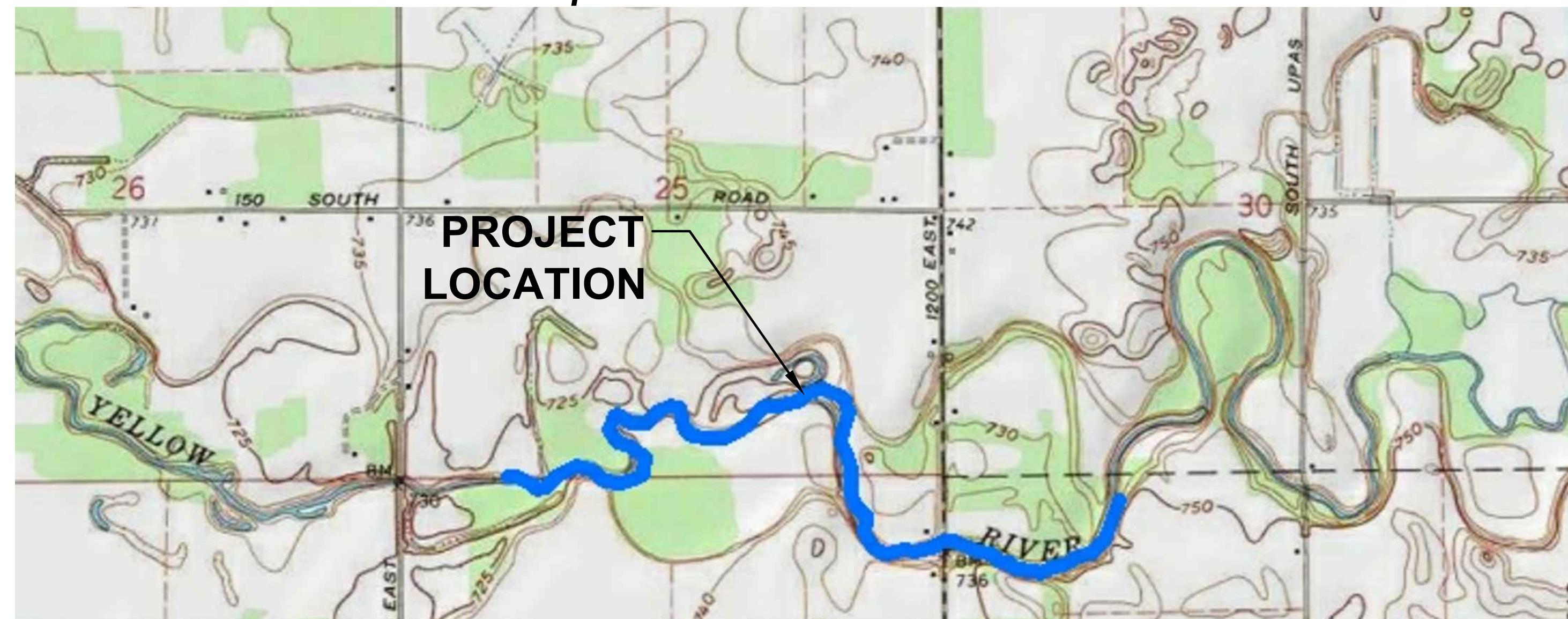


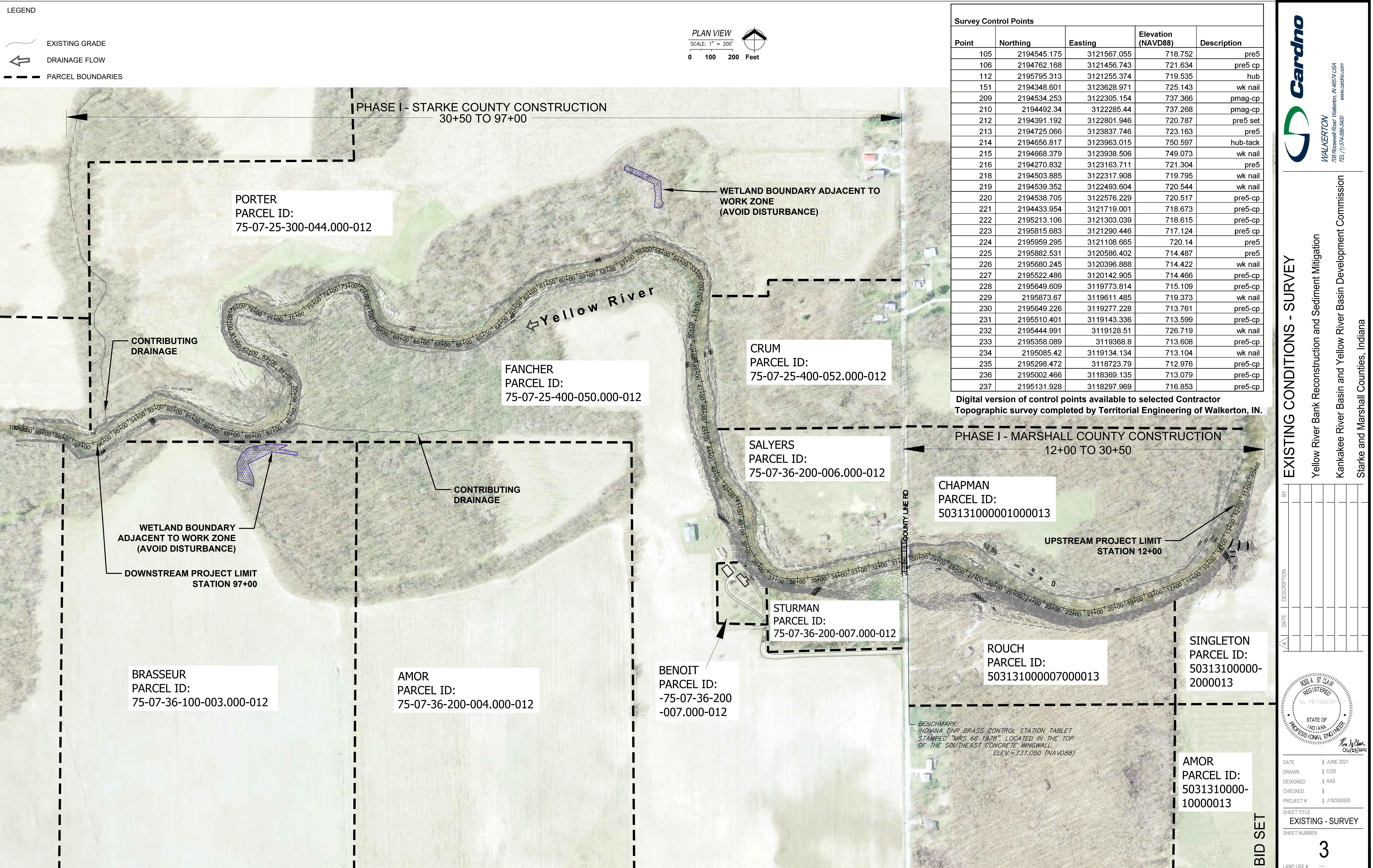
Phase I - Yellow River Bank Reconstruction and Sediment Mitigation

