

Weber County Hillside Review Application

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

Date Submitted / Completed	Fees (Office Use)	Receipt Number (Office Use)	File Number (Office Use)
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Property Owner Contact Information

Name of Property Owner(s) MARTIN AND BRIGITTE NORS		Mailing Address of Property Owner(s) 50 RIVER BLUFF RD ELEGANT IL COILS	
Phone 247 404 374	Fax	Preferred Method of Written Correspondence <input checked="" type="checkbox"/> Email <input type="checkbox"/> Fax <input type="checkbox"/> Mail	
Email Address no-b@msn.com			

Authorized Representative Contact Information

Name of Person Authorized to Represent the Property Owner(s) KARL LUNDIN		Mailing Address of Authorized Person 2485 GRANT AVE #212 OGDEN, UT 84401	
Phone 801 395 1560	Fax 801 395 1561	Preferred Method of Written Correspondence <input checked="" type="checkbox"/> Email <input type="checkbox"/> Fax <input type="checkbox"/> Mail	
Email Address KLUNDIN76@YAHOO.COM			

Property Information

Project Name NORS RESIDENCE	Current Zoning
Approximate Address 6640 EAST 1100 S MILLSVILLE, UT 84317	Land Serial Number(s) 20-063 0001
Subdivision Name / Lot Number(s) SKI LAKE ESTATES NO. 3 - LOT #15	

Project Narrative

SINGLE FAMILY DWELLING UNIT TO BE BUILT ON LOT #15 MILLSIDE. NEED MILLSIDE APPROVAL.

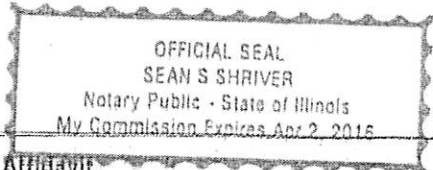
Property Owner Affidavit

I (We), Martin and Brigitte Nohs do hereby declare and say that I (we) am (are) the owner(s) of the property identified in this application and that the statements herein contained, the information provided in the attached plans and other exhibits are in all respects true and correct to the best of my (our) knowledge.

[Signature]
(Property Owner)

[Signature]
(Property Owner)

Subscribed and sworn to me this 28th day of April, 2014



[Signature]
(Notary)

Authorized Representative Affidavit

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

[Signature]
(Property Owner)

[Signature]
(Property Owner)

Dated this 28th day of April, 2014, personally appeared before me Martin and Brigitte Nohs, the signer(s) of the Representative Authorization Affidavit who duly acknowledged to me that they executed the same.

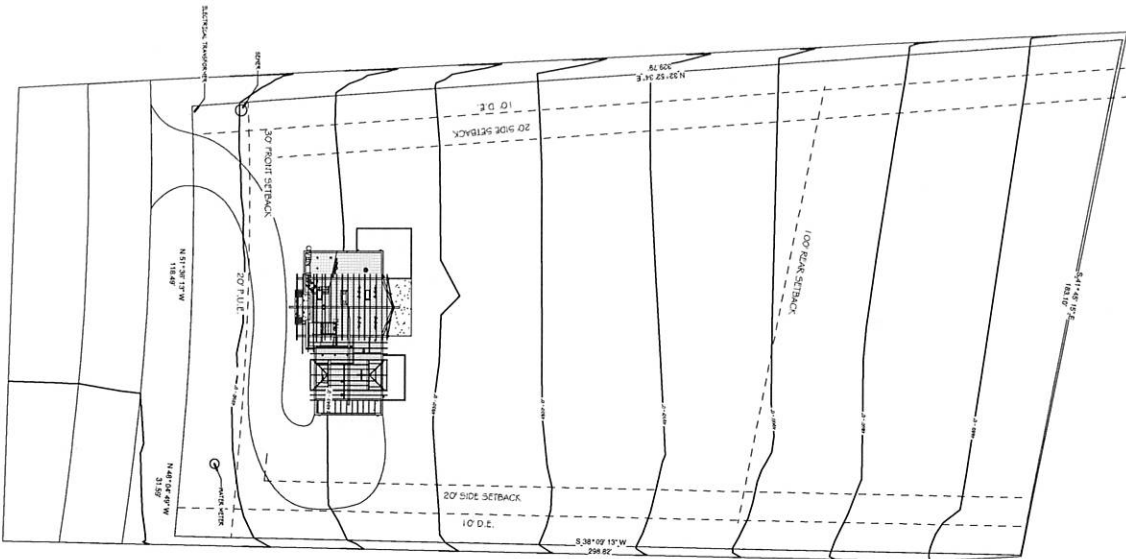


[Signature]
(Notary)

The Nobs Residence

6640 E 1100 S - SKI

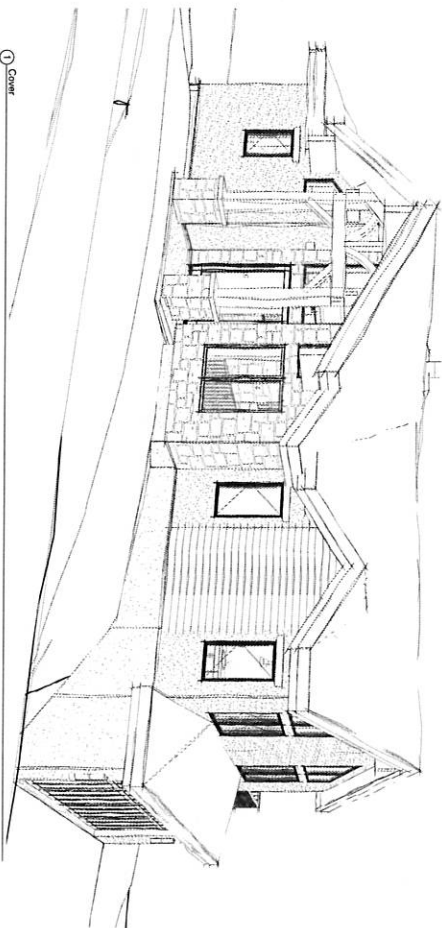
LAKE LOT #3



1 Site Plan
1" = 20'-0"

Sheet Number	Sheet Name	Current Revision	Sheet Issue Date
A1	Cover Page / Site Plan		04/07/2015
A2	Ground Level Plan		04/07/2015
A3	Main Floor Plan		04/07/2015
A4	Radicated Ceiling Plans		04/07/2015
A5	Elevations		04/07/2015
A6	Exteriors Section		04/07/2015
A7	Interior Section		04/07/2015
A8	Electrical Plans		04/07/2015
S1	Notes, Sections & Details		04/07/2015
S2	Foundation Plan		04/07/2015
S3	Main Floor Framing Plan		04/07/2015
S4	1st Floor Plans		04/07/2015

Name	Area	Perimeter
Living Area	1387 SF	184'-11.932"
Main Floor Living Area	1387 SF	184'-11.932"
Living Area 2	2249 SF	127'-2.112"
Non Living Area	564 SF	95'-0"
2-Car Garage	564 SF	95'-0"
Lower Level Porch	324 SF	100'-11.916"
Main Floor West	324 SF	79'-11.128"
Front Entry Hall	62 SF	55'-8"
Lower Level Entry	141.5 SF	385.5 SF



1 Elevation
1" = 20'-0"

DESIGN PARAMETERS	
DATE	04/07/2015
PROJECT NAME	6640 E 1100 S - SKI
CLIENT	THE NOBS RESIDENCE
LOCATION	6640 E 1100 S - SKI
SCALE	1" = 20'-0"
PROJECT NUMBER	13

1. ALL WORK TO BE DONE SHALL COMPLY WITH THE CITY OF DENVER, COLORADO SHALL COMPLY WITH THE CITY OF DENVER, COLORADO AND FEDERAL REQUIREMENTS FOR NEW CONSTRUCTION.
2. CONSTRUCTION SHALL COMPLY WITH ALL CITY OF DENVER, COLORADO AND FEDERAL REQUIREMENTS FOR NEW CONSTRUCTION.
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4. ALL UTILITIES TO BE LOCATED AS SHOWN ON THE PLANS.
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2 General Notes
1/2" = 1'-0"

LUNDIN DESIGN GROUP

2408 GREAT AVENUE, SUITE 1212 - DENVER, UT 84401
P: (407) 486-1800 F: (407) 486-1801

DESIGN

LUNDIN HOMES, LLC

2408 GREAT AVENUE, SUITE 1212 - DENVER, UT 84401
P: (407) 486-1800 F: (407) 486-1801

GENERAL CONTRACTOR

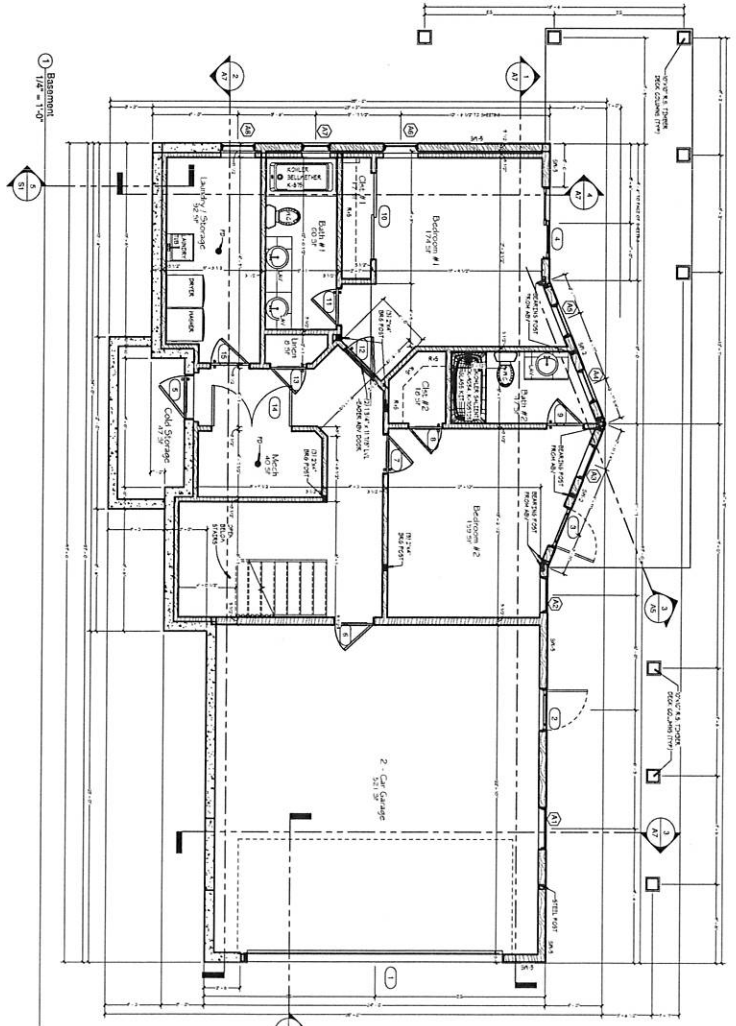
ASL ENGINEERING

PO Box 716
Eden, UT 84310
(801) 351-2573

ENGINEERING

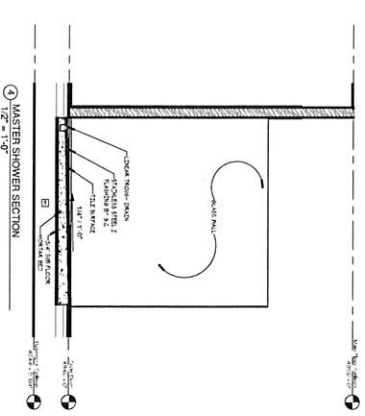
Door Number	Door Size	Description	Finish	Comments
1	18'-6"	Garage Door	OVERHEAD SECTIONAL DOOR	
2	3'-0" x 6'-6"	Out-Swing French - Left Hand Operation		
3	3'-0" x 6'-6"	Out-Swing French - Left Hand Operation		
4	(2) 2'-6" x 6'-6"	French Sliding Patio Door		
5	3'-0" x 6'-6"			
6	2'-6" x 6'-6"			
7	2'-6" x 6'-6"			
8	2'-6" x 6'-6"			
9	2'-6" x 6'-6"			
10	6'-0" x 6'-6"			
11	2'-6" x 6'-6"			
12	2'-6" x 6'-6"			
13	2'-6" x 6'-6"			
14	(2) 2'-6" x 6'-6"			
15	2'-6" x 6'-6"			
16	(2) 6'-0" x 8'-0"	Out-Swing French - Passive / Active Units		
17	3'-0" x 8'-0"	Out-Swing French - Left Hand Operation		
18	2'-6" x 8'-0"	French Sliding Patio Door		
19	2'-6" x 8'-0"			
20	2'-6" x 8'-0"			
21	2'-6" x 8'-0"			
22	3'-0" x 8'-0"			
23	2'-6" x 8'-0"			

Mark	Type	Head Height	Comments	Level
A1	35" x 45"	6'-8"		Basement
A2	30" x 60"	8'-0"		Basement
A4	30" x 60"	8'-0"	TEMPERED	Basement
A5	30" x 60"	8'-0"	TEMPERED	Basement
A6	30" x 60"	8'-0"	TEMPERED	Basement
A7	24" x 18"	6'-8"	TEMPERED	Basement
A8	30" x 30"	6'-8"	TEMPERED	Basement
B1	32" x 80"	18'-0"	TEMPERED	Main Floor
B2	32" x 80"	18'-0"	TEMPERED	Main Floor
B3	35" x 72"	8'-0"	TEMPERED	Main Floor
B4	35" x 72"	8'-0"	TEMPERED	Main Floor
B5	35" x 72"	8'-0"	TEMPERED	Main Floor
B6	35" x 72"	8'-0"	TEMPERED	Main Floor
B7	35" x 72"	8'-0"	TEMPERED	Main Floor
B8	35" x 72"	8'-0"	TEMPERED	Main Floor
B9	30" x 60"	8'-0"	TEMPERED	Main Floor
B10	30" x 60"	8'-0"	TEMPERED	Main Floor
B11	30" x 60"	8'-0"	TEMPERED	Main Floor
B12	30" x 60"	8'-0"	TEMPERED	Main Floor
B13	30" x 60"	8'-0"	TEMPERED	Main Floor
B14	30" x 60"	8'-0"	TEMPERED	Main Floor
B15	30" x 60"	8'-0"	TEMPERED	Main Floor
B16	35" x 72"	8'-0"	TEMPERED	Main Floor
B17	35" x 72"	8'-0"	TEMPERED	Main Floor
B18	35" x 72"	8'-0"	TEMPERED	Main Floor
B19	35" x 72"	8'-0"	TEMPERED	Main Floor
B20	35" x 72"	8'-0"	TEMPERED	Main Floor
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B36	35" x 72"	8'-0"	TEMPERED	Main Floor
B37	35" x 72"	8'-0"	TEMPERED	Main Floor
B38	35" x 72"	8'-0"	TEMPERED	Main Floor
B39	35" x 72"	8'-0"	TEMPERED	Main Floor
C1	Master Shower Glass	13'-0"	TEMPERED	Main Floor
C2	Master Shower Glass	13'-0"	TEMPERED	Main Floor
C3	Roof		TEMPERED	Roof

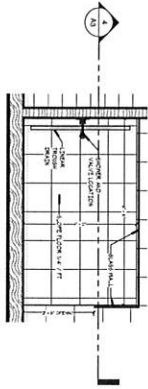


GENERAL NOTES:
 1. ALL FINISHES TO BE AS SHOWN ON THESE DRAWINGS UNLESS OTHERWISE NOTED.
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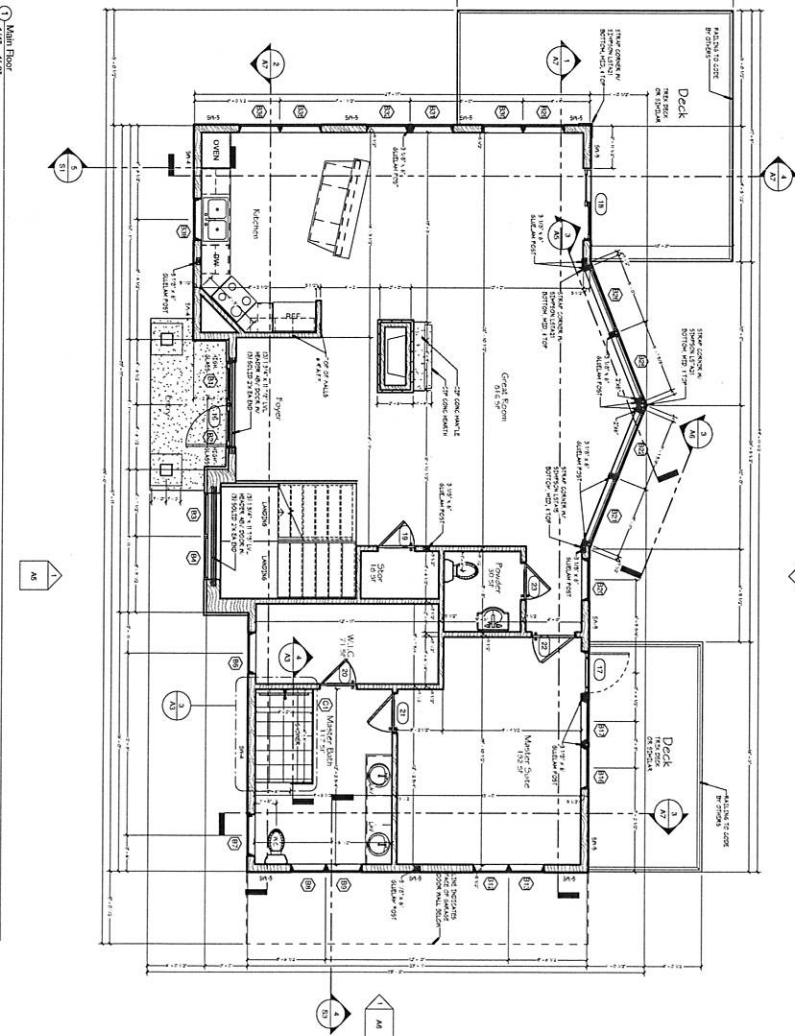
<p>LUNDIN DESIGN GROUP</p> <p>2485 GRANT AVENUE SUITE #1212 - OGDEN, UT 84401</p> <p>PH: (801) 466-1800 FAX: (801) 466-1801</p> <p>DESIGN</p>	<p>LUNDIN HOMES, LLC</p> <p>2485 GRANT AVENUE SUITE #1212 - OGDEN, UT 84401</p> <p>PH: (801) 466-1800 FAX: (801) 466-1801</p> <p>GENERAL CONTRACTOR</p>	<p>Engineering</p> <p>PO Box 716 Eden, Utah 84310 (801) 351-2573</p>
<p>Project number: 2014-0225</p> <p>Date: 04/13/2015</p> <p>Drawn by: CHANG</p> <p>Checked by: CHANG</p>	<p>The Nob's Residence</p> <p>6640 E 1100 S - SKI LAKE LOT #3</p> <p>Ground Level Plan</p>	<p>Scale: AS INDICATED</p> <p>A2</p>



