

DRAFT MINUTES
ALTA PLANNING COMMISSION MEETING
Thursday, June 2, 2022, 3:00 PM
**Meeting held virtually*
Alta Community Center, 10351 E. Highway 210, Alta, Utah

PRESENT: John Nepstad, Chair
Rob Voyer
Jeff Niermeyer
David Abraham
Maren Askins
Roger Bourke, Town of Alta Mayor (ex-officio)

STAFF PRESENT: John Guldner, Town Administrator
Chris Cawley, Assistant Town Administrator
Polly Mclean, Legal Counsel

OTHERS: Dave Richards, Alta Ski Area Avalanche Department Director
Mike Maughan, Alta Ski Area General Manager

1. INTRODUCTION, DETERMINATION LETTER READING, AND WELCOME FROM THE CHAIR

Planning Commission Chair Jon Nepstad opened the meeting at 3:00 PM. Mr. Nepstad described that the meeting was not taking place at the usual time for monthly Alta Planning Commission meetings.

2. DISCUSSION AND POSSIBLE ACTION: CONDITIONAL USE PERMIT APPLICATION FROM ALTA SKI AREA FOR THE INSTALLATION OF WYSSSEN TOWER REMOTE CONTROL AVALANCHE STRUCTURES ON MOUNT BALDY. MIKE MAUGHAN, DAVE RICHARDS

Planning Commission Chair Jon Nepstad introduced Dave Richards, Alta Ski Area Avalanche Office Director. Mr. Richards thanked the planning commission for convening a meeting to consider issuing a conditional use permit for Alta Ski Area to install Wyssen Tower remote avalanche control systems (RACS) on private lands on Mount Baldy. Mr. Richards stated that the purpose of the project was to maintain and improve skier safety and to provide an alternative to the use of artillery to conduct avalanche mitigation at Alta Ski Area. Mr. Richards described that artillery has been relied upon for avalanche mitigation in Alta since the 1950s, but that the US Army notified Alta Ski Area that the Army would require Alta Ski Area to conclude using artillery by 2025.

Mr. Richards acknowledged that Alta Ski Area had studied various alternatives to artillery, including a small aerial tramway that would deliver avalanche workers and skiers to the top of Mount Baldy, and the installation of a 22-unit RACS array. Mr. Richards described details of the

Wyssen Tower proposal: 9 towers would be installed on private lands, and 2 would be installed on US Forest Service (USFS) lands.

Mr. Richards opined that impacts from installation of the Wyssen Towers would be limited to noise, and added that current artillery-based avalanche mitigation system was possibly louder than the Wyssen Towers would end up being. Mr. Richards responded to several components of the conditional use permit application process, including that various other agencies have provided approvals under their respective authorities. The Bureau of Alcohol, Tobacco, and Firearms (ATF) approved 9 Wyssen Towers, but may be asked to approve an additional two towers in the future.

Mr. Nepstad asked Mr. Richards to describe how many artillery targets would be covered by the proposed Wyssen Towers. Mr. Richards described that 11 Wyssen Towers could affect the avalanche starting zones associated with 20 individual artillery targets. Mr. Richards described that Wyssen Towers deliver a significantly larger explosive payload than other methods, which is part of what would allow Alta Ski Area to reduce target areas on Mt. Baldy. Mr. Nepstad asked Mr. Richards to describe how Wyssen Towers are maintained and re-charged mid-season, and Mr. Richards described that Wyssen Tower explosive magazines are picked up by helicopters and flown to the base area to be restocked with explosives.

Mr. Nepstad asked Mr. Richards whether the Wyssen Towers would disrupt views of the Mount Baldy Ridgeline. Mr. Richards said that the Wyssen Towers would not disrupt ridgeline views except from isolated locations such as from directly underneath Mount Baldy in the Ballroom area.

Planning Commission Member Jeff Niermeyer referred to the USFS approval memo for the two Wyssen Towers proposed on USFS lands, and asked Mr. Richards whether the Wyssen Towers would foreclose the potential for Alta Ski Area to install an aerial tramway to the top of Mount Baldy. Mr. Richards responded that since he did not speak for the Alta Ski Area Board of Directors, he could not definitively confirm that the Wyssen Towers would preclude a tramway to Mount Baldy. However, Mr. Richards opined that as the Alta Ski Area Avalanche Department Director, installing Wyssen Towers would render a tramway to Mount Baldy unnecessary. Alta Ski Area General Manager Mike Maughan described that Alta Ski Area would observe the efficacy of the Wyssen Towers and may conclude in the future that further mitigation methods, such as an aerial tramway, would not be necessary.

Mr. Niermeyer asked Mr. Richards to clarify how many towers the ski area planned to install in 2022. Mr. Richards confirmed that Alta Ski Area would install 5 towers east of the summit of Mount Baldy in 2022, 4 towers on the west side of Baldy in 2023, and would consider whether to install an additional 2 towers later in the future.

Mr. Niermeyer asked Mr. Richards whether Alta Ski Area had considered refinishing the towers to cause them to blend in to the landscape. Mr. Richards described that there are products available to dull the reflective nature of the galvanized steel surface of the towers.

Mr. Niermeyer asked Mr. Richards whether the ATF approval covered all the towers proposed for installation on private land, and Mr. Richards confirmed that this was the case.

Mr. Maughan asked Mr. Richards to describe the phasing of various RACS installation projects in Little Cottonwood Canyon. Mr. Richards described that with the US Army's decision to end civilian use of military artillery, numerous avalanche mitigation operations were seeking to develop alternatives to artillery prior to the US Army's deadline. Hence, Snowbird, Alta, and the Utah Department of Transportation were planning to tightly sequence respective projects during 2022, 2023, and 2024 so that each entity will be prepared when the US Army deadline to stop using artillery came to pass.

Planning Commission Member Dave Abraham asked Mr. Richards to address the map included in the meeting exhibits, and Mr. Richards described which of the Wyssen Tower installations indicated on the map it was actively pursuing, and which were tentative. Mr. Abraham asked whether Alta Ski Area would install tower extensions described in the Wyssen Tower specification sheets, and Mr. Richards stated that the ski area did not plan to install tower extensions.

Planning Commission Member Maren Askins and Mr. Richards discussed the location of the tentative Wyssen Tower installations. Ms. Askins asked Mr. Richards whether the Wyssen Towers would be less impactful on the landscape or the environment than using artillery or other alternatives. Mr. Richards opined that the Wyssen Towers would be less impactful than a tramway and observed that the explosives deployed by the Wyssen Towers would leave a "powder burn" of black or brown explosive residue on the snow surface. Mr. Neirmeyer asked whether the towers would mitigate the problem of unexploded ordinance being left on the slope, and Mr. Nepstad pointed out that artillery rounds exploded into fragments of metal that remained on the landscape. Mr. Richards stated that there would be much less unexploded ordinance associated with the Wyssen Towers,

Mr. Niermeyer asked Mr. Richards how much Wyssen Towers cost, and Mr. Richards described that towers cost \$220,000 installed, each. Mr. Richards opined that it was well worth the cost of installation given how much safer Wyssen Towers are for avalanche workers and the public than artillery.

Mayor Roger Bourke asked Mr. Richards why Alta Ski Area was breaking the installation up into two phases, and how Alta Ski Area determined where to install the towers on Mt. Baldy. Mr. Richards described that the Wyssen Tower installer was working with Alta and Snowbird, and that Alta and Snowbird were on the same timeline to respond to the US Army's order to stop using artillery. Additionally, the ski area preferred to break up the total expense associated with the Wyssen Tower project over two years. Mr. Richards described the ski area's process to determine the most effective locations to install Wyssen Towers, which involved the use of ArcGIS-based software to study the terrain on Mount Baldy, in-person evaluation of the proposed installation sites, and historical knowledge of avalanche activity on Mount Baldy.

Mr. Nepstad recommended that the planning commission approve Alta Ski Area's application for a conditional use permit to install Wyssen Towers on Mount Baldy. **Mr. Niermeyer introduced a motion to approve granting a conditional use permit for the eight Wyssen Towers on Alta Ski Lifts' private property, as requested in their letter dated May 23rd, 2022, subject to the following conditions: that all requirements in the USFS decision letter dated January 2022, and all requirements in the ATF approval letter dated March 3rd, 2021 be incorporated as**

conditions in the conditional use permit granted by the Town of Alta, also including the foundation plans as provided by the tower manufacturer. Mr. Nepstad asked Mr. Niermeyer to clarify how many towers he intended to refer to in his motion, and Mr. Niermeyer stated he was referring to 8 towers. Mr. Niermeyer opined that he hoped the Wyssen Towers would eliminate the need to install a tram to Mount Baldy in the future. **Mr. Abraham seconded Mr. Niemeyer's motion, and the motion was passed with unanimous consent of the planning commission.**

Mr. Nepstad suggested that the planning commission should seek an update on the effectiveness of the Wyssen Towers and possibly take an in-person tour to observe the Towers. Assistant Town Administrator Chris Cawley asked Mr. Niermeyer to forward a transcript of his motion for inclusion in the meeting minutes.

Mr. Guldner thanked the planning commission for working through the ski area's conditional use permit application, and thanked Mr. Richards and Mr. Maughan for their presentation to the commission. Mr. Guldner described that after the commission's approval of a conditional use permit, the Alta Town Council would need to grant a variance to Alta Ski Area for construction on slopes over 30% in steepness.

Mayor Bourke asked Mr. Richards when Alta Ski Area planned to begin construction, and Mr. Richards reported that the projected start date of June 20 had been postponed due to slower-than-anticipated snowmelt.

3. DATE OF NEXT MEETING

Planning Commission Chair Jon Nepstad asked whether the plan to convene a social event was still in the works. Mr. Bourke opined that he'd like to hold such an event, although Mr. Nepstad reported he would be out of town on the regular date for a June planning commission meeting. Alta Ski Area General Manager Mike Maughan asked Mr. Nepstad whether the commission had questions about Alta Ski Area summer plans, and Mr. Nepstad thanked Mr. Maughan for reporting to the commission in detail at the commission's April 26 meeting. Mayor Bourke asked Mr. Maughan about the project to replace the Sunnyside Chairlift. Mr. Maughan reported that weather had delayed removal of the existing lift, and supply chain issues were creating concerns about whether Alta Ski Area would receive all the parts of the new lift in time for ski season. Mr. Maughan described that the ski area may need to run the Albion Lift at the beginning of the season if work on the new lift was ongoing at that time. Mr. Maughan described that the ski area would begin a master plan update focused on responding to climate change and managing demand for access to Alta. Mr. Maughan added the process could address UDOT's imminent decision to pursue a major transportation project through the Little Cottonwood Canyon Environmental Impact Statement.

Alta Ski Area Avalanche Department Director Dave Richards excused himself from the meeting and thanked the planning commission for taking action to grant a conditional use permit.

4. MOTION TO ADJOURN

Planning Commission Member Jeff Niermeyer moved to adjourn the meeting. Planning Commission Member Maren Askins seconded the motion, and the motion was carried with unanimous consent of the commission.

Minutes Approved on _____.

Chris Cawley, Interim Town Manager

Alta Planning Commission

Staff Report



To: Town Council

From: John Guldner and Chris Cawley

Re: Alta Ski Area Request for a Conditional Use Permit for one additional Remote Avalanche Control System (RACS) device on East Baldy

Date: July 11, 2023

Attachments: Application letter; exploder, footing, and shelter plans; staff report and approval letter re: Alta Ski Area's 2022 RACS projects; BW Exploder testing summary report

Background:

Last June you approved a Conditional Use Permit request from the Alta Ski Area for eight (8) RACS in East Baldy Area. There were actually eleven (11) devices, three (3) were on Forest Land and eight (8) were on Alta Ski Area's privately owned property, thereby needing Conditional Use Approval. Please refer to the attached staff memo dated May 25, 2022, for your review of the Wyssen Towers RACS last year.

While this new request is for a different type of exploder, a BW Exploder by Alpine Infrastructure, the same rationale applies to this one as it did to the eight (8) from last year. Alta has always been on the forefront of evolving avalanche mitigation measures. Approval of this BW exploder would continue that tradition and paves the way for future improvement in avalanche mitigation.

It is unfortunate that this location was not included in last year's review/approval but through the evolving experience with avalanche mitigation, this location stands out as needing another RAC installation.

The Ski Area has done an excellent job of explaining the need, location and the installation and operational details of this proposed RAC device. This device is close to the project area for last year's RACS installations and serves the same purpose as the RACS you approved last year.

Please review the attached information. A representative from the Ski Area will be at our next meeting to answer questions.

Staff Recommendation:

Using the same rationale as last year's approval, the staff recommendation is to approve the device as submitted under the same conditions as the RACS approved last year: construction/installation to follow the manufacturer's guidelines and specifications, including future annual inspections, adherence to the relevant Bureau of Alcohol, Tobacco, Firearms and Explosives requirements for such installations and following the same requirements for installation and mitigation as required by the Forest if the installation were on Forest lands.

Last year's staff report and Conditional Use Permit approval letter are attached.

Re: Tank Farm Structure; it would be ideal if the structure could be moved off the actual ridgeline. This can be an item of more discussion at the meeting.

