Staff Report for Administrative Hillside Review Approval

Weber County Planning Division

Synopsis

Application Information

Application Request:	Consideration and action on a Hillside Review Application for 8448 E. Copper Crest Rd., Eden.
Type of Decision:	Administrative
Applicant:	Jim and Penny Lacy
File Number:	HSR 2021-02

Property Information

Project Area:	0.08 Acres
Zoning:	Ogden Valley Destination and Recreation Resort (DRR-1) Zone
Existing Land Use:	Vacant
Proposed Land Use:	Residential
Parcel ID:	23-156-0004

Adjacent Land Use

North:	Residential	**South:**	Residential
East:	Residential	**West:**	Residential

Staff Information

Report Presenter:	Scott Perkes sperkes@webercountyutah.gov 801-399-8772
Report Reviewer:	RG

Applicable Ordinances

- Title 101 (General Provisions) Section 7 (Definitions)
- Title 104 (Zones) Section 29 (Ogden Valley Destination and Recreation Resort Zone DRR-1)
- Title 108 (Standards) Chapter 14 (Hillside Development)
- Title 108 (Standards) Chapter 22 (Natural Hazard Areas)

Background and Summary

The applicant is requesting approval of a Hillside Review for lot 147R of the Summit Eden Phase 1C, Amendment 7 Subdivision (see **Exhibit A**). All but one lot within this subdivision were platted as restricted lots due to their steep slopes. This included Lot 147R because a buildable area could not be established given the slope of the lot and potential geologic hazards.

The applicant has submitted a geotechnical and geologic hazards investigation prepared by IGES. The hazards evaluation cites the following levels of hazard:

Landslides/Mass Movement/Slope Stability:	Low Risk
Rockfall:	Low Risk
Surface-Fault Rupture and Earthquake-Related Hazards:	Low Risk
Liquefaction:	Low Risk
Debris-Flows and Flooding Hazards:	Low Risk
Shallow Groundwater:	Moderate Risk

- Regarding the moderate risk for shallow groundwater, the hazards report explains the following:

  Given the existing data, it is expected that groundwater levels will fluctuate both seasonally and annually, and the risk associated with shallow groundwater hazards is considered moderate. Spring thaw and runoff are likely to significantly contribute to elevated groundwater conditions. However,

shallow groundwater issues can be mitigated through appropriate grading measures and/or the avoidance of the construction of basement levels, or constructing basements with foundation drains.

In conclusion, the IGES report indicates *"the subsurface conditions are considered suitable for the proposed development provided that the recommendations presented in the report are incorporated into the design and construction of the project."*

As such, planning staff recommends that all recommendations within the geotechnical and geologic hazards report be followed as this site is developed. Prior to receiving a certificate of occupancy, the applicant will need to provide a letter from the geologist and geotechnical engineer, stating that all recommendations were followed as the house was constructed.

The following section is staff's review of the hillside review requirements of Weber County Land Use Code 108-14 Hillside Development Review Procedure and Standards.

Planning Division Review

The Planning Division Staff has determined that, in compliance with review agency conditions, the requirements and standards provided by the Hillside Review Chapter have been met for the excavation and construction of the dwelling. The following submittals were required:

1. Engineered Plans (see **Exhibit B**)
2. Geotechnical and Geologic Hazard Investigation (see **Exhibit C**).
3. Topographical site Plan (see **Exhibit D**)

Weber County Hillside Review Board comments

The Weber County Hillside Review Board, on this particular application, made the following comments and conditions:

Weber County Engineering Division: The Engineering Division have reviewed the proposed single-family home and have conditioned their approval on the following:

1. Follow the recommendations of the Geotechnical and Geologic Hazard Investigation prepared by IGES dated January 20, 2017.

Weber Fire District: The Fire Marshall has reviewed this single-family home have provided the following comment/condition:

1. This house will need a fire suppression system and a hydrant within 400'. I believe the hydrant is already installed but it's not showing on my map.

Impact fee $315.00

Weber County Building Inspection Department: The Building Department has not yet reviewed this single-family home project. However a detailed review will be conducted of their building plans once submitted for a building permit. Any and all conditions that may be imposed by the Building Department through the Building Permit Process will be applicable and contingent upon this hillside review approval.

Weber-Morgan Health Department: The Health Department has not yet provided a review of this project. Any review comments that may arise from the Health Department prior to the issuance of a Certificate of Occupancy shall be applicable and contingent upon this hillside review approval.

Weber County Planning Division: The Planning Division recommends approval subject to the applicant complying with all Hillside Review Board requirements and conditions. This recommendation for approval is also subject to the findings and conditions listed below.

Planning Division Findings

Staff recommends approval of HSR 2021-02 subject to all review agency requirements and the following conditions:

1. Development of the lot must follow all recommendations outlined in the geotechnical and geologic hazards investigation prepared by IGES.
2. A notice of natural hazards must be recorded against the property before a certificate of occupancy is issued for the proposed single-family residence.
3. Once the dwelling is complete, and prior to the issuance of a certificate of occupancy, the applicant must provide a letter from the geologist and geotechnical engineer, that states the home was built in accordance with the geologic hazards study and the geotechnical report recommendations.

The recommendation for approval is based on the following findings:

1. The application was submitted and has been deemed complete.
2. The requirements and standards found in the Hillside Development Review Procedures and Standards Chapter have been met or will be met during the excavation and construction phase of the dwelling.
3. The Hillside Review Board members reviewed the application individually and have provided their comments.
4. The applicant has met or will meet, as part of the building permit process and/or during the excavation and construction phase of the dwelling, the requirements, and conditions set forth by the Hillside Review Board.

Administrative Approval

Administrative approval of HSR 2021-02 is hereby granted based upon its compliance with the Weber County Land Use Code. This approval is subject to the requirements of applicable review agencies and is based on the findings listed in this staff report.

Date of Administrative Approval: 5/10/21

Rick Grover

Weber County Planning Director

Exhibits

A. Hillside Review Application
B. Engineered Building Plans
C. IGES Geotechnical and Geologic Hazard Investigation
D. Topographical Site plan

Area Map

Exhibit A

Weber County Hillside Review Application

Application submittals will be accepted by appointment only. (801) 399-8791. 2380 Washington Blvd. Suite 240, Ogden, UT 84401

Date Submitted / Completed	*Fees (Office Use)*	*Receipt Number (Office Use)*	*File Number (Office Use)*

Property Owner Contact Information

Name of Property Owner(s)	Mailing Address of Property Owner(s)
JIM AND PENNY LACY	98 thyme street Santa Rosa Beach, FL 32459
Phone: 502-551-5873 **Fax:** NA	
Email Address: pennyllacy@gmail.com	**Preferred Method of Written Correspondence:** ☒ Email ☐ Fax ☐ Mail

Authorized Representative Contact Information

Name of Person Authorized to Represent the Property Owner(s)	Mailing Address of Authorized Person
Pamela Russell	PO Box 68220 PARK CITY, UT 84068
Phone: 435-513-0355 **Fax:** NA	
Email Address: pamr@myscandinavian.com	**Preferred Method of Written Correspondence:** ☒ Email ☐ Fax ☐ Mail

Property Information

Project Name	Current Zoning
lot 147R	Residential
Approximate Address: 8448 E. Copper Crest Rd. Eden, UT 84310	**Land Serial Number(s):** 23-156-0004

Subdivision Name / Lot Number(s): Powder Mountain - lot 147R

Project Narrative

New residential custom home

Property Owner Affidavit

I (We), Jim and Penny Lacy, depose and say that I (we) am (are) the owner(s) of the property identified in this application and that the statements herein contained, the information provided in the attached plans and other exhibits are in all respects true and correct to the best of my (our) knowledge.

(Property Owner)

Penny L Lacy
(Property Owner)

Subscribed and sworn to me this 8 day of February, 20 21.

SUZANNE E WATKINS
Notary Public - State of Utah
Comm. No. 716410
My Commission Expires on
Feb 20, 2025

Suzanne E Watkins
(Notary)

Authorized Representative Affidavit

I (We), _____, the owner(s) of the real property described in the attached application, do authorized as my (our) representative(s), _____, to represent me (us) regarding the attached application and to appear on my (our) behalf before any administrative or legislative body in the County considering this application and to act in all respects as our agent in matters pertaining to the attached application.

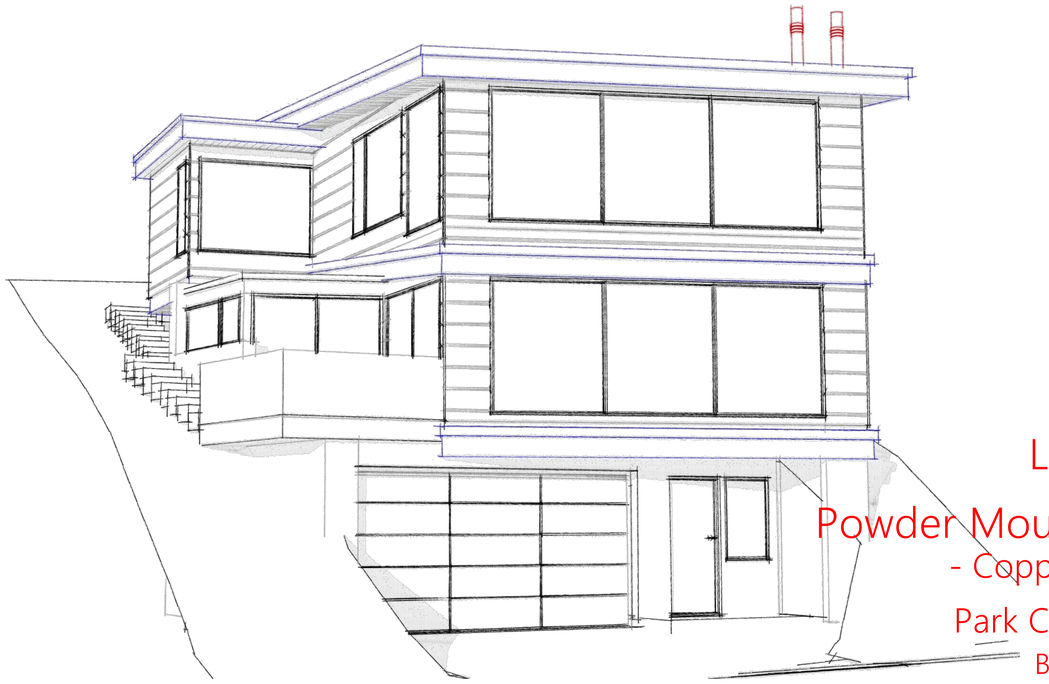
_____
(Property Owner)

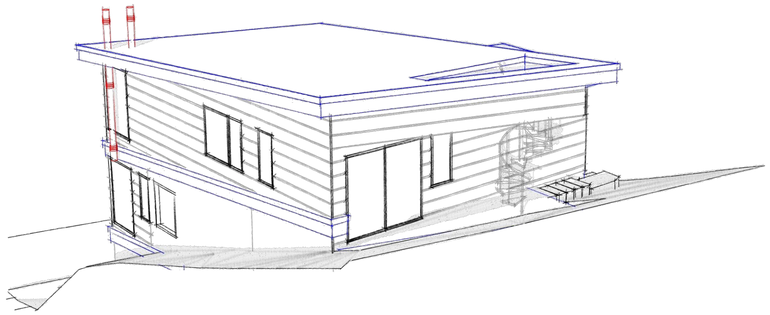
_____
(Property Owner)

Dated this _____day of _____, 20 _____, personally appeared before me _____, the signer(s) of the Representative Authorization Affidavit who duly acknowledged to me that they executed the same.

_____
(Notary)

Exhibit B



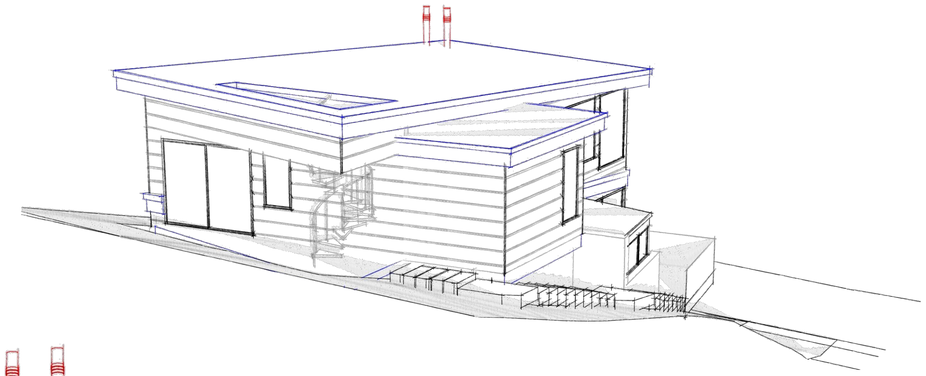


LACY

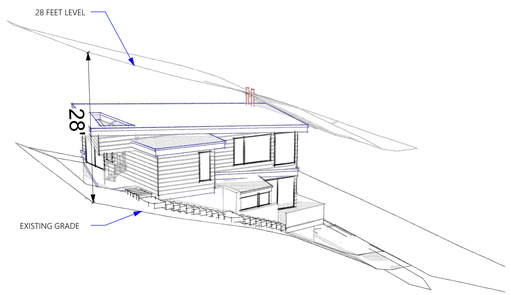
Powder Mountain, Lot # 147
- Copper Crest,
Park City, Utah

Build by:

Scandinavian LLC



DRAWING INDEX:



Building ***dreams*** *into* ***legacies***

SCANDINAVIAN LLC

ARCHITECTURAL OFFICE

Company Name Scandinavian LLC

Address 6410 N. Business Park Loop Rd. Unit E

Phone 435-513-0355

Fax

Project No.

Cad File

Drawn

Checked

A New Residence:
PENNY AND JIM LACY
Summit Powder Mountain, Lot # 147
- Copper Crest, Utah

BUILDER

Company Name

Address

Park City, Utah 84098

Phone

Fax

Drawing Date 5-4-2021

Scale

Title/No.

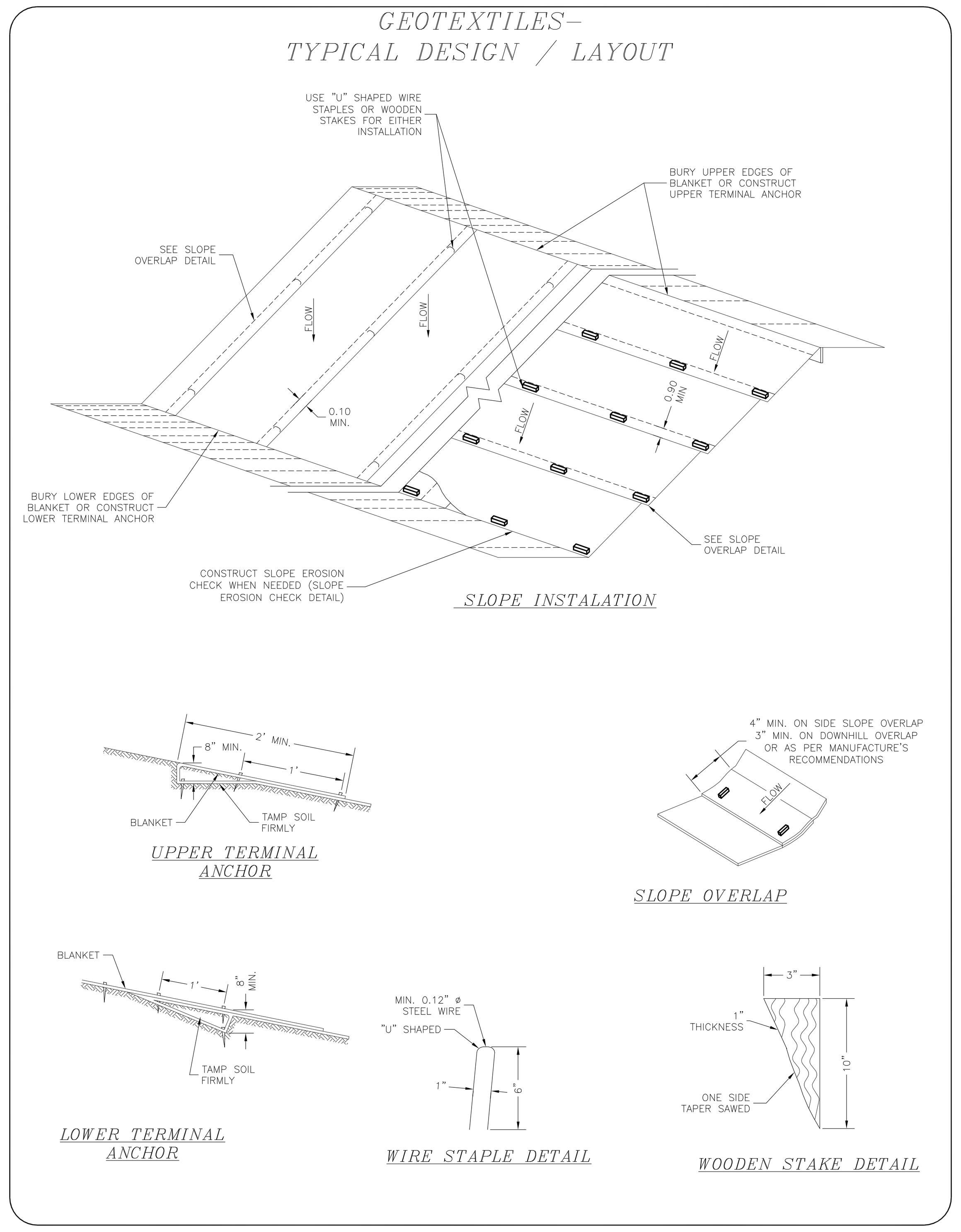
COVER SHEET

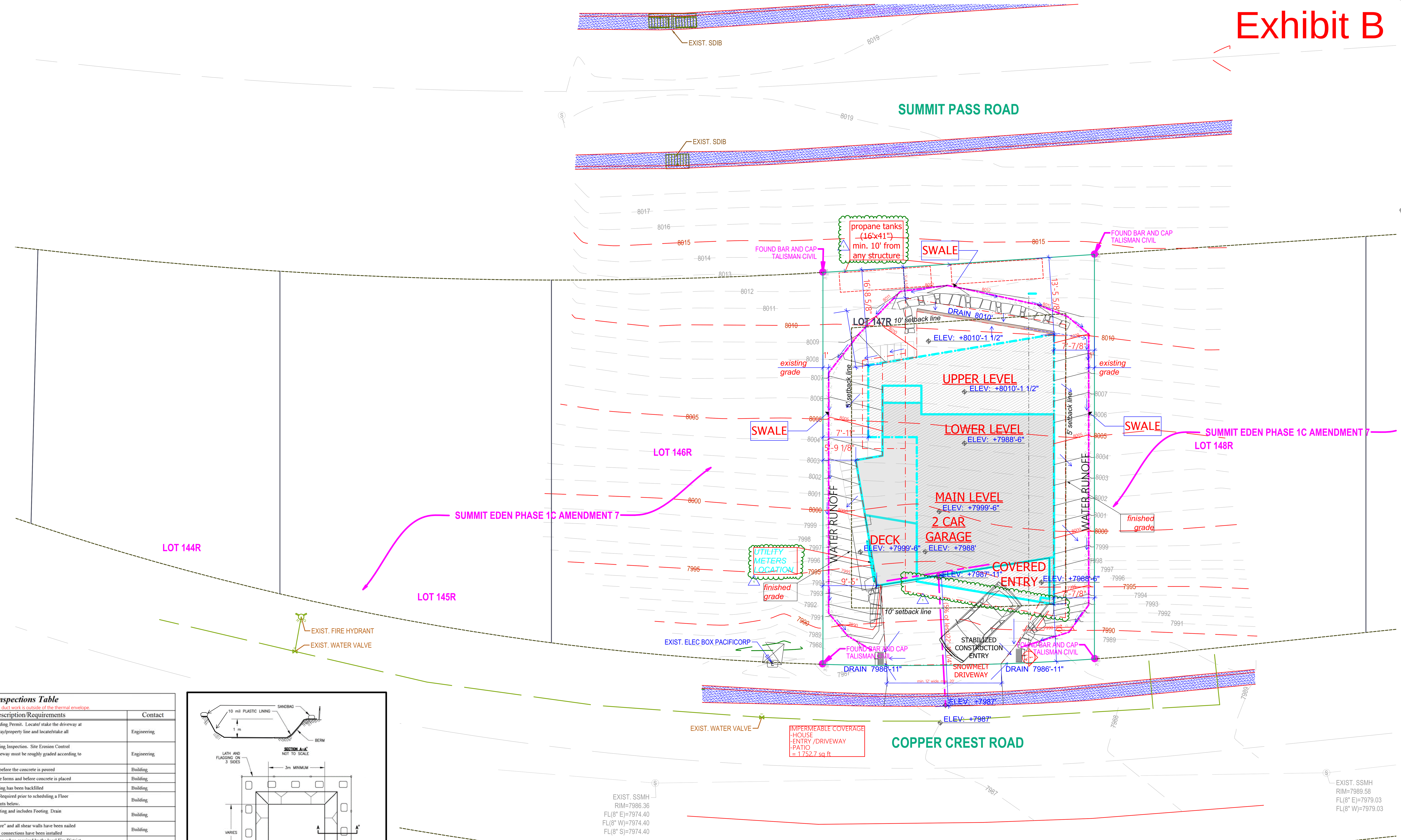
BUILDER/ DEALER'S APPROVAL :

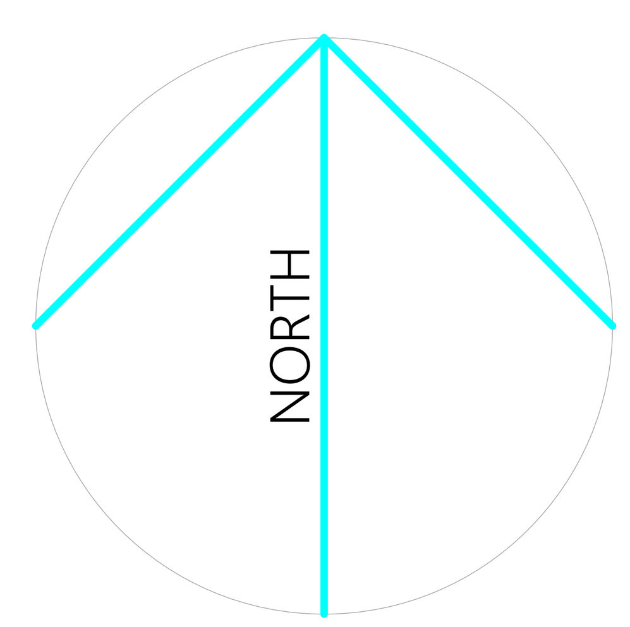
Signature and Date

1.0

Exhibit B

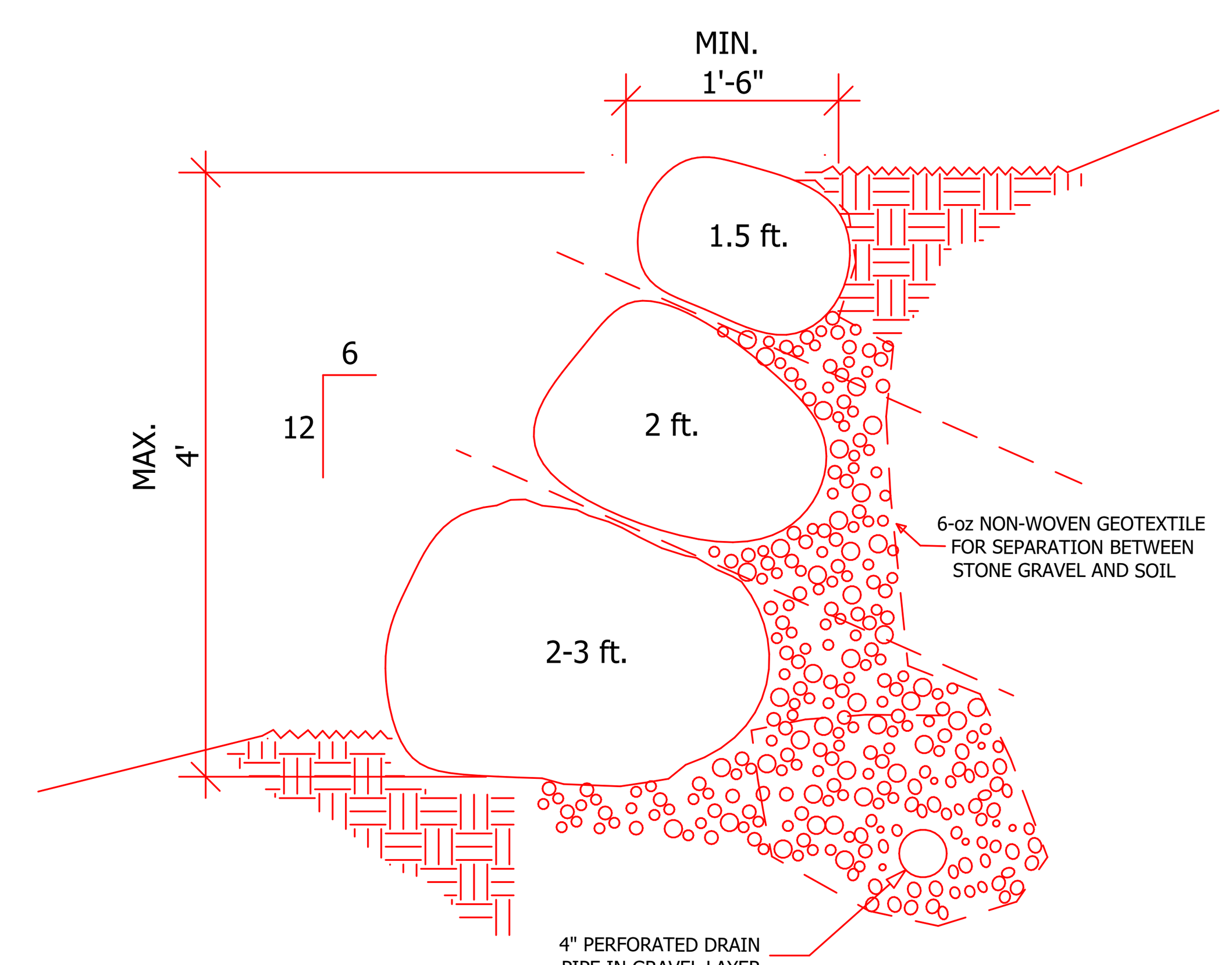






LEGEND

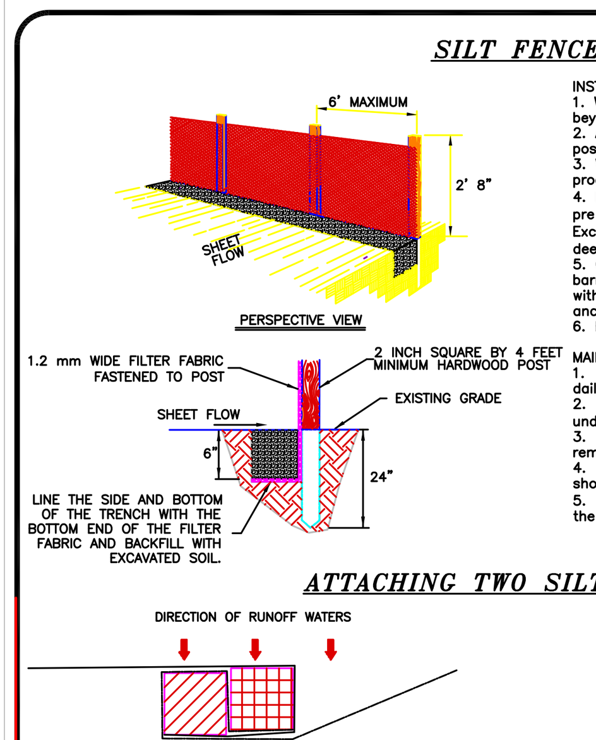
- FOUND REBAR W/ CAP (AS DESCRIBED)
- SANITARY SEWER MANHOLE
- WATER METER
- UTILITY POLE
- COMMUNICATION BOX
- ELECTRIC BOX
- OVERHEAD ELECTRICAL POWER LINE
- STACKED ROCK RETAINING/LANDSCAPING WALL



2
1.1
BOULDER WALL DETAIL
R105.3
RETAINING WALLS
(>4' OR SUPPORTING A SURCHARGE)
REQUIRE SEPARATE PERMITS.

NOTE !
BOULDERS ARE TO BE SELECTED & STACKED TO PROVIDE MAX. CONTACT. BOULDER WALLS ARE DESIGNED TO BE LESS THAN 4 FEET IN HEIGHT. IF THEY EXCEED 4 FEET, THEY WILL BE ENGINEERED. 12" - 18" MIN. ROUND BOULDER SIZE.

SILT FENCE



INSTALLATION:
1. Where possible, layout the silt fence 5 to 10 feet beyond the toe of slope.
2. Align the fence along the contour as close as possible.
3. When excavating the trench, use machinery that will produce no more than the desired dimension.
4. Place posts 6 foot on center along contour (or use pre assembled unit) and drive 2 feet (min.) into ground. Excavate an anchor trench (8 inches wide and 8 inches deep) immediately up-gradient of posts.
5. Cut fabric to required width, unroll along length of barrier and drape over barrier. Secure fabric to, stakes with staples, or similar, with trailing edge extending into anchor trench.
6. Backfill trench over filter fabric to anchor.

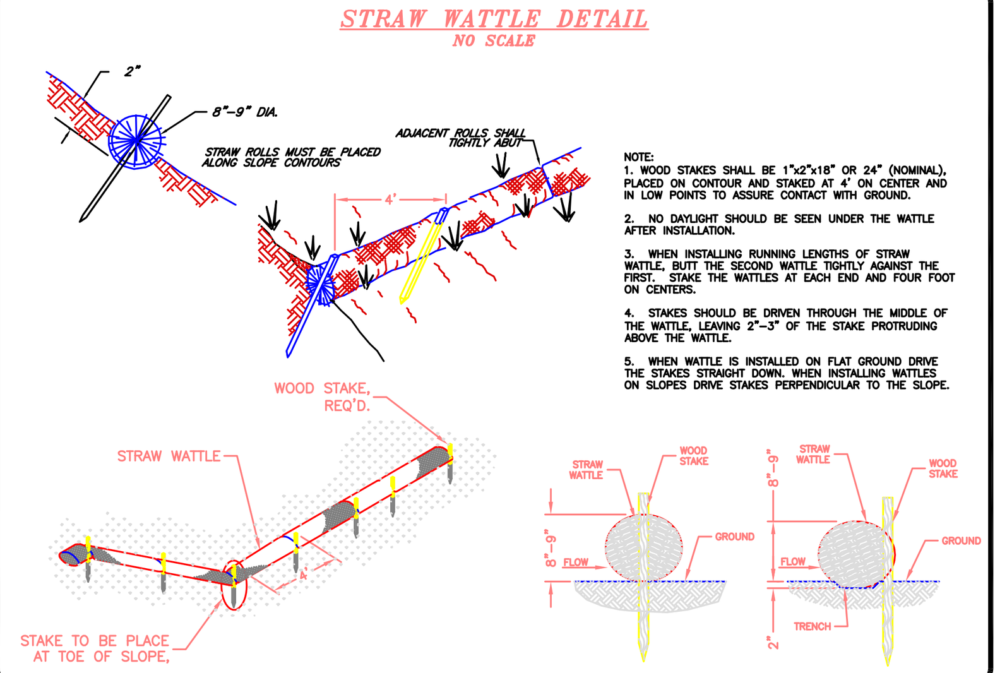
MAINTENANCE:
1. Inspect immediately after any rainfall and at least daily during prolonged rainfall.
2. Look for runoff bypassing ends of barriers or undercutting fence (repair immediately).
3. Repair or replace damaged areas of the fence and remove accumulated sediment.
4. Re-anchor fence as necessary to prevent shortcutting.
5. Remove accumulated sediment when it reaches ½ the height of the fence.

ATTACHING TWO SILT FENCES

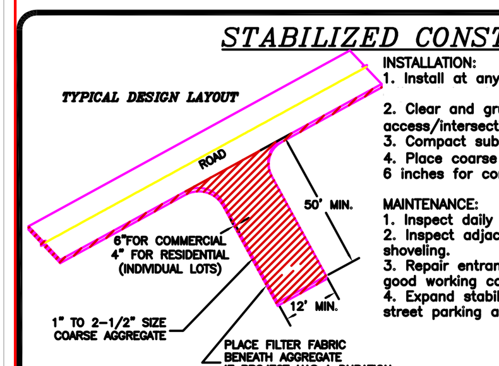
1. PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST FENCE.
2. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL.
3. DRIVE BOTH POSTS ABOUT 24 INCHES INTO THE GROUND AND BURY FLAP.

STRAW WATTLE DETAIL

NO SCALE



STABILIZED CONSTRUCTION ENTRANCE



INSTALLATION:
1. Install at any point of ingress or egress at a construction site.
2. Clear and grub area and grade to provide slope shown for driveway, or access/intersection. If adjacent to waterway, use a maximum slope of 2%.
3. Compact subgrade and place filter fabric.
4. Place coarse aggregate, 1 to 2 ½ inches size, to a minimum depth of 6 inches for commercial projects, and 4 inches for residential projects.

MAINTENANCE:
1. Inspect daily for loss of gravel or sediment buildup.
2. Inspect adjacent roadway for sediment deposit and clean by sweeping or shoveling.
3. Repair entrance and replace gravel as required to maintain control in good working condition.
4. Expand stabilized area as required to accommodate traffic, and off site street parking and prevent erosion at driveway.

Required Inspections Table

NOTE: Duct testing will be required where air handlers or more than 25% of the duct work is outside of the thermal envelope.

