

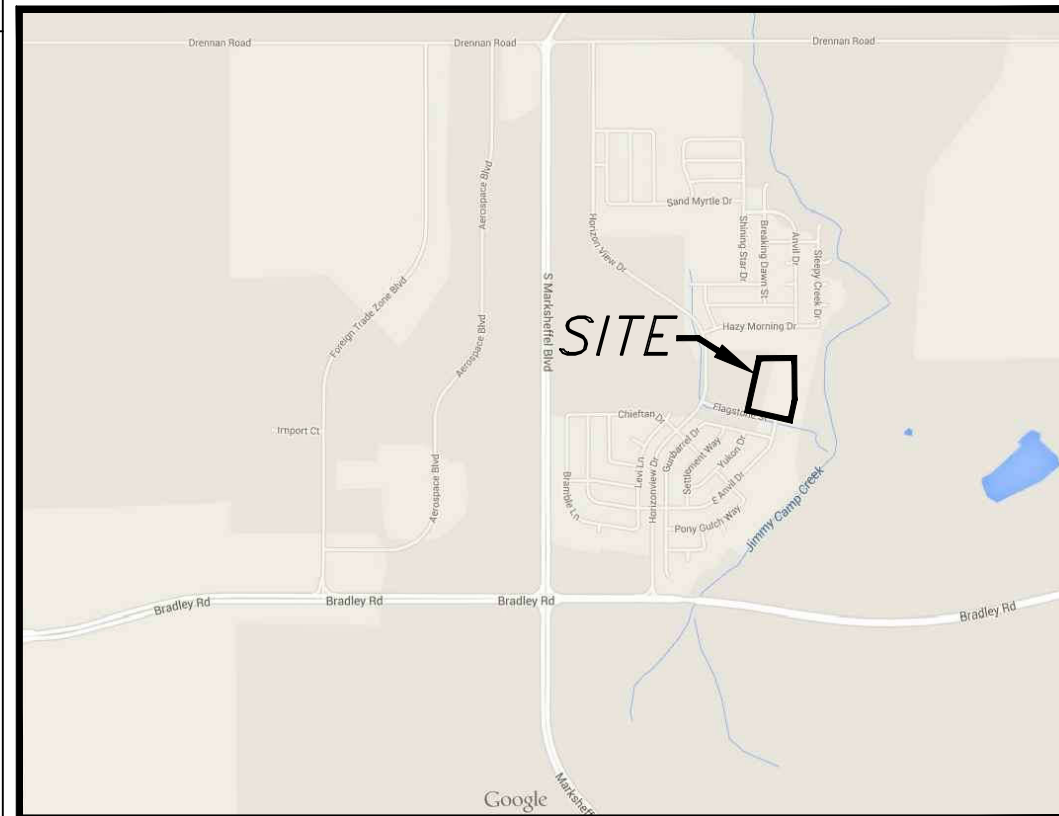
COLORADO CENTRE METROPOLITAN DISTRICT ADMINISTRATION BUILDING - SITE DEVELOPMENT PLAN

PCD File No. PPR-21-51

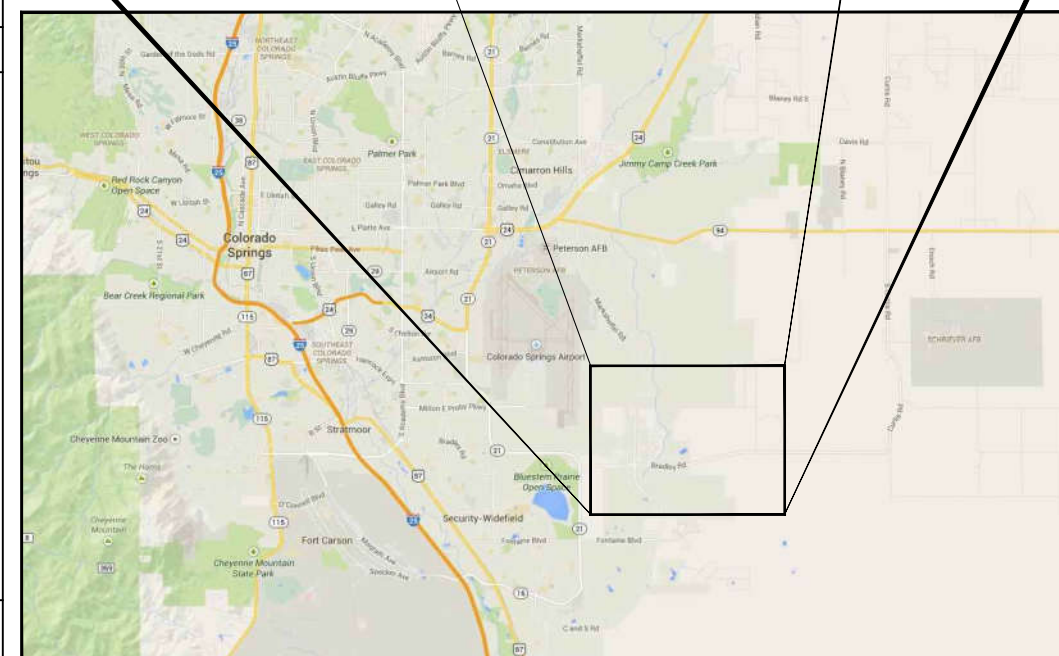
GRADING & EROSION CONTROL PLAN

LEGEND

	EX PROPERTY LINE
	EX RIGHT-OF-WAY
	EX BARBED WIRE FENCE
	EX SPLIT RAIL FENCE
	EX CHAIN LINK FENCE
	EX CONTOURS-MAJOR
	EX CONTOURS-MINOR
	EX FIRE HYDRANT
	EX WATER LINE
	EX SANITARY SEWER LINE
	EX FIRE HYDRANT
	CONTOURS-MAJOR
	CONTOURS-MINOR
	SILT FENCE (INITIAL/INTERIM)
	EX VEGETATION (SIZE VARIES)
	PARKING LOT ISLAND LIGHT POLE
	VEHICLE TRACKING PAD (INITIAL/INTERIM)
	CHECK DAM (FINAL)
	EROSION CONTROL BLANKET (FINAL)
	CURB SOCK (INTERIM)
	STAGING AREA (INITIAL/INTERIM)
	CONCRETE WASHOUT (INITIAL/INTERIM)
	RIPRAP (FINAL)
	AREA OF CUT
	AREA OF FILL
	PRE-DEVELOPED FLOW DIRECTION
	DEVELOPED FLOW DIRECTION



VICINITY MAP
N.T.S.



LOCATION MAP
N.T.S.

SHEET INDEX

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SIGNATURE BLOCKS

ENGINEER OF RECORD:

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 ON MY PART IN PREPARING THIS PLAN.

RYAN M. MANGINO, P.E.
PROFESSIONAL ENGINEER
NO. 43304
5/22/23

5/22/23
DATE

OWNER'S STATEMENT:

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

Alvaro J. Testa, District Manager

06/28/23
DATE

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 APPROVAL OF THIS DOCUMENT, ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA MANUAL VOLUMES 1 AND 2, AND ENGINEERING CRITERIA MANUAL, AS AMENDED.

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.

APPROVED
Engineering Department

JOSHUA PALMER, P.E.
COUNTY ENGINEER / ECM ADMINISTRATOR

06/29/2023 3:01:22 PM

EPC Department of Public Works

PRE-EXCAVATION CHECKLIST

PRE-EXCAVATION CHECKLIST	COLOR CODE FOR MARKING UNDERGROUND UTILITY LINES
<input type="checkbox"/> Gas and Other Utility Lines Shown on Construction Plans	PROPOSED EXCAVATION
<input type="checkbox"/> Utility Notification Center of Colorado (UNCC)-Call at Least Two (2) Business Days Ahead-1-800-922-1987	TEMPORARY SURVEY MARKINGS
<input type="checkbox"/> Utilities <u>Located & Marked</u> on the Ground	ELECTRIC
<input type="checkbox"/> Employees Briefed on Marking and Color Codes*	GAS, OIL, STEAM
<input type="checkbox"/> Employees Trained on Excavation and Safety Procedures for Natural Gas Lines	COMMUNICATION, CATV
<input type="checkbox"/> When Excavation Approaches Gas Lines, Employees Must Expose Lines by Careful Probing and Hand-Digging	POTABLE WATER
	IRRIGATION, RECLAIMED WATER, SLURRY LINES
	SEWER



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 PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND EL PASO COUNTY WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH COUNTY STAFF.
5. CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF ACTIVITIES THAT COULD CONTRIBUTE POLLUTANTS TO STORMWATER. CONTROL MEASURES FOR ALL SLOPES, CHANNELS, 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 PERMANENT 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 ECM ADMINISTRATOR PRIOR TO IMPLEMENTATION.
10. EARTH DISTURBANCES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY MINIMIZE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME. PRE-EXISTING VEGETATION SHALL BE PROTECTED AND MAINTAINED WITHIN 50 HORIZONTAL FEET OF A WATERS OF THE STATE UNLESS SHOWN TO BE INFEASIBLE AND SPECIFICALLY REQUESTED AND APPROVED.
11. COMPACTION OF SOIL MUST BE PREVENTED IN AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES OR WHERE FINAL STABILIZATION WILL BE ACHIEVED BY VEGETATIVE COVER. AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES SHALL ALSO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION UNTIL FINAL STABILIZATION IS ACHIEVED. IF COMPACTION PREVENTION IS NOT FEASIBLE DUE TO SITE CONSTRAINTS, ALL AREAS DESIGNATED FOR INFILTRATION AND VEGETATION CONTROL MEASURES MUST BE 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.
13. CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL BE DISCHARGE 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 3:1 AND STEEPER.
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, AND 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 ECM ADMINISTRATOR. IN GRANTING APPROVAL FOR THE USE OF SUCH CHEMICAL(S), SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.
22. BULK STORAGE OF ALLOWED PETROLEUM PRODUCTS OR OTHER ALLOWED LIQUID CHEMICALS IN EXCESS OF 55 GALLONS SHALL REQUIRE ADEQUATE SECONDARY CONTAINMENT PROTECTION TO CONTAIN ALL SPILLS 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, DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (1041, NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND OTHER LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, LOCAL, OR COUNTY AGENCIES, THE MOST RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.
25. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE ONLY AT APPROVED CONSTRUCTION ACCESS POINTS.
26. PRIOR TO CONSTRUCTION, THE PERMITTEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.
27. 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 WAS PREPARED BY EARTH ENGINEERING CONSULTANTS, LLC (DATED 09/08/14) 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 APPLICATIONS MATERIALS, CONTACT:

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL DIVISION
WQCD - PERMITS
4300 CHERRY CREEK DRIVE SOUTH
DENVER, CO 80246-1530
ATTN: PERMITS UNIT

EROSION CONTROL NOTES (CONT'D):

- 30. SEED AND MULCH ALL DISTURBED AREAS THAT WILL NOT HAVE IMPROVEMENTS (I.E. PAVED ROADS, RIPRAP, ETC.).
31. NO BATCH PLANTS ARE PROPOSED AS A PART OF THIS PROJECT.
32. THERE ARE NO STREAM CROSSINGS WITHIN THE LIMITS OF THIS PROJECT.
33. BMPs MUST BE INSTALLED PRIOR TO LAND DISTURBANCE. SEE LEGEND FOR PHASED BMPs (INITIAL/INTERIM/FINAL) FOR THIS PROJECT.
34. PROPOSED BUILDING SITE/LANDSCAPING IS LOCATED OUTSIDE OF FLOODPLAIN.
35. J-HOOKS TO BE INSTALLED WHEREVER SILT FENCE IS INSTALLED PERPENDICULAR TO CONTOURS.
36. THE PARTIES RESPONSIBLE FOR THIS PLAN HAVE FAMILIARIZED THEMSELVES WITH ALL CURRENT ACCESSIBILITY CRITERIA AND SPECIFICATIONS AND THE PROPOSED PLAN REFLECTS ALL SITE ELEMENTS REQUIRED BY THE APPLICABLE ADA DESIGN STANDARDS AND GUIDELINES AS PUBLISHED BY THE UNITED STATES DEPARTMENT OF JUSTICE. APPROVAL OF THIS PLAN BY EL PASO COUNTY DOES NOT ASSURE COMPLIANCE WITH THE ADA OR ANY REGULATIONS OR GUIDELINES ENACTED OR PROMULGATED UNDER OR WITH RESPECT TO SUCH LAWS.
37. EXISTING VEGETATION CONSISTS OF NATIVE GRASSES/WEEDS WITH APPROXIMATELY 75% GROUND COVER.

TIMING, CONSTRUCTION STAGING, AND SEQUENCING:

EXPECTED START DATE: MAY 2023
INSTALL TEMPORARY EROSION CONTROL: 2-4 DAYS
- PERIMETER SILT FENCING
- VEHICLE TRACKING CONTROL PAD
- CONCRETE WASHOUT
- CURB SOCK

ROUGH GRADING - 5 DAYS
INSTALL FINAL SITE IMPROVEMENTS - 10 MONTHS
REMOVE TEMPORARY EROSION CONTROL - 5 DAYS

EARTHWORK SUMMARY:

PROPOSED SITE:
CUT - 2,785.8 CY
FILL - 2,308.8 (*1.15) = 2,655.1 CY
NET - 130.7 CY CUT

DISTURBED AREA - 155,313 SF, 3.57 AC

EROSION CONTROL FACILITIES:

SILT FENCE - 1,402 LF
VEHICLE TRACKING PAD (VT) - 1
CURB SOCK LOCATIONS - 1
ROCK CHECK DAMS - 4
CONCRETE WASHOUT - 1
EROSION CONTROL BLANKET - 216 SY
TEMPORARY SEDIMENT BASIN - 1

Table with 2 columns: AREA OF TRACT, AREA OF BUILDING (EXISTING TREATMENT FACILITY), AREA OF BUILDING (PROPOSED ADMIN. BLDG.), % TRACT COVERAGE WITH IMPROVEMENTS (INCLUDING PROPOSED ADMIN. BLDG.), TOTAL IMPERVIOUS AREA (PROPOSED IMPROVEMENTS). Values include 336,719, 3,727±, 4,542, 15%, and 36,376.

