







Revised.

**A-1 CHIPSEAL**  
GRADING AND EROSION CONTROL PLAN  
**PROPOSED SAND FILTER**  
MAY 2022

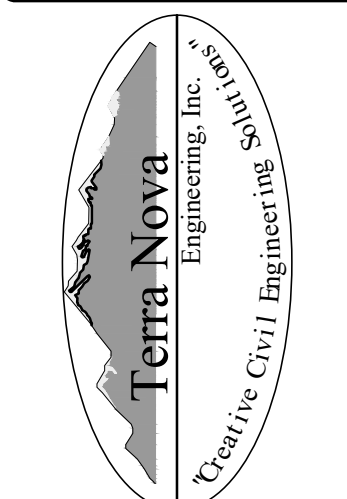
### LEGEND

EXISTING CONTOURS - MINOR	— — — — — 61.32 — — — — —
EXISTING CONTOURS - MAJOR	— — — — — 61.30 — — — — —
GRADE & DIRECTION	<u>2.2%</u>
PROPOSED CONTOUR	
PROPOSED	PR
EXISTING	EX
WATER LINE	— W — W —
SEWER LINE	— SS — SS —
STORM LINE	— ST — ST —
OVERHEAD ELECTRICAL LINE	— OE — OE —
CHAIN LINK FENCE	— □ — □ — □ —
FIRE HYDRANT	
CONCRETE EDGE	CE
FINISHED GROUND	FG
FINISHED SURFACE	FS
FLOWLINE	FL
SPOT ELEVATION	SE
ASPHALT EDGE	AE
LOW POINT	LP
HIGH POINT	HP
EXISTING ELEVATION	12.00*
EXISTING SPOT GRADE	× EX 7314.00
PROPOSED SPOT GRADE	× 7314.00

[illegible]

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REVIEWING AGENCIES.  
TERRA NOVA ENGINEERING,  
INC. APPROVES THEIR USE  
ONLY FOR THE  
PURPOSES DESIGNATED BY  
WRITTEN AUTHORIZATION.

PREPARED FOR:  
A-1 CHIPSEAL  
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2505 E 74TH AVE  
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A-1 CHIPSEAL	GRADING AND EROSION CONTROL PLAN PROPOSED SAND FILTER
--------------	--

DESIGNED BY	DLF
DRAWN BY	DLF
CHECKED BY	LD
H-SCALE	AS SHOWN
V-SCALE	N/A
JOB NO.	2173.00
DATE ISSUED	05/02/2011
SHEET NO.	3 OF 5

An on-site infiltration test using double-ring infiltrometer is required. Infiltration tests should be performed or supervised by a licensed professional engineer and conducted at a minimum depth equal to the bottom of the sand filter. Underdrains are required for sand filters and should be provided if infiltration tests show rates slower than 2 times that required to drain the WQCV over 12 hours

Newly attached infiltration test shows that test used a double-ring infiltrometer, was signed by a licensed professional engineer, and was conducted 7 feet below the bottom of the sand filter.

provide detail and show slope

Slope is now provided. Details are given on this page.

Pond design will be reviewed with resubmittal

FILTER SAND: 18" DEEP, FILTER SAND PER USDCM VOL 3 TABLE SF-1

53'

27'

27'

53'

The diagram shows a rectangular area representing a filter sand layer. The top and bottom horizontal dimensions are labeled as 53'. The left and right vertical dimensions are labeled as 27'. The corners of the rectangle are filled with a pattern of overlapping circles, representing the filter sand. Arrows point from the text 'FILTER SAND: 18" DEEP, FILTER SAND PER USDCM VOL 3 TABLE SF-1' to the top and bottom edges of the rectangle. Another arrow points from the text '27'' to the left vertical edge. A fourth arrow points from the text '53'' to the bottom horizontal edge.

include spillway design and details

The spillway is the existing curb chase in the western corner of the sand filter as shown.

