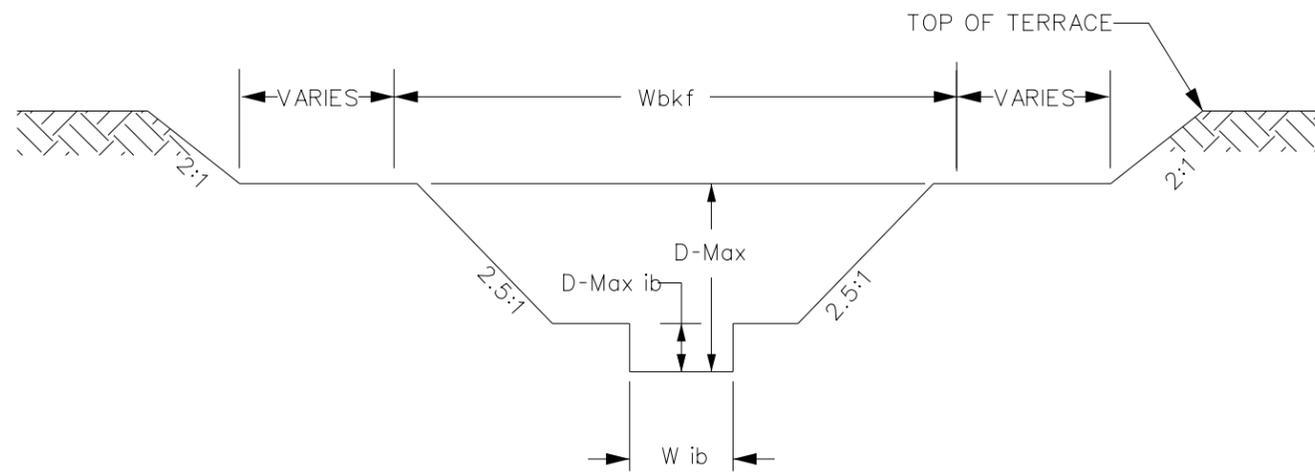
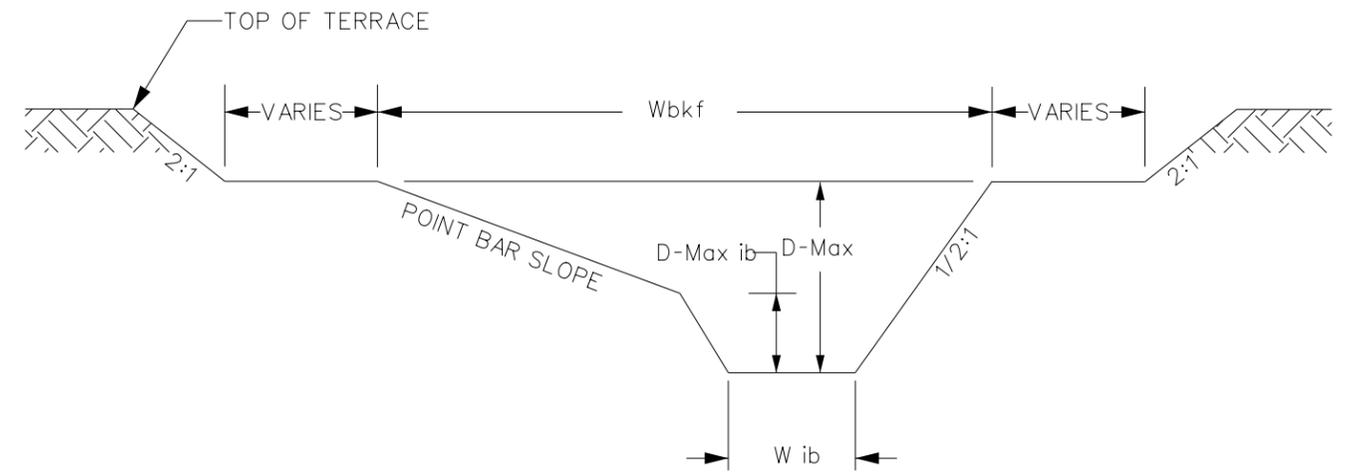


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TYPICAL RIFFLE CROSS SECTION
NTS



TYPICAL POOL CROSS SECTION
NTS

UNITS IN FT.

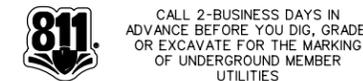
REACH 3G		REACH 3F AND 3E	
RIFFLE	POOL	RIFFLE	POOL
13.0	13.0	13.5	13.5
0.7	1.6 - 1.8	0.9	1.8 - 2.1
1.3	---	1.5	---
15.7	---	15.4	---
7.7	---	11.8	---
3.5	---	4.0	---
0.66	---	0.66	---
1.8 SF	---	2.0	---
---	0.5 - 1.5 Wbkf	---	0.5 - 1.5 Wbkf
---	1 - 5 Wbkf	---	1 - 5 Wbkf
---	0.5 - 1.5 Wbkf	---	0.5 - 1.5 Wbkf
1 - 7 Wbkf		1 - 7 Wbkf	
0.1 - 0.75 Wbkf		0.1 - 0.75 Wbkf	
0.5 - 2 AVG. DEPTH		0.5 - 2 AVG. DEPTH	

WIDTH OF BANKFULL (Wbkf)
 AVERAGE DEPTH (D)
 MAXIMUM DEPTH (D-Max)
 WIDTH TO DEPTH RATIO (Wbkf / D)
 BANKFULL XSEC AREA
 WIDTH OF INNER BERM (Wib)
 DEPTH OF INNER BERM (D-Max ib)
 CROSS SECTION AREA OF INNER BERM
 POOL LENGTH(Wp)
 POOL TO POOL SPACING - CASCADE POOL SYSTEM
 POOL TO POOL SPACING - STEP POOL SYSTEM
 RIFFLE CASCADE LENGTH
 STEP LENGTH
 STEP HEIGHT

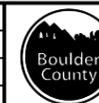
NOTES:

1. DURING CONSTRUCTION CORNERS OF DESIGN CHANNEL WILL BE ROUNDED AND A THALWEG WILL BE SHAPED PER DIRECTION OF ENGINEER.
2. POOL SHOWN ABOVE IS RIGHT BANK POOL ONLY.

90% SET



REVISIONS:	NO.	DATE	REVISION DESCRIPTION:



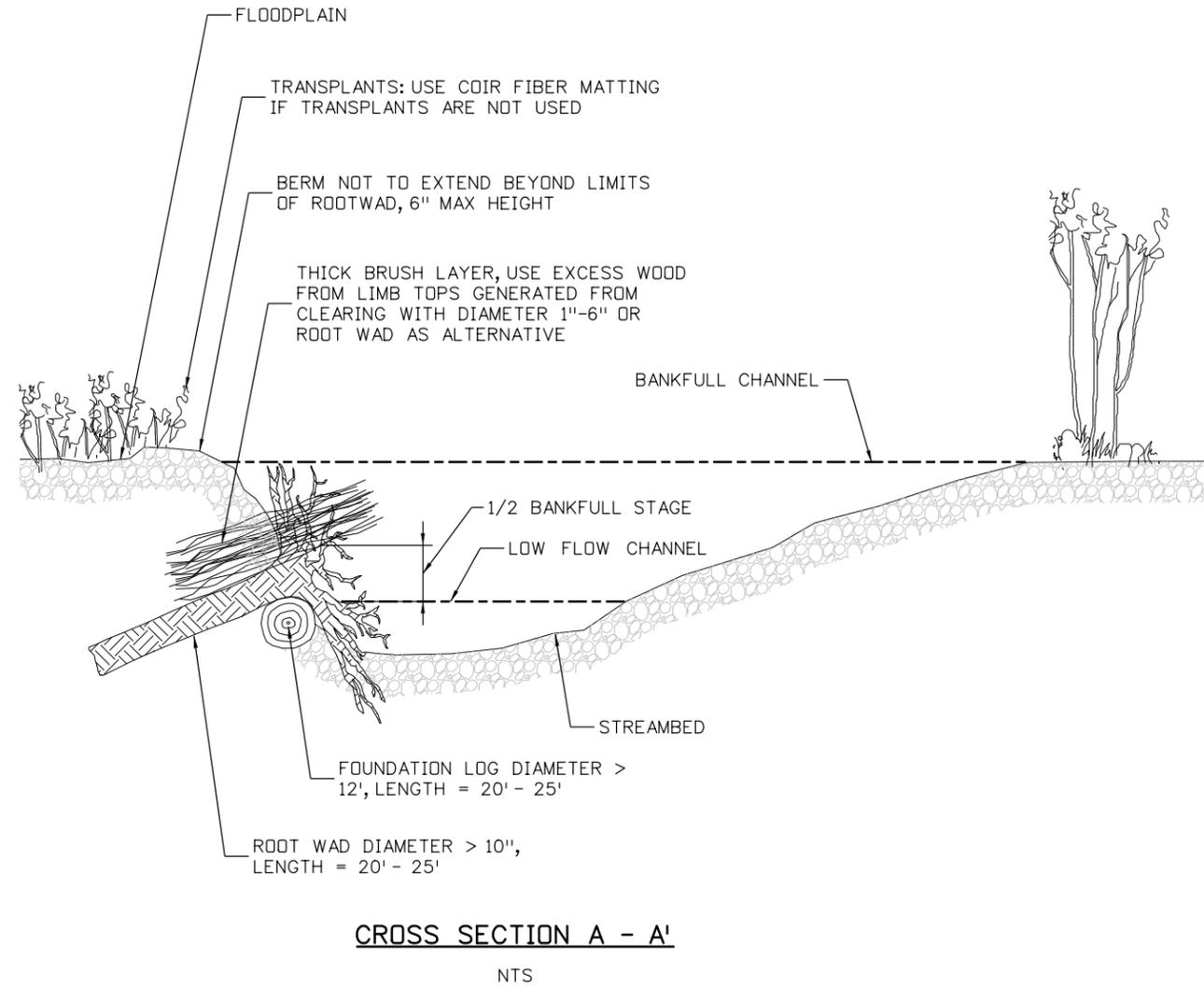
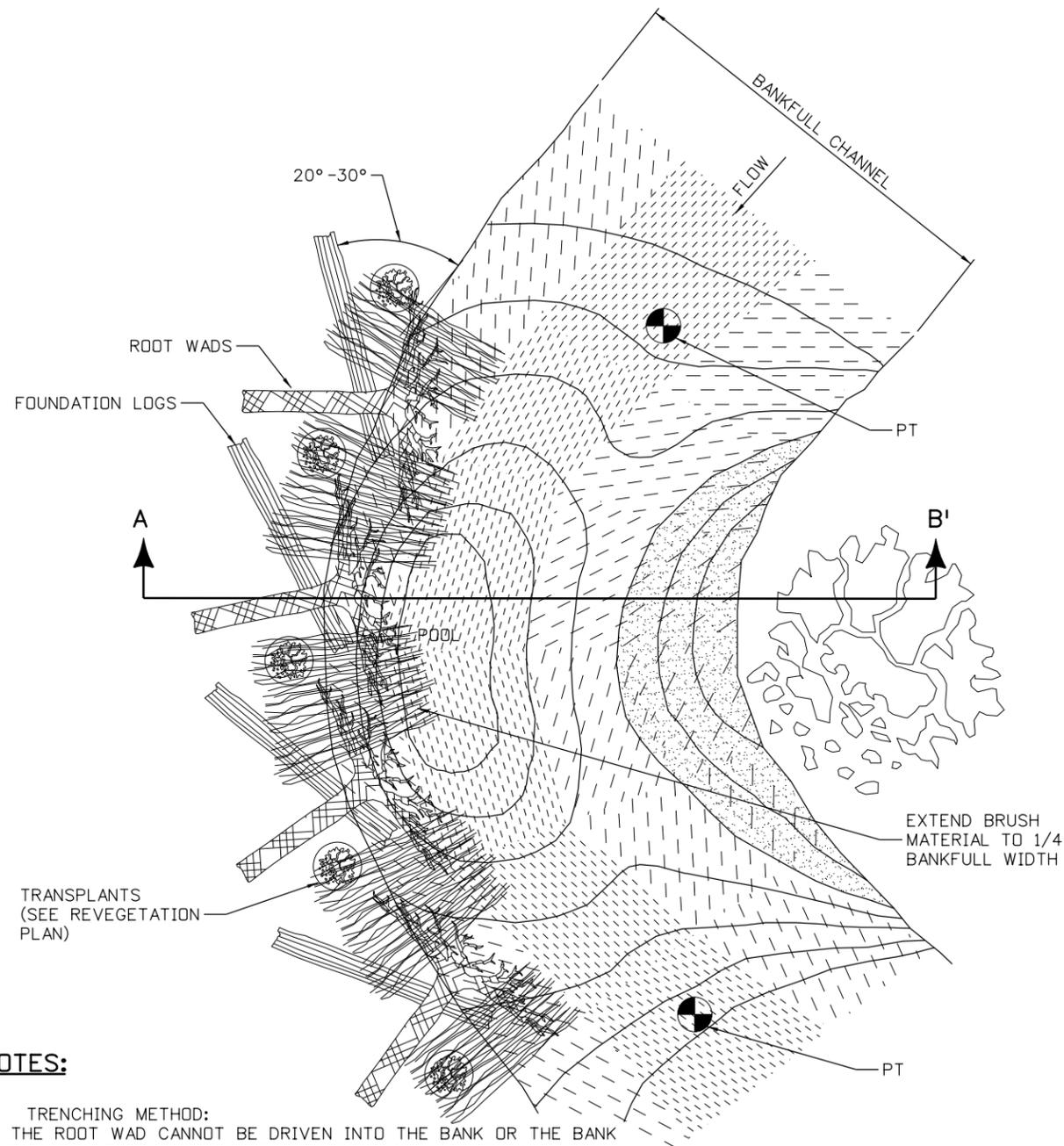
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
Michael Baker INTERNATIONAL

DESIGNED:	CAD:	CHECKED:	DATE:
LB	EMR	KPD	04/15/16

GOLD RUN ROAD
HABITAT RESTORATION DTLs
(SHEET 1 OF 11)

