Board of Adjustment Staff Report

Meeting Date: April 4, 2024 **Agenda Item: 8B**

SPECIAL USE PERMIT CASE NUMBER:	WSUP23-0016 (Sky Tavern Junior Ski Program Expansion)
BRIEF SUMMARY OF REQUEST:	Request for a 5-year expansion to the Sky Tavern Junior Ski Area, including a utility services use type for the installation of snowmaking infrastructure; an expansion of the destination resort use type to expand site parking and lighting; requests to vary certain standards of Articles 204, 410, 412, and 414; and associated major grading.
STAFF PLANNER:	Kat Oakley, Senior Planner Phone Number: 775.328.3628 E-mail: koakley@washoecounty.gov

CASE DESCRIPTION

For hearing, discussion, and possible action to approve a special use permit for an expansion to the Sky Tavern Junior Ski Area, including a utility services use type for the installation of snowmaking infrastructure including 1-million and 2-million gallon water storage tanks, approximately 11,000 linear feet of snowmaking water supply piping, and two well and pump houses; an expansion of the destination resort use type to expand site parking and lighting for the parking area and lighting for night skiing; requests to vary certain standards of WCC Articles 204, 410, 412, and 414; and associated major grading including approximately 6,600 cy of cut and fill, and 6.1 acres of disturbed area.

Applicant:	Sky Tavern Junior Ski Area
Property Owner:	City of Reno
Location:	21130 Mount Rose Hwy
APN:	048-050-03
Parcel Size:	143.070 Acres
Master Plan:	Rural
Regulatory Zone:	Parks and Recreation
Area Plan:	Forest
Development Code:	Authorized in Article 810, Special Use Permits
Commission District:	1 – Commissioner Hill

Vicinity Map

1001 E. Ninth St., Reno, NV 89512-2845
Telephone: 775.328.6100 – Fax: 775.328.6133
www.washoecounty.gov/csd/planning_and_development

STAFF RECOMMENDATION

APPROVE | **PARTIALLY APPROVE WITH CONDITIONS** | **DENY**

POSSIBLE MOTION

I move that, after giving reasoned consideration to the information contained in the staff report and information received during the public hearing, the Washoe County Board of Adjustment partially approve Special Use Permit Case Number WSUP23-0016 for Sky Tavern Junior Ski Area and to approve the request to vary standards WCC 110.410.25(c) & (f) & (g)(3), WCC 110.412.25(c), WCC 110.412.40(a) & (b), and WCC 110.204.05(d)(1) & (2), but deny the request to add lighting for night skiing; with the conditions included as Exhibit A to this matter, having made all five findings in accordance with Washoe County Code Section 110.810.30:

(Motion with Findings on Page 24)

Staff Report Contents

Exhibits Contents

Special Use Permit

The purpose of a special use permit is to allow a method of review to identify any potential harmful impacts on adjacent properties or surrounding areas for uses that may be appropriate within a regulatory zone; and to provide for a procedure whereby such uses might be permitted by further restricting or conditioning them so as to mitigate or eliminate possible adverse impacts. If the Board of Adjustment grants an approval of the special use permit, that approval is subject to conditions of approval. Conditions of approval are requirements that need to be completed during different stages of the proposed project. Those stages are typically:

- Prior to permit issuance (i.e. a grading permit, a building permit, etc.)
- Prior to obtaining a final inspection and/or a certificate of occupancy on a structure
- Prior to the issuance of a business license or other permits/licenses
- Some conditions of approval are referred to as "operational conditions." These conditions must be continually complied with for the life of the business or project.

The conditions of approval for Special Use Permit Case Number WSUP23-0016 are attached to this staff report and will be included with the action order.

The subject property is designated as Parks and Recreation (PR). The proposed use of a ski resort expansion with snow making, lighting, and parking—which is classified as a destination resort and utility services use type—is permitted in PR with a special use permit per WCC 110.302.05.2 and WCC 110.302.05.3 (tables 2 and 3). Therefore, the applicant is seeking approval of this SUP from the Board of Adjustment.

Additionally, Article 810, Special Use Permits, allows the Board of Adjustment to vary development code standards in conjunction with the approval process per WCC 110.810.20(e). The Board of Adjustment will be ruling on the request(s) to vary standards below:

Variance(s) Requested	Relevant Code	Staff Support for Request
No wheel stops	WCC 110.410.25(c)	Yes
No parking lot landscaping/screening	WCC 110.410.25(f)	Yes
Allowance to not replace removed significant trees	WCC 110.412.25(c)	Yes
Allow LED lighting in parking area	WCC 110.410.25(g)(3)	Yes
No landscaping buffers/coverage required	WCC 110.412.40(a) & (b)	Yes
No segmented parking area	WCC 110.204.05(d)(1)	Yes
No landscaping between parking area and highway	WCC 110.204.05(d)(2)	Yes

Project Evaluation

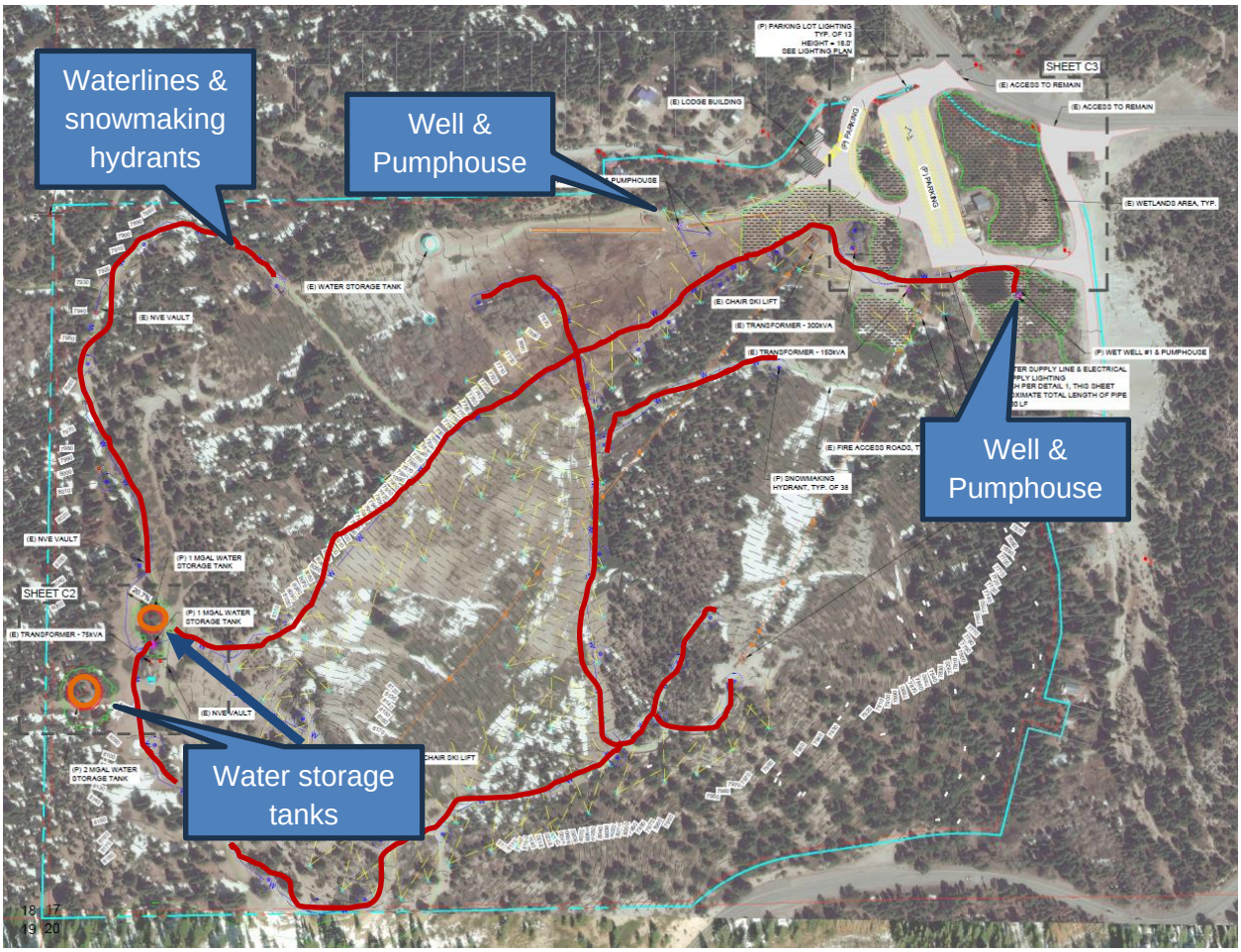
The Sky Tavern Junior Ski Resort (Sky Tavern)—an existing destination resort—is requesting an expansion, including a utility services use type for the instillation of snowmaking infrastructure including 1-million and 2-million gallon water storage tanks, approximately 11,000 linear feet of snowmaking water supply piping, and two well and pump houses; an expansion of the destination resort use type to improve site parking and to install lighting for night time skiing; and major grading. Sky Tavern is located off Nevada State Route 431 approximately 10 miles south of Reno on parcel APN 048-050-03 in the Forest planning area. The subject site has a regulatory zone of Parks and Recreation (PR). Destination resorts, utilities services, and major grading are permissible in this regulatory zone, subject to the approval of a special use permit by the Board of Adjustment. The surrounding uses include single family residential on the north and east, one commercial establishment adjacent to SR 431, and undeveloped land on other property boundaries. Adjacent properties are zoned Open Space (OS), Medium Density Suburban (MDS), General Rural (GR), and General Commercial (GC).

Sky Tavern has been an active ski resort since 1944 and was acquired by the City of Reno in 1968. It currently operates as a non-profit ski resort. Due to its age, Sky Tavern is a legally nonconforming destination resort. They have applied for many building permits over the years for grading and maintenance work. In 2018, Sky Tavern applied for and was granted a special use permit for the improvements to the ski resort, including the addition of snow making and major grading (WSUP18-0009). The 2018 special use permit expired and would be superseded by this special use permit.

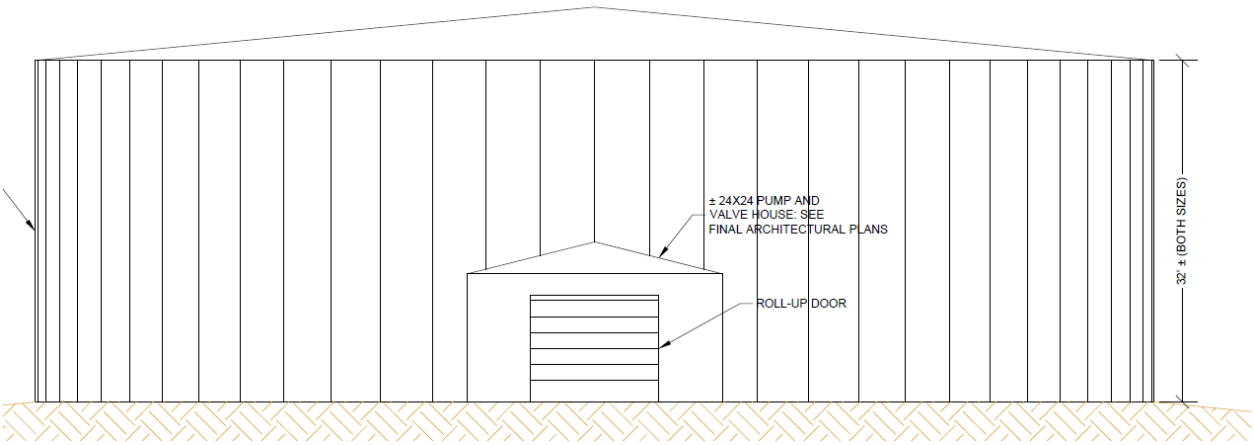
The subject parcel is currently developed with a ski resort and is approximately 143 acres. It is generally forested, with slopes ranging from approximately 0% to 60%. Wetlands are present on the northern portion of the site and are not proposed to be disturbed. Due to the steep slopes, this parcel is subject to the Hillside Development Standards of Article 424. Overall, the significant site improvements—including the water storage tanks and parking lot—are proposed on the flatter portions of the site.

The subject request includes the two aforementioned use types and major grading for approximately 6,600 cy of cut and fill and 6.1 acres of disturbed area. The application also includes several requests to vary the standards of the Washoe County Development Code. Each of these requests is addressed in turn. The applicant has requested that the permit be granted with a five year time frame rather than the standard two years. Staff is supportive of some, but not all, of the subject requests, and is therefore recommending partial approval with conditions.

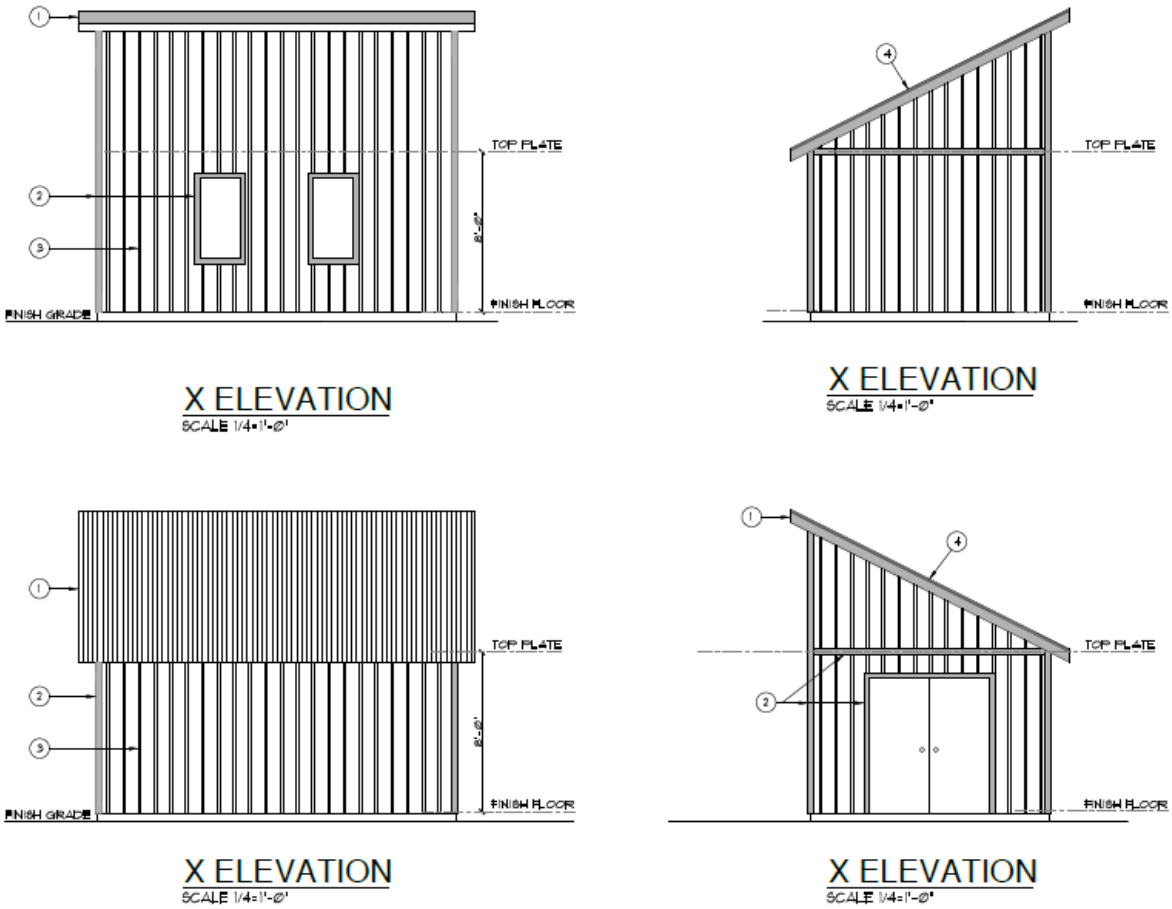
Utility Services



Site Plan



Water Storage Tank Elevation



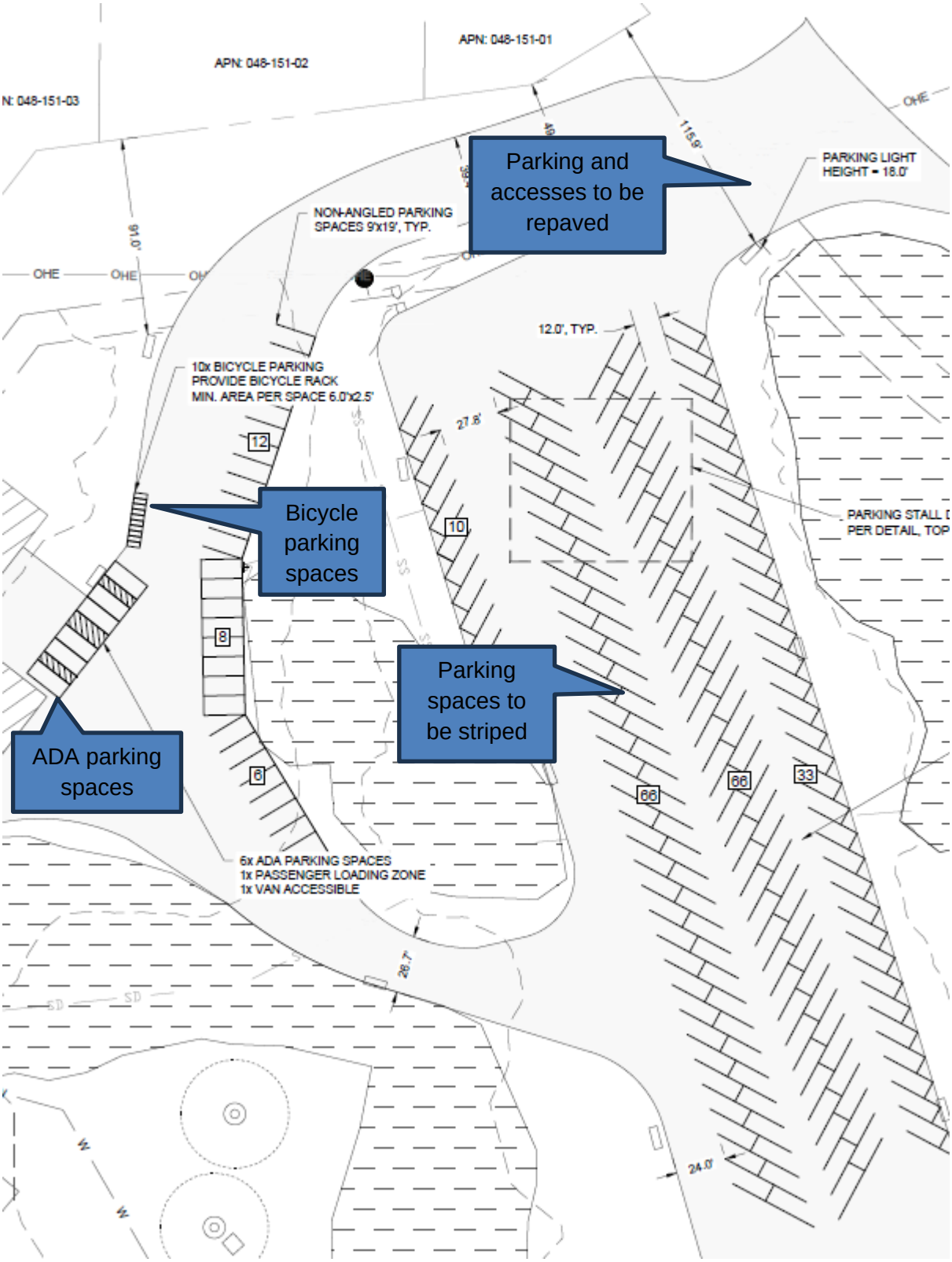
Pump House Elevation

The utility services use type request is for snowmaking infrastructure, including two new wells and pumphouses, one 1-million-gallon water storage tank, one 2-million-gallon water storage tank, and approximately 11,000 linear feet of waterlines and snowmaking hydrants throughout the site. While the installation of underground waterlines will include disturbance of slopes in excess of 30%, all proposed structures shall be located in areas less steep than 30%. The pumphouse and water storage tanks are under the maximum height of 65 feet. Per documentation provided by the applicant and confirmed by the Nevada Division of Water Resources, the applicant has sufficient water rights for the proposed infrastructure. The pumphouses are both over 150' feet from the nearest property line; staff therefore has no concerns about noise impacts. With condition 1.g requiring all structures to be non-reflective and be painted to blend in with the surroundings, staff is supportive of this request.

Destination Resort Expansion

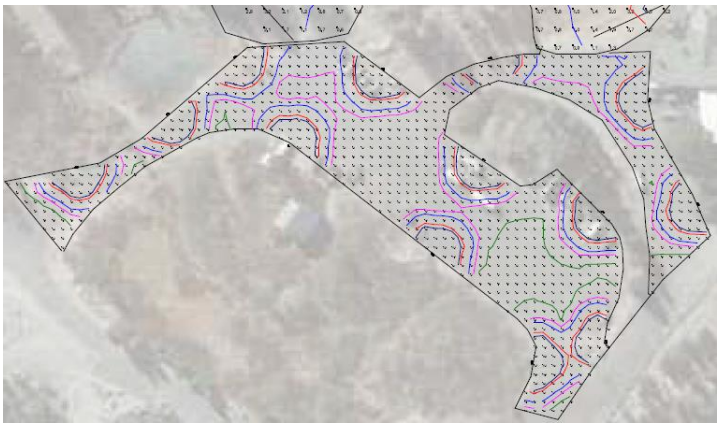
Sky Tavern is an established destination resort that is requesting substantive expansion. First, they are requesting to improve the parking lot by paving, striping, and adding lighting. Second, they are proposing lighting on the ski slopes to allow for night skiing. Due to the significant expansions, all current development standards will be applicable to the existing and proposed site infrastructure unless varied through this special use permit process.

Parking



Parking Site Plan

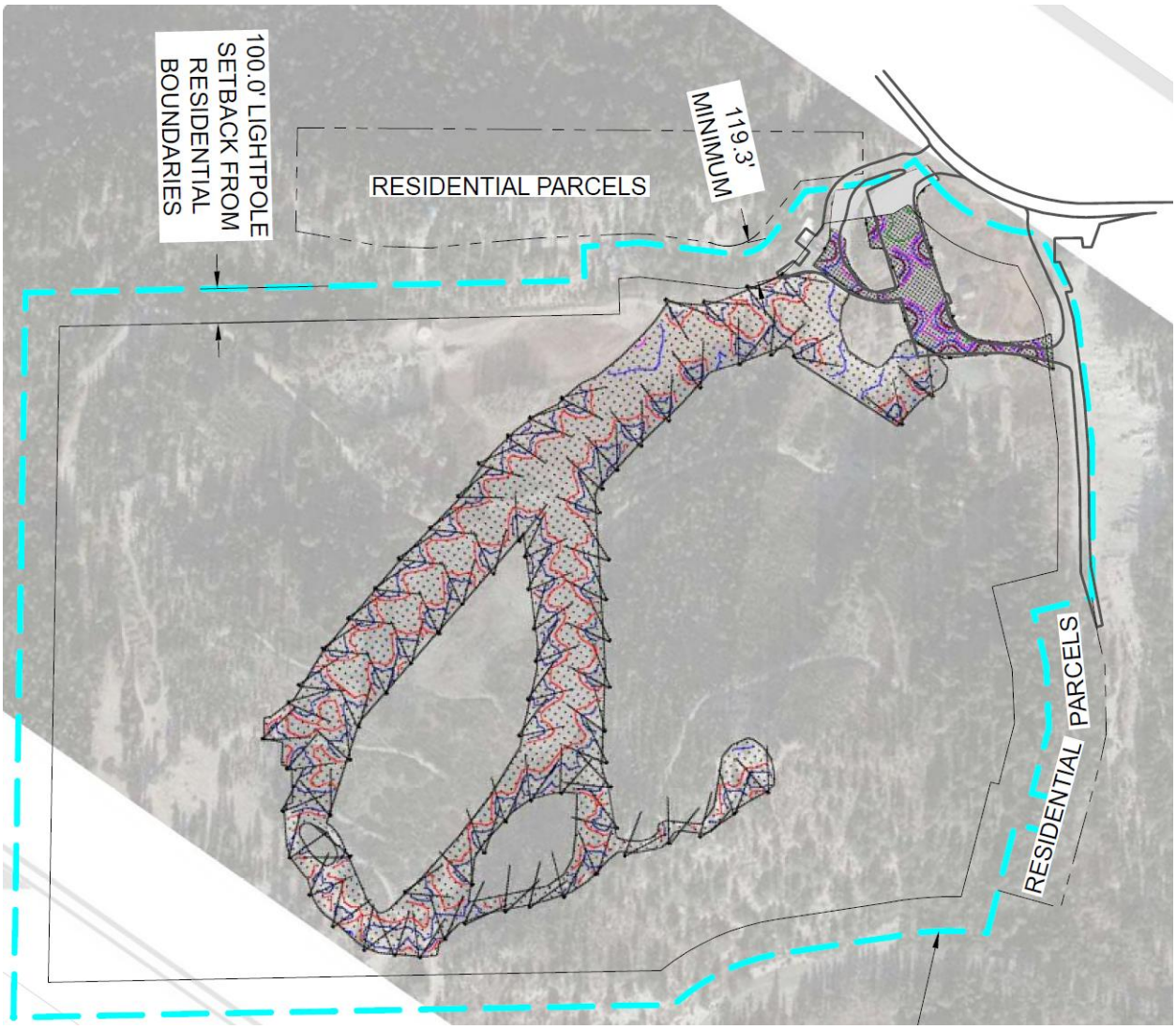
The applicant is proposing to repave and restripe the existing parking lot, which is currently paved but not striped. The paved area will not be expanded under this proposal. WCC 110.410.10.2 requires 1 parking space per employee. Additional parking space minimums can be established through this special use permit process for the destination resort and utility services use types. Sky Tavern has 10 employees on site at peak employment. The current parking area is unstriped. The site plan for this special use permit request shows 197 spaces, including 6 ADA accessible spaces as required by Washoe County Code. A bike rack for 10 bikes will be provided, which fulfills the requirements of WCC 110.410.15(b). One truck parking and loading space shall also be provided. Proposed parking meets the minimum space requirements and is sufficient for the proposal.



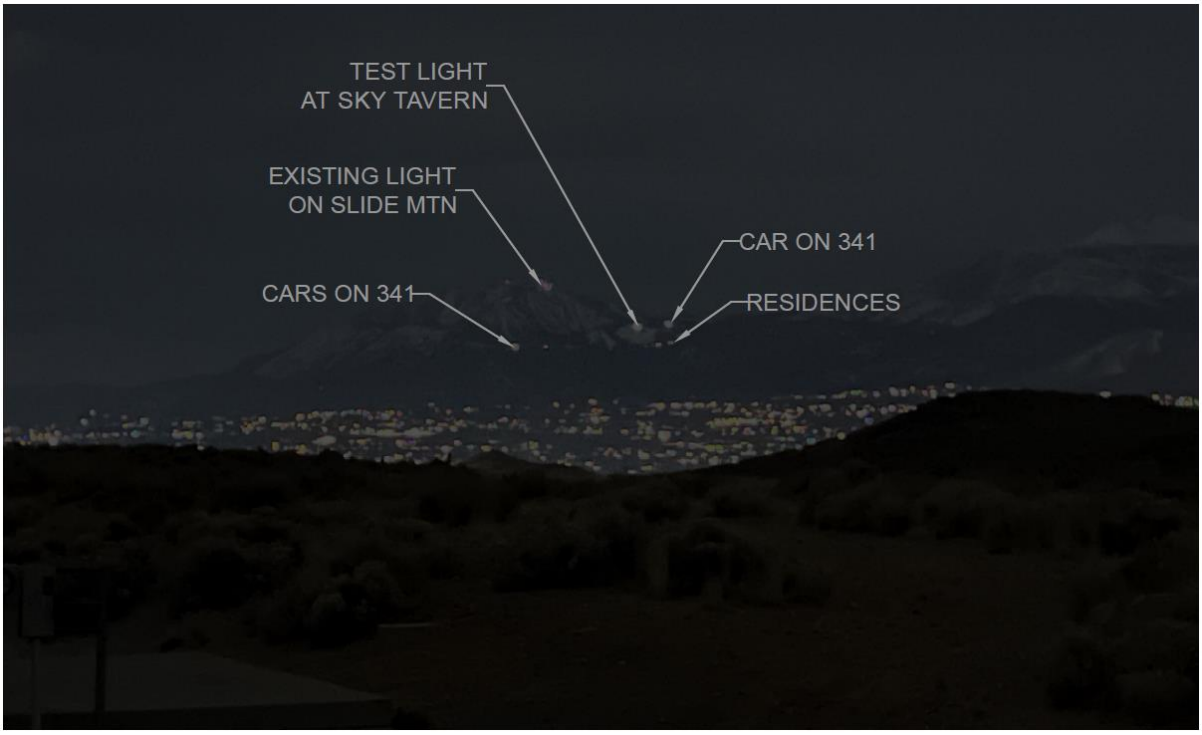
Parking Area Photometric Plan

All parking spaces, drive aisles, and access point dimensions meet the design requirements of Washoe County Code as described in WCC 110.410.25. The applicant is proposing to add parking area lighting, which will be composed of approximately 13 lighting standards 20' in height. All proposed parking area lights are at least 100' away from adjoining residential parcels. The applicant states in their project narrative that lights will extend to the intersection of parking area access and SR 431, improving safety. Proposed lighting also meets the requirements of WCC 110.410.25(g)(1) and (2). However, the applicant is requesting to vary three of the applicable design standards: WCC 110.410.25(c) requiring wheel stops, WCC 110.410.25(f) requiring landscaping and screening in and around the parking lot, and WCC 110.410.25(g)(3) requiring high-pressure sodium vapor lights in parking lot luminaries. Rationale for these requests is in the project narrative portion of the application (Exhibit E). In short, due to the nature of snow removal at a ski resort, any wheel stops and landscaping islands would be hazardous to snow removal operations and to personal vehicles. Furthermore, the subject property is located in a forested area, making landscaping screening unnecessary. Wetland vegetation currently exists between the parking area and SR 431, which should not be disturbed. Staff is therefore supportive of the applicant's request to vary WCC 110.410.25(c) and (f). While WCC 110.410.25(g)(3) requires high-pressure sodium vapor lights, the applicant is proposing LED lights which are more aligned with current dark night sky best practice. Maintaining dark night skies is identified in the Forest planning area priority policies, and varying the aforementioned standard furthers that goal. Staff is therefore supportive of varying WCC 110.410.25(g)(3).

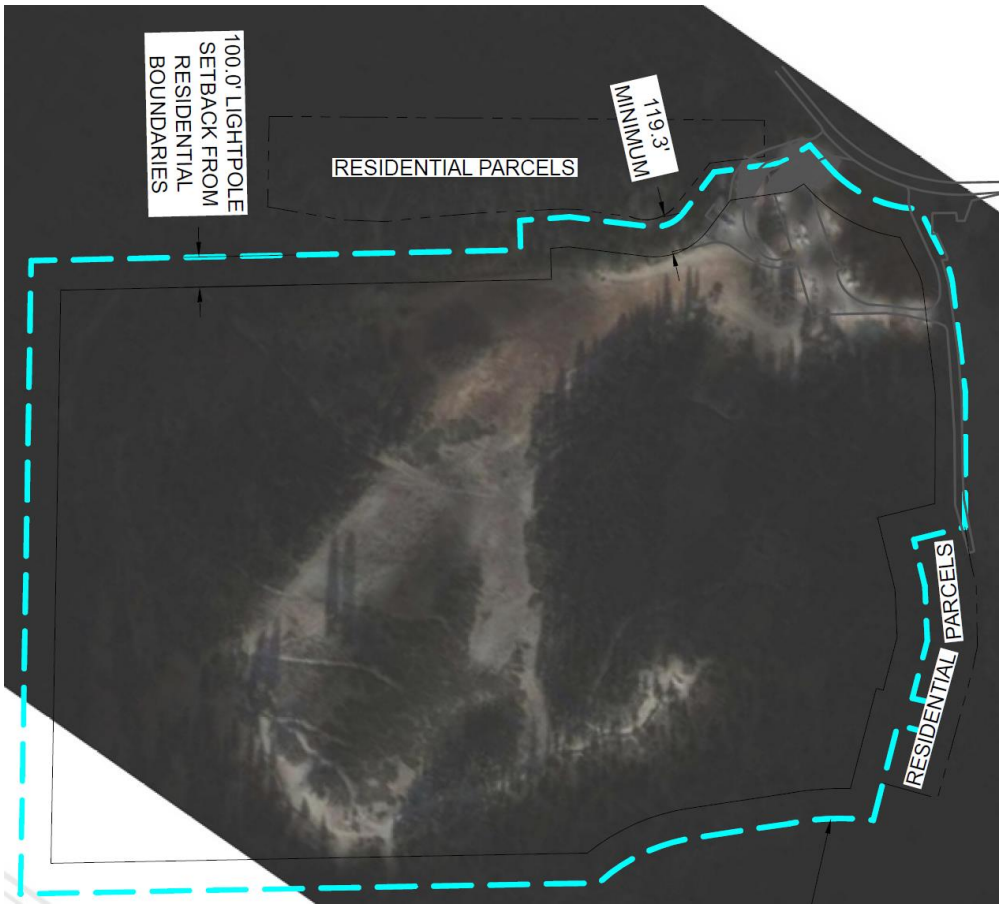
Ski Slope Lighting



Photometric Plan



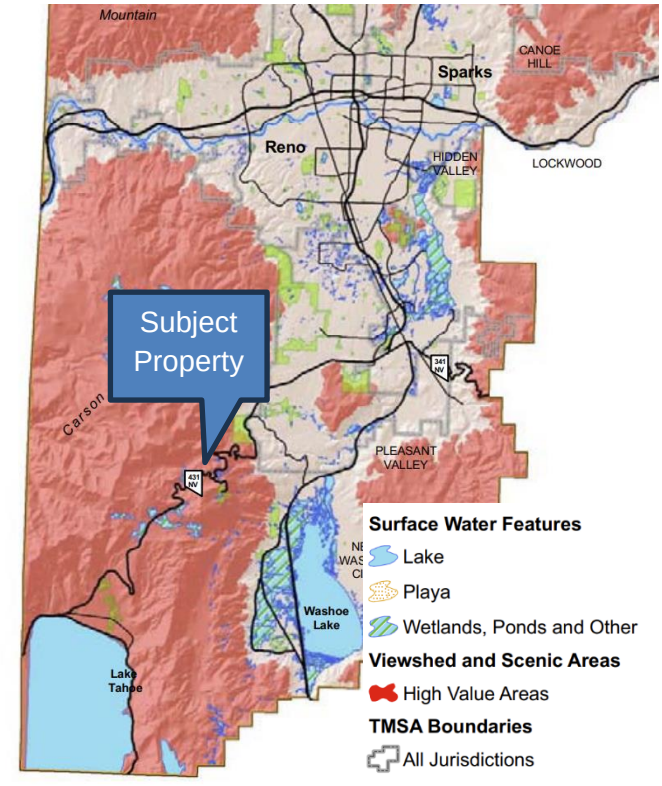
Test Light Image

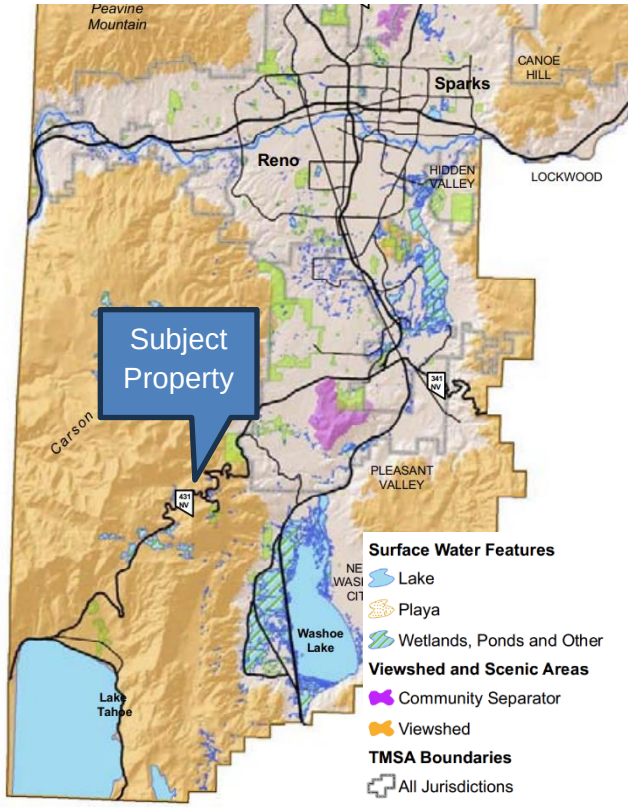


Lighting Simulation

The applicant is proposing lighting on the ski slopes for night skiing as part of their destination resort expansion. The LED lights would be mounted on 35-foot tall lighting standards. Approximately 77 lighting standards are proposed on the ski hill. The lights are proposed to operate between approximately 6:00 and 10:00 pm a maximum of 7 days a week December through April. There would also be potential for occasional operation throughout summer months for special events. The applicant has stated that this lighting would expand their operations significantly, allowing them to provide after-school skiing opportunities that are currently not available to the population they serve. As a primary training facility for Reno/Sparks high school race teams, this would allow students who wish to participate in ski racing to train without missing class time. As a non-profit ski resort, the requested expansion will increase access to skiing recreation in the region, which is central to the identity of the Forest planning area in particular.

While the lighting would provide recreation opportunities, it also would negatively impact the scenic quality of the area. As identified in the Washoe County Regional Open Space and Natural Resource Management Plan—part of Envision Washoe 2040—the subject property falls within the community viewshed and within a high value scenic area. As expanded upon later in this staff report, the master plan specifies that the subject site has exceptional scenic value and that preserving its scenic quality is of high priority in this particular area. While the impacts would be limited to the nighttime hours of lighting operation (approx. 6:00 pm – 10:00 pm, December-April), they would significantly increase lighting in a viewshed that can be seen by huge portions of Reno, Sparks, and unincorporated Washoe County. Due to the widespread impacts of the lights, the identified high scenic value of the area, and concerns about conformance with the master plan, staff is not supportive of this portion of the applicant's request.





Scenic Value and Viewshed Maps

Traffic

The proposed destination resort expansion will increase the capacity and operating hours of Sky Tavern. A traffic impact study (TIS) was therefore provided. The TIS contemplates not just the expansions proposed under this special use permit, but also future expansions that would be requested through a separate application process. The TIS therefore likely overestimates the impacts of these improvements in particular. The proposed and future improvements—including a lodge expansion and additional ski lift that are not part of this special use permit request—are estimated to generate 91 AM peak hour trips and 43 noon peak hour trips.

Even without the proposed expansion, the projected future level of service (LOS) would be D and E for some intersections at peak time, which is worse than the LOS C that is generally required by Washoe County. With the expansion, LOS for some intersections will be D and F. The intersection and turn movement with the worst projected LOS is a left turn onto SR 431 from Sky Tavern Road at the noon peak. The TIS includes an analysis of future LOS with their proposed improvement of an eastbound right-turn lane on SR 431 onto Bum's Gulch Road, which does not bring the LOS for all affected intersections to C or above. The Washoe County Division of Engineering and Capital Projects is therefore requiring an updated TIS that provides additional mitigation recommendations for those intersection turning movements with LOS E or F. The applicant shall be required to make any necessary roadway improvements to the standards and specifications of the County Engineer. These conditions of approval ensure that traffic impacts will be adequately mitigated with the development of the site. The Nevada Department of Transportation (NDOT) also provided comments aligning with the Engineering Division's, stating that permits will be needed for any required improvements in the right-of-way of SR 431. They also note that site improvements may impact drainage in the right-of-way and require further permits.

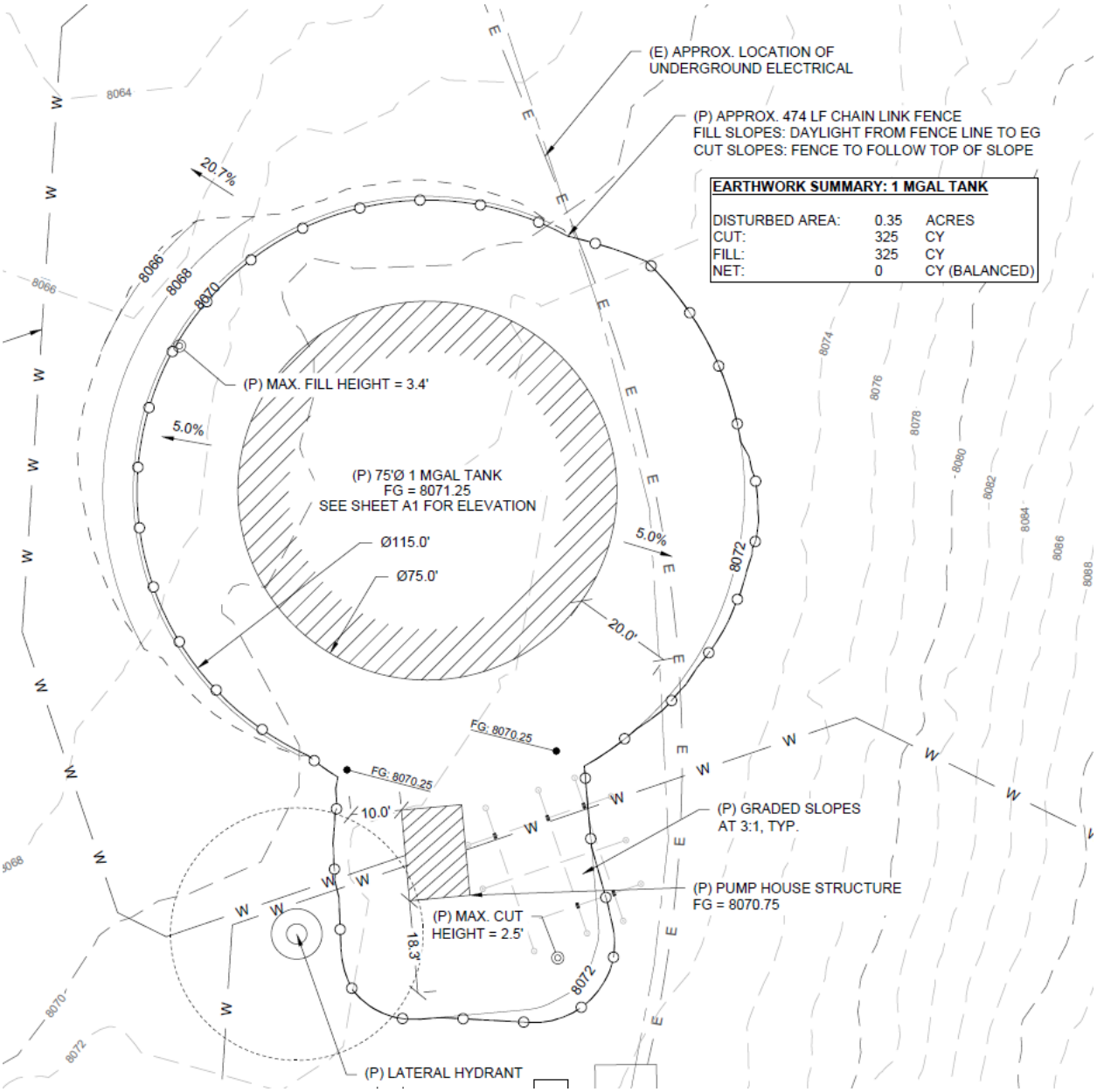
Table 7: Future Year Plus Project Intersection Level of Service

Int. ID	Intersection	Control	AM		Noon	
			Delay[1]	LOS	Delay[1]	LOS
1	Sky Tavern Road / Mt. Rose Hwy	Side Street Stop				
	Overall		0.2	A	4.3	A
	NB Left		29.7	D	**54.9**	**F**
	NB Right		25.0	D	13.5	B
	WB Left		12.0	B	9.0	A
2	Bum's Gulch Road / Old Mt. Rose Hwy / Mt. Rose Hwy	Side Street Stop				
	Overall		0.2	A	0.6	A
	NB Approach		**36.1**	**E**	31.1	D
	SB Approach		26.8	D	28.8	D
	EB Left		13.1	B	9.1	A
	WB Left		0.0	A	8.6	A
Additional analysis with the installation of a right-turn lane						
2	Bum's Gulch Road / Old Mt. Rose Hwy / Mt. Rose Hwy	Side Street Stop				
	Overall		0.2	A	0.6	A
	NB Approach		**36.1**	**E**	31.1	D
	SB Approach		20.8	C	28.1	D
	EB Left		13.1	B	9.1	A
	WB Left		0.0	A	8.6	A

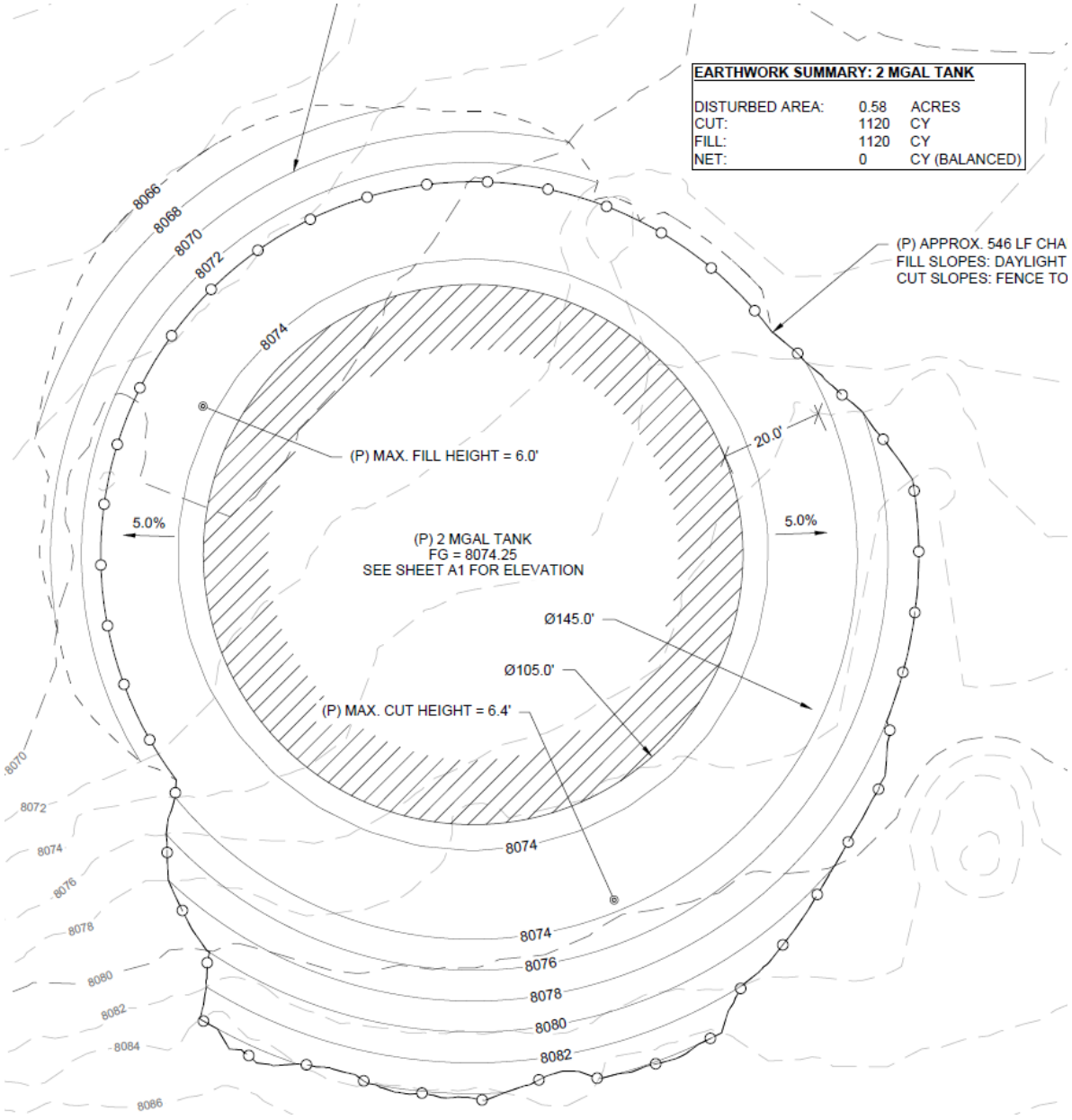
Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized and all way stop controlled intersections, and for the worst approach/movement for side street stop-controlled intersections.
Source: Headway Transportation, 2023

Major Grading

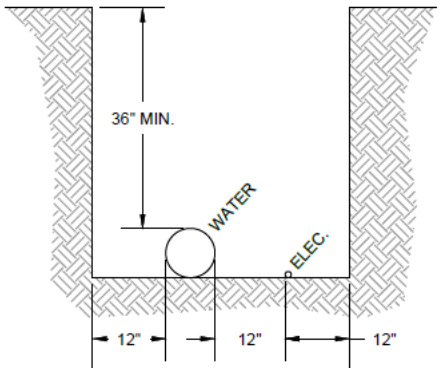
The proposed site improvements require grading that trigger the major grading thresholds and therefore require special use permit approval.



Grading Plans—1 Million Gallon Tank



Grading Plans—2 Million Gallon Tank



Grading Detail—Waterline Trench Cross Section

Proposed grading is for the construction of two water storage tanks and for the installation of waterlines and associated infrastructure for snowmaking. Cut and fill is expected to be balanced over the site, with excavated materials for the waterline trenches backfilled and compacted and cuts and fills for the water tank platforms likewise balanced. The water tanks are located on relatively flat areas and grading will have a maximum difference from existing grade of 6.5 feet. Approximately 1,445 cubic yards of cut and fill will be required for the water tanks, with .93 acres of disturbed area.

The waterline excavations account for the other approximately 5,215 cubic yards of cut and fill material, for an overall site disturbance of 6,660 cubic yards. Approximately .88 acres will be disturbed for grading associated with the water lines; the remaining portions of the 6.1 acres of disturbed area listed in the application are for the repaving of the parking area. That area will be permanently stabilized under pavement. The waterlines are partially in areas with slopes greater than 30% and thus trigger the major grading thresholds. All proposed grading complies with the standards of Article 438 and will be permanently stabilized under structures or will be revegetated. Staff is therefore supportive of this request.

As part of the grading and site improvements, approximately 69 significant trees as defined by WCC 110.412.25 will be removed. WCC 110.412.25(c) would require the proportional replacement of the lost trees. The applicant is requesting to waive that requirement. They state that the project site is already heavily vegetated and within an actively growing forest. The quantity of removed trees is very small in comparison to the total number of trees on the property (approximately 8,000), and areas that are not developed as accesses, ski runs, or other infrastructure are already generally vegetated. Staff is therefore supportive of waiving this requirement.

Article 424—Hillside Development Standards

Due to the presence of slopes 15% or greater over at least 20% of the subject property, the Hillside Development Standards of Article 424 are applicable. The applicant has provided all required application materials. Sheet C1 in the application packet (Exhibit E) shows areas that are not suitable for development, including slopes in excess of 30% and wetlands. While development is generally not allowed on slopes steeper than 30% under Article 424, WCC 110.424.20(d) allows for development in extenuating circumstances where certain requirements are met. These requirements in WCC 110.424.20(d)(1-6) include that the purposes of the Article shall not be compromised, that unstable slopes shall be stabilized, and that significant site features (ridgelines, endangered species habitat, etc.) shall be protected or mitigated. Staff has determined that these criteria are met and that there will be no detriment to the grading in the area deemed not suitable for development, which is proposed for the installation of the underground waterlines.

Article 204—Forest Area

The subject property is in the Forest planning area and therefore subject to the provisions of Article 204 of the Washoe County Development Code. Specifically, the property falls partially within the Mt. Rose Highway Scenic Roadway Corridor (hereafter referred to as “scenic corridor”). Those areas that do fall within the scenic corridor (500 feet from the centerline of Mt. Rose Highway) are subject to the provisions of WCC 110.204.05.

The only proposed site improvements within the scenic corridor are improvements to the existing parking area. No expansion is proposed to the parking lot, just repaving, striping, and lighting. However, the existing parking lot does not comply with the requirements of WCC 110.204.05(d)1 to divide parking lots over 100 spaces into smaller lots with no more than 50 spaces each, or with the requirements of WCC 110.204.05(d)(2) to landscape between the parking area and SR 431. The applicant has requested to waive these requirements. Since the parking area already exists, requiring its segmentation per WCC 110.204.05(d)(1) would increase the impact of the development. Furthermore, delineated wetlands exist between the parking area and the highway and should not be disturbed. Staff therefore supports the applicant's requests to waive these requirements.

All proposed improvements within the scenic corridor comply with the provisions of WCC 110.204.05.

Requests to Vary Standards

The applicant has requested to vary several standards in association with proposed site improvements that have already been addressed. However, due to the expansion of the destination resort use type and the non-conforming development of the site, there are other site standards applicable to the entire parcel that the applicant is requesting to waive in WCC 110.412.40. The applicant is requesting to vary specifically WCC 110.412.40(a) requiring a minimum of 20% of the developed area to be landscaped, WCC 110.412.40(b) requiring a landscaping buffer along roadways, WCC 110.412.40(c) requiring a landscaping buffer along adjoining residential uses. The applicant provided justifications for these requests in the narrative portion of their application (Exhibit E). In summary, the subject parcel is densely forested throughout and particularly along its boundaries, making additional formal landscaping unnecessary. Staff is supportive of the requests to vary these standards for the same reasons.

Master Plan Evaluation

The proposed development partially aligns and partially conflicts with the Envision Washoe 2040 (EW2040) Master Plan Forest Vision Statement as described in table 1.

Table 1: Master Plan Conformance

Vision Statement	Explanation of Conformance with Vision Statement
"The Forest area is gateway to Lake Tahoe and the Sierra Nevadas, characterized by…sweeping vistas from the Mt. Rose Highway."	The proposed development does not include any structures that will block or limit the vista from Mt. Rose Hwy. Proposed lights will change the existing vista during their hours of operation and be visible from the northeastern stretch of SR 431 and near the subject site. The vista currently contains many sources of light, including from residences, cars on Mt. Rose Hwy, and groomers at the ski resorts. However, the lighting proposed in this application would constitute a significant increase, which conflicts with this portion of the vision statement.

"The Forest area includes the Mount Rose Resort Services Area, which provides recreation-focused services and lodging."	The proposed improvements are not within the Mount Rose Resort Services Area but are for a ski resort, which is central to the identity and character of the Forest Area. The proposed development therefore aligns with this portion of the vision statement.

The development partially aligns and partially conflicts with applicable EW2040 Priority Principles & Policies as described in table 2.

Table 2: Master Plan Element Conformance Priority Principles & Policies

Master Plan Element	Priority Principles & Policies	Explanation of Conformance with Priority Principles & Policies
Regional Form & Coordination Principle 2. Utilize land use and transportation decisions to support a healthy economic base.		
	RFC2.1- Strengthen the identity of the region by encouraging land uses that both contribute to the character of the community and enable the area to sustain a viable economic base.	Sky Tavern contributes to the character of the community as a non-profit ski resort that increases accessibility to snow sports for people growing up in Washoe County. Access to recreation is identified in EW2040 as one of the key characteristics of Washoe County.
Conservation of Natural and Cultural Resources Principle 2. Coordinate development and conservation goals with State, tribal, and federal agencies.		
	NCR2.3 – Coordinate wildlife protection efforts with NDOW, USFS, USFWS, the Nevada Division of Natural Heritage, Nevada Division of Parks, Washoe County Regional Parks and Open Space.	The relevant agencies were given the opportunity to comment on this application and did not have any concerns about wildlife protection. The subject property is currently developed as a ski resort and the application requests an expansion of that use.
Adaption and Resiliency Principle 1. Limit development in the Development Constraints Area.		
	AR1.1 – Minimize development in areas with natural steep slopes.	Minimal grading for snow making infrastructure is proposed on slopes over 30%. Bigger improvements, such as water tanks and parking lots, are proposed on flatter portions of the subject site.
Open Space and Natural Resources Conservation Plan: Visual and Scenic Character		
	Goal 1 – Protect the region's visual and scenic resources.	The subject site is identified on Map 13 of the Open Space and Natural Resources Conservation Plan as having high scenic value and on Map 12 as being part of the regional viewshed. The lights proposed as part of this project will negatively impact the scenic value of this area when they are in operation (6:00-10:00 pm, up to 7 days a week, December-April). While the impact would only be during certain hours, the proposed lighting would be visible
	Goal 2 – Preserve and protect the visual integrity of our region's hillsides, ridges and hilltops.	
	Goal 3 – Preserve the remaining integrity of our region's dark night sky.	

	from huge portions of Reno, Sparks, and the unincorporated county. The requested lighting therefore does not align with these EW2040 policies. Other aspects of the project to not conflict with the policies.

The development partially aligns and partially conflicts with applicable priority principles & policies for the Forest planning area, as described in Table 3.

Table 3: Master Plan Conformance with Forest Priority Principles & Policies

Priority Principles & Policies	Explanation of Conformance with Priority Principles & Policies
Conservation of Natural and Cultural Resources Principle 1. Maintain scenic resources within the County.	
NCR1.1 – Collaborate with all planning partners to identify and protect the region's significant visual gateways and viewsheds including ridge lines, buttes, mountains, and riparian corridors.	Partner agencies were given the opportunity to review and comment on this proposal, as it falls within an identified community viewshed and significant visual gateway. The Nevada Department of Transportation (NDOT) provided conditions in alignment with their policies, as did Washoe County Parks and Open Space. Review of the proposal therefore aligns with this policy.
NCR1.2 – Maintain dark night skies.	The proposed lights for night skiing will impact dark night skies during their operation. While lights will be down shielded and limited to the subject property, the illumination will still be visible from a large geographic area. The proposed lights will therefore have a negative impact on maintaining dark night skies.
Conservation of Natural and Cultural Resources Principle 4. Protect and improve water resources.	
NCR4.2 – Buffer water bodies, seeps, springs, playas, wetlands, and riparian areas from development and special use permits.	Wetlands exist on the project site and adjacent to proposed development. However, they exist next to a currently developed area that is proposed to be maintained but not expanded under this permit. Condition 2.a ensures that best management practices will be used for all on-site grading, which will protect the wetlands.
Land Use Principle 4. Design communities and neighborhoods to create a strong sense of place.	
Forest Policy – Support expansion and modernization of the services and facilities of the historic Mount Rose Ski area and the Mount Rose Resort Services Area, consistent with the Regional Plan.	While the subject site is not within the Mount Rose Ski Resort Services Area, this Forest planning area policy indicates a value of the historic ski resorts in the area, which includes Sky Tavern. The requested expansion of Sky Tavern is within the requirements of the Regional Plan and would modernize and improve the facilities.

As identified in the applicant's narrative, outdoor recreation and access is one of the four cross-cutting themes of EW2040 and a priority for the entire community. Conservation of natural resources—including scenic resources—is likewise widely valued throughout the county and considered a cross-cutting theme. This project exemplifies how these two values can at times be in conflict. The addition of lights for night skiing will significantly improve outdoor recreation and access to skiing for kids throughout the county. However, it will also have a negative impact on scenic resources. Areas of high scenic and recreational value often overlap, as is generally the case in the Forest Planning Area and specifically the case for this project. EW2040 does not provide specific direction on how to weigh these values when they are in conflict. However, the Forest planning area section is very clear about the value it places on scenic and natural resources, as shown in the priority principles and policies and in the following description of existing and historic conditions: "The Forest planning area is known for its scenic and natural resources, consisting of spectacular mountain vistas, abundant wildlife, and a prevalent feeling of openness." Furthermore, as mentioned above, the subject site is part of the regional viewshed, visible from huge portions of Reno, Sparks, and the unincorporated county. Because of the specific scenic value of this particular site, staff is recommending denial on the request to add lights for night skiing and posits that it is not consistent with the master plan. Staff supports other aspects of the project to support and expand access to outdoor recreation.

Reviewing Agencies

The following agencies/individuals received a copy of the project application for review and evaluation.

Agencies	Sent to Review	Responded	Provided Conditions	Contact
Army Corps of Engineers	X			
FS - Carson Ranger District	X	X		Kalie Crews, kalie.crews@usda.gov
NDF - Endangered Species	X			
NDOT (Transportation)	X	X	X	Jeffery Graham, jeffrey.graham@dot.nv.gov
NDOW (Wildlife)	X	X		Katie Andrle, kmandrle@ndow.org
NV Water Resources	X	X		Steve Shell, sshell@water.nv.gov
Washoe County Building & Safety	X			
Washoe County Parks & Open Space	X	X	X	Faye-Marie Pekar, fpekar@washoecounty.gov
Washoe County Sewer	X			
Washoe County Traffic	X	X		Mitch Fink, mfink@washoecounty.gov
Washoe County Water Resource Planning	X			
Washoe County Water Rights Manager (All Apps)	X	X		Timber Weiss, tweiss@washoecounty.gov
Washoe County Engineering (Land Development) (All Apps)	X	X	X	Rob Wimer, rwimer@washoecounty.gov
Washoe County Engineering & Capital Projects Director (All Apps)	X			
NNPH Air Quality	X			
NNPH EMS	X	X		Sabrina Brasuell, EMSprogram@nnph.org
NNPH Environmental Health	X	X		Jim English, jenglish@nnph.org
TMFPD	X	X	X	Brittany Lemon, blemon@ttfpd.us
Regional Transportation Commission	X			
Nevada State Historic Preservation	X			
NV Energy	X			
Truckee Meadows Water Authority	X			

All conditions required by the contacted agencies can be found in Exhibit A, Conditions of Approval.

Staff Comment on Required Findings

WCC Section 110.810.30, Article 810, *Special Use Permits*, requires that all of the following findings be made to the satisfaction of the Washoe County Board of Adjustment before granting approval of the request. Staff has completed an analysis of the special use permit application and has determined that the proposal is in compliance with the required findings as follows.

(a) Consistency. That the proposed use is consistent with the action programs, policies, standards and maps of the Master Plan and the Forest Area Plan.

Staff Comment: The majority of the proposed development is consistent with the action programs, policies, standards and maps of the master plan. However, the request to add lighting for night skiing conflicts with several policies regarding maintaining high value scenic resources and limiting impacts to dark night skies. While the proposed lights would support outdoor recreation, one of the Envision Washoe 2040 cross-cutting themes, it would be in direct opposition of policies

specific to the Forest area and the subject property that prioritize maintaining scenic value. Staff has therefore only recommended approval for the other portions of this request that are consistent with the master plan. Staff is recommending denial on the request to add lighting for night skiing.

(b) Improvements. That adequate utilities, roadway improvements, sanitation, water supply, drainage, and other necessary facilities have been provided, the proposed improvements are properly related to existing and proposed roadways, and an adequate public facilities determination has been made in accordance with Division Seven.

Staff Comment: There are adequate utilities, sanitation, water supply, drainage, and other necessary facilities for all proposed parts of this development. Roadway facilities are currently insufficient but would be required to be improved to meet county and Nevada Department of Transportation standards as part of the conditions of approval proposed. This finding is therefore met and an adequate public facilities determination can be made in accordance with Division Seven.

(c) Site Suitability. That the site is physically suitable for a destination resort, utility services, and major grading, and for the intensity of such a development.

Staff Comment: The site is physically suitable for a destination resort, utility services, and major grading. The two proposed uses already exist on the subject property and are proposed to be expanded in a way that is compatible with the physical site. All structures are proposed on flatter areas of the subject site, and grading on slopes steeper than 30% are to facilitate the installation of underground snowmaking infrastructure and will be stabilized and revegetated. The site is therefore physically suitable.

(d) Issuance Not Detrimental. That issuance of the permit will not be significantly detrimental to the public health, safety or welfare; injurious to the property or improvements of adjacent properties; or detrimental to the character of the surrounding area.

Staff Comment: The majority of the requests in this application will not be significantly detrimental to the public health, safety or welfare; injurious to the property or improvements of adjacent properties; or detrimental to the character of the surrounding area. In fact, ski resorts are a stated aspect of the area character as identified in the Envision Washoe 2040 master plan, and the expansion of Sky Tavern will generally support that character. However, the proposed lights for night skiing will be detrimental to the character of the surrounding area. The subject property is visible from large portions of Reno, Sparks, and unincorporated Washoe County, and the proposed lights would be detrimental to a regional viewshed and identified area of high scenic value. Furthermore, it would be impactful to the Mount Rose Scenic Corridor, which is an identified scenic gateway to the Sierra Nevada Mountain Range and to Lake Tahoe. Staff is therefore recommending denial on the request for lighting for night skiing.

(e) Effect on a Military Installation. Issuance of the permit will not have a detrimental effect on the location, purpose or mission of the military installation.

Staff Comment: There is no military installation in the vicinity of the subject property; this finding is therefore met.

Recommendation

After a thorough analysis and review, Special Use Permit Case Number WSUP23-0016 is being recommended for partial approval with conditions. Staff offers the following motion for the Board's consideration.

Motion

I move that, after giving reasoned consideration to the information contained in the staff report and information received during the public hearing, the Washoe County Board of Adjustment partially approve Special Use Permit Case Number WSUP23-0016 for Sky Tavern Junior Ski Area and to approve the request to vary standards WCC 110.410.25(c) & (f) & (g)(3), WCC 110.412.25(c), WCC 110.412.40(a) & (b), and WCC 110.204.05(d)(1) & (2), but deny the request to add lighting for night skiing; with the conditions included as Exhibit A to this matter, having made all five findings in accordance with Washoe County Code Section 110.810.30:

(a) Consistency. That the proposed use is consistent with the action programs, policies, standards and maps of the Master Plan and the Forest Area Plan;

(b) Improvements. That adequate utilities, roadway improvements, sanitation, water supply, drainage, and other necessary facilities have been provided, the proposed improvements are properly related to existing and proposed roadways, and an adequate public facilities determination has been made in accordance with Division Seven;

(c) Site Suitability. That the site is physically suitable for a destination resort, utility services, and major grading, and for the intensity of such a development;

(d) Issuance Not Detrimental. That issuance of the permit will not be significantly detrimental to the public health, safety or welfare; injurious to the property or improvements of adjacent properties; or detrimental to the character of the surrounding area;

(e) Effect on a Military Installation. Issuance of the permit will not have a detrimental effect on the location, purpose or mission of the military installation.