② Master Shower
1/2" = 1'-0"



③ Deck
1/2" = 1'-0"



① Main Floor
1/2" = 1'-0"

- GENERAL NOTES**
1. ALL FINISHES ARE TO BE KEPT IN PLACE UNLESS OTHERWISE NOTED.
 2. ALL FINISHES SHALL BE TO THE SATISFACTION OF THE ARCHITECT.
 3. ALL MATERIALS SHALL BE KEPT IN PLACE UNLESS OTHERWISE NOTED.
 4. VERIFY ALL FINISHES, COLORS AND MATERIALS BEFORE ORDERING. MATCH TO EXISTING WHERE APPLICABLE.
 5. PROVIDE CURB TO BE FINISHED TO MATCH EXISTING CURB. CURB SHALL BE TO MATCH EXISTING CURB AND SHALL BE TO MATCH EXISTING CURB.
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- ② General Main Floor Notes**
1/2" = 1'-0"

The Nob's Residence
6640 E 1100 S - SKI LAKE
LOT #3
Main Floor Plan

Project number: 2014-0273
Date: 04/13/2015
Drawn by: TALL LUNDIN
Checked by: OLIVERSON

A3
AS PROVIDED

No.	Description	Date

LUNDIN DESIGN GROUP
2400 GRAND AVENUE SUITE #212 - COCOON UT #8401
PH: (408) 898-1100 FAX: (408) 898-1101

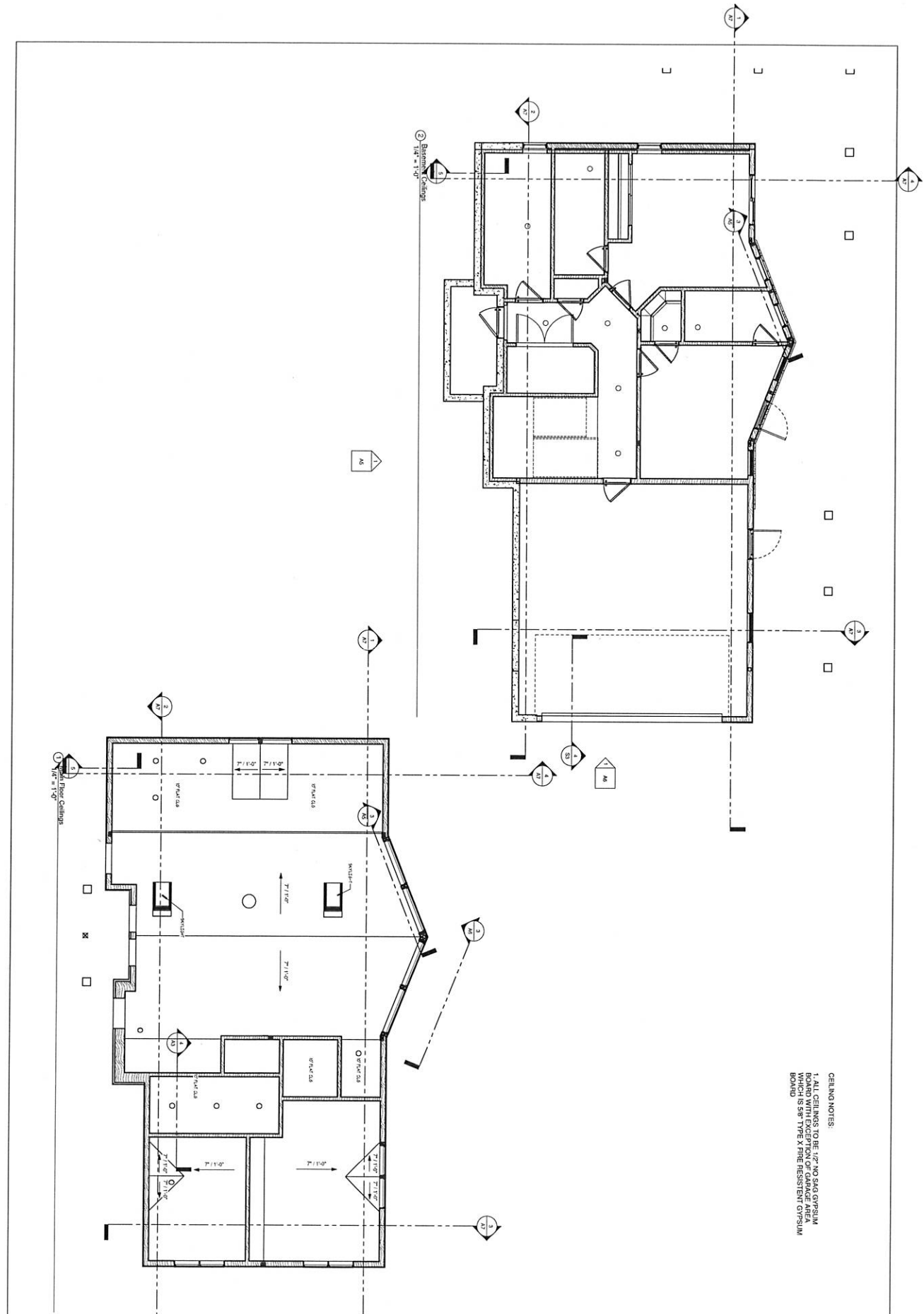
DESIGN

LUNDIN HOMES, LLC
2400 GRAND AVENUE SUITE #212 - COCOON UT #8401
PH: (408) 898-1100 FAX: (408) 898-1101

GENERAL CONTRACTOR

ETH ENGINEERING
PO Box 716
Eden, Utah 84310
(408) 254-2515

ENGINEERING



CEILING NOTES:
 1. ALL CEILINGS TO BE 1/2" NO SAG GYPSUM BOARD WITH EXCEPTION OF GARAGE AREA WHICH IS SR TYPE X FIRE RESISTANT GYPSUM BOARD

The Nob's Residence
 6640 E 1100 S - SKI LAKE LOT #3
 Reflected Ceiling Plans

Project Number: 20114-0223
 Date: 04/13/2015
 Drawn by: KATHIE LUNDIN
 Checked by: CHANDLER

A4
 Scale: 1/4" = 1'-0"

No.	Description	Date

LUNDIN DESIGN GROUP

2485 GRANT AVENUE SUITE #212 - GOSHEN, UT 84401
 P: (435) 638-1960 F: (435) 638-1961

DESIGN

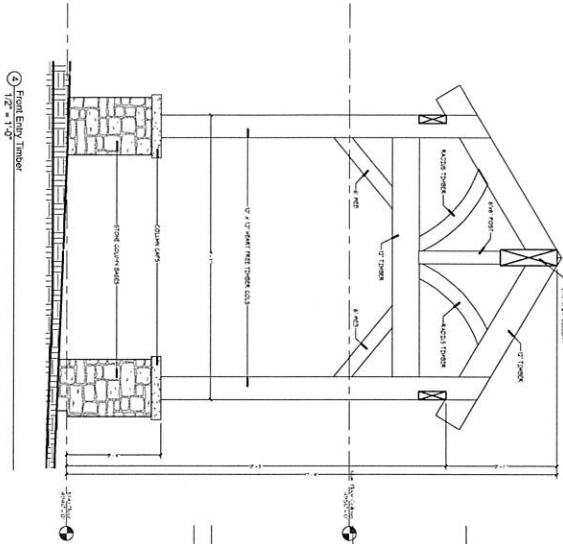
LUNDIN HOMES, LLC

2485 GRANT AVENUE SUITE #212 - GOSHEN, UT 84401
 P: (435) 638-1960 F: (435) 638-1961

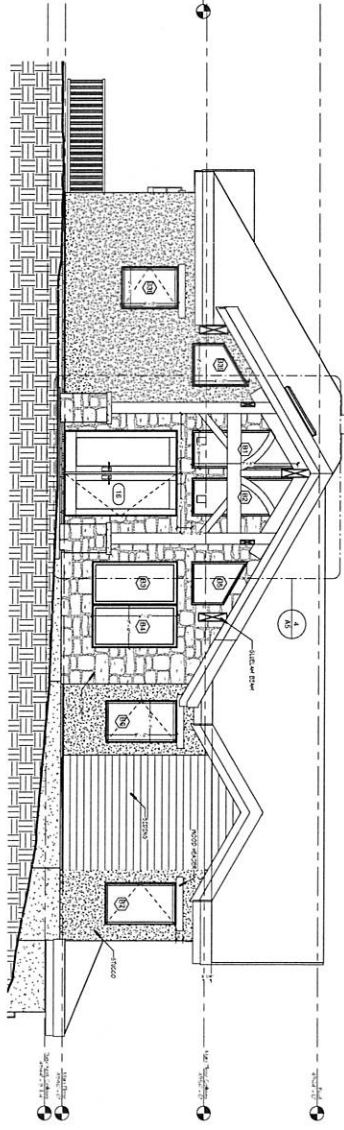
GENERAL CONTRACTOR

PG Box 716
 Eden, Utah 84310
 (401) 391-2473

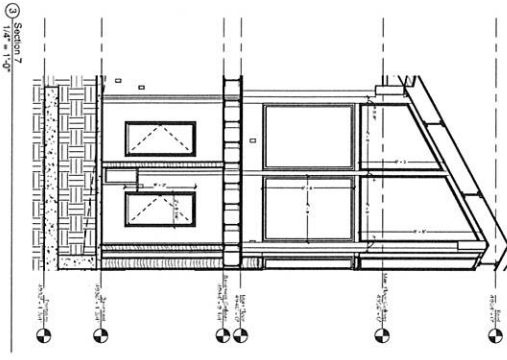
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 North
 Engineering
 ENGINEERING



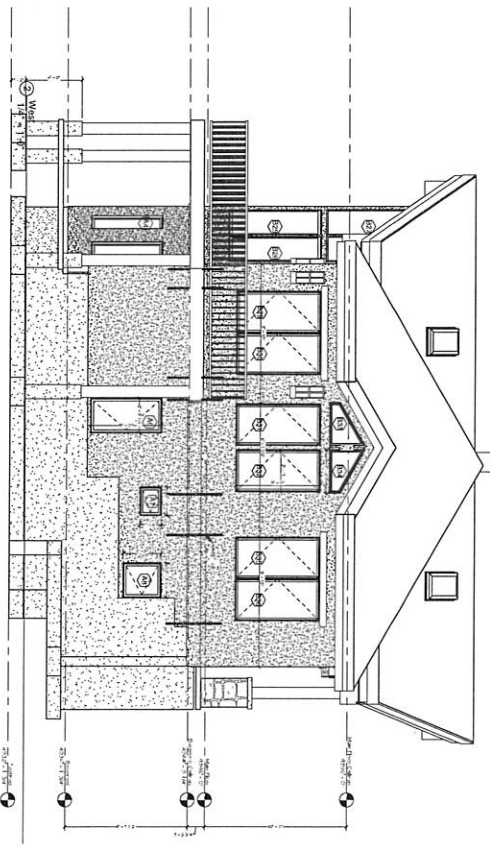
② Front Entry Timber
1/2" = 1'-0"






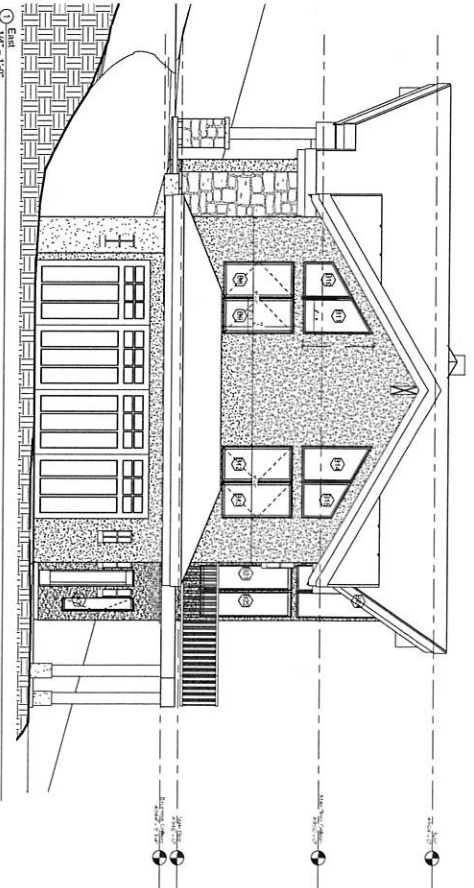
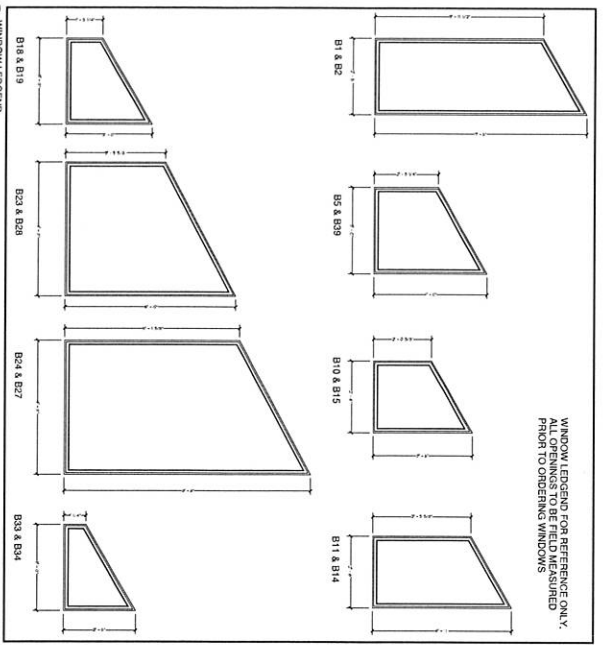
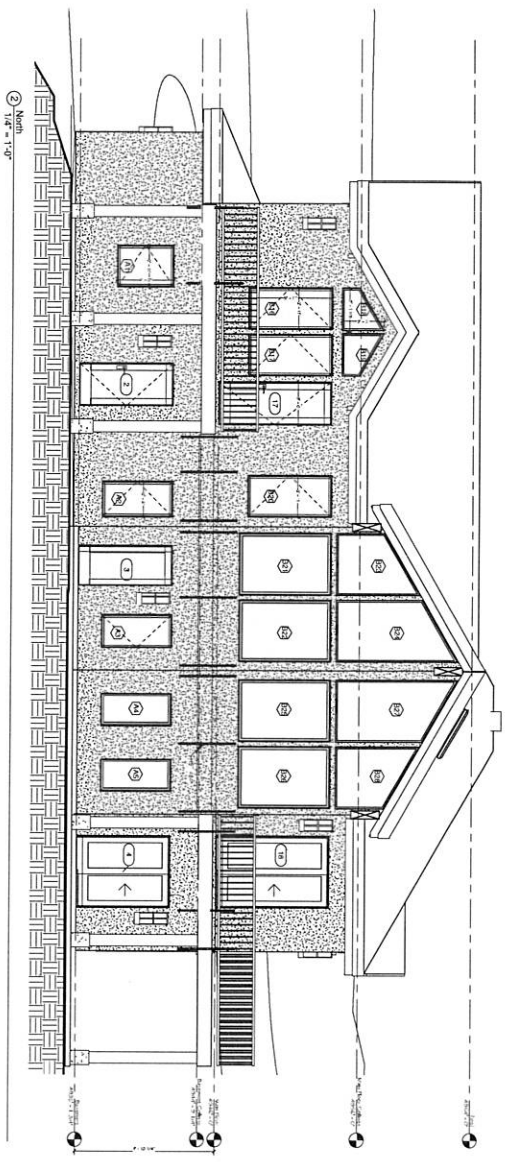
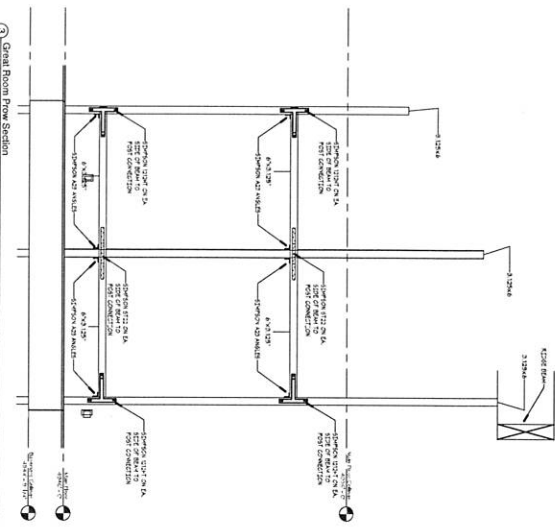
① South
1/2" = 1'-0"



① Section 1-1
1/2" = 1'-0"




Scale AS INDICATED A5	Project Name The Nob's Residence	No. Description Date	LUNDIN DESIGN GROUP  2485 GRANT AVENUE SUITE #212 - DORSET UT 84401 P: 1 (801) 345-1940 F: 1 (801) 345-1941 DESIGN	LUNDIN HOMES, LLC  2485 GRANT AVENUE SUITE #212 - DORSET UT 84401 P: 1 (801) 345-1940 F: 1 (801) 345-1941 GENERAL CONTRACTOR	 PO Box 716 Eden, Utah 84310 (801) 291-2573 North Engineering ENGINEERING
	Date 2014-02-23				
	Drawn by Robert Lundin Checked by Christopher				



