



Planning & Development Services Division

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Salt Lake County Planning Commission

Special Public Meeting Agenda

****REVISED****

Monday, June 30, 2014 8:15 A.M.

**THE MEETING WILL BE HELD AT SALT LAKE COUNTY GOVERNMENT CENTER
2001 SOUTH STATE STREET, NORTH BUILDING, MAIN FLOOR, COUNCIL CHAMBERS,
ROOM N1100**

ANY QUESTIONS, CALL (385) 468-6700

REASONABLE ACCOMMODATIONS FOR QUALIFIED INDIVIDUALS MAY BE PROVIDED UPON RECEIPT OF A REQUEST WITH 5 WORKING DAYS NOTICE. PLEASE CONTACT WENDY GURR AT 385-468-6707. TTY USERS SHOULD CALL 711.

The Planning Commission Public Meeting is a public forum where the Planning Commission receives comment and recommendations from applicants, the public, applicable agencies and County staff regarding land use applications and other items on the Commission's agenda. In addition, it is where the Planning Commission takes action on these items. Action may be taken by the Planning Commission on any item listed on the agenda which may include: approval, approval with conditions, denial, continuance or recommendation to other bodies as applicable.

BUSINESS MEETING

- 1) Other Business Items (as needed)

PUBLIC HEARINGS

28833 – Tanya Friese for Crown Castle International Corp. and Alta Ski Lifts Company– Requesting final approval of a Conditional Use Permit for construction and operation of a Wireless Telecommunications HUB building. **Location:** 10027 East Little Cottonwood Canyon Road. **Zone:** FR-20, Foothills and Canyons Overlay Zone (FCOZ). **Community Council:** Granite. **Planner:** Todd A. Draper

ADJOURN



STAFF REPORT

Executive Summary						
Hearing Body:	Salt Lake County Planning Commission					
Meeting Date and Time:	Monday, June 30, 2014	08:00 AM	File No:	2	8	8 3 3
Applicant Name:	Tanya Friese	Request:	Conditional Use			
Description:	FCOZ Conditional Use - Wireless Telecommunications HUB Building					
Location:	10027 East Little Cottonwood Canyon Road					
Zone:	FR-20 Forestry & Recreation	Any Zoning Conditions?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		
Community Council Rec:	Approval with Conditions					
Staff Recommendation:	Approval with Conditions					
Planner:	Todd A. Draper					

1.0 BACKGROUND

1.1 Summary

Crown Castle International is requesting approval for construction of and operation of a Wireless Telecommunications HUB building on the subject property. This HUB will support a series of wireless towers that will be installed throughout Little Cottonwood Canyon on property owned either by the U.S. Forest Service or the Utah Department of Transportation. A similar project was recently completed in Big Cottonwood Canyon. Additionally, for clarification purposes the subject property for this application is a relatively large parcel under the ownership of Alta Ski Lifts Company, but located within the jurisdiction of the Unincorporated County. This project affects a relatively small portion of that property.

1.3 Neighborhood Response

Members of the public in attendance at the April 16, 2014 meeting of the County Planning Commission were primarily concerned about the location of the building relative to the highway, and snow removal from the site. Concerns also included the potential for noise from the generator and concerns that the structure would increase avalanche danger to neighboring properties.

1.4 Community Council Response

At their April 2, 2014 meeting, the Granite Community Council recommended approval of the proposal with conditions that the architecture of the building be modified to enhance screening of exterior equipment and to blend in more with its surroundings. Specifically the wood and concrete exterior of Snowbird was discussed. The formal recommendation from their group is attached.

2.0 ANALYSIS

2.1 Applicable Ordinances

Section 19.84.060 of the Conditional Use Chapter of the Zoning Ordinance establishes five standards to be used in evaluating Conditional Use applications. The Planning Commission must find that all five of these standards have been met before granting approval of an application. Based on the foregoing analysis, Staff suggests the following:

Criteria Met		Conditional Use Criteria and Evaluation
YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	<p><u>Standard `A':</u> <i>The proposed site development plan shall comply with all applicable provisions of the Zoning Ordinance, such as parking, building setbacks, building height, etc.</i></p> <p>4/16/2014 Discussion: The proposed building appears to meet most zoning standards with 2 notable exceptions:</p> <p>1) The building may encroach into natural slopes greater than 30%. As the slope analysis provided does not appear to meet required ordinance standards it is difficult to determine if zoning ordinance has been met or not with regards to the prohibition of development on steep slopes. Encroachment into man made slopes in excess of 30% has typically been allowed for the construction of retention structures in the past, however the position of the building relative to the location of the natural slope is difficult to determine at this time . Staff believes that this would best be sorted out through the subsequent technical review process and should it later be determined that a slope waiver or variance is necessary that a separate application could be submitted at that time.</p> <p>2) Un-faced concrete walls are discouraged by the FCOZ ordinance. Concrete walls should be split faced, stamped, or have other significant architectural elements added to it. The intent is to break up the mass and wall lines in an effort to avoid unbroken expanses of building mass and walls that can intrude into the natural canyon setting and dominate a site. The current proposal calls for architectural tooling lines in the concrete approximately every 6 feet on the building and stamped concrete on the retaining walls. In staffs opinion additional tooling or architectural features need to be added to help break up the wall mass (horizontal and vertical elements). Also there are few details provided regarding the treatment of the concrete roof structure. Staff would suggest that the the roof structure also have a concrete treatment, coloration, and/or other details added to differentiate it from the building walls and the retaining walls.</p> <p>Staff would support the addition of conditions that would satisfy these criteria.</p> <p>6/17/2014 Update: The building plans have been revised to meet ordinance, the location of the structure has been modified, and an accurate slope analysis has been submitted for review. The grading specialist has determined that the slope over the new proposed site is 1) primarily man made, and 2) of an average slope of less than 30%. No slope waiver or variance is required for the location as currently proposed.</p>
YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	<p><u>Standard `B':</u> <i>The proposed use and site development plan shall comply with all other applicable laws and ordinances.</i></p>