Note: both the installation of the BW exploder and the tank farm structure will be required to be inspected by the Unified Fire Authority and the Town's Building Department.

The Variance to construction on slope over 30% will be addressed by the Land Use Appeal Authority in their next meeting.

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July 9, 2023

Town of Alta

Attn. Chris Cawley
Town of Alta

For Distribution to:
Alta Planning Commission
Town Council, Town of Alta

Alta Ski Area BW Exploder Installation

Project background and explanation:

Alta Ski Area is currently researching a developing technology for improving avalanche mitigation on the East facing slopes of Mount Baldy (East Baldy). East Baldy presents a complicated avalanche challenge for the efforts of avalanche mitigation performed by Alta Ski Area. The starting zones of this terrain lie above a cat road known as the EBT or East Baldy Traverse. This traverse is critical to the operations of the ski area as it is the only connection between the upper portions of the two drainages which comprise the ski area. This road is frequently closed due to avalanche hazard, forcing skiers down and across the base of the ski area so that they may ski from the Albion Basin into the Collins Gulch area and consequently increasing skier density on Devil's Elbow which is the 'easier way' off of the Sugarloaf lift.

Avalanche mitigation on this terrain is currently accomplished through three methods. The first of these methods is that of a Remote Avalanche Control System gas exploder called the Obell-X. Currently four Obell-X exploders are in place in the avalanche starting zones identified as yellow diamonds in Figure 1. The secondary method of mitigation is the use of an Avalauncher gun. This gun is used only as backup to the Obell-X exploders. The use of this Avalauncher is limited to non-operating hours due to the proximity of the Snowbird Ski Resort to the target areas. A final method of mitigation is that of the use of ski patrollers on slope executing mitigation using ski cuts and explosive delivery to the starting zones. This method presents hazard to personnel and is limited by weather and avalanche hazard. Historically several ski patrollers have been captured in avalanches while mitigating this terrain.

One limitation and hazard of using Obell-X exploders is that they must be reloaded and maintained using helicopters during the winter season. Use of helicopters is subject to weather conditions and involves some hazard to personnel. This limitation and hazard, coupled with concerns about the durability and performance of the Obell-X exploder has led Alta Ski Area to continue to explore other new technologies that could improve avalanche mitigation work for the East Baldy Area.

A developing technology that potentially could replace the Obell-X exploders is the BW Exploder. The BW Exploder is designed and manufactured in Wyoming by Alpine Infrastructure. The BW Exploder uses a mixture of Methane and Oxygen to create an explosion in avalanche starting zones. Like the Obell-X exploders, they are installed in fixed locations and operated remotely by computer. Benefits of the BW exploder are that a helicopter is not required to reload them, and they can fire significantly more shots than the Obell-X exploders before needing to be reloaded.



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The BW Exploder sits on a 4' x 4' concrete footing serviced by two 2" High-Density Poly Ethelene (HDPE) gas lines laid on the surface to a small tank farm. This tank farm is a prefabricated structure. The tank farm will sit to the east of the exploder and measures 8' high, by 8' wide, by 10' wide as designed. However, should the land use authority require, the structure could be as small as 4' wide, by 6' wide, by 6' high. This tank farm will be situated on the ridgeline near the existing ticket shack on Sugarloaf Pass between Alta and Snowbird ski resorts. The location of this tank farm is determined by access, property ownership, and the presence of pre-existing infrastructure. Numerous similar tank farms exist within Little Cottonwood Canyon on both the slopes of Mount Superior and Hellgate. The structure is shown in Figure 2. The tank farm will be of earthen color and will not be visible from the valley floor.

The exploder consists of a 24' tower with the detonation chamber mounted to the topmost portion. This device is pictured in figure 3. The exploder will be below the large cliff, will be of earthen color, and not visible from the valley floor.

The location of both the exploder and the tank farm are pictured in figure 4. Also visible in Figure 4 is the property line denoted in red. The Location and height of the proposed tower will not be "ridgeline" as seen in figures 5, and 6. The location of the exploder and property lines are visible in Figure 7.

The gases used for the BW Exploder are not regulated by the Bureau of Alcohol Tobacco Firearms and Explosives (BATFE) in their stored state within the tank farm. The exploder is regulated by BATFE once gases are mixed for detonation. This is similar to the BATFE regulation of the OBell-X device and is permitted under Alta Ski Area's Federal Explosives License/Permit (Type 20, manufacturer, and user of explosives).

Request for Variance and Conditional Use Permit:

Alta Ski Area requests from the Town of Alta the issuance of a Conditional Use Permit for installation of the BW Exploder System on the private lands of Mount Baldy to be installed in the shot 1 start zone identified by the "X" in Figure 7. Alta Ski Area also requests the issuance of a Variance to allow construction of the system on slopes over 30% in steepness.

The system will be installed in terrain of up to 40° in steepness and is similar to other avalanche mitigation devices in Alta which have been previously installed in terrain 50° in steepness. The design allows for the installation of the footing for the device on terrain much steeper than this. The installation teams which do this work are highly experienced in working in this high angle terrain. The installation consists of hand leveling a location, followed by deep rock drilling to secure the footing to the slope.

In reference to Town of Alta code requirements for conditional use:

Under code 10-9-2: Conditional Use permit.

10-9-2 Section A

1. Requirements are met through this process of requesting a permit from the Alta Planning Commission.

10-9-2 Section B.

1. Site plans for this project are depicted in attached images. There will be no required snow removal or erosion control for the project. Further, no roads, pathways, parking or grading will take place. There will be no requirement for access by either fire or police. One accessory structure will be installed (tank farm).
2. These structures do not fit the description of "buildings" by code definition.
3. This device is permitted under BATFE ruling 2022-02 for the installation and use of Remote Avalanche Control Systems. The mixing and detonation of gases is allowed by Alta Ski Area's Type 20 FEL/P issued by the BATFE. Storage of unmixed gases is not regulated by the BATFE under 18 U.S.C. 842(J).

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10-9-2 Section C, D

1. Requirements for this section are met through this process.

10-9-2 Section E.

2. The proposed use of this location meets the requirements for conditional use. The location is desirable to provide an installation of equipment which will provide for an increased level of safety for the employees and guests of Alta Ski Area. Thus, an increase to the general wellbeing through the protection of life and property.
3. Use of the proposed equipment will not be detrimental to the health and wellbeing of persons residing in the general vicinity. Conversely, the installation by design is to increase the safety of those persons.

In reference to Town of Alta code for Variances:

Under code 10-5-11: Variances.

10-5-11 Section A-E.

Pursuant to this section. It is understood by the applicant the application process and the appeal authority. It is understood that the burden of proof lies upon the applicant, and that applicant shall mitigate any harmful effects of the variance.

Under code annotated 10-9a-702. Variances

Applicant responses below meet the requirements of:

(2)(a)

- (i) Literal enforcement of the variance for slope would be unreasonable in the case of this project. The terrain is substantially steeper than the 30% stated in the code. As an avalanche mitigation tool, the installation must be installed in steep avalanche terrain.
- (ii) There are special circumstances which apply to this area based on avalanche hazard and limited other methods of avalanche mitigation are available.
- (iii) Granting the variance is desirable for the operation of the ski area and opening of ski terrain moving into the future.
- (iv) The isolation of the terrain and the limited disturbance of installation will not by any definition be contrary to the public interest or the general plan. By definition, the improved level of safety provided by the installation is in fact in the interest of the public.
- (v) The applicant seeks to observe the spirit of the land use ordinance and will continue to do so.

(2)(b)

- (i) Enforcement of the land use ordinance will not cause undue hardship under subsection (2)(a):
 - A. The property for which the variance is sought consists of private property on Mount Baldy consisting of topographically extreme terrain.
 - B. Due to the extreme nature of the terrain in topography, conditions are not general to the neighborhood.
- (ii) The request for the variance is terrain based and not economic or self-imposed.

(2)(c)

- (i) Special Circumstances apply based on the needed protection of life and property as well as the circumstances regarding extreme terrain.
- (ii) Similar installations have been installed and permissions granted within the Town of Alta on both public and private lands.

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Summary:

Alta Ski Area requests approval of a Conditional Use Permit and Slope Variance to install a single BW Exploder and associated tank farm on the slopes of Mount Baldy to begin in August 2023. The Installation will increase the level of safety provided to the employees and customers of Alta Ski Area. Further, the installation will allow the ski area to provide travel on the East Baldy Traverse on a more reliable basis. It is the opinion of Alta Ski Area that there exists an overwhelming precedent for the installation of this system within the mountainous terrain of Alta and upper Little Cottonwood Canyon based on the system's similarity to avalanche mitigation devices previously approved on both public and private lands and installed by Alta Ski Area and the Utah Department of Transportation within the Town of Alta.

The installation and testing of this new device will provide Alta with improved ability for avalanche mitigation in all weather conditions. Further, the testing of the device will help to move the avalanche industry forward with the development of new tools to better provide for the protection of life and property.

Thank you very much for your consideration of this matter. We look forward to hearing a response from you soon.

Sincerely,

David Richards
Alta Ski Area
Director, Avalanche Office

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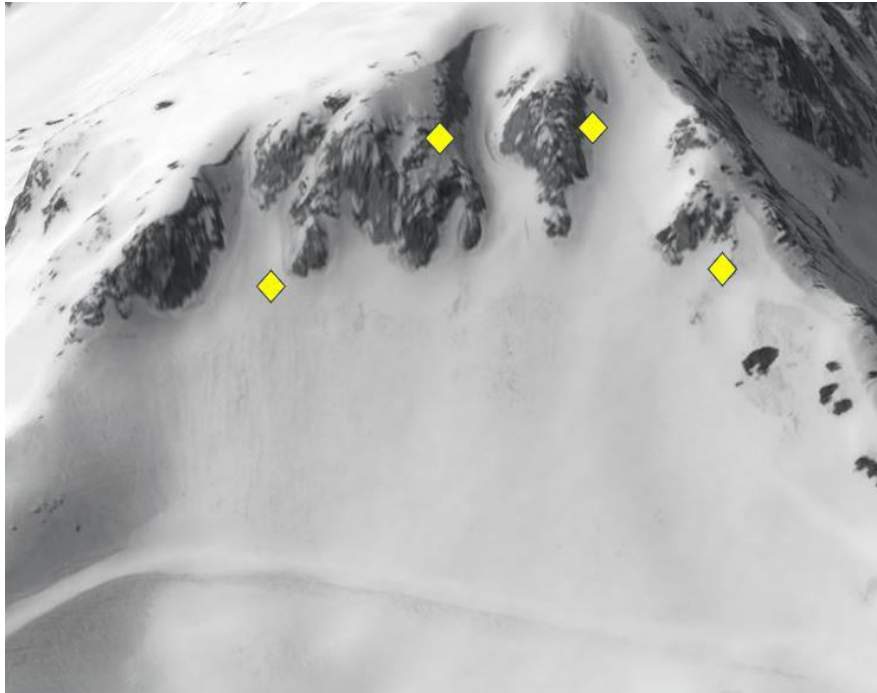


Figure 1



Figure 2

The structure will be of earthen color.

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Figure 3

The installed exploder will be a single tower and without the extra struts pictured here.

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Figure 4



Figure 4

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Figure 5

Location and height of proposed device viewed from below. The device will be of earthen color.
(Note existing Obell-X devices for reference)

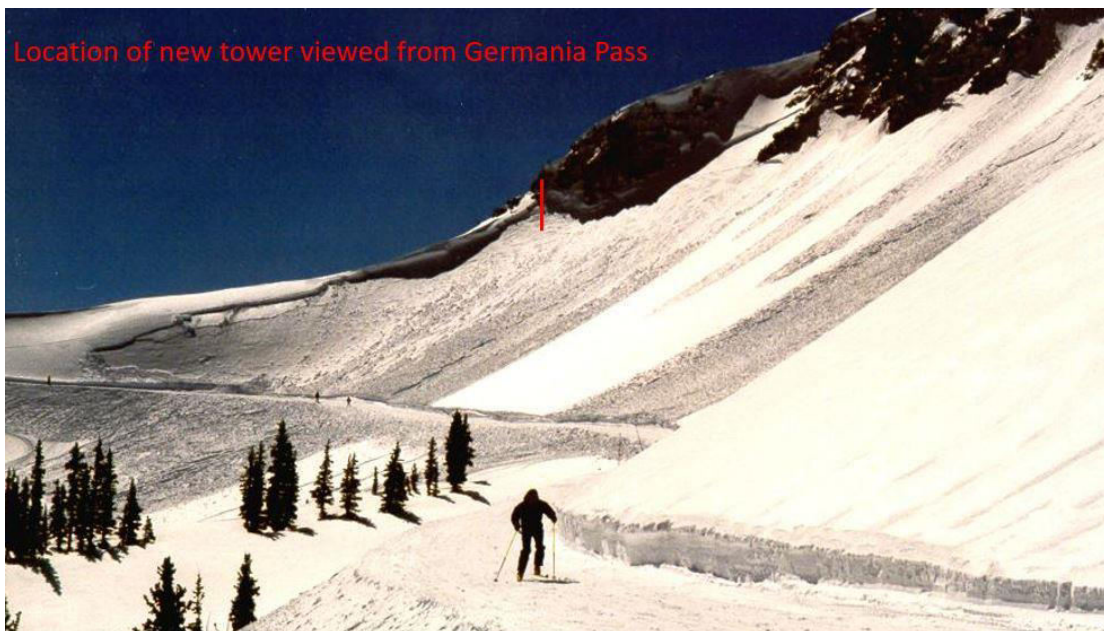


Figure 6

Location and height of proposed device viewed from Germania Pass.

