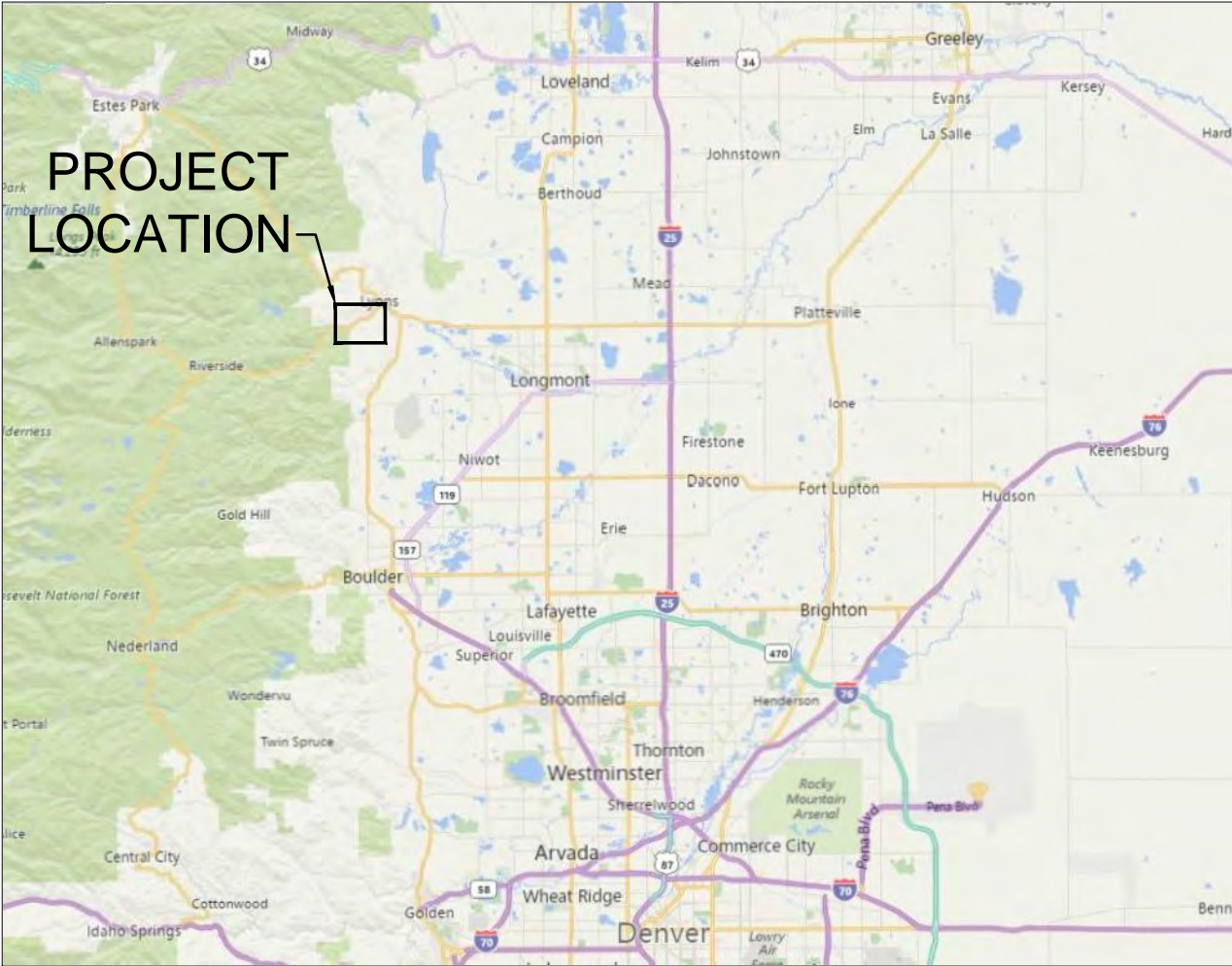


BOULDER COUNTY PARKS AND OPEN SPACE

SOUTH ST. VRAIN CREEK RESTORATION



VICINITY MAP

CLIENT CONTACT (OWNER):
ERNST STRENGE, INTERIM RESOURCE PLANNING MANAGER
BOULDER COUNTY PARKS AND OPEN SPACE
5201 ST VRAIN ROAD
LONGMONT, CO 80503
303-682-6531

FUNDING AGENCY CONTACT (30% DESIGN):
TIM KATERS, RESILIENCE PLANNING PROGRAM MANAGER
CDBG-DR (DOLA)
1313 SHERMAN ST
DENVER, CO 80203
303-864-7888

EMERGENCY WATERSHED PROGRAM CONTACT:
JEFF SICKLES, CONSTRUCTION
ENGINEITY ENGINEERING SOLUTIONS
10106 W. SAN JUAN WAY
LITTLETON, CO 80127

PROJECT CONTACT:
SCOTT SCHREIBER, PROJECT MANAGER, ENGINEER
MATRIX DESIGN GROUP
1601 BLAKE STREET, SUITE 200
DENVER, CO 80202
303-572-0200

MIKE RAFFERTY, STREAM RESTORATION ENGINEER
OTAK
808 SW 3RD AVENUE, SUITE 300
PORTLAND, OREGON 97204
503-415-2359

BRANDON PARSONS, LANDSCAPE ARCHITECT
THK ASSOCIATES
2953 S PEORIA STREET, SUITE 101
AURORA, CO 80014
303-770-7132

CLINT HENKE, PERMITTING SPECIALIST
ERO RESOURCES
1842 CLARKSON STREET
SENVVER, CO 80218
303-830-1188

BOULDER COUNTY APPROVAL: NRCS APPROVAL:

PRINT NAME PRINT NAME

SIGN NAME SIGN NAME



LOCATION MAP

$$1'' = 500$$


CATEGORY	DRAWING NUMBER	SHEET NUMBER	SHEET TITLE	STATIONING
GENERAL INFO	GEN 1	1	COVER SHEET	---
	GEN 2	2	NOTES AND LEGEND	---
	GEN 3	3	QUANTITIES	---
	GEN 4	4	SURVEY CONTROL	---
	GEN 5	5	SURVEY CONTROL	---
	GEN 6	6	INDEX SHEET	---
HORIZONTAL CONTRAOL	HCL 1	7	HORIZONTAL CONTROL	---
	HCL 2	8	HORIZONTAL CONTROL	---
	HCL 3	9	HORIZONTAL CONTROL	---
	HCL 4	10	HORIZONTAL CONTROL	---
STORMWATER MANAGEMENT PLAN	HAUL 1	11	HAUL AND ACCESS ROUTES	OVERALL
	SWMP 1	12	STORMWATER CONTROL PLAN	105+00 TO 96+50
	SWMP 2	13	STORMWATER CONTROL PLAN	96+50 TO 88+50
	SWMP 3	14	STORMWATER CONTROL PLAN	88+50 TO 80+50
	SWMP 4	15	STORMWATER CONTROL PLAN	80+50 TO 72+50
	SWMP 5	16	STORMWATER CONTROL PLAN	72+50 TO 64+50
	SWMP 6	17	STORMWATER CONTROL PLAN	64+50 TO 56+50
	SWMP 7	18	STORMWATER CONTROL PLAN	56+50 TO 48+50
	SWMP 8	19	STORMWATER CONTROL PLAN	48+50 TO 40+50
	SWMP 9	20	STORMWATER CONTROL PLAN	37+00 TO 29+50
DEMOLITION PLAN	SWMP 10	21	STORMWATER CONTROL PLAN	29+50 TO 21+00
	DEMO 1	22	DEMOLITION PLAN	105+00 TO 98+50
	DEMO 2	23	DEMOLITION PLAN	98+50 TO 88+50
	DEMO 3	24	DEMOLITION PLAN	88+50 TO 80+50
	DEMO 4	25	DEMOLITION PLAN	80+50 TO 72+50
	DEMO 5	26	DEMOLITION PLAN	72+50 TO 64+50
	DEMO 6	27	DEMOLITION PLAN	64+50 TO 56+50
	DEMO 7	28	DEMOLITION PLAN	56+50 TO 48+50
	DEMO 8	29	DEMOLITION PLAN	48+50 TO 40+50
	DEMO 9	30	DEMOLITION PLAN	37+00 TO 29+50
GRADING PLAN	DEMO 10	31	DEMOLITION PLAN	29+50 TO 21+00
	GRAD 1	32	GRADING PLAN	105+00 TO 88+00
	GRAD 2	33	GRADING PLAN	88+00 TO 74+00
	GRAD 3	34	GRADING PLAN	74+00 TO 59+00
	GRAD 4	35	GRADING PLAN	59+00 TO 44+00
MAIN CHANNEL PLAN AND PROFILE	GRAD 5	36	GRADING PLAN	37+00 TO 24+00
	MCPP 1	37	MAIN CHANNEL PLAN & PROFILE	105+00 TO 96+50
	MCPP 2	38	MAIN CHANNEL PLAN & PROFILE	96+50 TO 88+50
	MCPP 3	39	MAIN CHANNEL PLAN & PROFILE	88+50 TO 80+50
	MCPP 4	40	MAIN CHANNEL PLAN & PROFILE	80+50 TO 72+50
	MCPP 5	41	MAIN CHANNEL PLAN & PROFILE	72+50 TO 64+50
	MCPP 6	42	MAIN CHANNEL PLAN & PROFILE	64+50 TO 56+50
	MCPP 7	43	MAIN CHANNEL PLAN & PROFILE	56+50 TO 48+50
	MCPP 8	44	MAIN CHANNEL PLAN & PROFILE	48+50 TO 40+50
	MCPP 9	45	MAIN CHANNEL PLAN & PROFILE	37+00 TO 29+50
OVERFLOW CHANNEL PLAN AND PROFILES	MCPP 10	46	MAIN CHANNEL PLAN & PROFILE	29+50 TO 21+00
	OCPP A1	47	OVERFLOW CHANNEL A PLAN & PROFILE	13+15 TO 6+50
	OCPP A2	48	OVERFLOW CHANNEL A PLAN & PROFILE	6+50 TO 0+00
	OCPP B1	49	OVERFLOW CHANNEL B PLAN & PROFILE	11+26 TO 5+50
	OCPP B2	50	OVERFLOW CHANNEL B PLAN & PROFILE	5+50 TO 0+00
	OCPP C1	51	OVERFLOW CHANNEL C PLAN & PROFILE	14+49 TO 7+50
	OCPP C2	52	OVERFLOW CHANNEL C PLAN & PROFILE	7+50 TO 0+00
	OCPP D	53	OVERFLOW CHANNEL D PLAN & PROFILE	9+00 TO 0+00
	OCPP E1	54	OVERFLOW CHANNEL E PLAN & PROFILE	14+21 TO 7+50
	OCPP E2	55	OVERFLOW CHANNEL F PLAN & PROFILE	7+50 TO 0+00
SECTIONS	OCPP F	56	OVERFLOW CHANNEL F PLAN & PROFILE	9+00 TO 0+00
	SEC 1	57	ACTUAL CROSS SECTIONS INDEX MAP	---
	SEC 2	58	ACTUAL CROSS SECTIONS	---
CREEK DETAILS	SEC 3	59	ACTUAL CROSS SECTIONS	---
	DET 1	60	MAIN CHANNEL DETAILS	---
	DET 2	61	RIFFLE DETAILS	---
	DET 3	62	OVERFLOW CHANNEL DETAILS	---
	DET 4	63	ROCK RAMP DETAILS	---
	DET 5	64	KNICKPOINT STABILIZATION DETAILS	---
	DET 6	65	HABITAT BOULDER DETAILS	---
	DET 7	66	LARGE WOOD STRUCTURE DETAILS	---
	DET 8	67	LARGE WOOD STRUCTURE DETAILS	---
	DET 9	68	LARGE WOOD STRUCTURE DETAILS	---
REVEGETATION PLANS	DET 10	69	BEAVER DAM ANALOGUE DETAILS	---
	L1	70	REVEGETATION SCHEDULE AND NOTES	---
	L2	71	REVEGETATION PLAN	105+00 TO 96+50
	L3	72	REVEGETATION PLAN	96+50 TO 88+50
	L4	73	REVEGETATION PLAN	88+50 TO 80+50
	L5	74	REVEGETATION PLAN	80+50 TO 72+50
	L6	75	REVEGETATION PLAN	72+50 TO 64+50
	L7	76	REVEGETATION PLAN	64+50 TO 56+50
	L8	77	REVEGETATION PLAN	56+50 TO 48+50
	L9	78	REVEGETATION PLAN	48+50 TO 40+50
REVEGEATION DETAILS	L10	79	REVEGETATION PLAN	37+00 TO 29+50
	L11	80	REVEGETATION PLAN	29+50 TO 21+00
	LD1	81	REVEGETATION DETAILS	---
	LD2	82	REVEGETATION DETAILS	---
	LD3	83	REVEGETATION DETAILS	---

" I CERTIFY TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, JUDGEMENT
AND BELIEF, THESE PLANS MEET THE APPLICABLE NRCS STANDARDS"

[illegible]

Channel/Location	Station		EWP / BCPOS Area	201-00000 Clearing and Grubbing		202-00005 Removal of Structures and Debris		202-00010 Removal of Tree (6 to 12 inch DBH)		202-00011 Removal of Tree (12+ inch DBH)		203-00001 Unclassified Excavation (Stripping Native Streambed)		203-00002 Unclassified Excavation (Complete in Place)		203-00003 Unclassified Excavation (Haul Offsite)		203-00004 Alternate Bid Item - Unclassified Excavation (Extended Haul Offsite)		203-00005 Unclassified Excavation (Sort/Screen/Stockpile 6 to 12 inch Rock)		203-00006 Unclassified Excavation (Sort/Screen/Stockpile 12 to 24 inch Rock)		203-00007 Unclassified Excavation (Sort/Screen/Stockpile 24+ inch Rock)		208-00001 Stormwater Management		209-00200 Time-Released Watering		211-03005 Dewatering		212-00005 Seeding (Upland)		212-00022 Seeding (Riparian)		212-00032 Soil Conditioner	
				AC		LOAD		EA		EA		BCY		BCY		BCY		BCY		TON		TON		TON		LS		EA		LS		AC		AC		AC	
	From	To		PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.
Main Channel	100+30	88+50	BCPOS	3.2		1		7		9		2,273		853		6,669		6,669		204		62		6				473				1.59		0.36		1.95	
	88+50	76+50	EWP #1	4.1		1		9		17		3,000		1,447		11,721		11,721		204		62		6		1		699		1		2.11		0.62		2.72	
	76+50	66+50	EWP #1	4.4				2				2,500		3,140		10,889		10,889		204		62		6				782				2.46		0.81		3.27	
	66+50	54+00	EWP #1	3.2		1		4		1		1,490		733		3,440		3,440		204		62		6				613				1.78		0.70		2.48	
	54+00	44+50	EWP #1	0.6		1						475		149		234		234		204		62		6				15				0.18		0.01		0.19	
	36+50	30+75	EWP #2	0.9				6		1		633		190		1,434		1,434		204		62		6								0.45		0.08		0.53	
	30+75	26+00	EWP #2	1.2		1		2		3		860		867		2,074		2,074		204		62		6				108				0.71		0.11		0.82	
	11+45	2+97	EWP #1	1.8										3,602						204		62		6				368				0.88		0.92		1.79	
	10+52	2+54	EWP #1	1.2				10		3				76		3,042		3,042		204		62		6				271				0.87		0.24		1.11	
	11+71	1+25	EWP #1	2.4				14		13				791		3,600		3,600		204		62		6				562				1.58		0.71		2.29	
Overflow Channel A	13+50	2+15	EWP #1	1.3										727						204		62		6				223				0.85		0.31		1.16	
Overflow Channel E	8+26	0+88	EWP #1	0.4				9		2				157						204		62		6				20				0.13		0.17		0.30	
Overflow Channel F	14+21	0+00	EWP #1	1.0										107		1,695		1,695		204		62		6				108				0.69		0.23		0.92	
EWP Subtotal				22.4	0	4	0	56	0	40	0	8,958	0	11,986	0	38,129	0	38,129	0	2,448	0	744	0	72	0	1	0	3,828	0	1	0	12.7	0	4.9	0	17.6	0
BCPOS Subtotal				3.2	0	1	0	7	0	9	0	2,273	0	853	0	6,669	0	6,669	0	204	0	62	0	6	0	0	0	473	0	0	0	1.6	0	0.4	0	2.0	0
Project Total				25.7	0	5	0	63	0	49	0	11,230	0	12,839	0	44,798	0	44,798	0	2,652	0	806	0	78	0	1	0	4,301	0	1	0	14.3	0	5.3	0	19.5	0

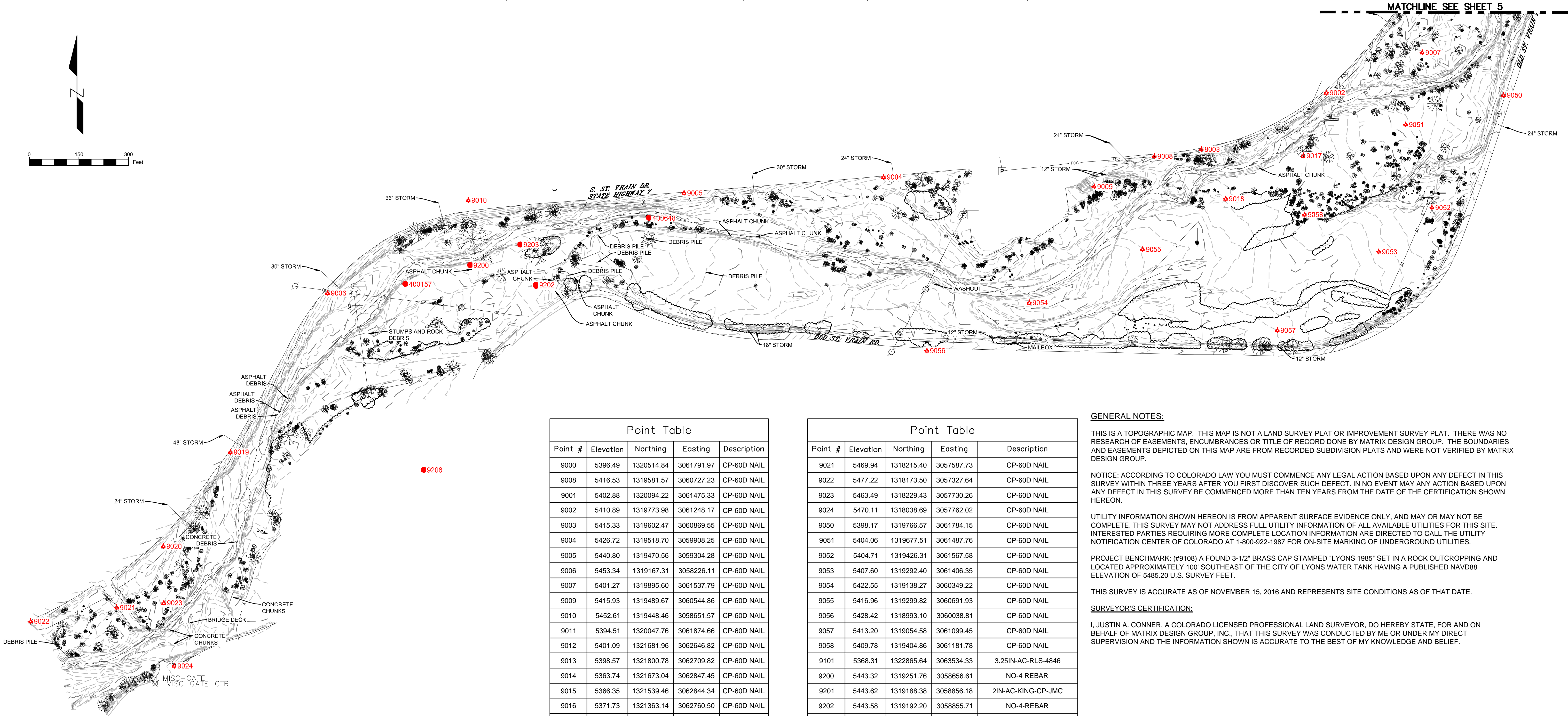
Channel/Location	Station		EWP / BCPOS Area	213-00012 Spray-On Mulch Blanket		214-00901 Perennial (Tubelling)		214-01011 Willow Cuttings in Existing Riprap		214-01015 Willow Cuttings		214-01026 Dormant Log Poles		214-01032 Fascines		214-01040 Beaver Protection Fence		214-01041 Vole Protection Fence		214-01050 Trees and Shrubs		214-01228 Large Wood Structure Type 1		214-01229 Large Wood Structure Type 2		214-01230 Large Wood Structure Type 3		214-01231 Large Wood Structure Type 4		214-01232 Large Wood Structure Type 5		214-01233 Large Wood Structure Type 6		215-01016 Transplanting Mature Willows		216-0030 Soil Retention Blanket (Special)	
				AC		SF		EA		EA		EA		LF		LS		LS		EA		EA		EA		EA		EA		EA		EA		EA		SY	
	From	To		PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.
Main Channel	100+30	88+50	BCPOS	1.95				48		1,412		29								473				3		1		4				2		28			
	88+50	76+50	EWP #1	2.72				43		1,371		9				1		1		699		1						7		5		1					
	76+50	66+50	EWP #1	3.27						1,184				67						782		2				1		8		6		2		30			
	66+50	54+00	EWP #1	2.48						163				104						613		1				2						2		20			
	54+00	44+50	EWP #1	0.19						287										15				2								3		42			
	36+50	30+75	EWP #2	0.53						1,079										59		1		1										33			
	30+75	26+00	EWP #2	0.82						1,425		12								108				1										42			
	11+45	2+97	EWP #1	1.25		945				904										368										1						2,621	
	10+52	2+54	EWP #1	1.05		695				226		27								271														103		267	
	11+71	1+25	EWP #1	2.04						468		21								562										2						1,241	
Overflow Channel A	13+50	2+15	EWP #1	1.16			1,877			0										223															0		
Overflow Channel B	8+26	0+88	EWP #1	0.19			1,381			245										20															532		
Overflow Channel E	14+21	0+00	EWP #1	0.83			1,019			277										108															392		
EWP Subtotal				16.5	0	5,917	0	43	0	7,629	0	69	0	171	0	1	0	1	0	3,828	0	5	0	4	0	3	0	15	0	17	0	6	0	270	0	5,053	0
BCPOS Subtotal				2.0	0	0	0	48	0	1,412	0	29	0	0	0	0	0	0	0	473	0	0	0	3	0	1	0	4	0	4	0	2	0	28	0	0	0
Project Total				18.5	0	5,917	0	91	0	9,041	0	98	0	171	0	1	0	1	0	4,301	0	5	0	7	0	4	0	19	0	21	0	8	0	298	0	5,053	0

Channel/Location	Station		EWP / BCPOS Area	218-00000 Noxious Weed Management		240-00000 Protection of Migratory Birds		506-03000 Riffle Structure		506-03001 Riffle Floodplain Sill		506-03002 Floodplain Sill		506-03004 Habitat Boulder		506-03005 Overflow Rock Ramp		506-03006 Knickpoint Stabilization Structure		506-00419 Willow Cuttings in Cobble Toe		506-00431 Boulder Toe		506-05000 Import 6 to 12 Inch Rock		506-05001 Import 12 to 24 Inch Rock		506-05000 Import 24+ Inch Rock		508-00001 Beaver Dam Analogue		607-11525 Fence (Plastic)		625-00000 Construction Surveying		626-00000 Mobilization		630-00012 Construction Zone Traffic Control	
				LS		EA		EA		LF		LF		EA		EA		EA		LF		LF		TON		TON		TON		EA		LF		LS		LS		LS	
	From	To		PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.
Main Channel	100+30	88+50	BCPOS					4		165				125						567		149		37		40		181				1,302							
	88+50	76+50	EWP #1	1			1		3		80				65					543				37		40		181				954		1		1		1	
	76+50	66+50	EWP #1					4		200		220		85						608		465		37		40		181				1,947							
	66+50	54+00	EWP #1					2		105				40						209		47		37		40		181				817							
	54+00	44+50	EWP #1					1						20						20				37		40		181				652							
	36+50	30+75	EWP #2					1		25				20						40				37		40		181				148							
	30+75	26+00	EWP #2					1						20						255				37		40		181				1,871							
	11+45	2+97	EWP #1									170				1				19				37		40		181											
	Overflow Channel B	10+52	2+54	EWP #1								115				1				13				37		40		181				261							
Overflow Channel C	11+71	1+25	EWP #1								100												37		40		181				349								
Overflow Channel D	13+50	2+15	EWP #1															2				37		40		181				653									
Overflow Channel E	8+26	0+88	EWP #1																4				37		40		181		2		951								
Overflow Channel F	14+21	0+00	EWP #1												1								37		40		181				603								
EWP Subtotal			1	0	1	0	12	0	410	0	605	0	250	0	3	0	6	0	1,707	0	512	0	444	0	480	0	2,172	0	2	0	9,468	0	1	0	1	0	1	0	
BCPOS Subtotal			0	0	0	0	4	0	165	0	0	0	125	0	0	0	0	0	567	0	149	0	37	0	40	0	181	0	0	0	1,302	0	0	0	0	0	0		
Project Total			1	0	1	0	16	0	575	0	605	0	375	0	3	0	6	0	2,274	0	661	0	481	0	520	0	2,353	0	2	0	10,770	0	1	0	1	0	1	0	

SOUTH ST. VRAIN CREEK RESTORATION

TOPOGRAPHIC SURVEY

A PORTION OF LAND LOCATED IN THE NORTHEAST QUARTER OF SECTION 26, THE NORTHWEST QUARTER OF SECTION 25 AND THE SOUTH HALF OF SECTION 24, TOWNSHIP 3 NORTH, RANGE 71 WEST OF THE 6TH P.M., AND THE WEST HALF OF SECTION 19, TOWNSHIP 3 NORTH, RANGE 71 WEST OF THE 6TH P.M., TOWN OF LYONS, COUNTY OF BOULDER, STATE OF COLORADO.



Point Table				
Point #	Elevation	Northing	Easting	Description
9000	5396.49	1320514.84	3061791.97	CP-60D NAIL
9008	5416.53	1319581.57	3060727.23	CP-60D NAIL
9001	5402.88	1320094.22	3061475.33	CP-60D NAIL
9002	5410.89	1319773.98	3061248.17	CP-60D NAIL
9003	5415.33	1319602.47	3060869.55	CP-60D NAIL
9004	5426.72	1319518.70	3059908.25	CP-60D NAIL
9005	5440.80	1319470.56	3058304.28	CP-60D NAIL
9006	5453.34	1319167.31	3058226.11	CP-60D NAIL
9007	5401.27	1319895.60	3061537.79	CP-60D NAIL
9009	5415.93	1319489.67	3060544.86	CP-60D NAIL
9010	5452.61	1319448.46	3058651.57	CP-60D NAIL
9011	5394.51	1320047.76	3061874.66	CP-60D NAIL
9012	5401.09	1321681.96	3062646.82	CP-60D NAIL
9013	5398.57	1321800.78	3062709.82	CP-60D NAIL
9014	5363.74	1321673.04	3062847.45	CP-60D NAIL
9015	5366.35	1321539.46	3062844.34	CP-60D NAIL
9016	5371.73	1321363.14	3062760.50	CP-60D NAIL
9017	5409.62	1319583.14	3061178.10	CP-60D NAIL
9018	5411.47	1319453.02	3060943.21	CP-60D NAIL
9019	5464.19	1318685.89	3057931.79	CP-60D NAIL
9020	5465.87	1318400.94	3057728.63	CP-60D NAIL

Point Table				
Point #	Elevation	Northing	Easting	Description
9021	5469.94	1318215.40	3057587.73	CP-60D NAIL
9022	5477.22	1318173.50	3057327.64	CP-60D NAIL
9023	5463.49	1318229.43	3057730.26	CP-60D NAIL
9024	5470.11	1318038.69	3057762.02	CP-60D NAIL
9050	5398.17	1319766.57	3061784.15	CP-60D NAIL
9051	5404.06	1319677.51	3061487.76	CP-60D NAIL
9052	5404.71	1319426.31	3061567.58	CP-60D NAIL
9053	5407.60	1319292.40	3061406.35	CP-60D NAIL
9054	5422.55	1319138.27	3060349.22	CP-60D NAIL
9055	5416.96	1319299.82	3060691.93	CP-60D NAIL
9056	5428.42	1318993.10	3060038.81	CP-60D NAIL
9057	5413.20	1319054.58	3061099.45	CP-60D NAIL
9058	5409.78	1319404.86	3061181.78	CP-60D NAIL
9101	5368.31	1322865.64	3063534.33	3.25IN-AC-RLS-4846
9200	5443.32	1319251.76	3058656.61	NO-4 REBAR
9201	5443.62	1319188.38	3058856.18	2IN-AC-KING-CP-JMC
9202	5443.58	1319192.20	3058855.71	NO-4-REBAR
9203	5440.10	1319314.20	3058807.91	2IN-AC-BLDR-CNTY-HALL-07
9204	5365.97	1321905.36	3063037.06	2.5IN-BC-IN-WW
9206	5455.61	1318631.87	3058516.13	PK-NAIL-PANEL-PNT
9207	5485.20	1326079.04	3064535.42	BM-3.5IN-BC-NGS-CP-LYONS

GENERAL NOTES:

THIS IS A TOPOGRAPHIC MAP. THIS MAP IS NOT A LAND SURVEY PLAT OR IMPROVEMENT SURVEY PLAT. THERE WAS NO RESEARCH OF EASEMENTS, ENCUMBRANCES OR TITLE OF RECORD DONE BY MATRIX DESIGN GROUP. THE BOUNDARIES AND EASEMENTS DEPICTED ON THIS MAP ARE FROM RECORDED SUBDIVISION PLATS AND WERE NOT VERIFIED BY MATRIX DESIGN GROUP.

NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

UTILITY INFORMATION SHOWN HEREON IS FROM APPARENT SURFACE EVIDENCE ONLY, AND MAY OR MAY NOT BE COMPLETE. THIS SURVEY MAY NOT ADDRESS FULL UTILITY INFORMATION OF ALL AVAILABLE UTILITIES FOR THIS SITE. INTERESTED PARTIES REQUIRING MORE COMPLETE LOCATION INFORMATION ARE DIRECTED TO CALL THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-922-1987 FOR ON-SITE MARKING OF UNDERGROUND UTILITIES.

PROJECT BENCHMARK: (#9108) A FOUND 3-1/2" BRASS CAP STAMPED "LYONS 1985" SET IN A ROCK OUTCROPPING AND LOCATED APPROXIMATELY 100' SOUTHEAST OF THE CITY OF LYONS WATER TANK HAVING A PUBLISHED NAVD88 ELEVATION OF 5485.20 U.S. SURVEY FEET.

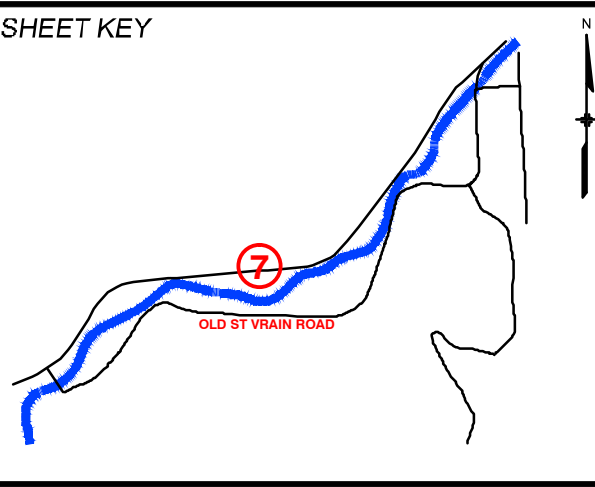
THIS SURVEY IS ACCURATE AS OF NOVEMBER 15, 2016 AND REPRESENTS SITE CONDITIONS AS OF THAT DATE.

SURVEYOR'S CERTIFICATION:

I, JUSTIN A. CONNER, A COLORADO LICENSED PROFESSIONAL LAND SURVEYOR, DO HEREBY STATE, FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC., THAT THIS SURVEY WAS CONDUCTED BY ME OR UNDER MY DIRECT SUPERVISION AND THE INFORMATION SHOWN IS ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

JUSTIN A. CONNER, PLS 38421
FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.

REFERENCE DRAWINGS			
AERIALS			
812-TITLEBLOCK-22x34			
812-TITLEBLOCK-22x34			
No.	DATE	DESCRIPTION	BY
REVISIONS			
COMPUTER FILE MANAGEMENT			
FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\SURVEY CONTROL 80%.dwg			
CTB FILE: ---			
PLOT DATE: 6/14/2017 10:57 AM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			



SYMBOL LEGEND	
⊙	CLEANOUT
⚓	SURVEY CONTROL POINT
✱	CONIFEROUS TREE (DIAMETER)
✱	DECIDUOUS TREE (DIAMETER)
⚡	FIRE HYDRANT
●	FOUND MONUMENT (AS NOTED)
✱	IRRIGATION CONTROL VALVE
✱	LIGHT POLE (AS NOTED)
⊙	SANITARY MANHOLE
⚓	SIGN
⊙	STORM MANHOLE
⊙	TELEPHONE PEDESTAL
⊙	WATER METER
⊙	WATER VALVE

PREPARED FOR:



PREPARED BY:





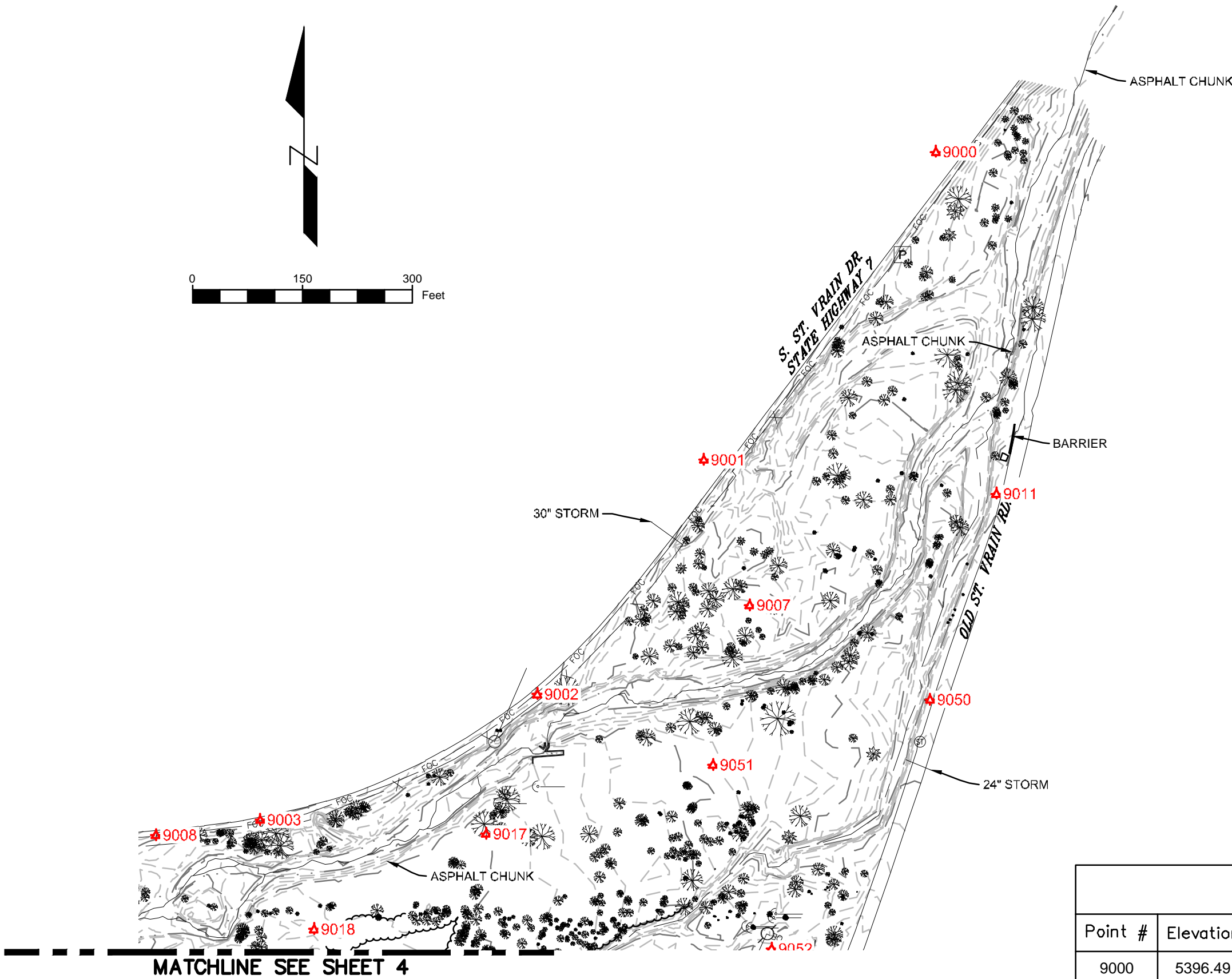
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION				
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN				
SURVEY CONTROL				
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:	02/17/17
DRAWN BY:	JDL	HORIZ. 1"= 30'	SHEET	4 OF 83
CHECKED BY:	RDK	VERT. N/A		
				DRAWING No. GEN 4

SOUTH ST. VRAIN STREAM RESTORATION

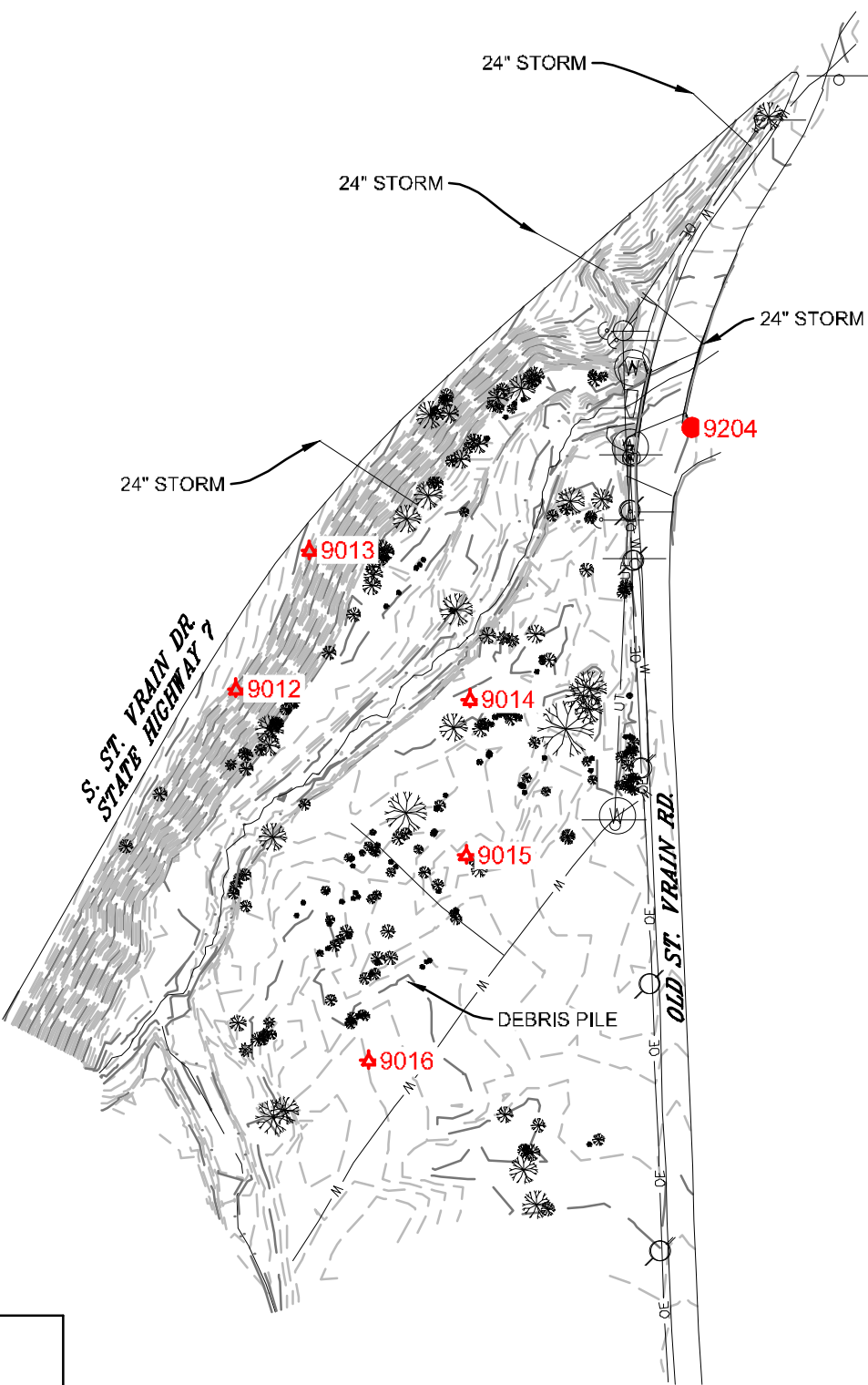
TOPOGRAPHIC SURVEY

A PORTION OF LAND LOCATED IN THE NORTHEAST QUARTER OF SECTION 26, THE NORTHWEST QUARTER OF SECTION 25 AND THE SOUTH HALF OF SECTION 24, TOWNSHIP 3 NORTH, RANGE 71 WEST OF THE 6TH P.M., AND THE WEST HALF OF SECTION 19, TOWNSHIP 3 NORTH, RANGE 71 WEST OF THE 6TH P.M., TOWN OF LYONS, COUNTY OF BOULDER, STATE OF COLORADO.



Point Table				
Point #	Elevation	Northing	Easting	Description
9000	5396.49	1320514.84	3061791.97	CP-60D NAIL
9008	5416.53	1319581.57	3060727.23	CP-60D NAIL
9001	5402.88	1320094.22	3061475.33	CP-60D NAIL
9002	5410.89	1319773.98	3061248.17	CP-60D NAIL
9003	5415.33	1319602.47	3060869.55	CP-60D NAIL
9004	5426.72	1319518.70	3059908.25	CP-60D NAIL
9005	5440.80	1319470.56	3059304.28	CP-60D NAIL
9006	5453.34	1319167.31	3058226.11	CP-60D NAIL
9007	5401.27	1319895.60	3061537.79	CP-60D NAIL
9009	5415.93	1319489.67	3060544.86	CP-60D NAIL
9010	5452.61	1319448.46	3058651.57	CP-60D NAIL
9011	5394.51	1320047.76	3061874.66	CP-60D NAIL
9012	5401.09	1321681.96	3062646.82	CP-60D NAIL
9013	5398.57	1321800.78	3062709.82	CP-60D NAIL
9014	5363.74	1321673.04	3062847.45	CP-60D NAIL
9015	5366.35	1321539.46	3062844.34	CP-60D NAIL
9016	5371.73	1321363.14	3062760.50	CP-60D NAIL
9017	5409.62	1319583.14	3061178.10	CP-60D NAIL
9018	5411.47	1319453.02	3060943.21	CP-60D NAIL
9019	5464.19	1318685.89	3057931.79	CP-60D NAIL
9020	5465.87	1318400.94	3057728.63	CP-60D NAIL

Point Table				
Point #	Elevation	Northing	Easting	Description
9021	5469.94	1318215.40	3057587.73	CP-60D NAIL
9022	5477.22	1318173.50	3057327.64	CP-60D NAIL
9023	5463.49	1318229.43	3057730.26	CP-60D NAIL
9024	5470.11	1318038.69	3057762.02	CP-60D NAIL
9050	5398.17	1319766.57	3061784.15	CP-60D NAIL
9051	5404.06	1319677.51	3061487.76	CP-60D NAIL
9052	5404.71	1319426.31	3061567.58	CP-60D NAIL
9053	5407.60	1319292.40	3061406.35	CP-60D NAIL
9054	5422.55	1319138.27	3060349.22	CP-60D NAIL
9055	5416.96	1319299.82	3060691.93	CP-60D NAIL
9056	5428.42	1318993.10	3060038.81	CP-60D NAIL
9057	5413.20	1319054.58	3061099.45	CP-60D NAIL
9058	5409.78	1319404.86	3061181.78	CP-60D NAIL
9101	5368.31	1322865.64	3063534.33	3.25IN-AC-RLS-4846
9200	5443.32	1319251.76	3058656.61	NO-4 REBAR
9201	5443.62	1319188.38	3058856.18	2IN-AC-KING-CP-JMC
9202	5443.58	1319192.20	3058855.71	NO-4-REBAR
9203	5440.10	1319314.20	3058807.91	2IN-AC-BLDR-CNTY-HALL-07
9204	5365.97	1321905.36	3063037.06	2.5IN-BC-IN-WW
9206	5455.61	1318631.87	3058516.13	PK-NAIL-PANEL-PNT
9207	5485.20	1326079.04	3064535.42	BM-3.5IN-BC-NGS-CP-LYONS



REFERENCE
DRAWINGS

AERIALS

812-TITLEBLOCK-22x34

812-TITLEBLOCK-22x34

No.	DATE	DESCRIPTION	BY
REVISIONS			

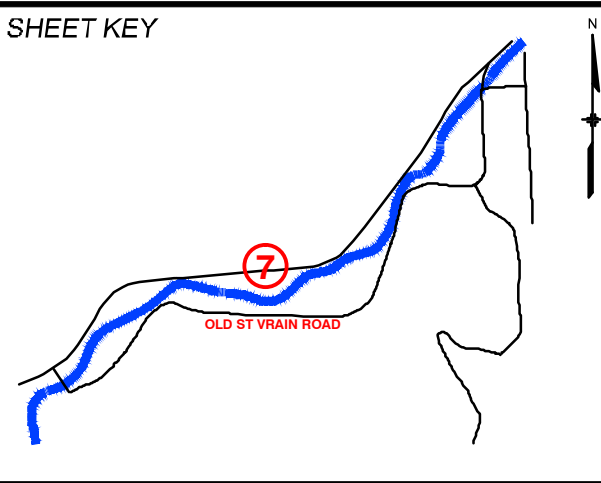
COMPUTER FILE MANAGEMENT

FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\SURVEY CONTROL 80%.dwg

CTB FILE: ---

PLOT DATE: 6/14/2017 10:59 AM

THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.



SYMBOL LEGEND

⊙

CLEANOUT

⚡

SURVEY CONTROL POINT

🌲

CONIFEROUS TREE (DIAMETER)

🌳

DECIDUOUS TREE (DIAMETER)

🔥

FIRE HYDRANT

●

FOUND MONUMENT (AS NOTED)

✳

IRRIGATION CONTROL VALVE

✳

LIGHT POLE (AS NOTED)

⊙

SANITARY MANHOLE

—

SIGN

⊙

STORM MANHOLE

□

TELEPHONE PEDESTAL

⊙

WATER METER

⊙

WATER VALVE

PREPARED FOR:

Boulder County

Parks & Open Space

PREPARED BY:

Matrix

DESIGN GROUP

AN EMPLOYEE-OWNED COMPANY

COLORADO LICENSED

D. D. SCHNEIDER

46577

2/19/17

PROFESSIONAL ENGINEER

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

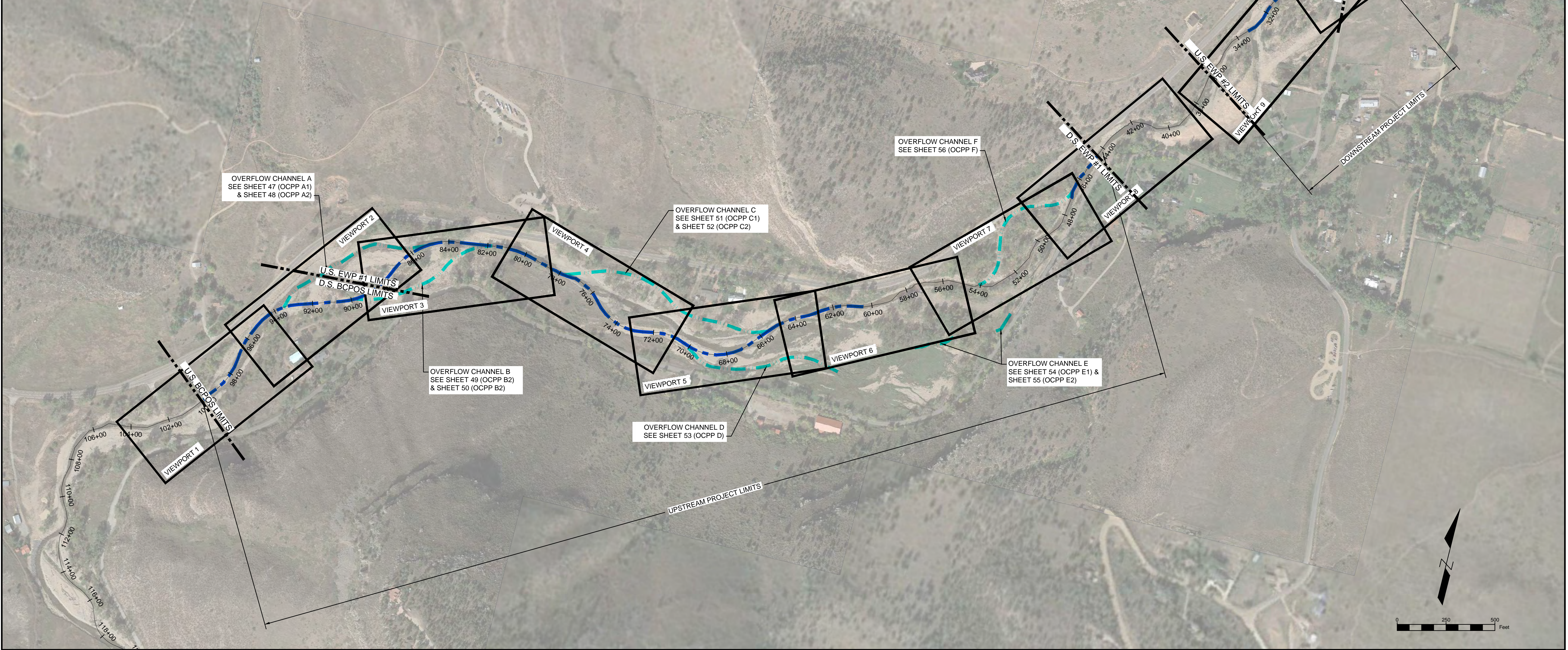
BOULDER COUNTY PARKS AND OPEN SPACE
FINAL DESIGN

SURVEY CONTROL

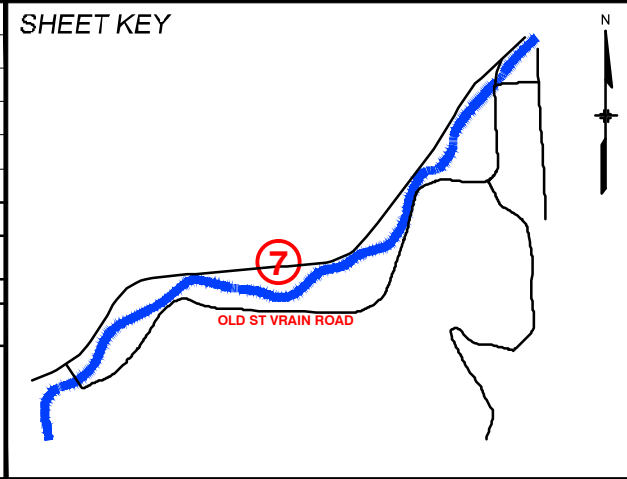
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:	02/17/17	DRAWING No.
DRAWN BY:	JDL	HORIZ. 1" = 150'	SHEET	5 OF 83	GEN 5
CHECKED BY:	RDK	VERT. N/A			

INDEX MAP KEY								
VIEWPORT	STORMWATER MANAGEMENT PLAN		DEMOLITION PLAN		MAIN CHANNEL PLAN AND PROFILE		REVEGETATION PLAN	
	SHEET NUMBER	DRAWING NUMBER	SHEET NUMBER	DRAWING NUMBER	SHEET NUMBER	DRAWING NUMBER	SHEET NUMBER	DRAWING NUMBER
1	12	SWMP 1	22	DEMO 1	37	MCPP 1	71	L2
2	13	SWMP 2	23	DEMO 2	38	MCPP 2	72	L3
3	14	SWMP 3	24	DEMO 3	39	MCPP 3	73	L4
4	15	SWMP 4	25	DEMO 4	40	MCPP 4	74	L5
5	16	SWMP 5	26	DEMO 5	41	MCPP 5	75	L6
6	17	SWMP 6	27	DEMO 6	42	MCPP 6	76	L7
7	18	SWMP 7	28	DEMO 7	43	MCPP 7	77	L8
8	19	SWMP 8	29	DEMO 8	44	MCPP 8	78	L9
9	20	SWMP 9	30	DEMO 9	44	MCPP 9	79	L10
10	21	SWMP 10	31	DEMO 10	46	MCPP 10	80	L11

EWP: EMERGENCY WATERSHED PROTECTION
BCPOS: BOULDER COUNTY PARKS AND OPEN SPACE



REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 AERIALS Proposed Linework 80% Parcels			
No.	DATE	DESCRIPTION REVISIONS	BY
COMPUTER FILE MANAGEMENT			
FILE NAME: R:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\OVERALL PLAN VIEW 80%.dwg			
CTB FILE: ---			
PLOT DATE: 6/14/2017 3:54 PM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			



LEGEND	
	MAIN CHANNEL
	OVERFLOW CHANNEL

PREPARED FOR:

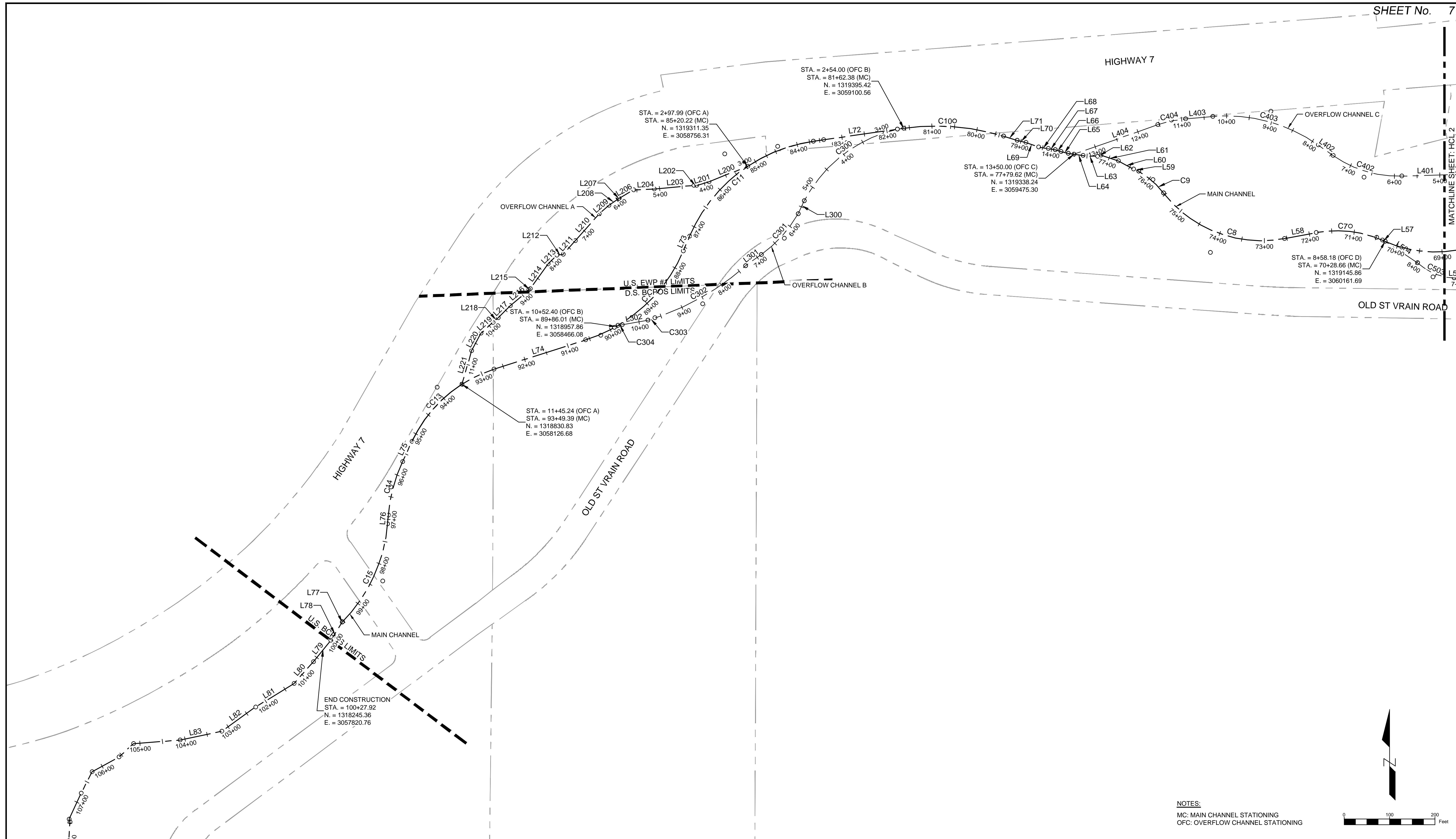
PREPARED BY:

AN EMPLOYEE-OWNED COMPANY

SEAL

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

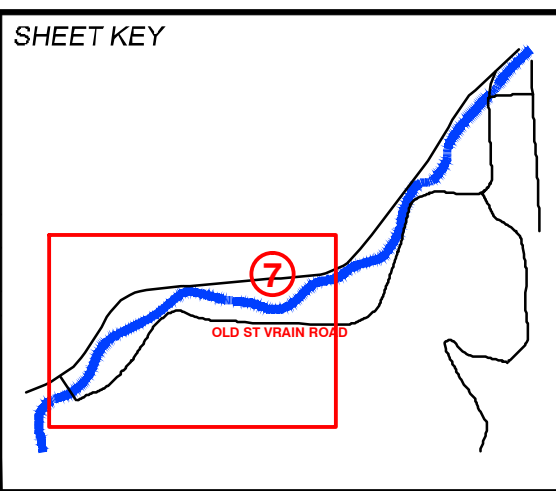
SOUTH ST. VRAIN CREEK RESTORATION				
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGNS				
INDEX SHEET				
DESIGNED BY: SDS	SCALE (22" X 34")	DATE ISSUED:	02/17/17	DRAWING No.
DRAWN BY: JDL	HORIZ. 1" = 250'	SHEET	6 OF 83	GEN 6
CHECKED BY: RDK	VERT. N/A			



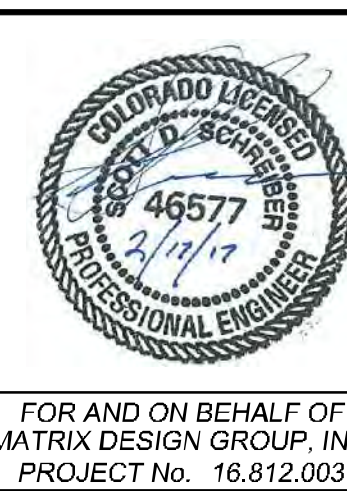
NOTES:
MC: MAIN CHANNEL STATIONING
OFC: OVERFLOW CHANNEL STATIONING

0 100 200 Feet

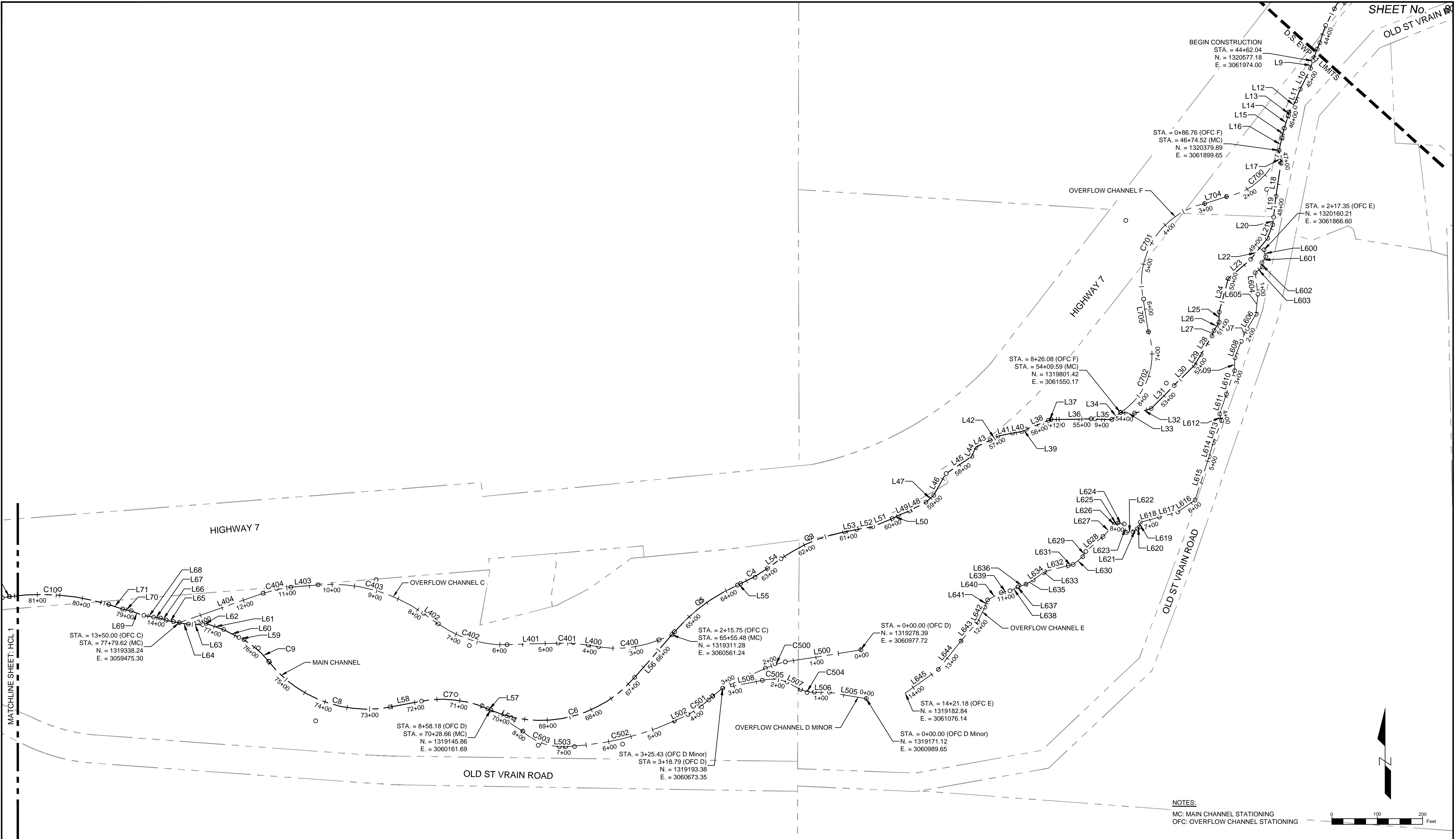
REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 AERIALS CONCURRENT PROJECTS Ditch, Irrigation, Features South St Vrain Topo 11-16-2016 PLAN AND PROFILE 80%			
No.	DATE	DESCRIPTION	BY
REVISIONS			
COMPUTER FILE MANAGEMENT			
FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\HORIZONTAL CONTROL PLAN 80%.dwg			
CTB FILE: ---			
PLOT DATE: 6/14/2017 11:02 AM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			



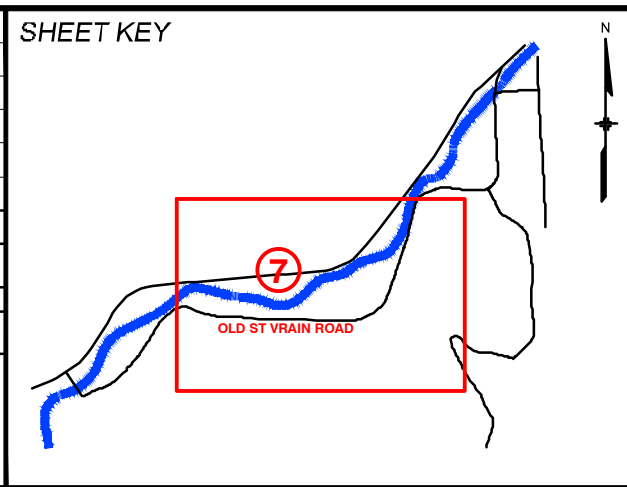
LEGEND	
---	PARCEL LINES



SOUTH ST. VRAIN CREEK RESTORATION				
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN				
HORIZONTAL CONTROL 1				
DESIGNED BY: SDS	SCALE (22" X 34")	DATE ISSUED: 02/17/17	DRAWING No.	HCL 1
DRAWN BY: JDL	HORIZ. 1" = 100'	SHEET 7 OF 83		
CHECKED BY: RDK	VERT. N/A			



REFERENCE DRAWINGS					
812-TITLEBLOCK-22x34 AERIALS Parcel CONCURRENT PROJECTS Ditch, Irrigation, Features South St Vrain Topo 11-16-2016 PLAN AND PROFILE 80%	No.	DATE	DESCRIPTION	BY	
	REVISIONS				
COMPUTER FILE MANAGEMENT					
FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\HORIZONTAL CONTROL PLAN 80%.dwg					
CTB FILE: ---					
PLOT DATE: 6/14/2017 11:03 AM					
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.					



LEGEND	
---	PARCEL LINES

PREPARED FOR:

PREPARED BY:

AN EMPLOYEE-OWNED COMPANY

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION					
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN					
HORIZONTAL CONTROL 2					
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:	02/17/17	DRAWING No.
DRAWN BY:	JDL	HORIZ. 1" = 100'	SHEET	8 OF 83	HCL 2
CHECKED BY:	RDK	VERT. N/A			



<div>REFERENCE DRAWINGS</div> <div>812-TITLEBLOCK-22x34 AERIALS Parcelle CONCURRENT PROJECTS Ditch, Irrigation, Features South St Vrain Topo 11-16-2016 PLAN AND PROFILE 80%</div>	No.	DATE	DESCRIPTION	BY
	REVISIONS			
	COMPUTER FILE MANAGEMENT			
	FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\HORIZONTAL CONTROL PLAN 80%.dwg CTB FILE: --- PLOT DATE: 6/14/2017 11:03 AM THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			

SHEET KEY

LEGEND

PARCEL LINES

PREPARED FOR:

PREPARED BY:

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN			
HORIZONTAL CONTROL 3			
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:
DRAWN BY:	JDL	HORIZ. 1" = 100'	02/17/17
CHECKED BY:	RDK	VERT. N/A	SHEET 9 OF 83

DRAWING No. HCL 3

LINE TABLE (DESIGN)		
LINE No.	LENGTH	DIRECTION
L1	139.36'	ÚH ƵĤ Œ ĒĖĀ
L2	95.00'	ÚĬ ƵĤ Œ ĒĖĀ
L3	56.46'	ÚĠ ƵĤ Œ ĒĖĀ
L4	72.46'	ÚĬ ƵĤ Œ ĒĖĀ
L5	70.97'	ÚĬ ƵĤ Œ ĒĖĀ
L6	61.91'	ÚĠ ƵĤ Œ ĒĖĀ
L7	56.74'	ÚĤ ƵĤ Œ ĒĖĀ
L8	65.18'	ÚĠ ƵĤ Œ ĒĖĀ
L9	17.93'	ÚĬ ƵĤ Œ ĒĖĀ
L10	50.98'	ÚĠ ƵĤ Œ ĒĖĀ
L11	28.12'	ÚĠ ƵĤ Œ ĒĖĀ
L12	28.71'	ÚĠ ƵĤ Œ ĒĖĀ
L13	7.18'	ÚĬ ƵĤ Œ ĒĖĀ
L14	29.64'	ÚĬ ƵĤ Œ ĒĖĀ
L15	21.29'	ÚĤ ƵĤ Œ ĒĖĀ
L16	28.64'	ÚĬ ƵĤ Œ ĒĖĀ
L17	29.03'	ÚĠ ƵĤ Œ ĒĖĀ
L18	73.53'	ÚĬ ƵĤ Œ ĒĖĀ
L19	46.75'	ÚĬ ƵĤ Œ ĒĖĀ
L20	16.44'	ÚĬ ƵĤ Œ ĒĖĀ
L21	32.46'	ÚĠ ƵĤ Œ ĒĖĀ
L22	58.97'	ÚĤ ƵĤ Œ ĒĖĀ
L23	65.25'	ÚĬ ƵĤ Œ ĒĖĀ
L24	76.89'	ÚĬ ƵĤ Œ ĒĖĀ
L25	21.81'	ÚĠ ƵĤ Œ ĒĖĀ
L26	22.11'	ÚĤ ƵĤ Œ ĒĖĀ
L27	12.81'	ÚĤ ƵĤ Œ ĒĖĀ
L28	47.10'	ÚĤ ƵĤ Œ ĒĖĀ
L29	28.03'	ÚĤ ƵĤ Œ ĒĖĀ
L30	63.29'	ÚĬ ƵĤ Œ ĒĖĀ
L31	71.48'	ÚĬ ƵĤ Œ ĒĖĀ
L32	37.92'	ÚĬ ƵĤ Œ ĒĖĀ
L33	31.17'	ÚĬ ƵĤ Œ ĒĖĀ
L34	24.30'	ÚĬ ƵĤ Œ ĒĖĀ

LINE TABLE (DESIGN)		
LINE No.	LENGTH	DIRECTION
L35	45.65'	ÚĬ ƵĤ Œ ĒĖĀ
L36	88.34'	ÚĬ ƵĤ Œ ĒĖĀ
L37	6.09'	ÚĬ ƵĤ Œ ĒĖĀ
L38	52.67'	ÚĬ ƵĤ Œ ĒĖĀ
L39	11.02'	ÚĬ ƵĤ Œ ĒĖĀ
L40	21.22'	ÚĬ ƵĤ Œ ĒĖĀ
L41	32.41'	ÚĬ ƵĤ Œ ĒĖĀ
L42	19.22'	ÚĬ ƵĤ Œ ĒĖĀ
L43	35.43'	ÚĬ ƵĤ Œ ĒĖĀ
L44	22.18'	ÚĬ ƵĤ Œ ĒĖĀ
L45	68.28'	ÚĬ ƵĤ Œ ĒĖĀ
L46	55.00'	ÚĬ ƵĤ Œ ĒĖĀ
L47	22.95'	ÚĬ ƵĤ Œ ĒĖĀ
L48	41.74'	ÚĬ ƵĤ Œ ĒĖĀ
L49	25.34'	ÚĬ ƵĤ Œ ĒĖĀ
L50	15.21'	ÚĬ ƵĤ Œ ĒĖĀ
L51	47.08'	ÚĬ ƵĤ Œ ĒĖĀ
L52	35.49'	ÚĬ ƵĤ Œ ĒĖĀ
L53	27.21'	ÚĬ ƵĤ Œ ĒĖĀ
L54	35.72'	ÚĬ ƵĤ Œ ĒĖĀ
L55	7.33'	ÚĬ ƵĤ Œ ĒĖĀ
L56	134.08'	ÚĬ ƵĤ Œ ĒĖĀ
L57	6.59'	ÚĬ ƵĤ Œ ĒĖĀ
L58	70.81'	ÚĬ ƵĤ Œ ĒĖĀ
L59	11.71'	ÚĬ ƵĤ Œ ĒĖĀ
L60	37.80'	ÚĬ ƵĤ Œ ĒĖĀ
L61	40.80'	ÚĬ ƵĤ Œ ĒĖĀ
L62	8.10'	ÚĬ ƵĤ Œ ĒĖĀ
L63	31.93'	ÚĬ ƵĤ Œ ĒĖĀ
L64	33.03'	ÚĬ ƵĤ Œ ĒĖĀ
L65	16.49'	ÚĬ ƵĤ Œ ĒĖĀ
L66	13.36'	ÚĬ ƵĤ Œ ĒĖĀ
L67	15.16'	ÚĬ ƵĤ Œ ĒĖĀ
L68	22.01'	ÚĬ ƵĤ Œ ĒĖĀ

LINE TABLE (DESIGN)		
LINE No.	LENGTH	DIRECTION
L69	29.58'	ÚĬ ƵĤ Œ ĒĖĀ
L70	19.56'	ÚĬ ƵĤ Œ ĒĖĀ
L71	31.97'	ÚĬ ƵĤ Œ ĒĖĀ
L72	201.73'	ÚĬ ƵĤ Œ ĒĖĀ
L73	35.52'	ÚĬ ƵĤ Œ ĒĖĀ
L74	211.86'	ÚĬ ƵĤ Œ ĒĖĀ
L75	49.13'	ÚĬ ƵĤ Œ ĒĖĀ
L76	19.72'	ÚĬ ƵĤ Œ ĒĖĀ
L77	0.73'	ÚĬ ƵĤ Œ ĒĖĀ
L78	47.36'	ÚĬ ƵĤ Œ ĒĖĀ
L79	60.42'	ÚĬ ƵĤ Œ ĒĖĀ
L80	64.42'	ÚĬ ƵĤ Œ ĒĖĀ
L81	98.91'	ÚĬ ƵĤ Œ ĒĖĀ
L82	92.24'	ÚĬ ƵĤ Œ ĒĖĀ
L83	93.90'	ÚĬ ƵĤ Œ ĒĖĀ
L200	91.84'	ÚĬ ƵĤ Œ ĒĖĀ
L201	28.31'	ÚĬ ƵĤ Œ ĒĖĀ
L202	6.25'	ÚĬ ƵĤ Œ ĒĖĀ
L203	87.61'	ÚĬ ƵĤ Œ ĒĖĀ
L204	45.19'	ÚĬ ƵĤ Œ ĒĖĀ
L205	36.98'	ÚĬ ƵĤ Œ ĒĖĀ
L206	36.98'	ÚĬ ƵĤ Œ ĒĖĀ
L207	1.46'	ÚĬ ƵĤ Œ ĒĖĀ
L208	25.66'	ÚĬ ƵĤ Œ ĒĖĀ
L209	28.80'	ÚĬ ƵĤ Œ ĒĖĀ
L210	79.44'	ÚĬ ƵĤ Œ ĒĖĀ
L211	39.75'	ÚĬ ƵĤ Œ ĒĖĀ
L212	14.32'	ÚĬ ƵĤ Œ ĒĖĀ
L213	27.41'	ÚĬ ƵĤ Œ ĒĖĀ
L214	66.97'	ÚĬ ƵĤ Œ ĒĖĀ
L215	4.14'	ÚĬ ƵĤ Œ ĒĖĀ
L216	53.84'	ÚĬ ƵĤ Œ ĒĖĀ
L217	37.44'	ÚĬ ƵĤ Œ ĒĖĀ
L218	15.79'	ÚĬ ƵĤ Œ ĒĖĀ

LINE TABLE (DESIGN)		
LINE No.	LENGTH	DIRECTION
L219	35.53'	ÚĬ ƵĤ Œ ĒĖĀ
L220	43.80'	ÚĬ ƵĤ Œ ĒĖĀ
L221	76.70'	ÚĬ ƵĤ Œ ĒĖĀ
L300	31.31'	ÚĬ ƵĤ Œ ĒĖĀ
L301	42.30'	ÚĬ ƵĤ Œ ĒĖĀ
L302	57.45'	ÚĬ ƵĤ Œ ĒĖĀ
L400	24.14'	ÚĬ ƵĤ Œ ĒĖĀ
L401	112.99'	ÚĬ ƵĤ Œ ĒĖĀ
L402	40.02'	ÚĬ ƵĤ Œ ĒĖĀ
L403	60.35'	ÚĬ ƵĤ Œ ĒĖĀ
L404	196.19'	ÚĬ ƵĤ Œ ĒĖĀ
L500	168.89'	ÚĬ ƵĤ Œ ĒĖĀ
L502	33.22'	ÚĬ ƵĤ Œ ĒĖĀ
L503	14.12'	ÚĬ ƵĤ Œ ĒĖĀ
L504	84.93'	ÚĬ ƵĤ Œ ĒĖĀ
L505	82.45'	ÚĬ ƵĤ Œ ĒĖĀ
L506	32.95'	ÚĬ ƵĤ Œ ĒĖĀ
L507	34.24'	ÚĬ ƵĤ Œ ĒĖĀ
L508	88.99'	ÚĬ ƵĤ Œ ĒĖĀ
L600	16.00'	ÚĬ ƵĤ Œ ĒĖĀ
L601	15.80'	ÚĬ ƵĤ Œ ĒĖĀ
L602	9.27'	ÚĬ ƵĤ Œ ĒĖĀ
L603	20.42'	ÚĬ ƵĤ Œ ĒĖĀ
L604	48.10'	ÚĬ ƵĤ Œ ĒĖĀ
L605	43.85'	ÚĬ ƵĤ Œ ĒĖĀ
L606	37.74'	ÚĬ ƵĤ Œ ĒĖĀ
L607	31.26'	ÚĬ ƵĤ Œ ĒĖĀ
L608	38.34'	ÚĬ ƵĤ Œ ĒĖĀ
L609	28.74'	ÚĬ ƵĤ Œ ĒĖĀ
L610	54.58'	ÚĬ ƵĤ Œ ĒĖĀ
L611	46.02'	ÚĬ ƵĤ Œ ĒĖĀ
L612	15.45'	ÚĬ ƵĤ Œ ĒĖĀ
L613	52.79'	ÚĬ ƵĤ Œ ĒĖĀ
L614	31.19'	ÚĬ ƵĤ Œ ĒĖĀ

LINE TABLE (DESIGN)		
LINE No.	LENGTH	DIRECTION
L615	100.86'	ÚĬ ƵĤ Œ ĒĖĀ
L616	46.37'	ÚĬ ƵĤ Œ ĒĖĀ
L617	41.73'	ÚĬ ƵĤ Œ ĒĖĀ
L618	43.86'	ÚĬ ƵĤ Œ ĒĖĀ
L619	10.75'	ÚĬ ƵĤ Œ ĒĖĀ
L620	7.10'	ÚĬ ƵĤ Œ ĒĖĀ
L621	11.39'	ÚĬ ƵĤ Œ ĒĖĀ
L622	14.58'	ÚĬ ƵĤ Œ ĒĖĀ
L623	19.05'	ÚĬ ƵĤ Œ ĒĖĀ
L624	15.03'	ÚĬ ƵĤ Œ ĒĖĀ
L625	7.15'	ÚĬ ƵĤ Œ ĒĖĀ
L626	1.41'	ÚĬ ƵĤ Œ ĒĖĀ
L627	36.10'	ÚĬ ƵĤ Œ ĒĖĀ
L628	50.18'	ÚĬ ƵĤ Œ ĒĖĀ
L629	13.29'	ÚĬ ƵĤ Œ ĒĖĀ
L630	27.32'	ÚĬ ƵĤ Œ ĒĖĀ
L631	11.51'	ÚĬ ƵĤ Œ ĒĖĀ
L632	53.01'	ÚĬ ƵĤ Œ ĒĖĀ
L633	3.97'	ÚĬ ƵĤ Œ ĒĖĀ
L634	27.87'	ÚĬ ƵĤ Œ ĒĖĀ
L635	18.41'	ÚĬ ƵĤ Œ ĒĖĀ
L636	18.70'	ÚĬ ƵĤ Œ ĒĖĀ
L637	0.75'	ÚĬ ƵĤ Œ ĒĖĀ
L638	18.82'	ÚĬ ƵĤ Œ ĒĖĀ
L639	19.90'	ÚĬ ƵĤ Œ ĒĖĀ
L640	34.06'	ÚĬ ƵĤ Œ ĒĖĀ
L641	16.92'	ÚĬ ƵĤ Œ ĒĖĀ
L642	35.46'	ÚĬ ƵĤ Œ ĒĖĀ
L643	57.01'	ÚĬ ƵĤ Œ ĒĖĀ
L644	80.41'	ÚĬ ƵĤ Œ ĒĖĀ
L645	88.67'	ÚĬ ƵĤ Œ ĒĖĀ
L704	50.04'	ÚĬ ƵĤ Œ ĒĖĀ
L705	72.36'	ÚĬ ƵĤ Œ ĒĖĀ

CURVE TABLE (DESIGN)					
CURVE No.	RADIUS	LENGTH	DELTA	CH. DIRECTION	CH. LENGTH
C1	300.00'	202.13'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	198.33'
C2	300.00'	172.03'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	169.68'
C3	350.00'	153.39'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	152.17'
C4	350.00'	69.28'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	69.16'
C5	400.00'	173.79'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	172.43'
C6	275.00'	348.66'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	325.78'
C7	250.00'	149.41'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	147.20'
C8	275.00'	299.49'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	284.91'
C9	201.06'	73.52'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	73.11'
C10	500.00'	222.03'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	220.21'
C11	350.00'	358.88'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	343.36'
C12	350.00'	300.68'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	291.52'
C13	300.00'	248.26'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	241.24'
C14	350.00'	122.23'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	121.61'
C15	350.00'	243.08'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	238.22'
C300	309.10'	267.06'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	258.83'
C301	283.35'	122.75'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	121.80'
C302	576.64'	248.73'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	246.80'
C303	576.64'	248.73'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	246.80'
C304	48.05'	18.38'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	18.27'
C400	250.00'	135.75'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	134.09'
C401	350.00'	65.74'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	65.65'
C402	250.00'	160.96'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	158.20'
C403	350.00'	245.62'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	240.61'
C404	250.00'	62.62'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	62.46'
C500	171.67'	45.87'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	45.73'
C501	239.01'	68.11'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	67.88'
C502	652.60'	247.21'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	245.73'
C503	128.67'	89.44'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	87.65'
C504	62.82'	31.22'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	30.90'
C505	85.23'	55.59'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	54.61'
C700	150.14'	162.59'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	154.76'
C701	176.48'	278.62'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	250.57'
C702	152.58'	203.56'	114.00'	ÚĬ ƵĤ Œ ĒĖĀ	188.79'

REFERENCE DRAWINGS

812-TITLEBLOCK-22x34

AERIALS

CONCURRENT PROJECTS

Ditch, Irrigation, Features

South St Vrain Topo 11-16-2016

PLAN AND PROFILE_80%

No.