GENERAL GRASS SEEDING NOTES:

- 1. AN ESTABLISHED STAND OF GRASS IN THIS COLORADO CLIMATE IS DEFINED AS 2 TO 3 PLANTS IN A SQUARE FOOT AREA.
2. GRASSES MUST BE PLANTED IN A FIRM, WEED-FREE SEEDBED, PRIMARILY BECAUSE SUCCESS DEPENDS UPON GOOD SOIL-TO-SEED CONTACT. IF YOU ARE BROADCASTING SEED, IT MUST BE RAKED INTO THE SOIL. NATIVE GRASS SEED IS PLANTED ONLY 1/4 TO 1/2 INCHES DEEP. LOOSE SOIL DRIES OUT QUICKLY AT THE SURFACE COMPARED TO FIRM SOIL.
3. MOST GRASSES SHOULD BE PLANTED WITH A GRASS DRILL, BUT BROADCASTING CAN ALSO BE USED. A DOUBLE DISC DRILL WITH AN AGITATOR IS RECOMMENDED FOR SEEDING. IF USING A GRASS DRILL, THE AMOUNT OF SEED NEEDED WILL BE CUT IN HALF SINCE THE METHOD OF PLANTING IS MORE EFFICIENT.
4. IN MOST CASES, A GRASS SEEDLING NEEDS NO FERTILIZER DURING ESTABLISHMENT. HOWEVER, ON DISTURBED SITES, SUCH AS AREAS AROUND A NEW HOUSE, WATER LINES, TRENCHING, ETC., SOIL AMENDMENTS MAY BE REQUIRED TO MAINTAIN THE VIGOR OF THE GRASSES.
5. RECOMMENDED SEEDING DATES FOR COLORADO ARE NOVEMBER 1 TO MAY 1, WHEN THE SOIL IS NOT FROZEN. GRASSES SHOULD BE SEEDDED WHEN SOIL MOISTURE AND TEMPERATURE ARE OPTIMUM FOR GERMINATION. GRASSES ARE DESIGNATED EITHER 'COOL' OR 'WARM' SEASON BASED ON THEIR GROWTH CYCLE. COOL-SEASON GRASSES CAN BE PLANTED WHEN TEMPERATURES ARE COOLER AND DAY LENGTHS ARE SHORT. WARM-SEASON GRASSES NEED WARMER TEMPERATURES AND LONGER DAY LENGTHS TO GROW.
6. A PROPER SEEDBED IS FIRM AND FREE OF COMPETING VEGETATION. CORRECT FIRMNESS IS WHEN AN ADULT FOOTPRINT IS ONLY SLIGHTLY VISIBLE ON THE PREPARED BED PRIOR TO THE SEEDING OPERATION. THE SEEDBED CAN BE FIRMED, IF NEEDED, BY PULLING A COMMERCIAL OR HOMEMADE PACKER OR ROLLER. A FIRM SEEDBED IS ESSENTIAL FOR PROPER SEEDING DEPTH. A LOOSE, FLUFFY BED WILL PLACE SEEDS TOO DEEP FOR PROPER GERMINATION.
7. SEEDING NATIVE GRASSES IN A SUITABLE COVER CROP IS RECOMMENDED. A SUITABLE COVER CROP DECREASES EVAPORATION TO RETAIN SOIL MOISTURE, AND KEEPS SOIL TEMPERATURES LOWER BECAUSE OF SHADING. IT PROTECTS YOUNG GRASS SEEDLINGS FROM STRONG WINDS, COLLECTS SNOW DURING WINTER, AND MINIMIZES THE WEED PROBLEM. THE COVER CROP SHOULD BE PLANTED IN THE SPRING MAY 15 THROUGH JULY 15 BUT PREFERABLY BEFORE JUNE 15. GRASS IS SEEDDED DIRECTLY INTO THE STANDING STUBBLE IN THE FALL. IF YOU ARE HAYING THE COVER CROP, LEAVE 18 INCHES ON SANDY SOIL AND 12 INCHES ON LOAMY OR HEAVIER SOILS. RECOMMENDED COVER CROPS ARE STERILE FORAGE SORGHUM, LONG-SEASON MILO, MILLET, OATS, SUDAN GRASS, ETC.
8. MOST GROWERS OF NATIVE GRASSES ARE CONVINCED THEY HAVE A FAILURE THE FIRST YEAR. MOST OF THE TIME THEY ACTUALLY HAVE A GOOD STAND. NATIVE GRASSES GROW DOWN, NOT UP, DURING THE ESTABLISHMENT YEAR. THE TOP GROWTH NORMALLY AMOUNTS TO A NARROW, STRAIGHT LEAF UNTIL LATE SUMMER. THESE SEEDLINGS CAN BE HARD TO SEE, EVEN FOR THE EXPERIENCED GROWER. BE PATIENT. DO NOT GRAZE FOR AT LEAST 2 TO 3 GROWING SEASONS AND AFTER THE GRASS IS ESTABLISHED.

MINIMUM BEST MANAGEMENT PRACTICES ELEMENTS:

- STEP 1- EROSION AND SEDIMENT CONTROL
INSTALL SEDIMENT TRAPPING DEVICES (PERIMETER CONTROLS) PRIOR TO THE START OF CONSTRUCTION.
STEP 2- SPILL PREVENTION AND RESPONSE
STEP 3- MATERIAL MANAGEMENT
MATERIAL AND EQUIPMENT STORAGE AREAS SHALL BE SECURE AND CONTAINED TO PREVENT DISCHARGE OF ANY MATERIAL IN RUNOFF. WASTE SHALL BE CONTAINED AND DISPOSED OF PROPERLY. MAINTAIN BMP'S DURING BUILDING AND UTILITY CONSTRUCTION.
STEP 4- INSPECTION AND MAINTENANCE (SEE EROSION CONTROL NOTES)
STEP 5- INSTALL FINAL STABILIZATION - PAVEMENT, LANDSCAPING, EROSION CONTROL BLANKETS, AND SEEDING.
STEP 6- REMOVE TEMPORARY CONTROLS - SILT FENCING, CURB SOCK AFTER PERMANENT FEATURES ARE INSTALLED.

FINAL STABILIZATION AND LONG-TERM STORMWATER MANAGEMENT:

FINAL STABILIZATION MEASURES INCLUDE PAVEMENT, PARTIAL LANDSCAPE, AND REVEGETATION.

ALL AREAS DISTURBED BY EARTHWORK SHALL BE PERMANENTLY REVEGETATED WITH GRASS MIX BY DRILL SEEDING. SEED MIX FOR THIS PROJECT SHALL BE AS FOLLOWS (SEE BELOW):

Table with 4 columns: TYPE, COMMON NAME, RECOMMENDED VARIETY, % OF SEED MIX, PLS RATE PER ACRE, DOUBLE IF BROADCAST. Includes varieties like SHOTGUN MIX, BLUESTEM, BIG, GRAMA, BLUE, GREEN NEEDLEGRASS, WHEATGRASS, WESTERN, GRAMA, SIDEOATS, SWITCHGRASS, PRAIRIE SANDREED, YELLOW INDIANGRASS.



COLORADO CENTRE METROPOLITAN DISTRICT
ADMINISTRATIVE BUILDING - SITE DEVELOPMENT PLAN
GRADING & EROSION CONTROL NOTES

Revisions table with columns: NO., DESCRIPTION, BY, APP., DATE. Contains 7 revision entries.

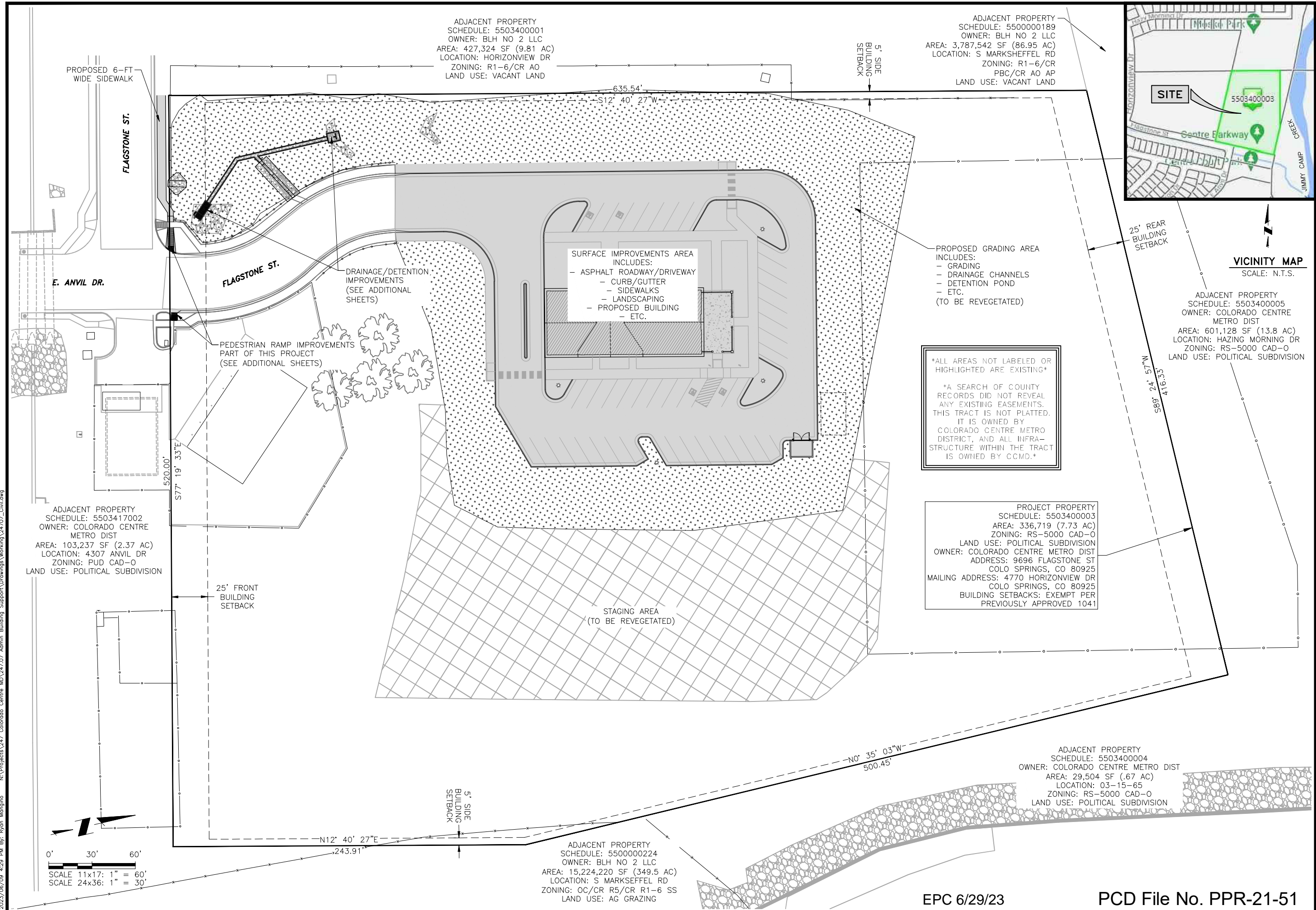
100% DESIGN



Project No.: 247.07
Date: 01/03/23
Design: RMM
Drawn: GCM
Check: RMM

C1
SHEET 1 OF 16

2023/06/09 4:29 PM By: Ryan Mangino N:\Projects\247 Colorado Centre MD\247.07 Admin Building Support\Drawings\Working\24707_Civil.dwg



ADJACENT PROPERTY
 SCHEDULE: 5503400001
 OWNER: BLH NO 2 LLC
 AREA: 427,324 SF (9.81 AC)
 LOCATION: HORIZONVIEW DR
 ZONING: R1-6/CR AO
 LAND USE: VACANT LAND

ADJACENT PROPERTY
 SCHEDULE: 550000189
 OWNER: BLH NO 2 LLC
 AREA: 3,787,542 SF (86.95 AC)
 LOCATION: S MARKSHEFFEL RD
 ZONING: R1-6/CR
 PBC/CR AO AP
 LAND USE: VACANT LAND

ADJACENT PROPERTY
 SCHEDULE: 5503417002
 OWNER: COLORADO CENTRE
 METRO DIST
 AREA: 103,237 SF (2.37 AC)
 LOCATION: 4307 ANVIL DR
 ZONING: PUD CAD-0
 LAND USE: POLITICAL SUBDIVISION

ADJACENT PROPERTY
 SCHEDULE: 5503400005
 OWNER: COLORADO CENTRE
 METRO DIST
 AREA: 601,128 SF (13.8 AC)
 LOCATION: HAZING MORNING DR
 ZONING: RS-5000 CAD-0
 LAND USE: POLITICAL SUBDIVISION

*ALL AREAS NOT LABELED OR
 HIGHLIGHTED ARE EXISTING*

*A SEARCH OF COUNTY
 RECORDS DID NOT REVEAL
 ANY EXISTING EASEMENTS.
 THIS TRACT IS NOT PLATTED.
 IT IS OWNED BY
 COLORADO CENTRE METRO
 DISTRICT, AND ALL INFRA-
 STRUCTURE WITHIN THE TRACT
 IS OWNED BY CCMD.*

PROJECT PROPERTY
 SCHEDULE: 5503400003
 AREA: 336,719 (7.73 AC)
 ZONING: RS-5000 CAD-0
 LAND USE: POLITICAL SUBDIVISION
 OWNER: COLORADO CENTRE METRO DIST
 ADDRESS: 9696 FLAGSTONE ST
 COLO SPRINGS, CO 80925
 MAILING ADDRESS: 4770 HORIZONVIEW DR
 COLO SPRINGS, CO 80925
 BUILDING SETBACKS: EXEMPT PER
 PREVIOUSLY APPROVED 1041

SURFACE IMPROVEMENTS AREA
 INCLUDES:
 - ASPHALT ROADWAY/DRIVEWAY
 - CURB/GUTTER
 - SIDEWALKS
 - LANDSCAPING
 - PROPOSED BUILDING
 - ETC.

DRAINAGE/DETENTION
 IMPROVEMENTS
 (SEE ADDITIONAL
 SHEETS)

PEDESTRIAN RAMP IMPROVEMENTS
 PART OF THIS PROJECT
 (SEE ADDITIONAL SHEETS)

STAGING AREA
 (TO BE REVEGETATED)

0' 30' 60'
 SCALE 11x17: 1" = 60'
 SCALE 24x36: 1" = 30'

ADJACENT PROPERTY
 SCHEDULE: 5503400004
 OWNER: COLORADO CENTRE METRO DIST
 AREA: 29,504 SF (.67 AC)
 LOCATION: 03-15-65
 ZONING: RS-5000 CAD-0
 LAND USE: POLITICAL SUBDIVISION

ADJACENT PROPERTY
 SCHEDULE: 550000224
 OWNER: BLH NO 2 LLC
 AREA: 15,224,220 SF (349.5 AC)
 LOCATION: S MARKSHEFFEL RD
 ZONING: OC/CR R5/CR R1-6 SS
 LAND USE: AG GRAZING



VICINITY MAP
 SCALE: N.T.S.

JDS-HYDRO a Division of **RESPEC**
 5540 TECH CENTER DR SUITE 100
 COLORADO SPRINGS, COLORADO 80919
 (719) 227-0072

DISCLAIMER: THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS. ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO JDS-HYDRO, A DIVISION OF RESPEC. JDS-HYDRO ASSUMES NO LIABILITY FOR UNAUTHORIZED CHANGES AND/OR REVISIONS MADE TO PLANS.

