BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
JAMES CANYON DRIVE PERMANENT REPAIRS
PROJECT NO. SEPT12C24 (BOULDER CO.)
PROJECT NO. SEPT12C91 (JAMESTOWN)

SCOPE OF WORK

THIS PROJECT CONSISTS OF REPAIRING FLOOD DAMAGED ROADS IN BOULDER COUNTY. PRIOR TO SEPTEMBER 12, 2013 JAMES CANYON DRIVE WAS A PAVED ROADWAY APPROXIMATELY 27' WIDE IN THE BOULDER COUNTY FOOTHILLS WITH JAMES CREEK RUNNING ALONG ONE SIDE. WITH THE RECENT FLOODING EVENT MANY SECTIONS OF THE ROADWAY WERE WASHED AWAY. A 22' WIDE TEMPORARY ROADWAY WAS CONSTRUCTED TO CARRY TRAFFIC. WORK WILL CONSIST OF CONSTRUCTING A PAVED ROADWAY INCLUDING EMBANKMENT, ROCKERY, PERMANENT DRAINAGE STRUCTURES, STRIPING, AND CONSTRUCTION SIGNING. THE PROJECT IS APPROXIMATELY 4.8 MILES IN LENGTH.

INDEX OF SHEETS

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6	GENERAL NOTES
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24 - 27	CBC PLAN AND PROFILE
28	STORM DRAIN PLAN AND PROFILE
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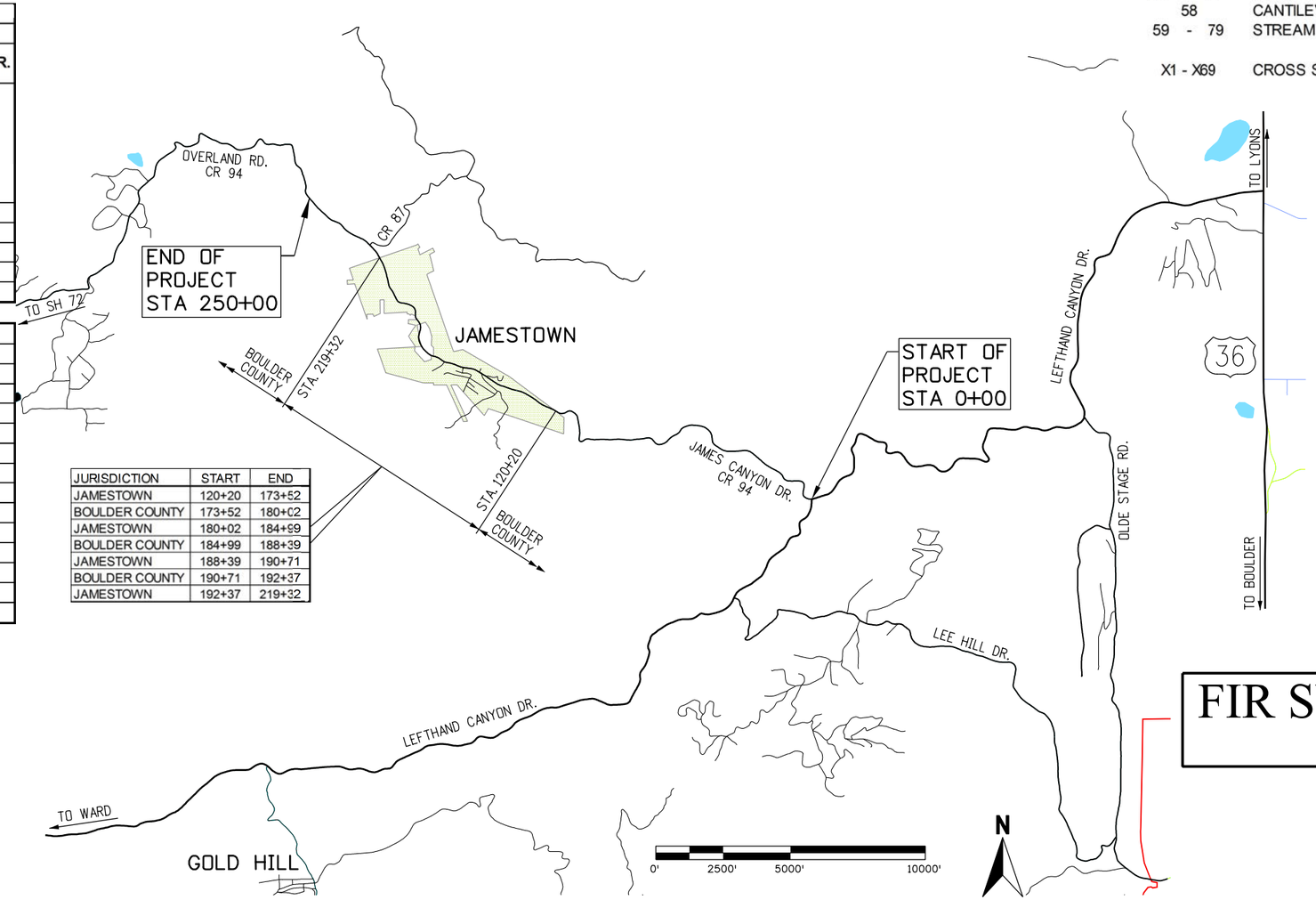
58	CANTILEVER WALL DETAIL
59 - 79	STREAM CROSS SECTIONS
X1 - X69	CROSS SECTIONS

TABULATION OF LENGTH & DESIGN DATA

STATION	LINEAR FEET ROADWAY	LINEAR FEET MAJOR STR.
STA. 0+00.00, JAMES CANYON BEGIN PROJECT STA. 250+00.00 JAMES CANYON END PROJECT	25,000.00	
TOTAL	25,000.00	0.00
SUMMARY OF PROJECT LENGTH	FEET	MILES
ROADWAY	25,000.00	4.73
MAJOR STRUCTURE	0.00	0.00
PROJECT GROSS LENGTH	25,000.00	4.73

DESIGN DATA	
MINIMUM RADIUS OF CURVE	86 FT
MAXIMUM GRADE	8.00%
MINIMUM S.S.D. HORIZONTAL	105 FT
MINIMUM S.S.D. VERTICAL	250 FT
DESIGN SPEED	35 MPH
2011 DESIGN TRAFFIC	960 ADT
DHV TRUCK %	



JURISDICTION	START	END
JAMESTOWN	120+20	173+52
BOULDER COUNTY	173+52	180+02
JAMESTOWN	180+02	184+99
BOULDER COUNTY	184+99	188+39
JAMESTOWN	188+39	190+71
BOULDER COUNTY	190+71	192+37
JAMESTOWN	192+37	219+32

FIR SUBMITTAL
JUNE 24, 2015

APPROVED FOR CONSTRUCTION:

MICHAEL A. THOMAS, P.E. DATE:
COUNTY ENGINEER

F.I.R.

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ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
JTS	JTS	MES	06/24/2015

JAMES CANYON
TITLE SHEET

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 1

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PLAN NUMBER	NEW OR REVISED	M STANDARD TITLE	PAGE NUMBER
M-100-1		STANDARD SYMBOLS (3 SHEETS)	1-3
M-100-2		ACRONYMS AND ABBREVIATIONS (4 SHEETS)	4-7
M-203-1	▭	APPROACH ROADS (REVISED ON JULY 08, 2013)	~~8~~
M-203-2		DITCH TYPES	9
M-203-11		SUPERELEVATION CROWNED AND DIVIDED HIGHWAYS (3 SHEETS)	10-12
M-203-12		SUPERELEVATION STREETS (2 SHEETS)	13-14
M-206-1		EXCAVATION AND BACKFILL FOR STRUCTURES (2 SHEETS)	15-16
M-206-2		EXCAVATION AND BACKFILL FOR BRIDGES (2 SHEETS)	17-18
M-208-1		TEMPORARY EROSION CONTROL (12 SHEETS)	19-30
M-210-1		MAILBOX SUPPORTS (2 SHEETS)	31-32
M-214-1		PLANTING DETAILS	33
M-412-1	▭	CONCRETE PAVEMENT JOINTS (5 SHEETS) (REVISED ON JULY 24, 2012)	~~34-38~~
M-510-1		STRUCTURAL PLATE PIPE H-20 LOADING	39
M-601-1	■	SINGLE CONCRETE BOX CULVERT (2 SHEETS) (REVISED ON AUGUST 27, 2013)	~~40-41~~
M-601-2	■	DOUBLE CONCRETE BOX CULVERT (2 SHEETS) (REVISED ON AUGUST 27, 2013)	~~42-43~~
M-601-3	▭	TRIPLE CONCRETE BOX CULVERT (2 SHEETS) (REVISED ON AUGUST 27, 2013)	~~44-45~~
M-601-10		HEADWALL FOR PIPES	46
M-601-11		TYPE "S" SADDLE HEADWALLS FOR PIPE	47
M-601-12		HEADWALLS AND PIPE OUTLET PAVING	48
M-601-20		WINGWALLS FOR PIPE OR BOX CULVERTS	49
M-603-1	■	METAL PIPE (4 SHEETS). (REVISED ON OCTOBER 02, 2014)	~~50-53~~
M-603-2	■	REINFORCED CONCRETE PIPE. (REVISED ON OCTOBER 02, 2014)	~~54~~
M-603-3		PRECAST CONCRETE BOX CULVERT	55
M-603-4	▭	CORRUGATED POLYETHYLENE PIPE (AASHTO M294) (REVISED ON OCT. 02, 2014).	~~56~~
M-603-5	▭	POLYVINYL CHLORIDE (PVC) PIPE (AASHTO M304). (REVISED ON OCT. 02, 2014).	~~57~~
M-603-6	▭	STEEL REINFORCED POLYETHYLENE RIBBED PIPE (AASHTO MP 20) (NEW ON APRIL 30, 2015)	
M-603-10		CONCRETE AND METAL END SECTIONS (2 SHEETS)	58-59
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M-604-25		VANE GRATE INLET (5 SHEETS)	68-72
M-605-1		SUBSURFACE DRAINS	73
M-606-1	■	GUARDRAIL TYPE 3 W-BEAM (19 SHEETS). (REVISED ON OCT. 27, 2014)	~~74-92~~
M-606-13	▭	GUARDRAIL TYPE 7 F-SHAPE BARRIER (4 SHEETS) (REVISED ON AUGUST 30, 2013)	~~93-96~~
M-606-14		PRECAST TYPE 7 CONCRETE BARRIER (3 SHEETS)	97-99

PLAN NUMBER	NEW OR REVISED	M STANDARD TITLE	PAGE NUMBER
M-607-1		WIRE FENCES AND GATES (3 SHEETS)	100-102
M-607-2		CHAIN LINK FENCE (3 SHEETS)	103-105
M-607-3		BARRIER FENCE	106
M-607-4	▭	DEER FENCE, GATES, AND GAME RAMPS (5 SHEETS) (REVISED ON APRIL 30, 2015)	~~107-109~~
M-607-10		PICKET SNOW FENCE	110
M-607-15		ROAD CLOSURE GATE (9 SHEETS)	111-119
M-608-1	▭	CURB RAMPS (7 SHEETS) (REVISED ON JUNE 16, 2014)	~~120-125~~
M-609-1	▭	CURBS, GUTTERS, AND SIDEWALKS (4 SHEETS) (REVISED ON JULY 24, 2012).	~~126-129~~
M-611-1		CATTLE GUARD (2 SHEETS)	130-131
M-611-2	▭	DEER GUARD (2 SHEETS) (NEW ON APRIL 30, 2015)	
M-613-1		ROADWAY LIGHTING (4 SHEETS)	132-135
M-614-1		RUMBLE STRIPS (3 SHEETS)	136-138
M-614-2		SAND BARREL ARRAYS (2 SHEETS)	139-140
M-615-1		EMBANKMENT PROTECTOR TYPE 3	141
M-615-2		EMBANKMENT PROTECTOR TYPE 5	142
M-616-1		INVERTED SIPHON	143
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S-614-1	■	GROUND SIGN PLACEMENT (2 SHEETS) (REVISED ON DECEMBER 12, 2014).	~~158-159~~
S-614-2		CLASS I SIGNS	160
S-614-3		CLASS II SIGNS	161
S-614-4	▭	CLASS III SIGNS (3 SHEETS) (REVISED ON DECEMBER 17, 2014)	~~162-164~~
S-614-5		BREAK-AWAY SIGN SUPPORT DETAILS FOR GROUND SIGNS (2 SHEETS)	165-166
S-614-6	▭	CONCRETE FOOTINGS AND SIGN ISLANDS FOR CLASS III SIGNS (2 SHEETS) (REVISED ON SEPTEMBER 16, 2013)	~~167-168~~
S-614-8	▭	TUBULAR STEEL SIGN SUPPORT DETAILS (6 SHEETS) (REVISED ON OCTOBER 23, 2014)	~~169-173~~
S-614-9		PEDESTRIAN PUSH BUTTON POST ASSEMBLY	174
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S-614-11		MILEPOST SIGN DETAIL FOR HIGH SNOW AREAS	176
S-614-12		STRUCTURE NUMBER INSTALLATION	177
S-614-14		FLASHING BEACON AND SIGN INSTALLATIONS (3 SHEETS)	178-180
S-614-20		TYPICAL POLE MOUNT SIGN INSTALLATIONS	181
S-614-21		CONCRETE BARRIER SIGN POST INSTALLATIONS	182
S-614-22		TYPICAL MULTI-SIGN INSTALLATIONS	183
S-614-40	▭	TYPICAL TRAFFIC SIGNAL INSTALLATION DETAILS (5 SHEETS) (REVISED ON APRIL 2, 2015)	~~184-188~~
S-614-40A	▭	ALTERNATIVE TRAFFIC SIGNAL INSTALLATION DETAILS (4 SHEETS) (REVISED ON APRIL 2, 2015)	~~189-192~~
S-614-41	▭	TEMPORARY SPAN WIRE SIGNALS (REVISED ON APRIL 2, 2015)	~~193~~
S-614-42		CABINET FOUNDATION DETAIL (4 SHEETS)	194-197
S-614-43		TRAFFIC LOOP AND MISCELLANEOUS SIGNAL DETAILS (10 SHEETS)	198-207
S-614-44	▭	PEDESTAL POLE SIGNALS (2 SHEETS) (REVISED ON NOVEMBER 03, 2014)	
S-614-50	▭	STATIC SIGN MONOTUBE STRUCTURES (12 SHEETS) (REVISED ON NOVEMBER 28, 2012)	~~208-219~~
S-614-60	▭	DYNAMIC SIGN MONOTUBE STRUCTURES (14 SHEETS) (REVISED ON NOVEMBER 28, 2012)	~~220-233~~
S-627-1	■	PAVEMENT MARKINGS (5 SHEETS) (REVISED ON JUNE 10, 2014).	~~234-238~~
S-630-1	■	TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION (20 SHEETS) (REVISED ON DECEMBER 08, 2014)	~~239-258~~
S-630-2		BARRICADES, DRUMS, CONCRETE BARRIERS (TEMP) AND VERTICAL PANELS	259
S-630-3		FLASHING BEACON (PORTABLE) DETAILS	260
S-630-4		STEEL SIGN SUPPORT (TEMPORARY) INSTALLATION DETAILS (2 SHEETS)	261-262
S-630-5	▭	PORTABLE RUMBLE STRIPS (TEMPORARY) (2 SHEETS) (REVISED ON JULY 26, 2013)	~~263-264~~
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S-630-7		ROLLING ROADBLOCKS FOR TRAFFIC CONTROL (3 SHEETS)	266-268

COLORADO
DEPARTMENT OF TRANSPORTATION

M&S STANDARDS PLANS LIST

July 04, 2012

Revised on April 30, 2015

ALL OF THE M&S STANDARD PLANS, AS SUPPLEMENTED AND REVISED, APPLY TO THIS PROJECT WHEN USED BY DESIGNATED PAY ITEM OR SUBSIDIARY ITEM.

NEW OR REVISED STANDARD PLAN SHEETS APPLICABLE TO THIS PROJECT, INDICATED BY A MARKED BOX ■, WILL BE ATTACHED TO THE PLANS.

F.I.R. SUBMITTAL

F.I.R.

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ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
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JAMES CANYON
STANDARD PLANS LIST

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 2

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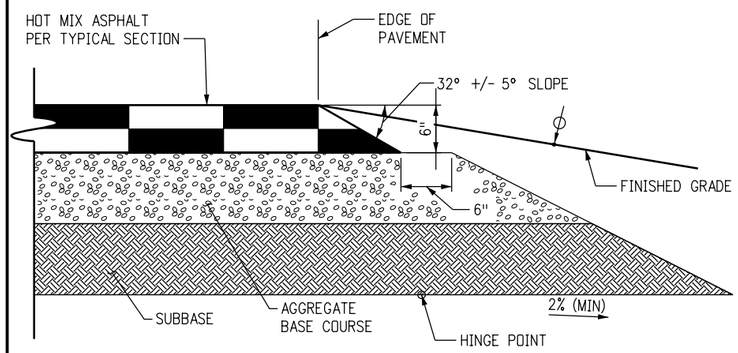
TYPICAL SECTION LEGEND:

P.G.L.	PROFILE GRADE LINE
P.O.S.S.	POINT OF SLOPE SELECTION
H.M.A.	HOT MIX ASPHALT
○	VERTICAL ALIGNMENT CONTROL POINTS
■	SAFETY EDGE WITH A 32° +/- 5° SLOPE AND SHOULDER MATERIAL (SEE SAFETY EDGE DETAILS).
ϕ	MINIMUM 4" TOPSOIL OR SPECIFIED ALTERNATIVE
◿	SEE PLAN AND PROFILE SHEETS FOR SUPERELEVATION RATES



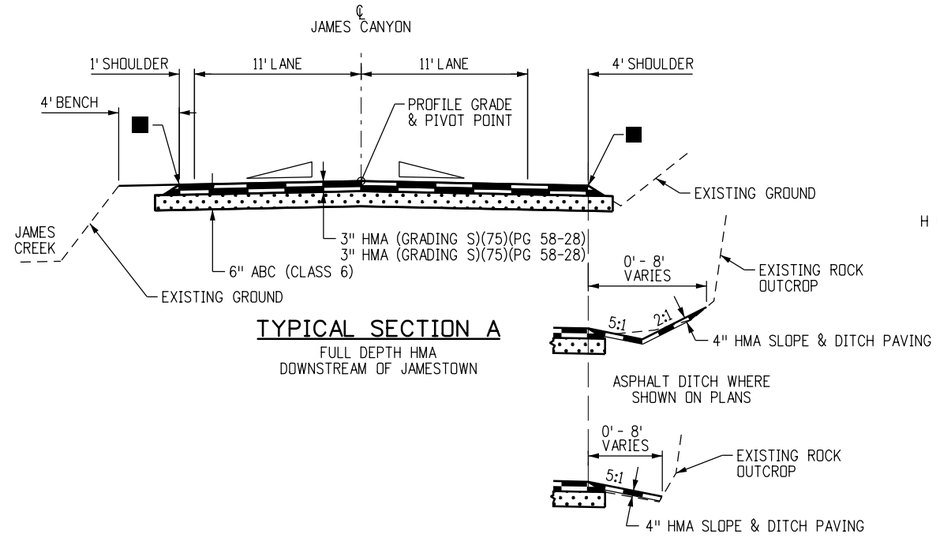
SAFETY EDGE DETAIL

SAFETY EDGE GENERAL NOTES

1. THE SAFETY EDGE WILL BE CONSTRUCTED AS PART OF THE ROADWAY PAVEMENT. A SHOULDER WEDGE DEVICE WILL BE ADDED TO THE SCREED OF THE PAVING MACHINE.
2. THE CONTRACTOR MAY USE A SHOULDER WEDGE MAKER OR A SIMILAR DEVICE THAT PRODUCES THE SAME COMPACTION RESULTS.
3. SHORT SECTIONS OF HANDWORK WILL BE ALLOWED WHEN NECESSARY FOR TRANSITIONS AND TURNOUTS.
4. THE SAFETY EDGE SHALL NOT BE INSTALLED IN FRONT OF GUARDRAIL OR AT INTERSECTIONS.

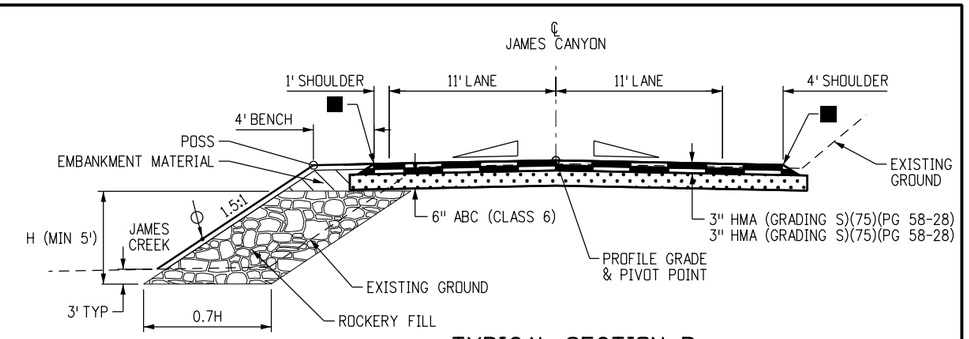
TYPICAL SECTION NOTES:

1. THE DEPTH AND WIDTH OF SIDE DITCHES SHALL BE VARIED WHERE NECESSARY TO PROVIDE PROPER DRAINAGE AT NO COST TO THE PROJECT.
2. THE TYPICAL SECTIONS MAY NOT APPLY NEAR STRUCTURES, SEE CROSS SECTIONS FOR AREAS WHERE TYPICAL SECTIONS DO NOT APPLY.



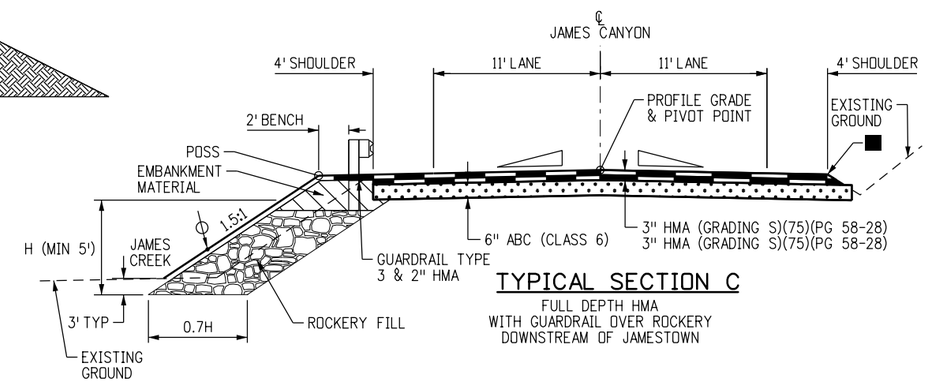
TYPICAL SECTION A

FULL DEPTH HMA
DOWNSTREAM OF JAMESTOWN



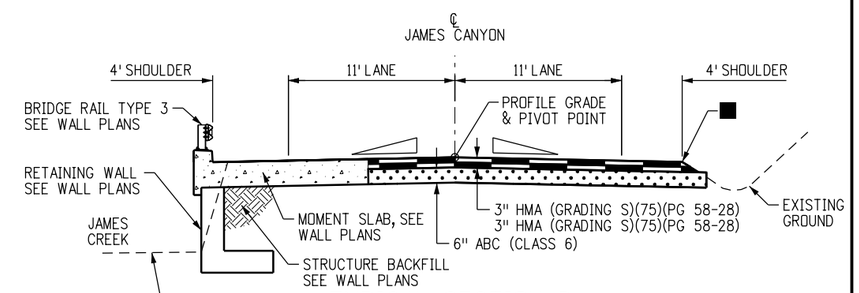
TYPICAL SECTION B

FULL DEPTH HMA
WITH ROCKERY SLOPE
DOWNSTREAM OF JAMESTOWN



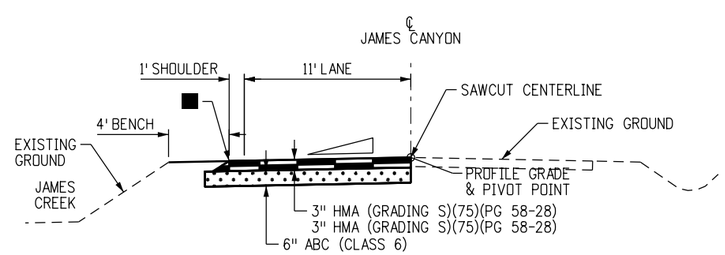
TYPICAL SECTION C

FULL DEPTH HMA
WITH GUARDRAIL OVER ROCKERY
DOWNSTREAM OF JAMESTOWN



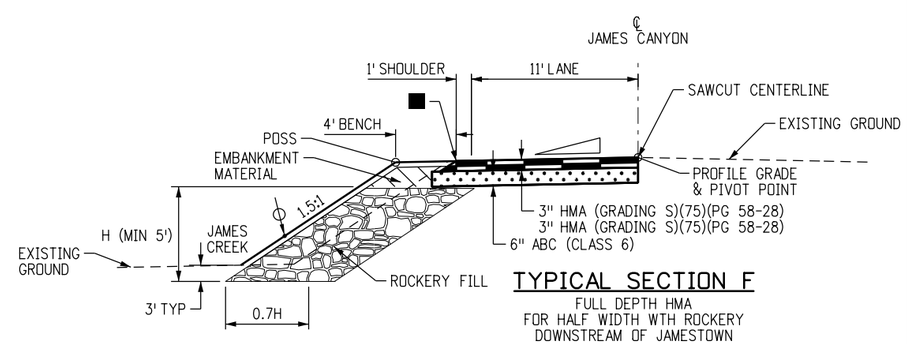
TYPICAL SECTION D

FULL DEPTH HMA
WITH RETAINING WALL
DOWNSTREAM OF JAMESTOWN



TYPICAL SECTION E

FULL DEPTH HMA
FOR HALF WIDTH
DOWNSTREAM OF JAMESTOWN



TYPICAL SECTION F

FULL DEPTH HMA
FOR HALF WIDTH WTH ROCKERY
DOWNSTREAM OF JAMESTOWN

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JAMES CANYON
TYPICAL SECTIONS

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 3

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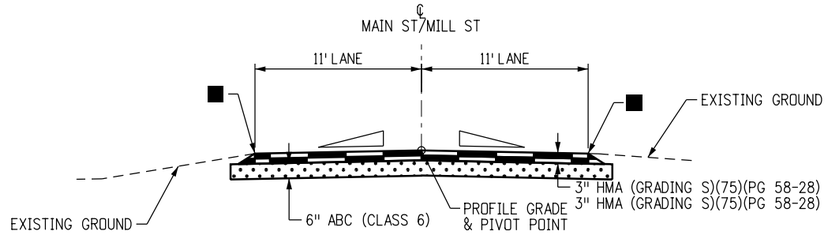
TYPICAL SECTION LEGEND:

P.G.L.	PROFILE GRADE LINE
P.O.S.S.	POINT OF SLOPE SELECTION
H.M.A.	HOT MIX ASPHALT
○	VERTICAL ALIGNMENT CONTROL POINTS
■	SAFETY EDGE WITH A 32° +/- 5° SLOPE AND SHOULDER MATERIAL (SEE SAFETY EDGE DETAILS).
ϕ	MINIMUM 4" TOPSOIL OR SPECIFIED ALTERNATIVE
◿	SEE PLAN AND PROFILE SHEETS FOR SUPERELEVATION RATES

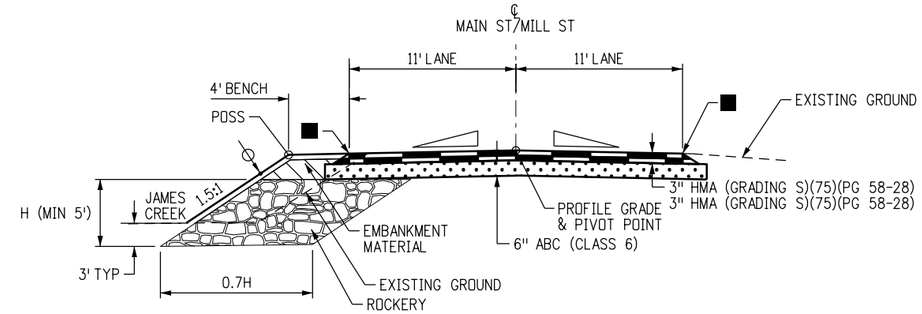
TYPICAL SECTION NOTES:

1. THE DEPTH AND WIDTH OF SIDE DITCHES SHALL BE VARIED WHERE NECESSARY TO PROVIDE PROPER DRAINAGE AT NO COST TO THE PROJECT.

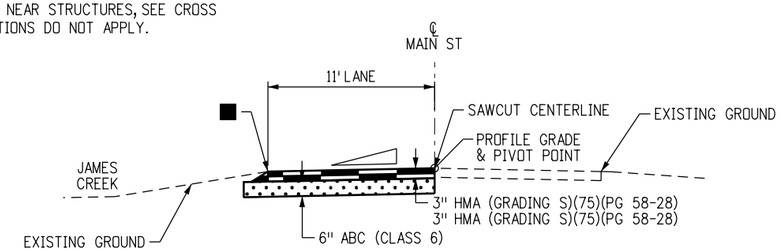
2. THE TYPICAL SECTIONS MAY NOT APPLY NEAR STRUCTURES, SEE CROSS SECTIONS FOR AREAS WHERE TYPICAL SECTIONS DO NOT APPLY.



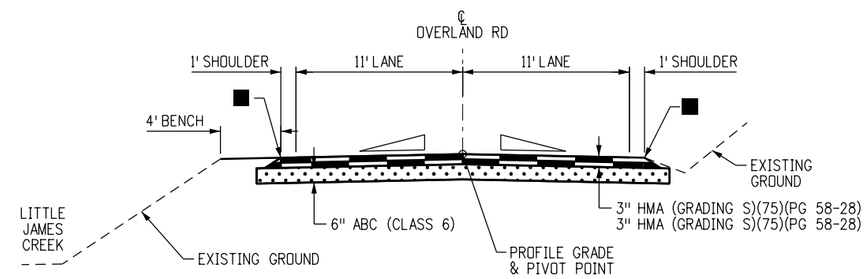
TYPICAL SECTION G
JAMESTOWN



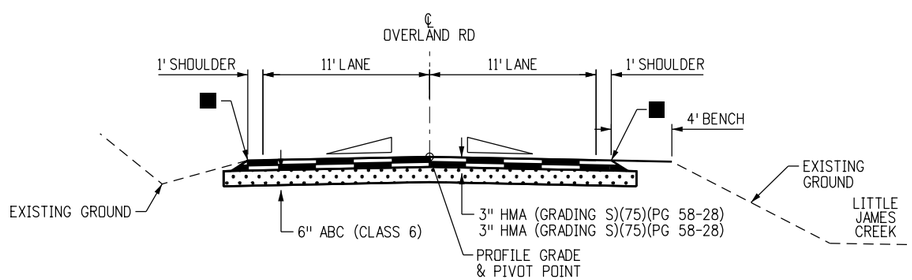
TYPICAL SECTION H
FULL DEPTH HMA
WITH ROCKERY SLOPE
JAMESTOWN



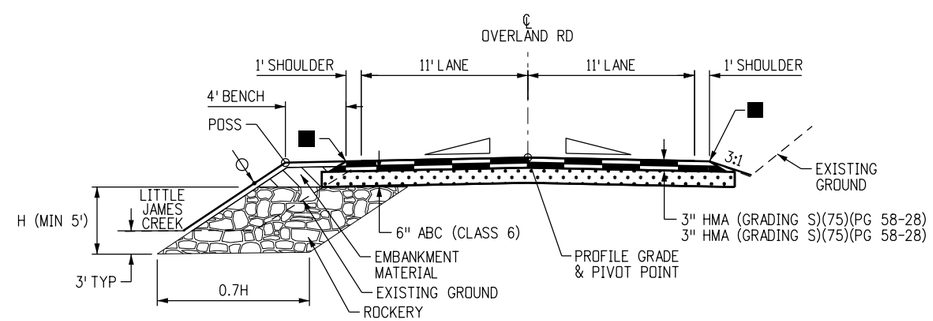
TYPICAL SECTION I
FULL DEPTH HMA
FOR HALF WIDTH
JAMESTOWN



TYPICAL SECTION J
FULL DEPTH HMA WITH LT BENCH
UPSTREAM OF JAMESTOWN



TYPICAL SECTION K
FULL DEPTH HMA WITH RT BENCH
UPSTREAM OF JAMESTOWN



TYPICAL SECTION L
FULL DEPTH HMA
WITH ROCKERY SLOPE
UPSTREAM OF JAMESTOWN

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F.I.R.

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ENGINEERING DIVISION
AECOM

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JAMES CANYON
TYPICAL SECTIONS

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 4

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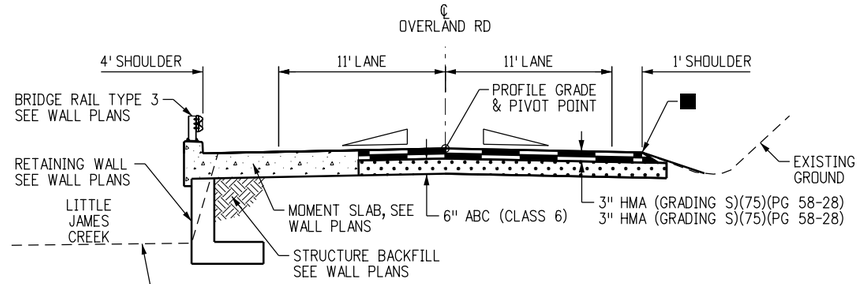
TYPICAL SECTION LEGEND:

P.G.L.	PROFILE GRADE LINE
P.O.S.S.	POINT OF SLOPE SELECTION
H.M.A.	HOT MIX ASPHALT
○	VERTICAL ALIGNMENT CONTROL POINTS
■	SAFETY EDGE WITH A 32° +/- 5° SLOPE AND SHOULDER MATERIAL (SEE SAFETY EDGE DETAILS).
ϕ	MINIMUM 4" TOPSOIL OR SPECIFIED ALTERNATIVE
◿	SEE PLAN AND PROFILE SHEETS FOR SUPERELEVATION RATES

TYPICAL SECTION NOTES:

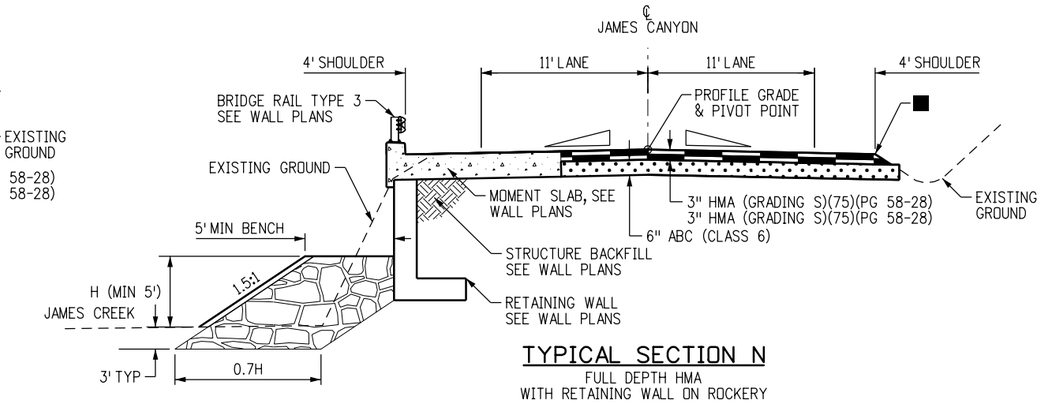
1. THE DEPTH AND WIDTH OF SIDE DITCHES SHALL BE VARIED WHERE NECESSARY TO PROVIDE PROPER DRAINAGE AT NO COST TO THE PROJECT.

2. THE TYPICAL SECTIONS MAY NOT APPLY NEAR STRUCTURES, SEE CROSS SECTIONS FOR AREAS WHERE TYPICAL SECTIONS DO NOT APPLY.



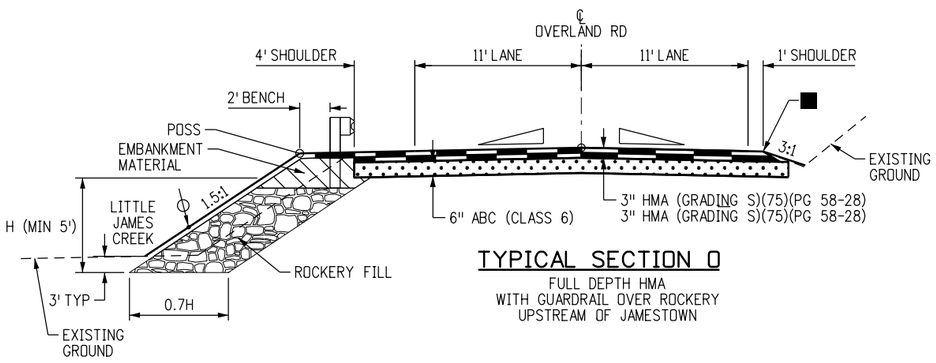
TYPICAL SECTION M

FULL DEPTH HMA
WITH RETAINING WALL
UPSTREAM OF JAMESTOWN



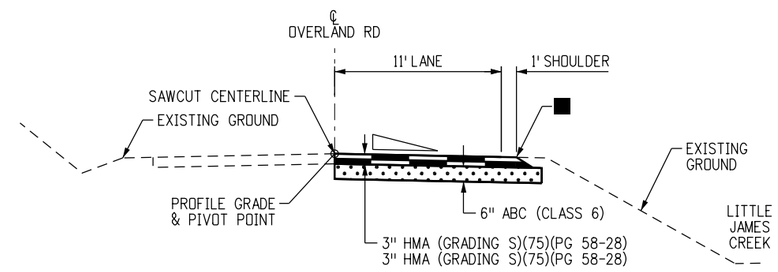
TYPICAL SECTION N

FULL DEPTH HMA
WITH RETAINING WALL ON ROCKERY
DOWNSTREAM OF JAMESTOWN



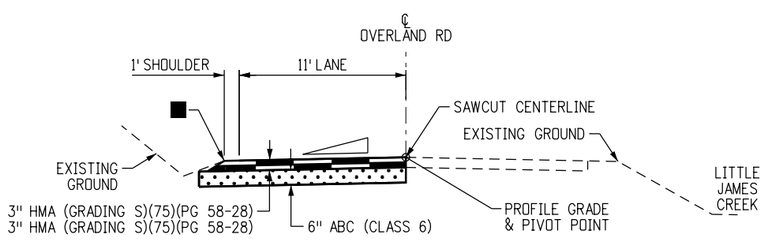
TYPICAL SECTION O

FULL DEPTH HMA
WITH GUARDRAIL OVER ROCKERY
UPSTREAM OF JAMESTOWN



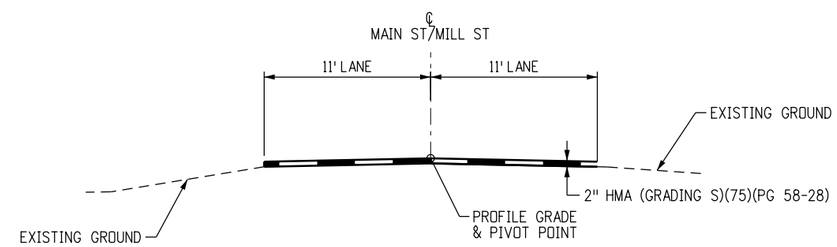
TYPICAL SECTION P

FULL DEPTH HMA RIGHT SIDE
UPSTREAM OF JAMESTOWN



TYPICAL SECTION Q

FULL DEPTH HMA LEFT SIDE
UPSTREAM OF JAMESTOWN



TYPICAL SECTION R

JAMESTOWN 2" OVERLAY

F.I.R. SUBMITTAL

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
JTS	JTS	MES	06/24/2015

JAMES CANYON
TYPICAL SECTIONS

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 5

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GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH 2011 COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, PROJECT SPECIAL PROVISIONS, M & S STANDARDS, STANDARD SPECIAL PROVISIONS AND THESE DRAWINGS.
2. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ENGINEER OR APPLICABLE ENTITY.
3. THE ENGINEER SHALL BE NOTIFIED 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.
4. ALL WORK SHALL BE DONE TO THE LINES, GRADES, SECTIONS, AND ELEVATIONS SHOWN ON THE PLANS UNLESS OTHERWISE NOTED OR APPROVED BY THE ENGINEER.
5. MILE POST REFERENCES ARE APPROXIMATE.
6. STATIONING ALONG JAMES CANYON DRIVE BEGINS AT STA 0+00 AT THE LEFTHAND CANYON INTERSECTION.
7. ALL SURVEYING NECESSARY TO COMPLETE THE PROJECT WILL BE PAID FOR AS CONSTRUCTION SURVEYING 1 LUMP SUM.
8. THE CONTRACTOR SHALL PROTECT ALL RANGE POINTS, TIES, BENCH MARKS, OR OTHER SURVEY CONTROL POINTS WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION THAT ARE DESIGNATED TO REMAIN, FROM DAMAGE. ANY MONUMENTS DISTURBED BY THE CONTRACTOR, DURING CONSTRUCTION OPERATION, SHALL BE RESET BY THE CONTRACTOR AT HIS OWN EXPENSE. THE CONTRACTOR AND THE ENGINEER SHALL NOTE THOSE MONUMENTS IN THE FIELD PRIOR TO CONSTRUCTION. SEE TABULATION OF SURVEY.
9. UTILITY LINES AS SHOWN ON THE PLAN SHEETS ARE PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION AND PROTECTION OF ALL UTILITIES AND STRUCTURES AFFECTED BY THE WORK AND ANY DAMAGE SHALL BE REPAIRED AND RESTORED TO THE SATISFACTION OF THE ENGINEER OR APPLICABLE ENTITY.
10. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 AT LEAST THREE BUSINESS DAYS IN ADVANCE OF ANY EXCAVATING OR GRADING.
11. THE CONTRACTOR SHALL NOTIFY ALL BUSINESSES AND RESIDENTS, IN WRITING, PRIOR TO ANY INTERRUPTION IN UTILITY SERVICE. NOTICE MUST BEAR ALL APPROPRIATE CONTACT INFORMATION, AND AN EMERGENCY NUMBER FOR AFTER HOURS CALLS.
12. WHERE NEW PAVEMENT IS TO ABUT EXISTING PAVEMENT, THE EXISTING PAVEMENT SHALL BE REMOVED TO A NEAT VERTICAL LINE BY FULL DEPTH SAWING. SAW CUTTING OF JOINTS WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
13. THE FOLLOWING SHALL BE FURNISHED WITH EACH ASPHALT PAVER. THIS EQUIPMENT SHALL BE USED ON ALL PASSES AND LIFTS OF HOT MIX ASPHALT PAVEMENT PLACED.
    1. A SKI TYPE DEVICE AT LEAST 30 FEET IN LENGTH
    2. SHORT SKI OR SHORT SHOE
    3. AT LEAST 1500 FEET OF CONTROL LINE AND STAKES
14. ANY LAYER OF ASPHALT PAVEMENT THAT IS TO HAVE A SUCCEEDING LAYER PLACED THEREON SHALL BE COMPLETED FULL WIDTH BEFORE SUCCEEDING LAYER IS PLACED.
15. BEFORE PLACEMENT OF THE TACK COAT, THE CONTRACTOR SHALL CLEAN THE EXISTING PAVEMENT SURFACE BY MEANS OF A POWER BROOM VACUUM SYSTEM OR OTHER APPROVED METHOD. CLEANING WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK.
16. FOR PRELIMINARY PLAN QUANTITIES OF PAVEMENT MATERIALS, THE FOLLOWING RATES OF APPLICATION WERE USED:

    TACK COAT DILUTED EMULSIFIED ASPHALT @ 0.1 GALS./SQ. YD. (DILUTED)
    DILUTED EMULSIFIED ASPHALT FOR TACK COAT SHALL CONSIST OF 1 PART EMULSIFIED ASPHALT AND 1 PART WATER
    HOT MIX ASPHALT @ 110 LBS./SQ. YD./INCH
    ABC @ 133 LBS./CU. FT.
17. ALL ACCESSES TO BUSINESSES OR DRIVEWAYS TO REMAIN OPEN AT ALL TIMES.
18. THE CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN TEMPORARY TRAFFIC CONTROL DEVICES NECESSARY THROUGHOUT THE DURATION OF CONSTRUCTION IN CONFORMANCE WITH TRAFFIC CONTROL PLANS.
19. THE CONTRACTOR SHALL MAINTAIN PAVEMENT MARKINGS ON THE ROADWAYS DURING ALL PHASES OF CONSTRUCTION IN ACCORDANCE WITH MUTCD AND CDOT STANDARDS.
20. WATER SHALL BE USED AS A DUST PALLIATIVE WHERE REQUIRED. LOCATIONS SHALL BE AS ORDERED. WATER WILL NOT BE PAID FOR SEPARATELY.
21. DEPTH OF MOISTURE-DENSITY CONTROL FOR THIS PROJECT SHALL BE AS FOLLOWS:
    - RECOMPACTED ROADWAY SUBGRADE - 12" BELOW EMBANKMENT MATERIAL.
    - FULL DEPTH OF EMBANKMENTS FOR ALL ROADWAYS AND DETOURS
    - BASES OF CUTS AND FILLS - 6" DEPTH BELOW EXISTING GROUND

    EXCAVATION REQUIRED FOR COMPACTION OF BASES AND CUTS AND FILLS AND RECOMPACTED SUBGRADE WILL BE CONSIDERED SUBSIDIARY TO EARTHWORK OPERATIONS AND WILL NOT BE PAID FOR SEPARATELY.

GENERAL NOTES (CONT'D):

22. THE CONCENTRATIONS OF WATER-SOLUBLE SULFATES IS UNKNOWN. CONCRETE SHALL MEET CLASS 2 REQUIREMENTS FOR SULFATE RESISTANCE, IN ACCORDANCE WITH TABLE 601-2 OF CDOT STANDARD SPECIFICATION 601.04.
23. FINAL GRADING OF PAVING SHALL PROVIDE POSITIVE DRAINAGE. WATER POCKETS AND POOLING OF WATER ON THE ROADWAY WILL NOT BE ACCEPTED, AND SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
24. THE ENTIRE CORRIDOR FROM LEFTHAND CANYON TO MILEPOST 4.8 SHALL BE SWEPT PRIOR TO FINAL STRIPING.
25. IT IS ESTIMATED THE FOLLOWING WILL BE REQUIRED:
    MOBILIZATION - 1 LS
    HOT MIX ASPHALT (PATCHING) - 100 TONS (TO BE PLACED AS DIRECTED BY THE ENGINEER)
    PROOF ROLLING - 30 HRS
    POTHOLING - 8 HOURS
    WILDLIFE BIOLOGIST - 20 HOURS
26. IT IS ESTIMATED THE FOLLOWING FIELD FACILITIES WILL BE REQUIRED:

    FIELD OFFICE (CLASS 2): 1 EACH
    FIELD LABORATORY (CLASS 2): 1 EACH
    SANITARY FACILITY: 2 EACH
27. EMBANKMENT MATERIAL IMPORTED ONTO THE PROJECT SHALL BE TESTED TO CONFIRM THAT ITS WATER SOLUBLE SULFATE CONTENT IS NOT GREATER THAN THAT CORRESPONDING TO SULFATE EXPOSURE CLASS 2.
28. IMPORTED MATERIAL USED FOR BACKFILLING PIPES SHALL BE TESTED FOR COMPATIBILITY WITH THE PLANNED PIPE MATERIAL, AS PER STANDARD SPECIAL PROVISION REVISION OF SECTION 203, IMPORTED MATERIAL FOR EMBANKMENT.
29. ROADWAY SMOOTHNESS CATEGORY SHALL BE: HRI CATEGORY I FOR ALL PAVEMENTS.
30. IT IS ESTIMATED THAT PUBLIC INFORMATION SERVICES WILL BE REQUIRED ON THIS PROJECT AND WILL BE PAID FOR AS PUBLIC INFORMATION SERVICES, 1 LUMP SUM.
31. DEWATERING SHALL BE INCLUDED IN THE WORK IF ENCOUNTERED.
32. TYPE C AND D INLET STATION AND OFFSET CALLOUTS ARE TO THE CENTER OF THE INLET BOX.
33. PIPE LENGTHS CALLED OUT IN THIS PLAN SET ARE THE ACTUAL LENGTH OF PIPE, AND DO NOT INCLUDE END SECTION LENGTHS. WHEN A PIPE CONNECTS TO AN INLET, THE INLET STATION AND OFFSET SHALL BE USED TO ALIGN THE PIPE. THE DISTANCE FROM THE INSIDE FACE OF THE INLET TO THE CENTER OF THE INLET IS NOT INCLUDED IN THE MEASURED PIPE LENGTH.
34. ALL END SECTION INSTALLATIONS TO INCLUDE CONCRETE JOINT FASTERNERS INSTALLED PER M-603-10.

MBTA NOTES:

THE CONTRACTOR SHALL COMPLY WITH THE MIGRATORY BIRD TREATY ACT (MBTA) AT ALL TIMES, INCLUDING CONDUCTING PRE-CONSTRUCTION SURVEYS FOR NESTING BIRDS SET FORTH BY U.S. FISH AND WILDLIFE SERVICE (USFWS) AND THE COLORADO PARKS AND WILDLIFE (CPW). THE CONTRACTOR SHALL SCHEDULE WORK TO AVOID TAKING (PURSUE, HUNT, TAKE, CAPTURE OR KILL; ATTEMPT TO TAKE, CAPTURE, KILL OR POSSESS) MIGRATORY BIRDS PROTECTED BY THE MBTA. THE INCIDENTAL TAKING OF A MIGRATORY BIRD SHALL BE REPORTED TO THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PENALTIES LEVIED BY THE USFWS FOR THE TAKING OF A MIGRATORY BIRD. THE CONTRACTOR SHALL RETAIN A QUALIFIED WILDLIFE BIOLOGIST, WITH A MINIMUM OF THREE YEARS' EXPERIENCE CONDUCTING MIGRATORY BIRD SURVEYS, TO IMPLEMENT THE REQUIREMENTS OF THE MBTA. THE CONTRACTOR SHALL SUBMIT DOCUMENTATION OF THE BIOLOGIST'S EDUCATION AND EXPERIENCE TO THE ENGINEER FOR ACCEPTANCE PRIOR TO COMMENCEMENT OF ANY ASSOCIATED WORK. A BIOLOGIST WITH LESS EXPERIENCE MAY BE USED BY THE CONTRACTOR SUBJECT TO THE ACCEPTANCE OF THE ENGINEER BASED ON REVIEW OF THE BIOLOGIST'S QUALIFICATIONS. DOCUMENTATION OF THE NEST SURVEYS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

THE CONTRACTOR SHALL COMPLETE ADDITIONAL RAPTOR NEST SURVEYS TO EVALUATE THE PRESENCE OF ACTIVE RAPTOR NESTS WITHIN THE STUDY AREA. IF AN ACTIVE NEST IS LOCATED IN OR NEAR THE STUDY AREA, THE USFWS AND CPW SHALL BE CONTACTED REGARDING USE OF SEASONAL BUFFERS TO PREVENT DISTURBANCE TO NESTING BIRDS DURING CONSTRUCTION.

LAND-CLEARING ACTIVITIES IN NATURAL HABITATS SHALL BE TIMED TO AVOID THE BREEDING SEASON AND TO AVOID IMPACTS TO ACTIVE BIRD NESTS. IF REQUIRED, TREES SHALL BE CLEARED PRIOR TO APRIL 1 OR AFTER AUGUST 31 TO PREVENT RAPTORS (AND OTHER BIRDS) FROM NESTING ON-SITE AND TO AVOID THE TAKING OF, OR DISTURBANCE TO, ACTIVE NESTS DURING THE BREEDING SEASON. WHERE WORK IS TO BE COMPLETED DURING THE NESTING SEASON, MIGRATORY BIRD SURVEYS WILL BE REQUIRED.