No.	Description	Date


LUNDIN DESIGN GROUP



2495 GRANT AVENUE, SUITE 212 - OGDEN, UT 84401
P: (801) 398-1960 F: (801) 398-1961


DESIGN

LUNDIN HOMES, LLC



2495 GRANT AVENUE, SUITE 212 - OGDEN, UT 84401
P: (801) 398-1960 F: (801) 398-1961

GENERAL CONTRACTOR



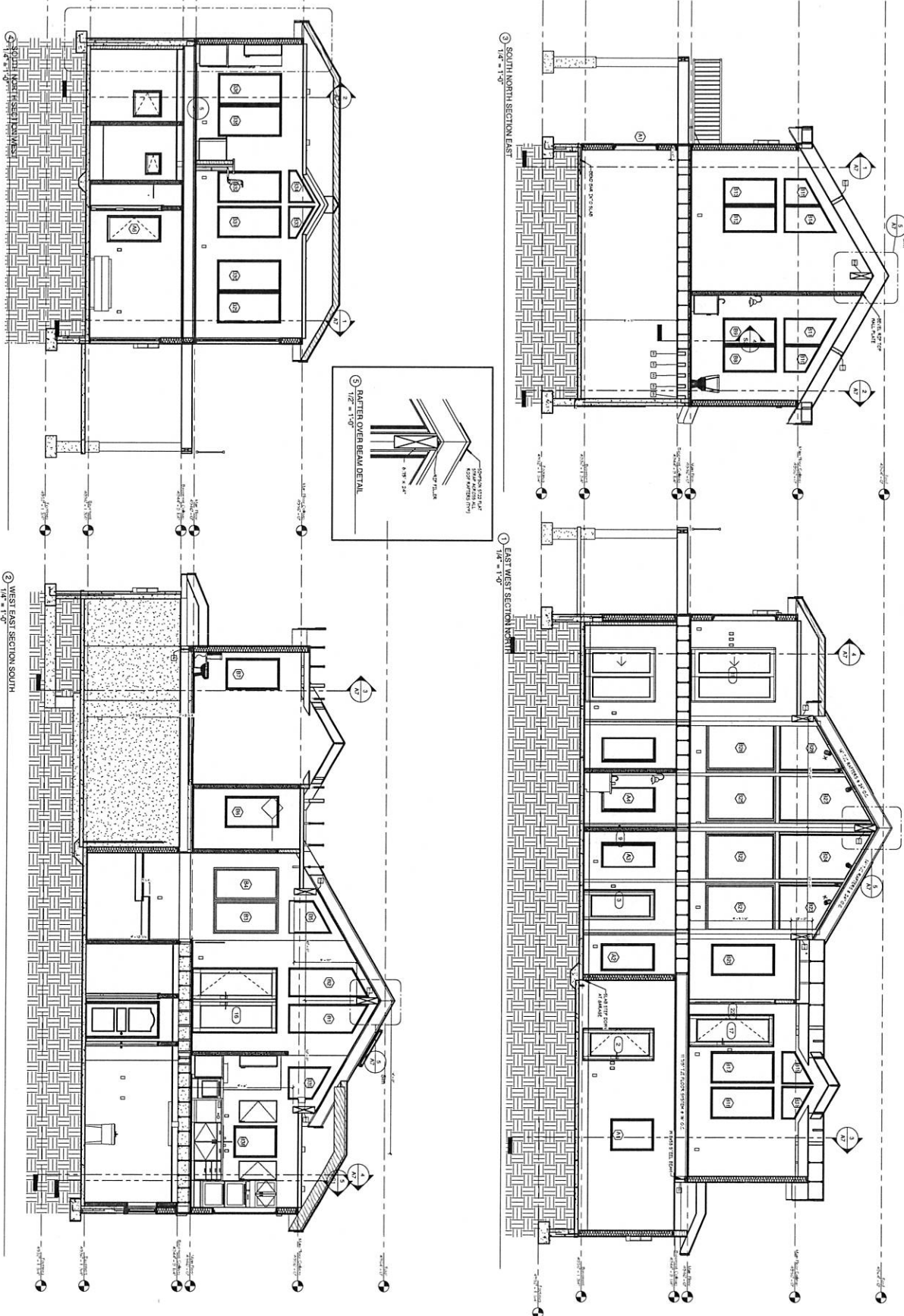
PO Box 716
Eden, Utah 84310
(801) 391-2573

ENGINEERING

The Nob's Residence
6640 E 1100 S., SKI LAKE, LOT #3
Elevations

Project Number: 2014-023
Date: 04/13/2015
Drawn by: Matt Lundin
Checked by: [Signature]

Scale: A6 AS INDICATED



The Nob's Residence
6640 E 1100 S - SKI LAKE
LOT #3
Building Sections

Project Number: 2014-0225
Drawn By: KATH LUNDIN
Checked By: [Signature]
Scale: AS SHOWN
A7

No.	Description	Date

LUNDIN DESIGN GROUP

2495 GRANT AVENUE SUITE #212 - OGDEN, UT 84401
P: 1 (801) 348-1800 F: 1 (801) 348-1801

DESIGN

LUNDIN HOMES, LLC

2495 GRANT AVENUE SUITE #212 - OGDEN, UT 84401
P: 1 (801) 348-1800 F: 1 (801) 348-1801

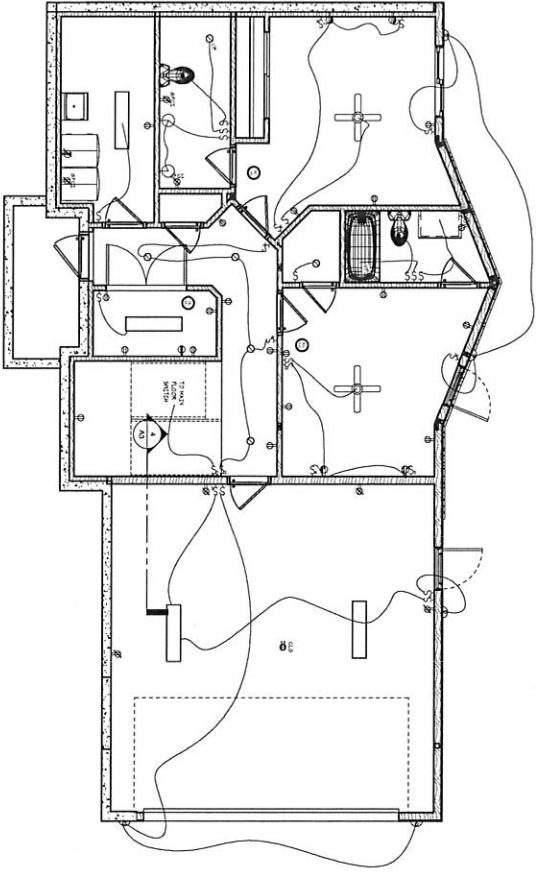
GENERAL CONTRACTOR

Atchuth
Engineering

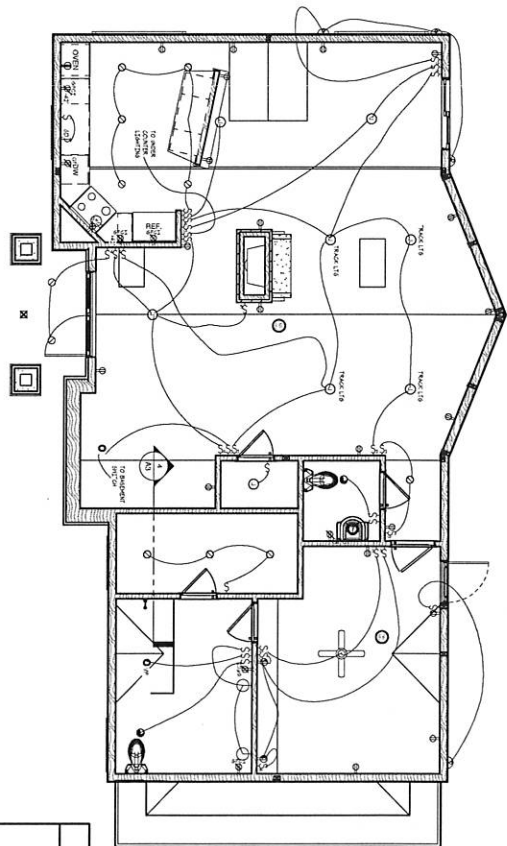
PO Box 716
Eden, Utah 84310
(801) 351-2573

ENGINEERING

① BASEMENT ELECTRICAL PLAN
1/4" = 1'-0"



② MAIN FLOOR ELECTRICAL
1/4" = 1'-0"



③ ELECTRICAL SYMBOLS 2
3/16" = 1'-0"

ELECTRICAL SYMBOLS	
	120VAC SERVICE
	DISCONNECT SWITCH
	FLOOR LIGHT
	WALL LIGHT
	RECESSED LIGHT
	PENDANT LIGHT
	DOWN LIGHT
	FLOODESCENCE LIGHT
	DIMMER
	SWITCH
	EXTENDED RANGE LIGHTING
	OUTLET
	220V OUTLET
	SWITCHED OUTLET
	GROUNDING OUTLET
	TELEPHONE OUTLET
	PHONE OUTLET
	FAN OUTLET
	JUNCTION BOX
	DIMMER FAN
	FAN/CLIMATE
	SECURITY PANEL
	THERMOSTAT
	RANGE & DISHWASHER
	WARMER/COOLER
	FLOOR WARMER
	FLOOR WARMER
	ELECTRICAL ESTABLISHMENT
	ELECTRICAL PANEL
	CEILING FAN
	FLOOR FAN

The Nobs Residence
6640 E 1100 S - SKI LAKE LOT #3
Electrical Plans

DATE: 01/14/2023
DRAWN BY: KAREL LUNDIN
CHECKED BY: KAREL LUNDIN

A8

No.	Description	Date

LUNDIN DESIGN GROUP

2485 GRANT AVENUE, SUITE #212 - OGDEN, UT 84401
P: 1 (801) 398-1860 F: 1 (801) 398-1861

DESIGN

LUNDIN HOMES, LLC

2485 GRANT AVENUE, SUITE #212 - OGDEN, UT 84401
P: 1 (801) 398-1860 F: 1 (801) 398-1861

GENERAL CONTRACTOR

PO Box 716
Eden, Utah 84310
(801) 391-2973

Actus
Engineering
ENGINEERING

MINIMUM NAILING SCHEDULE

CONNECTION

1. JOIST TO GIRDERS: 2-8d
2. GIRDS TO JOIST TOPS: EA END
3. SOLE PLATE TO JOIST OR BLOCKING: FACE NAIL
4. TOP PLATE TO STUD: END NAIL
5. STUD TO STUD: FACE NAIL
6. SOLE PLATE TO STUD: FACE NAIL
7. DOUBLE TOP PLATES: FACE NAIL
8. TOP PLATES LAPS AND INTERSECTIONS: FACE NAIL
9. CEILING JOISTS TO STUD: TOE NAIL
10. CEILING JOISTS TO PLATE TOE NAIL
11. CONTINUOUS HENDERS TO STUD TOE NAIL
12. CEILING JOISTS LAPS OVER PARTITIONS: FACE NAIL
13. RAFTER TO PLATE TOE NAIL
14. RAFTER TO CORNER STUDS
15. BUILD UP CORNERS AND BEAMS
16. BUILD UP GIRDERS AND BEAMS

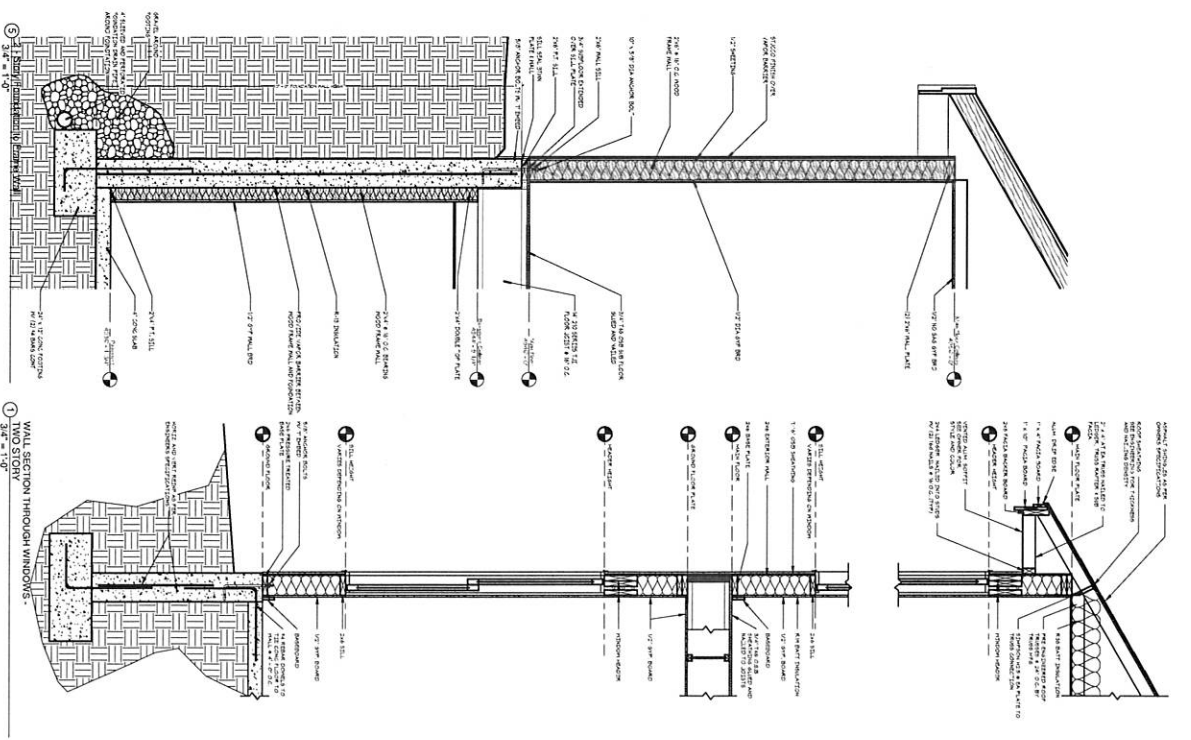
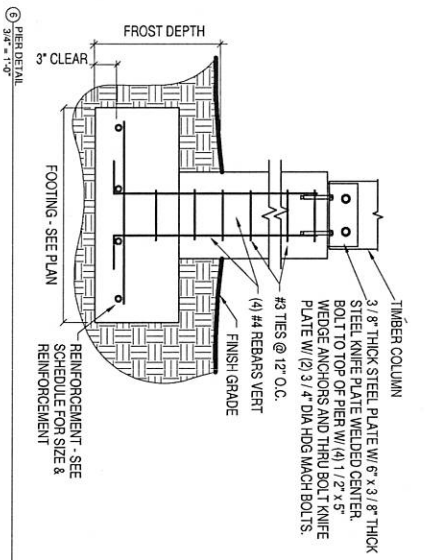
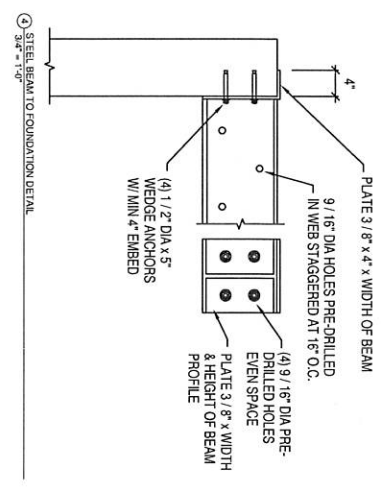
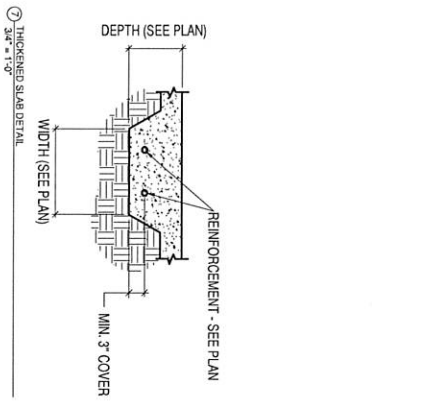
NAILING

1. 8d
2. 16d AT 18" O.C.
- 2 - 16d TOE NAIL, 2 - 16d END NAIL
- 4 - 8d AT 18" O.C.
- 2 - 16d AT 18" O.C.
- 2 - 16d AT 18" O.C.
- 3 - 16d AT 18" O.C.
- 3 - 16d AT 18" O.C.
- 3 - 16d AT 24" O.C.
- 20d AT 32" O.C. STAGGERED: 2 - 20d AT ENDS AND SPACES

MINIMUM NAILING SCHEDULE

CONNECTION	NAILING
1. JOIST TO GIRDERS: 2-8d	3 - 8d
2. GIRDS TO JOIST TOPS: EA END	2 - 16d AT 18" O.C.
3. SOLE PLATE TO JOIST OR BLOCKING: FACE NAIL	2 - 16d TOE NAIL, 2 - 16d END NAIL
4. TOP PLATE TO STUD: END NAIL	4 - 8d AT 18" O.C.
5. STUD TO STUD: FACE NAIL	2 - 16d AT 18" O.C.
6. SOLE PLATE TO STUD: FACE NAIL	2 - 16d AT 18" O.C.
7. DOUBLE TOP PLATES: FACE NAIL	3 - 16d AT 18" O.C.
8. TOP PLATES LAPS AND INTERSECTIONS: FACE NAIL	3 - 16d AT 18" O.C.
9. CEILING JOISTS TO STUD: TOE NAIL	2 - 16d AT 18" O.C.
10. CEILING JOISTS TO PLATE TOE NAIL	2 - 16d AT 18" O.C.
11. CONTINUOUS HENDERS TO STUD TOE NAIL	3 - 16d AT 18" O.C.
12. CEILING JOISTS LAPS OVER PARTITIONS: FACE NAIL	3 - 16d AT 18" O.C.
13. RAFTER TO PLATE TOE NAIL	20d AT 24" O.C.
14. RAFTER TO CORNER STUDS	20d AT 32" O.C. STAGGERED: 2 - 20d AT ENDS AND SPACES
15. BUILD UP CORNERS AND BEAMS	
16. BUILD UP GIRDERS AND BEAMS	

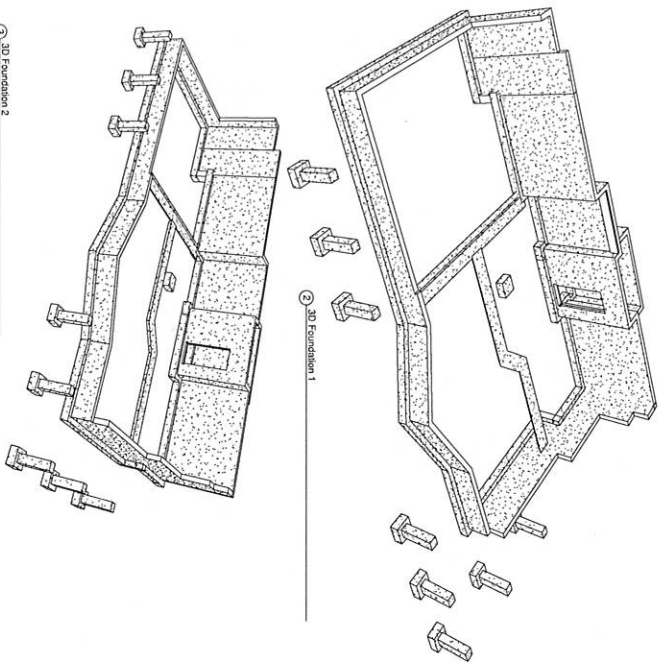
MINIMUM NAILING SCHEDULE



<p>Project Number: 2014-0223 Date: 08/13/2015 Drawn by: Anthony Checked by: [blank]</p>	<p>The Nobs Residence 6640 E 1100 S - SKI LAKE LOT #3</p> <p>Notes, Sections & Details</p>	<p>No. [blank] Description [blank] Date [blank]</p>	<p>LUNDIN DESIGN GROUP DESIGN</p>	<p>LUNDIN HOMES, LLC GENERAL CONTRACTOR</p>	<p>ENGINEERING</p>
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S1