Inspection	Description/Requirements	Contact
Driveway/ Site Staking	Required prior to issuance of a Building Permit. Locate/ stake the driveway at the street and at the road right of way/property line and locate/stake all property corners.	Engineering
Rough Grading	Required prior to scheduling a Footing Inspection. Site Erosion Control measures must be installed and driveway must be roughly graded according to plan	Engineering
Footing	Schedule after steel is in place and before the concrete is poured	Building
Foundation	Schedule after steel is in place in the forms and before concrete is placed	Building
Under Slab Plumbing & Heating	Before concrete is poured or plumbing has been backfilled	Building
Certificate of Elevation and/or Survey	Performed by a licensed surveyor. Required prior to scheduling a Floor Framing Inspection. See requirements below.	Building
Floor Framing Inspection	Required prior to placing floor sheeting and includes Footing Drain inspection	Building
Shear Wall	After the building is up to "the square" and all shear walls have been nailed and all the tie downs and shear wall connections have been installed	Building
Fire Sprinklers	Required prior to four-way inspection, when required by the local Fire District	Building
Four-Way	This inspection is performed after all rough electrical, plumbing, and mechanical has been installed. All framing is complete, shear walls previously inspected, and truss specifications are on the job for the inspector to read. Plumbing shall have either an air or water pressure test on them when the inspector arrives	Building
Weather Barrier/Stucco Lath	Weather barrier shall be inspected prior to applying veneer. Approved stucco I.C.C. research reports on site	Building
Gas Meter Set	Required before gas meter clearance is given to Questar	Building
Masonry wall/bond beam	Steel in masonry and before concrete/grout is poured	Building
Insulation	Pre Sheetrock insulation certificate required	Building
Drywall Nailing	This is done before drywall is taped	Building
Power to Panel	Building must be up with permanent roof installed	Building
Driveway pre-surfacing	Site Erosion Control measures must be installed and driveway graded to it's final configuration	Engineering
Final Driveway and Site Inspection	Required prior to Certificate of Occupancy and/or Bond Release. Driveway must be surfaced and site must be revegetated (inspections may be schedule separately). If the site is not revegetated, the erosion control measures must be in place and installed correctly.	Engineering
Flood Plain Elevation Certificate	FEMA Elevation Certificate (if applicable) required prior to Certificate of Occupancy. Form must be filed with FEMA and a copy provided to the Engineering Department	Engineering
Final	All work is DONE and building complete. Final clearances from the waste water district for sewer, County Health Department for septic, and fire district for sprinkler systems must be on the project for this inspection. Required for Certificate of Occupancy	Building
Certificate of Occupancy	Required prior to anyone occupying the structure. A Certificate of Occupancy will be issued once the final clearances have been obtained by the builder and brought to the Building Department's office in Coalville 1) Snyderville Basin Residential: Final from Building Department, Final from Engineering Department, Final letter from Snyderville Basin Water Reclamation District, Final water concurrency letter from appropriate water company, Final from Park City Fire District (in required subdivisions). 2) Eastern Summit County: Final from Building Department, Final from Engineering Department, Final from Fire District and Final from Health Department	Building
ECP Bond Release Inspection	Required to verify that the site has been fully stabilized (revegetated). Inspection is required prior to applicant receiving a release of their Erosion Control Bond. Applicant must provide a written request for the release of the bond.	Engineering

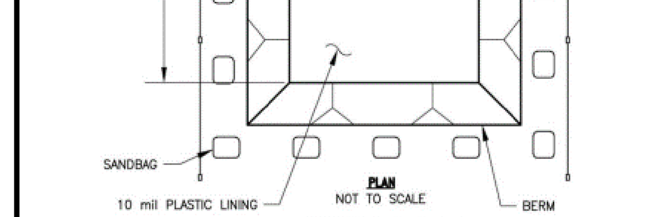
Construction Mitigation Plan Notes

- Show location for dumpster, portable toilets, materials storage, parking
- Construction parking/traffic may not block the street without a permit (available from the Engineering Division)
- Mud tracked out onto the street must be cleaned prior to the end of the work day
- The construction site must be maintained in a neat manner. Trash and other debris may not accumulate outside the dumpster.
- Roadside parking is not allowed from November 15 to April 15

Construction parking cannot be located within the R-O-W.
No street side parking is allowed during the winter season, Nov. 15 thru April 15.

- Perform washout of concrete trucks offsite or in designated concrete washout areas only.
- Do not wash out concrete trucks onto the ground, or into storm drains, open ditches, streets, or streams.
- Do not allow excess concrete to be dumped onsite, except in designated concrete washout areas.

Concrete washout areas may be prefabricated concrete washout containers, or self-installed structures (above-grade or below-grade).
- Prefabricated containers are most resistant to damage and protect against spills and leaks. Companies may offer delivery service and provide regular maintenance and disposal of solid and liquid waste.
- If self-installed concrete washout areas are used, below-grade structures are preferred over above-grade structures because they are less prone to spills and leaks.
- Self-installed above-grade structures should only be used if excavation is not practical.



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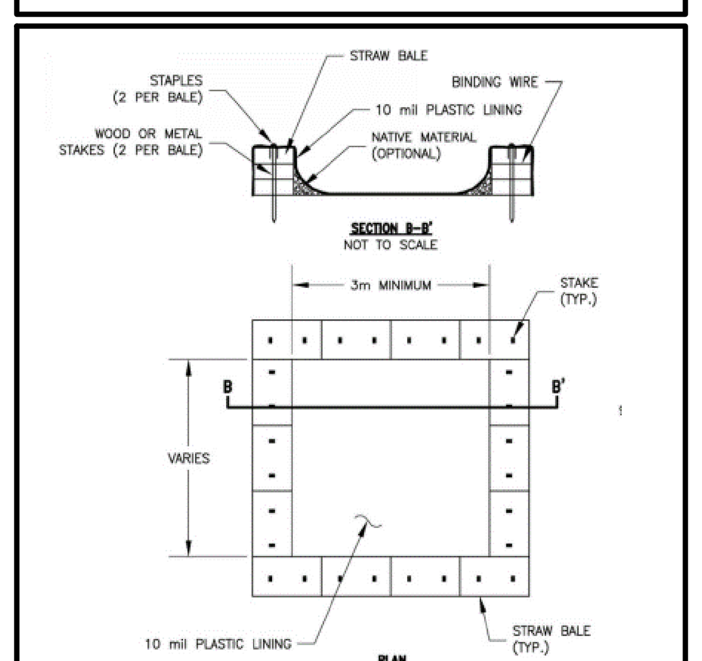
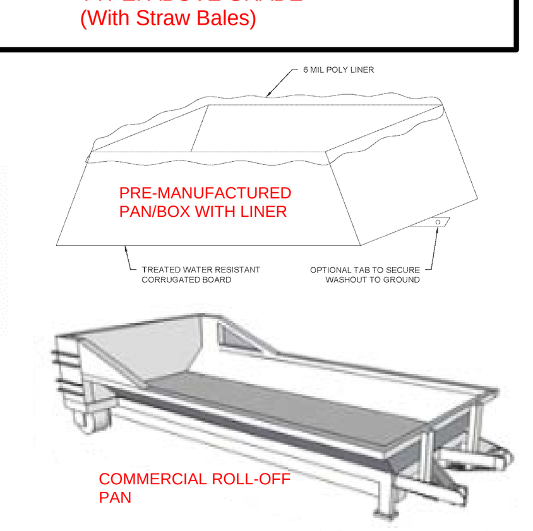


TYPE: ABOVE GRADE
(With Straw Bales)



SCANDINAVIAN LLC

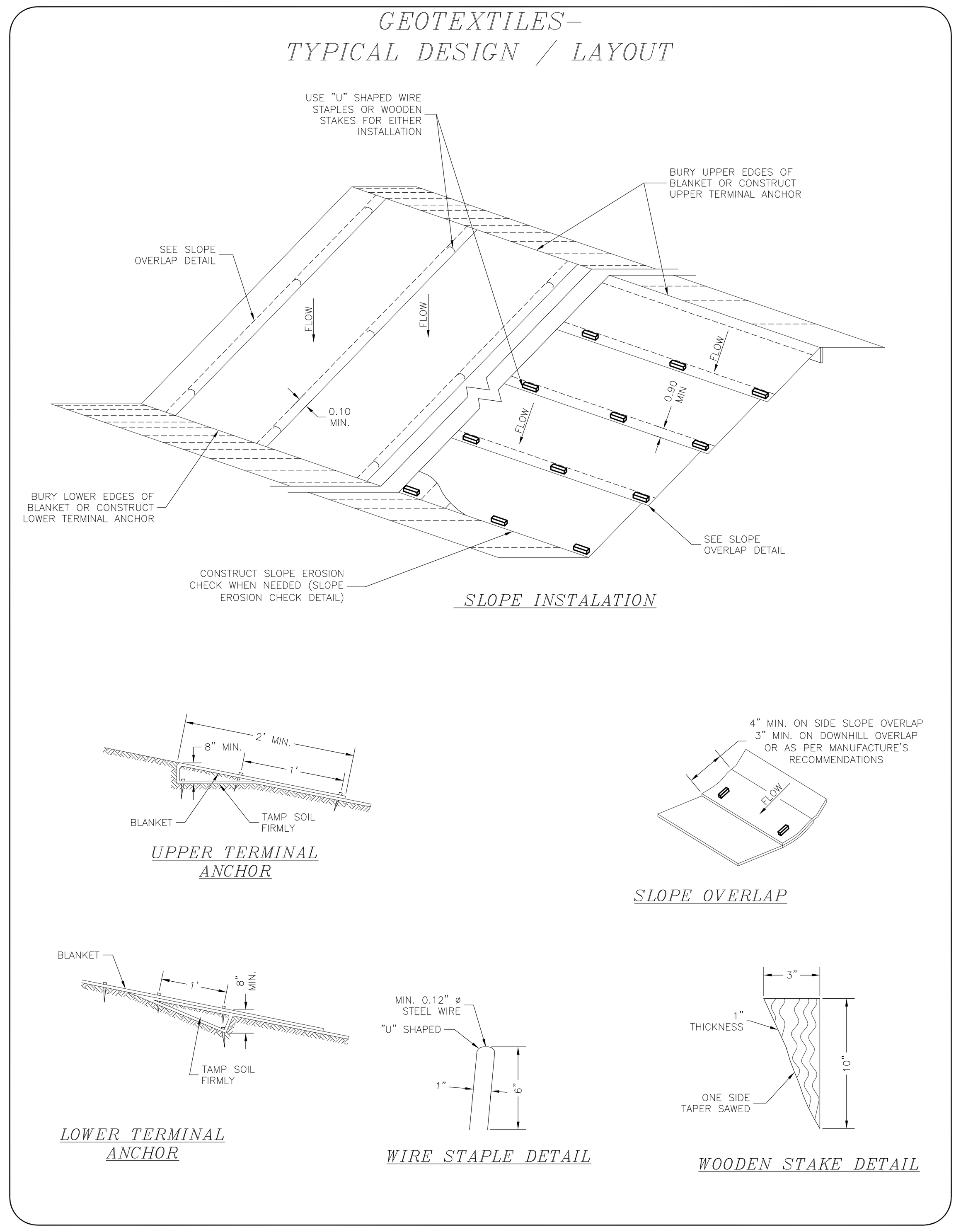
ARCHITECTURAL OFFICE
Company Name: Scandinavian LLC
Address: 6410 N. Business Park Loop Rd. Unit E
Phone: 435-513-0355
Fax
Project No.
Cad File
Drawn
Checked

A New Residence:
PENNY AND JIM LACY
Summit Powder Mountain, Lot # 147 - Copper Crest, Utah

BUILDER
Company Name
Address
Park City, Utah 84098
Phone
Fax

Drawing Date: 5-4-2021
Scale: 1" = 10'-0"
Title/No.: SITE PLAN
BUILDER/ DEALER'S APPROVAL:
Signature and Date

1.1



CONSTRUCTION MITIGATION PLAN

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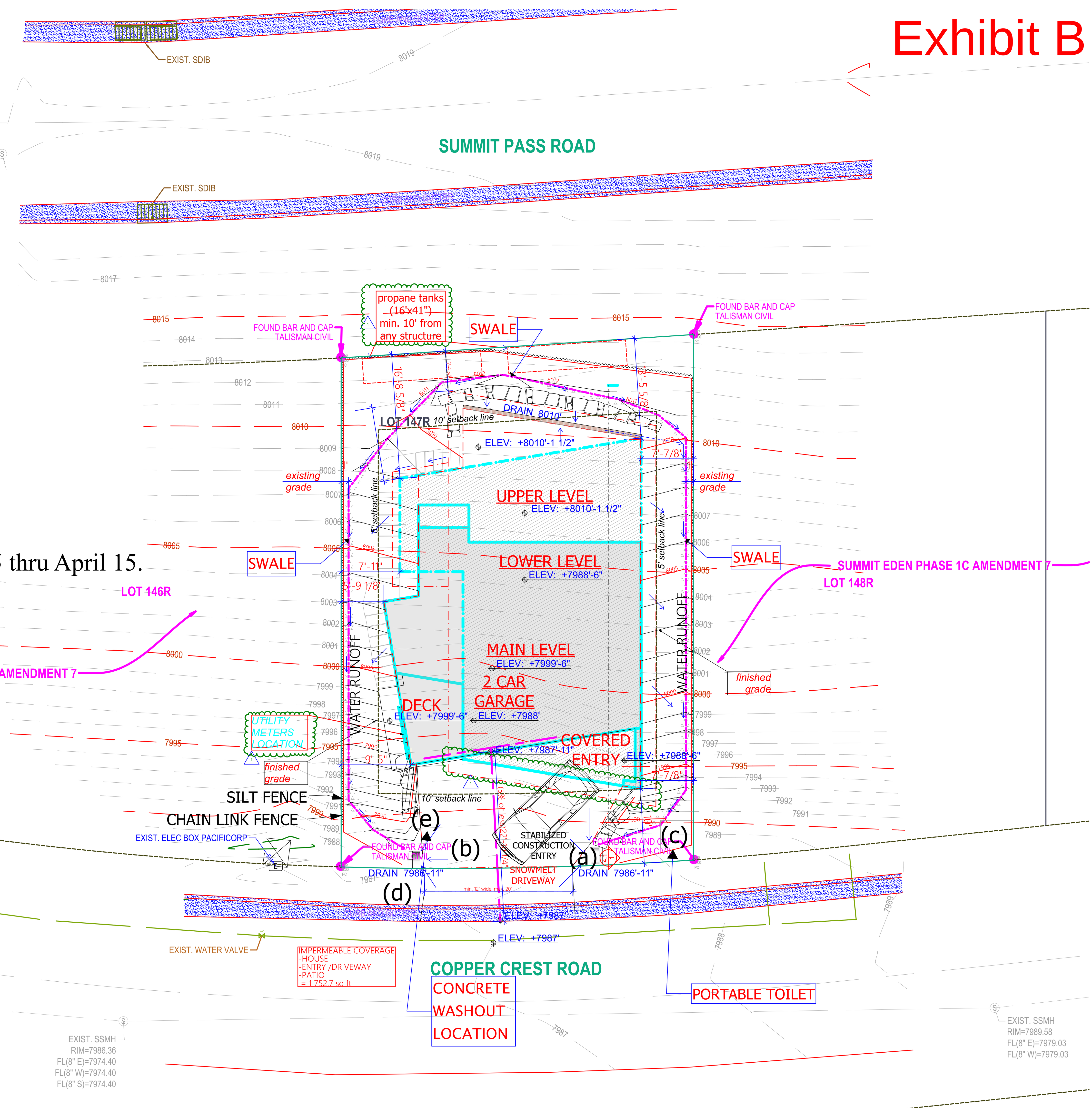
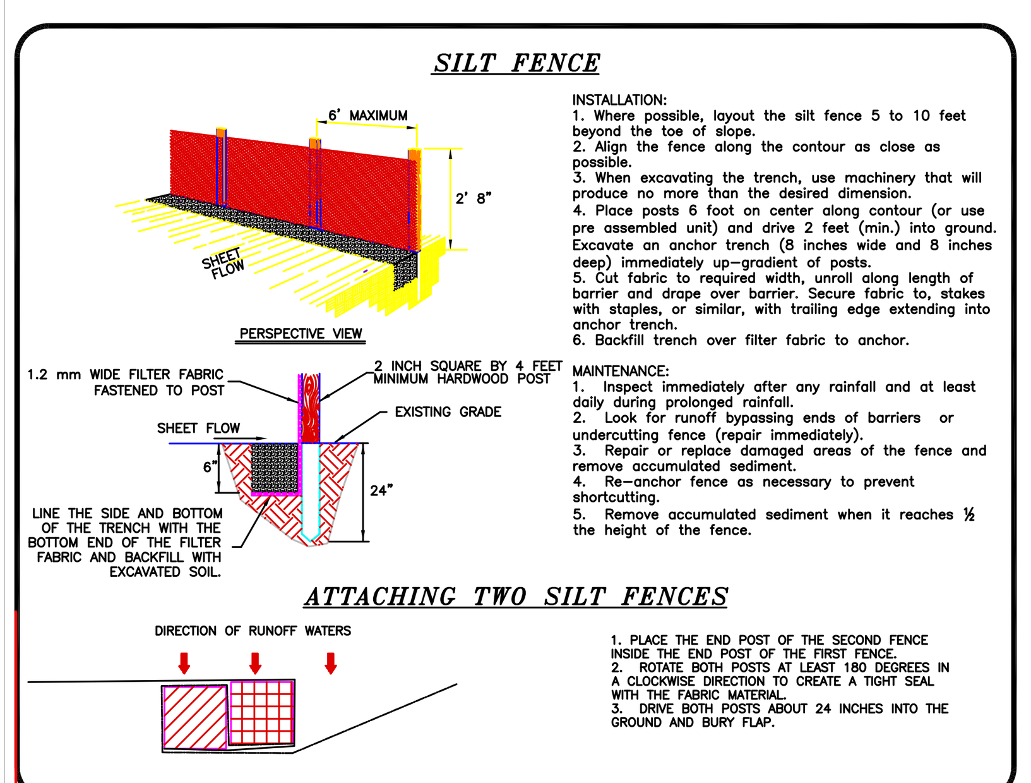
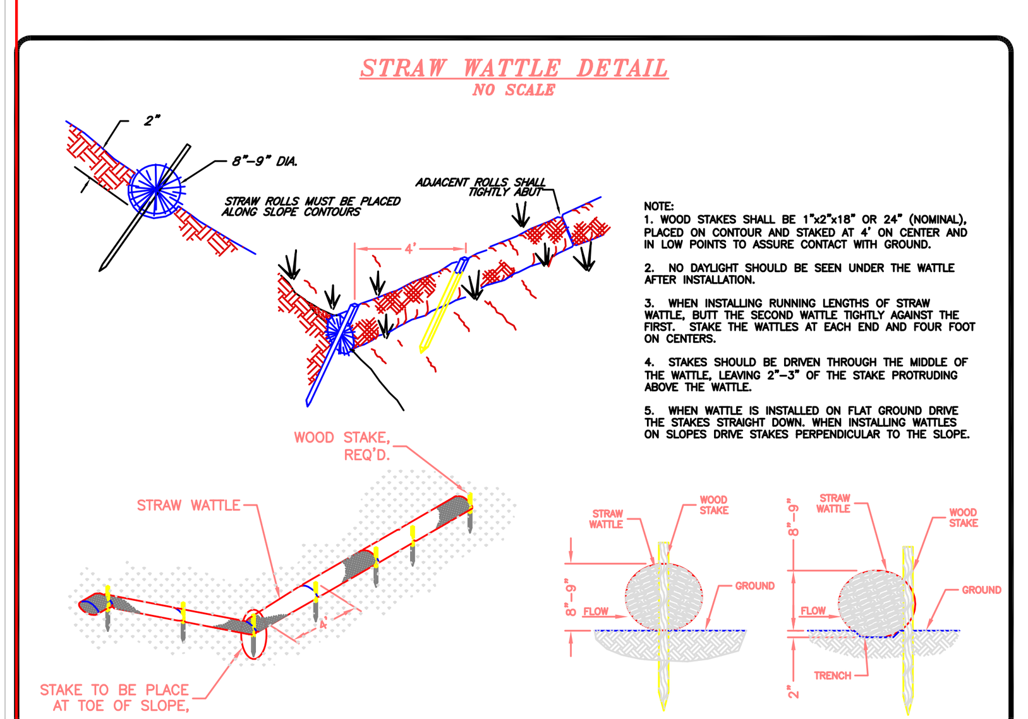
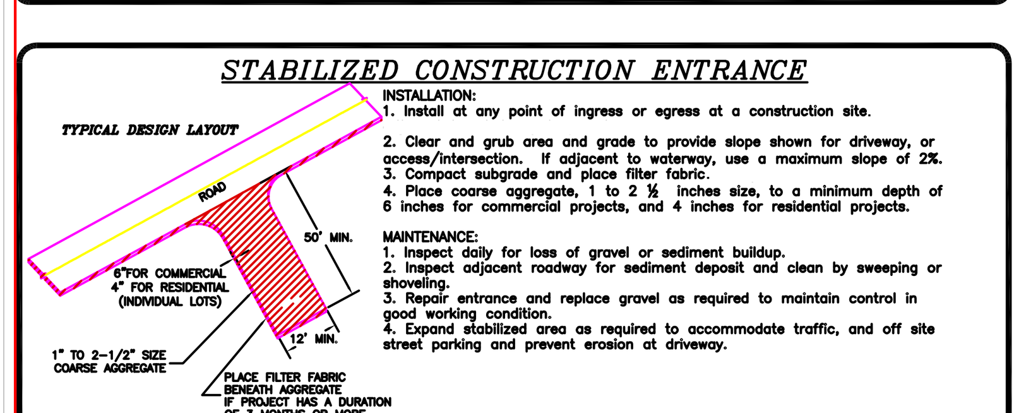
(a) = TRASH RECEPTACLE (COVERED DUMPSTER)
(b) = STORAGE AREA
(c) = PORTABLE TOILET
(d) = PARKING AREA
(e) = CONCRETE WASHOUT

Exhibit B









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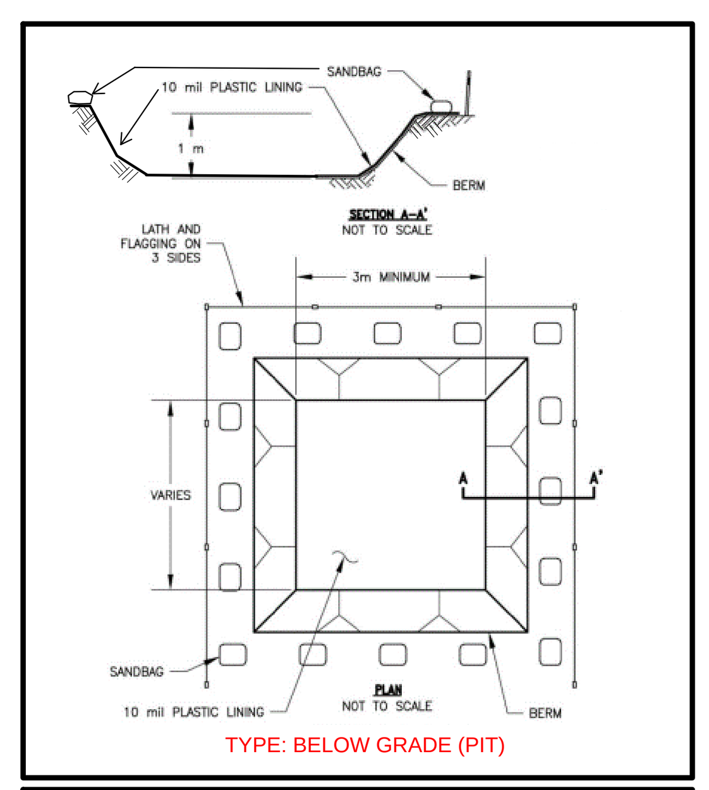
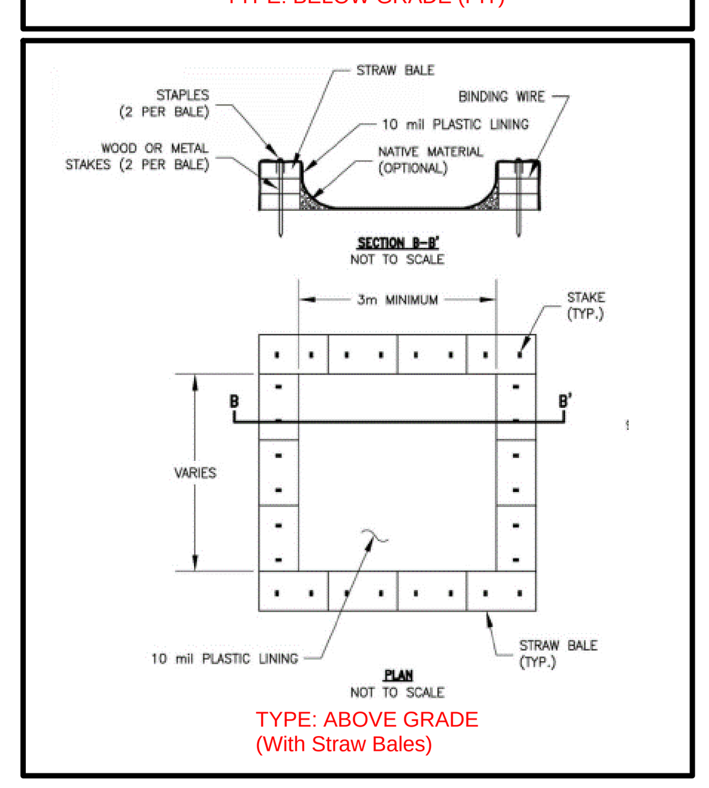
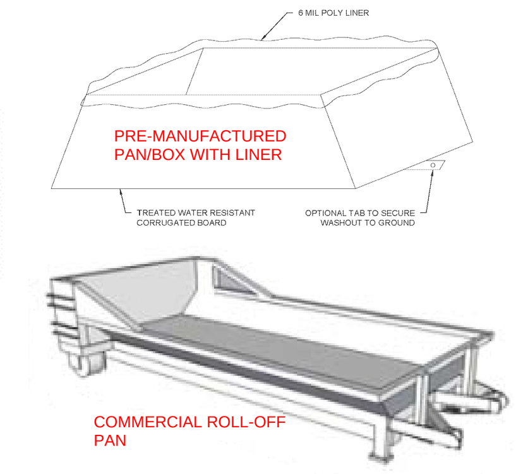
Construction parking cannot be located within the R-O-W.
No street side parking is allowed during the winter season, Nov. 15 thru April 15.

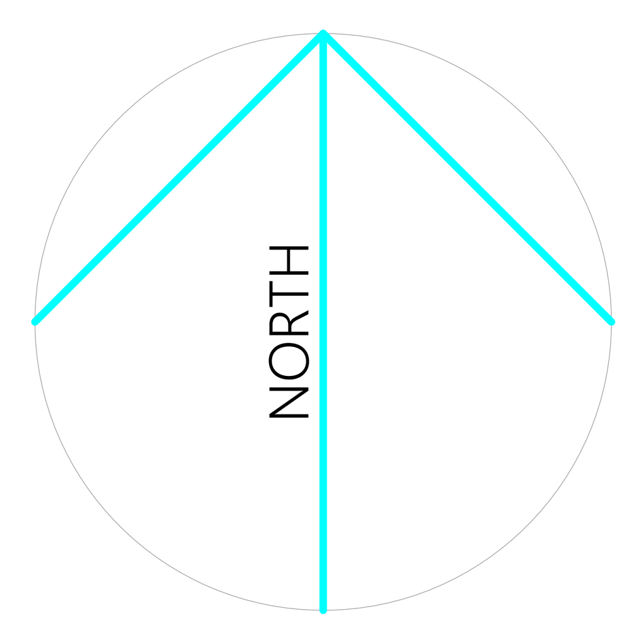
- Perform washout of concrete trucks offsite or in designated concrete washout areas only.
- Do not wash out concrete trucks onto the ground, or into storm drains, open ditches, streets, or streams.
- Do not allow excess concrete to be dumped onsite, except in designated concrete washout areas.

Concrete washout areas may be prefabricated concrete washout containers, or self-installed structures (above-grade or below-grade).
  - Prefabricated containers are most resistant to damage and protect against spills and leaks. Companies may offer delivery service and provide regular maintenance and disposal of solid and liquid waste.
  - If self-installed concrete washout areas are used, below-grade structures are preferred over above-grade structures because they are less prone to spills and leaks.
  - Self-installed above-grade structures should only be used if excavation is not practical.



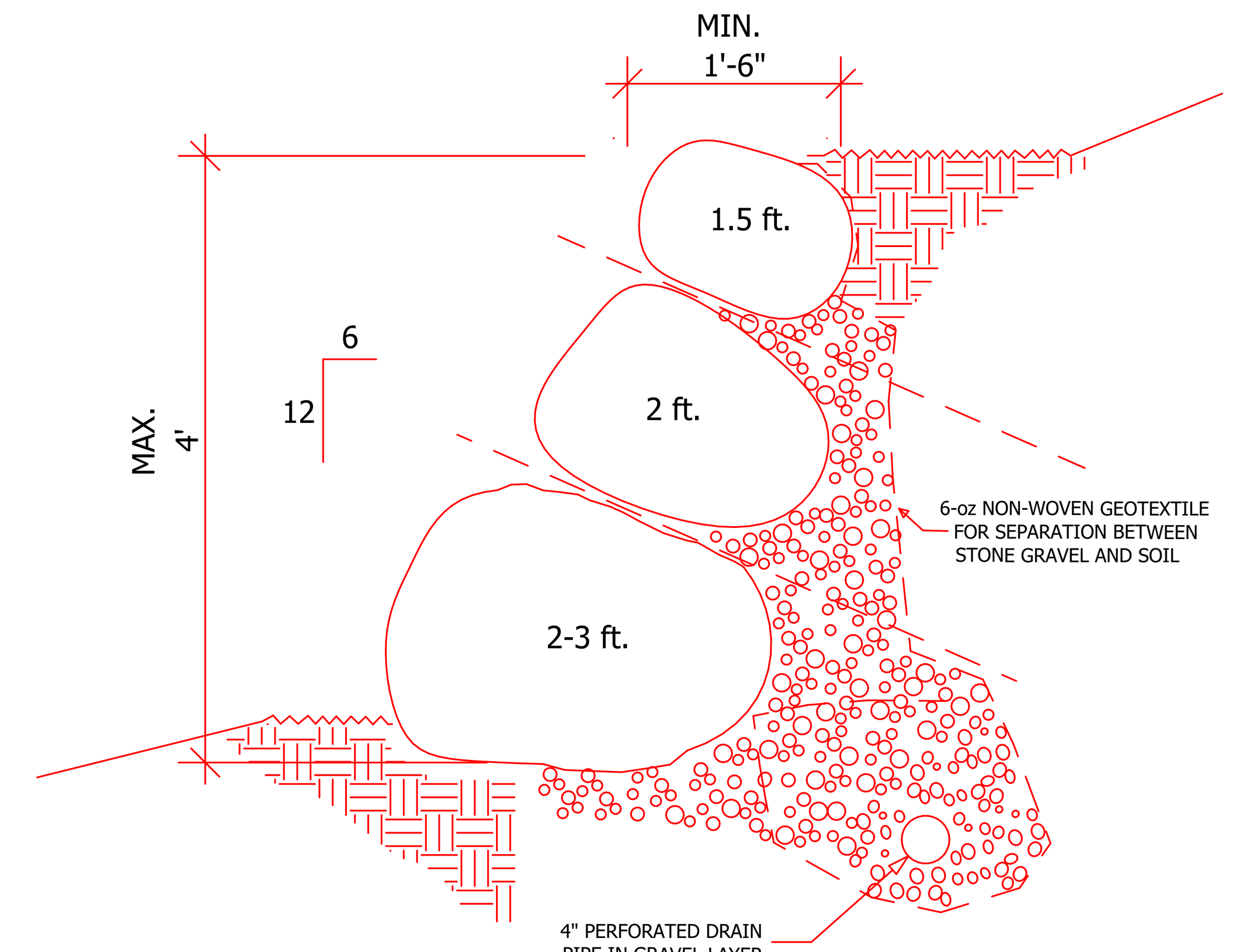






LEGEND

- FOUND REBAR W/ CAP (AS DESCRIBED)
- SANITARY SEWER MANHOLE
- WATER METER
- UTILITY POLE
- COMMUNICATION BOX
- ELECTRIC BOX
- OVERHEAD ELECTRICAL POWER LINE
- STACKED ROCK RETAINING/LANDSCAPING WALL



2 / 1.1 BOULDER WALL DETAIL

R105.3
RETAINING WALLS
(>4' OR SUPPORTING A SURCHARGE)
REQUIRE SEPARATE PERMITS.

NOTE !
BOULDERS ARE TO BE SELECTED & STACKED TO PROVIDE MAX. CONTACT. BOULDER WALLS ARE DESIGNED TO BE LESS THAN 4 FEET IN HEIGHT. IF THEY EXCEED 4 FEET, THEY WILL BE ENGINEERED. 12" - 18" MIN. ROUND BOULDER SIZE.

