

MAY 2015 FEMA PROJECTS

COTTONWOOD CREEK CUTOFF WALL/GRADE CONTROL STRUCTURE - FLD004

COLORADO SPRINGS, COLORADO

DECEMBER 2015

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PROJECT NAME
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COTTONWOOD CREEK CUTOFF WALL/GRADE CONTROL STRUCTURE - FLD004

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CITY REVIEW:

MIKE CHAVES P.E., ENGINEERING MANAGER, CITY OF COLORADO SPRINGS DATE

ENGINEER APPROVAL:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON THE BEHALF OF WILSON & COMPANY, ENGINEERS AND ARCHITECTS

Kyle D. Hinton
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COVER SHEET

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01

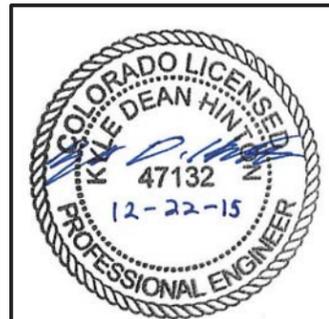
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GENERAL NOTES & SPECIFICATIONS

1. SCOPE OF WORK: THE WORK TO BE COMPLETED UNDER THESE REPAIRS SHALL INCLUDE THE PROJECT AS DEPICTED ON THESE CONSTRUCTION DRAWINGS AND SPECIFICATIONS AND SHALL INCLUDE ALL EQUIPMENT, LABOR, AND MATERIALS NECESSARY FOR CONSTRUCTION AS WELL AS EROSION AND SEDIMENT CONTROL, CONTROL OF WATER DURING CONSTRUCTION, PROTECTION OF ADJACENT IMPROVEMENTS, IMPORT OR EXPORT OF EARTHEN MATERIALS, REMOVAL AND DISPOSAL OF ALL WASTE MATERIALS FROM THE SITE, AND RECLAMATION OF THE AREAS OF THE SITE DISTURBED BY CONSTRUCTION ACTIVITIES.
2. ALL MATERIALS AND INSTALLATION PROCEDURES WILL BE IN COMPLIANCE WITH THE CITY OF COLORADO SPRINGS, CITY ENGINEERING DIVISION SUBDIVISION POLICY MANUAL, AND STANDARD SPECIFICATIONS MANUAL (LATEST EDITION), UNLESS OTHERWISE SPECIFIED IN SPECIAL PROVISIONS, SPECIAL TECHNICAL SPECIFICATIONS, THE PLANS, OR AS DIRECTED BY THE OWNER.
3. THE CONTRACTOR'S SHALL NOTIFY THE OWNER FOR TESTING AND OBSERVATION AS ESTABLISHED AT THE PRECONSTRUCTION CONFERENCE AND AS REQUIRED BY THE PLANS AND SPECIFICATIONS.
4. THE CONTRACTOR SHALL PROVIDE THREE (3) COPIES OF ALL SUBMITTALS AND CERTIFICATIONS TO THE OWNER FOR APPROVAL A MINIMUM OF ONE (1) WEEKS PRIOR TO THE ORDERING OF MATERIALS. THE SUBMITTALS SHALL BE MADE AS ELECTRONIC PDF FILES.
5. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE OWNER. THE OWNER RESERVES THE RIGHT TO ACCEPT OR REJECT MATERIALS AND WORKMANSHIP THAT DO NOT CONFORM TO THE PLANS AND SPECIFICATIONS.
6. THE CONTRACTOR SHALL NOTIFY THE OWNER A MINIMUM OF 48 HOURS PRIOR TO STARTING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING ANY OTHER AFFECTED UTILITY AGENCIES (OR THE LOCATING AGENCY) 72 HOURS IN ADVANCE OF CONSTRUCTION FOR UTILITY LOCATING.
7. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE PLANS AND SPECIFICATIONS AT THE JOB SITE AT ALL TIMES.
8. THE CONTRACTOR IS REQUIRED TO OBTAIN THE NECESSARY CONSTRUCTION PERMITS PRIOR TO THE START OF WORK INCLUDING PREPARATION OF A STORMWATER MANAGEMENT PLAN.
9. THE CONTRACTOR SHALL CONDUCT THE WORK IN A SAFE AND WORKMANLIKE MANNER, AND SHALL COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS REGARDING HEALTH AND SAFETY, PARTICULARLY INCLUDING THOSE PERTAINING TO EXCAVATION AND TRENCHING.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESETTling ANY LAND MONUMENTS AND/OR PROPERTY CORNERS DAMAGED DURING CONSTRUCTION. ANY MONUMENTS TO BE RESET WILL BE DONE UNDER THE DIRECT SUPERVISION OF A COLORADO REGISTERED LAND SURVEYOR AT THE CONTRACTORS EXPENSE.
11. THE CONTRACTOR SHALL OBTAIN AND BE FAMILIAR WITH ALL REGULATIONS GOVERNING THE CONSTRUCTION OF THIS PROJECT. THE CONTRACTOR SHALL OBTAIN COPIES OF ALL LATEST EDITIONS OF ALL DESIGN STANDARDS AND SPECIFICATIONS PRIOR TO CONSTRUCTION. A COPY OF THESE DOCUMENTS SHALL REMAIN ONSITE DURING CONSTRUCTION. COMPLIANCE WITH ALL LOCAL, COUNTY, STATE AND FEDERAL REQUIREMENTS IS THE ULTIMATE RESPONSIBILITY OF THE CONTRACTOR.
12. THE CONTRACTOR SHALL VERIFY LOCATION OF EXISTING FACILITIES INCLUDING UNDERGROUND UTILITIES PRIOR TO ACTUAL CONSTRUCTION. FOR INFORMATION CONTACT UNDERGROUND LOCATORS AT 1-800-922-1987. THE UTILITY INFORMATION SHOWN ON THESE PLANS REPRESENTS THE BEST AVAILABLE INFORMATION COMPILED TO THIS DATE. NO UNDERGROUND INVESTIGATIONS OR SURFACE LOCATIONS OF UNDERGROUND UTILITIES HAVE BEEN PERFORMED.
13. DIMENSIONS, ELEVATIONS, AND LOCATION OF EXISTING STRUCTURES, PIPELINES, AND UTILITIES ARE APPROXIMATE. THERE MAY BE OTHER STRUCTURES, PIPELINES, UTILITIES, ETC., NOT SHOWN ON THE DRAWINGS WHICH PRESENTLY EXIST IN THE AREA OF CONSTRUCTION. THE ENGINEER AND/OR OWNER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING STRUCTURES, PIPELINES, UTILITIES, ETC., WITHIN THE PROJECT SITE. THE CONTRACTOR SHALL, AT HIS EXPENSE, REPAIR ANY UTILITIES DISTURBED OR DISRUPTED BY THE CONSTRUCTION ACTIVITIES.
14. THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIAL STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURE'S LABELS. MATERIAL SHALL NOT BE STORED IN A LOCATION WHERE THEY MAY BE CARRIED BY STORMWATER RUNOFF INTO A STATE WATER AT ANY TIME.
15. SPILL PREVENTION AND CONTAINMENT MEASURES SHALL BE USED AT STORAGE, AND EQUIPMENT FUELING AND SERVICING AREAS TO PREVENT THE POLLUTION OF ANY STATE WATERS OR WETLANDS. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY, OR CONTAINED UNTIL APPROPRIATE CLEANUP METHODS CAN BE EMPLOYED. MANUFACTURERS RECOMMENDED METHODS OF SPILL CLEANUP SHALL BE FOLLOWED, ALONG WITH PROPER DISPOSAL METHODS.
16. IN GENERAL, SILT LADEN WATER SHALL NOT BE ALLOWED TO FLOW DOWNSTREAM. PUMPAGE FROM THE DEWATERING OF EXCAVATIONS SHALL BE DISCHARGED TO AN ADJACENT UPLAND SEDIMENT BASIN, OR OTHERWISE FILTERED BEFORE REACHING THE WATERCOURSE.
17. THE CONTRACTOR SHALL PREPARE A STORMWATER MANAGEMENT PLAN FOR THE SITE THAT IS COMPATIBLE WITH THE CONTRACTOR'S PLAN FOR PERFORMING THE WORK. THE PLAN SHALL MEET THE REQUIREMENTS OF THE CITY OF COLORADO SPRINGS. THIS PLAN SHALL BE FOLLOWED IN THE EXECUTION OF THE WORK.
18. IN NO CASE SHALL CONCRETE/GROUT OR CONCRETE/GROUT WASHWATER BE POURED IN FLOWING WATER.
19. THE CONTRACTOR IS RESPONSIBLE FOR ALL DEWATERING AND WATER CONTROL REQUIRED FOR CONSTRUCTION OF THE PROJECT IMPROVEMENTS.
20. THE CONTRACTOR SHALL CONSTRUCT THE PROJECT IN A MANNER THAT DOES NOT INCREASE THE RISK OF FLOODING OR EROSION DAMAGE TO ADJACENT FACILITIES.
21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF ALL PARTIALLY COMPLETED AND COMPLETED WORK UNTIL ACCEPTANCE BY THE OWNER.
22. THE CONTRACTOR SHALL PROVIDE A CONSTRUCTION FENCING CLOSURE AROUND ACTIVE WORK ZONES.
23. THE CONTRACTOR SHALL REPAIR ALL DAMAGE TO THE EXISTING TRAILS AND BANKS CAUSED BY THE CONTRACTORS USE OF THE TRAILS AND BANKS. SUCH REPAIRS WILL BE CONSIDERED INCIDENTAL TO BID ITEMS.
24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL CONSTRUCTION EASEMENTS REQUIRED TO ACCESS THE SITE INCLUDING COORDINATION WITH LANDOWNERS. NO PAYMENT SHALL BE ISSUED FOR COSTS INCURRED AS PART OF ROW ACCESS OR FOR OBTAINING CONSTRUCTION EASEMENTS.

