

Preliminary and Final DRAINAGE PLAN AND REPORT **ROCKY TOP MOTEL AND CAMPGROUND**

10090 W Highway 24
A portion of the NW ¼, Section 9, Township 13 South, Range 68 West
EL PASO COUNTY

June 14, 2019

Updated
August 16, 2021

Revised
January 4, 2022

Revised
April 13, 2022

Revised
August 22, 2022

Revises
December 19, 2022

Prepared for

G & D Enterprises
10090 West Highway 24
Green Mountain Falls, CO 80819

County File No.: PPR2140

Oliver E. Watts, Consulting Engineer, Inc.
Colorado Springs, Colorado

EPC STORMWATER REVIEW COMMENTS
IN ORANGE BOXES WITH BLACK TEXT

OLIVER E. WATTS, PE-LS
OLIVER E. WATTS, CONSULTING ENGINEER, INC.
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Celebrating over 43 years in business

December 19, 2022

El Paso County Planning and Community Development
2880 International Circle
Colorado Springs, CO 80910

ATTN: *Joshua Palmer, P.E.*

SUBJECT: Drainage Plan and Report
Rocky Top Motel and Campground

Transmitted herewith for your review and approval is the drainage plan and report for The Rocky Top Motel and Campground in El Paso County. This report is prepared and a result of Craig Dossey's letter of May 2, 2019 regarding an alleged violation of County grading regulations. It has been revised per the 10-7-21 County Review and our subsequent meetings and your review of December 12, 2022.. This report will accompany the submittal of other land use applications. Please contact me if I may provide any further information.

Oliver E. Watts, Consulting Engineer, Inc.

ALL TERRAIN RESPONSE: NOTED.
SIGNED DRAINAGE REPORT WILL
BE PROVIDED ONCE ALL
COMMENTS ARE RESOLVED.

BY: 
Oliver E. Watts, President

Encl:
Drainage Report 6 pages
Runoff Computations, 3 pages
UD Computations, 4 pages
FEMA Panel No. 08041C0952 G
SCS Soils Map
Backup Information, 5 sheets
Drainage Plan, Dwg 19-5341-02 & -07

Please sign this page and the next one electronically so that all pages of the report do not have to be scanned. It is much easier for us if the report is in the original state (ie: still a searchable pdf and not skewed from scanning).

Other option is just print, sign, and scan the two signature pages only and then insert them into the rest of the electronic (not scanned) pdf.

For a tutorial on how to do this with Adobe, you can check out this video:

<https://www.youtube.com/watch?v=jPvzRRDd8ho>

1. ENGINEER'S STATEMENT:

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

Oliver E. Watts, Consulting Engineer, Inc.

Oliver E. Watts Colo. PE-LS No. 9853

2. OWNERS / DEVELOPER'S STATEMENT:

I the owner / developer have read and will comply with all of the requirements specified in this drainage report and plan.

G & D Enterprises, Corp.

By: _____
Daniel P. Nieman, owner
10090 West Highway 24
Green Mountain Falls, CO 80819
684-9044

3. EL PASO COUNTY:

Filed in accordance with the requirements of the El Paso Land Development Code, Drainage Criteria Manual Volumes 1 and 2, and the Engineering Criteria Manual, as amended.

Joshua Palmer P.E.,
County Engineer / ECM Administrator

date

Conditions:

ALL TERRAIN RESPONSE: ADDRESSED.

SEE BASIN C DESCRIPTION.

Please state whether or not the offsite flow was reverted to historic conditions by the addition of this retaining wall. If not then please analyze the conveyance to the outfall to ensure it is adequate.

4. LOCATION AND DESCRIPTION:

The Rocky Top Motel and Campground is located in a portion of the NW ¼, Section 9, Township 13 South, Range 68 West, of the 6th P.M., in El Paso County. The address, located at 10090 West Highway 24, is adjacent to Green Mountain Falls, on the north side of Highway 24 as shown in detail on the enclosed drainage plan. This facility has been in use at this location since 1947 as a motel and since 1950 as a camp ground. A use application for RV storage has been recently submitted to the County for this additional use. A detailed site survey is submitted as part of the enclosed drainage plan to delineate current conditions.

The County issued a notice of violation dated May 2, 2019, in reply to neighborhood complaints itemizing items that needed to be completed to reply to violations of grading in excess of one acre and the un-permitted use as RV storage. The County is considering any construction dating back to March 10, 2008 to be included in the disturbed area. This would include the north-south and east-west access road by asphalt, the grading of the portion of the RV sites, and two RV storage areas adjacent to Highway 24. The storage area and the southwest 0.38 acre site were vacated and reclaimed and not included in the limit of disturbance. The tent site in the southwest was graded and restored and the 0.393 acre portion is also not included in the disturbance.

ALL TERRAIN RESPONSE: ADDRESSED. THE .39 AC TENT DISTURBANCE HAS BEEN ADDED TO THE SITE TOTAL.

PLEASE NOTE, THIS DISCUSSION HAS BEEN MOVED TO THE 'BASIN DESCRIPTION' SECTION OF THIS REPORT.

This text is contradictory to each other. The area should be included in the LOD since drainage paths were adjusted and impervious surfaces were added.

Much of the grading reported by the neighbors involved repair and maintenance, and only those areas within roadways are considered exempt. The owner has had to contend with erosion from stormwater runoff created by an addition of a culvert across the Lucky 4 Road to the west of the site. A rock retaining wall along the road was added for protection, which is within the 0.393 acre tent site area of disturbance. This is a private road that is not maintained by the County.

The proposed additional work requested by the client is as follows:

- Rec Room addition north portion of property
- RV site wall addition northeast portion
- Garage and wall addition behind motel area
- West PLD pond work
- East PLD pond work
- Total proposed work

0.035 ac. disturbance
0.144
0.331
0.264
0.330
1.104 ac. disturbance

5. FLOOD PLAIN STATEMENT:

This subdivision is not within the limits of a flood plain or flood hazard area, according to FEMA map panel number 08041C0467 G, dated December 7, 2018, a copy of which is enclosed for reference. Note that the site is in Zone D on said Firmette

Does not include 0.393ac tent site area that is shown on the drainage map.

6. METHOD AND CRITERIA:

The method used for all computations is that specified in the City-County Manual, using the rational method for areas of the size of the development enclosed for reference and review.

The soils in the subdivision have been mapped by the local USDA/SCS

ALL TERRAIN RESPONSE: ADDRESSED. THE .39 AC TENT DISTURBANCE HAS BEEN ADDED TO THE SITE TOTAL.

PLEASE NOTE, THIS DISCUSSION HAS BEEN MOVED TO THE 'BASIN DESCRIPTION' SECTION OF THIS REPORT. ADDITIONALLY, TOTAL DISTURBED AREA HAS INCREASED. WAS NOT SHOWN CORRECTLY PREVIOUSLY.

is enclosed for reference, indication that all soils in this area are largely usable as gravel surfacing and are excellent. Infiltration is a maximum and runoff is held to a minimum.

ALL TERRAIN RESPONSE: ADDRESSED. SEE BASIN B DESCRIPTION. EXISTING AND PROPOSED CONDITION RUNOFF VALUES ARE PROVIDED AND EXPLANATION OF DISCHARGE LOCATIONS.

Unresolved previous comment: Clarify that these flows are with the proposed/developed conditions since the sub-section heading is just "on-site runoff" it's unclear.

7. DESCRIPTION OF RUNOFF:

A. Historic Drainage:

Computations are enclosed to show the historic drainage conditions prior to construction of any existing facilities (pre-1947). The drainage pattern has remained unchanged, and is increased due to development over the years. Historic and developed runoffs are described as follows.

B. Drainage Inflows:

As shown on the enclosed drainage plan one small area (Basin O-1) will drain into the property near the northwest corner, creating 0.15 cfs / 1.1 cfs (5-year / 100-year runoffs) from a small vacant grassed site. This runoff is in the undeveloped historic state.

C. On Site Runoff:

On site runoff has existed in the current state for many years. Improvements include the motel area and improvements, including paving, to the road system. Other improvements include regrading the area for use as campground and tented areas and increases in runoff are minimal as described improvements are made. The type "A" soils of the site exhibit minimal runoff, which is not significantly increased with gravel or similar surfacing used for dust control

The above mentioned inflow will combine with runoff from Basin A for a total of 4.0 cfs/ 10.6 cfs at the location shown on the drainage plan along the entrance road. The historic runoff for this area is 0.85 cfs \ 6.2 cfs. This basin is a mixture of part of the paved road and graveled campground sites graded into the natural terrain and areas of native vegetation covering steeper boundary areas. This will combine with runoff from Basin B, consisting of the motel site, paved roads and parking.

The 0.61 acre RV parking site has been abandoned and reclaimed. The total runoff at the outfall point into Highway 24 is 5.6 cfs / 17.2 cfs, compared with the historic value of 3.2 cfs / 9.1 cfs.

ALL TERRAIN RESPONSE: ADDRESSED. EXISTING CULVERTS ARE NUMBERED ON MAP AND THROUGHOUT CALCS/REPORT.

This runoff is well within the 11.4 cfs capacity of the existing downstream culvert. The drainage plan, as shown by the enclosed computations. A sand filter basin is provided at the subdivision boundary for water quality. Computations are enclosed.

Please clarify which culvert this is on the drainage map.

Revise per comments on previous page regarding this area being considered part of the LOD since it is not fully reclaimed: grading changes and impervious surfaces added with the retaining walls.

Basin C is the Southwesterly third of the site, containing graveled campground sites, tent sites, and gravel road. The 0.38 acre RV storage site has been abandoned and reclaimed. The total runoff at the historic outfall point into Highway 24 is 3.2 cfs / 9.1 cfs, compared with the historic value of 1.748 cfs / 5.7 cfs. Some 24" cnp culverts exist within the site and below the outfall point, as shown on the drainage plan. The first has a computed capacity of 35.5 cfs and will safely accommodate this total runoff as shown in the computations. Highway 24 culverts have proved historically adequate and will remain so as far as this development is concerned. A sand filter basin is provided at the subdivision boundary for water quality. Computations are enclosed.

ALL TERRAIN RESPONSE: ADDRESS. BASIN C DESCRIPTION REGARDING EXISTING HIGHWAY 24 CULVERTS.

8. WATER QUALITY REQUIREMENTS:

The total historic and proposed development work on the site is largely mitigated by the existing Type A soils of the area. Two proposed sand filter basins are proposed at the outfall points of the development for this purpose. The proposed grading is shown on the enclosed drainage plan and

For what purpose? Clarify that the SFBs are there to provide WQ treatment of the WQCV.

ALL TERRAIN RESPONSE: ADDRESSED. SEE REVISED WATER QUALITY SECTION OF THE REPORT. SAND FILTERS HAVE BEEN REMOVED AND RUNOFF REDUCTION AREAS PROVIDE WATER QUALITY TREATMENT.

provide of the H that is a flow. It is the above listed is 24 culve

ALL TERRAIN RESPONSE: ADDRESS. SEE WATER QUALITY SECTION, DISCUSSION ADDED REGARDING NEED FOR DETENTION.

the grading plan that accompany the total submittal. The work is minimal and necessary erosion BMP's are proposed.

9. COST ESTIMATE:

All facilities are private.

In this section, also discuss any applicable WQ exclusions. For areas that need WQ treatment (like the paved road for example) but don't appear to be tributary to either pond. So for the paved road, the recommended applicable exclusion is per ECM App I.7.1.C.1 (which allows for 20% not to exceed 1 acre of the applicable development site area to not be treated).

Item No.		Description		ALL TERRAIN RESPONSE: ADDRESSED. EXCLUSIONS ARE DETAILED IN THE WATER QUALITY SECTION OF THE REPORT.		Cost
1		West Sand Filter Basin	1 ea	LS		\$ 2000.00
2		East Sand Filter Basin	1 ea	LS		2500.00
3		24" CMP Storm Sewer	101 LF	30.00		3030.00
4		12" PVC Storm Sewer	44 LF	25.00		1100.00
5		Firebaugh Grated Inlet	1 ea	1500.00		1500.00
6		CDOT Grated Inlet	1 ea	2500.00		2500.00
7		Riprap	10 CY	100.00		1000.00
Subtotal Construction Cost						\$ 13630.00
Engineering				10%		1363.00
Total Estimated Cost						\$ 14993.00

10. SUMMARY

The motel and campground have existed at this address since 1947 and 1950 respectively. The proposed facilities will mitigate the effects of historic development as well as proposed improvements. Those installed since March, 2008 have been specifically addressed. There will be no adverse effects on downstream or surrounding properties.

The drainage analysis has been prepared in accordance with the current El Paso County Drainage Criteria Manual. Supporting information and calculations are included in this report.

MAJOR BASIN	SUB BASIN	AREA		BASIN		T _c MIN	I		SOIL GRP	DEV. TYPE	C		FLOW		RETURN PERIOD	
		PLANIM READ	ACRES	LENGTH	HEIGHT								qp	qp		
FOUNTAIN CR	O-1	COGO	0.66	100	4	20			A	MDW	0.08	0.35			5	100
				+200	6	+1										
						21	2.9	4.8					0.15	1.1	5	100
	+A	COGO	3.12	+420	34	+1.2			A	MDW	0.08	0.35	15%			
				V=5.7						GRAVEL	0.50	0.70	85%			
										MIX	0.437	0.648				
	TOTAL	COGO	3.78			22.2	2.8	4.7	A	MIX	0.375	0.596	4.0	10.6	5	100
	+B	COGO	3.13	+360	34	+1.0			A	ROOF	0.73	0.81	2%			
				V=6.1						GRAVEL	0.50	0.70	20%			
										MDW	0.08	0.35	70%			
										MIX	0.215	0.478				
	TOTAL	COGO	6.91	43%		23.2	2.7	4.6	A	MIX	0.302	0.542	5.6	17.2	5	100
	C	COGO	2.97	100	2	14.7			A	GRAVEL	0.50	0.70	60%			
			V=5.4	+640	46	+2.0				MDW	0.08	0.35	40%			
				45%		16.7	3.3	5.5	A	MIX	0.332	0.560	3.2	9.1	5	100
HYDROLOGICAL COMPUTATION – BASIC DATA PROJ: ROCKY TOP MOTEL & CAMPGROUND BY: O.E. WATTS RATIONAL METHOD DATE: 6-14-19, 8-22-21										OLIVER E. WATTS, CONSULTING ENGINEER, INC. 614 ELKTON DRIVE COLORADO SPRINGS, CO 80907					PAGE 1 OF 3	

Is this the total impervious of the site? If so please show your work.

ALL TERRAIN RESPONSE: SEE UPDATED HYDROLOGIC CALC IN APPENDIX B. SEE SHEET TITLED "COMPOSITE IMPERVIOUS CALCS" FOR SITE TOTAL IMPERVIOUS.

MAJOR BASIN	SUB BASIN	AREA		BASIN		Tc MIN	I in./hr.		SOIL GRP	DEV. TYPE	C		FLOW		RETURN PERIOD -years-	
		PLANIM READ	ACRES	LENGTH -FT.-	HEIGHT -FT.-								5-ry	100-yr		
													qp -CFS-	qp -CFS-		
HISTORIC	O-1	COGO	0.66	100	4	20			A	MDW	0.08	0.35			5	100
				+200	6	+1										
						21	2.9	4.8					0.15	1.1	5	100
	+A	COGO	3.13	+420	34	+1.2										
	TOTAL		3.748			22.2	2.8	4.7	A	MDW	0.08	0.35	0.85	6.2	5	100
	+B	COGO	3.13	+360	34	+1.0										
	TOTAL		6.91			23.2	2.7	4.6	A	MDW	0.08	0.35	1.49	11.1	5	100
	C	COGO	2.97	100	2	14.7										
				+640	46	+2.0										
						16.7	3.3	5.5	A	MDW	0.08	0.35	0.78	5.7	5	100
HYDROLOGICAL COMPUTATION – BASIC DATA							OLIVER E. WATTS, CONSULTING ENGINEER, INC. 614 ELKTON DRIVE COLORADO SPRINGS, CO 80907									
PROJ: ROCKY TOP MOTEL & CAMPGROUND BY: O.E. WATTS																
RATIONAL METHOD DATE: August 24, 2022																
															PAGE 2	
															OF	
															3	

STREET AND STORM SEWER CALCULATIONS

[illegible]

ALL TERRAIN RESPONSE: NOT
ADDRESSED. SAND FILTERS NO
LONGER PROPOSED. OFFSITE
BASIN TO CHECK CULVERT #2
IS NOT ACCESSIBLE TO RECEIVE
TOPO. THEREFORE, FLOW TO
CULVERT #2 IS NOT
DEFINABLE. HOWEVER, ONSITE
INCREASE TO CULVERT #2 IS
NEGLECTABLE. SEE UPDATED
REPORT TEXT REGARDING.

c calcs for the culverts and

Design Procedure Form: Sand Filter (SF)

UD-BMP (Version 3.07, March 2018)

Sheet 1 of 2

Designer: O.E. WATTS

Company: Oliver E. Watts, CE

Date: December 26, 2022

Project: Rocky Top Motel and Campground

Location: Basin C SFB southwest corner

1. Basin Storage Volume

- A) Effective Imperviousness of Tributary Area, I_e
(100% if all paved and roofed areas upstream of sand filter)
- B) Tributary Area's Imperviousness Ratio ($i = I_e/100$)
- C) Water Quality Capture Volume (WQCV) Based on 12-hour Drain Time
 $WQCV = 0.8 * (0.91 * i^3 - 1.19 * i^2 + 0.78 * i)$
- D) Contributing Watershed Area (including sand filter area)
- E) Water Quality Capture Volume (WQCV) Design Volume
 $V_{WQCV} = WQCV / 12 * Area$
- F) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm
- G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume
- H) User Input of Water Quality Capture Volume (WQCV) Design Volume
(Only if a different WQCV Design Volume is desired)

$I_e = 45.0$ %

$i = 0.450$

WQCV = 0.15 watershed inches

Area = 129,700 sq ft

$V_{WQCV} =$ cu ft

$d_s = 2.52$ in

$V_{WQCV \text{ OTHER}} =$ cu ft

$V_{WQCV \text{ USER}} = 1,300$ cu ft

Review 3: please provide calculation as to how the impervious % was determined.

Review 4: Unresolved
Review 5: unresolved

ALL TERRAIN RESPONSE: SEE REVISED IMPERVIOUS CALCS (APPENDIX B). AN EXISTING CONDITIONS (PRE-PAVING & WALLS) AND PROPOSED CONDITIONS (PAVING & WALLS) IS PRESENTED.

2. Basin Geometry

- A) WQCV Depth
- B) Sand Filter Side Slopes (Horizontal distance per unit vertical, 4:1 or flatter preferred). Use "0" if sand filter has vertical walls.
- C) Minimum Filter Area (Flat Surface Area)
- D) Actual Filter Area
- E) Volume Provided

$D_{WQCV} = 2.0$ ft

$Z = 4.00$ ft / ft

$A_{Min} = 730$ sq ft

$A_{Actual} = 730$ sq ft

$V_T = 1303$ cu ft

3. Filter Material

Choose One

☒ 18" CDOT Class B or C Filter Material

☐ Other (Explain):

TYPE A SOIL

4. Underdrain System

- A) Are underdrains provided?

Choose One

☒ YES

☐ NO

$y = 1.5$ ft

$Vol_{12} = 1,300$

$D_o = 7/8$

ALL TERRAIN RESPONSE: SEE REVISED MAP AND CALCS. RUNOFF REDUCTION AREAS ARE SHOWN ON THE DRAINAGE PLAN AND GEC PLAN WITH ASSOCIATED AREAS OF RPA V. UIA.

ALL TERRAIN RESPONSE: NOT ADDRESSED. SAND FILTERS NO LONGER PROPOSED.

Delineate this area on the drainage map. It doesn't appear that the flows from the paved road (that need to be treated) are tributary to the pond. So we need to see this delineation in order to confirm which areas are being treated and are apart of this 129,700sq ft that is listed on this spreadsheet. See comment on page 6 above about possible exclusions. All areas within the LOD and/or disturbed since 2008 will need to with be shown as tributary to one of the ponds are shown to have an appropriate exclusion apply.

1.5ft here does not match what is shown on the plans. The plans show the bottom of the pond at 22ft elevation and inv of 4" pipe at connection to 18" pipe at 20.74ft. So something isn't right. Revise calcs and/or plans as needed to remove this discrepancy.

Design Procedure Form: Sand Filter (SF)

Sheet 2 of 2

Designer: O.E. WATTSCompany: Oliver E. Watts, CEDate: December 26, 2022Project: Rocky Top Motel and CampgroundLocation: Basin C SFB southwest corner

5. Impermeable Geomembrane Liner and Geotextile Separator Fabric

A) Is an impermeable liner provided due to proximity of structures or groundwater contamination?

Choose One

☐ YES ☒ NO

6. Inlet / Outlet Works

A) Describe the type of energy dissipation at inlet points and means of conveying flows in excess of the WQCV through the outlet

RIPRAPPED INLET AND SPILLWAY

Notes:

Design Procedure Form: Sand Filter (SF)

UD-BMP (Version 3.07, March 2018)

Sheet 1 of 2

Designer: O.E. WATTS
 Company: Oliver E. Watts, CE
 Date: December 26, 2022
 Project: Rocky Top Motel and Campground
 Location: BASIN B SFB SOUTHEAST CORNER

1. Basin Storage Volume

- A) Effective Imperviousness of Tributary Area, I_a
 (100% if all paved and roofed areas upstream of sand filter)
- B) Tributary Area's Imperviousness Ratio ($i = I_a/100$)
- C) Water Quality Capture Volume (WQCV) Based on 12-hour Drain Time
 $WQCV = 0.6 * (0.91 * I^3 - 1.19 * I^2 + 0.78 * I)$
- D) Contributing Watershed Area (including sand filter area)
- E) Water Quality Capture Volume (WQCV) Design Volume
 $V_{WQCV} = WQCV / 12 * Area$
- F) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm
- G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume
- H) User Input of Water Quality Capture Volume (WQCV) Design Volume
 (Only if a different WQCV Design Volume is desired)

$I_a = 43.0$ %
 $i = 0.430$
 $WQCV = 0.15$ watershed inches
 $Area = 136,300$ sq ft
 $V_{WQCV} =$ cu ft
 $d_6 = 2.52$ in
 $V_{WQCV OTHER} =$ cu ft
 $V_{WQCV USER} = 1,300$ cu ft

Review 3: please provide calculation as to how the impervious % was determined.
 Review 4: Unresolved
 Review 5: unresolved

ALL TERRAIN RESPONSE: SEE REVISED IMPERVIOUS CALCS (APPENDIX B). AN EXISTING CONDITIONS (PRE-PAVING & WALLS) AND PROPOSED CONDITIONS (PAVING & WALLS) IS PRESENTED.

2. Basin Geometry

- A) WQCV Depth
- B) Sand Filter Side Slopes (Horizontal distance per unit vertical, 4:1 or flatter preferred). Use "0" if sand filter has vertical walls.
- C) Minimum Filter Area (Flat Surface Area)
- D) Actual Filter Area
- E) Volume Provided

$D_{WQCV} = 2.0$ ft
 $Z = 4.00$ ft / ft
 $A_{Min} = 733$ sq ft
 $A_{Actual} = 730$ sq ft **ACTUAL FLAT AREA < MINIMUM FLAT AREA**
 $V_T = 1313$ cu ft

3. Filter Material

Choose One
☒ 18" CDOT Class B or C Filter Material
☐ Other (Explain):
 TYPE A SOIL

4. Underdrain System

- A) Are underdrains provided?
- B) Under

Choose One
☒ YES
☐ NO
 $y = 1.5$ ft
 $Vol_{12} = 1,300$ cu ft
 $D_o = 7/8$

ALL TERRAIN RESPONSE: SEE REVISED MAP AND CALCS. RUNOFF REDUCTION AREAS ARE SHOWN ON THE DRAINAGE PLAN AND GEC PLAN WITH ASSOCIATED AREAS OF RPA V. UIA.

ALL TERRAIN RESPONSE: NOT ADDRESSED. SAND FILTERS NO LONGER PROPOSED.

Delineate this area on the drainage map. It doesn't appear that the flows from the paved road (that need to be treated) are tributary to the pond. So we need to see this delineation in order to confirm which areas are being treated and are apart of this 136,300sq ft that is listed on this spreadsheet. See comment on page 6 above about possible exclusions. All areas within the LOD and/or disturbed since 2008 will need to with be shown as tributary to one of the ponds are shown to have an appropriate exclusion apply.

Cannot confirm whether or now 1.5ft here does matches what is shown on the plans. The plans show the bottom of the pond at 28ft elevation and inv of 4" pipe at connection to inlet box is unknown (not shown in plans). Revise calcs and/or plans as needed to clarify and to reflect this 1.5ft distance.

Design Procedure Form: Sand Filter (SF)

Sheet 2 of 2

Designer: O.E. WATTS
 Company: Oliver E. Watts, CE
 Date: December 26, 2022
 Project: Rocky Top Motel and Campground
 Location: BASIN B SFB SOUTHEAST CORNER

5. Impermeable Geomembrane Liner and Geotextile Separator Fabric

A) Is an impermeable liner provided due to proximity of structures or groundwater contamination?

Choose One

☐ YES ☒ NO

6. Inlet / Outlet Works

A) Describe the type of energy dissipation at inlet points and means of conveying flows in excess of the WQCV through the outlet

RIPRAPPED INLET AND SPILLWAY

Notes:

National Flood Hazard Layer FIRMette



38°56'20.49"N

ROCKY TOP MOTEL AND CAMPGROUND
FEMA MAP PANEL
1"=500'

OLIVER E. WATTS
CONSULTING ENGINEER, INC.
COLORADO SPRINGS

08041 C0459 G
eff. 12/7/2018

EL PASO COUNTY
080059

T13S R68W S008

T13S R68W S009

AREA OF MINIMAL FLOOD HAZARD
Zone X 08041 C0467 G
eff. 12/7/2018

USGS The National Map: Orthoimagery. Data refreshed April, 2019.

Feet

1:6,000

38°55'52.50"N

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AP
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone J
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
OTHER AREAS		Area with Flood Risk due to Levee Zone D
		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Coastal Transect
		Base Flood Elevation Line (BFE)
MAP PANELS		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped
		The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

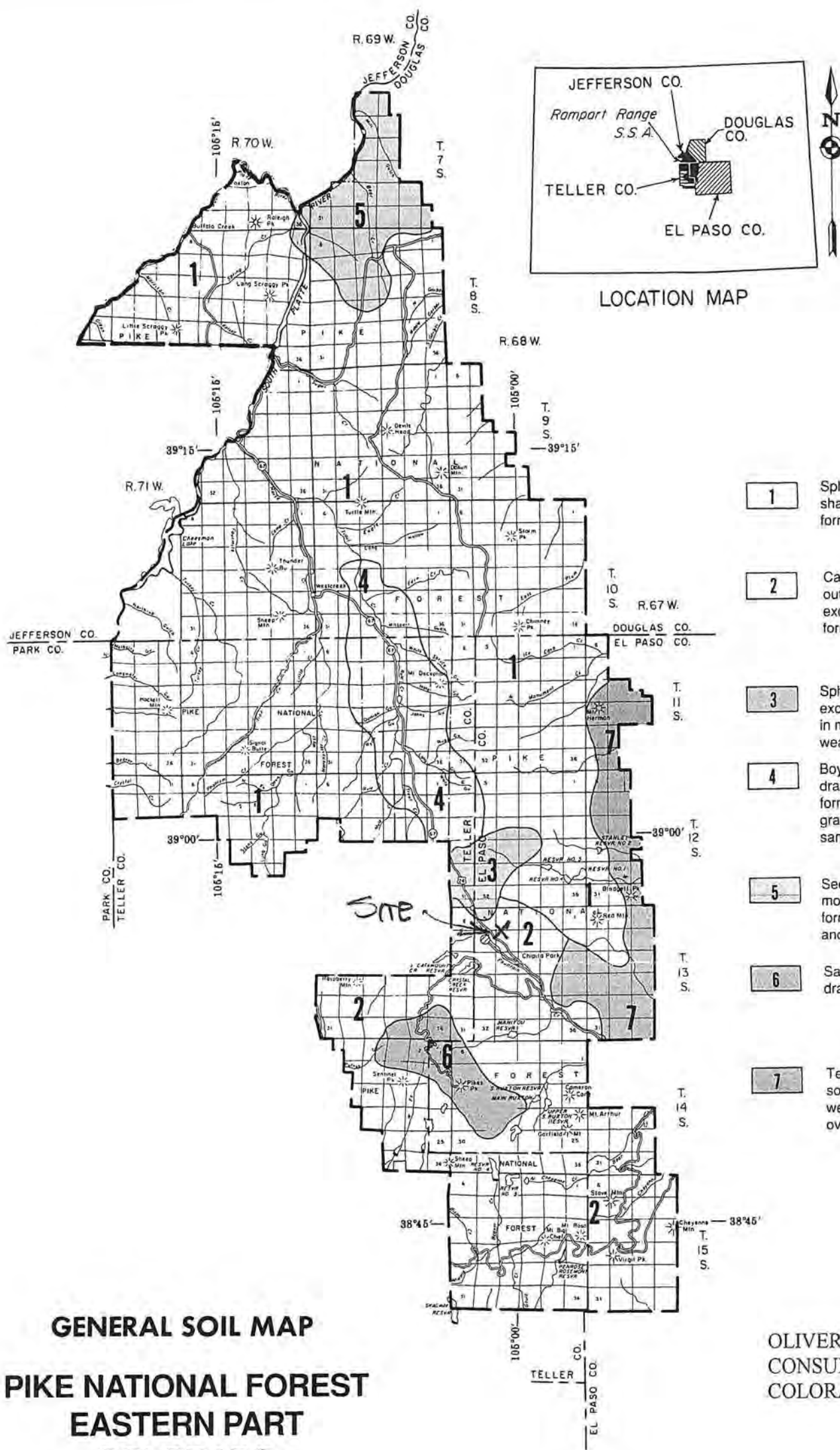


This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/14/2019 at 10:34:12 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

105°05.81"W



GENERAL SOIL MAP **PIKE NATIONAL FOREST** **EASTERN PART** **COLORADO**

JULY 1992

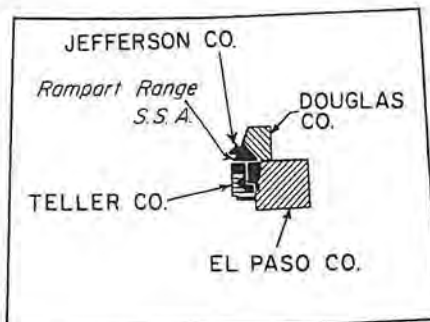


Scale 1:362,057

1 inch equals approximately 5.7 miles

PARTS OF DOUGLAS, EL PASO, JEFFERSON,
 AND TELLER COUNTIES, COLORADO

LOCATION MAP



SOIL LEGEND

- 1 Sphinx-Legault-Rock outcrop: Rock outcrop and shallow, somewhat excessively drained soils that formed in material weathered from granite
- 2 Catamount-Ivywild-Legault-Rock outcrop: Rock outcrop and shallow and moderately deep, somewhat excessively drained, and excessively drained soils that formed in material weathered from granite
- 3 Sphinx-Tecolote-Condrie: Shallow and deep, somewhat excessively drained and well drained soils that formed in material weathered from granite or in colluvium over weathered granite
- 4 Boyett-Frenchcreek-Pendant: Deep and shallow, well drained and somewhat excessively drained soils that formed in material weathered from limestone and granite, and in alluvium derived from mixed red arkosic sandstone
- 5 Security-Cathedral-Rock outcrop: Rock outcrop and moderately deep and shallow, well drained soils that formed in material weathered from mixed schist, gneiss, and granite
- 6 Sachett-Cirque land: Cirque land and shallow, excessively drained soils that formed in material weathered from granite
- 7 Tecolote-Pendant: Deep and shallow, well drained and somewhat excessively drained soils that formed in material weathered from limestone and in cobbly or stony colluvium over weathered granite

Compiled 1986

OLIVER E. WATTS
 CONSULTING ENGINEER, INC.
 COLORADO SPRINGS

ROCKY TOP MOTEL AND CAMPGROUND
 SCS SOILS MAP

U.S. DEPARTMENT OF AGRICULTURE
 FOREST SERVICE
 SOIL CONSERVATION SERVICE
 COLORADO AGRICULTURAL EXPERIMENT STATION

$$t_c = t_i + t_t \quad (\text{Eq. 6-7})$$

Where:

t_c = time of concentration (min)

t_i = overland (initial) flow time (min)

t_t = travel time in the ditch, channel, gutter, storm sewer, etc. (min)

3.2.1 Overland (Initial) Flow Time

The overland flow time, t_i , may be calculated using Equation 6-8.

$$t_i = \frac{0.395(1.1 - C_s)\sqrt{L}}{S^{0.33}} \quad (\text{Eq. 6-8})$$

Where:

t_i = overland (initial) flow time (min)

C_s = runoff coefficient for 5-year frequency (see Table 6-6)

L = length of overland flow (300 ft maximum for non-urban land uses, 100 ft maximum for urban land uses)

S = average basin slope (ft/ft)

Note that in some urban watersheds, the overland flow time may be very small because flows quickly concentrate and channelize.

3.2.2 Travel Time

For catchments with overland and channelized flow, the time of concentration needs to be considered in combination with the travel time, t_t , which is calculated using the hydraulic properties of the swale, ditch, or channel. For preliminary work, the overland travel time, t_t , can be estimated with the help of Figure 6-25 or Equation 6-9 (Guo 1999).

$$V = C_v S_w^{0.5} \quad (\text{Eq. 6-9})$$

Where:

V = velocity (ft/s)

C_v = conveyance coefficient (from Table 6-7)

S_w = watercourse slope (ft/ft)

Table 6-6. Runoff Coefficients for Rational Method
(Source: UDFCD 2001)

Land Use or Surface Characteristics	Percent Impervious	Runoff Coefficients											
		2-year		5-year		10-year		25-year		50-year		100-year	
		HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D
Business													
Commercial Areas	95	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.87	0.87	0.88	0.88	0.89
Neighborhood Areas	70	0.45	0.49	0.49	0.53	0.53	0.57	0.58	0.62	0.60	0.65	0.62	0.68
Residential													
1/8 Acre or less	65	0.41	0.45	0.45	0.49	0.49	0.54	0.54	0.59	0.57	0.62	0.59	0.65
1/4 Acre	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
1/3 Acre	30	0.18	0.22	0.25	0.30	0.32	0.38	0.39	0.47	0.43	0.52	0.47	0.57
1/2 Acre	25	0.15	0.20	0.22	0.28	0.30	0.36	0.37	0.46	0.41	0.51	0.46	0.56
1 Acre	20	0.12	0.17	0.20	0.26	0.27	0.34	0.35	0.44	0.40	0.50	0.44	0.55
Industrial													
Light Areas	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Heavy Areas	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Parks and Cemeteries	7	0.05	0.09	0.12	0.19	0.20	0.29	0.30	0.40	0.34	0.46	0.39	0.52
Playgrounds	13	0.07	0.13	0.16	0.23	0.24	0.31	0.32	0.42	0.37	0.48	0.41	0.54
Railroad Yard Areas	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
Undeveloped Areas													
Historic Flow Analysis-- Greenbelts, Agriculture	2	0.03	0.05	0.09	0.16	0.17	0.26	0.26	0.38	0.31	0.45	0.36	0.51
Pasture/Meadow	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Forest	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Exposed Rock	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Offsite Flow Analysis (when landuse is undefined)	45	0.26	0.31	0.32	0.37	0.38	0.44	0.44	0.51	0.48	0.55	0.51	0.59
Streets													
Paved	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Gravel	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Drive and Walks	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Roofs	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Lawns	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50

3.2 Time of Concentration

One of the basic assumptions underlying the Rational Method is that runoff is a function of the average rainfall rate during the time required for water to flow from the hydraulically most remote part of the drainage area under consideration to the design point. However, in practice, the time of concentration can be an empirical value that results in reasonable and acceptable peak flow calculations.

For urban areas, the time of concentration (t_c) consists of an initial time or overland flow time (t_i) plus the travel time (t_t) in the storm sewer, paved gutter, roadside drainage ditch, or drainage channel. For non-urban areas, the time of concentration consists of an overland flow time (t_i) plus the time of travel in a concentrated form, such as a swale or drainageway. The travel portion (t_t) of the time of concentration can be estimated from the hydraulic properties of the storm sewer, gutter, swale, ditch, or drainageway. Initial time, on the other hand, will vary with surface slope, depression storage, surface cover, antecedent rainfall, and infiltration capacity of the soil, as well as distance of surface flow. The time of concentration is represented by Equation 6-7 for both urban and non-urban areas.

Table 6-7. Conveyance Coefficient, C_v

Type of Land Surface	C_v
Heavy meadow	2.5
Tillage/field	5
Riprap (not buried)*	6.5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swales	20

*For buried riprap, select C_v value based on type of vegetative cover.

The travel time is calculated by dividing the flow distance (in feet) by the velocity calculated using Equation 6-9 and converting units to minutes.

The time of concentration (t_c) is then the sum of the overland flow time (t_i) and the travel time (t_t) per Equation 6-7.

3.2.3 First Design Point Time of Concentration in Urban Catchments

Using this procedure, the time of concentration at the first design point (typically the first inlet in the system) in an urbanized catchment should not exceed the time of concentration calculated using Equation 6-10. The first design point is defined as the point where runoff first enters the storm sewer system.

$$t_c = \frac{L}{180} + 10 \quad (\text{Eq. 6-10})$$

Where:

t_c = maximum time of concentration at the first design point in an urban watershed (min)

L = waterway length (ft)

Equation 6-10 was developed using the rainfall-runoff data collected in the Denver region and, in essence, represents regional “calibration” of the Rational Method. Normally, Equation 6-10 will result in a lesser time of concentration at the first design point and will govern in an urbanized watershed. For subsequent design points, the time of concentration is calculated by accumulating the travel times in downstream drainageway reaches.

