

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

LEGAL DESCRIPTION:

A PARCEL OF LAND IN THE SOUTHWEST QUARTER OF SECTION 6 AND THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 15 SOUTH, RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID SECTION 7;

THENCE SOUTH 21°16'15" EAST, A DISTANCE OF 1,234.30 FEET TO THE SOUTHEAST CORNER OF THE SAID PARCEL WHICH IS ALSO THE INTERSECTION OF THE EAST RIGHT-OF-WAY OF GRINNELL BOULEVARD AS DENOTED UNDER RECEPTION NUMBER 09080408 AND THE NORTH RIGHT-OF-WAY OF GOLDFIELD DRIVE AS DENOTED UNDER RECEPTION NUMBER 207712585 BOTH WITH THE CLERK AND RECORDER OF EL PASO COUNTY AND THE POINT OF BEGINNING;

THENCE DEPARTING THE SAID NORTH RIGHT-OF-WAY OF GOLDFIELD DRIVE AND CONTINUING NORTHERLY ALONG THE SAID EAST RIGHT-OF-WAY OF GRINNELL BOULEVARD THE FOLLOWING SIX (6) COURSES:

- 1. NORTH 08°19'24" WEST, A DISTANCE OF 695.98 FEET TO A POINT OF CURVATURE;
2. ALONG THE ARC OF SAID CURVE TO THE RIGHT AN ARC LENGTH OF 190.45 FEET, SAID CURVE HAVING A RADIUS OF 890.00 FEET, A CENTRAL ANGLE OF 12°15'39", AND A CHORD WHICH BEARS NORTH 02°15'50" WEST, A CHORD DISTANCE OF 190.09 FEET TO A POINT OF NON-TANGENT;
3. ALONG THE ARC OF SAID CURVE TO THE RIGHT AN ARC LENGTH OF 209.47 FEET, SAID CURVE HAVING A RADIUS OF 856.07 FEET, A CENTRAL ANGLE OF 14°01'11", AND A CHORD WHICH BEARS NORTH 12°14'55" EAST, A CHORD DISTANCE OF 208.95 FEET;
4. NORTH 27°27'34" EAST, A DISTANCE OF 142.19 FEET TO A POINT OF CURVATURE;
5. ALONG THE ARC OF SAID CURVE TO THE RIGHT AN ARC LENGTH OF 143.22 FEET, SAID CURVE HAVING A RADIUS OF 844.07 FEET, A CENTRAL ANGLE OF 09°43'19", AND A CHORD WHICH BEARS NORTH 32°16'35" EAST, A CHORD DISTANCE OF 143.05 FEET TO A POINT OF NON-TANGENT;
6. ALONG THE ARC OF SAID CURVE TO THE RIGHT AN ARC LENGTH OF 122.20 FEET, SAID CURVE HAVING A RADIUS OF 110.01 FEET, A CENTRAL ANGLE OF 63°38'34", AND A CHORD WHICH BEARS NORTH 68°57'28" EAST, A CHORD DISTANCE OF 116.01 FEET TO THEA POINT OF NON TANGENT ON THE SOUTH RIGHT-OF-WAY OF POWERS BOULEVARD AS RECORDED UNDER BOOK 5307, PAGE 1472 WITH THE EL PASO CLERK AND RECORDER;

THENCE EASTERLY ALONG THE SAID SOUTH RIGHT-OF-WAY OF POWERS BOULEVARD ALONG THE ARC OF SAID CURVE TO THE LEFT AN ARC LENGTH OF 488.21 FEET, SAID CURVE HAVING A RADIUS OF 2105.00 FEET, A CENTRAL ANGLE OF 131°7'19", AND A CHORD WHICH BEARS SOUTH 60°44'03" EAST A CHORD DISTANCE OF 487.12 FEET TO THE INTERSECTION WITH THE WEST BOUNDARY OF LOT 1, PAINTED SKY AT WATERVIEW FILING NO.3 AS RECORDED UNDER RECTION NUMBER 21271398 WITH THE EL PASO CLERK AND RECORDER;

THENCE DEPARTING THE SAID SOUTH RIGHT-OF-WAY OF POWERS BOULEVARD AND CONTINUING SOUTHERLY ALONG THE SAID WEST PROPERTY LINE OF LOT 1 SOUTH 15°45'42" WEST, A DISTANCE OF 150.36 FEET TO THE INTERSECTION OF THE NORTH RIGHT-OF-WAY OF DANCING SUN WAY AND THE WEST RIGHT-OF-WAY OF CUDAHY DRIVE, BOTH RECORDED UNDER SAID RECEPTION NUMBER 212713198;

THENCE CONTINUING SOUTHERLY ALONG THE SAID WEST RIGHT-OF-WAY OF CUDAHY DRIVE THE FOLLOWING THREE (3) COURSES:

- 1. SOUTH 15°45'42" WEST, A DISTANCE OF 201.74 FEET TO A POINT OF CURVATURE;
2. ALONG THE SAID WEST RIGHT-OF-WAY OF CUDAHY DRIVE ALONG THE ARC OF SAID CURVE TO THE LEFT AN ARC LENGTH OF 610.02 FEET, SAID CURVE HAVING A RADIUS OF 925.00 FEET, A CENTRAL ANGLE OF 37°47'09", AND A CHORD WHICH BEARS SOUTH 03°10'04" EAST, A CHORD DISTANCE OF 599.03 FEET;
3. SOUTH 22°03'38" EAST, A DISTANCE OF 12.90 FEET TO A POINT OF CURVATURE ON THE SAID NORTH RIGHT-OF-WAY OF GOLDFIELD DRIVE;

THENCE WESTERLY ALONG THE SAID NORTH RIGHT-OF-WAY OF GOLDFIELD DRIVE THE FOLLOWING FIVE (5) COURSES:

- 1. ALONG THE ARC OF SAID CURVE TO THE LEFT AN ARC LENGTH OF 91.01 FEET, SAID CURVE HAVING A RADIUS OF 736.00 FEET, A CENTRAL ANGLE OF 07°05'04", AND A CHORD WHICH BEARS SOUTH 62°27'39" EAST, A CHORD DISTANCE OF 90.95 FEET;
2. SOUTH 58°55'08" WEST, A DISTANCE OF 114.02 FEET TO A POINT OF CURVATURE;
3. ALONG THE ARC OF SAID CURVE TO THE RIGHT AN ARC LENGTH OF 110.36 FEET, SAID CURVE HAVING A RADIUS OF 519.00 FEET, A CENTRAL ANGLE OF 12°11'02", AND A CHORD WHICH BEARS SOUTH 65°00'36" WEST, A CHORD DISTANCE OF 110.16 FEET;
4. SOUTH 83°24'45" WEST, A DISTANCE OF 105.09 FEET;
5. SOUTH 81°41'14" WEST, A DISTANCE OF 172.84 FEET TO THE POINT OF BEGINNING;

SAID PARCEL CONTAINS 363,565 SQUARE FEET OR 8.346 ACRES, MORE OR LESS;

BENCHMARK:

\*A RR SPIKE SET IN CONCRETE NEXT TO A RAILROAD FENCE POST SOUTHWEST OF A 90 DEGREE CURVE IN POWERS BOULEVARD. THIS IS A SECTION CORNER FOR SECTIONS 6 AND 7, T15S, R65W, AND SECTIONS 1 AND 12, T15S, R66W OF THE SIXTH P.M. THE POINT IS DESIGNATED AS "5501V" PER THE COLORADO SPRINGS UTILITIES FACILITIES INFORMATION MANAGEMENT SYSTEM (FIMS).

ELEVATION: 5908.830 US SURVEY FEET (NAVDB8 DATUM)

NOTE: NAVD 88 ELEVATION WAS TRANSFORMED FROM NGVD29 DATUM USING THE NGS COORDINATE CONVERSION AND TRANSFORMATION TOOL (NCAT). NGVD 29 PUBLISHED ELEVATION = 5905.440. PER NCAT, DELTA IS 3.389 US SURVEY FEET.

BASIS OF BEARINGS:

BASIS OF BEARINGS ARE BASED UPON THE WEST LINE OF THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 15 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN AS MONUMENTED AT THE NORTHWEST CORNER OF SAID SECTION 7 BY A FOUND RR SPIKE IN CONCRETE AND THE WEST QUARTER OF SAID SECTION 7 BY A FOUND 3.25" ALUMINUM CAP IN A RANGE BOX STAMPED "17496", AS BEARING SOUTH 00°43'01" EAST, WITH ALL BEARINGS SHOWN HEREON RELATIVE THERETO.

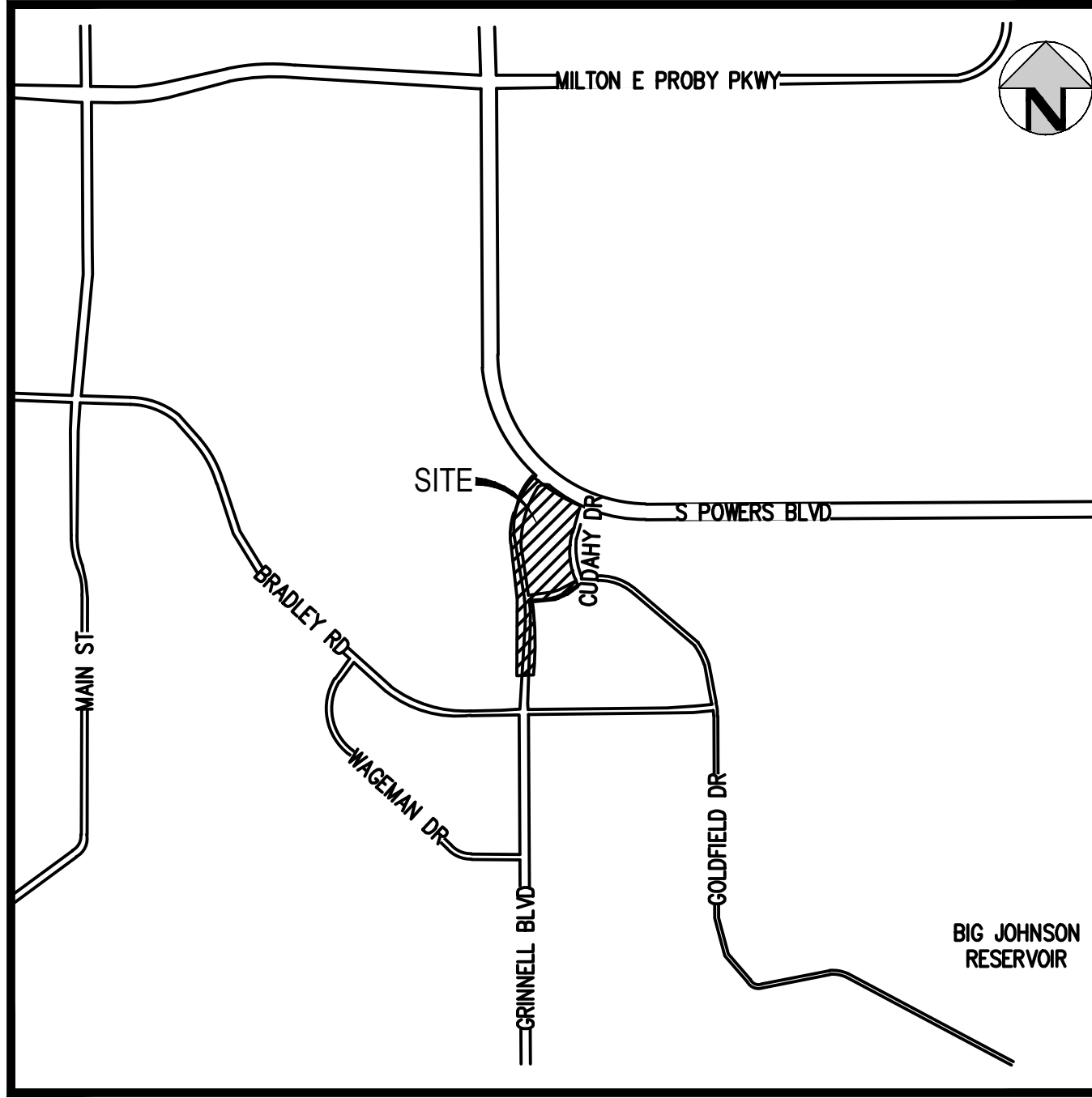
EPC STORMWATER REVIEW COMMENTS IN ORANGE BOXES WITH BLACK TEXT

OUTLOOK POWERS & GRINNELL SITUATED IN THE NORTHWEST 1/4 OF SECTION 7, TOWNSHIP 15 SOUTH, RANGE 65 WEST OF THE 6TH P.M., CITY OF COLORADO SPRINGS, COUNTY OF EL PASO, STATE OF COLORADO.

GRADING AND EROSION CONTROL PLAN

ABBREVIATIONS

Table with 2 columns: Abbreviation and Full Name. Includes BOP, BW, CONC, DIA, DIP, DR, DS, E, EGL, EL, EOC, EOP, ESMT, EX, FES, FF, FG, FH, FL, GB, GV, HC, HGL, HORZ, HP, INV, LP, MAX, MH, MIN, N, PHS, PR, PVC, RCP, ROW, SAN, SS, STA, STM, TB, TBC, TOP, TS, TW, TYP, UG, WAT.



VICINITY MAP SCALE: 1" = 2000'

SHEET INDEX

Table with 2 columns: Sheet Number and Description. Lists sheets 1 through 14, including GESC-COVER, GESC-NOTES, GESC-INITIAL, GESC-INTERIM, GESC-FINAL, GESC-DETAILS, and GESC-UNDERGROUND.

EL PASO COUNTY STANDARD NOTES

- 1. STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS...
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...
3. 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...
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...
5. CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF ACTIVITIES THAT COULD CONTRIBUTE POLLUTANTS TO STORMWATER...
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...
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...
9. ALL PERMANENT STORMWATER MANAGEMENT FACILITIES SHALL BE INSTALLED AS DESIGNED IN THE APPROVED PLANS...
10. EARTH DISTURBANCES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY MINIMIZE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION...
11. COMPACTION OF SOIL MUST BE PREVENTED IN AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES OR WHERE FINAL STABILIZATION WILL BE ACHIEVED BY VEGETATIVE COVER...
12. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH SURFACE 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...
14. DURING DEWATERING OPERATIONS, UNCONTAMINATED GROUNDWATER MAY BE DISCHARGED ON-SITE, BUT SHALL NOT LEAVE THE SITE IN THE FORM OF SURFACE RUNOFF...
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...
17. WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY...
18. TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED...
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...
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...
21. NO CHEMICAL(S) HAVING THE POTENTIAL TO BE RELEASED IN STORMWATER ARE TO BE STORED OR USED ON-SITE UNLESS PERMISSION FOR THE USE OF SUCH CHEMICAL(S) IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR...
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 ON-SITE...
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 USC 1344)...
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. 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...
28. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY HARRIS KOCHER SMITH, DATE OF REPORT] 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 FORSTORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITYDIVISION...
30. COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT WATER QUALITY CONTROL DIVISION WOOD -PERMITS 4300 CHERRY CREEK DRIVE SOUTH DENVER, CO 80246-1530 ATTN: PERMITS UNIT

Add EDARP File Number: SF2318 and PPR2320

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 THE ENGINEERING CRITERIA MANUAL, AS AMENDED.

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.

COUNTY ENGINEER/ECM ADMINISTRATOR DATE

OWNER'S STATEMENT:

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

OWNER SIGNATURE DATE

ENGINEER'S STATEMENT:

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 PREPARING THIS PLAN.

ENGINEER OF RECORD SIGNATURE DATE

PRELIMINARY NOT FOR CONSTRUCTION



Table with 2 columns: ISSUE DATE and PROJECT #. Includes a revision table with columns for DATE and REVISION COMMENTS.