REPAIR AREA	BEGINNING STATION	ENDING STATION	TYPICAL SECTION
1	5+75	7+06	B
	7+06	7+76	C
	7+76	8+48	D
	8+48	9+17	C
	9+17	9+29	A
2	19+81	20+06	B
	20+06	21+68	A
	21+68	22+12	B
	22+12	23+78	A
	23+78	27+33	B
3	28+70	29+40	B
4	36+80	39+15	B
4A	40+15	40+45	A
5	41+00	42+14	A
	42+14	43+72	B
	43+72	44+15	A
6	50+13	56+30	B
	56+30	58+30	F
6A	59+40	59+90	E
7	65+05	66+56	A
	66+56	68+95	B
8	69+95	74+50	F
	74+50	76+74	B
	76+74	77+40	C
	77+40	79+32	N
	79+32	80+30	C
	80+30	85+70	D
	85+70	86+46	C
	86+46	89+23	B
9	99+83	100+20	C
	100+20	102+68	N
	102+68	104+88	A
10	106+59	110+62	A
	110+62	111+04	B
11	112+54	118+13	B
	118+13	118+42	A
12	119+86	121+01	A
	121+01	122+05	B
	122+05	122+36	A
12A	127+16	129+68	F
	129+68	132+29	E

REPAIR AREA	BEGINNING STATION	ENDING STATION	TYPICAL SECTION
13	133+60	136+80	C
	136+80	138+00	B
14	140+11	141+10	B
	141+10	141+63	H
15	146+26	146+88	G
	146+88	149+00	H
	149+00	152+19	G
15A	152+19	153+88	R
16	153+88	155+69	G
16A	155+69	166+08	R
17	166+08	167+00	G
17A	167+00	169+00	R
17B	177+71	179+02	I
17C	179+61	179+98	I
18	180+41	181+05	J
	181+05	181+79	O
	181+79	183+69	M
	183+69	183+76	O
19	185+73	187+42	L
	187+42	187+61	J
20	190+32	192+76	J
21	194+28	194+45	J
	194+45	195+52	L
22	197+94	198+90	J
	198+90	199+48	K
23	201+36	203+04	K
24	206+94	208+32	K
25	218+80	219+83	K
26	225+30	225+55	Q
	225+55	226+25	K
	226+25	228+45	P
27	234+10	234+83	Q
28	239+65	240+21	P
29	246+02	246+83	P
30	247+41	248+21	P

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811
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REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

Boulder County

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
JTS	JTS	MES	06/24/2015

JAMES CANYON
GENERAL NOTES

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 6

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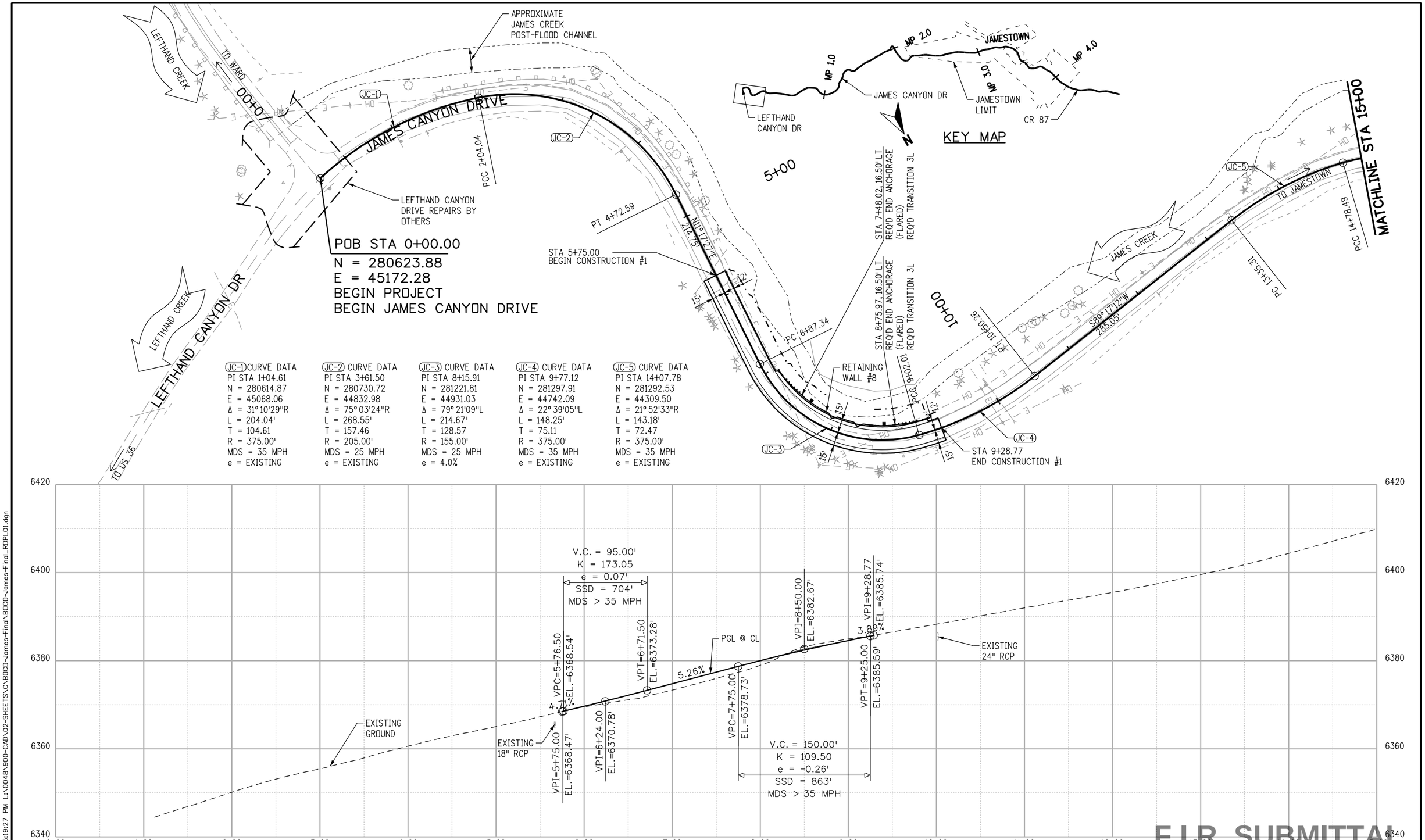

(JC-1) CURVE DATA
PI STA 1+04.61
N = 280614.87
E = 45068.06
Δ = 31°10'29"R
L = 204.04'
T = 104.61
R = 375.00'
MDS = 35 MPH
e = EXISTING

(JC-2) CURVE DATA
PI STA 3+61.50
N = 280730.72
E = 44832.98
Δ = 75°03'24"R
L = 268.55'
T = 157.46
R = 205.00'
MDS = 25 MPH
e = EXISTING

(JC-3) CURVE DATA
PI STA 8+15.91
N = 281221.81
E = 44931.03
Δ = 79°21'09"L
L = 214.67'
T = 128.57
R = 155.00'
MDS = 25 MPH
e = 4.0%

(JC-4) CURVE DATA
PI STA 9+77.12
N = 281297.91
E = 44742.09
Δ = 22°39'05"L
L = 148.25'
T = 75.11
R = 375.00'
MDS = 35 MPH
e = EXISTING

(JC-5) CURVE DATA
PI STA 14+07.78
N = 281292.53
E = 44309.50
Δ = 21°52'33"R
L = 143.18'
T = 72.47
R = 375.00'
MDS = 35 MPH
e = EXISTING

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JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 7

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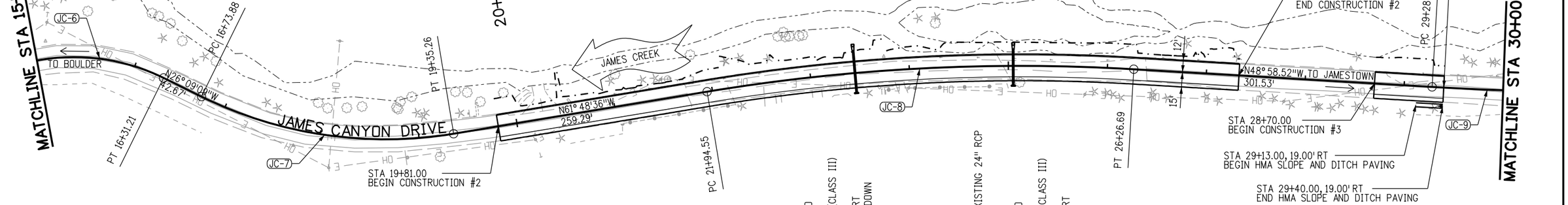
JC-6 CURVE DATA
PI STA 15+58.59
N = 281347.61
E = 44167.22
Δ = 42° 41'06"R
L = 152.72'
T = 80.10
R = 205.00'
MDS = 25 MPH
e = EXISTING

JC-7 CURVE DATA
PI STA 18+08.96
N = 281579.06
E = 44053.57
Δ = 35° 39'27"L
L = 261.38'
T = 135.08
R = 420.00'
MDS = 35 MPH
e = EXISTING

JC-8 CURVE DATA
PI STA 24+11.53
N = 281867.86
E = 43514.74
Δ = 12° 49'44"R
L = 432.14'
T = 216.98
R = 1930.00'
MDS = 35 MPH
e = 2.4%

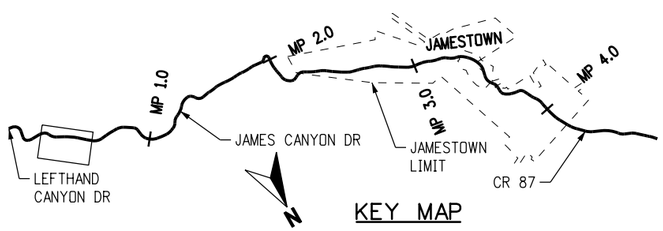
JC-9 CURVE DATA
PI STA 30+31.67
N = 282276.05
E = 43045.47
Δ = 03° 40'49"L
L = 206.82'
T = 103.45
R = 3220.00'
MDS = 35 MPH
e = EXISTING



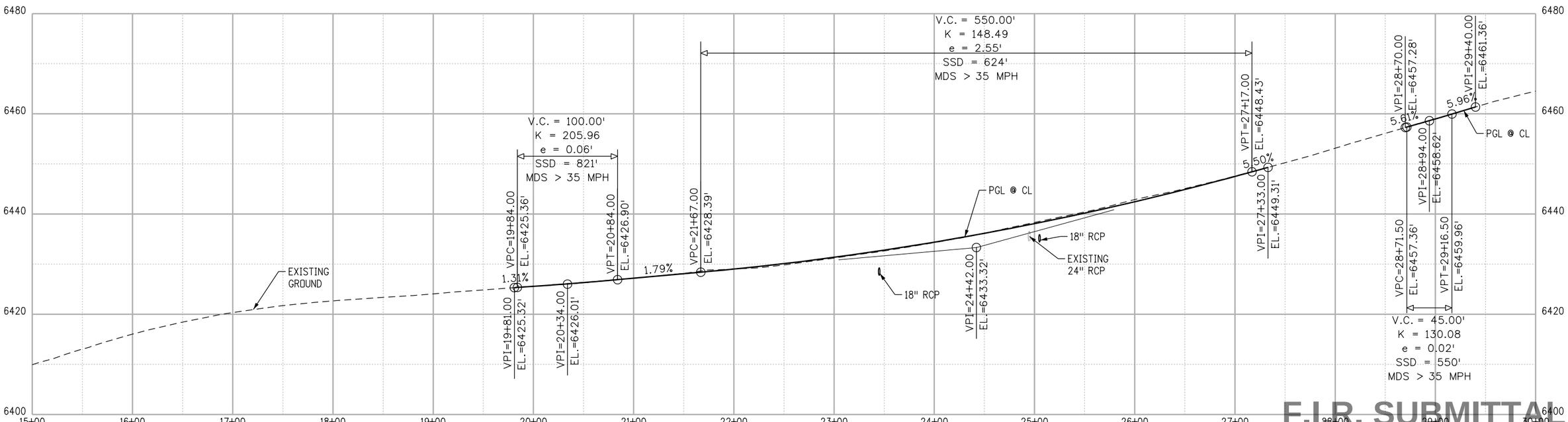
J-0.44
STA 23+45.00, 20.76' RT TO
STA 23+45.00, 22.74' LT
REQ'D 44 LF OF 18" RCP (CLASS III)
REQ'D 1 EA 18" RCES LT
REQ'D 1 EA 18" HEADWALL RT
REQ'D 5.4 CY RIPRAP RUNDOWN

REQ'D REMOVE 41 LF OF EXISTING 24" RCP

J-0.47
STA 25+05.00, 20.56' RT TO
STA 25+05.00, 16.94' LT
REQ'D 38 LF OF 18" RCP (CLASS III)
REQ'D 1 EA 18" RCES LT
REQ'D 1 EA 18" HEADWALL RT



KEY MAP



F.I.R. SUBMITTAL

0' 50' 100' 200'

F.I.R.

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JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 8

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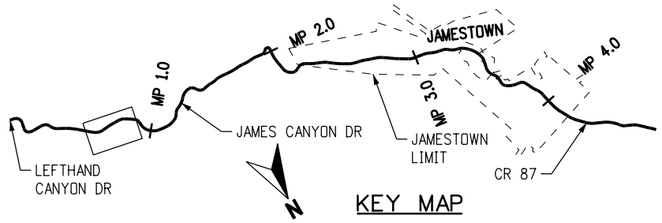
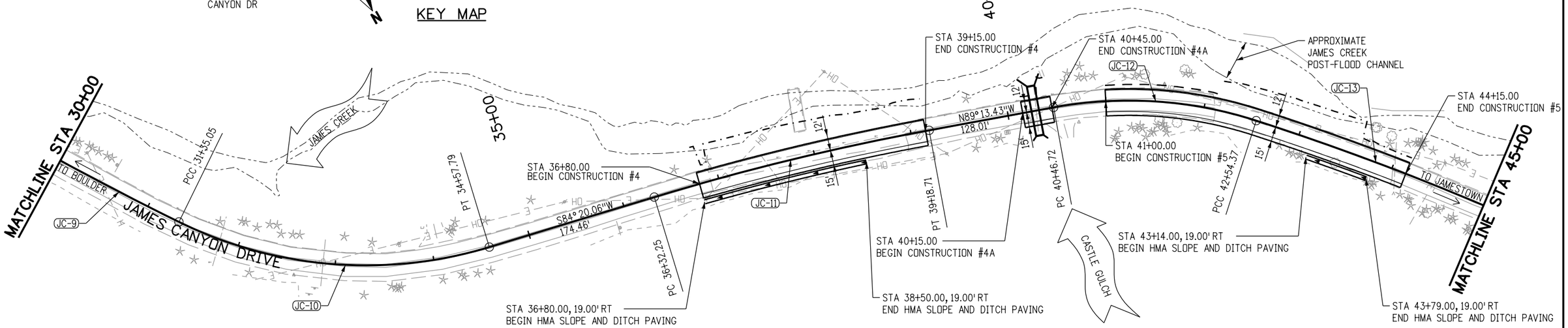


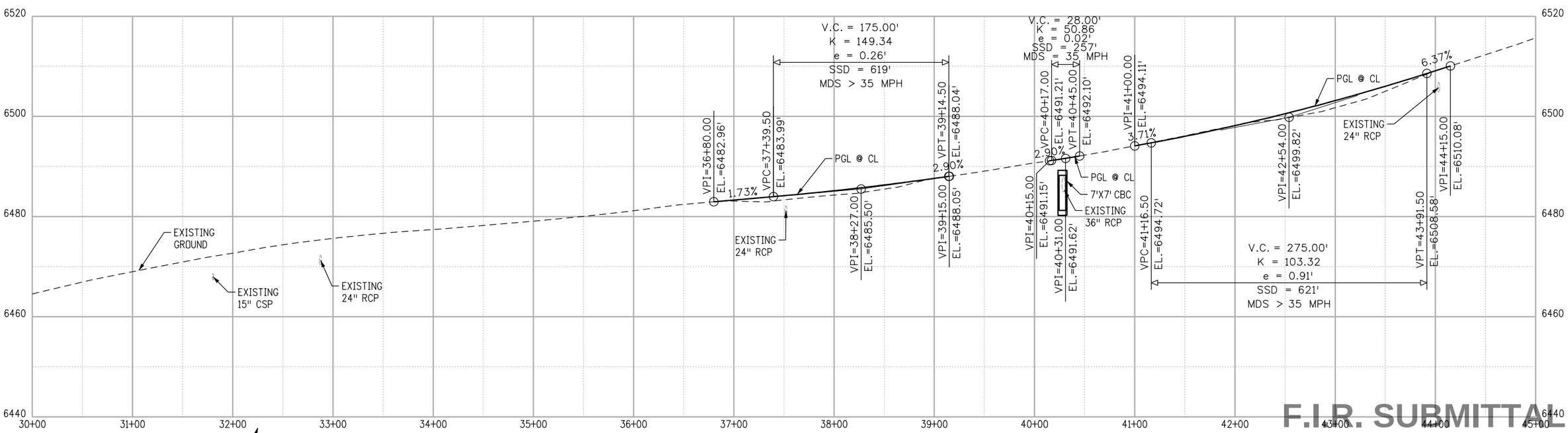
STA 40+27.89
SEE CASTLE GULCH CBC
PLAN & PROFILE

REQ'D REMOVE 49' EXISTING
36" RCP

40+00

JC-9 CURVE DATA	JC-10 CURVE DATA	JC-11 CURVE DATA	JC-12 CURVE DATA	JC-13 CURVE DATA
PI STA 30+31.67	PI STA 33+04.45	PI STA 37+75.63	PI STA 41+52.71	PI STA 44+36.95
N = 282276.05	N = 282441.54	N = 282393.45	N = 282398.53	N = 282538.87
E = 43045.47	E = 42828.54	E = 42343.69	E = 41966.34	E = 41714.18
Δ = 03° 40'49"L	Δ = 43° 00'13"L	Δ = 06° 26'11"R	Δ = 28° 19'39"R	Δ = 07° 34'11"R
L = 206.82'	L = 322.74'	L = 286.46'	L = 207.65'	L = 364.64'
T = 103.45	T = 169.40	T = 143.38	T = 105.99	T = 182.58
R = 3220.00'	R = 430.00'	R = 2550.00'	R = 420.00'	R = 2760.00'
MDS = 35 MPH	MDS = 35 MPH	MDS = 35 MPH	MDS = 35 MPH	MDS = 35 MPH
e = EXISTING	e = EXISTING	e = RC	e = 4.0%	e = RC





F.I.R. SUBMITTAL

0' 50' 100' 200'

N

F.I.R.

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JTS	JTS	MES	06/24/2015

JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91

SHEET NO: 9

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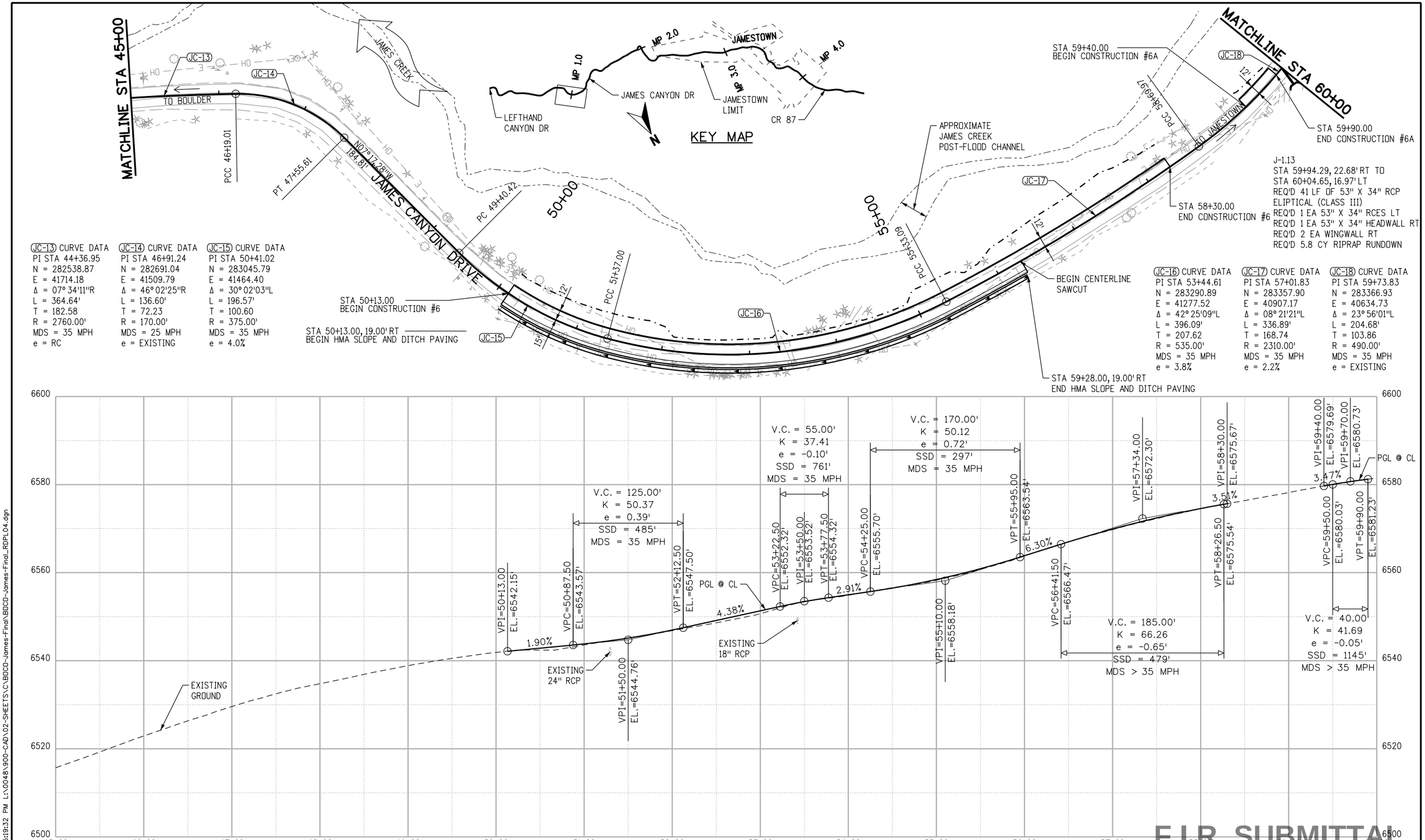

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REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

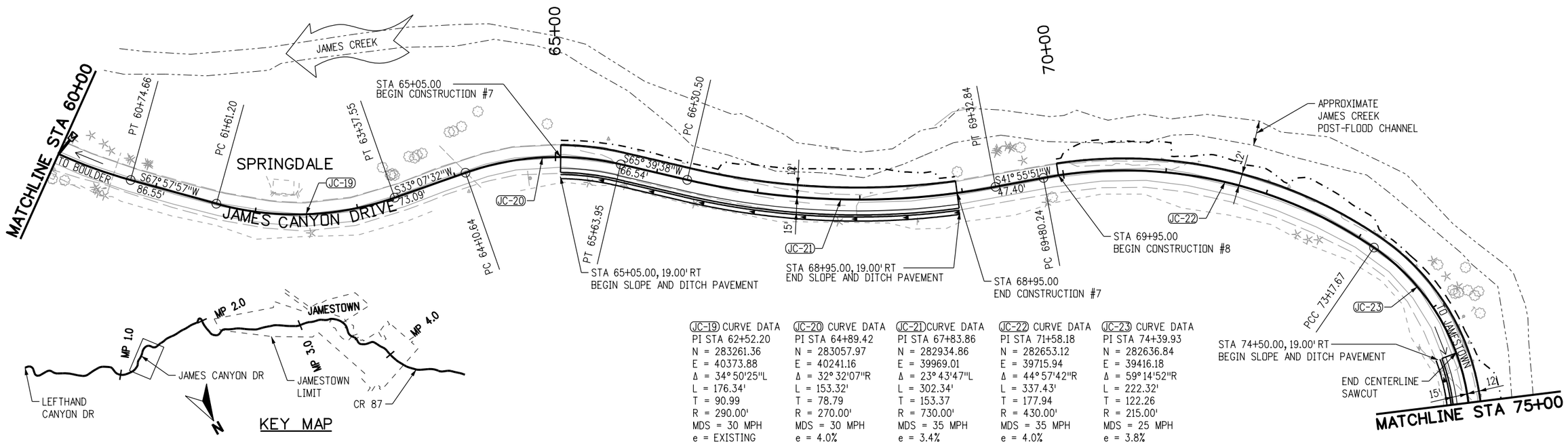
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
JTS	JTS	MES	06/24/2015

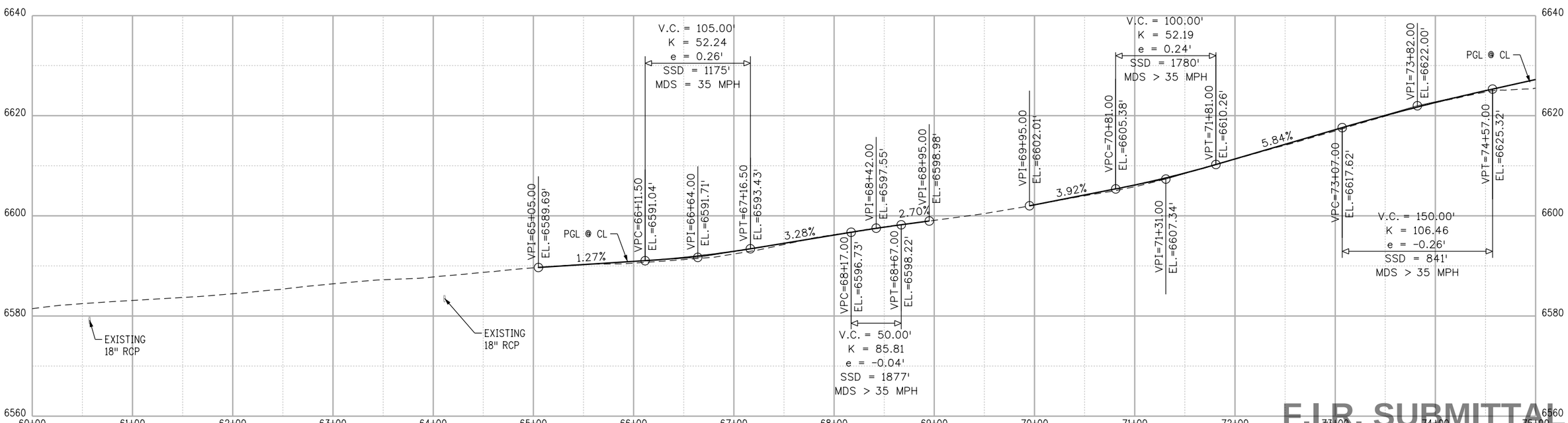
JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91

SHEET NO: 10



JC-19 CURVE DATA	JC-20 CURVE DATA	JC-21 CURVE DATA	JC-22 CURVE DATA	JC-23 CURVE DATA
PI STA 62+52.20	PI STA 64+89.42	PI STA 67+83.86	PI STA 71+58.18	PI STA 74+39.93
N = 283261.36	N = 283057.97	N = 282934.86	N = 282653.12	N = 282636.84
E = 40373.88	E = 40241.16	E = 39969.01	E = 39715.94	E = 39416.18
Δ = 34°50'25"L	Δ = 32°32'07"R	Δ = 23°43'47"L	Δ = 44°57'42"R	Δ = 59°14'52"R
L = 176.34'	L = 153.32'	L = 302.34'	L = 337.43'	L = 222.32'
T = 90.99	T = 78.79	T = 153.37	T = 177.94	T = 122.26
R = 290.00'	R = 270.00'	R = 730.00'	R = 430.00'	R = 215.00'
MDS = 30 MPH	MDS = 30 MPH	MDS = 35 MPH	MDS = 35 MPH	MDS = 25 MPH
e = EXISTING	e = 4.0%	e = 3.4%	e = 4.0%	e = 3.8%



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0' 50' 100' 200'

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JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 11

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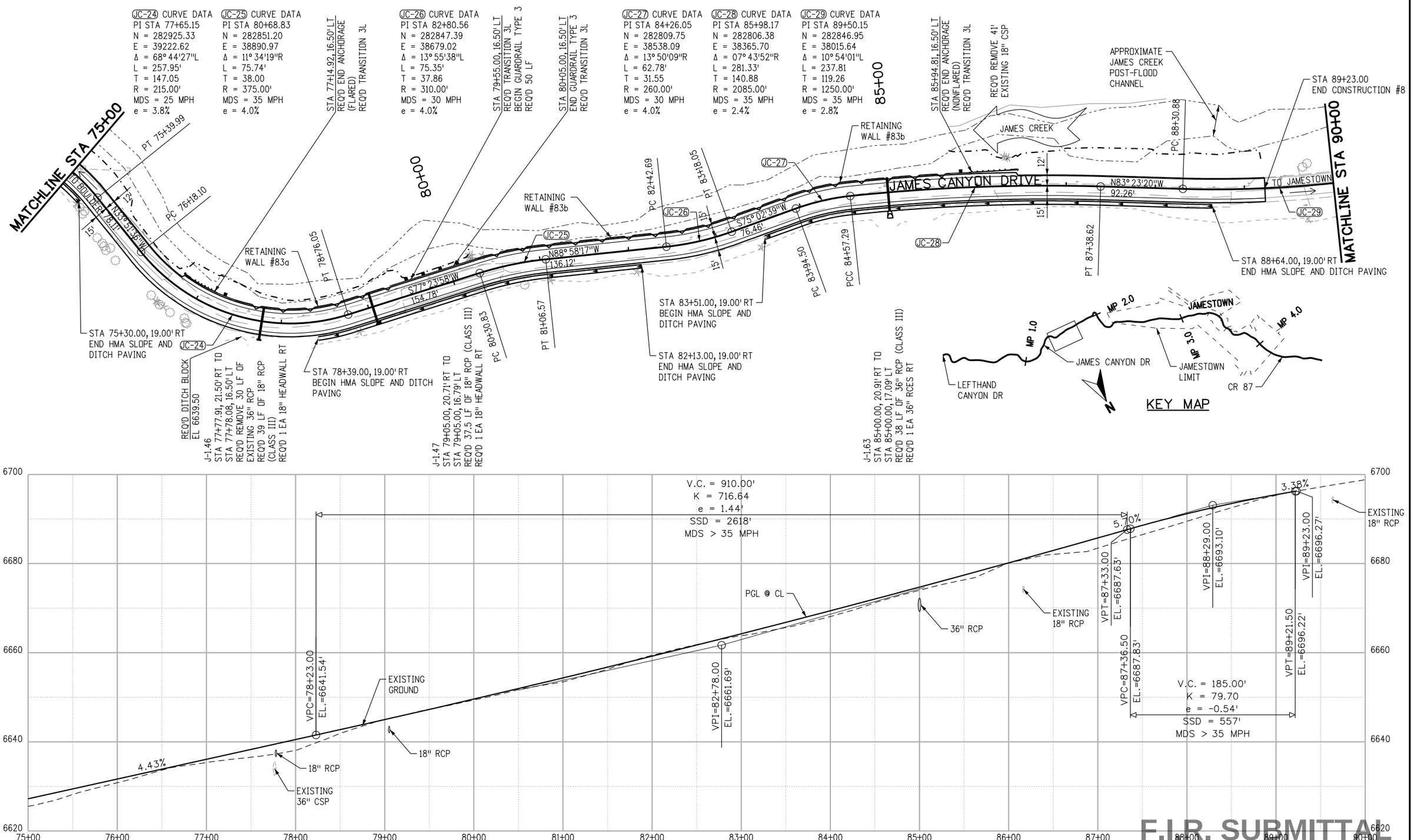

0' 50' 100' 200'

N

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JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91

SHEET NO: 12

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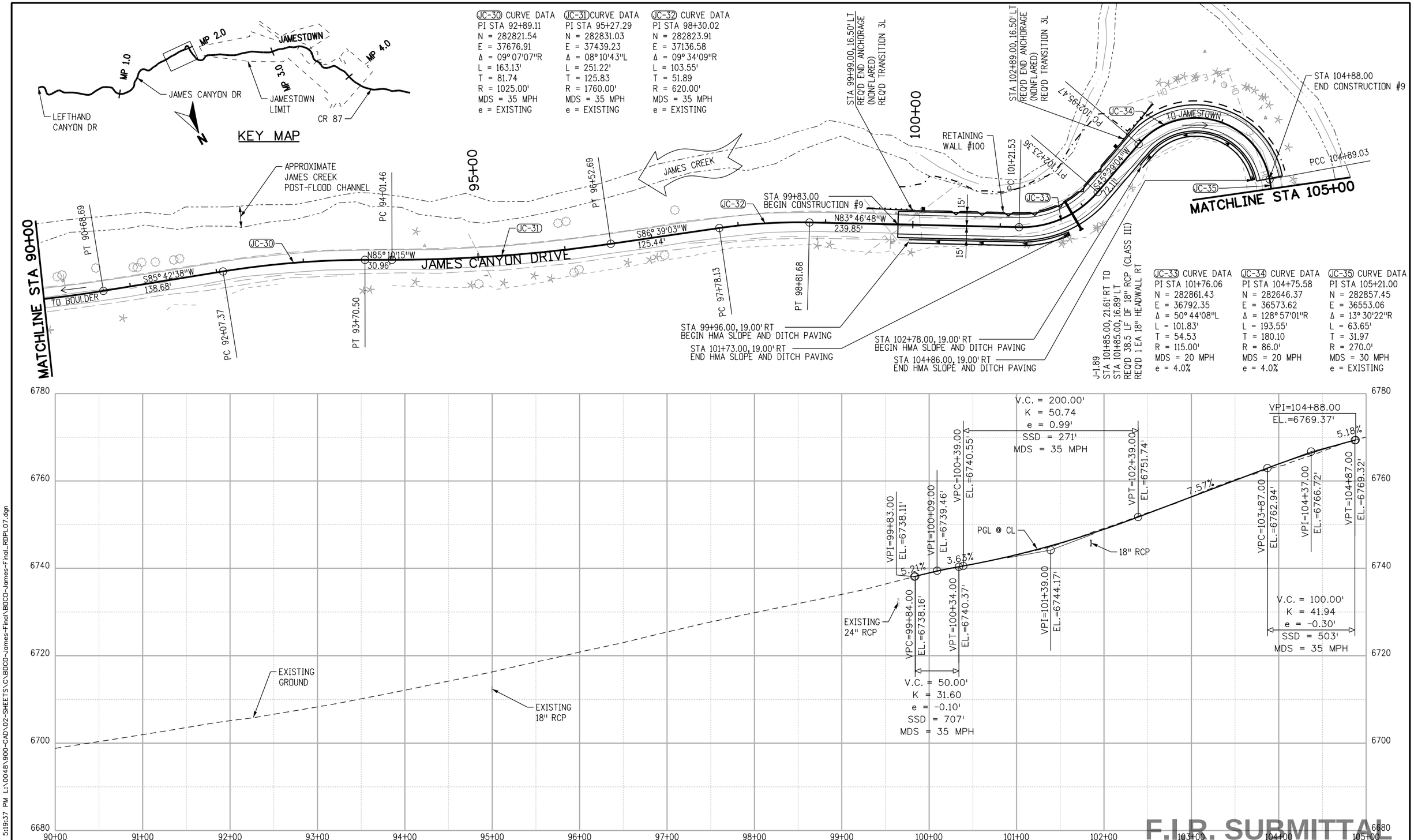

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JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91

SHEET NO: 13

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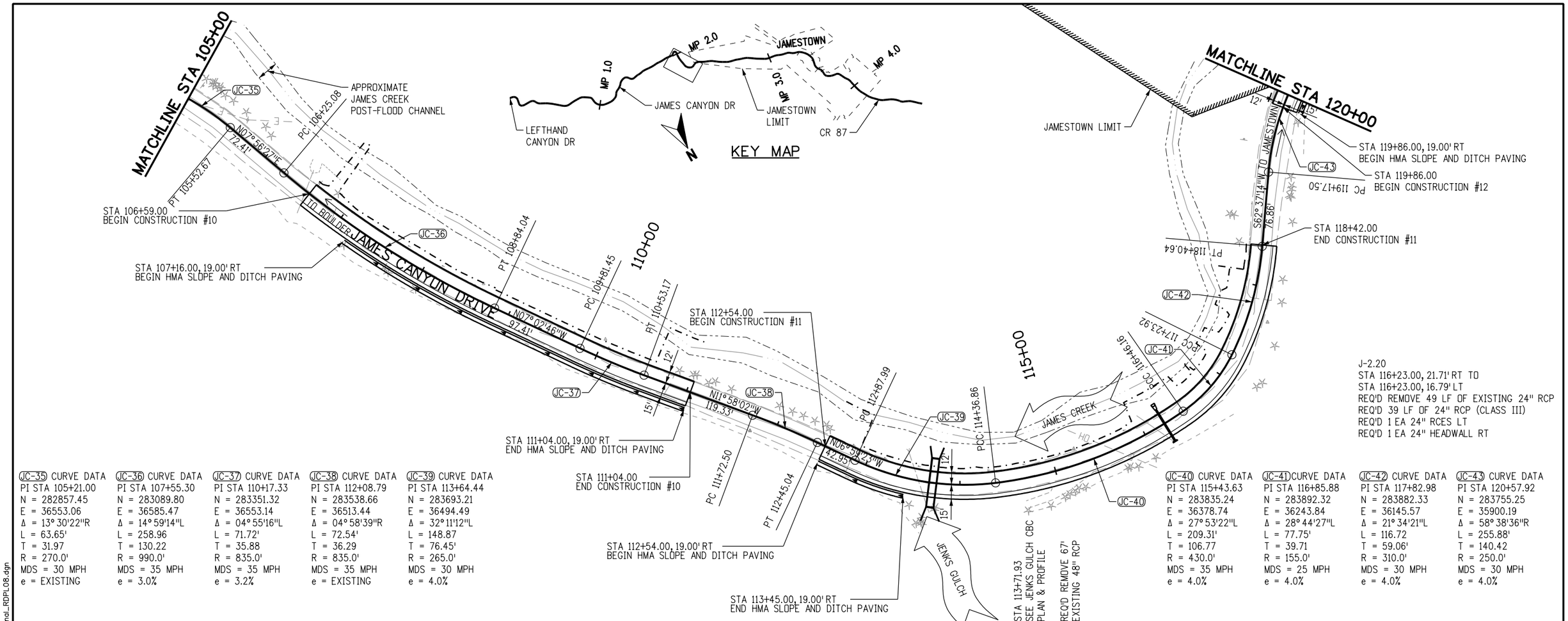
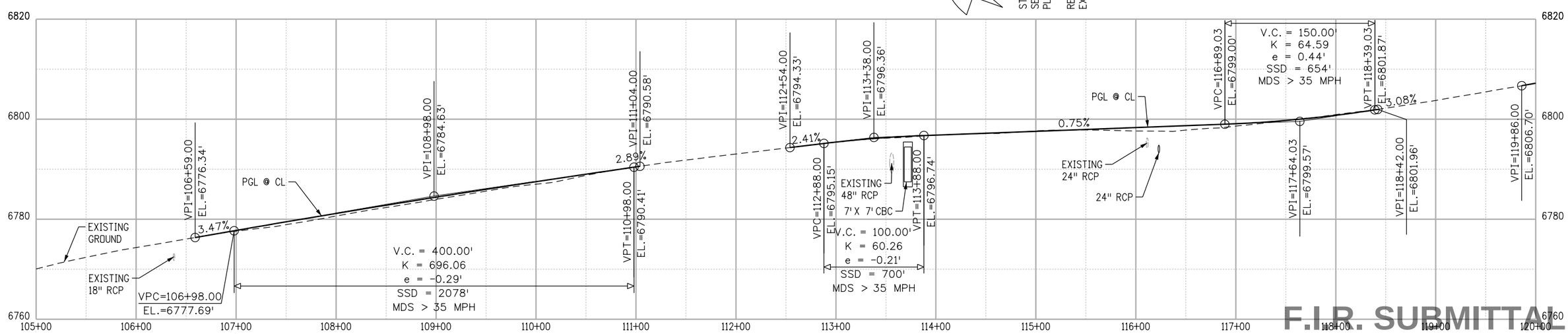


J-2.20
STA 116+23.00, 21.71' RT TO
STA 116+23.00, 16.79' LT
REQ'D REMOVE 49 LF OF EXISTING 24" RCP
REQ'D 39 LF OF 24" RCP (CLASS III)
REQ'D 1 EA 24" RCES LT
REQ'D 1 EA 24" HEADWALL RT

JC-35 CURVE DATA	JC-36 CURVE DATA	JC-37 CURVE DATA	JC-38 CURVE DATA	JC-39 CURVE DATA
PI STA 105+21.00	PI STA 107+55.30	PI STA 110+17.33	PI STA 112+08.79	PI STA 113+64.44
N = 282857.45	N = 283089.80	N = 283351.32	N = 283538.66	N = 283693.21
E = 36553.06	E = 36585.47	E = 36553.14	E = 36513.44	E = 36494.49
Δ = 13° 30'22"R	Δ = 14° 59'14"L	Δ = 04° 55'16"L	Δ = 04° 58'39"R	Δ = 32° 11'12"L
L = 63.65'	L = 258.96	L = 71.72'	L = 72.54'	L = 148.87
T = 31.97	T = 130.22	T = 35.88	T = 36.29	T = 76.45'
R = 270.0'	R = 990.0'	R = 835.0'	R = 835.0'	R = 265.0'
MDS = 30 MPH	MDS = 35 MPH	MDS = 35 MPH	MDS = 35 MPH	MDS = 30 MPH
e = EXISTING	e = 3.0%	e = 3.2%	e = EXISTING	e = 4.0%

JC-40 CURVE DATA	JC-41 CURVE DATA	JC-42 CURVE DATA	JC-43 CURVE DATA
PI STA 115+43.63	PI STA 116+85.88	PI STA 117+82.98	PI STA 120+57.92
N = 283835.24	N = 283892.32	N = 283882.33	N = 283755.25
E = 36378.74	E = 36243.84	E = 36145.57	E = 35900.19
Δ = 27° 53'22"L	Δ = 28° 44'27"L	Δ = 21° 34'21"L	Δ = 58° 38'36"R
L = 209.31'	L = 77.75'	L = 116.72	L = 255.88'
T = 106.77	T = 39.71	T = 59.06'	T = 140.42
R = 430.0'	R = 155.0'	R = 310.0'	R = 250.0'
MDS = 35 MPH	MDS = 25 MPH	MDS = 30 MPH	MDS = 30 MPH
e = 4.0%	e = 4.0%	e = 4.0%	e = 4.0%



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0' 50' 100' 200'

F.I.R.

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BOULDER COUNTY TRANSPORTATION DEPARTMENT
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JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 14

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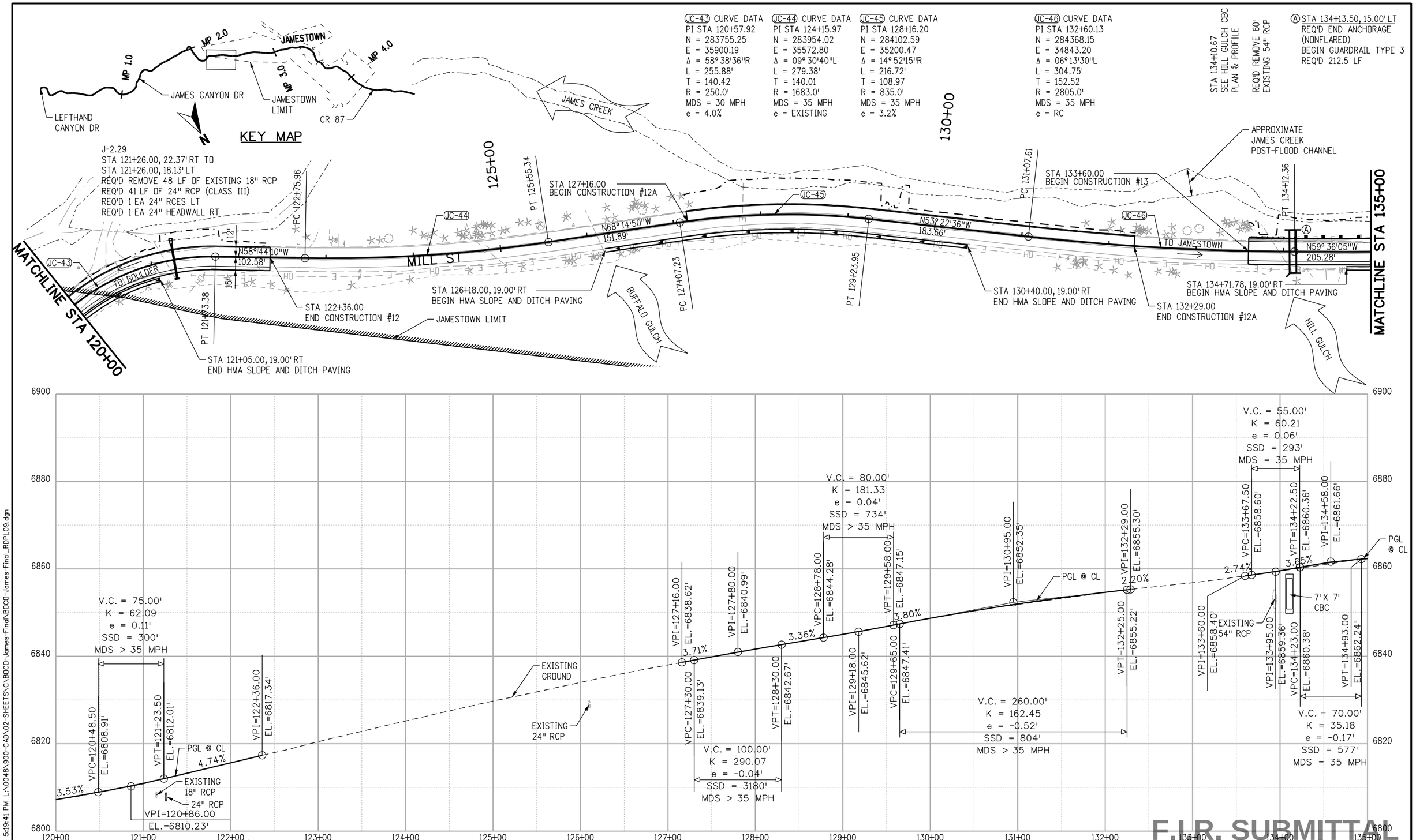

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JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 15

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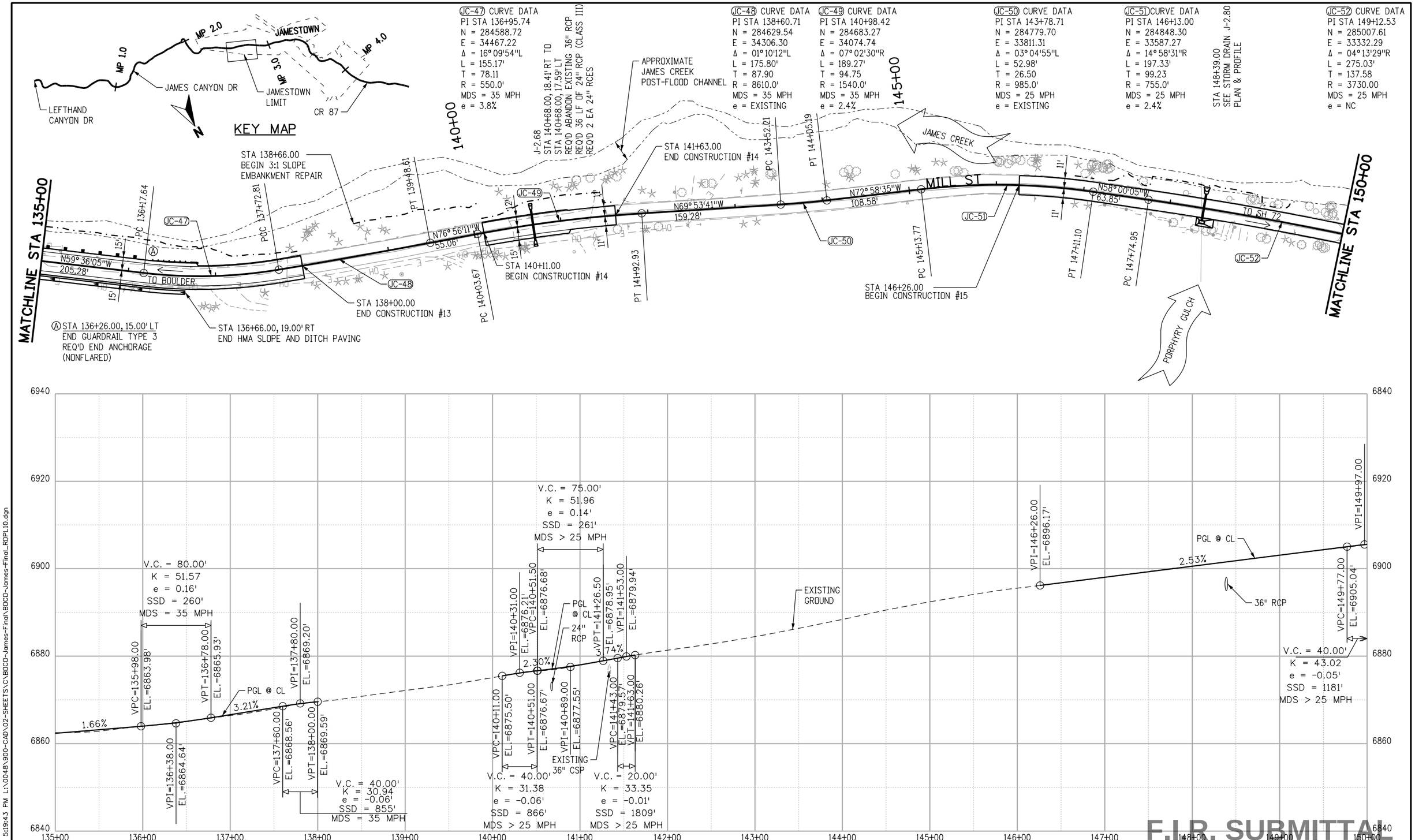

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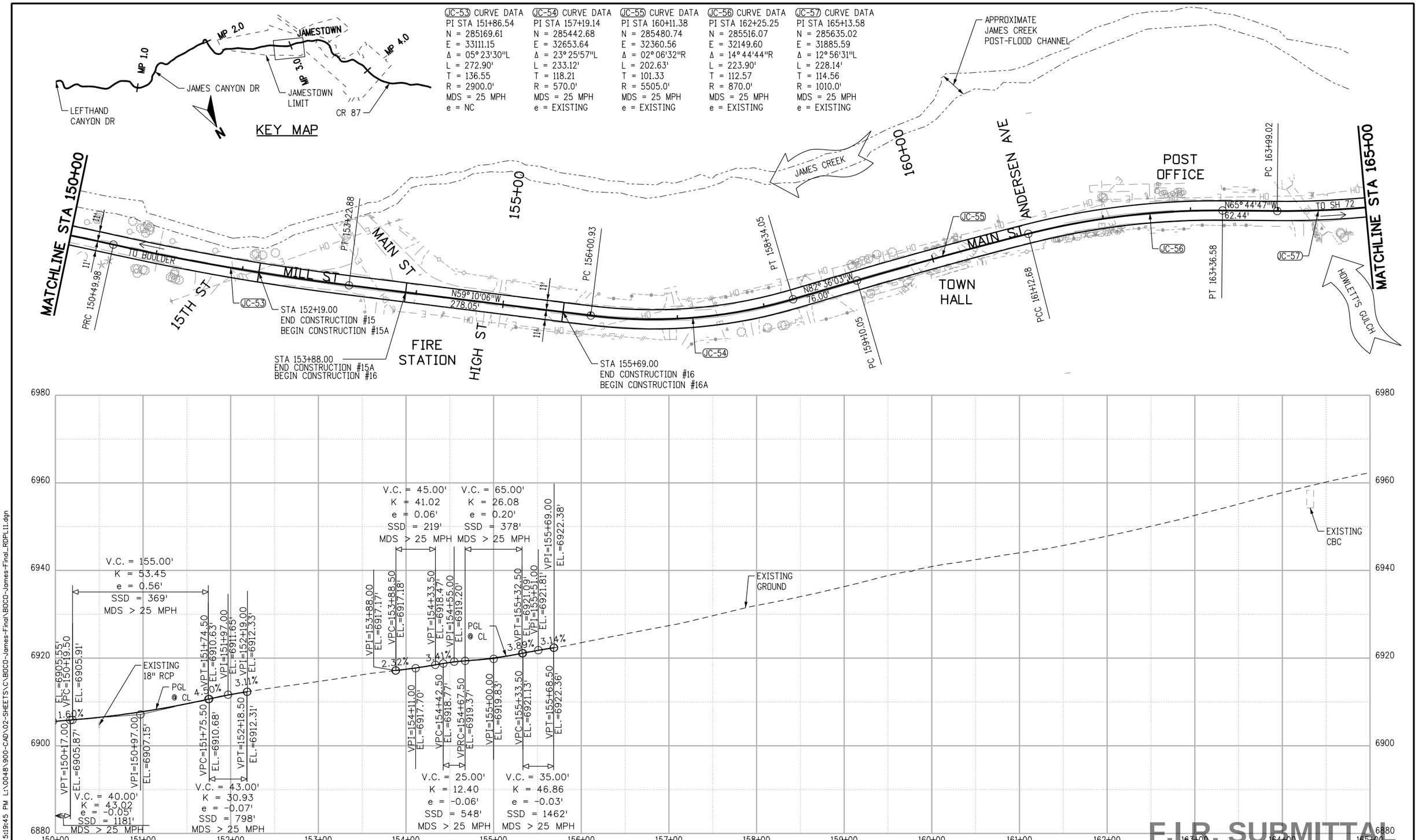
JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 16

stohrj 6/22/2015 5:19:43 PM L:\0048\900-CAD\02-SHEETS\C\BOCD-James-Final\BOCD-James-Final_RDPL10.dgn

JC-53 CURVE DATA	JC-54 CURVE DATA	JC-55 CURVE DATA	JC-56 CURVE DATA	JC-57 CURVE DATA
PI STA 151+86.54	PI STA 157+19.14	PI STA 160+11.38	PI STA 162+25.25	PI STA 165+13.58
N = 285169.61	N = 285442.68	N = 285480.74	N = 285516.07	N = 285635.02
E = 33111.15	E = 32653.64	E = 32360.56	E = 32149.60	E = 31885.59
Δ = 05° 23'30"L	Δ = 23° 25'57"L	Δ = 02° 06'32"R	Δ = 14° 44'44"R	Δ = 12° 56'31"L
L = 272.90'	L = 233.12'	L = 202.63'	L = 223.90'	L = 228.14'
T = 136.55	T = 118.21	T = 101.33	T = 112.57	T = 114.56
R = 2900.0'	R = 570.0'	R = 5505.0'	R = 870.0'	R = 1010.0'
MDS = 25 MPH	MDS = 25 MPH	MDS = 25 MPH	MDS = 25 MPH	MDS = 25 MPH
e = NC	e = EXISTING	e = EXISTING	e = EXISTING	e = EXISTING



0' 50' 100' 200'

N

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JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 17

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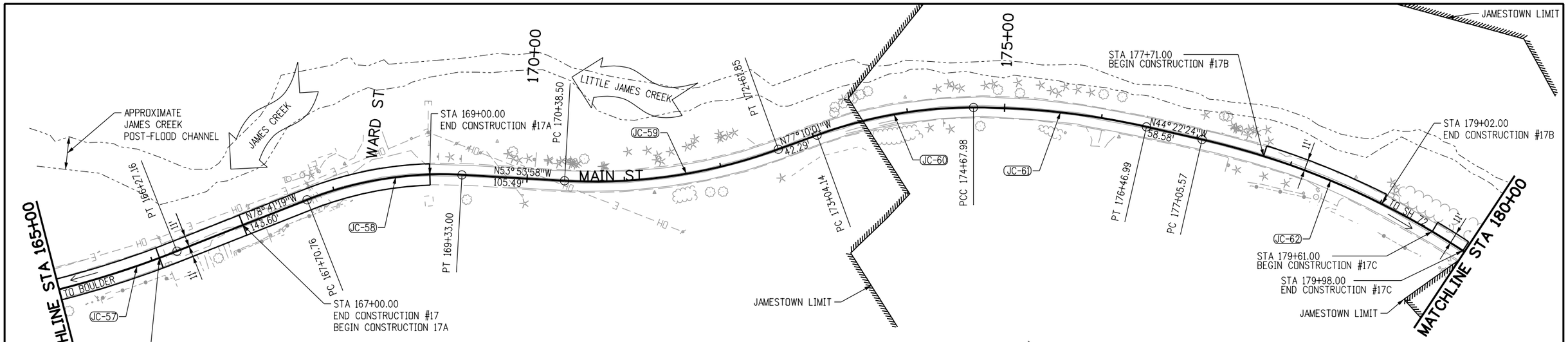


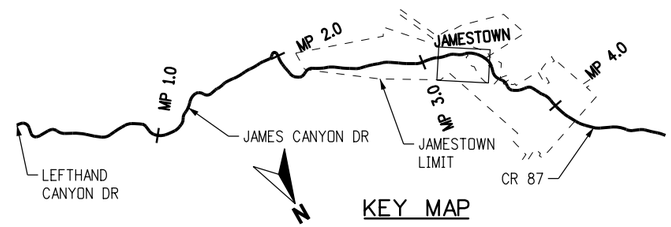
JC-57 CURVE DATA
PI STA 165+13.58
N = 285635.02
E = 31885.59
Δ = 12° 56'31"L
L = 228.14'
T = 114.56
R = 1010.0'
MDS = 25 MPH
e = EXISTING

JC-58 CURVE DATA
PI STA 168+53.17
N = 285701.82
E = 31551.63
Δ = 24° 47'21"R
L = 162.24'
T = 82.41
R = 375.0'
MDS = 25 MPH
e = EXISTING

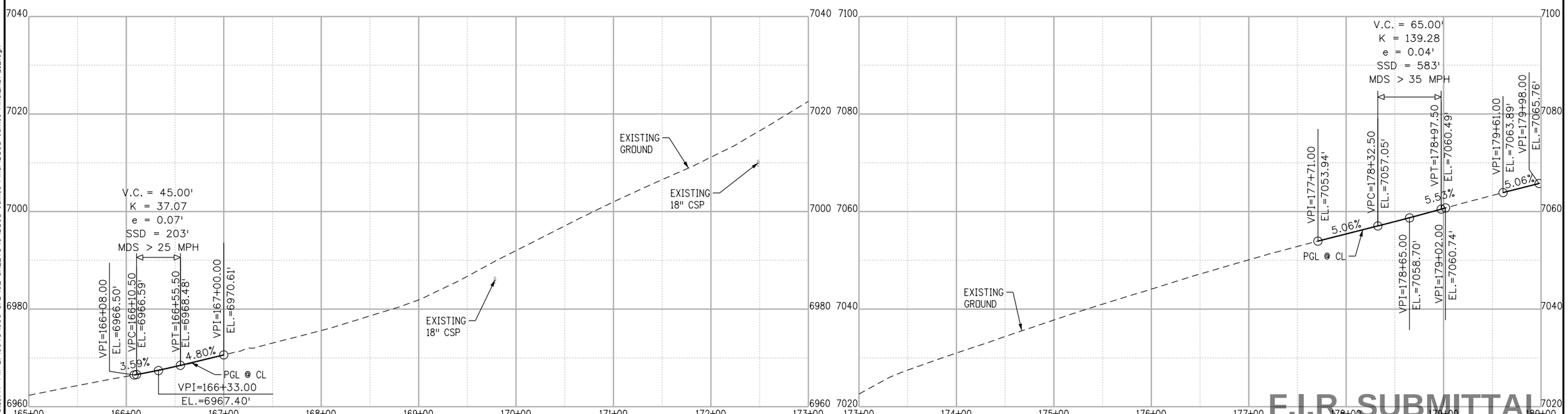
JC-59 CURVE DATA
PI STA 171+51.73
N = 285879.25
E = 31308.32
Δ = 23° 16'03"L
L = 223.35'
T = 113.24
R = 550.0'
MDS = 25 MPH
e = EXISTING

JC-60 CURVE DATA
PI STA 173+86.90
N = 285932.18
E = 31075.98
Δ = 19° 58'24"R
L = 163.84'
T = 82.76
R = 470.0'
MDS = 25 MPH
e = EXISTING

JC-61 CURVE DATA
PI STA 175+57.86
N = 286025.72
E = 30930.88
Δ = 12° 49'13"R
L = 179.01'
T = 89.88
R = 800.0'
MDS = 25 MPH
e = EXISTING



JC-62 CURVE DATA
PI STA 179+41.20
N = 286300.26
E = 30662.27
Δ = 32° 15'03"R
L = 458.75'
T = 235.63
R = 815.0'
MDS = 35 MPH
e = 3.4%



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0' 50' 100' 200'

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JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 18

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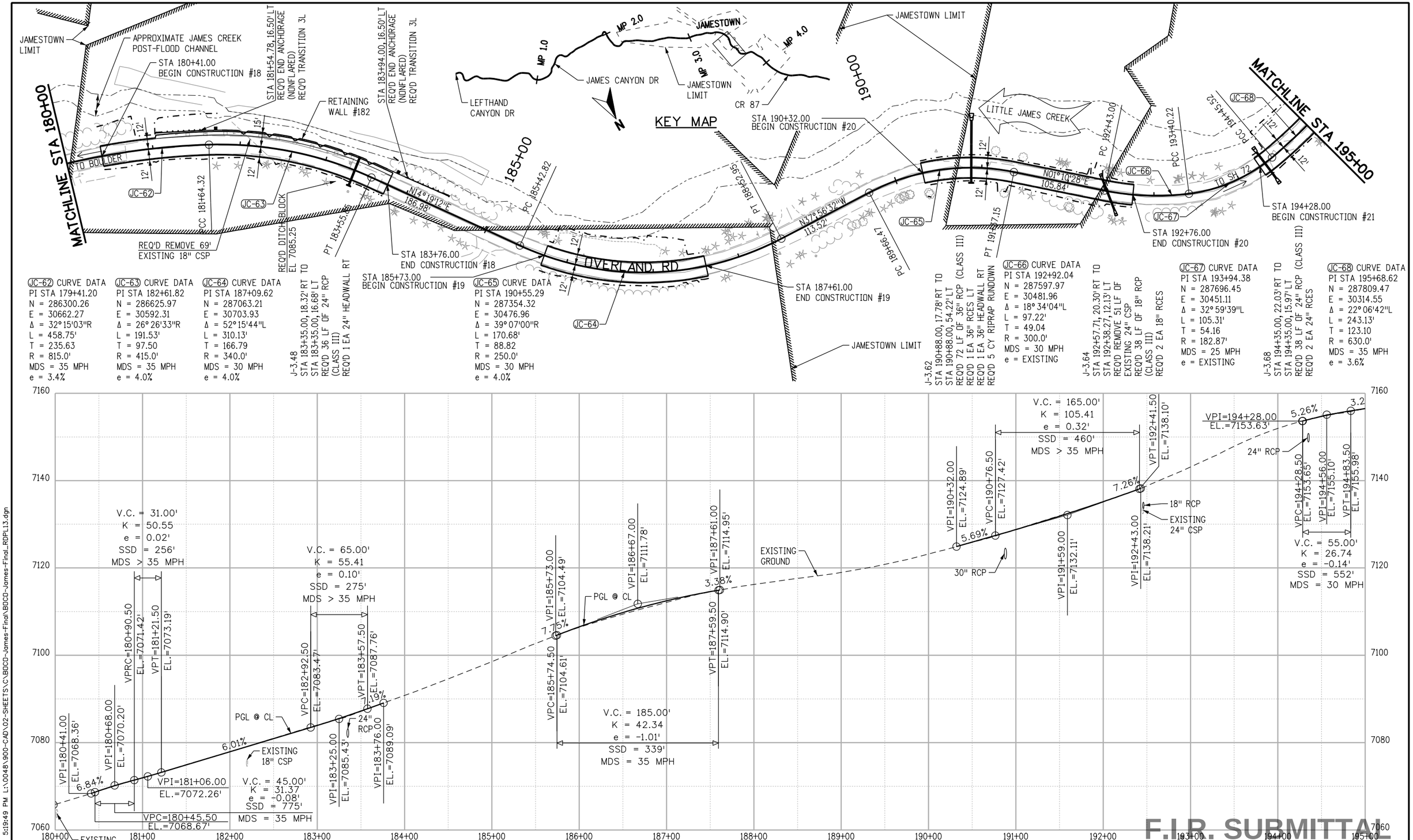

