TO:	Terry Mathew, Project Planner; CCI – Consultants Collaborative
FROM:	Jonathan Sanchez, PE, TE, PTOE; CR Associates Cristian Belmudez; CR Associates
DATE:	May 4, 2023
RE:	Karve Ski Park – Parking Analysis and Recommendations

The purpose of this memorandum is to document the parking analysis conducted for the proposed Karve Ski Park project (the "Project").

Project Description

The Project proposes to develop a 10.15 acres synthetic ski park (also known as a dry ski slope) located at 26351 N Center City Parkway within San Diego County. The ski park will be an outdoor, year-round synthetic snow sports complex and recreational park catering to all ages, abilities, and skill levels. The primary activities will be the ones that take place at the artificial ski slope which mimics the attributes of snow for both day and nighttime skiing and snowboarding.

The Project's hours of operation are anticipated to be as follows:

- Monday – Thursday: 9 AM to 10 PM
- Friday: 8 AM – 10 AM – Golf Driving Range
- Friday: 9 AM to 11 PM
- Saturday: 8 AM to 11 PM
- Sunday: 8 AM to 10 PM

The activities allowed and facilities available at the site are listed below:

- 147 parking space parking lot (including 6 EV charging spaces, 5 ADA compliant, and 11 clean air vehicle spaces)
- Skiing, Snowboarding, and Tubing
- Ziplining (Two zipline towers)
- Golf Driving Range (9 tee boxes)
- Village Area Amenities/Services – Four buildings totaling 9,525 square feet:
    - Building A – 2,000 square-foot building including Box Office and Guest Services, and First Aid and Management Office
    - Building B – 4,125 square-foot building including Pavilion with food and bar with seating indoor and outdoor; Restrooms including large ADA-compliant restrooms.
    - Building C – 2,400 square-foot building with Equipment rental and Event rooms (4) for groups. Each event room accommodates 20-30 guests.
    - Building D – 1,000 square-foot building including maintenance and storage space.
- Outdoor Patio – surrounding the Pavilion and will provide additional seating and serve as an observation area. There will also be space for two (2) food trucks at the rear of Building C.

To minimize the potential of insufficient parking, the Project will operate using an online reservation system where guests select a date and time slot for their desired activities. This system is intended to ensure that the Project does not exceed capacity. As such, during peak operations the maximum number of people on ski lifts will be 100.

Figure 1 displays the Project's regional location. **Figure 2** displays the Project's site plan.

Parking Analysis

The parking requirements for the proposed Project were evaluated based on the County of San Diego Ordinance No. 10251 (the Parking Ordinance), which provides off-street parking regulations for major land use categories. The two land uses (gold driving range and Karve Ski Park were evaluated separate to ensure that the project provides the necessary number of parking spaces.

Golf Driving Range

The Parking Ordinance requires 1 parking space per tee plus 1 parking space per employee but not less than 3. Based on this requirement, the proposed Project would need to provide 12 parking spaces (nine spaces for each of the tees and three spaces for employees).