SCANDINAVIAN LLC

ARCHITECTURAL OFFICE
Company Name: Scandinavian LLC
Address: 6410 N. Business Park Loop Rd. Unit E
Phone: 435-513-0355
Fax
Project No.
Cad File
Drawn
Checked

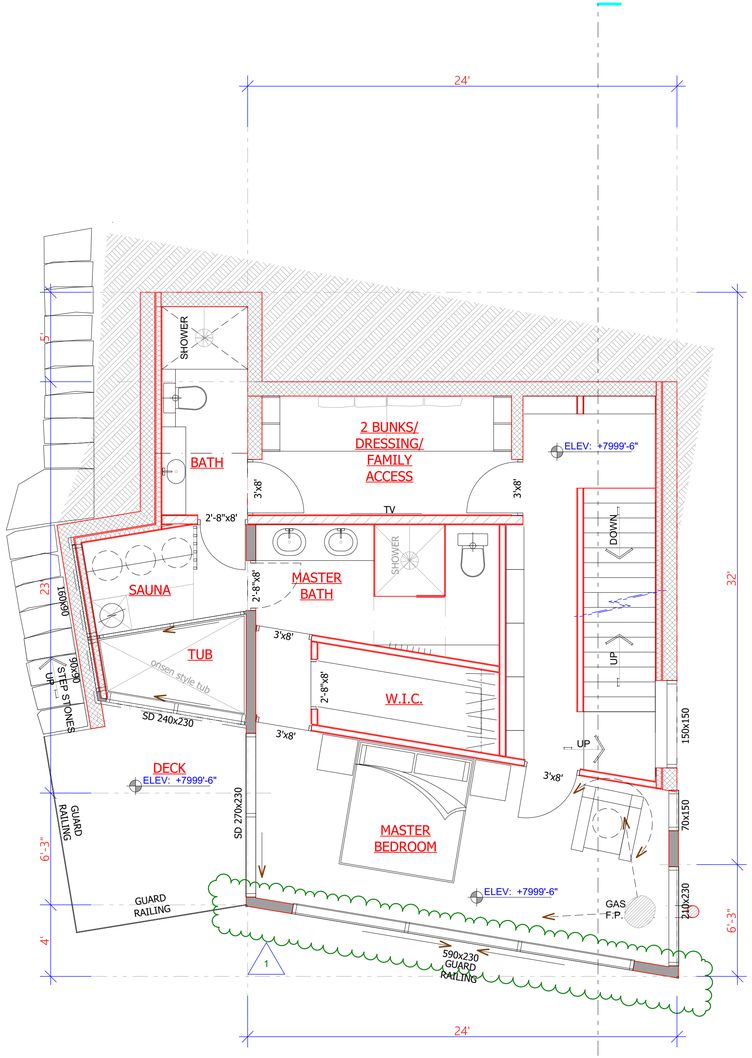
A New Residence:
PENNY AND JIM LACY
Summit Powder Mountain, Lot # 147 - Copper Crest, Utah

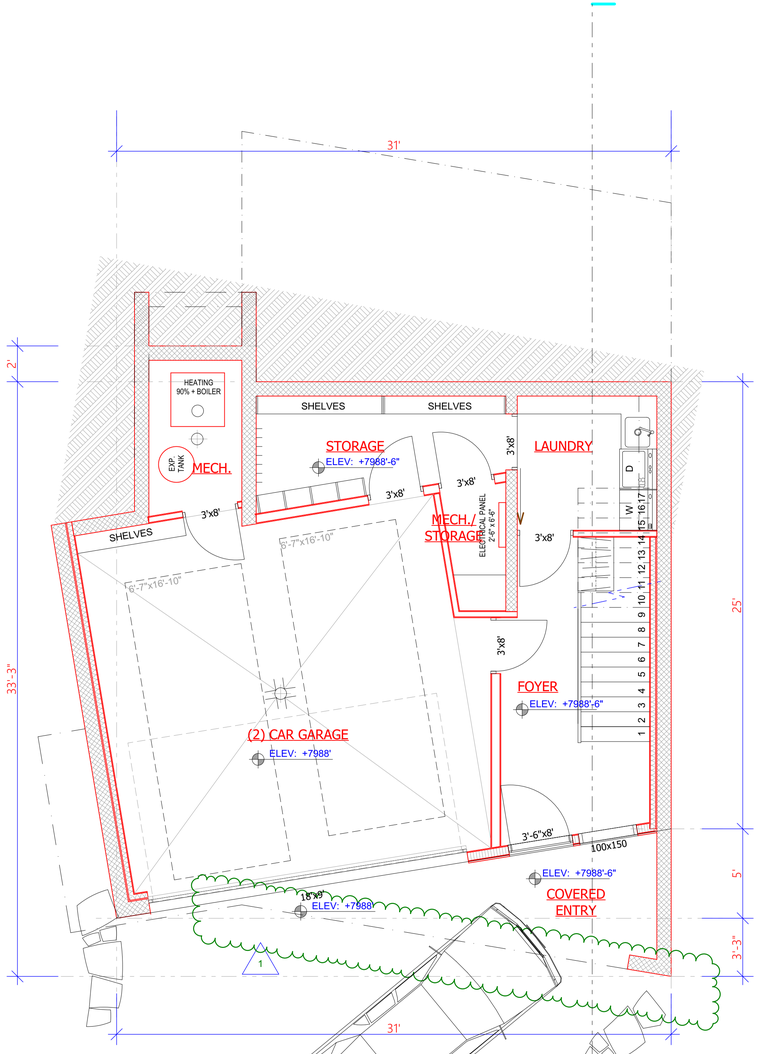
BUILDER
Company Name
Address: Park City, Utah 84098
Phone
Fax

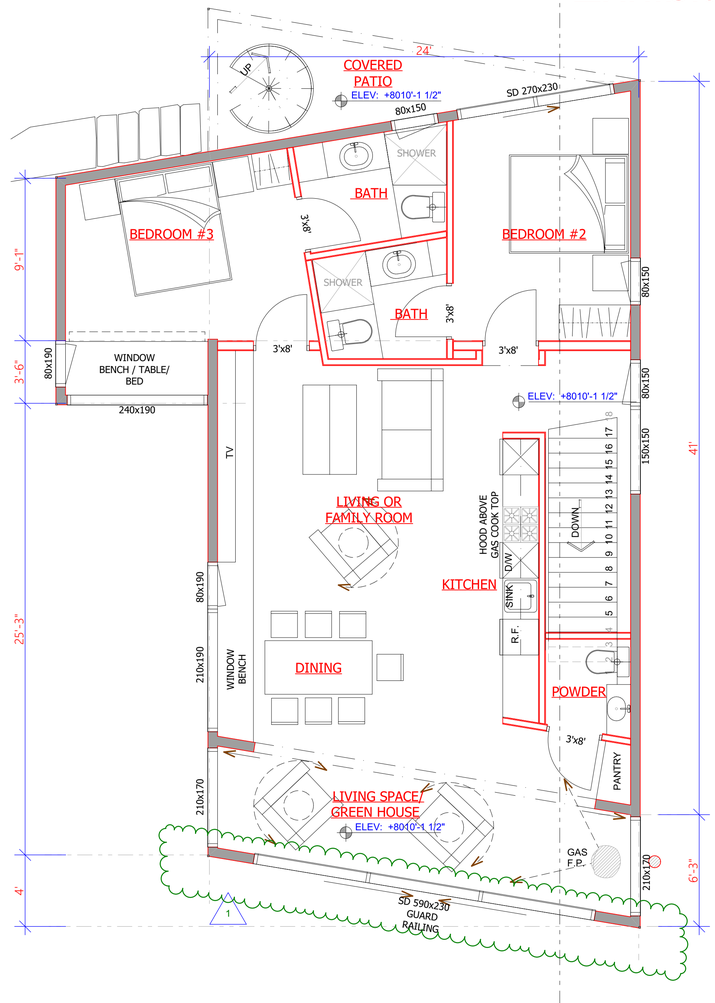
Drawing Date: 5-4-2021
Scale: 1" = 10' -0"
Title/No.: Construction Mitigation SITE PLAN
BUILDER/ DEALER'S APPROVAL :
Signature and Date

1.1

Exhibit B







1 2.1 MAIN LEVEL FLOOR PLAN

SCALE

0 2 4 8

2 2.1 LOWER LEVEL FLOOR PLAN

SCALE

0 2 4 8

3 2.1 UPPER LEVEL FLOOR PLAN

SCALE

0 2 4 8

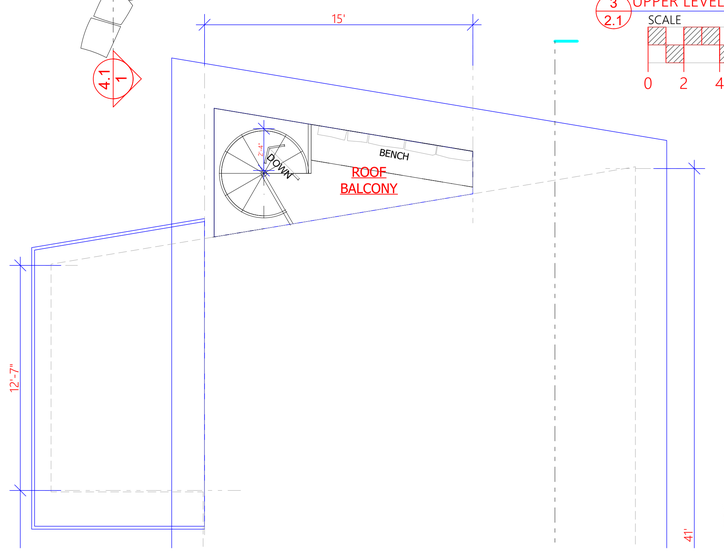
4 2.1 ROOF LEVEL FLOOR PLAN

SCALE

0 2 4 8

AREA CALCULATION	
UPPER LEVEL FLOOR PLAN	1108 sqft
MAIN LEVEL FLOOR PLAN	890 sqft
LOWER LEVEL FLOOR PLAN	350 sqft
MECHANICAL & STORAGE AREA	84 sqft
2 CAR GARAGE	465 sqft

TOTAL HEATED AREA	2 432 sqft
UNHEATED AREAS	465sqft
TOTAL GRAND AREA	2 897 sqft



SCANDINAVIAN LLC

ARCHITECTURAL OFFICE
Company Name Scandinavian LLC
Address 6410 N. Business Park Loop Rd. Unit E
Phone 435-513-0355
Fax
Project No.
Cad File
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A New Residence:
PENNY AND JIM LACY
Summit Powder Mountain, Lot # 147
- Copper Crest, Utah

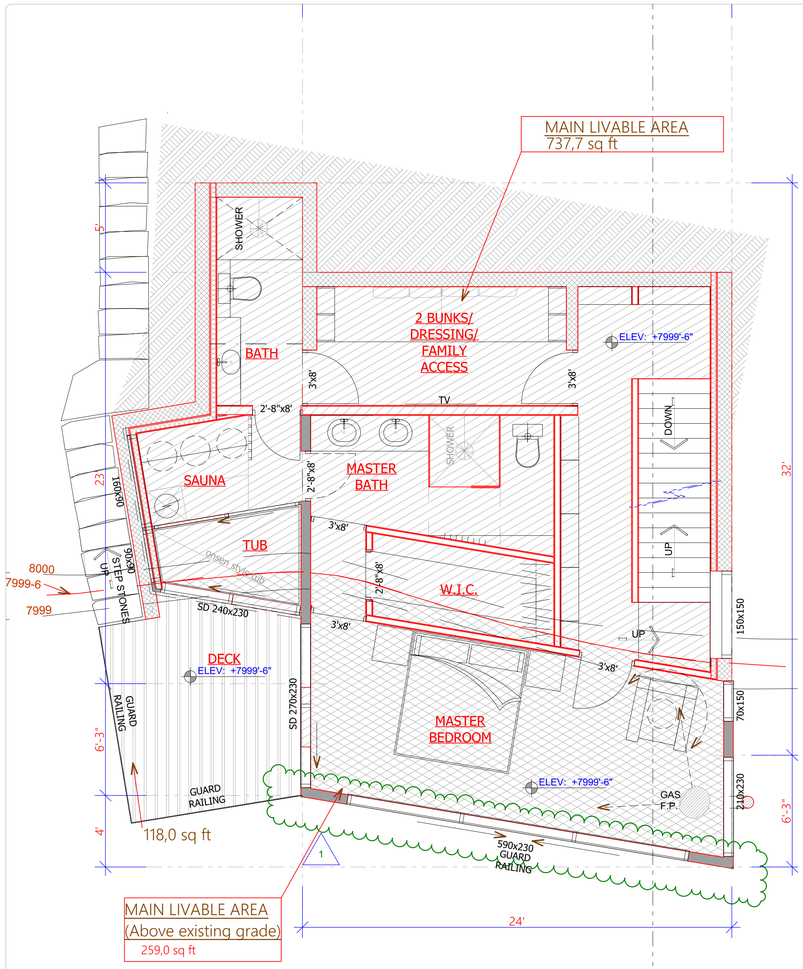
BUILDER
Company Name
Address
Park City, Utah 84098
Phone
Fax

Drawing Date 5-4-2021
Scale 1/4" = 1'-0"
Title/No.
FLOOR PLANS

BUILDER/ DEALER'S APPROVAL :
Signature and Date

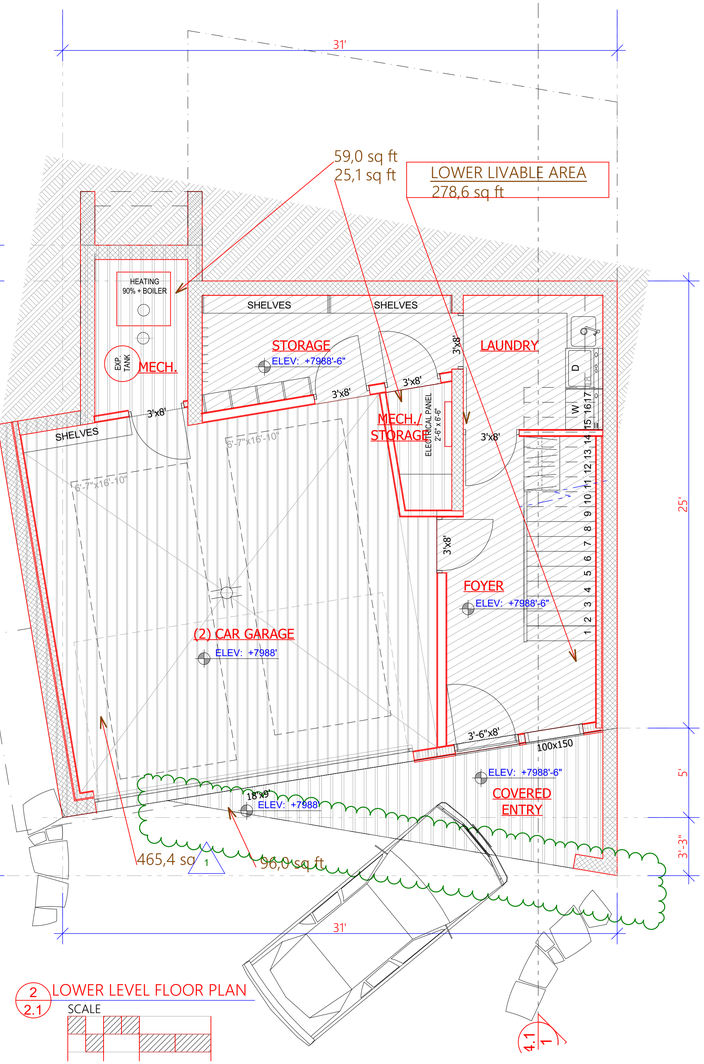
2.1

Exhibit B



1 2.1 MAIN LEVEL FLOOR PLAN

SCALE 0 2 4 8



2 2.1 LOWER LEVEL FLOOR PLAN

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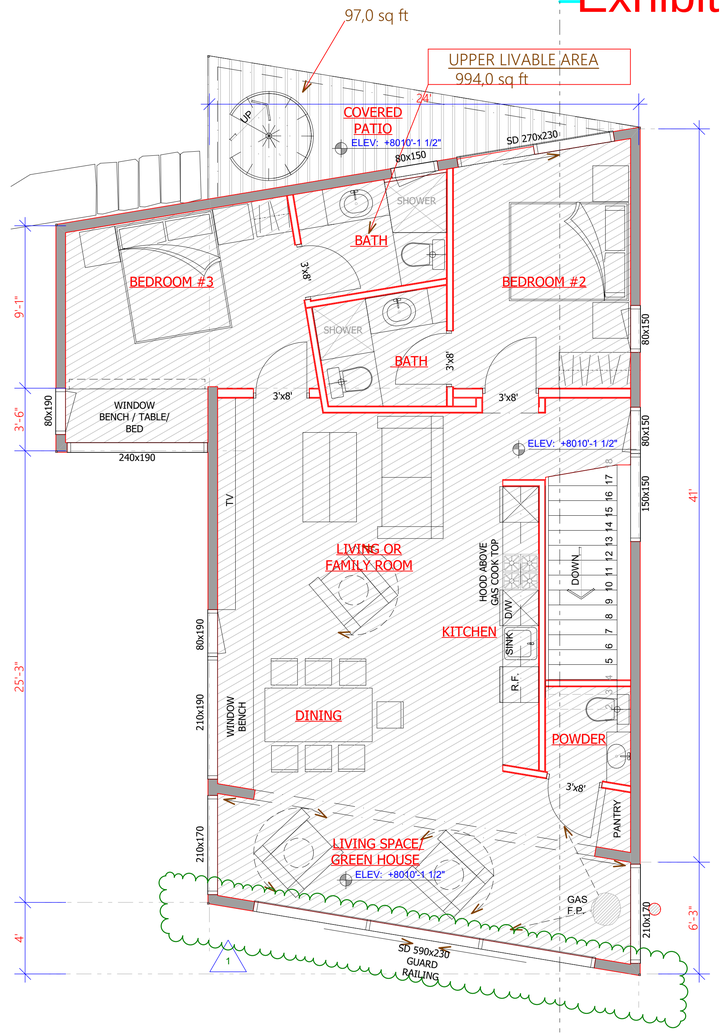
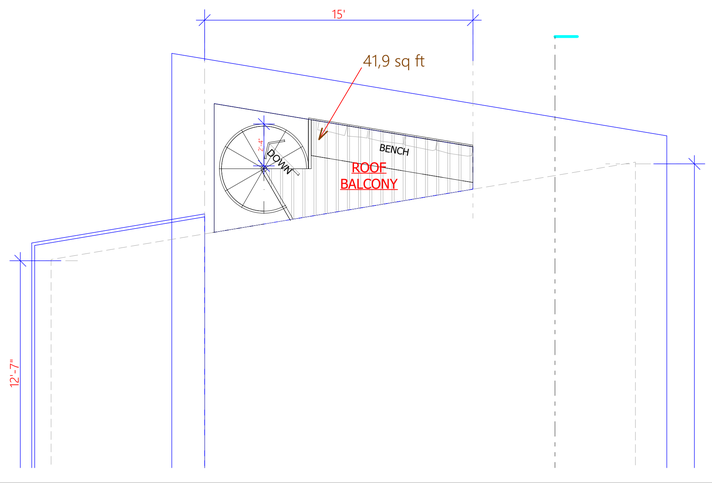


3 2.1 UPPER LEVEL FLOOR PLAN

SCALE 0 2 4 8

NET LIVABLE AREA CALCULATION	
UPPER LEVEL LIVABLE AREA	994 sqft
UPPER LIVABLE AREA (Above existing grade)	994 sqft
MAIN LEVEL LIVABLE AREA	738 sqft
MAIN LIVABLE AREA (Above existing grade)	259 sqft
LOWER LEVEL LIVABLE AREA	279 sqft
LOWER LIVABLE AREA (Above existing grade)	0 sqft
NET TOTAL LIVABLE AREA	2 011 sqft
TOTAL LIVABLE AREA (Above existing grade)	1253 sqft
GROSS TOTAL AREA CALCULATION	
ENCLOSED UPPER LEVEL FLOOR PLAN	1 108 sqft
ENCLOSED MAIN LEVEL FLOOR PLAN	890 sqft
ENCLOSED LOWER LEVEL FLOOR PLAN	350 sqft
ENCLOSED MECHANICAL / STORAGE	84 sqft
ENCLOSED TOTAL HEATED AREA	2 432 sqft
GARAGE	465 sqft
ROOF LEVEL BALCONY	42 sqft
UPPER LEVEL PATIO	97 sqft
MAIN LEVEL DECK	118 sqft
LOWER LEVEL ENTRY	96 sqft
GROSS TOTAL AREA	3 250 sqft



4 2.1 ROOF LEVEL FLOOR PLAN

SCALE 0 2 4 8

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ARCHITECTURAL OFFICE
Company Name Scandinavian LLC
Address 6410 N. Business Park Loop Rd. Unit E
Phone 435-513-0355
Fax
Project No.
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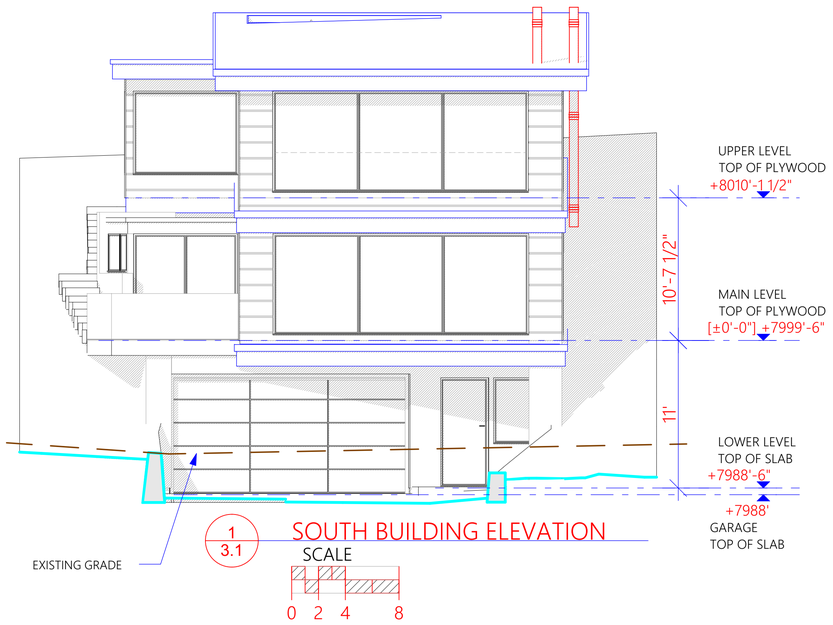
A New Residence:
PENNY AND JIM LACY
Summit Powder Mountain, Lot # 147
- Copper Crest, Utah

BUILDER
Company Name
Address
Park City, Utah 84098
Phone
Fax

Drawing Date 5-4-2021
Scale 1/4" = 1'-0"
Title/No. AREA CALCULATION
BUILDER/ DEALER'S APPROVAL :
Signature and Date

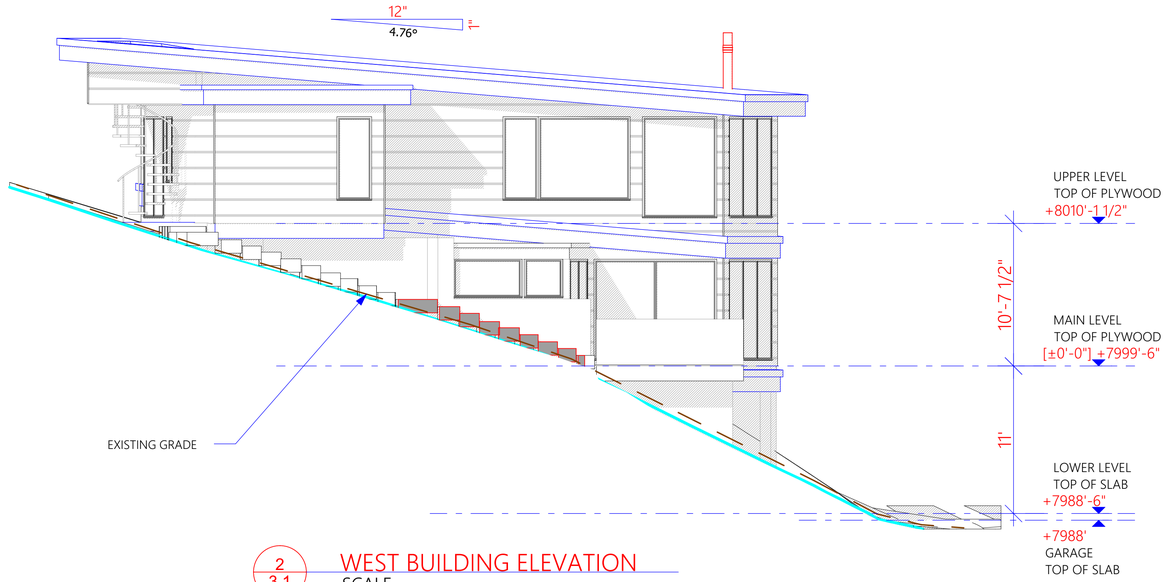
2.5

Exhibit B



1 / 3.1 SOUTH BUILDING ELEVATION

SCALE 0 2 4 8



2 / 3.1 WEST BUILDING ELEVATION

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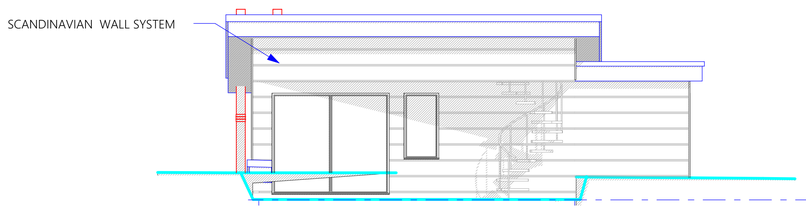

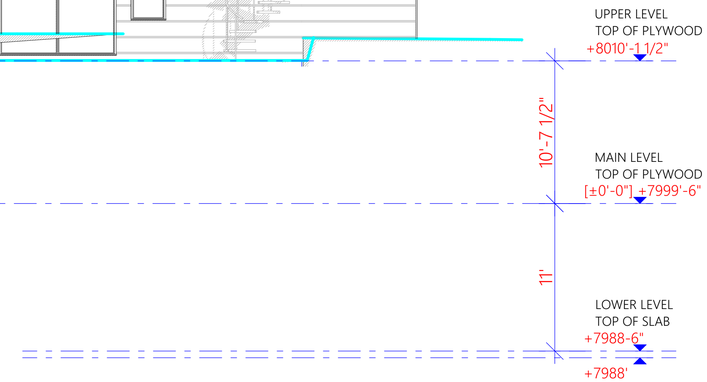

3 / 3.1 NORTH BUILDING ELEVATION

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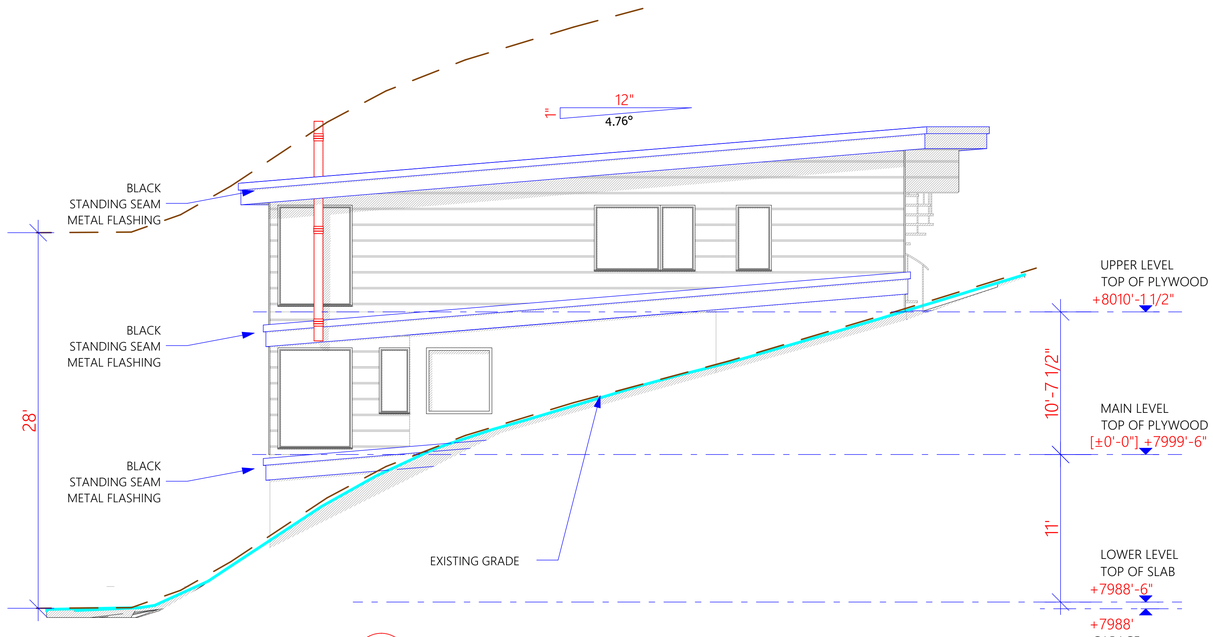

4 / 3.1 EAST BUILDING ELEVATION

SCALE 0 2 4 8

SCANDINAVIAN LLC

ARCHITECTURAL OFFICE
Company Name
Scandinavian LLC
Address
6410 N. Business
Park Loop Rd. Unit E
Phone 435-513-0355
Fax

Project No.

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A New Residence :
PENNY AND JIM LACY
Summit Powder Mountain, Lot # 147
- Copper Crest, Utah

BUILDER
Company Name
Address
Park City, Utah 84098
Phone
Fax

Drawing Date 5-4-2021

Scale 3/16" = 1'-0"

Title/No. BUILDING ELEVATIONS

BUILDER/ DEALER'S APPROVAL :

Signature and Date

3.1

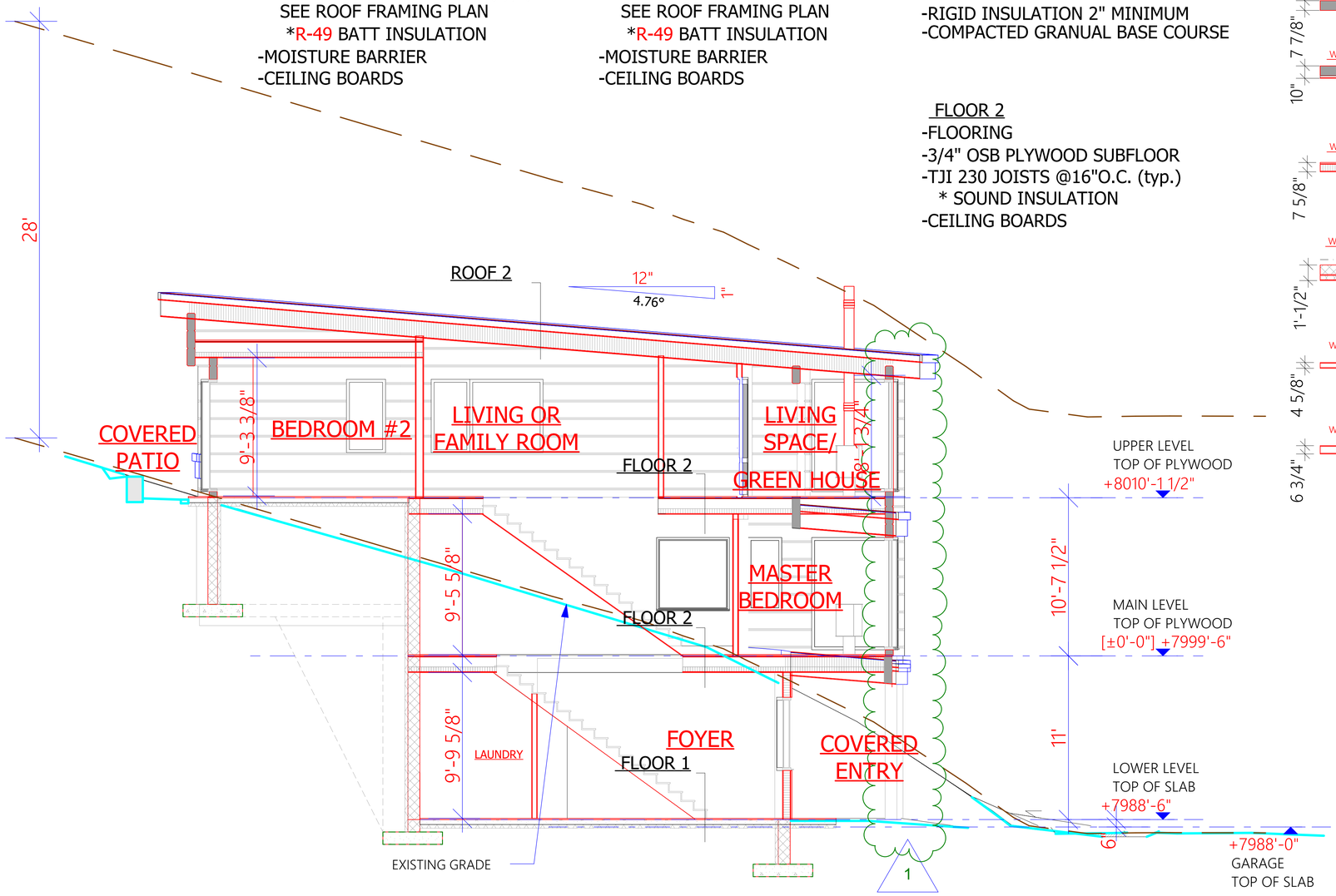
Exhibit B

ROOF 1
-WEATHERED STEEL ROOF PANELS
-UNDERLAYMENT
-PLYWOOD 5/8" OSB
-TJI 230 RAFTERS @16"O.C. (typ.)
SEE ROOF FRAMING PLAN
*R-49 BATT INSULATION
-MOISTURE BARRIER
-CEILING BOARDS

ROOF 2
-WEATHERED STEEL ROOF PANELS
-UNDERLAYMENT
-PLYWOOD 5/8" OSB
-TRUSSES @24"O.C. (typ.)
SEE ROOF FRAMING PLAN
*R-49 BATT INSULATION
-MOISTURE BARRIER
-CEILING BOARDS

FLOOR 1
-FLOORING
-4" REINFORCED CONC. SLAB
(WELDED WIRE FABRIC)
-6-MIL POLYETHENE VAPOR BARRIER
-RIGID INSULATION 2" MINIMUM
-COMPACTED GRANUAL BASE COURSE

FLOOR 2
-FLOORING
-3/4" OSB PLYWOOD SUBFLOOR
-TJI 230 JOISTS @16"O.C. (typ.)
* SOUND INSULATION
-CEILING BOARDS

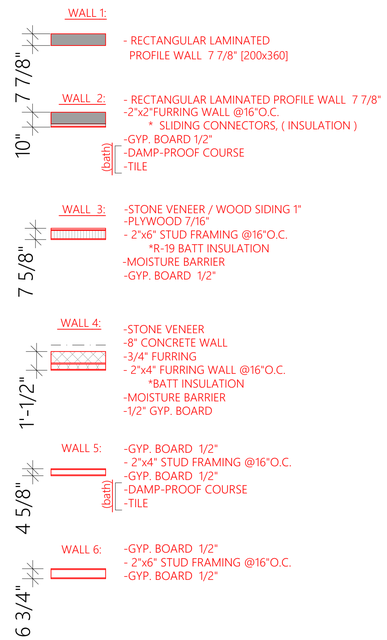


1 / 4.1 BUILDING SECTION

0 2 4 8

NOTE:
ROOM AREAS SHOWN BELOW
ROOM NAMES ARE APPROXIMATE
ALL FRAMING STUDS ARE 16"

WALL LEGEND:



SCANDINAVIAN LLC

ARCHITECTURAL OFFICE
Company Name: Scandinavian LLC
Address: 6410 N. Business Park Loop Rd. Unit E
Phone: 435-513-0355
Fax:
Project No.:
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PENNY AND JIM LACY
Summit Powder Mountain, Lot # 147
- Copper Crest, Utah

BUILDER
Company Name:
Address:
Park City, Utah 84098
Phone:
Fax:

Drawing Date: 5-4-2021
Scale: 1/4" = 1'-0"
Title/No.: BUILDING SECTION
BUILDER/ DEALER'S APPROVAL :
Signature and Date:

4.1

Exhibit C

Intermountain GeoEnvironmental Services, Inc.
12429 South 300 East, Suite 100, Draper, Utah 84120
Phone (801) 748-4044 ~ F: (801) 748-4045
www.igesinc.com

GEOTECHNICAL AND GEOLOGIC HAZARD INVESTIGATION
West Village Sliver
Summit Powder Mountain Resort
Weber County, Utah

IGES Project No. 01628-020

January 20, 2017

Prepared for:

Summit Mountain Holding Group

Intermountain GeoEnvironmental Services, Inc.
12429 South 300 East, Suite 100, Draper, Utah 84120 ~ T: (801) 748-4044 ~ F: (801) 748-4045

Exhibit C

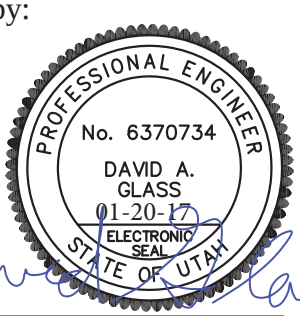
Prepared for:

Summit Mountain Holding Group
3632 North Wolf Creek Drive
Eden, Utah 84310
Attn: Mr. Rick Everson

Geotechnical and Geologic Hazard Investigation
West Village Sliver
Summit Powder Mountain Resort
Weber County, Utah

IGES Project No. 01628-020

Prepared by:



David A. Glass, P.E.
Senior Geotechnical Engineer

Peter E. Doumit, P.G., C.P.G.
Senior Geologist

IGES, Inc.
12429 South 300 East, Suite 100
Draper, Utah 84120
(801) 748-4044

January 20, 2017

Exhibit C

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE OF WORK

This report presents the results of a geotechnical and geologic hazard investigation conducted for the *West Village Sliver* development, part of the currently on-going expansion at the Powder Mountain Ski Resort in Weber County. The purpose of our investigation was to assess the nature and engineering properties of the subsurface soils at the project site and to provide recommendations for the design and construction of foundations, grading, and drainage. In addition, geologic hazards have been assessed for the property. The scope of work completed for this study included literature review, subsurface exploration, engineering analyses, and preparation of this report.