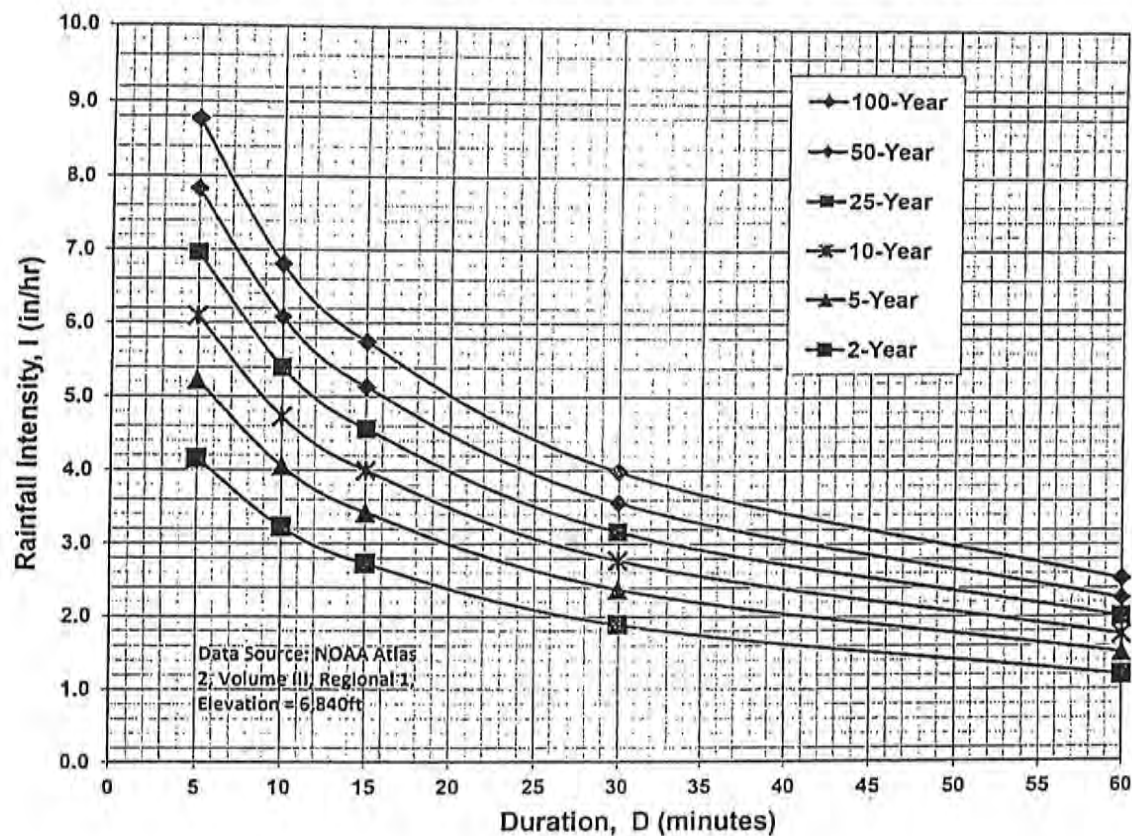
3.2.4 Minimum Time of Concentration

If the calculations result in a t_c of less than 10 minutes for undeveloped conditions, it is recommended that a minimum value of 10 minutes be used. The minimum t_c for urbanized areas is 5 minutes.

3.2.5 Post-Development Time of Concentration

As Equation 6-8 indicates, the time of concentration is a function of the 5-year runoff coefficient for a drainage basin. Typically, higher levels of imperviousness (higher 5-year runoff coefficients) correspond to shorter times of concentration, and lower levels of imperviousness correspond to longer times of

Figure 6-5. Colorado Springs Rainfall Intensity Duration Frequency



IDF Equations

$$I_{100} = -2.52 \ln(D) + 12.735$$

$$I_{50} = -2.25 \ln(D) + 11.375$$

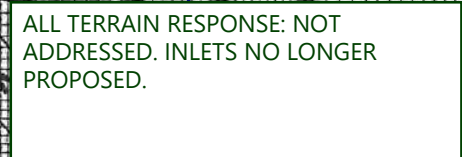
$$I_{25} = -2.00 \ln(D) + 10.111$$

$$I_{10} = -1.75 \ln(D) + 8.847$$

$$I_5 = -1.50 \ln(D) + 7.583$$

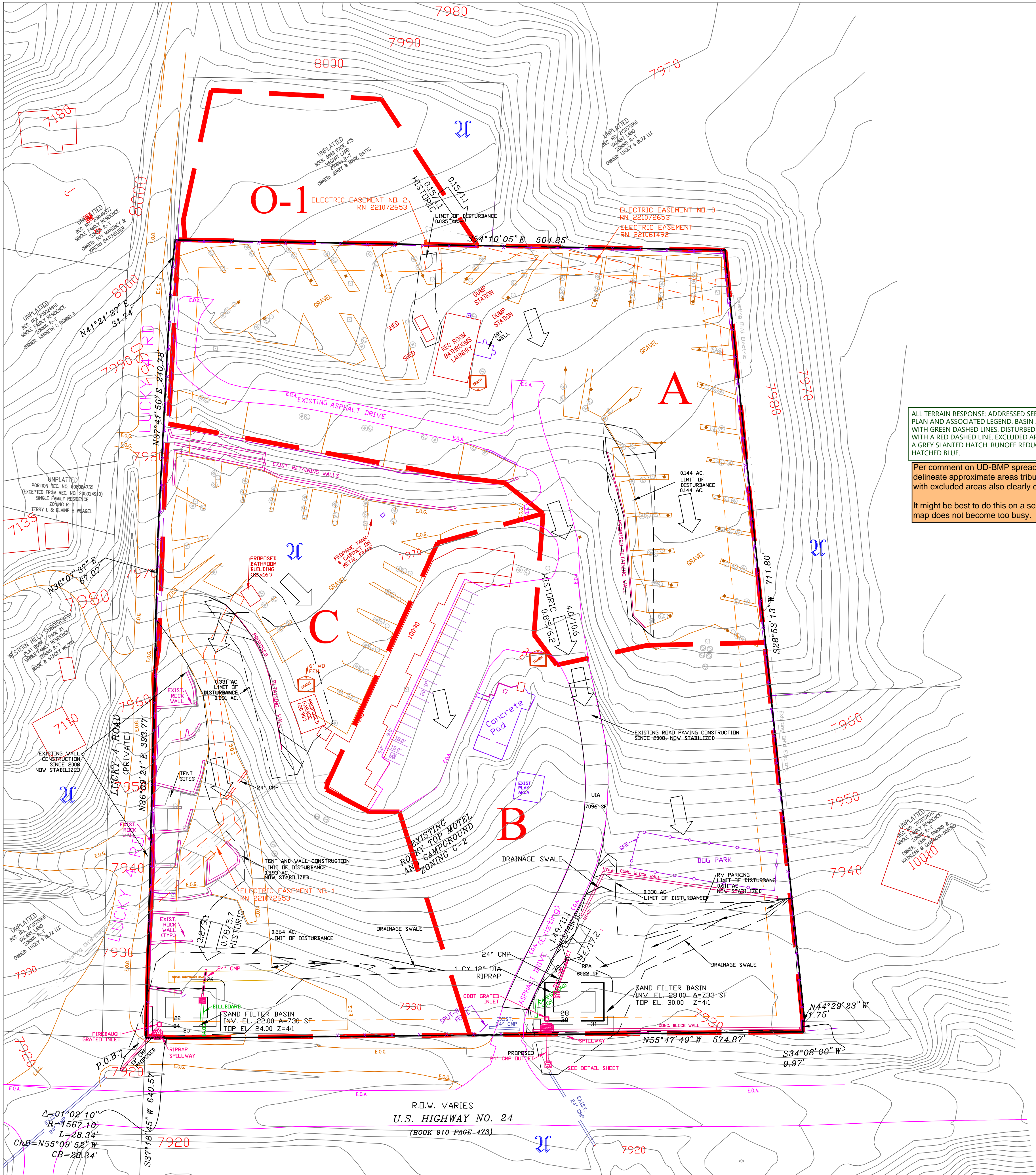
$$I_2 = -1.19 \ln(D) + 6.035$$

Note: Values calculated by equations may not precisely duplicate values read from figure.



This appears to be a graph for curb inlets with 8" throat that should not be used for the spillway and grated inlets proposed. Refer DCMV1 ch7 for alternate graphs for grate inlet and/or provide alternative calculation.

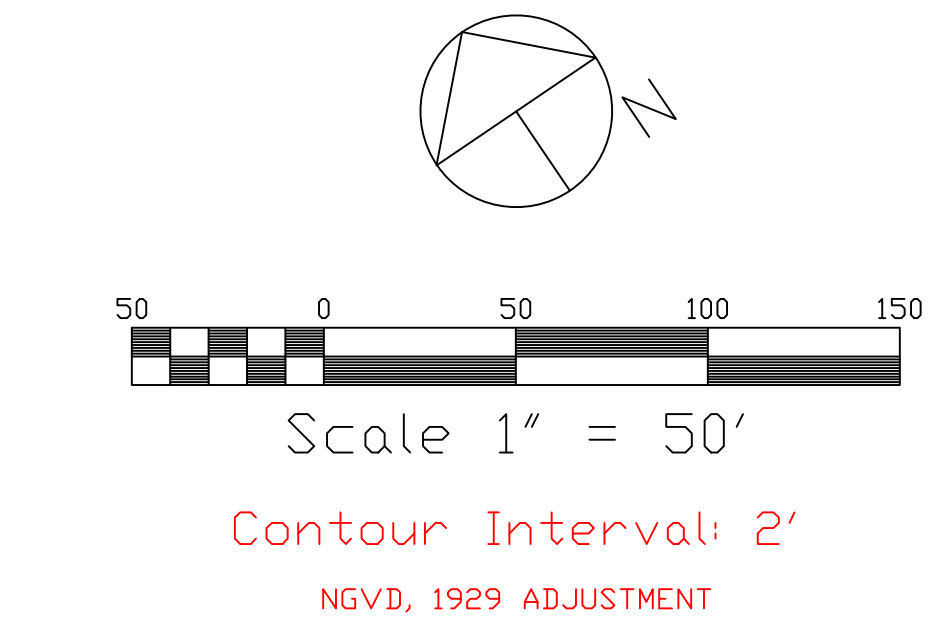
CRITICAL DEPTH
SPILLWAY WID'S
OUTLET GRATE



ALL TERRAIN RESPONSE ADDRESSED SEE UPDATED DRAINAGE PLAN AND ASSOCIATED LEGEND. BASIN AREAS ARE OUTLINED WITH GREEN DASHED LINES. DISTURBED AREAS ARE DENOTED WITH A RED DASHED LINE. EXCLUDED AREAS ARE SHOWN WITH A GREY SLANTED HATCH. RUNOFF REDUCTION AREAS ARE HATCHED BLUE.

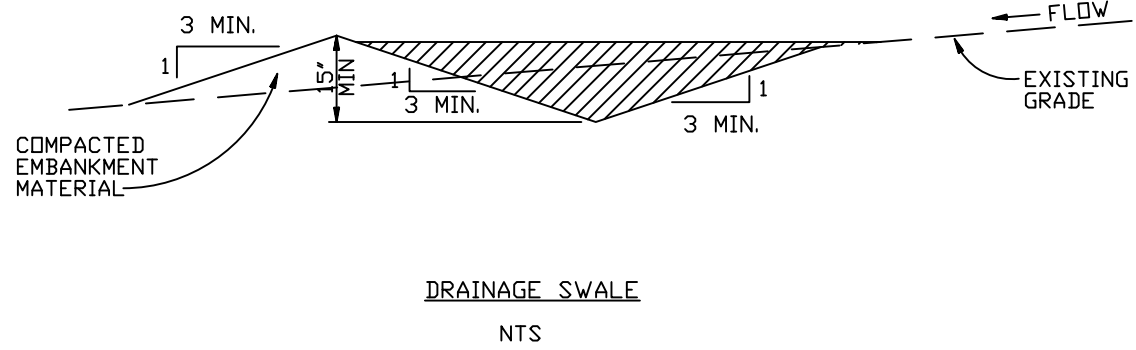
Per comment on UD-BMP spreadsheets above, delineate approximate areas tributary to each pond, with excluded areas also clearly delineated.

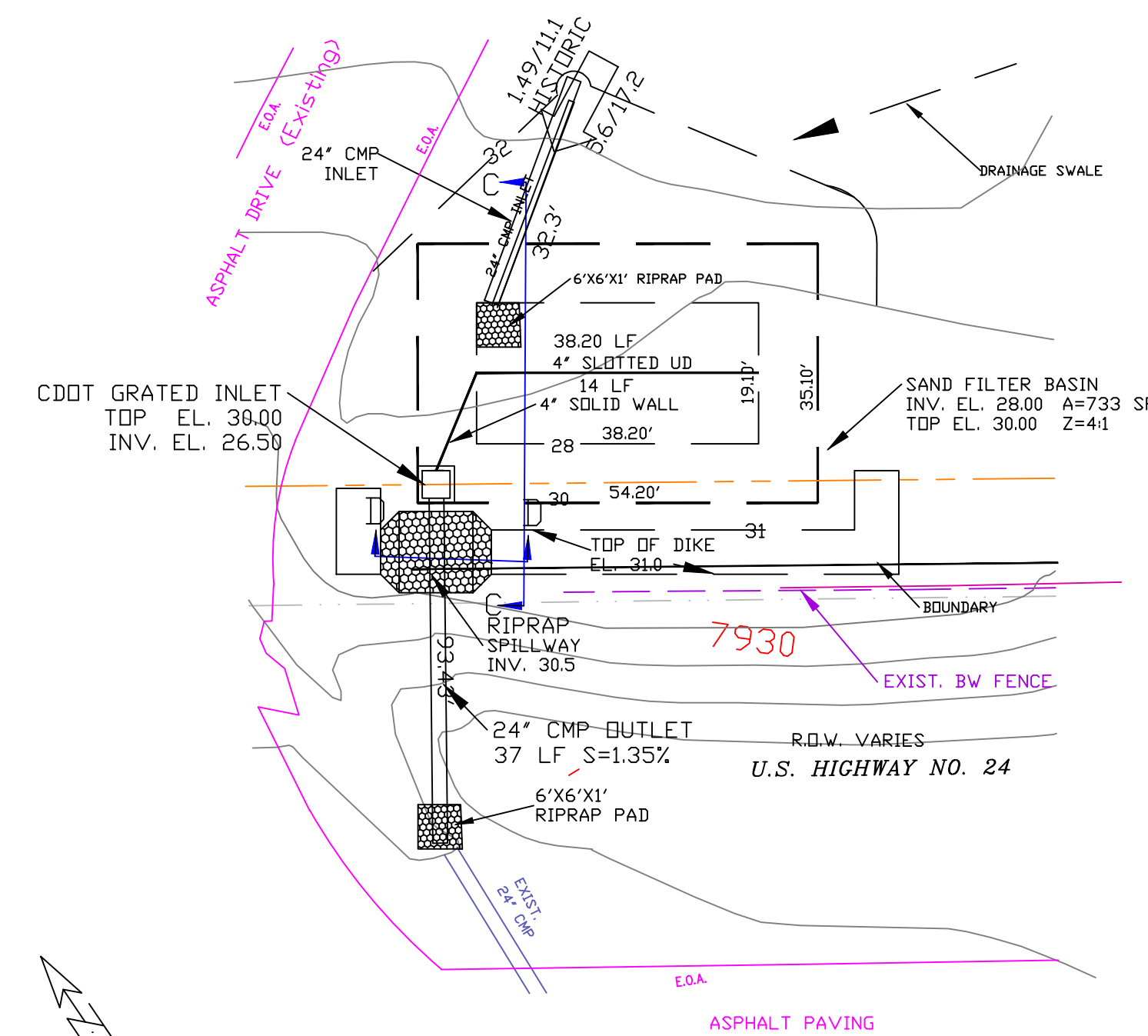
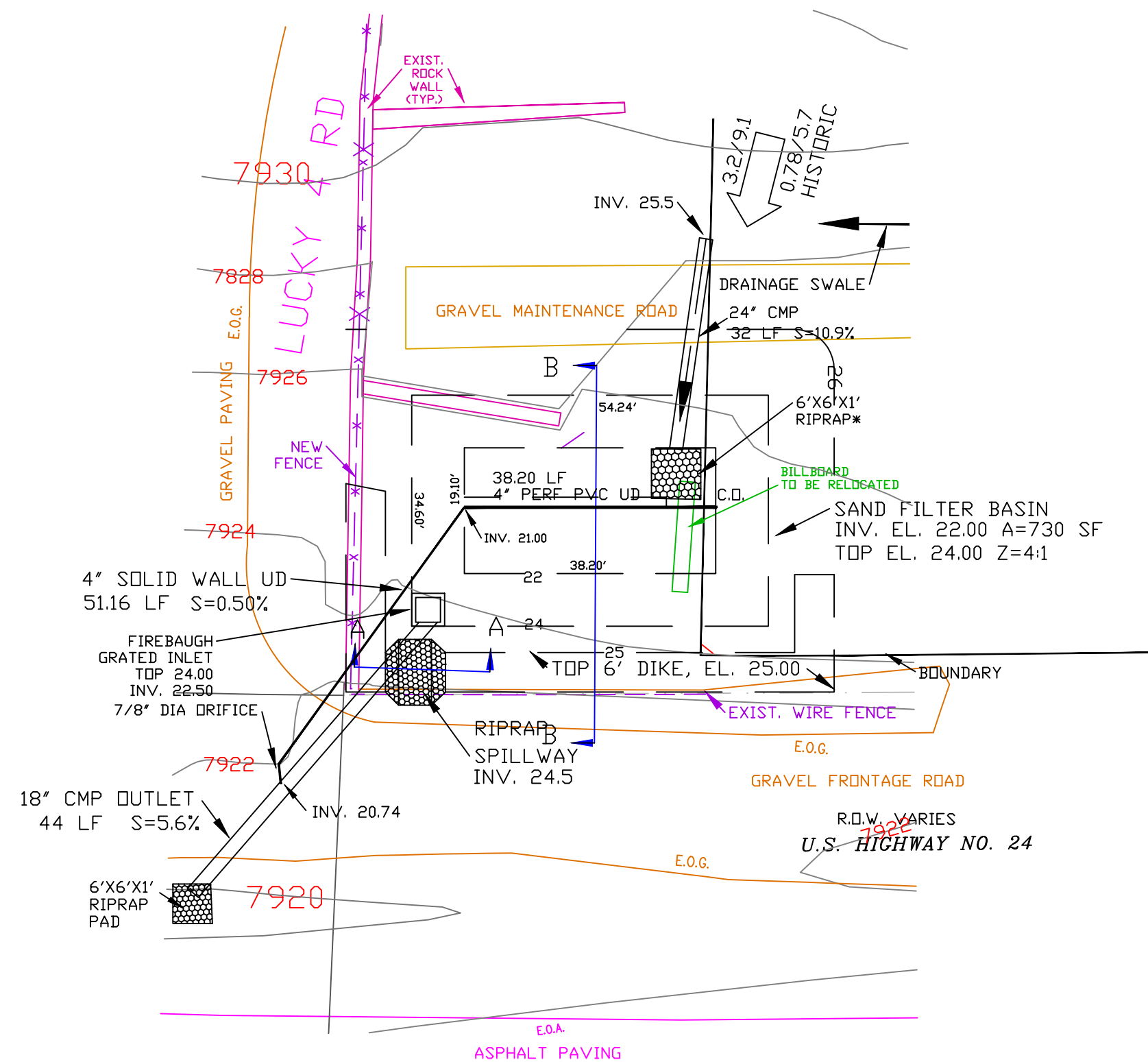
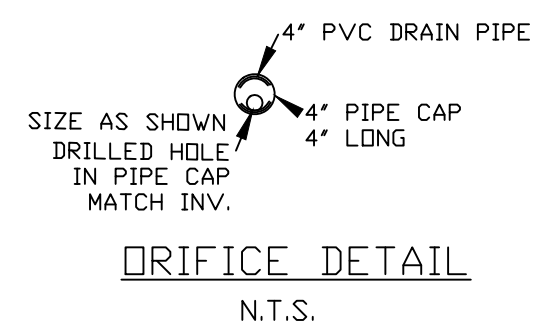
It might be best to do this on a separate map so this map does not become too busy.



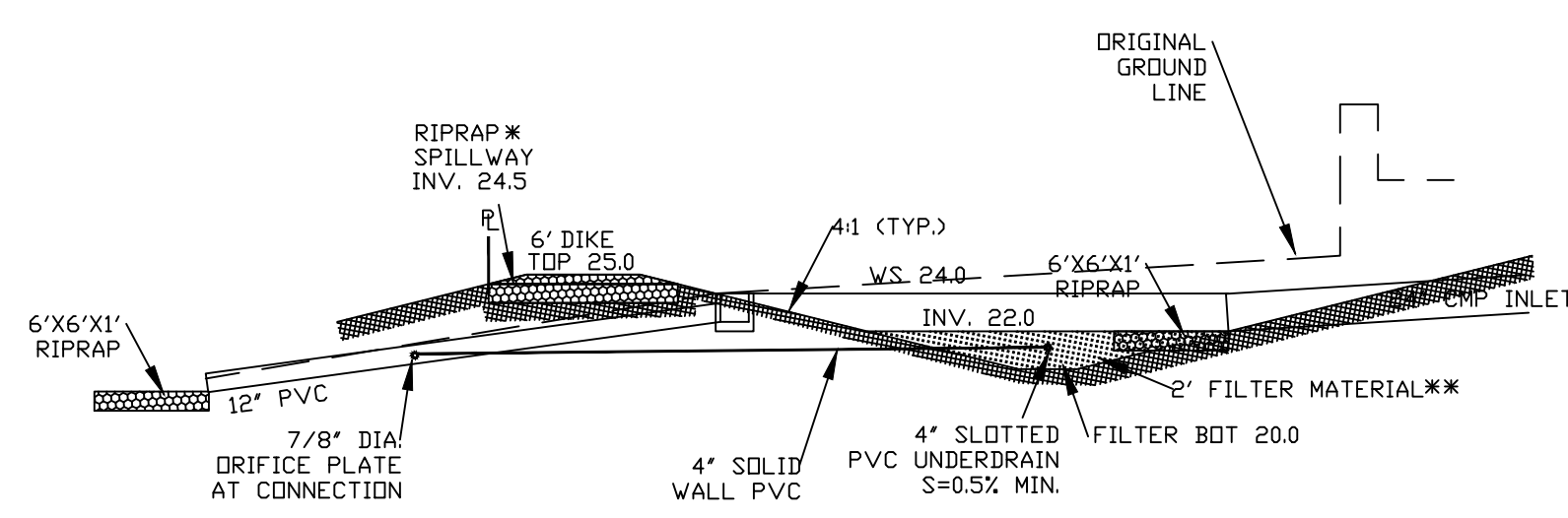
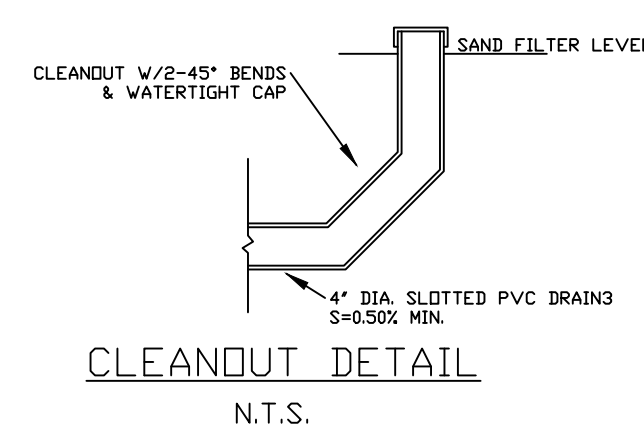
- CONTOUR LEGEND:**
- ORIGINAL CONTOURS:
 - 2'
 - 10'
 - FINISH CONTOURS:
 - 2'
 - 1'
 - 5'
- LEGEND:**
- 10.5/20.4 RUNOFF IN CFS 5-YEAR/100-YEAR
 - A LIMIT OF DRAINAGE BASIN AND DESIGNATION
 - EXISTING STORM SEWER AS LABELED
 - PROPOSED STORM SEWER AS LABELED
 - B LIMIT OF SOILS TYPE AND GROUP

BASIN	RUNOFF IN CFS			
	DEVELOPED		HISTORIC	
	5-YEAR	100-YEAR	5-YEAR	100-YEAR
O-1	0.15	1.1	0.15	1.1
O-1 + A	4.0	10.6	0.85	6.2
O-1 + A + B	5.6	17.2	1.49	11.1
C	3.2	9.1	0.78	5.7

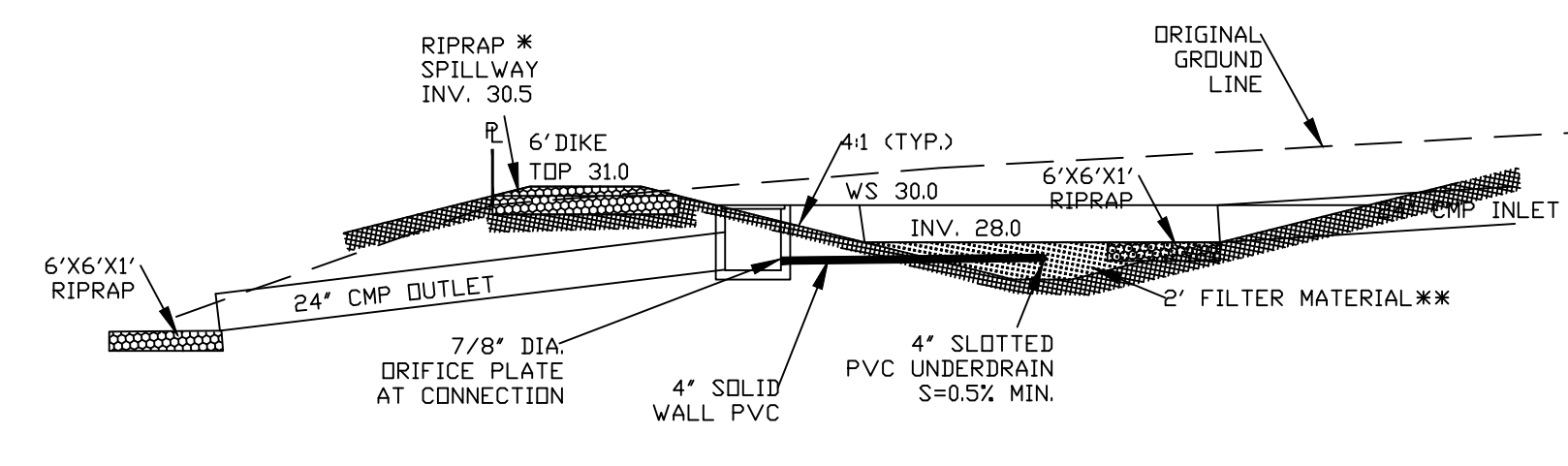




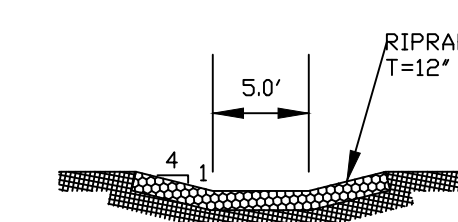
EAST SFB DETAILS



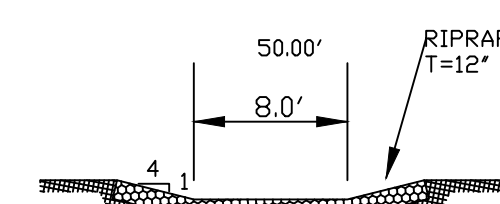
SECTION B-B
1"=10'



SECTION C-C
1"=10'



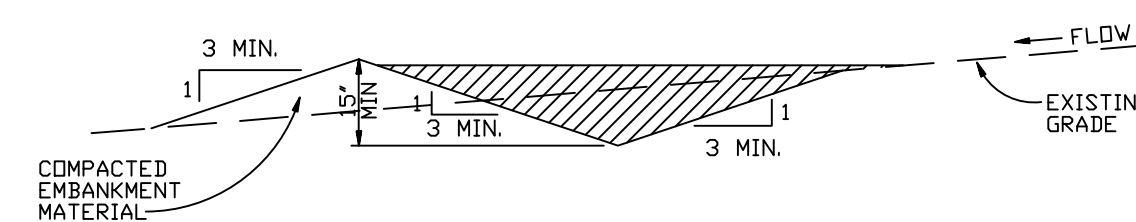
SECTION A-A SPILLWAY



SECTION D-D SPILLWAY

*RIPRAP IS TO BE TYPE "L"
OR "VL", MIXED WITH 35%
NATIVE SOIL BY WEIGHT,
COVERED WITH 4" MIN TOPSOIL

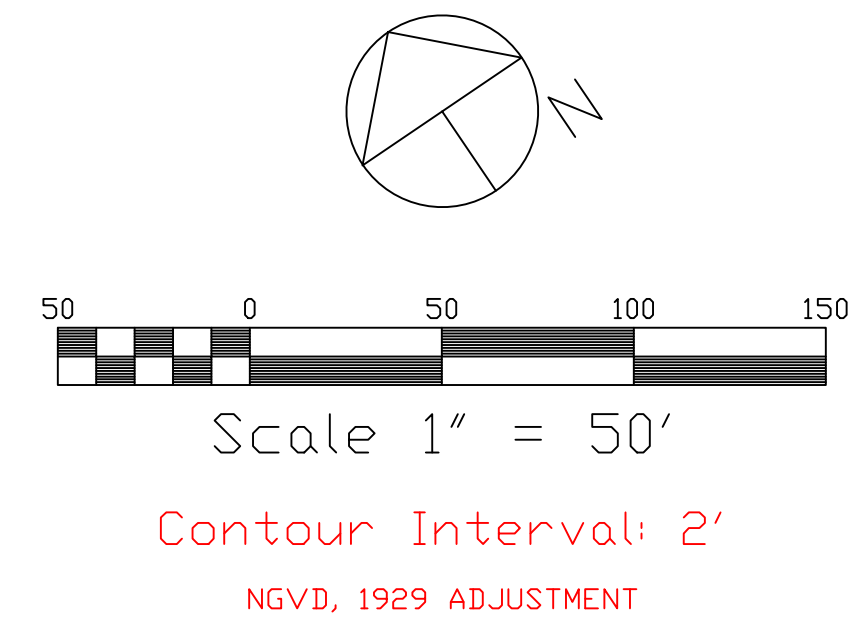
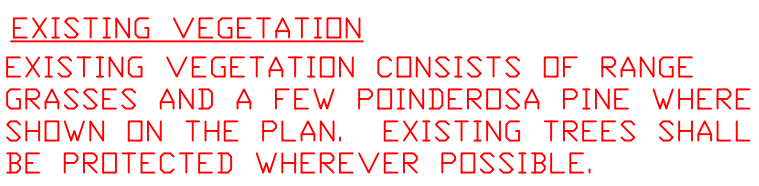
** FILTER MATERIAL IS TO BE
 85% SAND, ASTM C-33
 15" PEAT MIX
 RESEED PER MHFD TABLE B-6 MIX
 FOR DRYLAND GRASSES
 RESEED SIDE SLOPES
 DO NOT RESEED POND BOTTOM
 OR RIPRAP PADS



DRAINAGE SWALE
NTS

Prepared by the office of:
 Oliver E. Watts, Consulting Engineer, Inc.
 614 Elkton Drive
 Colorado Springs, CO 80907
 (719) 593-0173
 olliewatts@aol.com
 Celebrating 42 years in Business

DRAWN BY: D.E. WATTS DATE: 8-16-21 DWG. NO.: 19-5341-05 TOPOGRAPHY BY: CITY FMS 6-12-19	APPROVED BY: PROJ. NO. DWG.	REVISIONS 8-16-21 UPDATED 12-31-21 REVISED PER COUNTY REVIEW COMMENTS 8-22-22 REVISED PER COUNTY REVIEW COMMENTS 12-22-22 REVISED PER COUNTY REVIEW COMMENTS	OLIVER E. WATTS CONSULTING ENGINEER COLORADO SPRINGS	PROJECT ROCKY TOP MOTEL & CAMPGROUND PART NW1/4 SECTION 9, T.13S., R.68W., 6TH P.M. EL PASO COUNTY	SHT. NAME <h1>EROSION CONTROL PLAN</h1>	SHT. NO. 2 OF
--	-----------------------------------	---	--	---	--	---------------------



ALL TERRAIN RESPONSE: SEE REVISED GEC PLAN AND DRAINAGE REPORT. THE TOTAL DISTURBED AREA IS 2.72 ACRES. AREAS WERE MEASURED INCORRECTLY AND ADDED INCORRECTLY BY PREVIOUS ENGINEER.

Previous comment:
Page 3 of the PBMP Applicability
Form shows LOD as 1.104ac. Revise
to remove discrepancies.

Review #5 comment:
Per latest comments in the FDR, this
area should be listed as "1.497ac"
(1.104ac + 0.393ac).

This row of text was added per my comment on the last submittal. This is not sufficient. Areas of cut AND areas of fill must be identified SEPARATELY to satisfy GEC Checklist Item "i."

ALL TERRAIN RESPONSE: SEE REVISED GEC PLAN. PROPOSED GRADING HAS BEEN REMOVED AND CUT FILL LINE NOT APPLICABLE TO NEW PLAN. PLEASE NOTE THE ACTUAL GRADING ACTIVITIES HAVE ALREADY OCCURRED. A SURVEY OF PRE-DISTURBANCES IS NOT AVAILABLE AND THEREFORE A CUT-FILL LINE CAN NOT BE GENERATED AS THE COMPARISON OF EXISTING TO PROPOSED CAN NOT BE COMPLETED.

To satisfy this requirement, most engineers create a linetype for cut/fill and label one side of the line as "cut" and the other as "fill" throughout the plans.

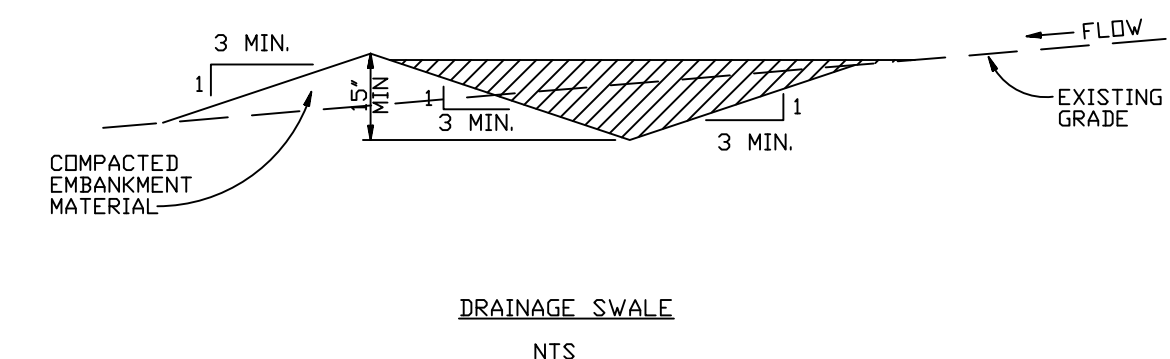
The diagram illustrates a spill containment system. At the top left, a horizontal line with a central gap represents a spill. Below it, a cloud-like shape represents the spill area. To the right of the spill is a vertical line labeled "SILT FENCE". Further right is a circle labeled "SP" (Interim Protection). To the right of the "SP" circle is another cloud-like shape labeled "STOCK PILE PROTECTION". Further right is another circle labeled "SSA" (Stabilized Staging Area). To the right of the "SSA" circle is a final cloud-like shape labeled "STABILIZED STAGING AREA". At the bottom, a large arrow points to the right, labeled "DIRECTION OF RUNOFF".

Engineer's Statement (for standalone GEC Plan):
This Grading and Erosion Control Plan was prepared under my direction and supervision and is correct to the best of my knowledge and belief. Said Plan has been prepared according to the criteria established by the County for Grading and Erosion Control Plans. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this plan.

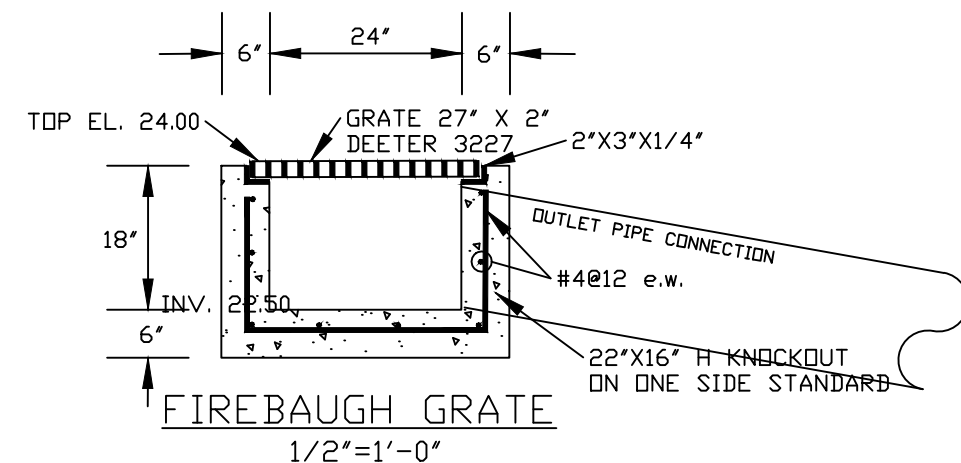
 Engineer of Record Signature _____ Date _____
 Oliver E. Watts, COLO PELS#9853
 Oliver E Watts Consulting Engineer, Inc.
 614 Elkton Drive Colorado Springs, CO 80907
 719-593-0173
 olliewatts@aol.com

Owner's Statement (for standalone GEC Plan):
I, the owner/developer have read and will comply with the requirements of the Grading and Erosion Control Plan.