COLORADO CENTRE METROPOLITAN DISTRICT
 ADMINISTRATIVE BUILDING - SITE DEVELOPMENT PLAN
 ADJACENT PROPERTY OWNERSHIP &
 PROPOSED IMPROVEMENTS EXHIBIT

NO.	DESCRIPTION	BY	APP.	DATE
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C2
 SHEET 2 OF 16

EPC 6/29/23

PCD File No. PPR-21-51

LEGEND

- EX PROPERTY LINE
- - - EX RIGHT-OF-WAY
- x - x - EX BARBED WIRE FENCE
- □ - EX SPLIT RAIL FENCE
- ○ - EX CHAIN LINK FENCE
- 5830 - EX CONTOURS-MAJOR
- - - EX CONTOURS-MINOR
- ☀ EX FIRE HYDRANT
- - - EX WATER LINE
- - - EX SANITARY SEWER LINE
- ☀ EX FIRE HYDRANT
- 5900 - CONTOURS-MAJOR
- - - CONTOURS-MINOR
- ~ SF ~ SILT FENCE (INITIAL/INTERIM)
- ☼ EX VEGETATION (SIZE VARIES)
- ⊙ PARKING LOT ISLAND LIGHT POLE
- ⊙ VEHICLE TRACKING PAD (INITIAL/INTERIM)
- ⊙ CD-1: CHECK DAM (FINAL)
- ⊙ ECB-1: EROSION CONTROL BLANKET (FINAL)
- ⊙ CURB SOCK (INTERIM)
- ▨ STAGING AREA (INITIAL/INTERIM)
- ▨ CONCRETE WASHOUT (INITIAL/INTERIM)
- ▨ RR-1: RIPRAP (FINAL)
- █ AREA OF CUT
- █ AREA OF FILL
- PRE-DEVELOPED FLOW DIRECTION
- DEVELOPED FLOW DIRECTION



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 Drawn: GCM
 Check: RMM

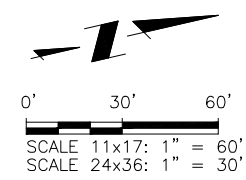
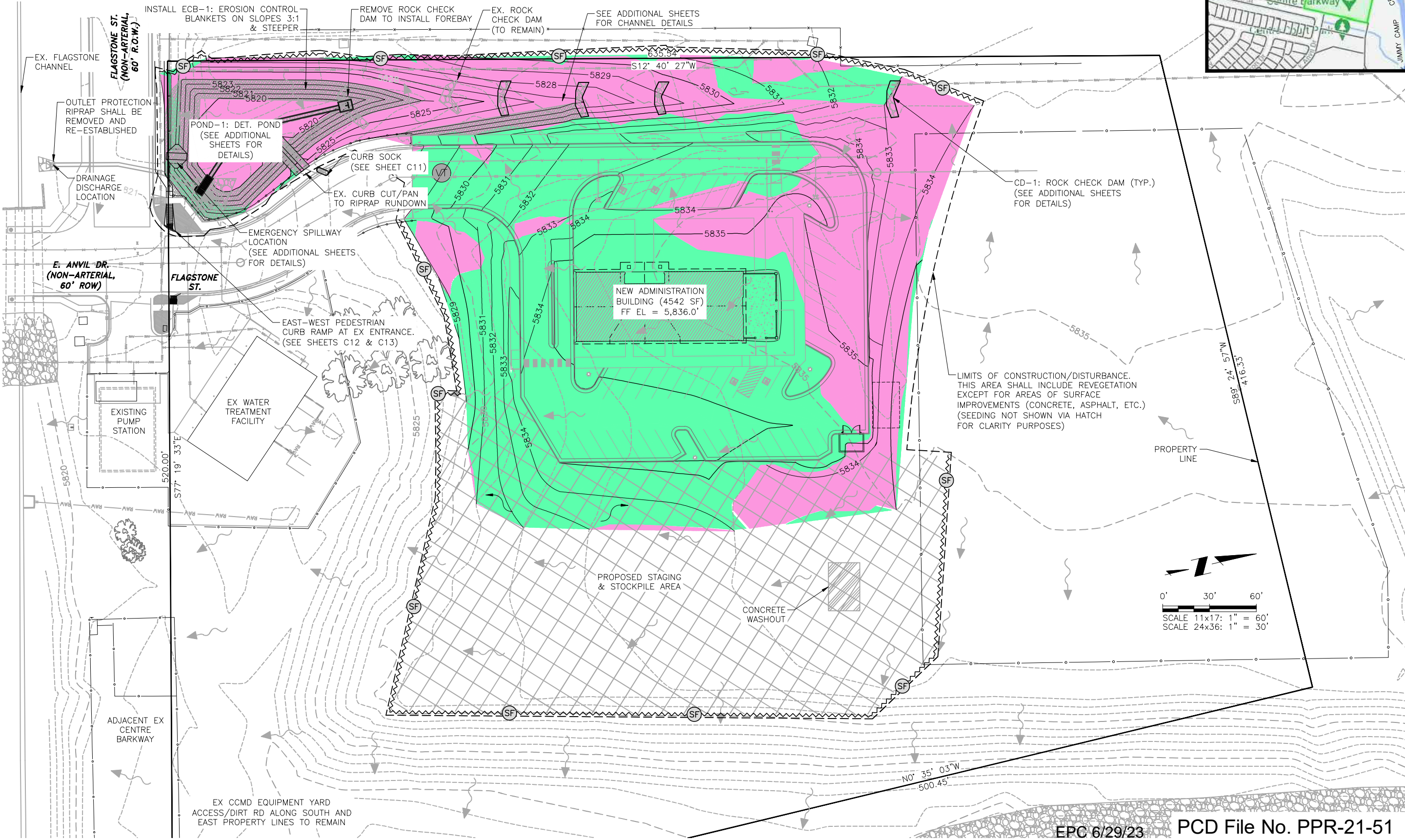
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 SHEET 3 OF 16

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EPC 6/29/23
 PCD File No. PPR-21-51

LEGEND

- EX PROPERTY LINE
- - - EX RIGHT-OF-WAY
- x-x- EX BARBED WIRE FENCE
- EX SPLIT RAIL FENCE
- EX CHAIN LINK FENCE
- 5830- EX CONTOURS-MAJOR
- - - EX CONTOURS-MINOR
- ☀ EX FIRE HYDRANT
- SS — SS — SS — EX SANITARY SEWER LINE
- 5900 — EX FIRE HYDRANT
- 5900 — CONTOURS-MAJOR
- 5900 — CONTOURS-MINOR
- SF — SILT FENCE (INITIAL/INTERIM)
- ☼ EX VEGETATION (SIZE VARIES)
- ⦿ PARKING LOT ISLAND LIGHT POLE
- ⦿ VEHICLE TRACKING PAD (INITIAL/INTERIM)
- ⦿ CD-1: CHECK DAM (FINAL)
- ⦿ ECB-1: EROSION CONTROL BLANKET (FINAL)
- ⦿ CURB SOCK (INTERIM)
- ▨ STAGING AREA (INITIAL/INTERIM)
- ▨ CONCRETE WASHOUT (INITIAL/INTERIM)
- ▨ RR-1: RIPRAP (FINAL)
- ▨ AREA OF CUT
- ▨ AREA OF FILL
- PRE-DEVELOPED FLOW DIRECTION
- DEVELOPED FLOW DIRECTION



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COLORADO CENTRE METROPOLITAN DISTRICT
ADMINISTRATIVE BUILDING - SITE DEVELOPMENT PLAN
GRADING & EROSION CONTROL PLAN

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1	EPC REVISIONS	RMM	RMM	03/10/23
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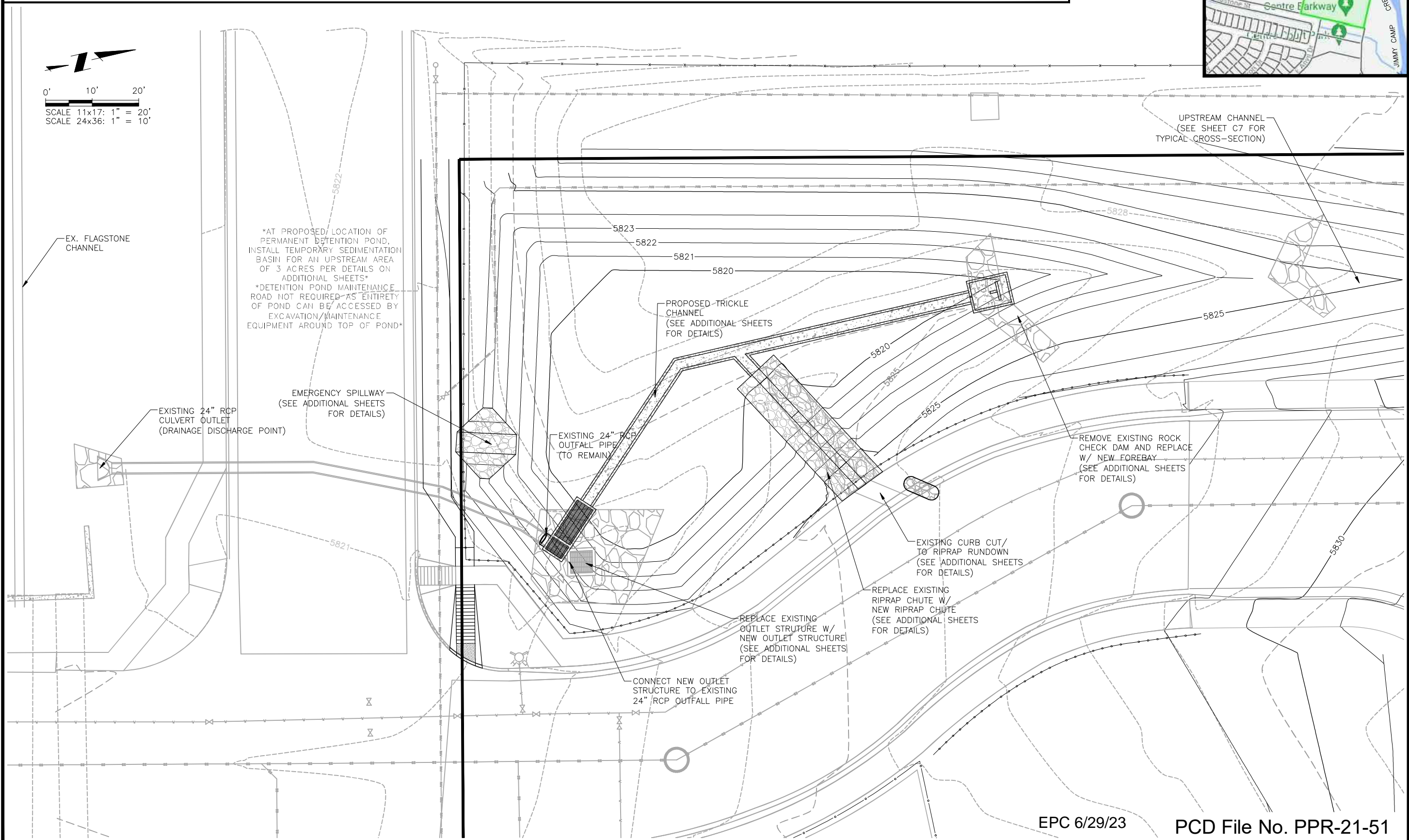
LEGEND

	EX PROPERTY LINE		EX FIRE HYDRANT		STAGING AREA (INITIAL/INTERIM)
	EX RIGHT-OF-WAY		EX WATER LINE		CONCRETE WASHOUT (INITIAL/INTERIM)
	EX BARBED WIRE FENCE		EX SANITARY SEWER LINE		RR-1: RIPRAP (FINAL)
	EX SPLIT RAIL FENCE		EX FIRE HYDRANT		AREA OF CUT
	EX CHAIN LINK FENCE		CONTOURS-MAJOR		AREA OF FILL
	EX CONTOURS-MAJOR		CONTOURS-MINOR		PRE-DEVELOPED FLOW DIRECTION
	EX CONTOURS-MINOR		PARKING LOT ISLAND LIGHT POLE		DEVELOPED FLOW DIRECTION
			VEHICLE TRACKING PAD (INITIAL/INTERIM)		
			CD-1: CHECK DAM (FINAL)		
			ECB-1: EROSION CONTROL BLANKET (FINAL)		
			CURB SOCK (INTERIM)		



VICINITY MAP
SCALE: N.T.S.

0' 10' 20'
SCALE 11x17: 1" = 20'
SCALE 24x36: 1" = 10'



AT PROPOSED LOCATION OF PERMANENT DETENTION POND, INSTALL TEMPORARY SEDIMENTATION BASIN FOR AN UPSTREAM AREA OF 3 ACRES PER DETAILS ON ADDITIONAL SHEETS
DETENTION POND MAINTENANCE ROAD NOT REQUIRED AS ENTIRETY OF POND CAN BE ACCESSED BY EXCAVATION/MAINTENANCE EQUIPMENT AROUND TOP OF POND

UPSTREAM CHANNEL
(SEE SHEET C7 FOR TYPICAL CROSS-SECTION)

REMOVE EXISTING ROCK CHECK DAM AND REPLACE W/ NEW FOREBAY
(SEE ADDITIONAL SHEETS FOR DETAILS)

EXISTING CURB CUT/ TO RIPRAP RUNDOWN
(SEE ADDITIONAL SHEETS FOR DETAILS)

REPLACE EXISTING RIPRAP CHUTE W/ NEW RIPRAP CHUTE
(SEE ADDITIONAL SHEETS FOR DETAILS)

REPLACE EXISTING OUTLET STRUCTURE W/ NEW OUTLET STRUCTURE
(SEE ADDITIONAL SHEETS FOR DETAILS)

CONNECT NEW OUTLET STRUCTURE TO EXISTING 24" RCP OUTFALL PIPE

EXISTING 24" RCP OUTFALL PIPE (TO REMAIN)

PROPOSED TRICKLE CHANNEL
(SEE ADDITIONAL SHEETS FOR DETAILS)

EXISTING 24" RCP CULVERT OUTLET (DRAINAGE DISCHARGE POINT)

EMERGENCY SPILLWAY
(SEE ADDITIONAL SHEETS FOR DETAILS)

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COLORADO CENTRE METROPOLITAN DISTRICT
ADMINISTRATIVE BUILDING - SITE DEVELOPMENT PLAN
DETENTION POND PLAN

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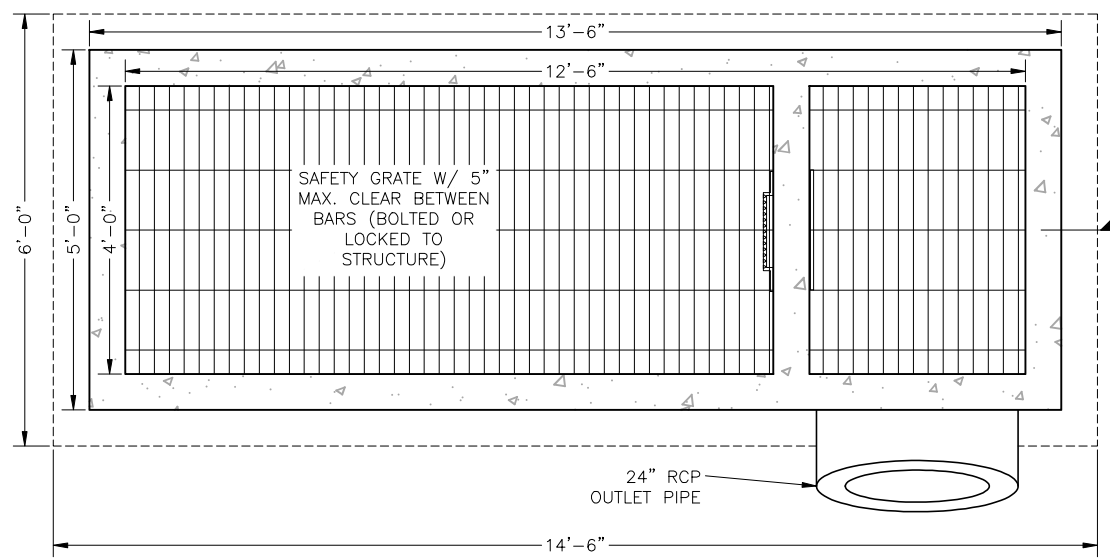
C5
SHEET 5 OF 16

