Notice of the Regular Meeting of the Ophir Planning and Zoning Commission
Town of Ophir, Colorado, 81426
7:00PM, Thursday January 12, 2023

Remote Meeting Platform
https://sands.zoom.us/j/6190810106

Agenda:

1. Approve the Agenda
2. Approve December 8th 2022 Minutes
3. Staff Report
4. Business Items:
    a. Crowell/Marsh Plan Review
    b. Energy Code Review
    c. OEC Lighting and Revegetation recommendation updates
5. New Business
6. Adjourn

MINUTES OF THE REGULAR MEETING OF PLANNING AND ZONING COMISSION

TOWN OF OPHIR, CO 81426

Thursday, December 8, 2022 7:00 PM

IN PERSON AND REMOTE MEETING VIA ZOOM PLATFORM

CALL TO ORDER

(TIME: 7:03 PM)

P&Z Members: Judah Kuper (Chair), Janice Gerona, Phil Hayden

APPROVAL OF AGENDA

Judah Kuper motions to approve the December 8th, 2022 P&Z Agenda, Janice Gerona seconds

Voting Members: Judah Kuper (Chair), Janice Gerona, Phil Hayden

Not in Favor (Nay): None

Motion to approve the agenda passes unanimously

APPROVAL OF MINUTES

Judah Kuper motions the August 4th, 2022 P&Z Meeting Minutes, Janice Gerona seconds

Voting Members: Judah Kuper (Chair), Janice Gerona, Phil Hayden

Not in Favor (Nay): None

Motion to approve the agenda passes unanimously

Judah Kuper motions the November 3, 2022 P&Z Meeting Minutes, Janice Gerona seconds

Voting Members: Judah Kuper (Chair), Janice Gerona, Phil Hayden

Not in Favor (Nay): None

Motion to approve the agenda passes unanimously

STAFF REPORT

Judah Kuper (Chair) give report

BUSINESS ITEMS

A. Continued discussion on LUC updates from previous meeting, with updates
B. Suggested definition and stance on Short Term Rental discussion

ADJOURN

Motion to adjourn by Judah Kuper, Seconded by Phil Hayden

LETTER OF EXPLANATION

BUILDING PERMIT APPLICATION
Town of Ophir
P.O. Box 683
Ophir, Colorado 81426
Phone: 970-728-4943

DECEMBER 4, 2022

TO: OPHIR PLANNING AND ZONING COMMITTEE

We would like to make a note on the "new" application for 106 Aurum Street, Ophir, CO 81426 submitted by Madison Crowell and William Marsh.

Madison Crowell and William Marsh purchased the property from Judah Kuper on December 23, 2021. Judah was planning on building in April of 2022, before he decided to buy elsewhere. He submitted these plans to the P&Z for approval in October of 2021 and was approved to build.

When we bought the property we were able to inherit the following with the inclusion of our buying price:

1. Architectural Designs – by Laura Dayley of Dayler Designs
2. Structural and Septic Designs – by Matthew Hepp of Alpine Edge Engineering
3. Water Tap (paid for)

We changed nothing in the architectural designs and plan on building the same house that Judah was proposing. We did decide to go with a stick house frame vs. SIPS and had Alpine Edge Engineering update the Structural design for us in November 2022.

Please note that these plans were reviewed and permitted by the town of Ophir in 2021.

Thank you,

Madison Crowell + William Marsh

M. Crowell WtM

BUILDING PERMIT APPLICATION REQUIREMENTS

Town of Ophir
P.O. Box 683
Ophir, Colorado 81426
Phone: 970-728-4943
fax: 970-728-2880

The Following Checklist contains the necessary requirements for a thorough plan check and is intended to be used as a guide for you and/or your architect/designer in the creation of construction plans.

Application should include the Building Permit Application (completed in ink) and three complete sets of construction plans.

If your proposed building site is in the Avalanche Hazard Overlay Zone District, the Wetland Areas Hazard Overlay Zone District and/or the Source Water Protection Overlay Zone District, you must include the appropriate SUP or variance with your building permit application.

PLAN SETS REQUIRE THE FOLLOWING ELEMENTS:

a. Site Plan

- Must include elevations in 1' or 2' contours and be stamped by a licensed surveyor
- Show setbacks of proposed construction from all property lines and existing structures and any natural water course, stream or wetlands in area/on property.
- Show location of septic system, well, water line & curb stop as well as propane tank (must meet UFC, UMC & NFPA) and utilities.
- Driveway access, including width, grade, length, parking spaces. Driveways over 150' in length must have fire department approval.
- Shows any retaining walls, decks and hardscaping.
- Shows overall building dimensions.

Section Views

- Must include footers, stem walls, reinforcing, sills, joists, studs, headers, rafters, stairs, handrails, roofing materials, pitch of roof, roof ventilation design, crawlspace ventilation and insulation R-values.

b. Floor Plans

- Plans for each floor must show individual room dimensions, window sizes and types, all door sizes and locations and plumbing and kitchen fixtures.

c. Foundation Plan

- Show size and depth of footing and stem walls, amount and placement of horizontal and vertical rebar, size and spacing of anchor bolts, size of piers and pads, thickness and reinforcing of slabs, vapor barriers and crawlspace ventilation.

d. Framing Plans

- FLOOR FRAMING: size, grade, spacing, span and type of wood used.
- ALL BEAMS AND HEADERS: location, spans, bearing location, size, grade, type of wood used.

- ROOF FRAMING: size, grade, spacing, span, type of wood used.
***NOTE**: All trusses, T.J.L.(s), or like products to be used require manufacture design specifications to be attached to the plans.*

e. Elevation Views
- All four elevations N, S, E, W. Must show pre-construction grade.

f. Insulation
- Must comply with Green Building Code

4. ADDITIONAL REQUIREMENTS

a. Planning and Zoning approval. P&Z generally reviews plans on the second Tuesday of each month at their regular meeting.

b. Proof of payment of water/sewer tap fees (if applicable)

c. Licensed Architect or Engineer stamp/signature for primary residences. Accessory buildings may or may not require engineering at the discretion of town building department staff.

d. Soils report (if applicable)

e. One copy of any approval pertaining to the parcel: deed restrictions, special use permits.

g. Documentation of well permit from the Colorado Division of Water Resources (if applicable).

h. Dumpster arrangements need to be made. It is understood that no construction waste is to be put in the Ophir dumpsters. Dumpsters need to be situated in a way that does not impede traffic or block snow removal activities.

i. Arrangements need to be made for restroom facilities. If port-a-potties are used they must be secured to the ground well enough to withstand severe Ophir winds.

j. Radon testing is highly recommended.

Complete this application and return to the Building Department with the appropriate documents as stated in the Building Permit Application Requirements.

Project Title: 106 AURUM Date: 12/4/2022

Project physical address: 106 Aurum Street, Ophir, CO 81426

Legal description: Lot: 9 + 10 Block 9 AND 10 BLK R OPHIR Tract

Project valuation 575,000

Property owner Madison Crowell + William Marsh Phone: 970-729-1751 + 970-946-2066

Mailing address 4 Spring Creek Drive Cell: madcrowell@gmail.com

PO BOX 857 Email: william.thomas.marsh@gmail.com

Telluride, CO 81435

	Architect/Designer	Contractor
Name:	Dayley Designs - Laura Dayley	Jay Crowell
Mailing Address:	Po Box 3159, Telluride, CO 81435	PO BOX 857, Telluride, CO 81435
Phone:		
Cell:	970-708-1121	970-729-1650
E-mail	daleydesign@mac.com	dallasdivide@hotmail.com

Permit type: Building Excavation Foundation Mechanical

Class of work: New Remodel Repair Move Demolition Addition /Alteration

Project description/scope of work:

Building a single family residential home.

PLEASE NOTE:

- Dumpster rental arrangements must be made, and it is understood that town dumpsters cannot be used for construction waste. Dumpsters must be covered and located in a way that does not impede traffic flow or snow plowing in winter.
- Port-a-potty or other arrangement need to be made for restroom facilities. All-porta-potties must be secured to the ground to withstand strong Ophir wind gusts.
- Radon testing is recommended and undertaken at the option of the applicant

BUILDING PERMIT FEES:

LUC Plan Review Fee (to be paid at time of application):

New Building or Remodel (Up to four hours reviewing by Plan Check reviewer. After the first 4 hours, each hour will be charged to the applicant at $75.00 per hour.)	$500.00
Accessory Buildings & Additions 500 Square feet plus:	$400.00
Accessory Buildings & Additions under 500 Square feet:	$200.00

Water Tap Fee: $7,000.00

Completion deposit:
(Return by check after final inspections by all Town Officials applicable.)

New construction $1,000.00	
Additions over 500 square feet	$500.00
Additions under 500 square feet	$250.00

Building Permit Fee:
Permit fee determined by the Building Official, based upon valuation of project.
See building permit valuation worksheet.

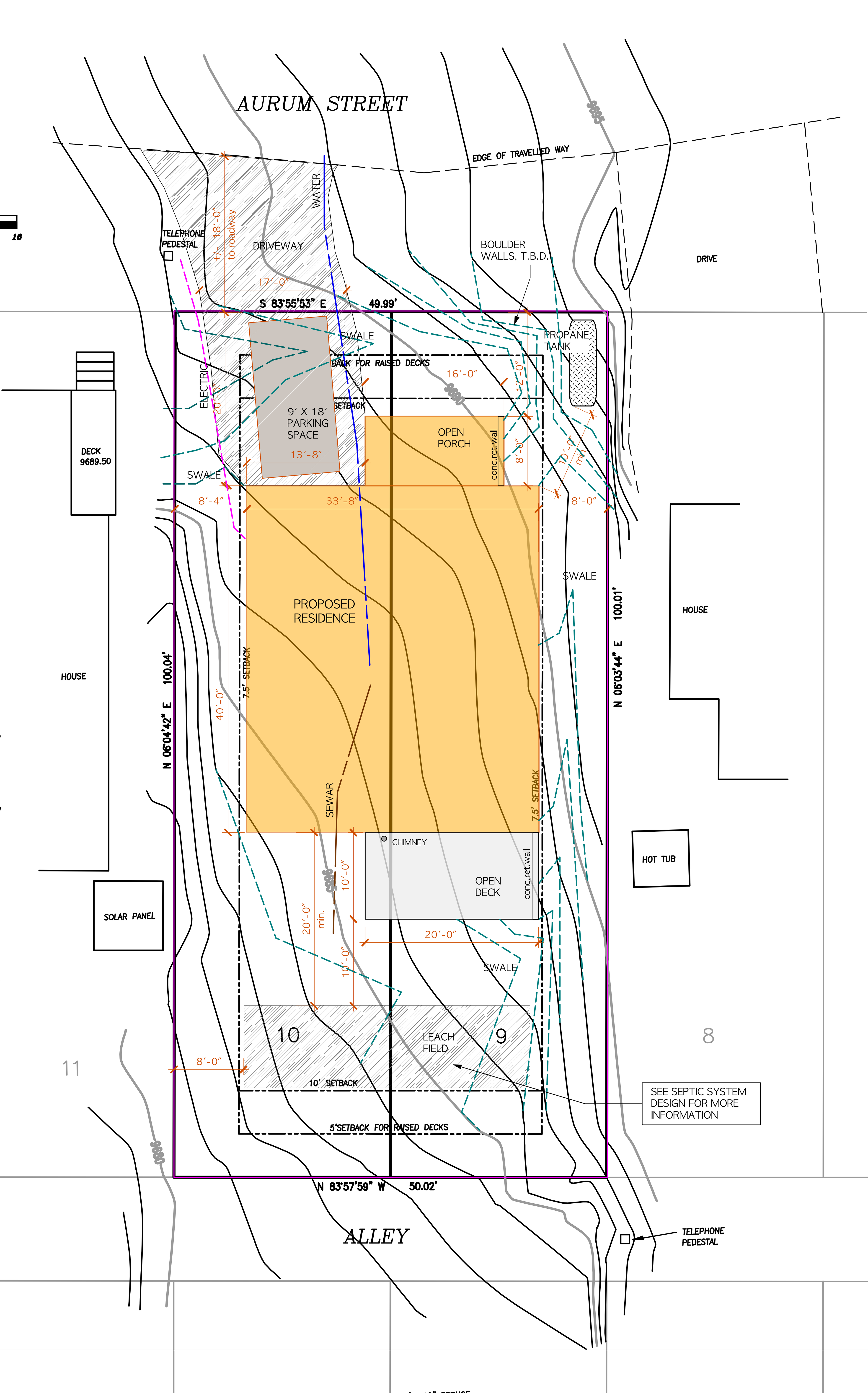
The undersigned hereby certifies that they have read and examined this application and know the same to be true and correct. All provisions of laws and ordinances governing this type of work will be complied with whether specified herein or not. The granting of a permit does not presume to give authority to violate or cancel the provisions of any other state or local law regulating construction or the performance of construction.

M. Crowell WtM — 12/4/2022

SIGNATURE OF APPLICANT — DATE

Applicant Signatures
"Applicant and designer have reviewed a copy of the Ophir Land Use Code and agrees to comply with the requirements of the current Ophir Land Use Code"

Owner: Madison Crowell + William Marsh M Crowell WtM — Date: 12/4/2022
Designer: Laura Dayley LD — Date: 12/4/2022
Contractor: Jay Crowell JMC — Date: 12/4/2022



This topographic survey of Lots 9 and 10, Block R, Town of Ophir, was field surveyed on November 19, 2009 under my direct responsibility, supervision and checking. It does not constitute a Land Survey Plat or Improvement Survey Plat as defined by section 38–51–102 C.R.S.

J. David Foley P.L.S. NO. 24954

NOTES

1. According to First American Title Insurance Company, Title Policy No. S0171562–3–E, dated December 29, 2006 at 2:54 P.M., there are no easements of record on this property.

2. Benchmark: USGS vertical control Benchmark H–46, which is also a HARN monument. Elevation as published by NGS is 9755.85 feet above sea level (NAVD88). Benchmark is a brass cap set in a boulder, located in the open area between Old Ophir and East Ophir, about 100 feet north of County Road D65.

3. Property lines shown hereon are prorated from the following found block corners: No. 5 rebar and 2" aluminum cap LS 24954 at the NW corner of Block S and at the NW corner of Block R; No. 5 rebar and 1.5" aluminum cap LS 6310 at the SW corner of Block S and at the SW corner of Block R.

4. NOTICE: According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.

5. Building setback lines are shown according to the Town of Ophir Land Use Code, Public Hearing Draft dated August 29, 2005, Article IV, Residential Zone District.

GENERAL NOTES

1. THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND SITE CONDITIONS PRIOR TO BEGINNING WORK. ALL STRUCTURAL DIMENSIONS ARE TO BE CHECKED AGAINST ARCHITECTURAL DRAWINGS.
2. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
3. DIMENSIONS GIVEN ARE FROM FACE OF STUD, FACE OF S.I.P., OR FACE OF CONCRETE U.ON.
4. CONSTRUCTION OF THIS PROJECT SHALL COMPLY WITH THE CURRENTLY ADOPTED AND ENFORCED BUILDING CODES, ENERGY CODES AND TOWN LAND USE CODES.
5. ALL EXHAUST FANS, GAS FIREPLACES, RANGE HOODS AND DRYERS SHALL BE VENTED TO THE OUTSIDE THROUGH SHEET METAL DUCTS. CAULK AND SEAL ALL EXTERIOR PENETRATIONS.
6. SMOKE DETECTORS SHALL BE HARD WIRED AND PLACED IN ACCORDANCE WITH THE CURRENT ELECTRICAL CODE.
7. DIAGRAMS AND DRAWINGS SHALL BE PROVIDED AS NECESSARY BY PLUMBING, HEATING AND MECHANICAL CONTRACTORS.
8. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEANLINESS, PROTECTION AND CARE OF THE JOB SITE, DRIVEWAY, VEGETATION, UTILITIES AND SEPTIC SYSTEMS.
9. ANY DESIGN CHANGES OR MATERIAL SUBSTITUTIONS SHALL BE PRESENTED TO THE ARCHITECTURAL DESIGNER FOR REVIEW.

OWNER

JUDAH KUPER and VALENTINA GARCIA
231 S. BRENT ST.
VENTURA, CA 93003

DESIGNER

LAURA DALEY
DALEY DESIGN STUDIO
PO BOX 3159
TELLURIDE, CO 81435

PROPERTY DESCRIPTION

LOTS 9 & 10, BLOCK R, TOWN OF OPHIR
SAN MIGUEL COUNTY
COLORADO

CODES

2009 IRC

SAN MIGUEL COUNTY & OPHIR PRESCRIPTIVE ENERGY CODE

TOWN OF OPHIR LAND USE CODE

DESIGN FIRM:
DALEY DESIGN STUDIO
architectural services
970.708.1121 • daleydesign@mac.com
post office box 3159
telluride, co 81435

CONSULTANT:

TRUE NORTH | PLAN NORTH

JOB NAME:

KUPER RESIDENCE

LOT 9 AND 10, BLOCK R
OPHIR, COLORADO

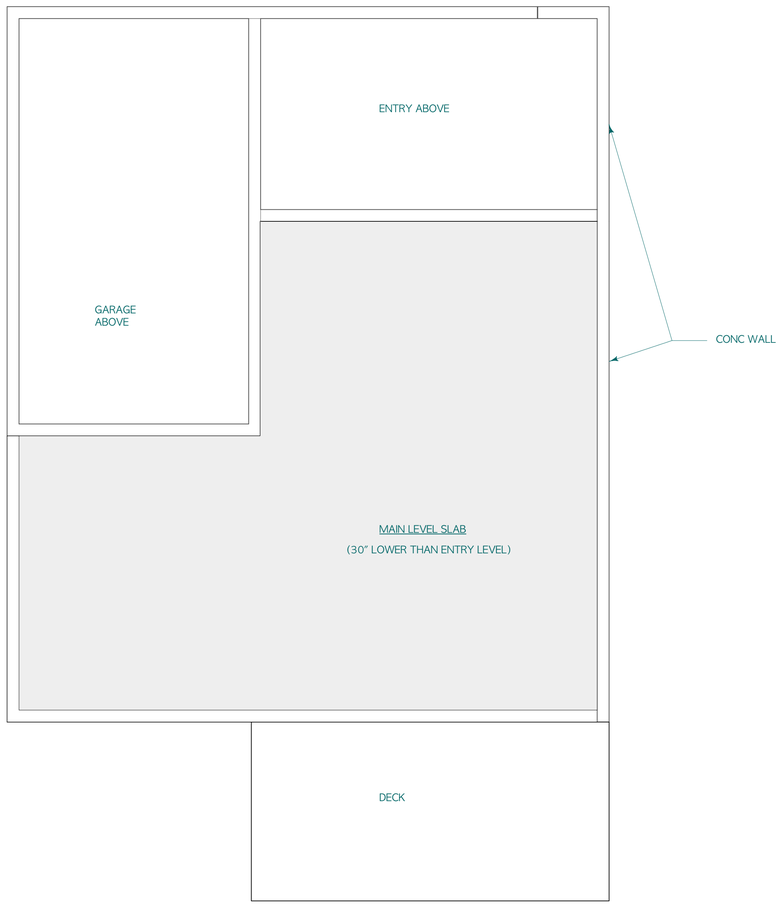
SUBMISSIONS/REVISIONS:
P & Z /PERMIT: 9/8/21
10/12/21 (revised)

DRAWING TITLE:

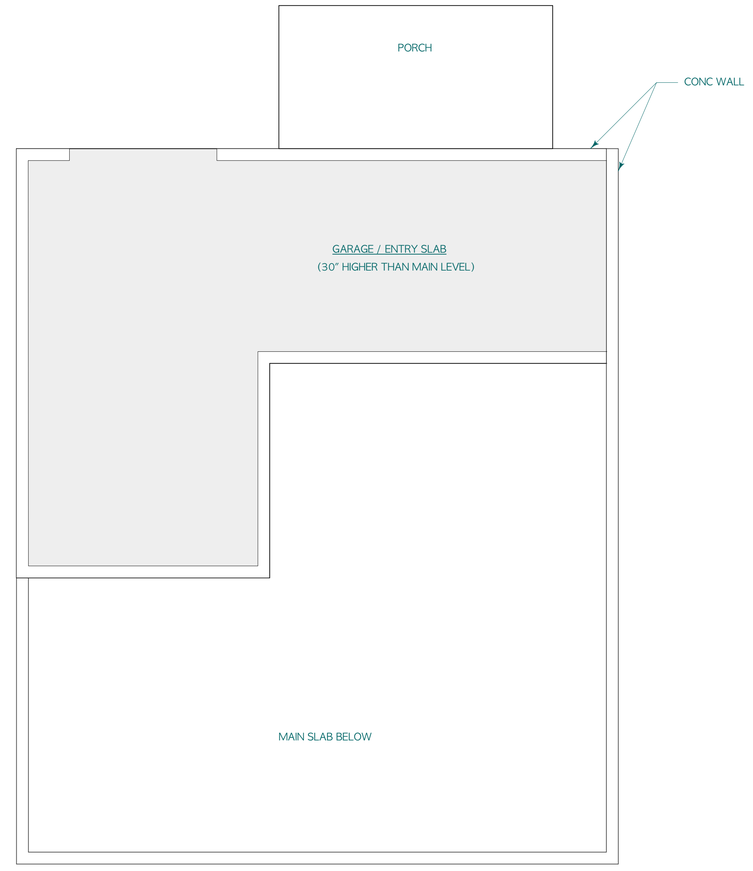
SITE PLAN

DATE: NOVEMBER 2, 2021
SCALE: 1/8" = 1'-0"
DRAWN BY: L. DALEY

A - 1



MAIN LEVEL SLAB CONFIGURATION



GARAGE / ENTRY LEVEL CONFIGURATION

DESIGN FIRM:

DALEY DESIGN STUDIO

architectural services

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JOB NAME:

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LOT 9 AND 10, BLOCK R
OPHIR, COLORADO

SUBMISSIONS/REVISIONS:

P & Z /PERMIT: 9/8/21
10/12/21 (revised)

DRAWING TITLE:

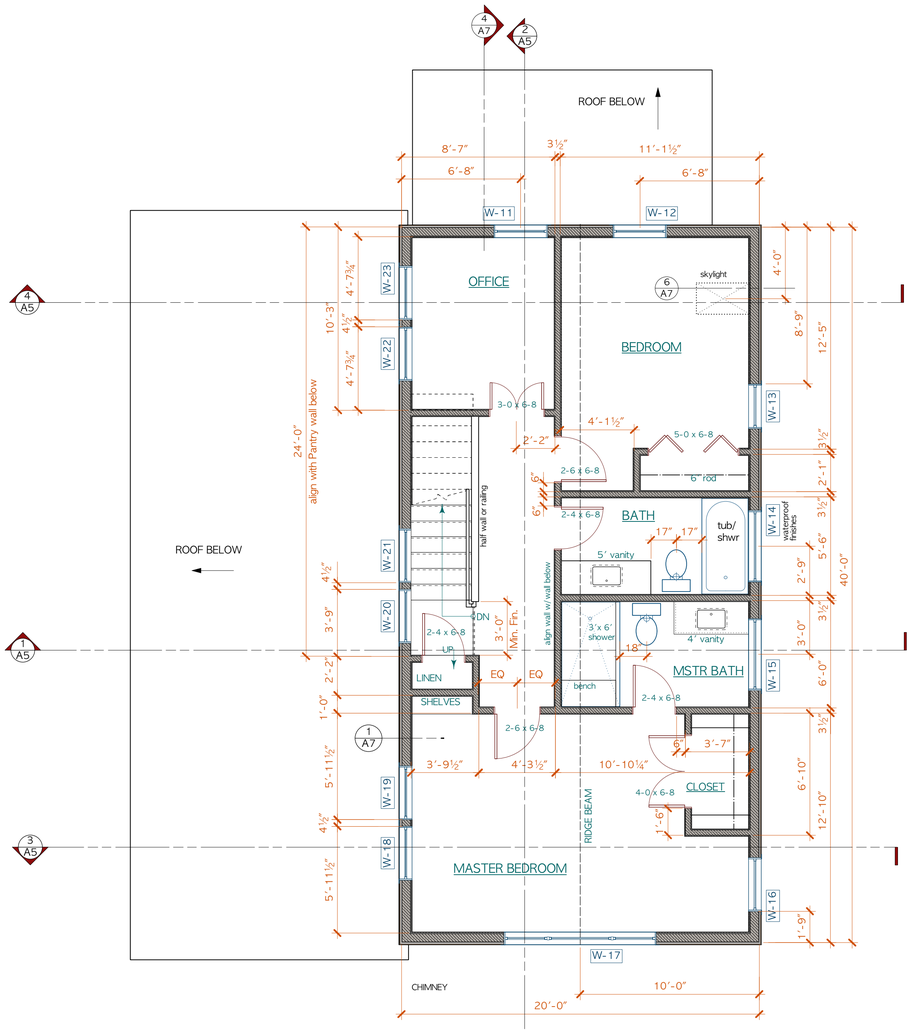
SLAB PLANS

DATE: NOVEMBER 2, 2021

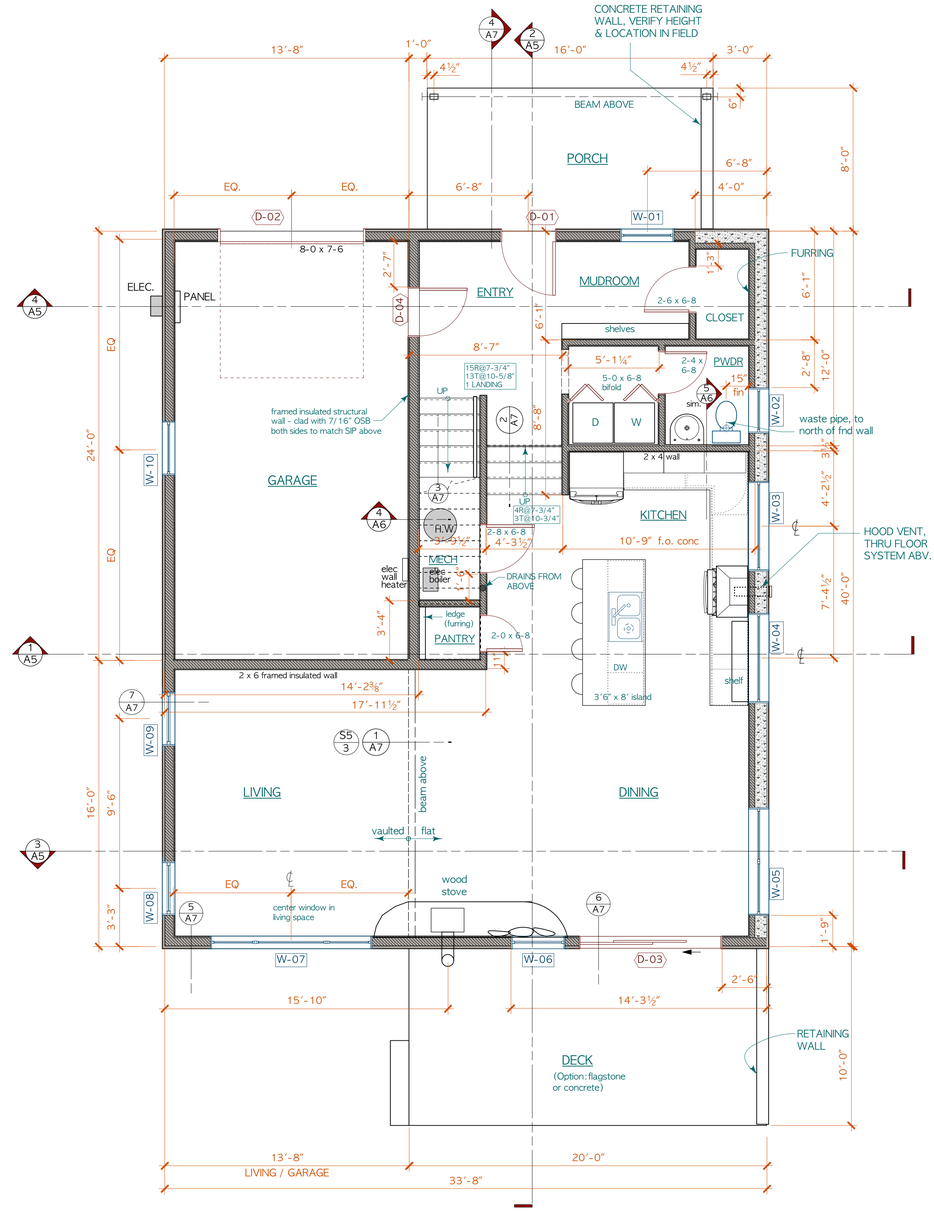
SCALE: 1/4" = 1'-0"

DRAWN BY: L. DALEY

A - 2



UPPER LEVEL PLAN



MAIN LEVEL PLAN

Window Schedule (13.5% glass-to-floor area, 15% max allowed)

Mark	Qty	Manuf	Item No	Operation	R.O. Width	R.O. Height	Glass	Frame Jamb	Egress	Finish Exterior	Finish Interior	Accessories	Comments
W- 01	1	ALPEN	MC 3040	CASEMENT	3'0"	4'0"	LOW E		YES	FIBERGLASS	FIBERGLASS	SCREEN	
W- 02	1	ALPEN	MA 2630	AWNING	2'6"	3'0"	LOW E		NO	FIBERGLASS	FIBERGLASS	SCREEN	
W- 03	1	ALPEN	MA 3046	FIXED	5'0"	2'0"	LOW E		NO	FIBERGLASS	FIBERGLASS		
W- 04	1	ALPEN	MA 3046	FIXED	5'0"	2'0"	LOW E		NO	FIBERGLASS	FIBERGLASS		
W- 05	1	ALPEN	MC 3046	CASEMENT - PAIR	6'0"	3'0"	LOW E		NO	FIBERGLASS	FIBERGLASS	SCREEN	
W- 06	1	ALPEN	MCPT 3046/MCPT 3020	FIXED + TRANSOM PICTURE	3'0"	6'6"	LOW E (temp)		NO	FIBERGLASS	FIBERGLASS		FIXED / MULL / VERIFY R.O.
W- 07	1	ALPEN	MC2660/MCPT2660 + MCPT4060/MCPT4020	CSMT/PICT/TRANS (TRIPLE)	9'0"	8'0"	LOW E		YES	FIBERGLASS	FIBERGLASS	SCREEN	MULL TOGETHER / VERIFY R.O.
W- 08	1	ALPEN	MC 3040 / MCPT 3020	CASEMENT / TRANSOM PICTURE	3'0"	6'0"	LOW E		YES	FIBERGLASS	FIBERGLASS	SCREEN	MULL TOGETHER / VERIFY R.O.
W- 09	1	ALPEN	MC 3040 / MCPT 3020	CASEMENT / TRANSOM PICTURE	3'0"	6'0"	LOW E		YES	FIBERGLASS	FIBERGLASS	SCREEN	MULL TOGETHER / VERIFY R.O.
W- 10	1	ALPEN	MC 3040	CASEMENT	3'0"	4'0"	LOW E		YES	FIBERGLASS	FIBERGLASS	SCREEN	
W- 11	1	ALPEN	MC 3040 / MCPT 3020	CASEMENT / TRANSOM PICTURE	3'0"	6'0"	LOW E		YES	FIBERGLASS	FIBERGLASS	SCREEN	MULL TOGETHER / VERIFY R.O.
W- 12	1	ALPEN	MC 3046 / MCPT 3020	CASEMENT / TRANSOM PICTURE	3'0"	6'0"	LOW E		YES	FIBERGLASS	FIBERGLASS	SCREEN	MULL TOGETHER / VERIFY R.O.
W- 13	1	ALPEN	MA 2640	AWNING	2'6"	4'0"	LOW E		NO	FIBERGLASS	FIBERGLASS	SCREEN	
W- 14	1	ALPEN	MA 4020	AWNING	4'0"	2'0"	LOW E		NO	FIBERGLASS	FIBERGLASS	SCREEN	
W- 15	1	ALPEN	MA 4020	AWNING	4'0"	2'0"	LOW E		NO	FIBERGLASS	FIBERGLASS	SCREEN	
W- 16	1	ALPEN	MA 3040	AWNING	3'0"	4'0"	LOW E		YES	FIBERGLASS	FIBERGLASS	SCREEN	
W- 17	1	ALPEN	MC2650/MCPT2620 + MCPT3650/MCPT3620	CSMT / PICT / TRANS (TRIPLE)	8'6"	7'0"	LOW E		YES	FIBERGLASS	FIBERGLASS	SCREEN	MULL TOGETHER / VERIFY R.O.
W- 18	1	ALPEN	MA 3020	AWNING	3'0"	2'0"	LOW E		NO	FIBERGLASS	FIBERGLASS	SCREEN	
W- 19	1	ALPEN	MA 3020	AWNING	3'0"	2'0"	LOW E		NO	FIBERGLASS	FIBERGLASS	SCREEN	
W- 20	1	ALPEN	MCPT 3020	PICTURE	3'0"	2'0"	LOW E (temp)		NO	FIBERGLASS	FIBERGLASS		FIXED
W- 21	1	ALPEN	MCPT 3020	PICTURE	3'0"	2'0"	LOW E (temp)		NO	FIBERGLASS	FIBERGLASS		FIXED
W- 22	1	ALPEN	MA 3020	AWNING	3'0"	2'0"	LOW E		NO	FIBERGLASS	FIBERGLASS	SCREEN	
W- 23	1	ALPEN	MA 3020	AWNING	3'0"	2'0"	LOW E		NO	FIBERGLASS	FIBERGLASS	SCREEN	

Exterior Door Schedule

Mark	Size Width	Size Height	Size Thickness	Door Operation	Frame Slab Style	Frame Jamb Thick	Frame Jamb Depth	Rough Opening RO Width	Rough Opening RO Height	Door Data Mfr	Model No.	Accessories	Comments
01	3'0"	7'0"	1 3/4"	Swing Simple	Panel	3/4"	8 1/2"	3'2"	7'1"	T.B.D.			
02	8'0"	7'6"	1 3/8"	Overhead	Panel	1 1/2"	8 1/2"	8'3"	7'7 1/2"	T.B.D.			
03	8'0"	8'10"	1 3/8"	Slider	Glass	3/4"	8 1/2"	8'0"	8'10"	ALPEN	V4PD80610 / MCPT4020	SCREEN	MULL TOGETHER / VERIFY R.O.
04	2'8"	6'8"	1 3/8"	Swing Simple	Solid	3/4"	7 5/8"	2'9 1/2"	6'8 3/4"	T.B.D.	STEEL 1-HR		

WINDOW AND DOOR NOTES

1. VERIFY ALL JAMB THICKNESSES BEFORE ORDERING.
2. INTERIORS TO BE FIBERGLASS (GLASTRA). HARDWARE COLOR BY OWNER.
3. SILL HEIGHTS AT EGRESS WINDOWS IN SLEEPING ROOMS SHALL BE 44" MAX. ABOVE FINISHED FLOOR.
4. CLEAR EGRESS OPENINGS SHALL BE 5.7 s.f. @ UPPER LEVEL ROOMS and 5.0 s.f. @ GRADE LEVEL ROOMS. NET HEIGHT SHALL BE 24" MIN. & WIDTH SHALL BE 20"MIN.
5. 0.35 MAX. U-VALUE REQUIRED. THERMAL ISOLATION BREAK REQUIRED.
6. 0.3 CFM PER S.F. OF WINDOW AREA MAX. AIR LEAKAGE RATE ALLOWED.
7. ALL WINDOWS WITHIN 24" OF A DOOR AND/OR 18" FROM THE FLOOR SHALL BE TEMPERED GLASS.

