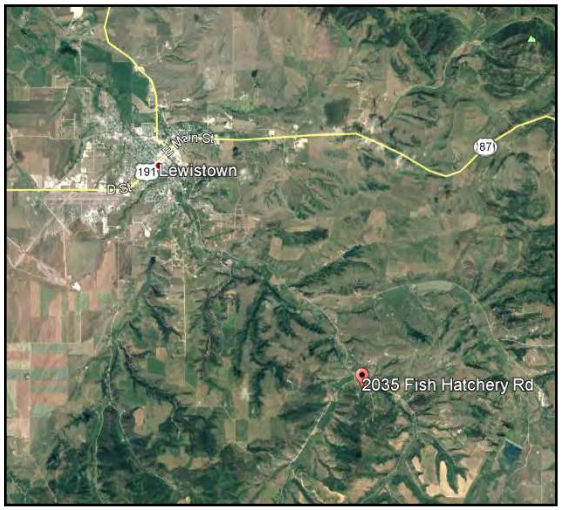


VICINITY MAP

NOTE:

BORING LOCATIONS REFERENCED TO EXISTING SURFACE FEATURES USING TAPE MEASUREMENTS AT THE TIME OF DRILLING. ELEVATIONS ESTIMATED FROM TOPOGRAPHIC SURVEY DATA PROVIDED BY SPARK ARCHITECTURE.

REVISION | DATE | REV

TD&H Engineering
406.761.3010 • tdhengineering.com
1800 RIVER DR. NO. • GREAT FALLS, MONTANA 59401

DRAWN BY:
DESIGNED BY:
QUALITY CHECK:
DATE:
JOB NO.
FIELDBOOK

2035 FISH HATCHERY ROAD
SOUTHEAST OF LEWISTOWN, MONTANA

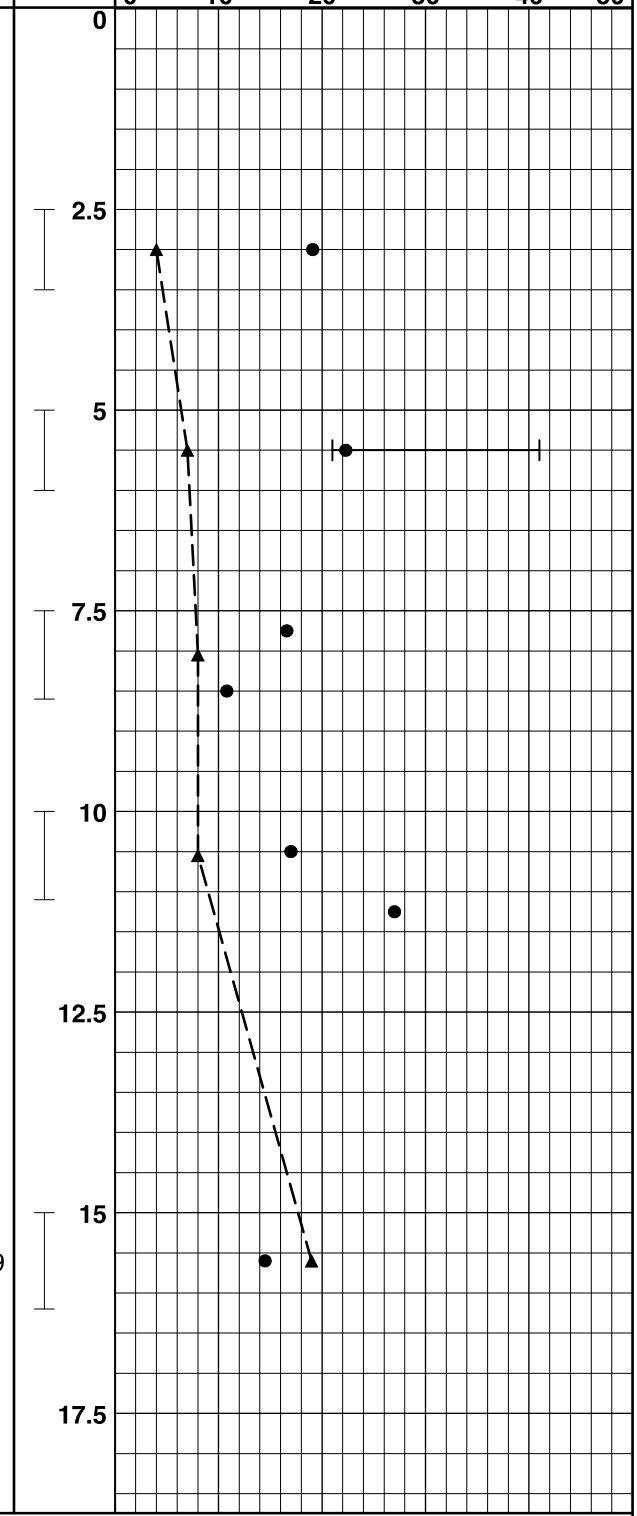
BORING LOCATION MAP

.DWG

FIGURE 1

SURFACE: Native Grasses
SURFACE ELEVATION: 4,179.8 feet

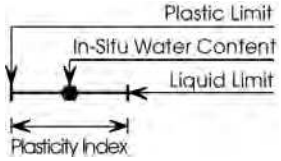
SOIL DESCRIPTION	DEPTH (FT)	SPT BLOW COUNTS
TOPSOIL: Lean CLAY, appears soft, dark brown, moist		
	1.5	
Lean CLAY with Sand, soft, light brown, moist qu = 0.5 - 2.0 tsf		2-2-2
	4.0	
Lean CLAY, firm, dark brown, moist, trace organics qu = 1.0 - 2.0 tsf		2-3-4
	8.0	
Weathered SANDSTONE, very soft rock, rusty brown, moist, some clay inclusions		2-3-5
	GROUND WATER	
	11.0	5-7-1
Weathered CLAYSTONE, very soft rock, light gray, very moist to wet		
	12.5	
Weathered SANDSTONE, very soft rock, rusty brown, very moist to wet		5-10-9
	16.5	
Bottom of Boring		



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-1

2035 Fish Hatchery Road
Southeast of Lewistown, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

May 1, 2020 | 20-060-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS

Figure No. 2
Sheet 1 of 1

SURFACE: Native Grasses
SURFACE ELEVATION: 4,179.7 feet

GRAPHIC LOG	SOIL DESCRIPTION	DEPTH (FT)	GROUND WATER	SPT BLOW COUNTS	SAMPLE
	TOPSOIL: Lean CLAY with Sand, soft, dark brown, moist, possible fill				
		3.5		1-3-3	
	Lean CLAY with Sand, soft, light brown, moist - See Figures 12, 14, and 15 for unconfined compression, consolidation, and swell test reports qu = 2.0 tsf			PUSH 2-1-3	
		9.0	▼		
	Weathered SANDSTONE, very soft rock, rusty brown, very moist to wet, some interbedded claystone			3-4-3	
				5-8-10-14	
		17.0			
	Bottom of Boring				

PENETRATION RESISTANCE/MOISTURE CONTENT

● = MOISTURE CONTENT
▲ = BLOWS PER FOOT

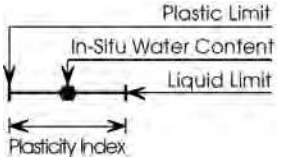
DEPTH (FT): 0, 2.5, 5, 7.5, 10, 12.5, 15, 17.5

0 10 20 30 40 50

LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- ▼ Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-2

2035 Fish Hatchery Road
Southeast of Lewistown, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

May 1, 2020 | 20-060-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS

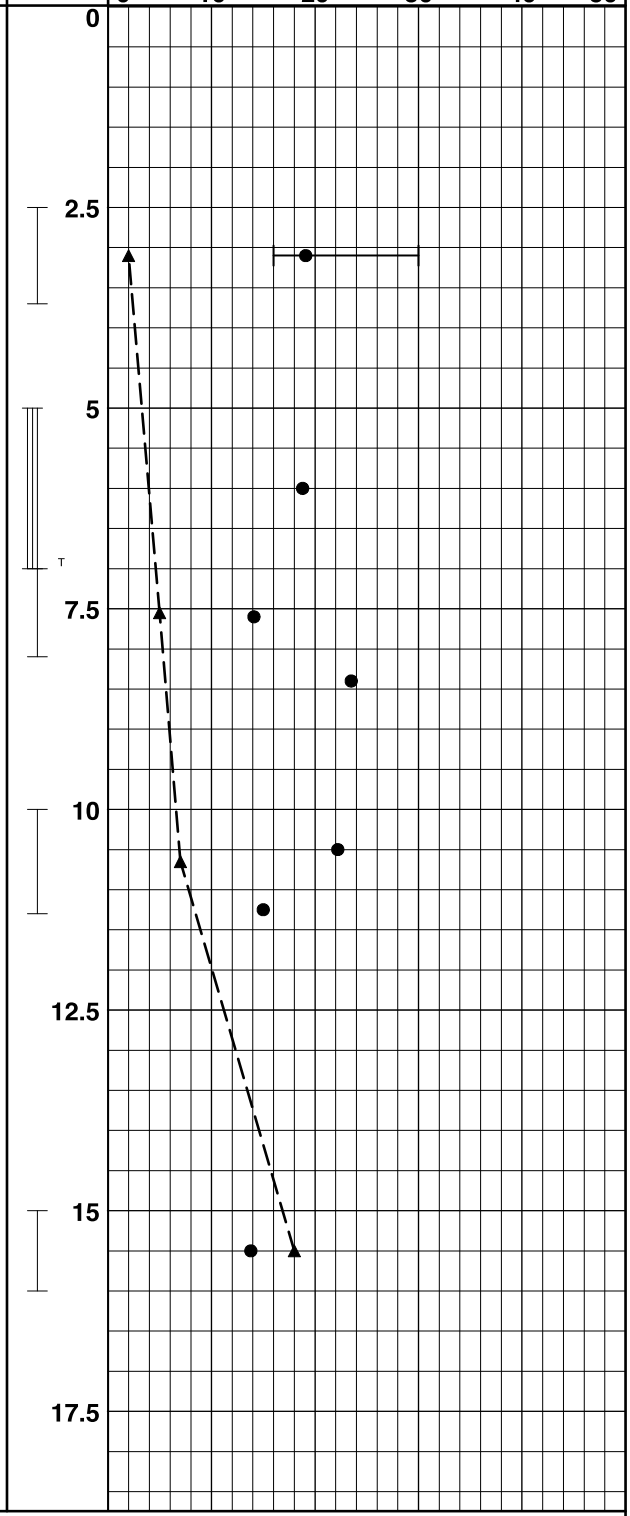
Figure No. 3
Sheet 1 of 1

SURFACE: Native Grasses
SURFACE ELEVATION: 4,177.2 feet

GRAPHIC LOG	SOIL DESCRIPTION	DEPTH (FT)	GROUND WATER	SPT BLOW COUNTS	SAMPLE
	TOPSOIL: Lean CLAY, soft, dark brown, moist	0.5			
	Lean CLAY with Sand, soft, brown, moist	2.5			
	Sandy Lean CLAY, very soft, light brown to grayish brown, moist to very moist qu = 0.75 tsf			1-1-1	
	- See Figure 13 for result of unconfined compression test	6.5		PUSH	
	Weathered SANDSTONE, very soft rock, rusty brown, moist to very moist, some interbedded claystone			3-3-2	
		8.3	▼		
	Weathered CLAYSTONE, very soft rock, light gray, moist to very moist	9.0			
	Weathered SANDSTONE, very soft rock, gray, very moist to wet, some interbedded claystone to 11.0 feet			2-3-4	
		16.5		4-8-10	
	Bottom of Boring				

PENETRATION RESISTANCE/MOISTURE CONTENT

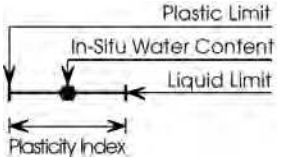
● = MOISTURE CONTENT
▲ = BLOWS PER FOOT



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- ▼ Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- ✱ No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-3

2035 Fish Hatchery Road
Southeast of Lewistown, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

May 1, 2020 | 20-060-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS

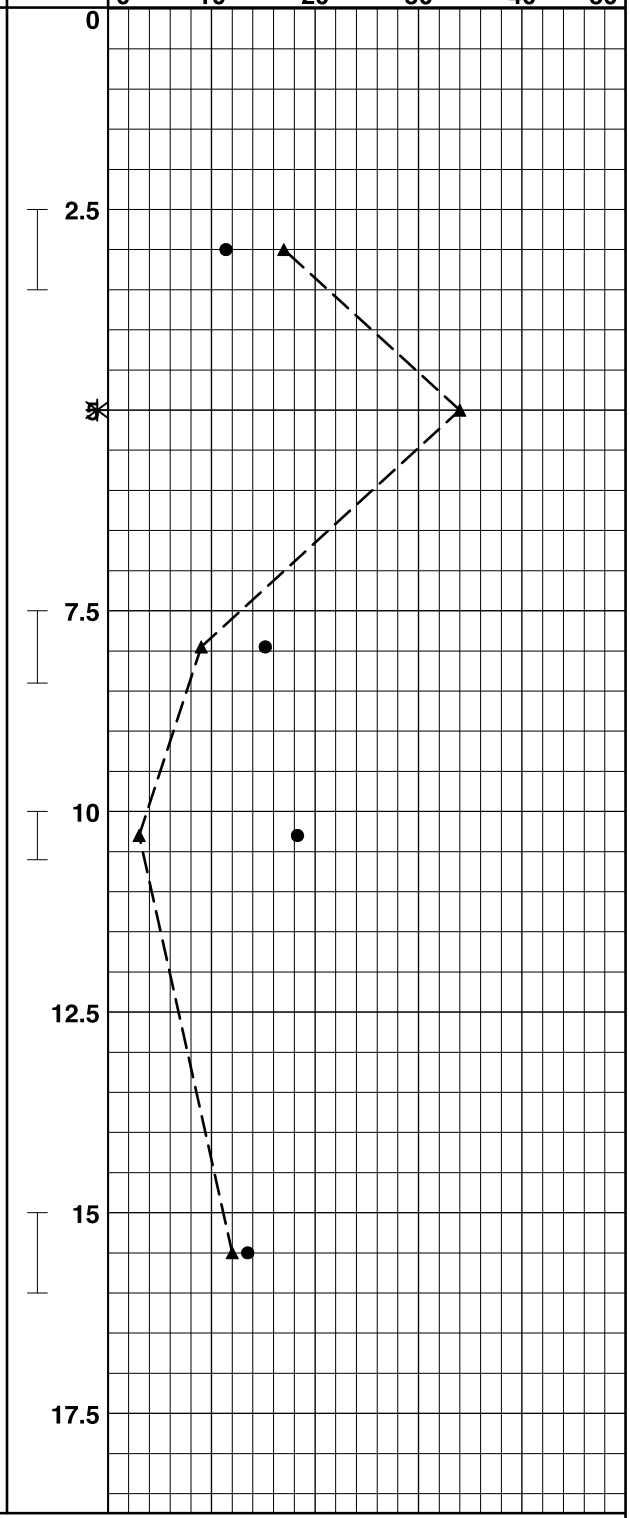
Figure No. 4
Sheet 1 of 1

SURFACE: Native Grasses
SURFACE ELEVATION: 4,175.5 feet

GRAPHIC LOG	SOIL DESCRIPTION	DEPTH (FT)	GROUND WATER	SPT BLOW COUNTS	SAMPLE
	TOPSOIL: Lean CLAY, appears soft, dark brown, moist	0.5			
	Lean CLAY with Sand, appears soft, brown, moist	2.5		6-9-8	
	Weathered SANDSTONE, very soft rock, rusty brown, moist to very moist, some interbedded claystone			19-18-16	
	- No Sample Recovered		▼	1-4-5	
				2-2-1	
				4-6-6	
		16.5			
	Bottom of Boring				