		<p>4/16/2014 Discussion: Compliance with this criterion will continue to be monitored throughout the subsequent technical review process and a final approval will not be issued unless this has been met to the satisfaction of the individual reviewers and reviewing agencies.</p> <p>6/17/2014 All reviewers have reviewed the revised plans and have either approved them as proposed, or approved with listed conditions. All conditions of the reviewers will be incorporated as part of the final conditions of approval for the site.</p>
YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	<p><u>Standard `C':</u> <i>The proposed use and site development plan shall not present a traffic hazard due to poor site design or to anticipated traffic increases on the nearby road system which exceed the amounts called for under the County Transportation Master Plan.</i></p>
		<p>4/16/2014 Discussion: The site is unmanned and will have limited traffic to and from the site relative to this specific use.</p> <p>6/17/2014 UDOT has granted approval for the access.</p>
YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	<p><u>Standard `D':</u> <i>The proposed use and site development plan shall not pose a threat to the safety of persons who will work on, reside on, or visit the property nor pose a threat to the safety of residents or properties in the vicinity by failure to adequately address the following issues: fire safety, geologic hazards, soil or slope conditions, liquefaction potential, site grading/ topography, storm drainage/flood control, high ground water, environmental health hazards, or wetlands.</i></p>
		<p>4/16/2014 Discussion: Final approval will not be granted by staff until compliance with these issues is achieved with the individual reviewers and reviewing agencies through the subsequent technical review process.</p> <p>6/17/2014 The technical review process has concluded and land use issues related to fire safety, geologic hazards (including avalanche risk), soil and slope conditions, grading and topography, flood control and environmental health hazards have been reviewed and the plans have been approved, or approved with conditions, by the respective review agencies and individuals. In some instances additional scrutiny of the plans will be provided as part of the subsequent building plan review related to compliance with building code requirements necessary to obtain a building permit.</p>
YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	<p><u>Standard `E':</u> <i>The proposed use and site development plan shall not adversely impact properties in the vicinity of the site through lack of compatibility with nearby buildings in terms of size, scale, height, or noncompliance with community general plan standards.</i></p>
		<p>4/16/2014 Discussion: The proposed building would be fairly compatible with nearby buildings, with the exception of the sole use of concrete as the construction material which would affect how the massing and scale of the building is viewed. Staff believes however that reasonable conditions can be imposed that would have the effect of alleviating this concern.</p> <p>6/17/2014 New plans have been submitted that adequately address the prior aesthetic issues related to compatibility with nearby structures and buildings in terms of size, scale, height, materials, and colors.</p>

2.2 Zoning Requirements

19.83.070 Color.

Monopoles, antennas, and any associated buildings or equipment shall be painted to blend with the surroundings which they are most commonly seen. The color shall be determined on a case-by-case basis by the planning commission for conditional uses and development services division for permitted uses. Within six months after the facility has been constructed, the planning commission or the development services division may require the color be changed if it is determined that the original color does not blend with the surroundings.

19.83.080 Sites in the foothills and canyons.

For the purpose of this chapter the foothills and canyons are defined as the areas shown on the maps in the document entitled "Salt Lake County Foothill and Canyon Development Standards."

A. Any grading for telecommunication facilities, including access roads and trenching for utilities, shall comply with the Uniform Building Code. Telecommunication facilities in the foothills and canyons shall comply with the FR zone requirements for grading (Section [19.12.100](#)), natural vegetation (Section [19.12.110](#)) and utilities (Section [19.12.120](#)). Everything possible should be done to minimize disturbance of the natural environment.

B. A computer-generated visual simulation of the proposed structures is required for all sites in the foothills and canyons. The simulation shall show all structures including but not limited to monopoles, antennas, and equipment buildings.

C. Everything possible should be done to minimize disturbance of the visual environment. Site placement and color should be carefully considered to blend in with the surroundings.

D. Continuous outside lighting is prohibited unless required by the FAA for the monopole.

19.83.090 Additional requirements.

The following shall be considered by the planning commission for conditional uses:

A. Compatibility of the proposed structure with the height and mass of existing buildings and utility structures.

B. Location of the antenna on other existing structures in the same vicinity such as other monopoles, buildings, water towers, utility poles, athletic field lights, parking lot lights, etc. where possible without significantly impacting antenna transmission or reception.

C. Location of the antenna in relation to existing vegetation, topography including ridge lines, and buildings to obtain the best visual screening.

D. Spacing between monopoles which creates detrimental impacts to adjoining properties.

E. Installation of, but not limited to, curb, gutter, sidewalk, landscaping, and fencing as per Sections [19.76.210](#) and [19.84.050](#)

19.83.100 Accessory buildings.

Accessory buildings to antenna structures must comply with the required setback, height and landscaping requirements of the zoning district in which they are located. All utility lines on the lot leading to the accessory building and antenna structure shall be underground.

19.83.110 Non-maintained or abandoned facilities.

The building official may require each non-maintained or abandoned telecommunications facility to be removed from the building or premise when such a facility has not been repaired or put into use by the owner or agent within ninety calendar days after notice of non-maintenance or abandonment is given to the owner or agent. The applicant shall post a site specific bond when a permit is issued to guarantee removal of the facility and site restoration. The type of bond and amount shall be determined upon review by county staff. No bond shall be required for roof or wall mounted facilities.

19.84.050 Approval/denial authority.

The planning commission has the authority to approve, deny, or approve with conditions conditional use applications.

A. Planning Commission Approval.

1. The planning commission shall review and approve or deny each application during a public meeting.
2. The planning commission's decision shall be based on information presented through the public meeting process, including: the materials submitted by the applicant, the recommendation of the director or director's designee, and input from interested parties and affected entities.
3. If conditions are specified, the director or director's designee shall issue a final approval letter upon satisfaction of the planning commission's conditions of approval.
4. If the applicant fails to meet all conditions of approval within twelve months of the planning commission's decision, the application is deemed denied. A twelve-month extension may be granted upon the payment of an additional filing fee equal to the original filing fee.
5. A planning commission decision shall be made on a complete conditional use application within a reasonable time frame, not to exceed ninety days. The planning commission is authorized to review and take action on an application as outlined in [Section 19.84.040](#) after having notified the applicant of the meeting date.
6. Failure by the applicant to provide information that has been requested by the planning commission, the director or director's designee to resolve conflicts with the standards in [Section 19.84.060](#) (above) may result in an application being denied.