EPC 6/29/23

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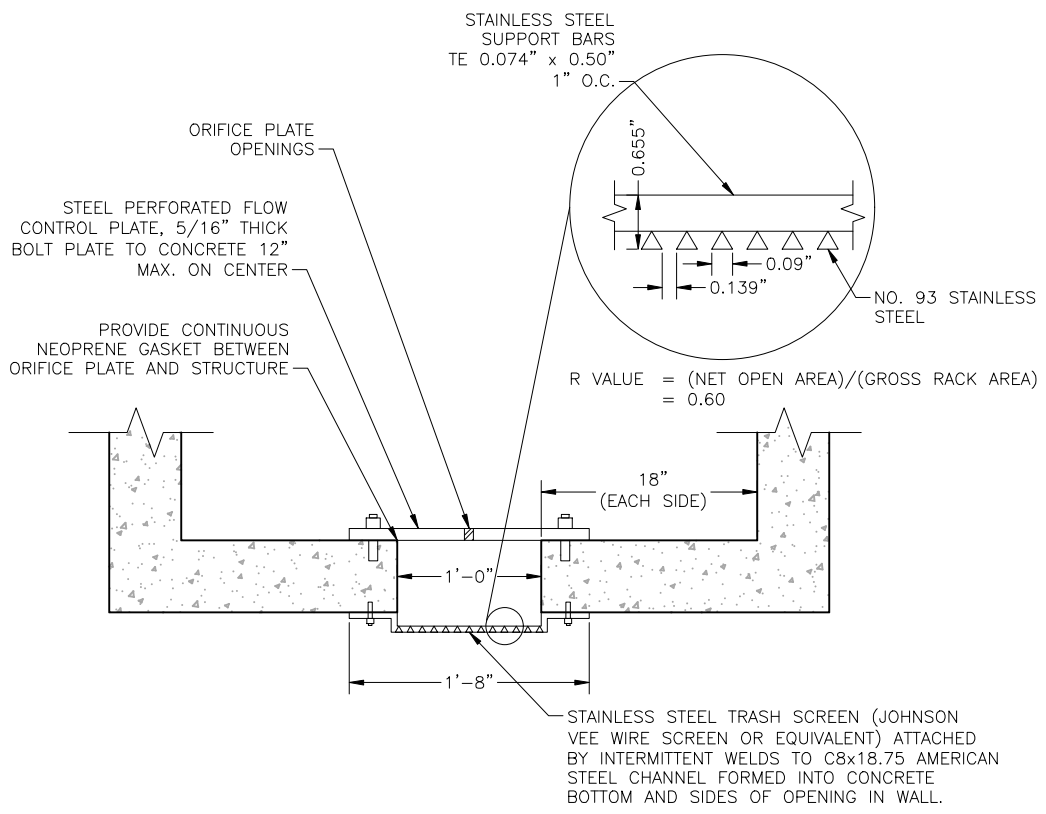
OUTLET STRUCTURE - TOP VIEW
 11x17 SCALE: 3/8"=1'-0"
 24x36 SCALE: 3/4"=1'-0"

EURV AND WQCV TRASH RACK NOTES:

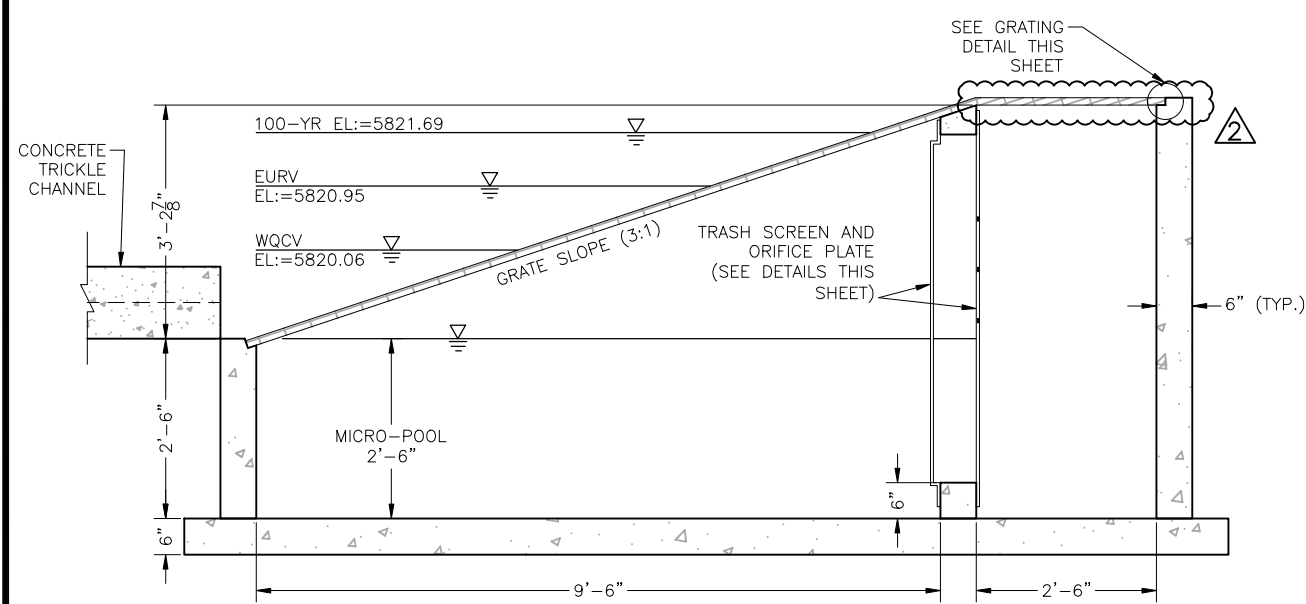
1. WELL-SCREEN TRASH RACKS SHALL BE STAINLESS STEEL AND SHALL BE ATTACHED BY INTERMITTENT WELDS ALONG THE EDGE OF THE MOUNTING FRAME.
2. BAR GATE TRASH RACKS SHALL BE ALUMINUM AND SHALL BE BOLTED USING STAINLESS STEEL HARDWARE.
3. TRASH RACK OPEN AREAS ARE FOR SPECIFIED TRASH RACK MATERIALS. TOTAL TRASH RACK SIZE MAY NEED TO BE ADJUSTED FOR MATERIALS HAVING DIFFERENT OPEN AREA/GROSS AREA RATIO (R VALUE).
4. STRUCTURAL DESIGN OF TRASH RACKS SHALL BE BASED ON FULL HYDROSTATIC HEAD WITH ZERO HEAD DOWNSTREAM OF THE RACK.

OVERFLOW SAFETY GRATE NOTES:

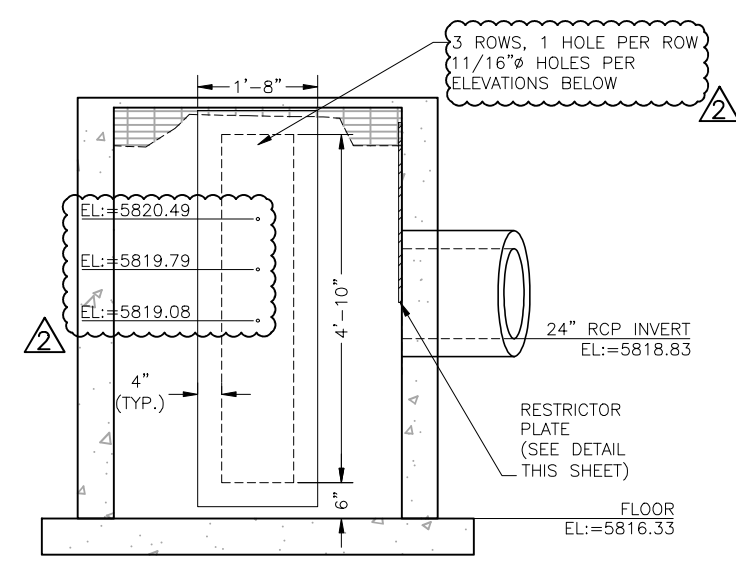
1. ALL SAFETY GRATES SHALL BE MOUNTED USING STAINLESS STEEL HARDWARE AND PROVIDED WITH HINGED AND LOCKABLE OR BOLTABLE ACCESS PANELS.
2. SAFETY GRATES SHALL BE STAINLESS STEEL, ALUMINUM, OR STEEL. STEEL GRATES SHALL BE HOT DIP GALVANIZED AND MAY BE HOT POWDER COATED AFTER GALVANIZING.
3. SAFETY GRATES SHALL BE DESIGNED SUCH THAT THE DIAGONAL DIMENSION OF EACH OPENING IS SMALLER THAN THE DIAMETER OF THE OUTLET PIPE.
4. STRUCTURAL DESIGN OF SAFETY GRATES SHALL BE BASED ON FULL HYDROSTATIC HEAD WITH ZERO HEAD DOWNSTREAM OF THE RACK.



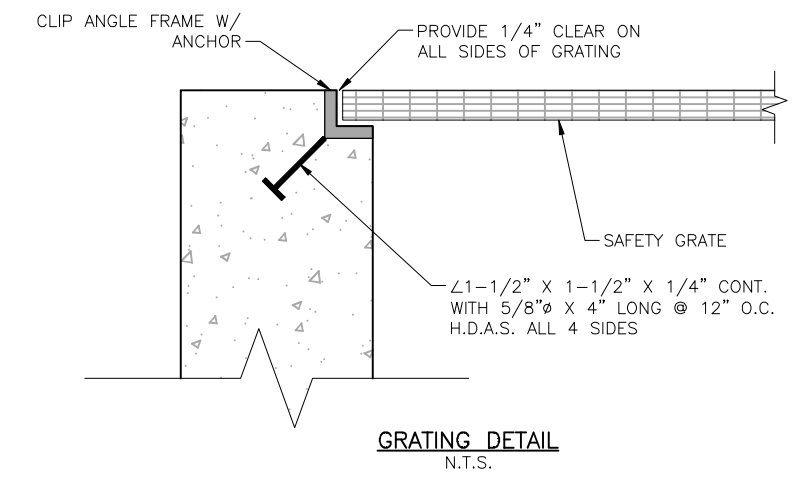
TRASH SCREEN & ORIFICE PLATE
 PLAN VIEW
 N.T.S.



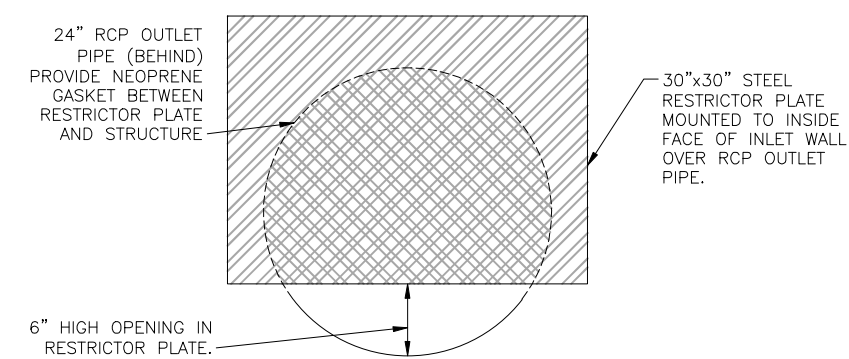
OUTLET STRUCTURE - SECTION A
 11x17 SCALE: 3/8"=1'-0"
 24x36 SCALE: 3/4"=1'-0"



OUTLET STRUCTURE - SECTION B
 11x17 SCALE: 3/8"=1'-0"
 24x36 SCALE: 3/4"=1'-0"



GRATING DETAIL
 N.T.S.



RESTRICTOR PLATE DETAIL
 N.T.S.

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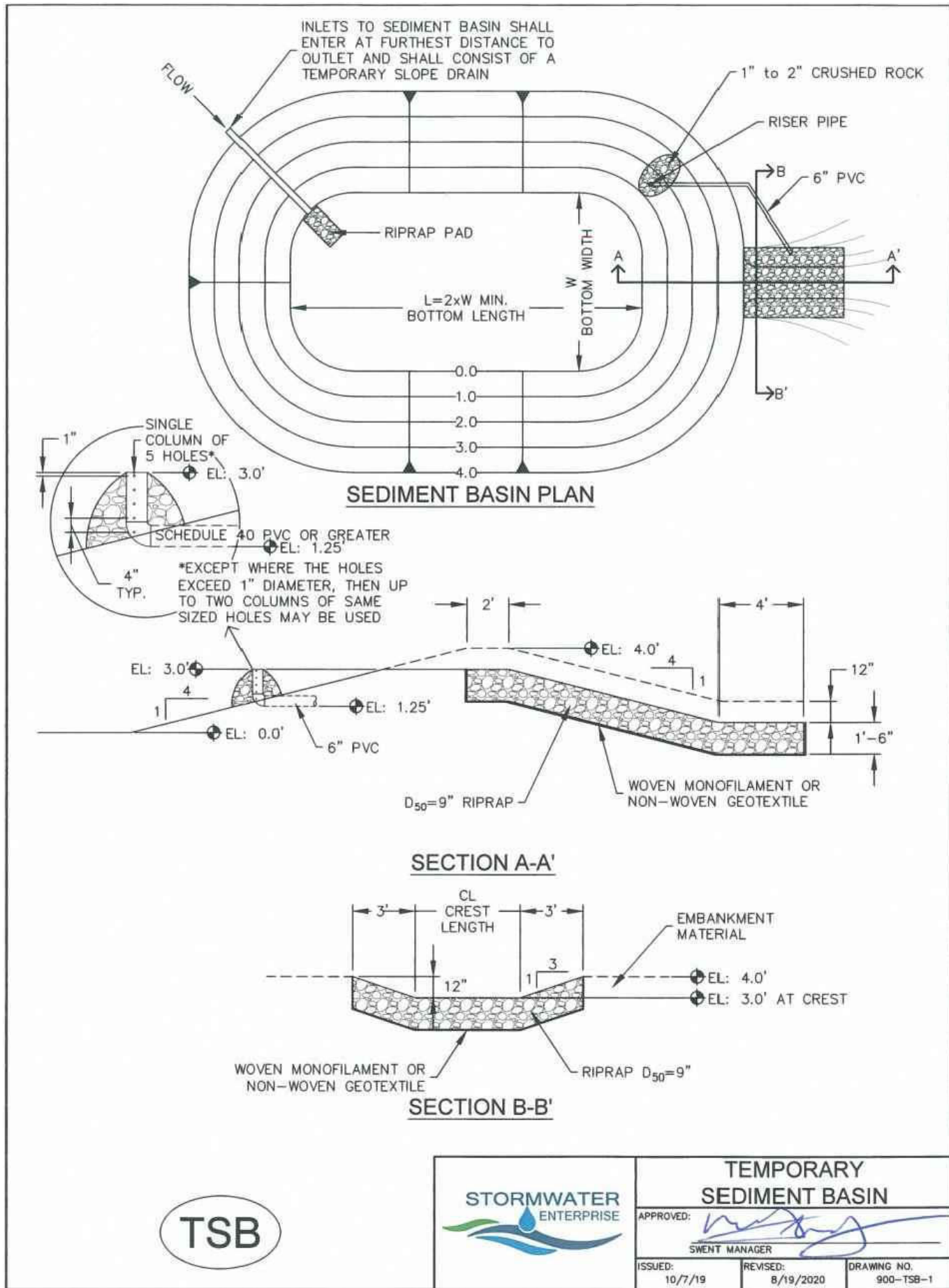


TABLE SB-1, SIZING INFORMATION FOR STANDARD SEDIMENT BASIN

UPSTREAM DRAINAGE AREA (ROUNDED TO NEAREST ACRE), (AC)	BASIN BOTTOM WIDTH (W), (FT)	SPILLWAY CREST LENGTH (CL), (FT)	HOLE DIAMETER (HD), (IN)
1	12½"	2	9/32
2	21	3	13/16
3	28	5	7/8
4	33½	6	9/16
5	38½	8	21/32
6	43	9	23/32
7	47¼	11	25/32
8	51	12	27/32
9	55	13	7/8
10	58¼	15	15/16
11	61	16	31/32
12	64	18	1
13	67½	19	1 1/16
14	70½	21	1 1/8
15	73¼	22	1 1/4

INSTALLATION NOTES

- FOR STANDARD BASIN, BOTTOM DIMENSION MAY BE MODIFIED AS LONG AS BOTTOM AREA IS NOT REDUCED.
- 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 D-698.
- PIPE SCHEDULE 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. DESIGN CALCULATIONS MUST BE APPROVED PRIOR TO IMPLEMENTATION.