DATE

DESCRIPTION

BY

COMPUTER FILE MANAGEMENT

FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\HORIZONTAL CONTROL PLAN 80%.dwg

CTB FILE: ---

PLOT DATE: 6/14/2017 11:03 AM

THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.

SHEET KEY

PREPARED FOR:

PREPARED BY:

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

BOULDER COUNTY PARKS AND OPEN SPACE

FINAL DESIGN

HORIZONTAL CONTROL

LINE & CURVE TABLES

DESIGNED BY: SJS

SCALE (22" X 34")

DATE ISSUED: 02/17/17

DRAWING No.

DRAWN BY: JDL

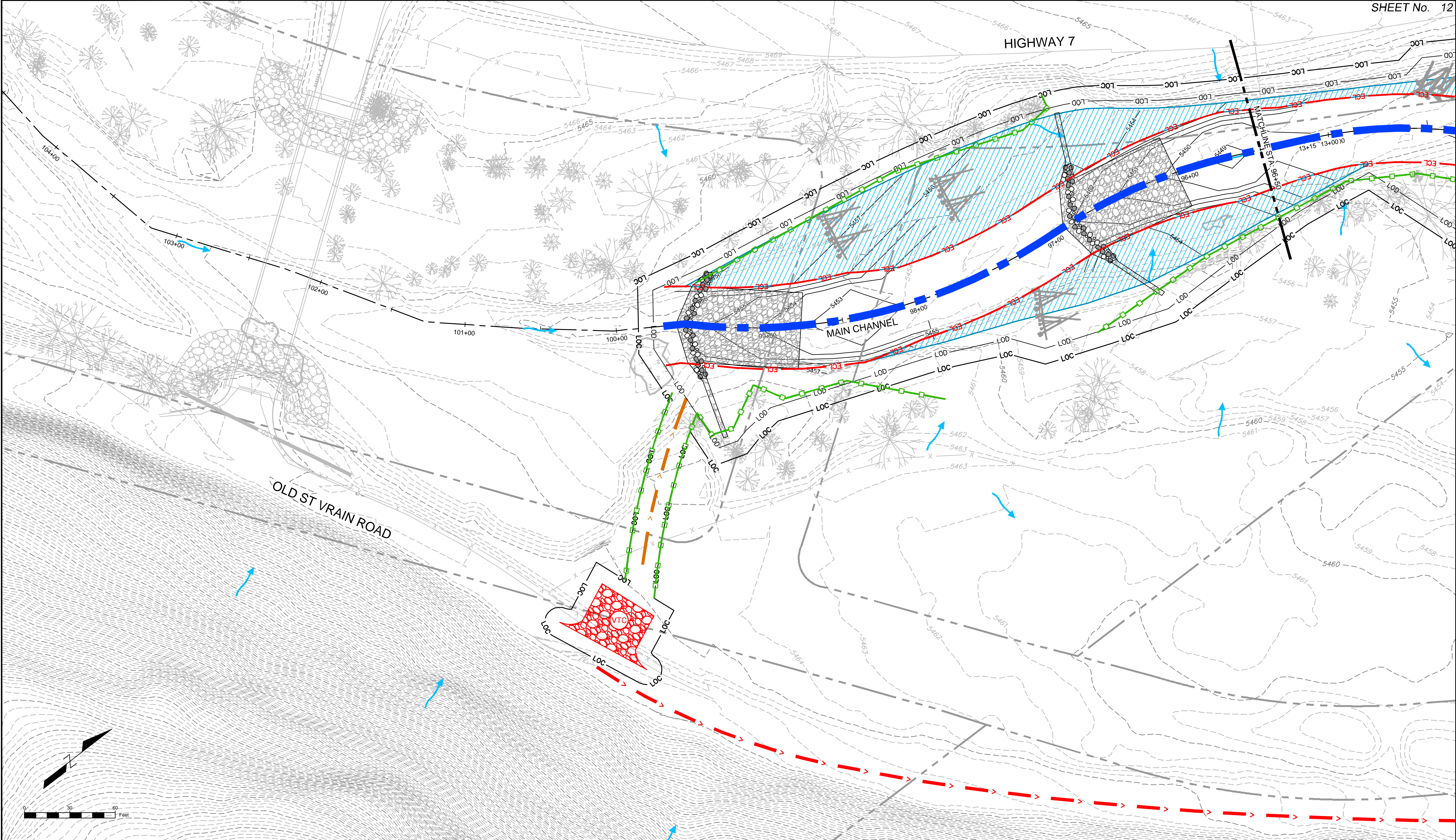
HORIZ. N/A

VERT. N/A

SHEET 10 OF 83

HCL 4

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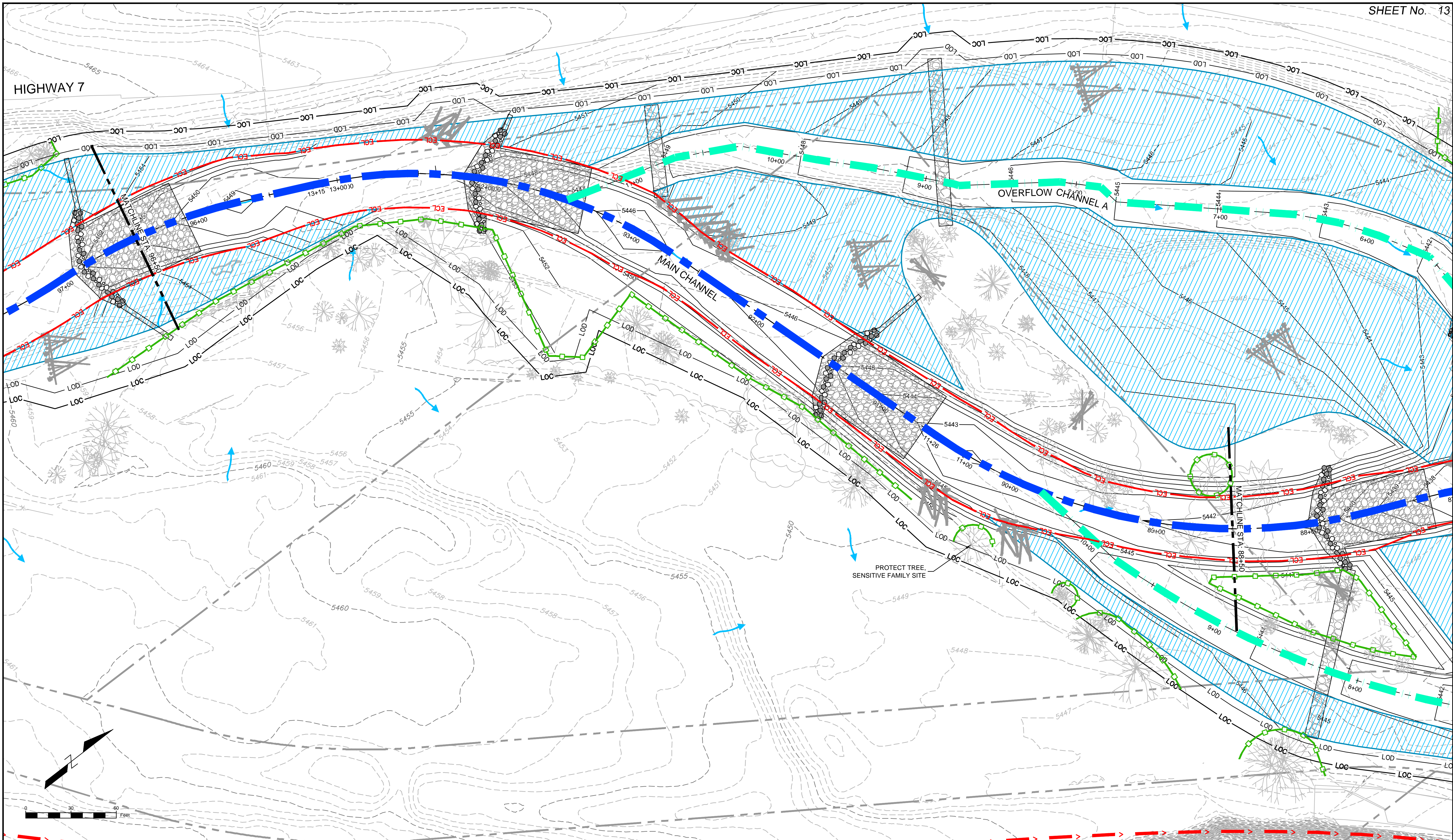
REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 AERIALS Plan and Profile, 80% South St Vrain Topo 11-18-2016 CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, JUB Proposed Labels, 80% HAUL ROUTES AND INTERNAL Proposed Linework, 80% TREE PROTECTION			
No.	DATE	DESCRIPTION	BY
COMPUTER FILE MANAGEMENT			
FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\EROSION CONTROL PLAN 80%.dwg			
CTB FILE: ---			
PLOT DATE: 6/14/2017 11:44 AM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			

SHEET KEY	

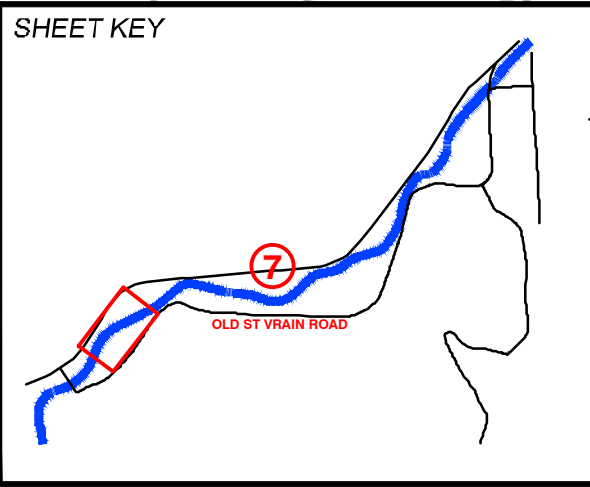
LEGEND	
LOC	LIMIT OF CONSTRUCTION
LOD	LIMIT OF DISTURBANCE
PLASTIC FENCE	
ECL	EROSION CONTROL LOGS
VEHICLE HAUL ROUTE	
INTERNAL ACCESS ROUTE	
VTC	VEHICLE TRACKING CONTROL
SP	STOCKPILE
SSA	STABILIZED STAGING AREA
ROCK CHECK DAM	
FLOW DIRECTION	

PREPARED FOR:	
PREPARED BY:	
FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003	

SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN			
STORMWATER MANAGEMENT PLAN STA: 105+00 TO STA: 96+50			
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:
DRAWN BY:	JDL	HORIZ. 1" = 30'	02/17/17
CHECKED BY:	RDK	VERT. N/A	SHEET 12 OF 83
			DRAWING No. SWMP 1



REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 AERIALS			
Plan and Profile, 80% South St Vrain Topo 11-18-2016			
CONCURRENT PROJECTS Old South St Vrain Road			
Old St Vrain Road Bridge, IUB			
Proposed Labels, 80%			
HAUL ROUTES AND INTERNAL ACCESS			
Proposed Linework, 80%			
TREE PROTECTION			
No.	DATE	DESCRIPTION	BY
COMPUTER FILE MANAGEMENT			
FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\EROSION CONTROL PLAN 80%.dwg			
CTB FILE: ---			
PLOT DATE: 6/14/2017 11:45 AM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			



LEGEND	
LOC	LIMIT OF CONSTRUCTION
LOD	LIMIT OF DISTURBANCE
ECL	EROSION CONTROL LOGS
VEHICLE HAUL ROUTE	
INTERNAL ACCESS ROUTE	
VEHICLE TRACKING CONTROL	
STOCKPILE	
STABILIZED STAGING AREA	
ROCK CHECK DAM	
FLOW DIRECTION	

PREPARED FOR:

Boulder County
Parks & Open Space

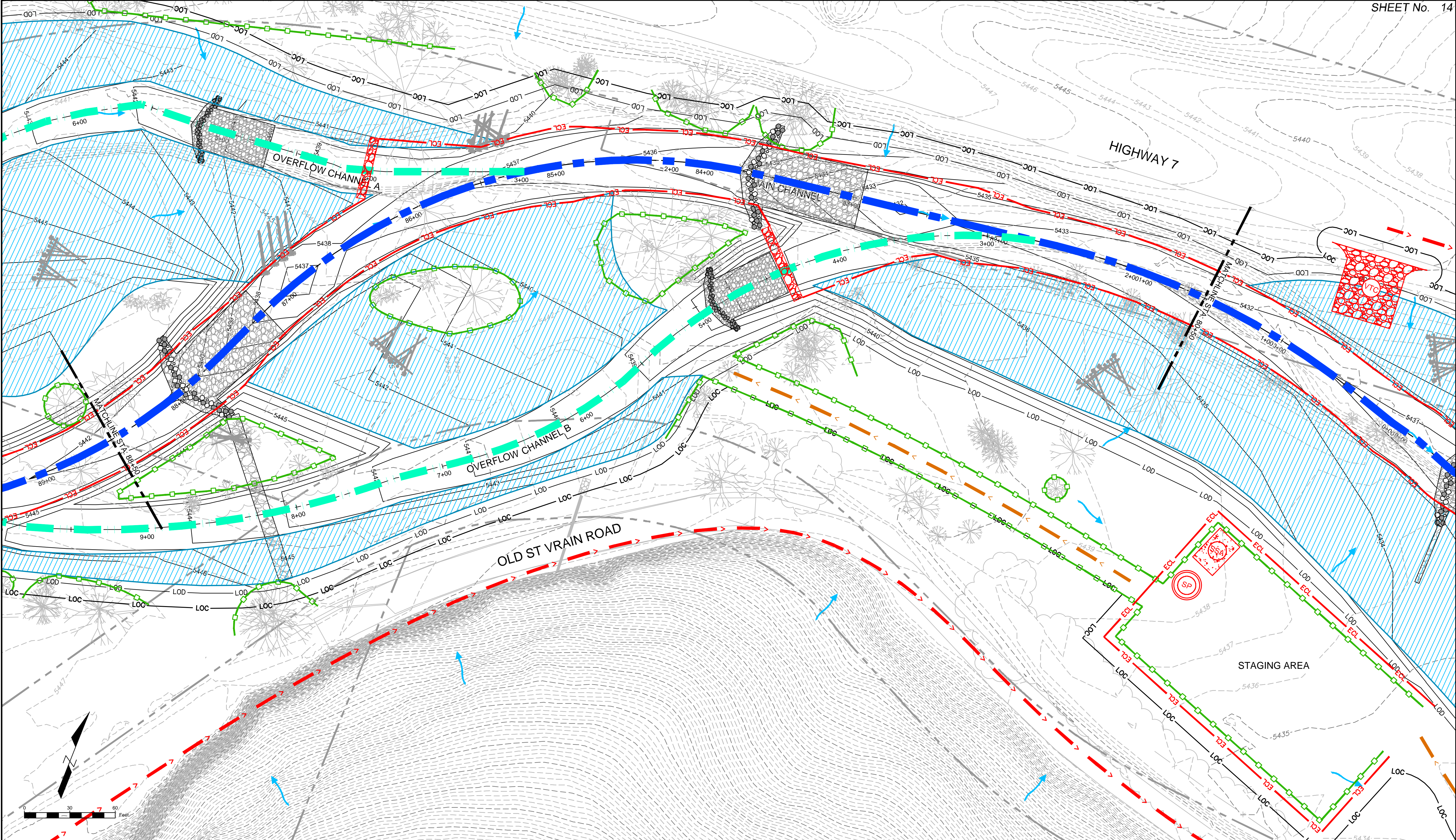
PREPARED BY:

Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

COLORADO LICENSED
D. D. SCHMIDT
46577
2/17/17
PROFESSIONAL ENGINEER

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN			
STORMWATER MANAGEMENT PLAN STA: 96+50 TO STA: 88+50			
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:
DRAWN BY:	JDL	HORIZ. 1" = 30'	02/17/17
CHECKED BY:	RDK	VERT. N/A	SHEET 13 OF 83
			DRAWING No. SWMP 2



REFERENCE DRAWINGS

812-TITLEBLOCK-22x34
AERIALS
PLAN AND PROFILE, 80%
South St Vrain Topo 11-18-2016
CONCURRENT PROJECTS
Old South St Vrain Road
Old St Vrain Road Bridge, JUB
Proposed Labels 80%
HAUL ROUTES AND INTERNAL
Proposed Linework 80%
TREE PROTECTION

No.	DATE	DESCRIPTION	BY
REVISIONS			

ACCESS

COMPUTER FILE MANAGEMENT

FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\EROSION CONTROL PLAN 80%.dwg
CTB FILE: ---
PLOT DATE: 6/14/2017 11:46 AM
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.

SHEET KEY

LEGEND

LOC

—

LIMIT OF CONSTRUCTION

LOD

—

LIMIT OF DISTURBANCE

—□—□—

PLASTIC FENCE

—ECL—

EROSION CONTROL LOGS

—<—

VEHICLE HAUL ROUTE

—<—

INTERNAL ACCESS ROUTE

—VTC—

VEHICLE TRACKING CONTROL

—SP—

STOCKPILE

—SSA—

STABILIZED STAGING AREA

—RCD—

ROCK CHECK DAM

—>—

FLOW DIRECTION

PREPARED FOR:

Boulder County
Parks & Open Space

PREPARED BY:

Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

BOULDER COUNTY PARKS AND OPEN SPACE
FINAL DESIGN

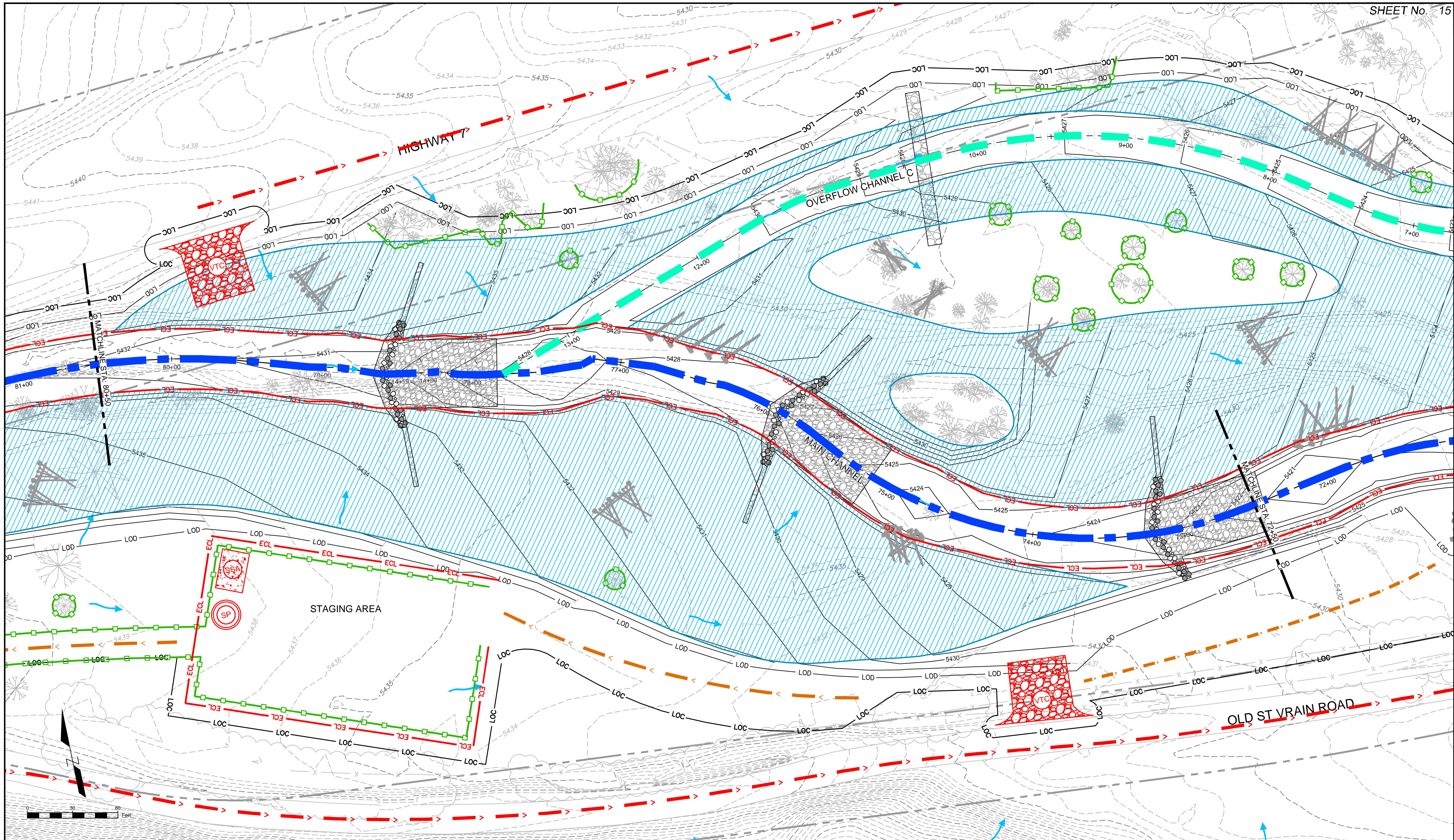
STORMWATER MANAGEMENT PLAN
STA: 88+50 TO STA: 80+50

DESIGNED BY: SDS
DRAWN BY: JDL
CHECKED BY: RDK

SCALE (22" X 34")
HORIZ. 1" = 30'
VERT. N/A

DATE ISSUED: 02/17/17
SHEET 14 OF 83

DRAWING No. SWMP 3



REFERENCE DRAWINGS		No.		DATE	DESCRIPTION	BY
812-TITLEBLOCK-22x34 AERIALS						
PLAN AND PROFILE, 80% South St Vrain Topo 11-18-2016						
CONCURRENT PROJECTS Old South St Vrain Road						
Old St Vrain Road Bridge, IUB						
PROPOSED LINEWORK 80% HALL, ROUTES AND INTERNAL TREE PROTECTION						

COMPUTER FILE MANAGEMENT	
FILE NAME:	r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\EROSION CONTROL PLAN 80%.dwg
CTB FILE:	---
PLOT DATE:	6/14/2017 11:47 AM
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.	

SHEET KEY

LEGEND

LOC	—	LIMIT OF CONSTRUCTION	VTC	VEHICLE TRACKING CONTROL
LOD	—	LIMIT OF DISTURBANCE	SP	STOCKPILE
—□—□—		PLASTIC FENCE	SSA	STABILIZED STAGING AREA
ECL	—	EROSION CONTROL LOGS	—X—X—	ROCK CHECK DAM
<		VEHICLE HAUL ROUTE	—>	FLOW DIRECTION
<		INTERNAL ACCESS ROUTE		

PREPARED FOR:

PREPARED BY:

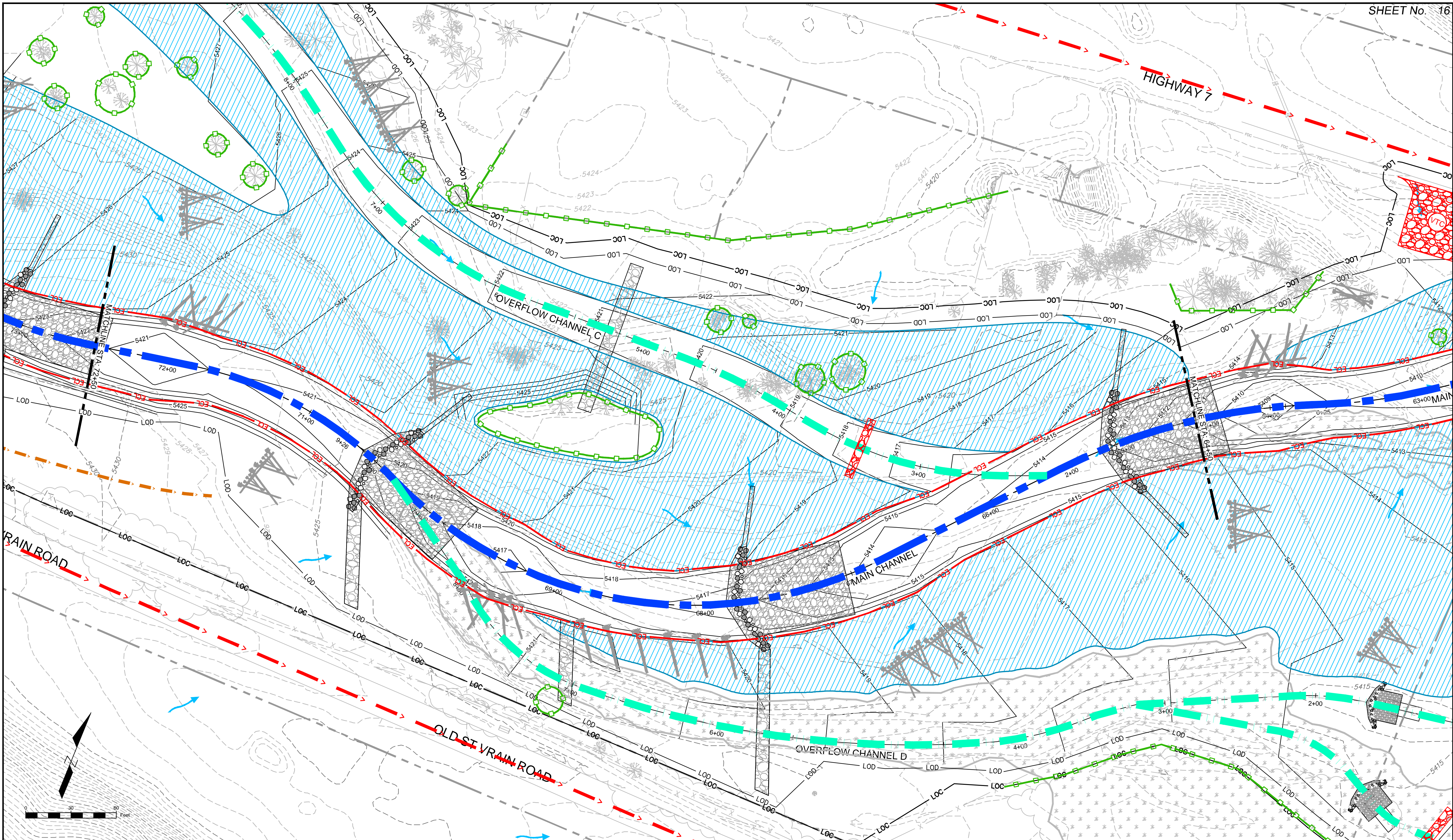
FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

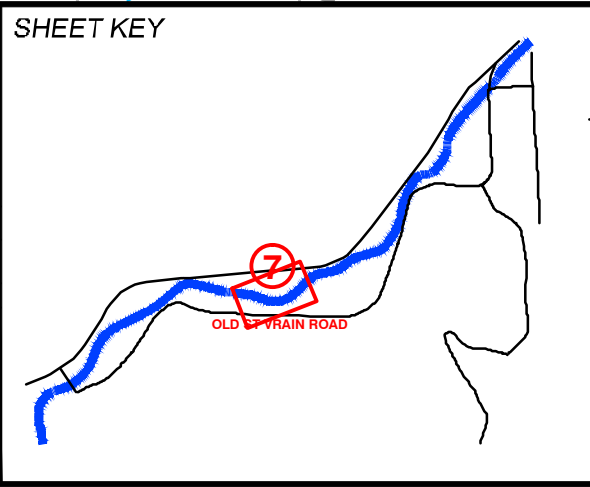
BOULDER COUNTY PARKS AND OPEN SPACE
FINAL DESIGN

STORMWATER MANAGEMENT PLAN
STA: 80+50 TO STA: 72+50

DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:	02/17/17	DRAWING No.
CHECKED BY:	JDL	HORIZ. 1" = 30'	SHEET	15 OF 83	SWMP 4
	RDK	VERT. N/A			



REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 AERIALS PLAN AND PROFILE, 80% South St Vrain Topo 11-16-2016 CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, JUB Proposed Labels 80% HAUL ROUTES AND INTERNAL Proposed Linework 80% TREE PROTECTION			
No.	DATE	DESCRIPTION	BY
COMPUTER FILE MANAGEMENT			
FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\EROSION CONTROL PLAN 80%.dwg			
CTB FILE: ---			
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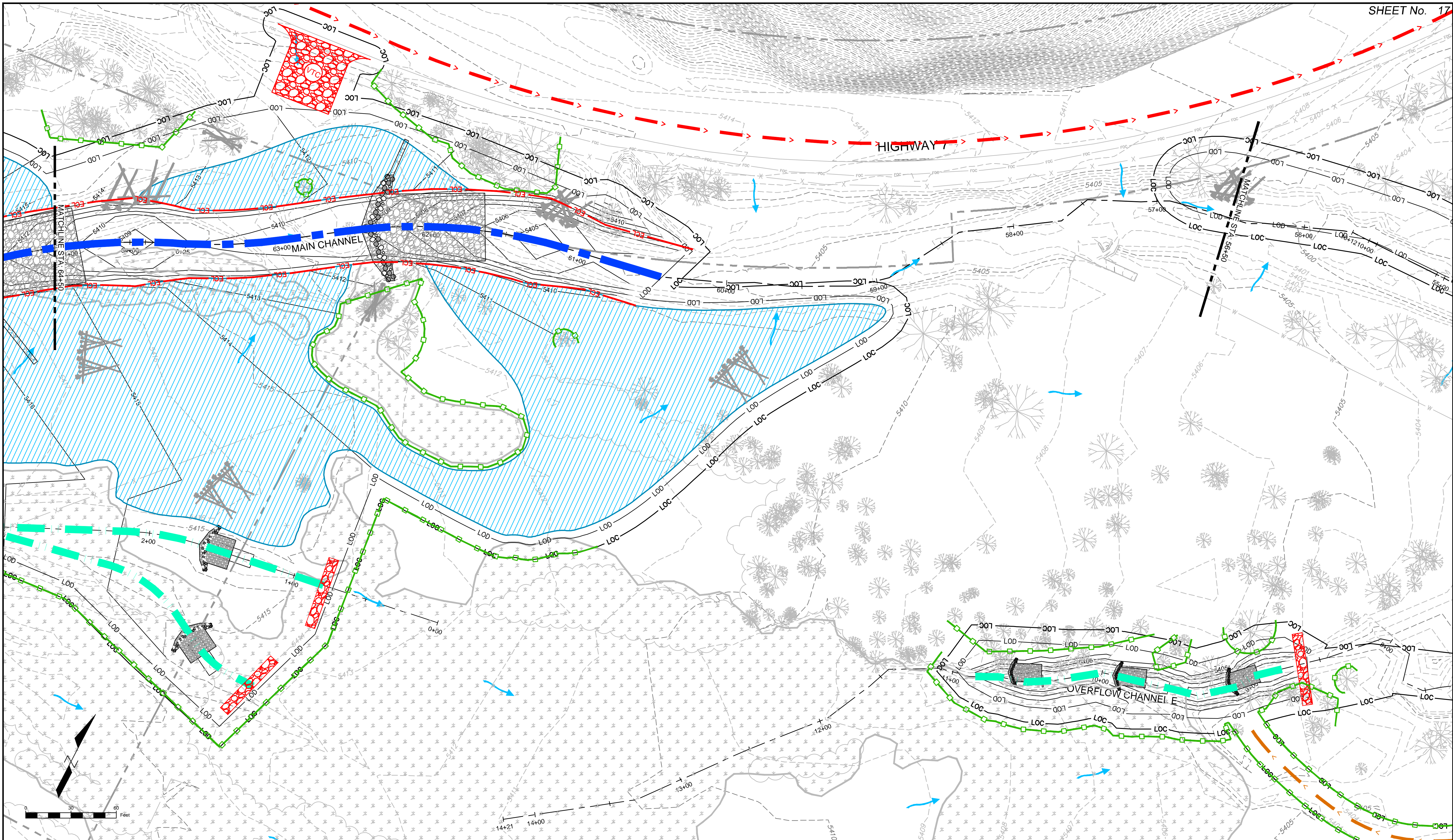


LEGEND	
LOC	LIMIT OF CONSTRUCTION
LOD	LIMIT OF DISTURBANCE
PLASTIC FENCE	
ECL	EROSION CONTROL LOGS
VEHICLE HAUL ROUTE	
INTERNAL ACCESS ROUTE	
VEHICLE TRACKING CONTROL	
STOCKPILE	
STABILIZED STAGING AREA	
ROCK CHECK DAM	
FLOW DIRECTION	

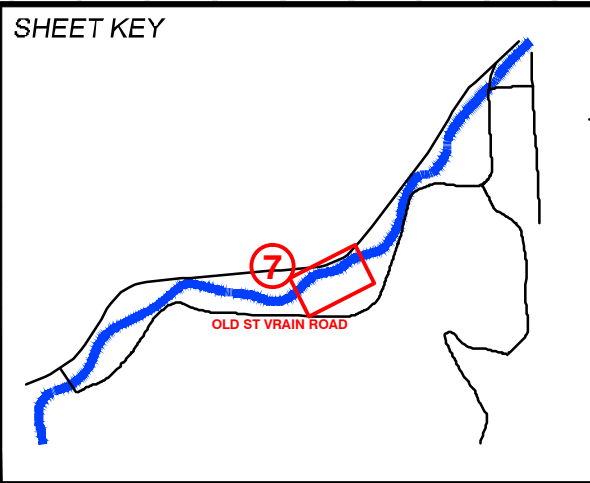
PREPARED FOR:
Boulder County
Parks & Open Space
PREPARED BY:
Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

COLORADO LICENSED
D. SCHMIDT
46577
2/9/17
PROFESSIONAL ENGINEER
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION				
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN				
STORMWATER MANAGEMENT PLAN STA: 72+50 TO STA: 64+50				
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:	02/17/17
DRAWN BY:	JDL	HORIZ. 1" = 30'	SHEET	16 OF 83
CHECKED BY:	RDK	VERT. N/A		
				DRAWING No. SWMP 5



REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 AERIALS Planets PLAN AND PROFILE, 80% South St Vrain Topo 11-18-2016 CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, JUB Proposed Labels 80% HAUL ROUTES AND INTERNAL Proposed Linework 80% TREE PROTECTION			
No.	DATE	DESCRIPTION	BY
REVISIONS			
COMPUTER FILE MANAGEMENT			
FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\EROSION CONTROL PLAN 80%.dwg			
CTB FILE: ---			
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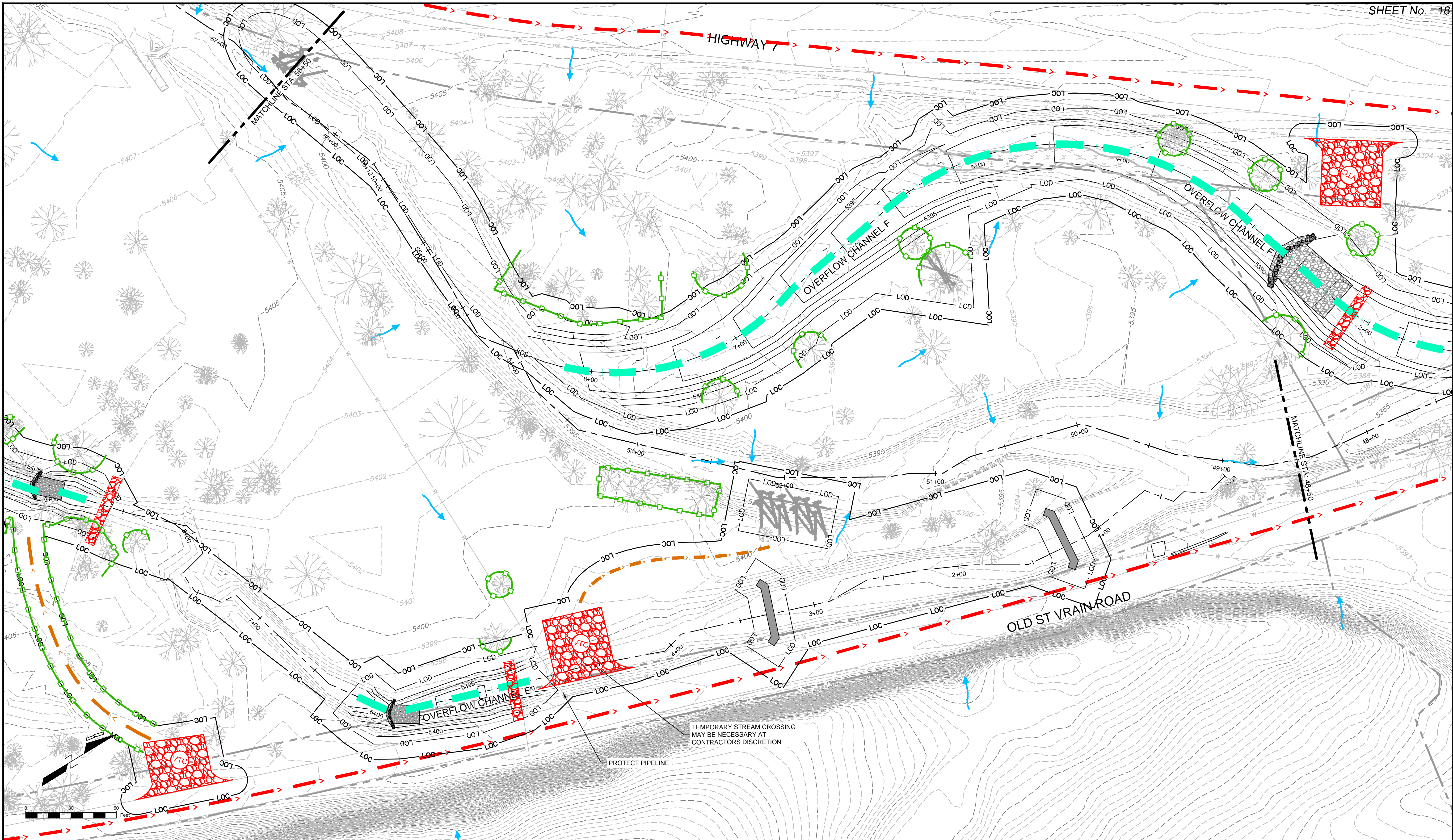


LEGEND	
LOC	LIMIT OF CONSTRUCTION
LOD	LIMIT OF DISTURBANCE
PLASTIC FENCE	
ECL	EROSION CONTROL LOGS
VEHICLE HAUL ROUTE	
INTERNAL ACCESS ROUTE	
VTC	VEHICLE TRACKING CONTROL
SP	STOCKPILE
SSA	STABILIZED STAGING AREA
ROCK CHECK DAM	
FLOW DIRECTION	

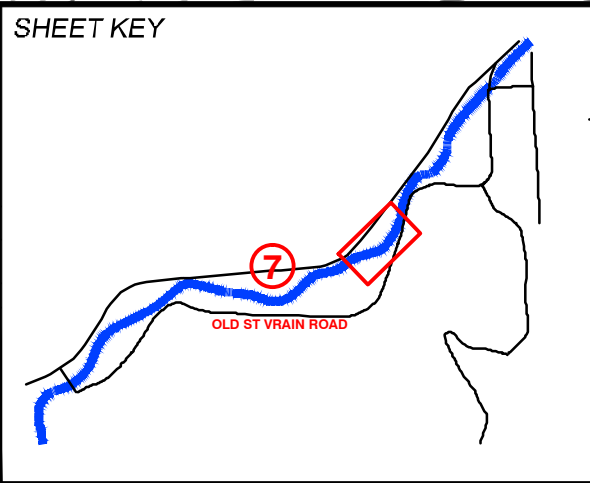
PREPARED FOR:
Boulder County
Parks & Open Space
PREPARED BY:
Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

COLORADO LICENSED
D. SCHMIDT
46577
2/9/17
PROFESSIONAL ENGINEER
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN			
STORMWATER MANAGEMENT PLAN STA: 64+50 TO STA: 56+50			
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:
DRAWN BY:	JDL	HORIZ. 1" = 30'	02/17/17
CHECKED BY:	RDK	VERT. N/A	17 OF 83
SHEET			DRAWING No. SWMP 6



REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 AERIALS Plan and Profile, 80% South St Vrain Topo 11-18-2016 CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, IUB Proposed Labels, 80% HAUL ROUTES AND INTERNAL Proposed Linework, 80% TREE PROTECTION			
No.	DATE	DESCRIPTION	BY
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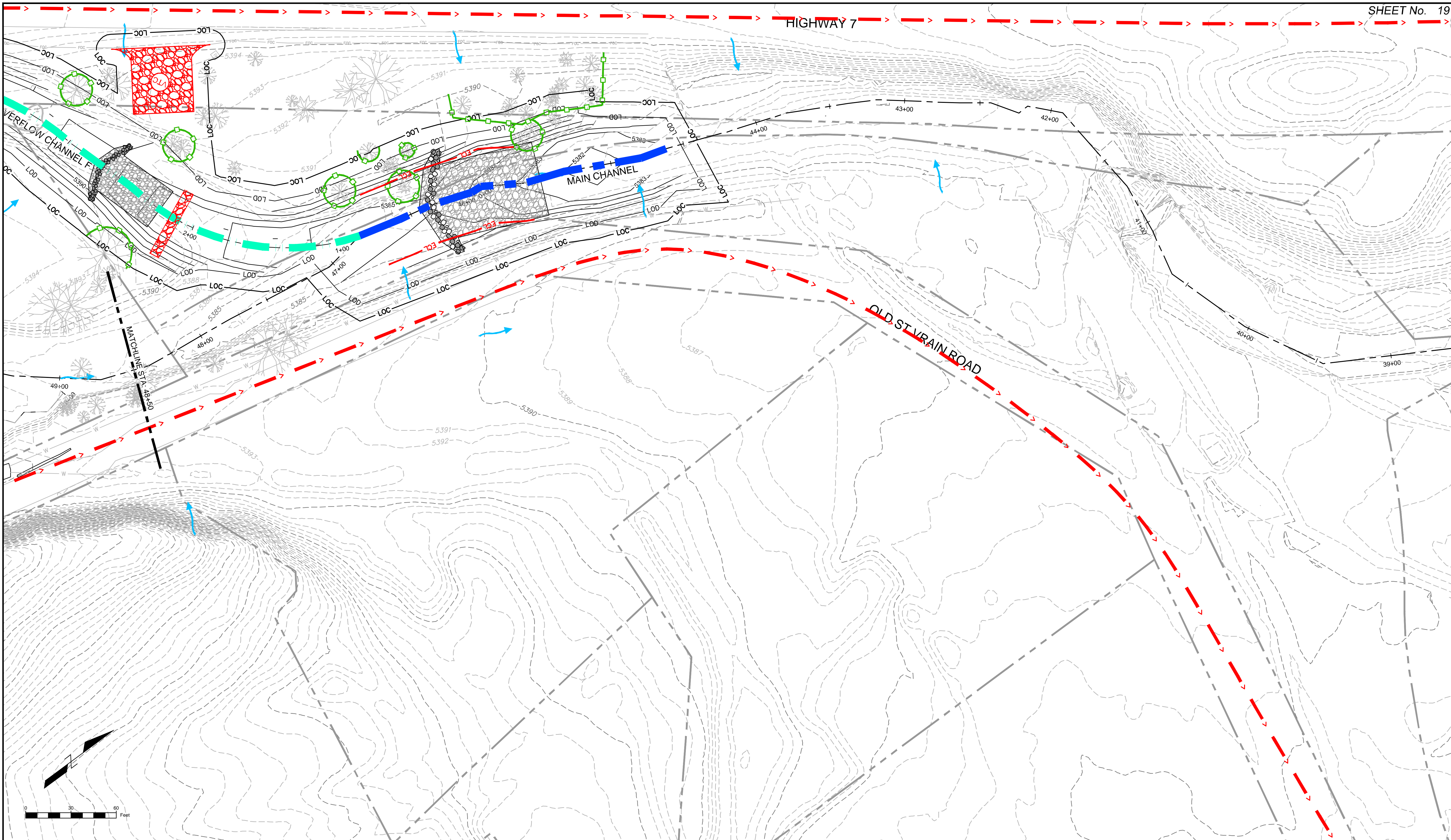
LEGEND	
LOC	LIMIT OF CONSTRUCTION
LOD	LIMIT OF DISTURBANCE
PLASTIC FENCE	
ECL	EROSION CONTROL LOGS
VEHICLE HAUL ROUTE	
INTERNAL ACCESS ROUTE	
VTCT	VEHICLE TRACKING CONTROL
SP	STOCKPILE
SSA	STABILIZED STAGING AREA
ROCK CHECK DAM	
FLOW DIRECTION	

PREPARED FOR:
Boulder County
Parks & Open Space
PREPARED BY:
Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

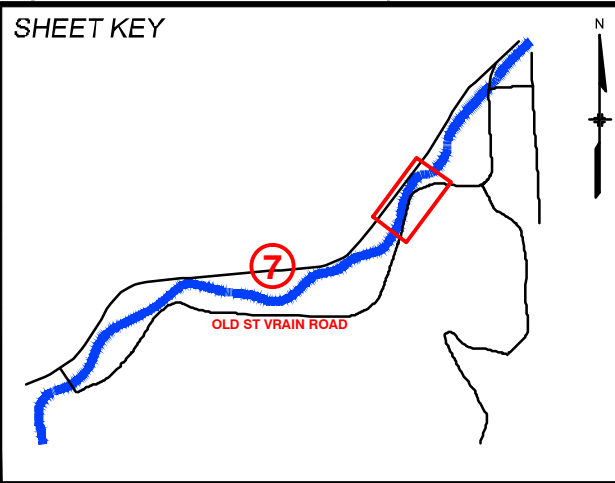
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION
BOULDER COUNTY PARKS AND OPEN SPACE
FINAL DESIGN
STORMWATER MANAGEMENT PLAN
STA: 56+50 TO STA: 48+50

DESIGNED BY: SDS	SCALE (22" X 34")	DATE ISSUED: 02/17/17	DRAWING No.
CHECKED BY: JDL	HORIZ. 1" = 30'	SHEET 18 OF 83	SWMP 7
	VERT. N/A		



REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 AERIALS PLAN AND PROFILE 80% South St Vrain Topo 11-16-2016 CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge JUB Proposed Labels 80% HAUL ROUTES AND INTERNAL Proposed Linework 80% TREE PROTECTION			
No.	DATE	DESCRIPTION	BY
COMPUTER FILE MANAGEMENT			
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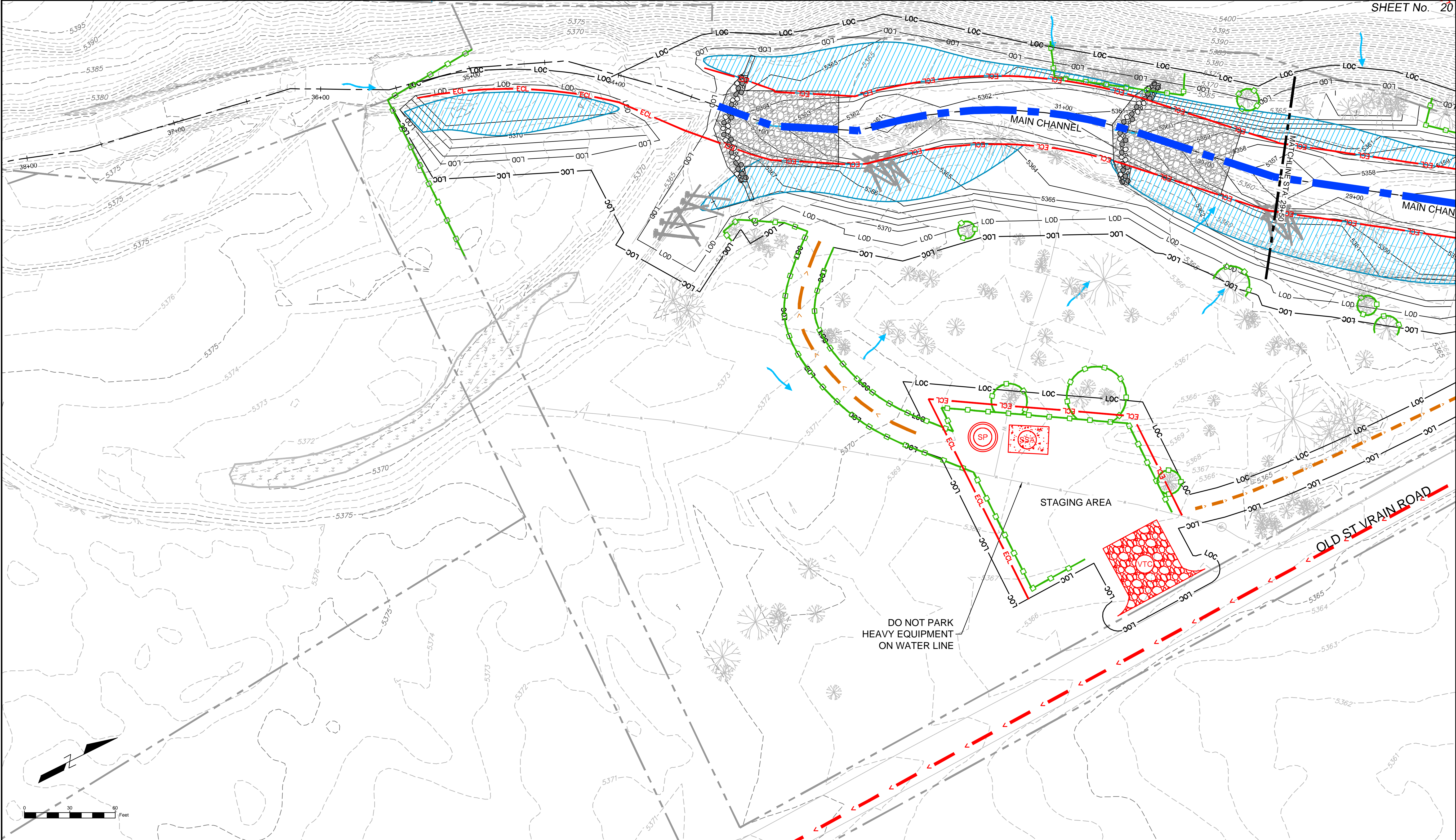


LEGEND	
LOC	LIMIT OF CONSTRUCTION
L0D	LIMIT OF DISTURBANCE
PLASTIC FENCE	
ECL	EROSION CONTROL LOGS
<	VEHICLE HAUL ROUTE
<	INTERNAL ACCESS ROUTE
VTCT	VEHICLE TRACKING CONTROL
SP	STOCKPILE
SSA	STABILIZED STAGING AREA
ROCK CHECK DAM	
FLOW DIRECTION	

PREPARED FOR:
Boulder County
Parks & Open Space
PREPARED BY:
Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN			
STORMWATER MANAGEMENT PLAN STA: 48+50 TO STA: 40+50			
DESIGNED BY: SDS	SCALE (22" X 34")	DATE ISSUED: 02/17/17	DRAWING No.
CHECKED BY: JDL	HORIZ. 1" = 30'	SHEET 19 OF 83	SWMP 8
	VERT. N/A		



REFERENCE DRAWINGS		No.		DATE	DESCRIPTION	BY
812-TITLEBLOCK-22x34 AERIALS						
PLAN AND PROFILE, 80% South St Vrain Topo 11-18-2016						
CONCURRENT PROJECTS Old South St Vrain Road						
Old St Vrain Road Bridge, IUB						
Proposed Labels 80%						
HAUL ROUTES AND INTERNAL ACCESS						
Proposed Linework 80%						
TREE PROTECTION						

COMPUTER FILE MANAGEMENT	
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SHEET KEY

LEGEND

- LOC — LIMIT OF CONSTRUCTION
- LOD — LIMIT OF DISTURBANCE
- PLASTIC FENCE
- ECL — EROSION CONTROL LOGS
- < — VEHICLE HAUL ROUTE
- < — INTERNAL ACCESS ROUTE
- VTC — VEHICLE TRACKING CONTROL
- SP — STOCKPILE
- SSA — STABILIZED STAGING AREA
- RC — ROCK CHECK DAM
- FLOW DIRECTION

PREPARED FOR:

PREPARED BY:

AN EMPLOYEE-OWNED COMPANY

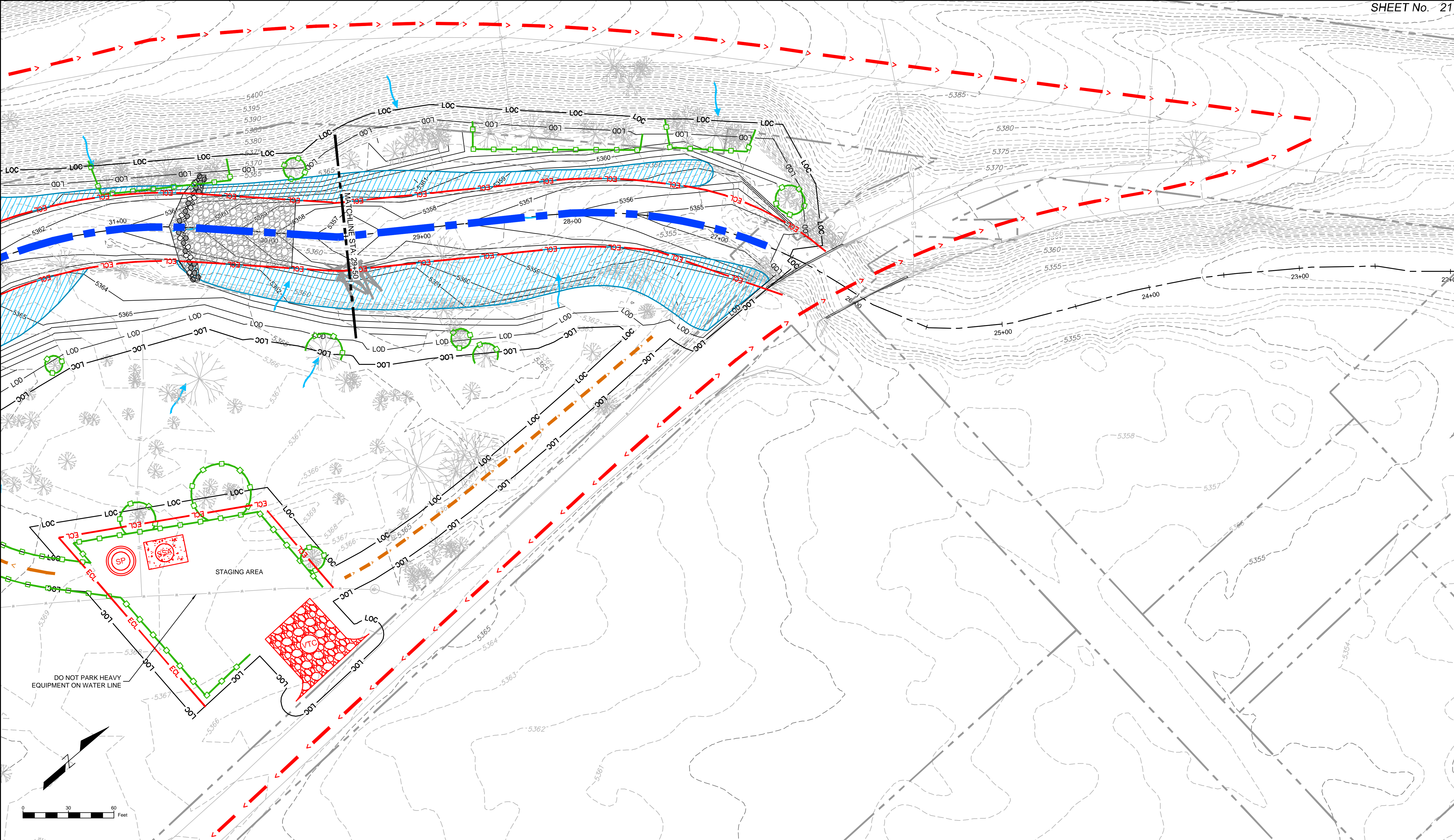
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

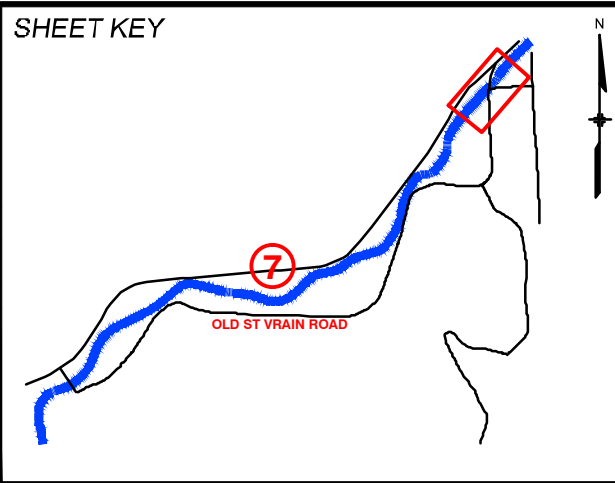
BOULDER COUNTY PARKS AND OPEN SPACE
FINAL DESIGN

STORMWATER MANAGEMENT PLAN
STA: 37+00 TO STA: 29+50

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DRAWN BY:	JDL <td>HORIZ. 1" = 30'</td> <td>02/17/17</td> <td rowspan="2">SWMP 9</td>	HORIZ. 1" = 30'	02/17/17	SWMP 9
CHECKED BY:	RDK <td>VERT. N/A</td> <td>SHEET 20 OF 83</td>	VERT. N/A	SHEET 20 OF 83	



REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 AERIALS PLAN AND PROFILE, 80% South St Vrain Topo 11-16-2016 CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, JUB Proposed Labels 80% HAUL ROUTES AND INTERNAL Proposed Linework 80% TREE PROTECTION			
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COMPUTER FILE MANAGEMENT			
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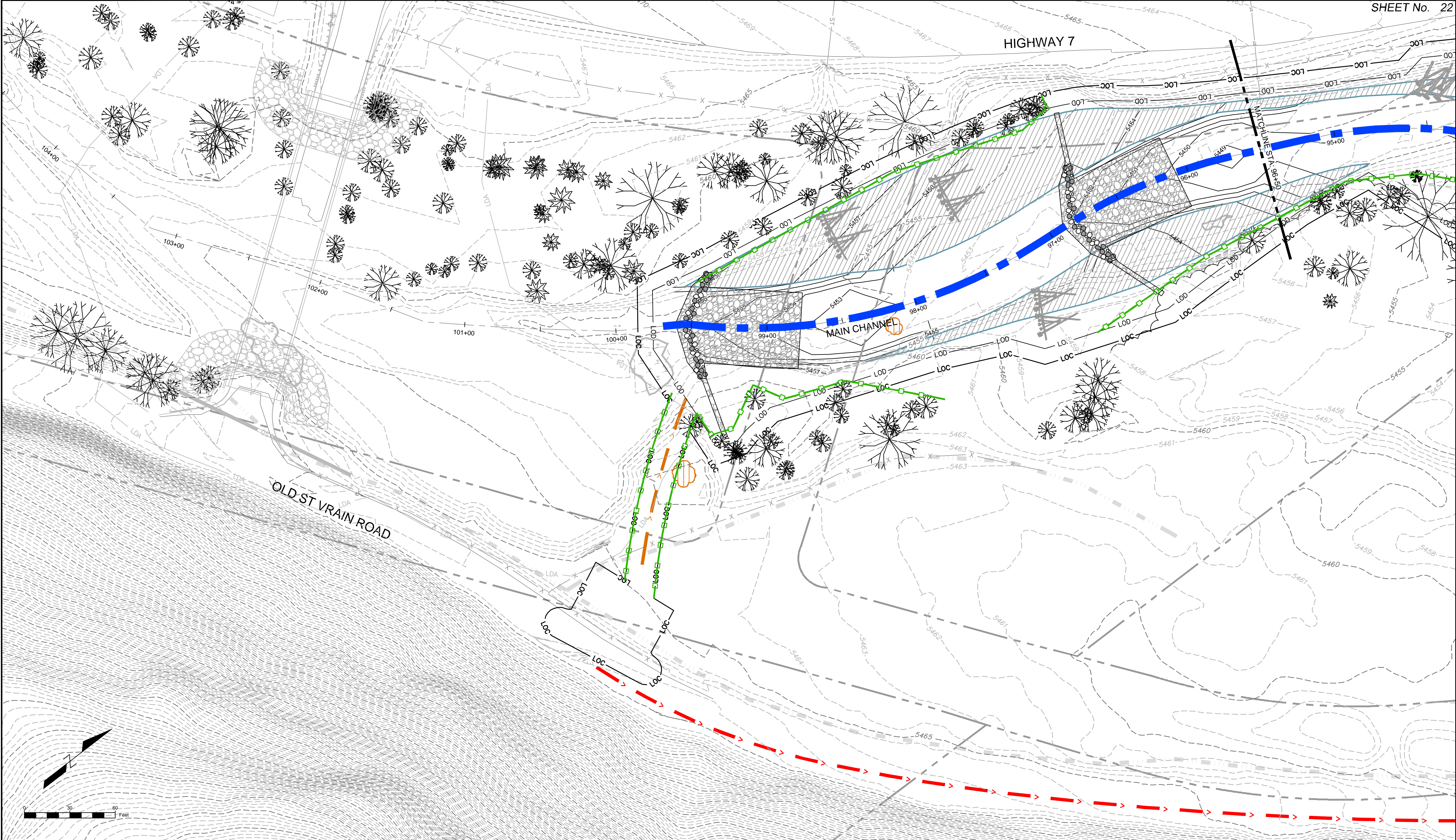


LEGEND	
LOC	LIMIT OF CONSTRUCTION
LOD	LIMIT OF DISTURBANCE
PLASTIC FENCE	
ECL	EROSION CONTROL LOGS
VEHICLE HAUL ROUTE	
INTERNAL ACCESS ROUTE	
VEHICLE TRACKING CONTROL	
STOCKPILE	
STABILIZED STAGING AREA	
ROCK CHECK DAM	
FLOW DIRECTION	

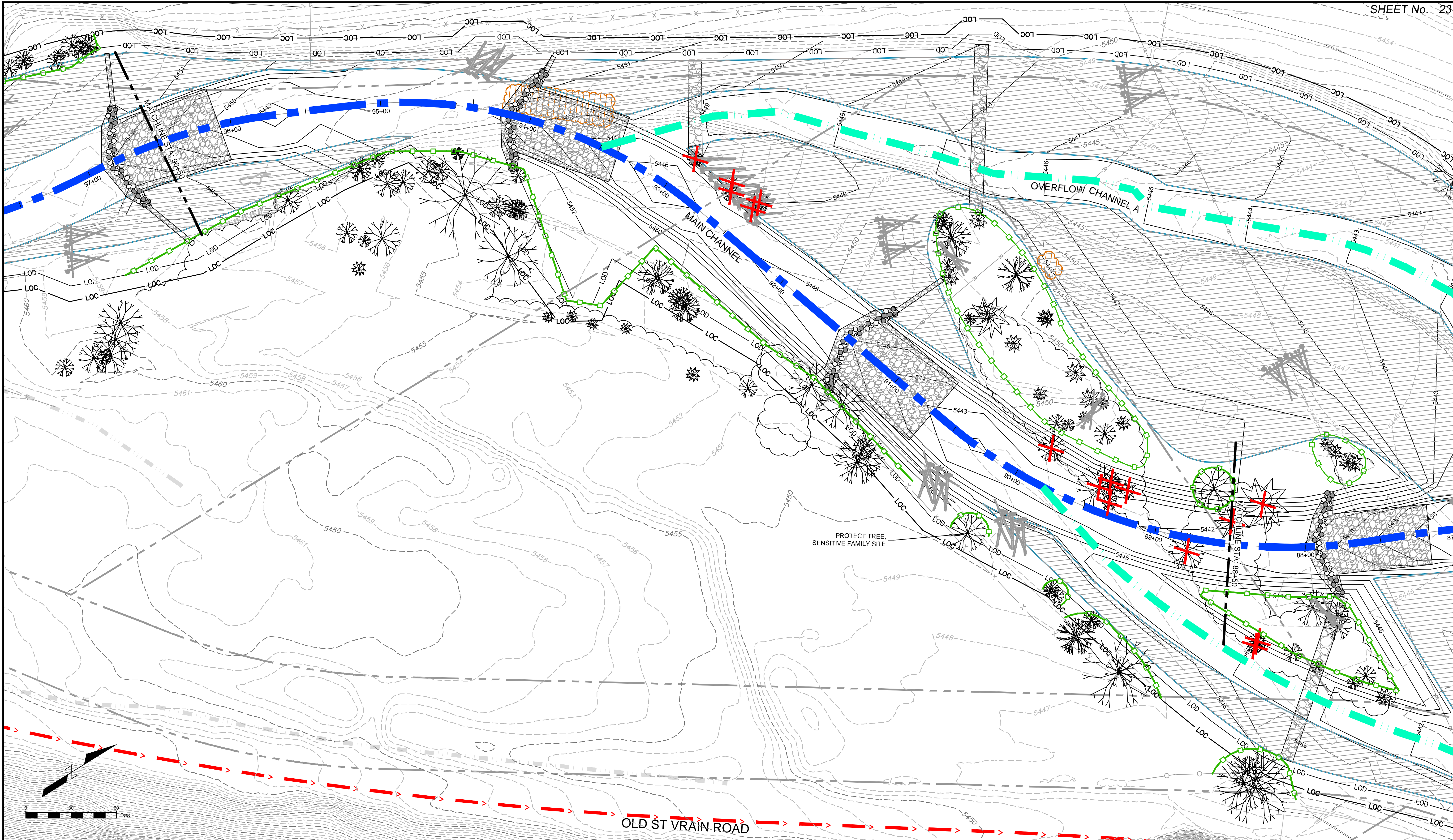
PREPARED FOR:
Boulder County
Parks & Open Space
PREPARED BY:
Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

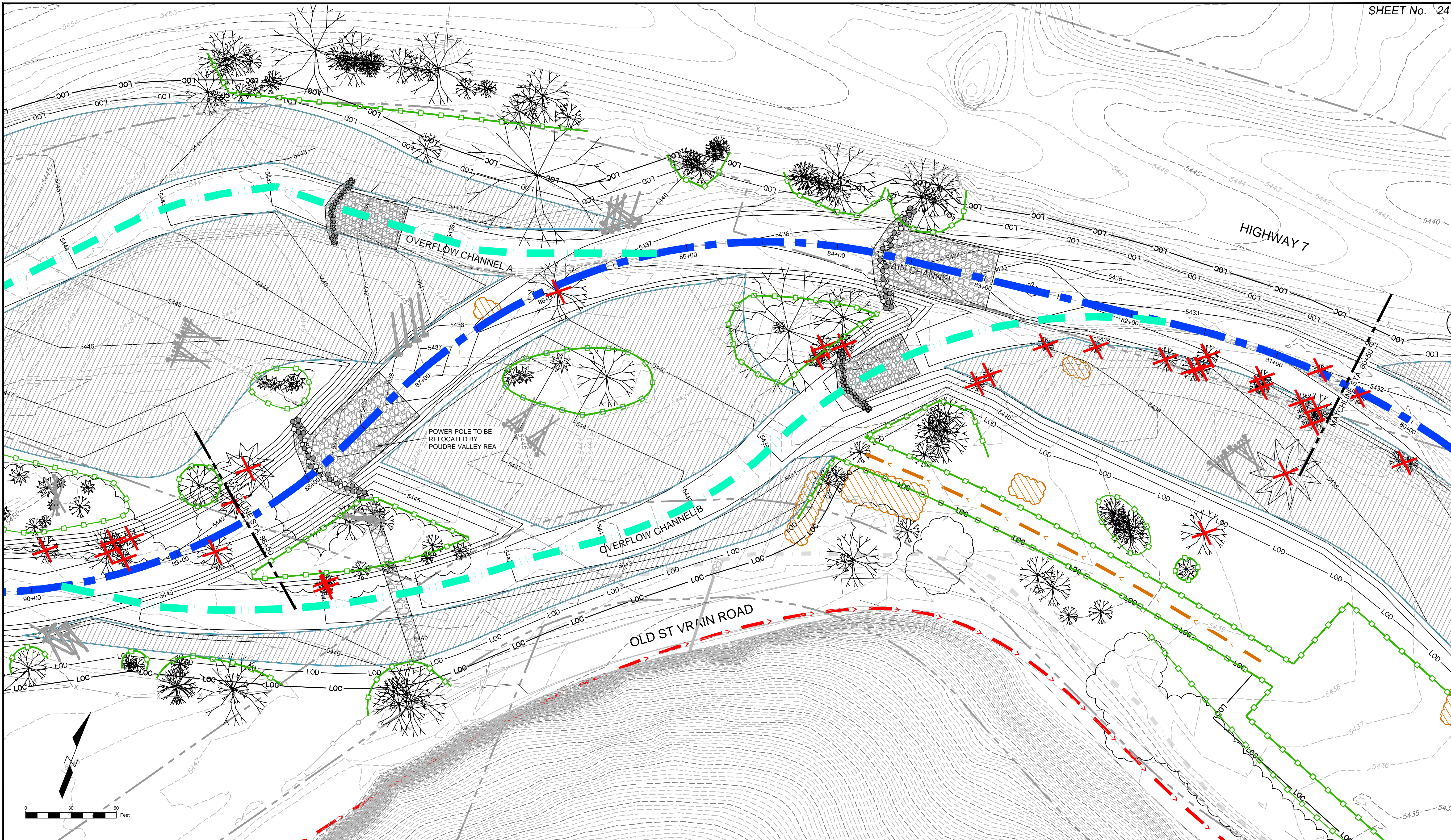
SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN			
STORMWATER MANAGEMENT PLAN STA: 29+50 TO STA: 21+00			
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:
CHECKED BY:	JDL	HORIZ. 1" = 30'	02/17/17
	RDK	VERT. N/A	SHEET 21 OF 83
			DRAWING No. SWMP 10



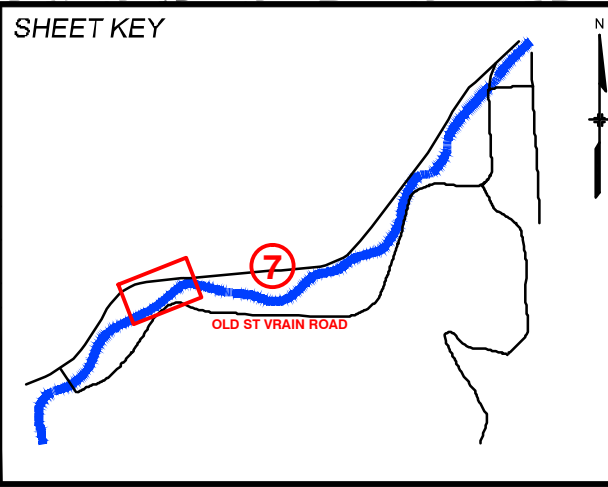
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SHEET KEY 				
LEGEND LOC ——— LIMIT OF CONSTRUCTION LOD ——— LIMIT OF DISTURBANCE MAIN CHANNEL OVERFLOW CHANNEL HAUL ROUTE INTERNAL ACCESS ROUTE TREE PROTECTION TREE REMOVAL DEBRIS REMOVAL				
PREPARED FOR: Boulder County Parks & Open Space PREPARED BY: Matrix DESIGN GROUP AN EMPLOYEE-OWNED COMPANY		FOR AND ON BEHALF OF: MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003		
COLORADO LICENSED D. SCHMIDT 46577 2/17 PROFESSIONAL ENGINEER		SOUTH ST. VRAIN CREEK RESTORATION BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN DEMOLITION PLANS STA: 105+00 TO STA: 96+50		
DESIGNED BY: SDS DRAWN BY: JDL CHECKED BY: RDK		SCALE (22" X 34") HORIZ. 1" = 30' VERT. N/A DATE ISSUED: 12/16/2016 DRAWING No. DEMO 1		



