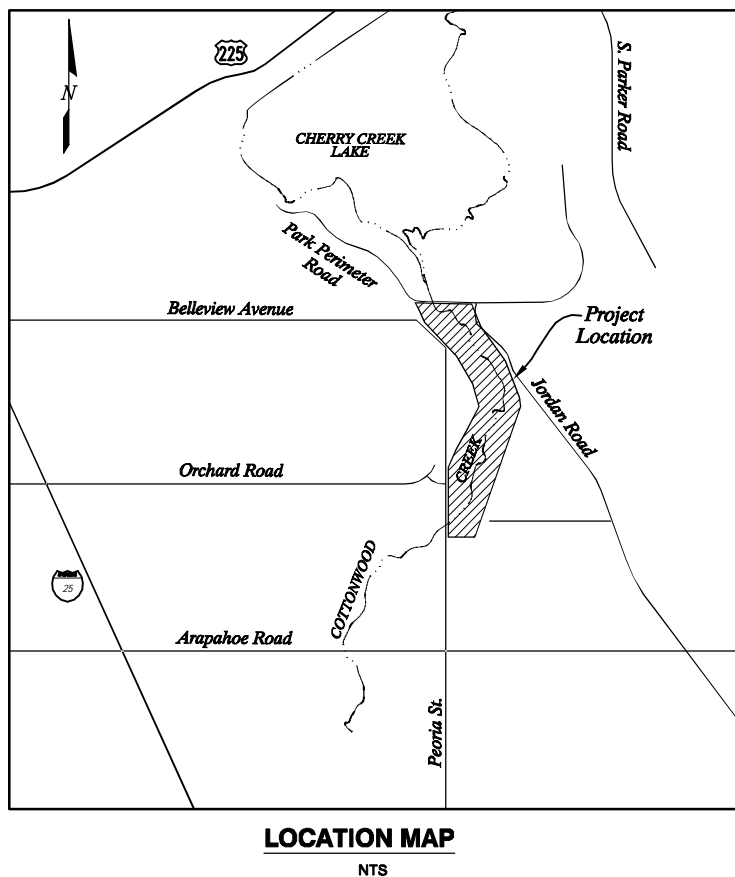
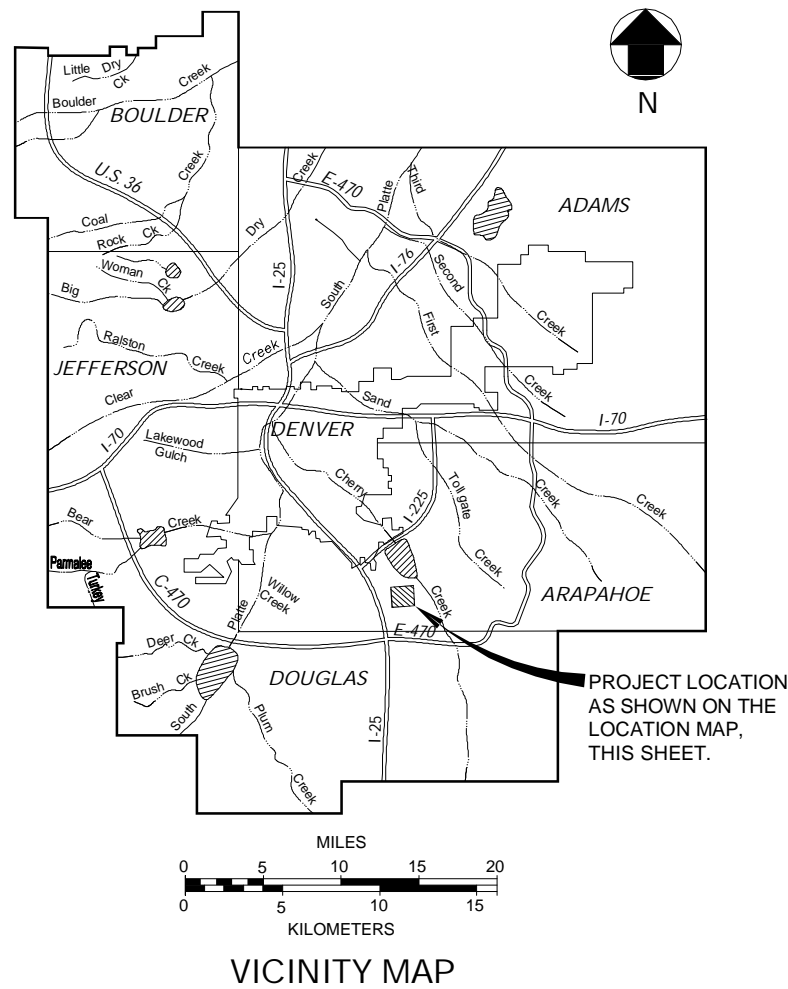


CONTRACT DRAWINGS FOR CONSTRUCTION OF COTTONWOOD CREEK RECLAMATION - PHASE 2 CHERRY CREEK BASIN WATER QUALITY AUTHORITY DECEMBER 2007



INDEX OF DRAWINGS

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2	G-2	GENERAL NOTES
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CIVIL		
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5	C-2	GRADING AND STABILIZATION PLAN B
6	C-3	GRADING AND STABILIZATION PLAN C
7	C-4	GRADING AND STABILIZATION PLAN D
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9	C-6	PROFILE STA. 138+47 TO 193+00
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11	C-8	TYPICAL CHANNEL SECTIONS
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13	C-10	RIFFLE DROP PLAN
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STRUCTURAL		
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23	S-3	BOARDWALK CROSSING SECTIONS
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39	EC-5	GESC STANDARD NOTES AND DETAILS - SHEET 2 OF 14
40	EC-6	GESC STANDARD NOTES AND DETAILS - SHEET 3 OF 14
41	EC-7	GESC STANDARD NOTES AND DETAILS - SHEET 4 OF 14
42	EC-8	GESC STANDARD NOTES AND DETAILS - SHEET 8 OF 14
43	EC-9	GESC STANDARD NOTES AND DETAILS - SHEET 10 OF 14
44	EC-10	GESC STANDARD NOTES AND DETAILS - SHEET 11 OF 14
45	EC-11	GESC STANDARD NOTES AND DETAILS - SHEET 12 OF 14
46	EC-12	GESC STANDARD NOTES AND DETAILS - SHEET 13 OF 14
47	EC-13	GESC STANDARD NOTES AND DETAILS - SHEET 14 OF 14

NAME: S:\0205_03\Phase 2\04\0205_03-CVPR.dwg DATE: DEC 18, 2007 TIME: 2:43 PM

	MULLER ENGINEERING CO., INC. CONSULTING ENGINEERS IRONGATE 4, SUITE 100 777 S. WADSWORTH BLVD. LAKEWOOD, COLORADO 80226 (303) 988-4939	DESIGN MDC DRAWN MAM CHECK DDJ	PREPARED FOR: CHERRY CREEK BASIN WATER QUALITY AUTHORITY 8390 E. CRESCENT PKWY., SUITE 500 GREENWOOD VILLAGE, CO. 80111 303-779-4525	COTTONWOOD CREEK RECLAMATION PHASE 2 CHERRY CREEK BASIN WATER QUALITY AUTHORITY	GENERAL TITLE SHEET	DATE DECEMBER 2007 DRAWING NO. G-1 SHEET NO. 1 OF 47
No.	DATE	REVISIONS	APPR.	MEC PROJECT No. 02025.03		

GENERAL LEGEND

	SOIL/SUBGRADE		PROPOSED FENCE
	CONCRETE		EXISTING FENCE
	BEDDING		EXISTING MAJOR CONTOUR
	EXISTING TREES EXISTING SHRUBS		EXISTING MINOR CONTOUR
	CONTROL POINT		PROPOSED MAJOR CONTOUR
	GEOTECHNICAL TEST PIT		PROPOSED MINOR CONTOUR
	NEW EMBANKMENT SLOPE AS INDICATED (HORIZ:VERT)		EASEMENT LINE
5585.75	SPOT ELEVATION		RIGHT-OF-WAY
	SECTION OR DETAIL DESIGNATION		EXISTING CULVERTS
	DRAWING NUMBER WHERE SECTION OR DETAIL IS SHOWN OR TAKEN		EXISTING SANITARY SEWER
	SILT FENCE		EXISTING WATER LINE
	CONSTRUCTION FENCE		EXISTING UNDERGROUND GAS
	VEHICLE TRACKING CONTROL		EXISTING OVERHEAD ELECTRIC
	CHECK DAM		PROPOSED UNDERGROUND ELECTRIC
	STABILIZED STAGING AREA		EXISTING UNDERGROUND TELEPHONE
			DITCH
			EDGE OF PAVEMENT/CONCRETE
			SECTION LINE
			CENTER LINE
			PARCEL LINE
			LIMITS OF CONSTRUCTION
			EXISTING RIPRAP
			PROPOSED RIPRAP

ABBREVIATIONS

AF	-ACRE - FEET	IN.	-INCH
APPROX.	-APPROXIMATELY	INV.	-INVERT ELEVATION
@	-AT	LF	-LINEAR FOOT/FEET
BLDG.	-BUILDING	L.P.	-LOW POINT
BLDR	-BOULDER	MH	-MANHOLE
BOC.	-BACK OF CURB	MAX.	-MAXIMUM
BOW	-BOTTOM OF WALL	MID	-MIDDLE
BP	-BANK PROTECTION	MIN.	-MINIMUM
BTWN	-BETWEEN	NRCP	-NONREINFORCED CONCRETE PIPE
C	-CENTERLINE	N.T.S.	-NOT TO SCALE
C.O.	-CLEAN OUT	# OR NO.	-NUMBER
CDOT	-COLORADO DEPARTMENT OF TRANSPORTATION	O/C. OR O.C.	-ON CENTER
CLR.	-CLEAR	PC	-POINT OF CURVATURE
COMB.	-COMBINATION	PT	POINT OF TANGENCY
CONC.	-CONCRETE	PVI	POINT OF VERTICAL INTERSECTION
CF	-CUBIC FEET	PVC	-POLYVINYL CHLORIDE PIPE
CJ	-CONSTRUCTION JOINT	PSF	-POUND/ SQUARE FOOT
DET.	-DETAIL	PSI	-POUND/ SQUARE INCH
DIA. OR Ø	-DIAMETER	QTY.	-QUANTITY
DIM.	-DIMENSION	RAD. OR R	-RADIUS
DIP	-DUCTILE IRON PIPE	RCP	-REINFORCED CONCRETE PIPE
D/S	-DOWNSTREAM	REQ D.	-REQUIRED
DWG.	-DRAWING	RET WALL	-RETAINING WALL
EA.	-EACH	REV.	-REVISED OR REVISION
EW.	-EACH WAY	R.O.W.	-RIGHT OF WAY
EOP	-EDGE OF PAVEMENT	SCH. OR SCHED.	-SCHEDULE
EOW	-EDGE OF WALK	SPEC.	-SPECIFICATION
EL.	-ELEVATION	SQ.	-SQUARE
EXST.	-EXISTING	STA	-STATION
FES	-FLARED END SECTION	STD.	-STANDARD
FL	-FLOW LINE	STL	-STEEL
FT.	-FEET OR FOOT	SAN SEWER	-SANITARY SEWER
F.F/FF	-FINISHED FLOOR	SS	-STAINLESS STEEL
FS	-FIRE SERVICE	TOC	-TOP OF CURB
GV	-GATE VALVE	TOG	-TOP OF GROUT
GALV.	-GALVANIZED	TOW	-TOP OF WALL
G.	-GAS	TYP.	-TYPICAL
HC	-HANDICAP	U.G.	-UNDERGROUND
HE.	-HORIZONTAL ELLIPTICAL	U/S	-UPSTREAM
H.P.	-HIGH POINT	U.S.G.S.	-UNITED STATES GEOLOGICAL SURVEY
HORZ. OR H.	-HORIZONTAL	VERT. OR V.	-VERTICAL
HT.	-HEIGHT	W	-WITH
		W/O	-WITHOUT
		WQ	-WATER QUALITY
		WS	-WATER SURFACE
		WSE	-WATER SURFACE ELEVATION

GENERAL NOTES

- LOCATIONS OF UTILITIES REPRESENT THE BEST-KNOWN LOCATIONS AT THE TIME OF PREPARATION OF DRAWINGS. THE CONTRACTOR SHALL FIELD-LOCATE ALL UTILITIES IN ADVANCE OF EXCAVATION. RELOCATION OF UTILITIES MAY OR MAY NOT BE NEEDED AFTER THEY ARE EXPOSED. ACTUAL RELOCATION OF LINES WILL NOT BE THE RESPONSIBILITY OF THE CONTRACTOR, UNLESS OTHERWISE SHOWN, BUT THE CONTRACTOR SHALL COOPERATE WITH UTILITY COMPANIES TO COORDINATE THE RELOCATION EFFORT. LINES NOT RELOCATED SHALL BE PROTECTED BY THE CONTRACTOR IN PLACE OR REMOVED AND REPLACED, IN KIND, AS APPROVED BY THE ENGINEER. NO ADDITIONAL PAYMENT WILL BE ALLOWED FOR THE MINOR ADJUSTMENT OF STRUCTURES OR PIPES IN ORDER TO CLEAR A CONFLICTING UTILITY. CONTACT UTILITY COMPANIES 48 HOURS IN ADVANCE WHEN WORKING ADJACENT TO THE UTILITY.
- THE CONTRACTOR SHALL COMPLY WITH ANY APPLICABLE TRAFFIC CONTROL REQUIREMENTS OF GREENWOOD VILLAGE IN ACCESSING THE CONSTRUCTION SITE.
- PROJECT FACILITIES ARE TO BE LOCATED BASED ON THE SURVEY COORDINATES, ELEVATIONS, DIMENSIONS, AND/OR GEOMETRIC DESIGN DATA PROVIDED ON THE DRAWINGS. WHERE SUCH INFORMATION IS NOT INDICATED ON THE DRAWINGS, FINISHED GRADES AND FACILITY LOCATIONS ARE TO BE DERIVED FROM PLAN VIEW LAYOUT LINES AND CONTOURS.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING STABLE EXCAVATIONS AND TEMPORARY SLOPES AND FOR SATISFYING ALL APPLICABLE OSHA, FEDERAL, STATE, AND LOCAL REGULATIONS. TEMPORARY EXCAVATIONS SHALL PROVIDE, AT MINIMUM, THE TRENCH DIMENSIONS AND CLEARANCES SHOWN OR SPECIFIED. TEMPORARY CONSTRUCTION SLOPES SHALL BE SLOPED, SHORED, SHEETED, AND/OR BRACED IN ACCORDANCE WITH STABILITY REQUIREMENTS AND APPLICABLE REGULATIONS, AND SHALL BE NO STEEPER THAN THE SLOPES SHOWN OR SPECIFIED WITHOUT THE APPROVAL OF THE ENGINEER. ANY SUCH APPROVALS BY THE ENGINEER WILL NOT RELIEVE THE CONTRACTOR FROM SOLE RESPONSIBILITY FOR PROVIDING STABLE EXCAVATIONS AND TEMPORARY SLOPES.
- THE WORK WILL TAKE PLACE IN AND AROUND A FLOWING STREAM, SUBJECT TO PERIODIC FLOODING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF SURFACE AND SUBSURFACE WATER DURING THE COURSE OF THE WORK. ANY DAMAGE TO THE WORK RESULTING FROM SUBSURFACE, BASE FLOWS OR FLOOD FLOWS, INCLUDING BOUAYANCY FORCES ON PIPELINES AND OTHER FACILITIES, SHALL BE CORRECTED BY THE CONTRACTOR AT THE CONTRACTOR'S SOLE COST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND SATISFYING THE REQUIREMENTS OF ANY APPLICABLE PERMITS PERTAINING TO WATER AND EROSION CONTROL.
- THE CONSTRUCTION WORK IS LIMITED TO THE PUBLIC RIGHT OF WAY AND THE CONSTRUCTION LIMITS SHOWN ON THE DRAWINGS.
- EXISTING FACILITIES NOT INDICATED TO BE REMOVED SHALL BE PROTECTED IN PLACE OR REMOVED AND REPLACED IN KIND, AS APPROVED BY THE ENGINEER.
- CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS (HORIZONTAL AND VERTICAL) AT CONNECTIONS TO ALL EXISTING INFRASTRUCTURE INCLUDING EXISTING SANITARY SEWERS, STORM DRAINS AND EXISTING CONCRETE STRUCTURES. THIS INFORMATION SHALL BE COLLECTED AND SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION AND/OR PRIOR TO INSTALLATION OF ANY NEW FACILITIES SHOWN ON THESE CONTRACT DRAWINGS. THE ENGINEER WILL DETERMINE IF ANY MINOR MODIFICATIONS TO THE NEW FACILITIES SHOWN ON THE CONTRACT DRAWINGS ARE NECESSARY SUCH AS HORIZONTAL AND VERTICAL ADJUSTMENTS.
- SCALES SHOWN ARE FOR FULL SIZE (22"x34") SHEETS AND REQUIRE ADJUSTMENT FOR HALF SIZE (11"x17") SHEETS.
- TOPOGRAPHIC MAPPING ON THE DRAWINGS WAS PREPARED BY CARROLL AND LANGE, INC. BASED ON AN AERIAL SURVEY CONDUCTED IN 2003. HORIZONTAL CONTROL FROM ARAPAHOE COUNTY CONTROL POINTS. VERTICAL CONTROL FROM BM 3" BRASS CAP @ NW CORNER OF HEADWALL ON SOUTH END OF NEWARK WAY CUL-DE-SAC, NORTH OF COTTONWOOD CREEK STAMPED: "USGS, SEPT. 1992 ELEV. 5632.33". NAVD 1929 DATUM. HORIZONTAL AND VERTICAL CONTROL POINTS ARE SHOWN ON DWG. G-3.
- THE PROJECT IS ORGANIZED INTO A BASE BID AND AN ALTERNATE SCHEDULE OF WORK TASKS. THE OWNER MAY ELECT TO AWARD JUST THE BASE BID, OR THE BASE BID PLUS SELECTED WORK TASKS FROM THE ALTERNATE SCHEDULE.
- THE FIRST INSTALLATIONS OF RIFFLE DROPS, ROCK CHUTES, BASEFLOW CHANNEL GRADING, BANK PROTECTION, AND OTHER WORK ELEMENTS IDENTIFIED BY THE OWNER SHALL BE CONSIDERED TEST INSTALLATIONS. CONTRACTOR SHALL NOTIFY ENGINEER AT LEAST 48 HOURS IN ADVANCE OF THE INSTALLATIONS SO THAT THE WORK CAN BE OBSERVED BY THE ENGINEER AND OWNER. THE OWNER, ENGINEER AND CONTRACTOR WILL DISCUSS THE WORK, CONFIRM THAT IT IS IN CONFORMANCE WITH THE DRAWINGS AND SPECIFICATIONS, AND CONSIDER ANY MODIFICATIONS THAT MAY ENABLE THE PROJECT TO BETTER EMULATE A NATURAL, FUNCTIONAL STREAM ENVIRONMENT. SEE SPECIFICATIONS FOR PAYMENT INFORMATION REGARDING MODIFICATIONS TO THE WORK.
- MISCELLANEOUS FENCE SEGMENTS WITHIN CONSTRUCTION LIMITS AND NOT IDENTIFIED ON THE PLANS SHALL BE REMOVED AND DISCARDED.

DATE: DEC 18, 2007 TIME: 8:17 PM

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No.	DATE	REVISIONS	APPR.

MULLER ENGINEERING CO., INC.
 CONSULTING ENGINEERS
 IRONGATE 4, SUITE 100
 777 S. WADSWORTH BLVD.
 LAKEWOOD, COLORADO 80226
 (303) 988-4939

MULLER

MEC PROJECT No. 02025.03

DESIGN MDC
DRAWN MAM
CHECK DDJ

PREPARED FOR:

CHERRY CREEK BASIN WATER QUALITY AUTHORITY
 8390 E. CRESCENT PKWY., SUITE 500
 GREENWOOD VILLAGE, CO. 80111
 303-779-4525

COTTONWOOD CREEK RECLAMATION
 PHASE 2
 CHERRY CREEK BASIN WATER QUALITY AUTHORITY

GENERAL
 GENERAL NOTES

DATE DECEMBER 2007
DRAWING NO. G-2
SHEET NO. 2 OF 47

Existing Embankment For Water Quality Pond

REPLACE 12" GATE AT EXISTING WATER QUALITY OUTLET STRUCTURE

6
C-15

Existing Water Quality Pond

NW CORNER SEC. 13
FND NO. 4 REBAR
N: 1,653,356.68
E: 3,184,646.67

Cherry Creek Family Shooting Center Facilities

EXISTING CHANNEL (TO BE ABANDONED)

Bellevue Ave.
N89°42'31"E 2646.38'

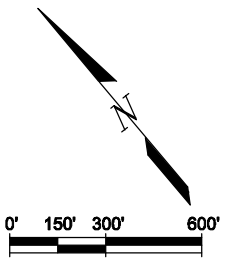
N 1/4 CORNER SEC. 14
3.25" ALUM. CAP
"WSSI LS 20160"
N: 1,653,343.22
E: 3,182,000.32

PHASE 2

CONTROL INFORMATION			
CONTROL POINT	NORTHING	EASTING	ELEVATION
1	1,653,828.54	3,183,738.54	5579.33
4	1,652,554.80	3,183,846.65	5575.76
5	1,652,556.68	3,184,946.77	5568.46
6	1,652,342.23	3,186,013.04	5593.44
7	1,651,645.67	3,184,618.00	5579.16
8	1,651,407.54	3,185,543.59	5579.63
9	1,651,408.58	3,186,772.72	5590.91
10	1,650,464.99	3,185,044.72	5600.80
11	1,650,569.50	3,185,996.70	5586.35
12	1,650,565.09	3,187,426.85	5598.93
13	1,649,443.08	3,188,156.64	5622.70
14	1,649,713.18	3,186,990.64	5590.54
15	1,649,434.07	3,185,650.69	5601.34
16	1,648,248.03	3,184,990.88	5617.66
17	1,648,465.20	3,186,030.18	5600.02
18	1,648,659.31	3,186,723.92	5612.52
20	1,647,662.06	3,186,530.70	5622.82
22	1,647,252.34	3,184,876.47	5644.25
23	1,646,769.84	3,185,940.77	5621.38

NOTES:

1. GEOTECHNICAL TEST PITS SHOWN WERE COMPLETED IN MARCH 2003. SEE THE "GEOTECHNICAL REPORT, COTTONWOOD CREEK CHANNEL STABILIZATION" (MAXFOUR MAY 2003) FOR TEST PIT LOGS AND INFORMATION REGARDING SUBSURFACE MATERIAL AND CONDITIONS AT THE TIME OF THE EXPLORATION.
2. CONTROL POINTS WERE SET DURING 2003 SURVEY, CONTRACTOR SHALL LOCATE AND INSPECT CONTROL POINTS PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER IF ADDITIONAL CONTROL IS NEEDED. ANY ADDITIONAL POINTS SHALL BE PROVIDED BY OWNER.



PLAN A

PLAN B

PLAN C

PLAN E

PLAN D

ROCK CHUTE, TYP.

RIFFLE DROP, TYP.

OVERFLOW WEIR, TYP.

N00°03'05"E 5300.82'

PHASE 1 IMPROVEMENTS SEE DWG. C-16

SW CORNER SEC. 13
FND NO. 6 REBAR
2.5" ALUM. CAP
PLS 28286
N: 1,648,055.86
E: 3,184,641.91

EXISTING PHASE 1 REACH

PHASE 1 IMPROVEMENTS SEE DWG. C-17

SOUTHFIELD PARK

NAME: S:\020205_03\Phase 2\cad\020205_03-SITE-PLAN.dwg DATE: DEC 18, 2007, TIME: 11:05 AM

No.	DATE	REVISIONS	APPR.

MULLER ENGINEERING CO., INC.
CONSULTING ENGINEERS
IRONGATE 4, SUITE 100
777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 988-4939

MULLER

MEC PROJECT No. 020205.03

DESIGN MDC
DRAWN MAM
CHECK DDJ

PREPARED FOR:
CHERRY CREEK BASIN WATER QUALITY AUTHORITY
8390 E. CRESCENT PKWY., SUITE 500
GREENWOOD VILLAGE, CO. 80111
303-779-4525

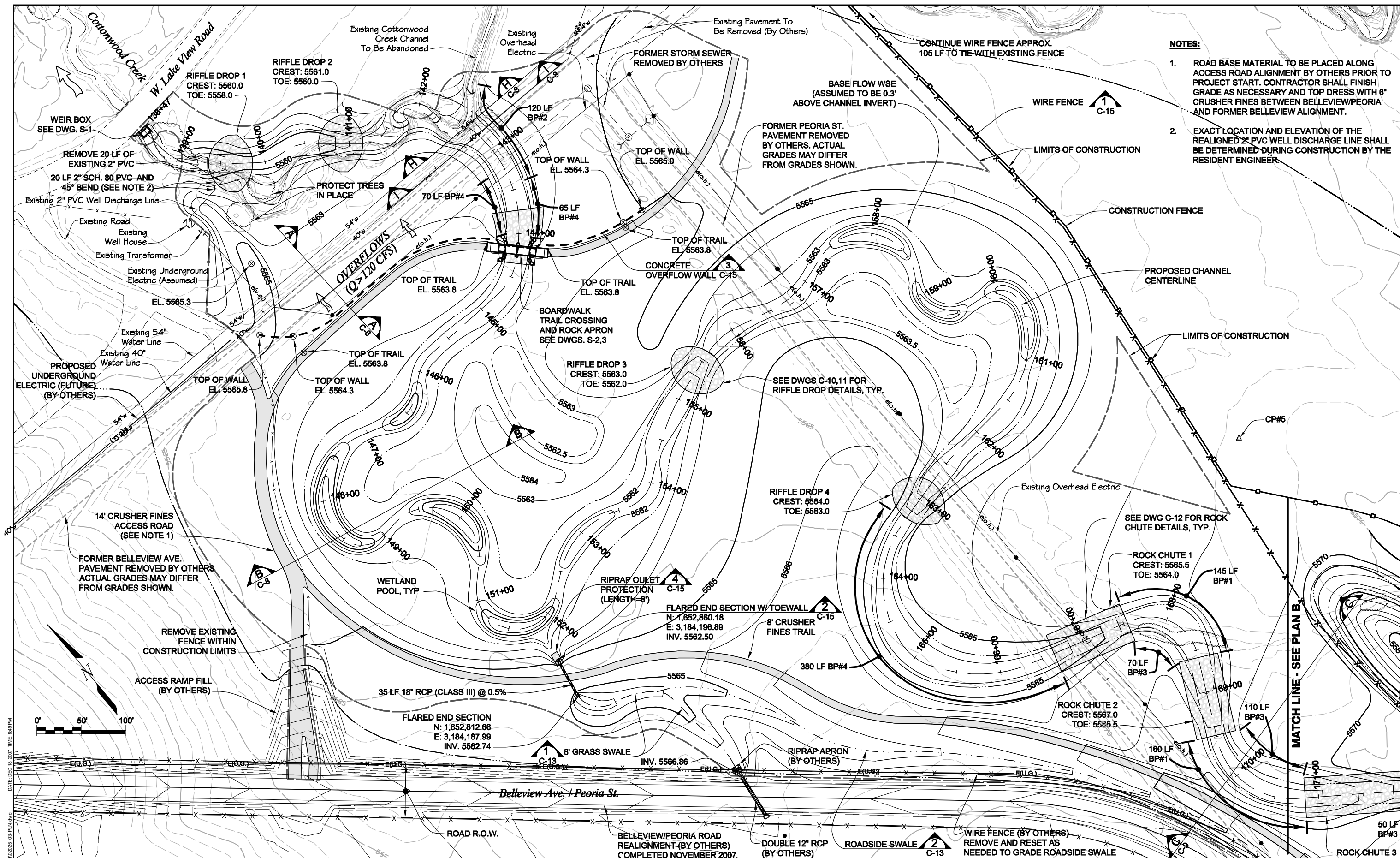
COTTONWOOD CREEK RECLAMATION
PHASE 2
CHERRY CREEK BASIN WATER QUALITY AUTHORITY

GENERAL
SITE PLAN

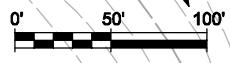
DATE
DECEMBER 2007

DRAWING NO.
G-3

SHEET NO.
3 OF 47

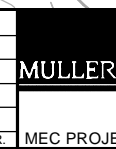


- NOTES:**
- ROAD BASE MATERIAL TO BE PLACED ALONG ACCESS ROAD ALIGNMENT BY OTHERS PRIOR TO PROJECT START. CONTRACTOR SHALL FINISH GRADE AS NECESSARY AND TOP DRESS WITH 6" CRUSHER FINES BETWEEN BELLEVUE/PEORIA AND FORMER BELLEVUE ALIGNMENT.
 - EXACT LOCATION AND ELEVATION OF THE REALIGNED 2" PVC WELL DISCHARGE LINE SHALL BE DETERMINED DURING CONSTRUCTION BY THE RESIDENT ENGINEER.



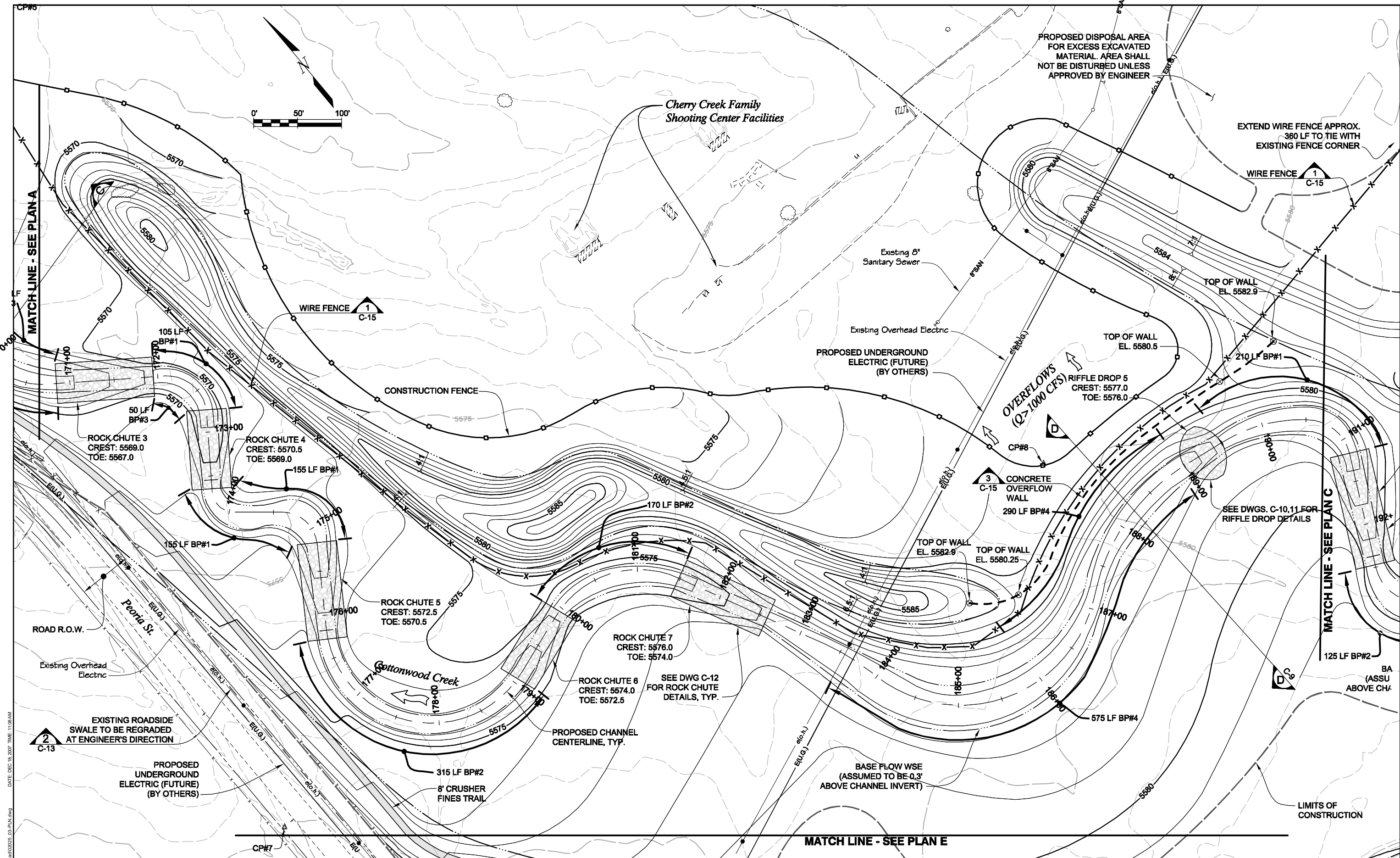
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<p>MULLER ENGINEERING CO., INC. CONSULTING ENGINEERS IRONGATE 4, SUITE 100 777 S. WADSWORTH BLVD. LAKEWOOD, COLORADO 80226 (303) 988-4939</p>	<p>DESIGN MDC</p> <p>DRAWN KSP</p> <p>CHECK DDJ</p>	<p>PREPARED FOR: CHERRY CREEK BASIN WATER QUALITY AUTHORITY 8390 E. CRESCENT PKWY., SUITE 500 GREENWOOD VILLAGE, CO. 80111 303-779-4525</p>	<p>COTTONWOOD CREEK RECLAMATION PHASE 2 CHERRY CREEK BASIN WATER QUALITY AUTHORITY</p>	<p>CIVIL GRADING AND STABILIZATION PLAN A</p>	<p>DATE DECEMBER 2007</p> <p>DRAWING NO. C-1</p> <p>SHEET NO. 4 OF 47</p>
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MEC PROJECT No. 020205.03

No.	DATE	REVISIONS	APPR.



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 DATE: DEC 18, 2007 TIME: 11:08 AM

No.	DATE	REVISIONS	APPR.

MULLER ENGINEERING CO., INC.
 CONSULTING ENGINEERS
 IRONGATE 4, SUITE 100
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 (303) 988-4939

MULLER

MEC PROJECT No. 02025.03

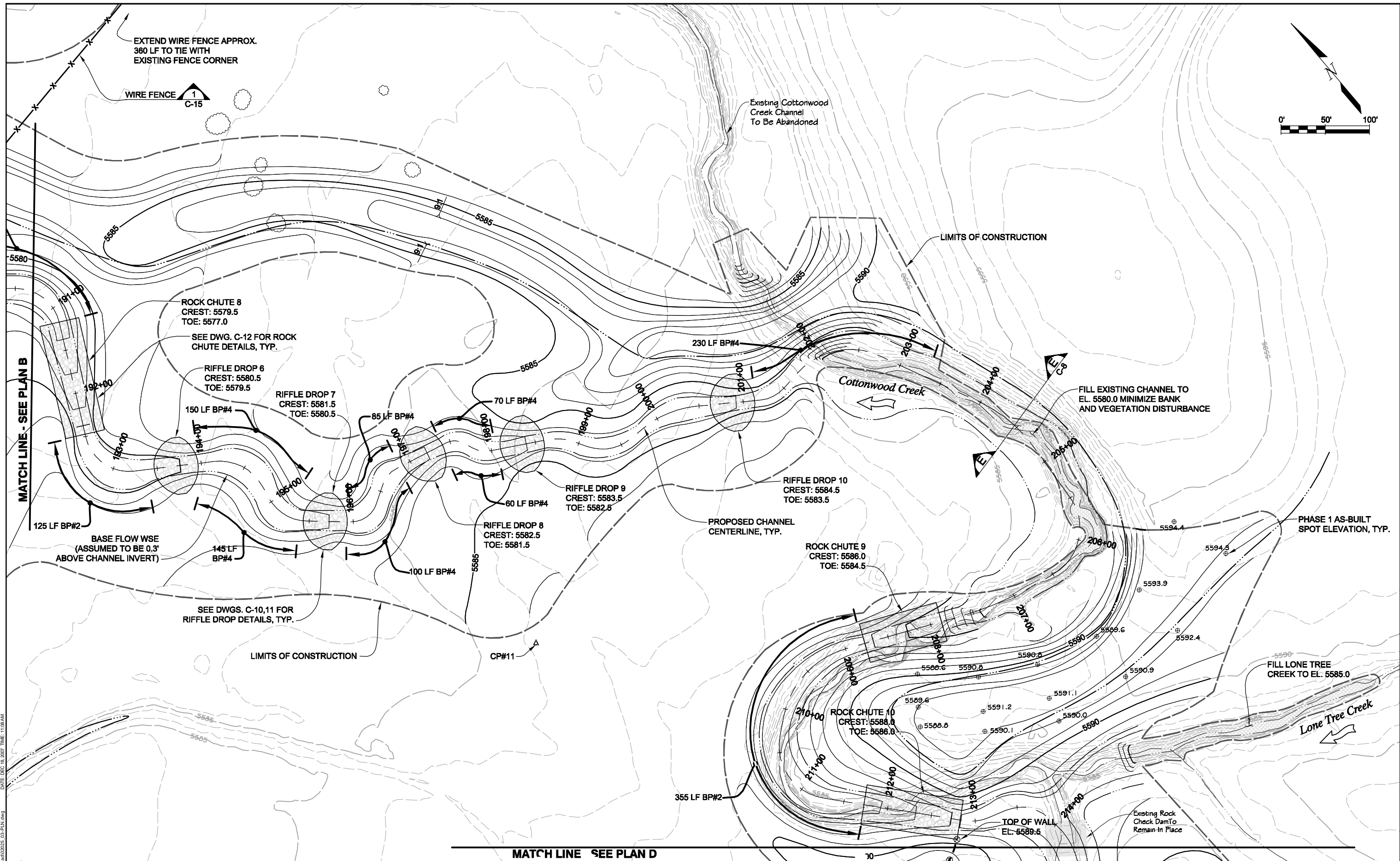
DESIGN MDC
 DRAWN KSP
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PREPARED FOR:
 CHERRY CREEK BASIN WATER QUALITY AUTHORITY
 8390 E. CRESCENT PKWY., SUITE 500
 GREENWOOD VILLAGE, CO. 80111
 303-779-4525

COTTONWOOD CREEK RECLAMATION
 PHASE 2
 CHERRY CREEK BASIN WATER QUALITY AUTHORITY

CIVIL
 GRADING AND STABILIZATION
 PLAN B

DATE: DECEMBER 2007
 DRAWING NO.: C-2
 SHEET NO.: 5 OF 47



NAME: S:\020205\03\Phase 2\cad\020205_03-P1.dwg DATE: DEC 18, 2007 TIME: 11:08 AM

No.	DATE	REVISIONS	APPR.

MULLER ENGINEERING CO., INC.
CONSULTING ENGINEERS
IRONGATE 4, SUITE 100
777 S. WADSWORTH BLVD.
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(303) 988-4939

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MEC PROJECT No. 020205

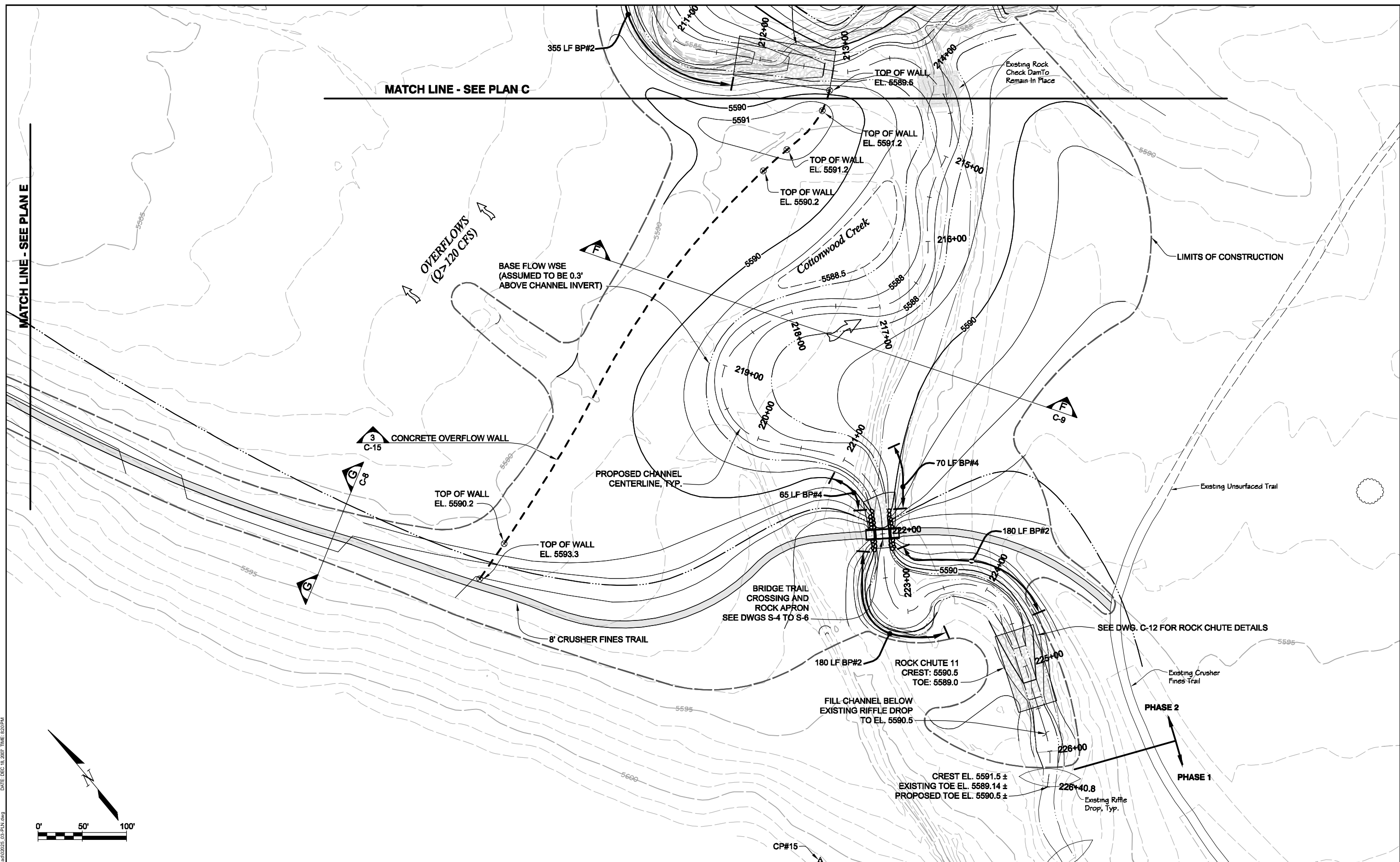
DESIGN MDC
DRAWN KSP
CHECK DDJ

PREPARED FOR:
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GREENWOOD VILLAGE, CO. 80111
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COTTONWOOD CREEK RECLAMATION
PHASE 2
CHERRY CREEK BASIN WATER QUALITY AUTHORITY

CIVIL
GRADING AND STABILIZATION
PLAN C

DATE DECEMBER 2007
DRAWING NO. C-3
SHEET NO. 6 OF 47



MATCH LINE - SEE PLAN E

MATCH LINE - SEE PLAN C

OVERFLOWS
(Q > 120 CFS)

BASE FLOW WSE
(ASSUMED TO BE 0.3'
ABOVE CHANNEL INVERT)

3
C-15
CONCRETE OVERFLOW WALL

TOP OF WALL
EL. 5590.2

TOP OF WALL
EL. 5593.3

PROPOSED CHANNEL
CENTERLINE, TYP.

8' CRUSHER FINES TRAIL

BRIDGE TRAIL
CROSSING AND
ROCK APRON
SEE DWGS S-4 TO S-6

180 LF BP#2

ROCK CHUTE 11
CREST: 5590.5
TOE: 5589.0

FILL CHANNEL BELOW
EXISTING RIFFLE DROP
TO EL. 5590.5

CREST EL. 5591.5 ±
EXISTING TOE EL. 5589.14 ±
PROPOSED TOE EL. 5590.5 ±

SEE DWG. C-12 FOR ROCK CHUTE DETAILS

PHASE 2

PHASE 1

LIMITS OF CONSTRUCTION

Existing Unsourced Trail

Existing Crusher
Fines Trail

Existing Rock
Check Dam To
Remain In Place

355 LF BP#2

TOP OF WALL
EL. 5589.5

TOP OF WALL
EL. 5591.2

TOP OF WALL
EL. 5591.2

TOP OF WALL
EL. 5590.2

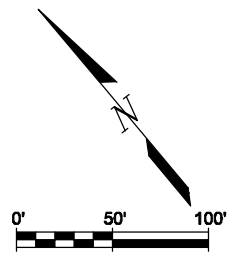
Cottonwood Creek

70 LF BP#4

65 LF BP#4

180 LF BP#2

CP#15



NAME: S:\02025\03\Phase 2\cad\02025_03-P.N.dwg DATE: DEC 18, 2007 TIME: 8:20PM

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777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 988-4939

MULLER

MEC PROJECT No. 02025.03

DESIGN MDC
DRAWN KSP
CHECK DDJ

PREPARED FOR:

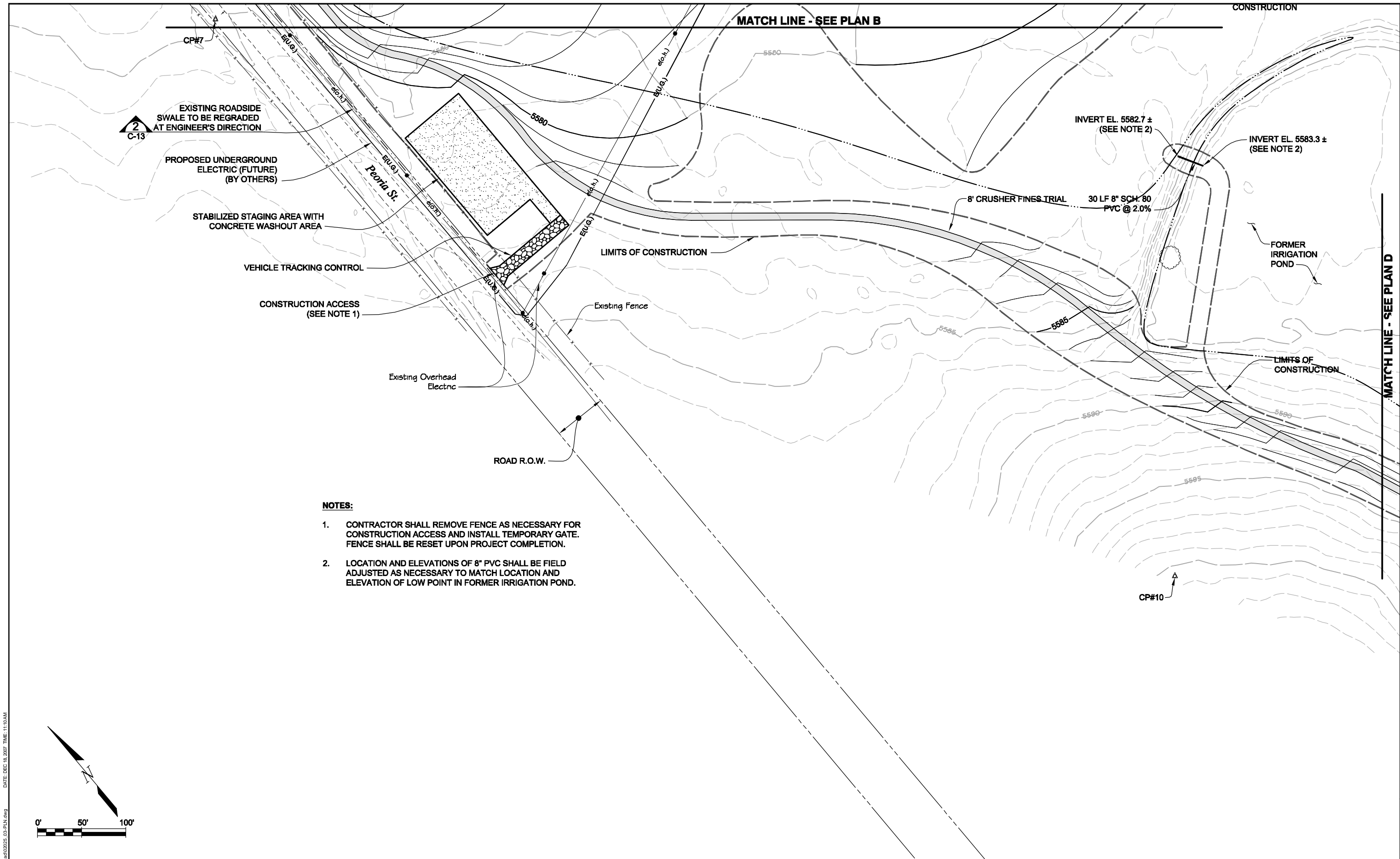


CHERRY CREEK BASIN WATER QUALITY AUTHORITY
8390 E. CRESCENT PKWY., SUITE 500
GREENWOOD VILLAGE, CO. 80111
303-779-4525

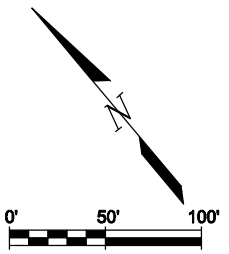
COTTONWOOD CREEK RECLAMATION
PHASE 2
CHERRY CREEK BASIN WATER QUALITY AUTHORITY

CIVIL
GRADING AND STABILIZATION
PLAN D

DATE DECEMBER 2007
DRAWING NO. C-4
SHEET NO. 7 OF 47



- NOTES:**
1. CONTRACTOR SHALL REMOVE FENCE AS NECESSARY FOR CONSTRUCTION ACCESS AND INSTALL TEMPORARY GATE. FENCE SHALL BE RESET UPON PROJECT COMPLETION.
 2. LOCATION AND ELEVATIONS OF 8" PVC SHALL BE FIELD ADJUSTED AS NECESSARY TO MATCH LOCATION AND ELEVATION OF LOW POINT IN FORMER IRRIGATION POND.