Kankakee River Basin and Yellow River Basin Development Commission

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6	PROPOSED PLAN 18+00 TO 30+50
7	PROPOSED PLAN 30+50 TO 43+00
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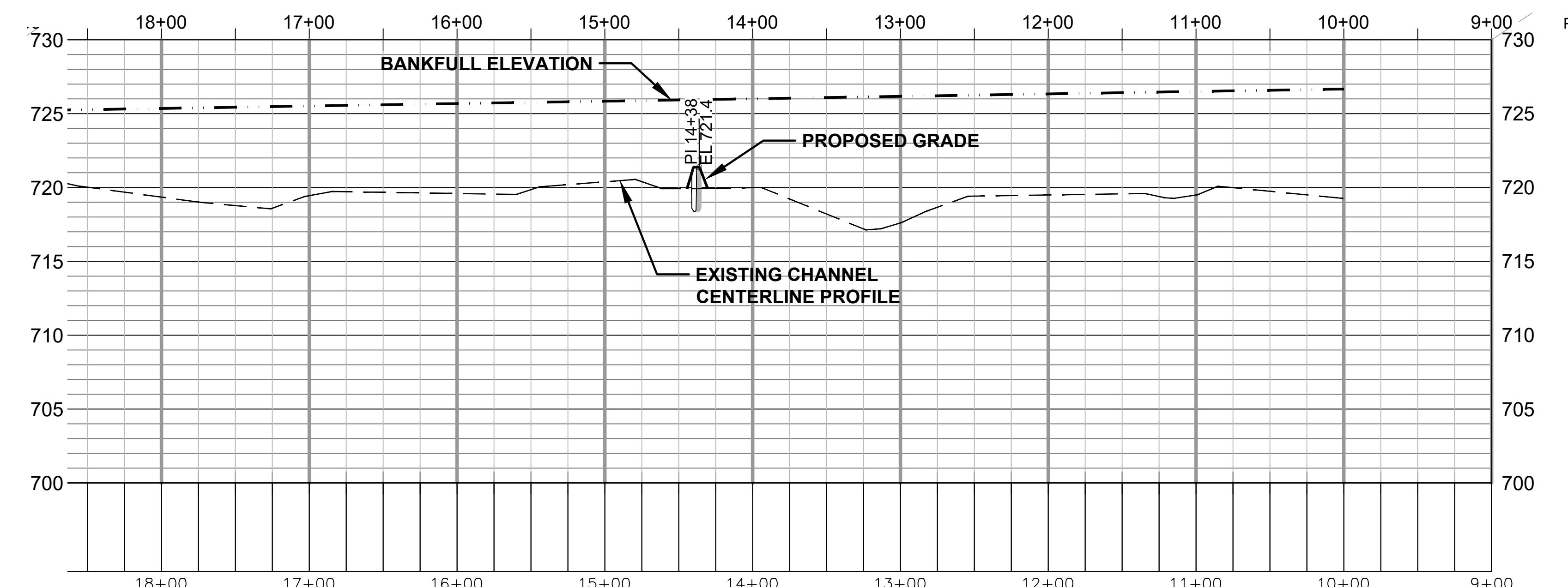
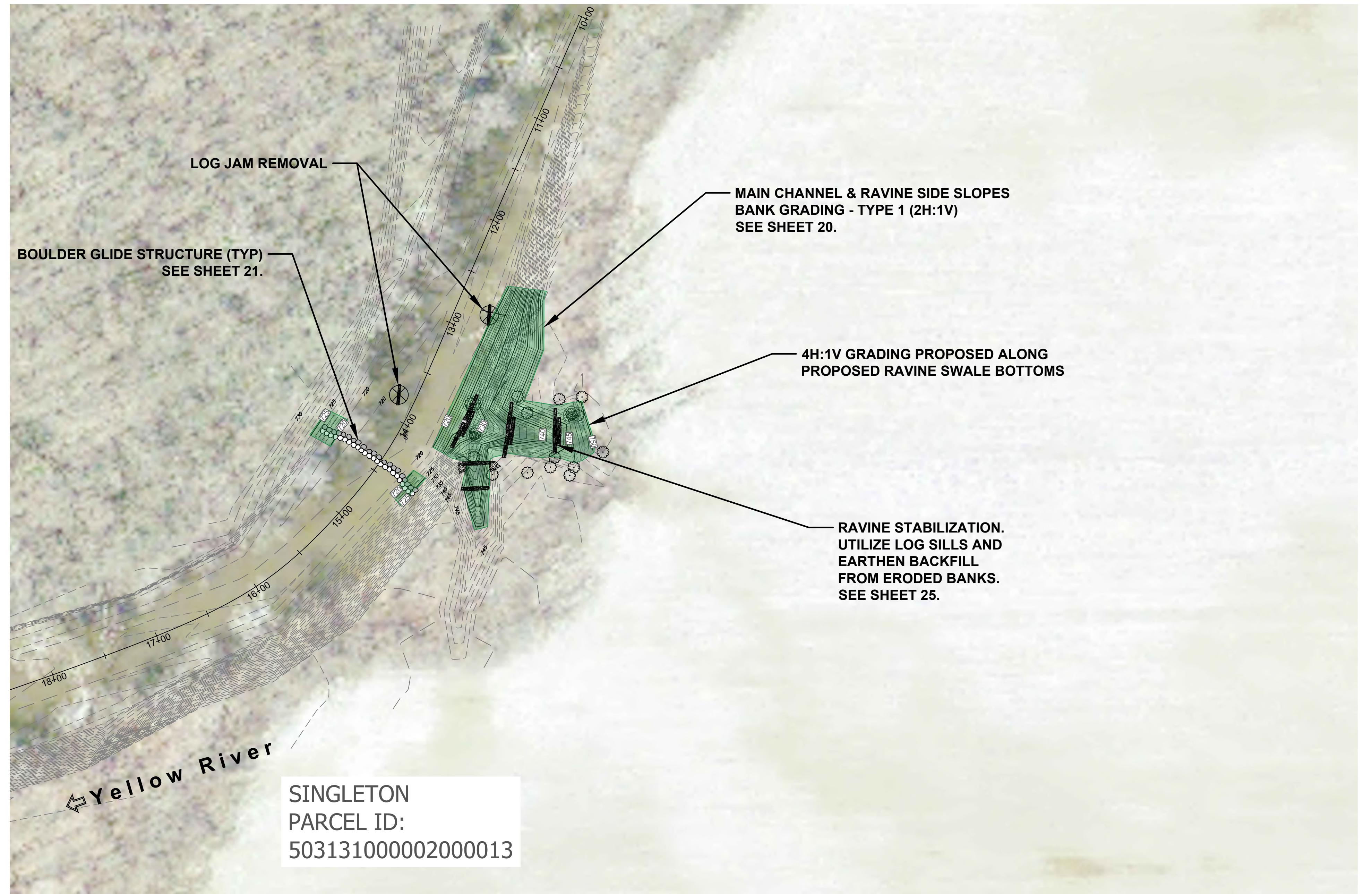