Filename: J:\221206\ENGINEERING\GESC-COVER.DWG Layout: LAYOUT11 Plotted: MON, 05/01/2023 3:30:05 PM by: Jay Wilson

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

EL PASO COUNTY STANDARD GRADING AND EROSION CONTROL NOTES

- 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.
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 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. 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 PRE-CONSTRUCTION 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, DITCHES, 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 ALTERNATIVE 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 EGM 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 A WATERS OF THE STATE UNLESS SHOWN TO BE INFESIBLE 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 LOOSENEED 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. 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 ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.
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.
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.
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 ON-SITE UNLESS PERMISSION FOR THE USE OF SUCH CHEMICAL(S) IS GRANTED IN WRITING BY THE EGM 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 ON-SITE AND TO PREVENT ANY SPILLED MATERIALS FROM ENTERING STATE WATERS, ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR OTHER FACILITIES.
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 USC 1344). IN ADDITION TO THE REQUIREMENTS OF THE LAND DEVELOPMENT CODE, DCU VOLUME II AND THE EGM 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. 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.
28. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY CTL THOMPSON ON MAY 18, 2021 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
WOOD - PERMITS
4300 CHERRY CREEK DRIVE SOUTH
DENVER, CO 80246-1530
ATTN: PERMITS UNIT

STANDARD GESC NOTES

- 1. SHADED BMPs WERE INSTALLED IN AN EARLIER PHASE, AND UNLESS OTHERWISE INDICATED SHALL BE LEFT IN PLACE UNTIL REVEGETATION ESTABLISHMENT IS APPROVED BY EL PASO COUNTY. CONTRACTOR SHALL VERIFY THE CONDITION OF ALL EXISTING BMPs AND REMOVE AND REPLACE THEM AS NECESSARY.
2. ALL EXISTING BMPs WILL NEED TO BE PROPERLY REFRESHED OR RE-INSTALLED BY THE CONTRACTOR TO FUNCTION AS ORIGINALLY DESIGNED.
3. SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, CULVERTS, STORM DRAINS, AND INLET AND OUTLET PROTECTION.
4. SEE DETAIL SHEETS EC-ECT FOR EROSION CONTROL MEASURE CONSTRUCTION DETAILS.
5. CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED AREAS NOT FORMALLY LANDSCAPED PER THE APPROVED LANDSCAPE PLAN SEED MIX OR EL PASO COUNTY STANDARD SEED MIX.
6. ROCK SOCKS MAY BE SUBSTITUTED FOR SILT FENCE AS PERIMETER CONTROL ON HARDSCAPE SURFACE AREAS.
7. ALL EROSION AND SEDIMENT CONTROL PRACTICES AND OTHER PROTECTIVE MEASURES IDENTIFIED IN THE SWMP MUST BE MAINTAINED IN EFFECTIVE OPERATION CONDITION. PROPER SELECTION AND INSTALLATION OF BMPs AND PROCEDURES, IN ACCORDANCE WITH THE SWMP, SHOULD BE ADEQUATE TO MEET THIS CONDITION. BMPs THAT ARE NOT ADEQUATELY MAINTAINED IN ACCORDANCE WITH GOOD ENGINEERING, HYDROLOGIC AND POLLUTION CONTROL PRACTICES, INCLUDING REMOVAL OF COLLECTED SEDIMENT OUTSIDE THE ACCEPTABLE TOLERANCES OF THE BMPs, ARE NO LONGER OPERATING EFFECTIVELY AND MUST BE ADDRESSED.
8. THE CONTRACTOR SHALL PROVIDE SURFACE ROUGHENING AND SEEDING AND MULCHING DURING THE DEMOLITION AND EARTHWORK PHASES AS REQUIRED BY THE SWMP AND EL PASO COUNTY INSPECTOR.
9. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING INLET PROTECTION ON ALL EXISTING STORM SEWER INLETS IMMEDIATELY ADJACENT TO AND DOWNSTREAM OF THE PROJECT SITE.
10. THE CONTRACTOR SHALL REFER TO THE STORMWATER MANAGEMENT PLAN (SWMP) DATED 11/01/2021, THE COUNTY/CITY GRADING, EROSION, AND SEDIMENT CONTROL SPECIFICATIONS, AND THE MILE HIGH FLOOD DISTRICT VOLUME 3: STORMWATER BEST MANAGEMENT PRACTICES (BMPs) FOR ADDITIONAL INFORMATION.
11. ALL LANDSCAPE DRAIN AREA INLETS SHALL HAVE INLET PROTECTION UNTIL THE UPSTREAM AREA HAS BEEN FORMALLY LANDSCAPED AND ESTABLISHED. REFER TO THE STORM SEWER PLANS FOR EXACT LOCATIONS OF ALL AREA INLETS.
12. EROSION CONTROL BLANKETS SHALL BE INSTALLED ON ALL PROPOSED SLOPES 4:1 OR GREATER.

GEC Checklist Item 1: Provide existing vegetation on GEC plans or add note with percent ground cover and type of vegetation.

SWMP Checklist Item 17f: Add a note that states no asphalt/concrete batch plants will be utilized.

Update the SWMP date

GENERAL STORM NOTES:

- 1. THE CONTRACTOR SHALL NOTIFY COLORADO 811 PRIOR TO EXCAVATION, IN ACCORDANCE WITH COLORADO STATE STATUTES.
2. THE LOCATION OF EXISTING UNDERGROUND UTILITIES IS APPROXIMATE AND SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE, AS SUPPLIED BY THE UTILITY OWNERS. PRIOR TO EXCAVATION, THE CONTRACTOR SHALL VERIFY EXISTENCE, SIZE, AND LOCATION OF EXISTING UTILITIES AND IMMEDIATELY NOTIFY HARRIS KOCHER SMITH OF ANY DISCREPANCIES. THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DAMAGES TO EXISTING UNDERGROUND FACILITIES.
3. PIPE LENGTHS ARE MEASURED FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE FOR CYLINDRICAL MANHOLES AND TO THE INSIDE FACE OF INLETS AND OTHER BOX STRUCTURES. PIPE LENGTHS ARE MEASURED TO THE END OF THE STRUCTURE FOR ALL FLARED END SECTIONS.
4. STATIONING OF INLETS SHOWN IN STORM SEWER PROFILES IS AT CENTER OF STRUCTURE.
5. ALL COORINATES ARE AT THE CENTER OF THE STRUCTURE UNLESS OTHERWISE INDICATED.
6. CONTRACTOR SHALL USE HDPE, PVC, OR RCP PIPES FOR THE MAIN LINES, BUT SHALL NOTIFY THE JURISDICTIONAL UTILITY PROVIDER AND THE ENGINEER, PRIOR TO INSTALLATION, FOR APPROVAL.
7. FOR ALL NON-CONCENTRIC MANHOLES, MANHOLE RINGS/COVERS AND STEPS LIDS SHALL BE ROTATED AS SHOWN IN PLAN VIEW.
8. ALL TYPE C & D INLETS SHALL HAVE CLOSE MESH GRATES.
9. ALL LATERAL PIPE-TO-PIPE CONNECTIONS SHALL BE MADE USING KOR-NEE CONNECTORS OR ENGINEER APPROVED EQUIVALENT.
10. CONTRACTOR SHALL ADJUST ALL EXISTING RIM ELEVATIONS TO MATCH THE PROPOSED GRADE.
11. CONTRACTOR SHALL MODIFY INLET BASES AS NEEDED IN ORDER TO ENSURE ALL STORM PIPES CONNECT PROPERLY TO THE INLET. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR REVIEW AND APPROVAL BY ENGINEER, OWNER, AND CITY/COUNTY PRIOR TO INSTALLATION.
12. CONTRACTOR SHALL PROVIDE ENGINEERED SHOP DRAWINGS, DESIGNED BY A LICENSED ENGINEER, DETAILING THE STRUCTURAL DESIGN OF ALL POND IMPROVEMENTS (FOREBAY, ENERGY DISSIPATING Baffles, OUTLET STRUCTURE, ETC.) FOR REVIEW AND APPROVAL BY ENGINEER, OWNER, AND CITY/COUNTY PRIOR TO INSTALLATION.

WATER QUALITY/NPDES EROSION AND SEDIMENT CONTROL NOTES

- 1. THIS CONSTRUCTION ACTIVITIES STORMWATER MANAGEMENT PLAN HAS BEEN SUBMITTED AS THE APPLICATION FOR A STORMWATER PERMIT FOR CONSTRUCTION ACTIVITIES FROM THE WATER QUALITY CONTROL DIVISION OF COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT. I UNDERSTAND THAT ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT FUNCTION AS INTENDED. THE REQUIREMENTS OF THIS PLAN SHALL BE THE OBLIGATION OF THE LAND OWNER AND/OR HIS SUCCESSORS OR HEIRS, UNTIL SUCH TIME AS THE PLAN IS PROPERLY COMPLETED, MODIFIED, OR VOIDED.
2. THE CONTRACTOR SHALL LOCATE, INSTALL, AND MAINTAIN ALL EROSION CONTROL AND WATER QUALITY 'BEST MANAGEMENT PRACTICES' AS INDICATED IN THE APPROVED CONSTRUCTION ACTIVITIES STORMWATER MANAGEMENT PLAN AND GEC PLANS.
3. MODIFICATION OF AN ACTIVE STORMWATER PERMIT FOR CONSTRUCTION ACTIVITIES BY THE DEVELOPER, CONTRACTOR, OR THEIR AUTHORIZED AGENTS SHALL REQUIRE TIMELY NOTIFICATION OF AND APPROVAL BY THE WATER QUALITY CONTROL DIVISION. TERMINATION OF AN ACTIVE STORMWATER PERMIT FOR CONSTRUCTION ACTIVITIES UPON COMPLETION OF THE PROJECT REQUIRES NOTIFICATION OF AND APPROVAL BY EL PASO COUNTY ENGINEERING.

BMP MAINTENANCE NOTE

ALL EROSION AND SEDIMENT CONTROL PRACTICES AND OTHER PROTECTIVE MEASURES IDENTIFIED IN THE SWMP MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION. PROPER SELECTION AND INSTALLATION OF BMPs AND IMPLEMENTATION OF COMPREHENSIVE INSPECTION AND MAINTENANCE PROCEDURES, IN ACCORDANCE WITH THE SWMP, SHOULD BE ADEQUATE TO MEET THIS CONDITION. BMPs THAT ARE NOT ADEQUATELY MAINTAINED IN ACCORDANCE WITH GOOD ENGINEERING, HYDROLOGIC AND POLLUTION CONTROL PRACTICES, INCLUDING REMOVAL OF COLLECTED SEDIMENT OUTSIDE THE ACCEPTABLE TOLERANCES OF THE BMPs, ARE CONSIDERED TO BE NO LONGER OPERATING EFFECTIVELY AND MUST BE ADDRESSED.

UTILITY NOTES

- 1. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE, AS SUPPLIED BY THE UTILITY OWNERS. PRIOR TO EXCAVATION, THE CONTRACTOR SHALL VERIFY EXISTENCE, SIZE AND LOCATION OF EXISTING UTILITIES AND IMMEDIATELY NOTIFY HARRIS KOCHER SMITH OF ANY DISCREPANCIES. THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DAMAGES TO EXISTING UNDERGROUND FACILITIES.
2. THE CONTRACTOR SHALL NOTIFY 811 PRIOR TO EXCAVATION, IN ACCORDANCE WITH COLORADO STATE STATUTES.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION ACTIVITIES, DEWATERING DISCHARGE, PERMITTING FOR ALL UTILITY INSTALLATION. PUMP RATE TESTS ARE HIGHLY RECOMMENDED.

FILE PATH: J:\221206\ENGINEERING\EROSION\GESC - COVERING LAYOUT.LAYOUT2
5 SHEETS
PLOTTED: MON 05/08/23 5:39:15P BY: TYLER WILSON



Know what's below. Call before you dig.

DESIGNED BY: MJS
CHECKED BY: RCP
DRAWN BY: MJS

Table with columns: ISSUE DATE: 05-08-2023, DATE, REVISION COMMENTS



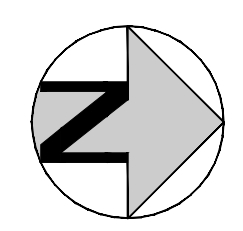
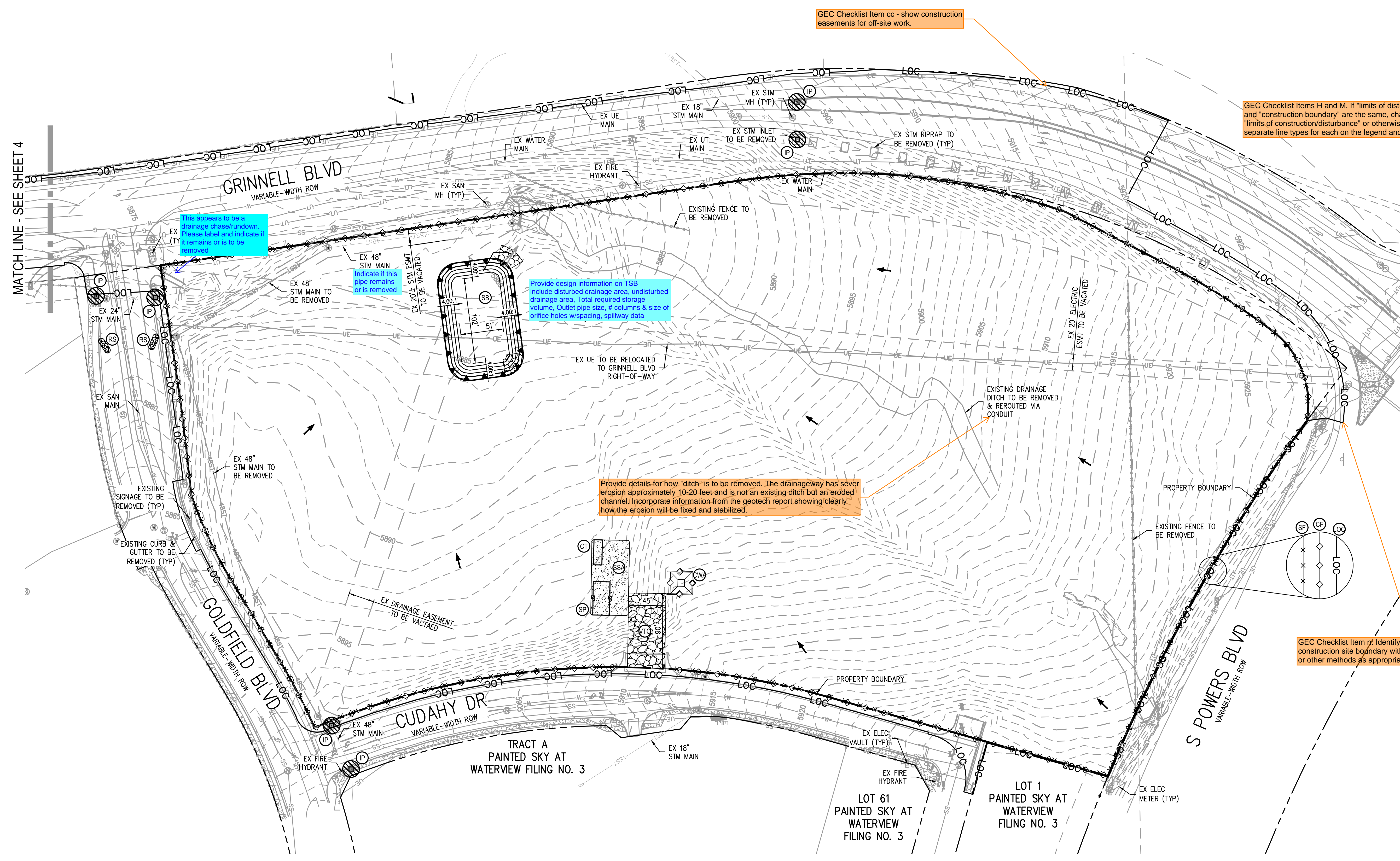
OUTLOOK POWERS & GRINNELL
GESC - NOTES

PRELIMINARY NOT FOR CONSTRUCTION

PROJECT #: 221206
SHEET NUMBER

2

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.



GEC Checklist Items H and M. If "limits of disturbance" and "construction boundary" are the same, change to "limits of construction/disturbance" or otherwise show as separate line types for each on the legend and figure.

**BMP LEGEND:**

- LIMITS OF CONSTRUCTION (Disturbance) — LOC
- CONSTRUCTION FENCE — CF
- SILT FENCE — SF
- STABILIZED STAGING AREA — SSA
- STOCKPILE PROTECTION — SP
- VEHICLE TRACKING CONTROL — VTC
- INLET PROTECTION — IP
- CONCRETE WASHOUT AREA — CWA
- ROCK SOCK — RS
- CONSTRUCTION TRAILER — CT
- SEDIMENT BASIN — SB
- TEMPORARY SLOPE DRAIN
- EXISTING CONTOURS — 5264, 5265
- PROPOSED CONTOURS — 5173, 5170
- DRAINAGE FLOW ARROW
- EMERGENCY OVERTFLOW PATH

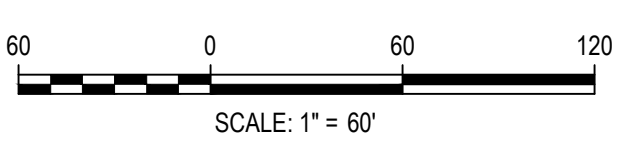
SWMP Checklist Item 17d - Show all areas of cut and fill on the plans.

