



8360 W. 48th Ave.
Wheat Ridge, CO 80033



Commercial Drywall Interior Finish

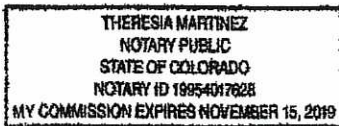
Phone (303) 698-1704
Fax (303) 722-0187

December 14, 2017

I, Ronald Mattox, owner of 100 Granite Street, Frisco CO, appoint
Pete Campbell of Campbell Construction to act on my behalf for
all building permits as it relates to 100 Granite Street.

Ronald Mattox
President

State of CO, County of Jefferson
Signed before me on this 14th day
of Dec., 2017 by Ronald Mattox
Notary Public: Theresia Martinez



PROJECT NARRATIVE

Mattox 3-Plex

100 Granite Street

The Mattox 3-Plex is located at 100 Granite Street which is the former site of an older apartment building that was very run down.

The new proposal for this site is for 3 townhomes side by side for which each unit has it's own garage and own entry. The architecture for the proposed tri-plex is more traditional mountain style and features elements of stone, reclaimed barnwood, rusty metal, and plank siding. The proposed structure is 2 ½ to 3 stories tall and will be much more attractive than the former building. The units feature decks with amazing views of the mountains and the parking design is very simple with the driveway for the north unit accessing from Granite Street and the other 2 units access with a shared driveway from 1st Ave. The landscaping for the open space surrounding this project will be improved with 35 shrubs, 7 Colorado Spruce and 10 Aspen Trees at a minimum.

Even though the former building had more lot coverage than this one, the drainage is being improved with additional percolation galleries that will ensure that any surface water can be appropriately distributed into the ground.

We believe that the proposed building will be a big improvement and welcome addition to the neighborhood.



P.O. Box 1627 ♦ Dillon, CO 80435

1-800-787-5137

www.timberlinedisposal.com

December 19, 2017

RE: 100 Granite Street Tri-Plex
Frisco, CO 80443

TO: Building and Planning Department

I have reviewed the site plans and Timberline Disposal can provide weekly or biweekly service for curb side services for all three units that have individual trash containers and recycling totes. Trash containers and totes can be provided in various sized to accommodate different areas of storage.

Thank you,

Larry Romine, COO
970-418-0110



December 19, 2017

Pete Campbell
Post Office Box 4272
110 South 1st Avenue, Unit 1
Frisco, Colorado 80443

Re: Mattox 3-Plex – Traffic Impact
Martin/Martin, Inc.: Project No.:MC17.1157

Mr. Campbell,

This letter is to identify the traffic impact of the new development at 100 Granite Street, in Frisco, Colorado. The existing site use is an apartment style building primarily used as rentals. There were three units with a total of approximately 10 bedrooms. The proposed site use is a three-plex with a total of 10 bedrooms and considered a luxury townhouse.

It is difficult to use the "TRIP GENERATION" book for such a small number of units, but the "TRIP GENERATION" book generally identifies that rental units tend to have more trips per day and at peak hours than luxury townhomes, typically by a factor of two. Knowing the area and the types of renters at this property, that would seem to hold true.

It is estimated that each existing unit would generate approximately four trips per day, for a total of 12 trips per day for the entire property. It is estimated that each proposed unit would generate two trips per day for a total of six trips per day.

Based on the information and trends in the "TRIP GENERATION" the total number of trips per day should drop from 12 trips to six trips, therefore there should be less of an impact due to the redevelopment than the existing property.

Sincerely,

A handwritten signature in blue ink that reads 'L. Mark Luna'.

L. Mark Luna, PE
Associate

M:\MC17.1157-Mattox 3 Plex\DOCS\MC17.1157_Dec_19_2017_R0_Ltr.docx



October 23, 2017

Town of Frisco
1 Main Street
PO Box 4100
Frisco, CO 80443

Re: 100 Granite Street (Mattox 3 Plex): Drainage Analysis
Martin/Martin, Inc. Project No.: MC17.1157

To Whom It May Concern,

Martin/Martin has completed a review of the existing and proposed drainage patterns for the proposed 100 Granite St. project, which is located at Lots 10-12, Block 4, King Solomon 2nd Addition to Frisco Townsite and addressed at 100 Granite Street. This property is currently developed with a parking lot and building which are to be demolished. The property area is approximately 0.24 acres. The project as proposed consists of residential building construction as well as driveway improvements for connections to the surrounding roadways. The purpose of this drainage memorandum is to summarize both the existing and proposed drainage patterns as well as identify the anticipated drainage modifications that will be necessary to accommodate the proposed site improvements.

The existing site consists of 4 sub-basins A, B, C, and D as shown in the Existing Drainage Plan, which drain to low points around the periphery of the site. The overall drainage area is 0.56 AC having a composite NRCS curve number estimated at 81. The westerly ROW contains a dry well that serves the existing site and the surrounding roadway facilities.

The proposed site maintains the existing drainage patterns as shown in the Proposed Drainage Plan. With the proposed development the NRCS curve number is estimated to be reduced to 77 for the 0.56 AC area, which is a reduction from the existing condition indicating that detention is not required for this site. Given the site plan and grade conditions around the site infiltration trench will be required to provide positive drainage away from the proposed structure. The on-site infiltration trench located on the east side of the building is sized to contain the 25-year storm volume within the voids of the placed washed dredge cobble. The cobble is assumed to have a porosity of 0.25. The off-site infiltration trenches located in the 1st Ave. right of way are sized to match the existing drywell. Runoff from the site is anticipated to be minimal as the drainage will be directed to the infiltration trenches. The development of the property is not anticipated to negatively impact any downstream or upstream developments and drainage ways.