PR RIPRAP RUNDOWN, R=10',  
3' DEEP AT WALL, 2' DEEP  
OUTSIDE, TYPE M RIPRAP,  
D50=12" FILL RIPRAP WITH  
FILTER SAND

VERTICAL CONCRETE WALL, HEIGHT  
VARIES TO MATCH EX GRADE

SAND FILTER DESIGN – PLAN VIEW  
N.T.S

The sand filter has a parking lot on both sides and the interior depth is 2' at the low point. Heavy machinery will have access to this sand filter.

how will water enter the SFB?

Existing curb and gutter directs flows to sand filter at these locations. This is the natural low point of site.

provide access to maintain filter material

Specify whether Class B or C?

PR RIPRAP RUNDOWN (PROJECTED), R=10', 3' DEEP-  
AT WALL, 2' DEEP OUTSIDE, TYPE M RIPRAP,  
D50=12" FILL RIPRAP WITH FILTER SAND

→ FILTER SAND: 18" DEEP, FILTER SAND  
PER USDCM VOL 3 TABLE SF-1

BEDDING SAND: 6" DEEP CDOT/  
CLASS C FILTER MATERIAL PER  
USDCM VOL 3 TABLE SF-1

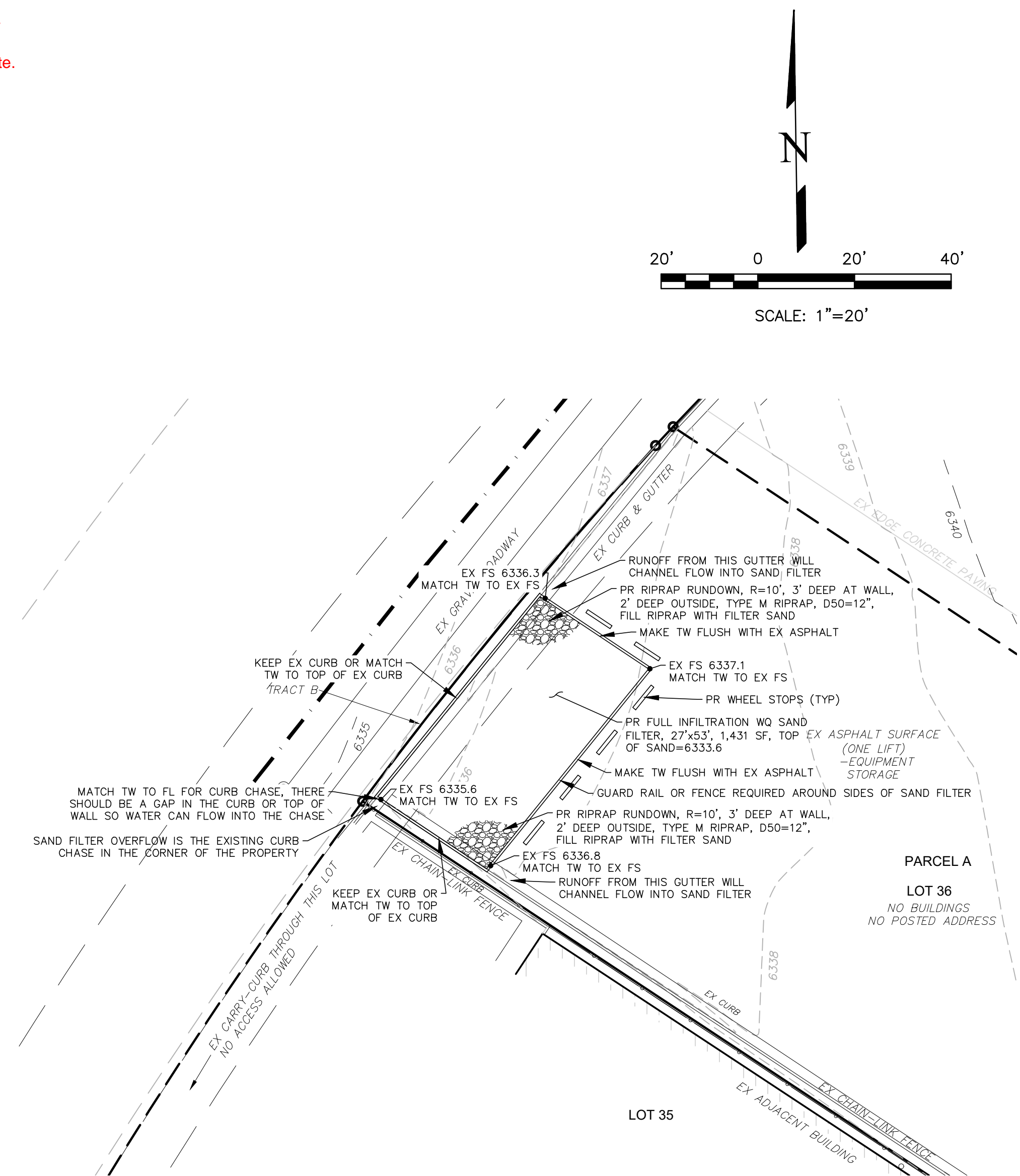
SAND FILTER DESIGN – PROFILE VIEW  
N.T.S.