Appeal Process

Board of Adjustment action will be effective 10 calendar days after the written decision is filed with the Secretary to the Board of Adjustment and mailed to the applicant, unless the action is appealed to the Washoe County Board of County Commissioners, in which case the outcome of the appeal shall be determined by the Washoe County Board of County Commissioners. Any appeal must be filed in writing with the Planning and Building Division within 10 calendar days from the date the written decision is filed with the Secretary to the Board of Adjustment and mailed to the applicant.

Applicant:	Sky Tavern Junior Ski Area, mike.oehlert@skytavern.com
Property Owner:	City of Reno
Representatives:	Robison Engineering Company, Inc, nathan@robisoneng.com

Conditions of Approval

Special Use Permit Case Number WSUP23-0016

The project approved under Special Use Permit Case Number WSUP23-0016 shall be carried out in accordance with the conditions of approval granted by the Board of Adjustment on April 4, 2024. Conditions of approval are requirements placed on a permit or development by each reviewing agency. These conditions of approval may require submittal of documents, applications, fees, inspections, amendments to plans, and more. These conditions do not relieve the applicant of the obligation to obtain any other approvals and licenses from relevant authorities required under any other act.

Unless otherwise specified, all conditions related to the approval of this special use permit shall be met or financial assurance must be provided to satisfy the conditions of approval prior to issuance of a grading or building permit. The agency responsible for determining compliance with a specific condition shall determine whether the condition must be fully completed or whether the applicant shall be offered the option of providing financial assurance. All agreements, easements, or other documentation required by these conditions shall have a copy filed with the County Engineer and the Planning and Building Division.

Compliance with the conditions of approval related to this special use permit is the responsibility of the applicant, his/her successor in interest, and all owners, assignees, and occupants of the property and their successors in interest. Failure to comply with any of the conditions imposed in the approval of the special use permit may result in the institution of revocation procedures.

Washoe County reserves the right to review and revise the conditions of approval related to this Special Use Permit should it be determined that a subsequent license or permit issued by Washoe County violates the intent of this approval.

For the purpose of conditions imposed by Washoe County, “may” is permissive and “shall” or “must” is mandatory.

Conditions of approval are usually complied with at different stages of the proposed project. Those stages are typically:

- Prior to permit issuance (i.e., grading permits, building permits, etc.).
- Prior to obtaining a final inspection and/or a certificate of occupancy.
- Prior to the issuance of a business license or other permits/licenses.
- Some “ conditions of approval” are referred to as “operational conditions.” These conditions must be continually complied with for the life of the project or business.

The Washoe County Commission oversees many of the reviewing agencies/departments with the exception of the following agencies.

- **The DISTRICT BOARD OF HEALTH, through the Washoe County Health District, has jurisdiction over all public health matters in the Health District. Any conditions set by the Health District must be appealed to the District Board of Health.**

FOLLOWING ARE CONDITIONS OF APPROVAL REQUIRED BY THE REVIEWING AGENCIES. EACH CONDITION MUST BE MET TO THE SATISFACTION OF THE ISSUING AGENCY.

Washoe County Planning and Building Division

1. The following conditions are requirements of Planning and Building, which shall be responsible for determining compliance with these conditions.

   Contact Name – Kat Oakley, Senior Planner, 775.328.3628, koakley@washoecounty.gov

   a. The applicant shall attach a copy of the action order approving this project to all permits and applications (including building permits) applied for as part of this special use permit.

   b. The applicant shall include a condition response memorandum with each subsequent permit application. That memorandum shall list each condition of approval, shall provide a narrative describing how each condition has been complied with, and the location of the information showing compliance with each condition within the improvement plan set that has been submitted.

   c. The applicant shall demonstrate substantial conformance to the plans approved as part of this special use permit.

   d. The applicant shall submit construction plans, with all information necessary for comprehensive review by Washoe County, and initial building permits shall be issued within five years from the date of approval by Washoe County. The applicant shall complete construction within the time specified by the building permits.

   e. A note shall be placed on all construction drawings and grading plans stating:

      NOTE

      Should any cairn or grave of a Native American be discovered during site development, work shall temporarily be halted at the specific site and the Sheriff's Office as well as the State Historic Preservation Office of the Department of Conservation and Natural Resources shall be immediately notified per NRS 383.170.

   f. Construction activities shall be limited to the hours between 7am to 7pm, Monday through Saturday only. Any construction machinery activity or any noise associated with the construction activity are also limited to these hours.

   g. All proposed structures shall have non-reflective siding and roofing and be painted to blend in with the surroundings.

   h. The development shall not be required to meet the standards of WCC 110.410.25(c), (f), or (g)(3); those of WCC 110.412.25(c); those of WCC 110.412.40; or those of WCC 110.204.05(d)(1) or (2).

   i. The following **Operational Conditions** shall be required for the life of the business:

      i. This special use permit shall remain in effect until or unless it is revoked or is inactive for one year.

      ii. Failure to comply with any of the conditions of approval shall render this approval out of conformance and subject to revocation.

      iii. The applicant and any successors shall direct any potential purchaser/operator of the site and/or the administrative permit to meet with Planning and Building to review conditions of approval prior to the final sale of the site and/or the administrative permit. Any subsequent purchaser/operator of the site and/or the

administrative permit shall notify Planning and Building of the name, address, telephone number, and contact person of the new purchaser/operator within 30 days of the final sale.

iv. This special use permit shall remain in effect as long as the business is in operation and maintains a valid business license.

v. Any site lighting shall not be operational later than 10:00 pm.

Washoe County Engineering and Capital Projects

2. The following conditions are requirements of the Engineering Division, which shall be responsible for determining compliance with these conditions.

   Contact Name – Robert Wimer, P.E., 775.328.2059, rwimer@washoecounty.gov

   a. A complete set of construction improvement drawings, including an on-site grading plan, shall be submitted when applying for a building/grading permit. Grading shall comply with best management practices (BMP's) and shall include detailed plans for grading, site drainage, erosion control (including BMP locations and installation details), slope stabilization, and mosquito abatement. Placement or removal of any excavated materials shall be indicated on the grading plan. Silts shall be controlled on-site and not allowed onto adjacent property.

   b. Applicant shall indicate on the plans where exported materials will be taken and a grading permit shall be obtained for the import site.

   c. Exported materials shall not be sold without the proper business license.

   d. A detailed hydrology/hydraulic report prepared by a registered engineer shall be submitted to the Engineering Division for review and approval. The report shall include the locations, points of entry and discharge, flow rates and flood limits of all 5- and 100-year storm flows impacting both the site and offsite areas and the methods for handling those flows. The report shall include all storm drainpipe and ditch sizing calculations and a discussion of and mitigation measures for any impacts on existing offsite drainage facilities and properties. Additionally, any increase in storm water runoff resulting from the development and based upon the 5- and 100-year storms shall be detained on site and attenuated to existing flow rates for discharge to the satisfaction of the County Engineer.

   e. The following note shall be added to the construction drawings; "All properties, regardless of if they are located within or outside of a FEMA designated flood zone, may be subject to flooding. The property owner is required to maintain all drainage easements and natural drainages and not perform or allow unpermitted and unapproved modifications to the property that may have detrimental impacts to surrounding properties."

3. The following conditions are requirements of the Engineering and Capital Projects, which shall be responsible for determining compliance with these conditions.

   Contact Name – Mitchell Fink, P.E., 775.328.2050, mfink@washoecounty.gov

   a. All Washoe County roadway improvements necessary (including but not limited to, curb, gutter, sidewalk, signing and striping, driveway access, and street lighting) to serve the project shall be designed and constructed to County standards and specifications to the satisfaction of the County Engineer.
   b. An updated traffic report shall be submitted to provide additional analysis and mitigation recommendations, specifically addressing the safety of the left turn movements onto and from the Mount Rose highway, the intersection turning movements exhibiting LOS E and

F, the driveway conflict with the proposed right turn pocket length not meeting NDOT standards, and any additional requirements by NDOT. The County Engineer shall be responsible for determining compliance with this condition and the traffic improvements that are required in association with NDOT right of way.

c. An approved occupancy permit shall be obtained from the Nevada Department of Transportation (NDOT), for any construction activities, improvements, and for access to, from, or under roads and highways maintained by NDOT and a copy of said permit sent to the Engineering Division.

Washoe County Utilities

4. The following conditions are requirements of Utilities, which shall be responsible for determining compliance with these conditions.

   Contact Name – Katrina Pascual, 775-954-7352, kpascual@washoecounty.gov; Alexander Mayorga, P.E., 775.328.2313, amayorga@washoecounty.gov,

   a. The applicant shall conform to all conditions imposed by intergovernmental agreements required to provide sewer service to the subject project, and, if required, be a party to any such agreements.

Truckee Meadows Fire Protection District

5. The following condition is a requirement of the Truckee Meadows Fire Protection District, which shall be responsible for determining compliance with this condition.

   Contact Name – Brittany Lemon, Fire Captain, 775.326.6079, blemon@tmfpd.us

   a. This project shall meet and comply with all requirements of currently adopted TMFPD fire codes, ordinances, and standards at the time of construction to include infrastructure for fire apparatus access roads and water supply. https://tmfpd.us/fire-code/

Nevada Department of Transportation

6. The following condition is a requirement of the Nevada Department of Transportation, which shall be responsible for determining compliance with this condition.

   Contact Name – Jeff Graham, P.E., 775.834-8382, Jeffrey.graham@dot.nv.gov

   a. The access to SR 431 from existing approaches may require improvements to meet current requirements of NDOT's Access Management System and Standards to accommodate the increased traffic volumes associated with the expansion. A review and acceptance of the traffic impact study will be required prior to the permit application for roadway improvements in NDOT right of way.

   b. All work proposed within SR 431 right of way will require an encroachment permit and must comply with NDOT's Standard Plans, Access Management System and Standards, Terms and Conditions Relating to Right-of-Way Occupancy Permits, and the Drainage Manual current version at the time of application. Please contact the NDOT District II Permits Office at (775) 834-8330 for information about obtaining NDOT occupancy permits.

   c. Since the site is located directly adjacent to SR 431 and has potential to effect area drainage patterns, the applicant may be required to obtain an occupancy permit from NDOT for the drainage encroachment.

Washoe County Regional Parks and Open Space

7. The following condition is a requirement of Washoe County Regional Parks and Open Space, which shall be responsible for determining compliance with this condition.

   Contact Name – Faye-Marie Pekar, Park Planner, 775.328.3623, fpekar@washoecounty.gov

   a. Consistent with the Mount Rose Scenic Byway Corridor Management Plan and 2008 Regional Open Space and Natural Resource Plan goals, it is recommended that the applicant use best practices for dark sky compliance.

   b. Any earthen materials imported to the site shall be "certified weed free" to prevent the spread of noxious and invasive weeds.

   c. The project shall comply with Washoe County Code section 110.412.67, Revegetation.

   d. All undeveloped areas disturbed as the result of project activities shall be revegetated utilizing a native seed mix as reviewed and approved by the Washoe Storey Conservation District and/or Washoe County Regional Parks and Open Space.

Northern Nevada Public Health

8. The following conditions are requirements of Northern Nevada Public Health, which shall be responsible for determining compliance with these conditions. The District Board of Health has jurisdiction over all public health matters in Northern Nevada Public Health. Any conditions set by NNPH must be appealed to the District Board of Health.

   Contact Name – Jim English, EHS Supervisor, 775.900.7239, jenglish@nnph.org

   a. EHS only reviewed the application for the purpose of allowing the issuance of a special permit for the expansion of the ski area. This review does not approve the site plan or proposed improvements as depicted.

   b. If the application is approved, the future building plans and permits must be reviewed and approved by EHS at which time the plans must meet all applicable sections of the current Washoe County District Board of health Regulations governing well construction.

   c. If the application is approved, future building plans must clearly identify whether the proposed water infrastructure is independent of the existing water system. Based on how the proposed new water infrastructure is proposed will determine if a separate water project is required pursuant to NAC 445A.

*** End of Conditions ***

Oakley, Katherine

From: Program, EMS
Sent: Monday, September 25, 2023 10:23 AM
To: Oakley, Katherine
Cc: Program, EMS
Subject: FW: September Agency Review Memo II
Attachments: September Agency Review Memo II.pdf

Hello,

The EMS Program has reviewed the September Agency Review Memo II - Special Use Permit Case Number WSUP23-0016 (Sky Tavern Junior Ski Program Expansion) - and has no concerns or questions at this time based on the information provided.

Of note, the closest listed hospital facilities should be listed as: Renown South Meadows and not Renown Health. Renown Health speaks to the entire Renown Health system and not individual locations such as Renown South Meadows or Renown Regional Medical Center.

Thank you,

Sabrina.

NORTHERN NEVADA Public Health

Sabrina Brasuell
EMS Coordinator
Epidemiology and Public Health Preparedness

O: 775-326-6043
1001 E Ninth St. Bldg. B Reno, NV 89512

NNPH.org

Click here to take our customer satisfaction survey

PLEASE NOTE: My last day in the role of EMS Coordinator is October 10th, 2023. **After October 10th, 2023,** please send non-urgent emsprogram@nnph.org

Date: September 25, 2023

To: Kat Oakley, Planner

From: Janelle K. Thomas, P.E., C.F.M., Senior Licensed Engineer
Robert Wimer, P.E., Licensed Engineer

Re: Special Use Permit for ***Sky Tavern Junior Program Expansion WSUP23-0016***
21130 Mount Rose Highway
APN 048-050-03

GENERAL PROJECT DISCUSSION

Washoe County Engineering staff has reviewed the above referenced application. The Special Use Permit is for the construction of a new snowmaking system which will include the construction of two new water wells, pump houses, and water lines to supply two large water storage tanks and is located on approximately 143.07 acres southwest of the intersection of Mt. Rose Highway and Sky Tavern Road. The Engineering and Capital Projects Division recommends approval with the following comments and conditions of approval which supplement applicable County Code and are based upon our review of the site and the application prepared by Robison Engineering Company, Inc. The County Engineer shall determine compliance with the following conditions of approval.

For questions related to sections below, please see the contact name provided.

GENERAL CONDITIONS
Contact Information: Robert Wimer, P.E. (775) 328-2059

1. A complete set of construction improvement drawings, including an on-site grading plan, shall be submitted when applying for a building/grading permit. Grading shall comply with best management practices (BMP's) and shall include detailed plans for grading, site drainage, erosion control (including BMP locations and installation details), slope stabilization, and mosquito abatement. Placement or removal of any excavated materials shall be indicated on the grading plan. Silts shall be controlled on-site and not allowed onto adjacent property.
2. Applicant shall indicate on the plans where exported materials will be taken and a grading permit shall be obtained for the import site.
3. Exported materials shall not be sold without the proper business license.

DRAINAGE (COUNTY CODE 110.416, 110.420, and 110.421)
Contact Information: Robert Wimer, P.E. (775) 328-2059

1. A detailed hydrology/hydraulic report prepared by a registered engineer shall be submitted to the Engineering Division for review and approval. The report shall include the locations, points of entry and discharge, flow rates and flood limits of all 5- and 100-year storm flows impacting both the site and offsite areas and the methods for handling those flows. The

report shall include all storm drainpipe and ditch sizing calculations and a discussion of and mitigation measures for any impacts on existing offsite drainage facilities and properties. Additionally, any increase in storm water runoff resulting from the development and based upon the 5- and 100-year storms shall be detained on site and attenuated to existing flow rates for discharge to the satisfaction of the County Engineer.

2. The following note shall be added to the construction drawings; "All properties, regardless of if they are located within or outside of a FEMA designated flood zone, may be subject to flooding. The property owner is required to maintain all drainage easements and natural drainages and not perform or allow unpermitted and unapproved modifications to the property that may have detrimental impacts to surrounding properties."

TRAFFIC AND ROADWAY (COUNTY CODE 110.436)
Contact Information: Mitchell Fink, P.E. (775) 328-2050

Conditions:

1. All Washoe County roadway improvements necessary (including but not limited to, curb, gutter, sidewalk, signing and striping, driveway access, and street lighting) to serve the project shall be designed and constructed to County standards and specifications to the satisfaction of the County Engineer.
2. An updated traffic report shall be submitted to provide additional analysis and mitigation recommendations, specifically addressing the safety of the left turn movements onto and from the Mount Rose highway, the intersection turning movements exhibiting LOS E and F, the driveway conflict with the proposed right turn pocket length not meeting NDOT standards, and any additional requirements by NDOT. The County Engineer shall be responsible for determining compliance with this condition and the traffic improvements that are required in association with NDOT right of way.
3. An approved occupancy permit shall be obtained from the Nevada Department of Transportation (NDOT), for any construction activities, improvements, and for access to, from, or under roads and highways maintained by NDOT and a copy of said permit sent to the Engineering Division.

UTILITIES (County Code 422 & Sewer Ordinance)
Contact Information: Alexander Mayorga, P.E. (775) 328-2313

Conditions:

1. The applicant shall conform to all conditions imposed by intergovernmental agreements required to provide sewer service to the subject project, and, if required, be a party to any such agreements.

Oakley, Katherine

From: Lemon, Brittany
Sent: Tuesday, September 19, 2023 10:07 AM
To: Oakley, Katherine
Cc: Way, Dale
Subject: WSUP23-0016 (Sky Tavern Junior Ski Program Expansion) Conditions of Approval

Hi Kat,

"This project shall meet and comply with all requirements of currently adopted TMFPD fire codes, ordinances, and standards at the time of construction to include infrastructure for fire apparatus access roads and water supply." https://tmfpd.us/fire-code/. .

Thank you!

Brittany Lemon
Fire Captain - Fire Prevention | Truckee Meadows Fire & Rescue
blemon@tmfpd.us | Office: 775.326.6079 | Cell: 775.379.0584
3663 Barron Way, Reno, NV 89511

"Committed to excellence, service, and the protection of life and property in our community"

Oakley, Katherine

From: Albarran, Adriana
Sent: Tuesday, September 19, 2023 4:56 PM
To: Oakley, Katherine
Subject: FW: September Agency Review Memo II

For Sky Tavern.

Regards,

Adriana Albarran
Office Support Specialist, Planning & Building Division | Community Services Department
aalbarran@washoecounty.gov | Direct Line: 775.328.2721
My working hours: Monday-Friday 8:30am to 5:00pm
Visit us first online: www.washoecounty.gov/csd
Planning Division: 775.328.6100 | Planning@washoecounty.gov
CSD Office Hours: Monday-Friday 8:00am to 4:00pm
1001 East Ninth Street, Reno, NV 89512

Have some kudos to share about a Community Services Department employee or experience?
Submit a Nomination

From: Crews, Kalie - FS, NV <kalie.crews@usda.gov>
Sent: Tuesday, September 19, 2023 4:53 PM
To: Albarran, Adriana <AAlbarran@washoecounty.gov>
Cc: Zumstein, Matthew - FS, NV <matthew.zumstein@usda.gov>; Wilmot, Kevin - FS, NV <kevin.wilmot@usda.gov>
Subject: RE: September Agency Review Memo II

[**NOTICE:** This message originated outside of Washoe County -- **DO NOT CLICK** on **links** or open **attachments** unless you are sure the content is safe.]

Hi Adriana.

We have reviewed the applications. We don't have any concerns. If possible, it would be helpful if the county could send these over with a map showing the locations, then we could easily discern these or have the GIS shop overlay the parcel maps.

Thanks for the opportunity to review the applications.

Kalie

Kalie Crews, M.A.
Deputy District Ranger (Acting)
Forest Service
Humboldt-Toiyabe National Forest, Carson Ranger District
p: 775-884-8108
kalie.crews@usda.gov

NORTHERN NEVADA Public Health | Environmental Health

September 25, 2023

Washoe County Community Services
Planning and Development Division

RE: Sky Tavern Junior Ski Program Expansion; 048-050-03
Special Use Permit; WSUP23-0016

Dear Washoe County Staff:

The following conditions are requirements of Northern Nevada Public Health (NNPH), Environmental Health Division, (EHS) which shall be responsible for determining compliance with these conditions.

Contact Name – James English - jenglish@washoecounty.us

a) Condition #1: EHS has reviewed the referenced application and notes the parcel is serviced by a public water system and community sewerage system.

b) Condition #2: EHS only reviewed the application for the purpose of allowing the issuance of a special permit for the expansion of the ski area. This review does not approve the site plan or proposed improvements as depicted.

c) Condition #3: If the application is approved, the future building plans and permits must be reviewed and approved by EHS at which time the plans must meet all applicable sections of the current Washoe County District Board of Health Regulations Govering Well Construction.

d) Condition #4: If the application is approved, future building plans must clearly identify whether the proposed water infrastructure is independent of the existing water system. Based on how the proposed new water infrastructure is proposed will determine if a separate water project is required pursuant to NAC 445A.

If you have any questions or would like clarification regarding the foregoing, please contact James English, EHS Supervisor at jenglish@washoecounty.us regarding all NNPH comments.

Sincerely,

James English, REHS, CP-FS
EHS Supervisor
Environmental Health Services
Northern Nevada Public Health

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
310 Galletti Way
Sparks, Nevada 89431

JOE LOMBARDO
Governor

TRACY LARKIN THOMASON, P.E.
Director

September 21, 2023

Washoe County Planning Division
1001 E. 9th St,
Reno, NV 89512
Attention: Kat Oakley– Planner

SENT VIA ELECTRONIC MAIL

RE: Sky Tavern Ski Program Expansion - **Case Number WSUP23-0016**

Dear Ms. Oakley,

Nevada Department of Transportation (NDOT) District II staff has reviewed the application received via e-mail on August 18th, 2023 and provides comments accordingly.

Sky Tavern Ski Program Expansion - For hearing, discussion, and possible action to approve a special use permit for an expansion to the Sky Tavern Junior Ski Area, including a utility services use type for the instillation of snowmaking infrastructure including 1-million and 2-million gallon water storage tanks, approximately 11,000 linear feet of snowmaking water supply piping, and two well and pump houses; an expansion of the destination resort use type to expand site parking and lighting; a request to vary certain landscaping standards of WCC 110.412; and associated major grading including approximately 6,600 cy of cut and 6.1 acres of disturbed area.

NDOT comments:

1. The project is directly adjacent to Mt Rose Highway which is an NDOT maintained road that is officially designated as SR 431 and functionally classified as a Minor Arterial.

2. The access to SR 431 from existing approaches may require improvements to meet current requirements of NDOT's Access Management System and Standards to accommodate the increased traffic volumes associated with the expansion. A review and acceptance of the traffic impact study will be required prior to the permit application for roadway improvements in NDOT right of way.

3. All work proposed within SR 431 right of way will require an encroachment permit and must comply with NDOT's Standard Plans, Access Management System and Standards, Terms and Conditions Relating to Right-of-Way Occupancy Permits, and the Drainage Manual current version at the time of application. Please contact the NDOT District II Permits Office at (775) 834-8330 for information about obtaining NDOT occupancy permits.

4. Since the site is located directly adjacent to SR 431 and has the potential to effect area drainage patterns, the applicant may be required to obtain an occupancy permit from NDOT for the drainage encroachment.

5. This letter does not provide for approval or disapproval of any improvements proposed by the project. NDOT review during the occupancy permit process may result in modification to the proposed improvements or denial.

6. The State defers to municipal government for land use development decisions. Public involvement for community development related improvements within NDOT right of way should be considered during the municipal land use development process. Significant improvements proposed within NDOT right of way may require additional public involvement. It is the responsibility of the applicant to perform such additional public involvement.

Thank you for the opportunity to review this application. NDOT reserves the right to incorporate further changes and/or comments as these applications and design reviews progress. Should you have any questions, please contact Jeff Graham at (775) 834-8382.

Sincerely,

DocuSigned by:
Jeff Freeman
EEF9C06ADD034C7...

Jeff Freeman, PE
Engineering Services Manager
District II

JF:ms

Cc: Bhupinder Sandhu – Acting DII District Engineer
Jeff Graham – Traffic Engineer
District II Traffic Engineering Distribution List
Washoe County Planning Division
File

Oakley, Katherine

From: Albarran, Adriana
Sent: Thursday, September 21, 2023 9:40 AM
To: Oakley, Katherine; Stark, Katherine; Bronczyk, Christopher
Subject: FW: September Agency Review Memo II

For your cases.

Regards,

Adriana Albarran
Office Support Specialist, Planning & Building Division | Community Services Department
aalbarran@washoecounty.gov | Direct Line: 775.328.2721
My working hours: Monday-Friday 8:30am to 5:00pm
Visit us first online: www.washoecounty.gov/csd
Planning Division: 775.328.6100 | Planning@washoecounty.gov
CSD Office Hours: Monday-Friday 8:00am to 4:00pm
1001 East Ninth Street, Reno, NV 89512

Have some kudos to share about a Community Services Department employee or experience?
Submit a Nomination

From: Katie Andrle <kmandrle@ndow.org>
Sent: Wednesday, September 20, 2023 2:39 PM
To: Albarran, Adriana <AAlbarran@washoecounty.gov>
Subject: RE: September Agency Review Memo II

[**NOTICE:** This message originated outside of Washoe County -- **DO NOT CLICK** on **links** or open **attachments** unless you are sure the content is safe.]

Hi Adriana,

I don't have any comments. Thanks!

From: Albarran, Adriana <AAlbarran@washoecounty.gov>
Sent: Monday, September 18, 2023 9:00 AM
To: Katie Andrle <kmandrle@ndow.org>
Subject: September Agency Review Memo II

WARNING - This email originated from outside the State of Nevada. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Hello,

Please find the attached **Agency Review Memo II** with cases received in **September** by Washoe County Community Services Department, Planning and Building Division.

Oakley, Katherine

From: Steve Shell <sshell@water.nv.gov>
Sent: Tuesday, September 19, 2023 2:59 PM
To: Oakley, Katherine
Subject: WSUP23-0016

[**NOTICE:** This message originated outside of Washoe County -- **DO NOT CLICK** on **links** or open **attachments** unless you are sure the content is safe.]

Applicant proposes to use water from Permit 91279 at a duty of 48.30 acre-feet annually.
The permit contains a duty of 48.30 acre-feet annually and is, therefore, sufficient to supply the project.
This permit is in good standing within the Office of the State Engineer and it's place of use is the subject property.

As of June 1, 2021, the Office of the State Engineer is open to the public. Please call 684-2800 upon arrival and a representative will come down to escort you to our office.

Steve Shell
Water Rights Specialist II
Department of Conservation and Natural Resources
Nevada Division of Water Resources
901 S. Stewart St., Suite 2002
Carson City, NV 89701
sshell@water.nv.gov
(O) 775-684-2836 | (F) 775-684-2811

NEVADA DIVISION OF WATER RESOURCES | Nevada Department of CONSERVATION & NATURAL RESOURCES
Connect with us:

Date: September 26, 2023

To: Kat Oakley, Planner

From: Timber Weiss, P.E., Licensed Engineer

Re: Special Use Permit Case Number WSUP23-0016 (Sky Tavern Junior Ski Program Expansion)
APN 048-050-03

GENERAL PROJECT DISCUSSION

For hearing, discussion, and possible action to approve a special use permit for an expansion to the Sky Tavern Junior Ski Area, including a utility services use type for the instillation of snowmaking infrastructure including 1-million and 2-million gallon water storage tanks, approximately 11,000 linear feet of snowmaking water supply piping, and two well and pump houses; an expansion of the destination resort use type to expand site parking and lighting; a request to vary certain landscaping standards of WCC 110.412; and associated major grading including approximately 6,600 cy of cut and 6.1 acres of disturbed area.

The Community Services Department (CSD) recommends approval of this project with the following Water Rights conditions:

No water rights conditions for this permit.

WASHOE COUNTY
COMMUNITY SERVICES DEPARTMENT
Regional Parks and Open Space

1001 EAST 9TH STREET
RENO, NEVADA 89520-0027
PHONE (775) 328-3600
FAX (775) 328.3699

TO: **Katherine Oakley, Planner**

FROM: **Faye-Marie Pekar, Park Planner**

DATE: **March 13, 2024**

SUBJECT: **Special Use Permit Case Number WSUP23-0016 (Sky Tavern Junior Ski Program Expansion)**

I have reviewed the application for case number WSUP23-0016 on behalf of the Washoe County Regional Parks and Open Space Program (Parks Program) and prepared the following comments:

If approved, this special use permit would allow for the expansion to the Sky Tavern Junior Ski Area, including a utility services use type for the instillation of snowmaking infrastructure including 1-million and 2-million gallon water storage tanks, approximately 11,000 linear feet of snowmaking water supply piping, and two well and pump houses; an expansion of the destination resort use type to expand site parking and lighting; a request to vary certain landscaping standards of Washoe County Code 110.412. The proposal includes major grading of 6.1 acres of disturbance with 6,600 cubic yards of cut.

The applicant is also proposing lighting for night skiing and the property is adjacent to Mount Rose Highway. According to the Mount Rose Scenic Byway Corridor Management Plan, visual quality is a challenge that the corridor faces where light pollution from streetlights, parking lot lights, local signage and development can interrupt the night skies enjoyed by both residents and visitors. Recreation access and experience is an additional challenge as the corridor is heavily used for access to hiking, biking, skiing, snowboarding, sledding, snowmobiling, cross country skiing and other activities. One of the Mount Rose Scenic Byway Corridor vision goals aims to preserve the scenic quality and natural resources by maintaining current and proposed outdoor advertising standards to manage billboards and on-site signs, so they do not detract from scenic views or night skies.

The Washoe County 2008 Regional Open Space and Natural Resource Management Plan also strives to protect the region's natural resources and open space through a series of goals and polices. Under *Visual and Scenic Character,* Goal 3, aims to "Preserve the remaining integrity of our region's dark night sky".

Given these considerations, the Parks Program requires the following conditions of approval:

1. Consistent with the Mount Rose Scenic Byway Corridor Management Plan and 2008 Regional Open Space and Natural Resource Plan goals, It is recommended that the applicant use best practices for dark sky compliance.

2. Any earthen materials imported to the site shall be “certified weed free” to prevent the spread of noxious and invasive weeds.

3. The project shall comply with Washoe County Code Section 110.412.67, Revegetation.

4. All undeveloped areas disturbed as a result of project activities shall be revegetated utilizing a native seed mix as reviewed and approved by the Washoe Storey Conservation District and/or Washoe County Regional Parks and Open Space.

February 7, 2024

Kathie Julian, District 1
Peter K. Ghishan, District 2
Lee Horishny, District 3
Don Christensen, District 4
Rob Pierce, District 5

Washoe County Board of Adjustment
1001 East 9th Street
Reno, NV 89512

Re: SKY TAVERN

Dear Members of the Washoe County Board of Adjustment:

I am writing in support of the formal submission separately being presented by Sky Tavern requesting the ability to install terrain lighting at their facility.

As one of a strong and engaged group of interested citizens, please review and consider my support for the use of Lights at Sky Tavern, a city-owned asset operated by the Sky Tavern 501c3 non-profit Sports Education Organization.

Reasons for my support:

- Sustainable - Lights change everything related to the organization's sustainability as the normal weekend programs reach capacity quickly. With the lights, after-school programs could satisfy this community's need for affordable and productive mountain sports programming.

- Training Support - The New University of Nevada NCAA Division 1 Alpine race team would greatly benefit from evening training that will better coordinate into their scholastic schedule.

- Constructive Activity - Washoe County High School District alpine race teams will also greatly benefit by getting participants on the hill after school instead of removing them from their regular school curriculum. There is tremendous value in after school activities for local youth since it does not interfere with their educational time, and it allows them to maintain their commitment to both school and to participate in constructive after school programming.

- Vision - Sky Tavern's Alpine Race Team aspires to create the nation's best development program. Long-term the possibility exists for participating athletes to achieve a University of Nevada scholarship or to race in the NCAA (national events) or perhaps even the Olympics! With more hill time, we train our kids towards greater academic and athletic achievements!

The local community will benefit from night events that include, but are not limited to expanded program capacity with:

- Adult Team Racing events
- Adaptive ski training

- High school racing
- Pro race events that would help increase the local tourism economy

The Hill and Why Night Recreation:

The Race Hill at Sky Tavern is a homologation-certified FIS (i.e. regulated International Ski and Snowboard Federation) race hill, making it one of the best training hills in the Tahoe region.

Training at night is better training:

- It's safer as the lighting is steady and non-changing.
- It's faster, as the surface is firm and fast, creating better race terrain conditions.
- It keeps children and University Students in school.
- Families can all be actively involved.
- And while this letter leads into early planning ideas, long-term this same project will directly benefit other important "medal" sports, such as moguls, skier cross, and snowboarding.

In short, I am sending this letter to assure you that this careful planning for Sky Tavern will allow the resort to build a comprehensive program model, further enhanced by lights, that will significantly improve the Recreational opportunities and development of our local youth and athletes. Thank you for your careful consideration.

Enthusiastically,

Richard J. Reviglio
Western Nevada Supply Co.

Cc: Mr. Eric Brown, Washoe County Manager

Washoe County, NV

A new service request has been filed.

Service Request Details	
ID	156746
Date/Time	3/12/2024 9:42 AM
Type	Planning Commission/Board of Adjustment
Address	Area - Washoe County
Origin	Control Panel
Comments	Good morning, I am a homeowner on Bums Gulch Road in Reno. There are several concerns regarding Sky Tavern I would like to bring to your attention. 1. Parking. Sky tavern routinely parks their clients on Bums Gulch Road, blocking access to the county road. This prevents us from easily entering or exiting. It also presents a huge safety concern as emergency vehicles would be unable to get to the homes on Bums Gulch if there were ever an emergency. My husband and I have brought this issue up directly to the Sky Tavern employees over several years however no changes have occurred. I have attached a picture from the morning of Saturday March 9 highlighting this concern. 2. Lights. Sky tavern is in the process of trying to get permitting for lights for night skiing. This would ruin the beautiful dark night sky experience on this part of the mountain. As residents we do NOT support lighting for night skiing. We do not believe the lights support the mission of Sky Tavern teaching the youth of the Reno area how to ski at an affordable cost. The lights are more in line with allowing the wealthy ski racers of the Reno Tahoe area access to night skiing. Thank you for your consideration of these

concerns.

Monica Thomas-Kleinbach

Submitter	Thomas-Kleinbach, Monica Washoe County, NV monica.thomas122@gmail.com

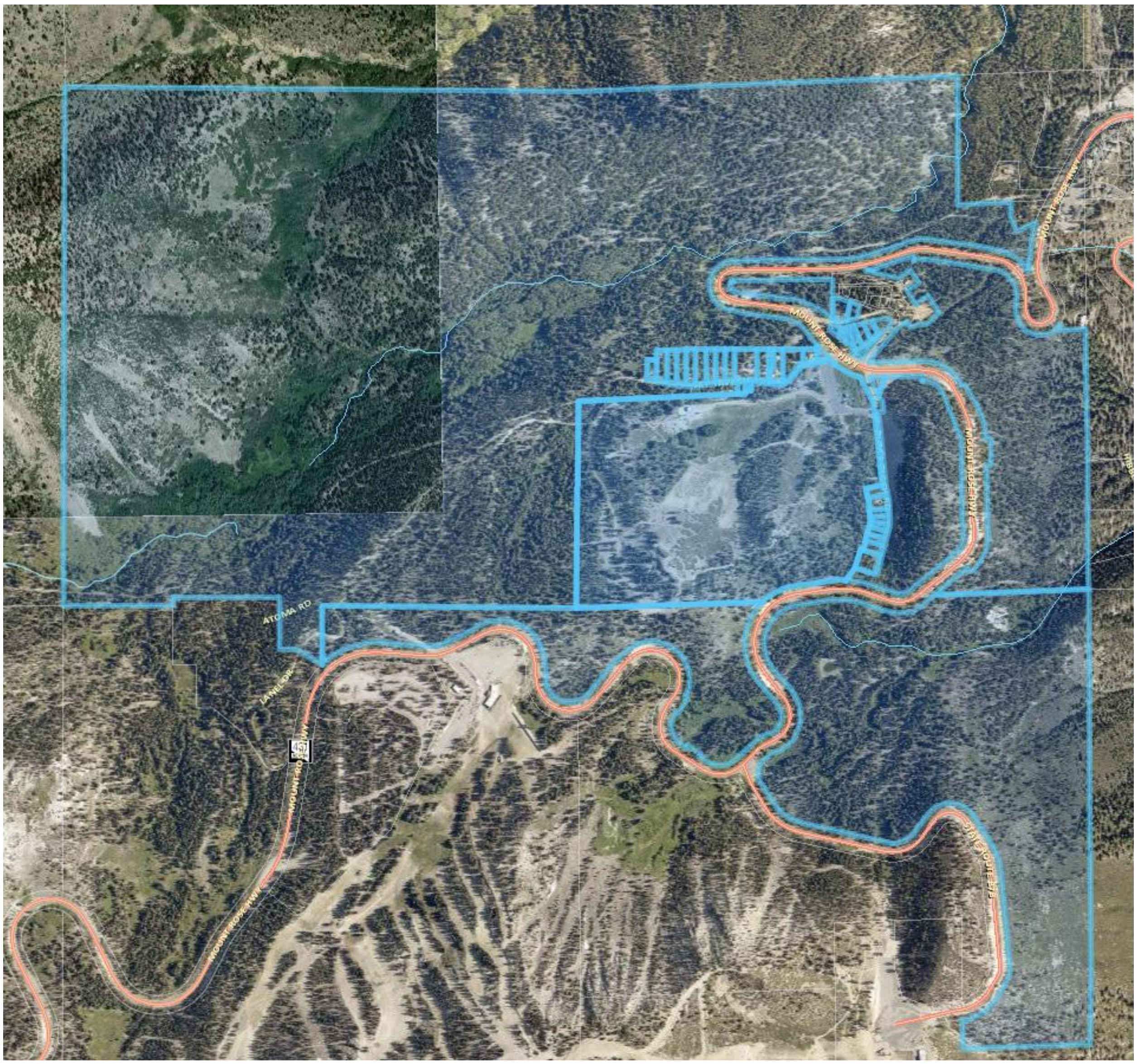
View in QAlert

Washoe County, NV

WSUP23-0016
EXHIBIT C

Public Notice

Washoe County Code requires that public notification for a special use permit must be mailed to a minimum of 30 separate property owners within a minimum 500-foot radius of the subject property a minimum of 10 days prior to the public hearing date. A notice setting forth the time, place, purpose of hearing, a description of the request and the land involved was sent within a 500-foot radius of the subject property. A total of 35 separate property owners were noticed a minimum of 10 days prior to the public hearing date.



Public Notice Map

WSUP23-0016 Sky Tavern Junior Ski Resort Expansion

Sky Tavern Junior Ski Area Expansion
SPECIAL USE PERMIT

Prepared for:

Sky Tavern
at
21130 Mt. Rose Highway
Reno, NV 89511

Prepared By:

Robison Engineering
COMPANY, INC
846 Victorian Ave., Suite 20
Sparks, NV 89431
(775) 852-2251

September 2023

Submitted to:

Washoe County, Nevada

TABLE OF CONTENTS

PROPERTY LOCATION

Sky Tavern Junior Ski Area is a destination ski resort that is located in the southwest corner of Washoe County approximately 10 miles north of Carson City and 10 miles south of Reno. The ski resort is accessed via Nevada State Route 431 also known as Mt. Rose Highway. The primary access to the ski resort is a parking lot at the east side of the property which can be accessed from Mt. Rose Highway or Bum's Gulch Rd. The ski resort is contained within one PR (parks and recreation) zoned property with Washoe County Assessor's Parcel Number 048-050-03 owned by the City of Reno and with an acreage of 143.07.

SPECIAL USE PERMIT REQUESTS

A special use permit is requested for the following components:

- Allowance of a utility service within a PR zone, including 1-million & 2-million gallon snowmaking water storage tanks, approximately 11,000 linear feet of snowmaking water supply piping, and two groundwater wells to supply the system each equipped with pump assemblies enclosed in pump house structures. Electrical to be supplied from existing on-site NVE facilities and service lines will be joint-trenched with water wherever possible.
- Allowance of site lighting within a PR zone
- Allowance to vary the landscaping standards per Washoe County Development Code section 110.412.50(a) – At least one tree shall be provided for every 10 parking spaces…
    - Due to the nature of this facility, landscaping islands or trees in the parking area are impractical and would not achieve the code's intent of screening, shade, etc. The entire area is forested, and winter parking is generally on top of accumulated snow which must be aggressively managed by heavy equipment; isolated trees and curb/gutter infrastructure would be damaged or destroyed.
- Allowances for grading associated with Washoe County Grading code which require a special use permit including:
    - 110.438.35(a)(2)(ii)(A) Grading on slopes 15% or greater – excavation of one thousand (1,000) cubic yards or more whether the material intended to be permanently located on the project site or temporarily stored on a site for relocation to another, final site
        - Approximately 5,000 cubic yards of material shall be excavated on areas with existing slopes greater than 15% in order to prepare the trenches for the proposed utility lines.

A site plan is included with this application showing all proposed improvements to be constructed under this special use permit.

PROJECT PHASING

Depending on several factors including available funding of the proposed improvements, the weather/constructable windows of time of the coming years, etc. – there is no set project phasing currently. However, given the scope of the proposed improvements, a time frame longer than two years is expected to be required.

WATER RIGHTS

A permit to appropriate water was granted for this project by The State of Nevada. A maximum amount of 48.3 acre-feet per year may be appropriated for recreational use per permit no. 91279; a copy of which is included in this application.

WETLANDS DELINEATION

Portions of this property include areas defined as wetlands that cannot be constructed on per the United States Army Corps of Engineers (USACE). A wetlands delineation report was prepared by Robison Wildlife Consulting, LLC, and the results of their findings are shown on the site plan. No improvements of any kind are proposed in any wetland areas.

TRAFFIC IMPACT

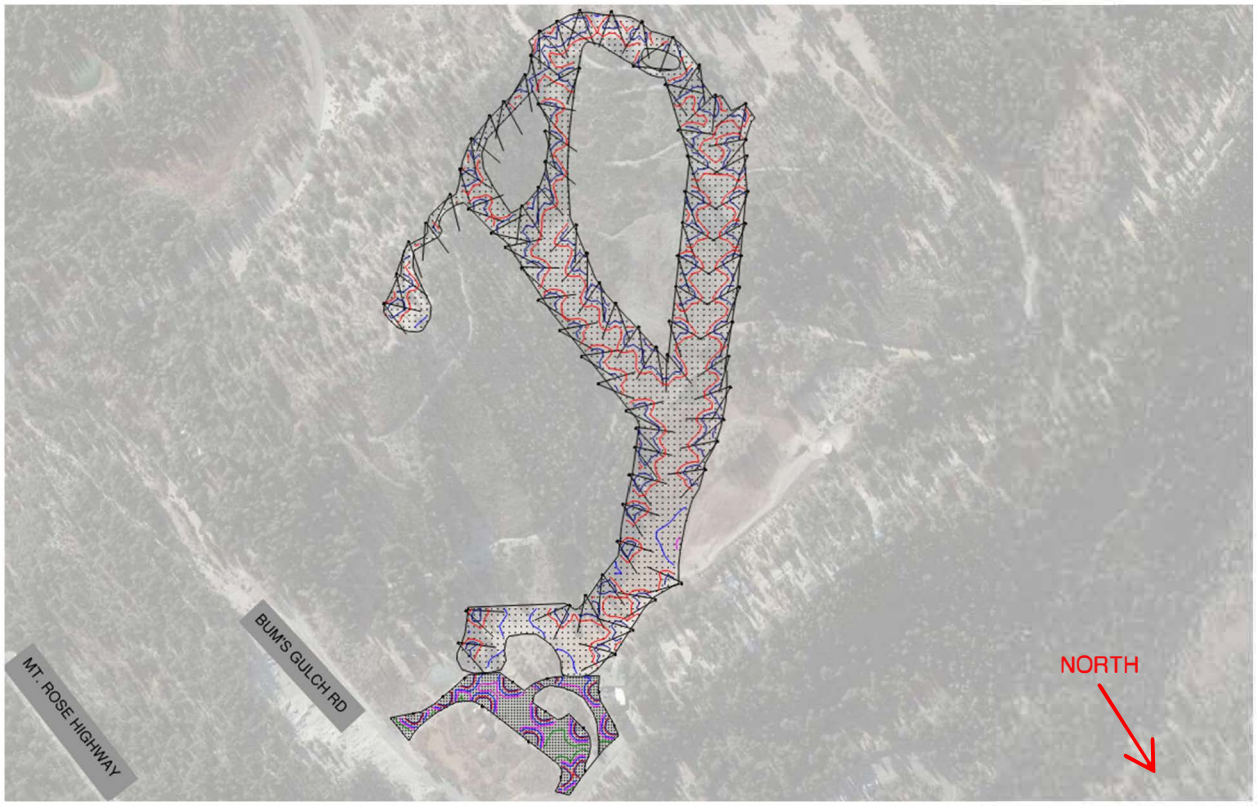
A traffic impact study was prepared for this project by Headway Transportation LLC and a copy is included with this application. Their study found that this expansion is anticipated to generate approximately 91 AM peak hour, and 43 Noon peak hour additional trips to the external roadway network,

GEOTECHNICAL INVESTIGATION

A geotechnical investigation was prepared for this project by Black Eagle Consulting, Inc. Their study found that the site is geotechnically suitable for the proposed improvements, and a copy of the report is included with this application.

SITE LIGHTING

A preliminary lighting design was prepared by Wisconsin Lighting Lab. Site lighting is proposed at the parking lot and all areas that will be served by the proposed snowmaking. Per the photometric below, the proposed lighting is not anticipated to impact neighboring properties or the adjacent streets, Mt. Rose Highway and Bum's Gulch Rd. Below is a preliminary photometric diagram excerpted from the preliminary design report by Wisconsin Lighting Lab.



The preliminary lighting design is included which details what specific lights are proposed.

LANDSCAPING AND REVEGETATION

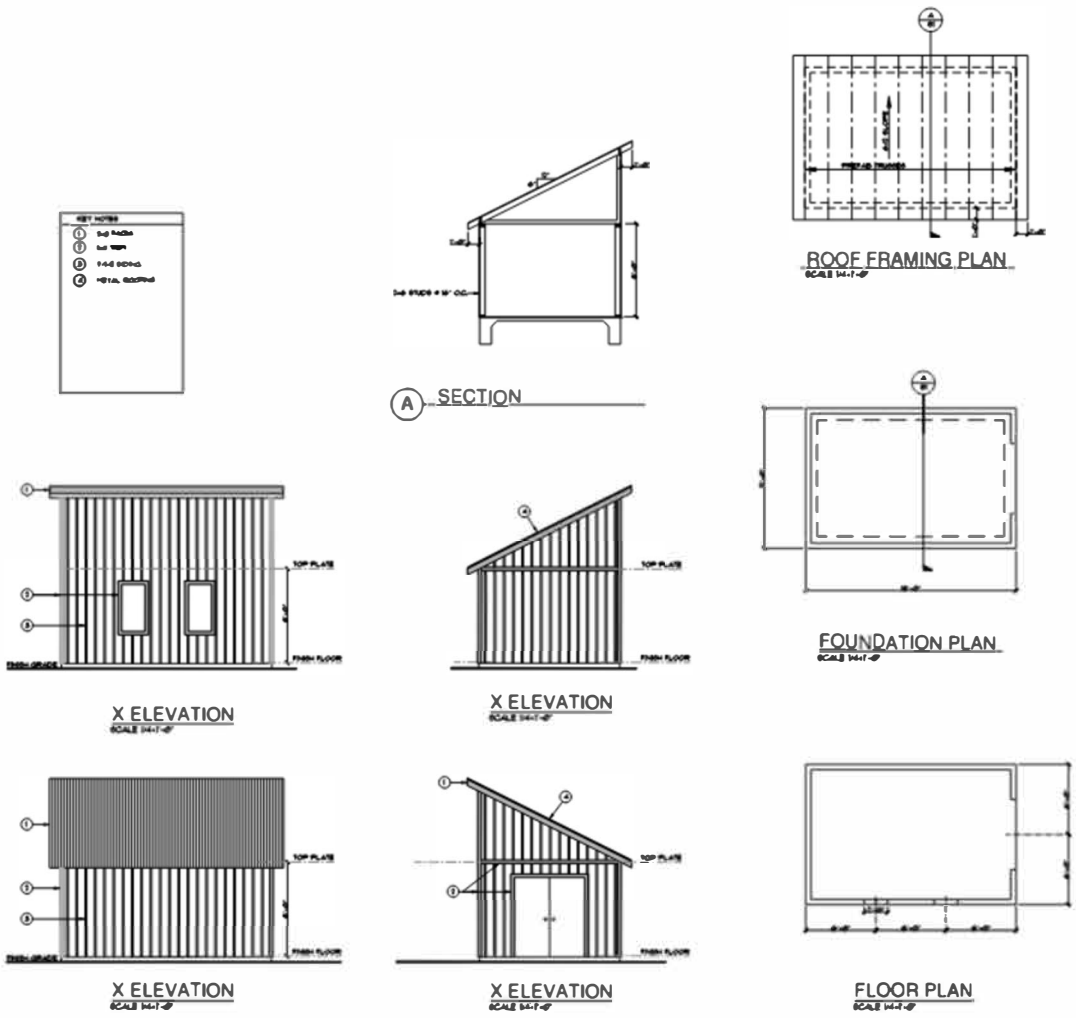
Sky Tavern has accumulated years of experience in promoting regeneration by native species and will treat all sloped areas with appropriate temporary erosion control, runoff management, and other Best Management Practices for all construction involving slopes or fresh disturbance. Revegetation with an aggressive for and native grass seed mix, followed by management of shrub and natural tree seedling regrowth, will achieve permanent stabilization consistent with the ski area operation.

PARKING

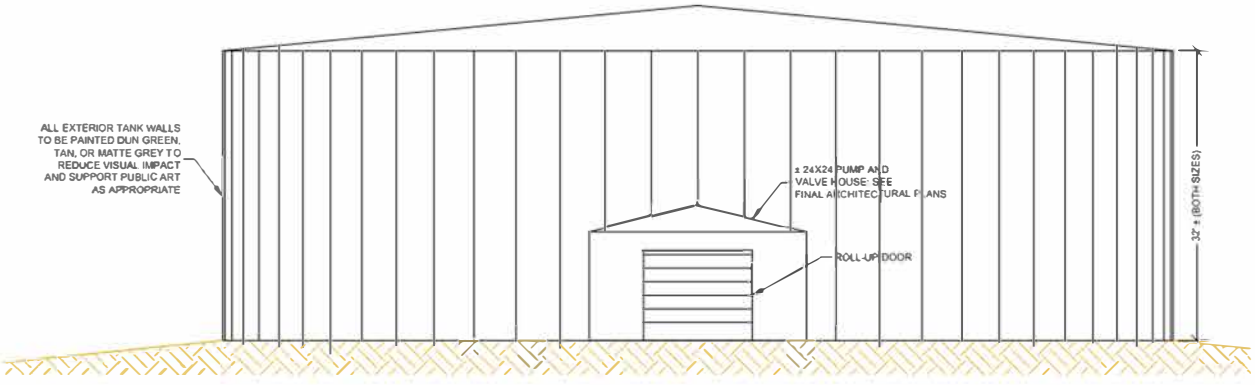
The existing parking area is proposed to be repaved and restriped. There is no specific parking requirement for a destination ski resort in Washoe County's development code, however Section 410.10.2 requires 1 parking space required per employee. A striping plan is included with this application showing 191 spaces.

PROPOSED STRUCTURES

The currently proposed structures include three pump house buildings and two water storage tanks. Architectural plans for the pump house buildings were prepared by Crom Engineering and for the water storage tanks by Robison Engineering. Below are the excerpted architectural drawings, and full sized plans are included with this application. Beyond what is shown on the plans, efforts shall be made to conceal the proposed structures so that they blend in with the surrounding aesthetic of the surrounding area, such as forest green paint, etc.



Pump House Building Plans



Water Storage Tank Elevation View

Washoe County Development Application

Your entire application is a public record. If you have a concern about releasing personal information, please contact Planning and Building staff at 775.328.6100.

Project Information	**Staff Assigned Case No.:** _____
Project Name: Sky Tavern Junior Ski Program - Expansion	
Project Description: Expansion to existing destination ski resort at Sky Tavern Junior Ski Program. Please see project narrative for detailed description of project.	
Project Address: 21130 Mount Rose Hwy	
Project Area (acres or square feet): 143.07 acres	
Project Location (with point of reference to major cross streets **AND** area locator): Property is southwest of the intersection of Mt. Rose Hwy and Sky Tavern Rd; directly north of Mt. Rose Ski Resort	

Assessor's Parcel No.(s):	Parcel Acreage:	Assessor's Parcel No.(s):	Parcel Acreage:
048-050-03	143.070		

Indicate any previous Washoe County approvals associated with this application:
Case No.(s). WSUP18-0009 is expired and its content is superceded by this plan

Applicant Information (attach additional sheets if necessary)

Property Owner:		**Professional Consultant:**	
Name: City of Reno		Name: Robison Engineering Company, Inc	
Address: 1 E 1st St		Address: PO Box 1505	
Reno	Zip: 89501	Sparks	Zip: 89432
Phone:	Fax:	Phone: (775) 852-2251	Fax: 852-9736
Email:		Email: nathan@robisoneng.com	
Cell:	Other:	Cell: 775-240-7652	Other:
Contact Person:		Contact Person: Nathan Earl Robison, PE	
Applicant/Developer:		**Other Persons to be Contacted:**	
Name: Sky Tavern Junior Ski Area - Applicant		Name:	
Address: 21130 Mt. Rose Hwy		Address:	
Reno	Zip: 89511		Zip:
Phone: (775) 323-5125	Fax:	Phone:	Fax:
Email: mike.oehlert@skytavern.com		Email:	
Cell:	Other:	Cell:	Other:
Contact Person: Mike Oehlert		Contact Person:	

For Office Use Only

Date Received:	Initial:	Planning Area:
County Commission District:		Master Plan Designation(s):
CAB(s):		Regulatory Zoning(s):

Special Use Permit Application
Supplemental Information

(All required information may be separately attached)

1. What is the project being requested?

Sky Tavern Junior Ski Program is proposing a new snowmaking system which shall include the construction of two new water wells, pump houses and water lines to supply two large water storage tanks which shall then supply the snowmaking hydrants.

2. Provide a site plan with all existing and proposed structures (e.g. new structures, roadway improvements, utilities, sanitation, water supply, drainage, parking, signs, etc.)

Site plan is included.

3. What is the intended phasing schedule for the construction and completion of the project?

Depending on several factors including available funding of the proposed improvements, the weather/constructable windows of time of the coming years, etc. – there is no set project phasing currently. However, given the scope of the proposed improvements, a time frame longer than two years is expected to be required.

4. What physical characteristics of your location and/or premises are especially suited to deal with the impacts and the intensity of your proposed use?

The property is a functional ski resort, and all proposed improvements are appropriate additions that serve the current use. The close proximity to existing electrical and sanitary utilities will allow for new services. The previously obtained water rights will allow for the snowmaking facilities and new water wells.

5. What are the anticipated beneficial aspects or affects your project will have on adjacent properties and the community?

The expansion will directly benefit the community as it will increase the facility's capacity, and extend the amount of time the ski program is operational throughout the year. More of the community will be able to take advantage of the recreational activity provided by Sky Tavern.

6. What are the anticipated negative impacts or affect your project will have on adjacent properties? How will you mitigate these impacts?

All of the new facilities are proposed onsite, and the construction phase will not negatively impact adjacent properties. Furthermore, given the seasonality of the ski resorts operations, much of construction can be completed without interrupting the typical schedule of the park.

7. Provide specific information on landscaping, parking, type of signs and lighting, and all other code requirements pertinent to the type of use being purposed. Show and indicate these requirements on submitted drawings with the application.

Please refer to the site plan and narrative document for specific information on landscaping, parking, lighting, etc.

Approx. total cut volume = 6,600 CY

8. Are there any restrictive covenants, recorded conditions, or deed restrictions (CC&Rs) that apply to the area subject to the special use permit request? (If so, please attach a copy.)

❑ Yes	■ No

9. Utilities:

a. Sewer Service	EXISTING - SEPTIC
b. Electrical Service	EXISTING - NV ENERGY
c. Telephone Service	EXISTING - ATT & VARIOUS WIRELESS
d. LPG or Natural Gas Service	EXISTING - PROPANE
e. Solid Waste Disposal Service	EXISTING - WASTE MANAGEMENT CONTRACT
f. Cable Television Service	EXISTING - SATELLITE
g. Water Service	EXISTING - ON-SITE PUBLIC WATER SYSTEM

For most uses, Washoe County Code, Chapter 110, Article 422, Water and Sewer Resource Requirements, requires the dedication of water rights to Washoe County. Please indicate the type and quantity of water rights you have available should dedication be required.

h. Permit #	N/A	acre-feet per year	
i. Certificate #		acre-feet per year	
j. Surface Claim #		acre-feet per year	
k. Other #		acre-feet per year	

Title of those rights (as filed with the State Engineer in the Division of Water Resources of the Department of Conservation and Natural Resources).

The water storage tanks will have the largest visual impact and shall be painted to blend in with the surrounding area - see plans/narrative.

10. Community Services (provided and nearest facility):

a. Fire Station	Truckee Meadows Fire & Rescue, Station 39
b. Health Care Facility	Renown Health; Incline Village Community Hospital; Tahoe Forest Hospital
c. Elementary School	Dodson Elementary School
d. Middle School	Marce Herz Middle School
e. High School	Galena High School
f. Parks	Galena High School
g. Library	South Valleys LIbrary
h. Citifare Bus Stop	Herz Boulevard and Mt. Rose Highway

Special Use Permit Application
for Grading
Supplemental Information

(All required information may be separately attached)

1. What is the purpose of the grading?

Excavation of utility trenches, grading required for the construction of two large water storage tanks - see plans.

2. How many cubic yards of material are you proposing to excavate on site?

Approx. total cut volume = 6,600 CY

3. How many square feet of surface of the property are you disturbing?

Combined estimated disturbed area including paving = 6.1 acres (265,000sf)

4. How many cubic yards of material are you exporting or importing? If none, how are you managing to balance the work on-site?

No export or import is proposed. All material excavated for pipe trenches shall be replaced/recompacted. The grading associated with the construction of the water storage tanks has a balanced cut/fill.

5. Is it possible to develop your property without surpassing the grading thresholds requiring a Special Use Permit? (Explain fully your answer.)

No - the excavation volume for the utility trenches exceeds standards.

6. Has any portion of the grading shown on the plan been done previously? (If yes, explain the circumstances, the year the work was done, and who completed the work.)

None of the proposed grading has been performed.

7. Have you shown all areas on your site plan that are proposed to be disturbed by grading? (If no, explain your answer.)

Yes.

8. Can the disturbed area be seen from off-site? If yes, from which directions and which properties or roadways?

The disturbed areas will be visible from the east, from Mt. Rose Highway

9. Could neighboring properties also be served by the proposed access/grading requested (i.e. if you are creating a driveway, would it be used for access to additional neighboring properties)?

These improvements do not directly serve neighboring properties, however the fire access roads and elevated water storage are of potential regional value.

10. What is the slope (horizontal/vertical) of the cut and fill areas proposed to be? What methods will be used to prevent erosion until the revegetation is established?

All proposed graded slopes are max 3:1.

11. Are you planning any berms?

Yes	No X	If yes, how tall is the berm at its highest?

12. If your property slopes and you are leveling a pad for a building, are retaining walls going to be required? If so, how high will the walls be and what is their construction (i.e. rockery, concrete, timber, manufactured block)?

No walls are proposed.

13. What are you proposing for visual mitigation of the work?

The water storage tanks will have the largest visual impact and shall be painted to blend in with the surrounding area - see plans/narrative.

14. Will the grading proposed require removal of any trees? If so, what species, how many and of what size?

The construction of the water storage tanks is expected to remove approximately 10 trees consisting of Jeffrey Pines and White Firs, with trunk sizes ranging from 1" to 18" within the proposed earthwork areas.

15. What type of revegetation seed mix are you planning to use and how many pounds per acre do you intend to broadcast? Will you use mulch and, if so, what type?

Dryland grass and shrubs suitable for high elevation slope stabilization and low fuel content.

16. How are you providing temporary irrigation to the disturbed area?

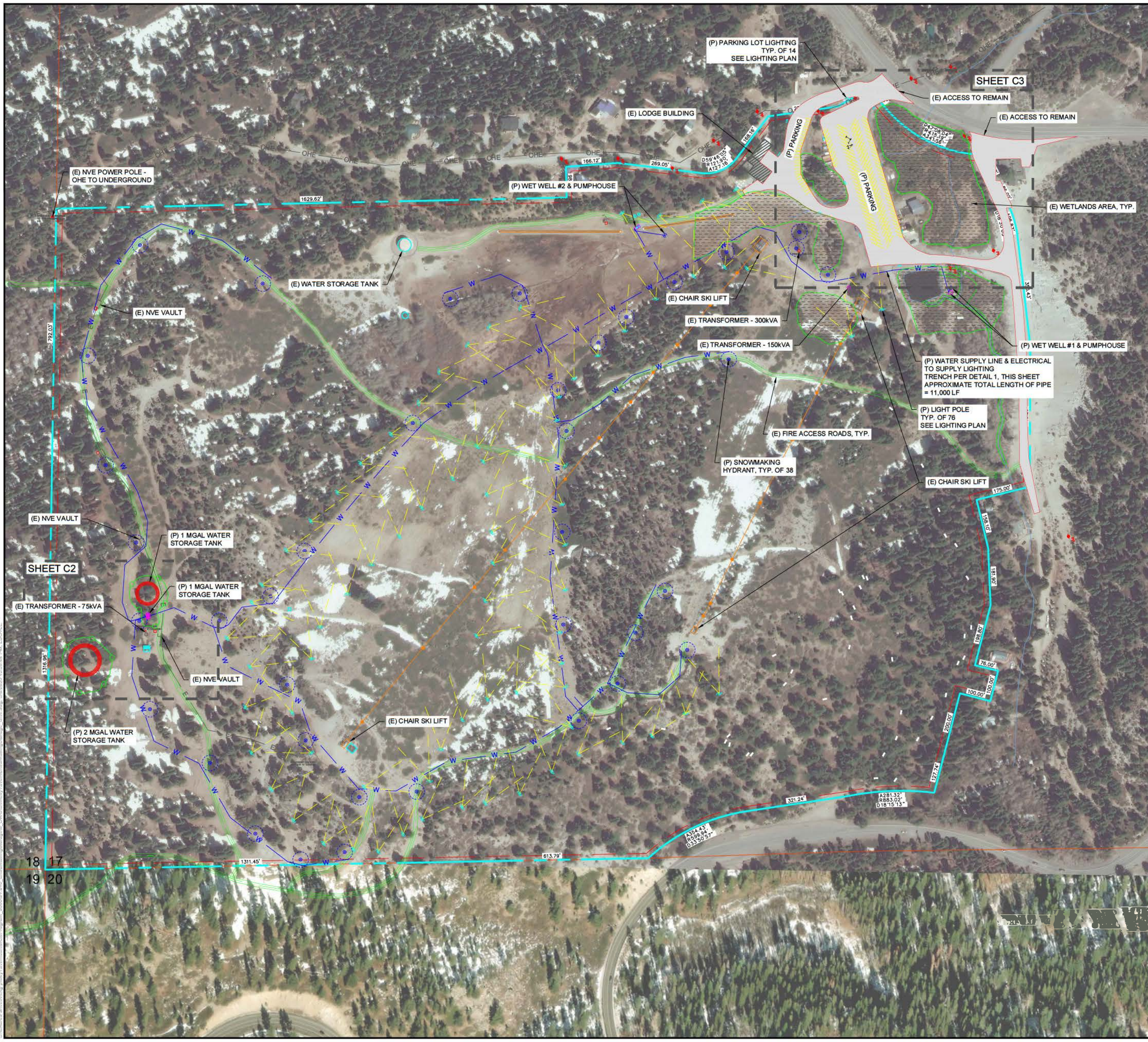
Temporary irrigation shall be provided if required for the disturbed earthwork associated with the construction of the water storage tanks.

17. Have you reviewed the revegetation plan with the Washoe Storey Conservation District? If yes, have you incorporated their suggestions?

The plan will be submitted to the Washoe Storey Conservation District prior to grading permit applications.

18. Are there any restrictive covenants, recorded conditions, or deed restrictions (CC&Rs) that may prohibit the requested grading?

Yes	No X	If yes, please attach a copy.



SKY TAVERN JUNIOR SKI AREA
SPECIAL USE PERMIT

PROJECT AUTHORITY

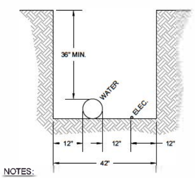
CIVIL ENGINEER	APPLICANT
ROBISON ENGINEERING COMPANY	SKY TAVERN
NATHAN ROBISON, PE, WRS	MIKE OEHLERT
846 VICTORIAN AVE, SUITE 20	21130 MT ROSE HWY
SPARKS, NV 89431	RENO, NV 89511
(775) 852-2251 x 700	(775) 323-5125
nathan@robisoneng.com	mike.oehlert@skytavern.com

PROJECT SUMMARY

JURISDICTION:	WASHOE COUNTY
COUNTY:	WASHOE COUNTY
APN:	048-050-03
ADDRESS:	21130 MTROSE HWY
ZONING:	PR
FEMA FLOOD ZONE:	X
PROJECT SUMMARY:	PLANS INCLUDE A 5-YEAR EXPANSION MASTER PLAN FOR INFORMATION PURPOSES. THIS SPECIAL USE PERMIT APPLICATION SEEKS PRELIMINARY APPROVAL FOR THE COMPONENTS OF THE EXPANSION THAT EXCEED SUP REQUIRED PARAMETERS, INCLUDING GRADING REQUIRED FOR TWO WATER STORAGE TANKS, GRADING OF FIRE ACCESS ROADS, GRADING REQUIRED TO CONSTRUCT AN AIRBAG JUMP SKI TRAINING FACILITY, AND PAVING OF APPROXIMATELY 180,000 SQUARE FEET OF PARKING/ENTRY AREAS.