ABBREVIATIONS

BOW = BOTTOM OF WALL	OC = ON CENTER
CL = CENTERLINE	OS = OFFSET
CLR = CLEAR	PC = POINT OF CURVATURE
CP = CONTROL POINT	PRC = POINT OF REVERSE CURVATURE
CY = CUBIC YARD	PT = POINT OF TANGENCY
DIA = DIAMETER	▲ PT = ANGLE POINT
DS = DOWNSTREAM	PVC = POLYVINYL CHLORIDE
ELEV = ELEVATION	PVI = POINT OF VERTICAL INTERSECTION
FG = FINISHED GRADE	R = RADIUS
FL = FLOW LINE	RCP = REINFORCED CONCRETE PIPE
GB = GRADE BREAK	RT = RIGHT
INV = INVERT	SF = SQUARE FOOT
L = LENGTH	STA = STATION
LT = LEFT	SY = SQUARE YARD
LF = LINEAR FOOT	TBC = TOP BACK OF CURB
MAINT= MAINTENANCE	TOB = TOP OF BOULDER/TOP OF BOX
MAX = MAXIMUM	TOS = TOP OF SLOPE
MH = MANHOLE	TOW = TOP OF WALL
MIN = MINIMUM	TYP = TYPICAL
	US = UPSTREAM
	WSE = WATER SURFACE ELEVATION
	YR = YEAR



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PROJECT NO:	15-600-067-00
DESIGNED BY:	KDH
DRAWN BY:	ATC
CHECKED BY:	VSF
DATE:	DECEMBER 2015
SHEET TITLE	GENERAL NOTES
SHEET NO:	02

GROUTED BOULDERS

BOULDERS

- REFER TO SECTION 625.2 OF THE SPECIAL TECHNICAL SPECIFICATIONS FOR THE FULL REQUIREMENTS FOR GROUTED BOULDERS.
- BOULDERS USED SHALL BE THE TYPE DESIGNATED ON THE DRAWINGS AND SHALL CONFORM TO THE FOLLOWING:

Nominal Size (inches)	Range in Smallest Dimension of Individual Rock Boulders (inches)	Maximum Ratio of Largest to Smallest Rock Dimension of Individual Boulders
48	45 - 51	1.5

- THE SPECIFIC GRAVITY OF THE BOULDERS SHALL BE TWO AND ONE-HALF (2.5) OR GREATER.
- BOULDER SPECIFIC GRAVITY SHALL BE ACCORDING TO THE BULK-SATURATED, SURFACE-DRY BASIS, IN ACCORDANCE WITH AASHTO T85.
- THE BOULDERS SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN FORTY PERCENT (40%) AFTER FIVE HUNDRED (500) REVOLUTIONS WHEN TESTED IN ACCORDANCE WITH AASHTO T96.
- THE BOULDERS SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN TEN PERCENT (10%) AFTER FIVE (5) CYCLES WHEN TESTED IN ACCORDANCE WITH AASHTO T104 FOR LEDGE ROCK USING SODIUM SULFATE.
- THE BOULDERS SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN TEN PERCENT (10%) AFTER TWELVE (12) CYCLES OF FREEZING AND THAWING WHEN TESTED IN ACCORDANCE WITH AASHTO T103 FOR LEDGE ROCK, PROCEDURE A.
- ROCK SHALL BE FREE OF CALCITE INTRUSIONS.
- COLOR SHALL BE CONSISTENT ON THE ENTIRE PROJECT AND SHALL MATCH THE COLOR OF ROCK TO BE USED FOR ALL OTHER PORTIONS OF THE WORK.
- RHYOLITE ROCK SHALL NOT BE USED FOR ANY GROUTED BOULDERS.
- CONTROL OF GRADATION WILL BE BY VISUAL INSPECTION.
- IN THE EVENT ENGINEER DETERMINES THE BOULDERS TO BE UNACCEPTABLE, ENGINEER WILL PICK TWO RANDOM TRUCKLOADS TO BE DUMPED AND CHECKED FOR GRADATION.
- MECHANICAL EQUIPMENT AND LABOR NEEDED TO ASSIST IN CHECKING GRADATION SHALL BE PROVIDED BY CONTRACTOR AT NO ADDITIONAL COST TO OWNER IF THE BOULDERS DO NOT MEET THE SPECIFIED GRADATION.
- IF THE BOULDERS DO MEET THE GRADATION SPECIFIED, OWNER WILL PAY FOR THE EQUIPMENT AND LABOR REQUIRED FOR CHECKING.

GROUT

- GROUT SHALL BE PER SECTION 500 AND 600 OF CITY OF COLORADO SPRINGS STANDARD SPECIFICATIONS EXCEPT AS MODIFIED HEREIN.
- CONCRETE FOR THE GROUT SHALL BE AN APPROVED BATCH MEETING THE FOLLOWING REQUIREMENTS:
 - ALL GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH EQUAL TO 3,200 PSI.
 - ONE CUBIC YARD OF GROUT SHALL CONTAIN A MINIMUM OF SIX (6) SACKS OF TYPE II PORTLAND CEMENT.
 - A MAXIMUM OF 25% TYPE F FLY ASH MAY BE SUBSTITUTED FOR THE PORTLAND CEMENT.
 - AGGREGATE FOR THE GROUT SHALL CONSIST OF 70% NATURAL SAND (FINES) AND 30% 3/8-INCH ROCK (COARSE).
 - SLUMP SHALL BE FOUR (4) INCHES TO SIX (6) INCHES.
 - AIR ENTRAINMENT SHALL BE 5.5% - 7.5%.
 - GROUT SHALL CONTAIN ONE AND ONE-HALF (1-1/2) POUNDS OF FIBERMESH, OR APPROVED EQUIVALENT, PER CUBIC YARD OF GROUT.

GROUTED BOULDER INSTALLATION

GROUTED BOULDERS SHALL BE PLACED AT THE LOCATIONS AS SHOWN ON THE DRAWINGS AND INSTALLED WITH THE FOLLOWING REQUIREMENTS:

- SUBGRADE:
 - THE SUBGRADE 12" BELOW EACH BOULDER SHALL BE FREE OF UNSUITABLE MATERIAL AND COMPACTED TO A MINIMUM OF 95% MAX DRY DENSITY (ASTM D698).
 - GROUTED BOULDERS SHALL BE PLACED ON SUBGRADE WITHOUT GRANULAR BEDDING UNLESS SHOWN ON THE PLANS OR APPROVED BY ENGINEER.
 - UNSTABLE MATERIAL SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF BY CONTRACTOR.
 - MATERIAL APPROVED BY ENGINEER SHALL BE PLACED AND COMPACTED IN A MAXIMUM OF FOUR-INCH (4") LIFTS TO NINETY FIVE PERCENT (95%) OF MAXIMUM STANDARD PROCTOR DENSITY (ASTM D698) TO RE-ESTABLISH THE SUBGRADE OF EACH BOULDER.
 - REMOVAL AND REPLACEMENT OF UNSUITABLE MATERIALS SHALL ONLY BE PAID FOR IF PRE-APPROVED BY THE OWNER IN WRITING.
 - SUBGRADE SHALL BE EXCAVATED A MINIMUM OF 6" TO A MAXIMUM OF 12" BEHIND PERIMETER BOULDERS.
 - BACKFILL BEHIND BOULDERS SHALL BE COMPACTED TO NINETY FIVE PERCENT (95%) MAXIMUM STANDARD PROCTOR DENSITY (ASTM D698). CARE SHALL BE TAKEN DURING COMPACTION TO AVOID DISTURBING AND/OR DAMAGING THE INTEGRITY OF THE BOULDER CHANNEL EDGE.
 - THE SUBGRADE ELEVATION FOR BOULDERS SHALL BE DETERMINED FROM THE HEIGHT OF EACH BOULDER USED.
- BOULDERS:
 - THE TOP ELEVATION OF ALL BOULDERS SHALL BE AS INDICATED ON THE DRAWINGS.
 - THE BOULDERS SHALL BE CAREFULLY PICKED AND ARRANGED SO THAT ADJACENT ROCK SURFACES MATCH WITHIN TWO (2) INCHES IN TOP ELEVATION AND TWO (2) INCHES ALONG VERTICAL EXPOSED FACES.
 - BOULDERS SHALL BE PLACED SUCH THAT ADJACENT BOULDERS "TOUCH" EACH OTHER AND VOIDS DO NOT EXCEED FOUR (4) INCHES. IT IS THE INTENT OF CONSTRUCTION TO MINIMIZE VOIDS AND GROUT PLACED BETWEEN BOULDERS.
 - CONTRACTOR SHALL, IF DEEMED NECESSARY, SUPPORT THE BOULDERS FROM FALLING OVER BEFORE AND DURING THE PLACEMENT OF GROUT, BACKFILL, AND COMPLETING COMPACTION WORK ON EITHER SIDE OF THE BOULDER.

- GROUTING:
 - PRIOR TO PLACING THE GROUT, ANY TYPE OF DEBRIS, FINES, SMALLER ROCK, OR SILT SHALL BE REMOVED FROM AROUND OR UNDER AND ON THE BOULDERS.
 - DEWATERING SHALL BE IMPLEMENTED TO GUARANTEE THAT THE GROUT WILL NOT BE PLACED OR SUBMERGED IN WATER FOR A PERIOD OF TWENTY-FOUR (24) HOURS AFTER THE GROUT HAS BEEN PLACED.
 - KEEP BOULDERS RECEIVING GROUT WET AT ALL TIMES PRIOR TO RECEIVING GROUT.
 - THE CONCRETE GROUT SHALL BE PLACED BY INJECTION METHODS BY PUMPING UNDER LOW PRESSURE, THROUGH A TWO- (2") INCH MAXIMUM DIAMETER HOSE TO ENSURE COMPLETE PENETRATION OF THE GROUT INTO THE VOID AREA AS DETAILED ON THE DRAWINGS. THE GROUT MIX SHALL BE STIFFENED AND OTHER MEASURES TAKEN TO RETAIN THE GROUT BETWEEN THE BOULDERS.
 - A "PENCIL" VIBRATOR SHALL BE USED TO MAKE SURE ALL VOIDS ARE FILLED BETWEEN THE BOULDERS FROM THE SUBGRADE AND AROUND THE BOULDERS TO A DEPTH AS SHOWN ON THE DRAWINGS. THE "PENCIL" VIBRATOR MAY BE USED TO SMOOTH THE APPEARANCE OF THE SURFACE, BUT CONTRACTOR SHALL USE A WOOD FLOAT TO SMOOTH AND GRADE THE GROUT AROUND THE BOULDERS.
 - GROUT SHOULD BE TROWELED OUT AND FINISHED TO MINIMIZE VISIBILITY.
 - CLEAN AND WASH ANY SPILLAGE BEFORE THE GROUT SETS SO THE VISUAL SURFACES OF BOULDERS WILL BE FREE OF GROUT TO PROVIDE A CLEAN, NATURAL APPEARANCE, OR IF WASHING DOES NOT CLEAN OFF GROUT RESIDUE, CONTRACTOR SHALL WASH OFF ANY GROUT RESIDUE WITH MURIATIC ACID AND WATER, USING A BRUSH TO SCRUB OFF THE RESIDUE.
 - GROUT SHALL RECEIVE COLD OR HOT WEATHER PROTECTION IN ACCORDANCE WITH SECTIONS 500 AND 600 OF THE CITY OF COLORADO SPRINGS STANDARD SPECIFICATIONS.

