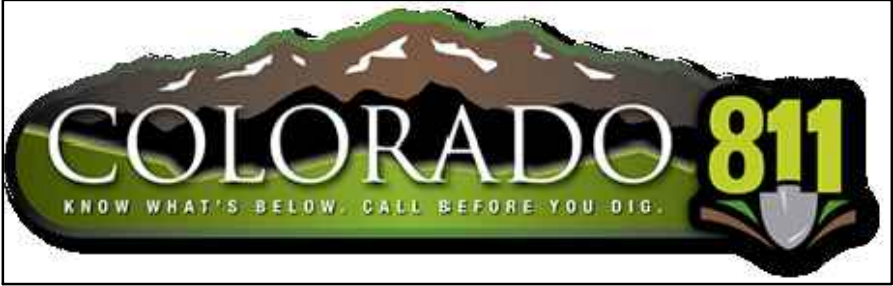


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# VOLLMER SUBSTATION

## EL PASO COUNTY, CO

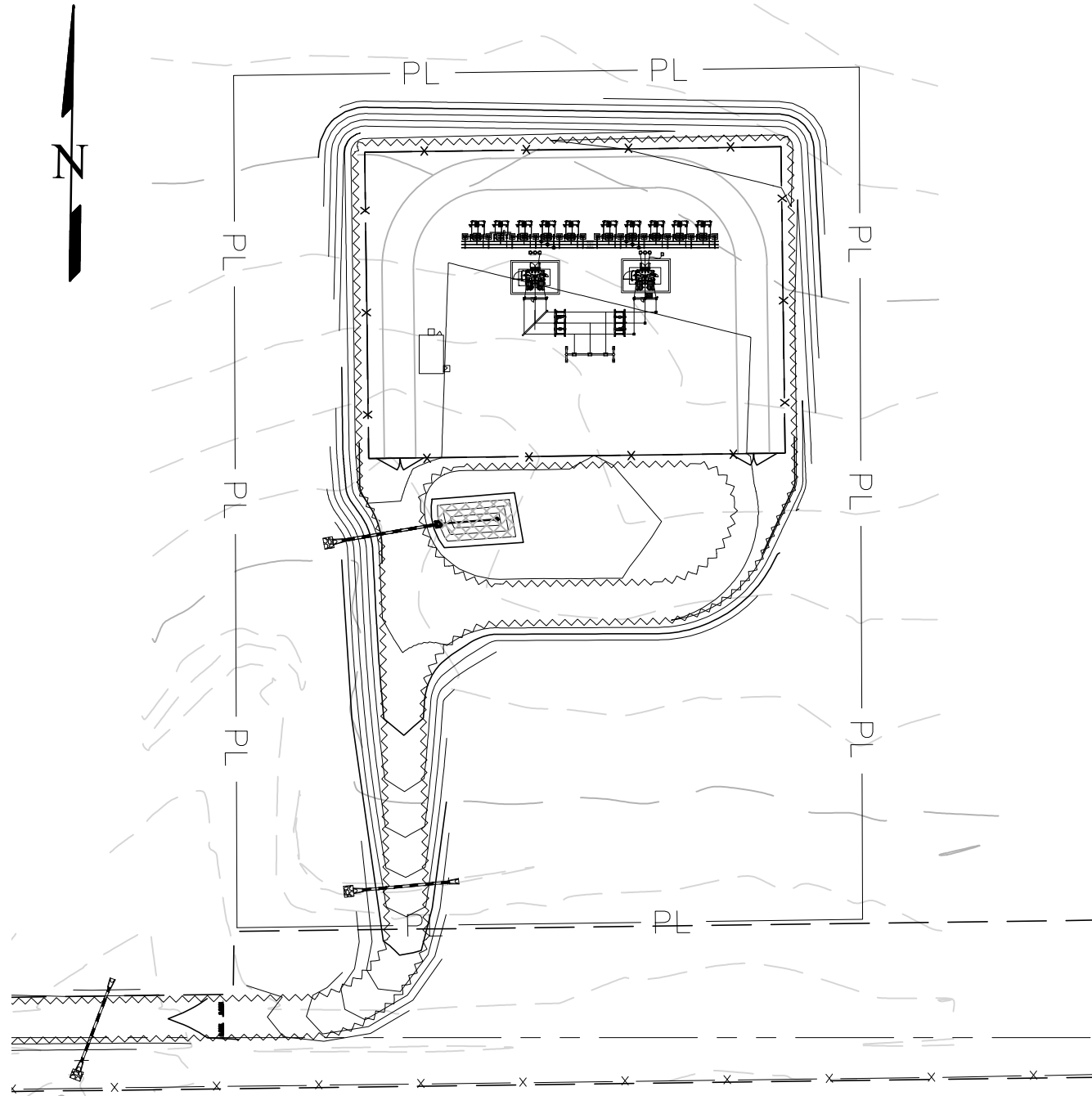
# GRADING, EROSION, & SEDIMENT CONTROL PLAN

### SEPTEMBER 2018

#### STANDARD NOTES FOR EL PASO COUNTY GRADING AND EROSION CONTROL

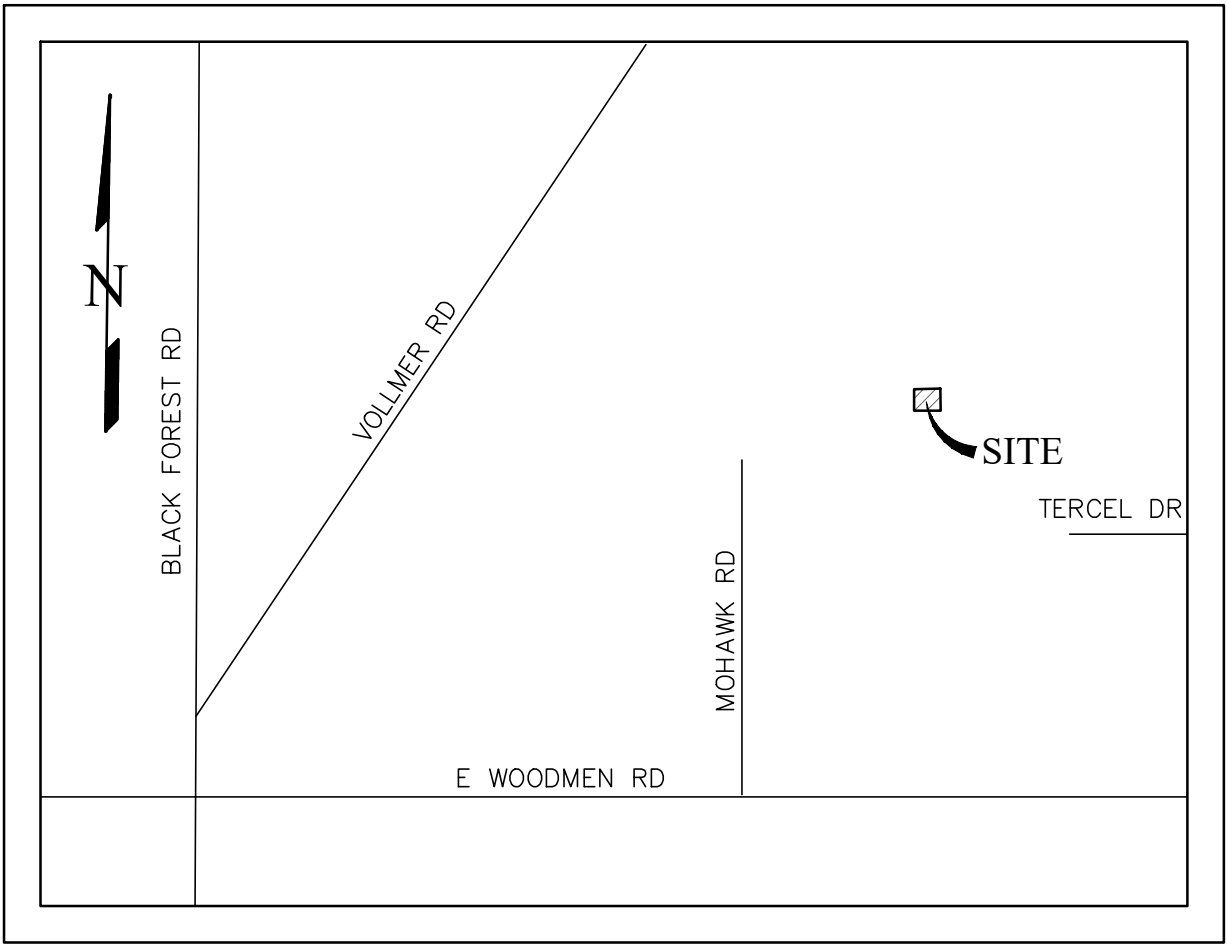
REVISED 8/24/16

- 1.CONSTRUCTION MAY NOT COMMENCE UNTIL A CONSTRUCTION PERMIT IS OBTAINED FROM PLANNING AND COMMUNITY DEVELOPMENT AND A PRECONSTRUCTION CONFERENCE IS HELD WITH PLANNING AND COMMUNITY DEVELOPMENT INSPECTIONS.
- 2.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.
- 3.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 TO REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.
- 4.A SEPARATE STORMWATER MANAGEMENT PLAN (SWMP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. DURING CONSTRUCTION THE SWMP IS THE RESPONSIBILITY OF THE DESIGNATED STORMWATER MANAGER, SHALL BE LOCATED ON SITE AT ALL TIMES AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.
- 5.ONCE THE ESQCP HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL BMPS AS INDICATED ON THE 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 PCD INSPECTIONS STAFF.
- 6.SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 21 CALENDAR DAYS AFTER FINAL GRADING, OR FINAL EARTH DISTURBANCE, HAS BEEN COMPLETED. DISTURBED AREAS AND STOCKPILES WHICH ARE NOT AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS SHALL ALSO BE MULCHED WITHIN 21 DAYS AFTER INTERIM GRADING. AN AREA THAT IS GOING TO REMAIN IN AN INTERIM STATE FOR MORE THAN 60 DAYS SHALL ALSO BE SEEDED. ALL TEMPORARY SOIL EROSION CONTROL MEASURES AND BMPS SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND ESTABLISHED.
- 7.TEMPORARY SOIL EROSION CONTROL FACILITIES SHALL BE REMOVED AND EARTH DISTURBANCE AREAS GRADED AND STABILIZED WITH PERMANENT SOIL EROSION CONTROL MEASURES PURSUANT TO STANDARDS AND SPECIFICATION PRESCRIBED IN THE DCM VOLUME II AND THE ENGINEERING CRITERIA MANUAL (ECM) APPENDIX I.
- 8.ALL PERSONS ENGAGED IN EARTH DISTURBANCE SHALL IMPLEMENT AND MAINTAIN ACCEPTABLE SOIL EROSION AND SEDIMENT CONTROL MEASURES INCLUDING BMP'S IN CONFORMANCE WITH THE EROSION CONTROL TECHNICAL STANDARDS OF THE DRAINAGE CRITERIA MANUAL (DCM) VOLUME II AND IN ACCORDANCE WITH THE STORMWATER MANAGEMENT PLAN (SWMP).
- 9.ALL TEMPORARY EROSION CONTROL FACILITIES INCLUDING BMPS AND ALL PERMANENT FACILITIES INTENDED TO CONTROL EROSION OF ANY EARTH DISTURBANCE OPERATIONS, SHALL BE INSTALLED AS DEFINED IN THE APPROVED PLANS, THESWMP AND THE DCM VOLUME II AND MAINTAINED THROUGHOUT THE DURATION OF THE EARTH DISTURBANCE OPERATION.
10. ANY EARTH DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY REDUCE 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.
11. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE DESIGNED TO LIMIT THE DISCHARGE TO A NON-EROSIVE VELOCITY.
12. CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL BE DISCHARGED TO OR ALLOWED TO RUNOFF TO STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
13. EROSION CONTROL BLANKETING IS TO BE USED ON SLOPES STEEPER THAN 3:1.
14. BUILDING, CONSTRUCTION, EXCAVATION, OR OTHER 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. BMP'S MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.
15. VEHICLE TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFFSITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.
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. THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, AND SAND THAT MAY ACCUMULATE IN THE STORM SEWER OR OTHER DRAINAGE CONVEYANCE SYSTEM AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.
18. 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.
19. NO CHEMICALS ARE TO BE USED BY THE CONTRACTOR, WHICH HAVE THE POTENTIAL TO BE RELEASED IN STORMWATER UNLESS PERMISSION FOR THE USE OF A SPECIFIC CHEMICAL IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR. IN GRANTING THE USE OF SUCH CHEMICALS, SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.
20. BULK STORAGE STRUCTURES FOR PETROLEUM PRODUCTS AND OTHER CHEMICALS SHALL HAVE ADEQUATE PROTECTION SO AS TO CONTAIN ALL SPILLS AND PREVENT ANY SPILLED MATERIAL FROM ENTERING STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
21. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE FLOW LINE OF THE CURB AND GUTTER OR IN THE DITCHLINE.
22. INDIVIDUALS 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 INCLUDED IN THE DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, OR COUNTY AGENCIES, THE MORE RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.
23. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
24. PRIOR TO ACTUAL CONSTRUCTION THE PERMITEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.
25. A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
26. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY CTL-THOMPSON AND SHALL BE CONSIDERED A PART OF THESE PLANS.
27. AT LEAST TEN DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB 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



SITE MAP

SCALE: 1"=80'



VICINITY MAP

N.T.S.