REFERENCE DRAWINGS 812-TITLEBLOCK-22x34 Parcels Ditch, Irrigation, Features PLAN AND PROFILE, 80% South St Vrain Topo 11-18-2016 AERIALS Proposed Labels 80% HAUL ROUTES AND INTERNAL ACCESS CONCURRENT PROJECTS Old St Vrain Road Bridge, JUB Proposed Linework 80% TREE PROTECTION		<table border="1"><thead><tr><th>No.</th><th>DATE</th><th>DESCRIPTION</th><th>BY</th></tr></thead><tbody><tr><td colspan="4">COMPUTER FILE MANAGEMENT</td></tr><tr><td colspan="4">FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\DEMOLITION PLAN 80%.dwg</td></tr><tr><td colspan="4">CTB FILE: ---</td></tr><tr><td colspan="4">PLOT DATE: 6/14/2017 1:00 PM</td></tr><tr><td colspan="4">THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.</td></tr></tbody></table>		No.	DATE	DESCRIPTION	BY	COMPUTER FILE MANAGEMENT				FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\DEMOLITION PLAN 80%.dwg				CTB FILE: ---				PLOT DATE: 6/14/2017 1:00 PM				THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.				SHEET KEY 		LEGEND LOC ——— LIMIT OF CONSTRUCTION LOD ——— LIMIT OF DISTURBANCE MAIN CHANNEL OVERFLOW CHANNEL HAUL ROUTE INTERNAL ACCESS ROUTE TREE PROTECTION TREE REMOVAL DEBRIS REMOVAL		PREPARED FOR: PREPARED BY: Matrix DESIGN GROUP AN EMPLOYEE-OWNED COMPANY		 FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003		SOUTH ST. VRAIN CREEK RESTORATION BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN DEMOLITION PLANS STA: 96+50 TO STA: 88+50 DESIGNED BY: SDS DRAWN BY: JDL CHECKED BY: RDK SCALE (22" X 34") HORIZ. 1" = 30' VERT. N/A DATE ISSUED: 12/16/2016 SHEET 23 OF 83 DRAWING No. DEMO 2	
No.	DATE	DESCRIPTION	BY																																		
COMPUTER FILE MANAGEMENT																																					
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PLOT DATE: 6/14/2017 1:00 PM																																					
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.																																					



REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 Parcels Ditch, Irrigation, Features PLAN AND PROFILE, 80% South St Vrain Topo 11-18-2016 AERIALS Proposed Labels 80% HAUL ROUTES AND INTERNAL CONCURRENT PROJECTS Old St Vrain Road Bridge, JUB Proposed Linework 80% TREE PROTECTION			
No.	DATE	DESCRIPTION	BY
COMPUTER FILE MANAGEMENT			
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PLOT DATE: 6/14/2017 1:01 PM			
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LEGEND	
LOC	LIMIT OF CONSTRUCTION
LOD	LIMIT OF DISTURBANCE
MAIN CHANNEL	
OVERFLOW CHANNEL	
HAUL ROUTE	
INTERNAL ACCESS ROUTE	
TREE PROTECTION	
TREE REMOVAL	
DEBRIS REMOVAL	

PREPARED FOR:

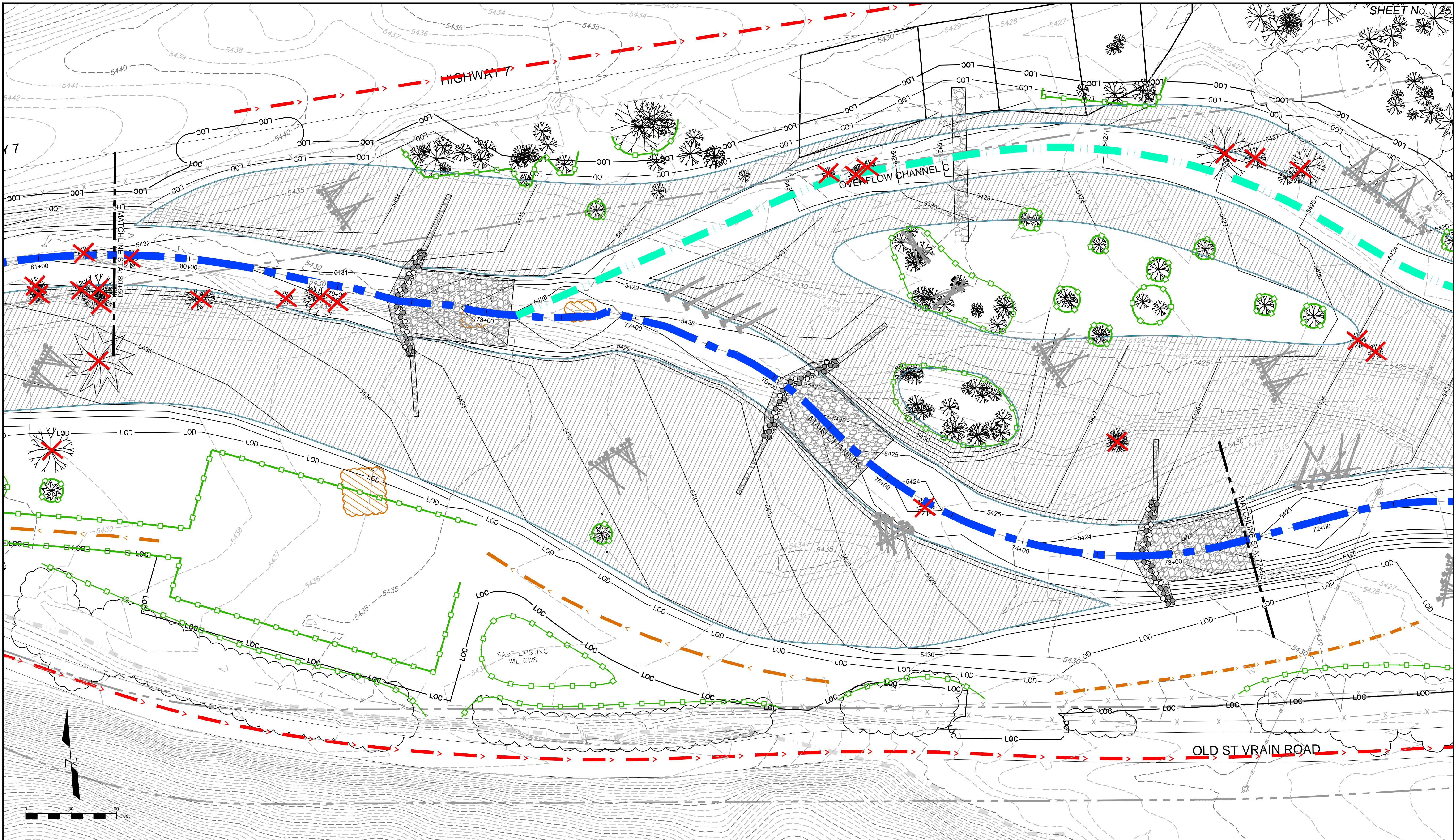
Boulder County
Parks & Open Space

PREPARED BY:

Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

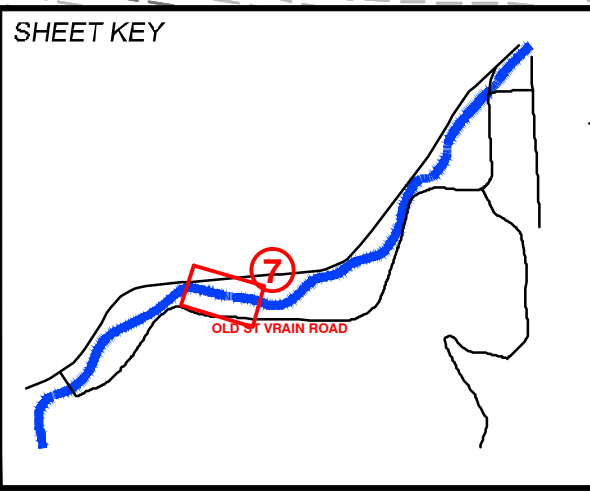
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN			
DEMOLITION PLANS STA: 88+50 TO STA: 80+50			
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:
DRAWN BY:	JDL	HORIZ. 1" = 30'	12/16/2016
CHECKED BY:	RDK	VERT. N/A	SHEET 24 OF 83
			DRAWING No. DEMO 3



SHEET No. 25

REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 Parcels Ditch, Irrigation, Features PLAN AND PROFILE, 80% South St Vrain Topo 11-18-2016 AERIALS Proposed Labels 80% HAUL ROUTES AND INTERNAL CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, JUB Proposed Linework 80% TREE PROTECTION			
No.	DATE	DESCRIPTION	BY
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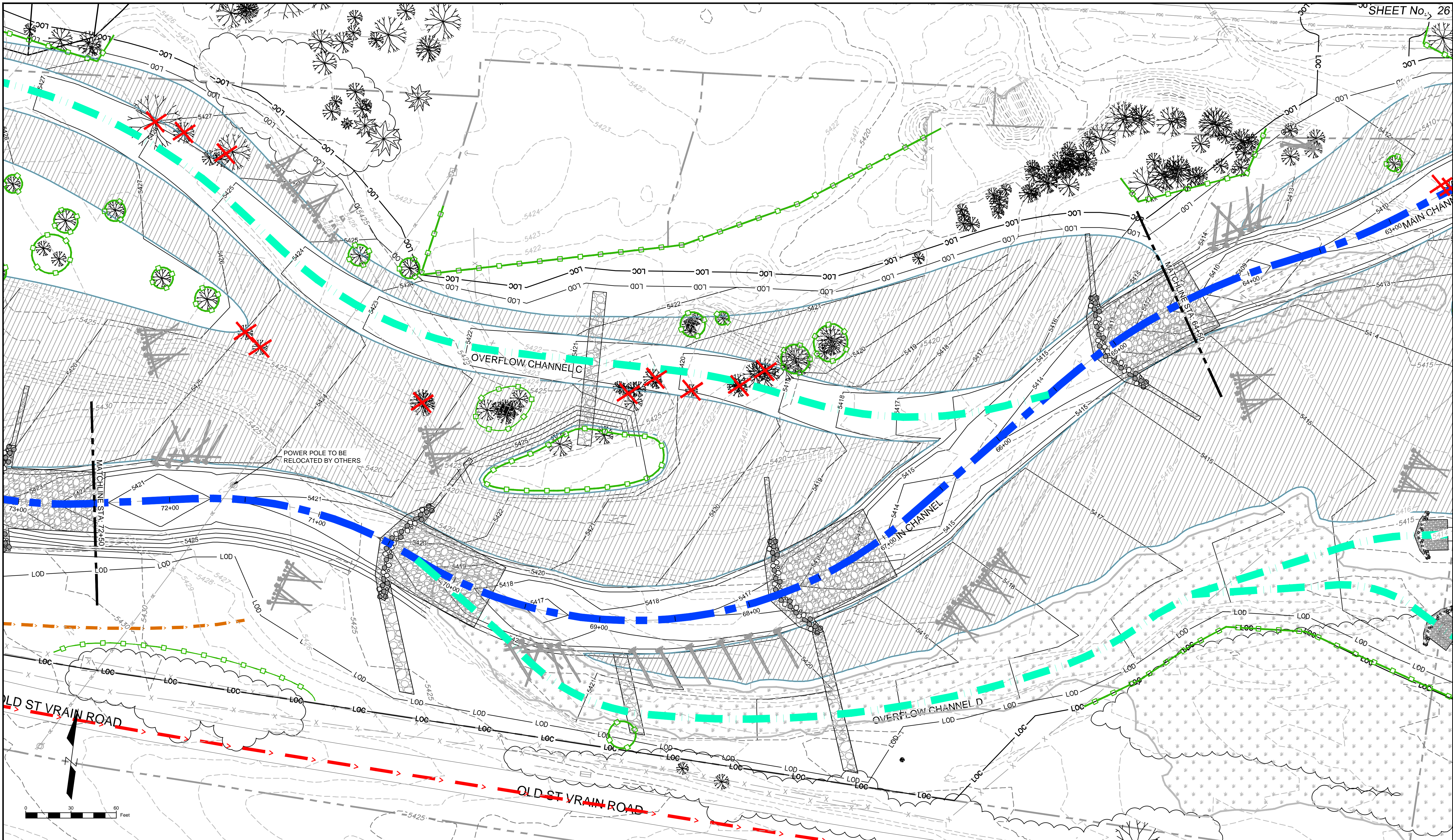


LEGEND	
LOC	LIMIT OF CONSTRUCTION
LOD	LIMIT OF DISTURBANCE
MAIN CHANNEL	MAIN CHANNEL
OVERFLOW CHANNEL	OVERFLOW CHANNEL
HAUL ROUTE	HAUL ROUTE
INTERNAL ACCESS ROUTE	INTERNAL ACCESS ROUTE
TREE PROTECTION	TREE PROTECTION
TREE REMOVAL	TREE REMOVAL
DEBRIS REMOVAL	DEBRIS REMOVAL

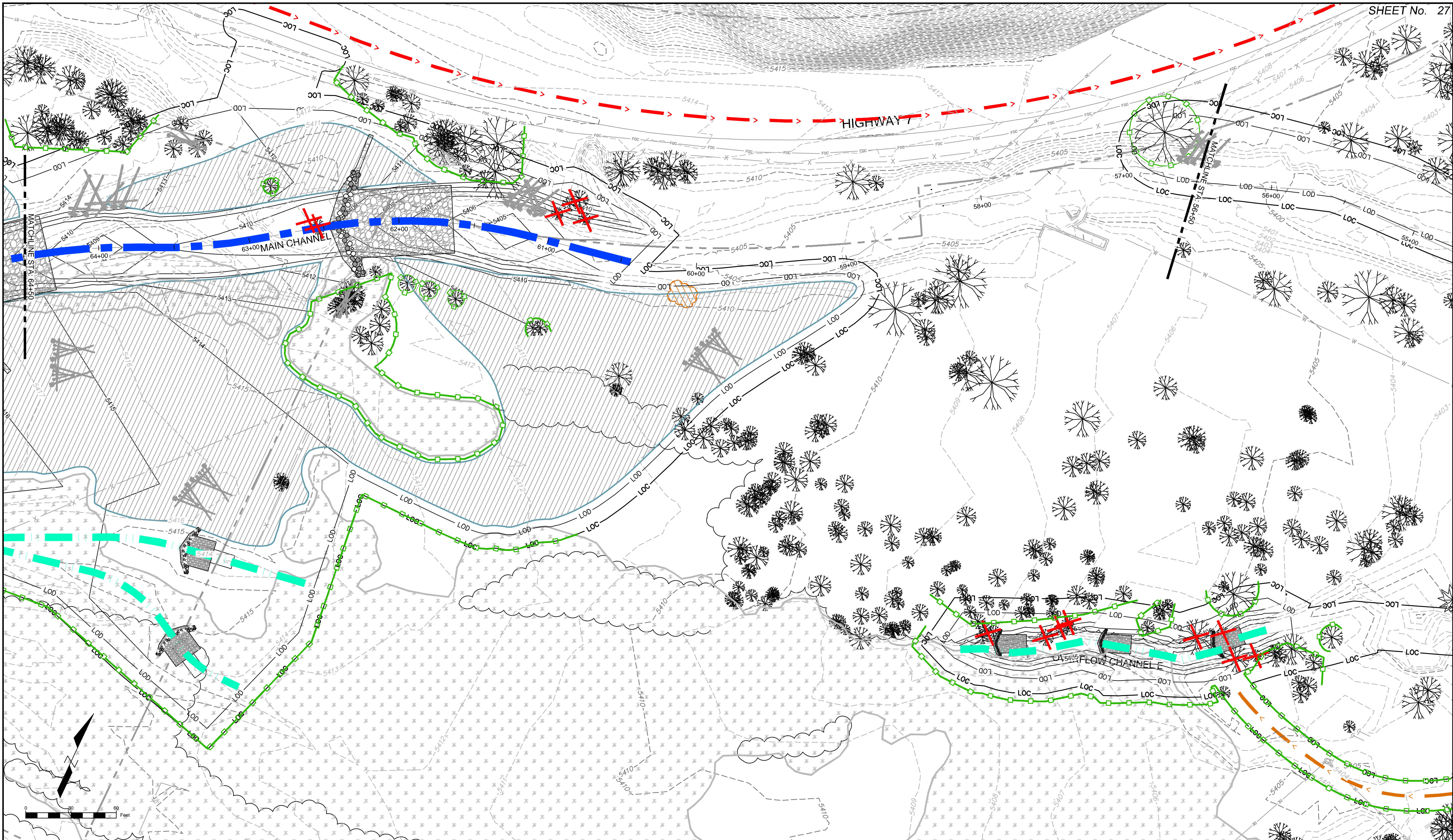
PREPARED FOR:
Boulder County
Parks & Open Space
PREPARED BY:
Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

COLORADO LICENSED
D. SCHNEIDER
46577
2/9/17
PROFESSIONAL ENGINEER
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

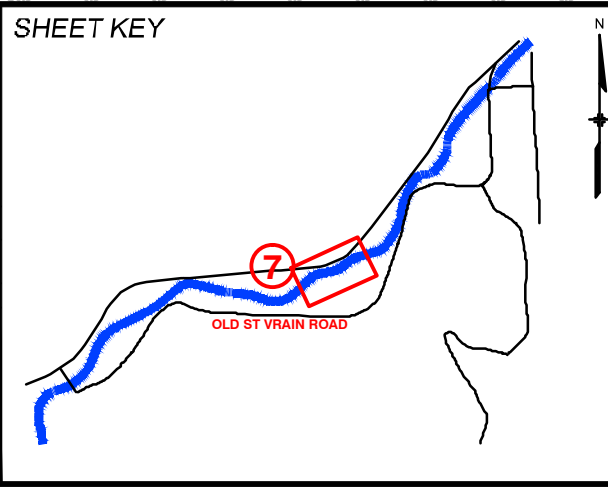
SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN			
DEMOLITION PLANS STA: 80+50 TO STA: 72+50			
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DRAWN BY:	JDL	HORIZ. 1" = 30'	12/16/2016
CHECKED BY:	RDK	VERT. N/A	SHEET 25 OF 83
			DRAWING No. DEMO 4



REFERENCE DRAWINGS 812-TITLEBLOCK-22x34 Pavement Ditch, Irrigation, Features PLAN AND PROFILE, 80% South St Vrain Topo 11-18-2016 AERIALS Proposed Labels 80% HAUL ROUTES AND INTERNAL CONCURRENCE PROJECTS Old St Vrain Road Old St Vrain Road Bridge, JUB Proposed Linework 80% TREE PROTECTION		COMPUTER FILE MANAGEMENT FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\DEMOLITION PLAN 80%.dwg CTB FILE: --- PLOT DATE: 6/14/2017 1:03 PM THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.		REVISIONS No. DATE DESCRIPTION BY	
LEGEND LOC LIMIT OF CONSTRUCTION LOD LIMIT OF DISTURBANCE MAIN CHANNEL OVERFLOW CHANNEL HAUL ROUTE INTERNAL ACCESS ROUTE TREE PROTECTION TREE REMOVAL DEBRIS REMOVAL		SHEET KEY OLD ST VRAIN ROAD		Matrix DESIGN GROUP AN EMPLOYEE-OWNED COMPANY	
PREPARED FOR: Boulder County Parks & Open Space PREPARED BY: Matrix DESIGN GROUP		FOR AND ON BEHALF OF: MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003		Colorado Licensed Professional Engineer 46577 2/9/17	
SOUTH ST. VRAIN CREEK RESTORATION BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN		DEMOLITION PLANS STA: 72+50 TO STA: 64+50		DESIGNED BY: JDL DRAWN BY: JDL CHECKED BY: RDK SCALE (22" X 34") HORIZ. 1" = 30' VERT. N/A DATE ISSUED: 12/16/2016 SHEET 26 OF 83 DRAWING No. DEMO 5	



REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 Parcels Ditch, Irrigation, Features PLAN AND PROFILE, 80% South St Vrain Topo 11-18-2016 AERIALS Proposed Labels 80% HAUL ROUTES AND INTERNAL CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, JUB Proposed Linework 80% TREE PROTECTION			
No.	DATE	DESCRIPTION	BY
COMPUTER FILE MANAGEMENT			
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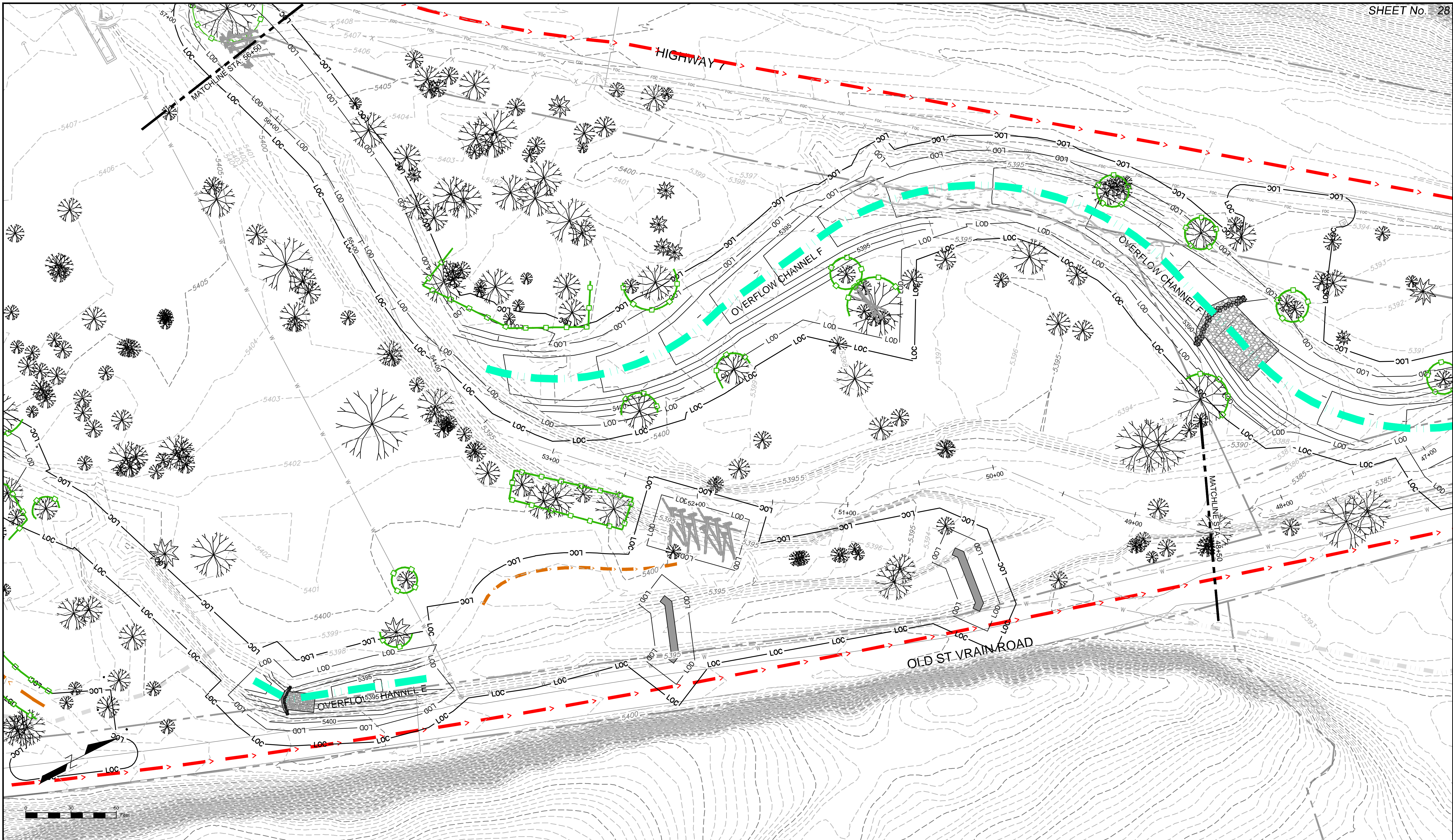


LEGEND	
LOC	LIMIT OF CONSTRUCTION
LOD	LIMIT OF DISTURBANCE
MAIN CHANNEL	
OVERFLOW CHANNEL	
HAUL ROUTE	
INTERNAL ACCESS ROUTE	
TREE PROTECTION	
TREE REMOVAL	
DEBRIS REMOVAL	

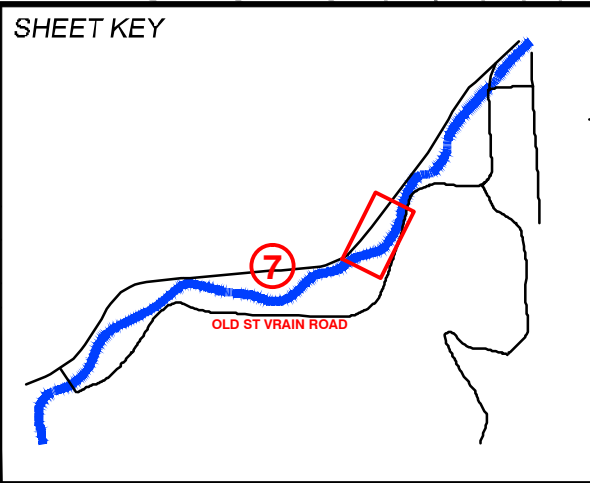
PREPARED FOR:
Boulder County
Parks & Open Space
PREPARED BY:
Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

COLORADO LICENSED
D. SCHNEIDER
46577
2/9/17
PROFESSIONAL ENGINEER
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN			
DEMOLITION PLANS STA: 64+50 TO STA: 56+50			
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:
DRAWN BY:	JDL	HORIZ. 1" = 30'	12/16/2016
CHECKED BY:	RDK	VERT. N/A	SHEET 27 OF 83
			DRAWING No. DEMO 6



REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 Parcels Ditch, Irrigation, Features PLAN AND PROFILE, 80% South St Vrain Topo 11-18-2016 AERIALS Proposed Labels 80% HAUL ROUTES AND INTERNAL ACCESS CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, JUB Proposed Linework 80% TREE PROTECTION			
No.	DATE	DESCRIPTION	BY
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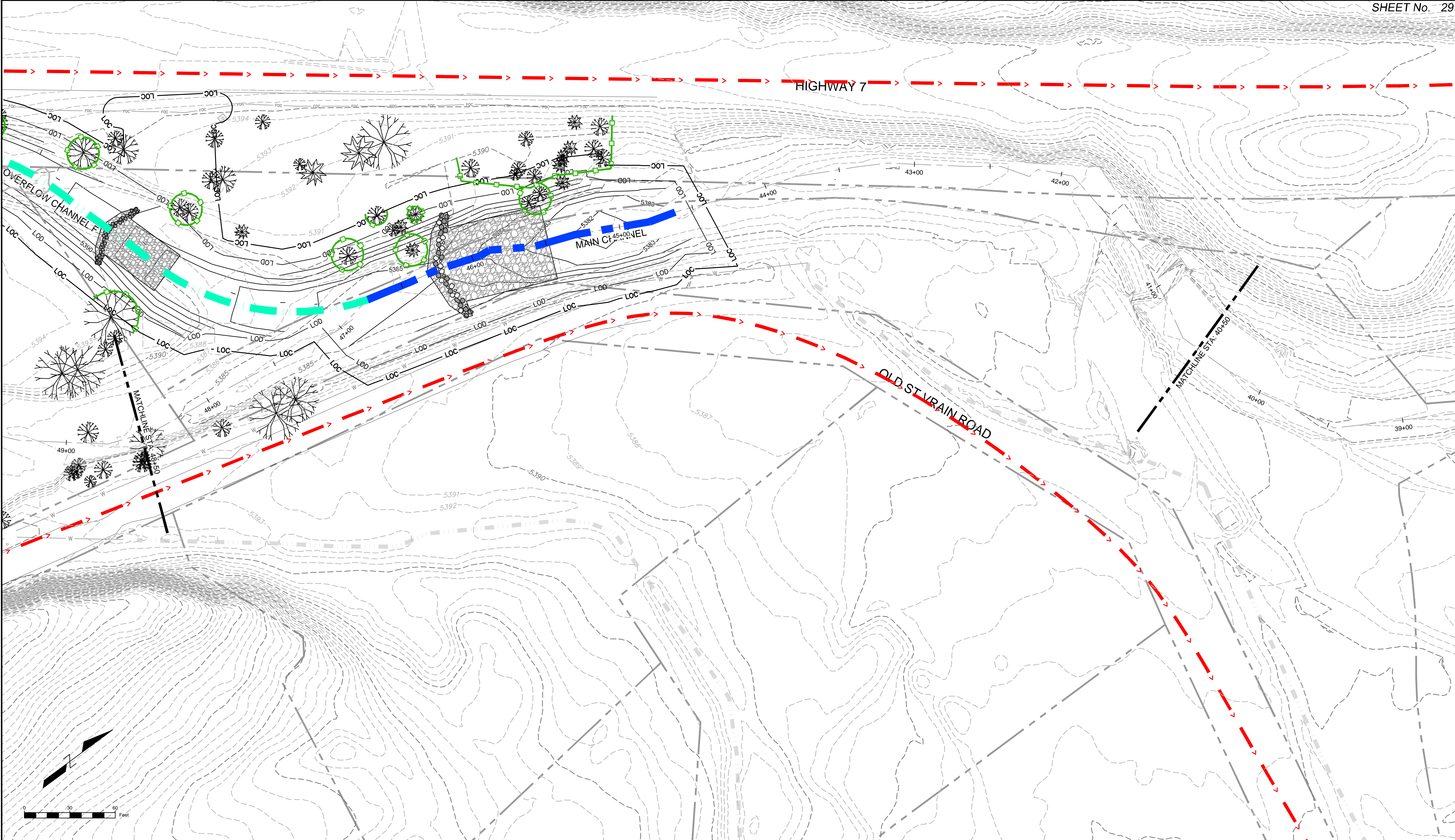


LEGEND	
LOC	LIMIT OF CONSTRUCTION
LOD	LIMIT OF DISTURBANCE
MAIN CHANNEL	
OVERFLOW CHANNEL	
HAUL ROUTE	
INTERNAL ACCESS ROUTE	
TREE PROTECTION	
TREE REMOVAL	
DEBRIS REMOVAL	

PREPARED FOR:
Boulder County
Parks & Open Space
PREPARED BY:
Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

COLORADO LICENSED
D. SCHMIDT
46577
2/17/17
PROFESSIONAL ENGINEER
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION
BOULDER COUNTY PARKS AND OPEN SPACE
FINAL DESIGN
DEMOLITION PLANS
STA: 56+50 TO STA: 48+50
DESIGNED BY: JDL
DRAWN BY: RDK
CHECKED BY: N/A
SCALE (22" X 34")
HORIZ. 1" = 30'
VERT. N/A
DATE ISSUED: 12/18/2016
SHEET 28 OF 83
DRAWING No. DEMO 7



REFERENCE DRAWINGS		No.		DATE	DESCRIPTION	BY
812-TITLEBLOCK-22x34						
Parcels						
Ditch, Irrigation, Features						
PLAN AND PROFILE, 80%						
South St Vrain Topo 11-18-2016						
AERIALS						
Proposed Labels 80%						
HAUL ROUTES AND INTERNAL						
CONCURRENT PROJECTS						
Old South St Vrain Road						
Old St Vrain Road Bridge, JUB						
Proposed Linework 80%						
TREE PROTECTION						

COMPUTER FILE MANAGEMENT	
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PLOT DATE:	6/14/2017 1:06 PM
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.	

SHEET KEY

LEGEND

LOC	LIMIT OF CONSTRUCTION	TREE PROTECTION
LOD	LIMIT OF DISTURBANCE	TREE REMOVAL
MAIN CHANNEL	DEBRIS REMOVAL	
OVERFLOW CHANNEL		
HAUL ROUTE		
INTERNAL ACCESS ROUTE		

PREPARED FOR:

PREPARED BY:

AN EMPLOYEE-OWNED COMPANY

FOR AND ON BEHALF OF

MATRIX DESIGN GROUP, INC.

PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

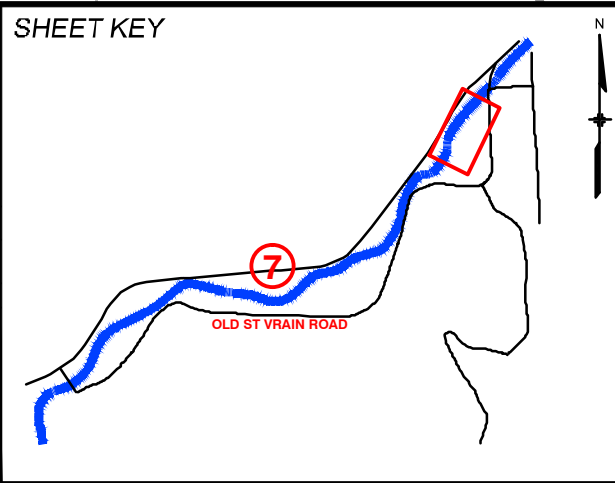
BOULDER COUNTY PARKS AND OPEN SPACE

FINAL DESIGN










DEMOLITION PLANS

STA: 48+50 TO STA: 40+50

DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:	12/16/2016	DRAWING No.
DRAWN BY:	JDL	HORIZ. 1" = 30'	SHEET	29 OF 83	DEMO 8
CHECKED BY:	RDK	VERT. N/A			

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LEGEND

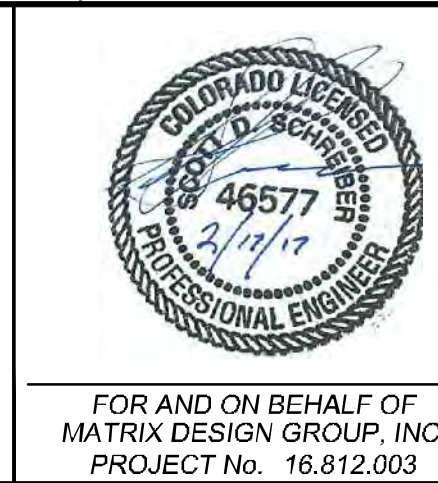
	LOC	LIMIT OF CONSTRUCTION		TREE PROTECTION
	LOD	LIMIT OF DISTURBANCE		
		MAIN CHANNEL		TREE REMOVAL
		OVERFLOW CHANNEL		
	>	HAUL ROUTE		DEBRIS REMOVAL
	<	INTERNAL ACCESS ROUTE		

PREPARED FOR:

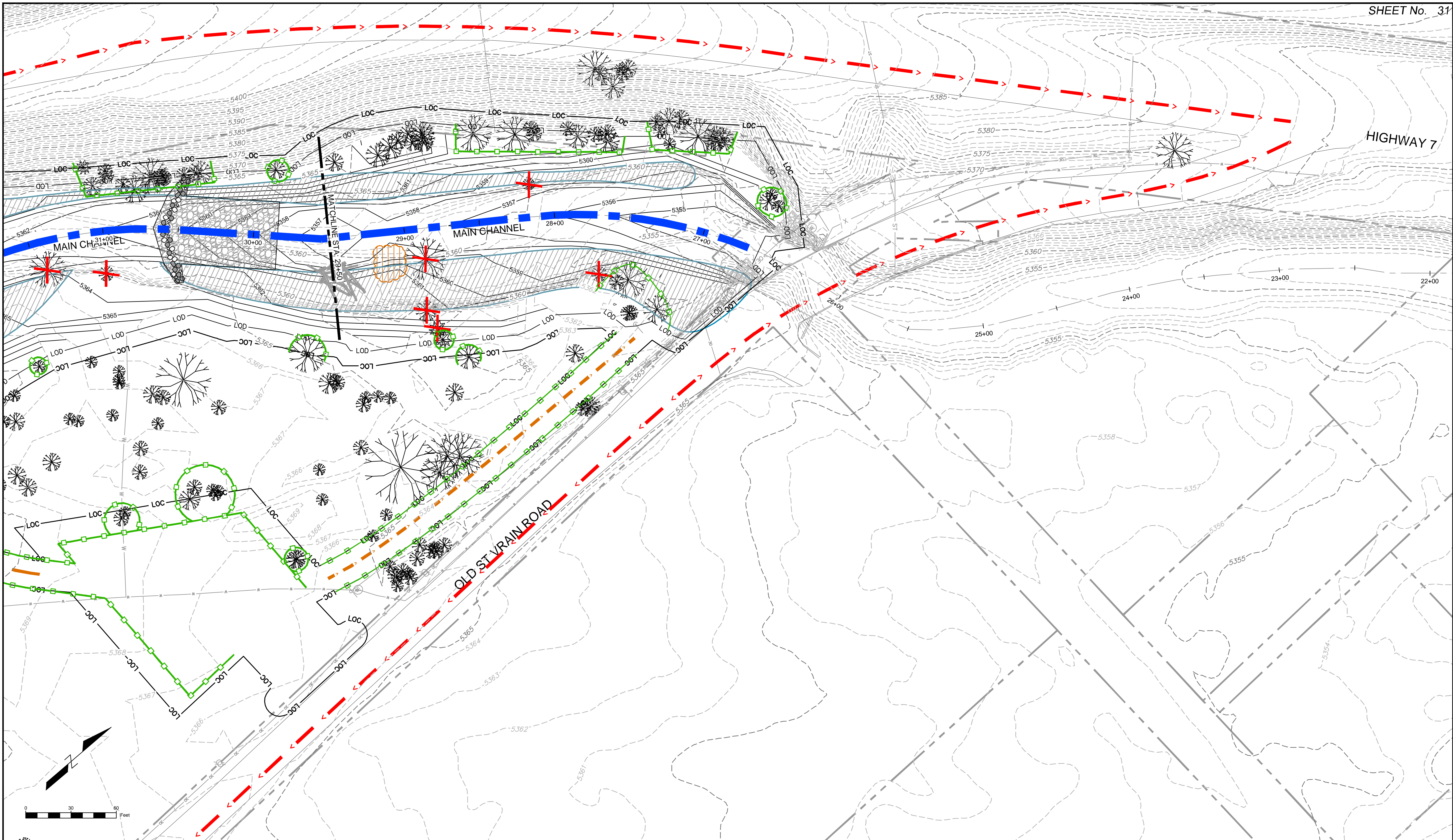
 **Boulder County**
Parks & Open Space

PREPARED BY:

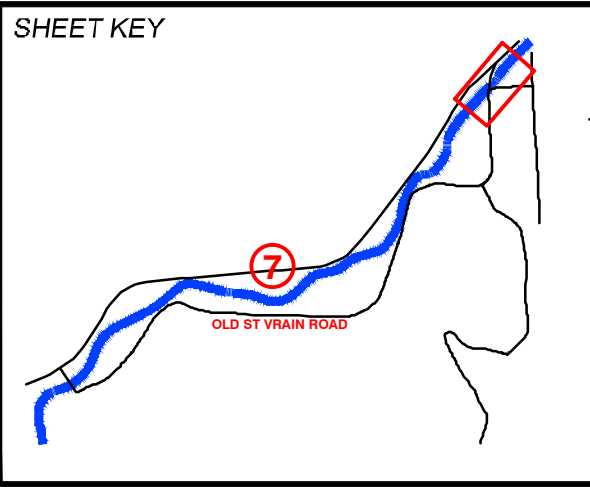
 **Matrix**
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY



SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN			
DEMOLITION PLANS STA: 37+00 TO STA: 29+50			
DESIGNED BY: SDS	SCALE (22" X 34")	DATE ISSUED:	12/16/2016
DRAWN BY: JDL	HORIZ. 1"= 30'		
CHECKED BY: RDK	VERT. N/A	SHEET	30 OF 83
			DRAWING No. DEMO 9



REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 Parcels Ditch, Irrigation, Features PLAN AND PROFILE, 80% South St Vrain Topo 11-18-2016 AERIALS Proposed Labels 80% HAUL ROUTES AND INTERNAL CONCURRENT PROJECTS Old St Vrain Road Bridge, JUB Proposed Linework 80% TREE PROTECTION			
No.	DATE	DESCRIPTION	BY
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PLOT DATE: 6/14/2017 1:07 PM			
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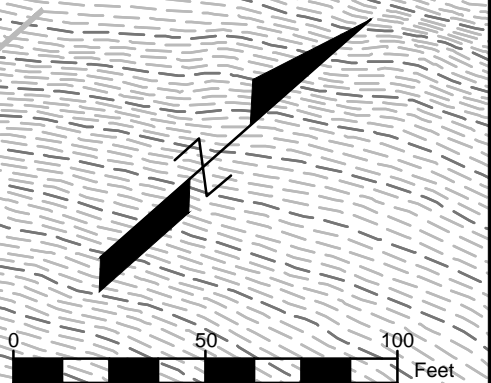
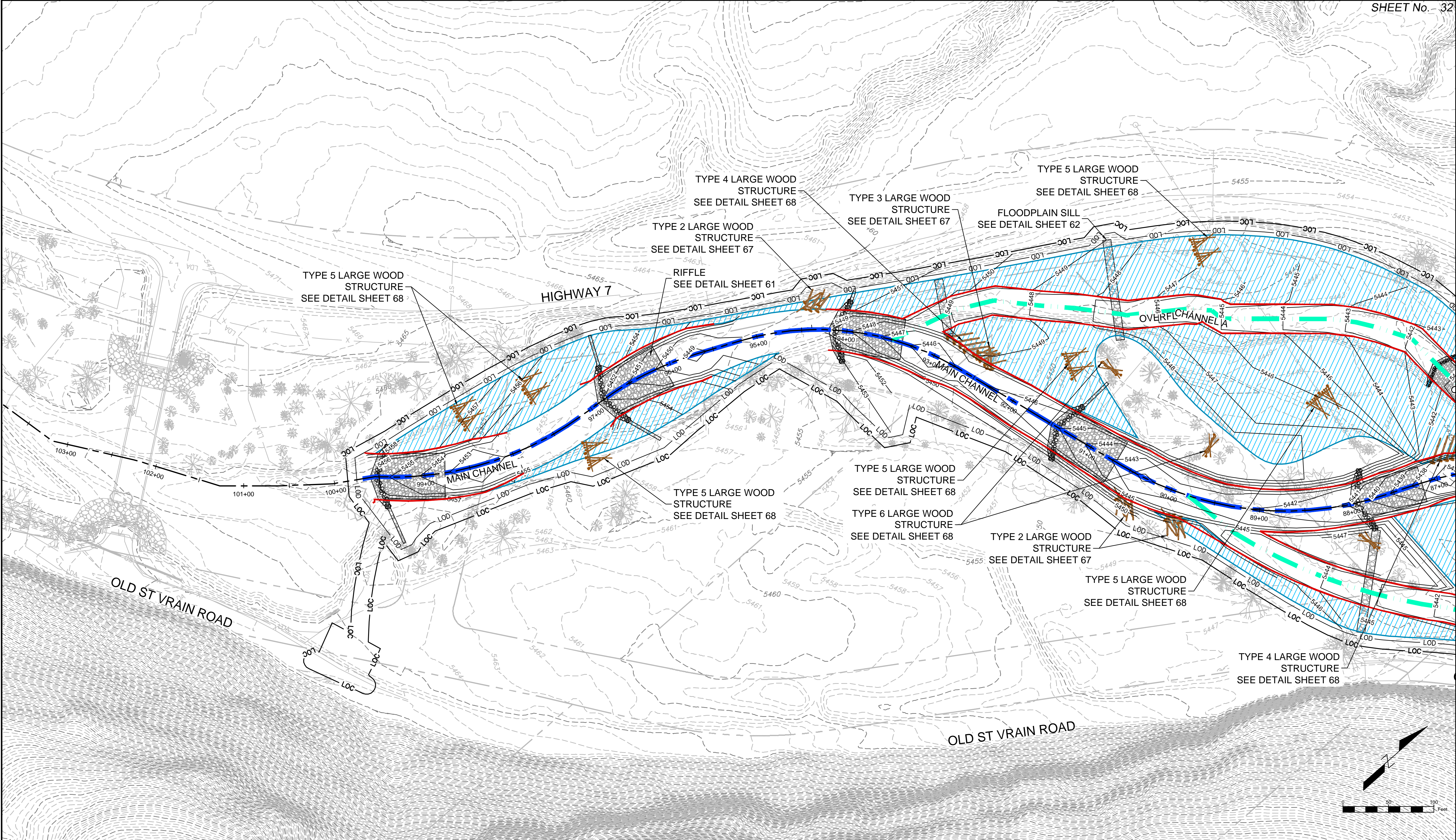
LEGEND	
LOC	LIMIT OF CONSTRUCTION
LOD	LIMIT OF DISTURBANCE
MAIN CHANNEL	MAIN CHANNEL
OVERFLOW CHANNEL	OVERFLOW CHANNEL
HAUL ROUTE	HAUL ROUTE
INTERNAL ACCESS ROUTE	INTERNAL ACCESS ROUTE
TREE PROTECTION	TREE PROTECTION
TREE REMOVAL	TREE REMOVAL
DEBRIS REMOVAL	DEBRIS REMOVAL

PREPARED FOR:
Boulder County
Parks & Open Space
PREPARED BY:
Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

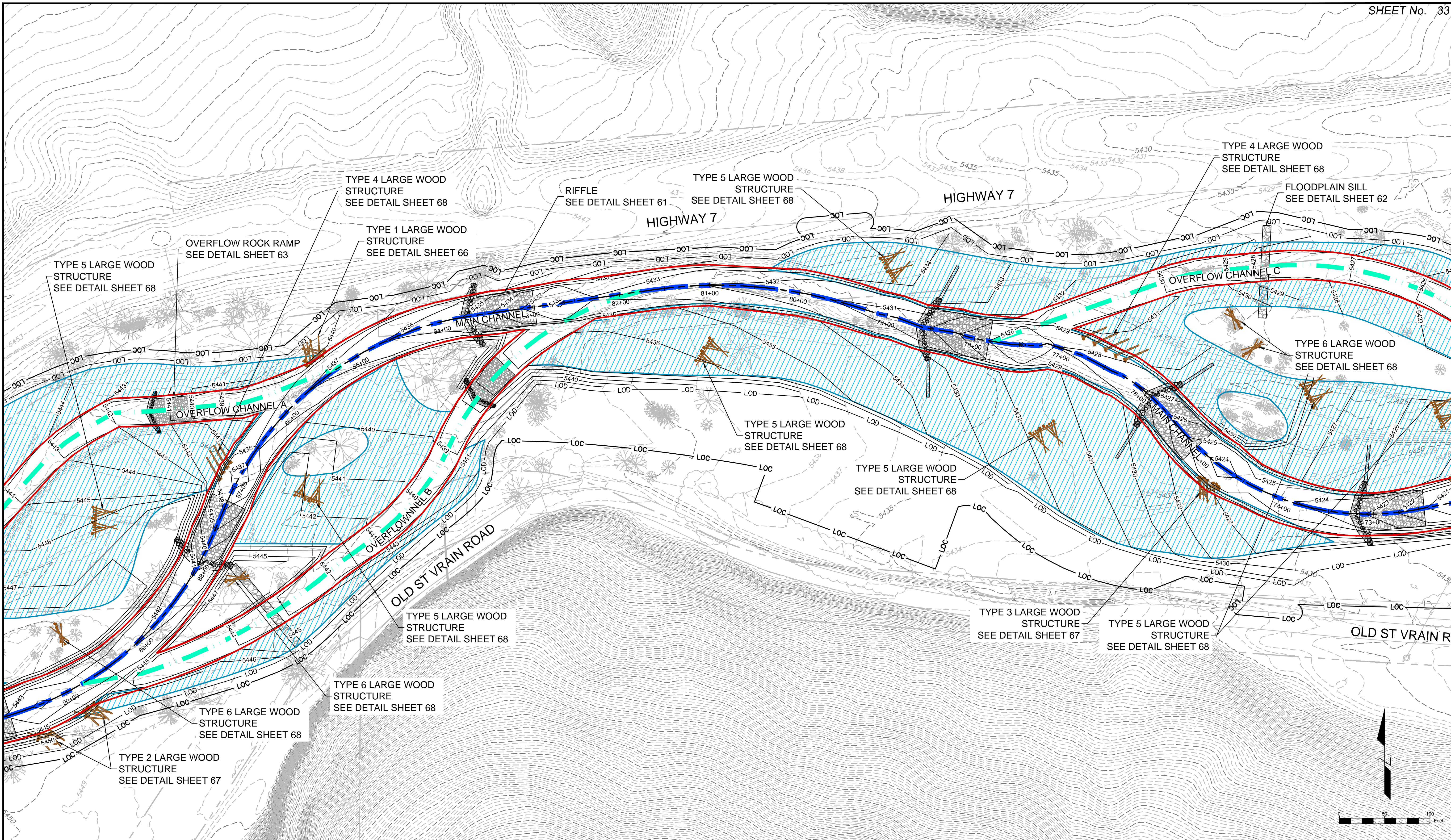
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION
BOULDER COUNTY PARKS AND OPEN SPACE
FINAL DESIGN
DEMOLITION PLANS
STA: 29+50 TO STA: 21+00

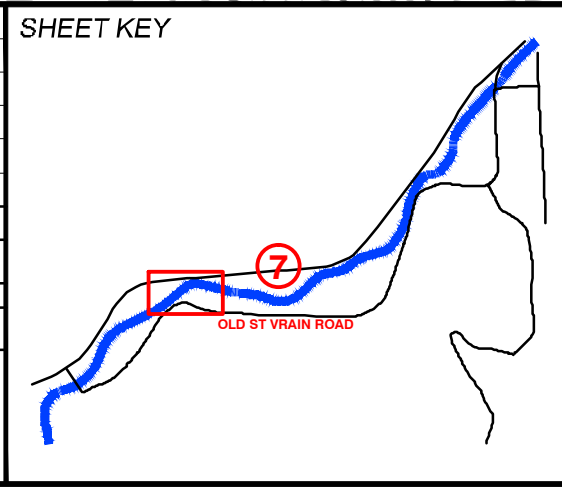
DESIGNED BY: SDS	SCALE (22" X 34")	DATE ISSUED: 12/16/2016	DRAWING No. DEMO 10
CHECKED BY: JDL	HORIZ. 1" = 30'	SHEET 31 OF 83	
	VERT. N/A		



REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 AERIALS Ditch, Irrigation, Features PLAN AND PROFILE, 80% South St Vrain Topo 11-18-2016 Proposed Labels 80% Parcels CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, JUB Proposed Linework 80% Proposed Bankfull Widths 80%			
No.	DATE	DESCRIPTION	BY
COMPUTER FILE MANAGEMENT			
FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\GRADING PLANS 80%.dwg			
CTB FILE: ---			
PLOT DATE: 6/14/2017 1:15 PM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			
SHEET KEY		LEGEND	
		PREPARED FOR: Boulder County Parks & Open Space PREPARED BY: Matrix Design Group AN EMPLOYEE-OWNED COMPANY	
		SOUTH ST. VRAIN CREEK RESTORATION BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN GRADING PLANS STA: 105+00 TO STA: 88+00	
DESIGNED BY: SDS		SCALE (22" X 34")	
DRAWN BY: JDL		HORIZ. 1" = 50'	
CHECKED BY: RDK		VERT. N/A	
		DATE ISSUED: 02/17/17	
		SHEET 32 OF 83	
		DRAWING No. GRAD 1	



REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 AERIALS Dig, Irrigation, Features PLAN AND PROFILE, 80% South St Vrain Topo 11-16-2016 Proposed Labels 80% Proposed Bankfull Widths 80%			
CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, JUB Proposed Linework 80% Proposed Bankfull Widths 80%			
No.	DATE	DESCRIPTION REVISIONS	BY
COMPUTER FILE MANAGEMENT			
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CTB FILE: ---			
PLOT DATE: 6/14/2017 1:16 PM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			



LEGEND	
	MAIN CHANNEL ALIGNMENT
	OVERFLOW CHANNEL
	BANKFULL
	LARGE WOOD STRUCTURE
	RIFFLE STRUCTURE
	LOC - LIMIT OF CONSTRUCTION
	LOD - LIMIT OF DISTURBANCE
	OVERFLOW ROCK RAMP & KNICKPOINT STABILIZATION
	FLOODPLAIN SILL

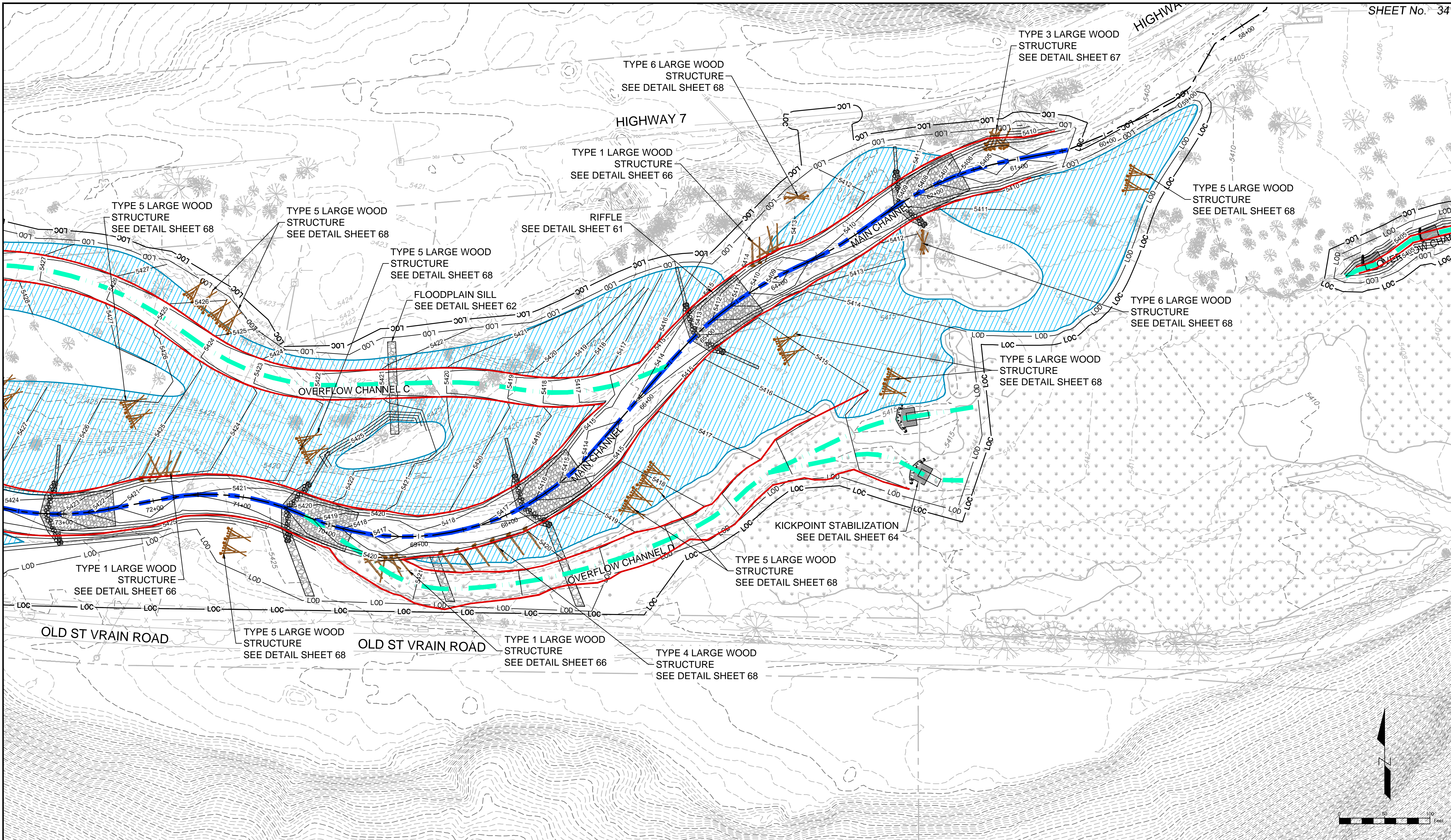
PREPARED FOR:

PREPARED BY:

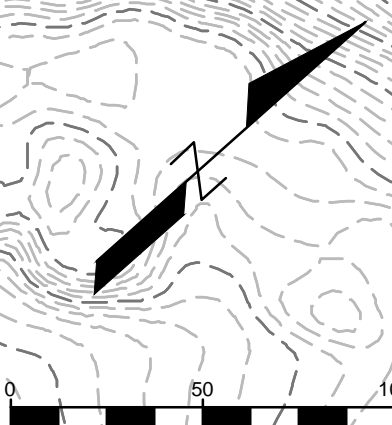
AN EMPLOYEE-OWNED COMPANY

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

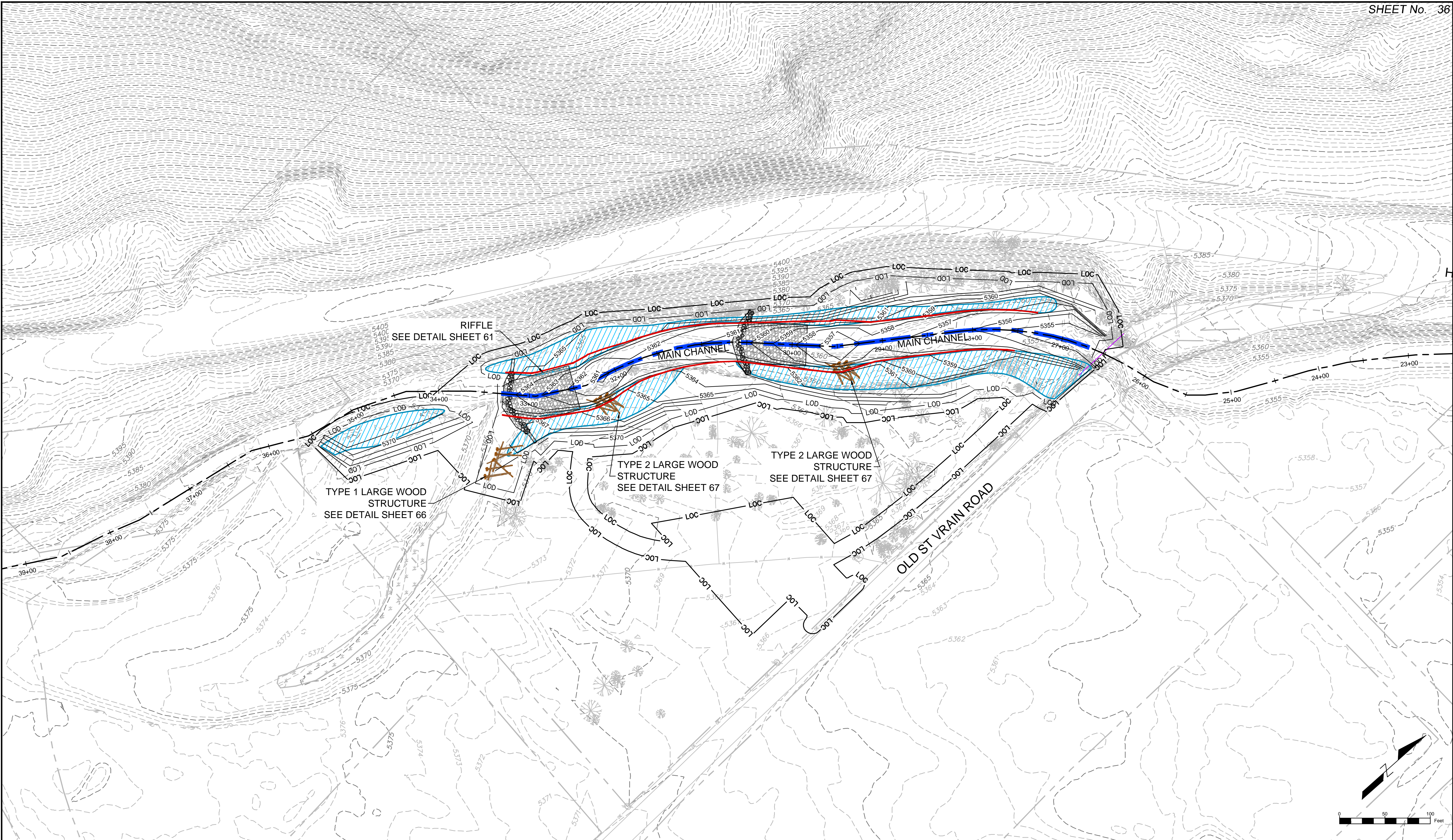
SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN			
GRADING PLANS STA: 88+00 TO STA: 74+00			
DESIGNED BY: SDS	SCALE (22" X 34")	DATE ISSUED: 02/17/17	DRAWING No.
DRAWN BY: JDL	HORIZ. 1" = 50'	SHEET 33 OF 83	GRAD 2
CHECKED BY: RDK	VERT. N/A		



REFERENCE DRAWINGS 812-TITLEBLOCK-22x34 AERIALS Ditch, Irrigation, Features PLAN AND PROFILE, 80% South St Vrain Topo 11-18-2016 Proposed Labels 80% Parcels CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, JUB Proposed Linework 80% Proposed Bankfull Widths 80%		REVISIONS No. DATE DESCRIPTION BY	
COMPUTER FILE MANAGEMENT FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\GRADING PLANS 80%.dwg CTB FILE: --- PLOT DATE: 6/14/2017 1:16 PM THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			
SHEET KEY 		LEGEND 	
PREPARED FOR: PREPARED BY: 		FOR AND ON BEHALF OF: 	
SOUTH ST. VRAIN CREEK RESTORATION BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN		GRADING PLANS STA: 74+00 TO STA: 59+00	
DESIGNED BY: SDS DRAWN BY: JDL CHECKED BY: RDK		SCALE (22" X 34") HORIZ. 1" = 50' VERT. N/A	
DATE ISSUED: 8/14/2017 SHEET 34 OF 83		DRAWING No. GRAD 3	



REFERENCE DRAWINGS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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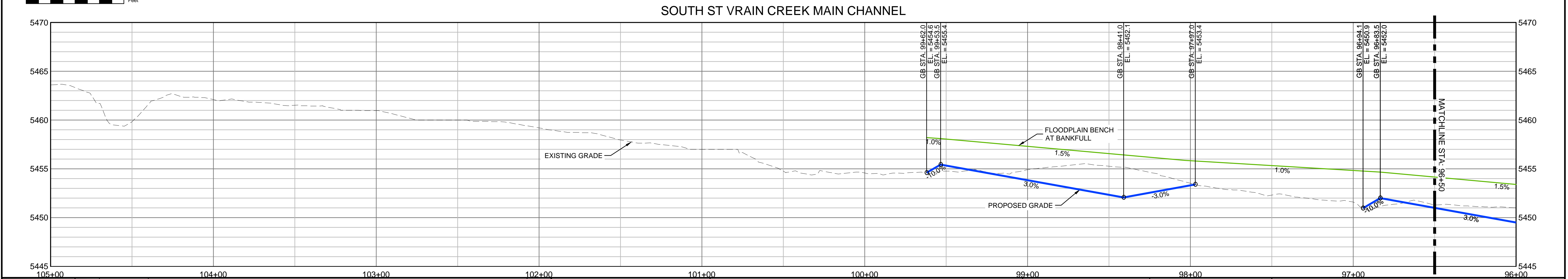
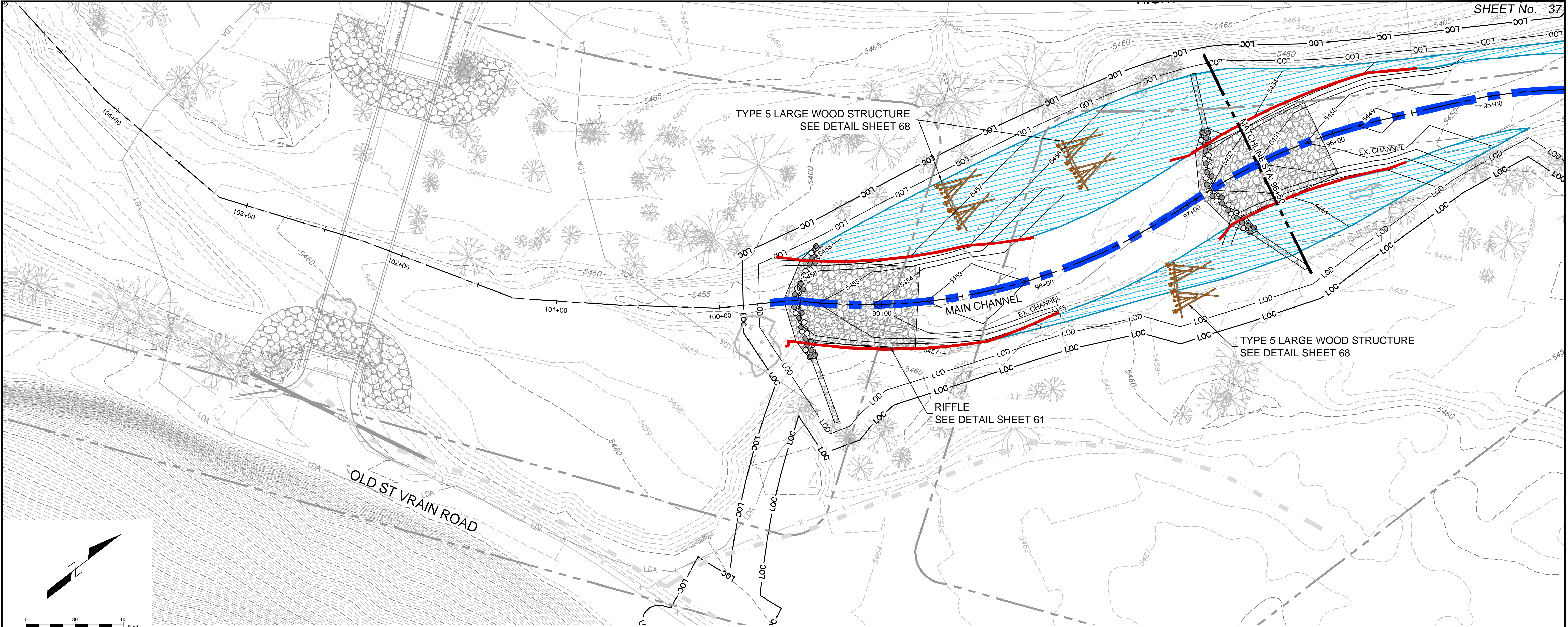
REFERENCE DRAWINGS		No.		DATE	DESCRIPTION	BY
812-TITLEBLOCK-22x34 AERIALS Ditch, Irrigation, Features PLAN AND PROFILE, 80% South St Vrain Topo 11-18-2016 Proposed Labels 80% Parcels CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, JUB Proposed Linework 80% Proposed Bankfull Widths 90%						
COMPUTER FILE MANAGEMENT						
FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\GRADING PLANS 80%.dwg						
CTB FILE: ---						
PLOT DATE: 6/14/2017 1:17 PM						
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.						

SHEET KEY		LEGEND	

PREPARED FOR:		PREPARED BY:	
FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003		DATE ISSUED: 8/14/2017 SHEET 36 OF 83 DRAWING No. GRAD 5	

DESIGNED BY:		SCALE (22" X 34")		DATE ISSUED:	
SDS	JDL	HORIZ.	1" = 50'	8/14/2017	8/14/2017
CHECKED BY:	RDK	VERT.	N/A	SHEET	36 OF 83

SOUTH ST. VRAIN CREEK RESTORATION	
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN	
GRADING PLANS STA: 37+00 TO STA: 24+00	



No.	DATE	DESCRIPTION	BY
COMPUTER FILE MANAGEMENT			
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CTB FILE: ---			
PLOT DATE: 6/14/2017 1:25 PM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			

SHEET KEY

LEGEND

- FLOODPLAIN BENCH AT
- RIFFLE STRUCTURE
- LARGE WOOD STRUCTURE
- BANKFULL
- MAIN CHANNEL ALIGNMENT
- OVERFLOW CHANNEL
- SILLS

PREPARED FOR:

PREPARED BY:

FOR AND ON BEHALF OF

DESIGNED BY:

DRAWN BY:

CHECKED BY:

SCALE (22" X 34")

HORIZ. 1" = 30'

VERT. 1" = 5'

DATE ISSUED:

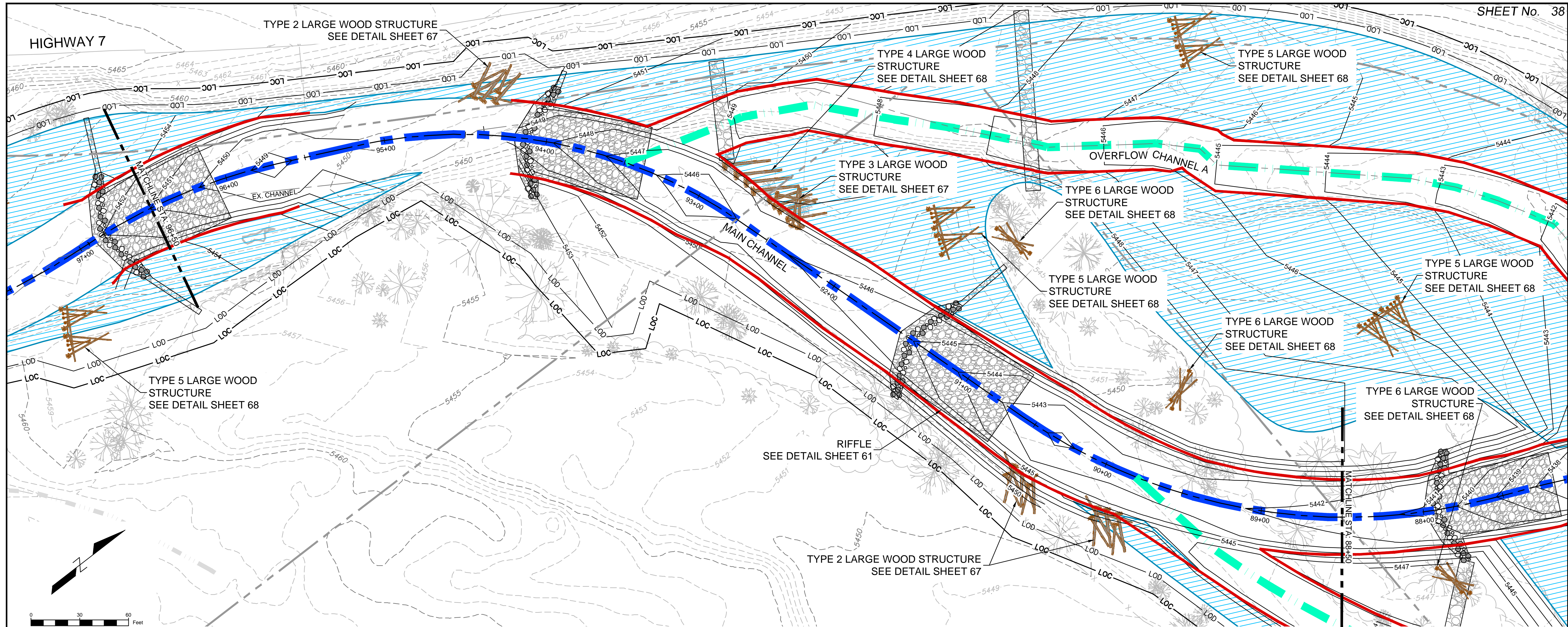
8/14/2017

SHEET

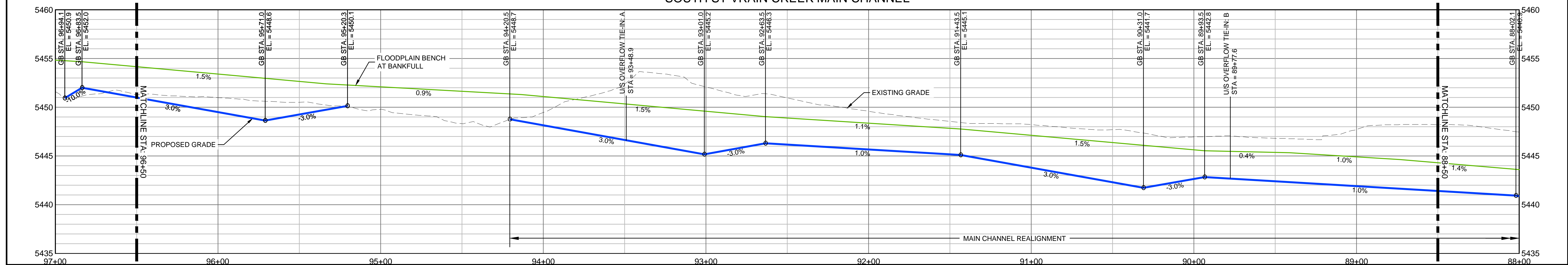
37 OF 83

DRAWING No.