NAME: S:\02025\03\Phase 2\cad\02025_03-P.N.dwg DATE: DEC 18, 2007 TIME: 11:10 AM

No.	DATE	REVISIONS	APPR.

MULLER ENGINEERING CO., INC.
 CONSULTING ENGINEERS
 IRONGATE 4, SUITE 100
 777 S. WADSWORTH BLVD.
 LAKEWOOD, COLORADO 80226
 (303) 988-4939

MULLER

MEC PROJECT No. 02025.03

DESIGN
MDC
 DRAWN
KSP
 CHECK
DDJ

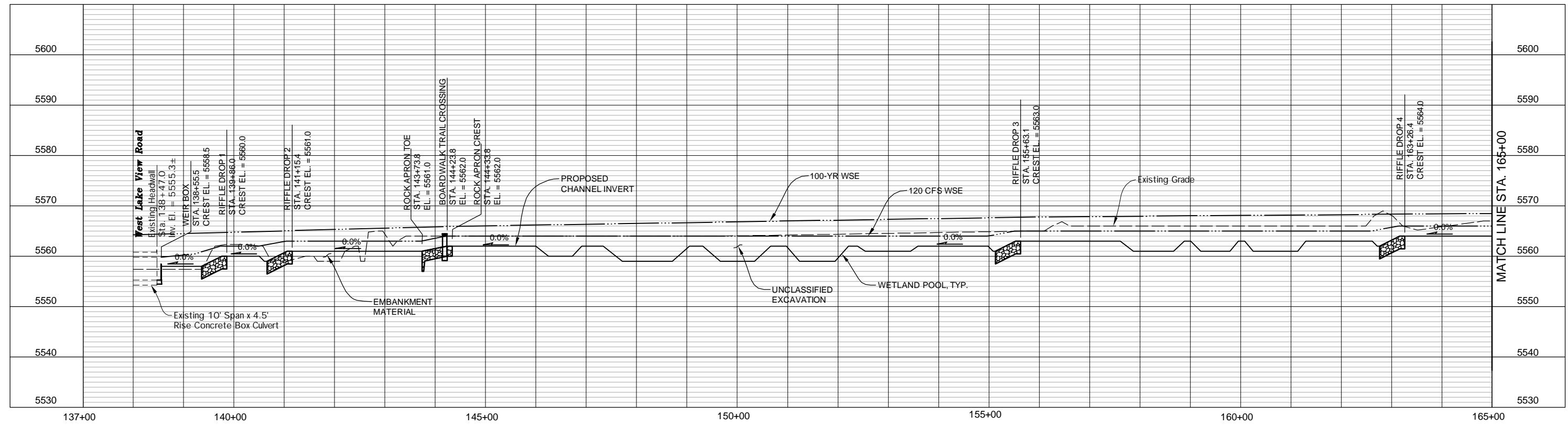


PREPARED FOR:
 CHERRY CREEK BASIN WATER QUALITY AUTHORITY
 8390 E. CRESCENT PKWY., SUITE 500
 GREENWOOD VILLAGE, CO. 80111
 303-779-4525

COTTONWOOD CREEK RECLAMATION
 PHASE 2
 CHERRY CREEK BASIN WATER QUALITY AUTHORITY

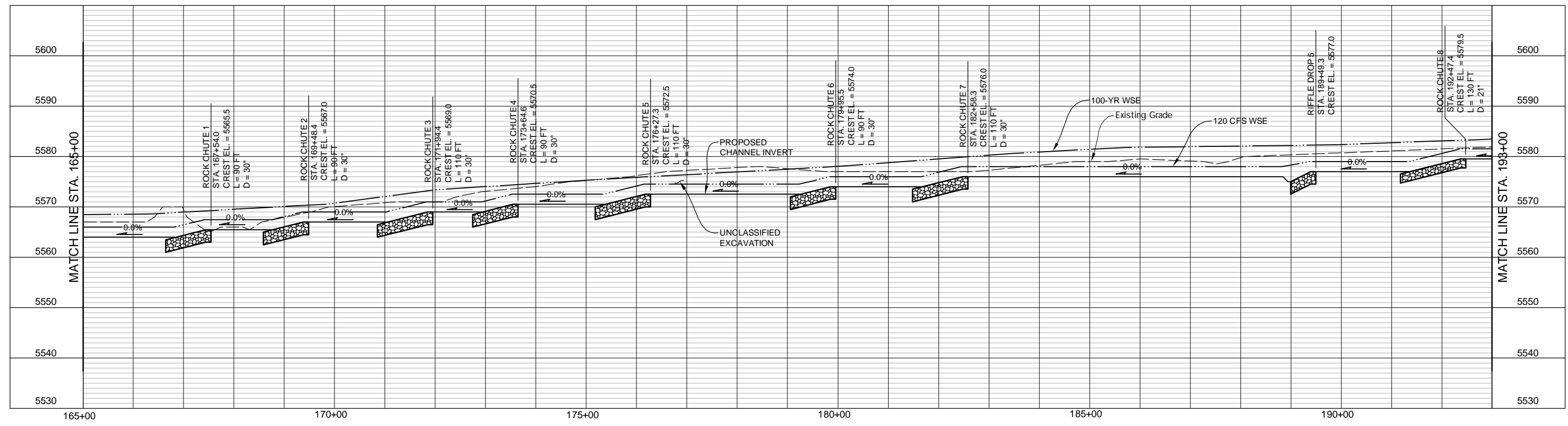
CIVIL
 GRADING AND STABILIZATION
 PLAN E

DATE	DECEMBER 2007
DRAWING NO.	C-5
SHEET NO.	8 OF 47



SCALE: 1"=100' HORIZ.
1"=5' VERT.

SEE NOTES, DWG. C-7



SCALE: 1"=100' HORIZ.
1"=5' VERT.

SEE NOTES, DWG. C-7

NAME: S:\0205\03\Phase 2\CD\0205_03-PRF.dwg DATE: DEC 18, 2007 TIME: 8:46 PM

No.	DATE	REVISIONS	APPR.

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CONSULTING ENGINEERS
IRONGATE 4, SUITE 100
777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 988-4939

MULLER

MEC PROJECT No. 02025.03

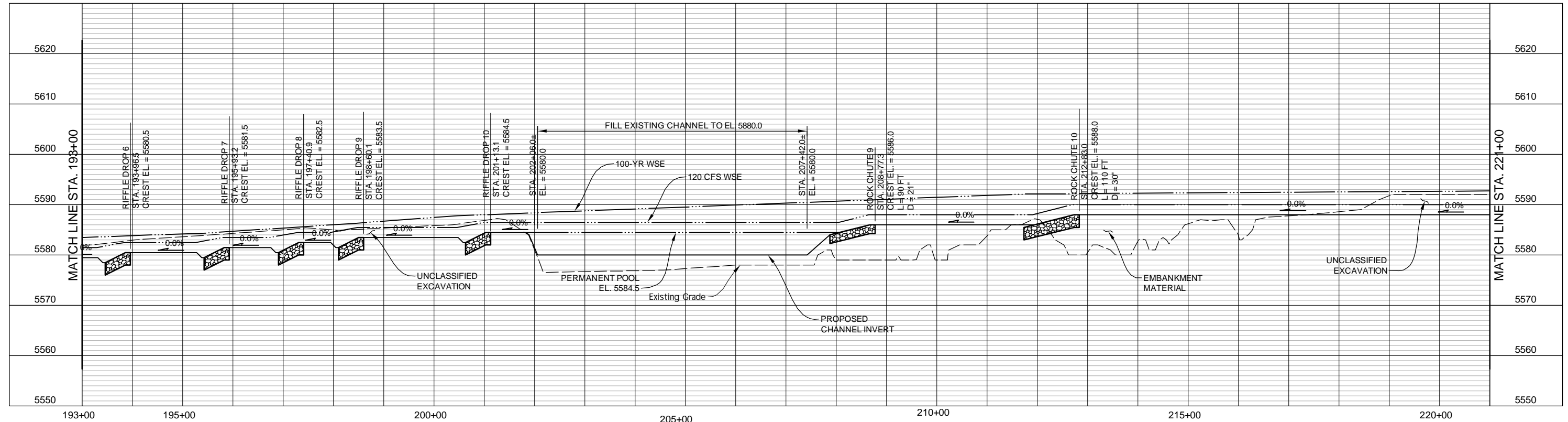
DESIGN MDC
DRAWN MAM
CHECK DDJ

PREPARED FOR:
CHERRY CREEK BASIN WATER QUALITY AUTHORITY
8390 E. CRESCENT PKWY., SUITE 500
GREENWOOD VILLAGE, CO. 80111
303-779-4525

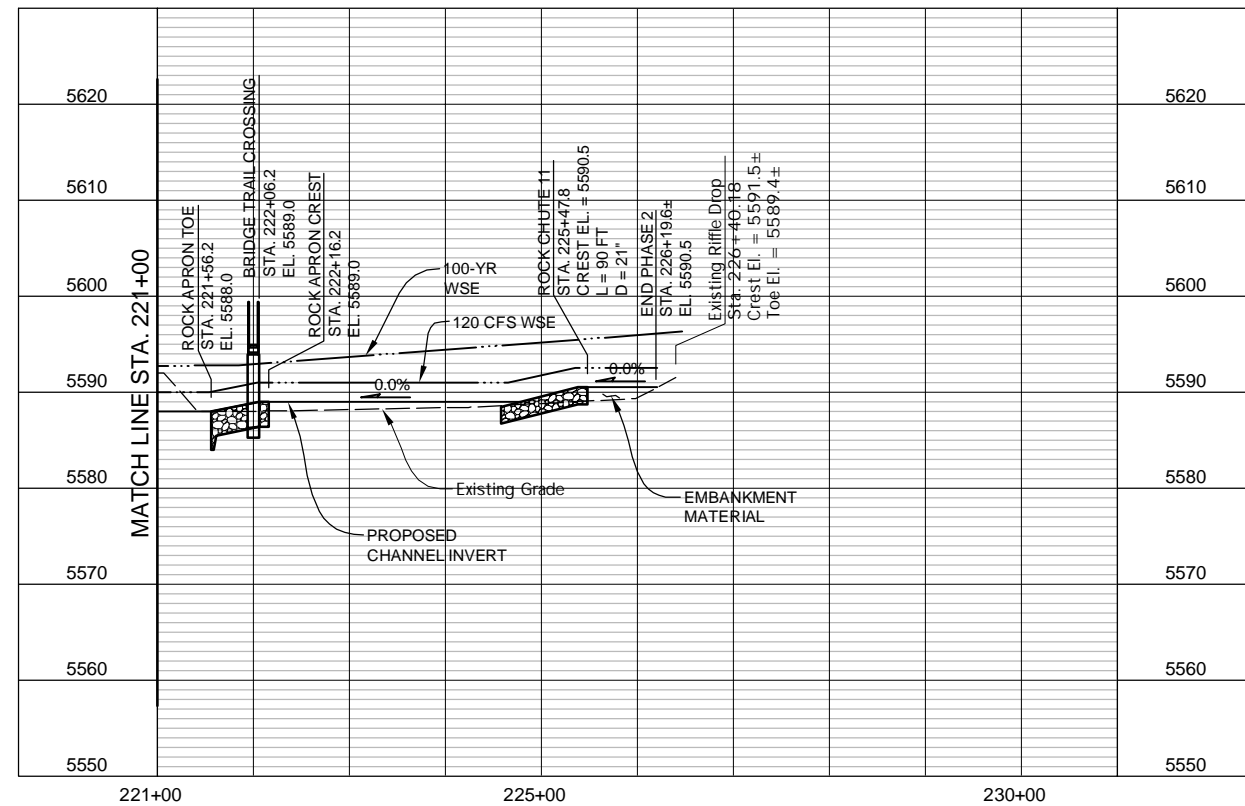
COTTONWOOD CREEK RECLAMATION
PHASE 2
CHERRY CREEK BASIN WATER QUALITY AUTHORITY

CIVIL
PROFILE STA. 138+47
TO 193+00

DATE: DECEMBER 2007
DRAWING NO.: C-6
SHEET NO.: 9 OF 47



SCALE: 1"=100' HORIZ.
1"=5' VERT.



SCALE: 1"=100' HORIZ.
1"=5' VERT.

PROFILE NOTES:

- 100-YR WSE SHOWN CORRESPONDS TO OVERBANK FLOW, WHERE APPLICABLE.
- THE DESIGN FLOW OF 120 CFS REPRESENTS THE FLOW WHICH WOULD BE CONVEYED IN THE CHANNEL WITHOUT OVERTOPPING THE OVERFLOW WEIRS.

STORM FLOWS

RETURN PERIOD	FLOW, CFS	
	U/S OF LONE TREE CREEK ¹	D/S OF LONE TREE CREEK ²
100-YR	4043	5311
10-YR	2529	2998
5-YR	2092	2426
2-YR	1287	1436

¹ SOURCE: OUTFALL PLANNING REPORT FOR THE COTTONWOOD CREEK WATERSHED (UDFCD, JUNE 1991)
² BASED ON HYDROLOGIC ANALYSIS OF LONE TREE CREEK

HYDRAULIC INFORMATION (PHASES 1 AND 2)

PROJECT COMPARISON	EXISTING CREEK	RECLAIMED CREEK
STREAM LENGTH, MI	2.2	2.7
SINUOSITY	1.37	1.74
RIPARIAN WETLANDS, AC	0.5	15.9
RIPARIAN CORRIDOR AREA, AC	4.4	24.9
2-YEAR FLOODPLAIN AREA, AC	6.6	83.3
EFFECTIVE SLOPE, % ¹	0.52	0.11

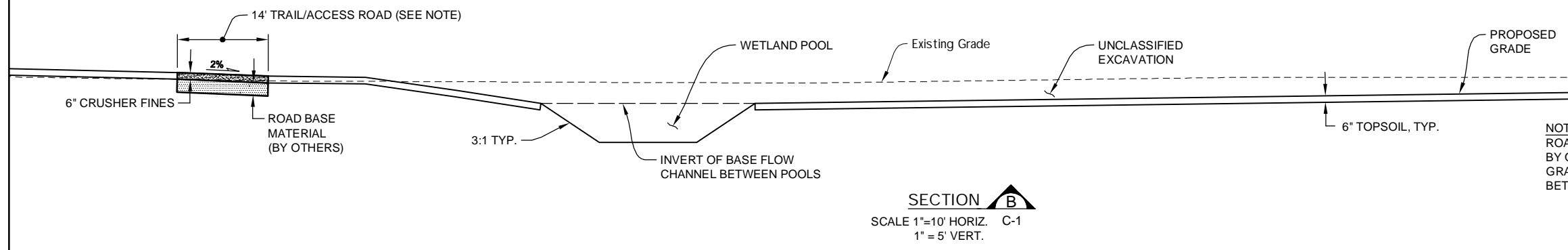
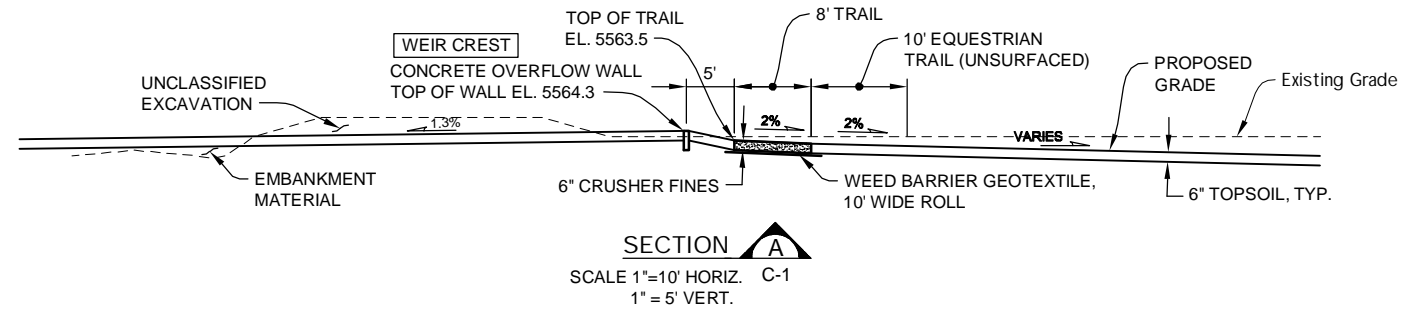
¹ REFLECTS AVERAGE CHANNEL SLOPE EXCLUDING DROP STRUCTURES FOR PROPOSED CHANNEL

WIDTH TO DEPTH RATIO	DEPTH, FT	EXISTING WIDTH	PROPOSED WIDTH	EXISTING WIDTH TO DEPTH RATIO	PROPOSED WIDTH TO DEPTH RATIO
BASEFLOW ²	0.2	8.0	15	40	50
BASEFLOW PLUS RIPARIAN FRINGE	1	14	66	14	66
BASEFLOW PLUS RIPARIAN BENCH	1.5	17	83	11	55
2 FOOT DEPTH	2	19	99	10	49
APPROXIMATE 2-YEAR FLOODPLAIN	6	26	319	4	53

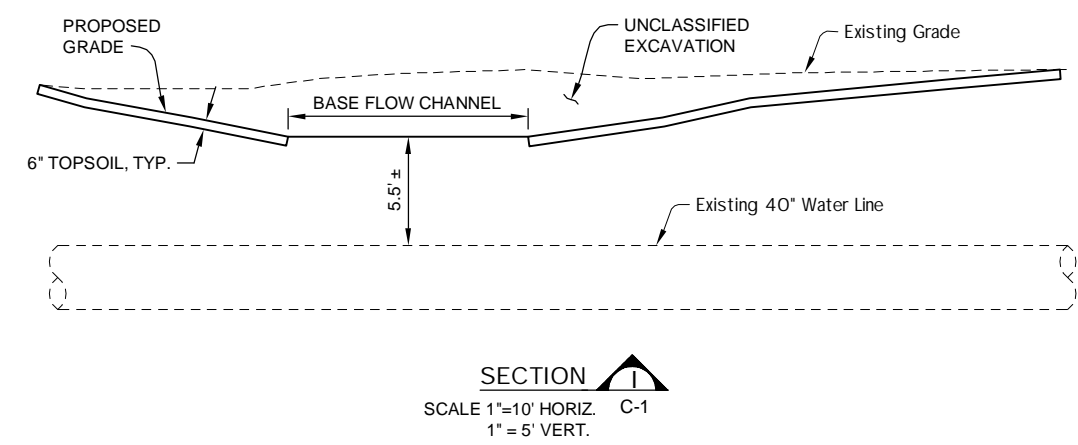
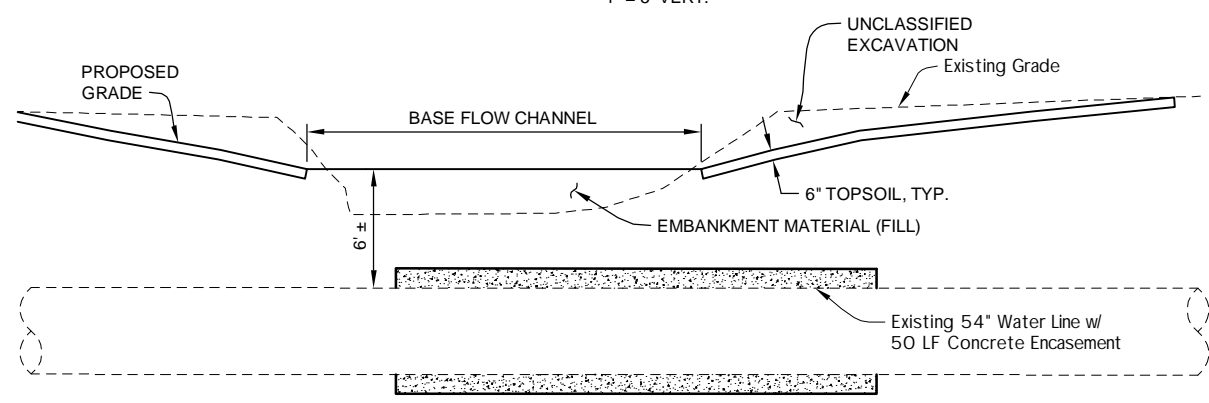
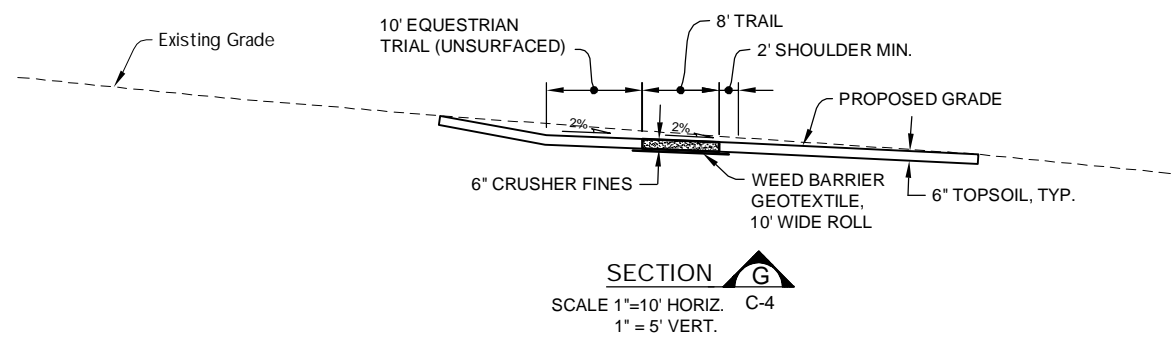
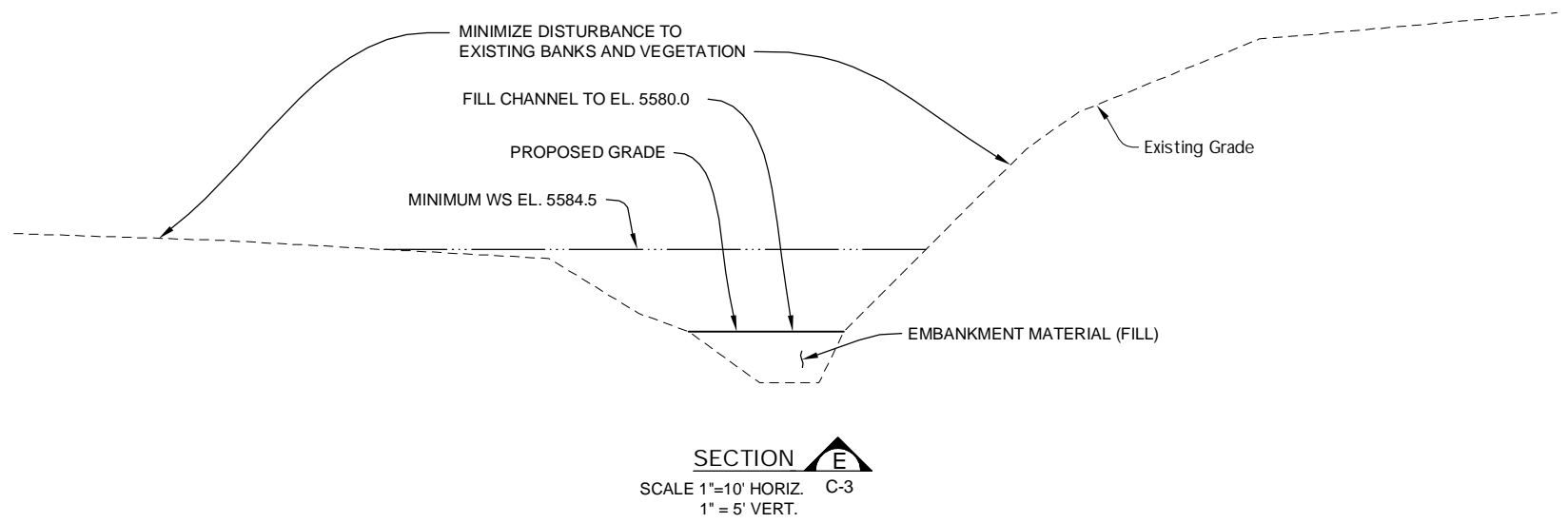
² DOES NOT REFLECT SCOUR HOLES FOR PROPOSED CHANNEL

NAME: S:\0205\03\Phase 2\CH02025_03-PRF.dwg DATE: DEC 18, 2007 TIME: 8:40 PM

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No.	DATE	REVISIONS	APPR.											
MEC PROJECT No. 02025.03														



NOTE:
ROAD BASE MATERIAL TO BE PLACED ALONG ACCESS ROAD ALIGNMENT BY OTHERS PRIOR TO PROJECT START. CONTRACTOR SHALL FINISH GRADE AS NECESSARY AND TOP DRESS WITH 6" CRUSHER FINES BETWEEN BELLEVUE/PEORIA AND FORMER BELLEVUE ALIGNMENT.



NAME: S:\02025_03\Phase 2\cad\02025_03-TYP-SEC.dwg DATE: DEC-18, 2007, TIME: 11:12 AM

No.	DATE	REVISIONS	APPR.

MULLER ENGINEERING CO., INC.
CONSULTING ENGINEERS
IRONGATE 4, SUITE 100
777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 988-4939

MEC PROJECT No. 02025.03

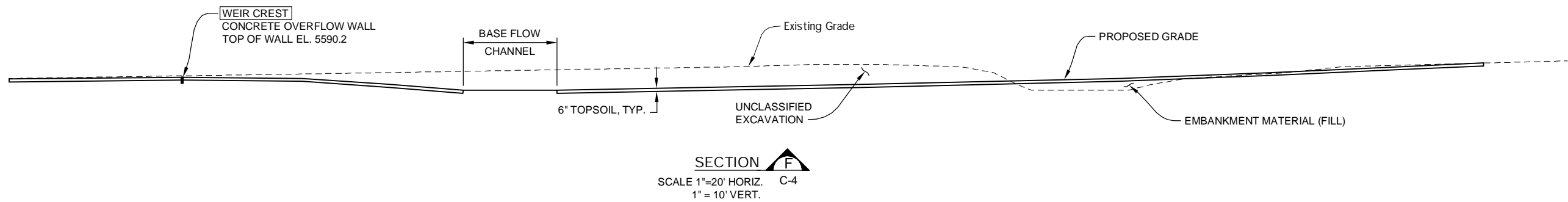
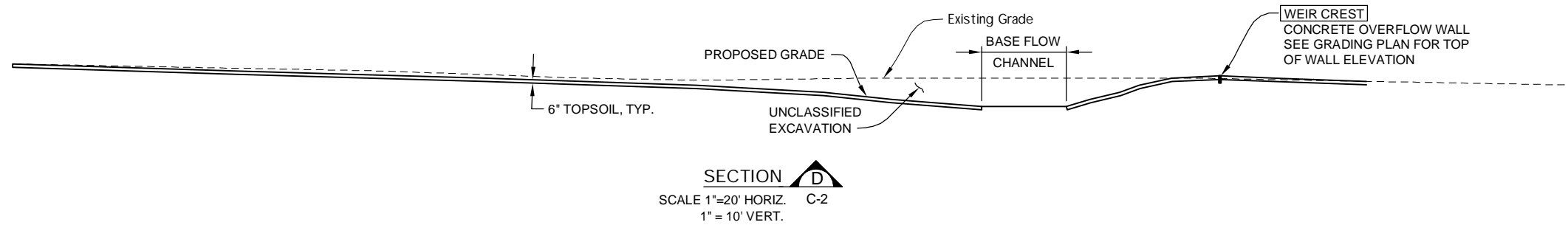
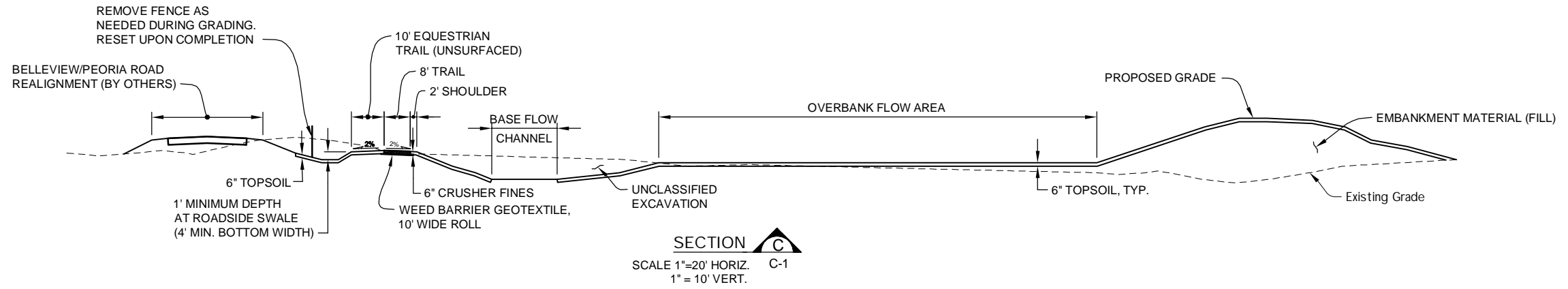
DESIGN MDC
DRAWN KSP
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PREPARED FOR:
CHERRY CREEK BASIN WATER QUALITY AUTHORITY
8390 E. CRESCENT PKWY., SUITE 500
GREENWOOD VILLAGE, CO. 80111
303-779-4525

COTTONWOOD CREEK RECLAMATION
PHASE 2
CHERRY CREEK BASIN WATER QUALITY AUTHORITY

CIVIL
TYPICAL CHANNEL SECTIONS

DATE: DECEMBER 2007
DRAWING NO.: C-8
SHEET NO.: 11 OF 47



NAME: S:\02025\03\Phase 2\cad\02025_03-TYP_SEC.dwg DATE: DEC 18, 2007 TIME: 2:46 PM

No.	DATE	REVISIONS	APPR.

MULLER ENGINEERING CO., INC.
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 (303) 988-4939

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MEC PROJECT No. 02025.03

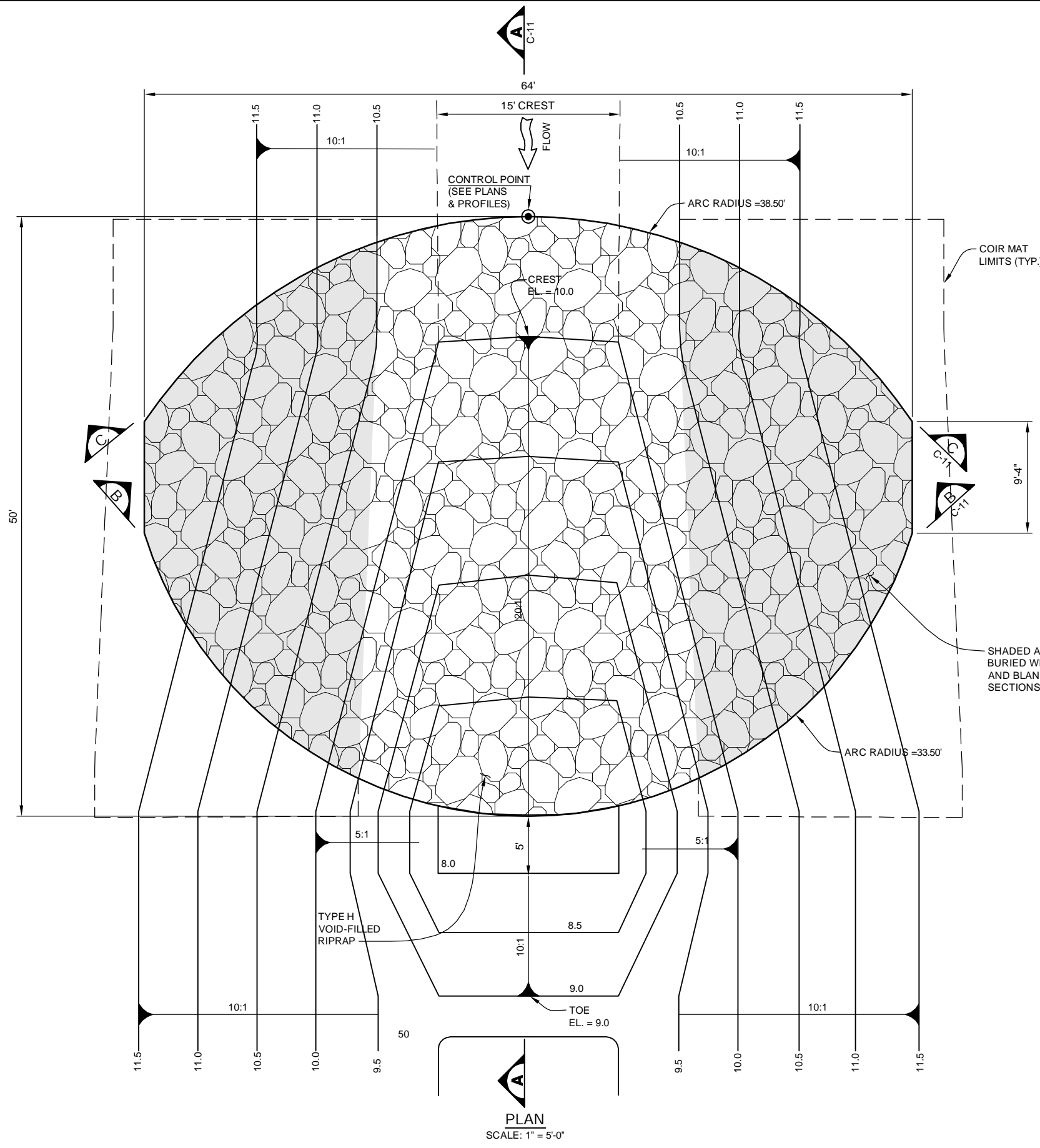
DESIGN
MDC
 DRAWN
KSP
 CHECK
DDJ

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COTTONWOOD CREEK RECLAMATION
 PHASE 2
 CHERRY CREEK BASIN WATER QUALITY AUTHORITY

CIVIL
 TYPICAL CHANNEL SECTIONS

DATE	DECEMBER 2007
DRAWING NO.	C-9
SHEET NO.	12 OF 47



- RIFFLE DROP NOTES:**
- ELEVATIONS SHOWN HERE FOR TYPICAL DROP ARE BASED ON ELEVATION 10.0 AT THE DROP CREST.
 - SEE GRADING PLAN AND PROFILE FOR ACTUAL ELEVATIONS OF DROP STRUCTURES.
 - CONTOURS SHOWN HERE WILL GOVERN GRADING IN THE IMMEDIATE VICINITY OF RIFFLE DROPS.

DATE: DEC 18, 2007 TIME: 2:44 PM
NAME: S:\02025\03\Phase 2\cad\02025_03-RIFFLE.dwg

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MEC PROJECT No. 02025.03

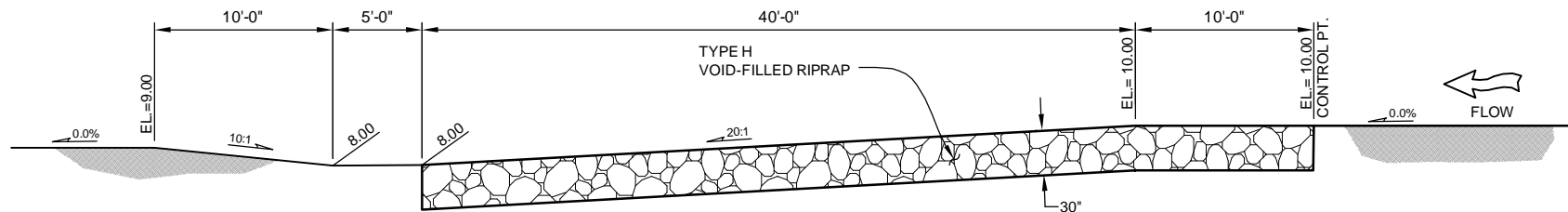
DESIGN MDC
DRAWN KSP
CHECK JTJ

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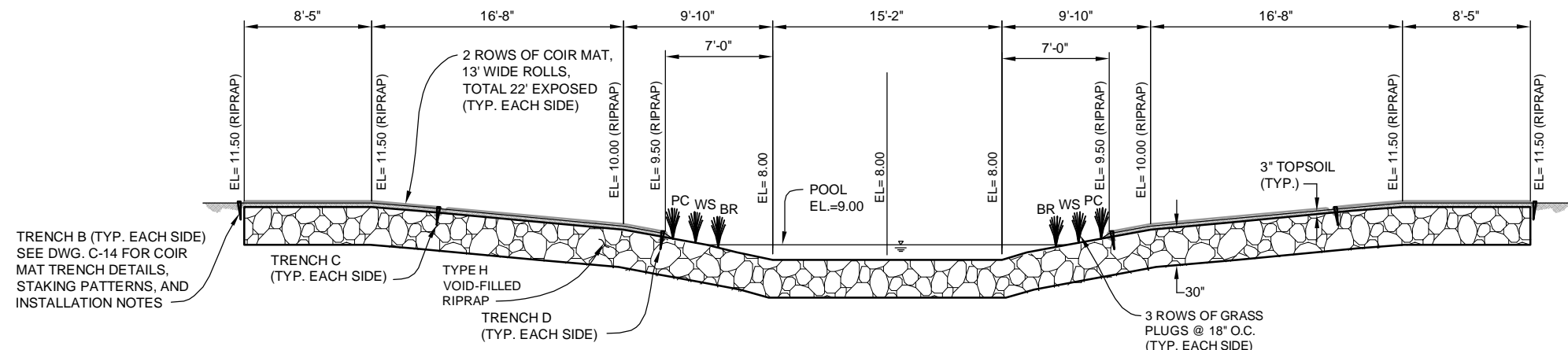
COTTONWOOD CREEK RECLAMATION
PHASE 2
CHERRY CREEK BASIN WATER QUALITY AUTHORITY

CIVIL
RIFFLE DROP PLAN

DATE	DECEMBER 2007
DRAWING NO.	C-10
SHEET NO.	13 OF 47



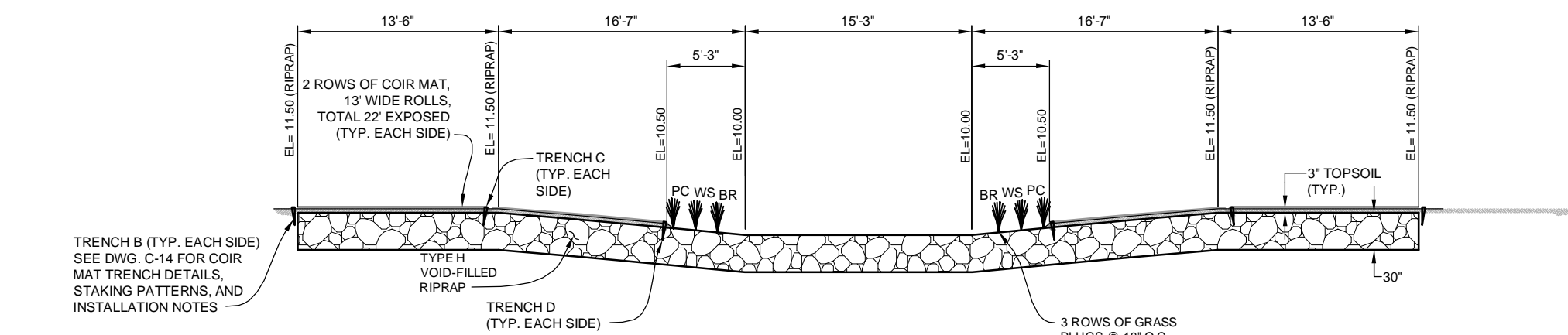
SECTION A
SCALE: 1" = 5'-0" C-10



SECTION B
SCALE: 1" = 5'-0" C-10

NOTE:
DIMENSIONS TAKEN ALONG
CURVED ALIGNMENT

BR = BALTIC RUSH
WS = WOOLLY SEDGE
PC = PRAIRIE CORDGRASS



SECTION C
SCALE: 1" = 5'-0" C-10

NOTE:
DIMENSIONS TAKEN ALONG
CURVED ALIGNMENT

BR = BALTIC RUSH
WS = WOOLLY SEDGE
PC = PRAIRIE CORDGRASS

TRENCH B (TYP. EACH SIDE)
SEE DWG. C-14 FOR COIR
MAT TRENCH DETAILS,
STAKING PATTERNS, AND
INSTALLATION NOTES

TRENCH C
(TYP. EACH SIDE)

TYPE H
VOID-FILLED
RIPRAP

TRENCH D
(TYP. EACH SIDE)

3 ROWS OF GRASS
PLUGS @ 18" O.C.
(TYP. EACH SIDE)

TRENCH B (TYP. EACH SIDE)
SEE DWG. C-14 FOR COIR
MAT TRENCH DETAILS,
STAKING PATTERNS, AND
INSTALLATION NOTES

TYPE H
VOID-FILLED
RIPRAP

TRENCH D
(TYP. EACH SIDE)

3 ROWS OF GRASS
PLUGS @ 18" O.C.
(TYP. EACH SIDE)

NAME: S:\02025\03\Phase 2\cad\02025_03-RIFLE.dwg
 DATE: DEC 18, 2007 TIME: 11:13 AM

No.	DATE	REVISIONS	APPR.

MULLER ENGINEERING CO., INC.
 CONSULTING ENGINEERS
 IRONGATE 4, SUITE 100
 777 S. WADSWORTH BLVD.
 LAKEWOOD, COLORADO 80226
 (303) 988-4939

MEC PROJECT No. 02025.03

DESIGN MDC
 DRAWN KSP
 CHECK JTJ

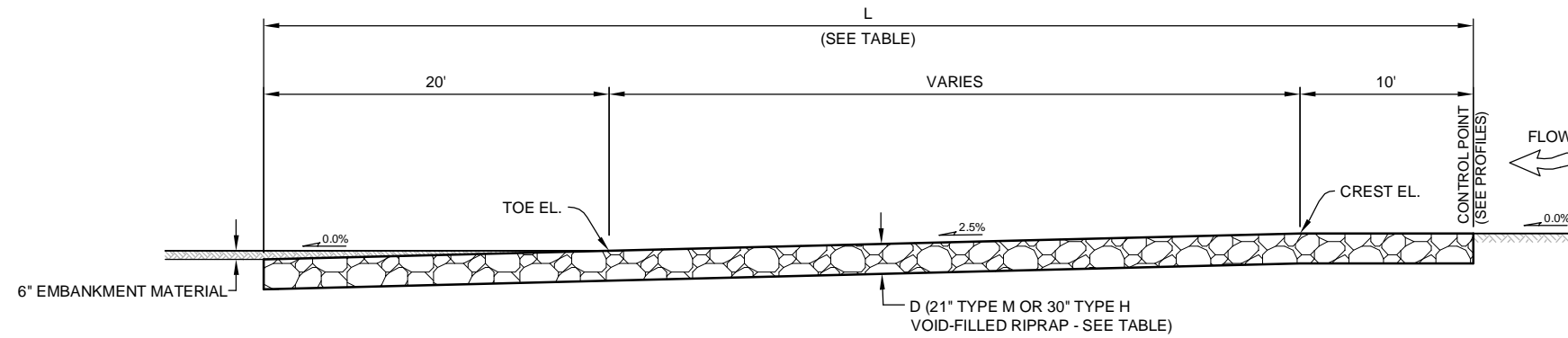
PREPARED FOR:
 CHERRY CREEK BASIN WATER QUALITY AUTHORITY
 8390 E. CRESCENT PKWY., SUITE 500
 GREENWOOD VILLAGE, CO. 80111
 303-779-4525

COTTONWOOD CREEK RECLAMATION
 PHASE 2
 CHERRY CREEK BASIN WATER QUALITY AUTHORITY

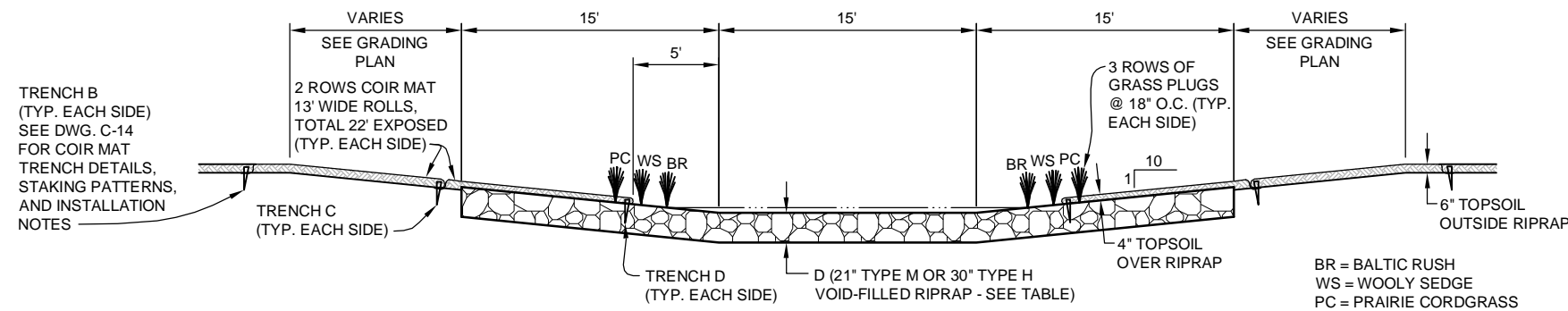
CIVIL
 RIFFLE DROP DETAILS

DATE DECEMBER 2007
DRAWING NO. C-11
SHEET NO. 14 OF 47

ROCK CHUTE #	VOID-FILLED RIPRAP		L	CREST EL.	TOE EL.
	SIZE	D			
1	TYPE H	30"	90 FT.	5565.5	5564.0
2	TYPE H	30"	90 FT.	5567.0	5565.5
3	TYPE H	30"	110 FT.	5569.0	5567.0
4	TYPE H	30"	90 FT.	5570.5	5569.0
5	TYPE H	30"	110 FT.	5572.5	5570.5
6	TYPE H	30"	90 FT.	5574.0	5572.5
7	TYPE H	30"	110 FT.	5576.0	5574.0
8	TYPE M	21"	130 FT.	5579.5	5577.0
9	TYPE M	21"	90 FT.	5586.0	5584.5
10	TYPE H	30"	110 FT.	5588.0	5586.0
11	TYPE M	21"	90 FT.	5590.5	5589.0



ROCK CHUTE PROFILE
SCALE: 1" = 5'-0"



ROCK CHUTE TYPICAL SECTION
SCALE: 1" = 5'-0"

DATE: DEC 18, 2007 TIME 9:05 PM
NAME: S:\02025\03\Phase 2\cad\02025_03-RL-DET.dwg

No.	DATE	REVISIONS	APPR.