Sincerely,



L. Mark Luna, PE

MARTIN/MARTIN, INC.
0101 FAWCETT ROAD, SUITE 260
PO BOX 8896
AVON, COLORADO 81620-8896
MAIN 970.926.6007
MARTINMARTIN-MTN.COM

Site Curve Number Comparison

Proposed site			Existing Site		
Basin	Area (ac)	CN	Basin	Area (ac)	CN
A1	0.17	80			
A2	0.08	81	A	0.28	87
B	0.10	67	B	0.15	73
C	0.10	73	C	0.04	69
D	0.11	82	D	0.09	82
Total	0.56	77	Total	0.56	81

WinTR-55 Current Data Description

--- Identification Data ---

User: REJ Date: 10/23/2017
Project: 100 Granite Units: English
SubTitle: Existing Condition Areal Units: Acres
State: Colorado
County: Summit
Filename: H:\MC17.1157-Mattox 3 Plex\ENG\DRAINAGE\win tr-55\100 Granite-Existing.w55

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
A		Outlet	0.28	87	0.1
B		Outlet	0.15	73	.175
C		Outlet	0.04	69	.22
D		Outlet	0.09	82	0.1

Total area: .56 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
1.23	1.52	1.79	2.2	2.55	2.92	1.07

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

REJ

100 Granite
Existing Condition
Summit County, Colorado

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
1.23	1.52	1.79	2.2	2.55	2.92	1.07

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

REJ

100 Granite
Existing Condition
Summit County, Colorado

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period	
	25-Yr (cfs)	

SUBAREAS		
A	0.46	
B	0.07	
C	.00	
D	0.11	
REACHES		
OUTLET	0.61	

REJ

100 Granite
Existing Condition
Summit County, Colorado

Hydrograph Peak/Peak Time Table

Sub-Area Peak Flow and Peak Time (hr) by Rainfall Return Period
or Reach 25-Yr
Identifier (cfs)
 (hr)

SUBAREAS

A 0.46
 11.93

B 0.07
 12.04

C .00
 n/a

D 0.11
 11.94

REACHES

OUTLET 0.61

REJ

100 Granite
Existing Condition
Summit County, Colorado

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
A	.28	0.100	87	Outlet	
B	.15	0.175	73	Outlet	
C	.04	0.220	69	Outlet	
D	.09	0.100	82	Outlet	

Total Area: .56 (ac)

REJ

100 Granite
Existing Condition
Summit County, Colorado

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)

A							
SHEET	85	0.0200	0.011				0.029
SHALLOW	45	0.0200	0.050				0.005
					Time of Concentration		0.1
							=====
B							
SHEET	60	0.0200	0.150				0.175
					Time of Concentration		.175
							=====
C							
SHEET	80	0.0200	0.150				0.220
					Time of Concentration		.22
							=====
D							
SHEET	30	0.0100	0.011				0.016
SHALLOW	60	0.0200	0.050				0.007
					Time of Concentration		0.1
							=====

REJ

100 Granite
Existing Condition
Summit County, Colorado

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
A	Open space; grass cover 50% to 75% (fair)	B	.11	69
	Paved parking lots, roofs, driveways	B	.17	98
	Total Area / Weighted Curve Number			.28
			===	==
B	Open space; grass cover 50% to 75% (fair)	B	.134	69
	Paved parking lots, roofs, driveways	B	.019	98
	Total Area / Weighted Curve Number			.15
			===	==
C	Open space; grass cover 50% to 75% (fair)	B	.042	69
	Total Area / Weighted Curve Number			.04
			===	==
D	Open space; grass cover 50% to 75% (fair)	B	.05	69
	Paved parking lots, roofs, driveways	B	.04	98
	Total Area / Weighted Curve Number			.09
			===	==

WinTR-55 Current Data Description

--- Identification Data ---

User: REJ Date: 10/23/2017
 Project: 100 Granite Units: English
 SubTitle: Proposed Condition Areal Units: Acres
 State: Colorado
 County: Summit
 Filename: H:\MC17.1157-Mattox 3 Plex\ENG\DRAINAGE\win tr-55\100 Granite-Proposed.w55

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
A1		Outlet	0.17	80	0.1
A2		Outlet	0.08	81	0.1
B		Outlet	0.1	67	0.1
C		Outlet	0.1	73	0.220
D		Outlet	0.12	82	0.1

Total area: .57 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
1.23	1.52	1.79	2.2	2.55	2.92	1.07

Storm Data Source: User-provided custom storm data
 Rainfall Distribution Type: Type II
 Dimensionless Unit Hydrograph: <standard>

REJ

100 Granite
Proposed Condition
Summit County, Colorado

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
1.23	1.52	1.79	2.2	2.55	2.92	1.07

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

REJ

100 Granite
Proposed Condition
Summit County, Colorado

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)

SUBAREAS	
A1	0.18
A2	0.09
B	.00
C	.00
D	0.14
REACHES	
OUTLET	0.41

REJ

100 Granite
Proposed Condition
Summit County, Colorado

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)
------------------------------------	--

