Old Town area are geared towards visitors, with little "local serving" businesses (such as grocery stores).

- The available data regarding gondola/cabriolet use in similar existing settings is very limited. Some of the other systems that connect commercial and lodging settings also serve as skier access (such as the Telluride – Mountain Village Gondola) and thus are not a useful source of data. The only source of detailed applicable data that we are aware of comes from a study conducted by LSC for the Ritz-Carlton Resort Hotel in Northstar, California during the 2012/13 ski season. Similar to the proposed Treasure Hill development, this high-end lodging property has an aerial system that connects the Ritz-Carton with the Village at Northstar 3,200 feet away, as well as ski-in/ski-out access. Surveys of persons using the gondola were conducted over two winter Saturdays (relatively late in the ski season), as well as 24-hour vehicle counts and person-counts over a 9-hour period. The survey of gondola riders yields the following information useful to the Treasure Hill evaluation:

    - 39 percent of gondola ridership were either hotel guests or residents of the adjacent Residence Club, while 14 percent were employees, 10 percent were visiting the hotel (such as to shop, dine or visit the spa at the hotel), and 36 percent were "other".

    - This high proportion of "other" trips is generated by skiers/boarders who used the gondola in order to walk through the Ritz and access the ski terrain.[4] This is also corroborated by the fact that the uphill ridership is

[4] Since this study has been completed, boarding this gondola with ski/boarding gear is now prohibited.

higher than the downhill ridership, and that the morning ridership exceeds the afternoon ridership.

- Interestingly, when asked "If not for the gondola how would you have made this trip?", only 7 percent said they would have driven, while 39 percent indicated they would have used the shuttle van and fully 22 percent "would not have made the trip". This indicates that the availability of the gondola "induces" trips (by providing a free and scenic ride, and by increasing the convenience of accessing the other end of the service).

- The traffic counts were compared with estimates using ITE rates, adjusted for the reported hotel occupancy rates. Daily traffic generation was lower than would be indicated by ITE rates on one day, and equal on the other. AM peak-hour volumes were lower than ITE rate estimates on one day but higher on the other, while both PM peak-hour counts were higher than ITE rates would have indicated. However, the study reports that the fact that the calculated rate per occupied room was higher on the day of lower occupancy is reasonable in that the employee trips vary less than the variation in occupancy (many employees are still reporting to work on lower occupancy days), which indicates that 100 percent occupancy days would generate a lower trip generation per occupied room.

It is difficult to directly use this data to identify a specific trip generation reduction applicable to Treasure Hill. If the 36 percent of gondola passengers that used the gondola for ski area access are eliminated (and the hotel/residential guests that ski-in/ski-out are set aside), the person-trip counts indicate that fully 54 percent of the person-trips to and from the Ritz Carlton traveling by gondola or vehicle were traveling by gondola. While only 7 percent of gondola passengers would have driven if the gondola were not available, the fact that 31 percent said they would have used the free shuttle van indicates that at Treasure Hill (if a shuttle van were not available) a substantially higher proportion would have driven. Finally, the fact that overall observed trip generation was found to not be significantly lower than would be indicated by ITE rates argues for a relatively low impact of the gondola (or a relatively high overall person-trip generation rate per room). On balance, however, this data indicates that the 30 percent reduction assumed in the Treasure Hill study is not unreasonable.

- A similar previous study for a mixed use development in a mountain resort setting connected to another major commercial center is a 2008 study conducted by LSC for the Snowmass Center Redevelopment Project in Snowmass Village, Colorado. The Snowmass Center was proposed to provide 178 condo/hotel units, 41 residential units and substantial commercial and retail space. The gondola would have connected the Center to the Base Village area and onward to the main Snowmass Village commercial center.

  The evaluation of non-auto travel (both by gondola and by rubber-tired transit) considered regional travel data to disaggregate total travel by work versus non-work trips, as well as by trips within Snowmass Village as well as trips external.

The analysis concluded that 14 percent of all travel would occur via the gondola, while another 36 percent would occur via transit (with a small percent by walking). The setting, however, differs from that of Treasure Hill, in that the Snowmass Center site is directly served by an extensive regional transit program (Roaring Fork Transportation Authority), while the extensive regional transit program serving Park City would not directly serve Treasure Hill but instead would serve the bottom cabriolet terminal. Accordingly, it is appropriate to assign a substantial portion of the "transit" mode split found in Snowmass to the cabriolet serving Treasure Hill, as rubber-tired transit passengers (such as commuters and persons traveling to other ski areas) will use the cabriolet to access the bus service. On the other hand, the Treasure Hill trips associated with accessing the PCMR slopes (which are a simple walk out the back door) are part of the gondola trips at Snowmass Center. Overall, however, the 30 percent factor assumed for Treasure Hill is in line with the analysis results of the Snowmass Center study.

Page 16, Table 5

The trip reductions discussed in the document appear to be incorrectly applied. For instance, the appropriate equation for Hotel PM peak-hour trips (using the values presented) is:

Net Volume = Base Volume of 142 X (65% occupancy/83% occupancy)
X (1-16% internal hotel-commercial reduction)
X (1-10% ski area access reduction)
X (1-30% cabriolet reduction)

= 58.85, rounded to 59

However, Table 5 reports a result of 55.

Discussion of Local Roadway Capacity

The traffic analysis needs to include an evaluation of roadway congestion along Lowell Avenue and Empire Avenue between the site and Manor Way, reflecting real-world winter traffic conditions. The project would (using the figures in the report) result in roughly a ¼ to 1/3 increase in traffic volumes on these streets. Snow (both on the roadway and piled), grades and the high density of residential driveways all combine to reduce the capacity of these roadways. It should be noted that the most recent version of the ITE *Highway Capacity Manual* includes a methodology for adjusting roadway capacity to reflect snow conditions. If sections of one-way operation result from the presence of on-street parking coupled with snow piles (and if the City believes that this is an appropriate design period), this impact on capacity (not reflected in the HCM methodology) can be modeled using a simulation software package.

It should also be noted that the concept of "capacity" on a local residential street can have different meanings to different people. For the traffic engineer, capacity is a measure of the total number of vehicles that can be accommodated within a specified

period. However, the capacity for residents along a local street is more a matter of the appropriate maximum level of traffic noise and safety concerns. This is typically the definition used by jurisdictions to define the appropriate roadway capacity. For local streets in the Old Town area, the *Park City Traffic and Transportation Master Plan* identifies a threshold of 2,500 vehicles per day. While the *Addendum #7* does not include any discussion of daily traffic volumes, it appears from the peak-hour volumes that this figure is already exceeded on Lowell Avenue. At a minimum, the applicant should provide a comparison of existing daily traffic volumes, future no-project daily volumes and project generated traffic volumes to help inform the discussion about relative impacts in comparison with this standard.

Discussion of Potential Mitigation Measures

Based upon our professional experience, the findings of the Park City Travel Demand Management study, and the expected impacts of the proposed development, we recommend the following key mitigation measures be considered.