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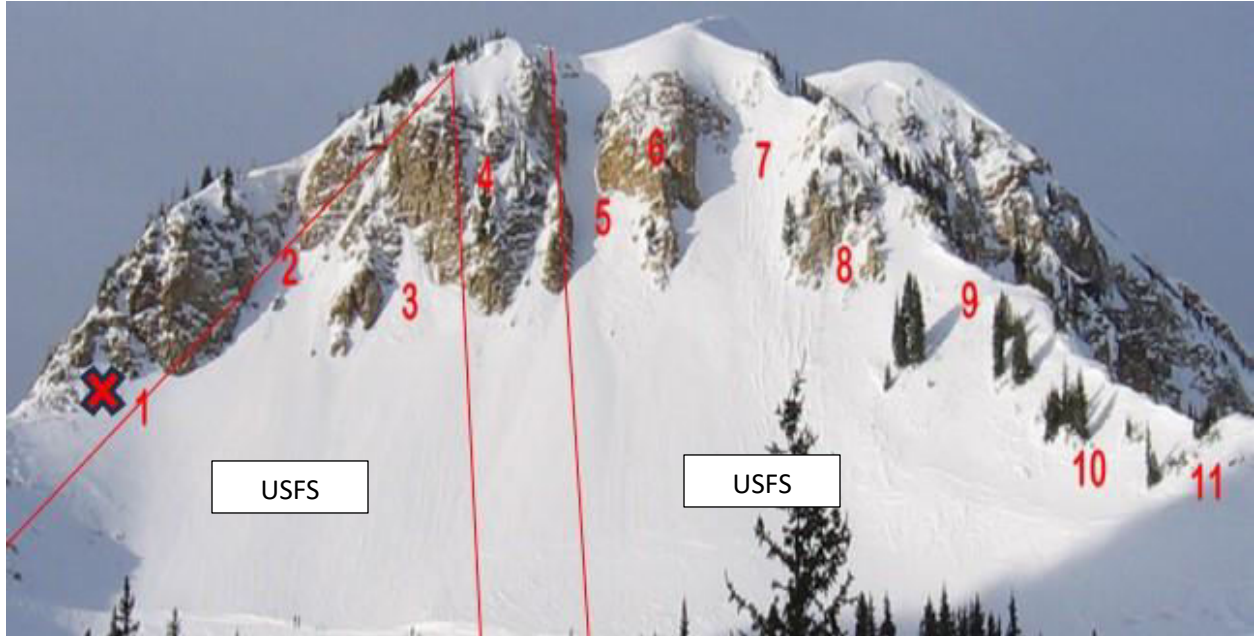
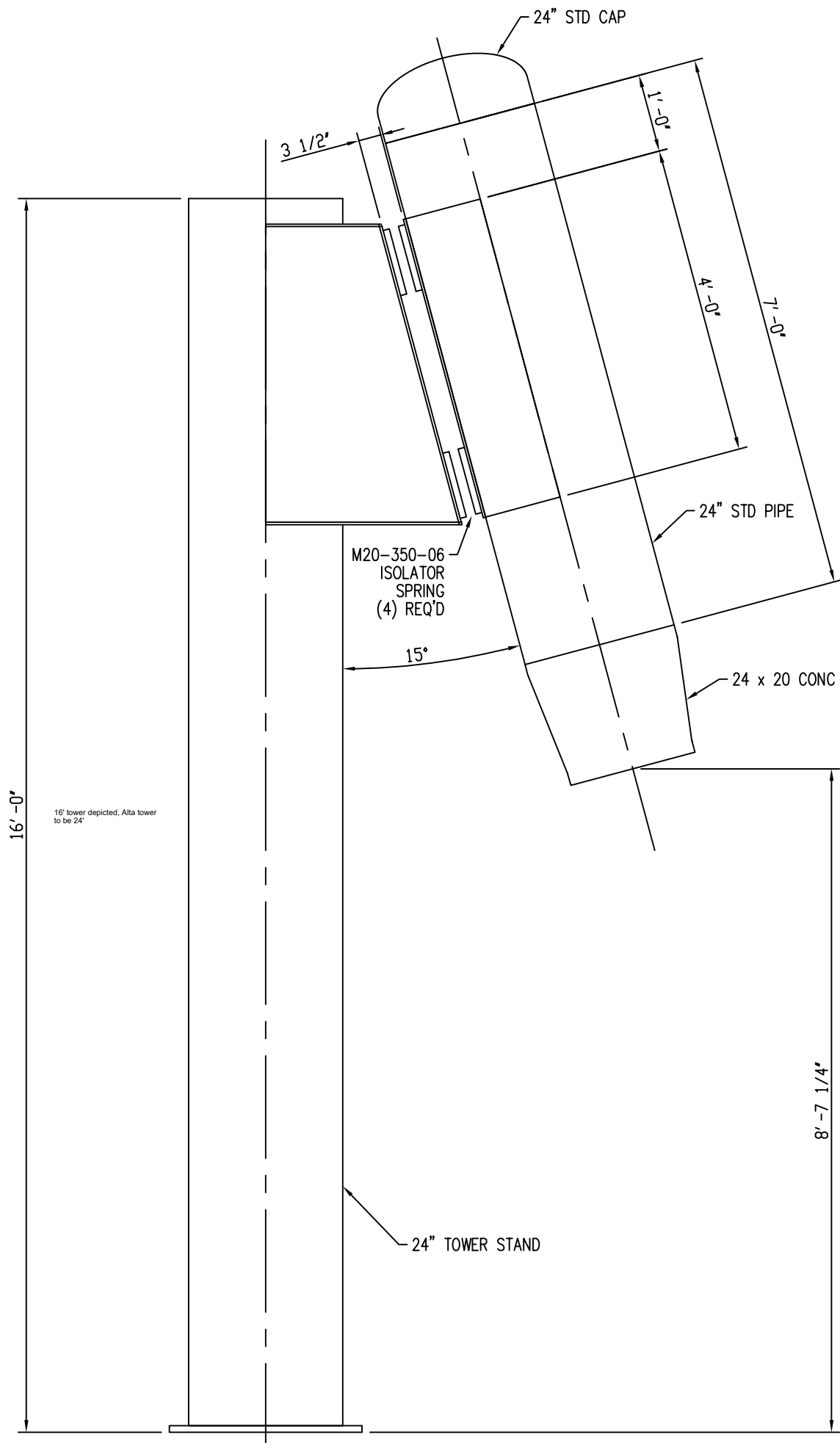
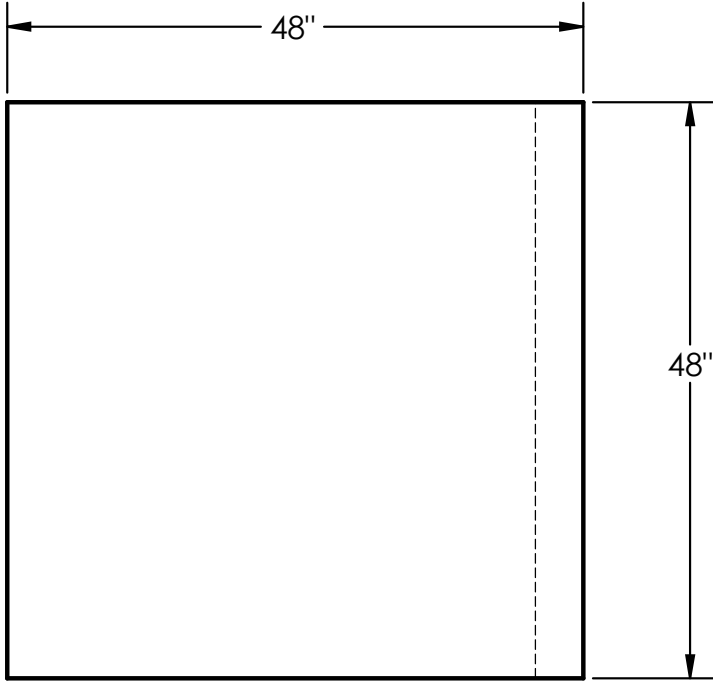


Figure 7
Exploder location denoted by "X". Property Lines shown.

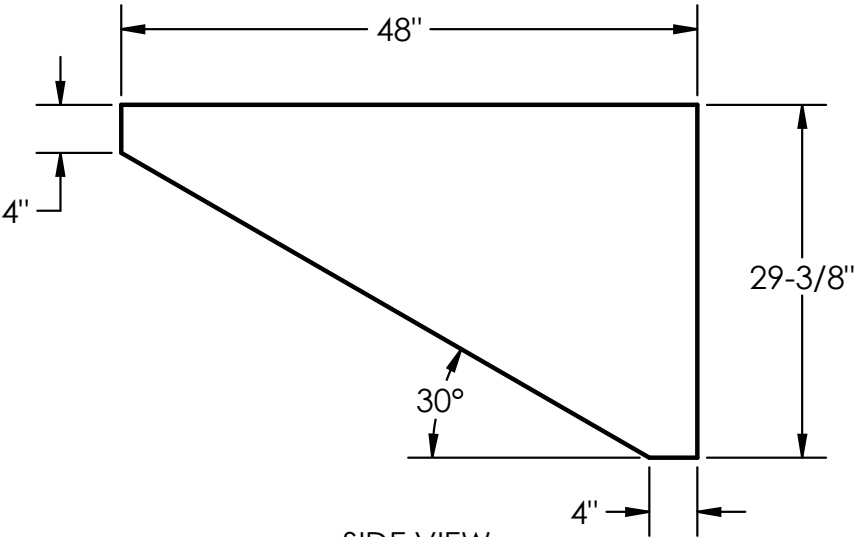
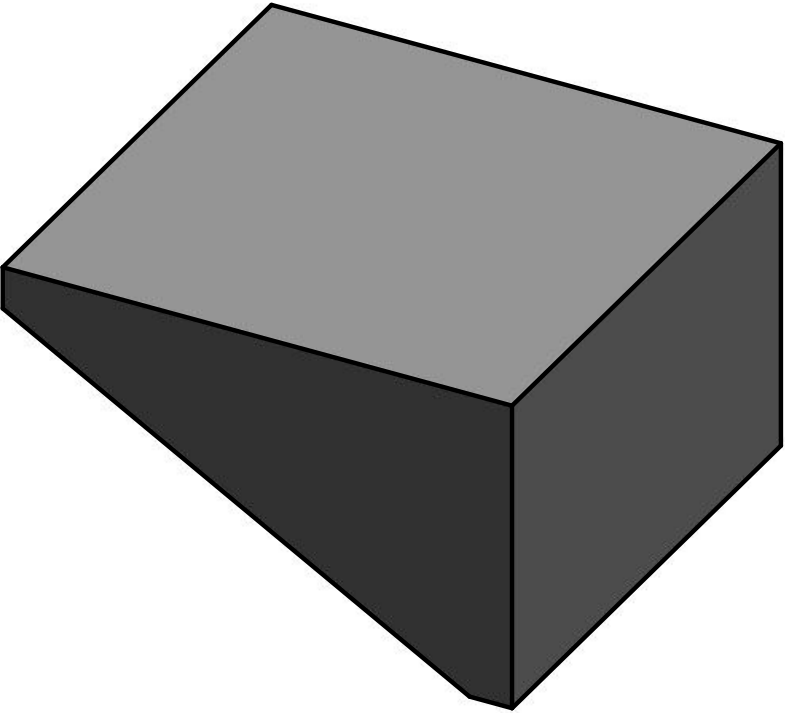