Footings will likely not be used for these walls.

will there be footings?

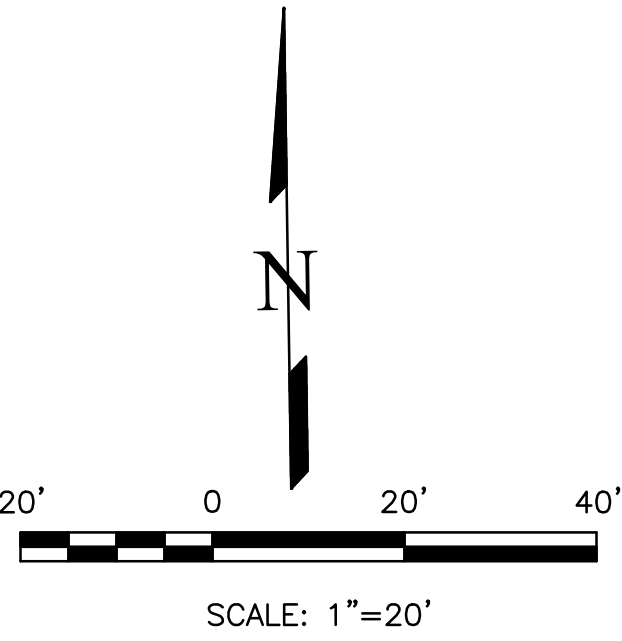
THIS DESIGN WAS PREPARED UNDER MY DIRECT SUPERVISION  
FOR AND ON BEHALF OF TERRA NOVA ENGINEERING, INC.

DANE FRANK  
COLORADO P.E. # 50207



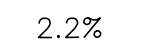
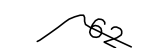






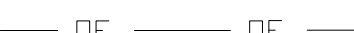
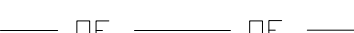






**A-1 CHIPSEAL**  
GRADING AND EROSION CONTROL PLAN  
**GRADING PLAN**  
MAY 2022

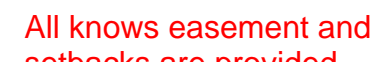


LEGEND

PROPERTY LINE	
EXISTING CONTOURS - MINOR	
EXISTING CONTOURS - MAJOR	
GRADE & DIRECTION	
PROPOSED CONTOUR	
PROPOSED	PR
EXISTING	EX
WATER LINE	 W 
SEWER LINE	 SS 
STORM LINE	 ST 
OVERHEAD ELECTRICAL LINE	 OE 
CHAIN LINK FENCE	
FIRE HYDRANT	
CONCRETE EDGE	CE
FINISHED GROUND	FG
FINISHED SURFACE	FS
FLOWLINE	FL
SPOT ELEVATION	SE
ASPHALT EDGE	AE
LOW POINT	LP
HIGH POINT	HP
EXISTING ELEVATION	12.00*
EXISTING SPOT GRADE	× EX 7314.00
PROPOSED SPOT GRADE	× 7314.00