PROJECT NO: 4011.SEPT12C38 SHEET NO: 156

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ROOT WAD BANK PROTECTION

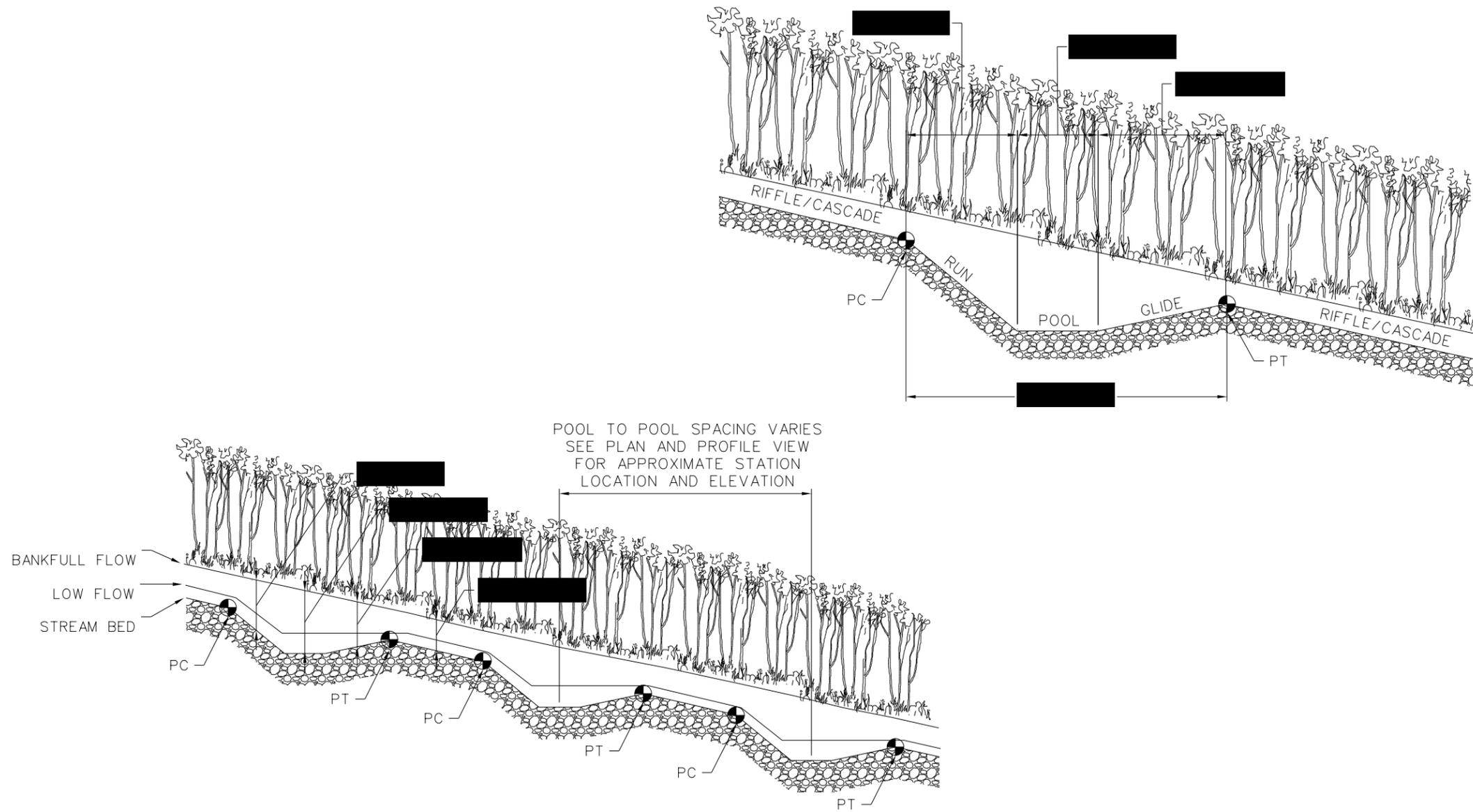
NTS

NOTES:

1. TRENCHING METHOD:
IF THE ROOT WAD CANNOT BE DRIVEN INTO THE BANK OR THE BANK NEEDS TO BE RECONSTRUCTED, THE TRENCHING METHOD SHOULD BE USED. THIS METHOD REQUIRES THAT A TRENCH BE EXCAVATED FOR THE LOG PORTION OF THE ROOT WAD. IN THIS CASE, A FOOTER LOG SHOULD BE INSTALLED UNDERNEATH THE ROOT WAD IN A TRENCH EXCAVATED PARALLEL TO THE BANK AND WELL BELOW THE STREAMBED. ONE-THIRD OF THE ROOT WAD SHOULD REMAIN BELOW NORMAL BASE FLOW CONDITIONS.
2. DRIVE POINT METHOD:
SHARPEN THE END OF THE LOG WITH A CHAINSAW BEFORE "DRIVING" IT INTO THE BANK. ORIENT ROOT WADS UPSTREAM SO THAT THE STREAM FLOW MEETS THE ROOT WAD AT A 90-DEGREE ANGLE, DEFLECTING THE WATER AWAY FROM THE BANK. A TRANSPLANT SHOULD BE PLACED ON THE DOWNSTREAM SIDE OF THE ROOT WAD IF A BACK EDDY IS FORMED BY THE ROOT WAD.

90% SET	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	NO.	DATE	REVISION DESCRIPTION:	BOULDER COUNTY TRANSPORTATION DEPARTMENT ENGINEERING DIVISION Michael Baker INTERNATIONAL	DESIGNED:	CAD:	CHECKED:	DATE:	GOLD RUN ROAD HABITAT RESTORATION DTLs (SHEET 2 OF 11) PROJECT NO: 4043.SEPT12C38 SHEET NO: 157
						LB	EMR	KPD	04/15/16	

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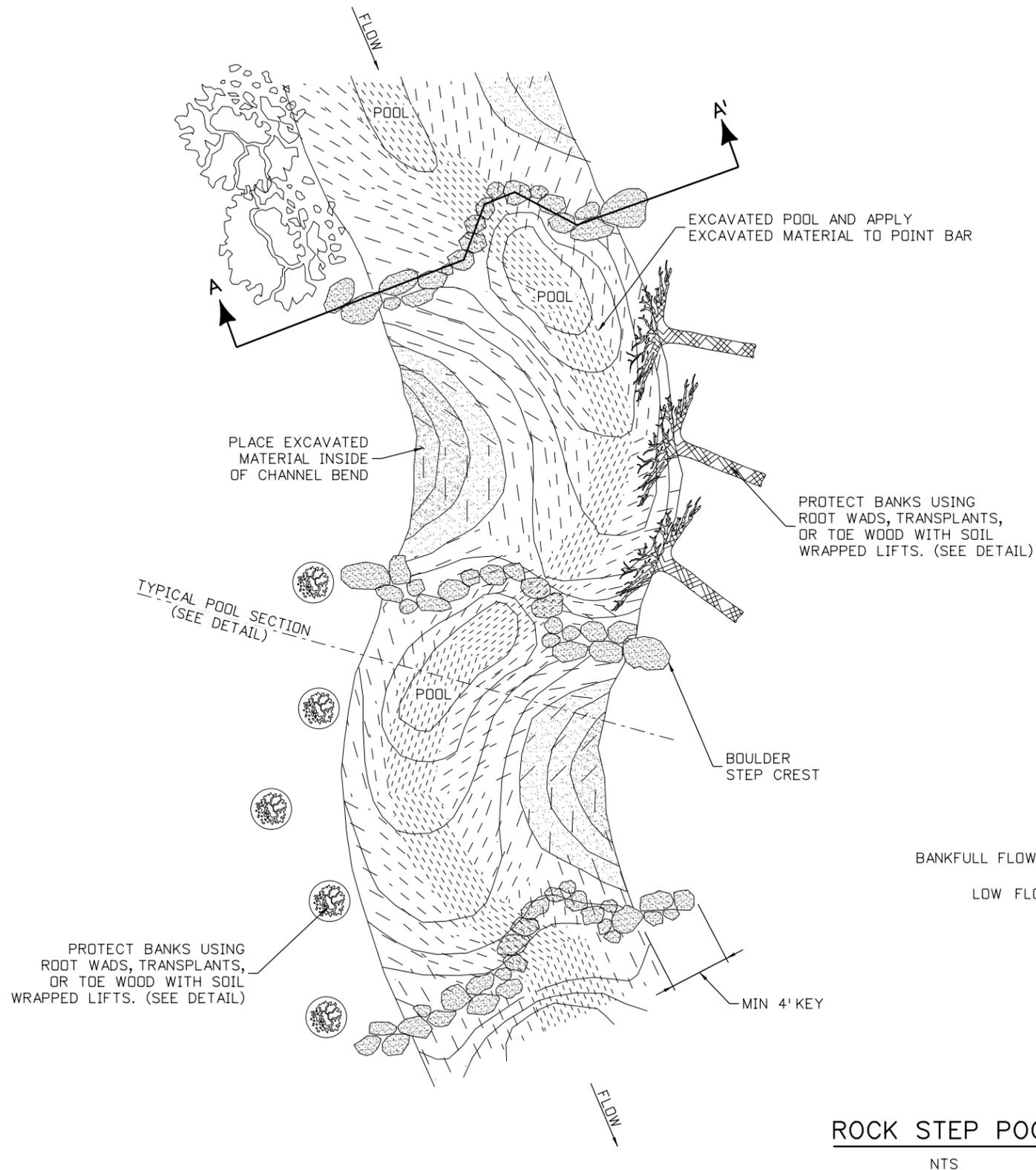