MAINTENANCE NOTES

- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN CONTROL MEASURES IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- SEDIMENT ACCUMULATED IN BASIN SHALL BE REMOVED AS NEEDED TO MAINTAIN CONTROL MEASURE EFFECTIVENESS, TYPICALLY WHEN SEDIMENT DEPTH REACHES ONE FOOT (I.E. TWO FEET BELOW SPILLWAY CREST).
- SEDIMENT BASINS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED.
- PERMANENTLY STABILIZE AREA AFTER SEDIMENT BASIN REMOVAL.



STORMWATER ENTERPRISE

TEMPORARY SEDIMENT BASIN

APPROVED: *[Signature]*

SWENT MANAGER

ISSUED: 10/7/19 REVISED: 8/19/2020 DRAWING NO. 900-TSB-1



STORMWATER ENTERPRISE

TEMPORARY SEDIMENT BASIN

APPROVED: *[Signature]*

SWENT MANAGER

ISSUED: 10/7/19 REVISED: 8/19/2020 DRAWING NO. 900-TSB-2

EPC 6/29/23

PCD File No. PPR-21-51

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COLORADO CENTRE METROPOLITAN DISTRICT
 ADMINISTRATIVE BUILDING - SITE DEVELOPMENT PLAN
 TEMPORARY SEDIMENTATION BASIN DETAILS

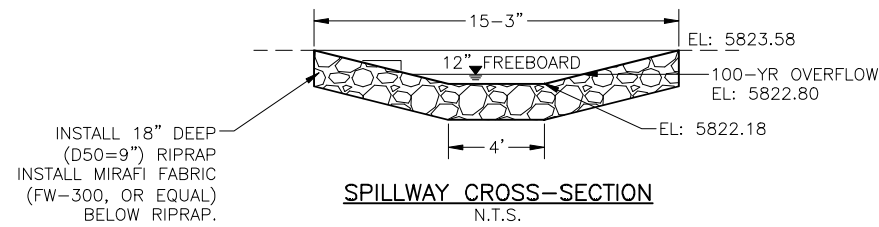
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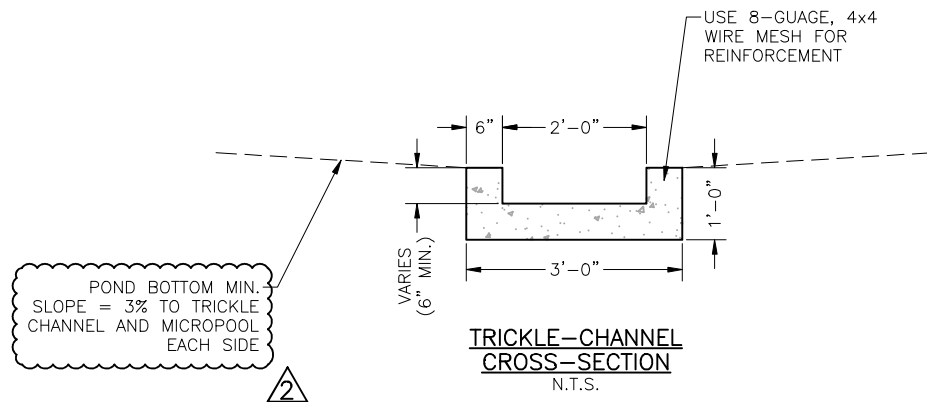


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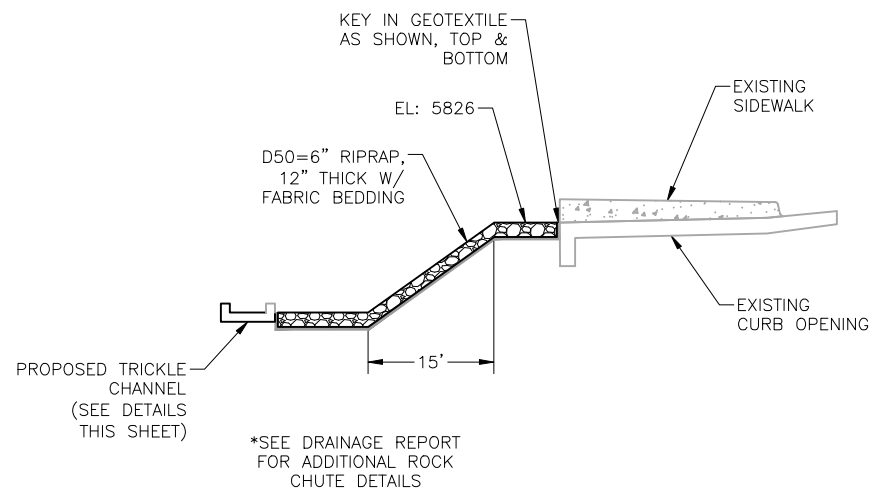
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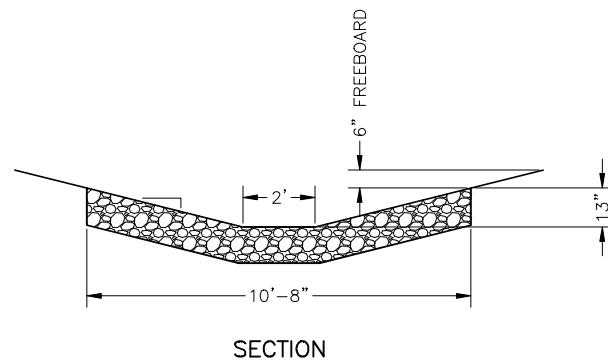
SPILLWAY CROSS-SECTION
N.T.S.



TRICKLE-CHANNEL CROSS-SECTION
N.T.S.

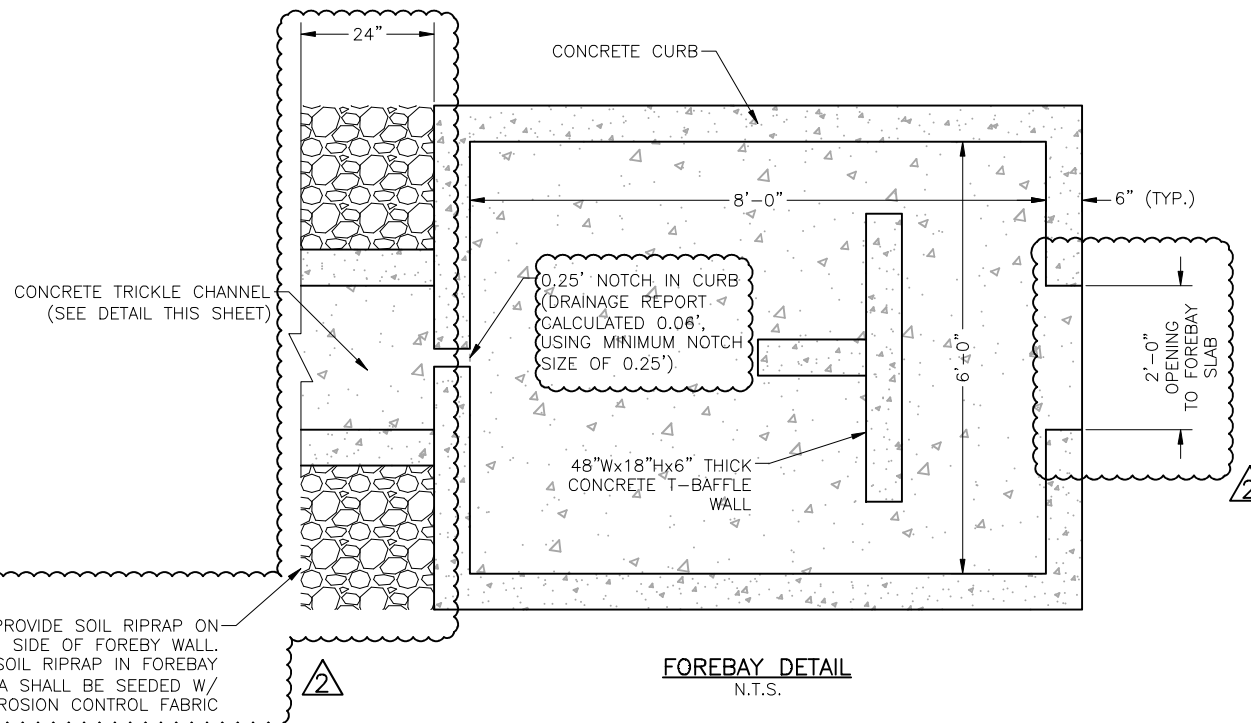


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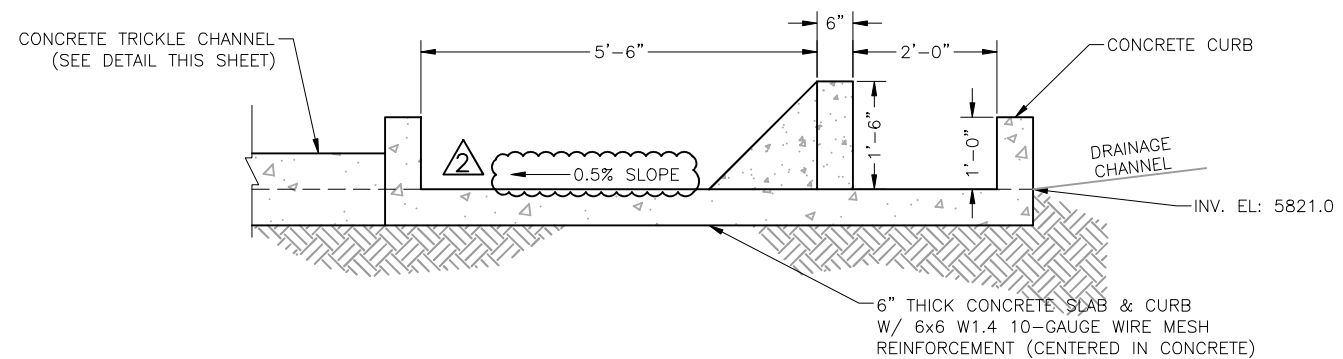


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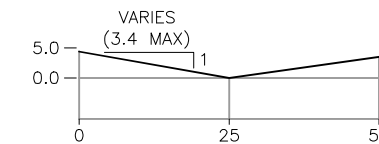
ROCK CHUTE DETAILS
N.T.S.



FOREBAY DETAIL
N.T.S.



FOREBAY CROSS-SECTION
N.T.S.



TYPICAL UPSTREAM CHANNEL SECTION
N.T.S.

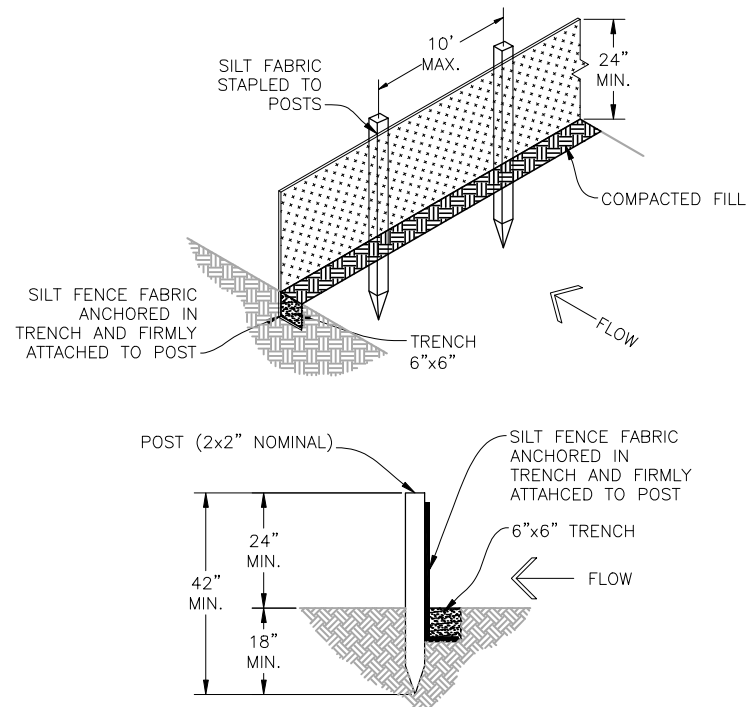
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SILT FENCE DETAIL

INSTALLATION REQUIREMENTS:

1. SILT FENCES SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
2. WHEN JOINTS ARE NECESSARY, SILT FENCE GEOTEXTILE SHALL BE SPLICED TOGETHER ONLY AT SUPPORT POST AND SECURELY SEALED.
3. METAL POSTS SHALL BE "STUDDED TEE" OR "U" TYPE WITH MINIMUM WEIGHT OF 1.33 POUNDS PER LINEAR FOOT. WOOD POSTS SHALL HAVE A MINIMUM DIAMETER OR CROSS SECTION DIMENSION OF 2 INCHES.
4. THE FILTER MATERIAL SHALL BE FASTENED SECURELY TO METAL POSTS USING WIRE TIES, OR TO WOOD POSTS WITH 3/4" LONG #9 HEAVY-DUTY STAPLES. THE SILT FENCE GEOTEXTILE SHALL NOT BE STAPLED TO EXISTING TREES.
5. WHILE NOT REQUIRED, WIRE MESH FENCE MAY BE USED TO SUPPORT THE GEOTEXTILE. WIRE FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 3/4" LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 6 INCHES AND SHALL NOT EXTEND MORE THAN 3 FEET ABOVE THE ORIGINAL GROUND SURFACE.