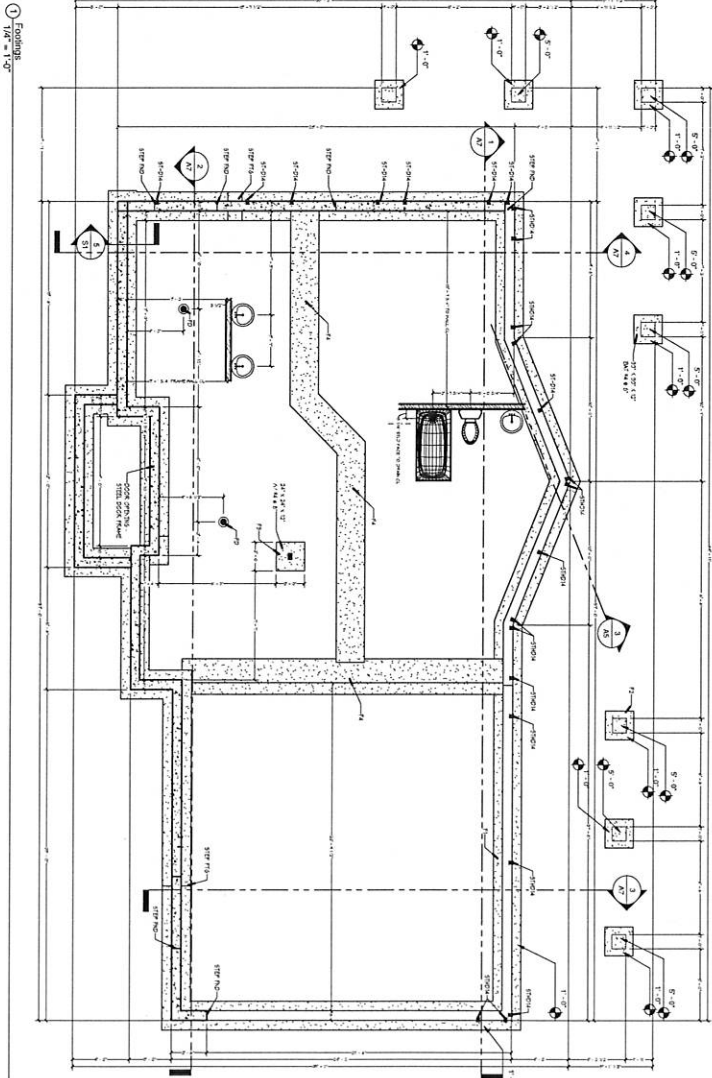
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CONCRETE WALL SCHEDULE

WALL HEIGHT	TOP EDGE SUPPORT	MINIMUM THICKNESS	REINFORCING		STEEL AT OPENINGS	REMARKS
			VERTICAL	HORIZONTAL		
2'-0"		8"	#4 AT 18" O.C.	2 - #4		#4 FOOTING DOWELS AT 32" O.C. EXTENDING 18" INTO FOUNDATION WALL.
4'-0"	NONE	8"	#4 AT 18" O.C.	4 - #4		
6'-0"		8"	#4 AT 18" O.C.	5 - #4	ABOVE: 2 - #4 BARS EA SIDE: 1 - #4 BAR	
8'-0"	FLOOR OR DAPPHADAM	8"	#4 AT 18" O.C.	6 - #4	BELOW: 1 - #4 BAR	DO NOT BAPTILL ANY FOUNDATION REINFORCING INSTALLED TEMP STOPPING AND SEATED ALT. BONDING ON TIEING FOUNDATION WALL.
10'-0"		8"	#4 AT 18" O.C.	18 - #4		
12'-0"		8"	#5 AT 18" O.C.	#4 AT 12" O.C.		

NOTES:
 1. ALL REINFORCING SHALL BE PLACED IN CENTER OF WALL AND EXTEND TO WITHIN THREE ONES OF THE TOP OF THE WALL.
 2. ONE HORIZONTAL BAR SHALL BE LOCATED IN THE TOP 2' - ONE BAR IN THE BOTTOM 4' AND THE OTHER BARS EQUALLY SPACED.
 3. BARS SHALL BE PLACED WITHIN 2' OF OPENINGS AND EXTEND 24" BEYOND THE EDGE OF THE OPENING. VERTICAL BARS MAY TERMINATE 2" FROM THE TOP OF THE CONCRETE.
 4. ALL REINFORCING SHALL BE PLACED AT 18" O.C. ON WALLS DESIGNATED AS SW-4. PLATES ARE TO HAVE A MINIMUM OF (2) ANCHOR BOLTS. ANCHOR BOLTS SHALL BE PLACED AT 32" O.C. ON WALLS DESIGNATED AS SW-1, SW-2 AND SW-3. ANCHOR BOLTS SHALL BE PLACED AT 32" O.C. ON WALLS DESIGNATED AS SW-4. PLATES ARE TO HAVE A MINIMUM OF (2) ANCHOR BOLTS. SPACE ANCHOR 5. USE 2" LONG ANCHOR BOLTS FOR DOUBLE SILL PLATES AND 3" LONG ANCHOR BOLTS FOR TRIPLE SILL PLATES.
 6. LINTEL DEPTH SHALL BE 2" FOR EACH FOOT OF OPENING WIDTH. MIN. 6".
 7. ALL CONCRETE WITHIN WALLS BETWEEN BEAMS SHALL BE 18" COMPACTED WITHIN WALLS BETWEEN BEAMS.
 8. PLACE ALL FOOTING REINFORCING 2" FROM BOTTOM OF FOOTING WITH 3" CLEAR ON SIDES UNLESS NOTED OTHERWISE.
 9. ALL FOUNDATION SHALL BE RANDED AND REINFORCED WITH COMPACTED FILL COMPACTED TO 95% UNLESS NOTED OTHERWISE.
 10. ALL FOUNDATION SHALL BE RANDED AND REINFORCED WITH COMPACTED FILL WITHIN 18" OF EXTERIOR WALLS.
 11. SEE ARCHITECTURAL PLANS FOR FOOTING FOUNDATION STEPS/DOWNS AND WALL HEIGHTS.



CONCRETE WALLS
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 11. SEE ARCHITECTURAL PLANS FOR FOOTING FOUNDATION STEPS/DOWNS AND WALL HEIGHTS.

No.	Description	Date

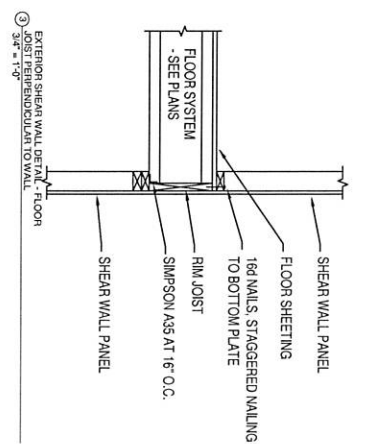
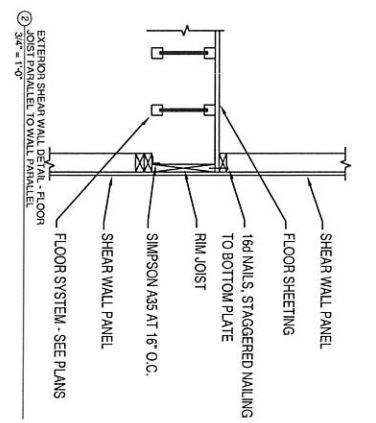
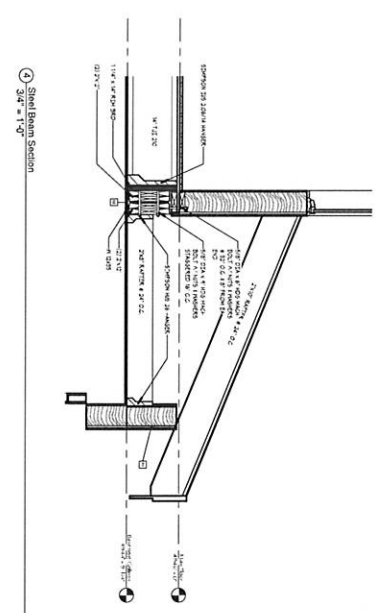
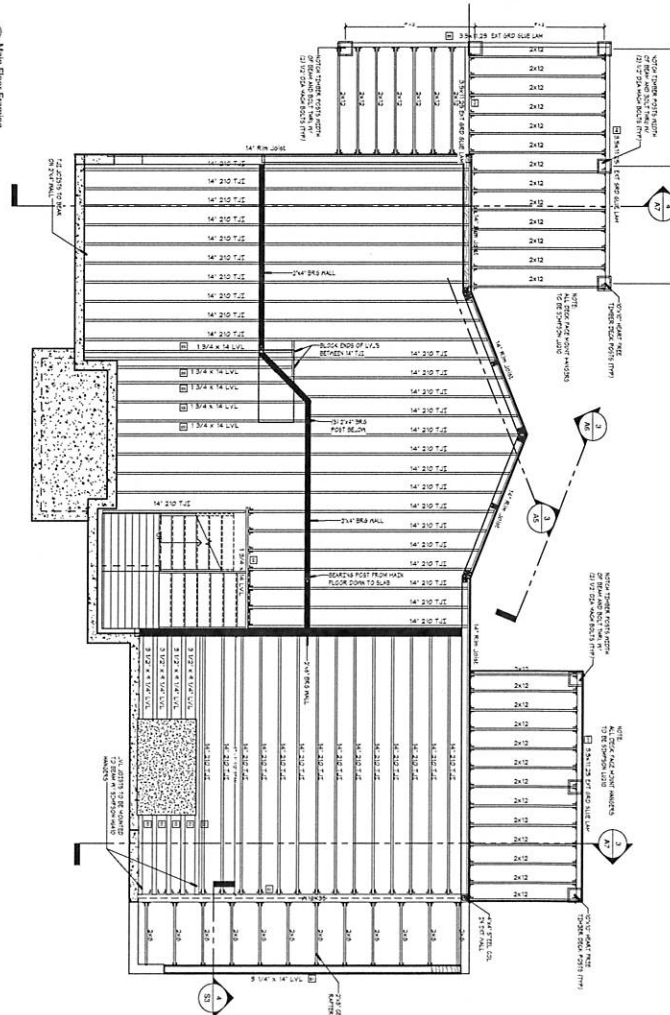
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6640 E 1100 S - SKI LAKE LOT #3	
Foundation Plan	
Project Number	2014-023
Date	06/13/2015
Drawn By	KATE CHAMBERLAIN
Checked By	KATE CHAMBERLAIN

LUNDIN DESIGN GROUP
 2485 GRANT AVENUE SUITE #212 - OGDEN, UT 84401
 P: (801) 468-1811 F: (801) 468-1811
 DESIGN

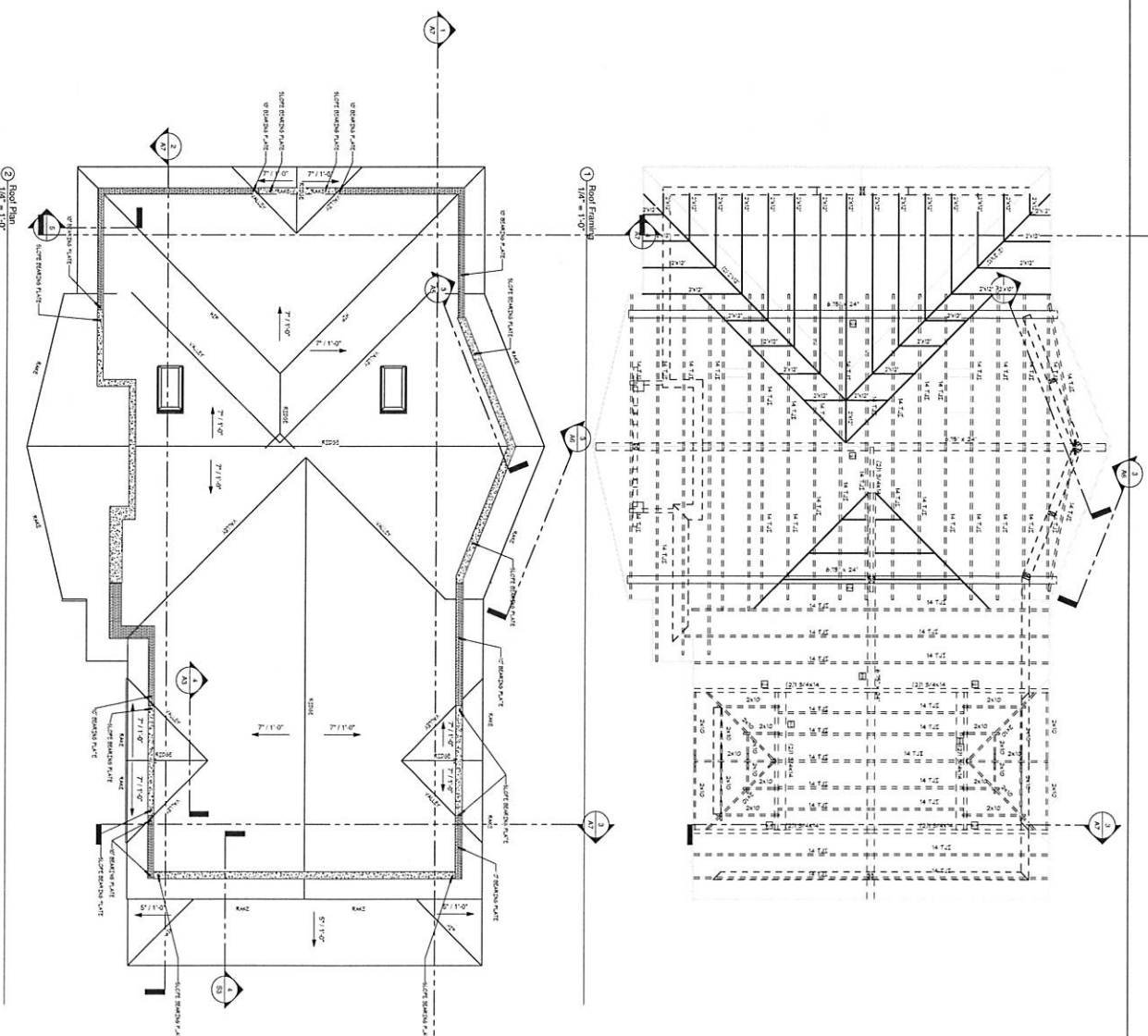
LUNDIN HOMES, LLC
 2485 GRANT AVENUE SUITE #202 - OGDEN, UT 84401
 P: (801) 468-1811 F: (801) 468-1811
 GENERAL CONTRACTOR

ACTIVUS
 10000 Engineering
 PG Box 716
 Eden, Utah 84310
 (801) 351-2573

Mark	Length	Type	Family	Cut Length	Comments
B1	18'-11"	5 1/2" x 14 LVL	LVL-Laminated Veneer Lumber	18'-10.2502"	
B2	22'-0"	W12X55	WAL-Flange	22'-0.2502"	
B3	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B4	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B5	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B6	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B7	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B8	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B9	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B10	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B11	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B12	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B13	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B14	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B15	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B16	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B17	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B18	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B19	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B20	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B21	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	
B22	18'-0"	3 1/2" x 9 1/2 LVL	LVL-Laminated Veneer Lumber	18'-4.5116"	



<p>LUNDIN DESIGN GROUP 2485 GRANT AVENUE, SUITE 1212 - CODY, WY 82401 P: (307) 248-1860 F: (307) 248-1861</p>	<p>LUNDIN HOMES, LLC 2485 GRANT AVENUE, SUITE 1212 - CODY, WY 82401 P: (307) 248-1860 F: (307) 248-1861</p>	<p>PO Box 716 Eden, Utah 84310 (801) 351-2973</p>
<p>No. Description Date</p>	<p>Project Number: 2011-4-232 Drawn by: KAREL LUNDIN Checked by: Chandler</p>	<p>Scale: AS INDICATED</p>



S4 <small>Scale 1/8" = 1'-0"</small>	The Nobs Residence 6640 E 1100 S - SKI LAKE LOT #3 Roof Plans
	<small>Project Number</small> 2014-0273
	<small>Date</small> 04/13/2015
	<small>Checked By</small> C. HARRIS