B. Decision. Each conditional use application shall be:

1. Approved if the proposed use, including the manner and design in which a property is proposed for development, complies with the standards for approval outlined in [Section 19.84.060](#); or
2. Approved with conditions if the anticipated detrimental effects of the use, including the manner and design in which the property is proposed for development, can be mitigated with the imposition of reasonable conditions to bring about compliance with the standards outlined in [Section 19.84.060](#); or
3. Denied if the anticipated detrimental effects of the proposed use cannot be mitigated with the imposition of reasonable conditions of approval to bring about compliance with the standards outlined in [Section](#)

19.84.075 Graffiti preventative materials or design.

A. Whenever the planning commission determines that there is a reasonable likelihood that graffiti will be placed on the surfaces of proposed improvements it shall require, as part of the conditional use approval, that the applicant apply an anti-graffiti material, approved by the development services division, to each of the surfaces to be constructed. The anti-graffiti material shall be used on surfaces from ground level to a height of nine feet. The planning commission may approve dense planting or appropriate design measures in place of anti-graffiti materials.

B. Whenever the planning commission becomes aware of graffiti having been placed on any surfaces constructed as part of development approved as a conditional use, it may require that the applicant or his/her successor in interest apply an anti-graffiti material to such surfaces where no such material was previously required.

2.3 Other Agency Recommendations or Requirements

Review comments pertaining to the previous preliminary approval of the application have not been included with this report. Presented here are the technical review comments and listed conditions under which final approval or clearance for the project has been granted by the reviewers.

Urban Hydrology Review -

Grading will be done according to the approved grading and drainage plan.

Salt Lake County Health Department -

Technical review approved.

UDOT -

UDOT Region 2 has no objection to this location for the LCC hub building from a permitting/traffic perspective.

SLC Watershed -

1. Contractor to provide all best management practices (BMP's) and measures necessary as determined by County personnel and Salt Lake City watershed personnel to control erosion and protect all water sources and Salt Lake City's Watershed. (This note should be added to the plans).
2. Show and label limits of disturbance and all construction best management practices and measures necessary to insure erosion control during construction.
3. All building setbacks must comply with Salt Lake Valley Health Department regulations.
4. Heat pumps and geothermal well systems are not allowed within the protected Salt Lake City Watershed.
5. If a power generator is required at this site a protection and containment plan for fuel fluids will need to be approved by Salt Lake City.

Water (service) has not been requested for this site under this application and water is not available for this parcel of land or to the building.

Traffic Review -

Technical Review approved per UDOT approval.

Geology -

1. The proposed building is located with in an area of potential natural hazards (avalanche and slope stability)
2. Received a copy of the Avalanche report prepared by Joesph Crilly S.E. which states the building has been designed to sufficiently mitigate the 100 yr snow avalanche at the site.
3. IGES will be submitting a copy of the geotechnical report and slope stability analysis as part of the Building permit process.
4. The Building is located with in a Red zone but is not used for Human Occupancy (limited to equipment repairs), and has been designed with in the requirements of the zoning administrators determination that it can withstand the 100 year avalanche.

Grading Review -

1. The slope analysis shows the building will be constructed on slopes in excess of thirty percent, however under the current FCOZ Ordinance, Slope averaging is permitted. Based on this information the slope is Averaged to be 22% grade.
2. The geotechnical study required could not be completed due to winter conditions and potential adverse affects, Based on this information the geotechnical report and slope stability report will be required to be submitted with the building permit application as part of the building permit review.
3. The planned grading at the site is limited to the area of the building foot print and wing walls
4. The back of the building will be required to be protected using a foundation drain system.
5. Recommendation of conditional approval is applicable subject to the following:
 - a. At the time of the Building permit a site specific Geotechnical engineering report and slope stability analysis shall be submitted for review and comment.
 - b. All site work shall be completed in accordance with the approved site grading and drainage plans.
 - c. At the time of the Building permit application a N.O.I and erosion control plans shall be submitted for review and comment.
 - d. Footing excavations shall be inspected and approved in writing by a qualified Geotechnical engineer prior to the placement of concrete forms and rebar.
 - e. The rear wall of the structure shall be constructed as a retaining wall.

2.4 Other Issues

Planning Review -

1. Revised plans and documentation address all previous planning and zoning related concerns.
2. A limits of disturbance fence will be required to be installed in the locations indicated on the approved plans.

2.5 Subdivision Requirements

Not applicable. The area will likely be leased separately to the operator by the Alta Ski Lift Company.

3.0 STAFF RECOMMENDATION

3.1 Staff recommends APPROVAL of the proposed Conditional Use with the following conditions:

- 1) Build in accordance with approved plans. A building permit is required for construction.
- 2) All site grading to be completed in accordance with the approved site grading and drainage plans.

- 3) During construction, comply with best management practices (BMP's) and measures necessary to control erosion and protect the Watershed. At the time of the Building permit application a N.O.I and erosion control plans shall be submitted for review and comment.
- 4) At the time of the Building permit a site specific Geotechnical engineering report and slope stability analysis shall be submitted for review and comment.
- 5) Grading at the site is limited to the area of the building foot print and wing walls.
- 6) Footing excavations shall be inspected and approved in writing by a qualified Geotechnical engineer prior to the placement of concrete forms and re-bar.
- 7) The rear wall of the structure shall be constructed as a retaining wall.
- 8) Install a limits of disturbance fence in the locations indicate on the approved plans prior to commencement of construction on the site. All land disturbance on site is limited to the area within the fence.
- 9) Treat the exterior surface of the building with anti-graffiti material(s).

3.2 Reasons for Recommendation

- 1 The Listed conditions are needed to ensure that the proposal meets specific ordinance requirements as well as the intent of the ordinances.
- 2) The listed conditions represent reasonable and implementable measures for the mitigation of potential negative impacts to surrounding properties and the public in general.

3.3 Other Recommendations

None at this time.