SUBAREAS

A1	0.18 11.94
----	---------------

A2	0.09 11.94
----	---------------

B	.00 n/a
---	------------

C	.00 n/a
---	------------

D	0.14 11.94
---	---------------

REACHES

OUTLET	0.41
--------	------

REJ

100 Granite
Proposed Condition
Summit County, Colorado

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
A1	.17	0.100	80	Outlet	
A2	.08	0.100	81	Outlet	
B	.10	0.100	67	Outlet	
C	.10	0.220	73	Outlet	
D	.12	0.100	82	Outlet	

Total Area: .57 (ac)

REJ

100 Granite
Proposed Condition
Summit County, Colorado

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)

A1							
SHEET	35	0.0200	0.011				0.014
SHALLOW	75	0.0100	0.050				0.013
					Time of Concentration		0.1
							=====
A2							
SHEET	35	0.0200	0.011				0.014
SHALLOW	50	0.0200	0.050				0.006
					Time of Concentration		0.1
							=====
B							
SHEET	30	0.0500	0.150				0.070
					Time of Concentration		0.1
							=====
C							
SHEET	80	0.0200	0.150				0.220
					Time of Concentration		0.220
							=====
D							
SHEET	12	0.0200	0.011				0.006
SHALLOW	60	0.0200	0.050				0.007
					Time of Concentration		0.1
							=====

REJ

100 Granite
Proposed Condition
Summit County, Colorado

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
A1	Open space; grass cover > 75% (good)	B	.082	61
	Paved parking lots, roofs, driveways	B	.085	98
	Total Area / Weighted Curve Number			.17
			===	==
A2	Open space; grass cover > 75% (good)	B	.037	61
	Paved parking lots, roofs, driveways	B	.042	98
	Total Area / Weighted Curve Number			.08
			===	==
B	Open space; grass cover > 75% (good)	B	.085	61
	Paved parking lots, roofs, driveways	B	.016	98
	Total Area / Weighted Curve Number			.1
			==	==
C	Open space; grass cover > 75% (good)	B	.069	61
	Paved parking lots, roofs, driveways	B	.033	98
	Total Area / Weighted Curve Number			.1
			==	==
D	Open space; grass cover > 75% (good)	B	.051	61
	Paved parking lots, roofs, driveways	B	.064	98
	Total Area / Weighted Curve Number			.12
			===	==

Sub-Basin Rainfall Volume

frequency	25 (yr)	P=	2.2 (in)		
Basin	Area	CN	S	Q	V
	(ac)			(in)	(cf)
A1	0.17	80	2.50	0.69	418
A2	0.08	81	2.35	0.73	210
B	0.10	67	4.93	0.24	88
C	0.10	73	3.70	0.41	153
D	0.11	82	2.20	0.78	327

25-year Drywell Size

0.25

Drywell Porosity=

Basin	V (cf)	$V_{\text{drywell}} = (V * (1/\text{drywell porosity}))$ Required Basin Volume	Width (ft)	Depth (ft)	Calculated length (ft)	Length Provided (ft)	Notes
	A1	418	1673	12	6	23	9
A2	210	842	12	6	12	9	*Match ex. size
C	153	614	3	6	34	34	

MATTOX 3 PLEX
 1ST AND GRANITE
 PROPOSED DRAINAGE MAP

No.	Issue / Revision	Date	Name

Job Number	MCI7.1157
Project Manager	LML
Design By	REL
Drawn By	REL
Principal in Charge	PHH