NOTES

1. NO GRADING IS PROPOSED. THE ONLY PROPOSED DEVELOPMENT IS THE INSTALLATION OF THE SAND FILTER.



confirm location of  
property setbacks and  
public easements

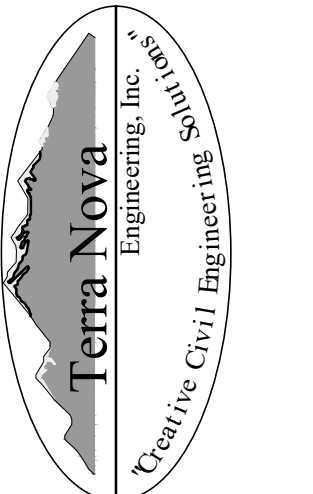
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FOR AND ON BEHALF OF TERRA NOVA ENGINEERING, INC.

DANE FRANK  
COLORADO P.E. # 50207

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COLORADO SPRINGS, CO 80904

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FAX: 719-635-6426  
[www.tnesinc.com](http://www.tnesinc.com)

A T O U R N A L

## GRADING PLAN

DESIGNED BY DLF	
DRAWN BY DLF	
CHECKED BY LD	
SCALE	AS SHOWN
SCALE	N/A
PROJECT NO. 2173.00	
DATE ISSUED 05/02/22	
SET NO. 2	OF 5

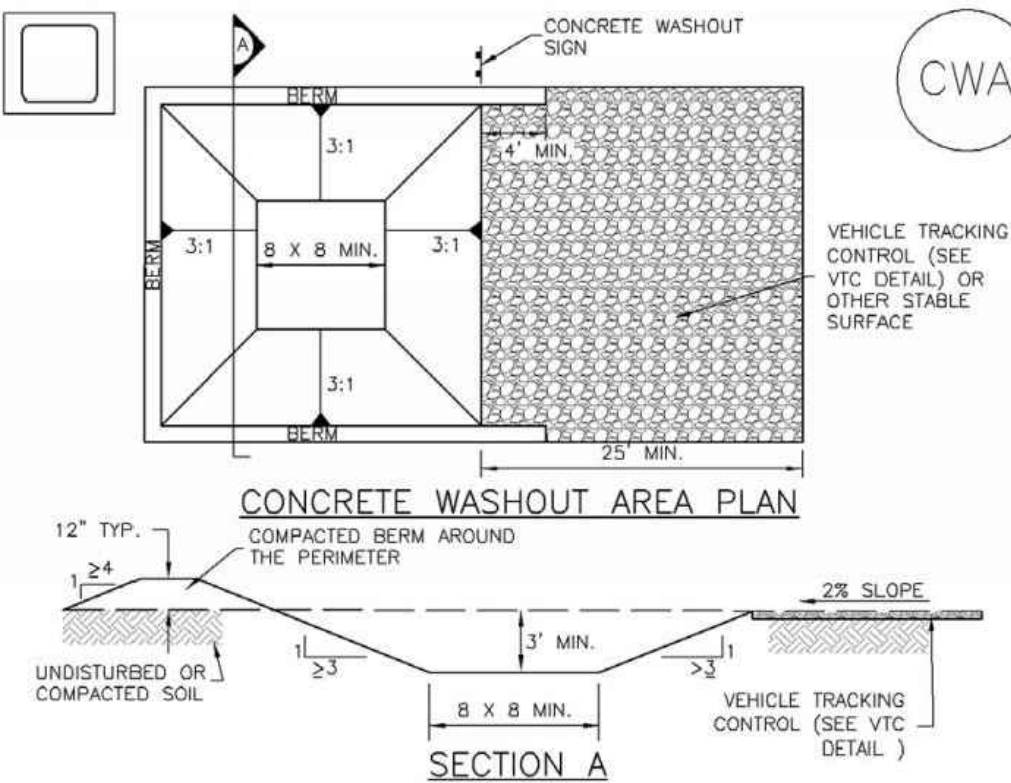






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Concrete Washout Area (CWA) MM-1