File #28833

Aerial Map

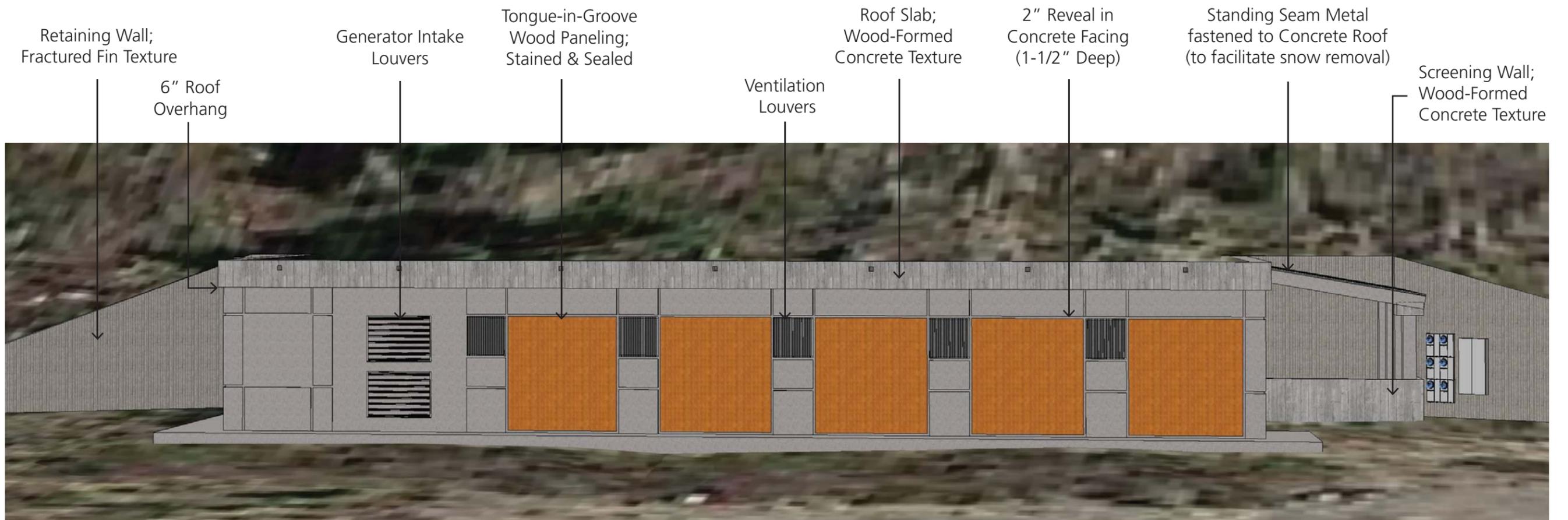


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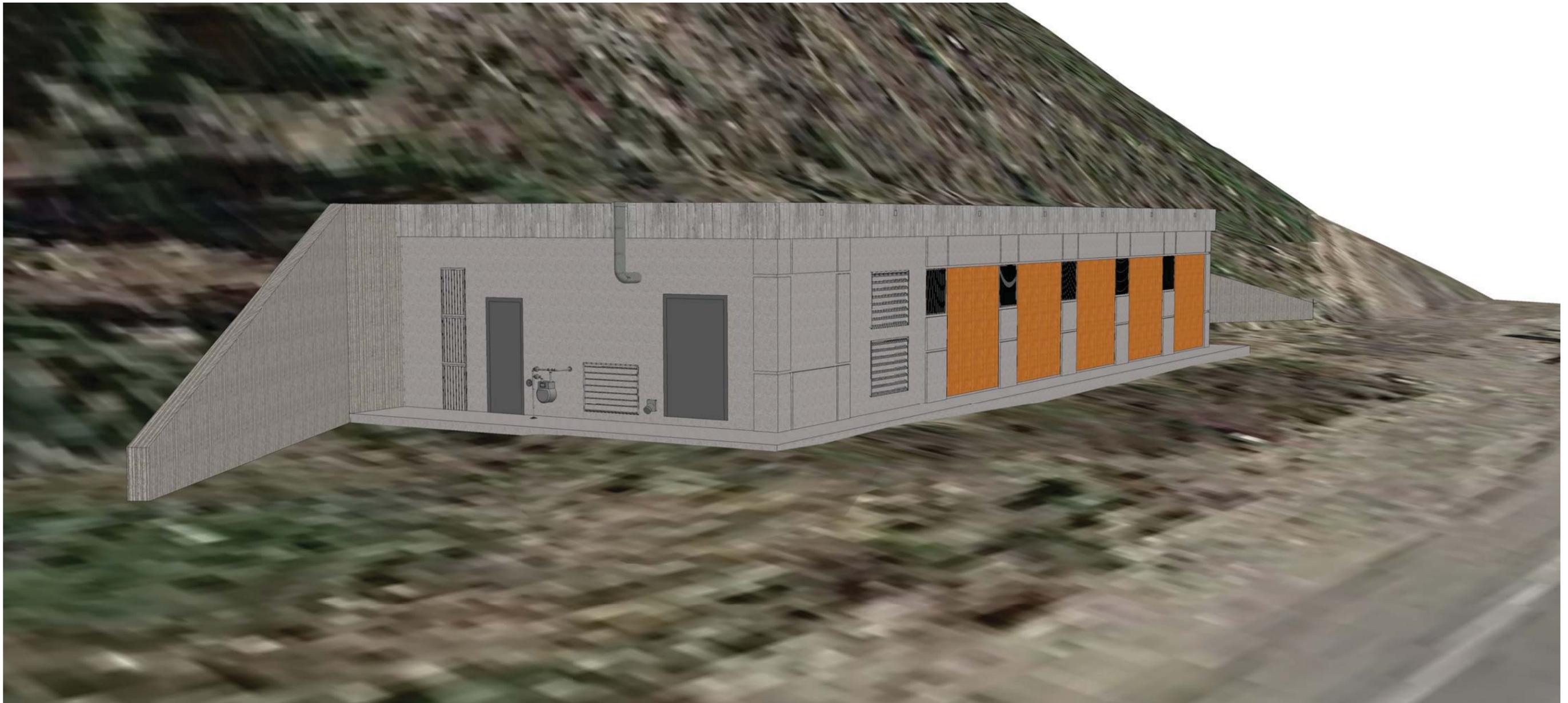
Front View