SHEET LIST

SHEET NO	SHEET LABEL	SHEET DESCRIPTION
1	C1	SITE MASTER PLAN & SHEET INDEX
2	C2	TANK GRADING PLAN
3	C3	PARKING AND ENTRY PAVING PLAN
4	A1	STORAGE TANK ELEVATIONS



NOTES:
1. CONTRACTOR TO PROVIDE ALL TRENCHING. CONFIRM ALL SERVICES & BACKFILL REQUIREMENTS WITH UTILITY PROVIDERS PRIOR TO INSTALLATION.
2. ALL DISTURBED AREA TO BE REVEGETATED WITH NATIVE PLANT MIX.

PRELIMINARY GRADING ESTIMATE - UTILITY TRENCHES
APPROXIMATELY 11,000 LINEAR FEET OF PIPE PROPOSED
TYPICAL TRENCH CROSS SECTION = 12.8 SF
ESTIMATED TRENCH EXCAVATION VOLUME = 5,215 CY
ESTIMATED TRENCH EXCAVATION AREA = 38,500 SF

ALL EXCAVATED MATERIAL SHALL BE REPLACED AND RECOMPACTED TO 90% MINIMUM DRY DENSITY FOLLOWING CONSTRUCTION OF PIPING

DETAIL 1 - TYPICAL JOINT TRENCH
SCALE: 1" = 2'

0' 75' 150'
SCALE: 1"=150'

Know what's below. Call before you dig.

NO	DESCRIPTION	DATE	BY	CHKD
P1	FOR REVIEW - MASTER PLAN	2023-03-07	LJD	NER
0	WASHOE COUNTY SPECIAL USE PERMIT	2023-05-08	LJD	NER
0.1	FOR REVIEW - ELECTRICAL DESIGN	2023-07-03	LJD	NER
1	WASHOE COUNTY SPECIAL USE PERMIT REV1	2023-07-10	LJD	NER
1.1	WASHOE COUNTY SPECIAL USE PERMIT REV2	2023-09-08	LD/NR	EWL

REVISIONS

	REFERENCES
1	USGS 3DEP 2-FT LIDAR DATA
2	RENG GPS MAPPING 2022-01-27
3	TROSCA ELECTRICAL 2022-02-11
4	TECHNOALPIN PLAN 2022-07-29
5	FIELD PLAN REVIEW 2022-08-24
6	
7	
8	

PROFESSIONAL ENGINEER - STATE OF NEVADA
NATHAN EARL ROBISON
Exp: 2023-12-31
CIVIL
No. 016055

Robison Engineering
846 VICTORIAN AVENUE SPARKS, NV 89431 www.robisoneng.com (775) 852-2251
DRAWN: NER/LJD
DATE: PENDING

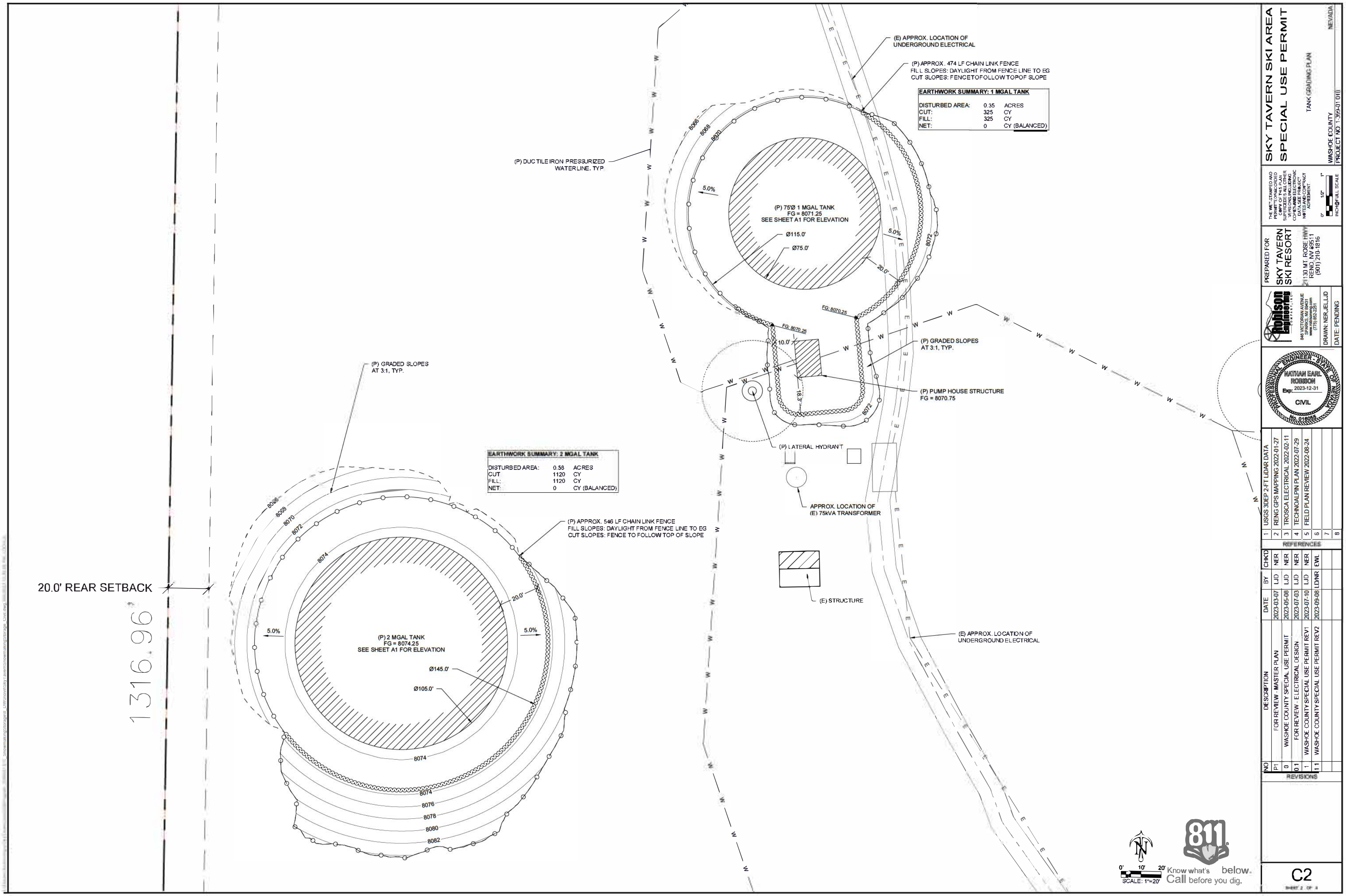
PREPARED FOR:
SKY TAVERN SKI RESORT
21130 MT. ROSE HWY
RENO, NV 89511
(901) 210-1816

THE WET-STAMPED AND PERMITTED OR RECORDED COPY OF THIS PLAN SUPERCEDES ALL OTHER VERSIONS INCLUDING COPIES AND ELECTRONIC DATA. SEE PROJECT NOTES AND CONTRACT AGREEMENT
0" 1/2" 1"
INCH @ FULL SCALE

SKY TAVERN SKI AREA
SPECIAL USE PERMIT
SITE MASTER PLAN & SHEET INDEX
WASHOE COUNTY NEVADA
PROJECT NO: 1-399-01 010

C1
SHEET 1 OF 4

WSUP23-0016
EXHIBIT E



WSUP23-0016
EXHIBIT E

SCALE: 1"=40'

NO	DESCRIPTION	DATE	BY	CHK'D
P1	FOR REVIEW - MASTER PLAN	2023-03-07	LJD	NER
0	WASHOE COUNTY SPECIAL USE PERMIT	2023-05-08	LJD	NER
0.1	FOR REVIEW - ELECTRICAL DESIGN	2023-07-03	LJD	NER
1	WASHOE COUNTY SPECIAL USE PERMIT REV1	2023-07-10	LJD	NER
1.1	WASHOE COUNTY SPECIAL USE PERMIT REV 2	2023-09-08	LD/NR	EWL

REVISIONS

	REFERENCES
1	USGS 3DEP 2-FT LiDARDATA
2	RENG GPS MAPPING 2022-01-27
3	TROSCA ELECTRICAL 2022-02-11
4	TECHNOALPIN PLAN 2022-07-29
5	FIELDPLAN REVIEW 2022-08-24
6	
7	
8	

PROFESSIONAL ENGINEER - STATE OF NEVADA
NATHAN EARL ROBISON
CIVIL
Exp. 2023-12-31
No. 016055

Robison Engineering Company, Inc.
848 VICTORIAN AVENUE
SPARKS, NV 89431
www.robisoneng.com
(775) 852-2251

DRAWN: NER,JEL,LJD
DATE: PENDING

PREPARED FOR:
SKY TAVERN SKI RESORT
21130 MT. ROSE HWY
RENO, NV 89511
(901) 210-1816

THE WET-STAMPED AND PERMITTED/RECORDED COPY OF THIS PLAN SUPERCEDES ALL OTHER VERSIONS, INCLUDING COPIES AND ELECTRONIC DATA. SEE PROJECT NOTES AND CONTRACT AGREEMENT

0" 1/2" 1"
INCH@FULL SCALE

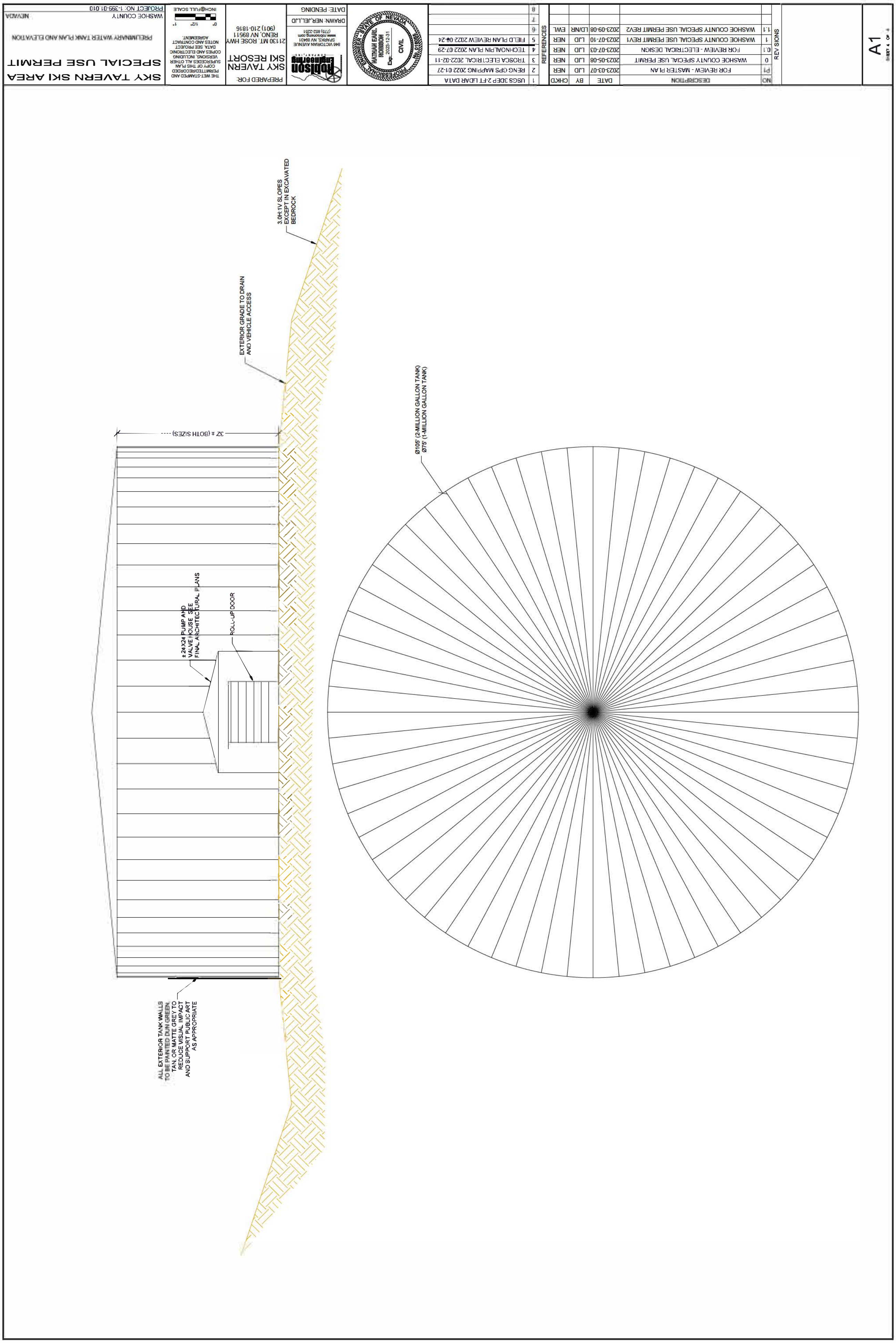
SKY TAVERN SKI AREA
SPECIAL USE PERMIT

PARKING AND ENTRY PAVING PLAN

WASHOE COUNTY NEVADA
PROJECT NO: 1-399-01.010

C3
SHEET 3 OF 4

WSUP23-0016
EXHIBIT E


SKY TAVERN SKI AREA
SPECIAL USE PERMIT
PRELIMINARY WATER TANK PLAN AND ELEVATION
WASHOE COUNTY
NEVADA
PROJECT NO: 1-399-01-010
PREPARED FOR:
SKY TAVERN
SKI RESORT
21130 MT. ROSE HWY
RENO, NV 89511
(901) 210-1816
DRAWN: NER/JEL/LJD
DATE: PENDING
REFERENCES
1 USGS 3DEP 2-FT LIDAR DATA
2 RENG GPS MAPPING 2022-01-27
3 TROSCA ELECTRICAL 2022-02-11
4 TECHNOALPIN PLAN 2022-07-29
5 FIELD PLAN REVIEW 2022-08-24
REV SIONS
NO | DESCRIPTION | DATE | BY | CHKD
P1 | FOR REVIEW - MASTER PLAN | 2023-03-07 | LJD | NER
0 | WASHOE COUNTY SPECIAL USE PERMIT | 2023-05-08 | LJD | NER
0.1 | FOR REVIEW - ELECTRICAL DESIGN | 2023-07-03 | LJD | NER
1 | WASHOE COUNTY SPECIAL USE PERMIT REV1 | 2023-07-10 | LJD | NER
1.1 | WASHOE COUNTY SPECIAL USE PERMIT REV2 | 2023-09-08 | LD/NR | EWL
NATHAN EARL ROBISON
CIVIL
Exp. 2023-12-31
A1
Ø105' (2-MILLION GALLON TANK)
Ø75' (1-MILLION GALLON TANK)
3.0H:1V SLOPES EXCEPT IN EXCAVATED BEDROCK
EXTERIOR GRADE TO DRAIN AND VEHICLE ACCESS
32' ± (BOTH SIZES)
ROLL-UP DOOR
± 24'X24' PUMP AND VALVE HOUSE SEE FINAL ARCHITECTURAL PLANS
ALL EXTERIOR TANK WALLS TO BE PAINTED DUN GREEN, TAN, OR MATTE GREY TO REDUCE VISUAL IMPACT AND SUPPORT PUBLIC ART AS APPROPRIATE

Mr. Nathan Robison, P.E.
Robison Engineering Co.
846 Victorian Avenue #20
Sparks, Nevada 89431

Project No.: 1674-17-1
August 24, 2023

RE: Geotechnical Summary
Sky Tavern Ski Area; APN 048-050-03
Washoe County, Nevada

Dear Mr. Robison:

Black Eagle Consulting, Inc. (BEC) is pleased to present this geotechnical summary of the proposed Sky Tavern Ski Resort improvements project to be constructed within the overall ski resort premises located on Mt. Rose Highway in Washoe County, Nevada. The projects are in initial planning and development, and an application for a special use permit is planned to be submitted to Washoe County. The projects will ultimately involve the design and construction of numerous proposed improvements and modifications to the existing ski area which include: new asphalt and concrete paving for parking areas adjacent to Mt. Rose highway, a new ski lift, an expansion to the existing lodge building, construction of a new Sprung® Structure building adjacent to the parking area, underground utilities for snowmaking, site lighting, a 1-million-gallon and a 2-million-gallon water storage tank, grading of new roads and pathways, a maintenance building, a ski jump and a skateboard park, and various ancillary buildings throughout the developed portions of the property. This geotechnical summary is to be used for planning and special use submittal purposes and will need to be supplemented with field exploration, laboratory testing and geotechnical analyses for the final design and construction of the specific improvements. It is our understanding that the improvements will be completed in phases.

Black Eagle Consulting, Inc. previously completed a geotechnical investigation for the existing water tank at Sky Tavern Ski Resort. Field logs and laboratory testing from the previous investigation have been used to supplement our geotechnical summary.

Project Description

As noted above, the project will involve the design and construction of numerous proposed improvements throughout the overall Sky Tavern Ski Resort site. The proposed 1- and 2-million-gallon water tanks will be of bolted steel construction which will be founded on Portland cement concrete (PCC) shallow ring foundations, and the bases will be placed on compacted aggregate base. Cuts and fills of up to 9 feet will be required to create level pads for the tanks. The proposed buildings and ancillary structures will be supported on shallow PCC foundations with PCC slab-on-grade floors. Site improvements include installation of a snowmaking system with buried water lines and aboveground snowmaking towers, a new ski lift, a new magic carpet lift, and construction of paved and unpaved access roads and pathways. Grading for these improvements will vary but is generally expected to involve less than 10 feet of cuts and fills. It is unclear if retaining walls will be necessary.

Black Eagle Consulting, Inc.
Geotechnical & Construction Services
1345 Capital Boulevard, Suite A
Reno, Nevada 89502-7140
Tel: 775/359-6600 Fax: 775/359-7766
Email: mail@blackeagleconsulting.com

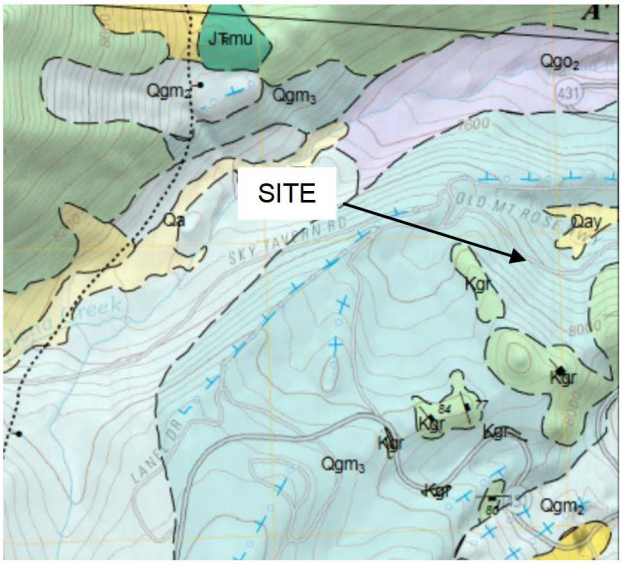
Site Conditions

The overall Sky Tavern Ski Resort site is located in the Carson Range between Reno and Lake Tahoe and consists of approximately 143 acres of mountainous terrain on Mount Rose in Washoe County, Nevada. The site is located in Sections 17 and 18, Township 17 North, Range 19 East, Mt. Diablo Meridian. The ski area is located to the west and north of Mt. Rose Highway (State Route 431).

The overall site includes steep terrain on Mount Rose sloping down to the east, towards Galena Creek, and to the south, towards Brown's Creek. Overall vertical relief is approximately 650 feet, but local relief within specific project areas is limited to less than 40 feet. The land is moderately to heavily vegetated by pine forest with native underbrush. Multiple stream drainages transect the project area, generally sloping towards the east, which are vegetated by aspen groves and alpine plants. The base area is located near the northeastern corner of the property and includes asphalt-paved parking and drives as well as multiple buildings such as the lodge building and numerous ancillary structures for maintenance and storage. Public utilities are present near the base area which include municipal water, electrical and sewer.

Geologic and General Soil Conditions

The site lies on the eastern slopes of Mount Rose in an area mapped by the Nevada Bureau of Mines and Geology (NBMG) as *Glacial Deposits (Late Pleistocene), Undivided Granitic Pluton(s) (Cretaceous), Young Alluvial Deposits (Late Pleistocene to Holocene), Glacial Outwash Deposits (Late Pleistocene)* (Hinz et al., 2014). In general, the vast majority of the site is underlain by granitic bedrock; however, the areas where the majority of development are planned are surfaced by glacial deposits, with granitic outcroppings generally exposed at and near peaks within the site. The glacial deposits are described as *Unsorted or poorly sorted sand, gravel and boulders (till). Granitic rocks typically moderately to highly weathered.* The granitic plutons are described as *granite, granodiorite, quartz monzonite, monzodiorite, and diorite. Locally contains abundant mafic enclaves (up to 50% by volume).*



Hinz et al., 2014

Based on previous exploration in the area, the site materials are generally non-plastic silty sand with gravel soils in a cobble-boulder matrix. The granitic bedrock typically has a weathering rind several feet thick of grus, making it excavatable through intermediate depths (5 to 10 feet). Hard bedrock materials can be present locally.

Black Eagle Consulting, Inc.
Geotechnical & Construction Services
1345 Capital Boulevard, Suite A
Reno, Nevada 89502-7140
Tel: 775/359-6600 Fax: 775/359-7766
Email: mail@blackeagleconsulting.com

While groundwater lies at considerable depths, seasonal snowmelt contributing to perched groundwater is common during spring and early summer and is possible through fractured rock at any time of year.

Geologic Hazards

The Sky Tavern Ski Resort lies within an area with a high potential for strong earthquake shaking. Seismic design criteria for proposed structures will be addressed in the future geotechnical investigation(s) for specific projects that will be performed by BEC.

No earthquake hazards map is available for the project location. The geologic map (Hinz et al., 2014) and the United States Geological Survey (USGS) U.S. Quaternary faults web mapping tool (USGS, 2023) identify the nearest fault lying approximately 1,200 feet to the east of the parking area and lodge. This fault, the Little Valley Fault, is mapped as being Holocene in age. Based on the available mapping, no additional fault investigation or mitigation in the form of building/structure setbacks is necessary for the structures proposed in the improvements.

The area is mapped as Zone X, or areas determined to be outside of the 500-year floodplain (Federal Emergency Management Area [FEMA], 2009a and b). However, multiple drainages exist within the site and at times may carry large volumes of water and debris flows which are able to breach the banks and any existing stormwater infrastructure.

The site should exhibit a moderate potential for dust generation during dry months. Rock slide/debris flow hazards are possible based on local terrain and can be mitigated with proper engineering. No other geologic hazards were identified.

Discussion and Conclusions

The site is geotechnically suitable for the proposed improvement projects. Soils within the site are expected to be granular sand and gravel deposits with considerable cobbles and boulders. Isolated areas (water tanks, new lift towers and water line) should expect to encounter granitic bedrock with varying degrees of weathering/hardness. The granular soils and granitic bedrock will provide excellent foundation support for the proposed improvements when properly prepared. When excavated, the native granular materials can be reused as structural fill, although removal of oversized particles may result in significant quantity shrinkage. The presence of bedrock, cobbles and boulders should be anticipated and will result in excavation difficulty. The geotechnical constraints associated with oversized cobbles and boulders or bedrock will be addressed in BEC's geotechnical investigation report(s).

Closing

This report has been prepared in general accordance with accepted geotechnical practices to provide an overall geotechnical summary and expected constraints for planning of the proposed improvements. As noted earlier, individual, project-specific geotechnical investigations will be completed with detailed geotechnical recommendations for the design and construction of the proposed improvements.

Black Eagle Consulting, Inc.
Geotechnical & Construction Services
1345 Capital Boulevard, Suite A
Reno, Nevada 89502-7140
Tel: 775/359-6600 Fax: 775/359-7766
Email: mail@blackeagleconsulting.com

We appreciate having the opportunity to work with you on this project. If you have any questions regarding our findings, please contact us.

Sincerely,

Black Eagle Consulting, Inc.

C. Remington Walker, P.E.
Project Engineer

CRW:JP:cjr

Copies to: Addressee (PDF via Email)

References

Federal Emergency Management Agency (FEMA), 2009a (March 16, 2009), *Flood Insurance Rate Map 32031C3325G Washoe County, Nevada.*

FEMA, 2009b (March 16, 2009), *Flood Insurance Rate Map 32031C3350G Washoe County, Nevada.*

Hinz, N.H., Ramelli, A.R., and Faulds, J.E., 2014, *Preliminary Geologic Map of the Mt. Rose Quadrangle, Washoe County, Nevada,* Nevada Bureau of Mines and Geology, Open File Report 14-7

United States Geological Survey (USGS), 2023, *Online Quaternary Fault and Fold Database of United States, Google Earth Files* at https://earthquake.usgs.gov/hazards/qfaults/ accessed August 2023.

Black Eagle Consulting, Inc.
Geotechnical & Construction Services
1345 Capital Boulevard, Suite A
Reno, Nevada 89502-7140
Tel: 775/359-6600 Fax: 775/359-7766
Email: mail@blackeagleconsulting.com

WISCONSIN LIGHTING LAB

QUOTATION

308 North Brooke Street
Fond du Lac, WI 54935
US

Quotation Details

Job Name:	Sky Tavern Ski Area-	Date Created:	6/26/23
Quote #:	972928	**Exp. Date:**	**7/14/23**

Contact Information

Prepared By:	Tyson Karcheski	Contact Name:	Mike Oehlert
Phone #:	(866) 308-9455	Phone #:	775-848-3992
E-Mail:	customer.quotes@willbrands.com	Email:	mike.oehlert@skytavern.com
Fax:	920-921-0781	Fax:	

Address Information

Bill To Name:	Sky Tavern Ski Area (1438029)	Ship To Name:	Sky Tavern Ski Resort
Bill To:	21130 MT Rose Hwy Reno, NV 89511	Ship To:	21130 Sky Tavern Rd Reno, NV 89511

Standard Products

Qty	Product	Sale Price	Ext. Price
77	**[PART#]** VS-RTSA-35-7324-11-AB-GV **[DESCRIPTION]** 35' Tall x 7.3" Base x 2.4" Top x 11ga Thick, Round Tapered Steel, Anchor Base Light Pole, Full Base Cover, Wiring Hand Hole & Cover, Standard Fixture Mounting & Durable Hot-Dip Galvanized Finish, USA Engineered & Manufactured (Includes 1" Anchor Bolts) **[COMMENTS]** SKI RUN POLES	$2,199.00	$169,323.00
77	**[PART#]** VS-S-BLH-R24-2-180-GV **[DESCRIPTION]** 2 @ 180 deg. Fixture Mount, Steel Bullhorn Bracket, Pole Top Mount, Hot-Dip Galvanized Finish, USA Engineered & Manufactured **[COMMENTS]** SKI RUN BULLHORNS	$299.00	$23,023.00
77	**[PART#]** VS-P2 **[DESCRIPTION]** Light Fixture Mounting, 2.38" OD x 4" Long, Tenon Top **[COMMENTS]** ALL POLES	$0.00	$0.00
77	**[PART#]** VS-PRE100 **[DESCRIPTION]** Pre-Shipped Anchor Bolt Kit, 1" x 36" x 4" **[COMMENTS]** SKI RUN PRE-SHIPPED ANCHORS	$99.00	$7,623.00
154	**[PART#]** NF-SHM-250-40-MV-45-DB-SF-WHP7NP **[DESCRIPTION]** 250W, NAFCO® Medium SHX Shoebox LED Light Fixture, 40000 Lumens, 4000K, 120-277V Input VAC, 45° Medium Spot Distribution **[COMMENTS]** [DARK BRONZE][SLIPFITTER][WHP7NP][GLARE CUPS]	$775.00	$119,350.00
154	**[PART#]** OA-SF **[DESCRIPTION]** Adjustable Slipfitter Mount, Fits 2.38" OD Tenon & Arm Mounts, Dark Bronze Powder Coat Standard **[COMMENTS]** SKI RUN SLIP FITTERS FOR FIXTURES	$40.00	$6,160.00
154	**[PART#]** OA-WHP7NP **[DESCRIPTION]** 6' Cord w/o Plug, Stripped Pigtail **[COMMENTS]** WHIP CHORD FOR SKI RUN FIXTURES	$0.00	$0.00
13	**[PART#]** VS-RSSA-18-4040-11-AB-GV-P2 **[DESCRIPTION]** 18' Tall x 4.0" OD x 11ga Thick, Round Straight Steel, Anchor Base Light Pole, Full Base Cover, Wiring Hand Hole & Cover, Standard Fixture Mounting & Durable Hot-Dip Galvanized Finish, USA Engineered & Manufactured (Includes 3/4" Anchor Bolts) **[COMMENTS]** PARKING LOT POLES	$1,059.00	$13,767.00
13	**[PART#]** VS-S-BLH-R24-2-180-GV **[DESCRIPTION]** 2 @ 180 deg. Fixture Mount, Steel Bullhorn Bracket, Pole Top Mount, Hot-Dip Galvanized Finish, USA Engineered & Manufactured **[COMMENTS]** PARKING LOT BULLHORNS	$299.00	$3,887.00
13	**[PART#]** VS-PRE075 **[DESCRIPTION]** Pre-Shipped Anchor Bolt Kit, 0.75" x 17" x 3" **[COMMENTS]** PARKING LOT PRE-SHIPPED ANCHORS	$35.00	$455.00
26	**[PART#]** NF-SHS-120-40-MV-4-DB-SF **[DESCRIPTION]** 120W, NAFCO® Small SHX Shoebox LED Light Fixture, 20250 Lumens, 4000K, 120-277V Input VAC, Type 4 Distribution	$499.00	$12,974.00

	[COMMENTS] PARKING LOT FIXTURES [DARK BRONZE][SLIPFITTER		
26	**[PART#]** OA-WHP3NP **[DESCRIPTION]** 2' Cord w/o Plug, Stripped Pigtail **[COMMENTS]** WHIP CHORD FOR PARKING LOT FIXTURES	$0.00	$0.00
26	**[PART#]** OA-SF **[DESCRIPTION]** Adjustable Slipfitter Mount, Fits 2.38" OD Tenon & Arm Mounts, Dark Bronze Powder Coat Standard **[COMMENTS]** PARKING LOT SLIP FITTERS FOR FIXTURES	$40.00	$1,040.00

- **Pricing includes delivery within the contiguous USA unless otherwise noted and is based on an order release within 30 days.**
- **Preshipped anchor bolts at CUSTOMER'S expense.**
- **Sales tax calculation (if applicable) will be finalized at order entry (OE).**
- If order quantity & quote quantity are different, pricing is subject to change.
- Quote is subject to Wisconsin Lighting Lab's standard terms and conditions. See website for complete details.

Grand Total:
$357,602.00

Estimated Lead Time: 10 to 12 Weeks

Important Notes

MADE IN THE USA
GALVANIZED POLES AND BULLHORNS
PRE-SHIPPED ANCHORS INCLUDED
QUOTING 120-277 VOLTS (CUSTOMER TO CONFIRM
CUSTOM SHORT GLARE CUP INCLUDED WITH FIXTURES
SPEC SHEETS AND PHOTOMETRICS ATTACHED
PRICE SHOWN IS THE DELIVERED COST MINUS TAX

- Light pole base: Assumes new install
- Loading Assumption: light poles rated for 7.1 EPA, 177 LBS at 100 MPH.
- Loading Assumption: mounting quantity [2, light fixtures]; [1, bracket] per pole.
- Lightning strikes and voltage surges can cause LED fixture damage; additional surge protection available upon request.
- Non-Standard specifications may add to the production lead time.
- Customer responsible for unloading at time of delivery; line items may ship at different times during production cycle.
- Commercial shipping location with receiving dock can be provided to void limited access delivery charges.
- Quoted Lead time is an estimate and is subject to change as business conditions change.

IMPORTANT: Do you require vibration dampeners? We recommend vibration dampeners be used when (1) light poles are being installed on a parking ramp, deck, bridge, pier, airport, train or subway hub/terminal or known problem area (2) a load of 0.75 EPA or smaller is going on the light poles and (3) light poles are being used as camera supports and/or will have non-standard appendages attached to them.

IMPORTANT: Wisconsin Lighting Lab and its vendors are not responsible for the structural adequacy of new and/or existing light pole footing designs and anchor bolts. Estimated loading capacity values and wind zone ratings are based on standard commercial design and engineering criteria, and they do not account for additional loadings from objects such as (but not limited to) signs, banners, cameras, solar panels and flags. Our light pole warranty does not cover vibration induced fatigue failure.

IMPORTANT: Wisconsin Lighting Lab and its vendors consider these quoted products as produced and supplied according to the customer's dimensional, material and/or electrical specifications. To ensure proper selection of the light pole, luminaire, accessories and/or foundation, we recommend the customer consult a qualified local engineer to analyze the loading, design and project criteria for the specific application.

WILL™ | WISCONSIN LIGHTING LAB

P: 866-308-9455
customer.quotes@willbrands.com

308 North Brooke Street
Fond du Lac, WI 54935
US

MADE IN USA

Sky Tavern Ski Area

06/19/2023

Job Number: **972928**

Prepared by: CO

NOTES

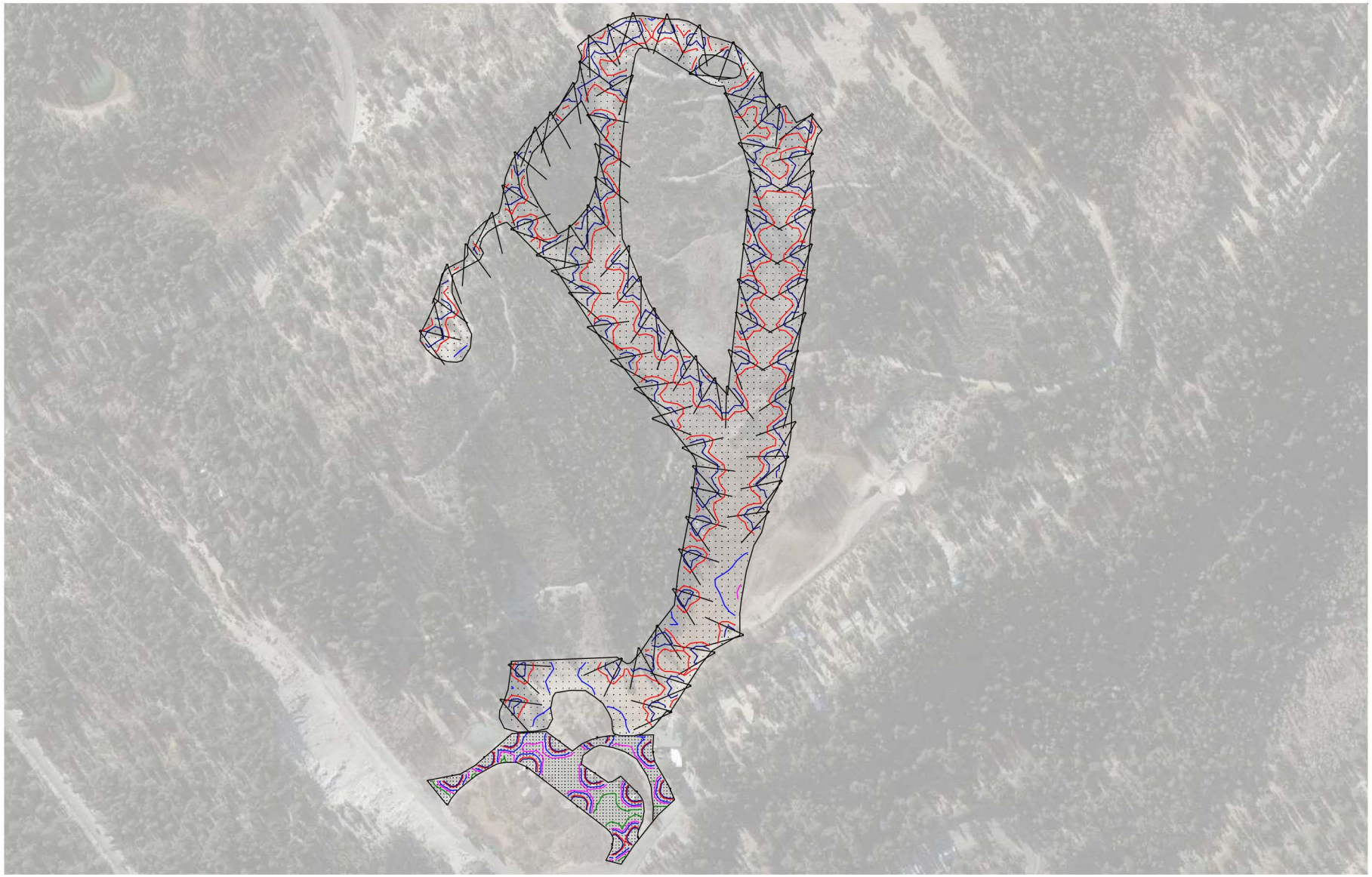
Powered by Wisconsin Lighting Lab, Inc.

*Luminaire testing data is based on Illuminating Engineering Society (IES) standards under simulated and laboratory conditions. This design is based on information supplied by others, and individual field measurements may vary from computer-simulated calculations due to variables like (but not limited to) variation in electrical voltage, environmental conditions and other variable field characteristics. Typical field foot candle measurements may vary +/- 10%. For sports lighting, field measurements should be taken in accordance with IESNA RP-6-15. Conformance to facility and local codes is the responsibility of the owner and their representatives. This layout may not meet CA Title 24 and/or other local energy codes. If specific compliance is required, those details must be provided to your factory design representative.

**Satisfactory performance and safe use of LED sports lighting fixtures is dependent upon light poles, brackets, anchorage and other structural components being of adequate design and condition. The total combined Effective Projected Area (EPA) and weight of all fixtures, brackets and attachments mounting to a light pole cannot exceed the EPA and weight rating for a specified pole. For sports lighting retrofit applications, it is the customer's responsibility to have a qualified inspector and/or engineer confirm the structural adequacy of the existing light poles assemblies. We are happy to quote new light poles and brackets if you have concerns about your existing materials,bonded

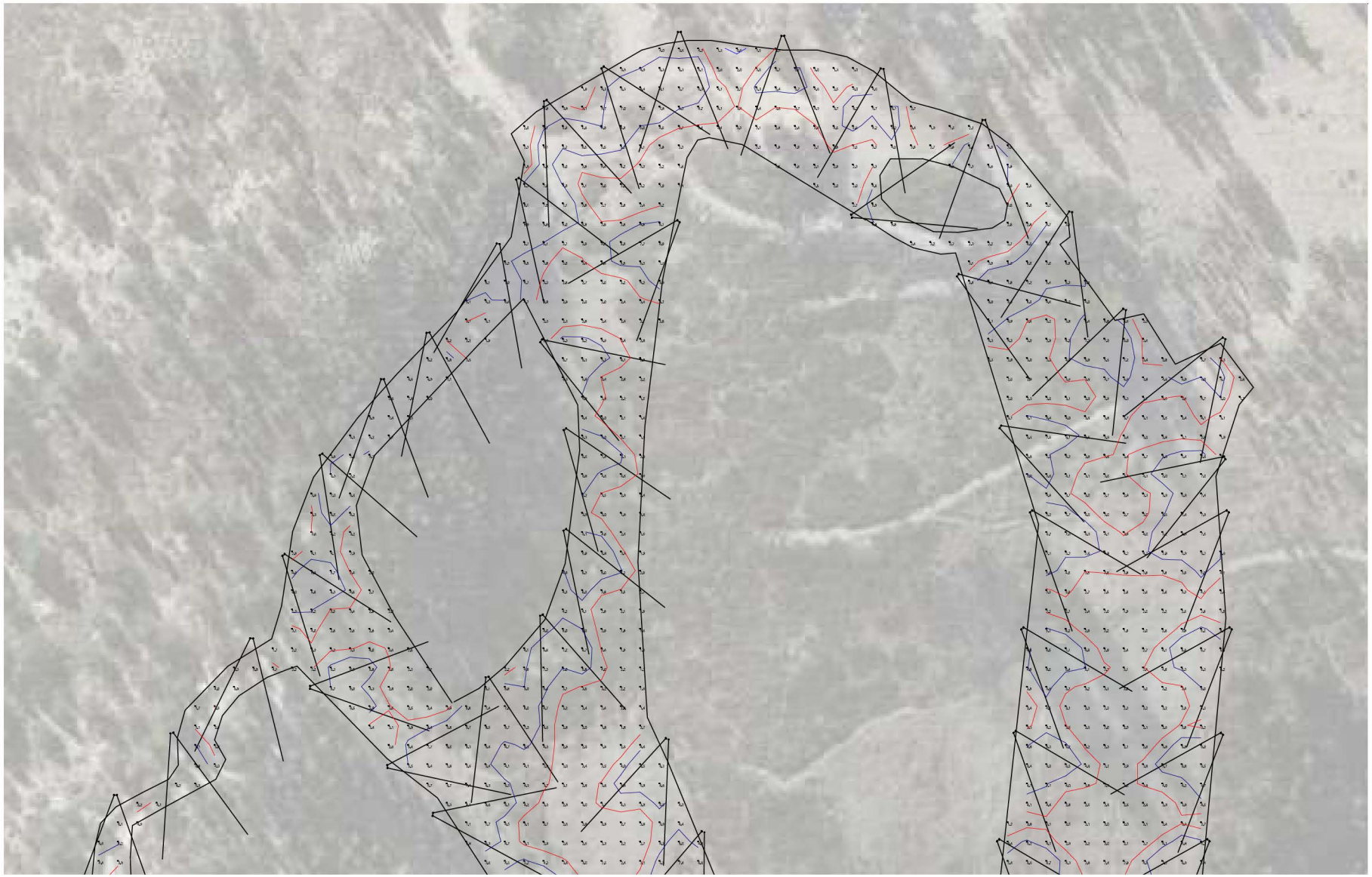
308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com ©2022

Photometrics



308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com ©2022

Photometrics

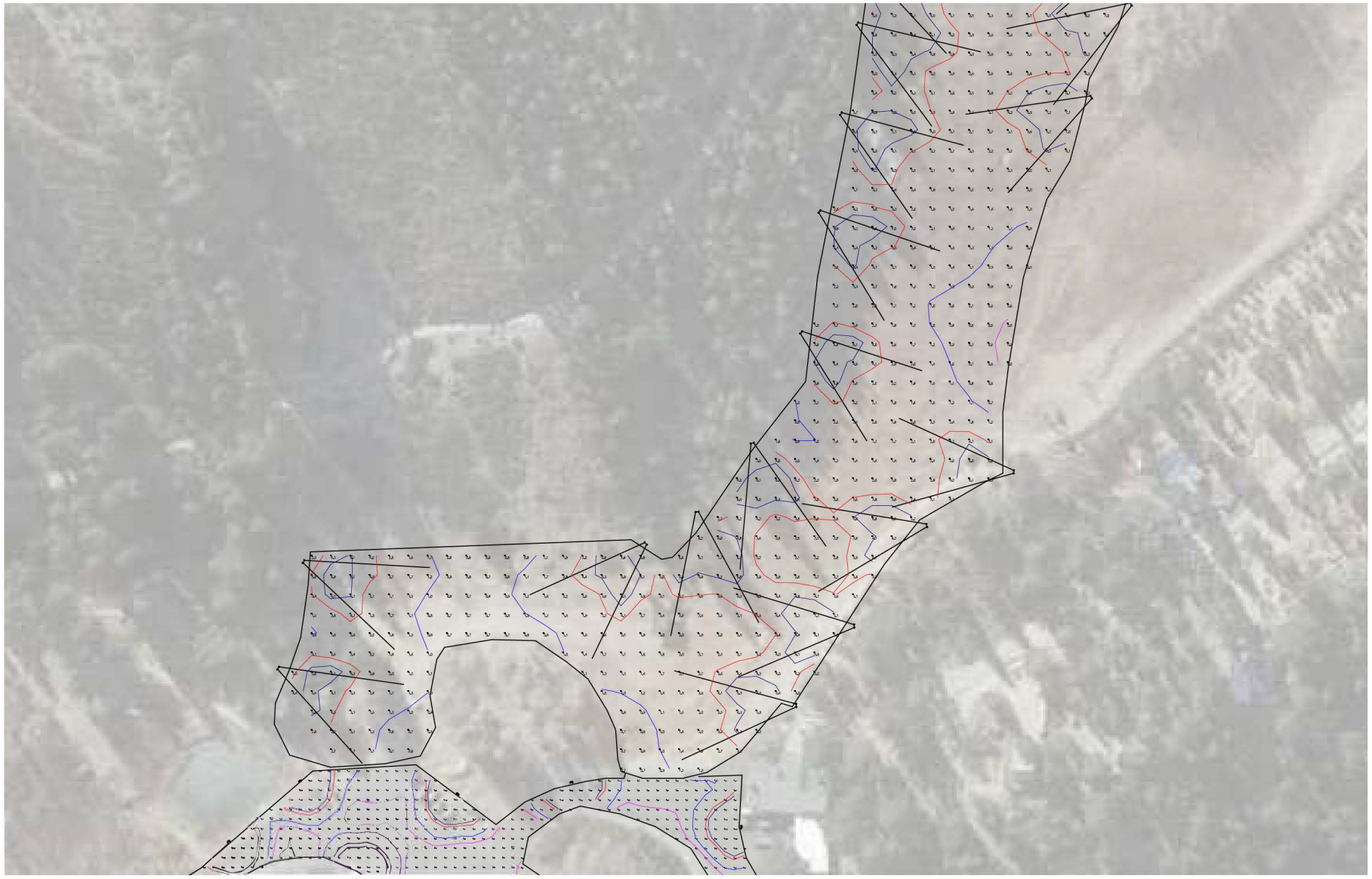


308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com ©2022

Photometrics

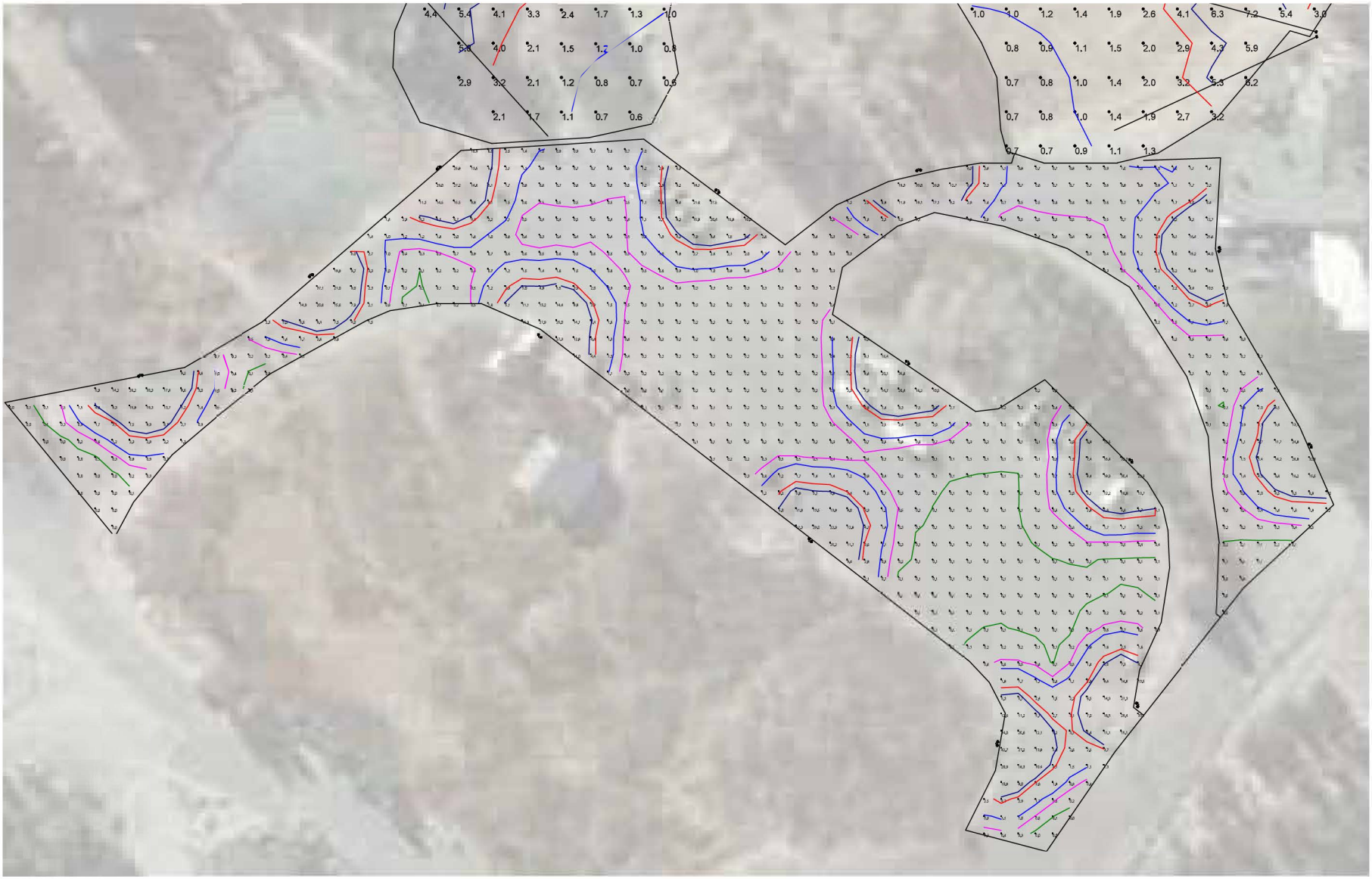
308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com ©2022

Photometrics



308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com ©2022

Photometrics



308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com ©2022

Calculations

Luminaire Schedule

Symbol	Qty	Label	LLF
	77	P1	0.950
	13	NF-SHS-120-40-xx-4	0.950

Isoline Legend

Illuminance (Fc)

Color	Value
	0.1
	0.5
	1
	3.5
	5

Calculation Summary

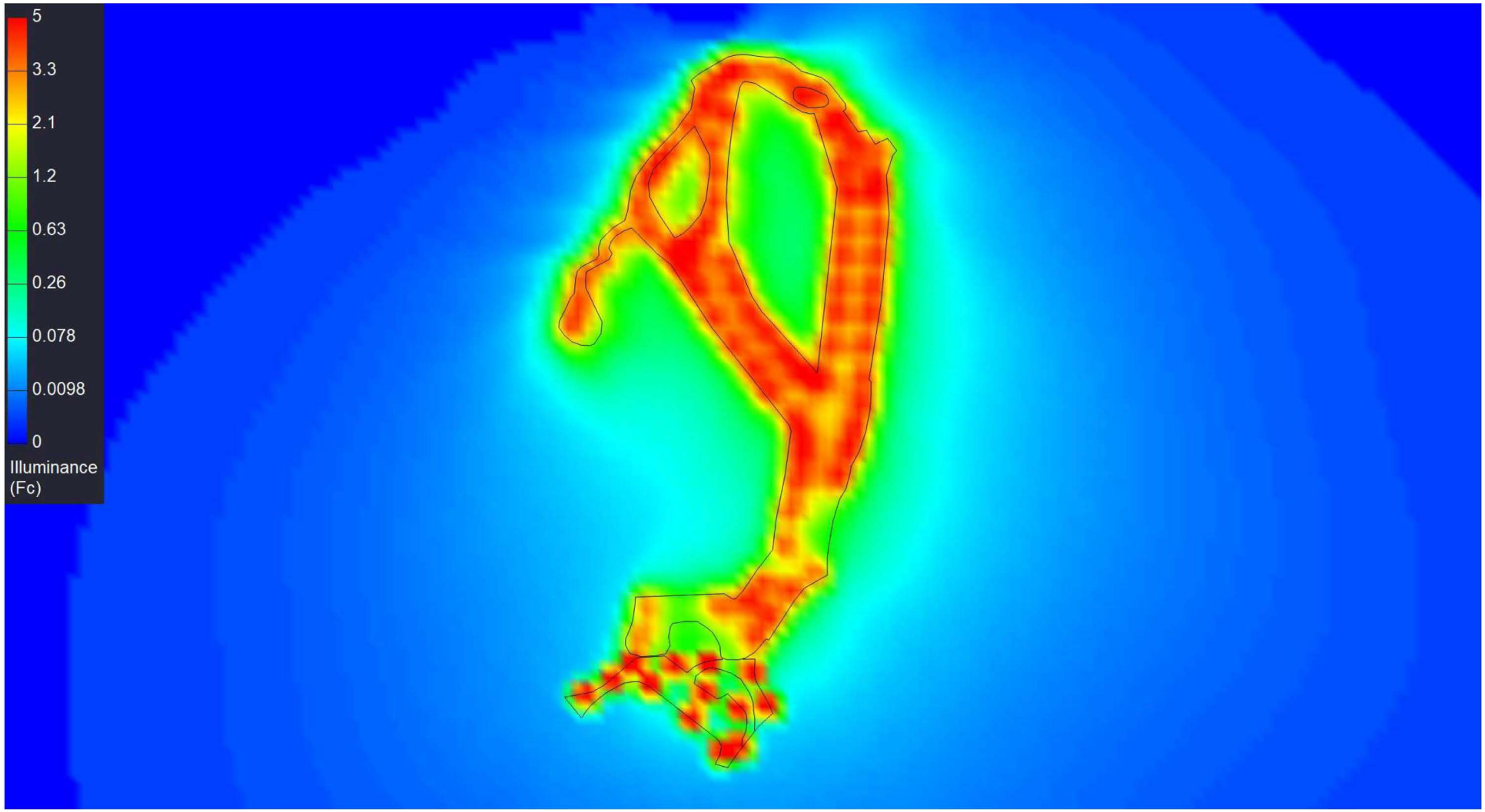
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Parking Lot	Illuminance	Fc	3.32	42.7	0.0	N.A.	N.A.
Phase 1 Lighting	Illuminance	Fc	3.74	9.1	0.5	7.48	18.20

308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com ©2022

Renderings

308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com ©2022

Renderings



308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com ©2022

NAFCO® RTSA ROUND TAPERED STEEL ANCHOR BASE LIGHT POLES

Catalog #

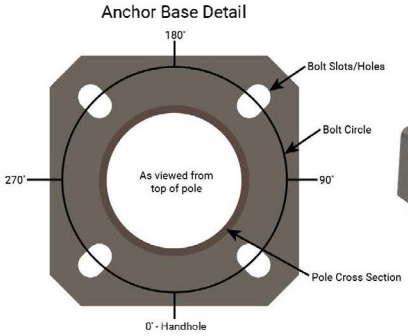
Project

Comments

Proudly engineered and manufactured in the American Midwest – our NAFCO® family of professional-grade light pole products combines 50+ years of manufacturing expertise and top-notch Midwestern workmanship. Like all WiLL products, NAFCO® poles come supported by our unmatched design, engineering, and project support capabilities.

Specifications

- **Pole Shaft** - The pole shaft is a one-piece assembly conforming to ASTM A595 Grade A or A572 Grade 55 with a constant linear taper of 0.14 in/ft. Poles greater than 50' are provided as a two-piece field assembled unit.
- **Pole Top** - A removable top cap is provided for poles receiving drilling patterns for side-mount luminaire arm assemblies. Other pole top options include Tenon Top, Top Cap Only or Open Top which is typical when the pole top diameter matches the necessary slip-fit dimensions.
- **Hand Hole** - A reinforced hand hole with grounding provision is provided at 1'-6" from the base end of the pole assembly. Each hand hole includes a cover and cover attachment hardware. Poles with a 5.90" base diameter are supplied with a 3" X 5" rectangular hand hole. All other pole assemblies are provided with a 4" X 6.5" oval hand hole (dimensions are nominal).
- **Base Cover** - A two-piece full base cover fabricated from ABS plastic is provided with each pole assembly. Additional base cover options, including a cast aluminum and fabricated steel cover, are available upon request. A two-piece steel full base cover is required for some applications depending on the finish requirement and/or pole base square. Factory reserves the right to provide a two-piece steel full base cover on some applications depending upon the finish requirement and/or pole base diameter.
- **Anchor Bolts** - Anchor bolts conform to ASTM F1554 Grade 55 and are provided with two hex nuts and two flat washers. Bolts have an "L" bend on one end and are galvanized a minimum of 12" on the threaded end.
- **Nut Covers** - Nut covers can be substituted on most models.
- **Hardware** - All structural fasteners are galvanized high strength carbon steel. All non-structural fasteners are galvanized or zinc-plated carbon steel or stainless steel.
- **Finish** - Standard finishes are either Galvanized or Finish Painted. Additional finish options including Finish Paint over Galvanizing are available upon request.
- **Design Criteria** - Standard EPA (Effective Projected Area) and weight values are based on Standard Commercial Criteria (with 1.3 gust factor) for top mounted fixtures only. Consult the factory on loading criteria for side mounted luminaires and/or brackets. Satisfactory performance of light poles is dependent upon the pole being properly attached to a supporting foundation of adequate design.




Top Cap


Tenon Top


Vibration Dampener


Handhole Cover


Festoon


NPT Pipe Coupling

308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

EPA Loading Guide (Commercial Design Criteria)

Base Model	80mph w/ 1.3 Gust		90mph w/ 1.3 Gust		100mph w/ 1.3 Gust		110mph w/ 1.3 Gust		120mph w/ 1.3 Gust		130mph w/ 1.3 Gust		140mph w/ 1.3 Gust		150mph w/ 1.3 Gust	
	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)
VS-RTSA-20-5931-11-AB-FP	19.3	482	15.1	377	12.2	305	10.5	262	8.8	220	7.4	185	6.3	157	5.5	138
VS-RTSA-20-6537-11-AB-FP	24.2	605	19.3	482	15.6	390	13.5	335	11.2	280	9.5	238	8.1	203	6.9	173
VS-RTSA-25-5924-11-AB-FP	12.5	312	9.9	247	8	200	6.9	173	5.7	143	4.8	119	4.1	103	3.5	88
VS-RTSA-25-7035-11-AB-FP	20.3	507	16.2	405	13.1	327	11.2	280	9.4	235	7.8	194	6.7	168	5.7	143
VS-RTSA-25-7035-07-AB-FP	30.5	760	24	625	19.8	495	16.5	413	13.9	348	11.7	293	10.0	250	8.5	213
VS-RTSA-30-6624-11-AB-FP	11.7	292	9.3	232	7.5	187	6.5	163	5.4	135	4.6	115	3.9	98	3.3	83
VS-RTSA-30-8038-11-AB-FP	18.9	473	14.9	373	12	300	10.0	250	8.4	210	6.8	168	5.7	143	4.7	118
VS-RTSA-30-8038-07-AB-FP	33.5	838	27	675	22	550	18.4	460	15.3	381	13.0	325	11.0	275	9.3	233
VS-RTSA-35-7324-11-AB-FP	11.2	280	8.9	224	7.1	177	6.3	156	5.3	131	4.4	110	3.8	95	3.1	78
VS-RTSA-35-8536-11-AB-FP	18.9	472	15.1	377	12.2	305	10.5	263	8.7	218	7.2	180	5.9	148	4.8	120
VS-RTSA-35-9546-11-AB-FP	23.2	580	18.2	455	14.5	363	12.0	300	9.7	243	7.8	194	6.3	156	5.2	130
VS-RTSA-39-7824-11-AB-FP	10.7	267	8.5	212	6.6	165	5.7	143	4.5	113	3.7	93	2.9	73	2.3	58
VS-RTSA-39-9036-11-AB-FP	17.2	430	13.5	338	10.8	270	9.0	225	7.3	183	5.8	144	4.7	118	3.8	95
VS-RTSA-39-9036-07-AB-FP	28.5	715	23	575	19	475	15.8	394	13.2	330	10.8	269	9.0	225	7.7	193
VS-RTSA-45-1037-11-AB-FP	17.4	435	13.5	338	10.6	265	8.8	219	7.0	175	5.5	138	4.3	108	3.2	80
VS-RTSA-45-1037-07-AB-FP	28.5	715	23	575	19	475	16.0	400	13.3	333	11.0	275	9.0	225	7.4	185
VS-RTSA-45-1147-07-AB-FP	35.7	893	28	700	22.3	558	18.7	468	15.0	375	12.2	305	10.0	250	8.1	203
VS-RTSA-50-1030-11-AB-FP	13.2	330	10.6	265	8.3	208	6.9	173	5.4	135	4.1	103	3.1	78	2.2	55
VS-RTSA-50-1030-07-AB-FP	20.5	512	16.5	412	13.6	340	12.1	303	10.2	255	8.7	218	7.3	183	5.9	148
VS-RTSA-50-1140-07-AB-FP	29.9	748	23.5	588	18.6	465	15.6	390	12.5	313	10.0	250	8.0	200	6.5	163
VS-RTSA-50-1360-03-AB-FP	69.2	1730	55	1375	44.2	1105	26.2	655	21.1	528	17.0	425	14.0	350	11.4	285
VS-RTSA-50-1360-07-AB-FP	50.4	1260	39.7	992	31.4	785	36.0	900	29.8	745	24.6	615	20.4	510	17.0	425
VS-RTSA-55-1136-0711-AB-FP	21.6	540	17.7	442	14.7	367	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-55-1246-0711-AB-FP	32.2	805	25.9	647	21.1	527	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-55-1352-0507-AB-FP	43.8	1095	35	875	28.6	715	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-60-1240-0707-AB-FP	25.9	647	20.7	517	16.8	420	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-60-1345-0507-AB-FP	34	850	27.6	690	22.6	565	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-60-1348-0711-AB-FP	30.1	752	24.5	612	20.2	505	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-65-1343-0507-AB-FP	30.8	770	24.8	620	20.4	510	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-65-1343-0707-AB-FP	27.3	682	22	550	17.9	447	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-70-1336-0507-AB-FP	23.6	590	19.2	480	15.8	395	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-70-1336-0707-AB-FP	20.6	515	16.7	417	13.7	342	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

1. The total combined EPA and weight of all fixtures, brackets, and other attachments mounting to a light pole cannot exceed the EPA and weight rating for a specified pole.
2. Standard EPA (Effective Projected Area) and weight values are based around standard commercial criteria (with 1.3 second gust factor) and AASHTO standards. **Specific light pole design standards are available from factory.**
3. Custom products, configurations, options, and accessories available from factory.
4. Satisfactory performance of light poles is dependent upon the structure being properly attached to a supporting foundation of adequate design.

"+" indicates a vibration dampener is standard.

308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

EPA Loading Guide (2017 Florida Building Code)

Base Model	110mph FBC		120mph FBC		130mph FBC		140mph FBC		150mph FBC		160mph FBC		170mph FBC		180mph FBC	
	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)
VS-RTSA-20-5931-11-AB-FP	16	400	13.5	338	11.5	288	9.9	248	8.5	213	7.5	188	6.5	163	5.8	145
VS-RTSA-20-6537-11-AB-FP	20	500	17	425	14.2	355	12.2	305	10.7	268	9.4	235	8.4	210	7.3	183
VS-RTSA-25-5924-11-AB-FP	10.5	263	9.2	130	8	200	6.7	168	5.7	143	4.8	120	4.2	105	3.5	88
VS-RTSA-25-7035-11-AB-FP	17	425	14	350	12	300	10.3	258	8.5	213	7.8	195	6.7	168	6	150
VS-RTSA-25-7035-07-AB-FP	23	575	20	500	17	425	14.5	363	12.8	320	11	275	9.5	238	8.5	213
VS-RTSA-30-6624-11-AB-FP	10	250	8.7	218	7.5	188	6.2	155	5.2	130	4.4	110	3.8	95	3.2	80
VS-RTSA-30-8038-11-AB-FP	17.2	430	14.5	363	12.3	308	10.5	263	9	225	8	200	6.7	168	5.7	143
VS-RTSA-30-8038-07-AB-FP	29	725	25.3	633	21.5	538	18.5	463	16	400	14	350	12.4	310	10.8	270
VS-RTSA-35-7324-11-AB-FP	9.7	243	8.4	210	7	175	6	150	5	125	4	100	3.3	83	2.8	70
VS-RTSA-35-8536-11-AB-FP	15	375	12.5	313	10.7	268	9.2	230	7.7	193	6.5	163	5.5	138	4.5	113
VS-RTSA-35-9546-11-AB-FP	19.4	485	16.5	413	14	350	11.3	283	9.4	235	8	200	6.5	163	5.3	133
VS-RTSA-39-7824-11-AB-FP	10	250	8.3	208	7	175	5.9	148	4.8	120	4	100	3.3	83	2.5	63
VS-RTSA-39-9036-11-AB-FP	14.4	360	12	300	10	250	8.5	213	7	175	6	150	5	125	4	100
VS-RTSA-39-9036-07-AB-FP	24.5	613	21	525	18.5	463	16	400	14	350	12	300	10.3	258	8.7	218
VS-RTSA-45-1037-11-AB-FP	12	300	9.5	238	7.7	193	6.3	158	5	125	4	100	3	75	2	50
VS-RTSA-45-1037-07-AB-FP	22.5	563	18.8	470	15.5	388	13	325	11.1	278	9.5	238	8	200	6.5	163
VS-RTSA-45-1147-07-AB-FP	9	225	7	175	5.5	138	4	100	3.3	83	2.3	58	1.4	35	1	25
VS-RTSA-50-1030-11-AB-FP	18	450	15	375	12.5	313	10	250	8.6	215	7	175	5.5	138	4.8	120
VS-RTSA-50-1030-07-AB-FP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-50-1140-07-AB-FP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-50-1360-03-AB-FP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-50-1360-07-AB-FP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-55-1136-0711-AB-FP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-55-1246-0711-AB-FP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-55-1352-0507-AB-FP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-60-1240-0707-AB-FP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-60-1345-0507-AB-FP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-60-1348-0711-AB-FP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-65-1343-0507-AB-FP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-65-1343-0707-AB-FP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-70-1336-0507-AB-FP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RTSA-70-1336-0707-AB-FP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

1. The total combined EPA and weight of all fixtures, brackets, and other attachments mounting to a light pole cannot exceed the EPA and weight rating for a specified pole.
2. Standard EPA (Effective Projected Area) and weight values are based around Ultimate Wind Speed, Risk Category II, Exposure Category C. Specific light pole design standards are available from factory. Above data is based around the load centroid being at 2.5' above the pole top and with 2.0' eccentricity. Weight of horizontally eccentric load is capped at 100lb, all remaining weight mounted 2.5' above top of the pole.
3. Custom products, configurations, options, and accessories available from factory.
4. Satisfactory performance of light poles is dependent upon the structure being properly attached to a supporting foundation of adequate design.