Our services were performed in accordance with our proposal to Summit Mountain Holding Group (Client), dated October 20, 2016. The recommendations presented in this report are subject to the limitations presented in the "Limitations" section of this report (Section 6.1).

1.2 PROJECT DESCRIPTION

Our understanding of the project is based primarily on the conceptual drawings prepared by EB5 Development, plus our previous involvement with the Summit Powder Mountain resort project, which included two geotechnical investigations for the greater 200-acre Powder Mountain Resort expansion project (IGES, 2012a and 2012b) and subsequent geotechnical consulting for several other aspects of the project.

The Summit Powder Mountain Resort expansion project is located southeast of SR-158 (Powder Mountain Road), south of previously developed portions of Powder Mountain Resort, in unincorporated Weber County, Utah. The Summit Powder Mountain project area is accessed by Powder Ridge Road. The *West Village Sliver* development will be located within the Phase 1C area of Summit Powder Mountain, between Summit Pass Road and Copper Crest Road (see *Site Vicinity Map,* Figure A-1 and *Geotechnical & Geologic Map,* Figure A-2, in Appendix A). Based on the preliminary site plan dated May 20, 2015, the approximately 0.72-acre *West Village Sliver* project will consist of eighteen single-family cabin-style residential/vacation units. All of the units are expected to be on-grade structures (no basements). We anticipate the structures will be conventional wood-frame construction founded on spread footings with slab-on-grade flooring, although it is feasible the structures could be constructed partially on caissons, similar in concept to the *Horizon Neighbourhood* project.

2.0 METHODS OF STUDY

2.1 LITERATURE REVIEW

2.1.1 Geotechnical

The earliest geotechnical report for the area is by AMEC (2001), which was a reconnaissance-level geotechnical and geologic hazard study. IGES later completed a geotechnical investigation for the Powder Mountain Resort expansion in 2012 (2012a, 2012b). Our previous work included twenty-two test pits and one soil boring excavated at various locations across the 200-acre development; as a part of this current study, the logs from relevant nearby test pits and other data from our reports were reviewed.

2.1.2 Geological

Several pertinent publications were reviewed as part of this assessment. Sorensen and Crittenden, Jr. (1979) provides 1:24,000 scale geologic mapping of the Huntsville Quadrangle, and Crittenden, Jr. (1972) provides 1:24,000 scale geologic mapping of the Brown's Hole Quadrangle. Coogan and King (2001) provide more recent geologic mapping of the area, but at a 1:100,000 scale. An updated Coogan and King (2016) regional geologic map (1:62,500 scale) provides the most recent published geologic mapping that covers the project area. Western Geologic (2012) conducted a reconnaissance-level geologic hazard study for the greater 200-acre Powder Mountain expansion project, including the West Village Sliver area. The Western Geologic (2012) study modified some of the potential landslide hazard boundaries that had previously been mapped at a regional scale (1:100,000) by Coogan and King (2001) and Elliott and Harty (2010). The corresponding United States Geological Survey (USGS) topographic maps for the Huntsville and Brown's Hole Quadrangles (2014) provide physiographic and hydrologic data for the project area. Regional-scale geologic hazard maps pertaining to landslides (Elliott and Harty, 2010; Colton, 1991), faults (Christenson and Shaw, 2008a; USGS and Utah Geological Survey (UGS), 2006), debris-flows (Christenson and Shaw, 2008b), and liquefaction (Christenson and Shaw, 2008c; Anderson et al., 1994) that cover the project area were also reviewed. The Quaternary Fault and Fold Database (USGS and UGS, 2006), was reviewed to identify the location of proximal faults that have had associated Quaternary-aged displacement.

Stereo-paired aerial imagery for the project site and recent and historic Google Earth imagery was also reviewed to assist in the identification of potential adverse geologic conditions. The aerial photographs reviewed are documented in the *References* section of this report.

2.2 FIELD INVESTIGATION

Subsurface soils were investigated by excavating three test pits at representative locations across the property. The approximate location of the test pits are illustrated on the *Geotechnical & Geology Map* (Figure A-2 in Appendix A). The soil types were visually logged at the time of our field work in general accordance with the *Unified Soil Classification System* (USCS). Soil classifications and descriptions are included on the test pit logs, Figures A-3 through A-5 in Appendix A. A key to USCS symbols and terminology is included as Figure A-6.

2.3 LABORATORY TESTING

Samples retrieved during the subsurface investigation were transported to the IGES laboratory for evaluation of engineering properties. Specific laboratory tests included:

- Atterberg Limits (ASTM D4318)
- Grain-Size Distribution (ASTM D6913)
- Fines Content (ASTM D1140)
- In situ Moisture Content (ASTM D2216)

Results of the laboratory testing are discussed in this report and presented in Appendix B. Some test results, including moisture content and Atterberg Limits, have been incorporated into the test pit logs (Figures A-3 through A-5).

3.0 GEOLOGIC CONDITIONS

3.1 GENERAL GEOLOGIC SETTING

The West Village Sliver property is situated in the western portion of the northern Wasatch Mountains, approximately 4 miles north of Ogden Valley. The Wasatch Mountains contain a broad depositional history of thick Precambrian and Paleozoic sediments that have been subsequently modified by various tectonic episodes that have included thrusting, folding, intrusion, and volcanics, as well as scouring by glacial and fluvial processes (Stokes, 1987). The uplift of the Wasatch Mountains occurred relatively recently during the Late Tertiary Period (Miocene Epoch) between 12 and 17 million years ago (Milligan, 2000). Since uplift, the Wasatch Front has seen substantial modification due to such occurrences as movement along the Wasatch Fault and associated spurs, the development of the numerous canyons that empty into the current Salt Lake Valley and Utah Valley and their associated alluvial fans, erosion and deposition from Lake Bonneville, and localized mass movement events (Hintze, 1988).

The Wasatch Mountains, as part of the Middle Rocky Mountains Province (Milligan, 2000), were uplifted as a fault block along the Wasatch Fault (Hintze, 1988). Ogden Valley itself is a fault-bounded trough that was occupied by Lake Bonneville (Sorensen and Crittenden, Jr, 1979) before being cut through by the Ogden River and subsequently dammed to form the Pineview Reservoir.

The Wasatch Fault and its associated segments are part of an approximately 230-mile long zone of active normal faulting referred to as the Wasatch Fault Zone (WFZ), which has well-documented evidence of late Pleistocene and Holocene (though not historic) movement (Lund, 1990; Hintze, 1988). The faults associated with the WFZ are all normal faults, exhibiting block movement down to the west of the fault and up to the east. The WFZ is contained within a greater area of active seismic activity known as the Intermountain Seismic Belt (ISB), which runs approximately north-south from northwestern Montana, along the Wasatch Front of Utah, through southern Nevada, and into northern Arizona. In terms of earthquake risk and potential associated damage, the ISB ranks only second in North America to the San Andreas Fault Zone in California (Stokes, 1987).

The WFZ consists of a series of ten segments of the Wasatch Fault that each display different characteristics and past movement, and are believed to have movement independent of one another (UGS, 1996). The West Village Sliver property is located approximately 10.2 miles to the northeast of the Weber Segment of the Wasatch Fault, which is the closest documented Holocene-aged (active) fault to the property and trends north-south along the Wasatch Front (USGS and UGS, 2006).

3.2 SURFICIAL GEOLOGY

According to Crittenden, Jr. (1972), the property is entirely underlain by the undivided Tertiary/Cretaceous Wasatch and Evanston Formations (TKwe), described as "unconsolidated pale-red to greenish-red pebble, cobble, and boulder conglomerate. Forms boulder-covered slopes but does not crop out anywhere. Clasts are mainly Precambrian quartzite and are tan, gray, or purple; matrix is mainly poorly consolidated sand and silt." A generalized bedding attitude shows this unit striking due north and dipping 10 degrees to the east; this map forms the basemap for the *Regional Geology Map 1* (Figure A-7). Coogan and King (2001) produced a regional-scale geologic map that covered the property; this map shows the property to be entirely underlain by the Wasatch Formation. Western Geologic (2012) identified a number of landslide deposits contained within the Powder Mountain Resort expansion area, though none of these were shown underlying the West Village Sliver area (Figure A-8). Deposits mapped as "mixed slope colluvium, shallow landslides, and talus" are found southwest of the property. Finally, Coogan and King (2016) updated their 2001 map, which shows the property to be situated upon the northeasternmost reach of a lobe of landslide deposits (unit Qms), near the contact with the Wasatch Formation (unit Tw) (Figure A-9). Wasatch Formation bedrock in the area is shown to be striking approximately to the north-northeast, and dipping between 3 and 6 degrees to the east-southeast; additionally, according to this map, the property is near a north-south trending concealed syncline[1] to the east.

3.3 HYDROLOGY

The USGS topographic maps for the Huntsville and Brown's Hole Quadrangles (2014) show that the West Village Sliver project area is situated on a slope, with the topographic gradient down to the southwest towards Lefty's Canyon (see Figure A-1). No active or ephemeral stream drainages are found on the property, though two small, dry gullies were observed during the site reconnaissance. No springs are known to occur on the property, though it is possible that springs may occur on various parts of the property during peak runoff.

Baseline groundwater depths for the West Village Sliver property are currently unknown, but are anticipated to fluctuate both seasonally and annually. Groundwater was not encountered in the three test pits excavated in this investigation.

3.4 GEOLOGIC HAZARDS FROM LITERATURE

Based upon the available geologic literature, regional-scale geologic hazard maps that cover the West Village Sliver project area have been produced for landslide, fault, debris-flow, and liquefaction hazards. The following is a summary of the data presented in these regional geologic hazard maps.

[1] Syncline: A fold of which the core contains the stratigraphically younger rocks; it is generally concave upward. (AGI, 2005)

3.4.1 Landslides

Two regional-scale landslide hazard maps have been produced that cover the project area. Colton (1991) does not show the property to be underlain by or adjacent to landslide deposits. Elliott and Harty (2010) shows deposits mapped as “Landslide undifferentiated from talus and/or colluvial deposits” southwest of the property. Most recently and more site-specific, Western Geologic (2012) used the Elliott and Harty (2010) map as a base map, which shows “mixed slope colluvium, shallow landslides, and talus” deposits southwest of the property (see Figure A-8).

3.4.2 Faults

Neither Christensen and Shaw (2008a) nor the Quaternary Fault and Fold Database of the United States (USGS and UGS, 2006) show any Quaternary-aged (~2.6 million years ago to the present) faults to be present on or projecting towards the subject property. The Weber County Natural Hazards Overlay Districts defines an active fault to be “a fault displaying evidence of greater than four inches of displacement along one or more of its traces during Holocene time (about 11,000 years ago to the present)” (Weber County, 2015). The closest active fault to the property is the Weber Segment of the Wasatch Fault Zone, located approximately 10.2 miles southwest of the western margin of the property (USGS and UGS, 2006).

3.4.3 Debris Flows

Christensen and Shaw (2008b) do not show the project area to be located within a debris-flow hazard special study area.

3.4.4 Liquefaction

Anderson, et al. (1994) and Christensen and Shaw (2008c) both show the project area to be located in an area with very low potential for liquefaction.

3.5 REVIEW OF AERIAL IMAGERY

A series of aerial photographs that cover project area were taken from the UGS Aerial Imagery Collection and analyzed stereoscopically for the presence of adverse geologic conditions across the property. This included a review of photos collected from the years 1947, 1953, and 1963. A table displaying the details of the aerial photographs reviewed can be found in the *References* section at the end of this report.

No geologic lineaments, fault scarps, landslide headscarps, or landslide deposits were observed in the aerial photography on the subject property.

Google Earth imagery of the property from between the years of 1993 and 2016 were also reviewed. No landslide or other geological hazard features were noted in the imagery. The property was observed to contain some surficial gravel, cobbles, and boulders, and be devoid of drainages aside from two small gullies that pass approximately north-south through the western and eastern

portions of the property, respectively. Most of the project area was found to be covered in various forms of vegetation, predominantly grasses and low-lying shrubs and bushes; no bedrock exposures were observed on the property.

At the time of this report, no LiDAR data for the project area was available to be reviewed.

3.6 SEISMICITY

Following the criteria outlined in the 2015 International Building Code (IBC, 2015), spectral response at the site was evaluated for the *Maximum Considered Earthquake* (MCE) which equates to a probabilistic seismic event having a two percent probability of exceedance in 50 years (2PE50). Spectral accelerations were determined based on the location of the site using the *U.S. Seismic "DesignMaps" Web Application* (USGS, 2012/15); this software incorporates seismic hazard maps depicting probabilistic ground motions and spectral response data developed for the United States by the U. S. Geological Survey as part of NEHRP/NSHMP (Frankel et al., 1996). These maps have been incorporated into both *NEHRP Recommended Provisions for Seismic Regulations for New Buildings and Other Structures* (FEMA, 1997) and the *International Building Code* (IBC) (International Code Council, 2015).

Table 3.6
Short- and Long-Period Spectral Accelerations for MCE

Parameter	Short Period (0.2 sec)	Long Period (1.0 sec)
MCE Spectral Response Acceleration (g)	$S_S = 0.810$	$S_1 = 0.269$
MCE Spectral Response Acceleration Site Class C (g)	$S_{MS} = S_sF_a = 0.872$	$S_{M1} = S_1F_v = 0.411$
Design Spectral Response Acceleration (g)	$S_{DS} = S_{MS}{}^*{}^2/_3 = 0.581$	$S_{D1} = S_{M1}{}^*{}^2/_3 = 0.274$

To account for site effects, site coefficients that vary with the magnitude of spectral acceleration and *Site Class* are used. Site Class is a parameter that accounts for site amplification effects of soft soils and is based on the average shear wave velocity of the upper 100 feet; based on our field exploration and our understanding of the geology in this area, the subject site is appropriately classified as Site Class C (*very dense soil/soft rock*). Based on IBC criteria, the short-period (F_a) coefficient is 1.076 and the long-period (F_v) site coefficient is 1.531. Based on the design spectral response accelerations for a *Building Risk Category* of I, II or III, the site's *Seismic Design Category* is D. The short- and long-period *Design Spectral Response Accelerations* are presented in Table 3.6; a summary of the *Design Maps* analysis is presented in Appendix B. The *peak ground acceleration* (PGA) may be taken as $0.4{*}S_{MS}$.

3.7 GEOLOGIC HAZARD ASSESSMENT

Geologic hazard assessments are necessary to determine the potential risk associated with particular geologic hazards that are capable of adversely affecting a proposed development area. As such, they are essential in evaluating the suitability of an area for development and provide critical data in both the planning and design stages of a proposed development. The geologic hazard assessment discussion below is based upon a qualitative assessment of the risk associated with a particular geologic hazard, based upon the data reviewed and collected as part of this investigation.

A “low” hazard rating is an indication that the hazard is either absent, is present in such a remote possibility so as to pose limited or little risk, or is not anticipated to impact the project in an adverse way. Areas with a low-risk determination for a particular geologic hazard do not require additional site-specific studies or associated mitigation practices with regard to the geologic hazard in question. A “moderate” hazard rating is an indication that the hazard has the capability of adversely affecting the project at least in part, and that the conditions necessary for the geologic hazard are present in a significant, though not abundant, manner. Areas with a moderate-risk determination for a particular geologic hazard may require additional site-specific studies, depending on location and construction specifics, as well as associated mitigation practices in the areas that have been identified as the most prone to susceptibility to the particular geologic hazard. A “high” hazard rating is an indication that the hazard is very capable of or currently does adversely affect the project, that the geologic conditions pertaining to the particular hazard are present in abundance, and/or that there is geologic evidence of the hazard having occurred at the area in the historic or geologic past. Areas with a high-risk determination always require additional site-specific hazard investigations and associated mitigation practices where the location and construction specifics are directly impacted by the hazard. For areas with a high-risk geologic hazard, simple avoidance is often considered.

The following is a summary of the geologic hazard assessment for the West Village Sliver property.

3.7.1 Landslides/Mass Movement/Slope Stability

The property is situated on mapped landslide deposits near the contact with Wasatch Formation bedrock, according to the most recent geologic map covering the property (Coogan and King, 2016). However, other literature sources, including the Western Geologic (2012) reconnaissance-level geologic hazard assessment for the greater Powder Mountain area and Elliott and Harty (2010), do not show the property to be underlain by landslide deposits, but near deposits mapped as landslide or colluvial deposits southwest of the property. Additionally, landslide deposits or headscarps were not observed in the aerial imagery evaluation on or upslope of the property, and no geomorphic expression of landslide deposits or headscarps were observed on or upslope of the property during the site reconnaissance. Though a deep clay seam displaying slickensides was

observed in TP-3 during the subsurface investigation, the seam also exhibited a blocky texture, indicating a lack of internal movement; additionally, no distinct slide plane was observed. It should be noted that this seam was also observed in TP-2 excavated for the *Copper Crest West* investigation to the south and in a road cut to the northeast of the property, but was not observed in either of the two westernmost test pits in this investigation, nor in the two test pits excavated for the *Main Street West* property to the east; it is therefore considered a highly localized unit.

The average slope across the property is found to be approximately 4:1 (horizontal:vertical), which does not require site-specific slope stability analyses. Though evidence of soil creep was observed in the aspen trees found on the property, the subsurface data indicate that this is restricted to the topsoil. Given this data, the risk associated with landslide and slope stability hazards on the property is considered to be low.

3.7.2 Rockfall

Though the property is on a slope, no bedrock outcrops are exposed upslope of the property. As such, the rockfall hazard associated with the property is considered to be low.

3.7.3 Surface-Fault Rupture and Earthquake-Related Hazards

No faults are known to be present on or project across the property, and the closest active fault to the property is the Weber Segment of the Wasatch Fault Zone, located approximately 10.2 miles to the west of the property (USGS and UGS, 2006). Given this information, the risk associated with surface-fault-rupture on the property is considered low.

The entire property is subject to earthquake-related ground shaking from a large earthquake generated along the active Wasatch Fault. Given the distance from the Wasatch Fault, the hazard associated with ground shaking is considered to be moderate. Proper building design according to appropriate building code and design parameters can assist in mitigating the hazard associated with earthquake ground shaking.

3.7.4 Liquefaction

The site is underlain by Wasatch Formation, a poorly consolidated sedimentary rock unit (conglomerate). Rock units such as these are not considered susceptible to liquefaction; as such, the potential for liquefaction occurring at the site is considered low.

3.7.5 Debris-Flows and Flooding Hazards

The property does not contain and is not located adjacent to any active or ephemeral drainages. Additionally, there are no debris-flow source areas upslope of the property, and the property is on a consistent slope downhill to the southwest. Given these conditions, the debris-flow and flooding hazard associated with the property is considered to be low.

3.7.6 Shallow Groundwater

Groundwater was not encountered in any of the three test pits excavated as part of this investigation. The test pits were excavated in early November, and the groundwater level was likely to be on its way down towards its seasonal low. No springs were observed on the property, and no plants indicative of shallow groundwater conditions were observed on the property. It should be noted, however, that groundwater seeps were observed in test pits excavated in the adjacent *Copper Crest West* and *Main Street West* properties at the same time as the *West Village Sliver* test pits were excavated.

Given the existing data, it is expected that groundwater levels will fluctuate both seasonally and annually, and the risk associated with shallow groundwater hazards is considered moderate. Spring thaw and runoff are likely to significantly contribute to elevated groundwater conditions. However, shallow groundwater issues can be mitigated through appropriate grading measures and/or the avoidance of the construction of basement levels, or constructing basements with foundation drains.

4.0 GENERALIZED SITE CONDITIONS

4.1 SITE RECONNAISSANCE

Mr. Peter E. Doumit, P.G., C.P.G., of IGES conducted reconnaissance of the site and the immediate adjacent properties on November 1 and 2, 2016. The site reconnaissance was conducted with the intent to assess the general geologic conditions present across the property, with specific interest in those areas identified in the geologic literature and aerial imagery reviews as potential geologic hazard areas. Additionally, the site reconnaissance provided the opportunity to geologically map the surficial geology of the area. Figure A-2 is a site-specific geologic map of the West Village Sliver property and adjacent areas.

At the time of the site reconnaissance, the property was observed to slope downhill to the southwest. Patchy low-lying vegetation, including grasses, shrubs, and bushes, were most common across the property, though some aspen trees were also present. The aspens displayed evidence of shallow soil creep, though this was later found to be restricted to the topsoil. The southern approximately ½ of the property was covered by a geofabric to prevent sloughing onto Copper Crest Road.

Variously-sized boulders and cobbles were found scattered across the property, as part of a surficial geologic unit considered to be either weathered Wasatch Formation or colluvial deposits derived from weathered Wasatch Formation. These were typically subrounded, and were found to be as large as 2 feet in diameter. The rock clasts[2] were found to be comprised entirely of banded to massive purple to gray to red quartzite.

Two small, generally north-south trending gullies were observed in the eastern portion of the property and contained small rounded alluvial gravel and cobbles. The gullies were dry and up to three feet deep, and contained several forks. No springs, seeps, or running water were observed on the property at the time of the site visit. Aside from shallow soil creep, no evidence of landsliding or other geologic hazards was observed on the property. Potential localized landslide features were observed to the southwest of the property (see Figure A-2).

4.2 SUBSURFACE CONDITIONS

On November 4, 2016, three exploration test pits were excavated at representative locations across the property (Figure A-2). The test pits were excavated with to depths ranging between 12 and 19 feet below existing grade with the aid of a Caterpillar 313F tracked excavator. Detailed logs for the test pits are displayed in Figure A-3 through Figure A-5. Four distinct geologic units were encountered in the subsurface, with three of these units being found in all of the test pits. The soil

[2] Clast: An individual constituent, grain, or fragment of a sediment or rock, produced by the mechanical or chemical disintegration or a larger rock mass. (AGI, 2005)

and moisture conditions encountered during our investigation are discussed in the following paragraphs.

4.2.1 Earth Materials

A/B Soil Horizon: This topsoil unit was found to be approximately one foot thick in all three test pits. The unit was a dark brown to brownish black, loose, moist, sandy lean CLAY with gravel (CL), with gravel and larger-sized quartzite clasts comprising approximately 15% of the unit. The topsoil was found to be forming upon the underlying loose colluvium unit.

Loose Colluvium: This unit was encountered in all three test pits, being between approximately 1 and 5 feet thick. The unit consisted of a dark brown, loose, moist, sandy lean CLAY with gravel (CL). Gravel and larger-sized subrounded quartzite clasts comprised approximately 20% of the unit, with individual clasts up to four inches in diameter, though the mode clast size was less than ½ inch in diameter.

Cemented Colluvium: This unit was observed in TP-2 and TP-3, and was found to be between 2 and 3 feet thick. The unit consisted of a light brown to light gray, medium-stiff to stiff, slightly moist, sandy lean CLAY with gravel (CL). Gravel and larger-sized subrounded quartzite clasts comprised between approximately 20% and 30% of the unit, with individual clasts up to eight inches in diameter.

Wasatch Formation: This unit was found to underlie the colluvium in all three test pits, being more than 15 feet thick and extending to the maximum depth of exploration in all three test pits. The unit consisted of weakly consolidated conglomerate bedrock that had been largely disaggregated into a heterogeneous dark reddish brown to moderate reddish brown to pale red, medium-dense to dense, moist to wet mixture of clay, sand, and gravel that collectively classifies as clayey GRAVEL with sand (GC). Gravel and larger-sized subrounded quartzite clasts comprised approximately 36% of the unit, with individual clasts up to 2 feet in diameter, with a mode clast size of 3 to 5 inches. The unit was observed to contain several subunits, which were not always consistent between the test pits.

In TP-1, three Wasatch Formation subunits were encountered: a dark reddish brown clayey GRAVEL with sand (GC) upper subunit, a pale red fluvial clayey GRAVEL with sand (GC) middle subunit, and a moderate reddish brown clayey GRAVEL with sand (GC) basal subunit. In TP-2, three subunits were also encountered: an upper dark reddish brown sandy lean CLAY with gravel (CL) seam, a middle pale red fluvial unit as seen in TP-1, and a lower moderate red clayey SAND with gravel (SC) subunit. In TP-3, three subunits were encountered: an upper pale red to moderate reddish brown sandy lean CLAY with gravel (CL) subunit, a middle dark reddish brown sandy fat CLAY with gravel (CH) clay seam with no slickensides, and a lower light gray clayey SAND with gravel (SC) seam with slickensides associated with a fat clay component.

Because the red clay seam was observed at the base of the original 12-foot total depth for TP-3, the test pit was deepened in an attempt to find the base of the clay seam. The dark red fat clay seam was found to be approximately 4 feet thick, underlain by the light gray fat clay seam, which was found to be at least 2.5 feet thick. It should be noted that while the color of the light gray clay seam was indicative of some of the dolomite bedrock found elsewhere on Powder Mountain, no bedrock clasts were observed in the clay seam. Though the seam exhibited a blocky texture, natural slickensides were observed internally within some of the blocks. This light gray fat clay seam was also encountered at depth in the eastern test pit (TP-2) excavated for the Copper Crest West property to the south.

4.2.2 Groundwater

Groundwater was not encountered in any of the test pits excavated for this project; however, it should be noted that groundwater was encountered at a depth of approximately 14½ feet below existing grade and the Copper Crest West property, located south of and adjacent to the West Village Sliver property (IGES, 2017). Accordingly, it is possible that groundwater could be encountered locally in excavations that exceed a depth of 14 feet below existing grade.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 GENERAL CONCLUSIONS

Based on the results of the field observations, literature review, and previously completed geotechnical investigation (IGES, 2012a), **the subsurface conditions are considered suitable for the proposed development provided that the recommendations presented in this report are incorporated into the design and construction of the project.**

Supporting data upon which the following conclusions and recommendations are based have been presented in the previous sections of this report. The recommendations presented herein are governed by the physical properties of the earth materials encountered in the subsurface explorations. If subsurface conditions other than those described herein are encountered in conjunction with construction, and/or if design and layout changes are initiated, IGES must be informed so that our recommendations can be reviewed and revised as deemed necessary.

5.2 GEOLOGIC CONCLUSIONS AND RECOMMENDATIONS

Based upon the data collected and reviewed as part of the geologic hazard assessment, IGES makes the following conclusions regarding the geological hazards present at the West Village Sliver project area:

- **The West Village Sliver project area does not appear to have major geological hazards that would adversely affect the development as currently proposed.**

- Shallow groundwater conditions were not observed in any of the three test pits, though groundwater seepage has been observed in test pits on adjacent properties; therefore, shallow groundwater hazards are considered to be moderate for the property for proposed structures with basements.

- Earthquake ground shaking is the only other identified hazard that may potentially affect all parts of the project area and is considered to pose a moderate risk.

- Landslide, rockfall, surface-fault-rupture, liquefaction, debris-flow, and flooding hazards are considered to be low for the property.

Given the conclusions listed above, IGES makes the following recommendations:

- Because landslide deposits are noted near the property, an IGES geologist or geotechnical engineer should observe the foundation excavations to confirm the absence of landslide deposits.

5.3 EARTHWORK

5.3.1 General Site Preparation and Grading

Below proposed structures, fills, and man-made improvements, all vegetation, topsoil, debris and undocumented fill (if any) should be removed. Any existing utilities should be re-routed or protected in place. The exposed native soils should then be proof-rolled with heavy rubber-tired equipment such as a scraper or loader*. Any soft/loose areas identified during proof-rolling should be removed and replaced with structural fill. All excavation bottoms should be observed by an IGES representative during proof-rolling or otherwise prior to placement of engineered fill to evaluate whether soft, loose, or otherwise deleterious earth materials have been removed, and to assess compliance with the recommendations presented in this report.

*not required where bedrock is exposed in the foundation subgrade

5.3.2 Excavations

Soft, loose, or otherwise unsuitable soils beneath structural elements, hardscape or pavements may need to be over-excavated and replaced with structural fill. If over-excavation is required, the excavations should extend one foot laterally for every foot of depth of over-excavation. Excavations should extend laterally at least two feet beyond flatwork, pavements, and slabs-on-grade. Structural fill should consist of granular materials and should be placed and compacted in accordance with the recommendations presented in this report.

Prior to placing engineered fill, all excavation bottoms should be scarified to at least 6 inches, moisture conditioned as necessary at or slightly above optimum moisture content (OMC), and compacted to at least 90 percent of the maximum dry density (MDD) as determined by ASTM D-1557 (Modified Proctor). Scarification is not required where hard bedrock is exposed.

5.3.3 Excavation Stability

The contractor is responsible for site safety, including all temporary trenches excavated at the site and the design of any required temporary shoring. The contractor is responsible for providing the "competent person" required by Occupational Safety and Health (OSHA) standards to evaluate soil conditions. For planning purposes, Soil Type C is expected to predominate at the site (sands and gravels). Close coordination between the competent person and IGES should be maintained to facilitate construction while providing safe excavations.

Based on OSHA guidelines for excavation safety, trenches with vertical walls up to 5 feet in depth may be occupied. Where very moist soil conditions or groundwater is encountered, or when the trench is deeper than 5 feet, we recommend a trench-shield or shoring be used as a protective system to workers in the trench. As an alternative to shoring or shielding, trench walls may be laid back at one and one half horizontal to one vertical (1½H:1V) (34 degrees) in accordance with OSHA Type C soils. Trench walls may need to be laid back at a steeper grade pending evaluation

of soil conditions by the geotechnical engineer. Soil conditions should be evaluated in the field on a case-by-case basis. Large rocks exposed on excavation walls should be removed (scaled) to minimize rock fall hazards.

5.3.4 Structural Fill and Compaction

All fill placed for the support of structures, flatwork or pavements should consist of structural fill. Structural fill should consist of granular native soils, which may be defined as soils with less than 25% fines, 10-60% sand, and contain no rock larger than 4 inches in nominal size (6 inches in greatest dimension). Structural fill should also be free of vegetation and debris. All structural fill should be 1 inch minus material when within 1 foot of any base coarse material. Soils not meeting these criteria may be suitable for use as structural fill; however, such soils should be evaluated on a case by case basis and should be approved by IGES prior to use.

All structural fill should be placed in maximum 4-inch loose lifts if compacted by small hand-operated compaction equipment, maximum 6-inch loose lifts if compacted by light-duty rollers, and maximum 8-inch loose lifts if compacted by heavy duty compaction equipment that is capable of efficiently compacting the entire thickness of the lift. Additional lift thickness may be allowed by IGES provided the Contractor can demonstrate sufficient compaction can be achieved with a given lift thickness with the equipment in use. We recommend that all structural fill be compacted on a horizontal plane, unless otherwise approved by IGES. Structural fill underlying all shallow footings and pavements should be compacted to at least 95 percent of the MDD as determined by ASTM D-1557. **The moisture content should be at, or slightly above, the OMC for all structural fill**. Any imported fill materials should be approved prior to importing. Also, prior to placing any fill, the excavations should be observed by IGES to confirm that unsuitable materials have been removed. In addition, proper grading should precede placement of fill, as described in the General Site Preparation and Grading subsection of this report.

Specifications from governing authorities such as Weber County and/or special service districts having their own precedence for backfill and compaction should be followed where more stringent.

5.3.5 Oversize Material

Based on our observations, there is a significant potential for the presence of oversize materials (larger than 6 inches in greatest dimension). Large rocks, particularly boulders (>12 inches), may require special handling, such as segregation from structural fill, and disposal.