CWA-1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

1. SEE PLAN VIEW FOR:  
-CWA INSTALLATION LOCATION.
2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES (USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE) SHOULD BE USED.
3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.
4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.
5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.
6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.
7. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

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

Concrete Washout Area (CWA) MM-1

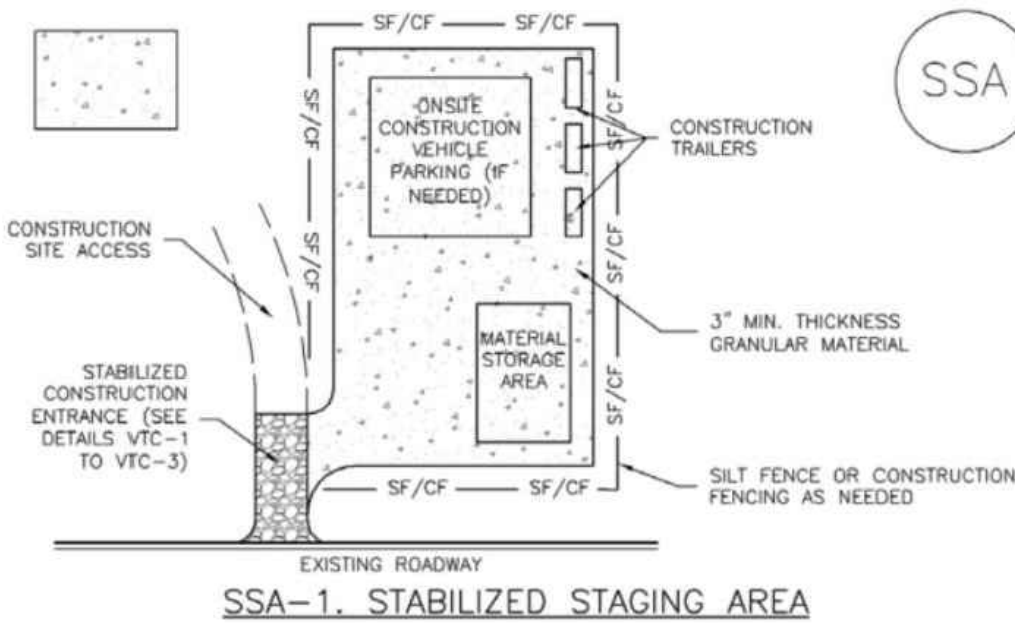
CWA MAINTENANCE NOTES

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. THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS, ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.
5. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.
6. THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.
7. WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PUEBLO, 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.

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

Stabilized Staging Area (SSA) SM-6



SSA-1. STABILIZED STAGING AREA

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, MSHTO #3 COARSE AGGREGATE OR 6" (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.

