



Planning and Community
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DEVIATION REQUEST AND DECISION FORM

Updated: 6/26/2019

PROJECT INFORMATION

Project Name : Lots 3 & 4 Rocky Mountain Industrial Park Filing No. 1A

Schedule No.(s): #5333303017, #5333303018

Legal Description: Lots 3 & 4 Rocky Mountain Industrial Park Filing No. 1A

APPLICANT INFORMATION

Company : Colorado River Landscaping LLC

Name : Eduardo Hernandez

X Owner ☐ Consultant ☐ Contractor

Mailing Address : 2170 Capital Drive
Colorado Springs, Colorado 80915

Phone Number : 719-329-4246

FAX Number : N/A

Email Address : coloradoriverlandscaping@gmail.com

ENGINEER INFORMATION

Company : M & S Civil Consultants, Inc.

Name : Virgil Sanchez

Colorado P.E. Number : 37160

Mailing Address : 212 N. Wahsatch Avenue, Suite 305

Phone Number : 719-955-5485

FAX Number : N/A

Email Address : virgils@mscivil.com

OWNER, APPLICANT, AND ENGINEER DECLARATION

To the best of my knowledge, the information on this application and all additional or supplemental documentation is true, factual and complete. I am fully aware that any misrepresentation of any information on this application may be grounds for denial. I have familiarized myself with the rules, regulations and procedures with respect to preparing and filing this application. I also understand that an incorrect submittal will be cause to have the project removed from the agenda of the Planning Commission, Board of County Commissioners and/or Board of Adjustment or delay review until corrections are made, and that any approval of this application is based on the representations made in the application and may be revoked on any breach of representation or condition(s) of approval.

Eduardo Hernandez H

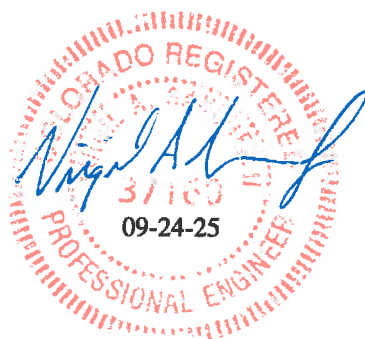
Signature of owner (or authorized representative)

9/29/25

Date

Engineer's Seal, Signature
And Date of Signature

☐



PCD File No. _____

DEVIATION REQUEST (Attach diagrams, figures, and other documentation to clarify request)

A deviation from the standards of or in Section **4.1** of the Drainage Criteria Manual, Vol. 2 (DCM) is requested.

Identify the specific DCM standard which a deviation is requested:

Specific Criteria: Existing Development PCM's for Providing Water Quality Capture Volume

Proposed Nature and Extent of Deviation: Allow for use of underground Water Quality Vault for the development of 3.49 acre heavy industrial commercial airport overlay district, known as Lots 3 & 4 Rocky Mountain Industrial Park Filing No. 1A. The vault is a proposed 72" diameter by 107' long Xfiltration Contech CMP facility, designed by Contech Engineering Solutions LLC. This vault will service the 2,935 cu ft of WQCV design volume.

State the reason for the requested deviation:

Lots 3 & 4 Rocky Mountain Industrial Park Filing No. 1A site has existing topography that generally conveys runoff towards the southeastern (Low Point) end of the site. A discussion occurred between the owner, developer, and civil engineer regarding preliminary design of a WQCV Sand Filter pond at the southeast corner of the site, disturbing approximately 1.37 acres. This discussion concluded that the pond footprint would be too large to make any functional use of the area. Thus an underground vault was proposed in order to continue using the surrounding area above the vault.

Explain the proposed alternative and compare to the ECM standards (May provide applicable regional or national standards used as basis):

Proposed Alternative Explanation: The proposed alternative resulting from the aforementioned discussion was to consider an underground WQCV vault. It was decided that utilizing underground detention, inlets and curb and gutter would allow for the functional use of the area and would disturb approximately 0.22 acres. The location of the vault will not impede on the existing function of the site, such as equipment and material storage.

Comparison of Proposed Deviation to ECM Standard: The water quality vault meets all requirements of Section 4.1 of the Drainage Criteria Manual Volume 2. The system provides Water Quality Capture Volume and allowable discharge rate into the surrounding soils.

Applicable Regional or National Standards used as Basis: The Xfiltration underground WQCV vault system will store stormwater (WQCV event 2,935 cu ft) and release it at an allowable rate into the surrounding soils. The vault is designed to capture and store the WQCV volume which allows for the removal of 80% TSS relying on the density differences and gravity to remove suspended solids and floatables from stormwater runoff. The surrounding soil will provide the required drain time, per Entech Engineering, Inc., Infiltration Rate Testing report and calculations provided. This system meets requirements of the Mile High Flood Control District requirements in Volume 3, Chapter 4. See attached documents.