- The proposed cabriolet is a key strategy to reduce trips and parking impacts in the Old Town area. To be an effective mitigation for peak-hour trips, the cabriolet must be operated well beyond the peak periods of the day. For instance, few lodging guests will use the cabriolet to access Main Street dining and evening entertainment if the cabriolet stops service at 8 PM. For those hours over an extended period of the day (such as 5 AM to 2 AM) when the cabriolet is not operating, a shuttle van service should be provided to connect the two cabriolet stations and the Old Town Transit Center.

- It is not enough to encourage employees to use transit services, rather employee auto access to the site should be prohibited during peak seasons. Exceptions should be made for hardship cases (such as for employees whose shifts start or end in the early morning hours), but the substantial majority of employees should be required to use non-auto modes or to park in a remote lot and shuttle to and from work. If necessary, this could include providing a private van service directly between a remote lot and Treasure Hill to serve peak times.

- Employee residence parking should be "unbundled" from housing costs (requiring employee residents to pay a significant monthly fee for the convenience of on-site parking) and free parking should be provided by the developer at an off-site, secure location.

- Free passes should be provided to employees commuting on UTA service connecting Salt Lake City with Kimball Junction.

- The lodging operator should offer a substantial credit to guests arriving without a car, such as those showing proof that they used a private shuttle service to and from the Salt Lake City International Airport. Given the high frequency of existing services, subsidizing existing services makes better sense (and puts fewer vehicles on the roads) than does operating a separate service solely for Treasure Hill guests/residents.

- Provide and maintain a fleet of bicycles (including electric assist bicycles) for guests and residents.

- Designate a Transportation Demand Management Coordinator for the development as a whole.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Treasure Hill Addendum 7 Review	**Organization:**	LSC
Project Location:	Park City, UT	**Performed By:**	WRS
Scenario Description:	With LSC Retail/Rest., Add#7 Hotel	**Date:**	6/26/2017
Analysis Year:	Buildout	**Checked By:**	GRS
Analysis Period:	PM Street Peak Hour	**Date:**	6/26/2017

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				82	42	40
Restaurant				136	86	50
Cinema/Entertainment				0		
Residential				101	63	38
Hotel				142	81	61
All Other Land Uses[2]				0		
Total				461	272	189

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		12	0	10	2
Restaurant	0	21		0	9	4
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	8	0		1
Hotel	0	1	4	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	461	272	189
Internal Capture Percentage	33%	28%	40%
External Vehicle-Trips[3]	309	196	113
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	62%	60%
Restaurant	28%	68%
Cinema/Entertainment	N/A	N/A
Residential	30%	34%
Hotel	9%	8%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Treasure Hill Addendum 7 Review
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	42	42	1.00	40	40
Restaurant	1.00	86	86	1.00	50	50
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	63	63	1.00	38	38
Hotel	1.00	81	81	1.00	61	61

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		12	2	10	2
Restaurant	2	21		4	9	4
Cinema/Entertainment	0	0	0		0	0
Residential	2	16	8	0		1
Hotel	0	10	41	0	1	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	2	0	3	0
Retail	0		25	0	29	14
Restaurant	0	21		0	10	58
Cinema/Entertainment	0	2	3		3	1
Residential	0	4	12	0		10
Hotel	0	1	4	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	26	16	42	16	0	0
Restaurant	24	62	86	62	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	19	44	63	44	0	0
Hotel	7	74	81	74	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	24	16	40	16	0	0
Restaurant	34	16	50	16	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	13	25	38	25	0	0
Hotel	5	56	61	56	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

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MEMORANDUM

Date: May 15, 2013

TO: Kurt Krieg, East West Partners

FROM: Gordon Shaw, PE, AICP and Jason Briedis, EIT, LSC

RE: Northstar Ritz Travel Mode Surveys

This memorandum presents the findings of the Northstar Ritz Travel Mode Surveys and Counts conducted at the Ritz Carlton Lake Tahoe (and adjacent Residence Club). The purpose of these surveys was to determine trip generation and travel mode information across the many transportation options to the facility. The travel modes included in this survey are private auto, shuttle, skis/snowboards, and the gondola between Northstar Village and the Ritz Carlton. This data can be used as input to analysis of transportation impacts associated with future developments in the Northstar area.

Survey Methodology

The analysis presented in this memorandum is based on surveys and counts of persons traveling to and from the Ritz Carlton at the following locations:

- Ritz Gondola
- Ritz "Ski Beach" (ski in/ski out access to Northstar California slops
- Ritz Valet Station
- Ritz Residence Club Valet Station

The survey and person counts were conducted on two consecutive Saturdays during the winter of 2013: March 30th and April 6th. The surveys and counts were conducted from 8:00 AM until 5:00 PM on both dates, for a total of 9 hours of data for each survey date. Additionally, vehicle counts were conducted along Ritz Carlton Highlands Court for 24 hours on the same days as the surveys. Separate vehicle counts were collected at both the entrance to Ritz Carlton Highlands Court and at a point along the roadway past the entrance to employee parking lot.

The gondola passenger survey was conducted at Northstar Village on April 6th. Survey personnel noted the time of trip, direction of travel, number of persons in party, and whether the group was carrying ski gear. The surveyors also asked gondola riders to identify whether they were a hotel guest, residence club guest, employee, or visitor, their trip purpose (e.g. skiing,

shopping, dining, work, etc.), and how the trip would have been made (or not) without the gondola.

The "ski beach" counts noted the number of persons in party and number of employees arriving at and departing from "ski beach" and the time of these trips. The valet counts recorded the time of each arrival/departure, number of persons per vehicle, and the type of vehicle (i.e. car, taxi, and shuttle).

Summary of Survey Findings

Tables A and B present the person counts conducted on March 30th and April 6th, respectively. The tables are divided to show the person counts at each location for each count day. Please note that no counts were conducted at the Residence Club Valet on April 6th. Data for this category are estimated by factoring the 15-minute counts from the March 30th count by the total of the other count locations. As shown, a total of 2,512 persons were counted during the count period on March 30th, and 1,137 persons were counted on April 6th. Table C presents a summary of both days of person counts. The right-hand column of Table C provides the mode share of all person trips to the Ritz Carlton during the survey times. The average group size for each mode is also provided for each day and as an aggregate of both days.

Table D provides the directional 24-hour vehicle counts collected on Ritz Carlton Highlands Court. Counts were collected at two separate locations concurrently. One location, referred to as "All Traffic" on Table D, counts every vehicle entering or exiting Ritz Carlton Highlands Court. The second count station, referred to as "Upper" on Table D, was located past the driveway for the employee parking lot and as such excludes employee vehicle trips external to the Ritz Carlton. Subtracting the "upper" count from the "all traffic" count yields the number of employee trips to the employee parking lot. Negative numbers in this column reflect vehicle trips from the employee parking lot to the Ritz. Table D also highlights the vehicles counted during the survey periods of 8:00 AM to 5:00 PM in dashed lines.

The following lists highlights key finding from the person counts and surveys:

- Approximately 25 percent of persons surveyed arrived to the Ritz Carlton by vehicle at either the main valet area or the Residence Club valet area.
- Approximately 44 percent of persons surveyed arrived at the Ritz Carlton by the Gondola from Northstar Village.
- Approximately 30 percent of persons surveyed arrived at the Ritz Carlton through "Ski Beach."