#### DESCRIPTION OF ACTIVITIES:

THE DEVELOPER PROPOSES TO CONSTRUCT AN ELECTRIC SUBSTATION AND GRAVEL ACCESS ROAD. THE SITE CONSISTS OF 5 ACRES OF UNDEVELOPED PRAIRIE AREA LOCATED IN THE NORTHWEST PART OF EL PASO COUNTY, APPROXIMATELY 3,600 FEET EAST OF THE NORTH END OF MOHAWK ROAD. A WATER QUALITY SAND FILTER IS PROPOSED TO BE LOCATED NEAR THE CENTER OF THE SITE.

THE SITE CURRENTLY CONSISTS OF NATIVE GRASSES WITH AN ESTIMATED COVERAGE AREA OF APPROXIMATELY 95%. THERE ARE NO EROSION CONTROL MEASURES CURRENTLY IN PLACE.

EROSION CONTROL MEASURES SHALL BE IMPLEMENTED IN A MANNER THAT WILL PROTECT PROPERTIES AND PUBLIC FACILITIES FROM THE ADVERSE EFFECTS OF EROSION AND SEDIMENTATION AS A RESULT OF CONSTRUCTION AND EARTHWORK ACTIVITIES. IT IS ANTICIPATED THAT CONSTRUCTION ACTIVITIES WILL OCCUR BETWEEN FALL OF 2018 AND FALL 2019, AT WHICH POINT IT WILL BE CONSIDERED COMPLETED.

CONSTRUCTION PHASING IS ANTICIPATED TO OCCUR AS FOLLOWS:

PHASE 1:  
PRIOR TO START OF CONSTRUCTION, INITIAL EROSION CONTROL MEASURES TO BE INSTALLED INCLUDE, BUT NOT LIMITED TO VEHICLE TRACKING CONTROL (VTC) PADS AT THE SITE EXIT POINT ONTO PAVEMENT, SILT FENCE (SF) ALONG THE PROPERTY BOUNDARY ON THE SOUTH SIDE OF THE DISTURBED AREAS, A STAGING AREA (SSA) WHICH WILL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETED. ALSO INCLUDED IN THIS PHASE WILL BE INSTALLATION OF SILT FENCE (SF) AROUND THE BASE OF THE DIRT STOCKPILE AREA. UNTIL THE STOCKPILE HAS BEEN REMOVED, THE SILT FENCE SHALL REMAIN IN PLACE AND BE MAINTAINED IN SUCH A WAY AS TO REDUCE TRANSFERENCE OF SEDIMENTATION OVER THE SITE.

PHASE 2:  
SEDIMENT CONTROL LOGS (SCL) ALONG THE NEWLY GRADED SWALES AND ACCESS ROAD SHALL BE INSTALLED. THE PROPOSED SAND FILTER WILL BE GRADED IN AND PROTECTED WITH SILT FENCE (SF). ALL PREVIOUSLY INSTALLED BMP'S SHALL REMAIN IN PLACE UNTIL A LATER PHASE.

PHASE 3:  
ANY AREA THAT IS GOING TO REMAIN IN AN INTERIM STATE FOR MORE THAN 60 DAYS SHALL BE SEEDED IN ORDER TO ESTABLISH A VEGETATIVE COVER UNTIL THE FINAL LANDSCAPING IS INSTALLED. ALL TEMPORARY SOIL EROSION CONTROL MEASURES AND BMP'S SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND VEGETATION HAS BEEN ESTABLISHED TO 70% ON AREAS NOT COVERED BY GRAVEL. ONCE VEGETATIVE COVER HAS BEEN ESTABLISHED AT 70% OF THE DISTURBED AREAS, SILT FENCE WILL BE REMOVED FROM THE DIRT STOCKPILE AREA. THE DIRT STOCKPILE (SP) WILL BE REMOVED AND RE-VEGETATED AS PART OF THIS PHASE.

PHASE 4:  
FINAL CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED AT THIS POINT. THE VEHICLE TRACKING CONTROL PADS, SEDIMENT CONTROL LOGS AND STAGING AREAS HAVE ALL BEEN REMOVED AND PERMANENT EROSION CONTROL MEASURES HAVE BEEN ESTABLISHED.

THE TOTAL AREA TO BE DISTURBED IS 7+ ACRES (PORTION OF SITE PLUS ACCESS ROAD). THE PORTION OF THE SITE BEING DEVELOPED SHALL BE MAINTAINED TO REDUCE SEDIMENTATION FROM MIGRATING TO OFF-SITE OR DOWNSTREAM CREEK BEDS.

THE SOILS ON THIS SITE ARE NOTED AS TYPE 19, COLUMBINE GRAVELLY SANDY LOAM W/0-3 PERCENT SLOPES. A SOILS MAP HAS BEEN INCLUDED IN THE FINAL DRAINAGE REPORT. EXISTING SITE VEGETATION CONSISTS OF NATIVE GRASSES. THERE ARE NO WETLANDS ON THIS SITE.

THERE ARE NO POTENTIAL POLLUTANTS EXISTING OR PROPOSED FOR STORAGE ON THIS SITE.

THE RECEIVING WATERS FOR THIS AREA IS SAND CREEK. PER THE FINAL DRAINAGE REPORT, ALL OF THE SITE FLOWS TO THE SOUTH AND OFFSITE.

THE PROPERTY OWNER OR OWNERS REPRESENTATIVE IS RESPONSIBLE FOR INSPECTING AND MAINTAINING THE SITE ON A REGULAR BASIS. INITIAL CRITERIA FOR THE OCCURRENCE OF INSPECTIONS IS AS FOLLOWS:  
ONCE EVERY 14 DAYS OR  
AFTER ANY PRECIPITATION OR SNOWMELT EVENT THAT SIGNIFICANT ENOUGH TO CAUSE SURFACE EROSION.  
A WRITTEN RECORD OF INSPECTIONS SHALL BE KEPT BY THE OWNER OR OWNERS REPRESENTATIVE AND MADE AVAILABLE TO THE COUNTY UPON REQUEST. THIS WILL CONTINUE UNTIL THE SITE IS STABILIZED AND THE STOCKPILE IS NO LONGER NEEDED.

#### EROSION CONTROL COST OPINION

1. 5,500 LF-SILT FENCE @ \$4.00/LF	\$	22,000
2. 1,330 LF-SEDIMENT CONTROL LOGS \$4.00/LF	\$	5,320
3. 1 EA-VEHICLE TRACKING CONTROL @ \$1,325/ENTRANCE	\$	1,325
4. 1.2 AC-DRILL SEED & MULCH @ \$4,500/AC	\$	5,400
5. 1 EA-CONCRETE WASHOUT @ \$760/EA	\$	760
6. 1 EA-FUEL SPILL KIT @ \$200/EA	\$	200
7. 40% MAINTENANCE AND REPLACEMENT	\$	14,002
TOTAL	\$	49,007

#### SHEET INDEX

COVER SHEET	1 OF 6
GRADING PLAN	2 OF 6
SAND FILTER DETAILS	3 OF 6
EROSION AND SEDIMENT CONTROL PLAN	4 OF 6
EROSION CONTROL DETAILS	5 OF 6
EROSION CONTROL DETAILS	6 OF 6

#### SITE DATA

OWNER/PETITIONER:  
MOUNTAIN VIEW ELECTRIC ASSOCIATION  
11140 E. WOODMAN RD  
PEYTON, CO 80931  
MR. DAVID WALDNER, (719) 495-2283

PREPARED BY:  
TERRA NOVA ENGINEERING, INC.  
125 N. WAHSATCH AVE.  
COLORADO SPRINGS, CO 80903  
(719) 635-6422 OFFICE  
(719) 499-2255 MOBILE

#### LEGAL DESCRIPTION

CURRENT PARCEL (NOT SITE'S PARCEL): W2E2, W2 W/MR SEC 34-12-65, EX TR 4  
CONV BY REC #210065613

#### AREA

TOTAL AREA TO BE CLEARED, EXCAVATED, GRADED OR DISTURBED IS 6.95 ACRES.

#### VOLUME

EARTHWORK VOLUMES: 4522 CU YD CUT, 6027 CU YD FILL, +1505 CU YD NET (FILL)

#### STATEMENTS

##### DESIGN ENGINEER'S STATEMENT:

THESE 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.

L'DUCETT, P.E. #32339 DATE  
FOR AND ON BEHALF OF TERRA NOVA ENGINEERING, INC.

##### OWNER/DEVELOPERS STATEMENT:

I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH ALL OF THE REQUIREMENTS SPECIFIED IN THE REQUIREMENTS OF THE GRADING AND EROSION CONTROL PLAN.

DAVID WALDNER DATE  
MOUNTAIN VIEW ELECTRIC ASSOCIATION  
11140 E. WOODMAN RD  
PEYTON, CO 80931

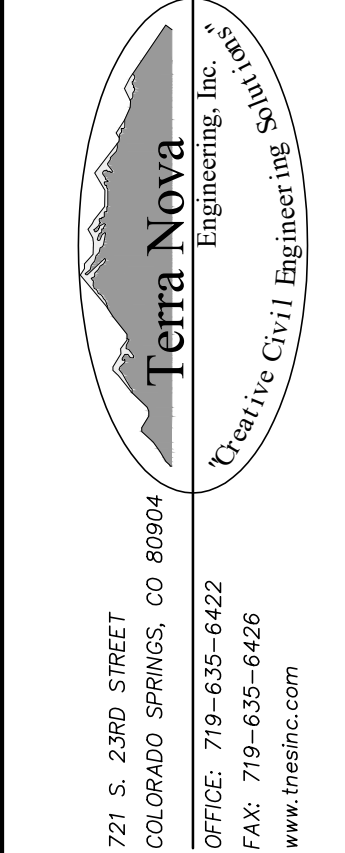
##### EL PASO COUNTY:

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.

JENNIFER IRVINE, P.E. DATE  
COUNTY ENGINEER/ECM ADMINISTRATOR

REVISIONS	NO.	DESCRIPTION	DATE
UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE REVIEWING AGENCIES, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT AND FOR THE COST DESCRIBED BY WRITTEN AUTHORIZATION.			