REVISIONS		
REV.	DESCRIPTION	DATE
0	ISSUED FOR APPROVAL	5/8/2023

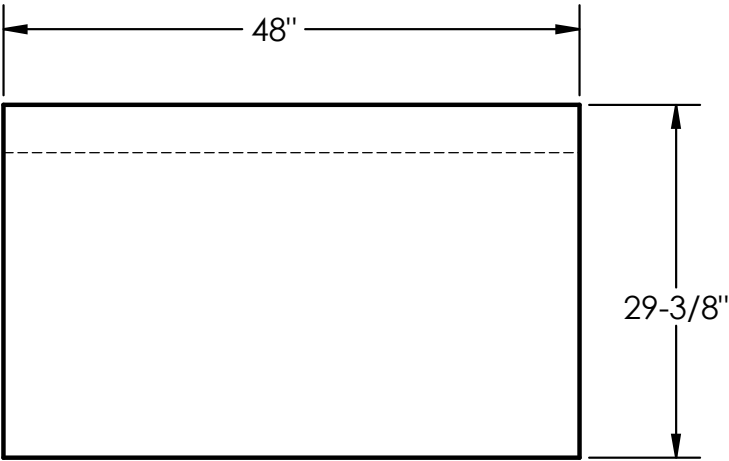


TOP VIEW

Depth and Diameter of anchor rod
to be determined by soils/rock



SIDE VIEW



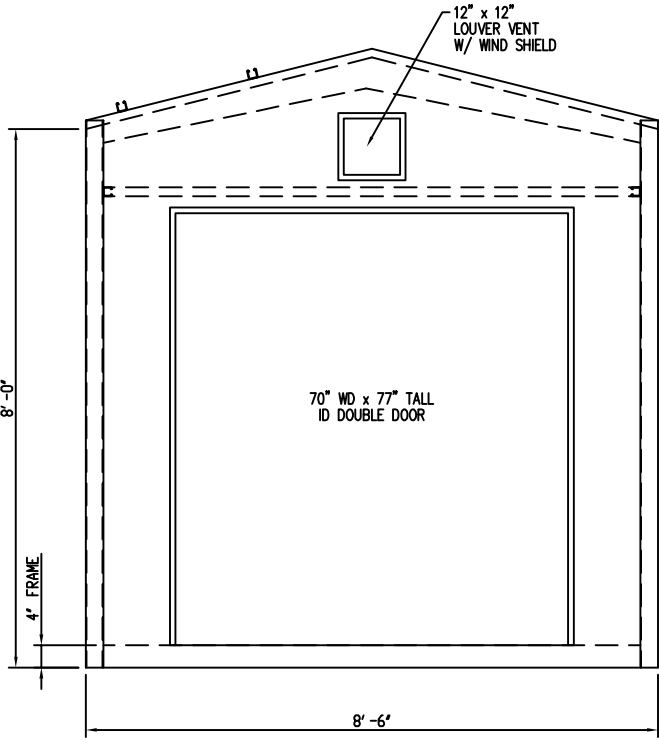
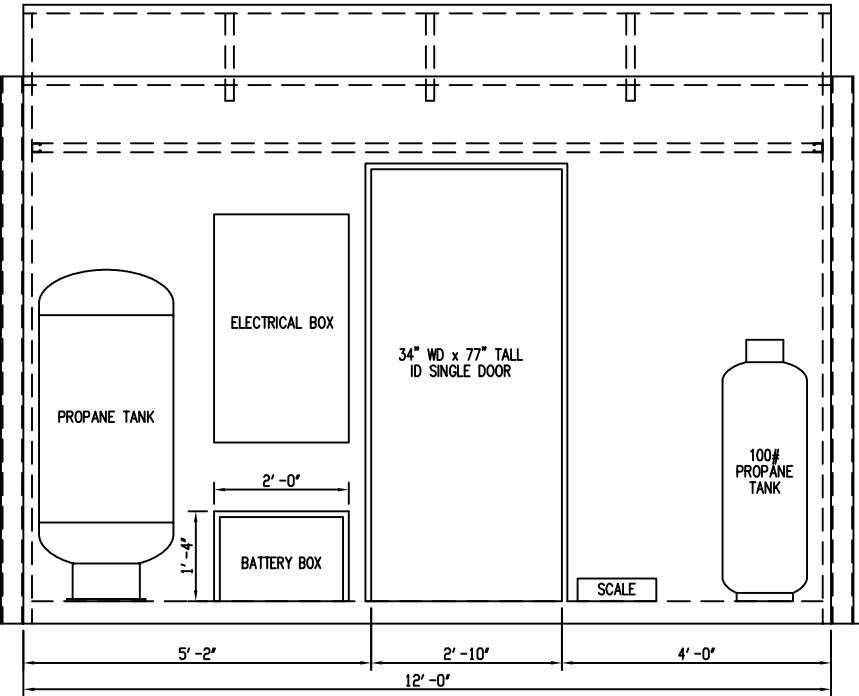
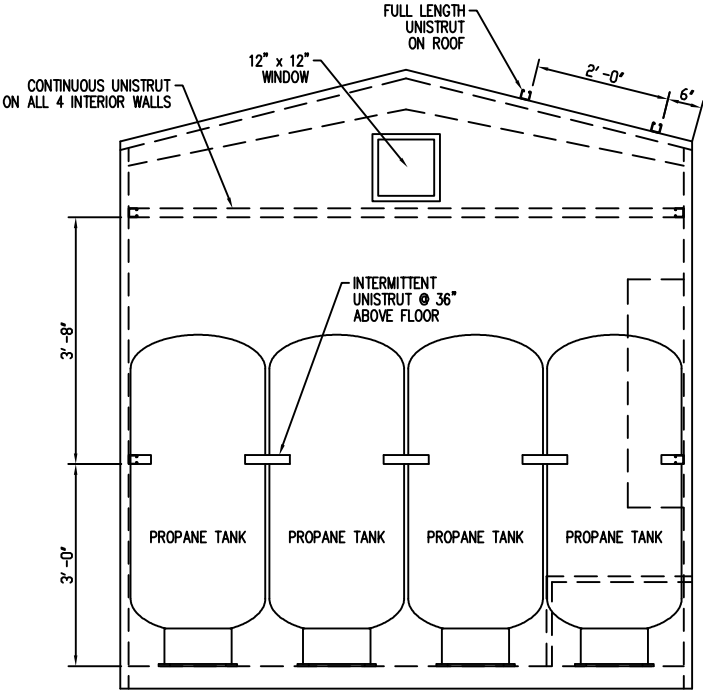
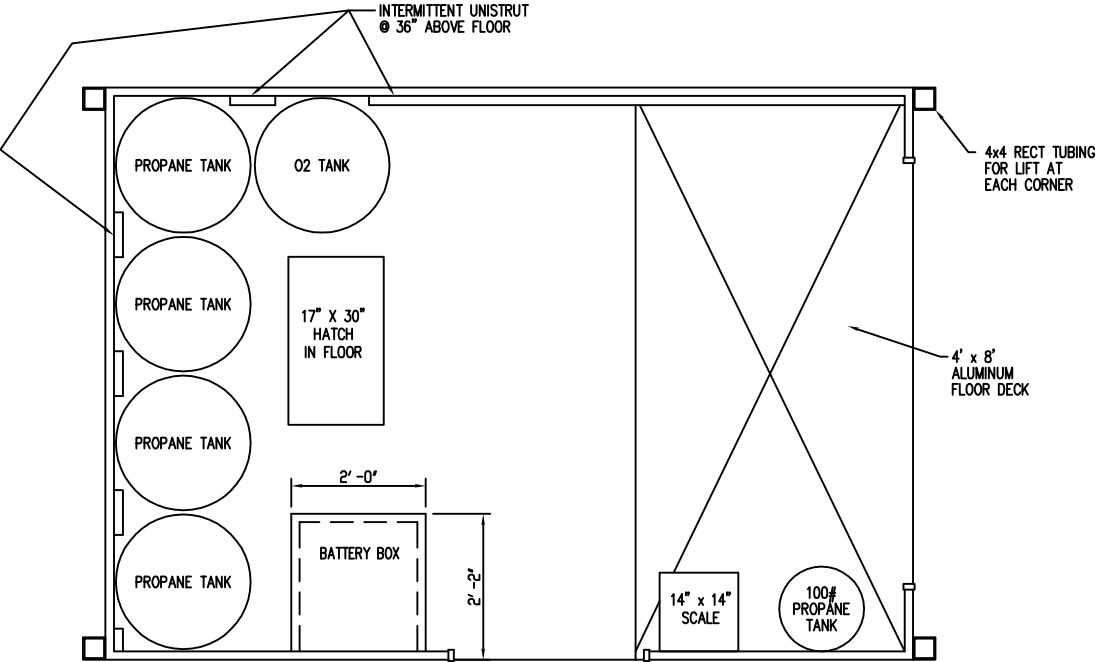
BACK VIEW

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	NAME	DATE	ALPINE INFRASTRUCTURE		
DRAWN	JBB	5/8/2023	TITLE: GASX TOWER PAD		
CHECKED					
			SIZE B	DWG. NO. AVI-001	REV 0
			Normal-weight Concrete DO NOT SCALE DRAWING		SCALE: 1:16WEIGHT: 3311 SHEET 1 OF 1

Tank Farm similar.

Alta shed to be custom built to size. Propane depicted to be Methane for Alta BW Exploder.



May 25, 2022

Staff Memo to the Alta Planning Commission

RE: Alta Ski Area Request for a Conditional Use Permit for eight (8) Wyssen Tower Remote Avalanche Control Systems on Mount Baldy. Eleven (11) total, but three(3) on Forest property, eight (8) on private property under Planning Commission purview.

The Alta Ski Area (Alta) is requesting a Conditional Use Permit (CUP) to install 11 Wyssen Tower Remote Avalanche Control Systems (RACS), 8 on their private property and 3 on Forest property, in the Mount Baldy Area.

Alta's letter of application and background materials on the Wyssen Towers, Department of Justice ATF Approval letter and Forest Service approval letter for the towers on Forest property are attached. The application letter and attachments provide a detailed description of the proposal.

The Forest Service has jurisdiction over the RACS installations on Forest property. The town has jurisdiction over the private property requests. The RACS on Alta's property are property zoned FR-50 and require CUP approval prior to construction. They also require a variance since they will be constructed on slope over 30%, but that is an issue for the Land Use Appeal Authority and will be dealt with separately.

In the FR-50 zone, anything but a single-family dwelling and accessory uses to single family dwellings requires a CUP. The ski area is a conditional use under "Commercial and private recreation" and the RACS qualify as conditional uses since they are "accessory uses and structures customarily incidental to a conditional use."

10-6A-3: CONDITIONAL USES:

All conditional uses are subject to sections [10-6A-4](#) through and including [10-6A-9](#) of this article, except that the regulations of sections [10-6A-4](#) through [10-6A-9](#) of this article may be modified by the town council as they relate to Public Use and Quasi-Public Uses.

Accessory uses and structures customarily incidental to a conditional use.

Commercial and private recreation.

Staff analysis of Alta's CUP application:

The requirements don't really apply to the current RACS proposal. Those requirements, 10-6A-4-9, are attached separately. The requirements, established over 50 years ago, anticipated dealing with more traditional buildings and structures, not modern-day remote-controlled avalanche mitigation systems. With Alta's request there are no issues with the standard requirements such as lot size, coverage, parking, setbacks, waterway setbacks or wastewater systems. Alta will follow the Forest approvals revegetation plan for any disturbance, even on their private lands. It seems the only applicable regulations would be slope, height and building material. Slope will be dealt with by the Appeal Authority. Height is determined by the avalanche paths and terrain. Building material has been determined by the design requirements of the specialized manufacturer of the racs.

Alta's application letter does an excellent job of defining the installation, character and need for the Wyssen Towers. The addition of the Department of Justice's ATF approval letter, the Forest Service

Decision Memo and the Foundation Instruction and Assembly information of the Wyssen Avalanche Structures give even more depth to the project and need. The Forest Service has jurisdiction over any structures on Forest property and has given their approval. Alta will follow the same requirements of the Forest Service and the ATF approval and conditions for the installation of the structures on their private land now under Planning Commission purview.

These RACS will replace the use of military weapons for avalanche control, and the hazards associated with the use of military weapons. Plus, the Department of Defense has targeted 2025 for the discontinuation for the use of military weapons for avalanche control. It is best to get ahead of that deadline with the installation and use of modern alternative avalanche control methods like the RACS in this request.

The proposed RACS, if successful, would eliminate the need for a tram to Mount Baldy to transport ski area personnel to conduct avalanche control with hand charges, exposing those personnel to both avalanche and explosive risk.

Recommendation

Staff recommends approval of the structures as submitted, with the same requirements and conditions issued under Forest Service and Department of Justice ATF approval letters as attached as well as the Wyssen Avalanche Structure Foundation installation instructions, also attached.

MAYOR
ROGER BOURKE

TOWN COUNCIL
CAROLYN ANCTIL
JOHN BYRNE
SHERIDAN DAVIS
ELISE MORGAN



TOWN OF ALTA
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TTY 711

June 5, 2022

Dave Richards Director
Alta Avalanche Office
P.O. Box 8007
Alta, Utah 84092-8007

Re: Conditional Use Permit Approval for 8 Wyssen Towers on Mount Baldy

Dear Dave:

On June 2, 2022, the Alta Planning Commission met, discussed, and approved Alta Ski Area's (Alta) request to construct eight (8) Wyssen Tower Remote Avalanche Control Systems (RACS) in the locations identified on Alta's private land on Mount Baldy.

The Commission's approval was subject to the conditions and requirements from your letter to the Planning Commission and Town Council of May 23, 2022, The Forest Service Decision Memo of January 2022, The U. S. Department of Justice's Bureau of Alcohol, Tobacco, Firearms and Explosives letter dated March 3, 2021, the Foundation Instructions for the Wyssen Avalanche tower LS12-5 and the May 25, 2022, Staff Memo to the Alta Planning Commission, all of which are attached hereto.

The Commission commended you on the completeness of your application and description of the project during the meeting. During that discussion, the earlier idea of a tram to service Mount Baldy for avalanche control operations was discussed. The discussion evolved around the thought that if the RACS worked as they should, the need for a tram to Mount Baldy would be eliminated. The Commission emphasized that point and hoped that the RACS would eliminate the need for that tram. You also noted that the manufacturer will spray the towers with a watershed friendly solution so the towers will more quickly dull from exposure to the elements to blend in more with the surroundings.