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MEC PROJECT No. 02025.03

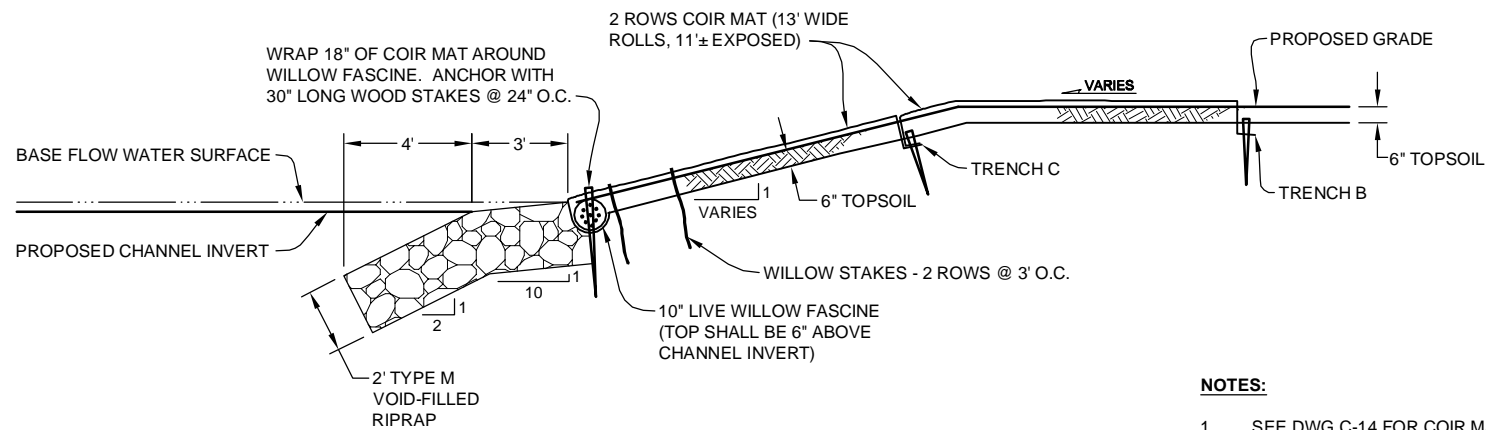
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CHECK JTW

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8390 E. CRESCENT PKWY., SUITE 500
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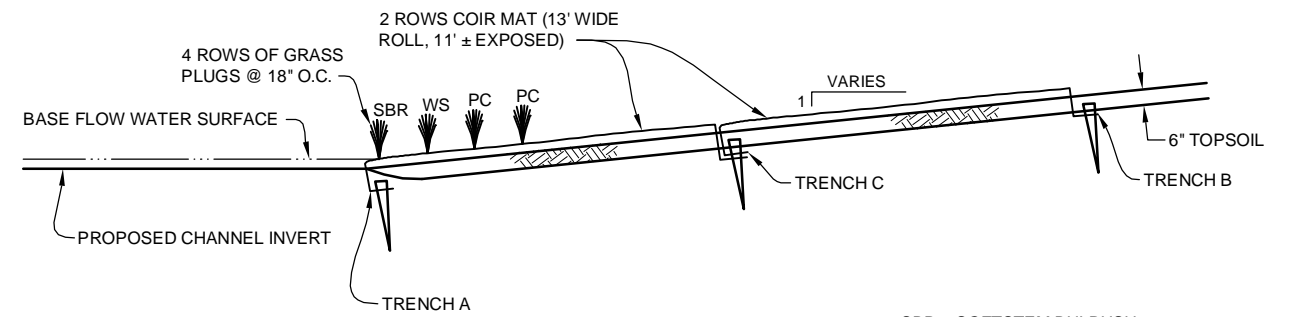
COTTONWOOD CREEK RECLAMATION
PHASE 2
CHERRY CREEK BASIN WATER QUALITY AUTHORITY

CIVIL
ROCK CHUTE
DETAILS

DATE	DECEMBER 2007
DRAWING NO.	C-12
SHEET NO.	15 OF 47



BANK PROTECTION NO. 1
SCALE: 1"=3'

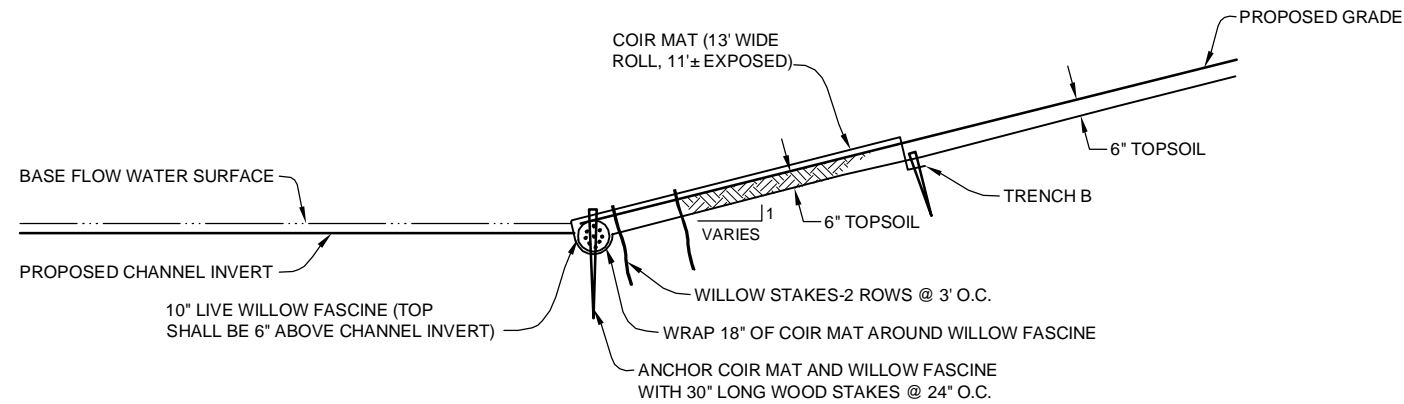


BANK PROTECTION NO. 3
SCALE: 1"=3'

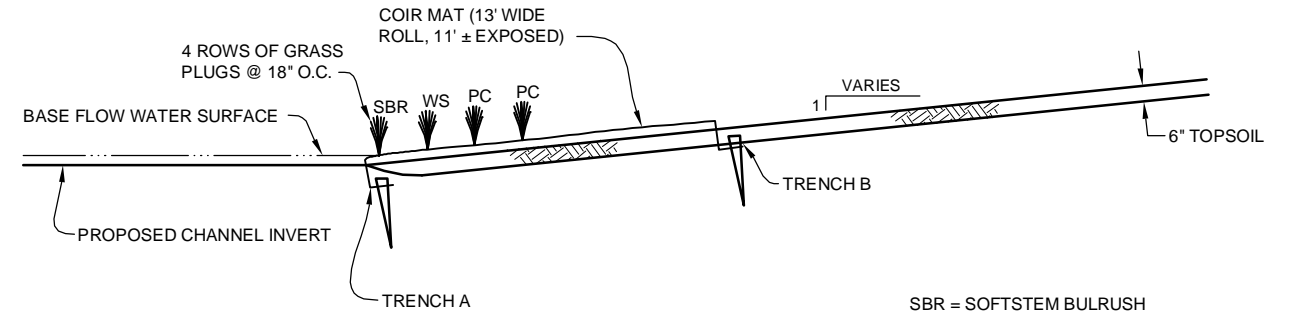
SBR = SOFTSTEM BULRUSH
WS = WOOLY SEDGE
PC = PRAIRIE CORDGRASS

NOTES:

1. SEE DWG C-14 FOR COIR MAT INSTALLATION NOTES AND DETAILS.
2. SEE DWG L-6 FOR WILLOW FASCINE DETAIL.



BANK PROTECTION NO. 2
SCALE: 1"=3'

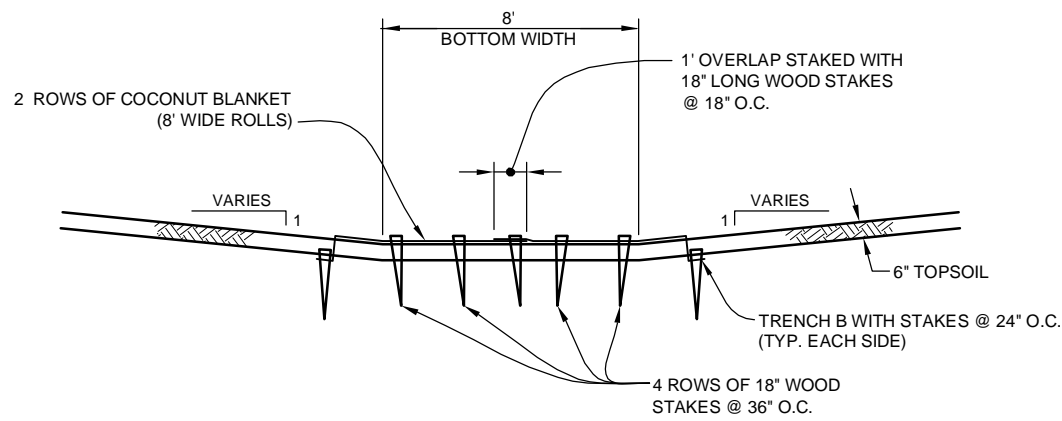


BANK PROTECTION NO. 4
SCALE: 1"=3'

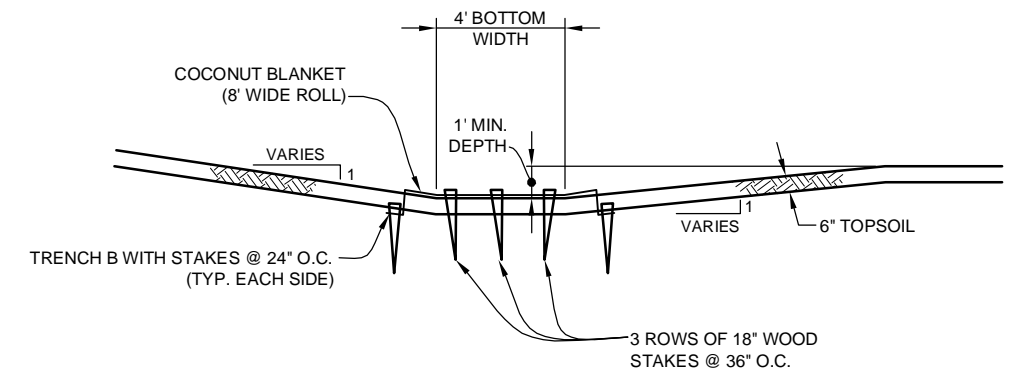
SBR = SOFTSTEM BULRUSH
WS = WOOLY SEDGE
PC = PRAIRIE CORDGRASS

HYDRAULIC INFORMATION:

1. BANK PROTECTION NO. 1 - USED TO REINFORCE SHARP OUTSIDE BENDS IN NARROW FLOOD PLAIN AREAS AND ADJACENT TO THE ROAD.
2. BANK PROTECTION NO. 2 - USED TO REINFORCE SHARP OUTSIDE BENDS IN WIDE FLOODPLAIN AREAS.
3. BANK PROTECTION NO. 3 - USED TO REINFORCE INSIDE BENDS WITHIN NARROW FLOODPLAIN AREA.
4. BANK PROTECTION NO. 4 - USED TO REINFORCE MILD BENDS IN WIDE FLOODPLAIN AREAS.



8' GRASS SWALE
SCALE: 1"=3'



ROADSIDE SWALE
SCALE: 1"=3'

DATE: DEC 18, 2007 TIME: 9:06 PM

NAME: S:\02025_03\Phase 2\cnd\02025_03-BANK-DETS.dwg

No.	DATE	REVISIONS	APPR.

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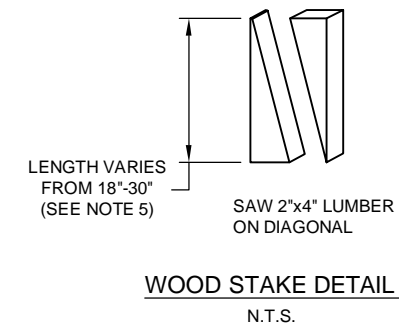
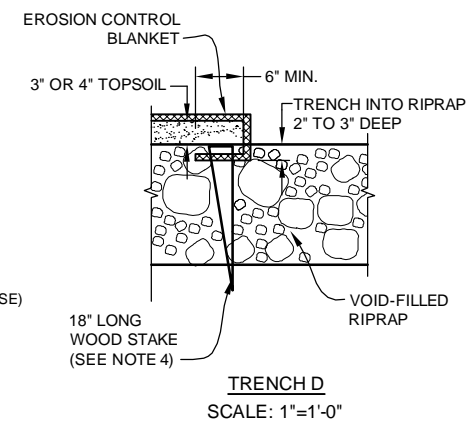
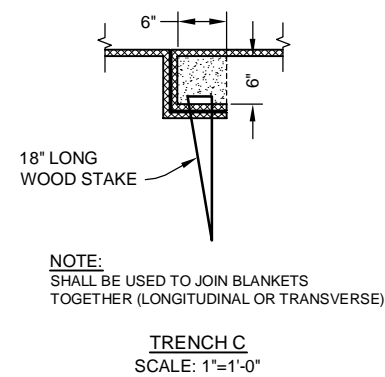
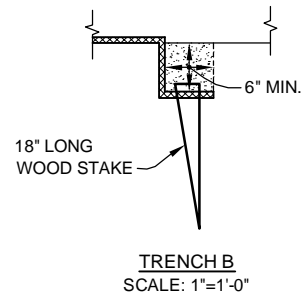
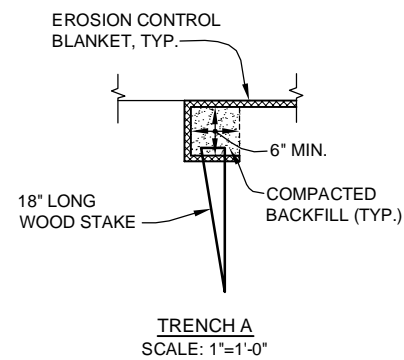
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DRAWN	KSP
CHECK	DDJ

PREPARED FOR:
CHERRY CREEK BASIN WATER QUALITY AUTHORITY
8390 E. CRESCENT PKWY., SUITE 500
GREENWOOD VILLAGE, CO. 80111
303-779-4525

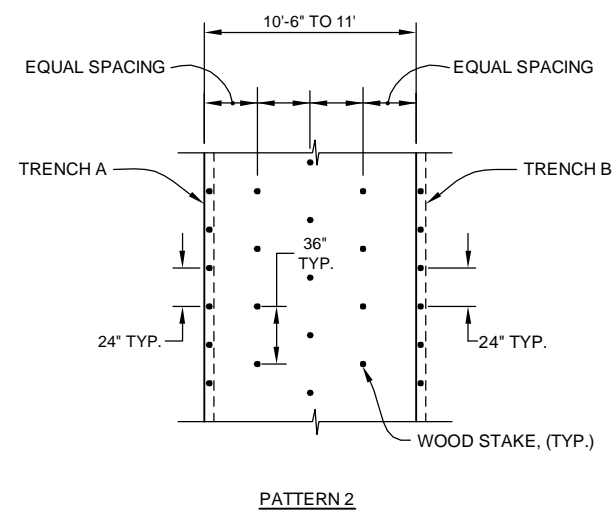
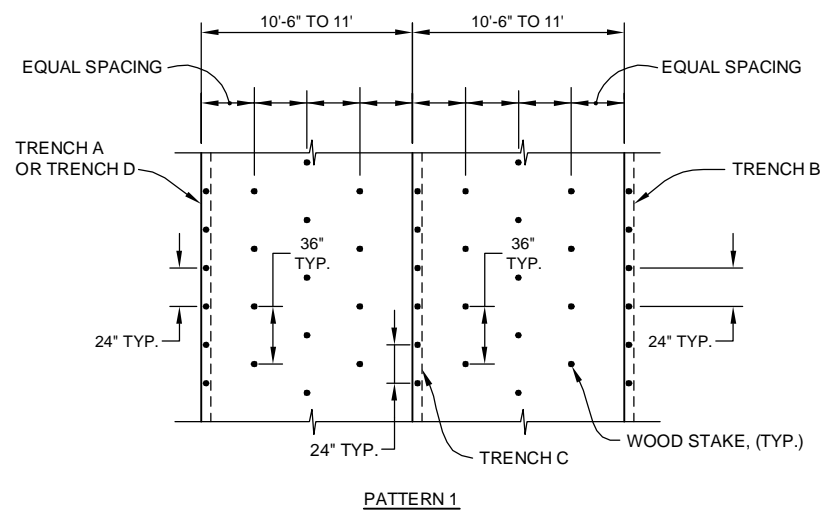
COTTONWOOD CREEK RECLAMATION
PHASE 2
CHERRY CREEK BASIN WATER QUALITY AUTHORITY

CIVIL
BANK PROTECTION DETAILS

DATE	DECEMBER 2007
DRAWING NO.	C-13
SHEET NO.	16 OF 47



ANCHOR TRENCH DETAILS FOR EROSION CONTROL BLANKETS



STAKING PATTERNS FOR EROSION CONTROL BLANKETS
SCALE: 1"=5'

NOTES:

1. SEED AND MULCH PRIOR TO INSTALLING EROSION CONTROL BLANKET. MULCH UNDER BLANKET SHALL BE A THIN LAYER OF STRAW THAT IS NOT CRIMPED. COIR MAT TOTAL WIDTH SHALL BE 13', BUT ONLY 10'-6" TO 11' OF WIDTH WILL BE EXPOSED ON SLOPE. STAKE COIR MAT BETWEEN ANCHORED ENDS WITH 3 ROWS OF 18" LONG WOOD STAKES @ 36" O.C. (SEE STAKING PATTERNS).
2. POSITION ROW STAKES IN AN ALTERNATING STAGGER PATTERN SO THAT STAKES FOR THE ROW ARE POSITIONED IN BETWEEN STAKES FOR ADJACENT ROWS. BP1 AND BP3 SHALL BE STAKED ACCORDING TO PATTERN 1; BP2 AND BP4 SHALL BE STAKED ACCORDING TO PATTERN 2.
3. WHEN STAKING INTO VOID-FILLED RIPRAP (TRENCH D), MECHANICAL MEANS MAY BE REQUIRED TO DRIVE A STARTER HOLE FOR STAKES AND/OR TO DRIVE STAKES. SOME ADJUSTMENT OF ROCKS MAY BE REQUIRED TO INSTALL STAKES.
4. WOOD STAKES USED TO ANCHOR WILLOW FASCINES SHALL BE 30" LONG. ALL OTHER WOOD STAKES SHALL BE 18" LONG.
5. INSTALL WOOD STAKES SUCH THAT ONLY 1" IS EXPOSED ABOVE GROUND.

DATE: DEC 18, 2007 TIME: 11:16 AM

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No.	DATE	REVISIONS	APPR.

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CONSULTING ENGINEERS
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777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 988-4939

MULLER

MEC PROJECT No. 02025.03

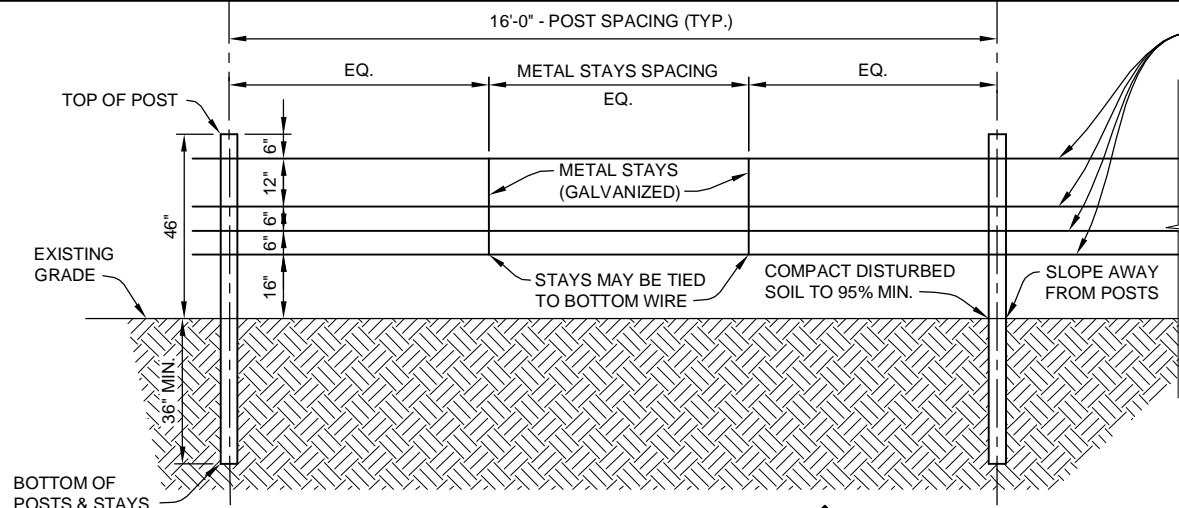
DESIGN	MDC
DRAWN	KSP
CHECK	DDJ

PREPARED FOR:
CHERRY CREEK BASIN WATER QUALITY AUTHORITY
8390 E. CRESCENT PKWY., SUITE 500
GREENWOOD VILLAGE, CO. 80111
303-779-4525

COTTONWOOD CREEK RECLAMATION
PHASE 2
CHERRY CREEK BASIN WATER QUALITY AUTHORITY

CIVIL
BANK PROTECTION DETAILS

DATE	DECEMBER 2007
DRAWING NO.	C-14
SHEET NO.	17 OF 47

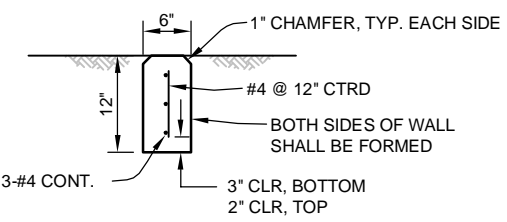


WIRE FENCE DETAIL 1
C-1,C-2,C-3

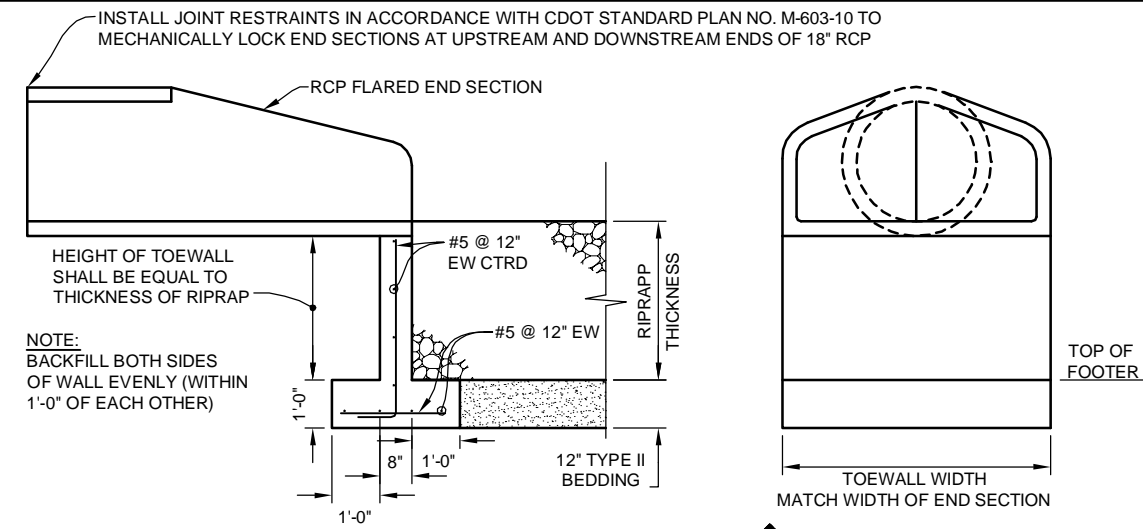
- NOTES:**
- POSTS SHALL BE 4" DIA., PRESURE TREATED PINE.
 - REFER TO CDOT STANDARD FENCE DETAILS FOR ADDITIONAL INFORMATION ON BRACING, SPLICING, GATES, AND MATERIALS (PLAN NO. M-607-1).

GENERAL CONCRETE NOTES (FOR TOEWALL AND OVERFLOW WALL):

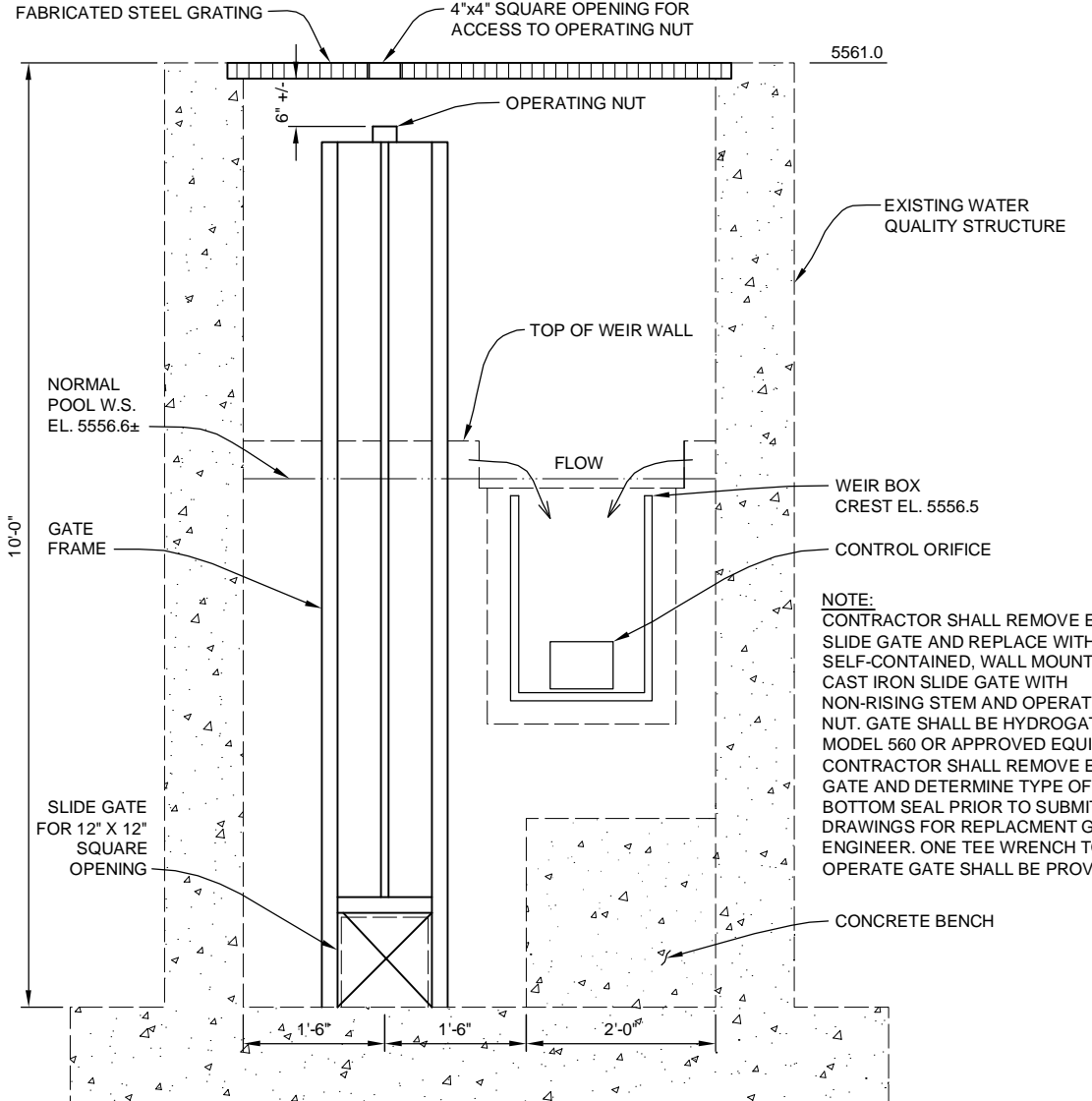
- BACKFILL BOTH SIDES OF WALL EVENLY (WITHIN 6" OF EACH OTHER).
- CONCRETE SHALL BE CLASS B.
- ALL REINFORCING STEEL SHALL BE GRADE 60.



CONCRETE OVERFLOW WALL 3
SCALE: 1"=1'-0" C-1,C-2,C-4

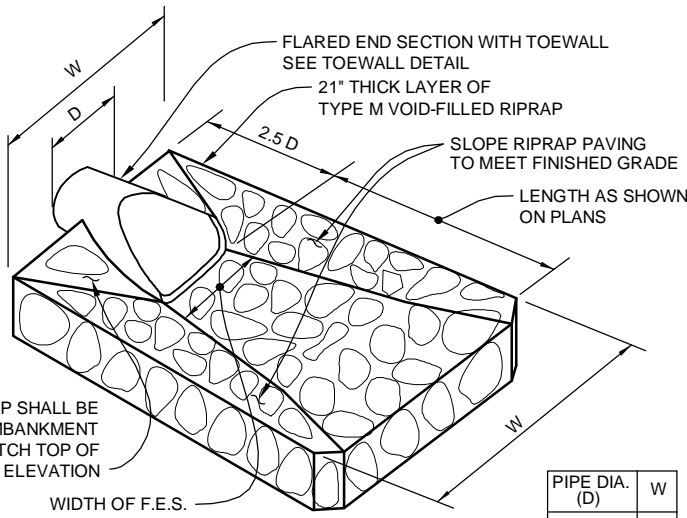


TOEWALL DETAIL 2
C-1



EXISTING WQ STRUCTURE GATE REPLACEMENT DETAIL 6
N.T.S. G-3

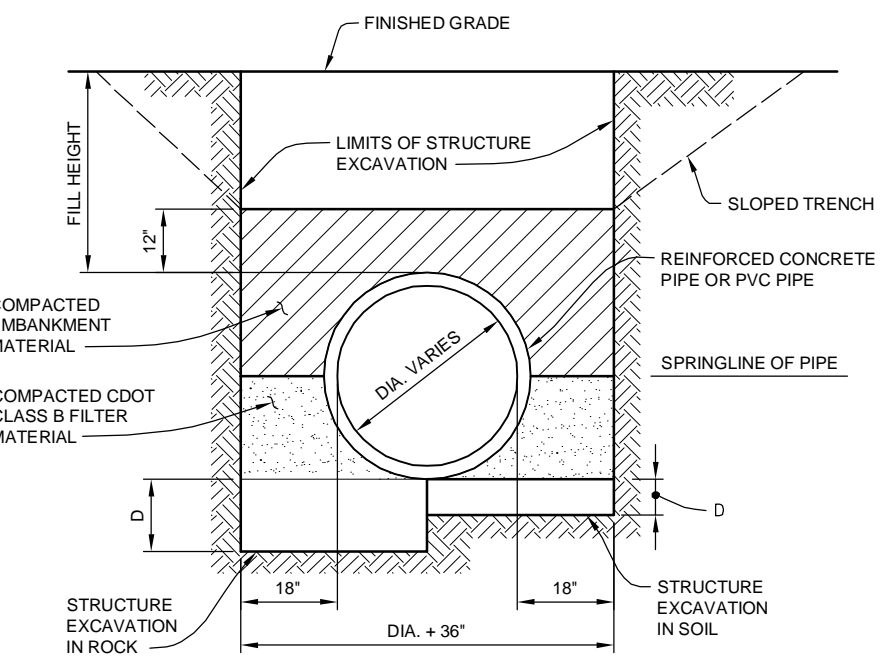
NOTE: CONTRACTOR SHALL REMOVE EXISTING SLIDE GATE AND REPLACE WITH 12"x12" SELF-CONTAINED, WALL MOUNTED CAST IRON SLIDE GATE WITH NON-RISING STEM AND OPERATING NUT. GATE SHALL BE HYDROGATE MODEL 560 OR APPROVED EQUIVALENT. CONTRACTOR SHALL REMOVE EXISTING GATE AND DETERMINE TYPE OF BOTTOM SEAL PRIOR TO SUBMITTING DRAWINGS FOR REPLACEMENT GATE TO ENGINEER. ONE TEE WRENCH TO OPERATE GATE SHALL BE PROVIDED.



VOID-FILLED RIPRAP SHALL BE EXTENDED UP EMBANKMENT SLOPES TO MATCH TOP OF PIPE ELEVATION

NOTE: VOID-FILLED RIPRAP PLACED ON SIDE SLOPES AND EMBANKMENT SLOPES SHALL BE BURIED WITH 6" OF TOPSOIL TO MEET FINISHED GRADE.

RIPRAP OUTLET PROTECTION DETAIL 4
N.T.S. C-2



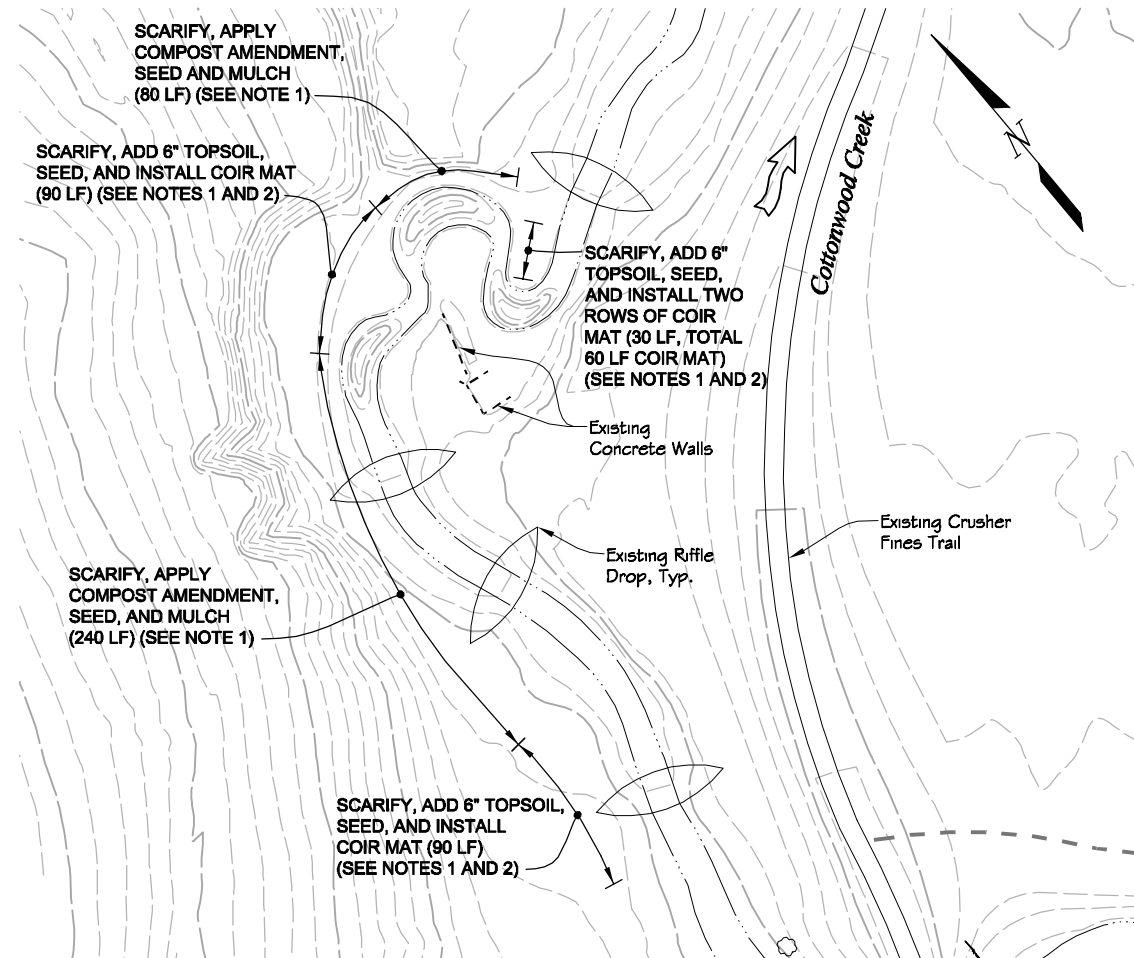
BEDDING DEPTH (D):

I.D. OF PIPE	D IN SOIL	D IN ROCK
6"-27"	3"	12"
30"-60"	4"	12"
66" OR >	6"	12"

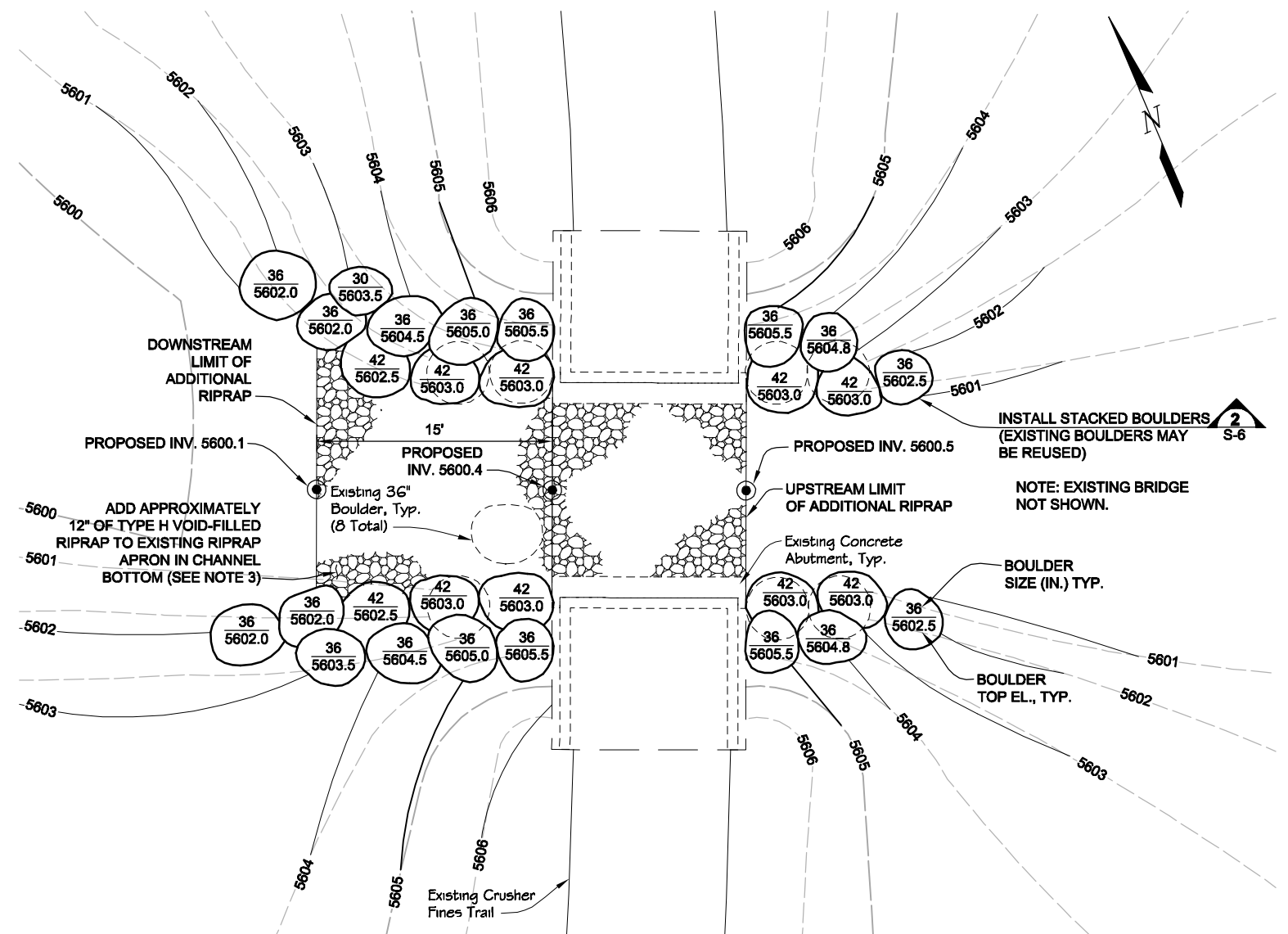
TRENCH SECTION 5
N.T.S.

DATE: DEC 18, 2007 TIME: 11:17 AM
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	MULLER ENGINEERING CO., INC. CONSULTING ENGINEERS IRONGATE 4, SUITE 100 777 S. WADSWORTH BLVD. LAKEWOOD, COLORADO 80226 (303) 988-4939	DESIGN: MDC DRAWN: KSP CHECK: DDJ	PREPARED FOR: CHERRY CREEK BASIN WATER QUALITY AUTHORITY 8390 E. CRESCENT PKWY., SUITE 500 GREENWOOD VILLAGE, CO. 80111 303-779-4525	COTTONWOOD CREEK RECLAMATION PHASE 2 CHERRY CREEK BASIN WATER QUALITY AUTHORITY	CIVIL MISCELLANEOUS DETAILS	DATE: DECEMBER 2007 DRAWING NO.: C-15 SHEET NO.: 18 OF 47
No. DATE REVISIONS APPR.	MEC PROJECT No. 02025.03					



PHASE 1 IMPROVEMENTS AT WETLAND AREA
SCALE: 1"=50'-0"



PHASE 1 IMPROVEMENTS AT EXISTING TRAIL CROSSING
SCALE: 1"=5'-0"

NOTES:

1. AREAS TO BE SEEDED AND/OR BLANKETED HAVE BEEN ESTIMATED BASED ON UNVEGETATED AREAS NOTED DURING AN OCTOBER 2007 FIELD VISIT. ACTUAL LIMITS WILL BE STAKED BY THE ENGINEER DURING CONSTRUCTION. ALL AREAS TO BE SEEDED WERE ASSUMED 10' WIDE FOR BIDDING PURPOSES. ACTUAL QUANTITIES SHALL BE DETERMINED IN THE FIELD. SEED ALL AREAS WITH THE RIPARIAN SEED MIX SHOWN ON DWG. L-6.
2. ALL COIR MAT SHALL BE 13' WIDE ROLLS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS ON DWG. C-14.
3. LIMITS AND THICKNESS OF RIPRAP TO BE INSTALLED AT THE TRAIL CROSSING MAY BE ADJUSTED BY THE ENGINEER PRIOR TO INSTALLATION.

NAME: S:\02025\03\Phase 2\cad\02025_03-P1\2.dwg DATE: DEC 18, 2007 TIME: 2:51 PM

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PREPARED FOR:

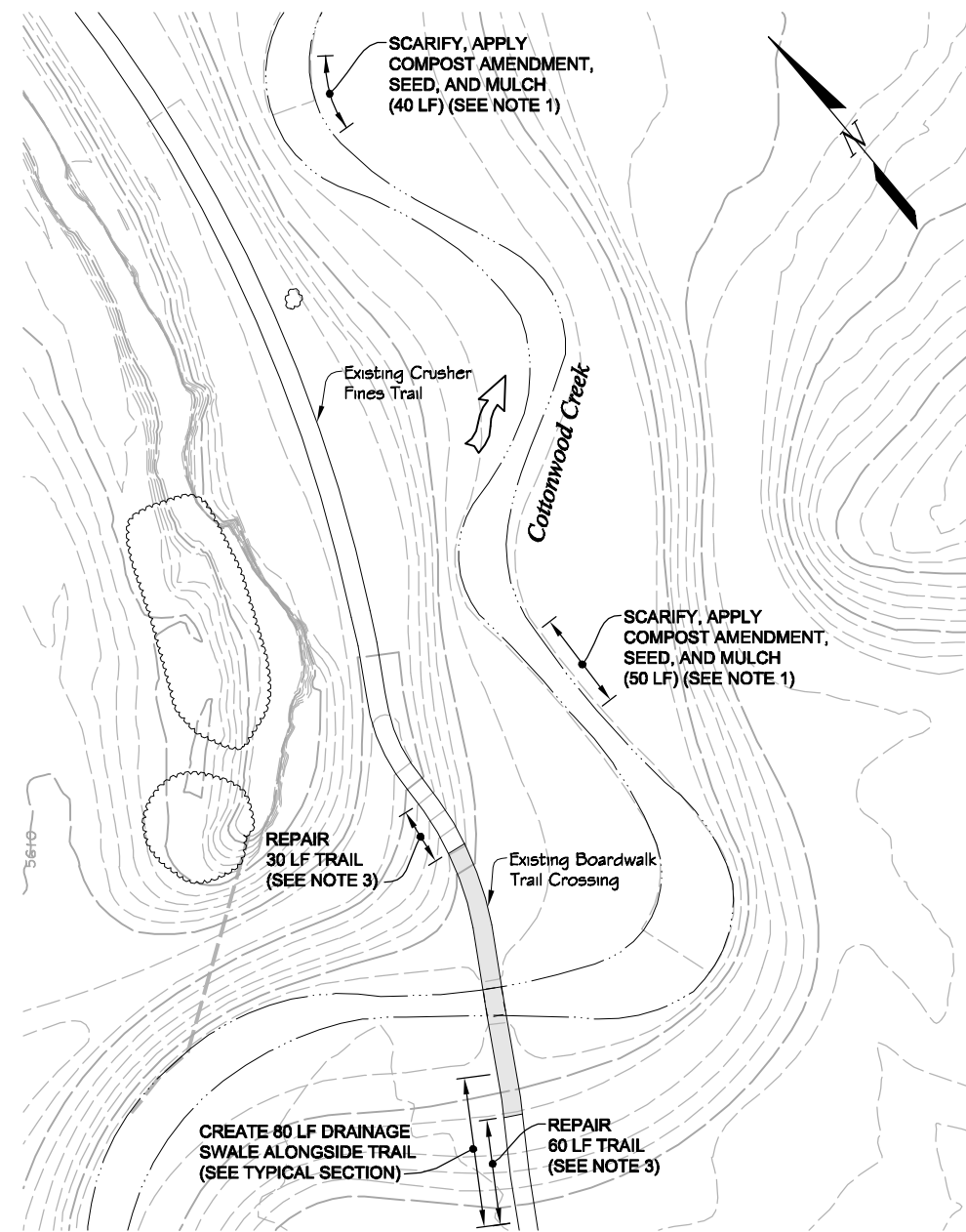


CHERRY CREEK BASIN WATER QUALITY AUTHORITY
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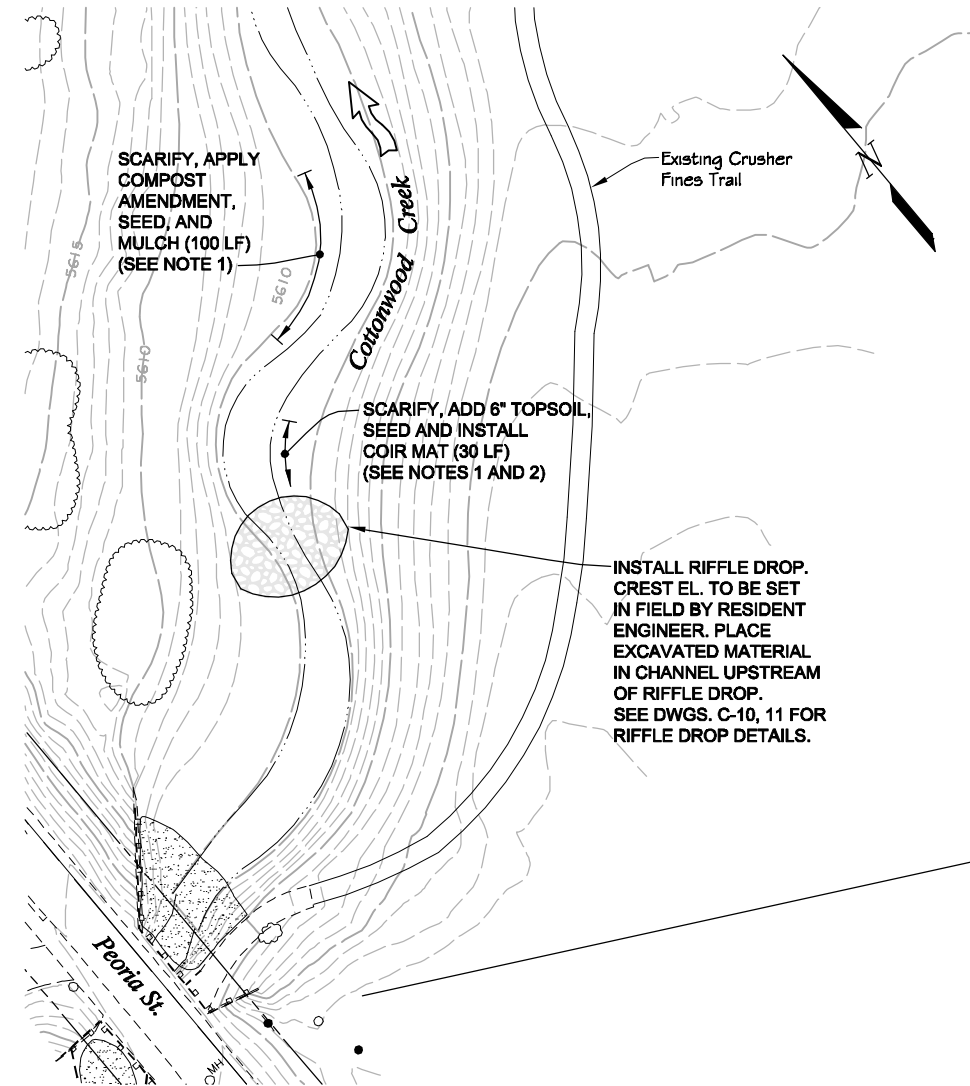
COTTONWOOD CREEK RECLAMATION
PHASE 2
CHERRY CREEK BASIN WATER QUALITY AUTHORITY

CIVIL
PHASE 1 IMPROVEMENTS

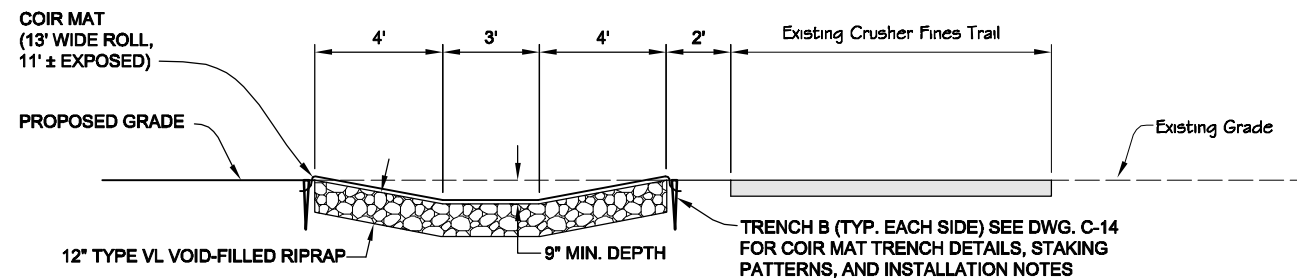
DATE DECEMBER 2007
DRAWING NO. C-16
SHEET NO. 19 OF 47



PHASE 1 IMPROVEMENTS AT EXISTING LOW FLOW CROSSING
SCALE: 1"=50'-0"



PHASE 1 IMPROVEMENTS AT PEORIA STREET
SCALE: 1"=50'-0"



DRAINAGE SWALE TYPICAL SECTION
SCALE: 1"=3'-0"

NOTES:

1. AREAS TO BE SEEDED AND/OR BLANKETED HAVE BEEN ESTIMATED BASED ON UNVEGETATED AREAS NOTED DURING AN OCTOBER 2007 FIELD VISIT. ACTUAL LIMITS WILL BE STAKED BY THE ENGINEER DURING CONSTRUCTION. ALL AREAS TO BE SEEDED WERE ASSUMED 10' WIDE FOR BIDDING PURPOSES. ACTUAL QUANTITIES SHALL BE DETERMINED IN THE FIELD. SEED ALL AREAS WITH THE RIPARIAN SEED MIX SHOWN ON DWG. L-6.
2. ALL COIR MAT SHALL BE 13' WIDE ROLLS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS ON DWG. C-14.
3. TRAIL REPAIRS SHALL CONSIST OF REMOVING EXISTING CRUSHER FINES MATERIAL AND REPLACING WITH A "STABILIZED CRUSHER FINES" MATERIAL INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS. THE "STABILIZED CRUSHER FINES" TRAIL SHALL HAVE A MINIMUM 6" THICKNESS AND 8' WIDTH.