Table E presents a summary of the gondola passenger survey. The following lists some key findings:

- During the survey period, 43 percent of the gondola riders were headed toward Northstar Village and 57 percent were headed toward the Ritz Carlton.

- Approximately 21 percent of survey respondents indicated that they were guests at the Ritz Carlton, followed by 18 percent that were Residence Club guest, 14 percent that were employees, and 10 percent that were visiting the hotel. Of the 49 responses indicting "other", 36 reported that the purpose of their gondola trip was to ski/snowboard.

- The survey indicated that skiing was the most common trip purpose (41 percent), followed by "visiting the hotel (not employee) with 19 percent and shopping at Northstar Village with 12 percent.

- A majority of survey respondents (54 percent) would take a shuttle between Northstar Village and the Ritz Carlton if the gondola was not present. Thirty-one percent would not make the trip and only 10 percent would drive.

- Across both count days, the average group size for gondola riders was 2.93.

Table F presents the gondola ridership by time of day, as observed by the surveyors. As shown, there was a strong uphill pattern in the morning (prior to 11 AM), with a lower uphill flow after lunch. Downhill use was higher in the late morning, and after 2:30 PM. The higher number of persons using the gondola in the uphill direction (a net of 85 over the survey period) probably reflects persons skiing back down the slopes.

Finally, Table G presents a comparison of the observed traffic counts with the trip generation estimates based upon standard trip generation rates, as published in the Institute of Transportation Engineers' *Trip Generation Manual* (2012). The occupancy rates for the hotel were obtained from The Ritz-Carlton Lake Tahoe. At 65 percent for 3/30/13 and 32 percent for 4/6/13, neither of the count days represent full occupancy. Trip generation rates were applied for ITE Land Use Code 310 Hotel (on a per-occupied room basis) for the hotel, and for ITE Land Use Code 230 Condominium (on a per unit basis) for the Residence Club. As shown, on a daily basis, the ITE trip rates indicate a trip generation of 1,300 vehicle-trips for 3/30/13, and 701 trips on 4/6/13. In comparison, the observed counts were 1,051 on 3/30/13 and 700 on 4/6/13. This indicates that actual counts were 19 percent below standard ITE rate estimates on 3/30/13 (the higher occupancy of the two days), and equal to standard ITE rate estimates on 4/6/13. Similarly, during the AM peak hour the counts were 19 percent below ITE estimates on 3/30/13 and 7 percent above ITE estimates on 4/6/13, while during the PM peak hour the counts were 6 percent above ITE estimates on 3/30/13 and 31 percent above ITE estimates on 4/6/30.

The fact that the ratio of observed counts to ITE estimates was substantially lower on the day of 65 percent occupancy than on the day of 32 percent occupancy is, at least in large part, reflective of the fact that hotel employee levels vary less than the variance in occupancy (as reflected in the traffic counts). This indicates that counts conducted on a true 100 percent occupancy day would indicate a lower ratio of observed counts to ITE estimates, and thus a lower actual trip generation rate than that observed in the two late-season count days.

TABLE A: Ritz Carlton Person Count - March 30, 2013

	Persons									
	Gondola		Ski Beach		Valet		Res Club		Total	
3/30/2013	In	Out	In	Out	In	Out	In	Out	In	Out
8:00 AM	9	5	0	0	0	0	0	0	9	5
8:15 AM	24	7	0	1	0	3	3	0	27	11
8:30 AM	8	8	0	11	0	3	0	0	8	22
8:45 AM	13	0	0	18	1	4	2	5	16	27
9:00 AM	7	2	0	30	2	0	0	0	9	32
9:15 AM	14	0	0	29	3	14	0	4	17	47
9:30 AM	20	9	0	24	11	1	0	0	31	34
9:45 AM	24	3	0	44	24	10	0	0	48	57
10:00 AM	8	1	0	11	9	3	0	0	17	15
10:15 AM	17	9	8	17	9	2	2	0	36	28
10:30 AM	18	1	7	19	5	12	0	0	30	32
10:45 AM	12	0	0	7	9	0	0	0	21	7
11:00 AM	23	13	6	18	7	11	0	0	36	42
11:15 AM	11	24	15	5	0	7	0	0	26	36
11:30 AM	47	26	21	12	1	7	3	0	72	45
11:45 AM	26	17	40	12	1	17	0	0	67	46
12:00 PM	10	24	36	7	9	4	0	0	55	35
12:15 PM	11	3	18	11	18	4	2	3	49	21
12:30 PM	29	24	9	11	3	7	0	0	41	42
12:45 PM	12	12	10	17	9	2	6	0	37	31
1:00 PM	11	3	8	25	3	10	0	0	22	38
1:15 PM	12	25	13	37	8	22	0	0	33	84
1:30 PM	4	5	14	6	16	13	2	0	36	24
1:45 PM	9	20	8	17	8	2	0	4	25	43
2:00 PM	7	19	16	2	12	10	0	0	35	31
2:15 PM	20	12	11	0	8	9	3	0	42	21
2:30 PM	21	50	7	6	1	11	0	5	29	72
2:45 PM	14	29	30	0	6	14	0	0	50	43
3:00 PM	11	15	19	6	15	24	2	0	47	45
3:15 PM	6	13	43	4	15	3	3	0	67	20
3:30 PM	5	28	11	11	11	13	0	0	27	52
3:45 PM	9	35	20	1	14	3	4	0	47	39
4:00 PM	15	31	22	0	11	8	3	0	51	39
4:15 PM	26	15	1	0	9	8	4	0	40	23
4:30 PM	13	18	5	0	0	15	7	0	25	33
4:45 PM	22	18	6	0	7	3	6	0	41	21
Total	548	524	404	419	265	279	52	21	*1,269*	*1,243*
Percent of Total	43.2%	42.2%	31.8%	33.7%	20.9%	22.4%	4.1%	1.7%	100.0%	100.0%
Entering Percent	51.1%		49.1%		48.7%		71.2%		50.5%	
Total Two-Way	1,072		823		544		73		2,512	
Percent of Total	42.7%		32.8%		21.7%		2.9%		100.0%	

Source: LSC Transportation Consultants, Inc.