5.3.6 Utility Trench Backfill

Utility trenches should be backfilled with structural fill in accordance with Section 5.3.4 of this report. Utility trenches can be backfilled with the onsite soils free of debris, organic and oversized material. Prior to backfilling the trench, pipes should be bedded in and shaded with a uniform granular material that has a Sand Equivalent (SE) of 30 or greater. Pipe bedding may be water-

densified in-place (jetting). Alternatively, pipe bedding and shading may consist of clean ¾-inch gravel, which generally does not require densification. Native earth materials can be used as backfill over the pipe bedding zone. All utility trenches backfilled below pavement sections, curb and gutter, and hardscape, should be backfilled with structural fill compacted to at least 95 percent of the MDD as determined by ASTM D-1557. All other trenches should be backfilled and compacted to approximately 90 percent of the MDD (ASTM D-1557). However, in all cases the pipe bedding and shading should meet the design criteria of the pipe manufacturer. Specifications from governing authorities having their own precedence for backfill and compaction should be followed where they are more stringent.

5.4 FOUNDATION RECOMMENDATIONS

Based on our field observations and considering the presence of relatively competent native earth materials, we recommend that the footings for proposed single-family cabin-type structures be founded either *entirely* on competent native soils or *entirely* on structural fill. Native/fill transition zones are not allowed. Considering the structures will most likely be on-grade structures (no basements), we anticipate the structural foundations will be placed at least 3.5 feet below final adjacent grade for frost protection. Depending on the location, the soil unit at this depth may consists of 'loose colluvium', which is generally soft, loose, and often contains abundant organic material, and is therefore potentially compressible – this is particularly true of the central part of the property in the vicinity of TP-2. Accordingly, we recommend a minimum over-excavation of 2 feet below bottom of foundations or a minimum of 5 feet below existing grade, *whichever is deeper*. However, in all cases the over-excavation need not extend below competent Wasatch Formation (e.g. over-excavation is not anticipated in the vicinity of TP-1). Alternatively, the foundations may be extended such that the foundations bear directly on competent earth materials (Wasatch Formation). It should be noted that Wasatch Formation was encountered at depths ranging between 2.5 feet and 6 feet below existing grade, but may be deeper, or shallower, at specific locations. We recommend that IGES assess the bottom of the foundation excavation prior to the placement of steel or concrete, or structural fill, to identify the competent native earth materials as well as any unsuitable soils or transition zones. Additional over-excavation may be required based on the actual subsurface conditions observed.

Shallow spread or continuous wall footings constructed entirely on structural fill, or entirely on competent, uniform native earth materials (Wasatch Formation conglomerate) may be proportioned utilizing a maximum net allowable bearing pressure of **2,600 pounds per square foot (psf)** for dead load plus live load conditions. The net allowable bearing values presented above are for dead load plus live load conditions. The allowable bearing capacity may be increased by one-third for short-term loading (wind and seismic). The minimum recommended footing width is 20 inches for continuous wall footings and 30 inches for isolated spread footings.

All conventional foundations exposed to the full effects of frost should be established at a minimum depth of 42 inches below the lowest adjacent final grade. Interior footings, not subjected to the full effects of frost (i.e., *a continuously heated structure*), may be established at higher elevations, however, a minimum depth of embedment of 12 inches is recommended for confinement purposes.

Foundation drains should be installed around below-ground foundations (e.g., basement walls) to minimize the potential for flooding from shallow groundwater or seepage, which may be present at various times during the year, particularly spring run-off.

5.5 SETTLEMENT

5.5.1 Static Settlement

Static settlements of properly designed and constructed conventional foundations, founded as described in Section 5.4, are anticipated to be on the order of 1 inch or less. Differential settlement is expected to be half of total settlement over a distance of 30 feet.

5.5.2 Dynamic Settlement

Dynamic settlement (or seismically-induced settlement) consists of dry dynamic settlement of unsaturated soils (above groundwater) and liquefaction-induced settlement (below groundwater). During a strong seismic event, seismically-induced settlement can occur within loose to moderately dense sandy soil due to reduction in volume during, and shortly after, an earthquake event. Settlement caused by ground shaking is often non-uniformly distributed, which can result in differential settlement.

Based on the subsurface conditions encountered, dynamic settlement arising from a MCE seismic event is expected to be low; for design purposes, settlement on the order of ½ inch over 40 feet may be assumed.

5.6 EARTH PRESSURES AND LATERAL RESISTANCE

Lateral forces imposed upon conventional foundations due to wind or seismic forces may be resisted by the development of passive earth pressures and friction between the base of the footing and the supporting soils. In determining the frictional resistance against concrete, a coefficient of friction of 0.45 for sandy/gravelly native soils or structural fill should be used.

Ultimate lateral earth pressures from *granular* backfill acting against retaining walls, temporary shoring, or buried structures may be computed from the lateral pressure coefficients or equivalent fluid densities presented in Table 5.6. These lateral pressures should be assumed even if the backfill is placed in a relatively narrow gap between a vertical bedrock cut and the foundation wall. These coefficients and densities assume no buildup of hydrostatic pressures. The force of water should be added to the presented values if hydrostatic pressures are anticipated.

Table 5.6
Lateral Earth Pressure Coefficients

Condition	Level Backfill		2H:1V Backfill	
	Lateral Pressure Coefficient	Equivalent Fluid Density (pcf)	Lateral Pressure Coefficient	Equivalent Fluid Density (pcf)
Active (Ka)	0.33	35	0.53	56
At-rest (Ko)	0.50	55	0.80	85
Passive (Kp)	3.0	320	—	—

Clayey soils drain poorly and may swell upon wetting, thereby greatly increasing lateral pressures acting on earth retaining structures; therefore, clayey soils should not be used as retaining wall backfill. Backfill should consist of native granular soil with an Expansion Index (EI) less than 20.

Walls and structures allowed to rotate slightly should use the active condition. If the element is to be constrained against rotation (i.e., a basement wall), the at-rest condition should be used. These values should be used with an appropriate factor of safety against overturning and sliding. A value of 1.5 is typically used. Additionally, if passive resistance is calculated in conjunction with frictional resistance, the passive resistance should be reduced by ½.

5.7 CONCRETE SLAB-ON-GRADE CONSTRUCTION

To minimize settlement and cracking of slabs, and to aid in drainage beneath the concrete floor slabs, all concrete slabs should be founded on a minimum 4-inch layer of compacted gravel overlying properly prepared subgrade. The gravel should consist of free-draining gravel or road base with a 3/4-inch maximum particle size and no more than 5 percent passing the No. 200 mesh sieve. The layer should be compacted to at least 95 percent of the MDD as determined by ASTM D-1557.

All concrete slabs should be designed to minimize cracking as a result of shrinkage. Consideration should be given to reinforcing the slab with a welded wire fabric, re-bar, or fibermesh. Slab reinforcement should be designed by the structural engineer; however, as a minimum, slab reinforcement should consist of 4’’×4’’ W4.0×W4.0 welded wire mesh within the middle third of the slab. We recommend that concrete be tested to assess that the slump and/or air content is in compliance with the plans and specifications. We recommend that concrete be placed in general accordance with the requirements of the American Concrete Institute (ACI). A Modulus of Subgrade Reaction of **250 psi/inch** may be used for design.

A moisture barrier (vapor retarder) consisting of 10-mil thick Visqueen (or equivalent) plastic sheeting should be placed below slabs-on-grade where moisture-sensitive floor coverings or

equipment is planned. Prior to placing this moisture barrier, any objects that could puncture it, such as protruding gravel or rocks, should be removed from the building pad. Alternatively, the subgrade may be covered with 2 inches of clean sand**.**

5.8 MOISTURE PROTECTION AND SURFACE DRAINAGE

Surface moisture should not be allowed to infiltrate into the soils in the vicinity of the foundations. As such, design strategies to minimize ponding and infiltration near the structures should be implemented.

We recommend roof runoff devices be installed to direct all runoff a minimum of 10 feet away from foundations. If a basement level is planned, the builder should be responsible for compacting the exterior backfill soils around the foundation. Additionally, the ground surface within 10 feet of the structures should be constructed so as to slope a minimum of **five** percent away from the structure. Pavement sections should be constructed to divert surface water off the pavement into storm drains, curb/gutter, or another suitable location.

Where basements are planned, IGES recommends a perimeter foundation drain be constructed in accordance with the International Residential Code (IRC).

5.9 SOIL CORROSION POTENTIAL

Based on laboratory testing of soil samples taken in this vicinity during several previous geotechnical investigations (e.g., IGES 2016, Copper Crest East), the soils in this area generally have a sulfate content less than 100 ppm. Accordingly, the soils are classified as having a ‘low’ potential for deterioration of concrete due to the presence of soluble sulfate. As such, conventional Type I/II Portland cement may be used for all concrete in contact with site soils.

Soil samples from this area have previously been tested for resistivity, soluble chloride and pH (e.g., IGES, 2016). Based on local testing, the onsite native soil is considered to be *moderately corrosive* to ferrous metal. Consideration should be given to retaining the services of a qualified corrosion engineer to provide an assessment of any metal that may be in contact with site soils.

5.10 CONSTRUCTION CONSIDERATIONS

5.10.1 Over-Size Material

Large boulders (up to 36 inches in diameter) were observed on the surface and within the test pits; as such, excavation of the basement may generate an abundance of over-size material that may require special handling, processing, or disposal.

6.0 CLOSURE

6.1 LIMITATIONS

The recommendations presented in this report are based on limited field exploration, review of existing hazard studies and other geotechnical data, and our understanding of the proposed construction. The subsurface data used in the preparation of this report were obtained from the explorations made for this investigation. It is possible that variations in the soil and groundwater conditions could exist between and beyond the points explored. The nature and extent of variations may not be evident until construction occurs. If any conditions are encountered at this site that are different from those described in this report, we should be immediately notified so that we may make any necessary revisions to recommendations contained in this report. In addition, if the scope of the proposed construction changes from that described in this report, IGES should also be notified.

This report was prepared in accordance with the generally accepted standard of practice at the time the report was written. No warranty, expressed or implied, is made.

It is the Client's responsibility to see that all parties to the project including the Designer, Contractor, Subcontractors, etc. are made aware of this report in its entirety. The use of information contained in this report for bidding purposes should be done at the Contractor's option and risk.

6.2 ADDITIONAL SERVICES

The recommendations made in this report are based on the assumption that an adequate program of tests and observations will be made during the construction. IGES staff or other qualified personnel should be on site to verify compliance with these recommendations. These tests and observations should include at a minimum the following:

- Observations and testing during site preparation, earthwork and structural fill placement.
- Consultation as may be required during construction.
- Quality control on concrete placement to verify slump, air content, and strength.

We also recommend that project plans and specifications be reviewed by us to verify compatibility with our conclusions and recommendations. Additional information concerning the scope and cost of these services can be obtained from our office.

We appreciate the opportunity to be of service on this project. Should you have any questions regarding the report or wish to discuss additional services, please do not hesitate to contact us at your convenience at (801) 748-4044.

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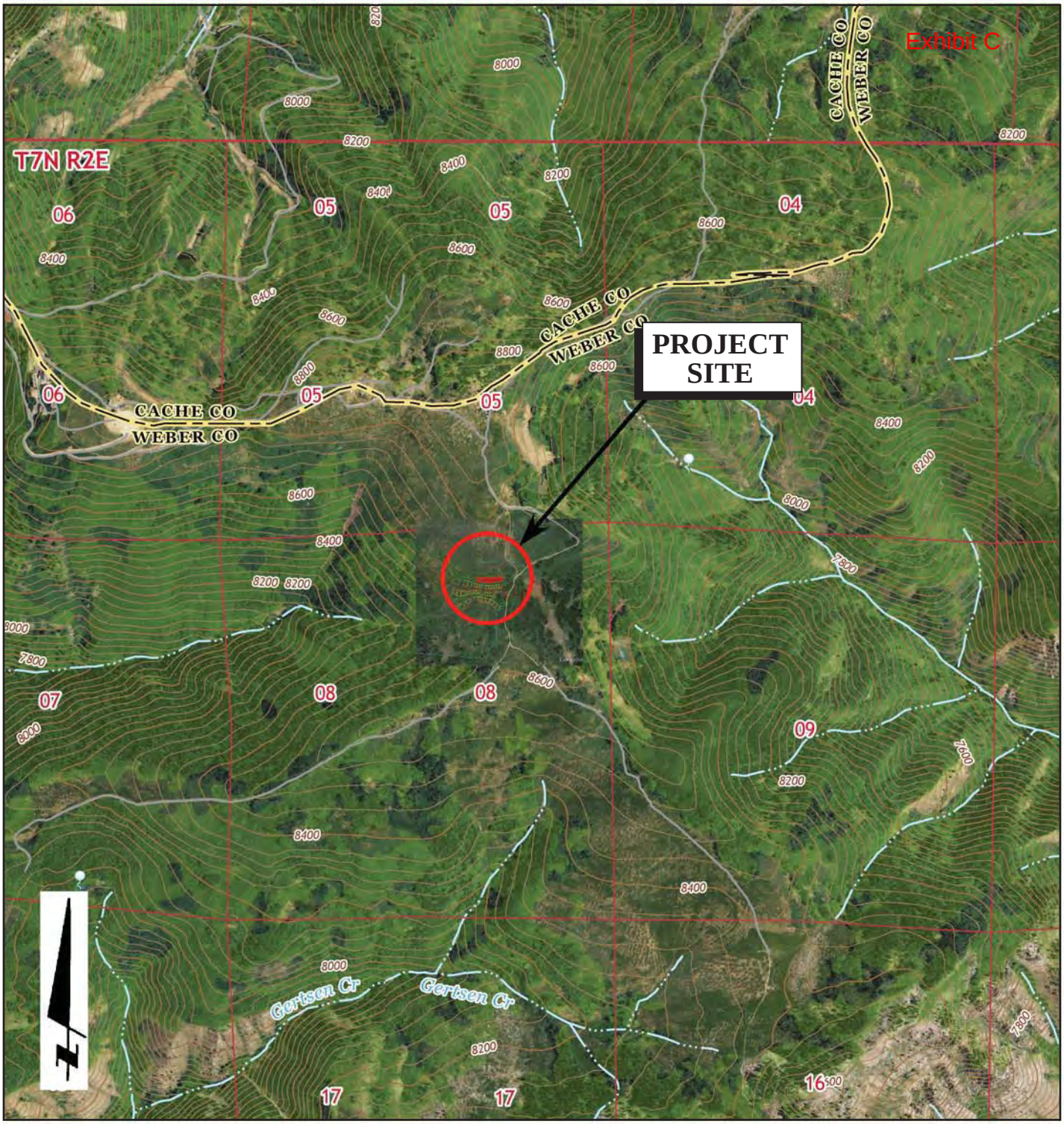
AERIAL PHOTOGRAPHS

Data Set	Date	Flight	Photographs	Scale
1947 AAJ	August 10, 1946	AAJ_1B	88, 89, 90	1:20,000
1953 AAI	September 14, 1952	AAI_4K	34, 35, 36	1:20,000
1963 ELK	June 25, 1963	ELK_3	57, 58, 59	1:15,840

*https://geodata.geology.utah.gov/imagery/

Exhibit C

APPENDIX A



BASE MAP:
USGS Huntsville, Browns Hole, James Peak and Sharp Mountain 7.5-Minute Quadrangle Topographic Maps (2011)

MAP LOCATION

0 1000' 2000'

SCALE 1:24,000

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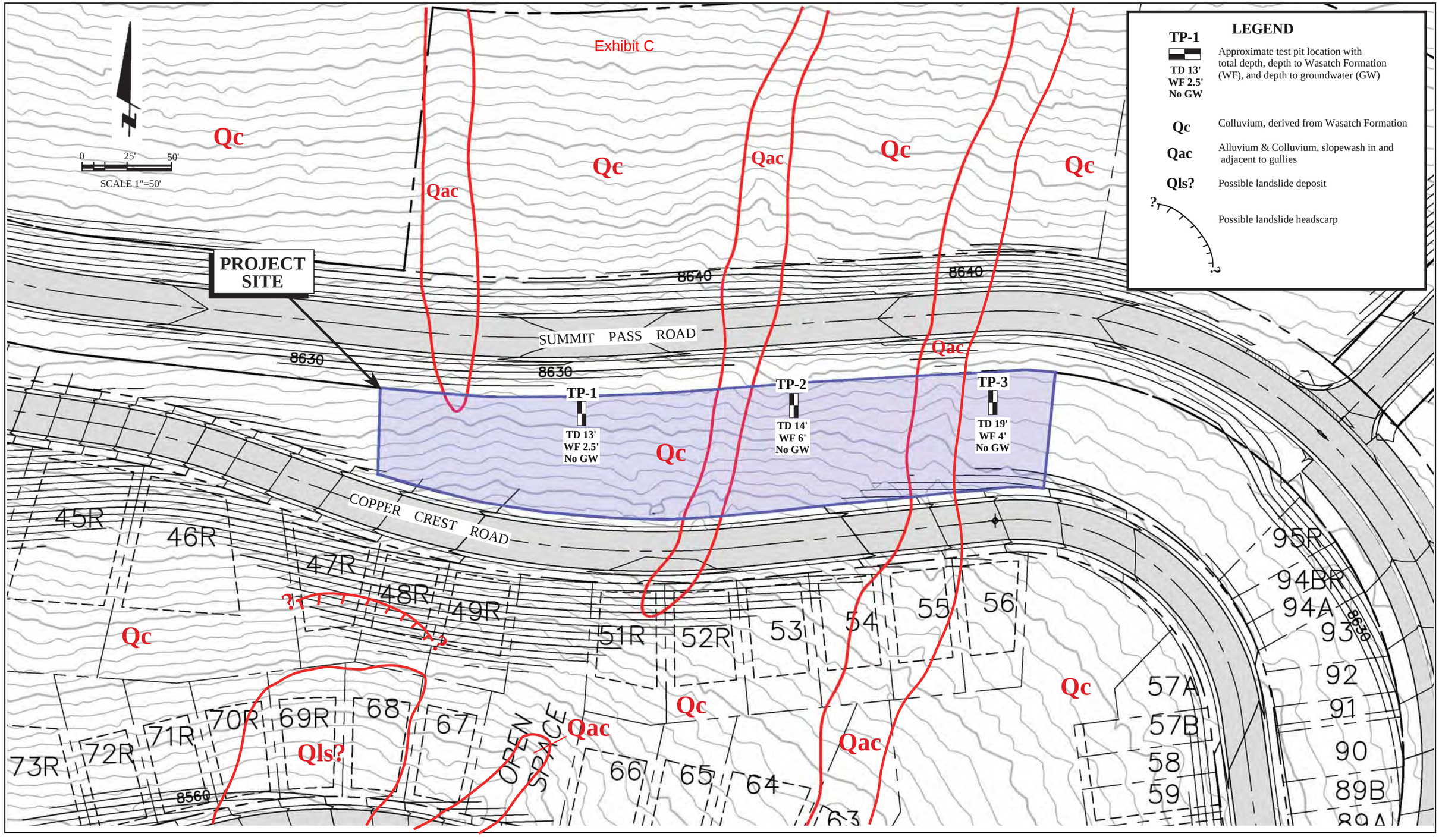
Summit Powder Mountain Resort
Weber County, Utah

SITE VICINITY MAP

Figure

A-1

Exhibit C



Basemap: Undated 50-scale site plan prepared by NV-5

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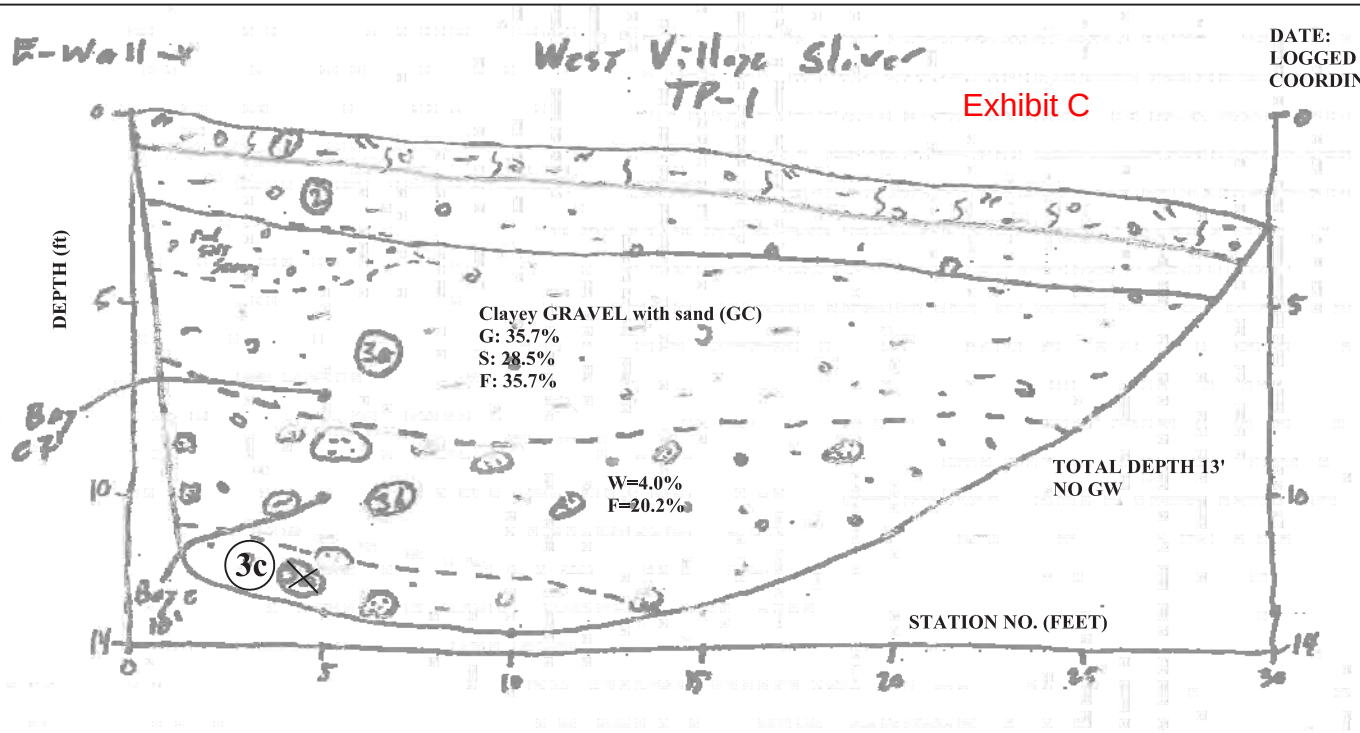
GEOTECH & GEOLOGY MAP

Figure

A-2

DATE: 11/4/16
LOGGED BY: ET
COORDINATES: N 41.36337, W111.74573



LITHOLOGIC UNIT DESCRIPTIONS:

1) **A/B Soil Horizon:** ~1' thick; dark yellowish brown (10YR 4/2) to grayish brown (5Y 3/2) sandy lean CLAY with gravel (CL), loose, moist, low plasticity, massive; gravel and larger sized clasts comprise ~15% of unit; clasts entirely subrounded quartzite up to 4" in diameter, though mode size < ½"; abundant plant and tree roots; gradational, irregular basal contact.

2) **Loose Colluvium:** ~1-1.5' thick; dark yellowish brown (10YR 4/2) sandy lean CLAY with gravel (CL), loose, moist, low plasticity, massive; gravel and larger sized clasts comprise ~20% of unit; clasts entirely subrounded quartzite up to 4" in diameter, though mode size < ½"; abundant plant and tree roots; sharp, wavy basal contact.

3) **Wasatch Formation:** At least ~10' thick; contains 3 subunits:

3a: ~5' thick; dark reddish brown (10R ¾) clayey GRAVEL with sand (GC), very dense, slightly moist, low plasticity, massive; gravel and larger sized clasts comprise ~36% of subunit; clasts entirely subangular quartzite up to 1.5" in diameter, though mode size ~3"; contains red silt seam at top of subunit between 0 and 8' stationing.

3b: ~3-5' thick; pale red (5R 6/2) clayey GRAVEL with sand (GC), very dense, slightly moist, low plasticity, massive; gravel and larger sized clasts comprise ~40% of subunit; clasts entirely quartzite up to 2' in diameter; subunit likely represents a fluvial deposit within the Wasatch Formation.

3c: At least 2' thick; moderate reddish brown (10R 4/6) clayey GRAVEL with sand (GC), very dense, slightly moist, low plasticity, massive; gravel and larger sized clasts comprise ~25% of subunit; clasts entirely quartzite up to 1' in diameter.

SCALE: 1"=5' H&V

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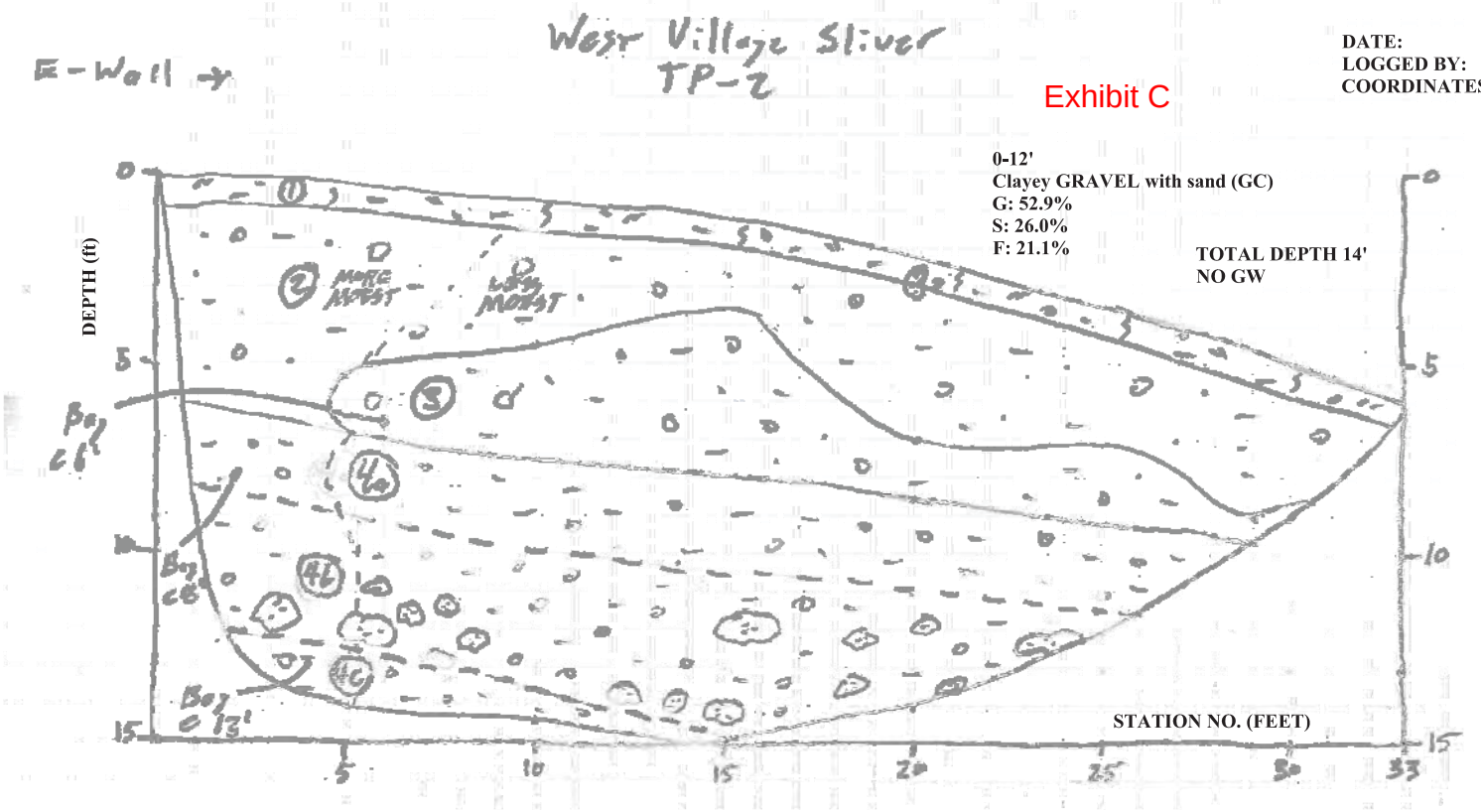
TEST PIT LOG TP-1

Figure

A-3

DATE: 11/4/16
LOGGED BY: ET
COORDINATES: N 41.36342, W111.74532



LITHOLOGIC UNIT DESCRIPTIONS:

1) **A/B Soil Horizon:** ~1' thick; dark yellowish brown (10YR 4/2) to grayish brown (5Y 3/2) sandy lean CLAY with gravel (CL), loose, moist, low plasticity, massive; gravel and larger sized clasts comprise ~15% of unit; clasts entirely subrounded quartzite up to 4" in diameter, though mode size < ½"; abundant plant and tree roots; gradational, irregular basal contact.

2) **Loose Colluvium:** ~2-5' thick; dark yellowish brown (10YR 4/2) sandy lean CLAY with gravel (CL), loose, moist, low plasticity, massive; gravel and larger sized clasts comprise ~20% of unit; clasts entirely subrounded quartzite up to 4" in diameter, though mode size < ½"; abundant plant and tree roots; sharp, highly irregular basal contact.

3) **Cemented Colluvium:** ~3' thick; light brown (5YR 6/4) to light gray (N7) sandy lean CLAY with gravel (CL), medium-stiff to stiff, slightly moist, low plasticity, massive; gravel and larger sized clasts comprise ~30-60% of unit; clasts entirely subrounded quartzite up to 8" in diameter; sharp, irregular basal contact.

4) **Wasatch Formation:** At least ~8' thick; contains 3 subunits:

4a: ~2' thick; dark reddish brown (10R ¾) sandy lean CLAY with gravel (CL), stiff to medium-stiff, slightly moist, low plasticity, massive; gravel and larger sized clasts comprise ~15% of subunit.

4b: ~3.5' thick; pale red (5R 6/2) clayey GRAVEL with sand (GC), dense, slightly moist, low plasticity, massive; light gray (N7) matrix; gravel and larger sized clasts comprise ~60% of subunit; clasts entirely subangular quartzite up to 2' in diameter, though mode size is ~4"; subunit likely represents a fluvial deposit within the Wasatch Formation; possible slight imbrication of clasts downslope.

4c: At least 1.5' thick; moderate reddish brown (10R 4/6) clayey SAND with gravel (SC), dense, moist, low to moderate plasticity, massive; gravel and larger sized clasts comprise ~35% of subunit; clasts entirely subrounded quartzite up to 5" in diameter, though mode size is ~2"; consistent with Wasatch Formation seen in other test pits.

SCALE: 1"=5' H&V

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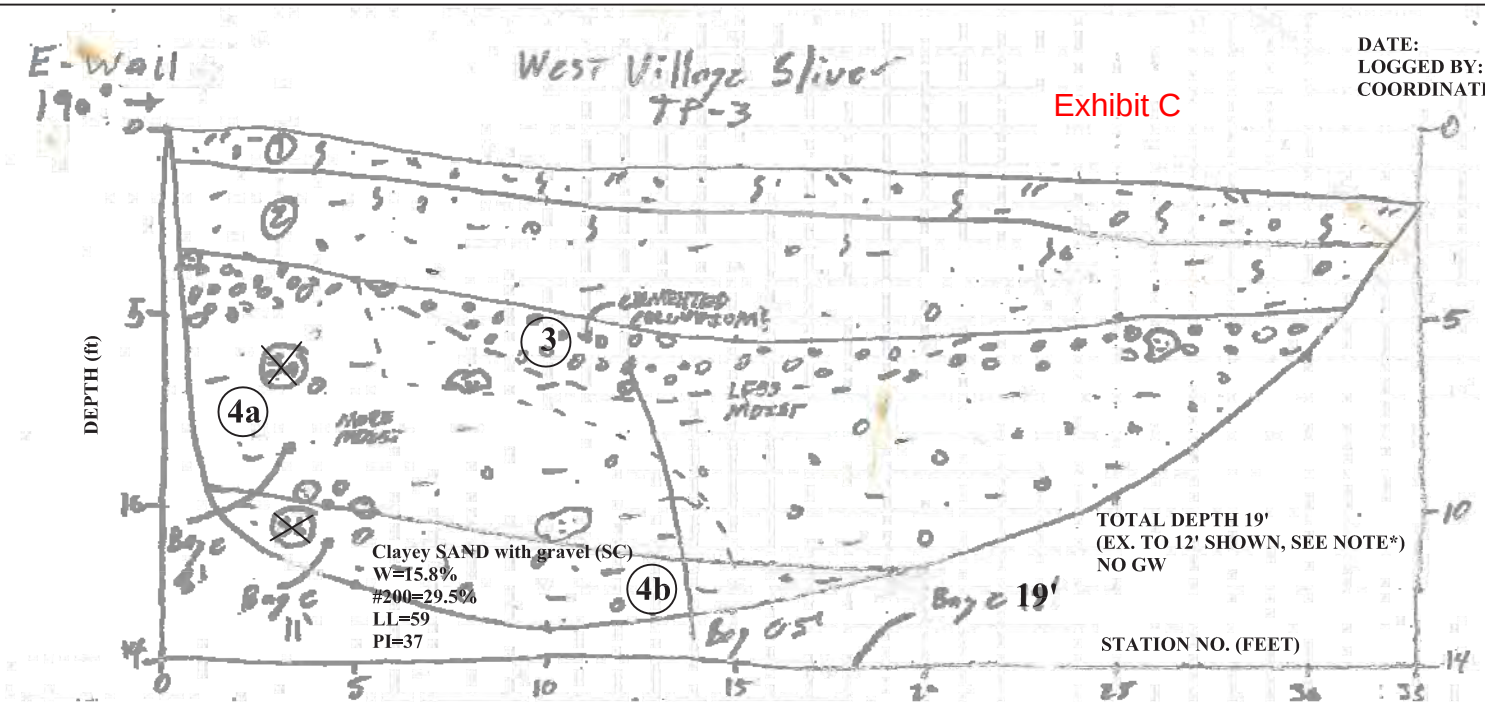
TEST PIT LOG TP-2

Figure

A-4



LITHOLOGIC UNIT DESCRIPTIONS:

1) **A/B Soil Horizon:** ~1' thick; dark yellowish brown (10YR 4/2) to grayish brown (5Y 3/2) sandy lean CLAY with gravel (CL), loose, moist, low plasticity, massive; gravel and larger sized clasts comprise ~15% of unit; clasts entirely subrounded quartzite up to 4" in diameter, though mode size < ½"; abundant plant and tree roots; gradational, irregular basal contact.