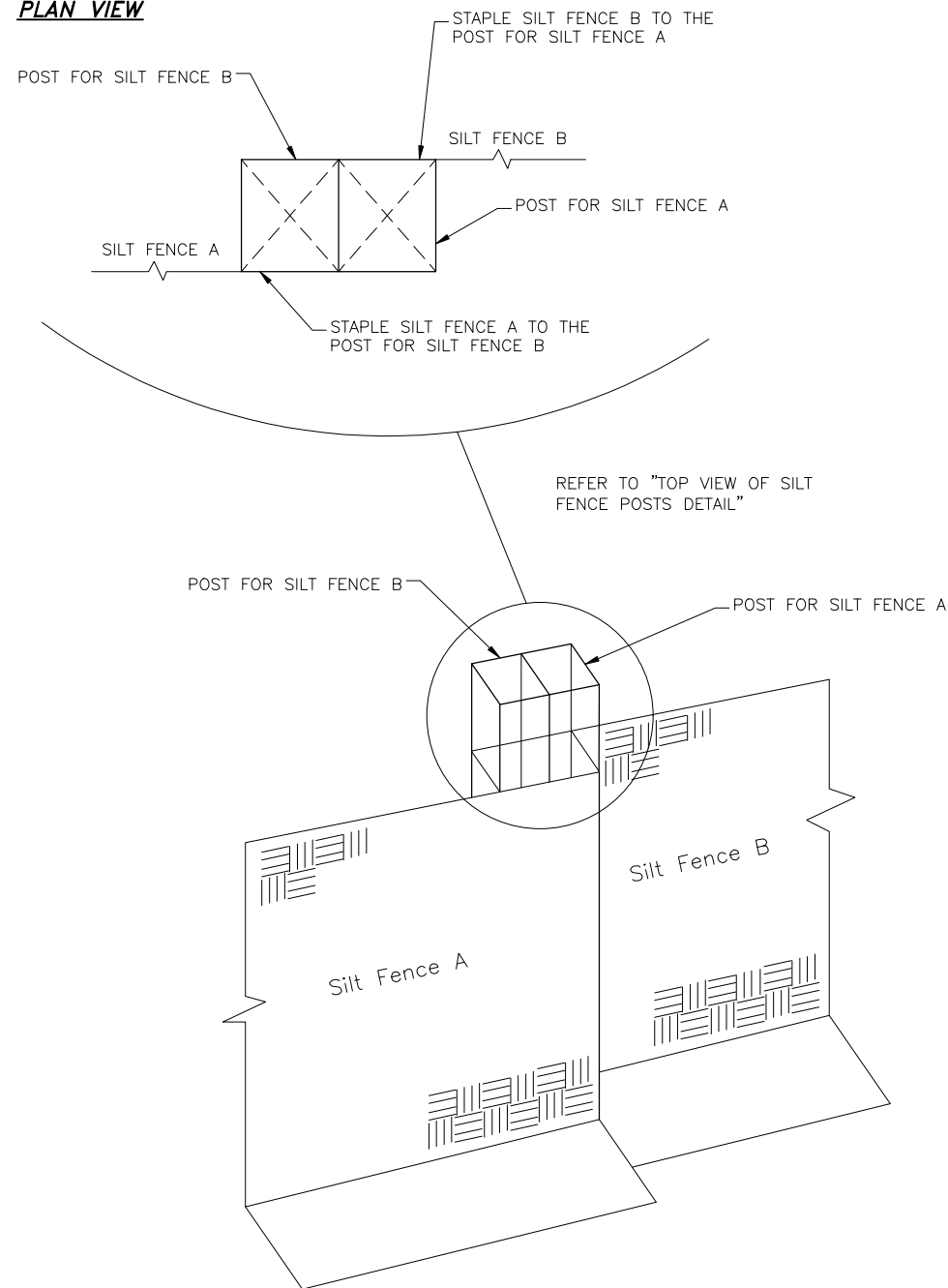
6. ALONG THE TOE OF FILLS, INSTALL THE SILT FENCE ALONG A LEVEL CONTOUR AND PROVIDE AN AREA BEHIND THE FENCE FOR RUNOFF TO POND AND SEDIMENT TO SETTLE. A MINIMUM DISTANCE OF 5 FEET FROM THE TOE OF THE FILL IS RECOMMENDED.
7. THE HEIGHT OF THE SILT FENCE FROM THE GROUND SURFACE SHALL BE MINIMUM OF 24 INCHES AND SHALL NOT EXCEED 36 INCHES. HIGHER FENCES MAY IMPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE OF THE STRUCTURE.

MAINTENANCE REQUIREMENTS:

1. CONTRACTOR SHALL INSPECT SILT FENCES IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS OF NO RAINFALL. DAMAGED, COLLAPSED, UNENTRENCHED OR INEFFECTIVE SILT FENCES SHALL BE PROMPTLY REPAIRED OR REPLACED.
2. SEDIMENT SHALL BE REMOVED FROM BEHIND SILT FENCE WHEN IT ACCUMULATES TO HALF THE EXPOSED GEOTEXTILE HEIGHT.
3. SILT FENCES SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED.

A **SILT FENCE DETAIL**
SCALE: N.T.S.

PLAN VIEW



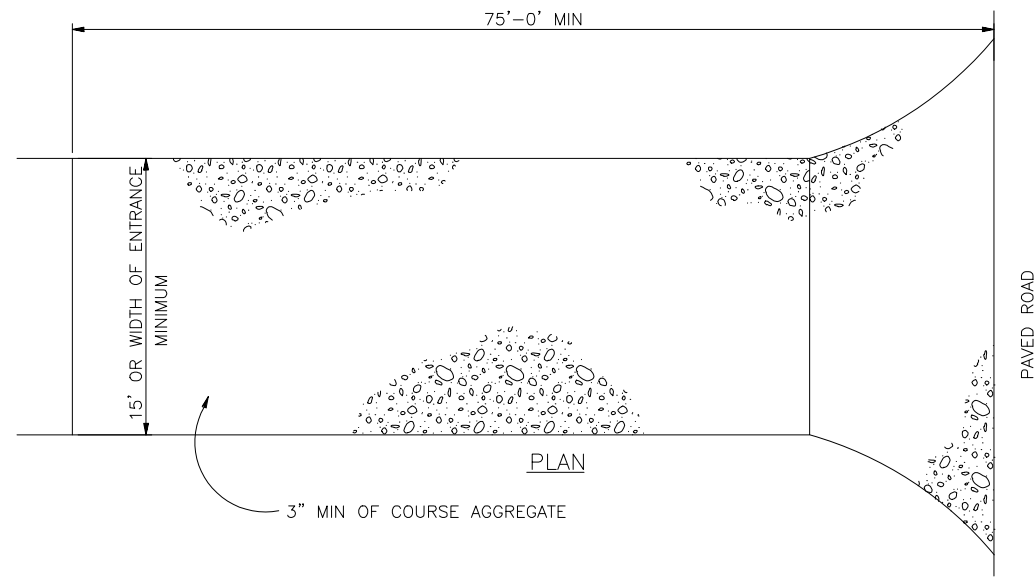
B **SILT FENCE POSTS DETAIL**
SCALE: N.T.S.

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Project No.: 247.07
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VEHICLE TRACKING PAD DETAIL

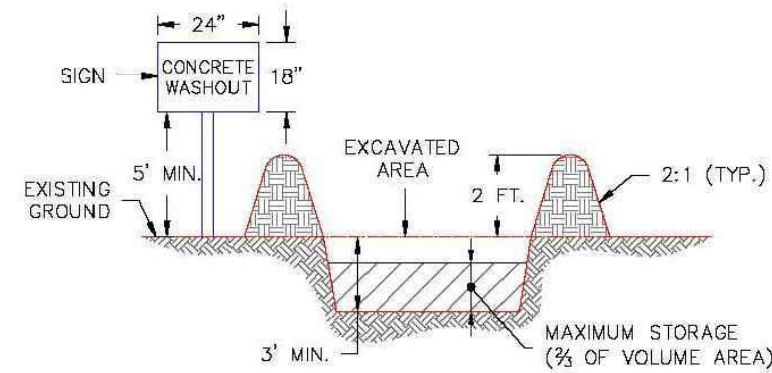
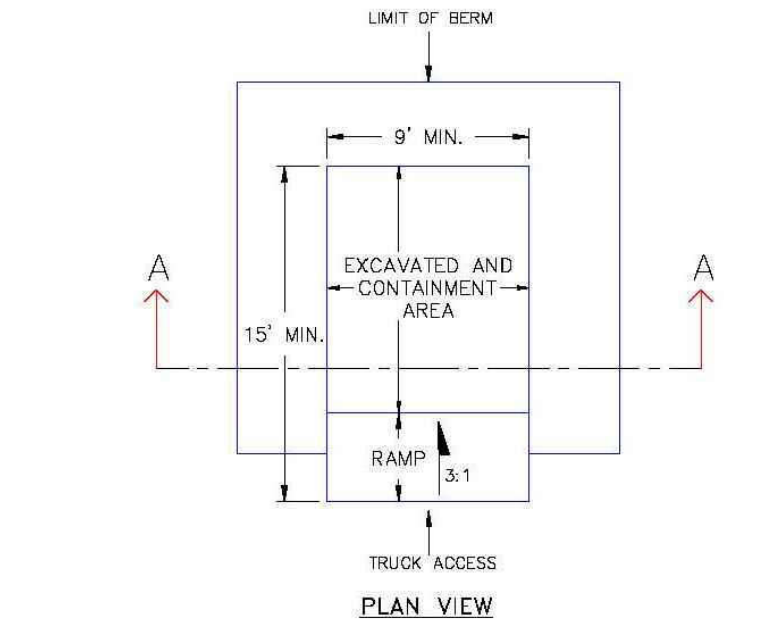
INSTALLATION REQUIREMENTS:

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

MAINTENANCE REQUIREMENTS

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

A
C10 VEHICLE TRACKING PAD DETAIL
SCALE: N.T.S.



SECTION A-A

NOTES:

1. SIGN MATERIAL, EXCAVATION, AND RESTORATION ARE INCLUDED IN THE COST OF THE CONCRETE WASHOUT STRUCTURE.
2. EROSION BALES MAY BE USED AS AN ALTERNATIVE FOR THE BERM.

DATE APPROVED: 1/1/08	Concrete Washout Structure	EL PASO COUNTY DEPARTMENT OF TRANSPORTATION
John A. McCarty DEPARTMENT OF TRANSPORTATION	Standard Drawing	
REVISION DATE: 7/17/07	FILE NAME: SD_3-84	

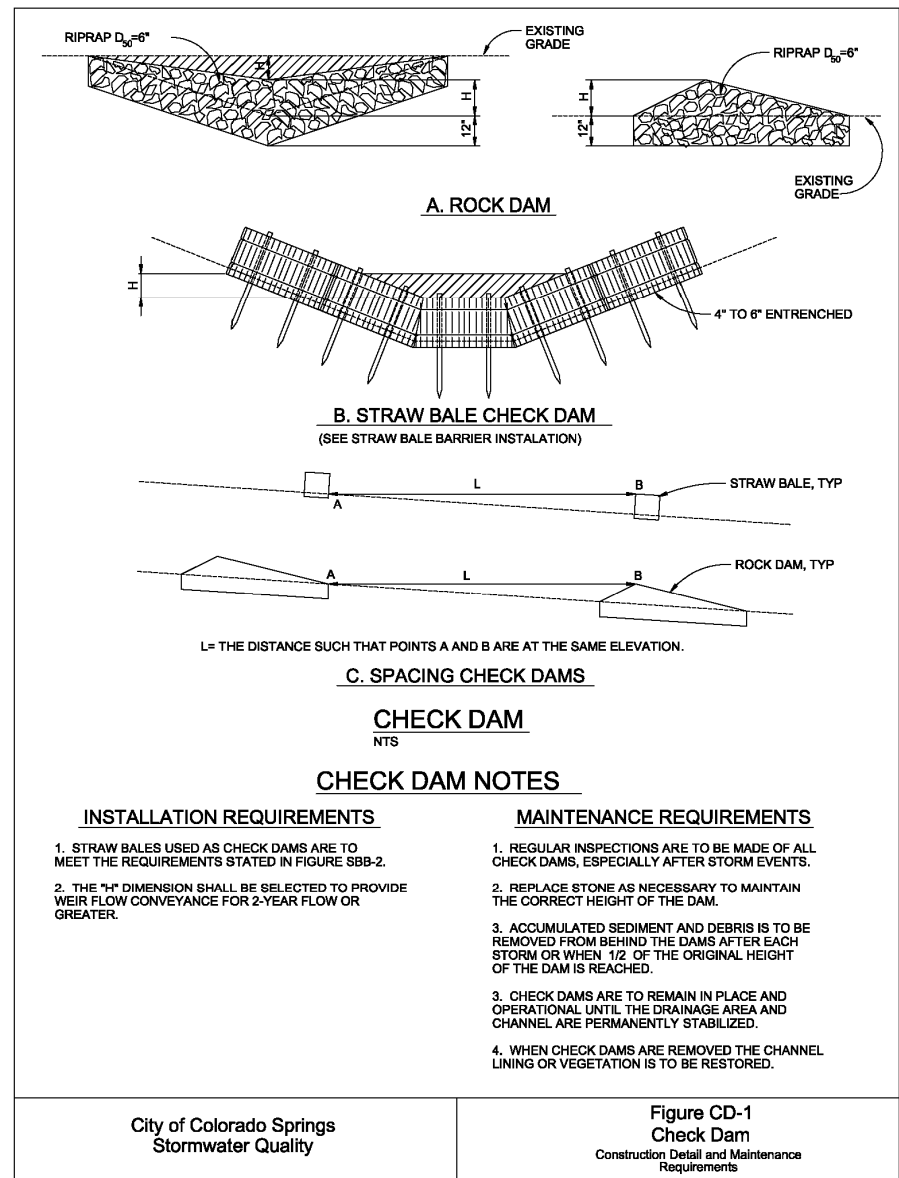
B
C10 CONCRETE WASHOUT STRUCTURE DETAIL
SCALE: N.T.S.

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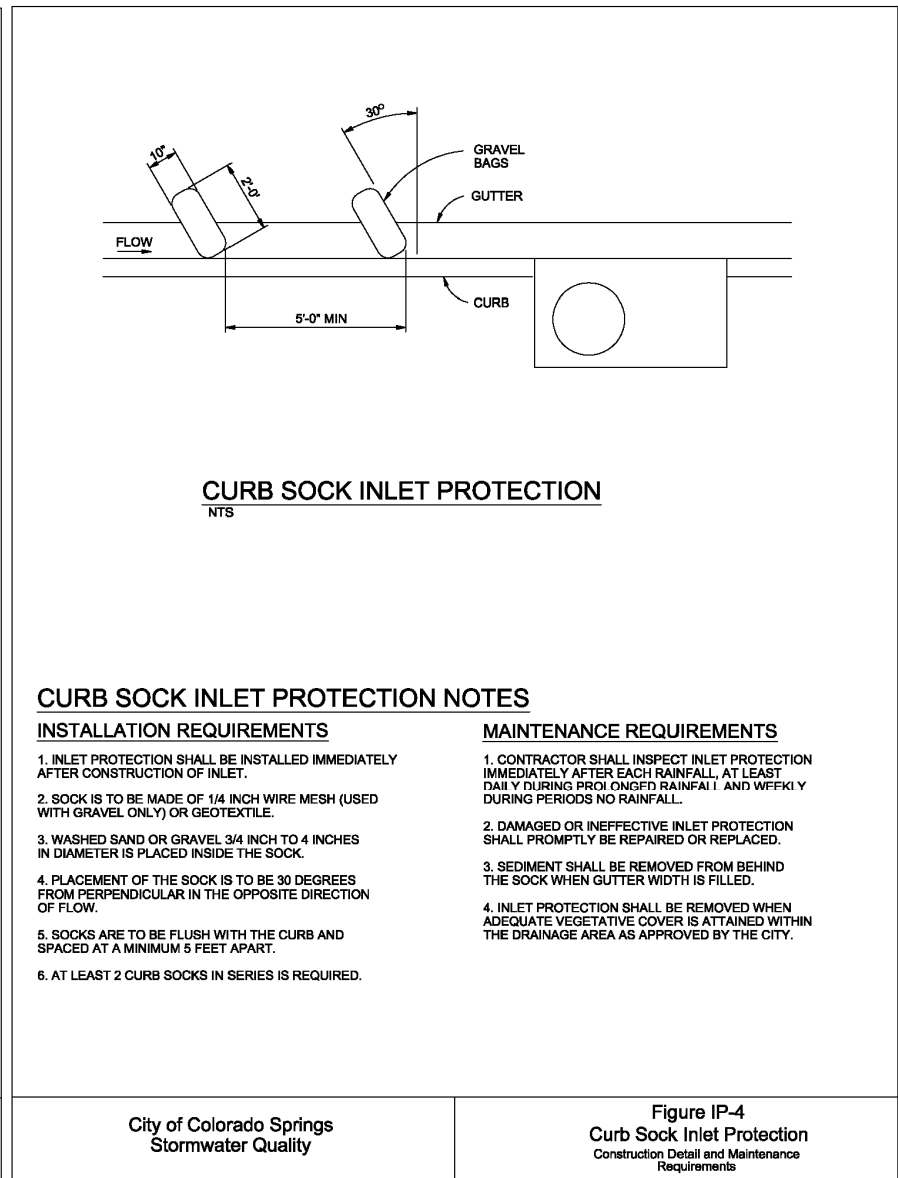
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Project No.: 247.07
Date: 01/03/23
Design: RMM
Drawn: GCM
Check: RMM



A
C11 CD-1: CHECK DAM
SCALE: N.T.S.