The Commission realized that the next step in this request is a request for a variance the Land Use Appeal Authority to install the RACS on slope over 30% on Mount Baldy. The Commission realized that the very nature of ski areas and avalanche control devices requires construction on slope over 30%. The Commission wished to express their recommendation for a positive consideration of that variance request to the Appeal Authority for the installation of these state-of-the-art RACS.

Congratulations on your successful request. Best of luck with the installation this summer.

If you have any questions, please don't hesitate to contact me.

Best!

John

John H. Guldner
Town Administrator
Town of Alta

Attachments

CC: Alta Planning Commission
Alta Town Council
Polly McLean
Mike Maughan

Brandt Seitz

BW Gas Exploder Testing Summary

05/26/2023

Blast Wave Evaluation of Prototype “BW” Remote Avalanche Control System

Background:

Remote Avalanche Control Systems (RACS) are reusable explosive devices that are used to trigger avalanches as part of avalanche control practices for ski resorts, highway corridors, and other developed or recreational areas in avalanche terrain. These devices can be activated electronically from a great distance to reduce the risk to avalanche control personnel who might otherwise be required to navigate avalanche terrain to use handheld explosive charges. In general, RACS either detonate a solid explosive (SE) charge or ignite a combustible gas mixture such as hydrogen or propane and oxygen to generate a directed gas explosion (DGE). The most common RACS deployed today include the Wyssen Tower – which is a mast-like structure that releases a solid explosive on a tether to be detonated above the snowpack, Gazex – which is a DGE system that employs a large diameter pipe angled towards the snow surface to direct the combustion propane and oxygen, and the O’Bellx – which is an egg-shaped DGE device that combusts a mixture of hydrogen and oxygen.

In addition to these common RAC systems, Eric Bressler of Alpine Infrastructure has been developing a new DGE system known as the BW exploder. This exploder uses an inverted combustion chamber and, in its prototype form, has been configured to combust a variety of gases including methane and hydrogen (Figure 1).



Figure 1 – Prototype BW Exploder RAC System designed by Eric Bressler of Alpine Infrastructure installed at Jackson Hole Mountain Resort for system testing.

In order to evaluate and enhance the design of the BW system, it was vital to establish a baseline of system performance as well as provide a means of comparison between existing avalanche control tools such as pentolite charges and existing RAC systems. Fortunately, there

has been a significant amount of research conducted over the past 100 years focusing on evaluating the efficacy of avalanche explosives. However, until recently, with the works of Bones¹, Simioni², Schweizer³, Gubler⁴, Larson⁵, and Seitz⁶ among others, there had not been a complete evaluation and comparison of in-situ avalanche control explosives, nor had an established test methodology and suitable measurement system been developed.

Based on this body of past research, both the test methodology developed by Simioni and the measurement equipment developed by Seitz were utilized to evaluate the strength, size, shape, behavior, and other characteristics of the blast waves from BW prototype exploder. The test methodology focuses on collecting air pressure measurements to characterize the peak overpressure, pressure rise rate, and energy equivalent of explosive blast waves as well as the radial decay and directionality of those parameters. The measurement equipment utilized was a subset of the original equipment developed by Seitz and consisted of six high-pressure acoustic microphones (i.e., pressure sensors) (Figure 2), connected to several independent, wireless, Raspberry Pi-based data, high-speed acquisition systems (Figure 3).



Figure 2 – 10 psi Larcor microphones used to measure explosive blast wave air pressures.



Figure 3 – Raspberry Pi-based data acquisition systems used to collect high-speed pressure data from Larcor microphones.

¹ Bones, J. A. (2012). Experimental Investigation of Interactions Between Explosive Detonations and the Resulting Snowpack Response (Issue November). Montana State University.

² Simioni, S. (2017). The Effects of Explosions on Snow. ETH Zurich.

³ Simioni, S., & Schweizer, J. (2018). Comparing Two Methods of Artificial Avalanche Triggering: Gas vs. Solid Explosives. International Snow Science Workshop, 158–161.

⁴ Gubler, H., & Wyssen, S. (2002). Artificial release of avalanches using the remote controlled Wyssen Avalanche Tower. International Snow Science Workshop, 41(0), 40–45.

⁵ Larson, Robb, et al. Measuring Explosive Airblast of Remote Avalanche Control Systems (RACS), 2022, rosap.ntl.bts.gov/view/dot/63352/dot_63352_DS1.pdf.

⁶ Seitz, Brandt. Measuring Explosive Airblast of Remote Avalanche Control Systems, Montana State University - Bozeman, 2021, <https://scholarworks.montana.edu/xmlui/handle/1/16418>.

Test Setup:

On Friday, May 26, 2023, two tests of the prototype BW exploder using a mixture of methane and oxygen were conducted at the Jackson Hole Mountain Resort near Jackson, Wyoming. The exploder was installed at the top of a snowy slope near the top of the Thunder chairlift (Figure 1). This device was located at an elevation of about 9,360 feet on a northerly slope with an incline of approximately 35° . Conditions at the time of testing were overcast with temperatures of about $45\text{--}55^\circ\text{F}$. The snowpack exhibited typical late-season conditions with surface melt and an overall moist to wet moisture content.

Overall, conditions were similar to those experienced by Seitz in his evaluation of in-situ RAC systems and solid explosives. However, it is important to note that the installation of the prototype exploder required it to be erected just off the edge of an access road at the top of the slope. As a result, the mouth of the exploder's combustion chamber was initially directed at a large, flat (i.e., 0° slope angle), and dense snowbank (rather than directed at an acute angle with the snow-covered slope below as would be typical for an operational RAC system) which had developed as the snow melted and receded from the access road. Efforts were made to taper this horizontal snowbank back into the natural slope angle prior to testing to better represent typical site conditions at an operational RAC system. These efforts were successful, but a small portion of the snowbank remained below the exploder which may have resulted in a greater portion of the blast wave being reflected upward rather than directed downslope towards the pressure sensor array.

Both tests of the BW exploder were conducted with the following arrangement of pressure sensors shown in the plan view illustration below (Figure 4) where the plot origin represents the mouth of the exploder's combustion chamber and the 0° axis is defined to be directly downslope (i.e., the slope's fall-line) of the exploder. Microphones were installed parallel to, and approximately 6-in above, the surface of the snow as was done for both Simioni's and Seitz's work.

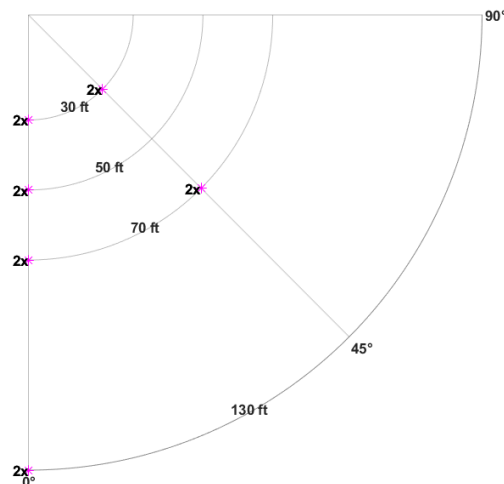


Figure 4 – Arrangement of pressure sensors utilized for both tests of the prototype BW exploder. NOTE: “2x” indicates the number of air pressure measurements taken at each sensor location, the plot origin represents the location of the exploder, and the 0° axis is directly downslope of the exploder.

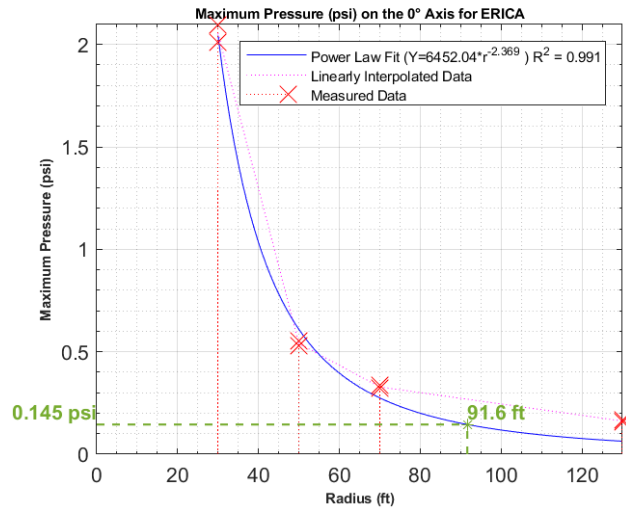


Figure 6 – Axial slice plot showing the peak pressures along the 0° axis as well as the power law curve fit to those measurements and the power law-interpolated location of the 1 kPa or 0.145 psi reference overpressure.

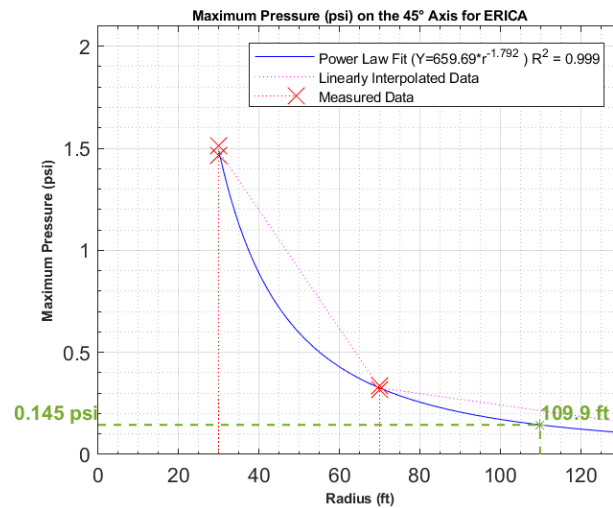


Figure 7 – Axial slice plot showing the peak pressures along the 45° axis as well as the power law curve fit to those measurements and the power law-interpolated location of the 1 kPa or 0.145 psi reference overpressure.

Table 1 – Table of power law curve fit coefficients for peak pressure measurements of the prototype BW exploder.

Axis	Power Law Coefficient a	Power Law Coefficient b	R ²
0°	6452	2.37	0.991
45°	660	1.79	0.999

The energy equivalent and pressure rise rate results exhibited the same directionality and repeatability trends as described above for peak pressures. However, the radial decay of energy equivalent was found to be the strongest along each axis, followed by pressure rise rate, and finally by peak pressures (this is consistent with the prior findings of Seitz). In other words, the energy equivalent of the blast wave decays most quickly with radial distance and the overpressures decay least rapidly with radial distance. For brevity, only the energy equivalent and pressure rise rate power law curve fit coefficients are shown below (Table 2 and Table 3).

Table 2 – Table of power law curve fit coefficients for energy equivalent of the prototype BW exploder.

Axis	Power Law Coefficient a	Power Law Coefficient b	R ²
0°	232	3.12	0.992
45°	25	2.61	0.993

Table 3 – Table of power law curve fit coefficients for pressure rise rate of the prototype BW exploder.

Axis	Power Law Coefficient a	Power Law Coefficient b	R ²
0°	8.21e6	2.45	0.995
45°	3.01e6	2.17	1.000

Summary:

Several conclusions, comparisons, and trends can be discussed from the above results. First, as was observed in Seitz's previous work (and mentioned above), the BW exploder seems to follow the same trends observed for other avalanche explosives and RAC systems whereby the radial decay of energy equivalent was found to be the strongest, followed by pressure rise rate, and then by peak pressure. One interesting departure from Seitz's previous body of work, however, was the magnitude of the radial decay of each of the three parameters. More specifically, it was previously observed that most explosives had peak pressure power law exponents of 1.2-1.7, energy equivalent power law exponents in the range of 1.9-2.5, and pressure rise rate power law exponents of 1.5-2.2. The testing of the prototype BW exploder however indicated power law exponents of 1.8-2.4, 2.6-3.1, and 2.2-2.5, respectively. Taken at face value, this could indicate that the BW simply has a stronger radial decay of its blast wave than previously tested explosives, however, as previously noted, it was found that the power law exponent seemed to exhibit a stronger correlation with site conditions than explosive. This could provide some evidence that the previously mentioned snowbank did, in fact, reflect a portion of the blast wave upward resulting in a greater radial decay of the blast wave at the snow's surface – though additional testing and a finer spatial resolution of pressure sensors would be necessary to confirm. Beyond the comparisons to previously observed trends, these results also provide an opportunity for comparison to previously tested explosives and RAC systems.

Comparing the BW first to other DGE systems, it was found that the BW behaves quite similarly to the O'Bellx RAC system in terms of absolute magnitude of peak pressures and energy equivalents (with slightly higher magnitudes than the O'Bellx at distances below about 70 feet). This, in turn, places it below a 0.8 m³ and 1.5 m³ Gazex system for peak pressures and energy equivalents (Figure 8 and Figure 9). In terms of pressure rise rate magnitudes, however, the BW was found have higher pressure rise rates than both the O'Bellx and 0.8 m³ Gazex systems for distances below about 125 feet (Figure 10). At distances beyond 125 feet, all devices generally approach similar pressure rise rates (as described in Seitz's previous work).