GEC Checklist Item n. Identify and protect areas outside of the construction site boundary with exist fencing, construction fencing or other methods as appropriate

**INITIAL PLAN NOTES:**

1. SHADED BEST MANAGEMENT PRACTICES (BMPs) WERE INSTALLED IN AN EARLIER PHASE, AND UNLESS OTHERWISE INDICATED SHALL BE LEFT IN PLACE UNTIL REVEGETATION ESTABLISHMENT IS APPROVED BY COUNTY OF EL PASO. CONTRACTOR SHALL VERIFY THE CONDITION OF ALL EXISTING BMPs AND REMOVE AND REPLACE THEM AS NECESSARY.
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3. SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, CULVERTS, STORM DRAINS, AND INLET AND OUTLET PROTECTION.
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10. THE CONTRACTOR SHALL REFER TO THE STORMWATER MANAGEMENT PLAN DATED 05-08-2023, THE EL PASO COUNTY GRADING, EROSION, AND SEDIMENT CONTROL SPECIFICATIONS, AND THE MILE HIGH FLOOD DISTRICT'S URBAN STORM DRAINAGE CRITERIA MANUAL, VOLUME 3 FOR ADDITIONAL INFORMATION.

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 PLOTTED: MON 05/08/2023 5:39:24P BY: TYLER WILSON



DESIGNED BY: MJS  
 CHECKED BY: RCP  
 DRAWN BY: MJS

ISSUE DATE: 05-08-2023	
DATE	REVISION COMMENTS

**HKS HARRIS KOCHER SMITH**  
 1120 Lincoln Street, Suite 1000  
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 HarrisKocherSmith.com

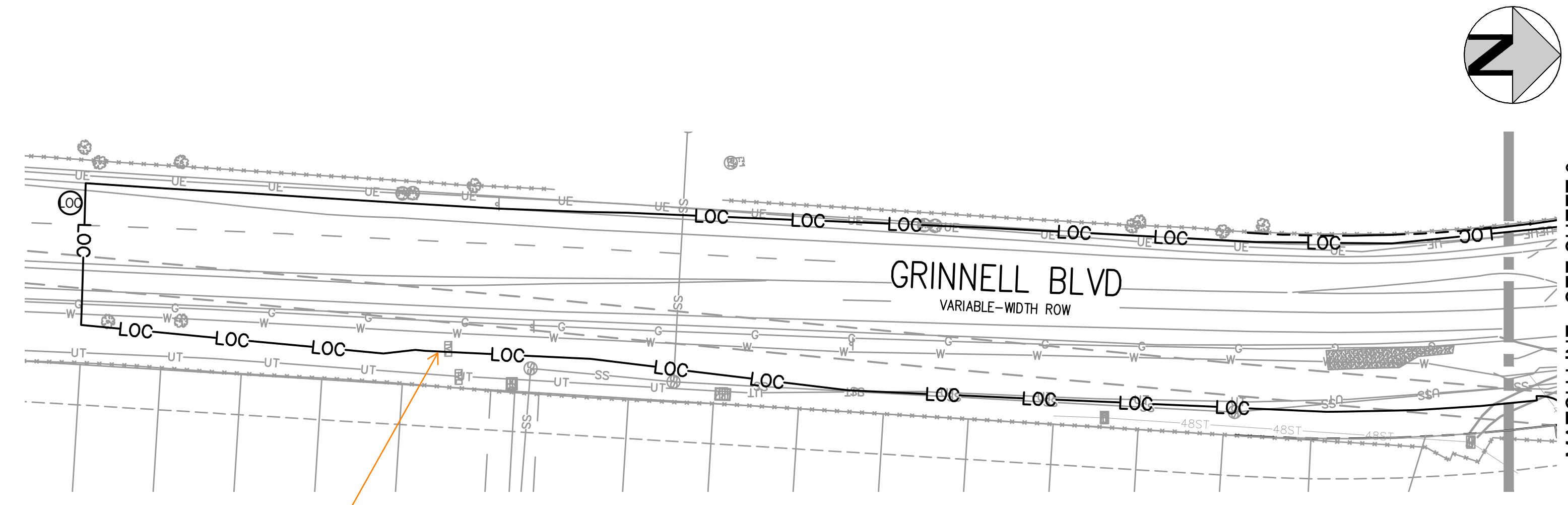
**Evergreen**  
 Development | Services | Investments

OUTLOOK POWERS & GRINNELL  
 GESC - INITIAL

PRELIMINARY  
 NOT FOR  
 CONSTRUCTION

PROJECT #: 221206  
 SHEET NUMBER  
**3**  
 3 OF 14

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Provide BMPs for construction work along Grinnell Blvd.

GEC Checklist Item n: Identify and protect areas outside of the construction site boundary with exist fencing, construction fencing or other methods as appropriate

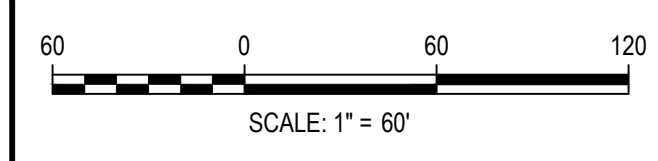
**BMP LEGEND:**

- LIMITS OF CONSTRUCTION (LOC) — LOC
- CONSTRUCTION FENCE (CF) — CF
- SILT FENCE (SF) — SF
- STABILIZED STAGING AREA (SSA) — SSA
- STOCKPILE PROTECTION (SP) — SP
- VEHICLE TRACKING CONTROL (VTC) — VTC
- INLET PROTECTION (IP) — IP
- CONCRETE WASHOUT AREA (CWA) — CWA
- ROCK SOCK (RS) — RS
- CONSTRUCTION TRAILER (CT) — CT
- SEDIMENT BASIN (SB) — SB
- TEMPORARY SLOPE DRAIN — Temporary Slope Drain
- EXISTING CONTOURS — 5264, 5265
- PROPOSED CONTOURS — 5173, 5170
- DRAINAGE FLOW ARROW — Drainage Flow Arrow
- EMERGENCY OVERFLOW PATH — Emergency Overflow Path

**INITIAL PLAN NOTES:**

1. SHADED BEST MANAGEMENT PRACTICES (BMPs) WERE INSTALLED IN AN EARLIER PHASE, AND UNLESS OTHERWISE INDICATED SHALL BE LEFT IN PLACE UNTIL REVEGETATION ESTABLISHMENT IS APPROVED BY COUNTY OF EL PASO. CONTRACTOR SHALL VERIFY THE CONDITION OF ALL EXISTING BMPs AND REMOVE AND REPLACE THEM AS NECESSARY.
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3. SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, CULVERTS, STORM DRAINS, AND INLET AND OUTLET PROTECTION.
4. SEE DETAIL SHEETS 9-14 FOR EROSION CONTROL MEASURE CONSTRUCTION DETAILS.
5. CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED AREAS NOT FORMALLY LANDSCAPED PER THE APPROVED LANDSCAPE PLAN SEED MIX OR THE EL PASO COUNTY STANDARD SEED MIX.
6. ROCK SOCKS MAY BE SUBSTITUTED FOR SILT FENCE AS PERIMETER CONTROL ON HARDSCAPE SURFACE AREAS.
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10. THE CONTRACTOR SHALL REFER TO THE STORMWATER MANAGEMENT PLAN DATED 05-08-2023, THE EL PASO COUNTY GRADING, EROSION, AND SEDIMENT CONTROL SPECIFICATIONS, AND THE MILE HIGH FLOOD DISTRICT'S URBAN STORM DRAINAGE CRITERIA MANUAL, VOLUME 3 FOR ADDITIONAL INFORMATION.

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 PLOTTED: MON 05/08/23 5:39:29P BY: TYLER WILSON



DESIGNED BY: MJS  
 CHECKED BY: RCP  
 DRAWN BY: MJS

ISSUE DATE: 05-08-2023	
DATE	REVISION COMMENTS

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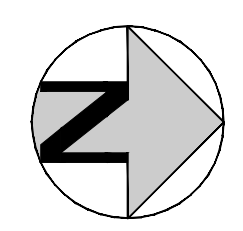
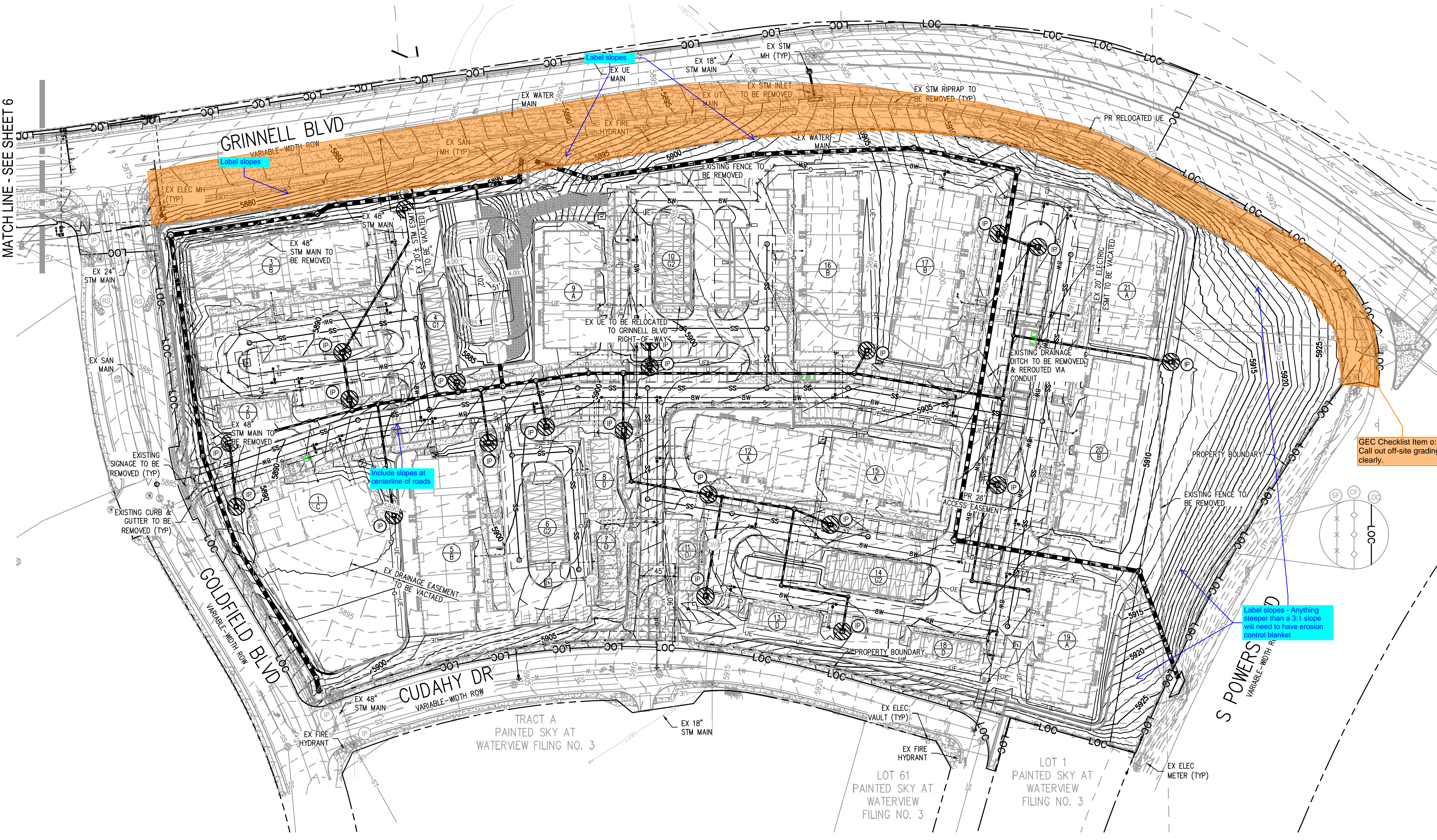
PRELIMINARY  
 NOT FOR  
 CONSTRUCTION

PROJECT #: 221206  
 SHEET NUMBER  
**4**  
 4 OF 14

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

FILE # 221206ENGRS\ENGRS\GESC - INTERIM\DWG LAYOUT\LAYOUT TO GESC - 221206.dwg, evergreen logo, gesc - final, p - final, p - roadwork, p - utility, stamp - gesc. PLOTTED: MON 05/08/2023 5:59:46P BY: TYLER WILSON

MATCH LINE - SEE SHEET 6



**BMP LEGEND:**

- LIMITS OF CONSTRUCTION (LOC)
- CONSTRUCTION FENCE (CF)
- SILT FENCE (SF)
- STABILIZED STAGING AREA (SSA)
- STOCKPILE PROTECTION (SP)
- VEHICLE TRACKING CONTROL (VTC)
- INLET PROTECTION (IP)
- CONCRETE WASHOUT AREA (CWA)
- ROCK SOCK (RS)
- CONSTRUCTION TRAILER (CT)
- SEDIMENT BASIN (SB)
- TEMPORARY SLOPE DRAIN
- EXISTING CONTOURS
- PROPOSED CONTOURS
- EMERGENCY OVERFLOW PATH

GEC Checklist Item o: Call out off-site grading clearly.

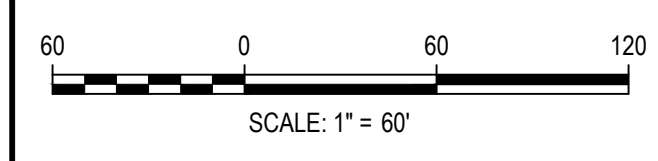
Label slopes - Anything steeper than a 3:1 slope will need to have erosion control blanket.

Per SWMP, Surface Roughening is a BMP proposed - show surface roughening areas on plans or add a note detailing what areas would require surface roughening.

Provide drainage arrows

**INTERIM PLAN NOTES:**

1. SHADED BEST MANAGEMENT PRACTICES (BMPs) WERE INSTALLED IN AN EARLIER PHASE, AND UNLESS OTHERWISE INDICATED SHALL BE LEFT IN PLACE UNTIL REVEGETATION ESTABLISHMENT IS APPROVED BY EL PASO COUNTY. CONTRACTOR SHALL VERIFY THE CONDITION OF ALL EXISTING BMPs AND REMOVE AND REPLACE THEM AS NECESSARY.
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4. ALL LANDSCAPE DRAIN AREA INLETS SHALL HAVE INLET PROTECTION UNTIL THE UPSTREAM AREA HAS BEEN FORMALLY LANDSCAPED AND ESTABLISHED. REFER TO THE STORM SEWER PLANS FOR EXACT LOCATIONS OF ALL AREA INLETS.
5. SEE DETAIL SHEETS 9-14 FOR EROSION CONTROL MEASURE CONSTRUCTION DETAILS.
6. CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED AREAS NOT FORMALLY LANDSCAPED PER THE APPROVED LANDSCAPE PLAN SEED MIX OR EL PASO COUNTY STANDARD SEED MIX.
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8. ALL EROSION AND SEDIMENT CONTROL PRACTICES AND OTHER PROTECTIVE MEASURES IDENTIFIED IN THE STORMWATER MANAGEMENT PLAN (SWMP) MUST BE MAINTAINED IN PROPER FUNCTIONING CONDITION. CONTRACTOR SHALL MONITOR ALL BMPs AND IMMEDIATELY CORRECT OR REAPPLY ANY THAT ARE NO LONGER FUNCTIONING EFFECTIVELY.
9. EROSION CONTROL BLANKETS SHALL BE INSTALLED ON ALL PROPOSED SLOPES 4:1 OR GREATER.
10. THE CONTRACTOR SHALL REFER TO THE STORMWATER MANAGEMENT PLAN DATED 05-08-2023; THE EL PASO COUNTY GRADING, EROSION, AND SEDIMENT CONTROL SPECIFICATIONS, AND THE MILE HIGH FLOOD DISTRICTS URBAN STORM DRAINAGE CRITERIA MANUAL, VOLUME 3 FOR ADDITIONAL INFORMATION.