MCPP 1



SOUTH ST VRAIN CREEK MAIN CHANNEL



No.	DATE	DESCRIPTION	BY
COMPUTER FILE MANAGEMENT			
FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\MAIN P&P 80%.dwg			
CTB FILE: ---			
PLOT DATE: 6/14/2017 1:26 PM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			

SHEET KEY	
	MAIN CHANNEL ALIGNMENT
	OVERFLOW CHANNEL
	LARGE WOOD STRUCTURE
	RIFFLE STRUCTURE
	BANKFULL
	FLOODPLAIN BENCH AT
	SILLS

PREPARED FOR:

PREPARED BY:

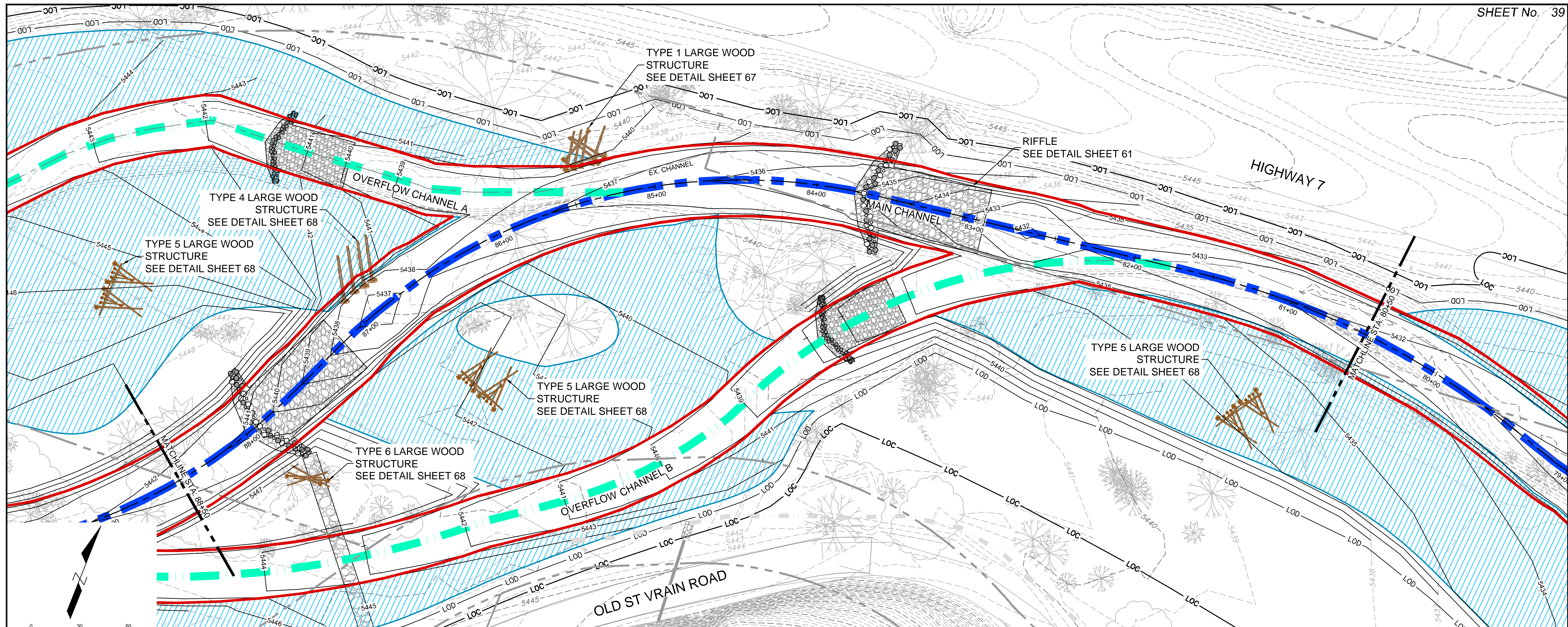
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

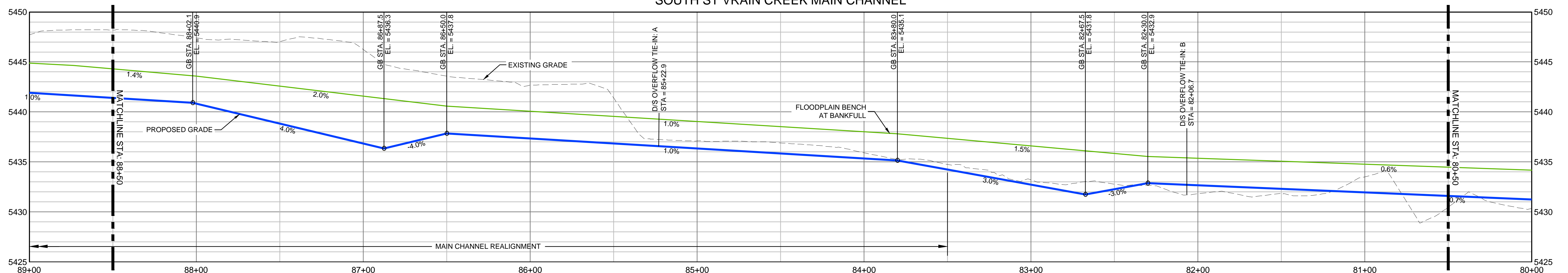
BOULDER COUNTY PARKS AND OPEN SPACE
FINAL DESIGN

MAIN CHANNEL PLAN AND PROFILE
STA: 96+50 TO STA: 88+50

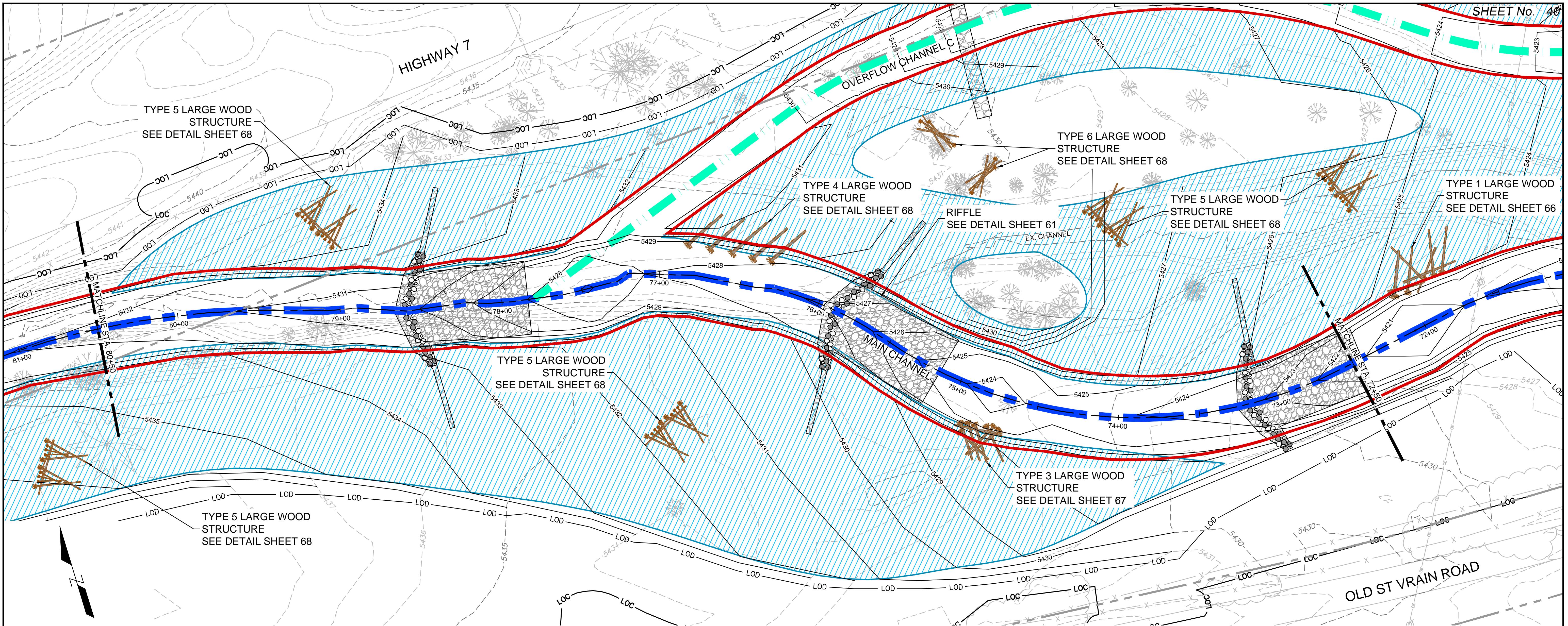
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:	8/14/2017	DRAWING No.
CHECKED BY: <td>JDL<td>HORIZ. 1" = 30'</td><td>SHEET<td>38 OF 83</td><td>MCPP 2</td></td></td>	JDL <td>HORIZ. 1" = 30'</td> <td>SHEET<td>38 OF 83</td><td>MCPP 2</td></td>	HORIZ. 1" = 30'	SHEET <td>38 OF 83</td> <td>MCPP 2</td>	38 OF 83	MCPP 2



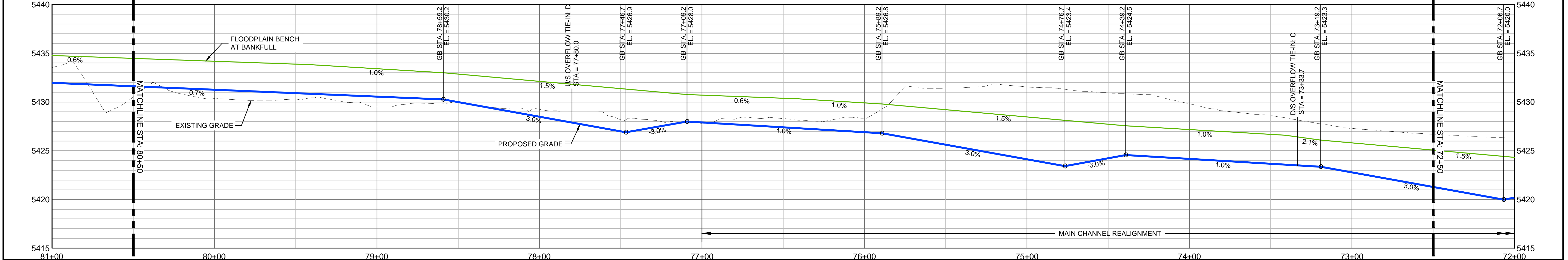
SOUTH ST VRAIN CREEK MAIN CHANNEL



REFERENCE DRAWINGS 812-TITLEBLOCK-22x34 AERIALS Plans Ditch, Irrigation, Features Proposed Labels 80% PLAN AND PROFILE 80% South St Vrain Topo 11-16-2016 CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, JUB Proposed Bankfull Widths 80% Proposed Linework 80%	COMPUTER FILE MANAGEMENT FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\MAIN P&P 80%.dwg CTB FILE: --- PLOT DATE: 6/14/2017 1:27 PM THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.		SHEET KEY 	LEGEND FLOODPLAIN BENCH AT BANKFULL RIFFLE STRUCTURE LARGE WOOD STRUCTURE BANKFULL MAIN CHANNEL ALIGNMENT OVERFLOW CHANNEL SILLS	PREPARED FOR: PREPARED BY: AN EMPLOYEE-OWNED COMPANY	 FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003	SOUTH ST. VRAIN CREEK RESTORATION BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN	
	MAIN CHANNEL PLAN AND PROFILE STA: 88+50 TO STA: 80+50							
	DESIGNED BY: SDS DRAWN BY: JDL CHECKED BY: RDK	SCALE (22" X 34") HORIZ. 1" = 30' VERT. 1" = 5'					DATE ISSUED: 8/14/2017 SHEET 39 OF 83	DRAWING No. MCPP 3



SOUTH ST VRAIN CREEK MAIN CHANNEL



REFERENCE DRAWINGS

812-TITLEBLOCK-22x34
AERIALS
Planets
Ditch, Irrigation, Features
Proposed Labels 80%
PLAN AND PROFILE 80%
South St Vrain Topo 11-16-2016
CONCURRENT PROJECTS
Old South St Vrain Road
Old St Vrain Road Bridge, JUB
Proposed Bankfull Widths 80%
Proposed Linework 80%

No.	DATE	DESCRIPTION	BY
COMPUTER FILE MANAGEMENT			
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CTB FILE: ---			
PLOT DATE: 6/14/2017 1:28 PM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			

SHEET KEY

LEGEND

- FLOODPLAIN BENCH AT BANKFULL
- RIFFLE STRUCTURE
- LARGE WOOD STRUCTURE
- BANKFULL
- MAIN CHANNEL ALIGNMENT
- OVERFLOW CHANNEL
- SILLS

PREPARED FOR:

Boulder County
Parks & Open Space

PREPARED BY:

Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

FOR AND ON BEHALF OF

MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

DESIGNED BY: JDL
DRAWN BY: JDL
CHECKED BY: RDK

SCALE (22" X 34")
HORIZ. 1" = 30'
VERT. 1" = 5'

DATE ISSUED: 6/14/2017

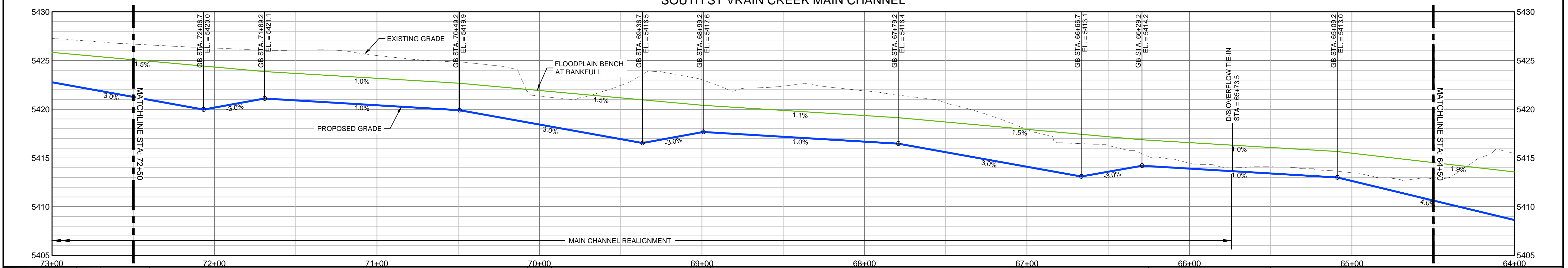
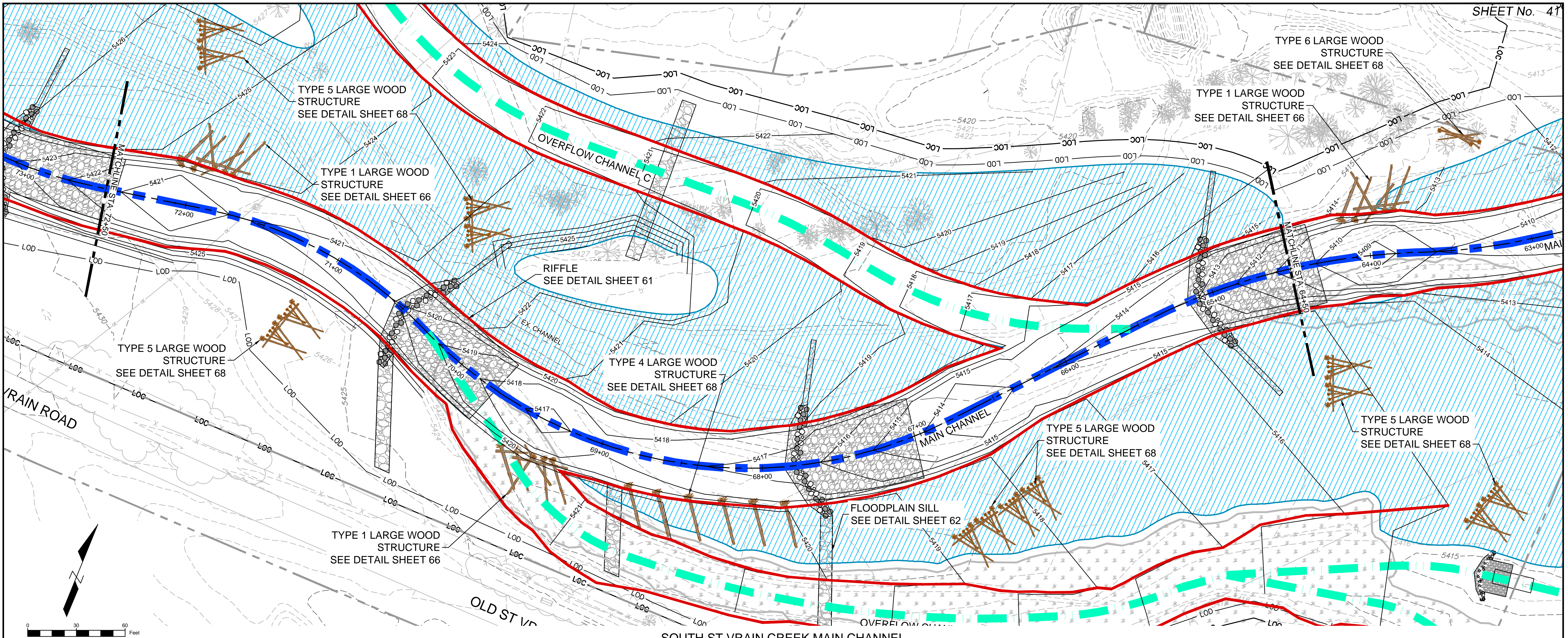
SHEET 40 OF 83

DRAWING No. MCPP 4

SOUTH ST. VRAIN CREEK RESTORATION

BOULDER COUNTY PARKS AND OPEN SPACE
FINAL DESIGN

MAIN CHANNEL PLAN AND PROFILE
STA: 80+50 TO STA: 72+50



No.	DATE	DESCRIPTION	BY

COMPUTER FILE MANAGEMENT

FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\MAIN P&P 80%.dwg

CTB FILE: ---

PLOT DATE: 6/14/2017 1:28 PM

THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.

SHEET KEY

LEGEND

- FLOODPLAIN BENCH AT
- RIFFLE STRUCTURE
- LARGE WOOD STRUCTURE
- BANKFULL
- MAIN CHANNEL ALIGNMENT
- OVERFLOW CHANNEL
- SILLS

PREPARED FOR:

Boulder County
Parks & Open Space

PREPARED BY:

Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

BOULDER COUNTY PARKS AND OPEN SPACE
FINAL DESIGN

MAIN CHANNEL PLAN AND PROFILE
STA: 72+50 TO STA: 64+50

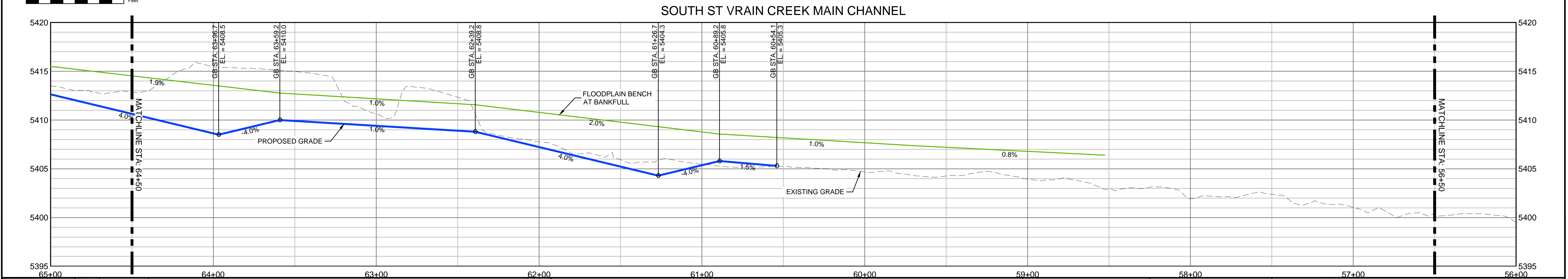
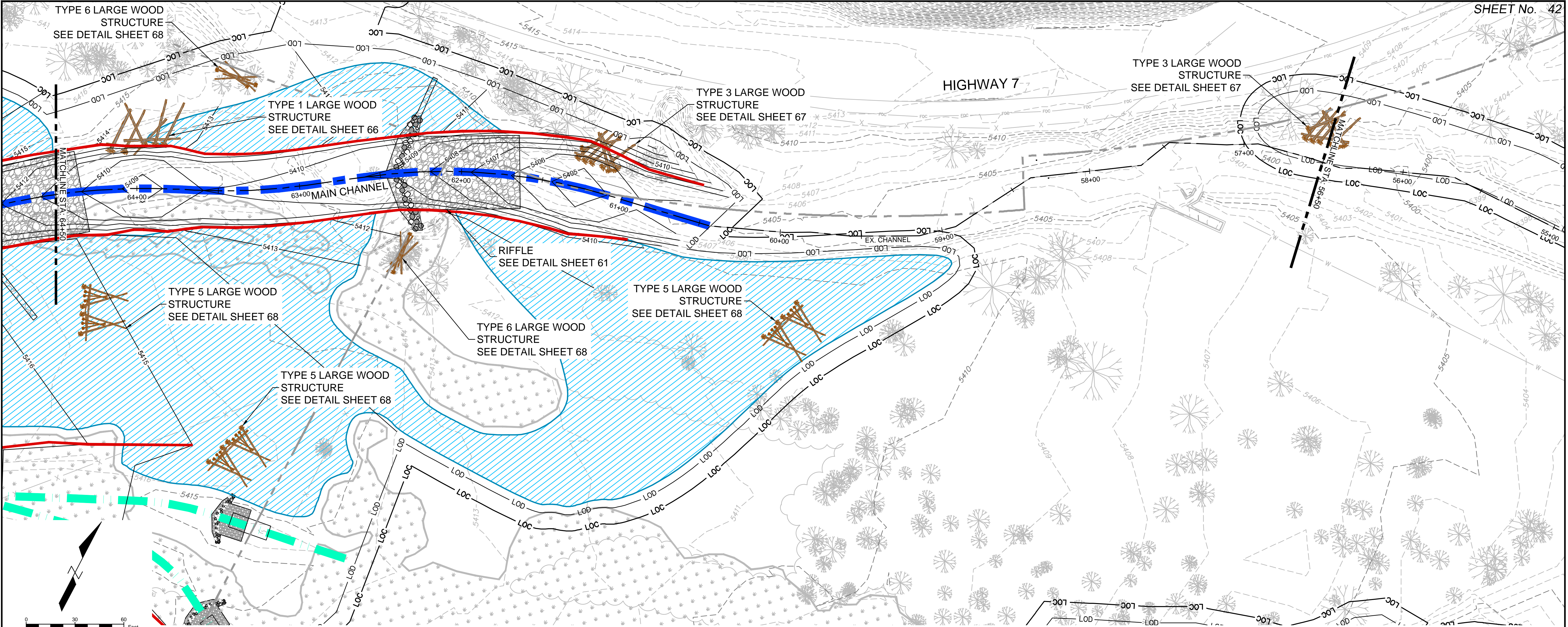
DESIGNED BY: SJS
DRAWN BY: JDL
CHECKED BY: RDK

SCALE (22" X 34")
HORIZ. 1" = 30'
VERT. 1" = 5'

DATE ISSUED: 8/14/2017

SHEET 41 OF 83

DRAWING No. MCPP 5



REFERENCE DRAWINGS

812-TITLEBLOCK-22x34
AERIALS
Parcels
Ditch, Irrigation, Features
Proposed Labels 80%
PLAN AND PROFILE 80%
South St Vrain Topo 11-16-2016
CONCURRENT PROJECTS
Old South St Vrain Road
Old St Vrain Road Bridge, JUB
Proposed Bankfull Widths 80%
Proposed Linework 80%

No.	DATE	DESCRIPTION	BY
REVISIONS			

COMPUTER FILE MANAGEMENT

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PLOT DATE: 6/14/2017 1:29 PM
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SHEET KEY

LEGEND

FLOODPLAIN BENCH AT BANKFULL

RIFLE STRUCTURE

LARGE WOOD STRUCTURE

BANKFULL

MAIN CHANNEL ALIGNMENT

OVERFLOW CHANNEL

SILLS

PREPARED FOR:

Boulder County
Parks & Open Space

PREPARED BY:

Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

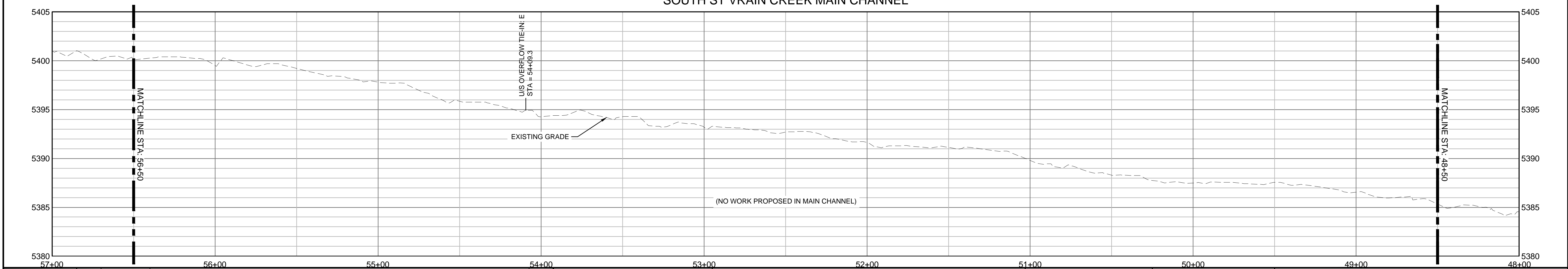
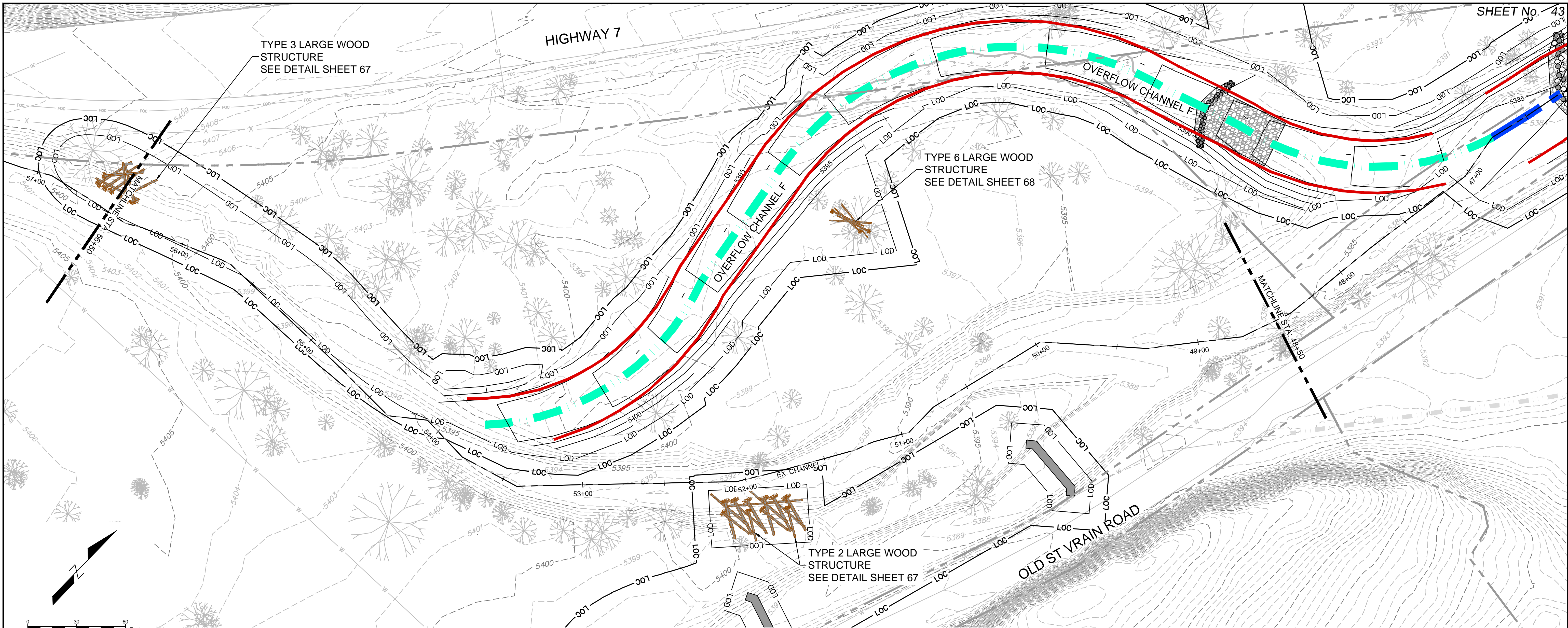
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

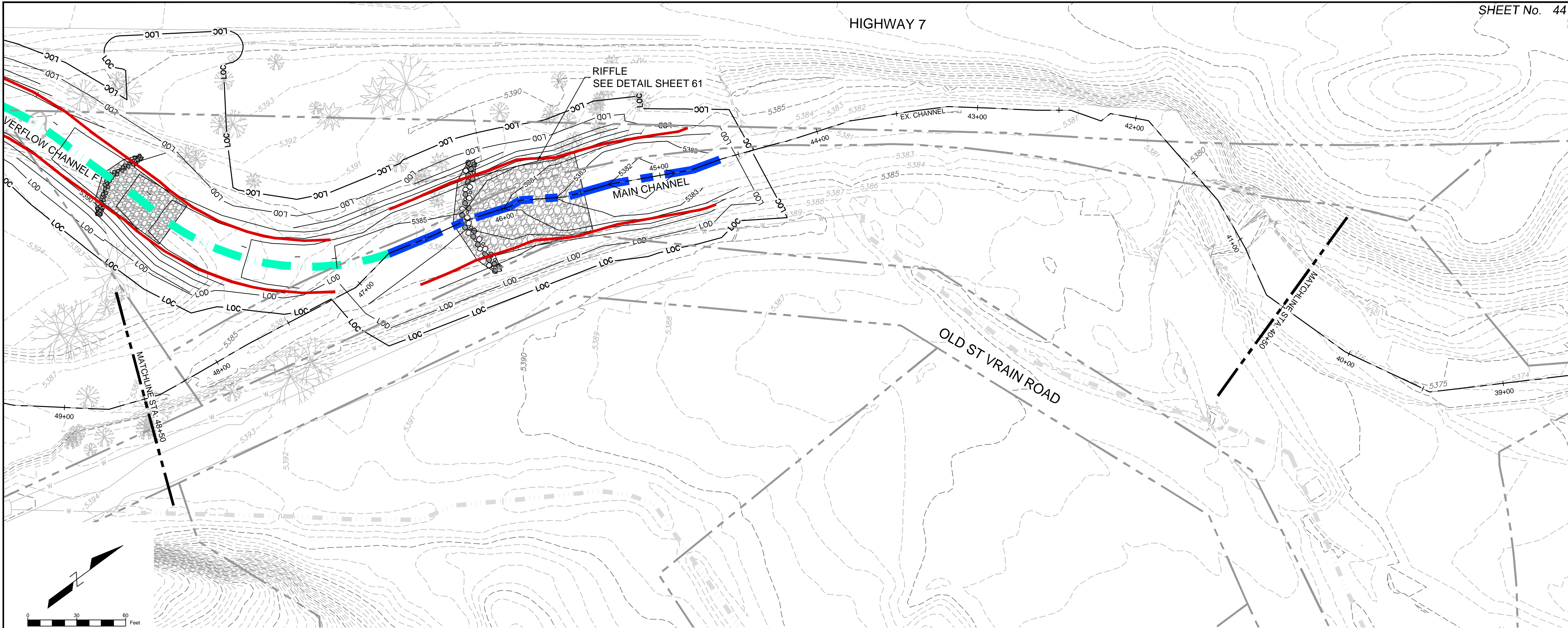
BOULDER COUNTY PARKS AND OPEN SPACE
FINAL DESIGN

MAIN CHANNEL PLAN AND PROFILE
STA: 64+50 TO STA: 56+50

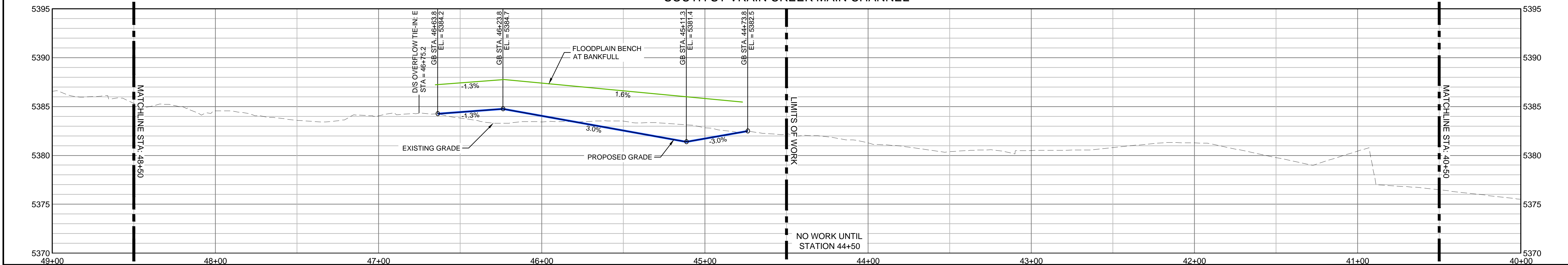
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CHECKED BY:	JDL	HORIZ. 1" = 30'	SHEET	42 OF 83	MCPP 6
	RDK	VERT. 1" = 5'			



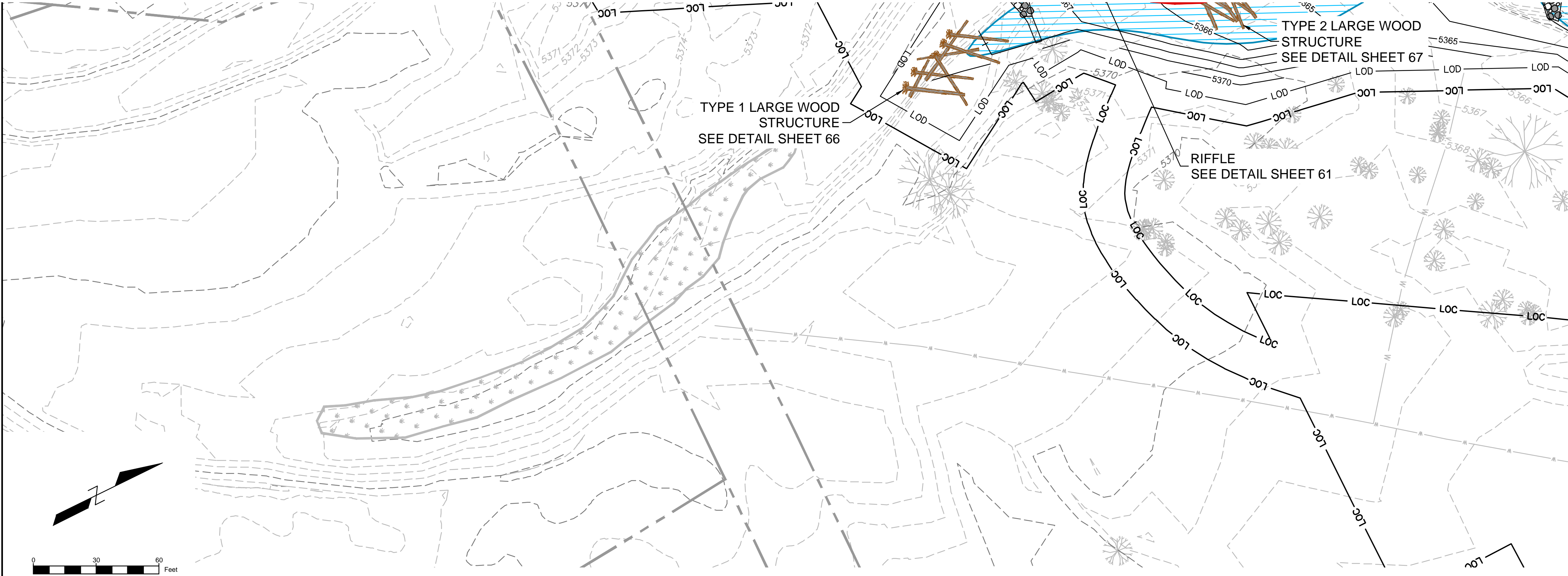
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				REVISIONS	
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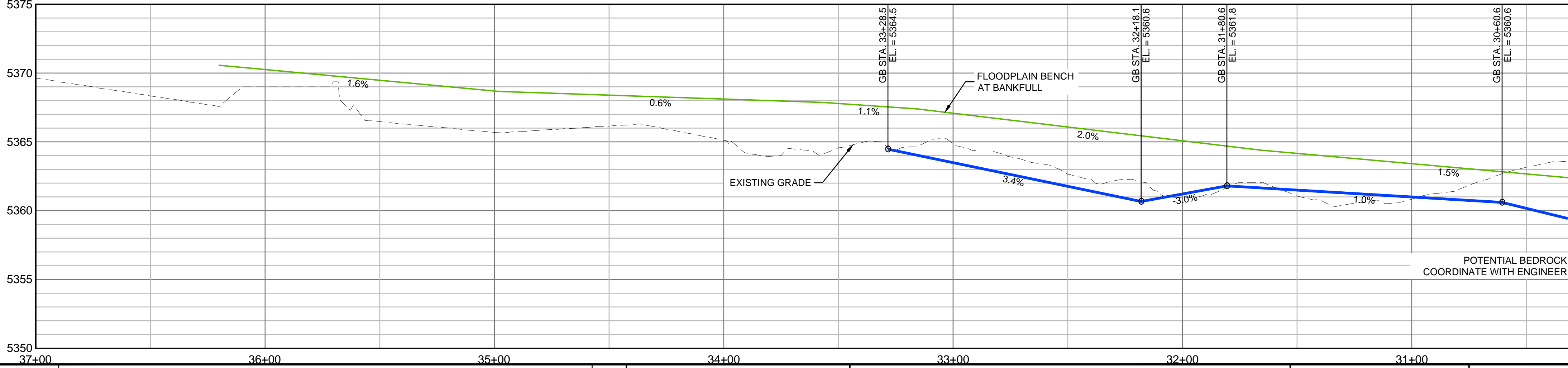
SOUTH ST VRAIN CREEK MAIN CHANNEL



REFERENCE DRAWINGS 812-TITLEBLOCK-22x34 AERIALS Parade Ditch, Irrigation, Features Proposed Labels 80% PLAN AND PROFILE 80% South St Vrain Topo 11-16-2016 CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, JUB Proposed Bankfull Widths 80% Proposed Linework 80%	No.	DATE	DESCRIPTION	BY	
	REVISIONS				
	COMPUTER FILE MANAGEMENT				
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SHEET KEY 		LEGEND 			PREPARED FOR: PREPARED BY:
FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003		DESIGNED BY: SDS DRAWN BY: JDL CHECKED BY: RDK			SCALE (22" X 34") HORIZ. 1" = 30' VERT. 1" = 5' DATE ISSUED: 8/14/2017 SHEET 44 OF 83 DRAWING No. MCPP 8



SOUTH ST VRAIN CREEK MAIN CHANNEL



REFERENCE DRAWINGS		No.		DATE	DESCRIPTION	BY
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COMPUTER FILE MANAGEMENT						
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CTB FILE: ---						
PLOT DATE: 6/14/2017 1:32 PM						
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE						

SHEET KEY

LEGEND

- FLOODPLAIN BENCH AT
- RIFFLE STRUCTURE
- LARGE WOOD STRUCTURE
- BANKFULL
- MAIN CHANNEL ALIGNMENT
- OVERFLOW CHANNEL
- SILLS

PREPARED FOR:

Boulder County
Parks & Open Space

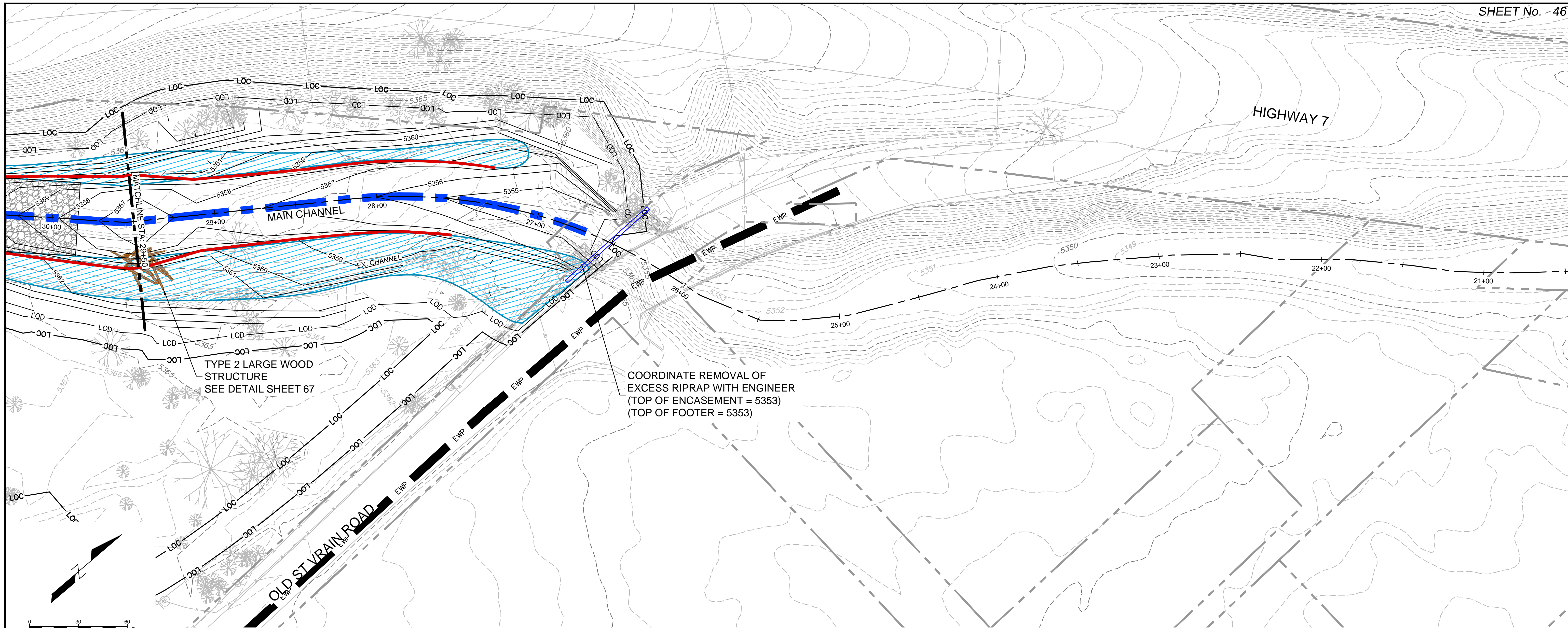
PREPARED BY:

Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

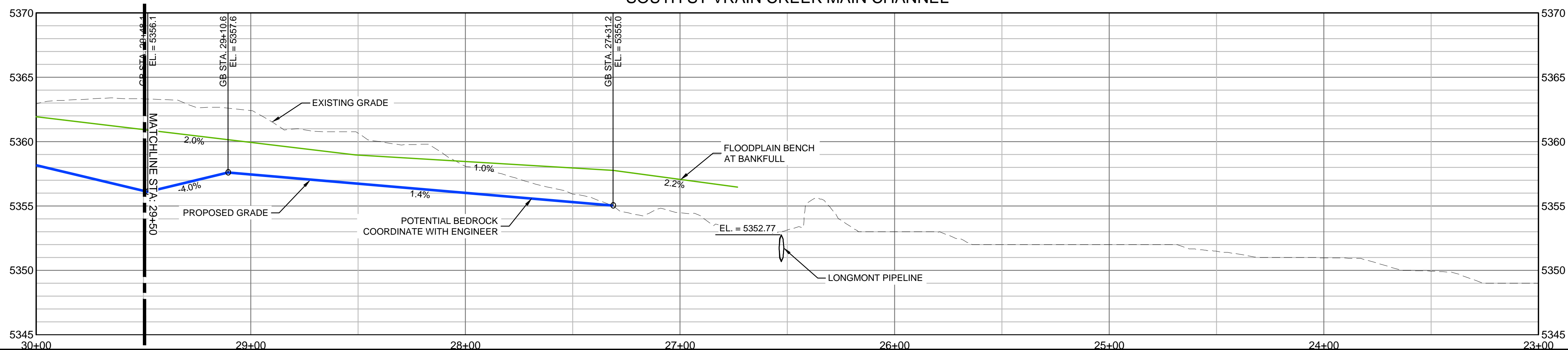
FOR AND ON BEHALF OF

MATRIX DESIGN GROUP

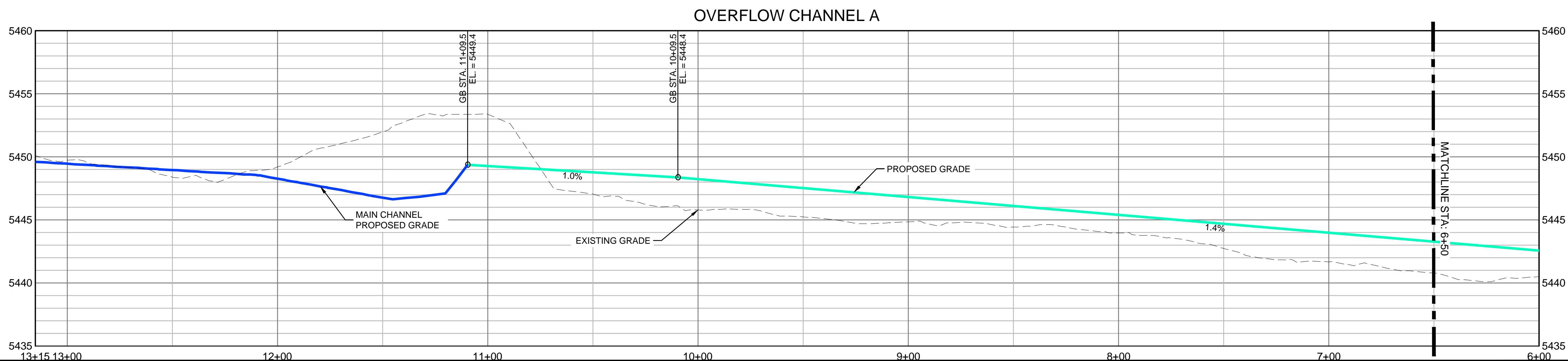
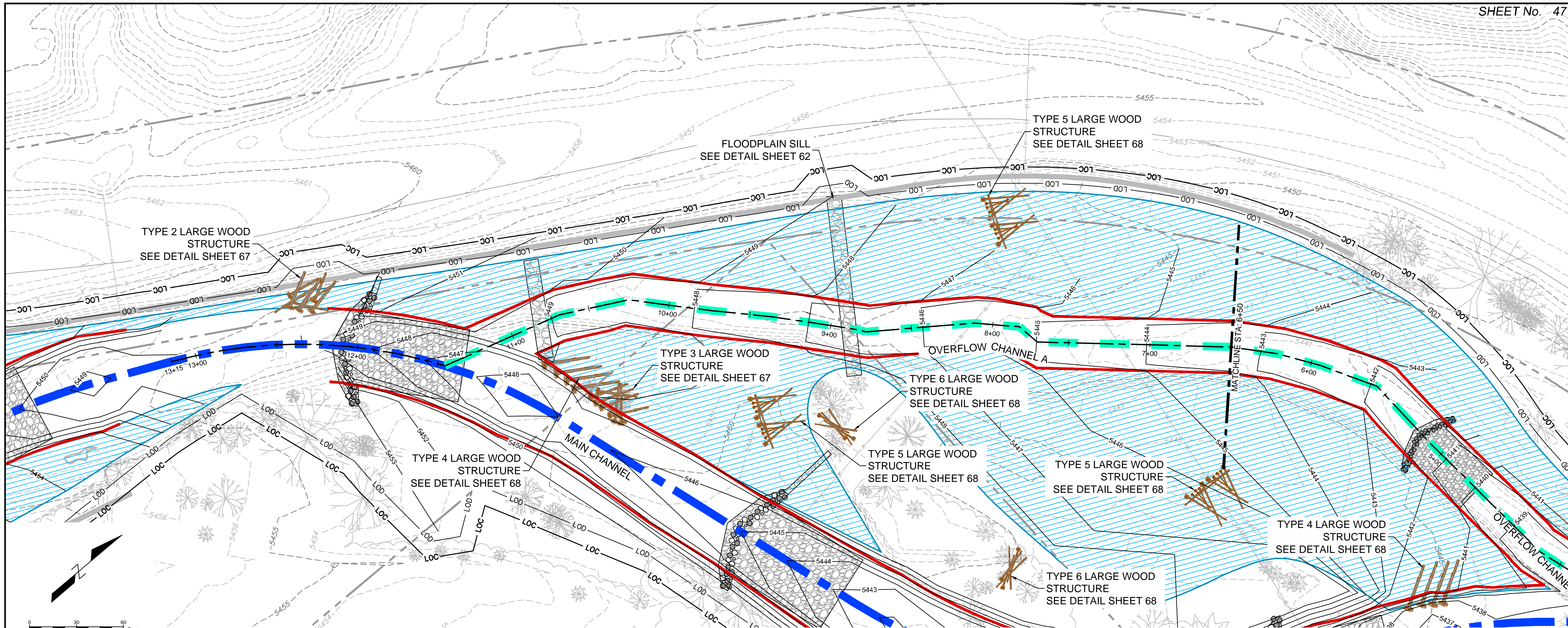
PROJECT No. 16.812.003



SOUTH ST VRAIN CREEK MAIN CHANNEL

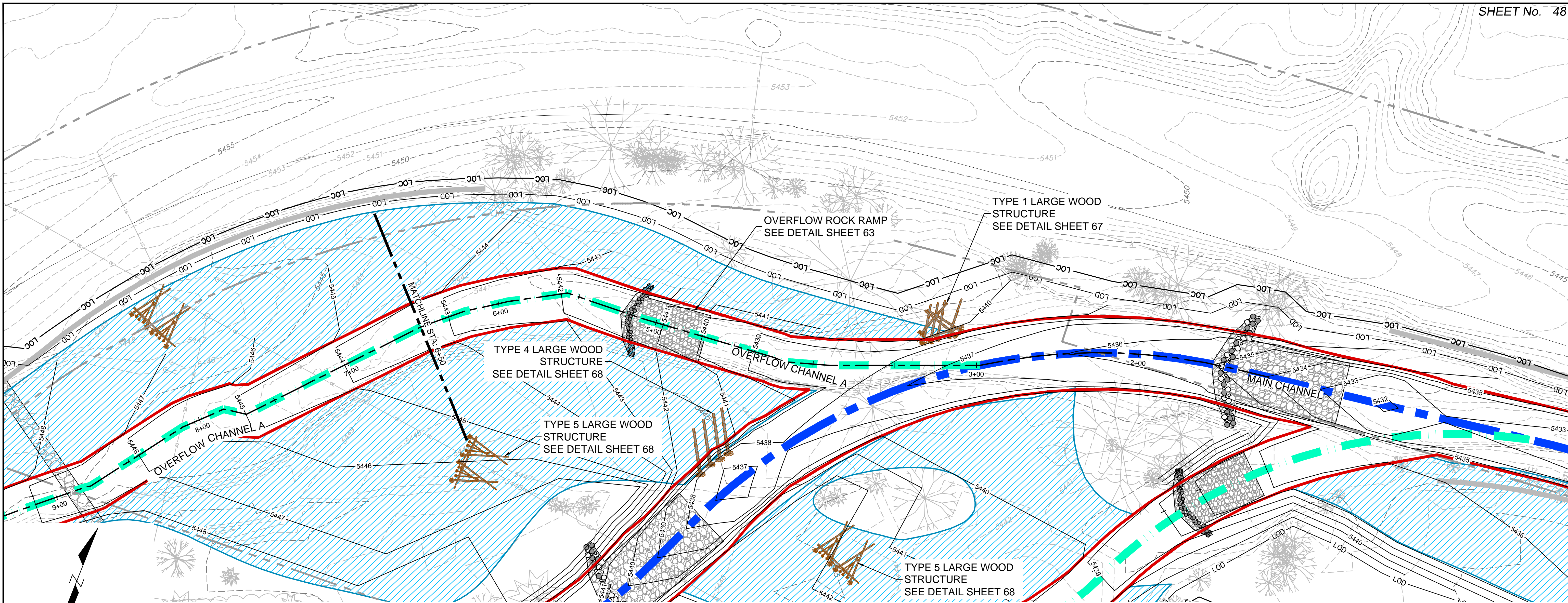


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	REVISIONS			
	COMPUTER FILE MANAGEMENT			
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SHEET KEY 				
LEGEND 				
PREPARED FOR: PREPARED BY: FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003				
SOUTH ST. VRAIN CREEK RESTORATION BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN MAIN CHANNEL PLAN AND PROFILE STA: 29+50 TO STA: 21+00 DESIGNED BY: SDS DRAWN BY: JDL CHECKED BY: RDK SCALE (22" X 34") HORIZ. 1" = 30' VERT. 1" = 5' DATE ISSUED: 8/14/2017 SHEET 46 OF 83 DRAWING No. MCPP 10				

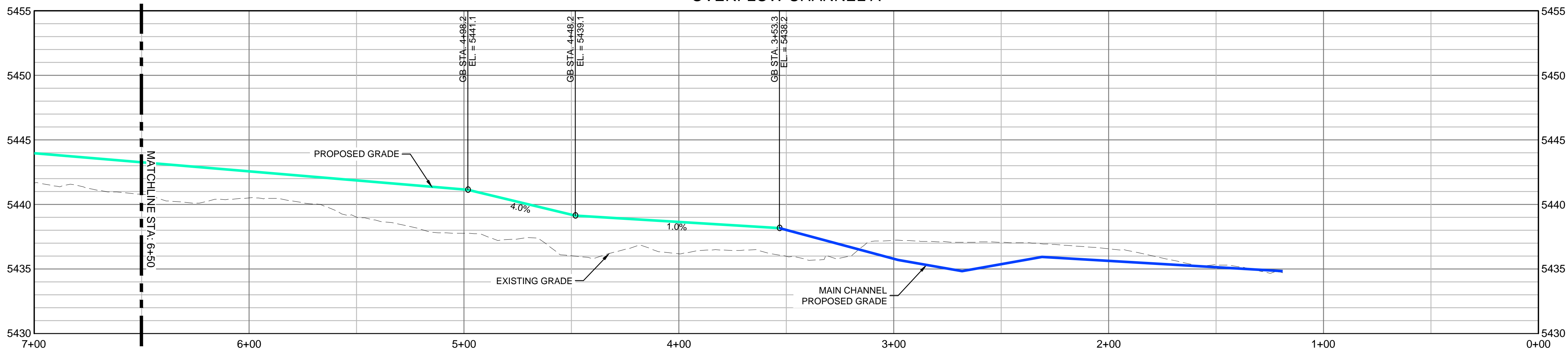
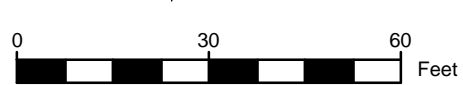


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	REVISIONS			
	COMPUTER FILE MANAGEMENT			
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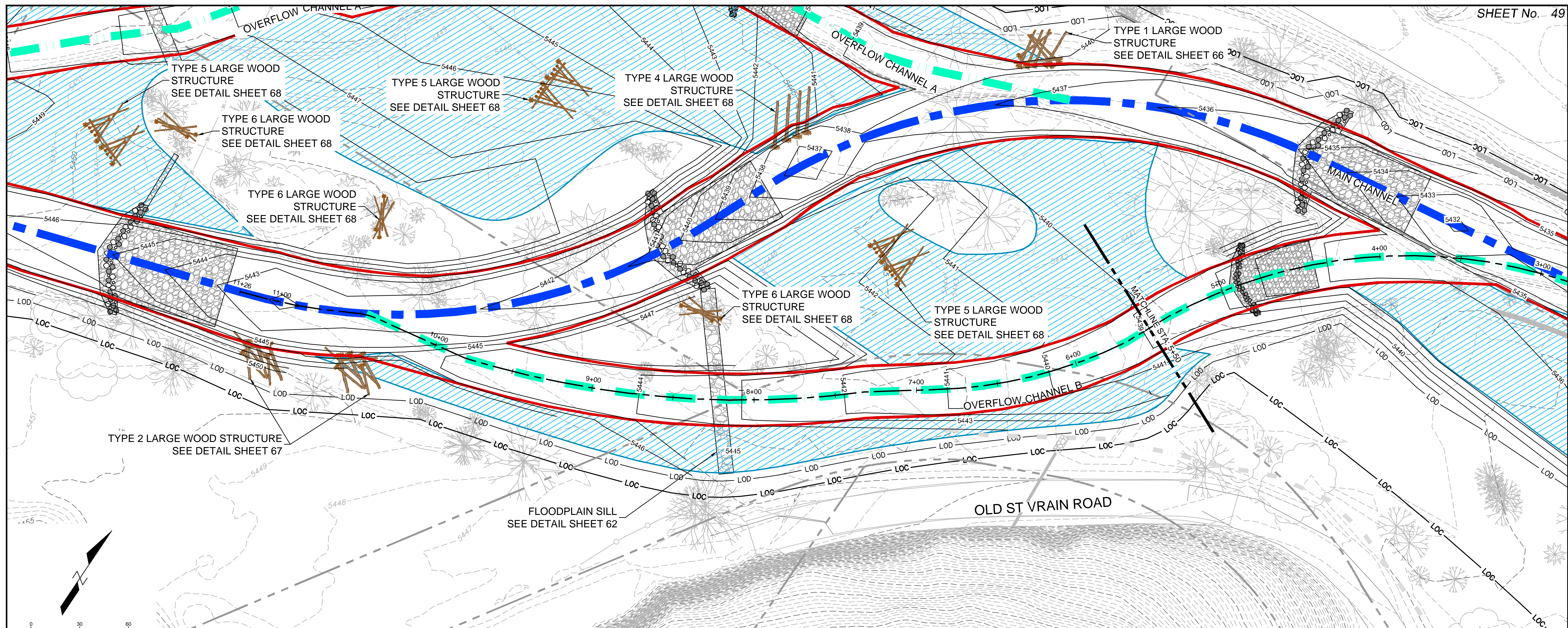
SHEET KEY 		LEGEND FLOODPLAIN BENCH AT BANKFULL RIFLE STRUCTURE LARGE WOOD STRUCTURE MAIN CHANNEL ALIGNMENT OVERFLOW CHANNEL SILLS BANKFULL	PREPARED FOR: PREPARED BY: AN EMPLOYEE-OWNED COMPANY	FOR AND ON BEHALF OF: FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003	SOUTH ST. VRAIN CREEK RESTORATION BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN OVERFLOW CHANNEL PLAN AND PROFILE STA: 13+15 TO STA: 6+50 DESIGNED BY: JDL DRAWN BY: JDL CHECKED BY: RDK SCALE (22" X 34") HORIZ. 1" = 30' VERT. 1" = 5' DATE ISSUED: 02/17/17 SHEET 47 OF 83 DRAWING No. OCPP A1
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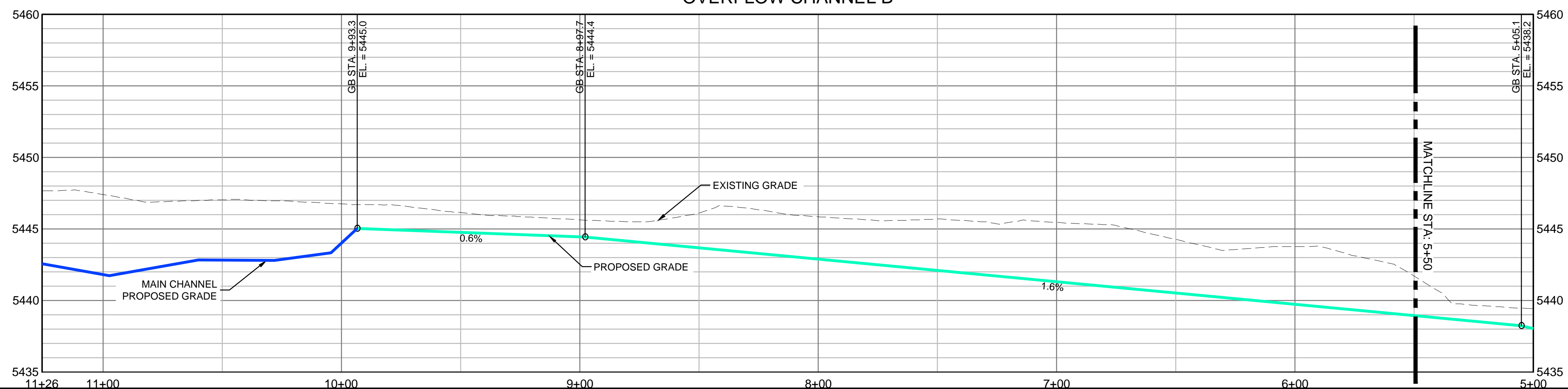
OVERFLOW CHANNEL A



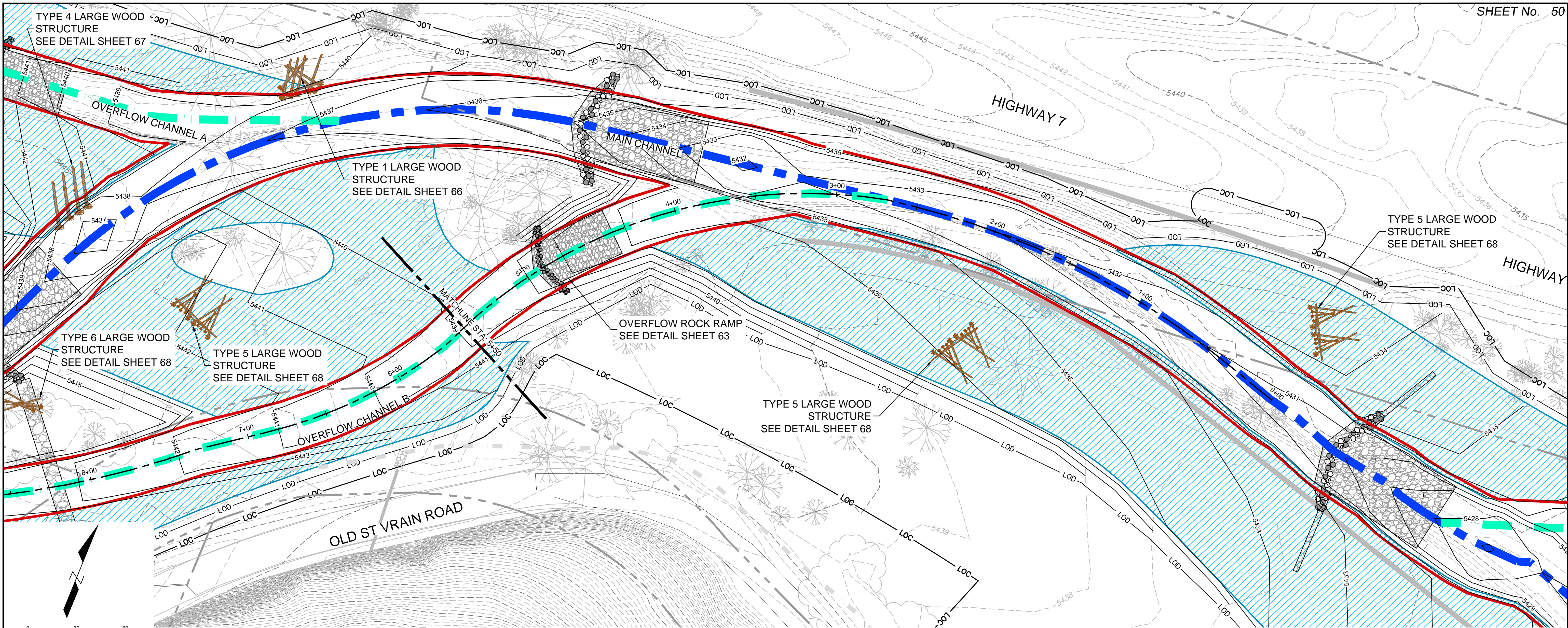
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812-TITLEBLOCK-22x34 AERIALS CONCURRENT PROJECTS Old St Vrain Road Bridge, JUB Old South St Vrain Road Ditch, Irrigation Features Proposed Labels 80% South St Vrain Topo 11-16-2016 PLAN AND PROFILE 80% Proposed Bankfull Widths 80% Proposed Linework 80%						 PREPARED BY: Matrix DESIGN GROUP AN EMPLOYEE-OWNED COMPANY																									
<table border="1"><thead><tr><th>No.</th><th>DATE</th><th>DESCRIPTION</th><th>BY</th></tr></thead><tbody><tr><td colspan="4">COMPUTER FILE MANAGEMENT</td></tr><tr><td colspan="4">FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\OVERFLOW P&P 80%.dwg</td></tr><tr><td colspan="4">CTB FILE: ---</td></tr><tr><td colspan="4">PLOT DATE: 6/14/2017 1:40 PM</td></tr><tr><td colspan="4">THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.</td></tr></tbody></table>		No.	DATE	DESCRIPTION	BY	COMPUTER FILE MANAGEMENT				FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\OVERFLOW P&P 80%.dwg				CTB FILE: ---				PLOT DATE: 6/14/2017 1:40 PM				THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.								BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN	
No.	DATE	DESCRIPTION	BY																												
COMPUTER FILE MANAGEMENT																															
FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\OVERFLOW P&P 80%.dwg																															
CTB FILE: ---																															
PLOT DATE: 6/14/2017 1:40 PM																															
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.																															
						OVERFLOW CHANNEL PLAN AND PROFILE STA: 6+50 TO STA: 0+00																									
						DESIGNED BY: SDS DRAWN BY: JDL CHECKED BY: RDK																									
						SCALE (22" X 34") HORIZ. 1" = 30' VERT. 1" = 5'																									
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						DRAWING No. OCPP A2																									



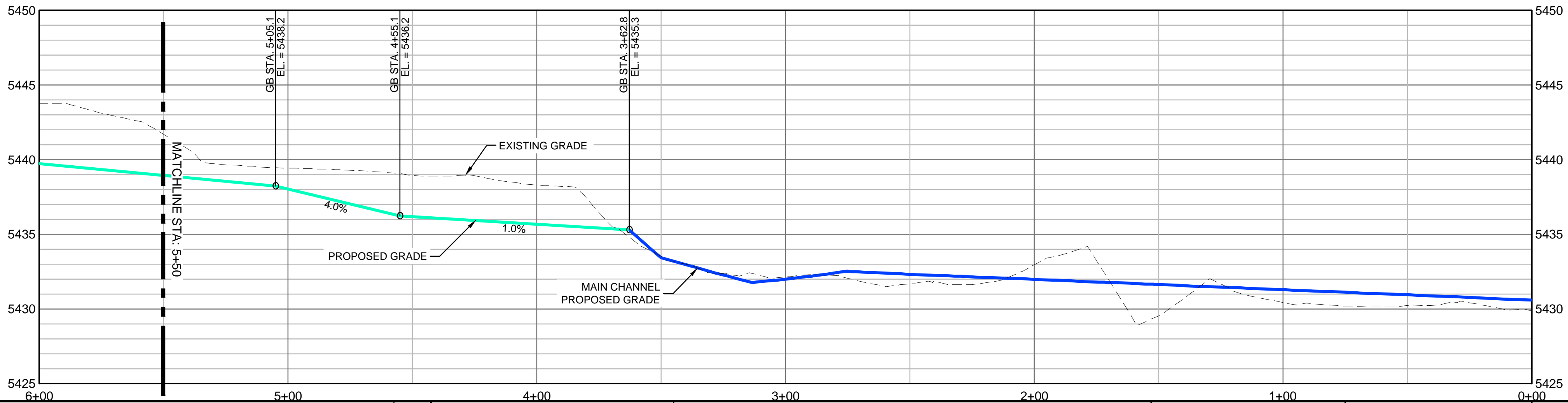
OVERFLOW CHANNEL B



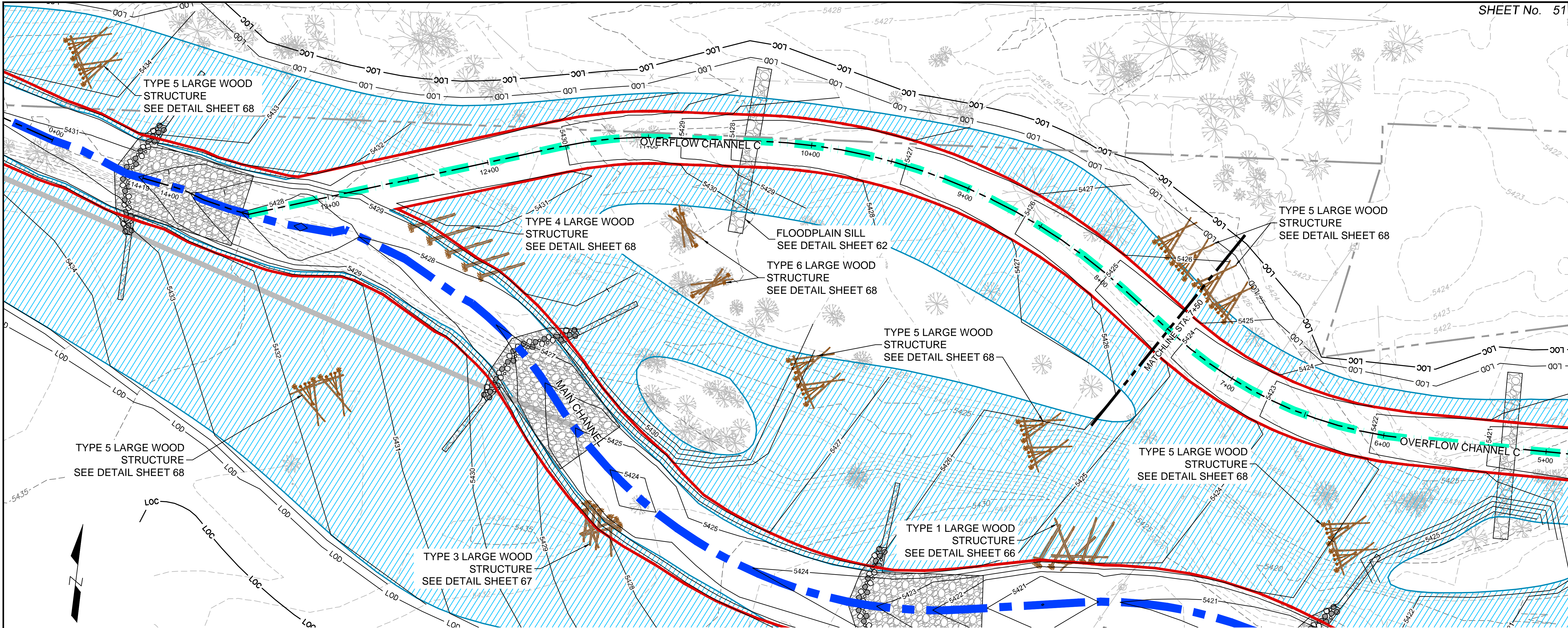
REFERENCE DRAWINGS 812-TITLEBLOCK-22x34 AERIALS CONCURRENT PROJECTS Old St Vrain Road Bridge, JUB Old South St Vrain Road Ditch, Irrigation Features Proposed Labels 80% South St Vrain Topo 11-16-2016 PLAN AND PROFILE 80% Proposed Bankfull Widths 80% Proposed Linework 80%	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td colspan="4" style="text-align: center;">REVISIONS</td> </tr> </tbody> </table>	No.	DATE	DESCRIPTION	BY	REVISIONS				COMPUTER FILE MANAGEMENT FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\OVERFLOW P&P 80%.dwg CTB FILE: --- PLOT DATE: 6/14/2017 1:41 PM THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.	SHEET KEY 	LEGEND <div style="display: flex; justify-content: space-between;"> <div> FLOODPLAIN BENCH AT BANKFULL RIFFLE STRUCTURE LARGE WOOD STRUCTURE </div> <div> MAIN CHANNEL ALIGNMENT OVERFLOW CHANNEL SILLS BANKFULL </div> </div>	PREPARED FOR: PREPARED BY: FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003	 SOUTH ST. VRAIN CREEK RESTORATION BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN OVERFLOW CHANNEL PLAN AND PROFILE STA: 11+26 TO STA: 5+50 DESIGNED BY: SDS DRAWN BY: JDL CHECKED BY: RDK SCALE (22" X 34") HORIZ. 1" = 30' VERT. 1" = 5' DATE ISSUED: 02/17/17 SHEET 49 OF 83 DRAWING No. OCPP B1
No.	DATE	DESCRIPTION	BY											
REVISIONS														



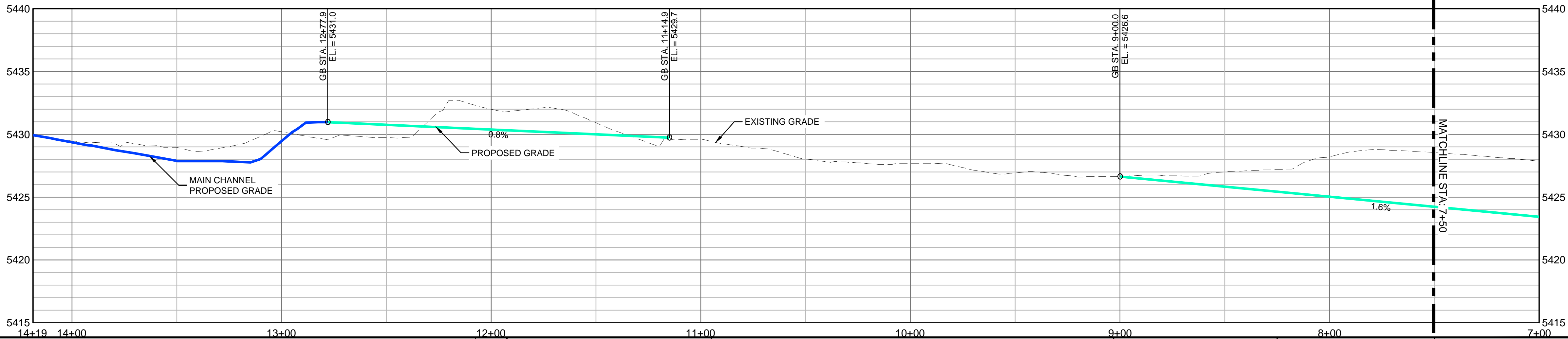
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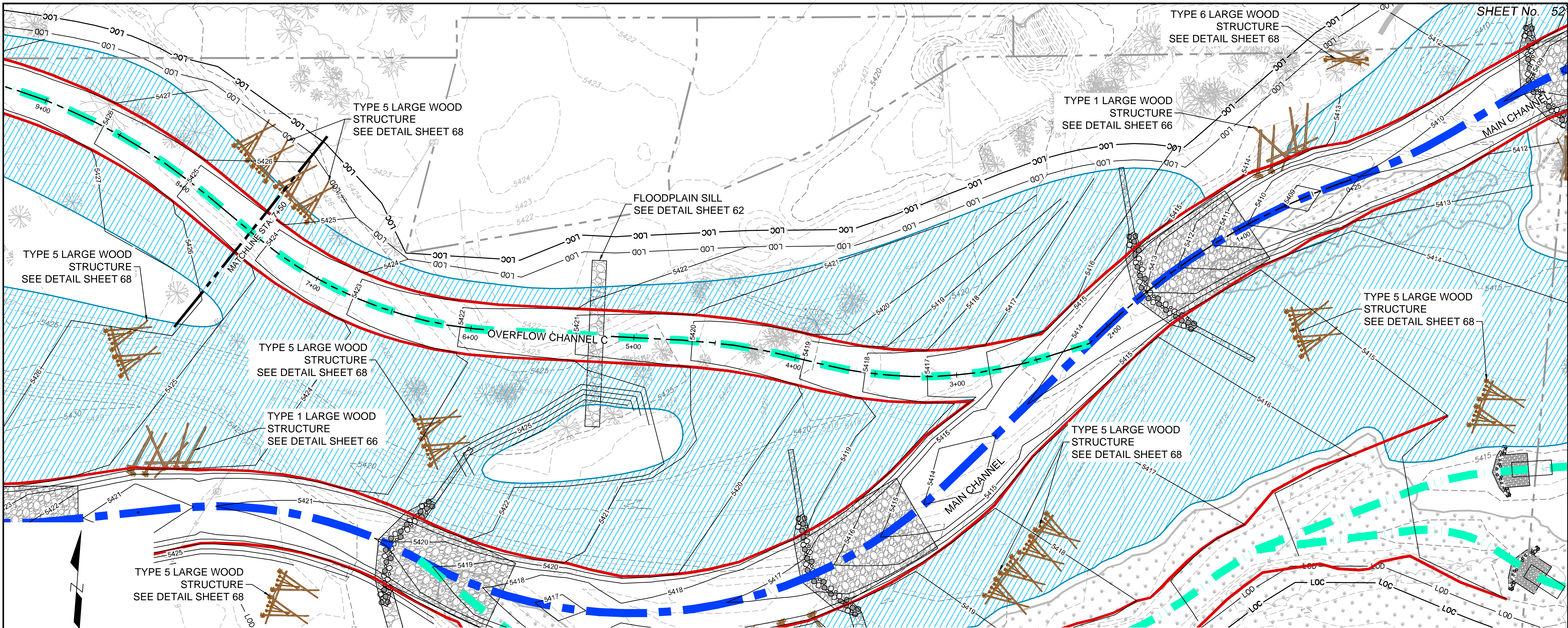
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No.	DATE	DESCRIPTION	BY																		
REVISIONS																					
COMPUTER FILE MANAGEMENT FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\OVERFLOW P&P 80%.dwg CTB FILE: --- PLOT DATE: 6/14/2017 1:42 PM THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.																					
SHEET KEY 		LEGEND <ul style="list-style-type: none">FLOODPLAIN BENCH AT BANKFULLRIFFLE STRUCTURELARGE WOOD STRUCTUREMAIN CHANNEL ALIGNMENTOVERFLOW CHANNELSILLSBANKFULL																			
PREPARED FOR: Boulder County Parks & Open Space PREPARED BY: Matrix Design Group AN EMPLOYEE-OWNED COMPANY		FOR AND ON BEHALF OF: MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003																			
SOUTH ST. VRAIN CREEK RESTORATION BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN		OVERFLOW CHANNEL PLAN AND PROFILE STA: 5+50 TO STA: 0+00																			
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DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:	02/17/17	DRAWING No.																
CHECKED BY:	JDL	HORIZ. 1" = 30'	SHEET	50 OF 83	OCPP B2																
	RDK	VERT. 1" = 5'																			



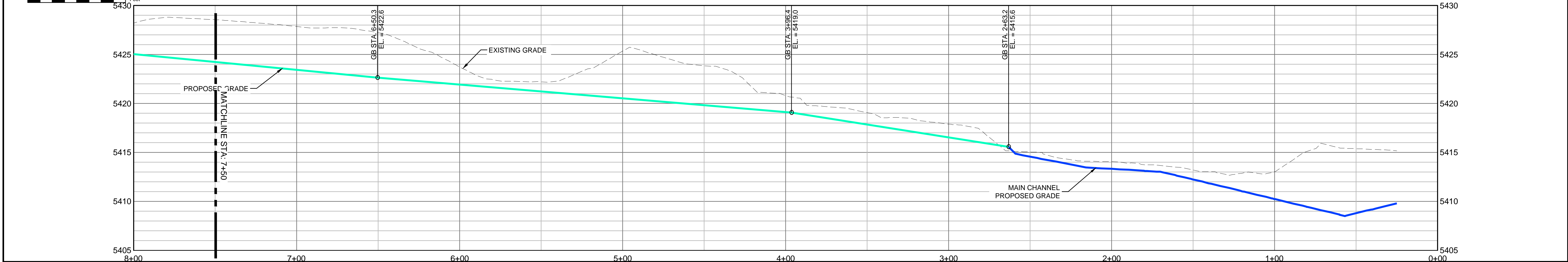
OVERFLOW CHANNEL C



REFERENCE DRAWINGS		COMPUTER FILE MANAGEMENT		SHEET KEY		LEGEND		PREPARED FOR:		SOUTH ST. VRAIN CREEK RESTORATION			
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DESIGNED BY: SDS DRAWN BY: JDL CHECKED BY: RDK		SCALE (22" X 34") HORIZ. 1" = 30' VERT. 1" = 5'		DATE ISSUED: 02/17/17 SHEET 51 OF 83		DRAWING No. OCPP C1		FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003					



OVERFLOW CHANNEL C



REFERENCE DRAWINGS			
No.	DATE	DESCRIPTION	BY
COMPUTER FILE MANAGEMENT			
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PLOT DATE: 6/14/2017 1:43 PM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			

SHEET KEY			
LEGEND			
FLOODPLAIN BENCH AT BANKFULL			
RIFLE STRUCTURE			
LARGE WOOD STRUCTURE			
SILLS			
BANKFULL			
MAIN CHANNEL ALIGNMENT			
OVERFLOW CHANNEL			

PREPARED FOR:

Boulder County

Parks & Open Space

PREPARED BY:

Matrix DESIGN GROUP

AN EMPLOYEE-OWNED COMPANY

FOR AND ON BEHALF OF

MATRIX DESIGN GROUP, INC.

PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

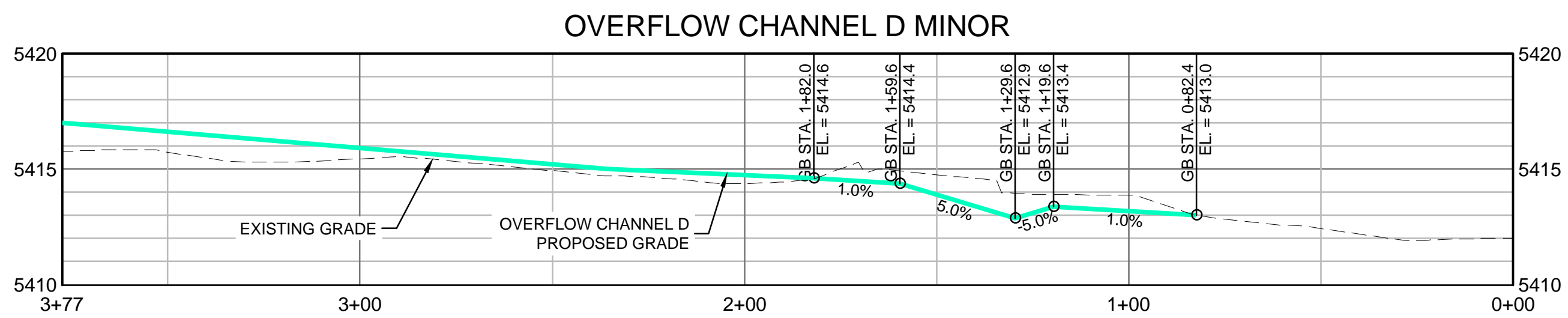
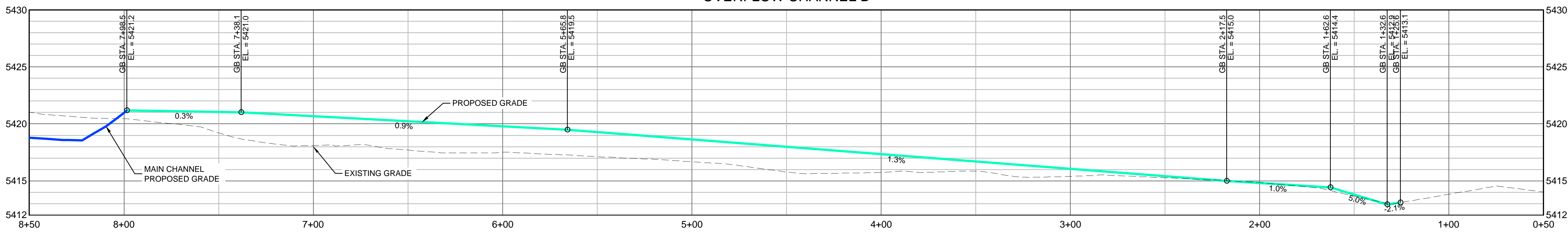
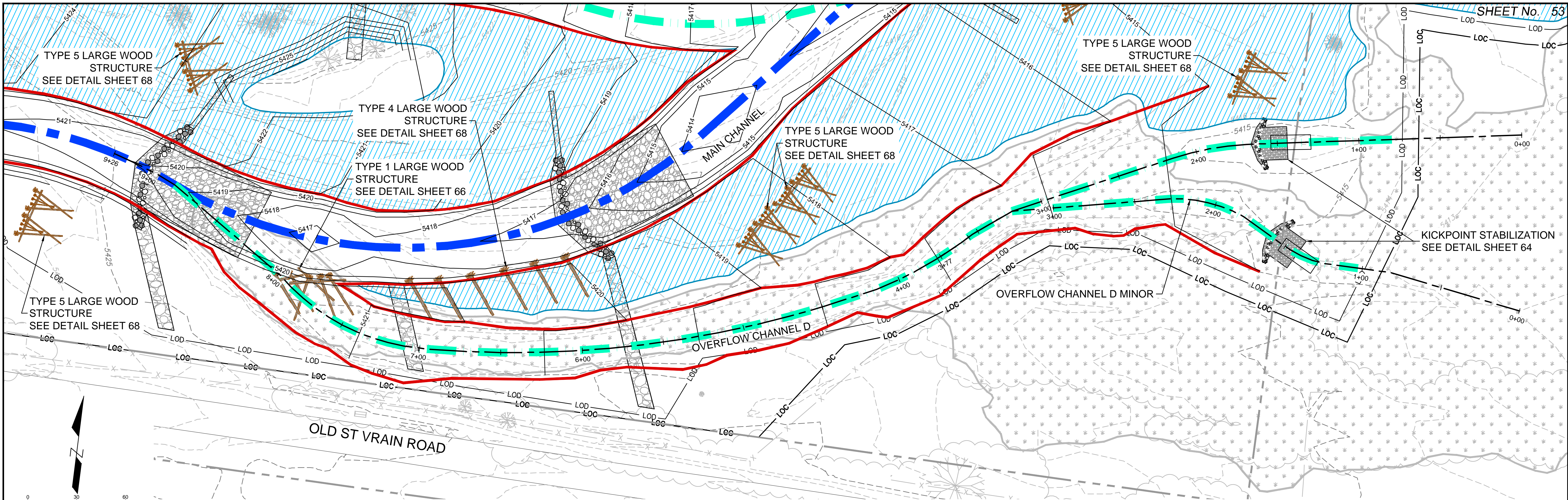
BOULDER COUNTY PARKS AND OPEN SPACE

FINAL DESIGN

OVERFLOW CHANNEL PLAN AND PROFILE

STA: 7+50 TO STA: 0+00

DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:	DRAWING No.
CHECKED BY:	RDK	HORIZ. 1" = 30'	02/17/17	OCPP C2
		VERT. 1" = 5'	SHEET	52 OF 83



REFERENCE DRAWINGS			
No.	DATE	DESCRIPTION	BY
812-TITLEBLOCK-22x34 AERIALS			
CONCURRENT PROJECTS			
Old St Vrain Road Bridge, JUB			
Old South St Vrain Road			
Ditch, Irrigation, Features			
Proposed Labels 80%			
South St Vrain Topo 11-18-2016			
PLAN AND PROFILE 80%			
Proposed Bankfull Widths 80%			
Proposed Linework 80%			

COMPUTER FILE MANAGEMENT			
FILE NAME:	r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\OVERFLOW P&P 80%.dwg		
CTB FILE:	---		
PLOT DATE:	6/14/2017 1:44 PM		
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			

SHEET KEY

LEGEND

- FLOODPLAIN BENCH AT BANKFULL
- RIFFLE STRUCTURE
- LARGE WOOD STRUCTURE
- MAIN CHANNEL ALIGNMENT
- OVERFLOW CHANNEL
- SILLS
- BANKFULL

PREPARED FOR:

PREPARED BY:

FOR AND ON BEHALF OF

PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

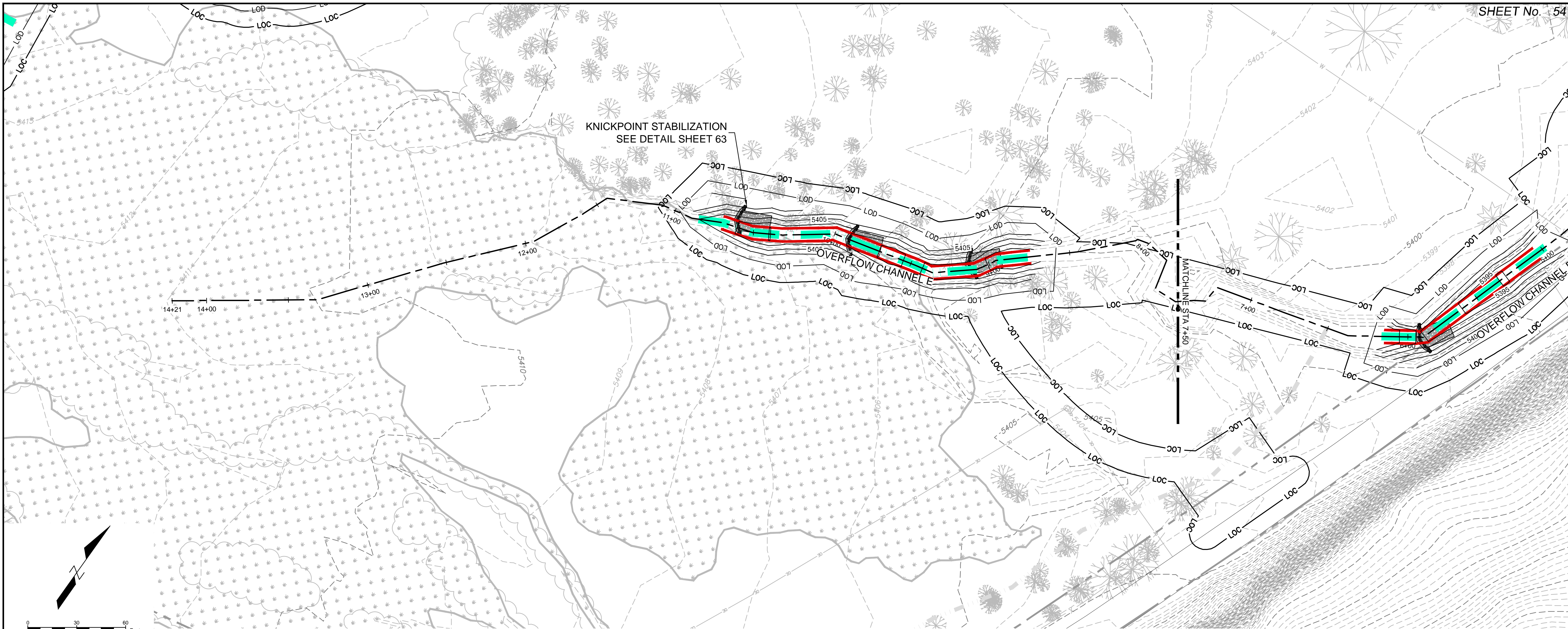
BOULDER COUNTY PARKS AND OPEN SPACE

FINAL DESIGN

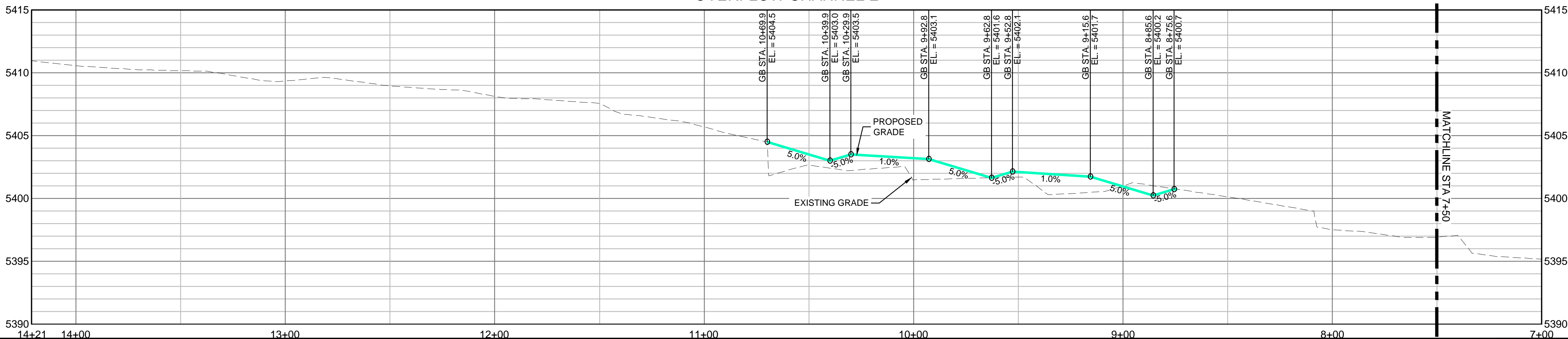
OVERFLOW CHANNEL PLAN AND PROFILE

STA: 8+50 TO STA: 0+50

DESIGNED BY: JDL
CHECKED BY: RDK
SCALE (22" X 34")
HORIZ. 1" = 30'
VERT. 1" = 5'
DATE ISSUED: 02/17/17
SHEET 53 OF 83
DRAWING No. OCPD



OVERFLOW CHANNEL E



REFERENCE DRAWINGS		No.		DATE	DESCRIPTION	BY
812-TITLEBLOCK-22x34 AERIALS Parsade CONCURRENT PROJECTS Old St Vrain Road Bridge, JUB Old South St Vrain Road Ditch, Irrigation Features Proposed Labels 80% South St Vrain Topo 11-16-2016 PLAN AND PROFILE 80% Proposed Bankfull Widths 80% Proposed Linework 80%						
COMPUTER FILE MANAGEMENT						
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CTB FILE: ---						
PLOT DATE: 6/14/2017 1:44 PM						
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.						

SHEET KEY	

LEGEND	
	FLOODPLAIN BENCH AT BANKFULL
	RIFFLE STRUCTURE
	LARGE WOOD STRUCTURE
	MAIN CHANNEL ALIGNMENT
	OVERFLOW CHANNEL
	SILLS
	BANKFULL

PREPARED FOR:	
	Parks & Open Space

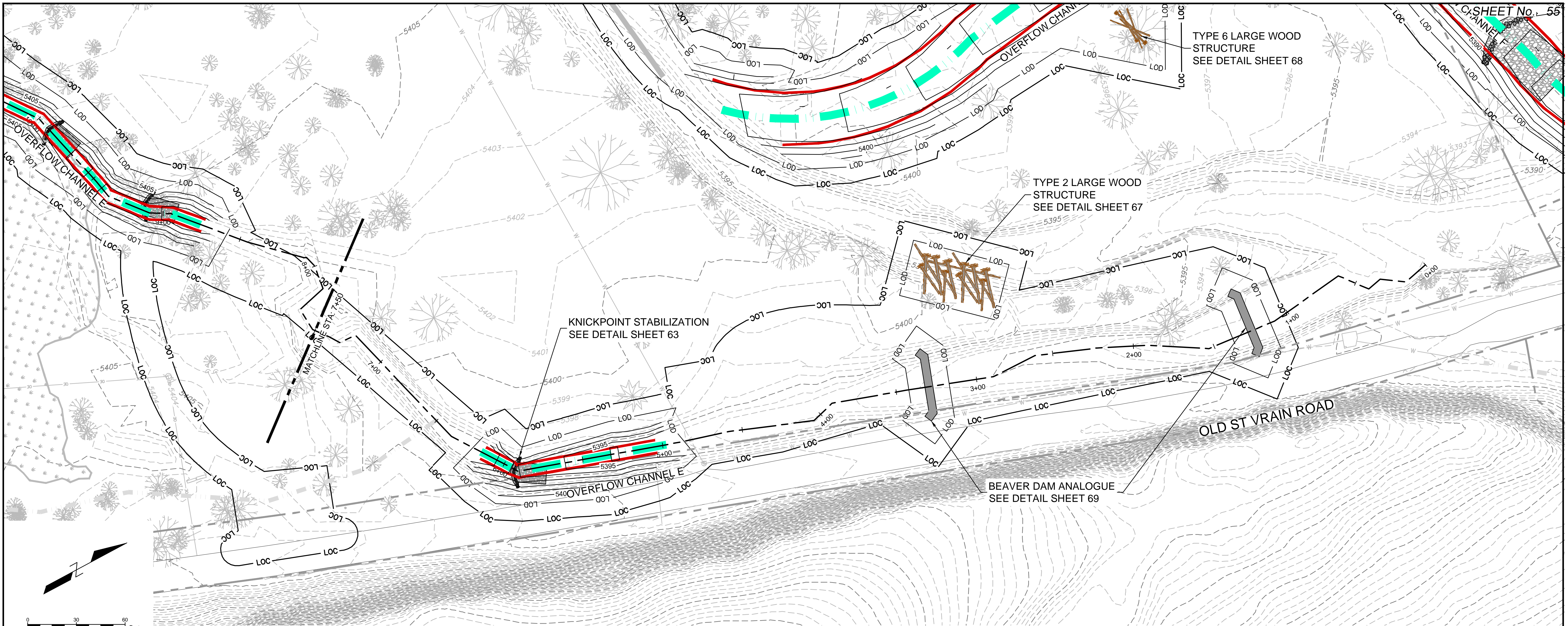
PREPARED BY:	
	Matrix Design Group

FOR AND ON BEHALF OF	
	Colorado Licensed Professional Engineer

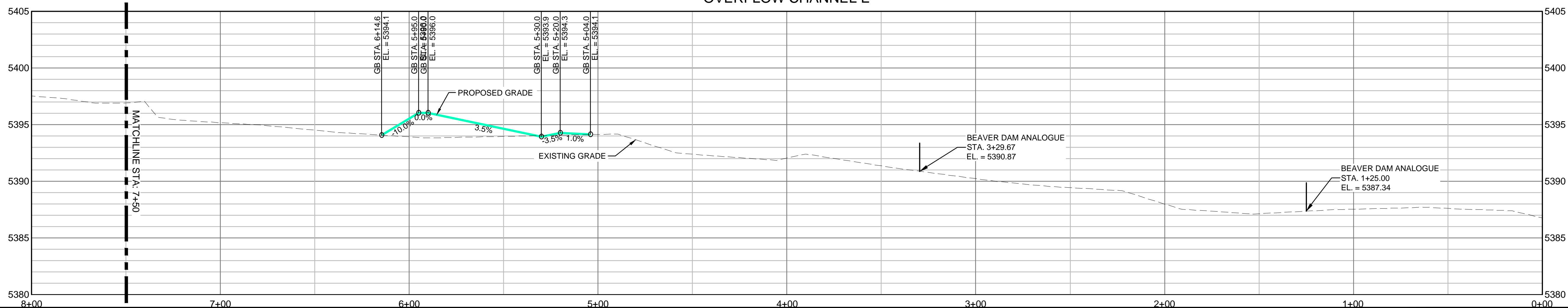
SOUTH ST. VRAIN CREEK RESTORATION	
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN	

OVERFLOW CHANNEL PLAN AND PROFILE	
STA: 14+21 TO STA: 7+50	

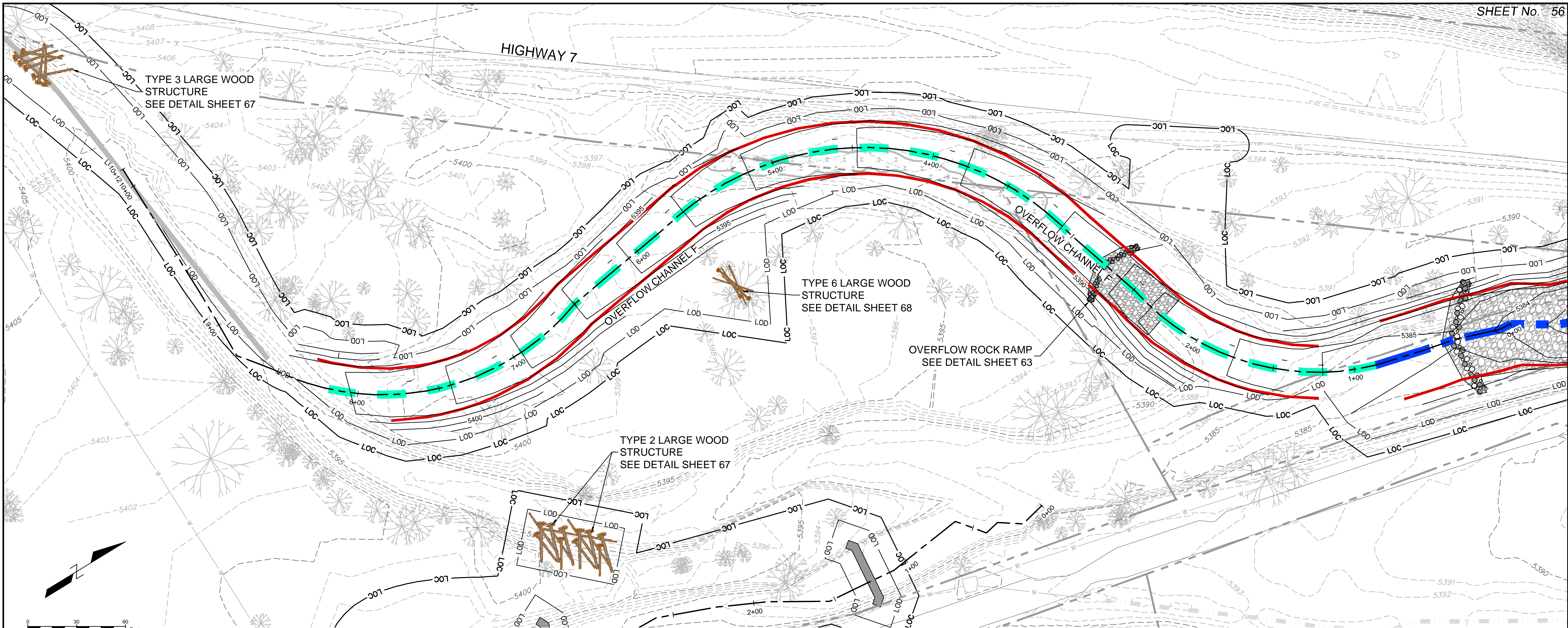
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:	DRAWING No.
DRAWN BY:	JDL <td>HORIZ. 1" = 30'</td> <td>02/17/17</td> <td>54 OF 83</td>	HORIZ. 1" = 30'	02/17/17	54 OF 83
CHECKED BY:	RDk <td>VERT. 1" = 5'</td> <td>SHEET</td> <td>OCPPE1</td>	VERT. 1" = 5'	SHEET	OCPPE1



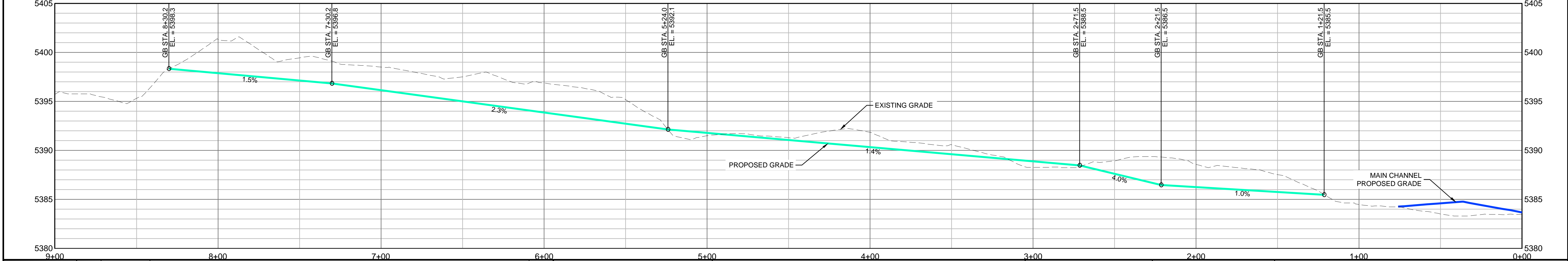
OVERFLOW CHANNEL E



REFERENCE DRAWINGS 812-TITLEBLOCK-22x34 AERIALS CONCURRENT PROJECTS Old St Vrain Road Bridge JUB Old South St Vrain Road Ditch, Irrigation Features Proposed Labels 80% South St Vrain Road 11-16-2016 PLAN AND PROFILE 80% Proposed Bankfull Widths 80% Proposed Linework 80%		<table border="1"><thead><tr><th>No.</th><th>DATE</th><th>DESCRIPTION</th><th>BY</th></tr></thead><tbody><tr><td colspan="4">REVISIONS</td></tr></tbody></table>		No.	DATE	DESCRIPTION	BY	REVISIONS													
No.	DATE	DESCRIPTION	BY																		
REVISIONS																					
COMPUTER FILE MANAGEMENT FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\OVERFLOW P&P 80%.dwg CTB FILE: --- PLOT DATE: 6/14/2017 1:45 PM THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.																					
SHEET KEY 		LEGEND 																			
PREPARED FOR: Boulder County Parks & Open Space PREPARED BY: Matrix Design Group AN EMPLOYEE-OWNED COMPANY		FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003																			
SOUTH ST. VRAIN CREEK RESTORATION BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN		OVERFLOW CHANNEL PLAN AND PROFILE STA: 7+50 TO STA: 0+00																			
<table border="1"><tr><td>DESIGNED BY:</td><td>SDS</td><td>SCALE (22" X 34")</td><td>DATE ISSUED:</td><td>02/17/17</td><td>DRAWING No.</td></tr><tr><td>DRAWN BY:</td><td>JDL</td><td>HORIZ. 1" = 30'</td><td>SHEET</td><td>55 OF 83</td><td>OCPP E2</td></tr><tr><td>CHECKED BY:</td><td>RDK</td><td>VERT. 1" = 5'</td><td colspan="3"></td></tr></table>		DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:	02/17/17	DRAWING No.	DRAWN BY:	JDL	HORIZ. 1" = 30'	SHEET	55 OF 83	OCPP E2	CHECKED BY:	RDK	VERT. 1" = 5'					
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:	02/17/17	DRAWING No.																
DRAWN BY:	JDL	HORIZ. 1" = 30'	SHEET	55 OF 83	OCPP E2																
CHECKED BY:	RDK	VERT. 1" = 5'																			



OVERFLOW CHANNEL F



REFERENCE DRAWINGS 812-TITLEBLOCK-22x34 AERIALS CONCURRENT PROJECTS Old St Vrain Road Bridge, JUB Old South St Vrain Road Culvert, Irrigation Features Proposed Labels 80% South St Vrain Topo 11-16-2016 PLAN AND PROFILE 80% Proposed Bankfull Widths 80% Proposed Linework 80%	No.	DATE	DESCRIPTION	BY
	REVISIONS			
	COMPUTER FILE MANAGEMENT			
	FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\OVERFLOW P&P 80%.dwg CTB FILE: --- PLOT DATE: 6/14/2017 1:45 PM THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			

SHEET KEY

LEGEND

- FLOODPLAIN BENCH AT BANKFULL
- RIFFLE STRUCTURE
- LARGE WOOD STRUCTURE
- MAIN CHANNEL ALIGNMENT
- OVERFLOW CHANNEL
- SILLS
- BANKFULL

PREPARED FOR:
Boulder County
Parks & Open Space

PREPARED BY:
Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

COLORADO LICENSED
D. SCHNEIDER
46577
2/9/17
PROFESSIONAL ENGINEER

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

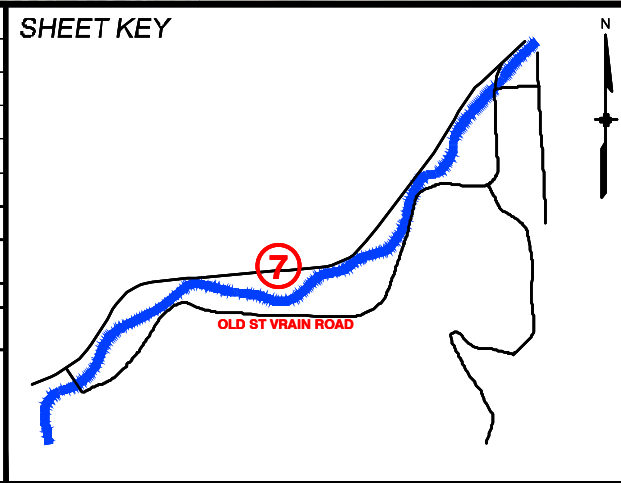
SOUTH ST. VRAIN CREEK RESTORATION
BOULDER COUNTY PARKS AND OPEN SPACE
FINAL DESIGN

OVERFLOW CHANNEL PLAN AND PROFILE
STA: 9+00 TO STA: 0+00

DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:	02/17/17	DRAWING No.
CHECKED BY:	JDL	HORIZ. 1" = 30'	SHEET	56 OF 83	OCPP F
	RDK	VERT. 1" = 5'			



REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 AERIALS Ditch, Irrigation, Features CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, LUB Proposed Linework 80% Parcels			
No.	DATE	DESCRIPTION	BY
REVISIONS			
COMPUTER FILE MANAGEMENT			
FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\ACTUAL CROSS SECTIONS 80%.dwg			
CTB FILE: ---			
PLOT DATE: 6/14/2017 1:50 PM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			



LEGEND	
LOC	LIMIT OF CONSTRUCTION
—	MAIN CHANNEL
—	OVERFLOW CHANNEL
	FLOODPLAIN BENCH
	RIFFLE
	FLOODPLAIN SILL
	WETLAND EXTENTS

PREPARED FOR:

Boulder County
Parks & Open Space

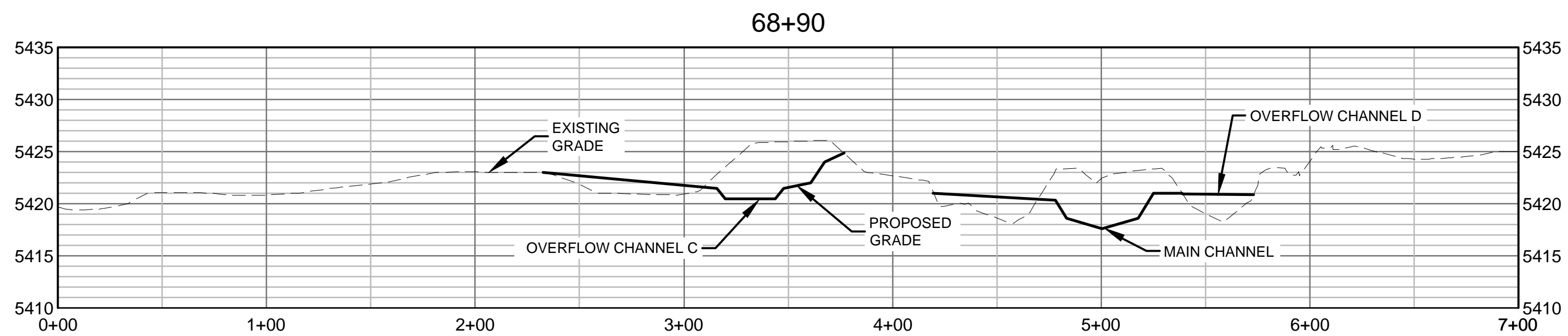
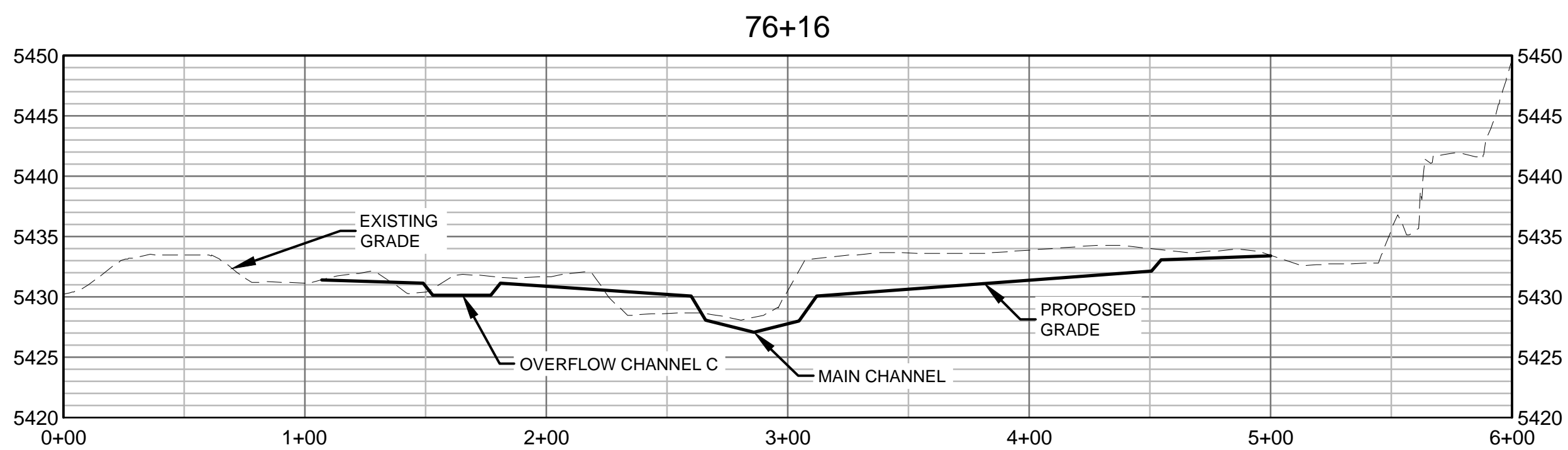
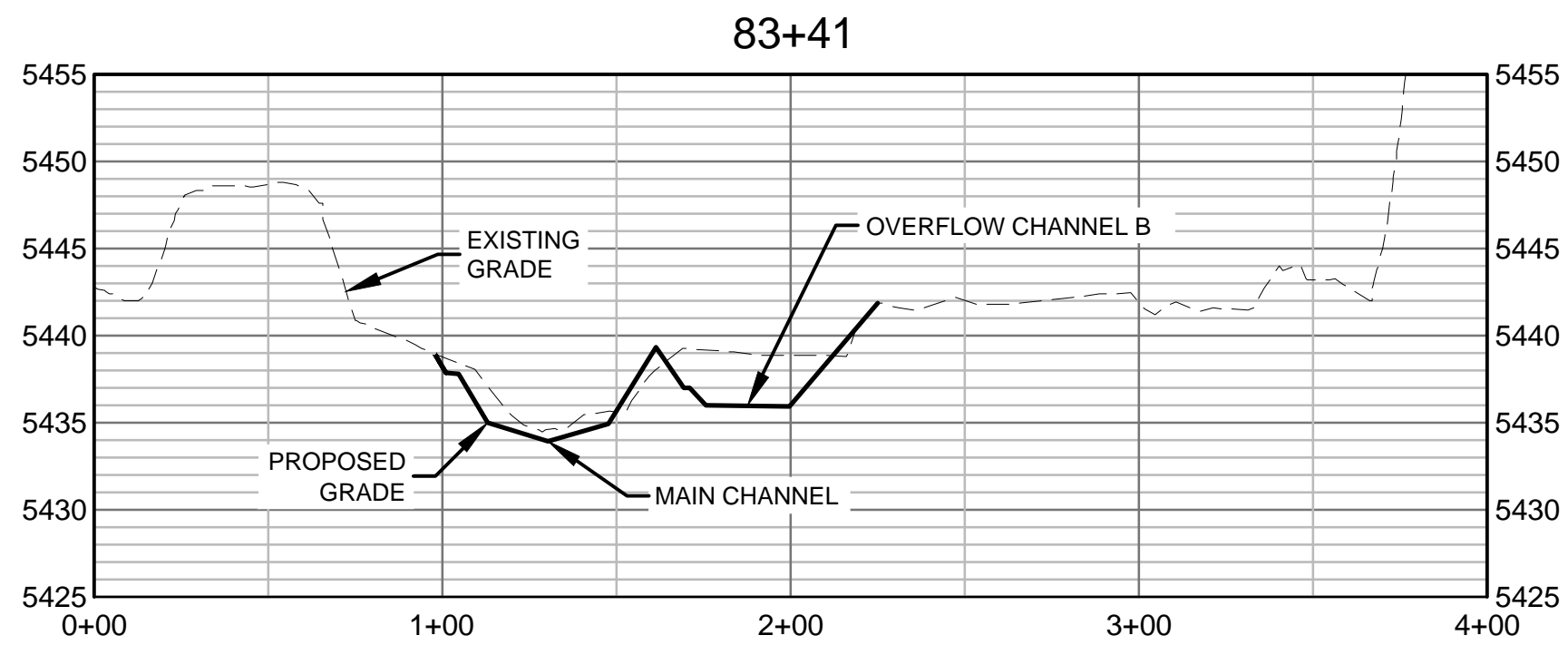
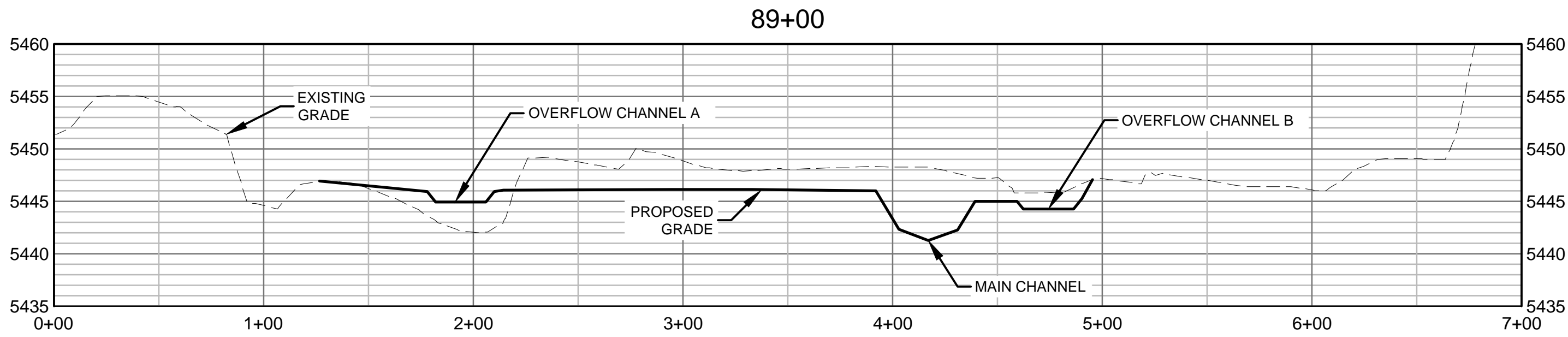
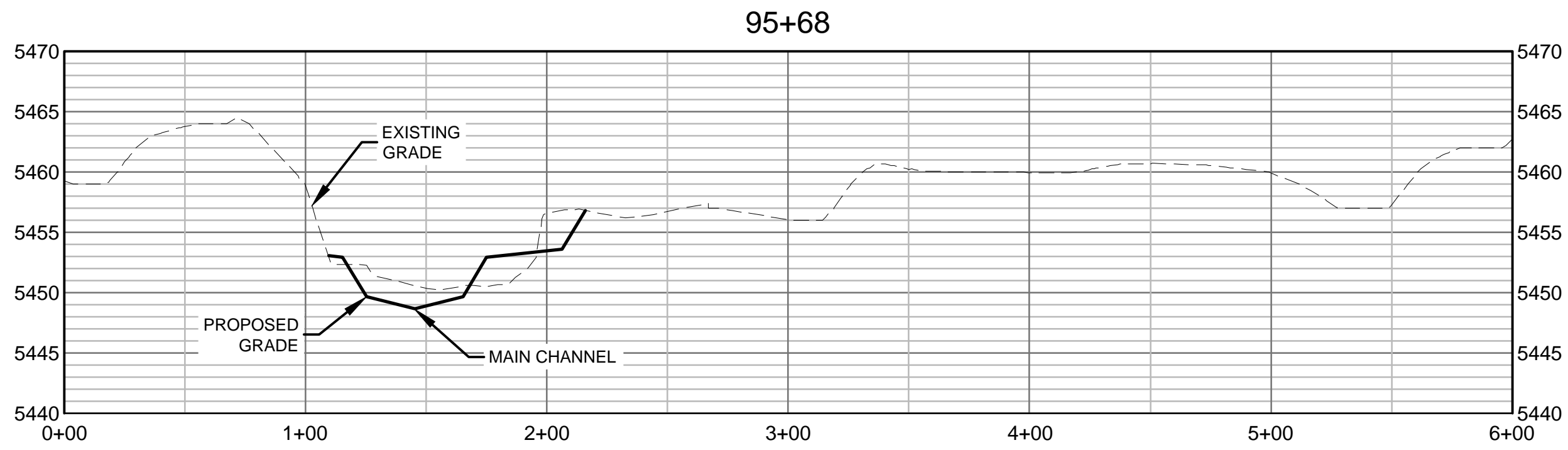
PREPARED BY:

Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

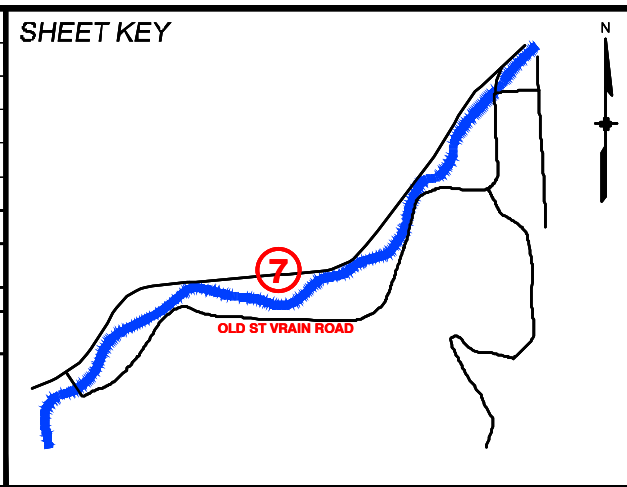
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION				
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN				
ACTUAL SECTIONS				
DESIGNED BY: SDS	SCALE (22" X 34")	DATE ISSUED:	02/17/17	DRAWING No.
DRAWN BY: JDL	HORIZ. 1" = 250'			SEC 1
CHECKED BY: RDK	VERT. N/A	SHEET	57 OF 83	

NOTES:
1. CROSS SECTIONS ARE LEFT TO RIGHT LOOKING DOWNSTREAM



REFERENCE DRAWINGS			
812-TITLEBLOCK-22x34 AERIALS Ditch, Irrigation, Features CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, UB Proposed Linework 80% Parcels			
No.	DATE	DESCRIPTION	BY
REVISIONS			
COMPUTER FILE MANAGEMENT			
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CTB FILE: ---			
PLOT DATE: 6/14/2017 1:50 PM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			



PREPARED FOR:

Boulder County
Parks & Open Space

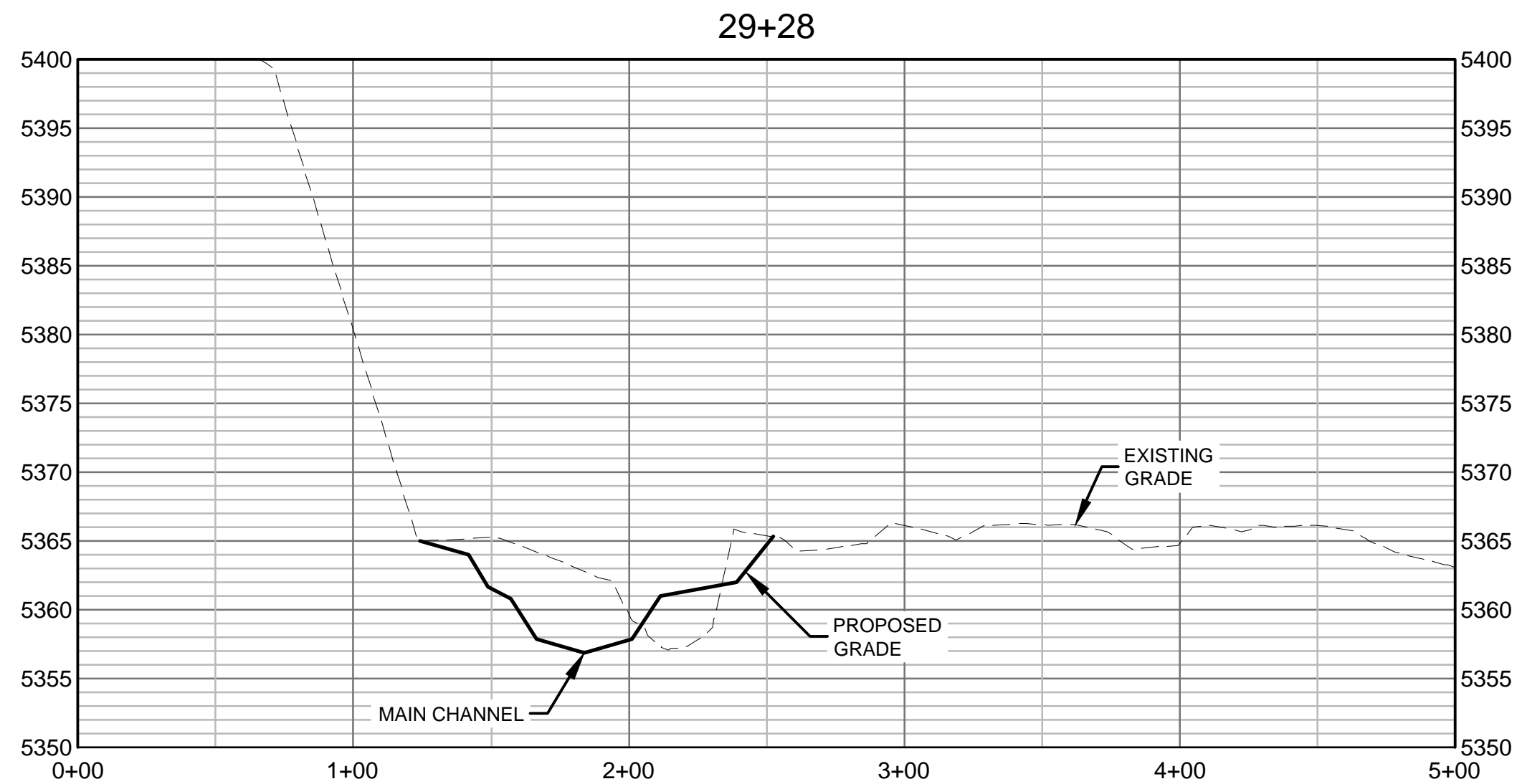
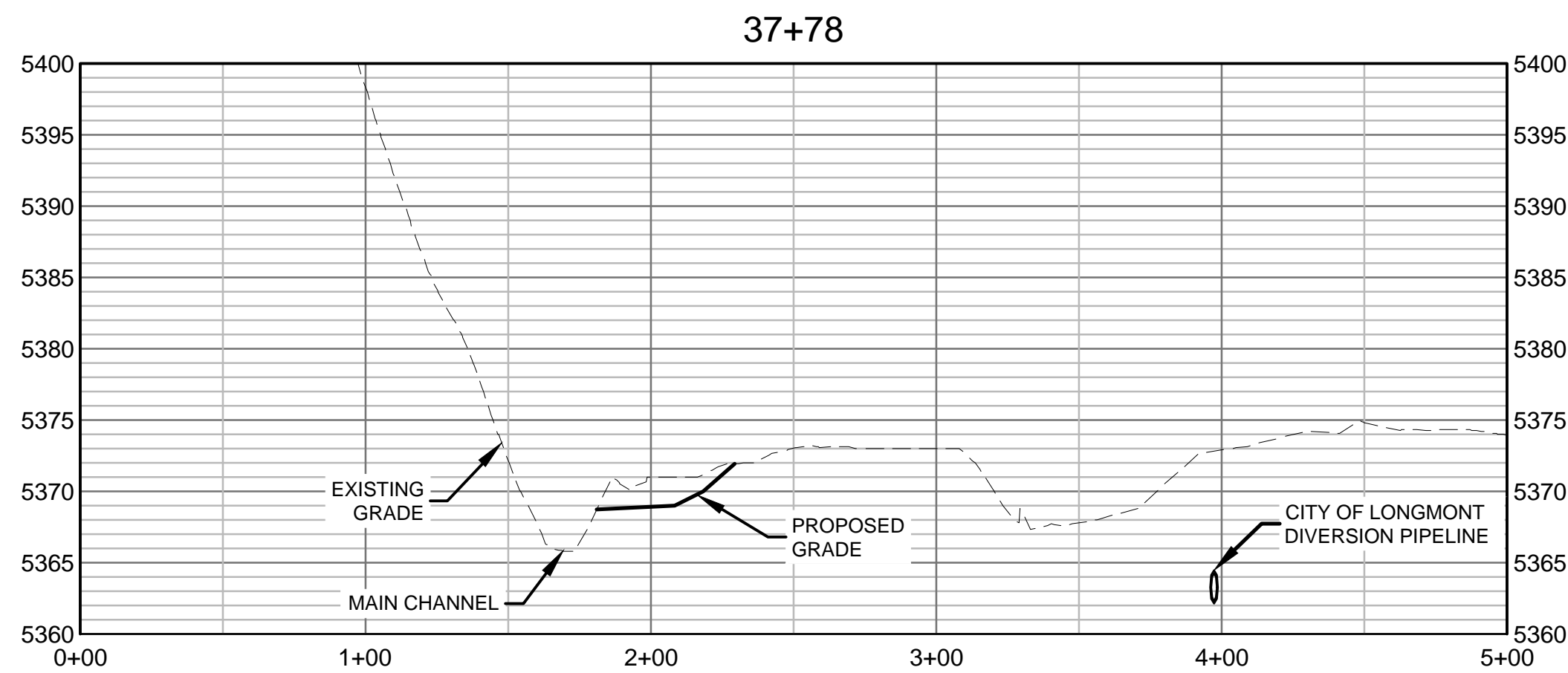
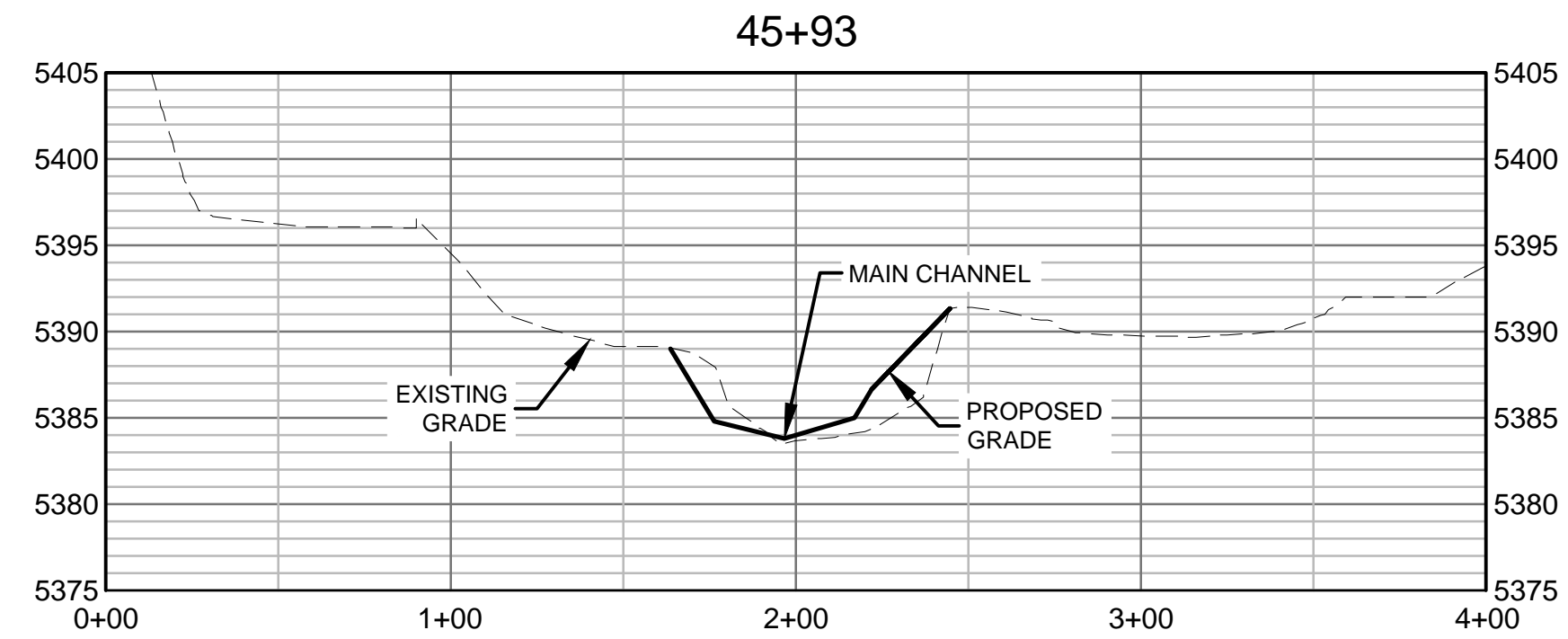
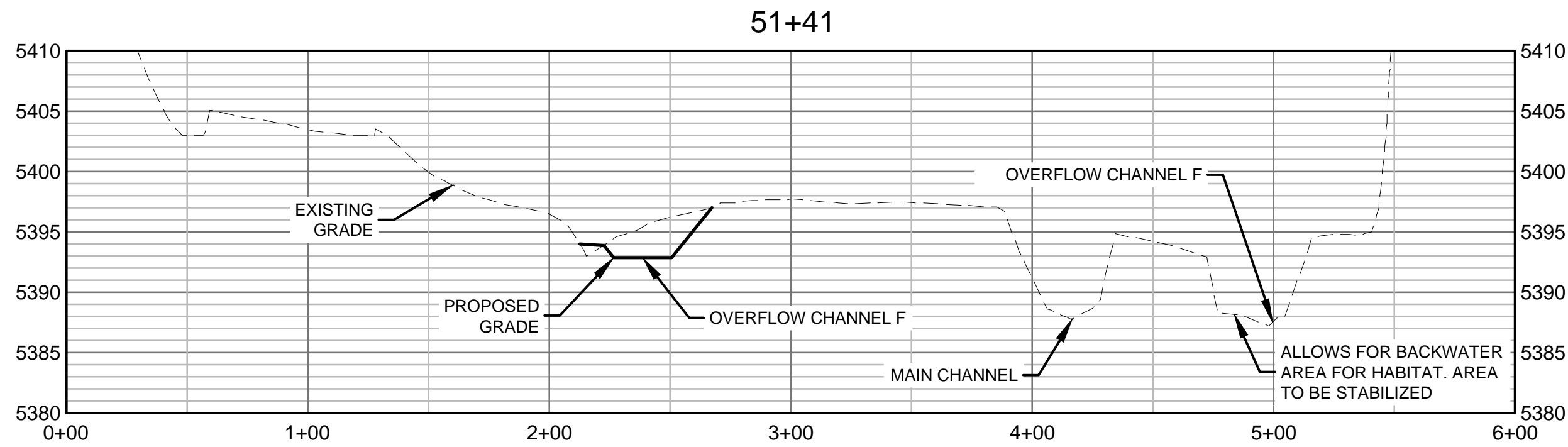
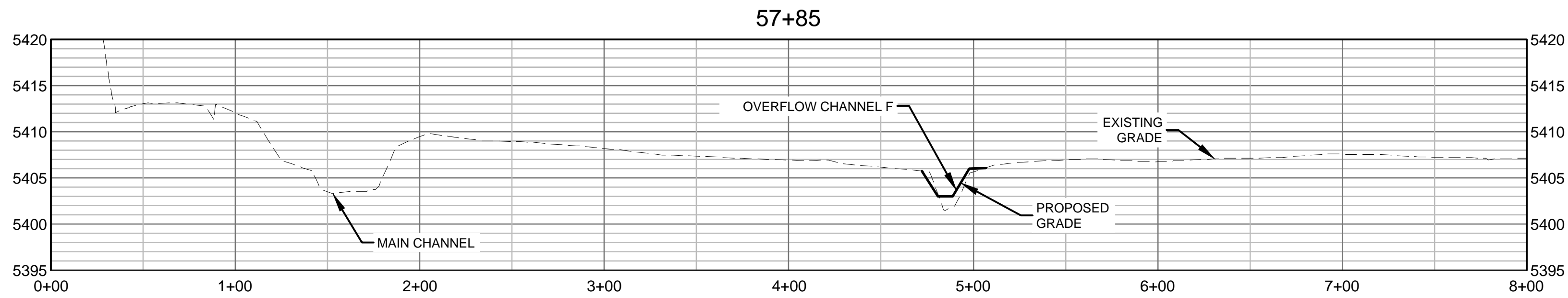
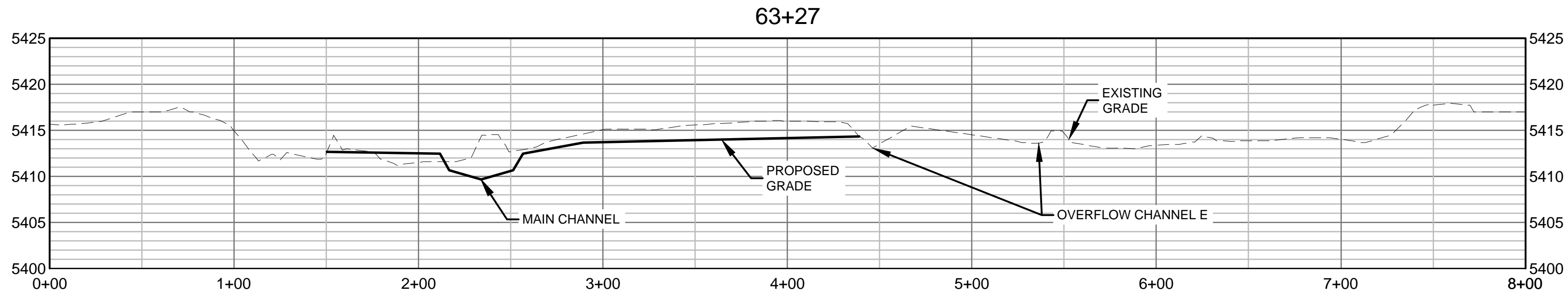
PREPARED BY:

Matrix
DESIGN GROUP
AN EMPLOYEE-OWNED COMPANY

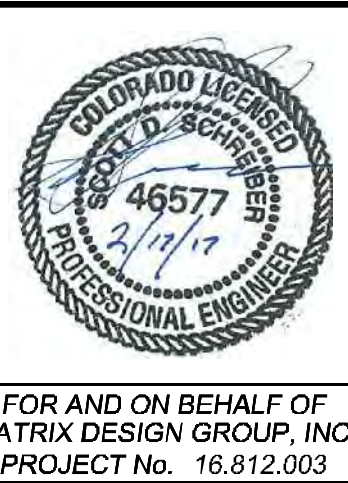
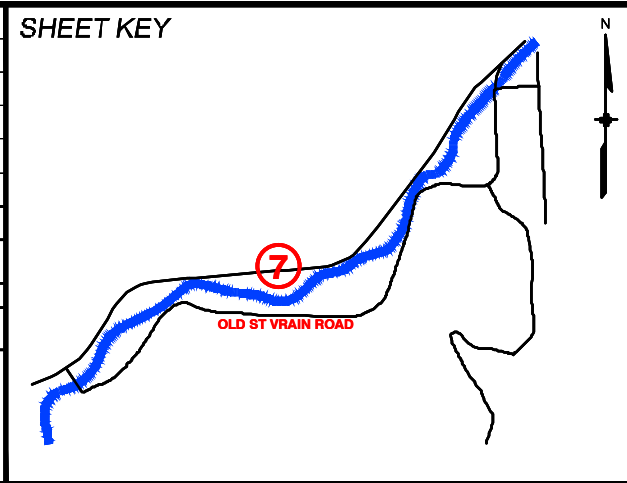
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION					
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN					
ACTUAL SECTIONS STA: 63+27 TO STA: 29+28					
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:	02/17/17	DRAWING No.
DRAWN BY:	JDL	HORIZ. 1"= 50'	SHEET	58 OF 83	SEC 3
CHECKED BY:	RDK	VERT. 1"= 10'			

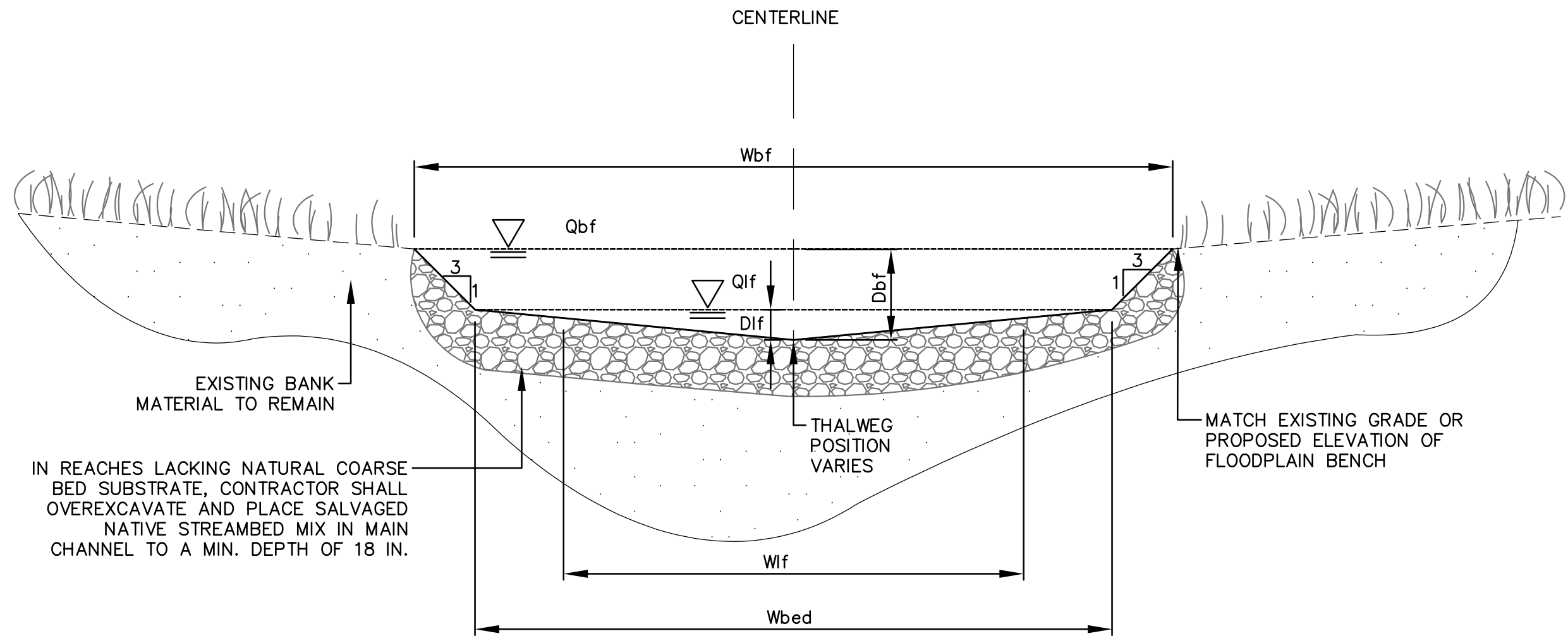
NOTES:
1. CROSS SECTIONS ARE LEFT TO RIGHT LOOKING DOWNSTREAM



REFERENCE DRAWINGS				
812-TITLEBLOCK-22x34 AERIALS Ditch, Irrigation, Features CONCURRENT PROJECTS Old South St Vrain Road Old St Vrain Road Bridge, URB Proposed Linework 80% Parcels	No.	DATE	DESCRIPTION REVISIONS	BY
	COMPUTER FILE MANAGEMENT			
	FILE NAME: r:\16.812.003 (south st vrain stream restoration)\Dwg\construction plans 80%\ACTUAL CROSS SECTIONS 80%.dwg			
	CTB FILE: ---			
	PLOT DATE: 6/14/2017 1:50 PM			
	THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			

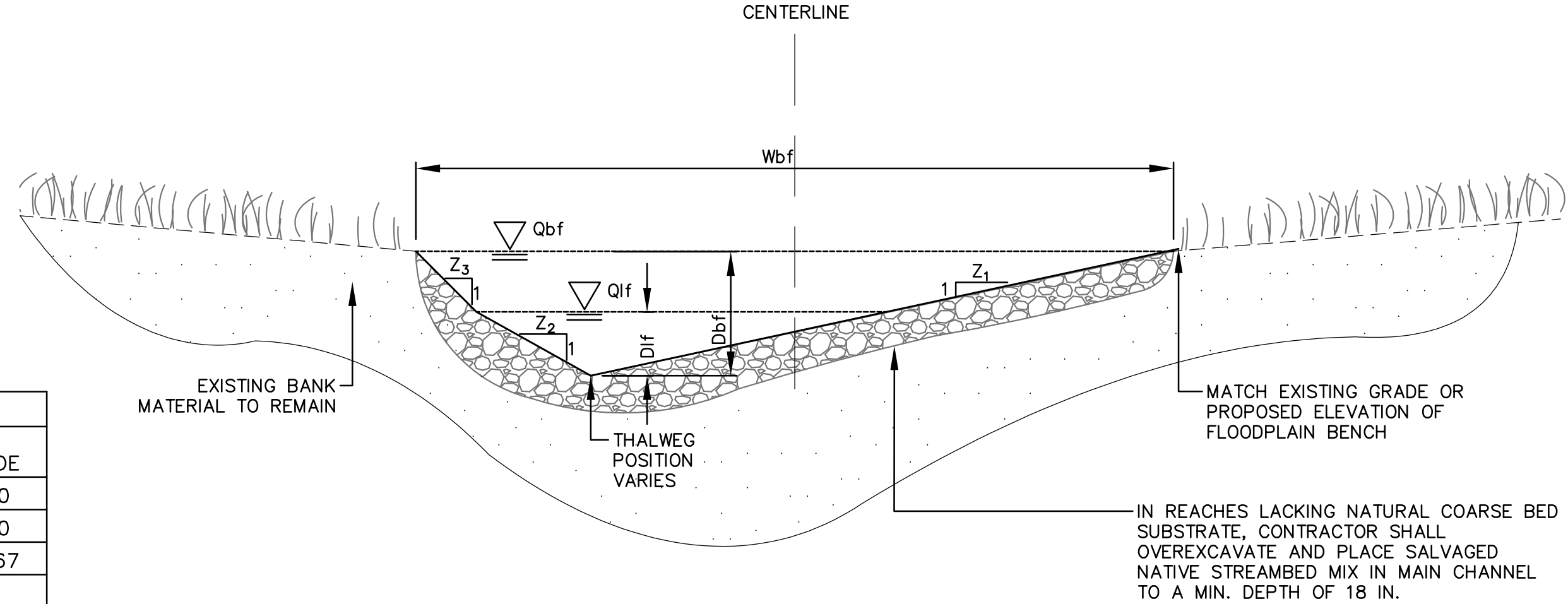


SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN			
ACTUAL SECTIONS STA: 63+27 TO STA: 29+28			
DESIGNED BY: SDS	SCALE (22" X 34")	DATE ISSUED: 02/17/17	DRAWING No.
DRAWN BY: JDL	HORIZ. 1" = 50'		SEC 3
CHECKED BY: RDK	VERT. 1" = 10'	SHEET 59 OF 83	

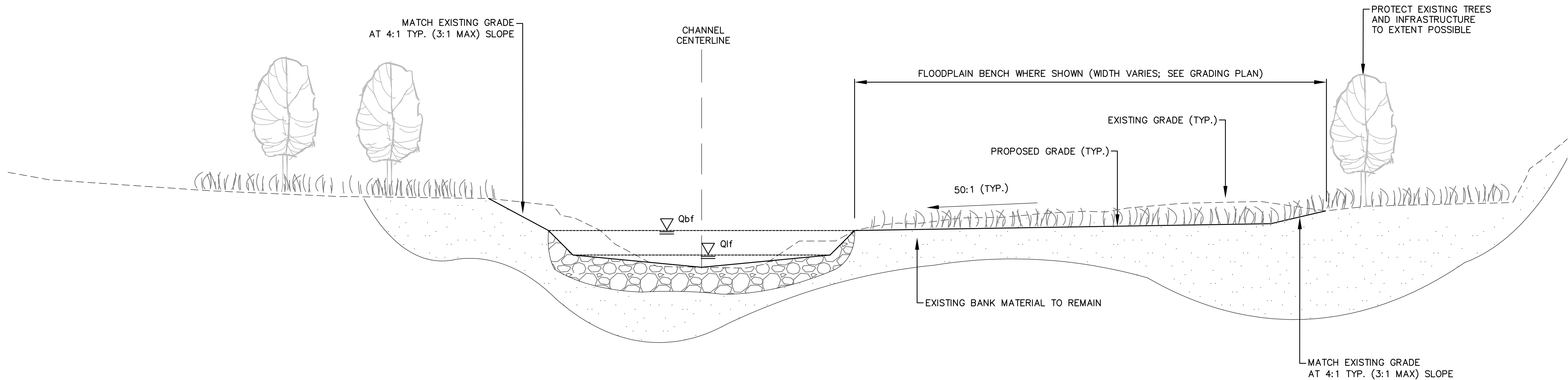


MAIN CHANNEL GRADING SECTION FOR STRAIGHT REACHES
NOT TO SCALE

TYPICAL MAIN CHANNEL GEOMETRY (FT)				
REACH TYPE	DIMENSION	NARROW	TYP	WIDE
STRAIGHT REACH	Wbf	40	45	50
	Wbed	28	34.5	40
	Dbf	3	2.75	2.67
	Dlf	1	1	1
	Z1	14	17.25	20
MEANDER REACH	Z2	3	3	3
	Wbf	40	45	50
	Dbf, max	4.5	4	3.67
	Dlf,pool	2.5	2.25	2
	Z1	6.1	7.7	9.5
	Z2	3	4	5
	Z3	2.5	3	3



MAIN CHANNEL GRADING SECTION FOR MEANDER REACHES
NOT TO SCALE



FLOODPLAIN GRADING SECTION
NOT TO SCALE

BANKFULL CHANNEL WIDTH		
SSV STATION	BANKFULL WIDTH (FT)	
START	END	
Tie-in	26+52	Match Existing
26+52	27+02	Transition
27+02	33+28	45
33+28	33+53	Transition
33+53	44+49	Match Existing
44+49	44+74	Transition
44+74	46+64	50
46+64	46+89	Transition
46+89	60+04	Match Existing
60+04	60+54	Transition
60+54	64+41	45
64+41	64+91	Transition
64+91	67+91	50
67+91	68+41	Transition
68+41	73+00	45
73+00	74+00	Transition
74+00	80+00	50
80+00	81+00	Transition
81+00	89+41	45
89+41	90+41	Transition
90+41	91+91	50
91+91	92+41	Transition
92+41	94+21	45
94+21	91+31	Transition
91+31	95+10	Match Existing
95+10	95+20	Transition
95+20	96+84	50
96+84	96+94	Transition
96+94	97+87	Match Existing
97+87	97+97	Transition
97+97	99+55	50
99+55	99+62	Transition
99+62	Tie-in	Match Existing

REFERENCE DRAWINGS

812-TITLEBLOCK-22x34

No.	DATE	DESCRIPTION	BY
REVISIONS			

COMPUTER FILE MANAGEMENT

FILE NAME: C:\Users\blairv\Documents\OTAKI\PROJECTS\132706_SSV-HallRanch\80\CAD_Details-STAMPED_ResizeStamp\SSV_Details_80pct_STAMPED-Resized.dwg

CTB FILE: ---

PLOT DATE: 2/27/2017 2:16 PM

THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.