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

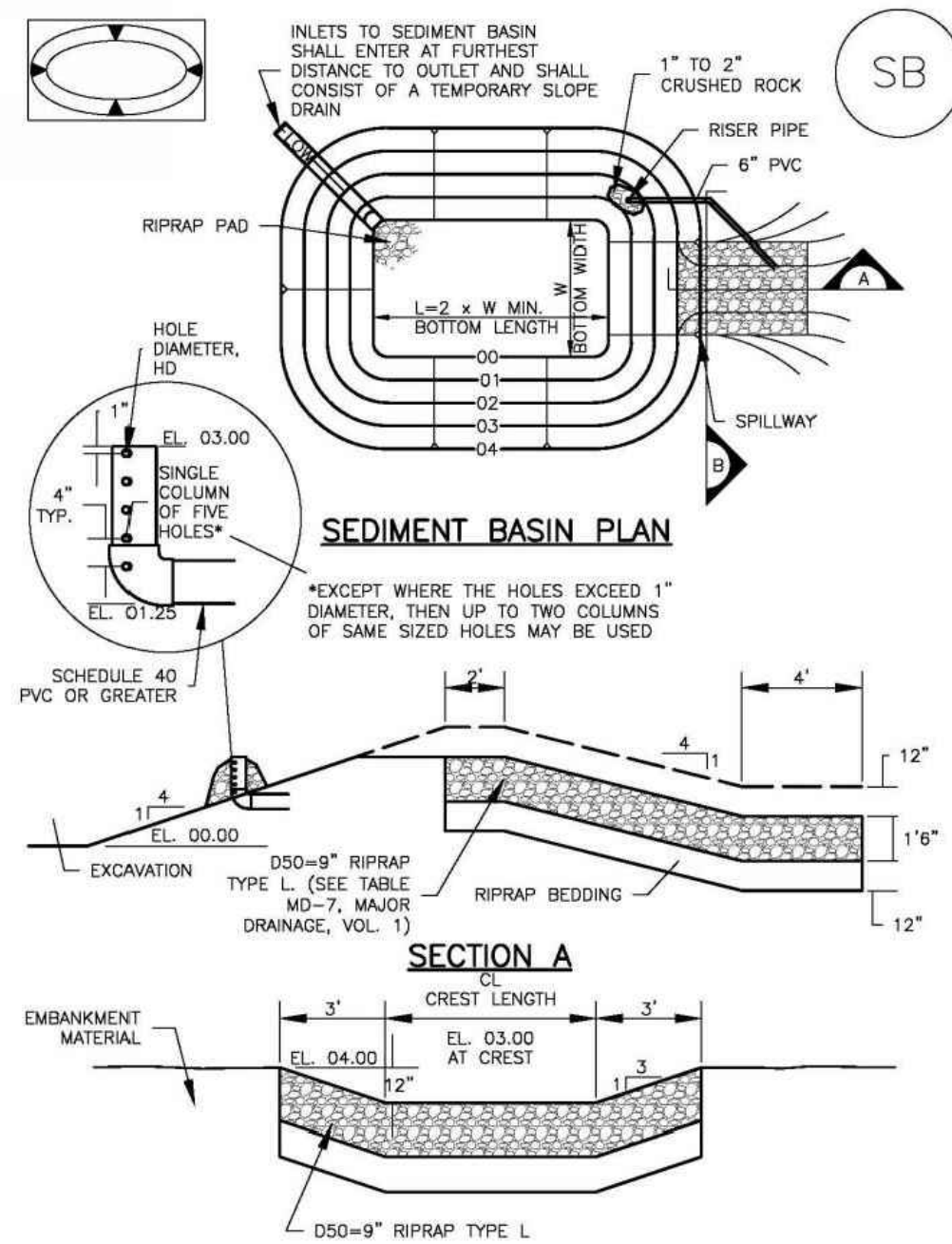
Stabilized Staging Area (SSA) SM-6

STABILIZED STAGING AREA MAINTENANCE NOTES

3. 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)

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

Sediment Basin (SB) SC-7



SEDIMENT BASIN PLAN

\*EXCEPT WHERE THE HOLES EXCEED 1" DIAMETER, THEN UP TO TWO COLUMNS OF SAME SIZED HOLES MAY BE USED

SECTION A

August 2013 Urban Drainage and Flood Control District SB-5  
Urban Storm Drainage Criteria Manual Volume 3

Sediment Basin (SB) SC-7

TABLE SB-1. SIZING INFORMATION FOR STANDARD SEDIMENT BASIN			
Upstream Drainage Area (rounded to nearest acre), (ac)	Basin Bottom Width (W), (ft)	Spillway Crest Length (CL), (ft)	Hole Diameter (HD), (in)
1	12 1/2	2	9/32
2	21	3	15/64
3	28	4	1/8
4	33 1/2	5	5/16
5	38 1/2	6	3/8
6	43	8	7/16
7	47 1/2	11	1/2
8	51	12	5/8
9	55	13	3/4
10	58 1/2	15	15/16
11	61	16	1
12	64	18	1 1/8
13	67 1/2	19	1 1/4
14	70 1/2	21	1 3/8
15	73 1/2	22	1 7/8