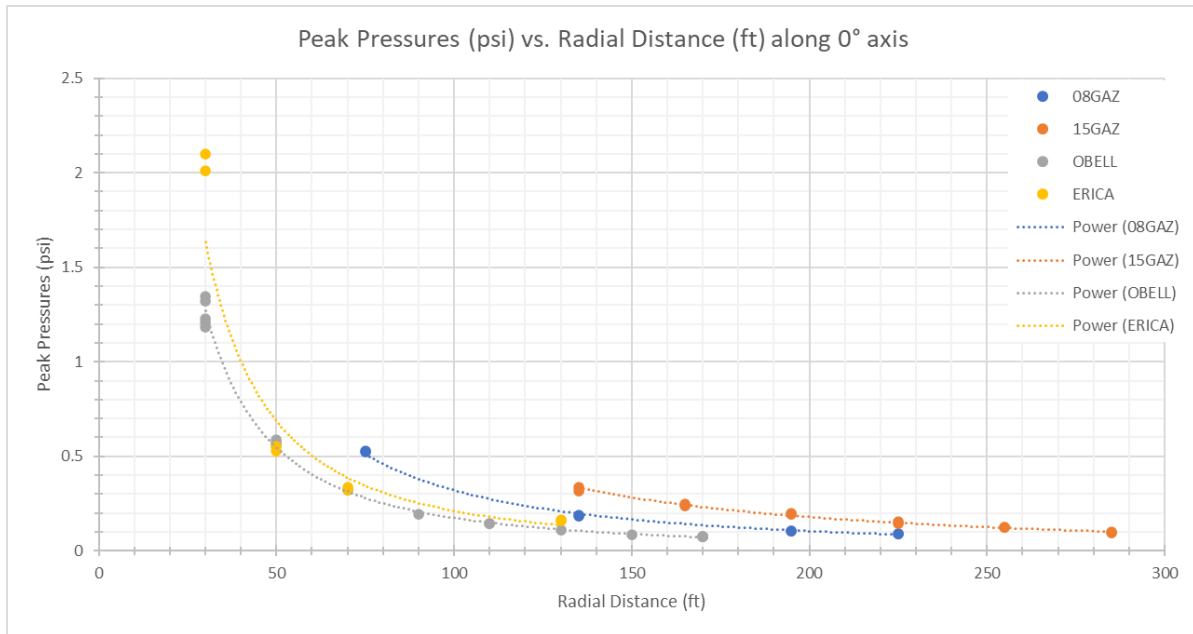


Figure 8 – Comparison of BW peak pressure results (labeled “ERICA”) to other DGE systems along the 0° axis.

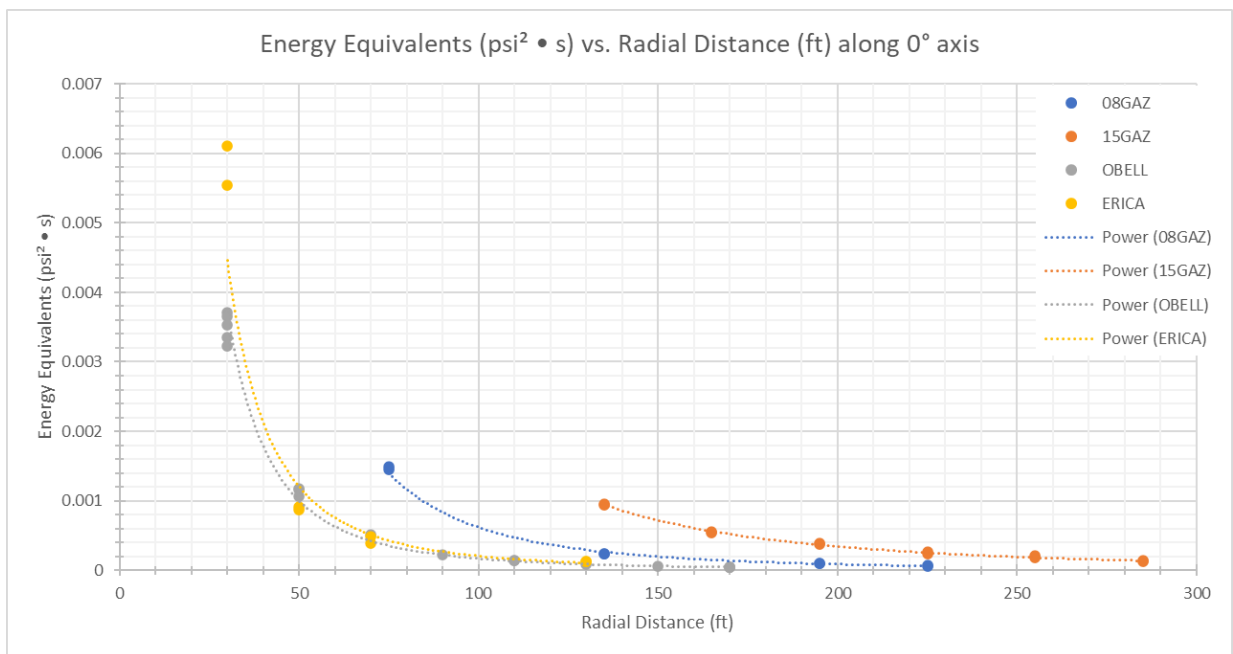


Figure 9 – Comparison of BW energy equivalent results (labeled “ERICA”) to other DGE systems along the 0° axis.

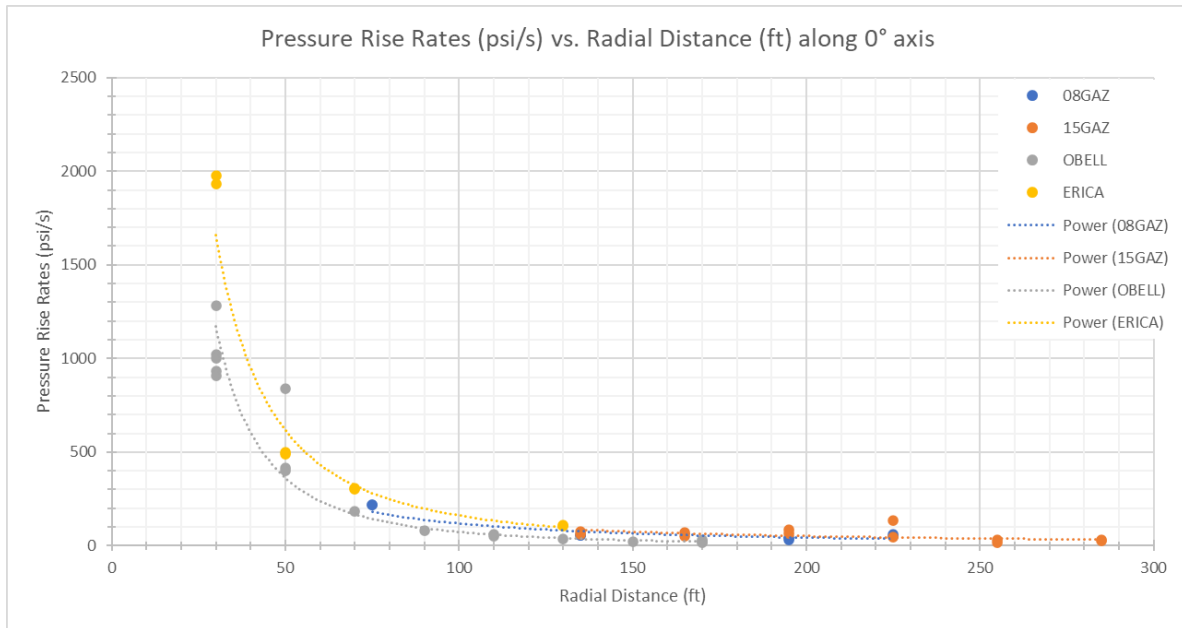


Figure 10 – Comparison of BW pressure rise rate results (labeled “ERICA”) to other DGE systems along the 0° axis.

Comparing the BW exploder instead to various previously tested solid explosives, it can be shown that the BW exploder exhibited similar overpressures as (though slightly lower than) a common 2-lb Pentolite hand charge detonated 2 m above the snow surface. The BW exploder does, however, fall below the overpressures measured for gel emulsion and Pentolite-based Wyssen tower charges detonated 2 m above the snow surface as well as a simulated Pentolite-based Avalanche Guard mortar charge buried 30 cm below the snow surface (Figure 11). As for energy equivalents, the BW exploder was found to fall below the solid explosive charges at least up to radial distances of about 100 feet (Figure 12). Lastly, pressure rise rates measured for the BW exploder actually exceeded those measured for the 2-lb Pentolite hand charge at radial distances up to about 125 feet (Figure 13).

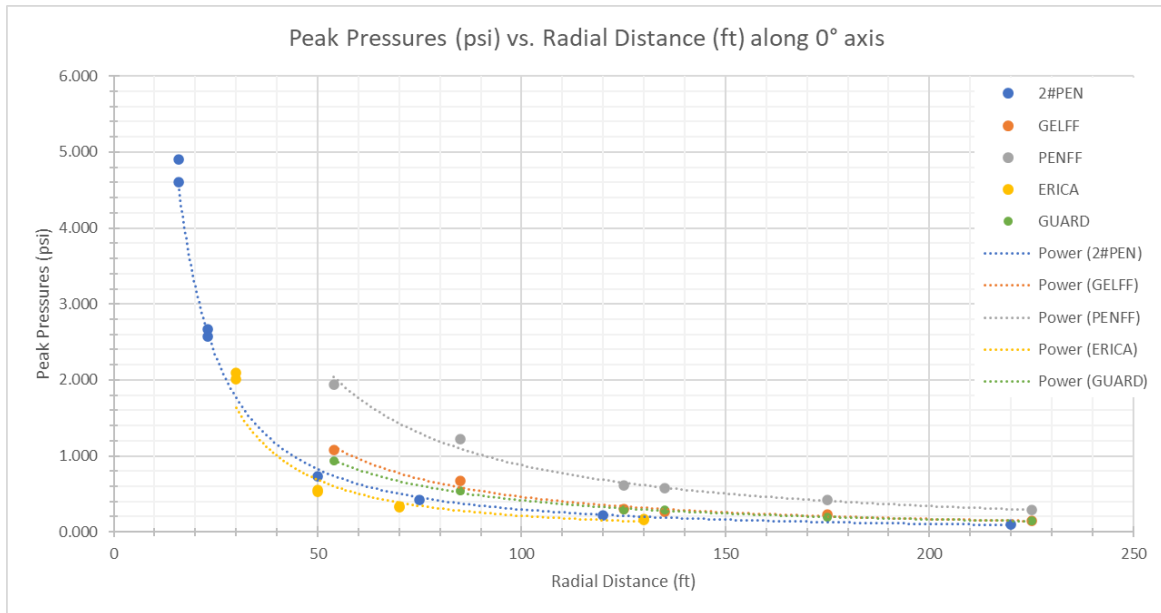


Figure 11 – Comparison of BW peak pressure results (labeled “ERICA”) to previously tested solid explosive charges along the 0° axis.

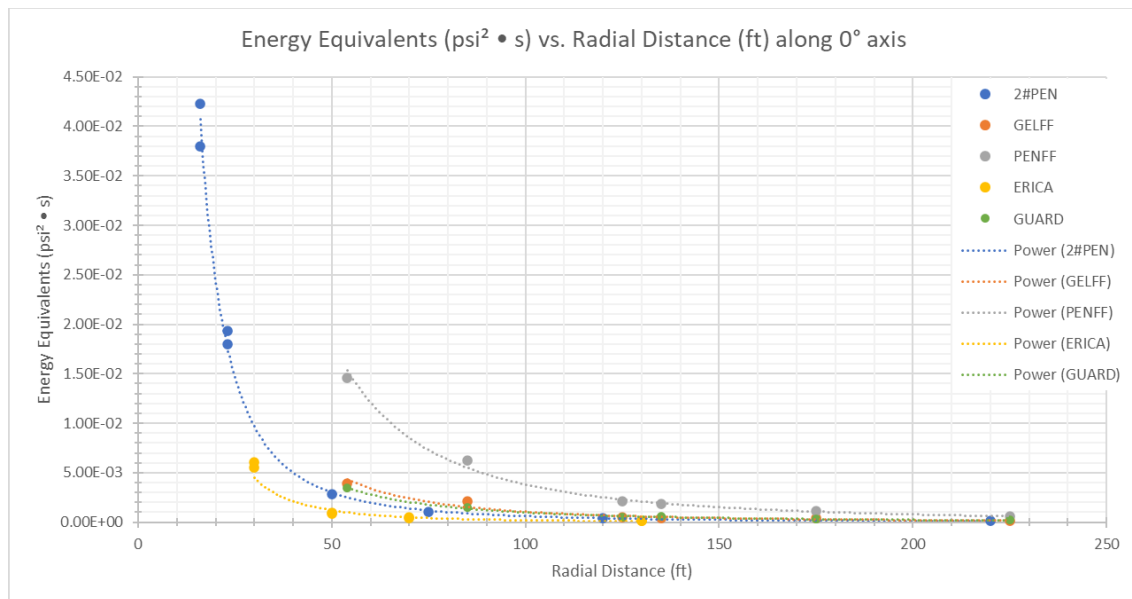


Figure 12 – Comparison of BW energy equivalent results (labeled “ERICA”) to previously tested solid explosive charges along the 0° axis.