TYPICAL RIFFLE CASCADE PROFILE

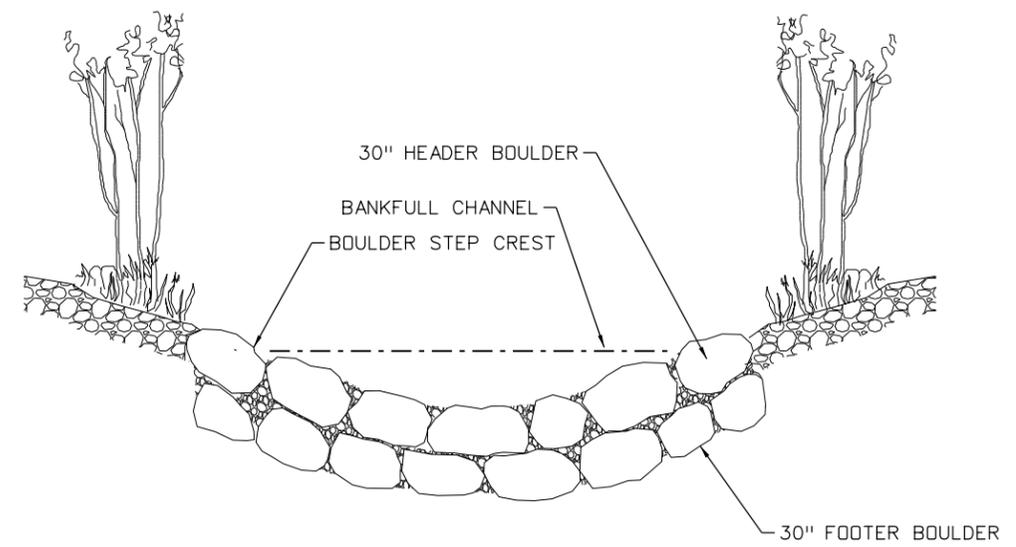
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90% SET	 <small>CALL UTILITY NOTIFICATION CENTER OF COLORADO CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES</small>	NO.	DATE	REVISION DESCRIPTION:	 BOULDER COUNTY TRANSPORTATION DEPARTMENT ENGINEERING DIVISION Michael Baker <small>INTERNATIONAL</small>	DESIGNED:	CAD:	CHECKED:	DATE:	GOLD RUN ROAD HABITAT RESTORATION DTLs (SHEET 4 OF 11) <small>PROJECT NO: 4011.SEPT12C38 SHEET NO: 158</small>
						LB EMR KPD 04/15/16				

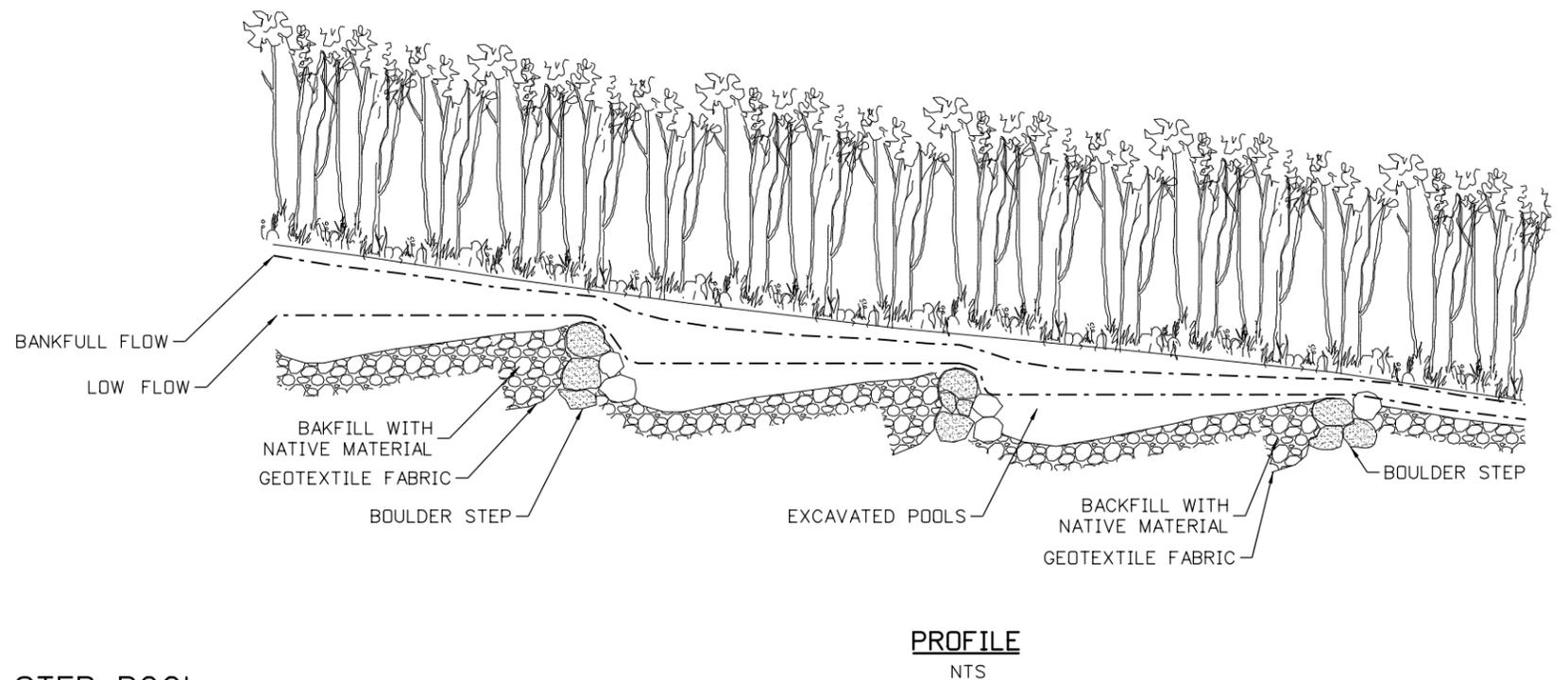
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ROCK STEP POOL
NTS



SECTION A - A'
NTS



PROFILE
NTS

90% SET



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:

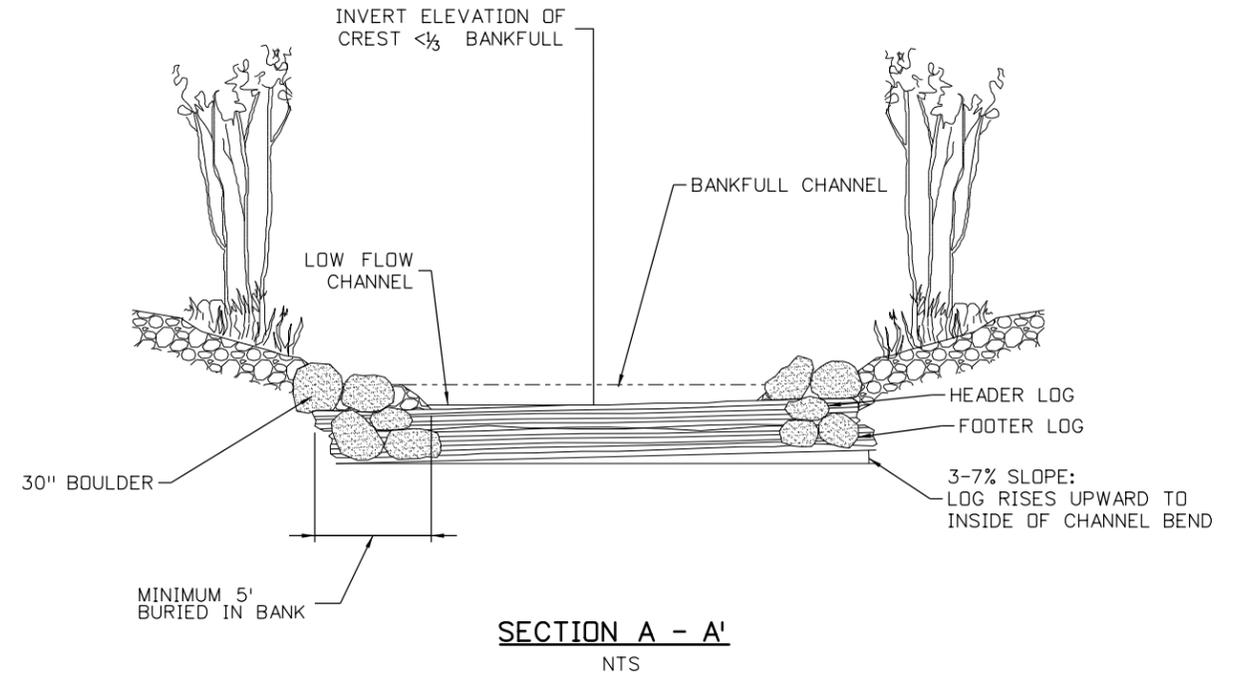
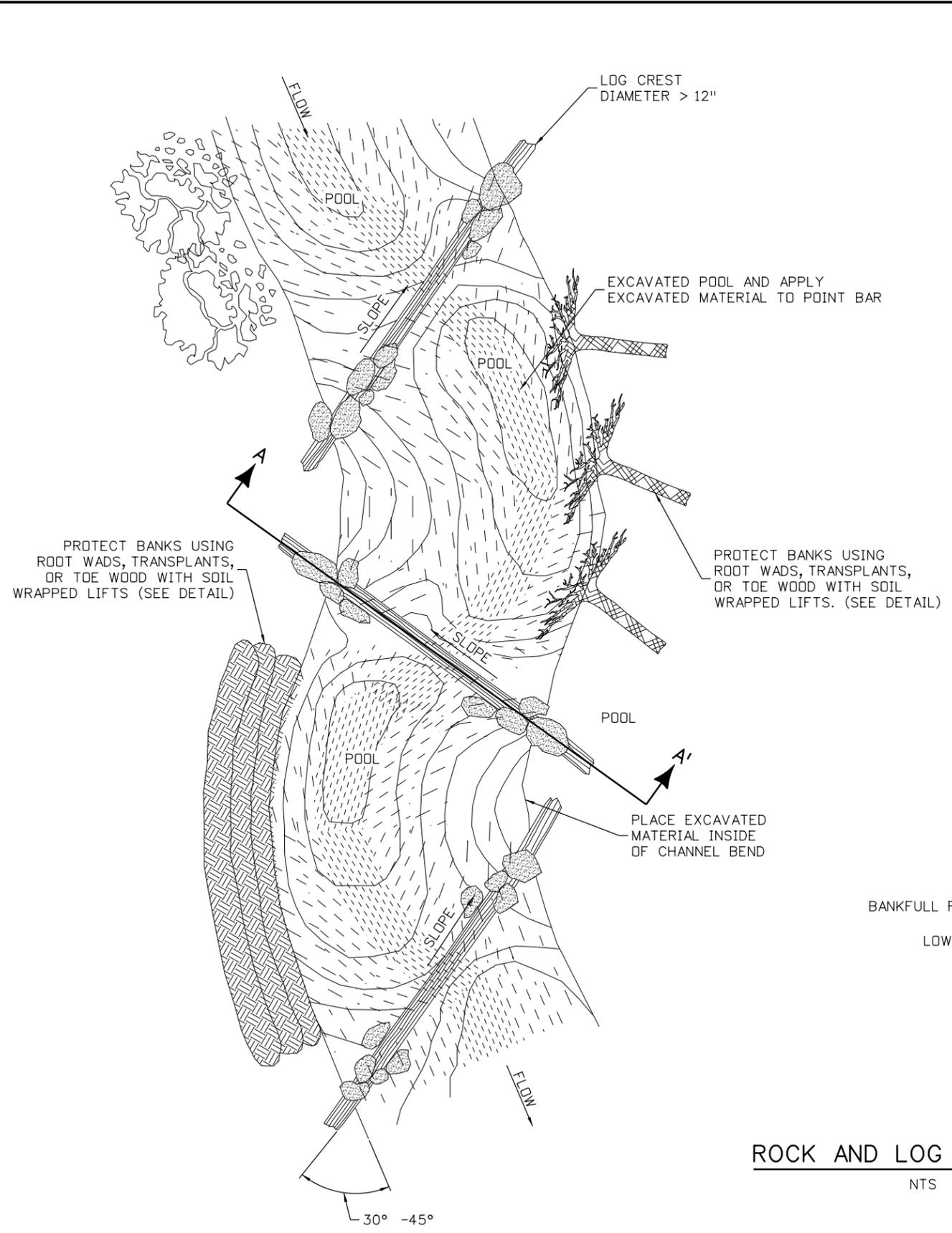


BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
Michael Baker INTERNATIONAL

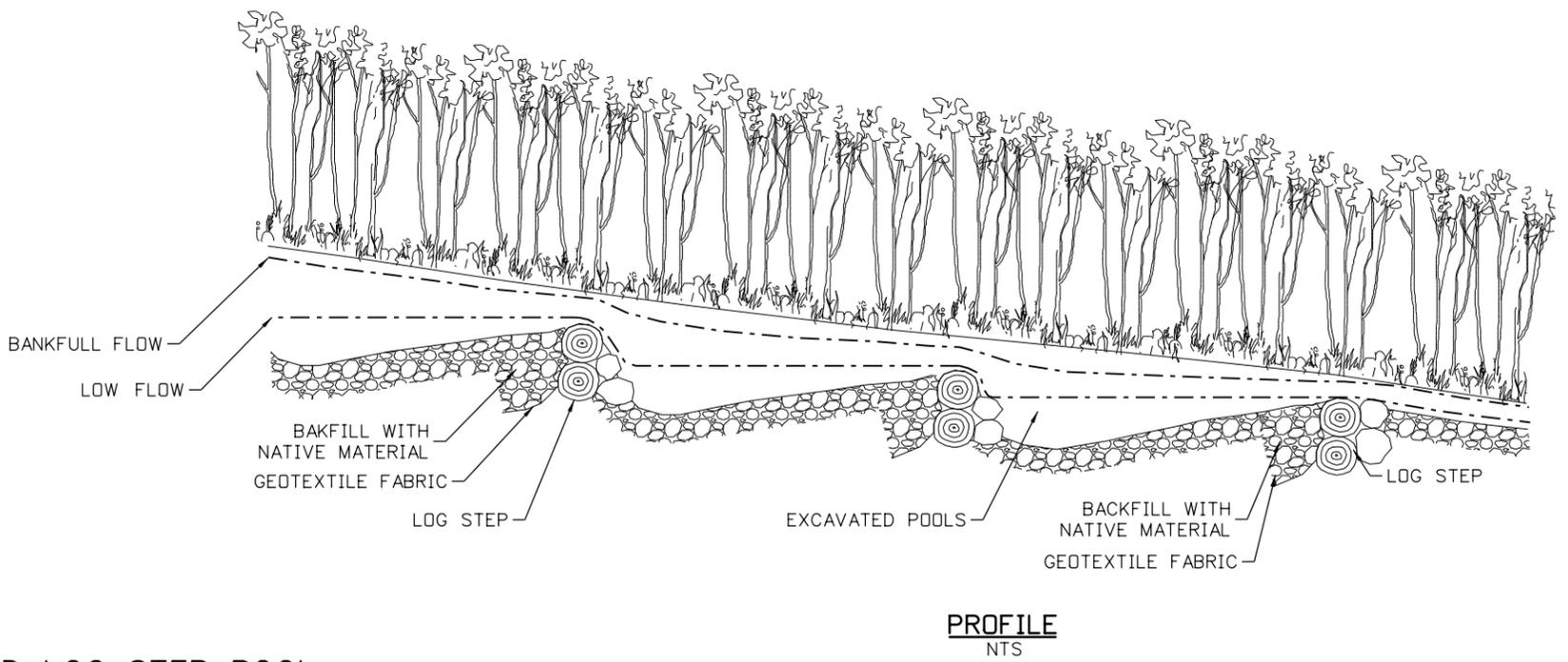
DESIGNED:	CAD:	CHECKED:	DATE:
LB	EMR	KPD	04/15/16

GOLD RUN ROAD HABITAT RESTORATION DTLs (SHEET 5 OF 11)
PROJECT NO: 4011.SEPT12C38 SHEET NO: 159

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ROCK AND LOG STEP POOL
NTS



PROFILE
NTS

90% SET

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:

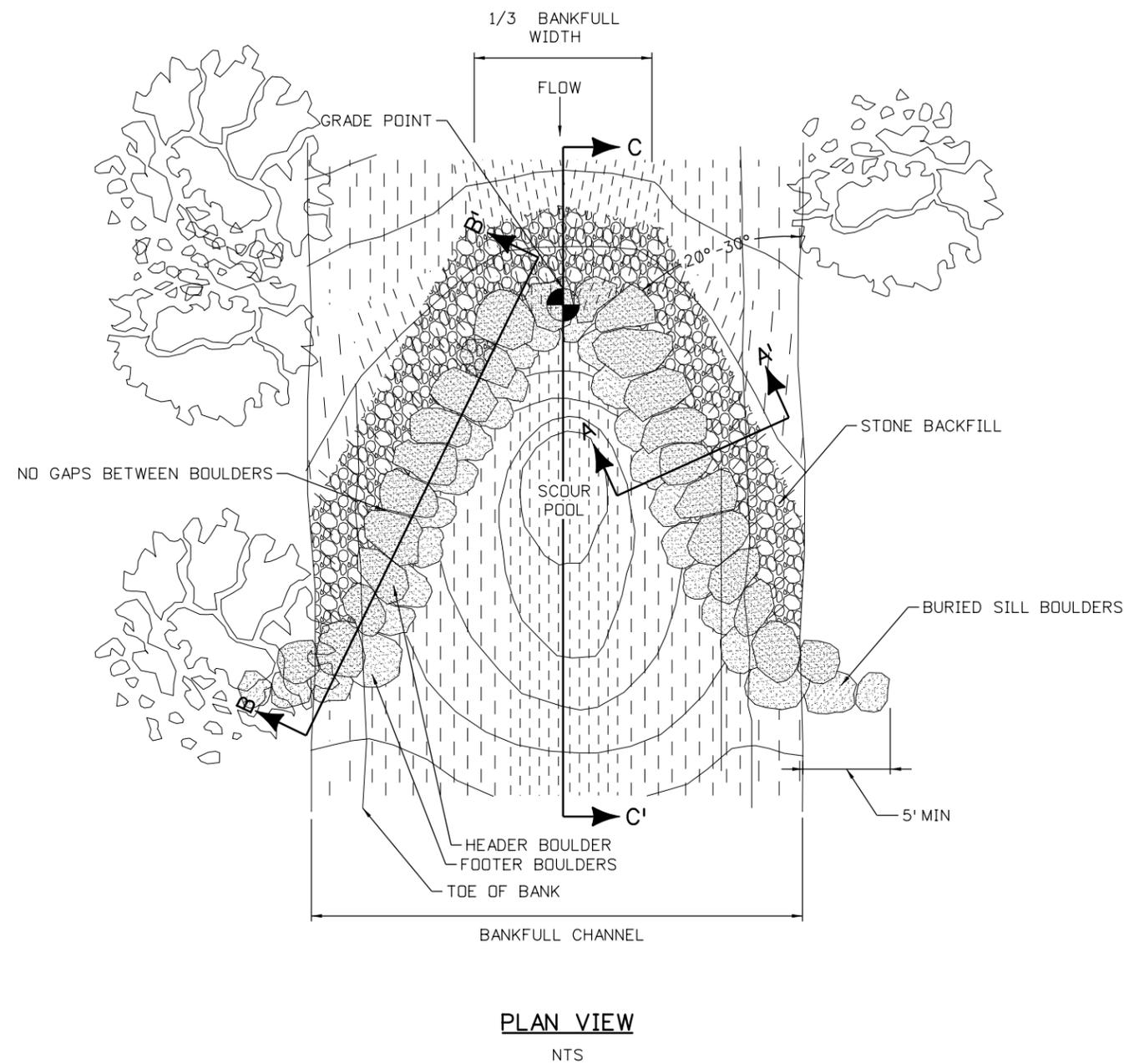


BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
Michael Baker INTERNATIONAL

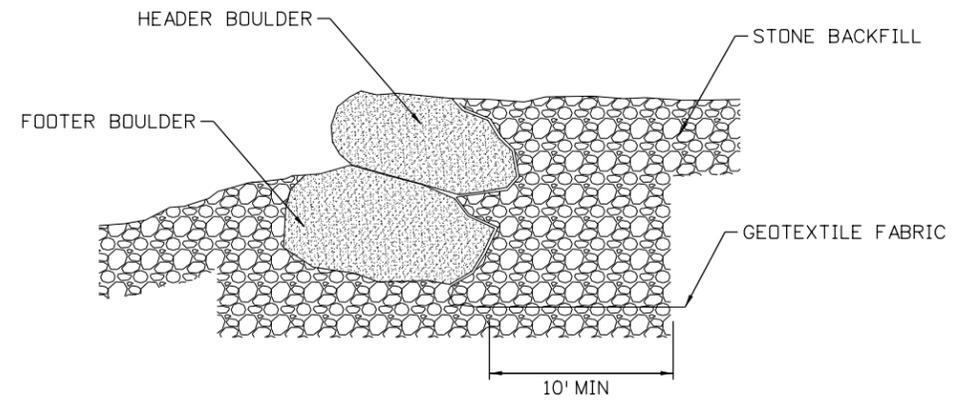
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LB	EMR	KPD	04/15/16

GOLD RUN ROAD HABITAT RESTORATION DTLs (SHEET 6 OF 11)
PROJECT NO: 4011.SEPT12C38 SHEET NO: 160

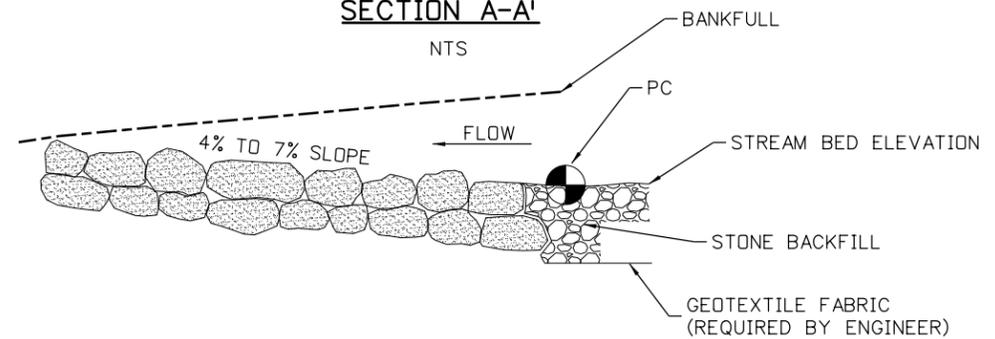
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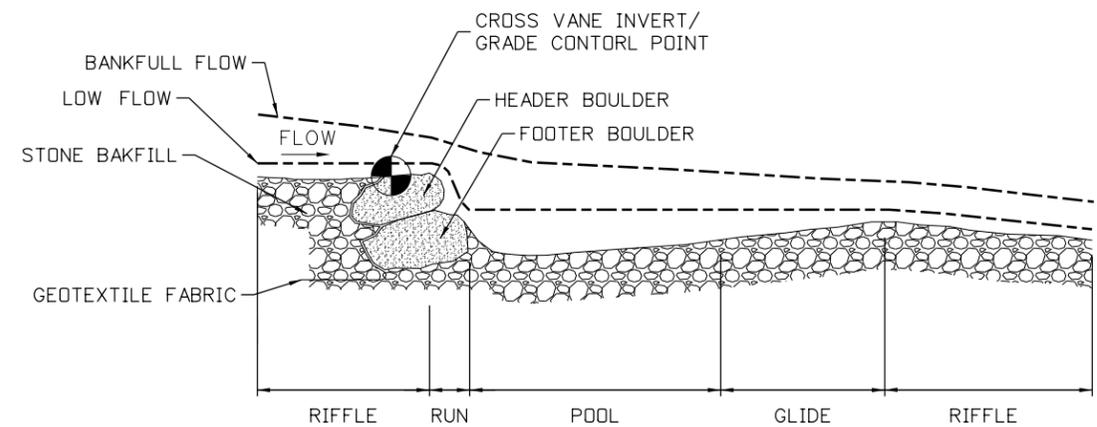
PLAN VIEW
NTS



SECTION A-A'



PROFILE VIEW B - B'
NTS



PROFILE VIEW C - C'
NTS

ROCK CROSS VANE
NTS

90% SET

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:

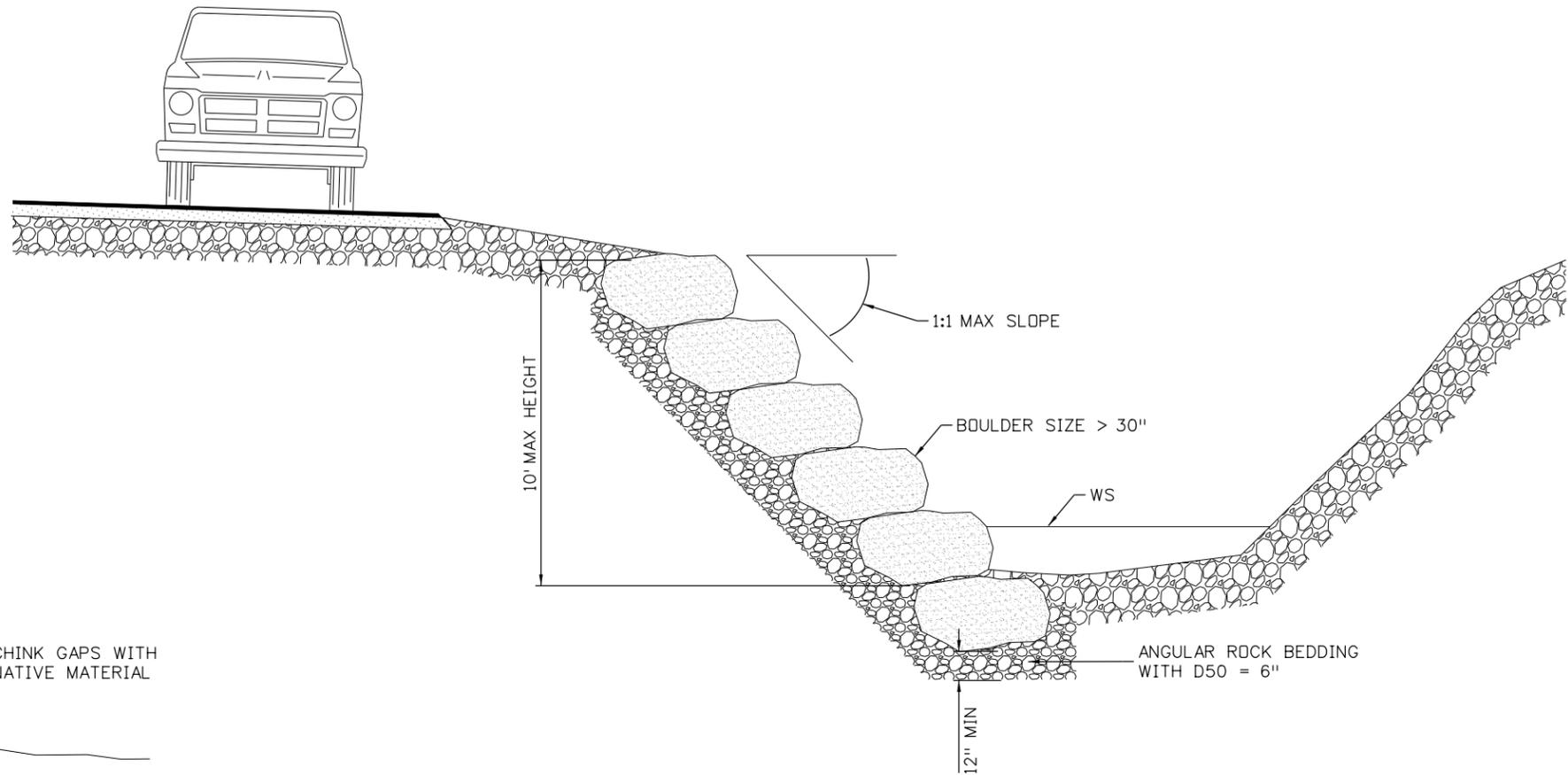


BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
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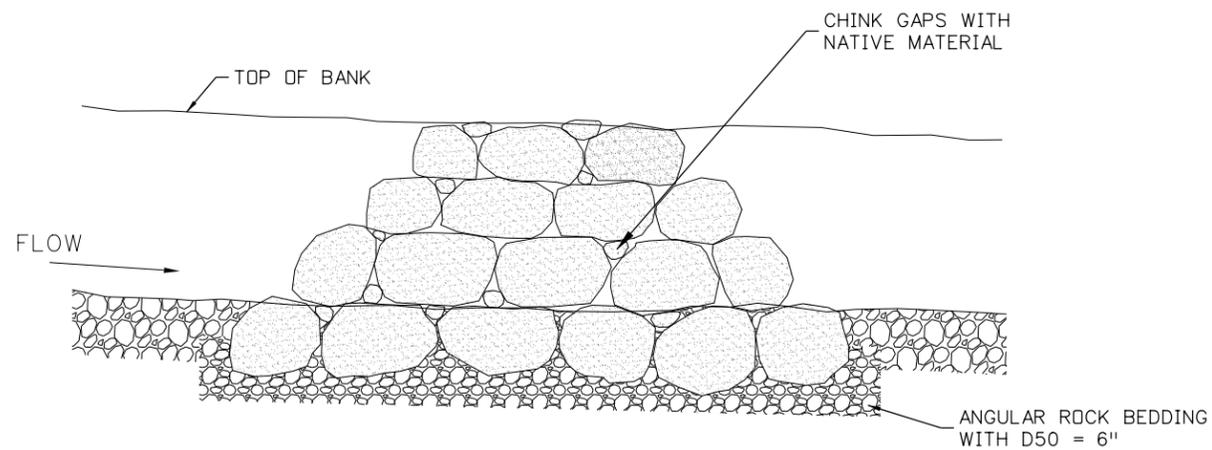
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GOLD RUN ROAD
HABITAT RESTORATION DTLs
(SHEET 7 OF 11)
PROJECT NO: 4011.SEPT12C38 SHEET NO: 161

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STACKED BOULDER WALL - CROSS SECTION VIEW
NTS



STACKED BOULDER WALL - PROFILE VIEW
NTS

90% SET

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:

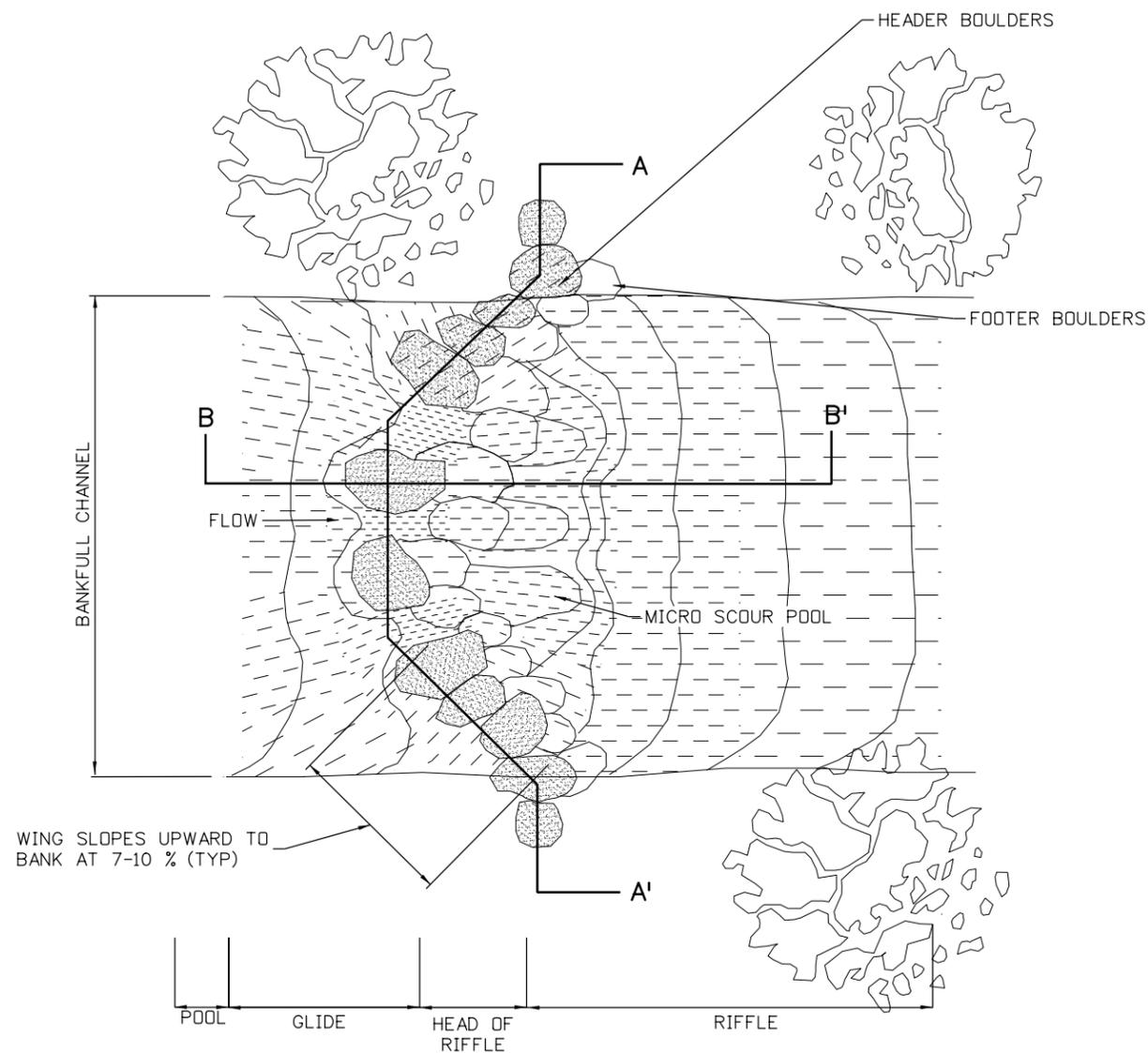


BOULDER COUNTY TRANSPORTATION DEPARTMENT
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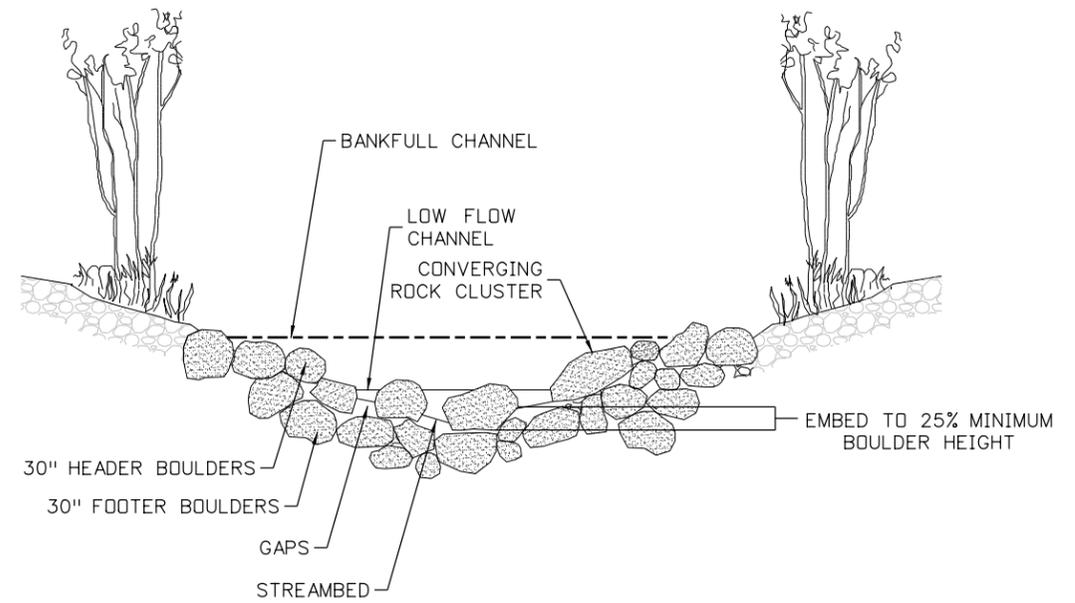
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LB	EMR	KPD	04/15/16

GOLD RUN ROAD
HABITAT RESTORATION DTLs
(SHEET 8 OF 11)
PROJECT NO: 4011.SEPT12C38 SHEET NO: 162

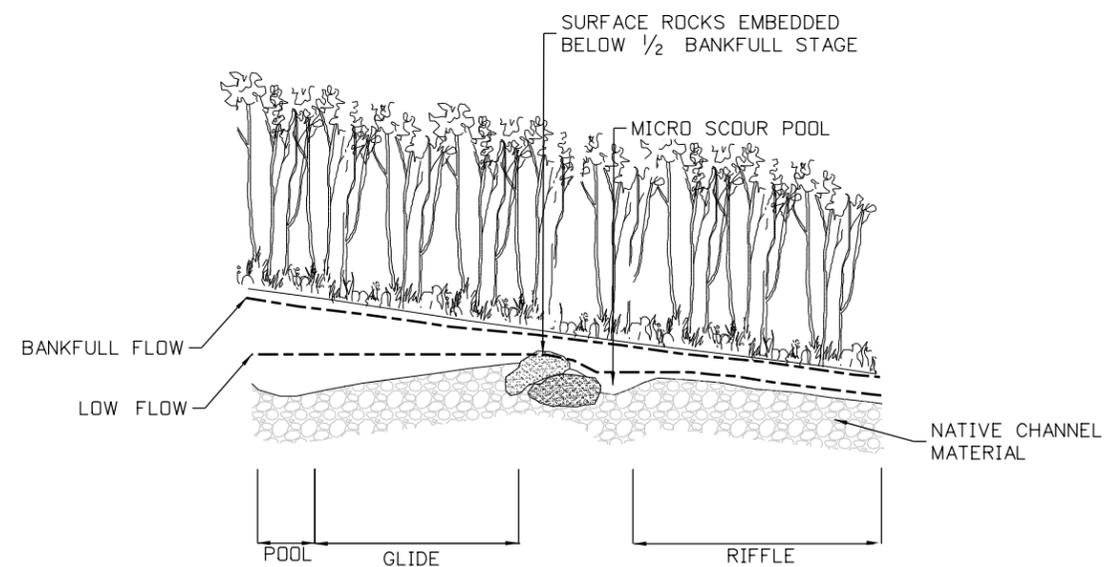
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PLAN VIEW
NTS



PROFILE A - A'
NTS



PROFILE B - B'
NTS

CONVERGING BOULDER CLUSTER
NTS

90% SET

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
Michael Baker INTERNATIONAL

DESIGNED:	CAD:	CHECKED:	DATE:
LB	EMR	KPD	04/15/16

GOLD RUN ROAD HABITAT RESTORATION DTLs (SHEET 10 OF 11)
PROJECT NO: 4043.SEPT12C38 SHEET NO: 164

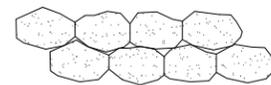
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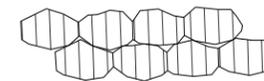
POOL RIGHT BEND



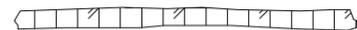
POOL LEFT BEND



BOULDER BANK PROTECTION



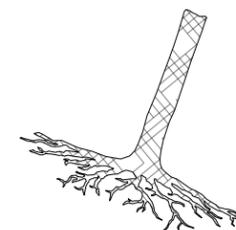
STACKED BOULDER WALL



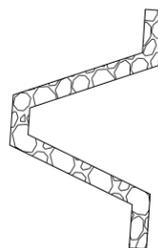
TOE WOOD
BANK PROTECTION



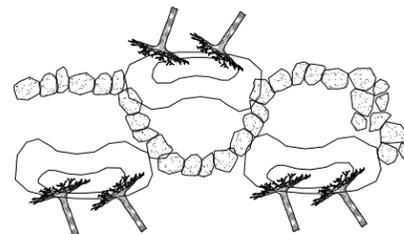
CONVERGING BOULDER CLUSTER



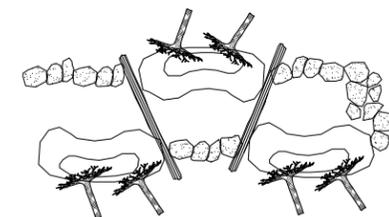
ROOT WAD BANK PROTECTION



ROCK CROSS VANE



ROCK STEP/POOL



LOG AND ROCK STEP/POOL

HABITAT RESTORATION LEGEND

90% SET	 <small>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</small>	REVISIONS:	NO.	DATE	REVISION DESCRIPTION:	 BOULDER COUNTY TRANSPORTATION DEPARTMENT ENGINEERING DIVISION Michael Baker INTERNATIONAL	DESIGNED:	CAD:	CHECKED:	DATE:	GOLD RUN ROAD HABITAT RESTORATION DTLs (SHEET 11 OF 11) <small>PROJECT NO: 4043.SEPT12C38 SHEET NO: 165</small>
							LB EMR KPD 04/15/16				