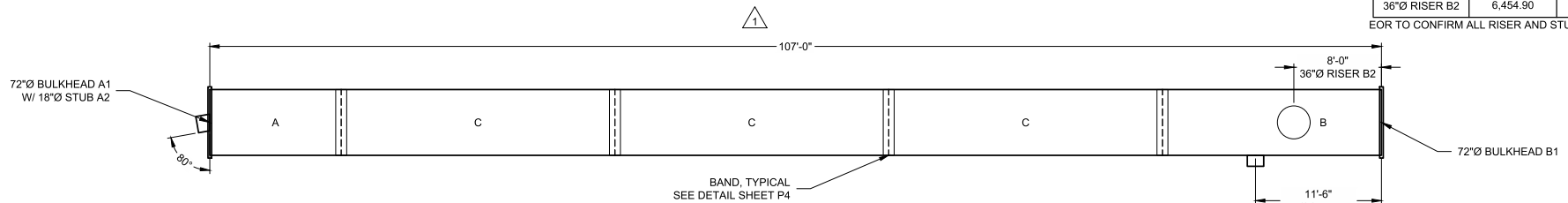


NORTH ARROW PROVIDED FOR
REFERENCE ONLY.
REFER TO ENGINEERED SITE PLANS FOR
EXACT LOCATION AND ORIENTATION

STUB INFORMATION		
PIECE	STUB INVERT	SYSTEM INVERT
18"Ø STUB A2	6,448.80	6,445.30
18"Ø STUB B3	6,448.80	6,445.30

RISER INFORMATION		
PIECE	RIM ELEV.	SYSTEM INVERT
36"Ø RISER B2	6,454.90	6,445.30

EOR TO CONFIRM ALL RISER AND STUB ELEVATIONS



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE.
- ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD (EOR) PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE 2 $\frac{3}{8}$ " x $\frac{1}{2}$ " CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE AS REQUIRED, BY CONTRACTOR.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- ALL ACCESS CASTINGS ARE THE RESPONSIBILITY OF THE CONTRACTOR AND ARE NOT SUPPLIED BY CONTECH.
- BULKHEADS SHALL BE CONSTRUCTED USING 12 GAGE OR HEAVIER MATERIAL, WITH BOTH THE WATER AND SOIL SIDE FINAL COATINGS MATCHING THE SPECIFIED CMP COATING. BULKHEAD PLATES MUST BE FULLY WELDED TO THE CONNECTING PIPE. THE DESIGN OF BULKHEADS SHALL ADHERE TO CHAPTER 8 OF THE NCSPA CSP DESIGN MANUAL, MEETING THE HEIGHT OF COVER DESIGN REQUIREMENTS WITH APPROPRIATE REINFORCEMENTS OR A MINIMUM REQUIRED PLATE THICKNESS. ADDITIONALLY, REINFORCING MEMBERS SHALL BE POST-COATED WITH ZINC RICH PAINT IN ACCORDANCE WITH AASHTO M36 FOR GALVANIZED AND ALUMINUM CMP SYSTEMS, OR AASHTO M245 FOR POLYMER CMP SYSTEMS.

THE UNDERSIGNED HEREBY APPROVES THE ATTACHED
(6) PAGES INCLUDING THE FOLLOWING:

- PIPE STORAGE = 3,024 CF
- MAINLINE PIPE GAGE = 16
- WALL TYPE = SOLID
- DIAMETER = 72"
- FINISH = ALT2 W/ POLYMER COATING
- CORRUGATION = 5x1

CUSTOMER

DATE

ASSEMBLY

SCALE: 1" = 10'

LOADING: H20

PIPE INV. = 6445.30 $\pm$

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1	9/24/25	LENGTH INCREASED PER EOR	TRC

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CONTECH
CMP DETENTION SYSTEMS

CONTECH
PROPOSAL
DRAWING

72"Ø UNDERGROUND DETENTION SYSTEM - 852685-010
ROCKY MOUNTAIN INDUSTRIAL PARK
COLORADO SPRINGS, CO
SITE DESIGNATION: XFILTRAITON SYSTEM

PROJECT No.: 852685	SEQ. No.: 010	DATE: 7/31/2025
DESIGNED: TRC	DRAWN: TRC	
CHECKED: TRC	APPROVED: TRC	
SHEET NO.: P1	OF	6



PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-15
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

2. ON-SITE GEOTECHNICAL ENGINEER SHALL MAKE RECOMMENDATIONS FOR BACKFILL AND SHALL PROVIDE TESTING.

CONSTRUCTION LOADING DIAGRAM
NOT TO SCALE

SCOPE

MATERIAL

PIPE

HANDLING AND ASSEMBLY

MATERIAL SPECIFICATION
NOT TO SCALE

CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS.
FOLLOW THE MANUFACTURER'S OR NCSPA'S GUIDELINES.

(B)			
(C)			
(D)			
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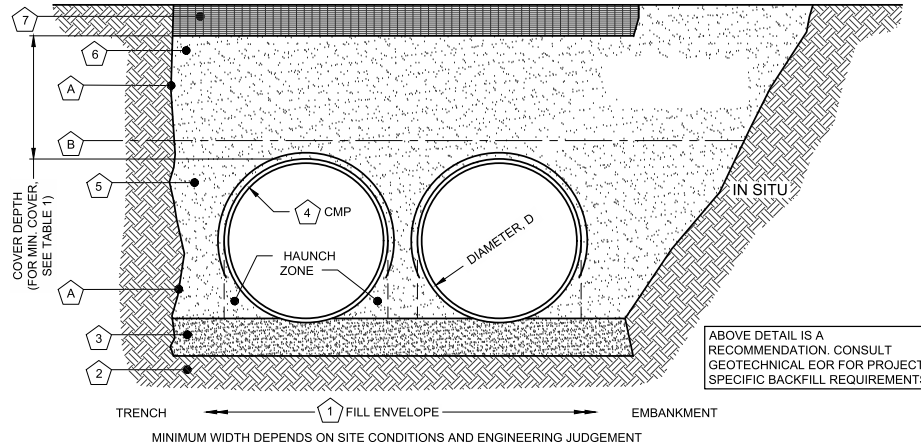
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TRC	TRC	
CHECKED:	APPROVED:	
TRC	TRC	
SHEET NO.:		
P2 OF 6		

TABLE 1:

DIAMETER, D	MIN. COVER	CORR. PROFILE
6"-10"	12"	1 1/2" x 1/4"
12"-48"	12"	2 2/3" x 1/2"
>48"-96"	12"	3" x 1", 5" x 1"
>96"	D/8	3" x 1", 5" x 1"

- STRUCTURAL BACKFILL MUST EXTEND TO LIMITS OF THE TABLE
- TOTAL HEIGHT OF COMPACTED COVER FOR CONVENTIONAL HIGHWAY LOADS IS MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT.



INSTALLATION NOTES

- WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES.
- OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.

NOTE:

1. AVOID PARKING OF VEHICLES OVER 50,000 LBS/AXLE OF XFILTRATION WQ STORAGE PIPE.

2. ON-SITE GEOTECHNICAL ENGINEER SHALL MAKE RECOMMENDATIONS FOR BACKFILL AND SHALL PROVIDE TESTING.

TABLE 2:

XFILTRATION [®] JOINT STANDARD BACKFILL SPECIFICATIONS			
MATERIAL LOCATION		MATERIAL SPECIFICATION	DESCRIPTION
FILL ENVELOPE WIDTH	PER ENGINEER OF RECORD	MINIMUM TRENCH WIDTH MUST ALLOW ROOM FOR PROPER COMPACTION OF HAUNCH MATERIALS UNDER THE PIPE. THE SUGGESTED MINIMUM TRENCH WIDTH, OR EOR RECOMMENDATION: PIPE ≤ 12": D + 16" PIPE > 12": 1.5D + 12"	MINIMUM EMBANKMENT WIDTH (IN FEET) FOR INITIAL FILL ENVELOPE: PIPE < 24": 3.0D PIPE 24" - 144": D + 4'0" PIPE > 144": D + 10'0"
FOUNDATION	AASHTO 26.5.2 - PER ENGINEER OF RECORD	PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND FOUNDATION BROUGHT BACK TO GRADE WITH A FILL MATERIAL APPROVED BY THE ENGINEER OF RECORD.	
BEDDING	AASHTO M 43: 3, 357, 4, 467, 5, 56, 57	ENGINEER OF RECORD TO DETERMINE IF BEDDING IS REQUIRED. PIPE MAY BE PLACED ON THE TRENCH BOTTOM OF A RELATIVELY LOOSE, NATIVE SUITABLE WELL GRADED GRANULAR MATERIAL THAT IS ROUGHLY SHAPED TO FIT THE BOTTOM OF THE PIPE, 2" MIN DEPTH. THE BEDDING MATERIAL MAY BE SUITABLE OPEN GRADED GRANULAR BEDDING CONFORMING TO AASHTO SOIL CLASSIFICATIONS A1, A2, OR A3 WITH MAXIMUM PARTICLE SIZE OF 3" PER AASHTO 26.3.8.1	
CORRUGATED METAL PIPE			
BACKFILL	FREE-DRAINING, ANGULAR, WASHED-STONE PER AASHTO M 43: 3, 357, 4, 467, 5, 56, 57 OR APPROVED EQUAL *	HAUNCH ZONE MATERIAL SHALL BE HAND SHOVELED OR SHOVEL SLICED INTO PLACE TO ALLOW FOR PROPER COMPACTION WITHOUT SOFT SPOTS. BACKFILL SHALL BE PLACED IN 8" +/- LOOSE LIFTS AND COMPACTED TO 90% STANDARD PROCTOR PER AASHTO T 99. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO LIFT (16") DIFFERENTIAL BETWEEN ANY OF THE PIPES AT ANY TIME DURING THE BACKFILL PROCESS. THE BACKFILL SHOULD BE ADVANCED ALONG THE LENGTH OF THE SYSTEM TO AVOID DIFFERENTIAL LOADING, WHERE CONVENTIONAL COMPACTION TESTING IS NOT PRACTICAL, THE MATERIAL SHALL BE MECHANICALLY COMPACTED UNTIL NO FURTHER YIELDING OF MATERIAL IS OBSERVED UNDER THE COMPACTOR. **IN AREAS WITH HIGH WATER TABLE FLUCTUATIONS THAT INTERACT WITH THE PIPE ZONE, CONSIDER INSTALLING A GEOTEXTILE SEPARATION LAYER TO PREVENT SOIL MIGRATION.	
COVER MATERIAL	UP TO MIN. COVER - AASHTO M 145: A-1, A-2, A-3 ABOVE MIN. COVER - PER ENGINEER OF RECORD	COVER MATERIAL MAY INCLUDE NON-BITUMINOUS, GRANULAR ROADBASE MATERIAL WITHIN MIN COVER LIMITS SEE SHEET P2 FOR PIPE SPAN/AXLE LOAD TABLE	
RIGID OR FLEXIBLE PAVEMENT (IF APPLICABLE)	PER ENGINEER OF RECORD	FLEXIBLE PAVEMENT SHOULD NOT BE COUNTED AS PART OF THE FILL HEIGHT OVER THE CMP. FINAL BACKFILL MATERIAL SELECTION AND COMPACTION REQUIREMENTS SHALL FOLLOW THE PROJECT PLANS AND SPECIFICATIONS PER THE ENGINEER OF RECORD.	
SIDE GEOTEXTILE	NONE	GEOTEXTILE LAYER IS RECOMMENDED ON SIDES OF EXCAVATION TO PREVENT SOIL MIGRATION WHEN STONE BEDDING IS USED. IF NO STONE BEDDING IS USED, THEN SIDE GEOTEXTILE IS REQUIRED. PROPOSED FOR THIS SITE.	
GEOTEXTILE BETWEEN LAYERS	NONE	IF SOIL TYPES DIFFER AT ANY POINT ABOVE PIPE INVERT, A GEOTEXTILE LAYER IS RECOMMENDED TO BE PLACED BETWEEN THE LAYERS TO PREVENT SOIL MIGRATION.	

NOTES:

- FOR MULTIPLE BARREL INSTALLATIONS, THE RECOMMENDED STANDARD SPACING BETWEEN PARALLEL PIPE RUNS SHALL BE THE PIPE DIAMETER /2 BUT NO LESS THAN 12" FOR DIAMETERS <72". FOR 72" AND LARGER DIAMETERS, THE MINIMUM SPACING IS 36". CONTACT YOUR CONTECH REPRESENTATIVE FOR NONSTANDARD SPACING.
- APPROVED REGIONAL EQUIVALENTS FOR SECTION 5 INCLUDE CA-7, MIDOT 6AA, 6A, OR 5G, PROVIDED THEY MEET THE PARTICLE SIZES INDICATED.

MANUFACTURER RECOMMENDED BACKFILL
NOT TO SCALE

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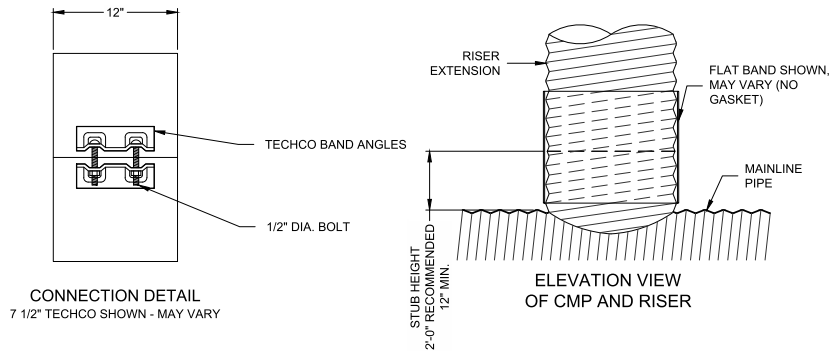
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CMP DETENTION SYSTEMS