SEDIMENT BASIN INSTALLATION NOTES

1. SEE PLAN VIEW FOR:  
-LOCATION OF SEDIMENT BASIN.  
-TYPE OF BASIN (STANDARD BASIN OR NONSTANDARD BASIN).  
-FOR STANDARD BASIN, BOTTOM WIDTH W, CREST LENGTH CL, AND HOLE DIAMETER, HD.  
-FOR NONSTANDARD BASIN, SEE CONSTRUCTION DRAWINGS FOR DESIGN OF BASIN INCLUDING RISER HEIGHT H, NUMBER OF COLUMNS N, HOLE DIAMETER HD AND PIPE DIAMETER D.
2. FOR STANDARD BASIN, BOTTOM DIMENSION MAY BE MODIFIED AS LONG AS BOTTOM AREA IS NOT REDUCED.
3. SEDIMENT BASINS SHALL BE INSTALLED PRIOR TO ANY OTHER LAND-DISTURBING ACTIVITY THAT RELIES ON ON BASINS AS A STORMWATER CONTROL.
4. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL FREE OF DEBRIS, ORGANIC MATERIAL, AND ROCKS OR CONCRETE GREATER THAN 3 INCHES AND SHALL HAVE A MINIMUM OF 15 PERCENT BY WEIGHT PASSING THE NO. 200 SIEVE.
5. EMBANKMENT MATERIAL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.
6. PIPE SCH 40 OR GREATER SHALL BE USED.
7. THE DETAILS SHOWN ON THESE SHEETS PERTAIN TO STANDARD SEDIMENT BASIN(S) FOR DRAINAGE AREAS LESS THAN 15 ACRES. SEE CONSTRUCTION DRAWINGS FOR EMBANKMENT, STORAGE VOLUME, SPILLWAY, OUTLET, AND OUTLET PROTECTION DETAILS FOR ANY SEDIMENT BASIN(S) THAT HAVE BEEN INDIVIDUALLY DESIGNED FOR DRAINAGE AREAS LARGER THAN 15 ACRES.

SB-6 Urban Drainage and Flood Control District August 2013  
Urban Storm Drainage Criteria Manual Volume 3

Sediment Basin (SB) SC-7

SEDIMENT BASIN 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 IN BASIN SHALL BE REMOVED AS NEEDED TO MAINTAIN BMP EFFECTIVENESS. TYPICALLY WHEN SEDIMENT DEPTH REACHES ONE FOOT (I.E., TWO FEET BELOW THE SPILLWAY CREST).
  5. SEDIMENT BASINS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS ACCEPTED BY THE LOCAL JURISDICTION.
  6. WHEN SEDIMENT BASINS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEED, AND MULCH OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.
- (DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO)
- 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.

August 2013 Urban Drainage and Flood Control District SB-7  
Urban Storm Drainage Criteria Manual Volume 3

These will not be used on this project so they have been removed from legend on previous page.  
Street Sweeping detail added.

include details for silt fence, erosion control logs, seeding, inlet protection

REVISIONS

NO.	DESCRIPTION	DATE

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PREPARED FOR:  
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Creative Civil Engineering

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OFFICE: 719-635-6422  
FAX: 719-635-6426  
www.tnainc.com

A-1 CHIPSEAL

GRADING AND EROSION CONTROL PLAN  
EROSION CONTROL DETAILS

DESIGNED BY DLF  
DRAWN BY DLF  
CHECKED BY LD

H-SCALE AS SHOWN  
V-SCALE N/A

JOB NO. 2173.00  
DATE ISSUED 05/02/22  
SHEET NO. 5 OF 5