"+" indicates a vibration dampener is standard.

308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

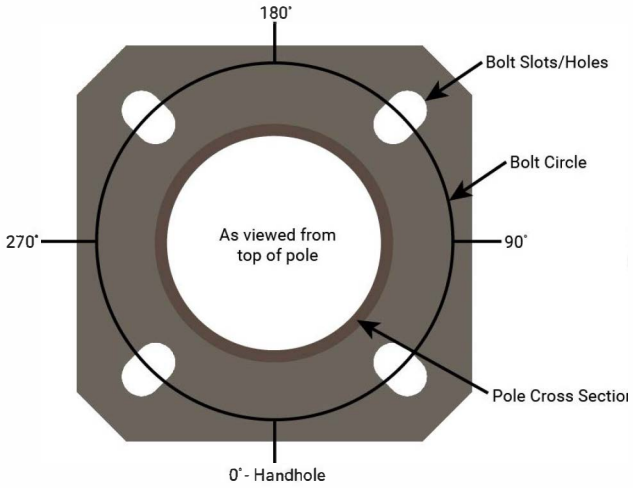
Designation & Dimensional Information

Base Model	Pole Dimensions					Base Plate		Anchor Bolts	
	Nominal Mounting Height	Top OD (in)	Base OD (in)	Wall Thick (ga)	Structural Weight (lb)	Bolt Circle Diameter (in)	Sq (in) x Thick (in)	Dia x Length x Hook (in)	Projection (in)
VS-RTSA-20-5931-11-AB-FP	20'-0"	3.1	5.9	11	140	8.5 - 9.5	10 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-20-6537-11-AB-FP	20'-0"	3.7	6.5	11	160	9.0 - 10.0	10.5 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-25-5924-11-AB-FP	25'-0"	2.4	5.9	11	155	8.5 - 9.5	10 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-25-7035-11-AB-FP	25'-0"	3.5	7	11	200	9.5 - 10.5	10.88 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-25-7035-07-AB-FP	25'-0"	3.5	7	7	280	9.5 - 10.5	10.88 x 1	1.00 x 36.00 x 4.00	4 - 4.5
VS-RTSA-30-6624-11-AB-FP	30'-0"	2.4	6.6	11	200	9.0 - 10.0	10.5 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-30-8038-11-AB-FP	30'-0"	3.8	8	11	265	10.5 - 11.5	11.5 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-30-8038-07-AB-FP	30'-0"	3.8	8	7	380	10.5 - 11.5	11.5 x 1.25	1.25 x 42.00 x 6.00	4.75 - 5.25
VS-RTSA-35-7324-11-AB-FP	35'-0"	2.4	7.3	11	250	10.0 - 11.0	11.25 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-35-8536-11-AB-FP	35'-0"	3.6	8.5	11	315	11.0 - 12.0	12 x 1	1.00 x 36.00 x 4.00	4 - 4.5
VS-RTSA-35-9546-11-AB-FP	35'-0"	4.6	9.5	11	370	12.5 - 13.5	13 x 1	1.00 x 36.00 x 4.00	4 - 4.5
VS-RTSA-39-7824-11-AB-FP	39'-0"	2.4	7.82	11	285	10.5 - 11.5	11.5 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-39-9036-11-AB-FP	39'-0"	3.58	9	11	355	12.0 - 13.0	12.38 x 1	1.00 x 36.00 x 4.00	4 - 4.5
VS-RTSA-39-9036-07-AB-FP	39'-0"	3.58	9	7	515	12.0 - 13.0	12.38 x 1.25	1.25 x 42.00 x 6.00	4.75 - 5.25
VS-RTSA-45-1037-11-AB-FP	45'-0"	3.7	10	11	450	13 - 14	14 x 1	1.00 x 36.00 x 4.00	4 - 4.5
VS-RTSA-45-1037-07-AB-FP	45'-0"	3.7	10	7	650	13 - 14	14 x 1.25	1.25 x 42.00 x 6.00	4.75 - 5.25
VS-RTSA-45-1147-07-AB-FP	45'-0"	4.7	11	7	780	14.5 - 15.5	16.5 x 1.5	1.25 x 42.00 x 6.00	5 - 5.5
VS-RTSA-50-1030-11-AB-FP	50'-0"	3	10	11	475	13 - 14	14 x 1	1.00 x 36.00 x 4.00	4 - 4.5
VS-RTSA-50-1030-07-AB-FP	50'-0"	3	10	7	680	13 - 14	14 x 1.25	1.25 x 42.00 x 6.00	4.75 - 5.25
VS-RTSA-50-1140-07-AB-FP	50'-0"	4	11	7	812	14.5 - 15.5	16.5 x 1.5	1.25 x 42.00 x 6.00	5 - 5.5
VS-RTSA-50-1360-03-AB-FP	50'-0"	6	13	3	1335	17.5	18.5 x 1.75	1.75 x 84.00 x 6.00	6.25 - 6.75
VS-RTSA-50-1360-07-AB-FP	50'-0"	6	13	7	1020	17	18 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-55-1136-0711-AB-FP	55'-0"	3.58	11	7 & 11	890	14.5 - 15.5	16.5 x 1.5	1.25 x 42.00 x 6.00	5 - 5.5
VS-RTSA-55-1246-0711-AB-FP	55'-0"	4.55	12	7 & 11	975	16	17 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-55-1352-0507-AB-FP	55'-0"	5.16	12.5	5 & 7	1225	16.5	17.5 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-60-1240-0707-AB-FP	60'-0"	4.01	12	7 & 7	1060	16	17 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-60-1345-0507-AB-FP	60'-0"	4.46	12.5	5 & 7	1275	16.5	17.5 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-60-1348-0711-AB-FP	60'-0"	4.83	13	7 & 11	1075	17	18 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-65-1343-0507-AB-FP	65'-0"	4.25	13	5 & 7	1400	17	18 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-65-1343-0707-AB-FP	65'-0"	4.25	13	7 & 7	1200	17	18 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-70-1336-0507-AB-FP	70'-0"	3.55	13	5 & 7	1440	17	18 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-70-1336-0707-AB-FP	70'-0"	3.55	13	7 & 7	1270	17	18 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6

1. The total combined EPA and weight of all fixtures, brackets, and other attachments mounting to a light pole cannot exceed the EPA and weight rating for a specified pole.
2. Custom products, configurations, options, and accessories available from factory.
3. Satisfactory performance of light poles is dependent upon the structure being properly attached to a supporting foundation of adequate design.

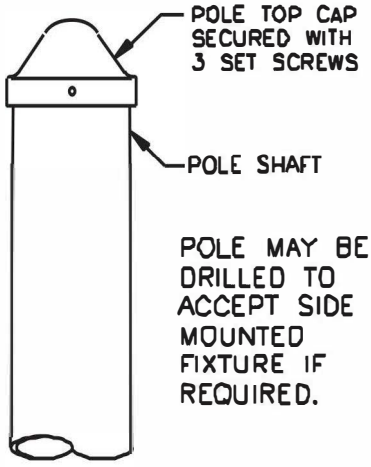
"+" indicates a vibration dampener is standard.

Anchor Base Detail

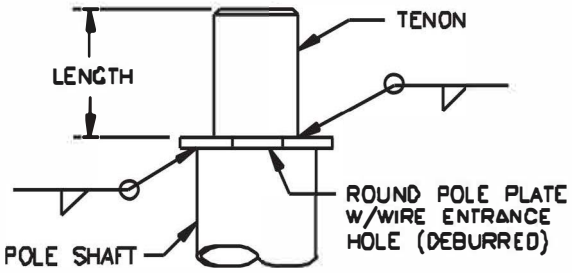


308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

Dimensional Diagrams

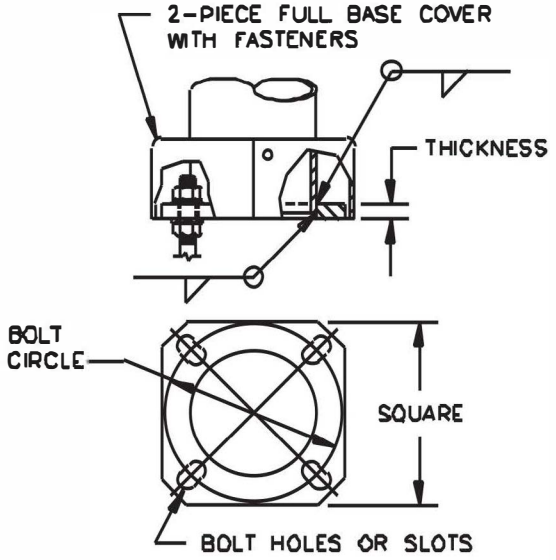


CAP DETAIL (OPTIONAL)

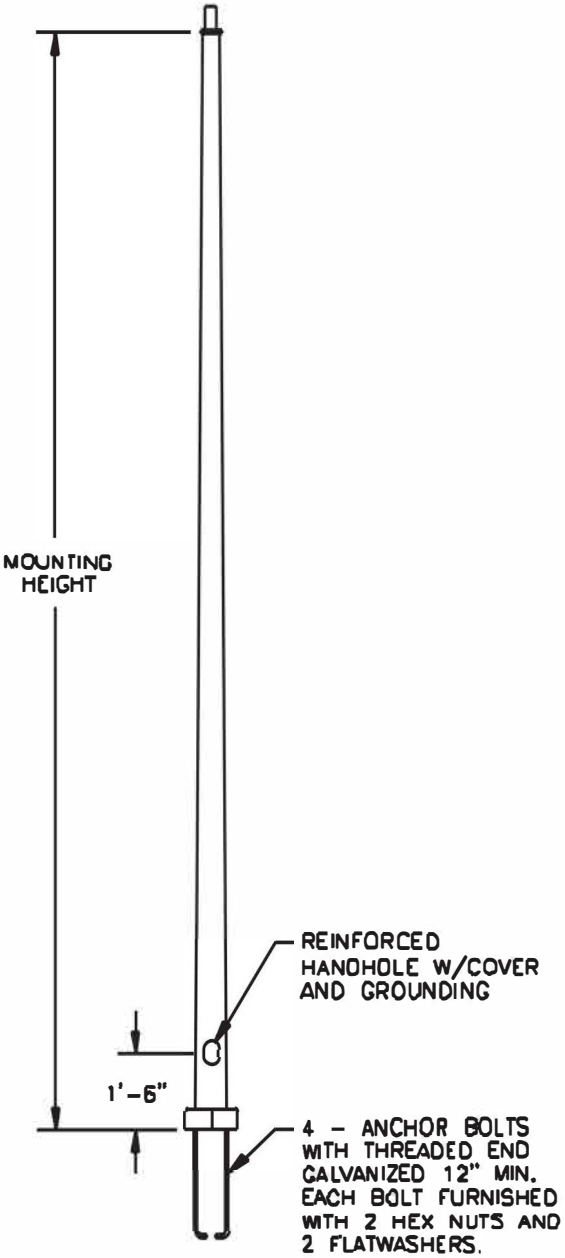


DESIGN NUMBER	O.D. (in)	PIPE SIZE	LENGTH (in)
P2	2.375	2.0" SCHED 80	4
P4	4.000	3.5" SCHED 40	6
PL	2.400	POLE TOP	N.A.

TENON DETAIL (STANDARD)



POLE BASE DETAIL



POLE DETAIL

308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

Ordering Information

Ex: VS-RTSA-20-5931-11-AB-FP-MB-D2-FST

Product Family	Design	Length	Base OD	Top OD	Thickness	Anchor Bolts	Finish Type	Painted Color	Fixture Mounting
VS = NAFCO®	RTSA = Round Tapered Steel Anchor Base	10-30 = 10-30'	59 = 5.9"	31 = 3.1"	11 = 11ga	AB = Includes Anchor Bolts	GV = Galvanized Only (No Paint)	DB = Dark Bronze	PC = Cap Only, No Side Drilling
		C = Custom	65 = 6.5"	37 = 3.7"	7 = 7ga	LAB = Less Anchor Bolts	FP = Finish Painted	MB = Medium Bronze	PL = Open Top, No Cap or Side Drilling
			70 = 7"	24 = 2.4"	0711 = 7 & 11ga	C = Custom	FPGV = Finished Painted Over Galvanizing	BK = Black	D1 = Drill Single
			66 = 6.6"	35 = 3.5"	0507 = 5 & 7ga		C = Custom	WH = White	D2 = Drill 2@180
			80 = 8"	38 = 3.8"	0707 = 7 & 7ga			LG = Light Gray	D3 = Drill 3@120
			73 = 7.3"	36 = 3.6"	C = Custom			SG = Slate Gray	D4 = Drill 4@90
			85 = 8.5"	46 = 4.6"				DG = Dark Green	D5 = Drill 2@90
			95 = 9.5"	36 = 3.58"				SL = Silver	D6 = Drill 3@90
			78 = 7.82"	47 = 4.7"				RAL = Custom RAL Match	P1 = 4" OD x 5" Long Tenon
			90 = 9"	30 = 3"				C = Custom	P2 = 2.38" OD x 4" Long Tenon
			10 = 10"	40 = 4"					P3 = 3.50" OD x 6" Long Tenon
			11 = 11"	60 = 6"					P4 = 4" OD x 6" Long Tenon
			13 = 13"	46 = 4.55"					P5 = 2.88" OD x 4" Long Tenon
			12 = 12"	52 = 5.16"					P6 = 2.88" OD x 5" Long Tenon
			13 = 12.5"	40 = 4.01"					P7 = 2.38" OD x 5" Long Tenon
			C = Custom	48 = 4.83"					PQ = 2.38" OD x 12" Long Tenon
				45 = 4.46"					PD = 3" OD x 3" Long Tenon
				43 = 4.25"					P9 = Custom Size Tenon
				36 = 3.55"					
				C = Custom					

Options & Accessories (Add as Suffix)		
Option	**Option**	**Accessories**
SPL = Special Cut Length (Please Specify)	ULHH = UL Compliant Hand Hole	STAMP = Engineering Services, Signed & Sealed Calcs
BCSPCL = Special Base Plate to Match Existing Bolt Circle (May Add to Production Lead Time, May Require Special Base Cover)	NECHH = NEC 410.30 Compliant Hand Hole & Cover	STAMPCA = Engineering Services, CA Signed & Sealed Calcs
VDA = Internal Vibration Dampener, Factory Installed	EHH = Additional Hand Hole Opening w/ Cover Assembly (Specify Pole Height & Orientation)	PRE100 = Pre-Ship Anchor Bolts - 1.0" x 36" x 4"
VDF = Internal Vibration Dampener, Field Installable	FST = Festoon Provision, Electrical by Others (Specify Pole Height & Orientation)	PRE125 = Pre-Ship Anchor Bolts - 1.25" x 42" x 6"
FBCP = ABS Plastic Full Base Cover	CPL = NPT Pipe Coupling (Specify Pole Height, Orientation, & NPT Size)	PRE150 = Pre-Ship Anchor Bolts - 1.5" x 54" x 6"
FBCS = Steel Full Base Cover		PRE175 = Pre-Ship Anchor Bolts - 1.75" x 84" x 6"
PXDX = Side Drill + Tenon w/ Additional Hand Hole (Specify Tenon OD & Length)		

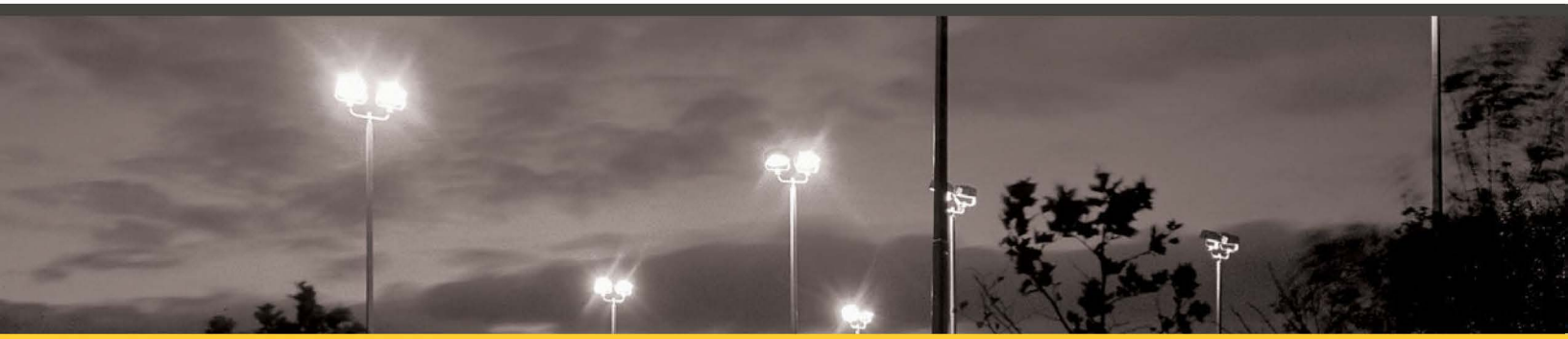
1. See previous pages for base model configurations. Consult factory or your sales rep for deviations from base models.
2. Please consult factory or your sales representative to verify options and accessories will work with your light pole part number.
3. Custom products, configurations, options, and accessories available from factory.

NAFCO® RSSA ROUND STRAIGHT STEEL ANCHOR BASE LIGHT POLES

Catalog #

Project

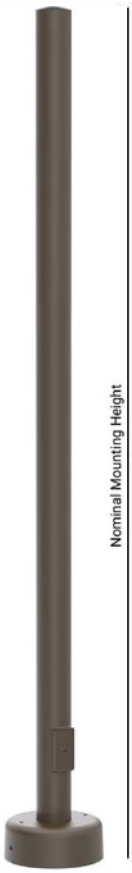
Comments

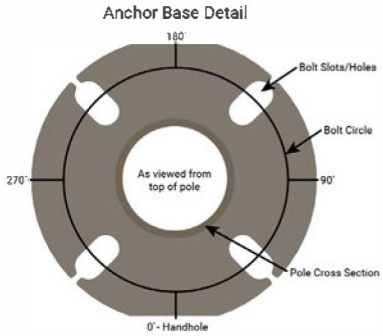


Proudly engineered and manufactured in the American Midwest – our NAFCO® family of professional-grade light pole products combines 50+ years of manufacturing expertise and top-notch Midwestern workmanship. Like all WiLL products, NAFCO® poles come supported by our unmatched design, engineering, and project support capabilities.

Specifications

- **Pole Shaft** - The pole shaft is fabricated from hot rolled welded steel tubing of one-piece construction with a minimum yield strength of 42 KSI.
- **Pole Top** - A removable top cap is provided for poles receiving drilling patterns for side-mount luminaire arm assemblies. Other pole top options include Tenon Top, Top Cap Only or Open Top which is typical when the pole top diameter matches the necessary slip-fit dimensions.
- **Hand Hole** - A reinforced hand hole with grounding provision is provided at 1' from the base end of the pole assembly. Each hand hole includes a cover and cover attachment hardware. All pole assemblies are provided with a 2.5" x 5" rectangular hand hole (dimensions are nominal).
- **Base Cover** - A two-piece full base cover fabricated from ABS plastic is provided with each pole assembly. Additional base cover options, including a cast aluminum and fabricated steel cover, are available upon request.
- **Anchor Bolts** - Anchor bolts conform to ASTM F1554 Grade 55 and are provided with two hex nuts and two flat washers. Bolts have an "L" bend on one end and are galvanized a minimum of 12" on the threaded end.
- **Hardware** - All structural fasteners are galvanized high strength carbon steel. All non-structural fasteners are galvanized or zinc-plated carbon steel or stainless steel.
- **Finish** - Standard finishes are either Galvanized or Finish Painted. Additional finish options including Finish Paint over Galvanizing are available upon request.
- **Design Criteria** - Standard EPA (Effective Projected Area) and weight values are based on Standard Commercial Criteria (with 1.3 gust factor) for side mounted fixtures only. Consult the factory on loading criteria for pole top mounted luminaires and/or brackets. Satisfactory performance of light poles is dependent upon the pole being properly attached to a supporting foundation of adequate design.






Top Cap


Tenon Top


Vibration Dampener


Handhole Cover


Festoon


NPT Pipe Coupling

308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

EPA Loading Guide (Commercial Design Criteria)

Base Model	70mph w/ 1.3 Gust		80mph w/ 1.3 Gust		90mph w/ 1.3 Gust		100mph w/ 1.3 Gust		110mph w/ 1.3 Gust		120mph w/ 1.3 Gust		130mph w/ 1.3 Gust		140mph w/ 1.3 Gust		150mph w/ 1.3 Gust	
	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)
VS-RSSA-10-3030-11-AB-FP	13.1	328	10	250	7.7	190	6	175	4.7	118	3.9	100	3.3	83	2.8	75	2.4	60
VS-RSSA-10-4040-11-AB-FP	25.1	630	19.1	480	15	375	12.2	305	9.9	275	8.3	225	7.0	200	6.0	175	5.2	150
VS-RSSA-10-4545-11-AB-FP	32.5	820	24.5	615	19.5	490	15.8	395	13.1	330	11.0	275	9.3	235	8.0	200	6.9	175
VS-RSSA-12-3030-11-AB-FP	10.4	260	7.7	195	5.8	145	4.4	130	3.4	90	2.8	75	2.3	75	1.9	75	1.6	75
VS-RSSA-12-4040-11-AB-FP	20.1	503	15	390	11.8	300	9.5	240	7.8	200	6.5	175	5.5	150	4.7	125	4.0	100
VS-RSSA-12-4545-11-AB-FP	26.2	655	19.8	495	15.7	395	12.7	320	10.5	263	8.7	220	7.4	200	6.3	175	5.5	150
VS-RSSA-14-3030-11-AB-FP	8.3	225	6	175	4.4	130	3.3	90	2.4	75	1.9	75	1.5	75	1.3	50	1.0	50
VS-RSSA-14-4040-11-AB-FP	16.5	425	12.2	305	9.4	250	7.6	195	6.2	175	5.1	150	4.3	125	3.6	100	3.1	100
VS-RSSA-14-4545-11-AB-FP	21.6	550	16.2	405	12.8	320	10.3	260	8.6	225	7.1	190	6.0	160	5.1	150	4.3	125
VS-RSSA-15-4040-11-AB-FP	16.5	425	9.6	250	7.4	185	5.9	150	6.2	175	5.1	150	4.3	125	3.6	100	3.1	100
VS-RSSA-15-4545-11-AB-FP	21.6	550	13.1	330	10.2	265	8.2	205	8.6	225	7.1	190	6.0	160	5.1	150	4.3	125
VS-RSSA-16-3030-11-AB-FP	6.5	175	4.6	125	3.2	100	2.3	60	1.5	50	1.2	45	0.9	45	0.7	45	0.5	45
VS-RSSA-16-4040-11-AB-FP	13.2	350	9.6	250	7.4	185	5.9	150	4.8	125	3.9	125	3.3	85	2.7	85	2.3	75
VS-RSSA-16-4545-11-AB-FP	17.5	440	13.1	330	10.2	265	8.2	205	6.7	175	5.6	150	4.7	125	4.0	120	3.4	100
VS-RSSA-18-3030-11-AB-FP	5.1	135	3.4	90	2.3	60	1.4	70	0.8	50	0.5	50	0.4	25	0.2	25	0.2	20
VS-RSSA-18-4040-11-AB-FP	10.7	275	7.6	190	5.7	180	4.5	130	3.6	100	3.0	75	2.4	75	2.0	75	1.7	50
VS-RSSA-18-4545-11-AB-FP	14.2	375	10.5	265	8.2	210	6.5	165	5.3	150	4.4	125	3.7	100	3.1	100	2.6	85
VS-RSSA-20-3030-11-AB-FP	3.9	115	2.4	100	1.4	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RSSA-20-4040-11-AB-FP	8.6	225	6	150	4.4	150	3.4	125	2.7	75	2.2	70	1.7	70	1.4	50	1.2	45
VS-RSSA-20-4545-11-AB-FP	11.6	300	8.5	215	6.6	165	5.2	130	4.2	125	3.4	100	2.8	100	2.4	75	1.9	75
VS-RSSA-20-5050-11-AB-FP	15.4	400	11.7	300	9.1	230	7.2	180	5.9	150	4.8	125	4.0	125	3.2	100	2.6	100
VS-RSSA-25-4040-11-AB-FP	4.8	125	2.8	100	1.9	75	1.3	75	1.0	65	0.7	50	0.4	50	N/A	N/A	N/A	N/A
VS-RSSA-25-4545-11-AB-FP	6.9	175	4.8	130	3.6	90	2.7	90	2.1	100	1.6	100	1.3	75	1.0	75	0.7	50
VS-RSSA-25-5050-11-AB-FP	9.7	100	7.2	180	5.5	150	4.2	150	3.4	125	2.7	100	2.1	100	1.6	75	1.1	75
VS-RSSA-25-5050-07-AB-FP	16.0	400	12.1	300	9.4	250	7.4	200	6.0	150	5.0	125	4.1	110	3.2	100	2.5	100
VS-RSSA-30-4545-11-AB-FP	3.7	110	2.3	80	1.5	75	1	60	0.7	60	0.4	75	N/A	N/A	N/A	N/A	N/A	N/A
VS-RSSA-30-5050-11-AB-FP	6.0	125	4.2	150	3	125	2.2	100	1.7	100	1.3	65	0.8	65	0.4	50	N/A	N/A
VS-RSSA-30-5050-07-AB-FP	10.8	275	8	200	6.5	160	4.7	125	3.8	110	3.0	100	2.3	100	1.7	70	1.1	70

1. The total combined EPA and weight of all fixtures, brackets, and other attachments mounting to a light pole cannot exceed the EPA and weight rating for a specified pole.
2. Standard EPA (Effective Projected Area) and weight values are based around standard commercial criteria (with 1.3 second gust factor) and AASHTO standards. **Specific light pole design standards are available from factory.**
3. Custom products, configurations, options, and accessories available from factory.
4. Satisfactory performance of light poles is dependent upon the structure being properly attached to a supporting foundation of adequate design.

"+" indicates a vibration dampener is standard.

EPA Loading Guide (2017 Florida Building Code)

Base Model	110mph FBC		120mph FBC		130mph FBC		140mph FBC		150mph FBC		160mph FBC		170mph FBC		180mph FBC	
	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)	Max EPA (sq ft)	Max Weight (lb)
VS-RSSA-10-3030-11-AB-FP	5.5	138	4.5	113	4	100	3.5	88	3	75	2.5	63	2	50	1.5	38
VS-RSSA-10-4040-11-AB-FP	12	300	10	250	8	200	7	175	6	150	5	125	5	125	4	100
VS-RSSA-10-4545-11-AB-FP	15.5	388	13	325	11	275	9	225	8.5	213	7	175	6.5	163	5.5	138
VS-RSSA-12-3030-11-AB-FP	4.5	113	3.5	88	3	75	2.5	63	2	50	1.5	38	1.5	38	1	25
VS-RSSA-12-4040-11-AB-FP	10	250	8	200	6.5	163	5.5	238	4.5	113	4	100	4	100	3.5	88
VS-RSSA-12-4545-11-AB-FP	13	325	10.5	263	9	225	7.5	188	7	175	6	150	5	125	4.5	113
VS-RSSA-14-3030-11-AB-FP	3.5	88	3	75	2.5	63	2	50	1.5	38	1	25	1	25	0.5	13
VS-RSSA-14-4040-11-AB-FP	9	225	7.5	188	6	150	5	125	4	100	3.5	88	3	75	3	75
VS-RSSA-14-4545-11-AB-FP	10.5	263	8.5	213	7	175	6	150	5.5	138	5	125	4	100	3.5	88
VS-RSSA-15-4040-11-AB-FP	9	225	7.5	188	6	150	5	125	4	100	3.5	88	3	75	3	75
VS-RSSA-15-4545-11-AB-FP	10.5	263	8.5	213	7	175	6	150	5.5	138	5	125	4	100	3.5	88
VS-RSSA-16-3030-11-AB-FP	3	75	2	50	1.5	38	1	25	1	25	0.5	13	0.5	13	N/A	N/A
VS-RSSA-16-4040-11-AB-FP	6.5	63	5	125	4	100	3	75	2.5	63	2	50	2	50	2	50
VS-RSSA-16-4545-11-AB-FP	9	225	7	175	5.5	138	4.5	113	4.5	113	4	100	3.5	88	3	75
VS-RSSA-18-3030-11-AB-FP	2	50	1.5	38	1	25	0.5	13	0.5	13	N/A	N/A	N/A	N/A	N/A	N/A
VS-RSSA-18-4040-11-AB-FP	5	125	4	100	3	75	2.5	63	1.5	38	1	25	1	25	1	25
VS-RSSA-18-4545-11-AB-FP	7	175	5.5	138	4.5	113	3.5	88	3.5	88	3	75	2.5	63	2	50
VS-RSSA-20-3030-11-AB-FP	1.5	38	1	25	0.5	13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RSSA-20-4040-11-AB-FP	4	100	3	75	2	50	1.5	38	1	25	0.5	13	0.5	13	0.5	13
VS-RSSA-20-4545-11-AB-FP	5.5	138	4.5	113	3.5	88	2.5	63	2.5	63	2.5	63	2	50	1.5	38
VS-RSSA-20-5050-11-AB-FP	7.5	188	6	150	5	125	5	125	4	100	3.5	88	2.5	63	2	50
VS-RSSA-25-4040-11-AB-FP	2	50	1	25	0.5	13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RSSA-25-4545-11-AB-FP	3	75	2	50	1	25	0.5	13	0.5	13	0.5	13	0.5	13	N/A	N/A
VS-RSSA-25-5050-11-AB-FP	4.5	113	3	75	3	75	3	75	2	50	1.5	38	1	25	0.5	13
VS-RSSA-25-5050-07-AB-FP	8	200	6	150	5.5	138	5	125	4	100	3.5	88	2.5	63	2	50
VS-RSSA-30-4545-11-AB-FP	1	25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RSSA-30-5050-11-AB-FP	2	50	0.5	13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VS-RSSA-30-5050-07-AB-FP	4.5	113	3	75	3	75	3	75	2.5	63	1.5	38	1	25	0.5	13

1. The total combined EPA and weight of all fixtures, brackets, and other attachments mounting to a light pole cannot exceed the EPA and weight rating for a specified pole.
2. Standard EPA (Effective Projected Area) and weight values are based around Ultimate Wind Speed, Risk Category II, Exposure Category C. Specific light pole design standards are available from factory. Above data is based around the load centroid being at 2.5' above the pole top and with 2.0' eccentricity. Weight of horizontally eccentric load is capped at 100lb, all remaining weight mounted 2.5' above top of the pole.
3. Custom products, configurations, options, and accessories available from factory.
4. Satisfactory performance of light poles is dependent upon the structure being properly attached to a supporting foundation of adequate design.

"+" indicates a vibration dampener is standard.

308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

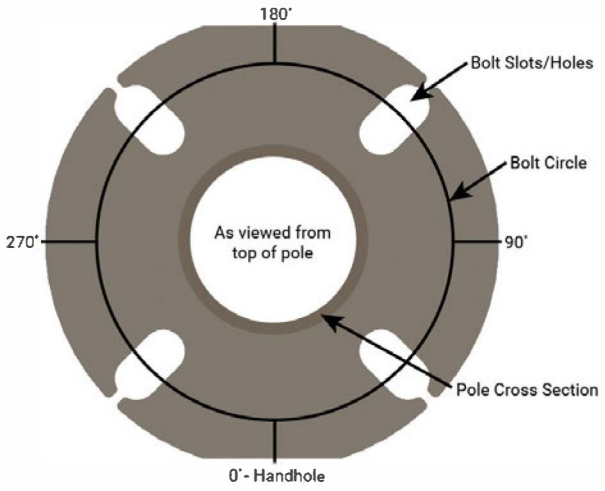
Designation & Dimensional Information

Base Model	Pole Dimensions					Base Plate		Anchor Bolts	
	Nominal Mounting Height	Top OD (in)	Base OD (in)	Wall Thick (ga)	Structural Weight (lb)	Bolt Circle Diameter (in)	Sq (in) x Thick (in)	Dia x Length x Hook (in)	Projection (in)
VS-RSSA-10-3030-11-AB-FP	10'-0"	3	3	11	55	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-10-4040-11-AB-FP	10'-0"	4	4	11	70	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-10-4545-11-AB-FP	10'-0"	4.5	4.5	11	75	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-12-3030-11-AB-FP	12'-0"	3	3	11	60	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-12-4040-11-AB-FP	12'-0"	4	4	11	80	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-12-4545-11-AB-FP	12'-0"	4.5	4.5	11	85	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-14-3030-11-AB-FP	14'-0"	3	3	11	70	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-14-4040-11-AB-FP	14'-0"	4	4	11	90	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-14-4545-11-AB-FP	14'-0"	4.5	4.5	11	95	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-15-4040-11-AB-FP	15'-0"	4	4	11	95	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-15-4545-11-AB-FP	15'-0"	4.5	4.5	11	100	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-16-3030-11-AB-FP	16'-0"	3	3	11	80	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-16-4040-11-AB-FP	16'-0"	4	4	11	100	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-16-4545-11-AB-FP	16'-0"	4.5	4.5	11	105	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-18-3030-11-AB-FP	18'-0"	3	3	11	90	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-18-4040-11-AB-FP	18'-0"	4	4	11	110	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-18-4545-11-AB-FP	18'-0"	4.5	4.5	11	115	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-20-3030-11-AB-FP	20'-0"	3	3	11	100	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-20-4040-11-AB-FP	20'-0"	4	4	11	120	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-20-4545-11-AB-FP	20'-0"	4.5	4.5	11	130	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-20-5050-11-AB-FP	20'-0"	5	5	11	145	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-25-4040-11-AB-FP	25'-0"	4	4	11	145	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-25-4545-11-AB-FP	25'-0"	4.5	4.5	11	155	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-25-5050-11-AB-FP	25'-0"	5	5	11	180	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-25-5050-07-AB-FP	25'-0"	5	5	7	260	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-30-4545-11-AB-FP	30'-0"	4.5	4.5	11	185	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-30-5050-11-AB-FP	30'-0"	5	5	11	210	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-30-5050-07-AB-FP	30'-0"	5	5	7	305	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75

1. The total combined EPA and weight of all fixtures, brackets, and other attachments mounting to a light pole cannot exceed the EPA and weight rating for a specified pole.
2. Custom products, configurations, options, and accessories available from factory.
3. Satisfactory performance of light poles is dependent upon the structure being properly attached to a supporting foundation of adequate design.

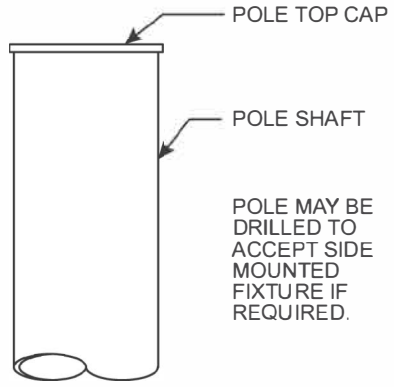
"+" indicates a vibration dampener is standard.

Anchor Base Detail

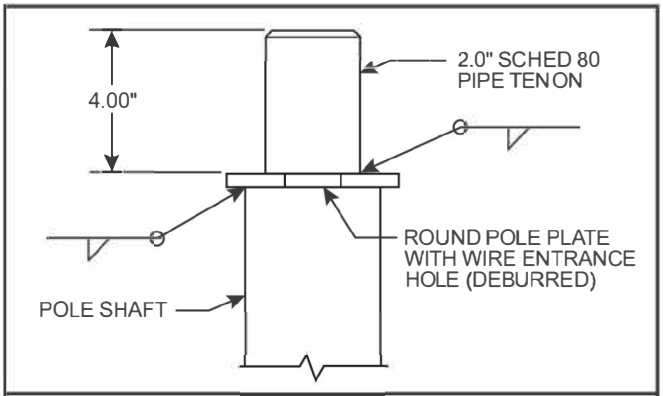


308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

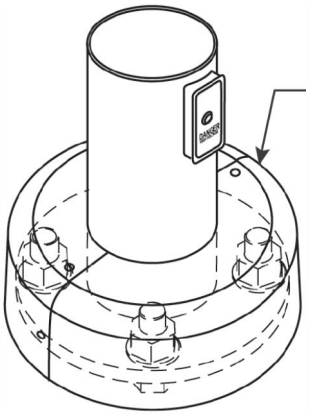
Dimensional Diagrams



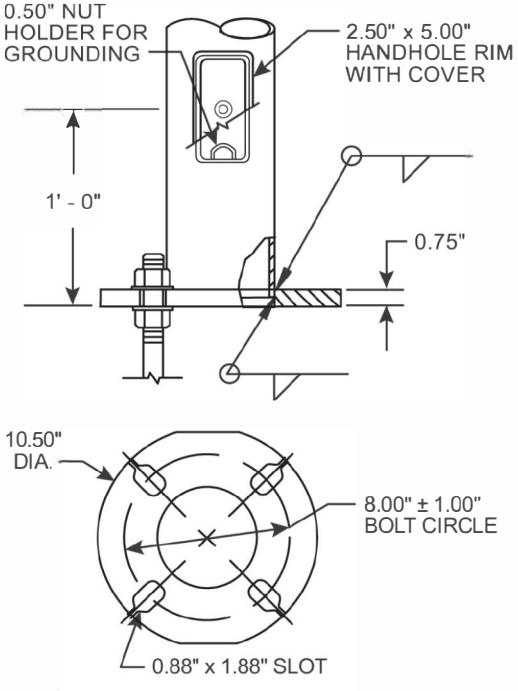
CAP DETAIL (STANDARD)



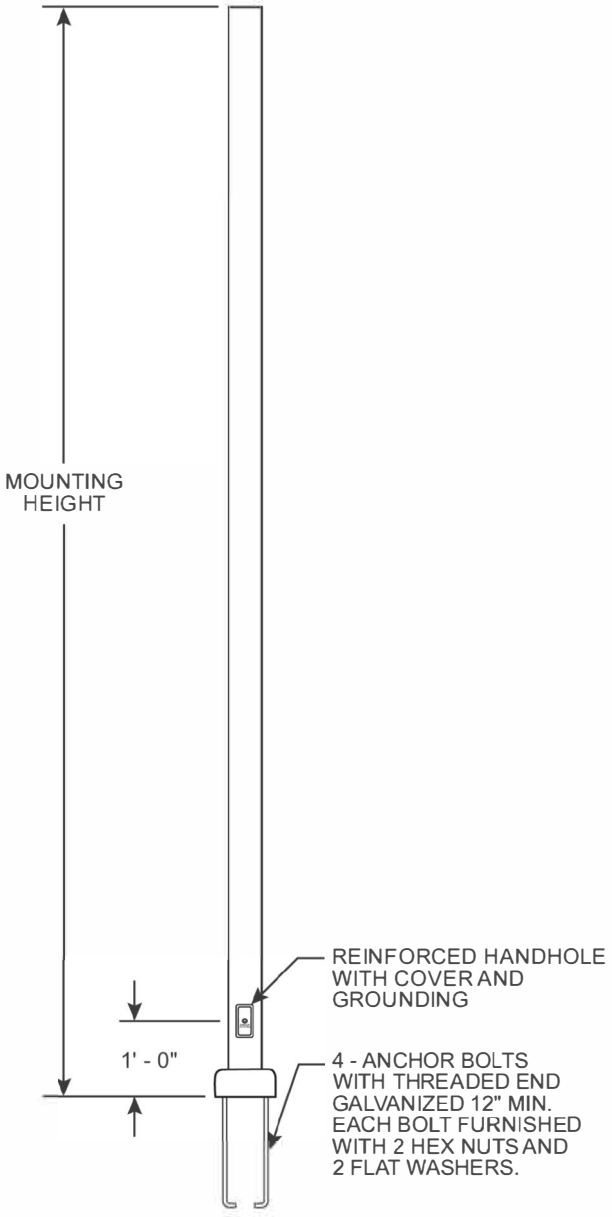
P2 TENON DETAIL (OPTIONAL)



FULL BASE COVER (STANDARD)



POLE BASE AND HANDHOLE DETAIL



POLE DETAIL

308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

Ordering Information

Ex: VS-RSSA-20-4040-11-AB-FP-MB-D2-FST

Product Family	Design	Length	Base OD	Top OD	Thickness	Anchor Bolts	Finish Type	Painted Color	Fixture Mounting
VS = NAFCO®	RSSA = Round Straight Steel Anchor Base	10-30 = 10-30'	30 = 3"	30 = 3"	11 = 11ga	AB = Includes Anchor Bolts	GV = Galvanized Only (No Paint)	DB = Dark Bronze	PC = Cap Only, No Side Drilling
		C = Custom	40 = 4"	40 = 4"	7 = 7ga	LAB = Less Anchor Bolts	FP = Finish Painted	MB = Medium Bronze	PL = Open Top, No Cap or Side Drilling
			45 = 4.5"	45 = 4.5"	C = Custom	C = Custom	FPGV = Finished Painted Over Galvanizing	BK = Black	D1 = Drill Single
			5 = 5"	5 = 5"			C = Custom	WH = White	D2 = Drill 2@180
			C = Custom	C = Custom				LG = Light Gray	D3 = Drill 3@120
								SG = Slate Gray	D4 = Drill 4@90
								DG = Dark Green	D5 = Drill 2@90
								SL = Silver	D6 = Drill 3@90
								RAL = Custom RAL Match	P1 = 4" OD x 5" Long Tenon
								C = Custom	P2 = 2.38" OD x 4" Long Tenon
									P3 = 3.50" OD x 6" Long Tenon
									P4 = 4" OD x 6" Long Tenon
									P5 = 2.88" OD x 4" Long Tenon
									P6 = 2.88" OD x 5" Long Tenon
									P7 = 2.38" OD x 5" Long Tenon
									PQ = 2.38" OD x 12" Long Tenon
									PD = 3" OD x 3" Long Tenon
									P9 = Custom Size Tenon

Options & Accessories (Add as Suffix)		
Option	**Option**	**Accessories**
SPL = Special Cut Length (Please Specify)	ULHH = UL Compliant Hand Hole	STAMP = Engineering Services, Signed & Sealed Calcs
BCSPCL = Special Base Plate to Match Existing Bolt Circle (May Add to Production Lead Time, May Require Special Base Cover)	NECHH = NEC 410.30 Compliant Hand Hole & Cover	STAMPCA = Engineering Services, CA Signed & Sealed Calcs
VDA = Internal Vibration Dampener, Factory Installed	EHH = Additional Hand Hole Opening w/ Cover Assembly (Specify Pole Height & Orientation)	PRE075 = Pre-Ship Anchor Bolts - 0.75" x 17" x 3"
VDF = Internal Vibration Dampener, Field Installable	FST = Festoon Provision, Electrical by Others (Specify Pole Height & Orientation)	
FBCP = ABS Plastic Full Base Cover	CPL = NPT Pipe Coupling (Specify Pole Height, Orientation, & NPT Size)	
FBCS = Steel Full Base Cover		
PXDX = Side Drill + Tenon w/ Additional Hand Hole (Specify Tenon OD & Length)		

1. See previous pages for base model configurations. Consult factory or your sales rep for deviations from base models.
2. Please consult factory or your sales representative to verify options and accessories will work with your light pole part number.
3. Custom products, configurations, options, and accessories available from factory.

NAFCO® STEEL BULLHORN BRACKETS, ROUND POLE MOUNT

Catalog #

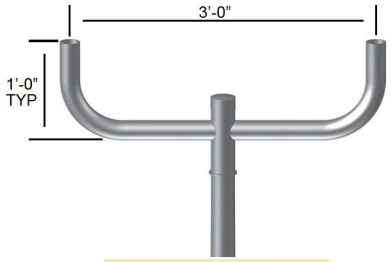
Project

Comments

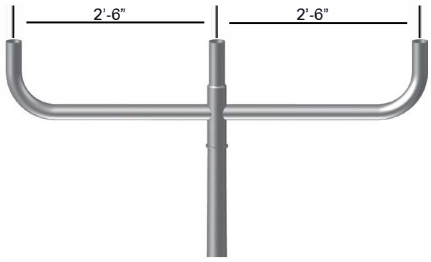
Proudly engineered and manufactured in the American Midwest – our NAFCO® family of professional-grade light pole products combines 50+ years of manufacturing expertise and top-notch Midwestern workmanship. Like all WiLL products, NAFCO® poles come supported by our unmatched design, engineering, and project support capabilities.

Specifications

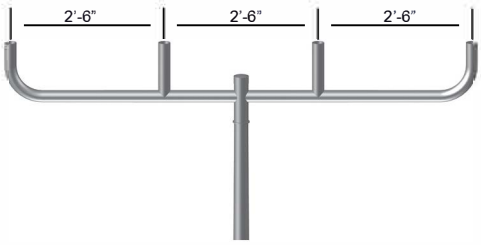
- **Center Hub (Excluding VS-S-BLH-R40-5-180-FP)** - The center hub is 2.88" OD x 0.203" wall with a minimum yield strength of 36,000 psi. **The standard hub fits a 2.38" OD x 4" pole/tenon top. Other sizes available by contacting the factory.**
- **Center Hub (VS-S-BLH-R40-5-180-FP)** - The center hub is 4.50" OD x 0.188" wall with a minimum yield strength of 36,000 psi. **The standard hub fits a 4" OD x 4" pole/tenon top. Other sizes available by contacting the factory.**
- **Arms** - Arms are 2.38" OD x 0.154" wall with a minimum yield strength of 36,000 psi. The maximum straight luminaire slipfit length is 4.63" for all arm brackets. For other tenon applications, please consult factory.
- **Main Arm Only for VS-S-BLH-R24-5-180-FP** - is 2.38" OD x 0.218" wall with a minimum yield strength of 36,000 psi.
- **Arm Attachment (VS-S-BLH-BTP-1-000-FP & VS-S-BLH-BTP-2-180-FP Only)** - Connection allows arm to be erected and held in place by gravity and secured by a single bolt.
- **Hardware** - All structural fasteners are galvanized high strength carbon steel. All non-structural fasteners are galvanized or zinc-plated carbon steel or stainless steel.
- **Finish** - Standard finishes are either Galvanized or Finish Painted. Additional finish options including Finish Paint over Galvanizing are available upon request.
- **Design Criteria** - Please reference Design Criteria Specification for appropriate design conditions.



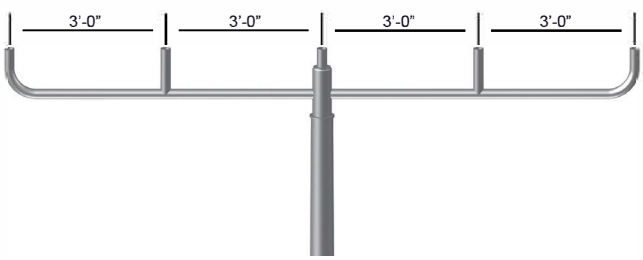
VS-S-BLH-R24-2-180-FP



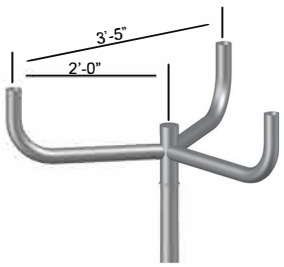
VS-S-BLH-R24-3-180-FP



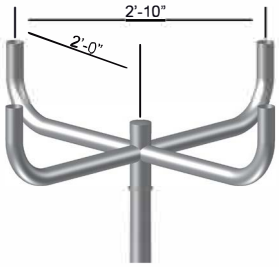
VS-S-BLH-R24-4-180-FP



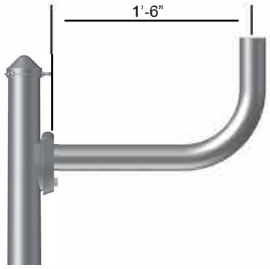
VS-S-BLH-R40-5-180-FP



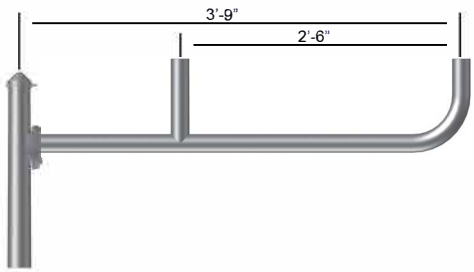
VS-S-BLH-R24-3-120-FP



VS-S-BLH-R24-4-090-FP



VS-S-BLH-BTP-1-000-FP



VS-S-BLH-BTP-2-180-FP

308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

Designation & Dimensional Information

Base Model	Mounting Type	Max Qty of Luminaires	Fixture Orientation	Max Luminaire Spacing	100mph w/ 1.3 Gust		Bracket Size	
					Max Luminaire EPA (sq ft)[1]	Max Luminaire Weight (sq ft)[1]	EPA (sq ft)	Weight (lb)
VS-S-BLH-BTP-1-000-FP	Side Bolt	1	N/A	1'-6"	5	100	0.5	11
VS-S-BLH-BTP-2-180-FP	Side Bolt	2	180°	2'-6"	3	100	1.1	20
VS-S-BLH-R24-2-180-FP	Top Hub	2	180°	3'-0"	7.3	150	1	21
VS-S-BLH-R24-3-180-FP	Top Hub	3	180°	2'-6"	4.7	150	1.6	32
VS-S-BLH-R24-3-120-FP	Top Hub	3	120°	3'-5"	4.7	150	1.3	34
VS-S-BLH-R24-4-180-FP	Top Hub	4	180°	2'-6"	3.4	150	2.3	44
VS-S-BLH-R24-4-090-FP	Top Hub	4	90°	2'-10"	3.5	150	1.6	44
VS-S-BLH-R40-5-180-FP	Top Hub	5	180°	3'-0"	3	100	3.5	86

1. Maximum EPA (Effective Projected Area) and weight values are based on luminaires having a centroid 1'-0" above the bracket top and a maximum mounting height of 70'-0". Variations from sizes above are available upon inquiry at the factory.
2. Total combined weight and EPA of brackets and luminaires cannot exceed Design Information of specified pole.

Note: Additional sizes and configurations are available upon request.

Pole Top Bracket Attachment

Bolt Attachment

Ordering Information

Ex: VS-S-BLH-R24-4-090-FP

Product Family	Design	Mounting	Mounting Points	Orientation	Finish Type	Painted Color
VS = NAFCO®	S-BLH = Steel Bullhorn	BTP = Bolt Mount	1	000 = N/A	GV = Galvanized Only (No Paint)	DB = Dark Bronze
		R24 = 2.38" Round Pole/Tenon Top Mount	2	090 = 90°	FP = Finish Painted	MB = Medium Bronze
		R40 = 4" Round Pole/Tenon Top Mount (5 @180° ONLY)	3	180 = 180°	FPGV = Finished Painted Over Galvanizing	BK = Black
			4	120 = 120°	C = Custom	WH = White
			5			LG = Light Gray
						SG = Slate Gray
						DG = Dark Green
						SL = Silver
						RAL = Custom RAL Match
						C = Custom

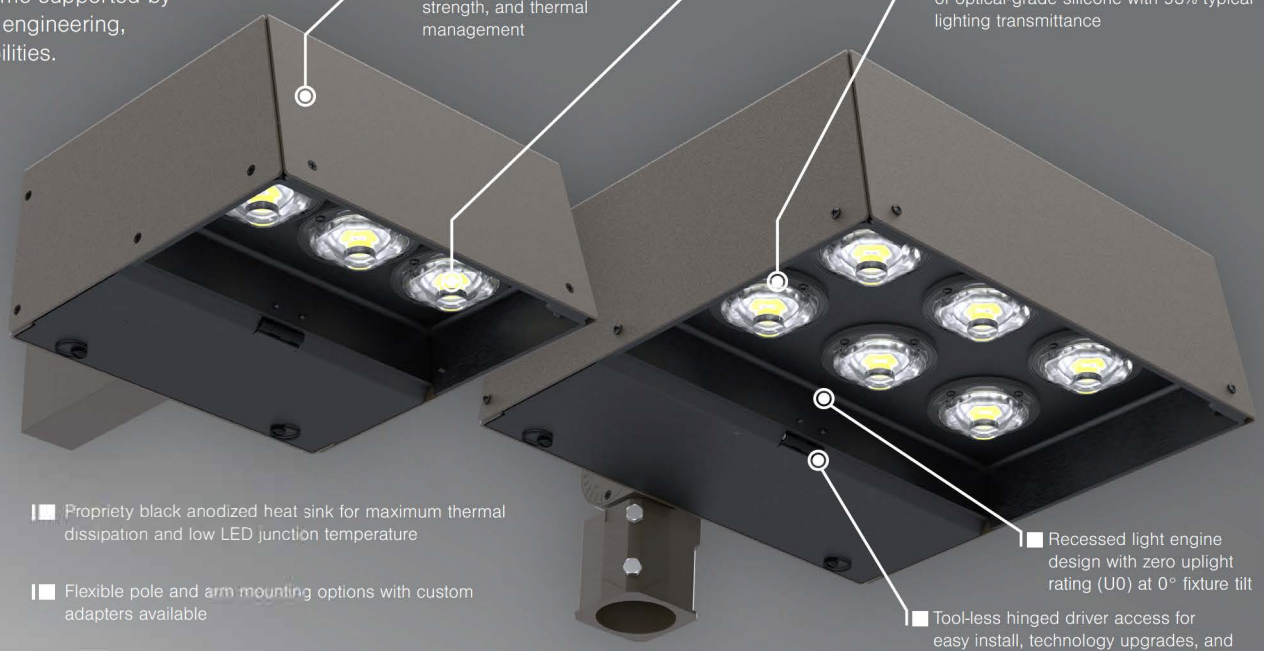
1. See above for base model configurations. Consult factory or your sales rep for deviations from base models.
2. Please consult factory or your sales representative to verify options and accessories will work with your light pole part number.
3. Custom products, configurations, options, and accessories available from factory.

308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

NAFCO® PRODUCT FAMILY

Proudly engineered and manufactured in Wisconsin, USA – our NAFCO® family of LED lighting products combines 50 years of manufacturing expertise with premium components and top-notch Midwestern workmanship. From high-output outdoor applications to extreme indoor industrial environments – NAFCO® series products drastically reduce energy consumption and maintenance costs and come supported by WiLL's unmatched design, engineering, and project support capabilities.

- Premium high-efficiency Chip-on-Board (COB) LEDs wired and bonded directly to circuit board to deliver compact lumen density and added reliability
- High-grade aluminum enclosure for superior corrosion resistance, strength, and thermal management
- Self-sealing optical assembly constructed of optical-grade silicone with 93% typical lighting transmittance



- Classic shoebox design combined with rugged aluminum construction and cutting-edge LED lighting technology
- Output options over 40,000 lumens
- Wireless and onboard control options including motion, photo, dimming, daylight harvesting, zones, and schedules
- True Amber and Phosphor Converted (PC) Amber premium LED chip options
- Propriety black anodized heat sink for maximum thermal dissipation and low LED junction temperature
- Flexible pole and arm mounting options with custom adapters available
- Recessed light engine design with zero uplight rating (U0) at 0° fixture tilt
- Tool-less hinged driver access for easy install, technology upgrades, and maintenance

NAFCO® SHX

Area/Flood LED Lighting

NAFCO® SHX SHOEBOX AREA/FLOOD LED LIGHTING

Catalog #

Project

Comments

Highlights

- Designed, engineered, and manufactured in Wisconsin, USA from premium domestic and imported components
- PPG® Commercial Performance Coatings custom color matching of RAL codes and architectural colors
- IES files, photometric reports, and lighting simulations available from factory design team
- Output options over 40,000 lumens
- Easy driver and LED module access for technology upgrades and maintenance
- Flexible mounting options with custom adapters available

Applications

- General flood and area lighting
- Parking lots, ramps, walkways, and roadways
- Car dealerships, schools, and hospitals
- Hotels and gas stations
- Retail stores and commercial buildings
- Outdoor sports facilities including tennis courts
- Amber and turtle applications
- RGB DMX color tuning applications

Construction & Finish

- Rugged aluminum chassis with excellent heat/impact resistance and hinged electrical access
- Architectural grade powder coat enclosure and black anodized heat sink
- High-grade stainless steel hardware for superior strength and corrosion resistance
- Driver components are fully encased in potting material for moisture and vibration resistance

Light Poles & Arms

- WiLL offers one of the most comprehensive light pole, bracket, and arm catalogs in the industry
- Aluminum, steel, fiberglass, and concrete materials
- Straight, tapered, and decorative designs
- Custom fabrication, finishing, and accessories available
- Dedicated light pole application support team

Compliance & Warranty

- ETL Certification for UL STD 1598 & CSA STD C22.2 # 250.0 for wet locations
- Meets Buy American Act requirements
- Standard 5-year limited warranty with extended factory warranties available
- Turtle and wildlife compliance options (consult factory)

Light Engine & Electrical

- Premium high-efficiency Chip-on-Board (COB) LEDs wired and bonded directly to circuit board to deliver compact lumen density and added reliability
- Self-sealing optical assembly constructed of optical-grade silicone with 93% typical lighting transmittance
- -40°C to +45°C ambient operating temperature
- Standard AC input voltage of 120-277V 50/60 Hz; up to 480V available
- Isolated 1-10V PWM/3-timer-modes dimmable (standard) and dim-to-off with standby power ≤ 0.5W (optional)
- Power factor of 0.90 min
- Total harmonic distortion of 20% max
- Drivers include integral input Surge Protection of Differential Mode 6kV, Common Mode 10kV per EN 61000-4-5
- Thermally protected secondary 10kA surge suppression available (optional)
- Always-on auxiliary power: 12VDC, 200mA (optional)
- Local specifying engineer recommended for product selection and local compliance
- Licensed electrician required for installation

Control Options

- Integral passive infrared Bluetooth® sensor for motion, photo, dimming, and daylight harvesting control
- Synapse® wireless system for large-scale control of zones, dimming, schedules, and sensors
- DMX control options available from factory

308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

EPA Chart

Base Model	0° Tilt	15° Tilt	30° Tilt	45° Tilt	60° Tilt	75° Tilt	90° Tilt
NF-SHS	0.6	0.7	0.9	1.0	1.1	1.1	1.4
NF-SHM	0.7	1.0	1.4	1.6	1.7	1.7	2.1

Specifications & Typical Lumen Output (WHITE LED)

Base Model	Weight (lb)	System Watts (W)	Engine Qty	Drive Current (A)	Typical HID Replacement	Distribution	3000K, 70 CRI					4000K, 70 CRI					5000K, 70 CRI					5700K, 70 CRI				
							Lumens	B	U	G	lm/W	Lumens	B	U	G	lm/W	Lumens	B	U	G	lm/W	Lumens	B	U	G	lm/W
NF-SHS-40	12	41.1	1	0.8	100-150W	2 = Type II	6,491	2	0	2	158	6,611	2	0	2	161	6,731	2	0	2	164	6,731	2	0	2	164
						3 = Type III	6,562	2	0	2	160	6,684	2	0	2	163	6,805	2	0	2	166	6,805	2	0	2	166
						4 = Type IV	6,634	2	0	2	161	6,756	2	0	2	164	6,879	2	0	2	167	6,879	2	0	2	167
						5W = 150° Type V Square	6,705	3	0	2	163	6,829	3	0	2	166	6,953	3	0	2	169	6,953	3	0	2	169
						5M = 100° Type V Flood	6,634	3	0	1	161	6,756	3	0	1	164	6,879	3	0	1	167	6,879	3	0	1	167
						70 = 70° Type V Flood	6,919	3	0	1	168	7,047	3	0	1	171	7,175	3	0	1	175	7,175	3	0	1	175
						45 = 45° Medium Spot	6,491	3	0	2	158	6,611	3	0	2	161	6,731	3	0	2	164	6,731	3	0	2	164
						5N = 25° Narrow Spot	6,776	4	0	1	165	6,902	4	0	1	168	7,027	4	0	1	171	7,027	4	0	1	171
NF-SHS-80	13	82.1	2	0.8	150-250W	2 = Type II	12,983	3	0	3	158	13,223	3	0	3	161	13,463	3	0	3	164	13,463	3	0	3	164
						3 = Type III	13,126	3	0	3	160	13,368	3	0	3	163	13,611	3	0	3	166	13,611	3	0	3	166
						4 = Type IV	13,268	3	0	3	162	13,514	3	0	3	165	13,759	3	0	3	168	13,759	3	0	3	168
						5W = 150° Type V Square	13,411	4	0	3	163	13,659	4	0	3	166	13,907	4	0	3	169	13,907	4	0	3	169
						5M = 100° Type V Flood	13,268	3	0	2	162	13,514	3	0	2	165	13,759	3	0	2	168	13,759	3	0	2	168
						70 = 70° Type V Flood	13,839	4	0	1	169	14,095	4	0	1	172	14,351	4	0	1	175	14,351	4	0	1	175
						45 = 45° Medium Spot	12,983	4	0	3	158	13,223	4	0	3	161	13,463	4	0	3	164	13,463	4	0	3	164
						5N = 25° Narrow Spot	13,554	5	0	2	165	13,804	5	0	2	168	14,055	5	0	2	171	14,055	5	0	2	171
NF-SHS-120	14	123.2	3	0.8	320-400W	2 = Type II	19,474	3	0	3	158	19,834	3	0	3	161	20,194	3	0	3	164	20,194	3	0	3	164
						3 = Type III	19,688	3	0	3	160	20,052	3	0	3	163	20,416	3	0	3	166	20,416	3	0	3	166
						4 = Type IV	19,902	3	0	4	162	20,270	3	0	4	165	20,638	3	0	4	168	20,638	3	0	4	168
						5W = 150° Type V Square	20,116	4	0	3	163	20,488	4	0	3	166	20,860	4	0	3	169	20,860	4	0	3	169
						5M = 100° Type V Flood	19,902	4	0	2	162	20,270	4	0	2	165	20,638	4	0	2	168	20,638	4	0	2	168
						70 = 70° Type V Flood	20,758	5	0	1	168	21,142	5	0	1	172	21,525	5	0	1	175	21,525	5	0	1	175
						45 = 45° Medium Spot	19,474	5	0	3	158	19,834	5	0	3	161	20,194	5	0	3	164	20,194	5	0	3	164
						5N = 25° Narrow Spot	20,330	5	0	3	165	20,706	5	0	3	168	21,082	5	0	3	171	21,082	5	0	3	171
NF-SHM-160	20	164.3	4	0.8	400W+	2 = Type II	25,965	4	0	4	158	26,445	4	0	4	161	26,925	4	0	4	164	26,925	4	0	4	164
						3 = Type III	26,250	4	0	4	160	26,736	4	0	4	163	27,221	4	0	4	166	27,221	4	0	4	166
						4 = Type IV	26,536	3	0	4	162	27,026	3	0	4	164	27,517	3	0	4	167	27,517	3	0	4	167
						5W = 150° Type V Square	26,821	5	0	4	163	27,317	5	0	4	166	27,813	5	0	4	169	27,813	5	0	4	169
						5M = 100° Type V Flood	26,536	4	0	2	162	27,026	4	0	2	164	27,517	4	0	2	167	27,517	4	0	2	167
						70 = 70° Type V Flood	27,677	5	0	1	168	28,189	5	0	1	172	28,700	5	0	1	175	28,700	5	0	1	175
						45 = 45° Medium Spot	25,965	5	0	4	158	26,445	5	0	4	161	26,925	5	0	4	164	26,925	5	0	4	164
						5N = 25° Narrow Spot	27,106	5	0	3	165	27,607	5	0	3	168	28,109	5	0	3	171	28,109	5	0	3	171
NF-SHM-200	21	205.3	5	0.8	750W	2 = Type II	32,456	4	0	4	158	33,056	4	0	4	161	33,657	4	0	4	164	33,657	4	0	4	164
						3 = Type III	32,813	4	0	4	160	33,419	4	0	4	163	34,027	4	0	4	166	34,027	4	0	4	166
						4 = Type IV	33,169	3	0	4	162	33,783	3	0	4	165	34,397	3	0	4	168	34,397	3	0	4	168
						5W = 150° Type V Square	33,526	5	0	4	163	34,146	5	0	4	166	34,767	5	0	4	169	34,767	5	0	4	169
						5M = 100° Type V Flood	33,169	4	0	2	162	33,783	4	0	2	165	34,397	4	0	2	168	34,397	4	0	2	168
						70 = 70° Type V Flood	34,596	5	0	1	169	35,236	5	0	1	172	35,876	5	0	1	175	35,876	5	0	1	175
						45 = 45° Medium Spot	32,456	5	0	4	158	33,056	5	0	4	161	33,657	5	0	4	164	33,657	5	0	4	164
						5N = 25° Narrow Spot	33,883	5	0	3	165	34,509	5	0	3	168	35,136	5	0	3	171	35,136	5	0	3	171
NF-SHM-250	22	246.4	6	0.8	750-1000W	2 = Type II	38,948	4	0	4	158	39,668	4	0	4	161	40,388	4	0	4	164	40,388	4	0	4	164
						3 = Type III	39,376	4	0	5	160	40,104	4	0	5	163	40,832	4	0	5	166	40,832	4	0	5	166
						4 = Type IV	39,804	4	0	5	162	40,540	4	0	5	165	41,276	4	0	5	168	41,276	4	0	5	168
						5W = 150° Type V Square	40,232	5	0	5	163	40,976	5	0	5	166	41,719	5	0	5	169	41,719	5	0	5	169
						5M = 100° Type V Flood	39,804	5	0	3	162	40,540	5	0	3	165	41,276	5	0	3	168	41,276	5	0	3	168
						70 = 70° Type V Flood	41,516	5	0	2	168	42,283	5	0	2	172	43,051	5	0	2	175	43,051	5	0	2	175
						45 = 45° Medium Spot	38,948	5	0	5	158	39,668	5	0	5	161	40,388	5	0	5	164	40,388	5	0	5	164
						5N = 25° Narrow Spot	40,660	5	0	3	165	41,412	5	0	3	168	42,163	5	0	3	171	42,163	5	0	3	171

Note: Typical lumen values are based on photometric tests performed in accordance with ANSI/IES LM-79-19. Actual performance may differ resulting from optical configuration, color temp and CRI, glare management, owner environment, and application.
Note: Data based on 25°C ambient operating temperature.
Note: BUG ratings are calculated with fixture tilt set to 0°.