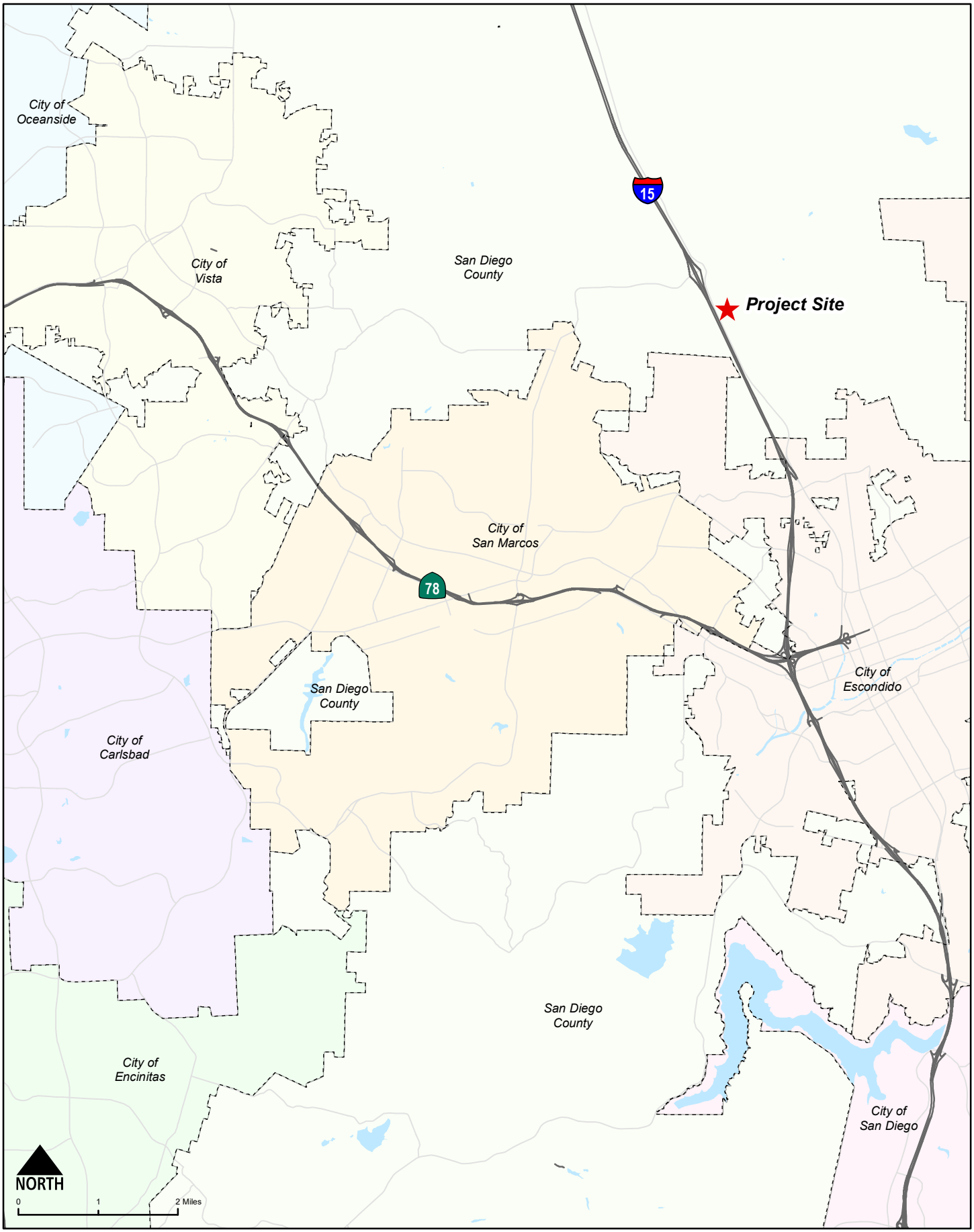
Karve Ski Park

The Parking Ordinance does not include parking requirements for ski facilities. Therefore, the parking generation rate for the ski area component of the Project was obtained from the Institute of Transportation Engineers (ITE) Parking Generation Manual, 5th edition, which also provides parking generation rates for a variety of land uses. The ITE Parking Generation Manual provides a parking generation rate of 0.22 parking spaces per daily lift tickets sold. The parking generation rate was calculated utilizing data obtained on Saturdays.

The Project proposes to sell lift tickets on a 2.5- hour time slot basis (controlled by the online reservation system) and will have a maximum capacity of 100 lift tickets per time-slot. The lift operation and ski slope will be the primary land use, whereas the remaining land uses such as the Bocce Balls Courts are amenities for guests to use while they wait for their turn at the lift.

For a conservative analysis, it is assumed that the longest period of operations for the proposed Project would be from 8 AM to 11 PM (15 hours), with an average duration of 2.5 hours per person at the hill, and a turnover rate of ski lift users of 6 times per day (15 hours divided by 2.5-hour time-slots = 6), resulting in a total of 600 daily lift tickets sold (6 time-slots per day X 100 clients per time-slot = 600 daily lift tickets sold).