PENETRATION RESISTANCE/MOISTURE CONTENT

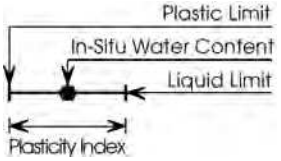
● = MOISTURE CONTENT
▲ = BLOWS PER FOOT



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- ▼ Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-4

2035 Fish Hatchery Road
Southeast of Lewistown, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

May 1, 2020 | 20-060-001

THOMAS, DEAN & HOSKINS, INC.
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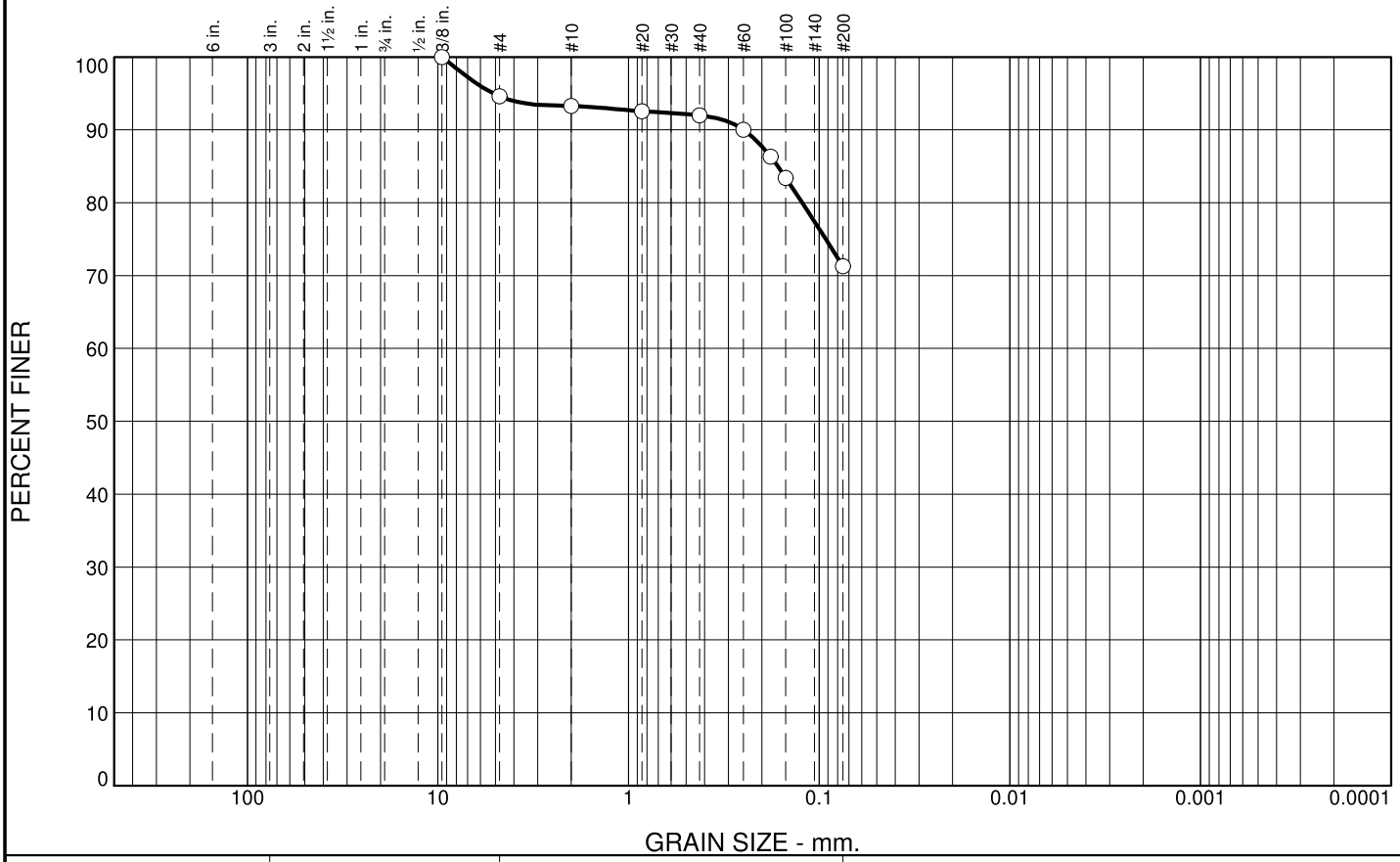
Figure No. 5
Sheet 1 of 1

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	5.4	1.3	1.3	20.7	71.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	94.6		
#10	93.3		
#20	92.6		
#40	92.0		
#60	90.0		
#80	86.3		
#100	83.4		
#200	71.3		

* (no specification provided)

Material Description

Lean CLAY with Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2496 D_{85}= 0.1652 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO=

Remarks

Report No. A-21333-206

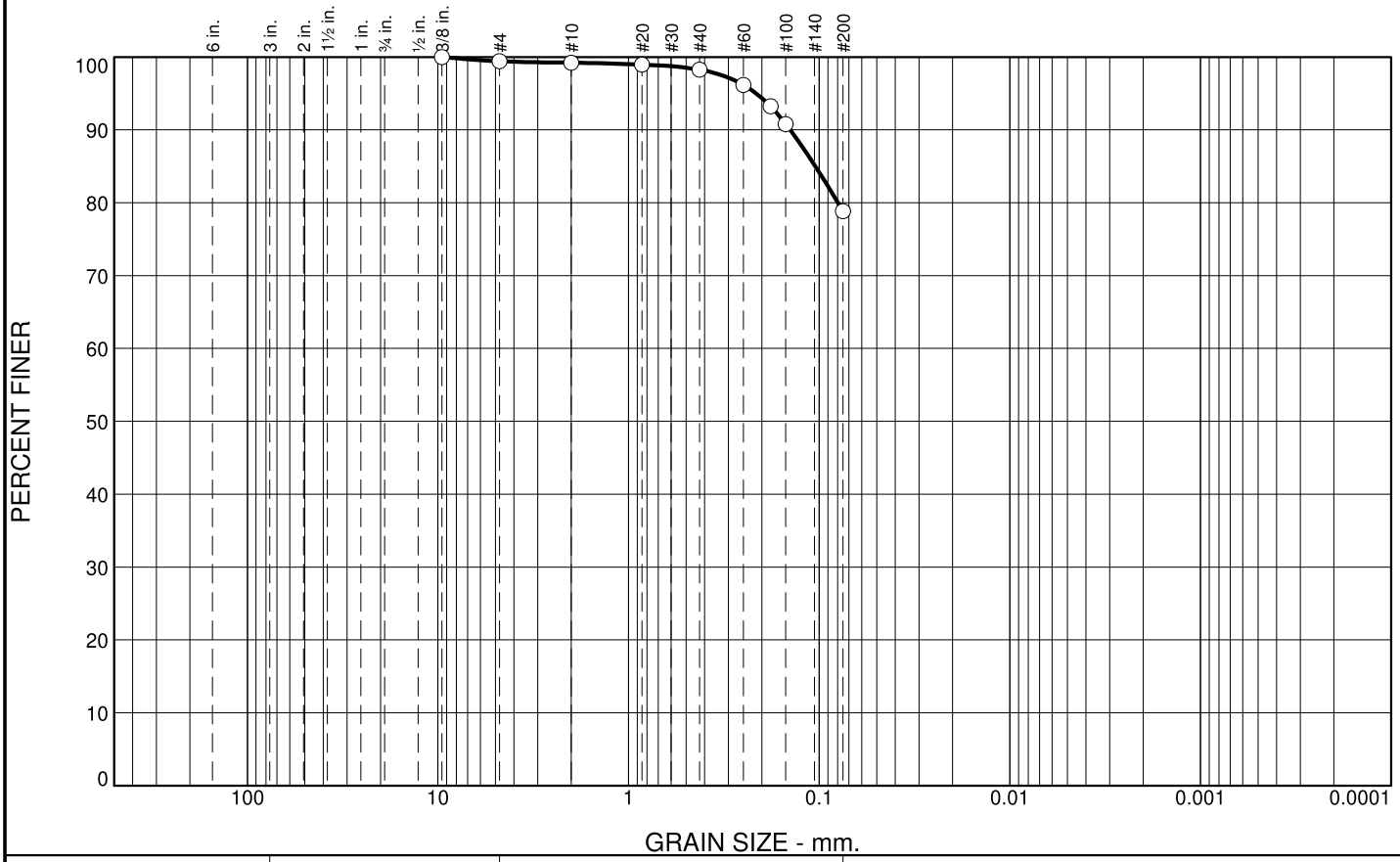
Location: B-1
Sample Number: A-21333 **Depth:** 2.5 - 4.0 ft **Date:** 5-20-2020

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: Montana Fish, Wildlife & Parks
Project: 2035 Fish Hatchery Road
Southeast of Lewistown, Montana
Project No: 20-060-001 **Figure** 6

Tested By: JH **Checked By:** Craig R Madison

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.6	0.2	0.9	19.4	78.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	99.4		
#10	99.2		
#20	98.9		
#40	98.3		
#60	96.2		
#80	93.2		
#100	90.8		
#200	78.9		

* (no specification provided)

Material Description

Lean CLAY with Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.1421 D_{85}= 0.1050 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO=

Remarks

Report No. A-21340-206

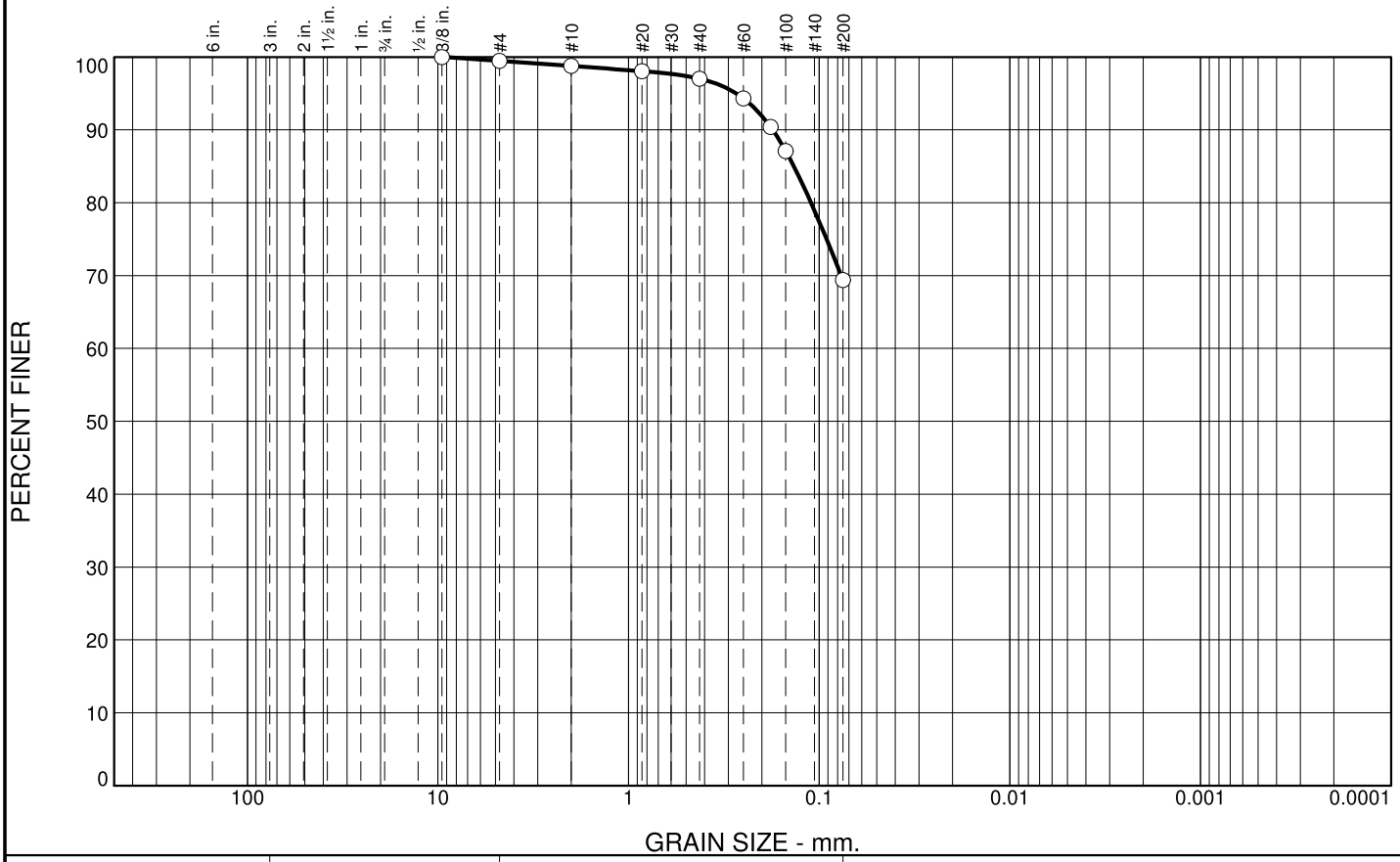
Location: B-2
Sample Number: A-21340 **Depth:** 2.5 - 3.5 ft **Date:** 5-20-2020

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: Montana Fish, Wildlife & Parks
Project: 2035 Fish Hatchery Road
Southeast of Lewistown, Montana
Project No: 20-060-001 **Figure** 7

Tested By: JH **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	0.7	1.8	27.6	69.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	99.5		
#10	98.8		
#20	98.0		
#40	97.0		
#60	94.3		
#80	90.4		
#100	87.1		
#200	69.4		

* (no specification provided)

Material Description

Sandy Lean CLAY

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.1756 D_{85}= 0.1361 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO=