Wireless Communication Hub Building • Little Cottonwood Canyon Road



View of East End

Wireless Communication Hub Building • Little Cottonwood Canyon Road



View of West End

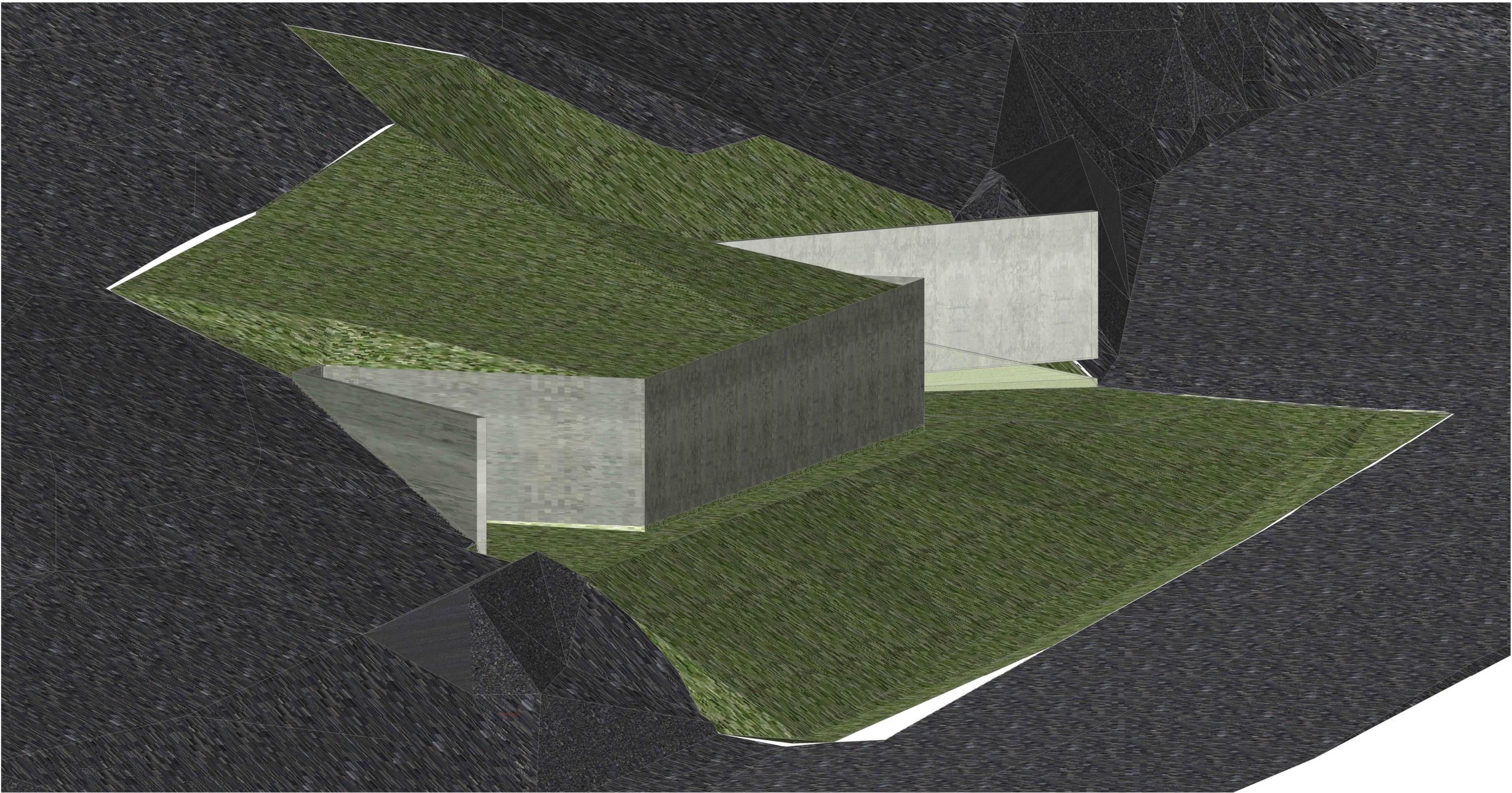
Wireless Communication Hub Building • Little Cottonwood Canyon Road



Overview

Wireless Communication Hub Building • Little Cottonwood Canyon Road

TOP



BOTTOM



4625 South 2900 East, Suite 105, Holladay, UT 84117

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COMMITMENT TO ENGINEERING EXCELLENCE AND SERVICE

Snow Avalanche Hazard Report

May 23, 2014

Client:

Brian Christensen, P.E. PTOE Principal
Horrocks Engineers
2162 W Grove Pkwy
Suite 400
Pleasant Grove, Utah 84062

Property Location:

Little Cottonwood Canyon HUB
Highway 210
Alta, Utah

Scope of Work:

This report completes sections 1 through 3 of the scope of work listed below.

- 1) Description of the snow avalanche hazard at the building site referenced above and indicated in figure 1.
- 2) 30 and 300-year snow avalanche loads on proposed structure.
- 3) Loads on structure from change in avalanche slope:
 - a) On both grade and roof areas.

Consultant:

CTS Engineering, Joseph D. Crilly, S.E.

Design Criteria:

This analysis is based on a return event frequency of 100 years, a one percent chance of occurrence in any year. The return periods chosen are based on the two requirements. The county ordinance requires a one-hundred year return period for design forces for structures in a snow avalanche runout zone. The use of the greater return periods allows the forces provided by this report to be considered strength design level forces to be used by the building's structural engineer.

The four corners of the building's location were provided by Horrocks Engineers. They are in UTM coordinates:

445364.87E, 4493350.11N
445389.27E, 44933552.17N
445389.58E, 4493343.81N
445365.58E, 4493342.28N

UTM zone 12T.