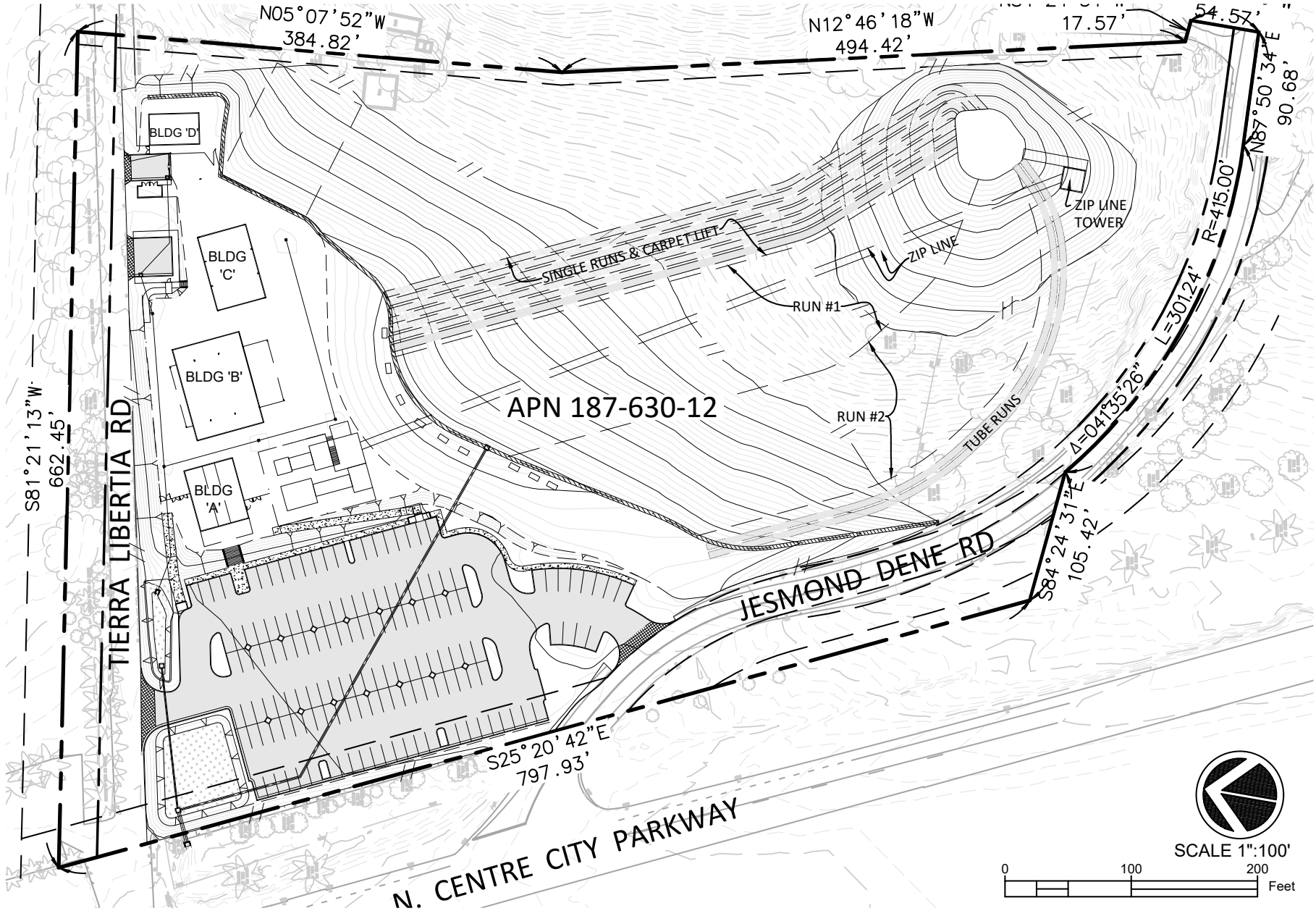
It should be noted that 600 daily lift tickets sold is a conservative estimate since it assumes that the Project is operating at peak capacity over the 15 hours of operation. However, per ITE's Parking Generation Manual, peak parking demand occurs at 12 PM, while hours before 9 AM and after 2 PM have a parking demand less than 50% of the peak. **Table 1** displays the Project's parking requirements and recommendations for both land uses. Relevant excerpts of each parking generation rate source are provided in **Attachment A**.



Karve Ski Park
Parking Analysis

C+R

Figure 1.1
Project Regional Location



Karve Ski Park
Parking Analysis

C+R

Project Site Plan

Table 1 - Project Parking Generation

Land Use	Units	Parking Generation Rate	Parking Required	Parking Provided by Project
Ski Area	600 Daily Lift Tickets Sold	0.22 Parking Spaces per Daily Lift Tickets Sold	132[1]	**147**
Golf Driving Range	9 Tee Boxes	The sum of the following: ▪ 1 Parking Space per Tee Box ▪ 1 Parking Space per Employee (No less than 3)	12	
		Total	**144**	**147**

Source: CR Associates (2022)

Note:
[1] 106 required parking spaces includes both clients and employees.