Remarks

Report No. A-21346-206

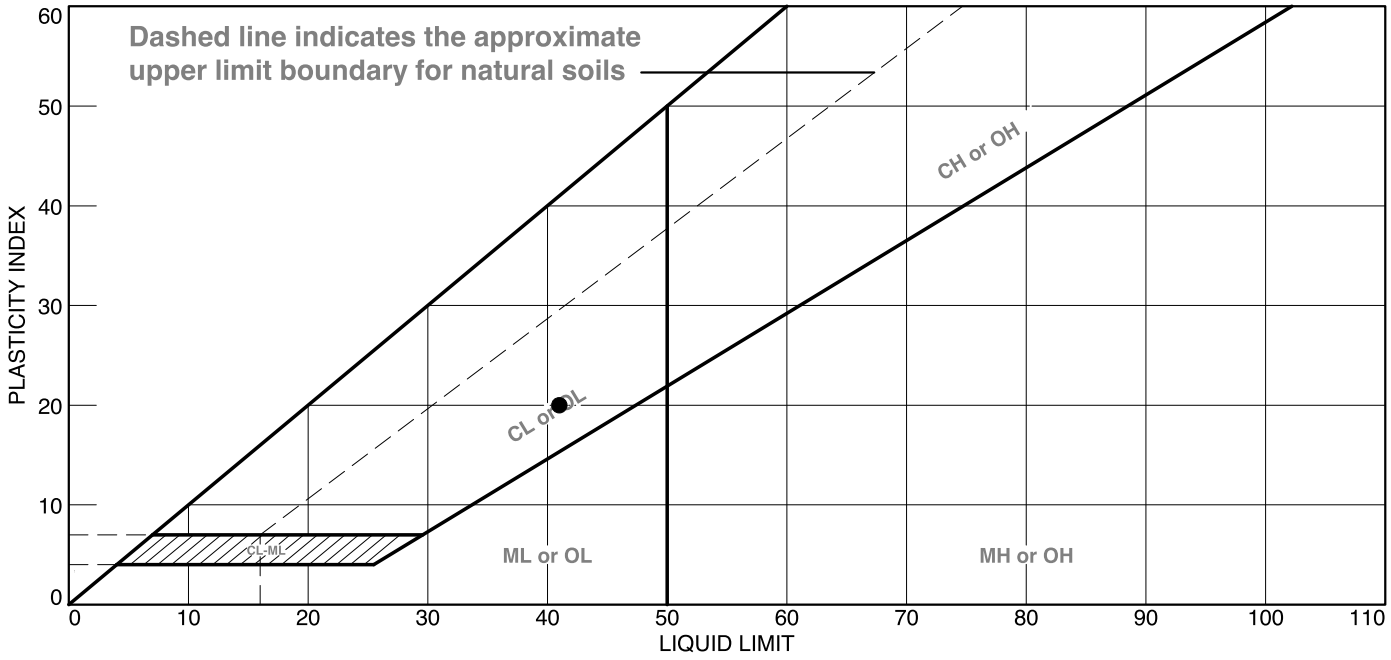
Location: B-3
Sample Number: A-21346 **Depth:** 2.5 - 4.0 ft **Date:** 5-20-2020

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: Montana Fish, Wildlife & Parks
Project: 2035 Fish Hatchery Road
Southeast of Lewistown, Montana
Project No: 20-060-001 **Figure** 8

Tested By: JH **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Lean CLAY	41	21	20			CL

Project No. 20-060-001 **Client:** Montana Fish, Wildlife & Parks

Project: 2035 Fish Hatchery Road

Southeast of Lewistown, Montana

Location: B-1

Sample Number: A-21334 **Depth:** 5.0 - 6.5 ft

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ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

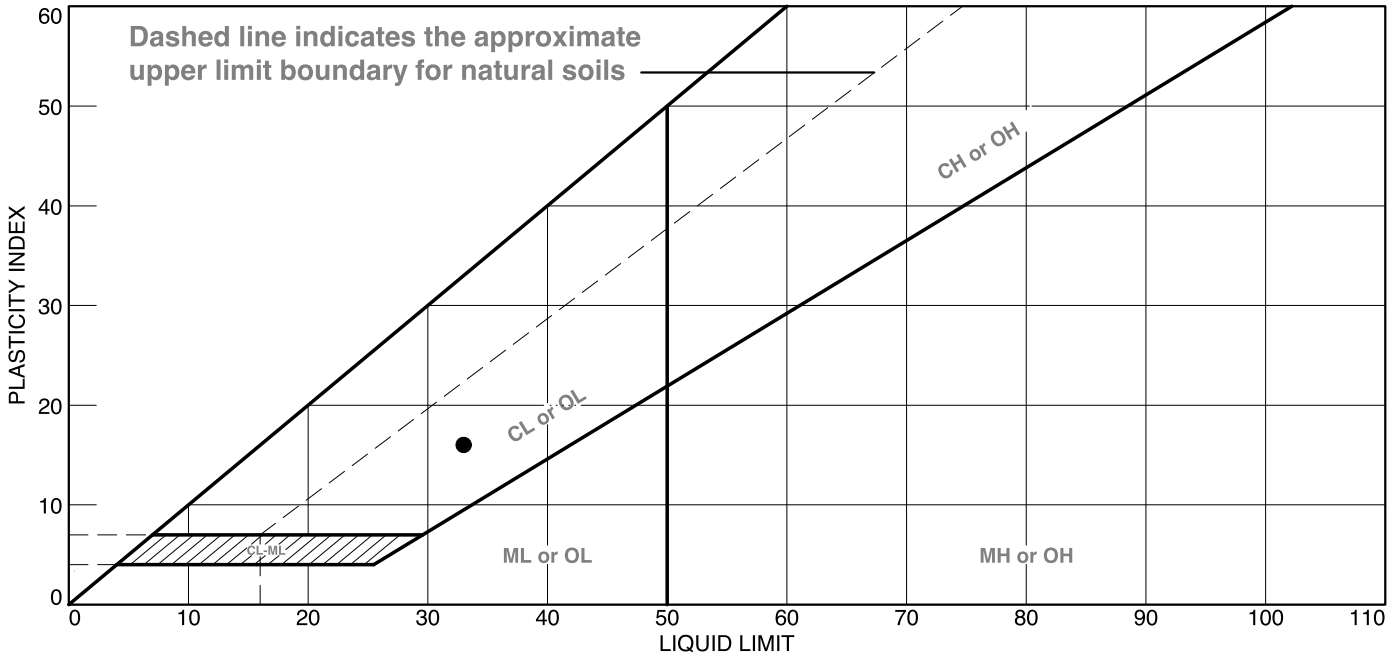
Remarks:

● Report No. A-21334-207
Date: 5-20-2020

Figure 9

Tested By: WJC **Checked By:** Craig R Nadeau

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Lean CLAY with Sand	33	17	16			CL

Project No. 20-060-001 **Client:** Montana Fish, Wildlife & Parks

Project: 2035 Fish Hatchery Road

Southeast of Lewistown, Montana

Location: B-2

Sample Number: A-21343 **Depth:** 7.0 - 8.5 ft

TD&H

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ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

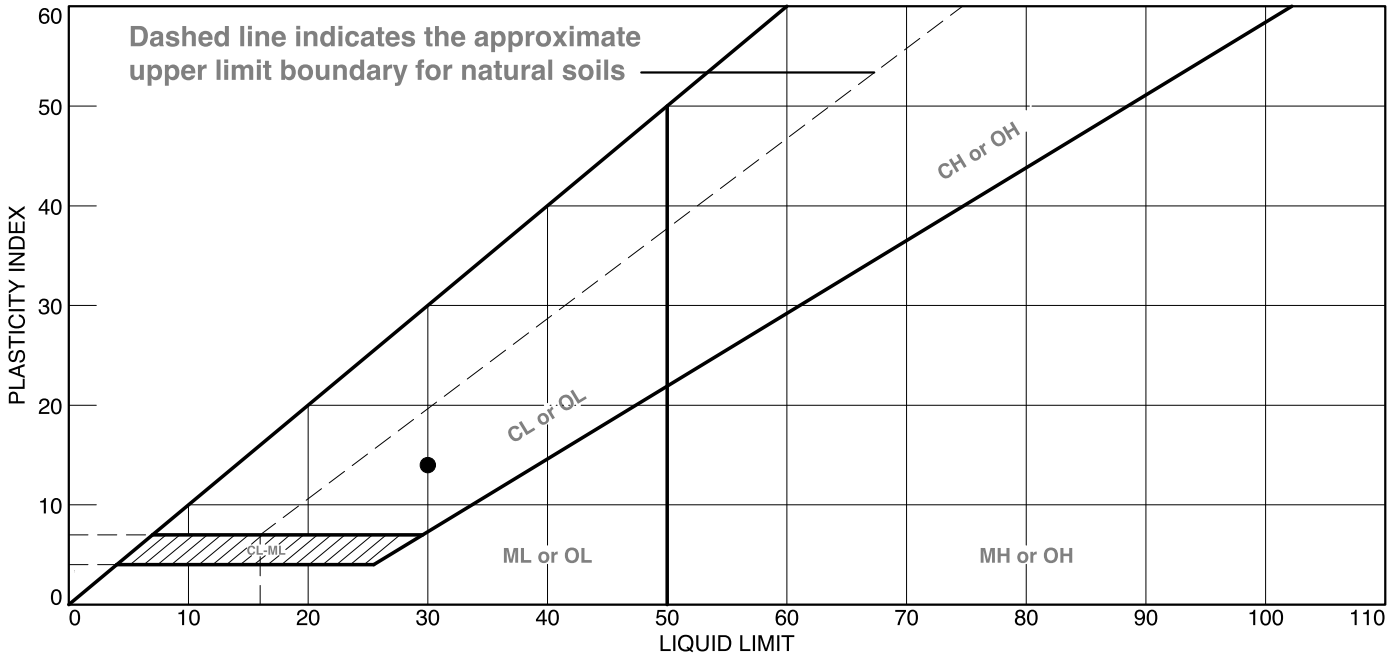
Remarks:

● Report No. A-21343-207
Date: 5-21-2020

Figure 10

Tested By: WJC **Checked By:** Craig R Nadeau

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Sandy Lean CLAY	30	16	14			CL

Project No. 20-060-001 **Client:** Montana Fish, Wildlife & Parks

Project: 2035 Fish Hatchery Road

Southeast of Lewistown, Montana

Location: B-3

Sample Number: A-21346 **Depth:** 2.5 - 4.0 ft

TD&H

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ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

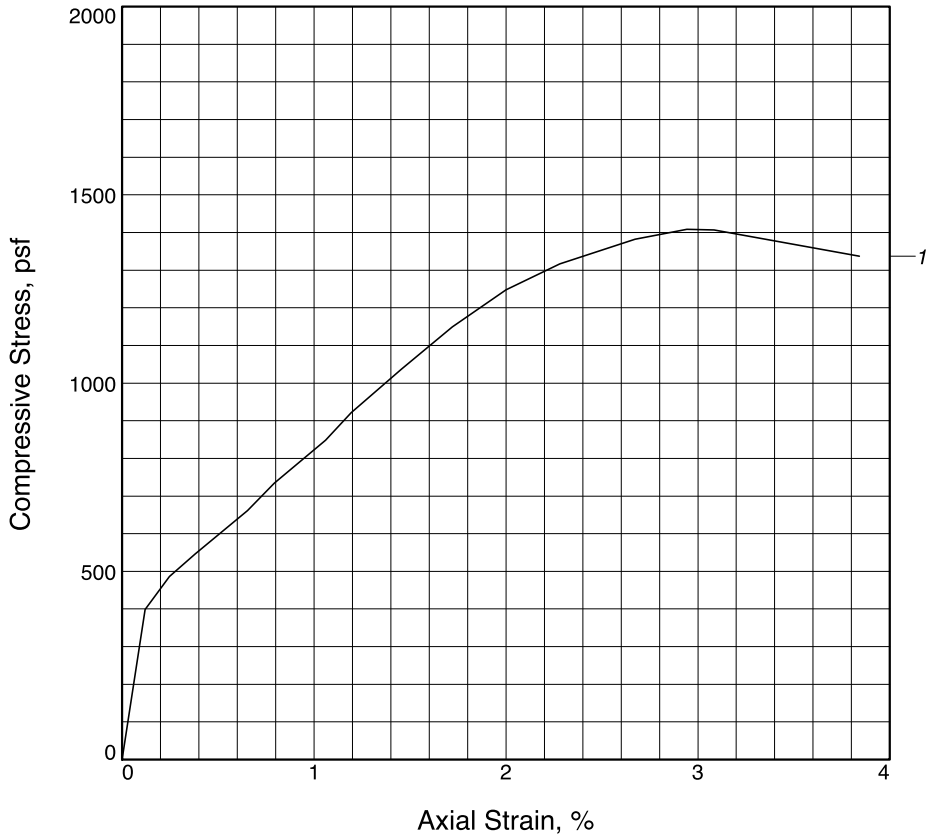
Remarks:

● Report No. A-21346-207
Date: 5-21-2020

Figure 11

Tested By: NJ **Checked By:** Craig R Madsen

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	1409			
Undrained shear strength, psf	704			
Failure strain, %	2.9			
Strain rate, in./min.	0.030			
Water content, %	22.8			
Wet density, pcf	117.3			
Dry density, pcf	95.5			
Saturation, %	80.4			
Void ratio	0.7642			
Specimen diameter, in.	2.85			
Specimen height, in.	5.59			
Height/diameter ratio	1.96			

Description: Lean CLAY with Sand

LL =	**PL =**	**PI =**	**Assumed GS=** 2.7	**Type:** Shelby Tube

Project No.: 20-060-001
Date Sampled: 5-1-2020

Remarks:
Report No. A-21342-215
Date: 5-15-2020

Figure 12

Client: Montana Fish, Wildlife & Parks

Project: 2035 Fish Hatchery Road
Southeast of Lewistown, Montana
Location: B-2
Sample Number: A-21342 **Depth:** 5.0 - 7.0 ft