Specifications & Typical Lumen Output (WHITE LED)

Base Model	Weight (lb)	System Watts (W)	Engine Qty	Drive Current (A)	LED Source	Lumens
NF-SHS-CW41-TA	14	41	3	0.25	True Amber (593 nm)	1,988
NF-SHS-CW105-PCA	14	105	3	0.45	Phosphor Converted Amber (590 nm)	7,316
NF-SHM-CW82-TA	22	82	6	0.25	True Amber (593 nm)	3,976
NF-SHM-CW210-PCA	22	210	6	0.45	Phosphor Converted Amber (590 nm)	14,633

308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

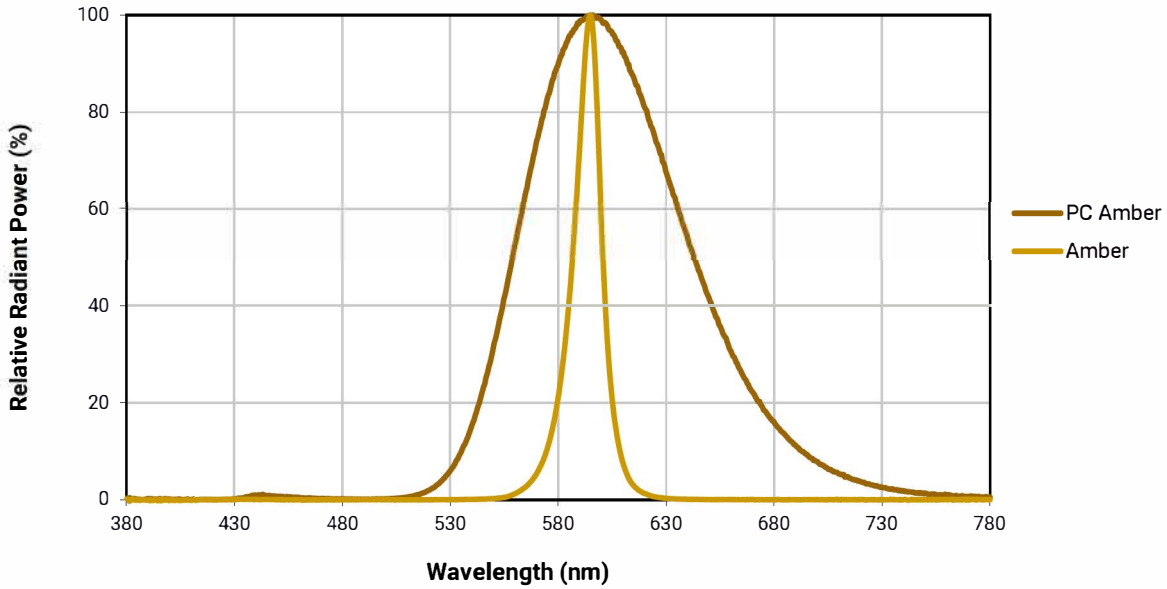
Lumen Multiplier & Maintenance (WHITE LED)

Ambient Temperature	Lumen Multiplier	TM-21 Lumen Maintenance (50,000 Hours)	Calculated L90 (hrs)	Calculated L70 (hrs)
0°C / 32°F	1.024	1.04	64,000	220,000
10°C / 50°F	1.021	1.02	64,000	220,000
25° C / 77°F	1.000	1.00	64,000	220,000
30°C / 86°F	0.993	0.99	58,000	194,000
35°C / 95°F	0.986	0.99	51,000	171,000
40° C / 104°F	0.979	0.98	45,000	151,000
45° C / 113°F	0.972	0.97	40,000	134,000

	Current (A)					
Voltage	40W	80W	120W	160W	200W	250W
Input Current @ 120V (A)	0.34	0.68	1.03	1.37	1.71	2.05
Input Current @ 208V (A)	0.20	0.39	0.59	0.79	0.99	1.18
Input Current @ 240V (A)	0.17	0.34	0.51	0.68	0.86	1.03
Input Current @ 277V (A)	0.15	0.30	0.44	0.59	0.74	0.89
Input Current @ 347V (A)	0.12	0.24	0.36	0.47	0.59	0.71
Input Current @ 480V (A)	0.09	0.17	0.26	0.34	0.43	0.51

Note: Values calculated according to IESNA TM-21-11 methodology.

LED Chip Wavelengths

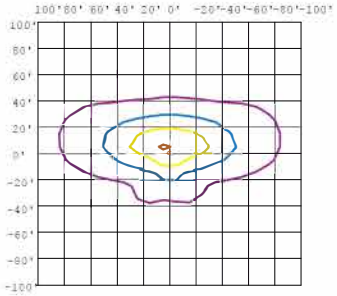


Photometric Diagrams

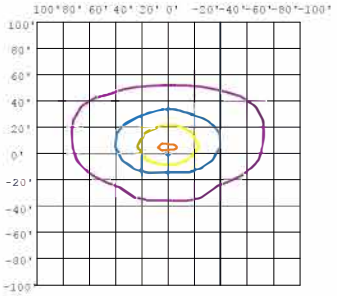
LEGEND

0.5 fc 2.0 fc 5.0 fc 10 fc 25 fc

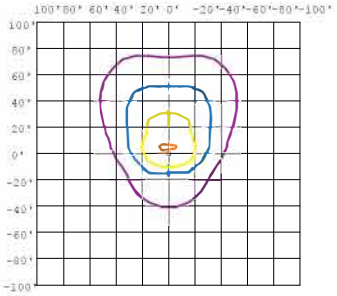
Simulated per IESNA LM-63-1995



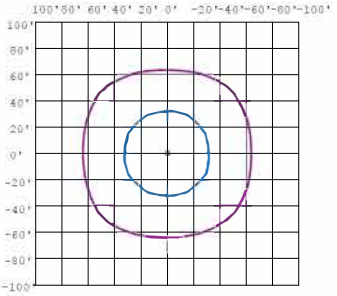
160W SHM
(2) Type II
25' Height @ 0°



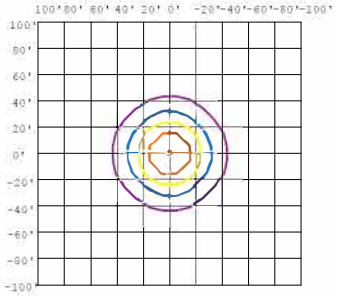
160W SHM
(3) Type III
25' Height @ 0°



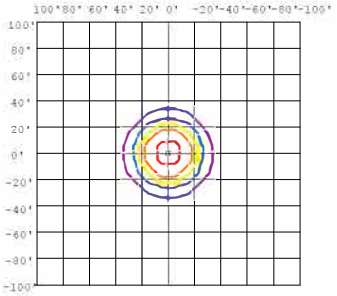
160W SHM
(4) Type IV
25' Height @ 0°



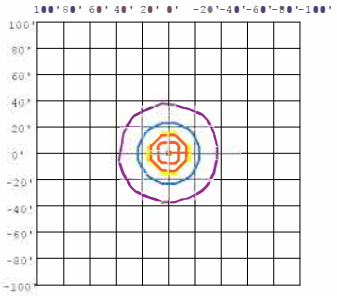
160W SHM
(5W) 150° Type V Square
25' Height @ 0°



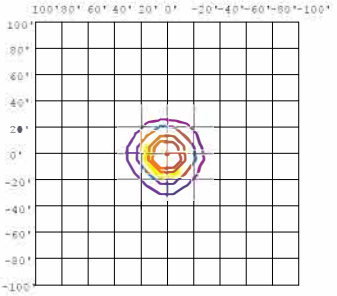
160W SHM
(5M) 100° Type V Flood
25' Height @ 0°



160W SHM
(70) 70° Type V Flood
25' Height @ 0°

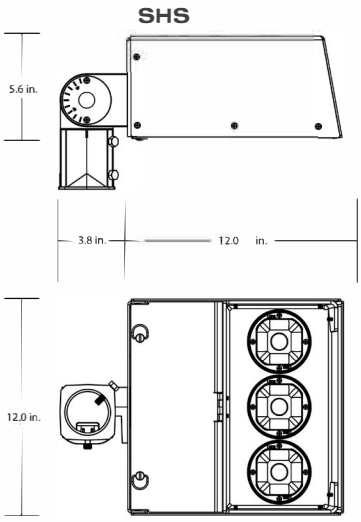


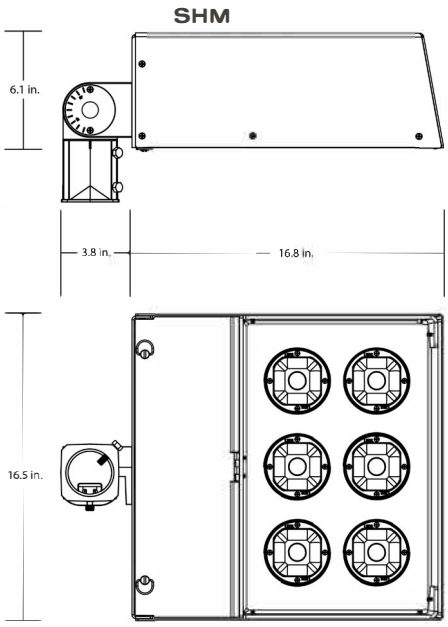
160W SHM
(45) 45° Medium Spot
25' Height @ 0°



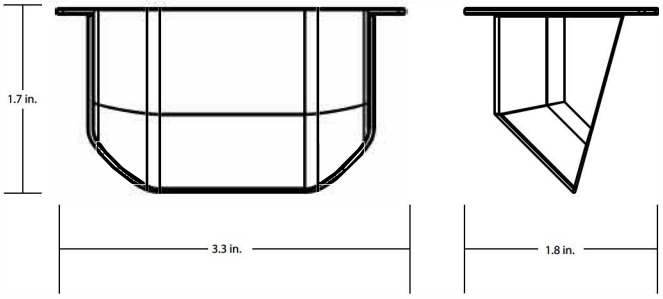
160W SHM
(5N) 25° Narrow Spot
25' Height @ 0°

Dimensional Diagrams

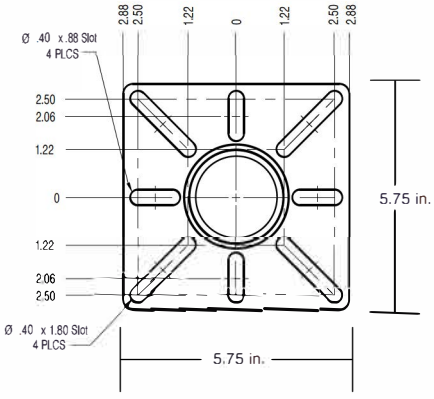


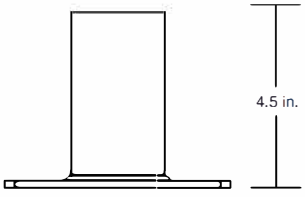


Note: Fixture diagrams shown with Slipfitter mount.

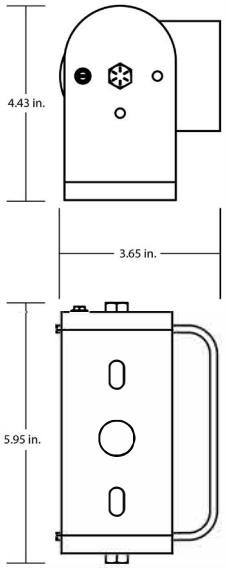


House Side Shield

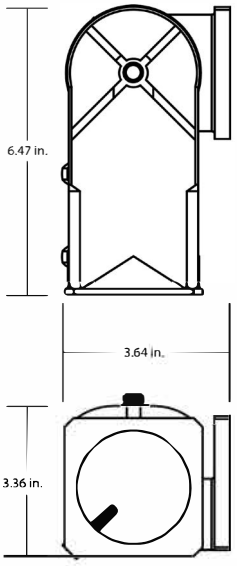




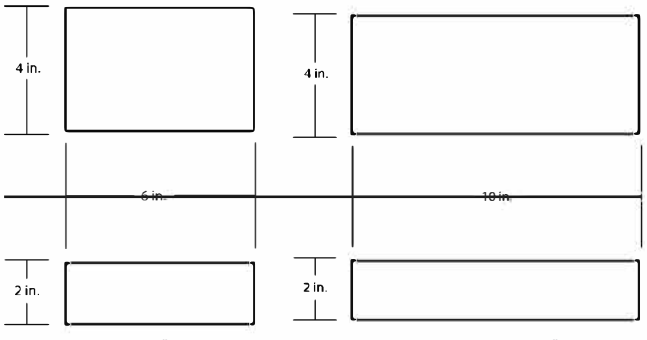
Tennis Court Davit Adapter



Trunnion Yoke Mount



Slipfitter Mount



6" Arm Mount

10" Arm Mount

308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

Ordering Information

Ex: NF-SHM-250-50-MV-4-BZ-6S

Product Family	Design	Performance (Watts = Nominal Lumens)	Color Temp	Voltage	Distribution	Finish Color
NF = NAFCO®	SHS = 12" Shoebox Small Chassis	40 = 6,750	27 = 2700K, 70 CRI	MV = 120-277V	2 = Type II	BZ = Bronze (Default)
	SHM = 16" Shoebox Medium Chassis	80 = 13,500	30 = 3000K, 70 CRI	HV = 277-480V	3 = Type III	BK = Black
		120 = 20,250	40 = 4000K, 70 CRI	CV = Custom	4 = Type IV	WH = White
		160 = 27,000	50 = 5000K, 70 CRI		5W = 150° Type V Square	NA = Nat Alum Silver
		200 = 34,000	57 = 5700K, 70 CRI		5M = 100° Type V Flood	LG = Light Gray
		250 = 40,000	PCA = PC Amber (590 nm)		7O = 70° Type V Flood	SG = Slate Gray
		CW = Custom, Amber, & RGB	TA = True Amber (593 nm)		45 = 45° Medium Spot	DG = Dark Green
			CT = Custom		5N = 25° Narrow Spot	DP = Dark Platinum
					CD = Custom	GM = Graphite Metallic
						RAL = Custom RAL Match

Options & Accessories (Add as Suffix)			
Mounting	**Option**	**Option**	**Accessories**
6S = 6" Arm (Square Pole)	WHP3NP = 2' Cord w/o Plug, Stripped Pigtail	SRG27710 = 10kA Surge Suppressor (Field Replaceable), 120-277V	TLPC1 = Twist-Lock Photocell, 120-277V (Not Installed)
6R = 6" Arm (Round Pole)	WHP7NP = 6' Cord w/o Plug, Stripped Pigtail	SRG48010 = 10kA Surge Suppressor (Field Replaceable), 347-480V	TLPC4 = Twist-Lock Photocell, 347/480V (Not Installed)
10S = 10" Arm (Square Pole)	WHP11NP = 10' Cord w/o Plug, Stripped Pigtail	BPC1 = Button Photocontrol, 120-277V	HSS4-1/2/3/4/5/6 = House Side Shield Types I, II, III, & IV (Wattage Specific)
10R = 10" Arm (Round Pole)		BPC3 = Button Photocontrol, 347V	HSS5-1/2/3/4/5/6 = House Side Shield Type V (Wattage Specific)
SF = 2.38" OD Slipfitter		BPC4 = Button Photocontrol, 480V	TCAA = Tennis Court Davit Adapter (Not Installed)
TR = Trunnion Yoke		N5P = NEMA 5pin Twist-Lock Receptacle	AFW = Area/Flood Light Wall Bracket (Black Finish) (Not Installed)
CM = Custom		MPS = Programmable Motion Sensor w/ ON/OFF + Dimming + Photocontrol, Bluetooth Settings Adjustable, maximum coverage of 100' diameter from 40' mounting height	GFX = Wireless DMX Lighting Control System (Consult Factory)
		EB12FI = 1500 lm 90 min Emergency Battery Backup, 0°C to 40°C Ambient Operating Temp, 120-277V Models Only (Consult Factory)	GFM = Wireless Mesh Lighting Control System (Consult Factory)
		EB12FIC = 1500 lm 90 min Cold Weather Emergency Battery Backup, -20°C to 40°C Ambient Operating Temp, 120-277V Models Only (Consult Factory)	

Note: Custom products, configurations, options, and accessories available from factory.

Arm Mounts

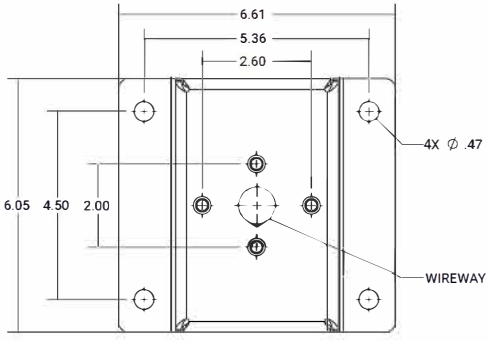
Slipfitter Mount

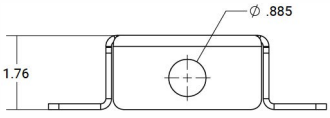
Trunnion Yoke Mount

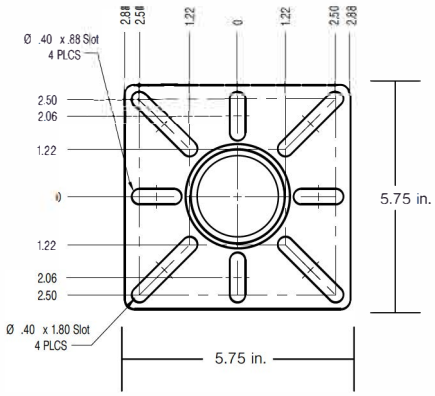
Area/Flood Light Wall Bracket

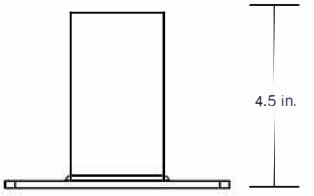
House Side Shield

Tennis Davit Adapter









308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

MANUFACTURED in WISCONSIN

Wisconsin manufacturing. Second to none.

- 10,000+ Wisconsin manufacturers employ 470,000+ workers and contributed $56 billion to economic growth in 2016.
- Wisconsin's manufacturing concentration is 87 percent higher than the national average.
- Industrial machinery ranks first among Wisconsin manufacturing jobs.
- Increasing international recognition of Wisconsin manufacturing expertise through Haribo and Foxconn investments.

WHY WILL MATTERS

- In the highly competitive manufacturing hotbed of Wisconsin, WiLL's history of success dates to the 1970s.
- Our experience spans aluminum castings, metal fabrication and machining, electrical design and assembly, industrial finishing, and thermal testing.

Sources:
(1) http://reliableplant.com/Read/30986/wisconsin-manufacturing-jobs
(2) https://www.wmc.org/news/manufacturing-is-strong-in-wisconsin/
(3) BizTimes Media, LLC (October 20, 2016)

"What is it with Wisconsin? You guys are like the Silicon Valley of Lighting!"
- Valued Customer

TRAFFIC IMPACT STUDY

FOR

SKY TAVERN SKI AREA EXPANSION

May 8, 2023

PREPARED FOR:

Robison Engineering Company, INC

PREPARED BY:

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

YOUR QUESTIONS ANSWERED QUICKLY

Why did you perform this study?

This Traffic Impact Study evaluates the potential traffic impacts associated with the proposed Sky Tavern Ski Expansion Area project located adjacent to Mt. Rose Highway (SR 431), southwest of Reno, Nevada. This study was undertaken to determine the existing and future traffic conditions, quantify traffic volumes generated by the proposed project, identify potential impacts, and develop recommendations to mitigate impacts, if any are found.

What does the project consist of?

Sky Tavern is primarily a junior ski program facility including ski areas and a lodge. The proposed project is an expansion of the Sky Tavern Ski Area including an additional ski lift, the ski lodge expansion (approximately double in size) and additional parking. The site will include other amenities typically associated with summertime including a bicycle path, an airbag drop training and entertainment areas for special events such as weddings.

How much traffic will the project generate?

The study evaluates peaks hours for traffic entering and exiting the site on a typical Saturday during ski season. The highest hours occur in the morning arrival period and around noon. The project is anticipated to generate approximately 91 AM peak hour, and 43 Noon peak hour additional trips to the external roadway network.

How will project traffic affect the roadway network?

The study intersections are expected to operate at acceptable overall levels of service under Existing Plus Project and Future Year Plus Project conditions. A right turn lane from Mt. Rose Highway entering the site at Bum's Gulch Road is warranted based on the existing volumes; the addition of project traffic entering further justifies the need.

Are any improvements recommended?

- Bum's Gulch Road serves as the primary entrance to the site, with the majority of traffic entering from the west via a right turn. It is recommended that an eastbound right-turn lane be constructed on Mt. Rose Highway for the intersection of Bum's Gulch Road / Mt. Rose Highway, based on NDOT's *Access Management System and Standards*. This will require a deviation letter since the spacing between Bums' Gulch Road and the Sky Tavern driveway does not allow for the full deceleration and taper length required. The deviation letter will be provided during the NDOT permitting process.

- It is recommended that the Sky Tavern Road approach at Mt. Rose Highway be striped to provide a separate left-turn and right-turn pockets. A stop bar and stop sign (36x36) should also be installed at this approach.
- It is recommended that the project install a stop bar / stop sign (36x36) on Bum's Gulch Road at Mt Rose Highway.
- Intersection ahead warning signs may be considered on Mt. Rose Highway as a safety improvement (see **Exhibit 3**).

TABLE OF CONTENTS

LIST OF FIGURES

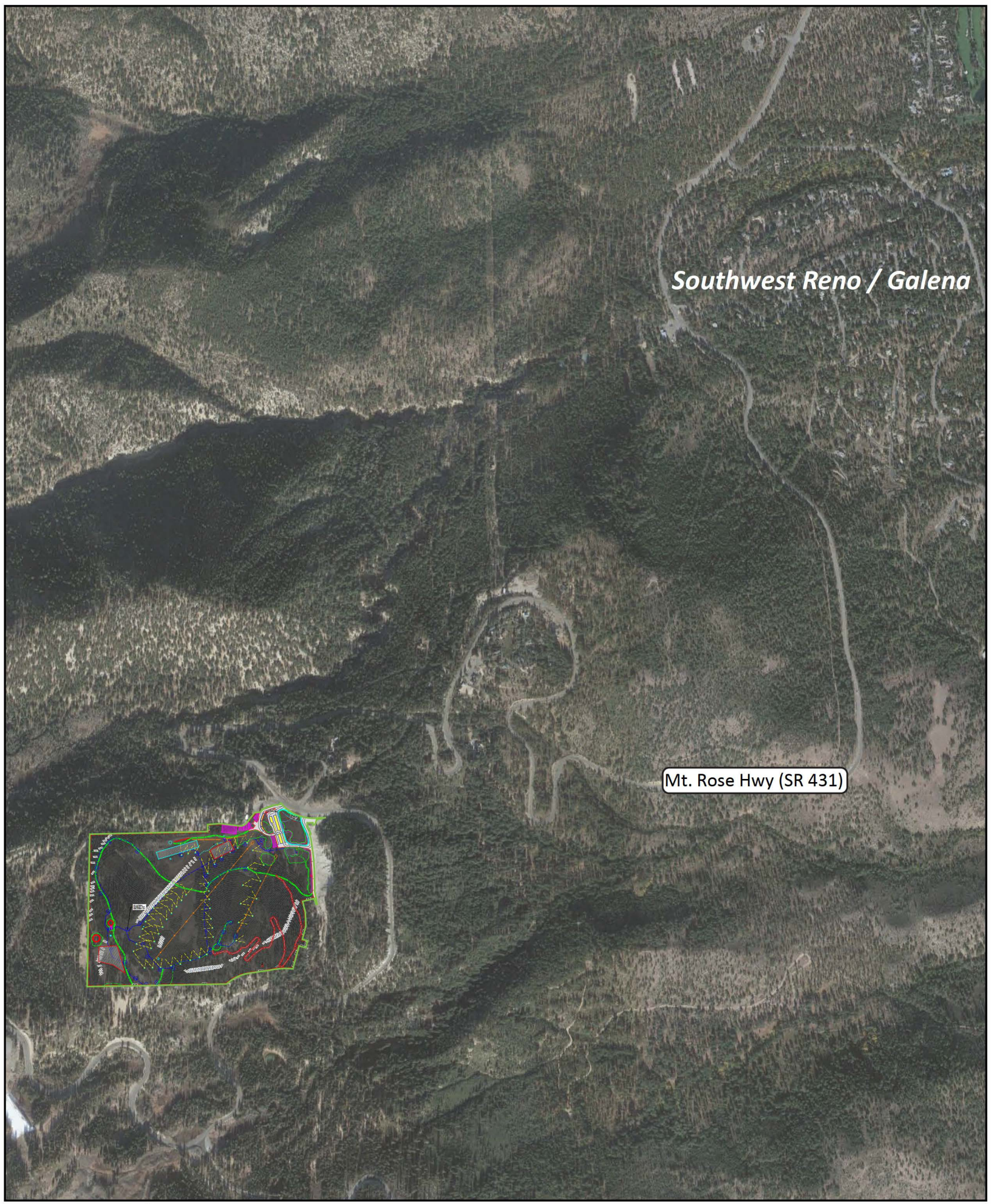
LIST OF APPENDICES

INTRODUCTION

This Traffic Impact Study (TIS) evaluates the potential traffic impacts associated with the proposed Sky Tavern Ski Area Expansion project. This study was undertaken to determine the existing and future (20-year horizon) traffic conditions, quantify traffic volumes generated by the proposed project, identify potential impacts, and develop recommendations to mitigate impacts, if any are found.

Proposed Project Expansion

Sky tavern is a non-profit regional center owned by the City of Reno that provides summer and winter sports. Sky Tavern is primarily a junior ski program facility including ski areas and a lodge. The proposed project is an expansion of the Sky Tavern Ski Area including an additional ski lift, the ski lodge expansion (approximately double in size) and additional parking. The site will include other amenities typically associated with summertime including a bicycle path, an airbag drop training and entertainment areas for special events such as weddings. The site is located southwest of Reno NV, adjacent to Mt. Rose Highway (SR 431) at approximate mile marker (MM) 12.95 on parcel APN: (048-050-03). The regional project location can be seen in **Figure 1**, the project site location along with the study intersections are shown in **Figure 2.** A preliminary site plan is shown in **Figure 3**.



HEADWAY TRANSPORTATION

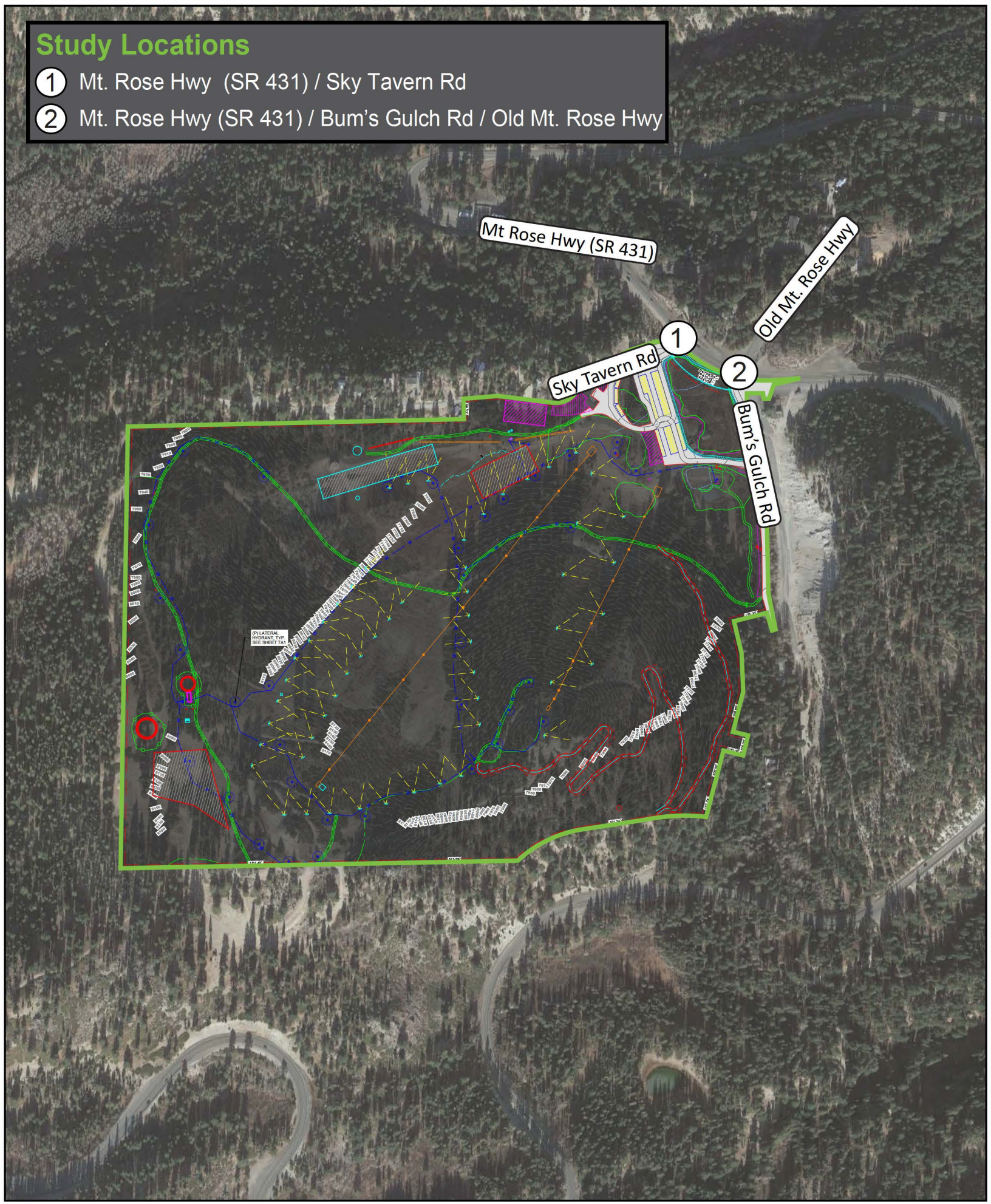
NO SCALE

Project Site

WSUP23-0016
Sky Tavern Ski Area Expansion
Traffic Impact Study
Regional Project Location

Figure **1**

EXHIBIT E



HEADWAY TRANSPORTATION

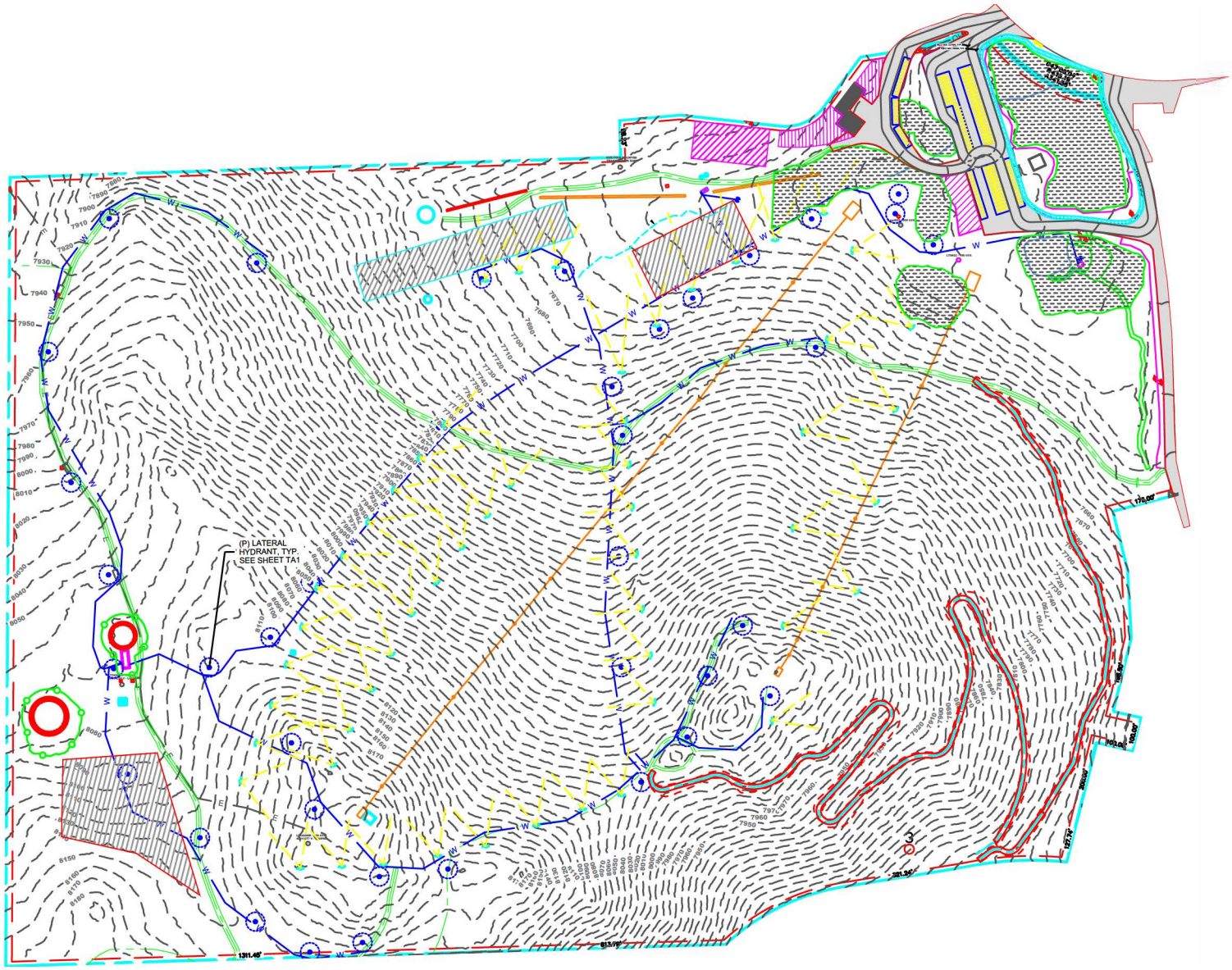
NO SCALE

Project Site

WSUP23-0016
Sky Tavern Ski Area Expansion
Traffic Impact Study
Project Site and Study Intersections

Figure 2

EXHIBIT E



NO SCALE

Figure 3

WSUP23-0016
Sky Tavern Ski Area Expansion
Traffic Impact Study
Preliminary Site Plan

EXHIBIT E

Study Area and Evaluated Scenarios

The following intersections are included in this study:

1. Sky Tavern Road / Mt. Rose Highway (SR 431)
2. Bum's Gulch Road / Mt. Rose Highway (SR 431)

This study includes analysis for the typical peak ski season weekend (Saturday) AM and Noon hours as these are the periods of time in which peak traffic entering and exiting the site was observed to be the highest. The evaluated development scenarios are:

- Existing Conditions
- Existing Plus Project Conditions (representing opening year)
- Future Year Conditions (20-year horizon background) Conditions
- Future Year (20-year horizon background) Plus Project Conditions

ANALYSIS METHODOLOGY

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

Intersections

The complete methodology for intersection level of service analysis is established in *the Highway Capacity Manual (HCM), 6th Edition* published by the Transportation Research Board (TRB). **Table 1** presents the delay thresholds for each level of service grade at signalized and unsignalized intersections.

Table 1: Level of Service Definition for Intersections

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

Source: *Highway Capacity Manual, 6th Edition*

Level of service calculations were performed for the study intersections using the Synchro 11 software package with analysis and results reported in accordance with *HCM* methodology.

Level of Service Policy

Regional Transportation Commission

The Regional Transportation Commission's (RTC) *2050 Regional Transportation Plan (RTP)* establishes level of service criteria for regional roadway facilities in the City of Reno, City of Sparks, and Washoe County. The current Level of Service policy is:

> *"All regional roadway facilities projected to carry less than 27,000 ADT at the latest RTP horizon – LOS D or better."*
>
> *"All regional roadway facilities projected to carry 27,000 or more ADT at the latest RTP horizon – LOS E or better."*
>
> *"All intersections shall be designed to provide a level of service consistent with maintaining the policy level of service of the intersecting corridors".*

The roadways within the study area are projected to carry less than 27,000 ADT at the latest *RTP* horizon.

Nevada Department of Transportation

The Nevada Department of Transportation (NDOT) *Traffic Impact Study Requirements* publication states:

> *Level of service "C" will be the design objective for capacity and under no circumstances will less than level of service "D" be accepted for site and non-site traffic.*

Hence, LOS "D" was used as the threshold criteria for this analysis.

Traffic engineering practitioners recognize that LOS E/F conditions for the side street approach, during the peak hour(s), does not indicate an intersection failure or the need for mitigation. This condition (LOS E/F for a minor side-street approach) commonly exists throughout urban and suburban areas and is manageable in most cases.

EXISTING CONDITIONS

Roadway Facilities

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

Mt. Rose Highway (SR 431) is classified as a minor arterial that runs southwest-northeast and connects to SR 28 and the junction of US 395A / Mt. Rose Highway. In the immediate project vicinity, Mt. Rose Highway has two lanes (one lane in each direction) and has a posted speed limit of 45 mph.

Bum's Gulch Road is a local road that runs north-south and connects to Mt. Rose Highway. The road primarily serves as the access to the Sky Tavern Ski area. In the immediate project vicinity, Bum's Gulch Road has two lanes (one lane in each direction) and has a speed limit of 25 mph. The roadway changes to Old Mt. Rose Highway north of Mt. Rose Highway.

Sky Tavern Road is a local road that is primarily an access to the Sky Tavern Ski area.

Bicycle & Pedestrian Facilities

There are no bicycle / pedestrian facilities (within project vicinity) on Mt. Rose Highway, Sky Tavern Road, or Bum's Gulch Road.

Transit Facilities

There are no transit facilities (within project vicinity) on Mt. Rose Highway, Sky Tavern Road, or Bum's Gulch Road.

Crash History

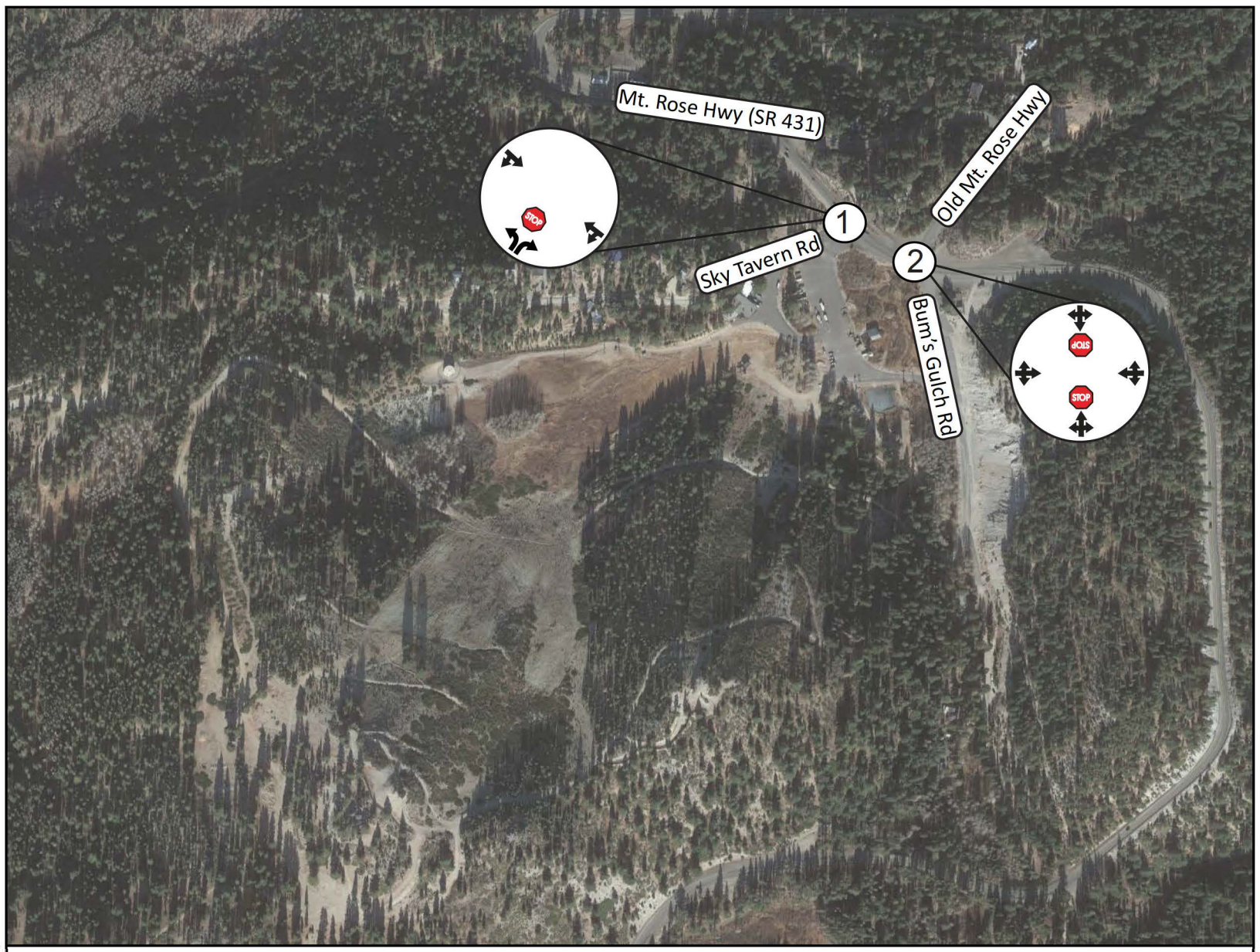
Vehicle crash data was obtained from NDOT and includes information from the 2016 to 2020 five-year period (the most current data available). As shown in **Exhibit 1**, twelve crashes occurred on Mt. Rose Highway within the project vicinity during the five-year period (some crashes overlap on the image). Four crashes resulted in injury and eight resulted in property damage. The injury crashes show vehicles running off the road / driving too fast for road conditions near the intersection of Mt. Rose Highway / Sky Tavern Road. The available crash data is found in **Appendix A**.

Exhibit 1: Crashes (2016-2020)

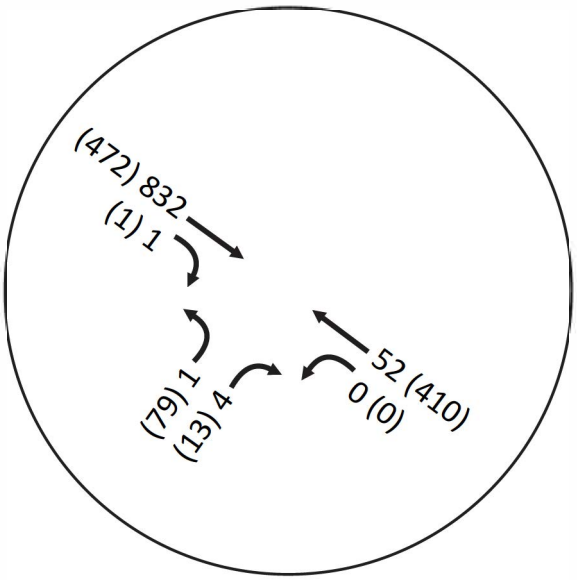
Mt. Rose Highway near the project site has horizontal curves and grades; these roadway features are associated with heighted safety concerns.

Traffic Volumes

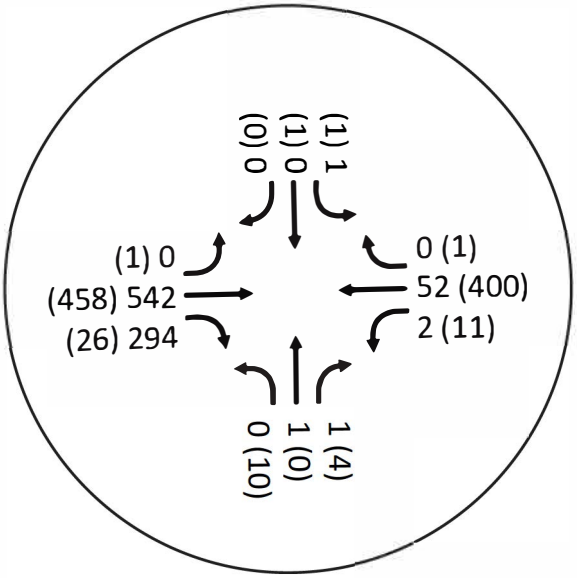
Intersection turning movement counts were collected on a typical Saturday during peak ski season, on March 18, 2023, from 6:00 AM to 7:00 PM (13 hours). In general, a large number of vehicles arrived in the morning in a concentrated period (7:00-9:00) and departed throughout the day. Two peak hours were selected for analysis based on the highest volumes entering and exiting the ski area; these hours also corresponded with the highest volumes on Mt. Rose Highway. The selected peak hours represent AM arrival (7:15-8:15) and noon departure (11:15-12:15). Full count data is included in **Appendix B**. The existing AM and Noon peak hour intersection turning movements and mainline volumes are shown on **Figure 4**.



1 *Mt. Rose Hwy (SR 431) / Sky Tavern Rd*



2 *Mt. Rose Hwy (SR 431) / Bum's Gulch Rd / Old Mt. Rose Hwy*



AM (Noon) Peak Hour Volumes
STOP Stop Sign
NO SCALE

Figure 4
WSUP23-0016
Sky Tavern Ski Area Expansion
EXHIBIT E
Traffic Impact Study
Existing Traffic Volumes, Lane Configurations & Controls

Intersection Level of Service Analysis

Existing weekend (Saturday) AM and Noon peak hour intersection level of service analysis was performed for the study intersections using Synchro 11 analysis software. The existing intersection lane configurations and controls are shown on **Figure 4. Table 2** shows the existing conditions level of service results and the technical calculations are provided in **Appendix C**.

Table 2: Existing Intersection Level of Service

Int. ID	Intersection	Control	AM		Noon	
			Delay[1]	LOS	Delay[1]	LOS
1	Sky Tavern Road / Mt. Rose Hwy	Side Street Stop				
	Overall		0.1	A	1.9	A
	NB Left		18.6	C	22.0	C
	NB Right		16.6	C	11.4	B
	WB Left		0.0	A	0.0	A
2	Bum's Gulch Road / Old Mt. Rose Hwy / Mt. Rose Hwy	Side Street Stop				
	Overall		0.1	A	0.4	A
	NB Approach		20.0	C	19.7	C
	SB Approach		17.1	C	18.2	C
	EB Left		10.4	B	8.4	A
	WB Left		0.0	A	8.1	A

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized and all way stop controlled intersections, and for the worst approach/movement for side street stop-controlled intersections.
Source: Headway Transportation, 2023

As shown in **Table 2,** the existing study intersections currently operate within policy level of service thresholds during the AM and Noon peak hours.

PROJECT CONDITIONS

Trip Generation

Trip generation rates for the site improvements were developed by comparing:

- Rates calculated using the institute of Transportation Engineer's (ITE) *Trip Generation Manual, 11th Edition* for land use 466 "Snow Ski Area" based on the number of lifts. ITE describes Snow Ski Area: *"A snow ski area typically includes chair lifts, ski runs, and lodge facility. A snow ski area may also contain equipment rental facilities, refreshments areas, locker rooms and small commercial/office spaces."* It is noted that the ITE sample size is small; therefore, data is limited.
- The degree of modification of the site and amenities added relative to the existing counts entering and exiting.

Table 3 shows the AM peak hour, and Noon peak hour ITE trip generation estimates compared to current site volumes entering and exiting. The ITE trips are lower than current counts; therefore, the trip generation was calculated as a percentage of current site traffic based on the expansion to provide a more accurate and conservative representation. The Sky Tavern Ski facility currently has two ski lifts and magic carpet lifts, the proposed expansion project will add an additional ski lift.

Table 3: Trip Generation Comparison / Estimates

ITE Trip Generation Manual					
Land Use (ITE Code)	**Independent Variable**	**Trips**			
		Saturday Peak Hour of Generator			
		AM	**AM In/Out**	**Noon**	**Noon In/Out**
Snow Ski Area (466)	3 Lifts (Represents Existing[1])	229	64 / 165	N/A	N/A
	1 Lift (Proposed)	76	21 / 55	N/A	N/A
Existing Trip Counts					
Existing Counts Entering / Exiting		**Saturday Peak Hour of Generator**			
		AM	**AM In/Out**	**Noon**	**Noon In/Out**
		304	297 / 7	144	38 / 106
Calculated Trip Generation					
Calculated Trips (30% of existing entering/exiting traffic)		**Trips**			
		Saturday Peak Hour of Generator			
		AM	**AM In/Out**	**Noon**	**Noon In/Out**
		91	89 / 2	43	11 / 32

Notes: 1.
Estimated equivalent number of lifts for trip generation purposes currently on the site considering chair lifts and magic carpet lifts.

Table 3 shows that the ITE trip generation data underrepresents site traffic, with a significant variance on the in/out percentage. Therefore, the new trips to the site were estimated based on the modifications. One chair lift/magic carpet lift is being added (approximately 30% increase in ski lift facilities), along with ski lodge expansion, and additional parking. Other proposed site modifications are typically associated with summertime and do not impact the peak ski season trip generation. The existing counts into and out of the site were increased by 30% in order to accurately and conservatively represent the trip generation.

As shown in **Table 3**, the calculated trip generation rates are more conservative than the ITE manual trip generation rates. The proposed expansion project is expected to generate 91 AM peak hour, and 43 Noon peak hour additional trips.

Trip Distribution

Project trips were distributed to the adjacent roadway network based on existing traffic volumes and the proximity to the Reno areas. Project trips were distributed based on the following:

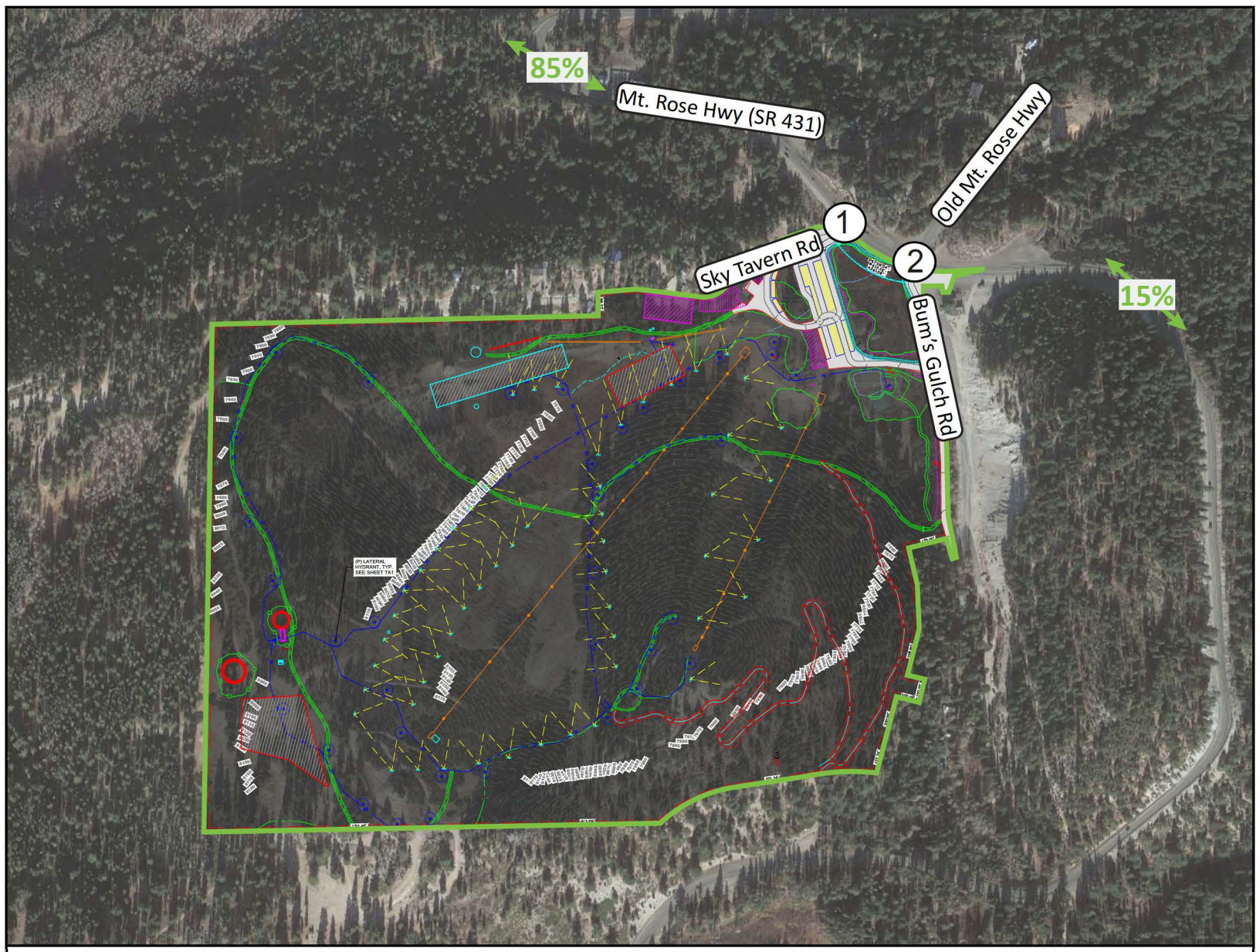
- 85% to/from the west (Reno area) via Mt. Rose Highway
- 15% to/from the east via Mt. Rose Highway

Figure 5 shows the project trip distribution and assignment.

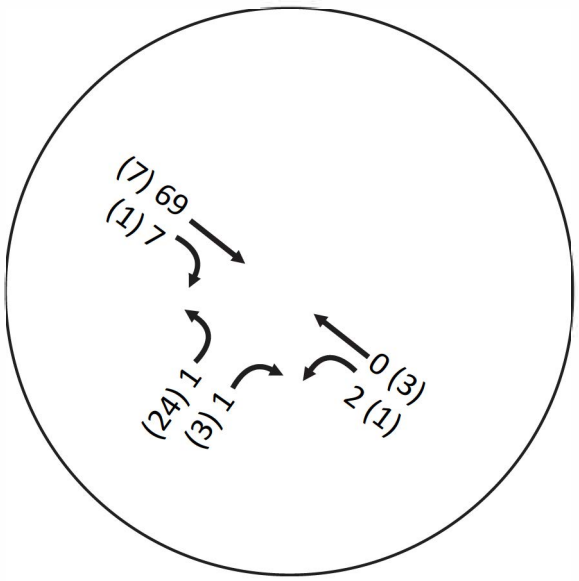
Project Access and Access Management (Turn Lane Analysis)

Two access points serve the Sky Tavern Ski area. During the ski season, the Bum's Gulch Road (Washoe County maintained) access serves as the primary entrance, and the Sky Tavern Road access serves as the primary exit.

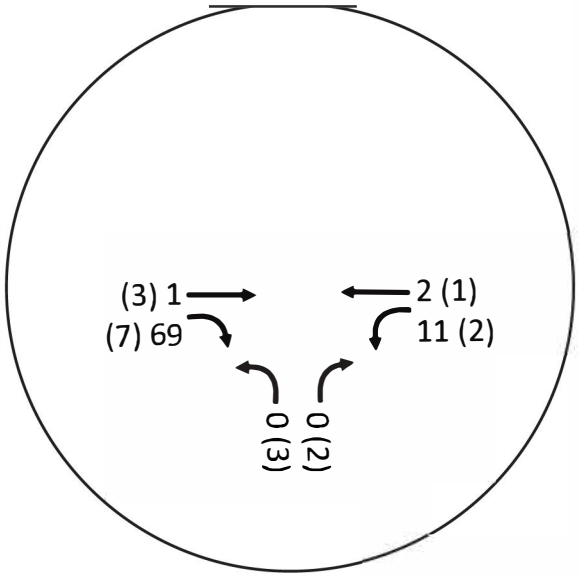
NDOT's *AMSS* table 4-16 provides criteria for right-turn deceleration lanes at an intersection. An eastbound right-turn lane is currently warranted on Mt. Rose Highway at the intersection of Bum's Gulch Road / Mt. Rose Highway with over 250 vehicles per hour turning right in the morning. The addition of project traffic bolsters the need for a deceleration lane.



1 Mt. Rose Hwy (SR 431) / Sky Tavern Rd



2 Mt. Rose Hwy (SR 431) / Bum's Gulch Rd / Old Mt. Rose Hwy



HEADWAY TRANSPORTATION

NO SCALE

AM (Noon) Peak Hour Volumes

XX% Trip Distribution

Project Site

WSUP23-0016

Sky Tavern Ski Area Expansion

Traffic Impact Study

Project Trip Distribution & Assignment

Figure 5

EXHIBIT E

EXISTING PLUS PROJECT CONDITIONS

Traffic Volumes

Project trips (**Figure 5**) were added to the existing traffic volumes (**Figure 4**) to develop the Existing Plus Project conditions traffic volumes, shown on **Figure 6**.

Intersection Level of Service

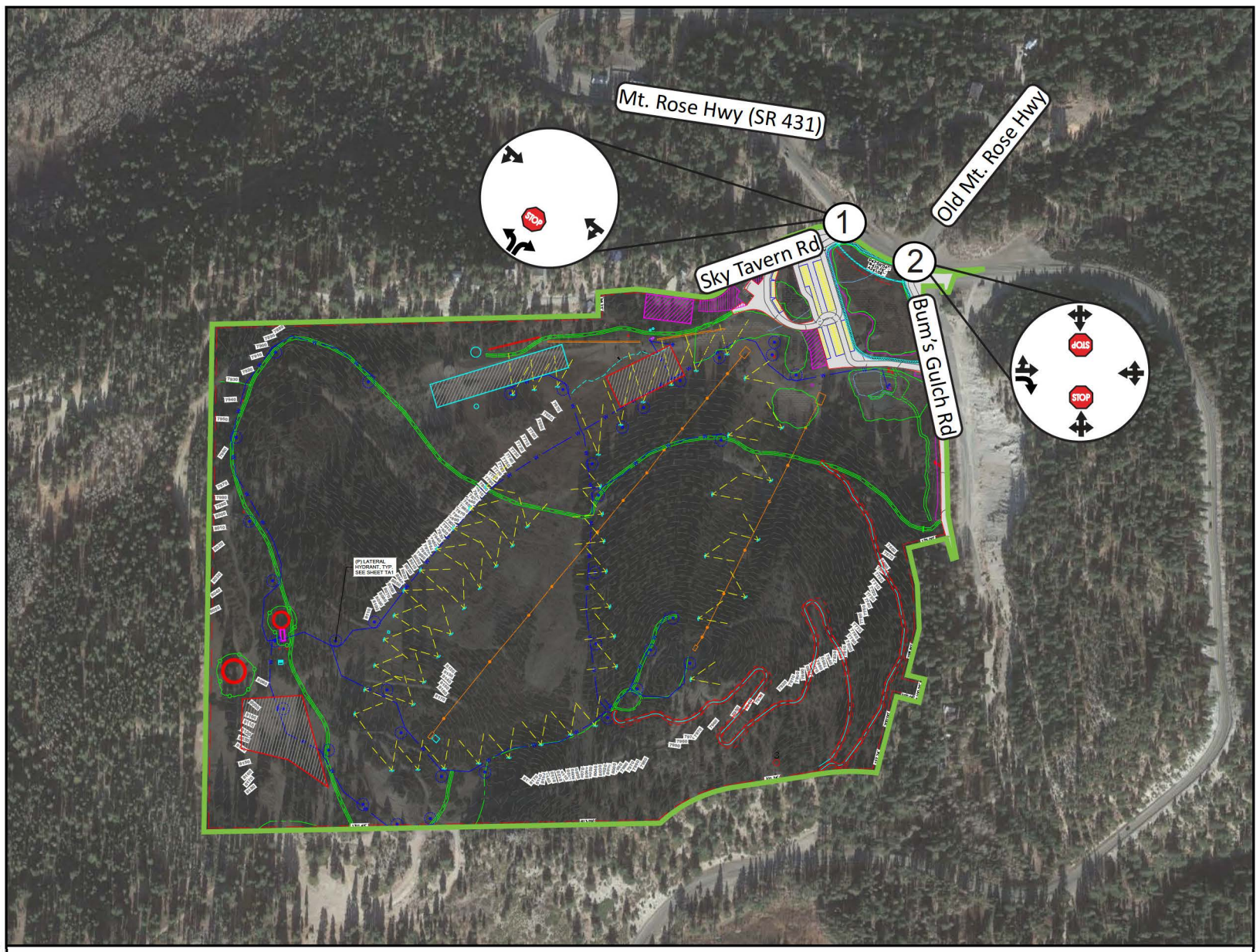
AM and Noon peak hour intersection level of service analysis was performed for the study intersections based on the Existing Plus Project traffic volumes, the existing peak hour factors from the counts, and the lane configurations and controls shown on **Figure 6**. **Table 4** shows the level of service results, and the technical calculations are provided in **Appendix D**.

Table 4: Existing Plus Project Level of Service

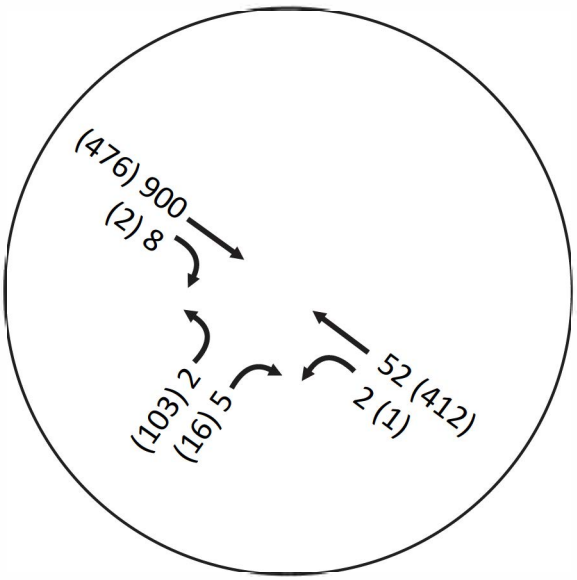
Int. ID	Intersection	Control	AM		Noon	
			Delay[1]	LOS	Delay[1]	LOS
1	Sky Tavern Road / Mt. Rose Hwy	Side Street Stop				
	Overall		0.2	A	2.7	A
	NB Left		20.5	C	24.5	C
	NB Right		18.0	C	11.5	B
	WB Left		10.4	B	8.4	A
2	Bum's Gulch Road / Old Mt. Rose Hwy / Mt. Rose Hwy	Side Street Stop				
	Overall		0.2	A	0.6	A
	NB Approach		22.1	C	20.0	C
	SB Approach		18.2	C	18.3	C
	EB Left		11.0	B	8.4	A
	WB Left		0.0	A	8.4	A
Additional analysis with the installation of a right-turn lane						
2	Bum's Gulch Road / Old Mt. Rose Hwy / Mt. Rose Hwy	Side Street Stop				
	Overall		0.2	A	0.5	A
	NB Approach		22.1	C	20.0	C
	SB Approach		14.7	B	17.9	C
	EB Left		11.0	B	8.4	A
	WB Left		0.0	A	8.1	A

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized and all way stop controlled intersections, and for the worst approach/movement for side street stop-controlled intersections.
Source: Headway Transportation, 2023

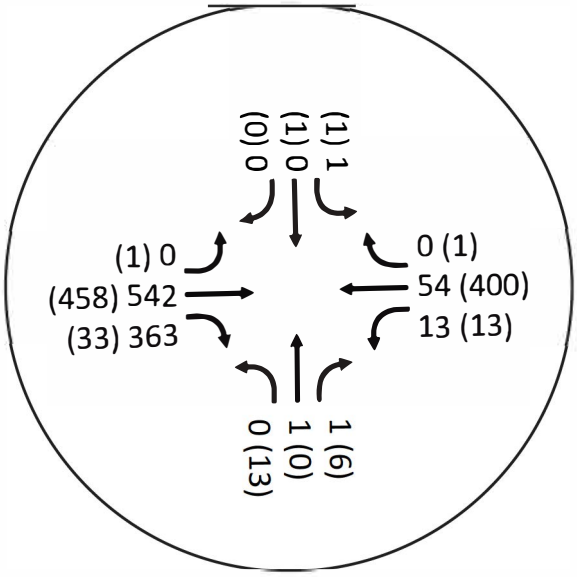
As shown in **Table 4**, the study intersections will operate within the level of service policy. The addition of the right-turn lane on Mt. Rose Highway for the intersection of Bum's Gulch Road is a safety improvement and is expected to slightly improve the operation.