As shown, the ski area component is required to provide 132 parking spaces and the golf driving range is required to provide 12 parking spaces, for a total of 144 required parking spaces. The proposed Project will provide a total of 147 parking spaces which is sufficient for the anticipated parking demand for the proposed Project.

Parking Validation

Since synthetic ski parks are not common in Southern California or in the United States, the parking generation/requirements documented above were validated against similar facilities and traditional snow resorts. The proposed Project was first compared against other similar facilities, including the following types of synthetic ski facilities:

1. Temporary Synthetic Ski Slope: These are dry ski slopes operated on a temporary basis, typically using the excess parking spaces at urban malls. Examples of these includes Urban Snow Park which operates in the San Francisco area and DIVERTSessions which operates in Santa Ana. Because these facilities use excess parking spaces, the actual parking demand is unknown, and therefore was not included in the comparison.
2. Facilities with Synthetic Ski Slopes in a building that is shared with other uses: These facilities are located inside a commercial or industrial building. Examples of these include Adventure Ski & Snowboard School in the City of Encinitas and ProSlopes in the City of Anaheim. Since these facilities share their parking spaces with other uses, the stand-alone demand is unknown, and therefore was not included in the comparison.
3. Liberty Mountain Snowflex Center[1], Lynchburg, VA – This facility provides year-round synthetic ski activities for Liberty University students, faculty, staff, and the general public. The facility provides 159 standard parking spaces and 4 ADA parking spaces, for a total of 163 parking spaces. However, this facility also shares its parking lot with two trails that are part of the Liberty Mountain Trail System (Mike Donahue and Lake Trails). Since this facility also shares their parking spaces with other uses, the stand-alone demand is unknown, and therefore was not included in the comparison.

[1] https://www.liberty.edu/campusrec/snowflex/

Due to the limited sample of synthetic ski slope facilities, the validation process includes traditional ski facilities. The following developments were selected for evaluation based on their location (i.e., southern California) and shared land use characteristics (i.e., outdoor recreation, ski resorts, snow tubing, etc.):

1. Big Bear Snow Play – This facility offers year-round recreation with activities including snow tubing, go-karts, multi-level ropes course, and zipline. The facility is 14 acres in size and provides 255 parking spaces.
2. Alpine Slide – This facility offers winter bobsled tracks & summer water slides. The facility is 10.5 acres in size and provides 150 parking spaces.
3. Big Bear Mountain Resort – This facility offers outdoor experiences such as skiing and snowboarding in the winter and lift-served hiking and mountain biking during the summer months. The facility is 827 acres in size and provides 400 parking spaces.
4. Snow Valley Mountain Resort – This facility offers runs for all skill levels, plus terrain parks, a snow play area for sledding & dining options. The facility is 1,493 acres in size and provides 107 parking spaces.

The acreage and parking supply for each development was obtained from planning documents (i.e., conditional use permits), aerial imagery, or online sources (i.e., ski resort website).

Because the number of daily lift tickets sold are proprietary information for each of these resorts, for an apples-to-apples comparison, a parking-space-to-acres ratio was developed for each of the facilities. **Table 2** summarizes the average parking generation rate per acre for the observed developments. **Attachment B** provides relevant excerpts of these sources. Please note that these are the total number of parking spaces provided (on-the-ground conditions) and not the average parking demand.

As shown, the average parking per acre rate for the observed developments is 12.1 parking spaces per acre. This ratio would result in 123 parking spaces (10.15 acres X 12.1 parking spaces per acre = 123 parking spaces) for the proposed Project or a combined total of 132 parking spaces (123 parking spaces[2] for Karve Ski Park + 9 parking spaces for golf driving range).

Table 2 - Parking Generation Rate per Acre for Observed Developments

Development	Address	Parking Provided	Acres	Parking Per Acre Rate
Big Bear Snow Play	42825 Big Bear Blvd, Big Bear Lake, CA 92315	255	14	18.2
Alpine Slide	800 Wildrose Ln, Big Bear Lake, CA 92315	150	10.5	14.3
Big Bear Mountain Resort	880 Summit Blvd Suite A, Big Bear Lake, CA 92315	827	400	2.1
Snow Valley Mountain Resort	35100 CA-18, Running Springs, CA 92382	1,493	107	14.0
		Average Parking per Acre Rate		**12.1**

Source: CR Associates (2022)

[2] Includes employee parking spaces.