FLOOR AREA: (2100 allowed)

MAIN LEVEL:	1346.67
UPPER LEVEL:	800.00
	2146.67
-50% MAIN STAIR:	- 43.60
-50% KIT. STAIR	- 5.73
TOTAL S.F.	2097.34

SITE COVERAGE: (2500 allowed)

TOTAL S.F.	1346.67

DESIGN FIRM:

DALEY DESIGN STUDIO

architectural services

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post office box 3159
telluride, co 81435

CONSULTANT:

TRUE NORTH | PLAN NORTH

JOB NAME:

KUPER RESIDENCE

LOT 9 AND 10, BLOCK R
OPHIR, COLORADO

SUBMISSIONS/REVISIONS:

P & Z /PERMIT: 9/8/21
10/12/21 (revised)

DRAWING TITLE:

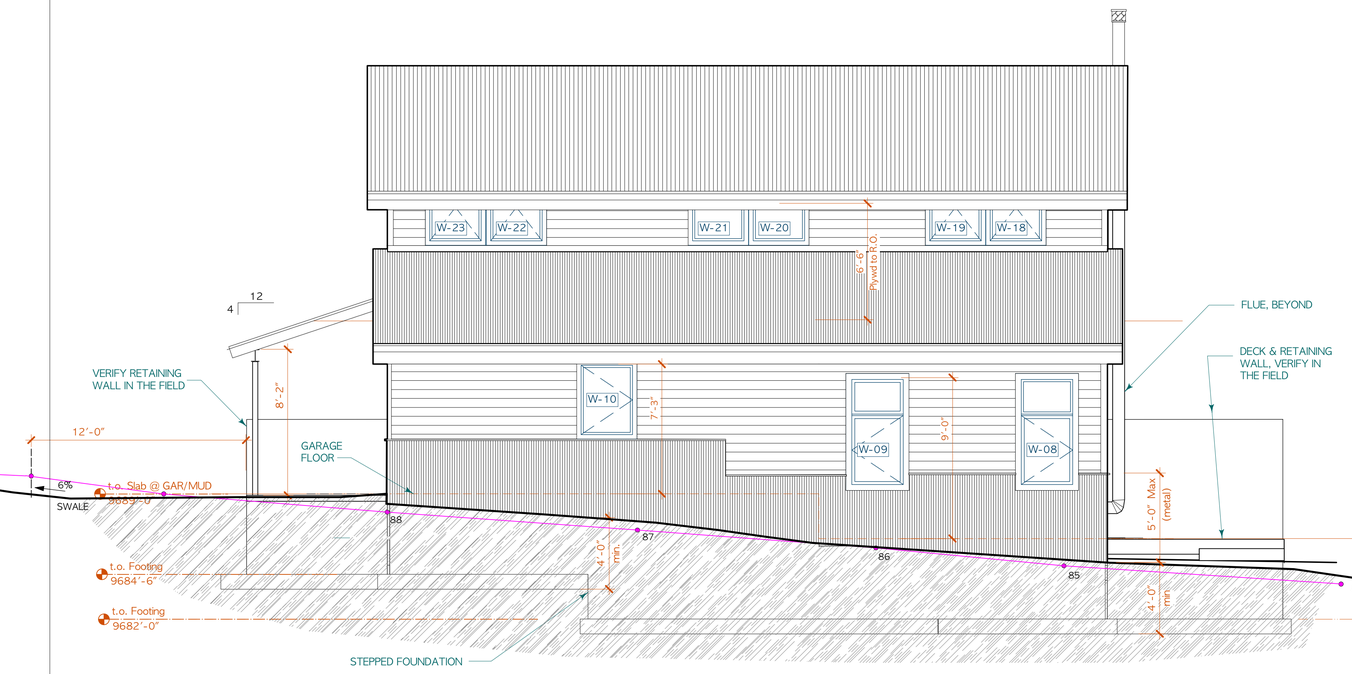
FLOOR PLANS

DATE: NOVEMBER 2, 2021

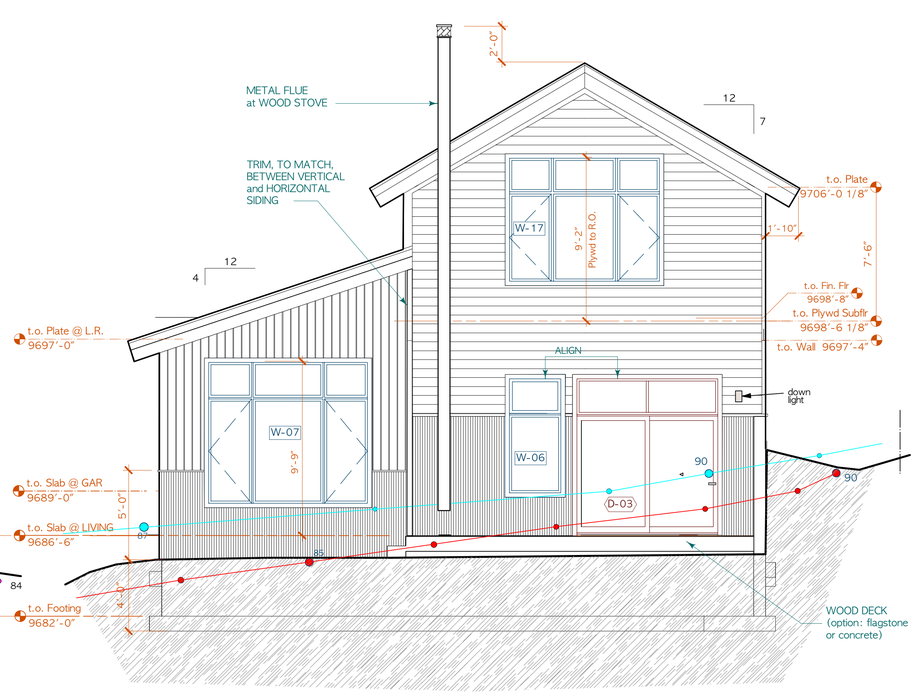
SCALE: 1/4" = 1'-0"

DRAWN BY: L. DALEY

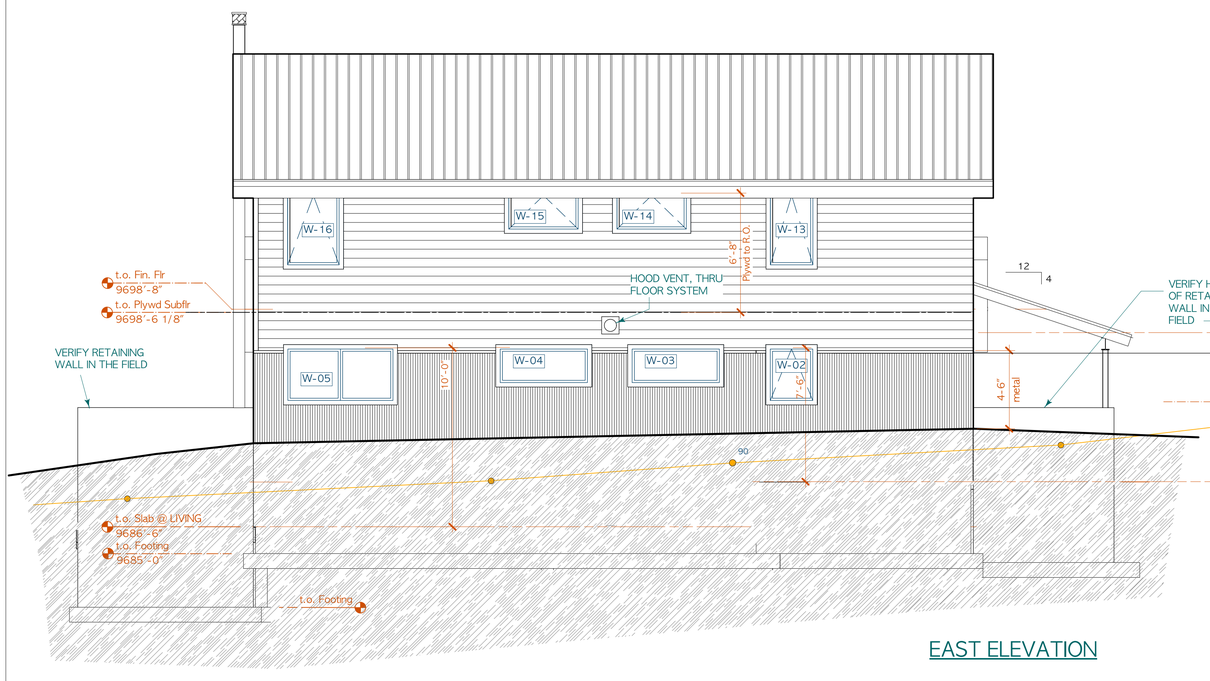
A - 3



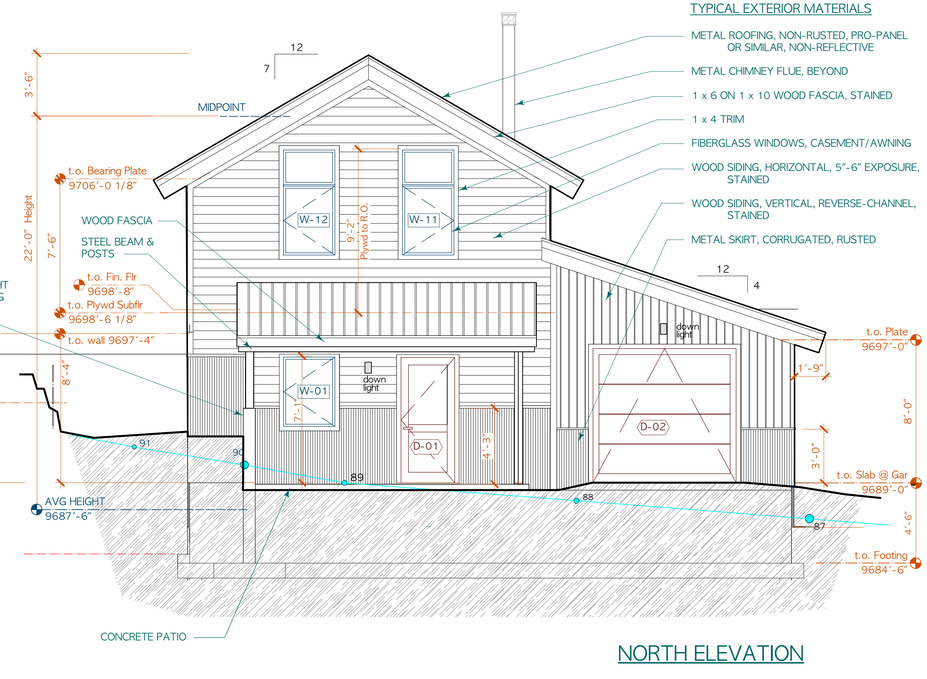
WEST ELEVATION



SOUTH ELEVATION



EAST ELEVATION



NORTH ELEVATION

DESIGN FIRM:

DALEY DESIGN STUDIO

architectural services

970.708.1121 • daleydesign@mac.com
post office box 3159
telluride, co 81435

CONSULTANT:

TRUE NORTH | PLAN NORTH

JOB NAME:

KUPER RESIDENCE

LOT 9 AND 10, BLOCK R
OPHIR, COLORADO

SUBMISSIONS/REVISIONS:

P & Z /PERMIT: 9/8/21
10/12/21 (revised)

DRAWING TITLE:

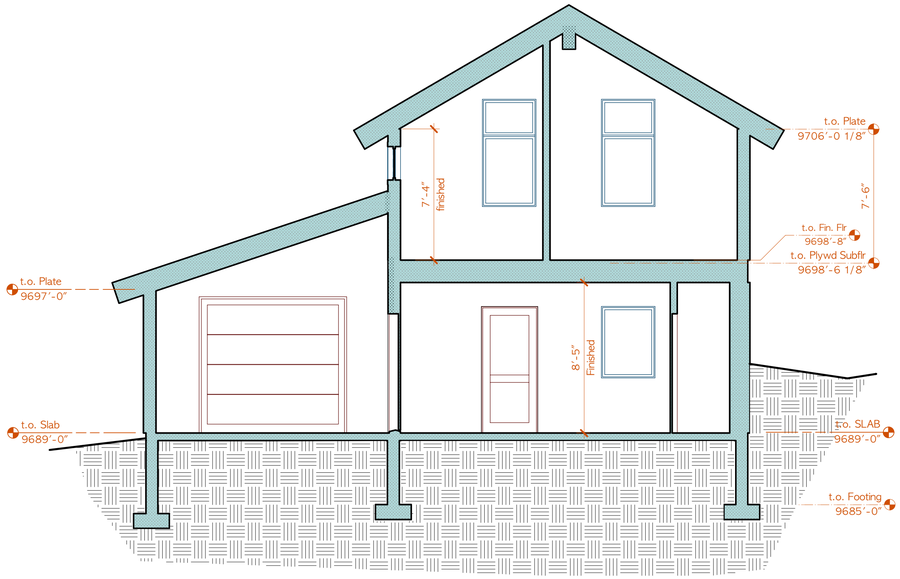
ELEVATIONS

DATE: NOVEMBER 2, 2021

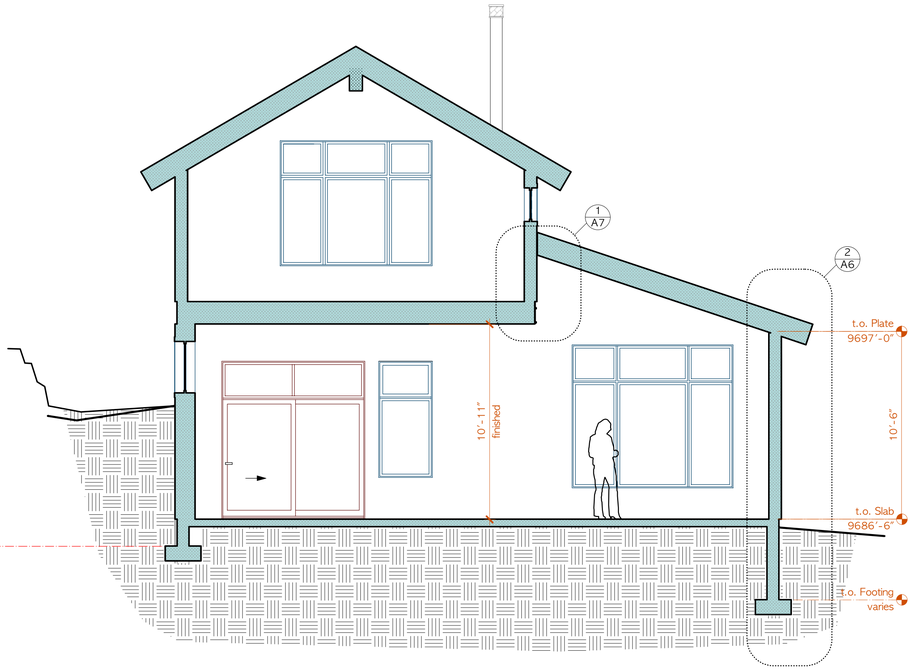
SCALE: 1/4" = 1'-0"

DRAWN BY: L. DALEY

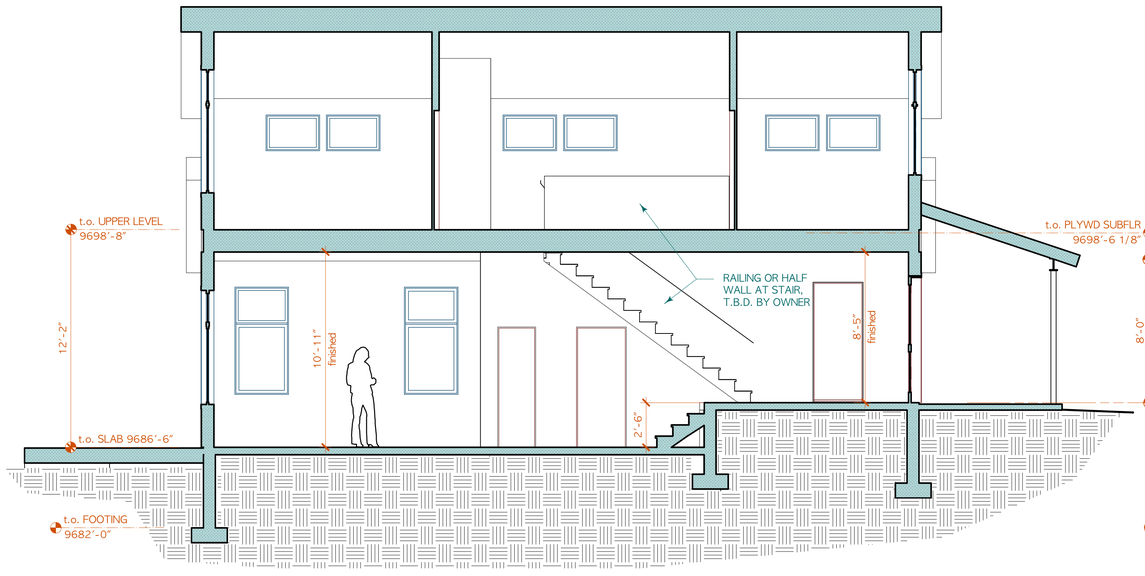
A-4



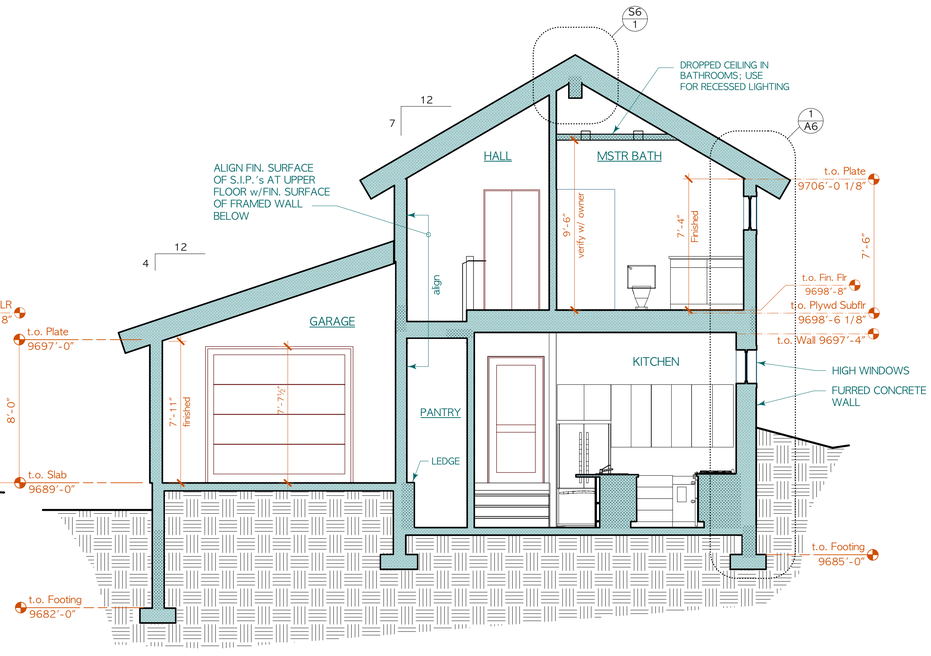
4 BUILDING SECTION THRU GARAGE and ENTRY
Scale: 1/4" = 1'-0"



3 BUILDING SECTION THRU LIVING and DINING
Scale: 1/4" = 1'-0"



2 LENGTHWISE BUILDING SECTION
Scale: 1/4" = 1'-0"



1 BUILDING SECTION THRU GARAGE and KITCHEN
Scale: 1/4" = 1'-0"

DESIGN FIRM:

DALEY DESIGN STUDIO
architectural services
970.708.1121 • daleydesign@mac.com
post office box 3159
telluride, co 81435

CONSULTANT:

TRUE NORTH | PLAN NORTH

JOB NAME:

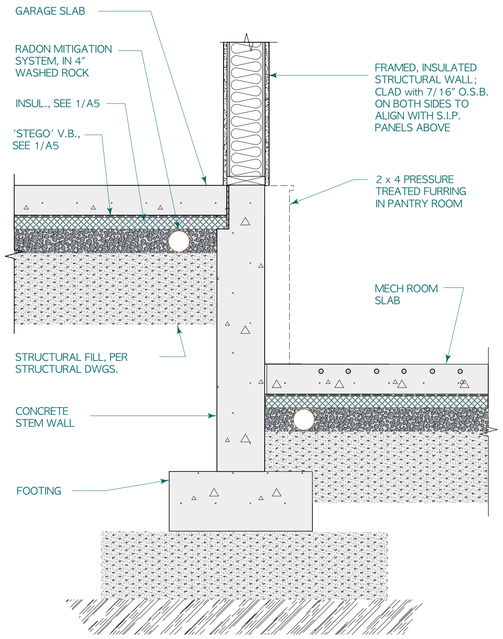
KUPER RESIDENCE
LOT 9 AND 10, BLOCK R
OPHIR, COLORADO

SUBMISSIONS/REVISIONS:
P & Z /PERMIT: 9/8/21
10/12/21 (revised)

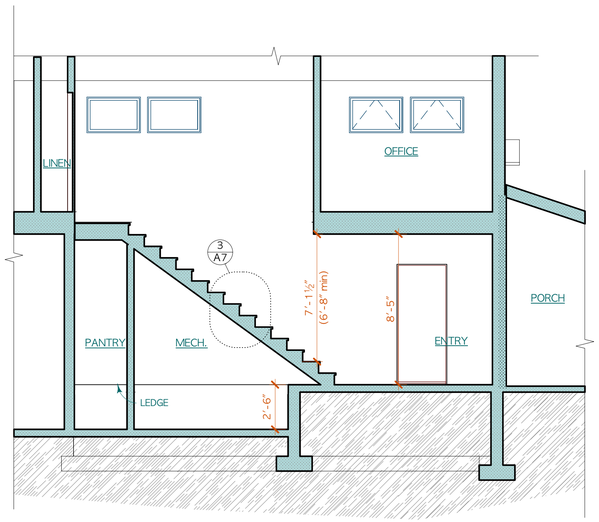
DRAWING TITLE:
BUILDING SECTIONS

DATE: NOVEMBER 2, 2021
SCALE: 1/4" = 1'-0"
DRAWN BY: L. DALEY

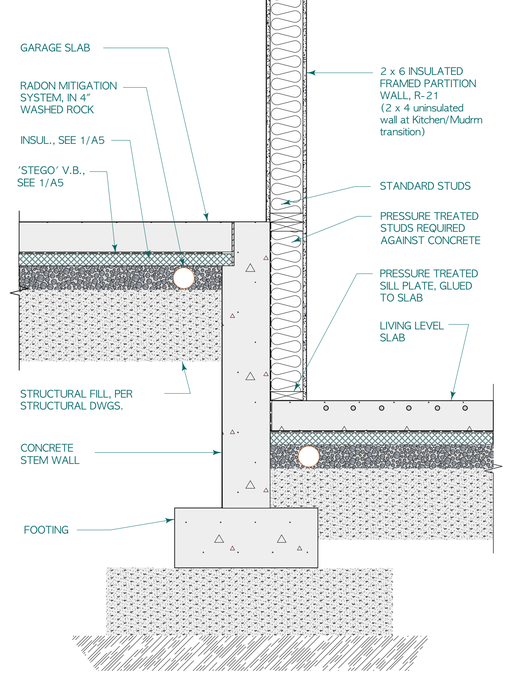
A -5



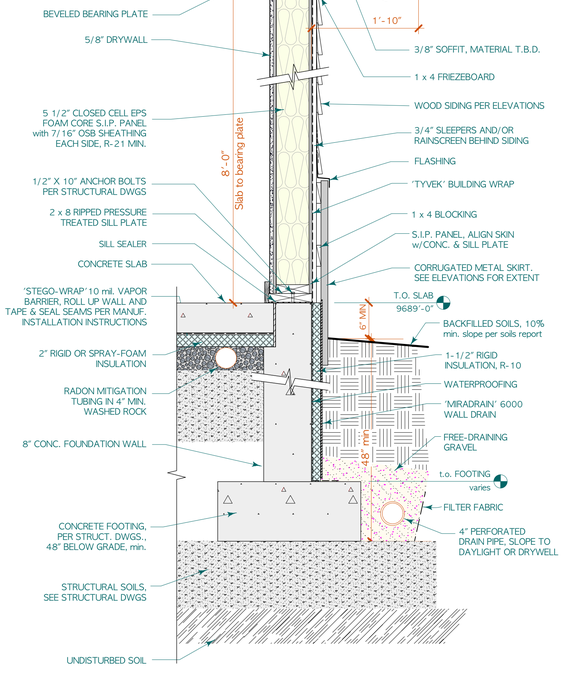
4 DETAIL @ BEARING-WALL LEVEL CHANGE
Scale: 1" = 1'-0"



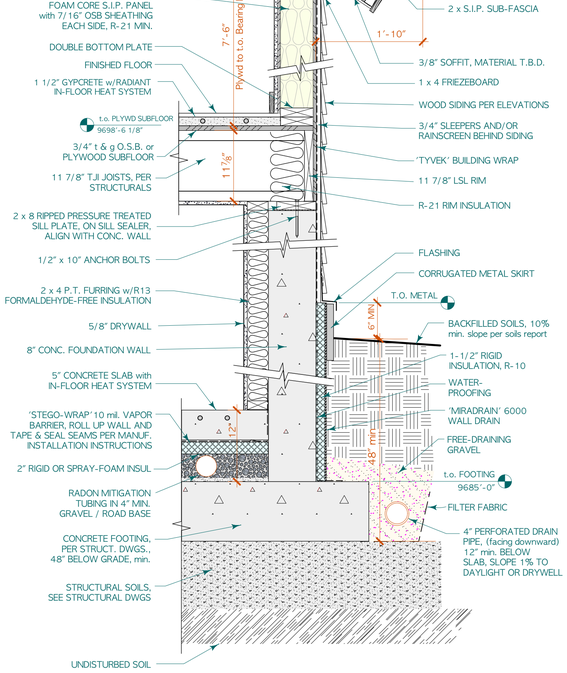
3 SECTION @ MAIN STAIR
1/4" = 1'-0"



5 DETAIL @ NON-BEARING-WALL LEVEL CHANGE
Scale: 1" = 1'-0"



2 WALL ASSEMBLY at WEST SIDE/GARAGE
1" = 1'-0"



1 WALL ASSEMBLY at EAST SIDE
1" = 1'-0"

DESIGN FIRM:

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CONSULTANT:

TRUE NORTH | PLAN NORTH

JOB NAME:

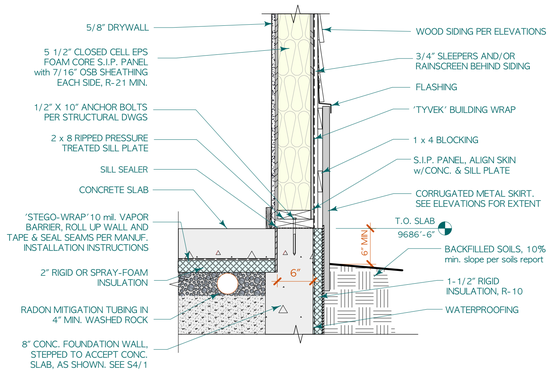
KUPER RESIDENCE
LOT 9 AND 10, BLOCK R
OPHIR, COLORADO

SUBMISSIONS/REVISIONS:
P & Z /PERMIT: 9/8/21
10/12/21 (revised)

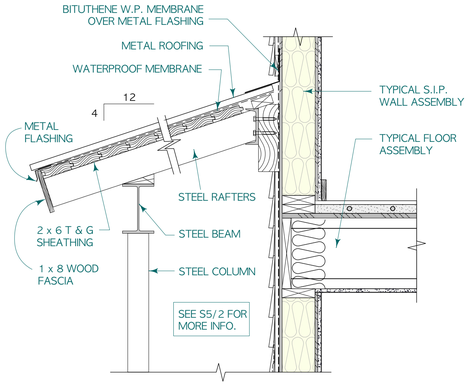
DRAWING TITLE:
WALL SECTIONS
DETAILS

DATE: NOVEMBER 2, 2021
SCALE: 1" = 1'-0"
DRAWN BY: L. DALEY

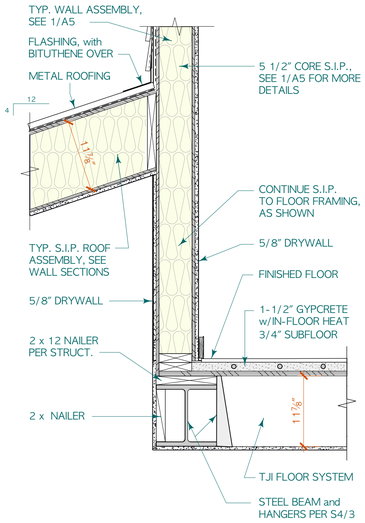
A-6



5 DETAIL @ INSET SLAB
Scale: 1" = 1'-0"

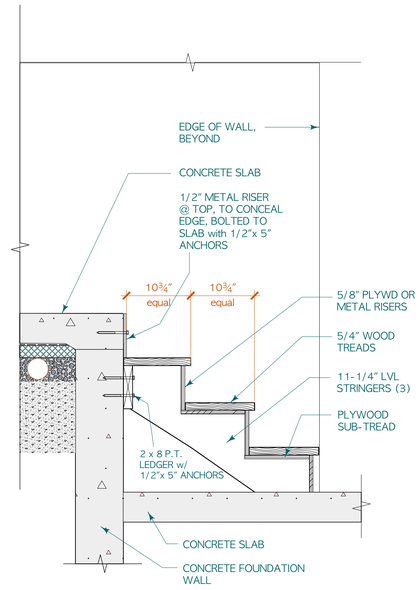


4 DETAIL @ PORCH ROOF
Scale: 1" = 1'-0"

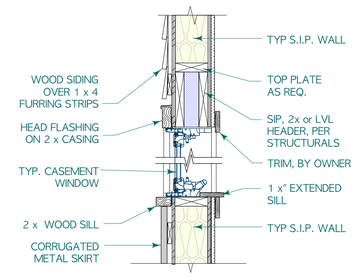


1 DETAIL @ BEAM
1" = 1'-0"

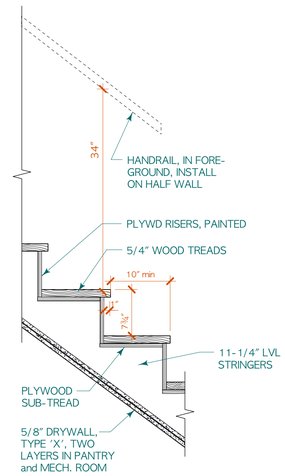
6 DETAIL @ PATIO DOOR and DECK
Scale: 1" = 1'-0"