NorthstarLodgingGuestSurveyResults.xlsx

TABLE B: Ritz Carlton Person Count - April 6, 2013

	Persons									
	Gondola		Ski Beach		Valet		*Res Club* [1]		Total	
4/6/2013	In	Out	In	Out	In	Out	*In*	*Out*	In	Out
8:00 AM	1	0	1	0	0	0	*0*	*0*	2	0
8:15 AM	8	0	1	0	1	1	*1*	*0*	11	1
8:30 AM	10	0	0	7	3	0	*0*	*0*	13	7
8:45 AM	4	3	0	4	1	5	*1*	*2*	6	14
9:00 AM	19	8	0	6	3	3	*0*	*0*	22	17
9:15 AM	10	0	0	9	9	7	*0*	*2*	19	18
9:30 AM	0	4	0	11	1	2	*0*	*0*	1	17
9:45 AM	2	3	0	16	0	7	*0*	*0*	2	26
10:00 AM	4	2	2	11	3	0	*0*	*0*	9	13
10:15 AM	14	6	2	3	4	18	*1*	*0*	21	27
10:30 AM	22	2	0	2	4	2	*0*	*0*	26	6
10:45 AM	28	0	2	11	0	0	*0*	*0*	30	11
11:00 AM	1	3	0	0	7	9	*0*	*0*	8	12
11:15 AM	2	18	0	4	3	3	*0*	*0*	5	25
11:30 AM	7	3	3	6	0	12	*1*	*0*	11	21
11:45 AM	2	16	15	0	0	0	*0*	*0*	17	16
12:00 PM	1	9	2	0	5	4	*0*	*0*	8	13
12:15 PM	9	3	12	3	11	4	*1*	*1*	33	11
12:30 PM	17	11	6	0	8	2	*0*	*0*	31	13
12:45 PM	14	7	6	3	7	0	*3*	*0*	30	10
1:00 PM	10	6	0	2	0	1	*0*	*0*	10	9
1:15 PM	13	1	3	9	8	9	*0*	*0*	24	19
1:30 PM	1	2	0	0	5	6	*1*	*0*	7	8
1:45 PM	2	4	9	2	0	10	*0*	*2*	11	18
2:00 PM	22	1	9	4	0	7	*0*	*0*	31	12
2:15 PM	2	6	8	2	0	3	*1*	*0*	11	11
2:30 PM	10	26	11	0	2	7	*0*	*2*	23	35
2:45 PM	15	3	4	0	3	3	*0*	*0*	22	6
3:00 PM	11	20	6	0	3	8	*1*	*0*	21	28
3:15 PM	5	13	4	0	2	4	*1*	*0*	12	17
3:30 PM	8	3	11	0	0	9	*0*	*0*	19	12
3:45 PM	15	9	12	0	0	0	*2*	*0*	29	9
4:00 PM	16	28	9	0	2	5	*1*	*0*	28	33
4:15 PM	0	3	13	0	11	2	*2*	*0*	26	5
4:30 PM	5	5	10	0	4	6	*3*	*0*	22	11
4:45 PM	7	4	0	0	6	5	*3*	*0*	16	9
Total	317	232	161	115	116	164	*23*	*9*	*617*	*520*
Percent of Total	51.4%	44.6%	26.1%	22.1%	18.8%	31.5%	*3.7%*	*1.7%*	100.0%	100.0%
Entering Percent	57.7%		58.3%		41.4%		*71.9%*		54.3%	
Total Two-Way	549		276		280		*32*		1,137	
Percent of Total	48.3%		24.3%		24.6%		*2.8%*		100.0%	

Note 1: Residence Club counts were not conducted on April 6th. Data are estimated based on March 30th counts.

Source: LSC Transportation Consultants, Inc.

NorthstarLodgingGuestSurveyResults.xlsx

TABLE C: Summary of Ritz Northstar Surveys and Person Counts

All Data Represents Total of 9-Hour Period: 8:00 AM to 5:00 PM

Survey/Count Location	Persons In	Persons Out	Persons Total	Average Group Size	Mode Share Percentage
March 30, 2013					
Main Valet Parking	265	279	544	2.60	21.7%
Residence Club Valet Parking	52	21	73	3.48	2.9%
Gondola	548	524	1,072	2.99	42.7%
Ski Beach	404	419	823	3.47	32.8%
Total Persons	1,269	1,243	2,512	3.08	100.0%
April 6, 2013					
Main Valet Parking	116	164	280	2.98	24.6%
Residence Club Valet Parking [1]	*23*	*9*	*32*	--	*2.8%*
Gondola	317	232	549	2.81	48.3%
Ski Beach	161	115	276	2.38	24.3%
Total Persons	617	520	1,137	2.67	100.0%
Total of Both Saturdays					
Main Valet Parking	381	443	824	2.73	22.6%
Residence Club Valet Parking [2]	*75*	*30*	*105*	*3.48*	*2.9%*
Gondola	865	756	1,621	2.93	44.4%
Ski Beach	565	534	1,099	3.20	30.1%
Total Persons	1,886	1,763	3,649	2.98	100.0%

Note 1: Residence Club trips were not counted on April 6th. April 6th data is estimated based on March 30th.
Note 2: Data related to the Residence Club based on counts conducted on March 30th only.

Source: LSC Transportation Consultants, Inc. *NorthstarLodgingGuestSurveyResults.xlsx*

TABLE D: Northstar Ritz Traffic Counts

	3/30/2013						4/6/2013					
	All Traffic		Upper Drive		Employee Lot [1,2]		All Traffic		Upper Drive		Employee Lot [1,2]	
Hour	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
12:00 AM	1	5	1	1	0	4	0	3	0	0	0	3
1:00 AM	1	1	1	1	0	0	1	1	1	1	0	0
2:00 AM	1	0	1	0	0	0	0	0	0	0	0	0
3:00 AM	2	1	2	1	0	0	1	1	1	1	0	0
4:00 AM	3	5	1	4	2	1	3	0	1	0	2	0
5:00 AM	13	4	0	3	13	1	12	4	3	4	9	0
6:00 AM	34	10	20	11	14	-1	**33**	**9**	17	10	**16**	**-1**
7:00 AM	33	9	19	8	**14**	1	26	9	14	9	12	0
8:00 AM	32	10	27	11	5	-1	20	6	18	5	2	1
9:00 AM	**46**	**18**	**37**	**18**	9	0	24	11	22	12	2	-1
10:00 AM	35	21	31	20	4	1	20	21	**18**	**20**	2	1
11:00 AM	33	23	29	22	4	1	20	16	16	13	4	3
12:00 PM	31	20	29	20	2	0	19	15	18	9	1	6
1:00 PM	34	26	27	23	7	3	25	25	23	24	2	1
2:00 PM	48	40	37	27	**11**	**13**	26	23	19	18	7	5
3:00 PM	**43**	**52**	**36**	**40**	7	12	**28**	**40**	**19**	**28**	**9**	**12**
4:00 PM	33	41	28	31	5	10	20	39	19	27	1	12
5:00 PM	25	63	25	54	0	9	18	24	19	21	-1	3
6:00 PM	12	45	13	36	-1	9	6	24	6	20	0	4
7:00 PM	17	42	21	35	-4	7	5	12	5	10	0	2
8:00 PM	9	19	8	15	1	4	9	14	10	13	-1	1
9:00 PM	14	25	16	20	-2	5	10	15	11	11	-1	4
10:00 PM	16	26	14	16	2	10	10	20	11	14	-1	6
11:00 PM	4	25	4	10	0	15	4	28	4	15	0	13
Total 24-Hours	**520**	**531**	**427**	**427**	**93**	**104**	**340**	**360**	**275**	**285**	**65**	**75**
Two-Way	**1,051**		**854**		**197**		**700**		**560**		**140**	
Survey Period	335	251	281	212	54	39	202	196	172	156	30	40
Two-Way	586		493		93		398		328		70	

Bold numbers indicate two-way AM and PM peak hours for each count category.

Dashed Lines indicate person count and survey times.

Note 1: Vehicle entering and exiting the Employee lot are estimated by computing the difference of the Upper Ritz Road from All Traffic.