DESIGNED BY: MJS  
CHECKED BY: RCP  
DRAWN BY: MJS

ISSUE DATE: 05-08-2023	
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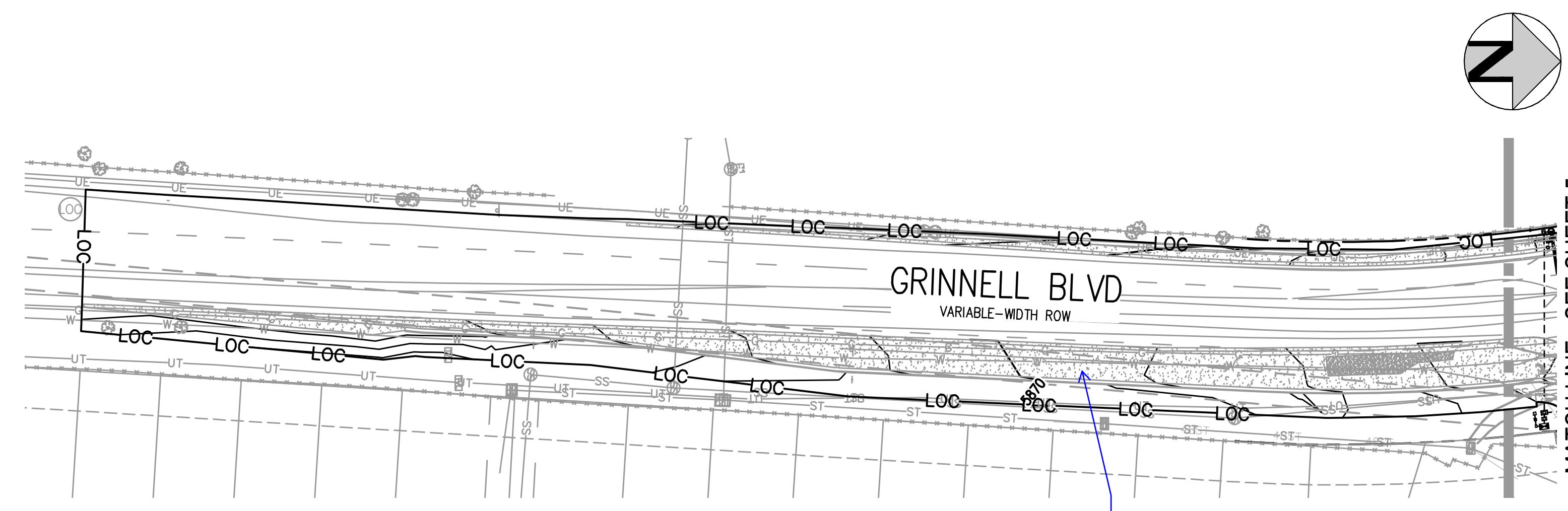
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OUTLOOK POWERS & GRINNELL  
GESC - INTERIM

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PROJECT #: 221206  
SHEET NUMBER  
**5**  
5 OF 14



Per legend, this is stabilized staging area? I believe this is new pavement for the widening of Grinnell. Please revise legend or hatching on the plan to be different.

**BMP LEGEND:**

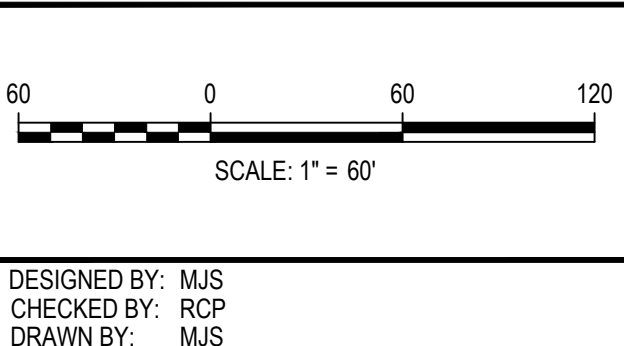
- LIMITS OF CONSTRUCTION (LOC) — LOC
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- TEMPORARY SLOPE DRAIN — Temporary Slope Drain
- EXISTING CONTOURS — 5264, 5265
- PROPOSED CONTOURS — 5173, 5170
- EMERGENCY OVERFLOW PATH — Emergency Overflow Path

**INTERIM PLAN NOTES:**

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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

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 PLOTTED: MON 06/08/23 5:59:46P BY: TYLER WILSON



ISSUE DATE: 05-08-2023	
DATE	REVISION COMMENTS

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 NOT FOR  
 CONSTRUCTION

PROJECT #: 221206  
 SHEET NUMBER  
**6**  
 6 OF 14

Typical comment: Show all swales and grading as well as provide details for the swale underdrains, their tie-into the storm sewer, and the swale typical section

Drainage Report shows a swale here and the swale cales call for an underdrain - provide grading contours, a typical section, and show the underdrain and how it ties into the storm sewer.

Drainage Report shows a swale here and the swale cales call for an underdrain - provide grading contours and a typical section.

**BMP LEGEND:**

- LIMITS OF CONSTRUCTION (LOC) — LOC —
- CONSTRUCTION FENCE (CF) — CF —
- SILT FENCE (SF) — SF —
- STABILIZED STAGING AREA (SSA) — SSA —
- STOCKPILE PROTECTION (SP) — SP —
- VEHICLE TRACKING CONTROL (VTC) — VTC —
- INLET PROTECTION (IP) — IP —
- CONCRETE WASHOUT AREA (CWA) — CWA —
- ROCK SOCK (RS) — RS —
- CONSTRUCTION TRAILER (CT) — CT —
- SEDIMENT BASIN (SB) — SB —
- TEMPORARY SLOPE DRAIN — SD —
- EXISTING CONTOURS — 5264 — 5265 —
- PROPOSED CONTOURS — 5173 — 5170 —
- EMERGENCY OVERTFLOW PATH — EOP —

Show areas of seeding/mulching on the final phase plans.

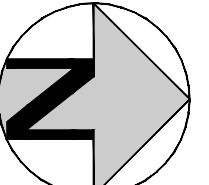
**AREA SUMMARY TABLE**

TOTAL SITE AREA	23.09 AC
PROJECT SITE AREA	16.57 AC
CUT VOLUME	42,804 CU YD
FILL VOLUME	135,421 CU YD
NET VOLUME	92,617 CU YD FILL

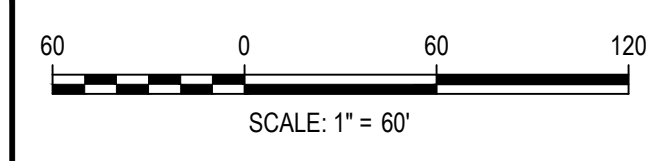
**FINAL PLAN NOTES:**

1. SHADED BEST MANAGEMENT PRACTICES (BMPs) WERE INSTALLED IN AN EARLIER PHASE, AND UNLESS OTHERWISE INDICATED SHALL BE LEFT IN PLACE UNTIL REVEGETATION ESTABLISHMENT IS APPROVED BY EL PASO COUNTY. CONTRACTOR SHALL VERIFY THE CONDITION OF ALL EXISTING BMPs AND REMOVE AND REPLACE THEM AS NECESSARY.
2. ALL EXISTING BMPs WILL NEED TO BE PROPERLY REFRESHED OR REINSTALLED BY THE CONTRACTOR TO FUNCTION AS ORIGINALLY DESIGNED.
3. SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, CULVERTS, STORM DRAINS, AND INLET AND OUTLET PROTECTION.
4. ALL LANDSCAPE DRAIN AREA INLETS SHALL HAVE INLET PROTECTION UNTIL THE UPSTREAM AREA HAS BEEN FORMALLY LANDSCAPED AND ESTABLISHED. REFER TO THE STORM SEWER PLANS FOR EXACT LOCATIONS OF ALL AREA INLETS.
5. SEE DETAIL SHEETS 9-14 FOR EROSION CONTROL MEASURE CONSTRUCTION DETAILS.
6. CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED AREAS NOT FORMALLY LANDSCAPED PER THE APPROVED LANDSCAPE PLAN SEED MIX OR EL PASO COUNTY STANDARD SEED MIX.
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MATCH LINE - SEE SHEET 8



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ISSUE DATE: 05-08-2023	REVISION COMMENTS
DATE	

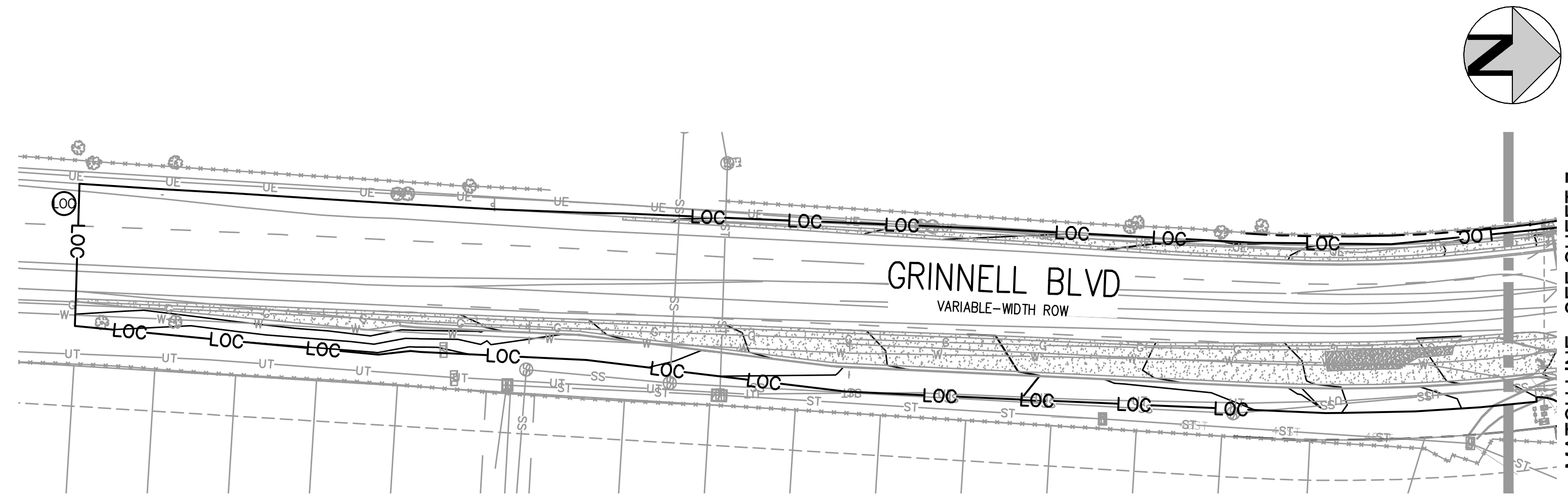
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PROJECT #: 221206  
 SHEET NUMBER  
**7**  
 7 OF 14



**BMP LEGEND:**

- LIMITS OF CONSTRUCTION LOC
- CONSTRUCTION FENCE CF
- SILT FENCE SF
- STABILIZED STAGING AREA SSA
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- EMERGENCY OVERFLOW PATH

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DESIGNED BY: MJS  
 CHECKED BY: RCP  
 DRAWN BY: MJS

DATE	REVISION COMMENTS

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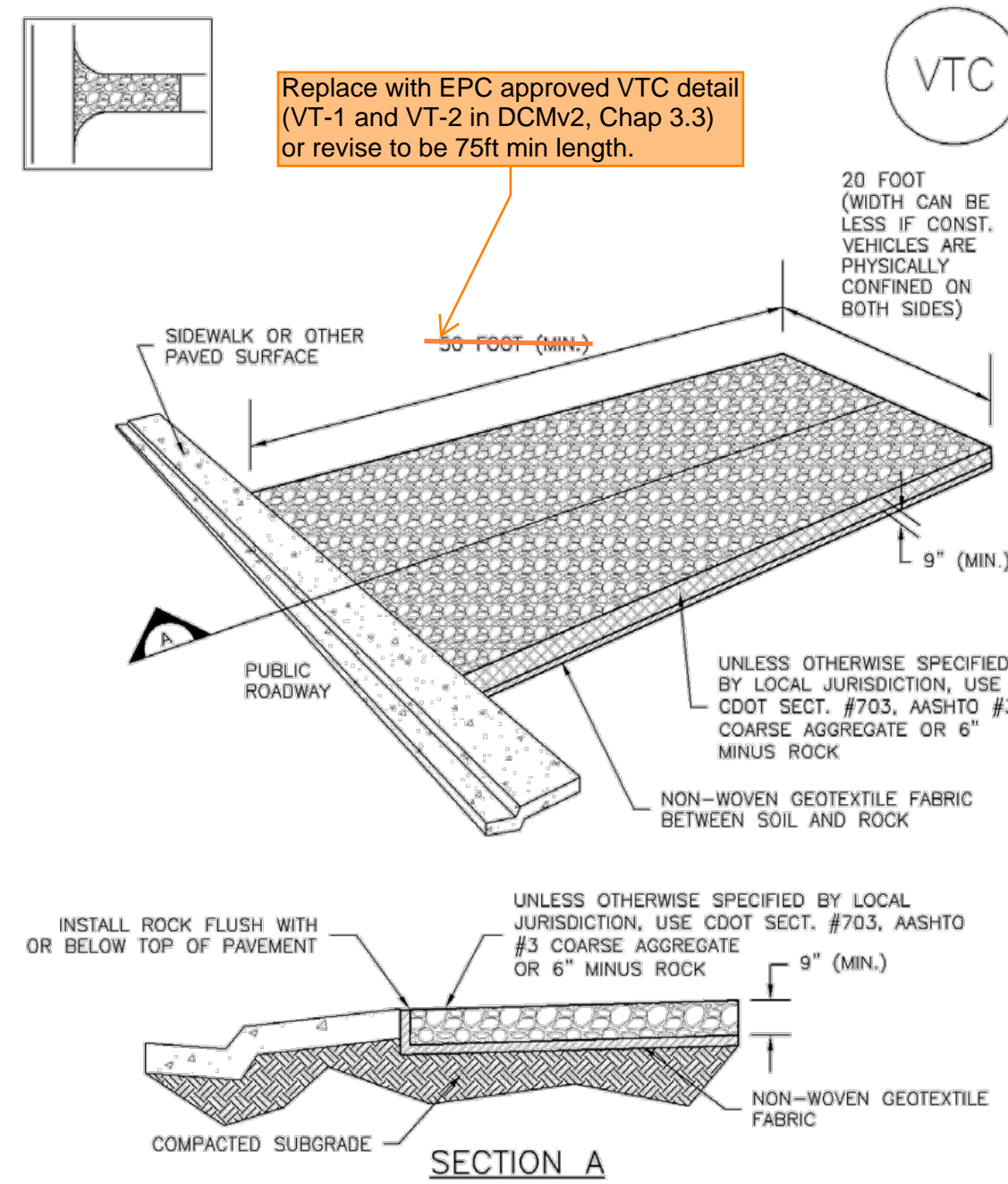
OUTLOOK POWERS & GRINNELL  
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PROJECT #: 221206  
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 8 OF 14