RIPRAP

- RIPRAP USED SHALL BE THE TYPE DESIGNATED ON THE DRAWINGS AND SHALL CONFORM TO THE FOLLOWING:

Riprap Designation	% Smaller Than Given Size By Weight	Intermediate Rock Dimension (inches)	d50* (inches)
Type VH	70 - 100	41	24
	50 - 70	33	
	35 - 50	24	
	2 - 10	9	
*d50 = Mean Particle Size			

- THE RIPRAP DESIGNATION AND TOTAL THICKNESS OF RIPRAP SHALL BE AS SHOWN ON THE DRAWINGS. THE MAXIMUM STONE SIZE SHALL NOT BE LARGER THAN THE THICKNESS OF THE RIPRAP.
- NEITHER WIDTH NOR THICKNESS OF A SINGLE STONE OF RIPRAP SHALL BE LESS THAN ONE-THIRD (1/3) OF ITS LENGTH.
- THE SPECIFIC GRAVITY OF THE RIPRAP SHALL BE TWO AND ONE-HALF (2.5) OR GREATER.
- RIPRAP SPECIFIC GRAVITY SHALL BE ACCORDING TO THE BULK-SATURATED, SURFACE-DRY BASIS, IN ACCORDANCE WITH AASHTO T85.
- THE BULK DENSITY FOR THE RIPRAP SHALL BE 1.3 TON/CY OR GREATER.
- THE RIPRAP SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN FORTY PERCENT (40%) AFTER FIVE HUNDRED (500) REVOLUTIONS WHEN TESTED IN ACCORDANCE WITH AASHTO T96.
- THE RIPRAP SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN TEN PERCENT (10%) AFTER FIVE (5) CYCLES WHEN TESTED IN ACCORDANCE WITH AASHTO T104 FOR LEDGE ROCK USING SODIUM SULFATE.
- THE RIPRAP SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN TEN PERCENT (10%) AFTER TWELVE (12) CYCLES OF FREEZING AND THAWING WHEN TESTED IN ACCORDANCE WITH AASHTO T103 FOR LEDGE ROCK, PROCEDURE A.
- ROCK SHALL BE FREE OF CALCITE INTRUSIONS.
- GRADATION:
 - EACH LOAD OF RIPRAP SHALL BE REASONABLY WELL GRADED FROM THE SMALLEST TO THE LARGEST SIZE SPECIFIED.
 - STONES SMALLER THAN THE TWO TO TEN PERCENT (2 TO 10%) SIZE WILL NOT BE PERMITTED IN AN AMOUNT EXCEEDING TEN PERCENT (10%) BY WEIGHT OF EACH LOAD.
 - CONTROL OF GRADATION SHALL BE BY VISUAL INSPECTION. HOWEVER IN THE EVENT ENGINEER DETERMINES THE RIPRAP TO BE UNACCEPTABLE, ENGINEER SHALL PICK TWO (2) RANDOM TRUCKLOADS TO BE DUMPED AND CHECKED FOR GRADATION.
 - MECHANICAL EQUIPMENT AND LABOR NEEDED TO ASSIST IN CHECKING GRADATION SHALL BE PROVIDED BY CONTRACTOR AT NO ADDITIONAL COST.

- BROKEN CONCRETE OR ASPHALT PAVEMENT SHALL NOT BE ACCEPTABLE FOR USE IN THE WORK.
- ROUNDED RIPRAP (RIVER ROCK) IS NOT ACCEPTABLE, UNLESS SPECIFICALLY DESIGNATED ON THE DRAWINGS.
- COLOR SHALL BE CONSISTENT ON THE ENTIRE PROJECT AND SHALL MATCH THE COLOR OF ROCK TO BE USED FOR ALL OTHER PORTIONS OF THE WORK. RIPRAP PLACEMENT
- FOLLOWING ACCEPTABLE PLACEMENT OF GRANULAR BEDDING, RIPRAP PLACEMENT SHALL COMMENCE AS FOLLOWS:
 - MACHINE PLACED RIPRAP:
 - RIPRAP SHALL BE PLACED ON THE PREPARED SLOPE OR CHANNEL BOTTOM AREAS IN A MANNER WHICH WILL PRODUCE A REASONABLY WELL GRADED MASS OF STONE WITH THE MINIMUM PRACTICABLE PERCENTAGE OF VOIDS.
 - RIPRAP SHALL BE MACHINE PLACED, UNLESS OTHERWISE STIPULATED IN THE DRAWINGS OR SPECIFICATIONS.
 - IT IS THE INTENT OF THESE SPECIFICATIONS TO PRODUCE A FAIRLY COMPACT RIPRAP PROTECTION IN WHICH ALL SIZES OF MATERIAL ARE PLACED IN THEIR PROPER PROPORTIONS. UNLESS OTHERWISE AUTHORIZED BY ENGINEER, THE RIPRAP PROTECTION SHALL BE PLACED IN CONJUNCTION WITH THE CONSTRUCTION OF EMBANKMENT OR CHANNEL BOTTOM WITH ONLY SUFFICIENT DELAY IN CONSTRUCTION OF THE RIPRAP PROTECTION, AS MAY BE NECESSARY, TO ALLOW FOR PROPER CONSTRUCTION OF THE PORTION OF THE EMBANKMENT AND CHANNEL BOTTOM WHICH IS TO BE PROTECTED.

- SLOPE PLACEMENT:
 - WHEN RIPRAP IS PLACED ON SLOPE, PLACEMENT SHALL COMMENCE AT THE BOTTOM OF THE SLOPE WORKING UP THE SLOPE.
- THE ENTIRE MASS OF RIPRAP SHALL BE PLACED ON EITHER CHANNEL SLOPE OR BOTTOM SO AS TO BE IN CONFORMANCE WITH THE REQUIRED GRADATION MIXTURE AND TO LINE, GRADE, AND THICKNESS SHOWN ON THE DRAWINGS.
- RIPRAP SHALL BE PLACED TO FULL COURSE THICKNESS AT ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACING THE UNDERLYING BEDDING MATERIAL. PLACING OF RIPRAP IN LAYERS, OR BY DUMPING INTO CHUTES, OR BY SIMILAR METHODS SHALL NOT BE PERMITTED.
- ALL MATERIAL USED FOR RIPRAP PROTECTION FOR CHANNEL SLOPE OR BOTTOM SHALL BE PLACED AND DISTRIBUTED SUCH THAT THERE SHALL BE NO LARGE ACCUMULATIONS OF EITHER THE LARGER OR SMALLER SIZES OF STONE. SOME HAND PLACEMENT MAY BE REQUIRED TO ACHIEVE THIS DISTRIBUTION.
- THE BASIC PROCEDURE SHALL RESULT IN LARGER MATERIALS FLUSH TO THE TOP SURFACE WITH FACES AND SHAPES ARRANGED TO MINIMIZE VOIDS, AND SMALLER MATERIAL BELOW AND BETWEEN LARGER MATERIALS.
- SURFACE GRADE SHALL BE A PLANE OR AS INDICATED, BUT PROJECTIONS ABOVE OR DEPRESSIONS UNDER THE FINISHED DESIGN GRADE BY MORE THAN TEN PERCENT (10%) OF THE ROCK LAYER THICKNESS SHALL NOT BE ALLOWED.
- SMALLER ROCK SHALL BE SECURELY LOCKED BETWEEN THE LARGER STONE. IT IS ESSENTIAL THAT THE MATERIAL BETWEEN THE LARGER STONES NOT BE LOOSE OR EASILY DISPLACED BY FLOW OR BY VANDALISM.
- THE STONE SHALL BE CONSOLIDATED BY THE BUCKET OF THE BACKHOE OR OTHER MEANS THAT WILL CAUSE INTERLOCKING OF THE MATERIAL.
- ALL ROCK IS TO BE PLACED IN A DEWATERED CONDITION BEGINNING AT THE TOE OF THE SLOPE OR OTHER LOWEST POINT.
- CONTRACTOR SHALL MAINTAIN THE RIPRAP PROTECTION UNTIL ACCEPTED. ANY MATERIAL DISPLACED FOR ANY REASON SHALL BE REPLACED TO THE LINES AND GRADES SHOWN ON THE DRAWINGS AT NO ADDITIONAL COST TO OWNER. IF THE BEDDING MATERIALS ARE REMOVED OR DISTURBED, SUCH MATERIAL SHALL BE REPLACED PRIOR TO REPLACING THE DISPLACED RIPRAP

BEDDING

REQUIREMENTS FOR CDOT TYPE II BEDDING SHALL CONFORM TO CDOT SECTION 703.09 CLASS A EXCEPT AS MODIFIED HEREIN.

- GRADATION FOR GRANULAR BEDDING:

Percent by Weight Passing Square-Mesh Sieves	
U.S. Standard Sieve Size	Type II (CDOT Sect. 703.09 Class A)
3 inches	90 - 100
¾ inch	20 - 90
No. 4	0 - 20
No. 200	0 - 3

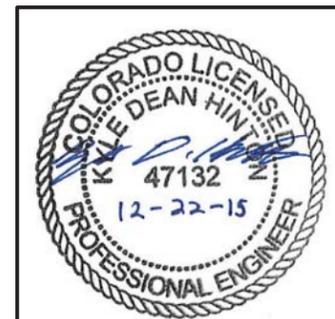
- GRANULAR BEDDING DESIGNATION AND TOTAL THICKNESS OF BEDDING SHALL BE AS SHOWN ON THE DRAWINGS.

- GRANULAR BEDDING SHALL MEET THE SAME REQUIREMENTS FOR SPECIFIC GRAVITY, ABSORPTION, ABRASION, SODIUM SULFATE SOUNDNESS, CALCITE INTRUSION, AND FREEZE-THAW DURABILITY AS REQUIRED FOR RIPRAP.
 - BROKEN CONCRETE ASPHALT PAVEMENT OR SLEDGE, SHALL NOT BE ACCEPTABLE FOR USE IN THE WORK. ROUNDED RIVER ROCK IS NOT ACCEPTABLE UNLESS SPECIFICALLY DESIGNATED ON THE DRAWINGS.
 - THE REQUIREMENTS FOR THE WEAR TEST IN AASHTO T96 SHALL NOT APPLY. BEDDING PLACEMENT

- AFTER AN ACCEPTABLE SUBGRADE IS ESTABLISHED, BEDDING SHALL BE IMMEDIATELY PLACED AND LEVELED TO THE SPECIFIED ELEVATION ON THE DRAWINGS.
- IMMEDIATELY FOLLOWING THE PLACEMENT OF THE BEDDING MATERIAL, THE RIPRAP SHALL BE PLACED.
- IF BEDDING MATERIAL IS DISTURBED FOR ANY REASON, IT SHALL BE REPLACED AND GRADED AT CONTRACTOR'S EXPENSE.

EARTHWORK

- EARTHWORK SHALL BE PER SECTION 600 OF THE CITY OF COLORADO SPRINGS STANDARD SPECIFICATIONS EXCEPT AS MODIFIED BY THE SPECIAL TECHNICAL SPECIFICATIONS.
- TEMPORARY EXCAVATION SLOPES SHALL BE IN ACCORDANCE WITH O.S.H.A REQUIREMENTS.
- WATER FOR COMPACTION WILL NOT BE MEASURED AND PAID SEPARATELY, BUT WILL BE INCLUDED IN ALL EARTHWORK.
- WATER WILL BE USED AS A DUST PALLIATIVE WHERE REQUIRED. LOCATIONS WILL BE AS ORDERED BY THE OWNER. WATER WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE SUBSIDIARY TO EARTHWORK.