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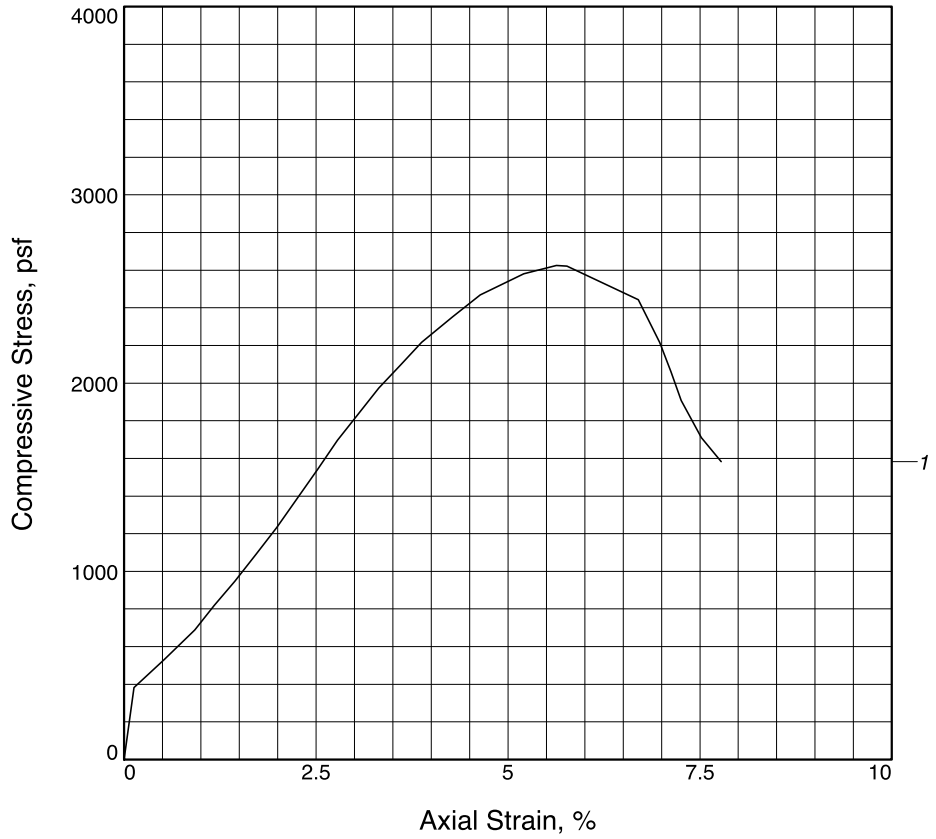
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Tested By: CRN **Checked By:** Craig R Madsen

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	2624			
Undrained shear strength, psf	1312			
Failure strain, %	5.6			
Strain rate, in./min.	0.030			
Water content, %	18.8			
Wet density, pcf	128.5			
Dry density, pcf	108.2			
Saturation, %	91.0			
Void ratio	0.5580			
Specimen diameter, in.	2.85			
Specimen height, in.	5.56			
Height/diameter ratio	1.95			

Description: Sandy Lean CLAY

LL =	**PL =**	**PI =**	**Assumed GS=** 2.7	**Type:** Shelby Tube

Project No.: 20-060-001
Date Sampled: 5-1-2020

Remarks:
Report No. A-21347-215
Date: 5-15-2020

Figure 13

Client: Montana Fish, Wildlife & Parks

Project: 2035 Fish Hatchery Road
Southeast of Lewistown, Montana
Location: B-3
Sample Number: A-21347 **Depth:** 6.0 - 6.5 ft

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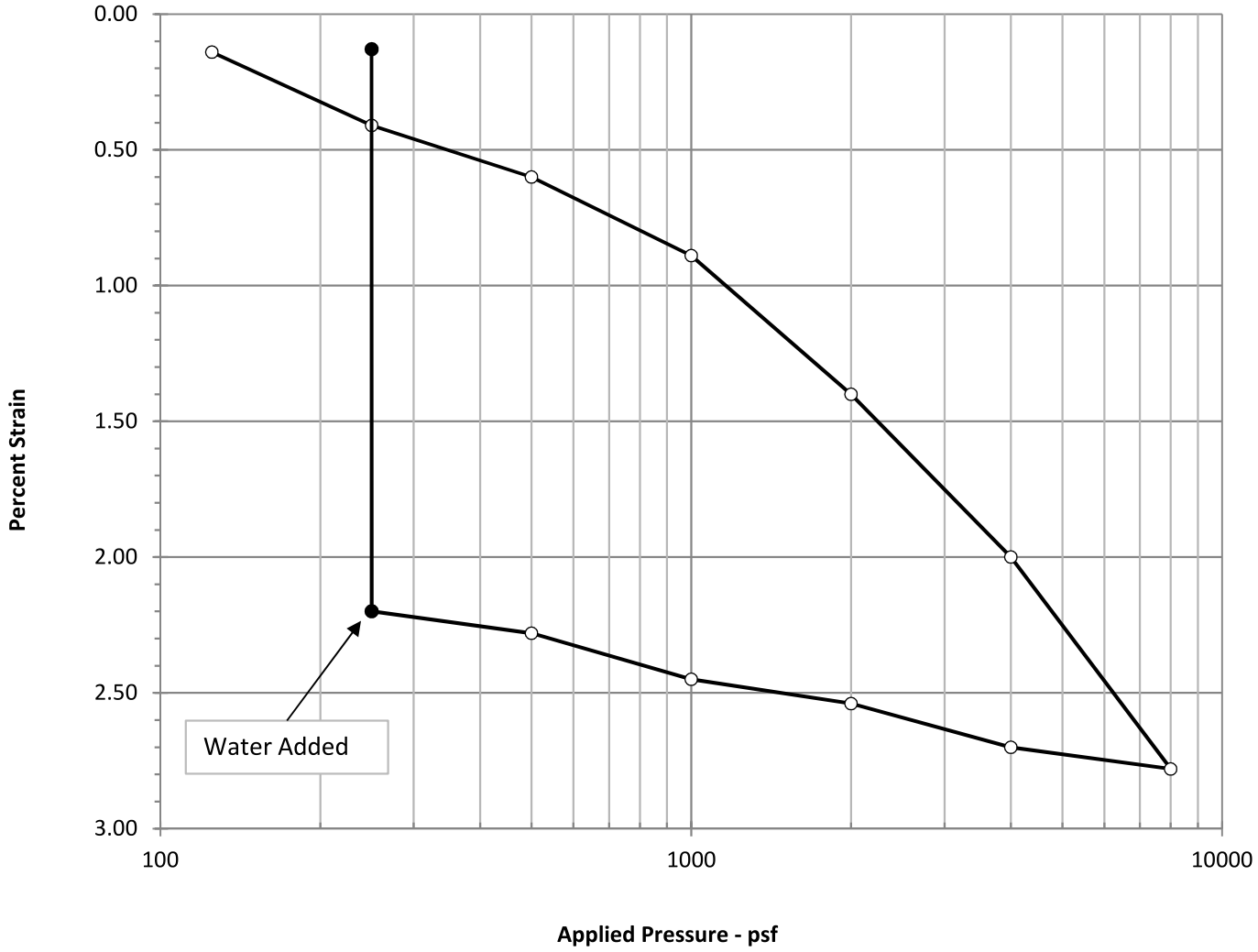
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Tested By: CRN **Checked By:** Craig R Madsen

CONSOLIDATION TEST REPORT



Natural Sat.	Natural Moist	Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	Pc (psf)	C_c	C_s	Swell Pressure (psf)	Swell (%)	e_o
83.3	19.2	103.6	-----	-----	2.7	740	~ 1,000	0.034	0.006	250	~ 2.1	0.622

MATERIAL DESCRIPTION	USCS	AASHTO
Lean CLAY with Sand	CL	-----

Project No. 20-060-001 **Client:** Montana Fish, Wildlife & Parks
Project: 2035 Fish Hatchery Road
Southeast of Lewistown, Montana

Location: B-2 **Sample Depth (ft):** 5.0 - 7.0

Remarks:
Report No. A-21342-219

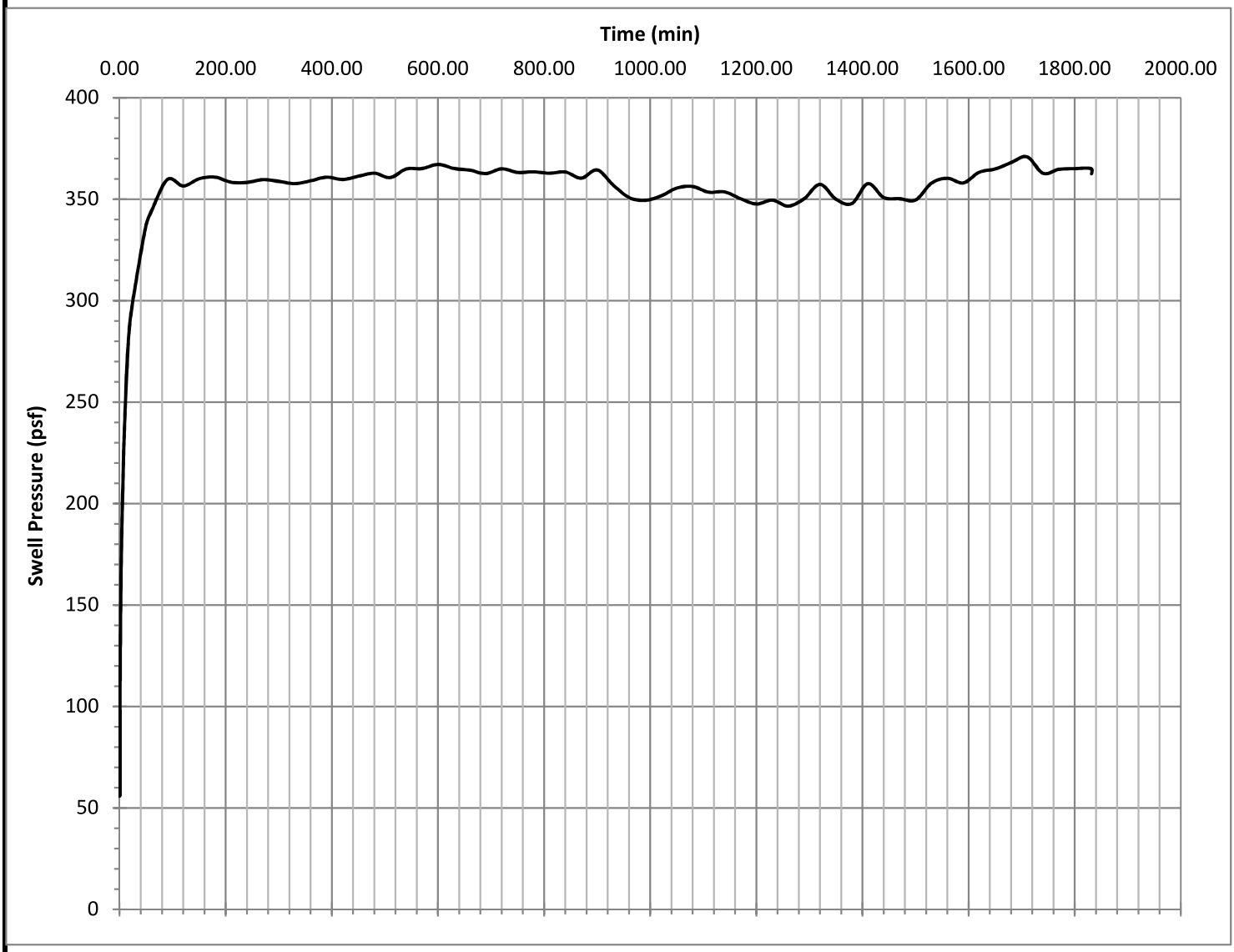
TD&H Engineering
Thomas, Dean & Hoskins, Inc.
Engineering Consultants

Figure 14

Technician : CRN

Reviewed By: Craig R Madsen

CONSTANT VOLUME SWELL TEST REPORT



Natural Sat.	Natural Moist	Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	Pc (psf)	C_c	C_s	Swell Pressure (psf)	Swell (%)	e_o
74.7	18.7	100.3	-----	-----	2.7	710	N/A	N/A	N/A	~ 370	N/A	0.676

MATERIAL DESCRIPTION	USCS	AASHTO
Lean CLAY with Sand	CL	-----

Project No. 20-060-001 **Client:** Montana Fish, Wildlife & Parks

Project: 2035 Fish Hatchery Road
Southeast of Lewistown, Montana

Location: B-2 **Sample Depth (ft):** 5.0 - 7.0

Remarks:
Report No. A-21342-216

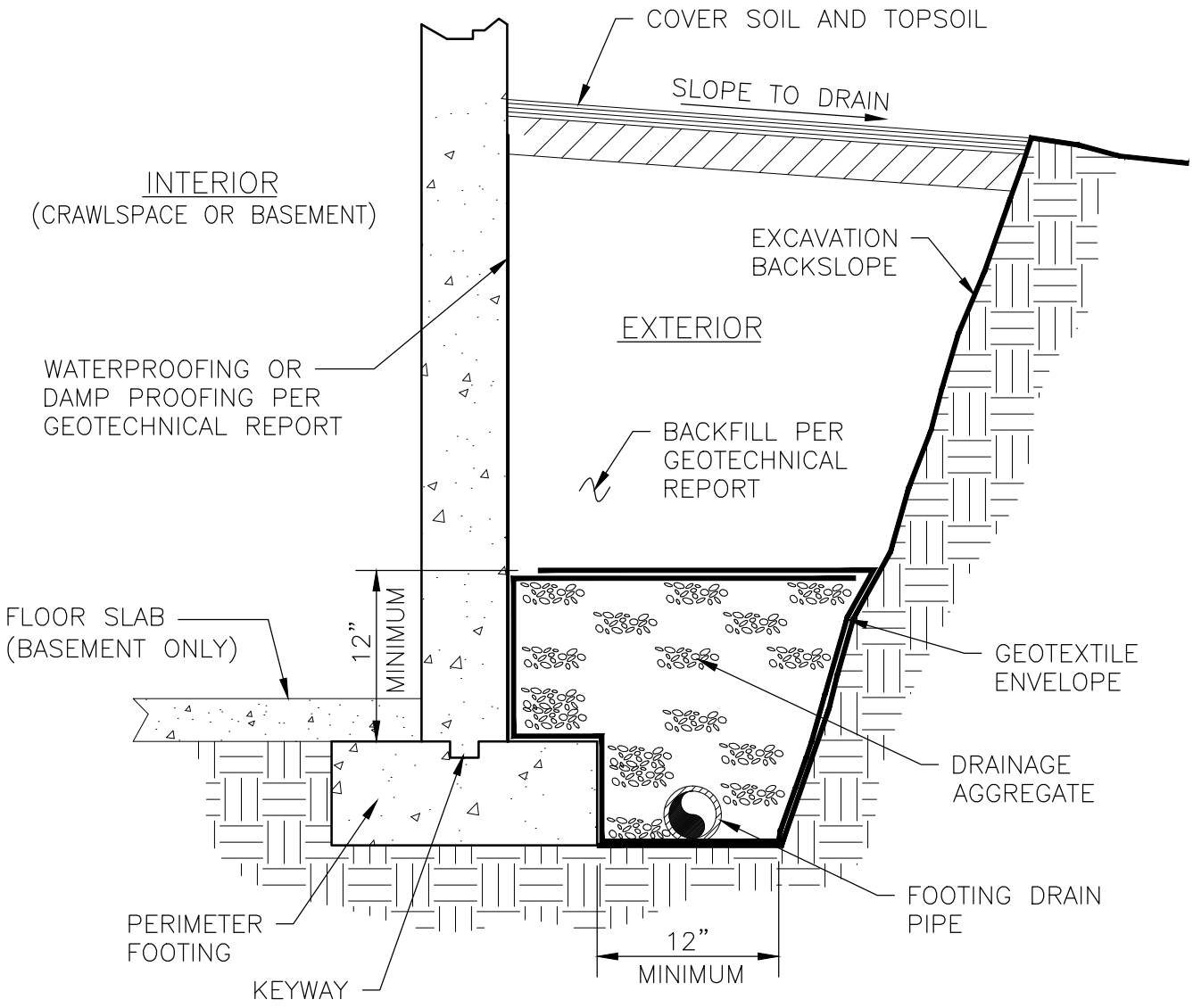
TD&H Engineering

Thomas, Dean & Hoskins, Inc.
Engineering Consultants

Figure 15

Technician: CRN

Reviewed By: Craig R Madsen



PERIMETER FOUNDATION DRAIN
NO SCALE

NOTES

1. FOOTING DRAIN PIPE SHALL CONSIST OF A MINIMUM 3–INCH DIAMETER, GEOTEXTILE–WRAPPED, FLEXIBLE, SLOTTED PIPE, ADVANCED DRAINAGE SYSTEM (ADS) WITH DRAIN GUARD OR APPROVED EQUIVALENT.
2. GEOTEXTILE ENVELOPE SHALL INCLUDE A FULL WIDTH OVERLAY AT THE TOP. GEOTEXTILE SHALL BE SOILTEX ST120N, MIRAFI 140NC OR APPROVED EQUIVALENT.
3. DRAINAGE AGGREGATE SHALL BE WASHED OR SCREENED GRAVEL CONFORMING TO THE FOLLOWING GRADATION:

SIEVE SIZE	PERCENT PASSING
1 1/2–INCH	100
3/4–INCH	75–95
3/8–INCH	10–20
NO. 4	0–5

4. FOOTING DRAINS SHALL HAVE A MINIMUM SLOPE OF 0.2 PERCENT TOWARDS A SUMP PUMP OR DAY–LIGHTED A MINIMUM OF 15 FEET AWAY FROM THE FOUNDATION.