Conclusion

Both the parking requirements calculated using the ITE Parking Generation Manual and the parking validation utilizing existing similar facilities show that the 147 parking spaces proposed by the Project would be sufficient to accommodate the parking needs of both the ski park and the golf driving range.

Attachment A - Parking Generation Sources

Land Use: 466 Snow Ski Area

Description

A snow ski area typically includes chair lifts, ski runs, and a lodge facility. Snow ski areas may also contain equipment rental facilities, refreshment areas, locker rooms, and small commercial/office space.

Time of Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand on a Saturday at one study site.

Hour Beginning	Percent of Saturday Peak Parking Demand
12:00–4:00 a.m.	–
5:00 a.m.	–
6:00 a.m.	–
7:00 a.m.	6
8:00 a.m.	26
9:00 a.m.	62
10:00 a.m.	79
11:00 a.m.	94
12:00 p.m.	100
1:00 p.m.	95
2:00 p.m.	81
3:00 p.m.	48
4:00 p.m.	13
5:00 p.m.	2
6:00 p.m.	–
7:00 p.m.	–
8:00 p.m.	–
9:00 p.m.	–
10:00 p.m.	–
11:00 p.m.	–

Additional Data

The average parking supply ratio for the five study sites with parking supply information is 1.0 spaces per acre of ski trails.

The sites were surveyed in the 1980s and the 2010s in Colorado and Montana.

Although acres of ski trails and number of lift tickets sold are used as independent variables, many other factors can have potentially significant effects on parking demand, including special events at the site, lift ticket fees, proportion of season pass versus daily lift ticket buyers and proximity to an urban area (in other words, population available for day trips).

Source Numbers

29, 518

Snow Ski Area
(466)

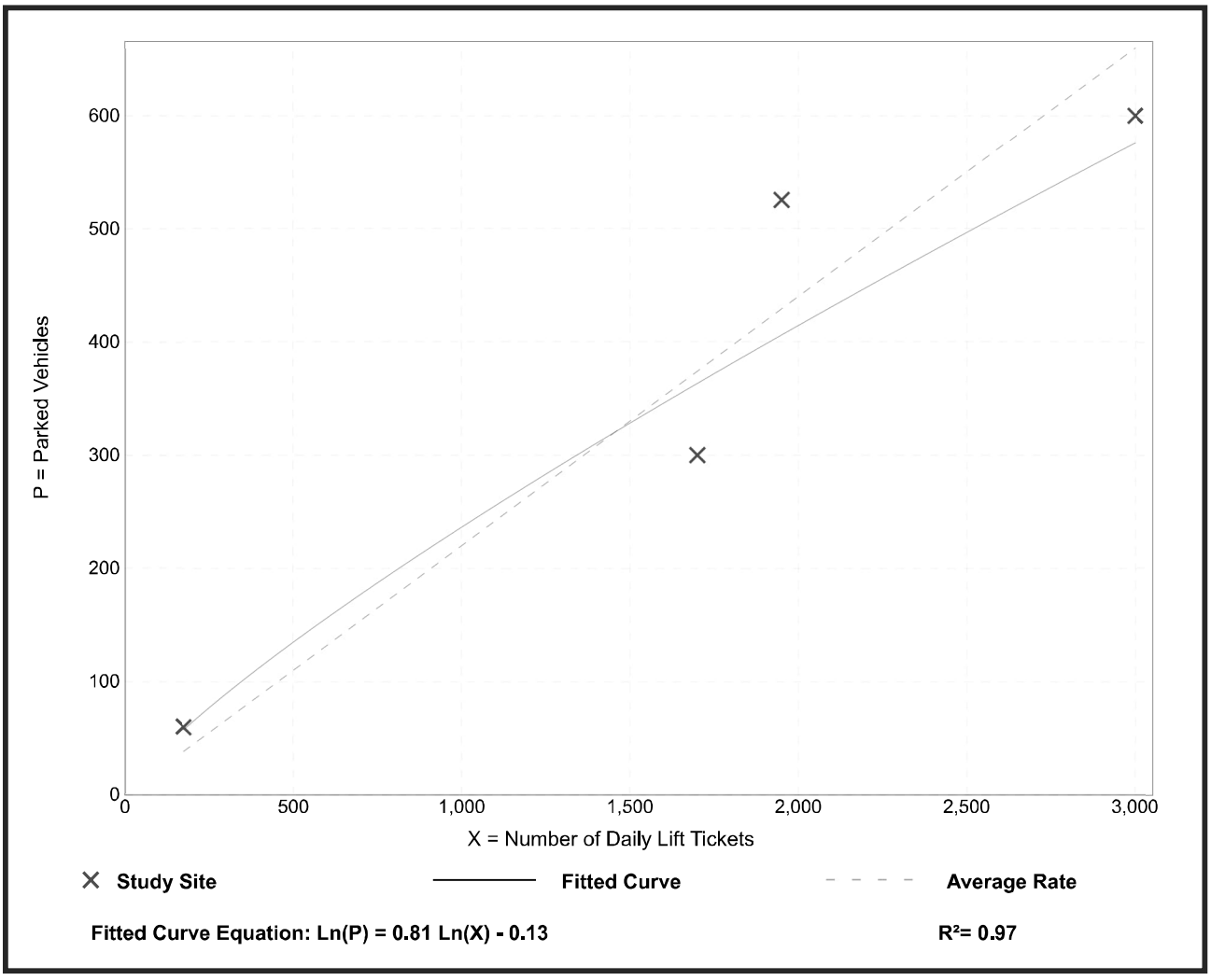
Peak Period Parking Demand vs: **Daily Lift Tickets**
On a: **Saturday**
Setting/Location: **Rural**
Peak Period of Parking Demand: **11:00 a.m. - 2:00 p.m.**
Number of Studies: 4
Avg. Num. of Daily Lift Tickets: 1706