2 STAIR DETAIL @ LEVEL CHANGE
1" = 1'-0"



7 DETAIL @ HEADER and WINDOW
1" = 1'-0"



3 DETAIL @ MAIN STAIR
1" = 1'-0"

DESIGN FIRM:
DALEY DESIGN STUDIO
architectural services
970.708.1121 • daleydesign@mac.com
post office box 3159
telluride, co 81435

CONSULTANT:

TRUE NORTH | PLAN NORTH

JOB NAME:

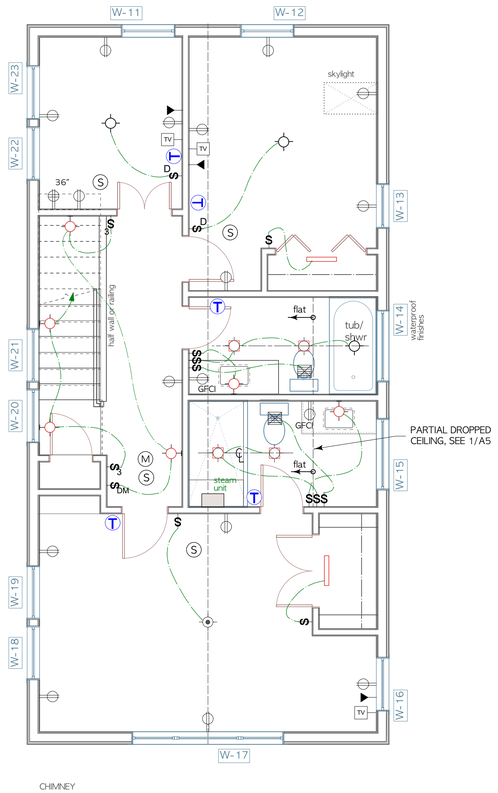
KUPER RESIDENCE
LOT 9 AND 10, BLOCK R
OPHIR, COLORADO

SUBMISSIONS/REVISIONS:
P & Z /PERMIT: 9/8/21
10/12/21 (revised)

DRAWING TITLE:
DETAILS

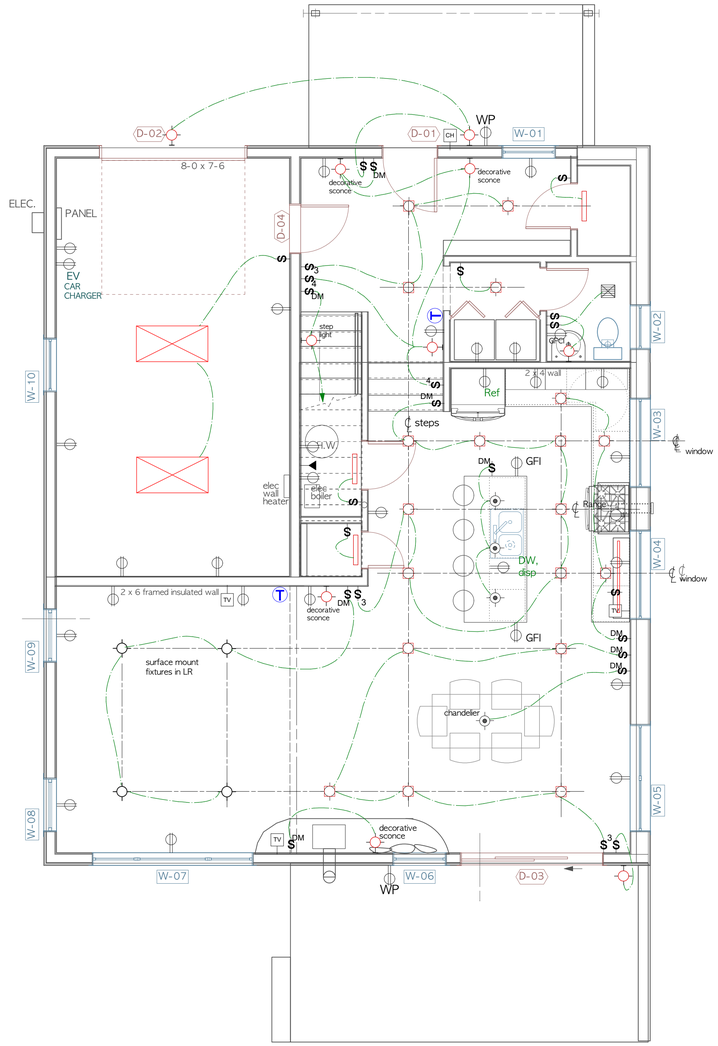
DATE: NOVEMBER 2, 2021
SCALE: 1" = 1'-0"
DRAWN BY: L. DALEY

A-7



KEY

	PENDANT LIGHT
	RECESSED CAN LIGHT
	FLUORESCENT CEILING LIGHT
	FLUORESCENT STRIP LIGHT
	WALL MOUNT LIGHT / SCONCE
	SURFACE MOUNTED CEILING
	FAN
	DUPLEX OUTLET
GFI	GROUND FAULT DUPLEX OUTLET
WP	WATERPROOF/EXTERIOR OUTLET
	FOUR-PLEX OUTLET
CH	DOORBELL / CHIME
TV	TV / CABLE
	TELEPHONE / DATA
S	SWITCH, STANDARD
S3	SWITCH, THREE-WAY
SDM	SWITCH w/DIMMER
S4	FOUR-WAY SWITCH
T	THERMOSTAT
S	SMOKE DETECTOR
M	CARBON MONIXIDE DETECTOR



DESIGN FIRM:

DALEY DESIGN STUDIO

architectural services

970.708.1121 • daleydesign@mac.com
post office box 3159
telluride, co 81435

CONSULTANT:

TRUE NORTH | PLAN NORTH

JOB NAME:

KUPER RESIDENCE

LOT 9 AND 10, BLOCK R
OPHIR, COLORADO

SUBMISSIONS/REVISIONS:

P & Z /PERMIT: 9/8/21
10/12/21 (revised)

DRAWING TITLE:

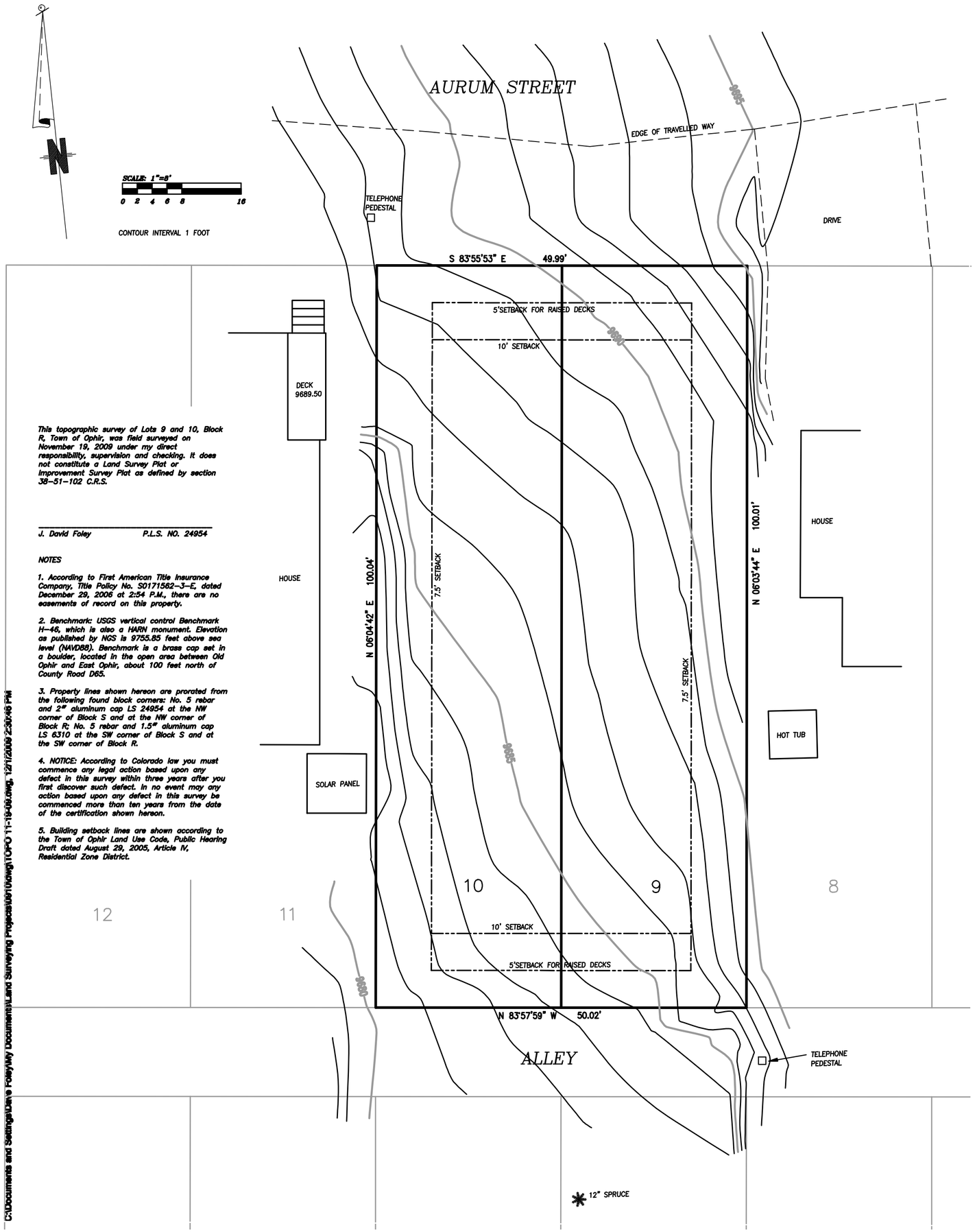
ELECTRICAL PLANS

DATE: NOVEMBER 2, 2021

SCALE: 1/4" = 1'-0"

DRAWN BY: L. DALEY

A-8



This topographic survey of Lots 9 and 10, Block R, Town of Ophir, was field surveyed on November 19, 2009 under my direct responsibility, supervision and checking. It does not constitute a Land Survey Plat or Improvement Survey Plat as defined by section 38-51-102 C.R.S.

J. David Foley *P.L.S. NO. 24954*

NOTES

1. *According to First American Title Insurance Company, Title Policy No. S0171562-3-E, dated December 29, 2006 at 2:54 P.M., there are no easements of record on this property.*

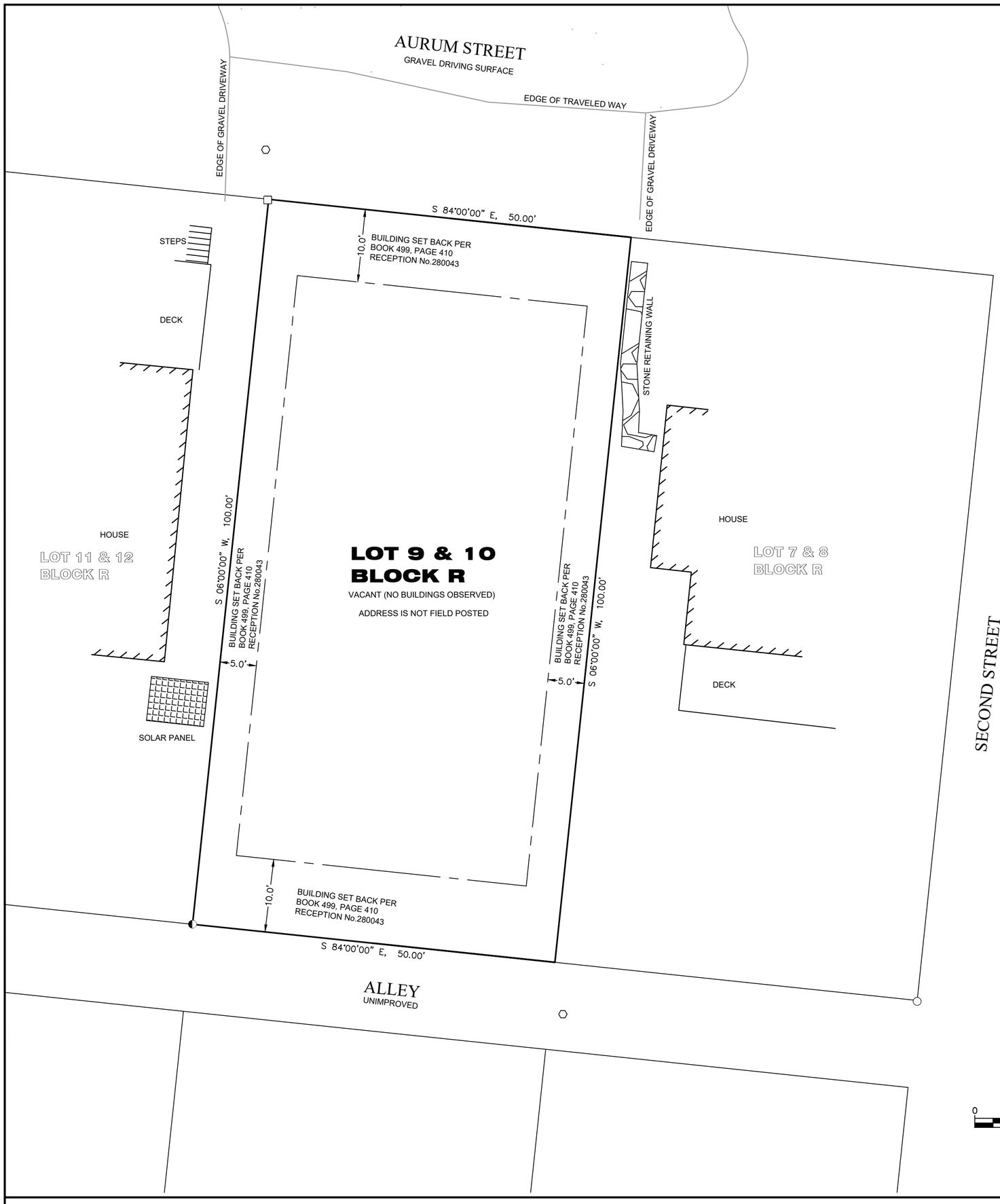
2. *Benchmark: USGS vertical control Benchmark H-46, which is also a HARN monument. Elevation as published by NGS is 9755.85 feet above sea level (NAVD88). Benchmark is a brass cap set in a boulder, located in the open area between Old Ophir and East Ophir, about 100 feet north of County Road D65.*

3. *Property lines shown hereon are prorated from the following found block corners: No. 5 rebar and 2" aluminum cap LS 24954 at the NW corner of Block S and at the NW corner of Block R; No. 5 rebar and 1.5" aluminum cap LS 6310 at the SW corner of Block S and at the SW corner of Block R.*

4. *NOTICE: According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.*

5. *Building setback lines are shown according to the Town of Ophir Land Use Code, Public Hearing Draft dated August 29, 2005, Article IV, Residential Zone District.*

C:\Documents and Settings\Dave Foley\My Documents\Land Surveying Projects\09\10\dwg\TOPO 11-19-09.dwg, 12/1/2009 2:30:46 PM



PROPERTY DESCRIPTION:

LOTS 9 AND 10, BLOCK R, OPHIR TOWNSITE, ACCORDING TO THE PLAT RECORDED JUNE 16, 1898 IN PLAT BOOK 28 AT PAGE 12,
COUNTY OF SAN MIGUEL,
STATE OF COLORADO..

IMPROVEMENT LOCATION CERTIFICATE:

I hereby certify that this improvement location certificate was prepared for Land Title Guarantee Company and Judah Kuper, that it is not a Land Survey Plat or Improvement Survey Plat, and that it is not to be relied upon for the establishment of fence, building, or other future improvement lines. I further certify that the improvements on the above described parcel on this date, 1/23/2021 except utility connections, are entirely within the the boundaries of the parcel, except as shown, that there are no encroachments upon the described premises except as indicated, and that there is no apparent evidence or sign of any easement crossing or burdening any part of said parcel, except as noted.

Thomas A. Clark **PLS 38014**

COLORADO LICENSED
THOMAS A. CLARK
PLS 38014
1/23/2021
PROFESSIONAL LAND SURVEYOR

SURVEYORS NOTES:

1. Easement research and property description provided by LAND TITLE GUARANTEE COMPANY - TELLURIDE, Order Number TLR86011075 effective on 01/11/2021 at 5:00 P.M.

2. According to FEMA Flood Insurance Rate Map 08113C0400C Panel Number 0287 dated September 30.1988 this parcel is within Zone X; Areas determined to be outside 500 year flood plain.

3. This survey is valid only if a printed or electronic copy has a seal and signature of the surveyor noted within the statement above.

4. The word certify as used hereon means an expression of professional opinion regarding the facts of this survey and does not constitute a warranty or guarantee, expressed or implied.

5. This survey is prepared for the exclusive use of the party or parties indicated within the surveyor's statement. Said statement does not extend to any unnamed person or parties without an expressed statement by the surveyor naming said entities.

6. NOTICE: According to Colorado law you must commence any legal action based upon defect in this survey within three years after you first discover such defect. In no event may any action based upon any defect in this survey be commenced more then ten years from the date of the certification shown hereon.

7. According to Ophir Avalanche Hazard Map Book 365, Page 989, this parcel is not depicted in an avalanche zone.

N

0 10' 20'

SCALE: 1" = 10'

LEGEND:

- FOUND #5 REBAR WITH 1 1/2" ALUMINUM CAP LS# ILLEGIBLE
- FOUND #5 REBAR WITH 1 1/2" ALUMINUM CAP LS 24954
- TELEPHONE PEDESTAL

Improvement Location Certificate Lots 9 & 10 Block R,
Town of Ophir, San Miguel County, Colorado.

ALL POINTS LAND SURVEY L.L.C.
PO BOX 754 OPHIR, COLORADO 81435 (970) 708-9694

DATE: 1/23/2021		
DRAWN BY	TC	JOB# 21004
CHECKED BY	JCC	SHEET-1-OF-1

TOWN OF OPHIR
P.O. BOX 683
OPHIR, CO 81426
(970) 728-4943
manager@ophir.us

INVOICE

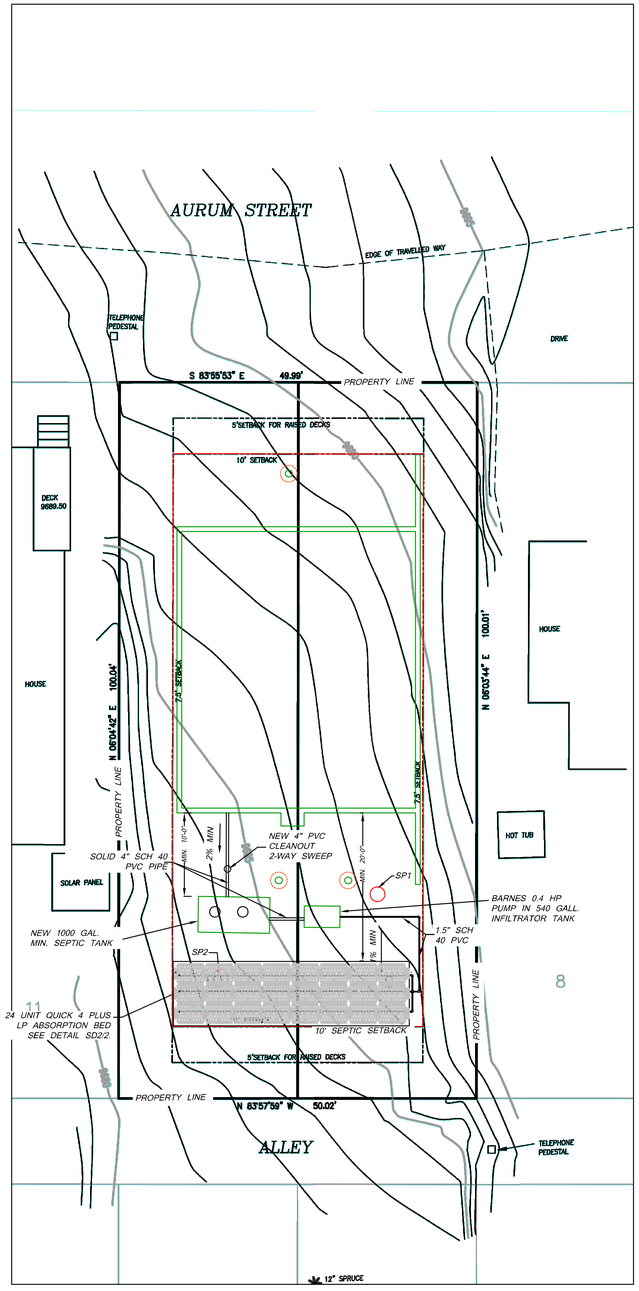
BILL TO
Judah Kuper
PO Box 4012
Telluride, CO 81435

INVOICE # 15468
DATE 05/04/2021
DUE DATE 05/31/2021
TERMS Due on Receipt {4}

DATE	DESCRIPTION	QTY	RATE	AMOUNT
	Building Department:Water tap fee Water tap fee	1	7,000.00	7,000.00

PAID

PAYMENT	7,000.00
BALANCE DUE	**$0.00**



CROWELL/ MARSH RESIDENCE
SEPTIC SYSTEM DESIGN
LOT 9 AND 10 BLOCK R
AURUM ST, TOWN OF OPHIR
SAN MIGUEL COUNTY, COLORADO

SEPTIC SITE PLAN

1"=10'

N

REVISIONS

DATE	BY

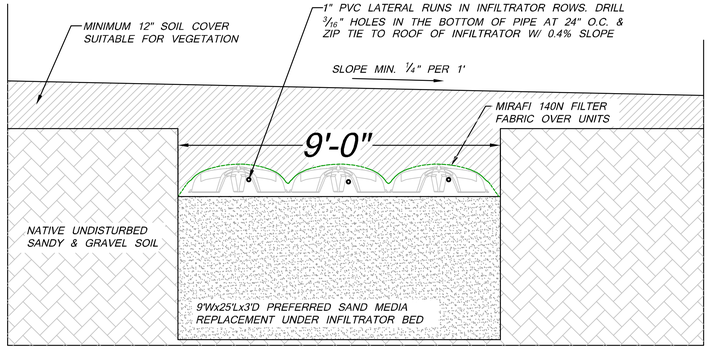
ALPINE EDGE ENGINEERING LLC
MATTHEW D. HEPP, P.E.
605 RIVER PARK DR
RIDGWAY, CO 81432
970-318-1469

CROWELL/ MARSH SEPTIC
LOT 9 & 10 BLOCK R, AURUM ST.
TOWN OF OPHIR
SAN MIGUEL COUNTY, COLORADO

NOV. 28, 2022

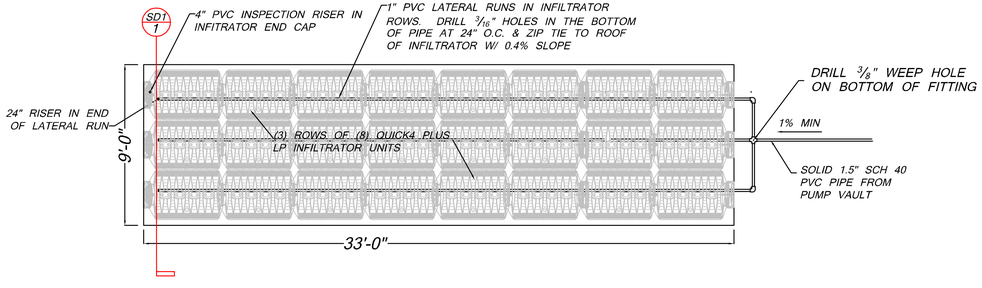
COLORADO REGISTERED
MATTHEW D. HEPP
40718
PROFESSIONAL ENGINEER

SD1



SD2 / 1 LEACHFIELD SECTION

SCALE 1/2"=1'



SD2 / 2 LEACHFIELD PLAN

SCALE 1/4"=1'

SITE AND SOIL EVALUATION NOTES AND NARRATIVE:

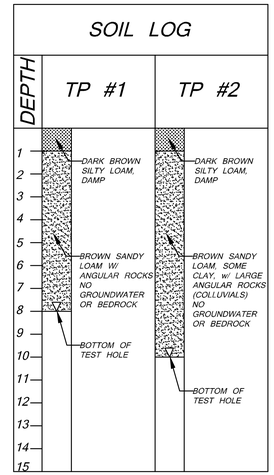
OWTS POSITION: N37.875 W107.833056
TOPOGRAPHY: SLOPE TO SOUTH AND SOUTH-WEST
VEGETATION: NATIVE GRASSES

NATURAL FEATURES: WATERCOURSE TO SOUTH
CULTURAL FEATURES: HIGH-DENSITY NEIGHBORHOOD
USE: RESIDENTIAL 2 BEDROOM RESIDENCE

SOILS INVESTIGATION:
(2) PROFILE PITS VISUAL AND TACTILE EVALUATION
60% ROCK CONTENT TYPE R-O SOILS

ELEVATIONS:

BENCHMARK: EXISTING GRADE AT SEPTIC PIPE EXITING RESIDENCE
BENCHMARK ELEVATION = 0"
EXISTING 4" PVC CLEANOUT TOP OF PIPE (T.O.P.) = -6"
MIN 2% SLOPE 10' RUN TO SEPTIC TANK (-12")
TANK INLET T.O.P. = -30"
4" LOSS IN SEPTIC TANK TO OUTLET
TANK OUTLET T.O.P. = -34"
MIN 1% SLOPE 20' RUN TO LEACH FIELD (-10")
DISTRIBUTION BOX T.O.P. = -44"
2" LOSS IN LATERAL DISTRIBUTION
LEACHFIELD T.O.P. = -46"
LEACHFIELD BOTTOM OF EXCVATION = -56" BELOW BENCHMARK



DESIGN CRITERIA

SITE AND SOILS EVALUATION PERFORMED 8-20-21 BY MATT HEPP PE. ALPINE EDGE ENGINEERING, 605 RIVER PARK DR, RIDGWAY, CO 81432, MATTHEPPENG@GMAIL.COM
(2) TEST PITS EXCAVATED WITH RUBBER TIRE BACKHOE 8-20-21.
SEE ATTACHED GRAPHIC SOILS LOGS. SOIL TYPE DETERMINED BY VISUAL AND TACTILE METHOD WITH JAR TEST VERIFICATION.

SOIL PROFILE:
0"-12" DARK BROWN SILTY LOAM, DAMP
12"-120" BROWN SANDY LOAM, SOME CLAY, W/, ANGULAR ROCKS (COLLUVIALS), 60% ROCK CONTENT, RESTRICTIVE TYPE R-O SOILS

2 BEDROOM RESIDENCE: TANK SIZE = 1000 GAL. MINIMUM
2 PERSONS PER BEDROOM, 75 GAL. PPPD, 0.2 BOD5 PPD
DESIGN FLOW = 300 GPD

DESIGN

REQUIRED TREATMENT AREA = 300 x 0.95 = 285 SQ. FT.
PUMP-DOSED BED ADJUSTMENT: 285 x 1 = 285 SQ. FT.
QUICK 4 PLUS LP UNITS = 12 SQ.FT./UNIT = 24 UNITS PLUS END UNITS
ABSORPTION AREA: (1) INFILTRATOR BED 3 UNITS WIDE X 8 UNITS LONG = 24 QUICK 4 PLUS END UNITS

CONSTRUCTION NOTES

ALL SEPTIC SYSTEM CONSTRUCTION SHALL COMPLY WITH STATE OF COLORADO ON-SITE WASTEWATER TREATMENT SYSTEM REGULATIONS. OWNER/CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PROPERTY LINES AND SETBACKS (SEE TABLE BELOW). FURTHER SETBACKS MAY BE REQUIRED PER INDIVIDUAL PLAT NOTES, COUNTY JURISDICTIONS, ETC. OWNER/CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UTILITY LOCATES PRIOR TO EXCAVATION. CONSTRUCTION OF SYSTEM SHALL NOT COMMENCE PRIOR TO APPROVAL OF COUNTY JURISDICTION AND ISSUANCE OF SEPTIC PERMIT. ENGINEER SHALL BE NOTIFIED FOR THE FOLLOWING INSPECTION WITH A MINIMUM 48 HOUR NOTICE:
WHEN LEACHFIELD HAS BEEN EXCAVATED.
WHEN SAND, GRAVEL, PIPES, AND SEPTIC TANK HAVE BEEN INSTALLED PRIOR TO COVERAGE.
SAN MIGUEL COUNTY WITH ENGINEER TO BE NOTIFIED FOR INSPECTIONS BEFORE ANY BACKFILL IS PLACE FROM THE PROPOSED BUILDING TO THE SOIL TREATMENT AREA.

SEPTIC TANK AND LINES

SEPTIC TANK SHALL BE A PRE-ENGINEERED COLORADO CERTIFIED 2 CHAMBER TANK. MAX DEPTH OF BURIAL 3'. TANK SHALL HAVE LOCKABLE SEALED RISERS TO SURFACE. LINES SHALL BE 4" SCH 40 PVD PIPE WITH MINIMUM SLOPES AT NOTED ON PLAN. PIPES SHALL BE BEDDED TO AVOID SETTLEMENT. DISTRIBUTION BOX SHALL BE APPROVED PER ENGINEER AND LEVELED TO ENSURE EQUAL DISTRIBUTION. DISTRIBUTION BOX SHALL HAVE A SEALED RISER TO SURFACE.

ABSORPTION BED SYSTEM

SYSTEM SHALL BE LOCATED IN AN AREA WITH ABUNDANT EXPOSURE TO SUNSHINE. THE SYSTEM SHALL BE CROWNED AND COVERED WITH A MINIMUM 12" OF NATIVE SOIL. THE COVER SHALL BE SEEDED WITH TYPICAL DRYLAND GRASSES. NO SHRUBS OR TRESS SHALL BE PLANTED ON THE COVER. THE BED SHALL BE PROTECTED FROM VEHICULAR OR PEDESTRIAN TRAVEL. THE GROUND SURFACE SHALL BE GRADED TO DEFLECT PRECIPITATION AND OTHER OUTSIDE WATER AWAY FROM DISPOSAL AREA.

PREFERRED SAND MEDIA

A GRADATION OF THE SAND MEDIA USED MUST BE PROVIDED BY THE INSTALLER. THE GRADATION MUST BE DATED NO MORE THAN ONE MONTH PRIOR TO THE INSTALLATION DATE. HOWEVER, A GRADATION OF THE ACTUAL METHOD PLACED IN THE EXCAVATION IS RECOMMENDED. THE PREFERRED SAND MEDIA MUST HAVE AN EFFECTIVE SIZE OF 0.25-0.60 MM. THE UNIFORMITY COEFFICIENT SHALL BE LESS THAN OR EQUAL TO 4.0. THE PERCENT FINES PASSING #200 SIEVE SHALL BE LESS THAN OR EQUAL TO 3.0.

MAINTENANCE

CARE SHOULD BE TAKEN BY THE USERS OF THE SEPTIC SYSTEM. DAILY WATER VOLUME EXCEEDING STATE DESIGN CRITERIA, THE USE OF HARSH DETERGENTS OR OTHER CHEMICALS, OR MODIFICATION OF THE APPROVED DESIGN CAN CAUSE FAILURE OF THIS SEPTIC SYSTEM. IT IS RECOMMENDED TO PUMP THE SEPTIC TANK EVERY TWO YEARS. ALPINE EDGE ENGINEERING EXPLICITLY WARRANTIES THIS SYSTEM FOR NORMAL USE WITH PROPER MAINTENANCE FOR A PERIOD OF TWO YEARS FROM THE DATE OF INSTALLATION.