CONSTRUCTION STANDARD NO. 02801-06C

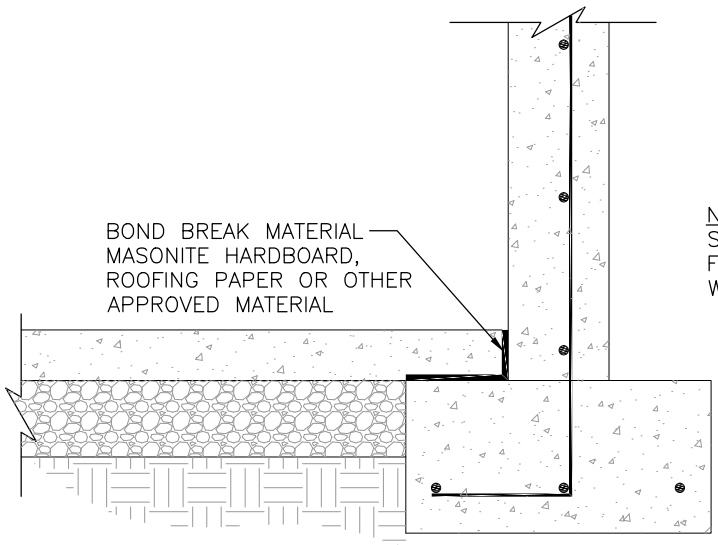
PERIMETER FOUNDATION DRAIN

RESIDENTIAL CONSTRUCTION

TD&H Engineering
tdhengineering.com
GREAT FALLS-BOZEMAN-KALISPELL-SHELBY MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO
WATFORD CITY NORTH DAKOTA

DRAWN BY:	RLT
DESIGNED BY:	CRN
QUALITY CHECK:	MMJ
DATE:	5/21/15
JOB NO.	
CAD NO.	02801-06C

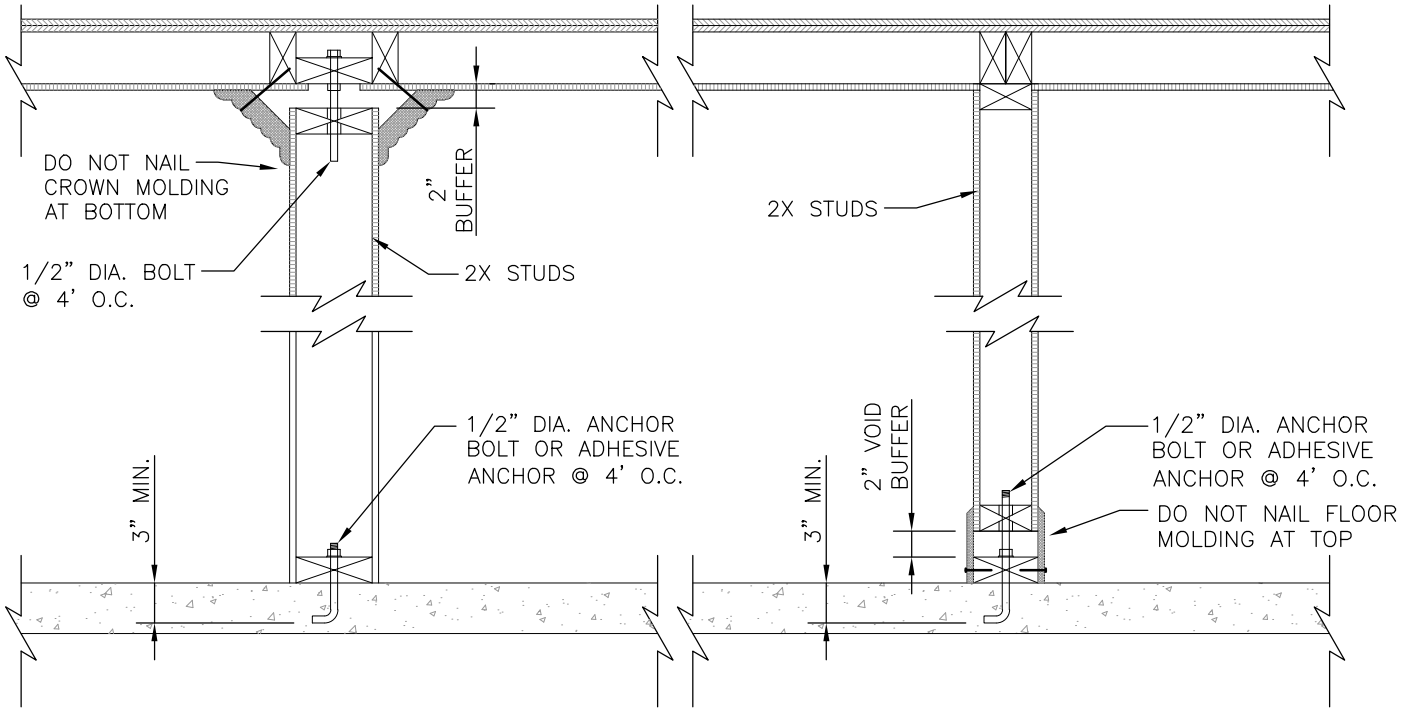
FIGURE



NOTE:
STRUCTURALLY ISOLATE SLAB FROM STEM WALLS, BASEMENT WALLS, COLUMNS, ETC.

FLOATING SLAB–ON–GRADE

NO SCALE



FLOOR SUPPORTED
(LATERALLY RESTRAINED AT CEILING)

CEILING SUPPORTED
(LATERALLY RESTRAINED AT FLOOR)

NON–BEARING PARTITION WALL FRAMING DETAILS

NO SCALE

Date: 7/2005	Revised:	By:	**CONSTRUCTION STANDARD NO. 02801-08**

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

MISC. DETAILS FOR SLAB-ON-GRADE CONSTRUCTION OVER EXPANSIVE SOILS

Hazards by Location

Search Information

Coordinates: 47.00159249331295, -109.34372127056122

Elevation: 4184 ft

Timestamp: 2020-05-27T18:34:48.543Z

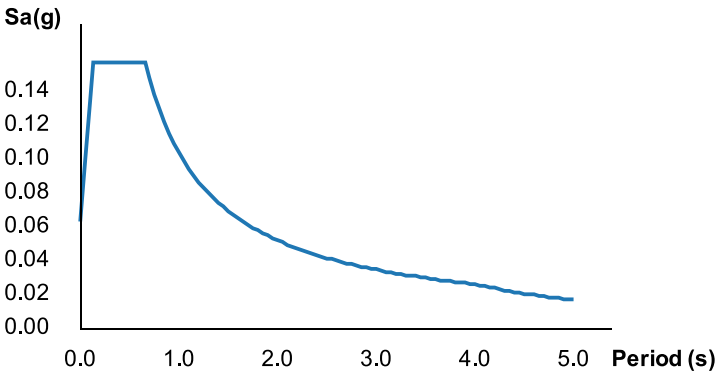
Hazard Type: Seismic

Reference Document: IBC-2015

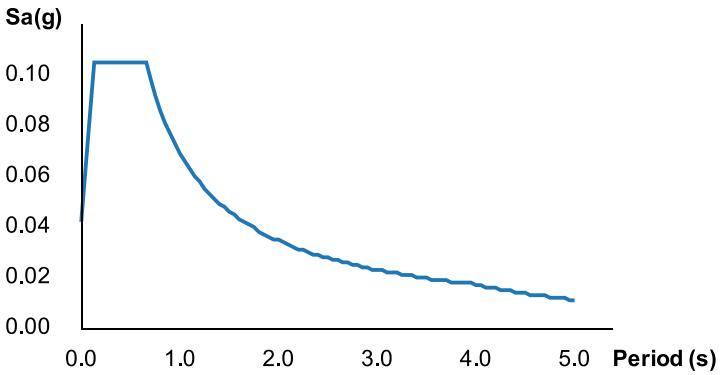
Risk Category: II

Site Class: D

MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
S_S	0.098	MCE_R ground motion (period=0.2s)
S_1	0.043	MCE_R ground motion (period=1.0s)
S_{MS}	0.157	Site-modified spectral acceleration value
S_{M1}	0.104	Site-modified spectral acceleration value
S_{DS}	0.105	Numeric seismic design value at 0.2s SA
S_{D1}	0.069	Numeric seismic design value at 1.0s SA

Additional Information

Name	Value	Description
SDC	B	Seismic design category
F_a	1.6	Site amplification factor at 0.2s
F_v	2.4	Site amplification factor at 1.0s
CR_S	0.976	Coefficient of risk (0.2s)

CR_1	0.939	Coefficient of risk (1.0s)
PGA	0.039	MCE_G peak ground acceleration
F_{PGA}	1.6	Site amplification factor at PGA
PGA_M	0.062	Site modified peak ground acceleration
T_L	4	Long-period transition period (s)
SsRT	0.098	Probabilistic risk-targeted ground motion (0.2s)
SsUH	0.101	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.5	Factored deterministic acceleration value (0.2s)
S1RT	0.043	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.046	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.6	Factored deterministic acceleration value (1.0s)
PGAd	0.6	Factored deterministic acceleration value (PGA)

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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SOIL CLASSIFICATION AND SAMPLING TERMINOLOGY FOR ENGINEERING PURPOSES

STANDARD PENETRATION TEST (ASTM D1586)

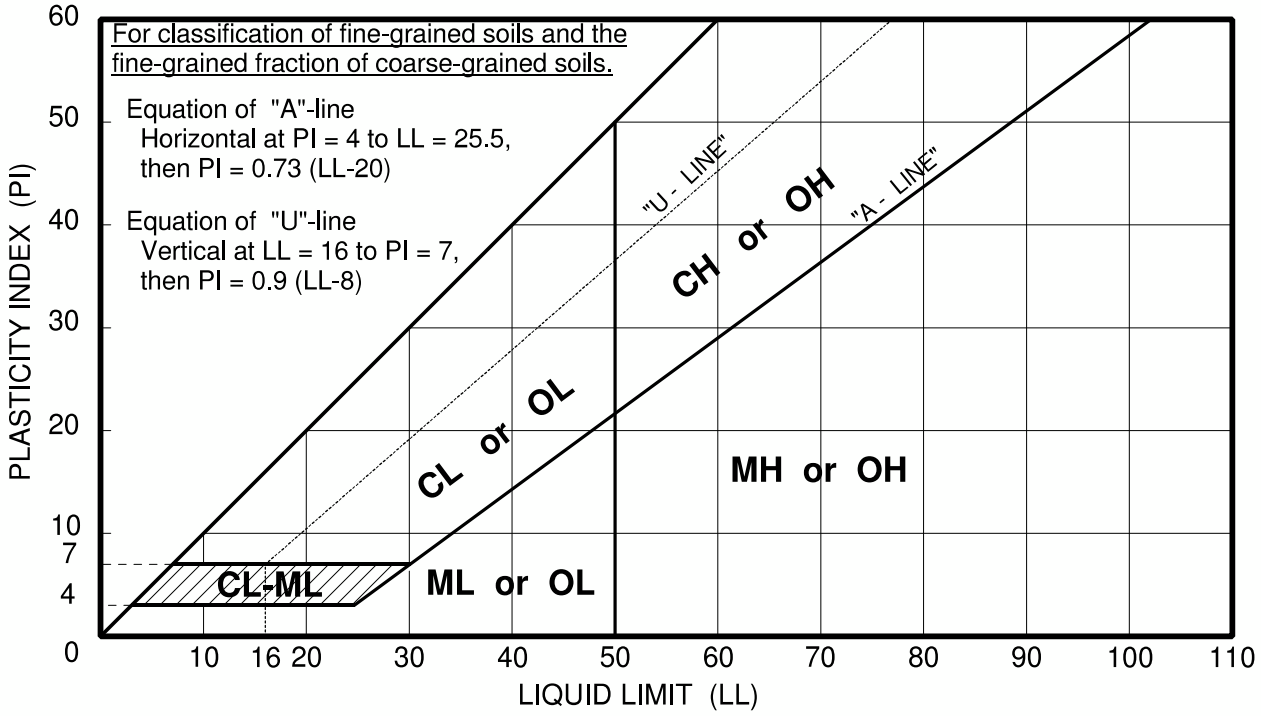
RELATIVE DENSITY*		RELATIVE CONSISTENCY*	
Granular, Noncohesive (Gravels, Sands, & Silts)	Standard Penetration Test (blows/foot)	Fine-Grained, Cohesive (Clays)	Standard Penetration Test (blows/foot)
Very Loose	0-4	Very Soft	0-2
Loose	5-10	Soft	3-4
Medium Dense	11-30	Firm	5-8
Dense	31-50	Stiff	9-15
Very Dense	+50	Very Stiff	15-30
		Hard	+30

*** Based on Sampler-Hammer Ratio of 8.929 E-06 ft/lbf and 4.185 E-05 ft^2/lbf for granular and cohesive soils, respectively (Terzaghi)**

PARTICLE SIZE RANGE

Sieve Openings (Inches)				Standard Sieve Sizes				
12"		3"	3/4"	No.4	No.10	No.40	No.200	<No.200
BOULDERS	COBBLES	GRAVELS		SANDS				SILTS & CLAYS
		Coarse	Fine	Coarse	Medium	Fine		(Distinguished By Atterberg Limits)