NAME: S:\02025\03\Phase 2\cad\02025_03-P1\2.dwg DATE: DEC 18, 2007 TIME: 11:31 AM

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DESIGN MDC
DRAWN KSP
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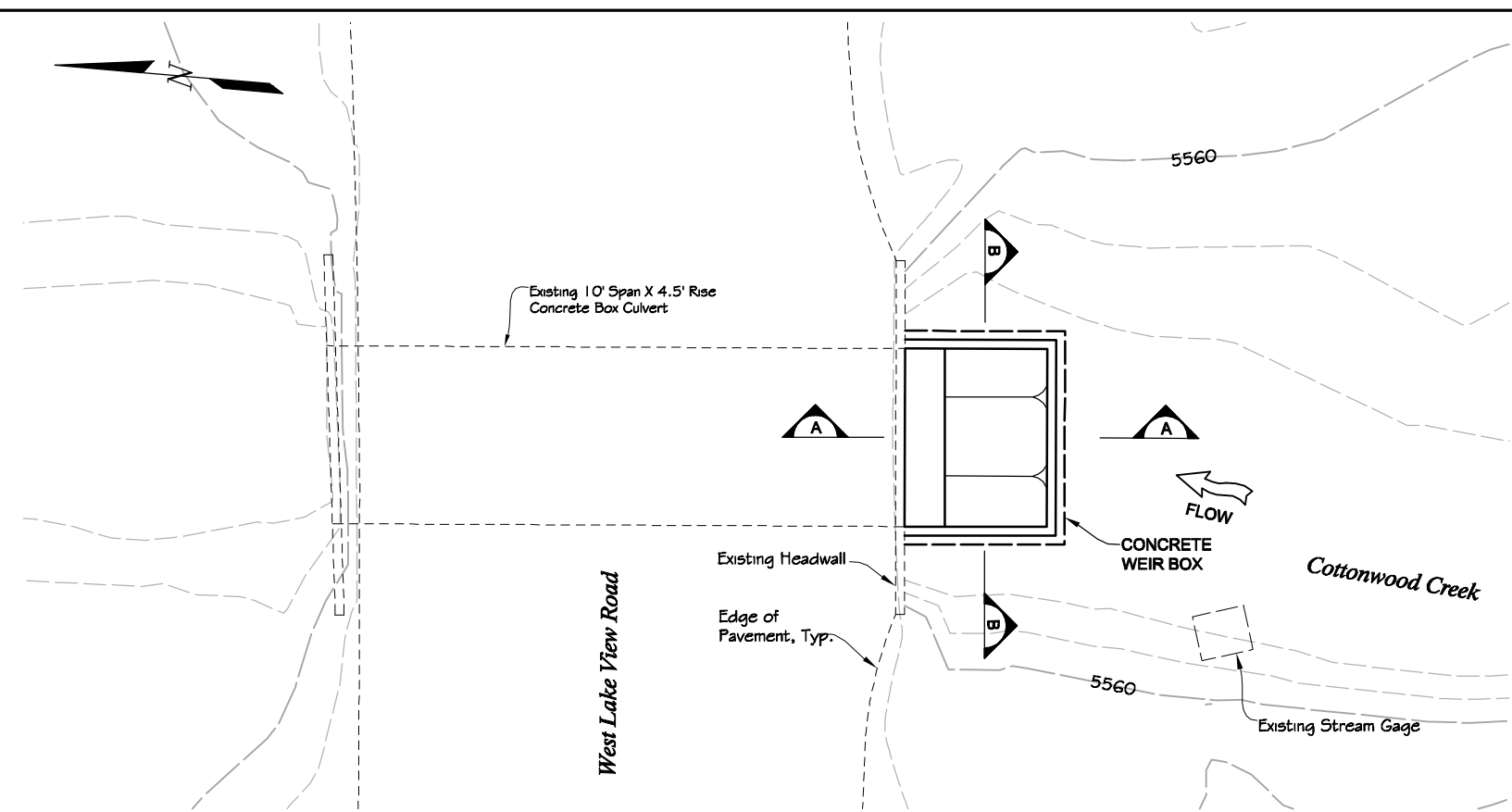


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COTTONWOOD CREEK RECLAMATION
PHASE 2
CHERRY CREEK BASIN WATER QUALITY AUTHORITY

CIVIL
PHASE 1 IMPROVEMENTS

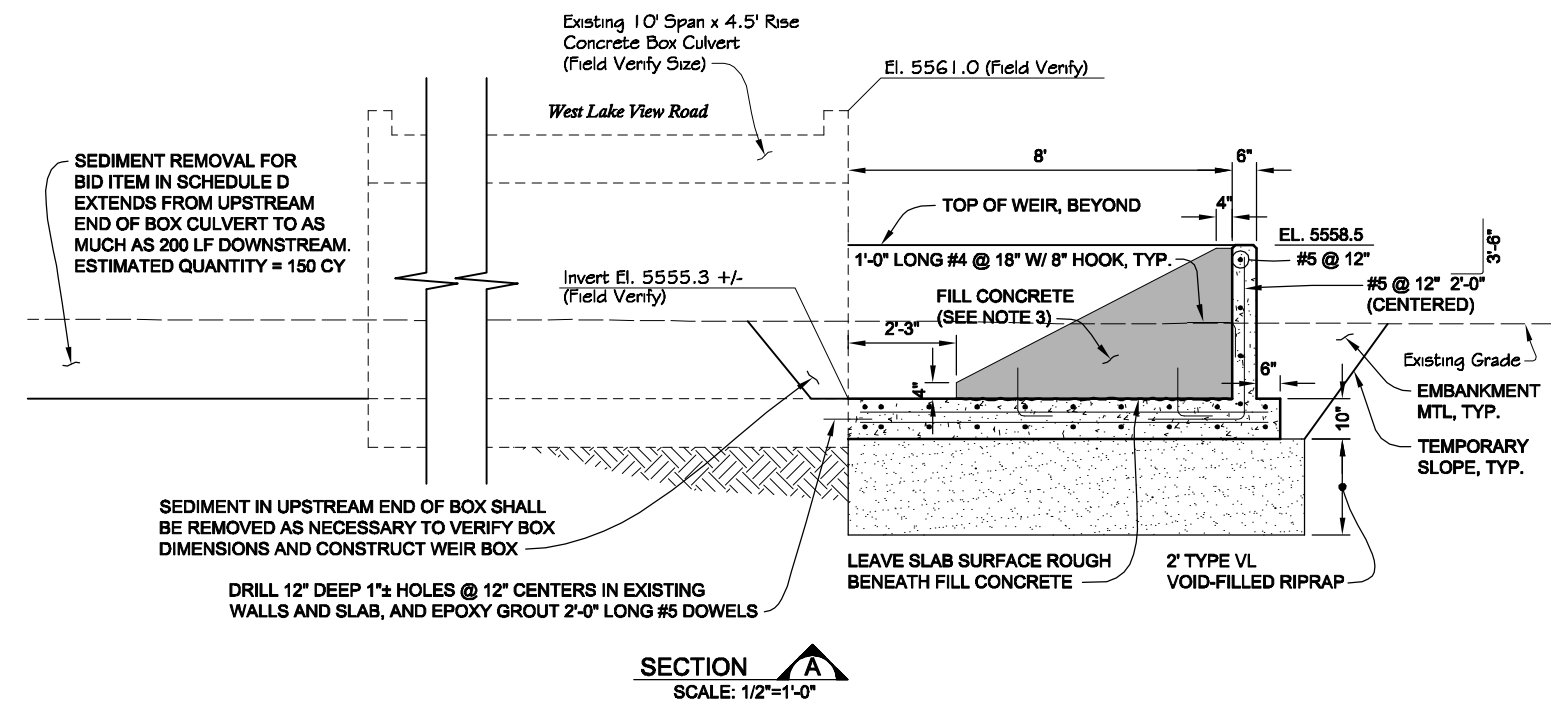
DATE DECEMBER 2007
DRAWING NO. C-17
SHEET NO. 20 OF 47



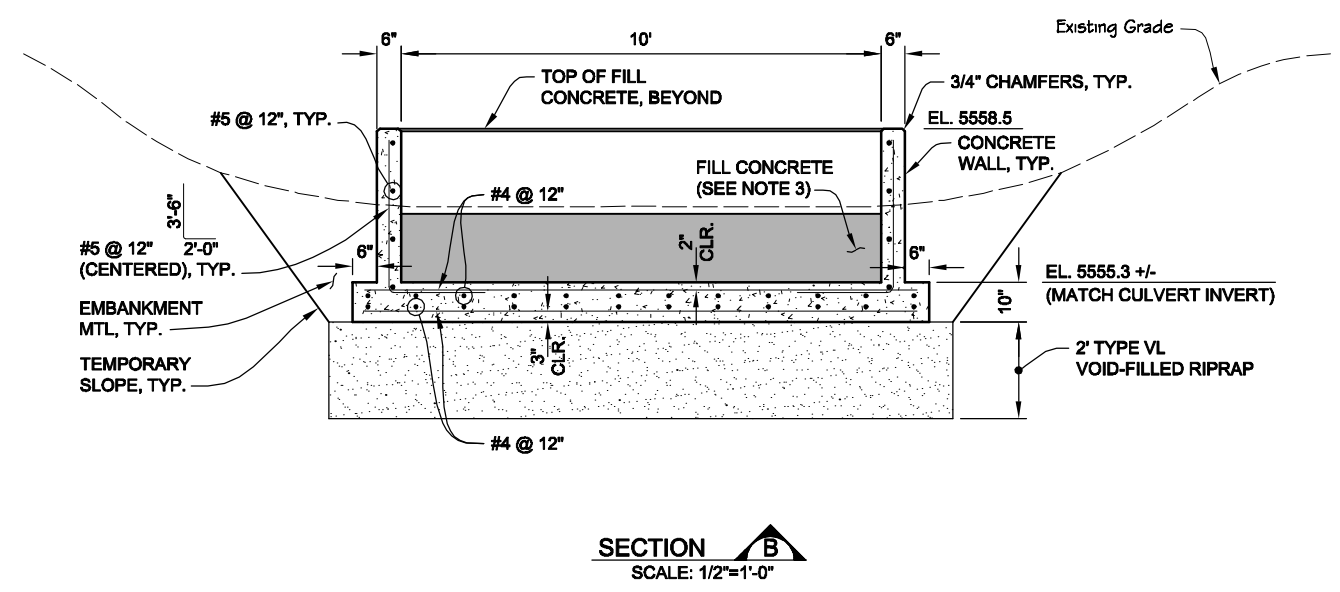
PLAN VIEW
SCALE: 1"=5'-0"

NOTES:

- EXISTING CULVERT SHALL BE DEWATERED AND ITS UPSTREAM END CLEARED OF SEDIMENT, AND ACTUAL DIMENSIONS AND ELEVATIONS PROVIDED TO RESIDENT ENGINEER AT LEAST 24 HOURS PRIOR TO PLACEMENT OF CONCRETE FORMWORK. DIMENSIONS AND ELEVATIONS OF WEIR BOX MAY BE ADJUSTED BASED ON FIELD DATA.
- SEE DWG S-4 FOR GENERAL CONCRETE STRUCTURE NOTES.
- FILL CONCRETE SHALL BE CLASS D AND SHALL CONTAIN 1.5 LBS/CY OF FIBERMESH SYNTHETIC FIBER REINFORCEMENT PER MANUFACTURER'S INSTRUCTIONS.
- WEIR BOX SHALL BE BACKFILLED TO ELEVATION 5558.0.



SECTION **A**
SCALE: 1/2"=1'-0"



SECTION **B**
SCALE: 1/2"=1'-0"

NAME: S:\02025\03\Phase 2\Cad\02025_03-PLAN-SEC.dwg DATE: DEC 18, 2007 TIME: 9:33 PM

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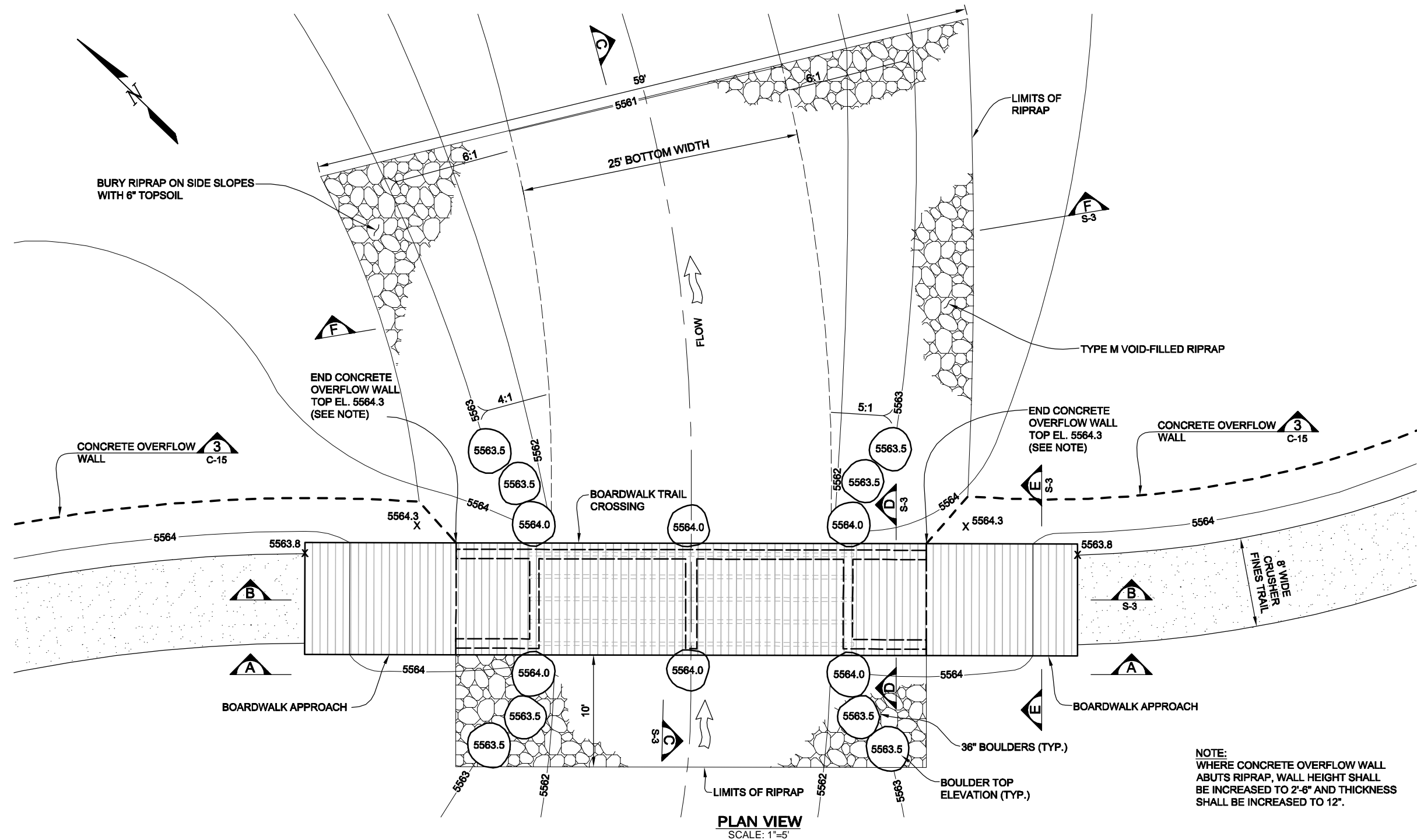
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DRAWN	KSP
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COTTONWOOD CREEK RECLAMATION
PHASE 2
CHERRY CREEK BASIN WATER QUALITY AUTHORITY

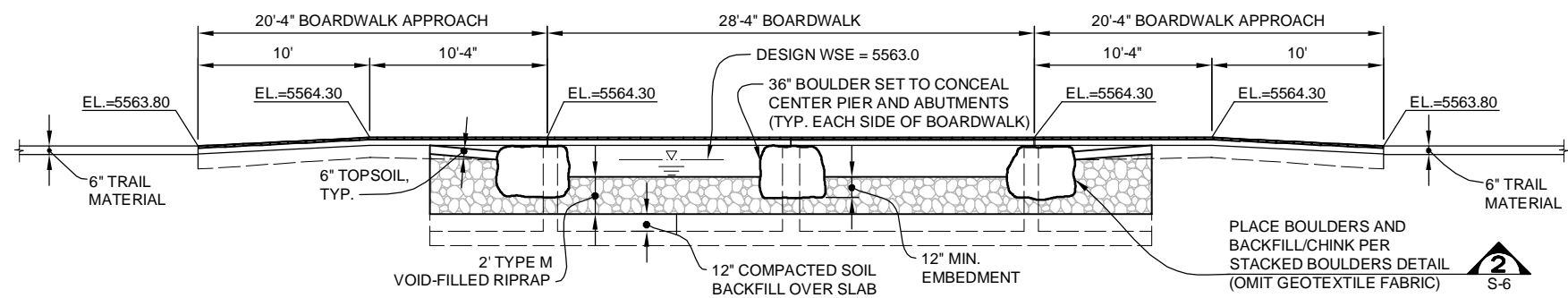
STRUCTURAL
WEIR BOX DETAILS

DATE	DECEMBER 2007
DRAWING NO.	S-1
SHEET NO.	21 OF 47



PLAN VIEW
SCALE: 1"=5'

NOTE:
WHERE CONCRETE OVERFLOW WALL ABUTS RIPRAP, WALL HEIGHT SHALL BE INCREASED TO 2'-6" AND THICKNESS SHALL BE INCREASED TO 12".



UPSTREAM ELEVATION A
SCALE: 1"=5'

BOARDWALK CROSSING HYDRAULIC INFORMATION:
Q_{DESIGN} = 120 cfs
WSE_{DESIGN} = 5563.00

NAME: S:\02025\03\Phase 2\cd\02025_03-BOARDWALK.dwg 4 DATE: DEC 18, 2007 TIME: 9:35 PM

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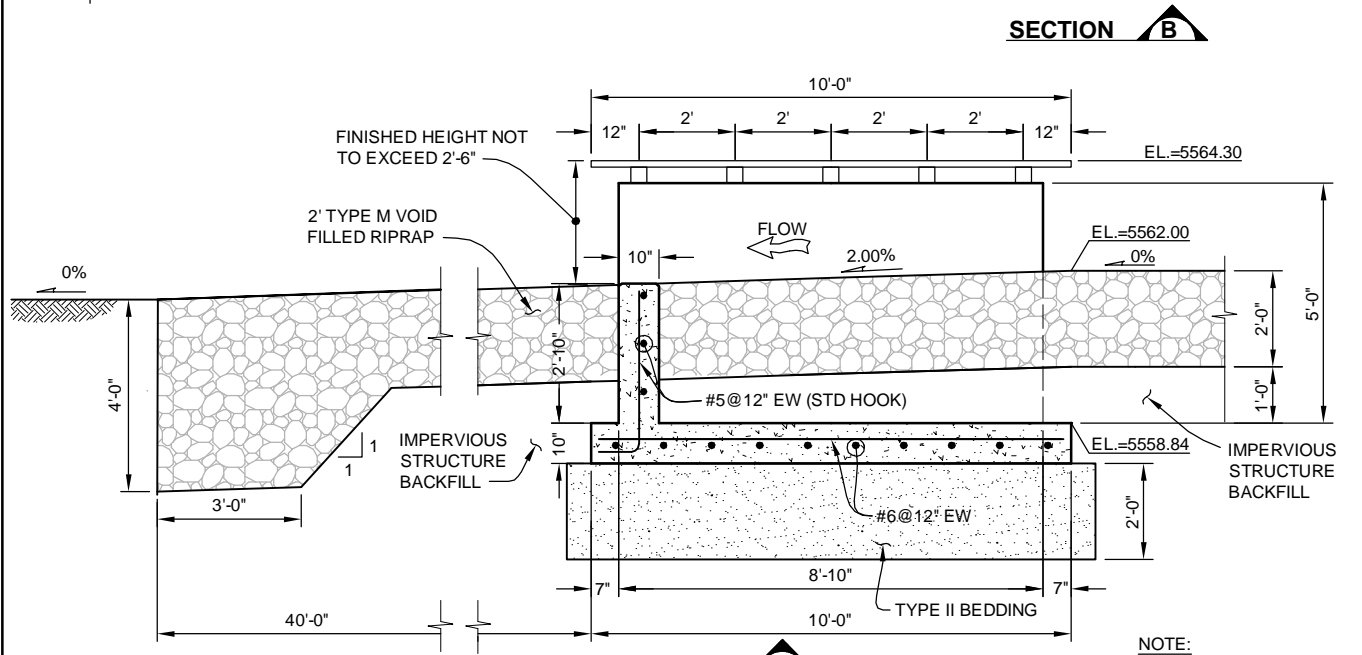
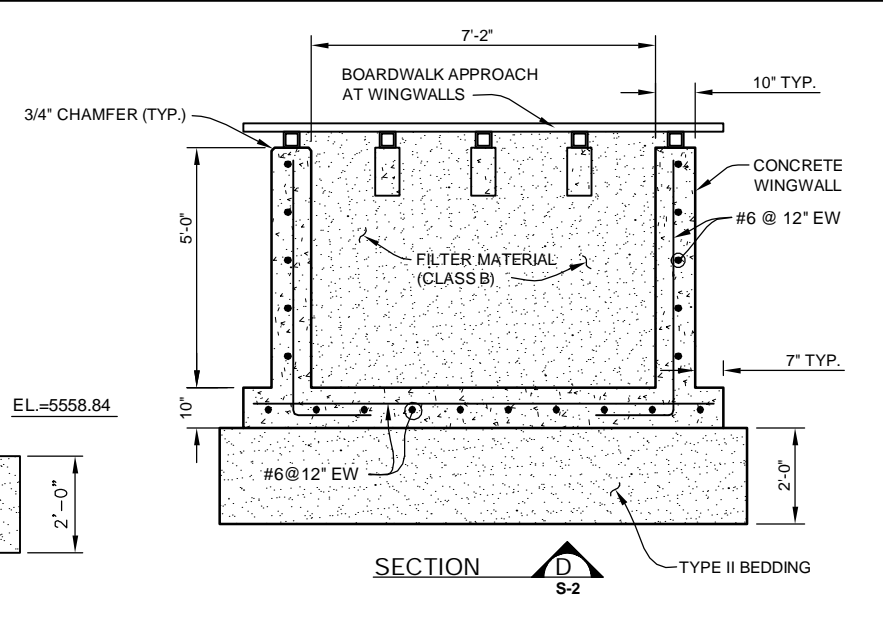
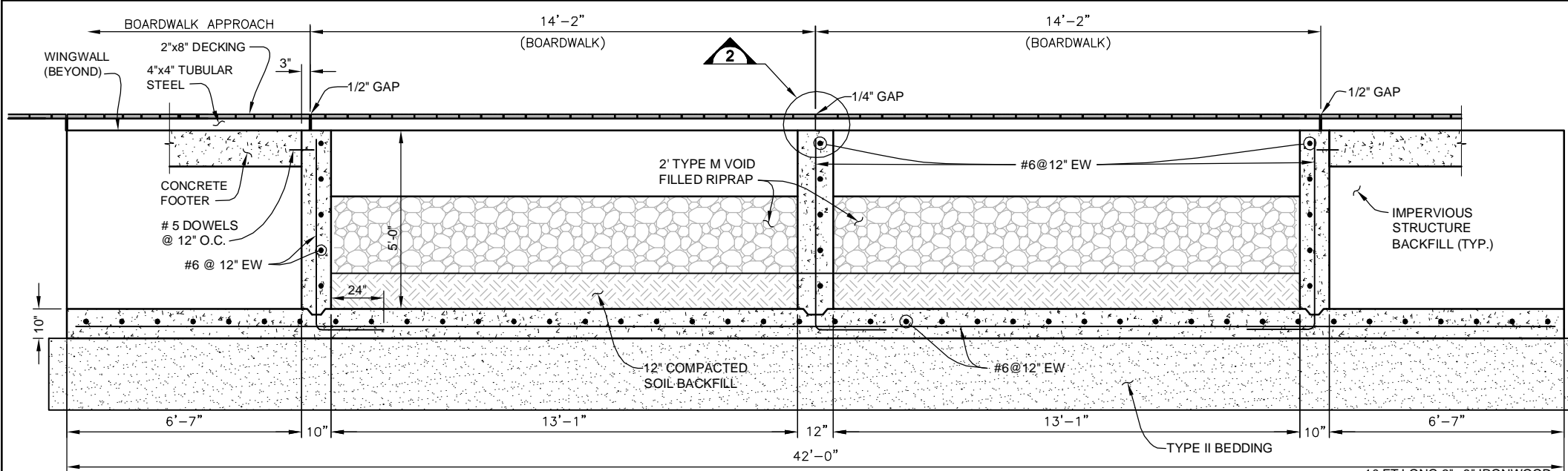
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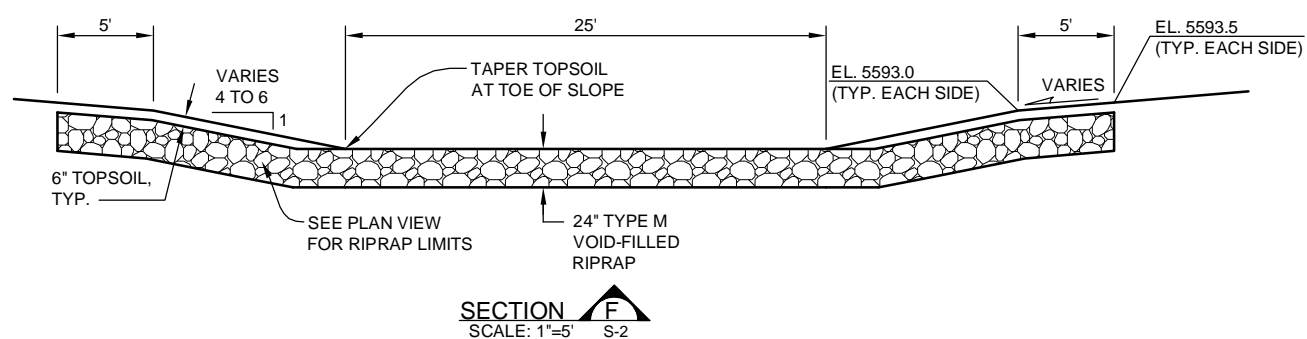
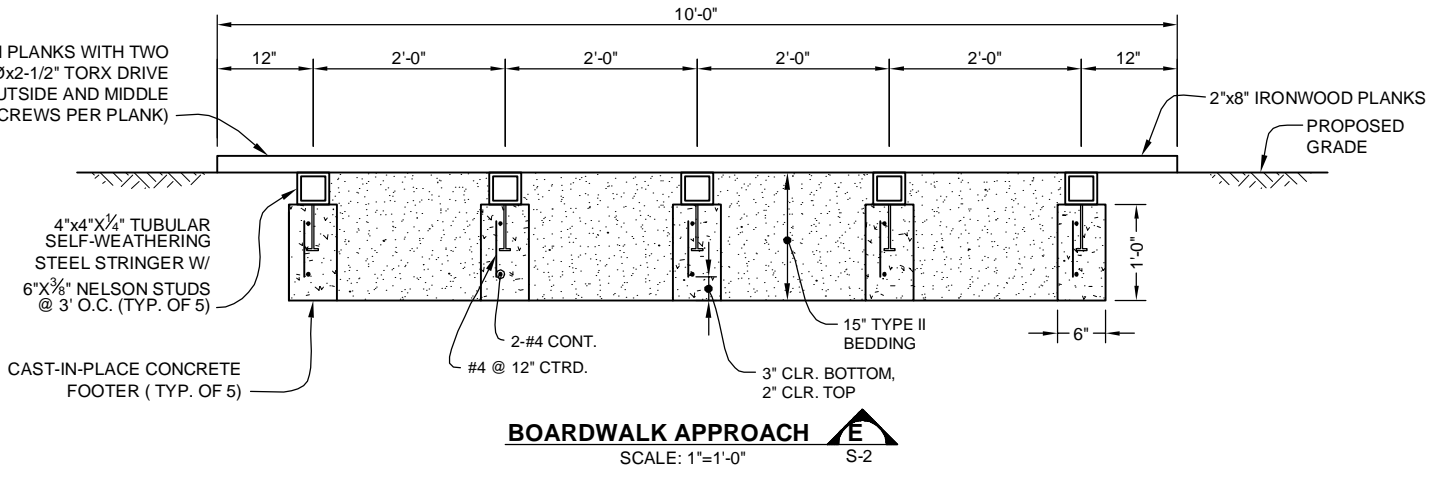
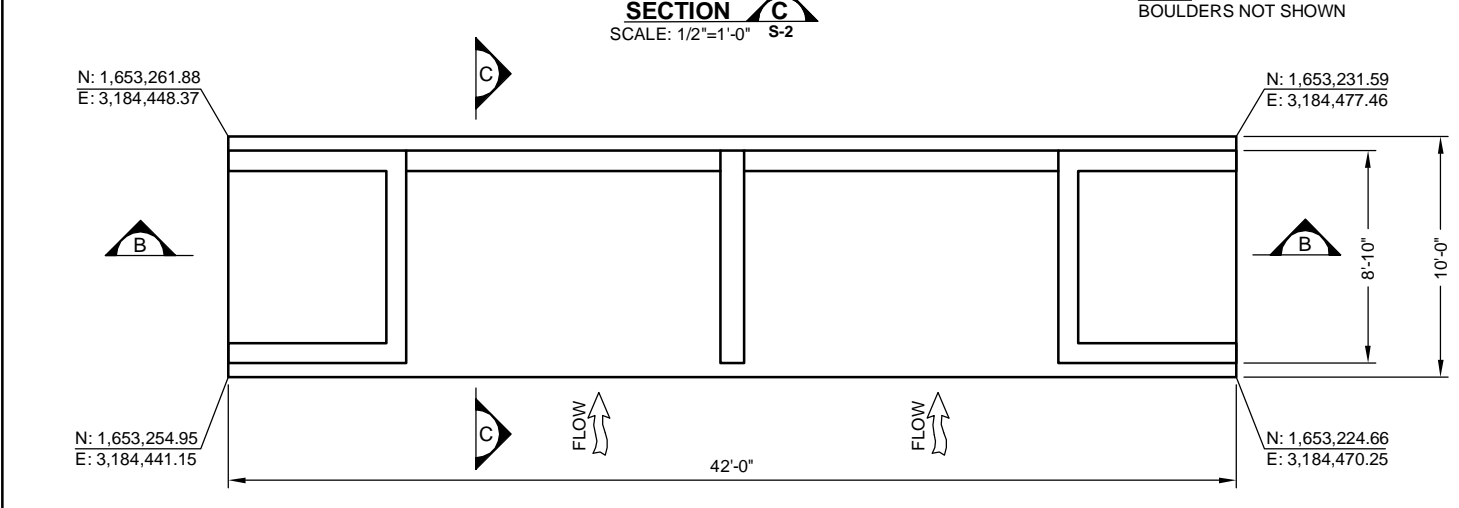
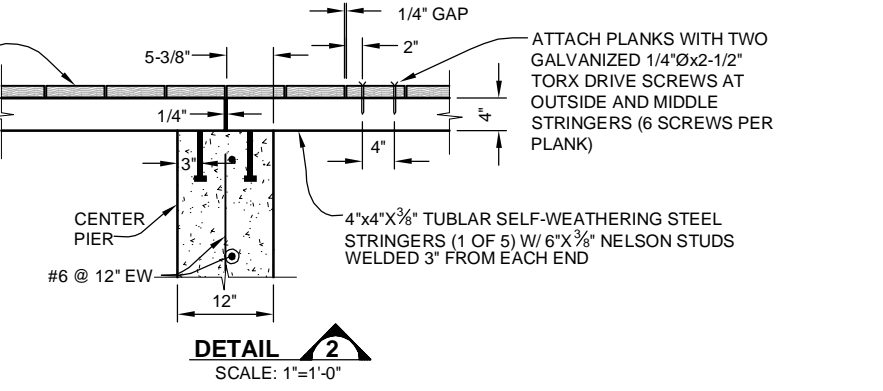
COTTONWOOD CREEK RECLAMATION
PHASE 2
CHERRY CREEK BASIN WATER QUALITY AUTHORITY

STRUCTURAL
BOARDWALK CROSSING
PLAN AND ELEVATION

DATE	DECEMBER 2007
DRAWING NO.	S-2
SHEET NO.	22 OF 47



- GENERAL STEEL NOTES:**
1. STRUCTURAL TUBING SHALL BE ASTM A847 GRADE 50.
 2. MISCELLANEOUS SHAPES, PLATES AND BARS SHALL BE ASTM A588 OR ASTM A242 (GRADE 50).
 3. HEADED ANCHOR STUDS SHALL BE STAINLESS STEEL CONFORMING TO ASTM A276.
- GENERAL CONCRETE STRUCTURE NOTES:**
SEE DWG. S-4
- GENERAL IRONWOOD SPECIFICATIONS:**
SEE NOTE 7 ON DWG. S-4



4 DATE: DEC 18, 2007 TIME: 11:22 AM
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 LAKEWOOD, COLORADO 80226
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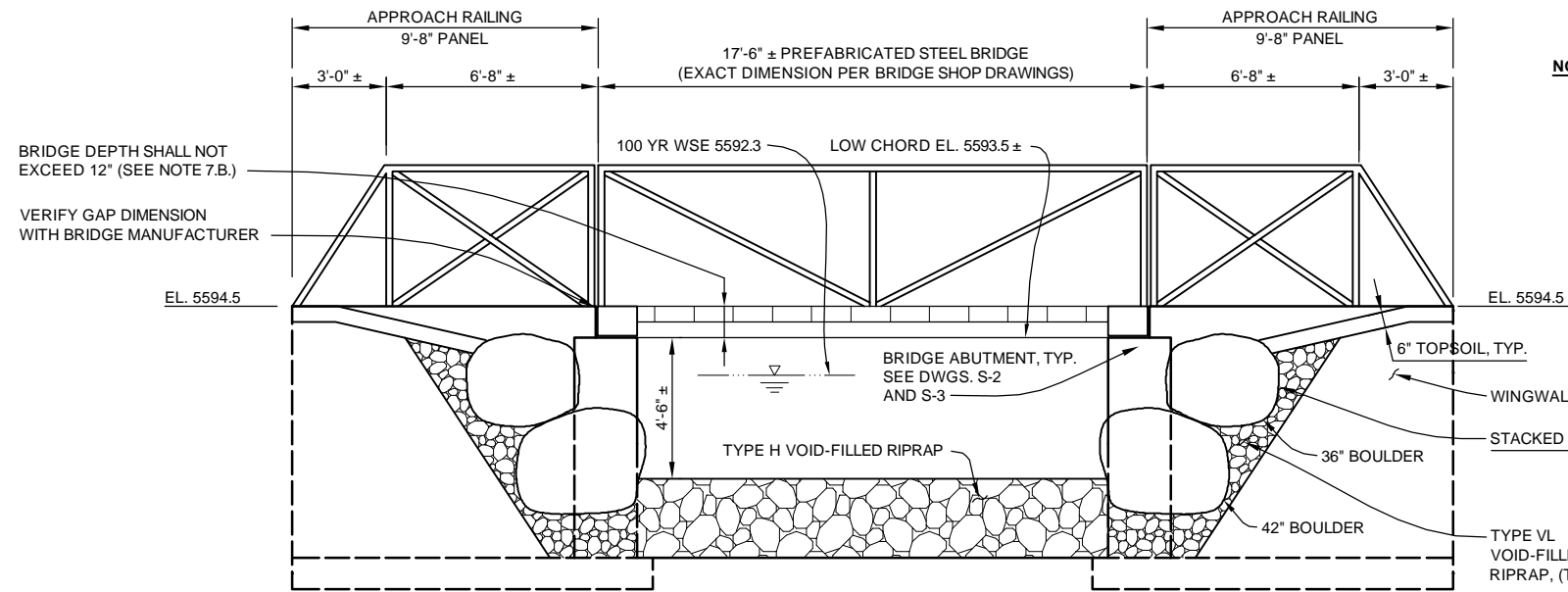
DESIGN: GBH
 DRAWN: KSP
 CHECK: DDJ

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 8390 E. CRESCENT PKWY., SUITE 500
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COTTONWOOD CREEK RECLAMATION
 PHASE 2
 CHERRY CREEK BASIN WATER QUALITY AUTHORITY

STRUCTURAL
BOARDWALK CROSSING SECTIONS

DATE: DECEMBER 2007
 DRAWING NO.: S-3
 SHEET NO.: 23 OF 47



NOTES: REFER TO BRIDGE SHOP DRAWINGS FOR EXACT BRIDGE DIMENSIONS.

BRIDGE CROSSING HYDRAULIC INFORMATION:
 Q_{DESIGN} = Q₁₀₀ = 320CFS
 WSE_{DESIGN} = WSE₁₀₀ = 5592.3

ELEVATION (Looking Downstream)

SCALE 1"=3'

PREFABRICATED BRIDGE NOTES:

- THE PREFABRICATED STEEL BRIDGE SHALL BE MANUFACTURED BY:
 - CONTINENTAL MANUFACTURING, INC. 8301 STATE HWY. 29 NORTH, ALEXANDRIA, MINNESOTA 56308, 1(800)328-2047.
 - OR APPROVED EQUAL
- THE CONTRACTOR IS RESPONSIBLE FOR ORDERING AND PURCHASING THE PREFABRICATED STEEL BRIDGE AND APPROACH RAILINGS. CONTRACTOR IS RESPONSIBLE FOR UNLOADING, ERECTING, INSTALLING BRIDGE AND APPROACH RAILINGS, AND ALL INCIDENTALS REQUIRED TO MAKE THE CONSTRUCTION OF THE BRIDGE COMPLETE IN PLACE. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE BRIDGE MANUFACTURER REGARDING SHOP DRAWING AND DIMENSIONS OF THE PREFABRICATED BRIDGE AND APPROACH RAILINGS TO ENSURE THAT THE ABUTMENTS ARE CONSTRUCTED IN THE CORRECT LOCATIONS.
- STRUCTURAL MEMBERS SHALL BE DESIGNED IN ACCORDANCE WITH THE AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" LATEST EDITION. THE "SERVICE LOAD DESIGN METHOD" (ALLOWABLE STRESS DESIGN) SHALL BE USED FOR STRUCTURAL STEEL.
- FABRICATOR SHALL DESIGN THE BRIDGE FOR THE FOLLOWING LOADS:
 - LIVE LOAD: 85 LBS. PER SQUARE FOOT.
 - VEHICLE LOAD: 1,200 LBS. FOR 2 WHEEL VEHICLES, 10,000 LBS. FOR 4 WHEEL VEHICLES
 - CONCENTRATED LOAD: 1,000 LBS. PLACED ON ANY 2.5 FOOT X 2.5 FOOT SQUARE.
 - WIND LOAD: 35 LBS. PER SQUARE FOOT HORIZONTAL FORCES, 20 LBS. PER SQUARE FOOT OVERTURNING (UPWARD) FORCES.
 - MINIMUM TOP CHORD/RAILING LOADS: 50 LBS. PER LINEAL FOOT OR A 200 LBS. POINT LOAD.
 - SUBMIT STRUCTURAL CALCULATIONS BEARING THE SEAL OF A COLORADO REGISTERED PROFESSIONAL ENGINEER.
- SUBMIT SHOP DRAWINGS: INDICATE SHOP FABRICATION AND FIELD ERECTION DETAILS INCLUDING CUTS, COPES, CONNECTIONS, HOLES, THREADED FASTENERS, AND WELDS FOR BRIDGE STRUCTURAL FRAMEWORK AND RAILINGS.
- SPECIFY THE ANCHOR BOLTS, WHICH ARE EMBEDDED IN CAST-IN-PLACE CONCRETE, IN TIME TO BE INSTALLED BEFORE THE START OF THE CONCRETE OPERATIONS. ANCHOR BOLTS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
- THE PREFABRICATED BRIDGE SHALL BE SUPPLIED WITH THE FOLLOWING ITEMS:
 - THE BRIDGE SHALL BE 17.5 FEET LONG BY 10 FEET WIDE NOMINALLY (AS MEASURED FROM THE INSIDE FACE OF STRUCTURAL ELEMENTS AT DECK LEVEL).
 - THE BRIDGE SHALL BE A PREFABRICATED PONY TRUSS TYPE BRIDGE CONSTRUCTED OF SELF-WEATHERING CORROSION-RESISTANT STEEL. ALL STEEL COMPONENTS SHALL BE FABRICATED FROM SQUARE AND/OR RECTANGULAR STRUCTURAL STEEL TUBING CONFORMING TO ASTM A847 (FY=50,000 PSI). THE TOTAL BRIDGE DEPTH AS MEASURED FROM TOP OF DECK TO LOW CHORD SHALL BE CONSTANT AND SHALL NOT EXCEED 12".
 - BRIDGE RAILING HEIGHT SHALL BE 54 INCHES WITH CONTINUOUS HORIZONTAL SELF-WEATHERING CORROSION-RESISTANT STEEL RAILS PROVIDED ON THE OUTSIDE FACE SUCH THAT A FOUR-INCH DIAMETER SPHERE CANNOT PASS THROUGH THE RAILING.
 - IRON WOOD SMOOTH RUB/HAND RAILS SHALL BE ATTACHED AT A HEIGHT OF 3.5 FEET.
 - THE BRIDGE SHALL BE SUPPLIED WITH IRON WOOD DECKING.
 - IRON WOOD SHALL BE NATURALLY DURABLE HARDWOOD IPE (TABEBUIA SPP) LAPACHO GROUP, PARTIALLY AIR DRIED TO A MOISTURE CONTENT OF 15% TO 20%, AND SUPPLIED S4S (SURFACED FOUR SIDES), E4E (EASED FOUR EDGES), WITH THE EDGES EASED TO A RADIUS OF 1/8". ENDS OF EACH PIECE SHALL BE SEALED WITH "ANCHORSEAL" MOBIL CER-M OR EQUAL AQUIOUS WAX LOG SEALER.
 - VERTICAL CAMBER AT BRIDGE MID SPAN SHALL BE 100% OF THE FULL DEAD LOAD DEFLECTION, SUCH THAT BRIDGE IS FLAT W/ NO CAMBER AFTER INSTALLATION.
 - STEEL TOE PLATES CONFORMING TO ASTM A588 OR ASTM A242 GRADE 50 SHALL BE INCLUDED IN THE BRIDGE FABRICATION ON THE INSIDE FACE OF RAILINGS.
- STEEL COVER PLATES (ASTM A588 OR A242 GRADE 50) SHALL BE ATTACHED (WELDED) AT THE BRIDGE ENDS TO COVER THE GAP BETWEEN THE BRIDGE END FLOOR BEAM AND CONCRETE ABUTMENT. THE COVER PLATES SHALL BE MANUFACTURED WITH BEVELED EDGES.
- THE CONTRACTOR SHALL CONSTRUCT CAST-IN-PLACE ABUTMENT WALLS & FOOTINGS FOR THE PREFABRICATED BRIDGE AS SHOWN ON THE DRAWINGS.

GENERAL CONCRETE STRUCTURE NOTES:

- SEE CONTRACT SPECIFICATIONS REGARDING WATER CONTROL (SURFACE AND SUBSURFACE) DURING CONSTRUCTION.
- SOIL COMPACTION REQUIREMENTS BENEATH STRUCTURES ARE 95% OF THE MAXIMUM DRY DENSITY MEASURED IN ACCORDANCE WITH ASTM D698 (STANDARD PROCTOR) UNLESS OTHERWISE NOTED.
- EXPLORATORY BORINGS AND LOGS WERE PERFORMED BY MAX FOUR ENGINEERS AND ARCHITECTS, LLC.
- CONCRETE IN ALL STRUCTURES SHALL BE CLASS D CONCRETE MIN. (4500 PSI @ 28 DAYS). ALL EXPOSED CONCRETE SHALL HAVE A RUBBED FINISH. ALL EXPOSED CONCRETE CORNERS SHALL HAVE A 3/4" X 3/4" CHAMFER.
- ALL REINFORCING STEEL SHALL BE GRADE 60.
- REFER TO PEDESTRIAN BRIDGE SHOP-DRAWINGS FOR DISTANCE BETWEEN ABUTMENTS, LAYOUT FOR ANCHOR BOLTS AND POSITIONING OF BRIDGE ON ABUTMENT.

APPROACH RAILING NOTES:

- RAILINGS SHALL CONSIST OF TUBING, ANGLES, PLATES AND BARS MADE OF SELF-WEATHERING CORROSION-RESISTANT STEEL MATCHING BRIDGE RAILINGS.
- FOUR PANELS SHALL BE PROVIDED, AND SHALL BE 9'-8" ± LONG BY 4'-6" HIGH AS SHOWN ABOVE. EACH PANEL SHALL INCLUDE BASE PLATES AND EXPANSION ANCHORS, IRON WOOD RUB RAILS, TOE PLATES, AND HORIZONTAL SAFETY RAILS TO PROVIDE LESS THAN A 4" OPENING. THE PANEL SHALL BE FABRICATED WITH SQUARE END VERTICAL MEMBERS. MANUFACTURER SHALL SUBMIT SHOP DRAWINGS FOR RAILINGS.
- EXPANSION ANCHORS SHALL BE INSTALLED IN CONFORMITY WITH THE MANUFACTURER'S RECOMMENDATION FOR MAXIMUM HOLDING CAPACITY. HOLE DEPTH SHALL NOT BE LESS THAN FOUR BOLT HOLE DIAMETERS. THE MINIMUM DISTANCE FROM THE ANCHOR TO THE EDGE OF THE CONCRETE FACE SHALL NOT BE LESS THAN 6 INCHES.
- RAILING PANEL LENGTHS SHALL BE SHORTENED AS NECESSARY TO PROVIDE ADEQUATE CLEARANCE TO BRIDGE RAILING, BUT SHALL MAINTAIN THE REQUIREMENT FOR NON-PASSAGE OF A 4-INCH SPHERE.

REINFORCING STEEL LAP SPLICE LENGTHS (ACI 350-01 12.2.2)	
BAR SIZE	LENGTH (IN)
#4	23.3
#5	29.1
#6	34.9
#7	50.9
#8	58.1
#9	65.4
#10	72.7
#11	79.9


DATE: DEC 18, 2007 TIME: 3:24 PM

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No.	DATE	REVISIONS	APPR.