PREPARED FOR:  
MYEA  
ATTN: DAVE WALDNER  
11140 E. WOODMAN RD  
PEYTON, CO 80831  
(719) 495-2283



VOLLMER SUBSTATION
GRADING, EROSION, & SEDIMENT CONTROL PLAN
COVER SHEET

DESIGNED BY LD
DRAWN BY DLF
CHECKED BY LD
H-SCALE AS SHOWN
V-SCALE NA
JOB NO. 1845.00
DATE ISSUED 09/07/18
SHEET NO. 1 OF 6

COUNTY PROJECT #: #####

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

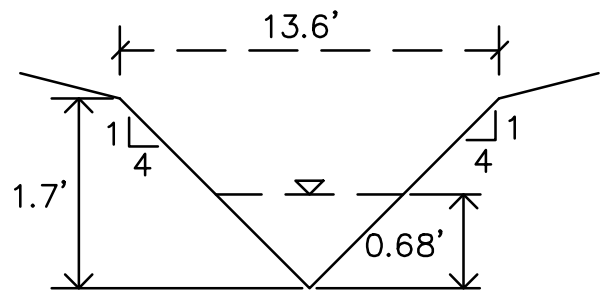
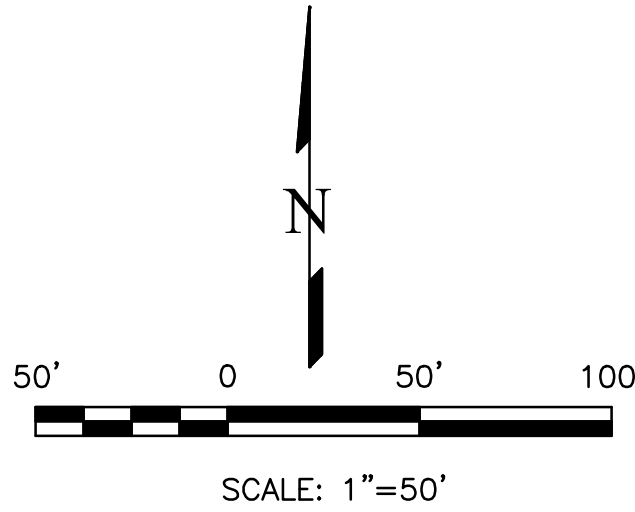
L. DUCETT, P.E.  
COLORADO P.E. NO. 32339

# VOLLMER SUBSTATION

## EL PASO COUNTY, CO

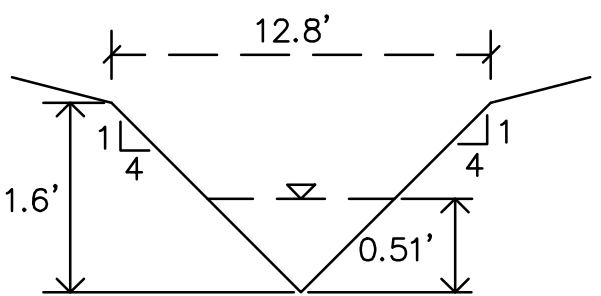
### GRADING, EROSION, & SEDIMENT CONTROL PLAN

SEPTEMBER 2018



Q = 0.7 CFS  
SLOPE = 0.5%  
n VALUE = 0.13  
DEPTH = 0.68'  
VELOCITY = 0.39 FT/S

SWALE CROSS SECTION - PRS1 (TYP)

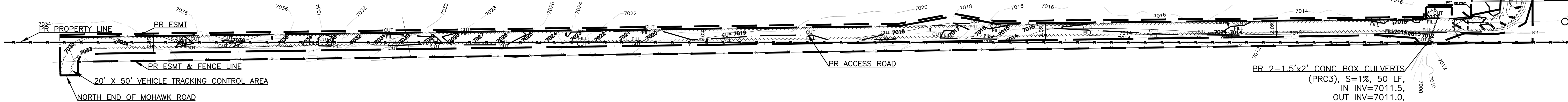
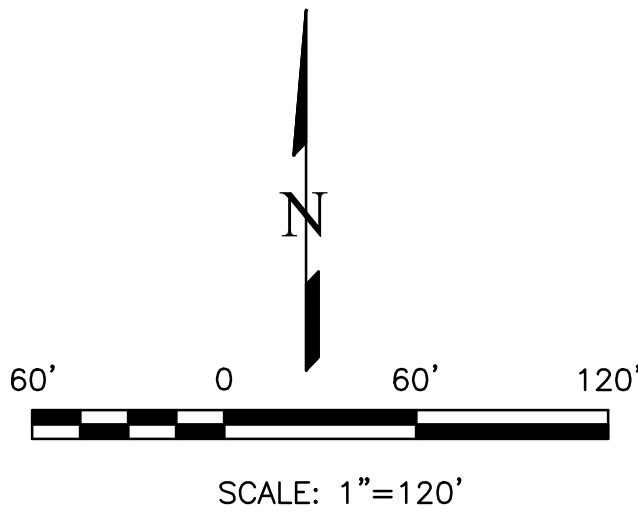
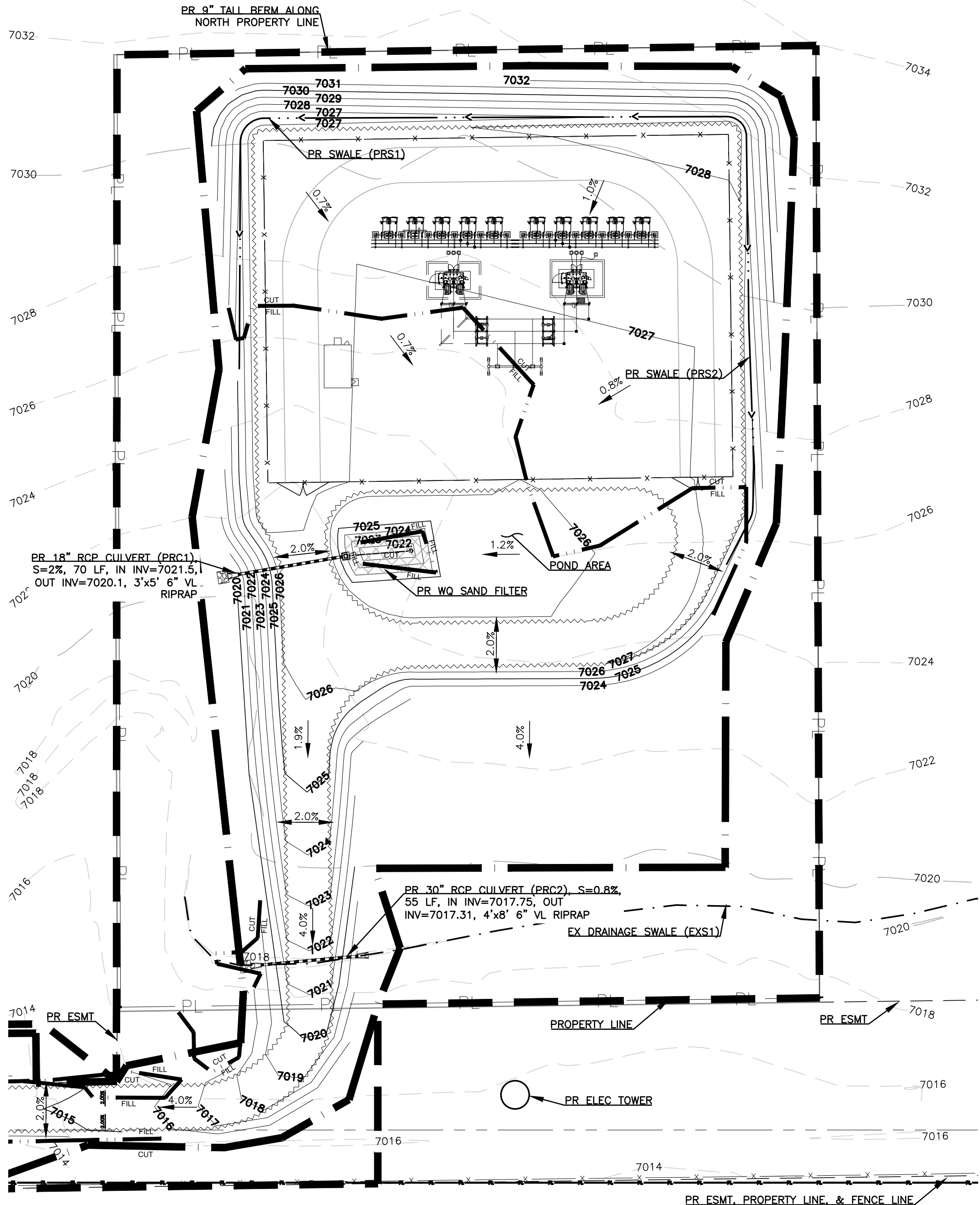


Q = 0.4 CFS  
SLOPE = 0.8%  
n VALUE = 0.13  
DEPTH = 0.51'  
VELOCITY = 0.40 FT/S

SWALE CROSS SECTION - PRS2 (TYP)

#### LEGEND

- 7262 EXISTING 2' CONTOUR
- 7260 EXISTING 10' CONTOUR
- FLOW DIRECTION
- SURFACE FLOW CHANNEL
- X FENCE LINE
- 7261 PROPOSED 1' CONTOUR
- 7265 PROPOSED 5' CONTOUR
- PROPOSED EDGE OF GRAVEL
- PROJECT BOUNDARY
- LIMITS OF DISTURBANCE
- CUT/FILL CUT/FILL LINE
- PR PROPOSED
- EX EXISTING



REVISIONS	NO.	DESCRIPTION	DATE

UNTIL SUCH TIME AS THESE  
DRAWINGS ARE APPROVED  
FOR CONSTRUCTION BY  
THE REVIEWING AGENCIES  
TERRA NOVA ENGINEERING,  
INC. APPROVES THEIR USE  
ONLY FOR THE PROJECT  
AND POSTED DESIGNATED BY  
WRITTEN AUTHORIZATION.

PREPARED FOR:  
MVEA  
ATTN: DAVE WALDNER  
11140 E. WOODMEN RD  
PEYTON, CO 80831  
(719) 495-2283

**Terra Nova**  
Engineering, Inc.  
Creative Civil Engineering

721 S. 2900 STREET  
COLORADO SPRINGS, CO 80904  
OFFICE: 719-635-6422  
FAX: 719-635-6426  
www.tnasinc.com

VOLLMER SUBSTATION	GRADING, EROSION, & SEDIMENT CONTROL PLAN
GRADING PLAN	

DESIGNED BY LD	DRAWN BY DLF
CHECKED BY LD	
H-SCALE AS SHOWN	V-SCALE NA
JOB NO. 1845.00	DATE ISSUED 09/07/18
SHEET NO. 2	OF 6