SETBACKS (HORIZONTAL DISTANCE IN FEET BETWEEN FEATURES)	SEPTIC TANK	ABSORPTION BED	EFFLUENT LINE
SPRINGS, WELLS, SUCTION LINES	50	100	50
POTABLE WATER SUPPLY LINES	10	25	10
POTABLE WATER SUPPLY CISTERN	25	25	25
OCCUPIED BUILDING	5	20	0
PROPERTY LINE, PIPED OR LINED IRRIGATION DITCH	10	10	10
SUBSOIL DRAIN, INTERMITTENT IRRIGATION LATERAL	10	25	10
LAKE, WATER COURSE, STREAM, IRRIGATION DITCH	50	50	50
DRY GULCH	10	25	10
SEPTIC TANK	-	5	-

REVISIONS

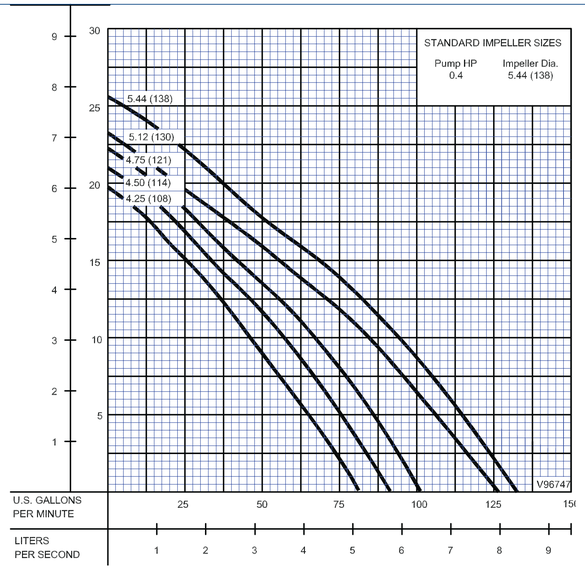
DATE	BY

ALPINE EDGE ENGINEERING LLC
MATTHEW D. HEPP, P.E.
605 RIVER PARK DR
RIDGWAY, CO 81432
970-318-1469

CROWELL/ MARSH SEPTIC
LOT 9 & 10 BLOCK R, AURUM ST.
TOWN OF OPHIR
SAN MIGUEL COUNTY, COLORADO

NOV. 28, 2022

SD2

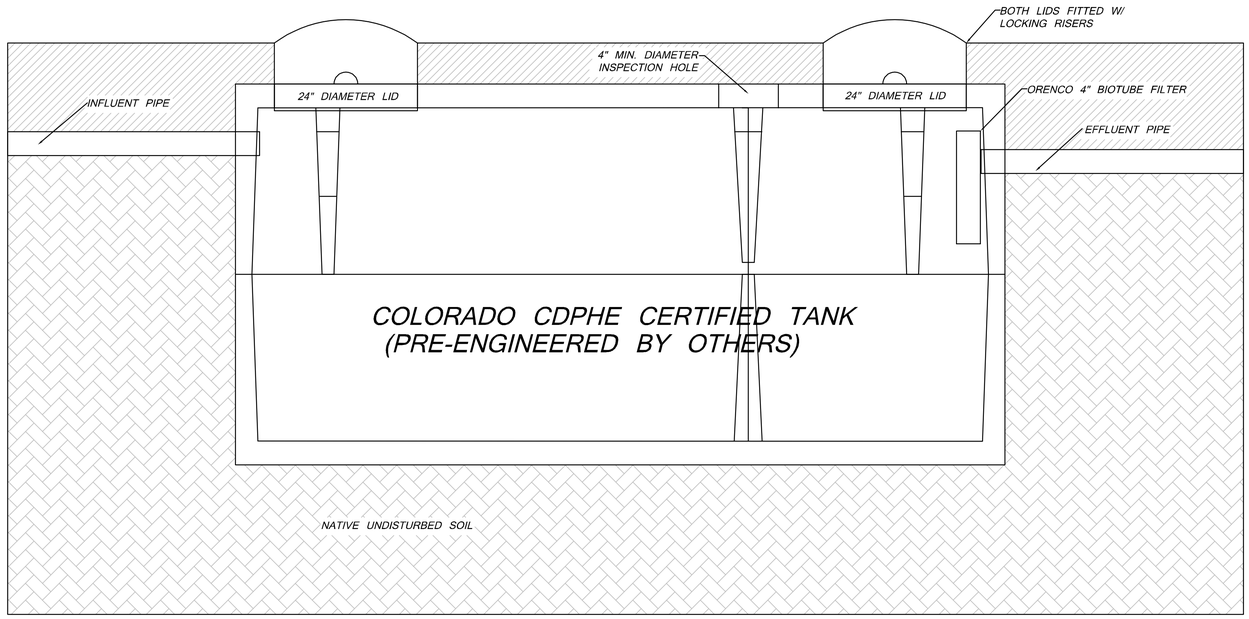


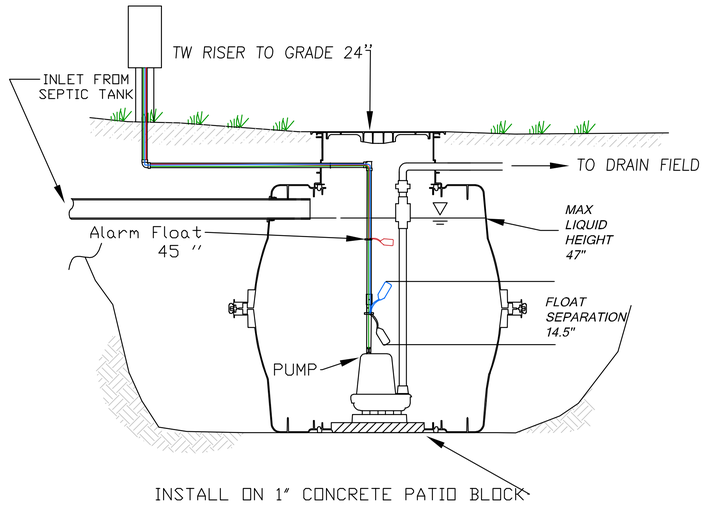
CRANE PUMPS & SYSTEMS
BARNS SERIES SE-411/421 2" SPHERICAL SOLIDS HANDLING MANUAL & AUTOMATIC PUMP TO BE INSTALLED IN A 540 GAL. INFILTRATOR BRAND POLY TANK W/ FLOAT ALARM PACKAGE

SD3
1

PUMP SPECIFICATIONS

N.T.S.





DOSING AMOUNT: 150 GALLONS.
FLOAT SEPARATION: 14.5"
ESTIMATED DOSINGS PER DAY: 3
ALARM: SJE RHOMBUS TANK ALERT EZ ALARM PN 1036589
FLOAT SWITCH: SJE RHOMBUS PUMPMASTER PUMP SWITCH PN 1002719, 1002715

SD3
2

SEPTIC TANK SECTION

SCALE ½"=1'

REVISIONS

DATE	BY

ALPINE EDGE ENGINEERING LLC
MATTHEW D. HEPP, P.E.
605 RIVER PARK DR
RIDGWAY, CO 81432
970-318-1469

CROWELL MARSH SEPTIC
LOT 9 & 10 BLOCK R, AURUM ST.
TOWN OF OPHIR
SAN MIGUEL COUNTY, COLORADO

NOV. 28, 2022

SD3

L. GLU LAMS-
1) All glu lam beams shall be 24F-V4 Douglas Fir (outer and core laminations), except where noted otherwise.
2) Glu lam columns shall be combination symbol 2, grade DF L2, or better.
3) Glu lams shall not be directly exposed to weather, unless wrapped or protected with water-resistant material to prevent moisture penetration.

MICRO-LAM

M. LVL beams or blocking shall be laminated veneer lumber (e.g., Micro=Lam by Trus Joist or Versa Lam by Boise Cascade). Equivalent brands may be used if approved by CE. All LVL to have at least the following minimum design stresses:*

*Fb = 2600 psi E = 1,900,000 psi Fc(ll) = 2310 psi**
*Fv = 285 psi Fc (t) = 750 psi**

VERSA-LAM

M. LVL beams or blocking shall be laminated veneer lumber (e.g., Versa Lam by Boise Cascade). Equivalent brands may be used if approved by AEE. All LVL to have at least the following minimum design stresses:*

	Fv	Fb	E	Fc(ll)*	Fc(t)*
1-3/4 and 2-5/8" wide	285	2800	2,000,000	3000	750
3½" and wider	285	3100	2,000,000	3000	750

N. PSL beams or columns as noted on the plans shall be Parallel Strand Lumber (e.g., Parallam PSL by Trus Joist). Equivalent brands may be used if approved by AEE. All PSL to have at least the following design stresses (in psi):

	Fv	Fb	E	Fc(ll)*	Fc(t)*
Beams	290	2900	2,000,000	2900	650
(Wolmanized)	175	2090	1,740,000	1680	385
Columns	290	2400	1,800,000	2500	650
(Wolmanized)	175	1728	1,566,000	1450	385

O. LSL beams, blocking, or rim joist shall be Laminated Strand Lumber (e.g., TimberStrand by Trus Joist) or equivalent size LVL. LSL shall have at least the following minimum allowable design stresses (in psi):

	Fv	Fb	E	Fc(ll)*	Fc(t)*
Blocking, Rim or Beam (Less than 9" deep)	400	1550	1,300,000	1400	650
Header or Beam (9-1/4" and deeper)	310	2325	1,550,000	2050	800

P. STRUCTURAL INSULATED PANELS (SIP's): Manufactured panels shall be approved per ICBO or equivalent report, and installed and connected to framing and foundation per manufacturer's details, unless noted otherwise on this plan.

IV. TIMBER CONNECTORS :

A. 1) All hardware (e.g., column caps and bases, beam and joist hangers, etc.) as specified on these plans has been denoted by Simpson Strong-Tie designations. Hardware used is to be Simpson or equal, with the engineer to approve the use of alternate hardware other than Simpson where the load capacity of such hardware is a consideration. All hardware shall be installed with nails or bolts exactly as called for by the manufacturer, unless noted otherwise on these plans.
2) Where plans indicate "Q" series hardware (e.g., CC(Q) or CB(Q), etc.), either standard or "Q" series may be used, unless noted otherwise. . SDS screws must be used with all Q and PHD or HDU series hardware, as well as any other hardware for which SDS screws are indicated in the Simpson catalog. Substitution of lag bolts or standard screws shall not be permitted.
3) Where steel straps, seats, buckets or other stock hardware as specified is spaced wider than actual attached member, provide plywood or 2x shim(s) as necessary such that all hardware bears firmly on solid framing.

B. All nails shall be common, and galvanized common nails where exposed to moisture, except where other treatment is required for connection to PT wood (see section III-G) or as noted otherwise. EXCEPTION: Galvanized box nails may be used for shear wall nailing unless noted otherwise.

C. All bolts shall be A307 steel and threaded fasteners A36 steel per ASTM designation, except where noted otherwise. Washers shall be provided below bolt heads and nuts where bolts bear directly on wood.
Bolt heads and nuts may be let-in to logs. Bolts in logs shall be checked for snugness and tightened as necessary 6 and 12 months after placement, and periodically after that as necessary.

D. All TJS open-web joists shall have top-chord bearing on wood beam or wall plates, with standard bearing clips per TrusJoist manual and plan details. Clips at endwall bearings shall be placed within +/-½" of center line of beam or plate. When joists butt together from opposite directions at interior bearings, provide separate bearing clips for each piece (per Trus Joist manual).

V. PLYWOOD DIAPHRAGMS :

A. HORIZONTAL DIAPHRAGMS: All framed horizontal (roof and floor) surfaces shall be sheathed with plywood, with face grain perpendicular to the supports, in a staggered pattern (per IBC Table 2306.3.1, cases 1 & 3). Nail at all panel edges, intermediate framing, and to blocking over perimeter or interior shear walls. Actual nailing and design of such diaphragms shall be per Code prescriptive method and not the responsibility of AEE, unless specifically noted otherwise on these plans.
B. VERTICAL DIAPHRAGMS (Shear walls): All perimeter walls of the structure, and any interior shear walls, shall be sheathed with minimum 7/16" thick OSB or 3/8" thick plywood sheathing, rated CD-Exposure 1. All panel edges shall be blocked, and all abutting panels shall be nailed to common framing members at panel joints. Actual design and nailing of such shear walls (braced wall lines) shall be per Code prescriptive method and not the responsibility of AEE, unless specifically noted otherwise on this plan.

C. AT EDGE OF OPENINGS & WALL CORNERS, nail sheathing panels to vertical framing with specified panel edge nailing over full height of framing. Attach any specified holdowns to minimum two full height studs, unless noted otherwise. At wall corners, attach any specified holdowns to multi-stud or post receiving sheathing nails from walls in both directions.

VI STEEL:

A. All structural steel shall conform to current AISC and IBC standards.

B. All Structural steel shall have a minimum yield strength of 50 ksi for W shapes ("I" beams- ASTM A-441 or A-572), 36 ksi (ASTM A-36 for shapes and plates, ASTM A-53 for pipe columns), and 46 ksi (ASTM A-500, Grade B) for structural steel tubing.

C. EXPOSURE PROTECTION: All steel exposed to weather, moisture, soil, or as noted shall be galvanized per ASTM A-123 (1.25 oz/sf minimum). All other steel surfaces to be shop primed after fabrication.

D. WELDS:

1. All welding is to be performed in accordance with the specifications of the American Welding Society (AWS) code D1.1-88.

2. Use E70XX electrodes (low hydrogen or approved equal) in all welding, unless use of another electrode is approved by the engineer.

3. All shop or field welding is to be performed by a Qualified Welder for the specific process indicated.

4. Where field welding is to be performed in the immediate area of existing flammable material (e.g., wood framing), such material shall be shielded or wrapped for protection from combustion, and a fire extinguisher shall be readily available during this process.

5. All field welds must be inspected by an AWS-Certified welding inspector, per "94 UBC Section 1701.5.5. The inspector must be notified prior to any welding process, so that preliminary inspection may be made if necessary. Inspection is to be visual and 100%, unless noted otherwise.

STRUCTURAL SPECIFICATIONS AND GENERAL NOTES

I. SCOPE OF ENGINEER'S SEAL :

A. The engineer's seal on this drawing shall be for STRUCTURAL PURPOSES ONLY, and shall apply only to the areas or items as indicated on these plans. ONLY WET-SIGNED DRAWINGS SHALL BE VALID FOR PERMIT APPROVAL AND CONSTRUCTION.
Specifically, the engineer's seal on this drawing shall apply only to the NEW RESIDENTIALADDITION CONSTRUCTION.

B. Where no specific conditions are indicated on these plans, the prescriptive provisions of '06 International Building Code (IBC) Section 2308 for Conventional Light-Frame Construction if approved by the Building Official. Such conditions shall not be included with this plan, and are not the responsibility of ALPINE EDGE ENGINEERING LLC (AEE).*

C. This structural plan is based on architectural plans for this structure as provided by others. Such architectural plans shall accompany and conform to these structural plans for permit approval.

D. All non-structural aspects of this plan (architectural, mechanical, electrical, plumbing, site planning, etc.) shall be the responsibility of others.

E. The engineer's seal shall be valid only for the individual structure on the specific site indicated on this plan. This plan shall not be valid for any other structure(s), even though such other structure(s) may be identical to that indicated on this plan.

II. GENERAL NOTES :

A. All construction shall be in accordance with the minimum requirements of the 2006 edition of the International Building Code (IBC) or International Residential Code (IRC), and all local building ordinances, or as specifically noted on these plans, with the most stringent conditions governing. It is the responsibility of the Contractor or Builder to be familiar with and comply with these requirements.

B. If any structural revisions are made from these plans, ALPINE EDGE ENGINEERING LLC (AEE) shall be notified prior to making such revisions and the necessary certified revised plans and calculations obtained. AEE assumes no responsibility for any revisions or effects thereof made without prior notification and approval.*

C. The Contractor and/or Architect or Designer shall verify all dimensions on these plans, and AEE shall be notified of any discrepancies found before work commences.

D. This structural design is based on a completed structure as per plans and calculations. The Contractor shall provide temporary bracing and/or shoring of the structure as required until all structural work has been completed in accordance with the plans.

E. The Contractor shall be responsible for the proper construction methods, techniques, sequences, and procedures required to perform this work, as well as for the provision of all required safety measures.

F. This structural design is based on loading conditions as determined by local building ordinances and the IBC. AEE is not responsible for damage resulting to this structure due to loading conditions exceeding those for which the structure has been designed, or due to "Acts of God" (e.g., fire, flooding, etc.). Loading conditions used for this design are:

Roof live (snow) load = 100 psf
Roof dead load = 15 psf
Ceiling dead load = 5 psf
Floor live load = 40 psf
Floor dead load = 50 psf
Perimeter Wall Dead Load = 15 psf
Seismic Design Category B
Wind: 90 mph, Exposure C

G. A flat building pad is assumed, unless grade lines shown on this plan indicate otherwise.
If discrepancies exist, AEE shall be notified and plans revised before construction commences.
Grade lines have been established by information provided by Surveyors, Contractors, Owners, Designers or Architects, and shall not be the responsibility of AEE.

III. TIMBER :

A. All sawn joists, rafters, headers, and light framing members shall be Hemlock Fir (HF) #2 or better, and all sawn posts and beams shall be HF #2 or better, unless noted otherwise.

B. All bearing and braced lateral wall (shear wall) studs shall be Spruce-Pine-Fir (SPF), Hem-Fir (HF), or DFL, "stud" grade or better, unless noted otherwise. Top and bottom plates shall be DFL #2 or better. Double top plates shall be lapped a minimum of (4) feet, with (8) 16d box nails each side within 24" of plate splice (nail in two rows).

C. All sawn 2x members shall be manufactured and used at 19% maximum moisture content, and shall bear the label "S.Dry" or "MC-15" on the grading stamp.

D. All headers at perimeter and interior bearing walls shall be a minimum of (2) 2X10 HF #2 or better and bear on a minimum of 1 trimmer each end, unless noted otherwise. Where opening exceeds 4'-6", header shall be a minimum of (2) 9 ½" LVLs and shall bear on minimum of 2 studs at each end, unless noted otherwise.

E. 1. All multi-2x4 or 2x6 members indicated on the plans shall be laminated with 10d nails at 12"o.c., and multiple 2x8 or deeper members shall be laminated with 2 rows of 10d nails at 12"o.c. at each layer, unless noted otherwise.
2. Where multi-ply joists, rafters or (girder) trusses are supported at bearing walls, multi-ply studs, grade #2 or better, with an equal number of plys shall be provided below wall plates at bearing points, unless noted otherwise.

F. Where wood "cleats" are to be lapped over posts and beams, attach each cleat to each member with minimum (5) 16d, unless noted otherwise. Attach plywood shims to each side of post or beam under cleats as required for flush framing.

G. SUBSTITUTIONS of Glu Lam or Manufactured Post or Beam products (per sections K, L, M, and N below) for specified sawn lumber of equal dimension shall be permitted, provided such glu lam or manufactured members are adequately protected from any exposure to weather, as required by manufacturer. Substitution of glu lam or manufactured products of lesser dimension than the specified sawn lumber shall not be permitted unless such change is made as a revision to this plan and approved by CE.
H. 1) All timber with ground contact, or attached directly to concrete less than 8" above outside grade, shall be grade HF #2 or better, and pressure treated (PT), for protection against decay.
2) Where PT is other than with CCA, fasteners and connectors shall be stainless steel or ZMAX (G185 HDG per ASTM A653), Hot-Dipped Galvanized (HDG- per ASTM A123 or ASTM A153), mechanically galvanized fasteners (ASTM B695, class 55 or greater), or as otherwise recommended per ASTM for the treatment process used. Protective barriers may be used for connectors where approved by the manufacturer.
3) Sill plates shall be foundation grade Hem Fir #2 or better, with ½" anchor bolts (minimum 7" embedment) placed at a maximum of 48"o.c. and at plate ends per IBC requirements, or as noted per plans.

I. 1. ROOF TRUSSES shall be designed by the manufacturer according to the loading conditions as indicated in Section II-F above, as well as accounting for unbalanced snow and drift loads as required by the IBC. All trusses shall be accompanied by drawings bearing the seal of a licensed Professional Engineer (PE).
2. MANUFACTURER'S TRUSS LAYOUT shall conform to roof framing plan. If discrepancies are noted, plan or truss layout revisions shall be required prior to the start of construction, such that layout and roof plan conform.
3. GIRDER TRUSSES: a) WALL BEARING: Provide DFL top plates and laminated multi-2x6 SPF#1 or DFL #2/better studs (see section E above), with number of laminated studs equal to number of girder truss plies (minimum 2-studs). Tie girder truss to studs below with two H6 straps (one each side) or equal with total wind uplift capacity of 1900 #. Stack similar laminated studs at each level below, with solid blocking in floor bays. Exception if noted otherwise on plans.
4. INTERIOR PARTITION WALLS: Trusses shall not be directly attached to interior partition walls, unless noted otherwise. Gaps of 1/4 - ¼" between truss bottom chord and wall top plate at installation are recommended. Wall plate may be attached to truss bottom chord with slotted clip (e.g., Simpson STC).
5. CEILING GYPSUM BOARD ATTACHMENT: It is recommended that ceiling gypsum board not be directly attached to truss bottom chords within 14" of partition walls, and that clips (e.g., Simpson DS), and/or blocking be provided such that the ceiling board is adequately supported without direct truss attachment in this zone. NOTE that this is a non-structural issue, but is recommended to avoid cracking or distortion of the finish ceiling as trusses move slightly up and downward with expected seasonal variation.

I. LOG TIMBERS shall be Ponderosa Pine or SPF "Post & Timber Grade #2" or better. For roof members, remove the upper or sloped segment of the log on which other roof members or sheathing are bearing, to a depth of 0.3 x log radius (e.g., to a 1.5" depth for a 10" diameter log), to create a flush bearing surface. Logs shall be adequately season to prevent excessive shrinkage or splitting.

I. ROOF OVERBUILD: 1) Overbuild trusses (by manufacturer) or framing shall be placed such that upper roof load is evenly distributed to main supporting roof structure below. 2) Main (lower) supporting roof shall be sheathed solid, except that access to the overbuild attic shall be provided as required by Code. Alternate lateral bracing may be acceptable, if approved by AEE.

J. Where roof rafters or trusses spaced at 24"o.c. are set on walls with studs spaced at 16"o.c., rafters or trusses shall not be offset from studs by more than 5" (center-to-center).

K. PLYWOOD WEB I- JOISTS as indicated on the plans (e.g., "TJI" or "BCI") denote manufactured, engineered wood "I" joists.
1. The specific brand, series and size indicated (or better) shall be used, unless alternate brands are approved by CE. Erection, anchorage, and blocking to be per manufacturer's standard, or per plan, with the most stringent condition governing.
2. Where I-joist blocking is specified, blocking shall match the depth and series of the accompanying I-joist framing, unless noted otherwise.

ALPINE EDGE ENGINEERING LLC
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NOTES

DESIGN CRITERIA:

APPLICABLE CODES: IRC '09, IECC '09
WIND LOAD = 90 MPH (3 SECOND GUST)
SNOW LOAD = 100 PSF
ROOF DEAD LOAD = 15 PSF
FLOOR LIVE LOAD = 40, 60 PSF
SEISMIC DESIGN CRITERIA = B

COLORADO REGISTERED MATTHEW D. HEPP 40718 PROFESSIONAL ENGINEER

SOIL PROFILE:

2000 PSF SOIL BEARING CAPACITY

DESIGNED ACCORDING TO TRAUTNER GEOTECH REPORT PROJECT # 56529GE
FOLLOW ALL GEOTECHNICAL RECOMMENDATIONS

CONCRETE:

1. ALL CONCRETE SHALL DEVELOP 3500 PSI COMPRESSIVE STRENGTH AT 28 DAYS FROM POUR.
2. ALL CONCRETE SHALL USE TYPE II PORTLAND CEMENT. FLY ASH SUBSTITUTION IS PERMITTED PER APPROVAL OF ENGINEER.
3. ALL REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60, EXCEPT COLUMN TIES, STIRRUPS, AND #3 BARS MAY BE GRADE 40. REINFORCING SHALL BE FREE OF DIRT, RUST, OR ANY OTHER MATERIAL WHICH MIGHT INHIBIT ITS BOND TO CONCRETE.
4. LAP SPLICES SHALL BE A MINIMUM OF 36 BAR DIAMETERS. MAKE ALL BARS CONTINUOUS AROUND CORNERS.
5. DETAIL BARS IN ACCORDANCE WITH A.C.I. BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.
6. REINFORCEMENT PROTECTION SHALL BE AS FOLLOWS:
FORMED CONCRETE EXPOSED TO EARTH----------3"
FORMED CONCRETE NOT EXPOSED TO EARTH-----1½"
7. ALL CONSTRUCTION JOINTS SHALL BE APPROVED PER ENGINEER.
8. SAW CUT ALL SLABS AT MAXIMUM 10 FEET O.C. E.W.
9. ALL CONCRETE FOOTING AND WALL POURS SHALL BE MECHANICALLY VIBRATED.

FOUNDATION:

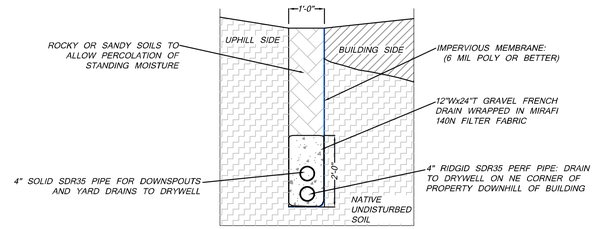
1. FOUNDATION SILLS SHALL BE PRESSURE TREATED WOOD, A MINIMUM 6" ABOVE FINISHED GRADE, SECURED WITH ½"x10" ANCHOR BOLTS AT 48" O.C. AND AT ENDS OF PLATES AND CORNERS.
2. OWNER/CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO PLACEMENT OF FORMS.
3. THE FOUNDATION SHALL BEAR ON NATIVE UNDISTURBED SOIL.
4. THE ENGINEER SHALL BE NOTIFIED A MINIMUM OF 48 HOURS IN ADVANCE FOR INSPECTION OF THE FOUNDATION WHEN ALL FORM WORK IS COMPLETE AND REBAR IS TIED IN PLACE. FURTHER INSPECTION PER THE LOCAL BUILDING JURISDICTION MAY BE REQUIRED.
5. THE ENGINEER SHALL BE NOTIFIED IF ADVERSE OR POOR SOIL CONDITIONS ARE ENCOUNTERED UPON EXCAVATION. FURTHER ENGINEERING MAY BE REQUIRED.
6. THE CONTRACTOR AND OWNER SHALL VERIFY A MINIMUM OF 6" POSITIVE DRAINAGE AWAY FROM THE BUILDING IN THE FIRST TEN FEET AROUND THE ENTIRE PERIMETER OF THE BUILDING. FAILURE TO DO SO MAY RESULT IN SUBSTANTIAL DIFFERENTIAL FOUNDATION SETTLEMENT.
7. THE CONTRACTOR SHALL INSTALL A DRAINAGE SWALE OR MIN. 4" GRAVEL INTERCEPTOR DRAIN TO DAYLIGHT MIN. 10' SEPARATION FROM THE FOUNDATION.
8. THE HOMEOWNER SHALL NOT INSTALL ANY IRRIGATION WITHIN 5 FEET OF THE FOUNDATION. INTRUSION OF IRRIGATION WATER INTO SOILS NEAR THE FOUNDATION CAN CAUSE EXTENSIVE STRUCTURAL DAMAGE INCLUDING DIFFERENTIAL SETTLEMENT AND HEAVING. THE HOMEOWNER TAKES FULL RESPONSIBILITY FOR PROPER SEPARATION BETWEEN THE FOUNDATION AND IRRIGATION INFLUENCE.
9. REFER TO EPA AND COLORADO DEPT. OF HEALTH AND ENVIRONMENT FOR RADON MITIGATION GUIDELINES.

FRAMING:

1. ENGINEERED LUMBER AND I JOISTS SHALL BE INSTALLED ACCORDING TO MANUFACTURERS' SPECIFICATIONS.
2. TYPICAL HEADER U.N.O.: (2) 2x10 H.F. #2 FOR OPENINGS < 60", (2) 9½" LVLs FOR OPENINGS > 60".
3. TYPICAL TRIMMERS U.N.O.: (2) 2x6 H.F. #2 FOR OPENINGS <60", (2) 2x6 H.F.#2 FOR OPENINGS > 48".
4. LOG COURSES SHALL BE (2) FULL COURSES MIN. 14".
4. ALL LUMBER AND INSTALLATION SHALL CONFORM WITH LOCAL APPLICABLE BUILDING CODES AND WITH THE NATIONAL DESIGN SPECIFICATION FOR WOOD.
5. ALL LUMBER SHALL BE STAMPED PER AN APPROVED GRADING AGENCY OR SHALL BE INSPECTED PER THE ENGINEER.
6. THE ENGINEER SHALL BE NOTIFIED FOR INSPECTION WHEN ALL STRUCTURAL FRAMING IS COMPLETE, BUT PRIOR TO COVERING. 48 NOTICE REQUESTED.

SHEATHING SCHEDULE

APPLICATION	MATERIAL	SPAN/INDEX	EDGE NAILING	FIELD NAILING
ROOF	5/8" OSB	32/16	8d @ 6" O.C.	8d @ 12" O.C.
FLOOR	3/4" T&G CDX	48/24	8d @ 6" O.C.	8d @ 12" O.C.
SHEAR WALL	7/16" OSB	24/0	8d @ 4" O.C.	8d @ 10" O.C.



S0 / 1 *INTERCEPTOR DRAIN* 1/2" = 1'

REQUIRED SETBACKS:
10' MIN. FROM BUILDING FOUNDATION.