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JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91

SHEET NO: 19

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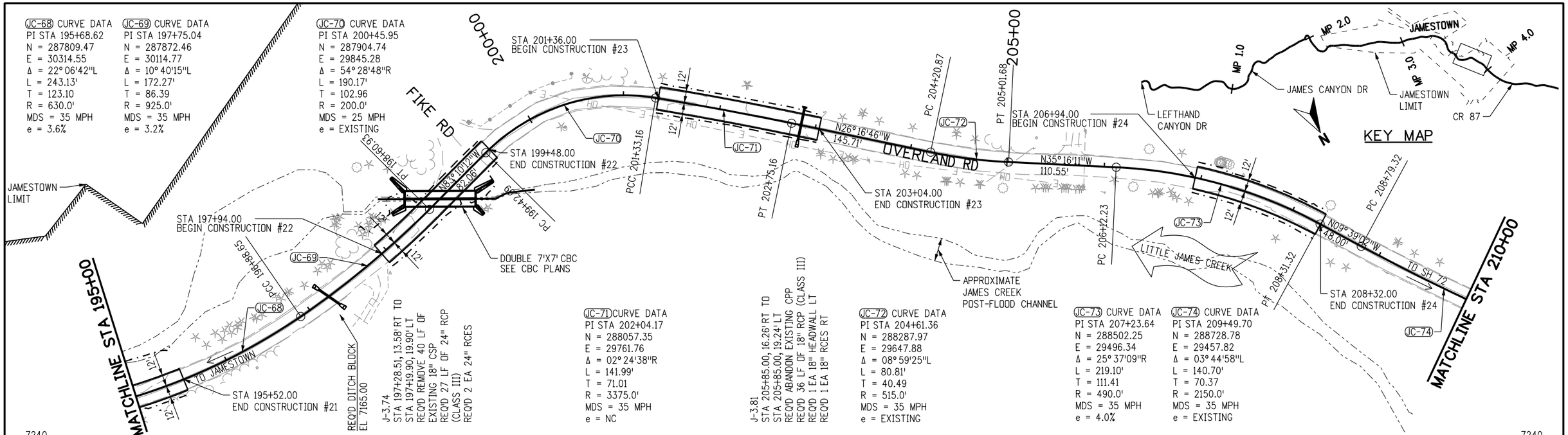
JC-68 CURVE DATA
PI STA 195+68.62
N = 287809.47
E = 30314.55
Δ = 22° 06'42"L
L = 243.13'
T = 123.10
R = 630.0'
MDS = 35 MPH
e = 3.6%

JC-69 CURVE DATA
PI STA 197+75.04
N = 287872.46
E = 30114.77
Δ = 10° 40'15"L
L = 172.27'
T = 86.39
R = 925.0'
MDS = 35 MPH
e = 3.2%

JC-70 CURVE DATA
PI STA 200+45.95
N = 287904.74
E = 29845.28
Δ = 54° 28'48"R
L = 190.17'
T = 102.96
R = 200.0'
MDS = 25 MPH
e = EXISTING

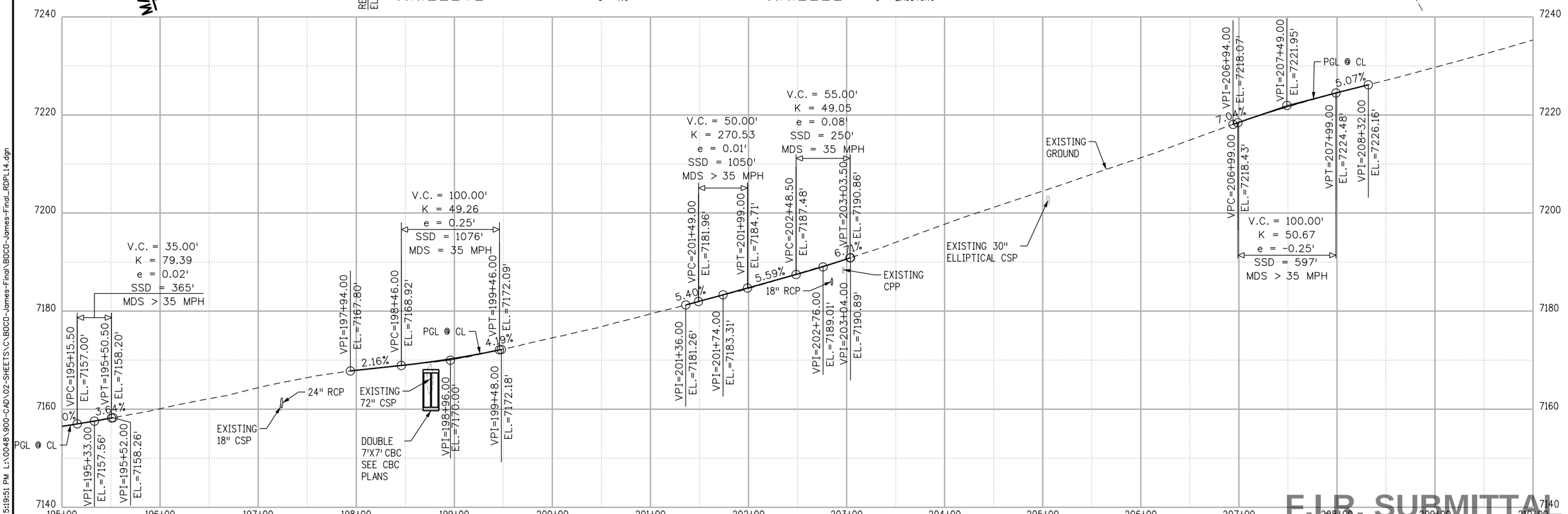


JC-71 CURVE DATA
PI STA 202+04.17
N = 288057.35
E = 29761.76
Δ = 02° 24'38"R
L = 141.99'
T = 71.01
R = 3375.0'
MDS = 35 MPH
e = NC

JC-72 CURVE DATA
PI STA 204+61.36
N = 288287.97
E = 29647.88
Δ = 08° 59'25"L
L = 80.81'
T = 40.49
R = 515.0'
MDS = 35 MPH
e = EXISTING

JC-73 CURVE DATA
PI STA 207+23.64
N = 288502.25
E = 29496.34
Δ = 25° 37'09"R
L = 219.10'
T = 111.41
R = 490.0'
MDS = 35 MPH
e = 4.0%

JC-74 CURVE DATA
PI STA 209+49.70
N = 288728.78
E = 29457.82
Δ = 03° 44'58"L
L = 140.70'
T = 70.37
R = 2150.0'
MDS = 35 MPH
e = EXISTING



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0' 50' 100' 200'

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JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 20

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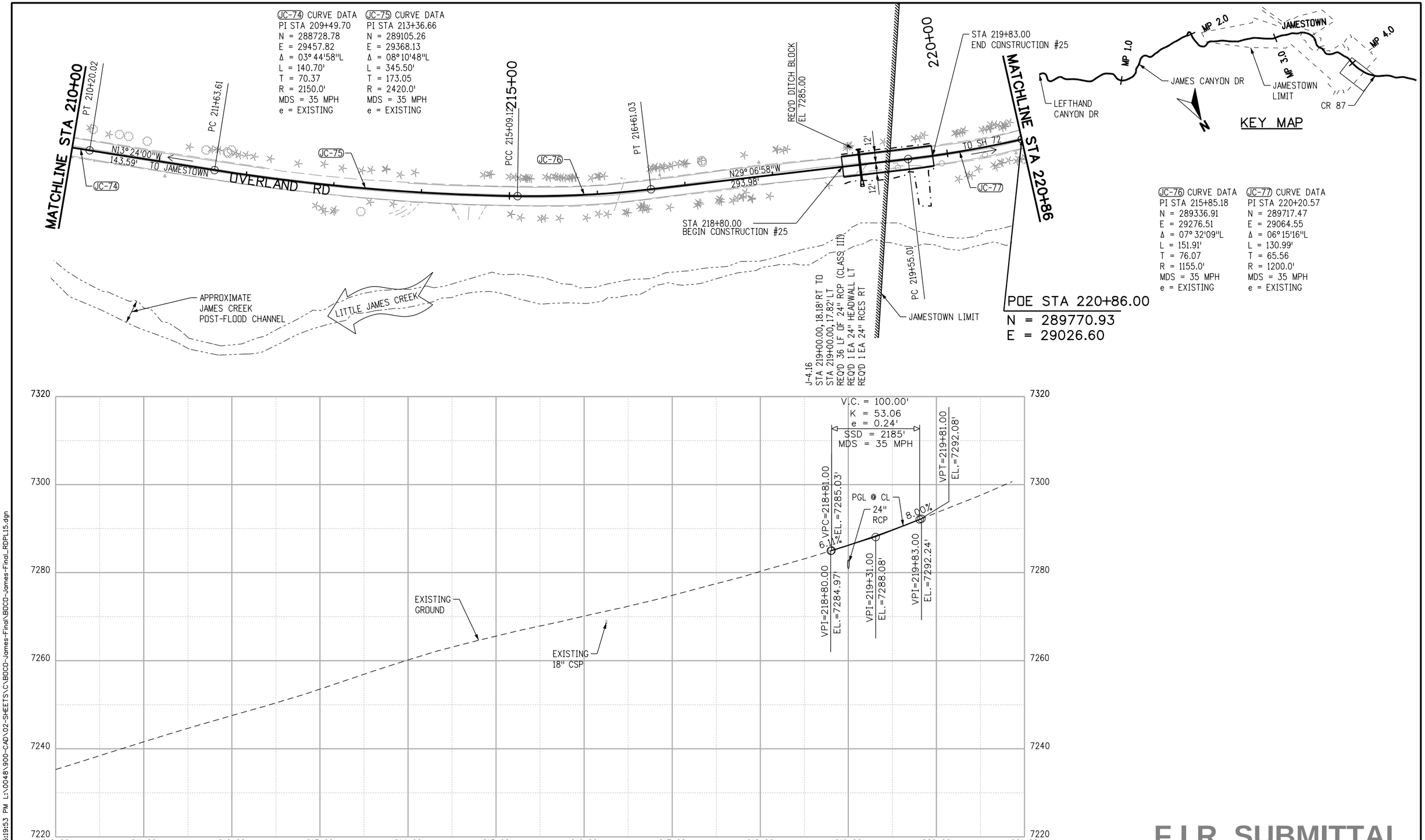

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JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91

SHEET NO: 21

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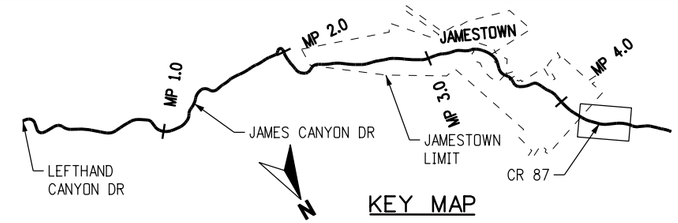
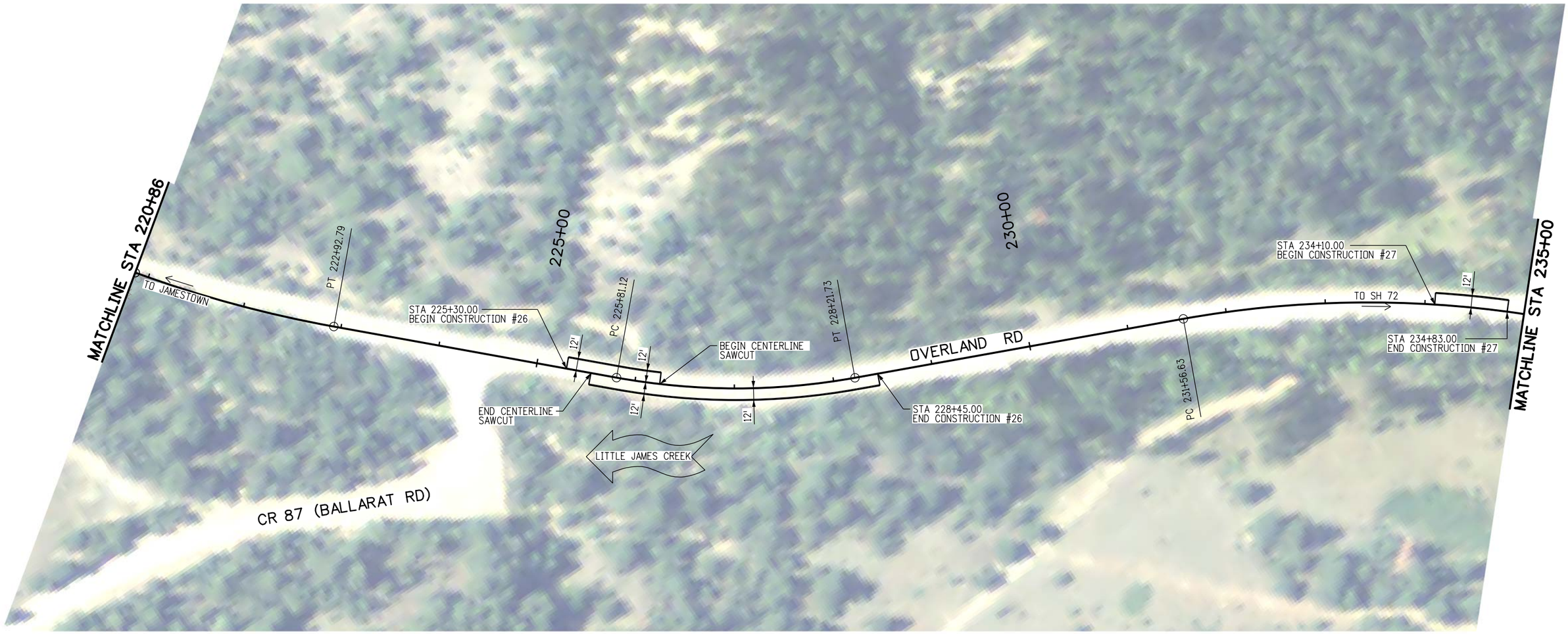
NOTE: CURVE AND ALIGNMENT DATA NOT PROVIDED BEYOND 220+86. STATIONING FOR REMAINDER OF JAMES CANYON TO BE BASED ON THE ROAD CENTERLINE DISTANCE FROM STA 220+86.



KEY MAP



F.I.R. SUBMITTAL

0' 50' 100' 200'

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
JTS	JTS	MES	06/24/2015

JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91

SHEET NO: 22

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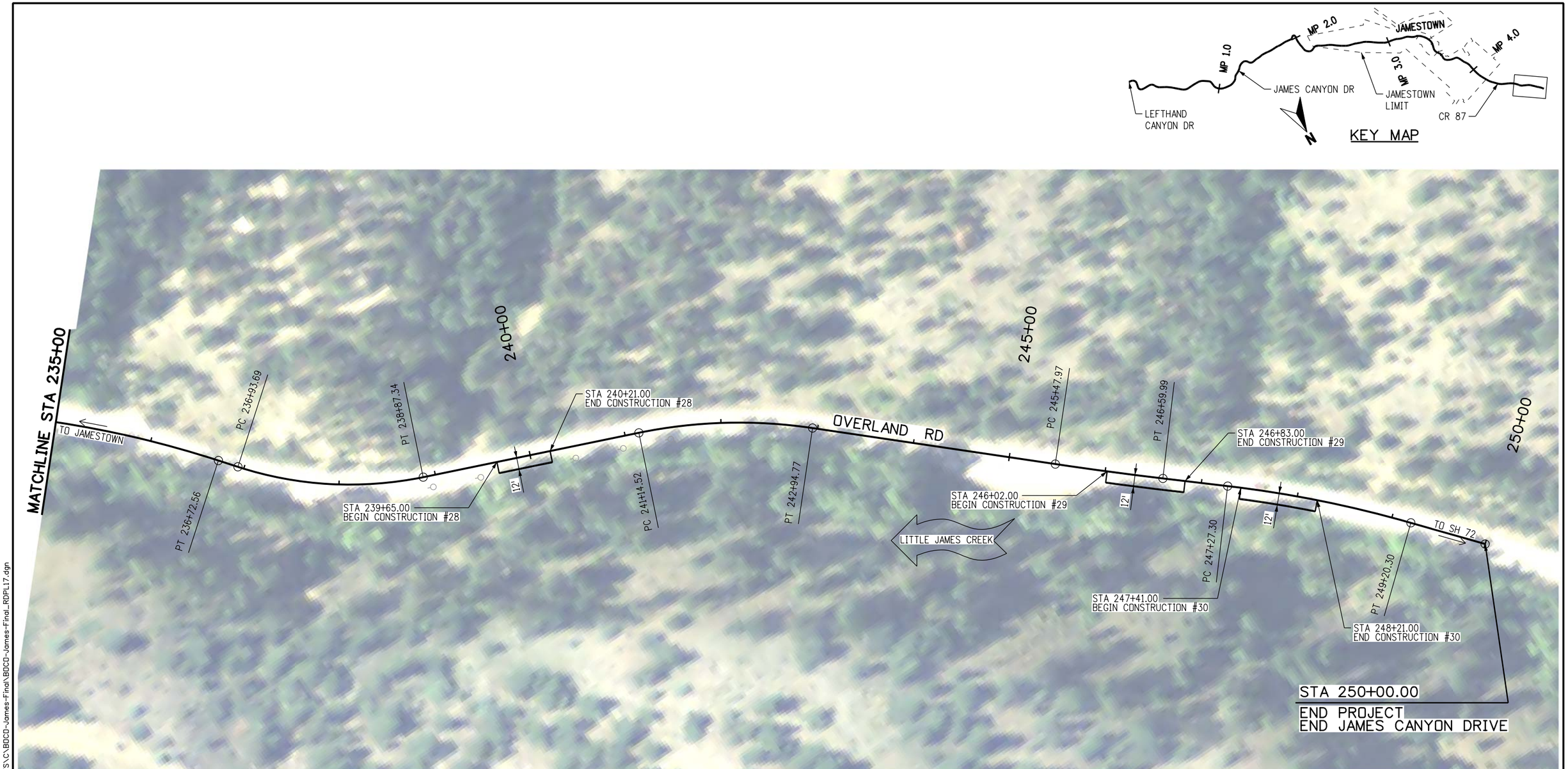

F.I.R. SUBMITTAL

0' 50' 100' 200'

N

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

Boulder County

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
JTS	JTS	MES	06/24/2015

JAMES CANYON
PLAN AND PROFILE

PROJECT NO: SEPT12C24 SEPT12C91

SHEET NO: 23

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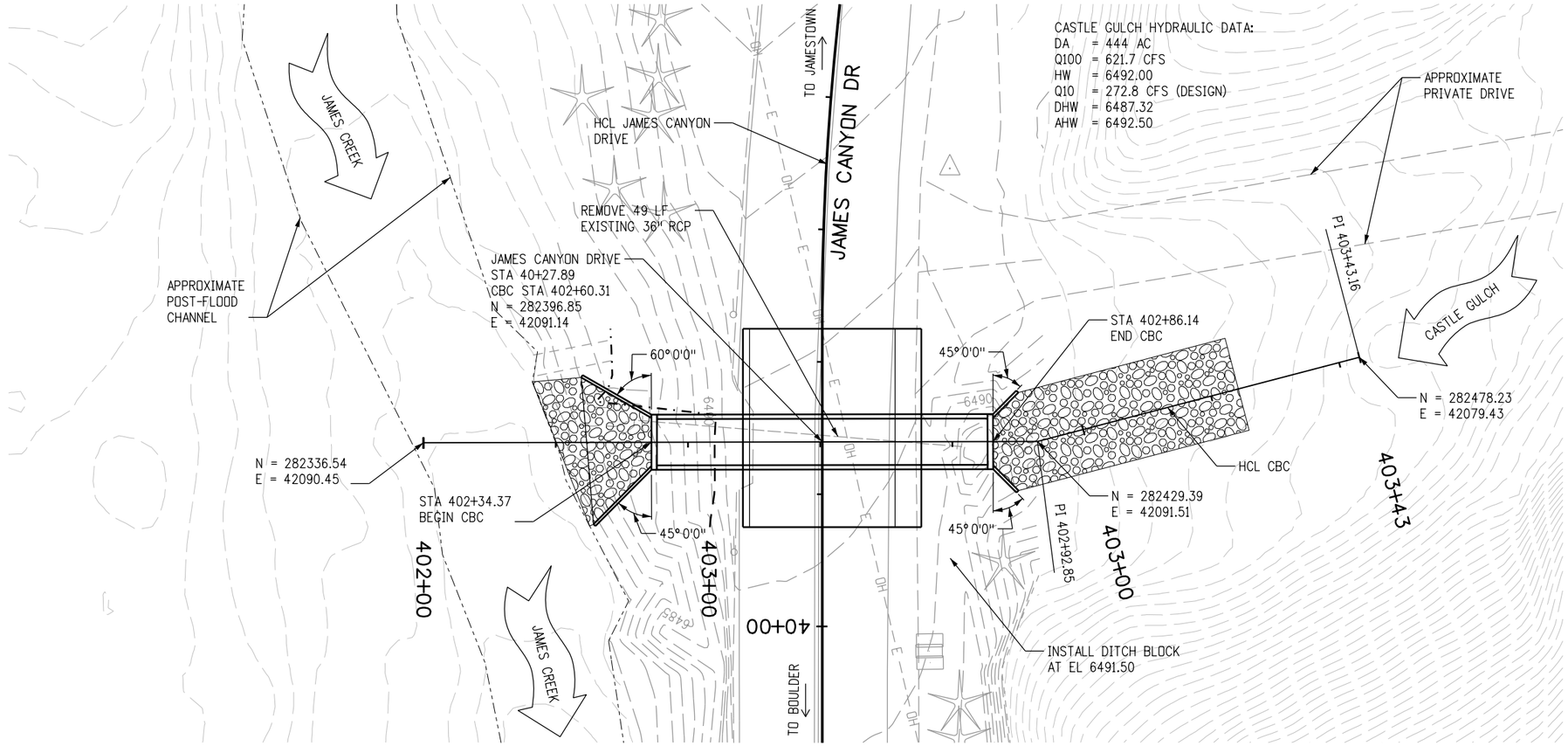
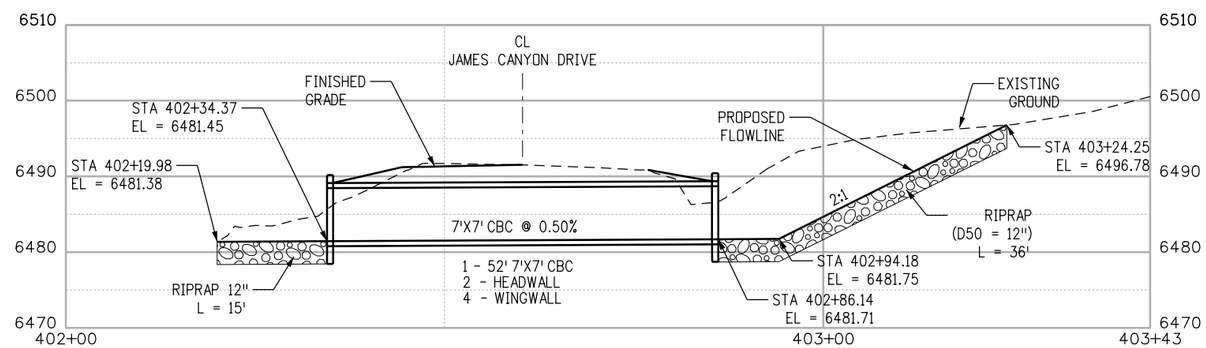




F.I.R. SUBMITTAL

0' 10' 20' 40'

N

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

AECOM

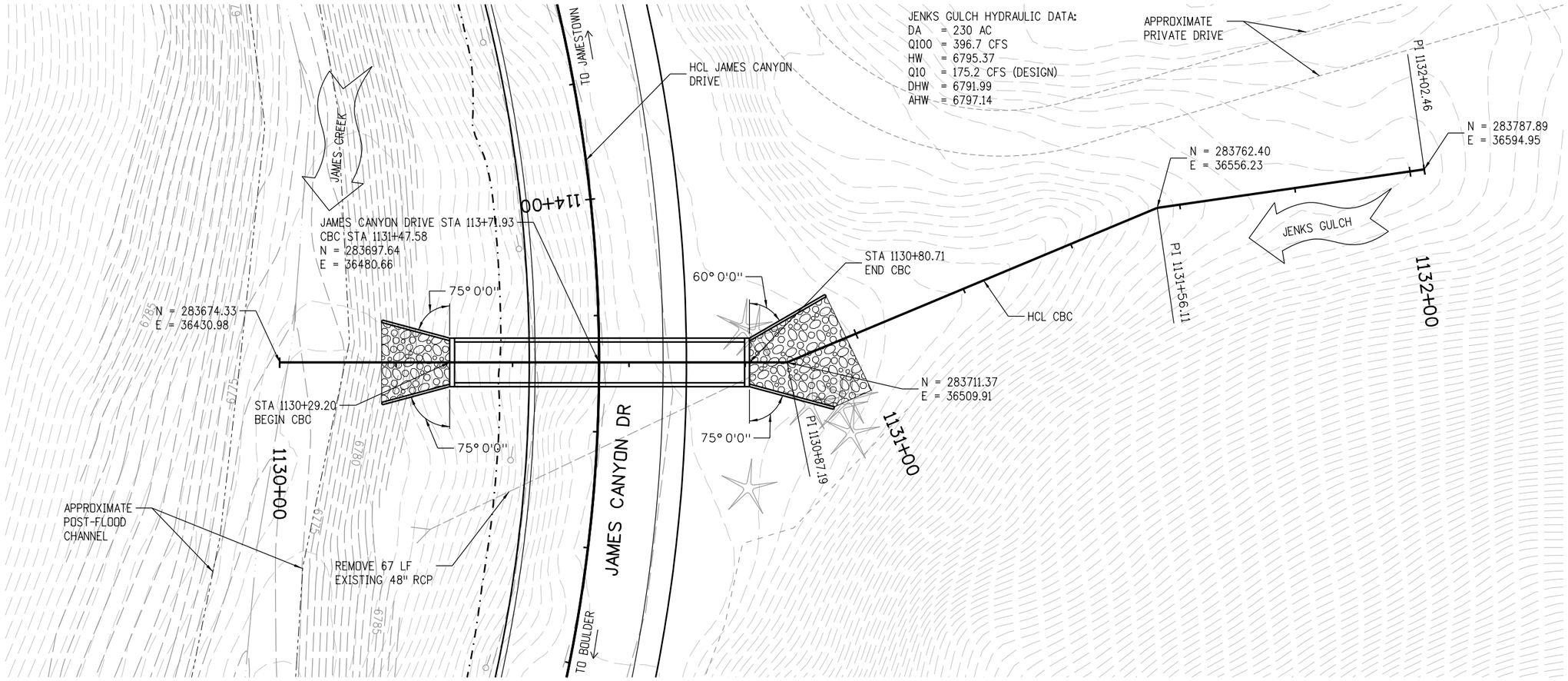
DESIGNED:	CAD:	CHECKED:	DATE:
CLK	CLK	SKL	06/24/2015

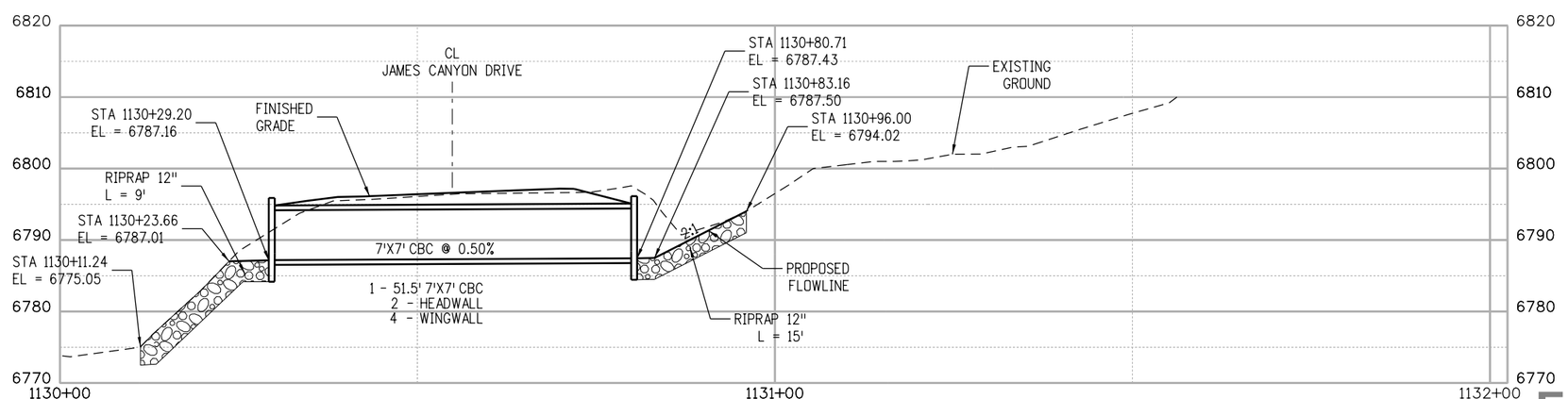
JAMES CANYON
CASTLE GULCH
CBC PLAN & PROFILE

PROJECT NO: SEPT12C24 SEPT12C91

SHEET NO: 24

cloudm1 6/22/2015 6:12:29 PM L:\0048\900-CAD\02-SHEETS\H\BOCD-James-Final\BOCD-James-Final_CBC-PnP01.dgn





F.I.R. SUBMITTAL

0' 10' 20' 40'

N

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

Boulder County

AECOM

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

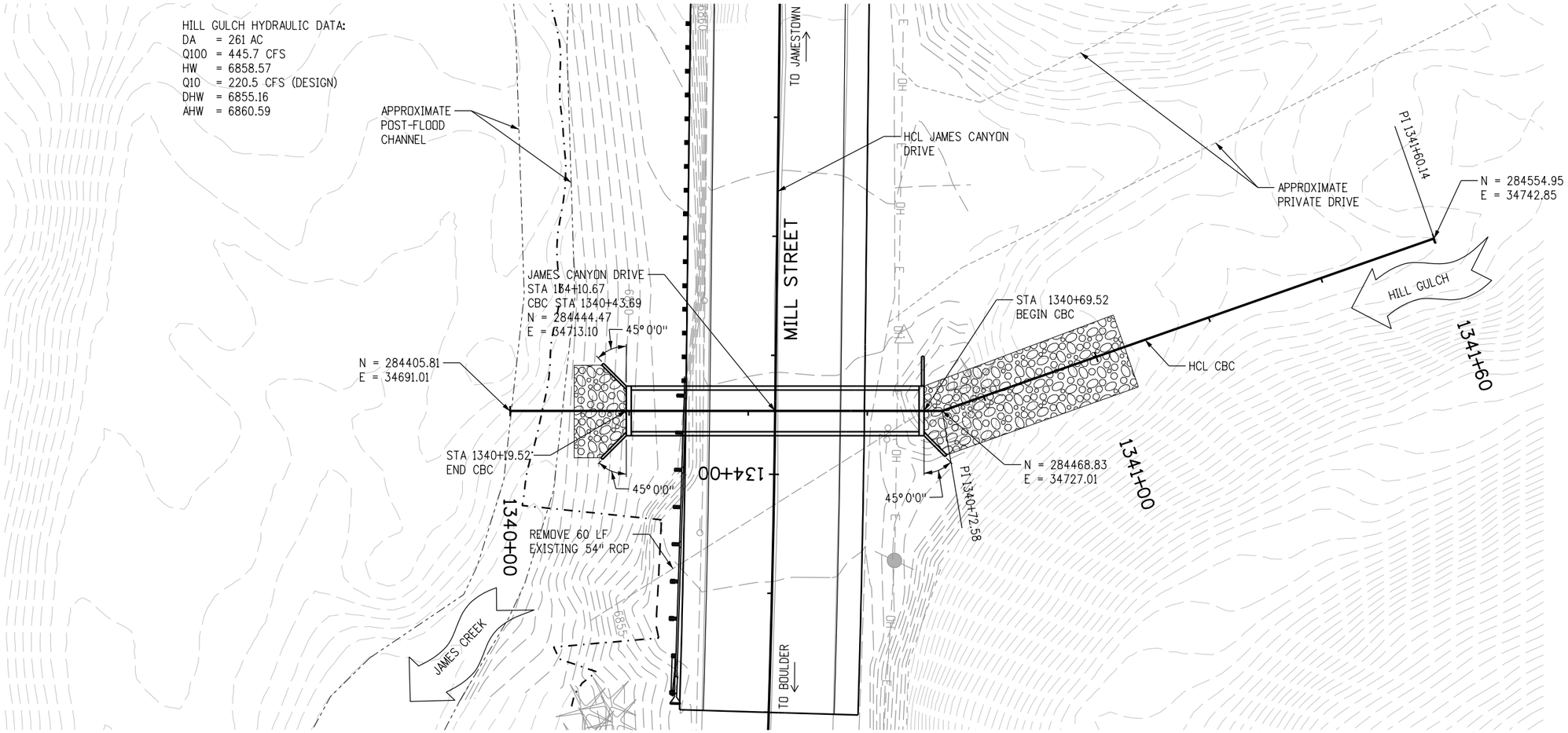
DESIGNED:	CAD:	CHECKED:	DATE:
CLK	CLK	SKL	06/24/2015

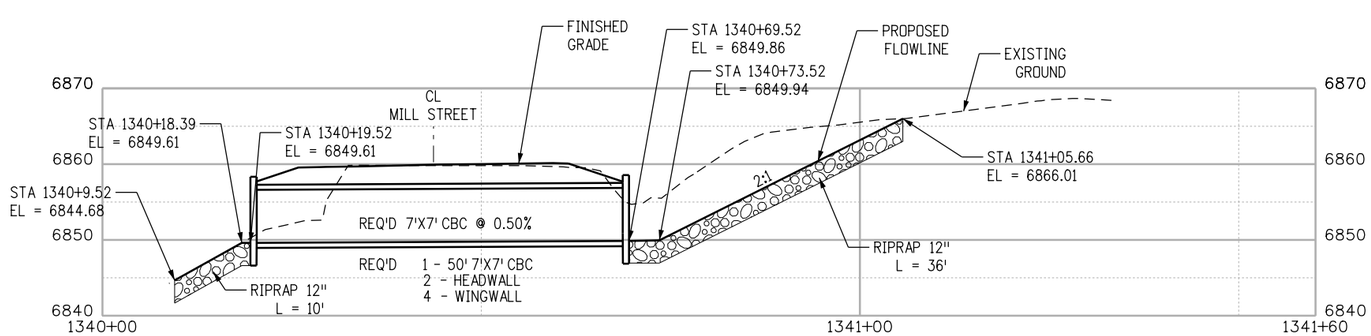
JAMES CANYON
JENKS GULCH
CBC PLAN & PROFILE

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 25

cloudm1 6/22/2015 6:13:37 PM L:\0048\900-CAD\02-SHEETS\H\BDCO-James-Final\BDCO-James-Final_CBC-PnP02.dgn

HILL GULCH HYDRAULIC DATA:
DA = 261 AC
Q100 = 445.7 CFS
HW = 6858.57
Q10 = 220.5 CFS (DESIGN)
DHW = 6855.16
AHW = 6860.59





F.I.R. SUBMITTAL

0' 10' 20' 40'

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
CLK	CLK	SKL	06/22/2015

JAMES CANYON
HILL GULCH
CBC PLAN & PROFILE

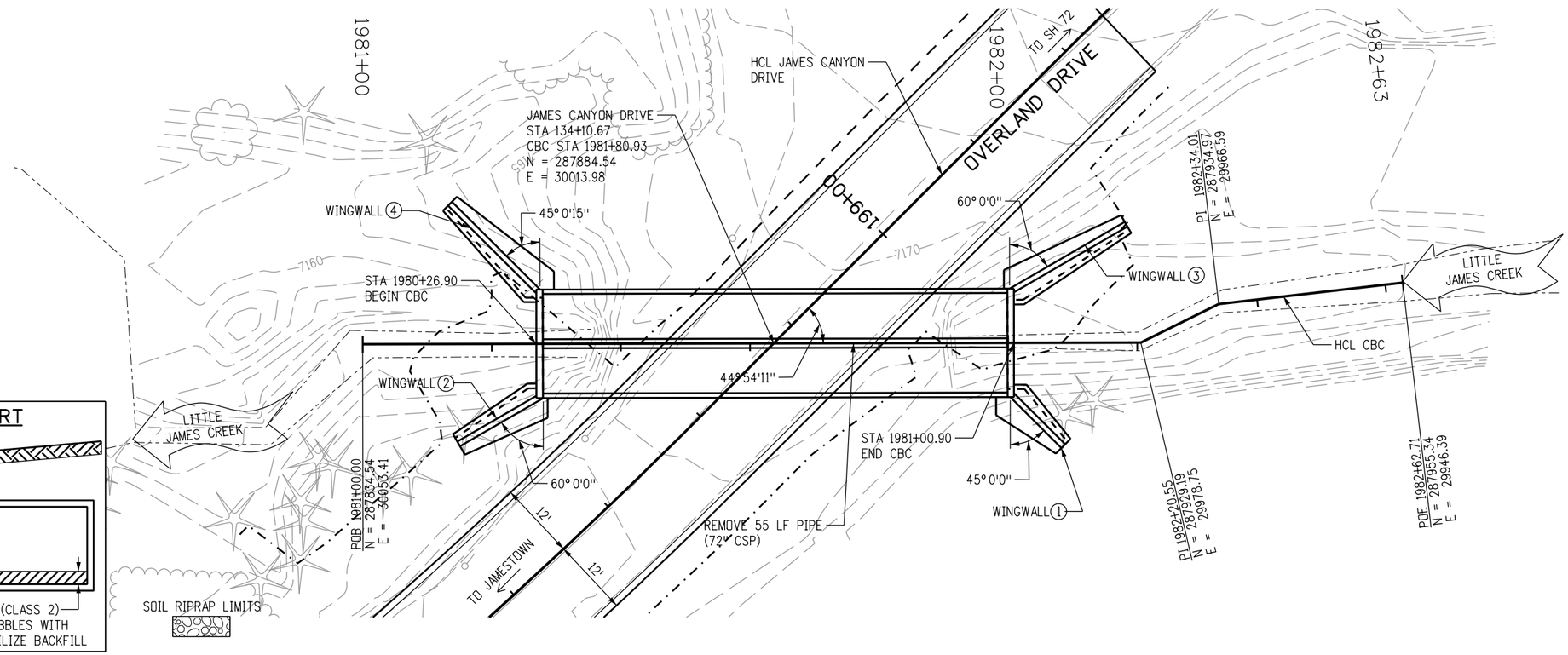
PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 26

cloudml 6/22/2015 6:13:50 PM L:\0048\900-CAD\02-SHEETS\H\BOCO-James-Final\BOCO-James-Final_CBC-PnP03.dgn

JAMES CREEK HYDRAULIC DATA:
DA = X.XX MI²
Q100 = XXXX CFS
HW = XXXX.X
Q10 = XXX CFS (DESIGN)
DHW = XXXX.X
AHW = XXXX.X

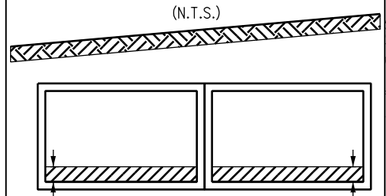
WINGWALL DIMENSIONS

①	L = XX.XX'		③	L = XX.XX'	
	M = XX.XX'			M = XX.XX'	
	K = XX.XX'			K = XX.XX'	
②	L = XX.XX'		④	L = XX.XX'	
	M = XX.XX'			M = XX.XX'	
	K = XX.XX'			K = XX.XX'	

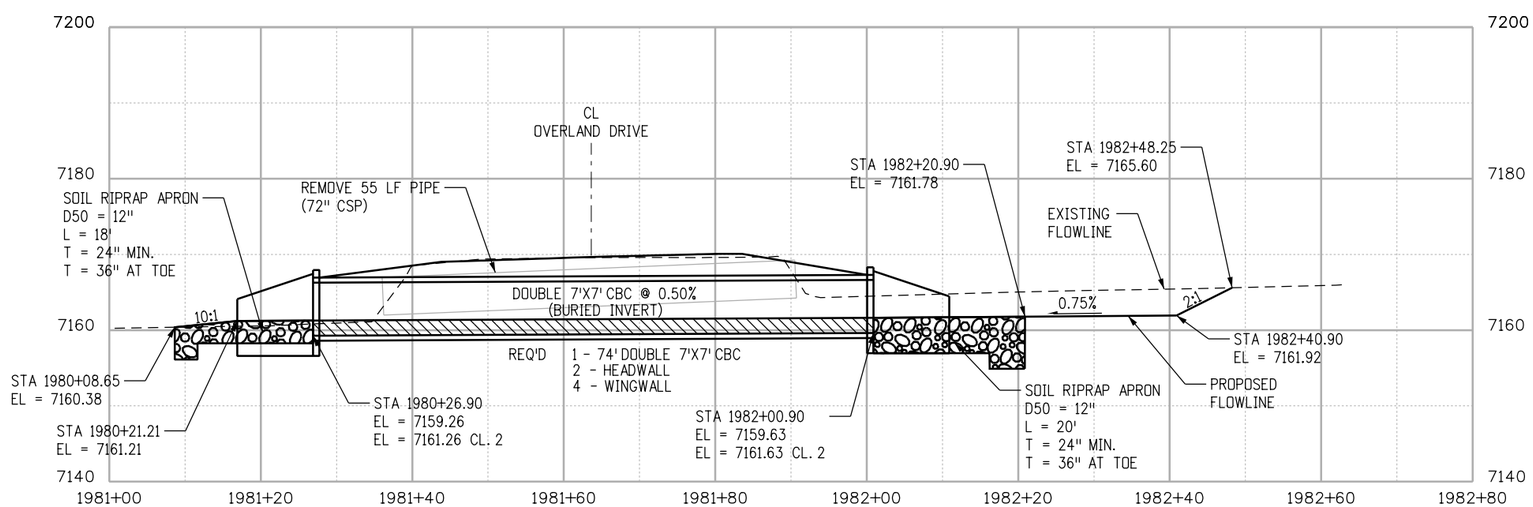


BURIED INVERT

(N.T.S.)



24" STRUCTURE BACKFILL (CLASS 2) TO INCLUDE ROCK AND COBBLES WITH RIPRAP AT ENDS TO STABILIZE BACKFILL



F.I.R. SUBMITTAL

0' 50' 100' 200'

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
MTC	MTC	SKL	06/24/2015

JAMES CANYON
CBC PLAN & PROFILE

PROJECT NO: SEPT12C24 SEPT12C91 SHEET NO: 27

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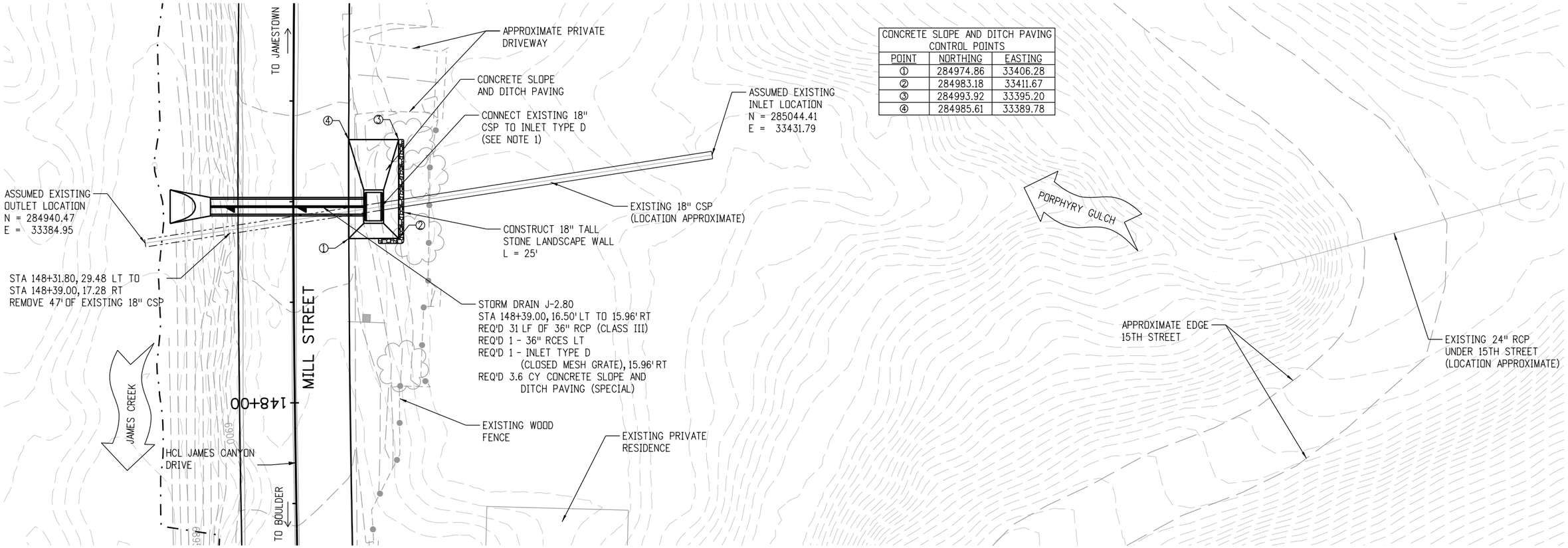
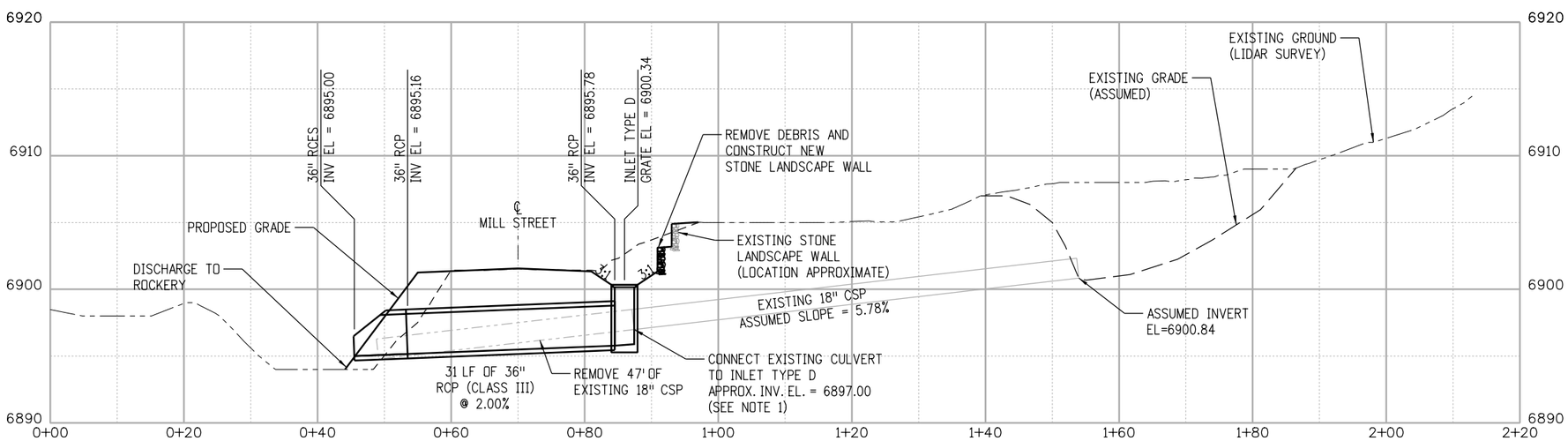


CONCRETE SLOPE AND DITCH PAVING CONTROL POINTS		
POINT	NORTHING	EASTING
①	284974.86	33406.28
②	284983.18	33411.67
③	284993.92	33395.20
④	284985.61	33389.78



STORM DRAIN J-2.80

CROSSING STA 148+39.00

NOTES:

1. EXISTING CULVERT LOCATION IS ASSUMED BASED ON PRELIMINARY FIELD MEASUREMENTS. FIELD VERIFY LOCATION AND INVERT OF EXISTING CULVERT AND ADJUST LOCATION OF INLET TYPE D AND PROPOSED CULVERT AS REQUIRED FOR CONNECTION. MAINTAIN GRATE ELEVATION AND CULVERT SLOPE AS SHOWN.