Owner Signature _____ Da _____



DRAWN BY: DE. WATTS DATE: 6-13-19		APPROVED BY: _____ PROJ. NO. _____ DWG. NO.: 19-5341-03 TOPOGRAPHY BY: CITY FMS 6-12-19 <small>CITY OF EL PASO, TEXAS</small>		ALL TERRAIN RESPONSE: SEE REVISED GEC PLAN. OFFSITE GRADING HAS BEEN REMOVED.		TED _____ DEW PER COUNTY REVIEW COMMENTS DEW 8-22-22 REVISED PER COUNTY REVIEW COMMENTS DEW 12-22-22 REVISED PER COUNTY REVIEW COMMENTS DEW		OLIVER E. WATTS CONSULTING ENGINEER COLORADO SPRINGS		PROJECT ROCKY TOP MOTEL & CAMPGROUND PART NW1/4 SECTION 9, T.13S., R.68W., 6TH P.M. EL PASO COUNTY		SHT. NAME GRADING AND EROSION CONTROL PLAN		SHT. NO. 1 OF 4	
--	--	--	--	---	--	--	--	--	--	---	--	--	--	--------------------------	--



ALL TERRAIN
RESPONSE TO ALL
SHEET 2 COMMENTS:
NOT ADDRESSED.
SAND FILTERS HAVE
BEEN REMOVED
FROM PLAN.

Unresolved previous comment:
provide detail to show how orifice plate will be
attached, what material it is made out of, etc.

Review #5 additional clarification:

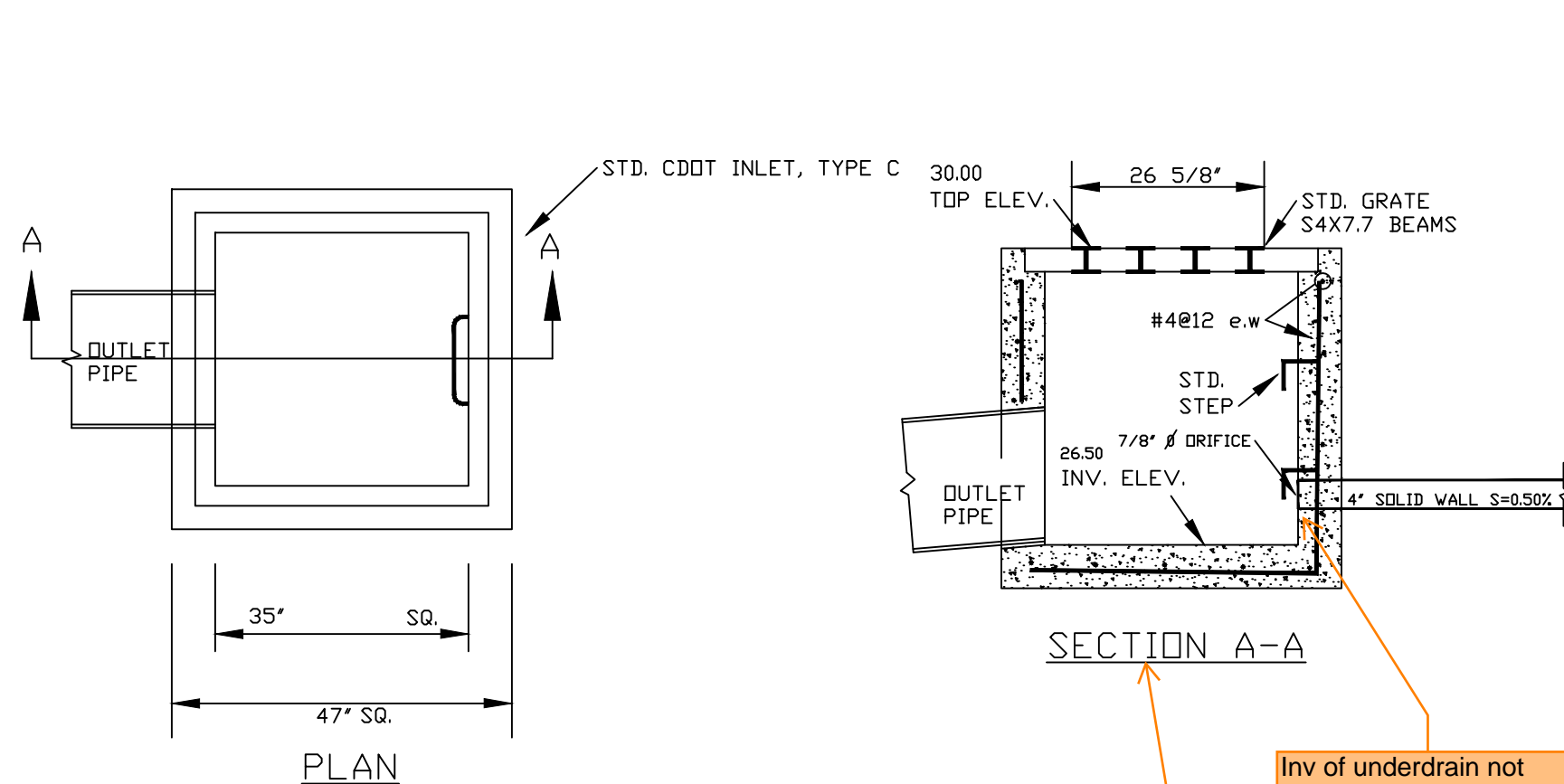
Show/detail things like:

- Does the 4" the 18" pipe?

- How is the connection made?

clarify that the riser portion of the piping (the cleanout) is to be straight pipe. Whereas the rest of the underdrain is slotted pipe.

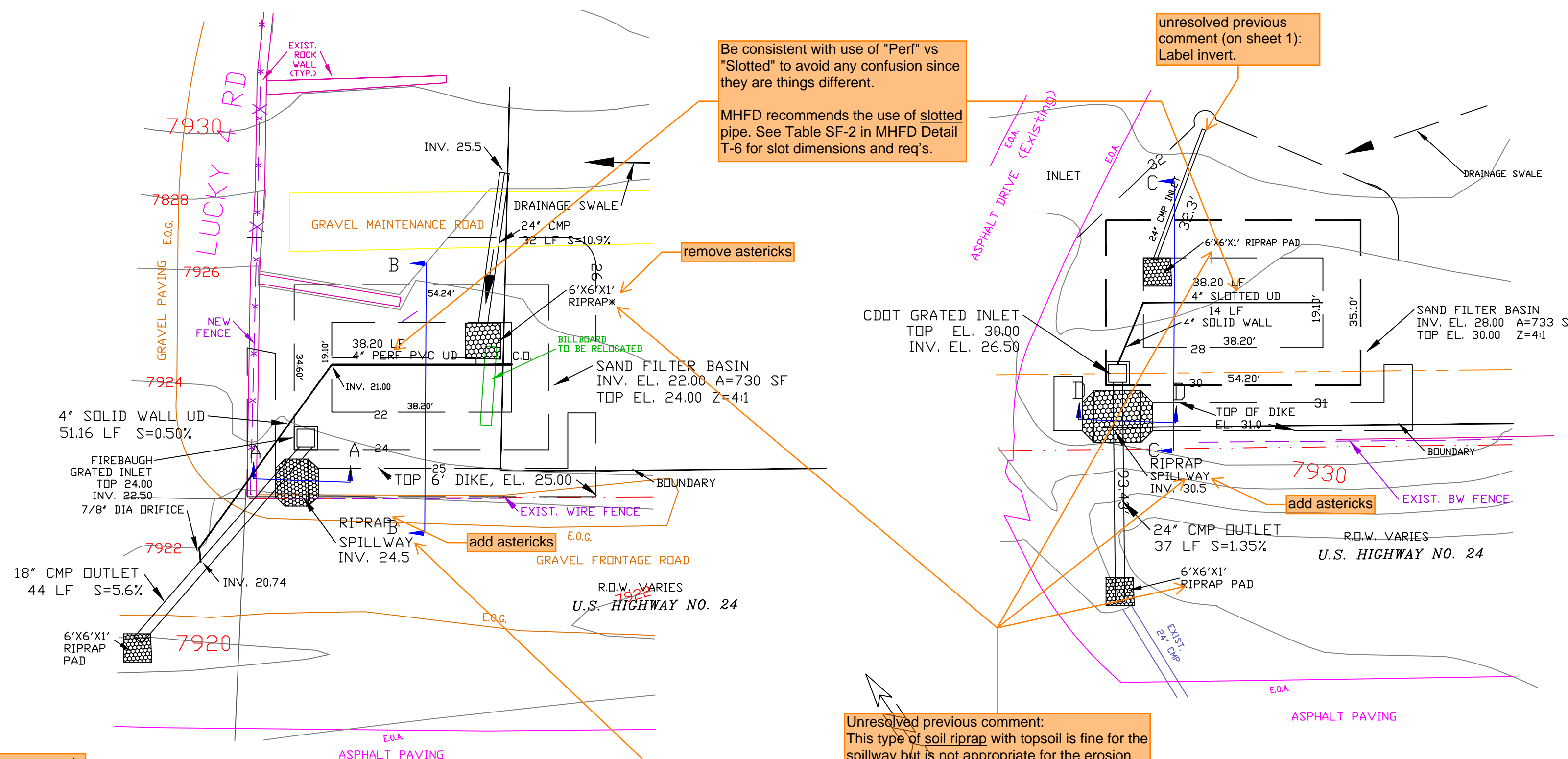
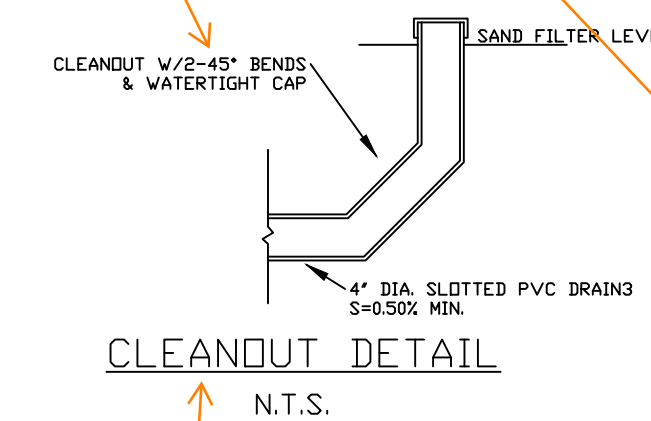
Unresolved previous comment:
Per DCMv2 Section 4.3, outlet
pipe should be 18" minimum.
(UD Figure 6-a)



CDOT INLET
1/2"=1'-0"

Revise to "CDOT Inlet Detail" or similar. Section A-A is for the spillway

where is this cleanout located on each SFB? Show and label on each plan detail on this sheet.



Be consistent with use of "Perf" vs "Slotted" to avoid any confusion since they are things different.

MHFD recommends the use of slotted pipe. See Table SF-2 in MHFD Detail T-6 for slot dimensions and req's.

- remove astericks

add astericks

add asterisks

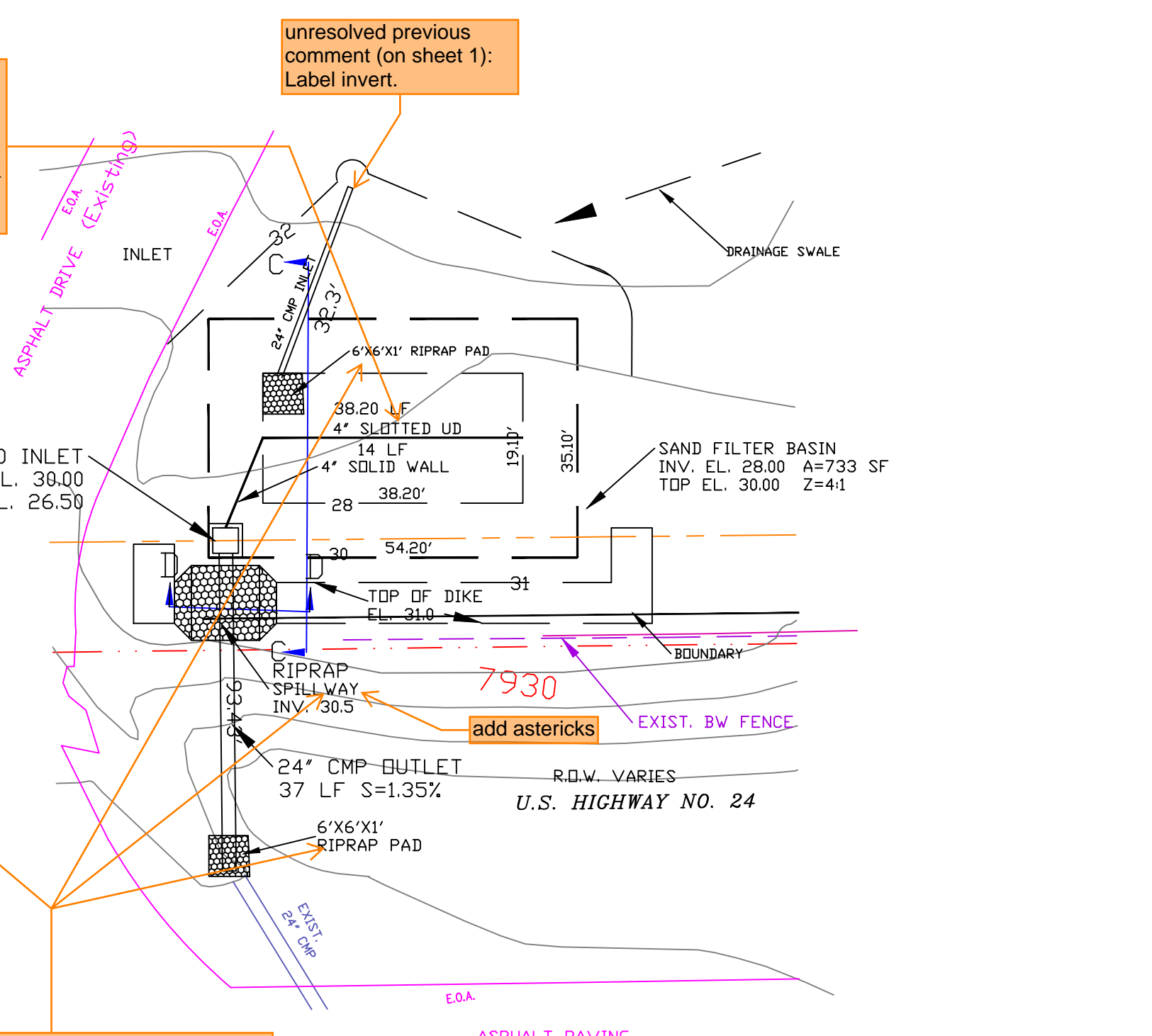
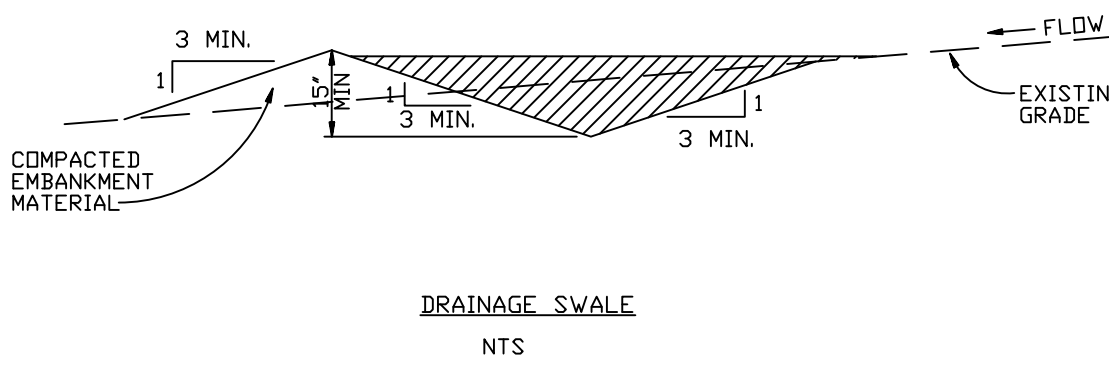
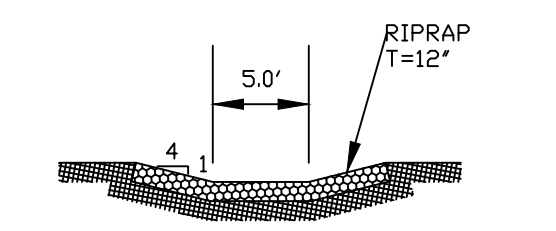
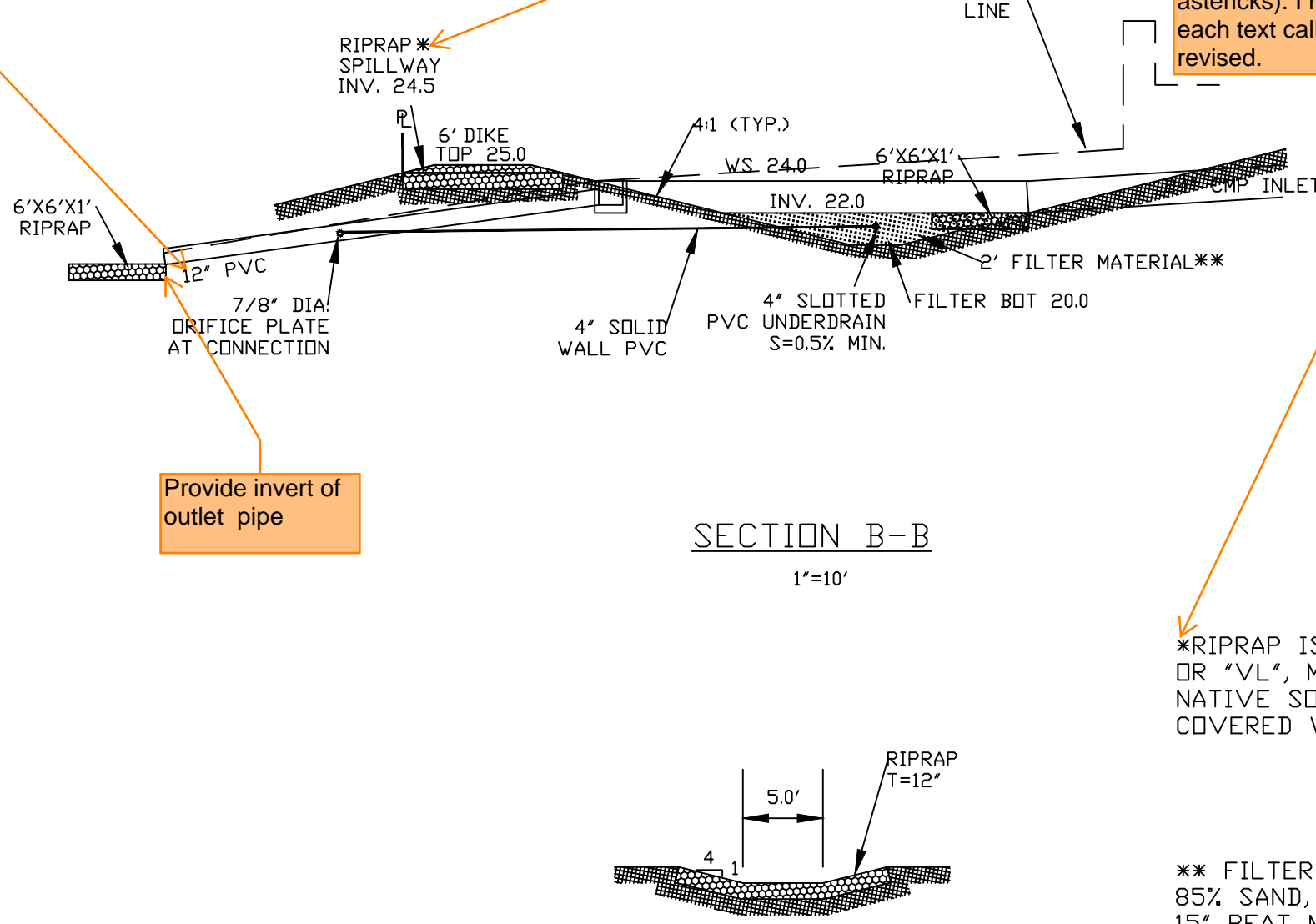
Unresolved previous comment:
This type of soil riprap with topsoil is fine for the spillway but is not appropriate for the erosion protection at the bottom of the SFB where the inlet pipe outfalls. We don't want to encourage the growth of vegetation with the topsoil nor do we want to introduce more sediment into the SFB which will cause extra maintenance.

So create a sep
these locations.

Additional clarification for this submittal:
Or clarify with revising text callouts as to which pads are soil riprap (via asterisks on each) and which are to be just riprap (ie: no soil, so no asterisks). I have added individual notes to each text callout that I think needs to be revised.

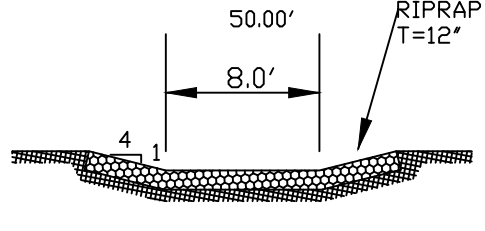
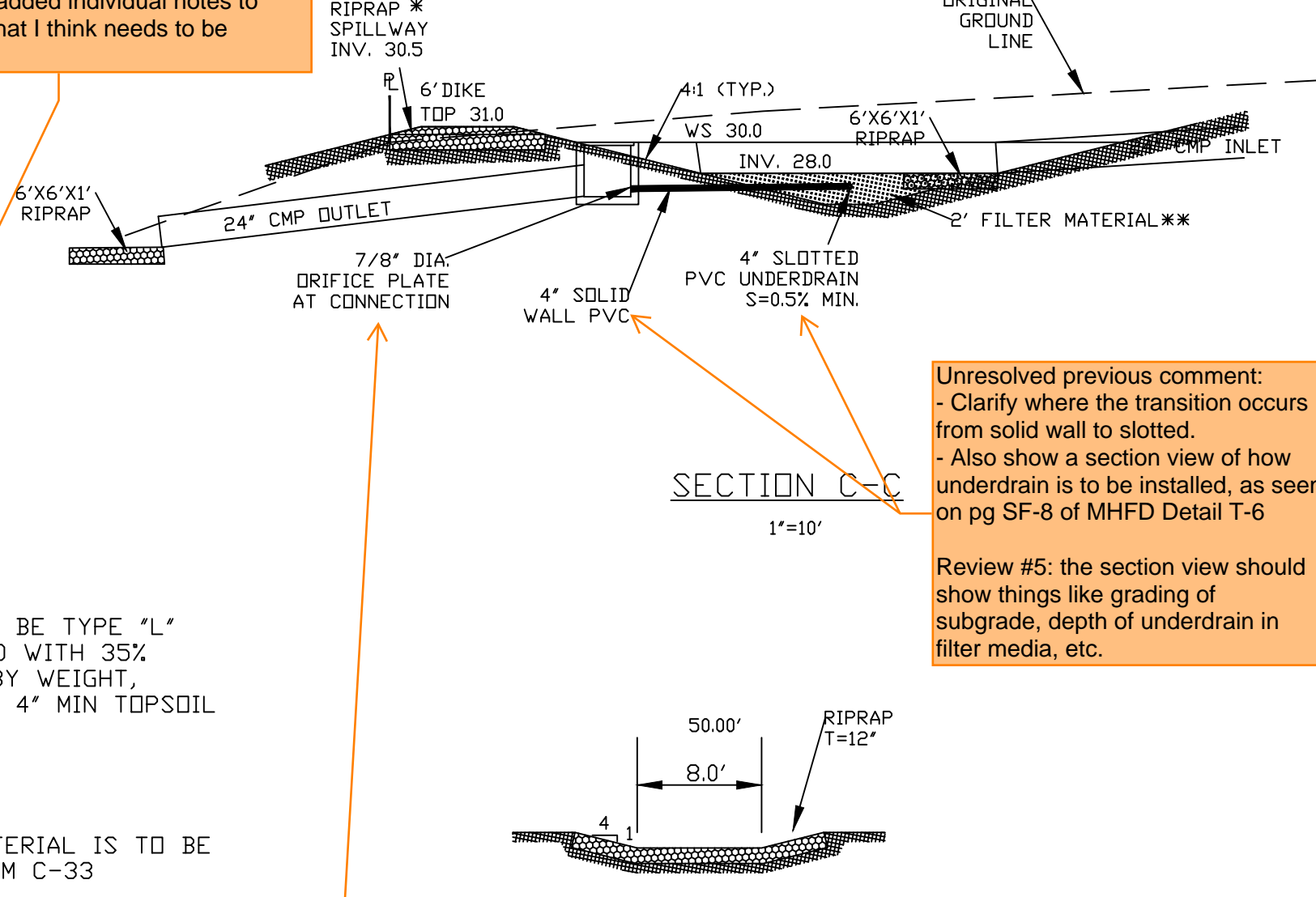
*RIPRAP IS TO BE TYPE "L"
OR "VL", MIXED WITH 35%
NATIVE SOIL BY WEIGHT,
COVERED WITH 4" MIN TOPSOIL

** FILTER MATERIAL IS TO BE
 85% SAND, ASTM C-33
 15% PEAT MIX
 RESEED PER MHFD TABLE B-6 MIX
 FOR DRYLAND GRASSES
 RESEED SIDE SLOPES
 DO NOT RESEED POND BOTTOM
 OR RIPRAP PADS



Unresolved previous comment:
- Clarify where the transition occurs from solid wall to slotted.

Review #5: the section view should show things like grading of subgrade, depth of underdrain in filter media, etc.



Unresolved previous comment:
provide detail to show how orifice plate will be attached, what material it is made out of, etc.

Review #5 additional clarification

On the newly added Orifice Detail, also show/detail things like

- Does the 4" pipe connect into the side wall of the inlet box?

- How is the connection sealed between the pipes and inlet box?
I would also add a note detailing how you want the orifice plate

- I would also add a note detailing how you want the orifice plate installed. For example: the underdrain pipe could come through the

Otherwise, the pipe could instead be cut flush with the wall of the inlet

box and it will be very difficult to install the cap (since you have to then add a 4" PVC coupling), so the likely

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DRAWN BY: D.E. WATTS	APPROVED BY:	REVISIONS 8-16-21 UPDATED	DEW	OLIVER E. WATTS CONSULTING ENGINEER COLORADO SPRINGS	PROJECT ROCKY TOP MOTEL & CAMPGROUND PART NW1/4 SECTION 9, T.13S., R.68W., 6TH P.M. EL PASO COUNTY	SHT. NAME EROSION CONTROL PLAN	SHT. NO. 2 OF 4
DATE: 8-16-21	PROJ. NO.	12-31-21 REVISED PER COUNTY REVIEW COMMENTS	DEW				
DWG. NO.: 19-5341-05	DWG.	8-22-22 REVISED PER COUNTY REVIEW COMMENTS	DEW				
TOPOGRAPHY BY: CITY FIMS 6-18-19 SURVEY INFORMATION BY: BARNETT, JON N. 10/30/24		12-22-22 REVISED PER COUNTY REVIEW COMMENTS	DEW				

El Paso County (standalone GEC Plan):
County plan review is provided only for general conformance with County Design Criteria. The County is not responsible for the accuracy and adequacy of the design, dimensions, and/or elevations which shall be confirmed at the job site. The County through the approval of this document assumes no responsibility for completeness and/or accuracy of this document.
Filed in accordance with the requirements of the El Paso County Land Development Code, Drainage Criteria Manual Volumes 1 and 2, and Engineering Criteria Manual, as amended.

County Engineer/ECM Administrator _____ Date _____

stormwater discharges from construction sites shall not cause or threaten to cause pollution, contamination, or degradation of State Waters, all work and earth disturbance shall be done in a manner that minimizes pollution of any on-site or off-site waters, including wetlands.

2. Notwithstanding anything depicted in these plans in words or graphic representation, all design and construction related to roads, storm drainage and erosion control shall conform to the standards and requirements of the most recent version of the relevant adopted El Paso County standards, including the Land Development Code, the Engineering Criteria Manual, the Drainage Criteria Manual, and the Drainage Criteria Manual Volume 2. Any deviations from regulations and standards must be requested, and approved, in writing.

3. A stormwater management plan (SWMP) for this project shall be completed and an Erosion and Stormwater Quality Control Permit (ESQCP) issued prior to commencing construction. Management of the SWMP during construction is the responsibility of the designated Qualified Stormwater Manager or Certified Erosion Control Inspector. The SWMP shall be located on site at all times during construction and shall be kept up to date with work progress and changes in the field.

4. Once the ESQCP is approved and a 'Notice to Proceed' has been issued, the contractor may install the initial stage erosion and sediment control measures as indicated on the approved GEC. A Preconstruction Meeting between the contractor, engineer, and El Paso County will be held prior to any construction. It is the responsibility of the applicant to coordinate the meeting time and place with County staff.

5. Control measures must be installed prior to commencement of activities that could contribute pollutants to stormwater. Control measures for all slopes, channels, and disturbed land areas shall be installed immediately upon completion of the disturbance.

6. All temporary sediment and erosion control measures shall be maintained and remain in effective operating condition until permanent soil erosion control measures are implemented and final stabilization is established. All persons engaged in land disturbance activities shall assess the adequacy of control measures at the site and identify if changes to those control measures are needed to ensure the continued effective performance of the control measures. All changes to temporary sediment and erosion control measures must be incorporated into the Stormwater Management Plan.

7. Temporary stabilization shall be implemented on disturbed areas and stockpiles where ground disturbing construction activity has permanently ceased or temporarily ceased for longer than 14 days.

8. Final stabilization must be implemented at all applicable construction sites. Final stabilization is achieved when all ground disturbing activities are complete and all disturbed areas either have a uniform vegetative cover with individual plant density of 70 percent of pre-disturbance levels established or equivalent vegetative cover stabilization method is implemented. All temporary sediment and erosion control measures shall be removed upon final stabilization and before permit closure.

9. All permanent stormwater management facilities shall be installed as designed in the approved plans. Any proposed changes that effect the design or function of permanent stormwater management structures must be approved by the ECM Administrator prior to implementation.

10. Earth disturbances shall be conducted in such a manner so as to effectively minimize accelerated soil erosion and resulting sedimentation. All disturbances shall be designed, constructed, and completed so that the exposed area of any disturbed land shall be limited to the shortest practical period of time. Pre-existing vegetation shall be protected and maintained within 50 horizontal feet of waters of the state unless shown to be infeasible and specifically requested and approved.

11. Compaction of soil must be prevented in areas designated for infiltration control measures or where final stabilization will be achieved by vegetative cover. Areas designated for infiltration control measures shall also be protected from sedimentation during construction until final stabilization is achieved. If compaction prevention is not feasible due to site constraints, all areas designated for infiltration and vegetation control measures must be loosened prior to installation of the control measure(s).

12. Any temporary or permanent facility designed and constructed for the conveyance of stormwater around, through, or from the earth disturbance area shall be a stabilized conveyance designed to minimize erosion and the discharge of sediment off site.

13. Concrete wash water shall be contained and disposed of in accordance with the SWMP. No wash water shall be discharged to or allowed to enter State Waters, including any surface or subsurface storm drainage system or facilities. Concrete washouts shall not be located in an area where shallow groundwater may be present or within 50 feet of a surface water body, creek or stream.

14. During dewatering operations of uncontaminated ground water may be discharged on site, but shall not leave the site in the form of surface runoff unless an approved State dewatering permit is in place.

15. Erosion control blanketing or other protective covering shall be used on slopes steeper than 3:1.

16. Contractor shall be responsible for the removal of all wastes from the construction site for disposal in accordance with local and State regulatory requirements. No construction debris, tree slash, building material wastes or unused building materials shall be buried, dumped, or discharged at the site.

17. Waste materials shall not be temporarily placed or stored in the street, alley, or other public way, unless in accordance with an approved Traffic Control Plan. Control measures may be required by El Paso County Engineering if deemed necessary, based upon specific conditions and circumstances.

18. Paving of soils and construction debris off-site shall be minimized. Materials removed off-site shall be cleaned up and properly disposed of immediately. The owner/developer shall be responsible for the removal of all construction debris, dirt, trash, rock, sediment, soil, and sand that may accumulate in roads, storm drains and other drainage conveyance systems and stormwater appurtenances as a result of site development.

20. The quantity of materials stored on the project site shall be limited, as much as practical, to that quantity required to perform the work in an orderly sequence. All materials stored on-site shall be stored in a neat, orderly manner, in their original containers, with original manufacturer's labels.

21. No chemical(s) having the potential to be released in stormwater are to be stored or used onsite unless permission for the use of such chemical(s) is granted in writing by the ECM Administrator. In granting approval for the use of such chemical(s), special conditions and monitoring may be required.

22. Bulk storage of allowed petroleum products or other allowed liquid chemicals in excess of 55 gallons shall require adequate secondary containment protection to contain all spills onsite and to prevent any spilled materials from entering State Waters, any surface or subsurface storm drainage system or other water body.

23. No person shall cause the impediment of stormwater flow in the curb and gutter or ditch except with approved sediment control measures.

24. Owner/developer and their agents shall comply with the 'Colorado Water Quality Control Act' (Title 25, Article 8, CRS), and the 'Clean Water Act' (33 US 1344), in addition to the requirements of the Land Development Code, DCM Volume II and the ECM Appendix I. All appropriate permits must be obtained by the contractor prior to construction (1041, NPDES, Floodplain, 404, Fugitive dust, etc.). In the event of conflicts between these requirements and other laws, rules, or regulations of other Federal, State, local, or County agencies, the most restrictive laws, rules, or regulations shall apply.

25. All construction traffic must enter/exit the site only at approved construction access points.

26. Prior to construction the Permittee shall verify the location of existing utilities.

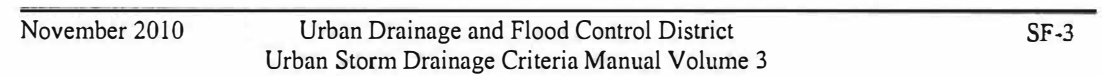
27. The site shall be available for earthwork operations and shall be utilized as required to minimize dust from earthwork equipment and wind.

28. The soils report for this site has been prepared by N/A----- and shall be considered a part of these plans.

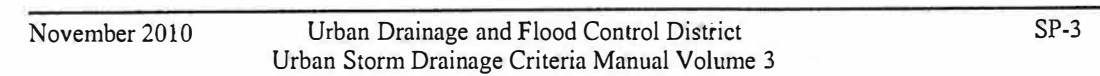
29. At least ten (10) days prior to the anticipated start of construction, for projects that will disturb one (1) acre or more, the owner or operator of construction activity shall submit a permit application for stormwater discharge to the Colorado Department of Public Health and Environment, Water Quality Division. The application contains certification of completion of a stormwater management plan (SWMP), of which this Grading and Erosion Control Plan may be a part. For Information or application materials contact:
Colorado Department of Public Health and Environment
Water Quality Control Division
WQCD - Permits
4300 Cherry Creek Drive South
Denver, CO 80246-1530
Attn: Permits Unit

DRAWN BY: DE. WATTS	APPROVED BY:	REVISIONS 8-16-21 UPDATED	DEW	OLIVER E. WATTS CONSULTING ENGINEER COLORADO SPRINGS	PROJECT ROCKY TOP MOTEL & CAMPGROUND PART NW1/4 SECTION 9, T.13S., R.68W., 6TH P.M. EL PASO COUNTY	SHT. NAME EROSION CONTROL PLAN	SHT. NO.
DATE:	PROJ. NO.	12-31-21 REVISED PER COUNTY REVIEW COMMENTS	DEW				3
DWG. NO.:	DWG.	8-22-22 REVISED PER COUNTY REVIEW COMMENTS	DEW				OF
TOPOGRAPHY BY: CITY FIMS 6-12-19		12-22-22 REVISED PER COUNTY REVIEW COMMENTS	DEW				4

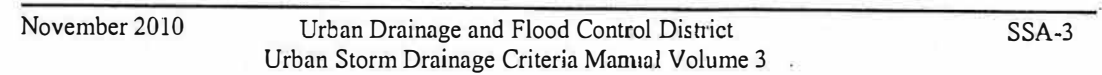
SC-1



MM-2



SM-6



SEEDING & MULCHING

SEEDING

1. ALLOWABLE SEED MIXES ARE INCLUDED IN THE CITY OF COLORADO SPRINGS STORMWATER CONSTRUCTION MANUAL. ALTERNATIVE SEED MIXES ARE ACCEPTABLE IF INCLUDED IN AN APPROVED LANDSCAPING PLAN. SEED SHOULD BE DRILL-SEEDED WHENEVER POSSIBLE.
2. SEED DEPTH MUST BE $\frac{1}{2}$ TO $\frac{3}{4}$ INCHES WHEN DRILL-SEEDING IS USED.
3. HYDRAULIC SEEDING OR HYDRO-SEEDING MAY BE APPLIED ON SLOPES STEEPER THAN 3:1 OR ON OTHER AREAS NOT PRACTICAL TO DRILL SEED.
4. SEEDING RATES MUST BE DOUBLED FOR BROADCAST SEEDING OR INCREASED BY 50% IF USING A BRILLON OR HYDRO-SEEDER.
5. BROADCAST SEEDING MUST BE LIGHTLY HAND-RAKED INTO THE SOIL.

