

Job No. 188737

May 18, 2022

Colorado Springs Equities LLC
90 South Cascade Avenue, 1500
Colorado Springs, CO 80903

Attn: Kelly Johnson

Re: Infiltration Testing (ASTM D3385) Summary
Crossroads Mixed Use
Meadowbrook Parkway
El Pso County, Colorado

Dear Kelly:

RMG – Rocky Mountain Group was requested to perform infiltration testing in the detention basin area in accordance with ASTM D3385-18. The testing was performed on May 17, 2022 in the area of the proposed detention basin located in the southwestern portion of the Crossroads Mixed Use Park. We understand this information is planned to be used to aid in design of a proposed underground detention system. We understand the existing detention basin area is cut to the approximate finish grade plan elevation. A total of four infiltration tests were performed at the detention surface.

RMG also performed visual-manual classification of the soils exposed at the testing surface. The material was observed to be a well-graded fine to medium sand with silt, corresponding to a Unified Soil Classification System (USCS) group symbol of SW-SM. Upon completion of the testing, a hand-auger excavation was performed in the test area to a depth of 3.5 feet below the testing surface. The material exposed in the hand-auger excavation was consistent with the material observed at the surface, and no anomalies or restrictive features were encountered. A table summary of the testing results is below. Copies of the infiltration field logs are attached.

Average Incremental Flow (in/hr)			
	Inner Ring	Outer Ring	Combined
Test 1	11.8	11.8	12
Test 2	12.5	9.8	11
Test 3	11.8	7.7	10
Test 4	11.8	13.1	12
Mean	12	11	11

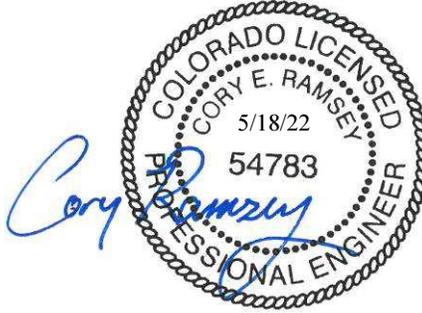
THE RESULTS OF THE TESTING SHOWS "EXCELLENT" INFILTRATION INTO THE SURROUNDING SOIL

The measurements of incremental flow of each of the tests were averaged for flow of the inner ring, flow of the outer ring, and a combined average flow. The table above presents the computed means for design purposes.

I hope this provides the information you have requested. Should you have questions, please feel free to contact our office.

Cordially,

RMG – Rocky Mountain Group



Cory Ramsey, P.E.
Geotechnical Project Manager

Double-Ring Infiltrometer - Field Log

ASTM D3385

Project: Crossroads Mixed Use Park
 Client: Colorado Springs Equities, LLC
 Location: Detention Pond Bottom, 38.8413, -104.6964

Job #: 188737
 Date: 17-May-22
 Technician: C. Ramsey, P.E.

Trial		Time (hr:min)	Elapsed Time (Total)	Flow Readings				Incremental Infiltration Rate (in/hr)		Remarks:	
				Inner Reading		Annular Space		Inner	Annular		
				Reading	Flow (cm ³)	Reading	Flow (cm ³)				
1	S	9:20	0	25.5	365	23	2189	11.8	23.6		
	E	9:21	(1)	26		24					
2	S	9:21	1	26	365	24	1642	11.8	17.7		
	E	9:22	(2)	26.5		24.75					
3	S	9:22	2	26.5	365	24.75	547	11.8	5.9		
	E	9:23	(3)	27		25					
4	S	9:23	3	27	547	25	1095	17.7	11.8		
	E	9:24	(4)	27.75		25.5					
5	S	9:24	4	27.75	182	25.5	547	5.9	5.9		
	E	9:25	(5)	28		25.75					
6	S	9:25	5	28	365	25.75	547	11.8	5.9		
	E	9:26	(6)	28.5		26					
7	S	9:26	6	28.5	365	26	1095	11.8	11.8		
	E	9:27	(7)	29		26.5					
								Mean:	11.8	11.8	
								Mean:	12 in/hr		