F.I.R. SUBMITTAL

0' 10' 20' 40'

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
MTC	MTC	SKL	06/24/2015

JAMES CANYON
STORM DRAIN J-2.80
PLAN & PROFILE

PROJECT NO: SEPT12C24 SEPT12C91 SHEET NO: 28

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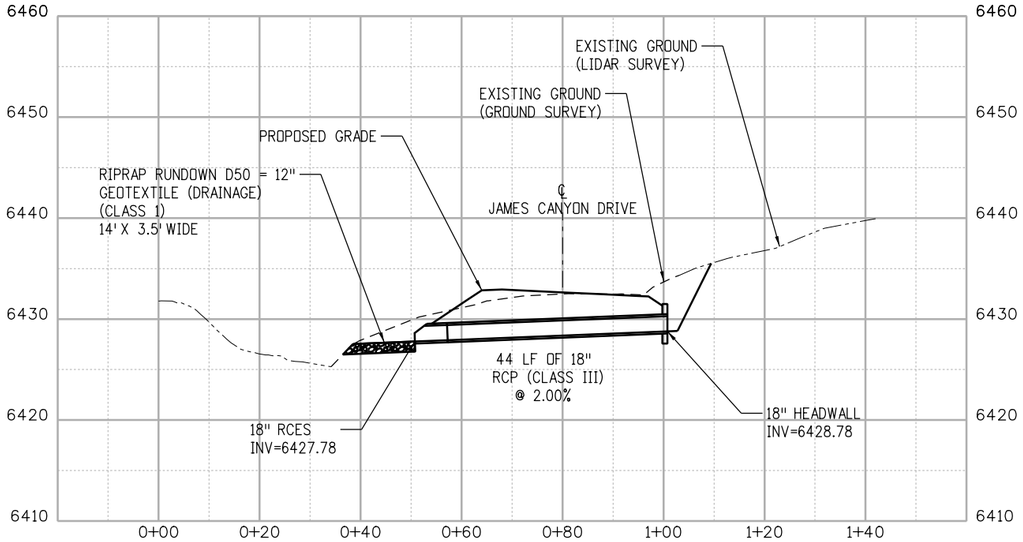
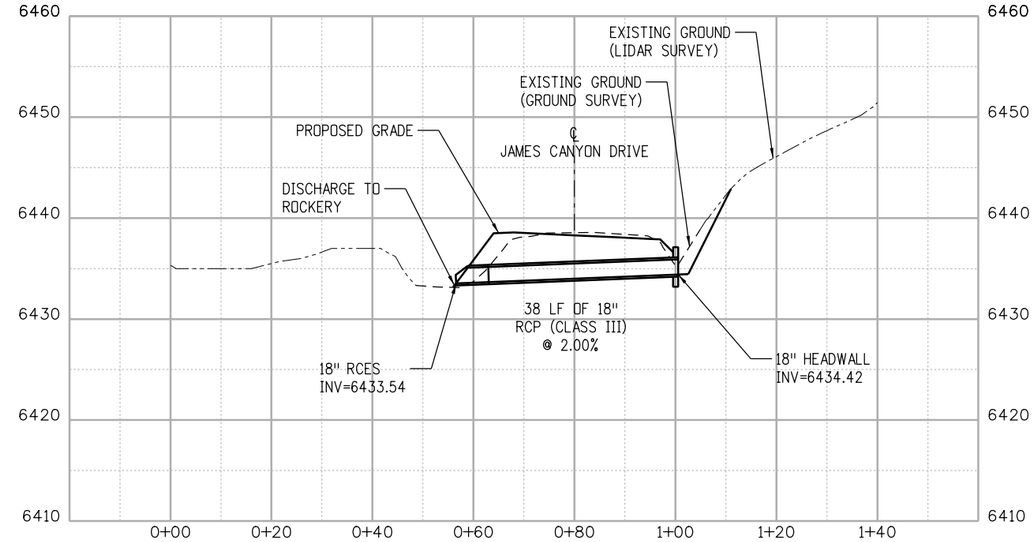


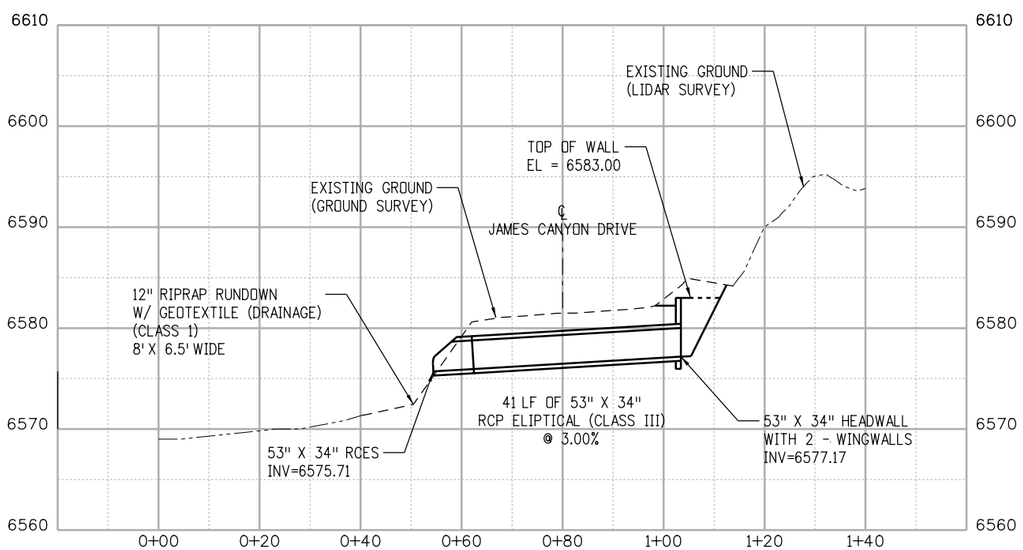
CULVERT J-0.44

CROSSING STA 23+45.00



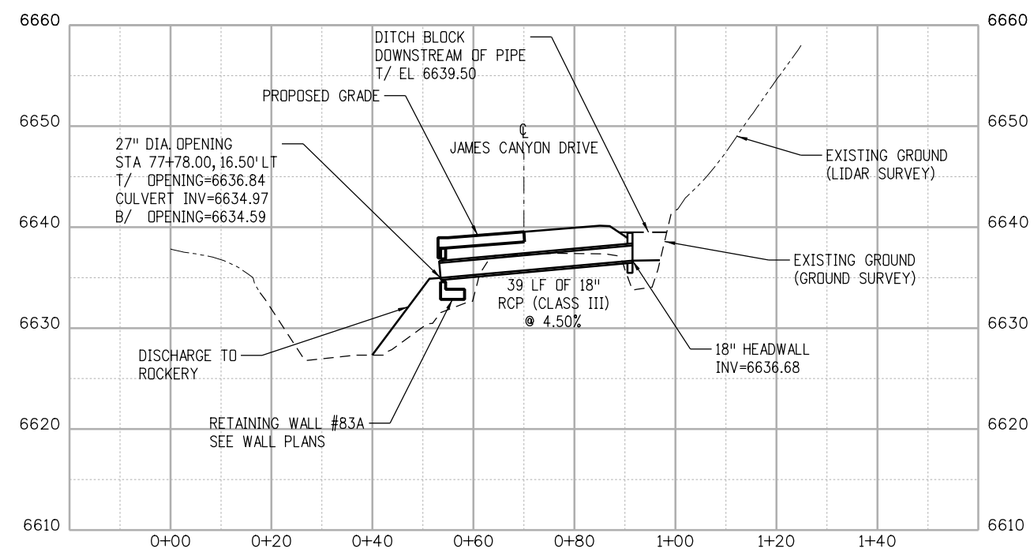
CULVERT J-0.47

CROSSING STA 25+05.00



CULVERT J-1.13

CROSSING STA 60+00.00



CULVERT J-1.46

CROSSING STA 77+78.00

F.I.R. SUBMITTAL

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
MTC	MTC	SKL	06/24/2015

JAMES CANYON
CROSS CULVERT PROFILES

PROJECT NO: SEPT12C24 SEPT12C91

SHEET NO: 29

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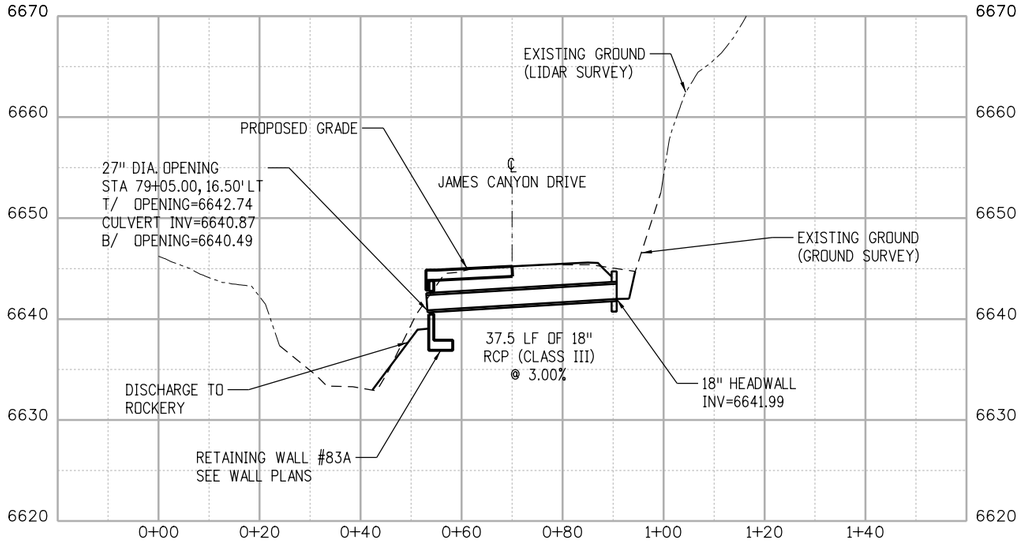
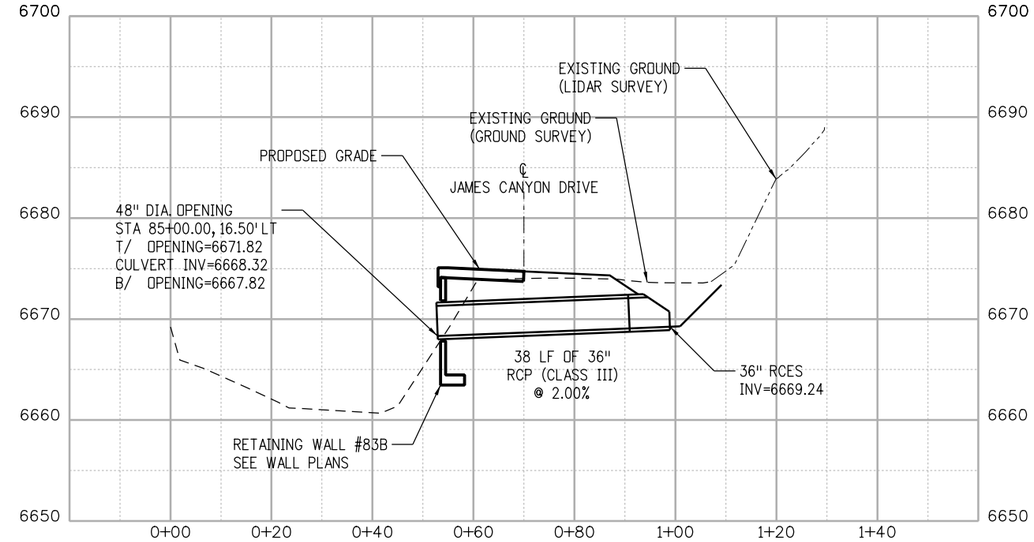


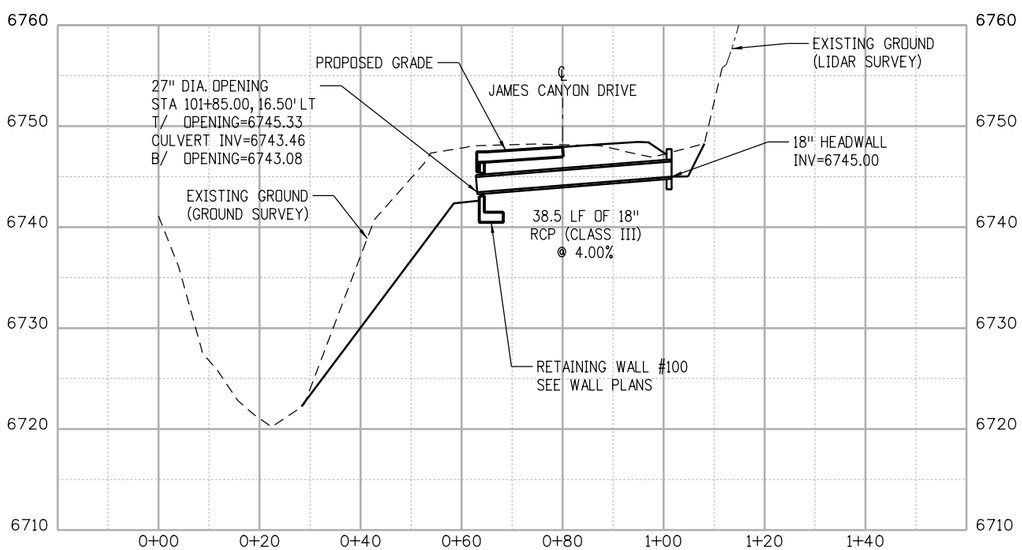
CULVERT J-1.47

CROSSING STA 79+05.00



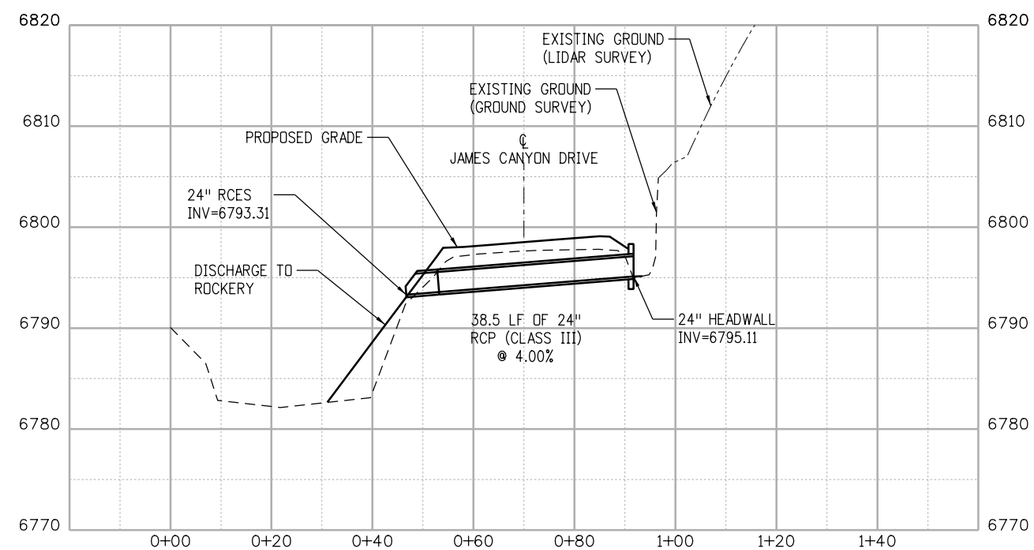
CULVERT J-1.63

CROSSING STA 85+00.00



CULVERT J-1.89

CROSSING STA 101+85.00



CULVERT J-2.20

CROSSING STA 116+23.00

F.I.R. SUBMITTAL

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

Boulder County

AECOM

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
MTC	MTC	SKL	06/24/2015

JAMES CANYON
CROSS CULVERT PROFILES

PROJECT NO: SEPT12C24 SEPT12C91

SHEET NO: 30

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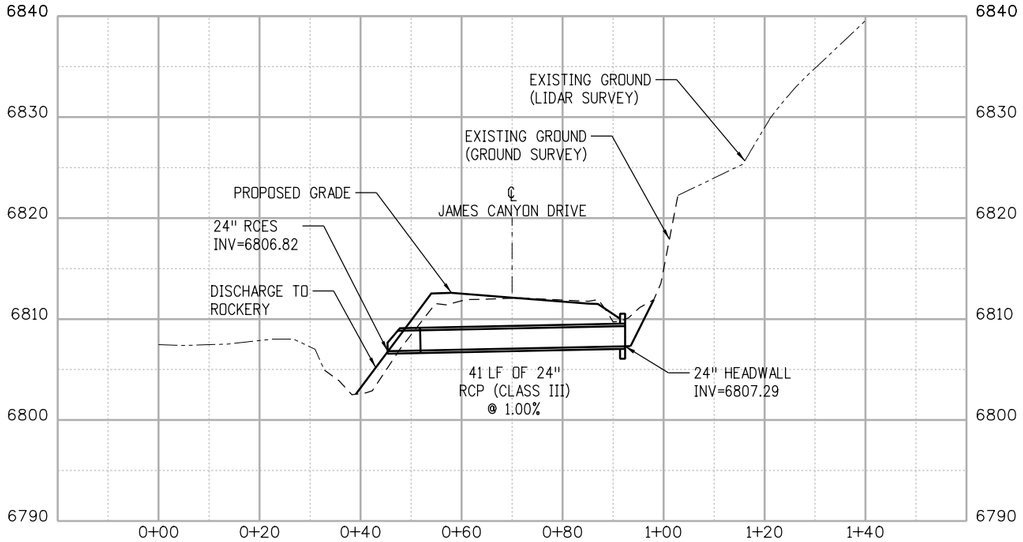
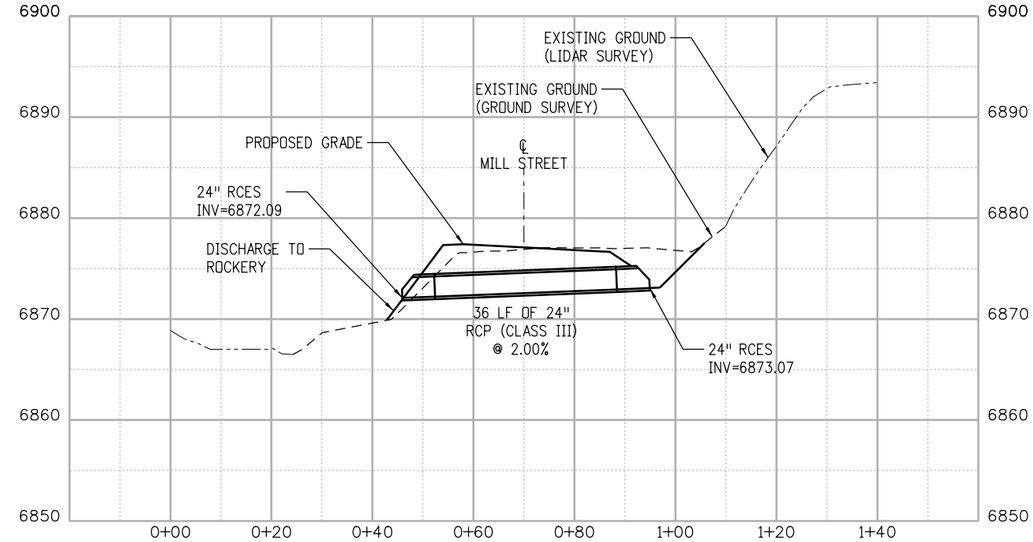


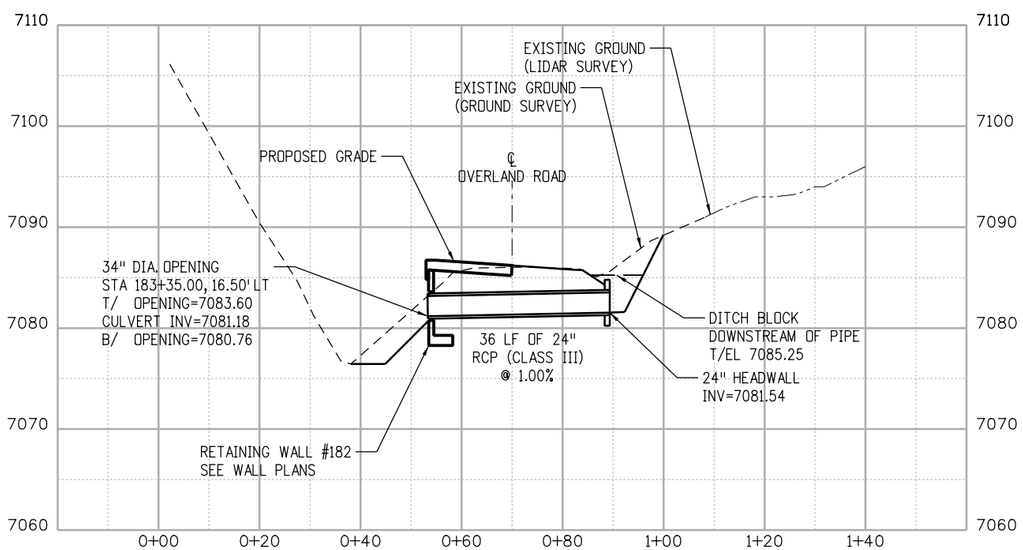
CULVERT J-2.29

CROSSING STA 121+26.00



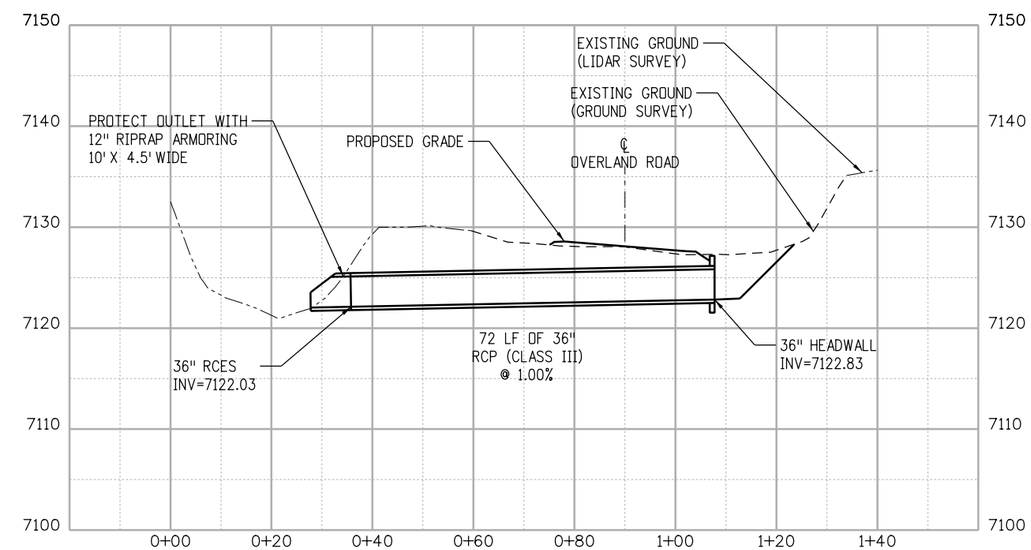
CULVERT J-2.68

CROSSING STA 140+68.00



CULVERT J-3.48

CROSSING STA 183+35.00



CULVERT J-3.62

CROSSING STA 190+88.00

F.I.R. SUBMITTAL

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

Boulder County

AECOM

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
MTC	MTC	SKL	06/24/2015

JAMES CANYON
CROSS CULVERT PROFILES

PROJECT NO: SEPT12C24 SEPT12C91

SHEET NO: 31

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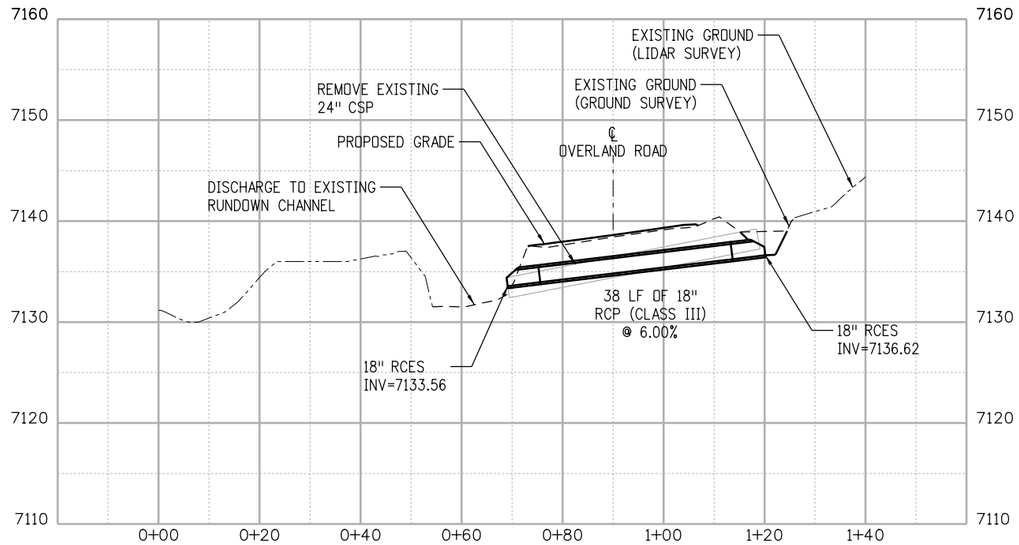
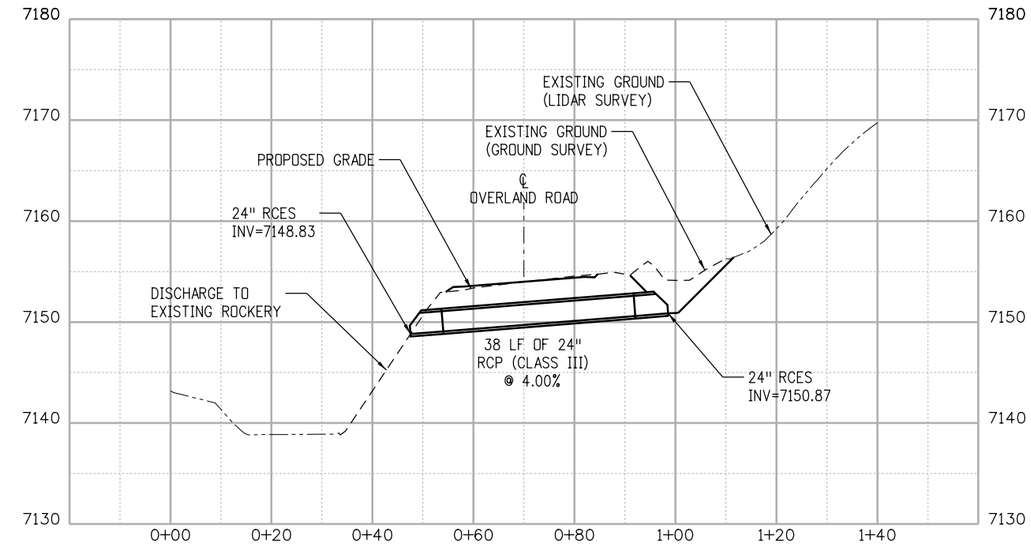


CULVERT J-3.64

CROSSING STA 192+46.00



CULVERT J-3.68

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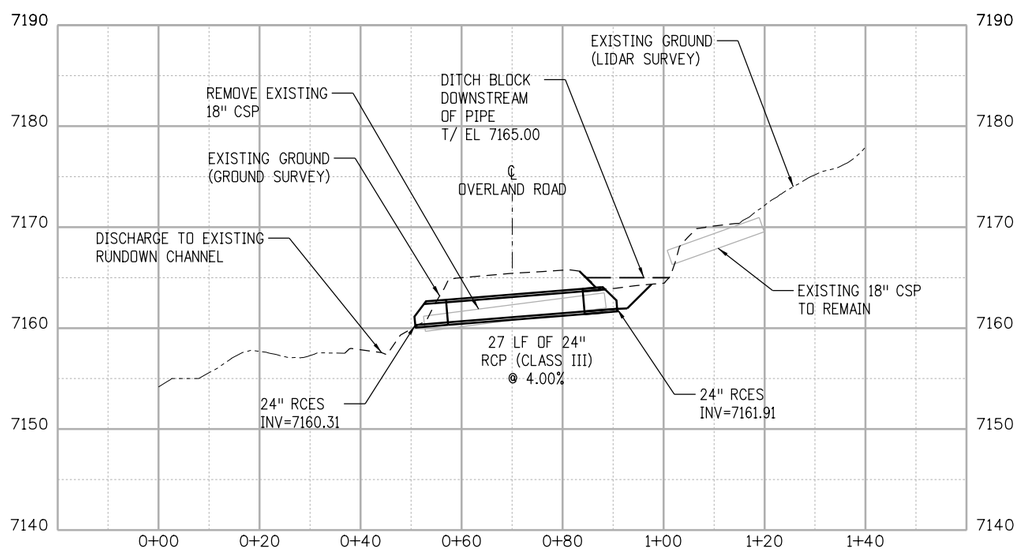
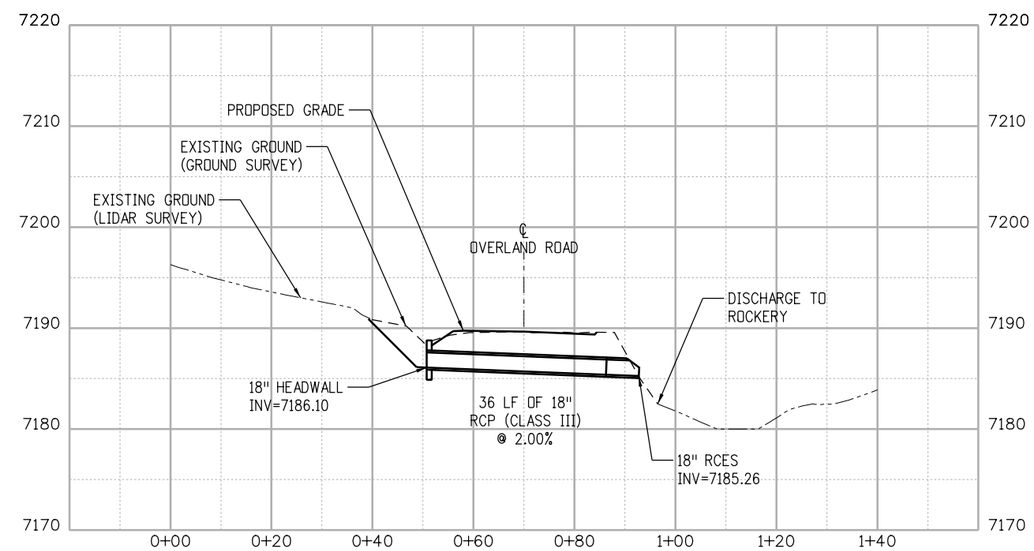


CULVERT J-3.74

CROSSING STA 197+24.00



CULVERT J-3.81

CROSSING STA 202+85.00

F.I.R. SUBMITTAL

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

Boulder County

AECOM

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
MTC	MTC	SKL	06/24/2015

JAMES CANYON
CROSS CULVERT PROFILES

PROJECT NO: SEPT12C24 SEPT12C91

SHEET NO: 32

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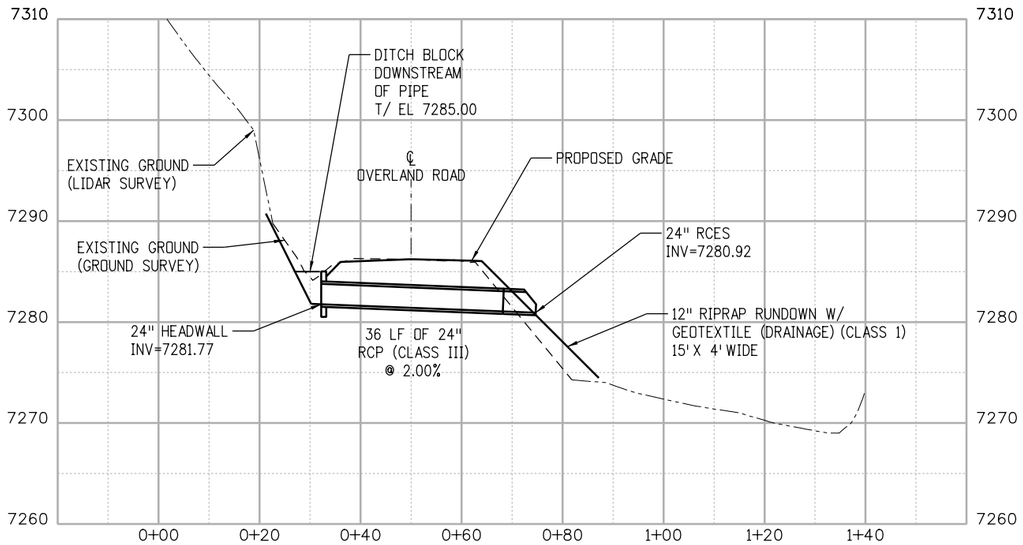

CULVERT J-4.16

CROSSING STA 219+00.00

F.I.R. SUBMITTAL

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
MTC	MTC	SKL	06/24/2015

JAMES CANYON
CROSS CULVERT PROFILES

PROJECT NO: SEPT12C24 SEPT12C91

SHEET NO: 33

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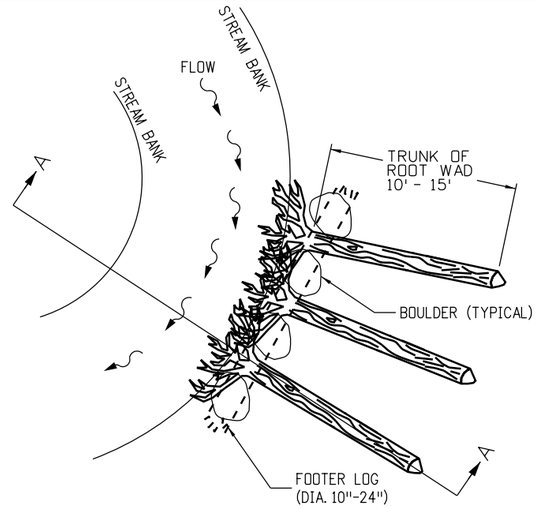
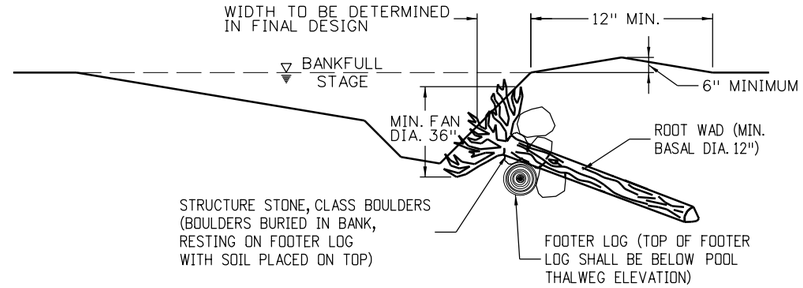
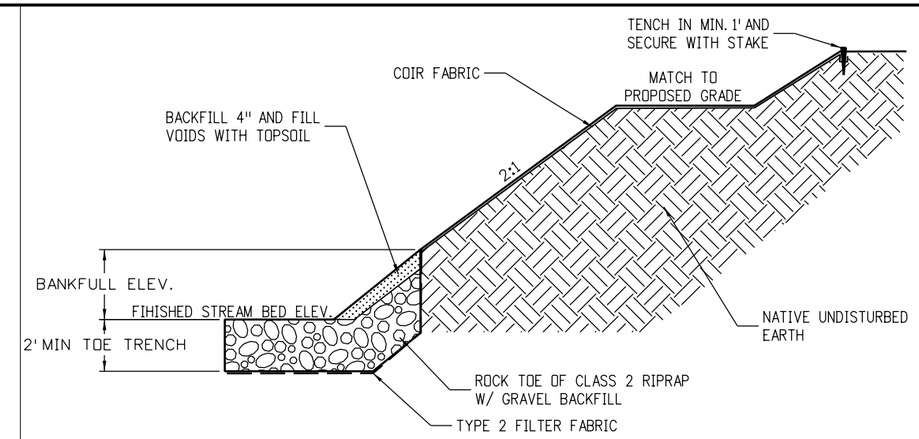


PLAN VIEW



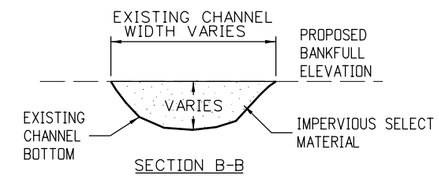
CROSS-SECTION A-A

ROOT WAD
SCALE: NTS

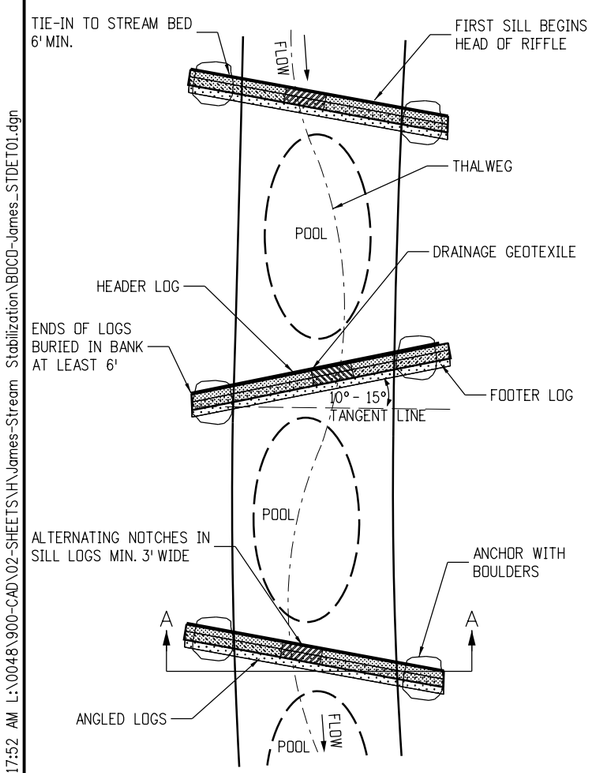


ROCK TOE
SCALE: NTS

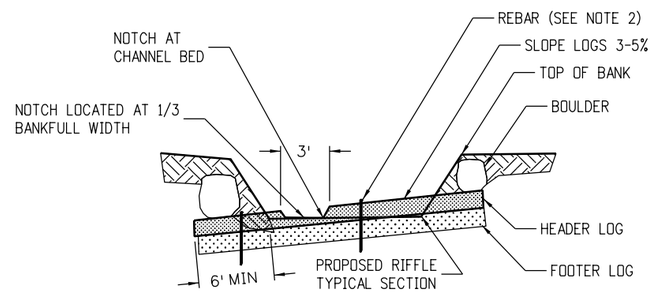
NOTES:
1. 90% COMPACTION RATE IS REQUIRED ON CHANNEL PLUG OR AS APPROVED BY THE ENGINEER.
2. SIDE SLOPE THAT IS ADJACENT TO PROPOSED STREAM NEEDS TO MATCH PROPOSED CROSS SECTION IN THAT REGION.
3. THIS STRUCTURE SHALL BE PLACED AS DIRECTED BY THE ENGINEER.



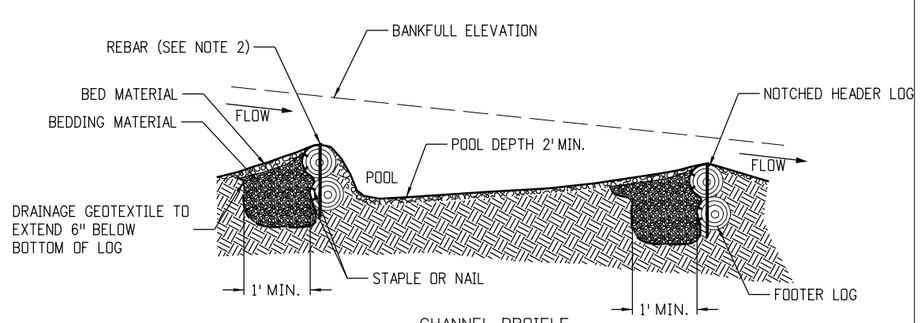
SECTION B-B



PLAN VIEW



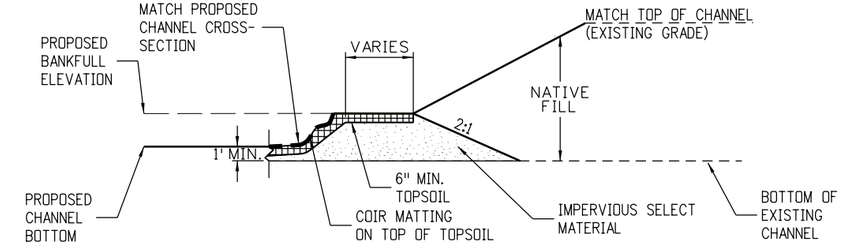
LOG SECTION A-A LOOKING UPSTREAM



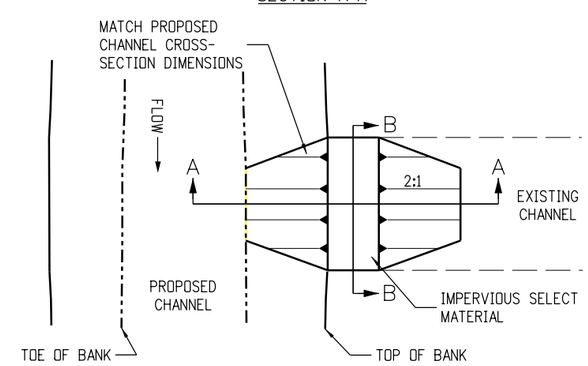
CHANNEL PROIFLE

NOTES:
1. ALTERNATE SILL DIRECTION AND SLOPE IN ACCORDANCE WITH PLANS.
2. DRILL 1-1/8" DIAMETER HOLE IN LOGS AND DRIVE #8 REBAR THROUGH. BEND AT TOP.
3. NOTCH LOCATED AT 1/3 BANKFULL, ALTERNATING IN RIFFLE, OR LOCATED AT MIDDLE FOR THE HEAD OF POOL.
4. LOG SHALL BE EMBEDDED IN BANK A MINIMUM OF 6'.

ANGLED LOG STEP POOL
SCALE: NTS



SECTION A-A



PLAN VIEW OF EXISTING CHANNEL WITH CHANNEL PLUG

CHANNEL PLUG
SCALE: NTS

FOR SUBMITTAL

15%

CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS: NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
MTC	MTC	TPF	04/15/2015

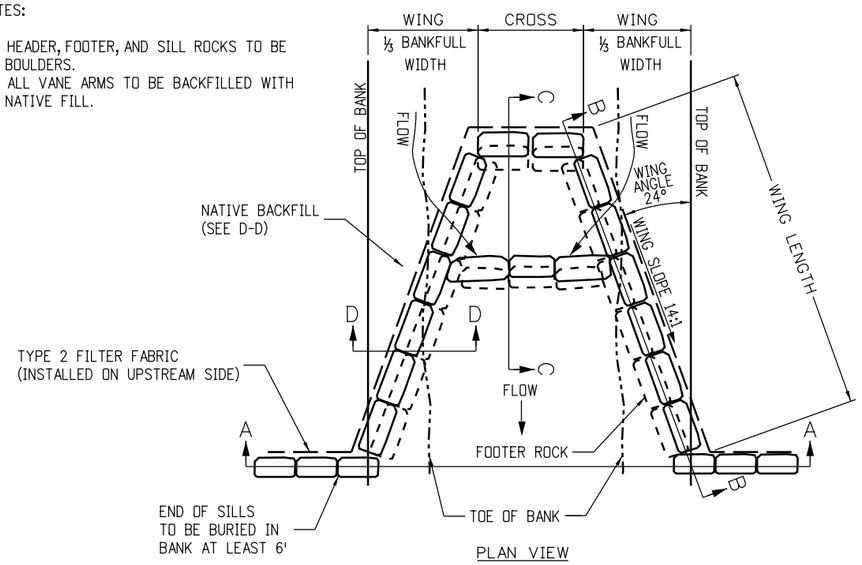
JAMES CANYON STREAM DETAILS (1 OF 5)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 34

SalekM 6/23/2015 8:17:52 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BOCD-James_STDET01.dgn

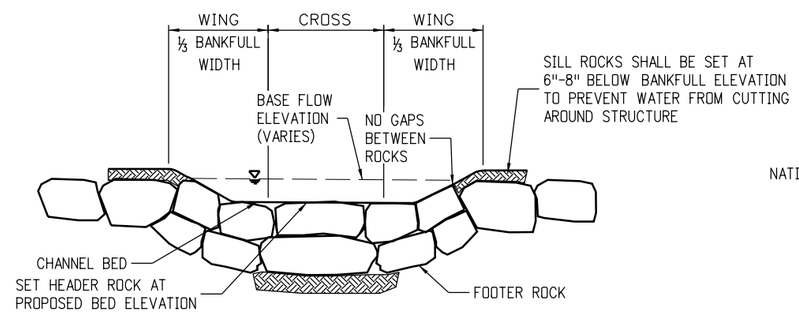
NOTES:

1. HEADER, FOOTER, AND SILL ROCKS TO BE BOULDERS.
2. ALL VANE ARMS TO BE BACKFILLED WITH NATIVE FILL.

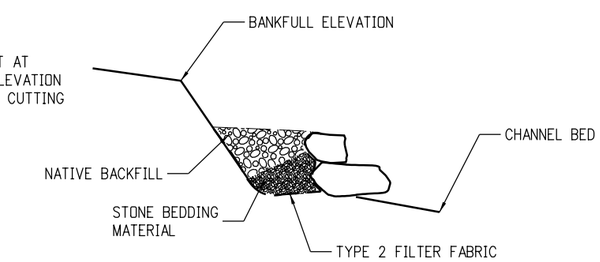


PLAN VIEW

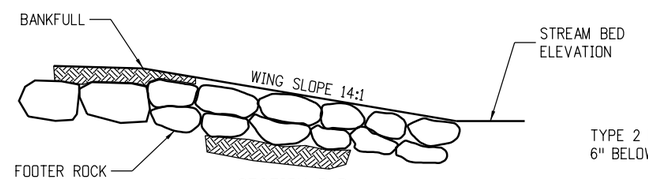
FOOTER AND HEADER BOULDER DIMENSIONS		
MINIMUM	MIDRANGE	MAXIMUM
24"	30"	36"



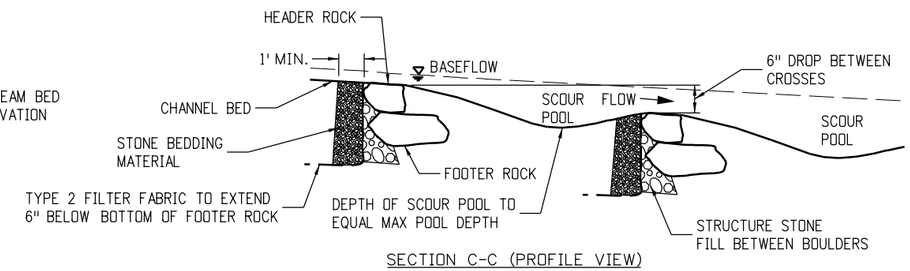
SECTION A-A (UPSTREAM VIEW)



SECTION D-D



SECTION B-B



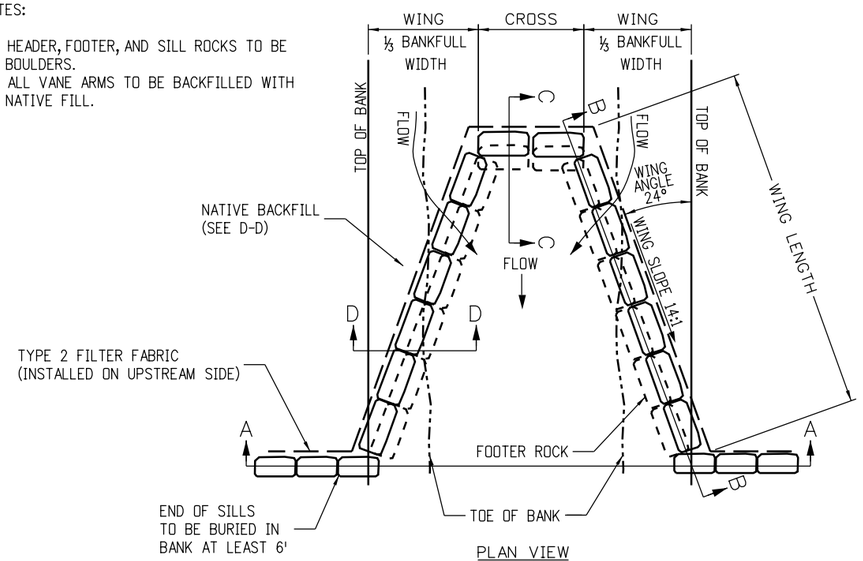
SECTION C-C (PROFILE VIEW)

DOUBLE DROP ROCK CROSS-VANE

SCALE: NTS

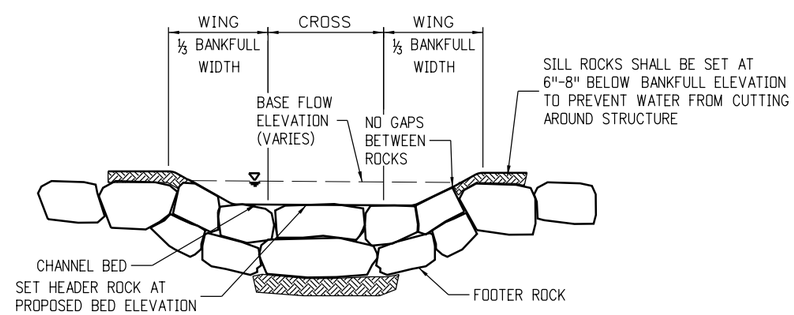
NOTES:

1. HEADER, FOOTER, AND SILL ROCKS TO BE BOULDERS.
2. ALL VANE ARMS TO BE BACKFILLED WITH NATIVE FILL.

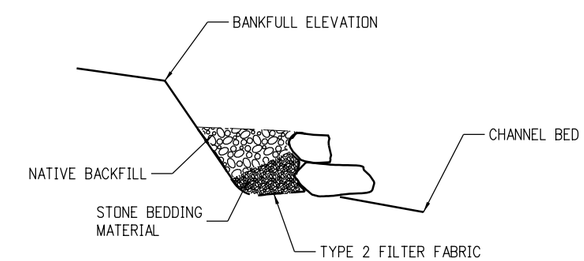


PLAN VIEW

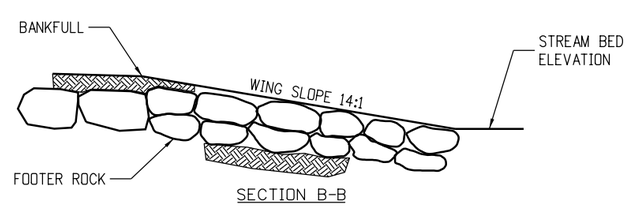
FOOTER AND HEADER BOULDER DIMENSIONS		
MINIMUM	MIDRANGE	MAXIMUM
24"	30"	36"



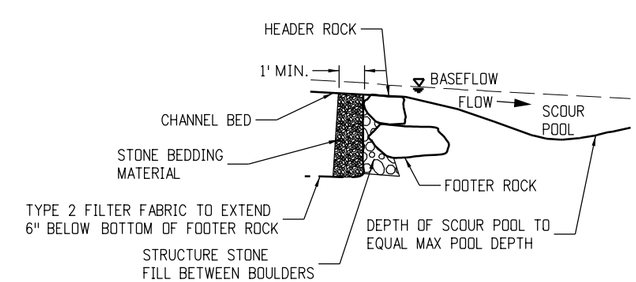
SECTION A-A (UPSTREAM VIEW)



SECTION D-D



SECTION B-B



SECTION C-C (PROFILE VIEW)

ROCK CROSS-VANE

SCALE: NTS

F.I.R. SUBMITTAL

15%

CALL UTILITY NOTIFICATION CENTER OF COLORADO
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REVISIONS: NO.	DATE	REVISION DESCRIPTION:

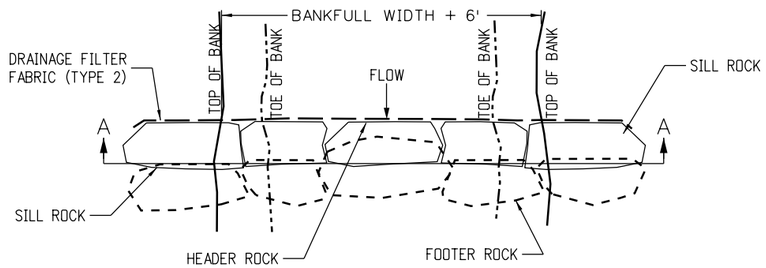
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
MTC	MTC	TPF	04/15/2015

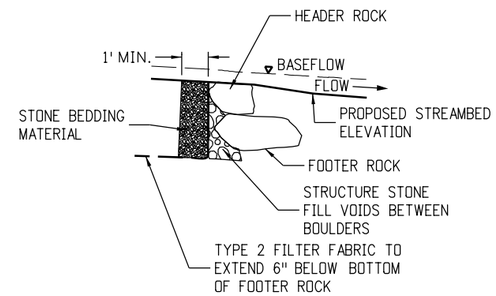
JAMES CANYON STREAM DETAILS (2 OF 5)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 35

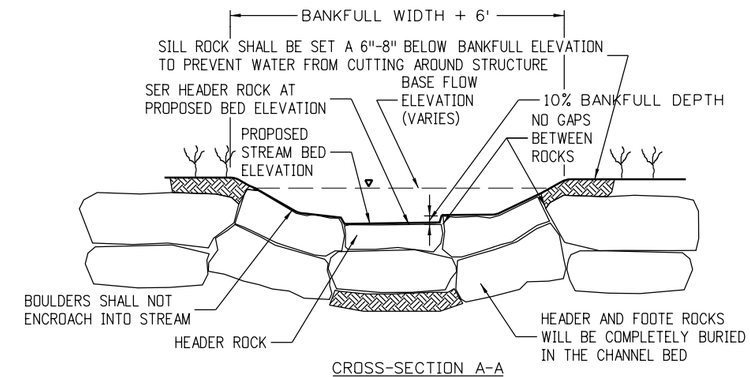
SaleKM 6/23/2015 8:17:53 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BOCO-James_STDET02.dgn



PLAN VIEW



PROFILE VIEW



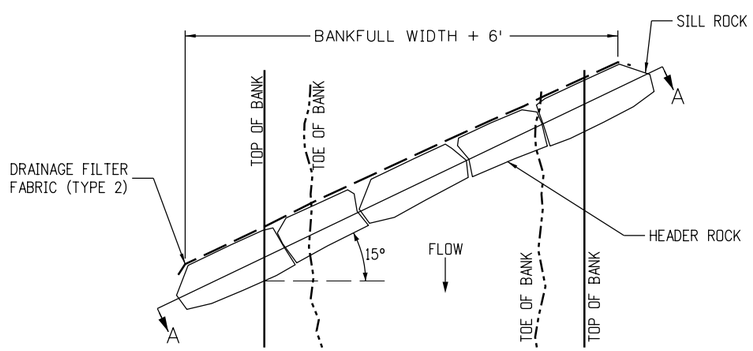
CROSS-SECTION A-A

NOTES:

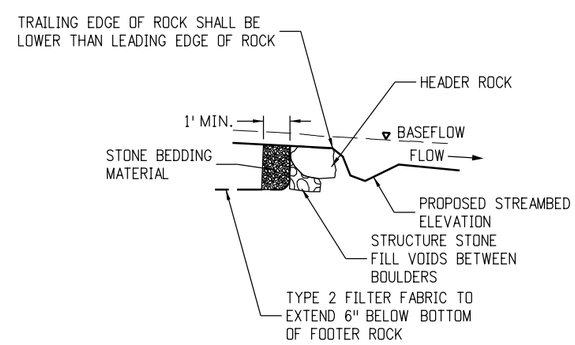
1. HEADER, FOOTER, AND SILL ROCKS TO BE STRUCTURE STONE, CLASS BOULDER.
2. HEADER ROCK IS PLACED LOWER THAN TOE ROCKS.

ROCK SILL

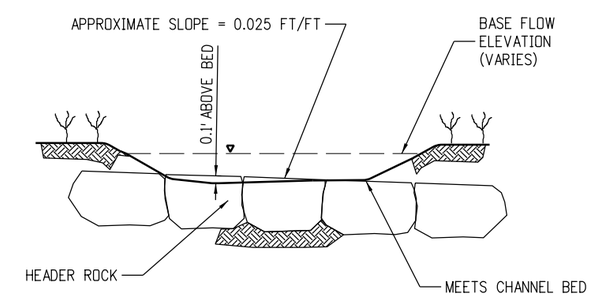
SCALE: NTS



PLAN VIEW



PROFILE VIEW



CROSS-SECTION A-A

NOTES:

3. ALTERNATE SILL DIRECTION IN ACCORDANCE WITH PLANS. HEADER, AND SILL ROCKS TO BE STRUCTURE STONE, CLASS BOULDER, 30"-36".
4. AT THE DISCRETION OF THE DESIGNER, SURGE STONE MAY BE USED IN LIEU OF #57 STONE AND CLASS 'A' USED TO FILL VOIDS.

ANGLED ROCK SILL (PLACED AT 15° ANGLE)

SCALE: NTS

F.I.R. SUBMITTAL

15%

CALL UTILITY NOTIFICATION CENTER OF COLORADO
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BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
MTC	MTC	TPF	04/15/2015

JAMES CANYON STREAM DETAILS (3 OF 5)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 36

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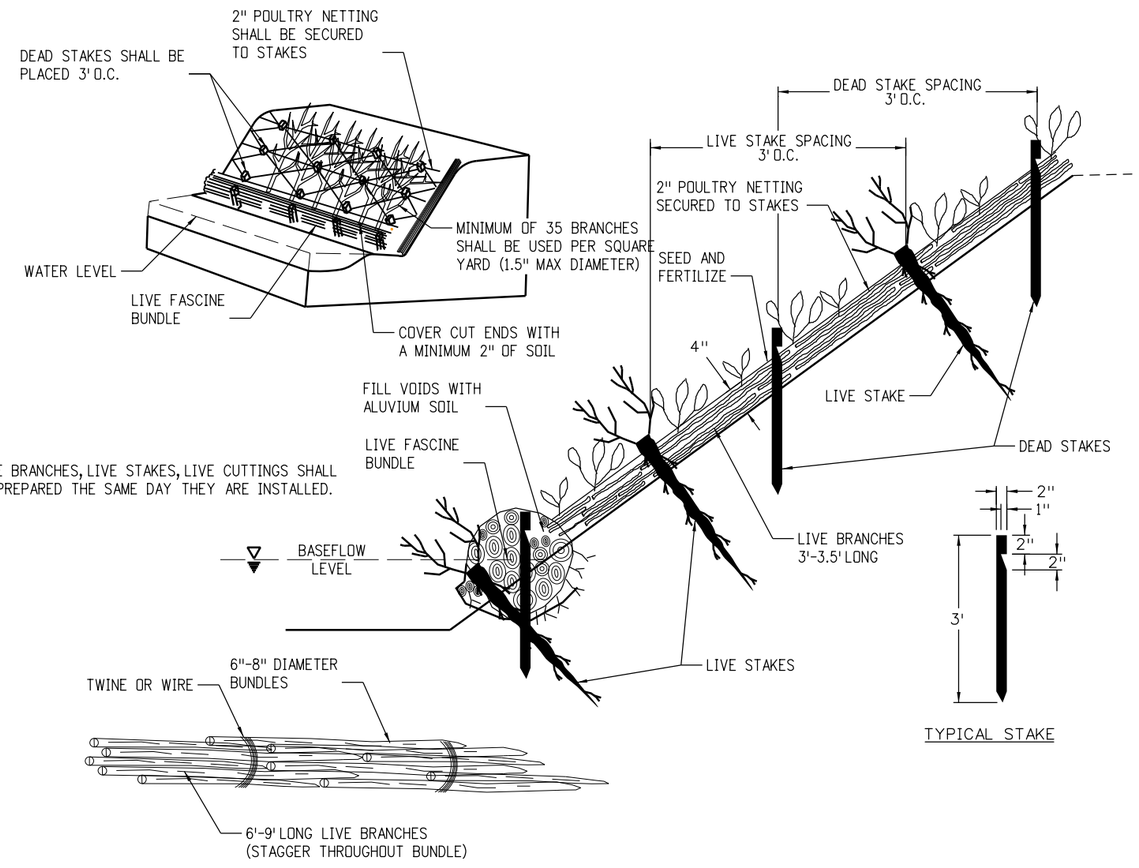
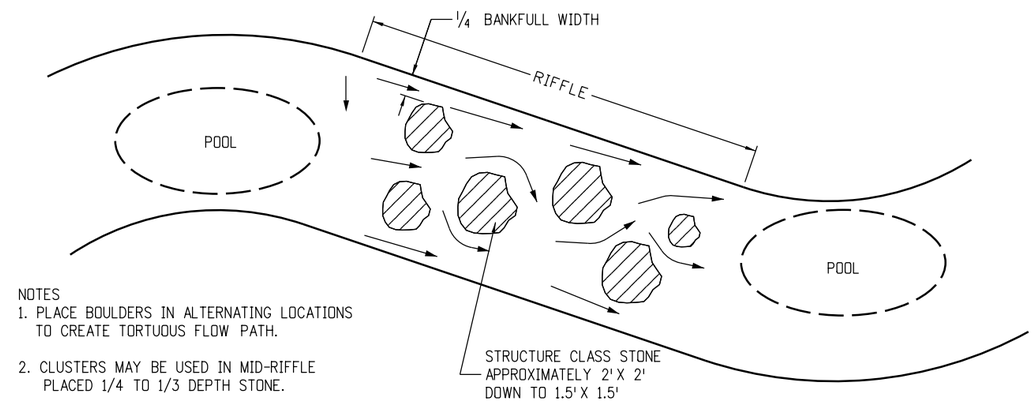


NOTE:

1. LIVE BRANCHES, LIVE STAKES, LIVE CUTTINGS SHALL BE PREPARED THE SAME DAY THEY ARE INSTALLED.

BRUSH MATTRESS
SCALE: NTS



NOTES
1. PLACE BOULDERS IN ALTERNATING LOCATIONS TO CREATE TORTUOUS FLOW PATH.

2. CLUSTERS MAY BE USED IN MID-RIFFLE PLACED 1/4 TO 1/3 DEPTH STONE.

TURBULENT RIFFLE
SCALE: NTS

F.I.R. SUBMITTAL

15%

CALL UTILITY NOTIFICATION CENTER OF COLORADO
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BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
MTC	MTC	TPF	04/15/2015

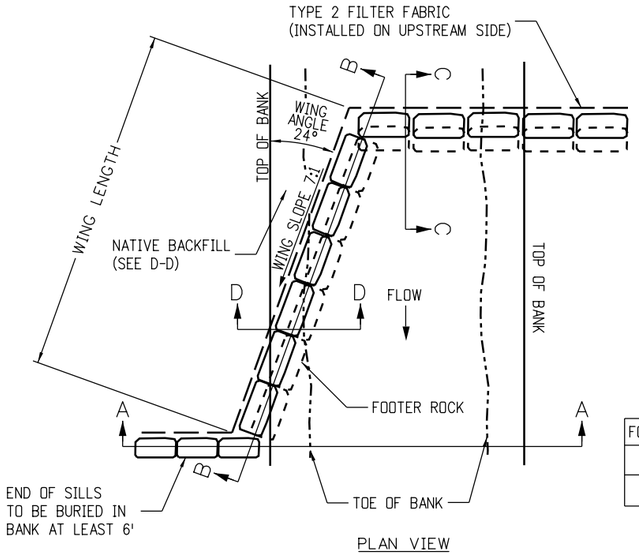
JAMES CANYON STREAM DETAILS (4 OF 5)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 37

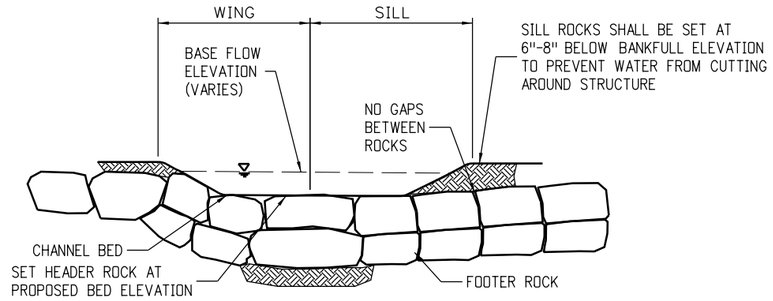
SolekM 6/23/2015 8:17:56 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BOCO-James_STDET04.dgn

NOTES:

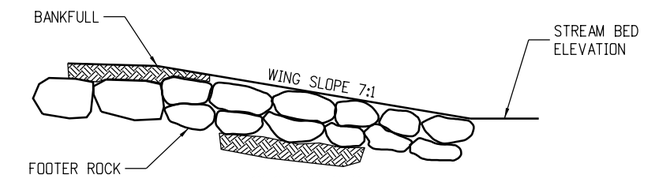
1. HEADER, FOOTER, AND SILL ROCKS TO BE BOULDERS.
2. ALL VANE ARMS TO BE BACKFILLED WITH NATIVE FILL.