B
C11 CURB SOCK INLET PROTECTION
SCALE: N.T.S.

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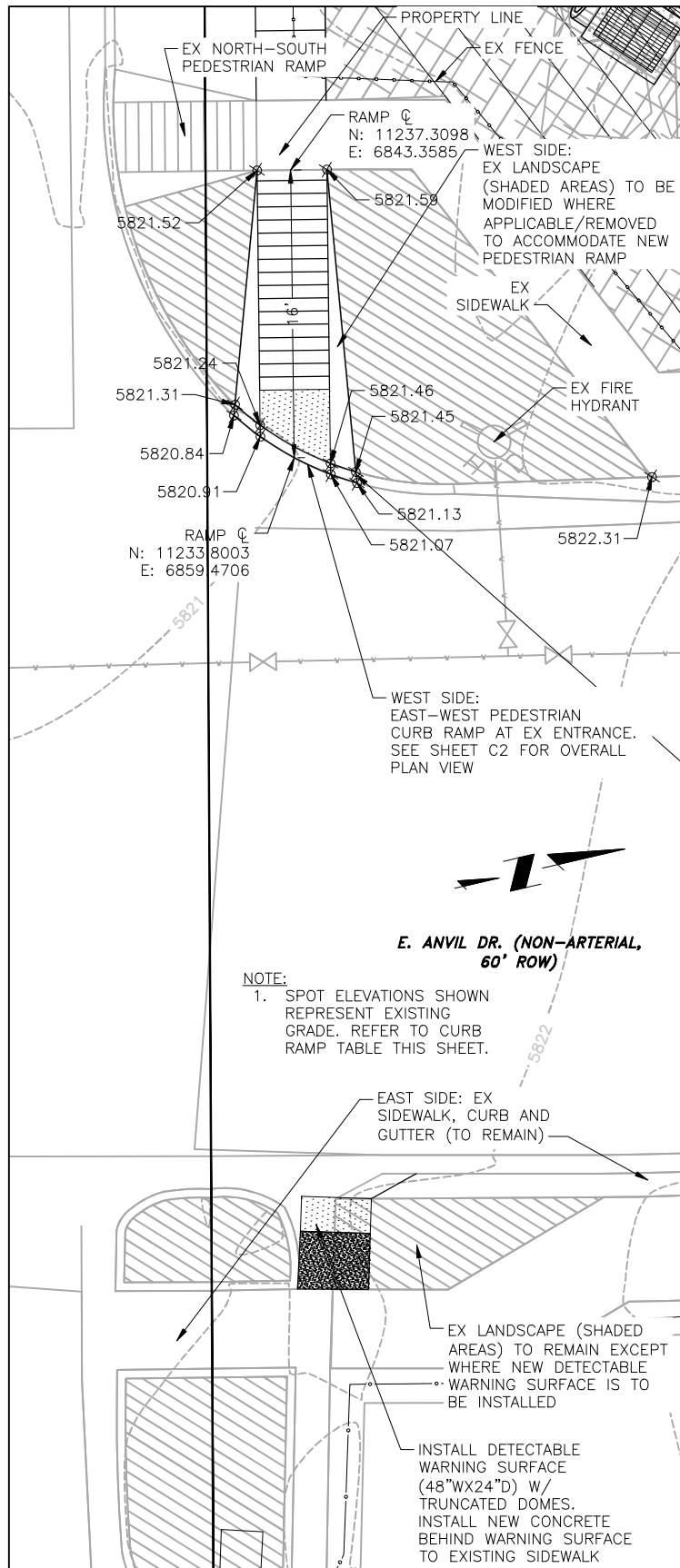


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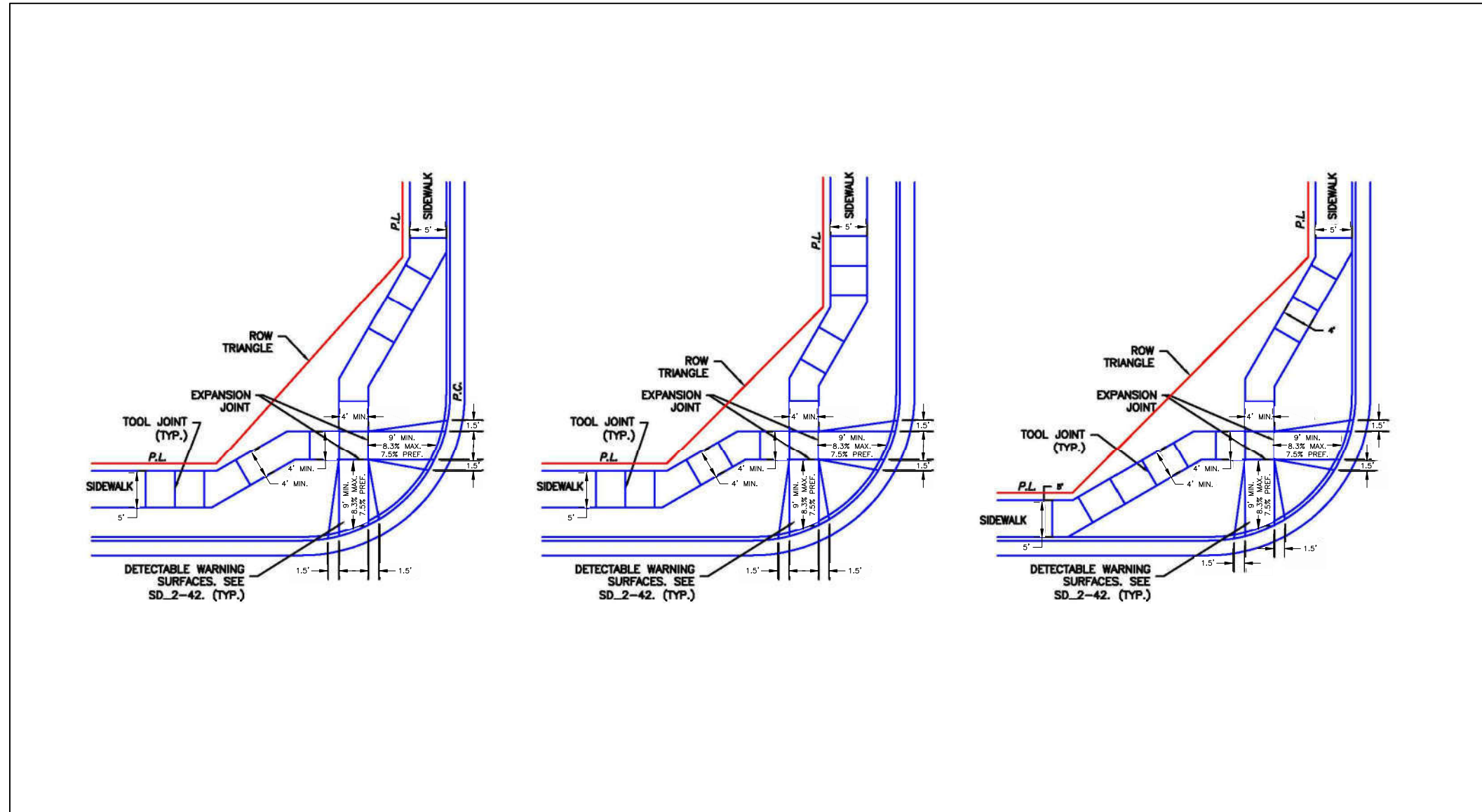
0' 5' 10'
 SCALE 11x17: 1" = 10'
 SCALE 24x36: 1" = 5'

- NOTES:
 1. ALL UTILITIES NOT SHOWN FOR CLARITY. SEE SHEET C3 FOR ADDITIONAL UTILITIES.
 2. RAMP JOINTS AND GRADE BREAKS SHALL BE FLUSH (1/8"). THE JOINT BETWEEN ROADWAY SURFACE AND GUTTER PAN SHALL BE FLUSH.

A PEDESTRIAN CURB RAMP
C12 AT E. ANVIL DR.
 SCALE:



EAST-WEST PEDESTRIAN CURB RAMP	
EXISTING EL	PROPOSED EL
5821.59	
5821.46	5821.04
5821.45	5821.40
5821.13	5821.40
5821.07	
5820.91	
5820.84	5821.24
5821.31	5821.24
5821.24	5821.04
5821.52	



SCALE: NOT TO SCALE

DATE APPROVED: 6/23/20	Pedestrian Curb Ramp Detail Standard Drawing		
Jennifer E. Irvine DEPARTMENT OF PUBLIC WORKS	REVISION DATE: 6/23/20	FILE NAME: SD_2-40	

B PEDESTRIAN CURB RAMP STANDARD
 C12 SCALE: N.T.S. EPC 6/29/23 PCD File No. PPR-21-51

JDS-HYDRO a Division of **RESPEC**
 5540 TECH CENTER DR SUITE 100
 COLORADO SPRINGS, COLORADO 80919
 (719) 227-0072
DISCLAIMER: THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS. ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO JDS-HYDRO, A DIVISION OF RESPEC. JDS-HYDRO ASSUMES NO LIABILITY FOR UNAUTHORIZED CHANGES AND/OR REVISIONS MADE TO PLANS.

COLORADO CENTRE METROPOLITAN DISTRICT
 ADMINISTRATIVE BUILDING - SITE DEVELOPMENT PLAN
 GRADING & EROSION CONTROL DETAILS 4

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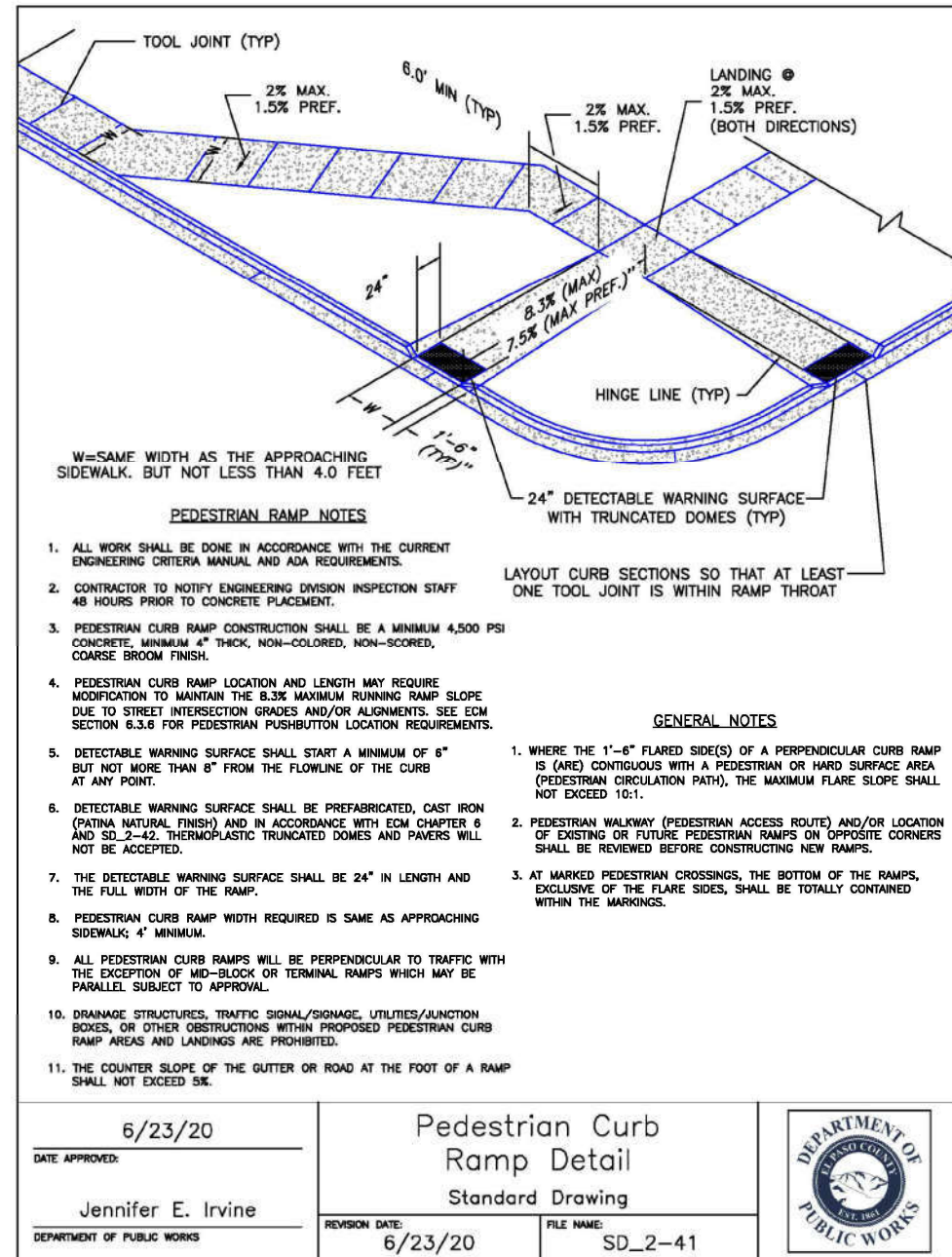