MULCHING

1. MULCHING SHOULD BE COMPLETED AS SOON AS PRACTICABLE AFTER SEEDING, HOWEVER PLANTED AREAS MUST BE MULCHED NO LATER THAN 14 DAYS AFTER PLANTING.
2. MULCHING REQUIREMENTS INCLUDE:
 - MAY OR STRAW MULCH
 - CERTIFIED PEST-FREE AND CERTIFIED SEED-FREE MULCH MAY BE USED, MULCH MUST BE APPLIED AT 2 TONS/ACRE AND ADEQUATELY SECURED BY GRIPPING AND/OR TACKIFIER.
 - HYDRAULIC MULCHING IS ALLOWED ON SLOPES GREATER THAN 3:1 AND MULCH FIBERS MUST BE TUCKED INTO THE SOIL TO A DEPTH OF 3 TO 4 INCHES.
 - TACKIFIER MUST BE USED IN PLACE OF CRIMPING ON SLOPES STEEPER THAN 3:1.
 - HYDRAULIC MULCHING IS AN OPTION ON SLOPE STEEPER OR WHERE ACCESS IS LIMITED.
 - HYDRAULIC SEEDING AND MULCHING MUST BE APPLIED AS A SEPARATE, SECOND OPERATION.
 - WOOD CELLULOSE FIBERS MIXED WITH WATER MUST BE APPLIED AT A RATE OF 200 TO 2,500 POUNDS/ACRE, AND TACKIFIER MUST BE APPLIED AT A RATE OF 100 POUNDS/ACRE.
3. EROSION CONTROL, SLURRY MULCHING, OR EROSION CONTROL BLANKET MAY BE USED IN PLACE OF TRADITIONAL MULCHING METHODS.



Silt Fence (SF)

SF-4
Urban Drainage and Flood Control District
Urban Storm Drainage Criteria Manual Volume 3
November 2010

Stockpile Management (SM)

SP-4 Urban Drainage and Flood Control District November 2010
Urban Storm Drainage Criteria Manual Volume 3

Stabilized Staging Area (SSA)

SSA-4
Urban Drainage and Flood Control District
Urban Storm Drainage Criteria Manual Volume 3
November 2010



INSTALLATION REQUIREMENTS

1. ALL ENTRANCES TO THE CONSTRUCTION SITE

1. AREAS TO BE STABILIZED PRIOR TO CONSTRUCTION BEGINNING.
2. CONSTRUCTION ENTRANCES ARE TO BE BUILT WITH AN APRON TO ALLOW FOR TURNING TRAFFIC, BUT SHOULD NOT BE BUILT OVER EXISTING PAVEMENT EXCEPT FOR A SLIGHT OVERLAP.
3. AREAS TO BE STABILIZED ARE TO BE PROPERLY GRADED AND COMPACTED PRIOR TO LAYING DOWN GEOTEXTILE AND STONE.
4. CONSTRUCTION ROADS, PARKING AREAS, LOADING/UNLOADING ZONES, STORAGE AREAS, AND STAGING AREAS ARE TO BE STABILIZED.
5. CONSTRUCTION ROADS ARE TO BE BUILT TO CONFORM TO SITE GRADES, BUT SHOULD NOT HAVE SLOPE SIZES OR ROAD GRADES THAT ARE EXCESSIVELY STEEP.

MAINTENANCE REQUIREMENTS

1. REGULAR INSPECTIONS ARE TO BE MADE OF ALL STABILIZED AREAS, ESPECIALLY AFTER STORM EVENTS.
2. STONES ARE TO BE REPLAPPED PERIODICALLY AND WHEN REPAIR IS NECESSARY.
3. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED DAILY BY SHOVELING OR SWEEPING. SEDIMENT IS NOT TO BE WASHED DOWN STORM SEWER DRAINS.
4. STORM SEWER INLET PROTECTION IS TO BE IN PLACE, INSPECTED, AND CLEANED IF NECESSARY.
5. OTHER ASSOCIATED SEDIMENT CONTROL MEASURES ARE TO BE INSPECTED TO ENSURE GOOD WORKING CONDITION.

Figure VT-2 Vehicle Tracking Application Examples

Prepared by the Office of:
Oliver E. Watts, Consulting Engineer, Inc.
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olliewatts@aol.com
Celebrating over 39 years in business

EROSION CONTROL DETAILS

SHT. NO.	
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 Colorado Springs, CO 80910
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 Fax 719-520-6695
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EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT

GRADING AND EROSION CONTROL PLAN CHECKLIST

Y - Satisfies criteria
N - Needs to be addressed

Revised: July 2019

		Applicant	PCD
1. GRADING AND EROSION CONTROL PLAN			
a	Vicinity map.	x	Y
b	Adjacent city/town/jurisdictional boundaries, subdivision names, and property parcel numbers labeled.	x	Y
c	North arrow and acceptable scale (1"=20' to 1"=100').	x	Y
d	Legend for all symbols used in the plan.	x	Y
e	Existing and proposed property lines. Proposed subdivision boundary for subdivision projects.	x	Y
f	All existing structures.	x	Y
g	All existing utilities.	x	Y
h	Construction site boundaries.	x	Y
i	Existing vegetation (notes are attached or site has already been stripped)	x	Y
j	FEMA 100-yr floodplain.	n/a	N/A
k	Existing and proposed water courses including springs, streams, wetlands, detention ponds, stormwater quality structures, roadside ditches, irrigation ditches and other water surfaces. Show maintenance of pre-existing vegetation within 50 feet of a receiving water.	n/a	Y
l	Existing and proposed contours 2 feet or less (except for hillside).	x	Y
m	Limits of disturbance delineating all anticipated areas of soil disturbance.	x	Y
n	Identify and protect areas outside of the construction site boundary with existing fencing, construction fencing or other methods as appropriate.	x	Y
o	Offsite grading clearly shown and called out.	n/a	N
p	Areas of cut and fill identified.	x	N
q	Conclusions from soils/geotechnical report and geologic hazards report incorporated in grading design (slopes, embankments, materials, mitigation, etc.)	x	Y
r	Proposed slopes steeper than 3:1 with top and toe of slope delineated. Erosion control blanketing or other protective covering required.	n/a	N/A
s	Stormwater flow direction arrows.	x	Y
t	Location of any dedicated asphalt / concrete batch plants.	n/a	N/A
u	Areas used for staging, storage of building materials, soils (stockpiles) or wastes. The use of construction office trailers requires PCD permitting.	x	Y
v	All proposed temporary construction control measures, structural and non-structural. Temporary construction control measures shall be identified by phase of implementation to include "initial," "interim," and "final" or shown on separate phased maps identifying each phase.	x	Y
w	Vehicle tracking provided at all construction entrances/exits. Construction fencing, barricades, and/or signage provided at access points not to be used for construction.	x	Y
x	Temporary sediment ponds provided for disturbed drainage areas greater than 1 acre.	n/a	N/A
y	Dewatering operations to include locations of diversion, pump and discharge(s) as anticipated at time of design.	n/a	N/A
z	All proposed temporary construction control measure details. Custom or other jurisdiction's details used must meet or exceed EPC standards.	x	Y

**ALL TERRAIN RESPONSE:
 SEE REVISED GEC PLAN,
 ALL PROPOSED GRADING
 HAS BEEN REMOVED.**

See comment on Sht 1 of plans

See comment on Sht 1 of plans



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		Applicant	PCD
aa	Any offsite stormwater control measure proposed for use by the project and not under the direct control or ownership of the Owner or Operator.	n/a	N/A
bb	Existing and proposed permanent storm water management facilities, including areas proposed for stormwater infiltration or subsurface detention.	x	Y
cc	Existing and proposed easements (permanent and construction) including required off site easements.	x	Y
dd	Retaining walls (not to be located in County ROW unless approved via license agreement). Design by P.E. and building permit from Regional Building Department required for walls greater than or equal to 4 feet in height, series of walls, or walls supporting a surcharge.	x	Y
ee	Plan certified by a Colorado Registered P.E., with EPC standard signature blocks for Engineer, Owner and EPC.	x	Y
ff	<p>Engineer's Statement (for standalone GEC Plan): This Grading and Erosion Control Plan was prepared under my direction and supervision and is correct to the best of my knowledge and belief. Said Plan has been prepared according to the criteria established by the County for Grading and Erosion Control Plans. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this plan.</p> <p>_____ Engineer of Record Signature Date</p>	x	Y
gg	<p>Engineer's Statement (for GEC Plan within Construction Drawing set): These detailed plans and specifications were prepared under my direction and supervision. Said plans and specifications have been prepared according to the criteria established by the County for detailed roadway, drainage, grading and erosion control plans and specifications, and said plans and specifications are in conformity with applicable master drainage plans and master transportation plans. Said plans and specifications meet the purposes for which the particular roadway and drainage facilities are designed and are correct to the best of my knowledge and belief. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparation of these detailed plans and specifications.</p> <p>_____ Engineer of Record Signature Date</p>		N/A
hh	<p>Owner's Statement (for standalone GEC Plan): I, the owner/developer have read and will comply with the requirements of the Grading and Erosion Control Plan.</p> <p>_____ Owner Signature Date</p>		Y
ii	<p>Owner's Statement (for GEC Plan within Construction Drawing set): I, the owner/developer have read and will comply with the requirements of the grading and erosion control plan and all of the requirements specified in these detailed plans and specifications.</p> <p>_____ Owner Signature Date</p>		N/A



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ii	<p>El Paso County (standalone GEC Plan): County plan review is provided only for general conformance with County Design Criteria. The County is not responsible for the accuracy and adequacy of the design, dimensions, and/ or elevations which shall be confirmed at the job site. The County through the approval of this document assumes no responsibility for completeness and/ or accuracy of this document. Filed in accordance with the requirements of the El Paso County Land Development Code, Drainage Criteria Manual Volumes 1 and 2, and Engineering Criteria Manual, as amended.</p>	X	Y
	<p>In accordance with ECM Section 1.12, these construction documents will be valid for construction for a period of 2 years from the date signed by the El Paso County Engineer. If construction has not started within those 2 years, the plans will need to be resubmitted for approval, including payment of review fees at the Planning and Community Development Director's discretion.</p>		
<p>_____ County Engineer/ECM Administrator Date</p>			
2. ADDITIONAL REPORTS/PERMITS/DOCUMENTS			
a	Soils report / geotechnical investigation as appropriate for grading/utilities/drainage/road construction.		
b	Use Agreement/easement between the Owner or Operator and other third party for use of all offsite grading or stormwater control measures, used by the owner or operator but not under their direct control or ownership.		
c	Floodplain Development Permit		
d	USACE 404/wetlands permit/mitigation plan		
e	FEMA CLOMR		
f	State Engineer's permit/Notice Of Intent to Construct		
g	Stormwater Management Plan (SWMP)		
h	Financial Assurance Estimate (FAE) (signed)		
i	Erosion and Stormwater Quality Control Permit (ESQCP) (signed)		
j	Pre-Development Site Grading Acknowledgement and Right of Access Form (signed)		
k	Conditions of Approval met?		



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Revised: July 2019

		Applicant	PCD
3. STANDARD NOTES FOR EL PASO COUNTY GRADING AND EROSION CONTROL PLANS			
1	Stormwater discharges from construction sites shall not cause or threaten to cause pollution, contamination, or degradation of State Waters. All work and earth disturbance shall be done in a manner that minimizes pollution of any on-site or off-site waters, including wetlands.	X	Y
2	Notwithstanding anything depicted in these plans in words or graphic representation, all design and construction related to roads, storm drainage and erosion control shall conform to the standards and requirements of the most recent version of the relevant adopted El Paso County standards, including the Land Development Code, the Engineering Criteria Manual, the Drainage Criteria Manual, and the Drainage Criteria Manual Volume 2. Any deviations from regulations and standards must be requested, and approved, in writing.	X	Y
3	A separate Stormwater Management Plan (SMWP) for this project shall be completed and an Erosion and Stormwater Quality Control Permit (ESQCP) issued prior to commencing construction. Management of the SWMP during construction is the responsibility of the designated Qualified Stormwater Manager or Certified Erosion Control Inspector. The SWMP shall be located on site at all times during construction and shall be kept up to date with work progress and changes in the field.	X	Y
4	Once the ESQCP is approved and a "Notice to Proceed" has been issued, the contractor may install the initial stage erosion and sediment control measures as indicated on the approved GEC. A Preconstruction Meeting between the contractor, engineer, and El Paso County will be held prior to any construction. It is the responsibility of the applicant to coordinate the meeting time and place with County staff.	X	Y
5	Control measures must be installed prior to commencement of activities that could contribute pollutants to stormwater. control measures for all slopes, channels, ditches, and disturbed land areas shall be installed immediately upon completion of the disturbance.	X	Y
6	All temporary sediment and erosion control measures shall be maintained and remain in effective operating condition until permanent soil erosion control measures are implemented and final stabilization is established. All persons engaged in land disturbance activities shall assess the adequacy of control measures at the site and identify if changes to those control measures are needed to ensure the continued effective performance of the control measures. All changes to temporary sediment and erosion control measures must be incorporated into the Stormwater Management Plan.	X	Y
7	Temporary stabilization shall be implemented on disturbed areas and stockpiles where ground disturbing construction activity has permanently ceased or temporarily ceased for longer than 14 days.	X	Y
8	Final stabilization must be implemented at all applicable construction sites. Final stabilization is achieved when all ground disturbing activities are complete and all disturbed areas either have a uniform vegetative cover with individual plant density of 70 percent of pre-disturbance levels established or equivalent permanent alternative stabilization method is implemented. All temporary sediment and erosion control measures shall be removed upon final stabilization and before permit closure.	X	Y
9	All permanent stormwater management facilities shall be installed as designed in the approved plans. Any proposed changes that effect the design or function of permanent stormwater management structures must be approved by the ECM Administrator prior to implementation.	X	Y
10	Earth disturbances shall be conducted in such a manner so as to effectively minimize accelerated soil erosion and resulting sedimentation. All disturbances shall be designed, constructed, and completed so that the exposed area of any disturbed land shall be limited to the shortest practical period of time. Pre-existing vegetation shall be protected and maintained within 50 horizontal feet of a waters of the state unless shown to be infeasible and specifically requested and approved.	X	Y



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11	Compaction of soil must be prevented in areas designated for infiltration control measures or where final stabilization will be achieved by vegetative cover. Areas designated for infiltration control measures shall also be protected from sedimentation during construction until final stabilization is achieved. If compaction prevention is not feasible due to site constraints, all areas designated for infiltration and vegetation control measures must be loosened prior to installation of the control measure(s).	X	Y
12	Any temporary or permanent facility designed and constructed for the conveyance of stormwater around, through, or from the earth disturbance area shall be a stabilized conveyance designed to minimize erosion and the discharge of sediment off site.	X	Y
13	Concrete wash water shall be contained and disposed of in accordance with the SWMP. No wash water shall be discharged to or allowed to enter State Waters, including any surface or subsurface storm drainage system or facilities. Concrete washouts shall not be located in an area where shallow groundwater may be present, or within 50 feet of a surface water body, creek or stream.	X	Y
14	During dewatering operations of uncontaminated ground water may be discharged on site, but shall not leave the site in the form of surface runoff unless an approved State dewatering permit is in place.	X	Y
15	Erosion control blanketing or other protective covering shall be used on slopes steeper than 3:1.	X	Y
16	Contractor shall be responsible for the removal of all wastes from the construction site for disposal in accordance with local and State regulatory requirements. No construction debris, tree slash, building material wastes or unused building materials shall be buried, dumped, or discharged at the site.	X	Y
17	Waste materials shall not be temporarily placed or stored in the street, alley, or other public way, unless in accordance with an approved Traffic Control Plan. control measures may be required by El Paso County Engineering if deemed necessary, based on specific conditions and circumstances.	X	Y
18	Tracking of soils and construction debris off-site shall be minimized. Materials tracked off-site shall be cleaned up and properly disposed of immediately.	X	Y
19	The owner/developer shall be responsible for the removal of all construction debris, dirt, trash, rock, sediment, soil, and sand that may accumulate in roads, storm drains and other drainage conveyance systems and stormwater appurtenances as a result of site development.	X	Y
20	The quantity of materials stored on the project site shall be limited, as much as practical, to that quantity required to perform the work in an orderly sequence. All materials stored on-site shall be stored in a neat, orderly manner, in their original containers, with original manufacturer's labels.	X	Y
21	No chemical(s) having the potential to be released in stormwater are to be stored or used onsite unless permission for the use of such chemical(s) is granted in writing by the ECM Administrator. In granting approval for the use of such chemical(s), special conditions and monitoring may be required.	X	Y
22	Bulk storage of allowed petroleum products or other allowed liquid chemicals in excess of 55 gallons shall require adequate secondary containment protection to contain all spills onsite and to prevent any spilled materials from entering State Waters, any surface or subsurface storm drainage system or other facilities.	X	Y
23	No person shall cause the impediment of stormwater flow in the curb and gutter or ditch except with approved sediment control measures.	X	Y



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 Fax 719-520-6695
 www.elpasoco.com

EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT

GRADING AND EROSION CONTROL PLAN CHECKLIST

Revised: July 2019

		Applicant	PCD
24	Owner/developer and their agents shall comply with the "Colorado Water Quality Control Act" (Title 25, Article 8, CRS), and the "Clean Water Act" (33 USC 1344), in addition to the requirements of the Land Development Code, DCM Volume II and the ECM Appendix I. All appropriate permits must be obtained by the contractor prior to construction (1041, NPDES, Floodplain, 404, fugitive dust, etc.). In the event of conflicts between these requirements and other laws, rules, or regulations of other Federal, State, local, or County agencies, the most restrictive laws, rules, or regulations shall apply.	X	Y
25	All construction traffic must enter/exit the site only at approved construction access points.	X	Y
26	Prior to construction the permittee shall verify the location of existing utilities.	X	Y
27	A water source shall be available on site during earthwork operations and shall be utilized as required to minimize dust from earthwork equipment and wind.	X	Y
28	The soils report for this site has been prepared by _____ and shall be considered a part of these plans.	n/a	N/A
29	At least ten (10) days prior to the anticipated start of construction, for projects that will disturb one (1) acre or more, the owner or operator of construction activity shall submit a permit application for stormwater discharge to the Colorado Department of Public Health and Environment, Water Quality Division. The application contains certification of completion of a stormwater management plan (SWMP), of which this Grading and Erosion Control Plan may be a part. For information or application materials contact: Colorado Department of Public Health and Environment Water Quality Control Division WQCD – Permits 4300 Cherry Creek Drive South Denver, CO 80246-1530 Attn: Permits Unit	X	Y
4. Applicant Comments:			
a			
b			
c			



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**EL PASO COUNTY PLANNING AND
COMMUNITY DEVELOPMENT
DEPARTMENT**

GRADING AND EROSION CONTROL PLAN CHECKLIST

Revised: July 2019

		Applicant	PCD
5. Checklist Review Certifications:			
a	<p>Engineer of Record: The Grading and Erosion Control Plan was prepared under my direction and supervision and is complete and correct to the best of my knowledge and belief. Said Plan has been prepared according to the criteria established by the County for Grading and Erosion Control Plans.</p> <p>_____ Engineer of Record Signature Date</p>	X	
b	<p>Review Engineer: The Grading and Erosion Control Plan was reviewed and found to meet the checklist requirements except where otherwise noted or allowed by an approved deviation request.</p> <p>_____ Review Engineer Date</p>	X	

Use 2023 Form which can be downloaded by double clicking on this icon:

ALL TERRAIN RESPONSE: ADDRESSED, HOWEVER 2025 FORM HAS BEEN USED.

For Section 1 below, add quantities for each of the 3 items highlighted in orange.

2022 Financial Assurance Estimate Form (with pre-plat construction)

Updated: 11/4/2021

PROJECT INFORMATION			
Rocky Top Motel	11/21/2022	PPR 2140	
Project Name	Date	PCD File No.	

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining
SECTION 1 - GRADING AND EROSION CONTROL (Construction and Permanent BMPs)							
* Earthwork							
less than 1,000; \$5,300 min		CY	\$ 8.00	=	\$ -		\$ -
1,000 - 5,000; \$8,000 min	4,500	CY	\$ 6.00	=	\$ 27,000.00		\$ 27,000.00
		CY	\$ 5.00	=	\$ -		\$ -
		CY	\$ 3.50	=	\$ -		\$ -
		CY	\$ 2.50	=	\$ -		\$ -
		CY	\$ 2.00	=	\$ -		\$ -
* Permanent Seeding (inc. noxious weed mgmt.)		AC	\$ 886.00	=	\$ -		\$ -
* Mulching		AC	\$ 831.00	=	\$ -		\$ -
* Permanent Erosion Control Blanket		SY	\$ 7.00	=	\$ -		\$ -
* Permanent Pond/BMP Construction	1,800	CY	\$ 22.00	=	\$ 39,600.00		\$ 39,600.00
* Permanent Pond/BMP (provide engineer's estimate)	2	EA	\$ 3,000.00	=	\$ 6,000.00		\$ 6,000.00
		EA		=	\$ -		\$ -
Safety Fence		LF	\$ 3.00	=	\$ -		\$ -
Temporary Erosion Control Blanket		SY	\$ 3.00	=	\$ -		\$ -
Vehicle Tracking Control		EA	\$ 2,625.00	=	\$ -		\$ -
Silt Fence		LF	\$ 3.00	=	\$ -		\$ -
Ter		AC	\$ 695.00	=	\$ -		\$ -
Ter		AC	\$ 831.00	=	\$ -		\$ -
Ero		EA	\$ 28.00	=	\$ -		\$ -
Ero		LF	\$ 6.00	=	\$ -		\$ -
Rock Check Dams		EA	\$ 554.00	=	\$ -		\$ -
Inlet Protection		EA	\$ 185.00	=	\$ -		\$ -
Sediment Basin		EA	\$ 1,952.00	=	\$ -		\$ -
Concrete Washout Basin		EA	\$ 997.00	=	\$ -		\$ -
				=	\$ -		\$ -
(insert items not listed but part of construction plans)					\$ -		\$ -
MAINTENANCE (35% of Construction BMPs)					\$ -		\$ -
* - Subject to defect warranty financial assurance. A minimum of 20% shall be retained until final acceptance (MAXIMUM OF 80% COMPLETE ALLOWED)							
Section 1 Subtotal				=	\$ 72,600.00		\$ 72,600.00

SECTION 2 - PUBLIC IMPROVEMENTS *

ROADWAY IMPROVEMENTS							
Construction Traffic Control		LS		=	\$ -		\$ -
Aggregate Base Course (135 lbs/cf)		Tons	\$ 31.00	=	\$ -		\$ -
Aggregate Base Course (135 lbs/cf)		CY	\$ 56.00	=	\$ -		\$ -
Asphalt Pavement (3" thick)		SY	\$ 16.00	=	\$ -		\$ -
Asphalt Pavement (4" thick)		SY	\$ 21.00	=	\$ -		\$ -
Asphalt Pavement (6" thick)		SY	\$ 32.00	=	\$ -		\$ -
Asphalt Pavement (147 lbs/cf) _" thick		Tons	\$ 97.00	=	\$ -		\$ -
Raised Median, Paved		SF	\$ 9.00	=	\$ -		\$ -
Regulatory Sign/Advisory Sign		EA	\$ 333.00	=	\$ -		\$ -
Guide/Street Name Sign		EA		=	\$ -		\$ -
Epoxy Pavement Marking		SF	\$ 15.00	=	\$ -		\$ -
Thermoplastic Pavement Marking		SF	\$ 26.00	=	\$ -		\$ -
Barricade - Type 3		EA	\$ 221.00	=	\$ -		\$ -
Delineator - Type I		EA	\$ 27.00	=	\$ -		\$ -
Curb and Gutter, Type A (6" Vertical)		LF	\$ 32.00	=	\$ -		\$ -
Curb and Gutter, Type B (Median)		LF	\$ 32.00	=	\$ -		\$ -
Curb and Gutter, Type C (Ramp)		LF	\$ 32.00	=	\$ -		\$ -
4" Sidewalk (common areas only)		SY	\$ 53.00	=	\$ -		\$ -
5" Sidewalk		SY	\$ 66.00	=	\$ -		\$ -
6" Sidewalk		SY	\$ 80.00	=	\$ -		\$ -
8" Sidewalk		SY	\$ 106.00	=	\$ -		\$ -
Pedestrian Ramp		EA	\$ 1,273.00	=	\$ -		\$ -
Cross Pan, local (8" thick, 6' wide to include return)		LF	\$ 67.00	=	\$ -		\$ -
Cross Pan, collector (9" thick, 8' wide to include return)		LF	\$ 102.00	=	\$ -		\$ -
Curb Chase		EA	\$ 1,639.00	=	\$ -		\$ -
Guardrail Type 3 (W-Beam)		LF	\$ 55.00	=	\$ -		\$ -
Guardrail Type 7 (Concrete)		LF	\$ 80.00	=	\$ -		\$ -
Guardrail End Anchorage		EA	\$ 2,324.00	=	\$ -		\$ -
Guardrail Impact Attenuator		EA	\$ 4,172.00	=	\$ -		\$ -
Sound Barrier Fence (CMU block, 6' high)		LF	\$ 87.00	=	\$ -		\$ -
Sound Barrier Fence (panels, 6' high)		LF	\$ 89.00	=	\$ -		\$ -
Electrical Conduit, Size =		LF	\$ 18.00	=	\$ -		\$ -
Traffic Signal, complete intersection		EA	\$ 470,666	=	\$ -		\$ -

PROJECT INFORMATION							
Rocky Top Motel		11/21/2022		PPR 2140			
Project Name		Date		PCD File No.			
Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining
[insert items not listed but part of construction plans]				=	\$ -		\$ -
[insert items not listed but part of construction plans]				=	\$ -		\$ -
STORM DRAIN IMPROVEMENTS							
Concrete Box Culvert (M Standard), Size (W x H)		LF		=	\$ -		\$ -
18" Reinforced Concrete Pipe		LF	\$ 70.00	=	\$ -		\$ -
24" Reinforced Concrete Pipe		LF	\$ 83.00	=	\$ -		\$ -
30" Reinforced Concrete Pipe		LF	\$ 104.00	=	\$ -		\$ -
36" Reinforced Concrete Pipe		LF	\$ 128.00	=	\$ -		\$ -
42" Reinforced Concrete Pipe		LF	\$ 171.00	=	\$ -		\$ -
48" Reinforced Concrete Pipe		LF	\$ 209.00	=	\$ -		\$ -
54" Reinforced Concrete Pipe		LF	\$ 272.00	=	\$ -		\$ -
60" Reinforced Concrete Pipe		LF	\$ 319.00	=	\$ -		\$ -
66" Reinforced Concrete Pipe		LF	\$ 368.00	=	\$ -		\$ -
72" Reinforced Concrete Pipe		LF	\$ 421.00	=	\$ -		\$ -
18" Corrugated Steel Pipe		LF	\$ 90.00	=	\$ -		\$ -
24" Corrugated Steel Pipe		LF	\$ 103.00	=	\$ -		\$ -
30" Corrugated Steel Pipe		LF	\$ 131.00	=	\$ -		\$ -
36" Corrugated Steel Pipe		LF	\$ 157.00	=	\$ -		\$ -
42" Corrugated Steel Pipe		LF	\$ 180.00	=	\$ -		\$ -
48" Corrugated Steel Pipe		LF	\$ 190.00	=	\$ -		\$ -
54" Corrugated Steel Pipe		LF	\$ 278.00	=	\$ -		\$ -
60" Corrugated Steel Pipe		LF	\$ 300.00	=	\$ -		\$ -
66" Corrugated Steel Pipe		LF	\$ 364.00	=	\$ -		\$ -
72" Corrugated Steel Pipe		LF	\$ 428.00	=	\$ -		\$ -
78" Corrugated Steel Pipe		LF	\$ 492.00	=	\$ -		\$ -
84" Corrugated Steel Pipe		LF	\$ 588.00	=	\$ -		\$ -
Flared End Section (FES) RCP Size = (unit cost = 6x pipe unit cost)		EA		=	\$ -		\$ -
Flared End Section (FES) CSP Size = (unit cost = 6x pipe unit cost)		EA		=	\$ -		\$ -
End Treatment- Headwall		EA		=	\$ -		\$ -
End Treatment- Wingwall		EA		=	\$ -		\$ -
End Treatment - Cutoff Wall		EA		=	\$ -		\$ -
Curb Inlet (Type R) L=5', Depth < 5'		EA	\$ 6,138.00	=	\$ -		\$ -
Curb Inlet (Type R) L=5', 5' ≤ Depth < 10'		EA	\$ 7,981.00	=	\$ -		\$ -
Curb Inlet (Type R) L=5', 10' ≤ Depth < 15'		EA	\$ 9,242.00	=	\$ -		\$ -
Curb Inlet (Type R) L=10', Depth < 5'		EA	\$ 8,447.00	=	\$ -		\$ -
Curb Inlet (Type R) L=10', 5' ≤ Depth < 10'		EA	\$ 8,706.00	=	\$ -		\$ -
Curb Inlet (Type R) L=10', 10' ≤ Depth < 15'		EA	\$ 10,898.00	=	\$ -		\$ -
Curb Inlet (Type R) L=15', Depth < 5'		EA	\$ 10,984.00	=	\$ -		\$ -
Curb Inlet (Type R) L=15', 5' ≤ Depth < 10'		EA	\$ 11,775.00	=	\$ -		\$ -
Curb Inlet (Type R) L=15', 10' ≤ Depth < 15'		EA	\$ 12,876.00	=	\$ -		\$ -
Curb Inlet (Type R) L=20', Depth < 5'		EA	\$ 11,706.00	=	\$ -		\$ -
Curb Inlet (Type R) L=20', 5' ≤ Depth < 10'		EA	\$ 12,920.00	=	\$ -		\$ -
Grated Inlet (Type C), Depth < 5'		EA	\$ 5,138.00	=	\$ -		\$ -
Grated Inlet (Type D), Depth < 5'		EA	\$ 6,347.00	=	\$ -		\$ -
Storm Sewer Manhole, Box Base		EA	\$ 12,876.00	=	\$ -		\$ -
Storm Sewer Manhole, Slab Base		EA	\$ 7,082.00	=	\$ -		\$ -
Geotextile (Erosion Control)		SY	\$ 7.00	=	\$ -		\$ -
Rip Rap, d50 size from 6" to 24"		Tons	\$ 89.00	=	\$ -		\$ -
Rip Rap, Grouted		Tons	\$ 105.00	=	\$ -		\$ -
Drainage Channel Construction, Size (W x H)		LF	\$ -	=	\$ -		\$ -
Drainage Channel Lining, Concrete		CY	\$ 631.00	=	\$ -		\$ -
Drainage Channel Lining, Rip Rap		CY	\$ 124.00	=	\$ -		\$ -
Drainage Channel Lining, Grass		AC	\$ 1,626.00	=	\$ -		\$ -
Drainage Channel Lining, Other Stabilization				=	\$ -		\$ -
[insert items not listed but part of construction plans]				=	\$ -		\$ -
Section 2 Subtotal				=	\$ -		\$ -

* - Subject to defect warranty financial assurance. A minimum of 20% shall be retained until final acceptance (MAXIMUM OF 80% COMPLETE ALLOWED)

PROJECT INFORMATION							
Rocky Top Motel		11/21/2022		PPR 2140			
Project Name		Date		PCD File No.			
Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction)	
						% Complete	Remaining
SECTION 3 - COMMON DEVELOPMENT IMPROVEMENTS (Private or District and NOT Maintained by EPC)**							
ROADWAY IMPROVEMENTS							
				=	\$ -		\$ -
				=	\$ -		\$ -
				=	\$ -		\$ -
				=	\$ -		\$ -
				=	\$ -		\$ -
				=	\$ -		\$ -
STORM DRAIN IMPROVEMENTS (Exception: Permanent Pond/BMP shall be itemized under Section 1)							
				=	\$ -		\$ -
				=	\$ -		\$ -
				=	\$ -		\$ -
				=	\$ -		\$ -
				=	\$ -		\$ -
				=	\$ -		\$ -
WATER SYSTEM IMPROVEMENTS							
Water Main Pipe (PVC), Size 8"		LF	\$ 71.00	=	\$ -		\$ -
Water Main Pipe (Ductile Iron), Size 8"		LF	\$ 83.00	=	\$ -		\$ -
Gate Valves, 8"		EA	\$ 2,058.00	=	\$ -		\$ -
Fire Hydrant Assembly, w/ all valves		EA	\$ 7,306.00	=	\$ -		\$ -
Water Service Line Installation, inc. tap and valves		EA	\$ 1,466.00	=	\$ -		\$ -
Fire Cistern Installation, complete		EA		=	\$ -		\$ -
				=	\$ -		\$ -
[insert items not listed but part of construction plans]				=	\$ -		\$ -
SANITARY SEWER IMPROVEMENTS							
Sewer Main Pipe (PVC), Size 8"		LF	\$ 71.00	=	\$ -		\$ -
Sanitary Sewer Manhole, Depth < 15 feet		EA	\$ 4,858.00	=	\$ -		\$ -
Sanitary Service Line Installation, complete		EA	\$ 1,553.00	=	\$ -		\$ -
Sanitary Sewer Lift Station, complete		EA		=	\$ -		\$ -
				=	\$ -		\$ -
[insert items not listed but part of construction plans]				=	\$ -		\$ -
LANDSCAPING IMPROVEMENTS (For subdivision specific condition of approval, or PUD)							
		EA		=	\$ -		\$ -
		EA		=	\$ -		\$ -
		EA		=	\$ -		\$ -
		EA		=	\$ -		\$ -
		EA		=	\$ -		\$ -
Section 3 Subtotal				=	\$ -		\$ -

** - Section 3 is not subject to defect warranty requirements

PROJECT INFORMATION		
Rocky Top Motel	11/21/2022	PPR 2140
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction)	
						% Complete	Remaining
AS-BUILT PLANS (Public Improvements inc. Permanent WQCV BMPs)		LS	\$ 1,750.00	=	\$ 1,750.00		\$ 1,750.00
POND/BMP CERTIFICATION (inc. elevations and volume calculations)		LS	\$ 500.00	=	\$ 500.00		\$ 500.00
Total Construction Financial Assurance						\$	74,850.00
(Sum of all section subtotals plus as-builts and pond/BMP certification)							
Total Remaining Construction Financial Assurance (with Pre-Plat Construction)						\$	74,850.00
(Sum of all section totals less credit for items complete plus as-builts and pond/BMP certification)							
Total Defect Warranty Financial Assurance						\$	14,520.00
(20% of all items identified as (*). To be collateralized at time of preliminary acceptance)							

Approvals

I hereby certify that this is an accurate and complete estimate of costs for the work as shown on the Grading and Erosion Control Plan and Construction Drawings associated with the Project.

Oliver E Watts Colorado PELS # 9853 (P.E. Seal Required)

Approved by Owner / Applicant

Date

Approved by El Paso County Engineer / ECM Administrator

Date

Post Construction Stormwater Management Applicability Evaluation Form

This form is to be used by the Engineer of Record to evaluate applicable construction activities to determine if the activities are eligible for an exclusion to permanent stormwater quality management requirements. Additionally Part III of the form is used to identify and document which allowable control measure design standard is used for the structure.

Part I. Project Information		
1. Project Name: Rocky Top Motel and Campground		
2. El Paso County Project #: PPR2140	3. ESQCP #:	ALL TERRAIN RESPONSE: ADDRESSED.
4. Project Location: 10090 W Hwy 24	Project Location in MS4 Permit Area (Y or N): No	
5. Project Description: Existing motel and campground	What happened to the description that was here on the previous submittal? Please add it back in.	
If project is located within the El Paso County MS4 Permit Area, please provide copy of this completed form to the Stormwater Quality Coordinator for reporting purposes; a		

Part II. Exclusion Evaluation: Determine if Post-Construction S				
are met. Note: Questions A thru K directly correlate to the MS4 permit Part I.E.4.a. mark Not Applicable in Part III, Question 2.				
Questions	Yes	No	Not Applicable	Notes:
A. Is this project a "Pavement Management Site" as defined in Permit Part I E.4.a.i. (A)?		x		This exclusion applies to "roadways" only. Areas used primarily for parking or access to parking are not included.
B. Is the project "Excluded Roadway Development"?				
• Does the site add less than 1 acre of paved area per mile?			x	
• Does the site add 8.25 feet or less of paved width at any location to the existing roadway?		x		
C. Does the project increase the width of the existing roadway by less than 2 times the existing width?		x		For redevelopment of existing roadways, only the area of the existing roadway is excluded from post-construction requirements when the site does not increase the width by two times or more. <i>This exclusion only excludes the original roadway area it does NOT apply to entire project.</i>
D. Is the project considered an aboveground and Underground Utilities activity?		x		Activity can NOT permanently alter the terrain, ground cover or drainage patterns from those present prior to the activity
E. Is the project considered a "Large Lot Single-Family Site"?		x		Must be a single-residential lot or agricultural zoned land, ≥ 2.5 acres per dwelling and total lot impervious area < 10 percent.