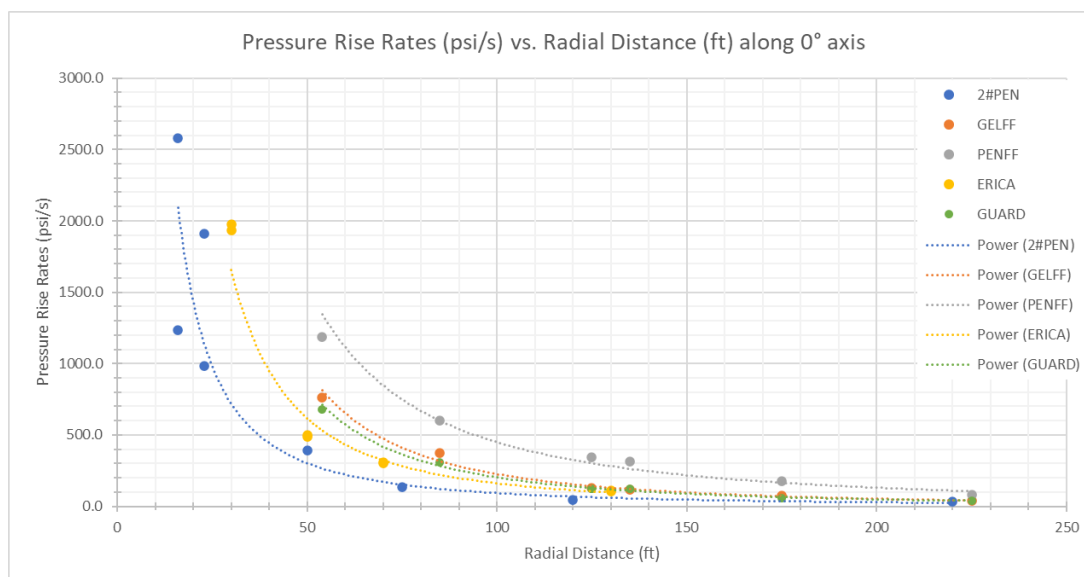


Figure 13 – Comparison of BW pressure rise rate results (labeled “ERICA”) to previously tested solid explosive charges along the 0° axis.

As a final point of comparison, the interpolated radial locations of the 1 kPa overpressure for the BW exploder, and all other explosives tested by Seitz, are shown in the table below (Table 4). This again indicates that the BW is most comparable to the O’Bellx system but exhibited stronger radial decay of overpressures than previously measured.

Table 4 – Comparison to Seitz’s previous work on the radial locations of the 1 kPa (0.145 psi) peak pressures.

Radial Location of 1 kPa (0.145 psi) Peak Pressure Reference (ft)													
Axis (°)	BW	2#PEN	15GAZ	OBELL	GELFF	GELWT	PENFF	PENWT	GUARD	PNCLF	OBRCK	PGLY1	PGLY2
0	92	138	230	115	234	239	404	345	222	429	124	477	490
30	X	X	X	105	X	X	X	X	X	X	109	X	X
45	110	141	X	X	246	238	425	346	237	317	X	576	859
60	X	X	155	188	X	X	X	X	X	X	174	X	X
90	X	128	113	245	238	215	467	313	227	280	X	X	X
120	X	X	82	97	X	X	X	X	X	X	X	X	X
135	X	X	X	X	257	212	466	300	232	X	X	X	X
150	X	X	X	110	X	X	X	X	X	X	X	X	X
180	X	X	X	96	242	198	466	319	214	X	X	X	X

In summary, the preliminary testing results of the BW exploder presented above indicate that it has very promising performance characteristics such as its overpressures and energy equivalents that place it well within the previously observed performance of established DGE systems like the O’Bellx and Gazex. Furthermore, the relatively high pressure rise rates observed for the BW system seem to place it somewhere above other DGE systems and even 2-lb Pentolite charges, but still below other larger solid explosives such as those used in Wyssen Tower RAC systems. Lastly, the BW exploder indicated a stronger radial decay of peak pressures, energy equivalents, and pressure rise rates than previously observed for any other explosive or RAC system, but it is unclear at this point whether this is an inherent limitation in the design of the BW exploder or was rather the result of environmental factors and/or testing conditions.

Alta Planning Commission

Staff Report



To: Town Council

From: John Guldner and Chris Cawley

Re: Alta Ski Area Request for a Conditional Use Permit to to install two Connex storage containers on a semi-permanent basis on private land adjacent to the Wildcat Parking Lot

Date: July 11, 2023

Attachments: Application letter; container specs

Background:

Alta Ski Area (Alta) is requesting your approval of a Conditional Use Permit to excavate a 16' x 40' area on their property in the northwest edge of the Wildcat Parking Lot. The area will be excavated and tucked into the hill. The area will be surfaced with gravel to serve as the pad for the containers.

This project has already been completed and we are playing catch up to formalize the required conditional use permit. Alta already owned the containers, which were in a separate location on the Ski Areas USFS special use permit. Alta planned on storing the Wyssen Towers where the containers were already located, but when the area was slated for maintenance, the containers had to be relocated. Alta reviewed their options for relocation of the containers and sought out the best place for the containers to store the Wyssen Towers over the summer and for an indefinite period into the future, while they evaluate a permanent storage facility. They picked the northwest corner of the main lot, as is shown in their application materials.

Alta did not realize the need to contact the Town about permitting until they had begun excavating the pad. While one can be found guilty of a class C misdemeanor under Town of Alta Code 10-1-11 to violate Town of Alta land use regulations by violating zoning ordinances, building without a permit, et cetera, upon being notified of the project by Alta Ski Area, the town allowed the project to continue while working on the details to formalize the approval.

This is a small project, well thought out and in a great location. Out of the way, yet still visible from the front so the containers can be monitored easily throughout the summer. Safe, tucked away. We've been clear with Alta that working before permit in the future may subject the company to a penalty.

Staff recommends the Planning Commission approve the conditional use permit request as submitted.

The request and project have been well thought out, safe location, protected, out of the way yet still visible for monitoring and satisfies the conditions necessary for approval as described below.

Again, the town and the Ski Area have had significant dialogue so this won't happen in the future and no construction can take place before the proper permits have been sought and issued.

The request meets the requirements necessary to grant a conditional use permit as identified in the application and specifically laid out in the ordinance as follows:

Chapter 9

Conditional Uses

1. The proposed use of the particular location is necessary or desirable to provide a service or facility which will contribute to the general well-being of the neighborhood and the community; and
2. Such use will not, under the circumstances of the particular case, be detrimental to the health, safety or general welfare of persons residing or working in the vicinity, or injurious to property or improvements in the vicinity; and
3. The proposed use will comply with regulations and conditions specified in this title for such use; and
4. The proposed use will conform with the intent of the town master plan.

Re: #1. This proposed use is necessary to support the conditional use permit issued last year for the RACS on Baldy and the East Castle. The commission did a thorough review of that project, but we all forgot to think about where these RACS would be stored in the summer. This storage option and location will contribute greatly to the project, the general well-being of Alta.

Re: #2. This use will have no detrimental impacts to the health, safety or general welfare of persons residing or working in the vicinity, nor will it cause any injuries to property or improvements in the vicinity.

Re: #3. This use does comply with the conditional use permit guidelines of the FR zone in which it is located. Specifically, these storage containers are customarily incidental to the ski area's existing RACS devices, for which the commission granted a conditional use permit in 2022.

Re: #4. The town master plan (general plan) recognizes Alta's avalanche hazards. While the plan does not specifically address these modern RACS, this current proposal does fit within the existing zoning, and it therefore complies with the intent of the town's general plan.

ALTA SKI AREA

P.O. Box 8007 • ALTA, UTAH 84092-8007
PHONE 801-359-1078 • FAX 801-799-2340
www.alta.com

June 5, 2023

Town of Alta
Attn. Chris Cawley
Town of Alta Administrator

For Distribution to:
Alta Planning Commission

RE: Request for Conditional Use Permit – Connex Storage Location

Purpose and Need

The transition from using the 105 Howitzer for avalanche mitigation work to Remote Avalanche Control Systems (RACS) within the ski area has created a need for summer storage for the Wyssen Tower Units. The size of the units allows their storage in Connex storage containers owned by the ski area. Each unit sets on a wheeled cradle that allows the unit to be wheeled into the container for storage. It also allows the units to be easily accessible during the summer for service. Storage of the units in the Connex storage containers protects them from vandalism and accidents. No explosive material will be in the units or stored in the containers.

Since maintenance is scheduled for the Wildcat Parking Lot (crack sealing and a chip seal overlay), Alta Ski Area desires to place the containers on a pad created located on its private land adjacent to the Northwest Corner of the Wildcat Parking Lot. See Exhibit 1.

The pad size will be approximately 18' x 42'. Each Connex container is 8' wide x 40' length x 8'6" height. The pad will be created with fill material and a cut into the embankment. Gravel will be placed on the pad prior placement of the Connex containers. Soil will be placed around the containers once in place to maintain the slope at the site. As noted in Exhibit 1, the Connex storage pad is located within an area that is proposed to be excavated for an expansion of the Wildcat parking lot to replace roadside parking. The Roadside Parking replacement project is currently under review by the USFS. It is Alta Ski Area's hope that the Roadside Parking replacement project will be approved and carried out during the summer of 2024, at which time the Connex Storage units will be relocated elsewhere.



Request for Conditional Use Permit

Alta Ski Area requests the Town of Alta to issue a Conditional Use Permit to allow the use of its private land adjacent to the Northwest Corner of the Wildcat parking lot for two Connex storage units as described above.

Fulfillment of Town of Alta code requirements for conditional Use (Section 10-9-2)

10-09-02 (A) – This document constitutes an application for a conditional use permit from the Alta Planning Commission.

10-09-2 (B)

1. Site plan for the project is attached as Exhibit 1.
2. Attached photos show the site lines of the Connex container location from the top and bottom of the Wildcat Ramp and the entrance to the Goldminer's daughter.
3. The Connex containers are 8' wide x 40' length x 8'6" height. The door of the containers will face the Wildcat Parking lot and grade of the pad for the containers will be level with Wildcat Parking lot. This is to facilitate the movement of the Wyssen units on their cradles from the parking lot into the containers.

10-09-2 (E)

1. This site is more desirable than other locations around the edges of the parking lot as it is tucked into a corner with a sloping grade around it that limits its view. Existing drainage and erosion control will be used at this site. No other improvements are necessary to use this site.
2. The use of this site for this purpose is not detrimental to the health, safety, or general welfare of persons residing or working in the vicinity or to other property improvements in the vicinity.

The two Connex containers proposed for this site are in addition to the current Connex containers used by the ski area to store equipment, supplies, and merchandise at the Wildcat and Albion base areas. Alta Ski Area is seeking approval from the USFS for a building site located on the North side of the Albion Parking lot for a storage facility which would allow reduction of Connex storage containers in the ski area.

Summary

Alta Ski Area requests approval of a Conditional Use Permit to store two 8'x40'x8'6" Connex containers on a pad created adjacent to the Northwest Corner of the Wildcat Parking Lot. The Connex containers will be used to store Wyssen Tower units during the summer months to secure and protect them.