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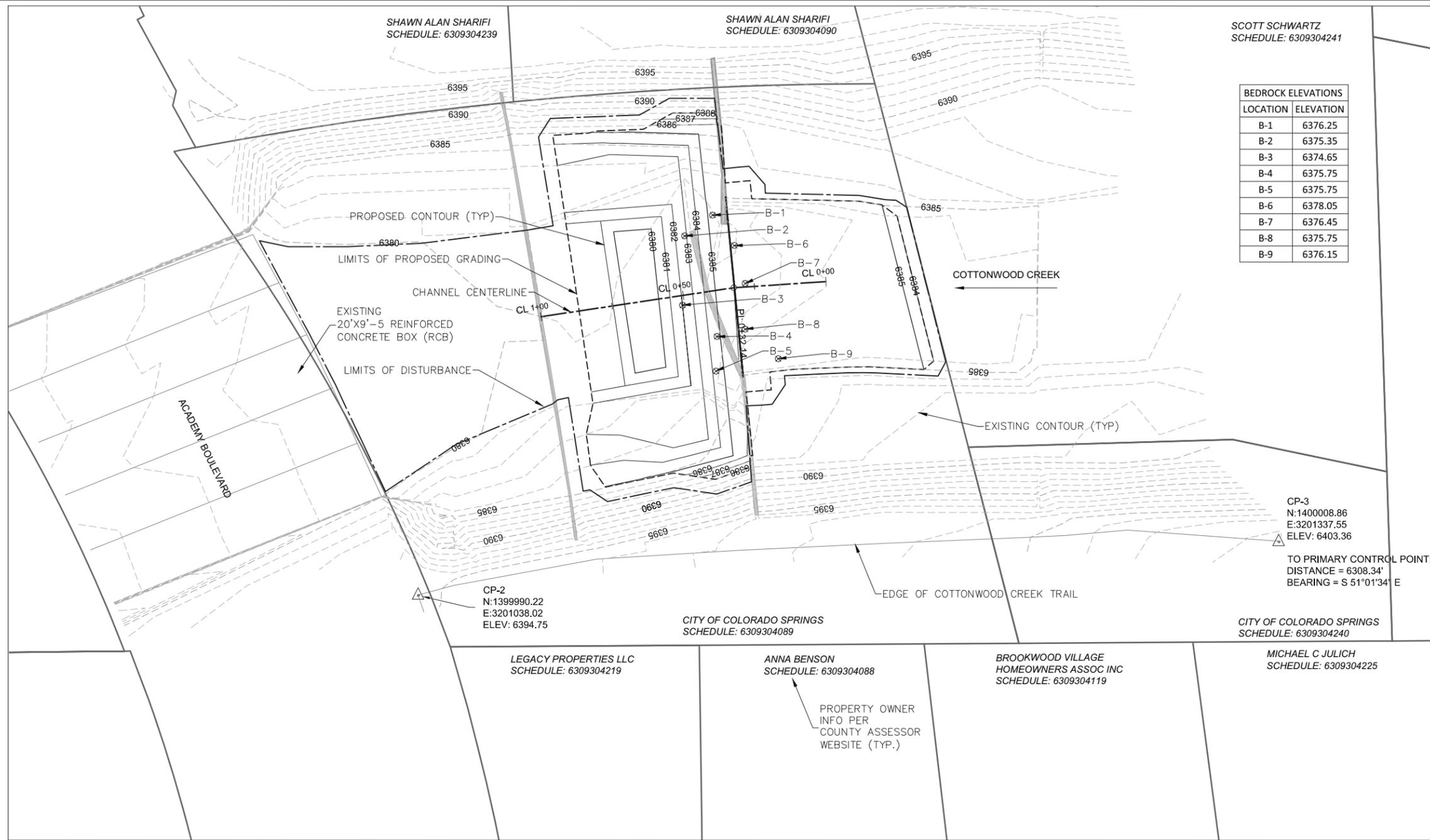
PROJECT NAME
MAY 2015 FEMA PROJECTS

COTTONWOOD CREEK CUTOFF WALL/GRADE CONTROL STRUCTURE - FLD004

REV.	DATE	DESCRIPTION	BY

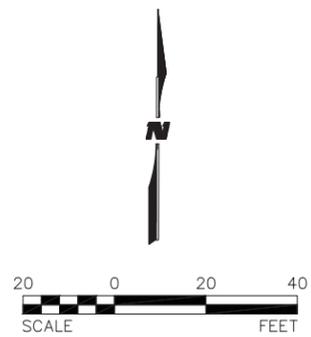
PROJECT NO: 15-600-067-00
 DESIGNED BY: KDH
 DRAWN BY: ATC
 CHECKED BY: VSF
 DATE: DECEMBER 2015
 SHEET TITLE
SPECIFICATION NOTES

SHEET NO:
03



SCOTT SCHWARTZ
SCHEDULE: 6309304241

LOCATION	ELEVATION
B-1	6376.25
B-2	6375.35
B-3	6374.65
B-4	6375.75
B-5	6375.75
B-6	6378.05
B-7	6376.45
B-8	6375.75
B-9	6376.15



LEGEND

- CONTROL POINT
- PARCEL LINE
- LIMITS OF GRADING
- LIMITS OF DISTURBANCE
- BEDROCK SURFACE PROBE LOCATION

CP-3
N:1400008.86
E:3201337.55
ELEV: 6403.36

TO PRIMARY CONTROL POINT:
DISTANCE = 6308.34'
BEARING = S 51°01'34" E

SHAWN ALAN SHARIFI
SCHEDULE: 6309304239

SHAWN ALAN SHARIFI
SCHEDULE: 6309304090

LEGACY PROPERTIES LLC
SCHEDULE: 6309304219

ANNA BENSON
SCHEDULE: 6309304088

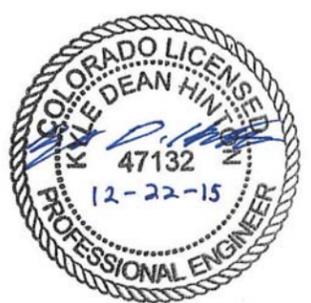
BROOKWOOD VILLAGE
HOMEOWNERS ASSOC INC
SCHEDULE: 6309304119

MICHAEL C JULICH
SCHEDULE: 6309304225

CHANNEL CENTERLINE (CL)				
	STA.	ELEV.*	NORTHING	EASTING
BEGIN PLACE TYPE H RIPRAP	0+23.13	6385.00	1400097.68	3201156.69
BEGIN PLACE GROUDED BOULDERS	0+28.13	6385.00	1400097.41	3201151.68
SHEET PILE WALL PT	0+32.13	6385.00	1400097.08	3201147.84
PVI	0+38.63	6385.00	1400096.12	3201141.41
PVI	0+58.63	6380.00	1400093.16	3201121.62
PVI	0+70.63	6380.00	1400091.41	3201109.78
PVI	0+74.63	6381.00	1400090.80	3201105.81
END PLACE GROUDED BOULDERS / END PROP GRADING	0+86.63	6381.00	1400089.01	3201093.87

*ELEVATIONS REFLECT PROPOSED SURFACE GRADE

- NOTES:
- PRIMARY CONTROL POINT LOCATION - DESCRIPTION: FIMS MONUMENT NUMBER 94 IS A BERNTSEN C1DB 3.5-INCH DIAMETER BRASS FIMS CAP SET IN THE TOP OF THE STORM SEWER INLET, LOCATED AT THE NORTHEAST CORNER OF UNION BOULEVARD AND TECUMSEH ROAD. ELEV: 6692.98 NORTHING: 1403976.6 EASTING: 3206241.85
 - CP-2 AND CP-3 ARE A CHISELED "+" IN THE CONCRETE ALONG EDGE OF COTTONWOOD TRAIL.
 - HORIZONTAL CONTROL VALUES ARE BASED ON THE NORTH AMERICAN DATUM, 1983 AND WHEN REPRESENTED AS STATE PLANE COORDINATES ARE COLORADO CENTRAL ZONE - 1983, CONSTRAINED TO VALUES AS PUBLISHED BY THE NGS IN 1986.
 - VERTICAL CONTROL VALUES ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM, 1929 AND THE 1960 SUPPLEMENTARY ADJUSTMENT.
 - BEDROCK ELEVATIONS PROVIDED ARE APPROXIMATE TO BE USED FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR IS RESPONSIBLE FOR ENSURING SHEET PILE IS EXTENDED TO BEDROCK AND DRIVEN TO REFUSAL
 - SEE SHEET 05 "DROP STRUCTURE PLAN SHEET" FOR DROP STRUCTURE IMPROVEMENTS.



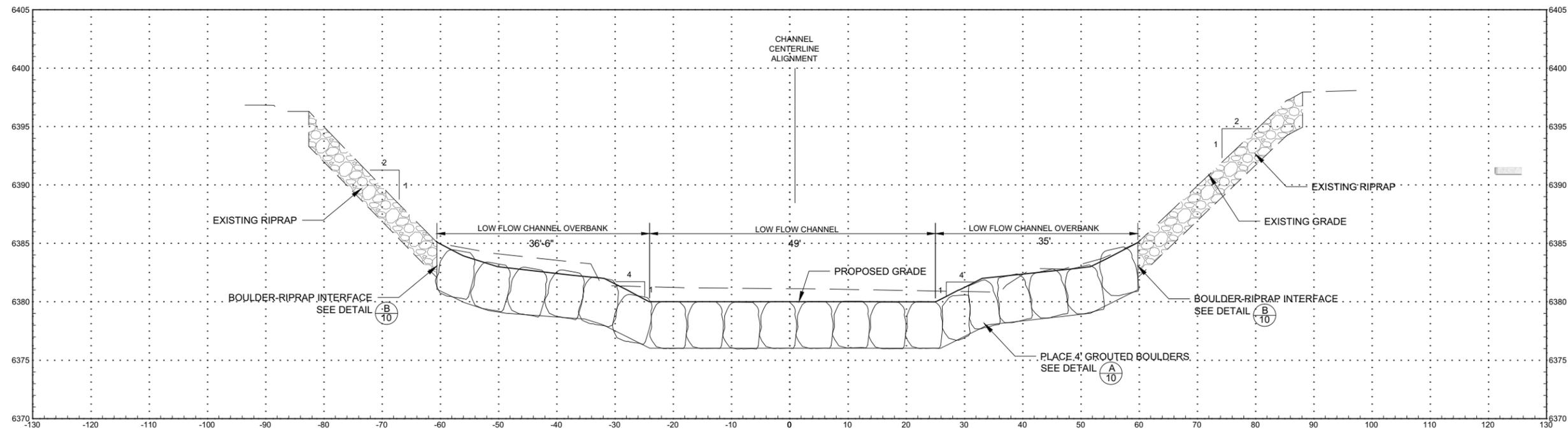
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PROJECT NAME
MAY 2015 FEMA PROJECTS

COTTONWOOD CREEK CUTOFF WALL/GRADE CONTROL STRUCTURE - FLD004

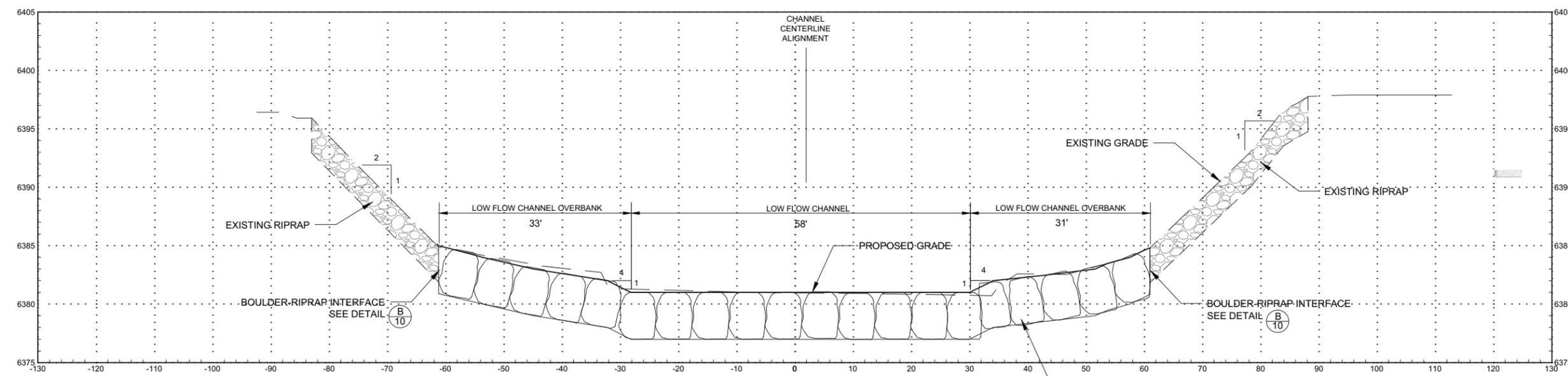
REV.	DATE	DESCRIPTION	BY

PROJECT NO: 15-600-067-00
DESIGNED BY: KDH
DRAWN BY: ATC
CHECKED BY: VSF
DATE: DECEMBER 2015
SHEET TITLE
SURVEY CONTROL, GEOTECHNICAL AND PROPERTY OWNERSHIP INFO
SHEET NO:
04