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PROPOSAL
DRAWING

72"Ø UNDERGROUND DETENTION SYSTEM - 852685-010
ROCKY MOUNTAIN INDUSTRIAL PARK
COLORADO SPRINGS, CO
SITE DESIGNATION: XFILTRAITON SYSTEM

PROJECT No.: 852685	SEQ. No.: 010	DATE: 7/31/2025
DESIGNED: TRC	DRAWN: TRC	
CHECKED: TRC	APPROVED: TRC	
SHEET NO.: P3	OF	6

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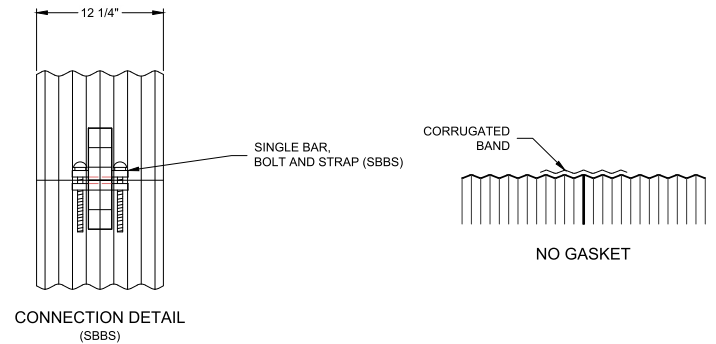


PLAIN END CMP RISER PIPE

GENERAL NOTES:

1. **DELIVERED BAND STYLE AND FASTENER TYPE MAY VARY BY FABRICATION PLANT.**
2. JOINT IS TO BE ASSEMBLED PER AASHTO BRIDGE CONSTRUCTION SPECIFICATION SEC 26.4.2.4.
3. BAND MATERIAL AND GAGE TO BE SAME AS RISER MATERIAL.
4. IF RISER HAS A HEIGHT OF COVER OF 10' OR MORE, USE A SLIP JOINT.
5. BANDS ARE NORMALLY FURNISHED AS FOLLOWS:
 - 12" THRU 48" 1-PIECE
 - 54" 2-PIECES
6. ALL RISER JOINT COMPONENTS WILL BE FIELD ASSEMBLED.
7. MANHOLE RISERS IN APPLICATIONS WHERE TRAFFIC LOADS ARE IMPOSED REQUIRE SPECIAL DESIGN CONSIDERATIONS.
8. DIMENSIONS SUBJECT TO MANUFACTURING TOLERANCES.

12" RISER BAND DETAIL NOT TO SCALE



2 2/3"x1/2" RIVETED PIPE

GENERAL NOTES:

1. JOINT IS TO BE ASSEMBLED PER AASHTO BRIDGE CONSTRUCTION SPECIFICATION SEC 26.4.2.4.
2. BAND MATERIALS AND/OR COATING CAN VARY BY LOCATION. CONTACT YOUR CONTECH REPRESENTATIVE FOR AVAILABILITY.
3. BANDS ARE SHAPED TO MATCH THE PIPE-ARCH WHEN APPLICABLE.
4. BANDS ARE NORMALLY FURNISHED AS FOLLOWS:
 - 12" THRU 48" 1-PIECE
 - 54" THRU 96" 2-PIECES
 - 102" THRU 144" 3-PIECES
5. BAND FASTENERS ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDS.
6. ALL CMP IS REROLLED TO HAVE ANNULAR END CORRUGATIONS OF 2 2/3"x1/2"
7. DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
8. ORDER SHALL DESIGNATE GASKET OPTION, IF REQUIRED (SEE DETAILS ABOVE).

5-C BAND DETAIL NOT TO SCALE

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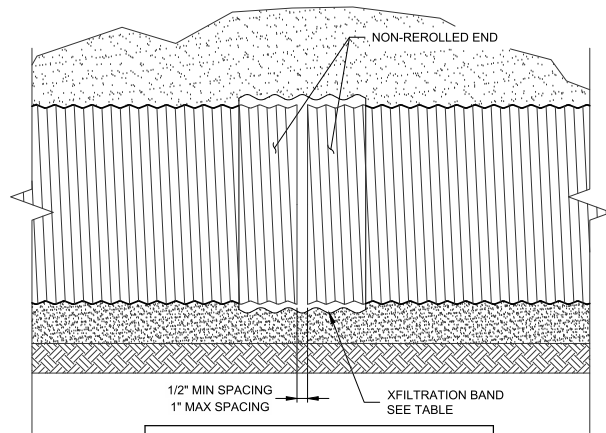


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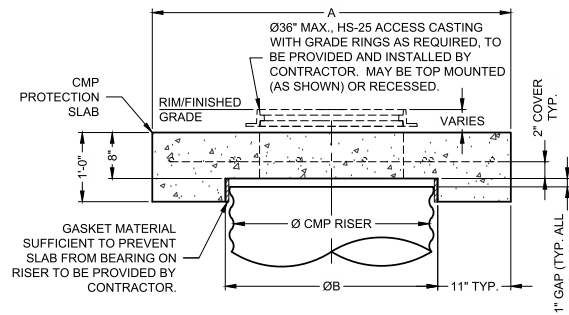
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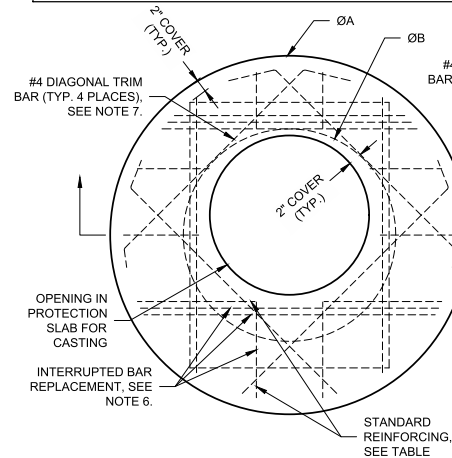
XFILTRATION BAND		
DIAMETER	BAND	FASTENER
12"Ø TO 60"Ø	5-C OR H-12	STD. PLANT FASTENER WITH NO GASKET
66"Ø TO 96"Ø	5-C OR H-12	STD. PLANT FASTENER WITH NO GASKET
102"Ø +	5-C, 10-C OR H-12	STD. PLANT FASTENER WITH NO GASKET