1 Mt. Rose Hwy (SR 431) / Sky Tavern Rd



2 Mt. Rose Hwy (SR 431) / Bum's Gulch Rd / Old Mt. Rose Hwy



HEXWAY TRANSPORTATION

NO SCALE

AM (Noon) Peak Hour Volumes

STOP Stop Sign Project Site

Figure 6

WSUP23-0016

Sky Tavern Ski Area Expansion

Traffic Impact Study

EXHIBIT E

Existing Plus Project Traffic Volumes, Lane Configuration & Controls

FUTURE YEAR CONDITIONS

The Future Year analysis estimates operating conditions for the 20-year horizon.

Planned Roadway Improvements

There are no planned roadway improvements within the study area.

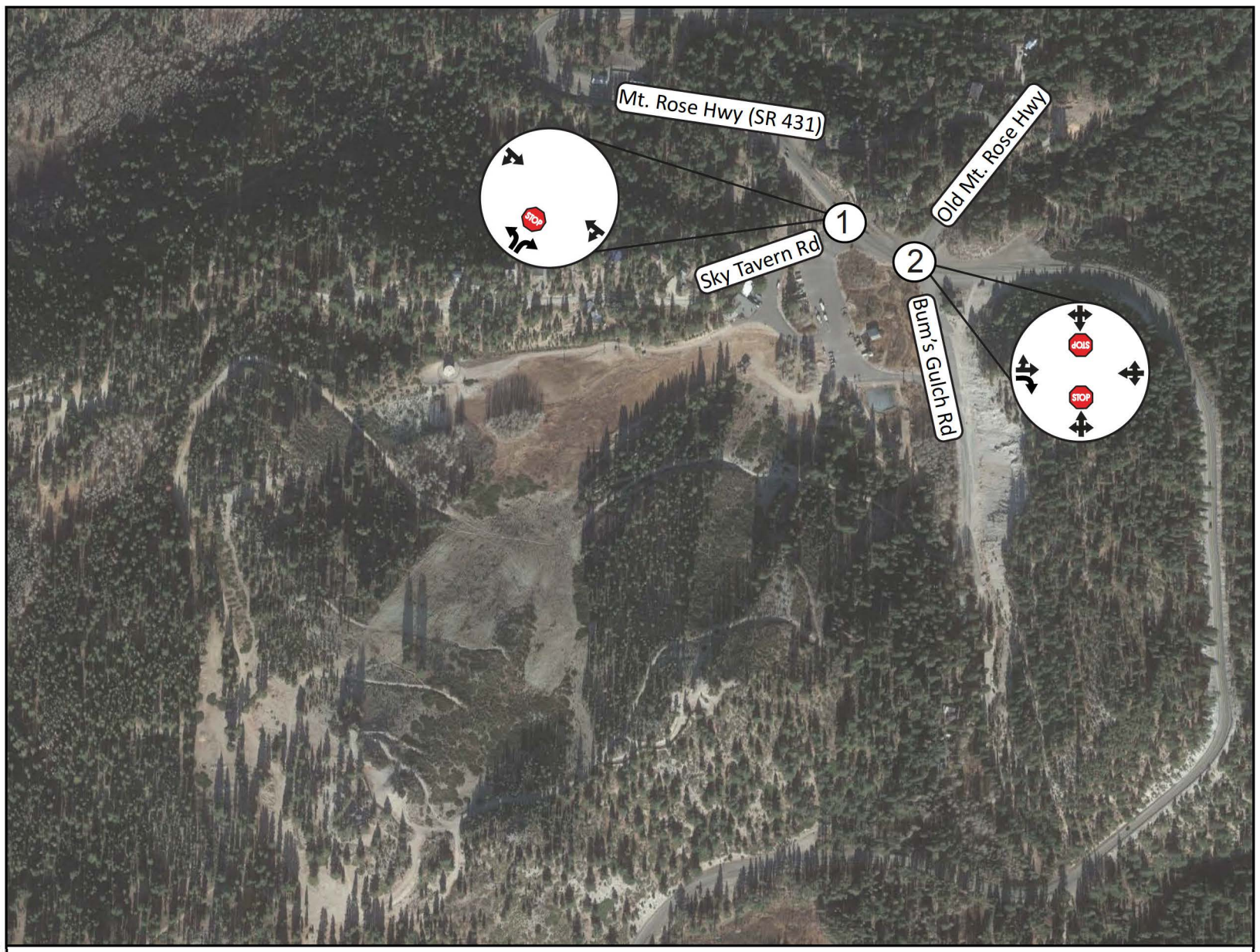
Traffic Volume Forecasts

Future year (20-year horizon) traffic volumes were developed using an exponential annual growth rate to provide a baseline for assessing potential impacts on the future transportation system. The growth rate was developed using the RTC's regional travel demand model. **Table 5** shows the projected Annual Average Daily Traffic (AADT) volumes and growth rates from the RTC Traffic Demand Model.

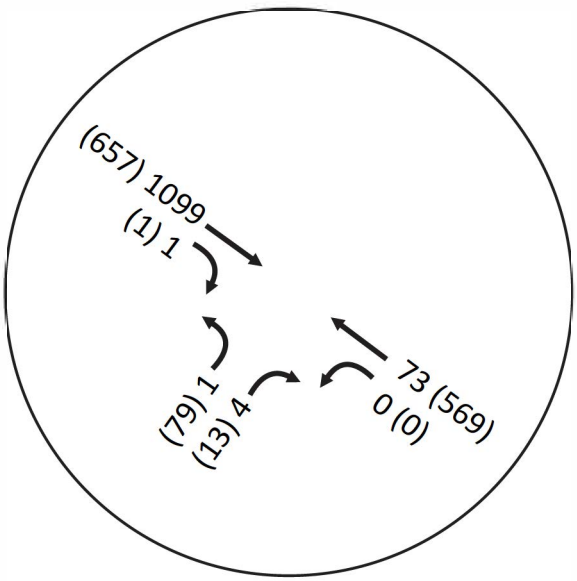
Table 5: RTC Model Growth Rates

Location -->	Mt. Rose Hwy (SR 431)	Mt. Rose Hwy (SR 431)	Mt. Rose Hwy (SR 431)
	West of site	East of site	East of site
	Travel Demand Model Volumes		
2020 RTC Model	6,436	6,336	5,334
2040 RTC Model	8,168	8,135	7,063
2050 RTC Model	12,946	12,839	7,841
Model Difference (2020-2040)	1,732	1,799	1,729
Model Difference (2020-2050)	6,510	6,503	2,507
	Growth Rate Calculation		
Compounded Growth rate (2020-2040)	1.20%	1.26%	1.41%
Compounded Growth Rate (2020-2050)	2.36%	2.38%	1.29%
Average growth Rate Per Year	1.65%	1.65%	1.65%
20 Years Growth Factor	**1.39**	**1.39**	**1.39**

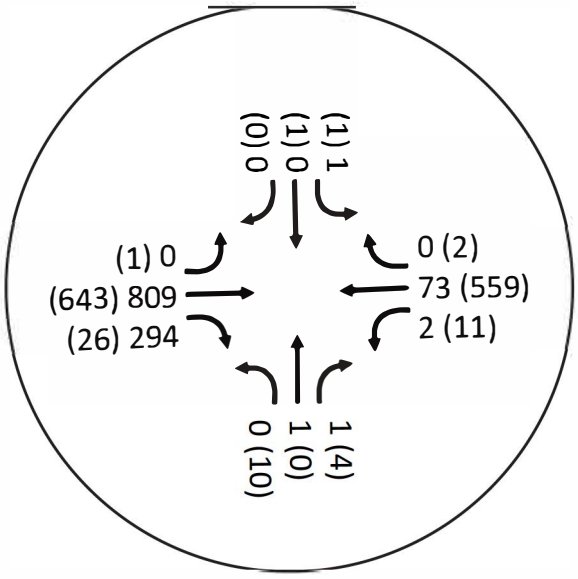
As shown in **Table 5,** the growth rate varies in the study area, with an average rate of 1.65 percent per year. An exponential growth rate of 1.65 percent per year for 20 years was applied (growth factor of 1.39) to the existing through traffic volumes on Mt. Rose Highway to develop future year traffic volume forecasts at the study intersections. **Figure 7** shows the Future Year (20-year horizon) traffic volumes at the study intersections.



1 Mt. Rose Hwy (SR 431) / Sky Tavern Rd



2 Mt. Rose Hwy (SR 431) / Bum's Gulch Rd / Old Mt. Rose Hwy



AM (Noon) Peak Hour Volumes

STOP Stop Sign

NO SCALE

HEADWAY TRANSPORTATION

Figure 7

WSUP23-0016

Sky Tavern Ski Area Expansion

EXHIBIT E

Traffic Impact Study

Future Year Traffic Volumes, Lane Configuration & Controls

Intersection Level of Service

AM and Noon peak hour intersection level of service analysis was performed for the study intersections using Synchro analysis software. **Table 6** shows the Future Year conditions level of service results, and the technical calculations are provided in **Appendix E**.

Table 6: Future Year Intersection Level of Service

Int. ID	Intersection	Control	AM		Noon	
			Delay[1]	LOS	Delay[1]	LOS
1	Sky Tavern Road / Mt. Rose Hwy	Side Street Stop				
	Overall		0.1	A	2.7	A
	NB Left		26.6	D	**42.1**	**E**
	NB Right		22.6	C	13.4	B
	WB Left		0.0	A	0.0	A
2	Bum's Gulch Road / Old Mt. Rose Hwy / Mt. Rose Hwy	Side Street Stop				
	Overall		0.1	A	0.5	A
	NB Approach		31.7	D	30.4	D
	SB Approach		24.5	C	28.3	D
	EB Left		12.3	B	9.0	A
	WB Left		0.0	A	8.6	A

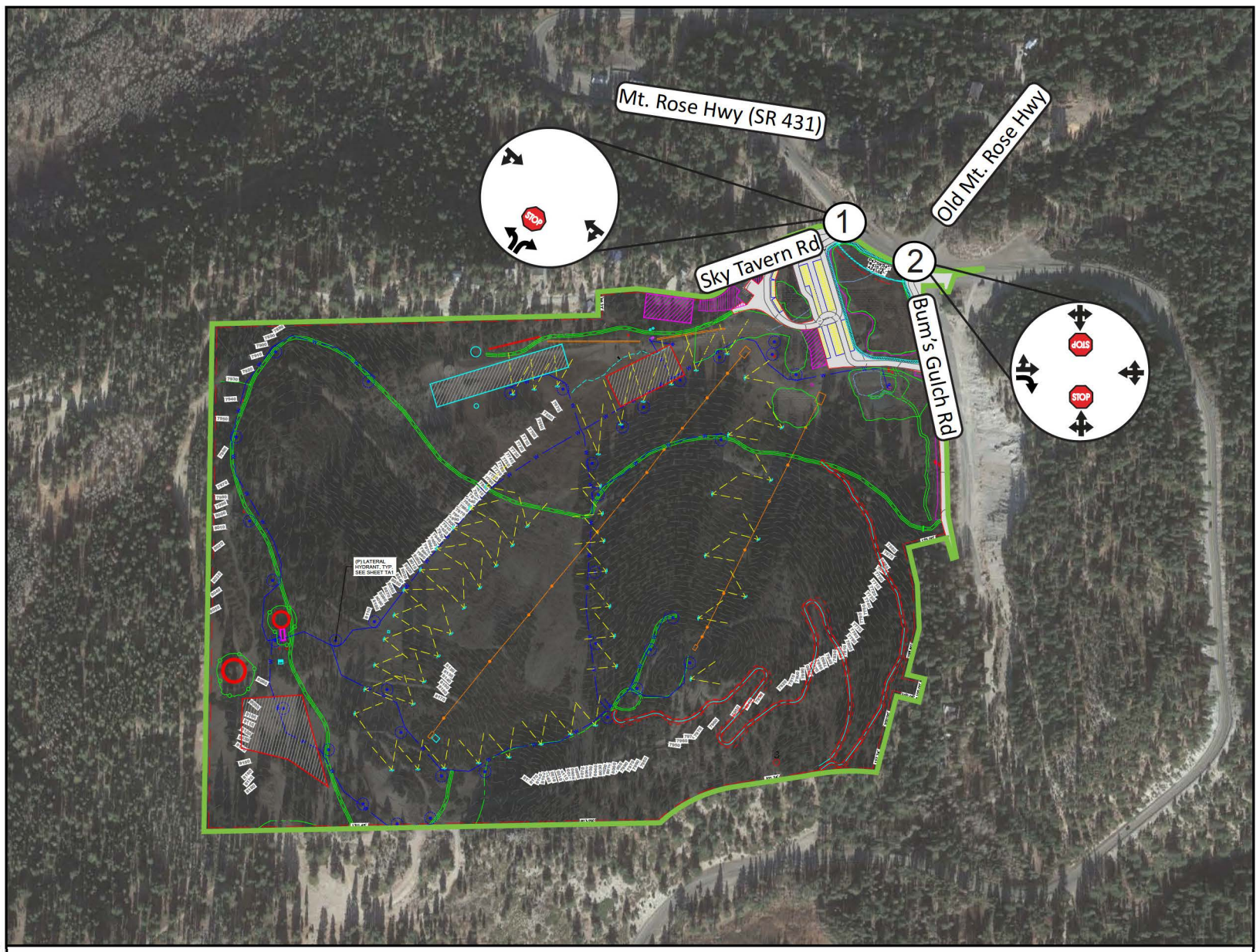
Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized and all way stop controlled intersections, and for the worst approach/movement for side street stop-controlled intersections.
Source: Headway Transportation, 2023

As shown in **Table 6**, the study intersections are expected to operate within the overall level of service policy. The northbound left-turn movement at the intersection of Sky Tavern Road / Mt. Rose Highway is expected to operate at a LOS E in the Noon peak hour without the expansion project. This is common for a side street approach, and reasonable for a Saturday during ski season.

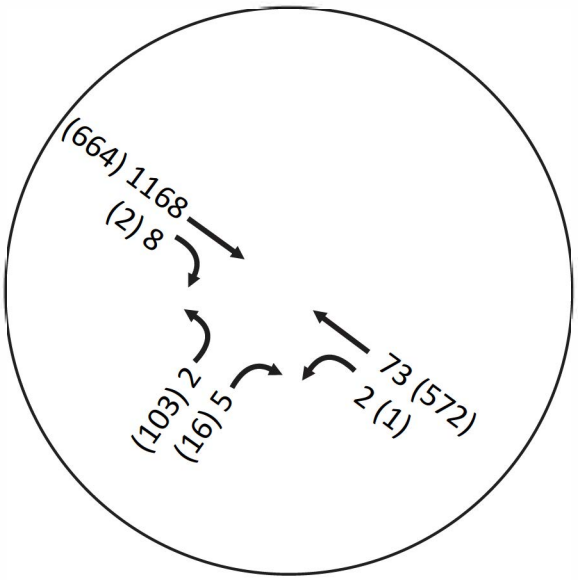
FUTURE YEAR PLUS PROJECT CONDITIONS

Traffic Volumes

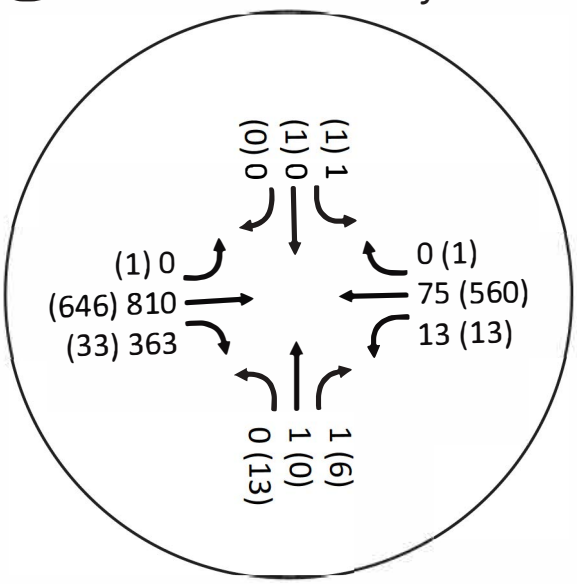
Project trips (**Figure 5**) were added to the Future Year traffic volumes (**Figure 7**) to develop the Future Year Plus Project conditions traffic volumes, shown on **Figure 8**.



1 Mt. Rose Hwy (SR 431) / Sky Tavern Rd



2 Mt. Rose Hwy (SR 431) / Bum's Gulch Rd / Old Mt. Rose Hwy



AM (Noon) Peak Hour Volumes

STOP Stop Sign Project Site

NO SCALE

Future Year Plus Project Traffic Volumes, Lane Configuration & Controls

HEADWAY TRANSPORTATION

WSUP23-0016
Sky Tavern Ski Area Expansion
Traffic Impact Study

EXHIBIT E

Figure 8

Intersection Level of Service

AM and Noon peak hour intersection level of service analysis was performed for the study intersections based on the Future Year Plus Project traffic volumes. **Table 7** shows the level of service results, and the technical calculations are provided in **Appendix F**.

Table 7: Future Year Plus Project Intersection Level of Service

Int. ID	Intersection	Control	AM		Noon	
			Delay[1]	LOS	Delay[1]	LOS
1	Sky Tavern Road / Mt. Rose Hwy	Side Street Stop				
	Overall		0.2	A	4.3	A
	NB Left		29.7	D	**54.9**	**F**
	NB Right		25.0	D	13.5	B
	WB Left		12.0	B	9.0	A
2	Bum's Gulch Road / Old Mt. Rose Hwy / Mt. Rose Hwy	Side Street Stop				
	Overall		0.2	A	0.6	A
	NB Approach		**36.1**	**E**	31.1	D
	SB Approach		26.8	D	28.8	D
	EB Left		13.1	B	9.1	A
	WB Left		0.0	A	8.6	A
Additional analysis with the installation of a right-turn lane						
2	Bum's Gulch Road / Old Mt. Rose Hwy / Mt. Rose Hwy	Side Street Stop				
	Overall		0.2	A	0.6	A
	NB Approach		**36.1**	**E**	31.1	D
	SB Approach		20.8	C	28.1	D
	EB Left		13.1	B	9.1	A
	WB Left		0.0	A	8.6	A

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized and all way stop controlled intersections, and for the worst approach/movement for side street stop-controlled intersections.
Source: Headway Transportation, 2023

As shown in **Table 7**, the study intersections are expected to operate within the overall level of service policy. The northbound left-turn movement at the intersection of Sky Tavern Road / Mt. Rose Highway is expected to operate at a LOS F in the Noon peak hour. The northbound approach at the intersection of Bum's Gulch Road / Mt. Rose Highway is expected to operate at a LOS E in the AM peak hour. These LOS are common for side street approaches and are reasonable for a Saturday during ski season. The addition of the eastbound right-turn lane on Mt. Rose Highway for the intersection of Bum's Gulch Road is a safety improvement and is expected to slightly improve the operation.

Project Access Turn Lane Lengths & Deviation Request

The NDOT standards provide minimum lengths for left-turn and right-turn deceleration lanes in Table 4-20. Deceleration lane lengths are determined based on the following:

Minimum Length of Deceleration Lane = Deceleration Length + Queue Storage Length

The deceleration length (including the taper length) for a 45-mph speed limit is 350 feet.

The eastbound right-turn is a free movement, therefore no storage length is needed.

Exhibit 2 shows the intersection spacing. The eastbound right-turn deceleration lane should be constructed to provide the maximum length available, approximately 200 feet. This will require a deviation letter which is provided separately.

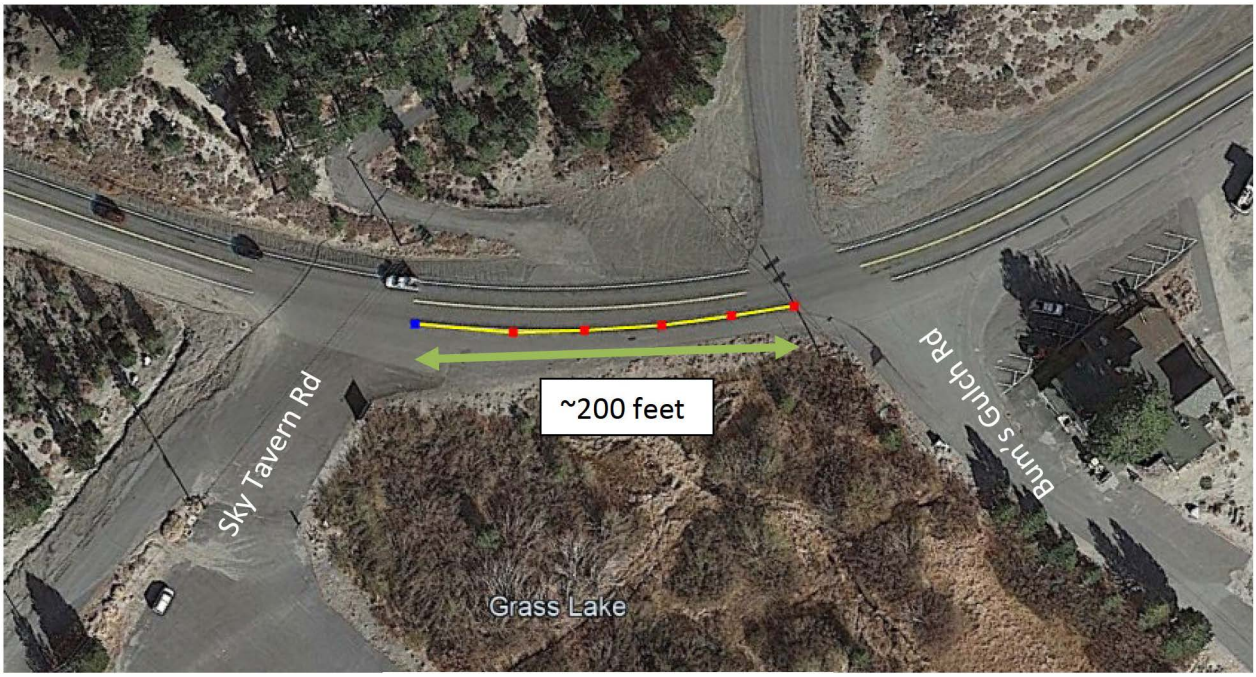


Exhibit 2: Intersection Spacing

SAFETY ENHANCEMENTS

Potential Enhancements on Mt. Rose Highway

Mt. Rose Highway near the site access roadway has horizontal curves and grades, roadway features associated with heighted safety concerns. Additional signage may be considered as a safety improvement to proactively address safety and alert motorists to be aware of the upcoming intersections.

Exhibit 3 show potential signage (either static or flashing) from the Manual on Uniform Traffic Control Devices (MUTCD):

- T-Intersection (W2-2) sign in the eastbound direction (west of Sky Tavern Road)
- Crossroad (W2-1) sign in the westbound direction (east of Bum's Gulch Road)

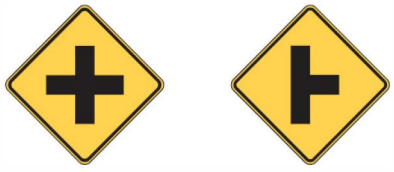


Exhibit 3: MUTCD Signage.

CONCLUSIONS & RECOMMENDATIONS

The following is a list of our key findings and recommendations:

- The proposed project is an expansion of the Sky Tavern Ski Area including an additional ski lift, the ski lodge expansion (approximately double in size) and additional parking. The site will include other amenities typically associated with summertime including a bicycle path, an airbag drop training and entertainment areas for special events such as weddings.
- The study is conducted for a typical weekend (Saturday traffic) during ski season. The project is anticipated to generate 91 AM peak hour, and 43 Noon peak hour additional trips on the external roadway network.
- The study intersections currently operate at overall acceptable levels of service and are expected to continue to operate acceptably under Existing Plus Project conditions and Future Year Plus Project conditions. The northbound left-turn movement at the intersection of Sky Tavern Road / Mt. Rose Highway is expected to operate at a LOS F. The northbound approach at the intersection of Bum's Gulch Road / Mt. Rose Highway is expected to operate at a LOS E in the AM peak hour. These side street delays do not indicate an exceedance of LOS policy or warrant mitigations.
- It is recommended that an eastbound right-turn lane be constructed on Mt. Rose Highway for the intersection of Bum's Gulch Road / Mt. Rose Highway, based on NDOT's *Access Management System and Standards*. A deviation letter is provided separately from this report since the AMSS requirement of 350 feet cannot be met given the intersection spacing to Sky Tavern Road (approximately 200 feet).
- It is recommended that the following improvements be installed on Sky Tavern Road at the intersection with Mt. Rose Highway:
  - Approach lane striping configuration (left-turn and right-turn pockets)
  - Stop Bar
  - Stop sign (36x36)
- It is recommended that the following improvements be installed on Bum's Gulch Road at the intersection with Mt. Rose Highway:
  - Stop Bar
  - Stop sign (36x36)
- Intersection approaching warning signs may be considered on Mt. Rose Highway as a safety improvement (see **Exhibit 3**).

Appendix A
NDOT Crash Data

Crash Severity	Crash Date	Crash Time	Primary Street	Dir	Secondary Street	Injured	Property Damage Only	Injury Type	Crash Type	Total Vehicles
INJURY CRASH	6/9/2016, 8:25 AM	3:25:00 PM	SR431	E	MILE MARKER 13	1	No Data	B	NON-COLLISION	1
PROPERTY DAMAGE ONLY	9/4/2016, 9:30 AM	4:30:00 PM	SR431	W	SKY TAVERN RD	No Data	PDO	No Data	ANGLE	1
PROPERTY DAMAGE ONLY	11/1/2016, 2:55 PM	9:55:00 PM	SR431	E	MILE MARKER 13	No Data	PDO	No Data	NON-COLLISION	1
PROPERTY DAMAGE ONLY	12/23/2016, 4:38 AM	12:38:00 PM	SR431	E	MILE MARKER 13	No Data	PDO	No Data	HEAD-ON	2
PROPERTY DAMAGE ONLY	3/15/2017, 5:33 AM	12:33:00 PM	SR431	E	MILE MARKER 13	No Data	PDO	No Data	NON-COLLISION	1
INJURY CRASH	1/19/2018, 3:27 AM	11:27:00 AM	SR431	E	MILE MARKER 13	1	No Data	C	NON-COLLISION	1
INJURY CRASH	6/30/2018, 4:28 PM	11:28:00 PM	SR431	E	SKY TAVERN RD	1	No Data	B	NON-COLLISION	1
PROPERTY DAMAGE ONLY	9/18/2018, 6:44 AM	1:44:00 PM	SR431	E	MILE MARKER 13	No Data	PDO	No Data	NON-COLLISION	1
INJURY CRASH	1/20/2019, 3:45 AM	11:45:00 AM	SR431	E	MILE MARKER 13	1	No Data	B	ANGLE	2
PROPERTY DAMAGE ONLY	9/24/2019, 2:02 PM	9:02:00 PM	SR431	E	MILE MARKER 13	No Data	PDO	No Data	ANGLE	2
PROPERTY DAMAGE ONLY	7/20/2020, 4:26 AM	11:26:00 AM	SR431	E	SKY TAVERN RD	No Data	PDO	No Data	SIDESWIPE, MEETING	2
PROPERTY DAMAGE ONLY	9/10/2020, 2:37 PM	9:37:00 PM	SR431	E	MILE MARKER 13	No Data	PDO	No Data	NON-COLLISION	1

V1 Type	V1 Dir	V1 Driver Age	V1 Lane Num	V1 Action	V1 Driver Factors	V1 Driver Distracted	V1 Vehicle Factors
CARRY-ALL	E	26	No Data	NOT REPORTED	APPARENTLY NORMAL	No Data	RAN OFF ROAD
PICKUP	W	33	1	GOING STRAIGHT	APPARENTLY NORMAL	No Data	No Data
SEDAN, 4 DOOR	W	76	No Data	GOING STRAIGHT	APPARENTLY NORMAL	No Data	DISREGARDED TRAFFIC SIGNS, SIGNALS, ROAD MARKINGS
HARDTOP, 4 DOOR	E	21	1	GOING STRAIGHT	APPARENTLY NORMAL	No Data	DRIVING TOO FAST FOR CONDITIONS
SEDAN, 4 DOOR	W	54	1	GOING STRAIGHT	APPARENTLY NORMAL	No Data	No Data
UTILITY	E	28	1	GOING STRAIGHT	APPARENTLY NORMAL	No Data	DRIVING TOO FAST FOR CONDITIONS
HATCHBACK/FASTBACK	E	33	1	NOT REPORTED	APPARENTLY NORMAL	No Data	DRIVING TOO FAST FOR CONDITIONS
UTILITY	E	65	1	NOT REPORTED	APPARENTLY NORMAL	No Data	FAILURE TO KEEP IN PROPER LANE OR RUNNING OFF ROAD
CARRY-ALL	No Data	39	1	GOING STRAIGHT	APPARENTLY NORMAL	No Data	DRIVING TOO FAST FOR CONDITIONS
STATION WAGON	E	93	1	NEGOTIATING A CURVE	HAD BEEN DRINKING	No Data	OVER-CORRECTING/OVER-STEERING
VAN CAMPER	W	No Data	1	NEGOTIATING A CURVE	UNKNOWN	No Data	DROVE LEFT OF CENTER
SEDAN, 4 DOOR	E	No Data	1	NEGOTIATING A CURVE	UNKNOWN	No Data	MECHANICAL DEFECTS

Appendix B
Traffic Count Data Sheets

TOTAL

Date	Time	Southbound						Westbound						Northbound						Eastbound					
		U Turns	Left Turns	Straight Through	Right Turns	EB Crosswalk Crossings	WB Crosswalk Crossings	U Turns	Left Turns	Straight Through	Right Turns	NB Crosswalk Crossings	SB Crosswalk Crossings	U Turns	Left Turns	Straight Through	Right Turns	EB Crosswalk Crossings	WB Crosswalk Crossings	U Turns	Left Turns	Straight Through	Right Turns	NB Crosswalk Crossings	SB Crosswalk Crossings
	0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	15	1	0	0
	6:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	18	1	0	0
	6:30	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	36	1	0	0
	6:45	0	0	0	0	0	0	0	1	5	0	0	0	0	0	0	0	0	0	0	0	37	10	0	0
	7:00	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1	2	0	2	58	22	0	0
	7:15	0	0	0	0	0	0	0	0	7	0	0	0	0	0	1	0	0	0	0	0	88	62	0	0
	7:30	0	1	0	0	0	0	0	1	10	0	0	0	0	0	0	0	0	0	0	0	129	88	0	0
	7:45	0	0	0	0	0	0	0	1	15	0	0	0	0	0	0	1	0	0	0	0	124	82	0	0
	8:00	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	201	62	0	0
	Total	0	1	0	0	0	0	0	2	52	0	0	0	0	0	1	1	0	0	0	0	542	294	0	0
	8:15	0	0	0	0	0	0	0	0	21	0	1	1	0	0	0	0	1	0	0	1	189	30	0	0
	8:30	0	0	0	0	0	0	0	1	25	0	0	0	0	1	0	0	1	0	0	11	183	4	4	1
	8:45	0	0	1	0	0	0	0	1	26	1	4	0	0	0	0	1	0	0	0	6	159	6	3	0
	9:00	0	0	0	0	0	0	0	0	23	0	0	0	0	0	0	0	1	1	0	1	143	4	1	0
	9:15	0	0	0	0	0	0	0	1	25	0	0	0	0	0	0	1	0	0	0	0	107	5	0	0
	9:30	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	1	0	0	0	0	8	1	0	0
3/18/2023	9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:00	0	0	0	0	0	0	0	0	37	0	0	0	0	0	0	0	0	0	0	1	103	2	0	0
	10:15	0	0	0	0	0	0	0	0	57	0	0	0	0	1	0	1	0	0	0	0	92	3	0	0
	10:30	0	0	0	0	0	0	0	1	52	0	0	2	0	2	0	4	0	0	0	0	134	4	0	0
	10:45	0	0	0	0	0	0	0	0	66	0	0	0	0	1	0	1	0	0	0	0	123	1	0	0
	11:00	0	0	0	0	0	0	0	4	51	0	0	0	0	1	0	2	0	0	0	0	116	2	0	0
	11:15	0	0	0	0	0	0	0	2	93	1	0	2	0	2	0	1	0	0	0	0	111	3	0	0
	11:30	0	0	0	0	0	0	0	1	92	0	0	1	0	2	0	0	0	0	0	1	123	11	0	3
	11:45	0	0	0	0	0	0	0	6	99	0	0	0	0	2	0	1	0	0	0	0	117	7	0	0
	12:00	0	1	1	0	0	0	0	2	116	0	0	0	0	4	0	2	0	0	0	0	107	5	1	3
	Total	0	1	1	0	0	0	0	11	400	1	0	3	0	10	0	4	0	0	0	1	458	26	1	6
	12:15	0	0	0	0	0	0	0	2	115	0	0	0	0	0	0	2	0	0	0	0	84	4	0	1
	12:30	0	0	0	0	0	0	0	1	97	0	0	0	0	2	0	2	0	0	0	0	105	8	0	0
	12:45	0	0	0	0	0	0	0	2	116	0	0	1	0	1	0	1	1	1	0	0	98	3	0	0
	13:00	0	0	0	0	0	0	0	1	113	0	0	0	0	2	0	2	0	0	0	0	92	8	0	2
	13:15	0	0	0	0	0	0	0	1	109	0	0	0	0	2	0	2	0	0	0	0	81	2	0	0
	13:30	0	0	0	0	0	0	0	2	148	0	0	0	0	4	0	1	0	0	0	0	70	2	0	0
	13:45	0	0	0	0	0	0	0	1	110	0	0	1	0	1	0	0	0	0	0	0	50	3	0	0
	14:00	0	0	1	0	0	0	0	1	144	0	0	0	0	1	0	1	0	0	0	0	63	3	0	0
	14:15	0	0	0	1	0	0	0	1	134	1	0	0	0	4	0	1	0	0	0	0	72	5	0	0
	14:30	0	0	0	0	0	0	0	1	130	0	0	0	0	0	0	0	0	0	0	0	51	3	0	1
	14:45	0	0	1	0	0	0	0	0	140	0	0	0	0	1	0	3	0	0	2	0	44	3	0	0
	15:00	0	0	0	0	0	0	0	0	137	0	0	0	0	0	0	0	0	0	0	0	49	1	0	0
	15:15	0	0	0	0	0	0	0	1	164	0	0	0	0	1	0	1	0	0	0	0	47	3	0	0
	15:30	0	0	0	0	0	0	0	2	165	0	0	0	0	1	0	0	0	0	0	0	47	1	0	0
	15:45	0	0	0	0	0	0	0	1	160	0	0	0	0	0	0	0	0	0	0	0	44	0	0	0
	16:00	0	0	0	0	0	0	0	1	175	1	0	0	0	2	0	0	0	0	0	0	49	0	0	0
	16:15	0	0	0	0	0	0	0	2	185	0	0	0	0	3	0	0	0	0	0	0	43	0	0	0
	16:30	0	0	0	1	0	0	0	4	168	0	0	0	0	5	0	0	0	0	0	0	46	0	0	0
	16:45	0	0	0	0	0	0	0	1	145	0	0	0	0	2	0	0	0	0	0	0	41	2	0	0
	17:00	0	0	0	0	0	0	0	3	90	0	0	0	0	2	1	0	0	0	0	0	55	0	0	0
	17:15	0	0	0	0	0	0	0	2	67	2	0	0	0	2	0	0	0	0	0	0	33	0	0	0
	17:30	0	1	0	0	0	0	0	0	60	0	0	0	0	2	0	1	0	0	0	0	26	0	0	0
	17:45	0	0	0	0	0	0	0	0	46	0	0	0	0	0	0	0	0	0	0	0	38	4	0	0
	18:00	0	0	0	0	0	0	0	0	49	0	0	0	0	0	0	0	0	0	0	0	24	0	0	0
	18:15	0	0	0	0	0	0	0	0	49	1	0	0	0	0	0	0	0	0	0	0	29	0	0	0
	18:30	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	30	0	0	0
	18:45	0	0	0	0	0	0	0	0	41	0	0	0	0	0	0	0	0	0	0	0	22	0	0	0
	19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TOTAL

Date	Time	Southbound						Westbound						Northbound						Eastbound					
		U Turns	Left Turns	Straight Through	Right Turns	EB Crosswalk Crossings	WB Crosswalk Crossings	U Turns	Left Turns	Straight Through	Right Turns	NB Crosswalk Crossings	SB Crosswalk Crossings	U Turns	Left Turns	Straight Through	Right Turns	EB Crosswalk Crossings	WB Crosswalk Crossings	U Turns	Left Turns	Straight Through	Right Turns	NB Crosswalk Crossings	SB Crosswalk Crossings
3/18/2023	0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0
	6:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	21	2	0	0
	6:30	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	38	2	0	0
	6:45	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	47	2	0	0
	7:00	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	3	0	0	0	0	80	0	0	0
	7:15	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	150	0	0	0
	7:30	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	2	0	0	0	0	211	0	0	0
	7:45	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	1	0	0	0	0	209	0	0	0
	8:00	0	0	0	0	0	0	0	0	20	0	0	0	0	1	0	1	0	0	0	0	220	1	0	0
	Total	0	0	0	0	0	0	0	0	52	0	0	0	0	1	0	4	0	0	0	0	790	1	0	0
	8:15	0	0	0	0	0	0	0	0	21	0	0	0	0	4	0	2	0	0	0	0	222	2	0	0
	8:30	0	0	0	0	0	0	0	0	26	0	1	0	0	3	0	1	0	0	0	0	196	0	1	0
	8:45	0	0	0	0	0	0	0	0	26	0	0	0	0	2	0	4	0	1	0	0	169	1	0	0
	9:00	0	0	0	0	0	0	0	0	23	0	0	0	0	1	0	2	1	0	0	0	146	0	0	0
	9:15	0	0	0	0	0	0	0	0	25	0	0	0	0	1	0	1	0	0	0	0	112	0	0	0
	9:30	0	0	0	0	0	0	0	0	28	0	0	0	0	0	0	0	0	0	0	0	105	2	0	0
	9:45	0	0	0	0	0	0	0	0	35	0	0	0	0	3	0	2	0	0	0	0	141	0	0	0
	10:00	0	0	0	0	0	0	0	1	43	0	0	0	0	1	0	0	0	0	0	0	119	0	0	0
	10:15	0	0	0	0	0	0	0	0	57	0	0	0	0	1	0	0	0	0	0	0	97	0	0	0
	10:30	0	0	0	0	0	0	0	0	55	0	0	0	0	1	0	0	0	0	0	0	135	0	0	0
	10:45	0	0	0	0	0	0	0	0	67	0	0	0	0	1	0	0	0	0	0	0	125	0	0	0
	11:00	0	0	0	0	0	0	0	0	52	0	0	0	0	2	0	0	0	0	0	0	116	1	0	0
	11:15	0	0	0	0	0	0	0	0	93	0	0	0	0	11	0	2	0	0	0	0	114	0	0	0
	11:30	0	0	0	0	0	0	0	0	95	0	0	1	0	21	0	2	0	0	0	0	131	0	0	0
	11:45	0	0	0	0	0	0	0	0	98	0	0	0	0	21	0	6	0	0	0	0	119	1	0	0
	12:00	0	0	0	0	0	0	0	0	123	0	0	0	0	26	0	3	0	0	0	0	108	0	0	0
	Total	0	0	0	0	0	0	0	0	409	0	0	1	0	79	0	13	0	0	0	0	472	1	0	0
	12:15	0	0	0	0	0	0	0	0	115	0	0	0	0	12	0	0	0	0	0	0	87	0	0	0
	12:30	0	0	0	0	0	0	0	0	99	0	0	3	0	18	0	1	0	0	0	0	112	0	0	0
	12:45	0	0	0	0	0	0	0	0	117	0	0	2	0	9	0	1	0	0	0	0	101	0	0	0
	13:00	0	0	0	0	0	0	0	0	114	0	0	0	0	20	0	2	0	2	0	0	94	0	0	0
	13:15	0	0	0	0	0	0	0	0	111	0	0	0	0	9	0	0	0	0	0	0	80	0	0	0
	13:30	0	0	0	0	0	0	0	0	151	0	0	0	0	15	0	1	0	0	0	0	72	0	0	0
	13:45	0	0	0	0	0	0	0	0	110	0	0	0	0	22	0	0	0	0	0	0	54	0	0	0
	14:00	0	0	0	0	0	0	0	0	146	0	0	0	0	14	0	0	0	0	0	0	66	0	0	0
	14:15	0	0	0	0	0	0	0	1	138	0	0	0	0	23	0	3	0	0	1	0	71	0	0	0
	14:30	0	0	0	0	0	0	0	0	131	0	0	0	0	16	0	0	0	0	0	0	54	0	0	0
	14:45	0	0	0	0	0	0	0	1	141	0	0	0	0	12	0	1	0	0	0	0	49	2	0	0
	15:00	0	0	0	0	0	0	0	1	137	0	0	0	0	17	0	2	0	0	0	0	46	0	0	0
	15:15	0	0	0	0	0	0	0	1	159	0	0	0	0	27	0	1	0	0	0	0	50	0	0	0
	15:30	0	0	0	0	0	0	0	0	169	0	0	0	0	19	0	0	0	0	0	0	47	0	0	0
	13:45	0	0	0	0	0	0	0	1	155	0	0	0	0	12	0	1	0	0	0	0	44	0	0	0
	16:00	0	0	0	0	0	0	0	0	176	0	0	0	0	10	0	1	0	0	0	0	49	0	0	0
	16:15	0	0	0	0	0	0	0	0	186	0	0	0	0	19	0	2	0	0	0	0	41	0	0	0
	16:30	0	0	0	0	0	0	0	1	170	0	0	0	0	18	0	0	0	0	0	0	43	1	0	0
	16:45	0	0	0	0	0	0	0	1	145	0	0	0	0	9	0	0	0	0	0	0	43	0	0	0
	17:00	0	0	0	0	0	0	0	2	90	0	0	0	0	6	0	0	0	0	0	0	55	0	0	0
	17:15	0	0	0	0	0	0	0	1	70	0	0	0	0	2	0	0	0	0	0	0	33	0	0	0
	17:30	0	0	0	0	0	0	0	0	63	0	0	0	0	1	0	0	0	0	0	0	26	0	0	0
	17:45	0	0	0	0	0	0	0	0	45	0	0	0	0	4	0	0	0	0	0	0	42	0	0	0
	18:00	0	0	0	0	0	0	0	0	48	0	0	0	0	0	0	0	0	0	0	0	24	0	0	0
	18:15	0	0	0	0	0	0	0	0	51	0	0	0	0	0	0	0	0	0	0	0	30	0	0	0
	18:30	0	0	0	0	0	0	0	1	40	0	0	0	0	1	0	0	0	0	0	0	31	0	0	0
	14:45	0	0	0	0	0	0	0	0	41	0	0	0	0	0	0	0	0	0	0	0	21	0	0	0
	19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix C
Existing LOS Calculations

1: Sky Tavern Rd & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	1	4	832	1	0	52
Future Vol, veh/h	1	4	832	1	0	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	1	5	956	1	0	60

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1017	957	0	0	957	0
Stage 1	957	-	-	-	-	-
Stage 2	60	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	266	315	-	-	727	-
Stage 1	376	-	-	-	-	-
Stage 2	968	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	266	315	-	-	727	-
Mov Cap-2 Maneuver	266	-	-	-	-	-
Stage 1	376	-	-	-	-	-
Stage 2	968	-	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	17	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	EBLn2	SET	SER
Capacity (veh/h)	727	-	266	315	-	-
HCM Lane V/C Ratio	-	-	0.004	0.015	-	-
HCM Control Delay (s)	0	-	18.6	16.6	-	-
HCM Lane LOS	A	-	C	C	-	-
HCM 95th %tile Q(veh)	0	-	0	0	-	-

1. AM Existing Conditions

2: Bum's Gulch Rd/Old Mt Rose Hwy & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	542	294	2	52	0	0	1	1	1	0	0
Future Vol, veh/h	0	542	294	2	52	0	0	1	1	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	0	686	372	3	66	0	0	1	1	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	66	0	0	1058	0	0	944	944	872	945	1130	66
Stage 1	-	-	-	-	-	-	872	872	-	72	72	-
Stage 2	-	-	-	-	-	-	72	72	-	873	1058	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1549	-	-	666	-	-	244	264	353	244	205	1003
Stage 1	-	-	-	-	-	-	348	371	-	943	839	-
Stage 2	-	-	-	-	-	-	943	839	-	348	304	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1549	-	-	666	-	-	243	263	353	241	204	1003
Mov Cap-2 Maneuver	-	-	-	-	-	-	243	263	-	241	204	-
Stage 1	-	-	-	-	-	-	348	371	-	943	835	-
Stage 2	-	-	-	-	-	-	938	835	-	346	304	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	17.1	20
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	301	1549	-	-	666	-	-	241
HCM Lane V/C Ratio	0.008	-	-	-	0.004	-	-	0.005
HCM Control Delay (s)	17.1	0	-	-	10.4	0	-	20
HCM Lane LOS	C	A	-	-	B	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

1. AM Existing Conditions

1: Sky Tavern Rd & Mt Rose Hwy

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	79	13	472	1	0	410
Future Vol, veh/h	79	13	472	1	0	410
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	84	14	502	1	0	436

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	939	503	0	0	503	0
Stage 1	503	-	-	-	-	-
Stage 2	436	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	295	573	-	-	1072	-
Stage 1	612	-	-	-	-	-
Stage 2	656	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	295	573	-	-	1072	-
Mov Cap-2 Maneuver	295	-	-	-	-	-
Stage 1	612	-	-	-	-	-
Stage 2	656	-	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	20.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	EBLn2	SET	SER
Capacity (veh/h)	1072	-	295	573	-	-
HCM Lane V/C Ratio	-	-	0.285	0.024	-	-
HCM Control Delay (s)	0	-	22	11.4	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0	-	1.1	0.1	-	-

2. Noon Existing Conditions

2: Bum's Gulch Rd/Old Mt Rose Hwy & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	458	26	11	400	1	10	0	4	1	1	0
Future Vol, veh/h	1	458	26	11	400	1	10	0	4	1	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	1	482	27	12	421	1	11	0	4	1	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	422	0	0	509	0	0	944	944	496	946	957	422
Stage 1	-	-	-	-	-	-	498	498	-	446	446	-
Stage 2	-	-	-	-	-	-	446	446	-	500	511	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1148	-	-	1066	-	-	244	264	578	243	260	636
Stage 1	-	-	-	-	-	-	558	548	-	595	577	-
Stage 2	-	-	-	-	-	-	595	577	-	557	540	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1148	-	-	1066	-	-	240	260	578	238	256	636
Mov Cap-2 Maneuver	-	-	-	-	-	-	240	260	-	238	256	-
Stage 1	-	-	-	-	-	-	557	547	-	594	568	-
Stage 2	-	-	-	-	-	-	585	568	-	552	539	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	18.2	19.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	288	1148	-	-	1066	-	-	247
HCM Lane V/C Ratio	0.051	0.001	-	-	0.011	-	-	0.009
HCM Control Delay (s)	18.2	8.1	0	-	8.4	0	-	19.7
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0

2. Noon Existing Conditions

Appendix D
Existing Plus Project LOS Calculations

1: Sky Tavern Rd & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	2	5	900	8	2	52
Future Vol, veh/h	2	5	900	8	2	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	2	6	1034	9	2	60

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1103	1039	0	0	1043	0
Stage 1	1039	-	-	-	-	-
Stage 2	64	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	236	283	-	-	675	-
Stage 1	344	-	-	-	-	-
Stage 2	964	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	235	283	-	-	675	-
Mov Cap-2 Maneuver	235	-	-	-	-	-
Stage 1	344	-	-	-	-	-
Stage 2	961	-	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	18.7	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	EBLn2	SET	SER
Capacity (veh/h)	675	-	235	283	-	-
HCM Lane V/C Ratio	0.003	-	0.01	0.02	-	-
HCM Control Delay (s)	10.4	0	20.5	18	-	-
HCM Lane LOS	B	A	C	C	-	-
HCM 95th %tile Q(veh)	0	-	0	0.1	-	-

3. AM Existing Plus Project Conditions

2: Bum's Gulch Rd/Old Mt Rose Hwy & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	542	363	13	54	0	0	1	1	1	0	0
Future Vol, veh/h	0	542	363	13	54	0	0	1	1	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	0	686	459	16	68	0	0	1	1	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	68	0	0	1145	0	0	1016	1016	916	1017	1245	68
Stage 1	-	-	-	-	-	-	916	916	-	100	100	-
Stage 2	-	-	-	-	-	-	100	100	-	917	1145	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1546	-	-	618	-	-	218	240	333	218	176	1001
Stage 1	-	-	-	-	-	-	329	354	-	911	816	-
Stage 2	-	-	-	-	-	-	911	816	-	329	277	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1546	-	-	618	-	-	213	234	333	212	171	1001
Mov Cap-2 Maneuver	-	-	-	-	-	-	213	234	-	212	171	-
Stage 1	-	-	-	-	-	-	329	354	-	911	794	-
Stage 2	-	-	-	-	-	-	886	794	-	327	277	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.1	18.2	22.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	275	1546	-	-	618	-	-	212
HCM Lane V/C Ratio	0.009	-	-	-	0.027	-	-	0.006
HCM Control Delay (s)	18.2	0	-	-	11	0	-	22.1
HCM Lane LOS	C	A	-	-	B	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	0

3. AM Existing Plus Project Conditions

2: Bum's Gulch Rd/Old Mt Rose Hwy & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑	↱		↔			↔			↔	
Traffic Vol, veh/h	0	542	363	13	54	0	0	1	1	1	0	0
Future Vol, veh/h	0	542	363	13	54	0	0	1	1	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	0	686	459	16	68	0	0	1	1	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	68	0	0	1145	0	0	786	786	686	1017	1245	68
Stage 1	-	-	-	-	-	-	686	686	-	100	100	-
Stage 2	-	-	-	-	-	-	100	100	-	917	1145	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1546	-	-	618	-	-	312	326	451	218	176	1001
Stage 1	-	-	-	-	-	-	441	451	-	911	816	-
Stage 2	-	-	-	-	-	-	911	816	-	329	277	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1546	-	-	618	-	-	305	317	451	212	171	1001
Mov Cap-2 Maneuver	-	-	-	-	-	-	305	317	-	212	171	-
Stage 1	-	-	-	-	-	-	441	451	-	911	794	-
Stage 2	-	-	-	-	-	-	886	794	-	327	277	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.1	14.7	22.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	372	1546	-	-	618	-	-	212
HCM Lane V/C Ratio	0.007	-	-	-	0.027	-	-	0.006
HCM Control Delay (s)	14.7	0	-	-	11	0	-	22.1
HCM Lane LOS	B	A	-	-	B	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	0

1. AM Existing Plus Project Conditions With Turn Lane Analysis

1: Sky Tavern Rd & Mt Rose Hwy

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	103	16	476	2	1	412
Future Vol, veh/h	103	16	476	2	1	412
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	110	17	506	2	1	438

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	947	507	0	0	508	0
Stage 1	507	-	-	-	-	-
Stage 2	440	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	292	570	-	-	1067	-
Stage 1	609	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	292	570	-	-	1067	-
Mov Cap-2 Maneuver	292	-	-	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	652	-	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	22.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	EBLn2	SET	SER
Capacity (veh/h)	1067	-	292	570	-	-
HCM Lane V/C Ratio	0.001	-	0.375	0.03	-	-
HCM Control Delay (s)	8.4	0	24.5	11.5	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	1.7	0.1	-	-

4. Noon Existing Plus Project Conditions

2: Bum's Gulch Rd/Old Mt Rose Hwy & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	458	33	13	400	1	13	0	6	1	1	0
Future Vol, veh/h	1	458	33	13	400	1	13	0	6	1	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	1	482	35	14	421	1	14	0	6	1	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	422	0	0	517	0	0	952	952	500	955	969	422
Stage 1	-	-	-	-	-	-	502	502	-	450	450	-
Stage 2	-	-	-	-	-	-	450	450	-	505	519	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1148	-	-	1059	-	-	241	261	575	240	256	636
Stage 1	-	-	-	-	-	-	555	545	-	592	575	-
Stage 2	-	-	-	-	-	-	592	575	-	553	536	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1148	-	-	1059	-	-	237	256	575	234	251	636
Mov Cap-2 Maneuver	-	-	-	-	-	-	237	256	-	234	251	-
Stage 1	-	-	-	-	-	-	554	544	-	591	565	-
Stage 2	-	-	-	-	-	-	581	565	-	546	535	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	18.3	20
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	291	1148	-	-	1059	-	-	242
HCM Lane V/C Ratio	0.069	0.001	-	-	0.013	-	-	0.009
HCM Control Delay (s)	18.3	8.1	0	-	8.4	0	-	20
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0

4. Noon Existing Plus Project Conditions

2: Bum's Gulch Rd/Old Mt Rose Hwy & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		✣			✣			✣	
Traffic Vol, veh/h	1	458	33	13	400	1	13	0	6	1	1	0
Future Vol, veh/h	1	458	33	13	400	1	13	0	6	1	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	1	482	35	14	421	1	14	0	6	1	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	422	0	0	517	0	0	934	934	482	955	969	422
Stage 1	-	-	-	-	-	-	484	484	-	450	450	-
Stage 2	-	-	-	-	-	-	450	450	-	505	519	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1148	-	-	1059	-	-	248	268	588	240	256	636
Stage 1	-	-	-	-	-	-	568	555	-	592	575	-
Stage 2	-	-	-	-	-	-	592	575	-	553	536	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1148	-	-	1059	-	-	244	263	588	234	251	636
Mov Cap-2 Maneuver	-	-	-	-	-	-	244	263	-	234	251	-
Stage 1	-	-	-	-	-	-	567	554	-	591	565	-
Stage 2	-	-	-	-	-	-	581	565	-	547	535	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	17.9	20
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	299	1148	-	-	1059	-	-	242
HCM Lane V/C Ratio	0.067	0.001	-	-	0.013	-	-	0.009
HCM Control Delay (s)	17.9	8.1	0	-	8.4	0	-	20
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0

10. Noon Existing Plus Project Conditions With Turn Lane Analysis

Appendix E
Future Year LOS Calculations

1: Sky Tavern Rd & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	1	4	1099	1	0	73
Future Vol, veh/h	1	4	1099	1	0	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	1	5	1263	1	0	84

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1348	1264	0	0	1264	0
Stage 1	1264	-	-	-	-	-
Stage 2	84	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	168	209	-	-	557	-
Stage 1	268	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	168	209	-	-	557	-
Mov Cap-2 Maneuver	168	-	-	-	-	-
Stage 1	268	-	-	-	-	-
Stage 2	944	-	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	23.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	EBLn2	SET	SER
Capacity (veh/h)	557	-	168	209	-	-
HCM Lane V/C Ratio	-	-	0.007	0.022	-	-
HCM Control Delay (s)	0	-	26.6	22.6	-	-
HCM Lane LOS	A	-	D	C	-	-
HCM 95th %tile Q(veh)	0	-	0	0.1	-	-

3. AM Future Year Conditions

2: Bum's Gulch Rd/Old Mt Rose Hwy & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	809	294	2	73	0	0	1	1	1	0	0
Future Vol, veh/h	0	809	294	2	73	0	0	1	1	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	0	1024	372	3	92	0	0	1	1	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	92	0	0	1396	0	0	1308	1308	1210	1309	1494	92
Stage 1	-	-	-	-	-	-	1210	1210	-	98	98	-
Stage 2	-	-	-	-	-	-	98	98	-	1211	1396	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1515	-	-	496	-	-	138	161	225	138	124	971
Stage 1	-	-	-	-	-	-	225	258	-	913	818	-
Stage 2	-	-	-	-	-	-	913	818	-	225	210	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1515	-	-	496	-	-	137	160	225	136	123	971
Mov Cap-2 Maneuver	-	-	-	-	-	-	137	160	-	136	123	-
Stage 1	-	-	-	-	-	-	225	258	-	913	813	-
Stage 2	-	-	-	-	-	-	908	813	-	223	210	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	24.5	31.7
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	187	1515	-	-	496	-	-	136
HCM Lane V/C Ratio	0.014	-	-	-	0.005	-	-	0.009
HCM Control Delay (s)	24.5	0	-	-	12.3	0	-	31.7
HCM Lane LOS	C	A	-	-	B	A	-	D
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

3. AM Future Year Conditions

1: Sky Tavern Rd & Mt Rose Hwy

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	79	13	657	1	0	569
Future Vol, veh/h	79	13	657	1	0	569
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	84	14	699	1	0	605

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1305	700	0	0	700	0
Stage 1	700	-	-	-	-	-
Stage 2	605	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	178	443	-	-	906	-
Stage 1	496	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	178	443	-	-	906	-
Mov Cap-2 Maneuver	178	-	-	-	-	-
Stage 1	496	-	-	-	-	-
Stage 2	549	-	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	38	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	EBLn2	SET	SER
Capacity (veh/h)	906	-	178	443	-	-
HCM Lane V/C Ratio	-	-	0.472	0.031	-	-
HCM Control Delay (s)	0	-	42.1	13.4	-	-
HCM Lane LOS	A	-	E	B	-	-
HCM 95th %tile Q(veh)	0	-	2.3	0.1	-	-

4. Noon Future Year Conditions

2: Bum's Gulch Rd/Old Mt Rose Hwy & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	643	26	11	559	2	10	0	4	1	1	0
Future Vol, veh/h	1	643	26	11	559	2	10	0	4	1	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	1	677	27	12	588	2	11	0	4	1	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	590	0	0	704	0	0	1307	1307	691	1308	1319	589
Stage 1	-	-	-	-	-	-	693	693	-	613	613	-
Stage 2	-	-	-	-	-	-	614	614	-	695	706	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	995	-	-	903	-	-	138	161	448	138	158	512
Stage 1	-	-	-	-	-	-	437	448	-	483	486	-
Stage 2	-	-	-	-	-	-	483	486	-	436	442	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	995	-	-	903	-	-	135	157	448	134	155	512
Mov Cap-2 Maneuver	-	-	-	-	-	-	135	157	-	134	155	-
Stage 1	-	-	-	-	-	-	436	447	-	482	476	-
Stage 2	-	-	-	-	-	-	472	476	-	431	441	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	28.3	30.4
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	169	995	-	-	903	-	-	144
HCM Lane V/C Ratio	0.087	0.001	-	-	0.013	-	-	0.015
HCM Control Delay (s)	28.3	8.6	0	-	9	0	-	30.4
HCM Lane LOS	D	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0

4. Noon Future Year Conditions

Appendix F

Future Year Plus Project LOS Calculations

1: Sky Tavern Rd & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	2	5	1168	8	2	73
Future Vol, veh/h	2	5	1168	8	2	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	2	6	1343	9	2	84

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1436	1348	0	0	1352	0
Stage 1	1348	-	-	-	-	-
Stage 2	88	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	149	186	-	-	516	-
Stage 1	244	-	-	-	-	-
Stage 2	940	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	148	186	-	-	516	-
Mov Cap-2 Maneuver	148	-	-	-	-	-
Stage 1	244	-	-	-	-	-
Stage 2	936	-	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	26.3	0	0.3
HCM LOS	D		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	EBLn2	SET	SER
Capacity (veh/h)	516	-	148	186	-	-
HCM Lane V/C Ratio	0.004	-	0.016	0.031	-	-
HCM Control Delay (s)	12	0	29.7	25	-	-
HCM Lane LOS	B	A	D	D	-	-
HCM 95th %tile Q(veh)	0	-	0	0.1	-	-

7. AM Future Year Plus Project Conditions

2: Bum's Gulch Rd/Old Mt Rose Hwy & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	810	363	13	75	0	0	1	1	1	0	0
Future Vol, veh/h	0	810	363	13	75	0	0	1	1	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	0	1025	459	16	95	0	0	1	1	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	95	0	0	1484	0	0	1382	1382	1255	1383	1611	95
Stage 1	-	-	-	-	-	-	1255	1255	-	127	127	-
Stage 2	-	-	-	-	-	-	127	127	-	1256	1484	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1512	-	-	459	-	-	122	145	211	122	105	967
Stage 1	-	-	-	-	-	-	212	245	-	882	795	-
Stage 2	-	-	-	-	-	-	882	795	-	212	190	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1512	-	-	459	-	-	119	140	211	117	101	967
Mov Cap-2 Maneuver	-	-	-	-	-	-	119	140	-	117	101	-
Stage 1	-	-	-	-	-	-	212	245	-	882	766	-
Stage 2	-	-	-	-	-	-	849	766	-	210	190	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.9	26.8	36.1
HCM LOS			D	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	168	1512	-	-	459	-	-	117
HCM Lane V/C Ratio	0.015	-	-	-	0.036	-	-	0.011
HCM Control Delay (s)	26.8	0	-	-	13.1	0	-	36.1
HCM Lane LOS	D	A	-	-	B	A	-	E
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	0

7. AM Future Year Plus Project Conditions

2: Bum's Gulch Rd/Old Mt Rose Hwy & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑	↱		↔			↔			↔	
Traffic Vol, veh/h	0	810	363	13	75	0	0	1	1	1	0	0
Future Vol, veh/h	0	810	363	13	75	0	0	1	1	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	0	1025	459	16	95	0	0	1	1	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	95	0	0	1484	0	0	1152	1152	1025	1383	1611	95
Stage 1	-	-	-	-	-	-	1025	1025	-	127	127	-
Stage 2	-	-	-	-	-	-	127	127	-	1256	1484	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1512	-	-	459	-	-	176	199	288	122	105	967
Stage 1	-	-	-	-	-	-	286	315	-	882	795	-
Stage 2	-	-	-	-	-	-	882	795	-	212	190	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1512	-	-	459	-	-	171	192	288	117	101	967
Mov Cap-2 Maneuver	-	-	-	-	-	-	171	192	-	117	101	-
Stage 1	-	-	-	-	-	-	286	315	-	882	766	-
Stage 2	-	-	-	-	-	-	849	766	-	210	190	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.9	20.8	36.1
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	230	1512	-	-	459	-	-	117
HCM Lane V/C Ratio	0.011	-	-	-	0.036	-	-	0.011
HCM Control Delay (s)	20.8	0	-	-	13.1	0	-	36.1
HCM Lane LOS	C	A	-	-	B	A	-	E
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	0

11. AM Future Year Plus Project Conditions With Turn Lane Analysis

1: Sky Tavern Rd & Mt Rose Hwy

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	103	16	664	2	1	572
Future Vol, veh/h	103	16	664	2	1	572
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	110	17	706	2	1	609

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1318	707	0	0	708	0
Stage 1	707	-	-	-	-	-
Stage 2	611	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	175	439	-	-	900	-
Stage 1	493	-	-	-	-	-
Stage 2	546	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	175	439	-	-	900	-
Mov Cap-2 Maneuver	175	-	-	-	-	-
Stage 1	493	-	-	-	-	-
Stage 2	545	-	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	49.3	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NWL	NWT	EBLn1	EBLn2	SET	SER
Capacity (veh/h)	900	-	175	439	-	-
HCM Lane V/C Ratio	0.001	-	0.626	0.039	-	-
HCM Control Delay (s)	9	0	54.9	13.5	-	-
HCM Lane LOS	A	A	F	B	-	-
HCM 95th %tile Q(veh)	0	-	3.5	0.1	-	-

8. Noon Future Year Plus Project Conditions

2: Bum's Gulch Rd/Old Mt Rose Hwy & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	646	33	13	560	1	13	0	6	1	1	0
Future Vol, veh/h	1	646	33	13	560	1	13	0	6	1	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	1	680	35	14	589	1	14	0	6	1	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	590	0	0	715	0	0	1318	1318	698	1321	1335	590
Stage 1	-	-	-	-	-	-	700	700	-	618	618	-
Stage 2	-	-	-	-	-	-	618	618	-	703	717	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	995	-	-	895	-	-	136	159	444	135	155	511
Stage 1	-	-	-	-	-	-	433	444	-	480	484	-
Stage 2	-	-	-	-	-	-	480	484	-	431	437	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	995	-	-	895	-	-	133	155	444	131	151	511
Mov Cap-2 Maneuver	-	-	-	-	-	-	133	155	-	131	151	-
Stage 1	-	-	-	-	-	-	432	443	-	479	473	-
Stage 2	-	-	-	-	-	-	468	473	-	424	436	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	28.8	31.1
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	171	995	-	-	895	-	-	140
HCM Lane V/C Ratio	0.117	0.001	-	-	0.015	-	-	0.015
HCM Control Delay (s)	28.8	8.6	0	-	9.1	0	-	31.1
HCM Lane LOS	D	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0

8. Noon Future Year Plus Project Conditions

2: Bum's Gulch Rd/Old Mt Rose Hwy & Mt Rose Hwy

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑	↱		↕			↕			↕	
Traffic Vol, veh/h	1	646	33	13	560	1	13	0	6	1	1	0
Future Vol, veh/h	1	646	33	13	560	1	13	0	6	1	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	1	680	35	14	589	1	14	0	6	1	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	590	0	0	715	0	0	1300	1300	680	1321	1335	590
Stage 1	-	-	-	-	-	-	682	682	-	618	618	-
Stage 2	-	-	-	-	-	-	618	618	-	703	717	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	995	-	-	895	-	-	140	163	454	135	155	511
Stage 1	-	-	-	-	-	-	443	453	-	480	484	-
Stage 2	-	-	-	-	-	-	480	484	-	431	437	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	995	-	-	895	-	-	137	159	454	131	151	511
Mov Cap-2 Maneuver	-	-	-	-	-	-	137	159	-	131	151	-
Stage 1	-	-	-	-	-	-	442	452	-	479	473	-
Stage 2	-	-	-	-	-	-	468	473	-	424	436	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	28.1	31.1
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	176	995	-	-	895	-	-	140
HCM Lane V/C Ratio	0.114	0.001	-	-	0.015	-	-	0.015
HCM Control Delay (s)	28.1	8.6	0	-	9.1	0	-	31.1
HCM Lane LOS	D	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0

12. Noon Future Year Plus Project Conditions With Turn Lane Analysis

Application No. 91279

APPLICATION FOR PERMIT TO APPROPRIATE THE PUBLIC WATERS OF THE STATE OF NEVADA

THIS SPACE FOR OFFICE USE ONLY

Date of Filing in State Engineer's Office NOV 18 2021

Returned to applicant for correction _____

Corrected Application filed _____ Map filed MAR 4 2021 UNDER 90473

The applicant Washoe County and City of Reno as to 50% Each

1001 E. Ninth Street (Street Address or P.O. Box) of Reno (City or Town)

Nevada, 89512 (State and ZIP Code) vbehmaram@washoecounty.us (E-mail Address)

hereby make(s) application for permission to appropriate the public waters of the State of Nevada, as hereinafter stated. (If applicant is a corporation, give date and place of incorporation; if a copartnership or association, give names of members.)