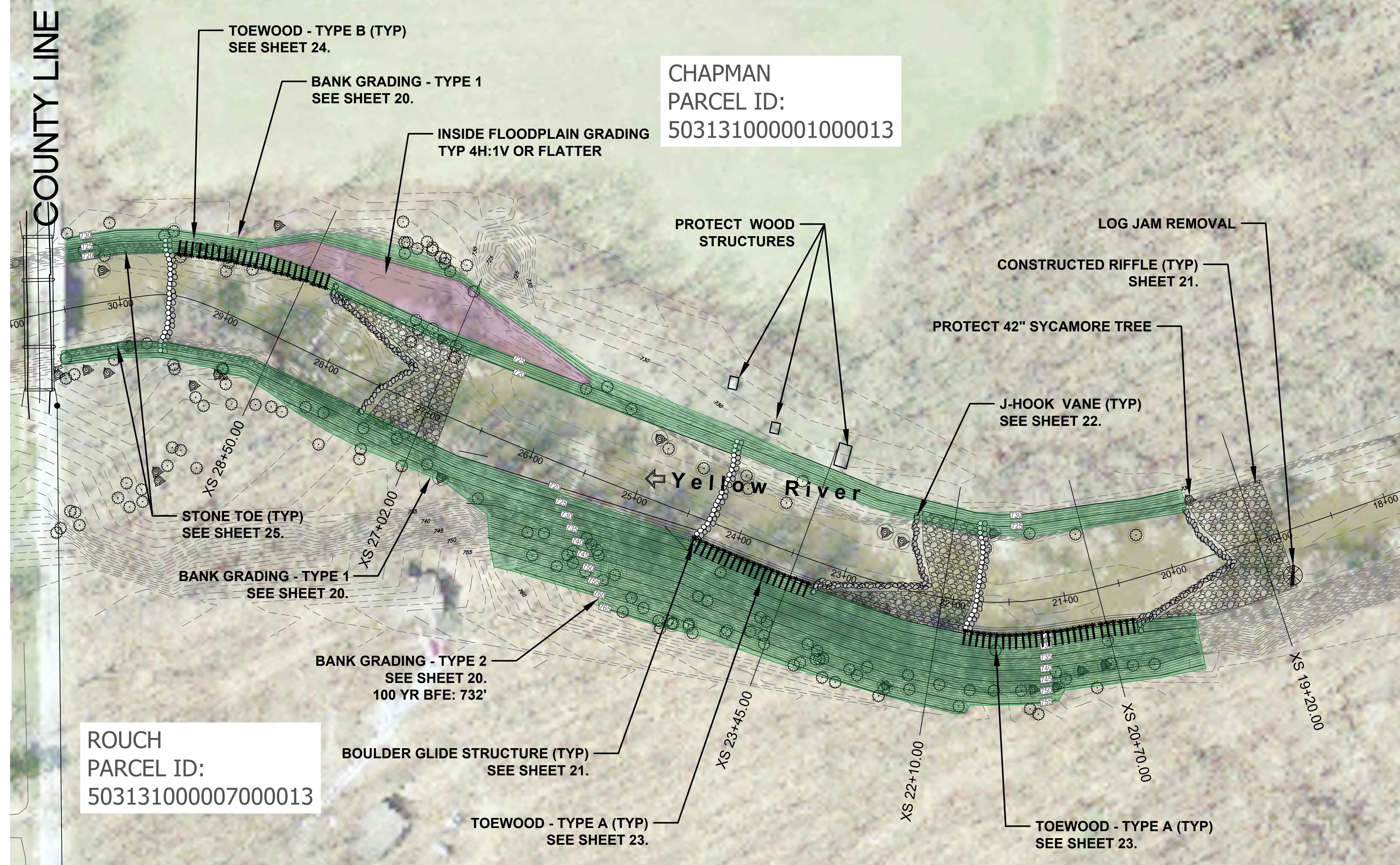
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- RAVINE STABILIZATION AREAS TO CONSIST OF APPROXIMATELY 2H:1V SIDE SLOPES AND 4H:1V OR FLATTER SWALE ALONG FLOWLINE OF RAVINES. UTILIZE ONSITE SOIL TO FILL RAVINE VOID AND COMPACT IN NO GREATER THAN 12" LIFTS. UTILIZE CUT TREES AND NON-DECOMPOSED DOWN TREES FOR LOG SILLS.
- ALL DISTURBED AREAS TO BE SEADED WITH STABILIZATION SEED MIX. SEE DETAILS FOR FURTHER SEED APPLICATION, SLOPE PROTECTION AND MULCHING DETAILS ON SHEET 20.
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PLAN VIEW
SCALE: 1" = 60'
0 30 60 Feet