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

L. DUCETT, P.E.  
COLORADO P.E. NO. 32339

# VOLLMER SUBSTATION

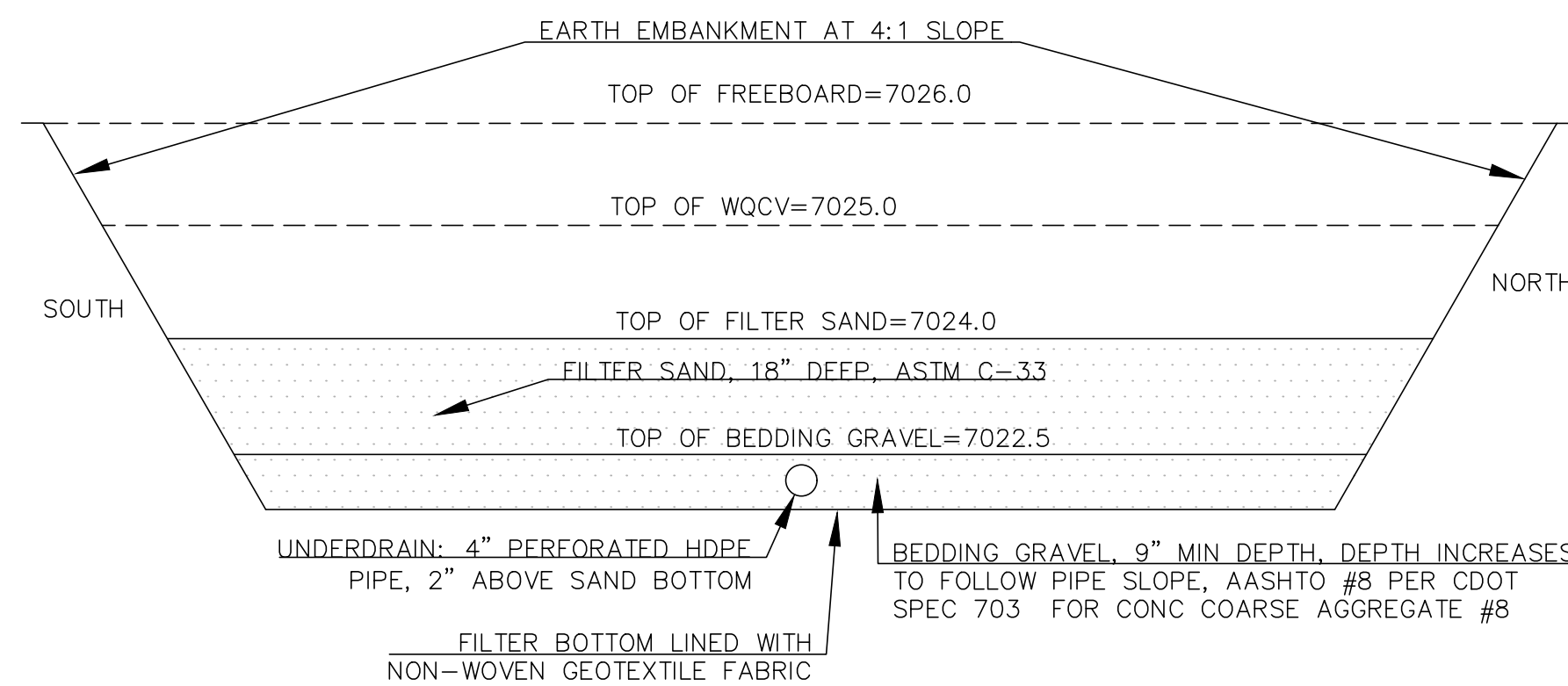
## EL PASO COUNTY, CO

### GRADING, EROSION, & SEDIMENT CONTROL PLAN

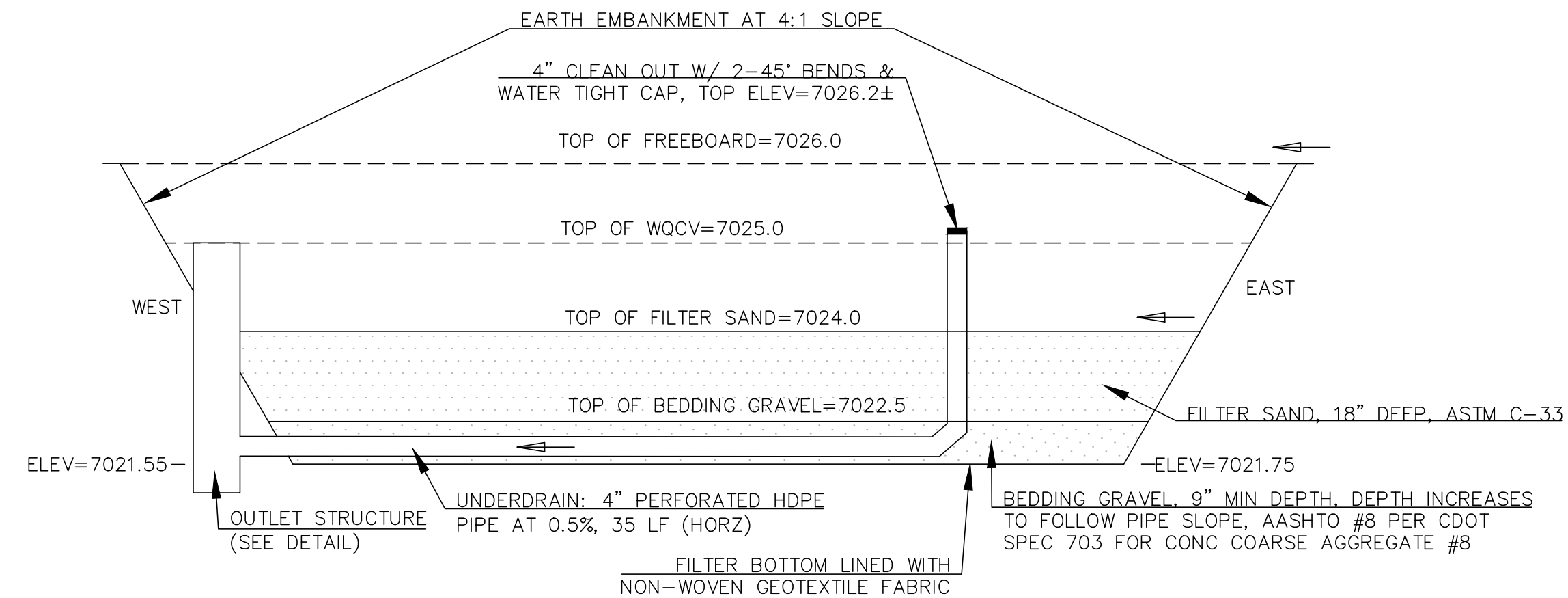
#### SEPTEMBER 2018

#### NOTES

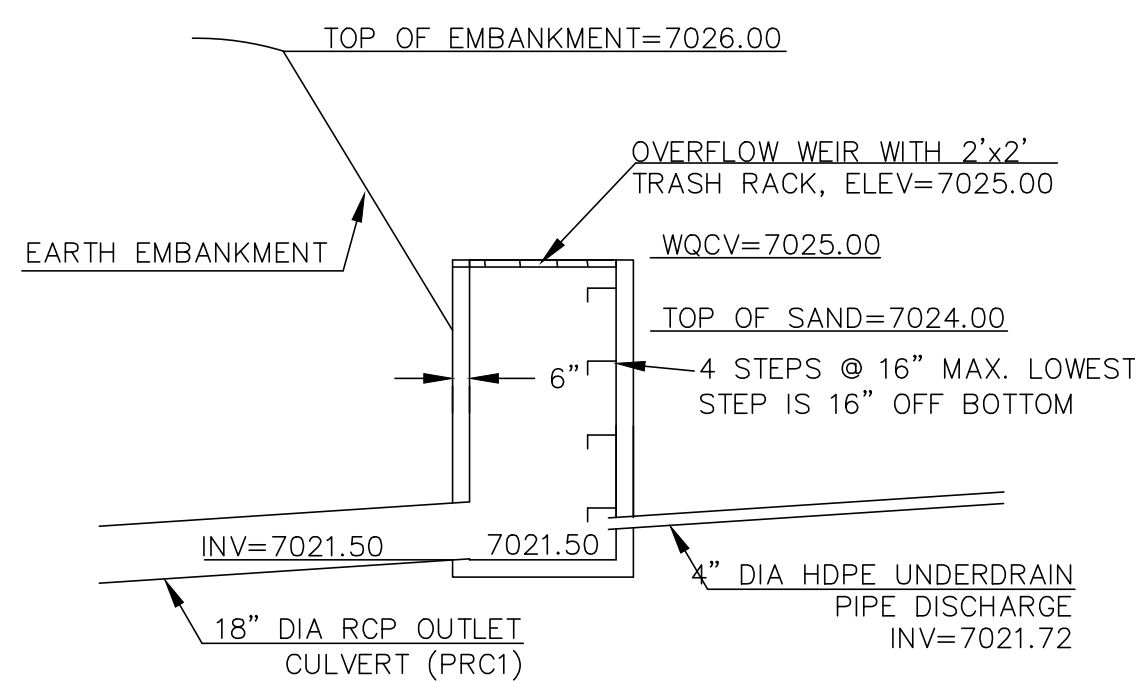
1. PROTECT SAND FILTER FROM SEDIMENT LOADING DURING CONSTRUCTION ACTIVITIES. SITE MUST BE STABILIZED BEFORE ALLOWING FLOW INTO THE SAND FILTER.



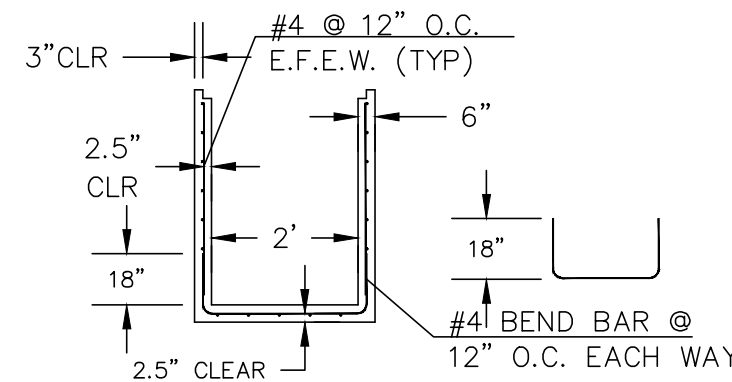
SAND FILTER - PROFILE VIEW (NORTH-SOUTH)  
N.T.S.



SAND FILTER - PROFILE VIEW (WEST-EAST)  
N.T.S.



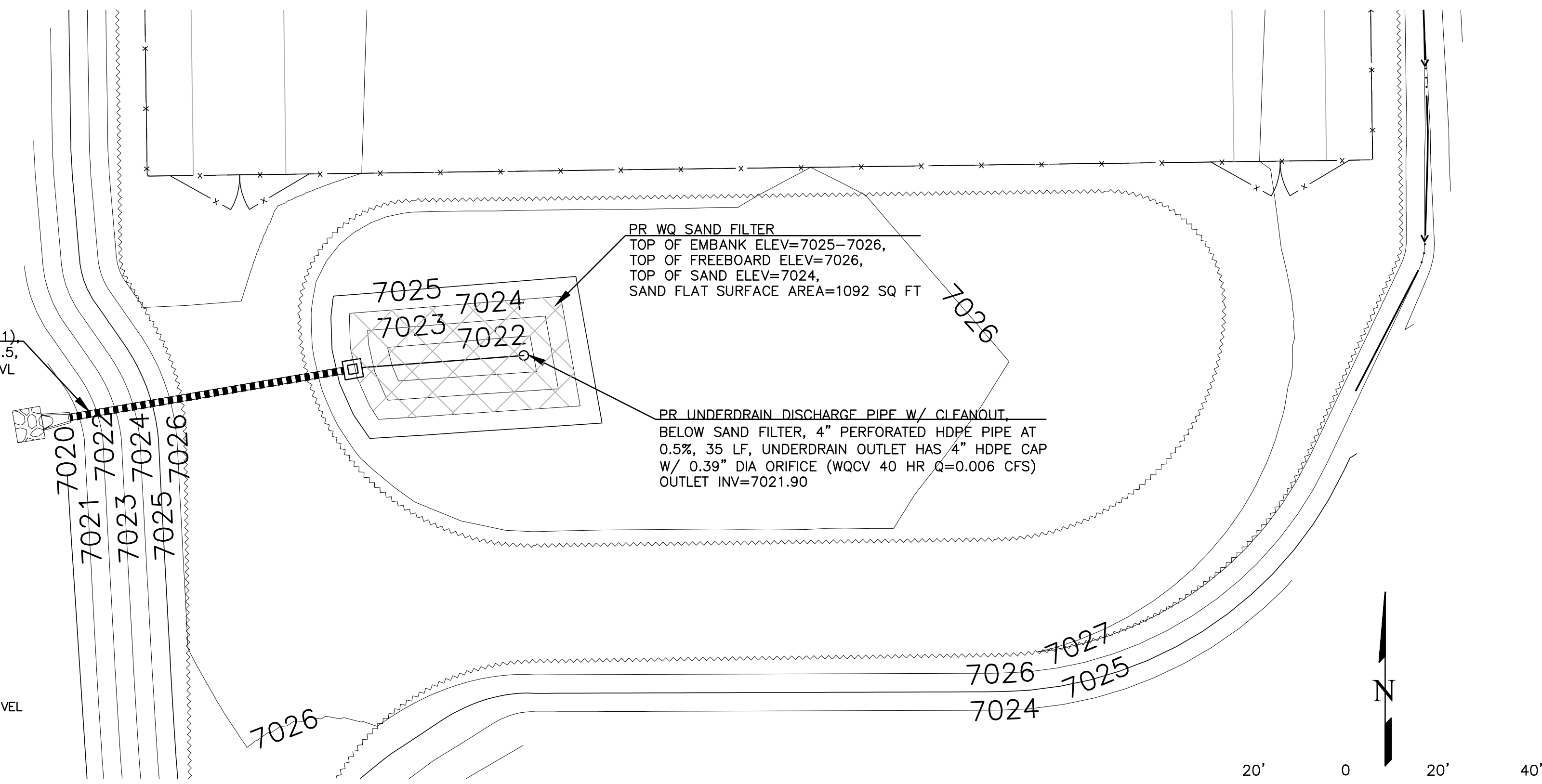
OUTLET STRUCTURE  
(CONCRETE & STEEL)