1. The source of water is Grass Lake and Tributaries, all being tributary to Browns Creek
   (Name of the stream, lake, underground, spring or other sources.)
2. The amount of water applied for is 0.11487 CFS and 0.0 AFA (net of 48.3 AFA returned to drainage)
   (Give diversion rate in cubic feet per second (CFS) AND duty in acre-feet annually (AFA).)
   (a) If stored in a reservoir give the number of acre-feet 9.2 (up to 3 MG of temporary tank storage)
3. The water is to be used for Recreational (Snowmaking)
   (Irrigation, power, mining, commercial, domestic or other use. Must be limited to one major use.)
4. If use is for:
   (a) Irrigation, state number of acres to be irrigated _____
   (b) Stockwater, state number and kind of animals _____
   (c) Other use (describe fully in No. 12) _____
   (d) Power:
      (1) Horsepower developed _____
      (2) Point of return of water to stream _____

Revised 06/17

WSUP23-0016 88
EXHIBIT E Wa

5. The water is to be diverted from its source at the following point: (Describe as being within a 40-acre subdivision of public survey, and by course and distance to a found section corner. If on unsurveyed land, it should be so stated.)

A concrete sump within the NW 1/4 of the SE 1/4 of Section 17, T17N, R19 E, MDM, or at a point from which the South 1/4 corner of said Section 17 bears S 06°00'58" W, 1949.48' feet, more or less. Please refer to map on file with Permit No. 90473.

6. Place of use: (Describe by legal subdivision. If on unsurveyed land, it should be so stated)

Washoe County Assessor's Parcel No. 048-050-03, being portions of the SW 1/4, and portions of the W 1/2 of the SE 1/4 of Section 17, T17N, R19E, MDM. Please refer to map on file with Permit No. 90473.

7. Use will begin about October 1st (Month and Day) and end about May 1st (Month and Day) of each year.

8. Description of proposed works. (Under the provisions of NRS 535.010 you may be required to submit plans and specifications of your diversion or storage works.) (State manner in which water is to be diverted, i.e. diversion structure, ditches and flumes, drilled well with a pump and motor, etc.)

No new works are proposed; all infrastructure is associated with Decreed Permit V02748 / Permit No. 90473

9. Estimated cost of works: n/a

10. Estimated time required to construct works: 5 years
(If the well is complete, describe works.)

11. Estimated time required to complete the application of water to beneficial use: 10 years

12. Provide a detailed description of the proposed project and its water usage (use attachments if necessary): (Failure to provide a detailed description may cause a delay in processing.)

The proposed project will store the non-consumptive portion of a total of to 57.5 acre feet of total water removed from Browns Creek, of which 48.3 or 84 percent will be returned via snowmelt runoff and infiltration to the source. Storage is anticipated to consist of up to 3 million gallons of tank capacity, thereafter in frozen water in approximately 2 feet of manmade snow within the Place of Use.

13. Miscellaneous remarks:

Evidence of snowmaking non-consumptive use is well documented, and includes a determination by the New Mexico State Engineer that 9.8 percent of diverted water is consumed, and Nevada Permit No. 85945 requires that only 20 percent of diverted water may be consumptively used. This application is based on 16 percent consumptive use.

permits@robisoneng.com
E-mail Address

775-852-2251 700
Phone No. Ext.

APPLICATION MUST BE SIGNED
BY THE APPLICANT OR AGENT

Nathan Earl Robison, PE, WRS
Type or print name clearly

Signature, applicant or agent

Robison Engineering Company, Inc
Company Name

PO Box 1505
Street Address or PO Box

Sparks, NV 89432
City, State, ZIP Code

Revised 06/17 $360 FILING FEE AND SUPPORTING MAP MUST ACCOMPANY APPLICATION

THE STATE OF NEVADA

PERMIT TO APPROPRIATE WATER

Name of Permittee:	**WASHOE COUNTY AND CITY OF RENO**
Source:	**STREAM (BROWNS CREEK)**
Basin:	**PLEASANT VALLEY**
Manner of Use:	**RECREATIONAL**
Period of Use:	**OCTOBER 1ST THROUGH MAY 1ST**
Priority Date:	**11/18/2021**

****

APPROVAL OF STATE ENGINEER

This is to certify that I have examined the foregoing application, and do hereby grant the same, subject to the following limitations and conditions:

This permit is issued subject to existing rights. The amount of water herein granted is only a temporary allowance, and the final water right obtained under this permit will be dependent upon the amount of water actually placed to beneficial use. A suitable measuring device must be installed and measurements of water use kept. The State retains the right to regulate the use of the water herein granted at any and all times.

Monthly records shall be kept of the amount of water pumped from this well and shall be submitted to the State Engineer on a quarterly basis within 15 days after the end of each calendar quarter.

This permit does not extend the permittee the right of ingress and egress on public, private, or corporate lands.

The issuance of this permit does not waive the requirements that the permit holder obtain other permits from State, Federal, and local agencies. The place of use of this permit is limited to that area lying totally within the Pleasant Valley Hydrographic Basin.

The total combined duty of water under Permits 90473 and 91279 shall not exceed 57.5 acre-feet per season.

The consumptive use of water under Permits 90473 and 91279 shall not exceed 9.2 acre-feet per season. A 16% consumptive use factor was assigned to be consistent with the Truckee-River Operating Agreement. The State Engineer reserves the right to modify the terms of this permit if it is found that the consumptive use of water under these permits for snowmaking purposes exceeds this percentage.

(Continued on Page 2)

The point of diversion and place of use are as described on the submitted application to support this permit.

The amount of water to be appropriated shall be limited to the amount that can be placed to beneficial use and **shall neither exceed a diversion rate of 0.11487 cubic feet per second nor exceed a seasonal duty of 48.3 acre-feet.**

Work must be prosecuted with reasonable diligence and proof of completion of work shall be filed on or before: **July 21, 2024**

Water must be placed to beneficial use and proof of the application of water to beneficial use shall be filed on or before: **July 21, 2026**

Map in support of proof of beneficial use shall be filed on or before: **N/A**

IN TESTIMONY WHEREOF, I, ADAM SULLIVAN, P.E.,

State Engineer of Nevada, have hereunto set my hand and the seal of my office, this 5TH day of **December, 2022**

P.E.

State Engineer

Sky Tavern Ski Area

Wetland Enhancement Project

Aquatic Resources Delineation Report

Draft December 2021

Sky Tavern Ski Area

Wetland Enhancement Project

Aquatic Resources Delineation Report

Draft
DECEMBER 2021

Prepared for:

Sky Tavern Board of Directors
21130 Mount Rose Highway
Reno, Nevada 89511

Submitted to:

U.S. Army Corps of Engineers
Sacramento District
Reno Regulatory Field Office
300 Booth Street, Room 3050
Reno, Nevada 89509-1361

Prepared by:

Reno:
5890 Mitra Way
Reno, Nevada 89523
Phone: (775) 225-5548

SKY TAVERN SKI AREA
WETLAND ENHANCEMENT PROJECT
AQUATIC RESOURCE DELINEATION REPORT

EXECUTIVE SUMMARY

This report presents the results of a delineation of wetlands and other waters that would likely be subject to regulation by the United States Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act. The delineation was conducted at the Sky Tavern Ski Area (Sky Tavern) Wetland Enhancement Project (Project) located in Washoe County, Nevada. The Project is bordered to the north by a paved entrance to Sky Tavern, to the east by Bums Gulch Road, to the south by a short dirt access road, and to the west by a small pond and the Project Discovery Leadership upland ropes course at Sky Tavern. There are multiple small buildings or ropes courses within the Project Area. The Project Area encompasses 2.09 acres on land owned by the City of Reno.

Field work for the delineation was conducted by Michael Robison and Daniel Robison, botanist for Robison Wildlife Consulting, LLC (RWC) in August 2021 using the routine on site determination method described in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and, where applicable, in accordance with methods identified in the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Western Mountains, Valleys, and Coast Region* (USACE 2010). Other waters were mapped and delineated in the field in accordance with the methodology presented in *A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States* (Mersel and Lichvar 2014).

Based on online mapping found at the USFWS National Wetlands Inventory Map program (https://www.fws.gov/wetlands/data/mapper.HTML) analysis, 2.09 acres of potentially jurisdictional wetland are located within the Project Area. Based on Field Analysis there are no wetlands and 0.15 acres of other waters located within the Project Area. All wetland boundaries and jurisdictional determinations presented in this report are preliminary and subject to verification by the USACE, Sacramento District.

SKY TAVERN SKI AREA
WETLAND ENHANCEMENT PROJECT
AQUATIC RESOURCE DELINEATION REPORT

TABLE OF CONTENTS

LIST OF TABLES

APPENDICES

SKY TAVERN SKI AREA
WETLAND ENHANCEMENT PROJECT
AQUATIC RESOURCE DELINEATION REPORT

1 INTRODUCTION

1.1 Project Description

RWC was retained by Robison Engineering to conduct an aquatic resource delineation on a portion of the Sky Tavern property that is approximately 2.09 acres in size. The area consists of a natural drainage with approximately 40 feet of elevation loss from the south to the north end. The soils consist largely of decomposed granite that has eroded into the Project Area. The northern end is a low, gradually sloped area that leads to a culvert under the parking entrance and to a depression west of the Project Area. The depression has been deepened in the past to create a pond that collects water that is lower than the culvert.

The property is owned by the City of Reno and leased long-term by Sky Tavern, home to the non-profit Sky Tavern Junior Ski Program. The City of Reno tasked Sky Tavern with increasing recreational use of the area and improving the facilities. To this end, Sky Tavern is proposing to increase snowmaking capacity, which would allow the area to open sooner, and add additional parking. Water for snowmaking would be stored in the historical location of Grassy Lake. A portion of the area would be dredged, and the equipment building would be removed.

The purpose of this report is to identify and describe aquatic resources that would be affected by the Project. The aquatic resource delineation and this report have been completed and prepared in accordance with the USACE Sacramento District *Minimum Standards for Acceptance of Aquatic Resource Delineation Reports* (USACE 2016).

1.2 Contact Information

Contact information for the applicant and agent is provided below.

Applicant:
Bill Henderson
Executive Director/General Manager
Sky Tavern
21130 Mount Rose Highway
Reno, Nevada 89511
(775) 323-5125

Agent:
Michael Robison, Principle Manager
and Biologist
Robison Wildlife Consulting, LLC
5890 Mitra Way
Reno, Nevada 89523
(775) 225-5548

2 LOCATION

The Project is located at 21130 Mount Rose Highway, Reno, Nevada 89511, on the eastern slope of Mount Rose in Washoe County. The Project is located entirely within Section 17, Township 17 North, Range 19 East (T17N R19E) Mount Diablo Base and Meridian (Project Area). It is bordered to the north by the parking lot, to the east by Bums Gulch Road, to the south by a dirt access road, and to the west by a pond and Project Discovery Rope course. The Project Area encompasses 2.09 acres.

The Project Area can be reached from the City of Reno by traveling 5.4 miles south on Interstate 580, exiting onto Nevada State Route 431/Mount Rose Highway, and traveling approximately 11 miles to Sky Tavern. Figure 2 shows the Project Area, location and access. All supporting maps are included in Appendix A with the exception of the aquatic resource delineation map which is included in Appendix B.

3 METHODS

Field work for the delineation was conducted on August 5 and 14, 2021, by Michael Robison and Daniel Robison, botanists for RWC. The relatively small size of the Project Area, and its position within the landscape allowed for the collection of three-parameter data (vegetation, soils, and hydrology) across the Project Area as a whole, rather than at discreet pairs of data points. The delineation was performed in accordance with the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and, where applicable, in accordance with methods identified in the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Western Mountains, Valleys, and Coast Region* (USACE 2010). Other waters of the United States were mapped and delineated in the field in accordance with the 2014 *A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States* (Mersel and Lichvar2014).

All Geographic Information System (GIS) data were recorded in the Universal Transverse Mercator (UTM) coordinate system in the North American Datum of 1983 (NAD 83) for Zone 11 North (meters) with a Garmin 64st unit (Garmin).

This report was prepared in accordance with the Sacramento District's *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports* (USACE 2016). The most recent *National Wetland Plant List* (Lichvar et al. 2016) was used to determine the wetland indicator status of plants observed in the Project Area. The PLANTS database (United States Department of Agriculture [USDA], National Resource Conservation Service [NRCS] 2018) was used for plant nomenclature, except where it conflicted with the nomenclature in the National Wetland Plant List, which was given priority.

4 EXISTING CONDITIONS

4.1 Landscape Setting and Climate

The Project Area is located at between 7,560 and 7,600 feet above mean sea level (amsl). According to the Western Regional Climate Center (WRCC), the average maximum temperature recorded at the Mount Rose Bowl, Nevada field station, which is located approximately 0.8 mile north of the Project Area, is approximately 75.3 degrees Fahrenheit (°F) in August, and the average temperature is approximately 21.1 °F in February. The average annual precipitation is 6.7 inches and tends to peak in December (WRCC 2016).

4.2 Vegetation

Two vegetation communities were identified within the Project Area and described below. All communities are mapped in Figure 3.

4.2.1 Sierra Nevada Willow Scrub-Shrub

Approximately 0.41 acres of the Project Area consists of a scrub-shrub plant community of dense stands of Lemmon's willow (*Salix lemmonii*) interspersed with grasses and barren areas. Other shrub species observed within this plant community included shining willow (*Salix lucida*), Coyote willow (*Salix exigua),* gray alder (*Alnus incana*), and sparse quaking aspen (*Populus tremuloides).* Forbs observed within this plant community included common yarrow (*Achillea millefolium)*, streambank arnica (*Arnica lanceolata*), bull thistle (*Cirsium vulgare*), common pussypaws (*Cistanthe monosperma*), fringed willowherb (*Epilobium ciliatum*), common horsetail (*Equisetum arvense*), racemed groudsmoke (*Gayophytum racemosum*), western marsh cudweed (*Gnaphalium palustre*), red-stem stork's bill (*Erodium cicutarium*), garden babysbreath (*Gypsophila scorzonerifolia*), seep monkeyflower (*Mimulus guttatus*), slender cinquefoil (*Potentilla gracilis*), curly dock (*Rumex crispus*), common dandelion (*Taraxicum officinale*), common mullein (*Verbascum thapsus*), and American speedwell (*Veronica americana*). Grasses observed within this plant community included rough bentgrass (*Agrostis scabra*), creeping bentgrass (*Agrostis stolonifera*), slender wheatgrass (*Elymus trachycaulus),* Baltic rush (*Juncus balticus*), toad rush (*Juncus bufonius*), swordleaf rush (*Juncus ensifolius*), foxtail barley (*Hordeum jubatum*), mat muhly (*Muhlenbergia richardsonii*), timothy (*Phleum pratense*), Nebraska sedge (*Carex nebrascensis*), Northwest Territory sedge (*Carex utriculata*), and Kentucky bluegrass (*Poa pratense*). Grasses were generally sparse and patchy with no meadow formation. The edges of the community near the paved road had rubber rabbitbrush (*Ericameria nauseosa*) and other upland plants such as desert Indian paintbrush (*Castilleja angustifolia*) and cushion buckwheat (*Eriogonum ovalifolium*).

4.2.2 Rocky Mountain Subalpine-Montane Riparian Woodland

Aproximately 1.67 acres of the Project Area consists of Rocky Mountain Subalpine-Montane Riparian

Woodland plant community consisting of Quaking aspen, grey alder, Jeffery pine (*Pinus jeffreyi*), and white fir (*Abies concolor*). This community occurs in upland areas along the eastern boundary of the Project Area and all of the southern 2/3rds of the Project Area. Forbs observed in this community included common yarrow, mealy goosefoot (*Chenopodium incanum*), poison hemlock (*Conium maculatum*), pinnate tansy mustard (*Descurainia pinnata*), racemed groundsmoke, garden babysbreath, false Solomon's seal (*Maianthemum racemosum*), woodland pinedrops (*Pterospora andromedea*), sheep sorrel (*Rumex acetosella*), and common cocklebur (*Xanthium strumarium*).

4.3 Soils

The entirety of the Project Area, 2.09 acres, is mapped by the NRCS as wetland (Figure 4). The Project Area is composed of two soil types: Tallac very bouldery sandy loam, four to 30 percent slopes; and Graylock-Temo-Rock outcrop complex, 30 to 70 percent slopes.

4.3.1 Tallac Sandy Loam Series

The Tallac sandy loams are a series of well-drained soils with a moderately low to moderately high available water capacity. Profiles range from 42 to 65 inches deep to cemented material. These soils do not flood, do not pond, and the depth to the water table is greater than 80 inches. Where mapped, the Tallac and similar soils compose 85 percent of the soil makeup, while other minor components make up the remaining 15 percent. The Tallac series are composed primarily of weathered glaciomarine deposits (NRCS 2018). This soil series is not hydric.

4.3.2 Graylock-Temo-Rock Outcrop Complex

The Graylock series of soils are somewhat excessively drained soils with a very low available water capacity. Profiles range from 56 to 66 inches deep to bedrock. These soils do not flood, do not pond, and the depth to the water table is greater than 80 inches. The Graylock series are composed primarily of residuum and colluvium derived from granitic rocks. This soil series is not hydric. The Temo series of soils are excessively drained soils with a very low to moderately low available water capacity. Profiles range from 16 to 60 inches deep to bedrock. These soils do not flood, do not pond, and the depth to the water table is greater than 80 inches. The Temo series are composed primarily of residuum and colluvium derived from granitic rocks. This soil series is not hydric.

Where mapped, the Graylock-Temo-Rock outcrop complex is composed of 50 percent Graylock and similar soils, 25 percent Temo and similar soils, ten percent Rock outcrop, while other minor components make up the remaining 15 percent (NRCS 2018).

4.4 Geology

Geologic maps from the United States Geologic Survey (USGS) indicate that the majority of the Project Area is underlain by lake and stream deposits. Lake deposits include gravel, sand,

and silt laid down by higher lakes nearly contemporaneous with Lake Lahontan and in post-Lake Lahontan lakes. These deposits are of Pleistocene to Recent age. Small amounts of Tahoe Till, a type of glacial deposit, and water are also mapped within the Project Area (Figure 5) (USGS 1950).

4.5 Hydrology

The National Hydrography Dataset (NHD) reports that there are no drainages mapped within the Project Area. The nearest mapped water is an ephemeral drainage approximately 1000 feet northeast of the Project Area (Figure 6). NHD flowline data shows this ephemeral drainage connecting with Browns Creek approximately one mile east-southeast from the Project Area. Browns Creek flows into Steamboat Creek, which flows into the Truckee River, the nearest traditional navigable water (TNW), approximately 16 linear miles northeast of the Project Area (USGS 2018).

The National Wetland Inventory (NWI) maps two types of wetlands within the Project Area (Figure 6):

1. PSS1B (Palustrine, Scrub-shrub, Broad-Leaved Deciduous, Seasonally Saturated);and
2. PFO1C (Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded) (United States Fish and Wildlife Service [USFWS] 1999).

No seasonally flooded wetland areas were observed during field studies.

4.6 Aquatic Resources

Aquatic resources within the Project Area consist of one ephemeral stream channel (Channel A). Photographs of the resource are included in Appendix C, OHWM data sheets are included in Appendix D, and Wetland delineation data sheets are included in Appendix E.

4.6.1 Channel A

Channel A enters the Project Area from a culvert on the south side of the Project Area and flows north through an incised drainage (not mapped in NHD) until it reaches the north west corner and flows outside of the Project Area in two locations. The channel splits in two. The first place the channel leaves the Project Area leads to the existing pond to the west of the Project Area. The second leads to a culvert that flows under the parking lot entrance and into the old grassy lake area. Water pools in a wider channel before flowing out of a culvert on the north side of the Project Area. After passing into the grassy lake wetland area, the channel passes through another culvert under Mount Rose Highway, where the stream channel re-emerges on the north side of the highway. The stream channel then continues to flow north-northeast for approximately 765 linear feet, where it reaches the ephemeral drainage mapped by the NHD and discussed in Section 4.5. Channel A has bed and bank, as well as OHWM indicators including a break in slope, change in vegetation, and sediment sorting (Appendix C, Photo Plates 2 and 3). Average OHWM width for Channel 1 was 4 feet.

Table 1. Aquatic Resources within the Project Area

Aquatic Resource Name	Aquatic Resources Classification			Acres	Linear Feet
	Cowardin	Location (UTM)*			
Channel A	R4SB	0252492E	4357943N	0.15	714
Total				**0.15**	**714**

*NAD83

5 REFERENCES

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station. Vicksburg, Miss.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X.

Mersel, M.K. and R.W. Lichvar. 2014. *A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States*. ERDC/CRREL TR-14-13. Hanover, NH: Cold Regions Research and Engineering Laboratory (CRREL) U.S. Army Engineer Research and Development Center.

Natural Resources Conservation Service (NRCS). 2018. Web Soil Survey. Soil Survey Staff, United States Department of Agriculture. Available online at: http://websoilsurvey.nrcs.usda.gov/. Accessed October 2021.

United States Army Corps of Engineers (USACE). 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*, ERDC/EL TR-10-3. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

_____. 2016. *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports*. U.S. Army Corps of Engineers, Sacramento District. Dated January 2016. Available online at: https://www.spk.usace.army.mil/Portals/12/documents/regulatory/jd/minimum-standards/Minimum_Standards_for_Delineation_with_Template-final.pdf. Accessed November 28, 2018.

United States Department of Agriculture (USDA), NRCS. 2018. The PLANTS Database (http://plants.usda.gov, 27 November 2018). National Plant Data Team, Greensboro, NC
27401-4901 USA

United States Fish and Wildlife Service (USFWS). 1999. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. http://www.fws.gov/wetlands/. Accessed November 26, 2018.

United States Geological Survey (USGS). 1950. Geologic Map and Sections of the Mount Rose Quadrangle, Nevada. Professional Paper 458-A. Reston, Va: U.S. Department of the

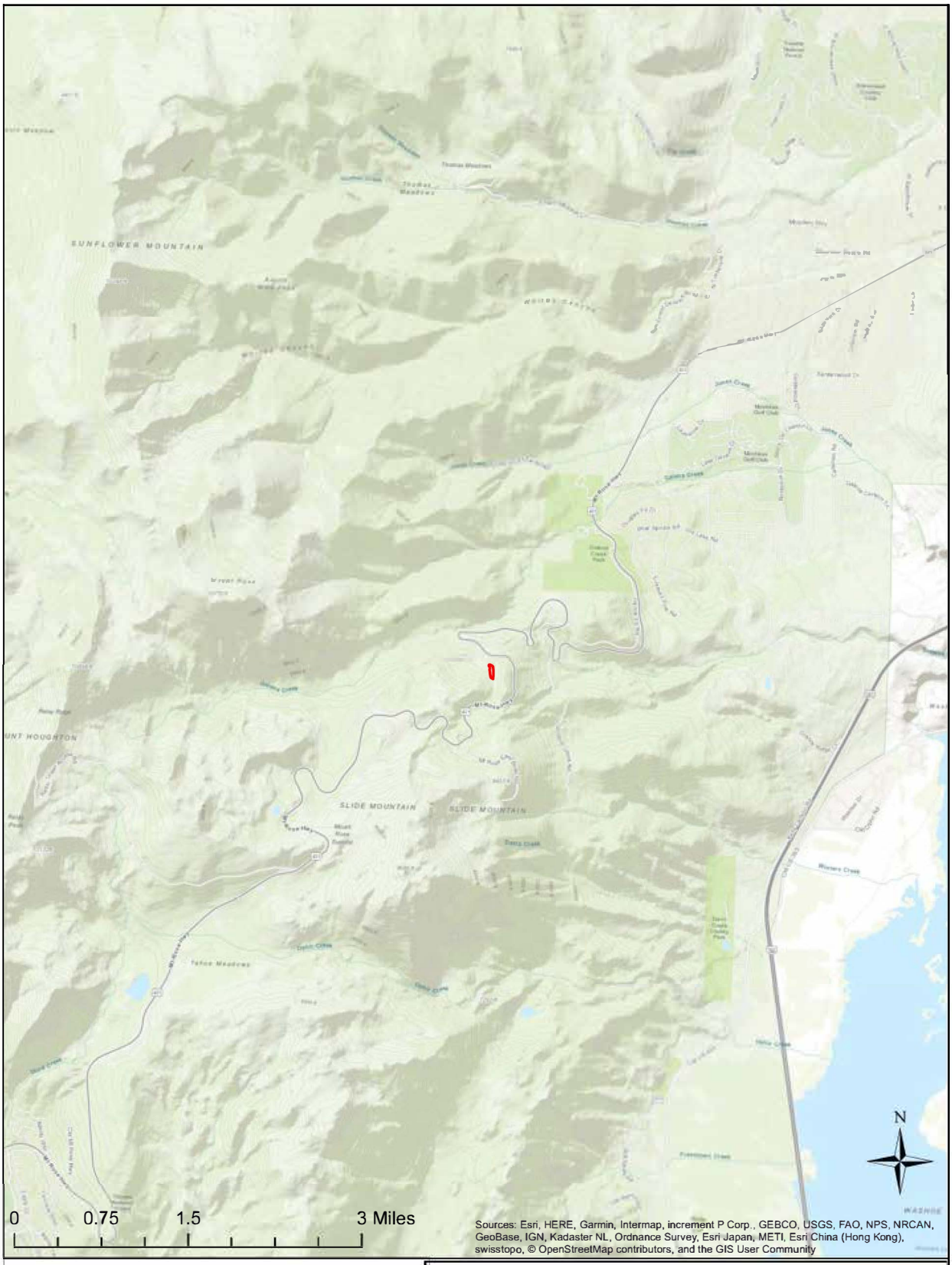
Interior.

_____. 2018. National Hydrography Geodatabase: The National Map viewer available online at: https://www.usgs.gov/core-science-systems/ngp/national-hydrography. Accessed November 2018.

Western Regional Climate Center (WRCC). 2016. Historical Climate Information for Mt. Rose Bowl, Nevada 1981-2010 monthly summary. Desert Research Institute. Reno, Nevada. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?nv5440. Accessed November 2018.

APPENDIX A

Supporting Maps



Legend

Biological Survey Area

City of Reno

Sky Tavern Wetland Enhancement Project

Project Location and Access
Figure 1

Date: December 17, 2021	Drawn By: DR
Project Number: 1110	
Filename: 1110_Figure1_Location	

WSUP23-0016
EXHIBIT E

Legend

Biological Survey Area

Vegetation Communities

Rocky Mountain Subalpine-Montane Riparian Woodland

Sierra Nevada Willow Scrub-Shrub

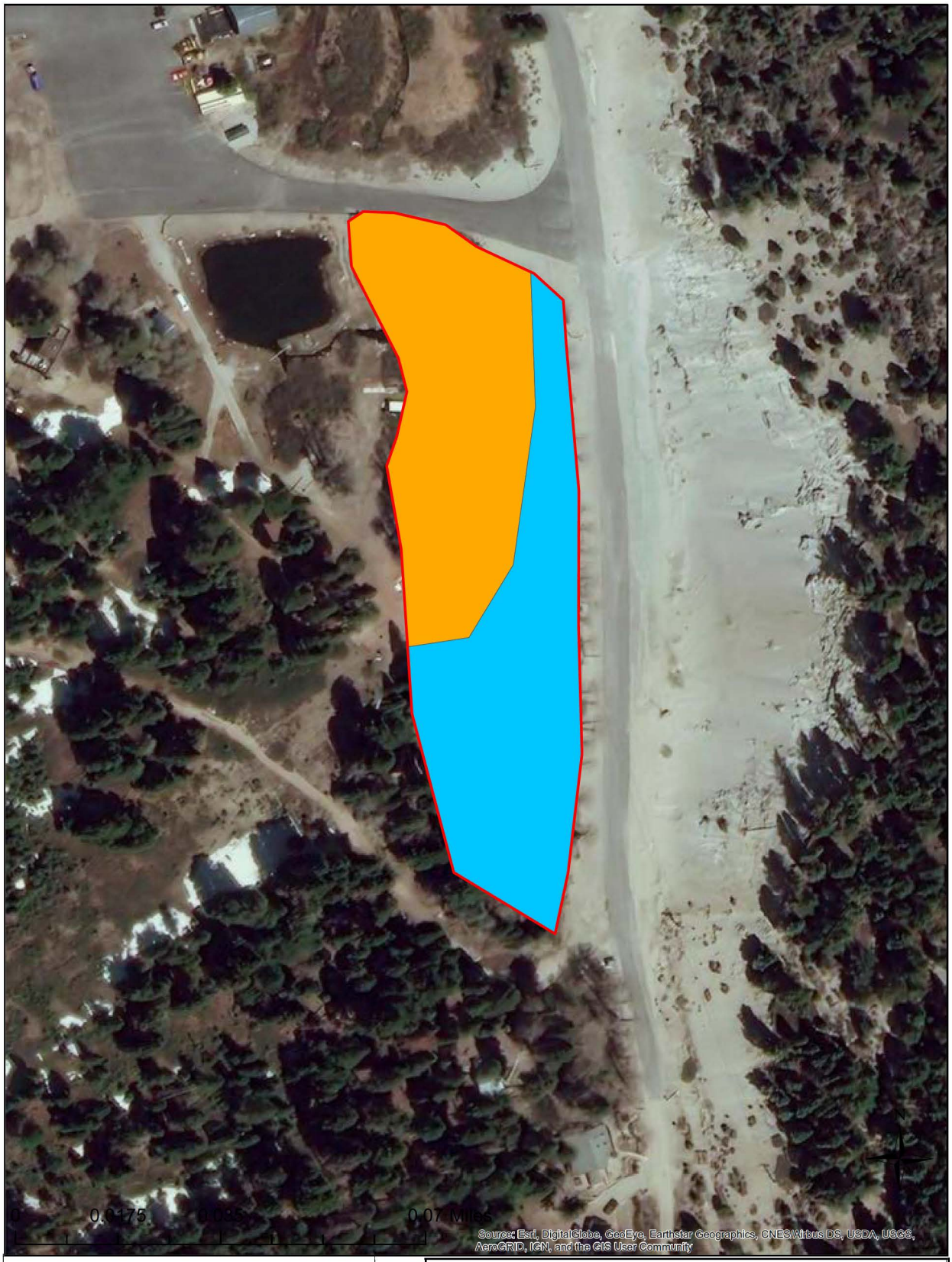
City of Reno

Sky Tavern Wetland Enhancement Project

Vegetation Communities
Figure 2

Date: December 17, 2021	Drawn By: DR
Project Number: 1110	
Filename: 1110_Figure2_Vegetation	

WSUP23-0016
EXHIBIT E



Legend

Biological Survey Area

Soil Association

Graylock-Temo-Rock outcrop

Tallac very bouldery sandy loam

City of Reno

Sky Tavern Wetland Enhancement Project

NRCS Soils
Figure 3

Date: December 17, 2021	Drawn By: DR
Project Number: 1110	
Filename: 1110_Figure3_Soils	

WSUP23-0016
EXHIBIT E

Legend

- Biological Survey Area
- Intermittent Streams

City of Reno

Sky Tavern Wetland Enhancement Project

Hydrology
Figure 4

Date: December 17, 2021	Drawn By: DR
Project Number: 1110	
Filename: 1110_Figure4_Hydro	

APPENDIX B

Aquatic Resources Delineation Map

Legend

- Biological Survey Area
- Channel A

City of Reno

Sky Tavern Wetland Enhancement Project

Aquatic Resources Delineation
Figure 5

Date: December 17, 2021	Drawn By: DR
Project Number: 1110	
Filename: 1110_Figure5_Delineation	

WSUP23-0016
EXHIBIT E

APPENDIX C

On-Site Photographs

Sky Tavern Wetland Delineation 2021 – Photo Log

Google Earth view from the North facing South.

Sky Tavern Wetland Project Area 2021 as seen from the West overlooking the pond.

Channel Bank Cut Observations

Southern edge as channel comes out of the culvert.

Midway Point in the Channel

Channel transition area of upland and willow shrub

Drainage culvert at the northern end of the project area.

Vegetation Communities

Rocky Mountain Subalpine-Montane Riparian Woodland

Rocky Mountain Subalpine-Montane Riparian Woodland

Sierra Nevada Willow Scrub-Shrub

Sierra Nevada Willow Scrub-Shrub

Soil Pit Observations

Pit about 4 ft from the stream channel. Approximately 2 ft deep. No ground water found at the stream depth.

Fine to course sand in the pit. Slight color change in the soil. Little to no oxidation observed.

WSUP23-0016
EXHIBIT E

APPENDIX D

OHWM Data Sheets

OHWM Delineation Cover Sheet

Project: Sky Tavern Wetland Enhancement **Date:** 8/5/2021

Location: 2430 Mount Rose Hwy Reno NV 89511 **Investigator(s):** Michael Robison

Project Description: The Sky Tavern board of directors proposes to use this area as a wetland enhancement project as mitigation for another project on site.

Describe the river or stream's condition (disturbances, in-stream structures, etc.):

The stream enters the project area at the southern edge through a culvert and exits through a culvert on the north edge and a gate that feeds into a pond just west of the project.

Off-site Information

Remotely sensed image(s) acquired? ☐ **Yes** ☒ **No** [If yes, attach image(s) to datasheet(s) and indicate approx. locations of transects, OHWM, and any other features of interest on the image(s); describe below] Description:

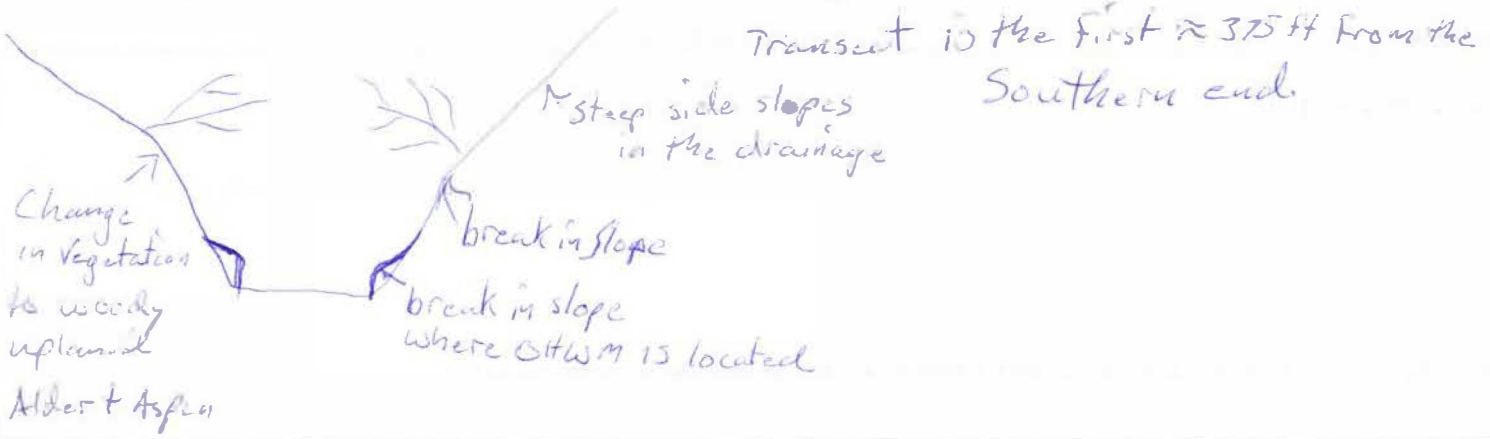
Hydrologic/hydraulic information acquired? ☐ **Yes** ☒ **No** [If yes, attach information to datasheet(s) and describe below.] Description:

List and describe any other supporting information received/acquired:

Information for the project was compiled through database searches from the USGS, USFWS wetland Mapper, (NWI) Google Earth, ESRI and location history from the proponent.

Instructions: Complete one cover sheet and one or more datasheets for each project site. Each datasheet should capture the dominant characteristics of the OHWM along some length of a given stream. Complete enough datasheets to adequately document up- and/or downstream variability in OHWM indicators, stream conditions, etc. Transect locations can be marked on a recent aerial image or their GPS coordinates noted on the datasheet.

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)



Break in Slope at OHWM: ☐ Sharp (> 60°) | ☒ Moderate (30–60°) | ☐ Gentle (< 30°) | ☐ None

Notes/Description: During this segment of the stream there is a continuous drop in elevation and a narrow, sometimes deep cut (3ft) in the normal slope.

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	20	60	20			Y
Below OHWM	10	30	60			N

Notes/Description: Within the channel there is sediment sorting and collection of erosion sediment. There is little to no sign of oxidation within the wall cuts in the channel. Lots of woody debris is found in the channel.

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	45	15	40	
Below OHWM	5	0	25	70

Notes/Description: This segment of the stream has very little vegetation within the active channel. There is nearly 100% canopy cover from the surrounding trees.

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

Project: SK Tavern Wetland Enhancement **Date:** 8/5/2021

Location: 2130 Mount Rose Hwy, Reno NV 89511 **Investigator(s):** Michael Robison

Project Description:

Describe the river or stream's condition (disturbances, in-stream structures, etc.):

Off-site Information

Remotely sensed image(s) acquired? ☐ **Yes** ☒ **No** [If yes, attach image(s) to datasheet(s) and indicate approx. locations of transects, OHWM, and any other features of interest on the image(s); describe below] Description:

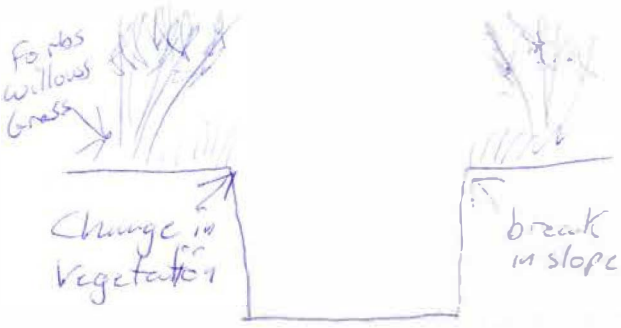
Hydrologic/hydraulic information acquired? ☐ **Yes** ☒ **No** [If yes, attach information to datasheet(s) and describe below.] Description:

List and describe any other supporting information received/acquired:

Instructions: Complete one cover sheet and one or more datasheets for each project site. Each datasheet should capture the dominant characteristics of the OHWM along some length of a given stream. Complete enough datasheets to adequately document up- and/or downstream variability in OHWM indicators, stream conditions, etc. Transect locations can be marked on a recent aerial image or their GPS coordinates noted on the datasheet.

Datasheet # 2 **OHWM Delineation Datasheet** Page 3 of 4

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)



This section is the northern 326ft of the project area. This section is almost level with a gentle slope that leads to continious flow through the narrow 2-4ft channel.

Break in Slope at OHWM: ☒ Sharp (> 60°) | ☐ Moderate (30–60°) | ☐ Gentle (< 30°) | ☐ None

Notes/Description: The channel has nearly vertical edges, with some areas undercut

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	20	60	20			
Below OHWM	10	40	50			

Notes/Description: In this section a lot of the erosion sediment gets trapped during high runoff events. The area around the channel consists mostly of sand and gravel mix. It is highly draining soil.

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	15	30	40	15
Below OHWM	0	0	30	70

Notes/Description: Some vegetation is observed within the stream in this section

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

APPENDIX E

Wetland Delineation Data Sheet

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Sky Tavern City/County: Reno Sampling Date: 8/5/2021

Applicant/Owner: Sky Tavern State: NV Sampling Point: _____

Investigator(s): M. Robison, D. Robison Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes N No _____

Are Vegetation N, Soil N or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	Is the Sampled Area within a Wetland?	Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____		
Wetland Hydrology Present?	Yes ✓ No _____		

Remarks: Wetland conditions present within the stream channel. Outside of channel is upland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus tremuloides	60	Y	FACUP
2. Salix lemmonii	5	N	FACW
3. Salix lucida	25	Y	FACW
4. Alnus ~~rhombifolia~~ incana	10	Y	FACW
	90	= Total Cover	

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: _____)			
1. Equisetum arvense	10	Y	FAC
2. Juncus arcticus	~~20~~ 5	N	FACW
3. Carex rehrsellensis	25	Y	OBL
4. Carex utriculata	~~30~~ 5	N	OBL
5. Agrostis stolonifera	25	Y	FACW
6. Phleum pratense	5	N	FACUP
7.			
8.			
9.			
10.			
11.			
	75	= Total Cover	

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	70	x 2 =	140
FAC species	10	x 3 =	30
FACU species	65	x 4 =	260
UPL species	0	x 5 =	
Column Totals:	175 (A)		460 (B)

Prevalence Index = B/A = 2.6

Hydrophytic Vegetation Indicators:

- X 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 7/1	90	Red	10	RM	PL	sand	Redox around roots

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

Soil test done in stream channel next to actively running stream. Soil sand and decomposed granite that appears to cycle regularly with flood events.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- X Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 2-4

Water Table Present? Yes X No ____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): _____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Stream present. Hydric vegetation and soils present within stream channel.

APPENDIX F

Plant List

Species Observed within and in the Vicinity of the Sky Tavern Project Area

Scientific Name	Common Name
Trees	
Abies concolor	White fir
Alnus incana	Grey alder
Pinus jeffreyi	Jeffrey pine
Populus tremuloides	Quaking aspen
Salix exigua	Coyote willow
Salix lemmonii	Lemmon's willow
Salix lucida	Shining willow
Shrubs	
Ericameria nauseosa	Rubber rabbitbrush
Forbs	
Achillea millefolium	Common yarrow
Arnica lanceolata	Streambank arnica
Castilleja angustifolia	Desert Indian paintbrush
Chenopodium incanum	Mealy goosefoot
Cirsium vulgare[1]	Bull thistle
Cistanthe monosperma	Common pussypaws
Conium maculatum	Poison hemlock
Descurainia pinanta	Pinnate tansy mustard
Epilobium ciliatum	Fringed willowherb
Eriogonum ovalifolium	Cushion buckwheat
Equisetum arvense	Common horsetail
Gayophytum racemosum	Racemed groundsmoke
Gnaphalium palustre	Western marsh cudweed
Erodium cicutarium	Red-stem stork's bill
Gypsophila scorzonerifolia	Garden babysbreath
Maianthemum racemosum	False Solomon's seal
Mimulus guttatus	Seep monkeyflower
Potentilla gracilis	Slender cinquefoil
Pterospora andromedea	Woodland pinedrops
Rumex acetosella	Sheep sorrel
Rumex crispus	Curly dock
Taraxicum officinale	Common dandelion
Verbascum thapsus	Common mullein
Veronica americana	American speedwell
Xanthium strumarium	Common cocklebur
Grass	
Agrostis scabra	Rough bentgrass
Agrostis stolonifera	Creeping bentgrass
Carex nebrascensis	Nebraska sedge
Carex utriculata	Northwest Territory sedge

Species Observed within and in the Vicinity of the Sky Tavern Project Area

Scientific Name	Common Name
Elymus trachycaulus	Slender wheatgrass
Juncus arcticus	Baltic rush
Juncus bufonius	Toad rush
Juncus ensifolius	Swordleaf rush
Hordeum jubatum	Foxtail barley
Muhlenbergia richardsonii	Mat muhly
Phleum pratense	Timothy
Poa pratensis	Kentucky bluegrass

[1] Nevada noxious weed species

Washoe County Development Application

Your entire application is a public record. If you have a concern about releasing personal information, please contact Planning and Building staff at 775.328.6100.

Project Information	**Staff Assigned Case No.:** WSUP23-0016
Project Name:	Sky Tavern Junior Ski Program - Expansion
Project Description:	A 5-year expansion is planned. This special use permit application seeks approval for the components of the expansion that require SUP review, including grading required for two water storage tanks, construction of site lighting, and various related features.
Project Address:	21130 Mount Rose Hwy
Project Area (acres or square feet):	143.07 acres
Project Location (with point of reference to major cross streets **AND** area locator):	Property is southwest of the intersection of Mt. Rose Hwy and Sky Tavern Rd; directly north of Mt. Rose Ski Resort

Assessor's Parcel No.(s):	Parcel Acreage:	Assessor's Parcel No.(s):	Parcel Acreage:
048-050-03	143.070		

Indicate any previous Washoe County approvals associated with this application:
Case No.(s). WSUP18-0009 is expired and its content is superceded by this plan

Applicant Information (attach additional sheets if necessary)

Property Owner:		**Professional Consultant:**	
Name: City of Reno		Name: Robison Engineering Company, Inc	
Address: 1 E 1st St		Address: PO Box 1505	
Reno	Zip: 89501	Sparks	Zip: 89432
Phone:	Fax:	Phone: (775) 852-2251	Fax: 852-9736
Email:		Email: nathan@robisoneng.com	
Cell:	Other:	Cell: 775-240-7652	Other:
Contact Person:		Contact Person: Nathan Earl Robison, PE	
Applicant/Developer:		**Other Persons to be Contacted:**	
Name: Sky Tavern Junior Ski Area - Applicant		Name:	
Address: 21130 Mt. Rose Hwy		Address:	
Reno, NV	Zip: 89511		Zip:
Phone: (775) 323-5125	Fax:	Phone:	Fax:
Email: mike.oehlert@skytavern.com		Email:	
Cell: 775-848-3993	Other:	Cell:	Other:
Contact Person: Mike Oehlert		Contact Person:	

For Office Use Only

Date Received:	Initial:	Planning Area:	
County Commission District:		Master Plan Designation(s):	
CAB(s):		Regulatory Zoning(s):	

Special Use Permit Application
Supplemental Information

(All required information may be separately attached)

1. What is the project being requested?

Sky Tavern Ski Area is proposing the construction of snowmaking and slope lighting, as well as a number of parking and access improvements which do not require Special Use Permit approval: see the attached narrative for details of this proposal.

2. Provide a site plan with all existing and proposed structures (e.g. new structures, roadway improvements, utilities, sanitation, water supply, drainage, parking, signs, etc.)

Site plan is included.

3. What is the intended phasing schedule for the construction and completion of the project?

Please see the attached narrative.

4. What physical characteristics of your location and/or premises are especially suited to deal with the impacts and the intensity of your proposed use?

The property is a functional ski resort, and all proposed improvements are appropriate additions that serve the current use. The close proximity to existing electrical and sanitary utilities will allow for new services. The previously obtained water rights will allow for the snowmaking facilities and new water wells.

5. What are the anticipated beneficial aspects or affects your project will have on adjacent properties and the community?

The expansion will directly benefit the community as it will increase the facility's capacity, and extend the amount of time the ski program is operational throughout the year. More of the community will be able to take advantage of the recreational activity provided by Sky Tavern.

6. What are the anticipated negative impacts or affect your project will have on adjacent properties? How will you mitigate these impacts?

All of the new facilities are proposed onsite, and the construction phase will not negatively impact adjacent properties. Furthermore, given the seasonality of the ski resorts operations, much of construction can be completed without interrupting the typical schedule of the park.

7. Provide specific information on landscaping, parking, type of signs and lighting, and all other code requirements pertinent to the type of use being purposed. Show and indicate these requirements on submitted drawings with the application.

Combined estimated earthwork volume = 6,600cy - please see attached plans

8. Are there any restrictive covenants, recorded conditions, or deed restrictions (CC&Rs) that apply to the area subject to the special use permit request? (If so, please attach a copy.)

❑ Yes	■ No

9. Utilities:

a. Sewer Service	SEPTIC (EXISTING) - PUBLIC SEWER CONNECTION PROPOSED
b. Electrical Service	EXISTING - NV ENERGY
c. Telephone Service	EXISTING - ATT & VARIOUS WIRELESS
d. LPG or Natural Gas Service	EXISTING - PROPANE
e. Solid Waste Disposal Service	EXISTING - WASTE MANAGEMENT CONTRACT
f. Cable Television Service	EXISTING - SATELLITE
g. Water Service	EXISTING - ON-SITE PUBLIC WATER SYSTEM

For most uses, Washoe County Code, Chapter 110, Article 422, Water and Sewer Resource Requirements, requires the dedication of water rights to Washoe County. Please indicate the type and quantity of water rights you have available should dedication be required.

h. Permit #	N/A	acre-feet per year	
i. Certificate #		acre-feet per year	
j. Surface Claim #		acre-feet per year	
k. Other #		acre-feet per year	

Title of those rights (as filed with the State Engineer in the Division of Water Resources of the Department of Conservation and Natural Resources).

Please see the attached narrative discussion for detailed evaluation of visual impacts.

10. Community Services (provided and nearest facility):

a. Fire Station	Truckee Meadows Fire & Rescue, Station 39
b. Health Care Facility	Renown Health; Incline Village Community Hospital; Tahoe Forest Hospital
c. Elementary School	Dodson Elementary School
d. Middle School	Marce Herz Middle School
e. High School	Galena High School
f. Parks	Galena High School
g. Library	South Valleys LIbrary
h. Citifare Bus Stop	Herz Boulevard and Mt. Rose Highway

Special Use Permit Application
for Grading
Supplemental Information

(All required information may be separately attached)

1. What is the purpose of the grading?

To prepare the land for construction of two water storage tank pads, an airbag ski jump training facility, construction of fire access roads, and to pave approximately 180,000 square feet of parking/entry area.

2. How many cubic yards of material are you proposing to excavate on site?

Combined estimated earthwork volume = 6,600cy - please see attached plans

3. How many square feet of surface of the property are you disturbing?

Combined estimated disturbed area including temporary trenching = 1.8 acres

4. How many cubic yards of material are you exporting or importing? If none, how are you managing to balance the work on-site?

No export is proposed.

5. Is it possible to develop your property without surpassing the grading thresholds requiring a Special Use Permit? (Explain fully your answer.)

No - the areas of mass grading significantly exceed SUP threshold.

6. Has any portion of the grading shown on the plan been done previously? (If yes, explain the circumstances, the year the work was done, and who completed the work.)

None of the proposed grading has been performed.

7. Have you shown all areas on your site plan that are proposed to be disturbed by grading? (If no, explain your answer.)

Yes.

8. Can the disturbed area be seen from off-site? If yes, from which directions and which properties or roadways?

The temporary trenching areas will be visible from the east, from Mt. Rose Highway. The Tank area will not be visible (see attached cross-section)

9. Could neighboring properties also be served by the proposed access/grading requested (i.e. if you are creating a driveway, would it be used for access to additional neighboring properties)?

These improvements do not directly serve neighboring properties, except for adding recreational opportunities, however the elevated water storage is of potential regional value for firefighting.

10. What is the slope (horizontal/vertical) of the cut and fill areas proposed to be? What methods will be used to prevent erosion until the revegetation is established?

All proposed graded slopes are max 3:1.

11. Are you planning any berms?

Yes	No x	If yes, how tall is the berm at its highest?

12. If your property slopes and you are leveling a pad for a building, are retaining walls going to be required? If so, how high will the walls be and what is their construction (i.e. rockery, concrete, timber, manufactured block)?

No walls are proposed.

13. What are you proposing for visual mitigation of the work?

Please see the attached narrative discussion for detailed evaluation of visual impacts.

14. Will the grading proposed require removal of any trees? If so, what species, how many and of what size?

The combined proposed grading is expected to remove 66 trees of 6" or greater size: see the attached narrative for detailed description of species.

15. What type of revegetation seed mix are you planning to use and how many pounds per acre do you intend to broadcast? Will you use mulch and, if so, what type?

Dryland grass and shrubs suitable for high elevation slope stabilization and low fuel content.

16. How are you providing temporary irrigation to the disturbed area?

Temporary irrigation shall be provided as necessary for revegeation of fill and cut slopes for the proposed water storage tanks.

17. Have you reviewed the revegetation plan with the Washoe Storey Conservation District? If yes, have you incorporated their suggestions?

The plan will be submitted to the Washoe Storey Conservation District prior to grading permit applications.

18. Are there any restrictive covenants, recorded conditions, or deed restrictions (CC&Rs) that may prohibit the requested grading?

Yes	No X	If yes, please attach a copy.

Sky Tavern Junior Ski Area Expansion
SPECIAL USE PERMIT

Prepared for:

Sky Tavern
at
21130 Mt. Rose Highway
Reno, NV 89511

Prepared By:

Robison Engineering
COMPANY, INC
846 Victorian Ave., Suite 20
Sparks, NV 89431
(775) 852-2251

February 2024

Submitted to:

Washoe County, Nevada

TABLE OF CONTENTS

PROPERTY LOCATION

Sky Tavern Junior Ski Resort is a destination ski and outdoor recreation facility located in the southwest corner of Washoe County, approximately 20 miles north of Carson City and 10 miles south of Reno. The resort is accessed via Nevada State Route 431 also known as Mt. Rose Highway. The primary access to the ski resort is a parking lot at the east side of the property which can be accessed from Mt. Rose Highway or Bum's Gulch Rd. The ski resort is contained within one PR (parks and recreation) zoned property with Washoe County Assessor's Parcel Number 048-050-03 owned by the City of Reno and comprises 143.07 acres.

SPECIAL USE PERMIT REQUESTS

A Special Use Permit (SUP) is requested for the following components:

- Utility service within a PR zone, consisting of 1-million & 2-million gallon snowmaking water storage tanks, approximately 11,000 linear feet of snowmaking water supply piping, movable snowmaking machines, and two shallow groundwater wells / spring boxes to supply the system; each equipped with pump assemblies enclosed in pump house structures. Electricity will be supplied from existing on-site NVE facilities and service lines will be joint-trenched with water wherever possible. Please note that the proposed well and pumphouse features are outside of delineated wetlands and more than 500' from the centerline of Mt. Rose Highway.
- Site lighting within a PR zone, including approximately 20% of the parcel area (the two primary ski runs), and the parking area which currently has no lighting. Lighting will extend to the existing paved intersection with SR 431, improving safety for cars entering and exiting at that intersection, and will be held back at least 100 feet from all adjacent residential parcels (see Figures).
- No variance or special allowance is requested for the parking lot size: the existing ~ 163,000 sf paved area within and adjacent to the parcel is an existing non-conforming use, and is not proposed to be expanded or significantly modified, except to add lighting and correct ADA accessibility issues, if necessary. Therefore, we request that variance from sections 110.204.05(d)(1) – "…parking…shall be limited in size to fifty (50) parking spaces…" and 110.204.05(d)(2) – "…all parking…shall provide adequate landscape material screening…" be treated as approved by the existence of the non-conforming conditions, created prior to these code provisions.
- Variance from parking area design standards per Washoe County Development Code sections 110.410.25(c) & (f) – "Wheel Stops – A wheel stop or curb shall be placed…" & "Landscaping and Screening – All open parking areas shall be landscaped and screened…"
    - Wheel stops are not appropriate for the proposed open parking area: during the primary winter use, the parking area is covered by snow. Implementation of wheel stops throughout the parking lot would create a hazard for personal vehicles and an extremely dangerous obstacle for snow removal/plowing.
    - Due to the nature of this facility, landscaping islands or trees in the parking area are impractical and would not achieve the code's intent of screening, shade, etc. The entire parcel is forested, and winter parking is generally on top of accumulated snow which must be aggressively managed by heavy equipment; isolated trees and curb/gutter infrastructure would be damaged or destroyed.

- Variance from parking area design standards per Washoe County Development Code sections 110.410.25(g)(3) – "Parking lot luminaries shall be high-pressure sodium vapor…"
    - The proposed LED lighting achieves safe parking area illumination at a small fraction of the energy consumption of sodium vapor lights.
- Variance from landscaping standards per Washoe County Development Code section 110.412.25(c) – "Preservation of Existing Trees: …each Significant Tree that is required to be removed shall be replaced…"
    - Due to the nature of this facility, the number of significant trees requiring removal is insignificant when considering the entire property; we propose the removal of approximately 24 white fir, 4 ponderosa pine, and 38 lodgepole pine from the 0.8 acres of proposed tank area: about 0.8% of the approximately 8000 trees on the ~ 60% of the 140-acre forest parcel. The graded slopes of the tank pads will be revegetated with native plant mixes, however replacing the removed trees in different areas is not practical given the high number of existing trees occupying all areas which are not in use for access, ski runs, or other developed uses. Natural growth of all conifer species is continual, therefore the loss of vegetation in this particular area is negligible, and the intent of code with respect to sustainable vegetation is satisfied.
- Variance form landscaping standards per Washoe County Development Code section 110.412.40
    - 110.412.40(a) – Coverage. A minimum of 20 percent of the total developed land area shall be landscaped…
        - Excluding areas where building or other facilities have been previously constructed, or areas that have been cleared for use of ski slopes, the majority of the remainder of this property – approximately 60% – is covered by existing natural vegetation, primarily mature forest conifers. All proposed areas of disturbance for the construction of utility trenches will be revegetated. The intent of this code is already met due to the vast quantity of existing trees and vegetation.
    - 110.412.40(b) – Required Yards Adjoining Streets – All required yards which adjoin a public street shall be landscaped and shall include at least one tree for every fifty linear feet of street frontage
        - The adjacent major public streets that surround this property are Mount Rose Highway, Bum's Gulch Rd, and Sky Tavern Rd. No developments are proposed along the adjoining major streets, however there are significant trees and native vegetation within most of the required yard area adjacent to these streets. Proposing to clear areas along these streets and replanting would not be a productive application of code.
    - 110.412.40(c) – When a civil or commercial use adjoins a residential use, a landscaped buffer is required… and 110.412.40(d) - Screening Adjoining Residential Uses – When a civil/commercial use adjoins a residential use, a solid decorative wall or fence shall be erected along the entire length of the common property line…
        - There are a total of 11 adjacent properties zoned for residential use. No developments are proposed near these properties, however there are vast amounts of trees and native vegetation that exist within most of the required yard area adjacent to these streets. The existing vegetation and trees provide screening for these residential properties.

- Variance from landscaping standards per Washoe County Development Code section 110.412.50(a) – "At least one tree shall be provided for every 10 parking spaces…"
    - Please see above discussion related to trees within the parking areas, and total quantity of existing trees.

- Grading specifically identified in Washoe County Grading code as requiring a special use permit including:
    - 110.438.35(a)(2)(ii)(A) Grading on slopes 15% or greater – excavation of one thousand (1,000) cubic yards or more whether the material intended to be permanently located on the project site or temporarily stored on a site for relocation to another, final site
        - Approximately 5,000 cubic yards of material will be excavated, in a balanced cut/fill design, in areas with existing slopes greater than 15% in order to prepare the trenches for the proposed utility lines. Though it is not clear that utility trenching and immediate backfill are 'grading' – this construction effort is included for completeness.

A site plan is included with this application showing all proposed improvements to be constructed under this special use permit.

HILLSIDE DEVELOPMENT

This property is subject to Washoe County Application Requirements and Procedures for hillside development per Section 110.424.15. The following narrative has been prepared to comply with these requirements:

(a) Site Analysis
(1) The site plans provided with this application show all prominent site conditions and characteristics including ridgelines, hills, and knolls. No major ravines or canyons exist.
(2) The preliminary geotechnical investigation report prepared by Black Eagle Consulting, Inc, summarizes the geological conditions of this property, and the proposed developments have been designed with these conditions in mind. Construction will be subject to final geotechnical investigation, inspection, and support where appropriate.
(3) The preliminary geotechnical investigation report prepared by Black Eagle Consulting, Inc, summarizes the soil conditions and the proposed developments have been designed with these conditions in mind.
(4) The wetlands delineation report prepared by Robison Wildlife Consulting, LLC, summarizes the significant hydrological conditions including wetlands areas which have been located and shown on the site plans. No development is proposed within these areas.
(5) The wetlands delineation report prepared by Robison Wildlife Consulting, LLC, and a tree inventory performed by Robison Engineering in support of this narrative, summarize the significant vegetation onsite.
(6) There is no unique or rare habitat for rare or endangered animal species onsite.
(7) The proposed development will be visible from the adjacent Mt. Rose Highway, SR431; es, however these will be visually mitigated by the surrounding trees and blend in with the natural site conditions. The proposed water storage tanks are approximately 3,000 feet away from the major public roads, and completely obscured from public rights of way by forest.

(i) Please see the attached figures for a cross-section view looking northwesterly, illustrating Mt. Rose Highway's view of the tanks obscured by land forms and trees from both above and below the proposed tank area.

(8) The purpose of these developments is to support the ongoing use of the property as a recreational destination ski resort which is complemented by the unique conditions of the hillside.

(9) A slope analysis is now included with the plans.

(b) Developable Area Map – the developments include the construction of two large water storage tank buildings which have been located on areas of modest sloping (< 15%) and grading designs have been prepared for these buildings. The other proposed developments are utility trenching only and are appropriately located throughout the site (i.e. these trenches do not require removal of any significant trees). Any material excavated for utility trenching shall be replaced, recompacted, and stabilized in place, restoring the pre-construction land surface.

(c) Constraint and Mitigation Analysis – the site and grading plans demonstrate that there are no significant constraints that will impede the proposed developments; similar snowmaking systems have been constructed at ski resorts worldwide.

(d) Washoe County Master Plan Amendment – these developments do not propose amendments to the master plan.

(e) Detailed Contour Analysis – the plans include a detailed contour analysis from LiDAR topography obtained from the USGS, and confirmed by ground GPS survey and elevation control network established by Robison Engineering.

PROJECT PHASING

Depending on several factors including available funding of the proposed improvements, the weather/constructable windows of time of the coming years, etc. – there is no set project phasing currently. However, given the scope of the proposed improvements, a time frame longer than two years is expected to be required.

WATER RIGHTS

A permit to appropriate water was granted for this project by The State of Nevada. A maximum amount of 48.3 acre-feet per year may be appropriated for recreational use per Permit no. 91279; a copy of which is included in this application. This Permit represents the non-consumptive (returned to the drainage system) portion of Permit no. 90473, which allows 9.2 acre feet consumptive use of water for recreation purposes; a total of 57.5 acre-feet may be diverted and used each year under the combined permit duty.

WETLANDS DELINEATION

Portions of this property include areas defined as wetlands that cannot be constructed on or otherwise disturbed per the United States Army Corps of Engineers (USACE). A wetlands delineation report was prepared by Robison Wildlife Consulting, LLC, and the results of their findings are shown on the site plan. No improvements of any kind are proposed in or closely adjacent to delineated wetland areas.

TRAFFIC IMPACT

A traffic impact study was prepared for this project by Headway Transportation LLC and a copy is included with this application. Their study found that this expansion is anticipated to generate

approximately 91 AM peak hour, and 43 Noon peak hour additional trips to the external roadway network, and that no improvements are required to support this traffic.

GEOTECHNICAL INVESTIGATION

A geotechnical investigation was prepared for this project by Black Eagle Consulting, Inc. Their study found that the site is geotechnically suitable for the proposed improvements, and a copy of the report is included with this application.

SITE LIGHTING

Several factors should be considered for approval of the proposed lighting, which would be unique on the eastern face of the Sierras, and is initially inconsistent with the Envision Washoe 2040 Master Plan's characterization of the eastern Sierra slope as a significant viewshed to be protected as a scenic resource; however, we present that the weight of public use, utilization of natural resources, protection of public interest and recreation opportunities, and the expansion of the unique social and cultural position of Sky Tavern as a regional institution and resource, overwhelm the incremental loss of 'dark hillside' conditions in this area, which is already impacted by Mt. Rose Highway, existing lighting from residential and commercial uses, and both fixed and snow-cat mobile lighting at the adjacent Mt. Rose Ski Area; these conditions are fully illustrated, along with actual lighting from one of the proposed fixtures, temporarily installed at Sky Tavern on January 19, 2024 to allow this accurate representation.

A preliminary lighting design was prepared by Wisconsin Lighting Lab. Site lighting is proposed at the parking lot and all areas that will be served by the proposed snowmaking. Per the photometric exhibits attached, the proposed lighting is not anticipated to impact neighboring properties or the adjacent streets, Mt. Rose Highway and Bum's Gulch Rd.

A preliminary design estimate from Wisconsin Lighting Lab is included, which details the specific lights which are proposed. Please see the included maps, photometric analysis, and simulations of visual impact from key vantage points in the Truckee Meadows for illustration of the impact of lighting on the region.

Lighting Schedule
The site lighting fixtures will be operational during the skiing months of December through April, though may be selectively used year-round for other outdoor activities, and will operate from sundown to approximately 10pm every evening.

Washoe County Master Plan – Forest Area Section F.2.6
Electricity for site lighting shall be sourced from existing NV Energy electrical utilities. A site electrical plan shall be designed and coordinated with NV Energy and an independent electrical engineer. Utilization of solar energy was considered but deemed impractical to implement at this time due to the following:

- The amount of photovoltaic cells needed to meet the electrical demand of these developments would be extensive land area is not available without tree removal or other negative impacts.
- The proposed light fixtures are high-efficiency and low-demand, reducing their impact.
- Locating the number of solar panels needed is difficult as the entire property is equipped with trees casting shade canopies throughout the day.

- Keeping the solar panels clear of snow would be difficult, causing solar panels to perform unreliably.
- Nevada's electrical grid is increasingly supplied by large-scale solar and geothermal projects which Robison Engineering is active in supporting; these appropriately-sited power generation projects exceed the potential for this site for electricity generation.