XFILTRATION JOINT DETAIL
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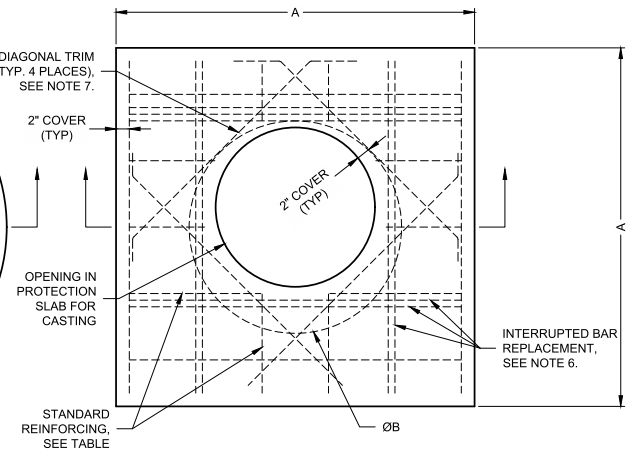


SECTION VIEW

ACCESS CASTING NOT SUPPLIED BY CONTECH



ROUND OPTION PLAN VIEW



SQUARE OPTION PLAN VIEW

REINFORCING TABLE				
Ø CMP RISER	A	Ø B	REINFORCING	**BEARING PRESSURE (PSF)
24"	Ø 4' 4"x4'	26"	#5 @ 10" OCEW #5 @ 10" OCEW	2,540 1,900
30"	Ø 4'-6" 4'-6" x 4'-6"	32"	#5 @ 10" OCEW #5 @ 9" OCEW	2,260 1,670
36"	Ø 5' 5' x 5'	38"	#5 @ 9" OCEW #5 @ 8" OCEW	2,060 1,500
42"	Ø 5'-6" 5'-6" x 5'-6"	44"	#5 @ 8" OCEW #5 @ 8" OCEW	1,490 1,370
48"	Ø 6' 6' x 6'	50"	#5 @ 7" OCEW #5 @ 7" OCEW	1,210 1,270

** ASSUMED SOIL BEARING CAPACITY

NOTES:

- DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION AND ACI 350.
- DESIGN LOAD HS25.
- EARTH COVER = 1' MAX.
- CONCRETE STRENGTH = 4,000 psi
- REINFORCING STEEL = ASTM A615, GRADE 60.
- PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
- TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
- PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
- DETAIL DESIGN BY DELTA ENGINEERS, ARCHITECTS AND LAND SURVEYORS, ENDWELL, NY.
- THIS DETAIL REFLECTS CAST-IN-PLACE MANHOLE CAP PROTECTION SLAB. PRECAST MANHOLE CAP AVAILABLE IN SELECT MARKETS UNDER SEPARATE SUBMITTAL & DESIGN.

CAST-IN-PLACE MANHOLE CAP DETAIL
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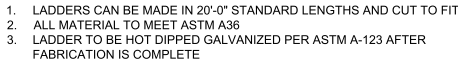
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L5" x 3" x 1/4" x 16" LONG AT 1'-0"
 SPACING. LONG LEG TO
 PROJECT OUT. WELD TOP
 AND BOTTOM OF 3" LEG TO EACH
 CORRUGATION CREST
 (THESE ANGLES SHOULD BE USED
 FOR LARGER DIAMETER
 MAINLINES WHERE ADDITIONAL
 STEPS ARE NEEDED)

2½" x ⅜" FLAT BAR SIDE RAIL

6" FROM RUNG TO
RIGID JOINT



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ENGINEERING, INC.

505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
PHONE (719) 531-5599

January 7, 2025

Colorado River Landscaping, LLC
8115 Sandy Court
Colorado Springs, Colorado 80939

Attn: Eduardo Hernandez

Re: Infiltration Rate Testing (Percolation Test Method)
8115 and 8145 Sandy Court
Lots 3 and 4, Rocky Mountain Industrial Park, Filing 1A
Colorado Springs, Colorado
Entech Job No. 241962

Dear Mr. Hernandez:

As requested, personnel of Entech Engineering, Inc. performed percolation testing at the above referenced site to evaluate the site soils to determine the infiltration rates for the proposed infiltration basins.

The testing was performed on December 13, 2024. The test locations are shown on Figure 1. The western infiltration (PH-1) and the eastern infiltration (PH-2) percolation test results, infiltration rates, and laboratory test results are shown in Figures 2 through 8. Soils encountered in the profile and percolation holes consisted of sand with silt to silty sand. Bedrock was not encountered in PH-1 or PH-2. Groundwater was not encountered in any of the holes drilled up to 15 feet.

Western Infiltration – 8115 Sandy Court

The average percolation rate was 32 minutes/inch for PH-1. The percolation rates correspond to adjusted an infiltration rate of 0.354 inches/hour.

Eastern Infiltration – 8145 Sandy Court

The average percolation rate was 2 minutes/inch for PH-2. The percolation rates correspond to adjusted an infiltration rate of 1.861 inches/hour.

We trust that this has provided you with the information you required. If you have any questions or need additional information, please do not hesitate to contact us.

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Zachary C. Gutierrez E.I.T.
Geotechnical Engineering Staff

Reviewed by:



Digitally signed by Joseph C. Goode III
Date: 01/08/25

Joseph C. Goode III, P.E.
Sr. Engineer

ZCG:JCG/III

Encl.

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PERCOLATION HOLE 1
 DATE DRILLED 12/13/2024
 REMARKS

DRY TO 15', 12/13/24

FILL 0-3', SAND, SILTY, BROWN,
 MEDIUM DENSE, MOIST

SAND, SILTY, BROWN to LIGHT
 BROWN, MEDIUM DENSE to
 DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %
5			22	4.5
5			11	6.1
10			44	7.3
15			32	8.2
20				

PERCOLATION HOLE 2
 DATE DRILLED 12/13/2024
 REMARKS

DRY TO 15', 12/13/24

FILL 0-2', SAND, SILTY, TAN

SAND, WITH SILT, LIGHT BROWN,
 MEDIUM DENSE to LOOSE, DRY
 to MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %
5			28	2.0
5			9	2.0
10			13	3.0
15			19	13.5
20				