PLASTICITY CHART



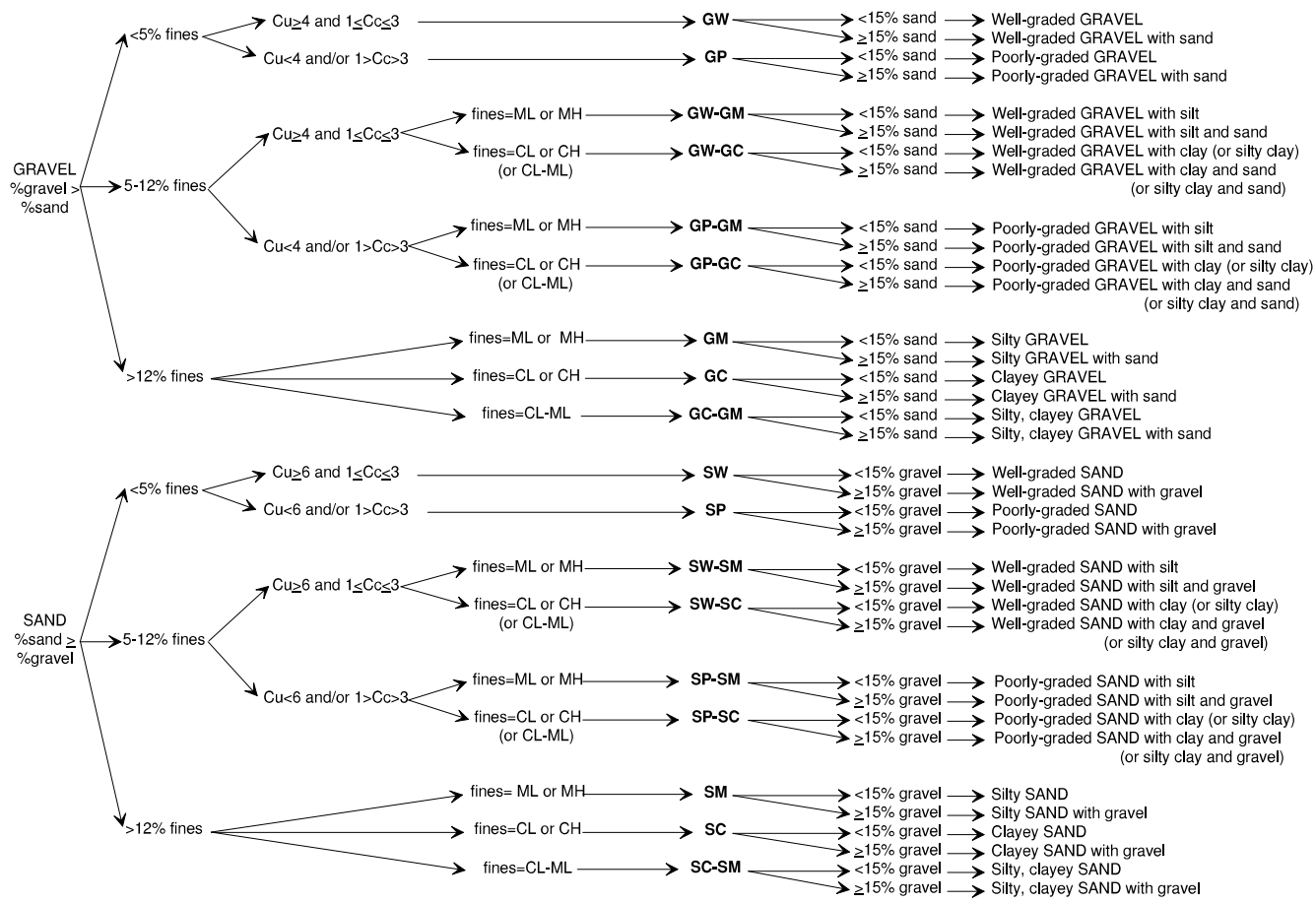
GW - Well-graded GRAVEL
GP - Poorly-graded GRAVEL
GM - Silty GRAVEL
GC - Clayey GRAVEL

SW - Well-graded SAND
SP - Poorly-graded SAND
SM - Silty SAND
SC - Clayey SAND

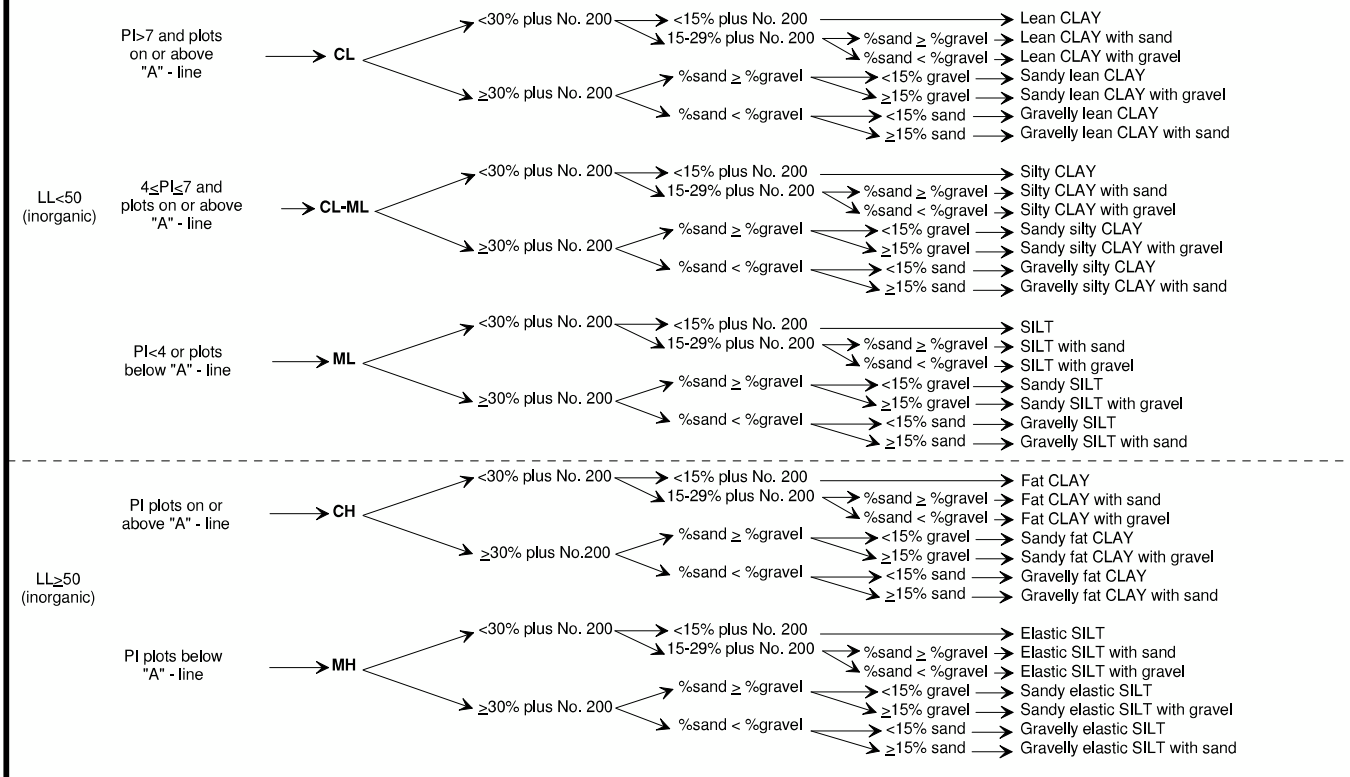
CL - Lean CLAY
ML - SILT
OL - Organic SILT/CLAY
CH - Fat CLAY
MH - Elastic SILT
OH - Organic SILT/CLAY

03/01

ASTM D2487
CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

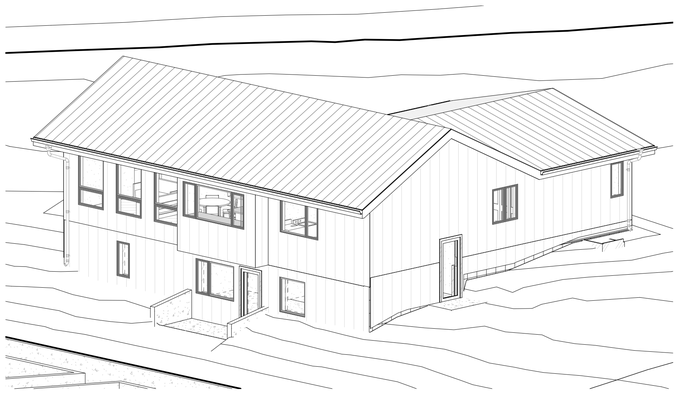


Flow Chart For Classifying Coarse-Grained Soils (More Than 50 % Retained On The No. 200 Sieve)

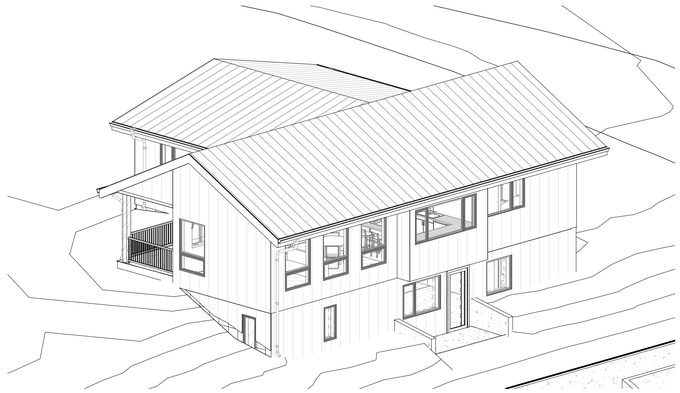


Flow Chart For Classifying Fine-Grained Soils (50 % Or More Passes The No. 200 Sieve)

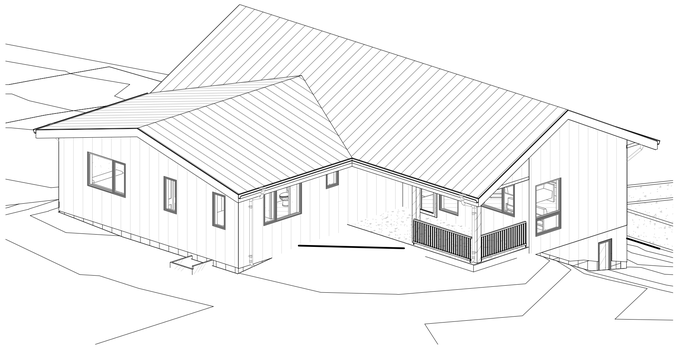
03/98



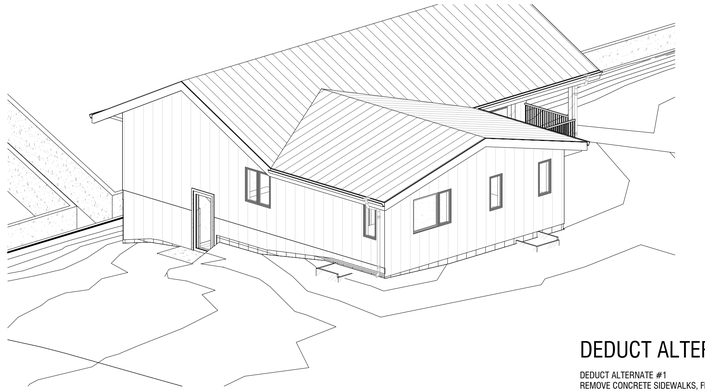
1 | ISOMETRIC - NORTH
SCALE:



2 | ISOMETRIC - EAST
SCALE:



3 | ISOMETRIC - SOUTH
SCALE:



4 | ISOMETRIC - WEST
SCALE:

SHEET INDEX

VICINITY AERIAL

DEDUCT ALTERNATES

DEDUCT ALTERNATE #1
REMOVE CONCRETE SIDEWALKS, FROM THE BASE BID AND LEAVE THE GROUND IN NATURAL STATE, MAKING SURE THERE IS POSITIVE DRAINAGE AWAY FROM HOUSE.

DEDUCT ALTERNATE #2
REMOVE GRAVEL DRIVEWAY FROM THE BASE BID AND LEAVING THE GROUND IN NATURAL STATE. MAKING SURE THERE IS POSITIVE DRAINAGE AWAY FROM HOUSE.

DEDUCT ALTERNATE #3
REMOVE METAL ROOFING FROM BASE BID AND REPLACE FINISHED ROOFING MATERIAL WITH 30# ASPHALT SHINGES.
ALL ROOFING SYSTEM MATERIALS ARE TO BE THE SAME AS THE BASE BID INCLUDING SYNTHETIC UNDERLAYMENT, AND PRE-FINISHED FLASING AROUND THE PERIMETER OF THE ROOF. FOLLOWING THE ASPHALT SHINGE MANUFACTURERES REQUIREMENTS FOR INSTALLION, COLOR IS TO BE SELECTED FROM MANUFACTURERS STANDARD COLORS.