Note 2: Negative numbers indicate traffic accessing the employee lot to/from Upper Ritz Road.

Source: LSC Transportation Consultants, Inc. *NorthstarLodgingGuestSurveyResults.xlsx*

TABLE E: Gondola Rider Survey Results

	# of Responses	Percent of Total	Percent of Responses
1. Would you like to take a quick survey on your trip today?			
1 yes	155	76.7%	78.3%
2 refuse	0	0.0%	0.0%
3 taken	43	21.3%	21.7%
No Response	4	2.0%	
Total	202		198
1A. Direction?			
1 To Northstar	85	42.1%	43.4%
2 To Ritz	111	55.0%	56.6%
No Response	6	3.0%	
Total	202		196
2. Are you a			
1 Hotel Guest	28	13.9%	20.7%
2 Residence Club Guest	25	12.4%	18.5%
3 Employee	19	9.4%	14.1%
4 Visiting the hotel (not guest or employee)	14	6.9%	10.4%
5 Other	49	24.3%	36.3%
No Response	67	33.2%	
Total	202		135
3. What is the purpose of your trip?			
1 Skiing	59	29.2%	41.0%
2 Dining at Village	2	1.0%	1.4%
3 Shopping at Village	18	8.9%	12.5%
4 Movie	0	0.0%	0.0%
5 Ice Skating	1	0.5%	0.7%
6 Dining at the Ritz / Manzanita	8	4.0%	5.6%
7 Visit Spa	1	0.5%	0.7%
8 Visiting the Ritz for other reason (not employee)	28	13.9%	19.4%
9 Going to/from work (employee only)	3	1.5%	2.1%
10 Making work-related trip (employee only)	6	3.0%	4.2%
11 Other	1	0.5%	0.7%
Multiple	17	8.4%	11.8%
No Response	58	28.7%	
Total	202		144
4. If not for the Gondola how would you have made this trip?			
1 Driven	15	7.4%	10.3%
2 Would not make trip	45	22.3%	30.8%
3 Would have used shuttle	79	39.1%	54.1%
4 Other	7	3.5%	4.8%
No Response	56	27.7%	
Total	202		146
Carrying ski/snowboard gear? (by observation)			
1 Yes	69	34.2%	36.3%
2 No	121	59.9%	63.7%
No Response	12	5.9%	
Total	202		190
Number of people in travel group (by observation)			
1 One	40	19.8%	568
2 Two	67	33.2%	
3 Three	37	18.3%	
4 Four	26	12.9%	
5 Five	22	10.9%	
6 Six	3	1.5%	
7 Seven	5	2.5%	
8 Eight	2	1.0%	
9 Nine	0	0.0%	
>9 More than Nine	0	0.0%	
No Response	0		
Total	202		
Average Group Size	2.81		

Multiple Responses	
1's	7
1,10	2
1,2,3,5	1
6,10	1
3,10	1
1,8	2
3,7,10	1
1,4,10	1
8,10	1
2,3	2
6,7	2
1,3	1
3,8	2
	17
"work"	7

TABLE F: Gondola Travel by Time of Day

	Groups			Total Persons	
Survey Time	Total	To Ritz	To NS Village	To Ritz	To NS Village
8:00	1	1	0	1	0
8:15	4	4	0	8	0
8:30	4	4	0	10	0
8:45	3	2	1	4	3
9:00	8	6	2	19	8
9:15	2	2	0	10	0
9:30	1	0	1	0	4
9:45	2	1	1	2	3
10:00	3	2	1	4	2
10:15	9	6	3	14	6
10:30	7	6	1	22	2
10:45	8	8	0	28	0
11:00	2	1	1	1	3
11:15	5	1	4	2	18
11:30	3	1	2	7	3
11:45	6	1	5	2	16
12:00	6	1	5	1	9
12:15	5	4	1	9	3
12:30	6	4	2	17	11
12:45	9	4	4	14	7
13:00	7	5	2	10	6
13:15	7	6	1	13	1
13:30	4	1	1	1	2
13:45	3	1	2	2	4
14:00	8	7	1	22	1
14:15	5	1	3	2	6
14:30	10	2	8	10	26
14:45	8	5	2	15	3
15:00	12	5	7	11	20
15:15	7	1	6	5	13
15:30	5	2	2	8	3
15:45	8	4	4	15	9
16:00	14	7	7	16	28
16:15	2	0	2	0	3
16:30	3	2	1	5	5
16:45	5	3	2	7	4
17:00	0	0	0	0	0
No Response	0		6		
Total	202	111	85	317	232

TABLE G: Comparison of Traffic Counts with Standard Trip Generation Rates

	Total Daily	AM Peak Hour Hr. Beginning	AM Total	AM In	AM Out	PM Peak Hour Hr. Beginning	PM Total	PM In	PM Out
Counts									
Date									
03/30/13	1051	9:15	66	46	20	14:45	100	48	52
04/06/13	700	6:15	48	36	12	15:00	68	28	40
Land Use									
Occupied Hotel Rooms									
03/30/13	111	65 percent occupancy							
04/06/13	54	32 percent occupancy							
Residence Club Condo Units	23								
Estimated Trip Generation at Standard ITE Trip Generation Rates									
Rates									
Hotel (LU 310)	10.5		0.64	0.35	0.29		0.74	0.42	0.32
Condo (LU 230)	5.81		0.44	0.08	0.36		0.52	0.33	0.19
Trip Generation Estimates at Standard ITE Rates									
03/30/13									
Hotel	1166		71	39	32		82	47	36
Condo	134		10	2	8		12	8	4
Total	1300		81	41	40		94	55	40
04/06/13									
Hotel	567		35	19	16		40	23	17
Condo	134		10	2	8		12	8	4
Total	701		45	21	24		52	31	21
Ratio of Observed to Standard ITE Rates									
03/30/13	81%		81%	112%	50%		106%	87%	130%
04/06/13	100%		107%	171%	50%		131%	90%	190%

Source: Institute of Transportation Engineers *Trip Generation Manual: 9th Edition*, 2012.

MEMORANDUM

To: THINC

From: Avenue Consultants

Date: June 8, 2017

Subject: Treasure Hill Traffic Studies Review

This memorandum describes the findings of a technical review by Avenue Consultants of the traffic studies performed for the proposed Treasure Hill development project located in Park City, with a particular emphasis on the Treasure Hill Traffic Study Draft Addendum #7, dated May 4, 2017 and prepared by Triton Engineering. Unless otherwise mentioned, all references to the "study" refer to Addendum #7.

Our biggest concern with the Treasure Hill study is the traffic analysis was only performed for intersections, which we don't feel is sufficient for the study area. In a typical location capacity is driven by the intersections; however, the Treasure Hill study area is decidedly non-typical due to the narrow width and steep grade of most roads in the study area. These non-standard features, especially when combined with heavy snowfall, on-street parking, lack of sidewalks, heavy truck traffic, and many pedestrians, create conditions where traffic capacity is dictated by mid-block locations where only one car in one direction can pass at a time, rather than by intersection performance. The study needs to consider these actual roadway-constrained conditions rather than the just the idealized intersection-constrained conditions.