Peak Period Parking Demand per Daily Lift Ticket

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.22	0.18 - 0.34	0.19 / 0.34	***	0.05 (23%)

Data Plot and Equation

Caution – Small Sample Size



Parking Generation Manual, 5th Edition ● Institute of Transportation Engineers

Attachment B - Observed Developments

of the property for commercial recreation purposes, including food, beverage and alcohol services, indoor and outdoor seating, and a Ropes Course, are consistent with the intent of this zone. The Development Code requirements are shown in the following table:

Development Code Requirements

1.	Site Area:	14 acres
2.	Building Setbacks	
	Buildings and Parking	
	Required:	15 feet
	Proposed:	Parking – 15 feet, ticket/restroom building – 340 feet
3.	Building Height:	
	Required:	40 maximum
	Proposed:	35 feet 6 inches building, Ropes Course - 24 feet
4.	Parking Spaces Provided:	Summer – 167 spaces, 8 accessible for the disabled
		Winter - 255 spaces, 8 accessible for the disabled
5.	Floor Area Ratio	Maximum allowed: 0.5 of 624,215 sq. ft. (14 acres), 312,000 square feet.
		Provided: .04 FAR, approx. 28,000 sq. ft. of buildings, tanks and Ropes Course
6.	Open Space	Minimum allowed: 20% of lot area (624,215 sq. ft.) 124,843 sq. ft. minimum
		Provided: 73% of lot (449,825 sq. ft.) undeveloped open space

Parking

Winter Operations

The parking requirement for a recreation area is based on capacity of the proposed use. The applicant indicates that the peak season is winter. Peak capacity of the snow play hill is currently approximately 400 people. Based on a ski industry average of 2.5 people per vehicle, approximately 160 parking spaces are required for the snow play use at this time. The applicant has installed approximately 255 paved spaces on the property, which are available during the winter season (November through April). Vehicles are directed to park by parking attendants to maximize the number of vehicles parked on the property. The parking lot accommodates passenger vehicles and tour busses.

Parking

The Alpine Coaster is not anticipated to increase the parking demand of the amusement park. This ride is proposed as another amusement activity within the park. The property is developed with approximately 150 striped parking spaces. At peak times, parking attendants are used to maximize the number of vehicles that can be accommodated on the property, which can total up to 300 parking spaces. No additional parking is needed or required at this time.