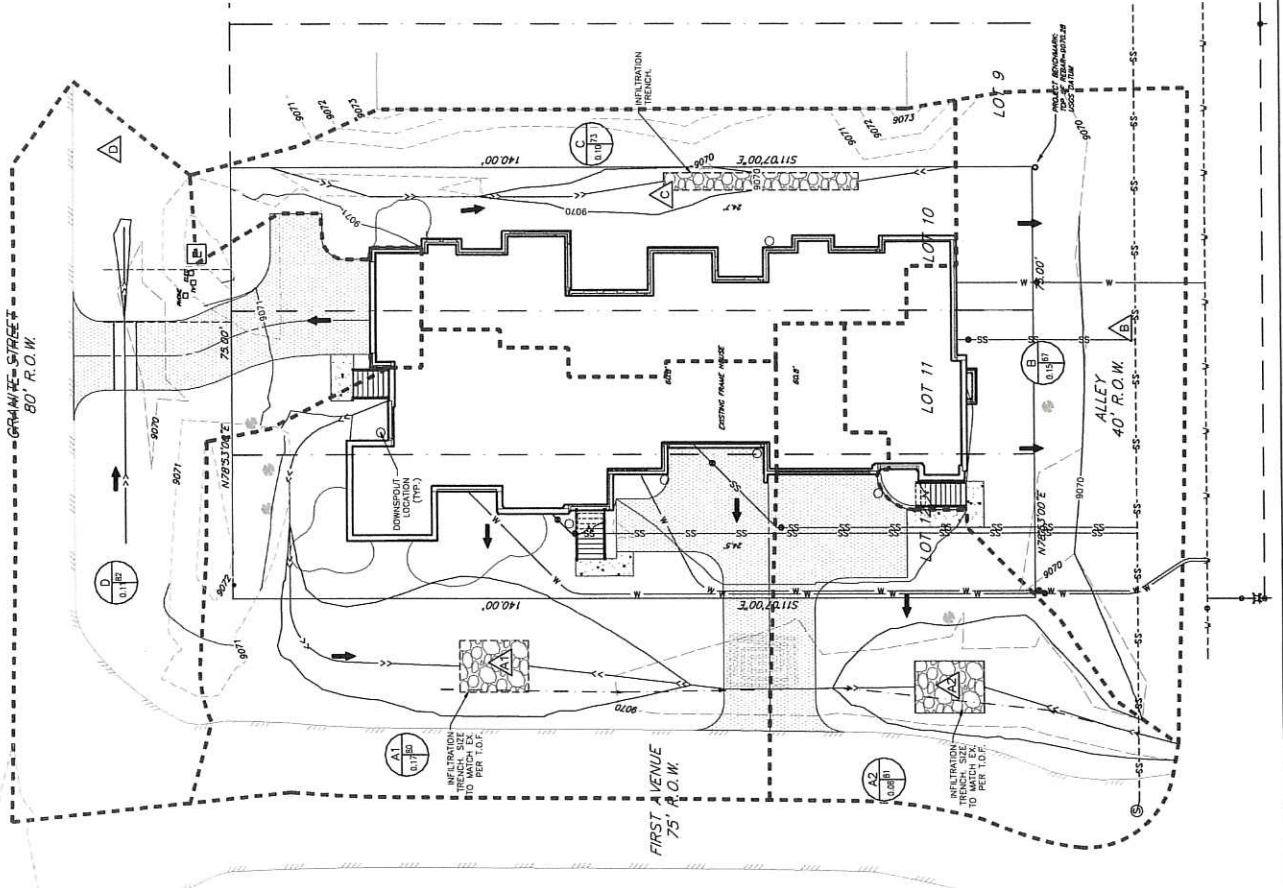
Sheet Number:
D2



CALL 811 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE OR EXCAVATE FOR MARKING OF UNDERGROUND MEMBER UTILITIES. MARTIN/MARTIN ASSURES AND RESPONSIBLY MARKING OF UNDERGROUND MEMBER UTILITIES LOCATED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE USER'S RESPONSIBILITY TO VERIFY THE MATERIAL, HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

LEGEND

- SUB-BASE BOUNDARY
- DIRECTION OF FLOW
- DESIGN POINT
- BASIN
- AREA IN SQUARE FEET
- CURVE, INCHES CURVE NUMBER





Sheet Number:

Job Number	M17.1157
Project Manager	LML
Design By	REJ
Drawn By	REJ
Principal in Charge	PHH