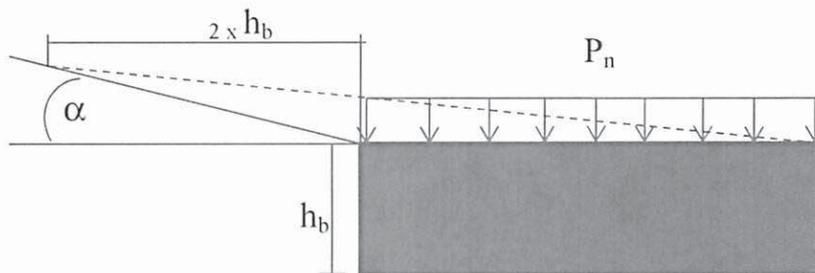
Design Snow Avalanche Loads and Velocities at Building Locations:

**Forces are for impact on a vertical element perpendicular to flow,
(100-year return period)**

Description:	Imperial Units	Metric Units
1. Avalanche velocity east end of building	53 mph	27 m/s
2. Avalanche velocity west end of building	77 mph	39.5 m/s
3. Design flow depth east end of building	7.9 ft	2.4 m
4. Design flow depth west end of building	10.5 ft	3.2 m
5. Snow Density at impact	18.73 lbm/ft ³	300 kg/m ³
6. Reference impact pressure (ρV^2) (east)	4568 lb /SF	220 kPa
7. Reference impact pressure (ρV^2) (west)	8578 lb /SF	410 kPa
8. Roof deposition load (slow moving avalanche)	125 lb/SF	600 kg/m ²
9. Roof load (fast moving avalanche)	148 lb/SF	720 kg/m ²
10. Powder blast on the south elevation:	50 lb/ SF	2.4 kPa

Roof deposition load (slow moving avalanche), is static. Snow avalanche forces are in addition to IBC roof snow loads. The deposition forces provided are for a slower moving avalanche and therefore cannot be counted on to remove any existing snow loads. Roof deposition load (fast moving avalanche), is dynamic and as a duration of 5 seconds. This load should be combined with 50% of the IBC roof snow load.

Where the grade transitions to the building roof the pressures normal to the roof are $P_n = \rho V^2 * \sin(\alpha)^2$ where α = the angle between the flat roof and the grade above; in increments of 5 degrees, with minimum of 15 degrees. (Therefore α is in 5 degrees increments, minimum of 15 degrees). This load replaces the minimum fast moving deposition load under line item #9 above. $P_n = (300) * 27^2 * \sin(15_{min})^2 = 14.65 \text{ kPa}$. Loads parallel to the roof are $0.5 * P_n$.



If grade is sloped over the top of the building, (dashed line) then the min vertical loading is per line item #9 with a minimum force parallel to the roof of $0.5 * P_n$.

The distance from the north edge of the building that the transition needs to be placed so the loading on the ground is not imposed on the building is twenty feet from the north elevation wall.

CTS Engineering

Summary

The loads provided above are sufficient to mitigate the 100 - year snow avalanche. By extending the slope of grade over the building starting from a distance behind (north) of the building equal to or greater than $2 \times$ the building height, the impact loads may be reduced to the loadings in line item 8 and 9. The drag force on the roof is also reduced, and the flow will continue off the roof in a down ward direction.

The occupants of this structure should be aware of all the potential hazards at the site. People outside the structure should also be aware of the hazards posed by snow avalanches, and heed all local ordinances, and safety recommendations.

If there are any questions regarding the applications of these loads or if you would like a gif file of the avalanche flow model please let me know. I may be reached at joe@ctsengineering.net or call at (801) 274-2831.

Sincerely,



Joseph D. Crilly, S.E.



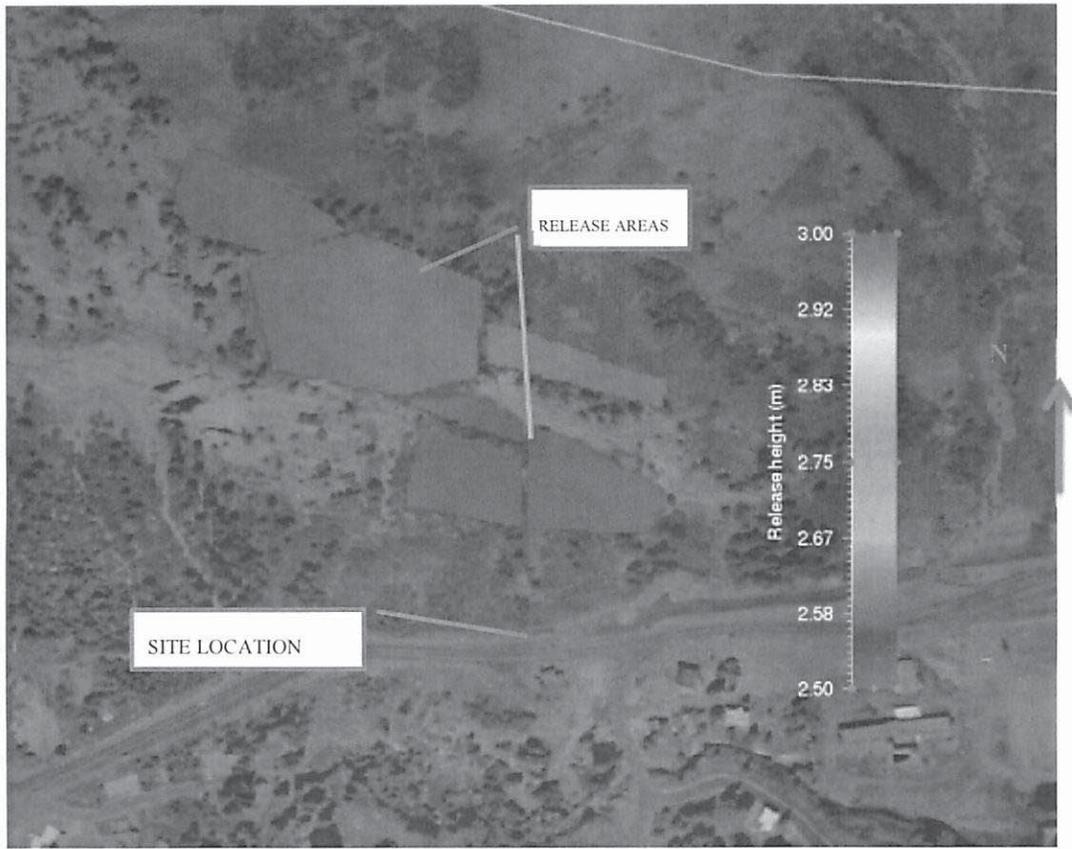


Figure I Site Location and Release Areas.