LEGEND

- EXISTING GRADE
- DRAINAGE FLOW
- TOEWOOD
- ROOTWAD COMPOSITE
- J-HOOK
- BOULDER GLIDE STRUCTURE
- CROSS VANE
- ROCK VANE
- CONSTRUCTED RIFFLE
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- TREE REMOVAL - POTENTIAL BAT TREE
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PROPOSED PLAN 18+00 TO 30+00 (MARSHALL)

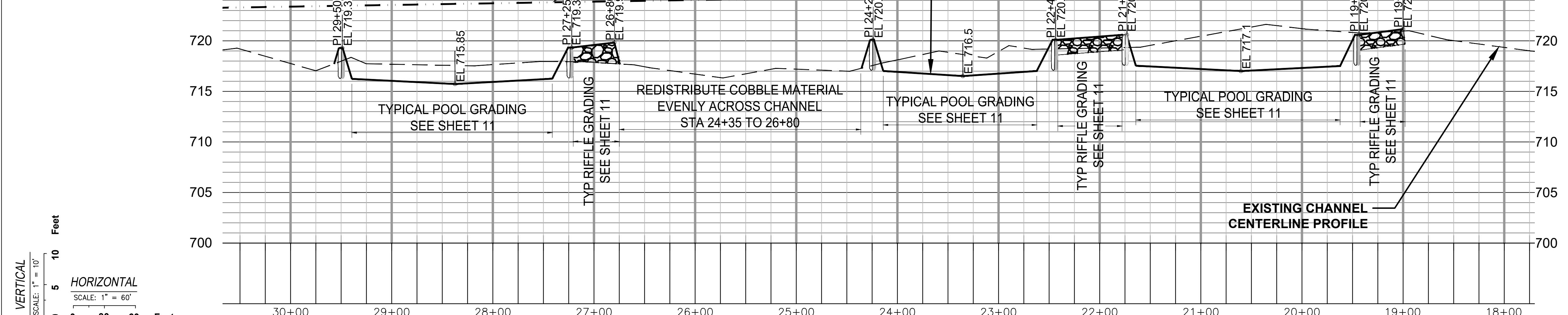
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WALKERTON
720 Rosecrans Road Walkerton, IN 46574 USA
TEL (574) 565-3400

Yellow River Bank Reconstruction and Sediment Mitigation

Kankakee River Basin and Yellow River Basin Development Commission

Starke and Marshall Counties, Indiana



PROFILE

PROFILE NOTES

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BID SET

6



DATE: JUNE 2021
DRAWN: COD
DESIGNED: RAS
CHECKED:
PROJECT #: J19Z50050
SHEET TITLE: 18+00 TO 30+50
SHEET NUMBER:

LAND USE #

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FANCHER
PARCEL ID:
75-07-25-400-
050.000-012