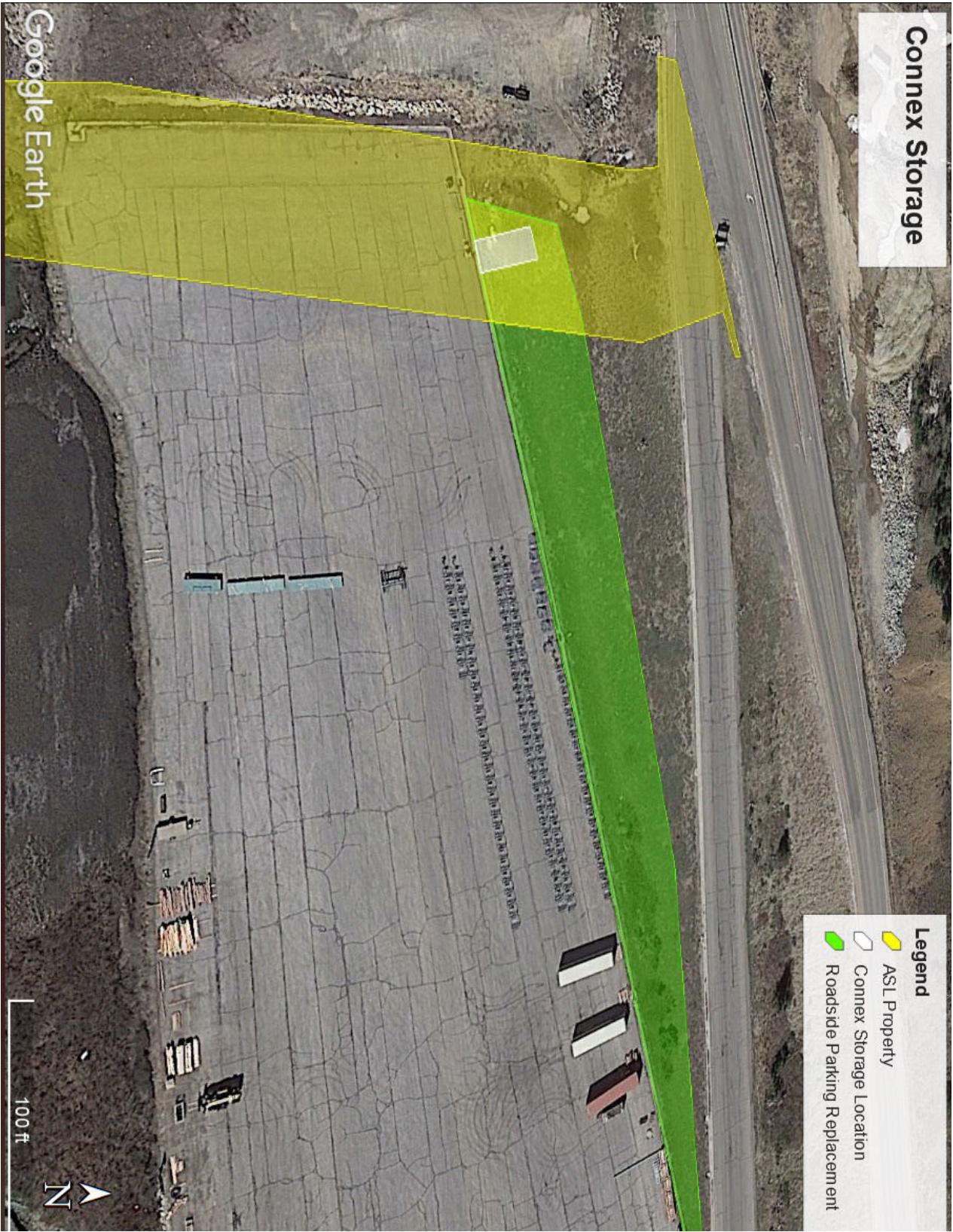
Thank you for your consideration of this request.

Sincerely,



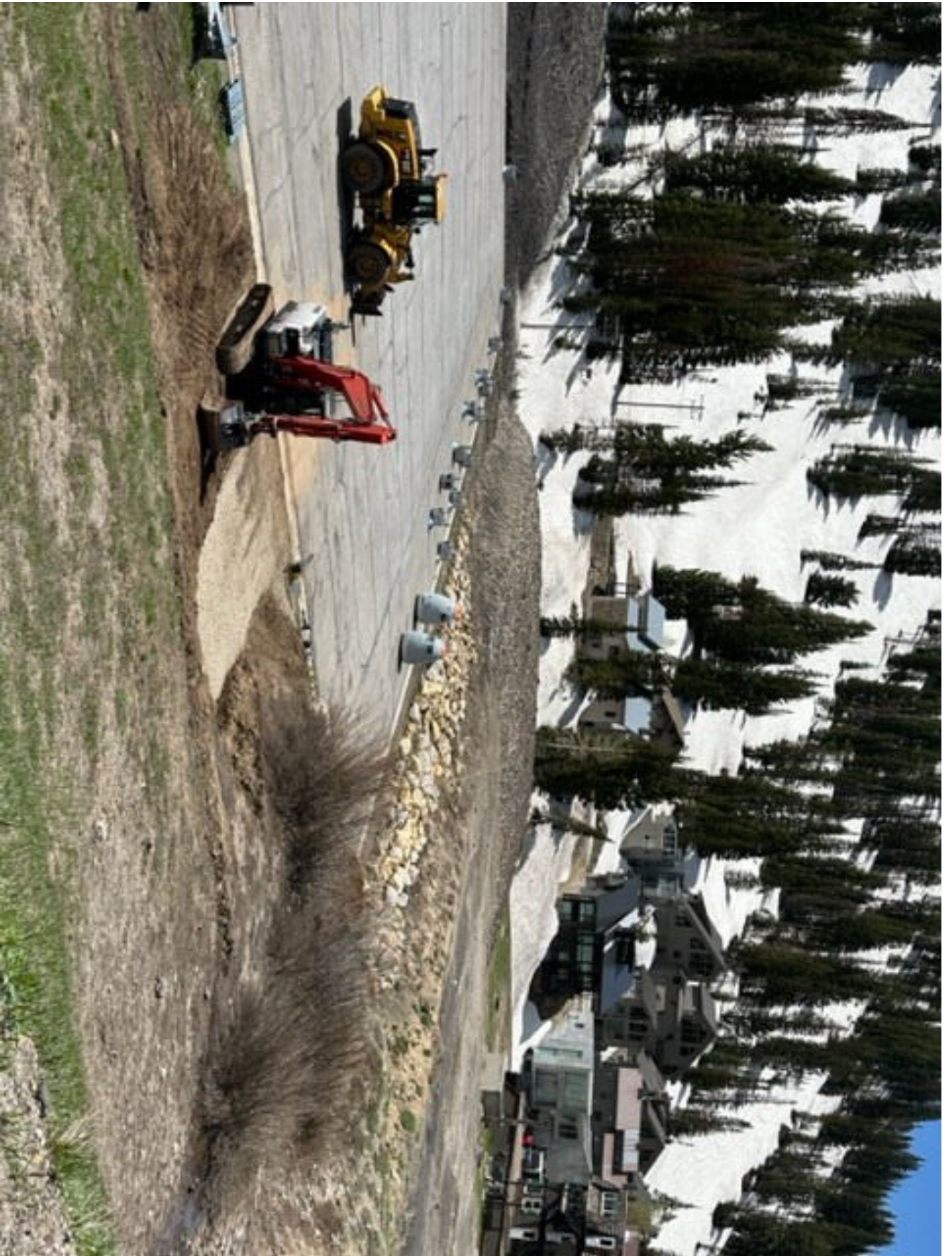
Michael R Maughan
General Manager
Alta Ski Area

Exhibit 1



Site Photos

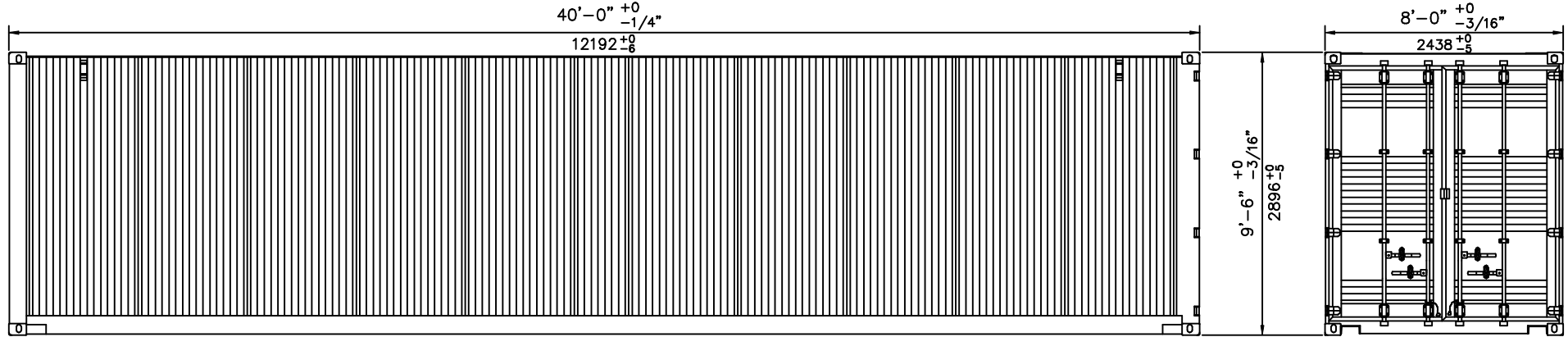






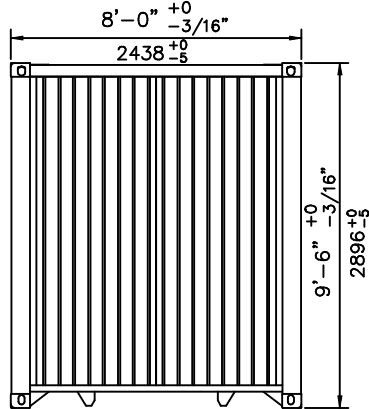


40' STEEL DRY FREIGHT HIGH CUBE ISO CONTAINER

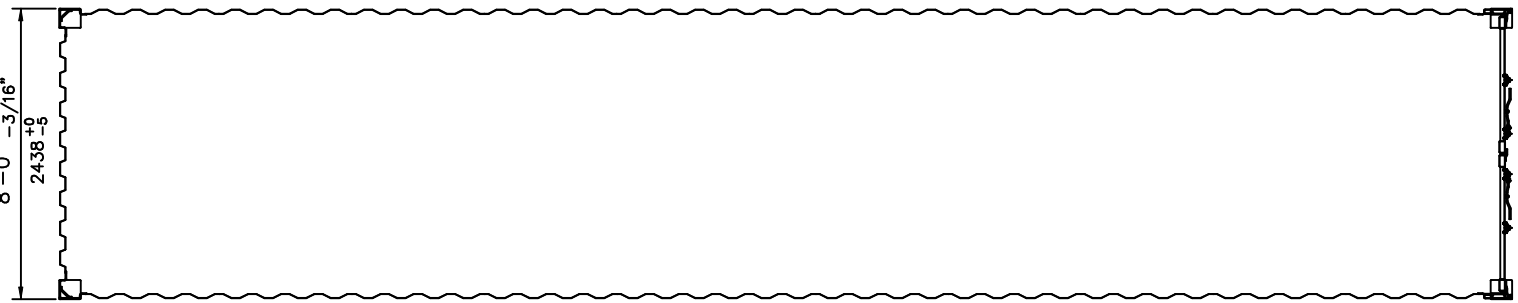


ROADSIDE WALL; ELEVATION

REAR END; ELEVATION

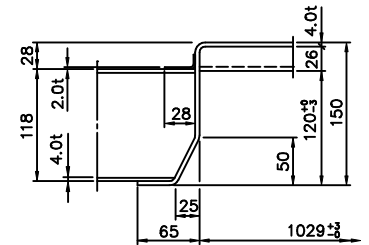


FRONT END; ELEVATION

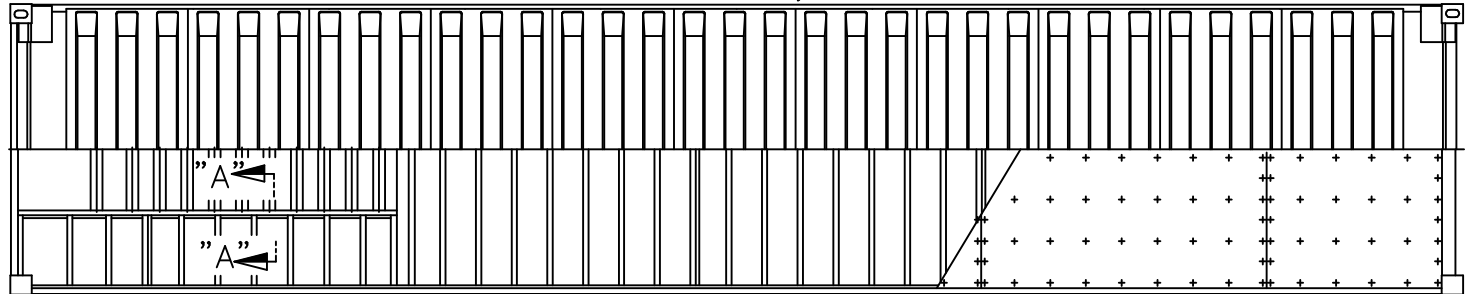


WALL CORRUGATION, CROSS SECTION; PLAN VIEW

ROOF CORRUGATION; PLAN VIEW



SECTION "A"-"A" (S=1/4mm)



CROSSMEMBERS

PLAN VIEW

WOOD FLOOR

GROSS WEIGHT	30480 KG	67200 LB
TARE WEIGHT	3880 KG	8560 LB
PAYLOAD WEIGHT	26600 KG	58640 LB
CUBIC CAPACITY	76.3 CU.M	2693 CU.FT

INTERNAL	LENGTH	12032 MM	39'-5 11/16"
	WIDTH	2352 MM	7'-8 5/8"
	HEIGHT	2695 MM	8'-10 1/8"

DOOR OPENING	WIDTH	2340 MM	7'-8 1/8"
	HEIGHT	2585 MM	8'-5 3/4"



SEA BOX, INC. P.O. Box 1181 Burlington, NC 27015				CUSTOMER 40' x 8' x 9'6"			
NOTES: For use on prototype building only. This drawing and all copies thereof are confidential and the property of S.B.I. No drawing or any part thereof may be used, reproduced, disclosed, or handed over to the third party without prior written consent from S.B.I. Copyright 2001				DRAWN KCE DATE 05-12-99			
SCALE:				DWG. NO. SBI 99-GA			
REVISIONS				CHECKED BY			
DATE				APPROVED NAME			
				GENERAL ARRANGEMENT			