2) **Loose Colluvium:** ~2-3' thick; dark yellowish brown (10YR 4/2) sandy lean CLAY with gravel (CL), loose, moist, low plasticity, massive; gravel and larger sized clasts comprise ~20% of unit; clasts entirely subrounded quartzite up to 4" in diameter, though mode size < ½"; clasts increase in frequency with depth; occasional plant and tree roots; sharp, wavy basal contact.

3) **Cemented Colluvium:** Up to 2' thick; light brown (5YR 6/4) to light gray (N7) sandy lean CLAY with gravel (CL), medium-stiff to stiff, slightly moist, low plasticity, massive; gravel and larger sized clasts comprise ~30-60% of unit; clasts entirely subrounded quartzite up to 8" in diameter; sharp, wavy basal contact.

4) **Wasatch Formation:** At least ~10' thick; contains 3 subunits:

4a: ~6' thick; pale red (5R 6/2) to moderate reddish brown (10R 4/6) sandy lean CLAY with gravel (CL), stiff to very stiff, slightly moist, with a moist zone extending to Station 15, low plasticity; massive, though linear cobble arrangement observed within subunit; gravel and larger sized clasts comprise ~30% of subunit; clasts entirely subangular quartzite up to 1.5' in diameter, though mode size is ~3"; gradational, planar basal contact.

4b: ~4' thick; dark reddish brown (10R ¾) sandy fat CLAY with gravel (CH), medium-stiff, moist, high plasticity, massive; gravel and larger sized clasts comprise ~25% of subunit; clasts entirely subrounded quartzite up to 6" in diameter, though mode size is ~1"; some rocks show polishing, though no slickensides present; sharp, planar basal contact.

4c: (not shown on graphic) At least ~2.5' thick; light gray (N7) clayey SAND with gravel (SC), dense, moist, high plasticity, massive; gravel and larger sized clasts comprise ~37% of subunit; clasts entirely quartzite up to 6" in diameter; blocky texture; occasional discontinuous, internal slickensides.

*Following initial logging, TP-3 was deepened to 19' below existing grade. Unit 3b was observed to be approximately 4' thick, and was underlain by Unit 3c, a light gray clayey SAND with gravel (SC), with a fat clay component that was slickensided, and the subunit was at least 2.5' thick.

SCALE: 1"=5' H&V

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TEST PIT LOG TP-3

Figure

A-5

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			USCS SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (More than half of material Is larger than the #200 sieve)	GRAVELS (More than half of coarse fraction Is larger than the #4 sieve)	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS (More than half of coarse fraction Is smaller than the #4 sieve)	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
			SC	CLAYEY SANDS SAND-GRAVEL-CLAY MIXTURES
FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid limit less than 50)		ML	INORGANIC SILTS & VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (Liquid limit greater than 50)		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

LOG KEY SYMBOLS

Exhibit C

BORING SAMPLE LOCATION

TEST-PIT SAMPLE LOCATION

WATER LEVEL (level after completion)

WATER LEVEL (level where first encountered)

CEMENTATION

DESCRIPTION	DESCRIPTION
WEAKELY	CRUMBLES OR BREAKS WITH HANDLING OR SLIGHT FINGER PRESSURE
MODERATELY	CRUMBLES OR BREAKS WITH CONSIDERABLE FINGER PRESSURE
STRONGLY	WILL NOT CRUMBLE OR BREAK WITH FINGER PRESSURE

OTHER TESTS KEY

C	CONSOLIDATION	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	DS	DIRECT SHEAR
UC	UNCONFINED COMPRESSION	T	TRIAXIAL
S	SOLUBILITY	R	RESISTIVITY
O	ORGANIC CONTENT	RV	R-VALUE
CBR	CALIFORNIA BEARING RATIO	SU	SOLUBLE SULFATES
COMP	MOISTURE/DENSITY RELATIONSHIP	PM	PERMEABILITY
CI	CALIFORNIA IMPACT	-200	% FINER THAN #200
COL	COLLAPSE POTENTIAL	Gs	SPECIFIC GRAVITY
SS	SHRINK SWELL	SL	SWELL LOAD

MODIFIERS

DESCRIPTION	%
TRACE	<5
SOME	5 - 12
WITH	>12

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
DRY	ABSENCE OF MOISTURE, DUSTY, DRY TO THE TOUCH
MOIST	DAMP BUT NO VISIBLE WATER
WET	VISIBLE FREE WATER, USUALLY SOIL BELOW WATER TABLE

STRATIFICATION

DESCRIPTION	THICKNESS	DESCRIPTION	THICKNESS
SEAM	1/16 - 1/2"	OCCASIONAL	ONE OR LESS PER FOOT OF THICKNESS
LAYER	1/2 - 12"	FREQUENT	MORE THAN ONE PER FOOT OF THICKNESS

GENERAL NOTES

1. Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual.
2. No warranty is provided as to the continuity of soil conditions between individual sample locations.
3. Logs represent general soil conditions observed at the point of exploration on the date indicated.
4. In general, Unified Soil Classification designations presented on the logs were evaluated by visual methods only. Therefore, actual designations (based on laboratory tests) may vary.

APPARENT / RELATIVE DENSITY - COARSE-GRAINED SOIL

APPARENT DENSITY	SPT (blows/ft)	MODIFIED CA. SAMPLER (blows/ft)	CALIFORNIA SAMPLER (blows/ft)	RELATIVE DENSITY (%)	FIELD TEST
VERY LOOSE	<4	<4	<5	0 - 15	EASILY PENETRATED WITH 1/2-INCH REINFORCING ROD PUSHED BY HAND
LOOSE	4 - 10	5 - 12	5 - 15	15 - 35	DIFFICULT TO PENETRATE WITH 1/2-INCH REINFORCING ROD PUSHED BY HAND
MEDIUM DENSE	10 - 30	12 - 35	15 - 40	35 - 65	EASILY PENETRATED A FOOT WITH 1/2-INCH REINFORCING ROD DRIVEN WITH 5-LB HAMMER
DENSE	30 - 50	35 - 60	40 - 70	65 - 85	DIFFICULT TO PENETRATED A FOOT WITH 1/2-INCH REINFORCING ROD DRIVEN WITH 5-LB HAMMER
VERY DENSE	>50	>60	>70	85 - 100	PENETRATED ONLY A FEW INCHES WITH 1/2-INCH REINFORCING ROD DRIVEN WITH 5-LB HAMMER

CONSISTENCY - FINE-GRAINED SOIL		TORVANE	POCKET PENETROMETER	FIELD TEST
CONSISTENCY	SPT (blows/ft)	UNTRAINED SHEAR STRENGTH (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	
VERY SOFT	<2	<0.125	<0.25	EASILY PENETRATED SEVERAL INCHES BY THUMB. EXUDES BETWEEN THUMB AND FINGERS WHEN SQUEEZED BY HAND.
SOFT	2 - 4	0.125 - 0.25	0.25 - 0.5	EASILY PENETRATED ONE INCH BY THUMB. MOLDED BY LIGHT FINGER PRESSURE.
MEDIUM STIFF	4 - 8	0.25 - 0.5	0.5 - 1.0	PENETRATED OVER 1/2 INCH BY THUMB WITH MODERATE EFFORT. MOLDED BY STRONG FINGER PRESSURE.
STIFF	8 - 15	0.5 - 1.0	1.0 - 2.0	INDENTED ABOUT 1/2 INCH BY THUMB BUT PENETRATED ONLY WITH GREAT EFFORT.
VERY STIFF	15 - 30	1.0 - 2.0	2.0 - 4.0	READILY INDENTED BY THUMBNAIL.
HARD	>30	>2.0	>4.0	INDENTED WITH DIFFICULTY BY THUMBNAIL.

IGES

Key to Soil Symbols and Terminology

Figure A-6

IGES, Inc. Project No.: 01628-020

BASE MAPS

-USGS Huntsville 7.5-Minute Geologic Quadrangle Map (GQ-1503), Sorensen and Crittenden, Jr. (1979)

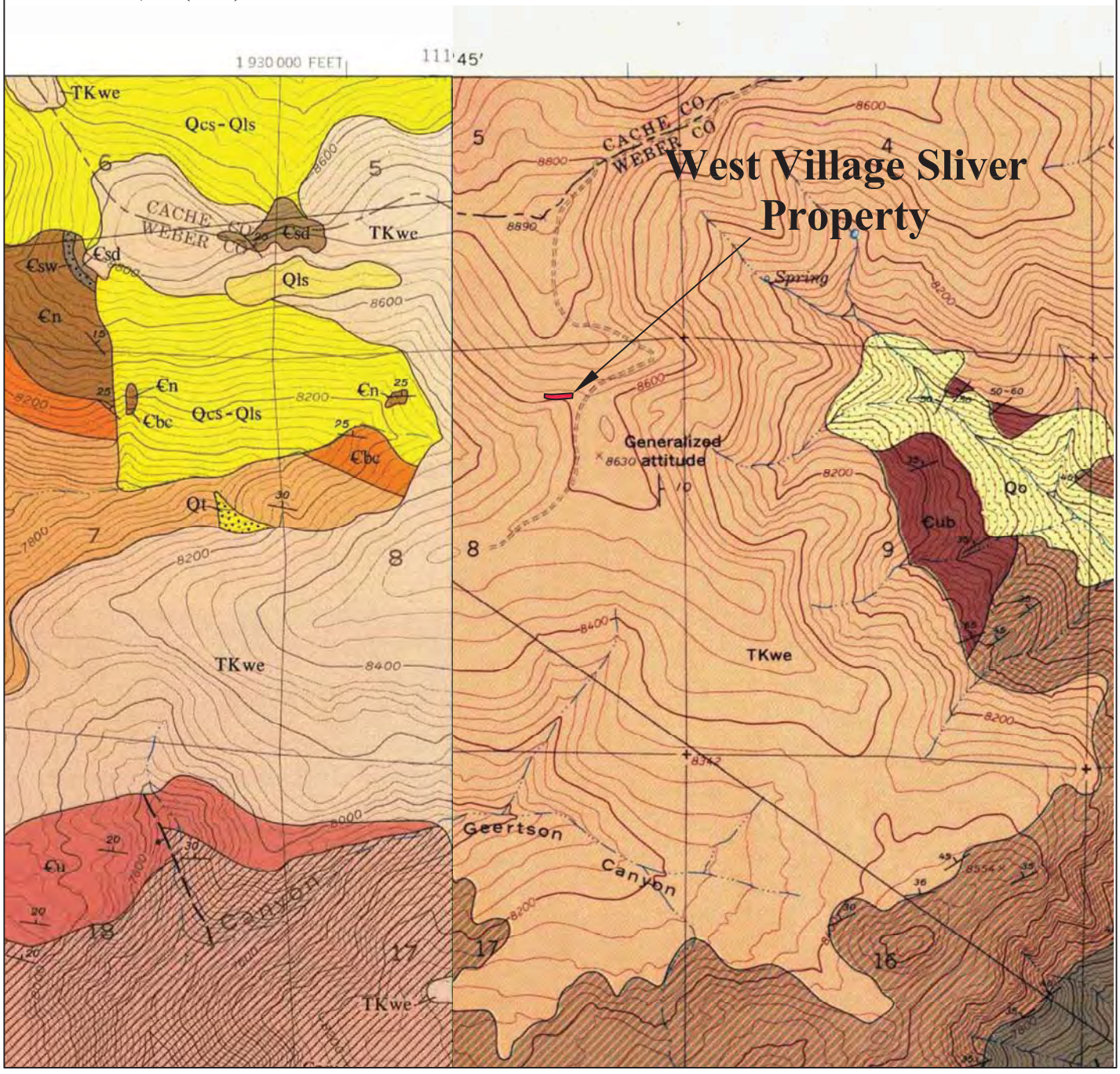
-USGS Brown's Hole 7.5-Minute Geologic Quadrangle Map (GQ-968), Crittenden, Jr. (1972)

Exhibit C

N

0' 1,000' 2,000' 4,000'

SCALE: 1"=2,000'



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Geotechnical & Geologic Hazard Investigation
West Village Sliver
Summit Powder Mountain Resort
Weber County, Utah REGIONAL GEOLOGY MAP 1

Figure

A-7a

Exhibit C

MAP LEGEND

Qal — ALLUVIAL DEPOSITS, UNDIFFERENTIATED (Holocene) – Unconsolidated gravel, sand, and silt deposits in presently active stream channels and floodplains; thickness 0-6 m

Qcs — COLLUVIUM AND SLOPEWASH (Holocene) – Bouldery colluvium and slopewash chiefly along eastern margin of Ogden Valley; in part, lag from Tertiary units; thickness 0-30 m

Qf — ALLUVIAL FAN DEPOSITS (Holocene) – Alluvial fan deposits; postdate, at least in part, time of highest stand of former Lake Bonneville; thickness 0-30 m

Qls — LANDSLIDE DEPOSITS (Holocene) – thickness 0-6 m

QT — TALUS DEPOSITS (Holocene) – thickness 0-6 m

TKwe — WASATCH AND EVANSTON(?) FORMATIONS, UNDIVIDED (Eocene, Paleocene, and Upper Cretaceous?) – Unconsolidated pale-reddish-brown pebble, cobble, and boulder conglomerate; forms boulder-covered slopes. Clasts are mainly Precambrian quartzite and are tan, gray, or purple; matrix is mainly poorly consolidated sand and silt; thickness 0-150 m

Csd — ST. CHARLES LIMESTONE (Upper Cambrian) – Includes:
Dolomite member – Thin- to thick-bedded, finely to medium crystalline, light- to medium-gray, white- to light-gray-weathering, cliff-forming dolomite; linguloid brachiopods common in basal 15 m; thickness 150-245 m

Csw — Worm Creek Quartzite Member – Thin-bedded, fine- to medium-grained, medium- to dark-gray, tan- to brown-weathering calcareous quartzitic sandstone; detrital grains well-sorted and well-rounded; thickness 6 m

Cn — NOUNAN DOLOMITE (Upper and Middle Cambrian) – Thin- to thick-bedded, finely crystalline, medium-gray, light- to medium-gray-weathering, cliff-forming dolomite; white twiggy structures common throughout unit; thickness 150-230 m

Cbc — CALLS FORT SHALE MEMBER OF BLOOMINGTON FORMATION (Middle Cambrian) – Olive-drab to light-brown shale and light- to dark-blue-gray limestone with intercalated orange to rusty-brown silty limestone; intraformational conglomerate common throughout unit; thickness 23-90 m

Clu — CAMBRIAN LIMESTONES, UNDIVIDED (Middle Cambrian) – Includes limestone and Hodges Shale Members of Bloomington Formation, and Blacksmith and Ute Limestones

Cb — BLACKSMITH LIMESTONE (Middle Cambrian)) – Medium- to thin-bedded, light-gray to dark-blue-gray limestone; thin-bedded, flaggy-weathering, gray to tan silty limestone and interbedded siltstone; light- to dark-gray dolomite, with some reddish siliceous partings; thickness 400? m

Exhibit C

MAP LEGEND

Cu — UTE LIMESTONE (Middle Cambrian) — Medium- to thin-bedded, finely crystalline, light- to dark-gray silty limestone with irregular wavy partings, mottled and streaked surfaces, worm tracks, and twiggy structures common throughout unit; oolites and *Girvanella* in many beds; olive-drab fissile shale interbedded throughout unit. Includes thin-bedded, gray-weathering, pale-tan to brown dolomite exposed at base of unit, 18-24 m at head of Geertsen Canyon and 0-3 m elsewhere; thickness 245? m

Cgcu — GEERTSEN CANYON QUARTZITE (Lower Cambrian) — Includes:
Upper member — Pale-buff to white or flesh-pink quartzite, locally streaked with pale red or purple. Coarse-grained; small pebbles occur throughout unit and increase in abundance downward. Base marked by zone 30-60 m thick of cobble conglomerate in beds 30 cm to 2 m thick; clasts, 5-10 cm in diameter, are mainly reddish vein quartz or quartzite, sparse gray quartzite, or red jasper; thickness 730-820 m

Cgcl — Lower member — Pale-buff to white and tan quartzite with irregular streaks and lenses of cobble conglomerate decreasing in abundance downward. Lower 90-120 m strongly arkosic, streaked greenish or pinkish. Feldspar clasts increase in size to 0.6-1.3 cm in lower part of unit; thickness 490-520 m

Recently active normal fault — Dashed where inferred. Ticks on downthrown side

Pre-Tertiary normal fault — Dotted where concealed
Bar and ball on downthrown side

Thrust fault — Dashed where inferred
Sawteeth on upper plate

Exhibit C

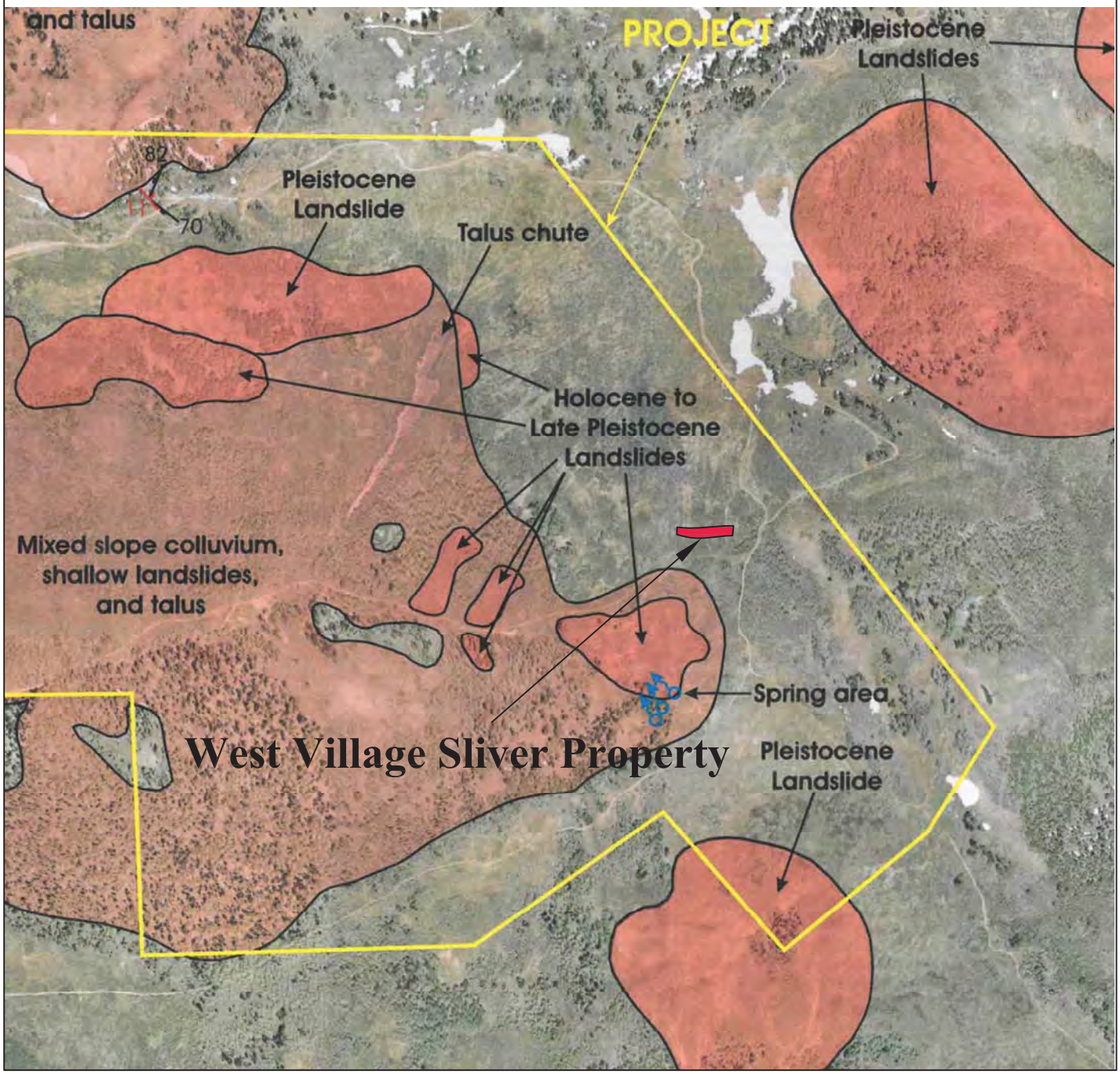
BASE MAP

-Western Geologic (2012)
Geologic Hazards
Reconaissance Report, Figure 3

N

0' 500' 1,000' 2,000'

SCALE: 1"=1,000'



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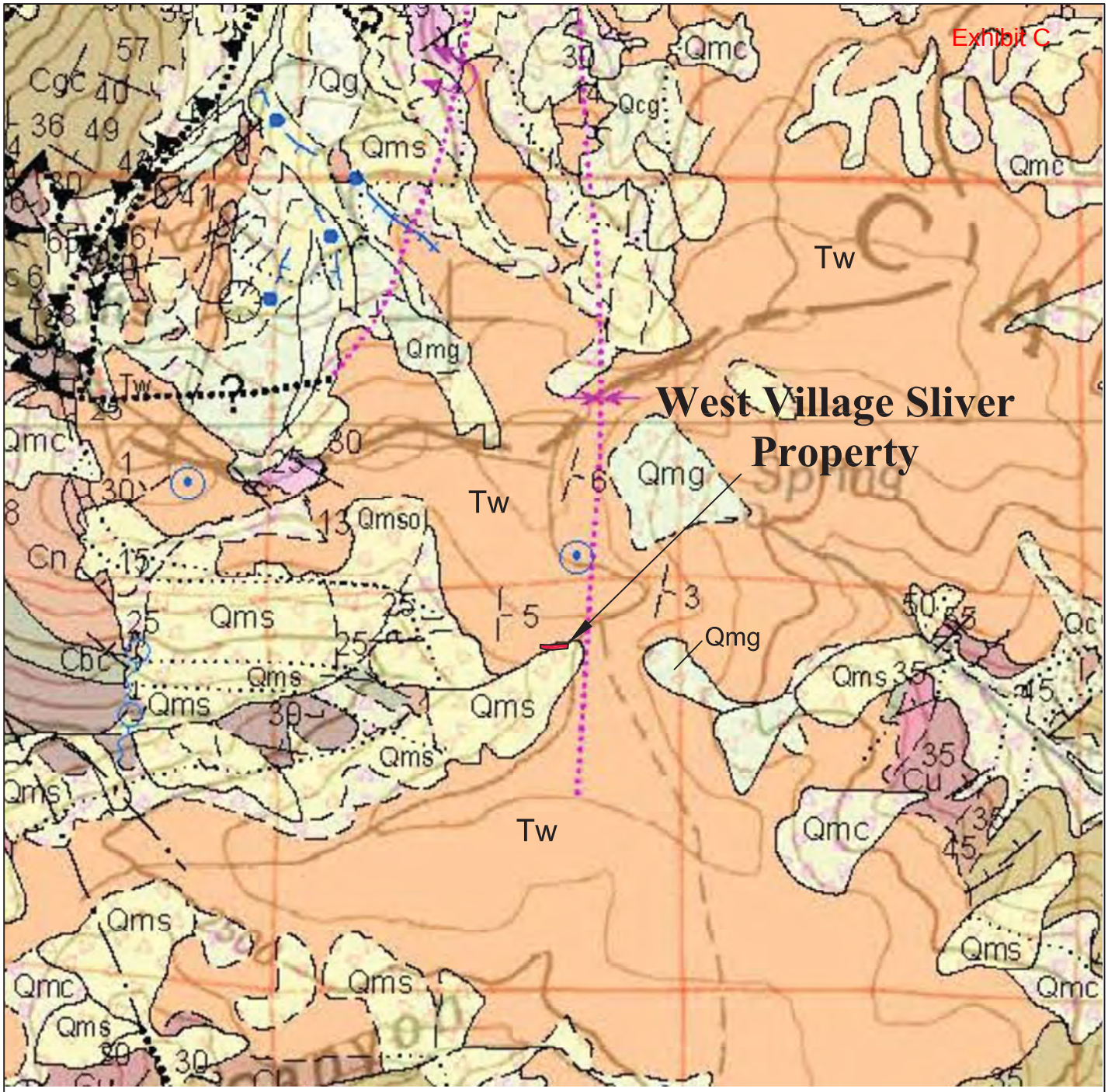
Weber County, Utah REGIONAL GEOLOGY MAP 2

Figure

A-8



BASE MAP

-Coogan and King (2016)
UGS Ogden 30'x60' Geologic Quadrangle Map, OFR-635DM
Plate 1

N

0' 1,000' 2,000' 4,000'

SCALE: 1"=2,000'

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Project No. 01628-020

Geotechnical & Geologic Hazard Investigation
West Village Sliver
Summit Powder Mountain Resort
Weber County, Utah REGIONAL GEOLOGY MAP 3

Figure

A-9a

Exhibit C

MAP LEGEND

Qmc **Landslide and colluvial deposits, undivided (Holocene and Pleistocene)** – Poorly sorted to unsorted clay- to boulder-sized material; mapped where landslide deposits are difficult to distinguish from colluvium (slopewash and soil creep) and where mapping separate, small, intermingled areas of landslide and colluvial deposits is not possible at map scale; locally includes talus and debris flow and flood deposits; typically mapped where landslides are thin ("shallow"); also mapped where the blocky or rumpled morphology that is characteristic of landslides has been diminished ("smoothed") by slopewash and soil creep; composition depends on local sources; 6 to 40 feet (2-12 m) thick. These deposits are as unstable as other landslide units (Qms, Qmsy, Qmso).

Human disturbances

Qh, Qh? **Human disturbances (Historical)** - Mapped disturbances obscure original deposits or rocks by cover or removal; only larger disturbances that pre-date the 1984 aerial photographs used to map the Ogden 30 x 60-minute quadrangle are shown; includes engineered fill, particularly along Interstate Highways 80 and 84, the Union Pacific Railroad, and larger dams, as well as aggregate operations, gravel pits, sewage-treatment facilities, cement plant quarries and operations, brick plant and clay pit, Defense Depot Ogden (Browning U.S. Army Reserve Center), gas and oil field operations (for example drill pads) including gas plants, and low dams along several creeks, including a breached dam on Yellow Creek.

Qms, Qms?, Qmsy, Qmsy?, Qmso, Qmso?

Landslide deposits (Holocene and upper and middle? Pleistocene) – Poorly sorted clay- to boulder-sized material; includes slides, slumps, and locally flows and floods; generally characterized by hummocky topography, main and internal scarps, and chaotic bedding in displaced blocks; composition depends on local sources; morphology becomes more subdued with time and amount of water in material during emplacement; Qms may be in contact with Qms when landslides are different/distinct; thickness highly variable, up to about 20 to 30 feet (6-9 m) for small slides, and 80 to 100 feet (25-30 m) thick for larger landslides. Qmsy and Qmso queried where relative age uncertain; Qms queried where classification uncertain. Numerous landslides are too small to show at map scale and more detailed maps shown in the index to geologic mapping should be examined.

Qmg, Qmg?

Mass-movement and glacial deposits, undivided (Holocene and Pleistocene) – Unsorted and unstratified clay, silt, sand, and gravel; mapped where glacial deposits lack typical moraine morphology, and appear to have failed or moved down slope; also mapped in upper Strawberry Bowl (Snow Basin quadrangle) where glacial deposits have lost their distinct morphology and the contacts between them and colluvium and talus in the cirques cannot be mapped; likely less than 30 feet (9 m) thick, but may be thicker in Mantua, James Peak, North Ogden, Huntsville, and Peterson quadrangles.

Tw, Tw?

Wasatch Formation (Eocene and upper Paleocene) – Typically red to brownish-red sandstone, siltstone, mudstone, and conglomerate with minor gray limestone and marlstone locally (see Twl); lighter shades of red, yellow, tan, and light gray present locally and more common in uppermost part, complicating mapping of contacts with overlying similarly colored Norwood and Fowkes Formations; clasts typically rounded Neoproterozoic and Paleozoic sedimentary rocks, mainly Neoproterozoic and Cambrian quartzite; basal conglomerate more gray and less likely to be red, and containing more locally derived angular clasts of limestone, dolomite and sandstone, typically from Paleozoic strata, for example in northern Causey Dam

Exhibit C

APPENDIX B

Water Content and Unit Weight of Soil

(In General Accordance with ASTM D7263 Method B and D2216)

Exhibit C

Project: **Summit - West Village Sliver**
No: **01628-020**
Location: Powder Mountain, UT
Date: 12/21/2016
By: ET

Sample Info.	Boring No.	TP-1	TP-3						
	Sample								
	Depth	10.0'	19.0'						
	Split	Yes	Yes						
	Split sieve	3/8"	3/4"						
Total sample (g)		4137.72	4013.90						
Moist coarse fraction (g)		1477.10	1373.09						
Moist split fraction (g)		2660.62	2640.81						
	Sample height, H (in)								
	Sample diameter, D (in)								
	Mass rings + wet soil (g)								
	Mass rings/tare (g)								
	Moist unit wt., γ_m (pcf)								
Coarse Fraction	Wet soil + tare (g)	1692.61	1830.15						
	Dry soil + tare (g)	1665.83	1733.77						
	Tare (g)	215.51	223.50						
	Water content (%)	1.8	6.4						
Split Fraction	Wet soil + tare (g)	720.44	1719.82						
	Dry soil + tare (g)	691.33	1499.38						
	Tare (g)	126.96	465.91						
	Water content (%)	5.2	21.3						
Water Content, w (%)		**4.0**	**15.8**						
Dry Unit Wt., γ_d (pcf)									

Entered by:_____
Reviewed:_____

Liquid Limit, Plastic Limit, and Plasticity Index of Soils

(ASTM D4318)

Exhibit C

Project: Summit - West Village Sliver
No: 01628-020
Location: Powder Mountain, UT
Date: 12/22/2016
By: DKS

Boring No.: TP-3
Sample:
Depth: 19.0'
Description: Brown fat clay

Preparation method: Wet
Liquid limit test method: Multipoint

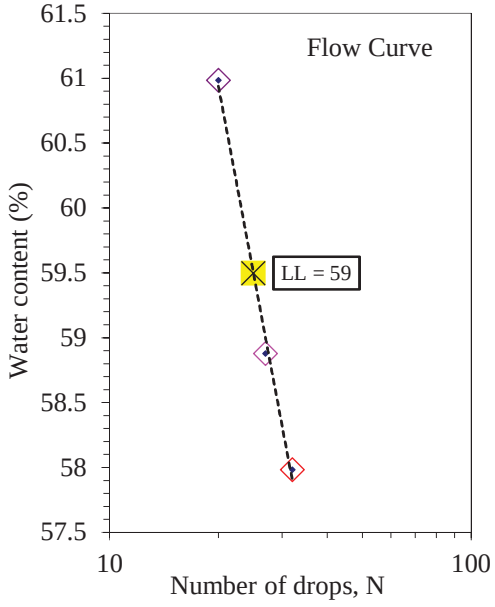
Plastic Limit

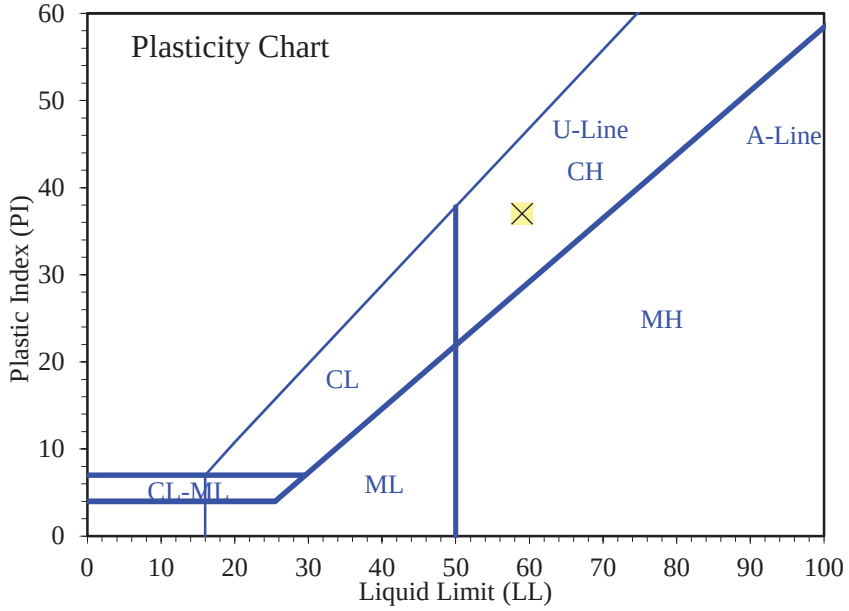
Determination No	1	2				
Wet Soil + Tare (g)	31.38	33.19				
Dry Soil + Tare (g)	29.58	31.08				
Water Loss (g)	1.80	2.11				
Tare (g)	21.70	21.52				
Dry Soil (g)	7.88	9.56				
Water Content, w (%)	22.84	22.07				

Liquid Limit

Determination No	1	2	3			
Number of Drops, N	32	27	20			
Wet Soil + Tare (g)	33.13	32.52	31.33			
Dry Soil + Tare (g)	28.99	28.64	27.86			
Water Loss (g)	4.14	3.88	3.47			
Tare (g)	21.85	22.05	22.17			
Dry Soil (g)	7.14	6.59	5.69			
Water Content, w (%)	57.98	58.88	60.98			
One-Point LL (%)		59	59			

Liquid Limit, LL (%)	**59**
Plastic Limit, PL (%)	**22**
Plasticity Index, PI (%)	**37**





Entered by:_____
Reviewed:_____

Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis

(ASTM D6913)