Questions (cont'd)	Yes	No	Not Applicable	Notes
F. Do Non-Residential or Non-Commercial Infiltration Conditions exist? Post-development surface conditions do not result in concentrated stormwater flow or surface water discharge during an 80 th percentile stormwater runoff event.		x		Exclusion does not apply to residential or commercial sites for buildings. A site specific study is required and must show: rainfall and soil conditions; allowable slopes; surface conditions; and ratios of imperviousness area to pervious area.
G. Is the project land disturbance to Undeveloped Land where undeveloped land remains undeveloped following the activity?		x		Project must be on land with no human made structures such as buildings or pavement.
H. Is the project a Stream Stabilization Site?		x		Standalone stream stabilization projects are excluded.
I. Is the project a bike or pedestrian trail?		x		Bike lanes for roadways are not included in this exclusion, but may qualify if part of larger roadway activity is excluded in A, B or C above.
J. Is the project Oil and Gas Exploration?		x		Activities and facilities associated with oil and gas exploration are excluded.
K. Is the project in a County Growth Area?				Note, El Paso County does not apply this exclusion. All Applicable Construction Activity in El Paso County must comply the Post-Construction Stormwater Management criteria.

Part III. Post Construction (Permanent) Stormwater Control Determination		
Questions	Yes	No
1. Is project an Applicable Construction Activity?	x	
2. Do any of the Exclusions (A-K in Part II) apply?		x
<p>If the project is an Applicable Construction Activity and no Exclusions apply then Post-Construction (Permanent) Stormwater Management is required. Complete the applicable sections of Part IV below and then coordinate signatures for form and place in project file.</p> <p>If the project is not an Applicable Construction Activity, or Exclusion(s) apply then Post-Construction (Permanent) Stormwater Management is NOT required. Coordinate signatures for form and place in project file.</p>		

Unresolved previous comment:
Revise to "Yes" since two SFBs
are providing WQCV.

Part IV: Onsite PWQ Requirements, Documentation		Yes	No
1. Check which Design Standard(s) the project will Measure Requirements identified in permit Part IV.			
A. Water Quality Capture Volume (WQCV) Standard		X	X
B. Pollutant Removal/80% Total Suspended Solids Removal (TSS)			X
C. Runoff Reduction Standard			X
D. Applicable Development Site Draining to a Regional WQCV Control Measure			X
E. Applicable Development Site Draining to a Regional WQCV Facility			X
F. Constrained Redevelopment Sites Standard			X
G. Previous Permit Term Standard			X
2. Will any of the project permanent stormwater control measure(s) be maintained by another MS4? If Yes, you must obtain a structure specific maintenance agreement with the other MS4 prior to advertisement.			X
3. Will any of the project permanent stormwater control measures be maintained by a private entity or quasi-governmental agency (e.g. HOA or Special District, respectively)? If Yes, a Private Detention Basin/Stormwater Quality Best Management Practice Maintenance Agreement and Easement must be recorded with the El Paso County Clerk and Recorder.			X

ATE RESPONSE: SAND FILTERS REMOVED.
WATER QUALITY TREATMENT ACHIEVED
VIA RUNOFF REDUCTION.

Part V Notes (attach an additional sheet if you need more space)

Most grading on the site is the annual road / parking area r
miles of road. Since this is maintenance, there is no need to
There is a 0.528 acre portion of the site that was graded se
aforementioned Grading Planset for details

ATE RESPONSE: ADDRESSED. HOWEVER,
PLEASE NOTE THE TOTAL DISTURBANCE
AREAS HAVE BEEN UPDATED.

or hundreds of
nset.
Refer to the

Please remove the notes above and add back in
the breakdown of disturbances that was included
with the last submittal (and deemed satisfactory at
that time with no comments on it)...

Project design is complete to include the project design, construction plans, drainage report, specifications, and maintenance and access agreements as required. The engineering, drainage considerations and information used to complete these documents is complete, true, and accurate to the best of my belief and knowledge.

Signature and Stamp of Engineer of Record Oliver E Watts CO PELS 9853

Date

Post-Construction Stormwater Management Applicability Form has been reviewed and the project design, construction plans, drainage report, specifications, and maintenance and access agreements as required, have been reviewed for compliance with the Post Construction Stormwater Management process and MS4 Permit requirements.

Signature of El Paso County Project Engineer

Date

**PRIVATE DETENTION BASIN /
STORMWATER QUALITY BEST MANAGEMENT PRACTICE
MAINTENANCE AGREEMENT AND EASEMENT**

This PRIVATE DETENTION BASIN / STORMWATER QUALITY BEST MANAGEMENT PRACTICE MAINTENANCE AGREEMENT AND EASEMENT (Agreement) is made by and between EL PASO COUNTY by and through THE BOARD OF COUNTY COMMISSIONERS OF EL PASO COUNTY, COLORADO (Board or County) and G & D Enterprises, Corp. (Owner). The above may occasionally be referred to herein singularly as “Party” and collectively as “Parties.”

Recitals

- A. WHEREAS, Owner is the owner of certain real estate (Property) in El Paso County, Colorado, which Property is legally described in Exhibit A attached hereto and incorporated herein by this reference; and
- B. WHEREAS, Owner desires to develop on the Property a land use to be known as Rocky Top RV Park & Campground; and
- C. WHEREAS, the development of this Property will substantially increase the volume of water runoff and will decrease the quality of the stormwater runoff from the Property, and, therefore, it is in the best interest of public health, safety and welfare for the County to condition approval of this land use on Owner’s promise to construct adequate drainage, water runoff control facilities, and stormwater quality structural Best Management Practices (“BMPs”) for the land use; and
- D. WHEREAS, Chapter 8, Section 8.4.5 of the El Paso County Land Development Code, as periodically amended, promulgated pursuant to Section 30-28-133(1), Colorado Revised Statutes (C.R.S.), requires the County to condition approval of all subdivisions on a developer’s promise to so construct adequate drainage, water runoff control facilities, and BMPs in subdivisions; and
- E. WHEREAS, the Drainage Criteria Manual, Volume 2, as amended by Appendix I of the El Paso County Engineering Criteria Manual (ECM), as each may be periodically amended, promulgated pursuant to the County’s Colorado Discharge Permit System General Permit (MS4 Permit) as required by Phase II of the National Pollutant Discharge Elimination System (NPDES), which MS4 Permit requires that the County take measures to protect the quality of stormwater from sediment and other contaminants, requires subdividers, developers, landowners, and owners of facilities located in the County’s rights-of-way or easements to provide adequate permanent stormwater quality BMPs with new development or significant redevelopment; and
- F. WHEREAS, Section 2.9 of the El Paso County Drainage Criteria Manual provides for a developer’s promise to maintain a subdivision’s drainage facilities in the event the County does not assume such responsibility; and
- G. WHEREAS, developers in El Paso County have historically chosen water runoff detention basins as a means to provide adequate drainage and water runoff control in subdivisions, which basins, while effective, are less expensive for developers to construct than other methods of providing drainage and water runoff control; and

isn't there two?

aren't they both new?
Just delete this and
revise the quantity.

ALL TERRAIN RESPONSE: SAND
FILTERS HAVE BEEN REMOVED FROM
PLAN. MAINTENANCE AGREEMENT
WILL NO LONGER BE SUBMITTED.

H. WHEREAS, Owner desires to improve for the detention basin/stormwater quality BMP(s) (“detention basin/BMP(s)”) as shown on the attached drainage and stormwater runoff control and to meet requirements of the County’s MS4 Permit, and to operate, clean, maintain and repair such detention basin/BMP(s); and

I. WHEREAS, Owner desires to improve the detention basin/BMP(s) on property that is legally described in Exhibit A; and

J. WHEREAS, Owner shall be charged with the duties of constructing, operating, maintaining and repairing the detention basin/BMP(s) on the Property described in Exhibit A; and

K. WHEREAS, it is the County’s experience that subdivision developers and property owners historically have not properly cleaned and otherwise not properly maintained and repaired these detention basins/BMPs, and that these detention basins/BMPs, when not so properly cleaned, maintained, and repaired, threaten the public health, safety and welfare; and

L. WHEREAS, the County, in order to protect the public health, safety and welfare, has historically expended valuable and limited public resources to so properly clean, maintain, and repair these detention basins/BMPs when developers and property owners have failed in their responsibilities, and therefore, the County desires the means to recover its costs incurred in the event the burden falls on the County to so clean, maintain and repair the detention basin/BMP(s) serving this land use due to the Owner’s failure to meet its obligations to do the same; and

M. WHEREAS, the County conditions approval of this land use on the Owner’s promise to so construct the detention basin/BMP(s), and conditions approval on the Owner’s promise to reimburse the County in the event the burden falls upon the County to so clean, maintain and/or repair the detention basin/BMP(s) serving this Property; and

N. WHEREAS, the County could condition land use approval on the Owner’s promise to construct a different and more expensive drainage, water runoff control system and BMPs than those proposed herein, which more expensive system would not create the possibility of the burden of cleaning, maintenance and repair expenses falling on the County; however, the County is willing to forego such right upon the performance of Owner’s promises contained herein; and

O. WHEREAS, the County, in order to secure performance of the promises contained herein, conditions approval of this land use upon the Owner’s grant herein of a perpetual Easement over the Property for the purpose of allowing the County to periodically access, inspect, and, when so necessary, to clean, maintain and/or repair the detention basin/BMP(s).

See template on PCD website. It says that here you just "insert number" (ie: the quantity of proposed BMPs). So delete "existing" and replace with "two"

Agreement

NOW, THEREFORE, in consideration of the mutual Promises and covenants of which are hereby acknowledged, the Parties agree as follows:

ALL TERRAIN RESPONSE: SAND FILTERS HAVE BEEN REMOVED FROM PLAN. MAINTENANCE AGREEMENT WILL NO LONGER BE SUBMITTED.

1. Incorporation of Recitals: The Parties incorporate the Recitals above into this Agreement.

2. Covenants Running with the Land: Owner agrees that this entire Agreement and the performance thereof shall become a covenant running with the land, which land is legally described in Exhibit A attached hereto, and that this entire Agreement and the performance thereof shall be binding upon itself, its successors and assigns.

3. Construction: Owner shall construct improvements to the **existing** detention basin/BMP(s) on that the Property described in Exhibit A attached hereto and incorporated herein by this reference,. Owner shall not commence construction of the detention basin/BMP(s) until the El Paso County Planning and Community Development Department (PCD) has approved in writing the plans and specifications for the detention basin/BMP(s) and this Agreement has been signed by all Parties and returned to the PCD. Owner shall complete construction of the detention basin/BMP(s) in substantial compliance with the County-approved plans and specifications for the detention basin/BMP(s). Failure to meet these requirements shall be a material breach of this Agreement and shall entitle the County to pursue any remedies available to it at law or in equity to enforce the same. Construction of the detention basin/BMP(s) shall be substantially completed within one (1) year (defined as 365 days), which one year period will commence to run on the date the Erosion and Stormwater Quality Control Permit (ESQCP) is issued. Rough grading of the detention basin/BMP(s) must be completed and inspected by the PCD prior to commencing road construction.

In the event construction is not substantially completed within the one (1) year period, then the County may exercise its discretion to complete the project and shall have the right to seek reimbursement from the Owner and its successors and assigns, for its actual costs and expenses incurred in the process of completing construction. The term actual costs and expenses shall be liberally construed in favor of the County, and shall include, but shall not be limited to, labor costs, tool and equipment costs, supply costs, and engineering and design costs, regardless of whether the County uses its own personnel, tools, equipment and supplies, etc. to correct the matter. In the event the County initiates any litigation or engages the services of legal counsel in order to enforce the Provisions arising herein, the County shall be entitled to its damages and costs, including reasonable attorney fees, regardless of whether the County contracts with outside legal counsel or utilizes in-house legal counsel for the same.

4. Maintenance: The Owner agrees for itself and its successors and assigns, that it will regularly and routinely inspect, clean and maintain the detention basin/BMP(s), and otherwise keep the same in good repair, all at its own cost and expense. No trees or shrubs that will impair the structural integrity of the detention basin/BMP(s) shall be planted or allowed to grow on the detention basin/BMP(s).

5. Creation of Easement: Owner hereby grants the County a non-exclusive perpetual easement upon and across the Property described in Exhibit A. The purpose of the easement is to allow the County to access, inspect, clean, repair and maintain the detention basin/BMP(s); however, the

creation of the easement does not expressly or implicitly impose on the County a duty to so inspect, clean, repair or maintain the detention basin/BMP(s).

6. County's Rights and Obligations: Any time the County determines, in the sole exercise of its discretion, that the detention basin/BMP(s) is not properly cleaned, maintained and/or otherwise kept in good repair, the County shall give reasonable notice to the Owner and its successors and assigns, that the detention basin/BMP(s) needs to be cleaned, maintained and/or otherwise repaired. The notice shall provide a reasonable time to correct the problems. Should the responsible parties fail to correct the specified problems, the County may enter upon the Property to so correct the specified problems. Notice shall be effective to the above by the County's deposit of the same into the regular United States mail, postage pre-paid. Notwithstanding the foregoing, this Agreement does not expressly or implicitly impose on the County a duty to so inspect, clean, repair or maintain the detention basin/BMP(s).

7. Reimbursement of County's Costs / Covenant Running With the Land: The Owner agrees and covenants, for itself and its successors and assigns, that it will reimburse the County for its costs and expenses incurred in the process of completing construction of, cleaning, maintaining, and/or repairing the detention basin/BMP(s) pursuant to the provisions of this Agreement.

The term "actual costs and expenses" shall be liberally construed in favor of the County, and shall include, but shall not be limited to, labor costs, tools and equipment costs, supply costs, and engineering and design costs, regardless of whether the County uses its own personnel, tools, equipment and supplies, etc. to correct the matter. In the event the County initiates any litigation or engages the services of legal counsel in order to enforce the provisions arising herein, the County shall be entitled to its damages and costs, including reasonable attorney's fees, regardless of whether the County contracts with outside legal counsel or utilizes in-house legal counsel for the same.

8. Contingencies of Land Use/Land Disturbance Approval: Owner's execution of this Agreement is a condition of land use/land disturbance approval.

The County shall have the right, in the sole exercise of its discretion, to approve or disapprove any documentation submitted to it under the conditions of this Paragraph, including but not limited to, any separate agreement or amendment, if applicable, identifying any specific maintenance responsibilities not addressed herein. The County's rejection of any documentation submitted hereunder shall mean that the appropriate condition of this Agreement has not been fulfilled.

9. Agreement Monitored by El Paso County Planning and Community Development Department and/or El Paso County Department of Public Works: Any and all actions and decisions to be made hereunder by the County shall be made by the Director of the El Paso County Planning and Community Development Department and/or the Director of the El Paso County Department of Public Works. Accordingly, any and all documents, submissions, plan approvals, inspections, etc. shall be submitted to and shall be made by the Director of the Planning and Community Development Department and/or the Director of the El Paso County Department of Public Works.

10. Indemnification and Hold Harmless: Owner agrees, for itself and its successors and assigns that it will indemnify, defend, and hold the County harmless from any and all loss, costs, damage, injury, liability, claim, lien, demand, action and causes of action whatsoever, whether at law or in equity, arising from or related to its intentional or negligent acts, errors or omissions or that of its agents, officers, servants, employees, invitees and licensees in the construction, operation, inspection,

cleaning (including analyzing and disposing of any solid or hazardous wastes as defined by State and/or Federal environmental laws and regulations), maintenance, and repair of the detention basin/BMP(s), and such obligation arising under this Paragraph shall be joint and several. Nothing in this Paragraph shall be deemed to waive or otherwise limit the defense available to the County pursuant to the Colorado Governmental Immunity Act, Sections 24-10-101, *et seq.* C.R.S., or as otherwise provided by law.

11. Severability: In the event any Court of competent jurisdiction declares any part of this Agreement to be unenforceable, such declaration shall not affect the enforceability of the remaining parts of this Agreement.

12. Third Parties: This Agreement does not and shall not be deemed to confer upon or grant to any third party any right to claim damages or to bring any lawsuit, action or other proceeding against either the County, the Owner, or their respective successors and assigns, because of any breach hereof or because of any terms, covenants, agreements or conditions contained herein.

13. Solid Waste or Hazardous Materials: Should any refuse from the detention basin/BMP(s) be suspected or identified as solid waste or petroleum products, hazardous substances or hazardous materials (collectively referred to herein as “hazardous materials”), the Owner shall take all necessary and proper steps to characterize the solid waste or hazardous materials and properly dispose of it in accordance with applicable State and/or Federal environmental laws and regulations, including, but not limited to, the following: Solid Wastes Disposal Sites and Facilities Acts, §§ 30-20-100.5 – 30-20-119, C.R.S., Colorado Regulations Pertaining to Solid Waste Disposal Sites and Facilities, 6 C.C.R. 1007-2, *et seq.*, Solid Waste Disposal Act, 42 U.S.C. §§ 6901-6992k, and Federal Solid Waste Regulations 40 CFR Ch. I. The County shall not be responsible or liable for identifying, characterizing, cleaning up, or disposing of such solid waste or hazardous materials. Notwithstanding the previous sentence, should any refuse cleaned up and disposed of by the County be determined to be solid waste or hazardous materials, the Owner, but not the County, shall be responsible and liable as the owner, generator, and/or transporter of said solid waste or hazardous materials.

14. Applicable Law and Venue: The laws, rules, and regulations of the State of Colorado and El Paso County shall be applicable in the enforcement, interpretation, and execution of this Agreement, except that Federal law may be applicable regarding solid waste or hazardous materials. Venue shall be in the El Paso County District Court.

IN WITNESS WHEREOF, the Parties affix their signatures below.

Executed this _____ day of _____, 20____, by:

G & D Enterprises, Corp.

By: _____
Daniel Newman, Owner

The foregoing instrument was acknowledged before me this _____ day of _____, 20____, by Daniel Newman as Owner of G & D Enterprises, Corp..
Witness my hand and official seal.

My commission expires: _____

, Notary Public

Executed this _____ day of _____, 20____, by:

BOARD OF COUNTY COMMISSIONERS
OF EL PASO COUNTY, COLORADO

By: _____
Kevin Mastin, Interim Executive Director
El Paso County Planning and Community Development Department
Authorized Signatory pursuant to LDC

The foregoing instrument was acknowledged before me this _____ day of _____, 20____, by _____, Executive Director, El Paso County Planning and Community Development Department.

Witness my hand and official seal.

My commission expires: _____

Notary Public

Approved as to Content and Form:

Assistant County Attorney

EXHIBIT A
Legal Description of Property

That portion of the Southwest Quarter of the Northwest Quarter of Section 9, Township 13 South, Range 68 West of the 6th P.M., described as follows:

Beginning at a point of the Easterly Right-of-Way line of US Highway No. 24 whence the Southwest Corner of the Northwest Quarter of said Section 9 bears S36°08'W, 635'; thence S55°22'E on said Easterly Right-of-Way line 605.3'; thence N27°31'E, 722'; thence N55°08'W, 513.8'; thence S35°18'W, 723' to the Point of Beginning, except any portion contained within US Highway 24, County of El Paso, State of Colorado

And containing 9.30 acres



2880 International Circle, Suite 110
 Colorado Springs, CO 80910
 Phone 719-520-6300
 Fax 719-520-6695
 www.elpasoco.com

EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT

Y - Satisfies criteria
N - Needs to be addressed

STORMWATER MANAGEMENT PLAN CHECKLIST

Revised: July 2019

		Applicant	PCD
1. STORMWATER MANAGEMENT PLAN (SWMP)			
1	Applicant (owner/designated operator), SWMP Preparer, Qualified Stormwater Manager, and Contractor Information. (On cover/title sheet)	X	Y
2	Table of Contents	X	Y
3	Site description and location to include: vicinity map with nearest street/crossroads description.	X	Y
4	Narrative description of construction activities proposed (e.g., may include clearing and grubbing, temporary stabilization, road grading, utility / storm installation, final grading, final stabilization, and removal of temporary control measures)	X	Y
5	Phasing plan – may require separate drawings indicating initial, interim, and final site phases for larger projects. Provide “living maps” that can be revised in the field as conditions dictate.	X	Y
6	Proposed sequence for major activities: Provide a construction schedule of anticipated starting and completion dates for each stage of land-disturbing activity depicting conservation measures anticipated, including the expected date on which the final stabilization will be completed.	X	Y
7	Estimates of the total site area and area to undergo disturbance; current area of disturbance must be updated on the SWMP as changes occur.	X	Y
8	Soil erosion potential and impacts on discharge that includes a summary of the data used to determine soil erosion potential	X	Y
9	A description of existing vegetation at the site and percent ground cover and method used to determine ground cover	X	Y
10	Location and description of all potential pollution sources including but not limited to: disturbed and stored soils; vehicle tracking; management of contaminated soils; loading and unloading operations; outdoor storage of materials; vehicle and equipment maintenance and fueling; significant dust generating process; routine maintenance activities involving fertilizers, pesticides, herbicides, detergents, fuels, solvents, oils, etc.; on-site waste management; concrete truck/equipment washing; dedicated asphalt, concrete batch plants and masonry mixing stations; non-industrial waste such as trash and portable toilets	X	Y
11	Material handling to include spill prevention and response plan and procedures.	X	Y
12	Spill prevention and pollution controls for dedicated batch plants	X	Y
13	Other SW pollutant control measures to include waste disposal and off site soil tracking	X	Y
14	Location and description of any anticipated allowable non-stormwater discharge (ground water, springs, irrigation, discharge covered by CDPHE Low Risk Guidance, etc.)	X	Y
15	Name(s) of ultimate receiving waters; size, type and location of stormwater outfall or storm sewer system discharge	X	Y
16	Description of all stream crossings located within the project area or statement that no streams cross the project area	X	N



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EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT

STORMWATER MANAGEMENT PLAN CHECKLIST

Revised: July 2019		Applicant	PCD
17	SWMP Map to include:		
17a	construction site boundaries	X	Y
17b	flow arrows to depict stormwater flow directions	X	Y
17c	all areas of disturbance	X	Y
17d	areas of cut and fill	X	N
17e	areas used for storage of building materials, soils (stockpiles) or wastes	X	Y
17f	location of any dedicated asphalt / concrete batch plants	X	Y
17g	location of all structural control measures	X	Y
17h	location of all non-structural control measures show locations of seeding and mulching	X	N
17i	springs, streams, wetlands and other surface waters, including areas that require maintenance of pre-existing vegetation within 50 feet of a receiving water	X	Y
18	Narrative description of all structural control measures to be used. Modifications to EPC standard control measures must meet or exceed County-approved details.	X	Y
19	Description of all non-structural control measures to be used including seeding, mulching, protection of existing vegetation, site watering, sod placement, etc.	X	Y
20	Technical drawing details for all control measure installation and maintenance; custom or other jurisdiction's details used must meet or exceed EPC standards	X	Y
21	Procedure describing how the SWMP is to be revised	X	Y
22	Description of Final Stabilization and Long-term Stormwater Quality (describe nonstructural and structural measures to control SW pollutants after construction operations have been completed, including detention, water quality control measure etc.)	X	Y
23	Specification that final vegetative cover density is to be 70% of pre-disturbed levels	X	Y
24	Outline of permit holder inspection procedures to install, maintain, and effectively operate control measures to manage erosion and sediment	X	Y
25	Record keeping procedures identified to include signature on inspection logs and location of SWMP records on-site	X	Y
26	If this project relies on control measures owned or operated by another entity, a documented agreement must be included in the SWMP that identifies location, installation and design specifications, and maintenance requirements and responsibility of the control measure(s).	X	Y
Please note: all items above must be addressed. If not applicable, explain why, simply identifying "not applicable" will not satisfy CDPHE requirement of explanation.			
2. ADDITIONAL REPORTS/PERMITS/DOCUMENTS			
a	Grading and Erosion Control Plan (signed)		
b	Erosion and Stormwater Quality Control Permit (ESQCP) (signed)		
3. Applicant Comments:			
a			



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**EL PASO COUNTY PLANNING AND
COMMUNITY DEVELOPMENT
DEPARTMENT**

STORMWATER MANAGEMENT PLAN CHECKLIST

Revised: July 2019

		Applicant	PCD
b			
c			
4. Checklist Review Certifications:			
a	<p>Engineer of Record: The Stormwater Management Plan was prepared under my direction and supervision and is correct to the best of my knowledge and belief. Said Plan has been prepared according to the criteria established by the County and State for Stormwater Management Plans.</p> <p>_____ Engineer of Record Signature Date</p>		
b	<p>Review Engineer: The Stormwater Management Plan was reviewed and found to meet the checklist requirements except where otherwise noted or allowed by an approved deviation request.</p> <p>_____ Review Engineer Date</p>		

El Paso County
STORMWATER MANAGEMENT PLAN

**Rocky Top Motel and
Campground**

10090 W Highway 24

A portion of the NW ¼, Section 9, Township 13 South, Range 68 West

County Project No.: PPR2140

December 22 2022

prepared for

G & D Enterprises
10090 West Highway 24
Green Mountain Falls, CO 80819

ALL TERRAIN RESPONSE: SEE
UPDATED STORMWATER
MANAGER. PE NUMBER
PROVIDED.

Qualified Stormwater Manager

Name: Erik S. Watts

Company: Oliver E. Watts Consulting Engineer Inc

Address: 614 Elkton Drive Colorado Springs, CO 80907

Contractor

Name: Dan Nieman

Company: G & D Enterprises

Address: 10090 West Highway 24, Green Mountain Falls, CO 80819

Per ECM App I.5.2:

"The individual performing the self-monitoring inspections shall be a qualified stormwater manager, which is an individual knowledgeable in the principles and practices of erosion and sediment control and pollution prevention and with the skills to assess conditions at construction sites that could impact stormwater quality and the effectiveness of stormwater controls implemented to meet stormwater permitting requirements. Examples of a qualified stormwater manager include a registered Professional Engineer or an erosion control inspector certified in a regionally recognized erosion and sediment control inspection training program. The person performing inspections should be a person with authority to expend project dollars on erosion and stormwater quality control."

Please provide information supporting that this QSM is qualified per the above criteria.

Oliver E. Watts, Consulting Engineer, Inc.
Colorado Springs, Colorado

OLIVER E. WATTS, PE-LS
OLIVER E. WATTS, CONSULTING ENGINEER, INC.
CIVIL ENGINEERING AND SURVEYING
614 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907
(719) 593-0173
fax (719) 265-9660
olliewatts@aol.com
Celebrating over 43 years in business

December 22, 2022

El Paso County D.O.T.
3275 Akers Drive
Colorado Springs, CO 80922

ATTN: Permits Unit

SUBJECT: Stormwater Management Plan
Falcon Storage Subdivision

Transmitted herewith for your review and approval is the SWMP for the Rocky Top Motel and campground

Please contact our office if we may provide any further information.

Oliver E. Watts, Consulting Engineer, Inc.

BY: _____
Erik S. Watts, Authorized Representative
Erosion Control Supervisor

The developer / owner has read and will comply with all of the requirements specified in this stormwater management report.

By: _____
Daniel P. Nieman, owner
10090 West Highway 24
Green Mountain Falls, CO 80819
719-684-9044

Table of Contents

1. Cover
2. Transmittal Letter
3. Table of Contents
4. Report 6 pages
5. Vicinity Map
6. Computations
7. FEMA Panel No. 08041C0467 G, dated December 7, 2018
8. SCS Soils Map and Interpretation Sheet
9. Backup Information, 4 pages
10. Grading and Erosion Control Plans
11. Landscape Plan

1. SITE DESCRIPTION:

The Rocky Top Motel and Campground is located in a portion of the NW ¼, Section 9, Township 13 South, Range 68 West, of the 6th P.M., in El Paso County. The address, located at 10090 West Highway 24, is adjacent to Green Mountain Falls, on the north side of Highway 24 as shown in detail on the enclosed grading planset. This facility has been in use at this location since 1947 as a motel and since 1950 as a camp ground. A use application for RV storage has been recently submitted to the County for this additional use. A detailed site development plan is submitted as part of the enclosed grading planset to delineate current conditions. The overall Site totals 9.3 acres. Grading over the years has occurred on 1.597 acres of the lot.

Lat: 38°.93558 " N

Long: 105°.00655 " W

a) **Construction activity description:** Construction activity for the site will include; overlot grading, and construction of a parking / RV camping spots, tent camping spots, a retaining wall along the west boundary and general maintenance. The site will be landscaped / reseeded once all construction has been completed.

b) **Sequence / time line of activities:** The site will be overlot graded for several years, per the enclosed grading plan. All site grading is to be in compliance with El Paso County Code. Grading for the site, is scheduled to be completed by fall 2023. Total site landscaping / reseeded should be completed and acceptable ground cover / vegetation established by late November 2023.

c) **Site area:** The site is 9.3 acres total. It is as stated above,, located at 10090 West Highway 24, and is adjacent to Green Mountain Falls, on the north side of Highway 24. The portion of the site that is to experience grading is approximately 1.597 acres. The Site is vegetated with grasses, and some scrub brush outside the RV, tent and motel area(s). Approximately 55% of the site has some form of vegetation on it. The site is to be graded so as to comply with the Grading and Erosion Control Plans, which accompany the submittal.

d) **Runoff:** Overall runoff from the Site will remain at historic levels because of the proposed detention facilities on the southwest and southeast portions of the lot. Attached is the "Description of Runoff" section from the lots drainage letter:

A. Historic Drainage:

Computations are enclosed to show the historic drainage conditions prior to construction of any existing facilities (pre-1947). The drainage pattern has remained unchanged, and is increased due to development over the years. Historic and developed runoffs are described as follows.

B. Drainage Inflows:

As shown on the enclosed drainage plan one small area (Basin O-1) will drain into the property near the northwest corner, creating 0.15 cfs / 1.1 cfs (5-year / 100-year runoffs) from a small vacant grassed site. This runoff is in the undeveloped historic state.

C. On Site Runoff:

On site runoff has existed in the current state for many years. Improvements include the motel area and improvements, including paving, to the road system. Other improvements include regrading the area for use as campground and tented areas and increases in runoff are minimal as described improvements are

made. The type "A" soils of the site exhibit minimal runoff, which is not significantly increased with gravel or similar surfacing used for dust control

The above mentioned inflow will combine with runoff from Basin A for a total of 4.0 cfs/ 10.6 cfs at the location shown on the drainage plan along the entrance road. The historic runoff for this area is 0.85 cfs \ 6.2 cfs. This basin is a mixture of part of the paved road and graveled campground sites graded into the natural terrain and areas of native vegetation covering steeper boundary areas. This will combine with runoff from Basin B, consisting of the motel site, paved roads and parking. The 0.61 acre RV parking site has been abandoned and reclaimed. The total runoff at the outfall point into Highway 24 is 5.6 cfs / 17.2 cfs, compared with the historic value of 1.49 cfs / 11.1 cfs. This runoff is well within the 21.4 cfs capacity of the existing downstream 24" cmp shown on the drainage plan, as shown by the enclosed computations. A sand filter basin is provided at the subdivision boundary for water quality. Computations are enclosed.

Basin C is the Southwesterly third of the site, containing graveled campground sites, tent sites, and a gravel road. The 0.38 acre RV storage site has been abandoned and reclaimed. The total runoff at the historic outfall point into Highway 24 is 3.2 cfs / 9.1 cfs, compared with the historic value of 0.748 cfs / 5.7 cfs. Some 24" cmp culverts exist within the site and below the outfall point, as shown on the drainage plan. The first has a computed capacity of 33.5 cfs and will safely accommodate this total runoff as shown in the computations. Highway 24 culverts have proved historically adequate and will remain so as far as this development is concerned. A sand filter basin is provided at the subdivision boundary for water quality. Computations are enclosed

8. WATER QUALITY REQUIREMENTS:

The total historic and proposed development work on the site is largely mitigated by the existing Type A soils of the area. Two proposed sand filter basins are proposed at the outfall points of the development for this purpose. The proposed grading is shown on the enclosed drainage plan and the grading plan that accompany the total submittal. The work is minimal and necessary erosion BMP's are proposed.

This parcel is not within the limits of a designated flood plain or flood hazard area, as identified on FEMA Panel No. 08041C0467 G, dated December 7, 2018, a copy of which is enclosed for reference.

The method used for all computations is that specified in the City-County Drainage Criteria Manual, using the rational method for areas of the size of the site and the SCS method for the review of the major basin involved. All computations are enclosed for reference and review.

The local USDA/SCS office has mapped the soils in the area. A soils map interpretation sheet is enclosed for reference. All soils in this area are of hydrologic group "A". Catamount-Ivywild-Legault-Rock outcrop. Rock outcrop and shallow and moderately deep, somewhat excessively drained soils that formed in material weathered from granite .The soils in this area are largely usable as gravel surfacing and are excellent as a construction material. Infiltration is a maximum and runoff is held to a minimum. . Potential erosion impacts would affect Highway 24 to the south. Runoff would be carried down the slopes and into the right-of-way. Erosion control measures; silt fencing, and reseedling will serve to mitigate this hazard. See page 2, Erosion Control Plan for details.

e) **Existing vegetation:** As stated previously; Item 1, C “Site Area,” vegetation consists of grasses, and some scrub brush. Approximately 55% of the site has some form of vegetation on it. This was determined, per visual inspection at the time of the site dated 10-6-22. Per the enclosed Grading and Erosion Control Plans: The area is to be graded as shown and erosion control measures, as shown, and listed in said Plans implemented.

f) **Potential pollution sources:**

Potential pollution sources which shall be evaluated for potential to contribute to stormwater discharge for the subject site may include the following: disturbed and stored soils, vehicle tracking of sediments, management of contaminated soils, loading and unloading operations, outdoor storage of materials (building material, chemicals, etc.), vehicle and equipment maintenance and fueling, significant dust or particulate generating processes, routine maintenance activities involving fertilizers, pesticides, detergents, fuels, solvents, oils. etc., on-site waste management practices (waste piles, liquid wastes, dumpsters), concrete truck / equipment washing, including the truck chute and associated fixtures, non-industrial waste sources (worker trash and portable toilet) and other areas or procedures where potential spills can occur. The locations of these areas that affect the site are shown on the enclosed plans.

TABLE 1: POTENTIAL POLLUTION SOURCES

Potential Pollution Sources	Possible Site Contributions of Pollutants to Stormwater Discharges
All disturbed and stored soils	Stockpiles of fill from the excavations, topsoil stockpiles. Imported borrow stockpile.
Vehicle tracking of sediments	See the enclosed drawings for vehicle entrance and exit.
Management of contaminated soils	No contaminated soils are expected to be encountered.
Loading and unloading operations	Loading and unloading of building materials, etc.
Outdoor storage activities (building material, fertilizers, chemicals, etc.)	Building materials and equipment storage areas (no fertilizers, petroleum or chemical products will be stored on-site).
Vehicle and equipment maintenance and fueling	Fueling will occur on-site using mobile equipment (will not be stored on-site). Equipment maintenance will occur off-site.
Significant dust or particulate-generating processes	Vehicle tracking, soil removed from excavation, stockpiles.
Routine maintenance activities involving fertilizers, pesticides, detergents, fuels, solvents, oils, etc.	All equipment maintenance will occur off-site. No fertilizers, pesticides, detergents, and/or solvents will be used or stored on-site.
On-site waste management practices (waste piles, liquid wastes, dumpsters, etc.)	All waste will be removed from site as soon as possible.
Concrete truck/equipment washing, including the concrete truck chute and associated fixtures and equipment	No Washout needed for this work.
Dedicated asphalt and concrete batch	No dedicated asphalt and concrete batch plants are on-

Potential Pollution Sources	Possible Site Contributions of Pollutants to Stormwater Discharges
plants	site.
Non-industrial waste sources such as worker trash and portable toilets	Worker trash will be removed from the site as soon as possible. Portable toilets will be provided.
Other areas or procedures where potential spills can occur	Petroleum releases from equipment are possible.

BMP's for Pollutant Prevention:

The following are common practices to mitigate potential pollutants:

- Wind erosion shall be controlled by sprinkling site roadways and/or temporary stabilizing stockpiles. Each dump truck hauling materials to or from the site shall be required to cover its bed with a tarpaulin.
- Sanitary facilities: The existing site restrooms will be used. Said existing restrooms shall be inspected daily for spills.
- Equipment fueling and maintenances services – a designated fueling area will be established to contain any spill resulting from fueling, maintenance or repair of equipment. Contractors shall be responsible for containment, cleanup and disposal of any leak or spill and any associated costs of said cleanup / disposal.
- Chemical products shall be protected from precipitation, free from ground contact, and stored properly to prevent damage from equipment, vehicles or workers.
- Material stockpiles (soils, soil amendments, debris/trash piles) – All construction trash and debris will be deposited in the site dumpster(s). Said dumpster shall be inspected daily for spills, overflows and capacity. Dumpsters to be emptied when the “Max Level” line is reached.
- Sediment and mitigation of sediment – Sweeping operations will take place as necessary to maintain roadways / parking areas. The perimeter of the site will be evaluated for any potential impact resulting from trucking operations or sediment mitigation from the site. BMP devices will be placed to protect storm system inlets should any roadway / parking area tracking or sediment mitigation occur.
- Snow removal and/or stockpiling will be considered prior to placement at the site. Snow stockpiles should be kept away from any stormwater conveyance system(s) to include; inlets, ponds, outfall locations, roadway surfaces, etc.

g) Non stormwater discharge: No springs are known to exist. Any additional discharge is confined to the surface and runoff routed to the subdivision detention pond.

h) Receiving water(s), size, type and description of outfall(s): Fountain Creek is the receiving water for stormwater discharge from this Site. Outfalls are shown on the enclosed grading plan. NOTE: There are no streams cross this project.

2. SITE MAP:

Enclosed are a vicinity map and grading and erosion control plans for review. Details for the BMP's are shown of the plans.

Add a statement that satisfies SWMP Checklist Item 16.

ALL TERRAIN RESPONSE:
STATEMENT ADDED.

3. BMPs FOR STORMWATER POLLUTION PREVENTION:

a) Erosion and sediment controls:

1) Structural practices: As indicated on the enclosed Grading and Erosion Control Plans, erosion will be contained through the use of said silt fencing or in the case of the project exit an VTC (vehicle tracing control pad). See Plans for locations and details on silt fencing and VTC. The portion of the lot that has experienced grading will be landscaped or reseeded per County Code (see DCM Volume II for details).