PERMIT SET

REVISIONS

DATE	BY

ALPINE EDGE ENGINEERING LLC
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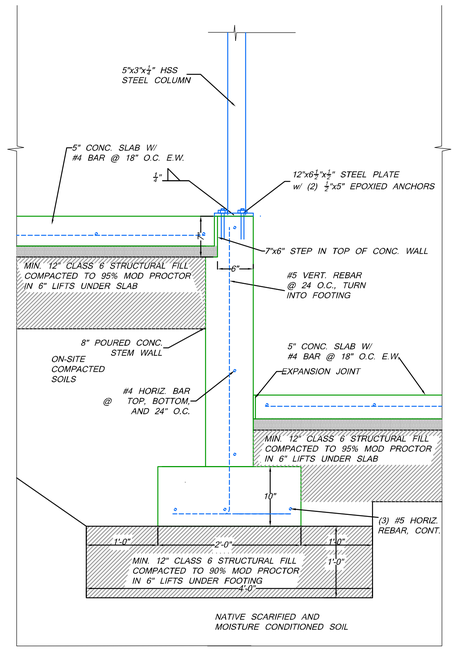
970-318-1469

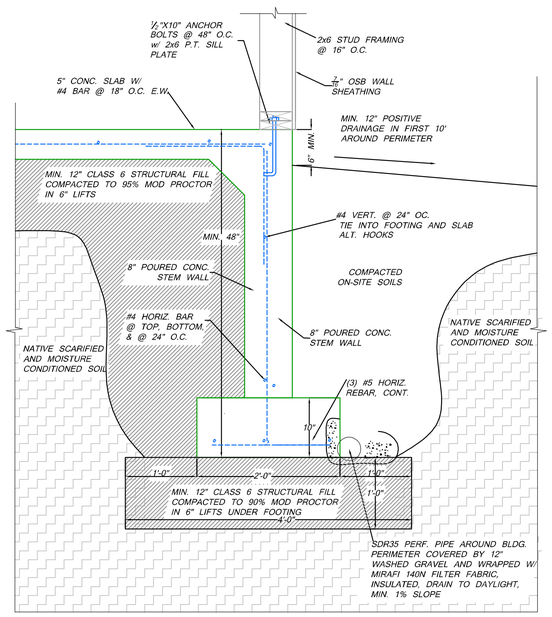
CROWELL/ MARSH RESIDENCE
LOT 9 AND 10 BLOCK R
TOWN OF OPHIR
SAN MIGUEL COUNTY, COLORADO

NOV. 29, 2022

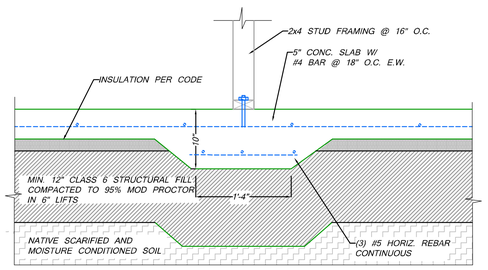
S0



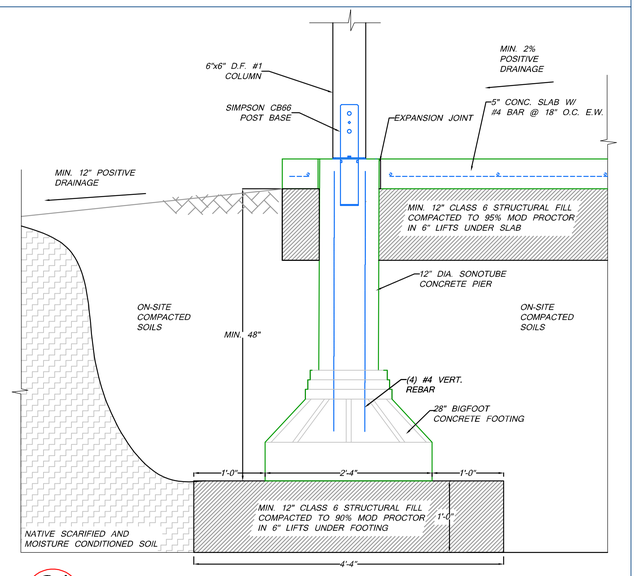
S1 / 2 GARAGE TRANSITION DETAIL 1" = 1'



S1 / 1 FOUNDATION DETAIL 1" = 1'

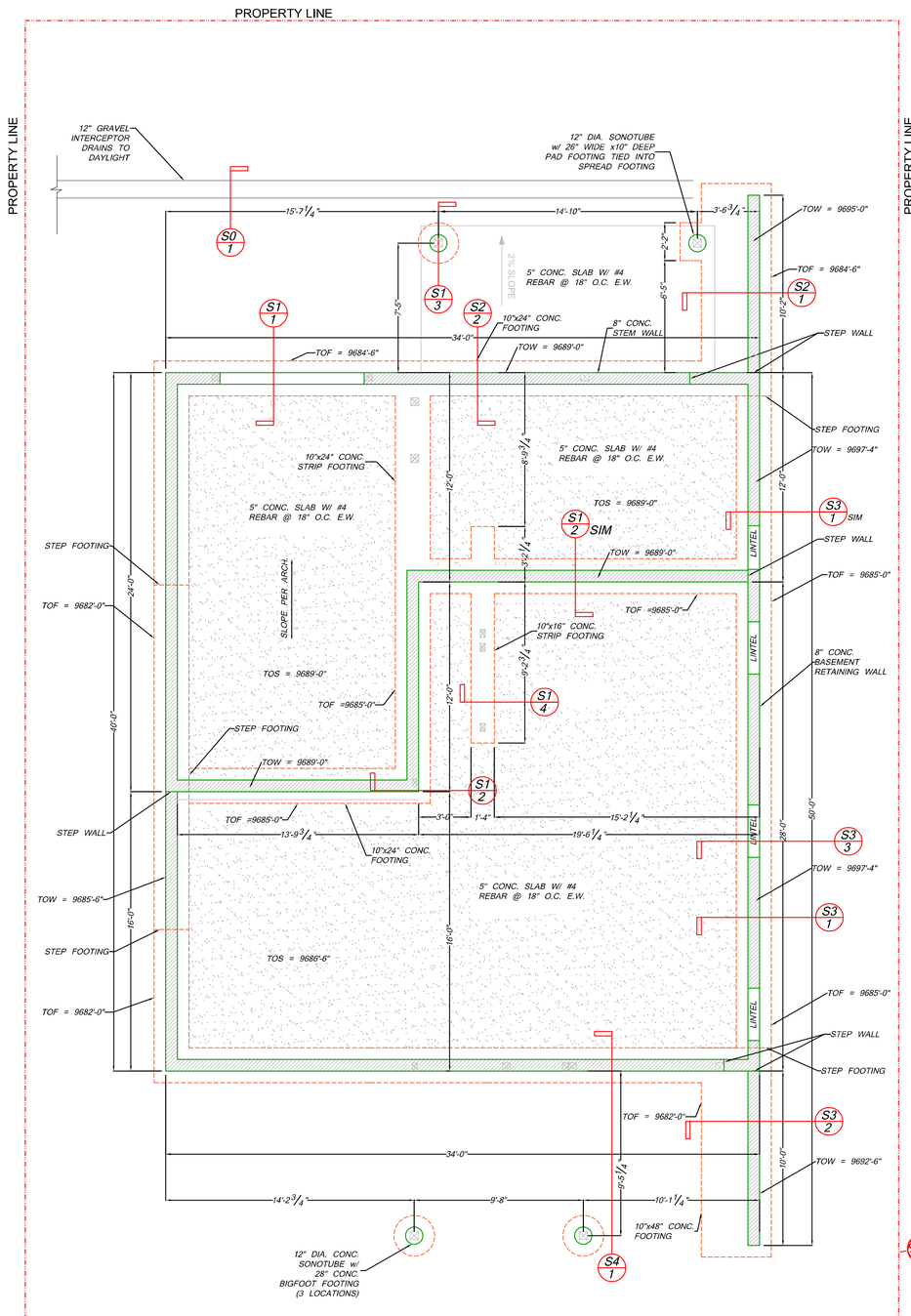


S1 / 4 THICKENED SLAB DETAIL 1" = 1'



S1 / 3 PIER FOUNDATION DETAIL 1" = 1'

PROPERTY LINE



FOUNDATION PLAN SCALE ¼"=1'

PROPERTY LINE

PROPERTY LINE

REVISIONS	
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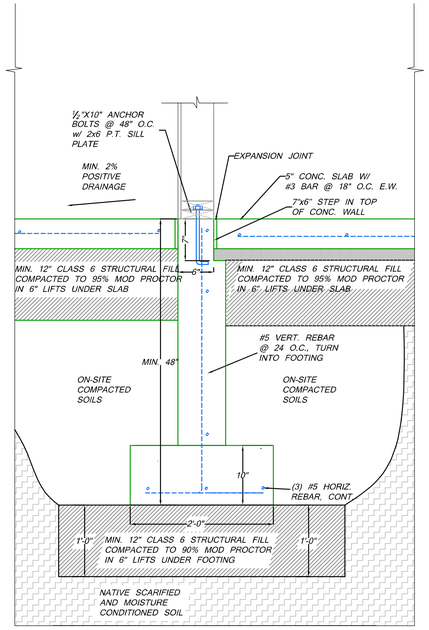
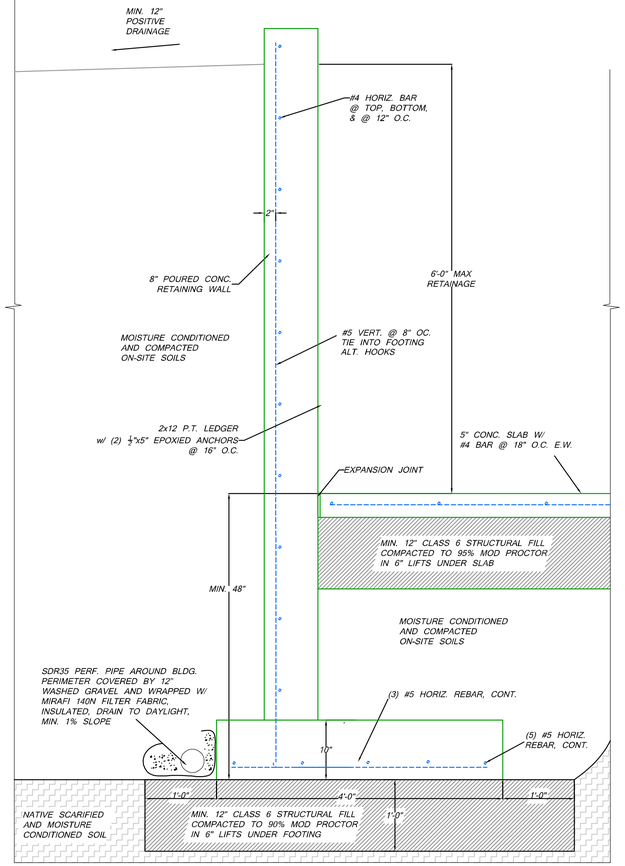
PERMIT SET

S1



S2
2 TYPICAL FOUNDATION DETAIL 1" = 1'



S2
1 NORTH EXTERIOR RETAINING WALL 1" = 1'

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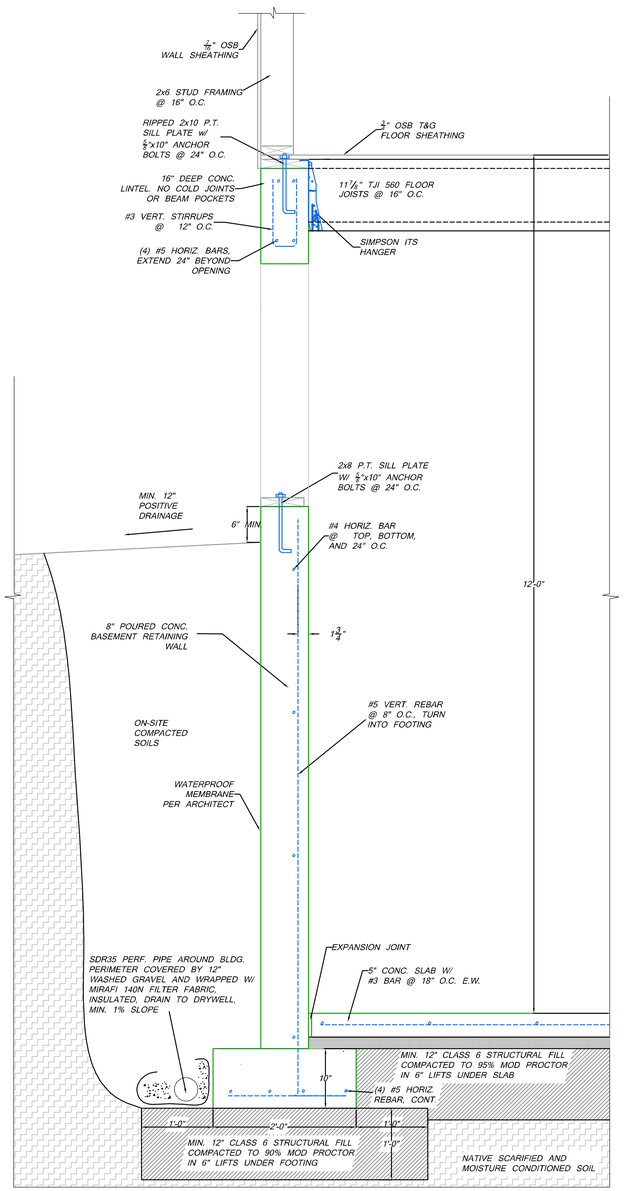
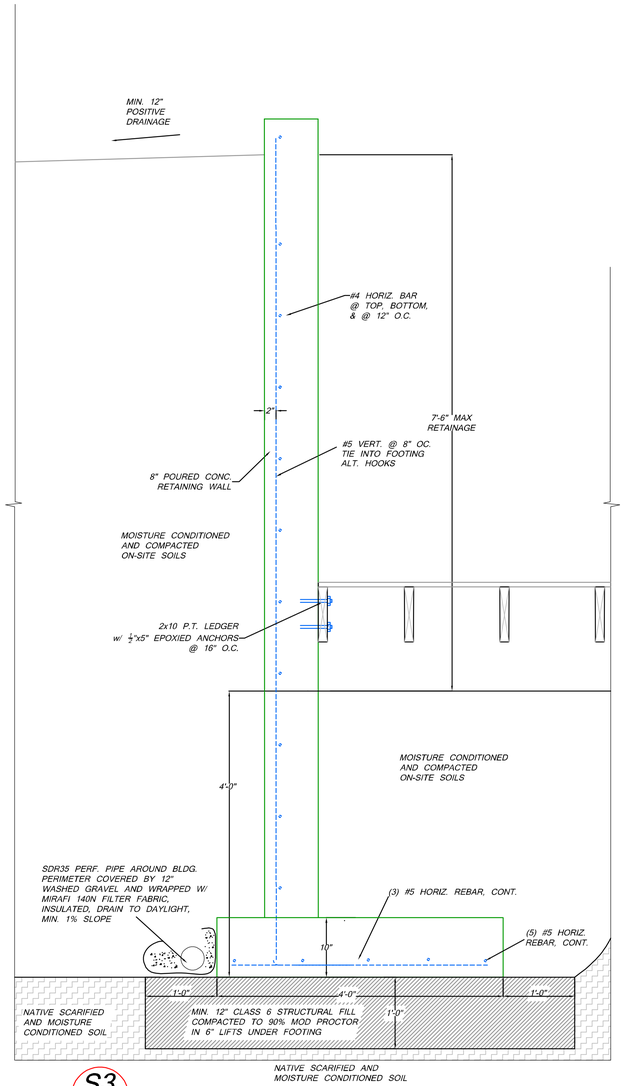
PERMIT SET

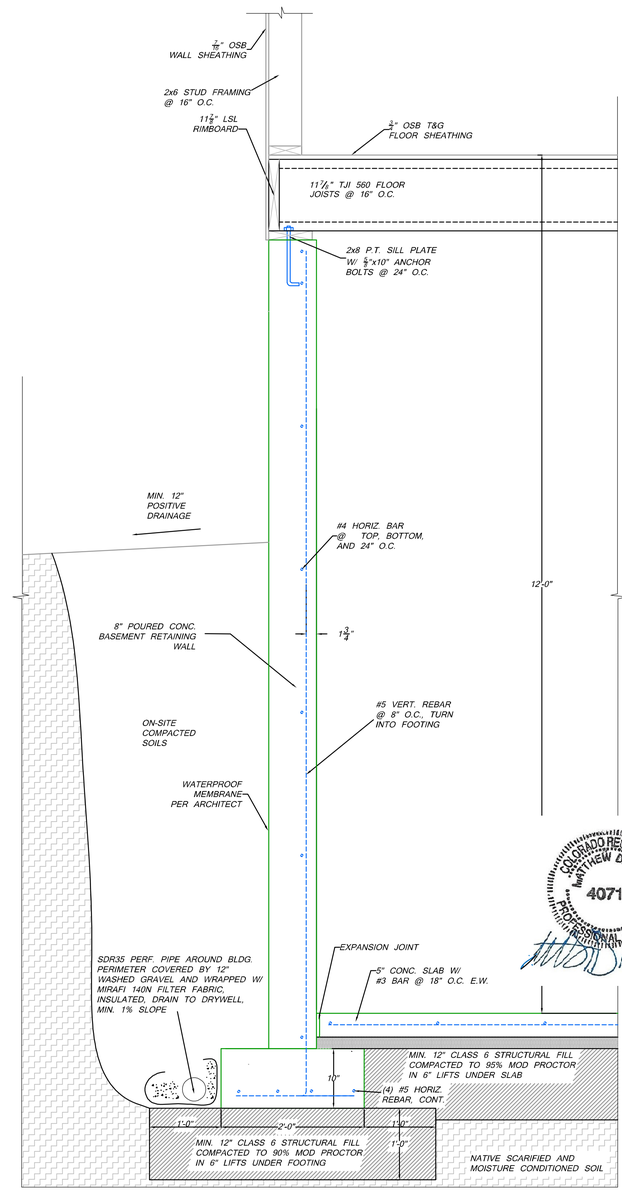
S2



S3 / 3 STEEL FLUSH BEAM DETAIL 1" = 1'



S3 / 2 SOUTH EXTERIOR RETAINING WALL 1" = 1'



S3 / 1 EAST FOUNDATION WALL DETAIL 1" = 1'

PERMIT SET

REVISIONS

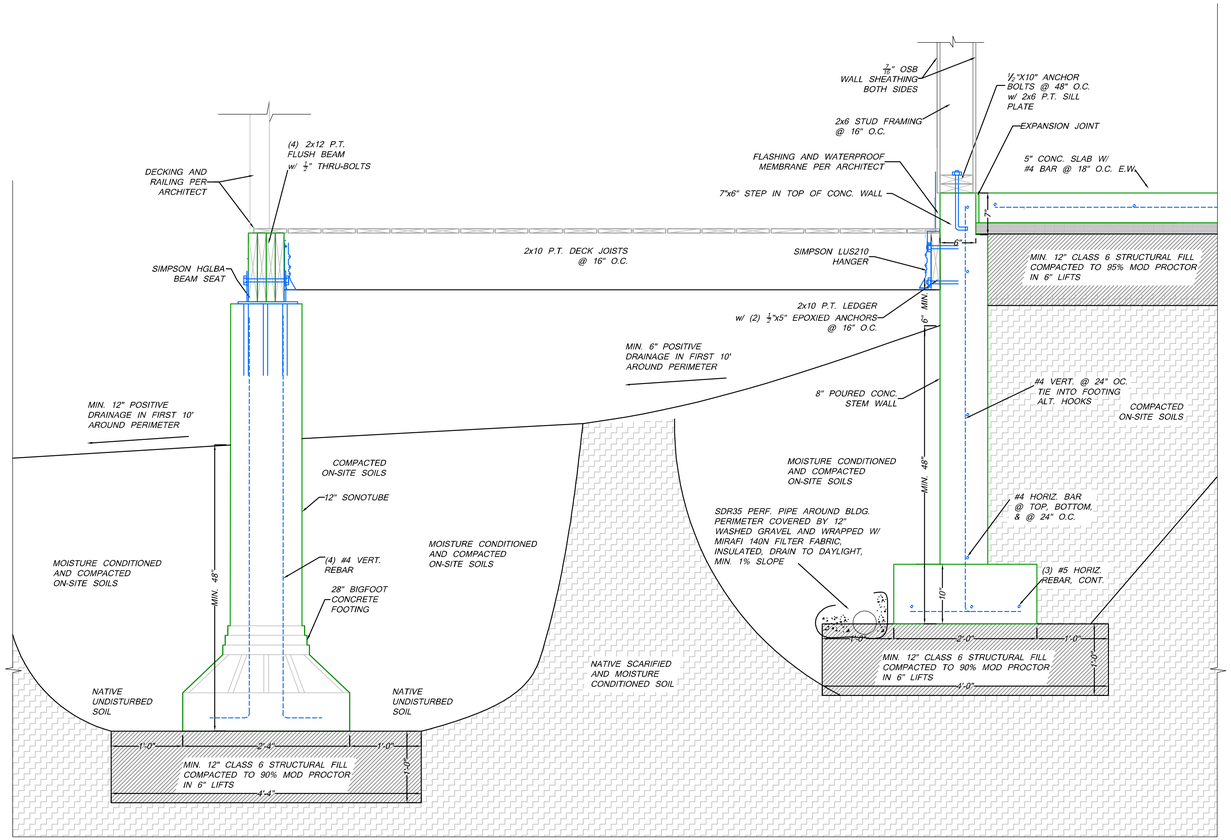
DATE	BY

ALPINE EDGE ENGINEERING LLC
MATTHEW D. HEPP, P.E.
605 RIVER PARK DR
RIDGWAY, CO 81432
970-318-1469

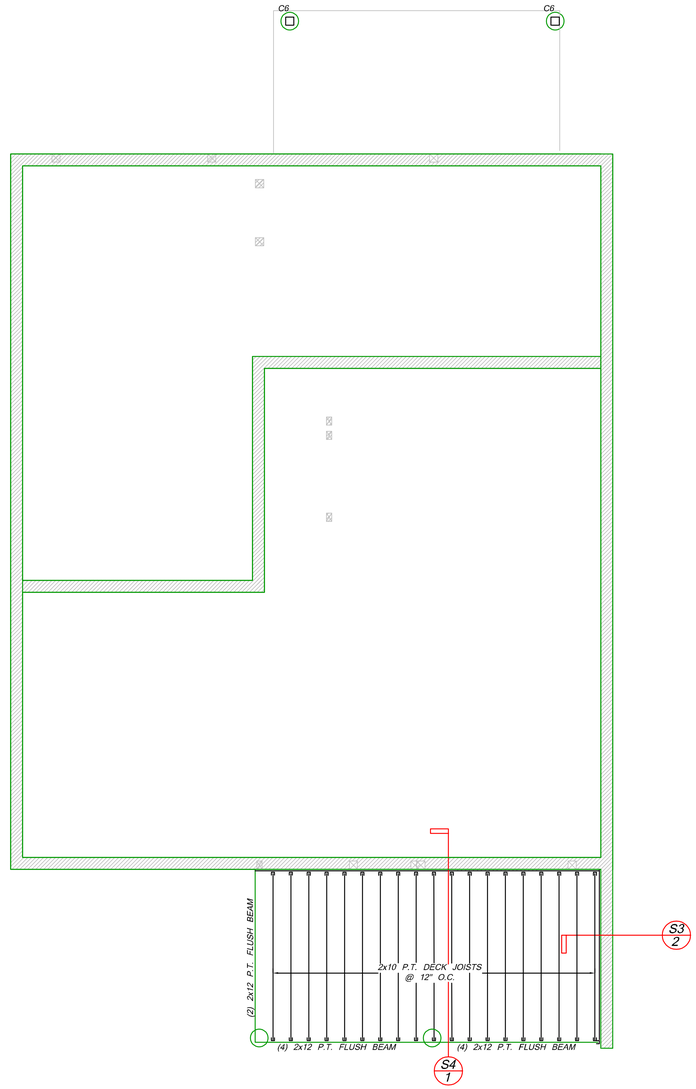
CROWELL/ MARSH RESIDENCE
LOT 9 AND 10 BLOCK R
TOWN OF OPHIR
SAN MIGUEL COUNTY, COLORADO

NOV. 29, 2022

S3



S4 / 1 DECK FRAMING DETAIL 1" = 1'



MAIN FLOOR FRAMING PLAN SCALE ¼"=1'

COLUMN SCHEDULE:

SYMBOL	DESCRIPTION
C0	(3) 2"x4"
C1	(4) 2"x4"
C2	(3) 2"x6"
C3	(4) 2"x6"
C4	6"x6" D.F. #1
C5	5"x5"x½" HSS
C6	6"x6" D.F. #1
□	BELOW ONLY
⊠	ABOVE ONLY
▨	ABOVE AND BELOW

REVISIONS

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ALPINE EDGE ENGINEERING LLC
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RIDGWAY, CO 81432
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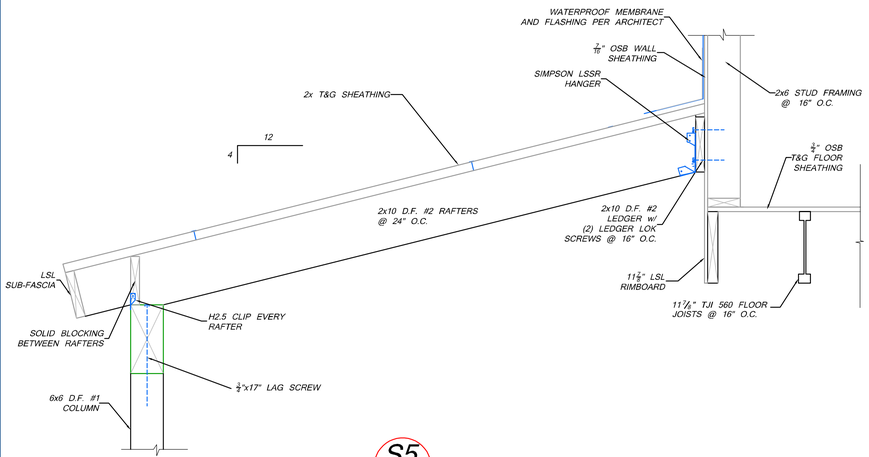
CROWELL/ MARSH RESIDENCE
LOT 9 AND 10 BLOCK R
TOWN OF OPHIR
SAN MIGUEL COUNTY, COLORADO

NOV. 29, 2022

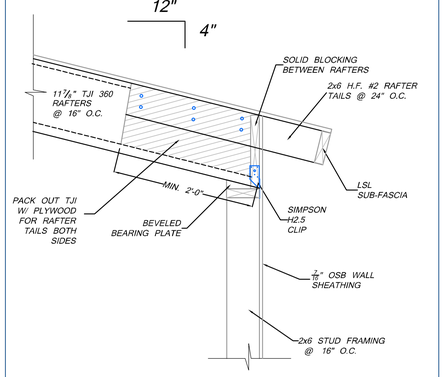
COLORADO REGISTERED MATTHEW D. HEPP 40718 PROFESSIONAL ENGINEER

PERMIT SET

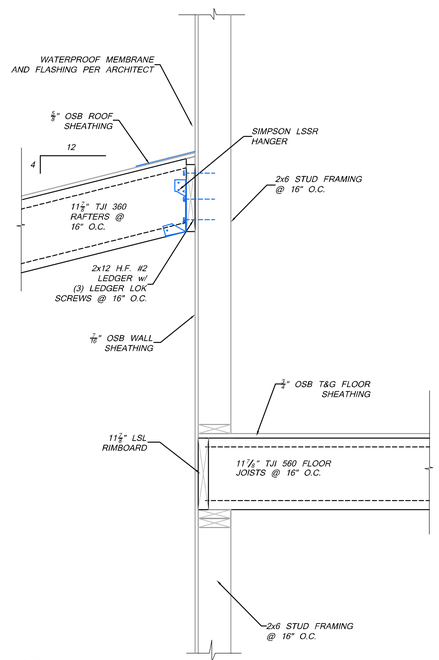
S4



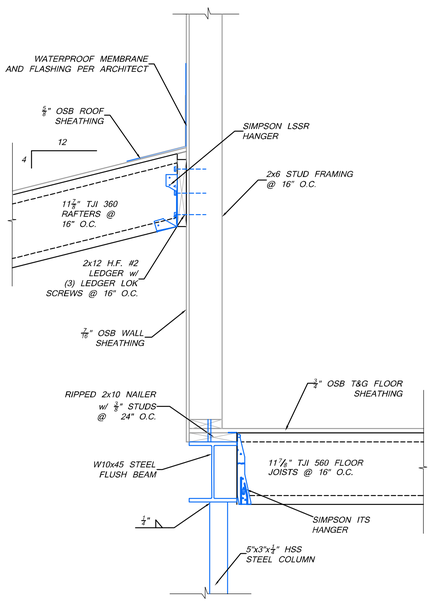
S5 / 2 SHED ROOF DETAIL 1" = 1'



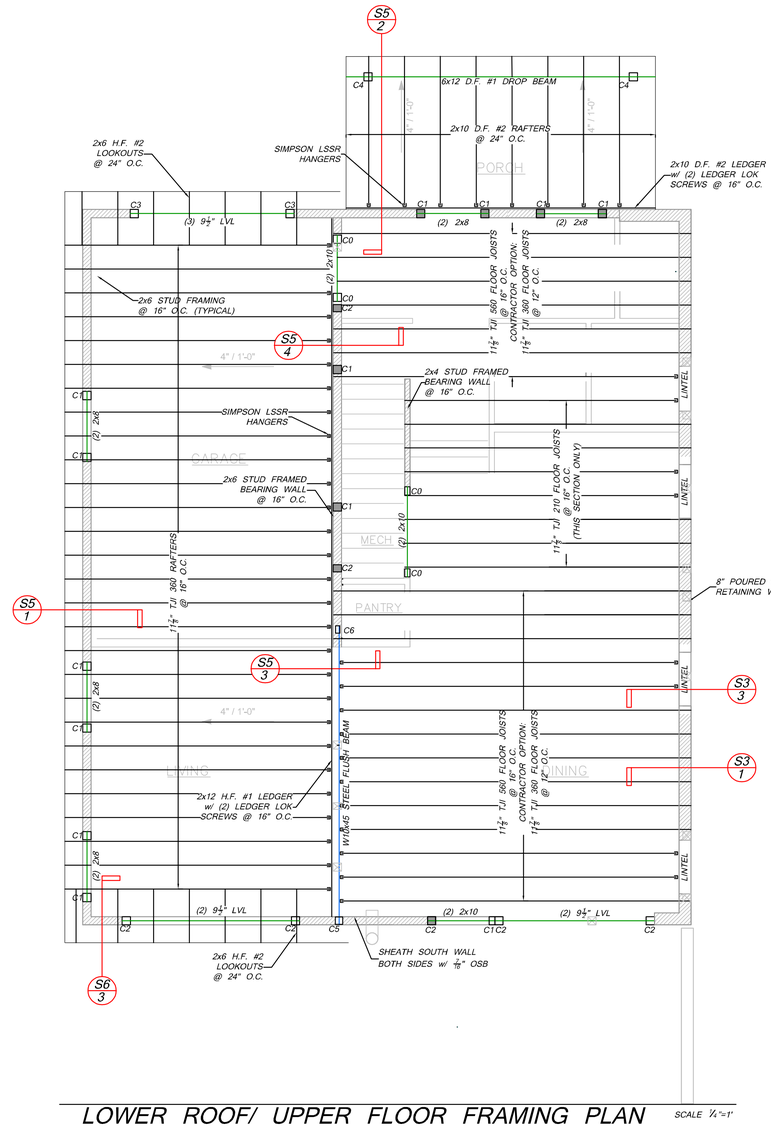
S5 / 1 LOW EAVE DETAIL 1" = 1'



S5 / 4 ROOF TRANSITION DETAIL 1" = 1'



S5 / 3 FLUSH BEAM FRAMING DETAIL 1" = 1'



LOWER ROOF/ UPPER FLOOR FRAMING PLAN SCALE 1/4"=1'

COLUMN SCHEDULE:

SYMBOL	DESCRIPTION
C0	(3) 2"x4"
C1	(4) 2"x4"
C2	(3) 2"x6"
C3	(4) 2"x6"
C4	6"x6" D.F. #1
C5	5"x5"x1/2" HSS
C6	5"x3"x1/2" HSS
☐	BELOW ONLY
☒	ABOVE ONLY
▨	ABOVE AND BELOW

PERMIT SET

REVISIONS

DATE	BY

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CROWELL/ MARSH RESIDENCE
LOT 9 AND 10 BLOCK R
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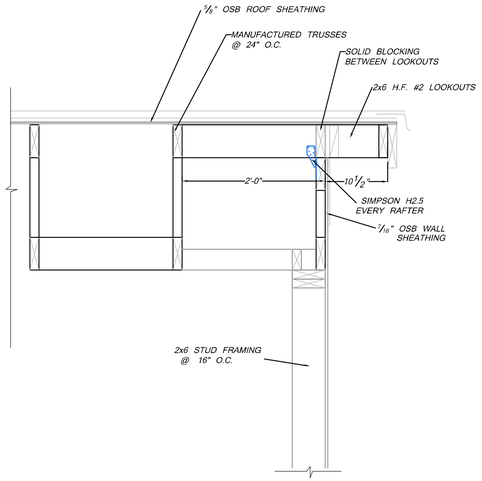
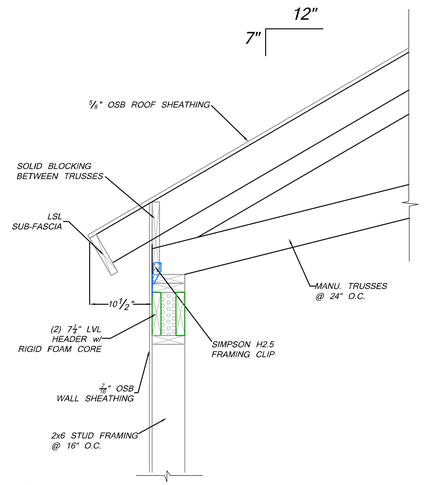
SAN MIGUEL COUNTY, COLORADO

NOV. 29, 2022

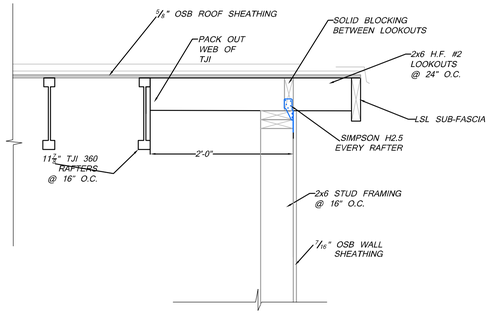
S5



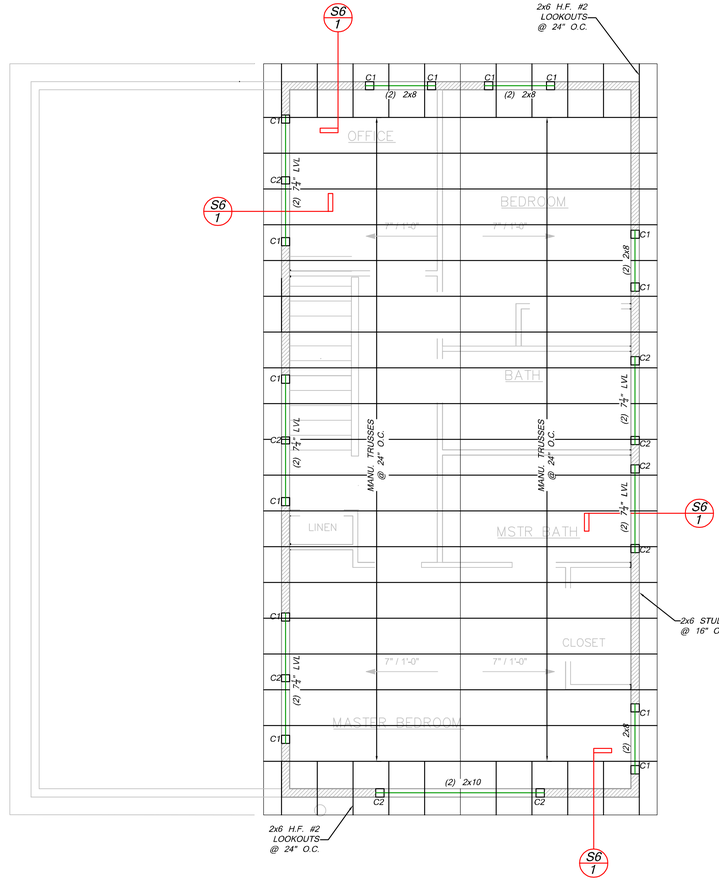
S6 / 2 RAKE OVERHANG DETAIL 1" = 1'



S6 / 1 LOW EAVE DETAIL 1" = 1'



S6 / 3 LOOKOUT DETAIL 1" = 1'



UPPER ROOF FRAMING PLAN SCALE ¼"=1'

COLUMN SCHEDULE:

SYMBOL	DESCRIPTION
C0	(3) 2"x4"
C1	(2) 2"x6"
C2	(3) 2"x6"
C3	(4) 2"x6"
C4	6"x6" D.F. #1
C5	5"x5"x¼" HSS
C6	5"x3"x¼" HSS
□	BELOW ONLY
⊠	ABOVE ONLY
▨	ABOVE AND BELOW

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SAN MIGUEL COUNTY, COLORADO

NOV. 29, 2022

COLORADO REGISTERED MATTHEW D. HEPP 40718 PROFESSIONAL ENGINEER

PERMIT SET

S6

TRAUTNER GEOTECH LLC
GEOTECHNICAL ENGINEERING, MATERIAL TESTING
AND ENGINEERING GEOLOGY

GEOTECHNICAL ENGINEERING STUDY
PROPOSED LOT 09-10 R OPHIR RESIDENTIAL STRUCTURE PROJECT

Ophir, Colorado

March 22, 2021

PREPARED FOR:

Mr. Judah Kuper
Email: judaykuper@gmail.com
PROJECT NO. 56529GE

649 Tech Center Drive Suite A • Durango, CO 81301 • 970/259-5095 • Fax 970/382-2515

Table of Contents

1.0 REPORT INTRODUCTION

This report presents our geotechnical engineering recommendations for the proposed Lot 09-10 R, Ophir Subdivision Residential Structure Project. This report was requested by Mr. Judah Kuper, and was prepared in accordance with our proposal dated January 29, 2021, Proposal No. 56529GE.