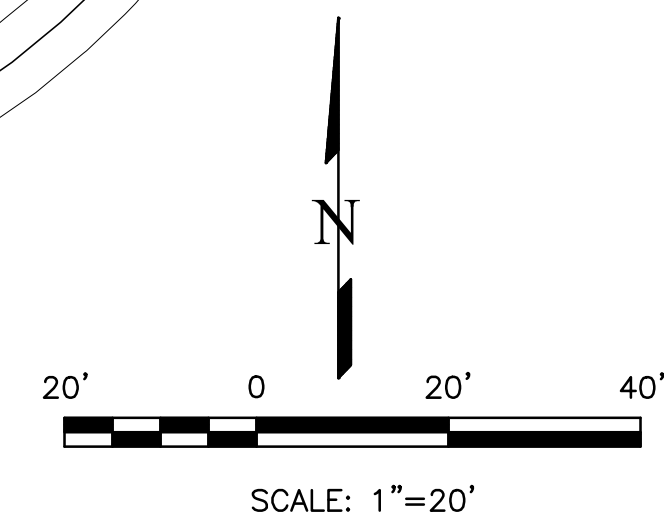
2'x2' OUTLET BOX  
STRUCTURAL DETAIL

#### LEGEND

- X FENCE LINE
- 7261 PROPOSED 1' CONTOUR
- 7265 PROPOSED 5' CONTOUR
- PROPOSED EDGE OF GRAVEL
- PR PROPOSED
- EX EXISTING



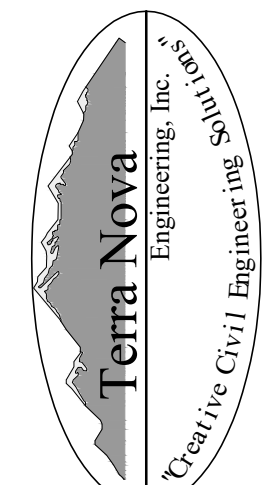
WATER QUALITY SAND FILTER - PROFILE VIEW  
SCALE: 1"=20'



REVISIONS	NO.	DESCRIPTION	DATE

UNTIL SUCH TIME AS THESE  
DRAWINGS ARE APPROVED  
FOR CONSTRUCTION BY  
THE EL PASO COUNTY  
ENGINEERING DEPARTMENT  
TERRA NOVA ENGINEERING,  
INC. APPROVES THEIR USE  
ONLY FOR THE PROJECT  
AND COST AUTHORIZED BY  
WRITTEN AUTHORIZATION.

PREPARED FOR:  
MVEA  
ATTN: DAVE WALDNER  
11140 E. WOODMEN RD  
PEYTON, CO 80831  
(719) 495-2283



721 S. 2900 STREET  
COLORADO SPRINGS, CO 80904  
OFFICE: 719-635-6422  
FAX: 719-635-6426  
www.tnec.com

#### VOLLMER SUBSTATION

GRADING, EROSION, & SEDIMENT CONTROL PLAN  
SAND FILTER DETAILS

DESIGNED BY LD
DRAWN BY DLF
CHECKED BY LD
H-SCALE AS SHOWN
V-SCALE NA
JOB NO. 1845.00
DATE ISSUED 09/07/18
SHEET NO. 3 OF 6

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

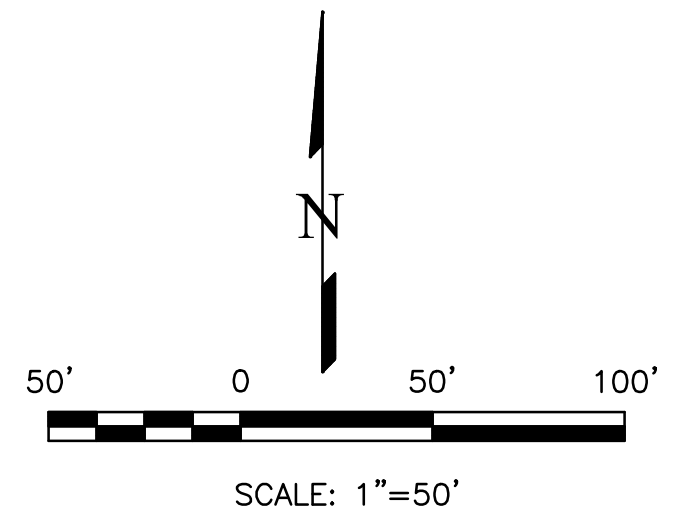
L. DUCETT, P.E.  
COLORADO P.E. NO. 32339

# VOLLMER SUBSTATION

## EL PASO COUNTY, CO

### GRADING, EROSION, & SEDIMENT CONTROL PLAN

#### SEPTEMBER 2018



#### EROSION CONTROL NOTES

THE CITY OF COLORADO SPRINGS ENGINEERING DEPARTMENT GENERAL SPECIFICATIONS SHOULD BE USED AS A RESOURCE WHEN DEVELOPING TECHNICAL SPECIFICATIONS FOR RE-VEGETATION. GENERAL GUIDELINES AND RECOMMENDATIONS FOR RE-VEGETATION INCLUDE:

1. SEED MIXTURES SHOULD BE SOWN AT THE PROPER TIME OF YEAR FOR THE MIXTURE. GENERALLY, THERE ARE TWO OPTIMAL SEEDING PERIODS DURING THE YEAR. THE FIRST PERIOD IS IN THE SPRING, MARCH TO MAY. THE SECOND PERIOD IS IN LATE SUMMER TO EARLY FALL, AUGUST TO SEPTEMBER.
2. SEED SHOULD BE DRILL-SEEDED, WHENEVER POSSIBLE.
3. BROADCAST SEEDING OR HYDRO-SEEDED MAY BE SUBSTITUTED ON SLOPES STEEPER THAN 3:1 OR ON OTHER AREAS NOT PRACTICAL TO DRILL SEED.
4. SEEDING RATES SHOULD BE DOUBLED FOR BROADCAST SEEDING OR INCREASED BY 50% IF USING A BRILLION DRILL OR HYDRO-SEEDED.
5. BROADCAST SEED SHOULD BE LIGHTLY HAND-RAKED INTO THE SOIL.
6. SEED DEPTH SHOULD BE  $\frac{1}{2}$  TO  $\frac{3}{4}$  INCH FOR MOST MIXTURES.
7. SEEDED AREAS SHOULD BE MULCHED, AND THE MULCH SHOULD BE ADEQUATELY SECURED.
8. IF HYDRO-SEEDED IS CONDUCTED, MULCHING SHOULD BE CONDUCTED AS A SEPARATE, SECOND OPERATION.
9. CONTAINERIZED NURSERY STOCK SHOULD BE KEPT IN A LIVE AND HEALTHY CONDITION PRIOR TO INSTALLATION.
10. CONTAINERIZED TREES AND SHRUBS SHOULD BE INSTALLED ACCORDING TO THE PLANTING DETAILS PROVIDE IN THE COLORADO SPRINGS LANDSCAPE CODE AND POLICY MANUAL, UNIT FOUR, APPENDICES FOR TREE AND SHRUB PLANTING DETAILS.
11. LIVE STAKES, POLES AND WILLOW BUNDLES SHOULD BE INSTALLED WHEN DORMANT (LATE WINTER AND EARLY SPRING).
12. IF BEAVER ARE KNOWN TO BE IN THE AREA, BEAVER PROTECTION SHOULD BE PROVIDED FOR TREES AND SHRUBS.

#### NOTES

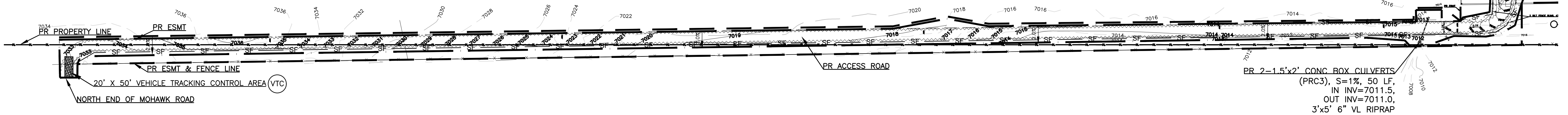
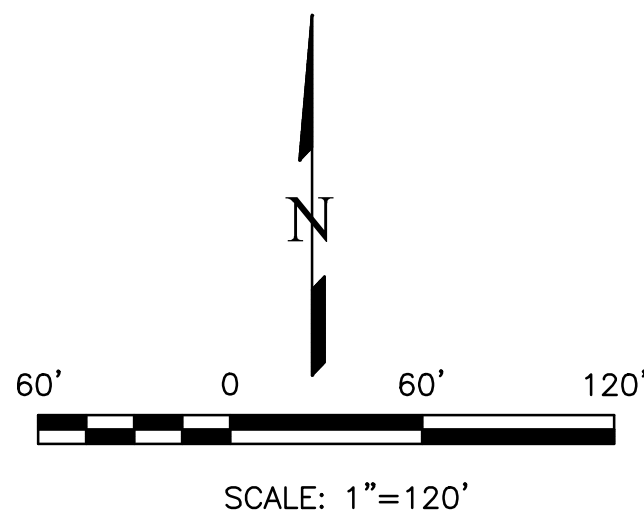
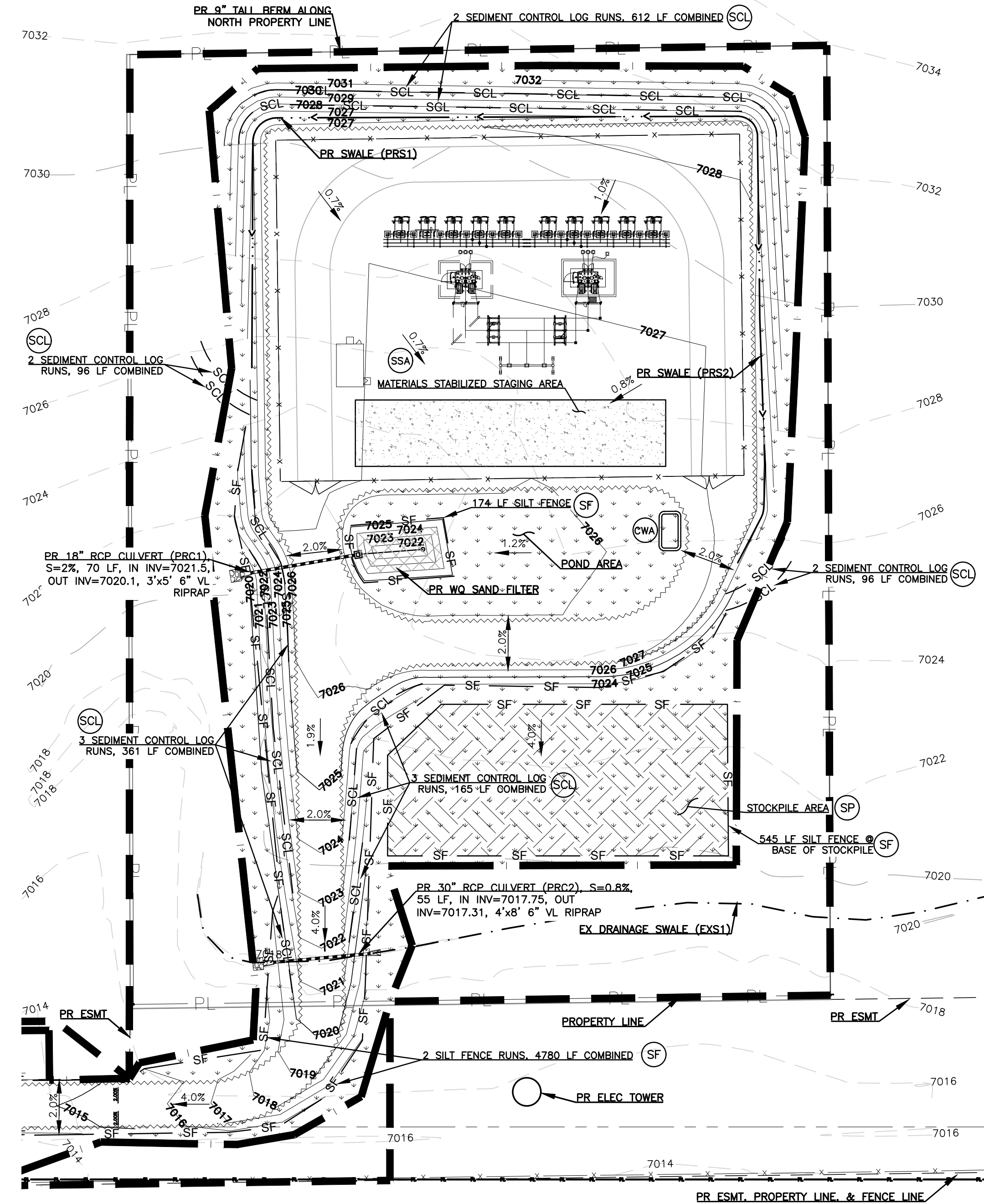
1. PROTECT SAND FILTER FROM SEDIMENT LOADING DURING CONSTRUCTION ACTIVITIES. SITE MUST BE STABILIZED BEFORE ALLOWING FLOW INTO THE SAND FILTER.