TEST BORING LOGS
 8115 AND 8145 SANDY COURT
 COLORADO RIVER LANDSCAPING

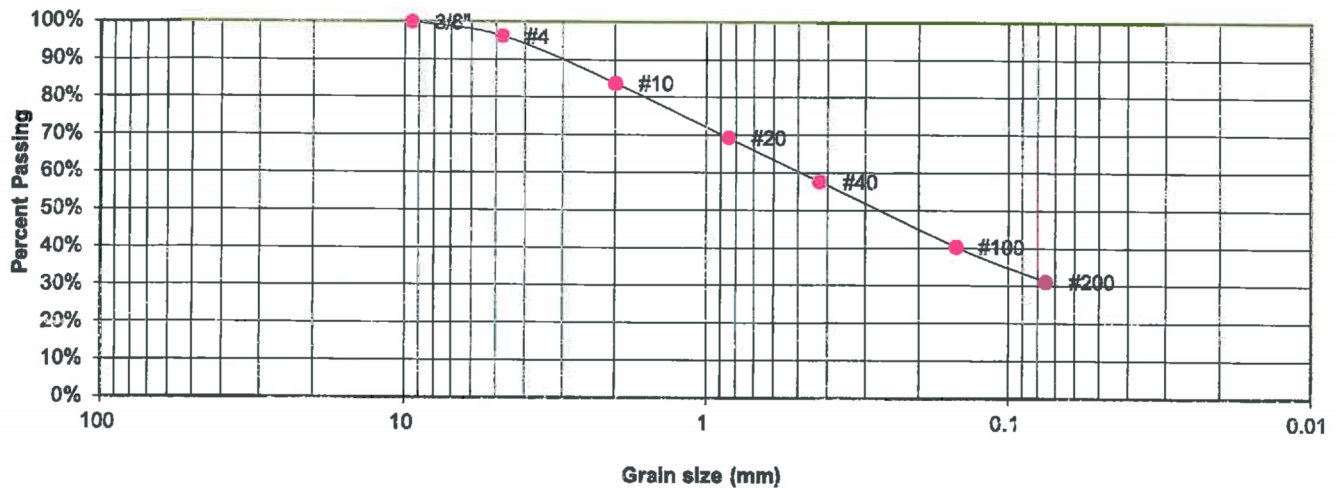
JOB NO.
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FIG. 2

TEST BORING
DEPTH (FT)

PH-1
2-3

SOIL DESCRIPTION SAND, SILTY

**Sieve Analysis
Grain Size Distribution**



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	96.3%
10	83.8%
20	69.3%
40	57.7%
100	40.4%
200	31.2%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM



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LABORATORY TEST RESULTS

8115 AND 8145 SANDY COURT
COLORADO RIVER LANDSCAPING

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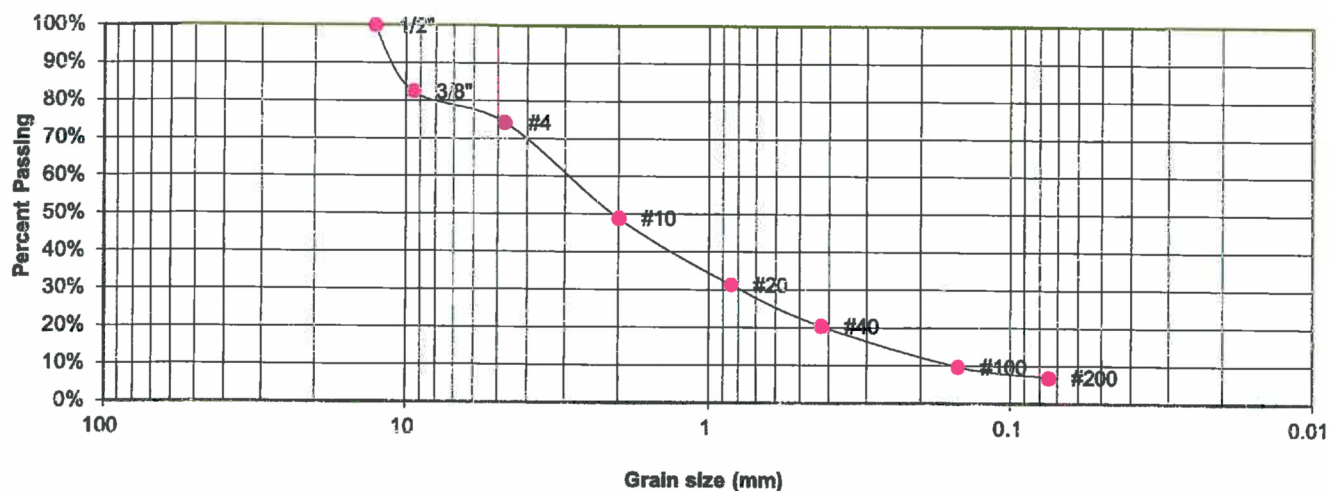
FIG. 3

TEST BORING
DEPTH (FT)

PH-2
2-3

SOIL DESCRIPTION SAND, WITH SILT

**Sieve Analysis
Grain Size Distribution**



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	82.4%
4	74.3%
10	48.9%
20	31.4%
40	20.4%
100	9.7%
200	7.0%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SW-SM



LABORATORY TEST RESULTS

8115 AND 8145 SANDY COURT
COLORADO RIVER LANDSCAPING

JOB NO.
241962

FIG. 4

Client: Colorado River Landscaping, LLC
Test Location: 8115 Sandy Court

Job Number: 241962

PERCOLATION HOLES

Date Holes Prepared: 12/13/2024

Hole No. 1

Depth: 51"

<u>Trial</u>	<u>Time (min.)</u>	<u>Water Level Change (in.)</u>
1	10	1/8
2	10	0
3	10	1/8

Hole No. 2

Depth: 56"

<u>Trial</u>	<u>Time (min.)</u>	<u>Water Level Change (in.)</u>
1	10	2
2	10	1 1/4
3	10	1

Hole No. 3

Depth: 63"

<u>Trial</u>	<u>Time (min.)</u>	<u>Water Level Change (in.)</u>
1	10	2 1/4
2	10	1 3/4
3	10	1 3/4

Perc Rate (min./in.): 80

Perc Rate (min./in.): 10

Perc Rate (min./in.): 6

Average Perc Rate (min./in.) 32

PROFILE HOLE

Date Profile Hole Completed: 12/13/2024

Depth

0-3'

3-5'

Visual Classification

Fill, sand, silty, brown

Sand, silty, brown

Remarks

No Bedrock

No Groundwater

22 Blows / ft. @ 2'

11 Blows / ft. @ 4'

44 Blows / ft. @ 9'

Observer: Stuart Wood

By:



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PERCOLATION TEST RESULTS

JOB NO.
241962

FIG. 5

Client: Colorado River Landscaping, LLC
Test Location: 8115 Sandy Court

Job Number: 241962

Infiltration Rate (I) = Percolation Rate (P) / Reduction Factor(R_f)
I=P/R_f

$R_f = [(2d_1 - \Delta d) / \text{dia}] + 1$

d_1 = initial water depth (in.)