As outlined within our proposal for services for this project the client is responsible for appropriate distribution of this report to other design professionals and/or governmental agencies unless specific arrangements have been made with us for distribution.

Geotechnical engineering is a discipline which provides insight into natural conditions and site characteristics such as; subsurface soil and water conditions, soil strength, swell (expansion) potential, consolidation (settlement) potential, and often slope stability considerations. The information provided by the geotechnical engineer is utilized by many people including the project owner, architect or designer, structural engineer, civil engineer, the project builder and others. The information is used to help develop a design and subsequently implement construction strategies that are appropriate for the subsurface soil and water conditions, and slope stability considerations. We are available to discuss any aspect of this report with those who are unfamiliar with the recommendations, concepts, and techniques provided below.

This geotechnical engineering report is the beginning of a process involving the geotechnical engineering consultant on any project. It is imperative that the geotechnical engineer be consulted throughout the design and construction process to verify the implementation of the geotechnical engineering recommendations provided in this report. Often the design has not been started or has only been initiated at the time of the preparation of the geotechnical engineering study. Changes in the proposed design must be communicated to the geotechnical engineer so that we have the opportunity to tailor our recommendations as needed based on the proposed site development and structure design.

The following outline provides a synopsis of the various portions of this report;

- Sections 1.0 provides an introduction and an establishment of our scope of service.
- Sections 2.0 and 3.0 of this report present our geotechnical engineering field and laboratory studies
- Sections 4.0 through 7.0 presents our geotechnical engineering design parameters and recommendations which are based on our engineering analysis of the data obtained.
- Section 8.0 provides a brief discussion of construction sequencing and strategies which may influence the geotechnical engineering characteristics of the site. Ancillary information such as some background information regarding soil corrosion and radon considerations is also presented as general reference.
- Section 9.0 provides our general construction monitoring and testing recommendations.
- Section 10.0 provides our conclusions and limitations.

The data used to generate our recommendations are presented throughout this report and in the attached figures.

All recommendations provided within this report must be followed in order to achieve the intended performance of the foundation system and other components that are supported by the site soil.

1.1 Proposed Construction

Architectural details and grading plans were not available at the time of this report. We generally understand that the project consists of designing and constructing a single-family residential structure that is supported by a steel reinforced concrete foundation system. We anticipate that retaining wall heights in the range of about 10 feet or less will be utilized due to the topography on the project site. We assume relatively light foundation loadings, typical of the proposed type of construction. When final building location, grading and loading information have been developed, we should be notified to re-evaluate the recommendations presented in this report.

If excavations are proposed that cannot be conventionally laid back to a safe inclination, or if excavations approach adjacent structures or utilities, then specialized excavation shoring may be needed. We do not perform shoring design. If needed, the project shoring design must be performed by a professional engineer that is registered to practice engineering in the State of Colorado. The project shoring plans must be sealed/stamped by the shoring design engineer.

2.0 FIELD STUDY

2.1 Site Description and Geomorphology

The project site is located adjacent to the south side of Aurum Street between 1st and 2nd Streets in Ophir, Colorado. The general location of the project site is indicated on Figure 2.1 below. The imagery used for Figure 2.1 was obtained from the San Miguel County GIS (imagery date: 2017).

Figure 2.1: General Project Location

The ground surface on the project site slopes down to the south from Aurum Street with slope inclinations in the range of about 5:1; horizontal to vertical (h:v) or flatter. We suspect that the present site grade has been altered to some extent in the past by placement of fill materials. Extensive south facing steep slope surfaces are located above and to the north of Aurum Street. The subsurface soil materials encountered in the vicinity of the project site generally consist of a mixture of gravel and cobbles with a sandy clay and/or silt soil matrix.

2.2 Subsurface Soil and Water Conditions

We advanced two continuous flight hollow stem auger test borings within the subject project lot. Hollow stem augers were utilized due to the caving nature of the subsurface soils. A schematic showing the approximate boring locations is provided below as Figure 2.2 (San Miguel County GIS Imagery: date 2017). The logs of the soils encountered in our test borings are presented in Appendix A.

Figure 2.2 Approximate Test Boring Locations

The schematic presented above was prepared using notes and field measurements obtained during our field exploration and is intended to show the approximate test boring locations for reference purposes only.

It proved difficult to discern between potential man placed fill materials and the native soil deposits due to the similar nature of the materials. We suspect that man placed fill material may have been encountered to a depth of about 6 feet below the ground surface at our Test Boring TB-2 location, and potentially to a depth of about 10 to 12 feet below the ground surface elevation at our Test Boring TB-1 location. The suspected man placed fill materials generally consisted of a mixture of gravel and cobbles with a sandy clay/silt soil matrix. Below the suspected man placed fill materials we encountered a mixture of medium dense to loose, and moist to very moist gravel and sand with a sandy clay soil matrix. The test borings were advanced to depths ranging from about 15 to 19 feet below the ground surface elevation.

We were not able to obtain “in-place” sleeve samples of the subsurface materials due to the granular nature of the subsurface materials. The swell/consolidation tests that were performed are based on remolded test specimens as indicated in Section 3.0 below. The samples obtained and tested exhibited a relatively low swell potential.

We did not encounter free subsurface water in our test borings at the time of the advancement of our test borings at the project site. We suspect that seasonal subsurface free water may be encountered within the structure extents during periods of spring snowmelt or heavy precipitation.

The logs of the subsurface soil conditions encountered in our test borings are presented in Appendix A. The logs present our interpretation of the subsurface conditions encountered in the test borings at the time of our field work. Subsurface soil and water conditions are often variable across relatively short distances. It is likely that variable subsurface soil and water conditions will be encountered during construction. Laboratory soil classifications of samples obtained may differ from field classifications.

3.0 LABORATORY STUDY

The laboratory study included tests to estimate the strength, swell and consolidation potential of the soils tested. We performed the following tests on select samples obtained from the test borings. The laboratory test results are provided in Appendix B.

- Moisture Content and Dry Density
- Sieve Analysis (Gradation)
- Atterberg Limits, Liquid Limit, Plastic Limit and Plasticity Index
- Swell Consolidation Tests
- Direct Shear Strength Test

A synopsis of some of our laboratory data for some of the samples tested is tabulated below.

Sample Designation	Percent Passing #200 Sieve	Atterberg Limits LL/PI	Moisture Content (percent)	Dry Density (PCF)	Measured Swell Pressure (PSF)	Swell or Consolidation Potential
TB-1; 10.5-14.5 feet*	-	-	7.4	129.1*	670	0.2 (% under 100 psf load)
TB-2; 0-3.5 feet*	35	24/7	12.6	124.3*	650	0.3 (% under 100 psf load)

*NOTES:
1. We determine the swell pressure as measured in our laboratory using the constant volume method. The graphically estimated load-back swell pressure may be different from that measured in the laboratory.
2. Negative Swell-Consolidation Potential indicates compression under conditions of loading and wetting.
3. * = Swell-Consolidation test performed on remolded sample due to rock content. Test results should be considered an estimate only of the swell or consolidation potential at the density and moisture content indicated.

Direct Shear Tests: We performed residual strength direct shear tests on a remolded sample obtained from Test Boring TB-2 at depths ranging from the ground surface to a depth of about 3½ feet below the ground surface elevation. We obtained an angle of internal friction (phi) of 33 degrees and cohesion of about 200 pounds per square foot. We did not assume cohesive strength (C=0) in our analyses.

4.0 FOUNDATION RECOMMENDATIONS

We understand that at this time only a shallow foundation system is being considered to support the structure. We have provided recommendations for spread footings and mat/raft type foundation systems in Sections 4.1 and 4.2 below. We are available to provide recommendations for a deep foundation system such as drilled micropiles at your request. Deep foundations will provide for the least likelihood of post-construction movement of the structure.

We encountered suspected man placed fill materials to depths ranging from about 6 to potentially as deep as about 10 to 12 feet below the present site grade. As discussed above, it was difficult to discern between potential man placed fill materials and the native soil deposits. In general, the suspected man placed fill material appeared to be relatively well consolidated, however we feel that there is potential for poorly consolidated and/or poor quality man placed fill materials to be encountered. We must be contacted to observe the exposed subsurface soil conditions during the project excavation phase. We recommend that density testing and proof rolling observations be performed on the subgrade soils to verify that the support materials are properly densified. It may be necessary to perform additional over-excavation and replacement with granular fill materials if questionable subsurface materials are encountered. A properly designed rigid mat/raft type of foundation system is more suitable to accommodate potential differential settlement in the support materials. Our recommendations for mat/raft foundations are provided in Section 4.2 below.

The integrity and long-term performance of each type of system is influenced by the quality of workmanship which is implemented during construction. It is imperative that all excavation and fill placement operations be conducted by qualified personnel using appropriate equipment and techniques to provide suitable support conditions for the foundation system.

4.1 Spread Footings

Properly designed and constructed continuous spread footings with stem walls (or beams) have the ability to distribute the forces associated with volume changes in the support soils. The rigidity of the system helps reduce differential movement and associated damage to the overlying structure. Volume changes such as settlement in the soils that support isolated pad footings will result in direct movement of the columns and structural components supported by the columns. Damage to the structure due to this type of movement can be severe. If possible, we recommend that isolated pad footings be avoided and that the foundation system be designed as rigid as is reasonably possible.

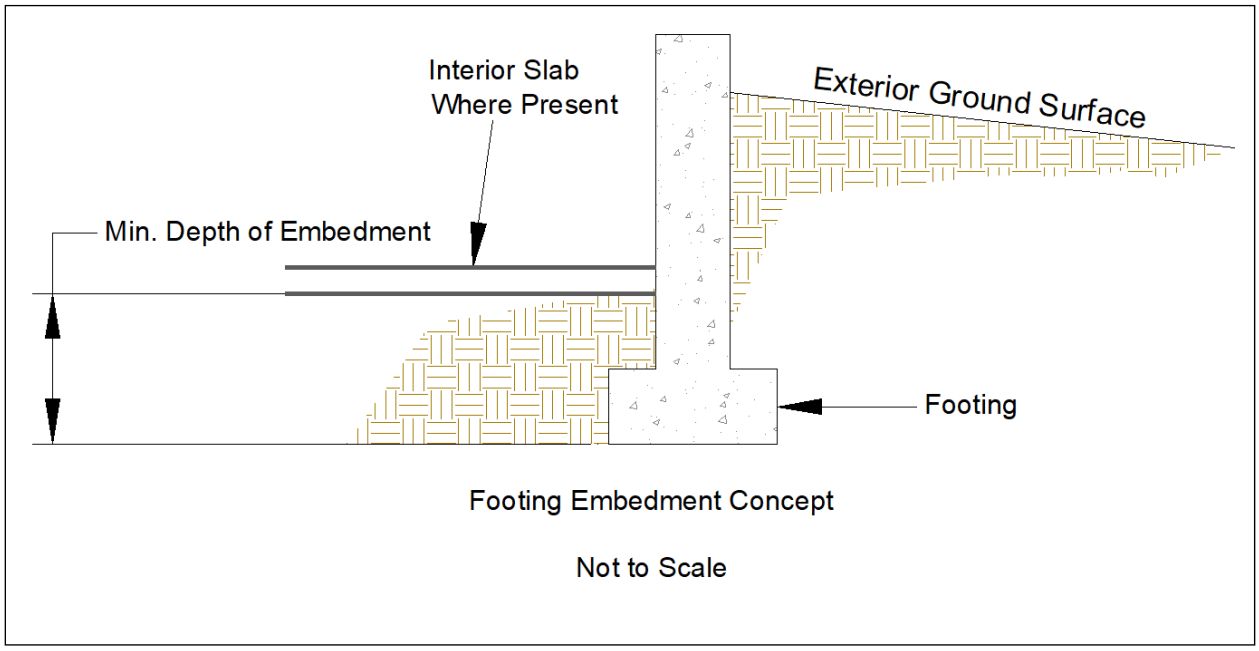
Careful preparation of the support soils, placement of granular compacted structural fill, careful placement and compaction of stem wall backfill and positive surface drainage adjacent to the foundation system all help reduce the potential for movement to occur within the support soils.

We recommend that the footings be supported by a layer of moisture conditioned and compacted natural soil which is overlain by a layer of compacted structural fill material. This concept is outlined below. It may be possible to utilize the more granular on-site soil deposits as the compacted structural fill depending on the quantity of fine materials (materials passing the#200 sieve screen). We should be contacted to observe the quality of the on-site soil materials for use as structural fill material.

- The foundation excavation should be excavated to at least 12 inches below the proposed footing support elevation.
- The natural soils exposed in the bottom of the excavation should be scarified to a depth of 8 inches.
- The scarified soil should be thoroughly moisture conditioned to about 2 percent above the laboratory determined optimum moisture content and then compacted.
- After completion of the compaction of the moisture conditioned natural soil a minimum 12-inch thick layer of granular aggregate base course structural fill material should be placed, moisture conditioned and compacted. Additional over-excavation and replacement with compacted granular fill may be needed if poor quality or poorly consolidated soil deposits are encountered. As discussed above, it may be possible to utilize the more granular on-site soil materials as the compacted structural fill. We must be contacted to assess the on-site soils for potential use as structural fill.
- The moisture conditioned natural soil material and the granular soils should be compacted as discussed under the Compaction Recommendations portion of this report below.

We recommend below-grade construction, such as retaining walls, crawlspace and basement areas, be protected from wetting and hydrostatic pressure buildup by an underdrain and wall drain system. Topographic conditions on the site may influence the ability to install a subsurface drain system which promotes water flow away from the foundation system. The subsurface drain system concept is discussed under the Subsurface Drain System section of this report below.

The footing embedment is a relatively critical, yet often overlooked, aspect of foundation construction. The embedment helps develop the soil bearing capacity, increases resistance of the footing to lateral movement and decreases the potential for rapid moisture changes in the footing support soils, particularly in crawl space areas. Interior footing embedment reduces the exposure of the crawl space support soils to dry crawl space air. Reduction in drying of the support soil helps reduce downward movement of interior footings due to soil shrinkage. All footings should have a minimum depth of embedment of at least one 1 foot. The embedment concept is shown below.



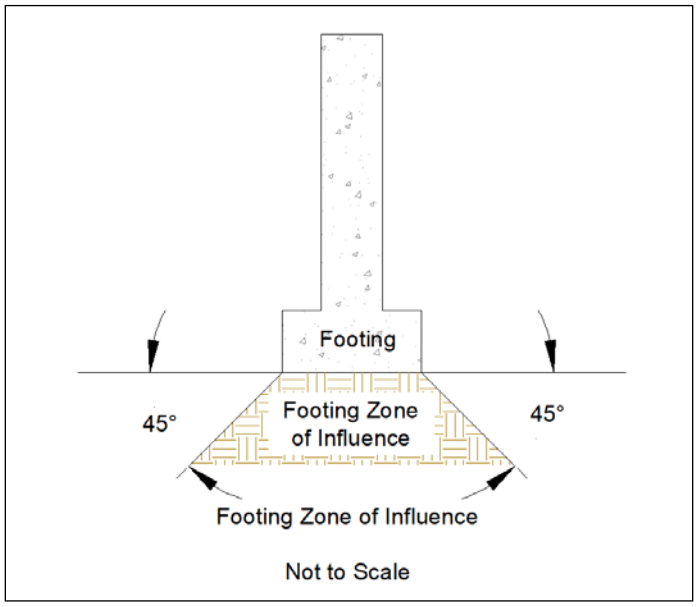
Spread footings located away from sloped areas may be designed using the allowable bearing capacity values tabulated below.

Minimum Depth of Embedment (Feet)	Continuous Footing Design Capacity (psf)	Isolated Footing Design Capacity (psf)
1	2,000	2,000
2	2,500	2,500
3	3,000	3,000

The bearing capacity values tabulated above may be increased by 20 percent for transient conditions associated with wind and seismic loads. Snow loads are not transient loads.

The bearing capacity values tabulated above are based on a continuous spread footing width in the range of about 1½ to 3 feet, and an isolated footing width in the range of about 3 to 5 feet. Development of the final footing design width is usually an iterative process based on evaluation of design pressures, footing widths and the thickness of compacted structural fill beneath the footings. We should be contacted as the design process continues to re-evaluate the design capacities above based on the actual proposed footing geometry.

The compacted structural fill should be placed and compacted as discussed in the Construction Considerations, "Fill Placement Recommendations" section of this report, below. The zone of influence of the footing (at elevations close to the bottom of the footing) is often approximated as being between two lines subtended at 45 degree angles from each bottom corner of the footing. The compacted structural fill should extend beyond the zone of influence of the footing as shown in the sketch below.



A general and simple rule to apply to the geometry of the compacted structural fill blanket is that it should extend beyond each edge of the footing a distance which is equal to the fill thickness.

We estimate that continuous strip footings designed and constructed above will exhibit a magnitude of post construction settlement in the range of about ½ inch, while isolated pad footings will exhibit a magnitude of post construction settlement in the range of about ½ to 1 inch depending on the actual size and load application of isolated footings. These estimated magnitudes of settlement do not include potential excessive settlement that could occur if poorly consolidated soil materials are present below the structure foundation system.

All footings should be support at an elevation deeper than the maximum depth of frost penetration for the area. This recommendation includes exterior isolated footings and column supports. Please contact the local building department for specific frost depth requirements.

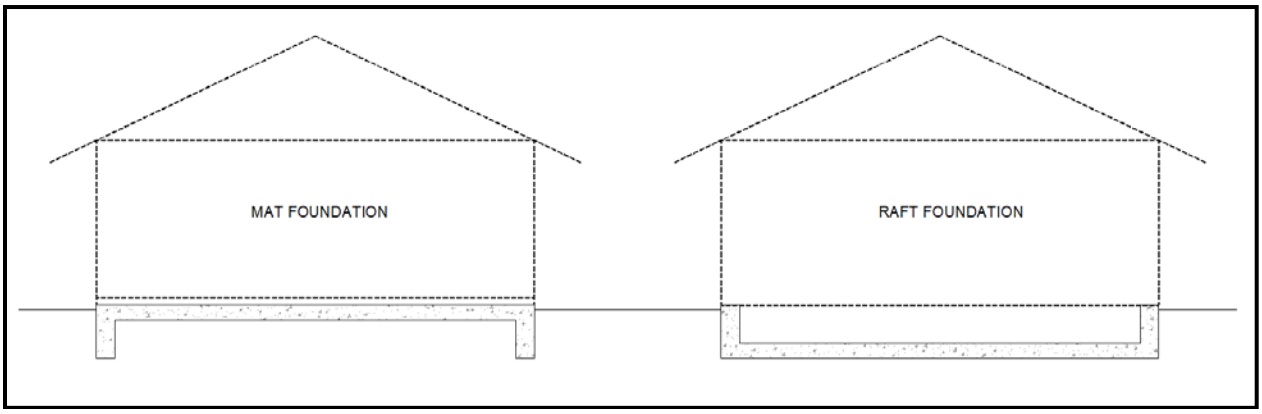
The post construction differential settlement may be reduced by designing footings that will apply relatively uniform loads on the support soils. Concentrated loads should be supported by footings that have been designed to impose similar loads as those imposed by adjacent footings.

Under no circumstances should any footing be supported by more than 3 feet of compacted structural fill material unless we are contacted to review the specific conditions supporting these footing locations.

The design concepts and parameters presented above are based on the soil conditions encountered in our test borings. We should be contacted during the initial phases of the foundation excavation at the site to assess the soil support conditions and to verify our recommendations.

4.2 Mat/Raft Foundations

Mat or raft foundations are commonly used to support structures on sites with soft and/or wet soil conditions. The design concepts of either system are similar, but their configurations are slightly different. This is shown in the sketch below.



Depending on the subsurface conditions, the depth of the support elevation of a raft foundation may be varied as needed to improve the support characteristics for the raft. The discussion presented below is appropriate for either concept. For purposes of clarity we will use the term "mat" for the remainder of our discussion below.

We must be contacted to observe the condition of the subgrade soils that are exposed at the proposed mat foundation bearing elevation. The recommendations provided below are based on relatively granular and well consolidated soil materials being exposed at the mat bearing elevation. It is possible that layers of softer clay/silt soil materials will be encountered below the footprint area of the mat foundation. If soft soil layers are encountered, we may recommend that additional over-excavation occur to expose the more granular soils. If needed, a layer of clean crushed aggregate material may be placed and compacted to establish the bottom of mat bearing elevation. The subgrade soils exposed at the mat foundation support elevation should be compacted to at least 90 percent of the maximum dry density as defined by the modified Proctor.

The mat foundation may be designed using a modulus of subgrade reaction of 150 pounds per cubic inch provided relatively granular soil materials are exposed at the mat bearing elevation. An allowable bearing capacity value of 1,500 pounds per square foot should be used for the initial design of the mat. We should be contacted if stress concentrated areas occur within the mat that exhibit bearing pressures greater than 1,500 pounds per square foot.

4.3 General Shallow Foundation Considerations

Some movement and settlement of any shallow foundation system will occur after construction. Movement associated with swelling soils also occurs occasionally. Utility line connections through and foundation or structural component should be appropriately sleeved to reduce the potential for damage to the utility line. Flexible utility line connections will further reduce the potential for damage associated with movement of the structure.

5.0 RETAINING STRUCTURES

We understand that laterally loaded walls will be constructed as part of this site development. Lateral loads will be imposed on the retaining structures by the adjacent soils and, in some cases, additional surcharge loads will be imposed on the retained soils from vehicles or adjacent structures. The loads imposed by the soil are commonly referred to as lateral earth pressures. The magnitude of the lateral earth pressure forces is partially dependent on the soil strength characteristics, the geometry of the ground surface adjacent to the retaining structure, the subsurface water conditions and on surcharge loads.

The retaining structures may be designed using the values tabulated below.

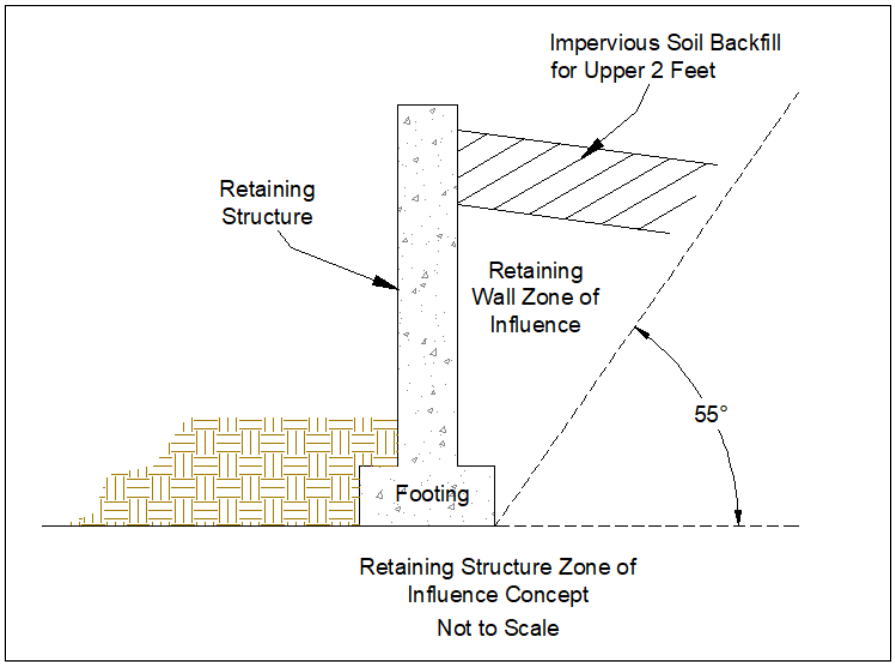
Lateral Earth Pressure Values

Type of Lateral Earth Pressure	Level Native Soil Backfill (pounds per cubic foot)	Level Imported Granular Soil Backfill (pounds per cubic foot)
Active	40	35
At-rest	60	55
Passive	425	460
Allowable Coefficient of Friction	0.41	0.45

Granular soil that is used for the retaining wall backfill may be permeable and may allow water migration to the foundation support soils. There are several options available to help reduce water migration to the foundation soils, two of which are discussed here. An impervious geotextile layer and shallow drain system may be incorporated into the backfill, as discussed in Section 8.5, Landscaping Considerations, below. A second option is to place a geotextile filter material on top of the granular soils and above that place about 1½ to 2 feet of moisture conditioned and compacted site clay soils. It should be noted that if the site clay soils are used volume changes may occur which will influence the performance of overlying concrete flatwork or structural components.

The values tabulated above are for well drained backfill soils. The values provided above do not include any forces due to adjacent surcharge loads or sloped soils. If the backfill soils become saturated the imposed lateral earth pressures will be significantly higher than those tabulated above.

The granular imported soil backfill values tabulated above are appropriate for material with an angle of internal friction of 35 degrees, or greater. The granular backfill must be placed within the retaining structure zone of influence as shown below in order for the lateral earth pressure values tabulated above for the granular material to be appropriate.



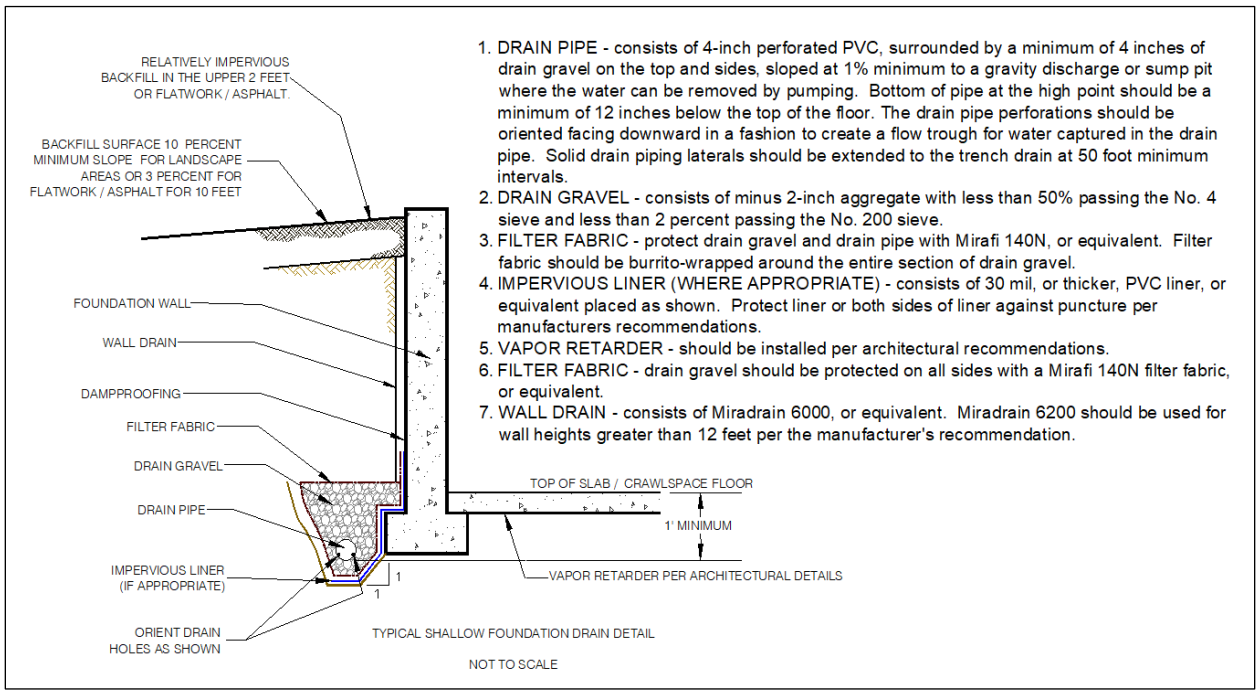
Backfill should not be placed and compacted behind the retaining structure unless approved by the project structural engineer. Backfill placed prior to construction of all appropriate structural members such as floors, or prior to appropriate curing of the retaining wall concrete, may result in severe damage and/or failure of the retaining structure.

6.0 SUBSURFACE DRAIN SYSTEM

We recommend below-grade construction, such as retaining walls, crawlspace and basement areas, be protected from wetting and hydrostatic pressure buildup by an underdrain and wall drain system. Exterior retaining structures may be constructed with weep holes to allow subsurface water migration through the retaining structures. Topographic conditions on the site may influence the ability to install a subsurface drain system which promotes water flow away from the foundation system. The subsurface drain system concept is discussed under the Subsurface Drain System section of this report below.

A drain system constructed with a free draining aggregate material and a 4 inch minimum diameter perforated drain pipe should be constructed adjacent to retaining structures and/or adjacent to foundation walls. The drain pipe perforations should be oriented facing downward. The system should be protected from fine soil migration by a fabric-wrapped aggregate which surrounds a rigid perforated pipe. We do not recommend use of flexible corrugated perforated pipe since it is not possible to establish a uniform gradient of the flexible pipe throughout the drain system alignment. Corrugated drain tile is perforated throughout the entire circumference of the pipe and therefore water can escape from the perforations at undesirable locations after being collected. The nature of the perforations of the corrugated material further decreases its effectiveness as a subsurface drain conduit.

The drain should be placed at each level of excavation and at least 12 inches below lowest adjacent finish floor or crawlspace grade. The drain system pipe should be graded to surface outlets or a sump vault. The drain system should be sloped at a minimum gradient of about 2 percent, but site geometry and topography may influence the actual installed pipe gradient. Water must not be allowed to pool along any portion of the subsurface drain system. An improperly constructed subsurface drain system may promote water infiltration to undesirable locations. The drain system pipe should be surrounded by about 2 to 4 cubic feet per lineal foot of free draining aggregate. If a sump vault and pump are incorporated into the subsurface drain system, care should be taken so that the water pumped from the vault does not recirculate through pervious soils and obtain access to the basement or crawl space areas. An impervious membrane should be included in the drain construction for grade beam and pier systems or other foundation systems such as interrupted footings where a free pathway for water beneath the structure exists. A generalized subsurface drain system concept is shown below.