MULLER ENGINEERING CO., INC.
 CONSULTING ENGINEERS
 IRONGATE 4 SUITE 100
 777 S. WADSWORTH BLVD.
 LAKEWOOD, COLORADO 80226
 (303) 988-4939

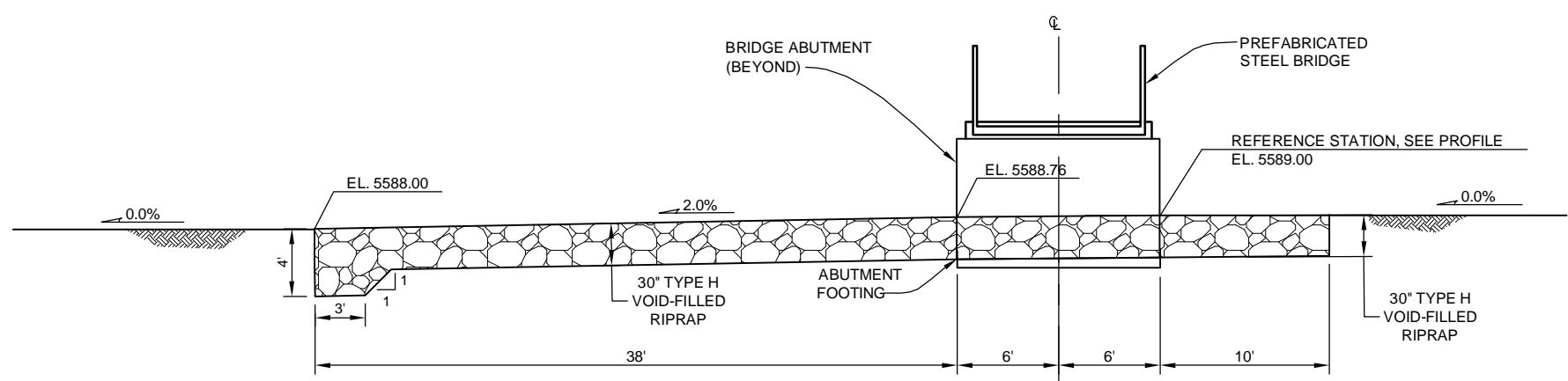
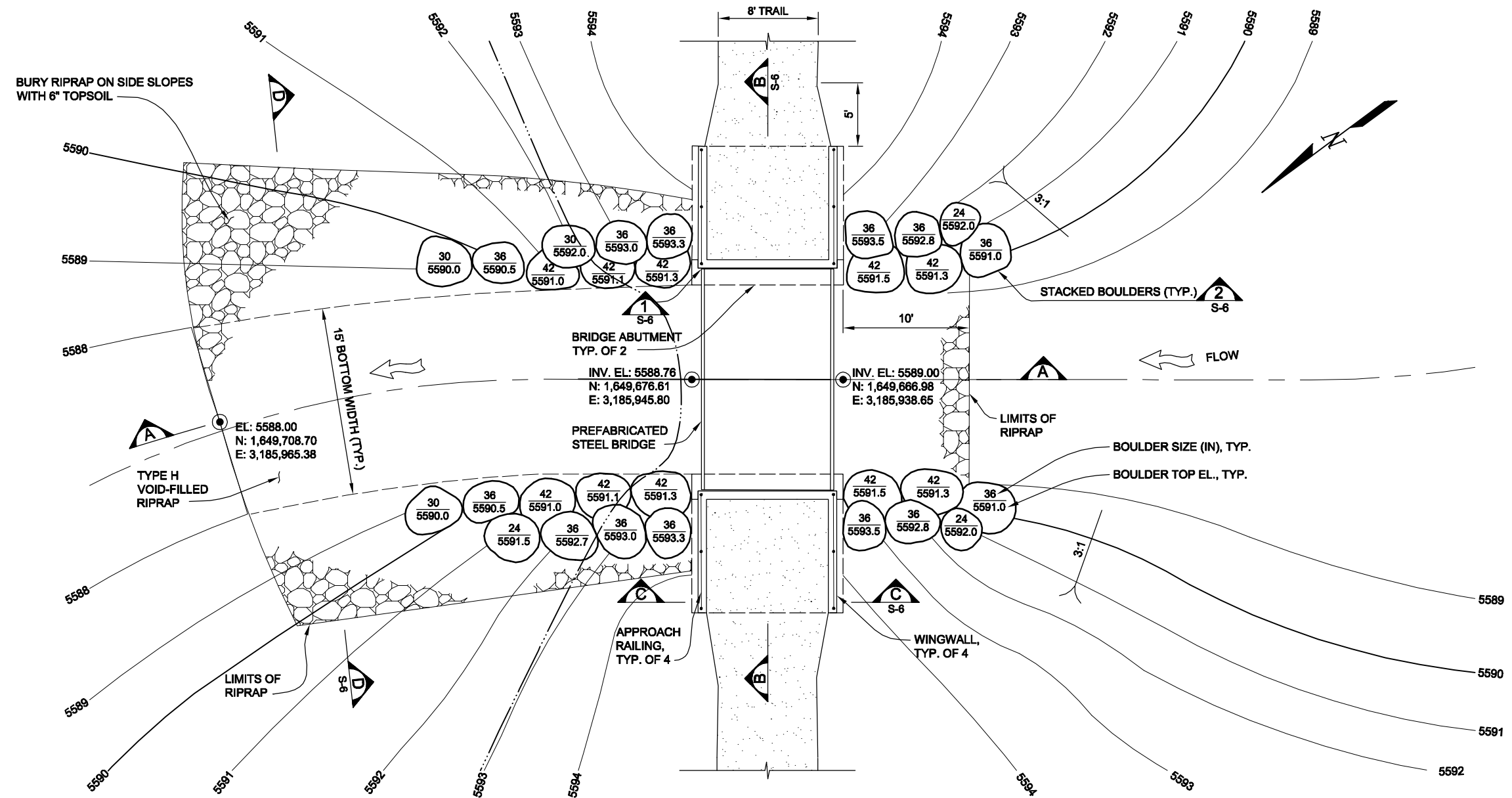
DESIGN MDC/DAH
 DRAWN KSP
 CHECK DDJ

PREPARED FOR:

 CHERRY CREEK BASIN WATER QUALITY AUTHORITY
 8390 E. CRESCENT PKWY., SUITE 500
 GREENWOOD VILLAGE, CO. 80111
 303-779-4525

COTTONWOOD CREEK RECLAMATION
 PHASE 2
 CHERRY CREEK BASIN WATER QUALITY AUTHORITY

STRUCTURAL
BRIDGE CROSSING ELEVATION AND NOTES

DATE: DECEMBER 2007
 DRAWING NO. S-4
 SHEET NO. 24 OF 47



NAME: S:\02025.03\Phase 2\Coord\02025_03-Plan&Prf1.dwg DATE: DEC 18, 2007 TIME: 9:40 PM

No.	DATE	REVISIONS	APPR.

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 LAKEWOOD, COLORADO 80226
 (303) 988-4939

MEC PROJECT No. 02025.03

DESIGN: MDC
 DRAWN: KSP
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 303-779-4525

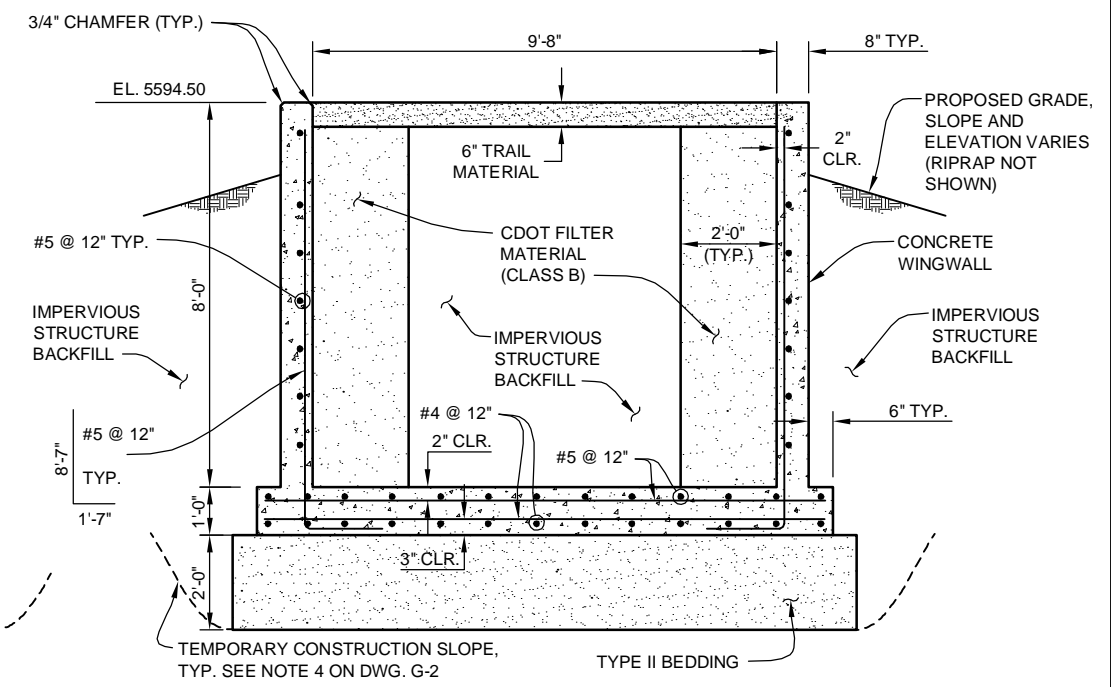
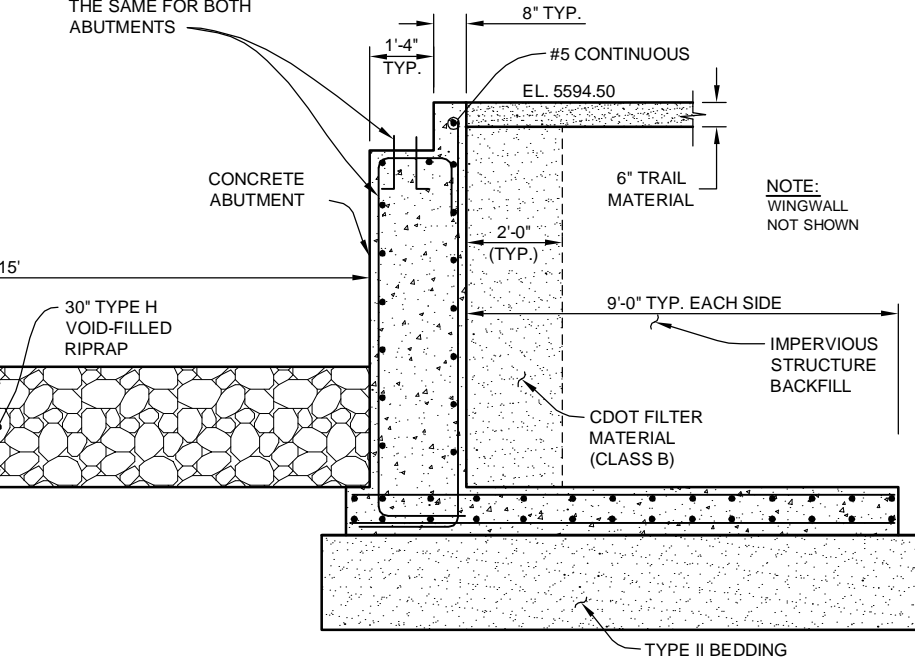
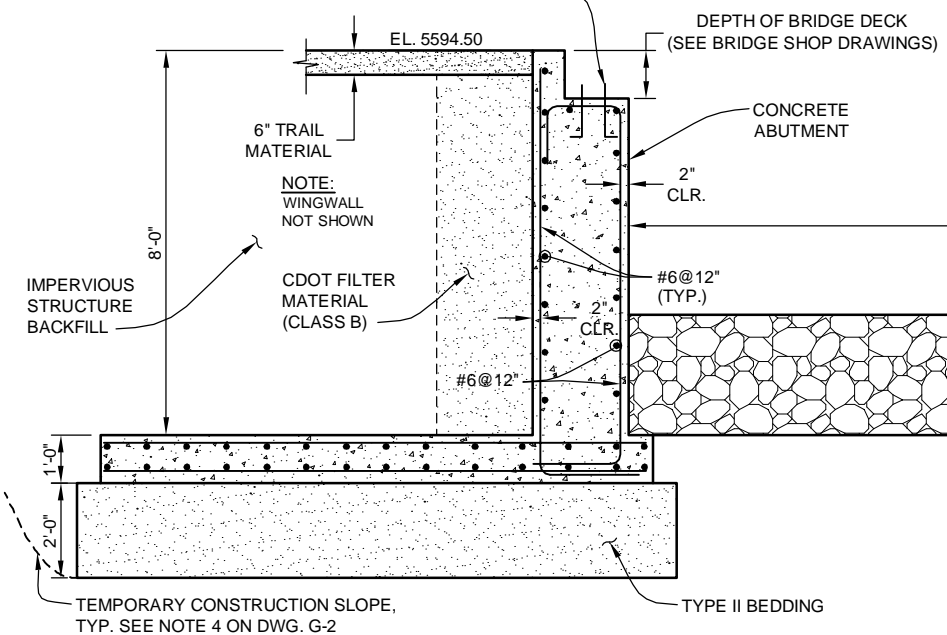
COTTONWOOD CREEK RECLAMATION
 PHASE 2
 CHERRY CREEK BASIN WATER QUALITY AUTHORITY

STRUCTURAL
**BRIDGE CROSSING
 PLAN AND PROFILE**

DATE: DECEMBER 2007
 DRAWING NO.: S-5
 SHEET NO.: 25 OF 47

ANCHOR BOLTS 3/4"x1'-0" W/3" HOOK (CONTRACTOR SHALL FURNISH AND INSTALL PER BRIDGE MANUFACTURER'S SPECIFICATIONS) BOLTS SHALL BE INCLUDED IN THE CONCRETE WORK AND NOT PAID FOR SEPARATELY. EACH BOLT SHALL BE PROVIDED WITH TWO NUTS AND WASHER.

STEEL REINFORCING AND ANCHOR BOLTS SHALL BE THE SAME FOR BOTH ABUTMENTS

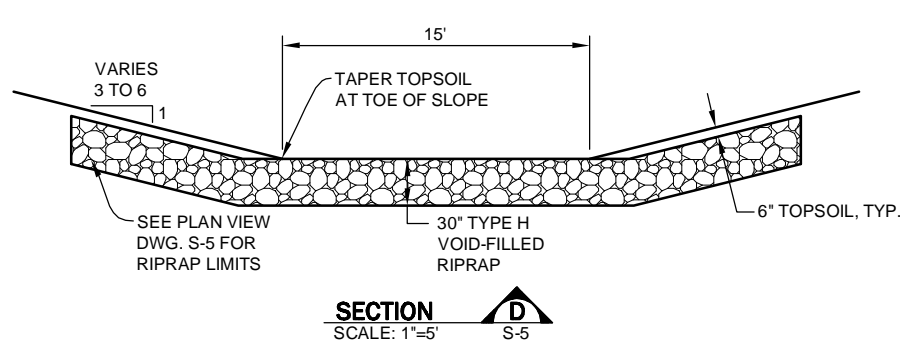


SECTION B
SCALE: 1/2"=1'-0" S-5

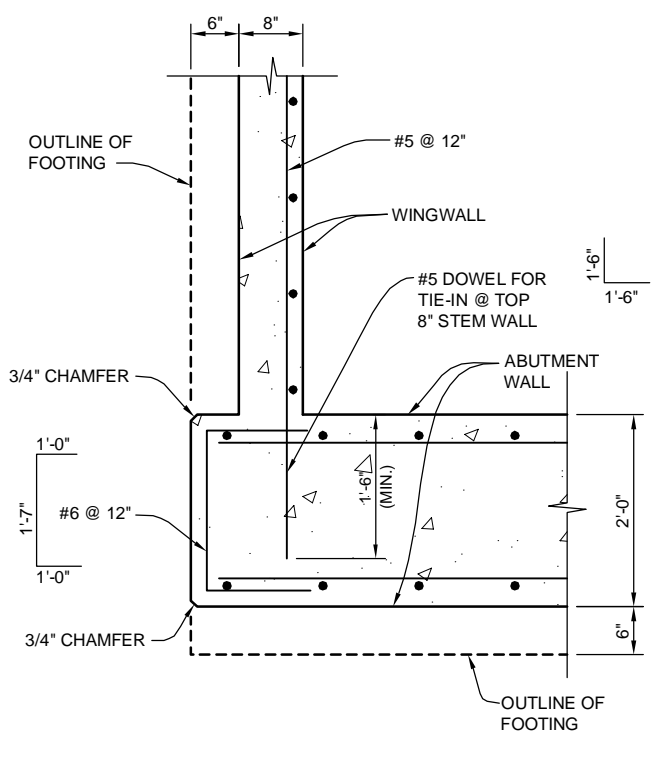
SECTION C
SCALE: 1/2"=1'-0" S-5

NOTES FOR STACKED BOULDERS:

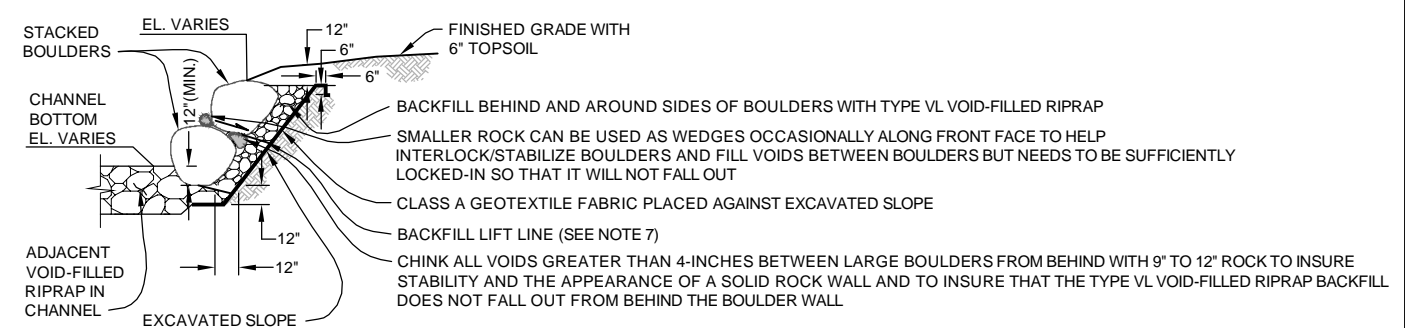
- BOULDERS SHALL BE 24"-42" (MIN. DIMENSION) WITH LARGER BOULDERS AT BOTTOM OF WALL. STACK HEIGHT 1-2 BOULDERS HIGH AS REQUIRED TO ACHIEVE TOP OF WALL BOULDER ELEVATIONS SHOWN ON PLAN AND MINIMUM REQUIRED KEY-IN DEPTH INTO CHANNEL BOTTOM.
- FACE SLOPE MAY VARY FROM 0.75-1.0H:1.0V AS LONG AS BOULDERS ARE ADEQUATELY INTERLOCKED TO INSURE A STABLE CONFIGURATION.
- BOULDERS SHALL BE SELECTED AND PLACED SO THEY FIT AS TIGHTLY AS POSSIBLE WITH ADJACENT BOULDERS AND SO THAT MAXIMUM FLAT SURFACES TOUCH ADJACENT BOULDERS. GAPS/VOIDS BETWEEN BOULDERS SHALL BE MINIMIZED AND SHALL NOT EXCEED 4-INCHES WITHOUT CHINKING FROM BEHIND AS SHOWN IN THE DETAIL.
- THE FRONT OF THE BOULDERS SHALL SECURELY REST ON THE LOWER BOULDER AND THE BACK REST ON THE VOID-FILLED RIPRAP BACKFILL SUCH THAT THE TOP SURFACE OF THE BOULDER SLOPES SLIGHTLY DOWN TOWARD THE EXCAVATED SLOPE.
- LONG DIMENSION OF BOULDERS SHALL EXTEND BACK TOWARDS THE EXCAVATED SLOPE TO PROVIDE MAXIMUM STABILITY.
- STACKING OF BOULDERS SHALL BE DONE SUCH THAT THE JOINTS BETWEEN BOULDERS ARE STAGGERED ON SUCCEEDING LEVELS TO AVOID CONTINUOUS JOINT PLANES IN VERTICAL OR LATERAL DIRECTIONS.
- AFTER EACH LEVEL OF BOULDERS IS PLACED, BACKFILL BEHIND BOULDERS WITH A LIFT OF TYPE VL VOID-FILLED RIPRAP. THE FIRST LIFT SHALL BE PLACED TO 12-INCHES BELOW TOP OF BOULDER. IN SUBSEQUENT LIFTS, THE TOP OF BACKFILL SHALL BE APPROXIMATELY EVEN WITH THE TOP OF THE BOULDERS AND SLOPE DOWN TOWARD THE SUBGRADE AT 1- TO 2-INCHES PER FOOT. AS THE BACKFILL IS PLACED, ANY VOID BETWEEN BOULDERS LARGER THAN 4-INCHES SHALL BE HAND-CHINKED FROM BEHIND AS SHOWN IN THE DETAIL.



SECTION D
SCALE: 1"=5' S-5



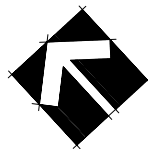
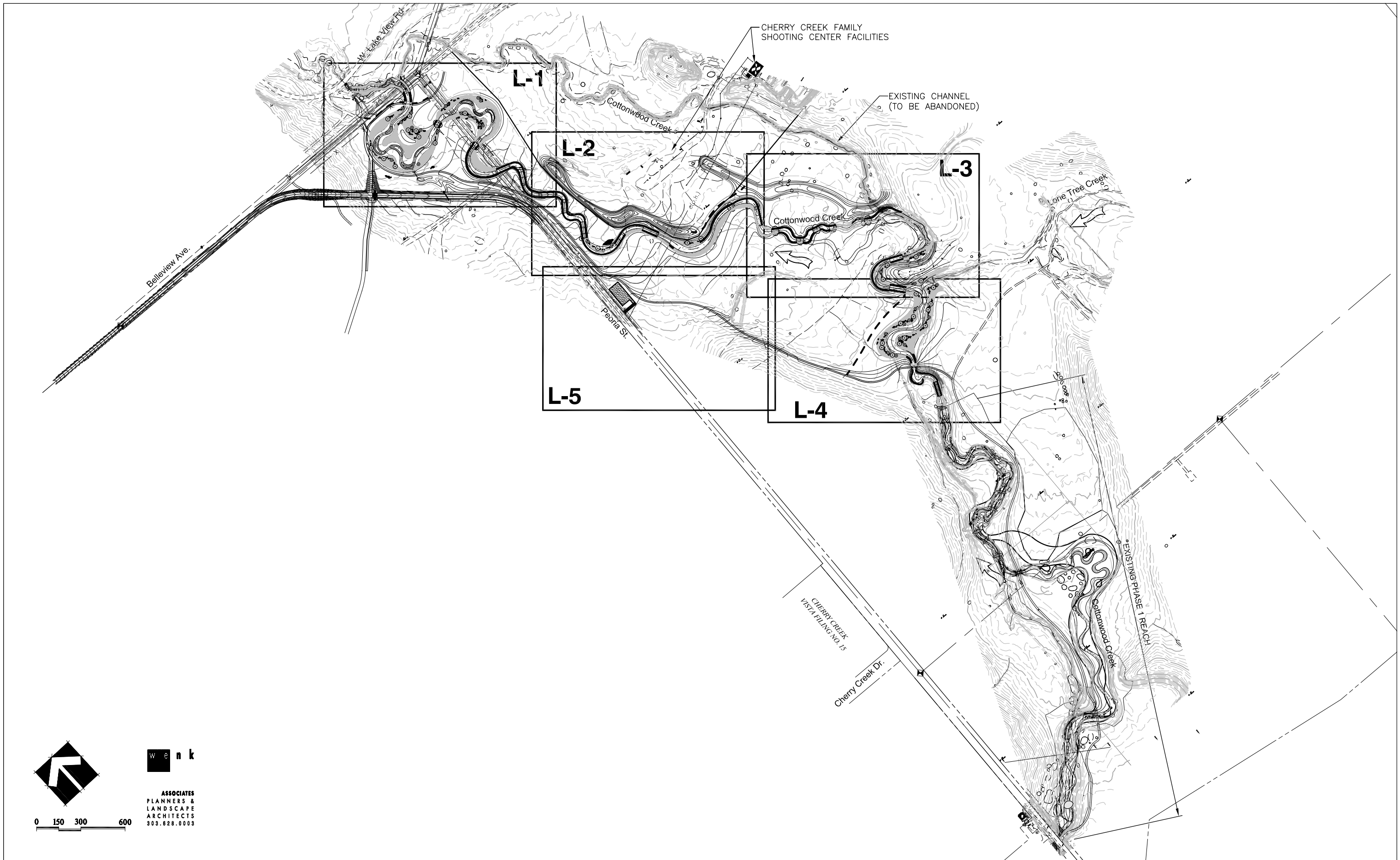
TYPICAL CORNER REINFORCEMENT DETAIL (PLAN VIEW)
SCALE: 1"=5' S-5



STACKED BOULDERS DETAIL
SCALE: 1"=5' C-16, S-2, S-4, S-5

DATE: DEC 18, 2007 TIME: 11:25 AM
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<p>MULLER ENGINEERING CO., INC. CONSULTING ENGINEERS IRONGATE 4, SUITE 100 777 S. WADSWORTH BLVD. LAKEWOOD, COLORADO 80226 (303) 988-4939</p>		<p>DESIGN: MDC/DAH DRAWN: KSP CHECK: DDJ</p>	<p>PREPARED FOR: CHERRY CREEK BASIN WATER QUALITY AUTHORITY 8390 E. CRESCENT PKWY., SUITE 500 GREENWOOD VILLAGE, CO. 80111 303-779-4525</p>	<p>COTTONWOOD CREEK RECLAMATION PHASE 2 CHERRY CREEK BASIN WATER QUALITY AUTHORITY</p>	<p>STRUCTURAL BRIDGE CROSSING SECTIONS</p>	<p>DATE: DECEMBER 2007 DRAWING NO. S-6 SHEET NO. 26 OF 47</p>
No.	DATE	REVISIONS	APPR.	MEC PROJECT No. 02025.03		



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No.	DATE	REVISIONS	APPR.

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CONSULTING ENGINEERS
IRONGATE 4, SUITE 100
777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 988-4939

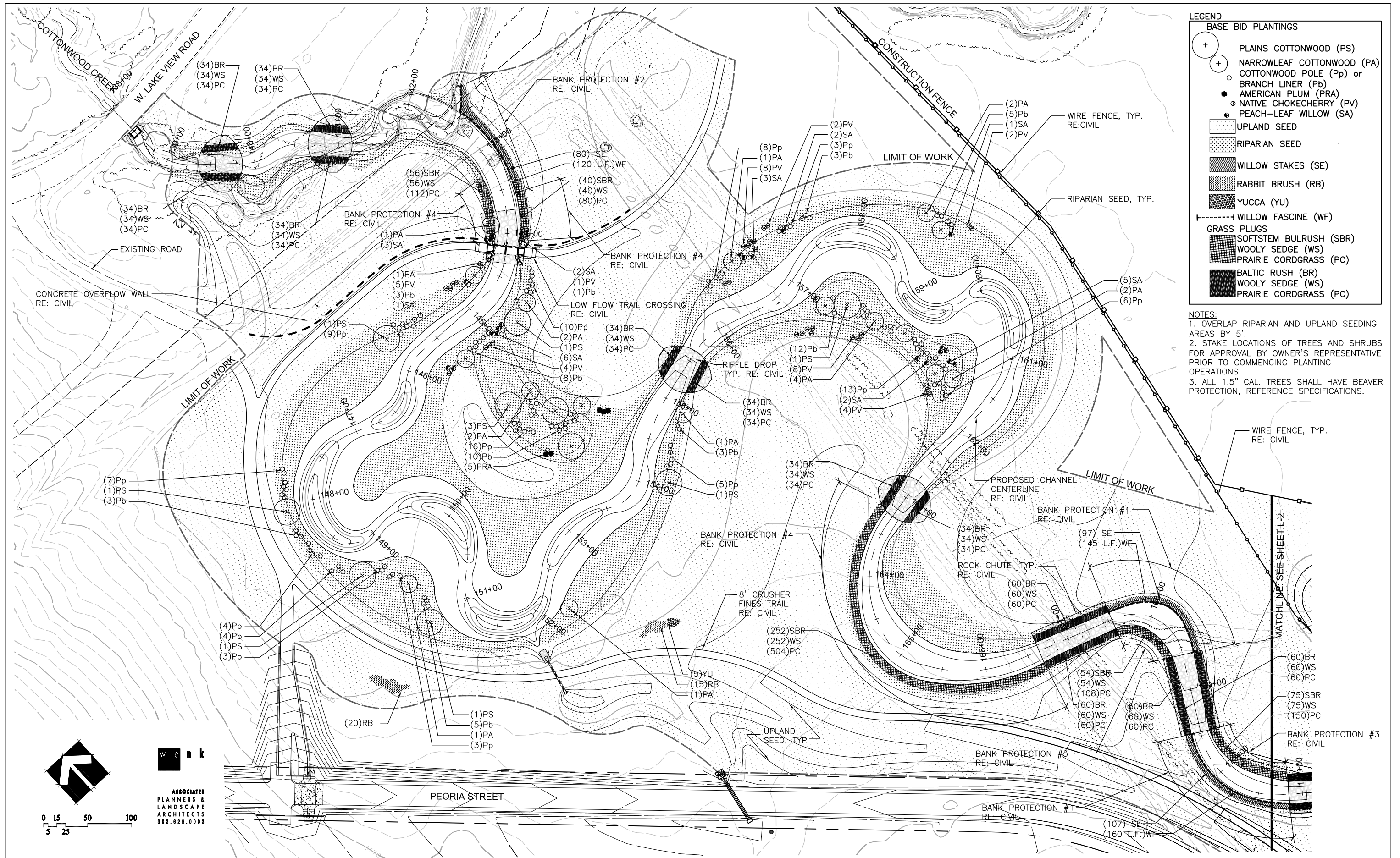
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8390 E. CRESCENT PKWY, SUIT 500
GREENWOOD VILLAGE, CO. 80111
303-779-4525

**COTTONWOOD CREEK RECLAMATION
PHASE 2
CHERRY CREEK BASIN WATER QUALITY AUTHORITY**

LANDSCAPE
INDEX SHEET

DATE
DECEMBER 2007
DRAWING NO.
L-0
SHEET NO.
27 OF 47



LEGEND

BASE BID PLANTINGS

- + PLAINS COTTONWOOD (PS)
- + NARROWLEAF COTTONWOOD (PA)
- o COTTONWOOD POLE (Pp) or BRANCH LINER (Pb)
- AMERICAN PLUM (PRA)
- ⊙ NATIVE CHOKECHERRY (PV)
- PEACH-LEAF WILLOW (SA)

GRASS PLUGS

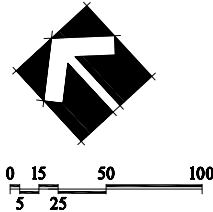
- ▨ SOFTSTEM BULRUSH (SBR)
- ▨ WOOLY SEDGE (WS)
- ▨ PRAIRIE CORDGRASS (PC)
- ▨ BAL TIC RUSH (BR)
- ▨ WOOLY SEDGE (WS)
- ▨ PRAIRIE CORDGRASS (PC)

OTHER FEATURES

- ░ UPLAND SEED
- ▨ RIPARIAN SEED
- ▨ WILLOW STAKES (SE)
- ▨ RABBIT BRUSH (RB)
- ▨ YUCCA (YU)
- WILLOW FASCINE (WF)

NOTES:

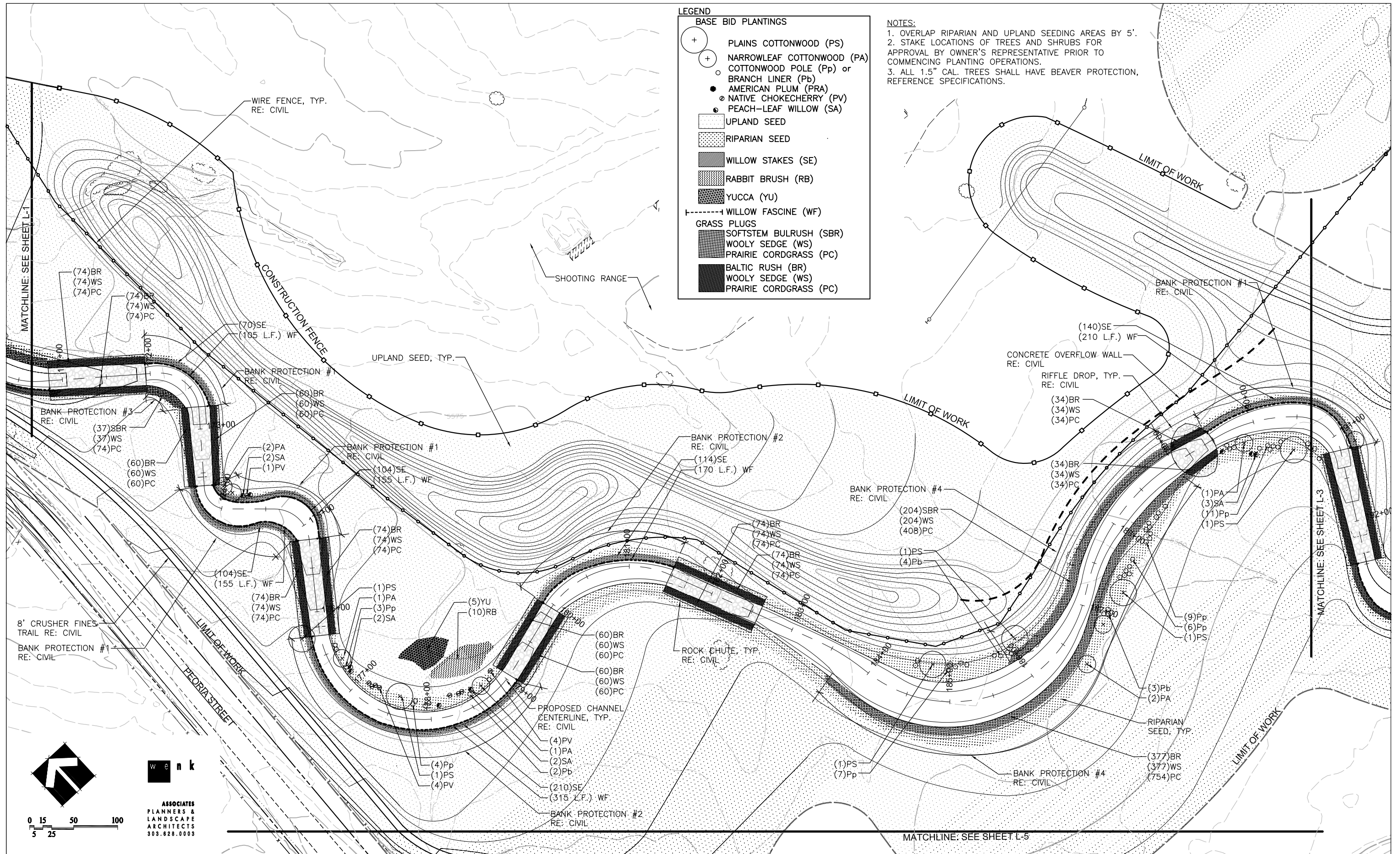
- OVERLAP RIPARIAN AND UPLAND SEEDING AREAS BY 5'.
- STAKE LOCATIONS OF TREES AND SHRUBS FOR APPROVAL BY OWNER'S REPRESENTATIVE PRIOR TO COMMENCING PLANTING OPERATIONS.
- ALL 1.5" CAL. TREES SHALL HAVE BEAVER PROTECTION, REFERENCE SPECIFICATIONS.



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No.	DATE	REVISIONS	APPR.	MEC PROJECT No. 02025.03		



LEGEND

BASE BID PLANTINGS

- ⊕ PLAINS COTTONWOOD (PS)
- ⊕ NARROWLEAF COTTONWOOD (PA)
- COTTONWOOD POLE (Pp) or BRANCH LINER (Pb)
- AMERICAN PLUM (PRA)
- ⊙ NATIVE CHOKECHERRY (PV)
- PEACH-LEAF WILLOW (SA)

- ░ UPLAND SEED
- ▒ RIPARIAN SEED
- ▓ WILLOW STAKES (SE)
- ▒ RABBIT BRUSH (RB)
- ▓ YUCCA (YU)
- WILLOW FASCINE (WF)

GRASS PLUGS

- ▒ SOFTSTEM BULRUSH (SBR)
- ▒ WOOLY SEDGE (WS)
- ▒ PRAIRIE CORDGRASS (PC)
- ▒ BALTIC RUSH (BR)
- ▒ WOOLY SEDGE (WS)
- ▒ PRAIRIE CORDGRASS (PC)

NOTES:

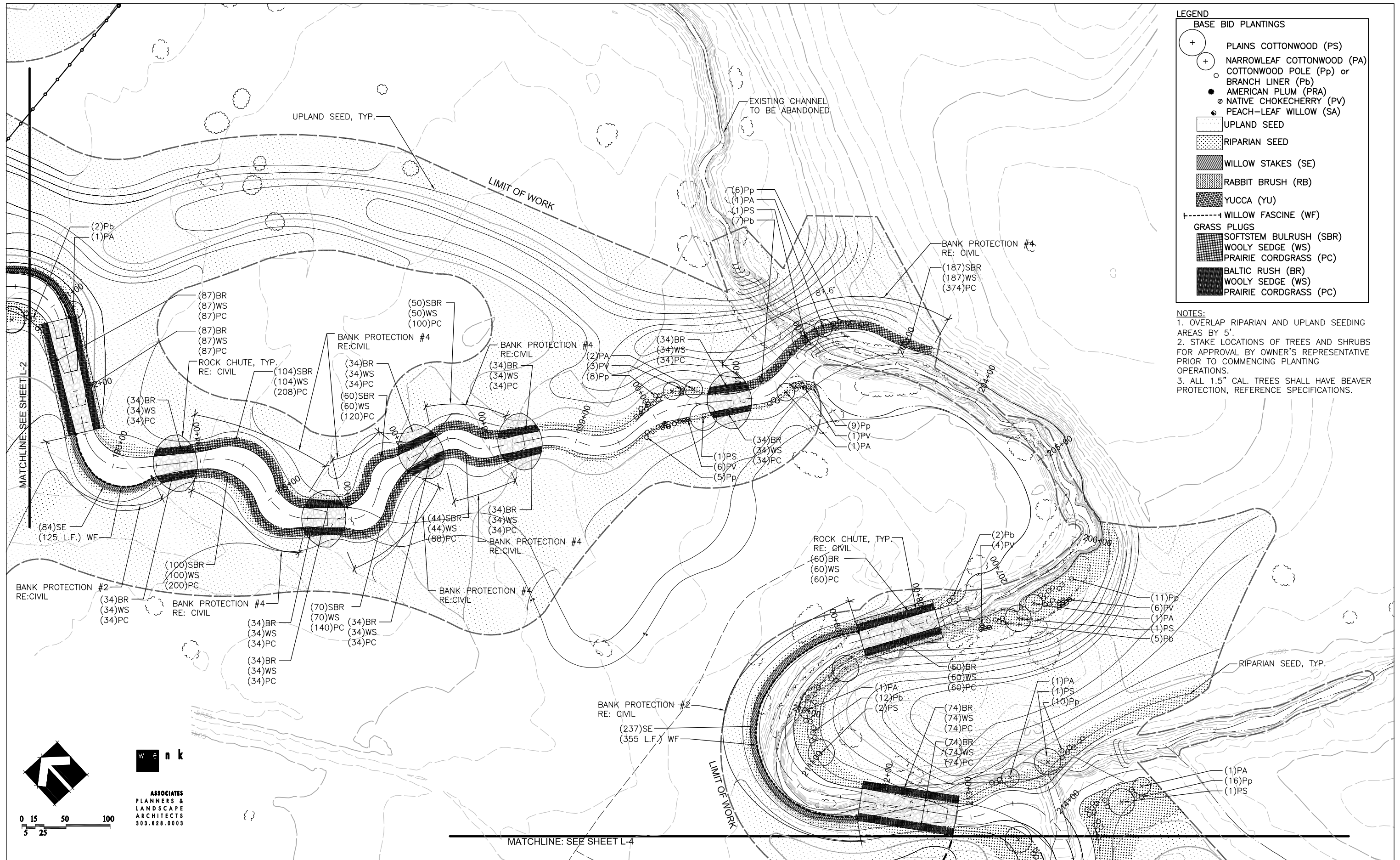
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No.	DATE	REVISIONS	APPR.	MEC PROJECT No. 02025.03		



LEGEND

BASE BID PLANTINGS

- + PLAINS COTTONWOOD (PS)
- + NARROWLEAF COTTONWOOD (PA)
- o COTTONWOOD POLE (Pp) or BRANCH LINER (Pb)
- AMERICAN PLUM (PRA)
- ⊙ NATIVE CHOKECHERRY (PV)
- PEACH-LEAF WILLOW (SA)

SEEDING

- ░ UPLAND SEED
- ▒ RIPARIAN SEED
- ▓ WILLOW STAKES (SE)
- ▒ RABBIT BRUSH (RB)
- ▓ YUCCA (YU)

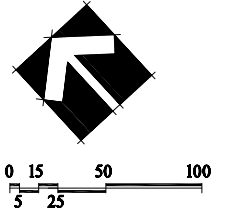
WILLOW FASCINE (WF)

GRASS PLUGS

- ▒ SOFTSTEM BULRUSH (SBR)
- ▒ WOOLY SEDGE (WS)
- ▒ PRAIRIE CORDGRASS (PC)
- ▒ BAL TIC RUSH (BR)
- ▒ WOOLY SEDGE (WS)
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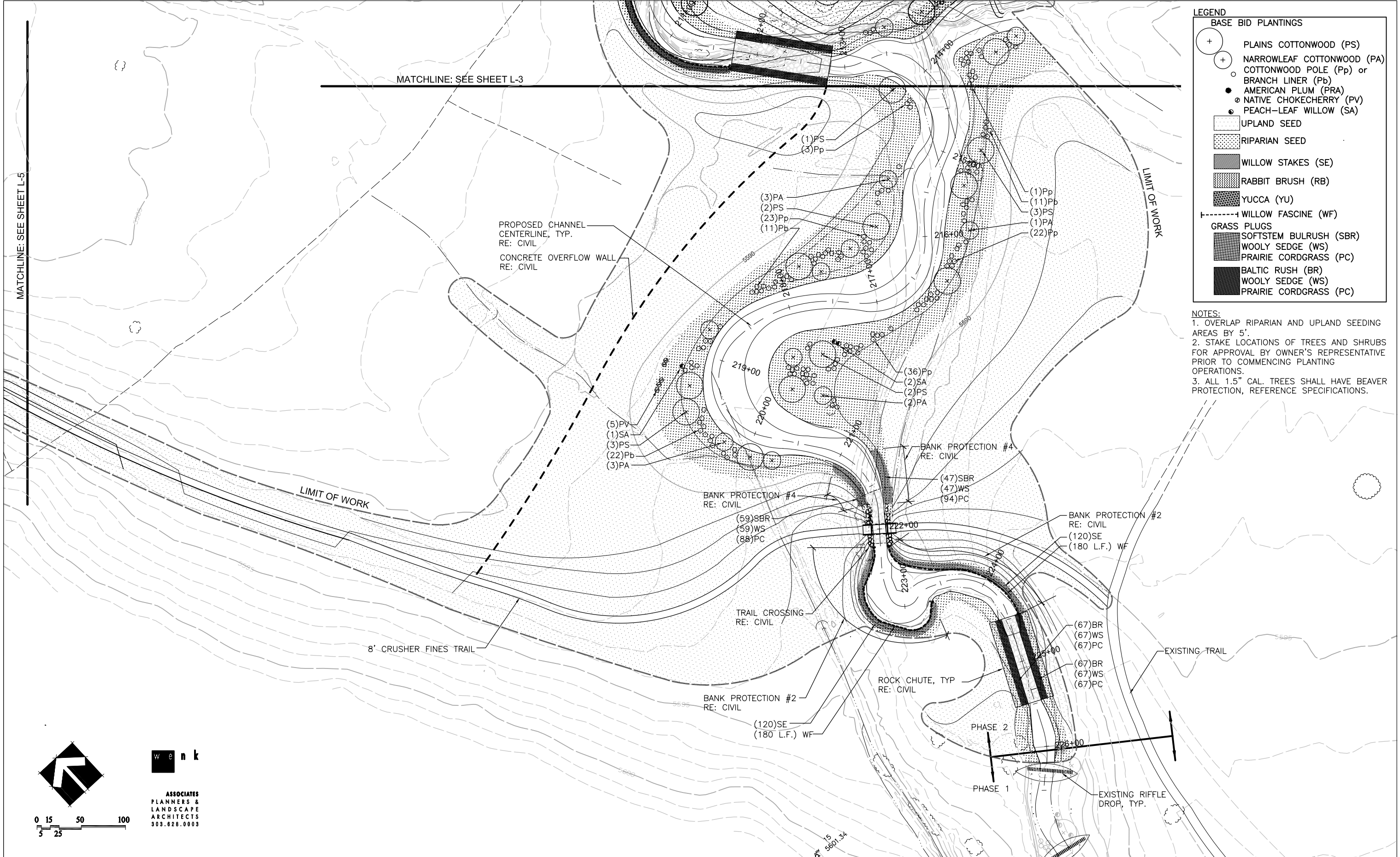
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						DRAWING NO. L-3
SHEET NO. 30 OF 47						



LEGEND

BASE BID PLANTINGS

- + PLAINS COTTONWOOD (PS)
- + NARROWLEAF COTTONWOOD (PA)
- o COTTONWOOD POLE (Pp) or BRANCH LINER (Pb)
- AMERICAN PLUM (PRA)
- ⊙ NATIVE CHOKECHERRY (PV)
- PEACH-LEAF WILLOW (SA)

SEEDING AREAS

- UPLAND SEED
- ▨ RIPARIAN SEED
- ▩ WILLOW STAKES (SE)
- ▧ RABBIT BRUSH (RB)
- ▦ YUCCA (YU)

WILLOW FASCINE (WF)

GRASS PLUGS

- ▨ SOFTSTEM BULRUSH (SBR)
- ▧ WOOLY SEDGE (WS)
- ▦ PRAIRIE CORDGRASS (PC)
- ▩ BALTIC RUSH (BR)
- ▧ WOOLY SEDGE (WS)
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NOTES:

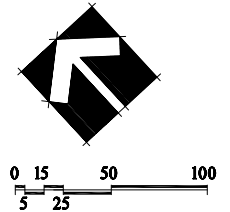
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MATCHLINE: SEE SHEET L-5

MATCHLINE: SEE SHEET L-3

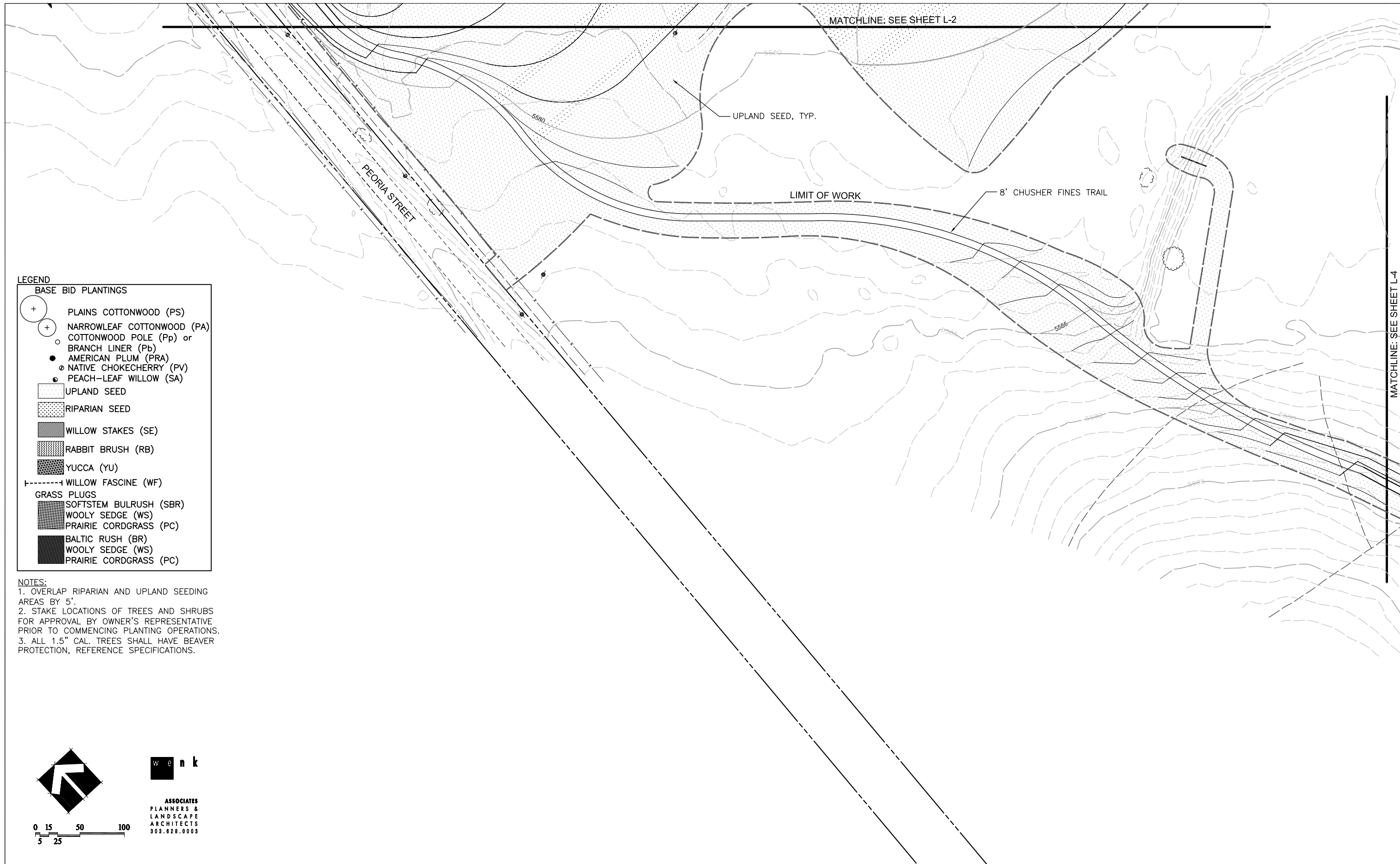
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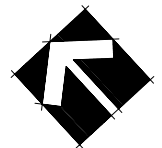
No.	DATE	REVISIONS	APPR.	MEC PROJECT No. 02025.03	MULLER ENGINEERING CO., INC. CONSULTING ENGINEERS IRONGATE 4, SUITE 100 777 S. WADSWORTH BLVD. LAKEWOOD, COLORADO 80226 (303) 988-4939	DESIGN NH DRAWN MFP CHECK NH	PREPARED FOR: CHERRY CREEK BASIN WATER QUALITY AUTHORITY 8390 E. CRESCENT PKWY, SUIT 500 GREENWOOD VILLAGE, CO. 80111 303-779-4525	COTTONWOOD CREEK RECLAMATION PHASE 2 CHERRY CREEK BASIN WATER QUALITY AUTHORITY	LANDSCAPE BANK STABILIZATION & PLANTING PLAN	DATE
										DECEMBER 2007
										DRAWING NO.
										L-4
										SHEET NO.
										31 OF 47



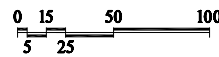
LEGEND

BASE BID PLANTINGS	
	PLAINS COTTONWOOD (PS)
	NARROWLEAF COTTONWOOD (PA)
	COTTONWOOD POLE (Pp) or BRANCH LINER (Pb)
	AMERICAN PLUM (PRA)
	NATIVE CHOKECHERRY (PV)
	PEACH-LEAF WILLOW (SA)
	UPLAND SEED
	RIPARIAN SEED
	WILLOW STAKES (SE)
	RABBIT BRUSH (RB)
	YUCCA (YU)
	WILLOW FASCINE (WF)
GRASS PLUGS	
	SOFTSTEM BULRUSH (SBR)
	WOOLY SEDGE (WS)
	PRAIRIE CORDGRASS (PC)
	BALTIC RUSH (BR)
	WOOLY SEDGE (WS)
	PRAIRIE CORDGRASS (PC)

- NOTES:**
1. OVERLAP RIPARIAN AND UPLAND SEEDING AREAS BY 5'.
 2. STAKE LOCATIONS OF TREES AND SHRUBS FOR APPROVAL BY OWNER'S REPRESENTATIVE PRIOR TO COMMENCING PLANTING OPERATIONS.
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						DRAWN MFP				DRAWING NO. L-5
								CHECK NH	SHEET NO. 32 OF 47	

PLANTING SCHEDULE (BASE BID- SCHEDULE A)

KEY	QTY.	BOTANICAL NAME	COMMON NAME	COMMENTS
TREES & SHRUBS				
PV	67	Prunus virginiana	Native Chokecherry	1 gal.
PA	43	Populus angustifolia	Narrowleaf Cottonwood	1.5" Caliper
PS	35	Populus sargentii	Plains Cottonwood	1.5" Caliper
Pp	281	Populus species	Cottonwood poles	Collected 3'-5' long
Pb	141	Populus species	Cottonwood branchlinear	Single branch
PRA	5	Prunus americana	American Plum	1 gal.
SA	36	Salix amygdaloids	Peachleaf Willow	1 gal.
RB	45	Chrysothamnus naus.	Rubber Rabbitbrush	1 gal.
YU	10	Yucca filamentosa	Adam's Needle Yucca	1 gal.
SE	1383	Salix exigua	Coyote Willow Stakes	Collected 3'-5' long plant 3'-0" on center
WETLAND PLUGS				
WF	2375 LF	Salix exigua	Willow Fascine	10" dia.
WETLAND PLUGS				
SBR	1347	Scirpus validus	Softstem Bulrush	10T, 18" O.C.
WS	3488	Carex lanuginosa	Woolly Sedge	10T, 18" O.C.
PC	5182	Spartina pectinata	Prairie Cordgrass	10T, 18" O.C.
BR	2215	Juncus baticus	Baltic Rush	10T, 18" O.C.