Constants	Area (cm ²)
Inner Ring	729.7
Annular Space	2189

Double-Ring Infiltrometer - Field Log

ASTM D3385

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 Client: Colorado Springs Equities, LLC
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Job #: 188737
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Trial		Time (hr:min)	Elapsed Time (Total)	Flow Readings				Incremental Infiltration Rate		Remarks:
				Inner Reading		Annular Space		Inner	Annular	
				Reading	Flow (cm ³)	Reading	Flow (cm ³)			
1	S	9:40	0	24.5	547	25.25	1095	17.7	11.8	
	E	9:41	(1)	25.25		25.75				
2	S	9:41	1	25.25	547	25.75	1095	17.7	11.8	
	E	9:42	(2)	26		26.25				
3	S	9:42	2	26	365	26.25	1095	11.8	11.8	
	E	9:43	(3)	26.5		26.75				
4	S	9:43	3	26.5	182	26.75	547	5.9	5.9	
	E	9:44	(4)	26.75		27				
5	S	9:44	4	26.75	547	27	547	17.7	5.9	
	E	9:45	(5)	27.5		27.25				
6	S	9:45	5	27.5	365	27.25	547	11.8	5.9	
	E	9:46	(6)	28		27.5				
7	S	9:46	6	28	365	27.5	1095	11.8	11.8	
	E	9:47	(7)	28.5		28				
8	S	9:47	7	28.5	182	28	1095	5.9	11.8	
	E	9:48	(8)	28.75		28.5				
9	S	9:48	8	28.75	365	28.5	1095	11.8	11.8	
	E	9:49	(9)	29.25		29				

Mean	12.5	9.8
Mean	11 in/hr	

Constants	Area (cm ²)
Inner Ring	729.7
Annular Space	2189

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				Inner Reading		Annular Space		Inner	Annular	
				Reading	Flow (cm ³)	Reading	Flow (cm ³)			
1	S	10:00	0	24.25	547	25	1642	17.7	17.7	
	E	10:01	(1)	25		25.75				
2	S	10:01	1	25	365	25.75	547	11.8	5.9	
	E	10:02	(2)	25.5		26				
3	S	10:02	2	25.5	365	26	547	11.8	5.9	
	E	10:03	(3)	26		26.25				
4	S	10:03	3	26	365	26.25	547	11.8	5.9	
	E	10:04	(4)	26.5		26.5				
5	S	10:04	4	26.5	365	26.5	547	11.8	5.9	
	E	10:05	(5)	27		26.75				
6	S	10:05	5	27	365	26.75	547	11.8	5.9	
	E	10:06	(6)	27.5		27				
7	S	10:06	6	27.5	365	27	547	11.8	5.9	
	E	10:07	(7)	28		27.25				
8	S	10:07	7	28	365	27.25	1095	11.8	11.8	
	E	10:08	(8)	28.5		27.75				
9	S	10:08	8	28.5	365	27.75	547	11.8	5.9	
	E	10:09	(9)	29		28				
10	S	10:09	9	29	182	28	547	5.9	5.9	
	E	10:10	(10)	29.25		28.25				