PLAN VIEW

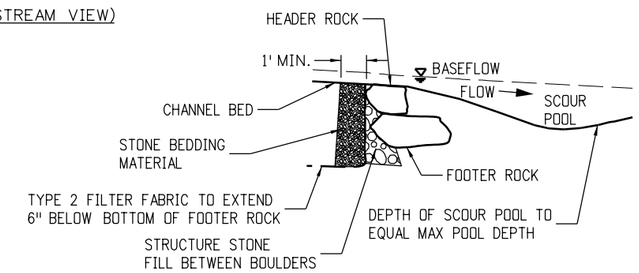


SECTION A-A (UPSTREAM VIEW)

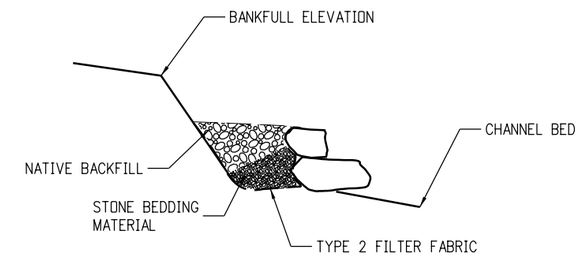


SECTION B-B

FOOTER AND HEADER BOULDER DIMENSIONS		
MINIMUM	MIDRANGE	MAXIMUM
24"	30"	36"



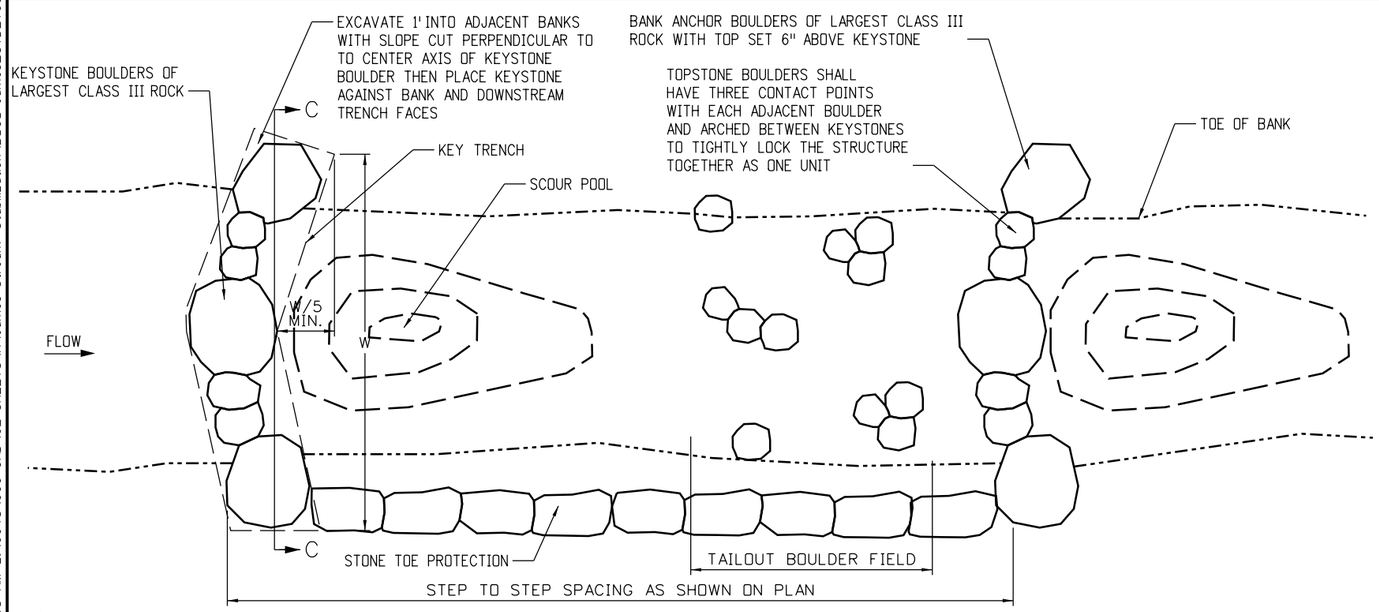
SECTION C-C (PROFILE VIEW)



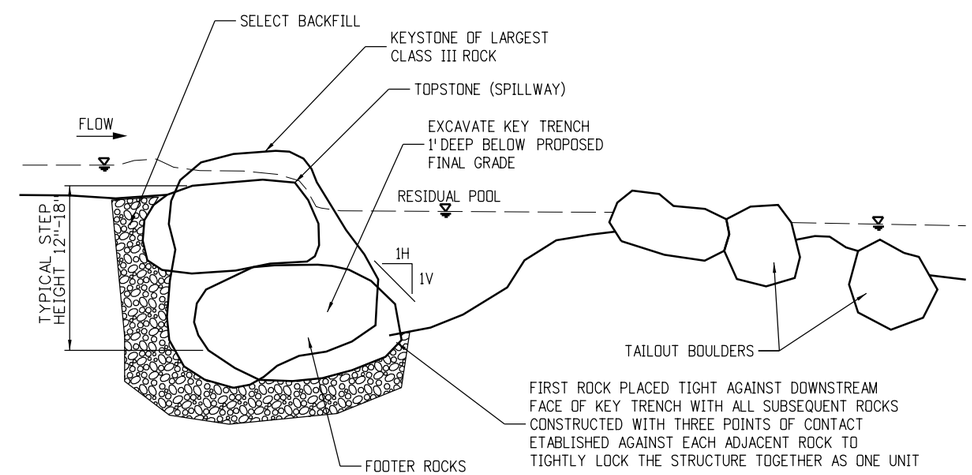
SECTION D-D

ROCK GRADE CONTROL VANE

SCALE: NTS



PLAN VIEW



PROFILE VIEW

NOTE
TOPSTONE AND FOOTER ROCKS SHALL BE PLACED
SO THAT THEY SHINGLE IN A DOWNSTREAM DIRECTION.
KEYSTONE ROCKS SHALL NTO HAVE FOOTERS.

ROCK STEP POOL

SCALE: NTS

F.I.R. SUBMITTAL

15%

CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

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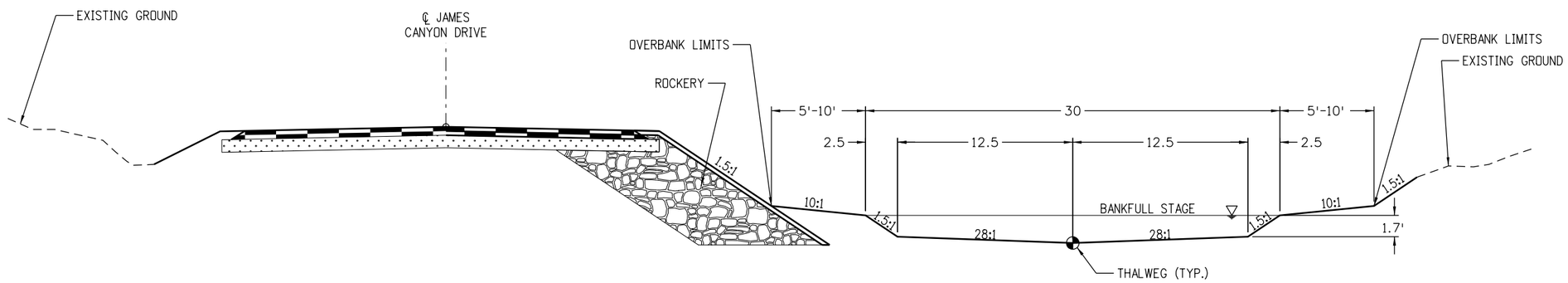
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
MTC	MTC	TPF	04/15/2015

JAMES CANYON
STREAM DETAILS
(5 OF 5)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 38

SalekM 6/23/2015 8:17:58 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BOCO-James_STDET05.dgn



TYPICAL RIFFLE CROSS-SECTION 1

SCALE 1" = 10'

F.I.R. SUBMITTAL

15%

CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

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BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

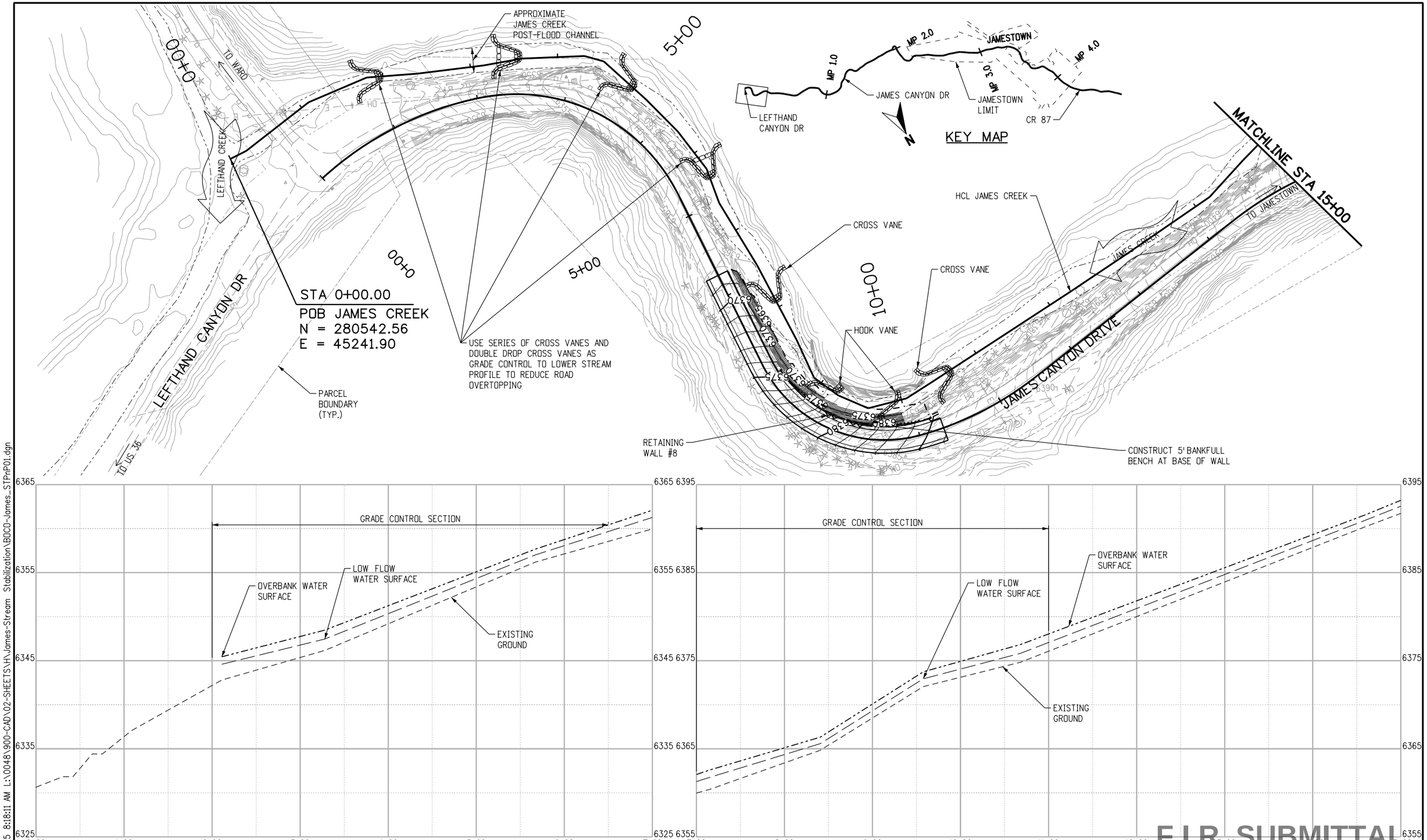
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
MTC	MTC	TPF	04/15/2015

JAMES CREEK STABILIZATION
TYPICAL SECTIONS

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 39

SalekM 6/23/2015 8:17:59 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BOCD-James_TYPXS01.dgn



CALL UTILITY NOTIFICATION CENTER OF COLORADO
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REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

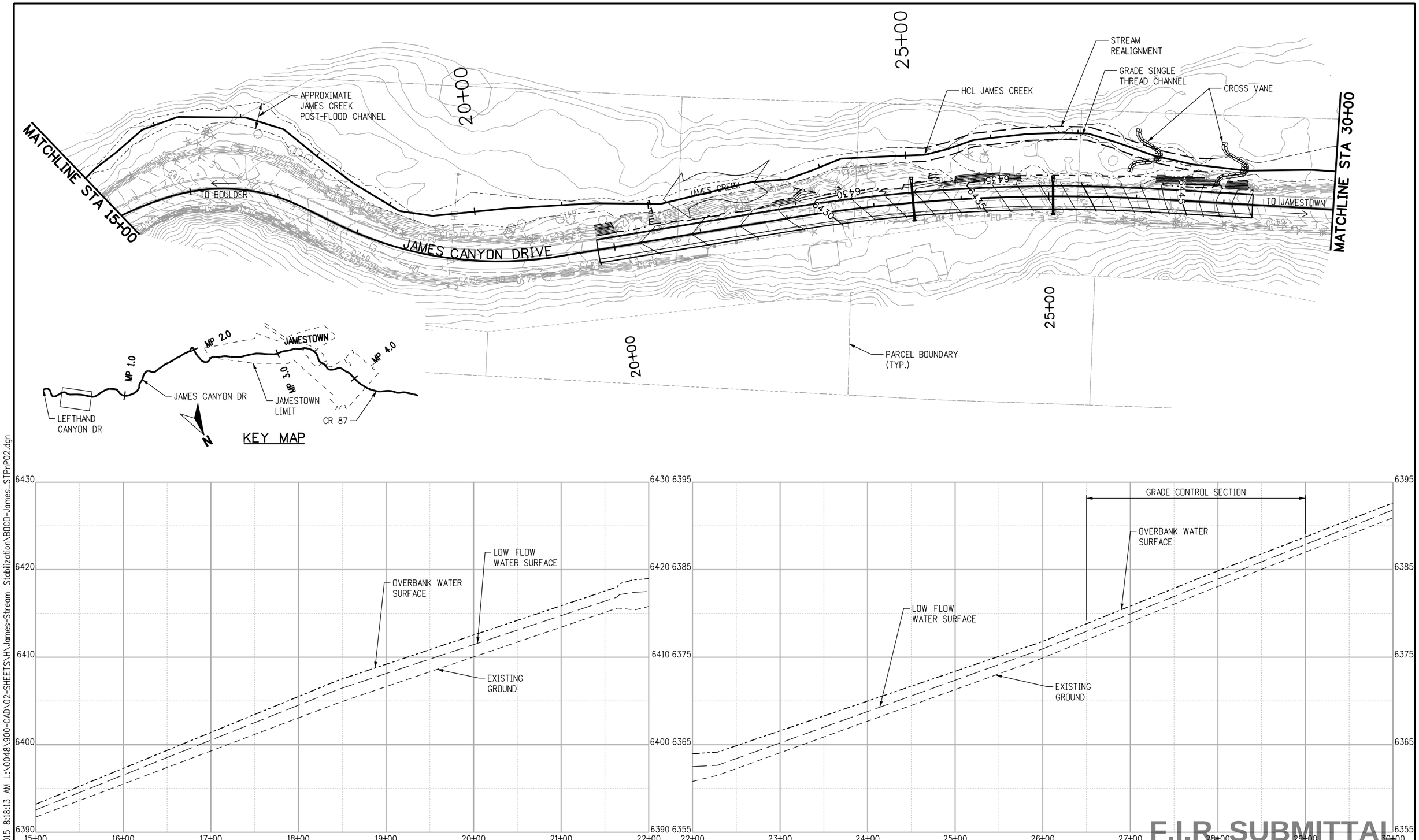
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

JAMES CANYON
PLAN & PROFILE
(1 OF 9)

PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 40

SaleKM 6/23/2015 8:18:11 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BOCO-James_STPnP01.dgn



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CALL UTILITY NOTIFICATION CENTER OF COLORADO
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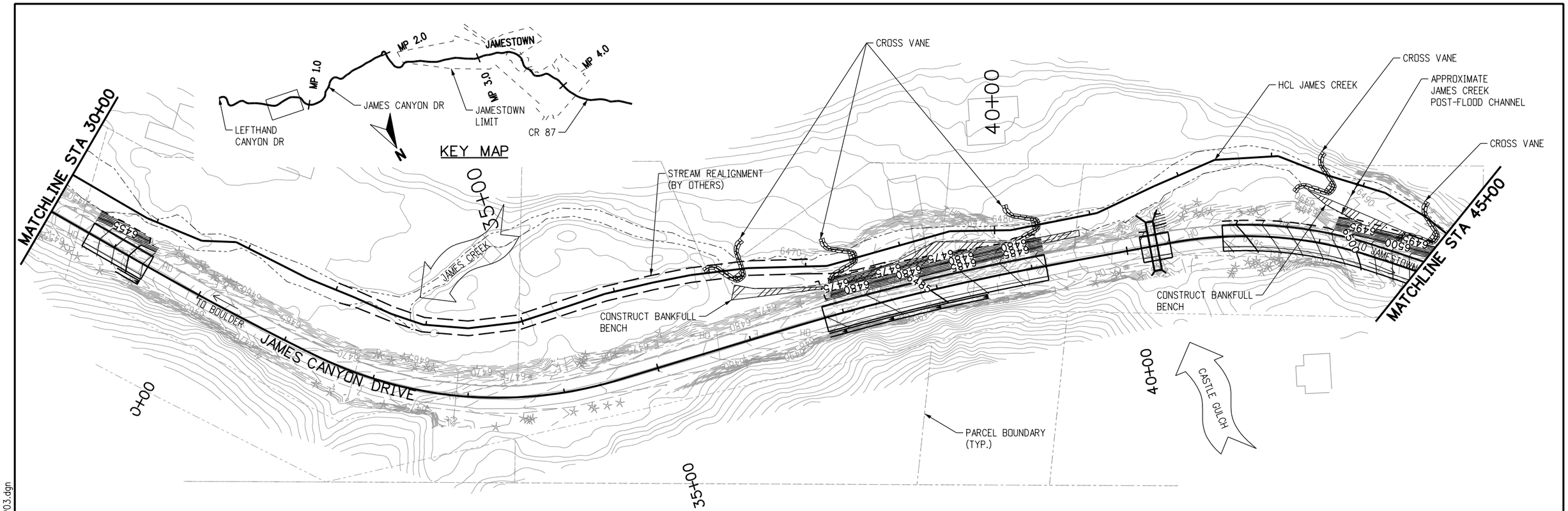
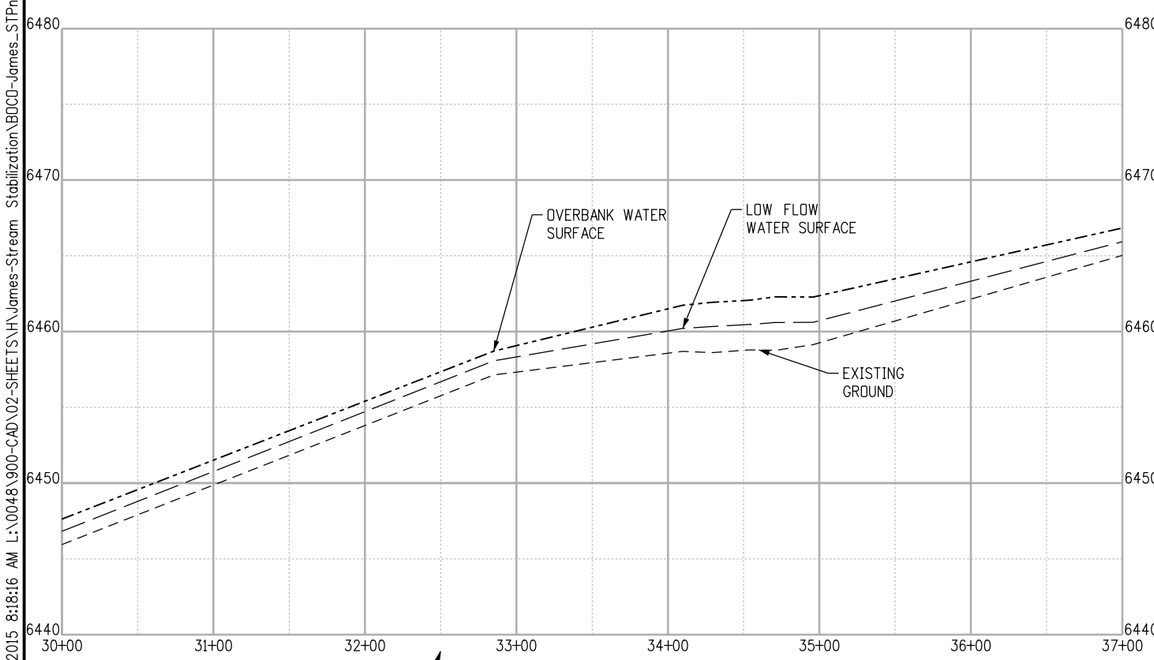
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

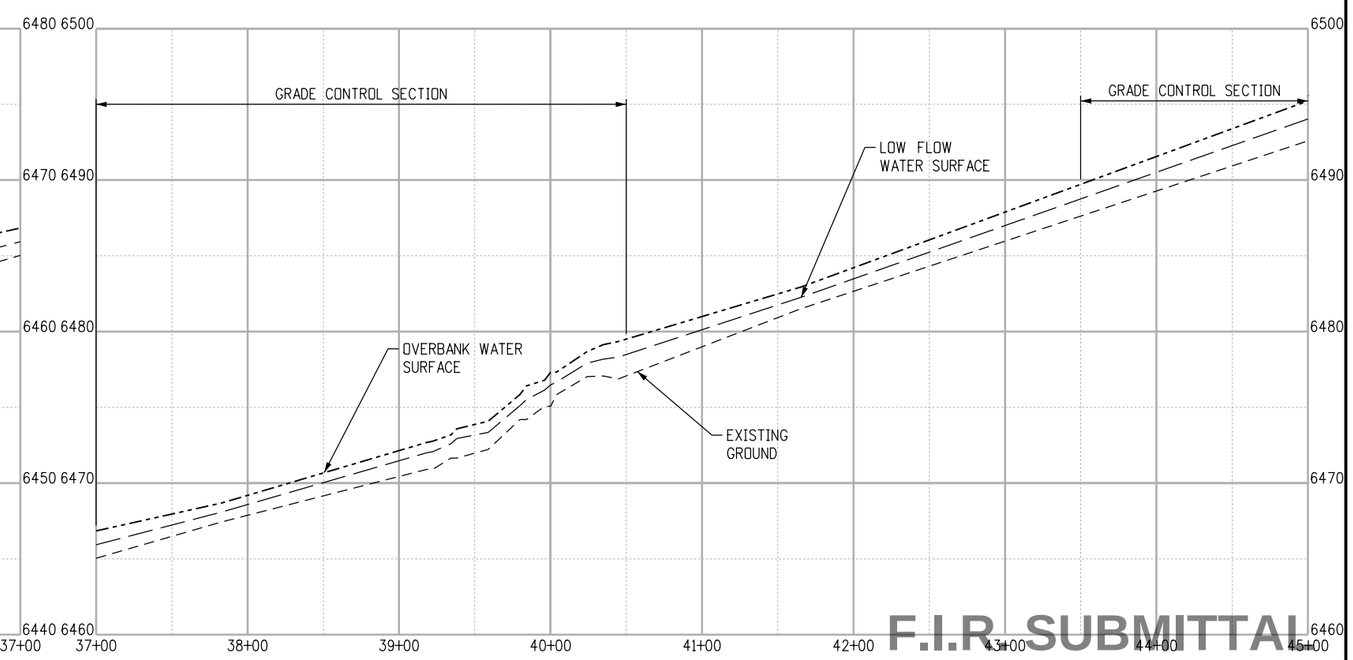
DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

JAMES CANYON
PLAN & PROFILE
(2 OF 9)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 41







F.I.R. SUBMITTAL

0' 50' 100' 200'

N

15%

CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

JAMES CANYON
PLAN & PROFILE
(3 OF 9)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 42

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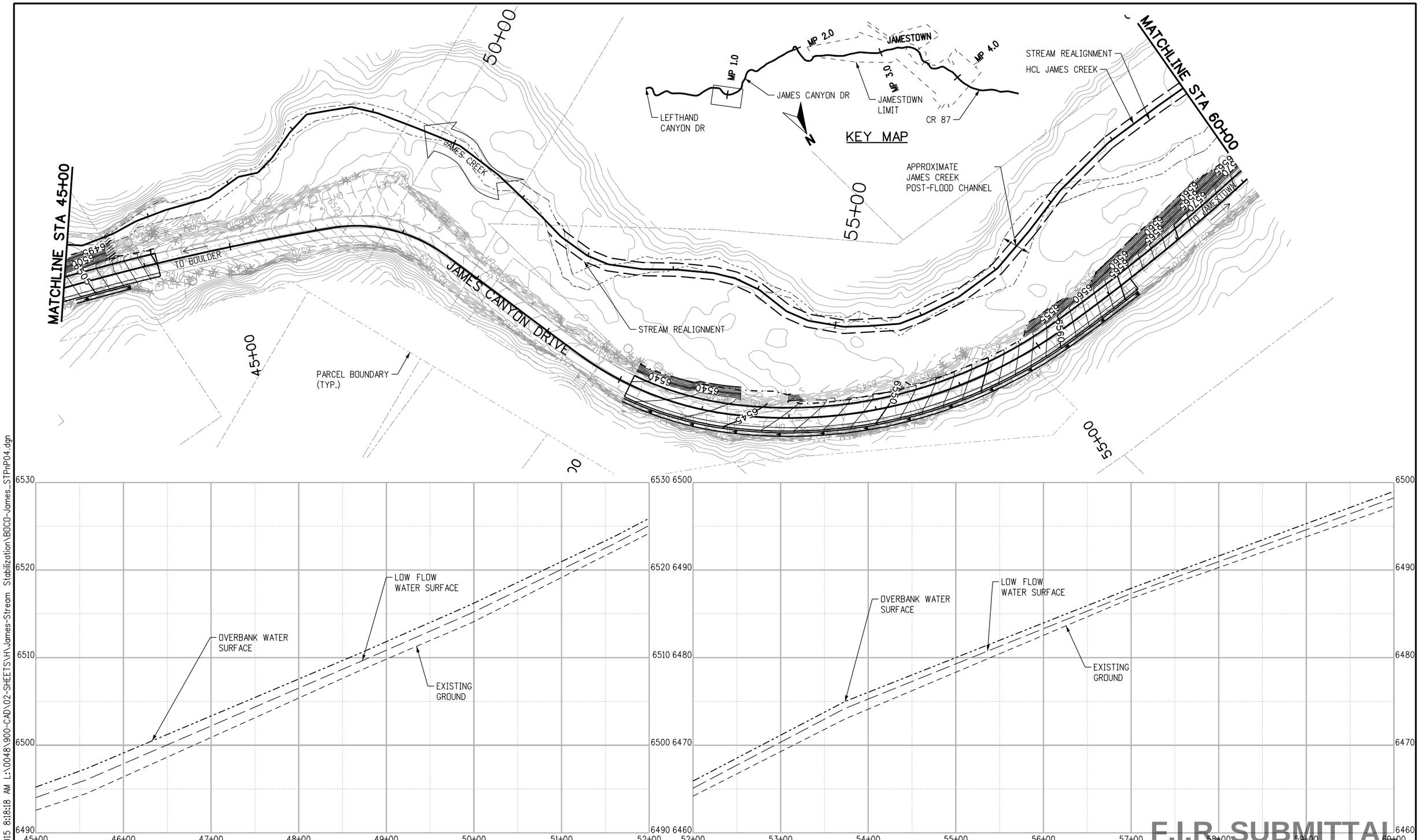

0' 50' 100' 200'

15%

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CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS: NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

JAMES CANYON
PLAN & PROFILE
(4 OF 9)

PROJECT NO: SEPT12C24 SEPT12C91 SHEET NO: 43

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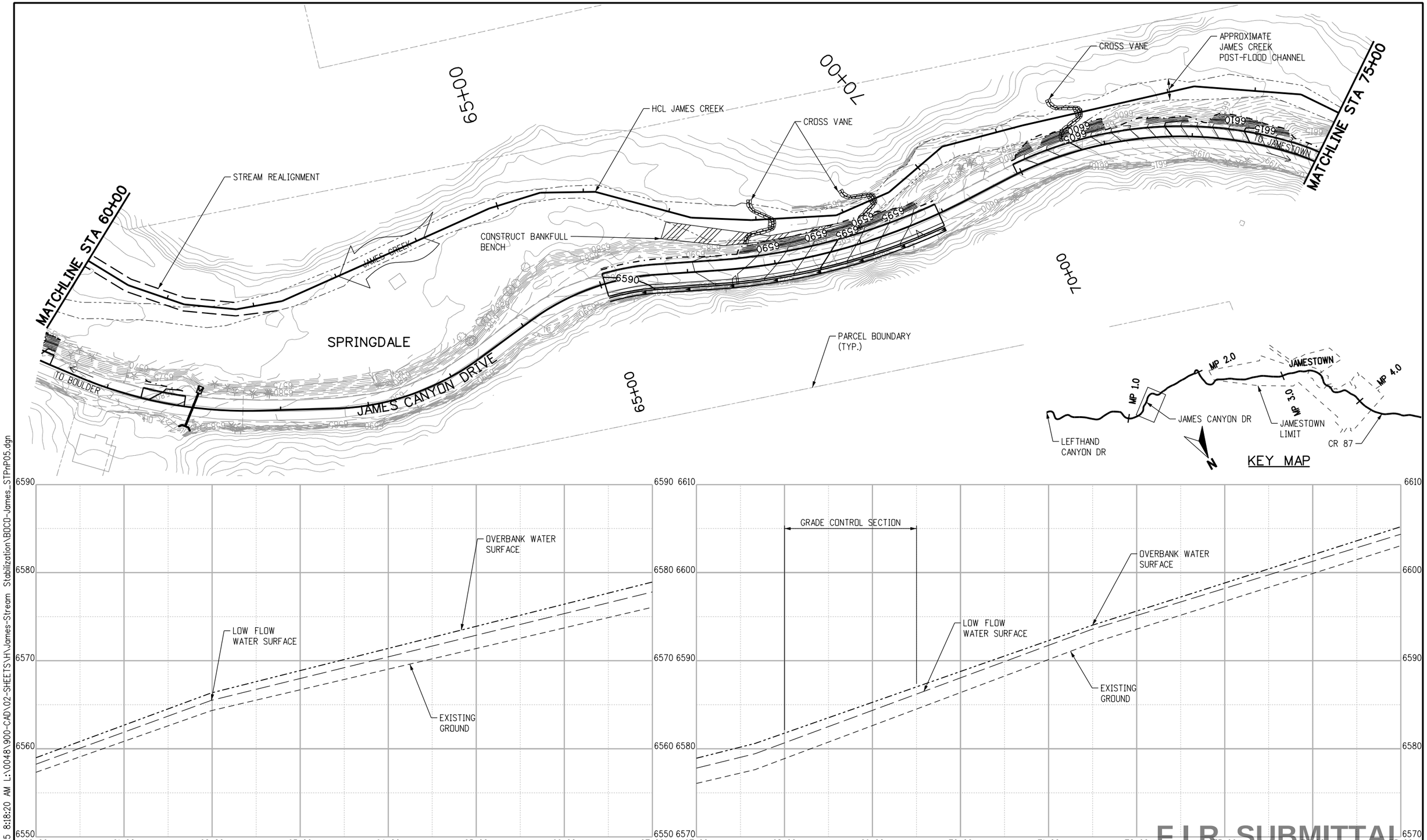

F.I.R. SUBMITTAL

0' 50' 100' 200'

N

15%

CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

JAMES CANYON
PLAN & PROFILE
(5 OF 9)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 44

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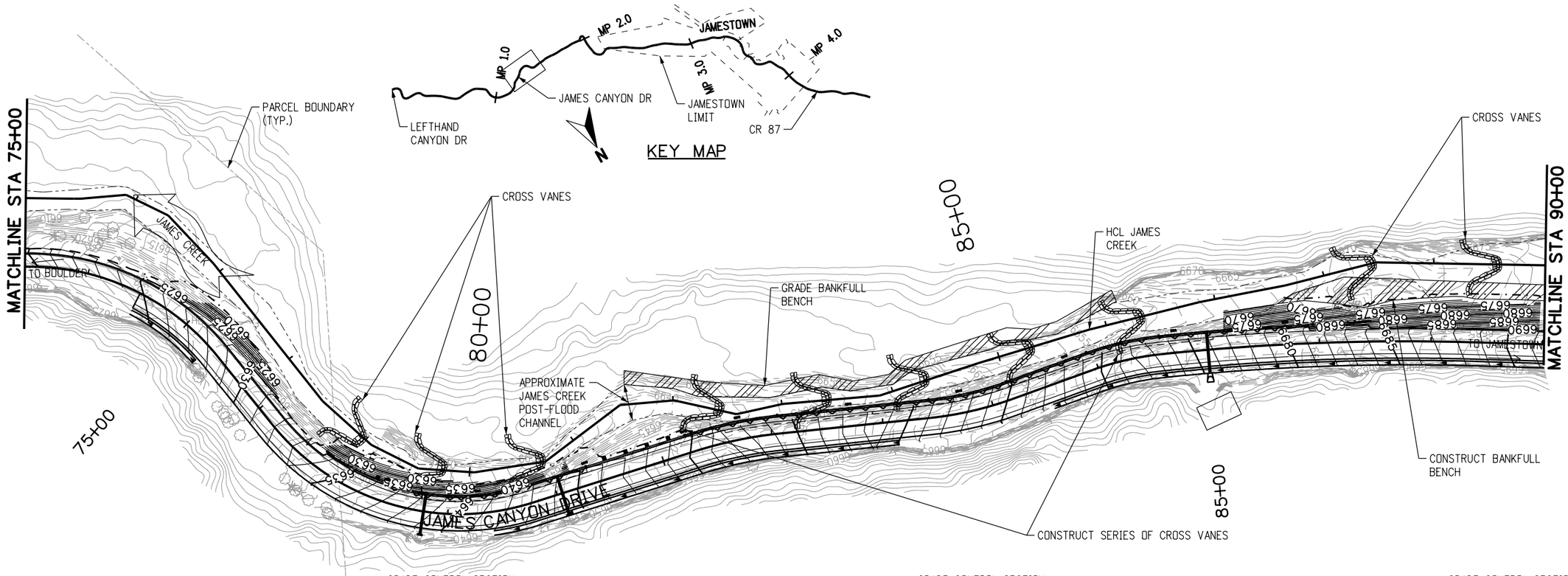

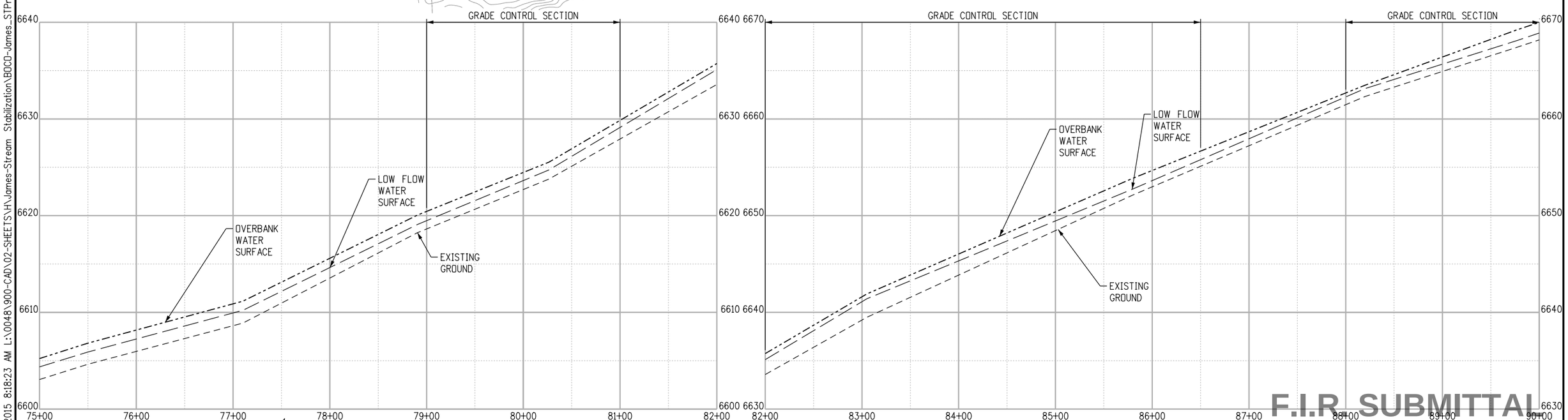

F.I.R. SUBMITTAL

0' 50' 100' 200'

N

15%

CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

JAMES CANYON
PLAN & PROFILE
(6 OF 9)

PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 45

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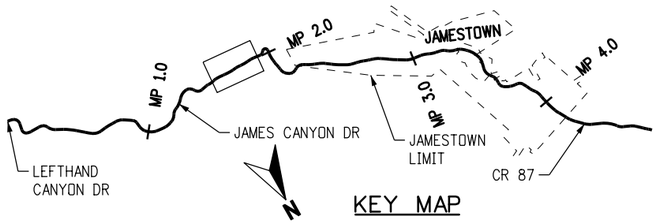

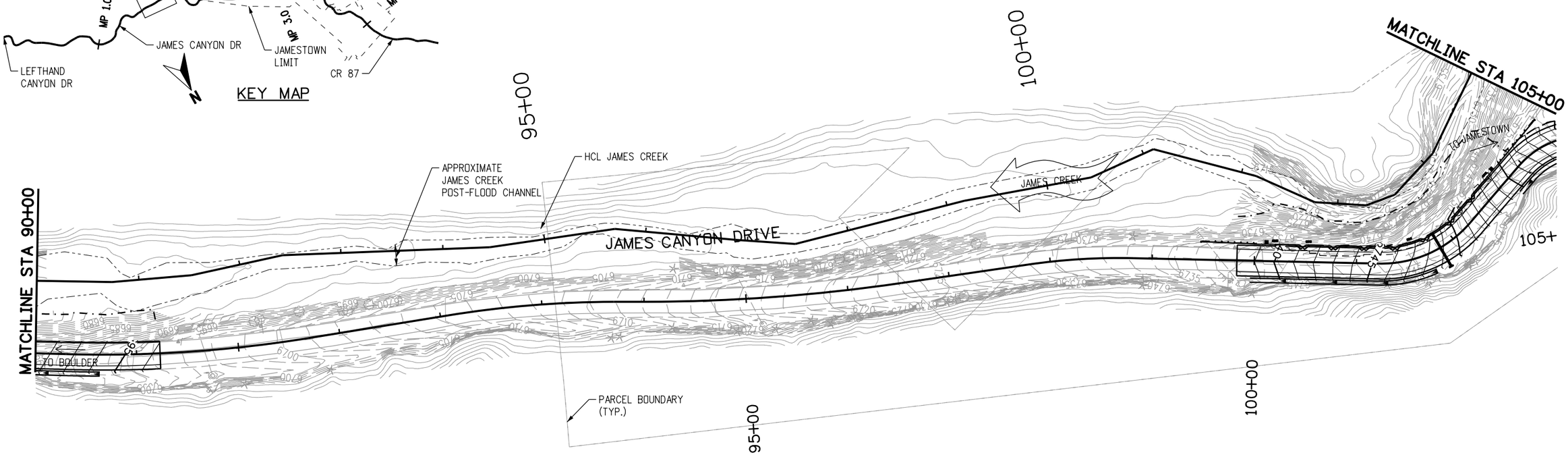

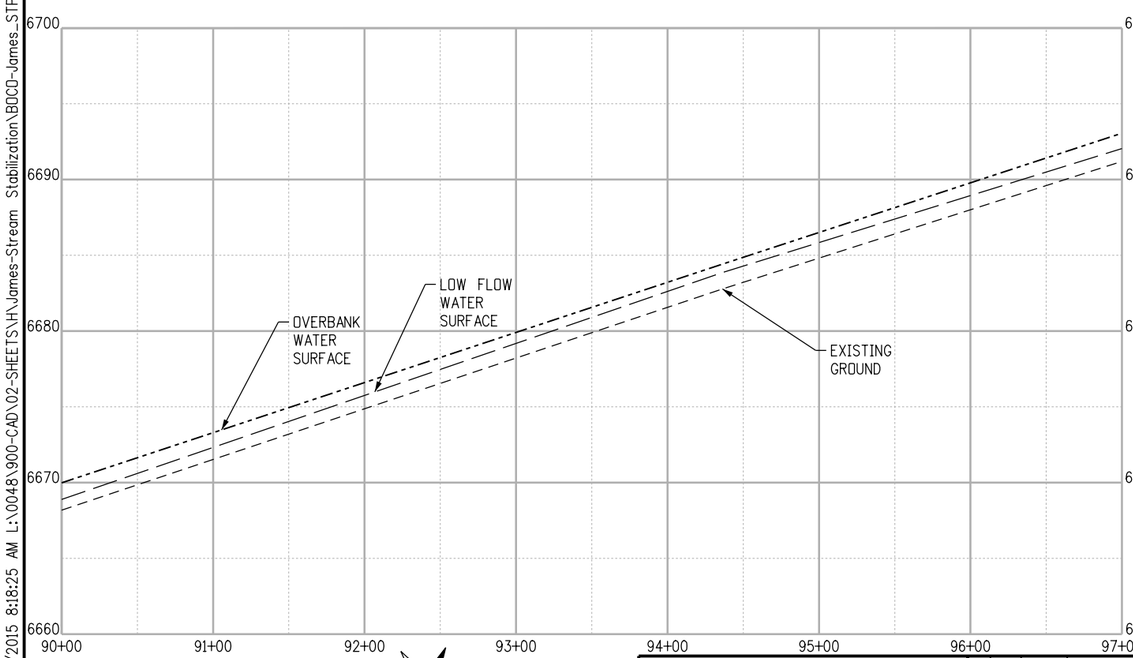

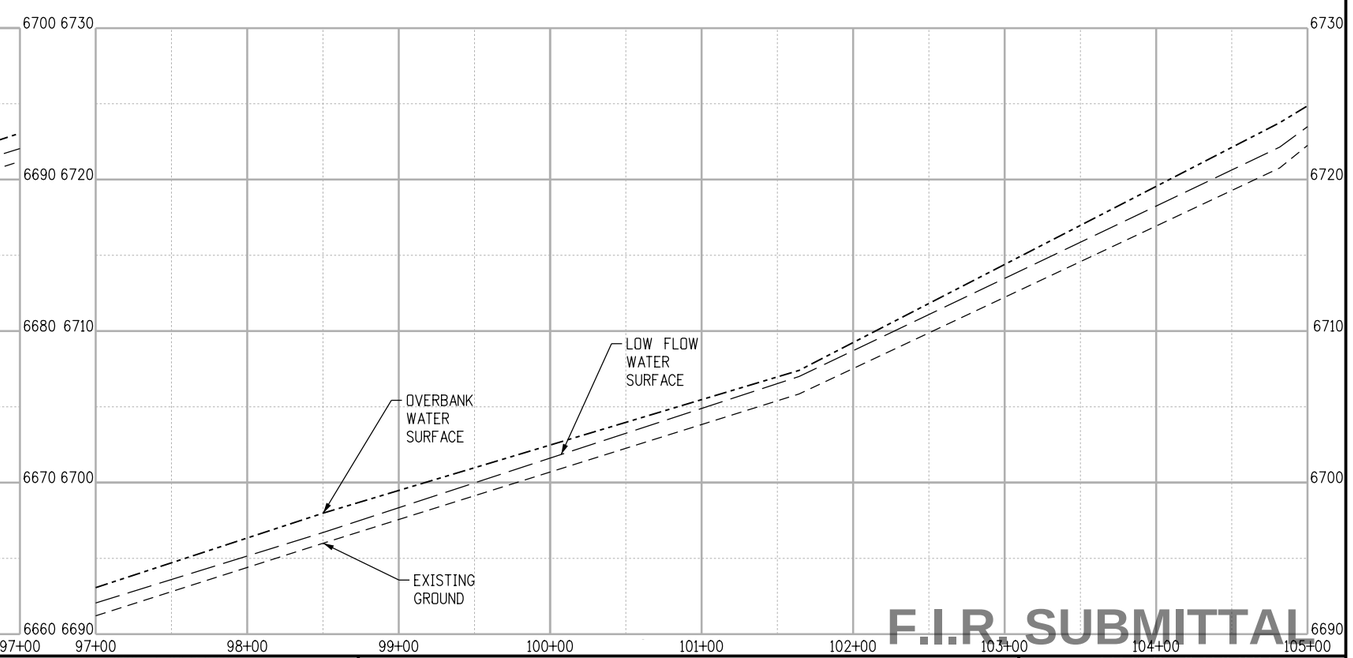

F.I.R. SUBMITTAL

0' 50' 100' 200'

N

15%

CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

JAMES CANYON
PLAN & PROFILE
(7 OF 9)

PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 46

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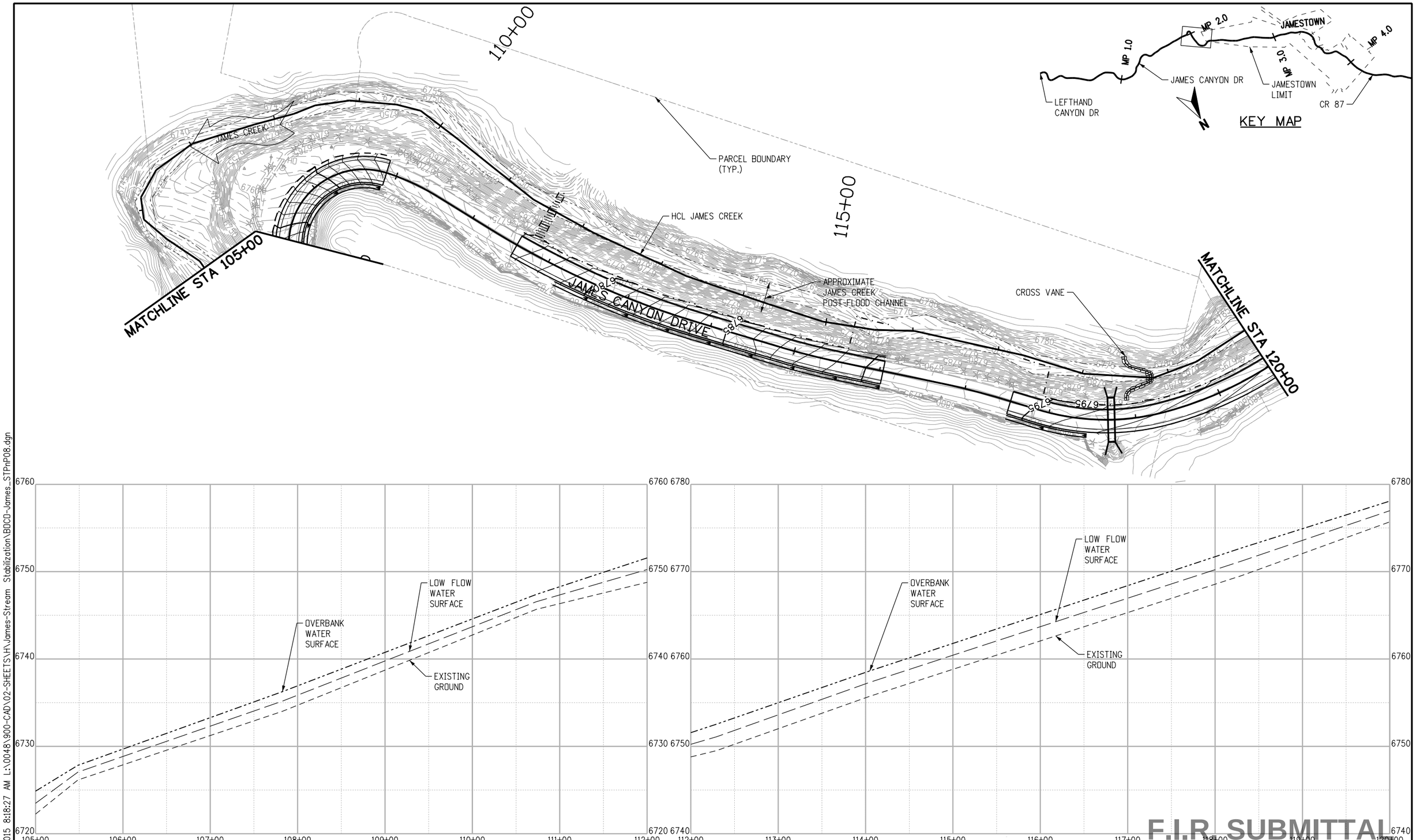

F.I.R. SUBMITTAL

0' 50' 100' 200'

15%

CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS: NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

JAMES CANYON
PLAN & PROFILE
(8 OF 9)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 47

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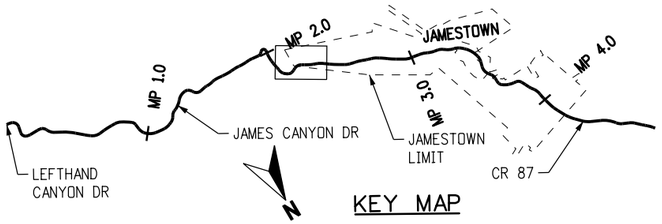

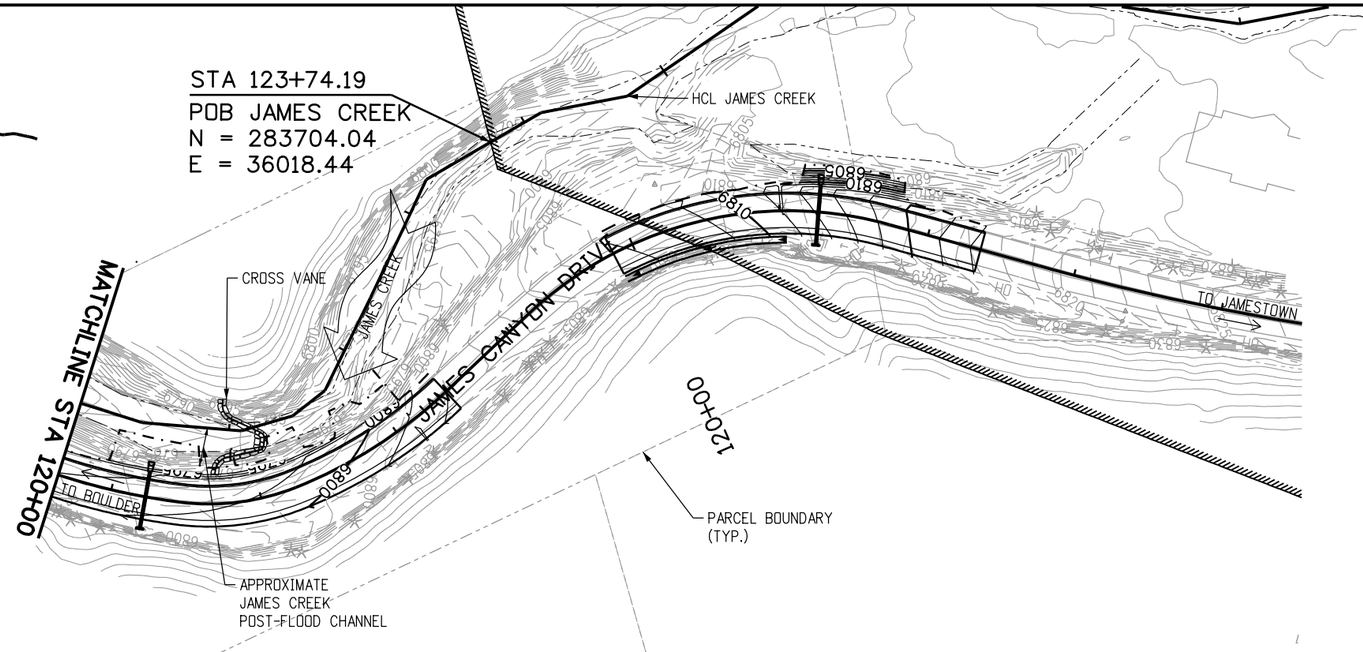

F.I.R. SUBMITTAL

0' 50' 100' 200'

N

15%

CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

JAMES CANYON
PLAN & PROFILE
(9 OF 9)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 48

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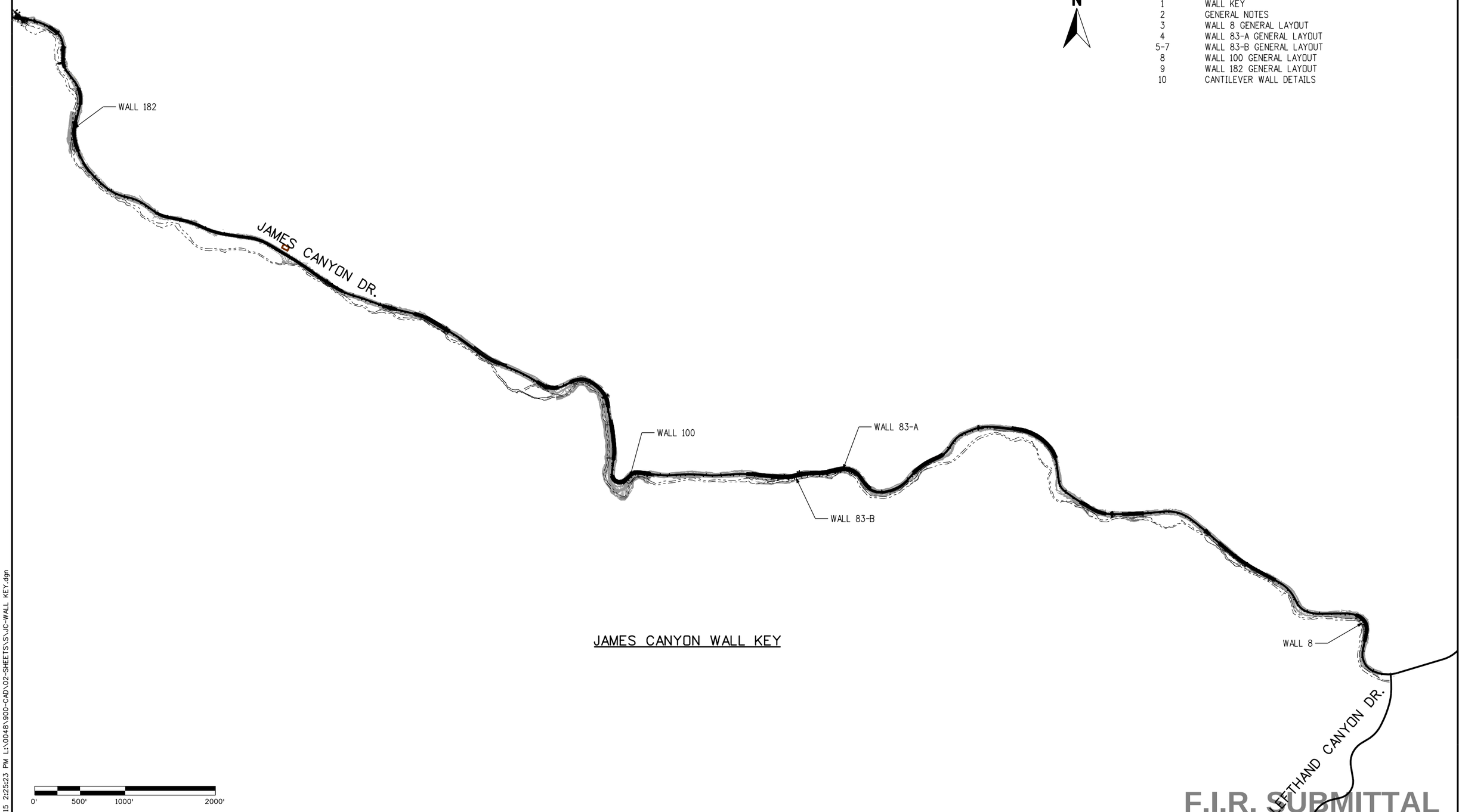
SHEET NO.	INDEX OF SHEETS
1	WALL KEY
2	GENERAL NOTES
3	WALL 8 GENERAL LAYOUT
4	WALL 83-A GENERAL LAYOUT
5-7	WALL 83-B GENERAL LAYOUT
8	WALL 100 GENERAL LAYOUT
9	WALL 182 GENERAL LAYOUT
10	CANTILEVER WALL DETAILS



JAMES CANYON WALL KEY

F.I.R. SUBMITTAL

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F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

Boulder County

AECOM

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
MFV	MFV	SBH	06/24/2015

JAMES CANYON
WALL KEY

PROJECT NO: SEPT12C24 SEPT12C91

SHEET NO: 49

NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. 2011 EDITION, AND PROJECT SPECIAL PROVISIONS; THE LATEST M&S STANDARDS; BOULDER COUNTY STANDARDS; AND THE PROJECT CONTRACT BID DOCUMENTS.

2. TEMPORARY EXCAVATION SUPPORT SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.

3. ALL CONCRETE SHALL BE CLASS D.

4. ALL CONSTRUCTION JOINTS NOT SHOWN ON THE PLANS SHALL BE APPROVED BY THE ENGINEER.

5. ALL EXPOSED CONCRETE SHALL BE CHAMFERED ¾ INCH.

6. GRADE 60 REINFORCING STEEL IS REQUIRED.

7. ALL REINFORCING STEEL SHALL BE EPOXY COATED UNLESS OTHERWISE NOTED.

8. (N) DENOTES NON COATED REINFORCING STEEL.

9. THE USE OF A TEMPORARY DIVERSION AND DEWATERING DURING CONSTRUCTION MAY BE REQUIRED. THE COST OF A TEMPORARY DIVERSION AND DEWATERING WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK.

10. THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR EPOXY COATED REINFORCING BARS PLACED IN ACCORDANCE WITH CDOT SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER OR LESS THAN 3" OF LATERAL COVER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH FOR CLASS D CONCRETE	1'-3"	1'-7"	2'-5"	2'-10"	3'-8"	4'-8"	5'-11"	7'-3"

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR BLACK REINFORCING BARS PLACED IN ACCORDANCE WITH CDOT SUBSECTION 602.06. THESE SPLICELENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER OR LESS THAN 3" OF LATERAL COVER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH FOR CLASS D CONCRETE	1'-1"	1'-4"	1'-7"	1'-11"	2'-6"	3'-1"	3'-11"	4'-10"

THE ABOVE SPLICE LENGTHS SHALL BE INCREASED BY 20% FOR 3 BAR BUNDLES AND 33% FOR 4 BARS.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF ALL OPEN CUTS FOR REQUIRED EARTHWORK, UTILITIES, AND THE STRUCTURE DURING CONSTRUCTION.

12. STATIONS, ELEVATIONS, AND DIMENSIONS CONTAINED IN THESE PLANS ARE CALCULATED FROM A RECENT FIELD SURVEY. THE CONTRACTOR SHALL VERIFY ALL DEPENDENT DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING ANY MATERIAL.