No.	Description	Date

LUNDIN DESIGN GROUP



2495 GRANT AVENUE SUITE #212 - OGDEN, UT 84401
P: (801) 348-1848 - FAX: (801) 348-1849
WWW.LUNDINDESIGN.COM


DESIGN

LUNDIN HOMES, LLC



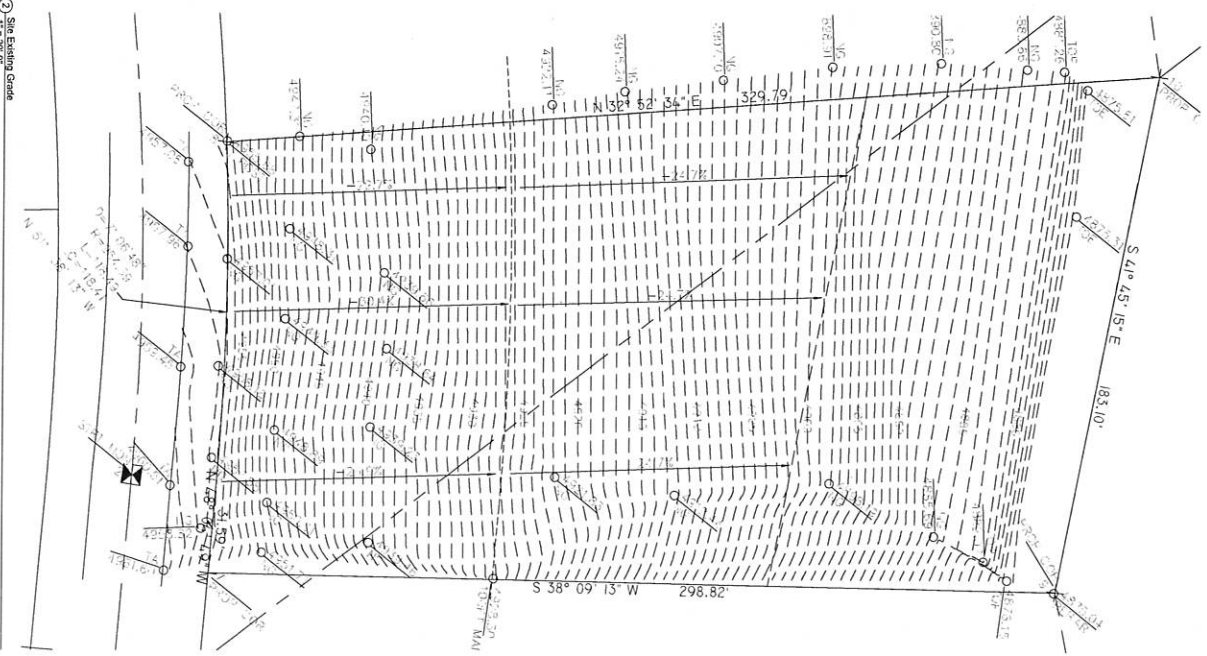
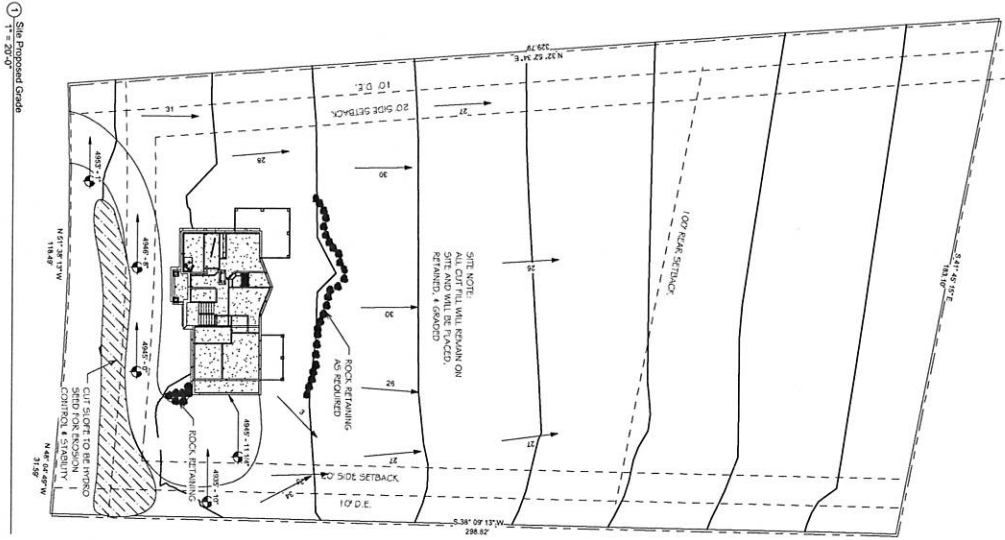
2495 GRANT AVENUE SUITE #212 - OGDEN, UT 84401
P: (801) 348-1848 - FAX: (801) 348-1849
WWW.LUNDINHOMES.COM

GENERAL CONTRACTOR



PO Box 716
Eden, Utah 84310
(801) 391-2573

Ortho Engineering
ENGINEERING



The Nob's Residence
 6640 E 1100 S - SKI LAKE LOT #3
 Topo Site

Project Number: 2014-0223
 Date: 02/26/2015
 Created By: QMK/MLP

C1
 1" = 20'-0"

No.	Description	Date

LUNDIN DESIGN GROUP

2488 GRANT AVENUE SUITE #212 - COCOON, UT 84401
 P: (801) 398-1840 F: (801) 398-1841

DESIGN

LUNDIN HOMES, LLC

2488 GRANT AVENUE SUITE #212 - COCOON, UT 84401
 P: (801) 398-1840 F: (801) 398-1841

GENERAL CONTRACTOR

Atitudo North
 ENGINEERING

PO Box 716
 Eden, Utah 84310
 (801) 391-2573



133 North 1330 West
Orem, Utah - 84057
Phone (801) 225-5711

3662 West 2100 South
Salt Lake City, Utah - 84120
Phone (801) 808-9310

1596 W. 2650 S. #108
Ogden, Utah - 84401
Phone (801) 399-9516

**GEOTECHNICAL STUDY
LOT 15 SKI LAKE ESTATES NO. 3
6640 EAST 1100 SOUTH
HUNTSVILLE, UTAH**

Project No. 145150G

June 23, 2014

Prepared For:

Mr. Martin Nobs
50 River Bluff Road
Elgin, IL 60120

Prepared By:

EARTHTEC ENGINEERING
Ogden Office

Earthtec Engineering

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No. 8	DIRECT SHEAR TEST
Nos. 9 – 10	STABILITY RESULTS

1.0 EXECUTIVE SUMMARY

This report presents the results of our geotechnical study for Lot 15 of the Ski Lake Estates No. 3 subdivision located in Huntsville, Utah. We understand the proposed building, as currently planned, will consist of a two to three story structure founded on spread footings with a walk-out basement.

Our field exploration included the excavation of two (2) test pits to depths of about 12 feet below the existing ground surface. Groundwater was not encountered during our field investigation. The subsurface soils encountered generally consisted of topsoil overlying layers of Fat Clay with sand (CH), Lean Clay with sand (CL), Silty Sand (SM), Sandy Lean Clay (CL), and Sandstone. All topsoil encountered should be removed beneath the entire building footprint and exterior flatwork.

Based on the results of our field exploration, laboratory testing, and engineering analyses, it is our opinion that the subject site is suitable for the proposed development, provided the recommendations presented herein are followed and implemented during design and construction. Conventional strip and spread footings may be used to support the structures, with foundations placed entirely on uniform, undisturbed, native soils or entirely on a minimum of 18 inches of properly placed and compacted structural fill.

The global stability of the existing slope at the property was analyzed as part of our study. Our analyses indicate that the proposed slope, meets the required minimum factors of safety. Any modifications to the slope, including the construction of retaining walls, may affect the slope stability and should be properly analyzed, designed, and engineered.

This executive summary provides a general synopsis of our recommendations. Details of our findings, conclusions and recommendations are provided within the body of this report. Failure to consult with Earthtec Engineering (Earthtec) regarding any changes made during design and/or construction of the project from those discussed herein relieves Earthtec from any liability arising from changed conditions at the site. We also strongly recommend that Earthtec observe the building excavations to verify the adequacy of our recommendations

presented herein, and that Earthtec performs materials testing and special inspections for this project to provide continuity during construction.

2.0 INTRODUCTION

The project is located at 6640 East 1100 South in Huntsville, Utah. The general location of the site is shown on Figure No. 1, *Vicinity Map*, at the end of this report.

The purposes of this study were to

- Evaluate the subsurface soil conditions at the site,
- Assess the engineering characteristics of the subsurface soils, and
- Provide geotechnical recommendations for general site grading and the design and construction of foundations, concrete floor slabs, driveway, and miscellaneous concrete flatwork.

The scope of work completed for this study included field reconnaissance, subsurface exploration, field and laboratory soil testing, geotechnical engineering analysis, and the preparation of this report.

3.0 PROPOSED CONSTRUCTION

We understand that the proposed project consists of constructing a single family residence. We anticipate that the future home will be conventionally framed and be two to three stories in height. The home will likely be founded on spread footings with a walk-out basement. We have based our recommendations in this report on the assumption that foundation loads for the proposed structures will not exceed 3,000 pounds per linear foot for bearing walls, 15,000 pounds for column loads, and 100 pounds per square foot for floor slabs. If structural loads will be greater Earthtec should be notified so that we may review our recommendations and make modifications, if necessary.

In addition to the construction described above, we anticipate that

- Utilities will be installed to service the proposed residence,
- Exterior concrete flatwork will be placed in the form of a driveway and sidewalk.

4.0 GENERAL SITE DESCRIPTION

At the time of our subsurface investigation, the subject property consisted of an undeveloped lot that was heavily vegetated with native grasses, weeds, and underbrush. The subject property slopes downward to the north at an approximate 25 percent grades. There is an approximate change in elevation of 90 feet across the property. An enclosed irrigation pipe was observed near the toe of the slope. The subject site is bounded on the north and east by residential development, on the south by 1100 South Street, and on the west by an undeveloped lot.

5.0 SUBSURFACE EXPLORATION

5.1 Soil Exploration

Under the direction of a qualified member of our geotechnical staff, subsurface explorations were conducted at the site on May 30, 2014 by excavating two (2) exploratory test pits to depths of about 12 feet below the existing ground surface using a track-mounted excavator. The approximate locations of the test pits are shown on Figure No. 2, *Aerial Photograph Showing Location of Test Pits and Slope Cross-Section*. Graphical representations and detailed descriptions of the soils encountered are shown on Figure Nos. 3 through 4, *Test Pit Log*, at the end of this report. The stratification lines shown on the logs represent the approximate boundary between soil units; the actual transition may be gradual. Due to potential natural variations inherent in soil deposits, care should be taken in interpolating between and extrapolating beyond exploration points. A key to the symbols and terms on the logs is presented on Figure No. 5, *Legend*.

The soil samples collected were classified by visual examination in the field following the guidelines of the Unified Soil Classification System (USCS). The samples were transported to our Ogden, Utah laboratory where they will be retained for 30 days following the date of this report and then discarded, unless a written request for additional holding time is received prior to the 30 day limit.

6.0 LABORATORY TESTING

Representative soil samples collected during our field exploration were tested in the laboratory to assess pertinent engineering properties and to aid in refining field

classifications, if needed. Tests performed included natural moisture content, dry density tests, liquid and plastic limits determinations, mechanical (partial) gradation analyses, one-dimensional consolidation test, and a direct shear test. The table below summarizes the laboratory test results, which are also included on the attached test pit logs at the respective sample depths, on Figure Nos. 6 through 7, *Consolidation-Swell Test*, and on Figure No. 8, *Direct Shear Test*.

Table 1: Laboratory Test Results

Test Pit No.	Depth (ft.)	Natural Moisture (%)	Natural Dry Density (pcf)	Atterberg Limits		Grain Size Distribution (%)			Soil Type
				Liquid Limit	Plasticity Index	Gravel (+ #4)	Sand	Silt/Clay (- #200)	
TP-1	3½	26	84	79	49	0	29	71	CH
TP-2	3½	23	90	49	22	0	21	79	CL

* NP = Non-Plastic

As part of the consolidation test procedure, water was added to the samples to assess moisture sensitivity when the samples were loaded to an equivalent pressure of approximately 1,000 psf. The consolidation test indicated the fat clay and lean clay soils have a high potential for compressibility and a slight potential for collapse (settlement) under increased moisture contents and anticipated load conditions.

7.0 SUBSURFACE CONDITIONS

7.1 Soil Types

On the surface of the site, we encountered topsoil which is estimated to extend about 1½ feet in depth at the test pit locations. Below the topsoil we encountered layers of Fat Clay with sand (CH), Lean Clay with sand (CL), Sandy Lean Clay (CL), Silty Sand (SM), and Sandstone extending to the maximum depth explored of about 12 feet below the existing ground surface. Based on our experience and observations during field exploration, the lean clay and fat clay soils visually appeared to be stiff in consistency and the silty sand soils visually had a relative density of dense.

7.2 Groundwater Conditions

Groundwater was not encountered during our field exploration. However, we observed salt staining in the soils, a possible indicator of past water or seepage levels, at a depth of about 4 feet below the existing ground surface. Note that groundwater levels will fluctuate in response to the season, precipitation, snow melt, irrigation, and other on and off-site influences. Quantifying these fluctuations would require long term monitoring, which is beyond the scope of this study. The contractor should be prepared to dewater excavations as needed.

8.0 SITE GRADING

8.1 General Site Grading

All surface vegetation and unsuitable soils (such as topsoil, organic soils, undocumented fill, soft, loose, or disturbed native soils, and any other inapt materials) should be removed from below foundations, floor slabs, and exterior concrete flatwork. We encountered topsoil on the surface of the site which we estimated to extend about 1½ feet below the existing ground surface. All topsoil encountered (including soil with roots larger than about ¼ inch in diameter) should be completely removed, even if found to extend deeper than 1½ feet, along with any other unsuitable soils that may be encountered.

Fill placed over large areas, even if only a few feet in depth, can cause consolidation in the underlying native soils resulting in settlement of the fill. If more than 3 feet of grading fill will be placed above the existing surface (to raise site grades), Earthtec should be notified so that we may provide additional recommendations, if required. Such recommendations will likely include placing the fill several weeks (or possibly more) prior to construction to allow settlement to occur.

8.2 Temporary Excavations

Temporary excavations that are less than 4 feet in depth and above groundwater should have side slopes no steeper than ½H:1V (Horizontal:Vertical). Temporary excavations where water is encountered in the upper 4 feet or that extend deeper than 4 feet below site grades should be sloped or braced in accordance with OSHA¹ requirements for Type C soils.

¹ OSHA Health And Safety Standards, Final Rule, CFR 29, part 1926.

8.3 Fill Material Composition

The native soils are not suitable for use as structural fill. Excavated soils, including the topsoil, may be stockpiled for use as fill in landscape areas.

Structural fill is defined as fill material that will ultimately be subjected to any kind of structural loading, such as those imposed by footings, floor slabs, pavements, etc. We recommend that a professional engineer or geologist verify that the structural fill to be used on this project meets the requirements, stated below. We recommend that structural fill consist of the imported sandy/gravelly soils meeting the following requirements in the table below:

Table 2: Structural Fill Recommendations

Sieve Size/Other	Percent Passing (by weight)
4 inches	100
3/4 inches	70 – 100
No. 4	40 – 80
No. 40	15 – 50
No. 200	0 – 20
Liquid Limit	35 maximum
Plasticity Index	15 maximum

In some situations, particles larger than 4 inches and/or more than 30 percent coarse gravel may be acceptable, but would likely make compaction more difficult and/or significantly reduce the possibility of successful compaction testing. Consequently, more strict quality control measures than normally used may be required, such as using thinner lifts and increased or full time observation of fill placement.

We recommend that utility trenches below any structural load be backfilled using structural fill. Note that most local governments and utility companies require Type A-1-a or A-1-b (AASHTO classification) soils (which overall is stricter than our recommendations for structural fill) be used as backfill above utilities in certain areas. All backfill soil should have a maximum particle size of 4 inches, a maximum Liquid Limit of 35 and a maximum Plasticity Index of 15.

If required (i.e. fill in submerged areas), we recommend that free draining granular material (clean sand and/or gravel) meet the following requirements in the table below:

Table 3: Free-Draining Fill Recommendations

Sieve Size/Other	Percent Passing (by weight)
3 inches	100
No. 10	0 – 25
No. 40	0 – 15
No. 200	0 – 5
Plasticity Index	Non-plastic

Three inch minus washed rock (sometimes called river rock or drain rock) and pea gravel materials usually meet these requirements and may be used as free draining fill. If free draining fill will be placed adjacent to soil containing a significant amount of sand or silt/clay, precautions should be taken to prevent the migration of fine soil into the free draining fill. Such precautions should include either placing a filter fabric between the free draining fill and the adjacent soil material, or using a well graded, clean filtering material approved by the geotechnical engineer.

8.4 Fill Placement and Compaction

Fill should be placed on level, horizontal surfaces. Where fill will be placed on existing slopes steeper than 5H:1V, the existing ground should be benched prior to placing fill. We recommend bench heights of 1 to 4 feet, with the lowest bench being a minimum 3 feet below adjacent grade and at least 10 feet wide.

The thickness of each lift should be appropriate for the compaction equipment that is used. We recommend a maximum lift thickness prior to compaction of 4 inches for hand operated equipment, 6 inches for most "trench compactors" and 8 inches for larger rollers, unless it can be demonstrated by in-place density tests that the required compaction can be obtained throughout a thicker lift. The full thickness of each lift of structural fill placed should be compacted to at least the following percentages of the maximum dry density, as determined by ASTM D-1557:

- In landscape and other areas not below structurally loaded areas: 90%
- Less than 5 feet of fill below structurally loaded areas: 95%
- Between 5 and 10 feet of fill below structurally loaded areas: 98%

Generally, placing and compacting fill at moisture contents within ± 2 percent of the optimum moisture content, as determined by ASTM D-1557, will facilitate compaction. Typically, the

further the moisture content deviates from optimum the more difficult it will be to achieve the required compaction.

Fill should be tested frequently during placement and we recommend early testing to demonstrate that placement and compaction methods are achieving the required compaction. The contractor is responsible to ensure that fill materials and compaction efforts are consistent so that tested areas are representative of the entire fill.

8.5 Stabilization Recommendations

The native soils may rut and pump during grading and construction. The likelihood of rutting and/or pumping, and the depth of disturbance, is proportional to the moisture content in the soil, the load applied to the ground surface, and the frequency of the load. Consequently, rutting and pumping can be minimized by avoiding concentrated traffic, minimizing the load applied to the ground surface by using lighter equipment, partially loaded equipment, tracked equipment, by working in dry times of the year, and/or by providing a working surface for equipment.

During grading the soil in any obvious soft spots should be removed and replaced with granular material. If rutting or pumping occurs traffic should be stopped in the area of concern. The soil in rutted areas should be removed and replaced with granular material. In areas where pumping occurs the soil should either be allowed to sit until pore pressures dissipate (several hours to several days) and the soil firms up, or be removed and replaced with granular material. Typically, we recommend removal to a minimum depth of 24 inches. For granular material, we recommend using angular well-graded gravel, such as pit run, or crushed rock with a maximum particle size of four inches. We suggest that the initial lift be approximately 12 inches thick and be compacted with a static roller-type compactor. A finer granular material such as sand, gravelly sand, sandy gravel or road base may also be used. Materials which are more angular and coarse may require thinner lifts in order to achieve compaction. We recommend that the fines content (percent passing the No. 200 sieve) be less than 15%, the liquid limit be less than 35, and the plasticity index be less than 15.

Using a geosynthetic fabric, such as Mirafi 600X or equivalent, may also reduce the amount of material required and avoid mixing of the granular material and the subgrade. If a fabric

is used, following removal of disturbed soils and water, the fabric should be placed over the bottom and up the sides of the excavation a minimum of 24 inches. The fabric should be placed in accordance with the manufacturer's recommendations, including proper overlaps. The granular material should then be placed over the fabric in compacted lifts. Again, we suggest that the initial lift be approximately 12 inches thick and be compacted with a static roller-type compactor.