Mean:	11.8	7.7
Mean:	10 in/hr	

Constants	Area (cm ²)
Inner Ring	729.7
Annular Space	2189

Double-Ring Infiltrometer - Field Log

ASTM D3385

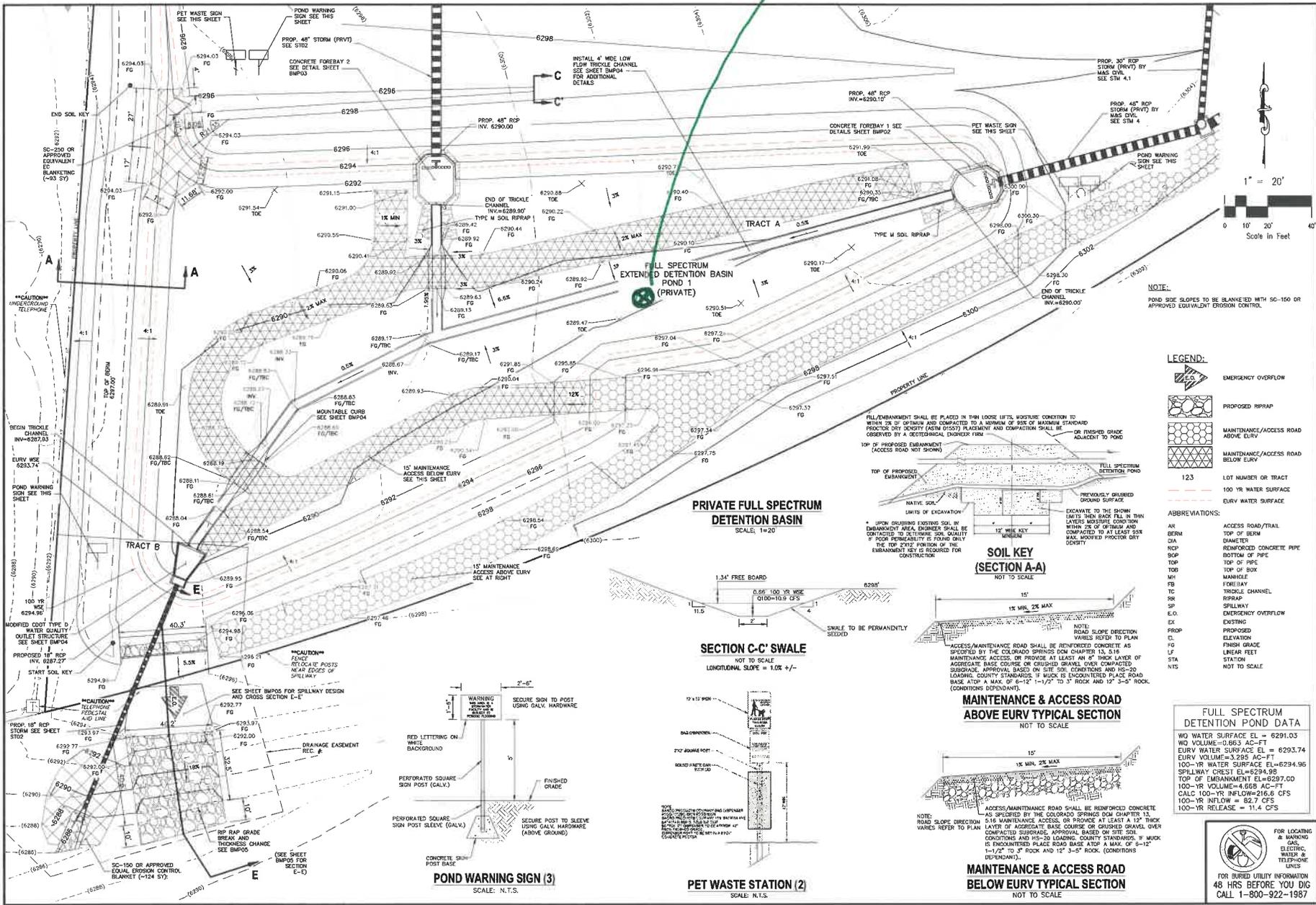
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				Inner Reading		Annular Space		Inner	Annular	
				Reading	Flow (cm ³)	Reading	Flow (cm ³)			
1	S	10:20	0	22	182	21.25	547	5.9	5.9	
	E	10:21	(1)	22.25		21.5				
2	S	10:21	1	22.25	365	21.5	1095	11.8	11.8	
	E	10:22	(2)	22.75		22				
3	S	10:22	2	22.75	547	22	2189	17.7	23.6	
	E	10:23	(3)	23.5		23				
4	S	10:23	3	23.5	365	23	1095	11.8	11.8	
	E	10:24	(4)	24		23.5				
5	S	10:24	4	24	365	23.5	1642	11.8	17.7	
	E	10:25	(5)	24.5		24.25				
6	S	10:25	5	24.5	365	24.25	547	11.8	5.9	
	E	10:26	(6)	25		24.5				
7	S	10:26	6	25	365	24.5	2189	11.8	23.6	
	E	10:27	(7)	25.5		25.5				
8	S	10:27	7	25.5	365	25.5	1095	11.8	11.8	
	E	10:28	(8)	26		26				
9	S	10:28	8	26	365	26	1095	11.8	11.8	
	E	10:29	(9)	26.5		26.5				
10	S	10:29	9	26.5	365	26.5	1095	11.8	11.8	
	E	10:30	(10)	27		27				
11	S	10:30	10	27	365	27	1095	11.8	11.8	
	E	10:31	(11)	27.5		27.5				
12	S	10:31	11	27.5	365	27.5	1095	11.8	11.8	
	E	10:32	(12)	28		28				
13	S	10:32	12	28	365	28	1095	11.8	11.8	
	E	10:33	(13)	28.5		28.5				
Mean:								11.8	13.2	
Mean:								12 in/hr		