Figure II Maximum Flow Heights

Figure III Maximum Velocities



Figure IV Maximum Pressures

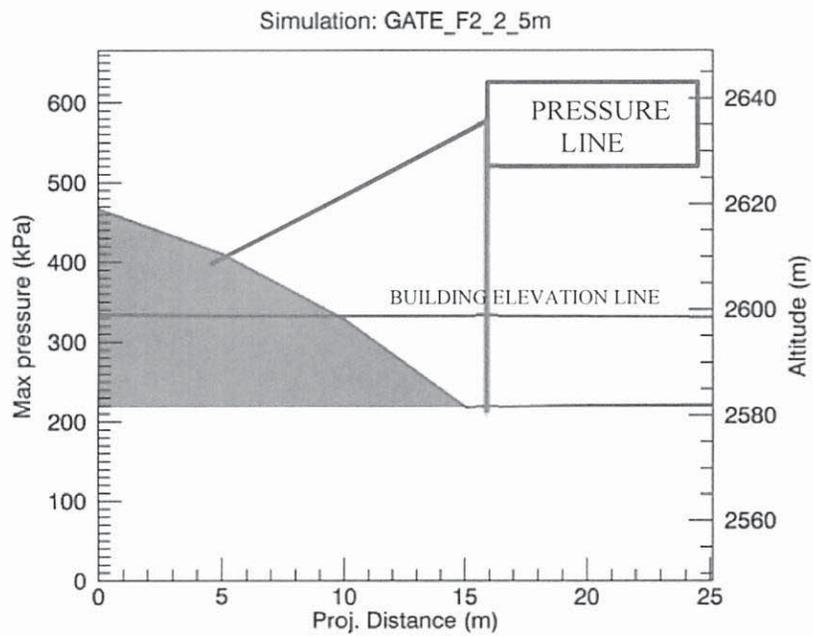


Figure V: Pressure Distribution across the Building Section - Looking North

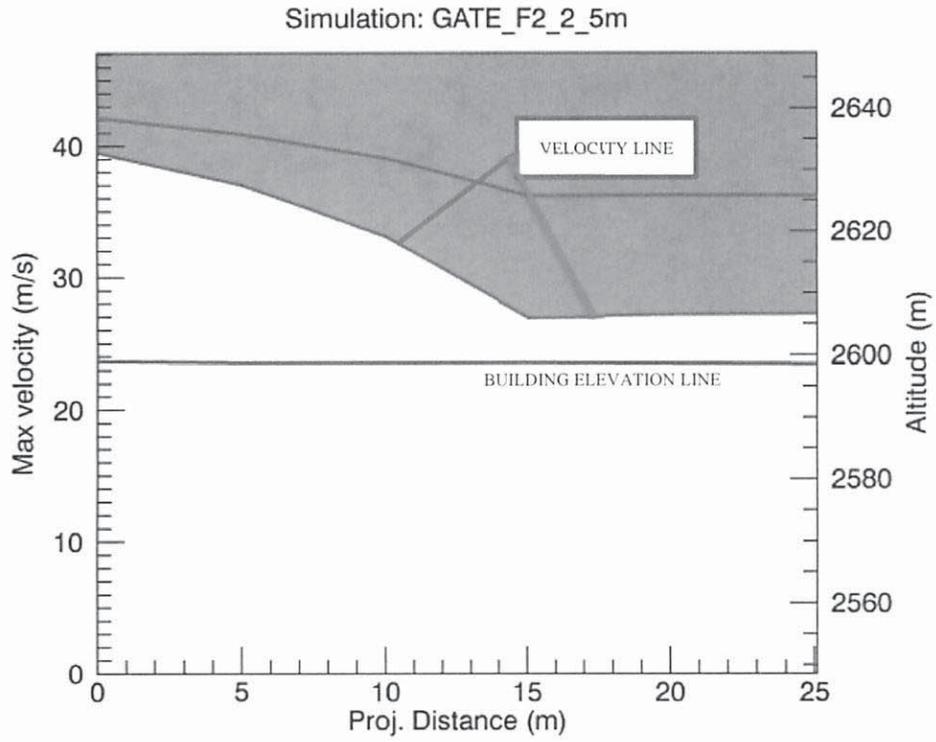


Figure VI: Velocity Distribution across the Building Section - Looking North



Intermountain GeoEnvironmental Services, Inc.
4153 South 300 West, Salt Lake City, Utah 84107
Ph:801-270-9400 Fax: 801-270-9401 www.igesinc.com

January 28, 2014

Horrocks Engineers
2162 West Grove Parkway, Suite 400
Pleasant Grove, Utah 84062

Attn: Mr. Derek Stonebreaker, P.E.

Proposal
Geotechnical Investigation for Hillside Cut Wall
Little Cottonwood Canyon Immediately West of Alta Ski Resort
Alta, Utah

Dear Mr. Stonebreaker,

INTRODUCTION

Intermountain GeoEnvironmental Services, Inc. (IGES) is pleased to present our proposal to complete a geotechnical investigation of the proposed hillside cut area near Alta, Utah. A small building is proposed measuring 25x65 feet in plan with a 10 ft. tall wall tucked into the hillside. The approximate location of the site is shown in the following Google Earth photo and is slightly upslope from the adjoining highway and approximately 80 feet north of the road shoulder. A geotechnical investigation is needed to assist in the design of the wall and determine allowable soil bearing pressures. The structural design of the building will be performed by Horrocks Engineers. If soil nail stabilization of the slope is deemed appropriate, IGES would provide design for this component of the work. Our proposed Scope of Work, assumptions and projected costs for this work is provided in the following.



SCOPE OF WORK

GENERAL

The following scope of work is proposed for the investigations followed by somewhat more generalized discussions of our work in the laboratory and our report preparation and analyses to support Horrocks design efforts.