#### LEGEND

7262	EXISTING 2' CONTOUR
7260	EXISTING 10' CONTOUR
←	FLOW DIRECTION
- - -	SURFACE FLOW CHANNEL
X	FENCE LINE
7261	PROPOSED 1' CONTOUR
7265	PROPOSED 5' CONTOUR
~~~~~	PROPOSED EDGE OF GRAVEL
---	PROJECT BOUNDARY
---	LIMITS OF DISTURBANCE
PR	PROPOSED
EX	EXISTING

#### EROSION CONTROL LEGEND

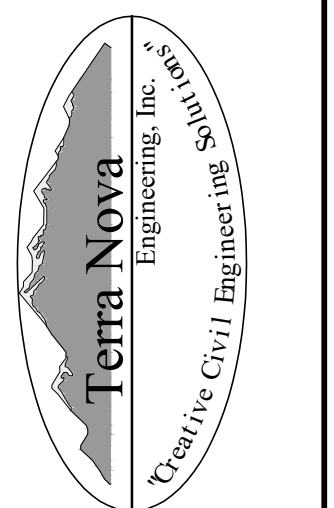
KEY	TITLE	SYMBOL
(SF)	SILT FENCE	—SF—
(SSA)	STABILIZED STAGING AREA	[Pattern]
(VTC)	VEHICLE TRACKING CONTROL	[Pattern]
(SP)	STOCKPILE MANAGEMENT WITH PROTECTION	[Pattern]
(CWA)	CONCRETE WASHOUT AREA	[Pattern]
(SCL)	SEDIMENT CONTROL LOG	—SCL—
(PS) (MU)	PERMANENT SEEDING AND MULCHING	[Pattern]



REVISIONS	NO.	DESCRIPTION	DATE

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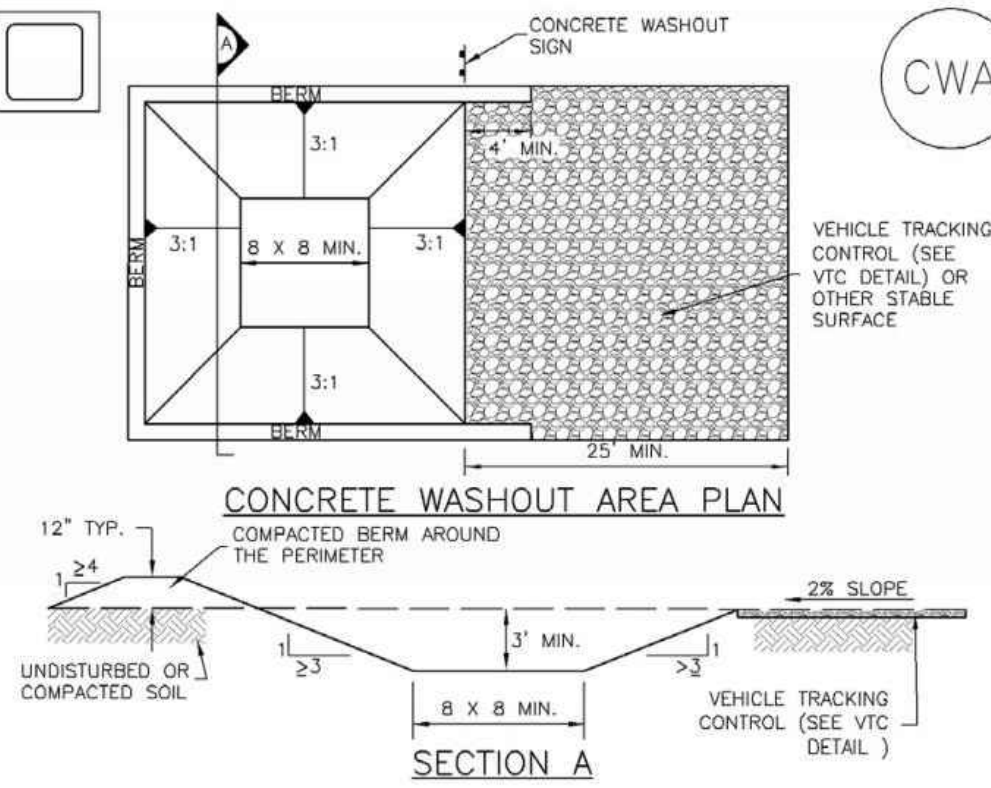
VOLLMER SUBSTATION  
GRADING, EROSION, & SEDIMENT CONTROL PLAN  
EROSION AND SEDIMENT CONTROL PLAN

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JOB NO. 1845.00  
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SHEET NO. 4 OF 6

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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 INFESIBLE, 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.

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MM-1

Concrete Washout Area (CWA)

CWA MAINTENANCE NOTES

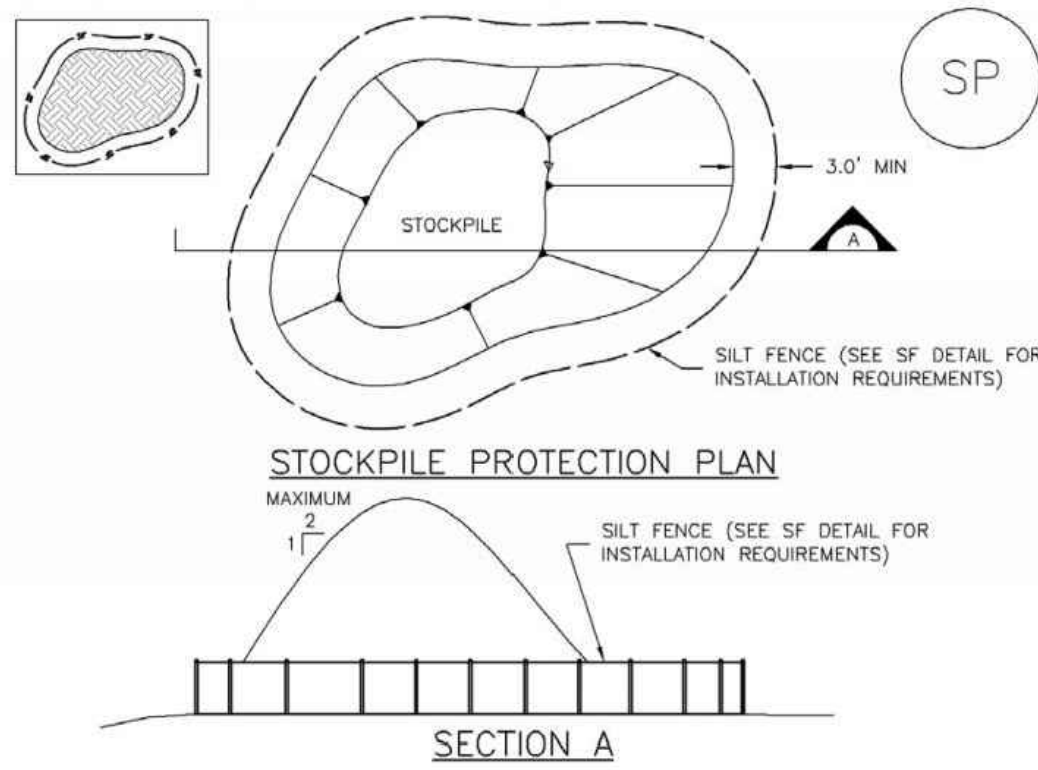
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS 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 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.

CWA-4 Urban Drainage and Flood Control District November 2010  
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Stockpile Management (SP)

MM-2



SP-1. STOCKPILE PROTECTION

STOCKPILE PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:  
-LOCATION OF STOCKPILES.  
-TYPE OF STOCKPILE PROTECTION.
2. INSTALL PERIMETER CONTROLS IN ACCORDANCE WITH THEIR RESPECTIVE DESIGN DETAILS. SILT FENCE IS SHOWN IN THE STOCKPILE PROTECTION DETAILS; HOWEVER, OTHER TYPES OF PERIMETER CONTROLS INCLUDING SEDIMENT CONTROL LOGS OR ROCK SOCKS MAY BE SUITABLE IN SOME CIRCUMSTANCES. CONSIDERATIONS FOR DETERMINING THE APPROPRIATE TYPE OF PERIMETER CONTROL FOR A STOCKPILE INCLUDE WHETHER THE STOCKPILE IS LOCATED ON A PERVIOUS OR IMPERVIOUS SURFACE, THE RELATIVE HEIGHTS OF THE PERIMETER CONTROL AND STOCKPILE, THE ABILITY OF THE PERIMETER CONTROL TO CONTAIN THE STOCKPILE WITHOUT FAILING IN THE EVENT THAT MATERIAL FROM THE STOCKPILE SHIFTS OR SLUMPS AGAINST THE PERIMETER, AND OTHER FACTORS.
3. STABILIZE THE STOCKPILE SURFACE WITH SURFACE ROUGHENING, TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS, OR SOIL BINDERS. SOILS STOCKPILED FOR AN EXTENDED PERIOD (TYPICALLY FOR MORE THAN 60 DAYS) SHOULD BE SEED AND MULCHED WITH A TEMPORARY GRASS COVER ONCE THE STOCKPILE IS PLACED (TYPICALLY WITHIN 14 DAYS). USE OF MULCH ONLY OR A SOIL BINDER IS ACCEPTABLE IF THE STOCKPILE WILL BE IN PLACE FOR A MORE LIMITED TIME PERIOD (TYPICALLY 30-60 DAYS).
4. FOR TEMPORARY STOCKPILES ON THE INTERIOR PORTION OF A CONSTRUCTION SITE, WHERE OTHER DOWNGRADIENT CONTROLS, INCLUDING PERIMETER CONTROL, ARE IN PLACE, STOCKPILE PERIMETER CONTROLS MAY NOT BE REQUIRED.

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MM-2

Stockpile Management (SM)

STOCKPILE PROTECTION MAINTENANCE NOTES

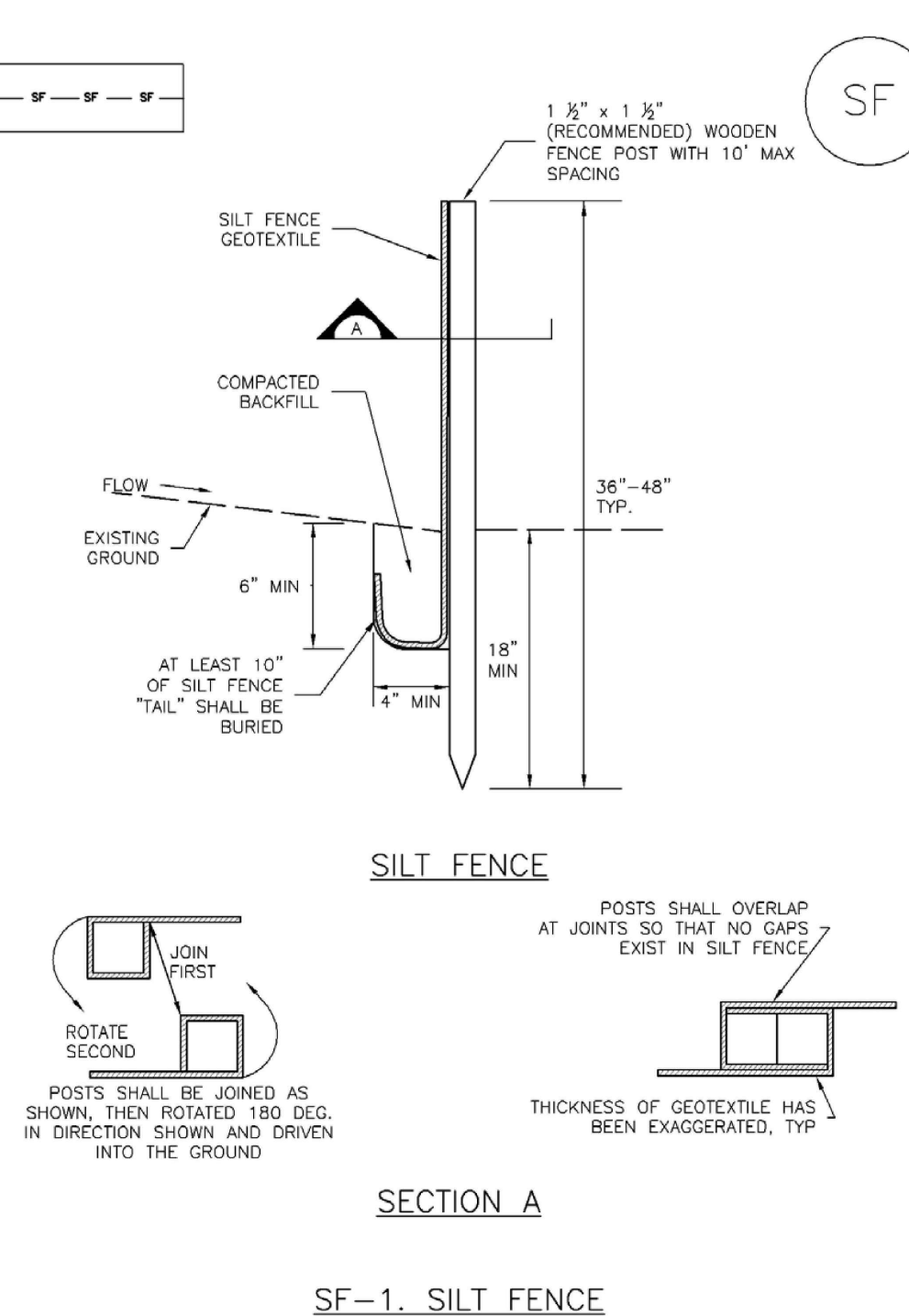
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS 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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Silt Fence (SF)

SC-1



SF-1. SILT FENCE

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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 (2-5 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 "J-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

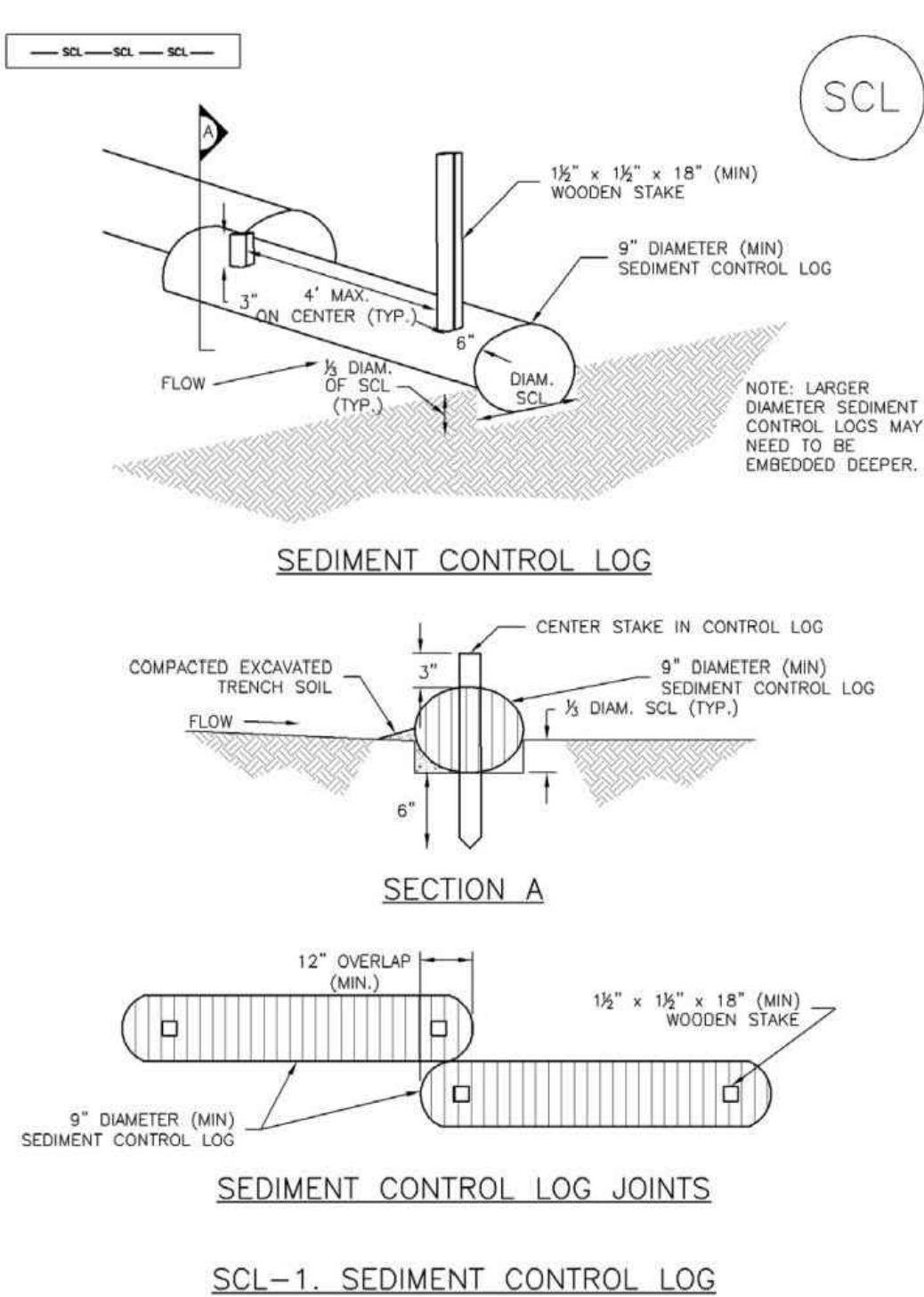
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS 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 MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD).  