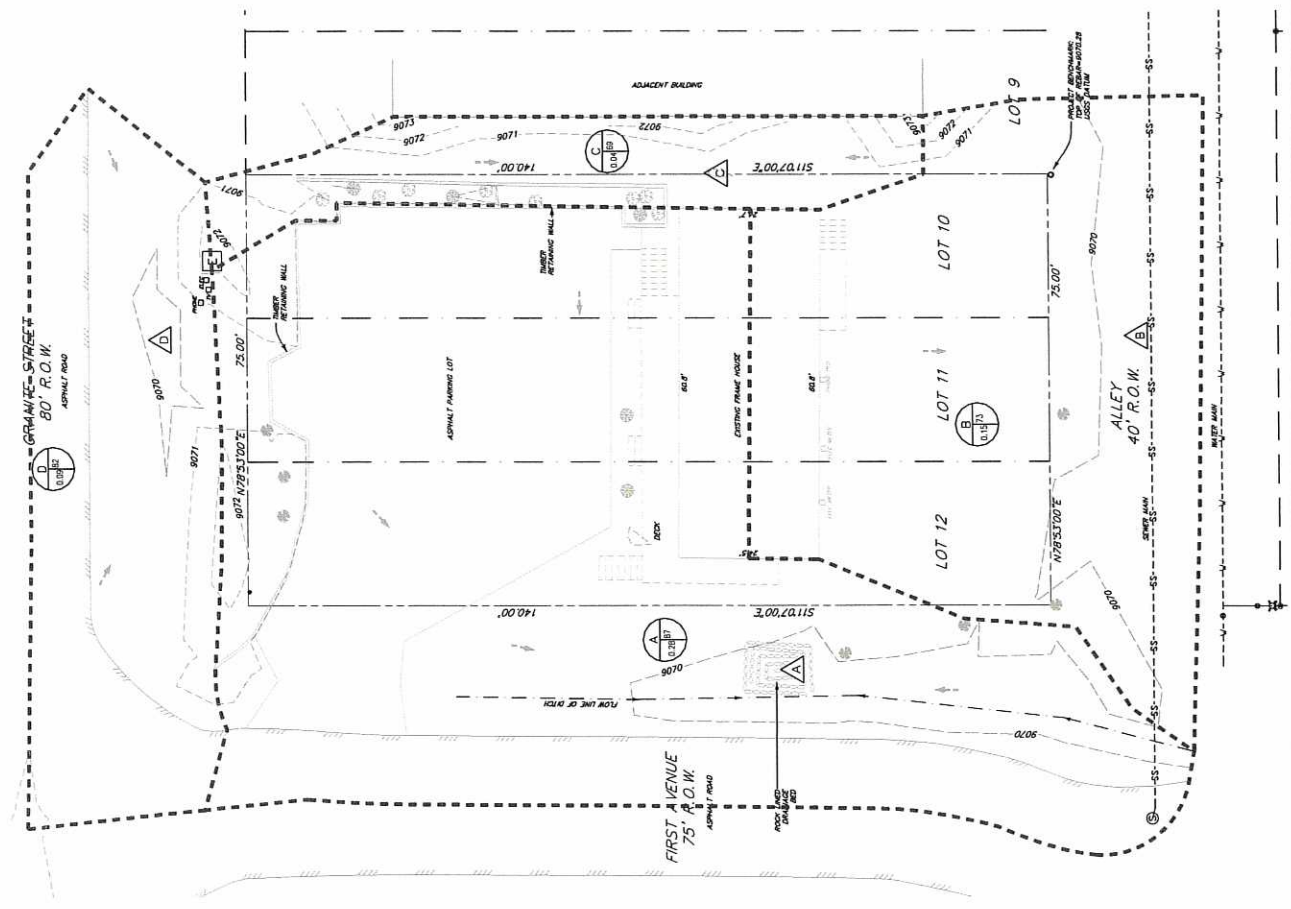
No.	Issue / Revision	Date	Name

MATTOX 3 PLEX
1ST AND GRANITE
FRISCO COLORADO
 EXISTING DRAINAGE MAP

0011 FAWCETT ROAD, SUITE 200, AVON, COLORADO 81602
 970.936.6007 MARTIN/MARTIN.COM
MARTIN/MARTIN
 CONSTRUCTION ENGINEERS

LEGEND

- SUB-IRON BOUNDARY
- DIRECTION OF FLOW
- DESIGN POINT
- BASH
- AREA IN ACRES
- CN, INCS CURVE NUMBER



Site Curve Number Comparison

Proposed site			Existing Site		
Basin	Area (ac)	CN	Basin	Area (ac)	CN
A1	0.17	80	A	0.28	87
A2	0.08	81	B	0.15	73
B	0.10	67	C	0.04	69
C	0.10	73	D	0.09	82
D	0.11	82			
Total	0.56	77	Total	0.56	81

WinTR-55 Current Data Description

--- Identification Data ---

User: REJ Date: 10/23/2017
 Project: 100 Granite Units: English
 SubTitle: Existing Condition Areal Units: Acres
 State: Colorado
 County: Summit
 Filename: H:\MC17.1157-Mattox 3 Plex\ENG\DRAINAGE\win tr-55\100 Granite-Existing.w55

--- Sub-Area Data ---

Name	Description	Reach	Area (ac)	RCN	Tc
A		Outlet	0.28	87	0.1
B		Outlet	0.15	73	.175
C		Outlet	0.04	69	.22
D		Outlet	0.09	82	0.1

Total area: .56 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
1.23	1.52	1.79	2.2	2.55	2.92	1.07

Storm Data Source: User-provided custom storm data
 Rainfall Distribution Type: Type II
 Dimensionless Unit Hydrograph: <standard>

REJ

100 Granite
Existing Condition
Summit County, Colorado

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
1.23	1.52	1.79	2.2	2.55	2.92	1.07

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

REJ

100 Granite
Existing Condition
Summit County, Colorado

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)

SUBAREAS	
A	0.46
B	0.07
C	.00
D	0.11
REACHES	
OUTLET	0.61

REJ

100 Granite
Existing Condition
Summit County, Colorado

Hydrograph Peak/Peak Time Table

Sub-Area Peak Flow and Peak Time (hr) by Rainfall Return Period
or Reach 25-Yr
Identifier (cfs)
 (hr)

SUBAREAS

A 0.46
 11.93

B 0.07
 12.04

C .00
 n/a

D 0.11
 11.94

REACHES

OUTLET 0.61

REJ

100 Granite
Existing Condition
Summit County, Colorado

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
A	.28	0.100	87	Outlet	
B	.15	0.175	73	Outlet	
C	.04	0.220	69	Outlet	
D	.09	0.100	82	Outlet	

Total Area:	.56 (ac)				

REJ

100 Granite
Existing Condition
Summit County, Colorado

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)

A							
SHEET	85	0.0200	0.011				0.029
SHALLOW	45	0.0200	0.050				0.005
					Time of Concentration		0.1
							=====
B							
SHEET	60	0.0200	0.150				0.175
					Time of Concentration		.175
							=====
C							
SHEET	80	0.0200	0.150				0.220
					Time of Concentration		.22
							=====
D							
SHEET	30	0.0100	0.011				0.016
SHALLOW	60	0.0200	0.050				0.007
					Time of Concentration		0.1
							=====

REJ

100 Granite
Existing Condition
Summit County, Colorado

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
A	Open space; grass cover 50% to 75% (fair)	B	.11	69
	Paved parking lots, roofs, driveways	B	.17	98
	Total Area / Weighted Curve Number			.28
			===	==
B	Open space; grass cover 50% to 75% (fair)	B	.134	69
	Paved parking lots, roofs, driveways	B	.019	98
	Total Area / Weighted Curve Number			.15
			===	==
C	Open space; grass cover 50% to 75% (fair)	B	.042	69
	Total Area / Weighted Curve Number			.04
			===	==
D	Open space; grass cover 50% to 75% (fair)	B	.05	69
	Paved parking lots, roofs, driveways	B	.04	98
	Total Area / Weighted Curve Number			.09
			===	==