SHEET KEY

PREPARED FOR:

PREPARED BY:

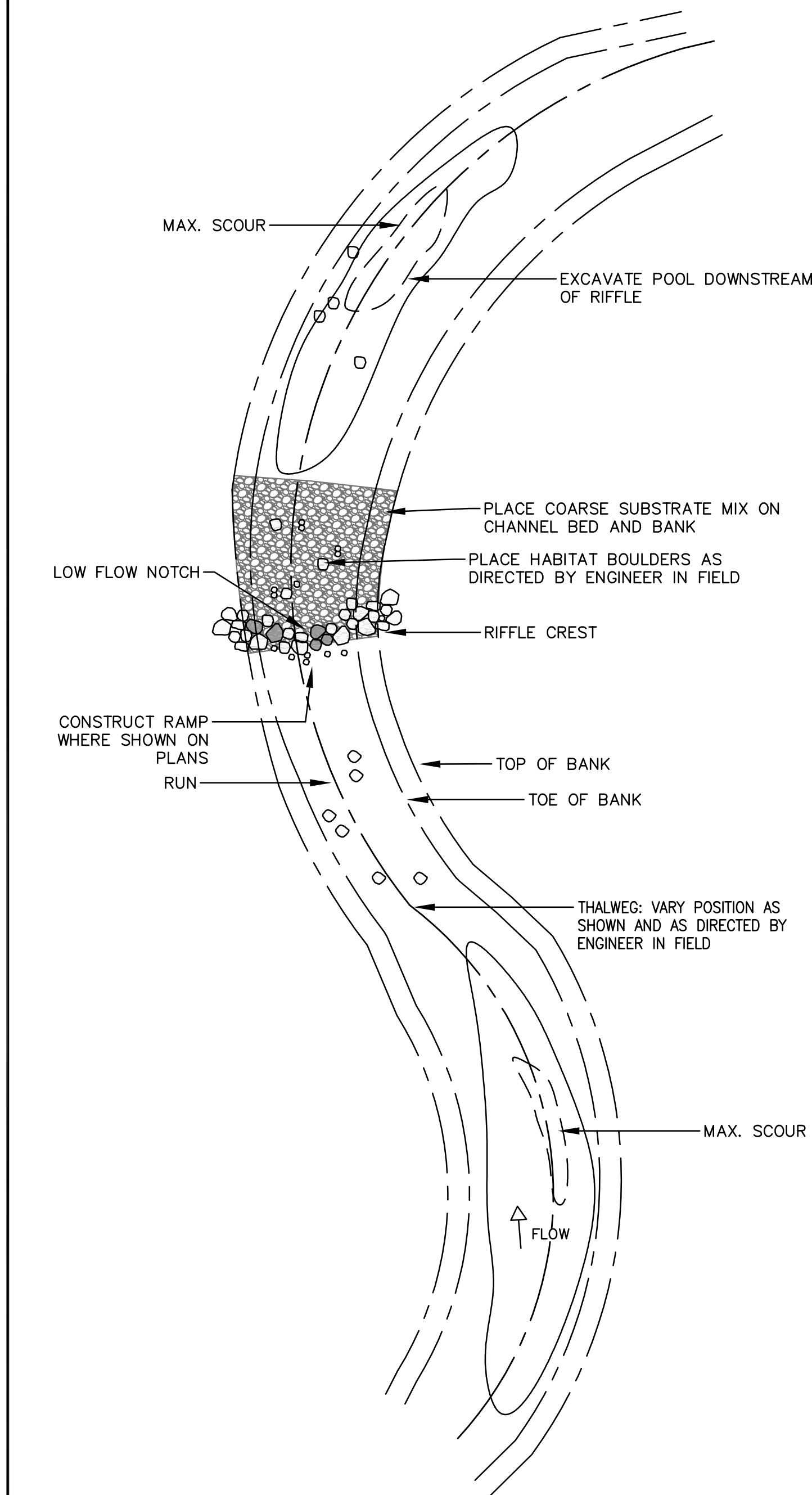
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16,812.003

SOUTH ST. VRAIN CREEK RESTORATION

Boulder County Parks and Open Space
FINAL DESIGN

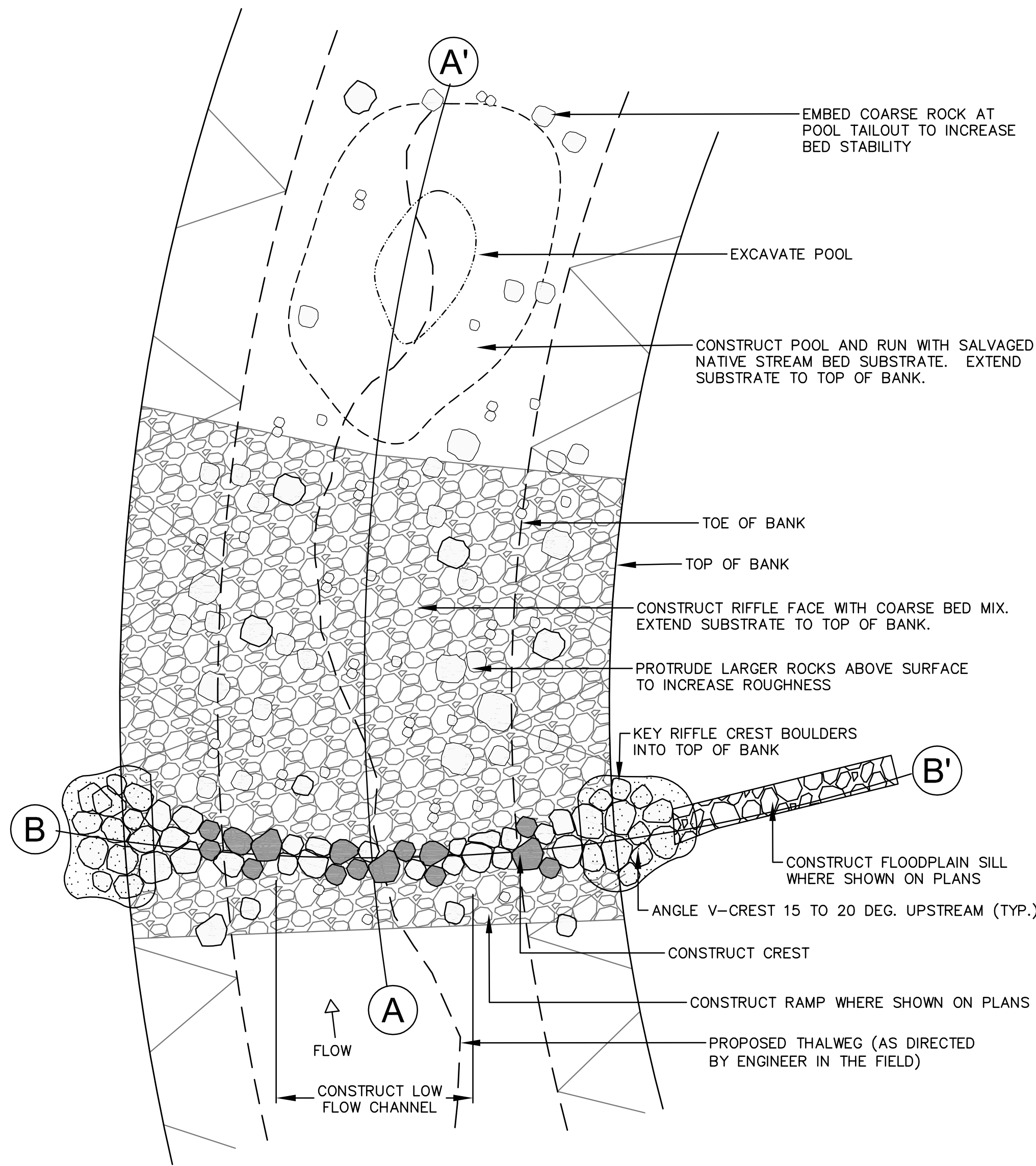
MAIN CHANNEL DETAILS

DESIGNED BY: MGR	SCALE (22" X 34")	DATE ISSUED: 02/03/17	DRAWING No.
DRAWN BY: RB	HORIZ. NTS	SHEET 60 OF 83	DET 1
CHECKED BY: LS	VERT. NTS		

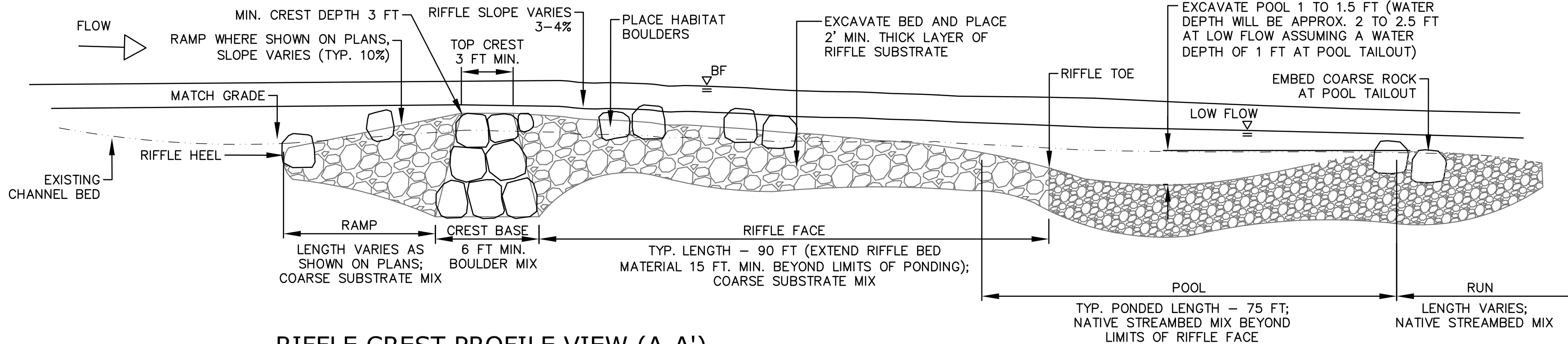


RIFFLE-POOL SEQUENCE PLAN VIEW
NOT TO SCALE

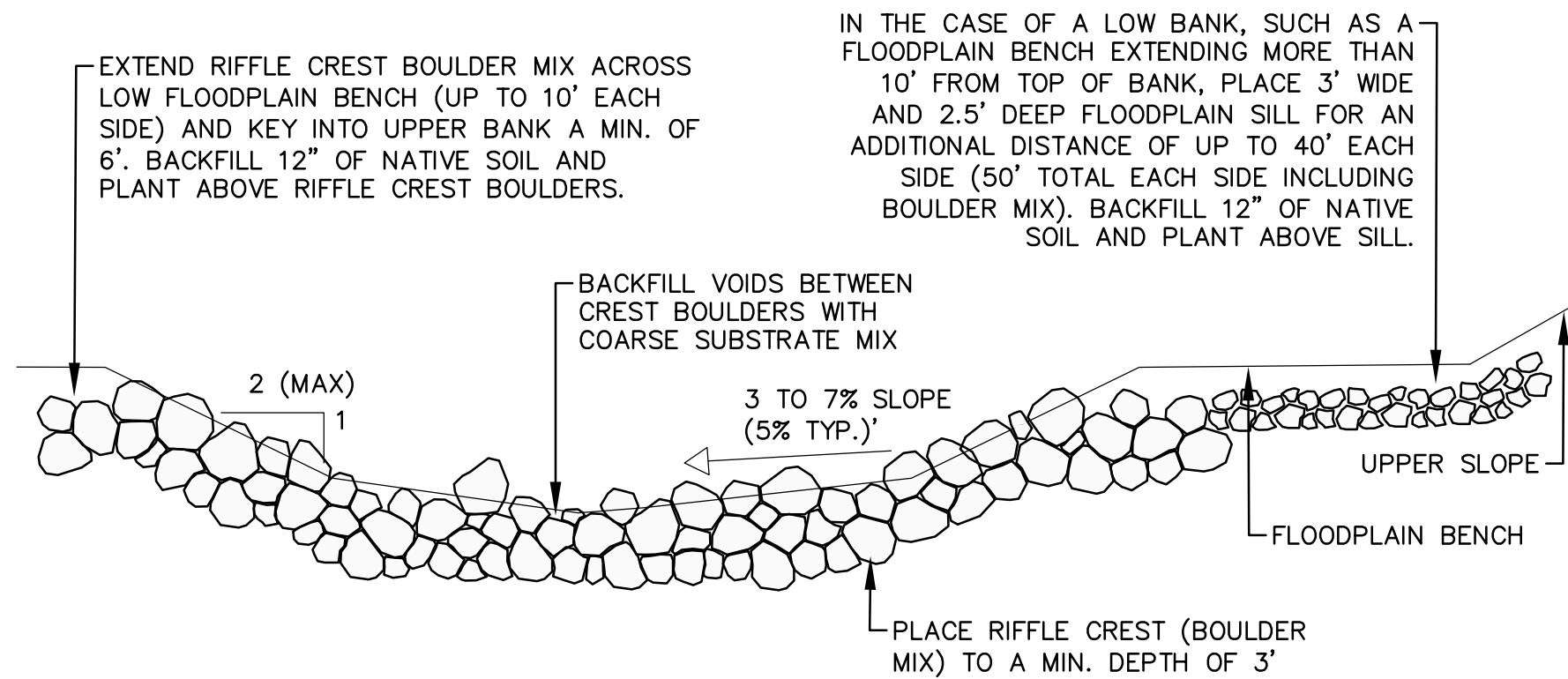
- RIFFLE STRUCTURE GENERAL NOTES:
- 1) TYPICAL STREAM SEQUENCE: RIFFLE, POOL, RUN. LIMITS OF EACH FEATURE ARE SHOWN ON PROFILE.
 - 2) PLACE THE LARGEST CREST ROCKS INTERLOCKED AT THE SURFACE ON THE UPSTREAM SIDE OF THE CREST.
 - 3) TO PROTECT BANKS FROM EROSION IN THE VICINITY OF THE RIFFLE STRUCTURES, THE CONTRACTOR SHALL EXTEND PLACEMENT OF RIFFLE ROCK TO THE TOP OF CHANNEL BANKS. THE WIDTH COLUMN IN THE RIFFLE LAYOUT TABLE (THIS SHEET) IS CONSIDERED THE BANKFULL WIDTH, AND MATCHES THE LOCAL CHANNEL WIDTH.
 - 4) SHAPE RIFFLE BED TO CREATE A 1 FT DEEP, 15 FT WIDE LOW FLOW PATH THROUGH STRUCTURE.
 - 5) THE SOURCE OF BED MATERIAL FOR THE RIFFLE RAMP AND RIFFLE FACE SHALL BE SALVAGED COARSE SUBSTRATE MIX. SCREENING OF EXCAVATED MATERIAL IS EXPECTED TO BE NECESSARY TO MEET THE REQUIRED GRADATION. SEE PROJECT SPECIFICATIONS FOR MORE INFORMATION ON SCREENING ROCK.
 - 6) THE SOURCE OF RIFFLE CREST ROCK SHALL PREFERENTIALLY BE SALVAGED BOULDERS DURING EARTHWORK ACTIVITIES. ALTHOUGH THE CONTRACTOR MAY NEED TO IMPORT A SIGNIFICANT PORTION OF THIS SIZE ROCK. THE CREST BOULDERS CAN BE ANGULAR, AND MAY SLIGHTLY EXCEED THE SPECIFIED D100 SIZE IF LARGER MATERIAL IS AVAILABLE. REFER TO PROJECT SPECIFICATIONS FOR MORE INFORMATION.
 - 7) FOR POOL AND RUN SEGMENTS WITHIN REALIGNED PORTIONS OF THE MAIN CHANNEL, ENGINEER SHALL VERIFY EXPOSED SUBSTRATE MATERIAL APPROXIMATELY MATCHES THE GRADATION OF THE NATIVE STREAMBED MATERIAL FOUND IN EXISTING CHANNEL. IF EXPOSED BED SUBSTRATE COMPRISES OF FINER GRAIN SIZES, CONTRACTOR SHALL RECONSTRUCT THE BED WITH SALVAGED NATIVE STREAMBED MIX TO A DEPTH OF 18 INCHES OR AS DIRECTED IN THE FIELD BY ENGINEER.
 - 8) EXTENT AND LOCATIONS OF RIFFLE FLOODPLAIN SILLS MAY VARY IN FIELD PER DIRECTION BY ENGINEER.



RIFFLE CREST PLAN VIEW
NOT TO SCALE



RIFFLE CREST PROFILE VIEW (A-A')
NOT TO SCALE



RIFFLE CREST CROSS SECTION VIEW (B-B')
NOT TO SCALE

RIFFLE LAYOUT TABLE						
RIFFLE CREST		RIFFLE FACE			INCLUDE RAMP?	INCLUDE RIFFLE FLOODPLAIN SILL?
SSV STA	ELEV. (FT)	SLOPE (%)	WIDTH (FT)	LENGTH (FT)		
30+61	5360.57	4.00%	45	90	NO	NONE
33+28	5364.46	3.45%	45	90	NO	BOTH BANKS
46+24	5384.75	3.00%	50	90	YES	NONE
62+39	5408.80	4.00%	45	90	NO	NONE
65+09	5413.00	4.00%	45	90	NO	BOTH BANKS
67+79	5416.45	3.00%	50	90	NO	LEFT BANK
70+49	5419.90	3.00%	45	90	NO	LEFT BANK
73+19	5423.35	3.00%	45	90	NO	LEFT BANK
75+89	5426.80	3.00%	50	90	NO	BOTH BANKS
78+59	5430.25	3.00%	50	90	NO	BOTH BANKS
83+80	5435.14	3.00%	45	90	NO	NONE
88+02	5440.92	4.00%	45	90	NO	NONE
91+43	5445.08	3.00%	50	90	NO	LEFT BANK
94+20	5448.74	3.00%	45	90	NO	LEFT BANK
96+84	5451.99	3.00%	50	90	YES	BOTH BANKS
99+53	5455.43	3.00%	50	90	YES	RIGHT BANK

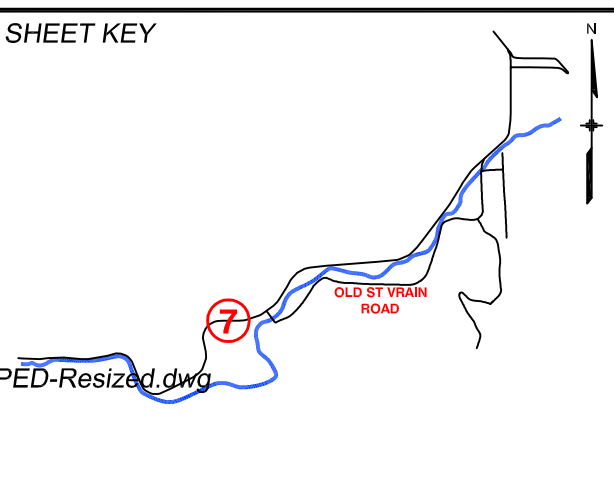
RIFFLE CREST GRADATION	
BOULDER MIX	
GRAIN SIZE	DIA (IN)
D _{MIN}	24
D16	30
D50	36
D84	42
D _{MAX}	48

RIFFLE FACE GRADATION	
COARSE SUBSTRATE MIX	
GRAIN SIZE	DIA (IN)
D _{MIN}	SAND
D16	2
D50	6
D84	12
D _{MAX}	24

FLOODPLAIN SILL GRADATION	
FLOODPLAIN SILL MIX	
GRAIN SIZE	DIA (IN)
D _{MIN}	SAND
D16	4
D50	12
D84	24
D _{MAX}	36

POOL AND RUN GRADATION	
NATIVE STREAMBED MIX	
GRAIN SIZE	DIA (IN)
D _{MIN}	SAND
D16	0.5 TO 1
D50	2 TO 4
D84	5 TO 7
D _{MAX}	18 TO 24

REFERENCE DRAWINGS			
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No.	DATE	DESCRIPTION	BY
COMPUTER FILE MANAGEMENT			
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PLOT DATE: 2/27/2017 2:22 PM			
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PREPARED FOR:

Boulder County
Parks & Open Space

PREPARED BY:

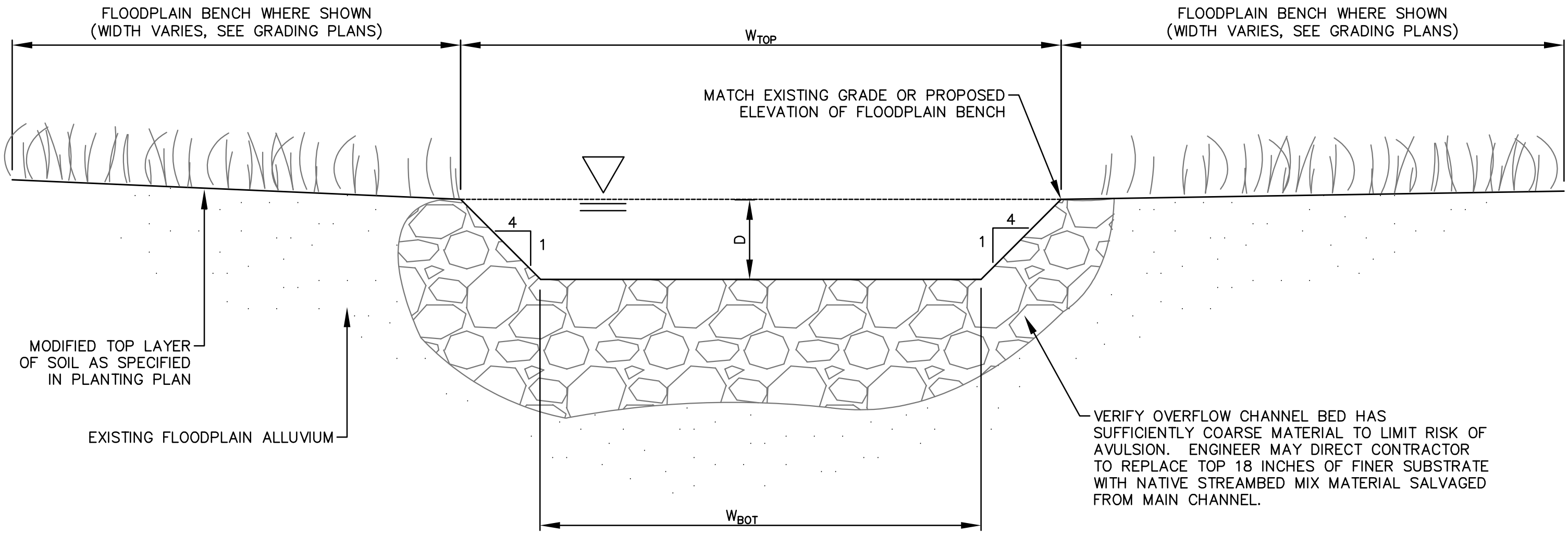
Matrix DESIGN GROUP

otak

COLORADO LICENSE
4381
2/27/17

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16,812.003

SOUTH ST. VRAIN CREEK RESTORATION				
BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN				
RIFFLE DETAILS				
DESIGNED BY:	MGR	SCALE (22" X 34")	DATE ISSUED:	02/03/17
DRAWN BY:	RB	HORIZ NTS		
CHECKED BY:	LS	VERT. NTS	SHEET	61 OF 83
				DRAWING No. DET 2



OVERFLOW CHANNEL GEOMETRY (FT)			
DIMENSION	NARROW	TYP	WIDE
W _{top}	20	32	40+
W _{bot}	12	20	24+
D	1	1.5	2

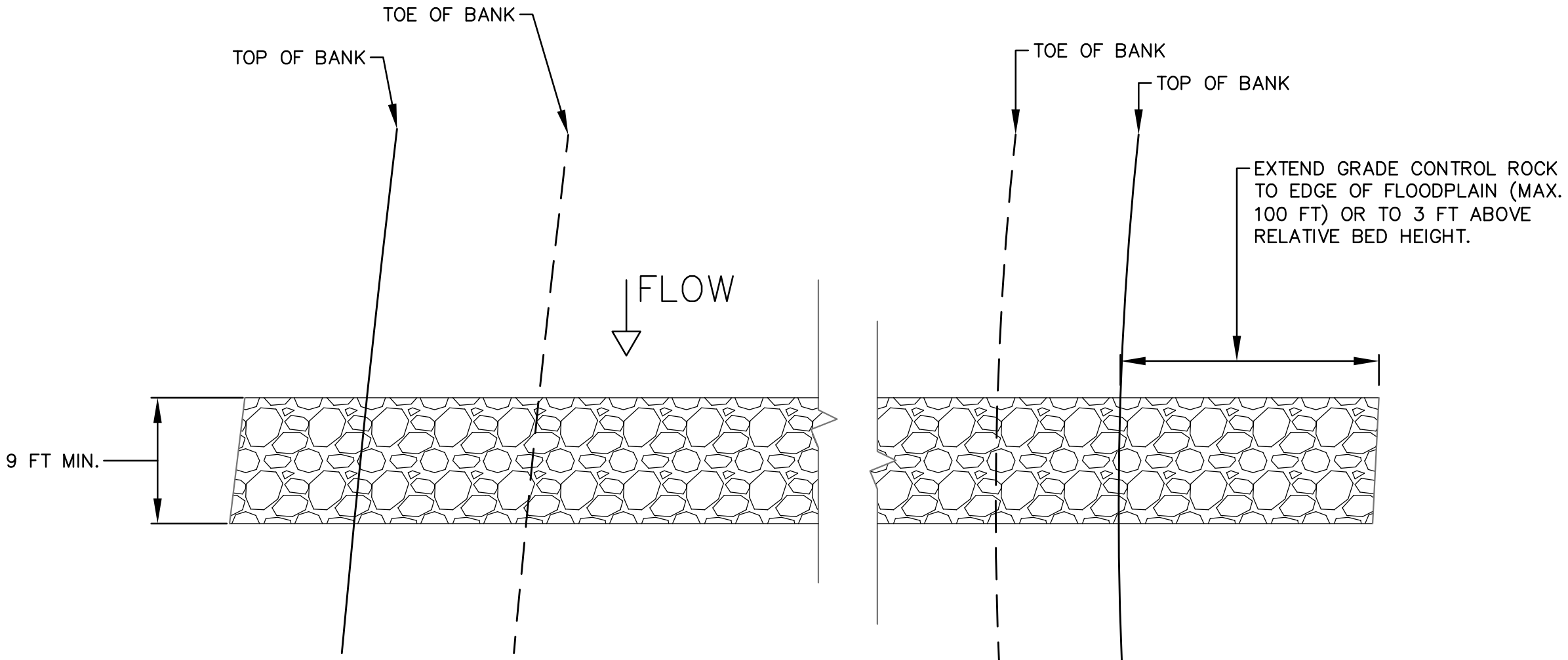
OVERFLOW CHANNEL SECTION
NOT TO SCALE

- OVERFLOW CHANNEL GENERAL NOTES:
- 1) OVERFLOW CHANNELS ARE INTENDED TO INCREASE FREQUENCY OF FLOODPLAIN
 - 2) ENGINEER SHALL VERIFY EXPOSED SUBSTRATE MATERIAL APPROXIMATELY MATCHES THE GRADATION OF THE NATIVE STREAMBED MATERIAL FOUND IN EXISTING CHANNEL. IF EXPOSED BED SUBSTRATE COMPRISES OF FINER GRAIN SIZES, CONTRACTOR SHALL RECONSTRUCT THE BED WITH SALVAGED NATIVE STREAMBED MIX TO A DEPTH OF 18 INCHES OR AS DIRECTED IN THE FIELD BY ENGINEER.
 - 3) OVERFLOW CHANNEL SECTION AND GEOMETRY TABLE ARE SHOWN AS A GENERAL GUIDE. REFER TO PLAN AND PROFILE SHEETS FOR GRADING EXTENTS.
 - 4) CONFIGURATIONS AND GEOMETRY OF OVERFLOW CHANNELS MAY BE REFINED IN FIELD PER ENGINEER DIRECTION TO AVOID IMPACTS TO EXISTING VEGETATION AND INFRASTRUCTURE.

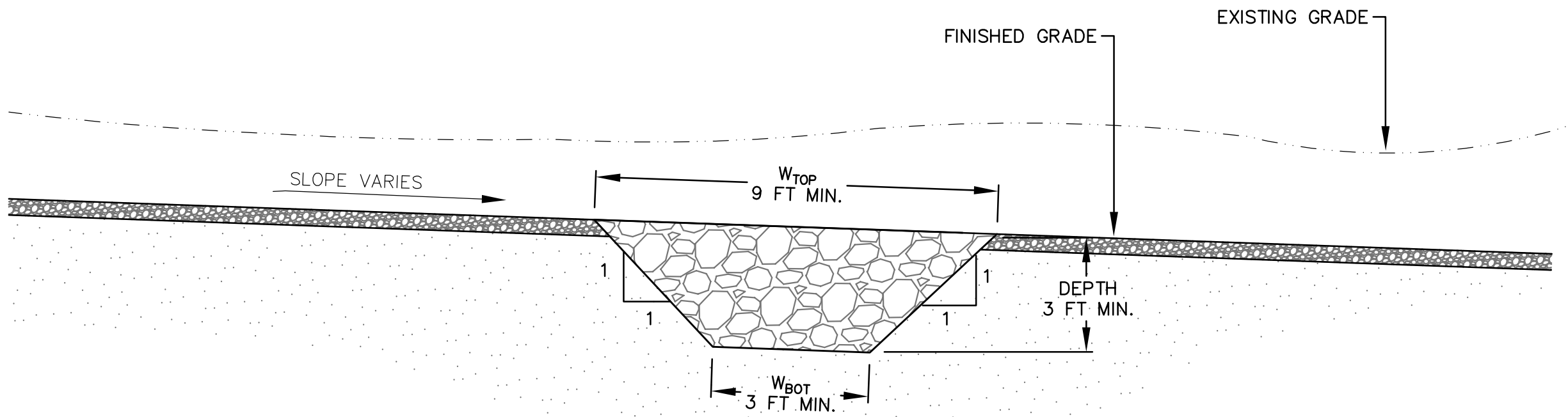
FLOODPLAIN SILL LOCATIONS		
CHANNEL ID	STATION	LENGTH (FT)
OFC A	8+95	110
	10+80	60
OFC B	8+10	115
OFC C	10+40	100
MAIN STEM RIGHT BANK	67+80	95
	68+90	55
	70+50	70

FLOODPLAIN SILL GRADATION		
FLOODPLAIN SILL MIX		
GRAIN SIZE	DIA (IN)	
D _{MIN}	SAND	
D ₁₆	4	
D ₅₀	12	
D ₈₄	24	
D _{MAX}	36	

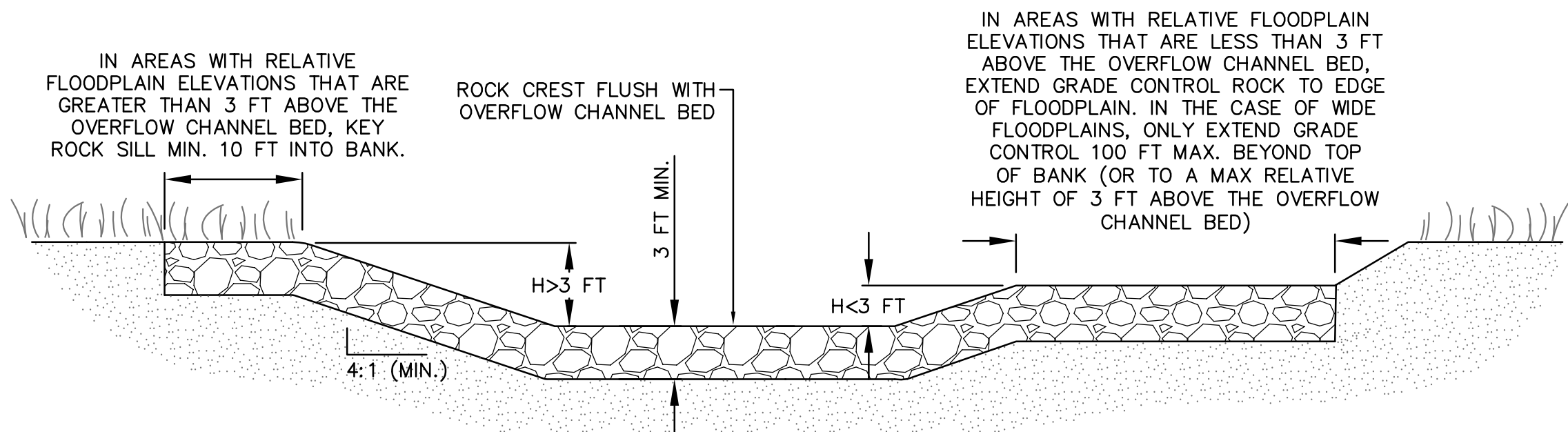
- FLOODPLAIN SILL GENERAL NOTES:
- 1) FLOODPLAIN SILL STRUCTURES ARE INTENDED TO PROVIDE GRADE CONTROL IN OVERFLOW CHANNELS NEAR EXISTING INFRASTRUCTURE AND SENSITIVE WETLAND HABITAT.
 - 2) THE SOURCE OF FLOODPLAIN SILL ROCK SHALL PREFERENTIALLY BE SALVAGED MATERIAL MATCHING THE GRADATION OF THE FLOODPLAIN SILL MIX. ALTHOUGH THE CONTRACTOR MAY NEED TO IMPORT A PORTION OF THIS LARGER BOULDERS IN THE MIX. THE BOULDERS CAN BE ANGULAR, AND MAY SLIGHTLY EXCEED THE SPECIFIED D100 SIZE IF LARGER MATERIAL IS AVAILABLE. REFER TO PROJECT SPECIFICATIONS FOR MORE INFORMATION.
 - 3) TO PROTECT THE SILL FROM BEING FLANKED DURING HIGH FLOWS, THE CONTRACTOR SHALL KEY THE FLOODPLAIN SILL INTO THE BANK AND/OR FLOODPLAIN AS SHOWN ON THE DETAIL.
 - 6) REFER TO PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
 - 7) FLOODPLAIN SILL CONFIGURATIONS MAY BE REFINED IN FIELD PER ENGINEER DIRECTION.



PLAN VIEW



PROFILE VIEW



CROSS SECTION VIEW OF CREST

ROCK RAMP DETAIL
NOT TO SCALE

REFERENCE DRAWINGS						SHEET KEY 	PREPARED FOR:  PREPARED BY: 	 FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003	SOUTH ST. VRAIN CREEK RESTORATION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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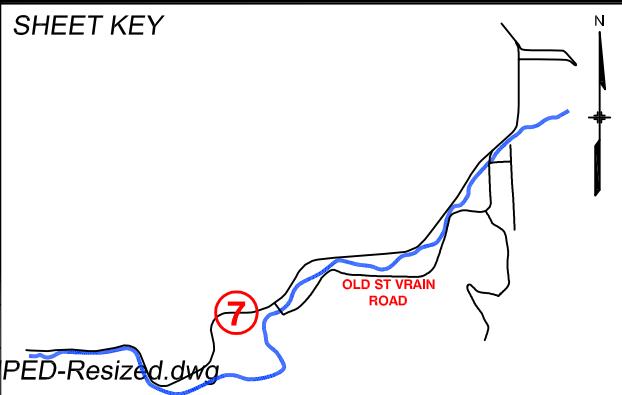


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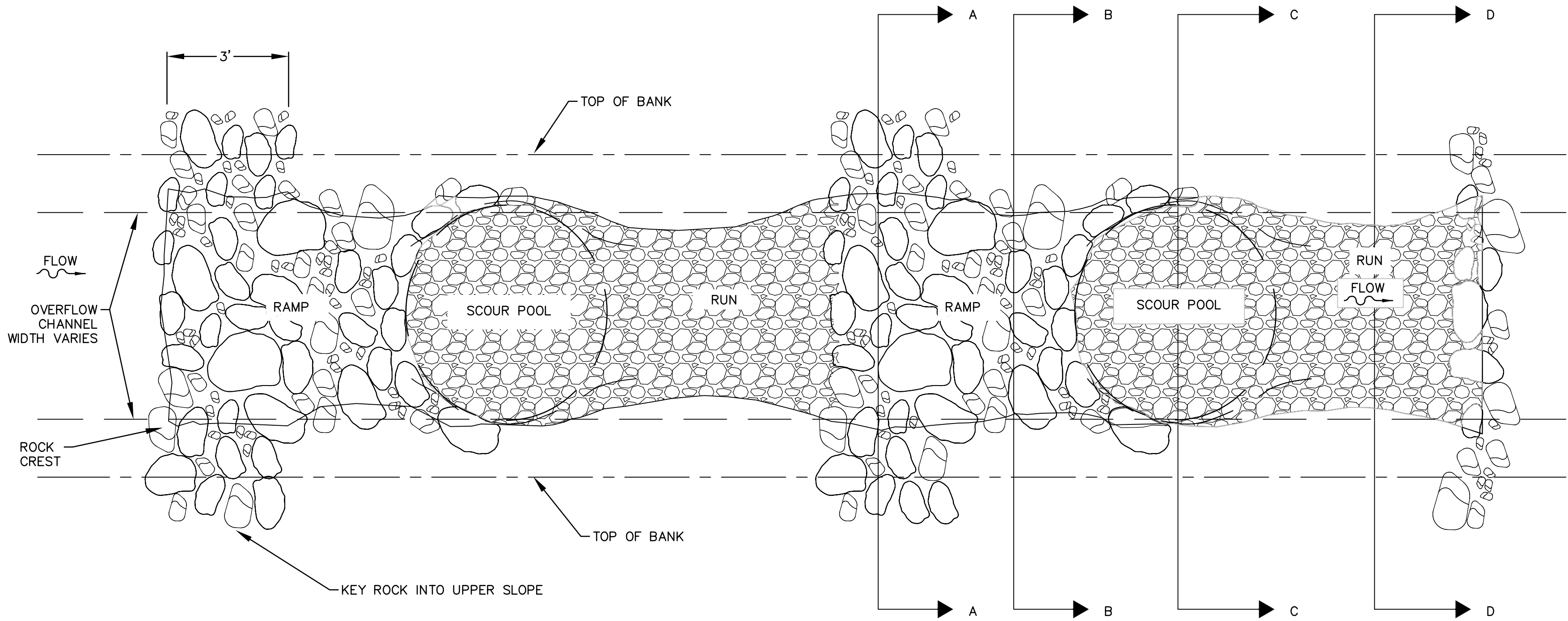
OVERFLOW RAMP FACE ROCK GRADATION	
NATIVE STREAMBED MIX	
GRAIN SIZE	DIA (IN)
D ₁₀	SAND
D ₁₆	0.75
D ₅₀	3
D ₈₄	7
D _{MAX}	24

- 1) OVERFLOW ROCK RAMP STRUCTURES ARE INTENDED TO PROTECT AGAINST HEADCUTTING AT THE CONFLUENCE WITH THE MAIN STEM AND QUICKLY TRANSITION GRADE IN ORDER TO CREATE BACKWATER HABITAT.
- 2) TO PROTECT BANKS FROM EROSION IN THE VICINITY OF THE STRUCTURE, THE CONTRACTOR SHALL EXTEND RAMP ROCK PLACEMENT TO TOP OF CHANNEL BANKS.
- 3) THE SOURCE OF CREST ROCK SHALL PREFERENTIALLY BE SALVAGED MATERIAL DURING EARTHWORK ACTIVITIES, ALTHOUGH THE CONTRACTOR MAY NEED TO IMPORT A PORTION OF THE FLOODPLAIN SILL MIX. THE CREST BUILDERS MAY BE ANGULAR. REFER TO PROJECT SPECIFICATIONS FOR MORE INFORMATION.
- 4) THE SOURCE OF BED MATERIAL FOR THE ROCK RAMP FACE SHALL BE NATIVE STREAMBED MATERIAL SALVAGED FROM THE MAIN CHANNEL.
- 5) REFER TO PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
- 6) ROCK RAMP LAYOUT, POSITION, AND ELEVATION MAY BE REFINED IN FIELD PER DIRECTION BY ENGINEER TO ACHIEVE DESIRED LEVEL OF INUNDATION OF BACKWATER HABITAT.

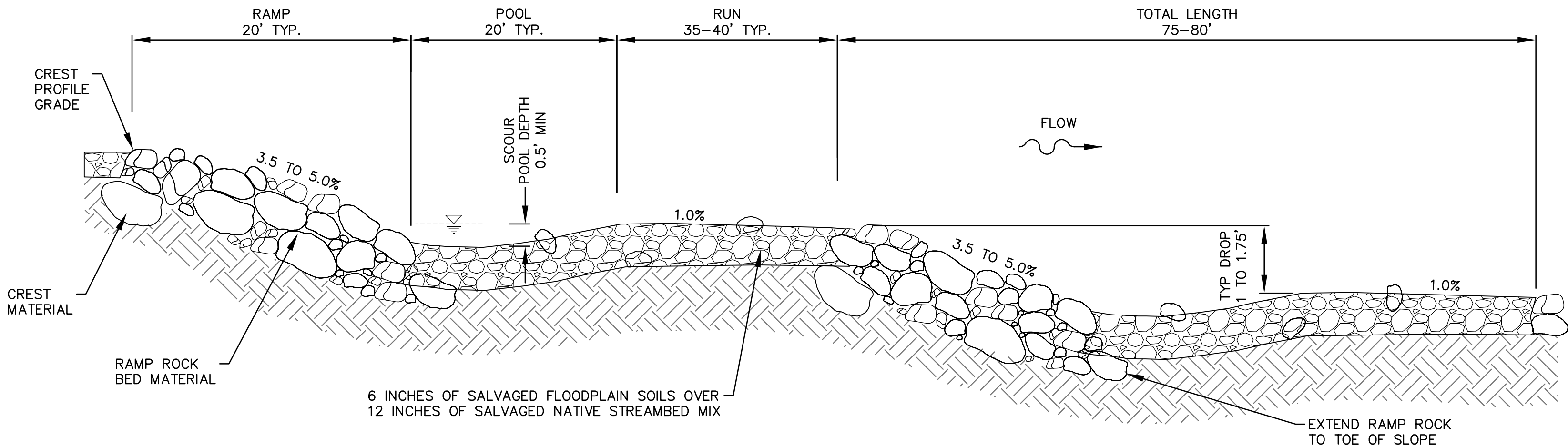
SHEET KEY



DESIGNED BY:	MGR	SCALE (22" X 34")	DATE ISSUED:	02/03/17	DRAWING No. DET 4
DRAWN BY:	RB	HORIZ. NTS			
CHECKED BY:	LS	VERT. NTS	SHEET	63 OF 83	



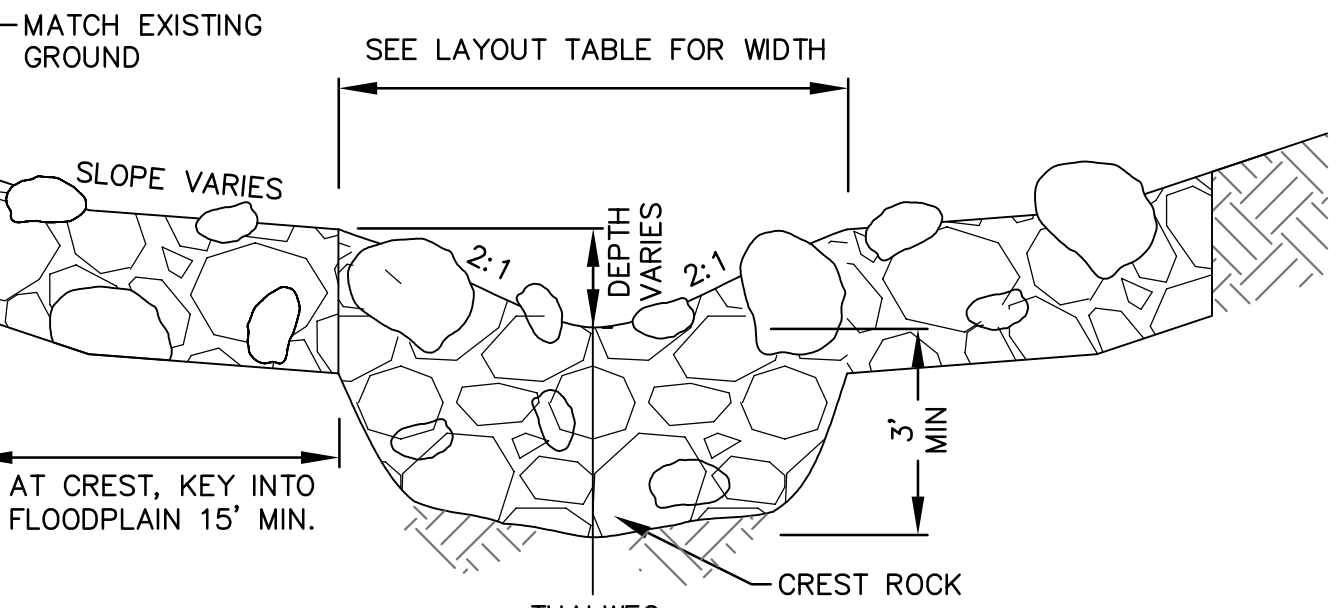
KNICKPOINT STABILIZATION PLAN VIEW
NOT TO SCALE



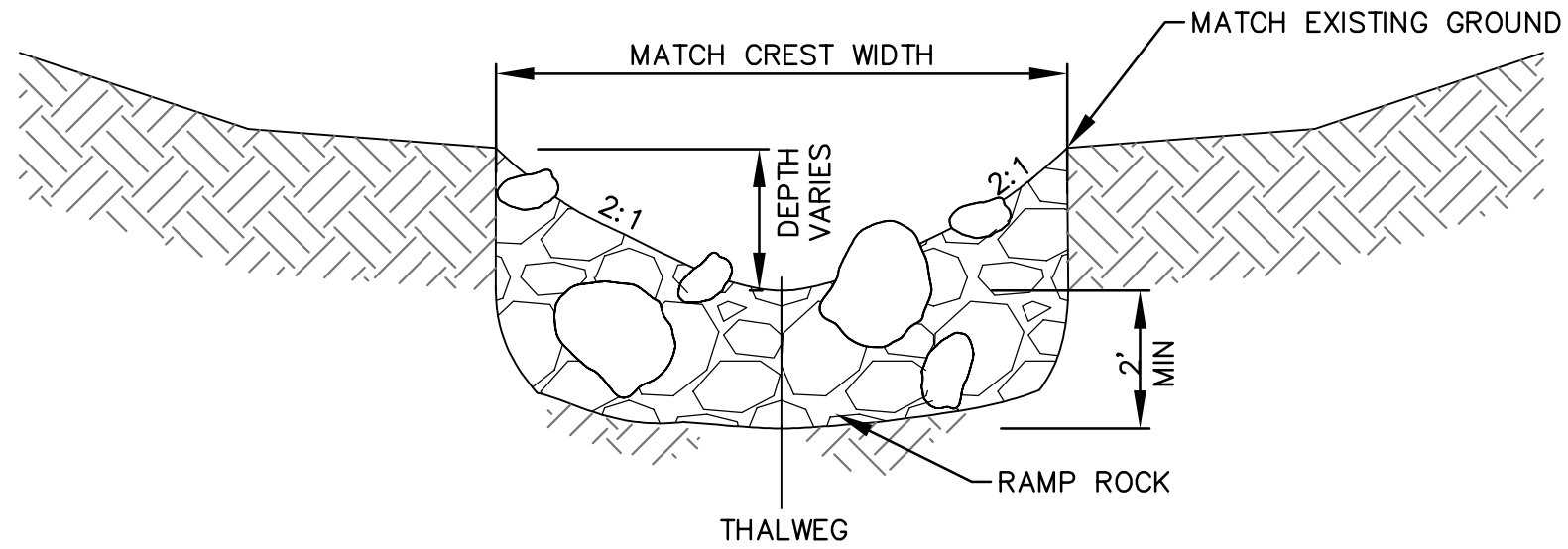
KNICKPOINT STABILIZATION PROFILE VIEW
NOT TO SCALE

- KNICKPOINT STABILIZATION STRUCTURE GENERAL NOTES:
- 1) KNICKPOINT STABILIZATION STRUCTURES ARE INTENDED TO HALT THE MIGRATION OF A SERIES OF EXISTING KNICKPOINTS IN THE FLOODPLAIN IN THE VICINITY OF THE EXISTING WETLAND (OVERFLOW CHANNELS D, D MINOR, AND E).
 - 2) TYPICAL SEQUENCE: RAMP, POOL, RUN. LIMITS OF EACH FEATURE ARE SHOWN ON PROFILE.
 - 3) INTERLOCK CREST ROCKS TO INCREASE STABILITY.
 - 4) THE SOURCE OF BED MATERIAL FOR THE RAMP AND UNDERLYING POOL AND BED MATERIAL SHALL BE SALVAGED NATIVE STREAMBED MIX FROM THE MAIN STEM OF SOUTH ST. VRAIN CREEK.
 - 6) THE SOURCE OF CREST ROCK SHALL PREFERENTIALLY BE SALVAGED MATERIAL DURING EARTHWORK ACTIVITIES, ALTHOUGH THE CONTRACTOR MAY NEED TO IMPORT A PORTION OF THIS SIZE ROCK. THE CREST BOULDERS MAY BE ANGULAR. REFER TO PROJECT SPECIFICATIONS FOR MORE INFORMATION.
 - 5) TO PROTECT BANKS FROM EROSION IN THE VICINITY OF THE STRUCTURE, THE CONTRACTOR SHALL EXTEND ROCK PLACEMENT TO TOP OF CHANNEL BANKS.
 - 6) REFER TO PLAN AND PROFILE SHEETS FOR ADDITIONAL INFORMATION.
 - 7) STRUCTURE CONFIGURATION MAY BE REFINED IN FIELD BY ENGINEER TO AVOID IMPACTS TO SENSITIVE WETLAND HABITAT AND MATURE VEGETATION.

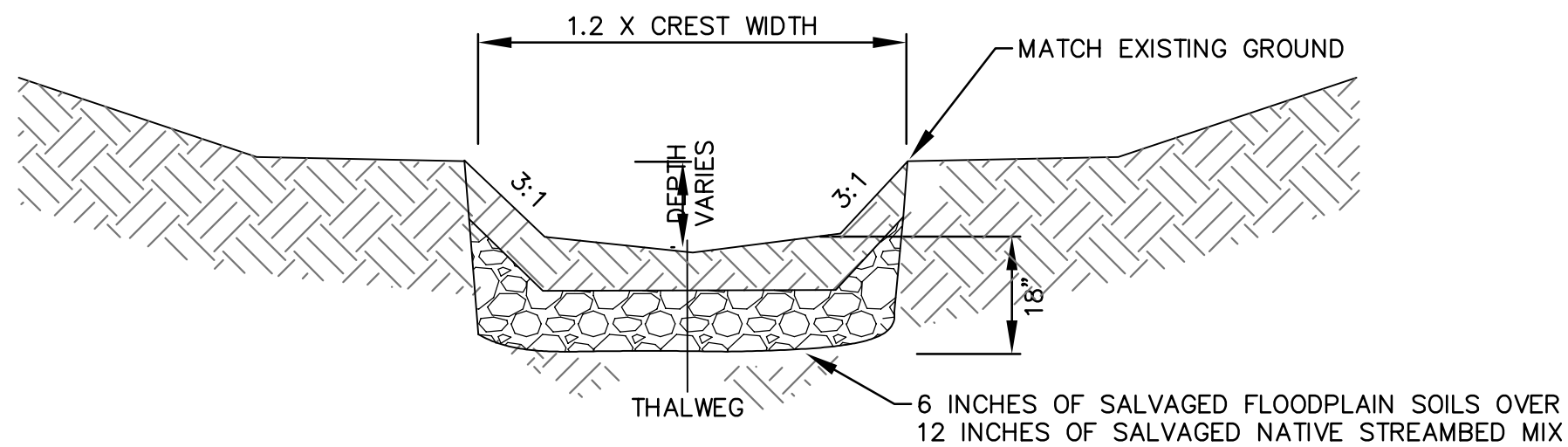
KNICKPOINT STABILIZATION STRUCTURE LAYOUT TABLE					
CHANNEL ID	STATION	CREST ELEV.	SLOPE (%)	WIDTH (FT)	LENGTH (FT)
OFC D	1+63	5414.43	5.00%	30	30
OFC D MINOR	1+82	5414.60	5.00%	30	30
OFC E	5+90	5396.01	3.50%	15	60
	9+16	5401.73	5.00%	15	30
	9+93	5403.10	5.00%	15	30
	10+70	5404.48	5.00%	15	30



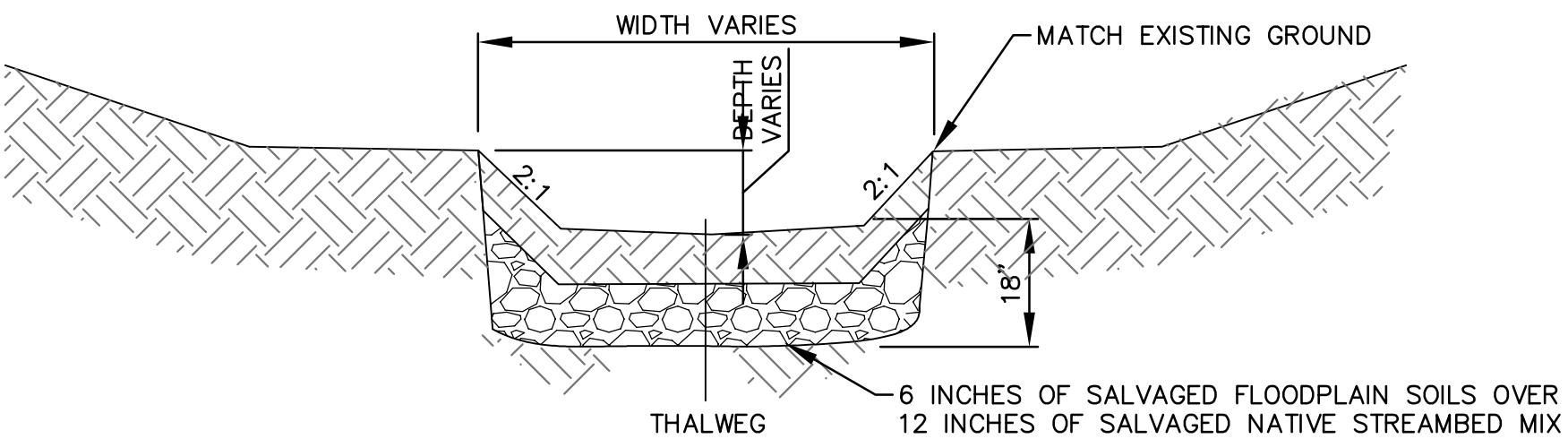
A CREST CROSS SECTION
NOT TO SCALE



B RAMP CROSS SECTION
NOT TO SCALE



C POOL CROSS SECTION
NOT TO SCALE



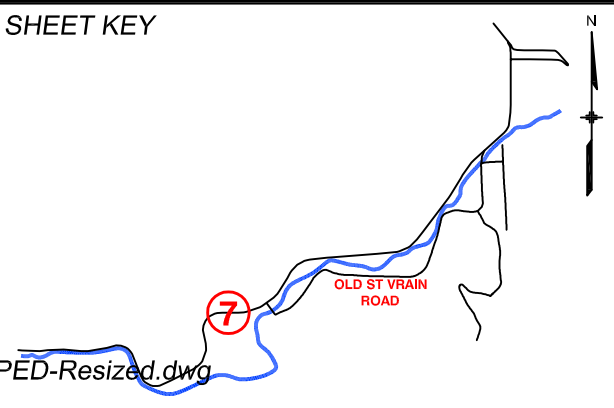
D RUN CROSS SECTION
NOT TO SCALE

KNICKPOINT STRUCTURE CREST ROCK GRADATION FLOODPLAIN SILL MIX	
GRAIN SIZE	DIA (IN)
D,MIN	SAND
D16	4
D50	12
D84	24
D,MAX	36

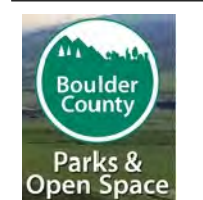
KNICKPOINT STRUCTURE RAMP ROCK (AND UNDERLYING POOL AND RUN) GRADATION NATIVE STREAMBED MIX	
GRAIN SIZE	DIA (IN)
D,MIN	SAND
D16	0.75
D50	3
D84	7
D,MAX	24

REFERENCE DRAWINGS			
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SHEET KEY



PREPARED FOR:



PREPARED BY:



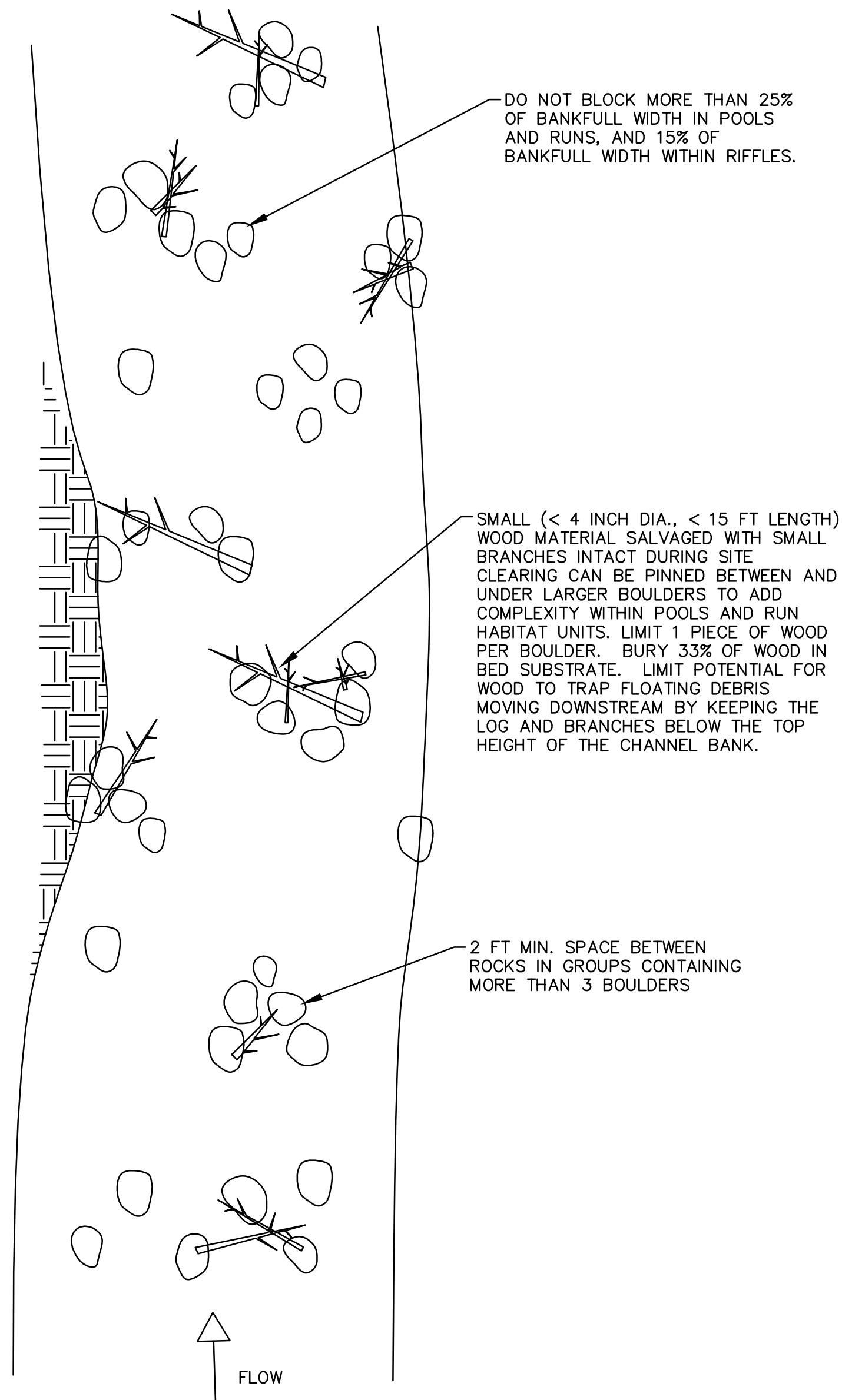
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16,812,003

SOUTH ST. VRAIN CREEK RESTORATION

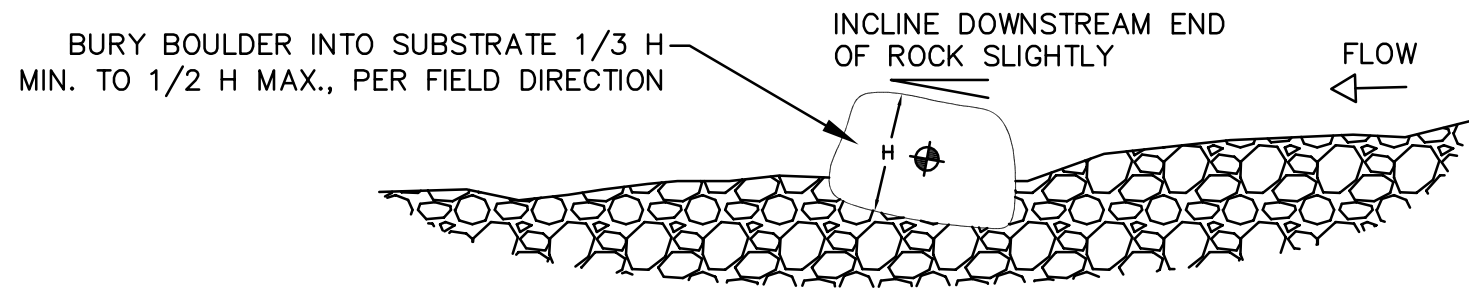
BOULDER COUNTY PARKS AND OPEN SPACE
FINAL DESIGN

KNICKPOINT STABILIZATION DETAILS

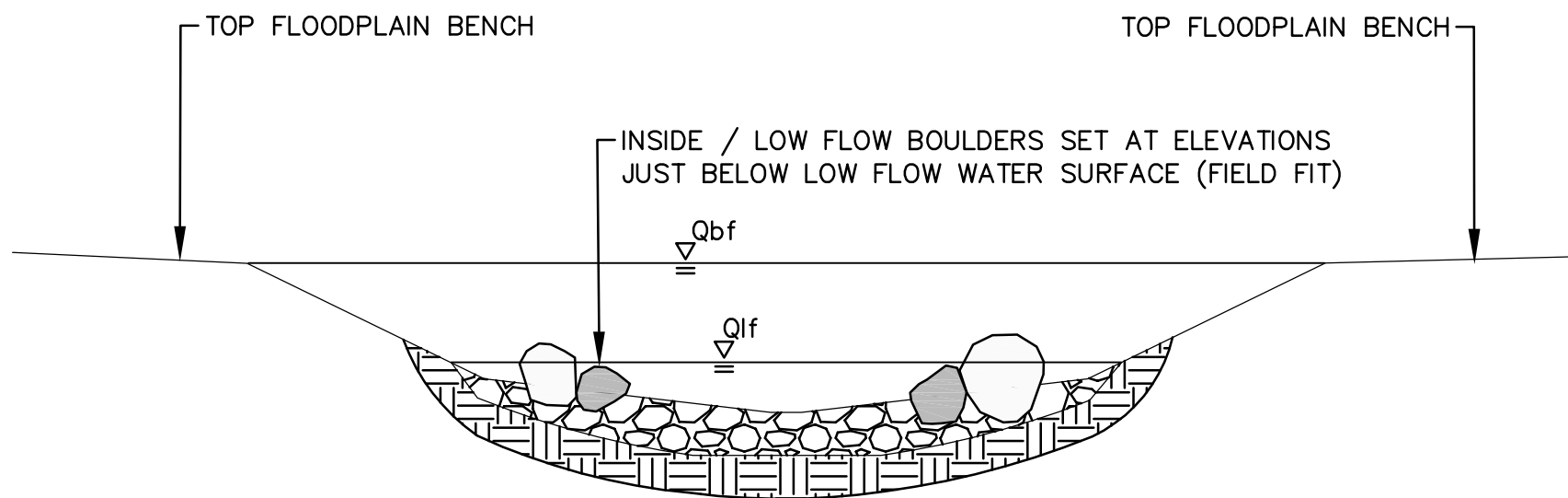
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DRAWN BY:	RB	HORIZ	NTS		
CHECKED BY:	LS	VERT.	NTS	SHEET 64 OF 83	DET 5



HABITAT BOULDER CONCEPT CONFIGURATIONS
NOT TO SCALE



HABITAT BOULDER PROFILE
NOT TO SCALE



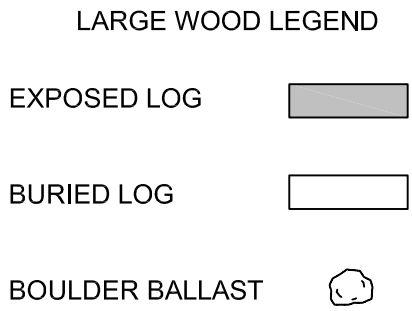
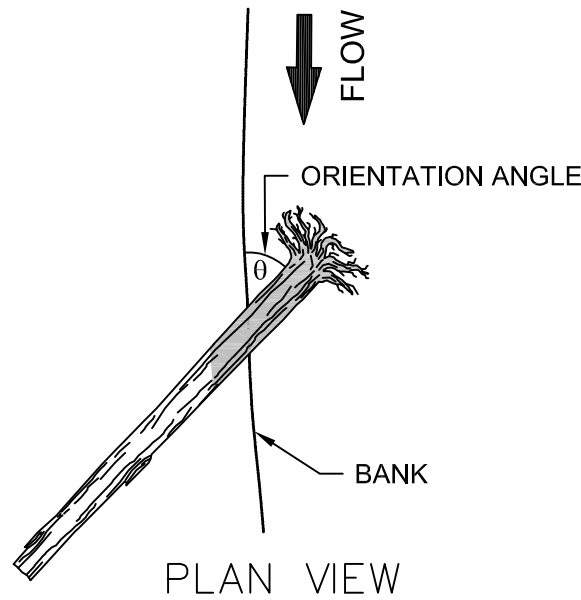
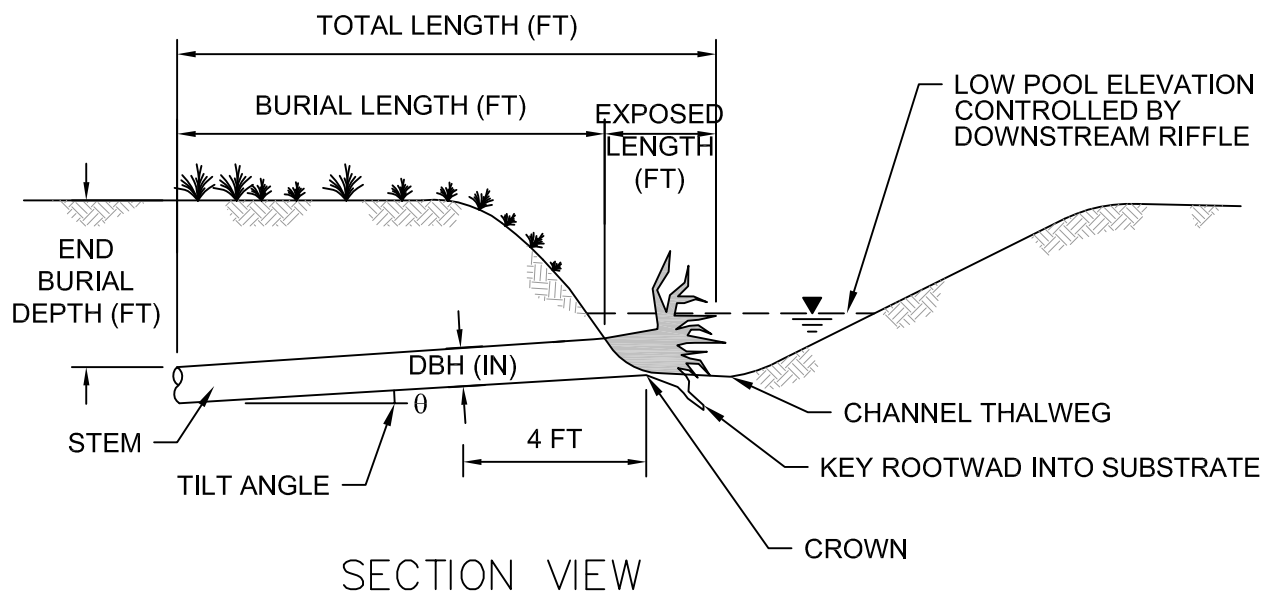
HABITAT BOULDER CROSS SECTION
NOT TO SCALE

- GENERAL NOTES:
- 1) PLACE HABITAT BOULDERS PER GUIDANCE ON THIS SHEET UNLESS OTHERWISE DIRECTED BY ENGINEER IN THE FIELD.
 - 2) SALVAGE OR IMPORT BOULDERS FOR USE IN RESTORED CHANNEL.
 - 3) BOULDERS USED FOR HABITAT SHALL BE ROUNDED OR SUBANGULAR.
 - 4) BOULDERS TO BE PLACED AT VARYING ELEVATIONS CORRESPONDING TO LOW-FLOW WATER SURFACE AND BANKFULL WATER SURFACE.
 - 5) BOULDERS PLACED AT LOW FLOW ELEVATION SHALL BE PLACED SO CREST (HIGHEST PART) IS WITHIN 2 TO 4 INCHES OF THE WATER SURFACE.
 - 6) LIMIT SIZE OF INDIVIDUAL BOULDER CLUSTER IN RIFFLE UNITS TO A MAXIMUM OF 3 ROCKS.

HABITAT BOULDER GRADATION	
GRAIN SIZE	DIA (IN)
D,MIN	24
D16	30
D50	36
D84	42
D,MAX	48

HABITAT BOULDER QUANTITIES				
HABITAT UNIT	QUANTITY PER EACH UNIT			SUBTOTAL
	MIN	TYP	MAX	
RIFFLE	6	8	10	145
POOL	0	2	4	30
RUN	6	12	18	200
TOTAL				375

REFERENCE DRAWINGS					SHEET KEY 	PREPARED FOR: PREPARED BY: 		SOUTH ST. VRAIN CREEK RESTORATION			
	BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN										
	HABITAT BOULDER DETAILS										
	DESIGNED BY:	MGR	SCALE (22" X 34")	DATE ISSUED:				02/03/17	DRAWING No.		
	DRAWN BY:	RB	HORIZ.	NTS							
	CHECKED BY:	LS	VERT.	NTS	SHEET	65	OF	83	DET 6		
COMPUTER FILE MANAGEMENT FILE NAME: C:\Users\blair\Documents\OTAK\PROJECTS\132706_SSV-HallRanch\80\CAD_Details-STAMPED_ResizeStamp\SSV_Details_Habitat_Boulders_STAMPED-Resized.dwg CTB FILE: --- PLOT DATE: 2/27/2017 2:44 PM THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.											



TYPICAL LOG REFERENCE KEY AND LEGEND

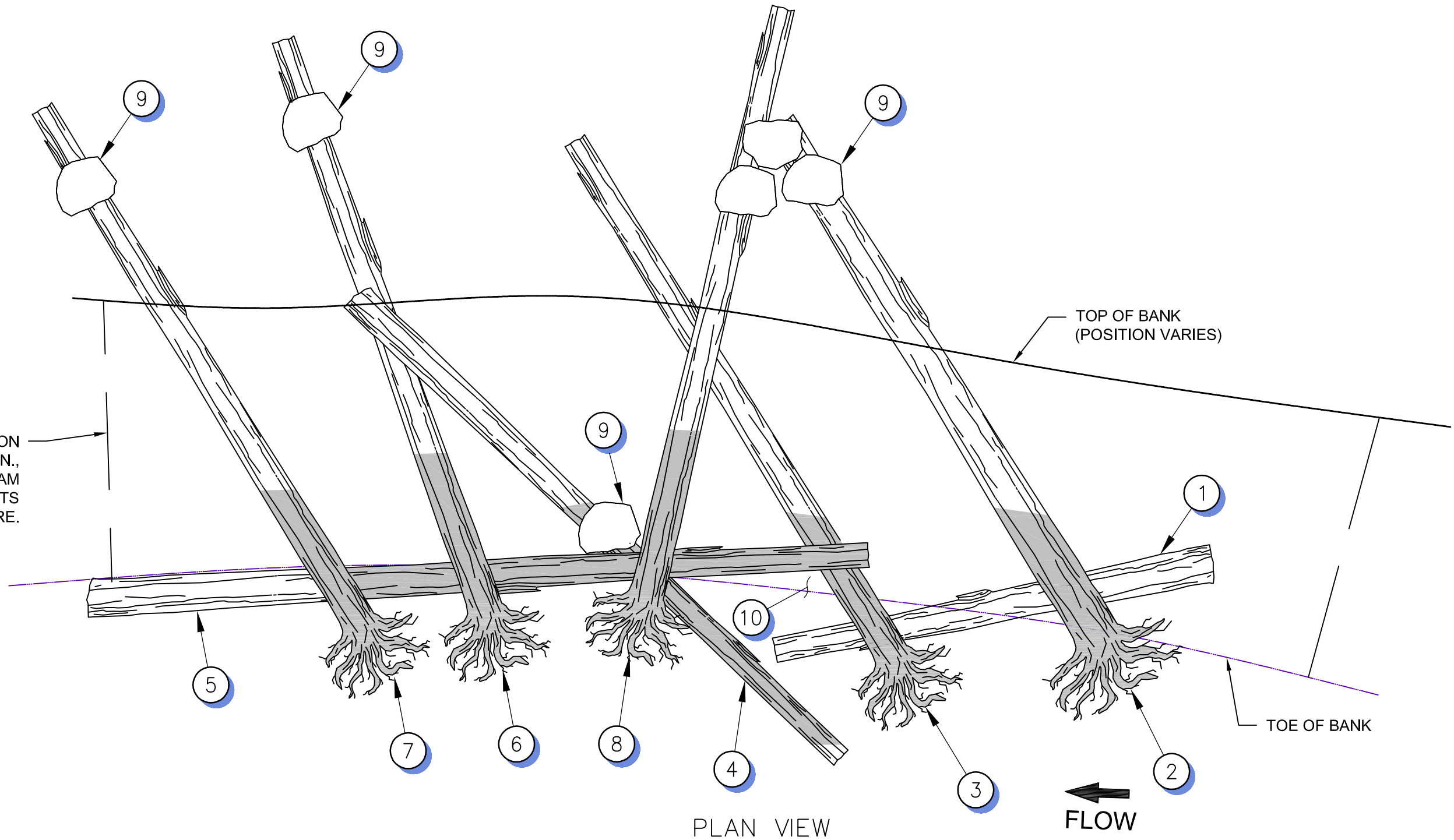
LARGE WOOD STRUCTURE CONSTRUCTION NOTES:

- IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE TRUCKS AND OPERATORS TO HAUL LARGE WOOD MATERIAL TO THE PROJECT SITE. LARGE WOOD MATERIAL FOR STRUCTURES SHALL BE SECURED FROM THE FOLLOWING SOURCES:
 - SALVAGED TREES REMOVED DURING CONSTRUCTION GRADING ACTIVITIES, AS APPROVED BY THE ENGINEER (LIMITED QUANTITY AVAILABLE)
 - IMPORTED LARGE WOOD FROM AN OFF-SITE SOURCE (PROCURED BY CONTRACTOR)
- THE CONTRACTOR SHALL TAKE CARE TO PROTECT THE ROOTWADS FROM DAMAGE DURING HANDLING OF LARGE WOOD MATERIAL.
- CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER IF A SPECIFIED LOG SIZE IS NOT AVAILABLE.
- THE CONTRACTOR SHALL PROVIDE A LIST OF THE LOGS THAT ARE AVAILABLE (ONSITE AND OFFSITE) TO BE USED FOR THE PROJECT. FOR EACH LOG, THE LIST SHALL DESCRIBE THE TREE SPECIES, DIAMETER (DBH), LENGTH, AND ROOTWAD DIAMETER. THE LARGE WOOD STRUCTURE CONFIGURATIONS AND MATERIAL SCHEDULES SHOWN IN THE PLANS ARE CONSIDERED PRELIMINARY, AND ARE SUBJECT TO REVISION BY THE ENGINEER UPON RECEIPT OF THE LIST OF LOG MATERIAL.
- THE LOCATION AND CONFIGURATION OF LARGE WOOD STRUCTURES MAY VARY IN FIELD DUE TO SITE CONDITIONS, AND THE FINAL LOCATION OF THESE STRUCTURES WILL BE FLAGGED BY THE ENGINEER DURING CONSTRUCTION.
- SPECIFIED DIAMETER OF LOGS SHALL BE MEASURED AT BREAST HEIGHT (DBH). LENGTHS OF LOGS SHALL INCLUDE THE ROOTWAD PORTIONS OF THE LOG. IF ROOTWAD IS PRESENT, LOG SIZE SHALL BE WITHIN 3 INCHES OF THE SPECIFIED DIAMETER. ROOTWAD DIAMETER SHALL TYPICALLY BE A MINIMUM OF 3 TIMES THE DBH OF THE LOG, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- BURIAL DEPTH AND BURIAL LENGTH SHALL MATCH OR EXCEED SPECIFIED DIMENSIONS. BOTH DIMENSIONS ARE MEASURED FROM THE TOP OF THE LOG. THE TILT ANGLE OF THE LOG IS PROVIDED ONLY AS A RECOMMENDATION. FINAL TILT ANGLES MAY VARY FROM PLANS PROVIDED THE LOGS HAVE THE REQUIRED BURIAL DEPTHS AND BURIAL LENGTHS.
- LOG ORIENTATION ANGLES ARE MEASURED BETWEEN THE LOG AND THE BANK. A LOG WITH AN ORIENTATION ANGLE OF 0 DEGREES SHALL BE PLACED PARALLEL TO THE BANK, AND A LOG WITH A 90 DEGREE ORIENTATION ANGLE SHALL BE PLACED PERPENDICULAR TO THE BANK. ORIENTATION OF LOGS SHALL BE WITHIN 10 DEGREES OF THE SPECIFIED ORIENTATION ANGLE, UNLESS APPROVED BY THE ENGINEER IN THE FIELD.
- LIMIT TRENCH WIDTHS ASSOCIATED WITH LOG INSTALLATION TO THE LOG DIAMETER PLUS 2 FEET AND MINIMIZE BANK DISTURBANCE. FOLLOWING CONSTRUCTION, THE CONTRACTOR SHALL STABILIZE THE DISTURBED BANKS BY METHODS NOTED ON THESE PLANS.
- BACKFILL LOG TRENCHES WITH NATIVE ALLUVIUM, MACHINE PACKING BY TRACKING OVER THE LOGS AND PATTING THE SOILS WITH THE BUCKET OF THE EXCAVATOR.
- IF MULTIPLE ROOTWADS OR STRUCTURES ARE INSTALLED TO PROTECT A BANK FROM EROSION, POSITION THE LOGS SO THE ROOTWADS OVERLAP SLIGHTLY TO AVOID WATER JETTING BETWEEN LOGS. IF THESE LOGS ARE PLACED ON THE OUTSIDE BEND OF THE MEANDER, INSTALL BANK PROTECTION MEASURES AROUND THE LOGS, PER DETAILS IN PLANTING PLANS.
- LARGE WOOD STRUCTURE TYPES 1, 2, AND 3 ARE DESIGNED WITH THE PURPOSE OF INCREASING HYDRAULIC DIVERSITY, SCOURING POOL HABITAT, AND STABILIZING BANKS BY DEFLECTING FLOWS. THESE STRUCTURES ARE PROPOSED IN AREAS WHERE POOLS ARE EXPECTED TO FORM NATURALLY, AND THEY ARE EXPECTED TO ENCOURAGE BED SCOUR TO INCREASE POOL DEPTH AND PROVIDE COVER HABITAT.
- LARGE WOOD STRUCTURE TYPE 4 CAN BE PLACED IN AREAS WITH LOW BANKS AND ARE DESIGNED WITH THE PURPOSE OF DEFLECTING FLOW AND PROVIDING COVER HABITAT.
- LARGE WOOD STRUCTURE TYPES 5 AND 6 ARE DESIGNED TO INCREASE FLOODPLAIN ROUGHNESS AND IMPROVE TERRESTRIAL HABITAT. THESE STRUCTURES WILL BE ENTIRELY CONSTRUCTED USING WOODY MATERIAL SALVAGED DURING SITE CLEARING AND REMOVAL OF EXISTING TREES. THE QUANTITY AND CONFIGURATION OF THESE STRUCTURES WILL VARY BASED ON THE AVAILABILITY OF SALVAGED WOOD OF THE SPECIFIED SIZE CLASSES AND OBSERVED SITE CONDITIONS. LOCATIONS OF STRUCTURE TYPES 5 AND 6 ARE CONCEPTUALLY SHOWN ON THE PLANS AND MAY VARY PER ENGINEER'S DIRECTION IN THE FIELD.