The study area is also unique in that existing traffic volumes can vary greatly by season. Unfortunately, the times when traffic volumes are the highest (i.e., during good ski days) are also the times when roadway capacity is the lowest. Because the study fails to account for these non-standard factors, it does not accurately quantify the impact of the project on traffic.

There are other areas of concern as well. First, the study does not account for the lower than normal traffic volumes that were present on February 18, 2017 when traffic data was collected. We found that area traffic volumes that day were actually less than even a typical Saturday in February, let alone a holiday weekend. Second, the approach to estimating background future traffic volumes was unusual by basing it solely on citywide population growth rather than localized growth projections or outputs from the traffic model. Similarly, the study does not appear to properly account for future traffic volumes due to the Bamberger and Resort entitled developments. Third, the trip reduction rates applied in the study are highly speculative and overly aggressive

Beyond the failure to recognize the unique characteristics of the study area and analyze the area accordingly, the study also lacks detailed information regarding the analyses that were performed. Furthermore, the study does not discuss or reference any previous analysis regarding walkability/pedestrian safety, construction impacts, or delivery truck traffic or attempt to determine whether these decade-old studies are still appropriate under 2017 conditions. This is particularly pertinent given our understanding that the size and scope of the Treasure Hill project has increased substantially since the original study was completed in 2005.

Given these failures, it is our opinion that the study does not provide a reliable projection of the true impact of the Treasure Hill development on traffic in the affected study area.

The following sections summarize the findings of our technical review including recommendations.

1 EXISTING TRAFFIC VOLUMES

For its study, Triton Engineering selected President's Day weekend as the baseline for determining peak traffic volumes given that this is typically one of the busiest ski times and traffic volumes are generally higher than on a typical day. Past studies also used President's Day weekend as the baseline. However, it is our understanding that President's Day weekend this year was abnormally warm and rainy, resulting in less than ideal skiing conditions and therefore less than normal traffic volumes. Additionally, it is our understanding that this year President's Day weekend was a "black-out" period for the Epic Local Pass, which would likewise result in artificially low traffic volumes in the subject area at that time. The Epic pass was not available during prior years when earlier traffic studies were performed, resulting to an apples-to-oranges comparison between 2017 traffic volumes and volumes in prior years.

The Utah Department of Transportation operates a number of permanent traffic counters throughout the state. We examined the counter on SR-224, which is located just north of Canyons Resort Drive, to understand how traffic volumes on Saturday, February 18, 2017 compared to the rest of the month. We found that February 18 was actually the lowest volume Saturday of the month. The AM volumes reported in the study would need to be increased by 18% just to match the average of the other Saturdays in the month, while the PM volumes would need to be increased by 5%. Adjustments to account for the typical increase due to the holiday weekend would only increase those factors.

Also, with Saturdays not having much of an AM peak, we looked at how weekday AM peak volumes compare to Saturday AM peak volumes. Based on the data from the SR-224 station, an upward adjustment factor of 31% would be needed to bring the Saturday, February 18 AM volumes as reported in the study up to equivalent weekday AM values. This issue is less relevant for the PM peak where the Saturday volumes are larger than the weekday volumes.

Given that all of the analyses in the study build on the existing volumes, most of the conclusions drawn by the study are inherently unreliable. At a minimum, the study would need to incorporate the following recommendations to meet minimum traffic study requirements.

RECOMMENDATIONS

- Apply an adjustment factor to the existing traffic volumes to scale them up to average February Saturday values
- Provide the peak hours within the respective peak period counts to know the specific hour analyzed for the AM & PM time periods

2 FUTURE TRAFFIC VOLUMES

In the Future (2037) Traffic Volumes section of the study, it states that Summit County has created a traffic model to analyze future traffic conditions and that future traffic volumes are "based on demographics associated with land use plans approved by Park City and Summit County." However, the study then goes on to say that future volumes were estimated using anticipated 25.8% population growth of Park City rather than outputs from the traffic model. It is unclear why the traffic model itself wasn't used to develop the future traffic volumes instead of land use data that would be an input to the traffic model. With the 25.8% being a universal value, the localized impacts of growth are diluted. This is the benefit of using the traffic model, the volume increase occurs where the growth occurs.

Also, it is unclear if the population growth of 25.8% includes factor in the two entitled projects referenced in the study ("Bamberger" and "Resort") as the study provides insufficient detail. Although the study appears to show that the estimated trip generation falls within the growth at the Park Ave/Deer Valley intersection, which is the busiest study intersection, it does not compare the growth at any of the other study intersections that may be impacted due to the two entitled projects. For example, the intersection of Lowell Ave/North Star shows a PM peak hour growth of 12 vehicles per hour. The study then projects that the two developments will generate 332 to 462 additional PM peak hour trips. Although the study is unclear as to the location of the two developments, it appears that at least one of them would have access off the south end of Lowell Avenue. Out of 332 or more peak hour trips, it is unreasonable to assume that only 12 of them would use the Lowell Ave/North Star intersection. This illustrative of the point above about universal versus localized growth. Consequently, the study fails to properly account for the traffic from the Bamberger and Resort projects. Those volumes should be calculated and explicitly added to all study intersections.

RECOMMENDATIONS

- Use outputs from the traffic model in estimating future traffic volumes or provide an explanation of why using population growth projections is the preferred approach
- Provide trip generation tables for the Bamberger and Resort developments as well as what was assumed for the "variety of mixed land uses" when estimating the trip generation
- Add the new vehicle trips from the entitled Bamberger and Resort developments to all study intersections as part of the future traffic volumes

3 PROJECT TRAFFIC VOLUMES

3.1 Trip Generation

Based on inadequate information in the study, it is impossible to determine how trip generation data was calculated. Although the study described the ITE land use code that was used for each land use category of the proposed project, it doesn't describe specifically which chart or equations within those categories were used. It appears that the weekday AM & PM peak hour generator was used for all land uses. Given that the traffic volume data collection occurred on the weekend, Saturday trip generation rates should have been used where available. The study needs more explanation of why weekday trip generation values were used instead of Saturday. Analyzing AM and PM peak periods on Saturday creates difficulties in the analysis. Saturday ITE trip generation values, if provided at all, are only for the peak hour of generator rather than for the AM and PM periods. Daily vehicle trips should also be calculated and provided in the trip generation table.

From the study, it is unclear what the square footage and number of rooms of the proposed Treasure Hill hotel will be. According to the introduction, the hotel is 200,000 square feet (sq-ft) with 202 rooms. But in the Project Traffic Volume section it is stated that the initial trip generation rate for the hotel was calculated at 83% occupancy, which also uses a value of 202 rooms. As a result, it is uncertain if the hotel has a total of 202 rooms or if 202 rooms is the number of rooms at 83% occupancy. It is also uncertain why 83% occupancy was applied to reduce the projected traffic generation as this is not a recommendation in the ITE Trip Generation Manual, but rather an average occupancy rate of studies that provided information on occupancy rates at the time the ITE studies were conducted. It is interesting to note that the original study back in July 2004 assumed 100% occupancy, which is a good assumption for a winter holiday weekend. This study should also assume 100% occupancy.