9.0 SLOPE STABILITY

We evaluated the overall stability of the proposed slope at the subject property. The properties of the native soils at the site were estimated using laboratory testing on samples recovered during our field investigations and our experience with similar soils. Our direct shear testing on the native Fat Clay with sand (CH) soils encountered during our field investigation indicated the soils have an internal friction angle of about 21 degrees and cohesion of about 345 psf. To account for the variability in the native fat clay soils, we used an internal friction angle of 20 degrees, an apparent cohesion of 200 psf, a saturated unit weight of 130 pcf, and a moist unit weight of 110 pcf for our analyses. We assumed an internal friction angle of 32 degrees, an apparent cohesion of 125 psf, a saturated unit weight 120 pcf, and a moist unit weight of 113 pcf for the native Silty Sand (SM) soils that we observed below the native Lean Clay and Fat Clay soils.

For the seismic (pseudostatic) analysis, a peak horizontal ground acceleration of 0.3854g for the 2% probability of exceedance in 50 years was obtained for site (grid) locations of 41.247 degrees north latitude and -111.788 degrees west longitude. Typically, one-third to one-half this value is utilized in analysis. Accordingly, a value of 0.193 was used as the pseudostatic coefficient for the stability analysis.

We evaluated the global stability of the proposed site using the computer program XSTABLE. This program uses a limit equilibrium (Bishop's modified) method for calculating factors of safety against sliding on an assumed failure surface and evaluates numerous potential failure surfaces, with the most critical failure surface identified as the one yielding the lowest factor of safety of those evaluated. The configuration analyzed was based on our observations during the field investigation, assumption of the foundation layout, and the topography map of the site that was provided to us by Mr. Karl Lundin with Lundin Homes.

The configuration of the existing slope was analyzed at Cross-Section A-A' and starts at the north portion of the lot near the toe of the slope where the lot was relatively flat. The lot then sloped up hill and to the south and consisted of an approximate 8-foot high slope inclined at approximately 0.7V:1H (Vertical:Horizontal), followed by a relatively flat area for approximately 18 feet, followed by an approximate 8-foot high slope inclined at approximately 0.7V:1H (Vertical:Horizontal). The lot then continued to slope uphill and to the south and consisted of an approximate 52 foot high slope inclined at approximately 0.3V:1H (Vertical:Horizontal). The lot then was cut into the existing slope for approximately 10 feet, followed by an approximate 5-foot high concrete wall, followed by a flat area for approximately 30 feet, followed by an approximate 10-foot high concrete wall. The lot continues to slope up hill and to the south and consisted of an approximate 10-foot high slope inclined at approximately of 0.5V:1H (Vertical:Horizontal), and then consisted of a relatively flat area to 1100 South Street. A water table was conservatively placed at approximately 5 to 20 feet below the ground surface, although groundwater was not encountered during our field exploration..

To model the load imposed on the slope by typical residential building, a 1,500 psf load was modeled approximately 20 feet north of the crest of the slope. Typically, the required minimum factors of safety are 1.5 for static conditions and 1.0 for seismic (pseudostatic) conditions. The results of our analyses indicate that the slope configuration described above meets both these requirements. The slope stability data are attached as Figure Nos. 9 and 10, *Stability Results*. Any modifications to the slope, including the construction of retaining walls, should be properly designed and engineered.

It should be clearly understood that slope movements or even failure can occur if the slope is undermined or the slope soils become saturated. The property owner and the owner's representatives should be made aware of the risks should these or other conditions occur that could saturate or erode/undermine the soils. Surface water should be directed away from the top and bottom of the slope, the slope should be vegetated with drought resistant plants, and sprinklers should not be placed on the face of the slope.

10.0 SEISMIC AND GEOLOGIC CONSIDERATIONS

10.1 Seismic Design

The residential structures should be designed in accordance with the International Residential Code (IRC). The IRC designates this area as a seismic design class D_t.

The site is located at approximately 41.247 degrees north latitude and -111.788 degrees west longitude from the approximate center of the site. The IRC site value for this property is 0.70g. The design spectral response acceleration parameters are given below.

Table 4: Design Acceleration for Short Period

S _s	F _a	Site Value (S _{DS})
0.94 g	1.12	2/3 S _s *F _a
		0.70 g

S_s = Mapped spectral acceleration for short periods

F_a = Site coefficient from Table 1613.5.3(1)

S_{DS} = 2/3 S_s F_a = 5% damped design spectral response acceleration for short periods

10.2 Faulting

The subject property is located within the Intermountain Seismic Belt where the potential for active faulting and related earthquakes is present. Based upon published geologic maps², no active faults traverse through or immediately adjacent to the site. The site is not located within local fault study zone. The nearest mapped fault trace is the Ogden Valley Southwestern Margin Fault Zone located about 1½ miles southwest of the site.

10.3 Liquefaction Potential

According to current liquefaction maps³ for Weber County, the site is located within an area designated as "Very Low" in liquefaction potential. Liquefaction can occur when saturated subsurface soils below groundwater lose their inter-granular strength due to an increase in soil pore water pressures during a dynamic event such as an earthquake. The potential for liquefaction is based on several factors, including 1) the grain size distribution of the soil, 2) the plasticity of the fine fraction of the soil (material passing the No. 200 sieve), 3) relative density of the soil, 4) earthquake strength (magnitude) and duration, and 5) overburden pressures. In addition, the soils must be near saturation for liquefaction to occur.

² U.S. Geological Survey, Quaternary Fault and Fold Database of the United States, November 3, 2010.

³ Utah Geological Survey, Liquefaction-Potential Map For A Part Of Weber County, Utah, Public Information Series 28, August 1994.

Loose, saturated sands are most susceptible to liquefaction, but some loose, saturated gravels and relatively sensitive silt to low-plasticity silty clay soils can also liquefy during a seismic event. Subsurface soils were composed of stiff, clays and fat clays, dense silty sand, and slightly weathered sandstone. The soils encountered at this project do not appear liquefiable, but the liquefaction susceptibility of underlying soils (deeper than our explorations) is not known and would require deeper explorations to quantify.

10.4 Geologic Setting

The surficial geology at the location of the subject site has been mapped as "Lake Bonneville fine grained deposits dated upper Pleistocene and Norwood Formation dated lower Oligocene and upper Eocene" by Jon K. King, W. Adolph Yonkee, and James C. Coogan (2008)⁴. These deposits are labeled as Unit Qlf/Tn on the referenced map. As shown on Figure No. 1, *Vicinity Map*, the topography of the site and surrounding area generally slopes down to the north northeast.

11.0 FOUNDATIONS

11.1 General

The foundation recommendations presented in this report are based on the soil conditions encountered during our field exploration, the results of laboratory testing of samples of the native soils, the site grading recommendations presented in this report, and the foundation loading conditions presented in Section 3.0, *Proposed Construction*, of this report. If loading conditions and assumptions related to foundations are significantly different, Earthtec should be notified so that we can re-evaluate our design parameters and estimates (higher loads may cause more settlement), and to provide additional recommendations if necessary.

Conventional strip and spread footings may be used to support the proposed structures after appropriate removals as outlined in Section 8.1. Foundations should not be installed on topsoil, undocumented fill, debris, combination soils, organic soils, frozen soil, or in ponded water. If foundation soils become disturbed during construction they should be removed or recompacted.

⁴ Interim Geologic Map of the Snow Basin and part of the Huntsville "7.5" Quadrangle, Davis, Morgan, and Weber Counties, Utah.

11.2 Strip/Spread Footings

We recommend that conventional strip and spread foundations be constructed entirely on firm, undisturbed, uniform soils, (i.e. completely on clay or completely on silty sand) or entirely on a minimum of 18 inches of structural fill extending to undisturbed native soils. Foundations should not be constructed on combination soils such as part on clay and part on silty sand. For foundation design we recommend the following:

- Footings founded on native silty sand and clay soils may be designed using a maximum allowable bearing capacity of 1,500 pounds per square foot. Footings founded on a minimum 18 inches of structural fill may be designed using a maximum allowable bearing capacity of 2,000 pounds per square foot. The values for vertical foundation pressure can be increased by one-third for wind and seismic conditions per Section 1806.1 when used with the Alternative Basic Load Combinations found in Section 1605.3.2 of the 2012 International Building Code.
- Continuous and spot footings should be uniformly loaded and should have a minimum width of 20 and 30 inches, respectively.
- Exterior footings should be placed below frost depth which is determined by local building codes. In general 30 inches of cover is adequate for most sites; however local code should be verified by the end design professional. Interior footings, not subject to frost (heated structures), should extend at least 18 inches below the lowest adjacent grade.
- Foundation walls and footings should be properly reinforced to resist all vertical and lateral loads and differential settlement.
- The bottom of footing excavations should be compacted with at least 4 passes of an approved non-vibratory roller prior to erection of forms or placement of structural fill to densify soils that may have been loosened during excavation and to identify soft spots. If soft areas are encountered, they should be stabilized as recommended in Section 8.5.
- Footing excavations should be observed by the geotechnical engineer prior to beginning footing construction to evaluate whether suitable bearing soils have been exposed and whether excavation bottoms are free of loose or disturbed soils.
- Due to the varying soil condition observed in the test pits, combination soils should be anticipated and that structural fill will be required.
- Structural fill used below foundations should extend laterally a minimum of 6 inches for every 12 vertical inches of structural fill placed. For example, if 18 inches of structural fill are required to bring the excavation to footing grade, the structural fill should extend laterally a minimum of 9 inches beyond the edge of the footings on both sides.

11.4 Estimated Settlements

If the proposed foundations are properly designed and constructed using the parameters provided above, we estimate that total settlements should not exceed one inch and differential settlements should be one-half of the total settlement over a 25-foot length of continuous foundation, for non-earthquake conditions. Additional settlement could occur during a seismic event due to ground shaking, if more than 3 feet of grading fill is placed above the existing ground surface, and/or if foundation soils are allowed to become wetted.

11.5 Lateral Earth Pressures

Below grade walls act as soil retaining structures and should be designed to resist pressures induced by the backfill soils. The lateral pressures imposed on a retaining structure are dependent on the rigidity of the structure and its ability to resist rotation. Most retaining walls that can rotate or move slightly will develop an active lateral earth pressure condition. Structures that are not allowed to rotate or move laterally, such as subgrade basement walls, will develop an at-rest lateral earth pressure condition. Lateral pressures applied to structures may be computed by multiplying the vertical depth of backfill material by the appropriate equivalent fluid density. Any surcharge loads in excess of the soil weight applied to the backfill should be multiplied by the appropriate lateral pressure coefficient and added to the soil pressure. For static conditions the resultant forces is applied at about one-third the wall height (measured from bottom of wall). For seismic conditions, the resultant forces are applied at about two-third times the height of the wall both measured from the bottom of the wall. The lateral pressures presented in the table below are based on drained, horizontally placed native clay soils (as outlined in this report) as backfill material using a 25° friction angle and a dry unit weight of 110 pcf.

Table 5: Lateral Earth Pressures (Static and Dynamic)

Condition	Case	Lateral Pressure Coefficient	Equivalent Fluid Pressure (pcf)
Active	Static	0.41	45
	Seismic	0.53	58
At-Rest	Static	0.58	64
	Seismic	0.73	80
Passive	Static	2.46	271
	Seismic	2.92	321

*Seismic values combine the static and dynamic values

These pressure values do not include any surcharge, and are based on a relatively level ground surface at the top of the wall and drained conditions behind the wall. It is important that water is not allowed to build up (hydrostatic pressures) behind retaining structures. Retaining walls should incorporate drainage behind the walls as appropriate, and surface water should be directed away from the top and bottom of the walls.

Lateral loads are typically resisted by friction between the underlying soil and footing bottoms. Resistance to sliding may incorporate the friction acting along the base of foundations, which may be computed using a coefficient of friction of soils against concrete of 0.30 for the native lean clay and fat clay soils, 0.40 for native silty sands, and 0.55 for structural fill meeting the recommendations presented herein. For allowable stress design, the lateral resistance may be computed using Section 1807 of the 2012 International Building Code and all sections referenced therein. Retaining wall lateral resistance design should further reference Section 1807.2.3 for reference of Safety Factors. Retaining systems are assumed to be founded upon and backfilled with granular structural fill. The values for lateral foundation pressure can be increased by one-third for wind and seismic conditions per Section 1806.1 when used with the Alternative Basic Load Combinations found in Section 1605.3.2 of the 2012 International Building Code.

The pressure and coefficient values presented above are ultimate; therefore an appropriate factor of safety may need to be applied to these values for design purposes. The appropriate factor of safety will depend on the design condition and should be determined by the project structural engineer.

12.0 FLOOR SLABS AND FLATWORK

Concrete floor slabs and exterior flatwork may be supported on the native soils after appropriate removals and grading as outlined in Section 8.1 are completed. We recommend placing a minimum 4 inches of free-draining fill material (see Section 8.3) beneath floor slabs to facilitate construction, act as a capillary break, and aid in distributing floor loads. For exterior flatwork, we recommend placing a minimum 4 inches of roadbase material. Prior to placing the free-draining fill or roadbase materials, the native subgrade

should be proof-rolled to identify soft spots, which should be stabilized as discussed above in Section 8.5.

For slab design, we recommend using a modulus of subgrade reaction of 100 pounds per cubic inch. A 6-mil polyethylene vapor retarder shall be applied over the porous layer with the basement the basement floor constructed over the polyethylene, as per Section R405 of the 2012 International Residential Code. To help control normal shrinkage and stress cracking, we recommend that floor slabs have adequate reinforcement for the anticipated floor loads with the reinforcement continuous through interior floor joints, frequent crack control joints, and non-rigid attachment of the slabs to foundation and bearing walls. Special precautions should be taken during placement and curing of all concrete slabs and flatwork. Excessive slump (high water-cement ratios) of the concrete and/or improper finishing and curing procedures used during hot or cold weather conditions may lead to excessive shrinkage, cracking, spalling, or curling of slabs. We recommend all concrete placement and curing operations be performed in accordance with American Concrete Institute (ACI) codes and practices.

13.0 DRAINAGE

13.1 Surface Drainage

As part of good construction practice, precautions should be taken during and after construction to reduce the potential for water to collect near foundation walls. Accordingly, we recommend the following:

- Adequate compaction of foundation backfill should be provided i.e. a minimum of 90% of ASTM D-1557. **Water consolidation methods should not be used.**
- The ground surface should be graded to drain away from the building in all directions. We recommend a minimum fall of 8 inches in the first 10 feet.
- Roof runoff should be collected in rain gutters with downspouts designed to discharge well outside of the backfill limits, or at least 10 feet from foundations, whichever is greater.
- Sprinklers should be aimed away, and all sprinkler components (valves, lines, sprinkler heads) should be placed at least 5 feet from foundation walls. Sprinkler systems should be well maintained, checked for leaks frequently, and repaired promptly. Overwatering at any time should be avoided.

- Any additional precautions which may become evident during construction.

13.2 Subsurface Drainage

Section R405.1 of the 2012 International Residential Code states, "Drains shall be provided around all concrete and masonry foundations that retain earth and enclose habitable or usable spaces located below grade." Section R310.2.2 of the 2012 International Residential Code states, "Window wells shall be designed for proper drainage by connecting to the building's foundation drainage system." An exception is allowed when the foundation is installed on well drained ground consisting of Group 1 soils, which include those defined by the Unified Soil Classification System as GW, GP, SW, SP, GM, and SM. The soils observed in the explorations at the depth of foundation consisted primarily of fat clay and lean clay soils which are not Group 1 soil. The recommendations presented below should be followed during design and construction of the foundation drains:

- A perforated 4-inch minimum diameter pipe should be enveloped in at least 12 inches of free-draining gravel and placed adjacent to the perimeter footings. The perforations should be oriented such that they are not located on the bottom side of the pipe, as much as possible. The free-draining gravel should consist of primarily $\frac{3}{4}$ - to 2-inch size gravel having less than 5 percent passing the No. 4 sieve, and should be wrapped with a separation fabric such as Mirafi 140N or equivalent.
- The highest point of the perforated pipe bottom should be equal to the bottom elevation of the footings. The pipe should be uniformly graded to drain to an appropriate outlet (storm drain, land drain, other gravity outlet, etc.) or to one or more sumps where water can be removed by pumping.
- A perforated 4-inch minimum diameter pipe should be installed in all window wells and connected to the foundation drain.
- To facilitate drainage beneath basement floor slabs we recommend that the minimum thickness of free-draining fill beneath the slabs be increased to at least 10 inches (approximately equal to the bottom of footing elevations). A separation fabric such as Mirafi 140N or equivalent should be placed beneath the free-draining gravel. Connections should be made to allow any water beneath the slabs to reach the perimeter foundation drain.
- The drain system should be periodically inspected and clean-outs should be installed for the foundation drain to allow occasional cleaning/purging, as needed. Proper drain operation depends on proper construction and maintenance.

14.0 GENERAL CONDITIONS

The exploratory data presented in this report was collected to provide geotechnical design recommendations for this project. The explorations may not be indicative of subsurface conditions outside the study area or between points explored and thus have a limited value in depicting subsurface conditions for contractor bidding. Variations from the conditions portrayed in the test pits may occur and which may be sufficient to require modifications in the design. If during construction, conditions are different than presented in this report, Earthtec should be advised immediately so that the appropriate modifications can be made.

The findings and recommendations presented in this geotechnical report were prepared in accordance with generally accepted geotechnical engineering principles and practice in this area of Utah at this time. No warranty or representation is intended in our proposals, contracts, letters, or reports.

This geotechnical report is based on relatively limited subsurface explorations and laboratory testing. Subsurface conditions may differ in some locations of the site from those described herein, which may require additional analyses and possibly modified recommendations. Thus we strongly recommend consulting with Earthtec regarding any changes made during design and construction of the project from those discussed herein. Failure to consult with Earthtec regarding any such changes relieves Earthtec from any liability arising from changed conditions at the site.

To maintain continuity, Earthtec should also perform materials testing and special inspections for this project. The recommendations presented herein are based on the assumption that an adequate program of tests and observations will be followed during construction to verify compliance with our recommendations. We also assume that we will review the project plans and specifications to verify that our conclusions and recommendations are incorporated and remain appropriate (based on the actual design). Earthtec should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Earthtec also should be retained to

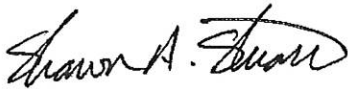
Geotechnical Study
Lot 15 SKI Lake Estates No. 3
6640 East 1100 South
Huntsville, Utah
Project No. 145150G

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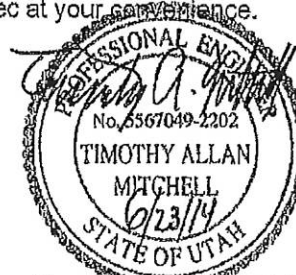
provide observation and testing services during grading, excavation, foundation construction, and other earth-related construction phases of the project.

We appreciate the opportunity of providing our services on this project. If we can answer questions or be of further service, please contact Earthtec at your convenience.