Exhibit C

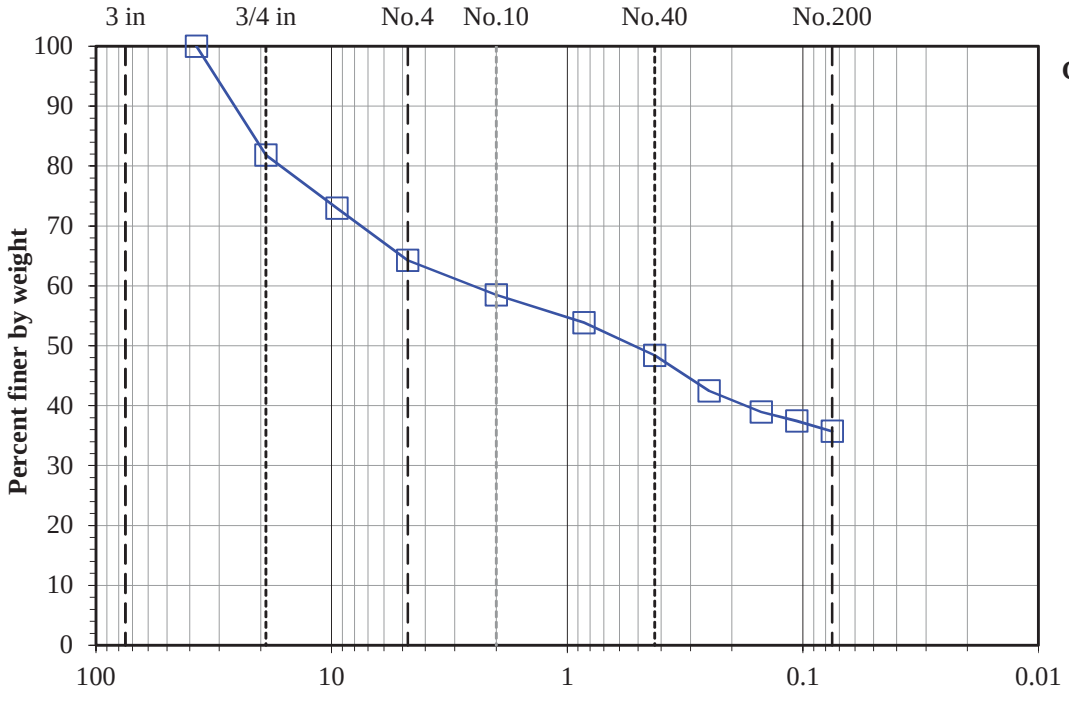
Project: Summit - West Village Sliver
No: 01628-020
Location: Powder Mountain, UT
Date: 12/21/2016
By: ET

Boring No.: TP-1
Sample:
Depth: 7.0'
Description: Reddish brown clayey gravel with sand

	Moist	Dry
Split:	Yes	
Split sieve:	3/8"	
Total sample wt. (g):	2656.86	2447.55
+3/8" Coarse fraction (g):	675.33	661.95
-3/8" Split fraction (g):	523.88	472.08
Split fraction:	0.730	

Water content data	C.F.(+3/8")	S.F.(-3/8")
Moist soil + tare (g):	796.76	646.18
Dry soil + tare (g):	783.38	594.38
Tare (g):	121.43	122.30
Water content (%):	2.0	11.0

Sieve	Accum. Wt. Ret. (g)	Grain Size (mm)	Percent Finer	
8"	-	200	-	
6"	-	150	-	
4"	-	100	-	
3"	-	75	-	
1.5"	-	37.5	100.0	
3/4"	444.93	19	81.8	
3/8"	661.95	9.5	73.0	←Split
No.4	56.23	4.75	64.3	
No.10	93.51	2	58.5	
No.20	123.74	0.85	53.8	
No.40	159.07	0.425	48.4	
No.60	197.30	0.25	42.5	
No.100	220.19	0.15	38.9	
No.140	229.91	0.106	37.4	
No.200	240.87	0.075	35.7	



Gravel (%): 35.7
Sand (%): 28.5
Fines (%): 35.7

Entered by:_____
Reviewed:_____

Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis

(ASTM D6913)

Exhibit C

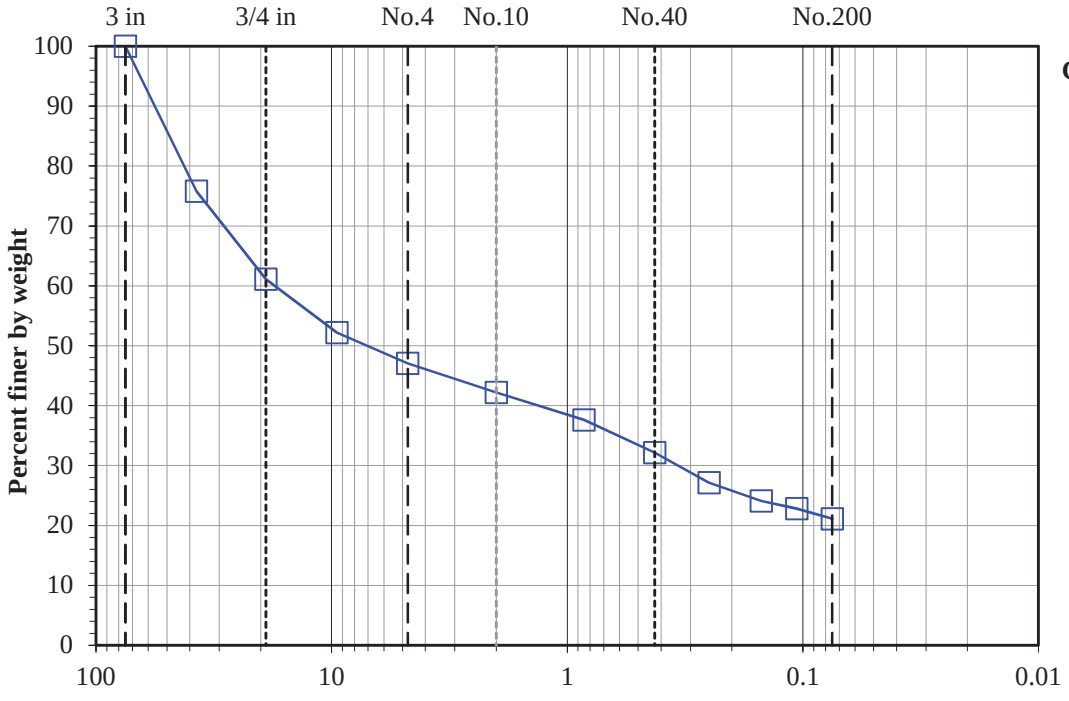
Project: Summit - West Village Sliver
No: 01628-020
Location: Powder Mountain, UT
Date: 12/21/2016
By: ET

Boring No.: TP-2
Sample:
Depth: 0 to 12'
Description: Brown clayey gravel with sand

	Moist	Dry
Split:	Yes	
Split sieve:	3/4"	
Total sample wt. (g):	30464.70	29381.83
+3/4" Coarse fraction (g):	11557.30	11422.03
-3/4" Split fraction (g):	2115.41	2009.39
Split fraction:	0.611	

Water content data	C.F.(+3/4")	S.F.(-3/4")
Moist soil + tare (g):	3445.82	2425.88
Dry soil + tare (g):	3409.12	2319.86
Tare (g):	310.32	310.47
Water content (%):	1.2	5.3

Sieve	Accum. Wt. Ret. (g)	Grain Size (mm)	Percent Finer	
8"	-	200	-	
6"	-	150	-	
4"	-	100	-	
3"	-	75	100.0	
1.5"	7114.94	37.5	75.8	
3/4"	11422.03	19	61.1	←Split
3/8"	294.30	9.5	52.2	
No.4	461.67	4.75	47.1	
No.10	622.94	2	42.2	
No.20	772.58	0.85	37.6	
No.40	951.39	0.425	32.2	
No.60	1118.07	0.25	27.1	
No.100	1216.65	0.15	24.1	
No.140	1259.24	0.106	22.8	
No.200	1315.19	0.075	21.1	



Gravel (%): 52.9
Sand (%): 26.0
Fines (%): 21.1

Entered by:_____
Reviewed:_____

Amount of Material in Soil Finer than the No. 200 (75µm) Sieve

(ASTM D1140)

Exhibit C

Project: Summit - West Village Sliver
No: 01628-020
Location: Powder Mountain, UT
Date: 12/21/2016
By: ET

Sample Info.	Boring No.	TP-1	TP-3						
	Sample								
	Depth	10.0'	19.0'						
	Split	Yes	Yes						
	Split Sieve*	3/8"	3/4"						
	Method	B	B						
Specimen soak time (min)		330	310						
Moist total sample wt. (g)		4137.72	4013.90						
Moist coarse fraction (g)		1477.10	1373.09						
Moist split fraction + tare (g)		720.44	1719.82						
Split fraction tare (g)		126.96	465.91						
Dry split fraction (g)		564.37	1033.47						
Dry retained No. 200 + tare (g)		511.62	1013.72						
Wash tare (g)		126.96	465.91						
No. 200 Dry wt. retained (g)		384.66	547.81						
Split sieve* Dry wt. retained (g)		1450.32	1290.72						
Dry total sample wt. (g)		3980.44	3467.27						
Coarse Fraction	Moist soil + tare (g)	1692.61	1830.15						
	Dry soil + tare (g)	1665.83	1733.77						
	Tare (g)	215.51	223.50						
	Water content (%)	1.85	6.38						
Split Fraction	Moist soil + tare (g)	720.44	1719.82						
	Dry soil + tare (g)	691.33	1499.38						
	Tare (g)	126.96	465.91						
	Water content (%)	5.16	21.33						
Percent passing split sieve* (%)		**63.6**	**62.8**						
Percent passing No. 200 sieve (%)		**20.2**	**29.5**						

Entered by:_____
Reviewed:_____

APPENDIX C

USGS Design Maps Detailed Report

Exhibit C

2012/2015 International Building Code (41.363°N, 111.7443°W)

Site Class C – "Very Dense Soil and Soft Rock", Risk Category I/II/III

Section 1613.3.1 — Mapped acceleration parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2012/2015 International Building Code are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 1613.3.3.

From Figure 1613.3.1(1) [1] $S_S = 0.810$ g

From Figure 1613.3.1(2) [2] $S_1 = 0.269$ g

Section 1613.3.2 — Site class definitions

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class C, based on the site soil properties in accordance with Section 1613.

2010 ASCE-7 Standard – Table 20.3-1
SITE CLASS DEFINITIONS

Site Class	$\overline{v}_s$	$\overline{N}$ or $\overline{N}_{ch}$	$\overline{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content $w \geq 40\%$, and • Undrained shear strength $\overline{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 1613.3.3 — Site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters

Exhibit C

TABLE 1613.3.3(1)
VALUES OF SITE COEFFICIENT F_a

Site Class	Mapped Spectral Response Acceleration at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = C and S_S = 0.810 g, F_a = 1.076

TABLE 1613.3.3(2)
VALUES OF SITE COEFFICIENT F_v

Site Class	Mapped Spectral Response Acceleration at 1–s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = C and S_1 = 0.269 g, F_v = 1.531

Equation (16-37):	$S_{MS} = F_a S_S = 1.076 \times 0.810 = 0.872$ g
Equation (16-38):	$S_{M1} = F_v S_1 = 1.531 \times 0.269 = 0.411$ g

Exhibit C

Section 1613.3.4 — Design spectral response acceleration parameters

Equation (16-39):	$S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 0.872 = 0.581$ g
Equation (16-40):	$S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 0.411 = 0.274$ g

Section 1613.3.5 — Determination of seismic design category

Exhibit C

TABLE 1613.3.5(1)
SEISMIC DESIGN CATEGORY BASED ON SHORT-PERIOD (0.2 second) RESPONSE ACCELERATION

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 0.581 g, Seismic Design Category = D

TABLE 1613.3.5(2)
SEISMIC DESIGN CATEGORY BASED ON 1-SECOND PERIOD RESPONSE ACCELERATION

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.274 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ “the more severe design category in accordance with Table 1613.3.5(1) or 1613.3.5(2)” = D

Note: See Section 1613.3.5.1 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 1613.3.1(1)*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/IBC-2012-Fig1613p3p1(1).pdf
2. *Figure 1613.3.1(2)*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/IBC-2012-Fig1613p3p1(2).pdf

USGS Design Maps Summary Report

Exhibit C

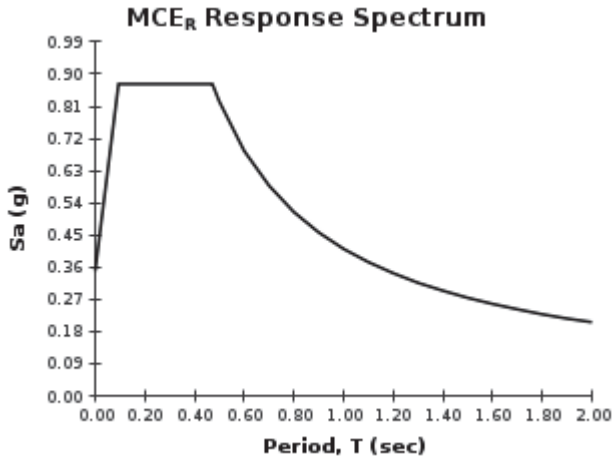
User–Specified Input

Report Title	West Village Sliver Wed January 18, 2017 20:38:10 UTC
Building Code Reference Document	2012/2015 International Building Code (which utilizes USGS hazard data available in 2008)
Site Coordinates	41.363°N, 111.7443°W
Site Soil Classification	Site Class C – “Very Dense Soil and Soft Rock”
Risk Category	I/II/III

USGS–Provided Output

S_S =	0.810 g	S_{MS} =	0.872 g	S_{DS} =	0.581 g
S_1 =	0.269 g	S_{M1} =	0.411 g	S_{D1} =	0.274 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the “2009 NEHRP” building code reference document.



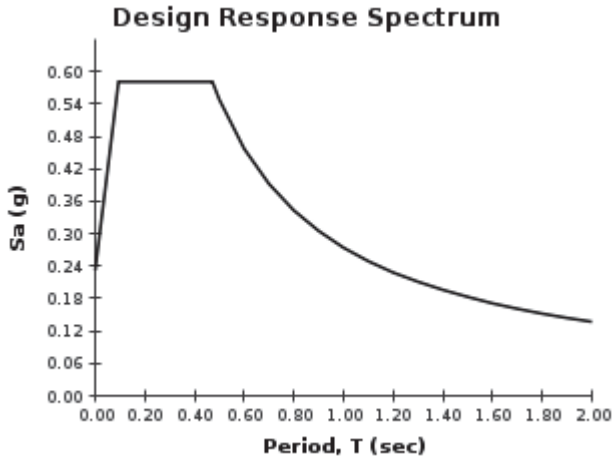
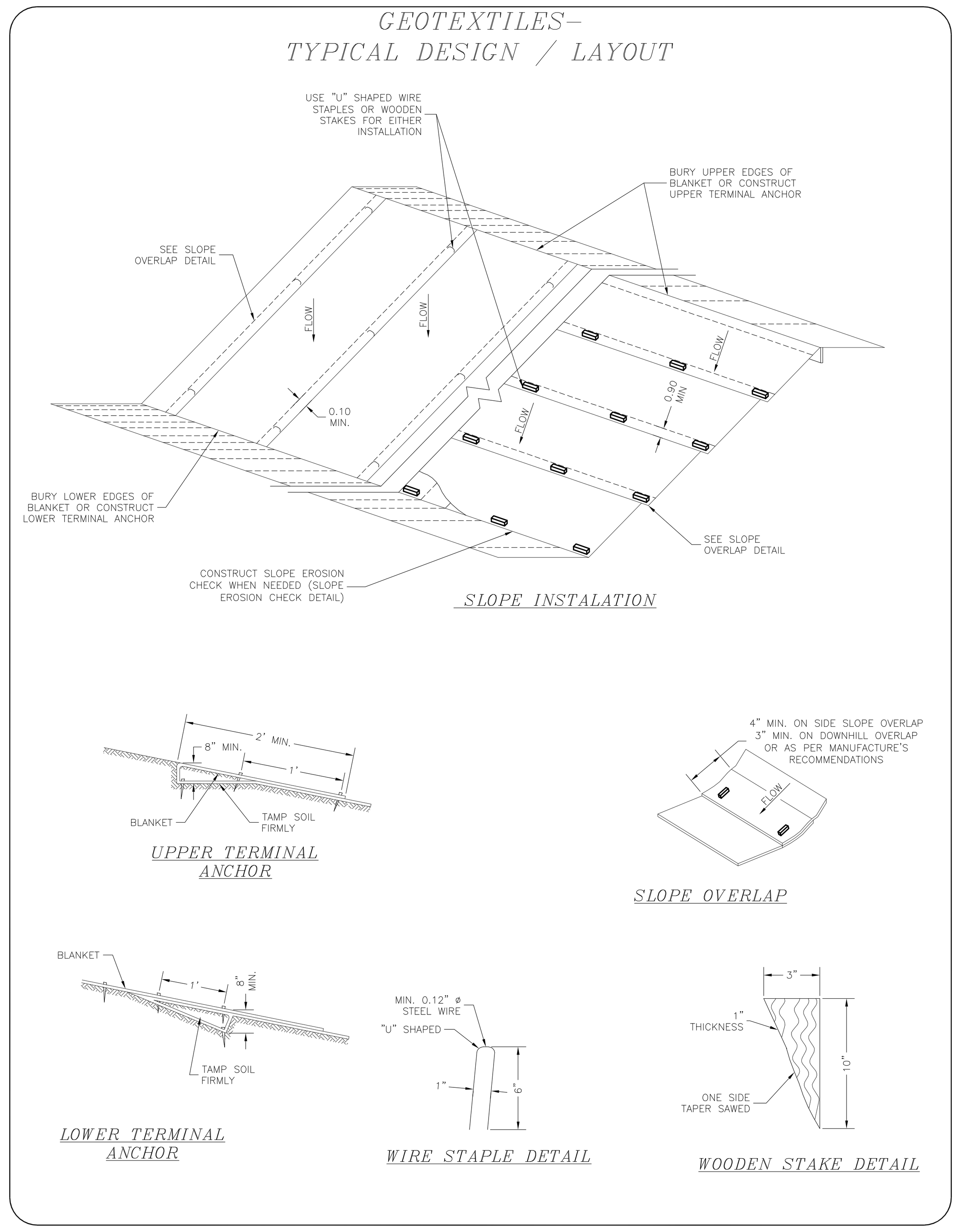
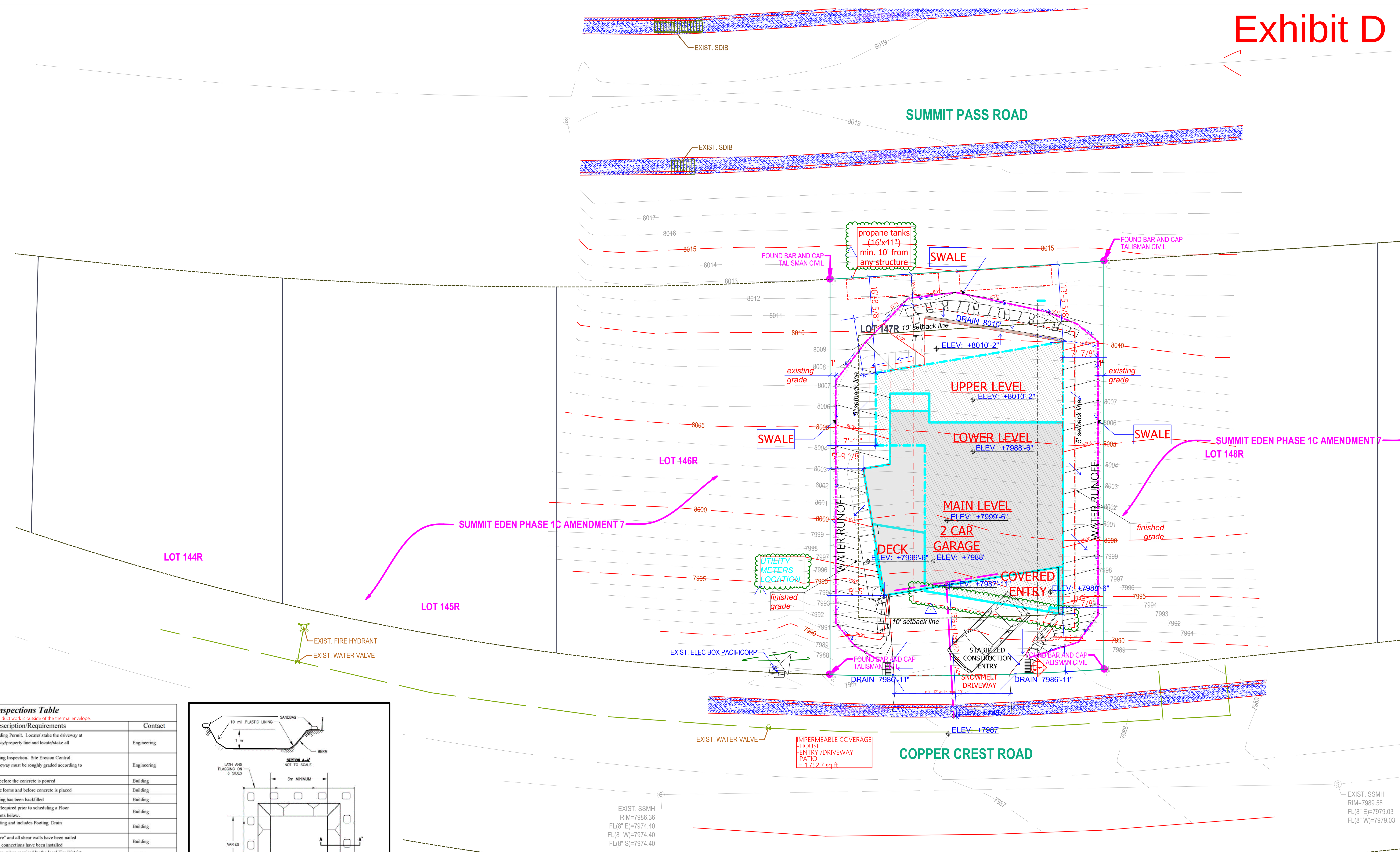
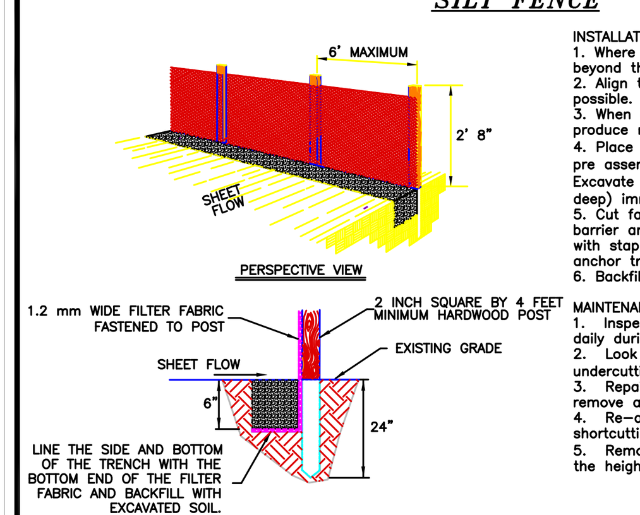


Exhibit D



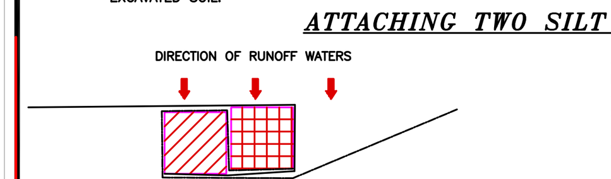




INSTALLATION:
1. Where possible, layout the silt fence 5 to 10 feet beyond the toe of slope.
2. Align the fence along the contour as close as possible.
3. When excavating the trench, use machinery that will produce no more than the desired dimension.
4. Place posts 6 foot on center along contour (or use pre assembled unit) and drive 2 feet (min.) into ground. Excavate an anchor trench (8 inches wide and 8 inches deep) immediately up-gradient of posts.
5. Cut fabric to required width, unroll along length of barrier and drape over barrier. Secure fabric to, stakes with staples, or similar, with trailing edge extending into anchor trench.
6. Backfill trench over filter fabric to anchor.

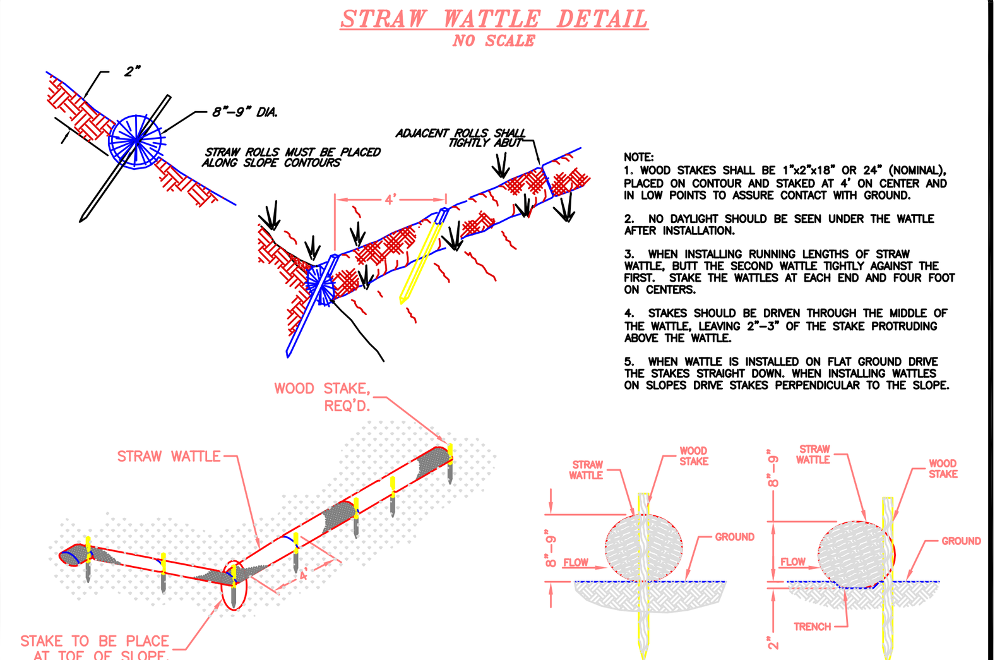
MAINTENANCE:
1. Inspect immediately after any rainfall and at least daily during prolonged rainfall.
2. Look for runoff bypassing ends of barriers or undercutting fence (repair immediately).
3. Repair or replace damaged areas of the fence and remove accumulated sediment.
4. Re-anchor fence as necessary to prevent shortcutting.
5. Remove accumulated sediment when it reaches ½ the height of the fence.

ATTACHING TWO SILT FENCES



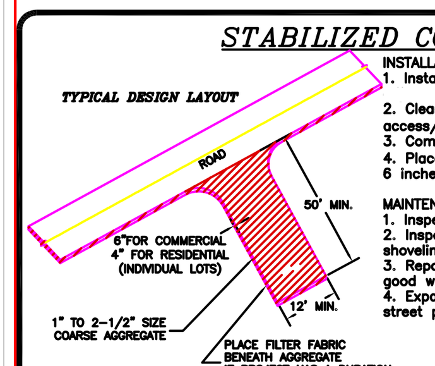
1. PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST FENCE.
2. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL.
3. DRIVE BOTH POSTS ABOUT 24 INCHES INTO THE GROUND AND BURY FLAP.

STRAW WATTLE DETAIL
NO SCALE



NOTE:
1. WOOD STAKES SHALL BE 1"x2"x18" OR 24" (NOMINAL), PLACED ON CONTOUR AND STAKED AT 4' ON CENTER AND IN LOW POINTS TO ASSURE CONTACT WITH GROUND.
2. NO DAYLIGHT SHOULD BE SEEN UNDER THE WATTLE AFTER INSTALLATION.
3. WHEN INSTALLING RUNNING LENGTHS OF STRAW WATTLE, BUTT THE SECOND WATTLE TIGHTLY AGAINST THE FIRST. STAKE THE WATTLES AT EACH END AND FOUR FOOT ON CENTERS.
4. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE WATTLE, LEAVING 2"–3" OF THE STAKE PROTRUDING ABOVE THE WATTLE.
5. WHEN WATTLE IS INSTALLED ON FLAT GROUND DRIVE THE STAKES STRAIGHT DOWN. WHEN INSTALLING WATTLES ON SLOPES DRIVE STAKES PERPENDICULAR TO THE SLOPE.

STABILIZED CONSTRUCTION ENTRANCE



INSTALLATION:
1. Install at any point of ingress or egress at a construction site.
2. Clear and grub area and grade to provide slope shown for driveway, or access/intersection. If adjacent to waterway, use a maximum slope of 2%.
3. Compact subgrade and place filter fabric.
4. Place coarse aggregate, 1 to 2 ½ inches size, to a minimum depth of 6 inches for commercial projects, and 4 inches for residential projects.

MAINTENANCE:
1. Inspect daily for loss of gravel or sediment buildup.
2. Inspect adjacent roadway for sediment deposit and clean by sweeping or shoveling.
3. Repair entrance and replace gravel as required to maintain control in good working condition.
4. Expand stabilized area as required to accommodate traffic, and off site street parking and prevent erosion at driveway.

Required Inspections Table

NOTE: Duct testing will be required where air handlers or more than 25% of the duct work is outside of the thermal envelope.

Inspection	Description/Requirements	Contact
Driveway/ Site Staking	Required prior to issuance of a Building Permit. Locate/ stake the driveway at the street and at the road right of way/property line and locate/stake all property corners.	Engineering
Rough Grading	Required prior to scheduling a Footing Inspection. Site Erosion Control measures must be installed and driveway must be roughly graded according to plan	Engineering
Footing	Schedule after steel is in place and before the concrete is poured	Building
Foundation	Schedule after steel is in place in the forms and before concrete is placed	Building
Under Slab Plumbing & Heating	Before concrete is poured or plumbing has been backfilled	Building
Certificate of Elevation and/or Survey	Performed by a licensed surveyor. Required prior to scheduling a Floor Framing Inspection. See requirements below.	Building
Floor Framing Inspection	Required prior to placing floor sheeting and includes Footing Drain inspection	Building
Shear Wall	After the building is up to "the square" and all shear walls have been nailed and all the tie downs and shear wall connections have been installed	Building
Fire Sprinklers	Required prior to four-way inspection, when required by the local Fire District	Building
Four-Way	This inspection is performed after all rough electrical, plumbing, and mechanical has been installed. All framing is complete, shear walls previously inspected, and truss specifications are on the job for the inspector to read. Plumbing shall have either an air or water pressure test on them when the inspector arrives	Building
Weather Barrier/Stucco Lath	Weather barrier shall be inspected prior to applying veneer. Approved stucco I.C.C. research reports on site	Building
Gas Meter Set	Required before gas meter clearance is given to Questar	Building
Masonry wall/bond beam	Steel in masonry and before concrete/grout is poured	Building
Insulation	Pre Sheetrock insulation certificate required	Building
Drywall Nailing	This is done before drywall is taped	Building
Power to Panel	Building must be up with permanent roof installed	Building
Driveway pre-surfacing	Site Erosion Control measures must be installed and driveway graded to it's final configuration	Engineering
Final Driveway and Site Inspection	Required prior to Certificate of Occupancy and/or Bond Release. Driveway must be surfaced and site must be revegetated (inspections may be schedule separately). If the site is not revegetated, the erosion control measures must be in place and installed correctly.	Engineering
Flood Plain Elevation Certificate	FEMA Elevation Certificate (if applicable) required prior to Certificate of Occupancy. Form must be filed with FEMA and a copy provided to the Engineering Department	Engineering
Final	All work is DONE and building complete. Final clearances from the waste water district for sewer, County Health Department for septic, and fire district for sprinkler systems must be on the project for this inspection. Required for Certificate of Occupancy	Building
Certificate of Occupancy	Required prior to anyone occupying the structure. A Certificate of Occupancy will be issued once the final clearances have been obtained by the builder and brought to the Building Department's office in Coalville 1) Snyderville Basin Residential: Final from Building Department, Final from Engineering Department, Final letter from Snyderville Basin Water Reclamation District, Final water concurrency letter from appropriate water company, Final from Park City Fire District (in required subdivisions). 2) Eastern Summit County: Final from Building Department, Final from Engineering Department, Final from Fire District and Final from Health Department	Building
ECP Bond Release Inspection	Required to verify that the site has been fully stabilized (revegetated). Inspection is required prior to applicant receiving a release of their Erosion Control Bond. Applicant must provide a written request for the release of the bond.	Engineering

Construction Mitigation Plan Notes

- Show location for dumpster, portable toilets, materials storage, parking
- Construction parking/traffic may not block the street without a permit (available from the Engineering Division)
- Mud tracked out onto the street must be cleaned prior to the end of the work day
- The construction site must be maintained in a neat manner. Trash and other debris may not accumulate outside the dumpster.
- Roadside parking is not allowed from November 15 to April 15

Construction parking cannot be located within the R-O-W.
No street side parking is allowed during the winter season, Nov. 15 thru April 15.