There are often aspects of each site and structure which require some tailoring of the subsurface drain system to meet the needs of individual projects. Drain systems that are placed adjacent to void forms must include provisions to protect and support the impervious liner adjacent to the void form. We are available to provide consultation for the subsurface drain system for this project, if desired.

Water often will migrate along utility trench excavations. If the utility trench extends from areas above the site, this trench may be a source for subsurface water within subsurface areas such as crawl space or basement areas. We recommend that the utility trench backfill be thoroughly compacted to help reduce the amount of water migration. The subsurface drain system should be designed to collect subsurface water from utility trench excavations.

7.0 CONCRETE FLATWORK

We anticipate that both interior and exterior concrete flatwork will be considered in the project design. Concrete flatwork is typically lightly loaded and has a limited capability to resist shear forces associated with volume changes in the support soils, including potential frost heave. It is prudent for the design and construction of concrete flatwork on this project to be able to accommodate some movement associated with swelling soil conditions.

7.1 Interior Concrete Slab-on-Grade Floors

A primary goal in the design and construction of concrete slab-on-grade floors is to reduce the amount of post construction uplift associated with swelling soils, or downward movement due to consolidation of soft soils. A parallel goal is to reduce the potential for damage to the structure associated with any movement of the slab-on-grade which may occur. There are limited options available to help mitigate the influence of volume changes in the support soil for concrete slab-on-grade floors, these include:

- Preconstruction scarification, moisture conditioning and re-compaction of the natural soils in areas proposed for support of concrete flatwork, and/or,
- Placement and compaction of granular compacted structural fill material

Damage associated with movement of interior concrete slab-on-grade floor can be reduced by designing the floors as “floating” slabs. Although the soil on this site does not exhibit a high swell potential when wetted, performance of the structure may be improved by isolating the floors from the interior partition walls. Interior walls may be structurally supported from framing above the floor, or interior walls and support columns may be supported on interior portions of the foundation system.

Interior concrete slab-on-grade floors should be supported by a layer of granular structural fill overlying the processed natural soils. Interior concrete flatwork, or concrete slab-on-grade floors, should be underlain by a minimum 8-inch thick layer of imported compacted structural fill that is placed and compacted as discussed in the Construction Considerations, “Fill Placement Recommendations” section of this report, below. The subgrade soils should be scarified to a depth of 8 inches, moisture conditioned, and compacted prior to placement of the imported structural fill. Both the imported structural fill and subgrade soils should be moisture conditioned and compacted as discussed later in this report.

All plumbing lines should be pressure tested before backfilling to help reduce the potential for wetting. The only means to completely mitigate the influence of volume changes on the performance of interior floors is to structurally support the floors over a void space. Floors that are suspended by the foundation system will not be influenced by volume changes in the site soils. The suggestions and recommendations presented in this section are intended to help reduce the influence of volume changes within the support soils on the performance of the concrete slab-on-grade floors.

7.1.1 Capillary and Vapor Moisture Rise

Capillary and vapor moisture rise through the slab support soil may provide a source for moisture in the concrete slab-on-grade floor. This moisture may promote development of mold or mildew in poorly ventilated areas and may influence the performance of floor coverings and mastic placed directly on the floor slabs. The type of floor covering, adhesives used, and other considerations that are not related to the geotechnical engineering practice will influence the design. The architect, builder and particularly the floor covering/adhesive manufacturer should be contacted regarding the appropriate level of protection required for their products.

Comments for Reduction of Capillary Rise

One option to reduce the potential for capillary rise through the floor slab is to place a layer of clean aggregate material, such as washed concrete aggregate for the upper 4 to 6 inches of fill material supporting the concrete slabs.

Comments for Reduction of Vapor Rise

To reduce vapor rise through the floor slab, a moisture barrier such as a 6 mil (or thicker) plastic, or similar impervious geotextile material is often be placed below the floor slab. The material used should be protected from punctures that will occur during the construction process.

There are proprietary barriers that are puncture resistant that may not need the underlying layer of protective material. Some of these barriers are robust material that may be placed below the compacted structural fill layer. We do not recommend placement of the concrete directly on a moisture barrier unless the concrete contractor has had previous experience with curing of concrete placed in this manner. As mentioned above, the architect, builder and particularly the floor covering/adhesive manufacturer should be contacted regarding the appropriate level of moisture and vapor protection required for their products.

7.1.2 Slab Reinforcement Considerations

The project structural engineer should be contacted to provide steel reinforcement design considerations for the proposed floor slabs. Any steel reinforcement placed in the slab should be placed at the appropriate elevations to allow for proper interaction of the reinforcement with tensile stresses in the slab. Reinforcement steel that is allowed to cure at the bottom of the slab will not provide adequate reinforcement.

7.2 Exterior Concrete Flatwork Considerations

Exterior concrete flatwork includes concrete driveway slabs, aprons, patios, and walkways. The desired performance of exterior flatwork typically varies depending on the proposed use of the site and each owner's individual expectations. As with interior flatwork, exterior flatwork is particularly prone to movement and potential damage due to movement of the support soils. This movement and associated damage may be reduced by following the recommendations discussed under interior flatwork, above. Unlike interior flatwork, exterior flatwork may be exposed to frost heave, particularly on sites where the bearing soils have a high silt content. It may be prudent to

remove silt soils from exterior flatwork support areas where movement of exterior flatwork will adversely affect the project, such as near the interface between the driveway and the interior garage floor slab. If silt soils are encountered, they should be removed to the maximum depth of frost penetration for the area where movement of exterior flatwork is undesirable.

If some movement of exterior flatwork is acceptable, we suggest that the support areas be prepared by scarification, moisture conditioning and re-compaction of about 6 inches of the natural soils followed by placement of at least 6 inches of compacted granular fill material. The scarified material and granular fill materials should be placed as discussed under the Construction Considerations, "Fill Placement Recommendations" section of this report, below.

It is important that exterior flatwork be separated from exterior column supports, masonry veneer, finishes and siding. No support columns, for the structure or exterior decks, should be placed on exterior concrete unless movement of the columns will not adversely affect the supported structural components. Movement of exterior flatwork may cause damage if it is in contact with portions of the structure exterior.

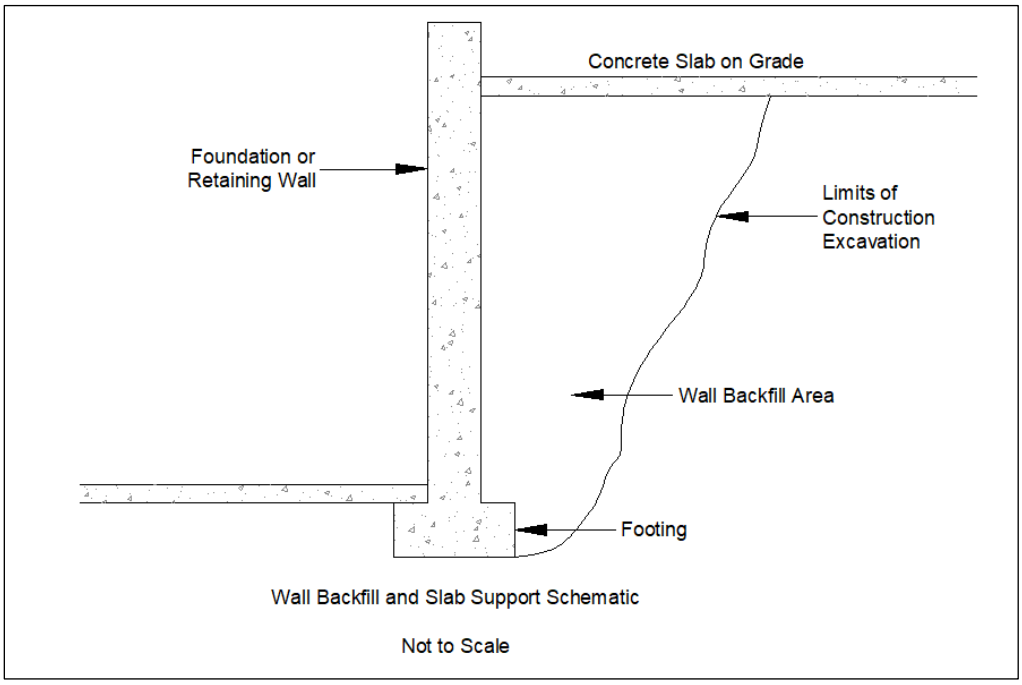
It should be noted that silt and silty sand soils located near the ground surface are particularly prone to frost heave. Soils with high silt content have the ability to retain significant moisture. The ability for the soils to accumulate moisture combined with a relatively shallow source of subsurface water and the fact that the winter temperatures in the area often very cold all contribute to a high potential for frost heave of exterior structural components. We recommend that silty soils be removed from the support areas of exterior components that are sensitive to movement associated with frost heave. These soils should be replaced with a material that is not susceptible to frost heave. Aggregate road base and similar materials retain less water than fine-grained soils and are therefore less prone to frost heave. We are available to discuss this concept with you as the plans progress.

Landscaping and landscaping irrigation often provide additional moisture to the soil supporting exterior flatwork. Excessive moisture will promote heave of the flatwork either due to expansive soil, or due to frost action. If movement of exterior slabs is undesirable, we recommend against placement of landscaping that requires irrigation. The ground surfaces near exterior flatwork must be sloped away from flatwork to reduce surface water migration to the support soil.

Exterior flatwork should not be placed on soils prepared for support of landscaping vegetation. Cultivated soils will not provide suitable support for concrete flatwork.

7.3 General Concrete Flatwork Comments

It is relatively common that both interior and exterior concrete flatwork is supported by areas of fill adjacent to either shallow foundation walls or basement retaining walls. A typical sketch of this condition is shown below.



Settlement of the backfill shown above will create a void and lack of soil support for the portions of the slab over the backfill. Settlement of the fill supporting the concrete flatwork is likely to cause damage to the slab-on-grade. Settlement and associated damage to the concrete flatwork may occur when the backfill is relatively deep, even if the backfill is compacted.

If this condition is likely to exist on this site it may be prudent to design the slab to be structurally supported on the retaining or foundation wall and designed to span to areas away from the backfill area as designed by the project structural engineer. We are available to discuss this with you upon request.

8.0 CONSTRUCTION CONSIDERATIONS

This section of the report provides comments, considerations and recommendations for aspects of the site construction which may influence, or be influenced by the geotechnical engineering considerations discussed above. The information presented below is not intended to discuss all aspects of the site construction conditions and considerations that may be encountered as the project progresses. If any questions arise as a result of our recommendations presented above, or if unexpected subsurface conditions are encountered during construction we should be contacted immediately.

8.1 Fill Placement Recommendations

There are several references throughout this report regarding both natural soil and compacted structural fill recommendations. The recommendations presented below are appropriate for the fill placement considerations discussed throughout the report above.

All areas to receive fill, structural components, or other site improvements should be properly prepared and grubbed at the initiation of the project construction. The grubbing operations should include scarification and removal of organic material and soil. No fill material or concrete should be placed in areas where existing vegetation or fill material exist.

We suspect that man-placed fill and subterranean structures may be encountered as the project construction progresses. All existing fill material should be removed from areas planned for support of structural components. Excavated areas and subterranean voids should be backfilled with properly compacted fill material as discussed below.

8.1.1 Natural Soil Fill

Any natural soil used for any fill purpose should be free of all deleterious material, such as organic material and construction debris. Natural soil fill includes excavated and replaced material or in-place scarified material. Our recommendations for placement of natural soil fill are provided below.

- The natural soils should be moisture conditioned, either by addition of water to dry soils, or by processing to allow drying of wet soils. The proposed fill materials should be moisture conditioned to between about optimum and about 2 percent above optimum soil moisture content. This moisture content can be estimated in the field by squeezing a sample of the soil in the palm of the hand. If the material easily makes a cast of soil which remains in-tact, and a minor amount of surface moisture develops on the cast, the material is close to the desired moisture content. Material testing during construction is the best means to assess the soil moisture content.
- Moisture conditioning of clay or silt soils may require many hours of processing. If possible, water should be added and thoroughly mixed into fine grained soil such as clay or silt the day prior to use of the material. This technique will allow for development of a more uniform moisture content and will allow for better compaction of the moisture conditioned materials.
- The moisture conditioned soil should be placed in lifts that do not exceed the capabilities of the compaction equipment used and compacted to at least 90 percent of maximum dry density as defined by ASTM D1557, modified Proctor test.
- We typically recommend a maximum fill lift thickness of 6 inches for hand operated equipment and 8 to 10 inches for larger equipment.
- Care should be exercised in placement of utility trench backfill so that the compaction operations do not damage underlying utilities.
- The maximum recommended lift thickness is about 6 to 8 inches. The maximum recommended rock size for natural soil fill is about 3 inches. This may require on-site screening or crushing if larger rocks are present. We must be contacted if it is desired to utilize rock greater than 3 inches for fill materials.

8.1.2 Granular Compacted Structural Fill

Granular compacted structural fill is referenced in numerous locations throughout the text of this report. Granular compacted structural fill should be constructed using an imported commercially produced rock product such as aggregate road base. Many products other than road base, such as

clean aggregate or select crusher fines may be suitable, depending on the intended use. If a specification is needed by the design professional for development of project specifications, a material conforming to the Colorado Department of Transportation (CDOT) "Class 6" aggregate road base material can be specified. This specification can include an option for testing and approval in the event the contractor's desired material does not conform to the Class 6 aggregate specifications. We have provided the CDOT Specifications for Class 6 material below.

Grading of CDOT Class 6 Aggregate Base-Course Material	
Sieve Size	Percent Passing Each Sieve
1 inch	100
¾ inch	95-100
#4	30-65
#8	25-55
#200	3-12

Liquid Limit less than 30

All compacted structural fill should be moisture conditioned and compacted to at least 90 percent of maximum dry density as defined by ASTM D1557, modified Proctor test. Areas where the structural fill will support traffic loads under concrete slabs or asphalt concrete should be compacted to at least 95 percent of maximum dry density as defined by ASTM D1557, modified Proctor test.

Although clean-screened or washed aggregate may be suitable for use as structural fill on sites with sand or non-expansive silt soils, or on sites where shallow subsurface water is present, clean aggregate materials must not be used on any site where expansive soils exist due to the potential for water to accumulate in the voids of the clean aggregate materials.

Clean aggregate fill, if appropriate for the site soil conditions, must not be placed in lifts exceeding 8 inches and each lift should be thoroughly vibrated, preferably with a plate-type vibratory compactor prior to placing overlying lifts of material or structural components. We should be contacted prior to the use of clean aggregate fill materials to evaluate their suitability for use on this project.

8.1.3 Deep Fill Considerations

Deep fills, in excess of approximately 3 feet, should be avoided where possible. Fill soils will settle over time, even when placed properly per the recommendations contained in this report. Natural soil fill or engineered structural fills placed to our minimum recommended requirements will tend to settle an estimated 1 to 3 percent; therefore, a 3 foot thick fill may settle up to approximately 1 inch over time. A 10 foot thick fill may settle up to approximately 3½ inches even when properly placed. Fill settlement will result in distress and damage to the structures they are intended to support. There are methods to reduce the effects of deep fill settlement such as surcharge loading and surveyed monitoring programs; however, there is a significant time period of monitoring required for this to be successful. A more reliable method is to support structural components with deep foundation systems bearing below the fill envelope. We can provide additional guidance regarding deep fills up on request.

8.2 Excavation Considerations

Unless a specific classification is performed, the site soils should be considered as an Occupational Safety and Health Administration (OSHA) Type C soil and should be sloped and/or benched according to the current OSHA regulations. Excavations should be sloped and benched to prevent wall collapse. Any soil can release suddenly and cave unexpectedly from excavation walls, particularly if the soils is very moist, or if fractures within the soil are present. Daily observations of the excavations should be conducted by OSHA competent site personnel to assess safety considerations.

We did not encounter free subsurface water in our test borings. If water is encountered during construction, it may be necessary to dewater excavations to provide for suitable working conditions.

If possible, excavations should be constructed to allow for water flow from the excavation the event of precipitation during construction. If this is not possible it may be necessary to remove water from snowmelt or precipitation from the foundation excavations to help reduce the influence of this water on the soil support conditions and the site construction characteristics.

8.2.1 Excavation Cut Slopes

We anticipate that some permanent excavation cut slopes may be included in the site development. Temporary cut slopes should not exceed 5 feet in height and should not be steeper than about 1:1 (horizontal to vertical) for most soils. Permanent cut slopes greater than 5 feet or steeper than 2½:1 must be analyzed on a site specific basis.

We did not observe evidence of existing unstable slope areas influencing the site, but due to the steepness and extent of the slopes in the area we suggest that the magnitude of the proposed excavation slopes be minimized and/or supported by retaining structures.

8.3 Utility Considerations

Subsurface utility trenches will be constructed as part of the site development. Utility line backfill often becomes a conduit for post construction water migration. If utility line trenches approach the proposed project site from above, water migrating along the utility line and/or backfill may have direct access to the portions of the proposed structure where the utility line penetrations are made through the foundation system. The foundation soils in the vicinity of the utility line penetration may be influenced by the additional subsurface water. There are a few options to help mitigate water migration along utility line backfill. Backfill bulkheads constructed with high clay content soils and/or placement of subsurface drains to promote utility line water discharge away from the foundation support soil.

Some movement of all structural components is normal and expected. The amount of movement may be greater on sites with problematic soil conditions. Utility line penetrations through any walls or floor slabs should be sleeved so that movement of the walls or slabs does not induce movement or stress in the utility line. Utility connections should be flexible to allow for some movement of the floor slab.

8.4 Exterior Grading and Drainage Comments

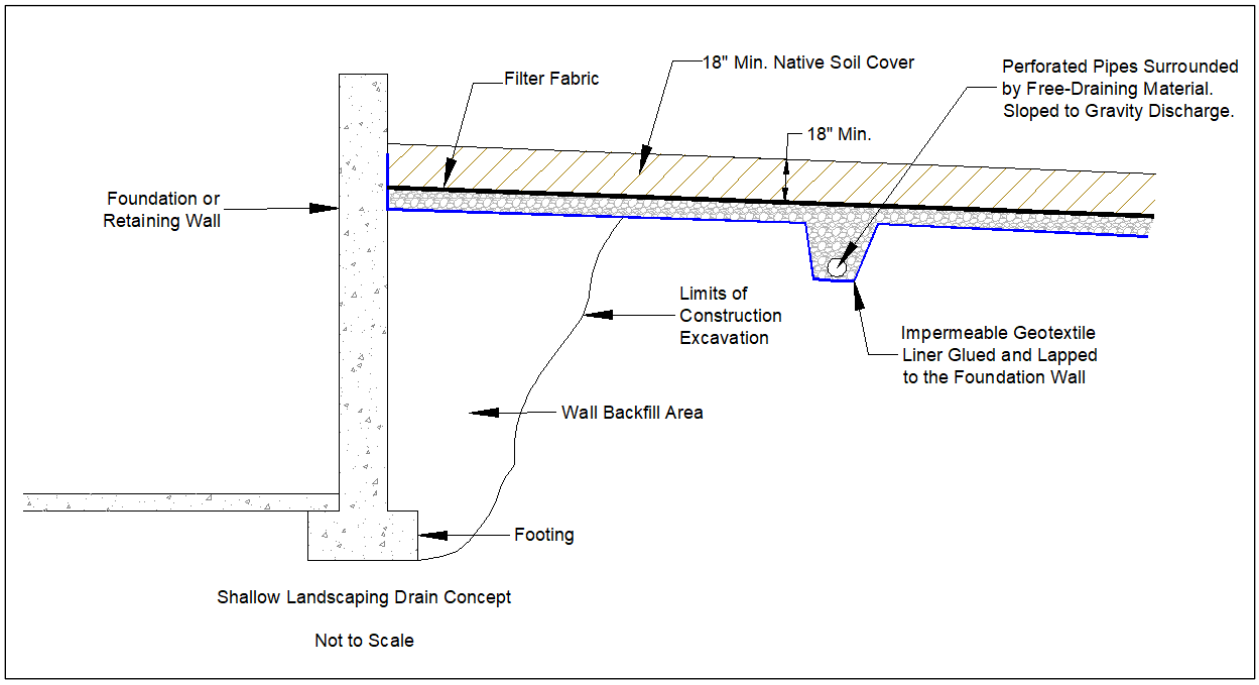
The following recommendations should be following during construction and maintained for the life of the structure with regards to exterior grading and surface drainage.

- The ground surface adjacent to the structure should be sloped to promote water flow away from the foundation system and flatwork.
- Snow storage areas should not be located in areas which will allow for snowmelt water access to support soils for the foundation system or flatwork.
- The project civil engineer, architect or builder should develop a drainage scheme for the site. We typically recommend the ground surface surrounding the exterior of the building be sloped to drain away from the foundation in all directions. We recommend a minimum slope of 12 inches in the first 10 feet in unpaved areas and a minimum slope of 3 inches in the first 10 feet in paved areas.
- Water flow from the roof of the structure should be captured and directed away from the structure. If the roof water is collected in an eave gutter system, or similar, the discharge points of the system must be located away from areas where the water will have access to the foundation backfill or any structure support soils. If downspouts are used, provisions should be made to either collect or direct the water away from the structure.
- Care should be taken to not direct water onto adjacent property or to areas that would negatively influence existing structures or improvements.

8.5 Landscaping Considerations

We recommend against construction of landscaping which requires excessive irrigation. Generally landscaping which uses abundant water requires that the landscaping contractor install topsoil which will retain moisture. The topsoil is often placed in flattened areas near the structure to further trap water and reduce water migration from away from the landscaped areas. Unfortunately, almost all aspects of landscape construction and development of lush vegetation are contrary to the establishment of a relatively dry area adjacent to the foundation walls. Excess water from landscaped areas near the structure can migrate to the foundation system or flatwork support soils, which can result in volume changes in these soils.

A relatively common concept used to collect and subsequently reduce the amount of excess irrigation water is to glue or attach an impermeable geotextile fabric or heavy mill plastic to the foundation wall and extend it below the topsoil which is used to establish the landscape vegetation. A thin layer of sand can be placed on top of the geotextile material to both protect the geotextile from punctures and to serve as a medium to promote water migration to the collection trench and perforated pipe. The landscape architect or contractor should be contacted for additional information regarding specific construction considerations for this concept which is shown in the sketch below.



A free draining aggregate or sand may be placed in the collection trench around the perforated pipe. The perforated pipe should be graded to allow for positive flow of excess irrigation water away from the structure or other area where additional subsurface water is undesired. Preferably the geotextile material should extend at least 10 or more feet from the foundation system.

Care should be taken to not place exterior flatwork such as sidewalks or driveways on soils that have been tilled and prepared for landscaping. Tilled soils will settle which can cause damage to the overlying flatwork. Tilled soils placed on sloped areas often "creep" down-slope. Any structure or structural component placed on this material will move down-slope with the tilled soil and may become damaged.

8.6 Soil Sulfate and Corrosion Issues

The requested scope of our services did not include assessment of the chemical constituents of corrosion potential of the site soils. Most soils in southwest Colorado are not typically corrosive to concrete. There has not been a history of damage to concrete due to sulfate corrosion in the area.

We are available to perform soluble sulfate content tests to assess the corrosion potential of the soils on concrete if desired.

8.7 Radon Issues

The requested scope of service of this report did not include assessment of the site soils for radon production. Many soils and formational materials in western Colorado produce Radon gas. The structure should be appropriately ventilated to reduce the accumulation of Radon gas in the structure. Several Federal Government agencies including the Environmental Protection Agency

(EPA) have information and guidelines available for Radon considerations and home construction. If a radon survey of the site soils is desired, please contact us.

8.8 Mold and Other Biological Contaminants

Our services do not include determining the presence, prevention or possibility of mold or other biological contaminants developing in the future. If the client is concerned about mold or other biological contaminants, a professional in this special field of practice should be consulted.

9.0 CONSTRUCTION MONITORING AND TESTING

Engineering observation of subgrade bearing conditions, compaction testing of fill material and testing of foundation concrete are equally important tasks that should be performed by the geotechnical engineering consultant during construction. We should be contacted during the construction phase of the project and/or if any questions or comments arise as a result of the information presented below. It is common for unforeseen, or otherwise variable subsurface soil and water conditions to be encountered during construction. As discussed in our proposal for our services, it is imperative that we be contacted during the foundation excavation stage of the project to verify that the conditions encountered in our field exploration were representative of those encountered during construction. Our general recommendations for construction monitoring and testing are provided below.

- Consultation with design professionals during the design phases: This is important to ensure that the intentions of our recommendations are properly incorporated in the design, and that any changes in the design concept properly consider geotechnical aspects.
- Grading Plan Review: A grading plan was not available for our review at the time of this report. A grading plan with finished floor elevations for the proposed construction should be prepared by a civil engineer licensed in the State of Colorado. Trautner Geotech should be provided with grading plans once they are complete to determine if our recommendations based on the assumed bearing elevations are appropriate.
- Observation and monitoring during construction: A representative of the Geotechnical engineer from our firm should observe the foundation excavation, earthwork, and foundation phases of the work to determine that subsurface conditions are compatible with those used in the analysis and design and our recommendations have been properly implemented. Placement of backfill should be observed and tested to judge whether the proper placement conditions have been achieved. Compaction tests should be performed on each lift of material placed in areas proposed for support of structural components.
- We recommend a representative of the geotechnical engineer observe the drain and dampproofing phases of the work to judge whether our recommendations have been properly implemented.
- If asphaltic concrete is placed for driveways or aprons near the structure we are available to provide testing of these materials during placement.

10.0 LIMITATIONS

This study has been conducted based on the geotechnical engineering standards of care in this area at the time this report was prepared. We make no warranty as to the recommendations contained in this report, either expressed or implied. The information presented in this report is based on our understanding of the proposed construction that was provided to us and on the data obtained from our field and laboratory studies. Our recommendations are based on limited field and laboratory sampling and testing. Unexpected subsurface conditions encountered during construction may alter our recommendations. We should be contacted during construction to observe the exposed subsurface soil conditions to provide comments and verification of our recommendations.

The recommendations presented above are intended to be used only for this project site and the proposed construction which was provided to us. The recommendations presented above are not suitable for adjacent project sites, or for proposed construction that is different than that outlined for this study.

This report provides geotechnical engineering design parameters, but does not provide foundation design or design of structure components. The project architect, designer or structural engineer must be contacted to provide a design based on the information presented in this report.

This report does not provide an environmental assessment nor does it provide environmental recommendations such as those relating to Radon or mold considerations. If recommendation relative to these or other environmental topics are needed and environmental specialist should be contacted.

The findings of this report are valid as of the present date. However, changes in the conditions of the property can occur with the passage of time. The changes may be due to natural processes or to the works of man, on the project site or adjacent properties. In addition, changes in applicable or appropriate standards can occur, whether they result from legislation or the broadening of knowledge. Therefore, the recommendations presented in this report should not be relied upon after a period of two years from the issue date without our review.

We are available to review and tailor our recommendations as the project progresses and additional information which may influence our recommendations becomes available.

Please contact us if you have any questions, or if we may be of additional service.

Respectfully,
TRAUTNER GEOTECH

Jonathan P. Butler, P.E.
Geotechnical Engineer

APPENDIX A
Logs of Test Borings

TRAUTNER GEOTECH LLC

Field Engineer	: Jonathan Butler
Hole Diameter	: 6 Inch
Drilling Method	: 3.25 Inch I.D.
	: Hollow Stem Auger
Sampling Method	: Mod. California Sampler
	: Standard Split Spoon
Date Drilled	: February 25, 2021
Total Depth (approx.)	: 19 feet
Location	: See Figure in Report

LOG OF BORING TB-1

Lots 9 & 10, Block R Ophir
Residential Structure
Mr. Judah Kuper

Project Number: 56529GE

Sample Type
- Mod. California Sampler
- Standard Split Spoon
- Bag Sample

Water Level
- Water Level During Drilling
- Water Level After Drilling

Depth in feet	DESCRIPTION	USCS	GRAPHIC	Samples	Blow Count	Water Level	REMARKS
0–4	PROBABLE MAN PLACED FILL, GRAVEL & COBBLES, sandy & silty, dense, moist, brown	GM			7/6 4/6 5/6		
4–6	POSSIBLE MAN PLACED FILL, SAND & GRAVEL, silty, medium dense, brown	SM-GM			NR		
6–17	GRAVEL & SAND, clayey & silty, dense, moist to very moist, brown to tan	GC-GM			11/6 10/6 10/6 4/6 3/6 2/6		
17–19	GRAVEL & COBBLES, silty, dense to very dense, very moist, brown to tan	GM					
19	Bring Terminated @ 19 feet						

TRAUTNER GEOTECH LLC

Field Engineer	: Jonathan Bulter
Hole Diameter	: 6 inch
Drilling Method	: 3.25 inch I.D.
	: Hollow Stem Auger
Sampling Method	: Mod. California Sampler
	: Standard Split Spoon
Date Drilled	: February 25, 2021
Total Depth (approx.)	: 15 feet
Location	: See Figure in Report

LOG OF BORING TB-2

Lots 9 & 10, Block R Ophir
Residential Structure
Mr. Judah Kuper

Project Number: 56529GE

Sample Type
- Mod. California Sampler
- Standard Split Spoon
- Bag Sample

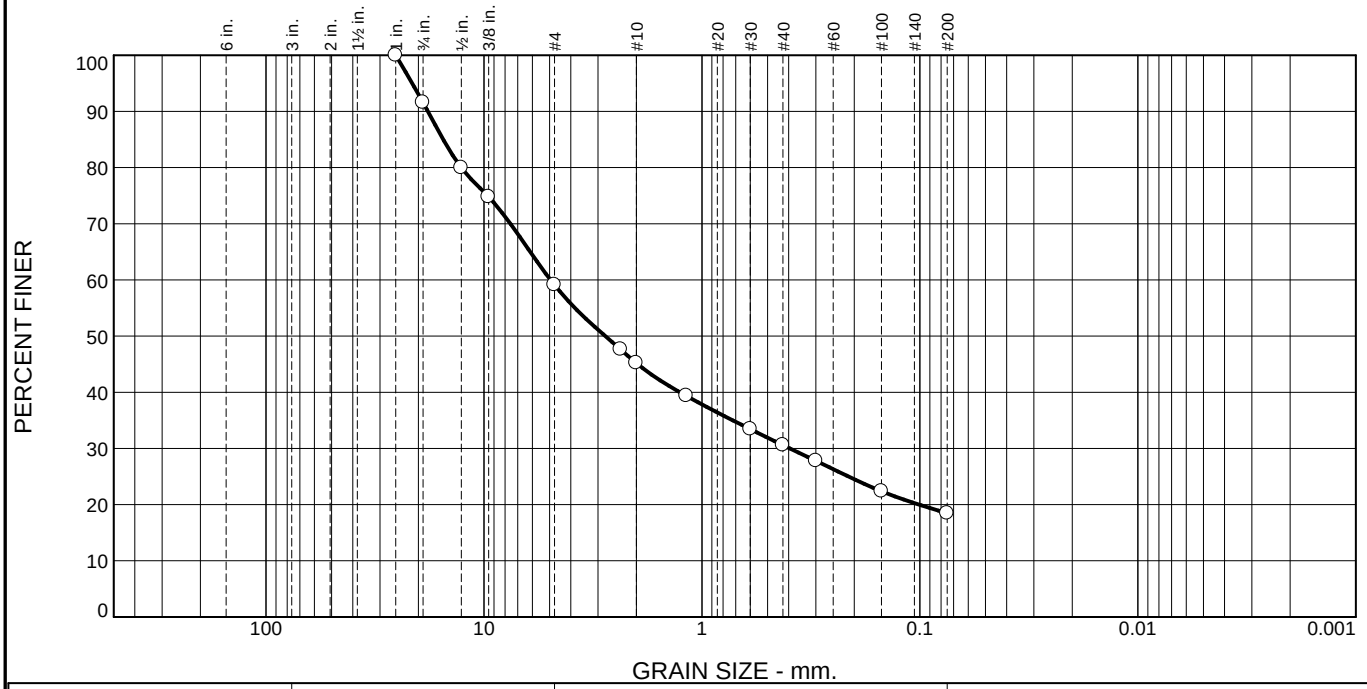
Water Level
- Water Level During Drilling
- Water Level After Drilling