FWP BIG SPRINGS HATCHERY RESIDENCE #1 -

PROJECT DIRECTORY

CLIENT REPRESENTATIVE
Paul Valle
Director
Design and Construction
Montana Fish, Wildlife & Parks
P.O. Box 200701
Helena, MT 59620-0701
406.841.4013
pvalle@mt.gov

Joey Renenger
Project Manager
Design and Construction
Montana Fish, Wildlife & Parks
P.O. Box 200701
Helena, MT 59620-0701
406.841.4007
Joey.Renenger@mt.gov

ARCHITECT
Spark Architecture
Sophia Sparklin
410 Central Ave #506
Great Falls, MT 59401
406.453.0001
sophia@spark-architecture.com

GEOTECHNICAL
TD&H Engineering
Craig Nadeau
1800 River Drive N.
Great Falls, MT 59401
406.761.3010
craig.nadeau@tdhengineering.com

STRUCTURAL ENGINEER
TD&H Engineering
Brady Lassila, PE
1800 River Drive N.
Great Falls, MT 59401
406.761.3010
brady.lassila@tdhengineering.com

CODE DESIGN CRITERIA

APPLICABLE CODES:

1. International Residential Code, (2018)
2. International Energy Conservation Code, (2012) Editions: ARM 24.301.161
3. ICC A117.1 – Accessibility, 2009 Edition
4. National Electrical Code, 2017 Edition (NFPA 70)
   As amended by the State of Montana: ARM 24.301.401
5. Uniform Plumbing Code, (2018), together with the following:
   UPC Appendix Chapters, Appendix A, Appendix B, and Appendix D
   The UPC, as modified and amended by the State of Montana: ARM 24.301.301, ARM 24.301.351
6. International Mechanical Code, (2018)
7. International Fire Code, (2012)

PROJECT DATA

PROJECT NAME:	FWP BIG SPRINGS HATCHERY RESIDENCE #1
PROJECT DESCRIPTION:	NEW RESIDENTIAL
PROJECT ADDRESS:	BIG SPRINGS TROUT HATCHERY LEWISTOWN MT 59457
CLIMATE ZONE:	6B
FIRE SUPPRESSION:	NONE
CONDITIONED AREA:	2533 SF
MAX BLDG HEIGHT (ACTUAL) :	14'-6" , 1 STORY + BASEMENT
AREA OF LOT (NET):	
EXTERIOR WALLS:	WOOD FRAME, CONTIINUOUS INSULATION

ENERGY CODE COMPLIANCE

ELEMENT	INSULATION / VALUE
CEILING	R-49
BASEMENT WALL	R-15ci OR R-19 cavity
WALLS - WOOD FRAMED	R-20+5ci OR R-13+10ci *R-21 OR 13+10ci
FLOOR	R-30
SLAB-ON-GRADE	R-10ci for 48" below surface
FENESTRATION	U-0.32

*ALL REQUIRED INSULATION VALUE BASED ON IECC 2012, TABLE R402.1.1

*VALUES AMMENDED BY STATE OF MONTANA ARM 24.301.161

Spark
ARCHITECTURE
410 Central Ave
GREAT FALLS, MT 59401
T: 406.453.0001
F: 406.760.1788
SPARK-ARCHITECTURE.COM

LICENSED ARCHITECT
SOPHIA A. SPARKLIN
3345
GREAT FALLS, MT
STATE OF MONTANA

FWP BIG SPRINGS RESIDENCE

Big springs Trout Hatchery, Lewistown, MT 59457
Paul Valle, Contact 406.841.4013 pvalle@mt.gov

PHASE	REVISIONS
BID SET 12/14/2020 - REVISION #00	

20011

PROJECT COVER

G000

12/10/2020 3:10:15 PM

GENERAL NOTES

1. ALL MANUFACTURED ARTICLES, MATERIALS AND EQUIPMENT SHALL BE APPLIED INSTALLED, CONNECTED, ERECTED, USED, CLEANED, AND CONDITIONED ACCORDANCE WITH THE MANUFACTURER'S WRITTEN SPECIFICATIONS OR INSTRUCTIONS UNLESS HEREINAFTER SPECIFIED TO THE CONTRARY.

2. ALL PRODUCTS LISTED BY ICBO / NER NUMBER SHALL BE INSTALLED PER THE REPORT AND MANUFACTURER'S WRITTEN INSTRUCTIONS. PRODUCT SUBSTITUTIONS FOR LISTED PRODUCTS SHALL ALSO HAVE ICB APPROVED EVALUATION REPORTS OR BE APPROVED AND LISTED BY OTHER NATIONALLY RECOGNIZED TESTING AGENCIES.

3. ITEMS NOT LOCATED BY DIMENSION (DOORS, ETC.) MAY BE MOVED SLIGHTLY TO ACCOMMODATE CONSTRUCTION.

4. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES AND PROTECT THE SAME.

5. CONTRACTORS AND SUBCONTRACTORS ARE TO VERIFY ALL DIMENSIONS, GRADE ELEVATIONS, UTILITY LOCATIONS AND RELATED INFORMATION. ALL WORK IS TO BE IN COMPLIANCE WITH THE STATE / CITY AND FEDERAL REQUIREMENTS AS WELL AS THE PLANS AND SPECIFICATIONS.

6. BEFORE ANY CONCRETE OR PLUMBING MATERIALS ARE INSTALLED, THE NATIVE OR FILL MATERIAL FOR GRADING SHALL BE TESTED TO DETERMINE IF THERE ARE ANY CORROSIVE PROPERTIES THAT COULD BE HARMFUL TO THOSE MATERIALS.

7. FINISHED FLOOR ELEVATIONS (AS-BUILT) SHALL BE CERTIFIED TO THE CITY FOR THE FEDERAL EMERGENCY MANAGEMENT ASSOCIATION (F.E.M.A.) WHERE REQUIRED.

8. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL CONDITIONS, DIMENSIONS AND MATERIAL IN THE FIELD FOR ACCURACY PRIOR TO CONSTRUCTION. IF THERE ARE ANY QUESTIONS REGARDING THESE OR OTHER COORDINATION ISSUES THE CONTRACTOR SHALL SUBMIT THEM IN WRITING TO THE ARCHITECT BEFOR PROCEEDING WITH THE WORK IN QUESTION, OR RELATED WORK. CLARIFY ALL DISCREPANCIES RELATIVE TO CONSTRUCTION DOCUMENTS, SPECIFICATIONS AND FIELD CONDITIONS PRIOR TO SUBMITTING BIDS AND COMMENCING WORK.

9. DO NOT SCALE DRAWINGS. DIMENSIONS SHALL GOVERN UNLESS OTHERWISE NOTED.

10. THE INTENT OF THE CONSTRUCTION DOCUMENTS IS TO ALLOW FOR THE PERFORMANCE OF THE WORK. EVERY ITEM NECESSARILY REQUIRED MAY NOT BE SPECIFICALLY MENTIONED OR SHOWN.

11. IT IS INTENDED THAT THE CONTRACTOR PROVIDE A COMPLETE JOB AND ANY OMISSIONS IN THESE OR IN THE OUTLINE OF WORK SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM THE RESPONSIBILITIES IMPLIED BY THE SCOPE OF WORK EXCEPT AS NOTED.

12. PROVIDE STRICT CONTROL OF JOB CLEANING AND PREVENT DUST AND DEBRIS FROM EMANATING FROM THE CONSTRUCTION AREA.

13. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF WORK BETWEEN ALL TRADES.

14. ALL WORK PERFORMED SHALL COMPLY WIT HALL NOTES IN THE DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE INTENT OF ALL NOTES IN WITH THE DRAWINGS, SPECIFICATIONS AND OTHER PROJECT DOCUMENTS, INCLUDING STRUCTURAL, CIVIL MECHANICAL ELECTRICAL PLUMING AND OTHER TRADES INDICATED IN CONTRACT DOCUMENTS.

15. THE CONTRACTOR SHALL CAREFULLY STUDY THE CONTRACT DOCUMENTS PRIOR TO CONSTRUCTION, AND SHALL REPORT TO THE ARCHITECT WITHOUT DELAY ANY ERRORS INCONSISTENCIES, OR OMISSIONS HE/SHE MAY DISCOVER AND SHALL NOT PROCEED WITH THE WORK UNTIL THE INTENT OF THE DOCUMENTS IS CONFIRMED BY THE ARCHITECT.

16. ALL WORK SHALL CONFIRM TO THE REQUIREMENTS OF:
    A) REFER TO CODE PLANS FOR BUILDING CODE REQUIREMENTS.
    B) U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
    C) AMERICA WITH DISABILITIES ACT.
    D) OTHER REGULATIONS AS SET FORTH IN THE DRAWINGS AND SPECIFICATIONS.
    E) ALL OTHER APPLICABLE CODES AND ALL OTHER GOVERNING AUTHORITIES HAVING JURISDICTION OVER THE PROJECT.

17. ALL WORK SHALL BE AT THE MINIMUM THE BEST PRACTICES OF EACH TRADE.

18. PROVIDE EXITING AND STAIRWAY GRAPHICS AS REQUIRED BY CODES ORDINANCES RULES AND REGULATIONS OR JURISDICTION MATERIALS TYPE AND COLOR SHALL BE AS SHOWN IN THE DRAWINGS OR SS SELECTED BY THE ARCHITECT.

SYMBOLS

GRID

CENTER LINE

Room name
101
150 SF
ROOM TAG / NUMBER

e1 i1
WALL TAG - EXT. AND INT.

1
WINDOW TAG

101
DOOR TAG

+ 0'-0"
CEILING HEIGHT

Name
Elevation
DATUM

SIM
X
A-101
CALLOUT HEAD

N
NORTH ARROW

ENTRY
DOOR ENTRY

ABBREVIATIONS

ABC	AGGREGATE BASE COURSE
ABV.	ABOVE
ADJ.	ADJUSTABLE
APPROX.	APPROXIMATE
BD.	BOARD
BLDG.	BUILDING
B.O.	BOTTOM OF
CAB.	CABINET
C.I.	CAST IRON
C.I.P.	CAST IN PLACE
CLG.	CEILING
CLKG.	CAULKING
CLO.	CLOSET
CLR	CLEAR
COL	COLUMN
CONC.	CONCRETE
CONT.	CONTINUOUS
CTR.	CENTER
DTL.	DETAIL
DIA.	DIAMETER
DN	DOWN
DR	DOOR
DWR	DRAWER
DWG	DRAWING
EA.	EACH
ELEC.	ELECTRICAL
EQ	EQUAL
EQUIP.	EQUIPMENT
EXT.	EXTERIOR
F.F.E.	FINISH FLOOR ELEVATION
FIN.	FINISH
F.O.	FACE OF
GA.	GUAGE
GALV	GALVANIZED
GYP	GYPSUM
GWB	GYPSUM WALL BOARD
H.B.	HOSE BIBB
HDWD	HARDWOOD
HORIZ	HORIZONTAL
HT	HEIGHT
HB	HOSE BIB
I.D.	INSIDE DIAMETER
INSUL	INSULATION
INT.	INTERIOR
JT.	JOINT
KIT.	KITCHEN
LAV.	LAVATORY
LT.	LIGHT
MAX.	MAXIMUM
MECH.	MECHANICAL
MTL	METAL
MFR.	MANUFACTURER
MIN	MINIMUM
MISC.	MISCELANEOUS
MTD.	MOUNTED
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
OPNG.	OPENING
OPP.	OPPOSITE
PL.	PLATE
PLY	PLYWOOD
REFRIG	REFRIGERATOR
REINF.	REINFORCED
REQ.	REQUIRED
RM.	ROOM
R.O.	ROUGH OPENING
SCHED.	SCHEDULED
SEC.	SECTION
SIM.	SIMILAR
SPEC.	SPECIFACTION
SQ.	SQUARE
STD.	STANDARD
STOR.	STORAGE
SUSP.	SUSPENDED
SYM.	SYMMETRICAL
T.O.	TOP OF
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VERT.	VERTICAL
W/	WITH
W.C.	WATER CLOSET
W/O	WITHOUT
WP.	WATERPROOF

WILDFIRE RESISTANCE NOTES

ROOF DESIGN
THE ROOF—WITH A LARGE SURFACE AREA AND POTENTIAL FOR ACCUMULATION OF COMBUSTIBLE VEGETATIVE DEBRIS—IS ONE OF THE MOST VULNERABLE PARTS OF A HOME. KEY MITIGATIONS FOR THE ROOF INCLUDE:

1. INSTALL A CLASS A FIRE-RATED COVERING OR ASSEMBLY.
2. WHERE APPLICABLE, INSTALL BIRD STOPS AT ROOF EDGE, INCLUDING ANY RIDGES. AN ADDITIONAL LAYER OF PROTECTION CAN BE ATTAINED IF A LAYER OF ROLL ROOFING IS INSTALLED OVER THE SURFACE OF THE ROOF DECK.
3. FOR COMPLEX ROOF DESIGNS WHERE THERE ARE JUNCTIONS BETWEEN A ROOF AND A WALL (E.G., DORMERS), CONSIDER NONCOMBUSTIBLE SIDING.
4. THE UNDER-EAVE AREA SHOULD BE CONSTRUCTED USING A SOFFITED EAVE DESIGN.
5. BOTH INLET (UNDER-EAVE) AND OUTLET (ROOF OR GABLE) VENTS CAN BE VULNERABLE TO EMBER ENTRY.
   - VENTS SHOULD BE COVERED WITH 1/8- TO 1/16-INCH NONCOMBUSTIBLE AND CORROSION-RESISTANT SCREENING. VENTS COVERED WITH 1/16-INCH SCREENING SHOULD BE CLEANED REGULARLY SO THAT THEY CAN PERFORM THEIR MOISTURE MANAGEMENT FUNCTION.
   - RIDGE OR OFF-RIDGE VENTS ARE LESS VULNERABLE THAN GABLE END VENTS.
   - USE OF VENTS APPROVED BY THE CALIFORNIA OFFICE OF THE STATE FIRE MARSHAL BUILDING MATERIALS LISTING PROGRAM, WHICH HAVE DEMONSTRATED A RESISTANCE TO EMBER AND FLAME EXPOSURES.1

EXTERIOR WALLS
EXTERIOR WALLS AND WINDOWS ARE ESPECIALLY VULNERABLE WHEN EXPOSED TO FLAMES OR RADIANT HEAT FOR EXTENDED PERIODS, SUCH AS FROM VEGETATION OR NEIGHBORING HOMES THAT HAVE IGNITED. DOORS AND WINDOWS CAN ALSO BE VULNERABLE TO WIND-BLOWN EMBERS AND FLAMES. IF THERE IS A HOME OR NEIGHBORING BUILDING WITHIN 30 FEET, THE POTENTIAL FOR RADIANT HEAT FROM THAT STRUCTURE—SHOULD IT IGNITE—MAY BE ENOUGH TO IGNITE SIDING OR BREAK GLASS IN WINDOWS, SO ADDITIONAL MITIGATIONS MAY BE NECESSARY. KEY MITIGATIONS FOR EXTERIOR WALLS INCLUDE:

1. MAKE SURE THERE IS, AT A MINIMUM, A 6-INCH NONCOMBUSTIBLE ZONE AT THE BASE OF THE WALL (I.E., BETWEEN THE GROUND AND START OF SIDING).
2. INSTALL MULTI-PANE WINDOWS HAVING TEMPERED GLASS.
3. WHEN VINYL WINDOWS ARE USED, MAKE SURE SINGLE- AND DOUBLE-HUNG WINDOWS INCLUDE METAL REINFORCEMENT IN INTERLOCK MEMBERS.
4. IF THERE IS A HOME OR NEIGHBORING BUILDING WITHIN 30 FEET, USE IGNITION-RESISTANT OR NONCOMBUSTIBLE SIDING AND METAL SHUTTERS.

LANDSCAPING AND NEAR HOME IGNITION ZONE
MANAGING VEGETATION AND OTHER COMBUSTIBLE ITEMS ON THE PROPERTY IS IMPORTANT FOR REDUCING THE ENERGY AND POTENTIAL SPREAD OF FIRE. REGARDLESS OF VEGETATION MAINTENANCE AND DEFENSIBLE SPACE ON THE LARGER PROPERTY, COMBUSTIBLE VEGETATION AND MULCH IN THE NEAR-HOME, 5-FOOT AREA IMMEDIATELY AROUND THE HOME CAN IGNITE AND ALLOW FLAMES TO TOUCH THE HOME. KEY MITIGATIONS FOR LANDSCAPING INCLUDE:

1. FOLLOW READILY AVAILABLE GUIDANCE ON CREATING AN EFFECTIVE DEFENSIBLE SPACE ON YOUR PROPERTY IN A RADIUS OF AT LEAST 100 FEET FROM THE HOME (OR TO THE PROPERTY LINE).
2. CREATE A NEAR-HOME NONCOMBUSTIBLE ZONE WITHIN 5 FEET OF THE HOME AND UNDER THE ENTIRE FOOT PRINT OF ANY ATTACHED DECK.
3. A NONCOMBUSTIBLE FENCE SECTION SHOULD BE USED FOR 5 TO 8 FEET WHERE THE FENCE CONNECTS TO THE HOME.