WinTR-55 Current Data Description

--- Identification Data ---

User: REJ Date: 10/23/2017
 Project: 100 Granite Units: English
 SubTitle: Proposed Condition Areal Units: Acres
 State: Colorado
 County: Summit
 Filename: H:\MC17.1157-Mattox 3 Plex\ENG\DRAINAGE\win tr-55\100 Granite-Proposed.w55

--- Sub-Area Data ---

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A1		Outlet	0.17	80	0.1
A2		Outlet	0.08	81	0.1
B		Outlet	0.1	67	0.1
C		Outlet	0.1	73	0.220
D		Outlet	0.12	82	0.1

Total area: .57 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
1.23	1.52	1.79	2.2	2.55	2.92	1.07

Storm Data Source: User-provided custom storm data
 Rainfall Distribution Type: Type II
 Dimensionless Unit Hydrograph: <standard>

REJ

100 Granite
Proposed Condition
Summit County, Colorado

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
1.23	1.52	1.79	2.2	2.55	2.92	1.07

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

REJ

100 Granite
Proposed Condition
Summit County, Colorado

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)

SUBAREAS	
A1	0.18
A2	0.09
B	.00
C	.00
D	0.14
REACHES	
OUTLET	0.41

REJ

100 Granite
Proposed Condition
Summit County, Colorado

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)
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SUBAREAS

A1	0.18 11.94
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A2	0.09 11.94
----	---------------

B	.00 n/a
---	------------

C	.00 n/a
---	------------

D	0.14 11.94
---	---------------

REACHES

OUTLET	0.41
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REJ

100 Granite
Proposed Condition
Summit County, Colorado

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
A1	.17	0.100	80	Outlet	
A2	.08	0.100	81	Outlet	
B	.10	0.100	67	Outlet	
C	.10	0.220	73	Outlet	
D	.12	0.100	82	Outlet	
Total Area:		.57 (ac)			

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100 Granite
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Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)

A1							
SHEET	35	0.0200	0.011				0.014
SHALLOW	75	0.0100	0.050				0.013
					Time of Concentration		0.1
							=====
A2							
SHEET	35	0.0200	0.011				0.014
SHALLOW	50	0.0200	0.050				0.006
					Time of Concentration		0.1
							=====
B							
SHEET	30	0.0500	0.150				0.070
					Time of Concentration		0.1
							=====
C							
SHEET	80	0.0200	0.150				0.220
					Time of Concentration		0.220
							=====
D							
SHEET	12	0.0200	0.011				0.006
SHALLOW	60	0.0200	0.050				0.007
					Time of Concentration		0.1
							=====

REJ

100 Granite
Proposed Condition
Summit County, Colorado

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
A1	Open space; grass cover > 75% (good)	B	.082	61
	Paved parking lots, roofs, driveways	B	.085	98
	Total Area / Weighted Curve Number			.17
			===	==
A2	Open space; grass cover > 75% (good)	B	.037	61
	Paved parking lots, roofs, driveways	B	.042	98
	Total Area / Weighted Curve Number			.08
			===	==
B	Open space; grass cover > 75% (good)	B	.085	61
	Paved parking lots, roofs, driveways	B	.016	98
	Total Area / Weighted Curve Number			.1
			==	==
C	Open space; grass cover > 75% (good)	B	.069	61
	Paved parking lots, roofs, driveways	B	.033	98
	Total Area / Weighted Curve Number			.1
			==	==
D	Open space; grass cover > 75% (good)	B	.051	61
	Paved parking lots, roofs, driveways	B	.064	98
	Total Area / Weighted Curve Number			.12
			===	==

Sub-Basin Rainfall Volume					
frequency	25	(yr)	P=	2.2	(in)
Basin	Area	CN	S	Q	V
	(ac)			(in)	(cf)
A1	0.17	80	2.50	0.69	418
A2	0.08	81	2.35	0.73	210
B	0.10	67	4.93	0.24	88
C	0.10	73	3.70	0.41	153
D	0.11	82	2.20	0.78	327