A
07 CROSS SECTION C/L STA 0+65.39

HORIZONTAL SCALE = 1" : 20'
 VERTICAL SCALE = 1" : 10'



B
07 CROSS SECTION C/L STA 0+78.48

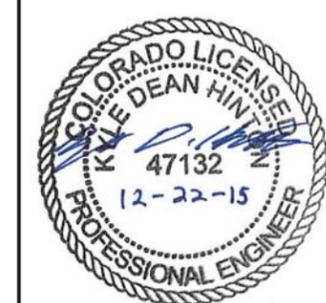
HORIZONTAL SCALE = 1" : 20'
 VERTICAL SCALE = 1" : 10'

LEGEND:
 --- EXISTING GROUND
 ——— PROPOSED GRADE



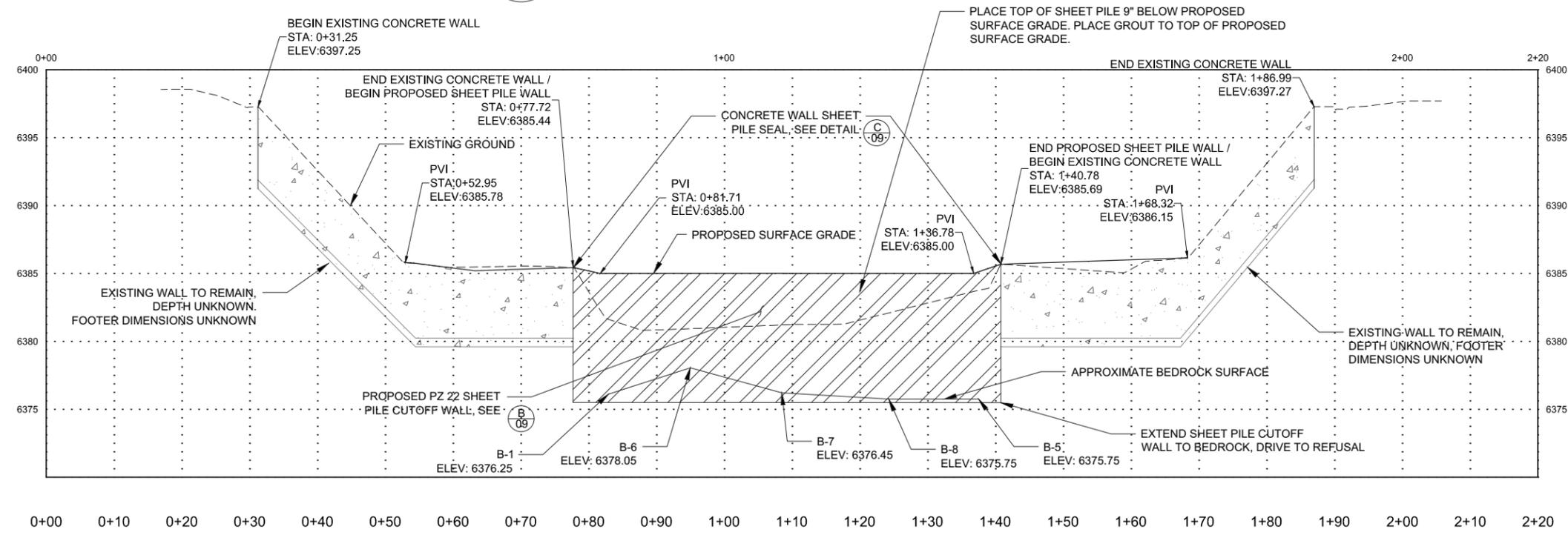
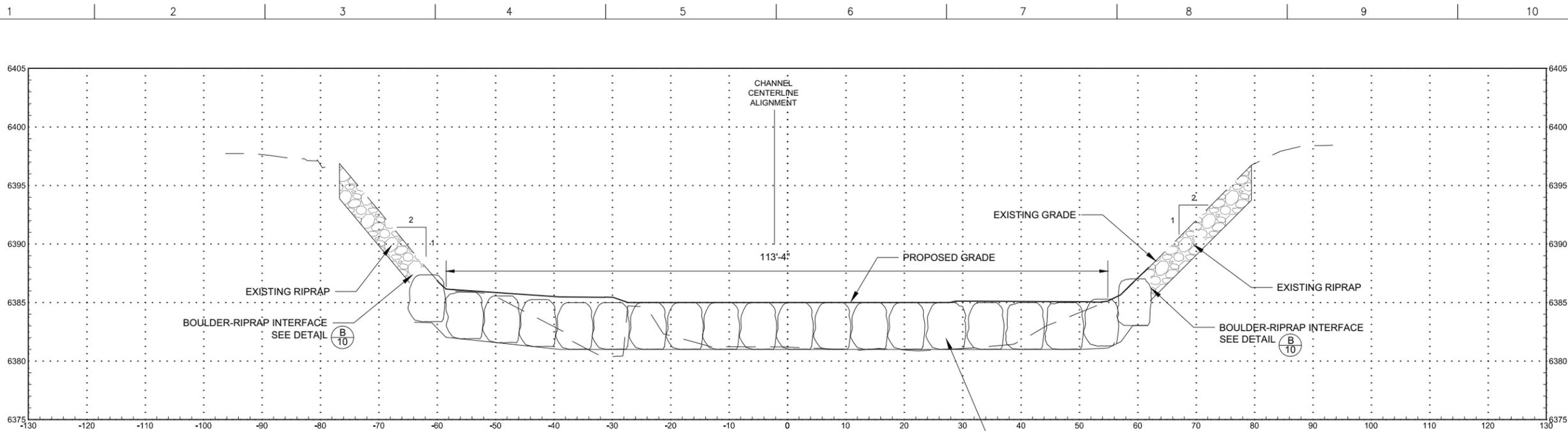
PROJECT NAME
MAY 2015 FEMA PROJECTS
COTTONWOOD CREEK CUTOFF WALL/GRADE CONTROL STRUCTURE - FLD004

REV.	DATE	DESCRIPTION	BY



PROJECT NO: 15-600-067-00
 DESIGNED BY: KDH
 DRAWN BY: ATC
 CHECKED BY: VSF
 DATE: DECEMBER 2015
 SHEET TITLE
TYPICAL SECTIONS
 SHEET NO:
07

12/18/2015 M:\MSD\15-600-067-002_Disciplines_SHEETS\Cottonwood_Creek\12-14 - Cross Sections.dwg



CUTOFF WALL				
	STA.	ELEV.	NORTHING	EASTING
BEGIN EXISTING CONCRETE WALL	0+31.25	6397.25	1400175.10	3201140.60
PVI	0+52.96	6385.78	1400153.49	3201142.55
END EXISTING WALL / BEGIN PROPOSED SHEET PILE	0+77.72	6385.44	1400128.78	3201144.97
PVI	0+81.71	6385.00	1400124.81	3201145.38
PVI	1+36.78	6385.00	1700070.03	3201153.03
END PROPOSED SHEET PILE / BEGIN EXISTING WALL	1+40.78	6385.69	1400066.05	3201151.44
PVI	1+68.32	6386.15	1400038.62	3201153.84
END EXISTING CONCRETE WALL	1+86.99	6397.27	1400020.04	3201155.65

NOTES:

- MAKE CLEAN VERTICAL SAW CUTS AT ENDS AND DEMO AND HAUL OFFSITE EXISTING CONCRETE WALL FROM STA. 0+77.72 TO STA. 1+40.78
- BEDROCK ELEVATIONS PROVIDED ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR IS RESPONSIBLE FOR ENSURING SHEET PILE IS EXTENDED TO BEDROCK AND DRIVEN TO REFUSAL

LEGEND:

- EXISTING GRADE
- PROPOSED GRADE
- B-1 → BEDROCK PROBE LOCATION



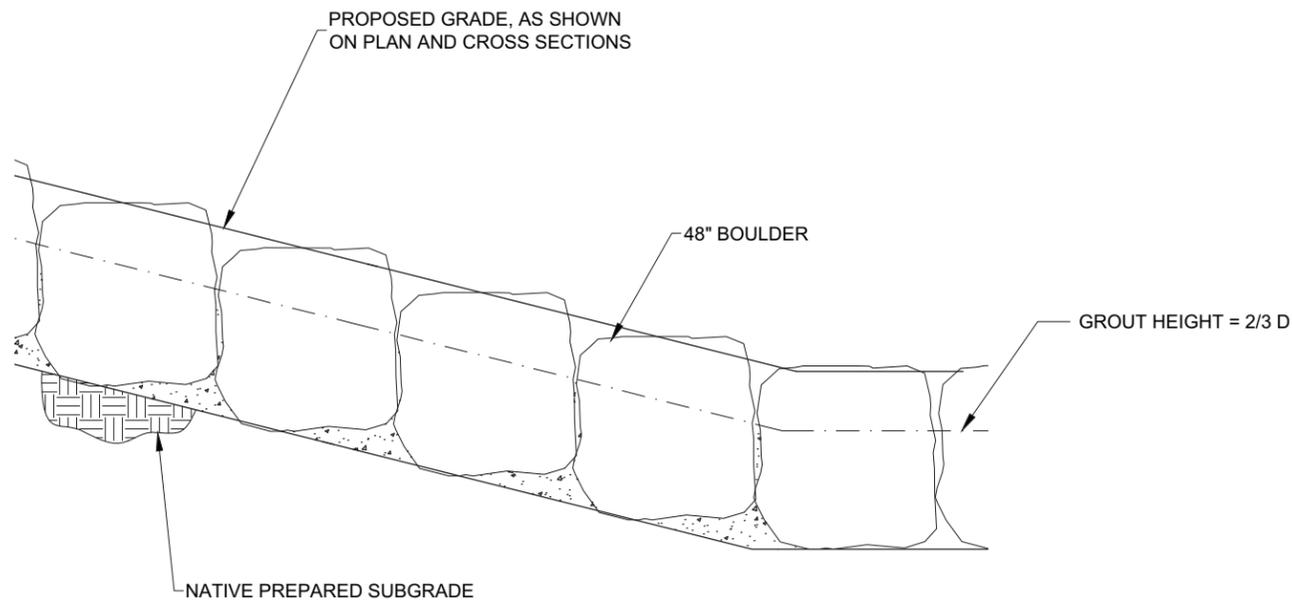
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PROJECT NAME
MAY 2015 FEMA PROJECTS
 COTTONWOOD CREEK CUTOFF WALL/GRADE CONTROL STRUCTURE - FLD004

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 15-600-067-00
 DESIGNED BY: KDH
 DRAWN BY: ATC
 CHECKED BY: VSF
 DATE: DECEMBER 2015
 SHEET TITLE
TYPICAL SECTION AND CUTOFF WALL SECTION
 SHEET NO:
08

12/18/2015 M:\MSD\15-600-067-002_Disciplines_SHEETS\Cottonwood_Creek\9-11 - Typical Sections & Details.dwg