SALYERS
PARCEL ID:
75-07-36-200-006.000-012

PLAN VIEW
SCALE: 1" = 60'
0 30 60 Feet

LEGEND

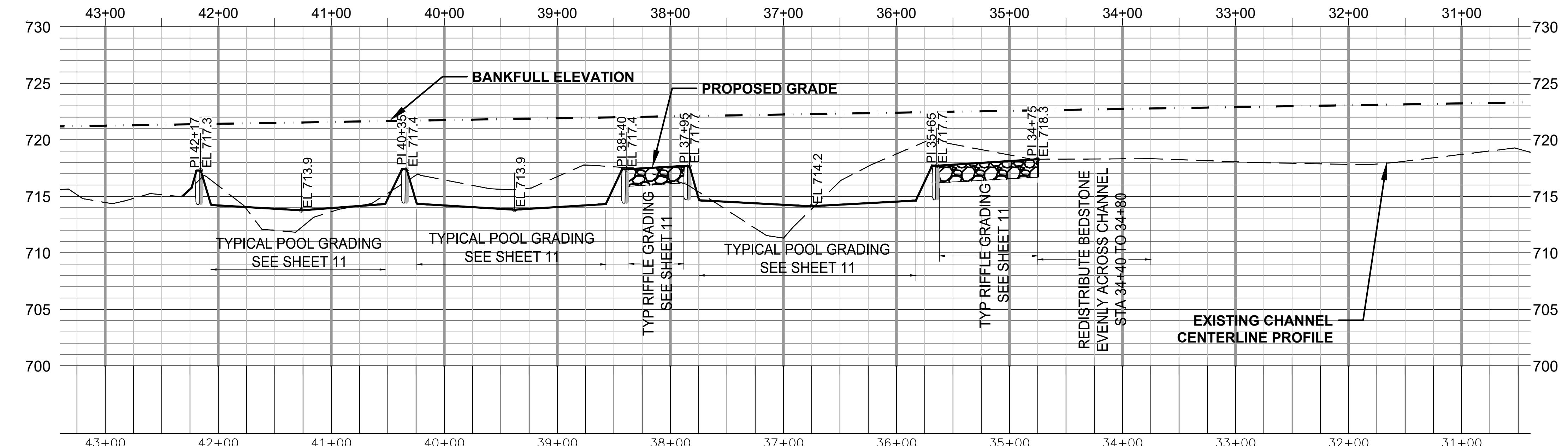
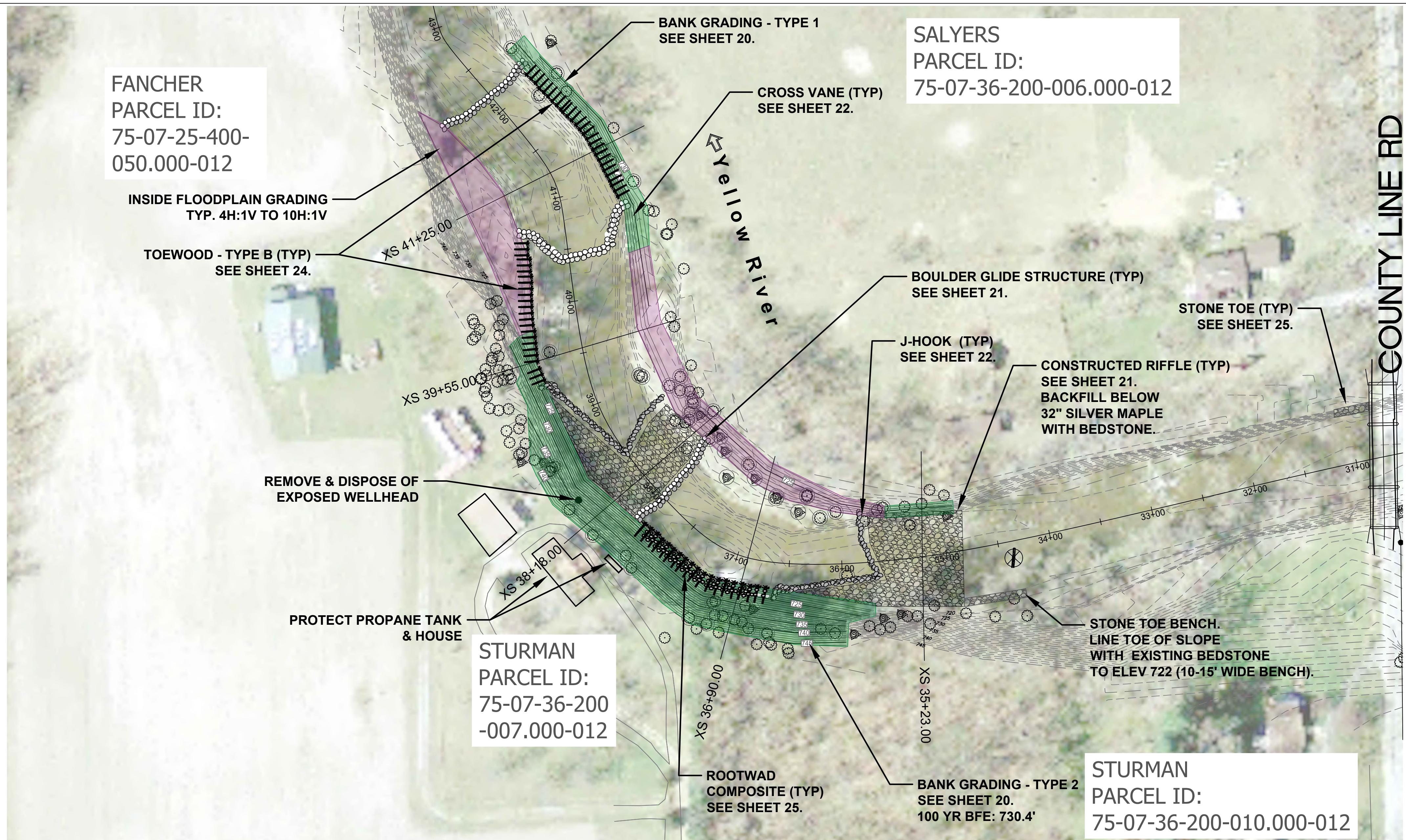
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PROPOSED PLAN 30+50 TO 43+00 (STARKE)