LARGE WOOD STRUCTURE LOCATIONS		
SSV STATION	TYPE	POSITION
29+50	2	RIGHT BANK
32+25	2	RIGHT BANK
33+40	1	RIGHT FLOODPLAIN
50+50	6	LEFT FLOODPLAIN
51+90	2	RIGHT BANK
52+10	2	RIGHT BANK
56+55	3	LEFT BANK
60+00	5	RIGHT FLOODPLAIN
61+20	3	LEFT BANK
62+40	6	RIGHT FLOODPLAIN
63+35	6	LEFT FLOODPLAIN
63+40	5	RIGHT FLOODPLAIN
63+95	1	LEFT BANK
64+45	5	RIGHT FLOODPLAIN
66+65	5	RIGHT FLOODPLAIN
66+90	5	RIGHT FLOODPLAIN
67+90 TO 68+80	4	RIGHT BANK (x6)
69+40	1	RIGHT BANK
70+50	5	LEFT FLOODPLAIN
71+10	5	RIGHT FLOODPLAIN
71+35	5	LEFT FLOODPLAIN
71+60	5	LEFT FLOODPLAIN
71+90	1	LEFT BANK
72+20	5	LEFT FLOODPLAIN
74+10	5	LEFT FLOODPLAIN
74+80	3	RIGHT BANK
75+50	6	LEFT FLOODPLAIN
75+85	6	LEFT FLOODPLAIN
76+30 TO 76+80	4	LEFT BANK (x5)
77+05	5	RIGHT FLOODPLAIN
79+10	5	LEFT FLOODPLAIN
81+10	5	RIGHT FLOODPLAIN
85+40	1	LEFT BANK
86+80	5	RIGHT FLOODPLAIN
86+80 TO 87+05	4	LEFT BANK (x4)
87+95	6	RIGHT FLOODPLAIN
88+15	5	LEFT FLOODPLAIN
89+75	6	LEFT FLOODPLAIN
89+90	2	RIGHT BANK
90+40	2	RIGHT BANK
91+00	5	LEFT FLOODPLAIN
91+20	6	LEFT FLOODPLAIN
91+65	5	LEFT FLOODPLAIN
92+50	3	LEFT BANK
92+70 TO 93+00	4	LEFT BANK (x4)
94+40	2	LEFT BANK
97+30	5	RIGHT FLOODPLAIN
97+55	5	LEFT FLOODPLAIN
98+50	5	LEFT FLOODPLAIN

LARGE WOOD STRUCTURE MATERIAL SCHEDULE						
STRUCTURE TYPE	QUANTITY OF STRUCTURE TYPE	QUANTITY OF HABITAT LOGS (>12 IN DBH)			QUANTITY OF BALLAST BOULDERS	
		BOLE + ROOTWAD	BOLE ONLY	SUBTOTAL	EACH STRUCTURE	SUBTOTAL
TYPE 1	5	5	3	40	6	30
TYPE 2	7	5	3	56	6	42
TYPE 3	4	7	1	32	6	24
TYPE 4	19	1	0	19	2	38
TYPE 5	21	3	0	63	5	105
TYPE 6	8	0	0	0	0	0
TOTAL	64	—	—	210	—	239

EXTEND ROCK TOE PROTECTION AND BANK TREATMENTS 10 FT MIN., UPSTREAM AND DOWNSTREAM ALONG THE BANK, BEYOND LIMITS OF THE LARGE WOOD STRUCTURE.



TYPE 1 LARGE WOOD STRUCTURE DETAIL

NOT TO SCALE

TYPE 1 LARGE WOOD STRUCTURE MATERIAL SCHEDULE (PER STRUCTURE)						
CONST. NOTE	DBH (IN)	LENGTH (FT)	ROOTWAD ATTACHED?	MIN. PERCENT OF LOG BURIED	MIN. END BURIAL DEPTH (FT)	STEM TILT ANGLE (DEG.)
1	15	20	NO	100%	0.1	0
2	24	30	YES	65%	4.5	5 DOWN
3	18	30	YES	65%	4	3 DOWN
4	12	30	NO	40%	1.5	8 DOWN
5	15	35	NO	35%	0.5	6 UP
6	18	30	YES	60%	4	5 DOWN
7	18	30	YES	65%	4	2 DOWN
8	15	30	YES	60%	4	10 DOWN

CONSTRUCTION SEQUENCING:

- INSTALL FOOTER LOG AT TOE OF BANK ORIENTED DOWNSTREAM AT 10 DEG WITH BOTTOM OF LOG 1 FOOT BELOW THE THALWEG DEPTH AND TOP OF LOG COMPLETELY EMBEDDED.
- PLACE LOG ON TOP OF FOOTER LOG AT TOE OF BANK AND ORIENTED UPSTREAM AT 60 DEG.
- PLACE LOG ON TOP OF FOOTER LOG AT TOE OF BANK AND ORIENTED UPSTREAM AT 60 DEG.
- PLACE LOG AT TOE OF BANK SO BOTTOM IS IN CONTACT WITH CHANNEL BED AND ORIENTED UPSTREAM AT 45 DEG. EMBED TIP OF LOG IN CHANNEL BED.
- INSTALL LOG ON TOP OF LOGS PLACED IN STEPS 3 AND 4 AND SLIGHTLY BURY DOWNSTREAM END OF LOG. ORIENT DOWNSTREAM AT 5 DEG.
- PLACE LOG AT TOE OF BANK ON TOP OF LOG PLACED IN STEP 5 AND ORIENTED UPSTREAM AT 75 DEG. WEDGE UNDER LOG PLACED IN STEP 4.
- PLACE LOG AT TOE OF BANK ON TOP OF LOG PLACED IN STEP 5 AND ORIENTED UPSTREAM AT 75 DEG.
- INSTALL LOG ON TOP OF LOGS PLACED IN STEPS 3 AND 4 AND ORIENT DOWNSTREAM AT 75 DEG.
- PLACE SIX 30-INCH DIAMETER BOULDERS (ALTERNATIVELY TWELVE 24-INCH DIA BOULDERS) ON TOP OF LOGS PLACED IN STEPS 2, 4, 6, 7, AND 8.
- PLACE 6-INCH MINUS SLASH DEBRIS (SMALLER BRANCHES SALVAGED DURING GRADING ACTIVITIES) IN ALL VISIBLE VOID SPACES BETWEEN LOGS. PARTIALLY ANCHOR THE SLASH DEBRIS BY PINNING THE ENDS OF THE BRANCHES BENEATH THE KEY LOGS INSTALLED IN THE STEPS ABOVE.

REFERENCE DRAWINGS

812-TITLEBLOCK-22x34

No.	DATE	DESCRIPTION	BY
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SHEET KEY

PREPARED FOR:

PREPARED BY:

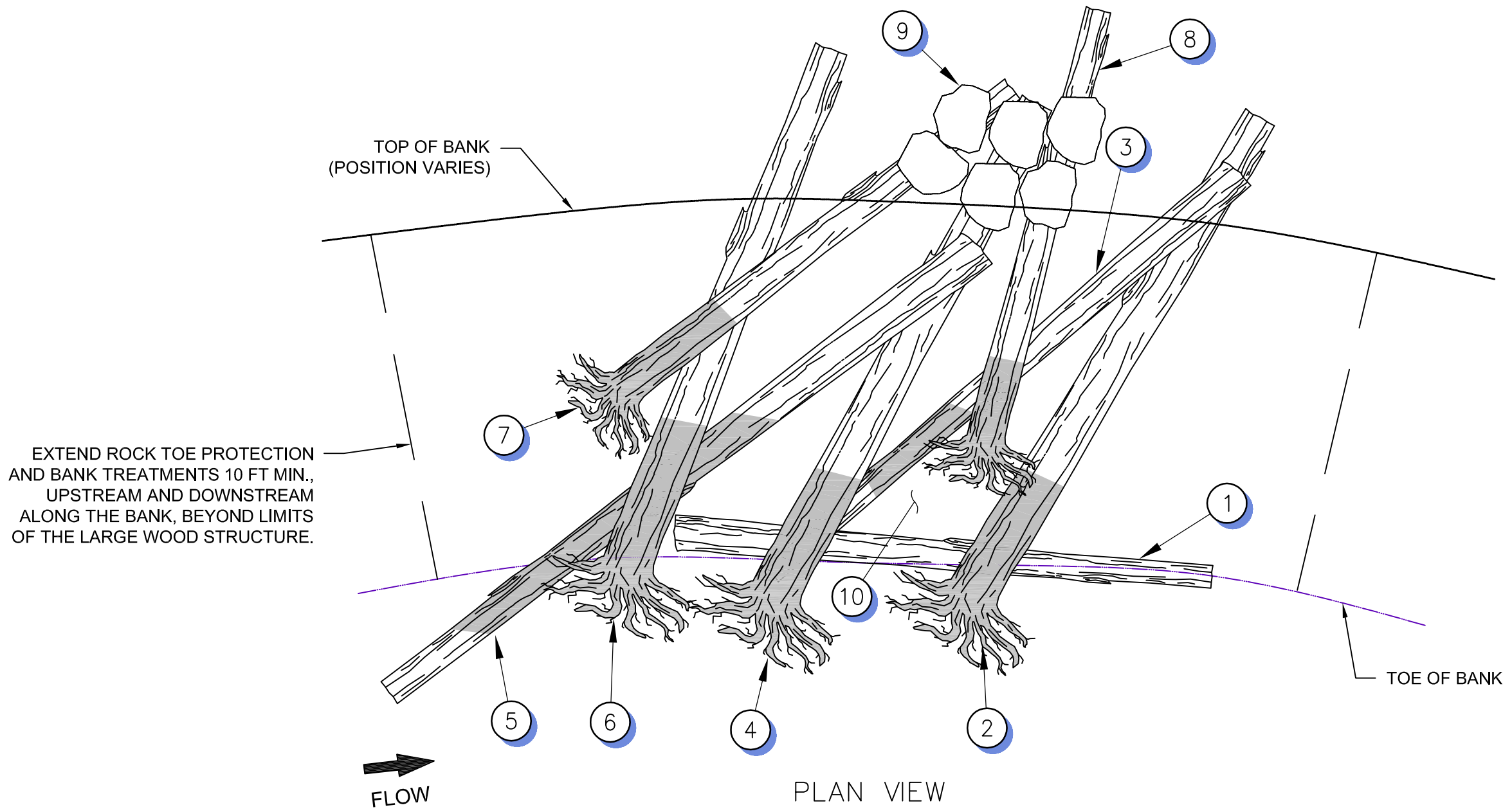
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

Boulder County Parks and Open Space
FINAL DESIGN

LARGE WOOD STRUCTURE DETAILS

DESIGNED BY:	MGR	SCALE (22" X 34")	DATE ISSUED:	02/03/17	DRAWING No.
CHECKED BY:	LS	HORIZ. NTS	SHEET	66 OF 83	DET 7



TYPE 2 LARGE WOOD STRUCTURE DETAIL

NOT TO SCALE

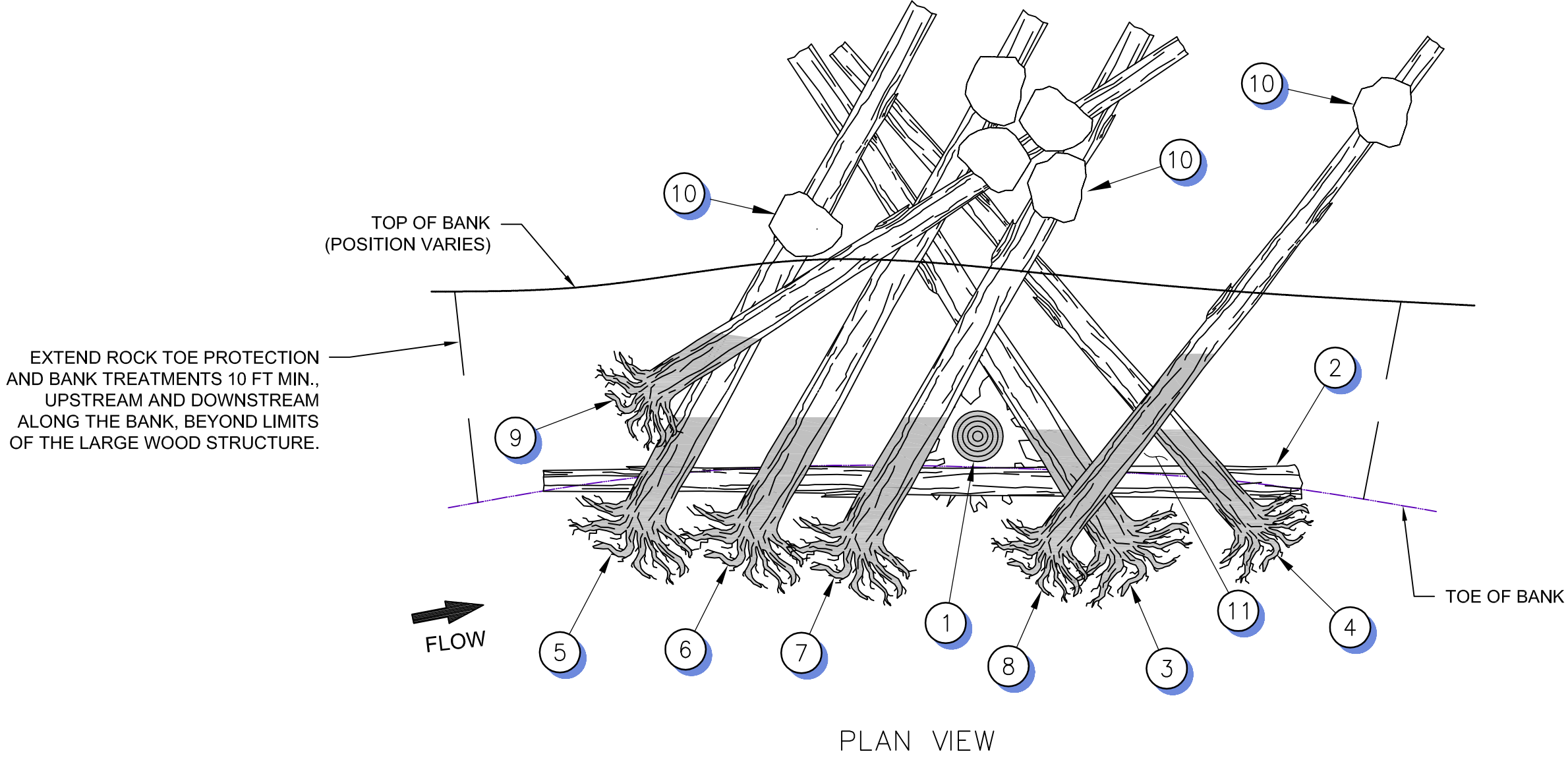
TYPE 2 LARGE WOOD STRUCTURE MATERIAL SCHEDULE (PER STRUCTURE)						
CONST. NOTE	DBH (IN)	LENGTH (FT)	ROOTWAD ATTACHED?	MIN. PERCENT OF LOG BURIED	MIN. END BURIAL DEPTH (FT)	STEM TILT ANGLE (DEG.)
1	15	20	NO	100%	0.1	0
2	24	25	YES	65%	4	0
3	15	25	NO	80%	1.25 & 1.5	15 DOWN
4	24	25	YES	65%	4	0
5	24	30	NO	50%	0.5 & 2	5 DOWN
6	18	25	YES	65%	4	2 DOWN
7	18	20	YES	65%	3.5	4 DOWN
8	18	20	YES	65%	4	4 DOWN

CONSTRUCTION SEQUENCING:

- 1 INSTALL FOOTER LOG PARALLEL TO TOE OF BANK WITH BOTTOM OF LOG 1 FOOT BELOW THE THALWEG DEPTH AND TOP OF LOG COMPLETELY EMBEDDED.
- 2 PLACE LOG ON TOP OF FOOTER LOG AT TOE OF BANK AND ORIENTED UPSTREAM AT 60 DEG.
- 3 INSTALL LOG ON TOP OF LOG PLACED IN STEP 2 AND WEDGE END BENEATH FOOTER LOG PLACED IN STEP 1. ORIENT UPSTREAM AT 40 DEG.
- 4 PLACE LOG ON TOP OF FOOTER LOG AT TOE OF BANK AND ORIENTED UPSTREAM AT 60 DEG.
- 5 INSTALL LOG ON TOP OF LOG PLACED IN STEP 4 AND BURY TIP IN THE BED. ORIENT UPSTREAM AT 40 DEG.
- 6 PLACE LOG AT TOE OF BANK ON TOP OF LOG PLACED IN STEP 5 AND ORIENTED UPSTREAM AT 60 DEG.
- 7 INSTALL LOG ON TOP OF LOG PLACED IN STEP 6 AND ORIENT UPSTREAM AT 40 DEG.
- 8 INSTALL LOG ON TOP OF LOG PLACED IN STEP 3 AND ORIENT UPSTREAM AT 80 DEG.
- 9 PLACE SIX 30-INCH DIAMETER BOULDERS (ALTERNATIVELY TWELVE 24-INCH DIA BOULDERS) ON TOP OF LOGS PLACED IN STEPS 4, 7, AND 8.
- 10 PLACE 6-INCH MINUS SLASH DEBRIS (SMALLER BRANCHES SALVAGED DURING GRADING ACTIVITIES) IN ALL VISIBLE VOID SPACES BETWEEN LOGS. PARTIALLY ANCHOR THE SLASH DEBRIS BY PINNING THE ENDS OF THE BRANCHES BENEATH THE KEY LOGS INSTALLED IN THE STEPS ABOVE.



REFERENCE PHOTO OF SLASH DEBRIS TO FILL VOID SPACES BETWEEN LOGS



TYPE 3 LARGE WOOD STRUCTURE DETAIL

NOT TO SCALE

TYPE 3 LARGE WOOD STRUCTURE MATERIAL SCHEDULE (PER STRUCTURE)						
CONST. NOTE	DBH (IN)	LENGTH (FT)	ROOTWAD ATTACHED?	MIN. PERCENT OF LOG BURIED	MIN. END BURIAL DEPTH (FT)	STEM TILT ANGLE (DEG.)
1	24	10	YES	33%	2.5	90
2	12	30	NO	100%	0.1	0
3	18	25	YES	60%	4	1 DOWN
4	15	25	YES	75%	4.5	2.5 DOWN
5	18	25	YES	60%	4	3.5 DOWN
6	18	25	YES	60%	4	3.5 DOWN
7	18	25	YES	60%	4	3.5 DOWN
8	15	30	YES	75%	4.5	2.5 DOWN
9	15	30	YES	75%	4.5	0

CONSTRUCTION SEQUENCING:

- 1 PLACE ROOT LOG AT TOE OF SLOPE WITH ROOTWAD RESTING ON THE CHANNEL BED AND PARTIALLY EMBEDDED IN THE BANK. POINT STEM STRAIGHT UP IN THE AIR, AND THE ROOTWAD WILL BE PINNED BETWEEN THE SURROUNDING LOGS. UPON COMPLETION OF STRUCTURE, TRIM THE STEM TO LESS THAN 2 FEET ABOVE TOP OF WOOD STRUCTURE AND "ROUGHEN" TOP WITH BUCKET OF EXCAVATOR TO LOOK LIKE A MORE NATURAL SNAG.
- 2 EMBED FOOTER LOG AT TOE OF SLOPE PARALLEL TO FLOW WITH THE TOP OF LOG FLUSH WITH THE PROPOSED CHANNEL BED ELEVATION.
- 3 INSTALL LOG WITH ROOTWAD CROWN RESTING ON THE FOOTER LOG AT TOE OF BANK AND ORIENTED DOWNSTREAM AT 45 DEG.
- 4 INSTALL LOG WITH ROOTWAD CROWN RESTING ON THE FOOTER LOG AT TOE OF BANK AND ORIENTED DOWNSTREAM AT 45 DEG.
- 5 INSTALL LOG WITH ROOTWAD CROWN RESTING ON THE FOOTER LOG AT TOE OF BANK AND ORIENTED UPSTREAM AT 45 DEG.
- 6 INSTALL LOG WITH ROOTWAD CROWN RESTING ON THE FOOTER LOG AT TOE OF BANK AND ORIENTED UPSTREAM AT 45 DEG.
- 7 INSTALL LOG WITH ROOTWAD CROWN RESTING ON THE FOOTER LOG AT TOE OF BANK AND ORIENTED UPSTREAM AT 45 DEG.
- 8 INSTALL LOG WITH ROOTWAD CROWN RESTING ON THE BOTTOM ROOTWADS AND ORIENTED UPSTREAM AT 45 DEG.
- 9 INSTALL LOG WITH ROOTWAD CROWN RESTING ON THE BOTTOM ROOTWADS AND ORIENTED UPSTREAM AT 35 DEG.
- 10 PLACE SIX 30-INCH DIAMETER BOULDERS (ALTERNATIVELY TWELVE 24-INCH DIA BOULDERS) ON TOP OF LOGS PLACED IN STEPS 5, 6, 7, 8, AND 9.
- 11 PLACE 6-INCH MINUS SLASH DEBRIS (SMALLER BRANCHES SALVAGED DURING GRADING ACTIVITIES) IN ALL VISIBLE VOID SPACES BETWEEN LOGS. PARTIALLY ANCHOR THE SLASH DEBRIS BY PINNING THE ENDS OF THE BRANCHES BENEATH THE KEY LOGS INSTALLED IN THE STEPS ABOVE.

REFERENCE DRAWINGS

812-TITLEBLOCK-22x34

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REVISIONS			
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SHEET KEY

PREPARED FOR:

PREPARED BY:

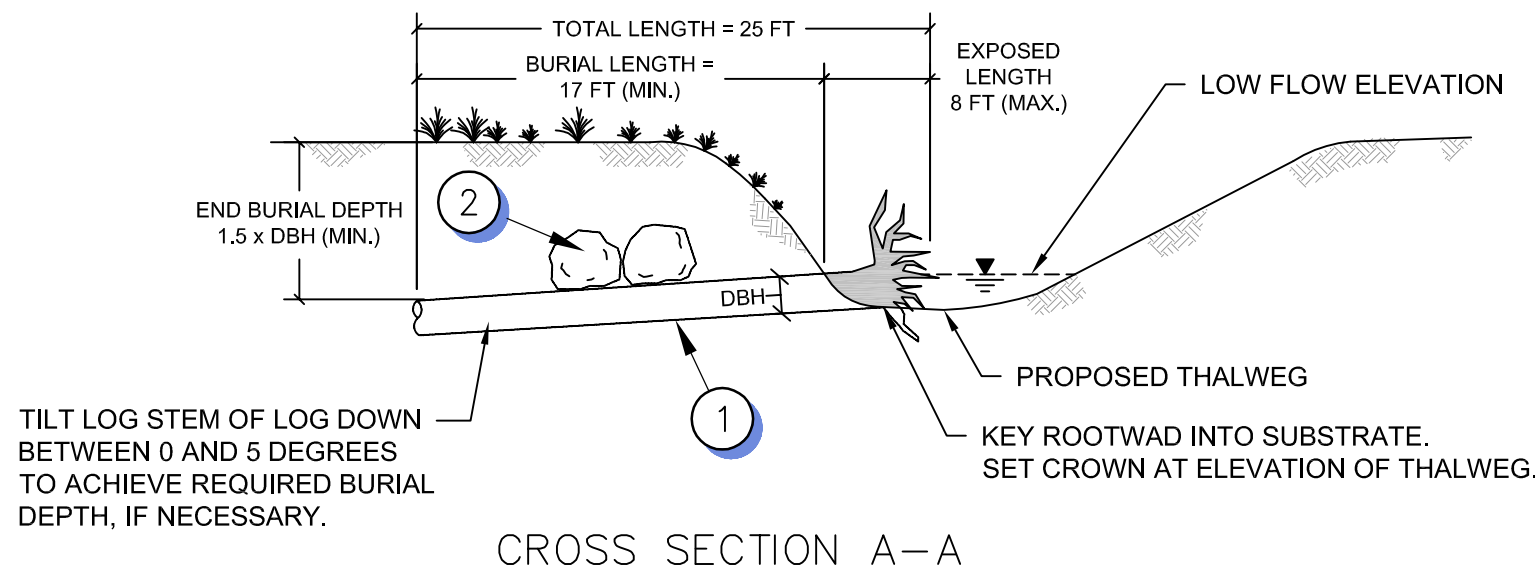
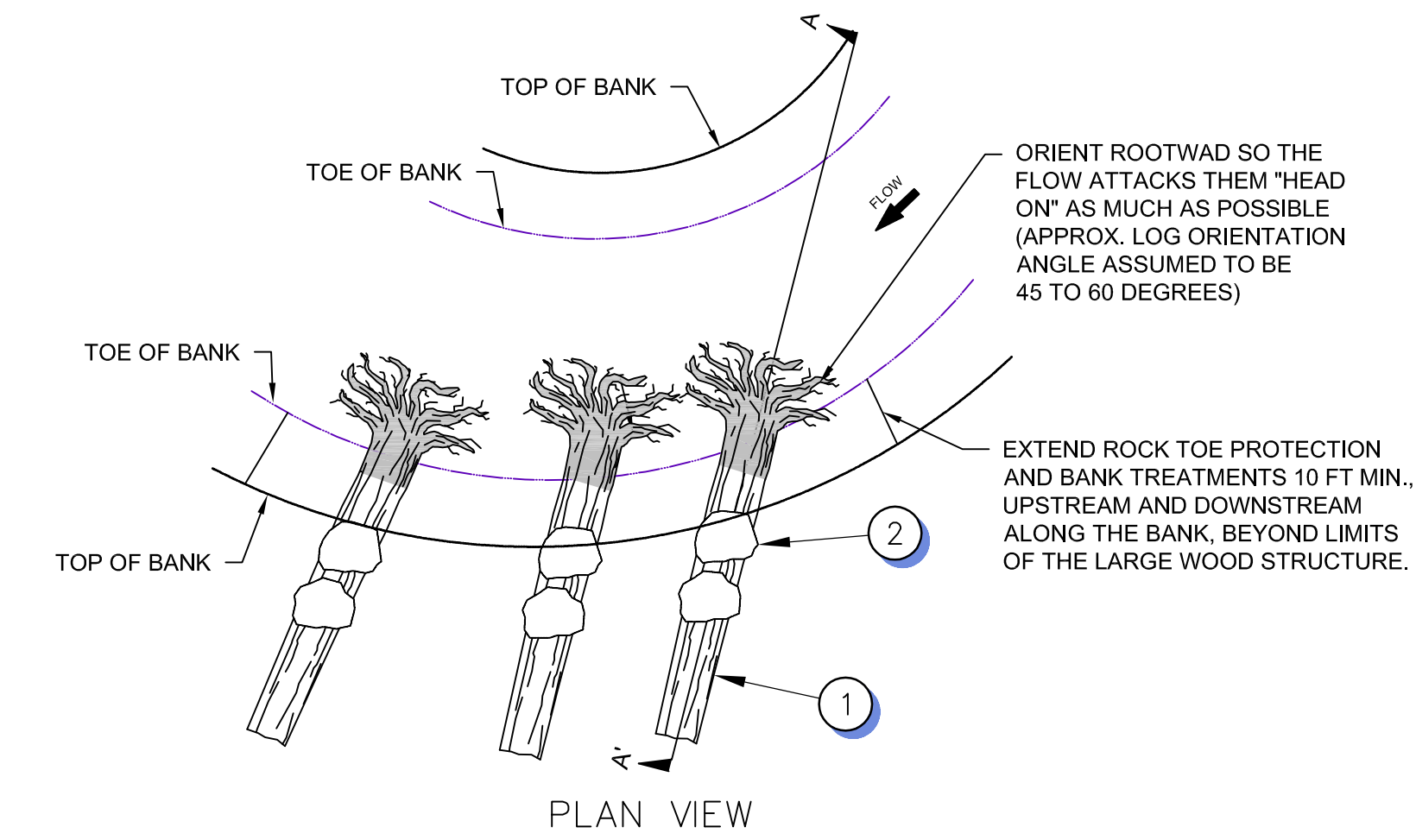
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16,812,003

SOUTH ST. VRAIN CREEK RESTORATION

Boulder County Parks and Open Space
FINAL DESIGN

LARGE WOOD STRUCTURE DETAILS

DESIGNED BY:	MGR	SCALE (22" X 34")	DATE ISSUED:	02/03/17	DRAWING No.
DRAWN BY:	MGR	HORIZ. NTS	SHEET	67 OF 83	DET 8
CHECKED BY:	LS	VERT. NTS			

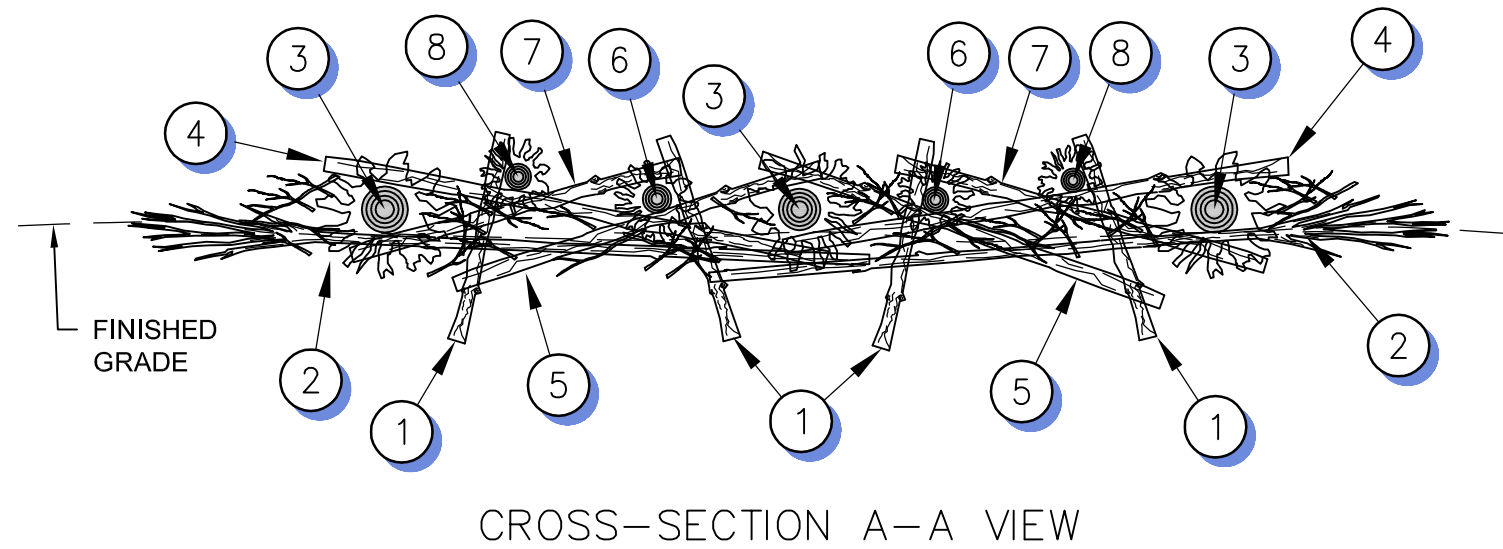
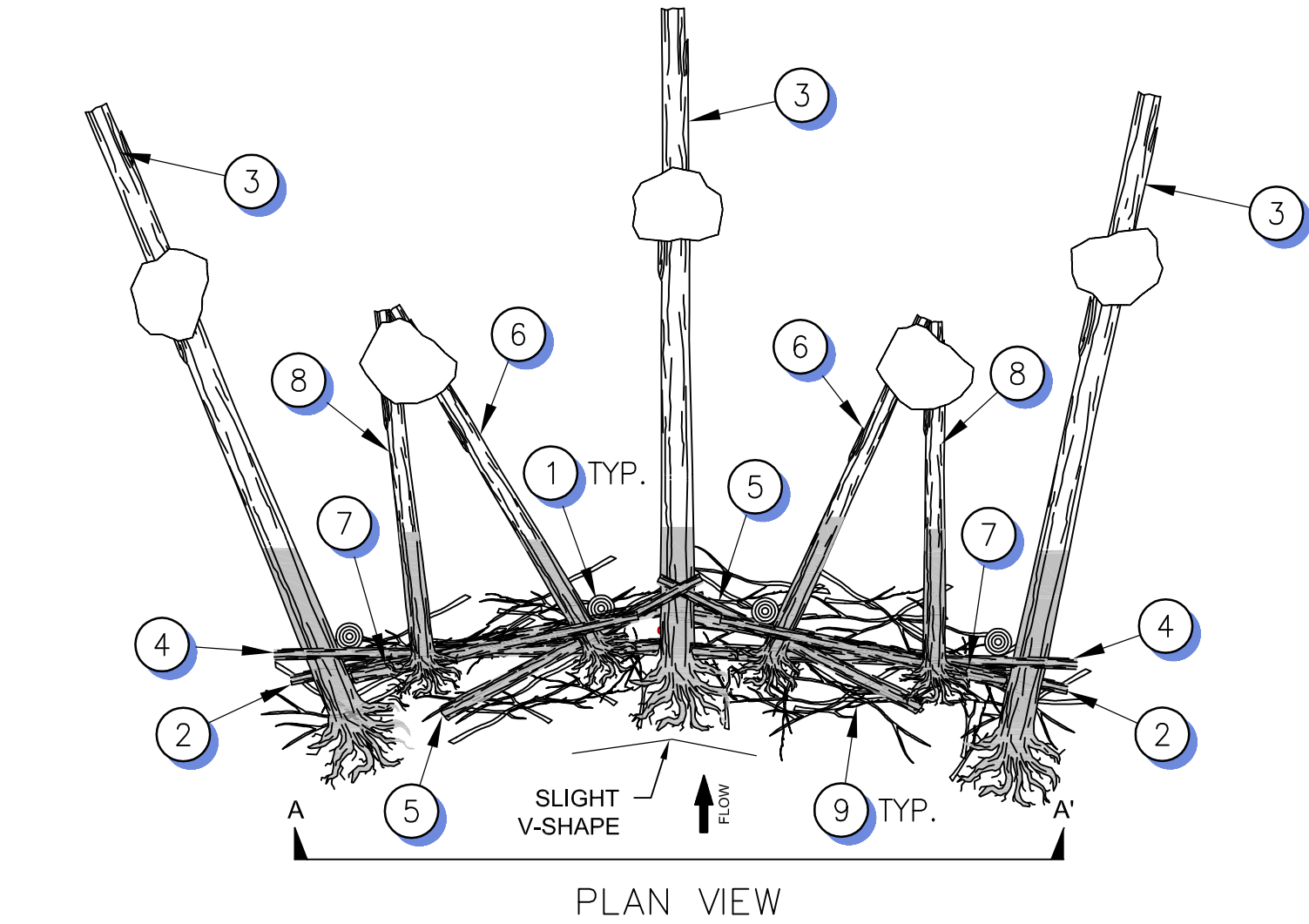


TYPE 4 LARGE WOOD STRUCTURE DETAIL
NOT TO SCALE

TYPE 4 LARGE WOOD STRUCTURE MATERIAL SCHEDULE (PER STRUCTURE)						
CONST. NOTE	DBH (IN)	LENGTH (FT)	ROOTWAD ATTACHED?	MIN. PERCENT OF LOG BURIED	MIN. END BURIAL DEPTH (FT)	STEM TILT ANGLE (DEG.)
1	18	25	YES	65%	2.5	5 DOWN

CONSTRUCTION SEQUENCING:

- PLACE LOG AT TOE OF BANK WITH BOTTOM CROWN OF BOLE AT ELEVATION OF PROPOSED THALWEG IN CHANNEL AND ORIENTED UPSTREAM AT 45 TO 60 DEG. KEY BOTTOM OF ROOTWAD INTO BED. SLIGHTLY OVERLAP OUTER DIAMETER OF ADJACENT ROOTWADS TO LIMIT HIGH VELOCITY FLOW HITTING THE BANK BETWEEN THE LOGS.
- PLACE TWO 30-INCH DIA. BOULDERS ON LOG (ALTERNATIVELY PLACE 4 24-INCH BOULDERS). ENGINEER MAY APPROVE REDUCING REQUIRED QUANTITY OF 30-INCH BALLAST BOULDERS BY 1 FOR EVERY 1 FOOT OF ADDITIONAL BURIAL DEPTH AT END OF LOG.

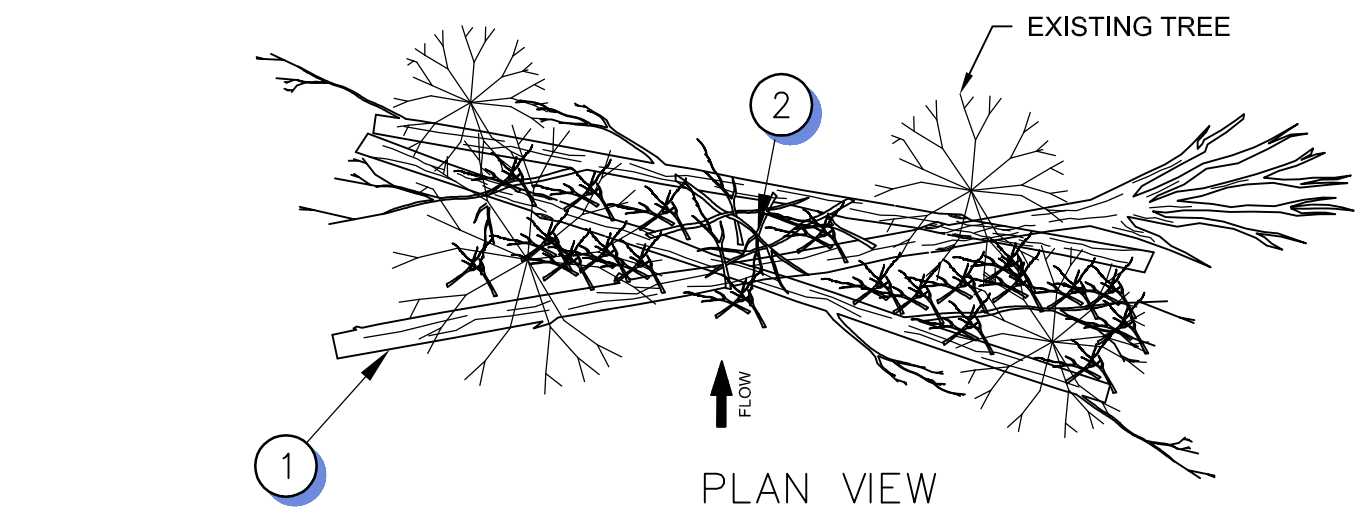
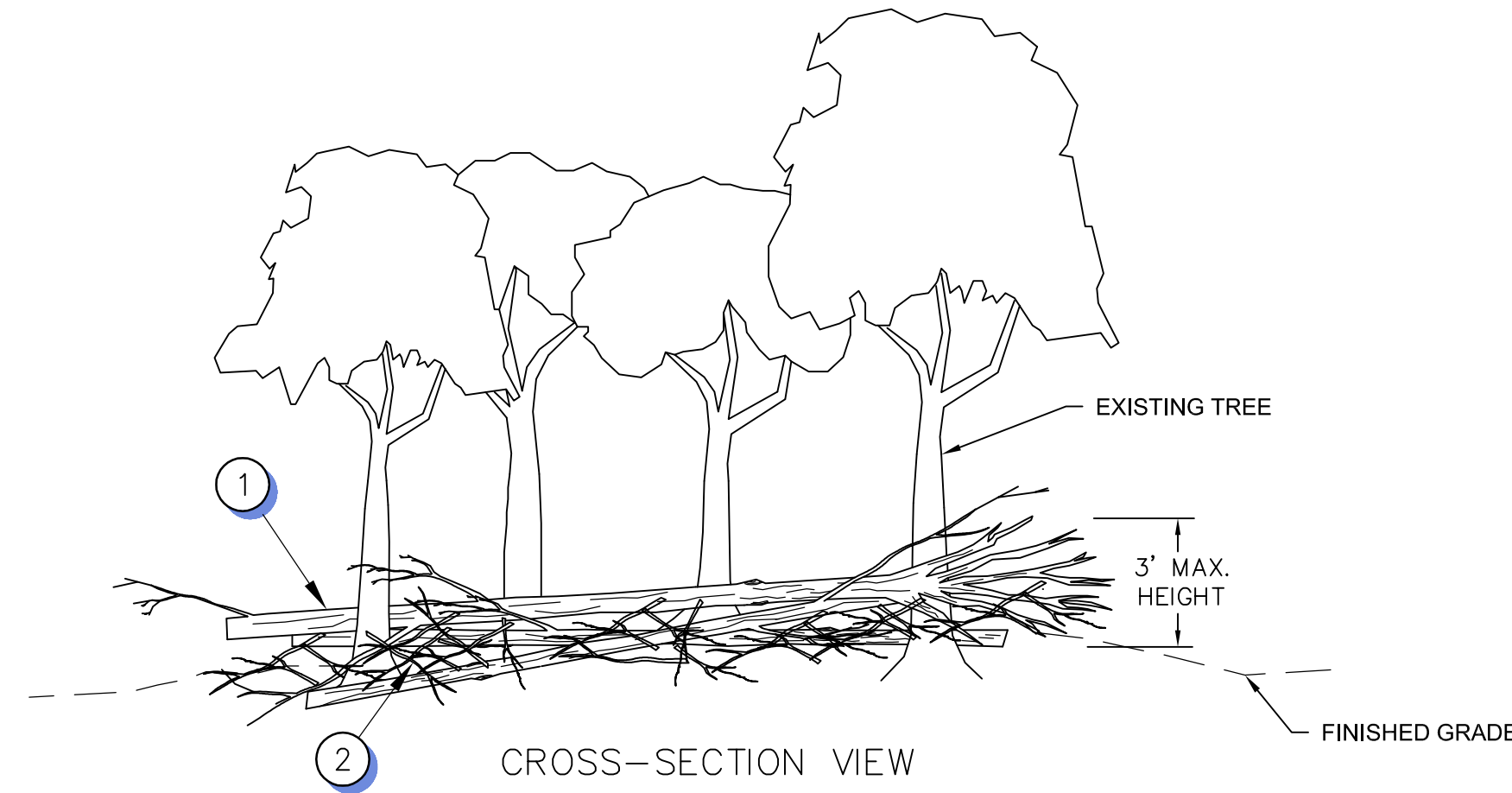


TYPE 5 LARGE WOOD STRUCTURE DETAIL
NOT TO SCALE

TYPE 5 LARGE WOOD STRUCTURE MATERIAL SCHEDULE (PER STRUCTURE)						
CONST. NOTE	DBH (IN)	LENGTH (FT)	ROOTWAD ATTACHED?	MIN. PERCENT OF LOG BURIED	MIN. END BURIAL DEPTH (FT)	QTY.
1	8	10	NO	65%	5	4
2	8 TO 10	25	NO	100%	0.1 TO 0.5	2
3	12	30	YES	65%	6	3
4	8 TO 10	25	NO	10%	0.1	2
5	5 TO 7	15	NO	10%	1	2
6	10	20	YES	60%	4	2
7	5 TO 7	15	NO	10%	1	2
8	10	20	YES	60%	4	2

CONSTRUCTION SEQUENCING:

- INSTALL FOUR LOG PILES AT 10 FEET ON CENTER WITH INNER PILES PLACED APPROX. 3 FEET FURTHER DOWNSTREAM. 2/3 OF EACH PILE SHALL BE BURIED AT 5:1 BATTER. ROUGHEN EXPOSED END OF PILE WITH EXCAVATOR BUCKET TO MAKE IT LOOK LIKE A NATURAL SNAG.
- EXCAVATE AN APPROX. 1 FOOT DEEP TRENCH IN FRONT OF THE LOG PILES AND PLACE TWO FOOTER LOG TO SPAN THE TRENCH. OVERLAP LOGS BY APPROX. 5 FEET IN CENTER, AND COMPLETELY EMBED THE LOGS BY PLACING BACKFILL ON TOP.
- PLACE THREE LOGS ON TOP OF THE FOOTER LOGS PLACED IN STEP 2 WITH ROOTWAD ENDS FACING UPSTREAM. ONE LOG SHOULD BE PLACED AT THE CENTER OF THE STRUCTURE, AND THE OTHER TWO SHOULD BE PLACED APPROX. 5 FT FROM EACH OUTER EDGE. BURY BOLE END OF LOG TO DEPTHS INDICATED ON THE TABLE ABOVE AND PLACE A 30-INCH BOULDER ON TOP FOR ADDED BALLAST.
- PLACE TWO LOGS ON EITHER SIDE OF THE CENTER LOG PLACED IN STEP 3. EACH LOG SHOULD BE PLACED ON TOP OF THE OUTER LOGS PLACED IN STEP 3, IN FRONT OF THE OUTER PILES, AND SLIGHTLY BURIED IN FRONT OF THE FOOTER LOGS PLACED IN STEP 2.
- PLACE TWO LOGS ON TOP OF THE CENTER LOG PLACED IN STEP 3 AND IN FRONT OF THE INNER PILES PLACED IN STEP 1. SLIGHTLY BURY OTHER END IN FLOODPLAIN.
- PLACE TWO LOGS ON TOP OF LOGS PLACED IN STEP 5 WITH ROOTWAD END FACING UPSTREAM. BURY BOLE END OF LOG TO DEPTHS INDICATED ON THE TABLE ABOVE.
- PLACE TWO LOGS ON TOP OF THE LOGS PLACED IN STEP 6 AND IN FRONT OF THE INNER PILES PLACED IN STEP 1. SLIGHTLY BURY OTHER END IN FLOODPLAIN.
- PLACE TWO LOGS ON TOP OF LOGS PLACED IN STEPS 4 AND 6 WITH ROOTWAD END FACING UPSTREAM. BURY BOLE END OF LOG TO DEPTHS INDICATED ON THE TABLE ABOVE. PLACE A 30-INCH BOULDER ON TOP WHERE THIS LOG AND THE LOG PLACED IN STEP 6, AS SHOWN.
- PLACE 3-INCH MINUS SLASH DEBRIS (SMALLER WOODY MATERIAL WITH BRANCHES INTACT SALVAGED DURING GRADING ACTIVITIES) IN ALL VISIBLE VOID SPACES BETWEEN LOGS. PARTIALLY ANCHOR THE SLASH DEBRIS BY PINNING THE ENDS OF THE BRANCHES BENEATH THE LOGS INSTALLED IN THE STEPS ABOVE.



TYPE 6 LARGE WOOD STRUCTURE DETAIL
NOT TO SCALE

TYPE 6 LARGE WOOD STRUCTURE MATERIAL SCHEDULE (PER STRUCTURE)						
CONST. NOTE	DBH (IN)	LENGTH (FT)	ROOTWAD ATTACHED?	MIN. PERCENT OF LOG BURIED	MIN. END BURIAL DEPTH (FT)	QTY.
1	6 TO 11	30	OPTIONAL	0%	0	3

CONSTRUCTION SEQUENCING:

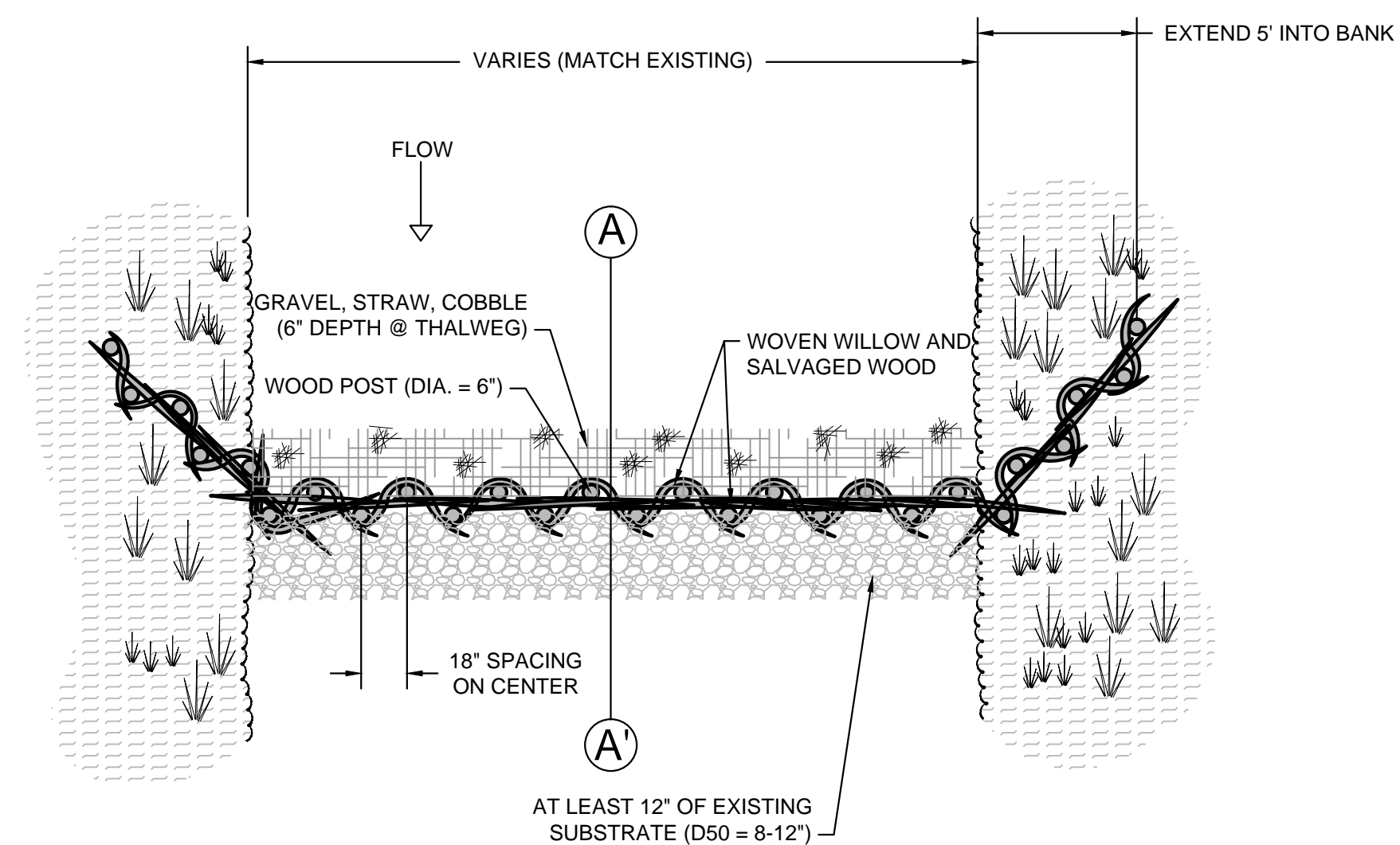
- AFTER CONFIRMING THE LOCATION OF THE STRUCTURE WITH THE ENGINEER, WEDGE 3 OR MORE SALVAGED LOGS WITH LARGER BRANCHES INTACT BETWEEN AN EXISTING GROUP OF MATURE TREES TO SERVE AS BRACING FOR THE OVERALL STRUCTURE. USE LOGS WITH BRANCHES INTACT OR A WYE IN THE TRUNK TO FURTHER HELP PIN LOGS BETWEEN TREES. AIM FOR AT LEAST 3 POINTS OF CONTACT WITH EXISTING TREES TO LIMIT THE ABILITY FOR HIGH FLOW TO MOBILIZE THE WOOD. ROUGHEN UP EXPOSED ENDS OF LOGS USING EXCAVATOR BUCKET TO MAKE THEM LOOK MORE NATURAL.
- DENSELY WEAVE SALVAGED 6-INCH MINUS SLASH DEBRIS WITH BRANCHES INTACT IN ALL VOID SPACES BETWEEN LOGS. PARTIALLY ANCHOR THE SLASH DEBRIS BY PINNING THE ENDS OF THE BRANCHES BETWEEN EXISTING TREES AND BENEATH THE BRACING LOGS INSTALLED IN THE STEP ABOVE. THE FINAL STRUCTURE SHOULD LOOK SIMILAR TO NATURAL WRACKED WOODY MATERIAL, AS SHOWN ON THE IMAGE BELOW.



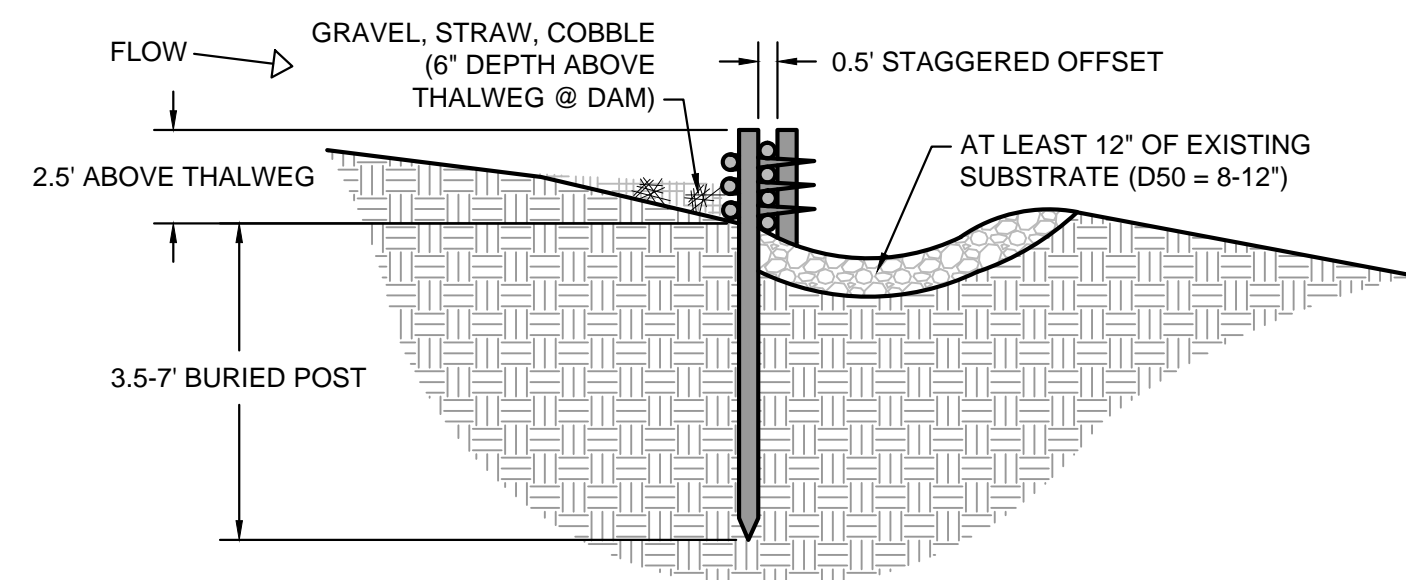
REFERENCE PHOTO OF NATURALLY DEPOSITED FLOOD DEBRIS IN TREES

REFERENCE DRAWINGS 812-TITLEBLOCK-22x34					SHEET KEY
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PREPARED FOR: PREPARED BY: 		SOUTH ST. VRAIN CREEK RESTORATION BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGN LARGE WOOD STRUCTURE DETAILS
DESIGNED BY: MGR DRAWN BY: MGR CHECKED BY: LS	SCALE (22" X 34") HORIZ. NTS VERT. NTS	DATE ISSUED: 02/03/17 SHEET 68 OF 83 DRAWING No. DET 9



BEAVER DAM ANALOGUE PLAN VIEW



REFERENCE DRAWINGS 812-TITLEBLOCK-22x34					
	No.	DATE	DESCRIPTION	BY	
	REVISIONS				
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SHEET KEY 					
PREPARED FOR: 					
PREPARED BY: 			FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 16.812.003		
SOUTH ST. VRAIN CREEK RESTORATION BOULDER COUNTY PARKS AND OPEN SPACE FINAL DESIGNS			CREEK DETAILS		
DESIGNED BY:	SDS	SCALE (22" X 34")	DATE ISSUED:	02/17/17	DRAWING No.
DRAWN BY:	JDI	HORIZ.	N/A		
CHECKED BY:	RDK	VERT.	N/A	SHEET	69 OF 83
					D10

- | | | | | | | | | |
|-------------------|-------------------|------------------------------------|-------|---------|-----------------|-------|----|-----|
| COMBINED SEEDING: | Western Snowberry | <i>Symphoricarpos occidentalis</i> | 40 Cl | 6' O.C. | RIPARIAN/UPLAND | 3.39% | 41 | 697 |
|-------------------|-------------------|------------------------------------|-------|---------|-----------------|-------|----|-----|

MATERIALS LIST NOTES:		*11.40% COVERAGE PER ACRE	TOTAL: 2345
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4. THE PLANT MATERIAL TO BE USED FOR REVEGETATION ON THIS PROJECT ON THE PLANS UNDER BOTH SEEDING (NATIVE) AND SEEDING (RIPARIAN).

- | | | | | | | |
|----|---|-----------------------|---------------------------|-------|---------|-----|
| 1. | WILLOW CUTTINGS SHALL BE PLANTED IN AREAS SHOWN ON PLANS. | Clustered Field Sedge | <i>Carex praegracilis</i> | 10 Cl | 2' O.C. | 154 |
|----|---|-----------------------|---------------------------|-------|---------|-----|

NOTES:	1. ALL WILLOW CUTTINGS, DORMANT LOG CUTTINGS (I.E. POLES) AND TREES AND	Blue Vervain	Verbena hastata	10 Cl	2' O.C.	64
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1. WILLOW CUTTINGS USED IN WILLOW CUTTINGS IN COBBLE TIE AND BOULDER
SHRUBS SHALL BE PLANTED BETWEEN SEPTEMBER 1ST AND NOVEMBER 31ST.

- NOTES:

* RATE GIVEN IS FOR BROADCAST SEED. DRILL SEEDING SHALL BE 1/2 OF GIVEN RATE.

BASED ON 120 SEEDS/SQ. FT.

PLS = PURE LIVE SEED

* RATE GIVEN IS FOR BROADCAST SEED. DRILL SEEDING SHALL BE 1/2 OF GIVEN RATE.

BASED ON 120 SEEDS/SQ. FT.

PLS = PURE LIVE SEED

COMMON NAME	BOTANICALS	SIZE / FORM	SPACING	PERCENT	QTY (PER AC)
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NOTES:

1. WILLOW CUTTINGS SHALL BE PLANTED IN AREAS SHOWN ON PLANS.

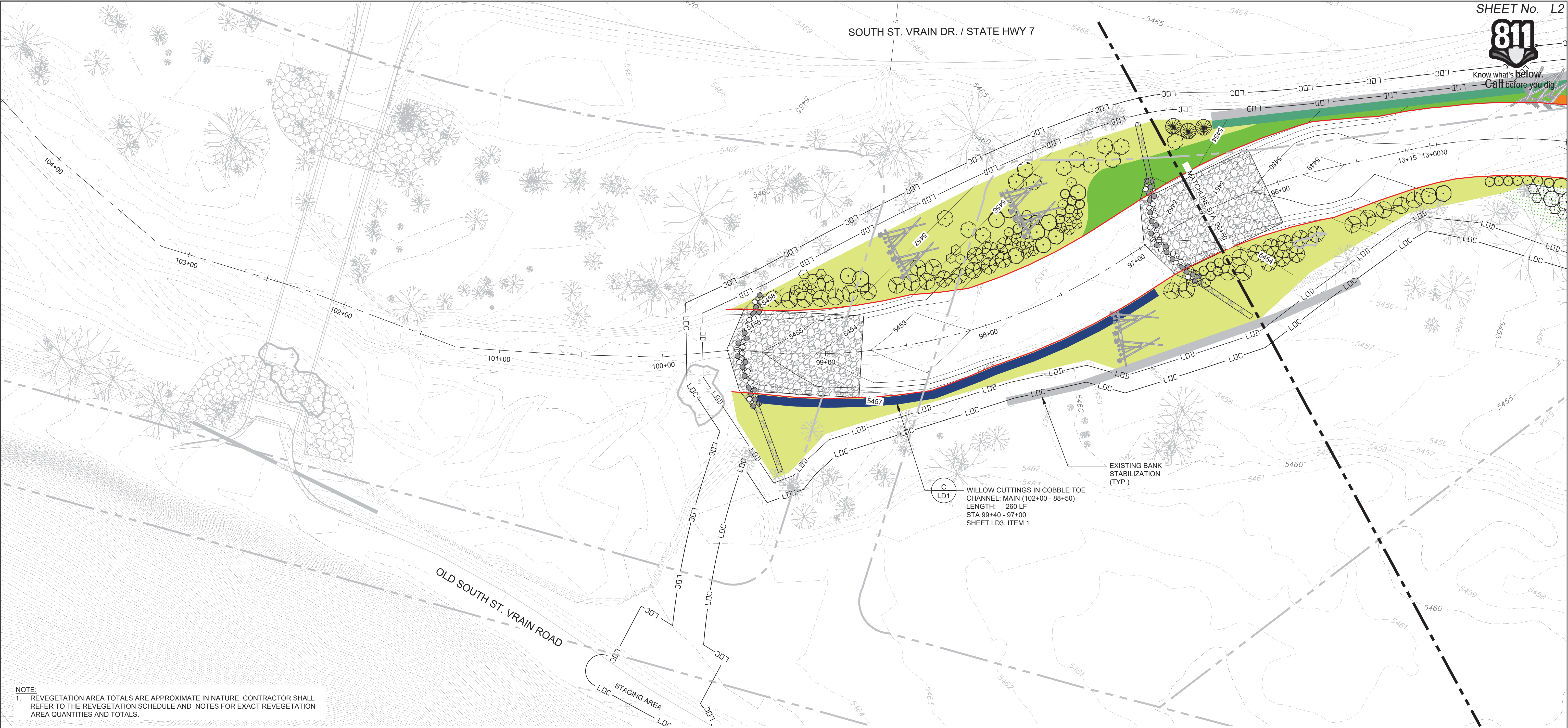
1. ALL WILLOW CUTTINGS, DORMANT LOG CUTTINGS (I.E. POLES) AND TREES AND

NOTES:

1. 40 CI IS A 40 CUBIC INCH CONTAINER PLANT.

- _____

1. ALL PERENNIALS (TUBELINGS) SHALL BE PLANTED AT 2' O.C. IN TRIANGULAR SPACING.



REVEGETATION LEGEND:

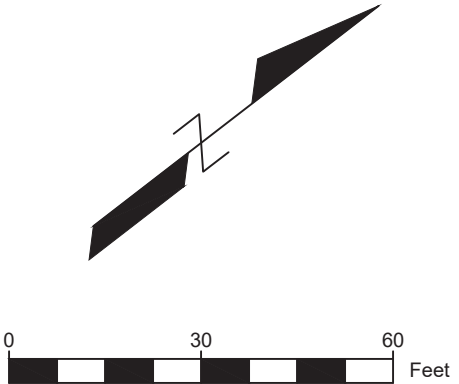
WILLOW CUTTINGS		BANK STABILIZATION	
PERENNIAL (TUBELINGS)		WILLOW CUTTINGS IN EX. RIPRAP	
SEEDING (RIPARIAN)		WILLOW CUTTINGS IN COBBLE TOE	
SEEDING (UPLAND)		FASCINES	
COMBINED SEEDING		BOULDER TOE	
MATURE WILLOWS			

PLANT SCHEDULE: L2

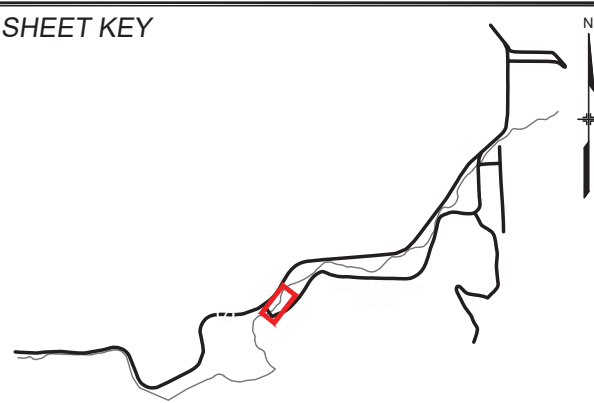
TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Betula occidentalis / Water Birch	40 CI	8
	Populus angustifolia / Narrowleaf Cottonwood	14 INCH/POLE	17
	Populus deltoides / Plains Cottonwood	14 INCH/POLE	12
	Salix amygdalioides / Peachleaf Willow	40 CI	10
EVERGREEN TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Pinus ponderosa / Ponderosa Pine	40 CI	--

SHRUBS	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Alnus incana ssp. tenuifolia / Thinleaf Alder	40 CI	21
	Cornus sericea / Red-Osier Dogwood	40 CI	13
	Prunus americana / American Plum	40 CI	--
	Prunus virginiana / Chokecherry	40 CI	6

APPROX. REVEGETATION AREAS:	AREA (AC.)
WILLOW CUTTINGS	0.13
PERENNIAL (TUBELINGS)	--
SEEDING (RIPARIAN)	--
SEEDING (UPLAND)	0.15
COMBINED SEEDING	0.43
MATURE WILLOWS	--



REFERENCE DRAWINGS				
	No.	DATE	DESCRIPTION	BY
REVISIONS				
COMPUTER FILE MANAGEMENT				
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PLOT DATE: 2/2/2017 2:08 PM				
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.				



ENGINEERING LEGEND	
	RIFFLE STRUCTURE
	LARGE WOOD STRUCTURE
	PARCELS
	LDD LIMITS OF DISTURBANCE
	LDC LIMITS OF CONSTRUCTION
	SILLS
	BANKFULL

PREPARED FOR:

Boulder County
Parks & Open Space

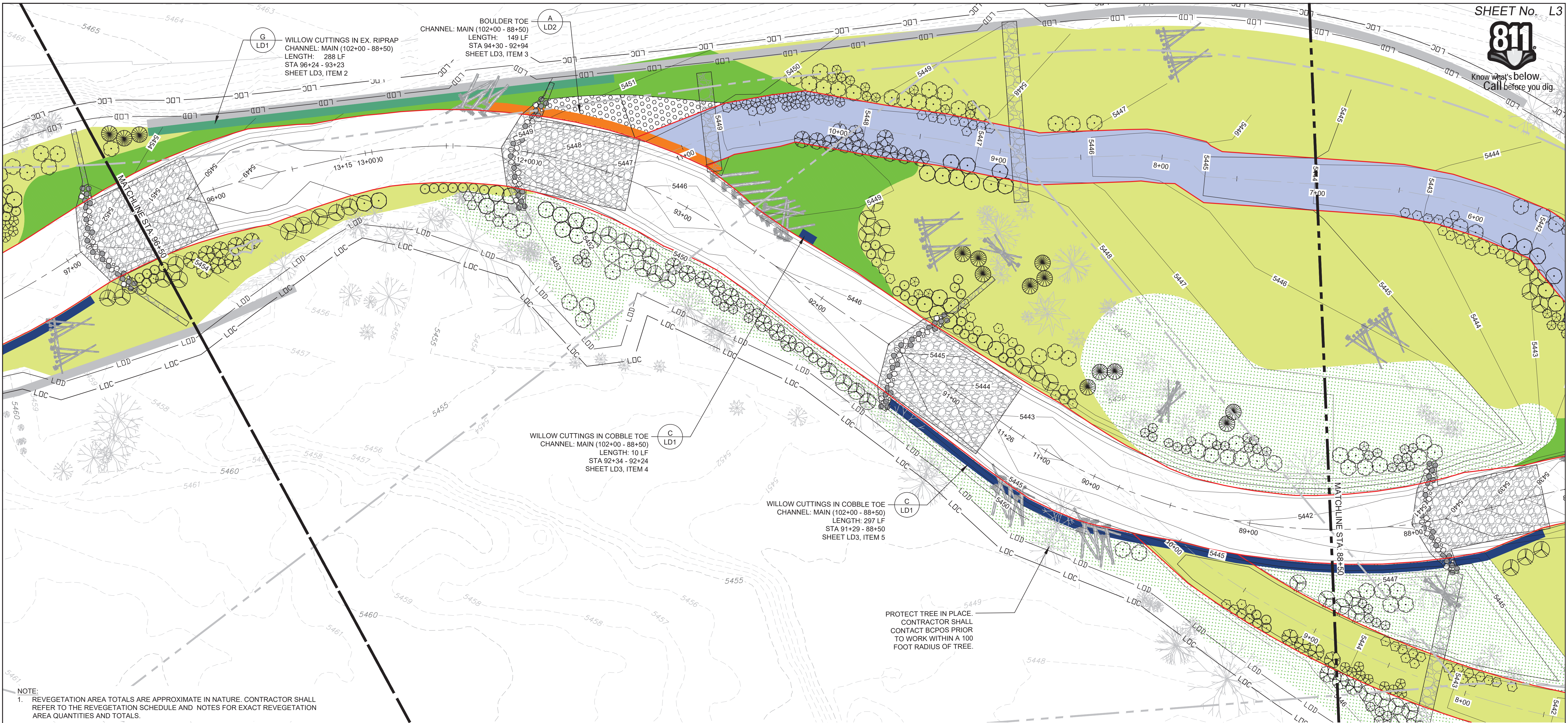
PREPARED BY:

thk associates, inc.

JULIA GAMEC 1124
06/06/2015
Original Date of Licensure
STATE OF COLORADO
LICENSED LANDSCAPE ARCHITECT

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRain CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE 80% DESIGN			
REVEGETATION PLAN STA: 105+00 TO STA: 96+50			
DESIGNED BY:	BP	SCALE	DATE ISSUED:
CHECKED BY:	BP	HORIZ. 1"= 30'	2/03/2017
	BP	VERT. ----	SHEET 71 OF 83
			DRAWING No. L2



REVEGETATION LEGEND:

WILLOW CUTTINGS		BANK STABILIZATION	
PERENNIAL (TUBELINGS)		WILLOW CUTTINGS IN EX. RIPRAP	
SEEDING (RIPARIAN)		WILLOW CUTTINGS IN COBBLE TOE	
SEEDING (UPLAND)		FASCINES	
COMBINED SEEDING		BOULDER TOE	
MATURE WILLOWS			

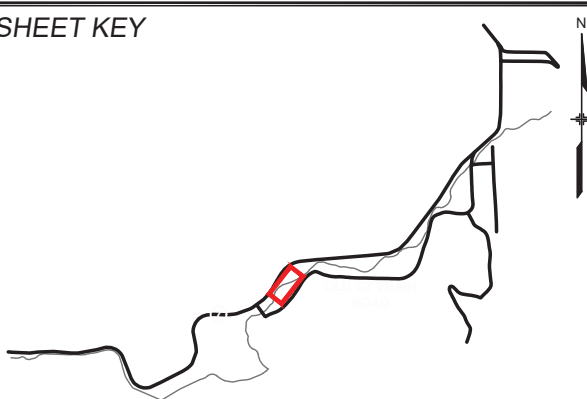
PLANT SCHEDULE: L3

TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Betula occidentalis / Water Birch	40 CI	33
	Populus angustifolia / Narrowleaf Cottonwood	14 INCH/POLE	29
	Populus deltoides / Plains Cottonwood	14 INCH/POLE	40
	Salix amygdalioides / Peachleaf Willow	40 CI	27
EVERGREEN TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Pinus ponderosa / Ponderosa Pine	40 CI	14

SHRUBS	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Alnus incana ssp. tenuifolia / Thinleaf Alder	40 CI	35
	Cornus sericea / Red-Osier Dogwood	40 CI	16
	Prunus americana / American Plum	40 CI	38
	Prunus virginiana / Chokecherry	40 CI	38

APPROX. REVEGETATION AREAS:	AREA (AC.)
WILLOW CUTTINGS	0.25
PERENNIAL (TUBELINGS)	--
SEEDING (RIPARIAN)	0.30
SEEDING (UPLAND)	0.68
COMBINED SEEDING	1.24
MATURE WILLOWS	0.04

REFERENCE DRAWINGS					
	No.	DATE		DESCRIPTION	BY
REVISIONS					
COMPUTER FILE MANAGEMENT					
FILE NAME: L:\7774-000 Matrix-So St. Vrain\00_7774-001 So St Vrain-80% DESIGN\04_CAD\4.1_Sheets\L-Revegetation Plans-80%.dwg					
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PLOT DATE: 2/2/2017 2:09 PM					
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.					



ENGINEERING LEGEND

	RIFFLE STRUCTURE		SILLS
	LARGE WOOD STRUCTURE		BANKFULL
	PARCELS		
	LDD - LIMITS OF DISTURBANCE		
	LDC - LIMITS OF CONSTRUCTION		

PREPARED FOR:



PREPARED BY:



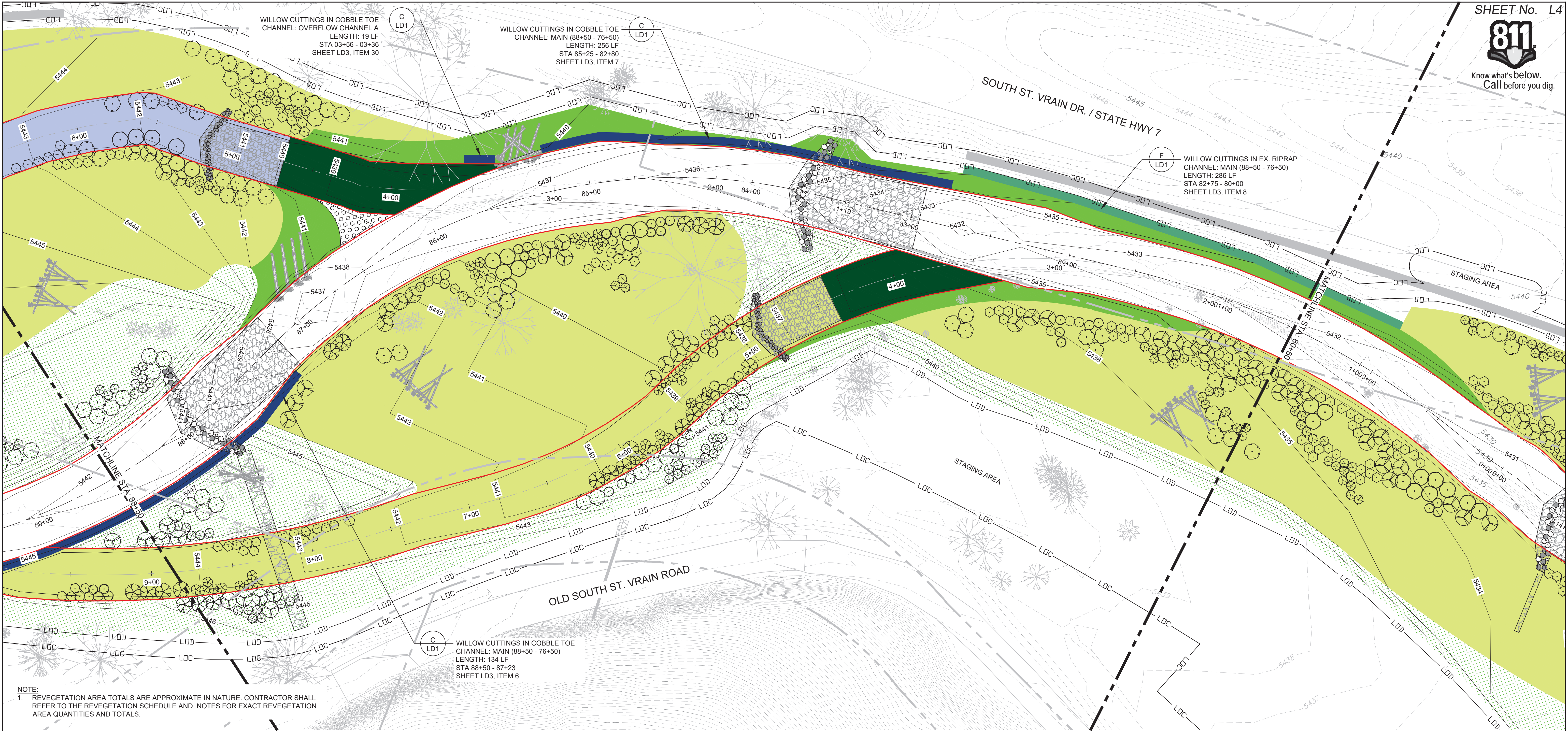
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

BOULDER COUNTY PARKS AND OPEN SPACE
80% DESIGN

REVEGETATION PLAN
STA: 96+50 TO STA: 88+50

DESIGNED BY:	BP	SCALE	DATE ISSUED:	2/3/2017	DRAWING No.
CHECKED BY:	JG	HORIZ. 1"= 30'	SHEET	72 OF 83	L3



NOTE:
1. REVEGETATION AREA TOTALS ARE APPROXIMATE IN NATURE. CONTRACTOR SHALL REFER TO THE REVEGETATION SCHEDULE AND NOTES FOR EXACT REVEGETATION AREA QUANTITIES AND TOTALS.

REVEGETATION LEGEND:

WILLOW CUTTINGS		BANK STABILIZATION	
PERENNIAL (TUBELINGS)		WILLOW CUTTINGS IN EX. RIPRAP	
SEEDING (RIPARIAN)		WILLOW CUTTINGS IN COBBLE TOE	
SEEDING (UPLAND)		FASCINES	
COMBINED SEEDING		BOULDER TOE	
MATURE WILLOWS			

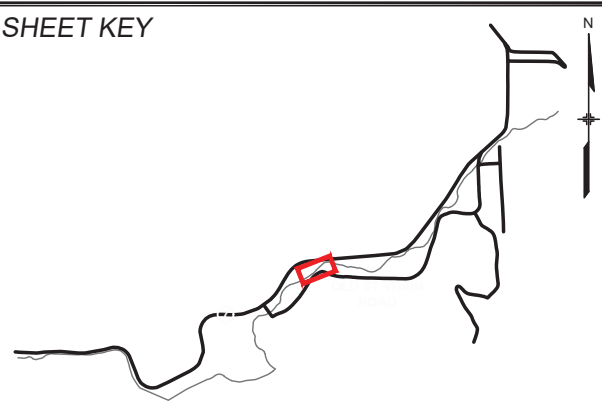
PLANT SCHEDULE: L4

TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Betula occidentalis / Water Birch	40 CI	17
	Populus angustifolia / Narrowleaf Cottonwood	14 INCH/POLE	43
	Populus deltoides / Plains Cottonwood	14 INCH/POLE	68
	Salix amygdalioides / Peachleaf Willow	40 CI	14
EVERGREEN TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Pinus ponderosa / Ponderosa Pine	40 CI	--

SHRUBS	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Alnus incana ssp. tenuifolia / Thinleaf Alder	40 CI	45
	Cornus sericea / Red-Osier Dogwood	40 CI	33
	Prunus americana / American Plum	40 CI	64
	Prunus virginiana / Chokecherry	40 CI	89

APPROX. REVEGETATION AREAS:	AREA (AC.)
WILLOW CUTTINGS	0.27
PERENNIAL (TUBELINGS)	0.08
SEEDING (RIPARIAN)	0.17
SEEDING (UPLAND)	0.72
COMBINED SEEDING	1.86
MATURE WILLOWS	0.01

REFERENCE DRAWINGS					
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REVISIONS					
COMPUTER FILE MANAGEMENT					
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PLOT DATE: 2/2/2017 2:09 PM					
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.					