LINETYPES

BOUNDARY OF WORK

CENTER LINE

DEMOLITION

HIDDEN FEATURES

OVERHEAD

PROPERTY

MATERIAL LEGEND

METAL STANDING SEAM ROOFING

METAL BOARD AND BATT SIDING

GYPSUM BOARD INTERIOR FINISH

EARTH

GRAVEL

CODE INFORMATION

EGRESS WINDOWS

R303.1 HABITABLE ROOMS
HABITABLE ROOMS SHALL HAVE AN AGGREGATE GLAZING AREA OF NOT LESS THAN 8% OF THE FLOOR AREA OF SUCH ROOM.

R310 EMERGENCY ESCAPE AND RESCUE OPENINGS
R310.1 BASEMENTS, HABITABLE ATTICS AND EVERY SLEEPING ROOM SHALL HAVE NOT LESS THAN ONE OPERABLE EMERGENCY ESCAPE AND RESCUE OPENING. EXCEPTION: BASEMENTS USED ONLY TO HOUSE MECHANICAL EQUIPMENT NOT EXCEEDING A TOTAL FLOOR AREA OF 200 SF DOES NOT NEED AN EMERGENCY ESCAPE.
R310.2 WINDOW WELLS
THE MINIMUM HORIZONTAL AREA OF THE WINDOW WELL SHALL BE 9 SQUARE FEET (0.9 M2), WITH A MINIMUM HORIZONTAL PROJECTION AND WIDTH OF 36 INCHES. THE AREA OF THE WINDOW WELL SHALL ALLOW THE EMERGENCY ESCAPE AND RESCUE OPENING TO BE FULLY OPENED.
EXCEPTION: THE LADDER OR STEPS REQUIRED BY SECTION
R310.2.1 SHALL BE PERMITTED TO ENCROACH A MAXIMUM OF 6 INCHES INTO THE REQUIRED DIMENSIONS OF THE WINDOW WELL.
R310.2.2 WINDOW SILL HEIGHT
WHERE A WINDOW IS PROVIDED AS THE EMERGENCY ESCAPE AND RESCUE OPENING, IT SHALL HAVE A SILL HEIGHT OF NOT MORE THAN 44" ABOVE THE FLOOR: WHERE THE SILL HEIGHT IS BELOW GRADE IT SHALL BE PROVIDED WITH A WINDOW WELL.
R310.2.3 WINDOW WELLS.
THE HORIZONTAL AREA OF THE WINDOW WELL SHALL BE NOT LESS THAN 9 SF WITH A HORIZONTAL PROJECTION AND WIDTH OF NOT LESS THAN 36"
R310.2.3.1 LADDER AND STEPS
WINDOW WELLS WITH A VERTICAL DEPTH GREATER THAN 44" SHALL BE EQUIPPED WITH A PERMANENTLY AFFIXED LADDER OR STEPS USABLE WITH THE WINDOW IN THE FULLY OPEN POSITION.

STAIRWAYS

R311.7 STAIRWAYS
R311.7.1 WIDTH
STAIRWAYS SHALL BE NOT LESS THAN 36" IN CLEAR WIDTH AT ALL POINTS ABOVETHE PERMITTED HANDRAIL HEIGHT AND BELOW THE REQUIRED HEADROOM HEIGHT. THE CLEAR WIDTH OF STAIRWAYS AT OR BELOW THE HANDRAIL HEIGHT SHALL NOT BE LESS THAN 31 1/2" WHERE A HANDRAIL IS INSTALLED ON ONE SIDE.
R311.7.5 STAIR TREADS AND RISERS (MONTANA AMENDMENT)
DIMENSIONS AND DIMENSIONED SURFACES SHALL BE EXCLUSIVE OF CARPETS, RUGS AND RUNNERS.
R311.7.5.1 RISERS - THE MAXIMUM RISER HEIGHT SHALL BE 8 1/4 INCHES. THE RISER SHALL BE MEASURED VERTICALLY BETWEEN LEADING EDGES OF THE ADJACENT TREADS. THE GREATEST RISER HEIGHT WITHIN ANY FLIGHT OF STAIRS SHALL NOT EXCEED THE SMALLEST BY MORE THAN 3/8 INCH. RISERS SHALL BE VERTICAL OR SLOPED FROM THE UNDERSIDE OF THE NOSING OF THE TREAD ABOVE AT AN ANGLE NOT MORE THAN 30 DEGREES FROM THE VERTICAL. OPEN RISERS ARE PERMITTED PROVIDED THAT THE OPENING BETWEEN TREADS DOES NOT PERMIT THE PASSAGE OF A 4-INCH-DIAMETER SPHERE.
R311.7.5.2 TREADS - THE MINIMUM TREAD DEPTH SHALL BE 9 INCHES. THE TREAD DEPTH SHALL BE MEASURED ORIZONTALLY BETWEEN THE VERTICAL PLANES OF THE FOREMOST PROJECTION OF ADJACENT TREADS AND AT A RIGHT ANGLE TO THE TREAD'S LEADING EDGE. THE GREATEST TREAD DEPTH WITHIN ANY FLIGHT OF STAIRS SHALL NOT EXCEED THE SMALLEST BY MORE THAN 3/8 INCH.
R311.7.5.3 NOSINGS
THE RADIUS OF CURVATURE AT THE NOSING SHALL BE NO GREATER THAN 9/16 INCH (14 MM). A NOSING NOT LESS THAN 3/4 INCH (19 MM) BUT NOT MORE THAN 11/4 INCHES (32 MM) SHALL BE PROVIDED ON STAIRWAYS WITH SOLID RISERS. THE GREATEST NOSING PROJECTION SHALL NOT EXCEED THE SMALLEST NOSING PROJECTION BY MORE THAN 3/8 INCH (9.5 MM) BETWEEN TWO STORIES, INCLUDING THE NOSING AT THE LEVEL OF FLOORS AND LANDINGS. BEVELING OF NOSINGS SHALL NOT EXCEED 1/2 INCH.
R311.7.6 LANDINGS FOR STAIRWAYS
THERE SHALL BE A FLOOR OR LANDING AT THE TOP AND BOTTOM OF EACH STAIRWAY. THE MINIMUM WIDTH PERPENDICULAR TO THE DIRECTION OF TRAVEL SHALL BE NO LESS THAN THE WIDTH OF THE FLIGHT SERVED. LANDINGS OF SHAPES OTHER THAN SQUARE OR RECTANGULAR SHALL BE PERMITTED PROVIDED THE DEPTH AT THE WALK LINE AND THE TOTAL AREA IS NOT LESS THAN THAT OF A QUARTER CIRCLE WITH A RADIUS EQUAL TO THE REQUIRED LANDING WIDTH. WHERE THE STAIRWAY HAS A STRAIGHT RUN, THE MINIMUM DEPTH IN THE DIRECTION OF TRAVEL SHALL BE NOT LESS THAN 36 INCHES. EXCEPTION: A FLOOR OR LANDING IS NOT REQUIRED AT THE TOP OF AN INTERIOR FLIGHT OF STAIRS, INCLUDING STAIRS IN AN ENCLOSED GARAGE, PROVIDED A DOOR DOES NOT SWING OVER THE STAIRS.
R311.7.7 STAIRWAY WALKING SURFACE
THE WALKING SURFACE OF TREADS AND LANDINGS OF STAIRWAYS SHALL BE SLOPED NO STEEPER THAN ONE UNIT VERTICAL IN 48 INCHES HORIZONTAL (2-PERCENT SLOPE).
R311.7.8.2 CONTINUITY
HANDRAILS FOR STAIRWAYS SHALL BE CONTINUOUS FOR THE FULL LENGTH OF THE FLIGHT, FROM A POINT DIRECTLY ABOVE THE TOP RISER OF THE FLIGHT TO A POINT DIRECTLY ABOVE THE LOWEST RISER OF THE FLIGHT. HANDRAIL ENDS SHALL BE RETURNED OR SHALL TERMINATE IN NEWEL POSTS OR SAFETY TERMINALS. HANDRAILS ADJACENT TO A WALL SHALL HAVE A SPACE OF NOT LESS THAN 11/2 INCH BETWEEN THE WALL AND THE HANDRAILS.
EXCEPTIONS:
1. HANDRAILS SHALL BE PERMITTED TO BE INTERRUPTED BY A NEWEL POST AT THE TURN.

SMOKE ALARMS

R314 SMOKE ALARMS
R314.3 LOCATION
SMOKE ALARMS SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS.
1. IN EACH SLEEPING ROOMS
2. OUTSIDE THE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS.
3. ON EACH ADDITIONAL STORY, BASEMENT, FIRST FLOOR AND HABITABLE ATTIC AREA.
4. NOT LESS THAN 3'-0" HORIZONTALLY FROM A DOOR OF A BATHROOM.

RADON VENTILATION

POLYETHYLENE SHEETING. INSTALL A PERFORATED PIPE BELOW THE SEALED POLYETHYLENE SHEET UNDER THE CONCRETE SLAB TO HELP PREVENT THE SOIL GAS FROM ENTERING THE HOME.

VENT PIPE. INSTALL A 3-INCH POLYVINYL CHLORIDE (PVC OR OTHER GAS-TIGHT PIPE) FROM THE GAS PERMEABLE LAYER THROUGH THE HOUSE AND ROOF TO SAFELY VENT RADON AND OTHER SOIL GASES ABOVE THE HOUSE. THE VENT PIPE SHOULD TERMINATE AT LEAST 12 INCH ABOVE THE SURFACE OF THE ROOF AND 10 FEET FROM ANY OPENING INTO A LIVING SPACE.

TIE INTO SUMP. BECAUSE OF HIGH GROUND WATER, THE PERFORATED PIPE LOCATED BELOW THE POLYETHYLENE SHEETING CAN BE TIED INTO A SUMP. THE SUMP MUST INCLUDE A SEALED COVER SPECIFICALLY DESIGNED TO ACCOMMODATE A RADON VENT PIPE AS WELL AS THE WATER LINE FROM THE SUMP PUMP.

Spark
ARCHITECTURE
410 Central Ave
GREAT FALLS, MT 59401
T: 406.453.0001
F: 406.760.1788
SPARK-ARCHITECTURE.COM

LICENSED ARCHITECT
SOPHIA A. SPARKLIN
3345
GREAT FALLS, MT
STATE OF MONTANA

FWP BIG SPRINGS RESIDENCE

Big springs Trout Hatchery, Lewistown, MT 59457
Paul Valle, Contact 406 841 4013 pvalle@mt.gov

PHASE	REVISIONS
BID SET 12/14/2020 - REVISION #00	

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GENERAL NOTES

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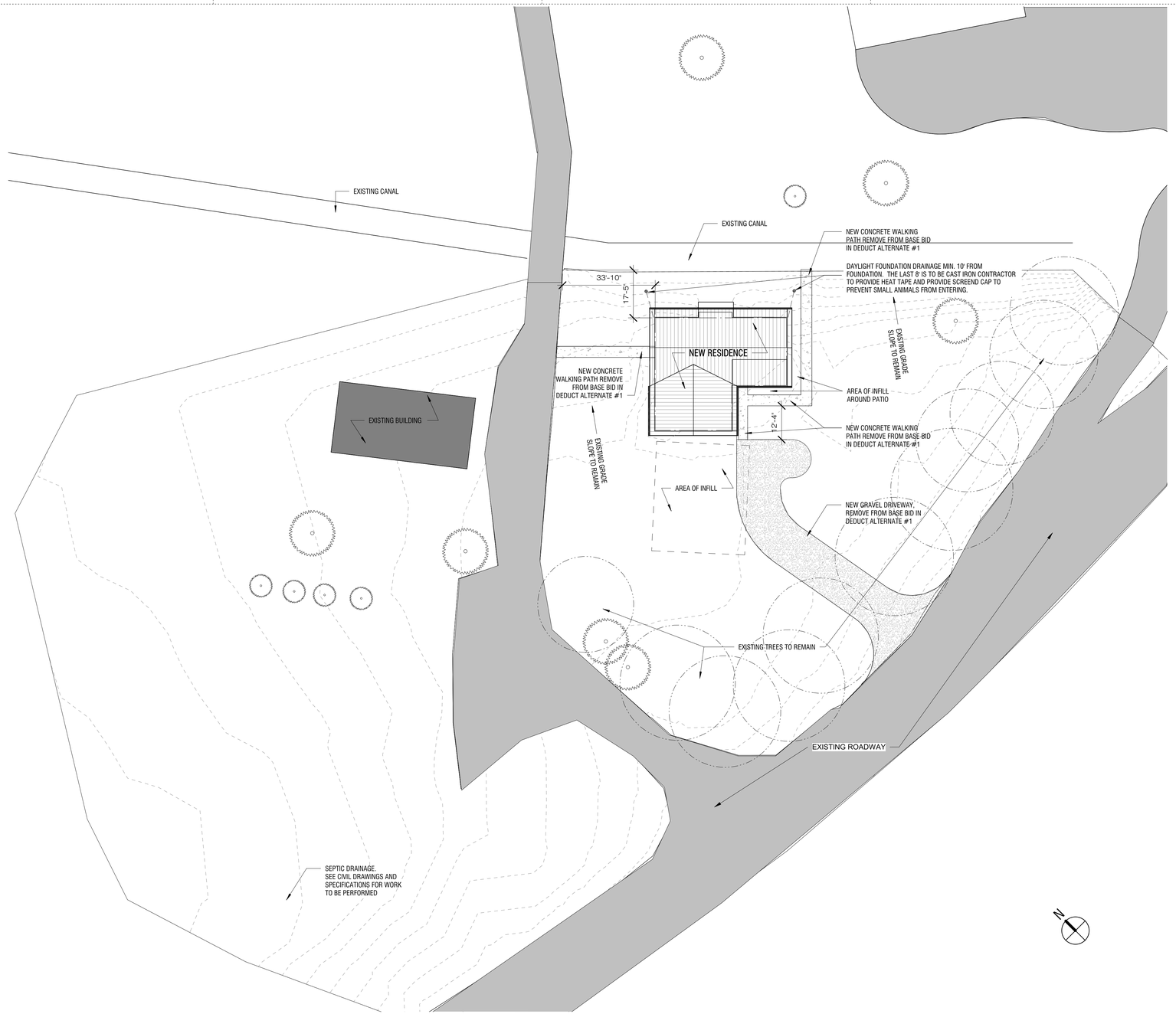

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SCALE: 1" = 20'-0"

Spark
ARCHITECTURE
410 Central Ave
GREAT FALLS, MT 59401
T: 406.453.0001
F: 406.760.1788
SPARK-ARCHITECTURE.COM

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SITE PLAN

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