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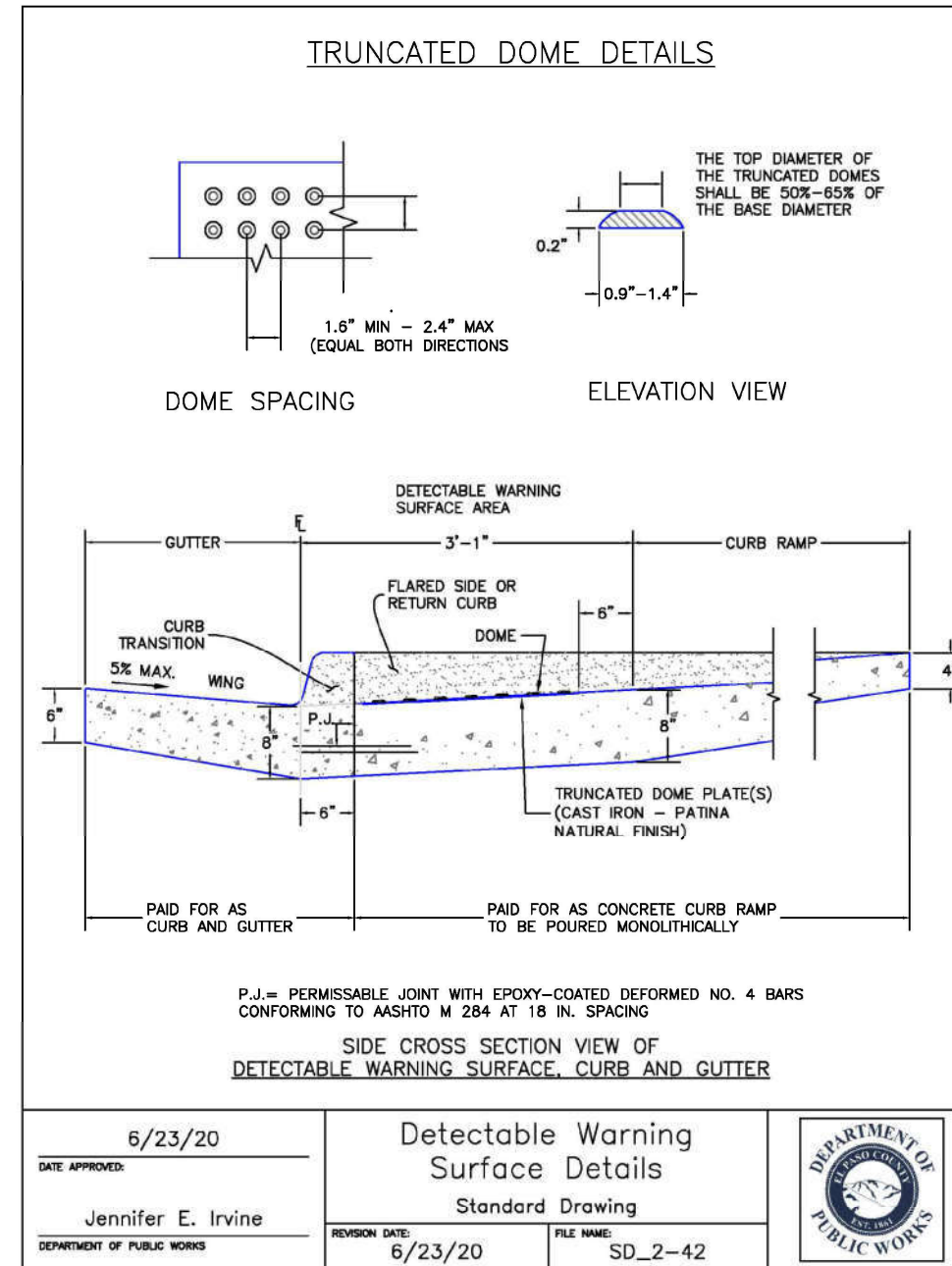
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 SHEET 12 OF 16

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A
C13 PEDESTRIAN CURB RAMP
SCALE: N.T.S.



B
C13 DETECTABLE WARNING SURFACE
SCALE: N.T.S.

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Design: RMM
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Temporary and Permanent Seeding (TS/PS) EC-2

Description

Temporary seeding can be used to stabilize disturbed areas that will be inactive for an extended period. Permanent seeding should be used to stabilize areas at final grade that will not be otherwise stabilized. Effective seeding includes preparation of a seedbed, selection of an appropriate seed mixture, proper planting techniques, and protection of the seeded area with mulch, geotextiles, or other appropriate measures.



Photograph TS/PS-1. Equipment used to drill seed. Photo courtesy of Douglas County.

Appropriate Uses

When the soil surface is disturbed and will remain inactive for an extended period (typically 30 days or longer), proactive stabilization measures should be implemented. If the inactive period is short-lived (on the order of two weeks), techniques such as surface roughening may be appropriate. For longer periods of inactivity, temporary seeding and mulching can provide effective erosion control. Permanent seeding should be used on finished areas that have not been otherwise stabilized.

Typically, local governments have their own seed mixes and timelines for seeding. Check jurisdictional requirements for seeding and temporary stabilization.

Design and Installation

Effective seeding requires proper seedbed preparation, selection of an appropriate seed mixture, use of appropriate seeding equipment to ensure proper coverage and density, and protection with mulch or fabric until plants are established.

The USDCM Volume 2 *Revegetation* Chapter contains detailed seed mix, soil preparations, and seeding and mulching recommendations that may be referenced to supplement this Fact Sheet.

Drill seeding is the preferred seeding method. Hydroseeding is not recommended except in areas where steep slopes prevent use of drill seeding equipment, and even in these instances it is preferable to hand seed and mulch. Some jurisdictions do not allow hydroseeding or hydromulching.

Seedbed Preparation

Prior to seeding, ensure that areas to be revegetated have soil conditions capable of supporting vegetation. Overlot grading can result in loss of topsoil, resulting in poor quality subsoils at the ground surface that have low nutrient value, little organic matter content, few soil microorganisms, rooting restrictions, and conditions less conducive to infiltration of precipitation. As a result, it is typically necessary to provide stockpiled topsoil, compost, or other

Temporary and Permanent Seeding	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	No

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EC-2 Temporary and Permanent Seeding (TS/PS)

soil amendments and rototill them into the soil to a depth of 6 inches or more.

Topsoil should be salvaged during grading operations for use and spread on areas to be revegetated later. Topsoil should be viewed as an important resource to be utilized for vegetation establishment, due to its water-holding capacity, structure, texture, organic matter content, biological activity, and nutrient content. The rooting depth of most native grasses in the semi-arid Denver metropolitan area is 6 to 18 inches. At a minimum, the upper 6 inches of topsoil should be stripped, stockpiled, and ultimately respread across areas that will be revegetated.

Where topsoil is not available, subsoils should be amended to provide an appropriate plant-growth medium. Organic matter, such as well digested compost, can be added to improve soil characteristics conducive to plant growth. Other treatments can be used to adjust soil pH conditions when needed. Soil testing, which is typically inexpensive, should be completed to determine and optimize the types and amounts of amendments that are required.

If the disturbed ground surface is compacted, rip or rototill the surface prior to placing topsoil. If adding compost to the existing soil surface, rototilling is necessary. Surface roughening will assist in placement of a stable topsoil layer on steeper slopes, and allow infiltration and root penetration to greater depth.

Prior to seeding, the soil surface should be rough and the seedbed should be firm, but neither too loose nor compacted. The upper layer of soil should be in a condition suitable for seeding at the proper depth and conducive to plant growth. Seed-to-soil contact is the key to good germination.

Seed Mix for Temporary Vegetation

To provide temporary vegetative cover on disturbed areas which will not be paved, built upon, or fully landscaped or worked for an extended period (typically 30 days or more), plant an annual grass appropriate for the time of planting and mulch the planted areas. Annual grasses suitable for the Denver metropolitan area are listed in Table TS/PS-1. These are to be considered only as general recommendations when specific design guidance for a particular site is not available. Local governments typically specify seed mixes appropriate for their jurisdiction.

Seed Mix for Permanent Revegetation

To provide vegetative cover on disturbed areas that have reached final grade, a perennial grass mix should be established. Permanent seeding should be performed promptly (typically within 14 days) after reaching final grade. Each site will have different characteristics and a landscape professional or the local jurisdiction should be contacted to determine the most suitable seed mix for a specific site. In lieu of a specific recommendation, one of the perennial grass mixes appropriate for site conditions and growth season listed in Table TS/PS-2 can be used. The pure live seed (PLS) rates of application recommended in these tables are considered to be absolute minimum rates for seed applied using proper drill-seeding equipment.

If desired for wildlife habitat or landscape diversity, shrubs such as rubber rabbitbrush (*Chrysothamnus nauseosus*), fourwing saltbush (*Atriplex canescens*) and skunkbrush sumac (*Rhus trilobata*) could be added to the upland seedmixes at 0.25, 0.5 and 1 pound PLS/acre, respectively. In riparian zones, planting root stock of such species as American plum (*Prunus americana*), woods rose (*Rosa woodstii*), plains cottonwood (*Populus sargentii*), and willow (*Populus spp.*) may be considered. On non-topsoiled upland sites, a legume such as Ladak alfalfa at 1 pound PLS/acre can be included as a source of nitrogen for perennial grasses.

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Temporary and Permanent Seeding (TS/PS) EC-2

Seeding dates for the highest success probability of perennial species along the Front Range are generally in the spring from April through early May and in the fall after the first of September until the ground freezes. If the area is irrigated, seeding may occur in summer months, as well. See Table TS/PS-3 for appropriate seeding dates.

Table TS/PS-1. Minimum Drill Seeding Rates for Various Temporary Annual Grasses

Species ^a (Common name)	Growth Season ^b	Pounds of Pure Live Seed (PLS)/acre ^c	Planting Depth (inches)
1. Oats	Cool	35 - 50	1 - 2
2. Spring wheat	Cool	25 - 35	1 - 2
3. Spring barley	Cool	25 - 35	1 - 2
4. Annual ryegrass	Cool	10 - 15	½
5. Millet	Warm	3 - 15	½ -¾
6. Sudangrass	Warm	5-10	½ -¾
7. Sorghum	Warm	5-10	½ -¾
8. Winter wheat	Cool	20-35	1 - 2
9. Winter barley	Cool	20-35	1 - 2
10. Winter rye	Cool	20-35	1 - 2
11. Triticale	Cool	25-40	1 - 2

^a Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead-plant residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 8 inches.

Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching should be applied as a separate operation, when practical, to prevent the seeds from being encapsulated in the mulch.

^b See Table TS/PS-3 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

^c Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.

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EPC 6/29/23

PCD File No. PPR-21-51

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EC-2 Temporary and Permanent Seeding (TS/PS)

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses

Common Name	Botanical Name	Growth Season ^b	Growth Form	Seeds/Pound	Pounds of PLS/acre
Alkali Soil Seed Mix					
Alkali sacaton	<i>Sporobolus airoides</i>	Cool	Bunch	1,750,000	0.25
Basin wildrye	<i>Elymus cinereus</i>	Cool	Bunch	165,000	2.5
Sodar streambank wheatgrass	<i>Agropyron riparium 'Sodar'</i>	Cool	Sod	170,000	2.5
Jose tall wheatgrass	<i>Agropyron elongatum 'Jose'</i>	Cool	Bunch	79,000	7.0
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	Cool	Sod	110,000	5.5
Total					17.75
Fertile Loamy Soil Seed Mix					
Ephriam crested wheatgrass	<i>Agropyron cristatum 'Ephriam'</i>	Cool	Sod	175,000	2.0
Dural hard fescue	<i>Festuca ovina 'durivuscula'</i>	Cool	Bunch	565,000	1.0
Lincoln smooth brome	<i>Bromus inermis leysii 'Lincoln'</i>	Cool	Sod	130,000	3.0
Sodar streambank wheatgrass	<i>Agropyron riparium 'Sodar'</i>	Cool	Sod	170,000	2.5
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	Cool	Sod	110,000	7.0
Total					15.5
High Water Table Soil Seed Mix					
Meadow foxtail	<i>Alopecurus pratensis</i>	Cool	Sod	900,000	0.5
Redtop	<i>Agrostis alba</i>	Warm	Open sod	5,000,000	0.25
Reed canarygrass	<i>Phalaris arundinacea</i>	Cool	Sod	68,000	0.5
Lincoln smooth brome	<i>Bromus inermis leysii 'Lincoln'</i>	Cool	Sod	130,000	3.0
Pathfinder switchgrass	<i>Panicum virgatum 'Pathfinder'</i>	Warm	Sod	389,000	1.0
Alkar tall wheatgrass	<i>Agropyron elongatum 'Alkar'</i>	Cool	Bunch	79,000	5.5
Total					10.75
Transition Turf Seed Mix^c					
Ruebens Canadian bluegrass	<i>Poa compressa 'Ruebens'</i>	Cool	Sod	2,500,000	0.5
Dural hard fescue	<i>Festuca ovina 'durivuscula'</i>	Cool	Bunch	565,000	1.0
Citation perennial ryegrass	<i>Lolium perenne 'Citation'</i>	Cool	Sod	247,000	3.0
Lincoln smooth brome	<i>Bromus inermis leysii 'Lincoln'</i>	Cool	Sod	130,000	3.0
Total					7.5

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Temporary and Permanent Seeding (TS/PS) EC-2

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses (cont.)

Common Name	Botanical Name	Growth Season ^b	Growth Form	Seeds/Pound	Pounds of PLS/acre
Sandy Soil Seed Mix					
Blue grama	<i>Bouteloua gracilis</i>	Warm	Sod-forming bunchgrass	825,000	0.5
Camper little bluestem	<i>Schizachyrium scoparium 'Camper'</i>	Warm	Bunch	240,000	1.0
Prairie sandreed	<i>Calamovilfa longifolia</i>	Warm	Open sod	274,000	1.0
Sand dropseed	<i>Sporobolus cryptandrus</i>	Cool	Bunch	5,298,000	0.25
Vaughn sideoats grama	<i>Bouteloua curtipendula 'Vaughn'</i>	Warm	Sod	191,000	2.0
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	Cool	Sod	110,000	5.5
Total					10.25
Heavy Clay, Rocky Foothill Seed Mix					
Ephriam crested wheatgrass ^d	<i>Agropyron cristatum 'Ephriam'</i>	Cool	Sod	175,000	1.5
Oahe Intermediate wheatgrass	<i>Agropyron intermedium 'Oahe'</i>	Cool	Sod	115,000	5.5
Vaughn sideoats grama ^e	<i>Bouteloua curtipendula 'Vaughn'</i>	Warm	Sod	191,000	2.0
Lincoln smooth brome	<i>Bromus inermis leysii 'Lincoln'</i>	Cool	Sod	130,000	3.0
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	Cool	Sod	110,000	5.5
Total					17.5

^a All of the above seeding mixes and rates are based on drill seeding followed by crimped straw mulch. These rates should be doubled if seed is broadcast and should be increased by 50 percent if the seeding is done using a Brillion Drill or is applied through hydraulic seeding. Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1. If hydraulic seeding is used, hydraulic mulching should be done as a separate operation.

^b See Table TS/PS-3 for seeding dates.

^c If site is to be irrigated, the transition turf seed rates should be doubled.

^d Crested wheatgrass should not be used on slopes steeper than 6H to 1V.

^e Can substitute 0.5 lbs PLS of blue grama for the 2.0 lbs PLS of Vaughn sideoats grama.

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EC-2 Temporary and Permanent Seeding (TS/PS)

Table TS/PS-3. Seeding Dates for Annual and Perennial Grasses

Seeding Dates	Annual Grasses (Numbers in table reference species in Table TS/PS-1)		Perennial Grasses	
	Warm	Cool	Warm	Cool
January 1–March 15			✓	✓
March 16–April 30	4	1,2,3	✓	✓
May 1–May 15	4		✓	
May 16–June 30	4,5,6,7			
July 1–July 15	5,6,7			
July 16–August 31				
September 1–September 30		8,9,10,11		
October 1–December 31			✓	✓

Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the Mulching BMP Fact Sheet for additional guidance.

Maintenance and Removal

Monitor and observe seeded areas to identify areas of poor growth or areas that fail to germinate. Reseed and mulch these areas, as needed.

An area that has been permanently seeded should have a good stand of vegetation within one growing season if irrigated and within three growing seasons without irrigation in Colorado. Reseed portions of the site that fail to germinate or remain bare after the first growing season.

Seeded areas may require irrigation, particularly during extended dry periods. Targeted weed control may also be necessary.

Protect seeded areas from construction equipment and vehicle access.

TS/PS-6 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 June 2012

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Project No.: 247.07
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Mulching (MU)

EC-4

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 reseeding. 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

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MU-1

EC-4

Mulching (MU)

- 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 nicking 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

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Urban Storm Drainage Criteria Manual Volume 3

June 2012

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2				
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Date: 01/03/23
Design: RMM
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