13. THE INFORMATION SHOWN ON THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-922-1987 AT LEAST 2 DAYS (NOT INCLUDING DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR ANY OTHER EARTHWORK.

14. REFER TO TECHNICAL MEMORANDUM, RECOMMENDATIONS FOR RETAINING WALL & PAVEMENT CONSTRUCTION JAMES CANYON DRIVE STA 8+00 TO 182+00, BY AECOM DATED 05/26/2015 FOR ADDITIONAL INFORMATION.

15. STRUCTURAL CONCRETE EXPOSED TO SOIL SHALL CONFORM TO CEMENTITIOUS MATERIAL CLASS 2, CORRESPONDING TO SULFATE EXPOSURE CLASS 2.

16. STRUCTURE EXCAVATION AND BACKFILL SHALL BE AS SHOWN ON THE PLANS. SHORING MAY BE REQUIRED FOR EXCAVATION ADJACENT TO EXISTING ROADWAY.

TABLE OF WALL QUANTITIES

ITEM	DESCRIPTION	UNITS	WALL 8	WALL 83-A	WALL 83-B	WALL 100	WALL 182
206	STRUCTURE EXCAVATION	CY					
206	STRUCTURE BACKFILL (CLASS 1)	CY					
506	RIPRAP (12 INCH)	CY					
601	CONCRETE CLASS D	CY					
602	REINFORCING STEEL (EPOXY COATED)	LB					
606	GUARDRAIL TYPE 3	LF					

ABBREVIATIONS

FF = FRONT FACE
BF = BACK FACE
EF = EACH FACE
FG = FINISHED GRADE
DH = DESIGN HEIGHT
HCL = HORIZONTAL CONTROL LINE

DESIGN DATA

AASHTO LRFD, 7th EDITION WITH CURRENT INTERIMS
DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN

REINFORCED CONCRETE:
CLASS D (WALL) CONCRETE: f'c = 4,500 PSI
REINFORCING STEEL: fy = 60,000 PSI

SOIL PARAMETERS:
NOMINAL BEARING PRESSURE (PSF) = 15,000 (ROCK)
= 5,000 (SOIL)
ACTIVE PRESSURE, (Ka) = 0.27
UNIT WEIGHT, γ (PSF) = 130
FRICTION ANGLE, ϕ (DEGREES) = 35

WALL DESCRIPTION

5 CANTILEVERED CIP WALLS
WALL 8 LENGTH = 64'-4" DESIGN HEIGHT = 8' TO 9'
WALL 83-A LENGTH = 183'-4⅞", DESIGN HEIGHT = 3' TO 10'
WALL 83-B LENGTH = 549'-2½", DESIGN HEIGHT = 4' TO 14'
WALL 100 LENGTH = 232'-9⅛", DESIGN HEIGHT = 4' TO 15'
WALL 182 LENGTH = 197'-0⅜", DESIGN HEIGHT = 6' TO 8'

F.I.R. SUBMITTAL

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

Boulder County
AECOM

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
MFV	MFV	SBH	06/24/2015

JAMES CANYON
WALL GENERAL NOTES

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 50

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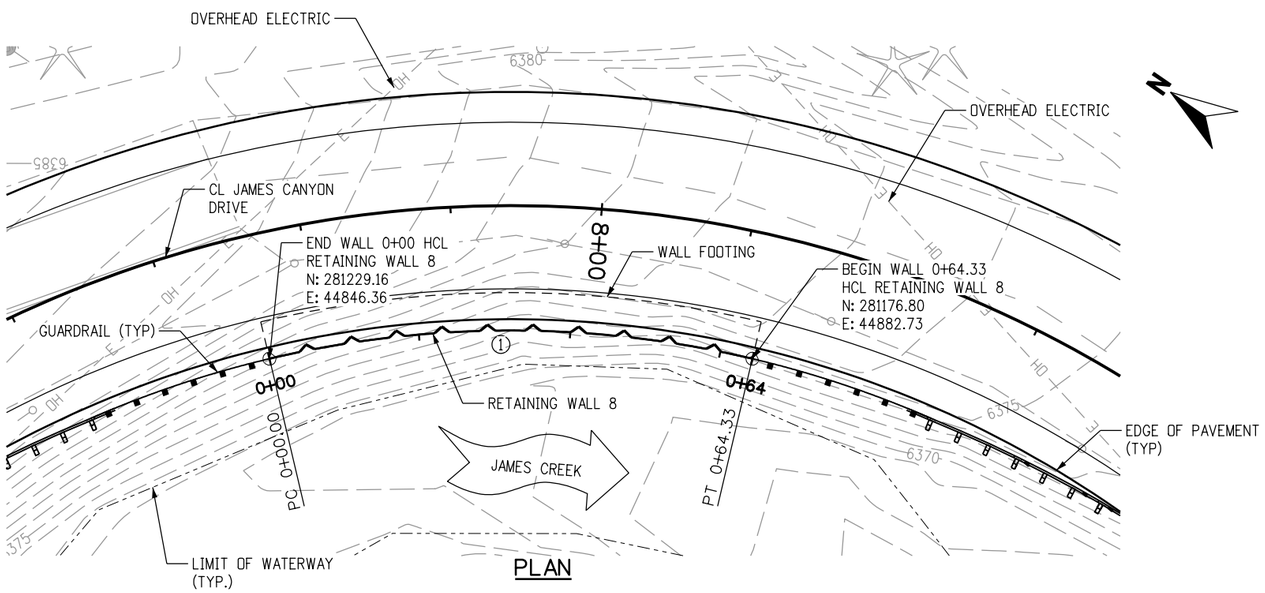
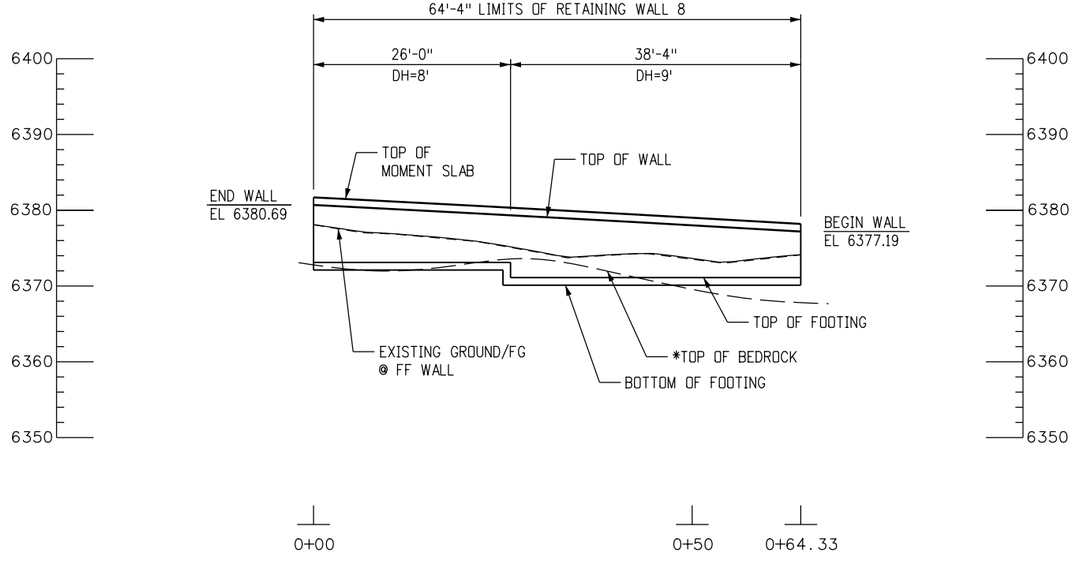


PLAN

WALL 8					
DESCRIPTION	WALL STATION	ROADWAY STATION	OFFSET (CL ROADWAY)	NORTHING	EASTING
END WALL	0+00.00	8+48.00	16.50' LT	281229.16	44846.36
BEGIN WALL	0+64.33	7+76.00	16.50' LT	281176.80	44882.73

WALL CURVE TABLE				
	DELTA	TANGENT	LENGTH	RADIUS
1	26° 36' 47" RT	32.76'	64.33'	138.50'



ELEVATION

(TAKEN AT HCL RETAINING WALL 8)

*APPROXIMATE BASED ON REFRACTION MICROTREMOR INVESTIGATION

0' 10' 20' 40'

F.I.R. SUBMITTAL

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

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ENGINEERING DIVISION

AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
MFV	MFV	SBH	06/24/2015

JAMES CANYON
WALL 08
GENERAL LAYOUT

PROJECT NO: SEPT12C24 SEPT12C91 SHEET NO: 51

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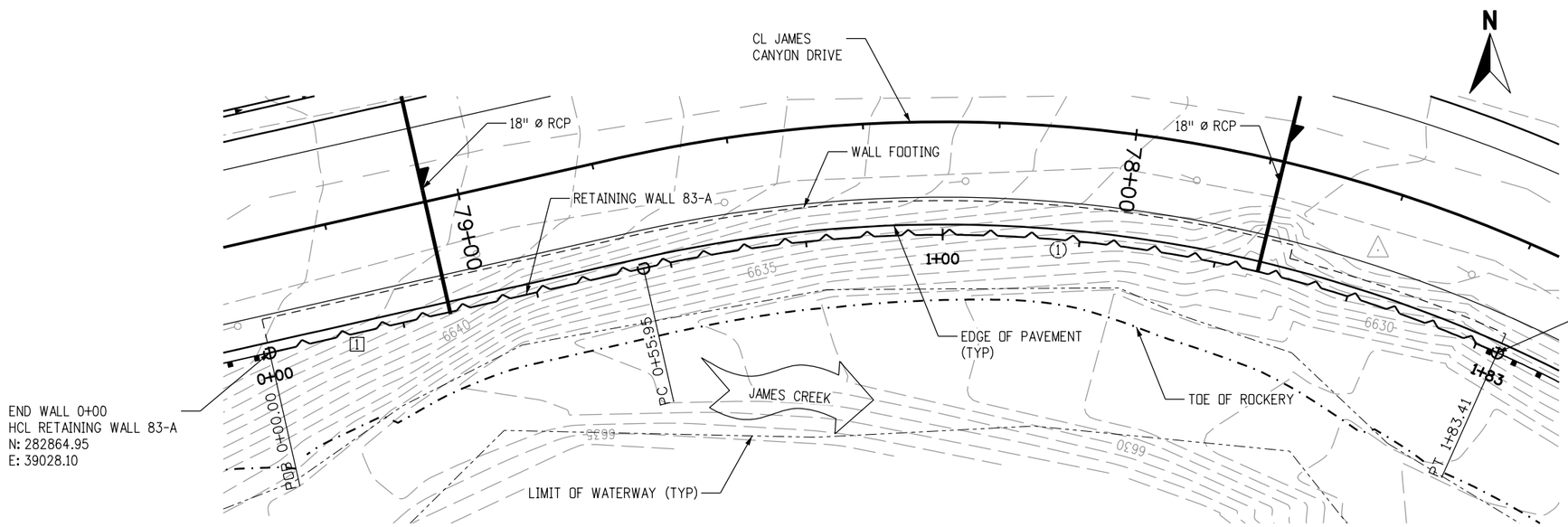
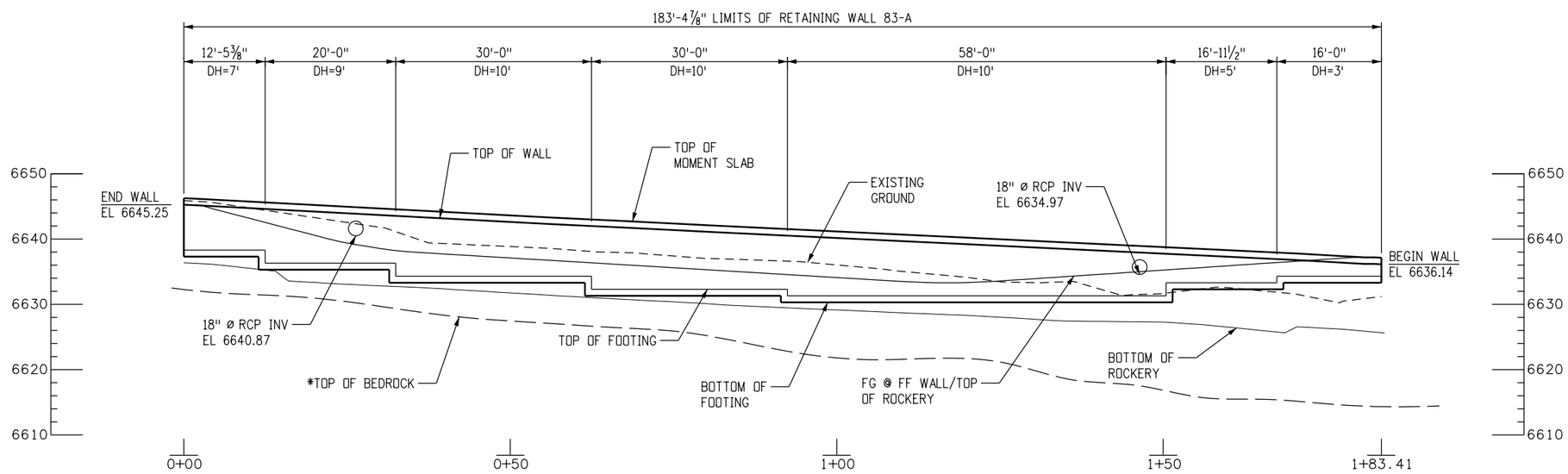


PLAN

WALL 83-A					
DESCRIPTION	WALL STATION	ROADWAY STATION	OFFSET (CL ROADWAY)	NORTHING	EASTING
END WALL	0+00.00	79+32.00	16.50' LT	282864.95	39028.10
PC	0+55.95	78+76.00	16.50' LT	282877.15	39082.71
BEGIN WALL	1+83.41	77+38.00	16.50' LT	282864.51	39207.34

WALL CURVE TABLE				
	DELTA	TANGENT	LENGTH	RADIUS
1	36° 47' 18" RT	66.01'	127.45'	198.50'

WALL LINE TABLE		
	BEARING	LENGTH
1	N 77° 23' 58" E	55.95'



ELEVATION

(TAKEN AT HCL RETAINING WALL 83-A)

*APPROXIMATE BASED ON REFRACTION MICROTREMOR INVESTIGATION

0' 10' 20' 40'

F.I.R. SUBMITTAL

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

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BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
MFV	MFV	SBH	06/24/2015

JAMES CANYON
WALL 83-A
GENERAL LAYOUT

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 52

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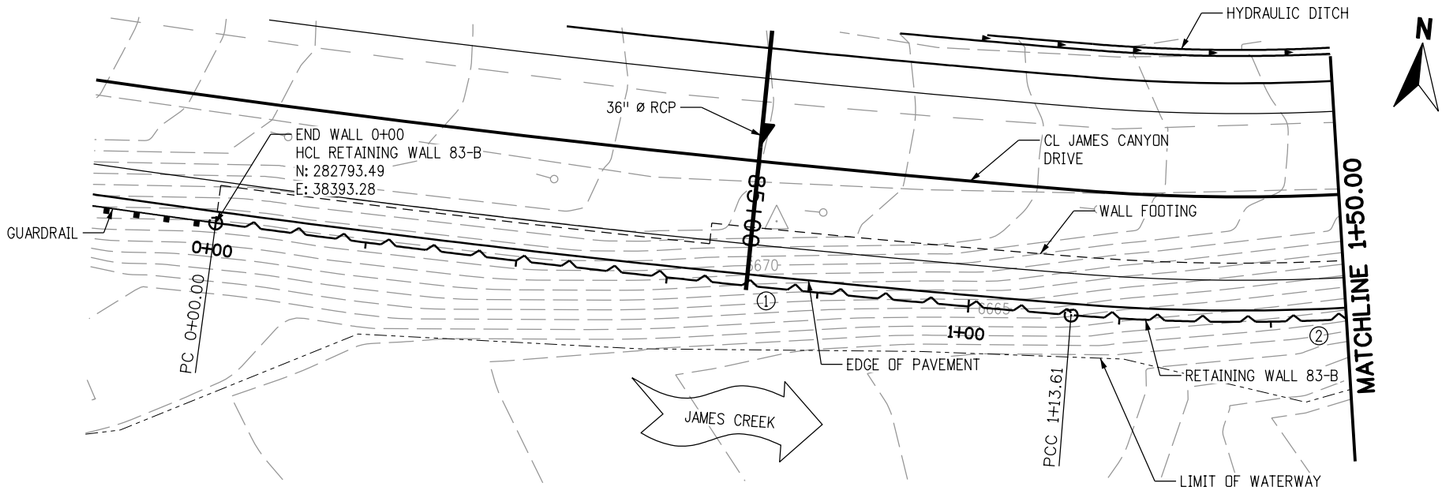
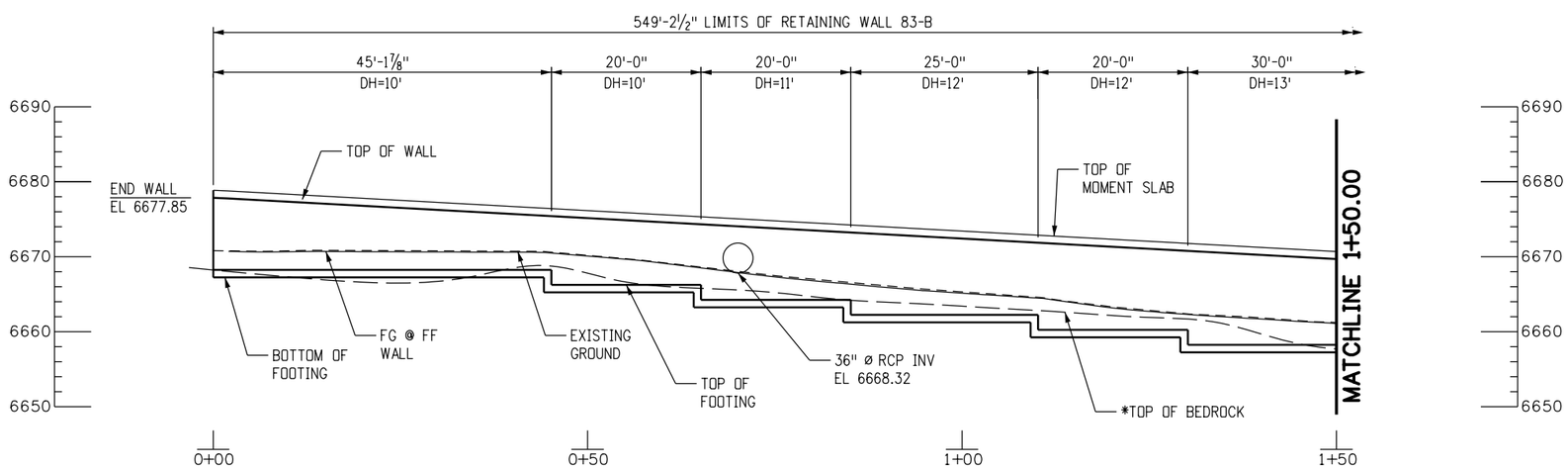


PLAN

WALL 83-B					
DESCRIPTION	WALL STATION	ROADWAY STATION	OFFSET (CL ROADWAY)	NORTHING	EASTING
END WALL	0+00.00	85+70.00	16.50' LT	282793.49	38393.28
PCC	1+13.61	84+57.29	16.50' LT	282792.64	38506.88
PT	1+80.38	83+94.50	16.50' LT	282801.95	38572.83
PC	2+56.84	83+18.05	16.50' LT	282821.68	38646.70
PT	3+28.19	82+42.69	16.50' LT	282831.58	38717.17
PC	4+64.31	81+06.57	16.50' LT	282834.02	38853.27
PT	5+43.38	80+30.83	16.50' LT	282843.39	38931.65
BEGIN WALL	5+49.21	80+25.00	16.50' LT	282844.66	38937.34

WALL CURVE TABLE				
	DELTA	TANGENT	LENGTH	RADIUS
1	03° 05' 51" LT	56.82'	113.61'	2101.50'
2	13° 50' 09" LT	33.55'	66.77'	276.50'
3	13° 55' 38" RT	35.85'	71.34'	293.50'
4	11° 34' 19" LT	39.67'	79.07'	391.50'

WALL LINE TABLE		
	BEARING	LENGTH
1	N 75° 02' 39" E	76.46'
2	S 88° 58' 17" E	136.12'
3	N 77° 23' 58" E	5.83'



ELEVATION

(TAKEN AT HCL RETAINING WALL 83-B)

*APPROXIMATE BASED ON REFRACTION MICROTREMOR INVESTIGATION

0' 10' 20' 40'

F.I.R. SUBMITTAL

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

Boulder County

AECOM

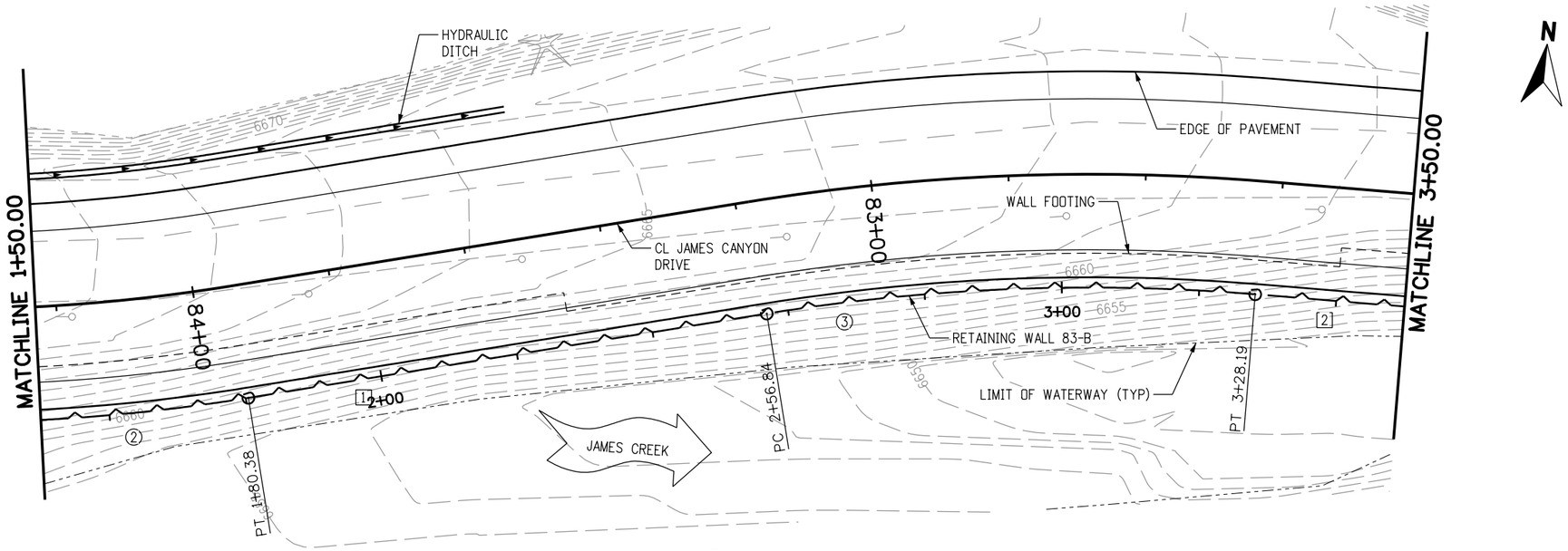
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
MFV	MFV	SBH	06/24/2015

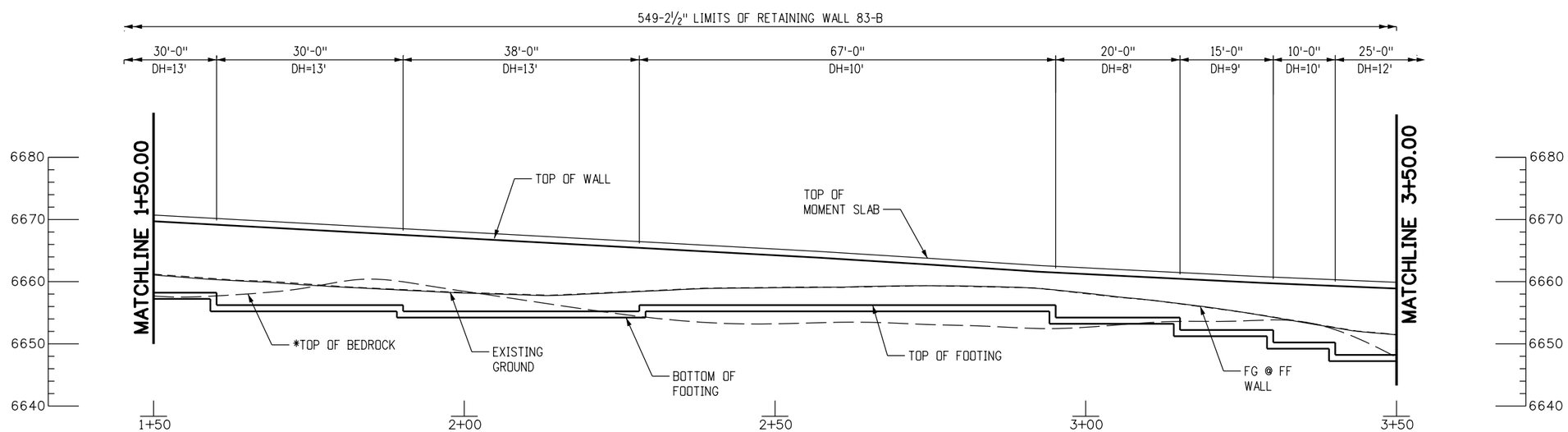
JAMES CANYON
WALL 83-B
GENERAL LAYOUT (1 OF 3)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 53

vausem 6/22/2015 2:25:41 PM L:\0048\900-CAD\02-SHEETS\SJC-SWALL83B_01.dgn



PLAN



ELEVATION

(TAKEN AT HCL RETAINING WALL 83-B)

*APPROXIMATE BASED ON REFRACTION MICROTREMOR INVESTIGATION

0' 10' 20' 40'

F.I.R. SUBMITTAL

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
MFV	MFV	SBH	06/24/2015

JAMES CANYON
WALL 83-B
GENERAL LAYOUT (2 OF 3)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 54

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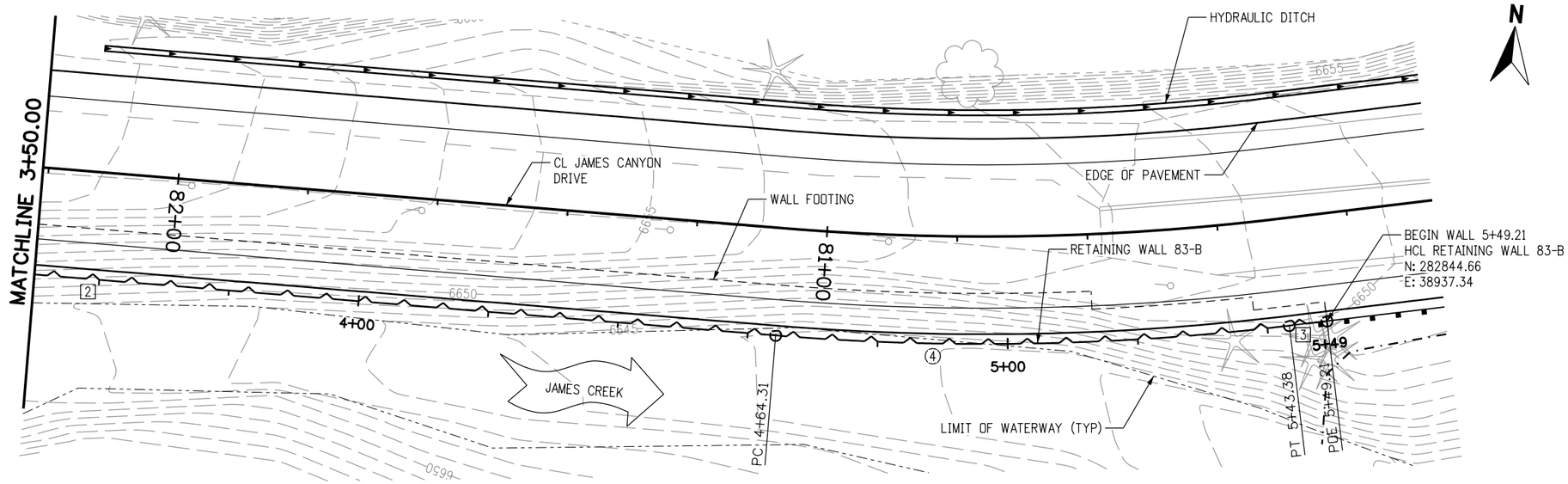
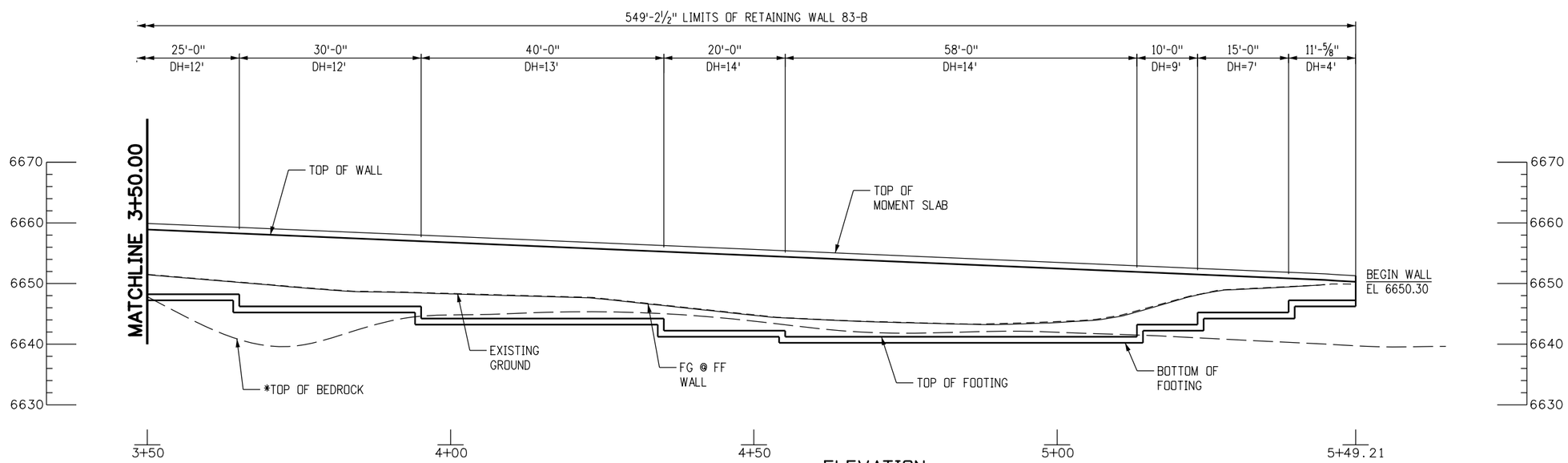


PLAN



ELEVATION

(TAKEN AT HCL RETAINING WALL 83-B)

*APPROXIMATE BASED ON REFRACTION MICROTREMOR INVESTIGATION

0' 10' 20' 40'

F.I.R. SUBMITTAL

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

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Boulder County

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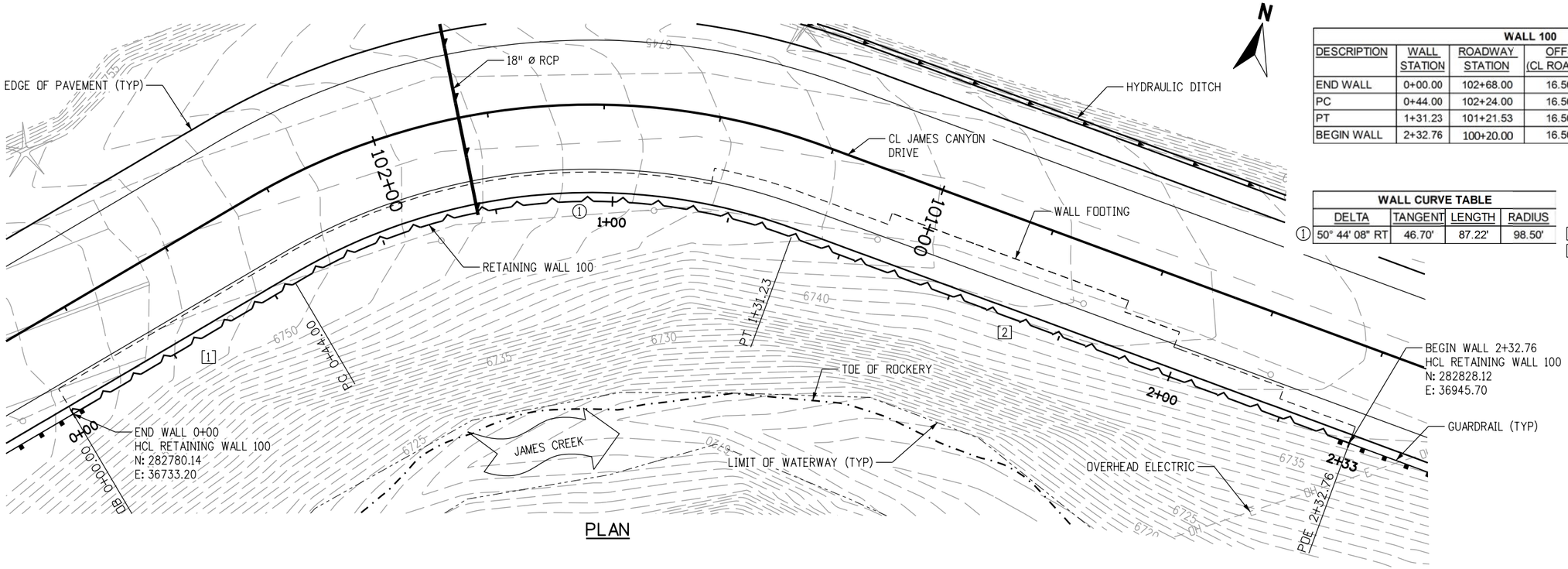
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
MFV	MFV	SBH	06/24/2015

JAMES CANYON
WALL 83-B
GENERAL LAYOUT (3 OF 3)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 55

vausem 6/22/2015 2:25:46 PM L:\0048\900-CAD\02-SHEETS\S\JC-SWALL83B_03.dgn

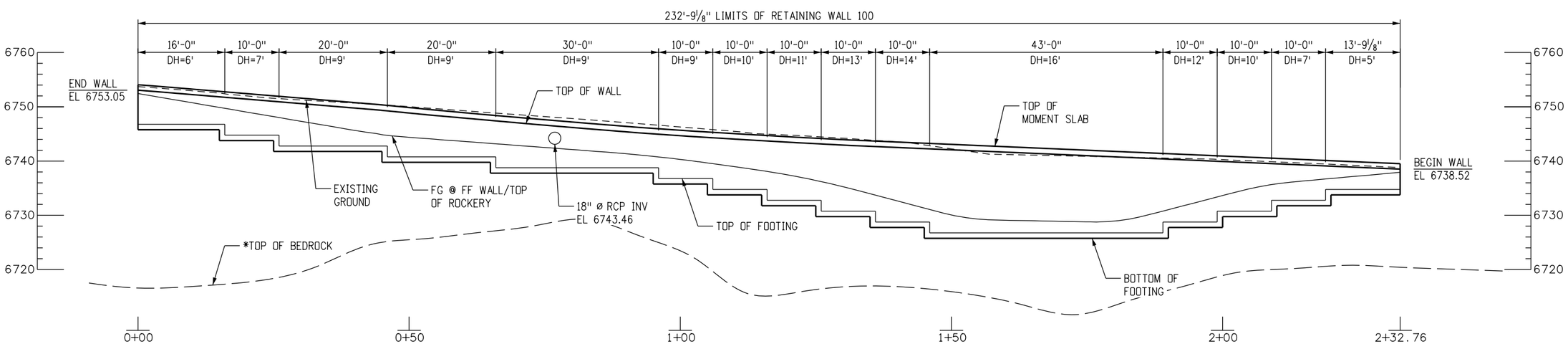


PLAN

WALL 100					
DESCRIPTION	WALL STATION	ROADWAY STATION	OFFSET (CL ROADWAY)	NORTHING	EASTING
END WALL	0+00.00	102+68.00	16.50' LT	282780.14	36733.20
PC	0+44.00	102+24.00	16.50' LT	282811.44	36765.04
PT	1+31.23	101+21.53	16.50' LT	282839.12	36844.77
BEGIN WALL	2+32.76	100+20.00	16.50' LT	282828.12	36945.70

WALL CURVE TABLE				
	DELTA	TANGENT	LENGTH	RADIUS
1	50° 44' 08" RT	46.70'	87.22'	98.50'

WALL LINE TABLE		
	BEARING	LENGTH
1	N 45° 29' 04" E	44.00'
2	S 83° 46' 48" E	101.53'



ELEVATION

(TAKEN AT HCL RETAINING WALL 100)

*APPROXIMATE BASED ON REFRACTION MICROTREMOR INVESTIGATION

0' 10' 20' 40'

F.I.R. SUBMITTAL

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
MFV	MFV	SBH	06/24/2015

JAMES CANYON
WALL 100
GENERAL LAYOUT

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 56

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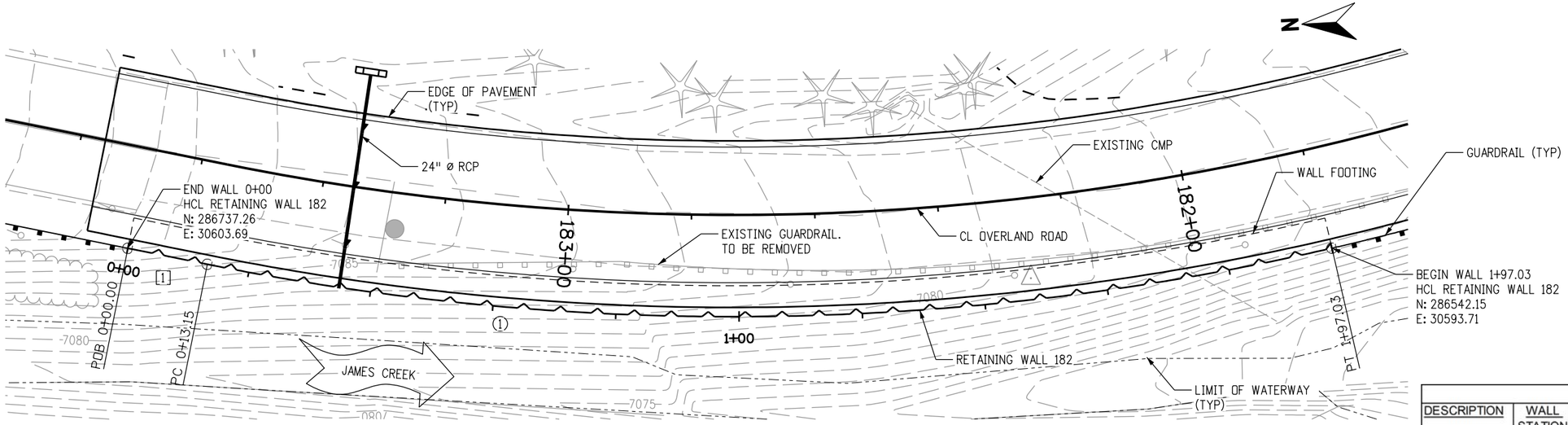
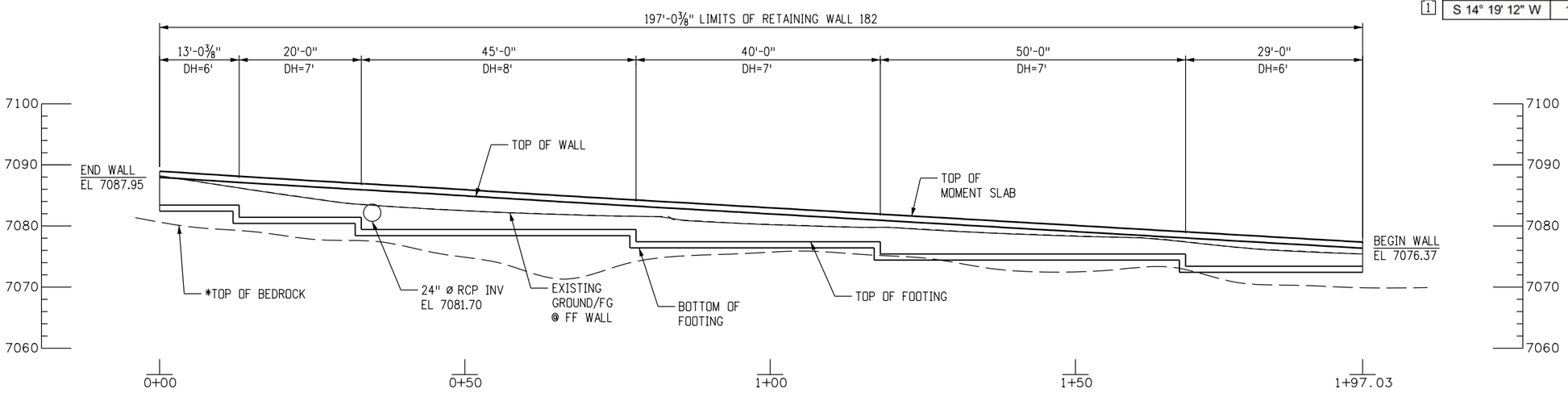


PLAN

WALL182					
DESCRIPTION	WALL STATION	ROADWAY STATION	OFFSET (CL ROADWAY)	NORTHING	EASTING
END WALL	0+00.00	183+69.00	16.50' LT	286737.26	30603.69
PC	0+13.15	183+55.85	16.50' LT	286724.52	30600.44
BEGIN WALL	1+97.03	181+79.00	16.50' LT	286542.15	30593.71

WALL CURVE TABLE				
	DELTA	TANGENT	LENGTH	RADIUS
1	24° 24' 56" LT	93.36'	183.88'	431.50'

WALL LINE TABLE		
	BEARING	LENGTH
1	S 14° 19' 12" W	13.15'



ELEVATION

(TAKEN AT HCL RETAINING WALL 182)

*APPROXIMATE BASED ON REFRACTION MICROTREMOR INVESTIGATION

0' 10' 20' 40'

F.I.R. SUBMITTAL

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

Boulder County

AECOM

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
MFV	MFV	SBH	06/24/2015

JAMES CANYON
WALL 182
GENERAL LAYOUT

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 57

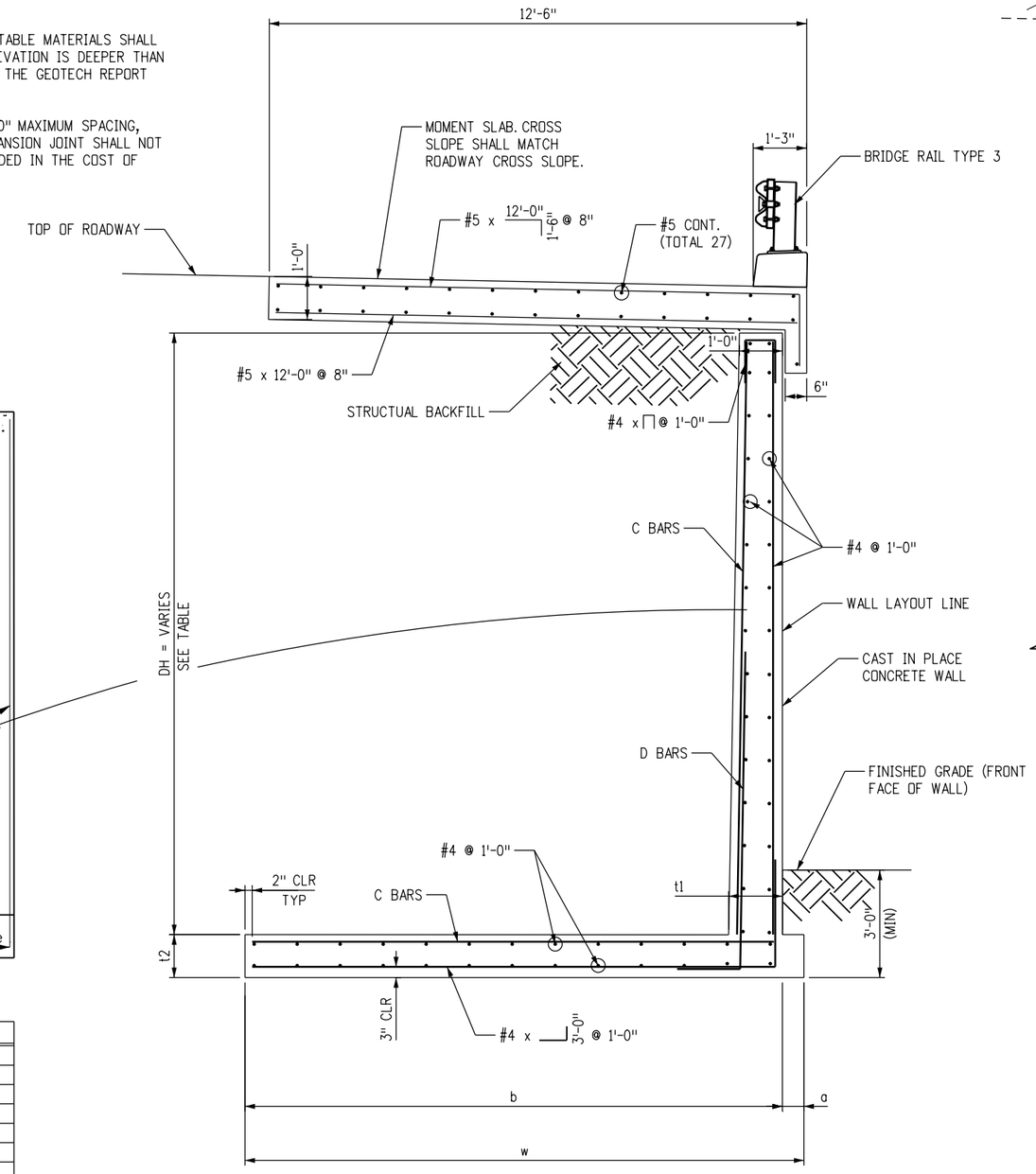
vausem 6/22/2015 2:25:51 PM L:\0048\900-CAD\02-SHEETS\SJC-SWALL182_01.dgn

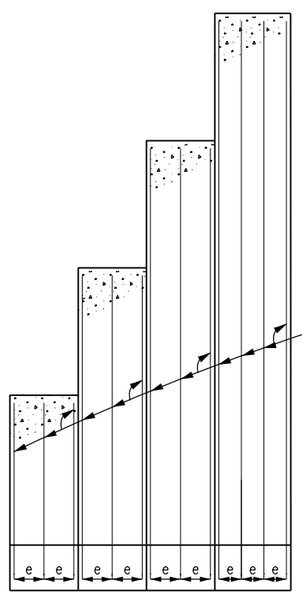
NOTES:

1. STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH M-206-1. ALL STRUCTURE BACKFILL SHALL BE STRUCTURE BACKFILL (CLASS 1) UNLESS APPROVED BY THE ENGINEER.

2. ADDITIONAL EXCAVATION AND BACFKFILL OF SUITABLE MATERIALS SHALL BE PERFORMED WHEN THE MINIMUM BEARING ELEVATION IS DEEPER THAN THE MINIMUM SCOUR DEPTH, AS PRESCRIBED BY THE GEOTECH REPORT AND SHOWN ON THE PLAN AND PROFILE SHEETS.

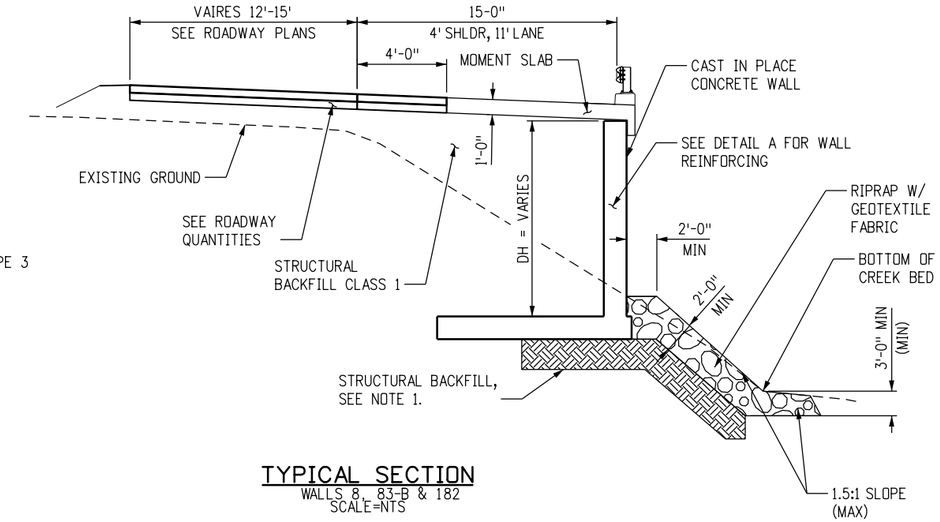
3. PROVIDE FULL DEPTH EXPANSION JOINT AT 30'-0" MAXIMUM SPACING, FILL TOP 1½" WITH POURED JOINT FILLER. EXPANSION JOINT SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF WORK.



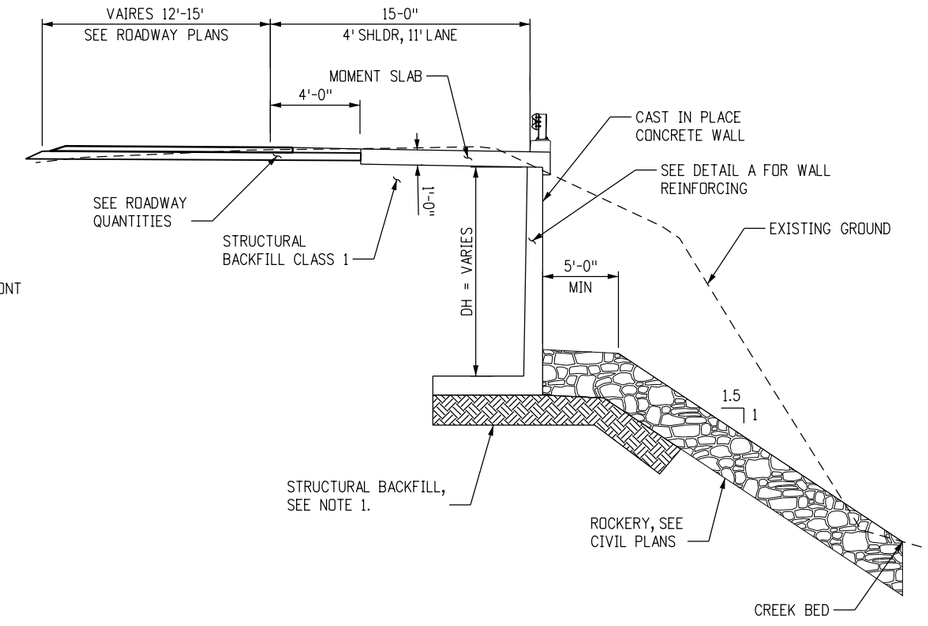


e =	1'-0"	8"	6"	6"
DH =	5'	10'	15'	20'
t_1 =	1'-0"	1'-0"	1'-3"	1'-3"
t_2 =	1'-0"	1'-0"	1'-6"	1'-6"
a =	-	-	-	-
b =	3'-0"	5'-0"	7'-9"	9'-9"
w =	3'-0"	5'-0"	7'-9"	9'-9"
C & D bars	#4	#6	#8	#11
Conc. CY/LF	0.296	0.546	1.028	1.375
Reinf. lbs/LF	30	67	129	263

DETAIL A
SCALE=NTS



TYPICAL SECTION
WALLS 8, 83-B & 182
SCALE=NTS



TYPICAL SECTION
WALLS 83-A & 100
SCALE=NTS

F.I.R. SUBMITTAL

F.I.R.

CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
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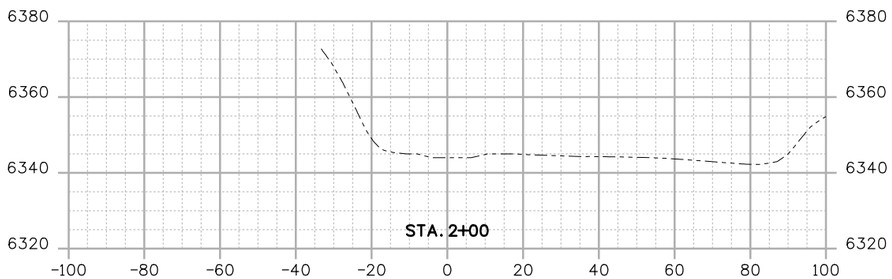
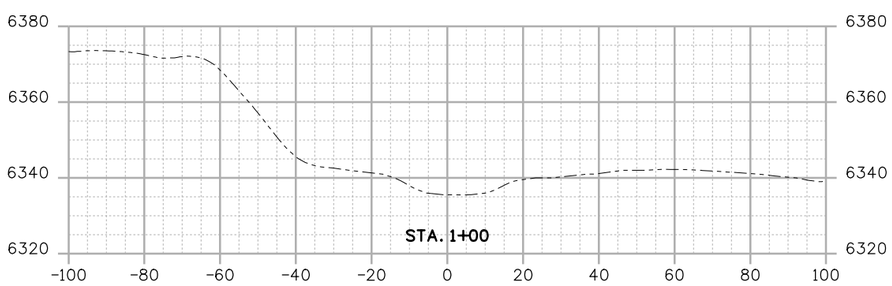
MFV	MFV	SBH	06/24/2015

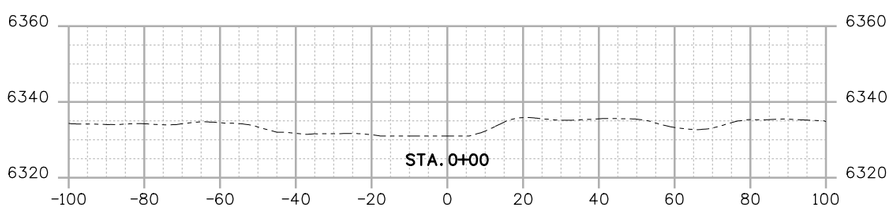
JAMES CANYON
CANTILEVER WALL DETAIL

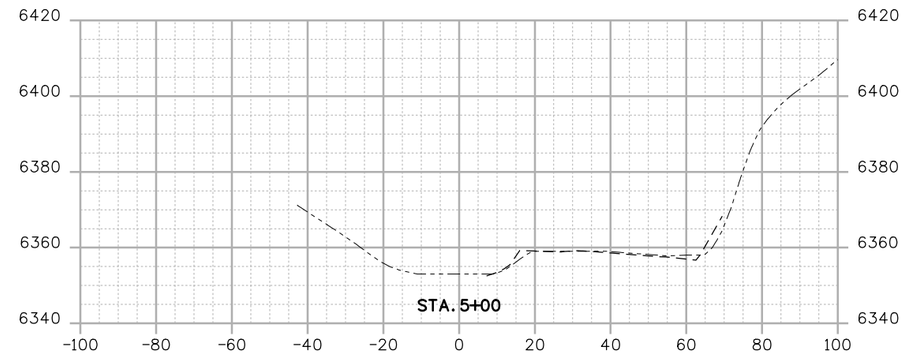
PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 58

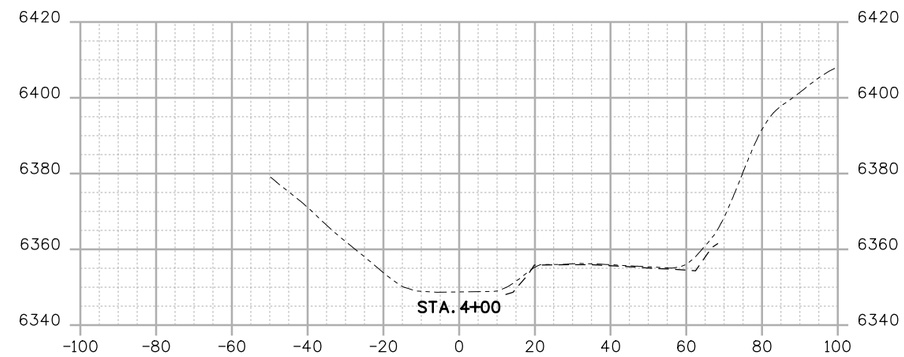
vausem 6/22/2015 2:45:28 PM L:\0048\900-CAD\02-SHEETS\S\JC_SWALL_D.dgn

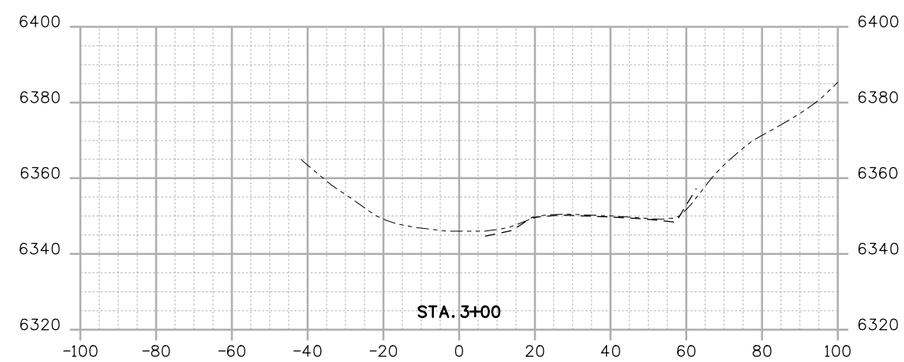












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CALL UTILITY NOTIFICATION CENTER OF COLORADO
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ENGINEERING DIVISION
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DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

JAMES STREAM SECTIONS
(1 OF 21)

PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 59

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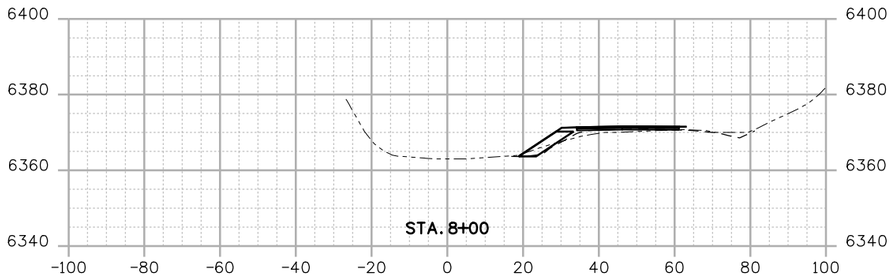

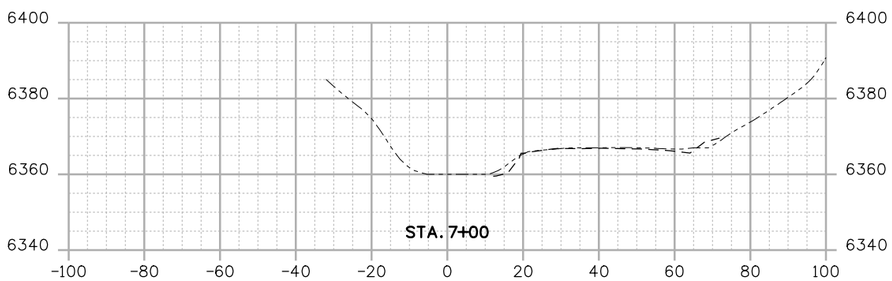

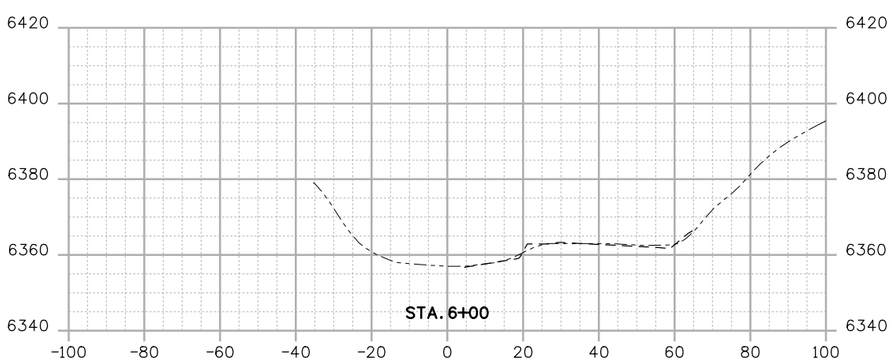

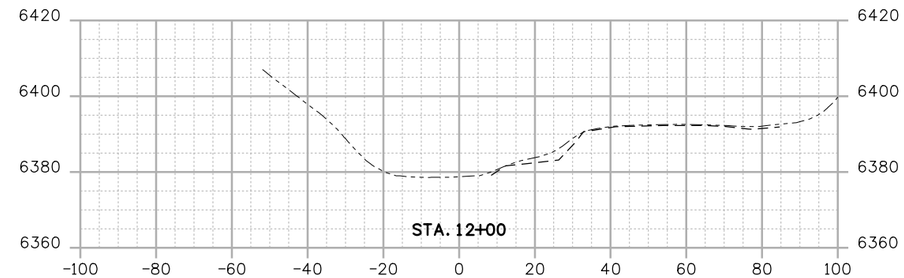

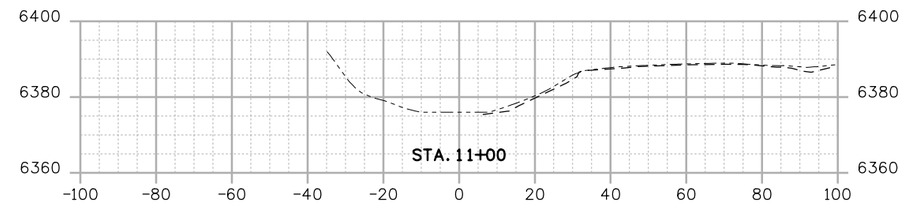

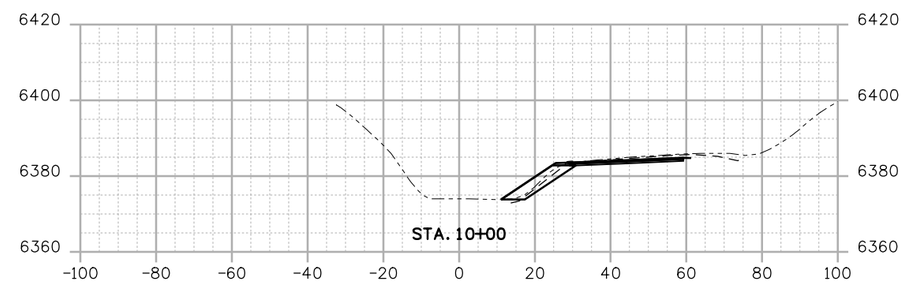

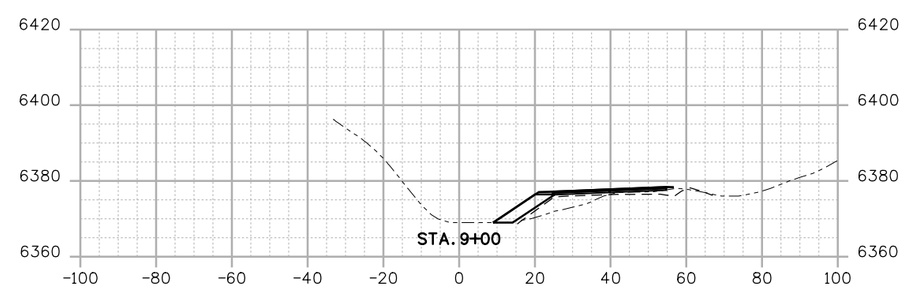

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F.I.R. SUBMITTAL

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CALL UTILITY NOTIFICATION CENTER OF COLORADO
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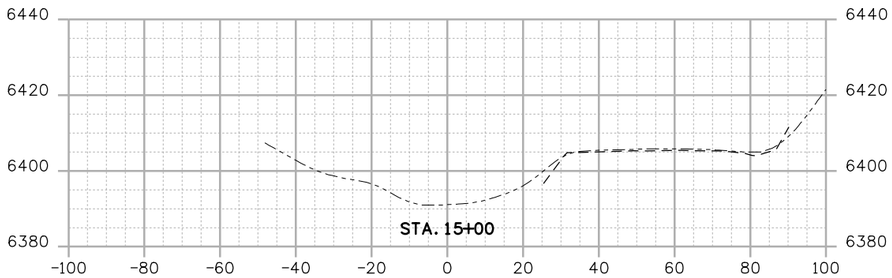
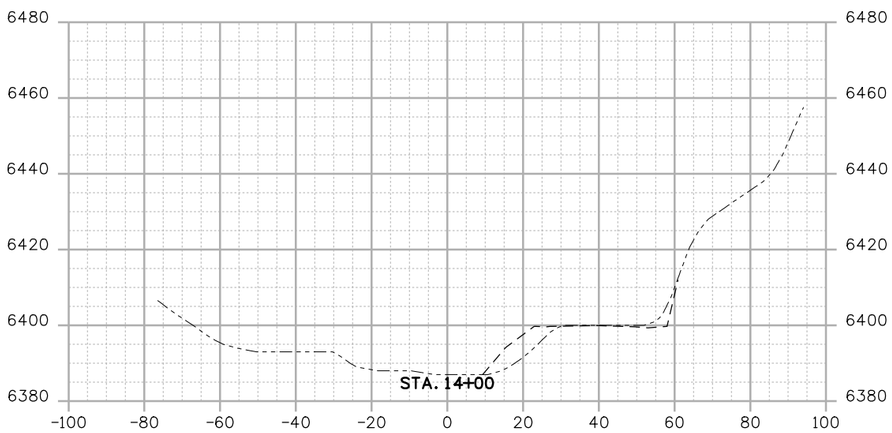
AECOM

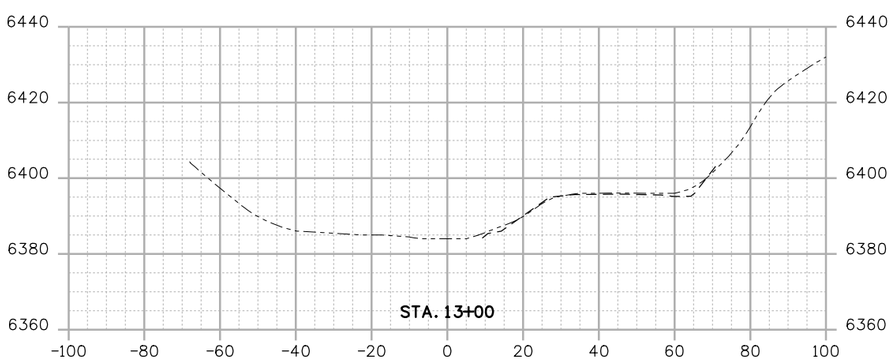
DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

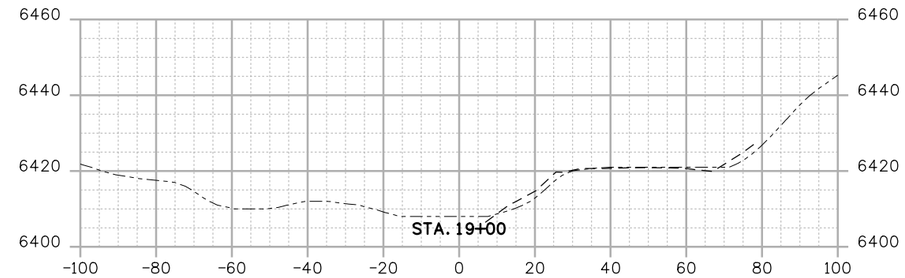
JAMES STREAM SECTIONS
(2 OF 21)

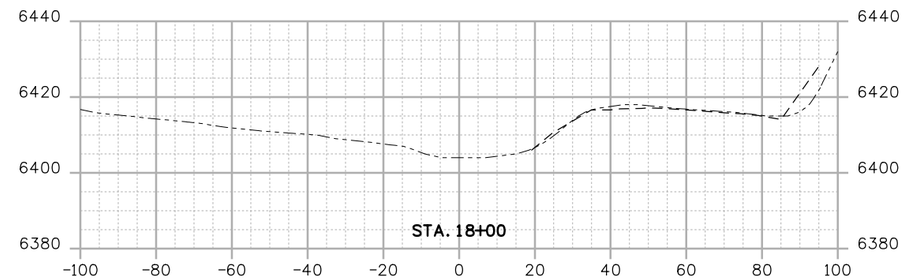
PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 60

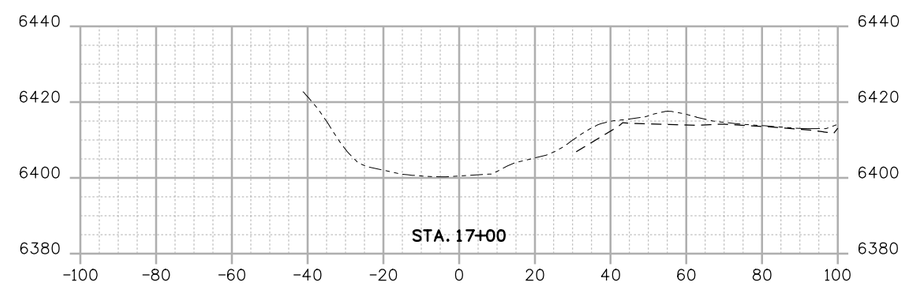


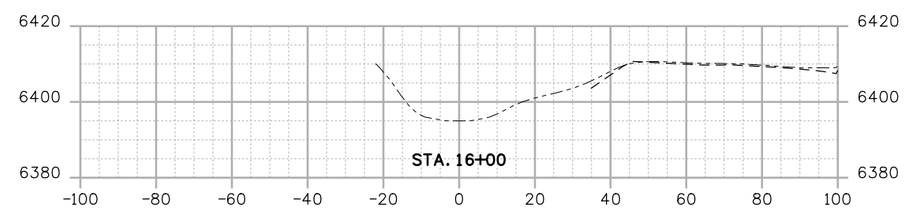












F.I.R. SUBMITTAL

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CALL UTILITY NOTIFICATION CENTER OF COLORADO
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REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

JAMES STREAM SECTIONS
(3 OF 21)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 61

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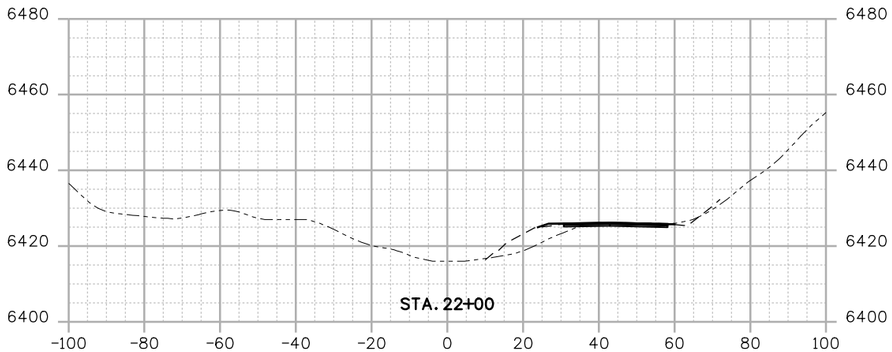

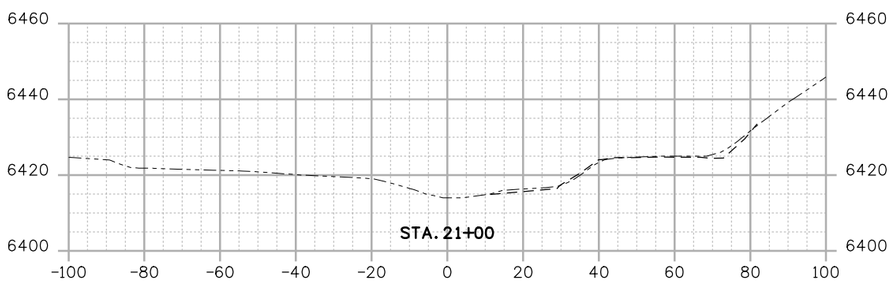

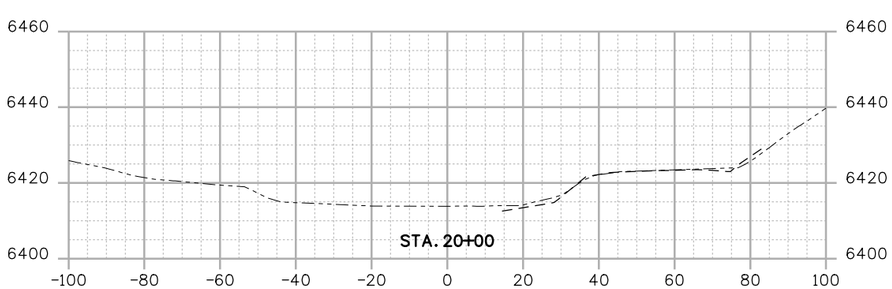

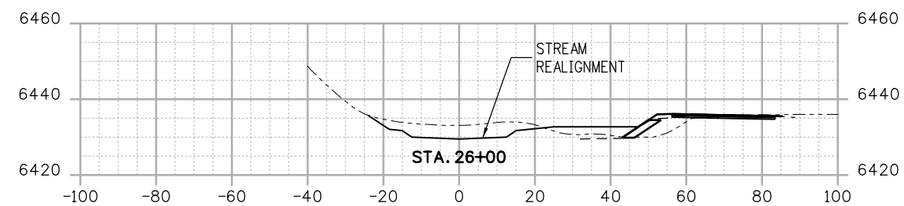

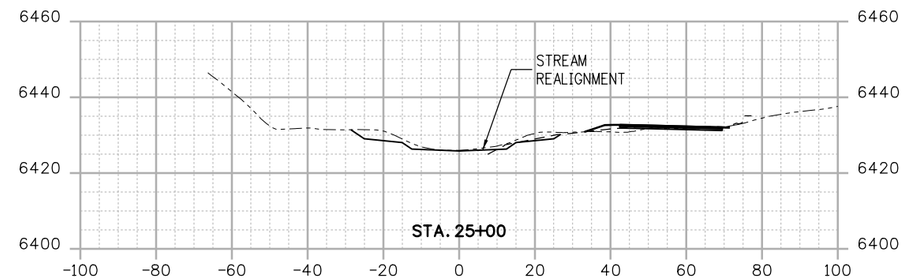

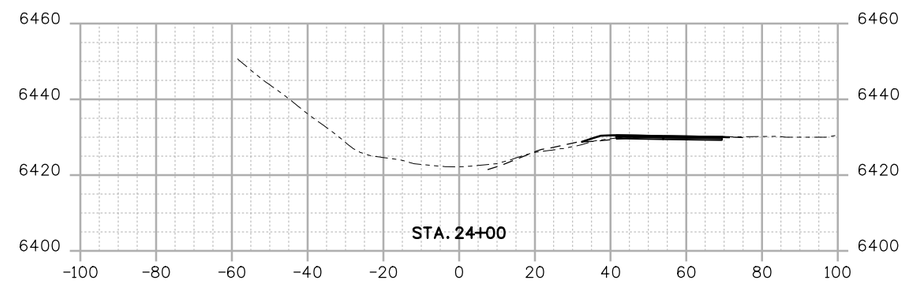

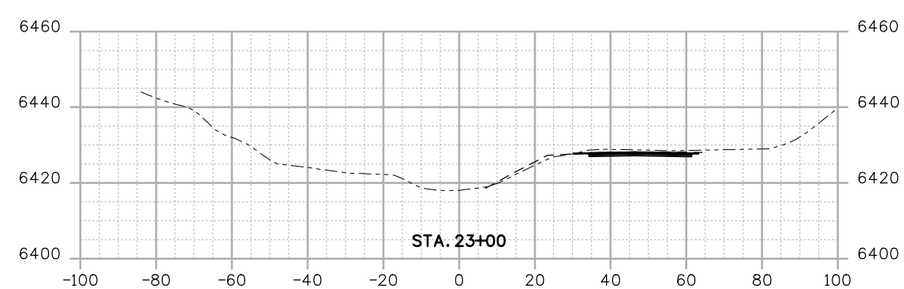

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CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

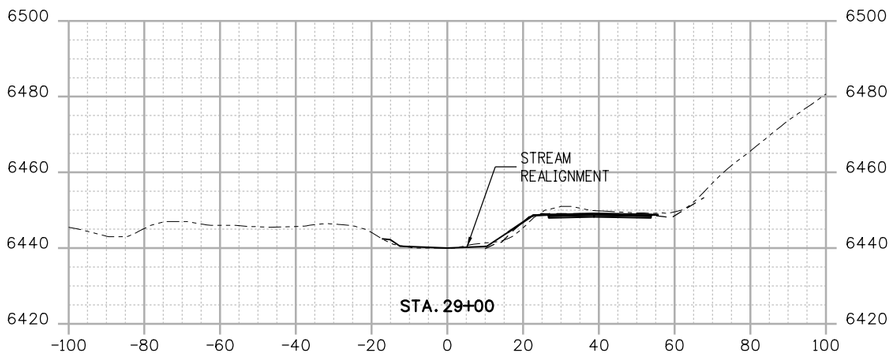
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

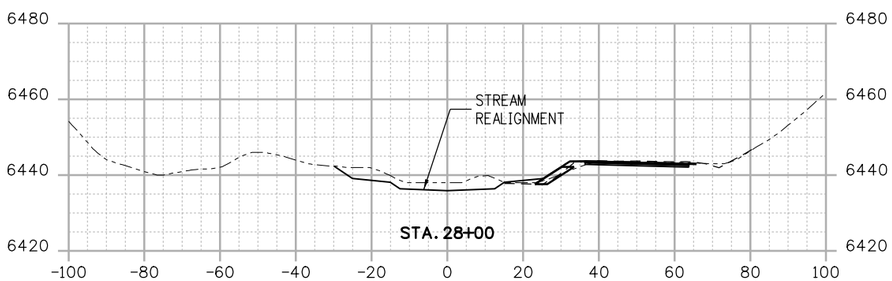
DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

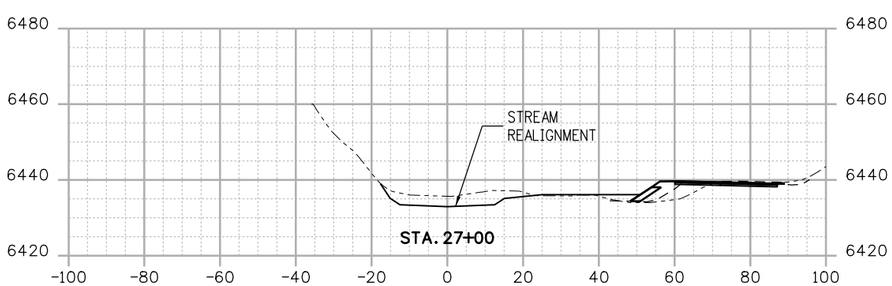
JAMES STREAM SECTIONS
(4 OF 21)

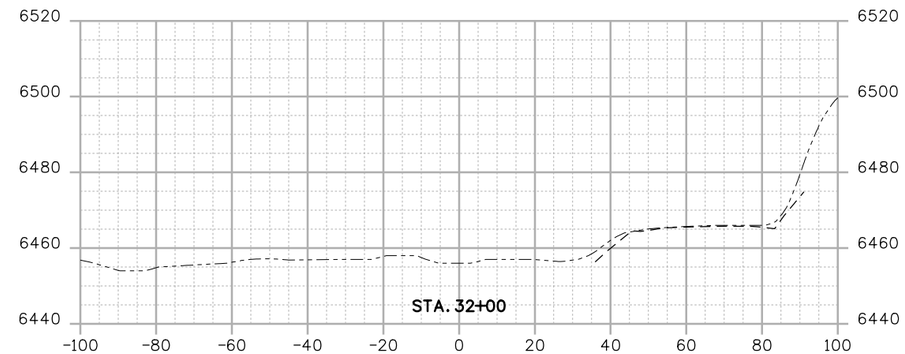
PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 62

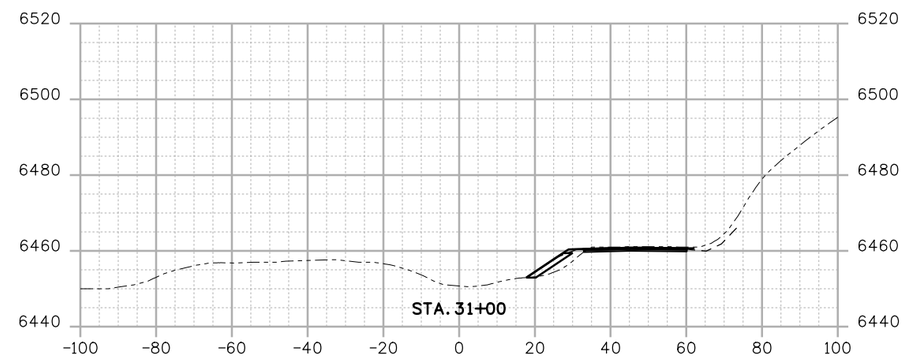
SalekM 6/23/2015 8:18:38 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BOCO-James_STXS.dgn

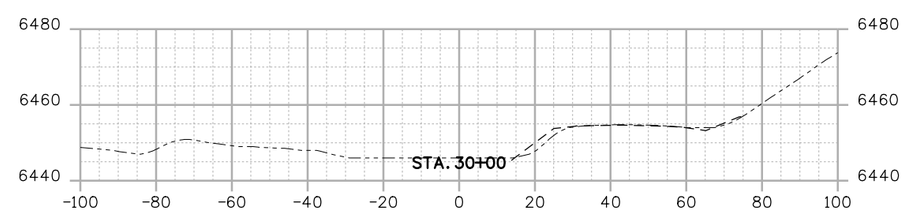












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CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

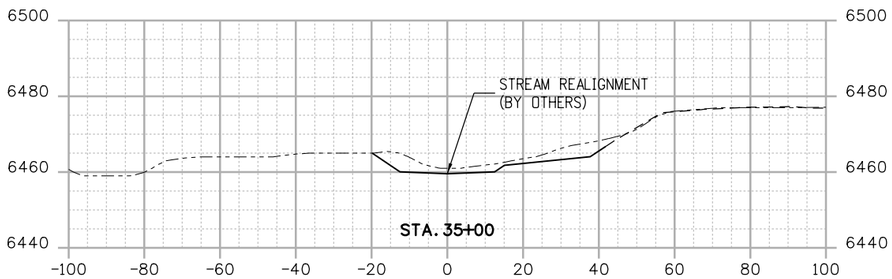
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

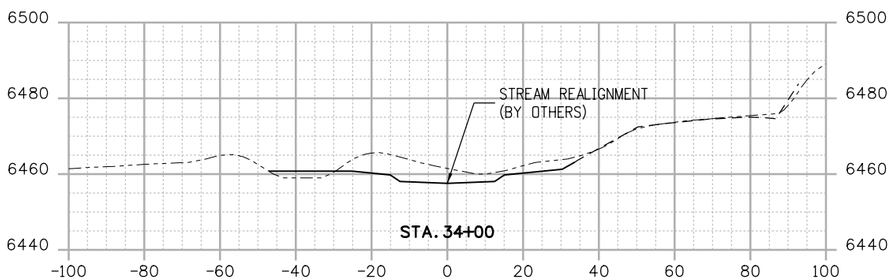
DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

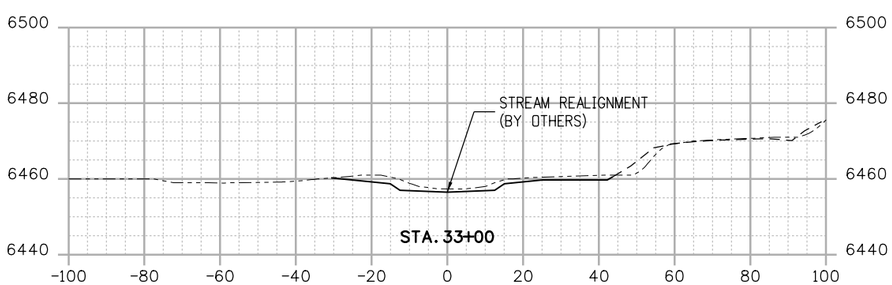
JAMES STREAM SECTIONS
(5 OF 21)

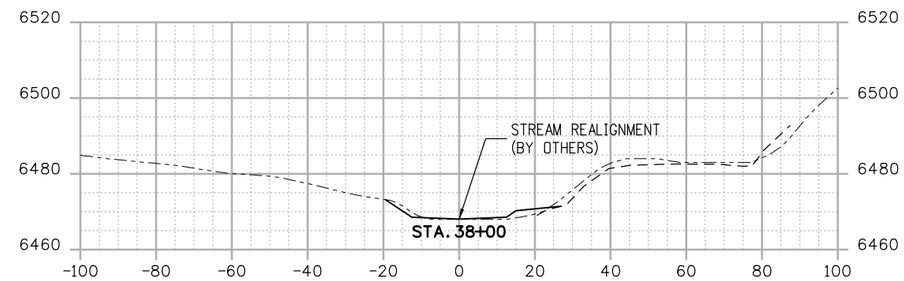
PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 63

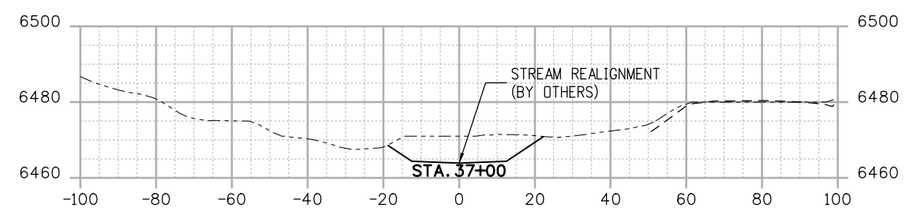
SalekM 6/23/2015 8:18:39 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BDCO-James_STXS.dgn

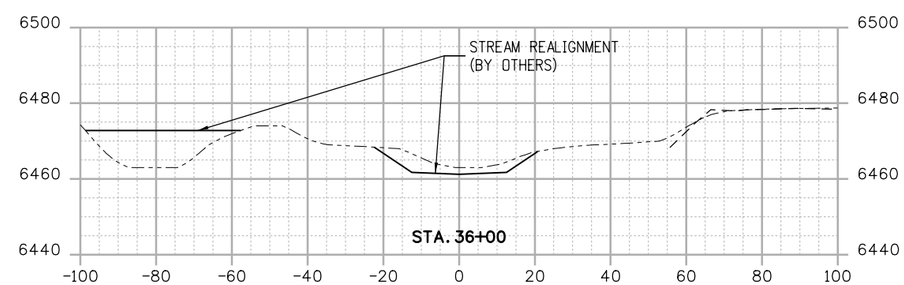












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CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

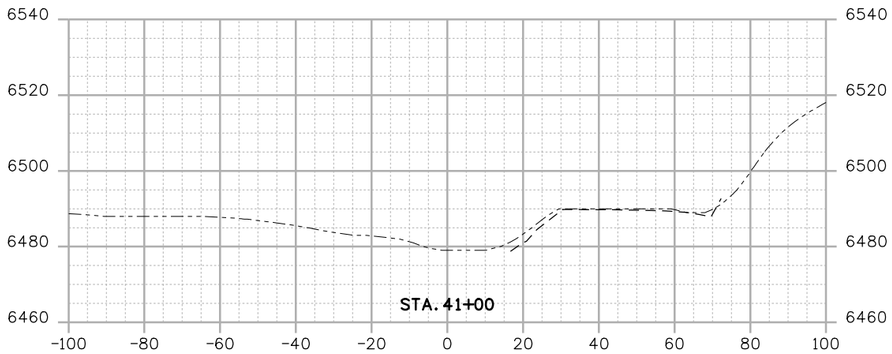
REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

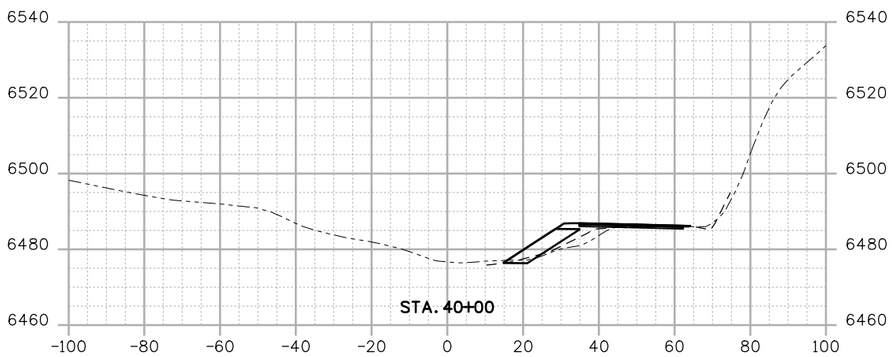
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

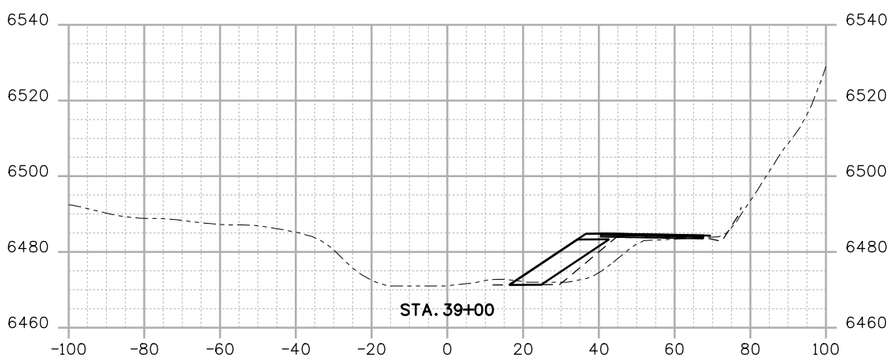
DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

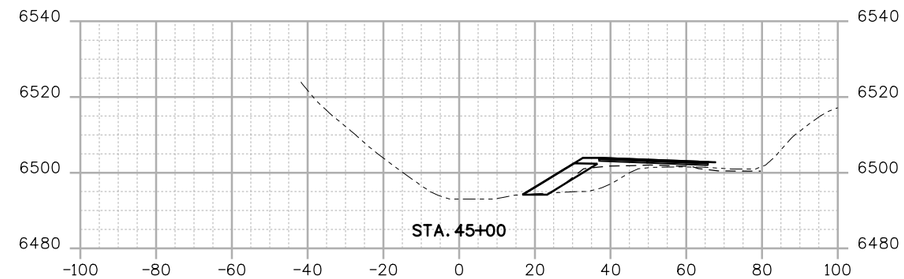
JAMES STREAM SECTIONS
(6 OF 21)

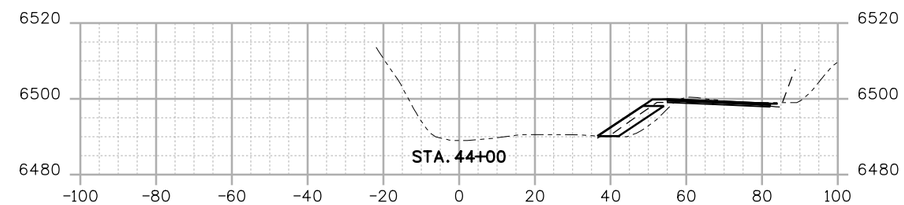
PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 64

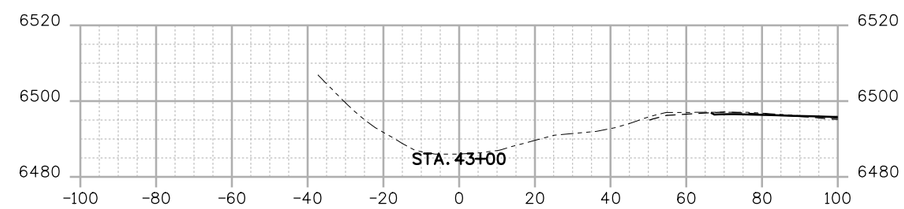


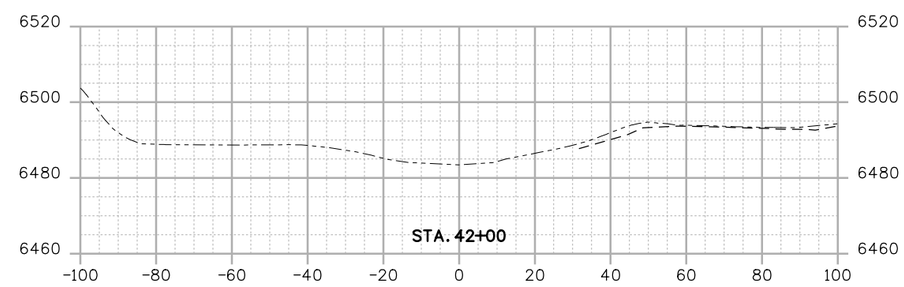












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CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

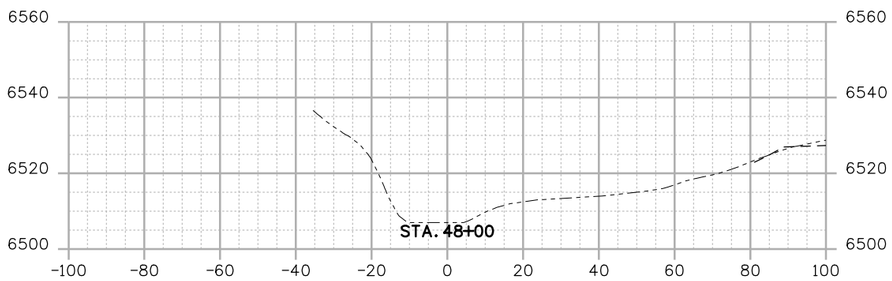
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

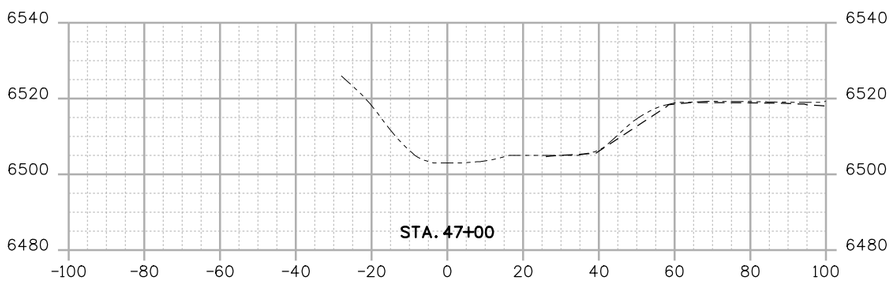
DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

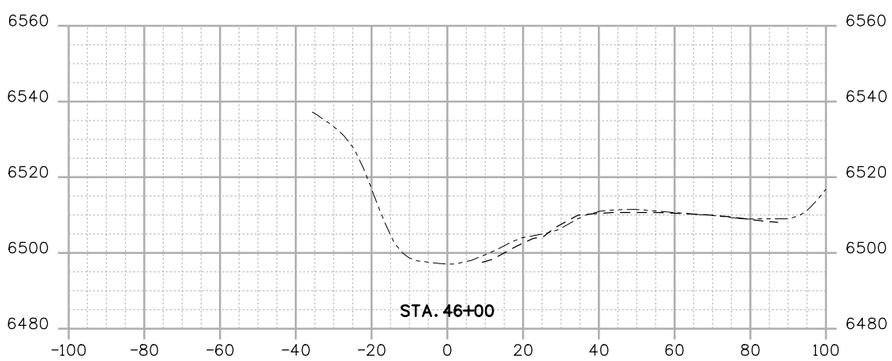
JAMES STREAM SECTIONS
(7 OF 21)

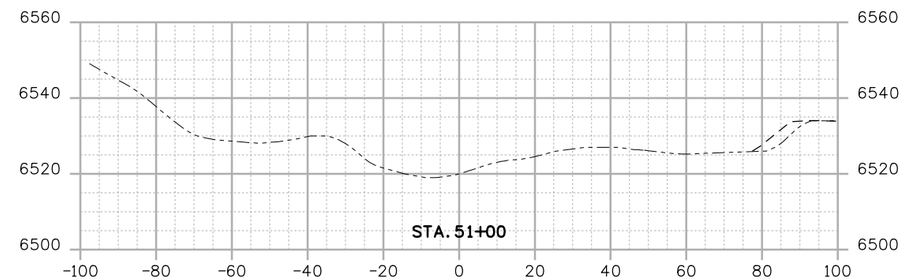
PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 65

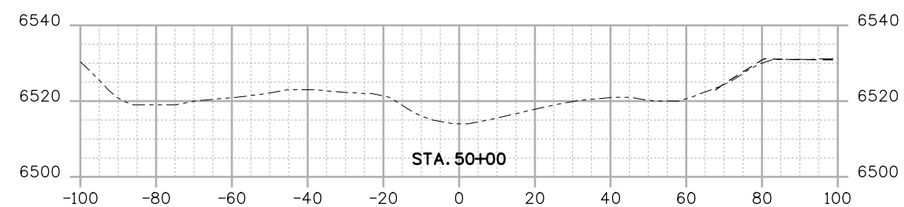
SalekM 6/23/2015 8:18:42 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BOCO-James_STXS.dgn

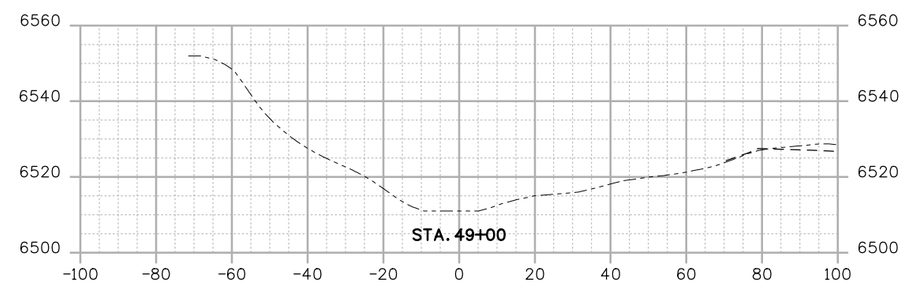












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CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

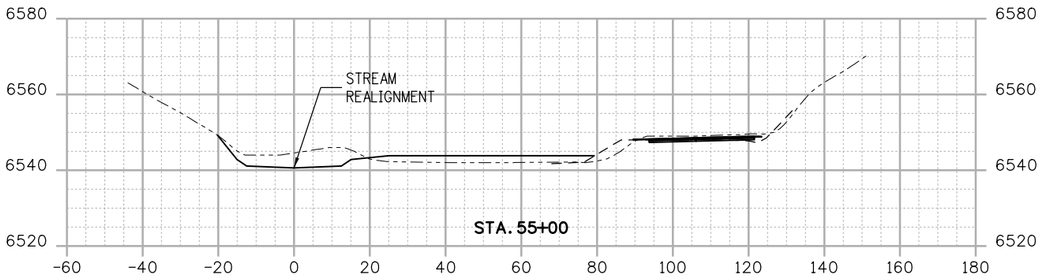
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

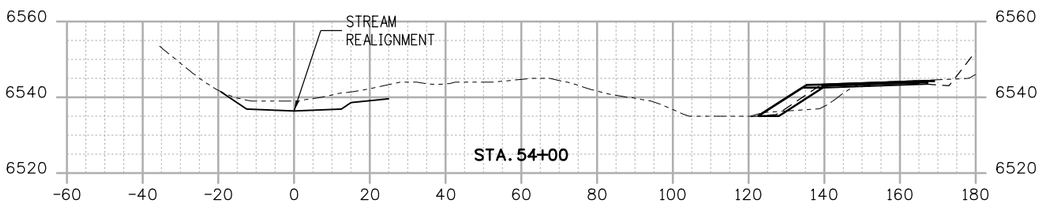
DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

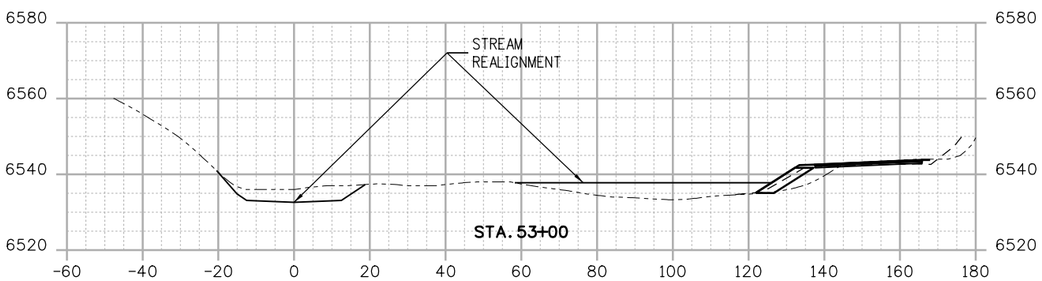
JAMES STREAM SECTIONS
(8 OF 21)

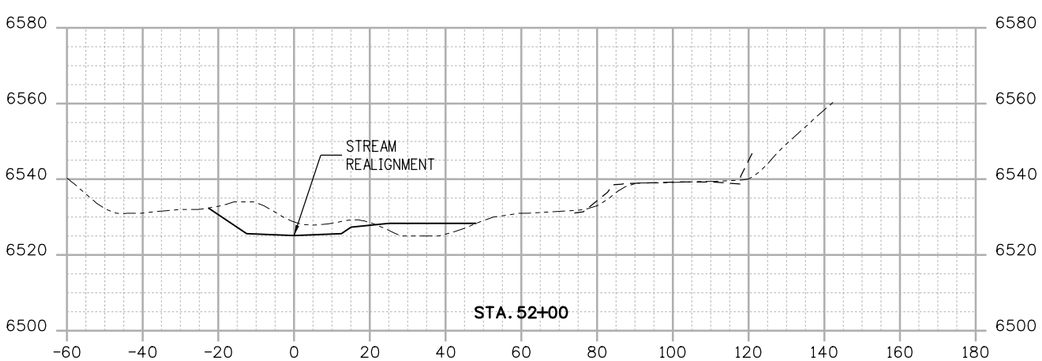
PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 66

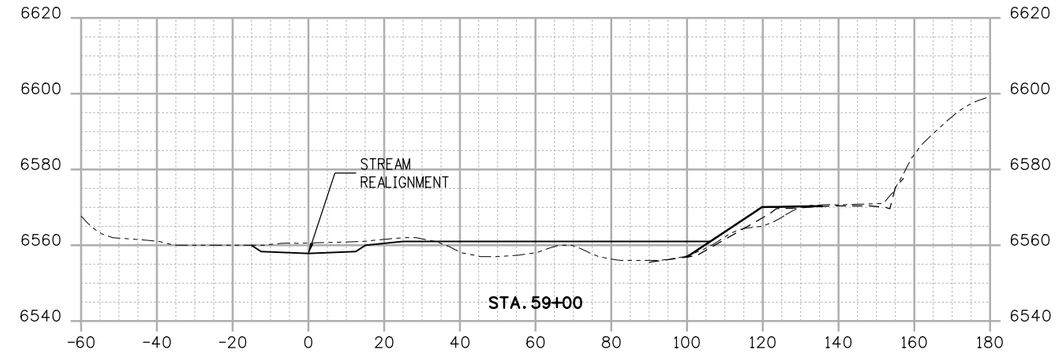
SalekM 6/23/2015 8:18:43 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BOCD-James_STXS.dgn

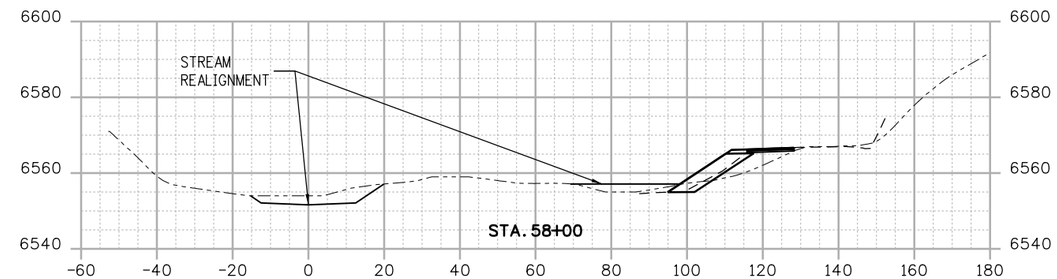


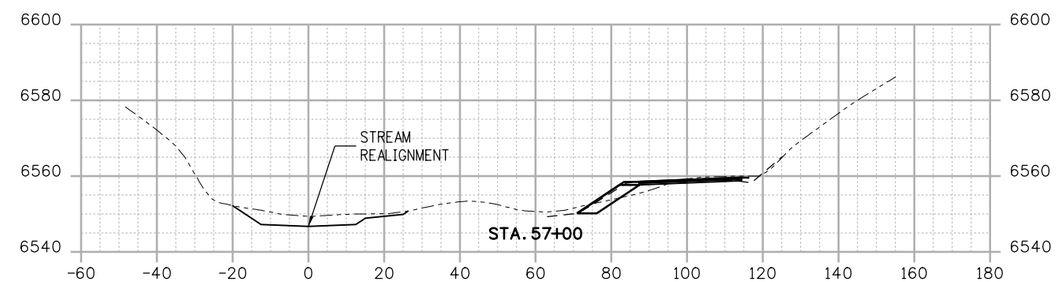


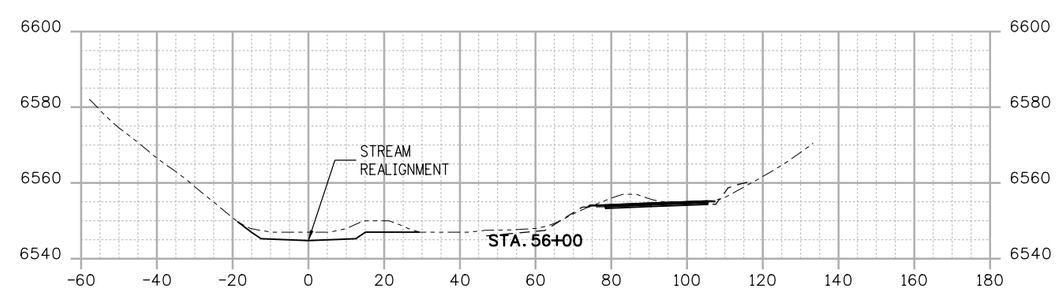












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CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

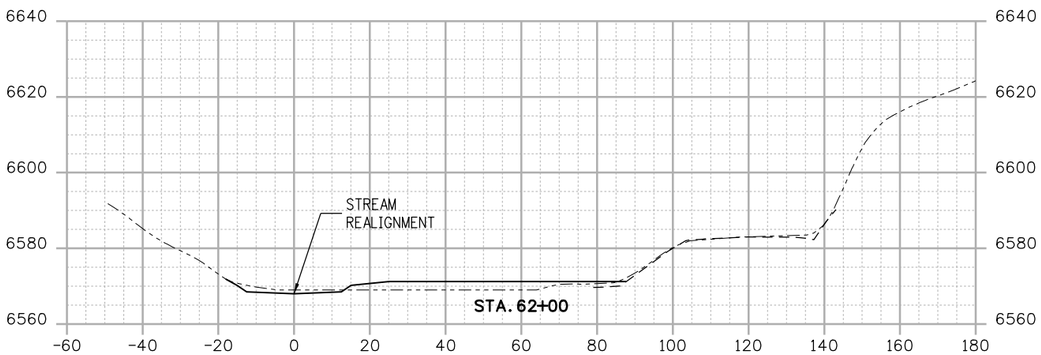
REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

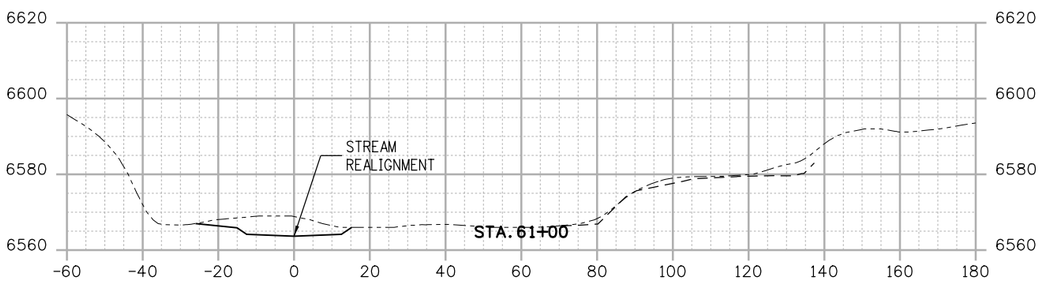
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

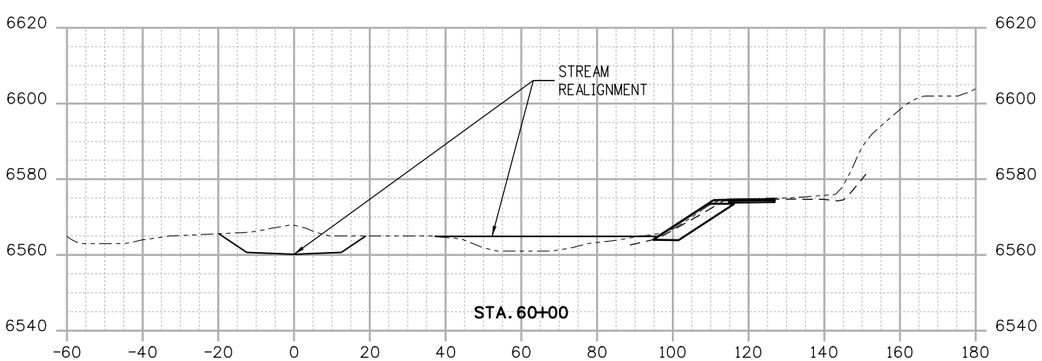
DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

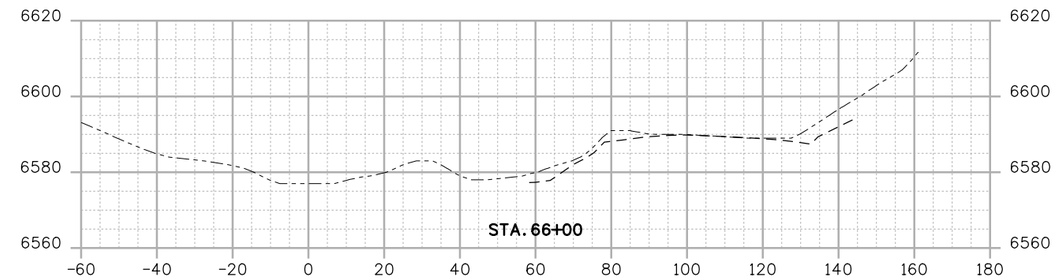
JAMES STREAM SECTIONS
(9 OF 21)

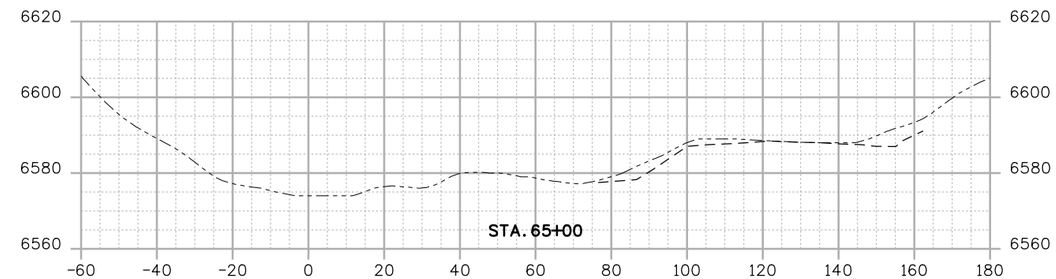
PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 67

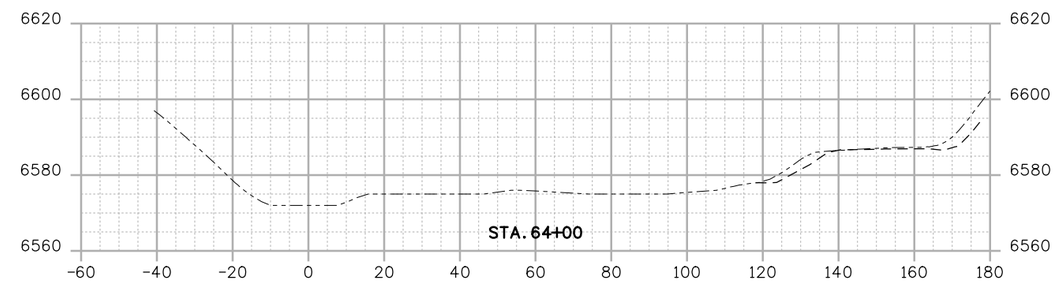


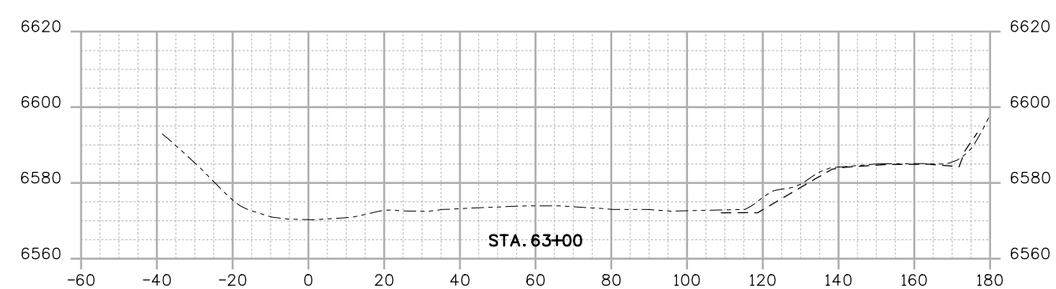












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CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

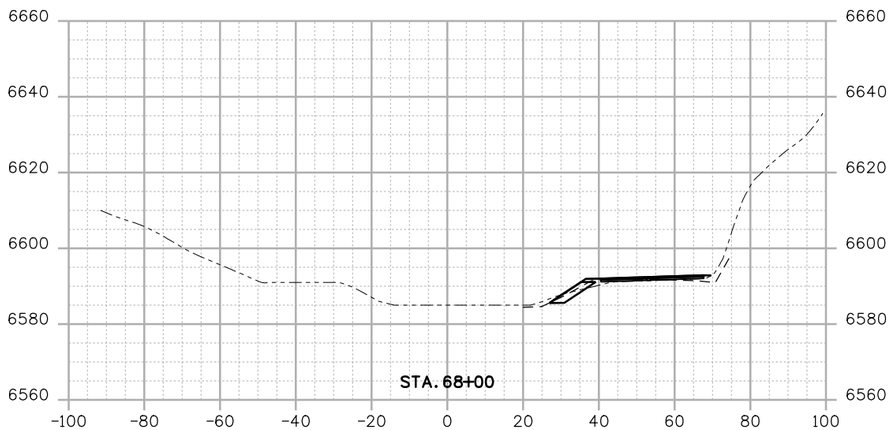
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

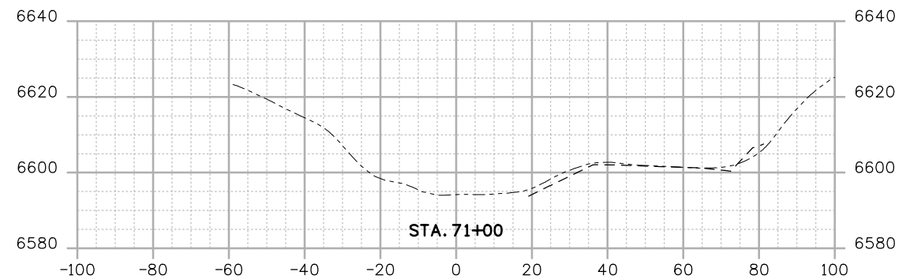
DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