Respectfully,
EARTHTEC ENGINEERING



Shawn A. Stuart, E.I.T.
Staff Geotechnical Engineer

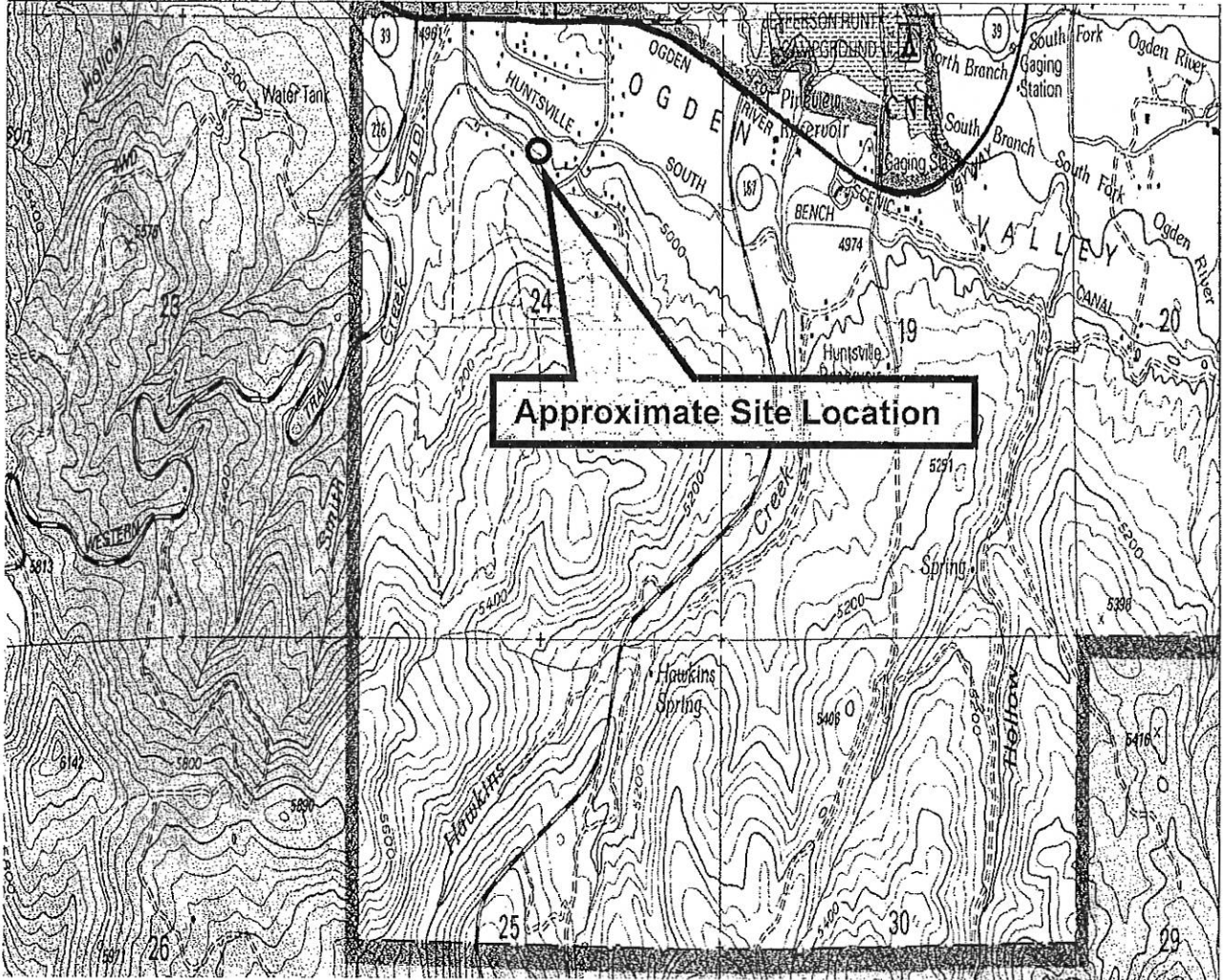


Timothy A. Mitchell, P.E.
Geotechnical Engineer

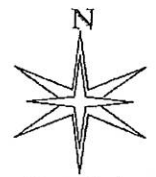
Earthtec Engineering

Professional Engineering Services - Geotechnical Engineering - Geologic Studies - Code Inspections - Special Inspection / Testing - Non-Destructive Examination - Failure Analysis

VICINITY MAP
LOT 15 SKI LAKE ESTATES NO. 3
6640 EAST 1100 SOUTH
HUNTSVILLE, UTAH



(cida.usgs.gov)



Not to Scale

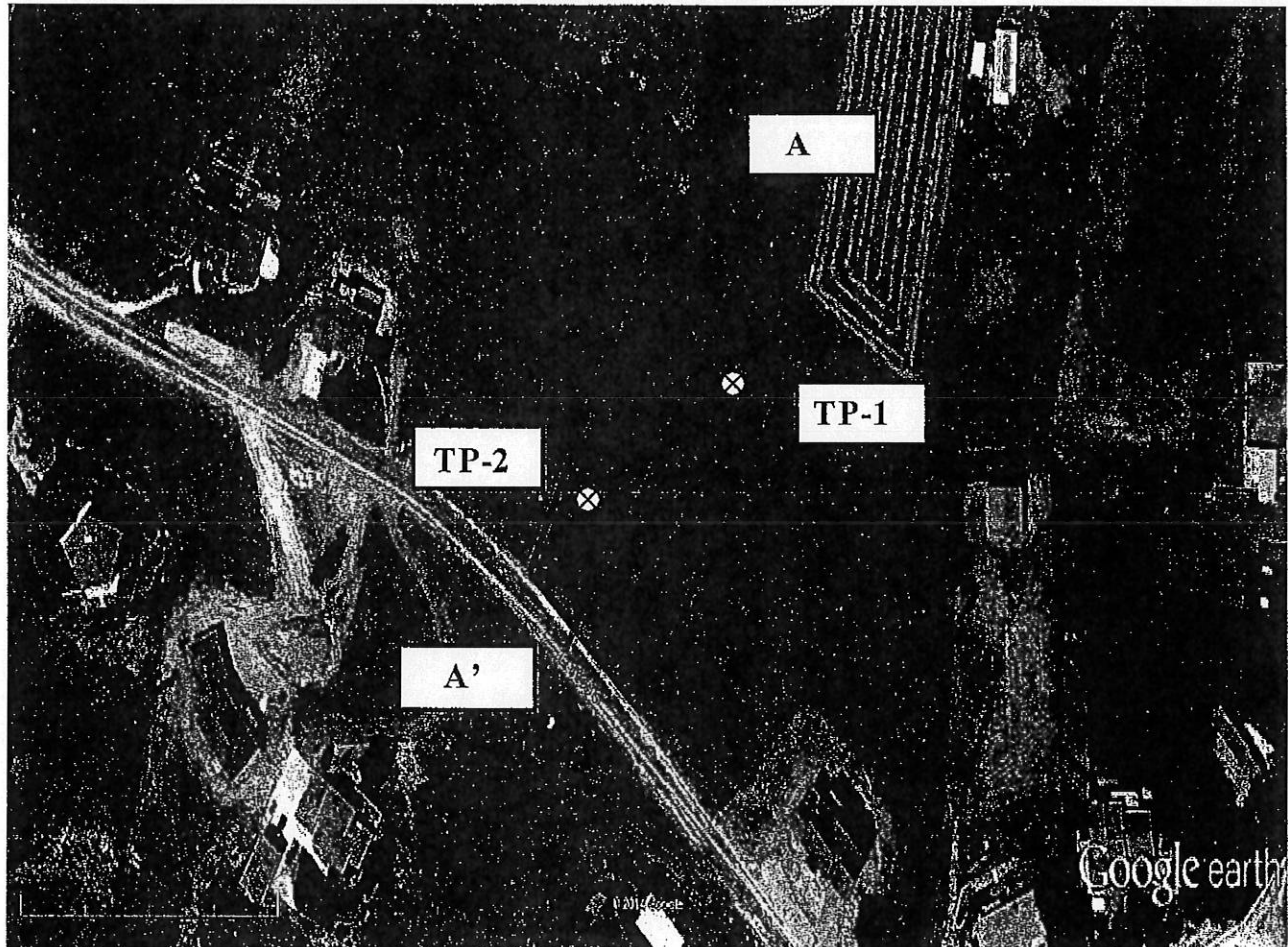
PROJECT NO.: 145150G



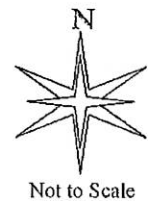
FIGURE NO.: 1

AERIAL PHOTOGRAPH SHOWING LOCATION OF TEST PITS AND SLOPE CROSS-SECTION

LOT 15 SKI LAKE ESTATES NO. 3
6640 EAST 1100 SOUTH
HUNTSVILLE, UTAH



- ⊗ Approximate Location of Test Pits
 - Approximate Slope Cross-Section Analyzed
 - - - Approximate Boundary Location
- (Aerial photograph provided by Google Earth)



PROJECT NO.: 145150G



FIGURE NO.: 2

TEST PIT LOG

NO.: TP-1

PROJECT: Lot 15 Ski Lake Estates No. 3
CLIENT: Martin Nobs
LOCATION: See Figure 2
OPERATOR: C.E. Butters
EQUIPMENT: Trackhoe
DEPTH TO WATER; INITIAL ∇ :

PROJECT NO.: 145150G
DATE: 05/30/14
ELEVATION: Not Measured
LOGGED BY: S. Stuart

AT COMPLETION ∇ :

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS								
					Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests	
0			TOPSOIL, clay, slightly moist, black, organic rich										
1													
2			Fat CLAY with sand, stiff (estimated), moist, olive, minor sandstone content up to 1 inch in diameter, moderate thin root material, minor pinhole texture										
3		CH											
4					26	84	79	49	0	29	71	C, DS	
5			Sandy Lean CLAY, stiff (estimated), moist, olive, heavy salt staining from 4 to 7 feet, moderate sandstone content up to 1 inch in diameter										
6		CL											
7													
8													
9			Silty SAND, dense (estimated), moist, olive, moderate sandstone content up to 6 inches in diameter										
10		SM											
11													
12													
13													
14													

Notes: No groundwater encountered.

Tests Key

- CBR = California Bearing Ratio
- C = Consolidation
- R = Resistivity
- DS = Direct Shear
- SS = Soluble Sulfates
- UC = Unconfined Compressive Strength

PROJECT NO.: 145150G



FIGURE NO.: 3

LOG OF TESTPIT: 145150G.GPJ EARTHTEC.GDT 6/19/14

TEST PIT LOG

NO.: TP-2

PROJECT: Lot 15 Ski Lake Estates No. 3
CLIENT: Martin Nobs
LOCATION: See Figure 2
OPERATOR: C.E. Butters
EQUIPMENT: Trackhoe
DEPTH TO WATER; INITIAL ∇ :

PROJECT NO.: 145150G
DATE: 05/30/14
ELEVATION: Not Measured
LOGGED BY: S. Stuart

AT COMPLETION ∇ :

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS								
					Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests	
0			TOPSOIL, clay, slightly moist, black, organic rich										
1													
2			Lean CLAY with sand, stiff (estimated), moist, olive, moderate thin root material										
3		CL											
4			SANDSTONE, olive, slightly weathered, moderate soft		23	90	49	22	0	21	79		C
5													
6		SANDSTONE											
7													
8			Silty SAND, dense (estimated), slightly moist, olive, moderate sandstone content up to 1 inch in diameter										
9													
10		SM											
11													
12			MAXIMUM DEPTH EXPLORED APPROXIMATELY 12 FEET										
13													
14													

Notes: No groundwater encountered.

Tests Key

- CBR = California Bearing Ratio
- C = Consolidation
- R = Resistivity
- DS = Direct Shear
- SS = Soluble Sulfates
- UC = Unconfined Compressive Strength

PROJECT NO.: 145150G



FIGURE NO.: 4

LEGEND

PROJECT: Lot 15 Ski Lake Estates No. 3
CLIENT: Martin Nobs

DATE: 05/30/14
LOGGED BY: S. Stuart

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR SOIL DIVISIONS		USCS SYMBOL		TYPICAL SOIL DESCRIPTIONS	
COARSE GRAINED SOILS (More than 50% retaining on No. 200 Sieve)	GRAVELS (More than 50% of coarse fraction retained on No. 4 Sieve)	CLEAN GRAVELS (Less than 5% fines)	GW	Well Graded Gravel, May Contain Sand, Very Little Fines	
		GRAVELS WITH FINES (More than 12% fines)	GP	Poorly Graded Gravel, May Contain Sand, Very Little Fines	
		SANDS (50% or more of coarse fraction passes No. 4 Sieve)	CLEAN SANDS (Less than 5% fines)	SW	Well Graded Sand, May Contain Gravel, Very Little Fines
			SANDS WITH FINES (More than 12% fines)	SP	Poorly Graded Sand, May Contain Gravel, Very Little Fines
	FINE GRAINED SOILS (More than 50% passing No. 200 Sieve)	SILTS AND CLAYS (Liquid Limit less than 50)	SM	Silty Sand, May Contain Gravel	
			SC	Clayey Sand, May Contain Gravel	
			CL	Lean Clay, Inorganic, May Contain Gravel and/or Sand	
			ML	Silt, Inorganic, May Contain Gravel and/or Sand	
SILTS AND CLAYS (Liquid Limit Greater than 50)		OL	Organic Silt or Clay, May Contain Gravel and/or Sand		
		CH	Fat Clay, Inorganic, May Contain Gravel and/or Sand		
		MH	Elastic Silt, Inorganic, May Contain Gravel and/or Sand		
		OH	Organic Clay or Silt, May Contain Gravel and/or Sand		
HIGHLY ORGANIC SOILS		PT	Peat, Primarily Organic Matter		

SAMPLER DESCRIPTIONS

- SPLIT SPOON SAMPLER
(1 3/8 inch inside diameter)
- MODIFIED CALIFORNIA SAMPLER
(2 inch outside diameter)
- SHELBY TUBE
(3 inch outside diameter)
- BLOCK SAMPLE
- BAG/BULK SAMPLE

WATER SYMBOLS

- Water level encountered during field exploration
- Water level encountered at completion of field exploration

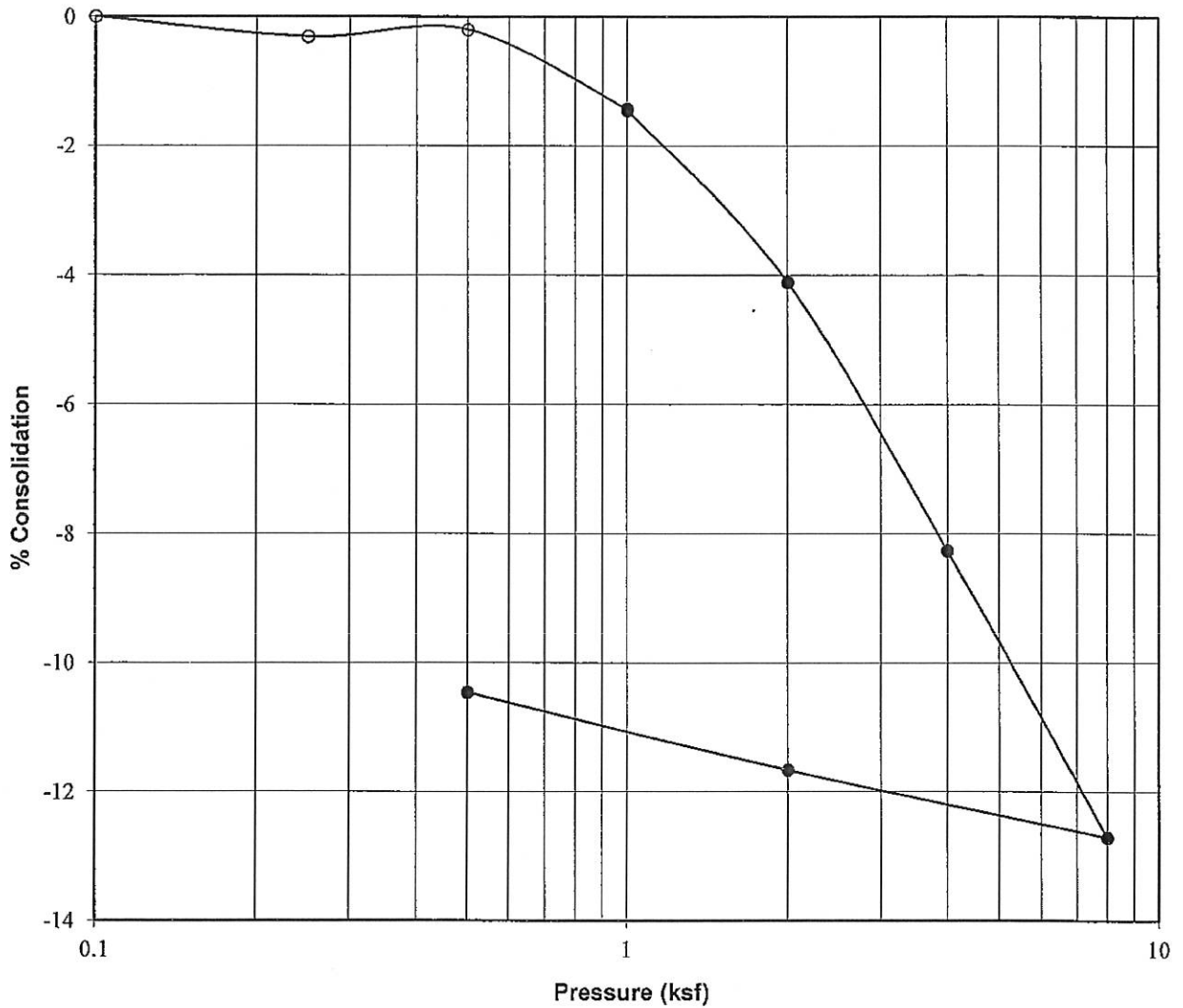
- NOTES:**
1. The logs are subject to the limitations, conclusions, and recommendations in this report.
 2. Results of tests conducted on samples recovered are reported on the logs and any applicable graphs.
 3. Strata lines on the logs represent approximate boundaries only. Actual transitions may be gradual.
 4. In general, USCS symbols shown on the logs are based on visual methods only: actual designations (based on laboratory tests) may vary.