2) Non-Structural practices: Permanent stabilization practices will be implemented on this Site through landscaping and reseeded. Said landscaping/seeding activities will occur when all grading / construction for the site is finished. See the enclosed Grading and Erosion Control Plans for details.

b) Materials handling and Spills Prevention: There are no plans to have any On-Site batch plant(s). Equipment fueling and maintenances services – a designated fueling area will be established to contain any spill resulting from fueling, maintenance or repair of equipment. Contractors shall be responsible for containment, cleanup and disposal of any leak or spill and any associated costs of said cleanup / disposal. Vehicle refueling will take place away from areas containing or conveying water, or near the existing road, in accordance with State approved practices. Should a fuel or fluid spill occur, the contractor will follow County and State guidelines concerning spills such as; berming the area around the spill and remove all contaminated soil in an approved container and disposing of said containing at a County / State approved facility / Site. Spills will be reported to CDPHE:

Water Quality Control Division
WQCD-Permits
4300 Cherry Creek Drive South
Denver, CO 80246-1530
(303) 692-3517
<http://www.cdphe.state.co.us>

revise to "slotted"

revise to "water quality"

4. FINAL STABILIZATION AND LONG TERM STORMWATER MANAGEMENT:

As stated earlier, copies of the Grading and Erosion Control Plans are submitted for your review. These Plans should adequately address this section. Said plans show two (proposed) detention basins located at the southeast corner and southwest corner of the lot. These will be used as water quality ponds during construction. A perforated PVC pipe will be installed to control the release of storm water. Once site construction is completed, the ponds will be converted to sand filter basins and outlets installed, per the plans. Our office will have inspectors monitoring the Site during construction to insure compliance with applicable State and El Paso County Code(s). The Permittee will contact your office upon final stabilization, once the vegetation / ground cover reaches 70% of pre-disturbance levels. See re-seed section, on page 9, for suggested final stabilization seed mix, for areas outside the landscaping. The temporary BMP's will be removed upon receiving permission from El Paso County.

No temporary sediment basins are shown on the plans. So I think that this sentence can be removed.

5. OTHER CONTROLS:

Please review the enclosed Grading and Erosion Control Plan. It details said controls. Waste disposal will be in accordance with El Paso County standards. The existing asphalt driveway will act as a VTC where shown on the grading plan to remove any soil from vehicles before entering the Highway 24 right-of-way.

6. INSPECTION AND MAINTENANCE:

The Qualified Stormwater Manager will monitor the day to day Site activities during construction. A copy of this report will be kept in the vehicle of said inspector.

Inspections will occur and reports will be filled out and signed by the Qualified Stormwater Manager every 14 days, and/or after a precipitation or snow melt event, that causes erosion, as required, to ensure adequate operation and design of selected BMP's. Signed copies of said inspection reports will be kept by the permit holder and at this office. Silt fencing will need to be replaced and/or repaired as need be. All litter and debris should be removed from the lot and disposed off of the site (i.e. in a trash bag, trash can, dumpster). The asphalt drive / VTC will be inspected weekly and have maintenance and cleaning performed as necessary.

7. SWMP REVISION PROCEDURES:

This SWMP should be revised as necessary to address the various phases of grading, construction, and changing site conditions and BMP needs.

The need for revision could include the following: Additional BMPs to control stormwater, as needed, removal of one of more BMP as items are completed, the weather and precipitation could affect and cause a needed revision in the SWMP. The Qualified Stormwater Manager will revise accordingly.

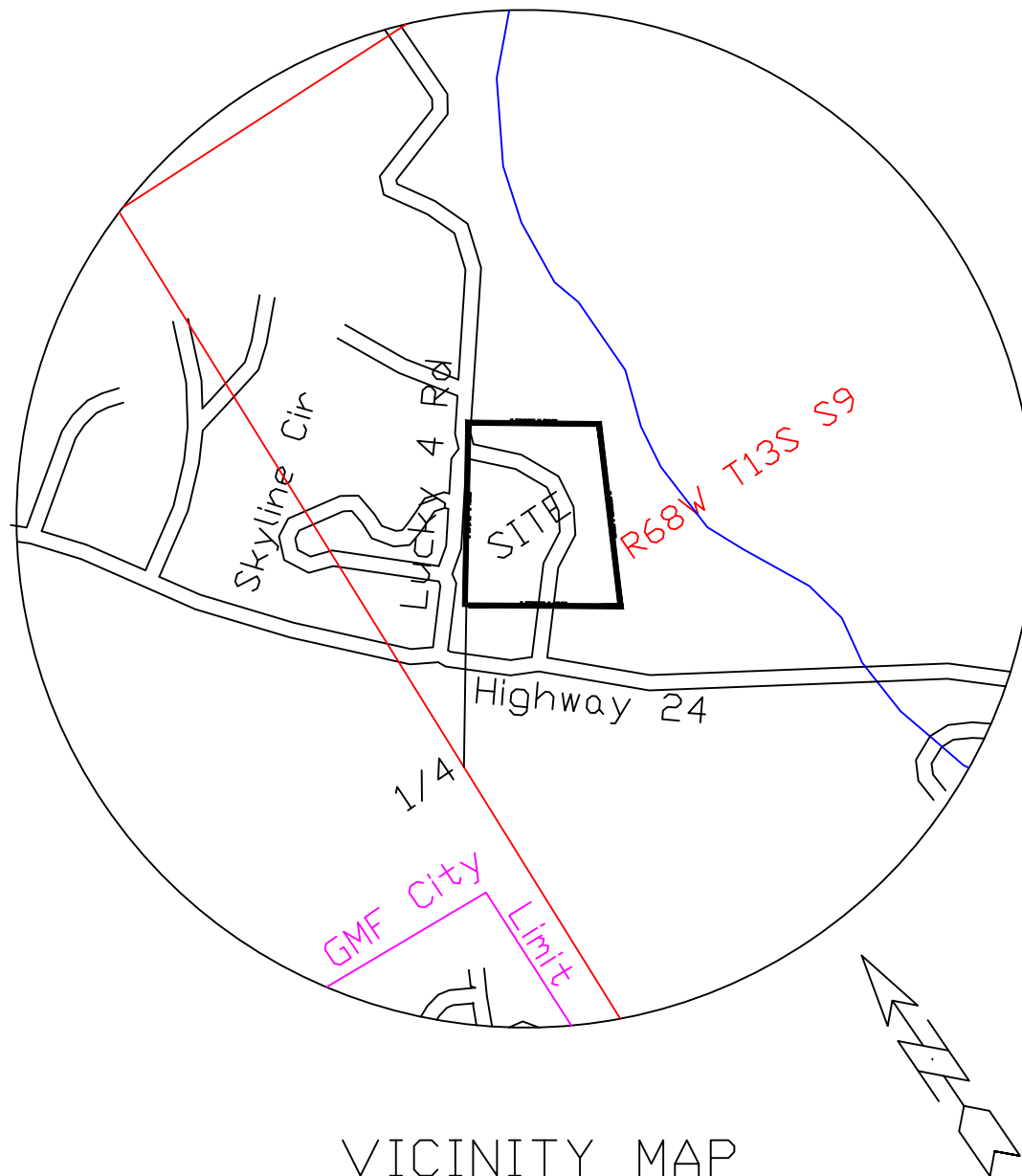
8. FINAL STABILIZATION:

Re-seed mixture

All disturbed areas shall be re-graded. See the attached landscaping plan for revegetation.

9. EROSION CONTROL MEASURES OWNER / OPERATED BY ANOTHER ENTITY:

This project outfalls to existing storm sewers on the north side of Highway 24 owned or operated by another entity.



VICINITY MAP
NTS

MAJOR BASIN	SUB BASIN	AREA		BASIN		T _c MIN	I		SOIL GRP	DEV. TYPE	C		FLOW		RETURN PERIOD	
		PLANIM READ	ACRES	LENGTH	HEIGHT								qp	qp		
FOUNTAIN CR	O-1	COGO	0.66	100	4	20			A	MDW	0.08	0.35			5	100
				+200	6	+1										
						21	2.9	4.8					0.15	1.1	5	100
	+A	COGO	3.12	+420	34	+1.2			A	MDW	0.08	0.35	15%			
				V=5.7						GRAVEL	0.50	0.70	85%			
										MIX	0.437	0.648				
	TOTAL	COGO	3.78			22.2	2.8	4.7	A	MIX	0.375	0.596	4.0	10.6	5	100
	+B	COGO	3.13	+360	34	+1.0			A	ROOF	0.73	0.81	2%			
				V=6.1						GRAVEL	0.50	0.70	20%			
										MDW	0.08	0.35	70%			
										MIX	0.215	0.478				
	TOTAL	COGO	6.91	43%		23.2	2.7	4.6	A	MIX	0.302	0.542	5.6	17.2	5	100
	C	COGO	2.97	100	2	14.7			A	GRAVEL	0.50	0.70	60%			
			V=5.4	+640	46	+2.0				MDW	0.08	0.35	40%			
				45%		16.7	3.3	5.5	A	MIX	0.332	0.560	3.2	9.1	5	100
HYDROLOGICAL COMPUTATION – BASIC DATA PROJ: ROCKY TOP MOTEL & CAMPGROUND BY: O.E. WATTS RATIONAL METHOD DATE: 6-14-19, 8-22-21										OLIVER E. WATTS, CONSULTING ENGINEER, INC. 614 ELKTON DRIVE COLORADO SPRINGS, CO 80907					PAGE 1 OF 3	

MAJOR BASIN	SUB BASIN	AREA		BASIN		T _c MIN	I in./hr.		SOIL GRP	DEV. TYPE	C		FLOW		RETURN PERIOD -years-	
		PLANIM READ	ACRES	LENGTH -FT.-	HEIGHT -FT.-								5-ry	100-yr		
													qp -CFS-	qp -CFS-		
HISTORIC	O-1	COGO	0.66	100	4	20			A	MDW	0.08	0.35			5	100
				+200	6	+1										
						21	2.9	4.8					0.15	1.1	5	100
	+A	COGO	3.13	+420	34	+1.2										
	TOTAL		3.748			22.2	2.8	4.7	A	MDW	0.08	0.35	0.85	6.2	5	100
	+B	COGO	3.13	+360	34	+1.0										
	TOTAL		6.91			23.2	2.7	4.6	A	MDW	0.08	0.35	1.49	11.1	5	100
	C	COGO	2.97	100	2	14.7										
				+640	46	+2.0										
						16.7	3.3	5.5	A	MDW	0.08	0.35	0.78	5.7	5	100
HYDROLOGICAL COMPUTATION – BASIC DATA							OLIVER E. WATTS, CONSULTING ENGINEER, INC. 614 ELKTON DRIVE COLORADO SPRINGS, CO 80907									
PROJ: ROCKY TOP MOTEL & CAMPGROUND BY: O.E. WATTS																
RATIONAL METHOD DATE: August 24, 2022																
															PAGE 2	
															OF	
															3	

STREET AND STORM SEWER CALCULATIONS

[illegible]

STREET AND STORM SEWER CALCULATIONS
PROJECT: ROCKY TOP MOTEL & CAMPGROUND
BY: O.E. WATTS DATE: 6-14-19, 8-16-21, 8-22-22

OLIVER E. WATTS, CONSULTING ENGINEER, INC.
614 ELKTON DRIVE COLORADO SPRINGS, CO 80907

Page:3
Of
Pages:3

National Flood Hazard Layer FIRMette



38°56'20.49"N

ROCKY TOP MOTEL AND CAMPGROUND
FEMA MAP PANEL
1"=500'

OLIVER E. WATTS
CONSULTING ENGINEER, INC.
COLORADO SPRINGS

08041 C0459 G
eff. 12/7/2018

EL PASO COUNTY
080059

T13S R68W S008

T13S R68W S009

AREA OF MINIMAL FLOOD HAZARD
Zone X 08041 C0467 G
eff. 12/7/2018

Zone D

SITE

USGS The National Map: Orthoimagery. Data refreshed April, 2019.

Feet

1:6,000

38°55'52.50"N

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

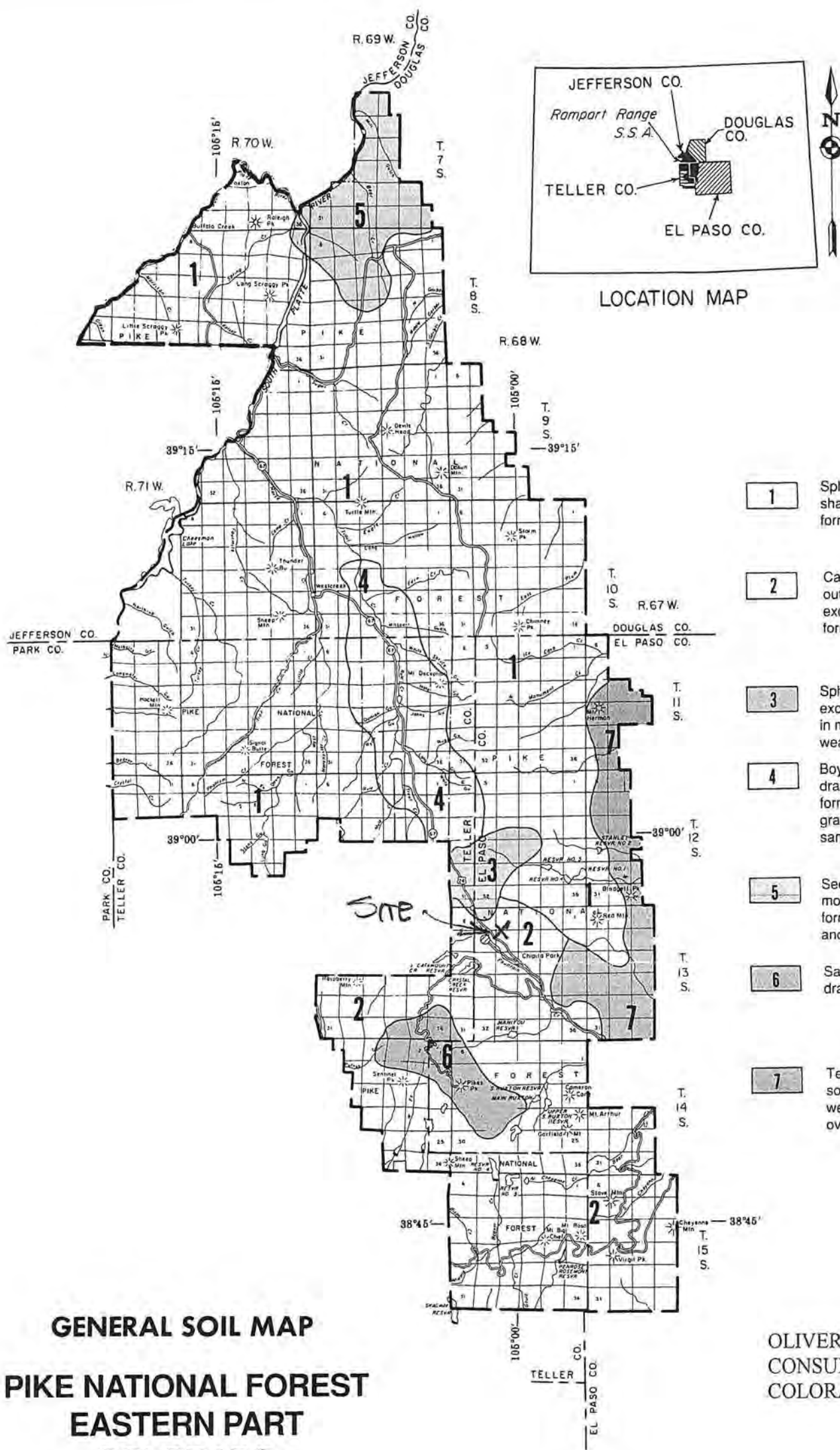
SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AP
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone J
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
OTHER AREAS		Area with Flood Risk due to Levee Zone D
		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Coastal Transect
		Base Flood Elevation Line (BFE)
MAP PANELS		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped
		The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/14/2019 at 10:34:12 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



GENERAL SOIL MAP **PIKE NATIONAL FOREST** **EASTERN PART** **COLORADO**

JULY 1992

5 0 5 10 MILES

Scale 1:362,057

1 inch equals approximately 5.7 miles

PARTS OF DOUGLAS, EL PASO, JEFFERSON,
 AND TELLER COUNTIES, COLORADO

LOCATION MAP

SOIL LEGEND

- 1 Sphinx-Legault-Rock outcrop: Rock outcrop and shallow, somewhat excessively drained soils that formed in material weathered from granite
- 2 Catamount-Ivywild-Legault-Rock outcrop: Rock outcrop and shallow and moderately deep, somewhat excessively drained, and excessively drained soils that formed in material weathered from granite
- 3 Sphinx-Tecolote-Condrie: Shallow and deep, somewhat excessively drained and well drained soils that formed in material weathered from granite or in colluvium over weathered granite
- 4 Boyett-Frenchcreek-Pendant: Deep and shallow, well drained and somewhat excessively drained soils that formed in material weathered from limestone and granite, and in alluvium derived from mixed red arkosic sandstone
- 5 Security-Cathedral-Rock outcrop: Rock outcrop and moderately deep and shallow, well drained soils that formed in material weathered from mixed schist, gneiss, and granite
- 6 Sachett-Cirque land: Cirque land and shallow, excessively drained soils that formed in material weathered from granite
- 7 Tecolote-Pendant: Deep and shallow, well drained and somewhat excessively drained soils that formed in material weathered from limestone and in cobbly or stony colluvium over weathered granite

Compiled 1986

OLIVER E. WATTS
 CONSULTING ENGINEER, INC.
 COLORADO SPRINGS

ROCKY TOP MOTEL AND CAMPGROUND
 SCS SOILS MAP

U.S. DEPARTMENT OF AGRICULTURE
 FOREST SERVICE
 SOIL CONSERVATION SERVICE
 COLORADO AGRICULTURAL EXPERIMENT STATION

$$t_c = t_i + t_t \quad (\text{Eq. 6-7})$$

Where:

t_c = time of concentration (min)

t_i = overland (initial) flow time (min)

t_t = travel time in the ditch, channel, gutter, storm sewer, etc. (min)

3.2.1 Overland (Initial) Flow Time

The overland flow time, t_i , may be calculated using Equation 6-8.

$$t_i = \frac{0.395(1.1 - C_s)\sqrt{L}}{S^{0.33}} \quad (\text{Eq. 6-8})$$

Where:

t_i = overland (initial) flow time (min)

C_s = runoff coefficient for 5-year frequency (see Table 6-6)

L = length of overland flow (300 ft maximum for non-urban land uses, 100 ft maximum for urban land uses)

S = average basin slope (ft/ft)

Note that in some urban watersheds, the overland flow time may be very small because flows quickly concentrate and channelize.

3.2.2 Travel Time

For catchments with overland and channelized flow, the time of concentration needs to be considered in combination with the travel time, t_t , which is calculated using the hydraulic properties of the swale, ditch, or channel. For preliminary work, the overland travel time, t_t , can be estimated with the help of Figure 6-25 or Equation 6-9 (Guo 1999).

$$V = C_v S_w^{0.5} \quad (\text{Eq. 6-9})$$

Where:

V = velocity (ft/s)

C_v = conveyance coefficient (from Table 6-7)

S_w = watercourse slope (ft/ft)

Table 6-6. Runoff Coefficients for Rational Method
(Source: UDFCD 2001)

Land Use or Surface Characteristics	Percent Impervious	Runoff Coefficients											
		2-year		5-year		10-year		25-year		50-year		100-year	
		HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D
Business													
Commercial Areas	95	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.87	0.87	0.88	0.88	0.89
Neighborhood Areas	70	0.45	0.49	0.49	0.53	0.53	0.57	0.58	0.62	0.60	0.65	0.62	0.68
Residential													
1/8 Acre or less	65	0.41	0.45	0.45	0.49	0.49	0.54	0.54	0.59	0.57	0.62	0.59	0.65
1/4 Acre	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
1/3 Acre	30	0.18	0.22	0.25	0.30	0.32	0.38	0.39	0.47	0.43	0.52	0.47	0.57
1/2 Acre	25	0.15	0.20	0.22	0.28	0.30	0.36	0.37	0.46	0.41	0.51	0.46	0.56
1 Acre	20	0.12	0.17	0.20	0.26	0.27	0.34	0.35	0.44	0.40	0.50	0.44	0.55
Industrial													
Light Areas	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Heavy Areas	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Parks and Cemeteries	7	0.05	0.09	0.12	0.19	0.20	0.29	0.30	0.40	0.34	0.46	0.39	0.52
Playgrounds	13	0.07	0.13	0.16	0.23	0.24	0.31	0.32	0.42	0.37	0.48	0.41	0.54
Railroad Yard Areas	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
Undeveloped Areas													
Historic Flow Analysis-- Greenbelts, Agriculture	2	0.03	0.05	0.09	0.16	0.17	0.26	0.26	0.38	0.31	0.45	0.36	0.51
Pasture/Meadow	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Forest	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Exposed Rock	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Offsite Flow Analysis (when landuse is undefined)	45	0.26	0.31	0.32	0.37	0.38	0.44	0.44	0.51	0.48	0.55	0.51	0.59
Streets													
Paved	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Gravel	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Drive and Walks	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Roofs	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Lawns	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50

3.2 Time of Concentration

One of the basic assumptions underlying the Rational Method is that runoff is a function of the average rainfall rate during the time required for water to flow from the hydraulically most remote part of the drainage area under consideration to the design point. However, in practice, the time of concentration can be an empirical value that results in reasonable and acceptable peak flow calculations.

For urban areas, the time of concentration (t_c) consists of an initial time or overland flow time (t_i) plus the travel time (t_t) in the storm sewer, paved gutter, roadside drainage ditch, or drainage channel. For non-urban areas, the time of concentration consists of an overland flow time (t_i) plus the time of travel in a concentrated form, such as a swale or drainageway. The travel portion (t_t) of the time of concentration can be estimated from the hydraulic properties of the storm sewer, gutter, swale, ditch, or drainageway. Initial time, on the other hand, will vary with surface slope, depression storage, surface cover, antecedent rainfall, and infiltration capacity of the soil, as well as distance of surface flow. The time of concentration is represented by Equation 6-7 for both urban and non-urban areas.

Table 6-7. Conveyance Coefficient, C_v

Type of Land Surface	C_v
Heavy meadow	2.5
Tillage/field	5
Riprap (not buried)*	6.5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swales	20

*For buried riprap, select C_v value based on type of vegetative cover.

The travel time is calculated by dividing the flow distance (in feet) by the velocity calculated using Equation 6-9 and converting units to minutes.

The time of concentration (t_c) is then the sum of the overland flow time (t_i) and the travel time (t_t) per Equation 6-7.

3.2.3 First Design Point Time of Concentration in Urban Catchments

Using this procedure, the time of concentration at the first design point (typically the first inlet in the system) in an urbanized catchment should not exceed the time of concentration calculated using Equation 6-10. The first design point is defined as the point where runoff first enters the storm sewer system.

$$t_c = \frac{L}{180} + 10 \quad (\text{Eq. 6-10})$$

Where:

t_c = maximum time of concentration at the first design point in an urban watershed (min)

L = waterway length (ft)

Equation 6-10 was developed using the rainfall-runoff data collected in the Denver region and, in essence, represents regional “calibration” of the Rational Method. Normally, Equation 6-10 will result in a lesser time of concentration at the first design point and will govern in an urbanized watershed. For subsequent design points, the time of concentration is calculated by accumulating the travel times in downstream drainageway reaches.

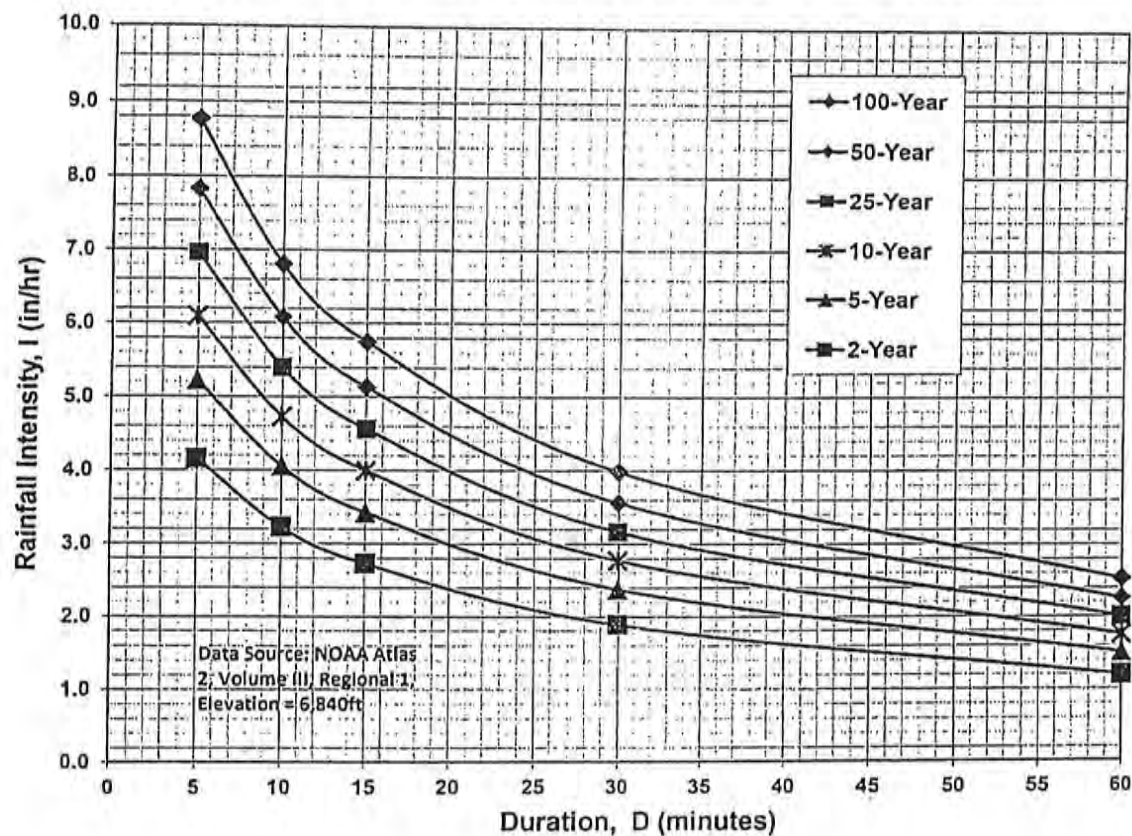
3.2.4 Minimum Time of Concentration

If the calculations result in a t_c of less than 10 minutes for undeveloped conditions, it is recommended that a minimum value of 10 minutes be used. The minimum t_c for urbanized areas is 5 minutes.

3.2.5 Post-Development Time of Concentration

As Equation 6-8 indicates, the time of concentration is a function of the 5-year runoff coefficient for a drainage basin. Typically, higher levels of imperviousness (higher 5-year runoff coefficients) correspond to shorter times of concentration, and lower levels of imperviousness correspond to longer times of

Figure 6-5. Colorado Springs Rainfall Intensity Duration Frequency



IDF Equations

$$I_{100} = -2.52 \ln(D) + 12.735$$

$$I_{50} = -2.25 \ln(D) + 11.375$$

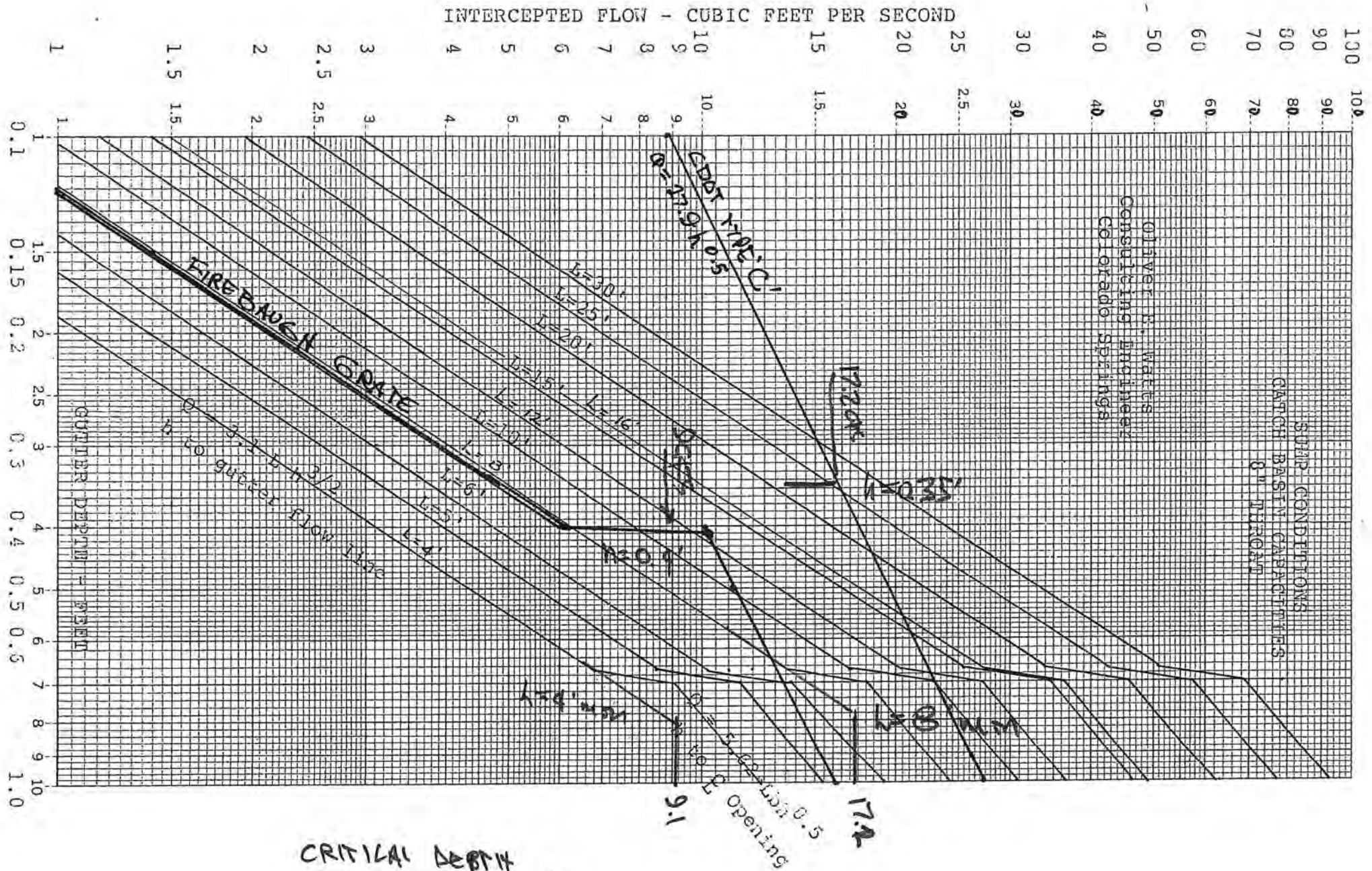
$$I_{25} = -2.00 \ln(D) + 10.111$$

$$I_{10} = -1.75 \ln(D) + 8.847$$

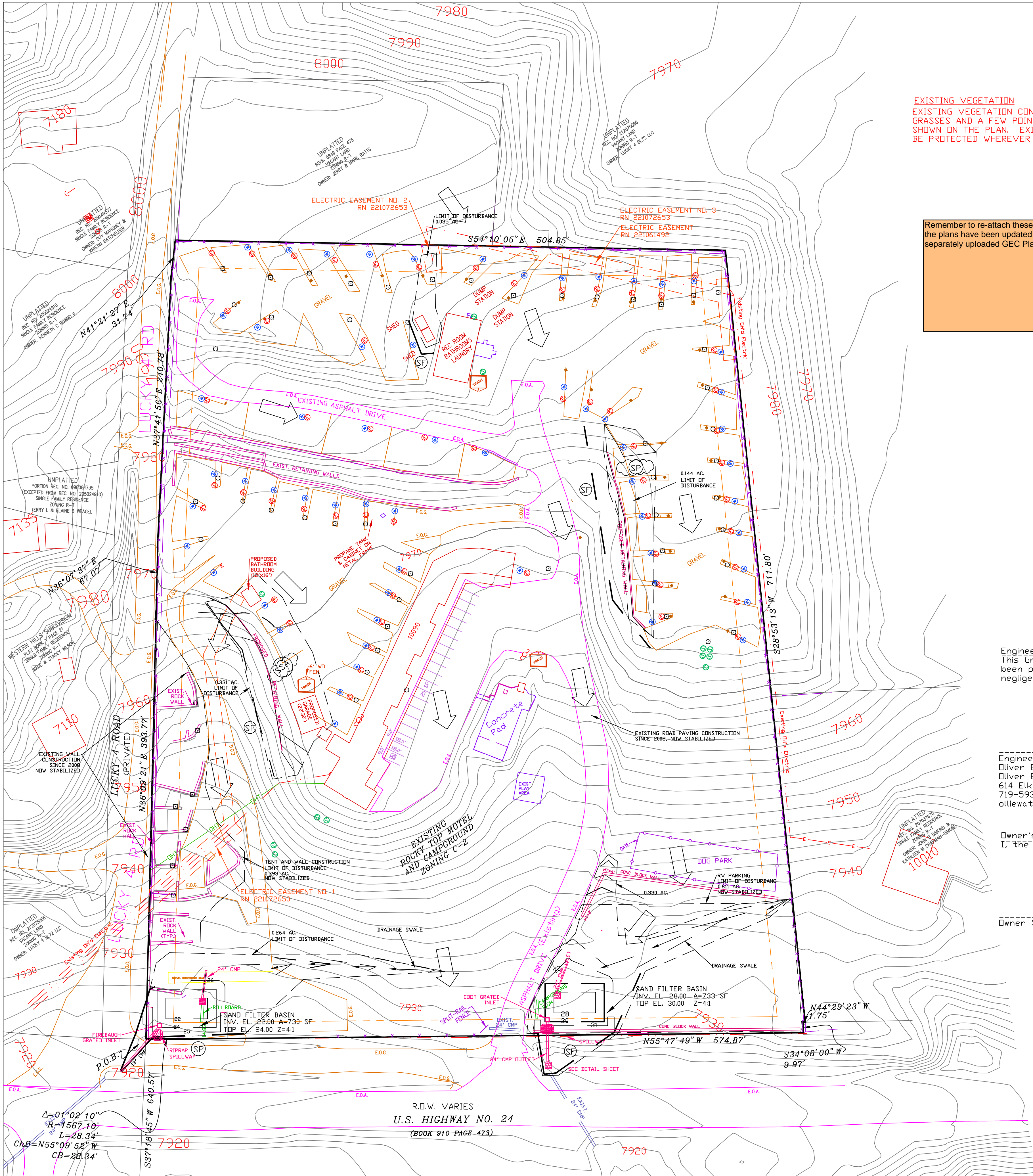
$$I_5 = -1.50 \ln(D) + 7.583$$

$$I_2 = -1.19 \ln(D) + 6.035$$

Note: Values calculated by equations may not precisely duplicate values read from figure.