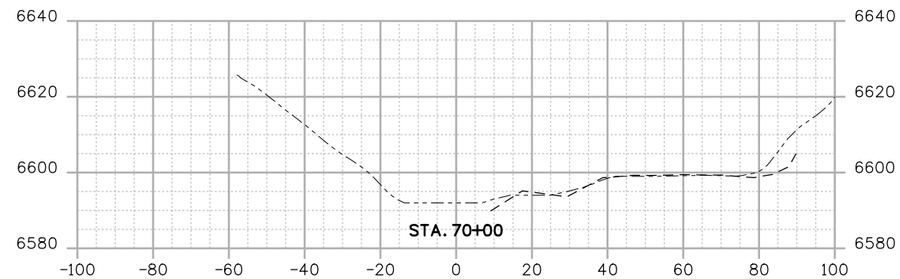
JAMES STREAM SECTIONS
(10 OF 21)

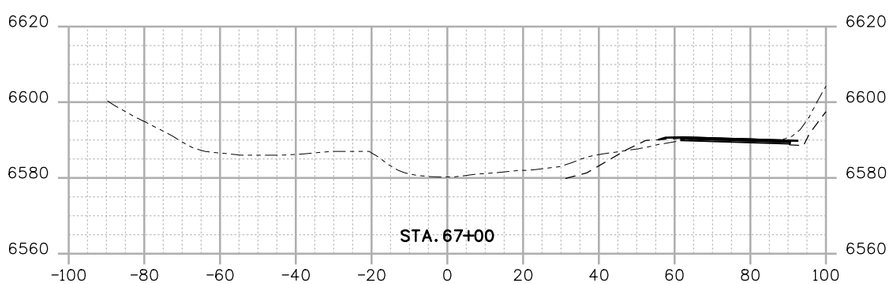
PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 68

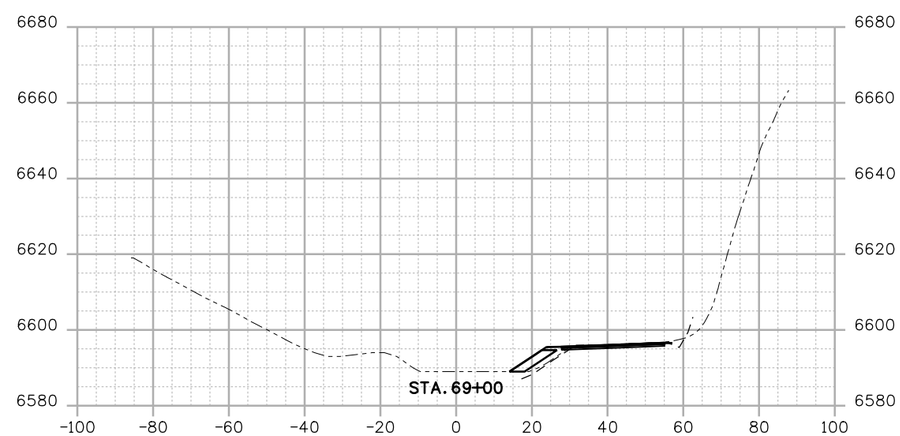
SalekM 6/23/2015 8:18:46 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BOCO-James_STXS.dgn











F.I.R. SUBMITTAL

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CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

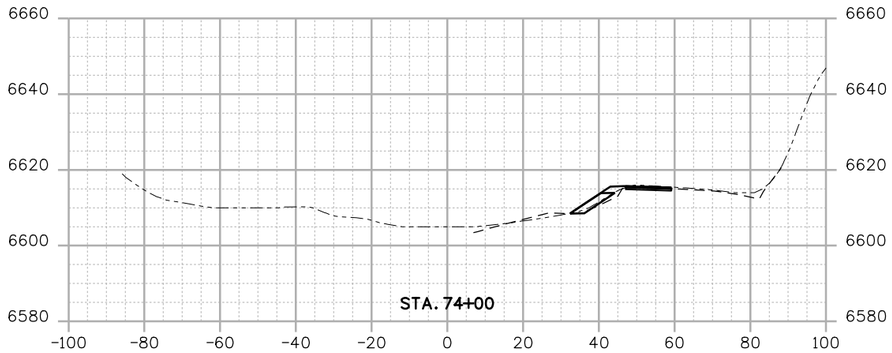
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

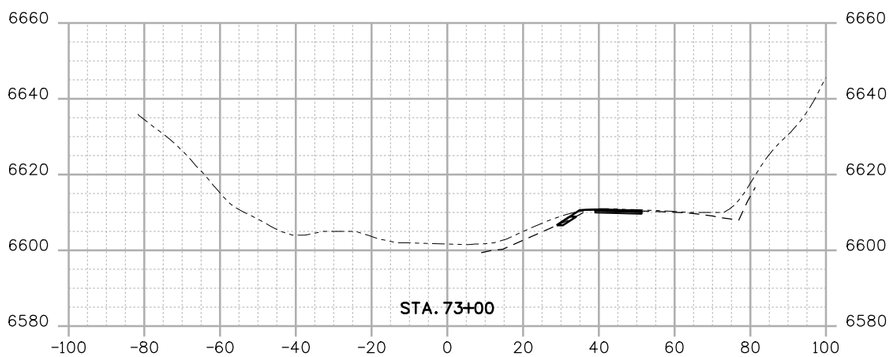
DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

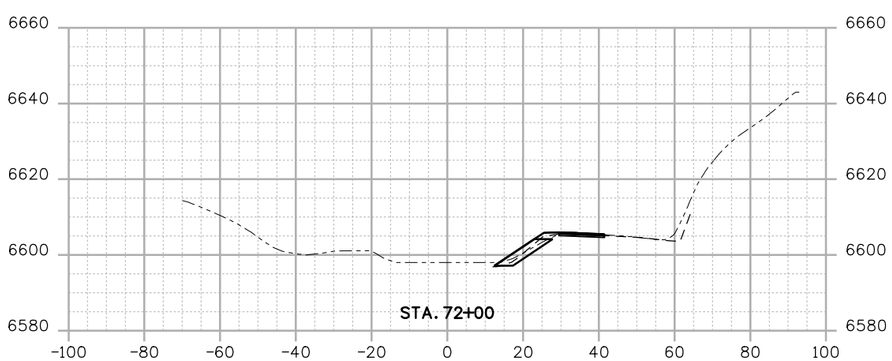
JAMES STREAM SECTIONS
(11 OF 21)

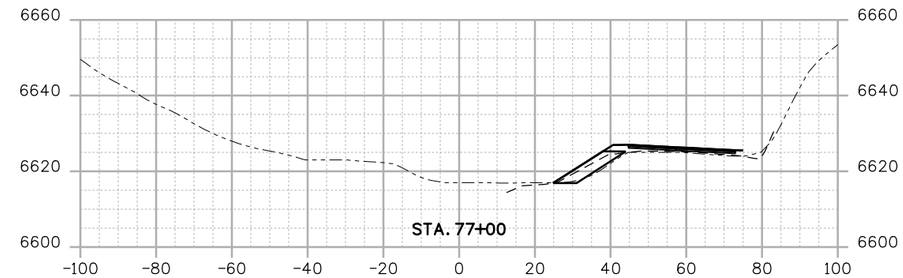
PROJECT NO: SEPT12C24 SEPT12C91
SHEET NO: 69

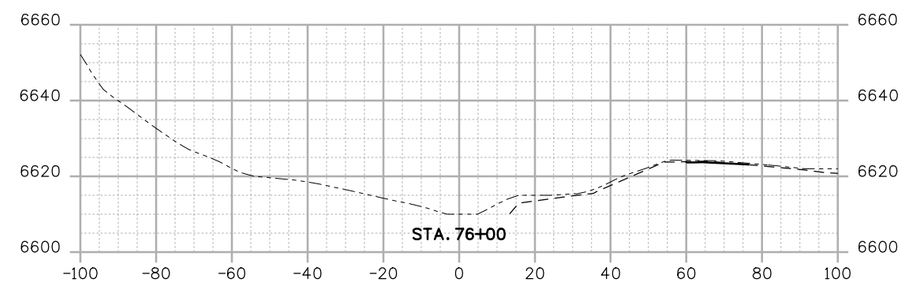
SalekM 6/23/2015 8:18:48 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BOCO-James_STXS.dgn

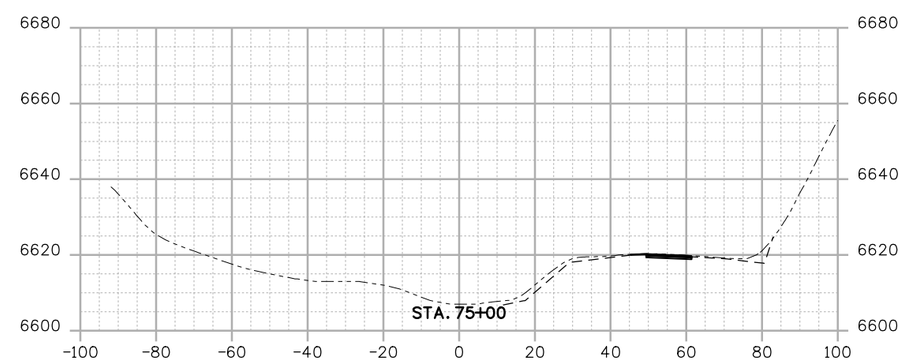












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CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

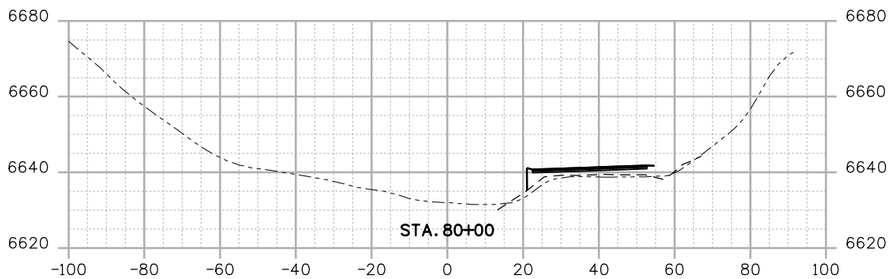
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

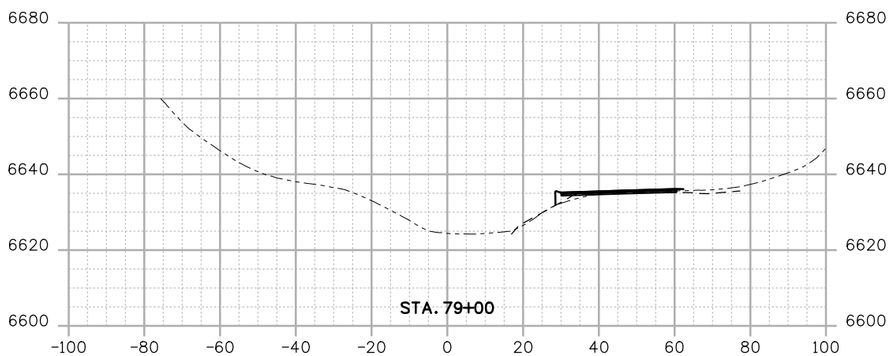
DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

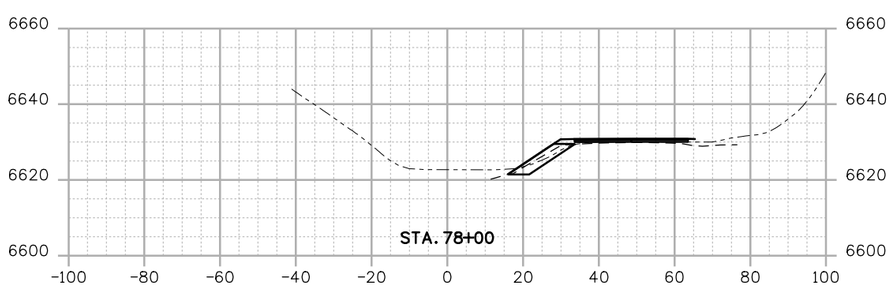
JAMES STREAM SECTIONS
(12 OF 21)

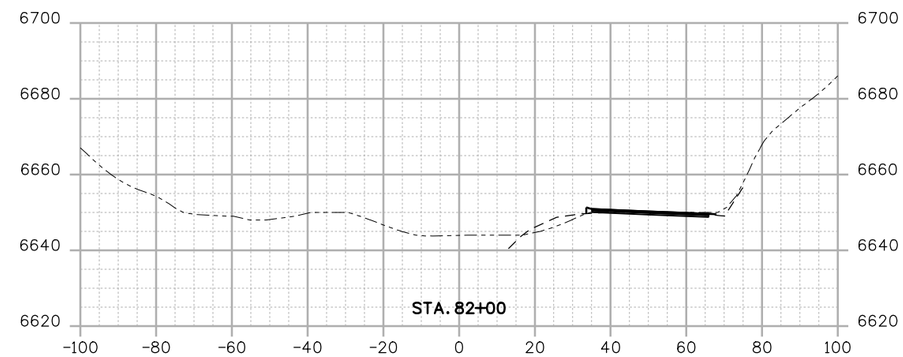
PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 70

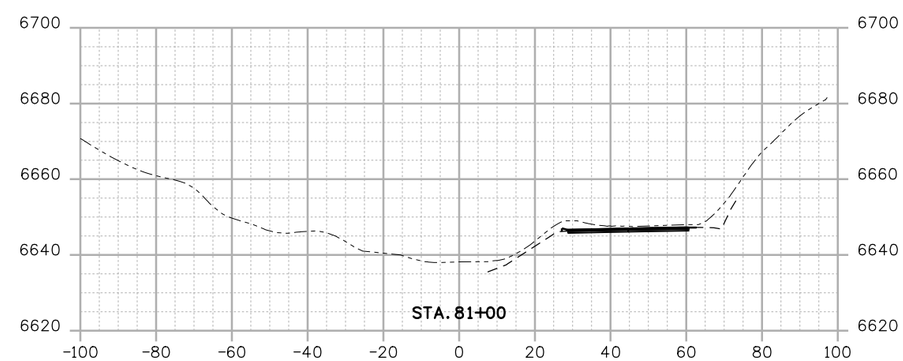
SalekM 6/23/2015 8:18:49 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BOCO-James_STXS.dgn











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CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

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BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

JAMES STREAM SECTIONS
(13 OF 21)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 71

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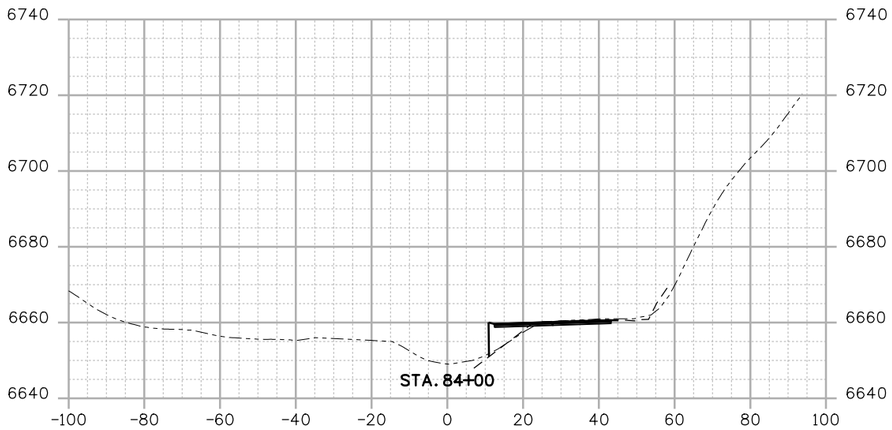

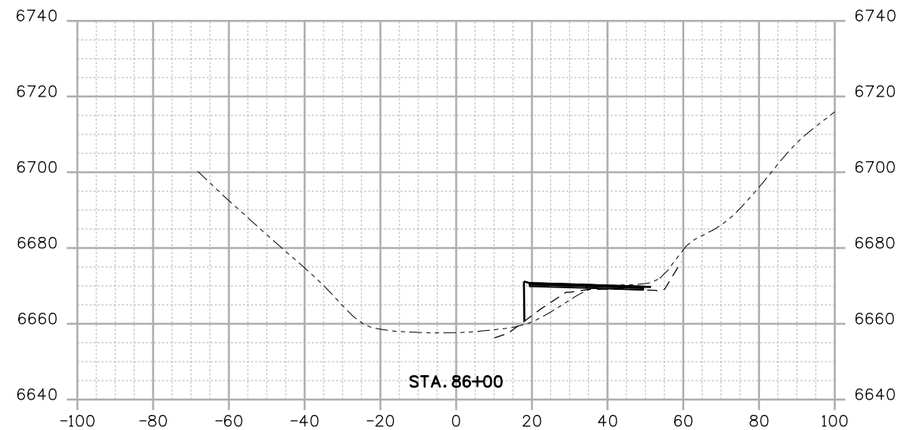

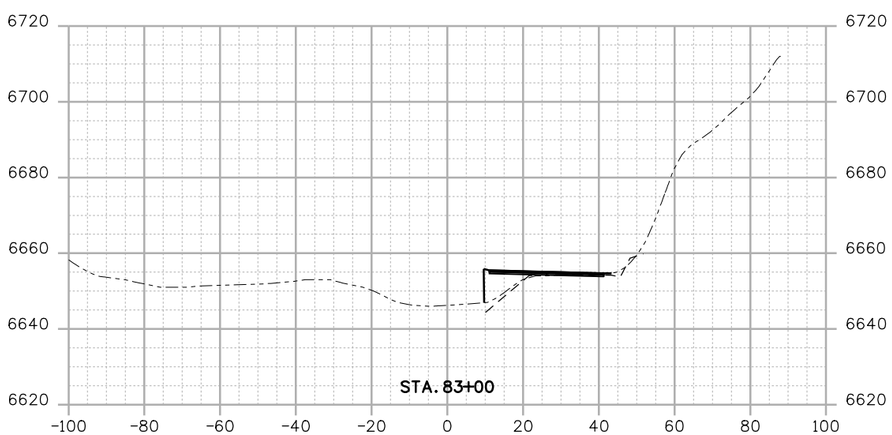

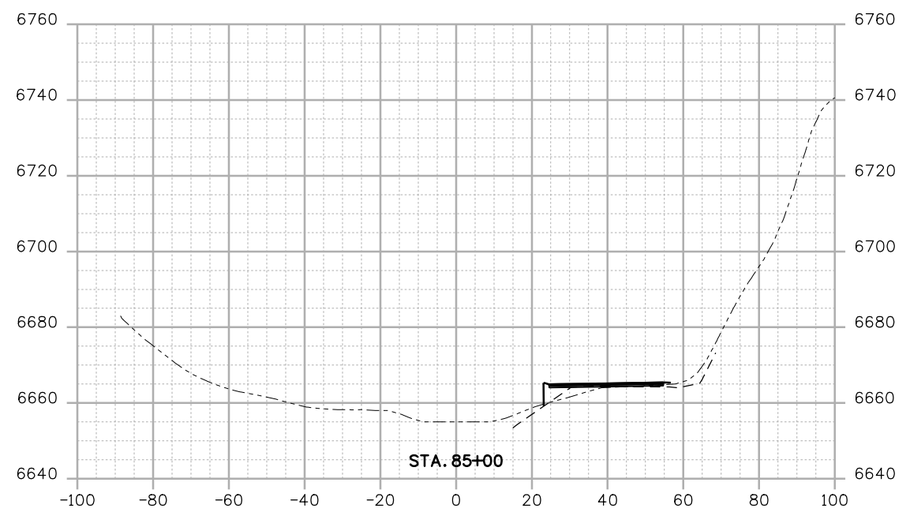

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CALL UTILITY NOTIFICATION CENTER OF COLORADO
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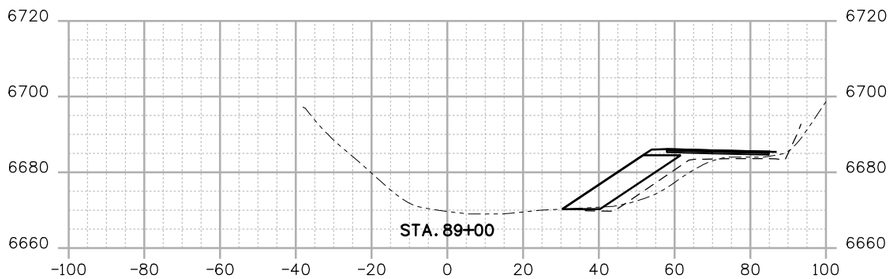
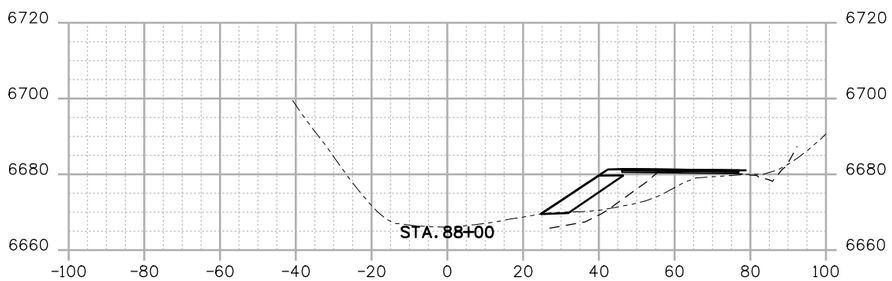
LNM	LNM	TPF	04/15/2015

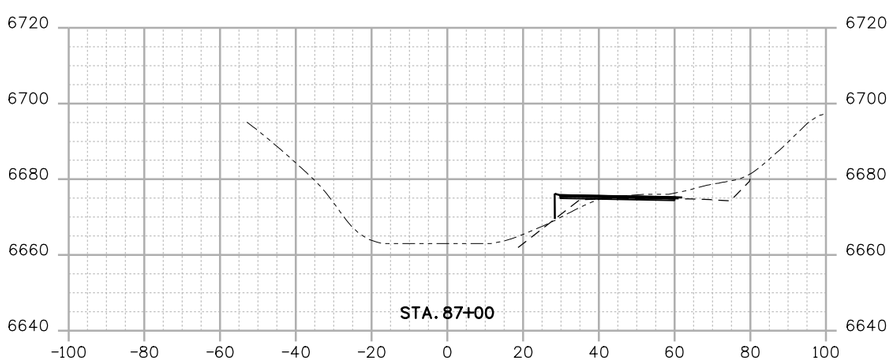
JAMES STREAM SECTIONS
(14 OF 21)

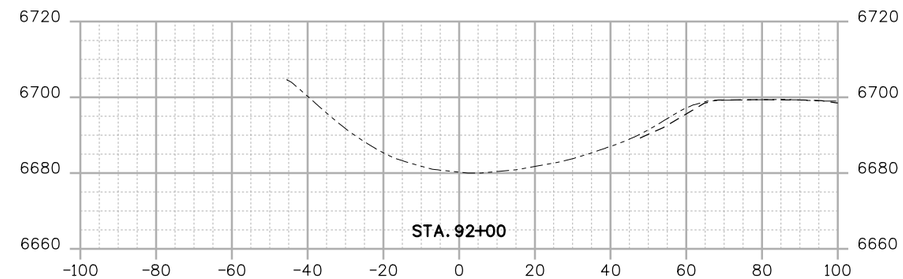
PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 72

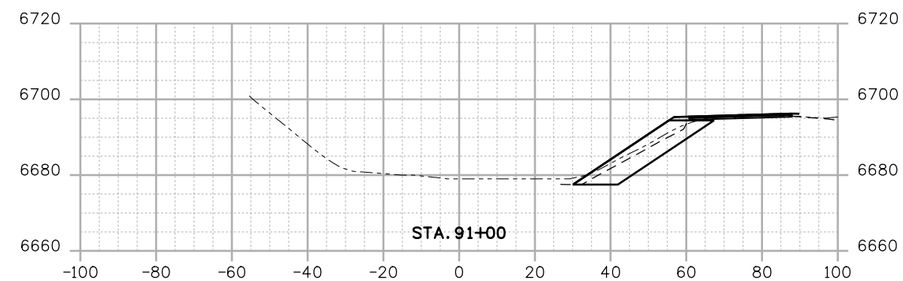
SalekM 6/23/2015 8:18:52 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BOCO-James_STXS.dgn

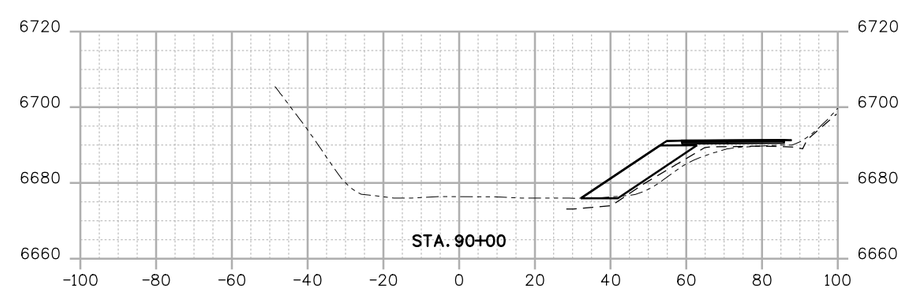












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CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

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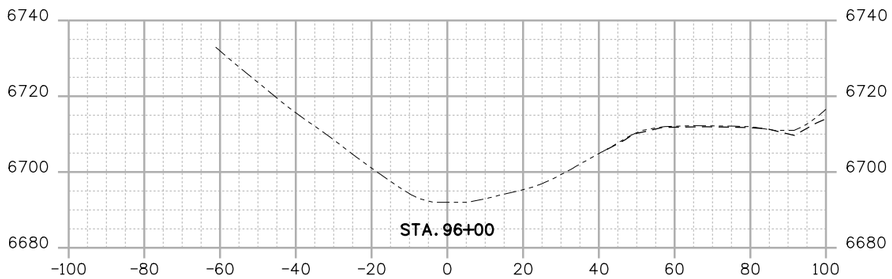
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

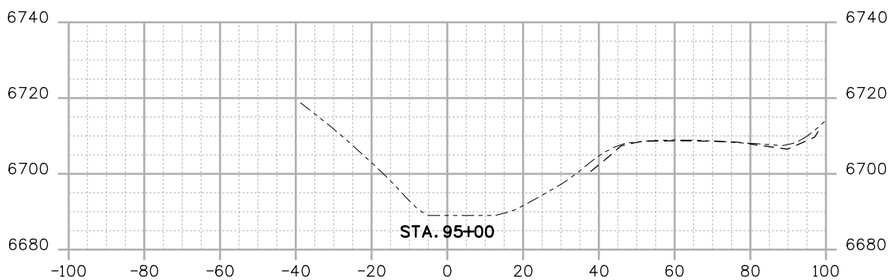
DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

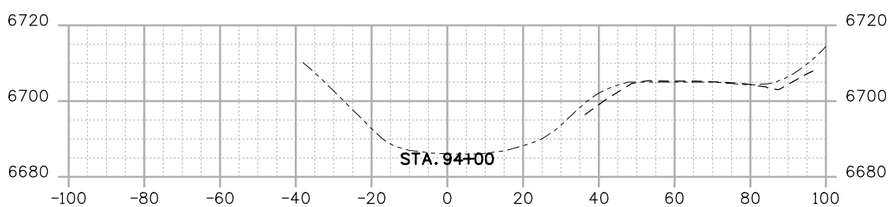
JAMES STREAM SECTIONS
(15 OF 21)

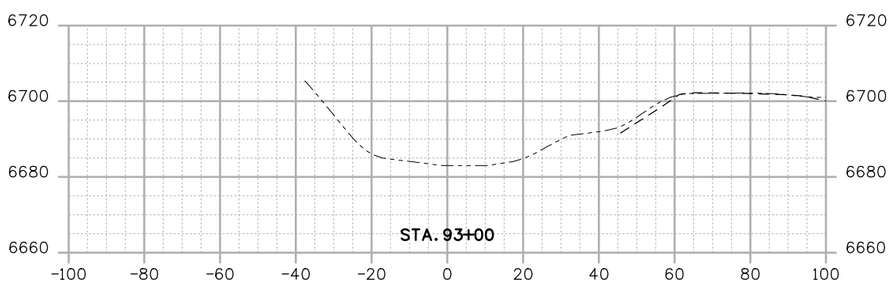
PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 73

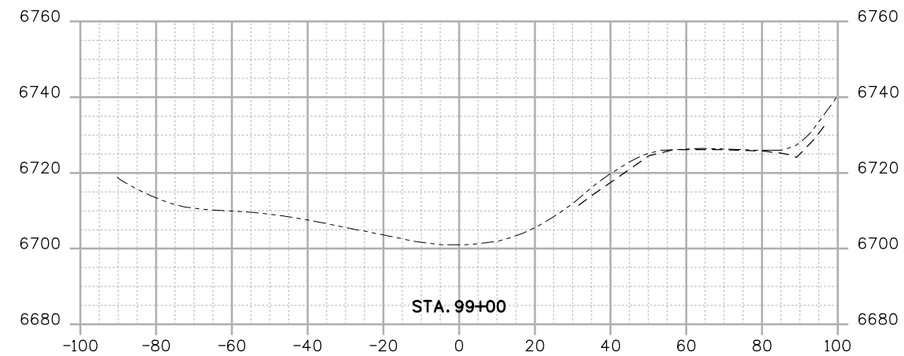
SalekM 6/23/2015 8:18:53 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BOCO-James_STXS.dgn

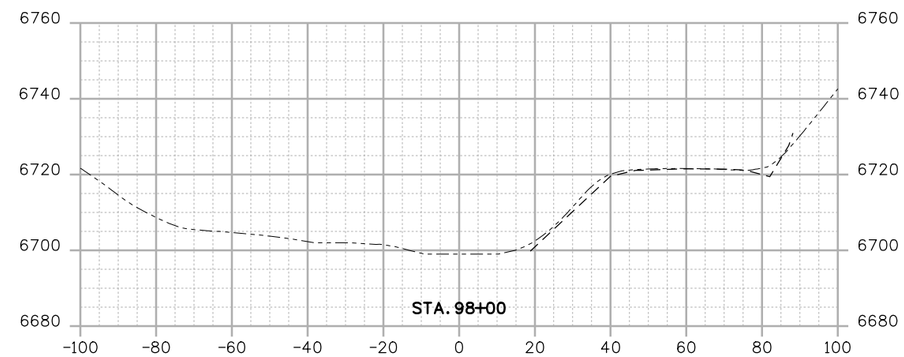


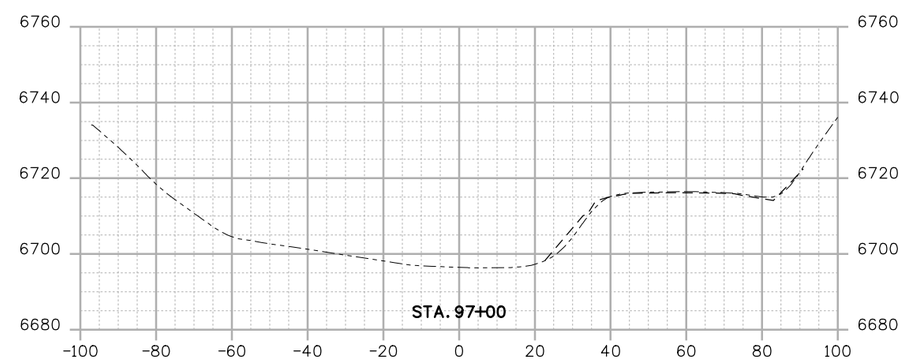












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CALL UTILITY NOTIFICATION CENTER OF COLORADO
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BOULDER COUNTY TRANSPORTATION DEPARTMENT
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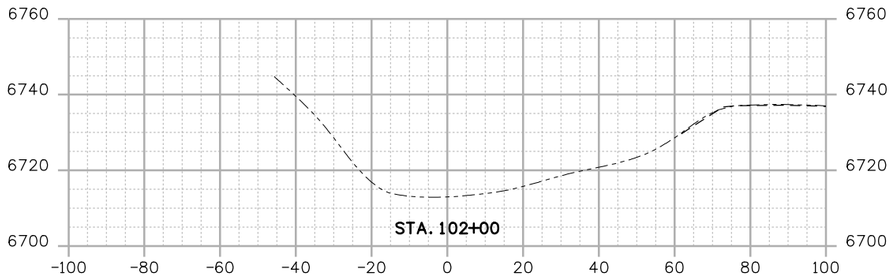
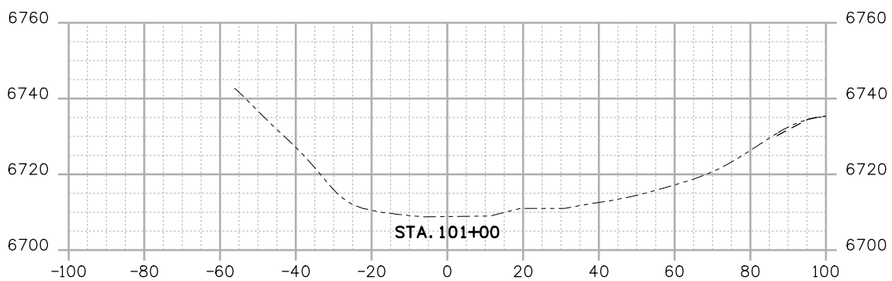
LNM	LNM	TPF	04/15/2015

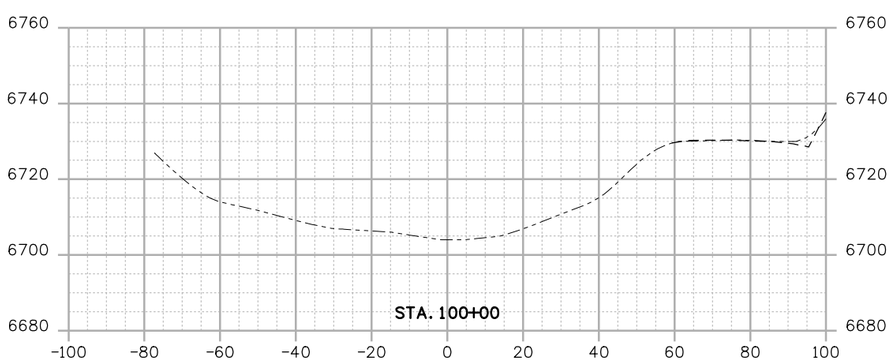
JAMES STREAM SECTIONS
(16 OF 21)

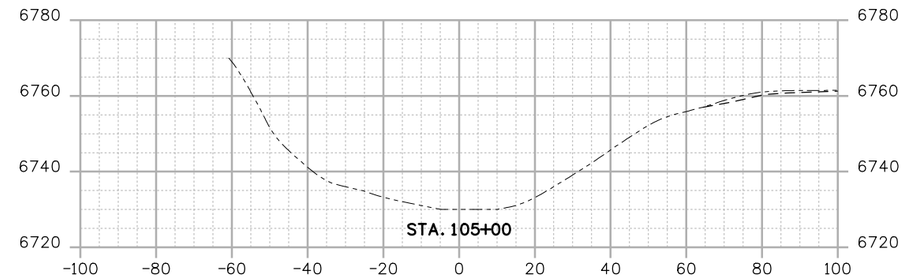
PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 74

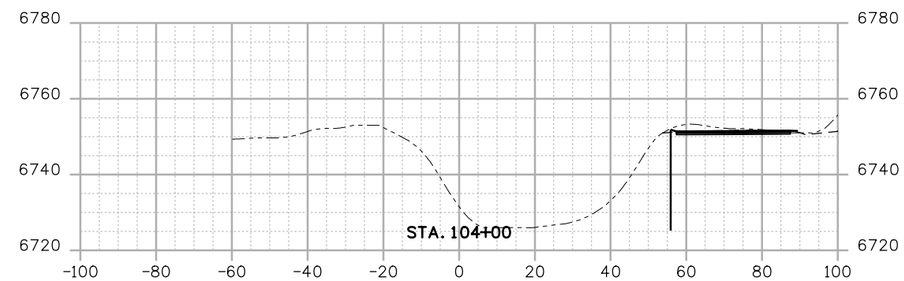
SalekM 6/23/2015 8:18:54 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BOCO-James_STXS.dgn

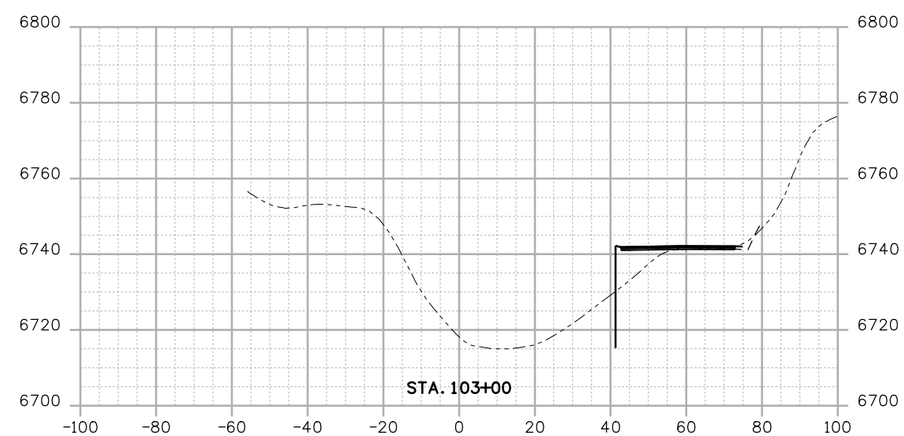












F.I.R. SUBMITTAL

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CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

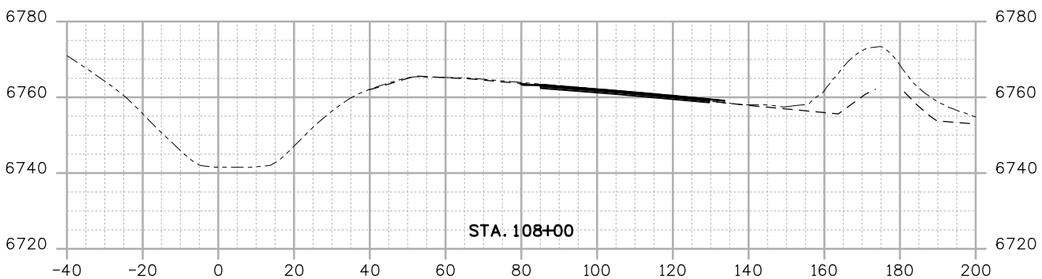
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

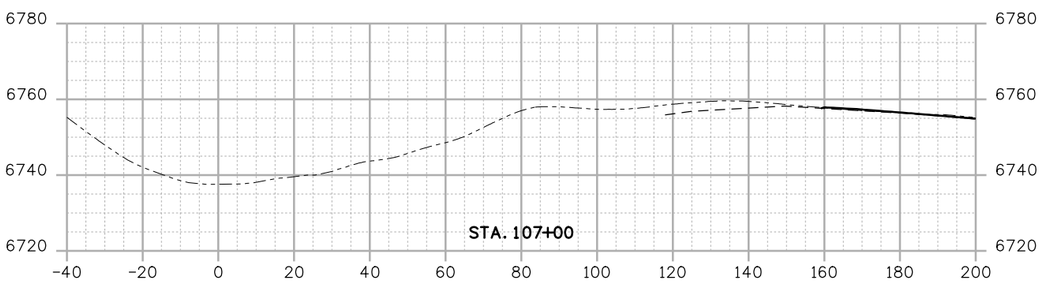
DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

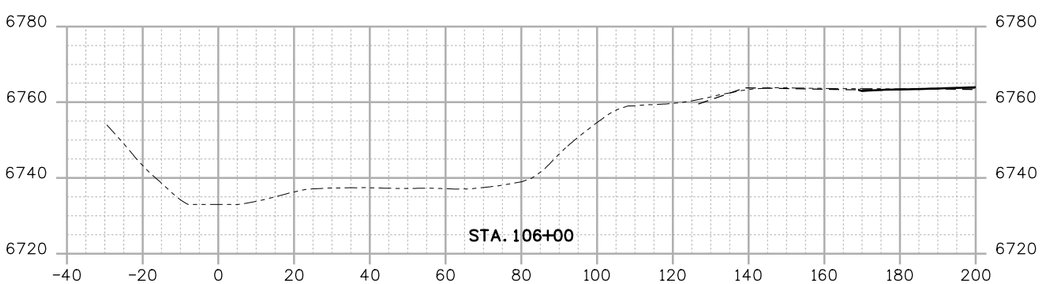
JAMES STREAM SECTIONS
(17 OF 21)

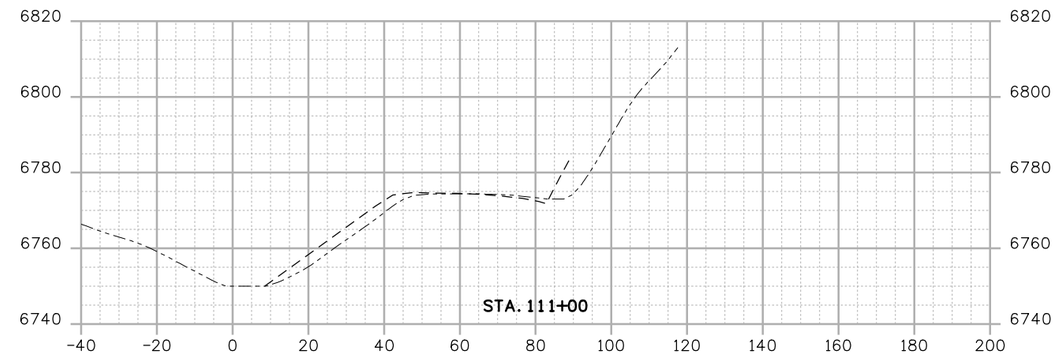
PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 75

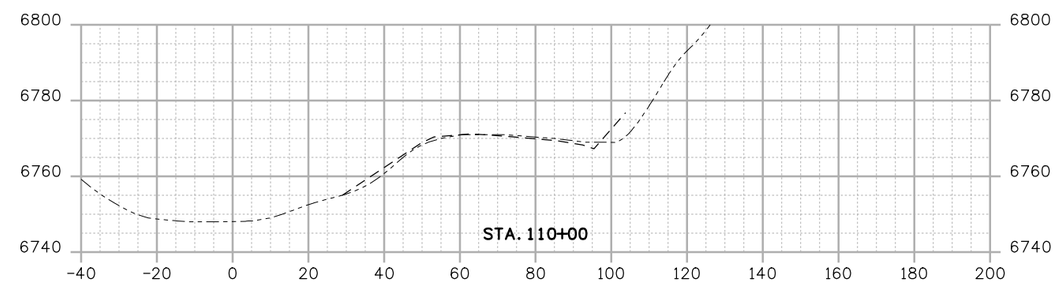
SalekM 6/23/2015 8:18:56 AM L:\0048\900-CAD\02-SHEETS\H\James-Stream Stabilization\BDCO-James_STXS.dgn

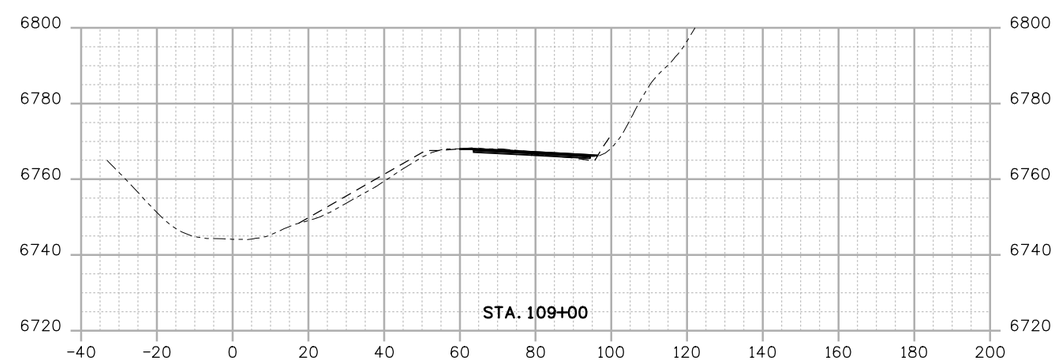












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CALL UTILITY NOTIFICATION CENTER OF COLORADO
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BOULDER COUNTY TRANSPORTATION DEPARTMENT
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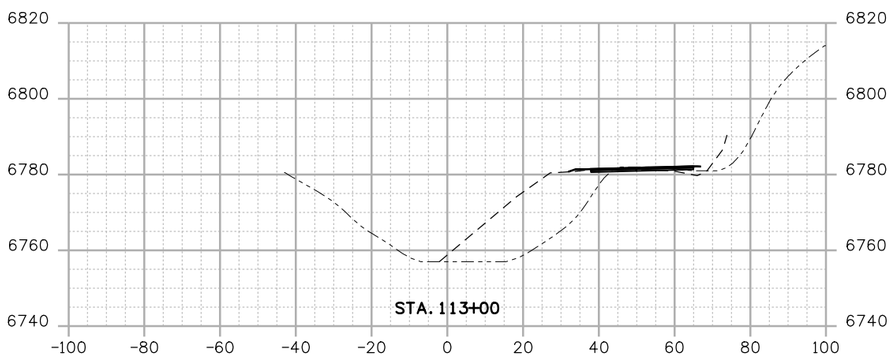
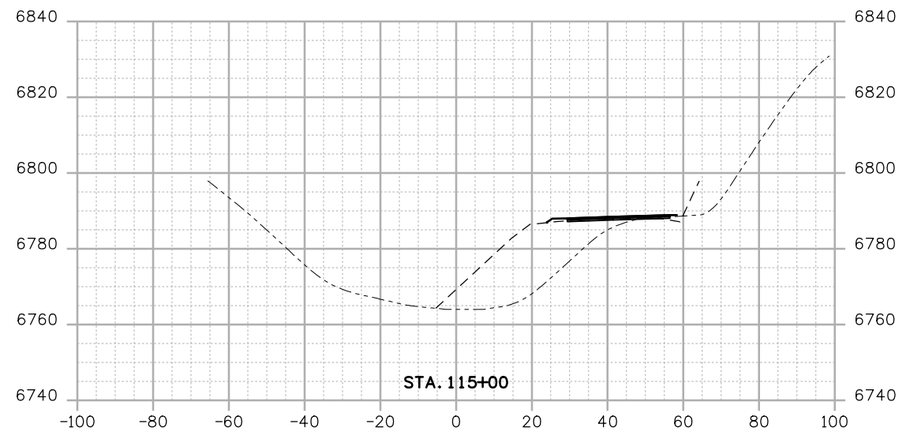
AECOM

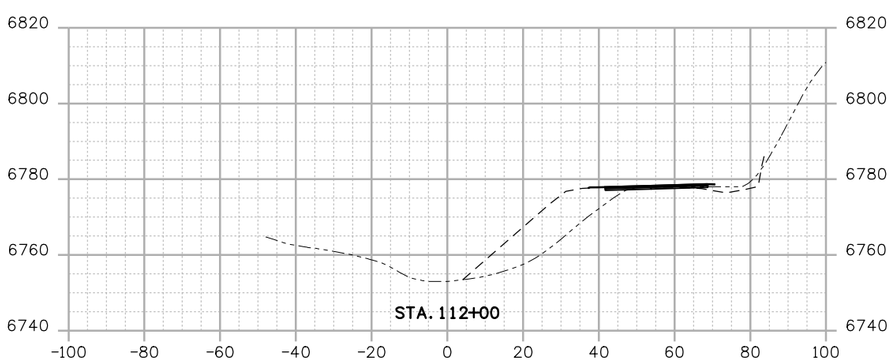
DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

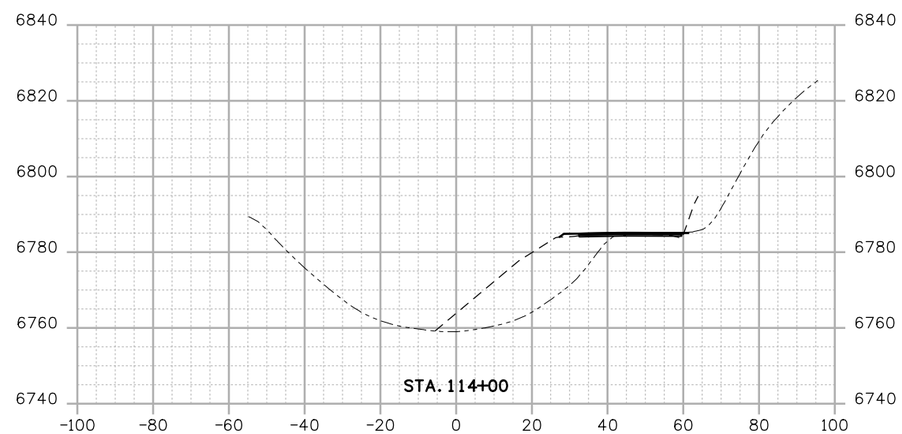
JAMES STREAM SECTIONS
(18 OF 21)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 76









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LNM	LNM	TPF	04/15/2015

JAMES STREAM SECTIONS
(19 OF 21)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 77

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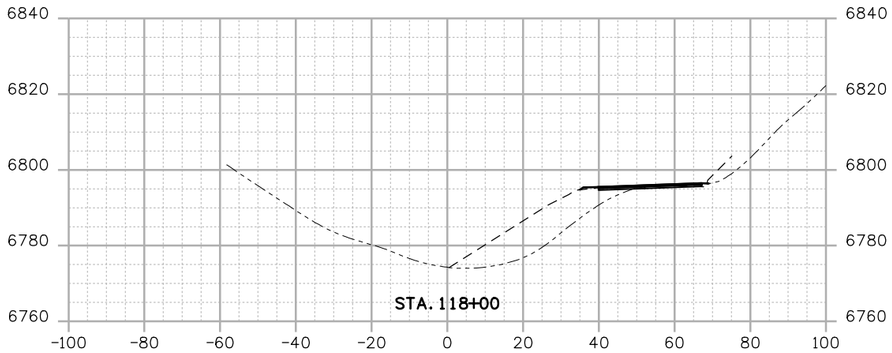

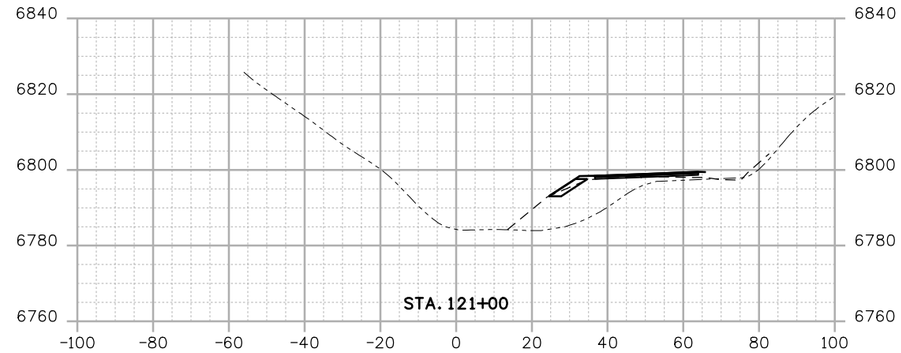

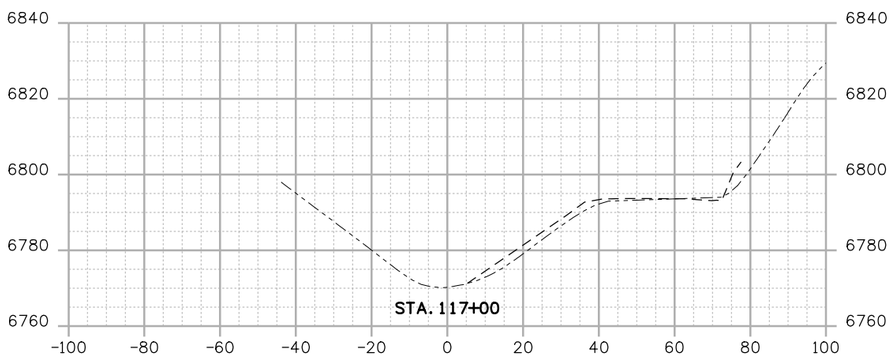

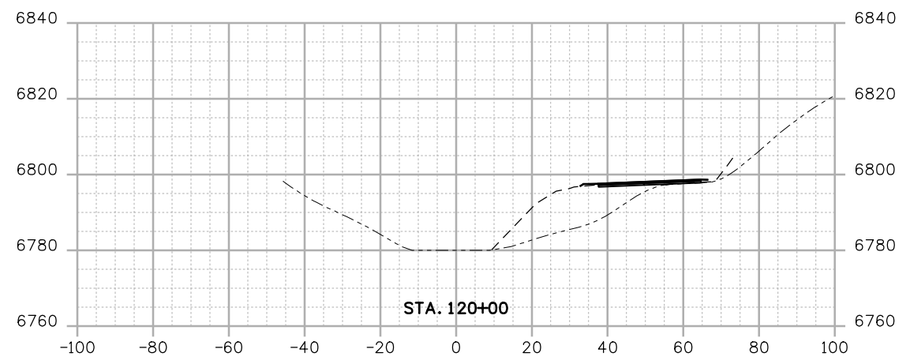

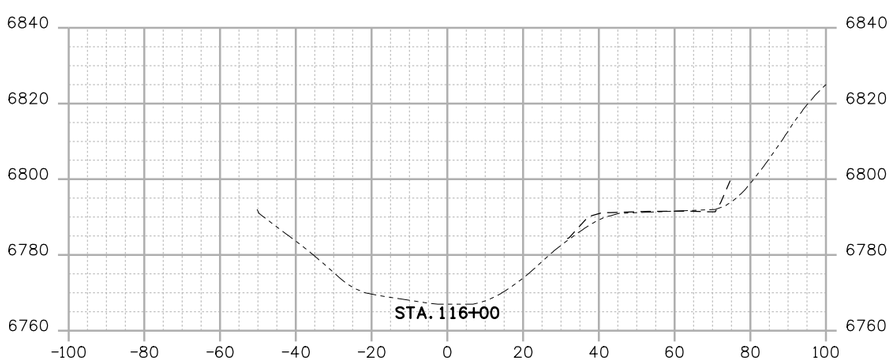

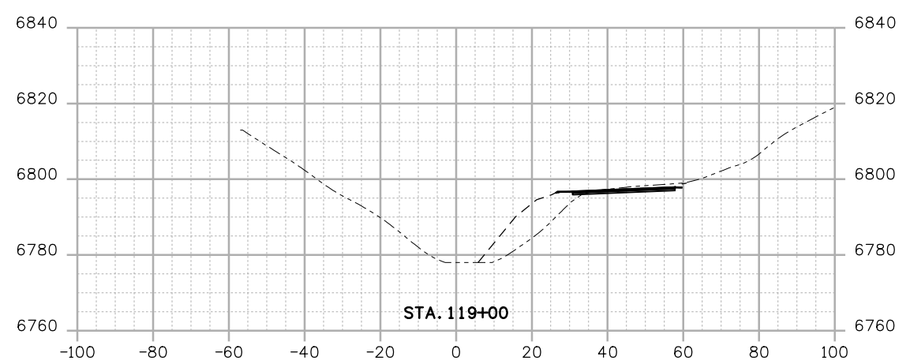

F.I.R. SUBMITTAL

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CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
AECOM

DESIGNED:	CAD:	CHECKED:	DATE:
LNM	LNM	TPF	04/15/2015

JAMES STREAM SECTIONS
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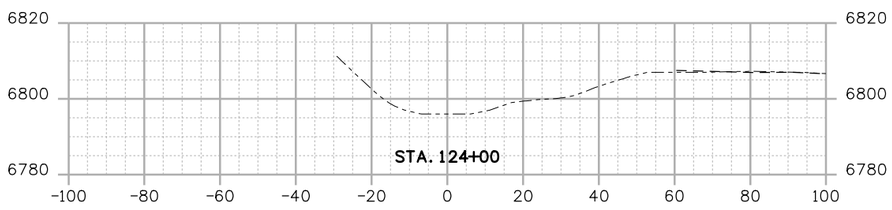

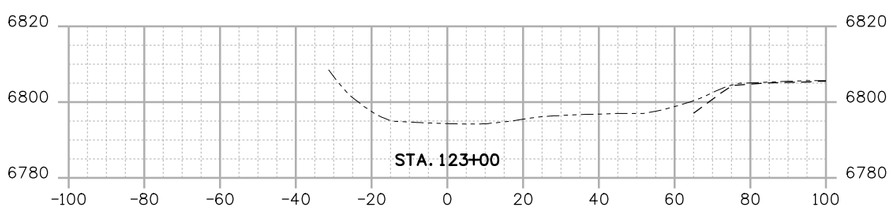

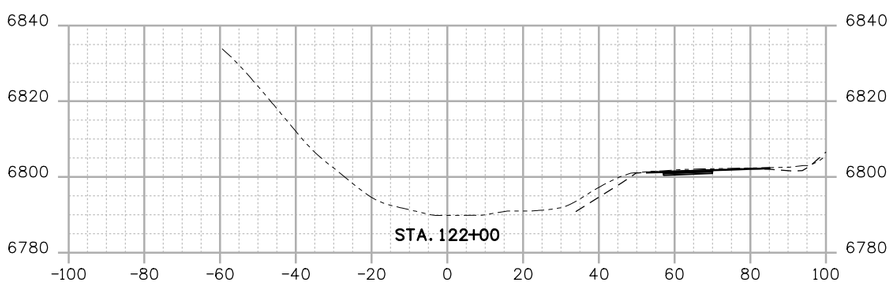

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JAMES STREAM SECTIONS
(21 OF 21)

PROJECT NO: SEPT12C24 SEPT12C91 | SHEET NO: 79

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