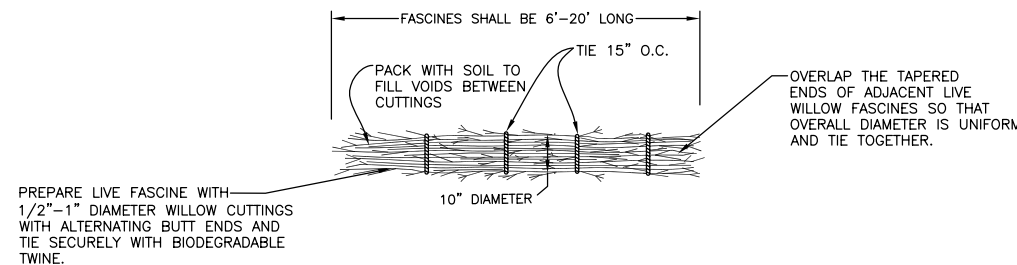
SEEDING SCHEDULE

KEY	BOTANICAL NAME	COMMON NAME	% OF MIX	PLS LBS/ACRE
UPLAND SEED MIX				
GRASSES				
	Buchloe dactyloides 'Sharp's'	Sharp's Buffalograss	5	1.63
	Bouteloua curtipendula 'Butte'	Butte Sideoats Grama	25	8.17
	Chondrosom gracile 'Hachita'	Hachita Blue Grama	25	8.17
	Distichlis stricta	Inland saltgrass	10	3.27
	Pascopyrum smithii 'Barton'	Barton Western Wheatgrass	20	6.53
	Elymus trachycaulus trachycaulus	Slender Wheatgrass	10	3.27
	Sporobolus cryptandrus	Sand dropseed	5	1.63
TOTAL 48.41 acres			100	32.67
WILDFLOWERS				
	Aster laevis	Smooth aster	.5	.16
	Dalea purpurea	Purle prarieclover	.5	.16
	Galilardia aristata	Blanket flower	.5	.16
	Liatris punctata	Gayfeather	1	.32
	Linum lewisii	Flax	.5	.16
	Penstemon strictus	Rocky Mt. penstemon	1	.32
TOTAL				1.28
RIPARIAN SEED MIX				
GRASSES				
	Carex lanuginosa	Wooley sedge	1	.22
	Carex nebrskansis	Nebraska sedge	.01	.01
	Chondrosom gracile 'Lovington'	Lovington Blue Grama	5	1.09
	Buchloe dactyloides	Buffalograss	5.95	1.3
	Distichlis stricta	Inland saltgrass	3	.65
	Juncus balticus	Baltic rush	.04	.01
	Spartina pectinala	Prairie cordgrass	15	3.3
	Sporobolus cryptandrus	Sand dropseed	5	1.1
	Panicum virgatum 'Blackwell'	Blackwell Switchgrass	28	6.1
	Pascopyrum smithii	Arriba Western wheatgrass	37	8.1
TOTAL 7.55 acres			100	21.88
WILDFLOWERS				
	Achillea millefolium	Yarrow	.05	.01
	Aster laevis	Smooth aser	.1	.02
	Asclepias speciosa	Showy milkweed	.1	.02
	Monarda fistulosa	Wild bergamont	.25	.01
	Verbena hastata	Bule verbena	.1	.02
TOTAL				.08

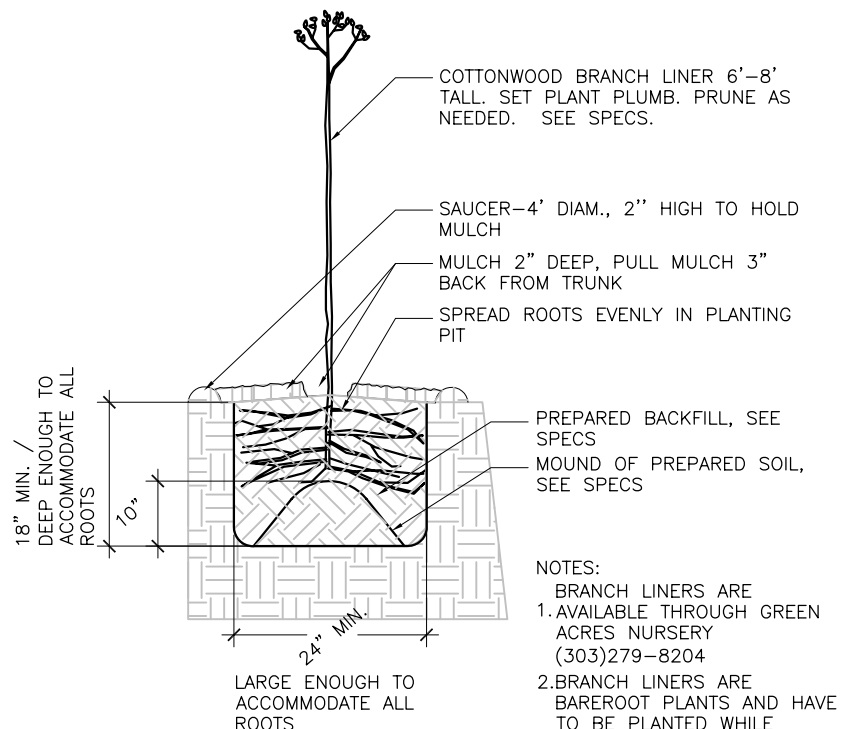
PLANTING SCHEDULE (BID ALTERNATE- SCHEDULE D)

KEY	QTY.	BOTANICAL NAME	COMMON NAME	COMMENTS
TREES & SHRUBS				
PA	20	Populus angustifolia	Narrowleaf Cottonwood	1.5" Caliper
PS	20	Populus sargentii	Plains Cottonwood	1.5" Caliper
SA	30	Salix amygdaloids	Peachleaf Willow	1 gal.
Pp	50	Populus species	Cottonwood poles	Collected 3'-5' long
Pb	50	Populus species	Cottonwood branchlinear	Single branch
PRA	80	Prunus americana	American Plum	1 gal.
SA	80	Rhus trilobata	Three-leaf Sumac	1 gal.
RB	40	Chrysothamnus naus.	Rubber Rabbitbrush	1 gal.
SE	500	Salix exigua	Coyote Willow Stakes	Collected 3'-5' long plant 3'-0" on center
WETLAND PLUGS				
SBR	1000	Scirpus validus	Softstem Bulrush	10T, 18" O.C.
PC	1000	Spartina pectinata	Prairie Cordgrass	10T, 18" O.C.

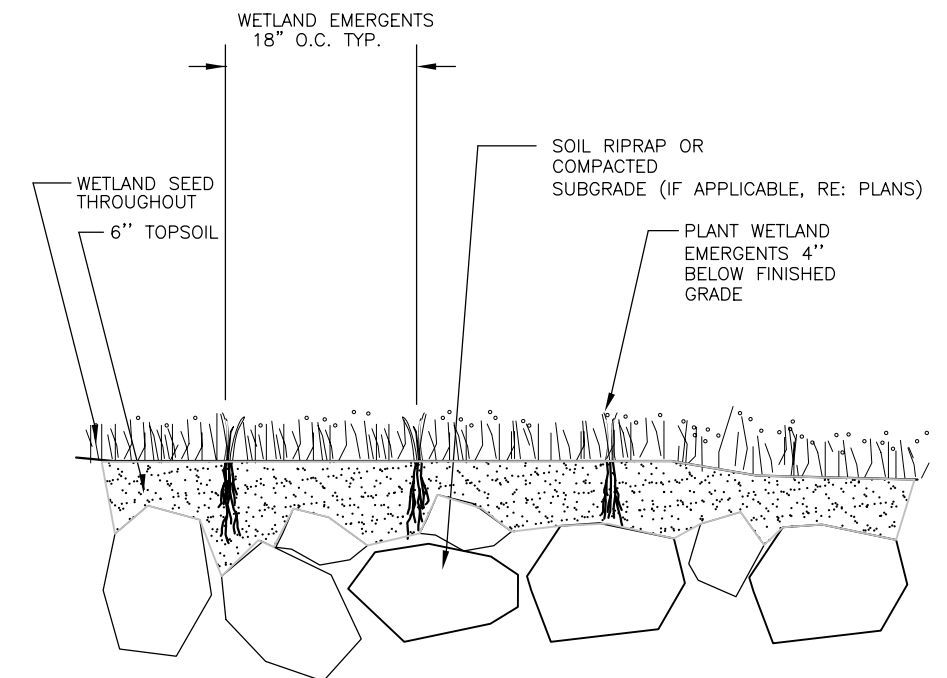
NOTES:
 1. ONLY BASE BID PLANTS ARE SHOWN ON LANDSCAPE PLANS. ALL BID ALTERNATE PLANTS, IF AWARDED AND APPROVED, WILL BE PLANTED AT LOCATIONS DETERMINED BY OWNER'S REPRESENTATIVE.
 2. SEEDING RATE IS BASED ON 100 PURE LIVE SEEDS (PLS) PER SQUARE FOOT, BROADCAST OR DRILL-SEEDED.
 3. THE CONTRACTOR SHALL SUPPLY ALL MATERIAL AND PLANTS IN QUANTITIES SUFFICIENT TO COMPLETE THE WORK SHOWN ON THE PLAN. SHOULD ANY DISCREPANCIES EXIST BETWEEN QUANTITIES SHOWN IN THE PLANT LIST AND THOSE SHOWN IN THE DRAWINGS, THE DRAWINGS SHALL TAKE PRECEDENCE.



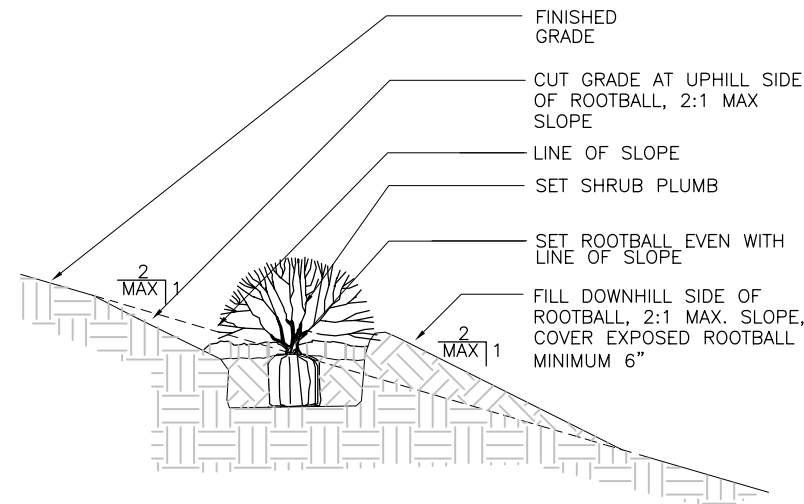
3 LIVE WILLOW FASCINE PLAN N.T.S.



2 COTTONWOOD BRANCH LINER SECTION N.T.S.

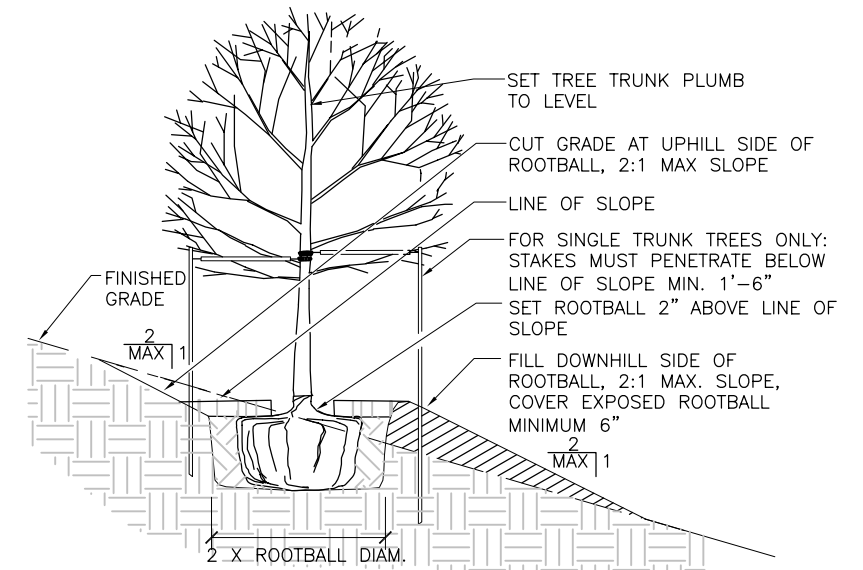


1 WETLAND PLUG PLANTING SECTION N.T.S.



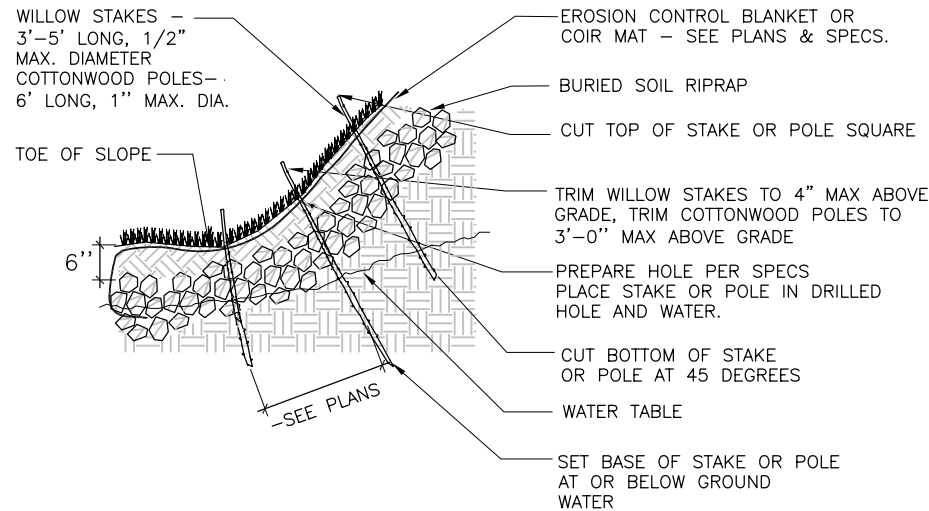
- NOTES:
1. REFER TO VARIOUS SPECIFIC INSTALLATION DETAILS.
 2. THIS INSTALLATION SHALL APPLY TO ALL SHRUB TYPES AND SIZES PLANTED ON SLOPES GREATER THAN 5:1.

4 SHRUB PLANTING ON SLOPE SECTION N.T.S.



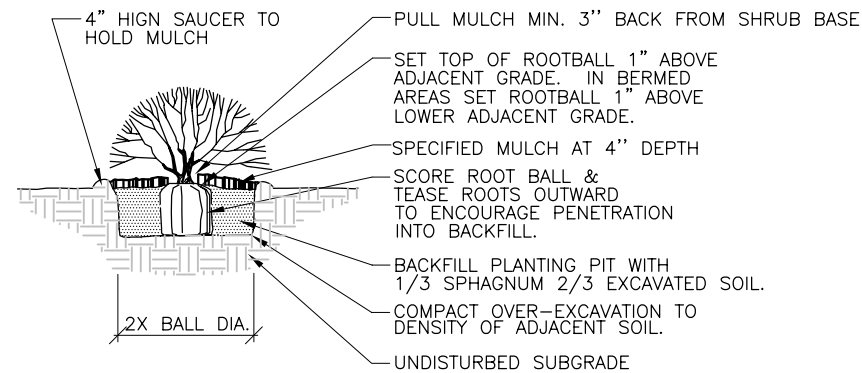
- NOTES:
1. REFER TO VARIOUS SPECIFIC TREE INSTALLATION DETAILS FOR STAKING, GUYING MULCHING, ETC.
 2. THIS INSTALLATION SHALL APPLY TO ALL TREE TYPES AND SIZES PLANTED ON SLOPES TO A MAXIMUM OF 3:1.
 3. TREES SHALL HAVE BEAVER PROTECTION, REFERENCE SPECIFICATIONS.

2 TREE PLANTING ON SLOPE SECTION N.T.S.



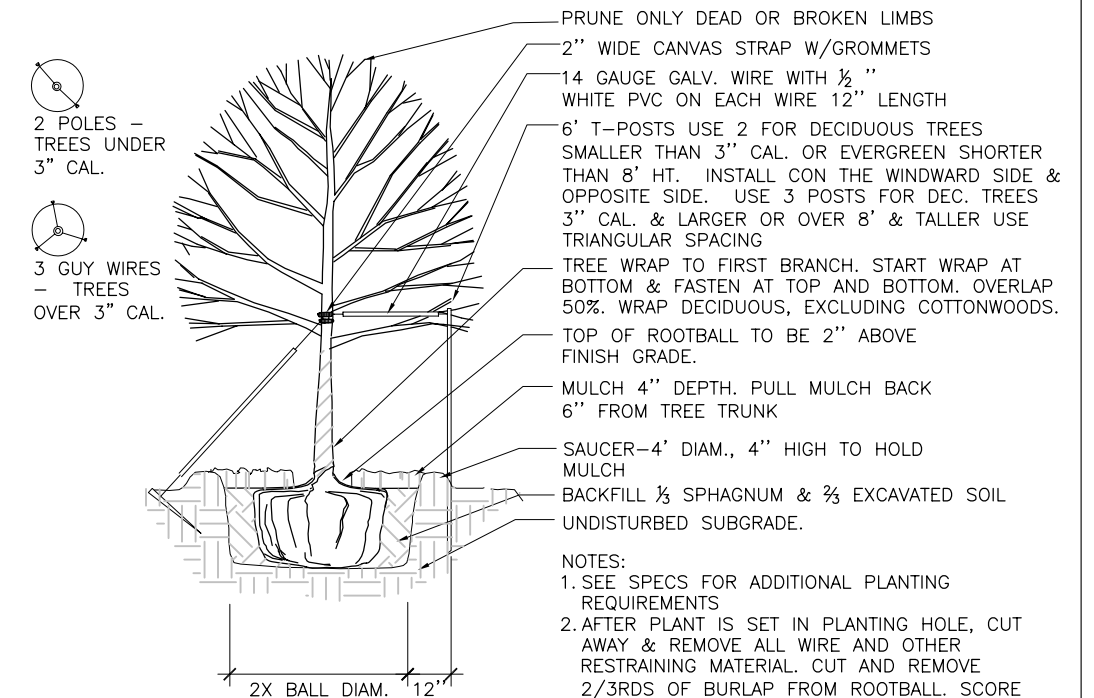
- NOTES:
1. REFER TO SPECS. BEFORE PLANTING
 2. CONDITIONS VARY, WILLOW STAKES/COTTONWOOD POLES MAY OCCUR IN AREAS OF EMBANKMENT, SOIL RIPRAP, COIR MAT, AND EROSION CONTROL BLANKET -SEE PLANS FOR SPECIFIC CONDITIONS.
 3. DIG TEST HOLE IN EACH AREA DESIGNATED FOR WILLOW STAKES OR COTTWOOD POLES, TO DETERMINE DEPTH OF WATER TABLE. PLANT WILLOW STAKES AND COTTWOOD POLES SO THAT BOTTOM 6\"/>

5 WILLOW STAKE/ COTTONWOOD POLE PLANTING SECTION N.T.S.



- NOTES:
1. SEE SPECS FOR ADDITIONAL PLANTING REQUIREMENTS.
 2. PLUMB AND ORIENT PLANTS FOR BEST APPEARANCE.
 3. REMOVE ALL TWINE FROM ROOT BALL, AND FOLD BURLAP BACK 2/3. REMOVE PLASTIC BURLAP ENTIRELY.
 4. FOR CONTAINER SHRUBS, CAREFULLY REMOVE CONTAINER AND SCORE ROOT BALL.
 5. PRUNE DEAD OR DAMAGED FOLIAGE
 6. DEEP WATER AFTER PLANTING.

3 SHRUB PLANTING SECTION N.T.S.



- NOTES:
1. SEE SPECS FOR ADDITIONAL PLANTING REQUIREMENTS
 2. AFTER PLANT IS SET IN PLANTING HOLE, CUT AWAY & REMOVE ALL WIRE AND OTHER RESTRAINING MATERIAL. CUT AND REMOVE 2/3RDS OF BURLAP FROM ROOTBALL. SCORE ROOTBALL AND PIT WALLS.
 3. TREES SHALL HAVE BEAVER PROTECTION, REFERENCE SPECIFICATIONS.

1 TREE PLANTING SECTION N.T.S.

		DESIGN NH DRAWN MFP CHECK NH	PREPARED FOR: CHERRY CREEK BASIN WATER QUALITY AUTHORITY 8390 E. CRESCENT PKWY, SUIT 500 GREENWOOD VILLAGE, CO. 80111 303-779-4525	COTTONWOOD CREEK RECLAMATION PHASE 2 CHERRY CREEK BASIN WATER QUALITY AUTHORITY	LANDSCAPE PLANTING DETAILS	DATE DECEMBER 2007 DRAWING NO. L-7 SHEET NO. 34 OF 47
No.	DATE	REVISIONS	APPR.	MEC PROJECT No. 02025.03		

GESC PLAN A

GESC PLAN B

0' 150' 300' 600'

Bellevue Ave.

Poplar St.

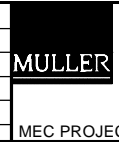
CHERRY CREEK
17572 FILING NO. 15

Cherry Creek Dr.

NAME: S:\02025_03\Phase 2\cad\02025_03-GESC.dwg DATE: JAN 17, 2008 TIME: 9:20 AM

CASE NO. E07-053

No.	DATE	REVISIONS	APPR.
1	01/15/08	SEMSWA COMMENTS ADDRESSED	JTW



MULLER ENGINEERING CO., INC.
 CONSULTING ENGINEERS
 IRONGATE 4, SUITE 100
 777 S. WADSWORTH BLVD.
 LAKEWOOD, COLORADO 80226
 (303) 988-4939

DESIGN
MDC
 DRAWN
MAM
 CHECK
JTW

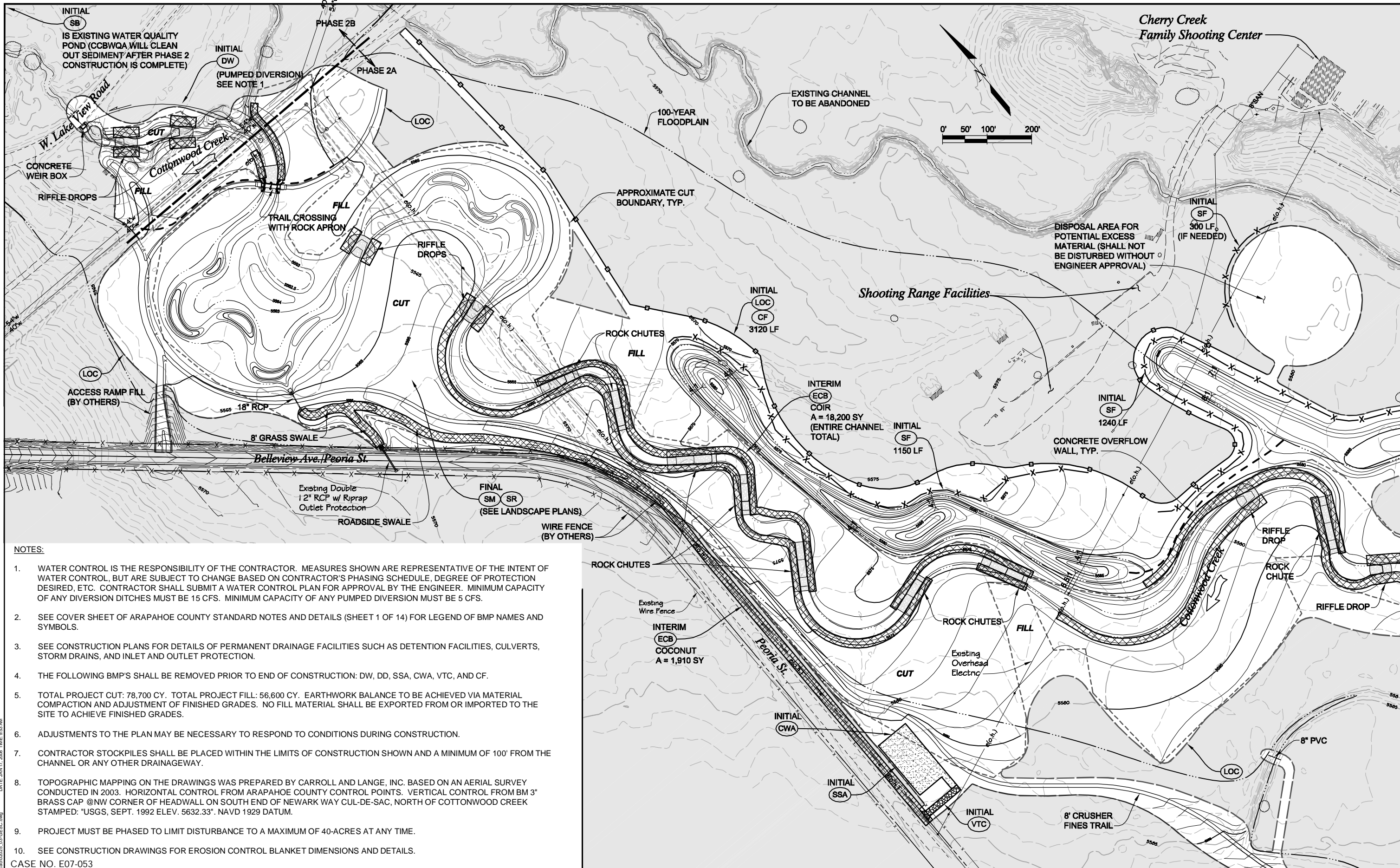


PREPARED FOR:
 CHERRY CREEK BASIN WATER QUALITY AUTHORITY
 8390 E. CRESCENT PKWY., SUITE 500
 GREENWOOD VILLAGE, CO. 80111
 303-779-4525

COTTONWOOD CREEK RECLAMATION
 PHASE 2
 CHERRY CREEK BASIN WATER QUALITY AUTHORITY

GESC
 GESC PLAN INDEX

DATE
DECEMBER 2007
 DRAWING NO.
EC-1
 SHEET NO.
35 OF 47



NOTES:

1. WATER CONTROL IS THE RESPONSIBILITY OF THE CONTRACTOR. MEASURES SHOWN ARE REPRESENTATIVE OF THE INTENT OF WATER CONTROL, BUT ARE SUBJECT TO CHANGE BASED ON CONTRACTOR'S PHASING SCHEDULE, DEGREE OF PROTECTION DESIRED, ETC. CONTRACTOR SHALL SUBMIT A WATER CONTROL PLAN FOR APPROVAL BY THE ENGINEER. MINIMUM CAPACITY OF ANY DIVERSION DITCHES MUST BE 15 CFS. MINIMUM CAPACITY OF ANY PUMPED DIVERSION MUST BE 5 CFS.
2. SEE COVER SHEET OF ARAPAHOE COUNTY STANDARD NOTES AND DETAILS (SHEET 1 OF 14) FOR LEGEND OF BMP NAMES AND SYMBOLS.
3. SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, CULVERTS, STORM DRAINS, AND INLET AND OUTLET PROTECTION.
4. THE FOLLOWING BMP'S SHALL BE REMOVED PRIOR TO END OF CONSTRUCTION: DW, DD, SSA, CWA, VTC, AND CF.
5. TOTAL PROJECT CUT: 78,700 CY. TOTAL PROJECT FILL: 56,600 CY. EARTHWORK BALANCE TO BE ACHIEVED VIA MATERIAL COMPACTION AND ADJUSTMENT OF FINISHED GRADES. NO FILL MATERIAL SHALL BE EXPORTED FROM OR IMPORTED TO THE SITE TO ACHIEVE FINISHED GRADES.
6. ADJUSTMENTS TO THE PLAN MAY BE NECESSARY TO RESPOND TO CONDITIONS DURING CONSTRUCTION.
7. CONTRACTOR STOCKPILES SHALL BE PLACED WITHIN THE LIMITS OF CONSTRUCTION SHOWN AND A MINIMUM OF 100' FROM THE CHANNEL OR ANY OTHER DRAINAGEWAY.
8. TOPOGRAPHIC MAPPING ON THE DRAWINGS WAS PREPARED BY CARROLL AND LANGE, INC. BASED ON AN AERIAL SURVEY CONDUCTED IN 2003. HORIZONTAL CONTROL FROM ARAPAHOE COUNTY CONTROL POINTS. VERTICAL CONTROL FROM BM 3" BRASS CAP @NW CORNER OF HEADWALL ON SOUTH END OF NEWARK WAY CUL-DE-SAC, NORTH OF COTTONWOOD CREEK STAMPED: "USGS, SEPT. 1992 ELEV. 5632.33". NAVD 1929 DATUM.
9. PROJECT MUST BE PHASED TO LIMIT DISTURBANCE TO A MAXIMUM OF 40-ACRES AT ANY TIME.
10. SEE CONSTRUCTION DRAWINGS FOR EROSION CONTROL BLANKET DIMENSIONS AND DETAILS.

CASE NO. E07-053

NAME: S:\02025\03\Phase 2\02025_03-GESC.dwg DATE: JAN 17, 2008 TIME: 8:53 AM

No.	DATE	REVISIONS	APPR.
1	01/15/08	SEMSWA COMMENTS ADDRESSED	JTW

MULLER ENGINEERING CO., INC.
 CONSULTING ENGINEERS
 IRONGATE 4, SUITE 100
 777 S. WADSWORTH BLVD.
 LAKEWOOD, COLORADO 80226
 (303) 988-4939

DESIGN MDC
 DRAWN MAM
 CHECK JTJ

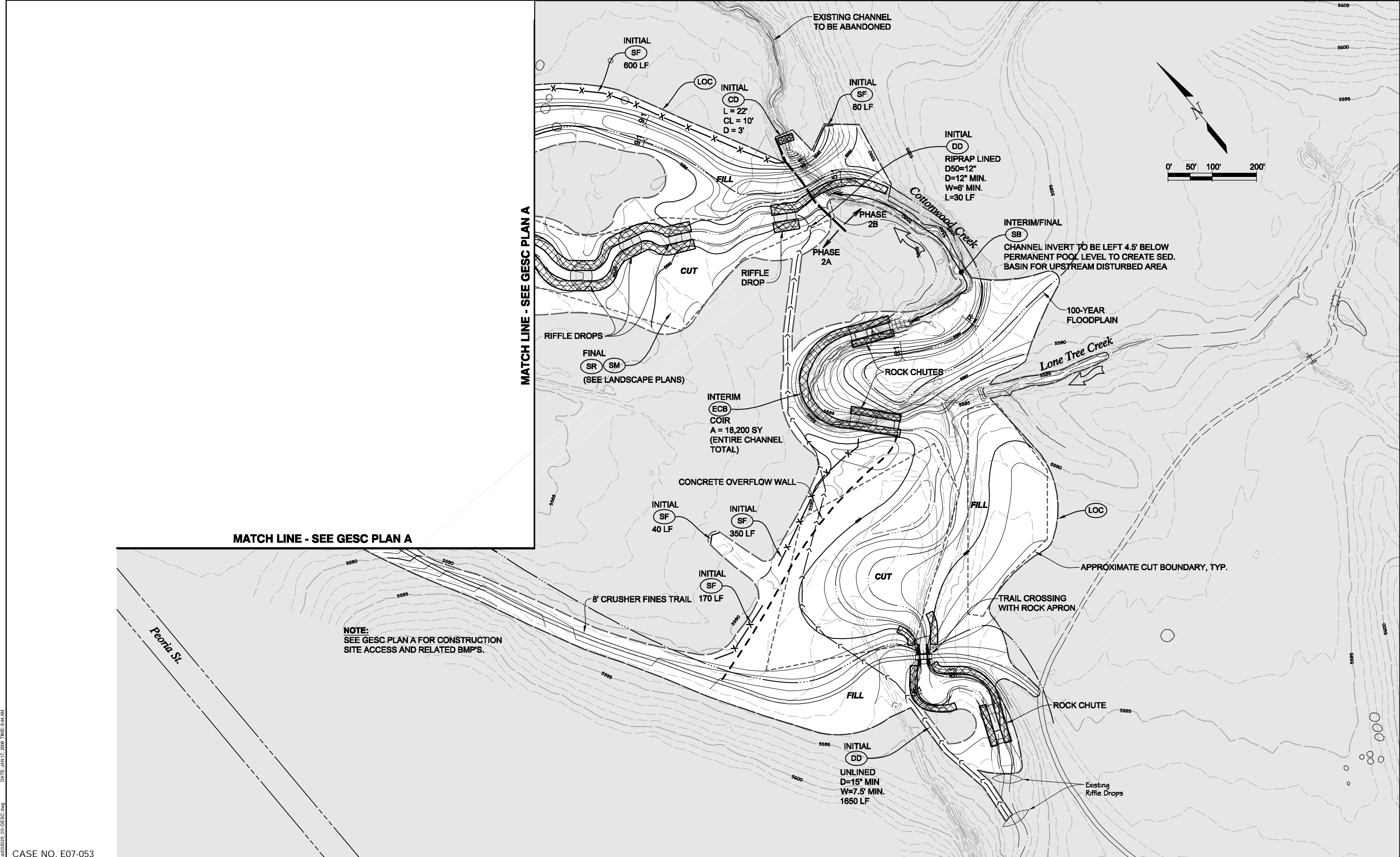
MEC PROJECT No. 02025.03

PREPARED FOR:
 CHERRY CREEK BASIN WATER QUALITY AUTHORITY
 8390 E. CRESCENT PKWY., SUITE 500
 GREENWOOD VILLAGE, CO. 80111
 303-779-4525

COTTONWOOD CREEK RECLAMATION
 PHASE 2
 CHERRY CREEK BASIN WATER QUALITY AUTHORITY

GESC
 GESC PLAN A

DATE	DECEMBER 2007
DRAWING NO.	EC-2
SHEET NO.	36 OF 47



CASE NO. E07-053

No.	DATE	REVISIONS	APPR.
1	01/15/08	SEMSWA COMMENTS ADDRESSED	JTW

MULLER ENGINEERING CO., INC.
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(303) 988-4939

DESIGN MDC
DRAWN MAM
CHECK JTJ

MEC PROJECT No. 02025.03

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CHERRY CREEK BASIN WATER QUALITY AUTHORITY
8390 E. CRESCENT PKWY., SUITE 500
GREENWOOD VILLAGE, CO. 80111
303-779-4525

COTTONWOOD CREEK RECLAMATION
PHASE 2
CHERRY CREEK BASIN WATER QUALITY AUTHORITY

GESC
GESC PLAN B

DATE	DECEMBER 2007
DRAWING NO.	EC-3
SHEET NO.	37 OF 47




























NAME: S:\02025.03\Phase 2\cad\02025.03-GESC.dwg DATE: JAN 17, 2008 TIME: 9:44 AM

GRADING, EROSION, AND SEDIMENT CONTROL (GESC) GENERAL NOTES

1. THE ARAPAHOE COUNTY DIRECTOR OF PUBLIC WORKS AND DEVELOPMENT'S (DIRECTOR) SIGNATURE AFFIXED TO THIS DOCUMENT INDICATES THE ARAPAHOE COUNTY PUBLIC WORKS DEPARTMENT, ENGINEERING DIVISION, HAS REVIEWED THE DOCUMENT AND FOUND IT IN GENERAL COMPLIANCE WITH THE ARAPAHOE COUNTY LAND DEVELOPMENT CODE AND/OR THE GRADING, EROSION AND SEDIMENT CONTROL (GESC) CRITERIA MANUAL. THE DIRECTOR THROUGH ACCEPTANCE OF THIS DOCUMENT, ASSUMES NO RESPONSIBILITY (OTHER THAN AS STATED ABOVE) FOR THE COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS.
2. THE ADEQUACY OF THIS GESC PLAN LIES WITH THE ORIGINAL DESIGN ENGINEER.
3. THE GESC PLAN SHALL BE CONSIDERED VALID FOR TWO (2) YEARS FROM THE DATE OF ACCEPTANCE BY ARAPAHOE COUNTY, AFTER WHICH TIME THE PLAN SHALL BE VOID AND WILL BE SUBJECT TO RE-REVIEW AND RE-ACCEPTANCE BY ARAPAHOE COUNTY. PLANS MUST CONFORM TO CURRENT REQUIREMENTS.
4. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE ARAPAHOE COUNTY ENGINEERING DIVISION. ARAPAHOE COUNTY RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO THE GESC MANUAL, GESC PLAN OR GESC PERMIT.
5. THE PLACEMENT OF EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMPs) SHALL BE IN ACCORDANCE WITH THE ARAPAHOE COUNTY - ACCEPTED GESC PLAN AND THE ARAPAHOE COUNTY GESC MANUAL.
6. ANY VARIATION IN MATERIAL, TYPE OR LOCATION OF EROSION AND SEDIMENT CONTROL BMPs FROM THE ARAPAHOE COUNTY - ACCEPTED GESC PLAN WILL REQUIRE APPROVAL FROM AN ACCOUNTABLE REPRESENTATIVE OF THE ARAPAHOE COUNTY ENGINEERING DIVISION.
7. AFTER THE GESC PLAN HAS BEEN ACCEPTED, THE GESC PERMIT APPLIED FOR, THE GESC FIELD MANUAL OBTAINED AND REVIEWED, THE CONTRACTOR MAY INSTALL THE INITIAL-STAGE EROSION AND SEDIMENT CONTROL BMPs INDICATED ON THE ACCEPTED GESC PLAN.
8. THE FIRST BMP TO BE INSTALLED ON THE SITE SHALL BE CONSTRUCTION FENCE, MARKERS, OR OTHER APPROVED MEANS OF DEFINING THE LIMITS OF CONSTRUCTION, INCLUDING CONSTRUCTION LIMITS ADJACENT TO STREAM CORRIDORS AND OTHER AREAS TO BE PRESERVED.
9. AFTER INSTALLATION OF THE INITIAL-STAGE EROSION AND SEDIMENT CONTROL BMPs, THE PERMITTEE SHALL CALL THE ENGINEERING DEPARTMENT TO SCHEDULE A PRECONSTRUCTION MEETING AT THE PROJECT SITE. THE REQUEST SHALL BE MADE A MINIMUM OF THREE BUSINESS DAYS PRIOR TO THE REQUESTED MEETING TIME. NO CONSTRUCTION ACTIVITIES SHALL BE PLANNED WITHIN 24 HOURS AFTER THE PRECONSTRUCTION MEETING.
10. THE OWNER OR OWNER'S REPRESENTATIVE, THE GESC MANAGER, THE GENERAL CONTRACTOR, AND THE GRADING SUBCONTRACTOR, IF DIFFERENT FROM THE GENERAL CONTRACTOR, MUST ATTEND THE PRECONSTRUCTION MEETING. IF ANY OF THE REQUIRED PARTICIPANTS FAIL TO ATTEND THE PRECONSTRUCTION MEETING, OR IF THE GESC FIELD MANUAL IS NOT ON SITE, OR IF THE INSTALLATION OF THE INITIAL BMPs ARE NOT APPROVED BY THE ARAPAHOE COUNTY INSPECTOR, THE APPLICANT WILL HAVE TO PAY A REINSPECTION FEE, ADDRESS ANY PROBLEMS WITH BMP INSTALLATION, AND CALL TO RESCHEDULE THE MEETING, WITH A CORRESPONDING DELAY IN THE START OF CONSTRUCTION.
11. CONSTRUCTION SHALL NOT BEGIN UNTIL THE ARAPAHOE COUNTY INSPECTOR APPROVES THE INSTALLATION OF THE INITIAL BMPs AND THE APPROVED GESC PERMIT IS PICKED UP FROM THE COUNTY AND IS IN-HAND ON THE SITE. THE COMPLETED PERMIT WILL BE AVAILABLE WITHIN 24-HOURS AFTER THE INSTALLATION OF THE INITIAL BMPs ARE APPROVED.
12. THE GESC MANAGER SHALL STRICTLY ADHERE TO THE ARAPAHOE COUNTY-APPROVED LIMITS OF CONSTRUCTION AT ALL TIMES. THE ARAPAHOE COUNTY ENGINEERING DIVISION MUST APPROVE ANY CHANGES TO THE LIMITS OF CONSTRUCTION AND, AT THE DISCRETION OF THE ENGINEERING DIVISION, ADDITIONAL EROSION/SEDIMENT CONTROLS MAY BE REQUIRED IN ANY ADDITIONAL AREAS OF CONSTRUCTION.
13. THE MAXIMUM AREA OF CONSTRUCTION SHALL BE LIMITED TO 40 ACRES (70 ACRES IF APPROVED FOR SOIL MITIGATION OPERATIONS) TO REDUCE THE AMOUNT OF LAND DISTURBED AT ANY ONE TIME. LARGER SITES SHALL BE DIVIDED INTO PHASES THAT ARE EACH 40 (OR 70) ACRES OR LESS IN SIZE. THESE PROJECTS SHALL CONDUCT GRADING ACTIVITIES IN ACCORDANCE WITH THE ACCEPTED GESC PLAN. BMP INSTALLATION AND APPROVAL BY ARAPAHOE COUNTY AT THE START AND COMPLETION OF EACH PHASE SHALL BE CONDUCTED IN ACCORDANCE WITH THE PROCEDURES OUTLINED IN THE GESC MANUAL AND/OR GESC FIELD MANUAL.
14. PRIOR TO ACTUAL CONSTRUCTION, THE PERMITTEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES. FOR INFORMATION, CONTACT THE DENVER INTER-UTILITY GROUP AT 1-800-922-1987 OR FAX AT (303)534-6700.
15. NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHEREVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATIONS.
16. THE GESC PERMIT SHALL BE VALID FOR A PERIOD OF TWO (2) YEARS.
17. A COPY OF THE GESC PERMIT, ACCEPTED GESC PLANS AND THE GESC FIELD MANUAL SHALL BE ON SITE AT ALL TIMES.
18. THE GESC MANAGER SHALL BE THE RESPONSIBLE PARTY FOR ENSURING THAT THE SITE REMAINS IN COMPLIANCE WITH THE GESC PERMIT AND SHALL BE THE PERMITTEE'S CONTACT PERSON WITH THE COUNTY FOR ALL MATTERS PERTAINING TO THE GESC PERMIT. THE GESC MANAGER SHALL BE ON THE SITE AS NECESSARY TO ENSURE THE GESC REQUIREMENTS ARE BEING IMPLEMENTED, AND (ALONG WITH THE ALTERNATE GESC MANAGER) SHALL PROVIDE THE COUNTY WITH A 24-HOUR EMERGENCY CONTACT NUMBER. IN THE EVENT THAT THE CONTRACTOR'S GESC MANAGER IS NOT ON SITE AND CANNOT BE REACHED DURING A VIOLATION, THE ALTERNATE GESC MANAGER SHALL BE CONTACTED. IF NEITHER THE GESC MANAGER NOR ALTERNATE GESC MANAGER CAN BE CONTACTED DURING ANY VIOLATION, WITHIN 24 HOURS, A VIOLATION MAY BE ISSUED TO THE PERMITTEE(S).
19. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE THROUGH THE ARAPAHOE COUNTY-APPROVED ACCESS POINT. A VEHICLE TRACKING CONTROL PAD IS REQUIRED AT ALL ACCESS POINTS ON THE SITE. ADDITIONAL STABILIZED CONSTRUCTION ENTRANCES MAY BE ADDED WITH AUTHORIZATION FROM THE ARAPAHOE COUNTY ENGINEERING DIVISION.