25-year Drywell Size

0.25

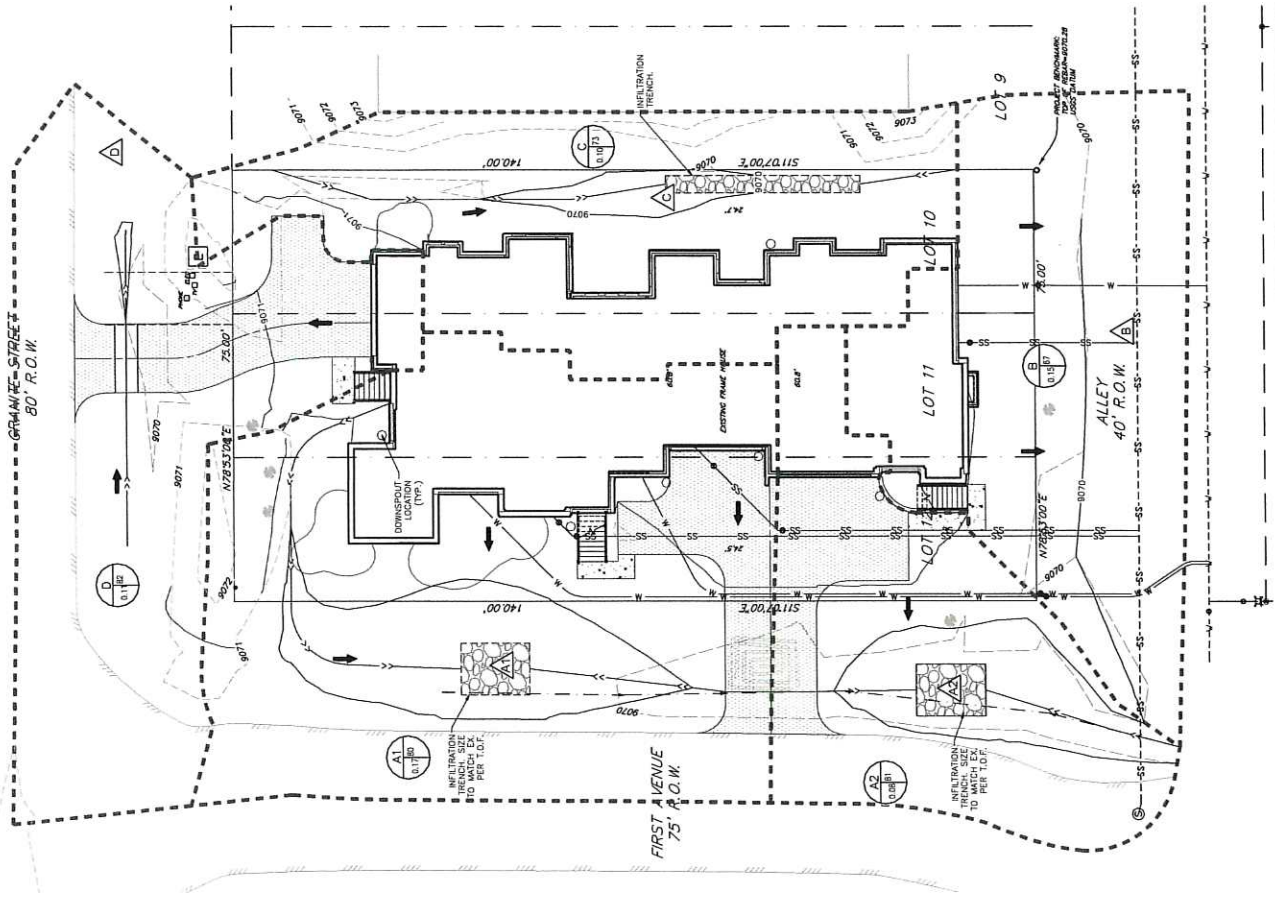
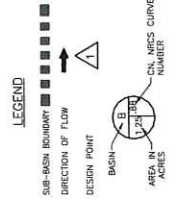
Drywell Porosity=

Basin	V (cf)	V _{drywell} = (V*(1/drywell porosity)) Required Basin Volume	Width (ft)	Depth (ft)	Calculated length (ft)	Length Provided (ft)	Notes
A1	418	1673	12	6	23	9	*Match ex. size
A2	210	842	12	6	12	9	*Match ex. size
C	153	614	3	6	34	34	

No.	Issue / Revision	Date	Name

Job Number	MCT17.157
Project Manager	ML
Design By	REL
Drawn By	REL
Principal in Charge	FRH

Street Number: **D2**



Subsoil Investigation Report

Rob Theobald P.E.

Prepared For:

100 Granite Street
Frisco, Colorado

This report presents the findings of sub-surface soils testing performed at 100 Granite Street, Frisco, Colorado. The purpose of said testing was to determine soil bearing pressure, groundwater conditions, and any other special soil conditions so as to allow for design of foundations, shoring and excavation.

The findings in this report are based upon soils samples taken on September 15, 2017, observations of the soil in the test pit, and knowledge of excavations near the site and testing of the soil sample.

Project Description:

The anticipated construction will be wood frame construction. It is anticipated that the foundation will be cast in place concrete foundation walls sitting on continuous strip footings. It is also anticipated that there will be point loads sitting on pads. The floor will be a cast in place slab on grade. It is anticipated that cut depths will be relatively shallow at less than 10 feet. If cut depths exceed 10 feet Engineer should be called to inspect site conditions during excavation. Footings, foundation walls and associated reinforcement will be designed by the structural engineer for the project.

Site Conditions:

The lot is bounded by Granite Street to the north, 1st Avenue to the west, an unpaved alley to the south and a developed multi-family project to the east. The site currently contains an existing residential building. According to the Geologic Map of the Frisco Quadrangle, Summit County, Colorado (2002) near surface deposits are outwash of the Pinedale glaciation. This was verified by testing of lot.

Sub-surface Conditions:

Soils were taken from two test pit excavated for the purpose of this report. Disturbed sampling methods were used.

The first test pit was dug south and west of the center of the lot. This test pit was used for percolation testing. Soils in test pit consisted of sandy gravel with cobbles to limits of excavation at 6'. Average percolation rate was 9 minutes per inch (percolation testing data follows this report).

Second test pit was dug south and east of the center of the lot. Soils in test pit consisted of sandy gravel with cobbles to limits of excavation at 8'.

Soils in both holes were very dry and very consistent.

No groundwater was encountered during exploration. No indicators of seasonal groundwater were observed

Soil has slight to swell potential.

Foundation:

Cast in place strip footings and pads will be ideal for this site. Foundation should be cast in place and should be placed on undisturbed native soils.

Footings should be placed on native soils below the buried organic layer. Footings should be designed for a maximum soil bearing pressure of 3,000 pounds per square foot with no minimum loading.