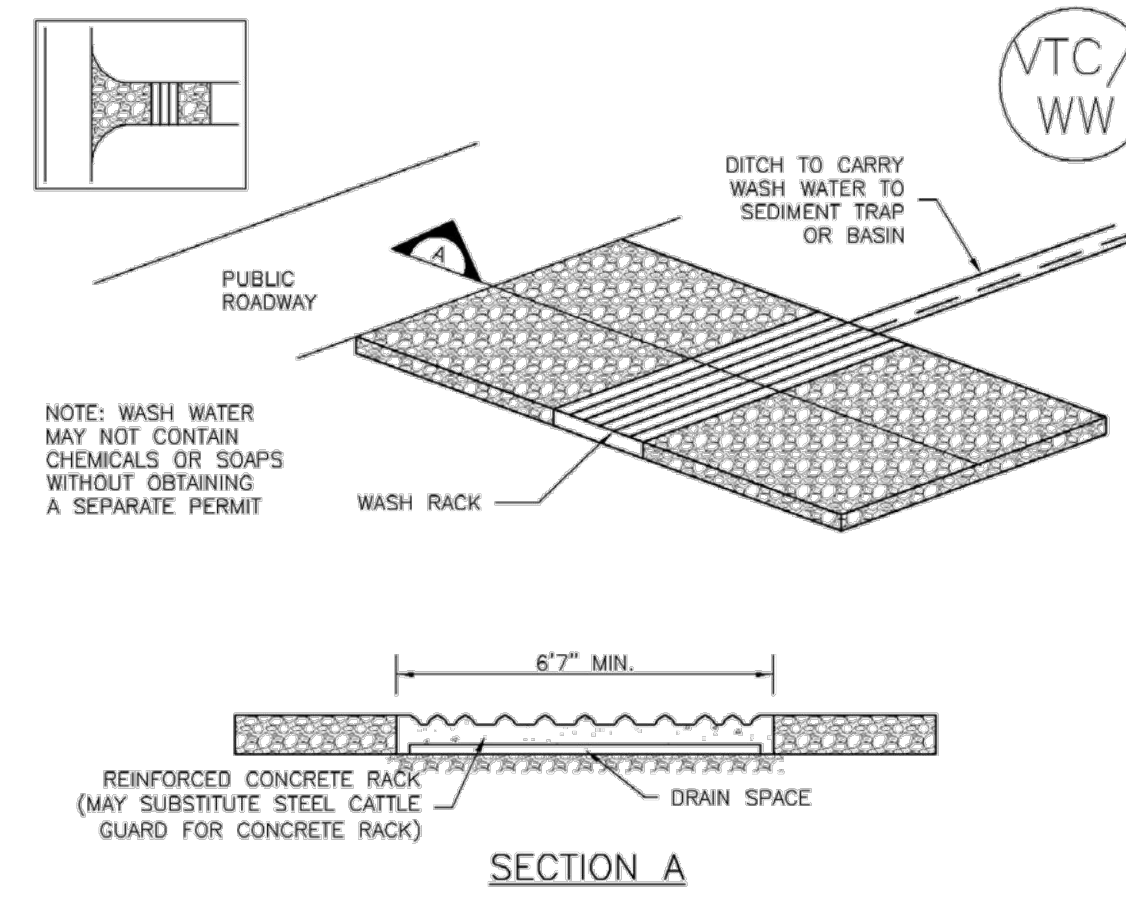


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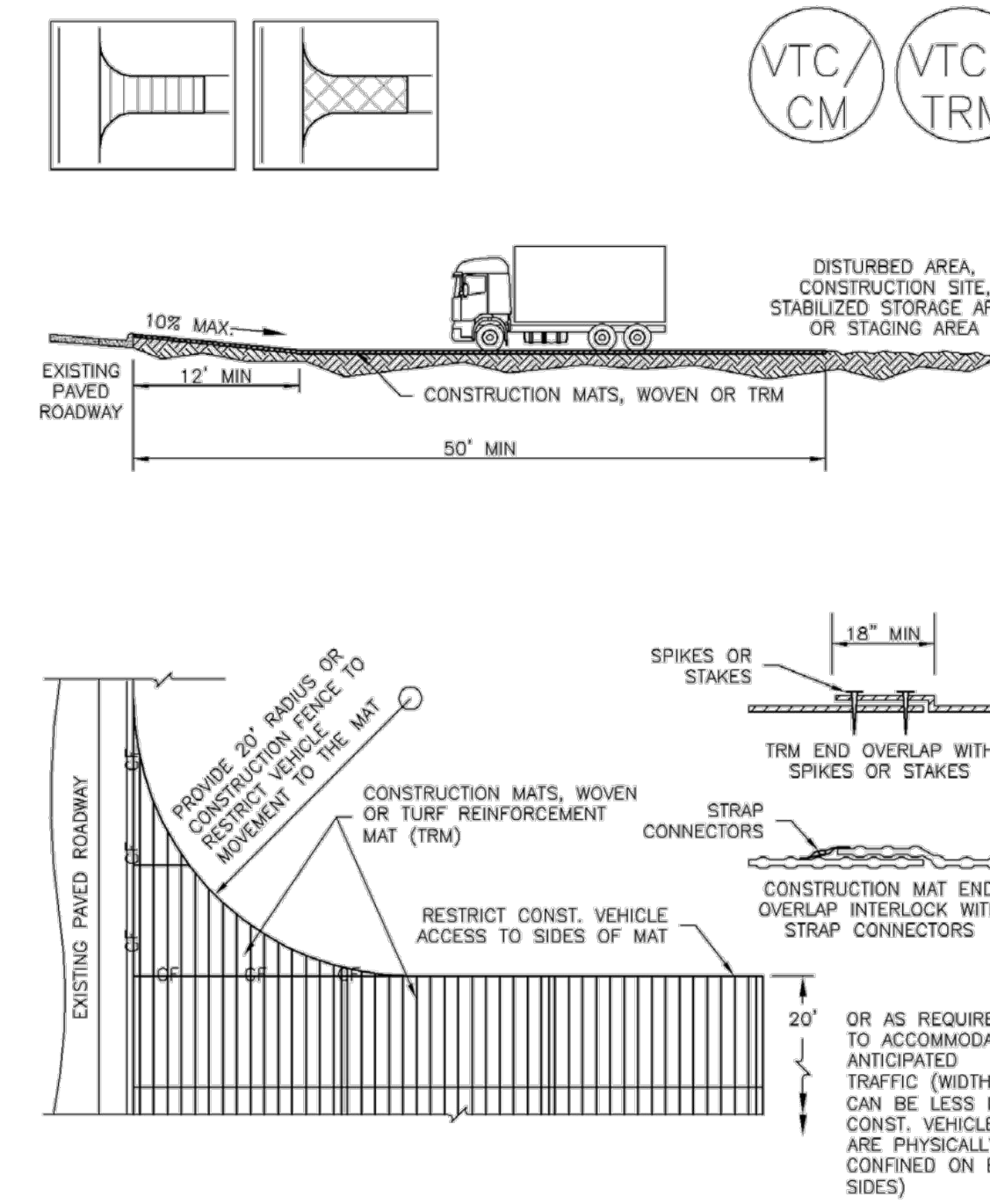
VTC-1. AGGREGATE VEHICLE TRACKING CONTROL

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



VTC-2. AGGREGATE VEHICLE TRACKING CONTROL WITH WASH RACK

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



VTC-3. VEHICLE TRACKING CONTROL W/ CONSTRUCTION MAT OR TURF REINFORCEMENT MAT (TRM)

November 2010 Urban Drainage and Flood Control District VTC-5  
Urban Storm Drainage Criteria Manual Volume 3

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

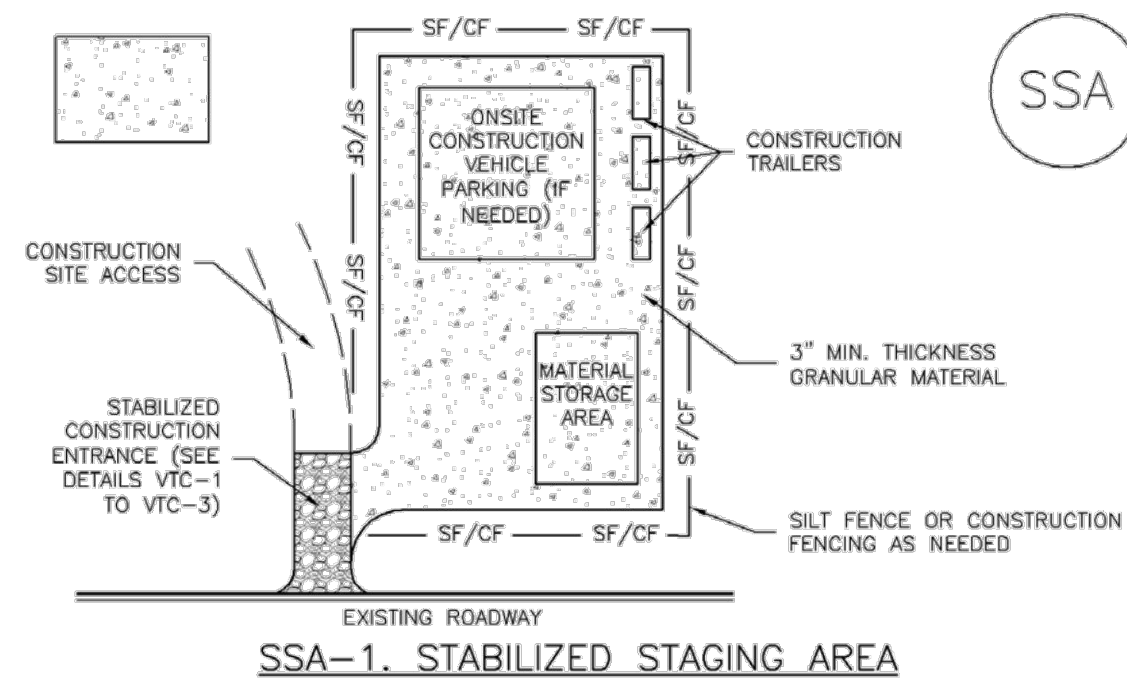
- SEE PLAN VIEW FOR:
  - LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
  - TYPE OF CONSTRUCTION ENTRANCE(S)/EXIT(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).
- CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.
- A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.
- STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
- A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.
- 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

- 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.
  - FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
  - WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
  - ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.
  - 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)

VTC-6 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

- SEE PLAN VIEW FOR:
  - LOCATION OF STAGING AREA(S).
  - CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
- STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
- STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
- THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
- UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.
- ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA MAINTENANCE NOTES

- 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.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- 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

SM-6 Stabilized Staging Area (SSA)

STABILIZED STAGING AREA MAINTENANCE NOTES

- STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.
  - 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, SEEDED 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)

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



Know what's below. Call before you dig.

DESIGNED BY: MJS  
CHECKED BY: RCP  
DRAWN BY: MJS

ISSUE DATE: 05-08-2023	
DATE	REVISION COMMENTS



OUTLOOK POWERS & GRINNELL  
GESC - DETAILS

PRELIMINARY  
NOT FOR  
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PROJECT #: 221206  
SHEET NUMBER

9

9 OF 14

FILE PATH: J:\221206\ENGINEERING\GESC - DETAILS\DWG LAYOUT.LAYOUT  
PLOTTED: MON 05/08/23 5:40:21P BY: TYLER WILSON

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**Description**

Mulching consists of evenly applying straw, hay, shredded wood mulch, rock, bark or compost to disturbed soils and securing the mulch by crimping, tackifiers, netting or other measures. Mulching helps reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing runoff. Although often applied in conjunction with temporary or permanent seeding, it can also be used for temporary stabilization of areas that cannot be reseeded due to seasonal constraints.



Photograph MU-1. An area that was recently seeded, mulched, and crimped.

Mulch can be applied either using standard mechanical dry application methods or using hydromulching equipment that hydraulically applies a slurry of water, wood fiber mulch, and often a tackifier.

**Appropriate Uses**

Use mulch in conjunction with seeding to help protect the seedbed and stabilize the soil. Mulch can also be used as a temporary cover on low to mild slopes to help temporarily stabilize disturbed areas where growing season constraints prevent effective reseeded. Disturbed areas should be properly mulched and tacked, or seeded, mulched and tacked promptly after final grade is reached (typically within no longer than 14 days) on portions of the site not otherwise permanently stabilized.

Standard dry mulching is encouraged in most jurisdictions; however, hydromulching may not be allowed in certain jurisdictions or may not be allowed near waterways.

Do not apply mulch during windy conditions.

**Design and Installation**

Prior to mulching, surface-roughen areas by rolling with a crimping or punching type roller or by track walking. Track walking should only be used where other methods are impractical because track walking with heavy equipment typically compacts the soil.

A variety of mulches can be used effectively at construction sites. Consider the following:

Mulch	
Functions	
Erosion Control	Yes
Sediment Control	Moderate
Site/Material Management	No

June 2012 Urban Drainage and Flood Control District MU-1  
Urban Storm Drainage Criteria Manual Volume 3

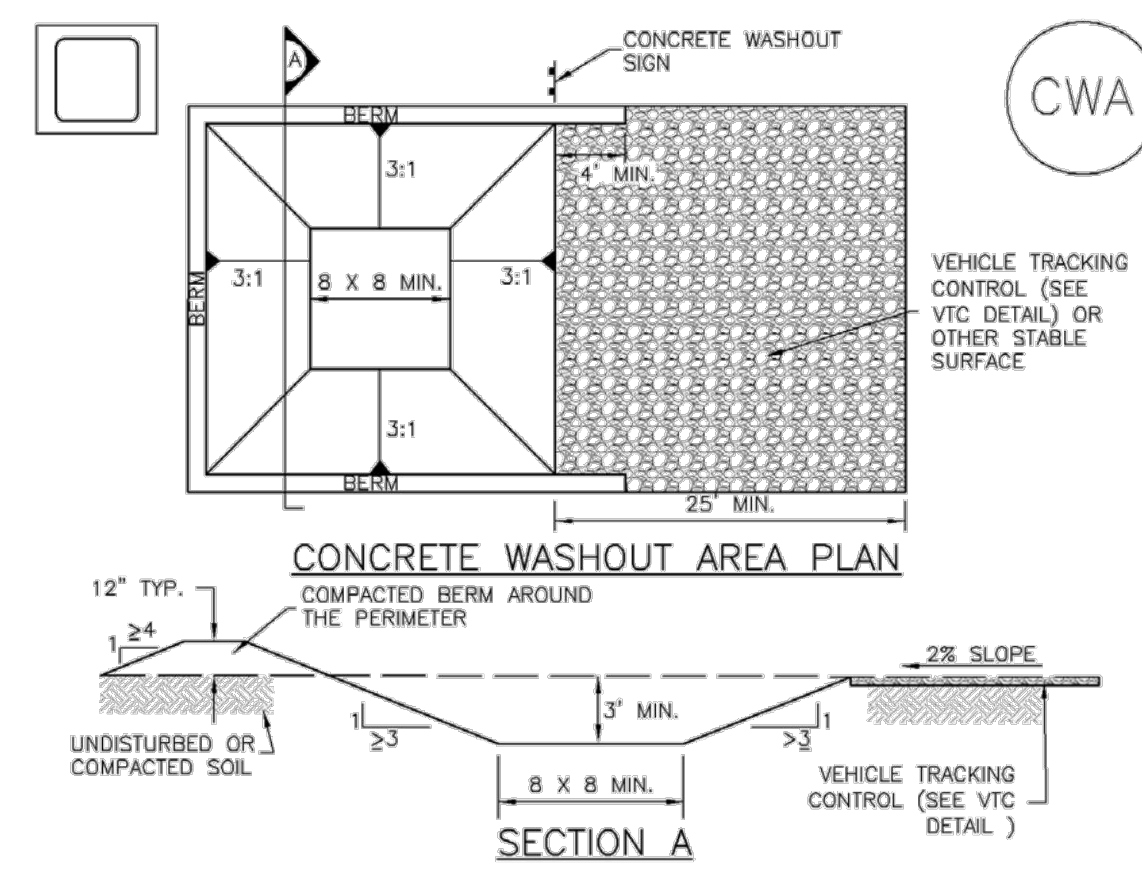
- Clean, weed-free and seed-free cereal grain straw should be applied evenly at a rate of 2 tons per acre and must be tacked or fastened by a method suitable for the condition of the site. Straw mulch must be anchored (and not merely placed) on the surface. This can be accomplished mechanically by crimping or with the aid of tackifiers or nets. Anchoring with a crimping implement is preferred, and is the recommended method for areas flatter than 3:1. Mechanical crimpers must be capable of tucking the long mulch fibers into the soil to a depth of 3 inches without cutting them. An agricultural disk, while not an ideal substitute, may work if the disk blades are dull or blunted and set vertically; however, the frame may have to be weighted to afford proper soil penetration.
- Grass hay may be used in place of straw; however, because hay is comprised of the entire plant including seed, mulching with hay may seed the site with non-native grass species which might in turn out-compete the native seed. Alternatively, native species of grass hay may be purchased, but can be difficult to find and are more expensive than straw. Purchasing and utilizing a certified weed-free straw is an easier and less costly mulching method. When using grass hay, follow the same guidelines as for straw (provided above).
- On small areas sheltered from the wind and heavy runoff, spraying a tackifier on the mulch is satisfactory for holding it in place. For steep slopes and special situations where greater control is needed, erosion control blankets anchored with stakes should be used instead of mulch.
- Hydraulic mulching consists of wood cellulose fibers mixed with water and a tackifying agent and should be applied at a rate of no less than 1,500 pounds per acre (1,425 lbs of fibers mixed with at least 75 lbs of tackifier) with a hydraulic mulcher. For steeper slopes, up to 2000 pounds per acre may be required for effective hydroseeding. Hydromulch typically requires up to 24 hours to dry; therefore, it should not be applied immediately prior to inclement weather. Application to roads, waterways and existing vegetation should be avoided.
- Erosion control mats, blankets, or nets are recommended to help stabilize steep slopes (generally 3:1 and steeper) and waterways. Depending on the product, these may be used alone or in conjunction with grass or straw mulch. Normally, use of these products will be restricted to relatively small areas. Biodegradable mats made of straw and jute, straw-coconut, coconut fiber, or excelsior can be used instead of mulch. (See the ECM/TRM BMP for more information.)

- Some tackifiers or binders may be used to anchor mulch. Check with the local jurisdiction for allowed tackifiers. Manufacturer's recommendations should be followed at all times. (See the Soil Binder BMP for more information on general types of tackifiers.)
- Rock can also be used as mulch. It provides protection of exposed soils to wind and water erosion and allows infiltration of precipitation. An aggregate base course can be spread on disturbed areas for temporary or permanent stabilization. The rock mulch layer should be thick enough to provide full coverage of exposed soil on the area it is applied.

**Maintenance and Removal**

After mulching, the bare ground surface should not be more than 10 percent exposed. Reapply mulch, as needed, to cover bare areas.