ENGINEERING LEGEND	
	RIFFLE STRUCTURE
	LARGE WOOD STRUCTURE
	PARCELS
	LIMITS OF DISTURBANCE
	LIMITS OF CONSTRUCTION
	SILLS
	BANKFULL

PREPARED FOR:

PREPARED BY:

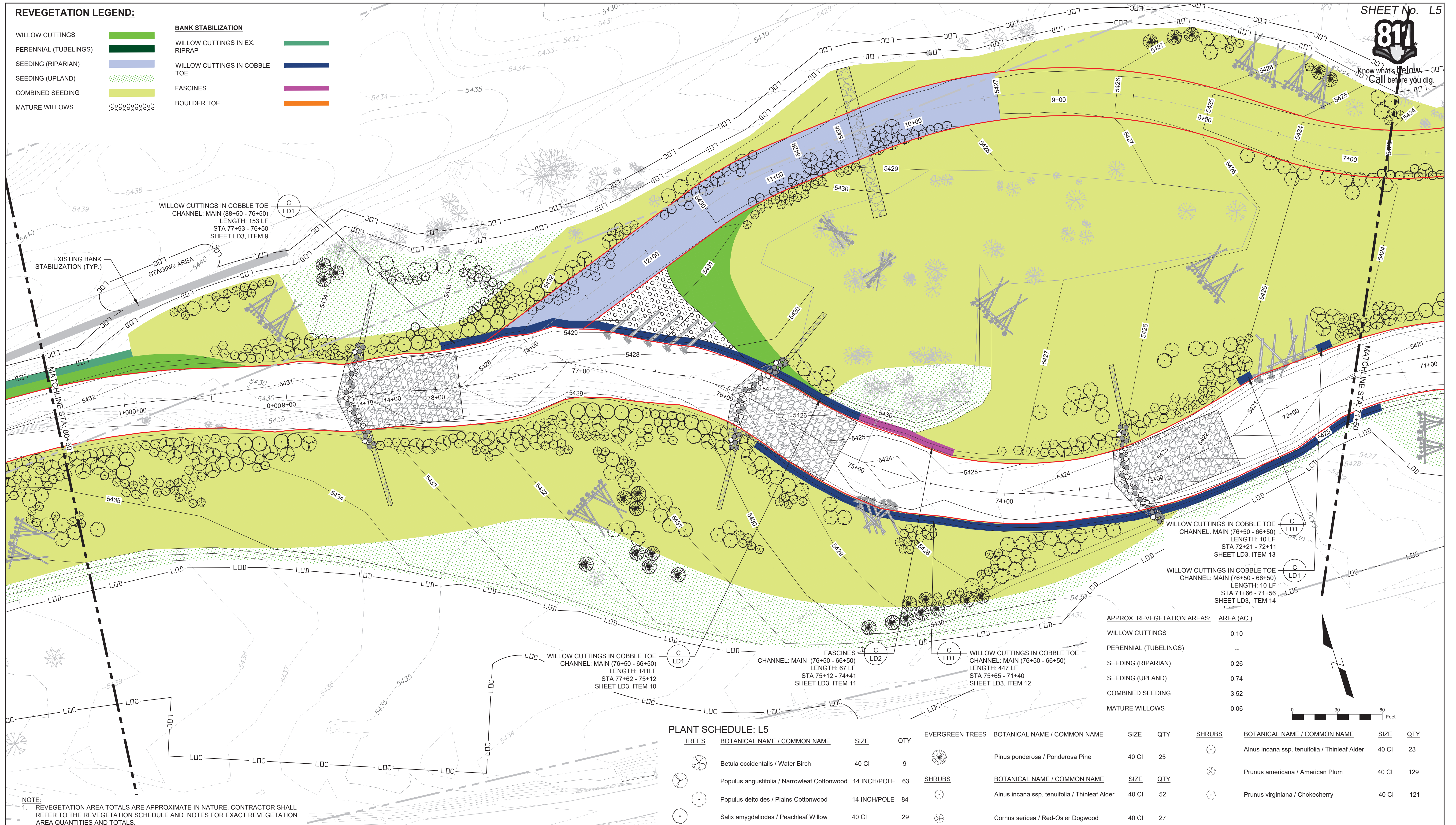
JULIA GAMEG
1124
06/26/2015
Original Date of License
STATE OF COLORADO
LICENSED LANDSCAPE ARCHITECT
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE 80% DESIGN			
REVEGETATION PLAN STA: 88+50 TO STA: 80+50			
DESIGNED BY:	BP	SCALE	DATE ISSUED:
CHECKED BY:	JG	HORIZ. 1"= 30' VERT. ---	2/03/2016
SHEET 73 OF 83			DRAWING No. L4












REVEGETATION LEGEND:

WILLOW CUTTINGS		BANK STABILIZATION	
PERENNIAL (TUBELINGS)		WILLOW CUTTINGS IN EX. RIPRAP	
SEEDING (RIPARIAN)		WILLOW CUTTINGS IN COBBLE TOE	
SEEDING (UPLAND)		FASCINES	
COMBINED SEEDING		BOULDER TOE	
MATURE WILLOWS			

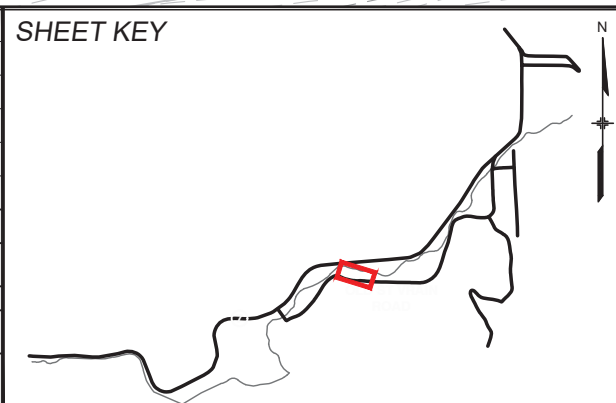
SHEET No. L5



PLANT SCHEDULE: L5

TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY	EVERGREEN TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY	SHRUBS	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	 Betula occidentalis / Water Birch	40 CI	9		Pinus ponderosa / Ponderosa Pine	40 CI	25		Alnus incana ssp. tenuifolia / Thinleaf Alder	40 CI	23
	Populus angustifolia / Narrowleaf Cottonwood	14 INCH/POLE	63	SHRUBS	BOTANICAL NAME / COMMON NAME	SIZE	QTY		Prunus americana / American Plum	40 CI	129
	Populus deltoides / Plains Cottonwood	14 INCH/POLE	84		Alnus incana ssp. tenuifolia / Thinleaf Alder	40 CI	52		Prunus virginiana / Chokecherry	40 CI	121
	Salix amygdalioides / Peachleaf Willow	40 CI	29		Cornus sericea / Red-Osier Dogwood	40 CI	27				

REFERENCE	DATE	DESCRIPTION	BY
DRAWINGS			
No.	DATE	DESCRIPTION	BY
		REVISIONS	
COMPUTER FILE MANAGEMENT			
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CTB FILE: ---			
PLOT DATE: 2/2/2017 2:09 PM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			



ENGINEERING LEGEND

	RIFFLE STRUCTURE		SILLS
	LARGE WOOD STRUCTURE		BANKFULL
	PARCELS		
	LIMITS OF DISTURBANCE		
	LIMITS OF CONSTRUCTION		

PREPARED FOR:



PREPARED BY:

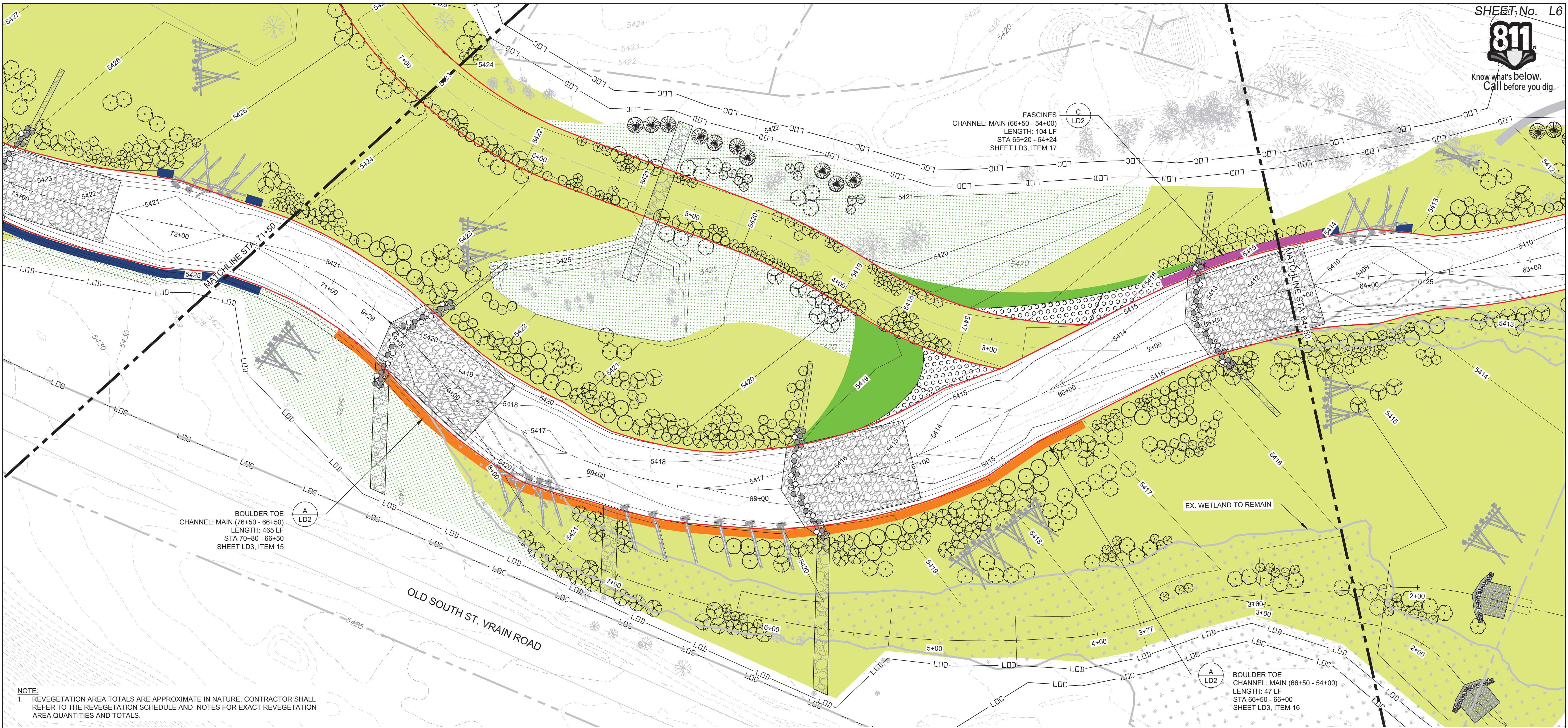


SOUTH ST. VRAIN CREEK RESTORATION

BOULDER COUNTY PARKS AND OPEN SPACE
80% DESIGN

REVEGETATION PLAN
STA: 80+50 TO STA: 71+50

DESIGNED BY:	BP	SCALE	DATE ISSUED:	2/03/2017	DRAWING No.
DRAWN BY:	BP	HORIZ. 1"= 30'	SHEET	74 OF 83	L5
CHECKED BY:	JG	VERT. ---			



REVEGETATION LEGEND:

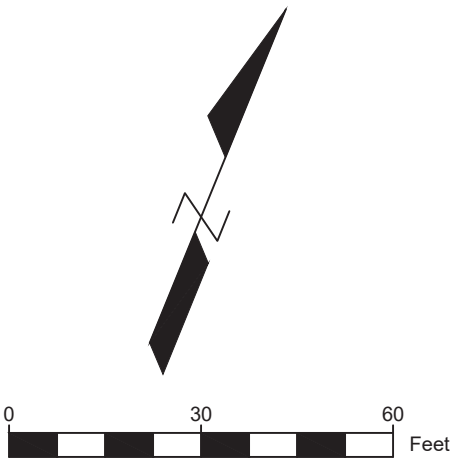
WILLOW CUTTINGS		BANK STABILIZATION	
PERENNIAL (TUBELINGS)		WILLOW CUTTINGS IN EX. RIPRAP	
SEEDING (RIPARIAN)		WILLOW CUTTINGS IN COBBLE TOE	
SEEDING (UPLAND)		FASCINES	
COMBINED SEEDING		BOULDER TOE	
MATURE WILLOWS			

PLANT SCHEDULE: L6

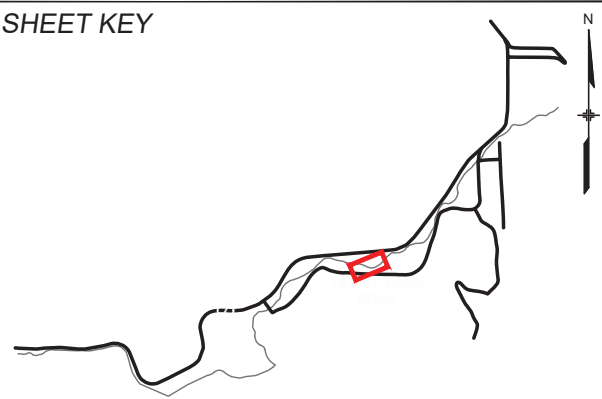
TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Betula occidentalis / Water Birch	40 CI	56
	Populus angustifolia / Narrowleaf Cottonwood	14 INCH/POLE	52
	Populus deltoides / Plains Cottonwood	14 INCH/POLE	62
	Salix amygdalioides / Peachleaf Willow	40 CI	32
EVERGREEN TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Pinus ponderosa / Ponderosa Pine	40 CI	10

SHRUBS	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Alnus incana ssp. tenuifolia / Thinleaf Alder	40 CI	81
	Cornus sericea / Red-Osier Dogwood	40 CI	48
	Prunus americana / American Plum	40 CI	42
	Prunus virginiana / Chokecherry	40 CI	68

APPROX. REVEGETATION AREAS:	AREA (AC.)
WILLOW CUTTINGS	0.09
PERENNIAL (TUBELINGS)	--
SEEDING (RIPARIAN)	--
SEEDING (UPLAND)	0.78
COMBINED SEEDING	2.31
MATURE WILLOWS	0.05



REFERENCE DRAWINGS				
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	REVISIONS			
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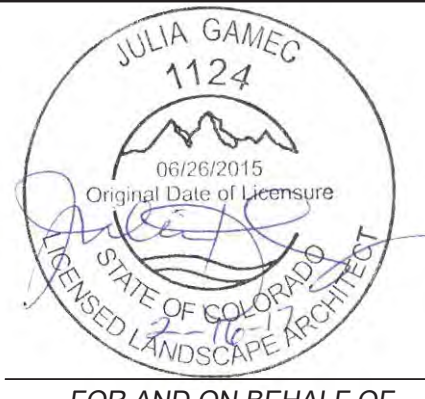
ENGINEERING LEGEND

	RIFFLE STRUCTURE		SILLS
	LARGE WOOD STRUCTURE		BANKFULL
	PARCELS		
	LDD - LIMITS OF DISTURBANCE		
	LDC - LIMITS OF CONSTRUCTION		

PREPARED FOR:



PREPARED BY:



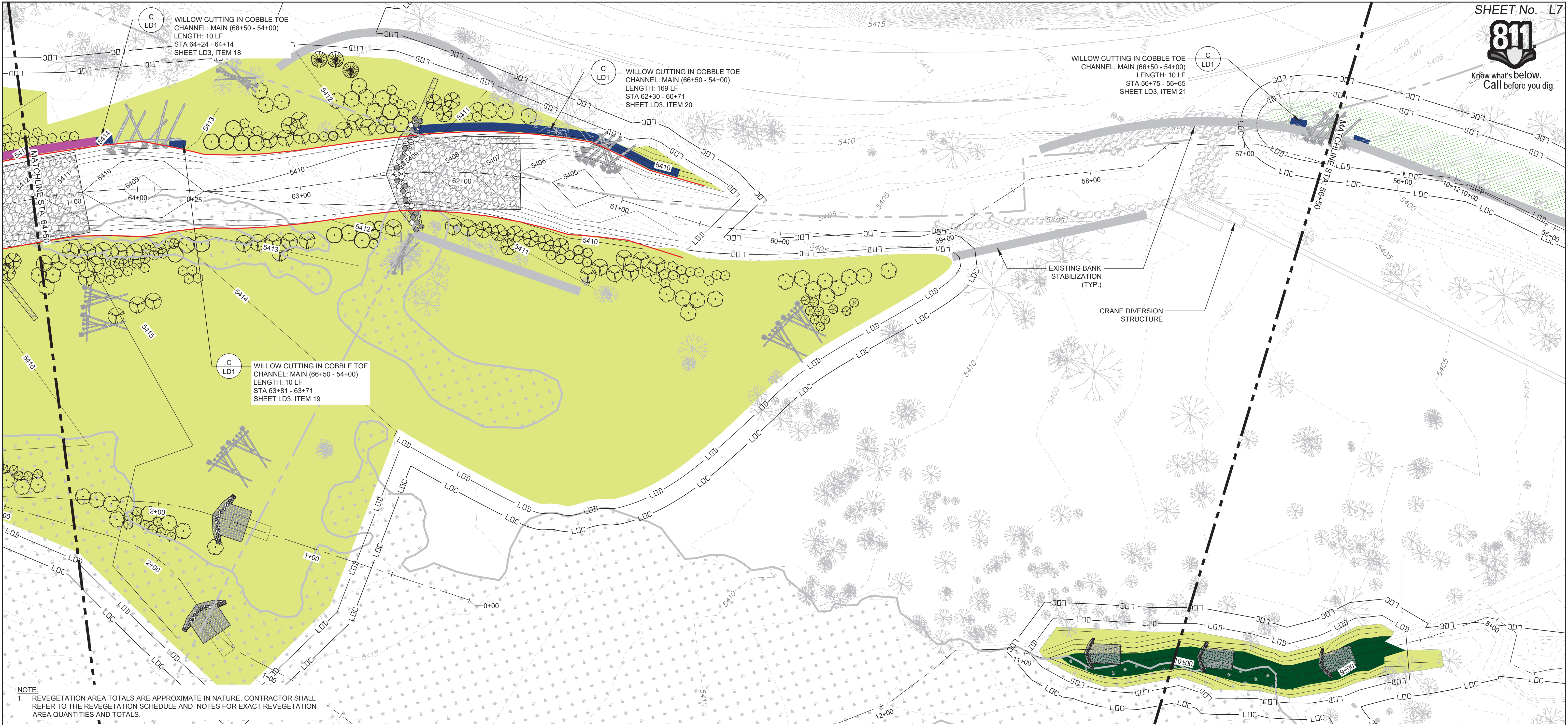
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

BOULDER COUNTY PARKS AND OPEN SPACE
80% DESIGN

REVEGETATION PLAN
STA: 71+50 TO STA: 64+50

DESIGNED BY: BP	SCALE: 1"= 30'	DATE ISSUED: 2/03/2017	DRAWING No. L6
CHECKED BY: JG	HORIZ. 1"= 30'	SHEET 75 OF 83	
	VERT. ----		



NOTE:
1. REVEGETATION AREA TOTALS ARE APPROXIMATE IN NATURE. CONTRACTOR SHALL REFER TO THE REVEGETATION SCHEDULE AND NOTES FOR EXACT REVEGETATION AREA QUANTITIES AND TOTALS.

REVEGETATION LEGEND:

WILLOW CUTTINGS		BANK STABILIZATION	
PERENNIAL (TUBELINGS)		WILLOW CUTTINGS IN EX. RIPRAP	
SEEDING (RIPARIAN)		WILLOW CUTTINGS IN COBBLE TOE	
SEEDING (UPLAND)		FASCINES	
COMBINED SEEDING		BOULDER TOE	
MATURE WILLOWS			

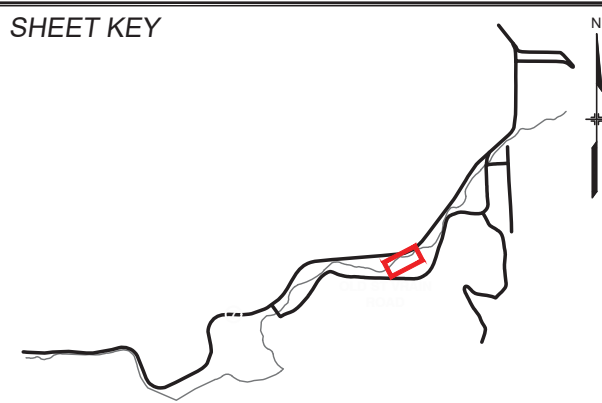
PLANT SCHEDULE: L7

TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Betula occidentalis / Water Birch	40 CI	10
	Populus angustifolia / Narrowleaf Cottonwood	14 INCH/POLE	37
	Populus deltoides / Plains Cottonwood	14 INCH/POLE	37
	Salix amygdalioides / Peachleaf Willow	40 CI	13
EVERGREEN TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Pinus ponderosa / Ponderosa Pine	40 CI	3

SHRUBS	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Alnus incana ssp. tenuifolia / Thinleaf Alder	40 CI	18
	Cornus sericea / Red-Osier Dogwood	40 CI	11
	Prunus americana / American Plum	40 CI	19
	Prunus virginiana / Chokecherry	40 CI	40

APPROX. REVEGETATION AREAS:	AREA (AC.)
WILLOW CUTTINGS	--
PERENNIAL (TUBELINGS)	0.02
SEEDING (RIPARIAN)	--
SEEDING (UPLAND)	0.02
COMBINED SEEDING	2.32
MATURE WILLOWS	--

REFERENCE DRAWINGS					
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	REVISIONS				
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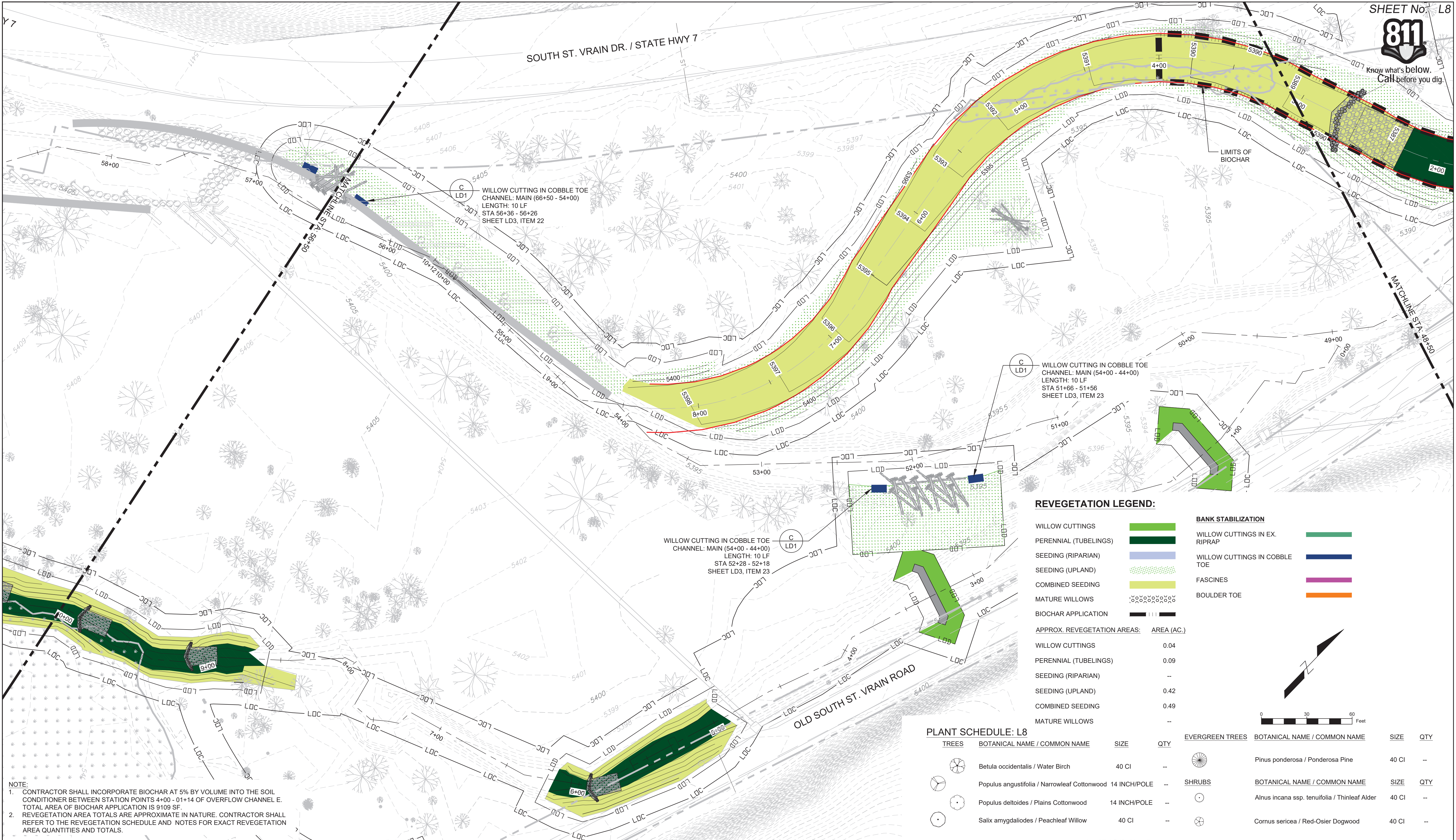
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	LARGE WOOD STRUCTURE
	PARCELS
	LIMITS OF DISTURBANCE
	LIMITS OF CONSTRUCTION
	SILLS
	BANKFULL

PREPARED FOR:

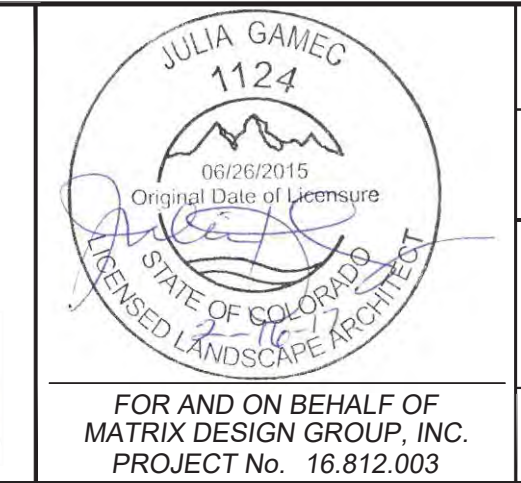
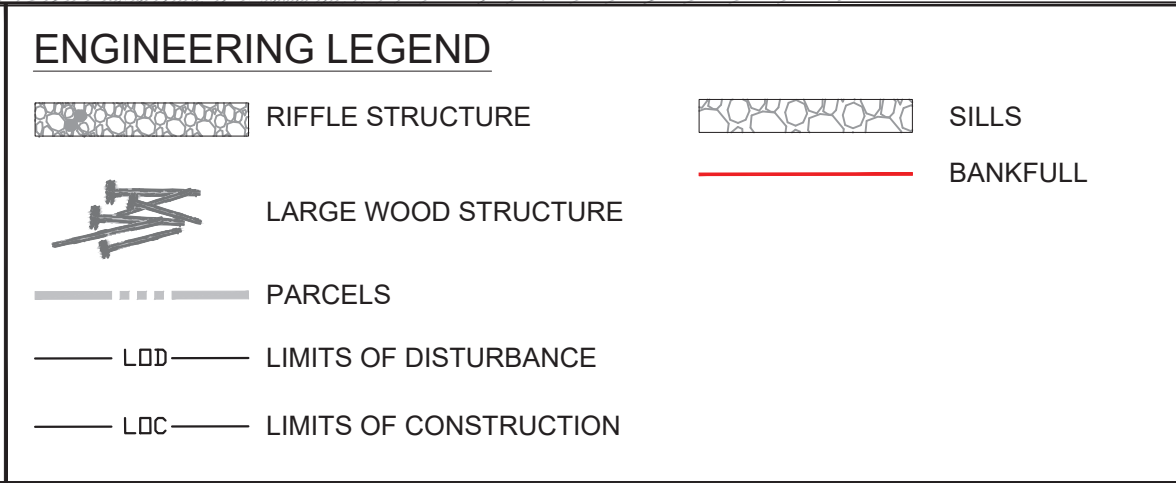
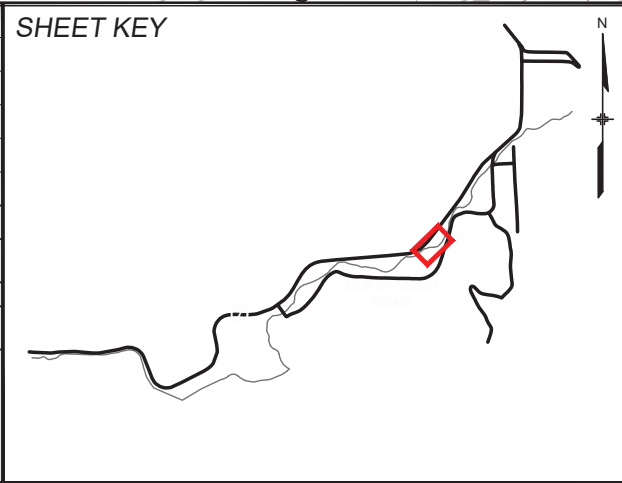
PREPARED BY:

JULIA GAMEG
1124
06/26/2015
Original Date of License
STATE OF COLORADO
REGISTERED LANDSCAPE ARCHITECT
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE 80% DESIGN			
REVEGETATION PLAN STA: 64+50 TO STA: 56+50			
DESIGNED BY:	BP	SCALE	DATE ISSUED:
DRAWN BY:	BP	HORIZ. 1"= 30'	2/03/2017
CHECKED BY:	BP	VERT. ---	SHEET 76 OF 83
			DRAWING No. L7



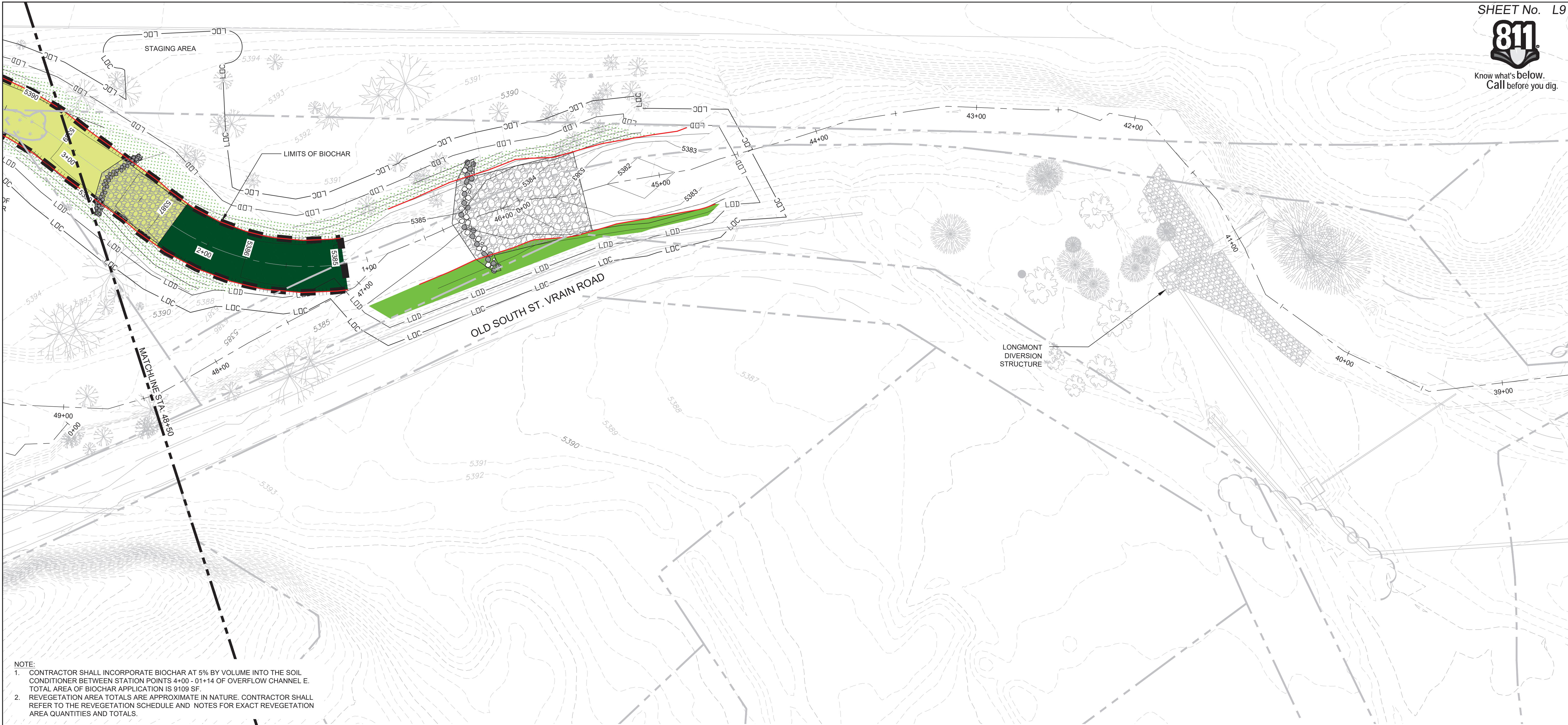
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CTB FILE: ---			
PLOT DATE: 2/2/2017 2:10 PM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			



SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE 80% DESIGN			
REVEGETATION PLAN STA: 56+50 TO STA: 48+50			
DESIGNED BY:	BP	SCALE	DATE ISSUED:
DRAWN BY:	BP	HORIZ. 1"= 30'	2/03/2017
CHECKED BY:	JG	VERT. ---	SHEET 77 OF 83
			DRAWING No. L8



Know what's below.
Call before you dig.



NOTE:
1. CONTRACTOR SHALL INCORPORATE BIOCHAR AT 5% BY VOLUME INTO THE SOIL CONDITIONER BETWEEN STATION POINTS 4+00 - 01+14 OF OVERFLOW CHANNEL E. TOTAL AREA OF BIOCHAR APPLICATION IS 9109 SF.
2. REVEGETATION AREA TOTALS ARE APPROXIMATE IN NATURE. CONTRACTOR SHALL REFER TO THE REVEGETATION SCHEDULE AND NOTES FOR EXACT REVEGETATION AREA QUANTITIES AND TOTALS.

REVEGETATION LEGEND:

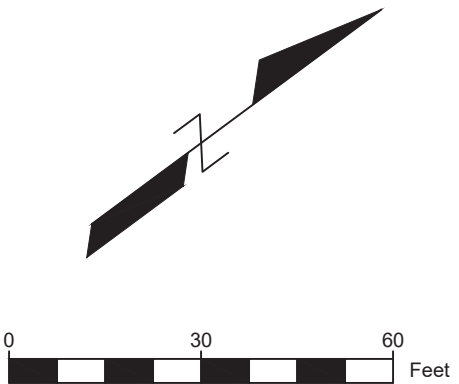
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PERENNIAL (TUBELINGS)		WILLOW CUTTINGS IN EX. RIPRAP	
SEEDING (RIPARIAN)		WILLOW CUTTINGS IN COBBLE TOE	
SEEDING (UPLAND)		FASCINES	
COMBINED SEEDING		BOULDER TOE	
MATURE WILLOWS			
BIOCHAR APPLICATION			

PLANT SCHEDULE: L9

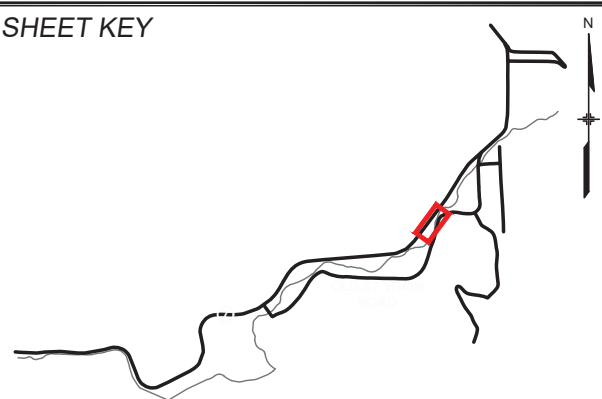
TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Betula occidentalis / Water Birch	40 CI	--
	Populus angustifolia / Narrowleaf Cottonwood	14 INCH/POLE	--
	Populus deltoides / Plains Cottonwood	14 INCH/POLE	--
	Salix amygdalioides / Peachleaf Willow	40 CI	--
EVERGREEN TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Pinus ponderosa / Ponderosa Pine	40 CI	--








SHRUBS	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Alnus incana ssp. tenuifolia / Thinleaf Alder	40 CI	--
	Cornus sericea / Red-Osier Dogwood	40 CI	--
	Prunus americana / American Plum	40 CI	--
	Prunus virginiana / Chokecherry	40 CI	--

APPROX. REVEGETATION AREAS:	AREA (AC.)
WILLOW CUTTINGS	0.05
PERENNIAL (TUBELINGS)	0.08
SEEDING (RIPARIAN)	--
SEEDING (UPLAND)	0.10
COMBINED SEEDING	0.06
MATURE WILLOWS	--



REFERENCE DRAWINGS					
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	REVISIONS				
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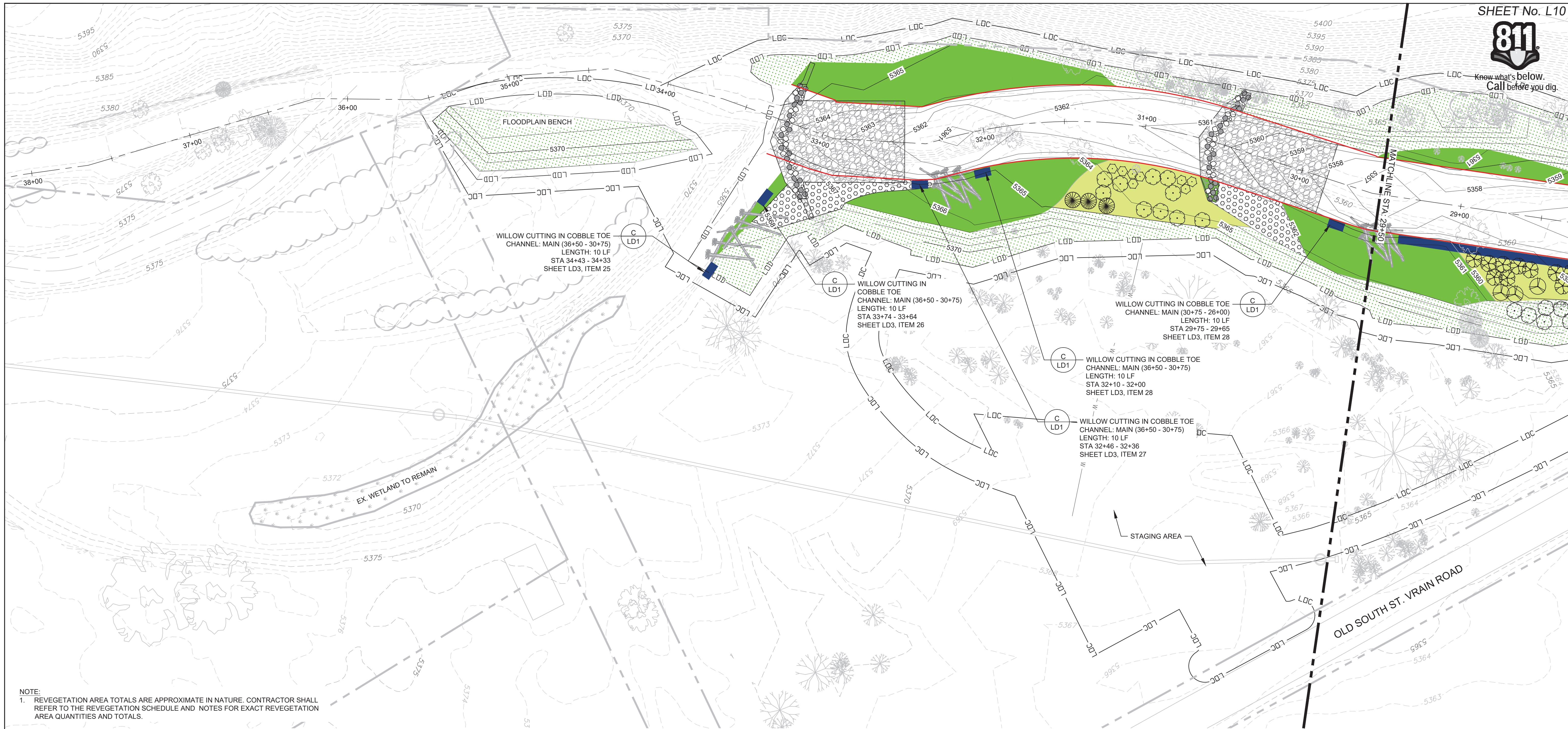
ENGINEERING LEGEND	
	RIFFLE STRUCTURE
	LARGE WOOD STRUCTURE
	PARCELS
	LIMITS OF DISTURBANCE
	LIMITS OF CONSTRUCTION
	SILLS
	BANKFULL

PREPARED FOR:

PREPARED BY:

JULIA GAMEC 1124
06/26/2015
Original Date of License
STATE OF COLORADO
LICENSED LANDSCAPE ARCHITECT
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION			
BOULDER COUNTY PARKS AND OPEN SPACE 80% DESIGN			
REVEGETATION PLAN STA: 48+50 TO STA: 40+50			
DESIGNED BY: BP	SCALE	DATE ISSUED:	2/03/2017
DRAWN BY: BP	HORIZ. 1"= 30'		
CHECKED BY: JG	VERT. ----	SHEET	78 OF 83
			DRAWING No. L9



NOTE:
1. REVEGETATION AREA TOTALS ARE APPROXIMATE IN NATURE. CONTRACTOR SHALL REFER TO THE REVEGETATION SCHEDULE AND NOTES FOR EXACT REVEGETATION AREA QUANTITIES AND TOTALS.

REVEGETATION LEGEND:

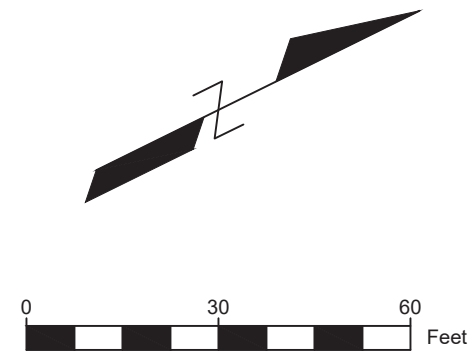
WILLOW CUTTINGS		BANK STABILIZATION	
PERENNIAL (TUBELINGS)		WILLOW CUTTINGS IN EX. RIPRAP	
SEEDING (RIPARIAN)		WILLOW CUTTINGS IN COBBLE TOE	
SEEDING (UPLAND)		FASCINES	
COMBINED SEEDING		BOULDER TOE	
MATURE WILLOWS			

PLANT SCHEDULE: L10

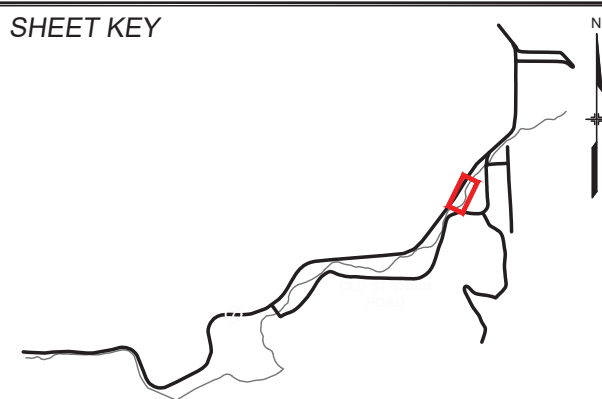
TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Betula occidentalis / Water Birch	40 CI	--
	Populus angustifolia / Narrowleaf Cottonwood	14 INCH/POLE	--
	Populus deltoides / Plains Cottonwood	14 INCH/POLE	10
	Salix amygdalioides / Peachleaf Willow	40 CI	--
EVERGREEN TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Pinus ponderosa / Ponderosa Pine	40 CI	3

SHRUBS	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Alnus incana ssp. tenuifolia / Thinleaf Alder	40 CI	--
	Cornus sericea / Red-Osier Dogwood	40 CI	--
	Prunus americana / American Plum	40 CI	--
	Prunus virginiana / Chokecherry	40 CI	8

APPROX. REVEGETATION AREAS:	AREA (AC.)
WILLOW CUTTINGS	0.23
PERENNIAL (TUBELINGS)	--
SEEDING (RIPARIAN)	--
SEEDING (UPLAND)	0.36
COMBINED SEEDING	0.07
MATURE WILLOWS	0.05



REFERENCE DRAWINGS				
	No.	DATE	DESCRIPTION	BY
REVISIONS				
COMPUTER FILE MANAGEMENT				
FILE NAME: L:\7774-000 Matrix-So St. Vrain\00_7774-001 So St Vrain-80% DESIGN\04_CAD\4.1_Sheets\L-Revegetation Plans-80%.dwg				
CTB FILE: ----				
PLOT DATE: 2/2/2017 2:11 PM				
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.				



ENGINEERING LEGEND

	RIFFLE STRUCTURE		SILLS
	LARGE WOOD STRUCTURE		BANKFULL
	PARCELS		
	LIMITS OF DISTURBANCE		
	LIMITS OF CONSTRUCTION		

PREPARED FOR:



PREPARED BY:



FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

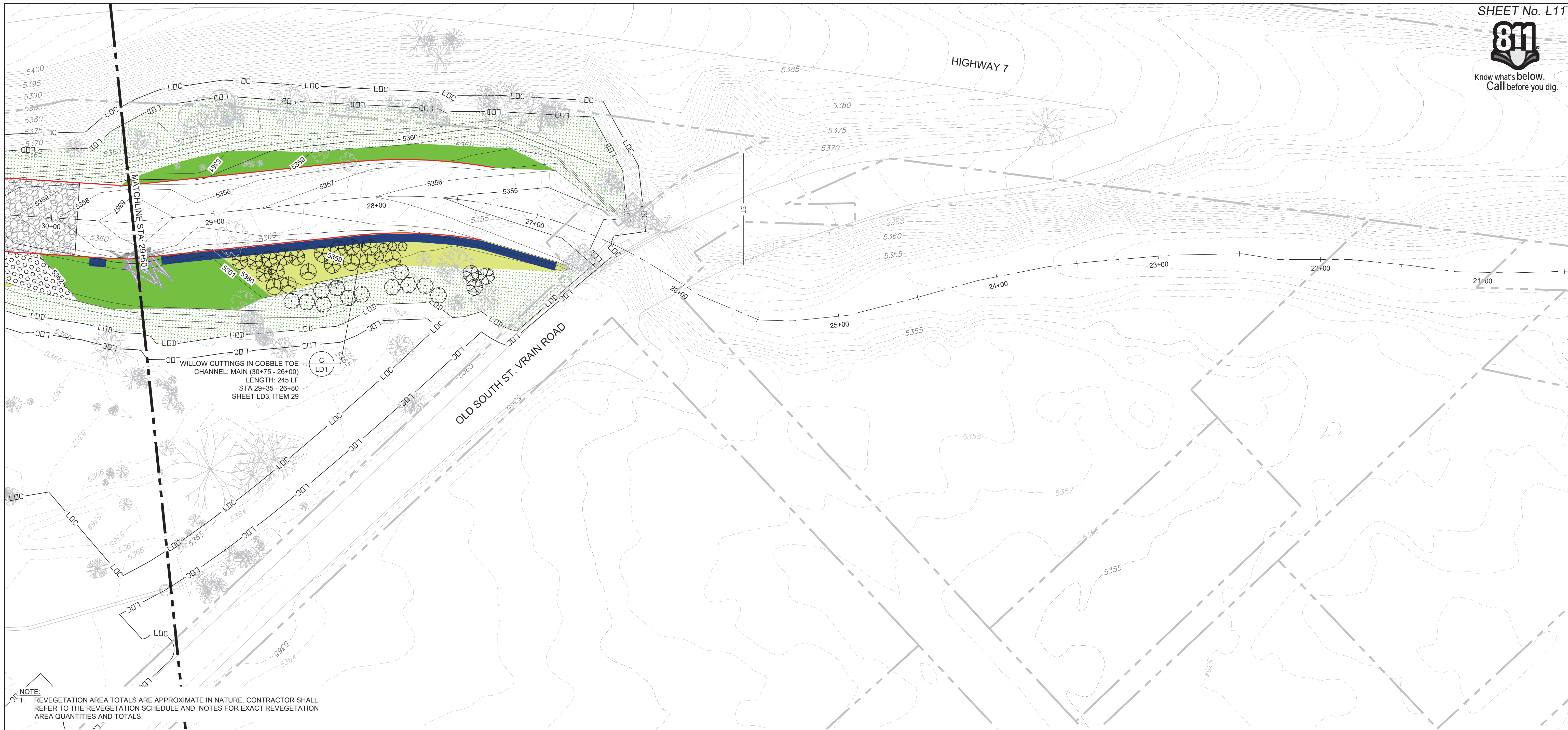
BOULDER COUNTY PARKS AND OPEN SPACE
80% DESIGN

REVEGETATION PLAN
STA: 37+00 TO STA: 29+50

DESIGNED BY:	BP	SCALE	DATE ISSUED:	2/03/2017	DRAWING No.
DRAWN BY:	BP	HORIZ. 1"= 30'	SHEET	79 OF 83	L10
CHECKED BY:	JG	VERT. ---			



Know what's below.
Call before you dig.



NOTE:
1. REVEGETATION AREA TOTALS ARE APPROXIMATE IN NATURE. CONTRACTOR SHALL REFER TO THE REVEGETATION SCHEDULE AND NOTES FOR EXACT REVEGETATION AREA QUANTITIES AND TOTALS.

REVEGETATION LEGEND:

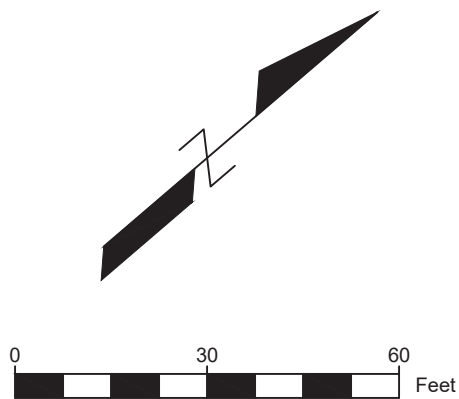
WILLOW CUTTINGS		BANK STABILIZATION	
PERENNIAL (TUBELINGS)		WILLOW CUTTINGS IN EX. RIPRAP	
SEEDING (RIPARIAN)		WILLOW CUTTINGS IN COBBLE TOE	
SEEDING (UPLAND)		FASCINES	
COMBINED SEEDING		BOULDER TOE	
MATURE WILLOWS			
BIOCHAR APPLICATION			

PLANT SCHEDULE: L11

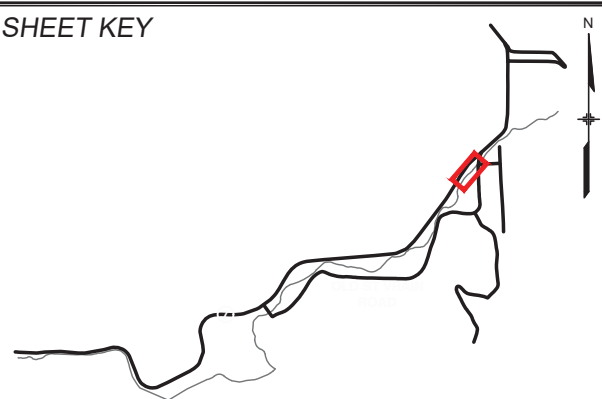
TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Betula occidentalis / Water Birch	40 CI	15
	Populus angustifolia / Narrowleaf Cottonwood	14 INCH/POLE	6
	Populus deltoides / Plains Cottonwood	14 INCH/POLE	12
	Salix amygdalioides / Peachleaf Willow	40 CI	--
EVERGREEN TREES	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Pinus ponderosa / Ponderosa Pine	40 CI	--

SHRUBS	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	Alnus incana ssp. tenuifolia / Thinleaf Alder	40 CI	--
	Cornus sericea / Red-Osier Dogwood	40 CI	--
	Prunus americana / American Plum	40 CI	4
	Prunus virginiana / Chokecherry	40 CI	--

APPROX. REVEGETATION AREAS:	AREA (AC.)
WILLOW CUTTINGS	0.11
PERENNIAL (TUBELINGS)	--
SEEDING (RIPARIAN)	--
SEEDING (UPLAND)	0.36
COMBINED SEEDING	0.10
MATURE WILLOWS	--



REFERENCE DRAWINGS					
	No.	DATE	DESCRIPTION		BY
REVISIONS					
COMPUTER FILE MANAGEMENT					
FILE NAME: L:\1774-000 Matrix-So St. Vrain\00_7774-001 So St Vrain-80% DESIGN\04_CAD\4.1_Sheets\LD-Revegetation Plans-80%.dwg					
CTB FILE: ----					
PLOT DATE: 2/2/2017 2:11 PM					
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.					



ENGINEERING LEGEND

	RIFFLE STRUCTURE		SILLS
	LARGE WOOD STRUCTURE		BANKFULL
	PARCELS		
	LIMITS OF DISTURBANCE		
	LIMITS OF CONSTRUCTION		

PREPARED FOR:



PREPARED BY:



FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 16.812.003

SOUTH ST. VRAIN CREEK RESTORATION

BOULDER COUNTY PARKS AND OPEN SPACE
80% DESIGN

REVEGETATION PLAN
STA: 29+50 TO STA: 21+00

DESIGNED BY:	BP	SCALE	DATE ISSUED:	02/03/2017	DRAWING No.
DRAWN BY:	BP	HORIZ. 1"= 30'	SHEET	80 OF 83	L11
CHECKED BY:	JG	VERT. ----			


-
- Diagram illustrating the installation of a Willow Log into the ground. The log is shown vertically, with the following specifications and components labeled:
- CUT TOP OF WILLOW CUTTINGS SQUARE**
 - 1 WILLOW CUTTING 3" O.C. TRIANGULAR SPACING BETWEEN CUTTINGS.**
 - SOIL COVER**
 - BACKFILL WITH A THICK MUD / WATER SLURRY TO PREVENT FORMATION OF AIR POCKETS.**
 - TRIM BRANCHES CLOSE**
 - WATER TABLE**
 - MIN. $\frac{3}{4}$ " DIAMETER PLACED IN HOLE**
 - MAKE ANGLED CUT AT BUTT-END, PLANT BUTT-END DOWN**
 - 3'-5'** (Length of the log)
 - 6" MIN.** (Minimum depth of the log in the ground)
 - PLANT 80% OF STAKE LENGTH INTO THE GROUND.**

A

-
- A cross-sectional diagram showing a water table stake installed in the ground. The stake is a long, narrow, tapered object with a 'BLUNT CUT' at the top. It is labeled '6'-12" STAKE' on the left. The top portion of the stake is labeled '20% OF STAKE ABOVE GRADE'. The bottom portion is labeled 'PLANT 80% OF STAKE LENGTH INTO THE GROUND.' The stake is surrounded by 'SOIL COVER' and 'BACKFILL WITH A THICK MUD / WATER SLURRY TO PREVENT FORMATION OF AIR POCKETS.' The backfill is shown as a stippled area. The stake is labeled 'TRIM BRANCHES CLOSE' and 'MIN. 2" DIAMETER'. A dashed line indicates the 'WATER TABLE'. The stake is labeled 'MAKE 45° ANGLED CUT AT BUTT-END, PLANT BUTT-END DOWN'.

B

-
- EXTEND COBBLE 24" MIN.
OUTSIDE OF CHANNEL
- STAKE 1'-3' O.C.
- 24" MIN.
- EX. SUBGRADE TO REMAIN
- BASE FLOW WATER SURFACE ELEVATION
- PLACE ENDS OF
WILLOW STAKES 6" MIN.
INTO THE SEASONALLY
SATURATED ZONE
- DRIVE OR PLANT WILLOW STAKES
THROUGH OPENINGS IN COBBLE
- 12"-18" COBBLE
- 24" MIN. (TYP.)
- NOTES:
1. INTEGRATE STAKE PLANTING TECHNIQUES DURING ROCK PLACEMENT TO ENSURE CONTACT WITH NATIVE GROUND.
 2. PLACE SOIL FILL AROUND CUTTINGS AND "WATER IN" IF NEEDED.
 3. ASSUME 3 STAKES PER 6 LINEAR FOOT OF COBBLE TOE



-
- REJECTED. REMOVING THE WIRE WILL NOT BE AN EXCUSE FOR DAMAGED ROOTBALLS.
- PRUNE ALL DAMAGED OR DEAD WOOD IMMEDIATELY PRIOR TO PLANTING
- 4'-5" SAUCER DEPTH
- SAUCER RIM
- DIG PLANT PIT TWICE AS WIDE AND DEEP AS SHRUB CONTAINER
- LOOSEN SIDES OF PLANT PIT AND ROOTBALL
- COMPACTED BACKFILL MIX
- 2X ROOTBALL DIA. MIN.
- 2'-6" DIA. SAUCER RIM

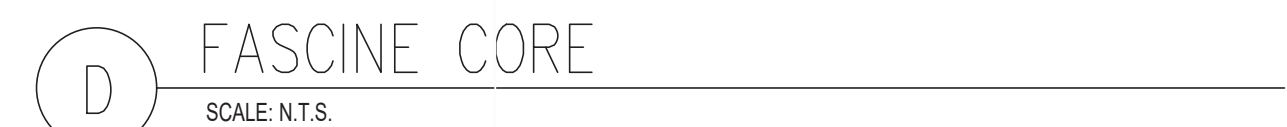
E

-
- NOTE:
1. HARVEST AND PLANT MATURE WILLOWS DURING DORMANT SEASON
 2. MATURE WILLOWS SHALL BE PLANTED IMMEDIATELY AFTER REMOVAL
- 3 TO 4 LIVE BUDS SHALL BE ABOVE GROUND PER INDIVIDUAL WILLOW STAKES
- BACKFILL WITH NATIVE BANK STREAM BED SLURRY
- 12" MIN.
- PLACE TOP OF ROOTBALL BTW 1'-3" ABOVE BASEFLOW ELEVATION.
- PLACE ENDS OF WILLOW ROOTS 6" MIN. INTO SEASONALLY SATURATED SOILS
- EX. SUBGRADE
- BASE FLOW WATER SURFACE ELEV.

-
2. ASSUME ONE BUNDLE (CONTAINING 3 WILLOW CUTTINGS) PER 6 LINEAR FEET OF EX. RIPRAP (SIZES VARY)
- INSTALL WILLOWS IN GROUPS OF 3 STAKES PER BUNDLE
- DRIVE OR PLANT WILLOW STAKES THROUGH OPENINGS IN RIPRAP
- EX. RIPRAP (SIZES VARY)
- BASE FLOW WATER SURFACE ELEVATION
- END OF WILLOW STAKE TO BE PLACED 6" PAST SEASONALLY SATURATED ZONE
- TRANSITION FROM COBBLE TO RIPRAP

©

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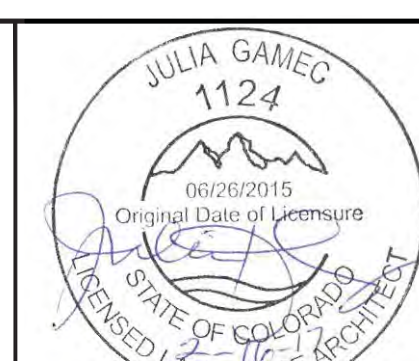


PREPARED FOR:

Boulder County
Parks & Open Space

PREPARED BY:

H&K
ASSOCIATES, INC.



SOUTH ST. VRAIN CREEK RESTORATION

BOULDER COUNTY PARKS AND OPEN SPACE 80% DESIGN

REVEGETATION DETAILS

DESIGNED BY:	BP	SCALE (22" X 34")	DATE ISSUED:	2/03/2017	DRAWING No. LD2
DRAWN BY:	EG	HORIZ. NTS			
CHECKED BY:	JG	VERT. NTS	SHEET	82 OF 83	

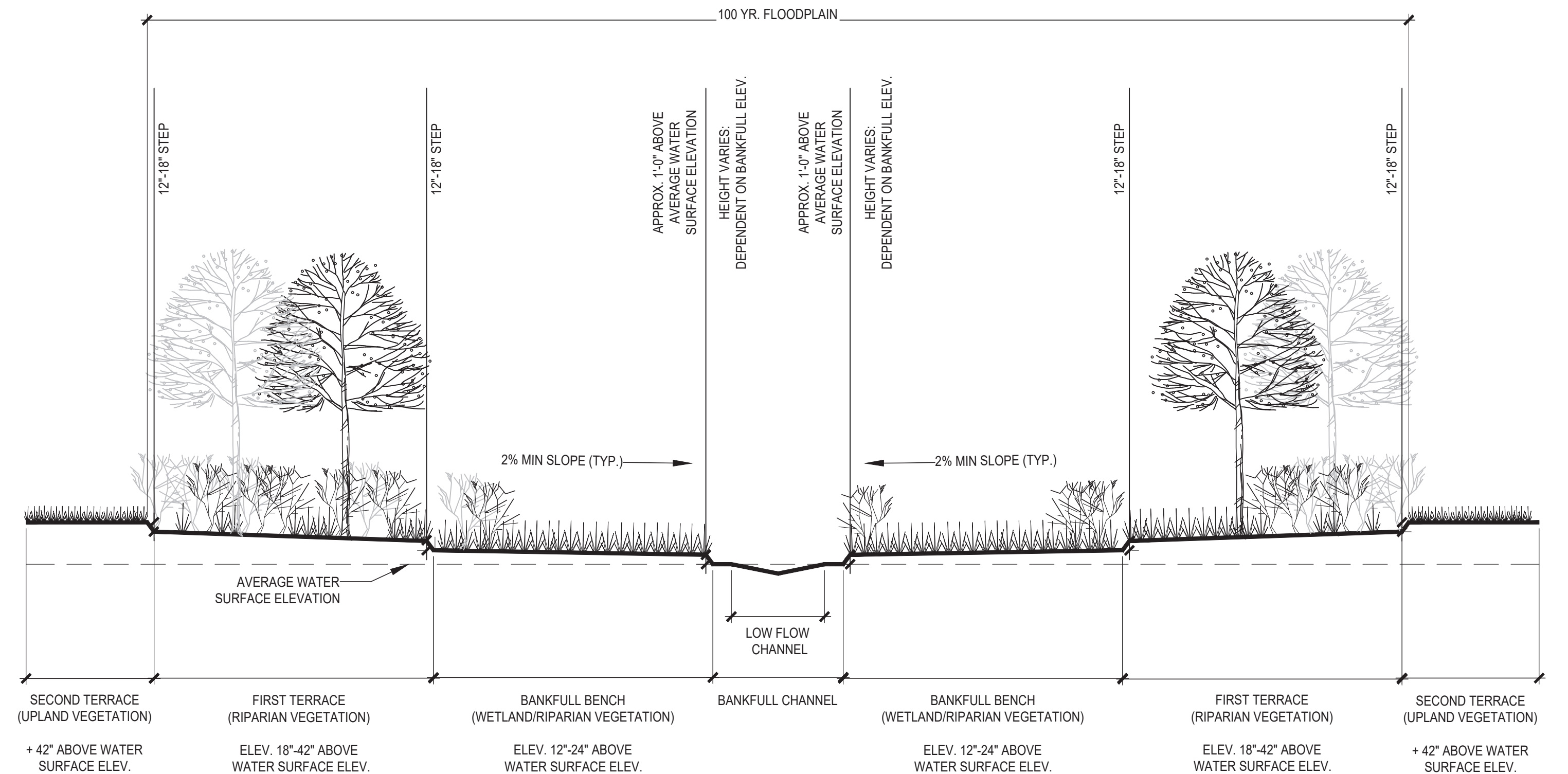
Bank Stabilization: Bioengineering Treatments

Item #	Bioengineering Treatment	Station Location		Left Bank	Right Bank	Total Length (L.F.)	SRH 2D Model Velocity (FT./S)	Initial Permissible Velocity (FT./S)	Established Permissible Velocity (FT./S)
		Station Start	Station End						
Main Channel 102+00 - 88+50									
1	Willow Cuttings in Cobble Toe	99+40	97+00	-	R	260	4 to 10	5 to 10	10+
2	Willow Cuttings in Ex. Riprap	96+24	93+23	L	-	288	4 to 10	5 to 10	12+
3	Boulder Toe	94+30	92+94	L	-	149	10 to 16	14 to 18	18+
4	Willow Cuttings in Cobble Toe	92+34	92+24	L	-	10	4 to 10	5 to 10	10+
5	Willow Cuttings in Cobble Toe	91+29	88+50	-	R	297	4 to 10	5 to 10	10+
Main Channel 88+50 - 76+50									
6	Willow Cuttings in Cobble Toe	88+50	87+23	-	R	134	4 to 10	5 to 10	10+
7	Willow Cuttings in Cobble Toe	82+25	82+80	L	-	256	4 to 10	5 to 10	12+
8	Willow Cuttings in Ex. Riprap	82+75	80+80	L	-	256	4 to 10	5 to 10	12+
9	Willow Cuttings in Cobble Toe	77+93	76+50	L	-	153	4 to 10	5 to 10	10+
Main Channel 76+50 - 66+50									
10	Willow Cuttings in Cobble Toe	77+62	75+12	L	-	141	4 to 10	5 to 10	10+
11	Fascines	75+12	74+41	L	-	67	4 to 10	5 to 8	8 to 10+
12	Willow Cuttings in Cobble Toe	75+65	71+40	-	R	447	4 to 10	5 to 10	10+
13	Willow Cuttings in Cobble Toe	72+21	72+11	L	-	10	4 to 10	5 to 10	10+
14	Willow Cuttings in Cobble Toe	71+66	71+56	L	-	10	4 to 10	5 to 10	10+
15	Boulder Toe	70+80	66+50	-	R	465	10 to 16	14 to 18	18+
Main Channel 66+50 - 54+00									
16	Boulder Toe	66+50	66+00	-	R	47	10 to 16	14 to 18	18+
17	Fascines	65+20	64+64	L	-	104	4 to 10	5 to 8	8 to 10+
18	Willow Cuttings in Cobble Toe	64+24	64+14	L	-	10	4 to 10	5 to 10	10+
19	Willow Cuttings in Cobble Toe	63+81	63+71	L	-	10	4 to 10	5 to 10	10+
20	Willow Cuttings in Cobble Toe	62+30	60+71	L	-	169	4 to 10	5 to 10	10+
21	Willow Cuttings in Cobble Toe	56+84	56+74	L	-	10	4 to 10	5 to 10	10+
22	Willow Cuttings in Cobble Toe	56+36	56+26	L	-	10	4 to 10	5 to 10	10+
Main Channel 54+00 - 44+00									
23	Willow Cuttings in Cobble Toe	52+28	52+18	-	R	10	4 to 10	5 to 10	10+
24	Willow Cuttings in Cobble Toe	51+66	51+56	-	R	10	4 to 10	5 to 10	10+
Main Channel 36+50 - 30+75									
25	Willow Cuttings in Cobble Toe	34+43	34+33	-	R	10	4 to 10	5 to 10	10+
26	Willow Cuttings in Cobble Toe	33+74	33+64	-	R	10	4 to 10	5 to 10	10+
27	Willow Cuttings in Cobble Toe	32+46	32+36	-	R	10	4 to 10	5 to 10	10+
28	Willow Cuttings in Cobble Toe	32+10	32+00	-	R	10	4 to 10	5 to 10	10+
Main Channel 30+75 - 26+00									
28	Willow Cuttings in Cobble Toe	29+75	29+65	-	R	10	4 to 10	5 to 10	10+
29	Willow Cuttings in Cobble Toe	29+35	26+80	-	R	245	4 to 10	5 to 10	10+
Overflow Channel A									
30	Willow Cuttings in Cobble Toe	03+56	03+36	L	-	19	4 to 10	5 to 10	10+

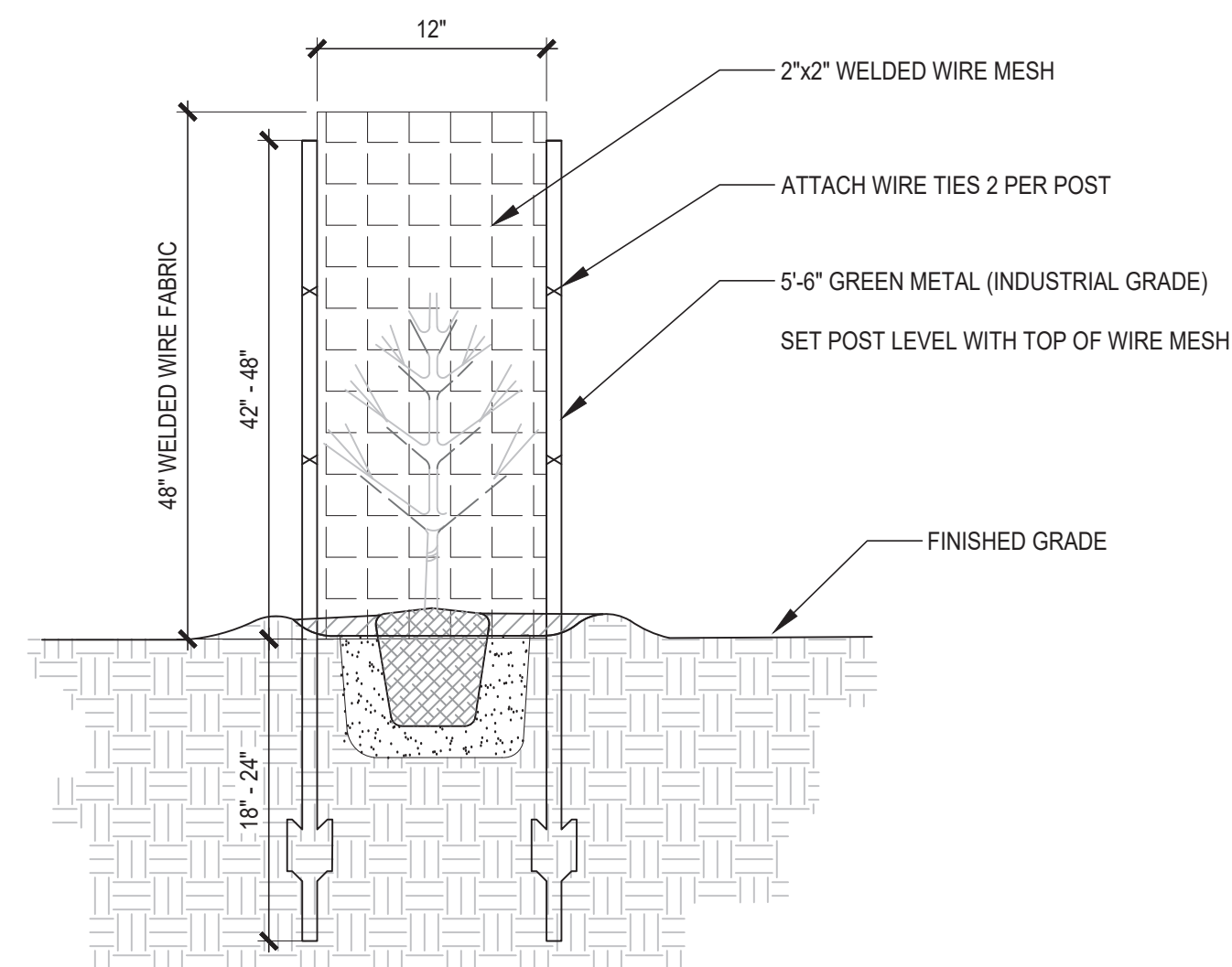
Total Willow Cuttings in Ex. Riprap	544
Total Willow Cuttings in Cobble Toe	2261
Total Boulder Toe	661
Total Fascines	171

Notes:

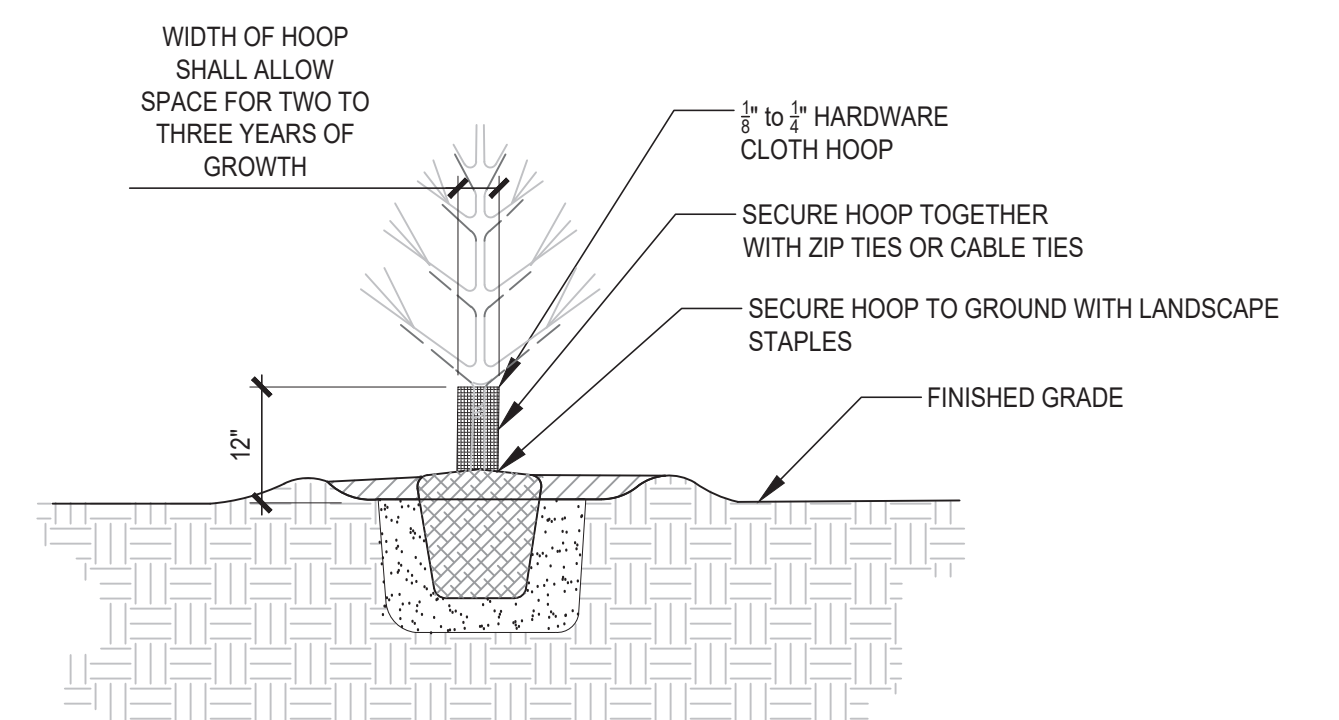
1. All bioengineering treatments and associated permissible velocities were sourced from references in the Manual of Bioengineering Treatments for Colorado Streams.
2. Permissible velocity for Willow Stakes in Cobble Toe was approximated by using the information from Table 4 - Permissible Shear and Velocity for Selected Lining Materials (Fischenich, 2001) and Table 5 - Permissible Shear Stress and Velocity Levels for Streambank Bioengineering Treatments found in the Living Streambanks: A Manual of Bioengineering Treatments for Colorado Streams (Living Streambanks, 2016)



A TYPICAL CREEK ECOSYSTEM SECTION
SCALE: 1/8"=1'-0"



B Beaver Protection Fence
SCALE: N.T.S.



 Vole Protection Fence
SCALE: N.T.S.

[illegible]