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Sediment Control Log (SCL)

SC-2



SCL-1. SEDIMENT CONTROL LOG

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Sediment Control Log (SCL)

SC-2

SEDIMENT CONTROL LOG INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION AND LENGTH OF SEDIMENT CONTROL LOGS.
2. SEDIMENT CONTROL LOGS THAT ACT AS A PERIMETER CONTROL SHALL BE INSTALLED PRIOR TO ANY UPGRADE LAND-DISTURBING ACTIVITIES.
3. SEDIMENT CONTROL LOGS SHALL CONSIST OF STRAW, COMPOST, EXCELSIOR OR COCONUT FIBER, AND SHALL BE FREE OF ANY NOXIOUS WEED SEEDS OR DEFECTS INCLUDING RIPS, HOLES AND OBVIOUS WEAR.
4. SEDIMENT CONTROL LOGS MAY BE USED AS SMALL CHECK DAMS IN DITCHES AND SWALES; HOWEVER, THEY SHOULD NOT BE USED IN PERENNIAL STREAMS OR HIGH VELOCITY DRAINAGE WAYS.
5. IT IS RECOMMENDED THAT SEDIMENT CONTROL LOGS BE TRENCHED INTO THE GROUND TO A DEPTH OF APPROXIMATELY 1/3 OF THE DIAMETER OF THE LOG. IF TRENCHING TO THIS DEPTH IS NOT FEASIBLE AND/OR DESIRABLE (SHORT TERM INSTALLATION WITH DESIRE NOT TO DAMAGE LANDSCAPE) A LESSER TRENCHING DEPTH MAY BE ACCEPTABLE WITH MORE ROBUST STAKING.
6. THE UPBELL SIDE OF THE SEDIMENT CONTROL LOG SHALL BE BACKFILLED WITH SOIL THAT IS FREE OF ROCKS AND DEBRIS. THE SOIL SHALL BE TIGHTLY COMPACTED INTO THE SHAPE OF A RIGHT TRIANGLE USING A SHOVEL OR WEIGHTED LAWN ROLLER.
7. FOLLOW MANUFACTURERS' GUIDANCE FOR STAKING. IF MANUFACTURERS' INSTRUCTIONS DO NOT SPECIFY SPACING, STAKES SHALL BE PLACED ON 4' CENTERS AND EMBEDDED A MINIMUM OF 6" INTO THE GROUND. 3" OF THE STAKE SHALL PROTRUDE FROM THE TOP OF THE LOG. STAKES THAT ARE BROKEN PRIOR TO INSTALLATION SHALL BE REPLACED.

SEDIMENT CONTROL LOG 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 SEDIMENT CONTROL LOG SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 1/3 OF THE HEIGHT OF THE SEDIMENT CONTROL LOG.
5. SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION, IF DISTURBED AREAS EXIST AFTER REMOVAL, THEY SHALL BE COVERED WITH TOP SOIL, SEED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, JEFFERSON COUNTY, COLORADO, DOUGLAS COUNTY, COLORADO, AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)  
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REVISIONS

NO.	DESCRIPTION	DATE

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Terra Nova Engineering, Inc.  
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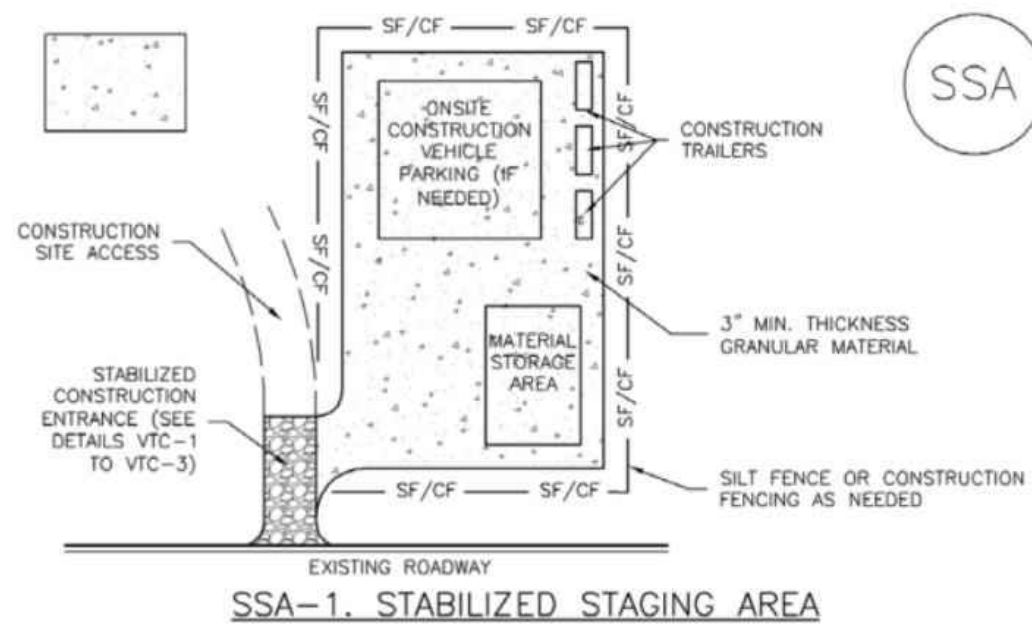
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DATE ISSUED 09/07/18

SHEET NO. 5 OF 6

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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, AASHTO #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
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  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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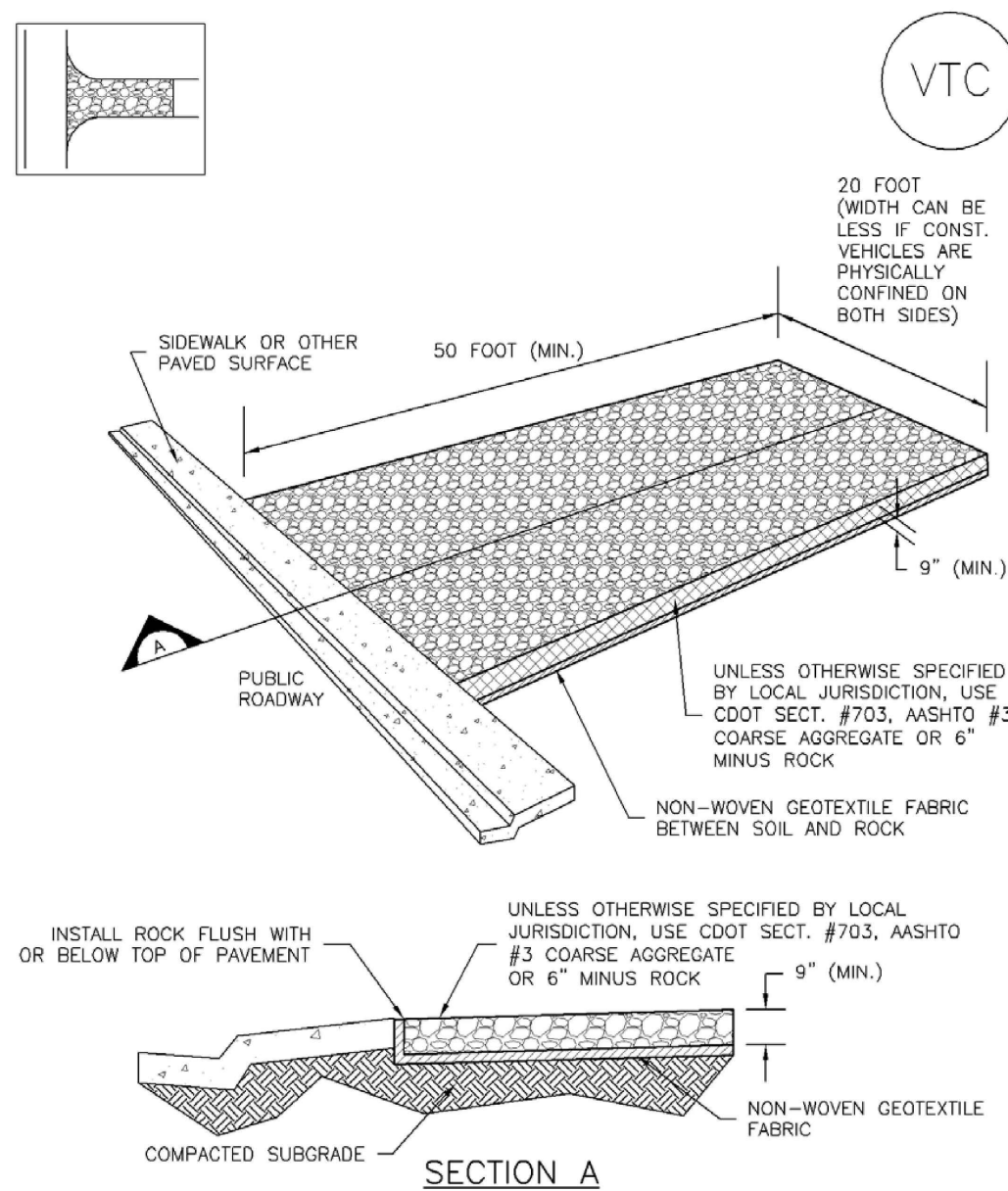
SM-6 Stabilized Staging Area (SSA)

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, SEEDING AND MULCHED 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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Vehicle Tracking Control (VTC) SM-4



VTC-1. AGGREGATE VEHICLE TRACKING CONTROL

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SM-4 Vehicle Tracking Control (VTC)

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR  
-LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).  
-TYPE OF CONSTRUCTION ENTRANCE(S)/EXIT(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).
  2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.
  3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.
  4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
  5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.
  6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.
- STABILIZED CONSTRUCTION ENTRANCE/EXIT 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 TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.