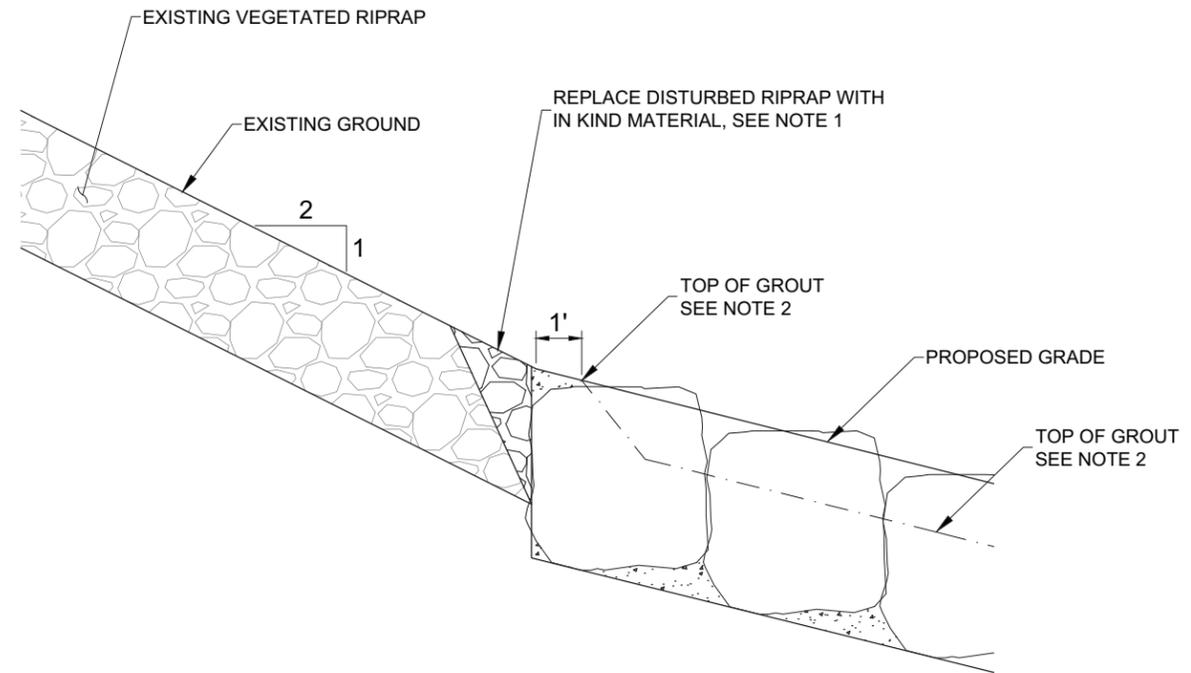


A
10
GROUTED BOULDER INSTALLATION



NOTES:

1. BEFORE GROUTING, CLEAN ALL DIRT AND MATERIALS FROM ROCK THAT COULD PREVENT THE GROUT FROM BONDING TO ROCK.
2. TOP 1/3 OF BOULDERS TO REMAIN CLEAN AND FREE OF GROUT
3. PLACE BOULDERS SUCH THAT A FLAT SURFACE IS PRESENT ALONG THE DIRECTION OF FLOW.
4. PLACE BOULDERS TOGETHER TIGHTLY IN ORDER TO MINIMIZE REQUIRED GROUT.
5. PLACE GROUT IN A MANNER THAT FILLS ALL VOIDS TO THE SPECIFIED GROUT THICKNESS
6. SEE SPECIAL TECHNICAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.



B
10
BOULDER RIPRAP INTERFACE



NOTES:

1. IN AREAS IN WHICH VEGETATED RIPRAP IS DISTURBED DUE TO PROJECT EXCAVATION, REPLACE RIPRAP WITH IN KIND MATERIAL AND INSTALL TO EDGE OF GROUTED BOULDERS. FILL GAPS BETWEEN RIPRAP AND BOULDERS WITH GROUT. FILL VOIDS IN RIPRAP WITH SOIL. DISTURBED RIPRAP IS RIPRAP WHICH HAS MOVED FROM ITS PRE-PROJECT LOCATION DUE TO PROJECT CONSTRUCTION.
2. PLACE GROUT AT PROPOSED FINISHED SURFACE GRADE WITHIN 1' OF BOULDER-RIPRAP INTERFACE, THEN TRANSITION TO NORMAL GROUT LEVEL AS SHOWN IN DETAIL **A**10
3. COST FOR REPLACEMENT OF DISTURBED RIPRAP SHALL BE CONSIDERED INCIDENTAL TO ITEMS INCLUDED IN THE BID SCHEDULE.



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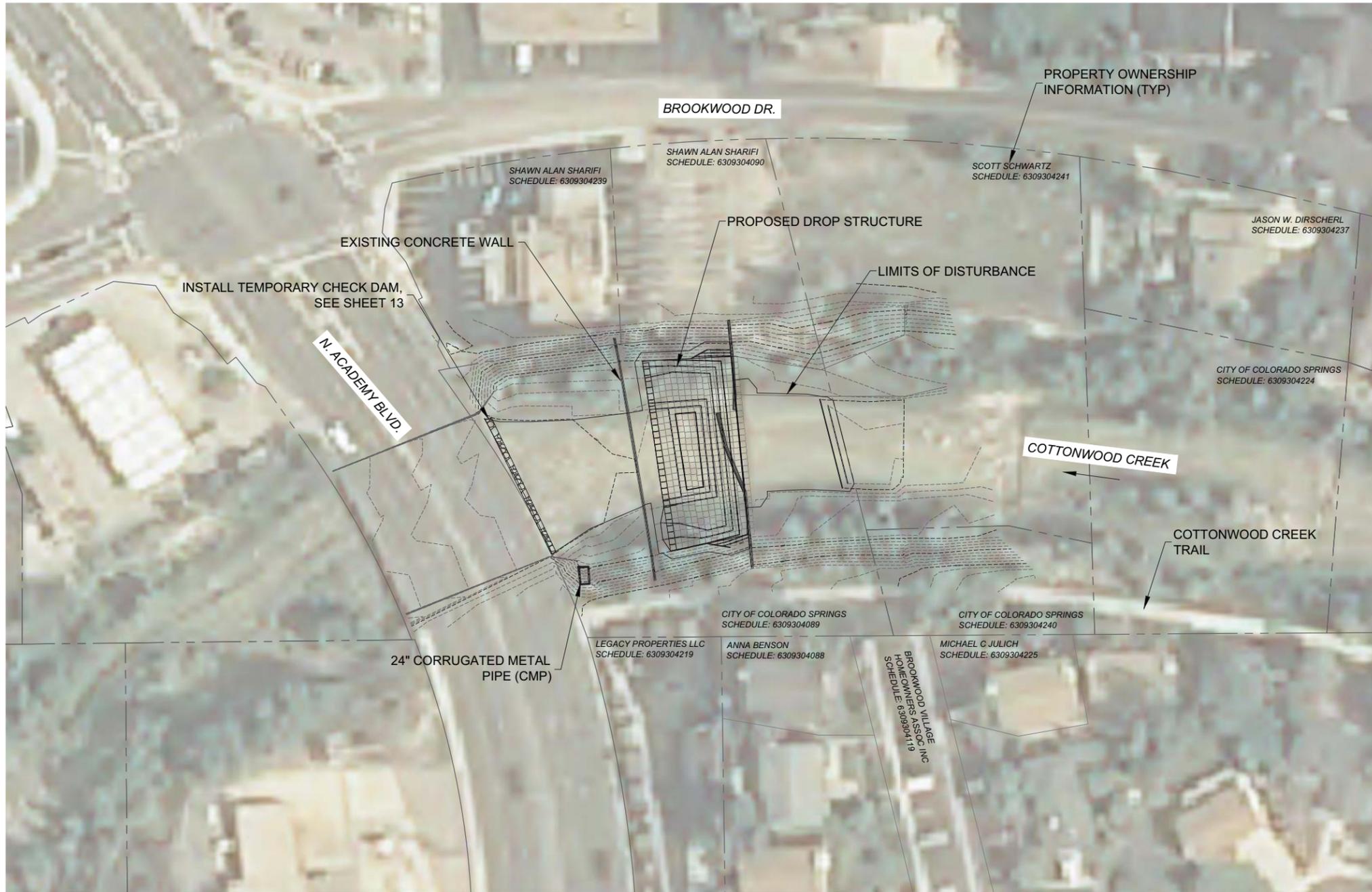
PROJECT NAME
MAY 2015 FEMA PROJECTS
COTTONWOOD CREEK CUTOFF WALL/GRADE CONTROL STRUCTURE - FLD004

REV.	DATE	DESCRIPTION	BY

PROJECT NO: 15-600-067-00
DESIGNED BY: KDH
DRAWN BY: ATC
CHECKED BY: VSF
DATE: DECEMBER 2015

SHEET TITLE
CONSTRUCTION DETAILS (2 OF 2)

SHEET NO:
10



LEGEND

-  EXISTING CONCRETE WALL
-  PROPOSED SHEET PILE WALL
-  TEMPORARY CHECK DAM
-  GROUTED BOULDERS
-  PARCEL LINE
-  EXISTING CONTOUR
-  PROPOSED CONTOUR

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PROJECT NAME
MAY 2015 FEMA PROJECTS
COTTONWOOD CREEK CUTOFF WALL/GRADE CONTROL STRUCTURE - FLD004

- NOTES:
1. LOCATIONS OF STAGING AREA AND PROJECT SITE ACCESS, INCLUDING DISPOSAL AREAS, FUELING AREAS, AND EQUIPMENT STORAGE AREAS ARE TO BE DETERMINED BY THE GENERAL CONTRACTOR AND INCLUDED IN THE CONTRACTOR'S STORMWATER MANAGEMENT PLAN.
 2. THE CONTRACTOR IS ADVISED THAT HE IS WORKING IN A DRAINAGE COURSE SUBJECT TO CONTINUOUS LOW FLOW AND INTERMITTENT FLOW OF SIGNIFICANT MAGNITUDE. CONTRACTOR SHALL HAVE ADEQUATE MANAGEMENT AND CONTROL OF WATER TO BE EXECUTED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.
 3. CONSTRUCTION VEHICLES SHOULD BE KEPT OUT OF THE ACTIVE WATERWAY TO THE MAXIMUM EXTENT PRACTICABLE.
 4. THE CONTRACTOR SHALL INSTALL ADEQUATE TEMPORARY STREAM CROSSINGS FOR CONSTRUCTION VEHICLES CROSSING THE ACTIVE WATERWAY.
 5. THE CONTRACTOR SHALL TEMPORARILY DIVERT FLOW AROUND ACTIVE EXCAVATION/WORK ZONES.