Similarly, in the Project Traffic Volume section of the study, the employee housing number of units is said to be approximately 25 units. In Table 4 it shows 30 units for the employee housing land use; however, the trip generation appears to be based off of 25 units. It also appears that in the Parking Analysis section of the report 30 employee housing units was used to calculate the number of parking stalls. Therefore, there is inconsistency in the number of employee housing units between the trip generation and the parking generation. Using 30 units of employee housing when calculating trip generation rates would result in an increase of 2 AM trips and 3 PM trips.

We were also unable to replicate the trip generation values of 56 AM trips and 109 PM trips for the commercial land use in Table 4 using the ITE Trip Generation Manual, assuming 8,735 sq-ft of Specialty Retail and 8,735 sq-ft of Quality Restaurant. With the given information in the Treasure Hill study it is uncertain how these numbers were obtained. We calculated the trip generation values for the respective land uses assuming 8,735 sq-ft for both land uses using the weekday peak hour of the generator and the average trip rates for both AM and PM peak hours from the ITE Trip Generation Manual, which equated to 108 AM trips and 123 PM trips—a substantial increase over the number calculated in the study.

The use of weekday instead of Saturday trip generation data and lack of detail are concerning. The study would need to incorporate the following recommendations to meet minimum traffic study requirements.

RECOMMENDATIONS

- Perform the trip generation calculations using Saturday data where available
- Calculate and provide daily trips in the trip generation table
- Provide more detail regarding the actual rates or equations used in the trip generation process
- Provide clear and consistent assumptions regarding the size of the hotel and the number of employee housing units throughout the study
- Re-evaluate or state assumptions made for the commercial land use in Table 4 and separate the commercial land use into two separate land uses showing both the Specialty Retail and Quality Restaurant land use trip generation

3.2 Trip Reduction

As repeatedly acknowledged by the study's author during the recent Planning Commission meeting, some of the trip reduction percentages applied in the study are largely speculative. For example, the study improperly relies on old 2014 data from the Park City Chamber of Commerce Convention & Visitors Bureau Economic Profile to reduce hotel trip generation estimates based on a presumed 65% hotel occupancy rate. This is an overly aggressive approach. During President's Day weekend, it is far more likely that the hotel would be operating near or at capacity. As such, the hotel trip generation should be increased not decreased. The study also makes no effort to determine whether 2014 hotel occupancy rates are consistent with rates in 2017 or future projections, or if there were historic factors that resulted in suppressed rates during that time period.

There are also limited details on how the internal capture percentages provided in the Trip Reduction section were calculated. It appears that these percentages were derived from Table 7.1 or 7.2 in Volume 1 of the ITE Trip Generation Manual. If that is the case, those percentages were not applied correctly. They are not intended to be instant reductions at all. Rather, they are origin and destination percentages that are dependent upon the trips entering and exiting the different land uses. The ITE Trip Generation Manual Volume 1 shows how these internal capture percentages are to be applied on pages 89 – 100. The ITE manual also provides blank worksheets that allow for the calculation of trip reductions due to internal capture as seen in Figure 1.

The appendix of the study should include ITE worksheets or something similar showing how the internal capture percentages were calculated. Furthermore, ITE suggests that if the site has two or more buildings containing the same land use the land uses should be combined if they are situated within reasonable and convenient walking distance of each other when calculating internal capture. This methodology was not followed in the study. With the limited details provided in the study, it is uncertain how the internal capture percentages were actually obtained.

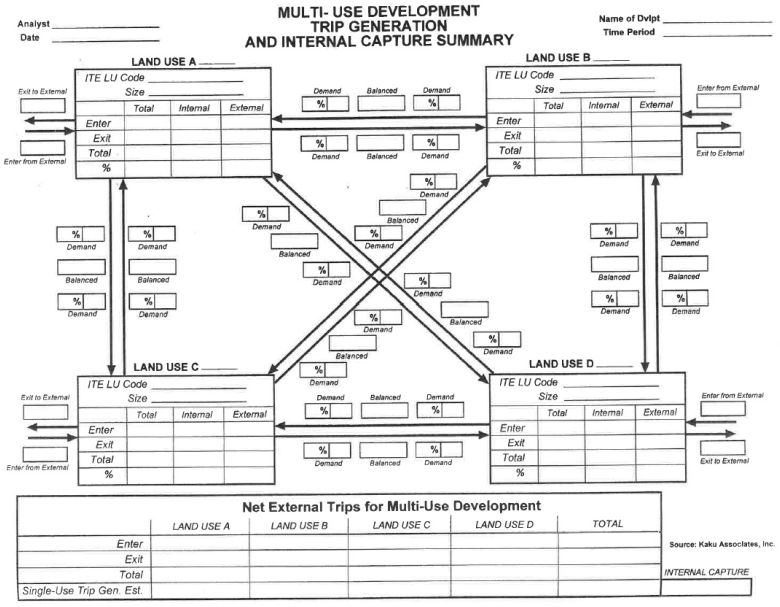

Figure 1: ITE Internal Capture Worksheet

Also, as noted in the study, internal capture information is not provided for the hotel land use. When this is the case, ITE recommends that either (1) local data be collected to establish an internal capture rate, or (2) no internal capture be assumed. The study takes neither approach and instead assumes a 16% trip reduction for the hotel use. Based on guidance from ITE, the 16% trip reduction assumed in the study for the hotel land use was improper.

When considering the trip reduction for the cabriolet, the study doesn't provide any details on why the 30% trip reduction was assumed. Again, the study's author expressly acknowledged that the reduction percentage was speculative. Although we acknowledge the difficulty in forecasting a reasonable value, a we believe a 30% rate is too high for this application. The best approach under the circumstances would be to perform sensitivity testing around the assumption to determine how important this assumption really is. Analyses could be performed with different cabriolet trip reduction factors (e.g., 15% or 0%) and then compared against the other scenarios to understand the related impacts to the roadway network. Under the circumstances, a smaller, more conservative trip reduction factor would be more reasonable.

RECOMMENDATIONS

- Eliminate the hotel trip reduction factor based on occupancy to be conservative or at least provide a detailed explanation of how the factor was applied
- Provide ITE internal capture worksheets or something similar showing internal capture calculations
- Show how each trip reduction factor was applied to each land use

- Perform sensitivity testing be performed for a range of cabriolet trip reduction percentages to determine the impacts associated with this assumption

4 TRAFFIC ANALYSIS

The most critical flaw in the study is that the traffic analysis section deals only with the intersections and not road capacity. Under typical conditions this approach might be appropriate, but in this non-standard study area capacity is governed far more by the width and grade of the roads, how that width is affected by snow banks, the number of heavy trucks and pedestrians, and the weather (see Figure 2). Under ideal conditions, a single lane can carry approximately 1,800 passenger cars per hour. The presence of traffic signals, stop signs, heavy vehicles, and roadway grades typically reduce this capacity by more than 50%. Here, even under ideal conditions, the study area roadways might have a one-way capacity of 600-700 vehicles per hour, which is probably achieved during summer. However, during winter conditions when the roadway width is reduced to one lane and vehicles must regularly yield to oncoming traffic or even back up to make way for another vehicle, the roadway capacity may reasonably be assumed to drop to as little as one-tenth of the ideal values, which would be only 60-120 vehicles per hour.