Yellow River Bank Reconstruction and Sediment Mitigation

Kankakee River Basin and Yellow River Basin Development Commission

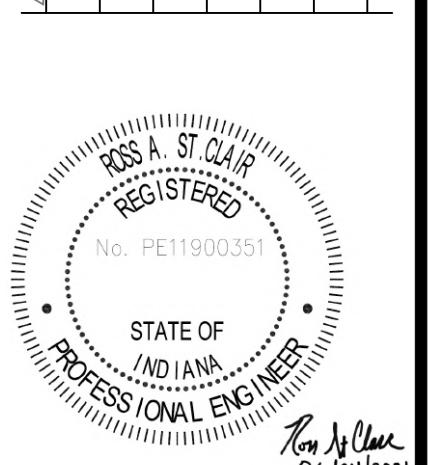
Starke and Marshall Counties, Indiana



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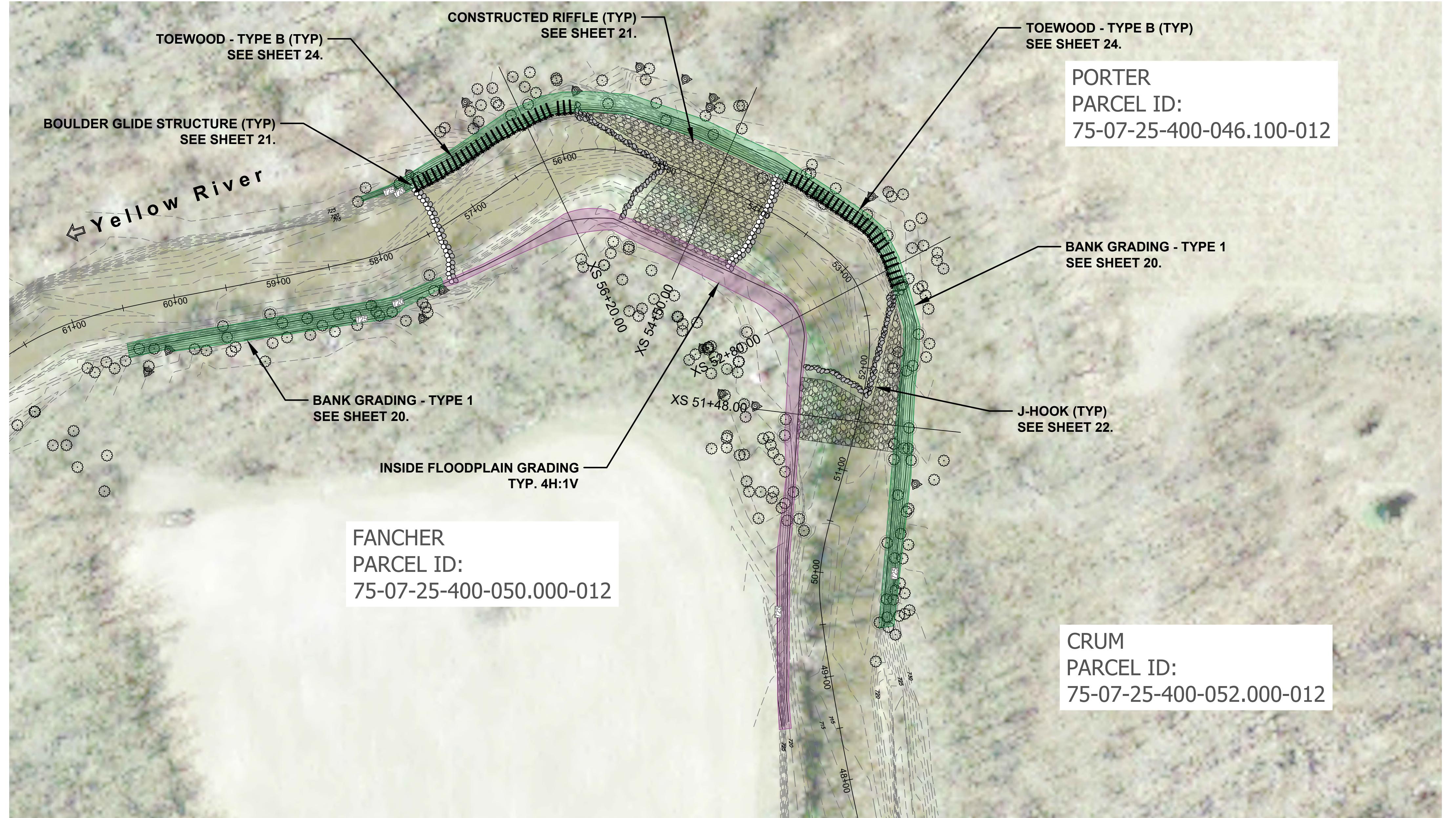
#	DATE	DESCRIPTION



DATE	JUNE 2021
DRAWN	COD
DESIGNED	RAS
CHECKED	
PROJECT #	J19Z50050
SHEET TITLE	30+50 TO 43+00
SHEET NUMBER	

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PLAN VIEW
SCALE: 1" = 60'
0 30 60 Feet

LEGEND

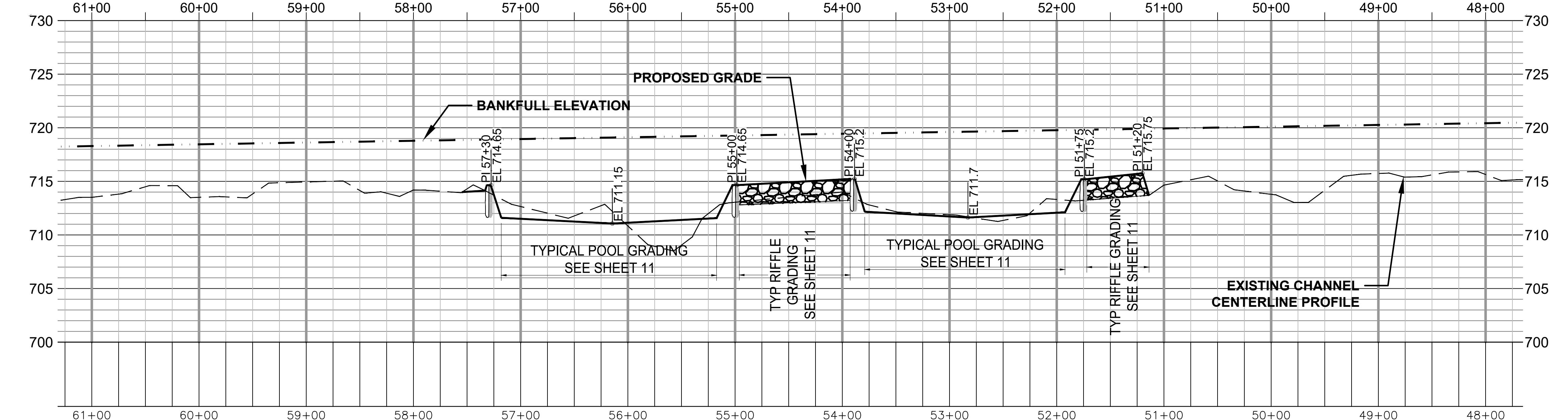
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PROPOSED PLAN 48+00 TO 61+00 (STARKE)