MU-2 Urban Drainage and Flood Control District June 2012  
Urban Storm Drainage Criteria Manual Volume 3



**CWA-1. CONCRETE WASHOUT AREA**

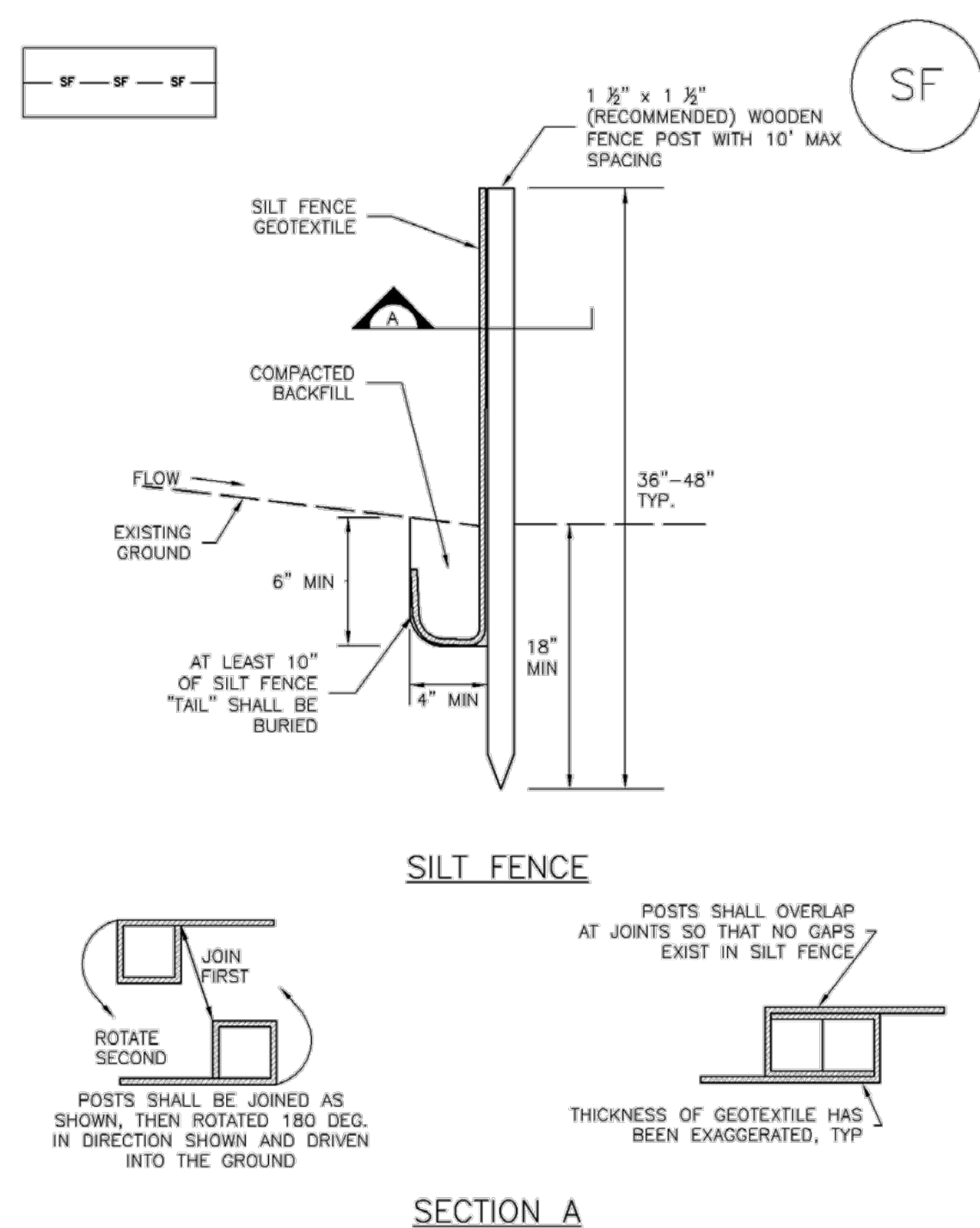
**CWA INSTALLATION NOTES**

- SEE PLAN VIEW FOR: -CWA INSTALLATION LOCATION.
- 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 (1.6 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.
- THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.
- 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.
- BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.
- VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.
- 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.
- USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

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

**Silt Fence (SF)**

**SC-1**



**SF-1. SILT FENCE**

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

**SC-1**

**Silt Fence (SF)**

**SILT FENCE INSTALLATION NOTES**

- 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.
- 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.
- 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.
- 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.
- 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.
- 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').
- SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

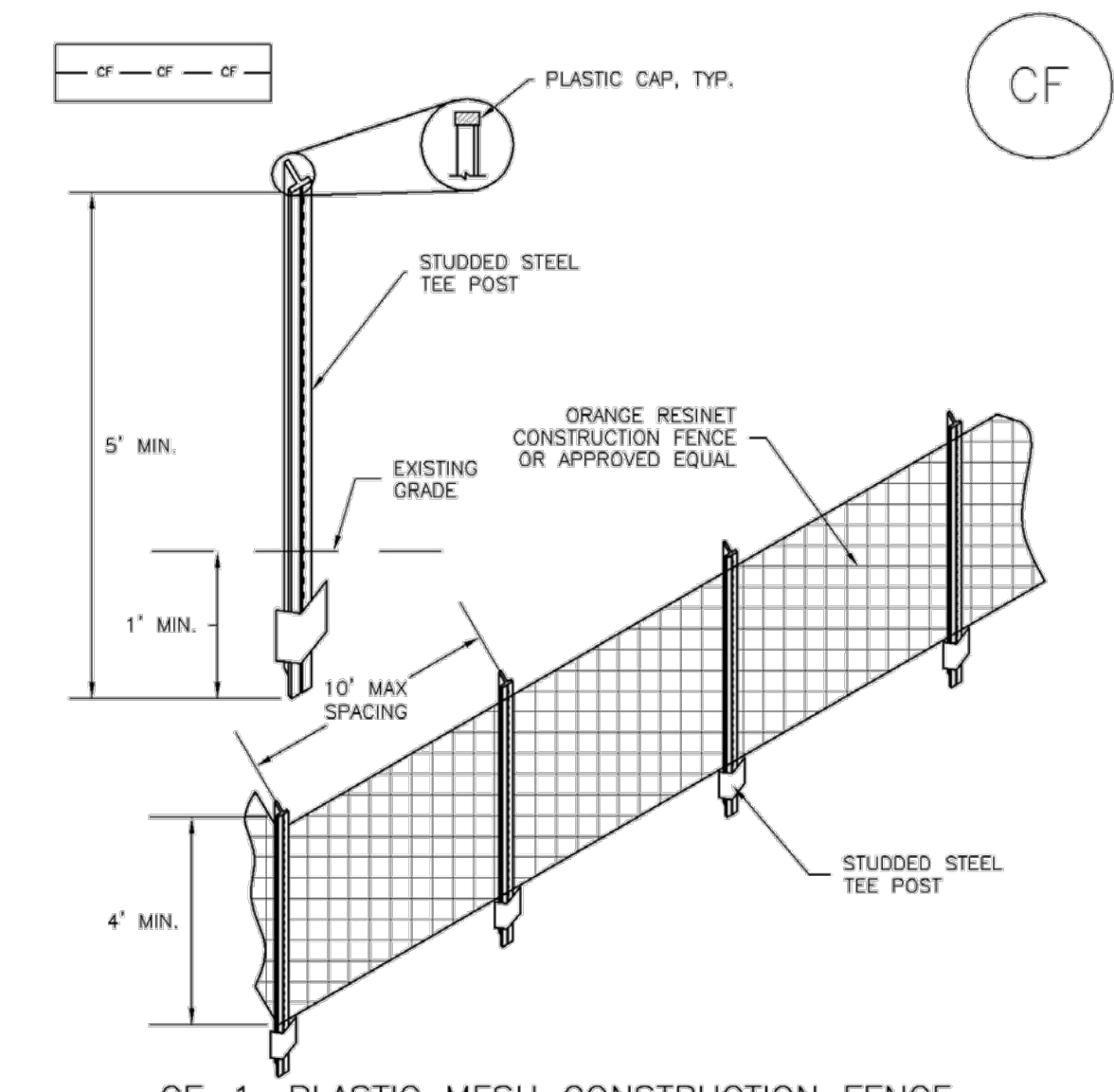
**SILT FENCE MAINTENANCE NOTES**

- 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.
  - FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
  - WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
  - 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".
  - REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.
  - 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.
  - WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.
- (DETAIL 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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**SM-3**

**Construction Fence (CF)**



**CF-1. PLASTIC MESH CONSTRUCTION FENCE**

**CONSTRUCTION FENCE INSTALLATION NOTES**

- SEE PLAN VIEW FOR: -LOCATION OF CONSTRUCTION FENCE.
- CONSTRUCTION FENCE SHOWN SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
- CONSTRUCTION FENCE SHALL BE COMPOSED OF ORANGE, CONTRACTOR-GRADE MATERIAL THAT IS AT LEAST 4' HIGH. METAL POSTS SHOULD HAVE A PLASTIC CAP FOR SAFETY.
- STUDDED STEEL TEE POSTS SHALL BE UTILIZED TO SUPPORT THE CONSTRUCTION FENCE. MAXIMUM SPACING FOR STEEL TEE POSTS SHALL BE 10'.
- CONSTRUCTION FENCE SHALL BE SECURELY FASTENED TO THE TOP, MIDDLE, AND BOTTOM OF EACH POST.

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**Construction Fence (CF)**

**SM-3**

**CONSTRUCTION FENCE MAINTENANCE NOTES**

- 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.
  - FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
  - WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
  - CONSTRUCTION FENCE SHALL BE REPAIRED OR REPLACED WHEN THERE ARE SIGNS OF DAMAGE SUCH AS RIPS OR SAGS. CONSTRUCTION FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
  - WHEN CONSTRUCTION FENCES ARE REMOVED, ALL DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE FENCE SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.
- (DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

November 2010 Urban Drainage and Flood Control District CF-3  
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CHECKED BY: RCP  
DRAWN BY: MJS

ISSUE DATE: 05-08-2023	
DATE	REVISION COMMENTS

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OUTLOOK POWERS & GRINNELL  
GESC - DETAILS

PRELIMINARY  
NOT FOR  
CONSTRUCTION

PROJECT #: 221206  
SHEET NUMBER  
**10**  
10 OF 14

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- IP-3. Rock Sock Inlet Protection for Sump/Area Inlet
- IP-4. Silt Fence Inlet Protection for Sump/Area Inlet
- IP-5. Over-excavation Inlet Protection
- IP-6. Straw Bale Inlet Protection for Sump/Area Inlet
- CIP-1. Culvert Inlet Protection

Proprietary inlet protection devices should be installed in accordance with manufacturer specifications. More information is provided below on selecting inlet protection for sump and on-grade locations.

**Inlets Located in a Sump**

When applying inlet protection in sump conditions, it is important that the inlet continue to function during larger runoff events. For curb inlets, the maximum height of the protective barrier should be lower than the top of the curb opening to allow overflow into the inlet during larger storms without excessive localized flooding. If the inlet protection height is greater than the curb elevation, particularly if the filter becomes clogged with sediment, runoff will not enter the inlet and may bypass it, possibly causing localized flooding, public safety issues, and downstream erosion and damage from bypassed flows.

Area inlets located in a sump setting can be protected through the use of silt fence, concrete block and rock socks (on paved surfaces), sediment control logs/straw wattles embedded in the adjacent soil and stacked around the area inlet (on pervious surfaces), over-excavation around the inlet, and proprietary products providing equivalent functions.

**Inlets Located on a Slope**

For curb and gutter inlets on paved sloping streets, block and rock sock inlet protection is recommended in conjunction with curb socks in the gutter leading to the inlet. For inlets located along unpaved roads, also see the Check Dam Fact Sheet.

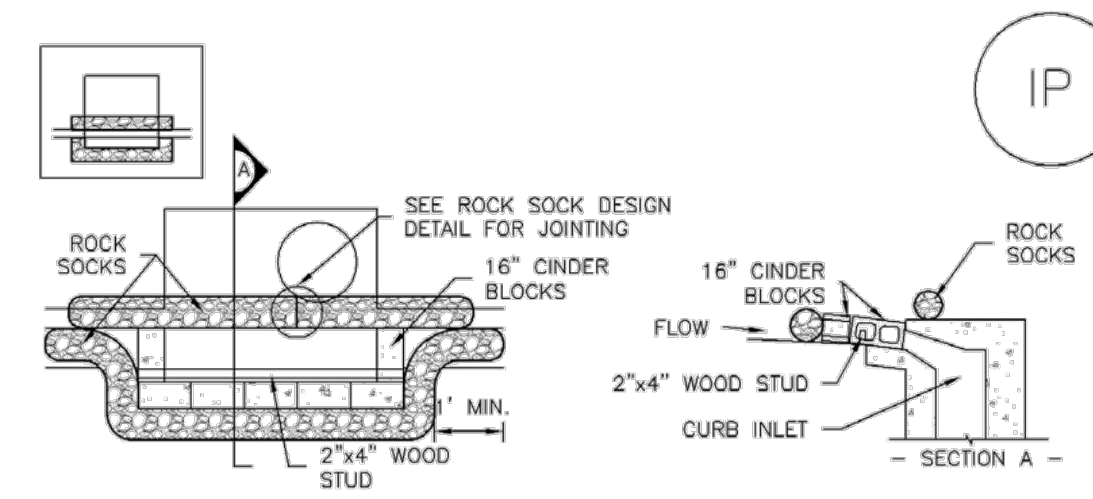
**Maintenance and Removal**

Inspect inlet protection frequently. Inspection and maintenance guidance includes:

- Inspect for tears that can result in sediment directly entering the inlet, as well as result in the contents of the BMP (e.g., gravel) washing into the inlet.
- Check for improper installation resulting in untreated flows bypassing the BMP and directly entering the inlet or bypassing to an unprotected downstream inlet. For example, silt fence that has not been properly trenched around the inlet can result in flows under the silt fence and directly into the inlet.
- Look for displaced BMPs that are no longer protecting the inlet. Displacement may occur following larger storm events that wash away or reposition the inlet protection. Traffic or equipment may also crush or displace the BMP.
- Monitor sediment accumulation upgradient of the inlet protection.

- Remove sediment accumulation from the area upstream of the inlet protection, as needed to maintain BMP effectiveness, typically when it reaches no more than half the storage capacity of the inlet protection. For silt fence, remove sediment when it accumulates to a depth of no more than 6 inches. Remove sediment accumulation from the area upstream of the inlet protection as needed to maintain the functionality of the BMP.
- Proprietary inlet protection devices should be inspected and maintained in accordance with manufacturer specifications. If proprietary inlet insert devices are used, sediment should be removed in a timely manner to prevent devices from breaking and spilling sediment into the storm drain.

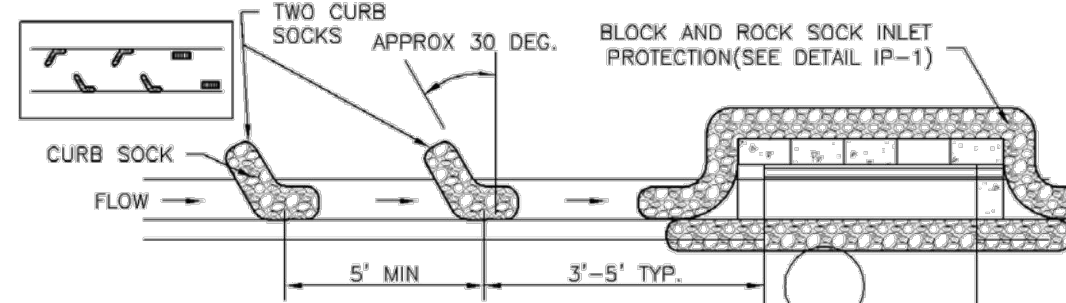
Inlet protection must be removed and properly disposed of when the drainage area for the inlet has reached final stabilization.



**IP-1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION**

**BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES**

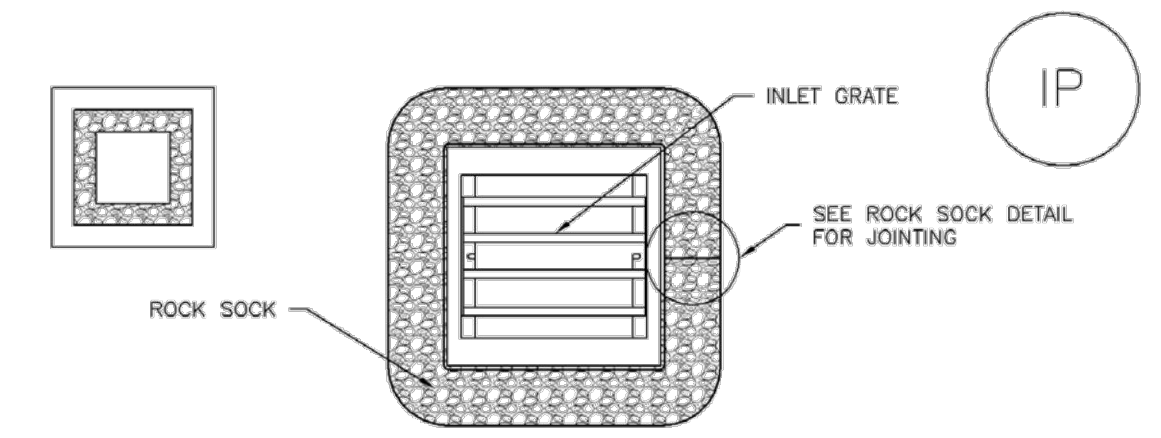
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. CONCRETE "ONDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.
3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



**IP-2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION**

**CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES**

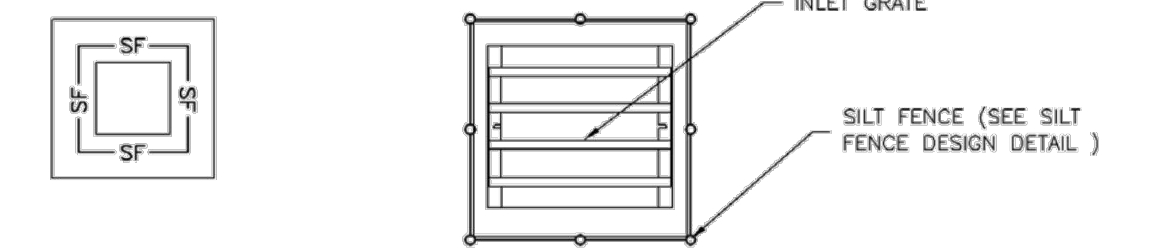
1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.
2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.
3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.
4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON-GRADE INLETS.