Any soils disturbed during excavation, or that become inundated with water during excavation or prior to pouring of footers should be removed and replaced with dry native soil compacted to

95% Standard Proctor Density (ASTM D-698) or screened or crushed rock with a nominal size of .75-1.5". Foundations should not be placed on loose, wet or frozen soils.

Footings and foundation walls at footing steps should be poured against undisturbed soils as described above at the bottom of the forms as described above to prevent infiltration of water or backfill soil.

Foundation walls should be designed for a minimum unsupported length of 6'. Footers should be a minimum of 16" wide and minimum pad dimensions should be at least 24".

Based on these recommendations it is anticipated that settlement will be less than 1".

Due to variable nature of observed soils deposit, Engineer should be called for an open hole inspection prior to placement of footings. If any pockets of organics, silt or other less suitable soils are encountered Engineer should be contacted and un-suitable soils should be removed and replaced with properly placed on-site or imported suitable soils.

Reinforcing shall be installed per structural plans.

Slabs:

Concrete slabs should be poured on a 4" layer of .75"-1.5" screened rock placed on top of undisturbed native soil.

Slabs should also be isolated from foundation walls and columns by means of expansion joints to allow for unrestrained vertical movement of floor slabs.

Slab should be reinforced per the structural design.

Control joints in slab should be tooled into wet concrete, or saw cut as soon as practical to prevent or control cracking. Control joints should create areas no larger than 100 s.f., and should be laid out to with particular attention towards managing cracking from any corners, sharp turns in edges and blocked out portions of the slab.

A vapor barrier should be installed beneath the slab, and should be uninterrupted or fully sealed. Under-slab insulation should be installed that meets or exceed the 2012 International Energy Conservation Code (IECC 2012), or other applicable codes. Insulation should be continuous, or should be fully sealed, and an insulation material that can support the design loads should be used.

Under-slab utilities should be minimized to the extent possible. Backfilling of excavations for required utilities should be done with screened rock in the .75-1.5" range. Under-slab plumbing should be pressure tested prior to backfill, or pouring of the slab. All utilities should be isolated from the slab to allow for vertical movement as discussed above. Utility trenches entering the building envelope from the outside, or continuing from outside the excavation under the slab should be backfilled with well-compacted native material or dammed with clay to prevent water intrusion.

Foundation Drain:

Because of perched groundwater, foundation should be damp-proofed and any foundation enclosing finished space should be waterproofed. Due to soils type and percolation rate no foundation drainage is required. Foundation should be insulated and insulation should be installed that meets or exceed the 2012 International Energy Conservation Code (IECC 2012), or other applicable codes.

Retaining Walls:

Retaining walls, that is walls that are only backfilled on one side, should be designed with an equivalent passive fluid pressure of 45 p.s.f.. Provisions for drainage of groundwater from behind retaining walls should be made.

Radon:

No radon testing was done as part of this report and Engineer makes no claims of knowledge of radon levels on the site. It is advisable to assume radon levels could be elevated and to refer to a radon expert or Appendix F of the International Residential Code or other applicable codes.

Excavation and Shoring:

The observed soils are an OSHA Type C soil. Excavation safety shall responsibility of the contractor. If shoring is required Engineer should be contacted for a shoring design.

Backfill and Grading:

Backfill under landscape and unimproved areas should be mechanically compacted to minimize settling. Backfill under structural areas (including but not limited to slabs, sidewalks and brick pavers) should be compacted to a minimum of 95% Standard Proctor Density (ASTM D-698). Care should be taken during backfilling to make sure no rocks with a diameter of 8" or greater rest directly against foundation walls. Additionally care should be taken to make sure foundation waterproofing is not damaged during backfill.

Site should be graded to provide positive surface drainage away from the structure. Grading should have a minimum of 6" of fall in the first 10' away from the structure, or should slope a minimum of 2% away from the structure to a swale sloped at a minimum of 2%.

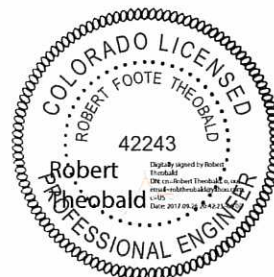
Conclusion:

Soils and bedrock on site are ideal for proposed methods of construction. If cut depths are to be excessive or if any changes in conditions are found Engineer should be contacted.

Due to nature of soils deposit it is recommended that Engineer be contacted to inspect excavation prior to placement of any foundations.

Due to practical constraints of pre-construction subsoil studies it is possible that unforeseen changes in conditions may be encountered. If any soils conditions different than those described in this report Engineer shall be contacted immediately.

Robert
Theobald
Digitally signed by Robert
Theobald
DN: cn=Robert Theobald, o, ou,
email=robtheobald@yahoo.co
m, c=US
Date: 2017.09.26 20:41:52
-06'00'
Robert Theobald P.E.



Percolation Test Data:

Project 100 Granite St.Date 9/15/17**Hole 1**Depth 12" in 6' pit in

Time

Interval 5 min

Test Number		Reading 1 (in)	Reading 2 (in)	Reading 3 (in)	Reading 4 (in)	Reading 5 (in)	Perc Rate (in/min)
1	Water Depth	2	2.625	3.25	3.75	4.25	
	Depth Change	--	0.625	0.625	0.5	0.5	
	Perc. Rate	--	8	8	10	10	
						Avg Perc Rate	9