- Perform washout of concrete trucks offsite or in designated concrete washout areas only.
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Concrete washout areas may be prefabricated concrete washout containers, or self-installed structures (above-grade or below-grade).
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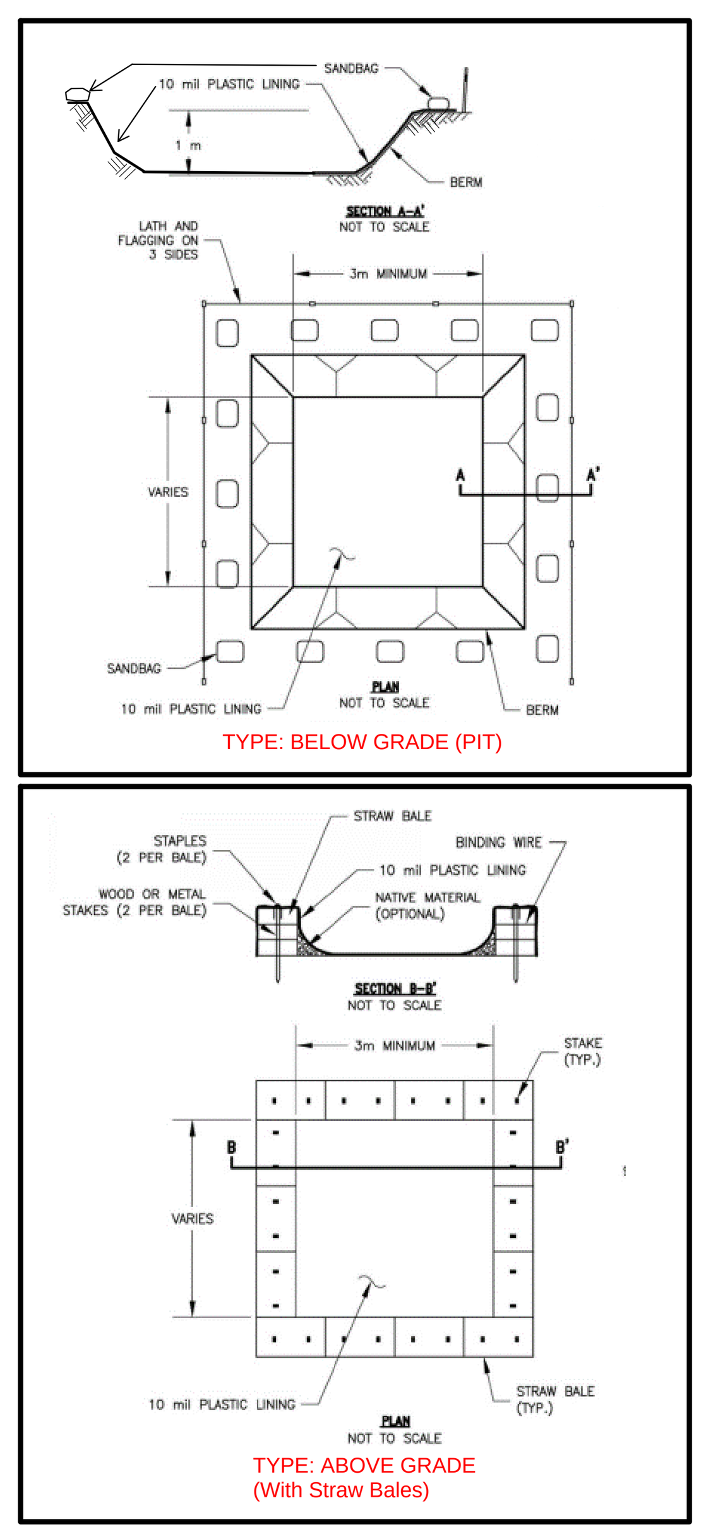
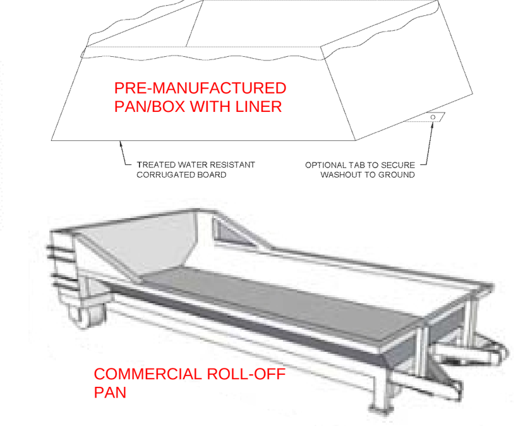
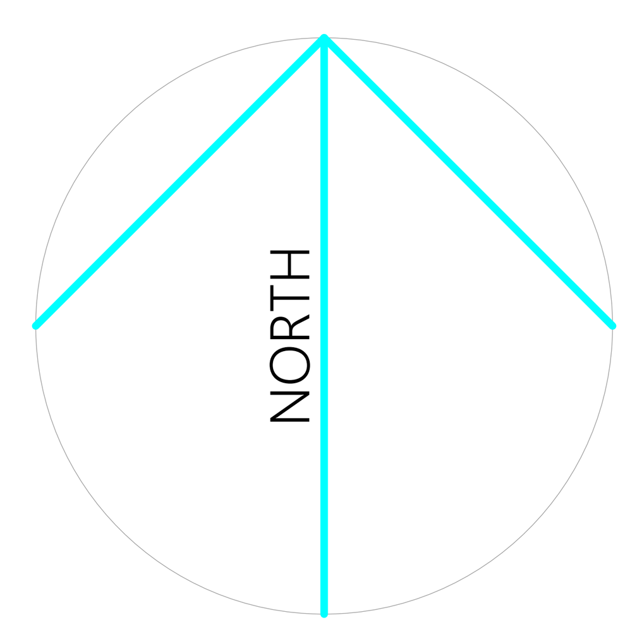
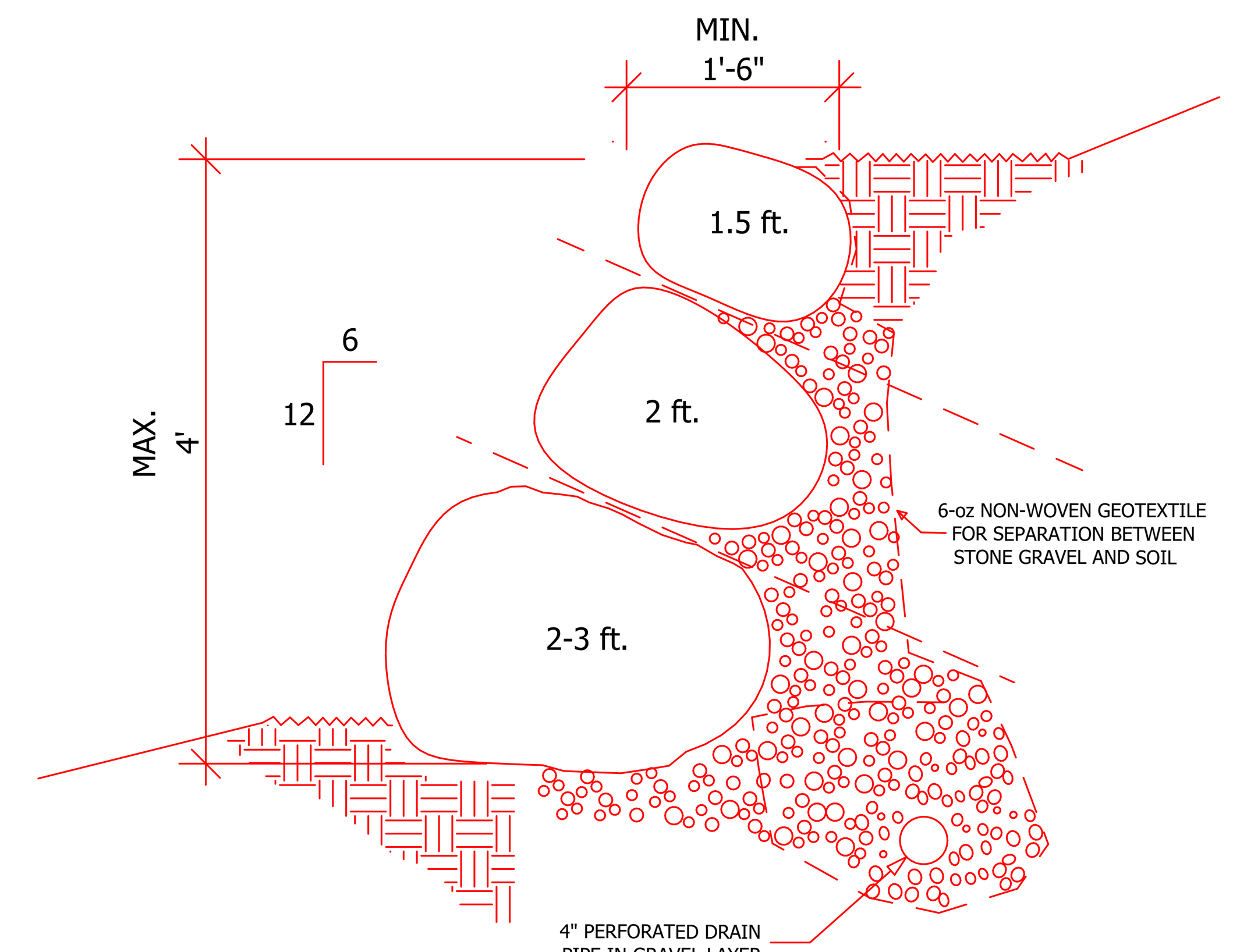






LEGEND

- FOUND REBAR W/ CAP (AS DESCRIBED)
- SANITARY SEWER MANHOLE
- WATER METER
- UTILITY POLE
- COMMUNICATION BOX
- ELECTRIC BOX
- OVERHEAD ELECTRICAL POWER LINE
- STACKED ROCK RETAINING/LANDSCAPING WALL



2 / 1.1 BOULDER WALL DETAIL
R105.3
RETAINING WALLS
(>4' OR SUPPORTING A SURCHARGE)
REQUIRE SEPARATE PERMITS.

NOTE !
BOULDERS ARE TO BE SELECTED & STACKED TO PROVIDE MAX. CONTACT. BOULDER WALLS ARE DESIGNED TO BE LESS THAN 4 FEET IN HEIGHT. IF THEY EXCEED 4 FEET, THEY SHALL BE ENGINEERED. 12" - 18" MIN. ROUND BOULDER SIZE.

SCANDINAVIAN LLC

ARCHITECTURAL OFFICE
Company Name: Scandinavian LLC
Address: 6410 N. Business Park Loop Rd. Unit E
Phone: 435-513-0355
Fax
Project No.
Cad File
Drawn
Checked

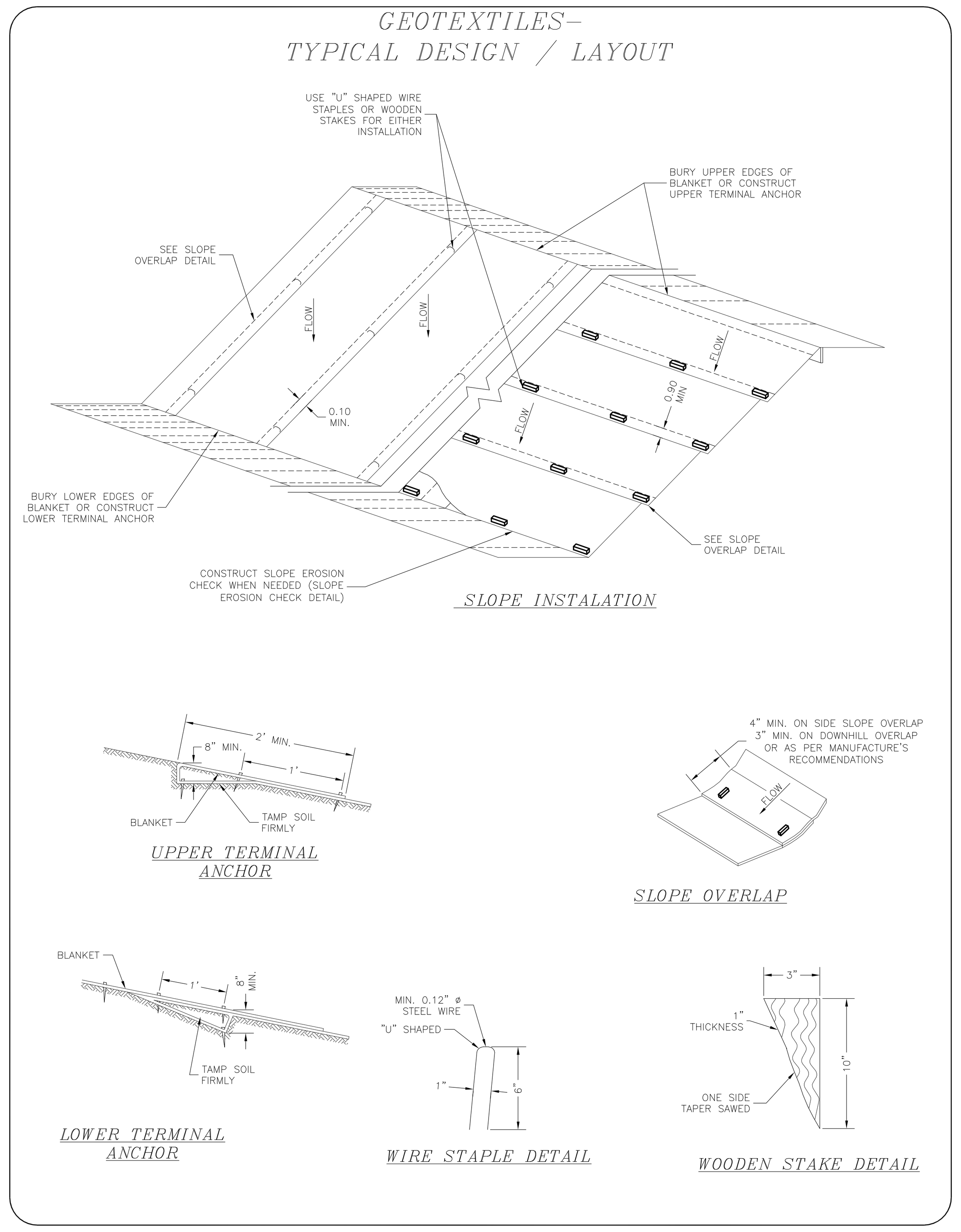
A New Residence:
PENNY AND JIM LACY
Summit Powder Mountain, Lot # 147 - Copper Crest, Utah

BUILDER
Company Name
Address
Park City, Utah 84098
Phone
Fax

Drawing Date: 5-3-2021
Scale: 1" = 10'-0"
Title/No.: SITE PLAN
BUILDER/ DEALER'S APPROVAL:
Signature and Date

1.1

Exhibit D



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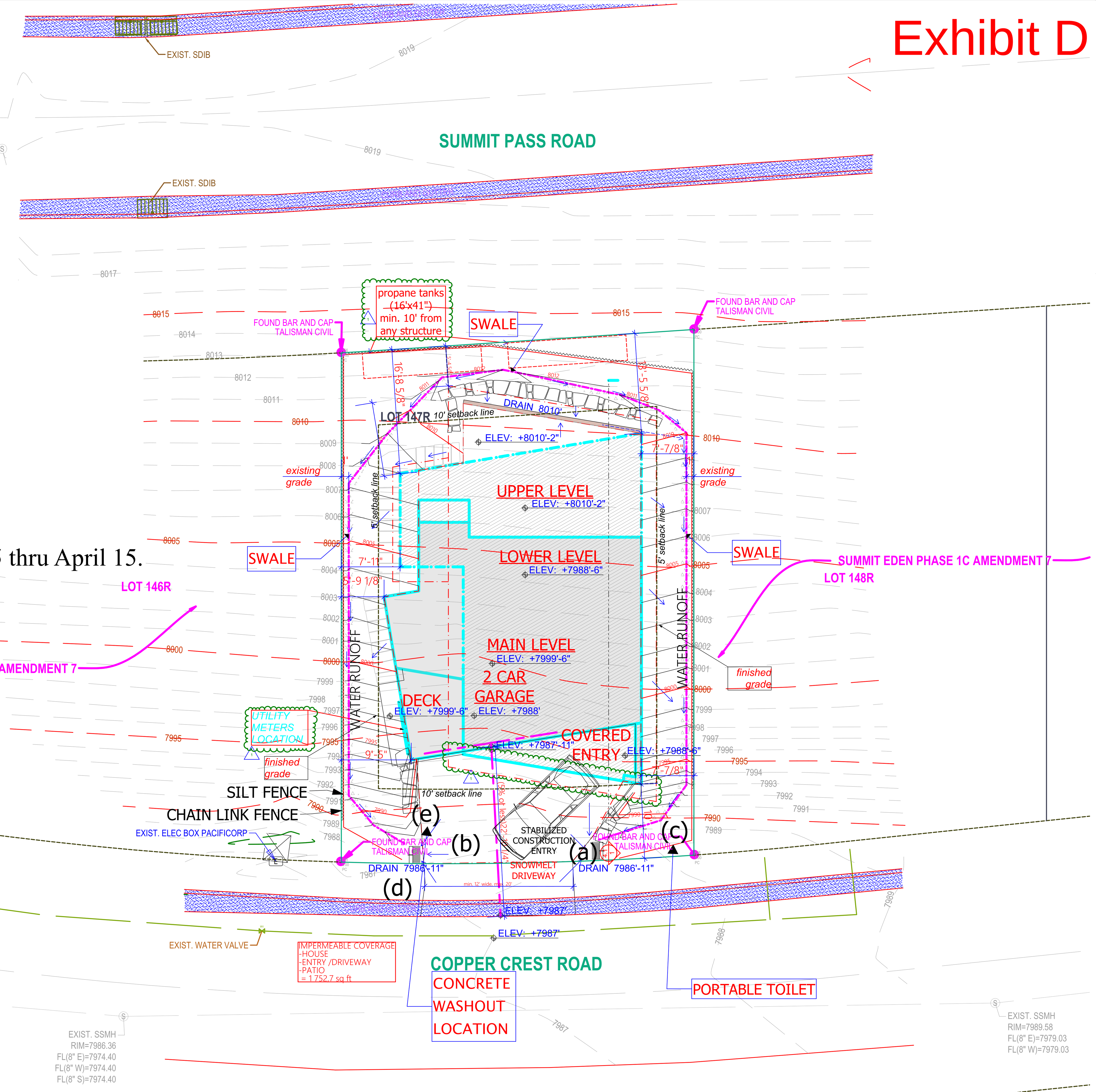
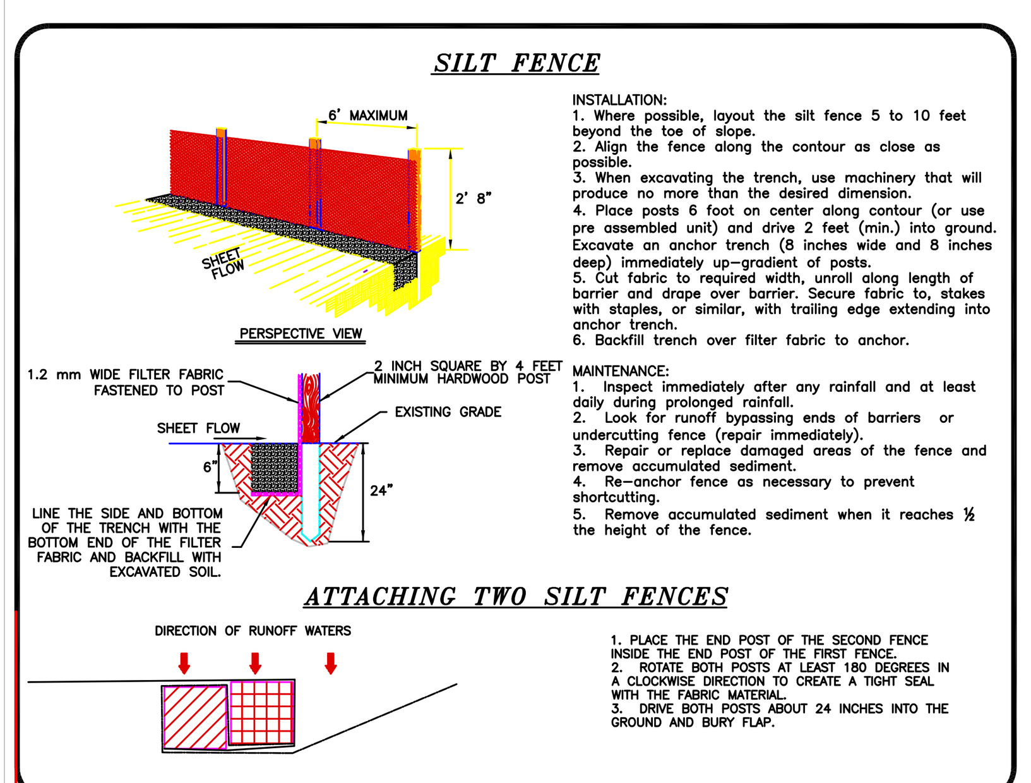
(a) = TRASH RECEPTACLE (COVERED DUMPSTER)
(b) = STORAGE AREA
(c) = PORTABLE TOILET
(d) = PARKING AREA
(e) = CONCRETE WASHOUT





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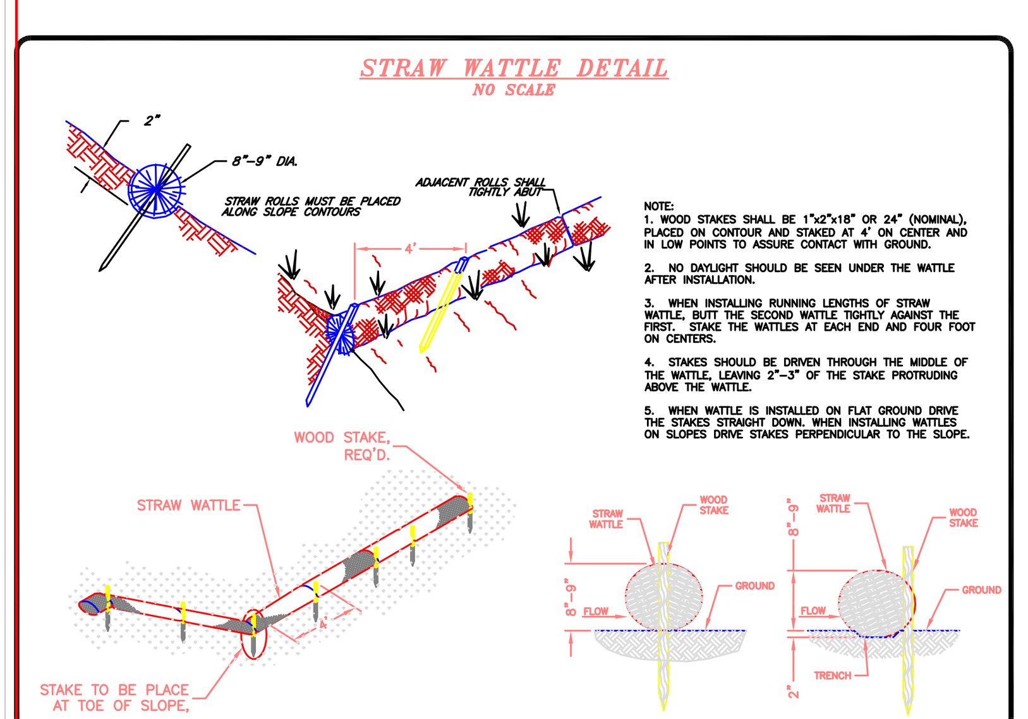

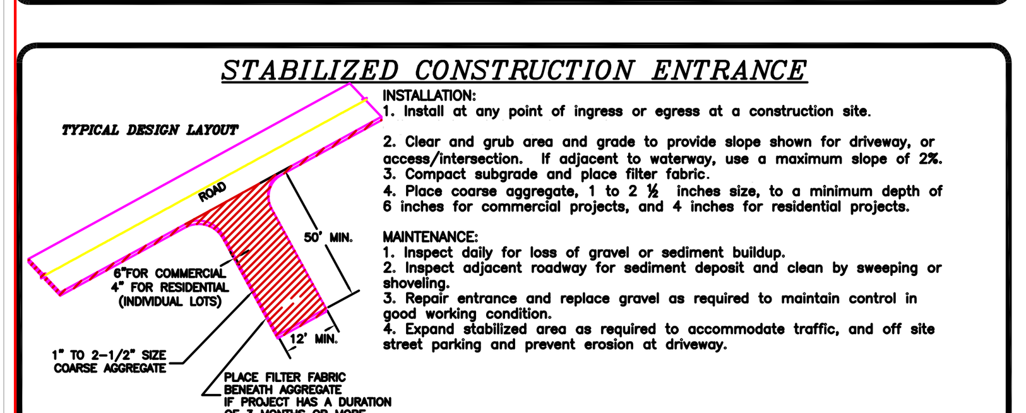

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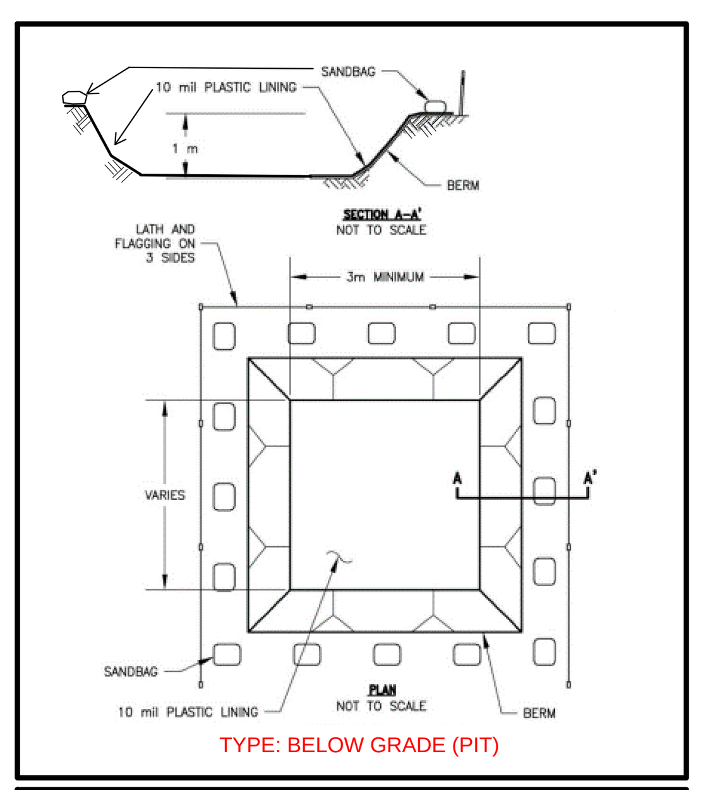

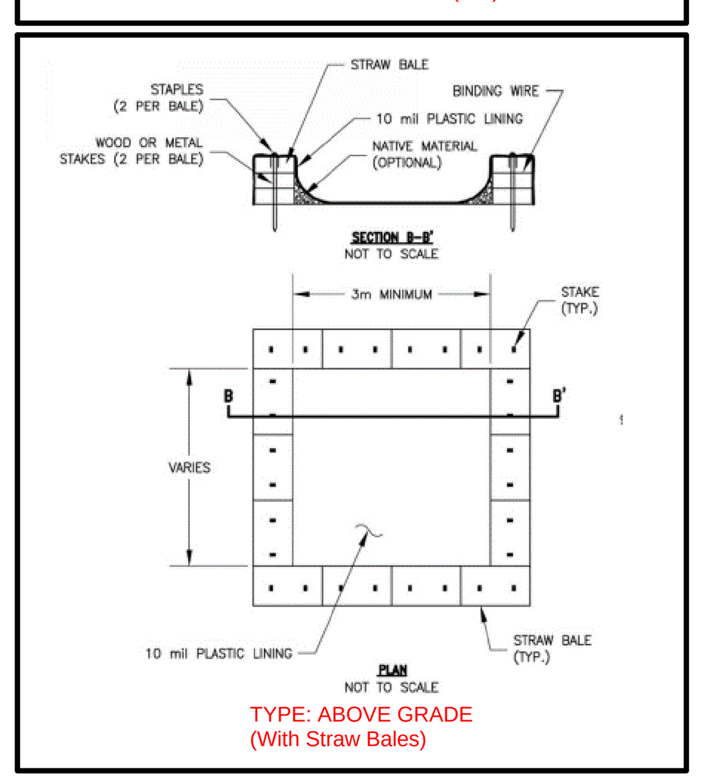

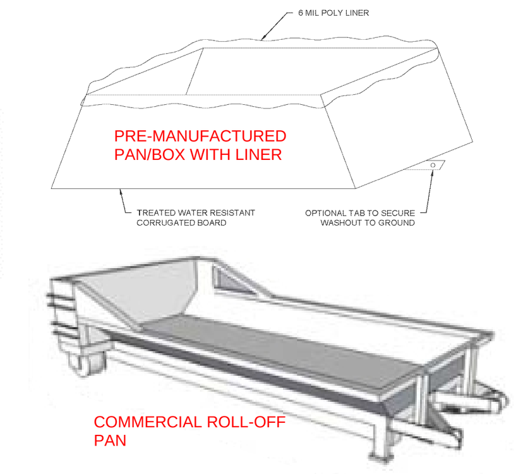

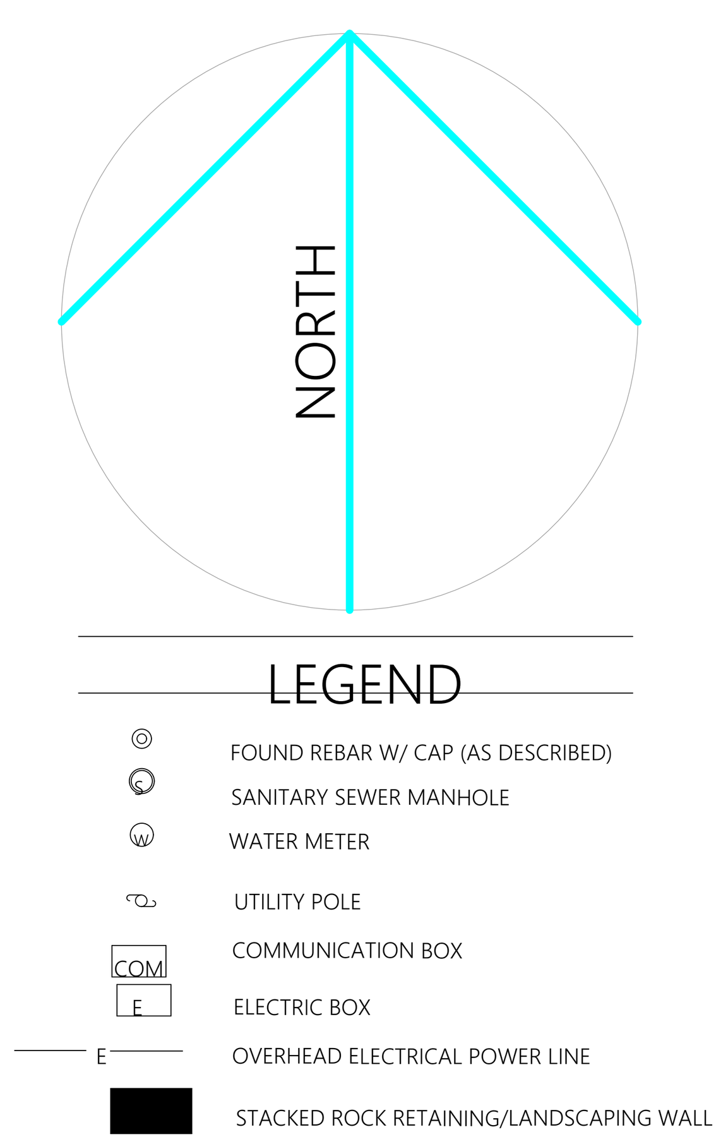

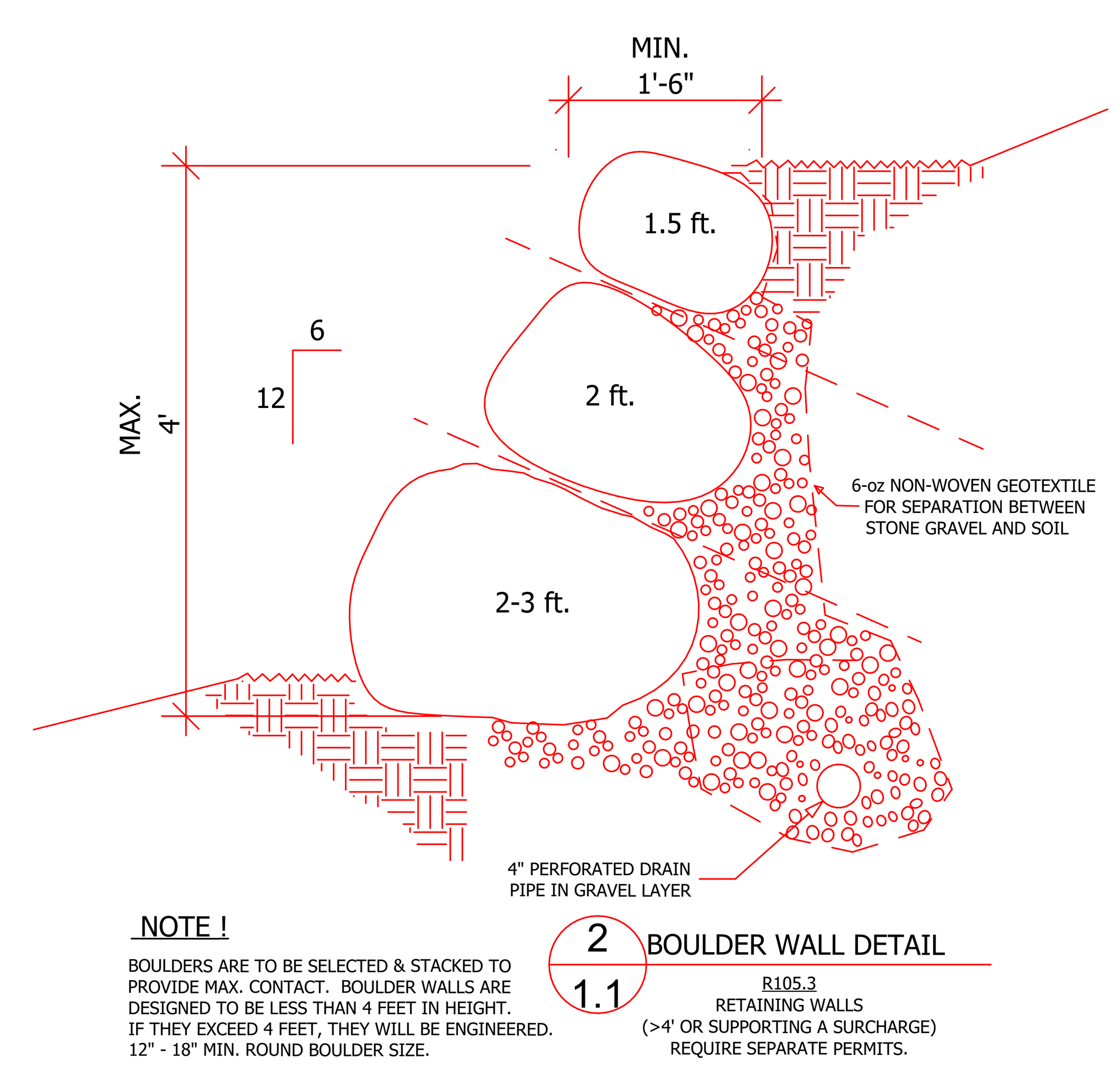

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BUILDER
Park City, Utah 84098

A New Residence:
PENNY AND JIM LACY
Summit Powder Mountain, Lot # 147 - Copper Crest, Utah

Drawing Date: 5-3-2021
Scale: 1" = 10' -0"
Title/No.
Construction Mitigation SITE PLAN
BUILDER/ DEALER'S APPROVAL :
Signature and Date

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