**IP-3. ROCK SOCK SUMP/AREA INLET PROTECTION**

**ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES**

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



**IP-4. SILT FENCE FOR SUMP INLET PROTECTION**

**SILT FENCE INLET PROTECTION INSTALLATION NOTES**

1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.
3. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.

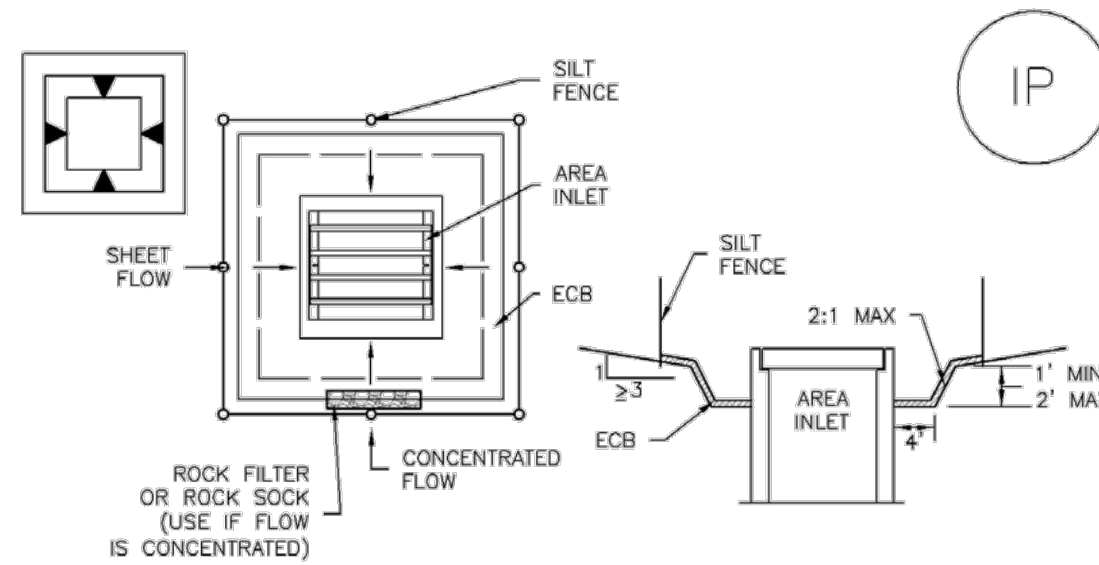
IP-2 Urban Drainage and Flood Control District August 2013  
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August 2013 Urban Drainage and Flood Control District IP-3  
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IP-4 Urban Drainage and Flood Control District August 2013  
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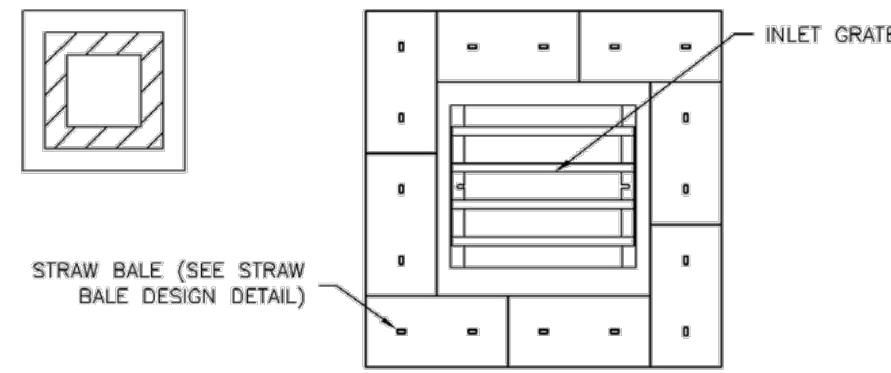
**SC-6 Inlet Protection (IP)**



**IP-5. OVEREXCAVATION INLET PROTECTION**

**OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES**

1. THIS FORM OF INLET PROTECTION IS PRIMARILY APPLICABLE FOR SITES THAT HAVE NOT YET REACHED FINAL GRADE AND SHOULD BE USED ONLY FOR INLETS WITH A RELATIVELY SMALL CONTRIBUTING DRAINAGE AREA.
2. WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 2:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.
3. SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.



**IP-6. STRAW BALES FOR SUMP INLET PROTECTION**

**STRAW BALES BARRIER INLET PROTECTION INSTALLATION NOTES**

1. SEE STRAW BALES DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.

IP-6 Urban Drainage and Flood Control District August 2013  
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**Inlet Protection (IP) SC-6**

**Description**

Inlet protection consists of permeable barriers installed around an inlet to filter runoff and remove sediment prior to entering a storm drain inlet. Inlet protection can be constructed from rock socks, sediment control logs, silt fence, block and rock socks, or other materials approved by the local jurisdiction. Area inlets can also be protected by over-excavating around the inlet to form a sediment trap.



**Photograph IP-1.** Inlet protection for a curb opening inlet.

**Appropriate Uses**

Install protection at storm sewer inlets that are operable during construction. Consider the potential for tracked-out sediment or temporary stockpile areas to contribute sediment to inlets when determining which inlets must be protected. This may include inlets in the general proximity of the construction area, not limited to downgradient inlets. Inlet protection is not a stand-alone BMP and should be used in conjunction with other upgradient BMPs.

**Design and Installation**

To function effectively, inlet protection measures must be installed to ensure that flows do not bypass the inlet protection and enter the storm drain without treatment. However, designs must also enable the inlet to function without completely blocking flows into the inlet in a manner that causes localized flooding. When selecting the type of inlet protection, consider factors such as type of inlet (e.g., curb or area, sump or on-grade conditions), traffic, anticipated flows, ability to secure the BMP properly, safety and other site-specific conditions. For example, block and rock socks will be better suited to a curb and gutter along a roadway, as opposed to silt fence or sediment control logs, which cannot be properly secured in a curb and gutter setting, but are effective area inlet protection measures.

Several inlet protection designs are provided in the Design Details. Additionally, a variety of proprietary products are available for inlet protection that may be approved for use by local governments. If proprietary products are used, design details and installation procedures from the manufacturer must be followed. Regardless of the type of inlet protection selected, inlet protection is most effective when combined with other BMPs such as curb socks and check dams. Inlet protection is often the last barrier before runoff enters the storm sewer or receiving water.

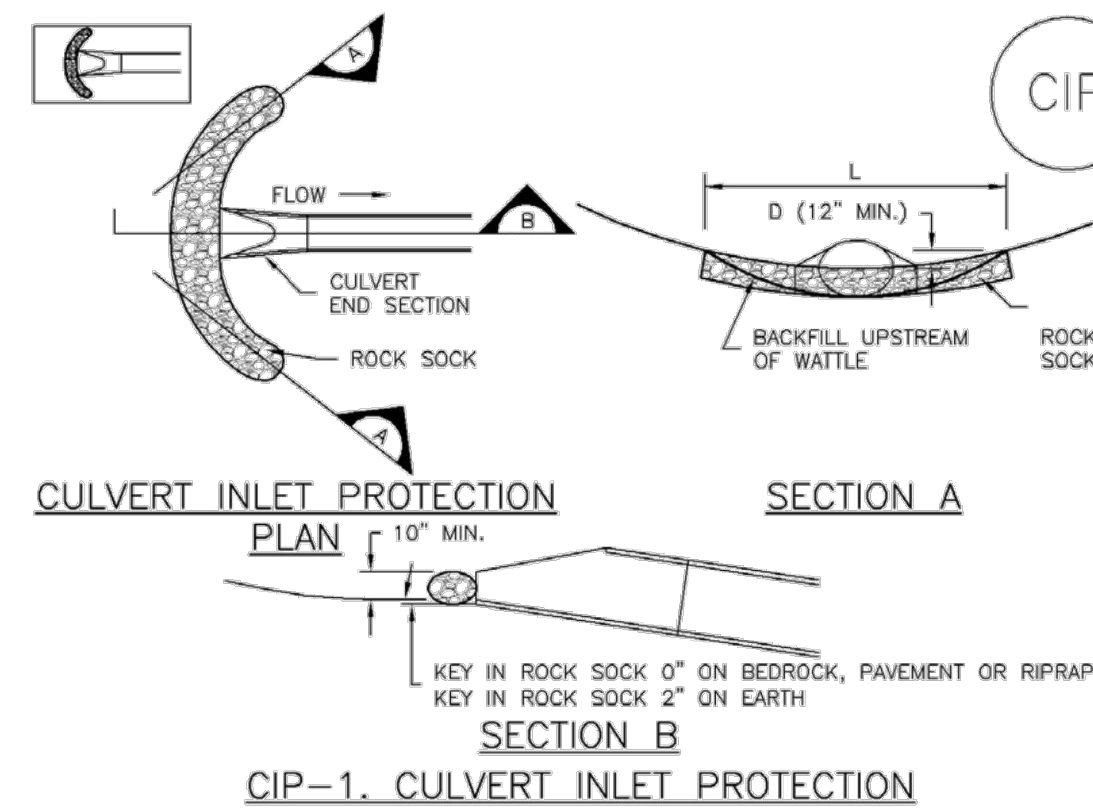
Design details with notes are provided for these forms of inlet protection:

- IP-1. Block and Rock Sock Inlet Protection for Sump or On-grade Inlets
- IP-2. Curb (Rock) Socks Upstream of Inlet Protection, On-grade Inlets

Inlet Protection (various forms)	
Functions	
Erosion Control	No
Sediment Control	Yes
Site/Material Management	No

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**Inlet Protection (IP) SC-6**



**CIP-1. CULVERT INLET PROTECTION**

**CULVERT INLET PROTECTION INSTALLATION NOTES**

1. SEE PLAN VIEW FOR -LOCATION OF CULVERT INLET PROTECTION.
2. SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

**CULVERT INLET 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. SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS 1/2 THE HEIGHT OF THE ROCK SOCK.
5. CULVERT INLET PROTECTION SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM AURORA, 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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**SC-6 Inlet Protection (IP)**

**GENERAL INLET PROTECTION INSTALLATION NOTES**

1. SEE PLAN VIEW FOR:
  - LOCATION OF INLET PROTECTION.
  - TYPE OF INLET PROTECTION (IP-1, IP-2, IP-3, IP-4, IP-5, IP-6)
2. INLET PROTECTION SHALL BE INSTALLED PROMPTLY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS). IF A RAINFALL/RUNOFF EVENT IS FORECAST, INSTALL INLET PROTECTION PRIOR TO ONSET OF EVENT.
3. 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.

**INLET 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. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR 1/2 OF THE HEIGHT FOR STRAW BALES.
5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED, UNLESS THE LOCAL JURISDICTION APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.
6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, 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.

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF INLET PROTECTION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY PROPRIETARY INLET PROTECTION METHODS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY INLET PROTECTION; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

NOTE: SOME MUNICIPALITIES DISCOURAGE OR PROHIBIT THE USE OF STRAW BALES FOR INLET PROTECTION. CHECK WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALES INLET PROTECTION IS ACCEPTABLE.

IP-8 Urban Drainage and Flood Control District August 2013  
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**Evergreen**  
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PROJECT #: 221206  
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**11**  
11 OF 14



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**Rock Sock (RS)**

**SC-5**

**Description**

A rock sock is constructed of gravel that has been wrapped by wire mesh or a geotextile to form an elongated cylindrical filter. Rock socks are typically used either as a perimeter control or as part of inlet protection. When placed at angles in the curb line, rock socks are typically referred to as curb socks. Rock socks are intended to trap sediment from stormwater runoff that flows onto roadways as a result of construction activities.



**Photograph RS-1.** Rock socks placed at regular intervals in a curb line can help reduce sediment loading to storm sewer inlets. Rock socks can also be used as perimeter controls.

**Appropriate Uses**

Rock socks can be used at the perimeter of a disturbed area to control localized sediment loading. A benefit of rock socks as opposed to other perimeter controls is that they do not have to be trenched or staked into the ground; therefore, they are often used on roadway construction projects where paved surfaces are present.

Use rock socks in inlet protection applications when the construction of a roadway is substantially complete and the roadway has been directly connected to a receiving storm system.

**Design and Installation**

When rock socks are used as perimeter controls, the maximum recommended tributary drainage area per 100 lineal feet of rock socks is approximately 0.25 acres with disturbed slope length of up to 150 feet and a tributary slope gradient no steeper than 3:1. A rock sock design detail and notes are provided in Detail RS-1. Also see the Inlet Protection Fact Sheet for design and installation guidance when rock socks are used for inlet protection and in the curb line.

When placed in the gutter adjacent to a curb, rock socks should protrude no more than two feet from the curb in order for traffic to pass safely. If located in a high traffic area, place construction markers to alert drivers and street maintenance workers of their presence.

**Maintenance and Removal**

Rock socks are susceptible to displacement and breaking due to vehicle traffic. Inspect rock socks for damage and repair or replace as necessary. Remove sediment by sweeping or vacuuming as needed to maintain the functionality of the BMP, typically when sediment has accumulated behind the rock sock to one-half of the sock's height.

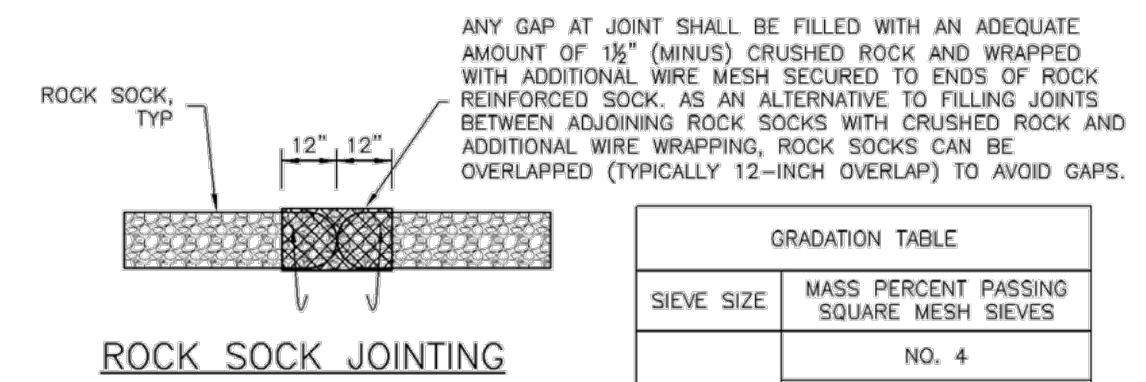
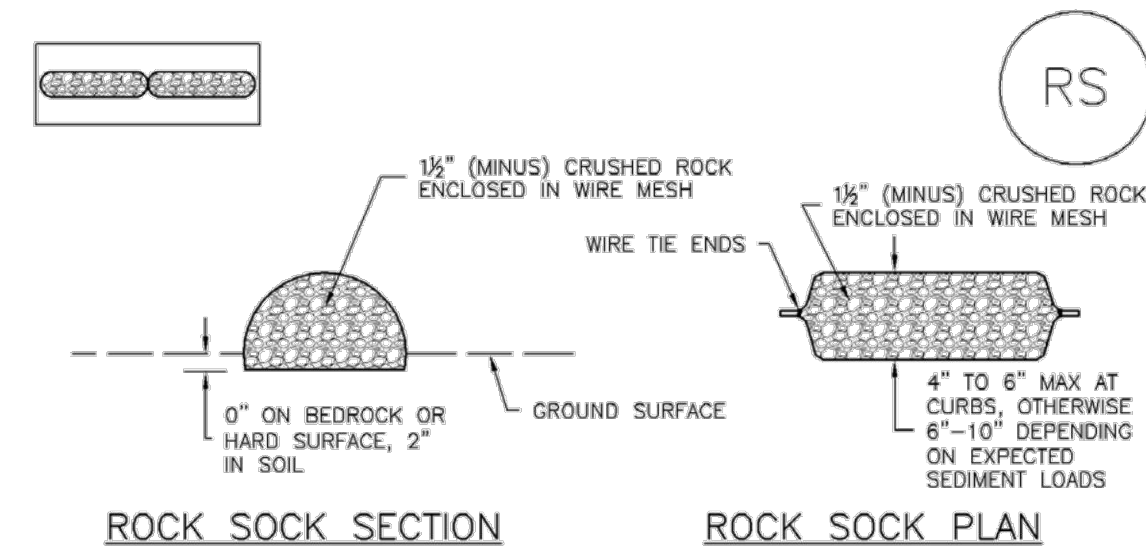
Once upstream stabilization is complete, rock socks and accumulated sediment should be removed and properly disposed.