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Annular Space	2189

Approximate Testing Location



- LEGEND:**
- EMERGENCY OVERTFLOW
 - PROPOSED RIPRAP
 - MAINTENANCE/ACCESS ROAD ABOVE EUR
 - MAINTENANCE/ACCESS ROAD BELOW EUR
 - 123 LOT NUMBER OR TRACT
 - 100 YR WATER SURFACE
 - EUR WATER SURFACE
- ABBREVIATIONS:**
- AK ACCESS ROAD/TRAIL
 - BM BENCHMARK
 - CA CENTERLINE
 - NCP REINFORCED CONCRETE PIPE
 - SOP BOTTOM OF PIPE
 - TOP TOP OF PIPE
 - TDB TOP OF BOX
 - MH MANHOLE
 - FB FOREBAY
 - TR TRICKLE CHANNEL
 - RR RIPRAP
 - SP SPILLWAY
 - EO EMERGENCY OVERTFLOW
 - EX EXISTING
 - PROP PROPOSED
 - EL ELEVATION
 - FG FINISH GRADE
 - LF LEAK FEET
 - STA STATION
 - N/TS NOT TO SCALE

FULL SPECTRUM DETENTION POND DATA

WQ WATER SURFACE EL =	6291.03
WQ VOLUME =	0.665 AC-FT
EUR WATER SURFACE EL =	6293.74
EUR VOLUME =	3.295 AC-FT
100-YR WATER SURFACE EL =	6293.96
SPILLWAY CREST EL =	6294.98
TOP OF EMBANKMENT EL =	6297.00
100-YR VOLUME =	4.68 AC-FT
CALC 100-YR INFLOW =	216.6 CFS
100-YR INFLOW =	82.7 CFS
100-YR RELEASE =	11.4 CFS

CROSSROADS MINED USE FILING NO. 1

PERMANENT BMP PLAN

DATE: 02/16/2022

PROJECT NO. 18-003 SCALE: HORIZONTAL: DATE: 02/16/2022

DESIGNED BY: CWM VERTICAL: N/A

DRAWN BY: DJM

CHECKED BY: DJM

SHEET 20 OF 24

BMP01

210 N. WARRICK AVE. STE 305
 COLORADO SPRINGS, CO 80903
 PHONE: 719.555.8485

CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF CIVIL CONSULTANTS, INC.

AREA: A. SANCHEZ, COLORADO (P.E. NO. 37160)

DATE: 02/16/2022

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CAUTION