BACKGROUND

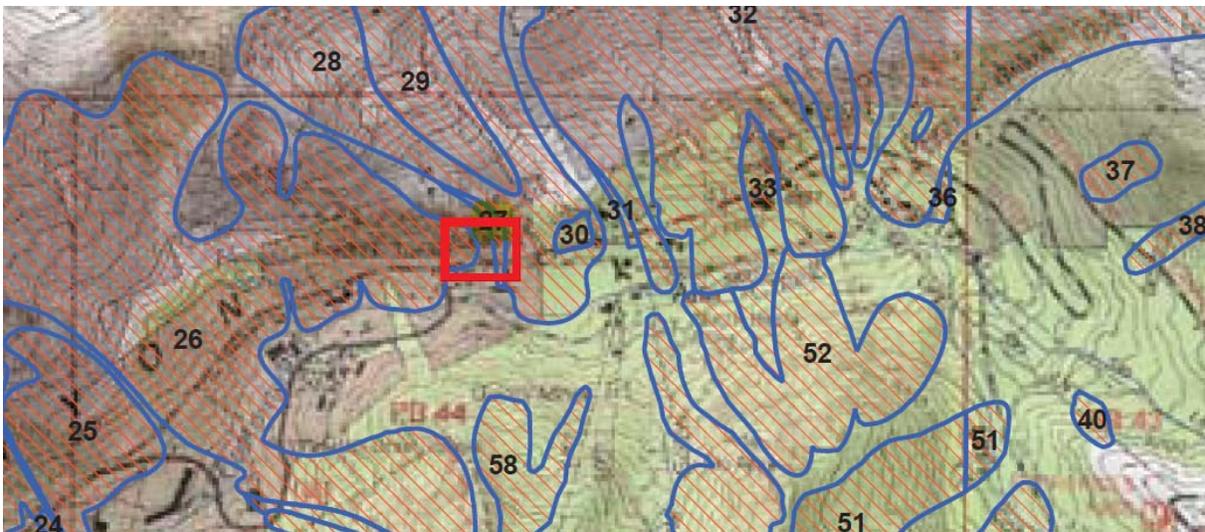
The close up aerial photo of the site indicates that the site is at the base of a rather steep slope covered with colluvium composed of talus or slide debris or their combination





Current site Conditions as seen from Little Cottonwood Canyon Road

As the photos show, the sloping hillside is moderately steep, but snow covered making access difficult. As seen in the mapping presented in the UDOT snow avalanche mapping, the slope may have the potential to be an avalanche chute or immediately adjacent to one. Excavation into the snow could potentially trigger a slide.



As such, it would be prudent to defer any site investigation requiring excavation until after the snow melt.

SITE INVESTIGATIONS

We propose to perform a single test pit at the proposed site to expose cut slope lithology and foundation soils. This single test pit will be sampled for laboratory testing and other wise supplemented by mapping of adjacent rock exposures and other geologic parameters. The test pit will also be photographed for additional documentation.

Bulk samples will be collected for laboratory testing. All work will be performed under the direction and supervision of an experienced geotechnical engineer.

All exploration locations will be backfilled with excavated materials.

LABORATORY TESTING

Appropriate laboratory tests will be performed on soil samples obtained from the field investigation described above. Specific laboratory tests will be dependent on actual soil conditions encountered at the site; however, tests currently envisioned are summarized below:

- Moisture-density tests
- Gradation analysis
- Atterberg Limits
- Laboratory Moisture Density Relationship (Proctor)
- Corrosivity Testing

REPORT AND RECOMMENDATIONS

The results of our investigation, laboratory testing, and engineering analyses will be presented in a final reports. This report will include, at a minimum, the following:

- a. A general Plot Plan and Vicinity map showing the location of site investigations.
- b. Logs of explorations.
- c. A detailed description of surface and subsurface conditions encountered.
- d. A summary of laboratory test data.
- e. Bearing capacity assessment and estimated settlement of the proposed wall design.
- f. Design lateral earth pressure parameters for wall design
- g. Global slope stability evaluation of the proposed wall system with consideration for traffic load and downslope geometry

One wet stamped hard copies of our final report will be provided along with a PDF version for electronic distribution.

If it appears more appropriate to use soil nail technology for slope retention, IGES will develop a soil nail wall design for Horrocks' use in preparing detailed plans and specifications. The design will include the various sized components of a soil nail wall

system including shotcrete thicknesses, plate design, nail size and lengths, welded wire mesh reinforcement recommendations. IGES will also provide review of the final design plans and specs for conformance to our design recommendations.

CONDITIONS, SCHEDULE AND FEES

IGES proposes to undertake the above scope of work on a **TIME & EXPENSE** basis in general accordance with our current schedule of fees and the attached "General Conditions" as presented on Attachment 1. Based on the scope of work outlined in the preceding, our fees estimated to perform the investigation, testing and report/design developments are estimated to be \$4,500 to \$5,000. If soil nail wall design is required, an additional \$2,500 fee will be charged including final drawing and spec review.

The above fee is based on the following assumptions:

1. Test pit location will be accessible via trackhoe and performed after slopes have essentially become clear of snow pack and avalanche hazard abated.
2. Horrocks will assist in locating test pit as required. Alternatively, test pit locations will be approximately located using handheld GPS methods
3. Free and clear access will be provided to all required investigation locations.
4. Client/Owner will provide a site topographic base map for use in our report in AutoCAD Format or similar.

Our site investigation can generally begin within one week of receipt of written authorization to proceed. Field work will require 1 day to complete.

Lab testing will require approximately 4-8 days to complete following delivery of samples to our laboratory. Our analyses and report preparation will require an additional week after completion of lab testing.

If you wish us to proceed with the proposed services, please indicate so by signing the Authorization to Proceed at the end of this proposal. Non-acceptance of these terms or any significant modification to them inclusive of limitations of liability, insurance levels or indemnification may result in a modification to our proposed fees as offered above or withdrawal of this proposal.

We appreciate the opportunity to provide you with our services and look forward to working with you on this project. If you have any questions regarding the proposed scope of work or any other aspects of our proposal please call.

Sincerely,
IGES, Inc.

A handwritten signature in cursive script that reads "John F. Wallace".

John F. Wallace, P.E.
Principal Engineer

Attachments:

1. General Conditions - Form B 100
2. Schedule of Fees - 2014