Yellow River Bank Reconstruction and Sediment Mitigation

Kankakee River Basin and Yellow River Basin Development Commission

Starke and Marshall Counties, Indiana



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#	DATE	DESCRIPTION	BY

ROSS A. ST CLAIR
REGISTERED
No. PE1190035
STATE OF
INDIANA
PROFESSIONAL ENGINEER
Kris Clark
06/14/2021

DATE | JUNE 2021
DRAWN | COD
DESIGNED | RAS
CHECKED |
PROJECT # | J19Z50050
SHEET TITLE | 48+00 TO 61+00
SHEET NUMBER |

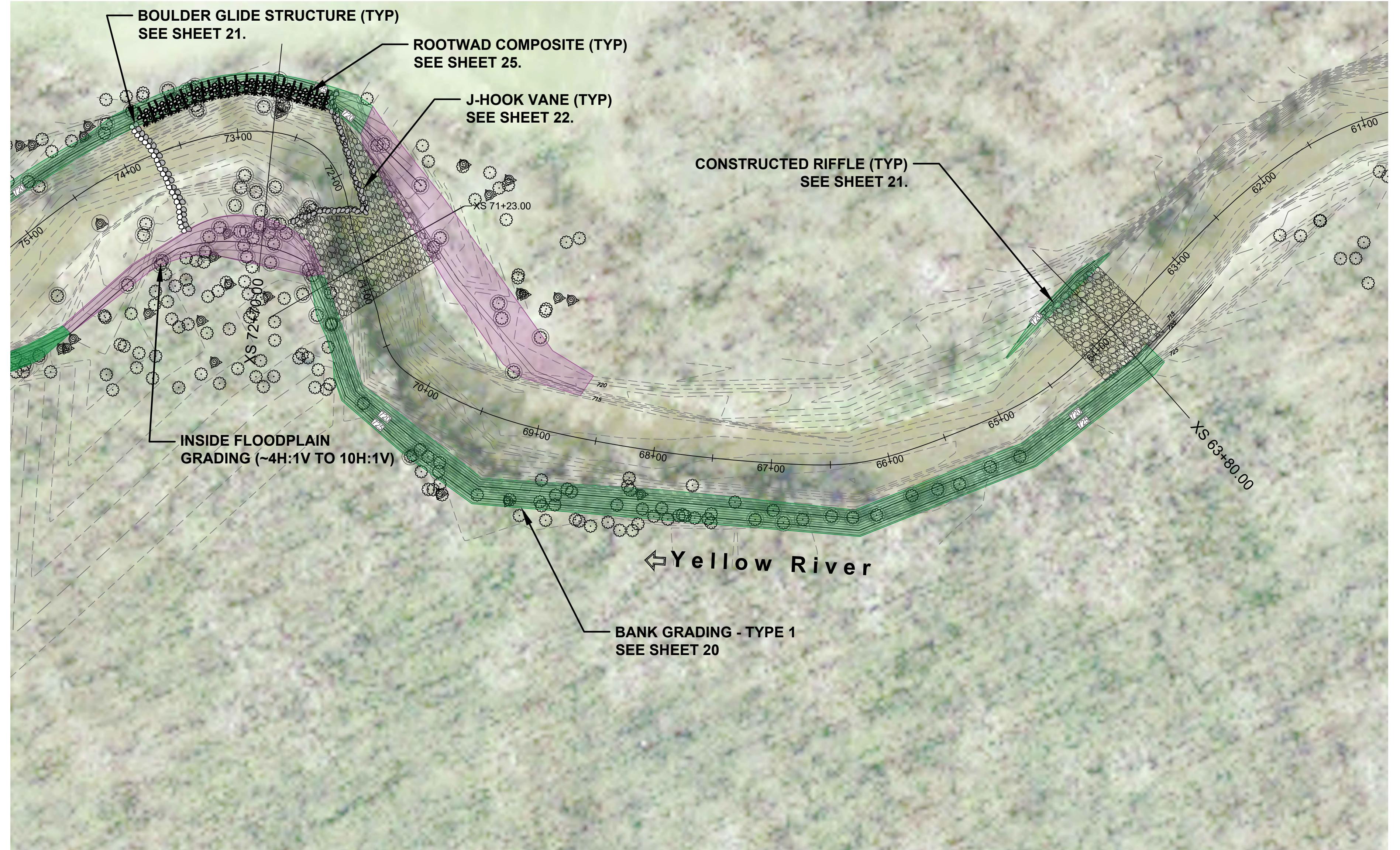
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0 30 60 Feet

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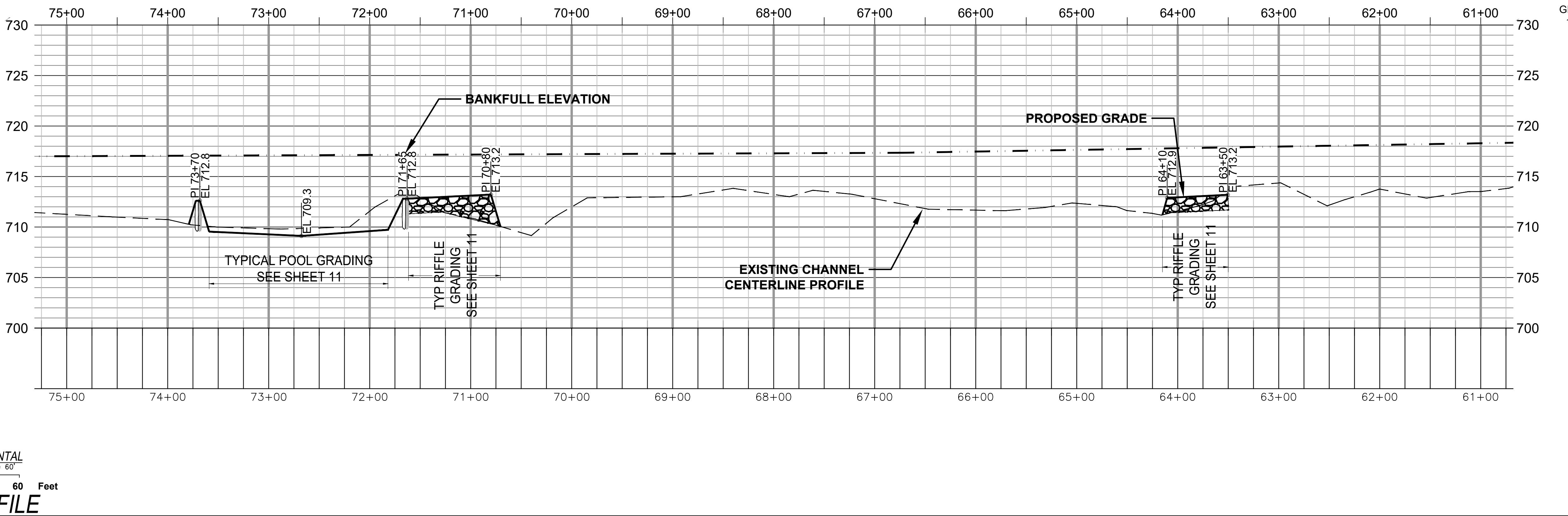
WALKERTON
720 Rosecrans Road, Walkerton, IN 46574 USA
TEL: (574) 565-3400