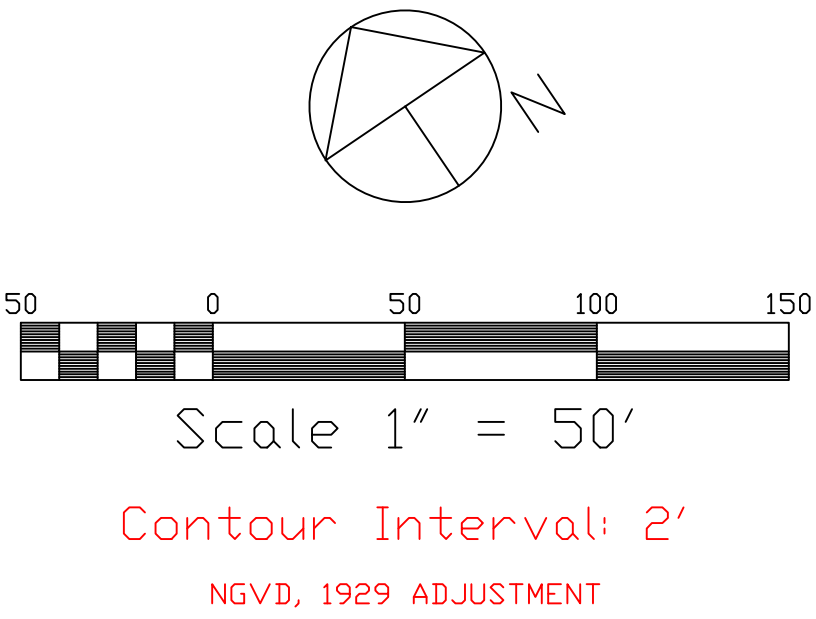
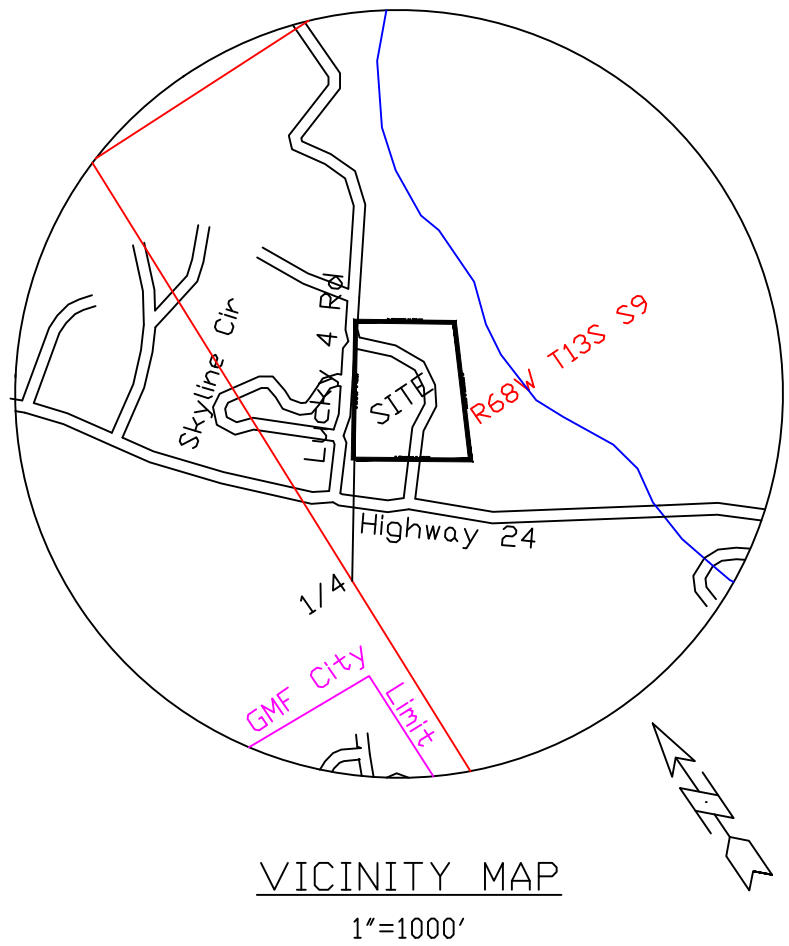


CRITICAL DEPTH
SPILLWAY WID'S
OUTLET GRATE

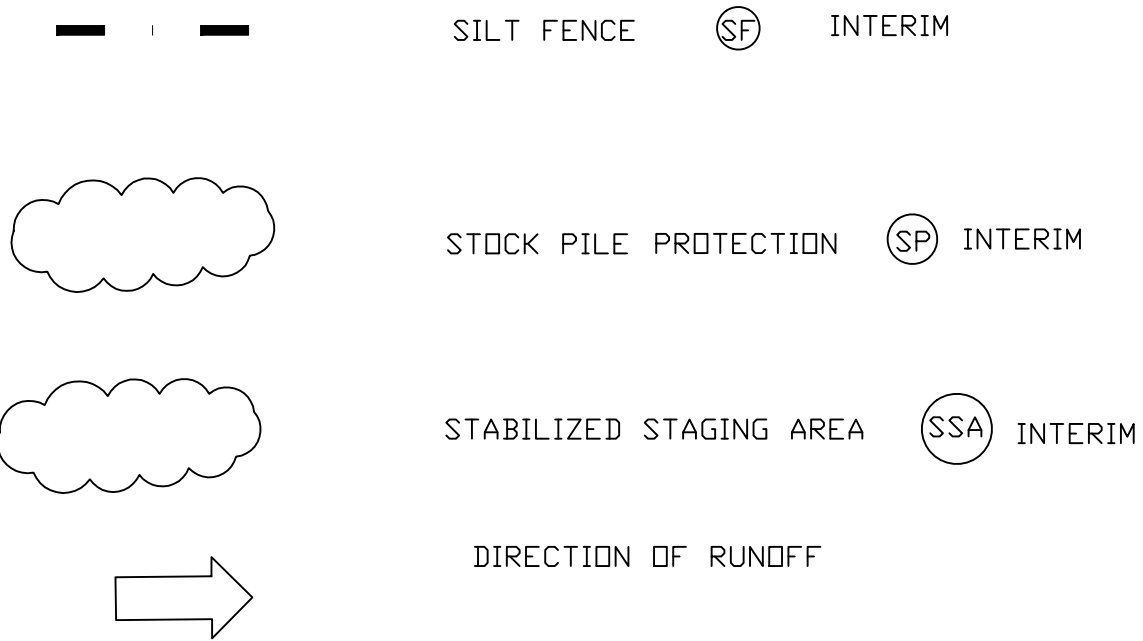


EXISTING VEGETATION
EXISTING VEGETATION CONSISTS OF RANGE GRASSES AND A FEW POINDEROA PINE WHERE SHOWN ON THE PLAN. EXISTING TREES SHALL BE PROTECTED WHEREVER POSSIBLE.

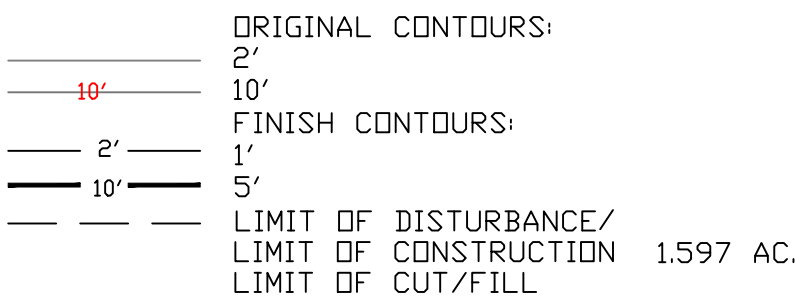
Remember to re-attach these plans to the SWMP once the plans have been updated per comments in the separately uploaded GEC Plans



EROSION CONTROL LEGEND:



CONTOUR LEGEND:

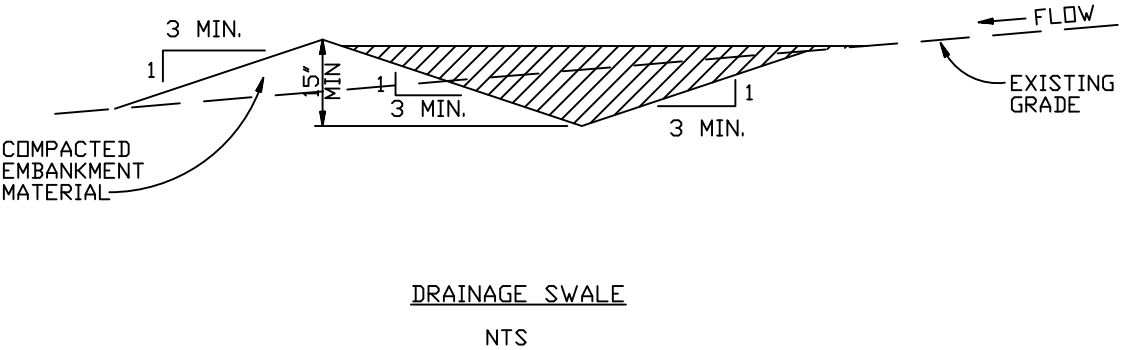


Engineer's Statement (for standalone GEC Plan):
This Grading and Erosion Control Plan was prepared under my direction and supervision and is correct to the best of my knowledge and belief. Said Plan has been prepared according to the criteria established by the County for Grading and Erosion Control Plans. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this plan.

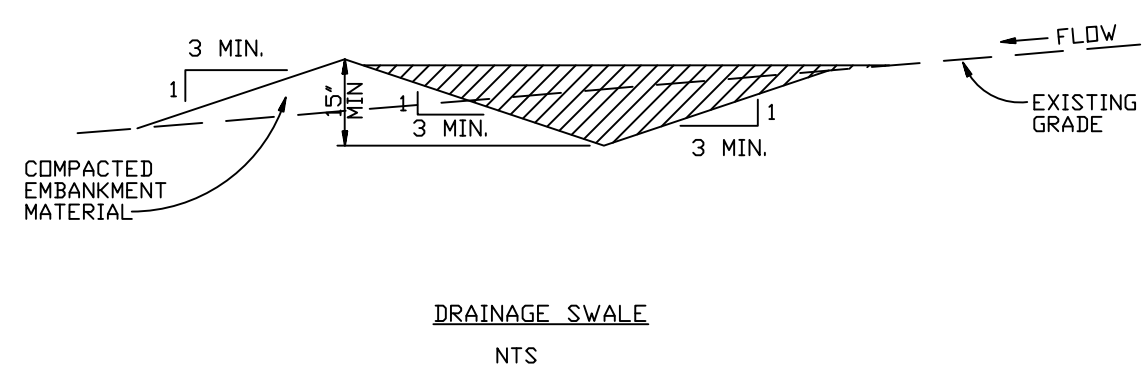
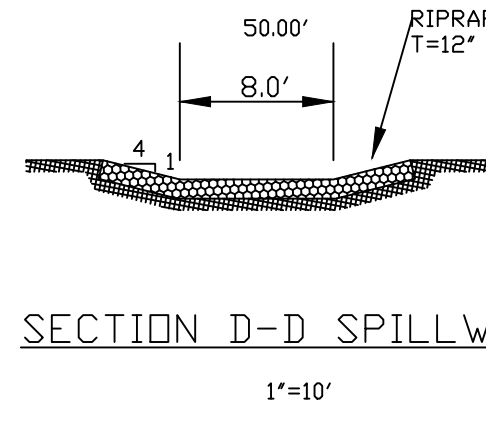
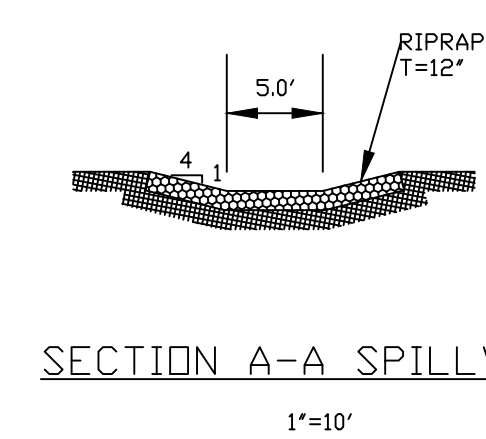
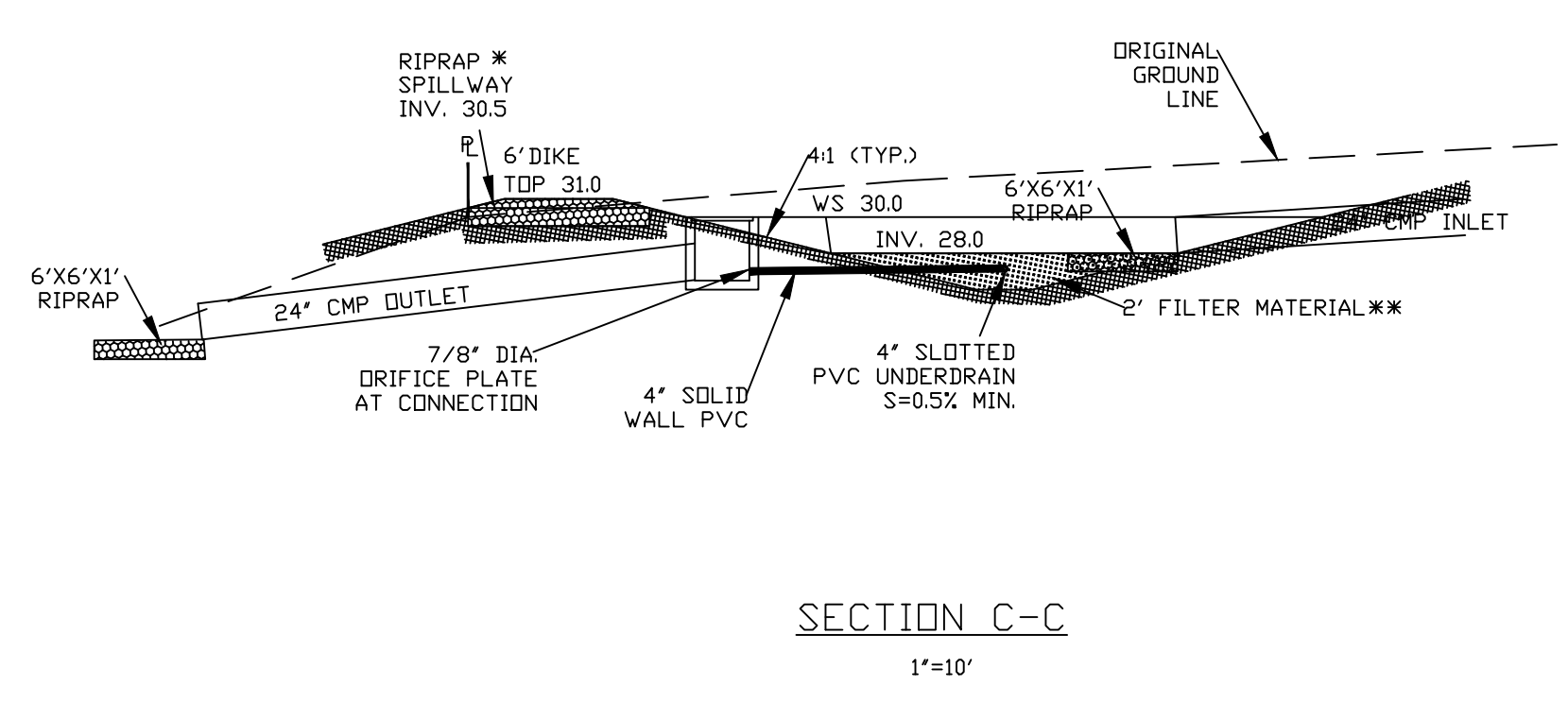
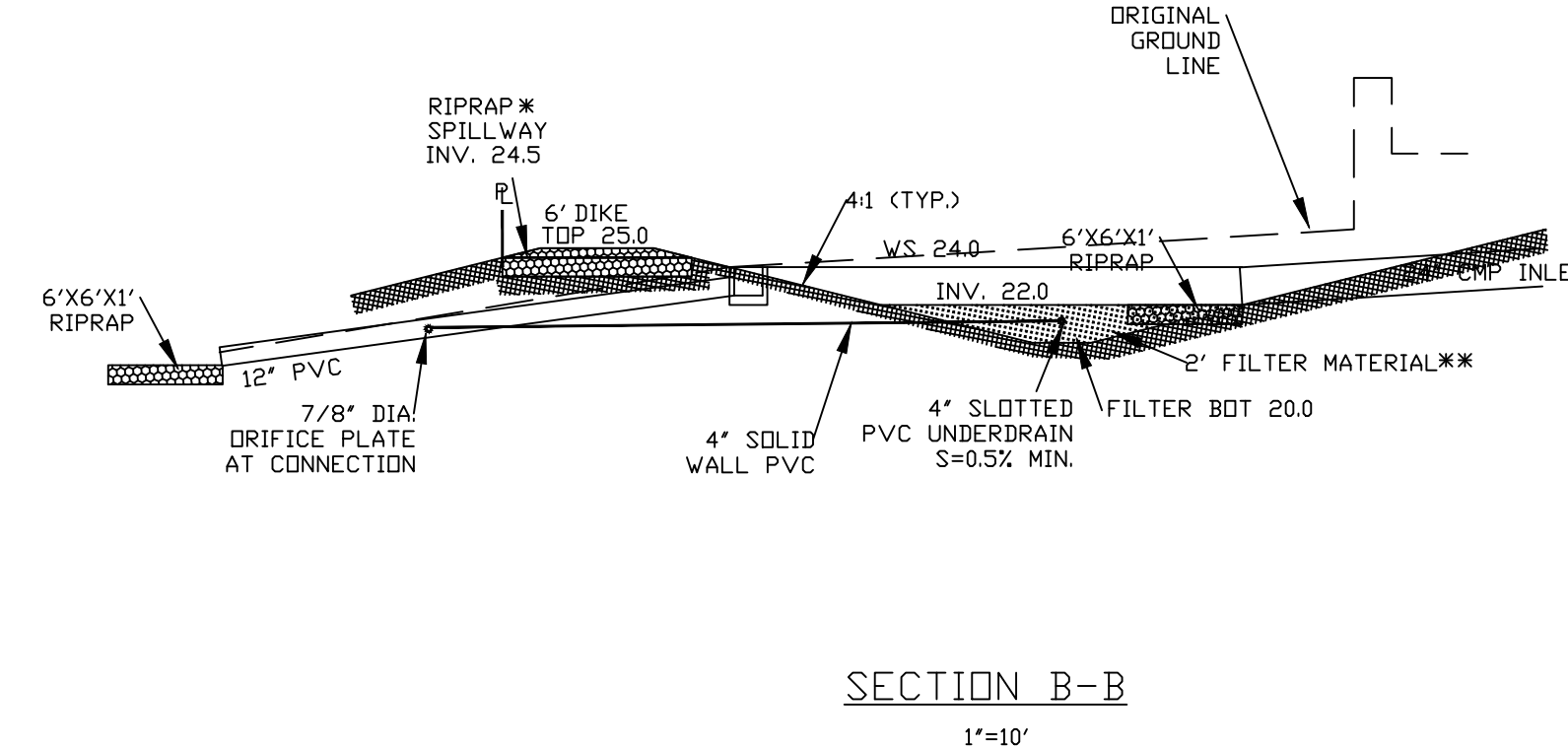
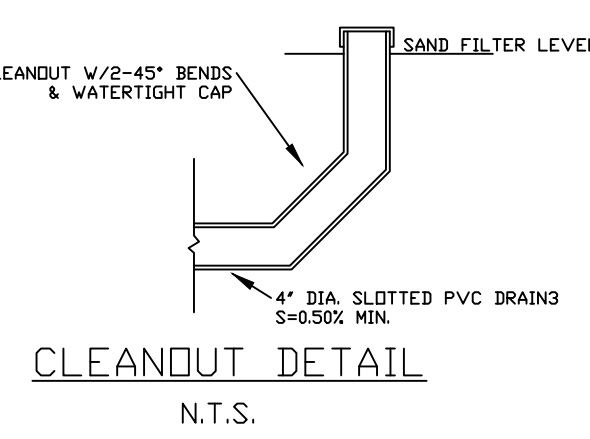
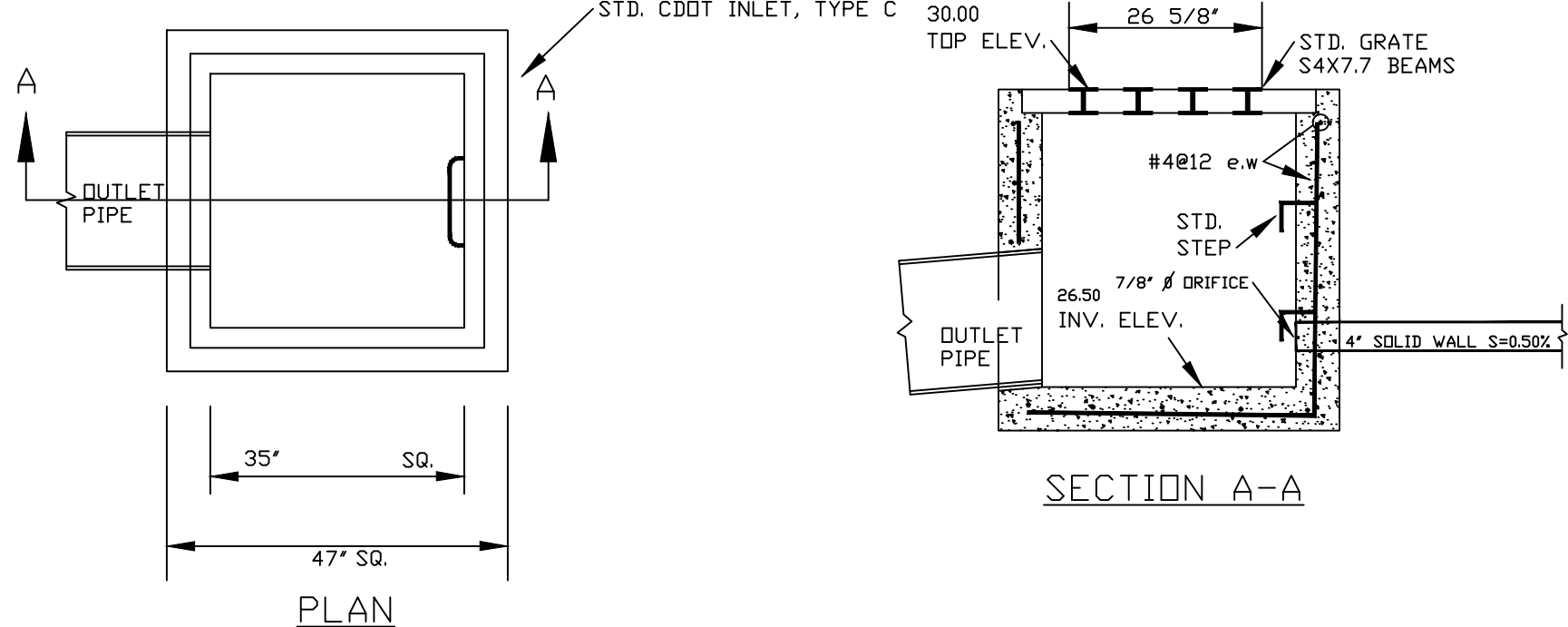
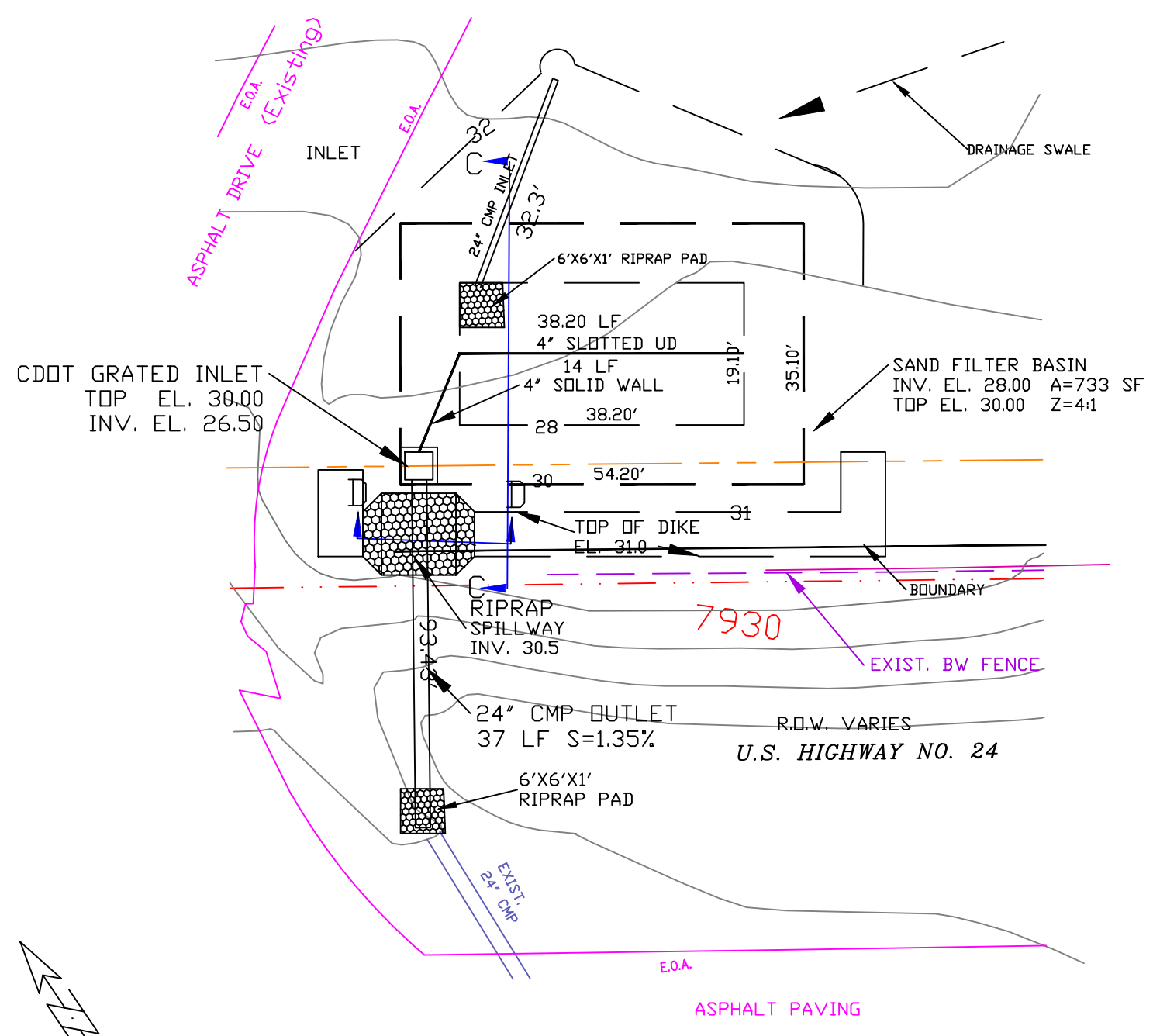
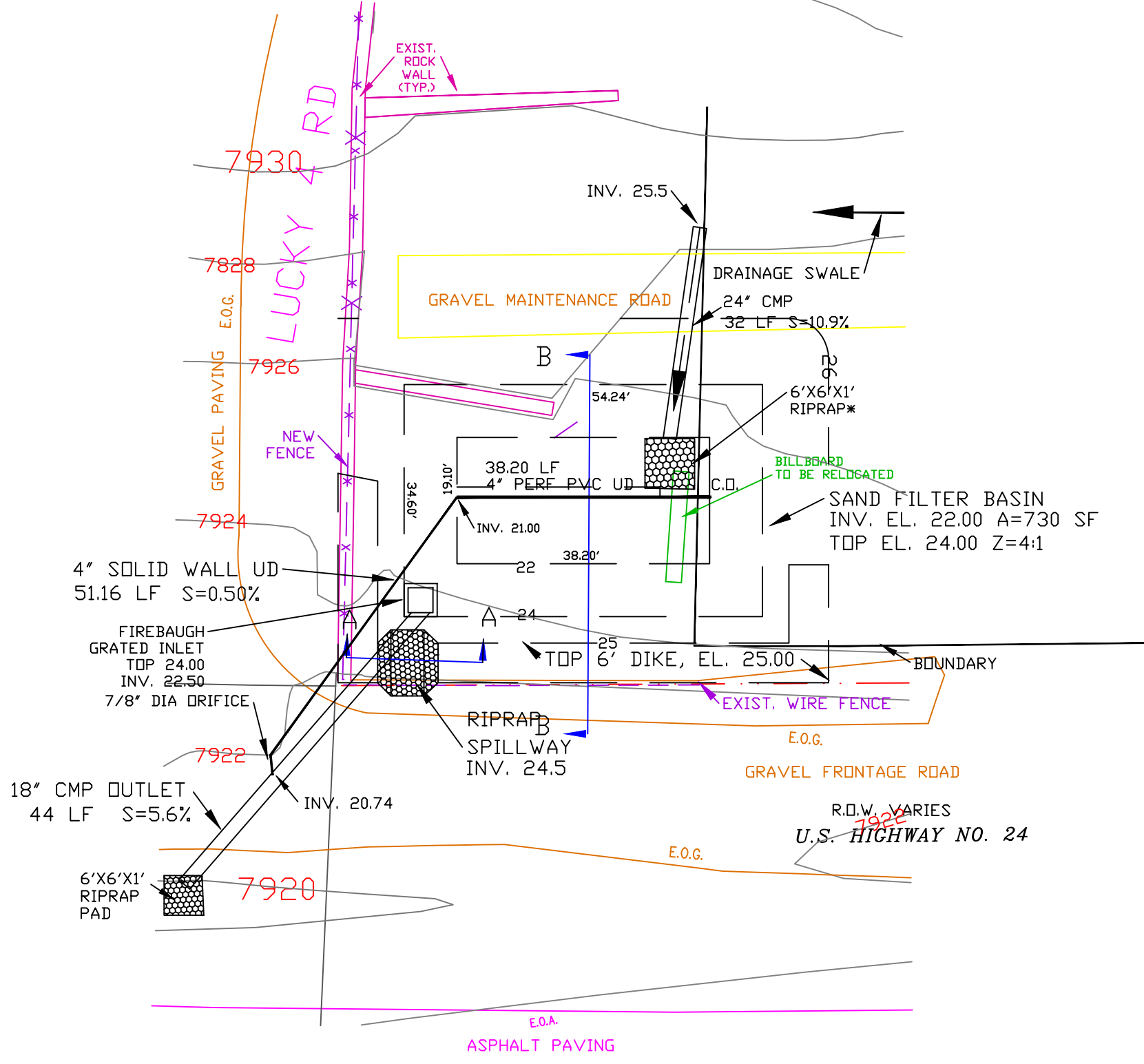
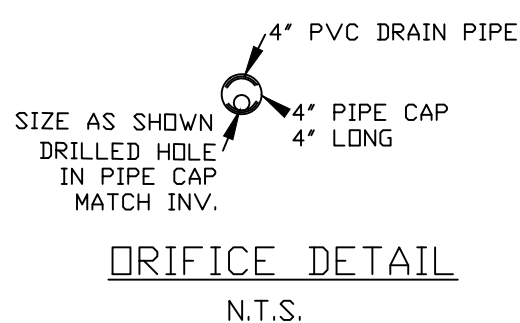
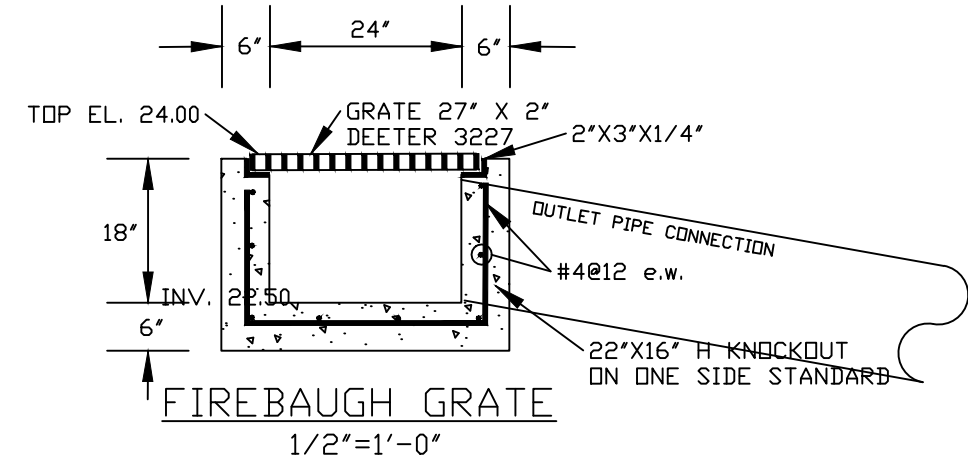
Engineer of Record Signature
Oliver E. Watts, COLD PELS#9853
Oliver E Watts Consulting Engineer, Inc.
614 Elkton Drive Colorado Springs, CO 80907
719-593-0173
olliewatts@aol.com

Owner's Statement (for standalone GEC Plan):
I, the owner/developer have read and will comply with the requirements of the Grading and Erosion Control Plan.

Owner Signature _____ Date _____



DRAWN BY: D.E. WATTS DATE: 6-13-19 DWG. NO.: 19-5341-03 TOPOGRAPHY BY: CITY FMS 6-12-19 SURVEY INFORMATION BY: RAMPART JOB NO. 18384		APPROVED BY: PROJ. NO. DWG.		REVISIONS 8-16-21 UPDATED 12-30-21 REVISED PER COUNTY REVIEW COMMENTS 8-22-22 REVISED PER COUNTY REVIEW COMMENTS 12-22-22 REVISED PER COUNTY REVIEW COMMENTS		DEW DEW DEW DEW		OLIVER E. WATTS CONSULTING ENGINEER COLORADO SPRINGS		PROJECT ROCKY TOP MOTEL & CAMPGROUND PART NW1/4 SECTION 9, T.13S., R.68W., 6TH P.M. EL PASO COUNTY		SHT. NO. GRADING AND EROSION CONTROL PLAN		SHT. NO. 1 OF 4	
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*RIPRAP IS TO BE TYPE 'L' OR 'VL', MIXED WITH 35% NATIVE SOIL BY WEIGHT, COVERED WITH 4" MIN TOPSOIL

** FILTER MATERIAL IS TO BE 85% SAND, ASTM C-33 15% PEAT MIX RESEED PER MHFD TABLE B-6 MIX FOR DRYLAND GRASSES RESEED SIDE SLOPES DO NOT RESEED POND BOTTOM OR RIPRAP PADS

Prepared by the office of:
Oliver E. Watts, Consulting Engineer, Inc.
614 Elktion Drive
Colorado Springs, CO 80907
(719) 593-0173
Olliewatts@aol.com
Celebrating 42 years in Business

DRAWN BY: D.E. WATTS DATE: 8-16-21 DWG. NO.: 19-5341-05 TOPOGRAPHY BY: CITY FMS 6-12-19 SURVEY INFORMATION BY: RAMPART JOB NO. 18384	APPROVED BY: PROJ. NO.: DWG.:	REVISIONS 8-16-21 UPDATED DEW	OLIVER E. WATTS CONSULTING ENGINEER COLORADO SPRINGS	PROJECT ROCKY TOP MOTEL & CAMPGROUND PART NW1/4 SECTION 9, T.13S., R.68W., 6TH P.M. EL PASO COUNTY	SHT. NAME EROSION CONTROL PLAN	SHT. NO. 2 OF 4
		12-31-21 REVISED PER COUNTY REVIEW COMMENTS DEW				
		8-22-22 REVISED PER COUNTY REVIEW COMMENTS DEW				
		12-22-22 REVISED PER COUNTY REVIEW COMMENTS DEW				

El Paso County (standalone GEC Plan):
County plan review is provided only for general conformance with County Design Criteria. The County is not responsible for the accuracy and adequacy of the design, dimensions, and/or elevations which shall be confirmed at the job site. The County through the approval of this document assumes no responsibility for completeness and/or accuracy of this document.
Filed in accordance with the requirements of the El Paso County Land Development Code, Drainage Criteria Manual Volumes 1 and 2, and Engineering Criteria Manual, as amended.

County Engineer/ECM Administrator _____ Date _____

stormwater discharges from construction sites shall not cause or threaten to cause pollution, contamination, or degradation of State Waters, all water and earth disturbance shall be done in a manner that minimizes pollution of any on-site or off-site waters, including wetlands.

2. Notwithstanding anything depicted in these plans in words or graphic representation, all design and construction related to roads, storm drainage and erosion control shall conform to the standards and requirements of the most recent version of the relevant adopted El Paso County standards, including the Land Development Code, the Engineering Criteria Manual, the Drainage Criteria Manual, and the Drainage Criteria Manual Volume 2. Any deviations from regulations and standards must be requested, and approved, in writing.

3. A stormwater management plan (SWMP) for this project shall be completed and an Erosion and Stormwater Quality Control Permit (ESQCP) issued prior to commencing construction. Management of the SWMP during construction is the responsibility of the designated Qualified Stormwater Manager or Certified Erosion Control Inspector. The SWMP shall be located on site at all times during construction and shall be kept up to date with work progress and changes in the field.

4. Once the ESQCP is approved and a 'Notice to Proceed' has been issued, the contractor may install the initial stage erosion and sediment control measures as indicated on the approved GEC. A Preconstruction Meeting between the contractor, engineer, and El Paso County will be held prior to any construction. It is the responsibility of the applicant to coordinate the meeting time and place with County staff.

5. Control measures must be installed prior to commencement of activities that could contribute pollutants to stormwater. Control measures for all slopes, channels, and disturbed land areas shall be installed immediately upon completion of the disturbance.

6. All temporary sediment and erosion control measures shall be maintained and remain in effective operating condition until permanent soil erosion control measures are implemented and final stabilization is established. All persons engaged in land disturbance activities shall assess the adequacy of control measures at the site and identify if changes to those control measures are needed to ensure the continued effective performance of the control measures. All changes to temporary sediment and erosion control measures must be incorporated into the Stormwater Management Plan.

7. Temporary stabilization shall be implemented on disturbed areas and stockpiles where ground disturbing construction activity has permanently ceased or temporarily ceased for longer than 14 days.

8. Final stabilization must be implemented at all applicable construction sites. Final stabilization is achieved when all ground disturbing activities are complete and all disturbed areas either have a uniform vegetative cover with individual plant density of 70 percent of pre-disturbance levels established or equivalent vegetative cover stabilization method is implemented. All temporary sediment and erosion control measures shall be removed upon final stabilization and before permit closure.

9. All permanent stormwater management facilities shall be installed as designed in the approved plans. Any proposed changes that effect the design or function of permanent stormwater management structures must be approved by the ECM Administrator prior to implementation.

10. Earth disturbances shall be conducted in such a manner so as to effectively minimize accelerated soil erosion and resulting sedimentation. All disturbances shall be designed, constructed, and completed so that the exposed area of any disturbed land shall be limited to the shortest practical period of time. Pre-existing vegetation shall be protected and maintained within 50 horizontal feet of waters of the state unless shown to be infeasible and specifically requested and approved.

11. Compaction of soil must be prevented in areas designated for infiltration control measures or where final stabilization will be achieved by vegetative cover. Areas designated for infiltration control measures shall also be protected from sedimentation during construction until final stabilization is achieved. If compaction prevention is not feasible due to site constraints, all areas designated for infiltration and vegetation control measures must be loosened prior to installation of the control measure(s).

12. Any temporary or permanent facility designed and constructed for the conveyance of stormwater around, through, or from the earth disturbance area shall be a stabilized conveyance designed to minimize erosion and the discharge of sediment off site.

13. Concrete wash water shall be contained and disposed of in accordance with the SWMP. No wash water shall be discharged to or allowed to enter State Waters, including any surface or subsurface storm drainage system or facilities. Concrete washouts shall not be located in an area where shallow groundwater may be present or within 50 feet of a surface water body, creek or stream.

14. During dewatering operations of uncontaminated ground water may be discharged on site, but shall not leave the site in the form of surface runoff unless an approved State dewatering permit is in place.