Depth in feet	DESCRIPTION	USCS	GRAPHIC	Samples	Blow Count	Water Level	REMARKS
0–1	PROBABLE MAN PLACED FILL, GRAVEL & SAND, silty, soft, moist, dark brown	GM					
2–6	PROBABLE MAN PLACED FILL, GRAVEL & SAND, clayey & silty, dense to medium dense, moist, brown to tan	GC-GM			11/6 7/6		
7–11	PROABLE MAN PACED FILL, GRAVEL & SAND, clayey & silty, loose, moist, brown to tan	GC-GM			3/6 2/6 1/6		
12–15	GRAVEL & SAND, clayey, dense, moist, brown to tan	GC			7/6 8/6 9/6		

Bring Terminated @ 15 feet

APPENDIX B
Laboratory Test Results

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	8	33	14	14	13	18	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.0	100		
.75	92		
.50	80		
.375	75		
#4	59		
#8	48		
#10	45		
#16	39		
#30	33		
#40	31		
#50	28		
#100	22		
#200	18		

* (no specification provided)

Material Description

SM - Silty Sand with Gravel

Atterberg Limits (ASTM D 4318)

PL= 24 **LL=** 31 **PI=** 7

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-2-4(0)

Coefficients

D_{90}= 18.0955 D_{85}= 15.3806 D_{60}= 4.9506
D_{50}= 2.7772 D_{30}= 0.3956 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 3-1-21 **Date Tested:** 3-15-21

Tested By: J. Treinen

Checked By: J. Butler

Title: PE

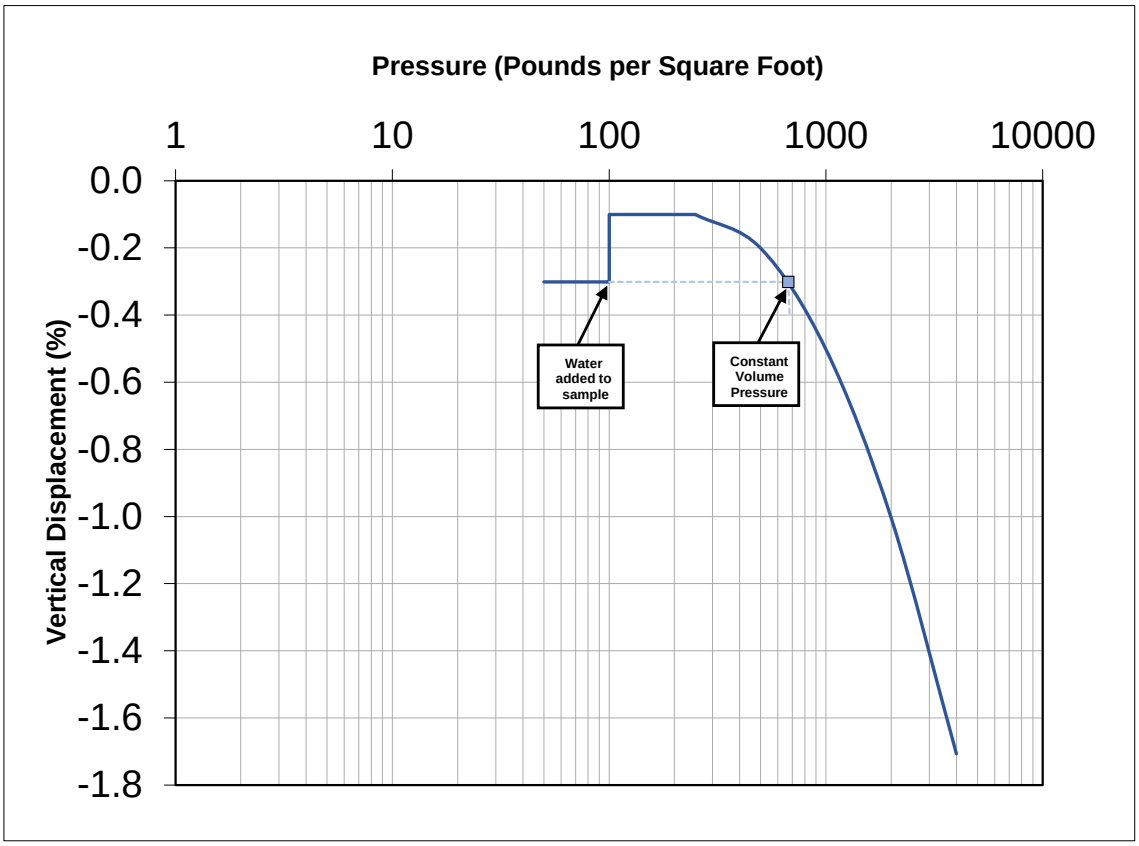
Location: TB-2 at 0-3.5 ft **Date Sampled:** 3-1-21
Sample Number: C10346-E

TRAUTNER GEOTECH LLC

Client: Judah Kuper
Project: Lots 09-10 Ophir

Project No: 56529GE **Figure** B.1

SWELL - CONSOLIDATION TEST

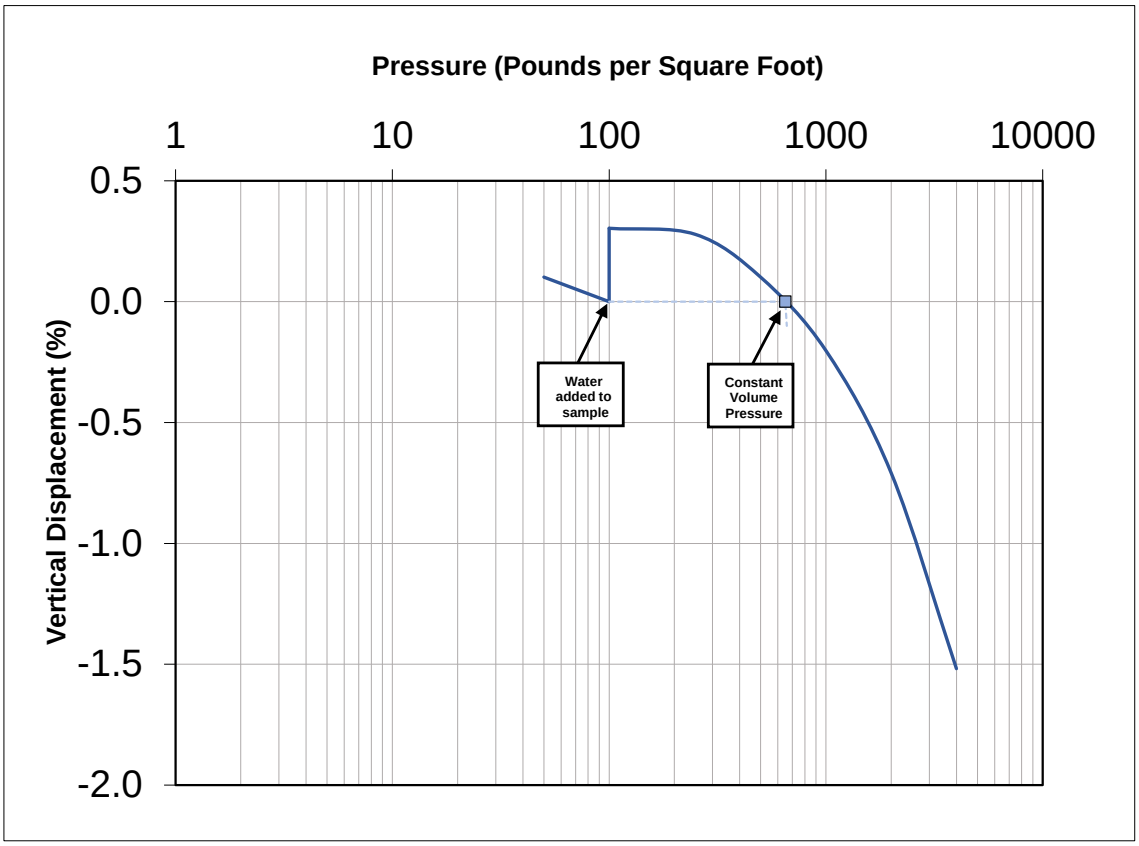


SUMMARY OF TEST RESULTS		
Sample Source:	TB-1 @ 10.5'-14'	
Visual Soil Description:	SC-SM	
Swell Potential (%)	0.2%	
Constant Volume Swell Pressure (lb/ft^2):	670	
	Initial	**Final**
Moisture Content (%):	7.4	14.4
Dry Density (lb/ft^3):	129.1	124.8
Height (in.):	0.996	0.979
Diameter (in.):	1.94	1.94

Note: Remolded Sample; Molded from the portion of sample passing a #10 sieve. Consolidated under 500 PSF prior to initiating load sequence and wetting. Initial values represent the conditions under 50 PSF following the pre-consolidation under 500 PSF.

Project Number:	56529GE
Sample ID:	C10346C
Figure:	B.2

SWELL - CONSOLIDATION TEST



SUMMARY OF TEST RESULTS		
Sample Source:	TB-2 @ 0'-3.5'	
Visual Soil Description:	SM	
Swell Potential (%)	0.3%	
Constant Volume Swell Pressure (lb/ft^2):	650	
	Initial	**Final**
Moisture Content (%):	12.6	13.3
Dry Density (lb/ft^3):	124.3	126.6
Height (in.):	0.988	0.973
Diameter (in.):	1.94	1.94

Note: Remolded Sample; Molded from the portion of sample passing a #10 sieve. Consolidated under 500 PSF prior to initiating load sequence and wetting. Initial values represent the conditions under 50 PSF following the pre-consolidation under 500 PSF.

Project Number:	56529GE
Sample ID:	C10346H
Figure:	B.3

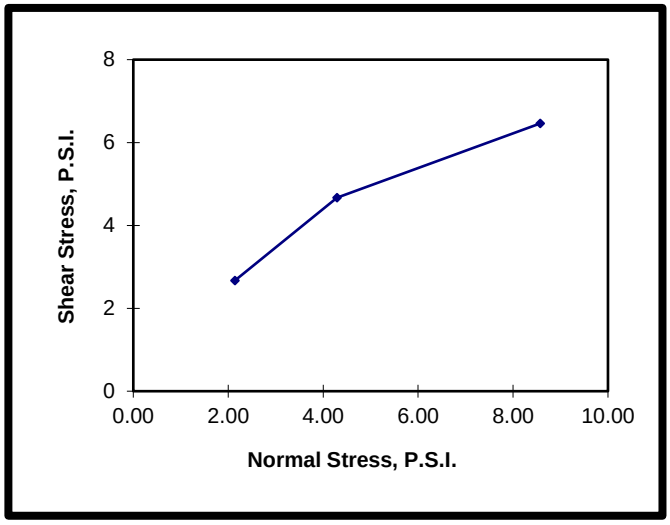
Direct Shear Test Results

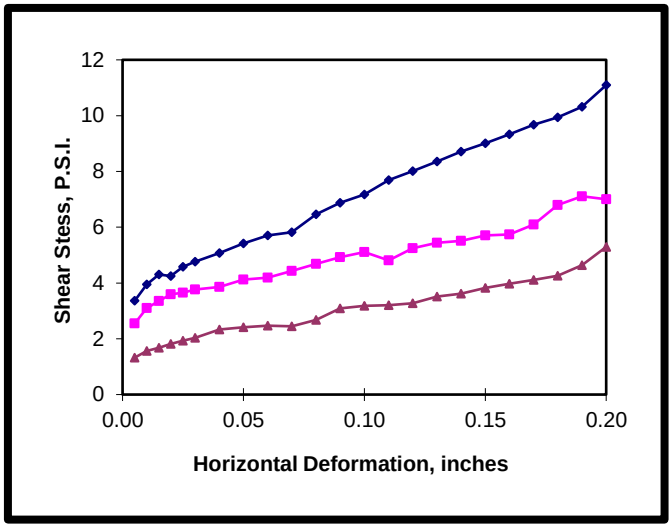
Project:	Lots 9/10 Ophir
Project #:	56529GE
Lab #:	C10346E
Date:	March 1, 2021
Technician:	S. Vandervert
Figure:	**B.4**

Visual Soil Description:	Sand, clayey & silty
Type of Specimen:	Remolded
Diameter:	1.946 in.
Thickness:	2.0 in
Sample Source:	TB-2 @

Summary of Sample Data:	
Initial Moisture Content (%)	14.1
Intial Dry Density (P.C.F)	118.6
Final Moisture Content (%)	15.6
Final Dry Density (P.C.F)	117.4

Residual Direct Shear Test Results:			
Normal Stress (psi)	2.14	4.29	8.57
Shear Stress (psi @ 4.1% disp.)	2.67	4.67	6.46





ESTIMATED STRENGTH PARAMETERS	
Angle of Internal Friction, phi	33
Cohesion, P.S.F.	198

Project Number:	56413GE
Sample ID:	C10346E
Figure:	B.4

LAND TITLE GUARANTEE COMPANY
191 S PINE ST #1C
TELLURIDE, CO 81435
Phone: (970) 728-1023
Fax: (877) 348-5414

"PURCHASERS" STATEMENT OF SETTLEMENT

PROPERTY ADDRESS: **(VACANT - LOTS 9 AND 10, BLOCK R) AURUM STREET, OPHIR, CO 81426**

SELLER(S): **JUDAH KUPER AND VALENTINA GARCIA GARCIA**

BUYER(S): **MADISON DABNEY CROWELL AND WILLIAM THOMAS MARSH**

SETTLEMENT DATE: **December 23, 2021** DATE OF PRORATION: **December 23, 2021**

DESCRIPTION	DEBIT	CREDIT
Sales Price & Earnest Money		
Sales Price	225,000.00	
Earnest Money from LTGC - Earnest Money		10,000.00
Title Fees - Land Title Guarantee Company		
Tax Certificate	27.00	
Closing Fees - Land Title Guarantee Company		
Closing Fee to Land Title Guarantee Company	200.00	
Recording Fees - Land Title Guarantee Company		
Record Warranty Deed to Land Title Guarantee Company	38.00	
RETT/RETA receipt recording	18.00	
Documentary Fee to Land Title Guarantee Company	22.50	
Withholding and Transfer Taxes		
Transfer Tax 4 percent to TOWN OF OPHIR	9,000.00	
Real Estate Tax - SAN MIGUEL COUNTY TREASURER		
Current Year Property Taxes R0009149 01/01/2021 to 12/23/2021 @ $9.7533/day		3,472.17
SubTotals	234,305.50	13,472.17
Due from Buyer/Borrower		**220,833.33**
Totals	234,305.50	234,305.50

The above figures do not include sales or use taxes on property

APPROVED AND ACCEPTED

PURCHASER(S)

MADISON DABNEY CROWELL

MADISON DABNEY CROWELL
Signed 12/22/21 at 08:13PM

WILLIAM THOMAS MARSH

WILLIAM THOMAS MARSH Signed 12/22/21 at 08:14PM

REAL ESTATE BROKER:

TELLURIDE PROPERTIES - SHIMKONIS PARTNERS

ASA VAN GELDER

ASA VAN GELDER Signed 12/23/21 at 11:23AM

LAND TITLE CLOSING AGENT:

Pamela Shifrin

Pamela Shifrin

106 AURUM STREET
DALLAS DIVIDE DEVELOPMENT

Date: January 4, 2023

To: Ophir Planning and Zoning

From: William Marsh & Madison Crowell

Jay Crowell – General Contractor

Subject: Exterior Material Samples

Please see the following pages for the Exterior Material Samples:

ROOFING EXAMPLE:

SIDING AND CORRUGATED METAL EXAMPLES:

San Miguel County Building Department
P.O. Box 1170, Telluride, CO 81435
Phone: 970-728-3923

Job Address:

Parcel: 477935307005

OWTS PERMIT

Permit No: **20220230**
Type: **OWTS**
Work Classification:
Status: **Approved**

OWTS Completed Date:
Application Date: 12/16/2022
Issued Date: 12/16/2022
Expired Date: 12/16/2023

Tank Condition: New
Bedrooms: 2
Lot Size:

Leach System: New
Water Supply:

Structure Type: SFR
Lot: 09 10

Contact Type	Contact	Address	Phone
Applicant	Madison Crowell and William Marsh	106 Aurum St	
Owner	CROWELL MADISON DABNEY AND MARSH WILLIAM THOMAS AS JT	PO BOX 2903 TELLURIDE, CO 814352903	

Contractor Type	Contractor(s)	Address	Phone	Cell

FEES DUE

Fee	Amount
OWTS	$255.00
State OWTS	$20.00
Total:	**$275.00**

FEES PAID

Date	Paytype	Amt Paid
12/16/2022	Check	$275.00
	Remaining Amount Due	**$0.00**

Comments:

Please use the attached plan set for construction of the OWTS. Contact the design engineer with questions or modifications during construction. The OWTS must be visually inspected by San Miguel County and by the design engineer prior to backfilling. Please notify the site inspector at 970.708.0323 72 hours in advance for final inspection of the OWTS.

Plans and specifications given above are approved for installation:

16 DEC 2022

Signed Date

Installed system found to comply with above approved plans and specifications:

Signed Date

Ophir Building Energy Code topics for discussion:

What are Ophir's goals with adopting a new energy code?

*Make sure additions & remodels beyond a certain size are addressed by energy codes

Topics in addition to CCC / Dan Reardon's document:

PV-ready
EV-ready
Electric-ready
ccASHP's, battery storage, & other electrification technologies in SMPA's rebate system

- Incentives, encouragement, education regarding 100% electric, heat pumps & HP DHW, cook stoves, etc. for all of the above

100% Totally Green offset if no on-site power produced

Prescriptive: 18% window to floor area ratio
OR Performance path requirements… HERS score of 61?

Change insulation requirement backstop to be 2018 code table (vs 2009)

Outdoor heating design temp requirement for Manual J calculations = 0 degF or lower for Ophir?

Address log homes – same as county?

Require EPA-certified wood stoves? When installed for heating

303.6
Exterior Lighting.

(a) Purpose and Intent. The purpose of this regulation is to standardize outdoor night-time lighting fixtures to preserve, protect and enhance Ophir's dark sky heritage, protect the natural environment from the damaging effects of night lighting, minimize glare from obtrusive light, minimize blue light emissions from light emitting diodes (LEDs), conserve energy, and permit the reasonable and safe use of outdoor night-time lighting.

(b) Applicability. All outdoor lighting fixtures (luminaries) shall be installed in conformance with this section.

(c) Maximum Wattage and Shielding. All of Ophir's lighting installations shall be designed, installed or replaced to be fully shielded (full cutoff).

(d) Permitted outdoor lighting includes the following:

1) Incandescent Light of 100 watts or less.

2) Compact Fluorescent of 26 watts or less.

3) Narrow-Spectrum Amber (NSA) LEDs of 2500 Kelvins or less.

(e) Ophir's Exterior Lighting Guidelines requires the following:

1) Only NSA-LEDs are permitted for outdoor use. The use of NSA-LEDs reduces the exponential glare effect from the blue light spectrum prevalent in LEDs.

2) Ophir's topography requires that light fixtures are full cutoff, which is both fully shielded and recessed, and emit light only downward where it is not visible from any location off a homeowner's property. Light glare off of a homeowner's property is considered light trespass.

3) Unshaded large windows with unshielded indoor lights may transmit light trespass in the same manner as an unshielded outdoor light. Homeowners should be mindful to reduce the impact of indoor lighting on their neighbors by concealing light sources from direct view, turning off lights at night, and/or using window coverings, and/or low visible transmittance (VT) glass.

4) The use motion sensor devices for lighting devices shall not be triggered off of the homeowner's property.

5) Lighting attached to single-family home structures shall not exceed the height of the eave.

6) Landscape lighting is prohibited.

7) The use of Mercury Vapor Lighting Fixtures is prohibited.

(f) Definitions:

1) Outdoor light fixture. An outdoor artificial illuminating devices, lamps and other devices, permanent or portable, used for illumination. Such devices shall include, but are not limited to, search, spot or flood lights for buildings and structures, recreational areas, parking area lighting, landscape lighting, or other signage and street lighting.

2) Luminaire (light fixture). A complete lighting unit consisting of one or more electric lamps, the lamp holder, any reflector or lens, ballast (if any), and any other components and accessories.

3) Fully Shielded. A fixture that is shielded in such a manner that the light rays emitted by the fixture, either directly from the lamp or indirectly from the fixture, are projected below a horizontal plane running from the lowest point visible on the

fixture where light is emitted.

4) Obtrusive light. Spill light that causes glare, annoyance, discomfort, or loss of visual ability of the night sky. Light pollution.

5) Glare. Intense and blinding light that causes visual discomfort or disability.

6) Light trespass or (aka Spill light) Light from a luminaire that falls outside of the boundaries of the property on which it is located. Light trespass results in glare and obtrusive light.

7) Landscape Lighting. Luminaries mounted in or at grade (but not more than 3 feet above grade) and used solely for visual landscape effects rather than the area lighting of stairs, doors or walkways.

(g) Non-Conforming Lights. If there are violations to this regulation, a written complaint should be sent to the Town Manager at which time the Town Manager or Building Inspector will contact the homeowner citing 303.6 of the LUC. The homeowner has 30 days to fix the lighting issue in compliance with the LUC. The Town of Ophir's Plan Checker will enforce the LUC and a fine of $50.00 per week will be rendered if the homeowner fails to comply within the 30 days.

(h) Exempt Lighting. The following are exempt from the requirements of this section:

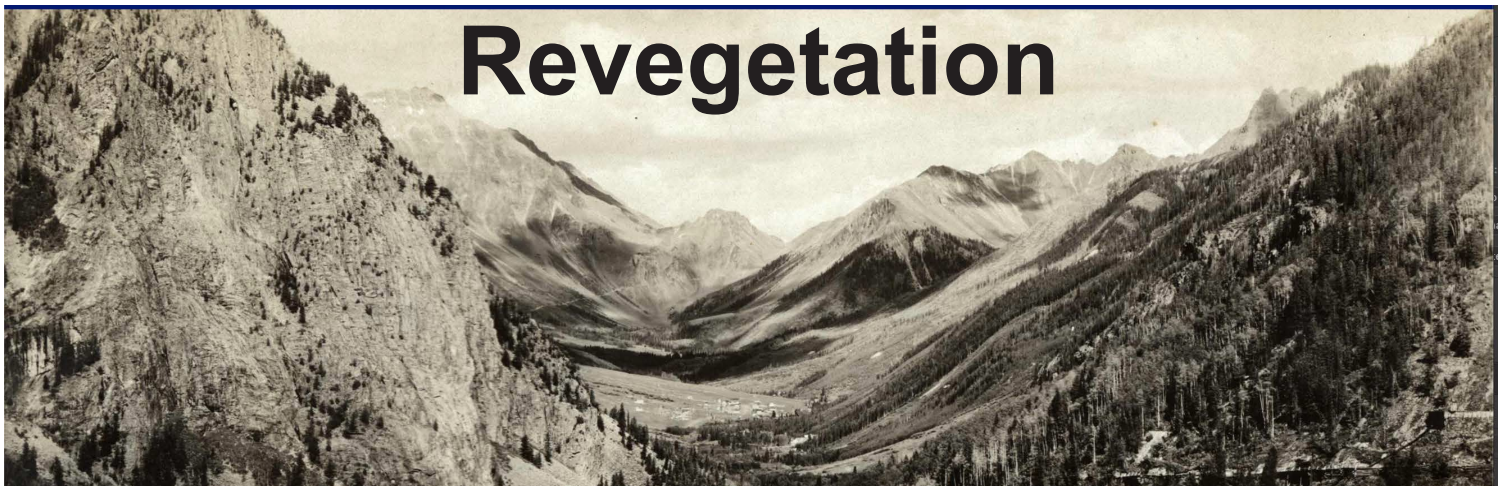
1) Holiday Lighting (less than thirty days use in any one year).

a. The use Red Light is encouraged for holiday lighting.

(i) Lighting Guidelines for Homeowner's Consideration:

1) Homeowners should consider installing a minimum of fixtures that cast light only on areas such as stairs, walkways or doorways.
2) The use fixtures that are no brighter than necessary
3) Homeowners should consider the use of outdoor Red Light for fixtures and in Christmas lighting. Red light preserves night vision and casts minimal glare.
4) Homeowners should be mindful of surfaces that may reflect light outward resulting in spill light.
5) Homeowners shall be mindful of motion detectors that are triggered throughout the night by waving trees, blowing snow or grazing animals.

Revegetation



Created by
Ophir Environmental
Commission2021

Revegetation and Native Plant & Soil Preservation

This purpose of this document is to set expectations on how impacts to native plants and soil within the town of Ophir are to be minimized and revegetated. These requirements relate to all manner of soil disturbance including: new construction, renovations, water & powerline installation, septic system installation, road work, event planning, etc. This hand out is to guide you through the requirements placed upon projects with the Town of Ophir.

Ophir's Ecosystem

The town of Ophir itself is situated in the sub-alpine forest life zone and comprises woodland forest, various grassland, wildflower and mycelium communities. The vegetation that exists within the Ophir valley and the surrounding high country is a wild remnant of North America's once expansive native plant population and is home to rare and endangered native flowers, grasses and fungi that extend upwards to the alpine zones.

Since the end of the last ice age approximately 10,000-years ago the valley's native soils and flora have developed symbiotically. Today in the 21st century, the flora growing within Ophir is uniquely old growth in nature and an irreplaceable natural resource. The town of Ophir is proud to be one of only a few communities within the lower 48-states that has a healthy native plant population growing within and adjacent to its town site and the residents of Ophir wish to sustain this resource for future generations to enjoy and return home to.

Anthropic Disturbances to Soil & Plants

The establishment of Ophir in 1881 precipitated numerous anthropic disturbances in the form of mining, tailing, adits, roads, homes, grazing and forest removal. These legacy sites form a mosaic of disturbances that can be seen today within the valley. In the 1970's and 80's home building began again in earnest within Ophir and by the new millennium the size and scope of projects and associated disturbances to native vegetation

had increased exponentially.

In the 21st century, the main driver to native vegetation disturbance has been new home construction and road work along with an exponential increase in the abundance of invasive weed seeds. Until recently, the town of Ophir had not required revegetation to occur after soil disturbances within the town. The result is that the footprints of soil disturbances created growing areas for both noxious and invasive weeds that have infected neighboring lots, meadows and are moving into the surrounding high country. These exotic introduced weeds often outcompete and suffocate Ophir's native wildflowers and grasses with the effects of the warming climate accelerating this process.

Revegetation

Revegetation is required to all soil disturbed within the town of Ophir. Assuring the proper revegetation in Ophir's fragile ecosystem is the responsibility of the land owner. Successful revegetation is a multi-year process that is essential to prevent invasive and noxious weeds from growing and in the reduction of soil erosion.

The Revegetation Plan

Each project is required to submit a Revegetation Plan. This plan shall include the following:

1. A map or drawing of area to be disturbed during construction. Common disturbances include areas around the house, along the driveway, utility corridors, septic system, and staging/construction parking areas.

2. Step 1: Minimizing Soil Site Disturbances:
    1. **Protecting** Ophir's established native root systems is far and away the easiest method to sustaining Ophir's native plants. Revegetation above 9,500-feet is akin to alpine gardening, it is a nurturing multi-year endeavor of seeding, mulching and pulling weeds until the natives are established and can out compete the invasives. This much we know, with all things equal, weeds win. Anywhere that the soil is disturbed, weeds now grow in abundance.

    2. **Site Disturbance**: The best Revegetation Plan is thoughtful about altering as little of the site as possible. Fewer disturbances translate into less time and money for revegetation. Also, it is helpful to show on the Revegetation Plan which areas are targeted for specific preservation (such as clarifying which trees will not be cut or where fencing will be used to protect established native shrubs) and any additional measures that will be taken to limit disturbances from construction.

    3. **Fencing the Site**: A sturdy fence or silt fence shall be erected along the property line to contain the impact zone. This is essential for reducing the footprint of projects from damaging adjoining meadows and lots. The fence shows the various sub-contractors not familiar with Ophir that established vegetation in areas outside the fence impact zone shall not be used to store materials, for parking, to drive heavy machinery upon, etc.

    4. **Heavy Machinery:** On occasion, heavy machinery may have to be driven onto a neighboring meadow or lot from the construction site. When this is to occur, it is required that 4x8 sheets of plywood are placed under the machinery's treads to protect the established vegetation.

    5. **Parking Plan:** Contractors are not permitted to park on established vegetation surrounding the construction site. How many cars do you expect for your project and where will they be expecting to park?

6. **Topsoil Stockpiling:** Stockpiling entails scraping off the topsoil — or the uppermost, fertile layer of the soil — and setting it aside until needed. After construction, this topsoil should be spread out to a depth of 3" or more on all surfaces that are to be seeded. The addition of fertilizer is usually unnecessary for native grasses, and it can promote the growth of annual weeds. If a homeowner needs a place to store or deposit this valuable natural resource, please contact the town. Ophir is in need of native topsoil for its own revegetation projects.

7. **Ground Cover:** This is a critical step in preventing the spread of weeds from the disturbed site. If it is late in the growing season or if impacts are continuing for years, at a minimum, the homeowner shall cover exposed dirt with wood chips or mulch to prevent weeds from growing and going to seed on their exposed lots and seeded the following growing season. Preventing weeds from growing is essential towards revegetation efforts>

3. Step 2: Revegetation

1. **Revegetation** is a multi-year process. $500- from the building deposit is retained until the 2nd summer after successful germination.

2. **Native Vegetation:** Although the establishment of both native grasses and wildflowers surrounding our homes is the most desirable outcome, in mountain ecosystems, native grasses are commonly the first vegetation to establish before the establishment (3 to 5 years later) of native wildflowers & other plants.

3. **Approved Seed List:** In the Revegetation Plan, attach the seed mix to be purchased and where it is to be used. The Town of Ophir requires use of the “Telluride Mix/US Forest Service” from the Southwest Seed Company in Dolores.

4. **Soil Preparation:** A good seedbed is crucial to successful revegetation. Slopes that have been disturbed should be graded to avoid concentrated water flow and subsequent erosion. If possible, any areas severely compacted by machinery and equipment during construction should be ripped by tractor or backhoe to loosen soils and allow for water infiltration and root growth. Clods of dirt larger than 3" should be broken, and any weeds controlled by hand pulling or if they have not yet gone to seed, by tilling into the soil.

5. **Seeding:** Establishing native vegetation within Ophir is akin to alpine gardening, it is a 3-year process that takes patience. Areas that have been seeded need to cordoned off to protect the tender growth from vehicle and pedestrian traffic. Pay close attention to the recommended rates of seed application for Ophir’s required seed mix. Not all the seed needs to be buried; it is fine if some is still visible.
   Year #1 is soil preparation, seeding and mulching.
   Year #2 is weeding, additional fertilizing and often necessary, a second seeding.
   Year #3 is weeding and seeding where necessary.
   Year #4 continued weeding where necessary.

6. **Weeds** will appear along with, or before, grass seedlings. There are already weed seeds in the soil waiting for the disturbance that allows them to grow. Weeds will inevitably grow in areas that have been reseeded. Pulling the weeds allows the grasses and flowers that have been seeded to establish their root systems. The growing season in Ophir is short. Although seeding is most successful in the fall before it snows in (September and October) or the early spring (April and early May) when the ground is still moist or snow covered, germination can be successful when it is above freezing and raining in Ophir. Many native seeds require a period of cold to germinate and are not harmed by being in the soil over winter. Ophir recommends seeding early, often and liberally.

7. **Mulching:** Mulch keeps the top soil in place and maintains moisture within the soil. Wood chips make great mulch along with store bought mulch material. After mulching some of the soil should be visible to allow solar warming.

8. **Erosion Matting:** Slopes steeper than 2:1 require erosion matting. Approved matting types for Ophir include coir (coconut or jute fiber), aspen fibers, or a blend of these. Straw and plastic woven matting is not permitted. Biodegradable matting is required since this breaks down more quickly and is less of a hazard to wildlife.

9. **Irrigation:** If you have seeded at the optimal times of the year, and there is regular and normal precipitation, then supplemental irrigation may not be necessary. However, irrigating seeds the first year will improve success.

10. **Time** – Be patient. Native grasses expend a lot of energy the first year in putting down roots. Because of this, the plants may look small after one year of growth. This is normal. It may take two growing seasons and good moisture before adequate results are seen.

11. **The Return of the $500- Building Deposit:** The building deposit is eligible to be returned after the second summer of successful revegetation efforts.
    Summer #1: Disturbed areas are reseeded.
    Summer #2: After the second summer, the disturbed areas are assessed for successful germination and the absence of invasive weeds.

12. **Gratitude**: The Town of Ophir and its residents appreciate your efforts in preserving the valley's native plant population. If you need help, please reach out to the Ophir Environmental Commission for guidance and a helping hand.

"Remember who we are and why we came here"

-David Glenn- (Former Ophir Mayor)