Δd = final water level drop (in.)

dia = diameter of the percolation hole (in.)

Test No. P1 (PH-1)

Perc Rate 0.75 in/hr
diameter 8

P1 (inches)
 $d_1 =$ 51.0
 $\Delta d =$ 1/8
 $R_f =$ 13.7

Test No. P2 (PH-1)

Perc Rate 6.00 in/hr
diameter 8

P2 (inches)
 $d_1 =$ 56.0
 $\Delta d =$ 1
 $R_f =$ 14.9

Test No. P3 (PH-1)

Perc Rate 10.00 in/hr
diameter 8

P2 (inches)
 $d_1 =$ 63.0
 $\Delta d =$ 1 3/4
 $R_f =$ 16.5

I = 0.055 in/hr

I = 0.403 in/hr

I = 0.605 in/hr

I AVG= 0.354 in/hr



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INFILTRATION TEST RESULTS

JOB NO.
240644

FIG. 6

Client: Colorado River Landscaping, LLC
Test Location: 8145 Sandy Court

Job Number: 241962

PERCOLATION HOLES

Date Holes Prepared: 12/13/2024

Hole No. 4

Depth: 54"

<u>Trial</u>	<u>Time (min.)</u>	<u>Water Level Change (in.)</u>
1	10	2 1/2
2	10	2 1/2
3	10	2 1/4

Perc Rate (min./in.): 4

Hole No. 5

Depth: 44"

<u>Trial</u>	<u>Time (min.)</u>	<u>Water Level Change (in.)</u>
1	10	7
2	10	5
3	10	6

Perc Rate (min./in.): 2

Average Perc Rate (min./in.) 3

Hole No. 6

Depth: 56"

<u>Trial</u>	<u>Time (min.)</u>	<u>Water Level Change (in.)</u>
1	10	6 1/4
2	10	7
3	10	6 1/2

Perc Rate (min./in.): 2

PROFILE HOLE

Date Profile Hole Completed: 12/13/2024

Depth

0-2'
2-15'

Visual Classification

Fill, sand, silty, brown
Sand, with silt, brown

28 Blows / ft. @ 2'

9 Blows / ft. @ 4'

13 Blows / ft. @ 9'

Remarks

No Bedrock
No Groundwater

Observer: Stuart Wood

By:



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PERCOLATION TEST RESULTS

JOB NO.
241962

FIG. 7

Client: Colorado River Landscaping, LLC
Test Location: 8145 Sandy Court

Job Number: 241962

Infiltration Rate (I) = Percolation Rate (P) / Reduction Factor(R_f)
I=P/R_f

R_f = [(2d₁ - Δd) / dia] + 1

d₁ = initial water depth (in.)

Δd = final water level drop (in.)

dia = diameter of the percolation hole (in.)

Test No. P4 (PH-2)

Perc Rate 15.00 in/hr
diameter 8

P1 (inches)
d₁ = 54.0
Δd = 2 1/4
R_f = 14.2

Test No. P5 (PH-2)

Perc Rate 30.00 in/hr
diameter 8

P2 (inches)
d₁ = 44.0
Δd = 6
R_f = 11.3

Test No. P6 (PH-2)

Perc Rate 30.00 in/hr
diameter 8

P2 (inches)
d₁ = 56.0
Δd = 6 1/2
R_f = 14.2

I = 1.055 in/hr

I = 2.667 in/hr

I = 2.115 in/hr

I AVG= 1.861 in/hr



INFILTRATION TEST RESULTS

**JOB NO.
240644**

FIG. 8

LIMITS OF CONSIDERATION

(At least one of the conditions listed below must be met for this deviation request to be considered.)

- ☐ The ECM standard is inapplicable to the particular situation.
- ☐ Topography, right-of-way, or other geographical conditions or impediments impose an undue hardship and an equivalent alternative that can accomplish the same design objective is available and does not compromise public safety or accessibility.
- ☒ A change to a standard is required to address a specific design or construction problem, and if not modified, the standard will impose an undue hardship on the applicant with little or no material benefit to the public.

Provide justification:

Requiring the use of a WQCV Sand Filter Detention facility will inhibit functionality and aesthetics of the southeast corner of the site. The proposed alternative, although more expensive, would function the same and allow for private use of that land. The proposed alternative will not compromise public safety or accessibility. The underground Xfiltration system with store the WQCV volume, it will remove suspended solids and floatables and it will infiltrate and release at a required drain time.

CRITERIA FOR APPROVAL

Per ECM section 5.8.7 the request for a deviation may be considered if the request is **not based exclusively on financial considerations**. The deviation must not be detrimental to public safety or surrounding property. The applicant must include supporting information demonstrating compliance with **all of the following criteria**:

The deviation will achieve the intended result with a comparable or superior design and quality of improvement.

The deviation meets the criteria for ECM Section 5.8.7.

- The deviation is not based exclusively on financial considerations as the underground facility will cost more to install.
- The deviation will achieve the intended result with a comparable design and quality of improvement. It will meet the required WQCV storage volume, removal of required TSS, drain in the required time and the surrounding soil will provide exceptional infiltration which will lessen the risk of failure.
- The deviation will not affect safety or operations. The WQCV vault is underground allows for safety from the public and lacks the nuisance of pest such as mosquitos often present with above ground ponds.
- The deviation will not adversely affect maintenance and its associated cost. Cost and maintenance to be the responsibility of the owner.
- The deviation will not adversely affect aesthetic appearance. Since the system is underground, it will not be a nuisance or eye sore.

The deviation will not adversely affect safety or operations.

The construction of the underground vault system will not adversely affect safety for the public but will provide continued access to the location for equipment and material storage. The underground system provides a manhole and ladder system to access the vault for routine maintenance. Access to the system is no more of a concern than than a EPC inspector lifting a typical manhole cover on a standard manhole or inlet. See attached documents in Deviation Request Section.