Figure 2: Study Area Roadways During Peak Conditions

A volume-to-capacity analysis using these types of values is therefore recommended and would be more representative of actual conditions in the study area. Of course, the challenge with this type of analysis is that it is unique, and capacity is not very easy to measure. However, field observations could be performed to see how

many vehicles are able to cross a point during peak winter conditions when capacity is low and volumes are high. The failure to consider mid-block roadway capacity in the study, away from intersections, renders the traffic analysis highly suspect and unreliable.

Another factor that should have been considered is the impact on quality of life for those that live in the area, especially on Lowell and Empire Avenues. It is important to understand, on a daily level, how much additional traffic will be on these roads in order assess this impact. Comparing existing daily volumes at several locations along these roads to what they would be with the proposed project would be vital. Just comparing existing to project volumes at the Lowell Ave/North Star intersection reveals that the project will increase PM peak hour volumes by more than 140%. Understanding these quality of life impacts along the Lowell and Empire corridors would be valuable for a complete understanding of the impact of the Treasure Hill project on the surrounding historic neighborhoods.

Independent of these new analyses, the study provided limited or no details regarding the details of the traffic analysis for the following items.

- Assumptions regarding heavy vehicles, roadway grades, or peak hour factors, nor are any details regarding the SimTraffic analysis, such as the number of runs that were performed
- Whether the mitigated level of service and delay results shown at the intersection of Empire Ave/Silver King are for a signal or roundabout
- Signal spacing, safety, or queuing concerns/issues with adding a signal to Empire Ave/Silver King
- Assumptions regarding left turn phasing at Empire Ave/Silver King
- Whether existing signal timing parameters were obtained for the signal at Park Ave/Deer Valley

The study also states that need for mitigation at the Empire Ave / Silver King intersection is due to background growth that would occur independent of the Treasure Hill development. However, that background growth occurs over a period of 20 years. It is possible that the Treasure Hill development may be built before the mitigation would be required. The study should consider existing traffic conditions plus the proposed project to determine if the traffic impacts of the development alone would require mitigation.

Furthermore, the study doesn't discuss or reference any previous analysis regarding walkability/pedestrian safety, construction impacts, or delivery truck and emergency vehicle traffic that would provide some information or detail about these items. Nor does it address which previous analyses are still appropriate under 2017 conditions, particularly given the significant increase in the size and scope of the project since the first studies.

RECOMMENDATIONS

- Provide a roadway volume-to-capacity analysis under constrained winter conditions where Lowell Ave and Empire Ave and any other impacted streets are reduced to a single lane
- Provide a comparison of daily volumes on Lowell and Empire Avenues and similarly-situated streets within and without the proposed project
- Provide additional details on the intersection analyses that were performed
- Perform a traffic analysis for existing plus project conditions
- Provide any updated information on walkability/pedestrian safety, construction impacts, and delivery truck traffic or reference previous analyses if such studies are still appropriate

5 PARKING ANALYSIS

It is not clear what the purpose of the parking analysis in the study is, but if it is to be used to determine how much parking should be provided, it will be important to consider reserved spaces. For example, residential units typically have a number of reserved parking spaces which are not available for use by business patrons. In such a condition, when calculating the total number of spaces needed, the weekday and weekend values may then be the same (depending on the number of reserved spaces), thereby increasing the number of required weekend parking spaces.

RECOMMENDATIONS

- Provide an explanation of the purpose of the analysis and, if necessary, account for reserved parking spaces in the calculation of total parking needs
- Use a consistent employee housing unit number throughout the study
- Show each parking reduction applied to each land use on a separate row to provide a better understanding of the degree of reduction for each land use

6 SUMMARY OF FINDINGS & RECOMMENDATIONS

In conclusion, the Treasure Hill study does not provide adequate detail or analysis to ultimately be able to determine the full impact the proposed project will have on traffic in the study area, much less determine mitigation measures that might address actual impacts. Most notably, because the Treasure Hill study area is non-standard due to the narrow width and steep grade of most roads in the study area, the failure to analyze traffic flow and capacity at mid-block locations under typical winter conditions undermines any conclusions as to impact. Additionally, as described in detail above, the Treasure Hill study is questionable in regards to existing traffic volumes, future background volume projections (including traffic from the Bamberger and Resort developments), trip reduction factors.

Overall, the study is often too basic and simplistic in nature and omits necessary detail to determine or replicate the analysis procedures and assumptions that were used. The study seems to be generally be conservative in estimating existing and future volumes for which the Treasure Hill would have no responsibility, but aggressive in reducing trips (and thereby impacts) that would be attributable to the development. The study also fails to discuss or reference any previous analyses regarding walkability/pedestrian safety, construction impacts, or delivery truck traffic. It is critical to know whether these items are still appropriate under 2017 conditions, particularly given what we understand to be a substantial increase in the scope and size of the project since the first study was prepared in 2004.

Our study recommendations are as follows:

- Apply an adjustment factor to the existing traffic volumes to scale them up to average February Saturday values
- Provide the peak hours within the respective peak period counts to know the specific hour analyzed for the AM & PM time periods
- Use outputs from the traffic model in estimating future traffic volumes or provide and explanation of why using population growth projections is the preferred approach
- Provide trip generation tables for the Bamberger and Resort developments as well as what was assumed for the “variety of mixed land uses” when estimating the trip generation

- Add the new vehicle trips from the entitled Bamberger and Resort developments to all study intersections as part of the future traffic volumes
- Perform the trip generation calculations using Saturday data where available
- Calculate and provide daily trips in the trip generation table
- Provide more detail regarding the actual rates or equations used in the trip generation process
- Provide clear and consistent assumptions regarding the size of the hotel and the number of employee housing units throughout the study
- Re-evaluate or state assumptions made for the commercial land use in Table 4 and separate the commercial land use into two separate land uses showing both the Specialty Retail and Quality Restaurant land use trip generation
- Eliminate the hotel trip reduction factor based on occupancy to be conservative or at least provide a detailed explanation of how the factor was applied
- Provide ITE internal capture worksheets or something similar showing internal capture calculations
- Show how each trip reduction factor was applied to each land use
- Perform sensitivity testing be performed for a range of cabriolet trip reduction percentages to determine the impacts associated with this assumption
- Provide a roadway volume-to-capacity analysis under constrained winter conditions where Lowell Ave and Empire Ave are reduced to a single lane
- Provide a comparison of daily volumes on Lowell and Empire Avenues and similarly situated streets within and without the proposed project
- Provide additional details on the intersection analyses that were performed
- Perform a traffic analysis for existing plus project conditions
- Provide any updated information on walkability/pedestrian safety, construction impacts, and delivery truck traffic or reference previous analyses if such studies are still appropriate.
- Provide an explanation of the purpose of the analysis and, if necessary, account for reserved parking spaces in the calculation of total parking needs
- Use a consistent employee housing unit number throughout the study.
- Show each parking reduction applied to each land use on a separate row to provide a better understanding of the degree of reduction for each land use.