REV.	DATE	DESCRIPTION	BY

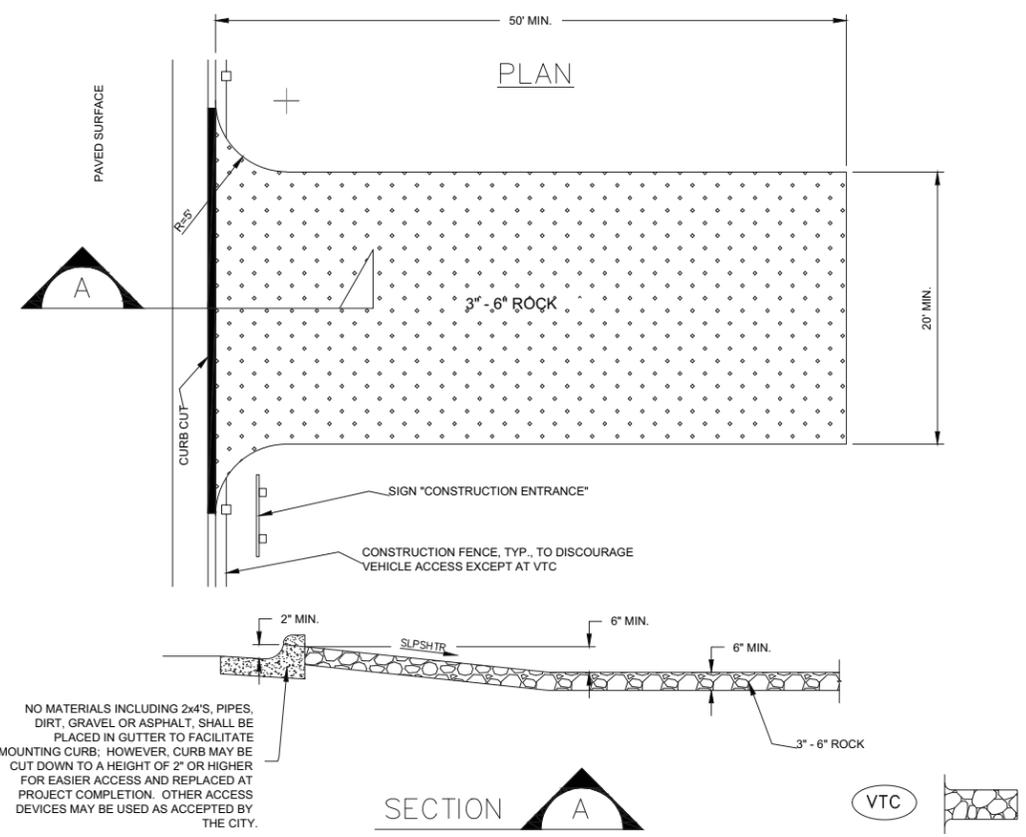
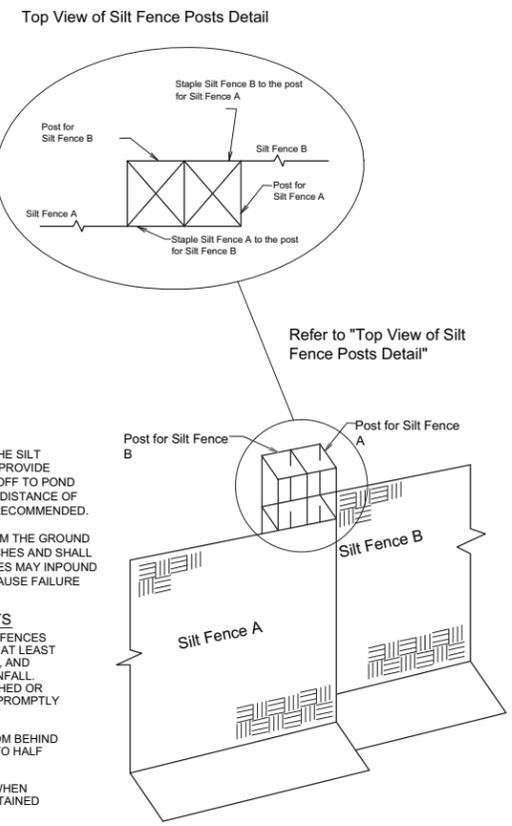
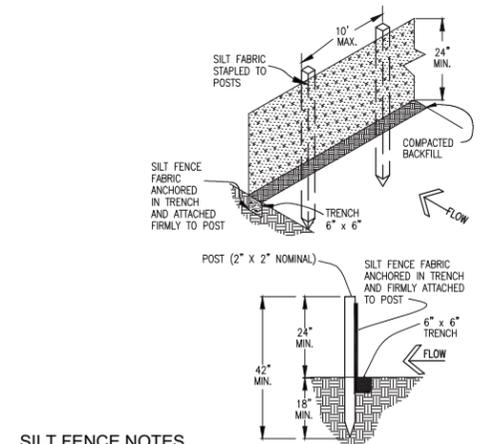
PROJECT NO: 15-600-067-00
 DESIGNED BY: KDH
 DRAWN BY: ATC
 CHECKED BY: VSF
 DATE: DECEMBER 2015

SHEET TITLE
EROSION CONTROL PLAN

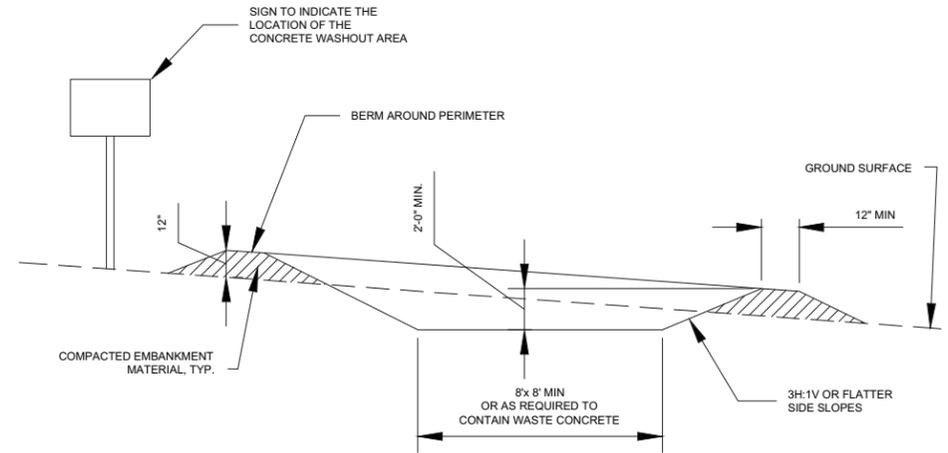
SHEET NO:
11

REV.	DATE	DESCRIPTION	BY

PROJECT NO:	15-600-067-00
DESIGNED BY:	KDH
DRAWN BY:	ATC
CHECKED BY:	VSF
DATE:	DECEMBER 2015
SHEET TITLE	
EROSION CONTROL DETAILS (1 OF 2)	
SHEET NO:	
12	



- INSTALLATION NOTES:**
- VEHICLE TRACKING CONTROL PAD SHALL BE LOCATED AT EVERY ACCESS POINT TO THE CONSTRUCTION SITE.
 - A SIGN SHALL BE PLACED NEXT TO THE VEHICLE TRACKING CONTROL PAD TO DESIGNATE THE LOCATION AS THE CONSTRUCTION ENTRANCE/EXIT.
 - VEHICLE TRACKING CONTROL (VTC) PADS SHALL CONSIST OF HARD, DENSE, DURABLE ROCK, ANGULAR IN SHAPE AND RESISTANT TO WEATHERING. ROUNDED STONE SHALL NOT BE USED, I.E., RIVER ROCK AND COBBLES. THE ROCK SHALL BE A MINIMUM OF 3" AND A MAXIMUM OF 6" DIAMETER. THE ROCK SHALL HAVE A SPECIFIC GRAVITY OF AT LEAST 2.6. CONTROL OF GRADATION WILL BE BY VISUAL INSPECTION. NOTE: OTHER MATERIALS, I.E., ROADBASE, MUD MATS, ETC., MAY BE USED IN PLACE OF ROCK UPON WRITTEN APPROVAL OF THE CITY INSPECTOR.
 - ANY CRACKED OR DAMAGED CURB AND GUTTER AND SIDEWALK SHALL BE REPLACED BY CONTRACTOR.
 - ALTHOUGH NOT NORMALLY USED, THE CITY RESERVES THE RIGHT TO REQUIRE VEHICLE TRACKING CONTROL WITH A TEMPORARY CATTLE GUARD AND/OR WHEEL WASH FACILITIES AT SITES WHERE TRACKING ONTO PAVED AREAS BECOMES A SIGNIFICANT PROBLEM AS DETERMINED BY THE CITY INSPECTOR.
 - 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 AND CONSTRUCTING A WASHWATER SEDIMENT TRAP.
- MAINTENANCE NOTES:**
- CONTRACTOR SHALL INSPECT VEHICLE TRACKING CONTROL PAD DAILY. ROCK SURFACE SHALL BE CLEAN AND LOOSE ENOUGH TO RUT SLIGHTLY UNDER WHEEL LOADS AND CAUSE LOOSE ROCK TO DISLodge MUD FROM TIRES. WHEN ROCK BECOMES COMPACTED OR FILLED WITH SEDIMENT SO THAT THE EFFECTIVENESS OF THE PAD IS DIMINISHED, CONTRACTOR SHALL RIP, TURN OVER, OR OTHERWISE LOOSEN ROCK, PLACE ADDITIONAL NEW ROCK, OR REPLACE WITH NEW ROCK AS NECESSARY TO RESTORE EFFECTIVENESS.
 - SEDIMENT AND OTHER MATERIAL SPILLED, DROPPED OR TRACKED ONTO PAVED SURFACES SHALL BE REMOVED IMMEDIATELY OR BY THE END OF EACH WORKING DAY.
 - VEHICLE TRACKING CONTROL PAD SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE AREA SHOULD BE TOPSOILED, SEEDED, CRIMPED, AND MULCHED OR OTHERWISE STABILIZED.
 - IF VEHICLE WHEEL WASH FACILITIES ARE REQUIRED, CONTRACTOR SHALL INSPECT VEHICLE TRACKING CONTROL AND WHEEL WASH FACILITIES DAILY. ACCUMULATED SEDIMENTS SHALL BE REMOVED FROM THE PAD SURFACE.
 - ACCUMULATED SEDIMENT IN THE WASHWATER/SEDIMENT TRAP SHALL BE REMOVED WHEN THE SEDIMENT REACHES AN AVERAGE DEPTH OF 12-INCHES.



- CONCRETE WASHOUT NOTES:**
- CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
 - VEHICLE TRACKING CONTROL (DETAIL SW-14) IS REQUIRED IF ACCESS TO CONCRETE WASHOUT AREA IS OFF PAVEMENT.
 - 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.
 - THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
 - AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AN ACCEPTED WASTE SITE.
 - WHEN THE CONCRETE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER ACCEPTED BY THE CITY.