  5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.
- 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 CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)

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Chapter 14 Revegetation

or irrigation to wet and settle the seed bed. Firming of the seedbed following seeding will improve results during dry or warm seeding times.

Table 14-9. Recommended Seed Mix for High Water Table Conditions<sup>1</sup>

Common Name (Variety)	Scientific Name	Growth Season	Growth Form	Seeds/Lb	Lbs PLS/Acre Drilled	Lbs PLS/Acre Broadcast or Hydrosseeded
Redtop <sup>2</sup>	<i>Agrostis alba</i>	Warm	Sod	5,000,000	0.1	0.2
Switchgrass (Pathfinder)	<i>Panicum virgatum</i>	Warm	Sod/Bunch	389,000	2.2	4.4
Western wheatgrass (Arriba)	<i>Pascopyrum smithii</i>	Cool	Sod	110,000	7.9	15.8
Indian saltgrass	<i>Distichlis spicata</i>	Warm	Sod	520,000	1.0	2.0
Woolly sedge	<i>Carex lanuginosa</i>	Cool	Sod	400,000	0.1	0.2
Baltic rush	<i>Juncus balticus</i>	Cool	Sod	109,300,000	0.1	0.2
Prairie cordgrass	<i>Spartina pectinata</i>	Cool	Sod	110,000	1.0	2.0
Annual rye	<i>Lolium multiflorum</i>	Cool	Cover crop	227,000	10.0	20.0
				<b>TOTAL</b>	<b>22.4</b>	<b>44.8</b>
<b>Wildflowers</b>						
Nuttall's sunflower	<i>Helianthus nuttallii</i>	---	---	250,000	0.10	0.20
Wild bergamot	<i>Monarda fistulosa</i>	---	---	1,450,000	0.12	0.24
Yarrow	<i>Achillea millefolium</i>	---	---	2,770,000	0.06	0.12
Blue vervain	<i>Verbena hastata</i>	---	---		0.12	0.24
				<b>TOTAL</b>	<b>0.40</b>	<b>0.80</b>

<sup>1</sup>For portions of facilities located near or on the bottom or where wet soil conditions occur. Planting of potted nursery stock wetland plants 2-foot on-center is recommended for sites with wetland hydrology.

<sup>2</sup>Non-native

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Table 14-10. Recommended Seed Mix for Transition Areas<sup>1</sup>

Common Name (Variety)	Scientific Name	Growth Season	Growth Form	Seeds/Lb	Lbs PLS/Acre Drilled	Lbs PLS/Acre Broadcast or Hydrosseeded
Sheep fescue (Durar)	<i>Festuca ovina</i>	Cool	Bunch	680,000	1.3	2.6
Western wheatgrass (Arriba)	<i>Pascopyrum smithii</i>	Cool	Sod	110,000	7.9	15.8
Alkali sacaton	<i>Spolobolus airoides</i>	Warm	Bunch	1,758,000	0.5	1.0
Slender wheatgrass	<i>Elymus trachycandus</i>	Cool	Bunch	159,000	5.5	11.0
Canadian bluegrass (Ruebens)	<i>Poa compressa</i>	Cool	Sod	2,500,000	0.3	0.6
Switchgrass (Pathfinder)	<i>Panicum virgatum</i>	Warm	Sod/Bunch	389,000	1.3	2.6
Annual rye	<i>Lolium multiflorum</i>	Cool	Cover crop	227,000	10.0	20.0
				<b>TOTAL</b>	<b>26.8</b>	<b>53.6</b>
<b>Wildflowers</b>						
Blanket flower	<i>Faillardia aristata</i>	---	---	132,000	0.25	0.50
Prairie coneflower	<i>Ratibida columnaris</i>	---	---	1,230,000	0.20	0.40
Purple prairie clover	<i>Petalostemon purpurea</i>	---	---	210,000	0.20	0.40
Gayfeather	<i>Liatris punctata</i>	---	---	138,000	0.06	0.12
Flax	<i>Linum lewisii</i>	---	---	293,000	0.20	0.40
Penstemon	<i>Penstemon strictus</i>	---	---	592,000	0.20	0.40
Yarrow	<i>Achillea millefolium</i>	---	---	2,770,000	0.03	0.06
				<b>TOTAL</b>	<b>1.14</b>	<b>2.28</b>

<sup>1</sup>For side slopes or between wet and dry areas.

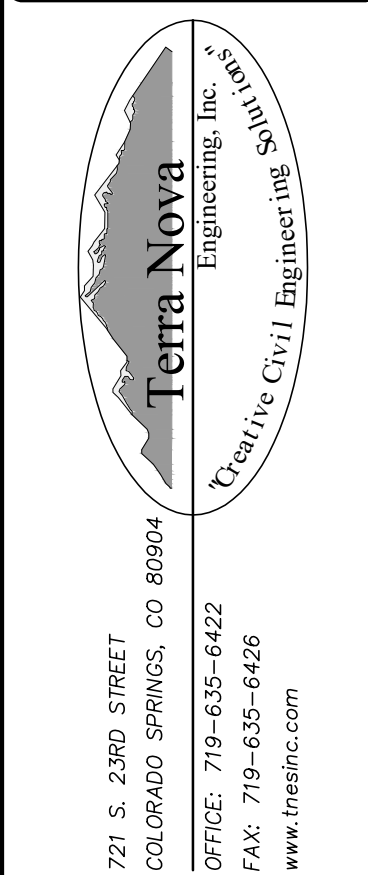
<sup>2</sup>Substitute 1.7 lbs PLS/acre of inland saltgrass (*Distichlis spicata*) in salty soils.

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REVISIONS	DESCRIPTION	DATE
NO.		

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PREPARED FOR:  
MVEA  
ATTN: DAVE WALDNER  
11140 E. WOODMEN RD  
PEYTON, CO 80831  
(719) 495-2283



721 S. 2960 STREET  
COLORADO SPRINGS, CO 80904  
OFFICE: 719-635-6422  
FAX: 719-635-6426  
www.tnasec.com

VOLLMER SUBSTATION

GRADING, EROSION, & SEDIMENT CONTROL PLAN

EROSION CONTROL DETAILS

DESIGNED BY LD  
DRAWN BY DLF  
CHECKED BY LD  
H-SCALE AS SHOWN  
V-SCALE NA  
JOB NO. 1845.00  
DATE ISSUED 09/07/18  
SHEET NO. 6 OF 6