PROJECT NO.: 145150G



FIGURE NO.: 5

CONSOLIDATION - SWELL TEST



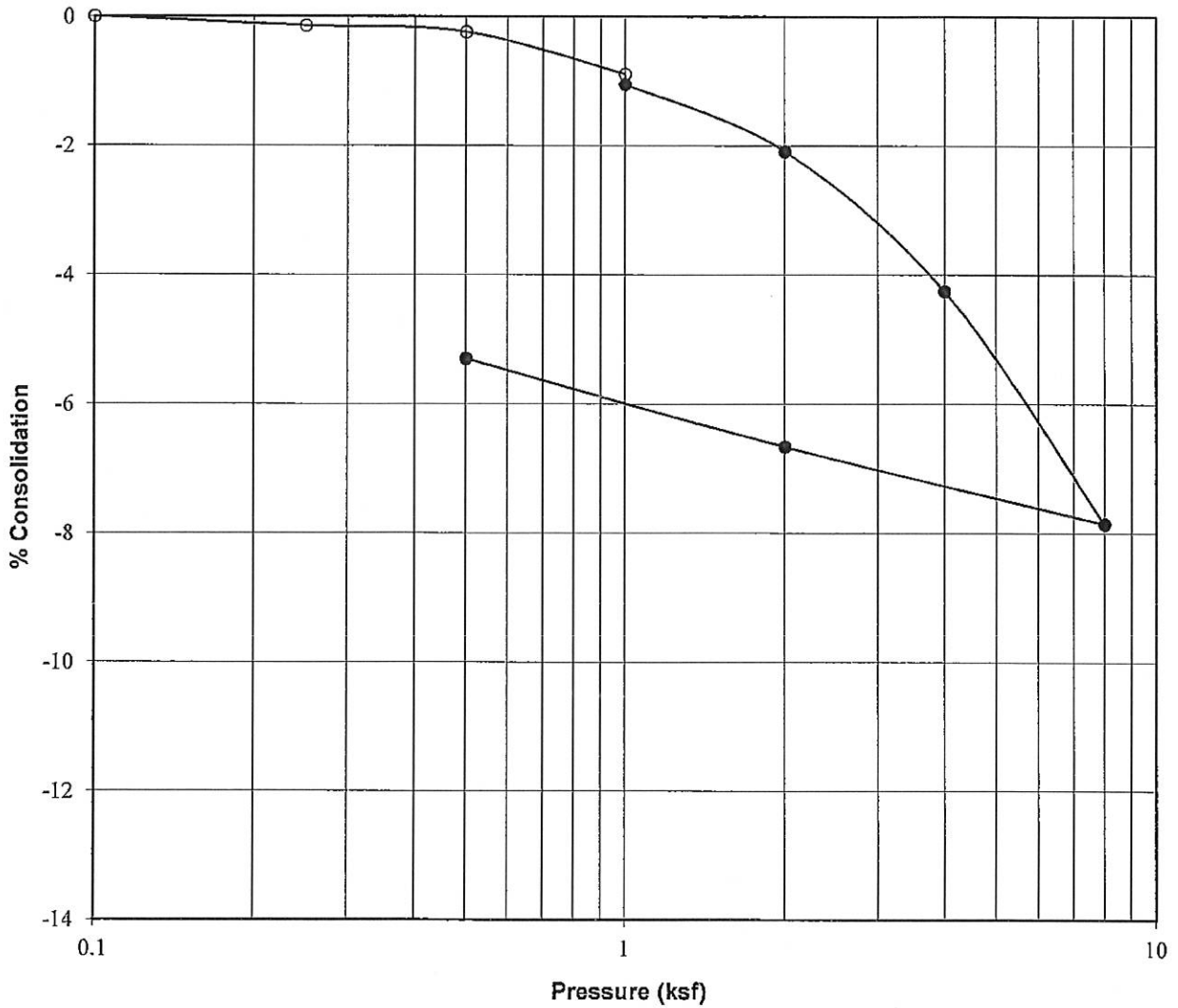
Project:	Lot 15 Ski Lake Estates No. 3
Location:	TP-1
Sample Depth, ft:	3½
Description:	Block
Soil Type:	Fat CLAY with sand (CH)
Natural Moisture, %:	26
Dry Density, pcf:	84
Liquid Limit:	79
Plasticity Index:	49
Water Added at:	1 ksf
Percent Collapse:	0.0

PROJECT NO.: 145150G



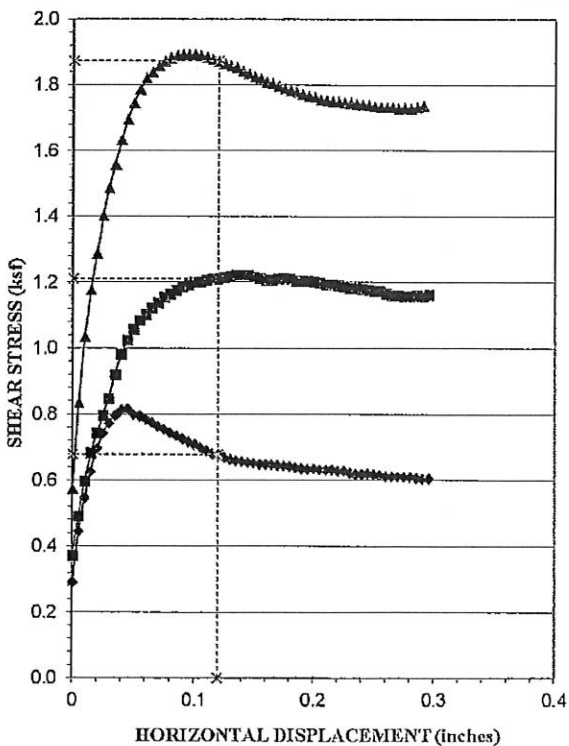
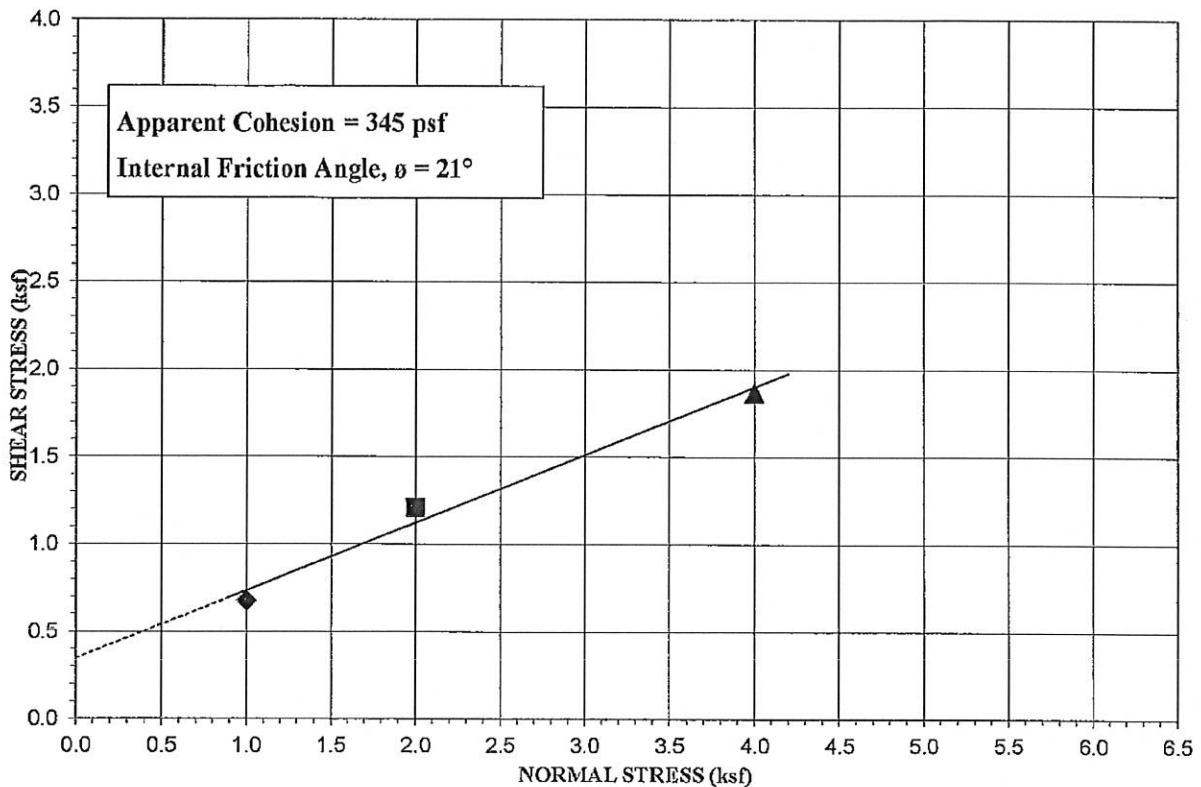
FIGURE NO.: 6

CONSOLIDATION - SWELL TEST



Project:	Lot 15 Ski Lake Estates No. 3
Location:	TP-2
Sample Depth, ft:	3½
Description:	Block
Soil Type:	Lean CLAY with sand (CL)
Natural Moisture, %:	23
Dry Density, pcf:	90
Liquid Limit:	49
Plasticity Index:	22
Water Added at:	1 ksf
Percent Collapse:	0.2

DIRECT SHEAR TEST



Source: TP-1	Depth: 3½ ft		
Type of Test:	Consolidated Drained/Saturated		
Test No. (Symbol)	1 (◆)	2 (■)	3 (▲)
Sample Type	Undisturbed		
Initial Height, in.	1	1	1
Diameter, in.	2.4	2.4	2.4
Dry Density Before, pcf	88.2	84.7	86.7
Dry Density After, pcf	89.4	78.3	88.6
Moisture % Before	25.9	25.9	25.9
Moisture % After	34.3	44.2	32.5
Normal Load, ksf	1.0	2.0	4.0
Shear Stress, ksf	0.68	1.21	1.87
Strain Rate	.0000566 IN/SEC		
Sample Properties			
Cohesion, psf	345		
Friction Angle, ϕ	21		
Liquid Limit, %	79		
Plasticity Index, %	49		
Percent Gravel	0		
Percent Sand	29		
Percent Passing No. 200 sieve	71		
Classification	Fat CLAY with sand (CH)		

PROJECT: Lot 15, Ski Lake Estates No. 3

PROJECT NO.: 145150G



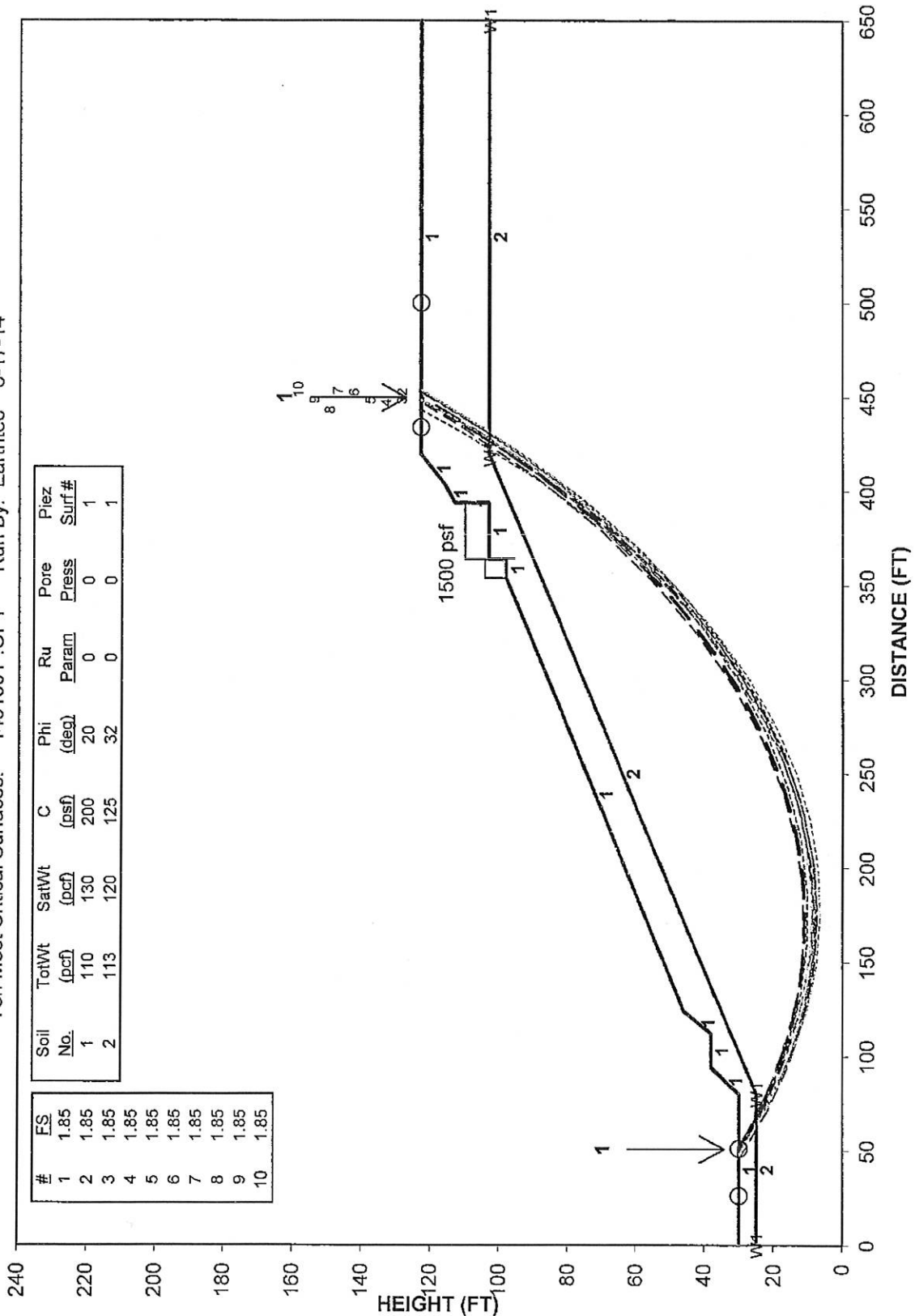
FIGURE NO.: 8

STABILITY RESULTS

Lot 15 Ski Lakes - Static
 Ten Most Critical Surfaces. 145150T.OPT Run By: Earthtec 6-17-14

Soil No.	TotWt (pcf)	SatWt (pcf)	C (psf)	Phi (deg)	Ru Param	Pore Press	Piez Surf#
1	110	130	200	20	0	0	1
2	113	120	125	32	0	0	1

#	FS
1	1.85
2	1.85
3	1.85
4	1.85
5	1.85
6	1.85
7	1.85
8	1.85
9	1.85
10	1.85

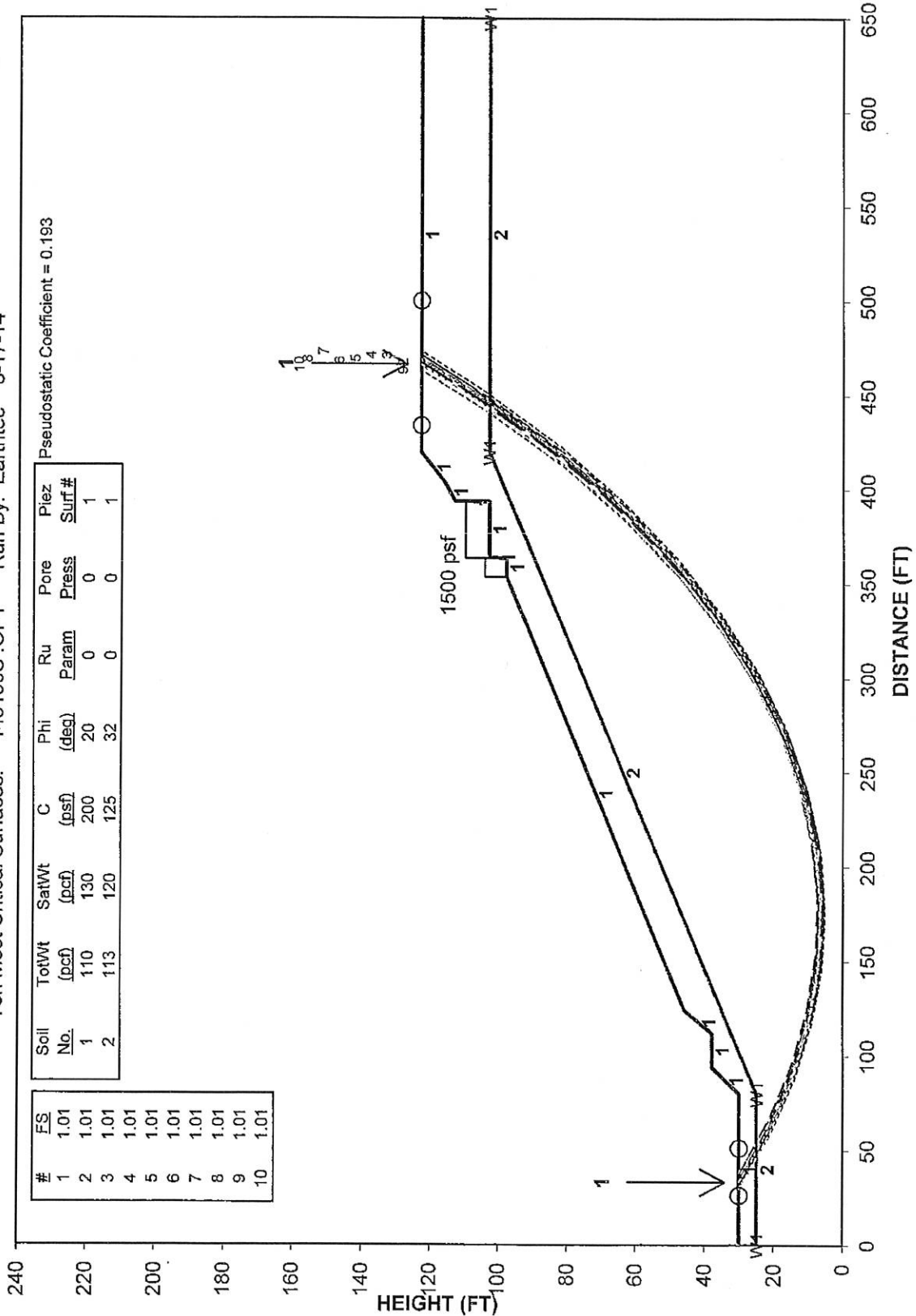


STABILITY RESULTS

Lot 15 Ski Lakes - Siesmic
 Ten Most Critical Surfaces. 145150S.OPT Run By: Earthtec 6-17-14

Soil No.	TotWt (pcf)	SatWt (pcf)	C (psf)	Phi (deg)	Ru Param	Pore Press	Piez Surf #
1	110	130	200	20	0	0	1
2	113	120	125	32	0	0	1

#	FS
1	1.01
2	1.01
3	1.01
4	1.01
5	1.01
6	1.01
7	1.01
8	1.01
9	1.01
10	1.01



PROJECT NO.: 145150



FIGURE NO.: 10