15. Erosion control blanketing or other protective covering shall be used on slopes steeper than 3:1.

16. Contractor shall be responsible for the removal of all wastes from the construction site for disposal in accordance with local and State regulatory requirements. No construction debris, tree slash, building material wastes or unused building materials shall be buried, dumped, or discharged at the site.

17. Waste materials shall not be temporarily placed or stored in the street, alley, or other public way, unless in accordance with an approved Traffic Control Plan. Control measures may be required by El Paso County Engineering if deemed necessary, based upon specific conditions and circumstances.

18. Paving of soils and construction debris off-site shall be minimized. Materials removed off-site shall be cleaned up and properly disposed of immediately. The owner/developer shall be responsible for the removal of all construction debris, dirt, trash, rock, sediment, soil, and sand that may accumulate in roads, storm drains and other drainage conveyance systems and stormwater appurtenances as a result of site development.

20. The quantity of materials stored on the project site shall be limited, as much as practical, to that quantity required to perform the work in an orderly sequence. All materials stored on-site shall be stored in a neat, orderly manner, in their original containers, with original manufacturer's labels.

21. No chemical(s) having the potential to be released in stormwater are to be stored or used onsite unless permission for the use of such chemical(s) is granted in writing by the ECM Administrator. In granting approval for the use of such chemical(s), special conditions and monitoring may be required.

22. Bulk storage of allowed petroleum products or other allowed liquid chemicals in excess of 55 gallons shall require adequate secondary containment protection to contain all spills onsite and to prevent any spilled materials from entering State Waters, any surface or subsurface storm drainage system or other water body.

23. No person shall cause the impediment of stormwater flow in the curb and gutter or ditch except with approved sediment control measures.

24. Owner/developer and their agents shall comply with the 'Colorado Water Quality Control Act' (Title 25, Article 8, CRS), and the 'Clean Water Act' (33 US 1344), in addition to the requirements of the Land Development Code, DCM Volume II and the ECM Appendix I. All appropriate permits must be obtained by the contractor prior to construction (1041, NPDES, Floodplain, 404, Fugitive dust, etc.). In the event of conflicts between these requirements and other laws, rules, or regulations of other Federal, State, local, or County agencies, the most restrictive laws, rules, or regulations shall apply.

25. All construction traffic must enter/exit the site only at approved construction access points.

26. Prior to construction the Permittee shall verify the location of existing utilities.

27. The site shall be available for earthwork operations and shall be utilized as required to minimize dust from earthwork equipment and wind.

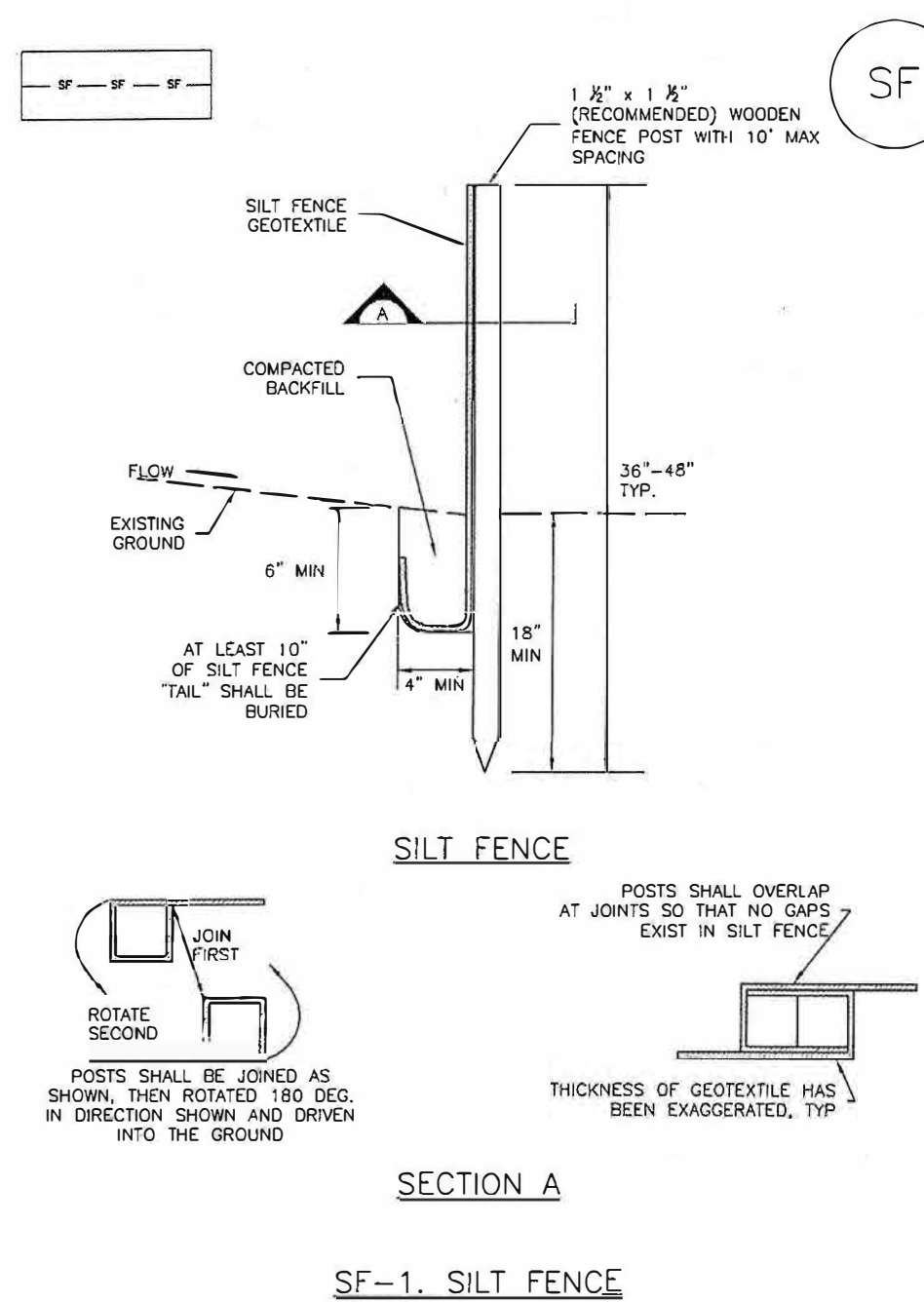
28. The soils report for this site has been prepared by N/A----- and shall be considered a part of these plans.

29. At least ten (10) days prior to the anticipated start of construction, for projects that will disturb one (1) acre or more, the owner or operator of construction activity shall submit a permit application for stormwater discharge to the Colorado Department of Public Health and Environment, Water Quality Division. The application contains certification of completion of a stormwater management plan (SWMP), of which this Grading and Erosion Control Plan may be a part. For Information or application materials contact:
Colorado Department of Public Health and Environment
Water Quality Control Division
WQCD - Permits
4300 Cherry Creek Drive South
Denver, CO 80246-1530
Attn: Permits Unit

DRAWN BY: DE. WATTS	APPROVED BY:	REVISIONS 8-16-21 UPDATED	DEW	OLIVER E. WATTS CONSULTING ENGINEER COLORADO SPRINGS	PROJECT ROCKY TOP MOTEL & CAMPGROUND PART NW1/4 SECTION 9, T.13S., R.68W., 6TH P.M. EL PASO COUNTY	SHT. NAME EROSION CONTROL PLAN	SHT. NO. 3 OF 4
DATE:	PROJ. NO.	12-31-21 REVISED PER COUNTY REVIEW COMMENTS	DEW				
DWG. NO.:	DWG.	8-22-22 REVISED PER COUNTY REVIEW COMMENTS	DEW				
TOPOGRAPHY BY: CITY FMS 6-12-19		12-22-22 REVISED PER COUNTY REVIEW COMMENTS	DEW				

Silt Fence (SF)

SC-1



November 2010 Urban Drainage and Flood Control District
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SF-3

SC-1

Silt Fence (SF)

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2-3 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.
2. A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.
3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.
5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.
6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J-HOOK," THE "L-HOOK," EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' - 20').
7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

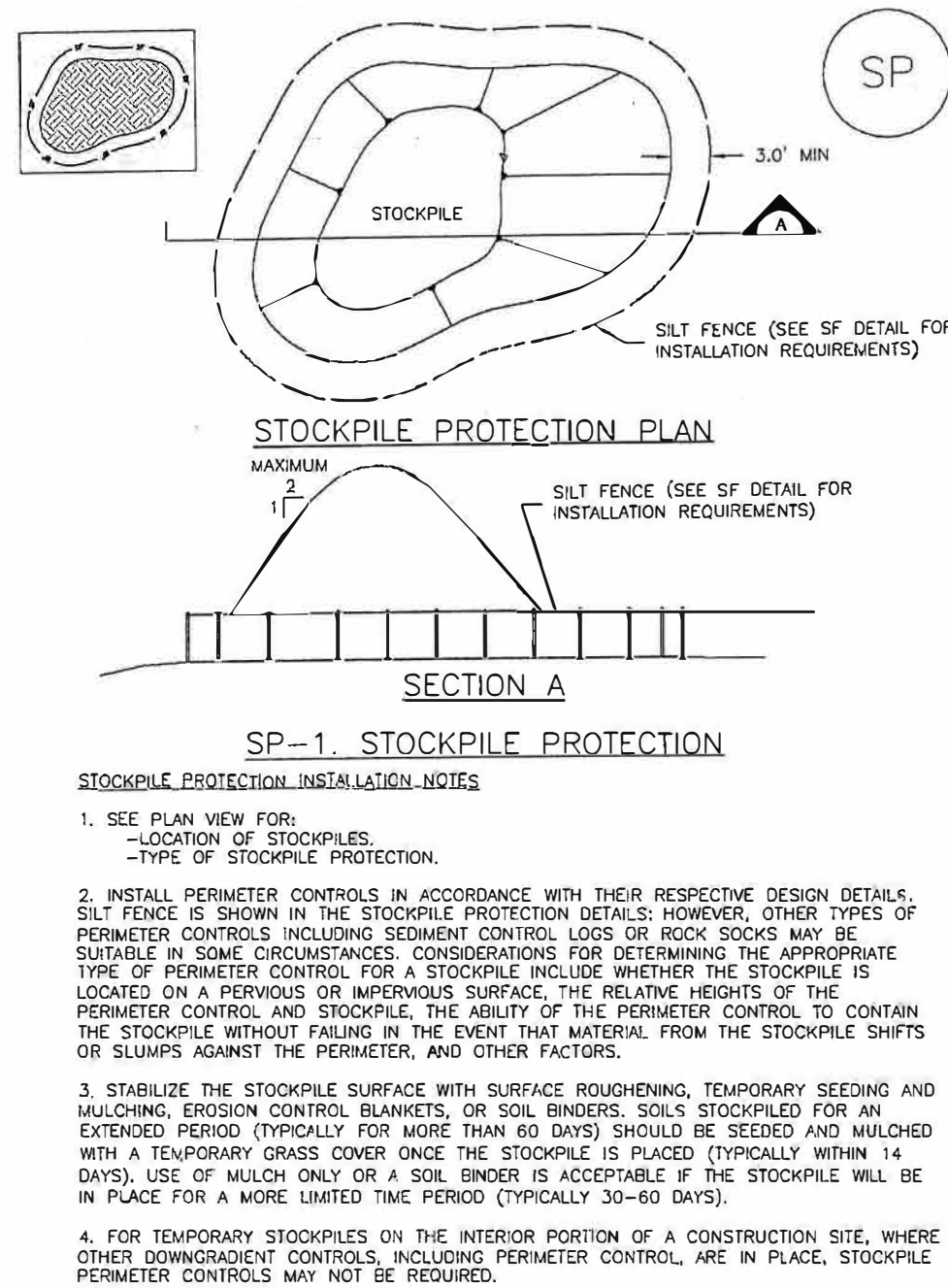
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
 2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
 3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
 4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP. TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".
 5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.
 6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.
 7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEED, AND MULCH, OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.
- (DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD)
- NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

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Stockpile Management (SP)

MM-2



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SP-3

MM-2

Stockpile Management (SM)

STOCKPILE PROTECTION MAINTENANCE NOTES

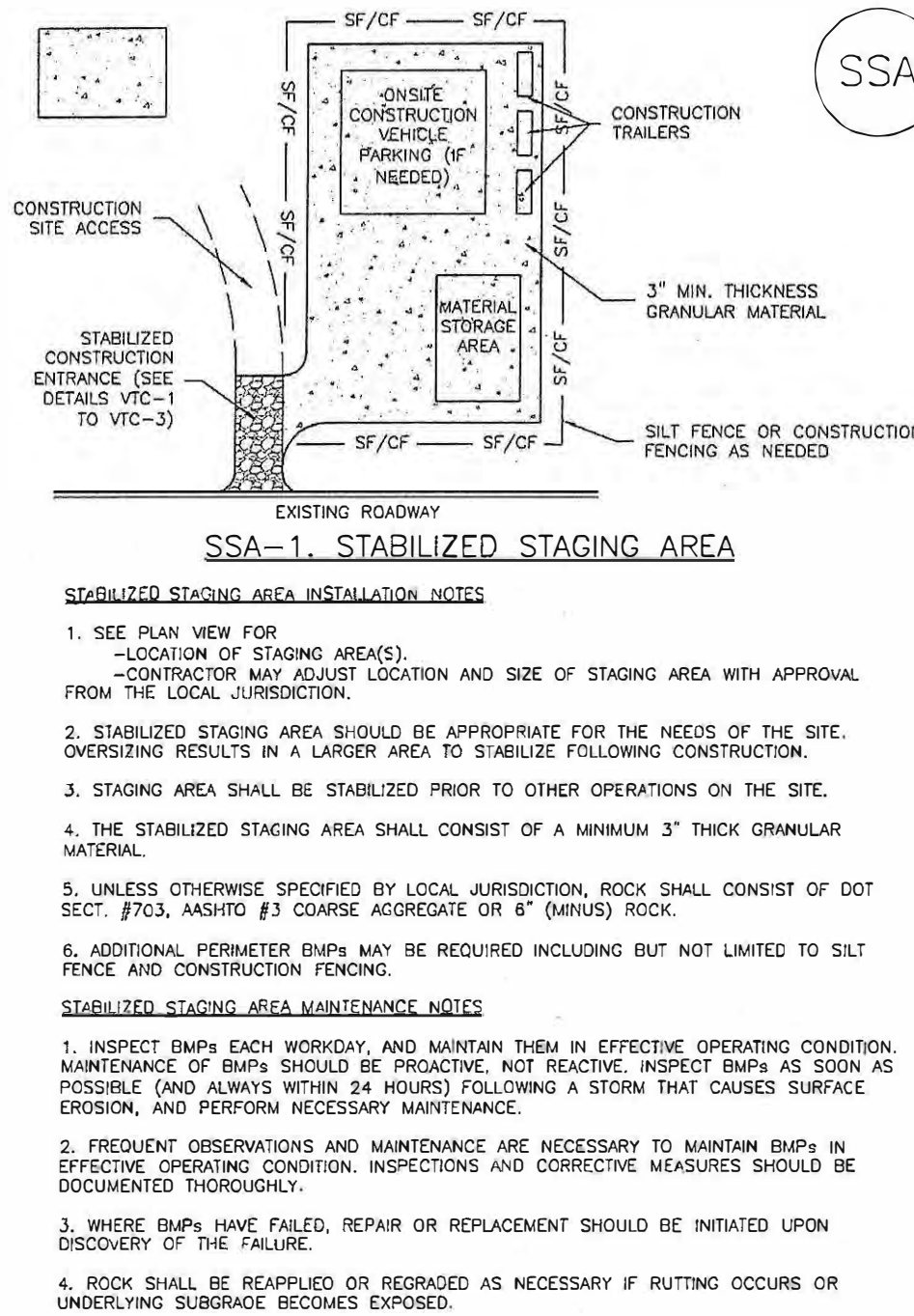
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
 2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
 3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
 4. IF PERIMETER PROTECTION MUST BE MOVED TO ACCESS SOIL STOCKPILE, REPLACE PERIMETER CONTROLS BY THE END OF THE WORKDAY.
 5. STOCKPILE PERIMETER CONTROLS CAN BE REMOVED ONCE ALL THE MATERIAL FROM THE STOCKPILE HAS BEEN USED.
- (DETAILS ADAPTED FROM PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)
- NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

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Stabilized Staging Area (SSA)

SM-6



STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 - LOCATION OF STAGING AREA(S).
 - CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
 2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE, OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
 3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
 4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
 5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, #4810 #3 COARSE AGGREGATE OR 8" (MINUS) ROCK.
 6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.
- STABILIZED STAGING AREA MAINTENANCE NOTES**
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
 2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
 3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
 4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

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SSA-3

SM-6

Stabilized Staging Area (SSA)

STABILIZED STAGING AREA MAINTENANCE NOTES

5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.
 6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEED, AND MULCH, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.
- NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.
- NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.
- (DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

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SEEDING & MULCHING

ALL SOIL TESTING, SOILS AMENDMENT AND FERTILIZER DOCUMENTATION, AND SEED LOAD AND BAG TICKETS MUST BE ADDED TO THE CSWMP.

SOIL PREPARATION

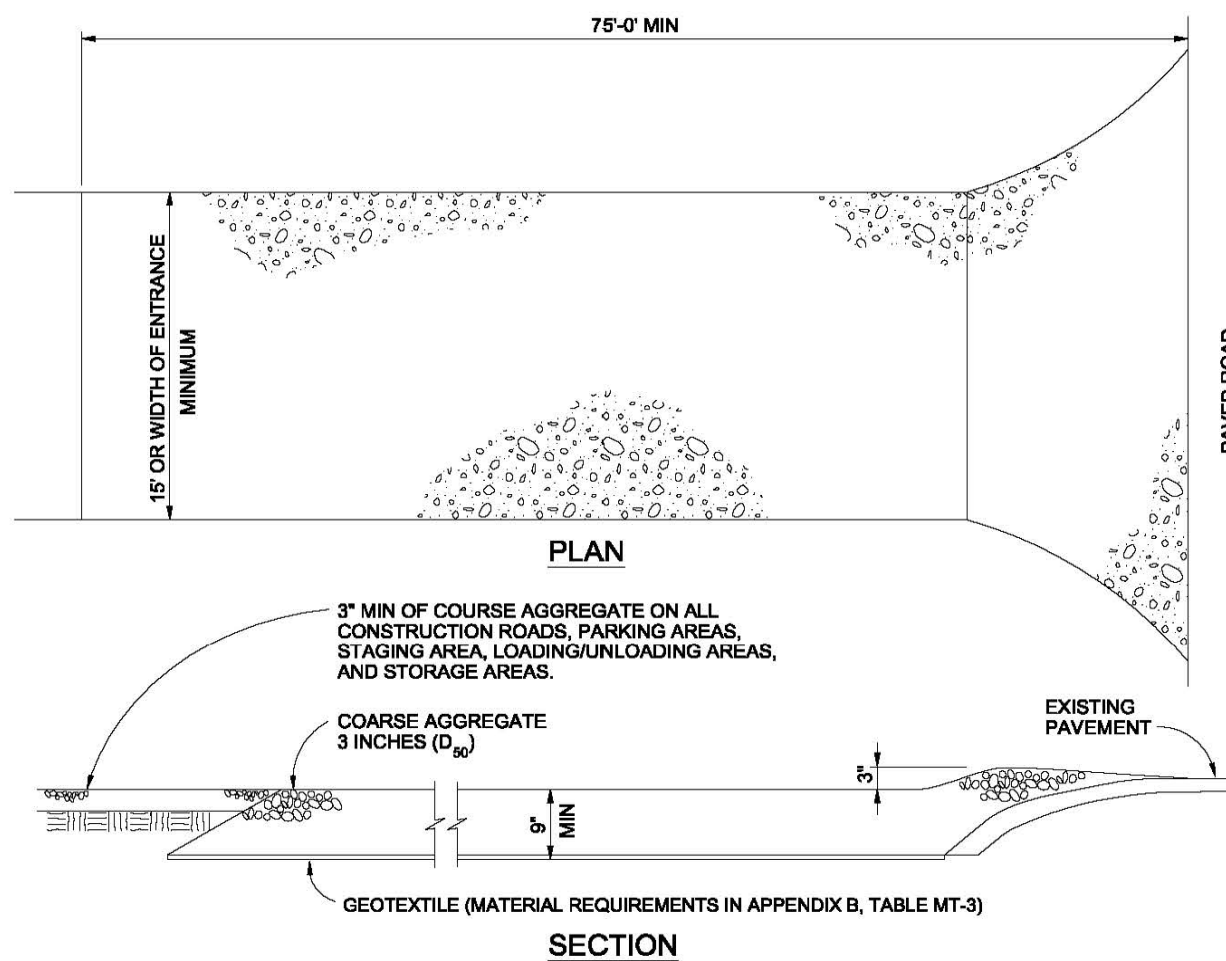
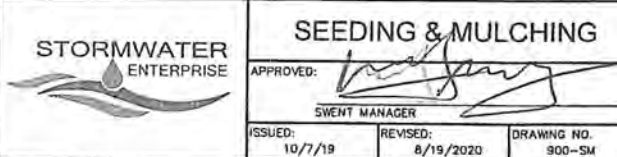
1. IN AREAS TO BE SEED, THE UPPER 6 INCHES OF THE SOIL MUST NOT BE HEAVILY COMPACTED, AND SHOULD BE IN FRABLE CONDITION. LESS THAN 85% STANDARD PROCTOR DENSITY IS ACCEPTABLE. AREAS OF CONACTION OR GENERAL CONSTRUCTION ACTIVITY MUST BE SCARIFIED TO A DEPTH OF 6 TO 12 INCHES PRIOR TO SPREADING TOPSOIL TO BREAK UP COMPACTED LAYERS AND PROVIDE A BLENDING ZONE BETWEEN DIFFERENT SOIL LAYERS.
2. AREAS TO BE PLANTED SHALL HAVE AT LEAST 4 INCHES OF TOPSOIL SUITABLE TO SUPPORT PLANT GROWTH.
3. THE CITY RECOMMENDS THAT EXISTING AND/OR IMPORTED TOPSOIL BE TESTED TO IDENTIFY SOIL DEFICIENCIES AND ANY SOIL AMENDMENTS NECESSARY TO ADDRESS THESE DEFICIENCIES. SOIL AMENDMENTS AND/OR FERTILIZER DEFICIENCIES BASED ON SOIL TESTING RESULTS.
4. TOPSOIL SHALL BE PROTECTED DURING THE CONSTRUCTION PERIOD TO RETAIN ITS STRUCTURE, AVOID COMPACTION, AND TO PREVENT EROSION AND CONTAMINATION. STRIPPED TOPSOIL MUST BE STORED IN AN AREA AWAY FROM MACHINERY AND CONSTRUCTION OPERATIONS, AND CARE MUST BE TAKEN TO PROTECT THE TOPSOIL AS A VALUABLE COMMODITY. TOPSOIL MUST NOT BE STRIPPED DURING UNDESIRABLE WORKING CONDITIONS (E.G. DURING WET WEATHER OR WHEN SOILS ARE SATURATED). TOPSOIL SHALL NOT BE STORED IN SWALES OR IN AREAS WITH POOR DRAINAGE.

SEEDING

1. ALLOWABLE SEED MIXES ARE INCLUDED IN THE CITY OF COLORADO SPRINGS STORMWATER CONSTRUCTION MANUAL. ALTERNATIVE SEED MIXES ARE ACCEPTABLE IF INCLUDED IN AN APPROVED LANDSCAPING PLAN.
2. SEED SHOULD BE DRILL-SEED WHENEVER POSSIBLE.
3. SEED DEPTH MUST BE 1/2 TO 3/4 INCHES WHEN DRILL-SEEDING IS USED.
4. BROADCAST SEEDING OR HYDRO-SEEDING WITH TACKIFIER MAY BE SUBSTITUTED ON SLOPES STEEPER THAN 3:1 OR ON OTHER AREAS NOT PRACTICAL TO DRILL SEED.
5. SEEDING RATES MUST BE DOUBLED FOR BROADCAST SEEDING OR INCREASED BY 50% IF USING A BRILLIANT DRILL OR HYDRO-SEEDING.
6. BROADCAST SEEDING MUST BE LIGHTLY HAND-RAKED INTO THE SOIL.

MULCHING

1. MULCHING SHOULD BE COMPLETED AS SOON AS PRACTICABLE AFTER SEEDING, HOWEVER PLANTED AREAS MUST BE MULCHED NO LATER THAN 14 DAYS AFTER PLANTING.
2. MULCHING REQUIREMENTS INCLUDE:
 - HAY OR STRAW MULCH
 - ONLY CERTIFIED WEED-FREE AND CERTIFIED SEED-FREE MULCH MAY BE USED. MULCH MUST BE APPLIED AT 2 TONS/ACRE AND ADEQUATELY SECURED BY CRIMPING AND/OR TACKIFIER.
 - CRIMPING MUST NOT BE USED ON SLOPES GREATER THAN 3:1 AND MULCH FIBERS MUST BE TUCKED INTO THE SOIL TO A DEPTH OF 3 TO 4 INCHES.
 - TACKIFIER MUST BE USED IN PLACE OF CRIMPING ON SLOPES STEEPER THAN 3:1.
 - HYDRAULIC MULCHING
 - HYDRAULIC MULCHING IS AN OPTION ON STEEP SLOPES OR WHERE ACCESS IS LIMITED.
 - IF HYDRO-SEEDING IS USED, MULCHING MUST BE A SEPARATE, SECOND OPERATION.
 - WOOD CELLULOSE FIBERS MIXED WITH WATER MUST BE APPLIED AT A RATE OF 2,000 TO 2,500 POUNDS/ACRE, AND TACKIFIER MUST BE APPLIED AT A RATE OF 100 POUNDS/ACRE.
 - EROSION CONTROL BLANKET
 - EROSION CONTROL BLANKET MAY BE USED IN PLACE OF TRADITIONAL MULCHING METHODS.



VEHICLE TRACKING NOTES

INSTALLATION REQUIREMENTS

1. ALL ENTRANCES TO THE CONSTRUCTION SITE ARE TO BE STABILIZED PRIOR TO CONSTRUCTION BEGINNING.
2. CONSTRUCTION ENTRANCES ARE TO BE BUILT WITH AN APRON TO ALLOW FOR TURNING TRAFFIC, BUT SHOULD NOT BE BUILT OVER EXISTING PAVEMENT EXCEPT FOR A SLIGHT OVERLAY.
3. AREAS TO BE STABILIZED ARE TO BE PROPERLY GRADED AND COMPACTED PRIOR TO LAYING DOWN GEOTEXTILE AND STONE.
4. CONSTRUCTION ROADS, PARKING AREAS, LOADING/UNLOADING ZONES, STORAGE AREAS, AND STAGING AREAS ARE TO BE STABILIZED.
5. CONSTRUCTION ROADS ARE TO BE BUILT TO CONFORM TO SLOPES, BUT SHOULD NOT HAVE SIDE SLOPES OR ROAD GRADES THAT ARE EXCESSIVELY STEEP.

MAINTENANCE REQUIREMENTS

1. REGULAR INSPECTIONS ARE TO BE MADE OF ALL STABILIZED AREAS, ESPECIALLY AFTER STORM EVENTS.
2. STONES ARE TO BE REAPPLIED PERIODICALLY AND WHEN REPAIR IS NECESSARY.
3. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED DAILY BY SHOVELING OR SWEEPING. SEDIMENT IS NOT TO BE WASHED DOWN STORM SEWER DRAINS.
4. STORM SEWER INLET PROTECTION IS TO BE IN PLACE, INSPECTED, AND CLEANED IF NECESSARY.
5. OTHER ASSOCIATED SEDIMENT CONTROL MEASURES ARE TO BE INSPECTED TO ENSURE GOOD WORKING CONDITION.

City of Colorado Springs
Stormwater Quality

Figure VT-2
Vehicle Tracking
Application Examples

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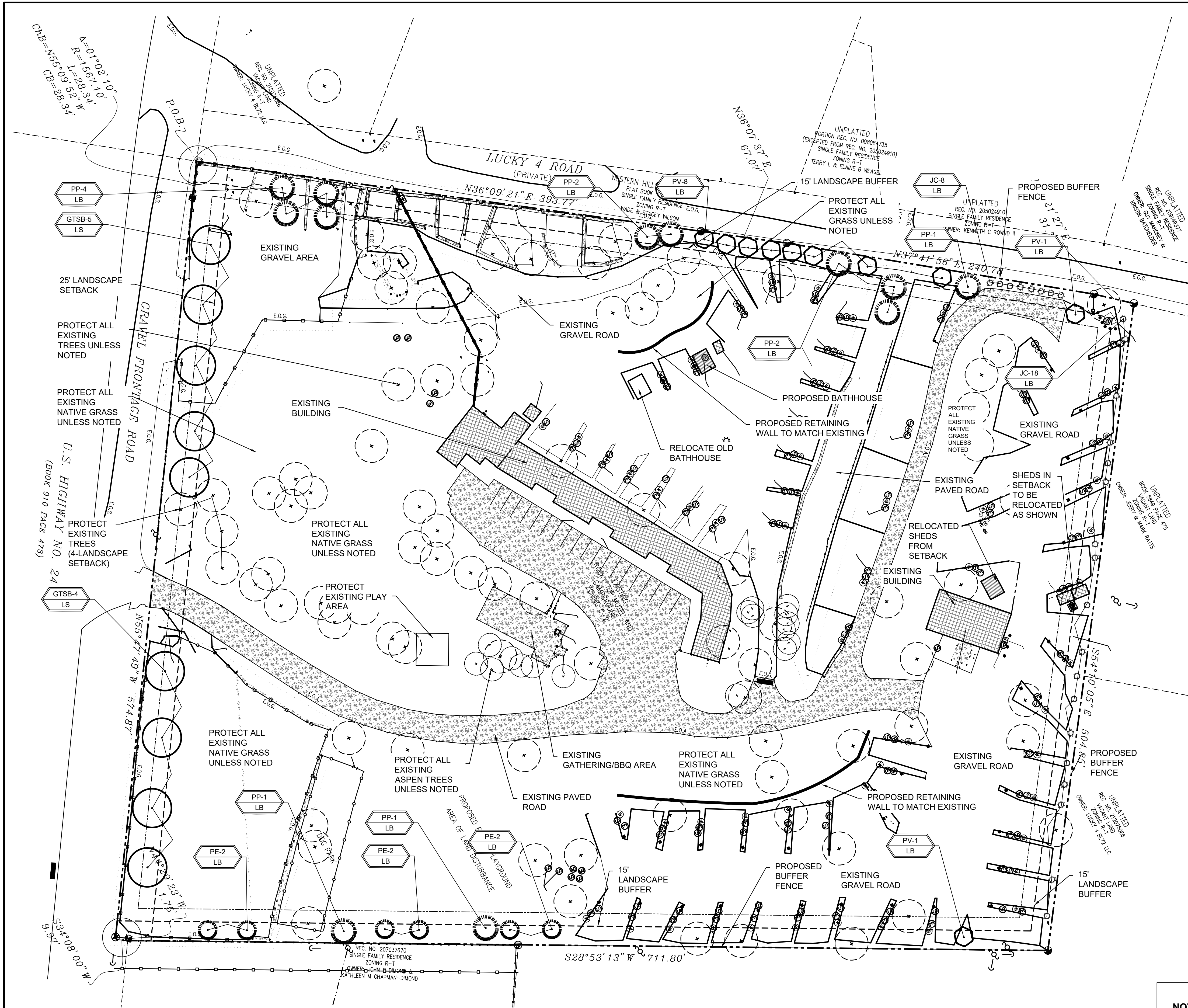
PROJECT

SHT. NAME

EROSION CONTROL DETAILS

SHT. NO.

OF



LANDSCAPE PLAN

UTILITIES NOTE

VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES PRIOR TO START OF WORK. CALL 811 FOR UTILITY LOCATES. TREE TRUNK PLACEMENT SHALL BE 6" MINIMUM DISTANCE FROM ANY GAS OR ELECTRIC AND 10" FROM GAS MAINS RATED AT 150PSI. FOR SANITARY SEWER AND WATER MAINLINES TREES SHALL NOT BE LOCATED WITHIN EASEMENTS AND WITHIN 15' OF ANY MAINLINE. ANY CONFLICT BETWEEN TREE LOCATIONS AND UTILITIES SHOWN ON PLANS SHALL BE RESOLVED WITH GENERAL CONTRACTOR PRIOR TO PLANTING. ALL ELECTRICAL VAULTS AND TRANSFORMERS SHALL BE KEPT CLEAR FROM PLANT MATERIAL PER COLORADO SPRINGS UTILITIES GUIDELINES "LANDSCAPING AROUND ELECTRICAL EQUIPMENT". SEE COLORADO SPRINGS UTILITIES CONSTRUCTION STANDARD DRAWINGS 18-302 FOR SPECIFIC CLEARANCE REQUIREMENTS. ALL SHRUBS TO BE LOCATED 3' CLEAR OF ALL FIRE HYDRANTS AT MATURE SIZE.

NOTE: IRRIGATION SYSTEM FOR TREES TO BE DESIGN/BUILD FOR POINT SOURCE DRIP IRRIGATION FOR ALL PROPOSED TREES ONLY. COORDINATE WITH GENERAL CONTRACTOR.

DOCUMENT NOTE

IRRESPECTIVE OF ANY OTHER TERM IN THIS DOCUMENT, LANDSCAPE ARCHITECT SHALL NOT CONTROL OR BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SCHEDULES, SEQUENCES OR PROCEDURES, OR FOR CONSTRUCTION SAFETY OR ANY OTHER RELATED PROGRAMS, OR FOR ANOTHER PARTIES' ERRORS OR OMISSIONS OR FOR ANOTHER PARTIES' FAILURE TO COMPLETE THEIR WORK OR SERVICES IN ACCORDANCE WITH LANDSCAPE ARCHITECT'S DOCUMENTS.

CODE REQUIREMENTS					
LANDSCAPE SETBACKS (LS)					
STREET NAME OR ZONE BOUNDARY (ELEV.)	STREET CLASSIFICATION	WIDTH (FT.) REQ./PROV.	LINEAR FOOTAGE	TREE/FEET REQUIRED	NO. OF TREES REQ./PROVIDED
HUT 24	EXPRESSWAY	25/25 FT	575	1/20 FT	29/15 (4 EXISTING)
MOTOR VEHICLE LOTS (MV)					
NO. OF VEHICLE SPACES PROVIDED	SHADE TREES (1/6 SPACES) REQ./PROV.	VEHICLE LOT FRONTAGE(S)	3/3 LENGTH OF FRONTAGE (FT)		
20	2/2 EXISTING	NOT REQUIRED	0		
MIN. 3' SCREENING PLANTS REQ./PROV.	EVERGREEN PLANTS REQ. 50%/PROV.				
NA	NA				
INTERNAL LANDSCAPING (IL)					
INTERNAL LANDSCAPE AREA INCLUDES ALL LANDSCAPE AREAS NOT INCLUDING SETBACKS, BUFFERS OR MOTOR VEHICLE ISLANDS.					
NET SITE AREA (SF) (LESS PUBLIC ROAD)	PERCENT MINIMUM INTERNAL AREA (%)	INTERNAL AREA (SF) REQ./PROV.	INTERNAL TREES (1000 SF) EXCLUDING DRIVEWAYS		
489,00 SF	NON-RESIDENTIAL	20,225 SF/1000	40/22 EXISTING PROVIDED		
LAND SUBSTITUTES REQ./PROV.	INTERNAL PLANT ABBR. DENOTED ON PLAN	PERCENT GROUND PLANE VEG. REQ./PROV.			
0/0	IL	50%/50%			
LANDSCAPE BUFFERS AND SCREENS (LSB)					
STREET NAME OR PROPERTY LINE (ELEV.)	LINEAR FOOTAGE	SETBACK BUFFER (5') REQ. / PROV.	BUFFER TREES (1/20') REQ./PROV.		
WEST BOUNDARY	634	5' 5' - 20'	32/75 NEW TREES, 8 UPRIGHT EVERGREEN TREES, 13 EXISTING + 40 PROVIDED		
NORTH BOUNDARY	509	5' 5' - 20'	26/6 UPRIGHT EVERGREEN TREES, 3 EXISTING + 21 PROV.		
EAST BOUNDARY	102	5' 5' - 20'	36/5 TREES, 8 EXISTING + 11 PROV.		
OPAQUE FENCE, 6' FENCE PROVIDED ALONG ENTIRE WEST, NORTH, EAST BOUNDARY EXISTING CEDAR FENCE FOR BUFFER REQUIREMENT					

PLANT SCHEDULE					
Symbol	Abbr.	Quantity	Botanical Name	Common Name	Mature Width/Ht. Planting Size
EVERGREEN TREES					
JC	26	Juniperus scopulorum 'Cologreen'	Cologreen Juniper	6-8' x 12-15'	5 gal.
PP	12	Pinus ponderosa	Ponderosa Pine	20'	6" Ht.
PE	6	Pinus edulis	Pinyon Pine	15'X15'	6" Ht.
DECIDUOUS TREES:					
GTSB	9	Gleditsia triacanthos 'Sunburst'	Sunburst Honeylocust	30'	1-1/2" cal.
PV	10	Prunus virginiana 'Schubert'	Canada Red Cherry	15'X15'	1-1/2" cal.

HIGD

HIGHER GROUND DESIGNS

HIGHER GROUND DESIGNS, INC.

LANDSCAPE ARCHITECTURE, PLANNING & IRRIGATION DESIGN

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ROCKY TOP RV PARK/CAMPGROUND

GREEN MOUNTAIN FALLS

EL PASO COUNTY, CO

PREPARED FOR:

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REVISIONS

ORIGINAL DATE

8-13-21

DRAWN BY

DESCRIPTION

LANDSCAPE PLAN

SHEET NO.

L1.1