Rock Sock	
Functions	
Erosion Control	No
Sediment Control	Yes
Site/Material Management	No

November 2010 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 RS-1

**SC-5**

**Rock Sock (RS)**



**ROCK SOCK INSTALLATION NOTES**

- SEE PLAN VIEW FOR: -LOCATION(S) OF ROCK SOCKS.
- CRUSHED ROCK SHALL BE 1/2" (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (1/2" MINUS).
- WIRE MESH SHALL BE FABRICATED OF 10 GAGE POULTRY MESH, OR EQUIVALENT, WITH A MAXIMUM OPENING OF 1/2", RECOMMENDED MINIMUM ROLL WIDTH OF 48"
- WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6" CENTERS ALONG ALL JOINTS AND AT 2" CENTERS ON ENDS OF SOCKS.
- SOME MUNICIPALITIES MAY ALLOW THE USE OF FILTER FABRIC AS AN ALTERNATIVE TO WIRE MESH FOR THE ROCK ENCLOSURE.

GRADATION TABLE	
SIEVE SIZE	MASS PERCENT PASSING SQUARE MESH SIEVES
NO. 4	
2"	100
1 1/2"	90 - 100
1"	20 - 55
3/4"	0 - 15
5/8"	0 - 5

MATCHES SPECIFICATIONS FOR NO. 4 COARSE AGGREGATE FOR CONCRETE PER AASHTO M43. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.

**RS-1. ROCK SOCK PERIMETER CONTROL**

RS-2 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 November 2010

**Rock Sock (RS)**

**SC-5**

**ROCK SOCK MAINTENANCE NOTES**

- 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.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, OR DAMAGED BEYOND REPAIR.
- SEDIMENT ACCUMULATED UPSTREAM OF ROCK SOCKS SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP. TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 1/2 OF THE HEIGHT OF THE ROCK SOCK.
- ROCK SOCKS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
- WHEN ROCK SOCKS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, 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.

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF ROCK SOCK INSTALLATION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY OTHER, SIMILAR PROPRIETARY PRODUCTS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY PROTECTION PRODUCTS. HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

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

Provide standard detail for stockpile protection.

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<p>Know what's below. Call before you dig.</p>	ISSUE DATE: 05-08-2023 DATE REVISION COMMENTS	<p>1120 Lincoln Street, Suite 1000                  Denver, Colorado 80203                  P: 303.623.6300 F: 303.623.6311                  HarrisKocherSmith.com</p>	<p>Development   Services   Investments</p>	OUTLOOK POWERS & GRINNELL GESC - DETAILS	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">PRELIMINARY NOT FOR CONSTRUCTION</p>	PROJECT #: 221206 SHEET NUMBER
	DESIGNED BY: MJS CHECKED BY: RCP DRAWN BY: MJS					13 13 OF 14

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

**Description**

A sediment basin is a temporary pond built on a construction site to capture eroded or disturbed soil transported in storm runoff prior to discharge from the site. Sediment basins are designed to capture site runoff and slowly release it to allow time for settling of sediment prior to discharge. Sediment basins are often constructed in locations that will later be modified to serve as post-construction stormwater basins.



Photograph SB-1. Sediment basin at the toe of a slope. Photo courtesy of WWE.

**Appropriate Uses**

Most large construction sites (typically greater than 2 acres) will require one or more sediment basins for effective management of construction site runoff. On linear construction projects, sediment basins may be impractical; instead, sediment traps or other combinations of BMPs may be more appropriate.

Sediment basins should not be used as stand-alone sediment controls. Erosion and other sediment controls should also be implemented upstream.

When feasible, the sediment basin should be installed in the same location where a permanent post-construction detention pond will be located.

**Design and Installation**

The design procedure for a sediment basin includes these steps:

- Basin Storage Volume:** Provide a storage volume of at least 3,600 cubic feet per acre of drainage area. To the extent practical, undisturbed and/or off-site areas should be diverted around sediment basins to prevent "clean" runoff from mixing with runoff from disturbed areas. For undisturbed areas (both on-site and off-site) that cannot be diverted around the sediment basin, provide a minimum of 500 ft<sup>3</sup>/acre of storage for undeveloped (but stable) off-site areas in addition to the 3,600 ft<sup>3</sup>/acre for disturbed areas. For stable, developed areas that cannot be diverted around the sediment basin, storage volume requirements are summarized in Table SB-1.

- Basin Geometry:** Design basin with a minimum length-to-width ratio of 2:1 (L:W). If this cannot be achieved because of site space constraints, baffling may be required to extend the effective distance between the inflow point(s) and the outlet to minimize short-circuiting.

- Dam Embankment:** It is recommended that embankment slopes be 4:1 (H:V) or flatter and no steeper than 3:1 (H:V) in any location.

Sediment Basins	
Functions	
Erosion Control	No
Sediment Control	Yes
Site/Material Management	No

- Inflow Structure:** For concentrated flow entering the basin, provide energy dissipation at the point of inflow.

Table SB-1. Additional Volume Requirements for Undisturbed and Developed Tributary Areas Draining through Sediment Basins

Imperviousness (%)	Additional Storage Volume (ft <sup>3</sup> ) Per Acre of Tributary Area
Undeveloped	500
10	800
20	1230
30	1600
40	2030
50	2470
60	2980
70	3560
80	4360
90	5300
100	6460

- Outlet Works:** The outlet pipe shall extend through the embankment at a minimum slope of 0.5 percent. Outlet works can be designed using one of the following approaches:

- Riser Pipe (Simplified Detail):** Detail SB-1 provides a simplified design for basins treating no more than 15 acres.
- Orifice Plate or Riser Pipe:** Follow the design criteria for Full Spectrum Detention outlets in the EDB Fact Sheet provided in Chapter 4 of this manual for sizing of outlet perforations with an emptying time of approximately 72 hours. In lieu of the trash rack, pack uniformly sized 1½- to 2-inch gravel in front of the plate or surrounding the riser pipe. This gravel will need to be cleaned out frequently during the construction period as sediment accumulates within it. The gravel pack will need to be removed and disposed of following construction to reclaim the basin for use as a permanent detention facility. If the basin will be used as a permanent extended detention basin for the site, a trash rack will need to be installed once contributing drainage areas have been stabilized and the gravel pack and accumulated sediment have been removed.
- Floating Skimmer:** If a floating skimmer is used, install it using manufacturer's recommendations. Illustration SB-1 provides an illustration of a Faircloth Skimmer Floating Outlet™, one of the more commonly used floating skimmer outlets. A skimmer should be designed to release the design volume in no less than 48 hours. The use of a floating skimmer outlet can increase the sediment capture efficiency of a basin significantly. A floating outlet continually decants cleanest water off the surface of the pond and releases cleaner water than would discharge from a perforated riser pipe or plate.

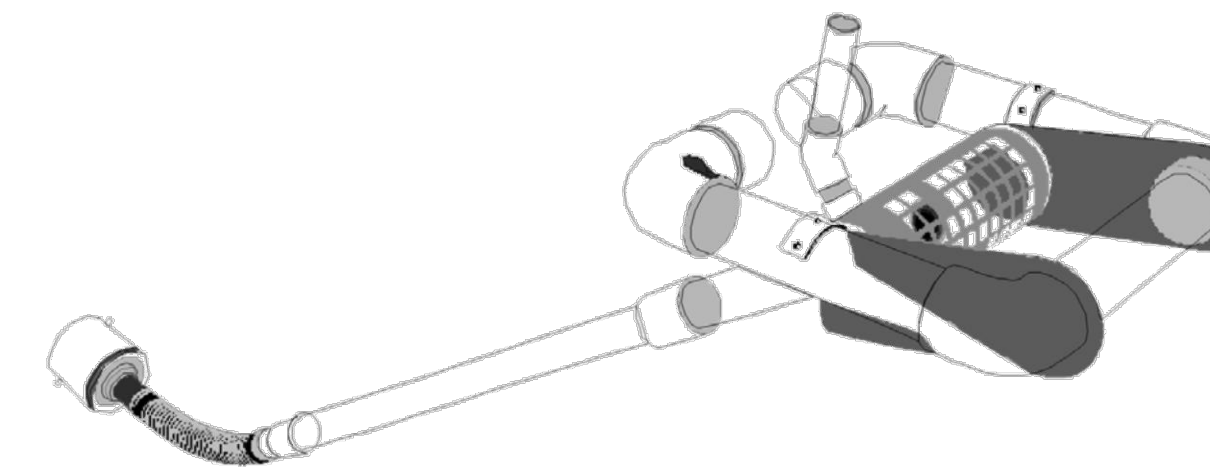


Illustration SB-1. Outlet structure for a temporary sediment basin - Faircloth Skimmer Floating Outlet. Illustration courtesy of J. W. Faircloth & Sons, Inc., FairclothSkimmer.com.

- Outlet Protection and Spillway:** Consider all flow paths for runoff leaving the basin, including protection at the typical point of discharge as well as overtopping.

- Outlet Protection:** Outlet protection should be provided where the velocity of flow will exceed the maximum permissible velocity of the material of the waterway into which discharge occurs. This may require the use of a riprap apron at the outlet location and/or other measures to keep the waterway from eroding.
- Emergency Spillway:** Provide a stabilized emergency overflow spillway for rainstorms that exceed the capacity of the sediment basin volume and its outlet. Protect basin embankments from erosion and overtopping. If the sediment basin will be converted to a permanent detention basin, design and construct the emergency spillway(s) as required for the permanent facility. If the sediment basin will not become a permanent detention basin, it may be possible to substitute a heavy polyvinyl membrane or properly bedded rock cover to line the spillway and downstream embankment, depending on the height, slope, and width of the embankments.

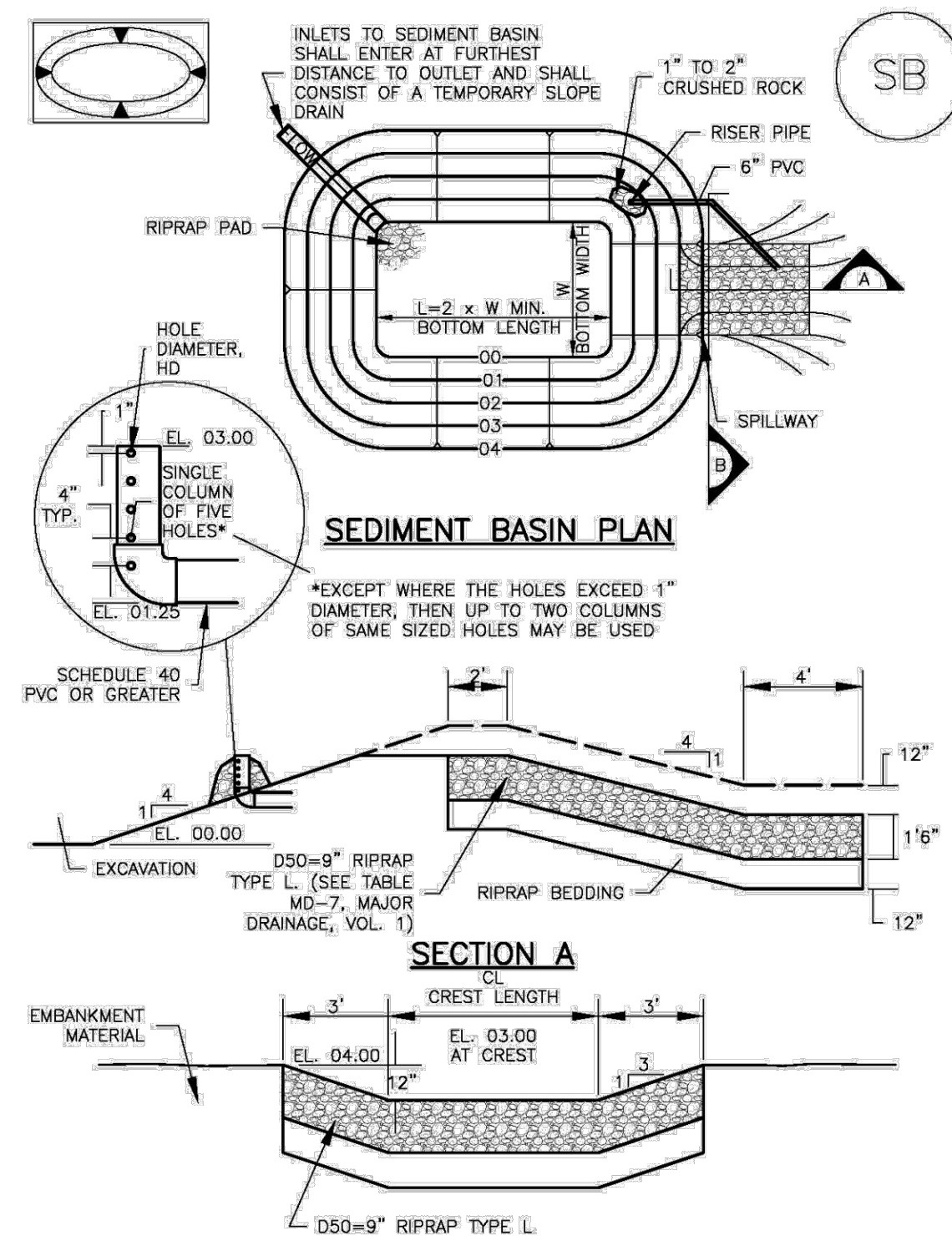
**Maintenance and Removal**

Maintenance activities include the following:

- Dredge sediment from the basin, as needed to maintain BMP effectiveness, typically when the design storage volume is no more than one-third filled with sediment.
- Inspect the sediment basin embankments for stability and seepage.
- Inspect the inlet and outlet of the basin, repair damage, and remove debris. Remove, clean and replace the gravel around the outlet on a regular basis to remove the accumulated sediment within it and keep the outlet functioning.
- Be aware that removal of a sediment basin may require dewatering and associated permit requirements.
- Do not remove a sediment basin until the upstream area has been stabilized with vegetation.

Final disposition of the sediment basin depends on whether the basin will be converted to a permanent post-construction stormwater basin or whether the basin area will be returned to grade. For basins being converted to permanent detention basins, remove accumulated sediment and reconfigure the basin and outlet to meet the requirements of the final design for the detention facility. If the sediment basin is not to be used as a permanent detention facility, fill the excavated area with soil and stabilize with vegetation.

**Sediment Basin (SB) SC-7**



**SC-7 Sediment Basin (SB)**

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 ½	2	½
2	21	3	¾
3	28	5	1
4	33 ½	6	1 ¼
5	38 ½	8	1 ½
6	43	9	1 ¾
7	47 ½	11	2
8	51	12	2 ¼
9	55	13	2 ½
10	58 ½	15	2 ¾
11	61	16	3
12	64	18	3 ¼
13	67 ½	19	3 ½
14	70 ½	21	3 ¾
15	73 ½	22	4

- SEDIMENT BASIN INSTALLATION NOTES**
- 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.
  - FOR STANDARD BASIN, BOTTOM DIMENSION MAY BE MODIFIED AS LONG AS BOTTOM AREA IS NOT REDUCED.
  - SEDIMENT BASINS SHALL BE INSTALLED PRIOR TO ANY OTHER LAND-DISTURBING ACTIVITY THAT RELIES ON BASINS AS A STORMWATER CONTROL.
  - 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.
  - EMBANKMENT MATERIAL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.
  - PIPE SCH 40 OR GREATER SHALL BE USED.
  - 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.

**Sediment Basin (SB) SC-7**

- SEDIMENT BASIN MAINTENANCE NOTES**
- 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.
  - FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
  - WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
  - 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).
  - SEDIMENT BASINS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS ACCEPTED BY THE LOCAL JURISDICTION.
  - WHEN SEDIMENT BASINS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDS AND MULCHED 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.

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