REVEGETATION OF STAGING, ACCESS AND CONSTRUCTION AREAS

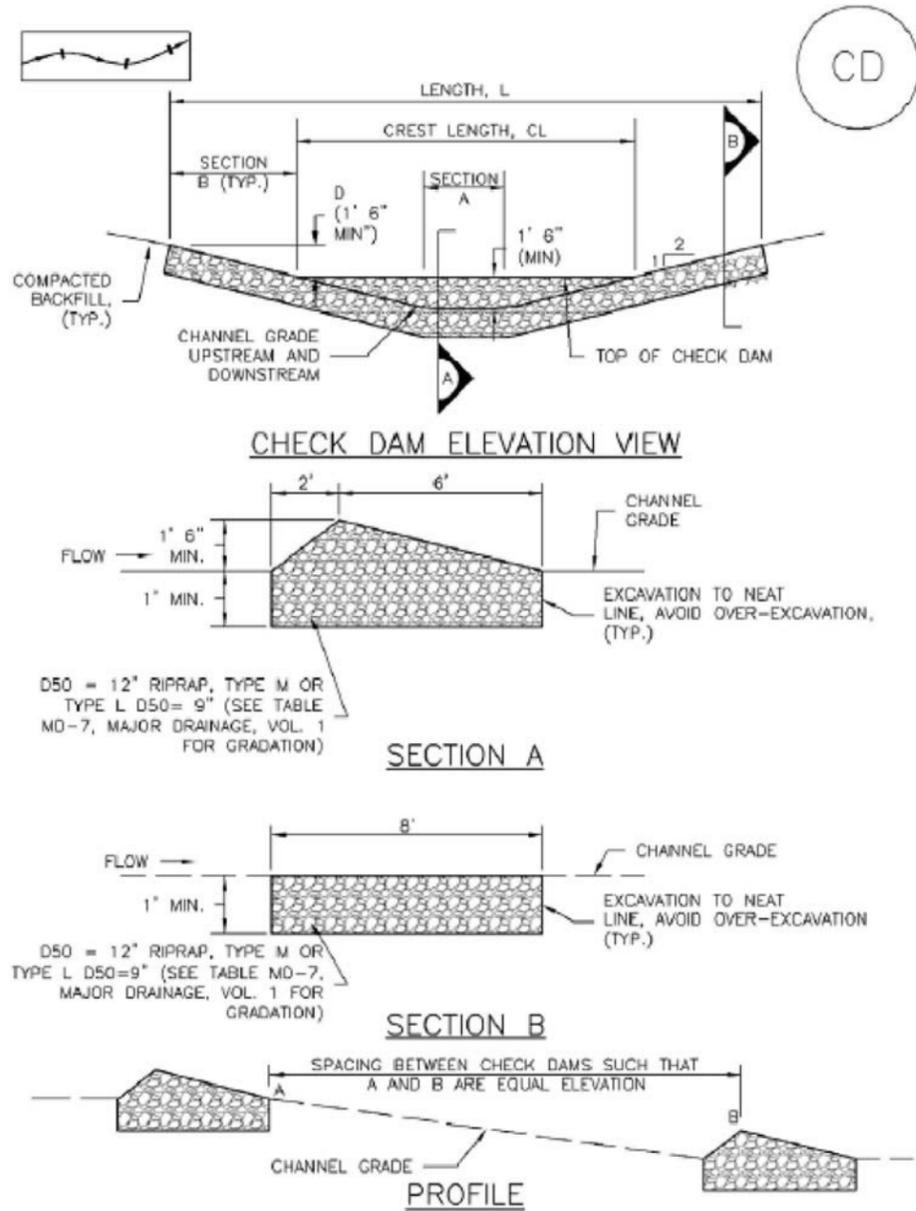
- ALL AREAS DISTURBED BY STAGING, ACCESS, OR OTHER CONSTRUCTION ACTIVITIES INSIDE OR OUTSIDE OF THE LIMITS OF DISTURBANCE SHALL BE RESTORED AND STABILIZED TO MATCH EXISTING GRADES AT THE COMPLETION OF THE PROJECT. THESE AREAS SHALL RECEIVE FERTILIZER, SEEDING, AND MULCHING AS APPROPRIATE FOR THE AREA DISTURBED IN ACCORDANCE WITH THE EROSION CONTROL REQUIREMENTS FOR THE PROJECT.
- PAYMENT FOR RESTORATION OF DISTURBED AREAS OUTSIDE THE LIMITS OF DISTURBANCE SHOWN ON THE PLANS SHALL BE CONSIDERED INCIDENTAL TO THE ITEMS ON THE BID SCHEDULE FOR THE PROJECT AND WILL NOT BE PAID SEPARATELY.
- CONTRACTOR SHALL SUBMIT SWMP AND EROSION AND STORMWATER QUALITY CONTROL PLAN (ESQCP) TO CITY FOR APPROVAL. SWMP AND ESQCP SHALL INCLUDE BMP'S FOR ALL MAJOR PHASES OF CONSTRUCTION.
- EROSION CONTROL ITEMS SHOWN ON THESE PLANS ARE MINIMUM REQUIREMENTS. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL EROSION CONTROL ITEMS NECESSARY TO COMPLY WITH REQUIREMENTS OF SWMP AND ESQCP PERMITS.
- REVEGETATE ALL DISTURBED AREA WITHIN LIMITS OF DISTURBANCE WITH WETLAND PLANTINGS EXCEPT FOR AREAS INSIDE GROUDED BOULDERS OR LOW FLOW CHANNEL. SEE SPECIAL TECHNICAL PROVISIONS FOR WETLAND PLANTINGS REQUIREMENT.

MAINTENANCE REQUIREMENTS

- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

CWA CONCRETE WASHOUT AREA

VTC VEHICLE TRACKING CONTROL



CD TEMPORARY CHECK DAM

TEMPORARY CHECK DAM NOTES

MAINTENANCE REQUIREMENTS

1. REGULAR INSPECTIONS ARE TO BE MADE OF ALL CHECK DAMS, ESPECIALLY AFTER STORM EVENTS.
2. REPLACE STONE AS NECESSARY TO MAINTAIN THE CORRECT HEIGHT OF THE DAM.
3. ACCUMULATED SEDIMENT AND DEBRIS IS TO BE REMOVED FROM BEHIND THE DAMS AFTER EACH STORM OR WHEN 1/2 OF THE ORIGINAL HEIGHT OF THE DAM IS REACHED.
3. CHECK DAMS ARE TO REMAIN IN PLACE AND OPERATIONAL UNTIL THE DRAINAGE AREA AND CHANNEL ARE PERMANENTLY STABILIZED.
4. WHEN CHECK DAMS ARE REMOVED THE CHANNEL LINING OR VEGETATION IS TO BE RESTORED.

EROSION AND SEDIMENT CONTROL NOTES

1. EROSION AND SEDIMENT CONTROL AND PERMITTING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ALL WORK SHALL BE PLANNED AND IMPLEMENTED TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENTATION, AND TO MINIMIZE THE TIME OF WORK IN THE CREEK.
2. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED PRIOR TO THE EARTHWORK OPERATIONS THEY PROVIDE CONTROL FOR. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED IN A MANNER THAT WILL PROTECT PROPERTIES, WETLANDS, WILDLIFE HABITAT, DOWN STREAM WATER COURSE AND PUBLIC FACILITIES FROM THE ADVERSE EFFECTS OF EROSION AND SEDIMENTATION AS A RESULT OF CONSTRUCTION AND EARTHWORKS ACTIVITIES WITHIN THE PROJECT SITE.
3. ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES THAT ARE NOT PAVED OR IN THE LOW FLOW CHANNEL SHALL BE REVEGETATED IN CONFORMANCE WITH THE PLANS AND SPECIFICATIONS OR DIRECTION BY THE OWNER.
4. ALL EARTH DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED AND COMPLETED IN SUCH A MANNER SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME.
5. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE DESIGNED AND PROTECTED TO MINIMIZE EROSION
6. NO PERSON SHALL CAUSE, PERMIT, OR CONTRIBUTE TO THE DISCHARGE INTO THE MUNICIPAL SEPARATE STORM SEWER POLLUTANTS THAT COULD CAUSE THE CITY OF COLORADO SPRINGS TO BE IN VIOLATION OF ITS COLORADO DISCHARGE PERMIT SYSTEM MUNICIPAL STORMWATER DISCHARGE PERMIT.
7. THE CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, AND SAND THAT MAY ACCUMULATE IN THE STORM SEWER OR OTHER DRAINAGE CONVEYANCE SYSTEM AND STORMWATER APPURTENANCES AS A RESULT OF SITE CONSTRUCTION.
8. ALL TEMPORARY EROSION CONTROL FACILITIES INCLUDING BMP'S AND ALL PERMANENT FACILITIES INTENDED TO CONTROL EROSION OF ANY EARTH DISTURBANCE OPERATIONS, SHALL BE INSTALLED AS DEFINED IN THE APPROVED PLANS AND SPECIFICATIONS AND MAINTAINED THROUGHOUT THE DURATION OF THE EARTH DISTURBANCE OPERATION.
9. PERMANENT SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN FOURTEEN (14) CALENDAR DAYS AFTER FINAL GRADING, OR FINAL EARTH DISTURBANCE, HAS BEEN COMPLETED. DISTURBED AREAS AND STOCKPILES WHICH ARE NOT AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS SHALL ALSO BE MULCHED WITHIN 21 DAYS AFTER INTERIM GRADING. AN AREA THAT IS GOING TO REMAIN IN AN INTERIM STATE FOR MORE THAN 60 DAYS SHALL ALSO BE SEEDED AND BLANKETED AS REQUIRED. ALL TEMPORARY SOIL EROSION CONTROL MEASURES AND BMP'S SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED.
10. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ADEQUATE SEDIMENT AND EROSION CONTROL MEASURES FOR ALL AREAS DISTURBED BY THE CONTRACTOR IN THE PERFORMANCE OF THE PROJECT WORK.
11. EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED REGULARLY BY THE CONTRACTOR AND AFTER EVERY STORMWATER RUNOFF EVENT. EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE MAINTAINED CONTINUOUSLY AS REQUIRED TO MAINTAIN FUNCTION UNTIL FINAL STABILIZATION IS ACHIEVED.
12. DEWATERING AND TEMPORARY EROSION CONTROL FOR CONSTRUCTION WITHIN THE STREAM BED SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND ALL APPLICABLE STATE, COUNTY, CITY, AND FEDERAL REGULATIONS.
13. THE CONTRACTOR IS REQUIRED TO INSTALL VEHICLE TRACKING CONTROL (VTC) AT ACCEPTABLE LOCATIONS OF THE PROJECT INGRESS AND EGRESS IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT FROM THE SITE. CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN SEDIMENT FREE SURFACES ON ALL SURROUNDING ROADWAYS AND PAVED PARKING LOTS. THE CONTRACTOR IS RESPONSIBLE FOR PROMPT CLEANUP OF ANY SEDIMENT TRACKED ONTO ADJACENT STREETS AND PARKING LOTS FROM THE PROJECT AREA.
14. TO THE EXTENT PRACTICAL FLOW SHALL BE DIVERTED AROUND EARTH DISTURBING WORK PERFORMED IN THE ACTIVE STREAM BED.
15. GRADING ACTIVITIES ADJACENT TO THE ACTIVE STREAM BED SHALL BE PERFORMED IN A MANNER THAT MINIMIZES SPILLAGE OF SOIL INTO THE ACTIVE STREAM.
16. GRAVEL FILTRATION PACKS OR OTHER APPROPRIATE FILTRATION OR SETTLING METHODS SHALL BE UTILIZED TO MINIMIZE SEDIMENT CONTENT IN PUMPAGE FROM DEWATERING OR DIVERSION ACTIVITIES.
17. FERTILIZER SHALL BE APPLIED AT A RATE OF 50 LBS. OF AVAILABLE NITROGEN PER ACRE AND 40 LBS. OF AVAILABLE PHOSPHORUS PER ACRE.

REFER TO URBAN DRAINAGE AND FLOOD CONTROL DISTRICT CRITERIA MANUAL, VOLUME 3 FOR ADDITIONAL BMP DETAILS.

PROJECT NAME
MAY 2015 FEMA PROJECTS
COTTONWOOD CREEK CUTOFF WALL/GRADE CONTROL STRUCTURE - FLD004

REV.	DATE	DESCRIPTION	BY

PROJECT NO:	15-600-067-00
DESIGNED BY:	KDH
DRAWN BY:	ATC
CHECKED BY:	VSF
DATE:	DECEMBER 2015

SHEET TITLE
EROSION CONTROL DETAILS (2 OF 2)