20. THE GESC MANAGER IS RESPONSIBLE FOR CLEANUP OF SEDIMENT OR CONSTRUCTION DEBRIS TRACKED ONTO ADJACENT PAVED AREAS. PAVED AREAS INCLUDING STREETS ARE TO BE KEPT CLEAN THROUGHOUT BUILD-OUT AND SHALL BE CLEANED, WITH A STREET SWEEPER OR SIMILAR DEVICE, AT FIRST NOTICE OF ACCIDENTAL TRACKING OR AT THE DISCRETION OF THE ARAPAHOE COUNTY INSPECTOR. STREET WASHING IS NOT ALLOWED. ARAPAHOE COUNTY RESERVES THE RIGHT TO REQUIRE ADDITIONAL MEASURES TO ENSURE AREA STREETS ARE KEPT FREE OF SEDIMENT AND/OR CONSTRUCTION DEBRIS.
21. APPROVED EROSION AND SEDIMENT CONTROL BMPs SHALL BE MAINTAINED AND KEPT IN GOOD REPAIR FOR THE DURATION OF THIS PROJECT. AT A MINIMUM, THE GESC MANAGER SHALL INSPECT ALL BMPs IN ACCORDANCE WITH THE ACCEPTED GESC PLAN AND GESC MANUAL. ALL NECESSARY MAINTENANCE AND REPAIR ACTIVITIES SHALL BE COMPLETED WITHIN 48 HOURS. ACCUMULATED SEDIMENT AND CONSTRUCTION DEBRIS SHALL BE REMOVED AND PROPERLY DISPOSED.
22. STRAW BALES ARE NOT AN ARAPAHOE COUNTY GESC-ACCEPTED SEDIMENT CONTROL BMP.
23. TOPSOIL SHALL BE STRIPPED AND STOCKPILED IN THE LOCATION SHOWN ON THE ACCEPTED GESC PLAN. THE TOPSOIL STOCKPILE(S) SHALL FOLLOW ALL STOCKPILING CRITERIA DESCRIBED IN THE GESC MANUAL. IT SHALL BE NOTED THAT THERE IS A TOPSOIL CERTIFICATION REQUIRED AT THE INITIAL CLOSE-OUT INSPECTION OF THE GESC PERMIT.
24. THE ACCEPTED GESC PLAN MAY REQUIRE CHANGES OR ALTERATIONS AFTER APPROVAL TO MEET CHANGING SITE OR PROJECT CONDITIONS OR TO ADDRESS INEFFICIENCIES IN DESIGN OR INSTALLATION. THE GESC MANAGER SHALL OBTAIN PRIOR APPROVAL FROM THE DESIGN ENGINEER AND ARAPAHOE COUNTY ENGINEERING FOR ANY PROPOSED CHANGES.
25. LINING OF TEMPORARY SWALES AND DITCHES SHALL BE IN ACCORDANCE WITH THE GESC CRITERIA MANUAL.
26. NO PERMANENT EARTH SLOPES GREATER THAN 3:1 SHALL BE ALLOWED.
27. ANY SETTLEMENT OR SOIL ACCUMULATIONS BEYOND THE LIMITS OF CONSTRUCTION DUE TO GRADING OR EROSION SHALL BE REPAIRED IMMEDIATELY BY THE GESC MANAGER. THE GESC MANAGER SHALL BE HELD RESPONSIBLE FOR OBTAINING ACCESS RIGHTS TO ADJACENT PROPERTY, IF NEEDED, AND REMEDIATING ANY ADVERSE IMPACTS TO ADJACENT WATERWAYS, WETLANDS, PROPERTIES, ETC. RESULTING FROM WORK DONE AS PART OF THIS PROJECT.
28. A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
29. SOILS THAT WILL BE STOCKPILED FOR MORE THAN THIRTY (30) DAYS SHALL BE SEEDED AND MULCHED WITHIN FOURTEEN (14) DAYS OF STOCKPILE CONSTRUCTION. NO STOCKPILES SHALL BE PLACED WITHIN ONE HUNDRED (100) FEET OF A DRAINAGE WAY UNLESS APPROVED BY THE ARAPAHOE COUNTY ENGINEERING DIVISION.
30. ALL CHEMICAL OR HAZARDOUS MATERIAL SPILLS WHICH MAY ENTER WATERS OF THE STATE OF COLORADO, WHICH INCLUDE BUT ARE NOT LIMITED TO, SURFACE WATER, GROUND WATER AND DRY GULLIES OR STORM SEWER LEADING TO SURFACE WATER, SHALL BE IMMEDIATELY REPORTED TO THE CDPHE PER CRS 25-8-601, AND ARAPAHOE COUNTY. RELEASES OF PETROLEUM PRODUCTS AND CERTAIN HAZARDOUS SUBSTANCES LISTED UNDER THE FEDERAL CLEAN WATER ACT (40 CFR PART 116) MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER AS WELL AS THE CDPHE. CONTACT INFORMATION FOR CDPHE, ARAPAHOE COUNTY AND THE NATIONAL RESPONSE CENTER CAN BE FOUND IN APPENDIX A. SPILLS THAT POSE AN IMMEDIATE RISK TO HUMAN LIFE SHALL BE REPORTED TO 911. FAILURE TO REPORT AND CLEAN UP ANY SPILL SHALL RESULT IN ISSUANCE OF A STOP WORK ORDER. TO REPORT SPILLS TO ARAPAHOE COUNTY CALL ARAPAHOE COUNTY DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT-STORMWATER GROUP AT 720-874-6500.
31. ALL WORK ON SITE SHALL STAY A MINIMUM OF ONE HUNDRED (100) FEET AWAY FROM ANY DRAINAGE WAY, WETLAND, ETC. UNLESS OTHERWISE NOTED ON AN ACCEPTED ARAPAHOE COUNTY GESC PLAN.
32. ALL PROJECTS SHALL BALANCE EARTHWORK QUANTITIES ON SITE. IN THE EVENT A VARIANCE IS GRANTED BY THE COUNTY TO ALLOW IMPORT OR EXPORT OF MATERIAL, THE PERMITTEE SHALL HAVE A GESC PERMIT IN HAND FOR THE IMPORT OR EXPORT SITE PRIOR TO ANY TRANSPORTING OF EARTHEN MATERIAL. THE GESC MANAGER SHALL NOTIFY THE ARAPAHOE COUNTY INSPECTOR OF THE LOCATION AND PERMIT NUMBERS OF BOTH THE EXPORTING AND IMPORTING SITES PRIOR TO ANY IMPORT/EXPORT OPERATIONS.
33. THE USE OF REBAR, STEEL STAKES OR STEEL FENCE POSTS FOR STAKING OR SUPPORT OF ANY EROSION OR SEDIMENT CONTROL BMP IS PROHIBITED (EXCEPT STEEL TEE-POSTS FOR USE IN SUPPORTING CONSTRUCTION FENCE).
34. THE CLEANING OF CONCRETE DELIVERY TRUCK CHUTES IS RESTRICTED TO APPROVED CONCRETE WASH OUT LOCATIONS ON THE JOB SITE. THE DISCHARGE OF WATER CONTAINING WASTE CONCRETE TO THE STORM SEWER SYSTEM IS PROHIBITED. ALL CONCRETE WASTE SHALL BE PROPERLY CLEANED UP AND DISPOSED AT AN APPROPRIATE LOCATION.
35. ALL DEWATERING ON SITE SHALL BE COORDINATED WITH AN ARAPAHOE COUNTY INSPECTOR AND BE FREE OF SEDIMENT IN ACCORDANCE WITH THE GESC CRITERIA MANUAL.
36. ALL PERMANENT INSTALLATIONS OF PIPES FOR STORM SEWERS, SLOPE DRAINS, AND CULVERTS, TOGETHER WITH RIPRAP APRONS OR OTHER INLET AND OUTLET PROTECTION, REQUIRE INSPECTION BY ARAPAHOE COUNTY ENGINEERING (SEPARATE FROM GESC INSPECTIONS).
37. ALL DISTURBED AREAS WHICH ARE EITHER FINAL GRADED, OR WILL REMAIN INACTIVE FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE REQUIRED TO BE STABILIZED WITHIN 14 DAYS OF THE COMPLETION OF THE GRADING ACTIVITIES. THIS MAY REQUIRE MULTIPLE MOBILIZATIONS FOR SEEDING AND MULCHING.
38. HYDRAULIC SEEDING AND HYDRAULIC MULCHING ARE NOT AN ACCEPTABLE METHOD OF SEEDING OR MULCHING IN ARAPAHOE COUNTY.
39. ALL INTERIM INLET PROTECTION SHALL BE INSTALLED PRIOR TO PAVING.
40. ALL SINGLE FAMILY RESIDENTIAL PROJECTS SHALL COMPLY WITH THE GESC MANUAL, SECTION 9, THROUGHOUT THE BUILDING PERMIT PROCESS.

DETAIL SHEET

NO.	NO.		BMP LEGEND	
1	(2)		(CD) CHECK DAM	
2	(2)		(CB) COMPOST BLANKET	
3	(2)		(CFB) COMPOST FILTER BERM	
4	(3)		(CWA) CONCRETE WASHOUT AREA	
5	(3)		(CF) CONSTRUCTION FENCE	
6	(3)		(CM) CONSTRUCTION MARKERS	
7	(4)		(DW) DEWATERING	
8	(4)		(DD) DIVERSION DITCH	
9	(5)		(ECB) EROSION CONTROL BLANKET	
10	(6)		(IP) INLET PROTECTION	
11	(7)		(RCD) REINFORCED CHECK DAM	
12	(7)		(RRB) REINFORCED ROCK BERM	
13	(7)		(RRC) RRB FOR CULVERT PROTECTION	
14	(8)		(SB) SEDIMENT BASIN	
15	(9)		(SCL) SEDIMENT CONTROL LOG	
16	(9)		(ST) SEDIMENT TRAP	
17	(10)		(SM) SEEDING AND MULCHING	
18	(11)		(SF) SILT FENCE	
19	(11)		(SSA) STABILIZED STAGING AREA	
20	(11)		(SR) SURFACE ROUGHENING	
21	(12)		(TSD) TEMPORARY SLOPE DRAIN	
22	(12)		(TSC) TEMPORARY STREAM CROSSING	
23	(13)		(TER) TERRACING	
24	(13)		(VTC) VEHICLE TRACKING CONTROL	
25	(13)		(VW) VTC WITH WHEEL WASH	
			(RW) ROCK AND RIPRAP GRADATIONS	
			(LOC) LIMITS OF CONSTRUCTION	



DEPARTMENT OF PUBLIC WORKS
AND DEVELOPMENT ENGINEERING
DIVISION

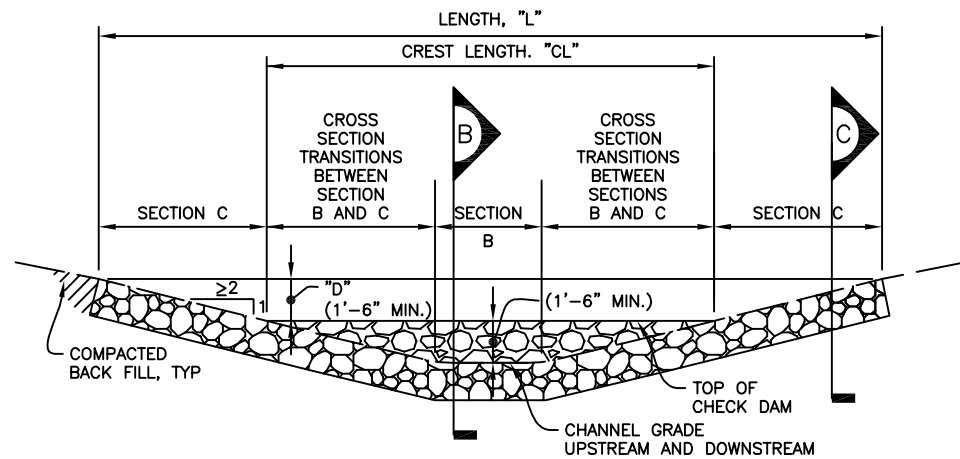
GESC GRADING, EROSION, AND SEDIMENT CONTROL

NOTE: SCALES
SHOW ARE
FOR 22"x34"
SHEETS: ADJUST
ACCORDINGLY
FOR 11"x17"
SHEET

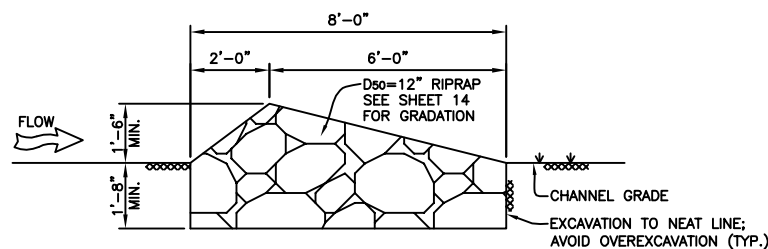
GESC PLAN STANDARD NOTES AND DETAILS JANUARY 2005

SHEET 1 OF 14

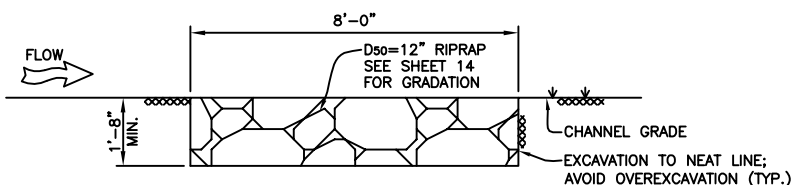
DRAWING NO. EC-4
SHEET 38 OF 47



ELEVATION
SCALE: 1" = 10'-0"



SECTION B
SCALE: 1/4" = 1'-0"



SECTION C
SCALE: 1/4" = 1'-0"

CHECK DAM INSTALLATION NOTES

- SEE PLAN VIEW FOR:
 - LOCATIONS OF CHECK DAMS.
 - CHECK DAM TYPE (CHECK DAM OR REINFORCED CHECK DAM).
 - LENGTH, "L", CREST LENGTH, "CL", AND DEPTH, "D".
- CHECK DAMS INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED AFTER CONSTRUCTION FENCE, BUT PRIOR TO ANY UPSTREAM LAND-DISTURBING ACTIVITIES.
- RIPRAP UTILIZED FOR CHECK DAMS SHALL HAVE A D_{50} MEDIAN STONE SIZE OF 12".
- RIPRAP PAD SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1'-8".
- THE ENDS OF THE CHECK DAM SHALL BE A MINIMUM OF 1'-6" HIGHER THAN THE CENTER OF THE CHECK DAM.

CHECK DAM MAINTENANCE NOTES

- THE GESC MANAGER SHALL INSPECT CHECK DAMS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY.
- SEDIMENT ACCUMULATED UPSTREAM OF CHECK DAMS SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF CHECK DAM IS WITHIN 1/2 OF THE HEIGHT OF THE CREST.
- CHECK DAMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED BY THE COUNTY.
- WHEN CHECK DAMS ARE REMOVED, EXCAVATIONS SHALL BE FILLED WITH SUITABLE COMPACTED BACK FILL. ANY DISTURBED AREA SHALL BE SEEDING AND MULCHED AND COVERED WITH EROSION CONTROL BLANKET OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE COUNTY.



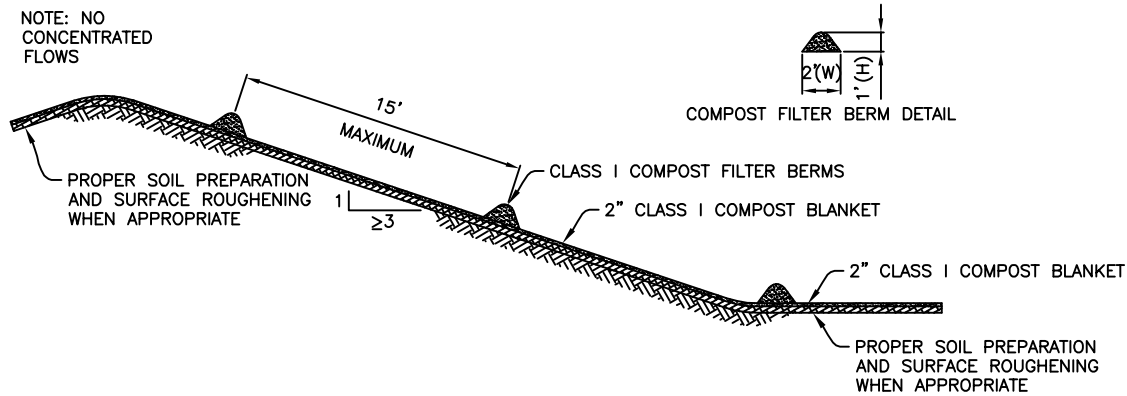
CHECK DAM



COMPOST BLANKET



COMPOST FILTER BERM



COMPOST BLANKET AND COMPOST FILTER BERM
SCALE: 1" = 10'-0"

COMPOST BLANKET NOTES:

- SEE PLAN VIEW FOR AREA OF COMPOST BLANKET.
- MAY BE USED IN PLACE OF STRAW MULCH OR EROSION CONTROL BLANKET IN AREAS WHERE ACCESS IS DIFFICULT DUE TO LANDSCAPING OR OTHER OBJECTS OR IN AREAS WHERE A SMOOTH TURF GRASS FINISH IS DESIRED.
- SHALL ONLY BE UTILIZED IN AREAS WHERE SHEET FLOW CONDITIONS PREVAIL; SHALL BE PROHIBITED IN AREAS OF POSSIBLE CONCENTRATED FLOW.
- SOIL PREPARATION SHALL BE COMPLETE PER THE SPECIFICATIONS OUTLINED IN THESE CRITERIA PRIOR TO APPLICATION.
- WHEN TURF GRASS FINISH IS NOT DESIRED, SURFACE ROUGHENING ON SLOPES SHALL TAKE PLACE PRIOR TO APPLICATION.
- SHALL BE EVENLY APPLIED AT A DEPTH OF 2 INCH.
- MAY BE APPLIED UTILIZING PNEUMATIC BLOWER, OR BY HAND.
- SEEDING SHALL BE DRILLED PRIOR TO THE APPLICATION OF COMPOST OR SEED MAY BE COMBINED AND BLOWN WITH THE PNEUMATIC BLOWER.
- COMPOST FILTER BERM SHALL BE UTILIZED ON SLOPES WITH A MAXIMUM SPACING OF 15 FEET PER THE REQUIREMENTS FOUND IN THE COMPOST FILTER BERM SECTION.
- THE GESC MANAGER SHALL INSPECT WEEKLY, DURING AND AFTER ANY STORM EVENT.
- COMPOST USED IN THE APPLICATION OF THE COMPOST BLANKET SHALL BE A CLASS I COMPOST AS DEFINED BY THE FOLLOWING PHYSICAL, CHEMICAL, AND BIOLOGICAL PARAMETERS:

PARAMETERS	CLASS I COMPOST FOR COMPOST BLANKET
MINIMUM STABILITY INDICATOR	STABLE TO VERY STABLE
SOLUBLE SALTS	MAXIMUM 5mmhos/cm
PH	6.0 - 8.0
AG INDEX	> 10
MATURITY INDICATOR EXPRESSED AS PERCENTAGE OF GERMINATION/VIGOR	80+/80+
MATURITY INDICATOR EXPRESSED AS AMMONIA N/ NITRATE N RATIO	< 4
MATURITY INDICATOR EXPRESSED AS CARBON TO NITROGEN RATIO	20:1
TESTED FOR CLOPYRALID	YES/NEGATIVE RESULT
MOISTURE CONTENT	30-60 %
ORGANIC MATTER CONTENT	25-45 % OF DRY WEIGHT
PARTICLE SIZE DISTRIBUTION	3" (75mm) 100% PASSING 1" (25mm) 95% TO 100% PASSING 3/4" (19mm) 85% TO 90% PASSING 3/8" (9.5mm) 50% TO 60% PASSING #4 20 TO 35% PASSING
PRIMARY, SECONDARY NUTRIENTS; TRACE ELEMENT	MUST BE REPORTED
TESTING AND TEST REPORT SUBMITTAL REQUIREMENTS	STA + CLOPYRALID
ORGANIC MATTER PER CUBIC YARD	MUST REPORT
CHEMICAL CONTAMINANTS	MEET OR EXCEED US EPA CLASS A STANDARD, 40 CFR 503.1 TABLES 1 & 3 LEVELS
MINIMUM MANUFACTURING/PRODUCTION REQUIREMENT	FULLY PERMITTED UNDER COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, HAZARDOUS MATERIALS AND WASTE MANAGEMENT DIVISION
RISK FACTOR RELATING TO PLANT GERMINATION AND HEALTH	LOW

NOTE: CLOPYRALID IS THE COMMON NAME OF A HERBICIDE THAT KILLS BROAD-LEAVED WEEDS SUCH AS DANDELIONS, CLOVER AND THISTLE.

COMPOST FILTER BERM NOTES:

- SEE PLAN VIEW FOR LENGTH OF COMPOST FILTER BERM.
- SHALL BE APPLIED TO ALL SLOPES RECEIVING A COMPOST BLANKET AT 15' INCREMENTS.
- FILTER BERMS SHALL RUN PARALLEL TO THE CONTOUR.
- FILTER BERMS SHALL BE A MINIMUM OF 1' H x 2' W.
- FILTER BERMS SHALL BE APPLIED UTILIZING PNEUMATIC BLOWER, OR BY HAND.
- SHALL ONLY BE UTILIZED IN AREAS WHERE SHEET FLOW CONDITIONS PREVAIL; SHALL BE PROHIBITED IN AREAS OF POSSIBLE CONCENTRATED FLOW.
- SOIL PREPARATION SHALL BE COMPLETE PER THE SPECIFICATIONS OUTLINED IN THESE CRITERIA PRIOR TO APPLICATION.
- WHEN TURF GRASS FINISH IS NOT DESIRED, SURFACE ROUGHENING ON SLOPES SHALL TAKE PLACE PRIOR TO APPLICATION.
- SEEDING SHALL BE DRILLED BEFORE THE APPLICATION OF COMPOST OR SEED MAY BE COMBINED AND BLOWN WITH THE PNEUMATIC BLOWER.
- THE GESC MANAGER SHALL INSPECT WEEKLY, DURING AND AFTER ANY STORM EVENT.
- COMPOST USED IN THE APPLICATION OF THE COMPOST BLANKET SHALL BE A CLASS I COMPOST AS DEFINED BY THE FOLLOWING PHYSICAL, CHEMICAL, AND BIOLOGICAL PARAMETER

PARAMETERS	CLASS I COMPOST FOR COMPOST FILTER BERM
MINIMUM STABILITY INDICATOR	STABLE TO VERY STABLE
SOLUBLE SALTS	MAXIMUM 5mmhos/cm
PH	6.0 - 8.0
AG INDEX	> 10
MATURITY INDICATOR EXPRESSED AS PERCENTAGE OF GERMINATION/VIGOR	80+/80+
MATURITY INDICATOR EXPRESSED AS AMMONIA N/ NITRATE N RATIO	< 4
MATURITY INDICATOR EXPRESSED AS CARBON TO NITROGEN RATIO	20:1
TESTED FOR CLOPYRALID	YES/NEGATIVE RESULT
MOISTURE CONTENT	30-60 %
ORGANIC MATTER CONTENT	25-45 % OF DRY WEIGHT
PARTICLE SIZE DISTRIBUTION	3" (75mm) 100% PASSING 1" (25mm) 95% TO 100% PASSING 3/4" (19mm) 85% TO 90% PASSING 3/8" (9.5mm) 50% TO 60% PASSING #4 20 TO 35% PASSING
PRIMARY, SECONDARY NUTRIENTS; TRACE ELEMENT	MUST BE REPORTED
TESTING AND TEST REPORT SUBMITTAL REQUIREMENTS	STA + CLOPYRALID
ORGANIC MATTER PER CUBIC YARD	MUST REPORT
CHEMICAL CONTAMINANTS	MEET OR EXCEED US EPA CLASS A STANDARD, 40 CFR 503.1 TABLES 1 & 3 LEVELS
MINIMUM MANUFACTURING/PRODUCTION REQUIREMENT	FULLY PERMITTED UNDER COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, HAZARDOUS MATERIALS AND WASTE MANAGEMENT DIVISION
RISK FACTOR RELATING TO PLANT GERMINATION AND HEALTH	LOW

NOTE: IF A BIOSOLID COMPOST IS TO BE UTILIZED IT SHALL BE PRODUCED BY A FACILITY IN POSSESSION OF A VALID NOTICE OF AUTHORIZATION (NOA) FOR THE UNRESTRICTED USE AND DISTRIBUTION BY THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT. THE NOA SHALL BE PROVIDED UPON REQUEST TO ARAPAHOE COUNTY.

NOTE: A LAB TEST DETAILING THE CHEMICAL, PHYSICAL, AND BIOLOGICAL PARAMETERS SHALL BE PROVIDED UPON REQUEST BY ARAPAHOE COUNTY.



DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT ENGINEERING DIVISION

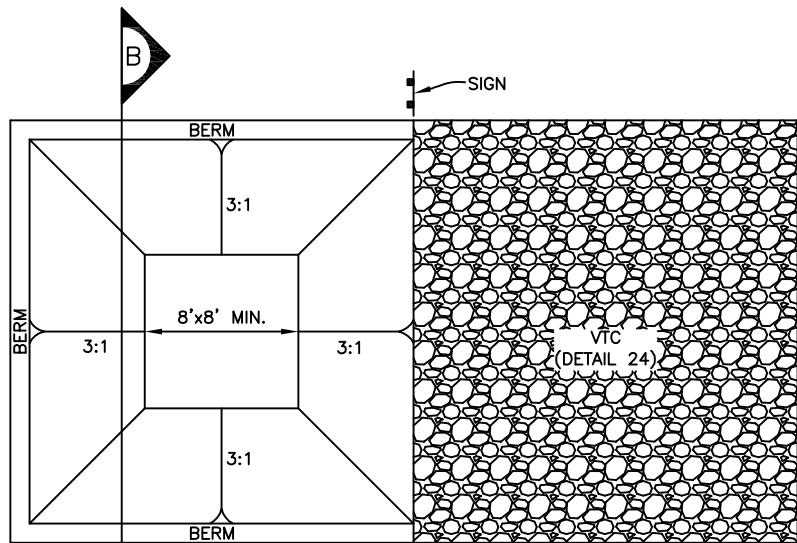
GESC GRADING, EROSION, AND SEDIMENT CONTROL

NOTE: SCALES SHOW ARE FOR 22"x34" SHEETS; ADJUST ACCORDINGLY FOR 11"x17" SHEET

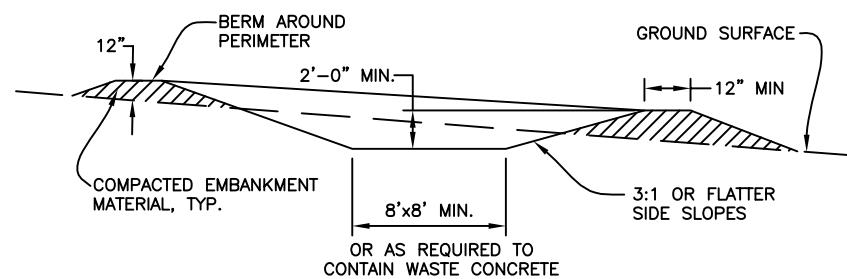
GESC PLAN STANDARD NOTES AND DETAILS JANUARY 2005

SHEET 2 OF 14

DRAWING NO. EC-5 SHEET 39 OF 47



DETAIL A
SCALE: 1" = 5'-0"



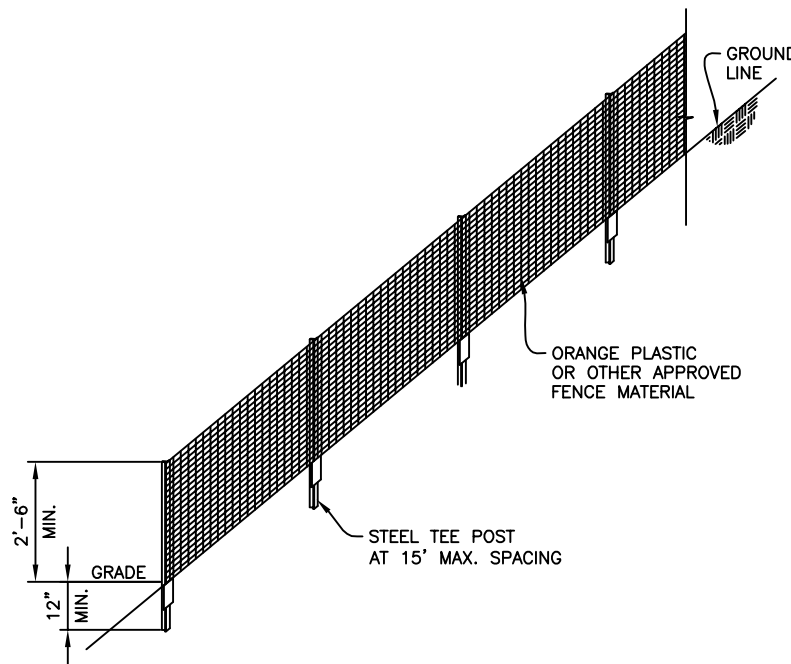
SECTION B
SCALE: 1" = 5'-0"

CONCRETE WASHOUT AREA INSTALLATION NOTES

- SEE PLAN VIEW FOR:
1. - LOCATIONS OF CONCRETE WASHOUT AREA.
 2. THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
 3. VEHICLE TRACKING CONTROL (DETAIL 24) IS REQUIRED AT THE ACCESS POINT.
 4. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
 5. EXCAVATED MATERIAL SHALL BE UTILIZED IN PERIMETER BERM CONSTRUCTION.

CONCRETE WASHOUT AREA MAINTENANCE NOTES

1. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
2. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AN APPROVED WASTE SITE.
3. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE COUNTY.
4. INSPECT WEEKLY, DURING AND AFTER ANY STORM EVENT.



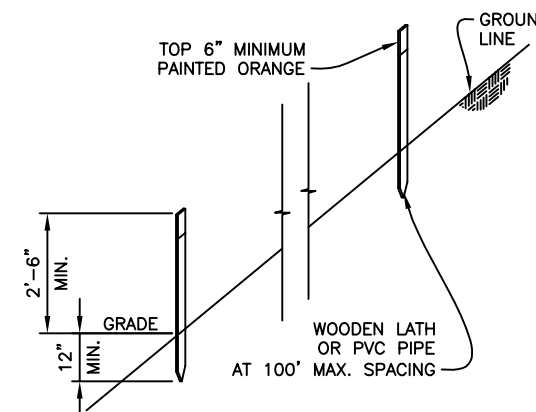
DETAIL A
SCALE: 1/2" = 1'-0"

CONSTRUCTION FENCE INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 - TYPE OF CONSTRUCTION LIMIT INDICATOR (FENCE OR MARKERS).
 - LOCATION AND LENGTH OF FENCE OR LINE OF MARKERS.
2. CONSTRUCTION FENCE OR MARKERS INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED PRIOR TO OTHER BMPs AND ANY LAND-DISTURBING ACTIVITIES.
3. STEEL TEE POSTS SHALL BE UTILIZED FOR SUPPORT OF CONSTRUCTION FENCE. MAXIMUM SPACING FOR TEE POSTS SHALL BE 15'.

CONSTRUCTION FENCE MAINTENANCE NOTES

1. ANY DAMAGED FENCE OR MARKERS SHALL BE REPAIRED ON A DAILY BASIS.
2. FENCE OR MARKERS SHALL BE REMOVED AT THE END OF CONSTRUCTION. IF ANY DISTURBED AREA EXISTS AFTER FENCE REMOVAL, IT SHALL BE DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE COUNTY.



(ALTERNATIVE TO CONSTRUCTION FENCE)
SCALE: 1/2" = 1'-0"



DEPARTMENT OF PUBLIC WORKS
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DIVISION

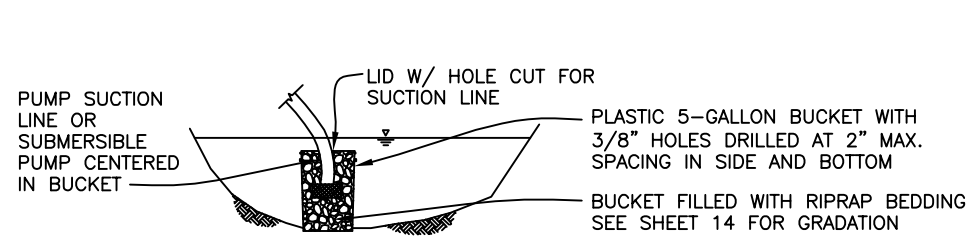
**GESC GRADING, EROSION, AND
SEDIMENT CONTROL**

NOTE: SCALES
SHOW ARE
FOR 22"x34"
SHEETS: ADJUST
ACCORDINGLY
FOR 11"x17"
SHEET

**GESC PLAN
STANDARD NOTES AND DETAILS
JANUARY 2005**

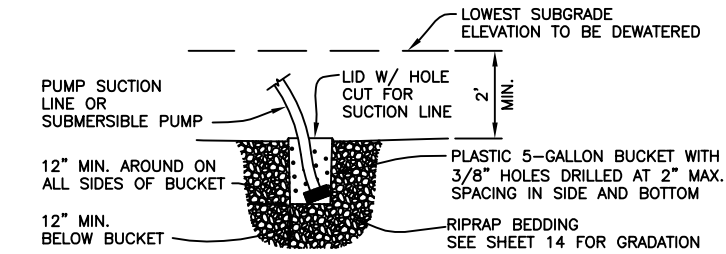
SHEET 3 OF 14

**DRAWING NO. EC-6
SHEET 40 OF 47**



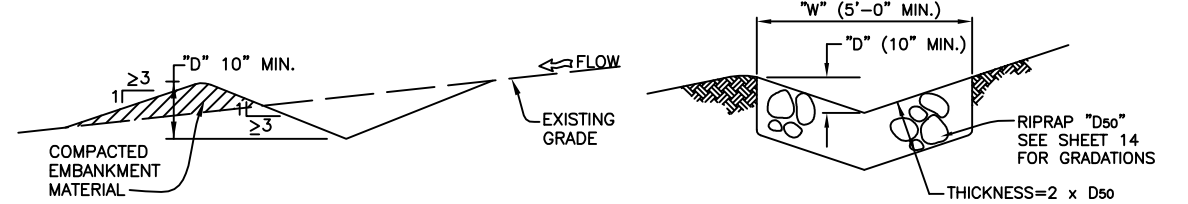
ALTERNATIVE FOR DRAINING POND ALREADY FILLED WITH WATER

SCALE: 1/4" = 1'-0"



DEWATERING SUMP FOR SUBMERSIBLE PUMP - DETAIL A

SCALE: 1/4" = 1'-0"

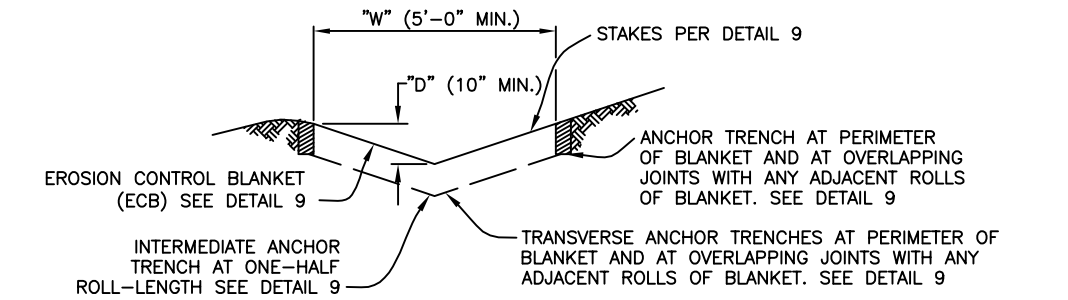


UNLINED - DETAIL A

LONGITUDINAL SLOPE $\leq 0.5\%$
SCALE: 1/4" = 1'-0"

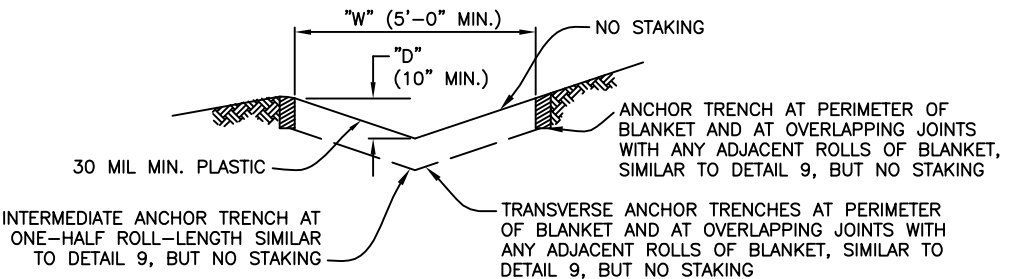
RIPRAP LINED - DETAIL D

LONGITUDINAL SLOPE 3% TO 33%



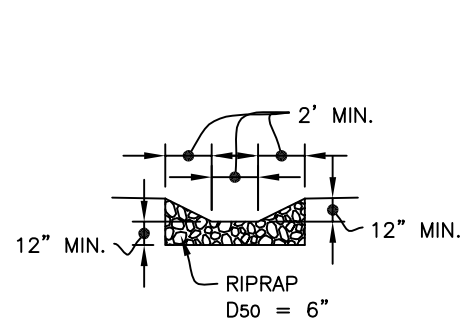
EROSION CONTROL BLANKET (ECB) LINED - DETAIL B

LONGITUDINAL SLOPE 0.5% TO 3%
SCALE: 1/4" = 1'-0"



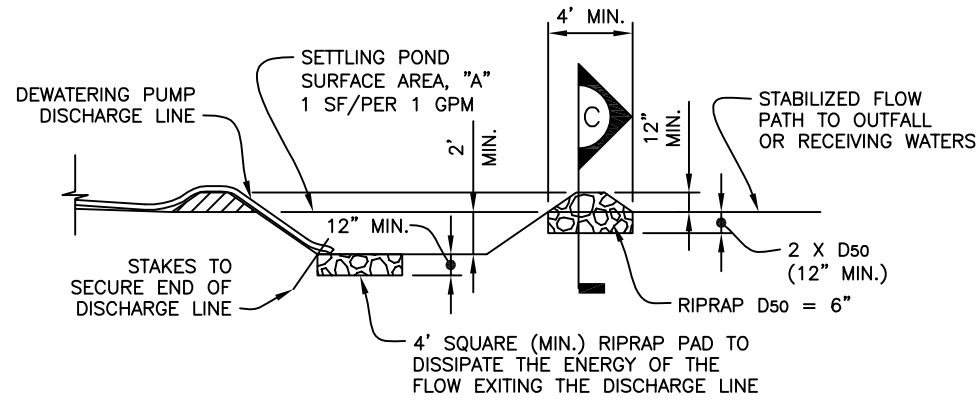
PLASTIC LINED - DETAIL C

LONGITUDINAL SLOPE 3% TO 33%
SCALE: 1/4" = 1'-0"



BASIN OUTLET - SECTION C

SCALE: 1" = 10'-0"



SUMP DISCHARGE SETTLING BASIN - DETAIL B

SCALE: 1" = 10'-0"

DEWATERING INSTALLATION NOTES

1. THE GESC MANAGER SHALL OBTAIN A CONSTRUCTION DISCHARGE (DEWATERING) PERMIT FROM THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT PRIOR TO ANY DEWATERING OPERATIONS. ALL DEWATERING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE DISCHARGE PERMIT AND SHALL BE COORDINATED WITH THE ARAPAHOE COUNTY INSPECTOR.
2. THE GESC MANAGER SHALL PROVIDE, OPERATE, AND MAINTAIN DEWATERING SYSTEMS OF SUFFICIENT SIZE AND CAPACITY TO PERMIT EXCAVATION AND SUBSEQUENT CONSTRUCTION IN DRY CONDITIONS AND TO LOWER AND MAINTAIN THE GROUNDWATER LEVEL A MINIMUM OF 2- FEET BELOW THE LOWEST POINT OF EXCAVATION AND CONTINUOUSLY MAINTAIN EXCAVATIONS FREE OF WATER UNTIL BACKFILLED TO FINAL GRADE.
3. DEWATERING OPERATIONS SHALL USE ONE OR MORE OF THE DEWATERING SUMPS SHOWN ABOVE OR OTHER MEANS APPROVED BY THE COUNTY TO REDUCE THE PUMPING OF SEDIMENT, AND SHALL PROVIDE A TEMPORARY BASIN FOR SETTLING PUMPED DISCHARGES PRIOR TO RELEASE OFF SITE OR TO A RECEIVING WATER. SEDIMENT BASIN PER DETAIL 14 MAY BE USED IN LIEU OF SUMP DISCHARGE SETTLING BASIN SHOWN ABOVE.
4. A 4' SQUARE RIPRAP PAD SHALL BE PLACED AT DISCHARGE POINT.
5. THE DISCHARGE END OF THE LINE SHALL BE STAKED IN PLACES TO PREVENT MOVEMENT OF RIPRAP PAD.

DEWATERING MAINTENANCE NOTES

1. THE GESC MANAGER SHALL INSPECT DEWATERING SYSTEMS AND PERFORM ANY NECESSARY REPAIRS OR MAINTENANCE ON A HOURLY BASIS.
2. TEMPORARY SETTLING BASINS SHALL BE REMOVED WHEN NO LONGER NEEDED FOR DEWATERING OPERATIONS. ANY DISTURBED AREA SHALL BE DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE COUNTY.

DIVERSION DITCH INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 - LOCATION OF DIVERSION DITCH.
 - TYPE OF DITCH (UNLINED, ECB LINED, PLASTIC LINED OR RIPRAP LINED).
 - LENGTH OF EACH TYPE OF DITCH.
 - DEPTH, "D", AND WIDTH, "W" DIMENSIONS.
 - FOR ECB LINED DITCH, EROSION CONTROL BLANKET TYPE (SEE DETAIL 9).
 - FOR RIPRAP LINED DITCH, SIZE OF RIPRAP, "D50".
2. SEE DRAINAGE PLANS FOR DETAILS OF ANY PERMANENT CONVEYANCE FACILITIES OR DIVERSION DITCHES EXCEEDING A 2-YEAR FLOW RATE OF 10 CFS.
3. DIVERSION DITCHES INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED PRIOR TO ANY LAND-DISTURBING ACTIVITIES.
4. FOR ECB LINED DITCHES, INSTALLATION OF EROSION CONTROL BLANKET SHALL CONFORM TO THE REQUIREMENTS OF DETAIL 9.
5. IN LOCATIONS WHERE CONSTRUCTION TRAFFIC MUST CROSS A DIVERSION DITCH, THE PERMITTEES SHALL INSTALL A TEMPORARY CULVERT WITH A MINIMUM DIAMETER OF 12-INCHES.

DIVERSION DITCH MAINTENANCE NOTES

1. THE GESC MANAGER SHALL INSPECT DIVERSION DITCHES WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY.
2. DIVERSION DITCHES ARE TO REMAIN IN PLACE UNTIL THE END OF CONSTRUCTION, OR, IF APPROVED BY THE COUNTY, LEFT IN PLACE.
3. IF DIVERSION DITCHES ARE REMOVED, THE DISTURBED AREA SHALL BE DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE COUNTY.



DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT ENGINEERING DIVISION

GESC GRADING, EROSION, AND SEDIMENT CONTROL

NOTE: SCALES SHOW ARE FOR 22"x34" SHEETS: ADJUST ACCORDINGLY FOR 11"x17" SHEET

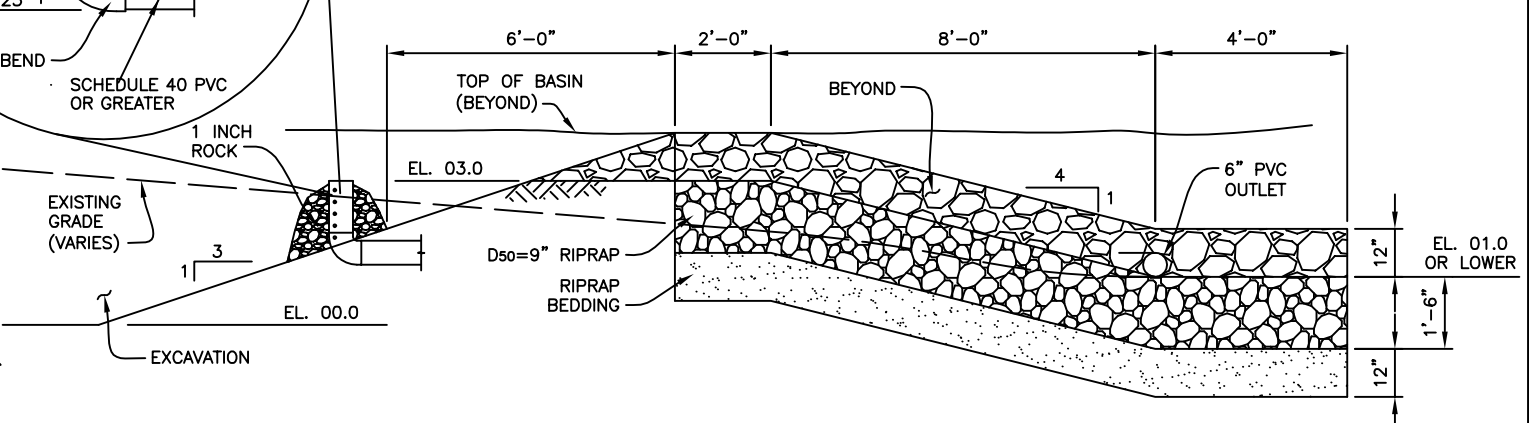
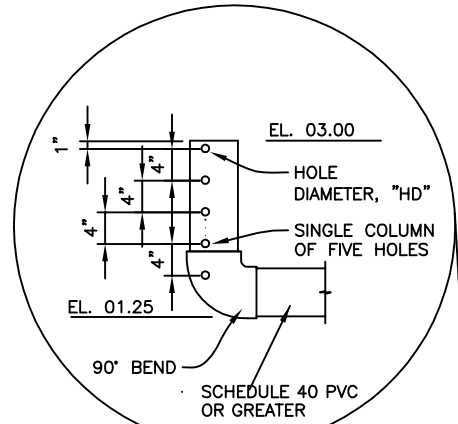
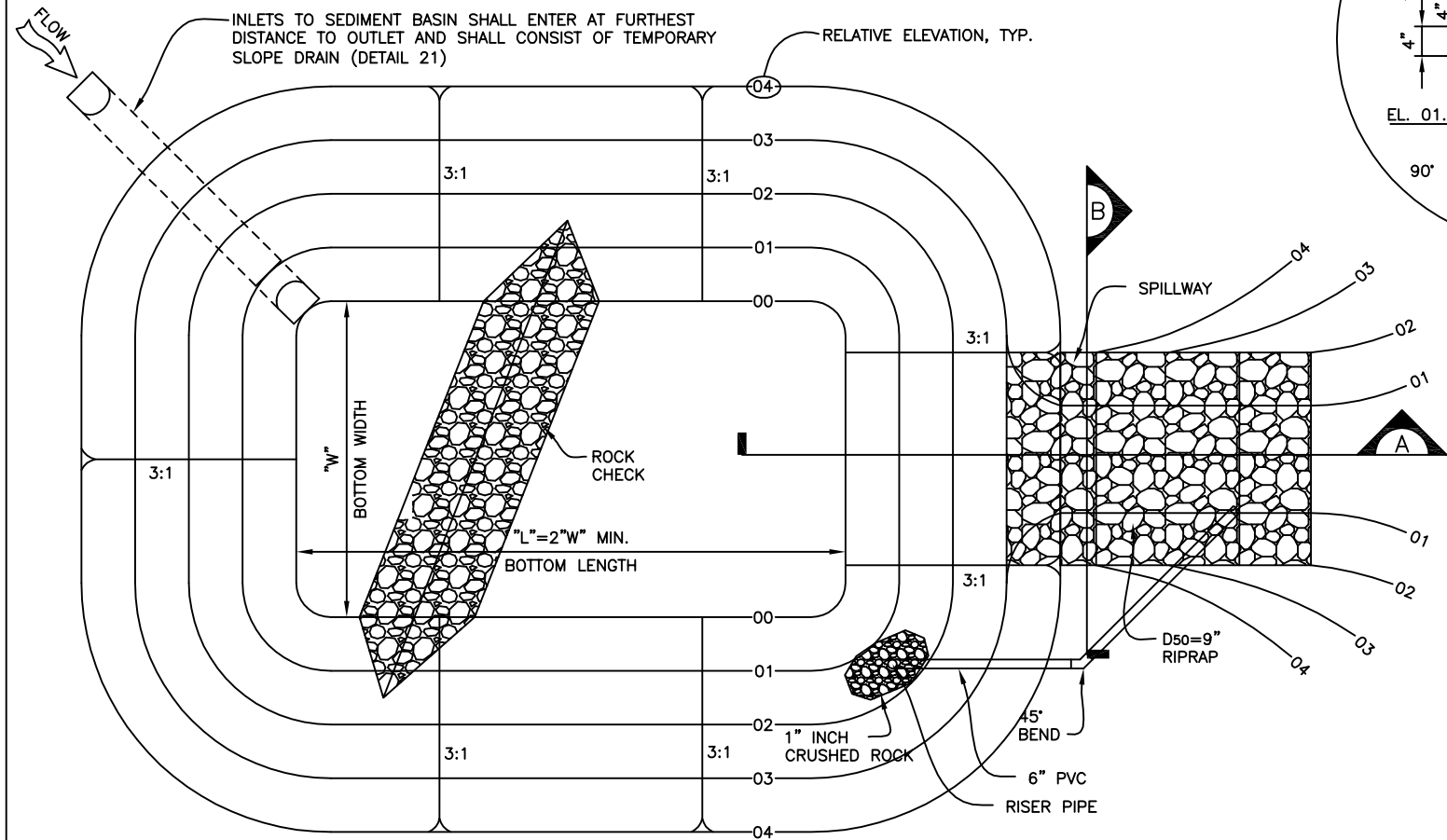
GESC PLAN STANDARD NOTES AND DETAILS JANUARY 2005

SHEET 4 OF 14

DRAWING NO. EC-7 SHEET 41 OF 47

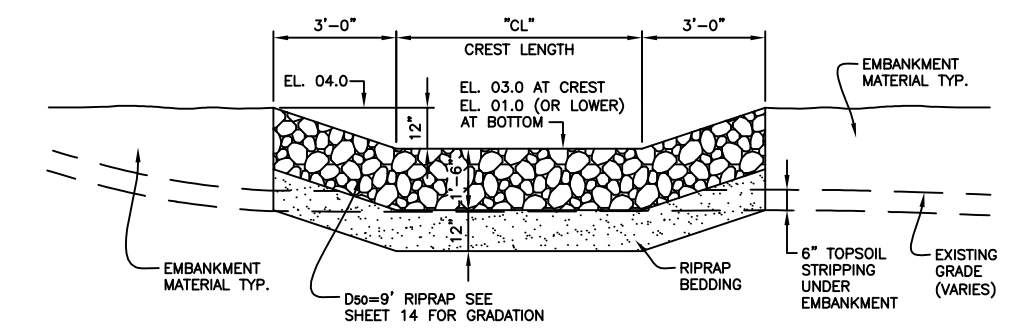
STANDARD BASIN-PLAN

SCALE: 1" = 5'-0"



STANDARD BASIN-SECTION A

SCALE: 1/2" = 1'-0"



STANDARD BASIN-SECTION B

SCALE: 1/2" = 1'-0"

SEDIMENT BASIN INSTALLATION NOTES

- SEE PLAN VIEW FOR:
 - LOCATION OF SEDIMENT BASIN.
 - TYPE OF BASIN (STANDARD BASIN OR NON-STANDARD BASIN).
 - FOR STANDARD BASIN, CREST LENGTH, "CL", BOTTOM WIDTH, "W", AND HOLE DIAMETER, "HD".
 - FOR NON-STANDARD 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 INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED PRIOR TO ANY OTHER LAND-DISTURBING ACTIVITY.
- 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 WITHIN 2 PERCENTAGE POINTS OF OPTIMUM DENSITY IN ACCORDANCE WITH ASTM D698.
- PIPE SCH 40 OR GREATER SHALL BE USED.
- THE DETAILS SHOWN ON THIS SHEET PERTAIN TO STANDARD SEDIMENT BASIN(S) IDENTIFIED ON THE GESC PLAN VIEW DRAWINGS USED 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 MAINTENANCE NOTES

- THE GESC MANAGER SHALL INSPECT SEDIMENT BASIN WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY.
- SEDIMENT SHALL BE REMOVED FROM THE POND ONCE IT REACHES 1 FOOT IN DEPTH OR 20% OF THE PONDS WATER QUALITY CAPTURE VOLUME, WHICHEVER IS LESS.
- SEDIMENT BASINS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED BY THE COUNTY.
- IF SEDIMENT BASINS ARE REMOVED, THE DISTURBED AREA SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE COUNTY.



DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT ENGINEERING DIVISION

GESC GRADING, EROSION, AND SEDIMENT CONTROL

NOTE: SCALES SHOW ARE FOR 22"x34" SHEETS: ADJUST ACCORDINGLY FOR 11"x17" SHEET

GESC PLAN
STANDARD NOTES AND DETAILS
JANUARY 2005

SHEET 8 OF 14
DRAWING NO. EC-8
SHEET 42 OF 47

SEE DWG L-6 FOR SEED MIXES

SEEDING AND MULCHING INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 - AREA OF SEEDING AND MULCHING.
 - TYPE OF SEED MIX (PERMANENT, TEMPORARY, OR LOW-GROWTH).
2. ALL BRANDS FURNISHED SHALL BE FREE FROM SUCH NOXIOUS SEEDS AS RUSSIAN OR CANADIAN THISTLE, COARSE FESCUE, EUROPEAN BINDWEED, JOHNSON GRASS, KNAP WEED AND LEAFY SPURGE.
3. THE SEEDER SHALL FURNISH TO THE CONTRACTOR A SIGNED STATEMENT CERTIFYING THAT THE SEED FURNISHED IS FROM A LOT THAT HAS BEEN TESTED BY A RECOGNIZED LABORATORY. SEED WHICH HAS BECOME WET, MOLDY, OR OTHERWISE DAMAGED IN TRANSIT OR IN STORAGE WILL NOT BE ACCEPTABLE. SEED TICKETS SHALL BE PROVIDED TO ARAPAHOE COUNTY UPON REQUEST.
4. DRILL SEEDING MIX SHALL CONFORM TO THE TABLE ON THE RIGHT: UNLESS OTHERWISE APPROVED BY THE COUNTY.
5. IF THE SEED AVAILABLE ON THE MARKET DOES NOT MEET THE MINIMUM PURITY AND GERMINATION PERCENTAGES SPECIFIED, THE SUBCONTRACTOR MUST COMPENSATE FOR A LESSER PERCENTAGE OF PURITY OR GERMINATION BY FURNISHING SUFFICIENT ADDITIONAL SEED TO EQUAL THE SPECIFIED PRODUCT. THE TAGS FROM THE SEED MIXES MUST BE SUPPLIED TO CONTRACTOR AND FORWARDED TO THE ARAPAHOE COUNTY GESC INSPECTOR.
6. THE FORMULA USED FOR DETERMINING THE QUANTITY OF PURE LIVE SEED (PLS) SHALL BE (POUNDS OF SEED) X (PURITY) X (GERMINATION) = POUNDS OF PURE LIVE SEED (PLS).
7. PERMANENT SEED MIX SHALL BE USED UNLESS OTHERWISE APPROVED BY THE COUNTY.
8. ALL AREAS TO BE SEEDED AND MULCHED SHALL HAVE NATIVE TOPSOIL OR APPROVED SOIL AMENDMENTS SPREAD TO A DEPTH OF AT LEAST 6 INCHES (LOOSE DEPTH). HAUL ROADS AND OTHER COMPACTED AREAS SHALL BE LOOSENEED TO A DEPTH OF 6 INCHES PRIOR TO SPREADING TOPSOIL.
9. SOIL IS TO BE THOROUGHLY LOOSENEED (TILLED) TO A DEPTH OF AT LEAST 6 INCHES PRIOR TO SEEDING. THE TOP 6 INCHES OF THE SEED BED SHALL BE FREE OF ROCKS GREATER THAN 4 INCHES AND SOIL CLODS GREATER THAN 2 INCHES. SEEDING OVER ANY COMPACTED AREAS THAT HAVEN'T BEEN THOROUGHLY LOOSENEED SHALL BE REJECTED.
10. SEED IS TO BE APPLIED USING A MECHANICAL DRILL TO A DEPTH OF 1/4 INCH. ROW SPACING SHALL BE NO MORE THAN 6 INCHES. MATERIAL USED FOR MULCH SHALL CONSIST OF LONG-STEMMED STRAW. AT LEAST 50 PERCENT OF THE MULCH, BY WEIGHT, SHALL BE 10 INCHES OR MORE IN LENGTH. MULCH SHALL BE APPLIED AND MECHANICALLY ANCHORED TO A DEPTH OF AT LEAST 2 INCHES. MULCH SHALL BE APPLIED AT A RATE OF 4000 LB. OF STRAW PER ACRE.
11. IF THE PERMITTEE DEMONSTRATES TO THE COUNTY THAT IT IS NOT POSSIBLE TO DRILL SEED, SEED IS TO BE UNIFORMLY BROADCAST AT TWO TIMES THE DRILLED RATE, THEN LIGHTLY HARROWED TO PROVIDE A SEED DEPTH OF APPROXIMATELY 1/4 INCH, THEN ROLLED TO COMPACT, THEN MULCHED AS SPECIFIED ABOVE.
12. WHEN SEEDING AND MULCHING IS USED TO STABILIZE DISTURBED AREAS, ALL DISTURBED AREAS WHICH ARE EITHER FINAL GRADED, OR WILL REMAIN INACTIVE FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE REQUIRED TO BE STABILIZED WITHIN 14 DAYS OF THE COMPLETION OF THE GRADING ACTIVITIES. THIS MAY REQUIRE MULTIPLE MOBILIZATIONS FOR SEEDING AND MULCHING.
13. MULCH SHALL BE APPLIED WITHIN 24-HOURS OF SEEDING.
14. TACKIFIER SHOULD BE UTILIZED TO HELP WITH STRAW DISPLACEMENT.

SEEDING AND MULCHING MAINTENANCE NOTES

1. SEEDED AND MULCHED AREAS SHALL BE INSPECTED FOR REQUIRED COVERAGE MONTHLY FOR A PERIOD OF TWO YEARS FOLLOWING INITIAL SEEDING. REPAIRS AND RE-SEEDING AND MULCHING SHALL BE UNDERTAKEN AFTER THE FIRST GROWING SEASON FOR ANY AREAS FAILING TO MEET THE REQUIRED COVERAGE.
2. REQUIRED COVERAGE FOR STANDARD, OPEN SPACE AND LOW GROWTH SEED MIXES SHALL BE DEFINED AS FOLLOWS:
 1. THREE (3) PLANTS PER SQUARE FOOT WITH A MINIMUM HEIGHT OF 3 INCHES. THE 3 PLANTS PER SQUARE FOOT SHALL BE OF THE VARIETY AND SPECIES FOUND IN THE ARAPAHOE COUNTY-APPROVED MIX.
 2. NO BARE AREAS LARGER THAN 4 SQUARE FEET (TWO-FEET BY TWO-FEET OR EQUIVALENT).
 3. FREE OF ERODED AREAS.
 4. FREE FROM INFESTATION OF NOXIOUS WEEDS IN ACCORDANCE WITH SECTION 7.3 OF THE GESC CRITERIA MANUAL.
3. REQUIRED COVERAGE FOR TURF GRASS AREAS SHALL BE DEFINED AS FOLLOWS:
 1. AT LEAST 80% VEGETATIVE COVER OF GRASS SPECIES PLANTED.
 2. NO BARE AREAS LARGER THAN 4 SQUARE FEET (TWO-FEET BY TWO-FEET OR EQUIVALENT).
 3. FREE OF ERODED AREAS.
 4. FREE FROM INFESTATION OF NOXIOUS WEEDS IN ACCORDANCE WITH SECTION 7.3 OF THE GESC CRITERIA MANUAL.
4. RILL AND GULLY EROSION SHALL BE FILLED WITH TOPSOIL PRIOR TO RESEEDING. THE RESEEDING METHOD SHALL BE APPROVED BY THE COUNTY.

ARAPAHOE COUNTY PERMANENT DRILL SEEDING MIX

SPECIES	VARIETY	NOTES	% IN MIX	POUNDS OF PLS PER ACRE
BIG BLUESTEM	KAW	PNWS	10	1.1
YELLOW INDIANGRASS	CHEYENNE	PNWS	10	1
SWITCHGRASS	BLACKWELL	PNWS	10	0.4
SIDEOATS GRAMA	VAUGHN	PNWB	10	0.9
WESTERN WHEATGRASS	ARRIBA	PNCS	10	1.6
BLUE GRAMA	HACHITA	PNWB	10	0.3
THICKSPIKE WHEATGRASS	CRITANA	PNCS	10	1
PRAIRIE SANDREED	GOSHEN	PNWS	10	0.7
GREEN NEEDLEGRASS	LODORM	PNCB	10	1
SLENDER WHEATGRASS	PRYOR	PNCB	5	0.6
STREAMBANK WHEATGRASS	SODAR	PNCS	5	0.6
TOTAL				9.2

ARAPAHOE COUNTY TEMPORARY DRILL SEEDING MIX

SPECIES	VARIETY	NOTES	% IN MIX	POUNDS OF PLS PER ACRE
SMOOTH BROMEGRASS	LINCOLN	PICS	30	3.9
INTERMEDIATE WHEATGRASS	OAHE	PICS	30	4.5
PUBESCENT WHEATGRASS	LUNA	PICS	30	4.2
ANNUAL RYEGRASS	N/A	AICB	10	0.8
TOTAL				13.4

ARAPAHOE COUNTY LOW-GROWTH DRILL SEEDING MIX

SPECIES	VARIETY	NOTES	% IN MIX	POUNDS OF PLS PER ACRE
BUFFALOGRASS	TEXOKA	PNWS	20	3.2
BLUE GRAMA	HACHITA	PNWB	20	0.6
WESTERN WHEATGRASS	ARRIBA	PNCS	20	3.2
SIDEOATS GRAMA	VAUGHN	PNWB	20	1.8
THICKSPIKE WHEATGRASS	CRITANA	PNCS	10	1
STREAMBANK WHEATGRASS	SODAR	PNCS	10	1.2
TOTAL				11.0

NOTES:
 P=PERENNIAL
 A=ANNUAL
 N=NATIVE
 I=INTRODUCED
 W=WARM SEASON
 C=COOL SEASON
 S=SOD FORMER
 B=BUNCHGRASS



SM

SEEDING AND MULCHING

17



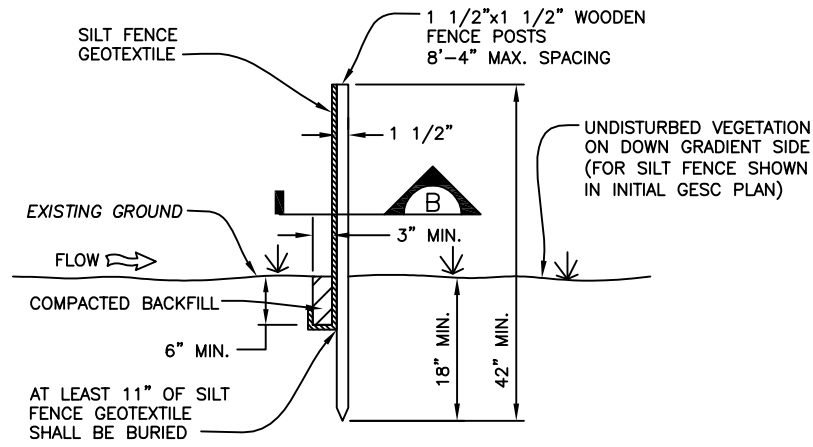
DEPARTMENT OF PUBLIC WORKS
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**GESC GRADING, EROSION, AND
SEDIMENT CONTROL**

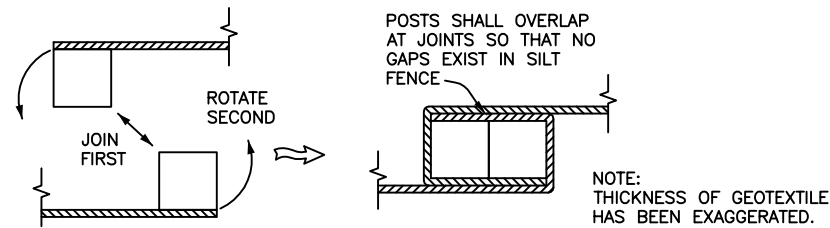
NOTE: SCALES
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ACCORDINGLY
FOR 11"x17"
SHEET

**GESC PLAN
STANDARD NOTES AND DETAILS
JANUARY 2005**

SHEET 10 OF 14
DRAWING NO. EC-9
SHEET 43 OF 47



DETAIL A
SCALE: 1" = 1'-0"



POST SHALL BE JOINED AS SHOWN, THEN ROTATED 180° IN DIRECTION SHOWN AND DRIVEN INTO THE GROUND

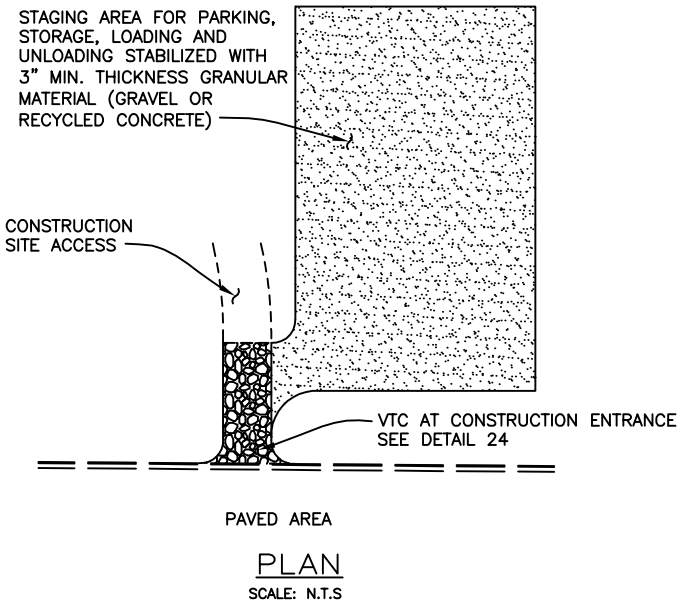
JOINTS-SECTION B
SCALE: N.T.S

SILT FENCE INSTALLATION NOTES

- SEE PLAN VIEW FOR:
 - LOCATION AND LENGTH OF FENCE.
- ANCHOR TRENCH SHALL BE EXCAVATED WITH TRENCHER, OR WITH SILT FENCE INSTALLATION MACHINE; NO ROAD GRADERS, BACKHOES, ETC. SHALL BE USED. TRENCH SHALL BE COMPACTED BY HAND, WITH "JUMPING JACK", OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
- SILT FENCE GEOTEXTILE SHALL MEET THE FOLLOWING REQUIREMENTS:
 - 6-TO 12-GALLONS PER MINUTE PER SQUARE FOOT FLOW CAPACITY.
 - 90 LB. TENSILE STRENGTH PER ASTM D4622.
 - UV DESIGN AT 500 HRS MIN. 70% STRENGTH RETAINED PER ASTM D 4355.
- SILT FENCE INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED PRIOR TO ANY LAND-DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

- THE GESC MANAGER SHALL INSPECT SILT FENCE DAILY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
- SEDIMENT ACCUMULATED UPSTREAM OF SILT FENCE SHALL BE REMOVED WHEN THE UPSTREAM SEDIMENT REACHES A DEPTH OF 6-INCHES.
- SILT FENCE SHALL BE REMOVED WHEN THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED BY THE COUNTY. IF ANY DISTURBED AREA EXISTS AFTER REMOVAL, IT SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE COUNTY.



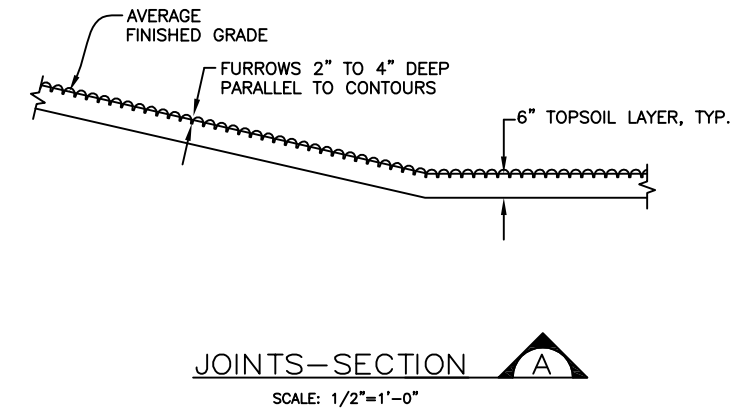
PLAN
SCALE: N.T.S

STABILIZED STAGING AREA INSTALLATION NOTES

- SEE PLAN VIEW FOR GENERAL LOCATION OF STAGING AREA. CONTRACTOR MAY MODIFY LOCATION AND SIZE OF STABILIZED STAGING AREA WITH COUNTY APPROVAL.
- STABILIZED STAGING AREA SHALL BE LARGE ENOUGH TO FULLY CONTAIN PARKING, STORAGE, AND UNLOADING AND LOADING OPERATIONS.
- IF REQUIRED BY THE COUNTY, SITE ACCESS ROADS SHALL BE STABILIZED IN THE SAME MANNER AS THE STAGING AREA.
- STAGING AREA SHALL BE STABILIZED PRIOR TO ANY OTHER OPERATIONS ON THE SITE.
- THE STABILIZED STAGING AREA SHALL CONSIST OF A 3" MINIMUM THICKNESS OF GRANULAR MATERIAL (GRAVEL OR RECYCLED CONCRETE).

STABILIZED STAGING AREA MAINTENANCE NOTES

- THE GESC MANAGER SHALL INSPECT THE STABILIZED STAGING AREA WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
- GESC MANAGER SHALL PROVIDE ADDITIONAL THICKNESS OF GRANULAR MATERIAL IF ANY RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.
- STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING AND LOADING OPERATIONS.
- ANY ACCUMULATED DIRT OR MUD SHALL BE REMOVED FROM THE SURFACE OF THE STABILIZED STAGING AREA.
- THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE COUNTY, USED ON SITE, AND THE AREA TOPSOILED, DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED.



JOINTS-SECTION A
SCALE: 1/2"=1'-0"

SURFACE ROUGHENING INSTALLATION NOTES

- SURFACE ROUGHENING SHALL BE PROVIDED ON ALL FINISHED GRADES (SLOPES AND "FLAT" AREAS) WITHIN 2 DAYS OF COMPLETION OF FINISHED GRADE (FOR AREAS NOT RECEIVING TOPSOIL) OR WITHIN 2 DAYS OF TOPSOIL PLACEMENT.
- AREAS WHERE BUILDING FOUNDATIONS, PAVEMENT, OR SOD IS TO BE PLACED WITHIN 7-DAYS OF FINISHED GRADING DO NOT NEED TO BE SURFACE ROUGHENED.
- DISTURBED SURFACES SHALL BE ROUGHENED USING RIPPING OR TILLING EQUIPMENT ON THE CONTOUR OR TRACKING UP AND DOWN A SLOPE USING EQUIPMENT TREADS.

SURFACE ROUGHENING MAINTENANCE NOTES

- THE GESC MANAGER SHALL INSPECT THE SURFACE ROUGHENING WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
- VEHICLES AND EQUIPMENT SHALL GENERALLY BE CONFINED TO ACCESS DRIVES AND SHALL NOT BE DRIVEN OVER AREAS THAT HAVE BEEN SURFACE ROUGHENED.
- IN NON-TURF GRASS FINISHED AREAS, SEEDING AND MULCHING SHALL TAKE PLACE DIRECTLY OVER SURFACE ROUGHENED AREAS WITHOUT FIRST SMOOTHING OUT THE SURFACE.
- IN AREAS NOT SEEDED AND MULCHED AFTER SURFACE ROUGHENING, SURFACES SHALL BE RE-ROUGHENED AS NECESSARY TO MAINTAIN GROOVE DEPTH AND SMOOTH OVER ANY RILL EROSION.



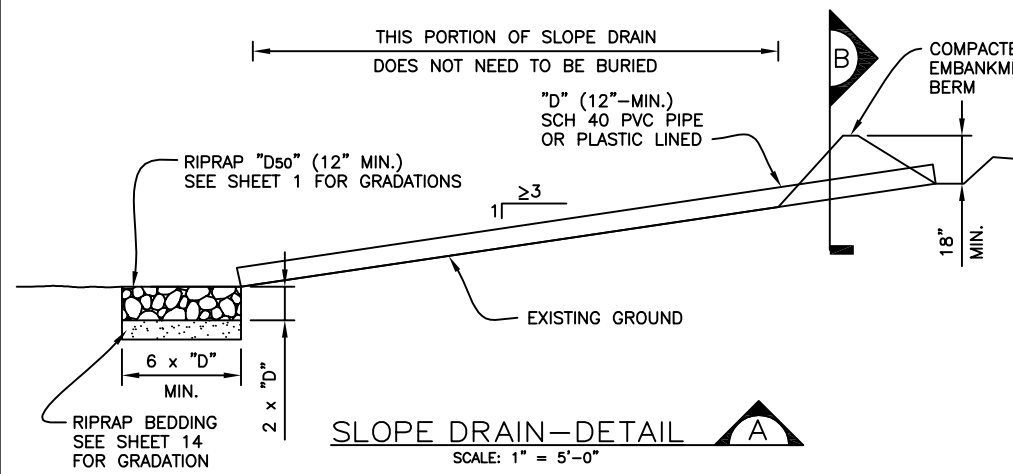
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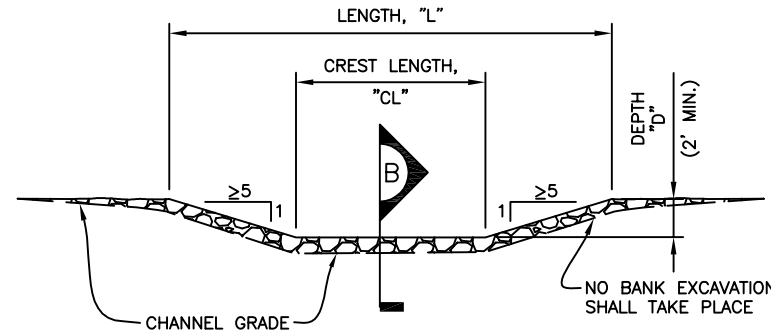
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**GESC PLAN
STANDARD NOTES AND DETAILS
JANUARY 2005**

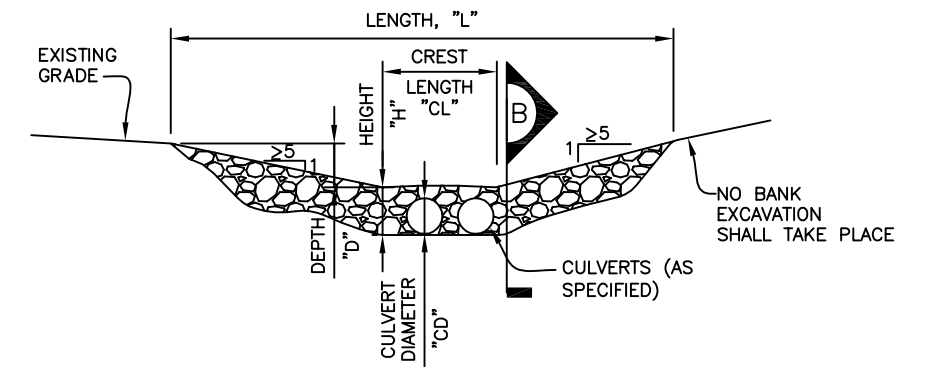
SHEET 11 OF 14
DRAWING NO. EC-10
SHEET 44 OF 47



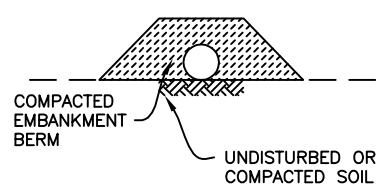
SLOPE DRAIN-DETAIL A
SCALE: 1" = 5'-0"



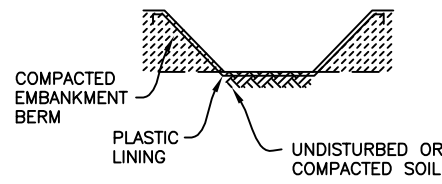
FORD CROSSING-DETAIL A
SCALE: 1" = 5'-0"



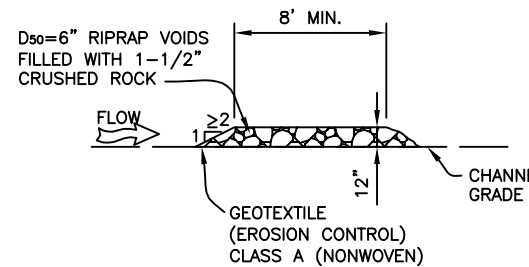
CULVERT CROSSING-DETAIL A
SCALE: 1" = 5'-0"



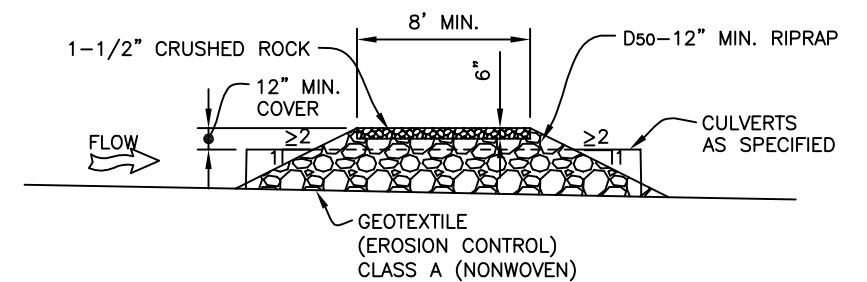
SLOPE DRAIN-SECTION B
SCALE: 1" = 5'-0"



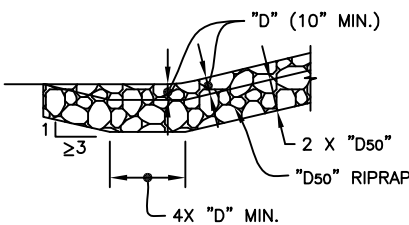
PLASTIC LINED DRAIN-SECTION E
SCALE: 1" = 5'-0"



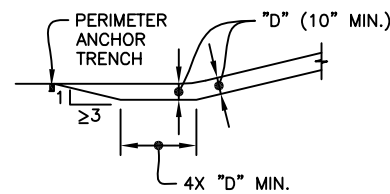
FORD CROSSING-SECTION B
SCALE: 1" = 5'-0"



CULVERT CROSSING-DETAIL A
SCALE: 1" = 5'-0"



TERMINATION OF RIPRAP LINED SLOPE DRAIN-DETAIL D
SCALE: 1" = 5'-0"



TERMINATION OF PLASTIC LINED SLOPE DRAIN-DETAIL C
SCALE: 1" = 5'-0"

SLOPE DRAIN INSTALLATION NOTES

- SEE PLAN VIEW FOR:
 - LOCATION AND LENGTH OF SLOPE DRAIN.
 - PIPE DIAMETER, "D", AND RIPRAP SIZE, "D₅₀".
- SLOPE DRAIN DIMENSIONS SHALL BE CONSIDERED MINIMUM DIMENSIONS; CONTRACTOR MAY ELECT TO INSTALL LARGER FACILITIES. ANY DAMAGE TO SLOPE OR SLOPE DRAIN DURING RUNOFF EVENTS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- SLOPE DRAINS INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED PRIOR TO ANY UPSTREAM LAND-DISTURBING ACTIVITIES.
- FOR TEMPORARY SLOPE DRAINS, PIPE MAY BE INSTALLED ON TOP OF SLOPE; HOWEVER, 12" MIN. COVER AT TOP OF SLOPE SHALL BE PROVIDED.
- A RIPRAP PAD SHALL BE PLACED AT THE OUTFALL OF THE SLOPE DRAIN.

SLOPE DRAIN MAINTENANCE NOTES

- THE GESC MANAGER SHALL INSPECT SLOPE DRAINS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS AS NECESSARY.
- TEMPORARY SLOPE DRAINS ARE TO REMAIN IN PLACE UNTIL NO LONGER NEEDED, BUT SHALL BE REMOVED PRIOR TO THE END OF CONSTRUCTION. WHEN SLOPE DRAINS ARE REMOVED, THE DISTURBED AREA SHALL BE DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE COUNTY.

TEMPORARY STREAM CROSSING INSTALLATION NOTES

- SEE PLAN VIEW FOR:
 - LOCATIONS OF TEMPORARY STREAM CROSSING.
 - STREAM CROSSING TYPE (FORD OR CULVERT).
 - FOR FORD CROSSING: LENGTH, "L", CREST LENGTH, "CL", AND DEPTH, "D".
 - FOR CULVERT CROSSING: LENGTH, "L", CREST LENGTH, "CL", CROSSING HEIGHT, "H", DEPTH, "D", CULVERT DIAMETER, "CD", AND NUMBER, TYPE AND CLASS OR GAUGE OF CULVERTS.
- TEMPORARY STREAM CROSSING DIMENSIONS, D₅₀, AND NUMBER OF CULVERTS INDICATED (FOR CULVERT CROSSING) SHALL BE CONSIDERED MINIMUM DIMENSIONS; ENGINEER MAY ELECT TO INSTALL LARGER FACILITIES. ANY DAMAGE TO STREAM CROSSING OR EXISTING STREAM CHANNEL DURING BASEFLOW OR FLOOD EVENTS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- SEE SHEET 14 FOR RIPRAP AND 1-1/2" CRUSHED ROCK GRADATIONS.
- FOR A TEMPORARY STREAM CROSSING THAT WILL CARRY LOADS, THE TEMPORARY STREAM CROSSING MUST BE DESIGNED BY THE DESIGN ENGINEER.

TEMPORARY STREAM CROSSING MAINTENANCE NOTES

- THE GESC MANAGER SHALL INSPECT STREAM CROSSINGS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
- SEDIMENT ACCUMULATED UPSTREAM OF STREAM CROSSINGS SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF CROSSING IS WITHIN 6-INCHES OF THE CREST (FORD CROSSING) OR GREATER THAN AN AVERAGE DEPTH OF 12-INCHES (CULVERT CROSSING).
- STREAM CROSSINGS ARE TO REMAIN IN PLACE UNTIL NO LONGER NEEDED, BUT SHALL BE REMOVED PRIOR TO THE END OF CONSTRUCTION.
- WHEN STREAM CROSSINGS ARE REMOVED, THE DISTURBED AREA SHALL BE DRILL SEEDED AND CRIMP MULCHED AND COVERED WITH EROSION CONTROL BLANKET OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE COUNTY.

TSD TEMPORARY SLOPE DRAIN

TSC TEMPORARY STREAM CROSSING



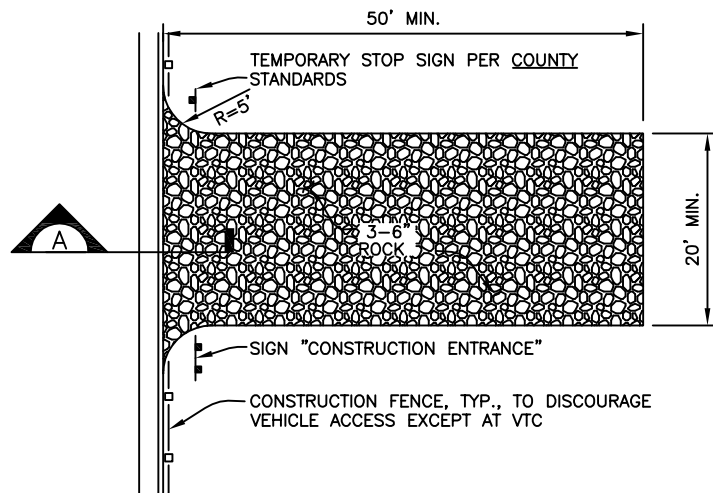
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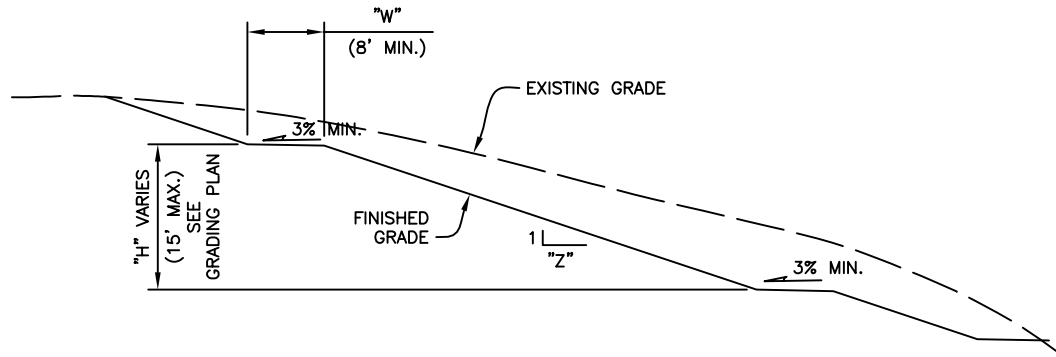
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ACCORDINGLY
FOR 11"x17"
SHEET

**GESC PLAN
STANDARD NOTES AND DETAILS
JANUARY 2005**

SHEET 12 OF 14
DRAWING NO. EC-11
SHEET 45 OF 47



PLAN
SCALE: 1" = 10'-0"



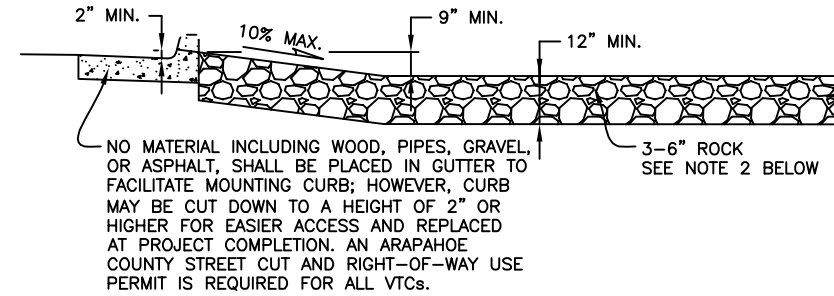
SECTION A
SCALE: 1" = 10'-0"

TERRACING INSTALLATION NOTES

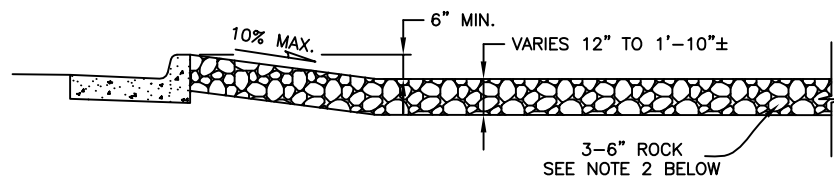
- SEE PLAN VIEW FOR:
- WIDTH, "W", AND SLOPE, "Z".
- TERRACING IS NOT REQUIRED FOR SLOPES OF 4 TO 1 OR FLATTER.
- EARTH (VEGETATED) SLOPES STEEPER THAN 3 TO 1 ARE NOT ALLOWED ON THE SITE.

TERRACING MAINTENANCE NOTES

- THE GESC MANAGER SHALL INSPECT THE SURFACE ROUGHENING WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
- ANY RILL EROSION OCCURRING ON SLOPES SHALL BE REPAIRED AND RESEEDED AND MULCHED IN ACCORDANCE WITH DETAIL 17.



SECTION A
SCALE: 1/2" = 1'-0"



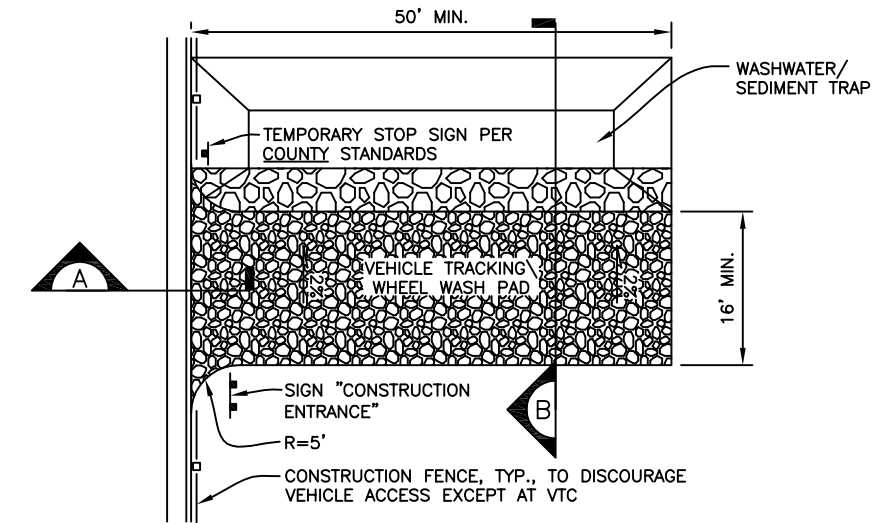
SECTION A
SCALE: 1" = 10'-0"

VEHICLE TRACKING CONTROL INSTALLATION NOTES

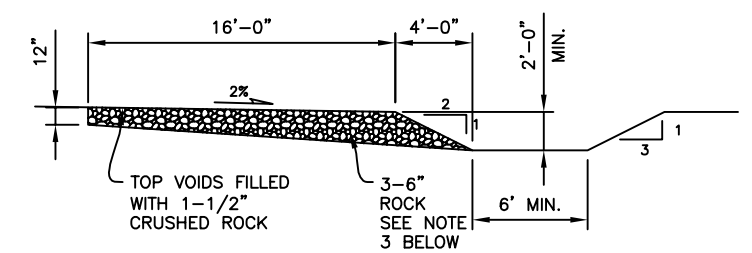
- VEHICLE TRACKING CONTROL PADS SHALL BE INSTALLED AT EVERY ACCESS POINT TO SITE.
- VEHICLE TRACKING CONTROL PADS SHALL CONSIST OF HARD, DENSE, DURABLE STONE, ANGULAR IN SHAPE AND RESISTANT TO WEATHERING. ROUNDED STONE OR BOULDERS WILL NOT BE ACCEPTABLE. THE STONES SHALL BE 3" WITH A MAXIMUM SIZE OF 6". THE STONE SHALL HAVE A SPECIFIC GRAVITY OF AT LEAST 2.6. CONTROL OF GRADATION WILL BE BY VISUAL INSPECTIONS.
- ANY CRACKED OR DAMAGED CURB AND GUTTER AND SIDEWALK SHALL BE REPLACED BY PERMITTEE.
- AN ARAPAHOE COUNTY STREET CUT AND RIGHT OF WAY USE PERMIT IS REQUIRED FOR ALL VTCs.
- A TEMPORARY STOP SIGN INSTALLED IN ACCORDANCE WITH COUNTY CRITERIA, AS AMENDED, SHALL BE INSTALLED FOR EXITING TRAFFIC AT THE VTC. IF A PERMANENT STOP SIGN IS INSTALLED THAN THE APPROPRIATE PERMITS SHALL BE OBTAINED FROM THE COUNTY.

VEHICLE TRACKING CONTROL MAINTENANCE NOTES

- GESC MANAGER SHALL INSPECT VEHICLE TRACKING CONTROL DAILY. GRAVEL SURFACE SHALL BE CLEAN AND LOOSE ENOUGH TO RUT SLIGHTLY UNDER WHEEL LOADS AND CAUSE LOOSE GRAVEL TO DISLodge MUD FROM TIRES. WHEN GRAVEL BECOMES COMPACTED OR FILLED WITH SEDIMENT SO THAT THE EFFECTIVENESS OF THE PAD IS DIMINISHED, CONTRACTOR SHALL RIP, TURN OVER, OR OTHERWISE LOOSEN GRAVEL, PLACE ADDITIONAL NEW GRAVEL, OR REPLACE WITH NEW GRAVEL AS NECESSARY TO RESTORE EFFECTIVENESS.
- VEHICLE TRACKING CONTROL SHALL BE REMOVED AT THE END OF CONSTRUCTION, THE GRAVEL MATERIAL REMOVED OR, IF APPROVED BY THE COUNTY, USED ON SITE, AND THE AREA TOPSOILED, DRILL SEEDDED AND CRIMP MULCHED OR OTHERWISE STABILIZED.



PLAN
SCALE: 1" = 10'-0"



SECTION B
SCALE: 1" = 10'-0"

VEHICLE TRACKING CONTROL WITH WHEEL WASH INSTALLATION NOTES

- ALTHOUGH NOT NORMALLY USED, THE COUNTY RESERVES THE RIGHT TO REQUIRE VEHICLE TRACKING CONTROL WITH WHEEL WASH FACILITIES AT SITES WHERE TRACKING ONTO PAVED AREAS BECOMES A SIGNIFICANT PROBLEM.
- IF VEHICLE TRACKING CONTROL WITH WHEEL WASH FACILITIES ARE REQUIRED, ALL WHEELS ON EVERY VEHICLE LEAVING THE SITE SHALL BE CLEANED OF MUD USING A PRESSURE-WASHER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A WATER SOURCE.
- VEHICLE TRACKING CONTROL PADS SHALL CONSIST OF HARD, DENSE, DURABLE STONE, ANGULAR IN SHAPE AND RESISTANT TO WEATHERING. ROUNDED STONE OR BOULDERS WILL NOT BE ACCEPTABLE. THE STONES SHALL BE 3" WITH A MAXIMUM SIZE OF 6". THE STONE SHALL HAVE A SPECIFIC GRAVITY OF AT LEAST 2.6. CONTROL OF GRADATION WILL BE BY VISUAL INSPECTIONS.
- ANY CRACKED OR DAMAGED CURB AND GUTTER AND SIDEWALK SHALL BE REPLACED BY CONTRACTOR.
- A TEMPORARY STOP SIGN INSTALLED IN ACCORDANCE WITH COUNTY CRITERIA, AS AMENDED, SHALL BE INSTALLED FOR EXITING TRAFFIC AT THE VTC. IF A PERMANENT STOP SIGN IS INSTALLED THAN THE APPROPRIATE PERMITS SHALL BE OBTAINED FROM THE COUNTY.

VEHICLE TRACKING CONTROL WITH WHEEL WASH MAINTENANCE NOTES

- GESC MANAGER SHALL INSPECT VEHICLE TRACKING CONTROL WITH WHEEL WASH FACILITIES DAILY. ACCUMULATED SEDIMENTS SHALL BE REMOVED FROM PAD SURFACE.
- ACCUMULATED SEDIMENT IN THE WASHWATER/SEDIMENT TRAP SHALL BE REMOVED WHEN THE SEDIMENT DEPTH REACHES AN AVERAGE OF 12-INCHES.
- VEHICLE TRACKING CONTROL WITH WHEEL WASH FACILITY SHALL BE REMOVED AT THE END OF CONSTRUCTION, THE RIPRAP MATERIAL REMOVED OR, IF APPROVED BY THE COUNTY, USED ON SITE, AND THE AREA TOPSOILED, DRILL SEEDDED AND CRIMP MULCHED OR OTHERWISE STABILIZED.



DEPARTMENT OF PUBLIC WORKS
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DIVISION

**GESC GRADING, EROSION, AND
SEDIMENT CONTROL**

NOTE: SCALES
SHOW ARE
FOR 22"x34"
SHEETS: ADJUST
ACCORDINGLY
FOR 11"x17"
SHEET

**GESC PLAN
STANDARD NOTES AND DETAILS
JANUARY 2005**

**SHEET 13 OF 14
DRAWING NO. EC-12
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ROCK AND RIPRAP GRADATIONS

TABLE 1. RIPRAP GRADATIONS

D50 MEDIAN STONE SIZE (INCHES)	% OF MATERIAL SMALLER THAN TYPICAL STONE	TYPICAL STONE EQUIVALENT DIAMETER (INCHES)	TYPICAL STONE WEIGHT (POUNDS)
6	70 - 100	12	85
	50 - 70	9	35
	35 - 50	6	10
	2 - 10	2	0.4
9	70 - 100	15	160
	50 - 70	12	85
	35 - 50	9	35
	2 - 10	3	1.3
12	70 - 100	21	440
	50 - 70	18	275
	35 - 50	12	85
	2 - 10	4	3
18	100	30	1280
	50 - 70	24	650
	35 - 50	18	275
	2 - 10	6	10
24	100	42	3500
	50 - 70	33	1700
	35 - 50	24	650
	2 - 10	9	35

TABLE 2. RIPRAP BEDDING

SIEVE SIZE	MASS PERCENT PASSING SQUARE MESH SIEVES
	CLASS A
3"	100
1 1/2"	20 - 90
NO. 4	0 - 20
NO. 200	0 - 3
MATCHES SPECIFICATIONS FOR CDOT CLASS A FILTER MATERIAL AND UDFCD TYPE 1 BEDDING. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.	

TABLE 3. 1 1/2" CRUSHED ROCK

SIEVE SIZE	MASS PERCENT PASSING SQUARE MESH SIEVES
	NO. 4
2"	100
1 1/2"	90 - 100
1"	20 - 55
3/4"	0 - 15
3/8"	0 - 5
MATCHES SPECIFICATIONS FOR NO. 4 COARSE AGGREGATE FOR CONCRETE PER AASHTO M43. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.	



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SHEET 14 OF 14
DRAWING NO. EC-13
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