The deviation will not adversely affect maintenance and its associated cost.

The underground detention facility will cost more than a Sand Filter Pond to install. However, the underground facility will provide a usable area for equipment and material storage. The underground facility will be privately owned and maintained by the owner of Lots 3 and 4 of Rocky Mountain Industrial Park Filing No. 1A. A regular maintenance schedule should be the same as an above ground facility. The owner should hire a qualified contractor that is familiar with the maintenance of a similar system. They should possess knowledge and equipment to perform their duties as required for a regular maintenance schedule. Inspection of the system is as usual as any other storm manhole or outlet structure. See attached document.

The deviation will not adversely affect aesthetic appearance.

The facility will be underground and the deviation will maintain the functionality of the site for vehicle and material storage.

The deviation meets the design intent and purpose of the ECM standards.

The deviation meets the design intent for the detention, water quality, maintenance and operation than a standard above ground EPC detention facility. The underground water quality vault meets the engineering, hydrologic and pollution control practices as defined in this Section 1.7. The approval criteria for this deviation request provided in Chapters 1 and 5 of the ECM, the owner or authorized agent will provide a structure specific operation and maintenance (O&M) manual and maintenance agreement for the structure. The operation and maintenance manual will include specific procedures and equipment that will be used by the owner or authorized representative to operate and maintain the structure.

The deviation meets the control measure requirements of Part I.E.3 and Part I.E.4 of the County's MS4 permit, as applicable.

The deviation meets the control measure requirements of Part I.E.3 of EPC's MS4 permit- construction sites. The permittee will implement a program to reduce or prevent the discharge of pollutants to the MS4 from applicable construction activities.

The deviation meets the control measure requirements of Part I.E.4 of EPC's MS4 permit-post-construction stormwater management in new development and redevelopment. The permittee will implement a program to reduce the discharge of pollutants to the MS4 from applicable development sites.

EXAMPLE MAINTENANCE INSTRUCTIONS FOR XFILTRATION SYSTEM

- 1) STORM WATER MANAGEMENT FACILITIES ARE REQUIRED TO BE INSPECTED BY A QUALIFIED AND CERTIFIED INDIVIDUAL. FIRST YEAR WILL REQUIRE QUATERLY INSPECTIONS AND MAINTENANCE IF REQUIRED. POST FIRST YEAR WILL REQUIRE ANNUAL CONFINED SPACE INSPECTIONS. UNLESS DEEMED BY INSPECTOR A LONGER PERIOD OF TIME BETWEEN INSPECTIONS.
- 2) REMOVE THE MANHOLE COVER TO PROVIDE ACCESS TO THE POLLUTANT STORAGE. FOLLOW LOCAL AND OSHA RULES FOR CONFINED SPACE ENTRY.
- 3) INITIAL VISUAL INSPECTION, USE A LIGHT SOURCE TO INSPECT THE INLET AND LENGTH OF XFILTRATION SYSTEM. USE STADIA ROD TO MEASURE FIXED POINT OF VAULT BOTTOM AND FIXED POINT TO TOP OF SEDIMENT FOR THE LENGTH OF XFILTRATION SYSTEM.
- 4) USE A VACUUM TRUCK OR SIMILAR EQUIPMENT TO REMOVE ALL WATER, DEBRIS, OILS AND SEDIMENT.
- 5) USE HIGH PRESSURE HOSE TO CLEAN THE XFILTRATION SYSTEM, STARTING AT INLETS AND STORM SEWER PIPE THEN PROCEEDING TO THE XFILTRATION SYSTEM. HIGH PRESSURE WASH ALL THE REMAINING SEDIMENT AND DEBRIS. THEN, USE THE VACUUM TRUCK TO REMOVE THE WATER AND RESIDUE.
- 6) REPLACE THE MANHOLE COVER AND LOG ALL FINDINGS, NAME OF INSPECTOR AND PROCEDURES.
- 7) DISPOSE OF THE POLLUTED WATER, OILS, SEDIMENT AND TRASH AT AN APPROVED FACILITY.

REVIEW AND RECOMMENDATION:

Approved by the ECM Administrator

This request has been determined to have met the criteria for approval. A deviation from Section 4.1 of the DCM ~~of the ECM~~ is hereby granted based on the justification provided.

□

L

J

Denied by the ECM Administrator

This request has been determined not to have met criteria for approval. A deviation from Section _____ of the ECM is hereby denied.

□

L

J

ECM ADMINISTRATOR COMMENTS/CONDITIONS:

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1.1. PURPOSE

The purpose of this resource is to provide a form for documenting the findings and decision by the ECM Administrator concerning a deviation request. The form is used to document the review and decision concerning a requested deviation. The request and decision concerning each deviation from a specific section of the ECM shall be recorded on a separate form.

1.2. BACKGROUND

A deviation is a critical aspect of the review process and needs to be documented to ensure that the deviations granted are applied to a specific development application in conformance with the criteria for approval and that the action is documented as such requests can point to potential needed revisions to the ECM.

1.3. APPLICABLE STATUTES AND REGULATIONS

Section 5.8 of the ECM establishes a mechanism whereby an engineering design standard can be modified when if strictly adhered to, would cause unnecessary hardship or unsafe design because of topographical or other conditions particular to the site, and that a departure may be made without destroying the intent of such provision.

1.4. APPLICABILITY

All provisions of the ECM are subject to deviation by the ECM Administrator provided that one of the following conditions is met:

- The ECM standard is inapplicable to a particular situation.
- Topography, right-of-way, or other geographical conditions or impediments impose an undue hardship on the applicant, and an equivalent alternative that can accomplish the same design objective is available and does not compromise public safety or accessibility.
- A change to a standard is required to address a specific design or construction problem, and if not modified, the standard will impose an undue hardship on the applicant with little or no material benefit to the public.

1.5. TECHNICAL GUIDANCE

The review shall ensure all criteria for approval are adequately considered and that justification for the deviation is properly documented.

1.6. LIMITS OF APPROVAL

Whether a request for deviation is approved as proposed or with conditions, the approval is for project-specific use and shall not constitute a precedent or general deviation from these Standards.

1.7. REVIEW FEES

A Deviation Review Fee shall be paid in full at the time of submission of a request for deviation. The fee for Deviation Review shall be as determined by resolution of the BoCC.