Expanded response to Question 5 of the SUP Application

The newly adopted Envision Washoe 2040 Draft Vision & Guiding Principles (Plan) include the following statements of principal, which the proposed snowmaking and lighting improvements respond to:

1. "Washoe County is a place of diverse and resilient opportunities to build a quality life in a safe and engaging community offering unparalleled access to Washoe County's natural landscape, its arts, culture, and history, and its rich network of community services."
    a. Adding snowmaking and lights will allow after-school, weekday training for racing teams and other junior skiers, in a safe and engaging volunteer community. Due to the expense, distance, and out-of-state nature of other after-school skiing opportunities, Sky Tavern offers the only viable access to area high school students, to Washoe County's natural landscape as well as its culture and history. It will add to Washoe County's rich network of community services.

2. The Plan sets forth its "Top Priorities for the Future of Washoe County." One such priority is to "preserve and enhance access to open space, recreation, wildlife and natural resources." The Plan also sets forth "Key Takeaways." One of those is "Access to Nature and Recreation" specifically stating as follows: "Access to nature and recreation was the most common response in questionnaires and interviews. The access that residents have to hiking, biking, skiing, and open space was stated as the primary reason people were attracted to the area and one of the most important features that speaks to resident retention."
    a. Adding snowmaking and lights will preserve and enhance access to nature and recreation. Skiing was one of the primary reasons that people were attracted to the area and one of the most important features that speaks to resident retention.

3. The Plan also sets forth that "Resiliency" is one of its core components. The Plan notes that "to some stakeholders, resiliency translates to environmental resilience, or the ability to withstand and adapt to changing environments related to both climate change and shifts in the local and global economy."
    a. Adding snowmaking and lighting will allow Sky Tavern to be environmentally resilient. Adding snowmaking will give Sky Tavern the ability to withstand and adapt to changing environments related to climate change. When winters produce less snow for whatever reason, snowmaking will make up for that lack of snow. Adding lights will give Sky Tavern the ability to withstand and adapt to changing environments related to shifts in the local economy. Not everyone has the flexibility to ski during the day, and high school education is negatively impacted by removing students from school during the day. The weekend programs at Sky Tavern are at or exceed their capacity every year, and expansion into weekdays is the only practical way to teach more kids the joy and pleasure of snow sports in our region.

4. The Plan Vision Statement on page 25 reads in part: "Washoe County is a place of diverse and resilient opportunities to build a quality of life … offering unparalleled access to … Washoe County's natural landscape, its … culture, and history and its rich network of community services." Furthermore, in the Forest Area part of the Plan, it is identified that recreational opportunities are a key aspect to this area of Washoe County.
    a. Adding snowmaking and lights at Sky Tavern will add to the recreational opportunities in the Forest Area. Washoe County residents will be able to ski at Sky Tavern and benefit from their services when there is a lack of snow. And they will be able to sky at Sky Tavern and benefit from their services not just on weekend days but also on weekday afternoons and early evenings.

5. The Plan particularly mentions Mount Rose Ski Tahoe Resort and the Mount Rose Resort Services Area (RSA). Mount Rose Ski Tahoe Resort is not only an important feature of the area's character, but of the entire region's character and identity as well. It is expected that future growth of this area will be focused on taking advantage of the unique natural environment and will not compete with service providers in the urban areas."
    a. Sky Tavern is an equally important cultural institution to Mount Rose Ski Tahoe, and occupies a complimentary niche: where Mount Rose thrives on commercial adult recreation, Sky Tavern serves the less profitable, and potentially conflicting (advanced vs. beginner, slow vs. fast, etc) needs of youth skiers and snowboarders. Where Mount Rose has limited capacity to accommodate school-age racing, whether recreation or competitive, due to conflict with commercial users, Sky Tavern can provide ski runs entirely dedicate to racers, volunteers, and support staff. And where Mount Rose must turn a profit to be viable, Sky Tavern is a non-profit institution with only a skeleton of paid staff, and can put all of its donated and paid season pass resources into the mountain and enhancing its unique educational vision and purpose.

Adding snowmaking and lights at Sky Tavern should be seen as reasonably taking advantage of the unique natural environment of the Forest Area, and of allowing the beneficial expansion of one of the most socially successful institutions in Washoe County.

STAFF AND PERSONNEL

Sky Tavern has approximately 10 full-time employees working at any one time. During certain events or times, there may be upwards of 75 volunteers time, however most of these volunteers will be working on the slopes of the facility, and are parents of ski and snowboard students, therefore they do not separately contribute to parking requirements.

LANDSCAPING AND REVEGETATION

Sky Tavern has accumulated years of experience in promoting regeneration by native species and will treat all sloped areas with appropriate temporary erosion control, runoff management, and other Best Management Practices for all construction involving slopes or fresh disturbance. Revegetation with an aggressive forb and native grass seed mix, followed by management of shrub and natural tree seedling regrowth, will achieve permanent stabilization consistent with the ski area operation.

Significant Tree Removal
Washoe County Development Standards Section 110.412.25 defines a "significant tree" as one which has a caliper greater than 6 inches, as measured 54 inches from grade. The proposed

disturbance for the construction of water storage tanks, approximately 69 trees are proposed to be removed, including:

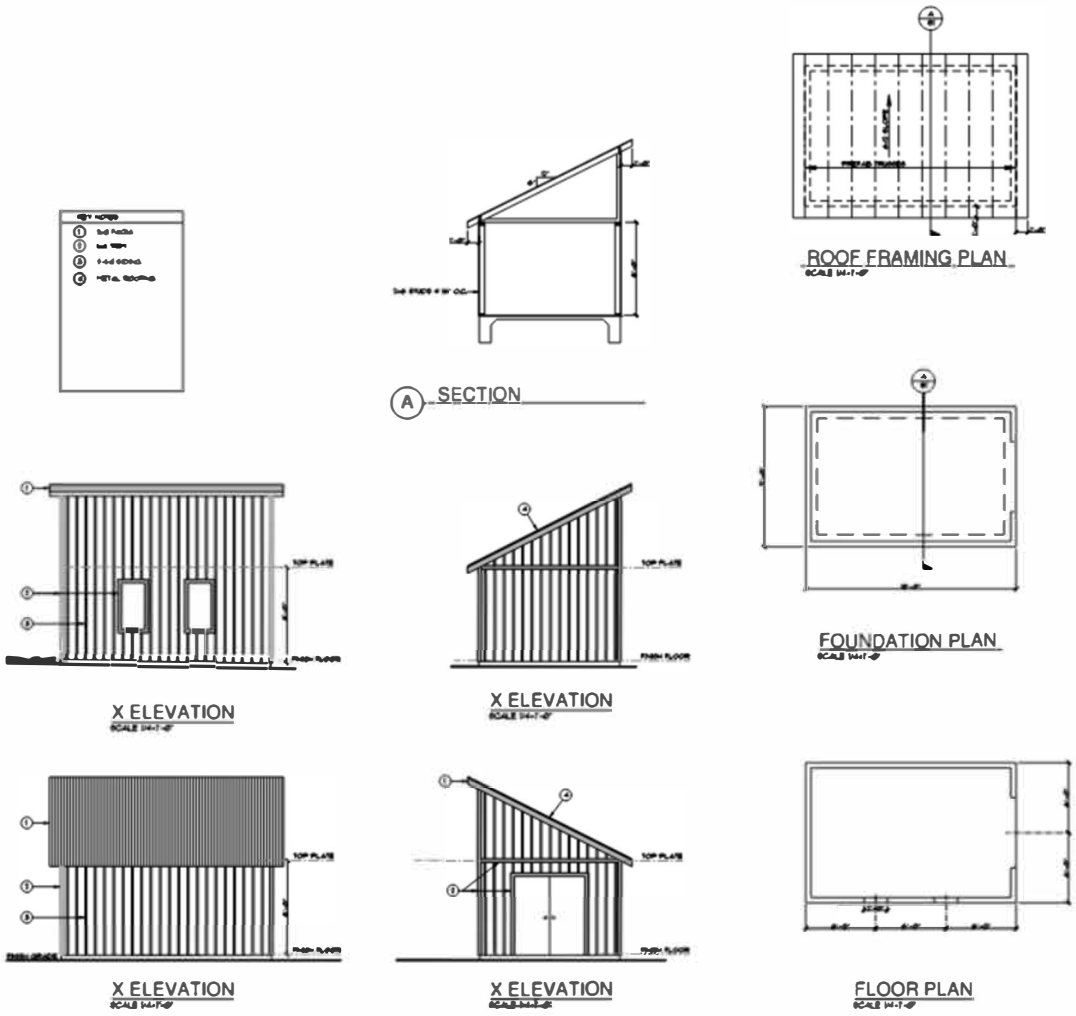
- 24 White Fir with calipers ranging from 8” to 34”
- 4 Ponderosa Pine with calipers ranging from 10” to 29”
- 38 Lodgepole Pine with calipers ranging from 8” to 42”

PARKING

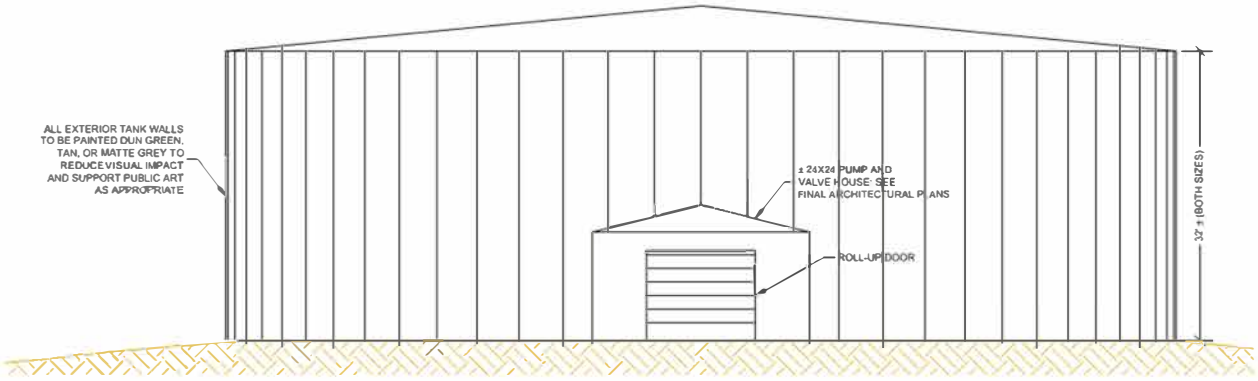
The existing parking area is proposed to be repaved and restriped. There is no specific parking requirement for a destination ski resort in Washoe County’s development code, however Section 410.10.2 requires 1 parking space required per employee. A striping plan is included with this application showing 197 spaces including 6 accessible spaces near the lodge building with one being a van-accessible space. There are also 10 bicycle spaces provided near the existing lodge building.

PROPOSED STRUCTURES

The currently proposed structures include three pump house buildings and two water storage tanks. Architectural plans for the pump house buildings were prepared by Crom Engineering and for the water storage tanks by Robison Engineering. Below are the excerpted architectural drawings, and full sized plans are included with this application. Beyond what is shown on the plans, efforts shall be made to conceal the proposed structures so that they blend in with the surrounding aesthetic of the surrounding area, such as forest green paint, etc.



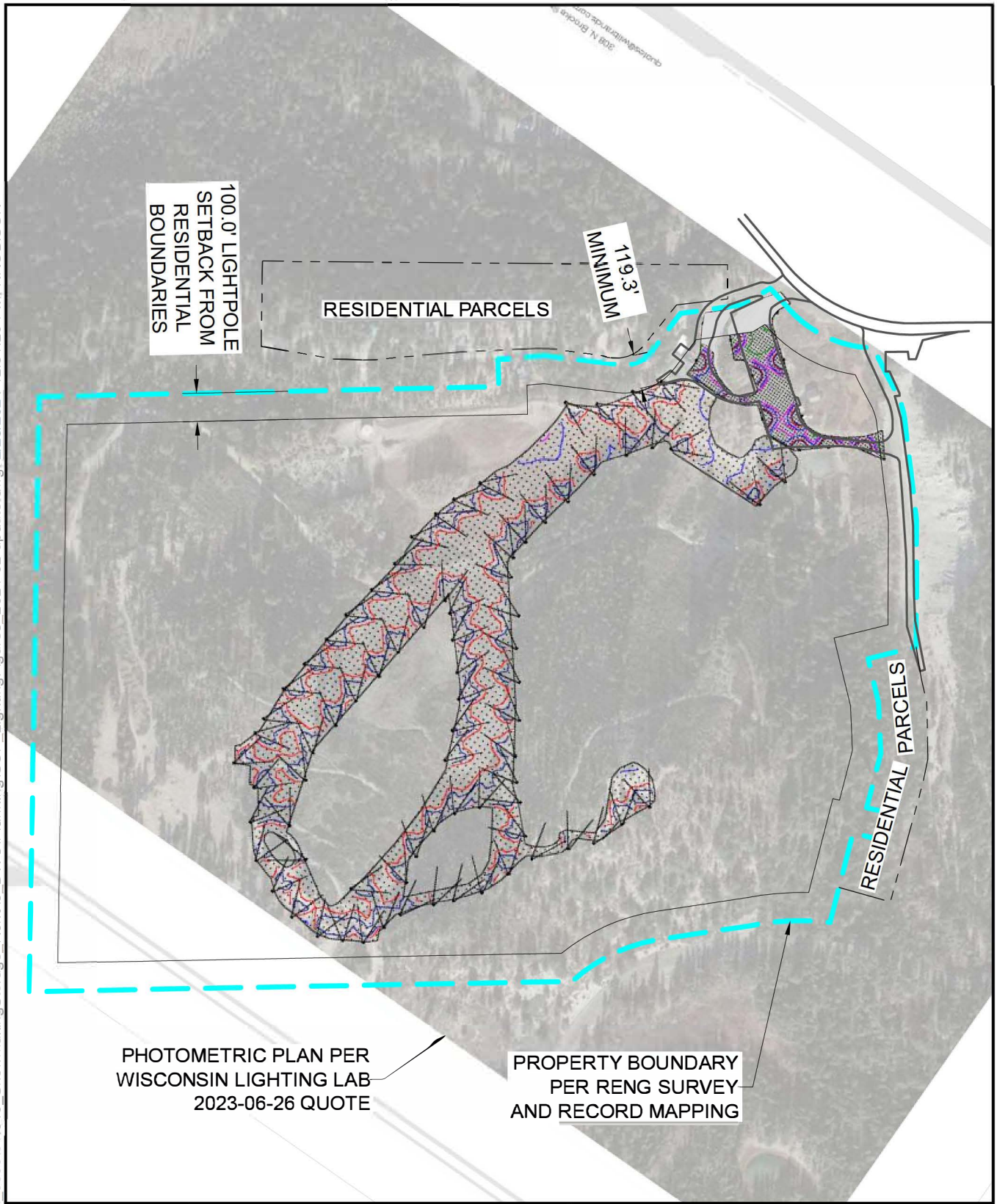
Pump House Building Plans



Water Storage Tank Elevation View

ATTACHMENTS

1. City of Reno Property Owner's Affidavit
2. Preliminary Geotechnical Report
3. Lighting Study
4. Cross-Section
5. Civil and Tank Architectural Plans
6. Pump Shed Architectural Plans
7. Documentation of Taxes Paid
8. Traffic Impact Study
9. Water Rights
10. Wetlands Delineation Report



P:\SkyTavernJuniorSkiProgram_0399\01.010_SnowmakingStorage_Reno\8_DWG\Planning\SUP_LightingFigures_2024-02_update.dwg, 2/28/2024 12:51:26 PM, NROBISON

Robison Engineering COMPANY, INC
846 VICTORIAN AVENUE
SPARKS, NV 89431
www.robisoneng.com

DRAWN: WiLL,NER
DATE: 2024-02-28

PREPARED FOR:
SKY TAVERN SKI RESORT
21130 MT ROSE HWY
RENO, NV 89511
(775) 323-5125

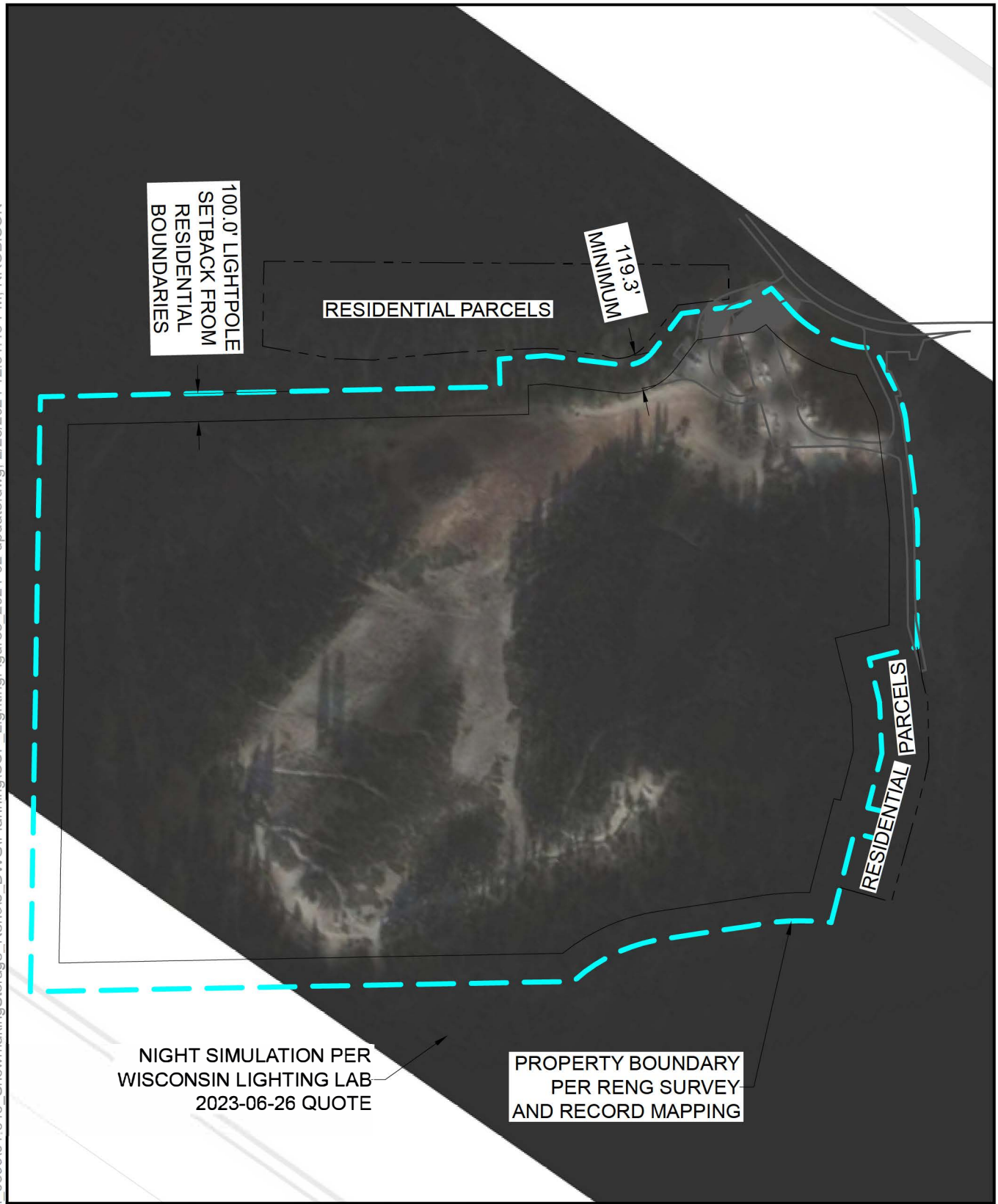
N
0 250 500
SCALE IN: FEET

SKY TAVERN SKI AREA SPECIAL USE PERMIT

PHOTOMETRIC PLAN WITH RESIDENTIAL SETBACK

WASHOE COUNTY NEVADA
PROJECT NO: 1-399-01.010

WSUP23-0016
EXHIBIT F



Robison Engineering COMPANY, INC
846 VICTORIAN AVENUE
SPARKS, NV 89431
www.robisoneng.com

DRAWN: WiLL,NER
DATE: 2024-02-28

PREPARED FOR:
SKY TAVERN SKI RESORT
21130 MT ROSE HWY
RENO, NV 89511
(775) 323-5125

N
0 250 500
SCALE IN: FEET

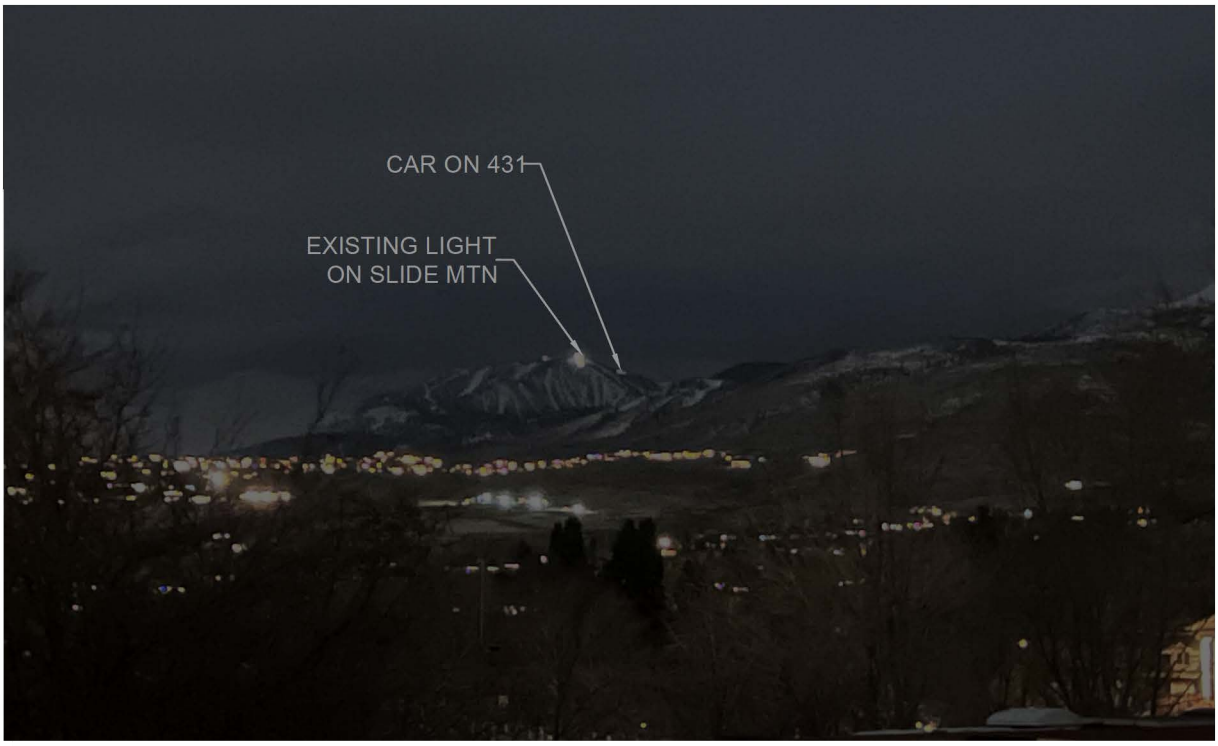
SKY TAVERN SKI AREA SPECIAL USE PERMIT

NIGHT SIMULATION WITH RESIDENTIAL SETBACK

WASHOE COUNTY NEVADA
PROJECT NO: 1-399-01.010

P:\SkyTavernJuniorSkiProgram_0399\01.010_SnowmakingStorage_Reno\8_DWG\Planning\SUP_LightingFigures_2024-02 update.dwg, 2/28/2024 12:51:45 PM, NROBISON

WSUP23-0016
EXHIBIT F



LOOKING SOUTH 61° WEST FROM WINDY HILL TURNOUT: NIGHT WITH ACTUAL TEST LIGHT

LOOKING SOUTH 61° WEST FROM WINDY HILL TURNOUT: DAY

Robison Engineering COMPANY, INC
846 VICTORIAN AVENUE
SPARKS, NV 89431
www.robisoneng.com

DRAWN: WiLL,NER

DATE: 2024-02-28

PREPARED FOR:

SKY TAVERN SKI RESORT

21130 MT ROSE HWY
RENO, NV 89511

(775) 323-5125

SKY TAVERN SKI AREA SPECIAL USE PERMIT

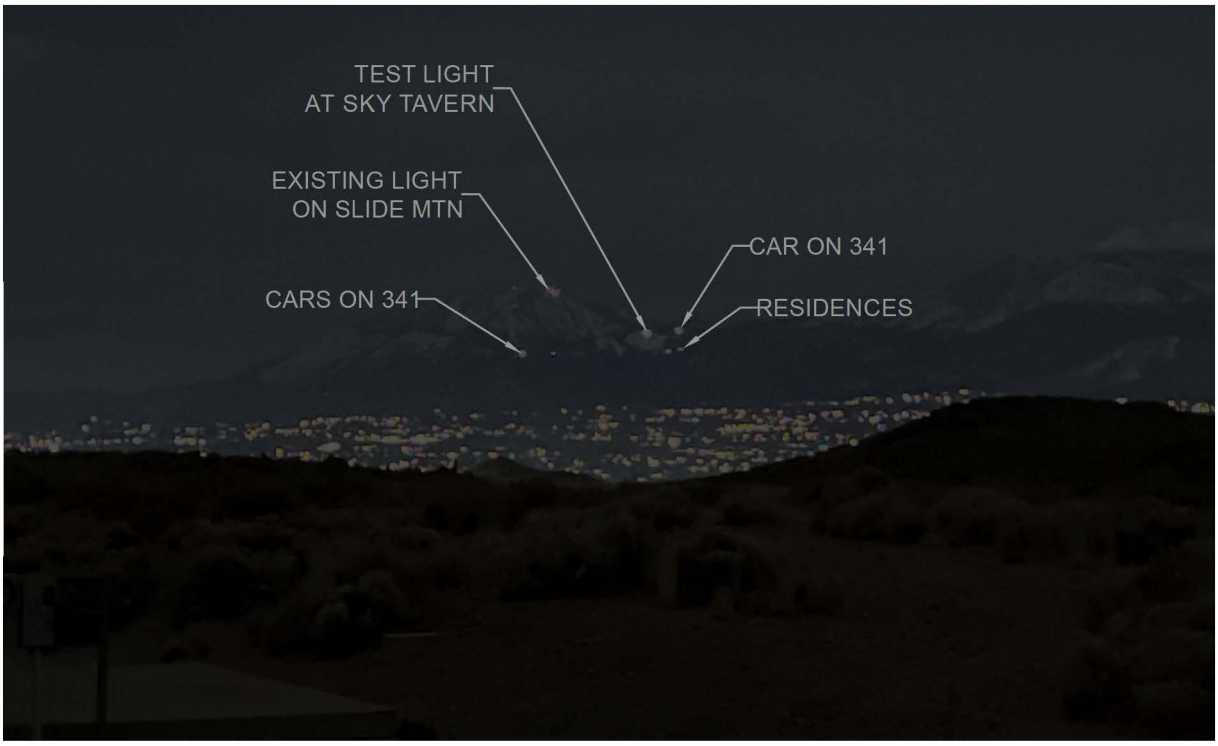
VIEW FROM
WINDY HILL

WASHOE COUNTY NEVADA

PROJECT NO: 1-399-01.010

P:\SkyTavernJuniorSkiProgram_0399\01.010_SnowmakingStorage_Reno\8_DWG\Planning\SUP_LightingFigures_2024-02 update.dwg, 2/28/2024 1:48:22 PM, NROBISON

WSUP23-0016
EXHIBIT F



LOOKING DUE WEST FROM RATTLESNAKE MTN TRAIL: NIGHT WITH ACTUAL TEST LIGHT

LOOKING DUE WEST FROM RATTLESNAKE MTN TRAIL: DAY

Robison Engineering COMPANY, INC
846 VICTORIAN AVENUE
SPARKS, NV 89431
www.robisoneng.com

DRAWN: WiLL,NER

DATE: 2024-02-28

PREPARED FOR:

SKY TAVERN SKI RESORT

21130 MT ROSE HWY
RENO, NV 89511

(775) 323-5125

SKY TAVERN SKI AREA SPECIAL USE PERMIT

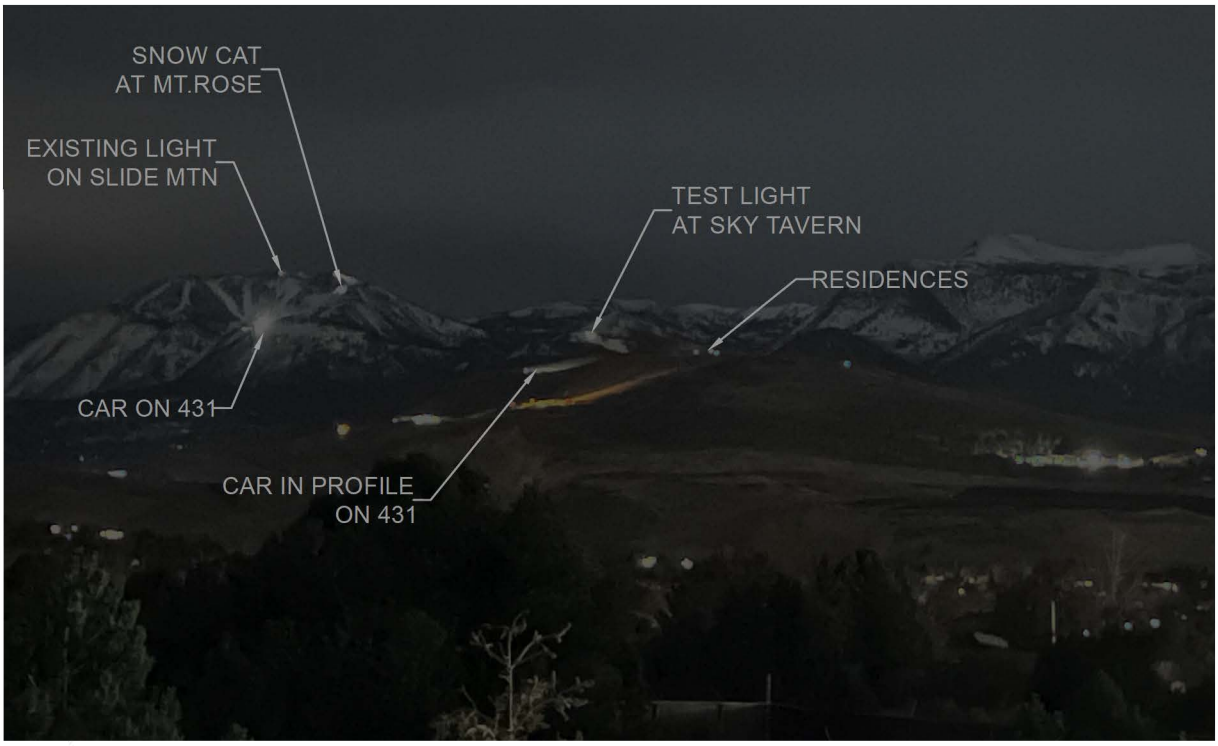
VIEW FROM
RATTLESNAKE MOUNTAIN TRAIL

WASHOE COUNTY NEVADA

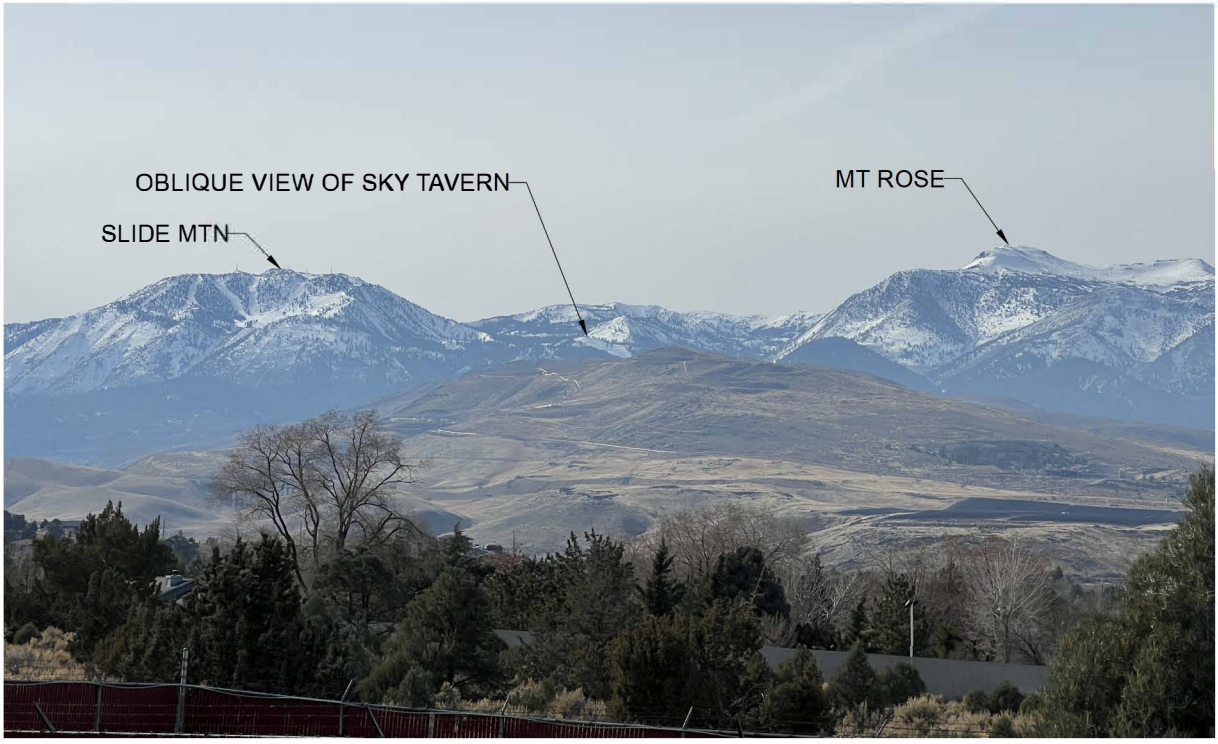
PROJECT NO: 1-399-01.010

P:\SkyTavernJuniorSkiProgram_0399\01.010_SnowmakingStorage_Reno\8_DWG\Planning\SUP_LightingFigures_2024-02 update.dwg, 2/28/2024 1:48:51 PM, NROBISON

WSUP23-0016
EXHIBIT F



LOOKING NORTH 63° WEST FROM HIGHWAY 341: NIGHT WITH ACTUAL TEST LIGHT



LOOKING NORTH 63° WEST FROM HIGHWAY 341: DAY

Robison Engineering COMPANY, INC
846 VICTORIAN AVENUE
SPARKS, NV 89431
www.robisoneng.com

DRAWN: WiLL,NER

DATE: 2024-02-28

PREPARED FOR:

SKY TAVERN SKI RESORT

21130 MT ROSE HWY
RENO, NV 89511

(775) 323-5125

SKY TAVERN SKI AREA SPECIAL USE PERMIT

VIEW FROM HWY 341
VIRGINIA FOOTHILLS

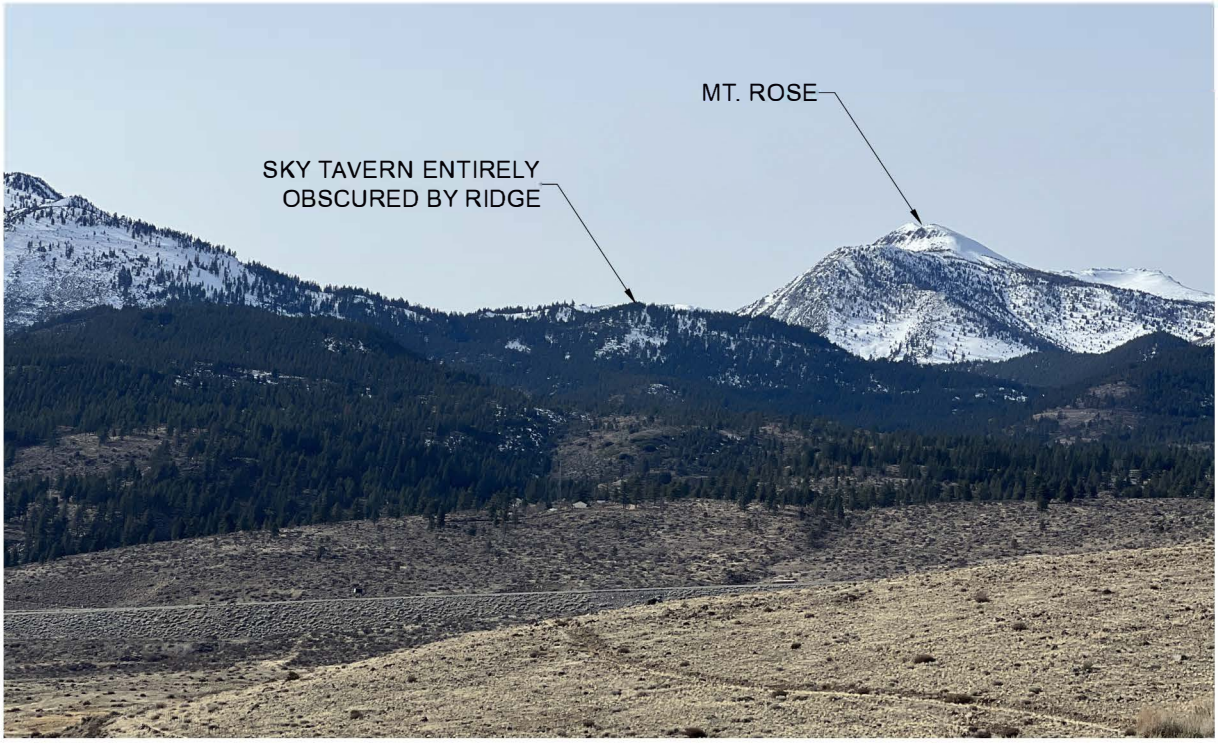
WASHOE COUNTY NEVADA

PROJECT NO: 1-399-01.010

P:\SkyTavernJuniorSkiProgram_0399\01.010_SnowmakingStorage_Reno\8_DWG\Planning\SUP_LightingFigures_2024-02 update.dwg, 2/28/2024 1:49:02 PM, NROBISON

WSUP23-0016
EXHIBIT F

LOOKING EAST: ACTUAL FIXTURE INSTALLED AT CREST OF SKY TAVERN SKI AREA 2024-01-19



LOOKING DUE NORTH FROM WASHOE LAKE AREA

Robison Engineering COMPANY, INC
846 VICTORIAN AVENUE
SPARKS, NV 89431
www.robisoneng.com

DRAWN: WiLL,NER

DATE: 2024-02-28

PREPARED FOR:

SKY TAVERN SKI RESORT

21130 MT ROSE HWY
RENO, NV 89511

(775) 323-5125

SKY TAVERN SKI AREA SPECIAL USE PERMIT

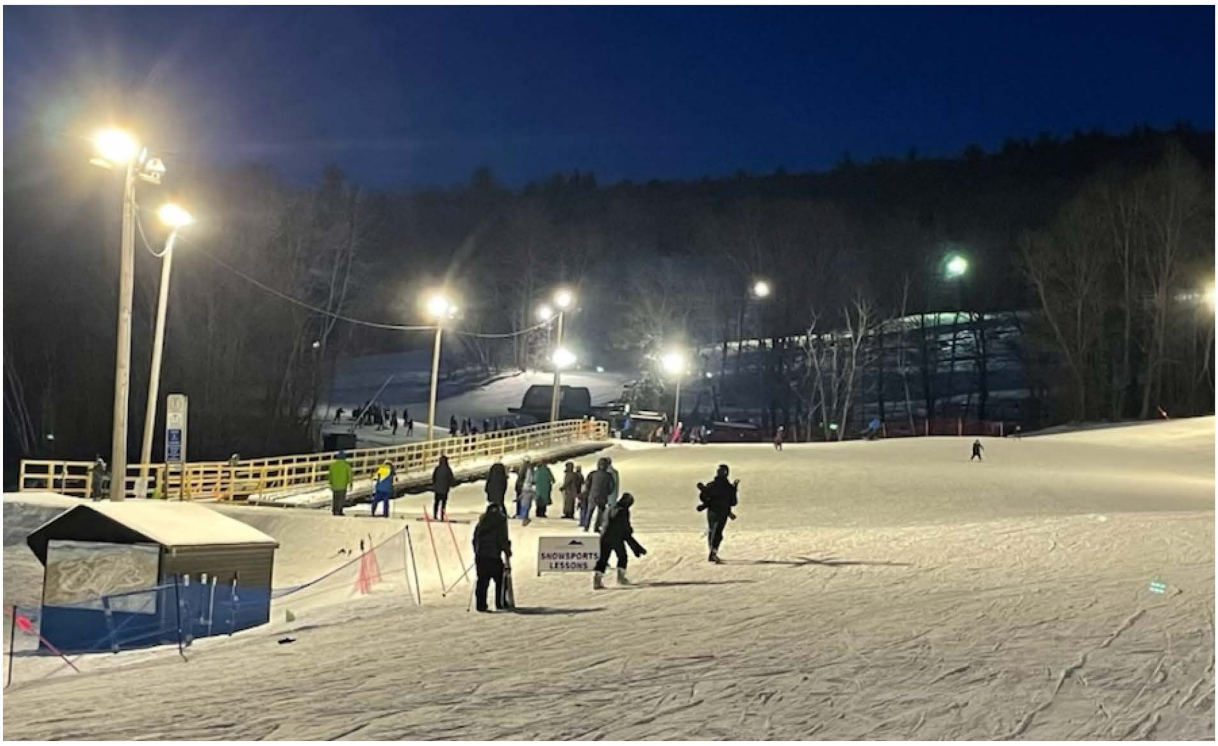
VIEW FROM WASHOE SUMMIT
OLD 395 / LITTLE WASHOE LAKE

WASHOE COUNTY NEVADA

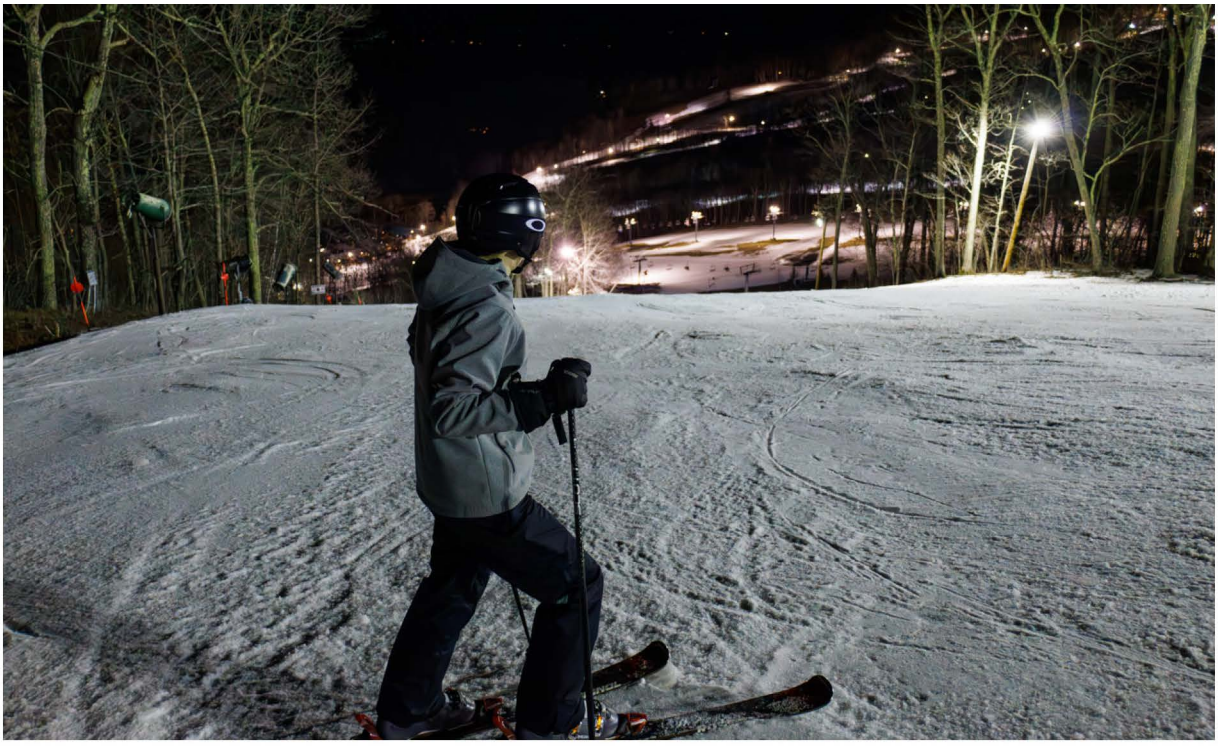
PROJECT NO: 1-399-01.010

P:\SkyTavernJuniorSkiProgram_0399\01.010_SnowmakingStorage_Reno\8_DWG\Planning\SUP_LightingFigures_2024-02 update.dwg, 2/28/2024 1:53:16 PM, NROBISON

WSUP23-0016
EXHIBIT F



LOOKING UPSLOPE FROM BASE OF HILL



LOOKING DOWNSLOPE FROM CREST OF HILL

Robison Engineering COMPANY, INC
846 VICTORIAN AVENUE
SPARKS, NV 89431
www.robisoneng.com

DRAWN: WiLL,NER

DATE: 2024-02-28

PREPARED FOR:

SKY TAVERN SKI RESORT

21130 MT ROSE HWY
RENO, NV 89511

(775) 323-5125

SKY TAVERN SKI AREA SPECIAL USE PERMIT

EXAMPLE NIGHTTIME VIEWS
FROM GROUND LEVEL - CATAMOUNT SKI HILL

WASHOE COUNTY NEVADA

PROJECT NO: 1-399-01.010

P:\SkyTavernJuniorSkiProgram_0399\01.010_SnowmakingStorage_Reno\8_DWG\Planning\SUP_LightingFigures_2024-02 update.dwg, 2/28/2024 1:35:33 PM, NROBISON

WSUP23-0016
EXHIBIT F

Designation & Dimensional Information

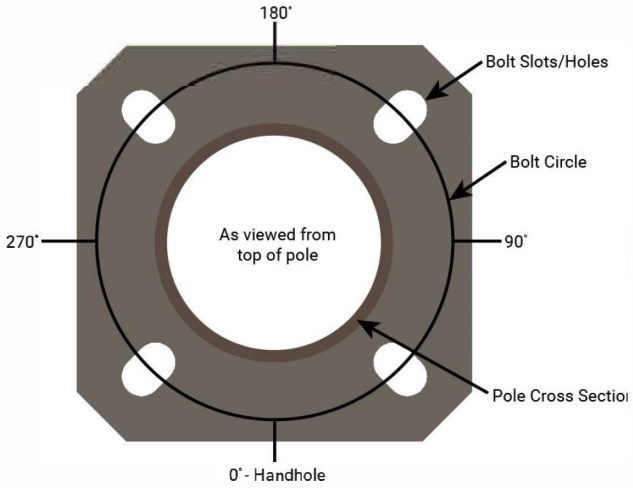
Base Model	Pole Dimensions					Base Plate		Anchor Bolts	
	Nominal Mounting Height	Top OD (in)	Base OD (in)	Wall Thick (ga)	Structural Weight (lb)	Bolt Circle Diameter (in)	Sq (in) x Thick (in)	Dia x Length x Hook (in)	Projection (in)
VS-RTSA-20-5931-11-AB-FP	20'-0"	3.1	5.9	11	140	8.5 - 9.5	10 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-20-6537-11-AB-FP	20'-0"	3.7	6.5	11	160	9.0 - 10.0	10.5 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-25-5924-11-AB-FP	25'-0"	2.4	5.9	11	155	8.5 - 9.5	10 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-25-7035-11-AB-FP	25'-0"	3.5	7	11	200	9.5 - 10.5	10.88 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-25-7035-07-AB-FP	25'-0"	3.5	7	7	280	9.5 - 10.5	10.88 x 1	1.00 x 36.00 x 4.00	4 - 4.5
VS-RTSA-30-6624-11-AB-FP	30'-0"	2.4	6.6	11	200	9.0 - 10.0	10.5 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-30-8038-11-AB-FP	30'-0"	3.8	8	11	265	10.5 - 11.5	11.5 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-30-8038-07-AB-FP	30'-0"	3.8	8	7	380	10.5 - 11.5	11.5 x 1.25	1.25 x 42.00 x 6.00	4.75 - 5.25
VS-RTSA-35-7324-11-AB-FP	35'-0"	2.4	7.3	11	250	10.0 - 11.0	11.25 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-35-8536-11-AB-FP	35'-0"	3.6	8	11	315	11.0 - 12.0	12 x 1	1.00 x 36.00 x 4.00	4 - 4.5
VS-RTSA-35-9546-11-AB-FP	35'-0"	4.6	9.5	11	370	12.5 - 13.5	13 x 1	1.00 x 36.00 x 4.00	4 - 4.5
VS-RTSA-39-7824-11-AB-FP	39'-0"	2.4	7.82	11	285	10.5 - 11.5	11.5 x 0.875	1.00 x 36.00 x 4.00	3.88 - 4.38
VS-RTSA-39-9036-11-AB-FP	39'-0"	3.58	9	11	355	12.0 - 13.0	12.38 x 1	1.00 x 36.00 x 4.00	4 - 4.5
VS-RTSA-39-9036-07-AB-FP	39'-0"	3.58	9	7	515	12.0 - 13.0	12.38 x 1.25	1.25 x 42.00 x 6.00	4.75 - 5.25
VS-RTSA-45-1037-11-AB-FP	45'-0"	3.7	10	11	450	13 - 14	14 x 1	1.00 x 36.00 x 4.00	4 - 4.5
VS-RTSA-45-1037-07-AB-FP	45'-0"	3.7	10	7	650	13 - 14	14 x 1.25	1.25 x 42.00 x 6.00	4.75 - 5.25
VS-RTSA-45-1147-07-AB-FP	45'-0"	4.7	11	7	780	14.5 - 15.5	16.5 x 1.5	1.25 x 42.00 x 6.00	5 - 5.5
VS-RTSA-50-1030-11-AB-FP	50'-0"	3	10	11	475	13 - 14	14 x 1	1.00 x 36.00 x 4.00	4 - 4.5
VS-RTSA-50-1030-07-AB-FP	50'-0"	3	10	7	680	13 - 14	14 x 1.25	1.25 x 42.00 x 6.00	4.75 - 5.25
VS-RTSA-50-1140-07-AB-FP	50'-0"	4	11	7	812	14.5 - 15.5	16.5 x 1.5	1.25 x 42.00 x 6.00	5 - 5.5
VS-RTSA-50-1360-03-AB-FP	50'-0"	6	13	3	1335	17.5	18.5 x 1.75	1.75 x 84.00 x 6.00	6.25 - 6.75
VS-RTSA-50-1360-07-AB-FP	50'-0"	6	13	7	1020	17	18 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-55-1136-0711-AB-FP	55'-0"	3.58	11	7 & 11	890	14.5 - 15.5	16.5 x 1.5	1.25 x 42.00 x 6.00	5 - 5.5
VS-RTSA-55-1246-0711-AB-FP	55'-0"	4.55	12	7 & 11	975	16	17 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-55-1352-0507-AB-FP	55'-0"	5.16	12.5	5 & 7	1225	16.5	17.5 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-60-1240-0707-AB-FP	60'-0"	4.01	12	7 & 7	1060	16	17 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-60-1345-0507-AB-FP	60'-0"	4.46	12.5	5 & 7	1275	16.5	17.5 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-60-1348-0711-AB-FP	60'-0"	4.83	13	7 & 11	1075	17	18 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-65-1343-0507-AB-FP	65'-0"	4.25	13	5 & 7	1400	17	18 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-65-1343-0707-AB-FP	65'-0"	4.25	13	7 & 7	1200	17	18 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-70-1336-0507-AB-FP	70'-0"	3.55	13	5 & 7	1440	17	18 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6
VS-RTSA-70-1336-0707-AB-FP	70'-0"	3.55	13	7 & 7	1270	17	18 x 1.5	1.50 x 54.00 x 6.00	5.5 - 6

1. The total combined EPA and weight of all fixtures, brackets, and other attachments mounting to a light pole cannot exceed the EPA and weight rating for a specified pole.
2. Custom products, configurations, options, and accessories available from factory.
3. Satisfactory performance of light poles is dependent upon the structure being properly attached to a supporting foundation of adequate design.

"+" indicates a vibration dampener is standard.

35-FOOT TALL SKI SLOPE LIGHTPOLES

Anchor Base Detail



Designation & Dimensional Information

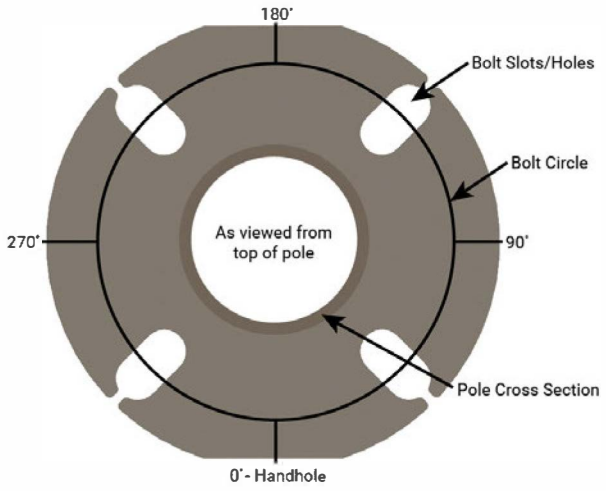
Base Model	Pole Dimensions					Base Plate		Anchor Bolts	
	Nominal Mounting Height	Top OD (in)	Base OD (in)	Wall Thick (ga)	Structural Weight (lb)	Bolt Circle Diameter (in)	Sq (in) x Thick (in)	Dia x Length x Hook (in)	Projection (in)
VS-RSSA-10-3030-11-AB-FP	10'-0"	3	3	11	55	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-10-4040-11-AB-FP	10'-0"	4	4	11	70	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-10-4545-11-AB-FP	10'-0"	4.5	4.5	11	75	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-12-3030-11-AB-FP	12'-0"	3	3	11	60	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-12-4040-11-AB-FP	12'-0"	4	4	11	80	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-12-4545-11-AB-FP	12'-0"	4.5	4.5	11	85	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-14-3030-11-AB-FP	14'-0"	3	3	11	70	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-14-4040-11-AB-FP	14'-0"	4	4	11	90	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-14-4545-11-AB-FP	14'-0"	4.5	4.5	11	95	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-15-4040-11-AB-FP	15'-0"	4	4	11	95	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-15-4545-11-AB-FP	15'-0"	4.5	4.5	11	100	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-16-3030-11-AB-FP	16'-0"	3	3	11	80	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-16-4040-11-AB-FP	16'-0"	4	4	11	100	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-16-4545-11-AB-FP	16'-0"	4.5	4.5	11	105	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-18-3030-11-AB-FP	18'-0"	3	3	11	90	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-18-4040-11-AB-FP	18'-0"	4	4	11	110	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-18-4545-11-AB-FP	18'-0"	4.5	4.5	11	115	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-20-3030-11-AB-FP	20'-0"	3	3	11	100	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-20-4040-11-AB-FP	20'-0"	4	4	11	120	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-20-4545-11-AB-FP	20'-0"	4.5	4.5	11	130	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-20-5050-11-AB-FP	20'-0"	5	5	11	145	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-25-4040-11-AB-FP	25'-0"	4	4	11	145	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-25-4545-11-AB-FP	25'-0"	4.5	4.5	11	155	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-25-5050-11-AB-FP	25'-0"	5	5	11	180	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-25-5050-07-AB-FP	25'-0"	5	5	7	260	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-30-4545-11-AB-FP	30'-0"	4.5	4.5	11	185	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-30-5050-11-AB-FP	30'-0"	5	5	11	210	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75
VS-RSSA-30-5050-07-AB-FP	30'-0"	5	5	7	305	7.0 - 9.0	10.5 x 0.75	0.75 x 17.00 x 3.00	3.25 - 3.75

1. The total combined EPA and weight of all fixtures, brackets, and other attachments mounting to a light pole cannot exceed the EPA and weight rating for a specified pole.
2. Custom products, configurations, options, and accessories available from factory.
3. Satisfactory performance of light poles is dependent upon the structure being properly attached to a supporting foundation of adequate design.

"+" indicates a vibration dampener is standard.

20-FOOT TALL PARKING LOT LIGHTPOLES

Anchor Base Detail



308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

NAFCO® SHX SHOEBOX AREA/FLOOD LED LIGHTING

Catalog #

Project

Comments

Highlights

- Designed, engineered, and manufactured in Wisconsin, USA from premium domestic and imported components
- PPG® Commercial Performance Coatings custom color matching of RAL codes and architectural colors
- IES files, photometric reports, and lighting simulations available from factory design team
- Output options over 40,000 lumens
- Easy driver and LED module access for technology upgrades and maintenance
- Flexible mounting options with custom adapters available

Applications

- General flood and area lighting
- Parking lots, ramps, walkways, and roadways
- Car dealerships, schools, and hospitals
- Hotels and gas stations
- Retail stores and commercial buildings
- Outdoor sports facilities including tennis courts
- Amber and turtle applications
- RGB DMX color tuning applications

Construction & Finish

- Rugged aluminum chassis with excellent heat/impact resistance and hinged electrical access
- Architectural grade powder coat enclosure and black anodized heat sink
- High-grade stainless steel hardware for superior strength and corrosion resistance
- Driver components are fully encased in potting material for moisture and vibration resistance

Light Poles & Arms

- WiLL offers one of the most comprehensive light pole, bracket, and arm catalogs in the industry
- Aluminum, steel, fiberglass, and concrete materials
- Straight, tapered, and decorative designs
- Custom fabrication, finishing, and accessories available
- Dedicated light pole application support team

Compliance & Warranty

- ETL Certification for UL STD 1598 & CSA STD C22.2 # 250.0 for wet locations
- Meets Buy American Act requirements
- Standard 5-year limited warranty with extended factory warranties available
- Turtle and wildlife compliance options (consult factory)

Light Engine & Electrical

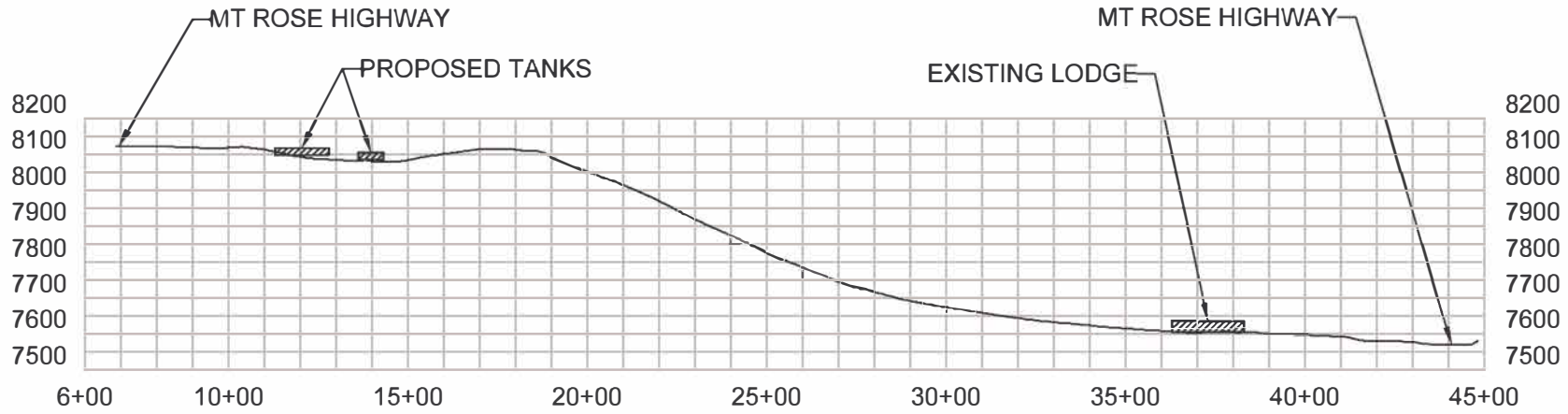
- Premium high-efficiency Chip-on-Board (COB) LEDs wired and bonded directly to circuit board to deliver compact lumen density and added reliability
- Self-sealing optical assembly constructed of optical-grade silicone with 93% typical lighting transmittance
- -40°C to +45°C ambient operating temperature
- Standard AC input voltage of 120-277V 50/60 Hz; up to 480V available
- Isolated 1-10V PWM/3-timer-modes dimmable (standard) and dim-to-off with standby power ≤ 0.5W (optional)
- Power factor of 0.90 min
- Total harmonic distortion of 20% max
- Drivers include integral input Surge Protection of Differential Mode 6kV, Common Mode 10kV per EN 61000-4-5
- Thermally protected secondary 10kA surge suppression available (optional)
- Always-on auxiliary power: 12VDC, 200mA (optional)
- Local specifying engineer recommended for product selection and local compliance
- Licensed electrician required for installation

Control Options

- Integral passive infrared Bluetooth® sensor for motion, photo, dimming, and daylight harvesting control
- Synapse® wireless system for large-scale control of zones, dimming, schedules, and sensors
- DMX control options available from factory

308 N. Brooke St. | Fond du Lac, WI 54935
quotes@willbrands.com | www.willbrands.com

P:\SkyTavernJuniorSkiProgram 0399\01.010 SnowmakingStorage Reno\8 DWG\Planning\X-section.dwg, 2/28/2024 3:03:50 PM, NROBISON



Robison Engineering COMPANY, INC
846 VICTORIAN AVENUE
SPARKS, NV 89431
www.robisoneng.com

DRAWN:NER

DATE:2024-02-28

PREPARED FOR:
SKY TAVERN SKI RESORT

21130 MT ROSE HWY
RENO, NV 89511
(775) 323-5125

0 1/2 1/1
INCH@FULL SCALE

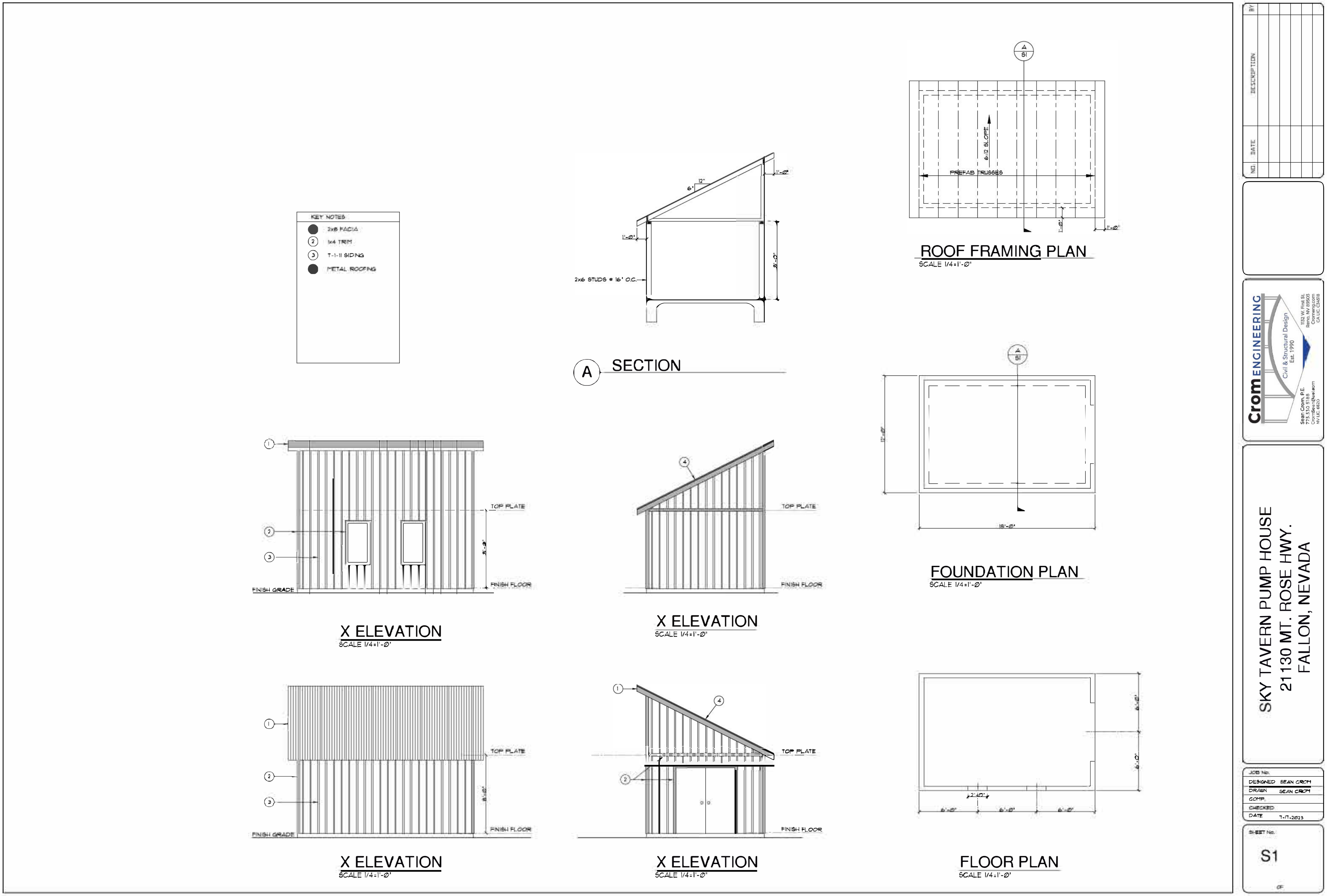
SKY TAVERN SKI AREA SPECIAL USE PERMIT

SITE CROSS-SECTION
THROUGH TANKS AND LODGE

WASHOE COUNTY NEVADA

PROJECT NO:1-399-01.010

WSUP23-0016
EXHIBIT F



WSUP23-0016
EXHIBIT F