Noise

Several videos of Alpine Coasters are available to view on the internet, and these were viewed to determine if the ride would generate additional noise. The ride is a fast, yet smooth, glide down from the top of the up-tracks. As mentioned earlier within this report, the carts are pulled by cable to the top of the tracks which does not create excess noise, such as a traditional roller coaster. Because of the design of the Alpine Coaster, it is not anticipated that riders will scream in terror, however, riders may cheer and laugh, but these are not expected to exceed a 60 CNEL (dBA) decibel level that is normally acceptable in residential neighborhoods. This noise is not anticipated to be excessively loud or significant, nor any different that the noise from people using the snow play hill, alpine slide, water slide, zip line or other amusement rides at the facility.

Tree Removal

No trees over 12” in diameter at breast height (DBH) are proposed for removal with this project. Minor brush clearing and grading will be performed. No replacement trees are required to be planted because of the existence of a sufficient tree canopy on the entire property.

Lighting

All lighting will be subject to Development Code Section 17.35 lighting standards for decorative and accessory lighting within commercial developments. Minimal lighting for safety and aesthetic purposed are permitted, however, cannot be intrusive to adjacent properties or shine directly into the right of way. Animated and flashing lights are not permitted. The applicant has proposed sections of LED rope lighting (white) for track awareness and safety. Carts will also be equipped with headlights and taillights for safety and visibility.

Design Review

The standard color of the Alpine Coaster structure is raw galvanized metal. For safety and maintenance, vinyl coating may not be applied to the rail structure. Additionally, cables are not painted or coated. The overall design of the existing and proposed structures will be similar to the *Mine Shaft* theme seen in Figure 2 of this report. Where applicable, railings and platforms will be constructed with wood in lieu of galvanized metal.

efficiency and circulation patterns into and out of the Valley during "peak events", as well as traffic management of BBMR parking procedures. These plans have worked well for two years and are reviewed and refined accordingly before, during and after each season.

BBMR has offered paid parking for select individuals for many years. It was originally only for stock holders and select season pass holders and has slowly expanded into what is being proposed today. The proposed paid parking program was part of the BBMR's plan to offer a VIP experience for customers in the entire base area of both BBMR's. The expansion of this size was a change from previous ownership and operations and created new challenges to City, Sheriff, and BBMR management. After review and during the snow season of 2017, the City allowed it to continue as a trial under a Temporary Use Permit, 2017-129/TUP for the 2017-2018 season. Because of the uncertainty of the success of the TMP, the Temporary Use Permit was approved for one season, from December 2017, until approximately October 2018. As a condition of approval for the Temporary Use Permit, the applicant was required to apply for a Conditional Use Permit once the pilot parking plan and new Sheriff's traffic plan was implemented. As required, City staff, Sheriff's Office, and BBMR's met on several occasions to evaluate the success of the plan. This proposal is a result of the on-going discussions and cooperation between the agencies and applicant.

Zoning:	Commercial-Recreation (C-4)
General Plan Designation:	Commercial Recreation (CR)
Existing Land Use:	Paved and un-paved parking
Adjacent Land Uses:	*North* – Multiple-family residential dwelling units (duplexes) and single-family residential units along Switzerland, zoned R-3. *South* – Ski, snowboarding trails on resort-owned land, zoned C-4 *East* – Multiple-family residential dwelling units (condominiums); zoned R-3. *West* – Multiple-family residential dwelling units (condominiums) zoned R-3 and single-family residential units, zoned R-1, and Pine Summit Camp, zoned R-L;

ANALYSIS

The proposal to operate a paid parking lot requires a conditional use permit pursuant to Table 17.35.030(A) in the Commercial-Recreation (C-4) zone, which provides the principal uses permitted in commercial zones. The main base lot is entirely zoned C-4 and accommodates approximately 827 parked cars. The proposal by the BBMR is to implement paid parking on Fridays, Saturdays, Sundays, and holidays, including the week between Christmas and New Year's and the week following New Year's commonly considered "winter break." Free parking will be allowed on non-holiday Mondays through Thursdays during the winter season, with the ability to charge for parking during the summer for special events. During a typical winter season the breakdown is approximately 85 days of non-paid parking and 65 days of paid parking. Paid parking must be either through the purchase of a Big Bear Mountain Resort's parking pass or cash payment upon arrival. The process for money collection at Snow Summit is as follows. The two