PROPOSED PLAN 61+00 TO 75+00 (STARKE)

Yellow River Bank Reconstruction and Sediment Mitigation

Kankakee River Basin and Yellow River Basin Development Commission

Starke and Marshall Counties, Indiana



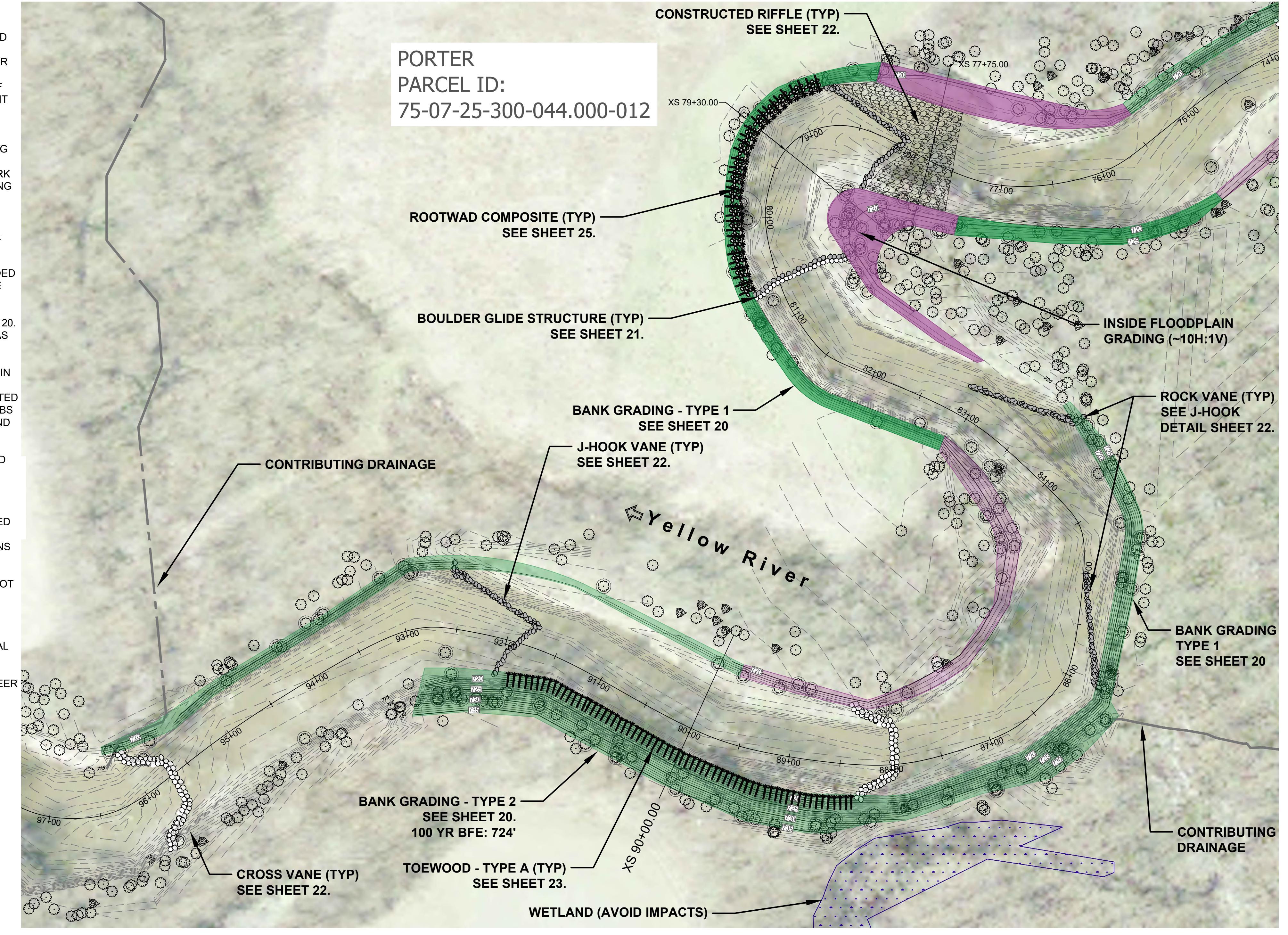
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PROFILE

HORIZONTAL
SCALE: 1" = 80' Feet

VERTICAL
SCALE: 1" = 10' Feet



PLAN VIEW
SCALE: 1" = 60'
0 30 60 Feet

LEGEND

- EXISTING GRADE
- DRAINAGE FLOW
- TOEWOOD
- ROOTWAD COMPOSITE
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PROPOSED PLAN 75+00 TO 97+00 (STARKE)

Yellow River Bank Reconstruction and Sediment Mitigation

Kankakee River Basin and Yellow River Basin Development Commission

Starke and Marshall Counties, Indiana

Cardno

WALKERTON
720 Rosecrans Road, Walkerton, IN 46574 USA
TEL: (574) 565-3400

DATE DESCRIPTION BY



DATE JUNE 2021

DRAWN COD

DESIGNED RAS

CHECKED

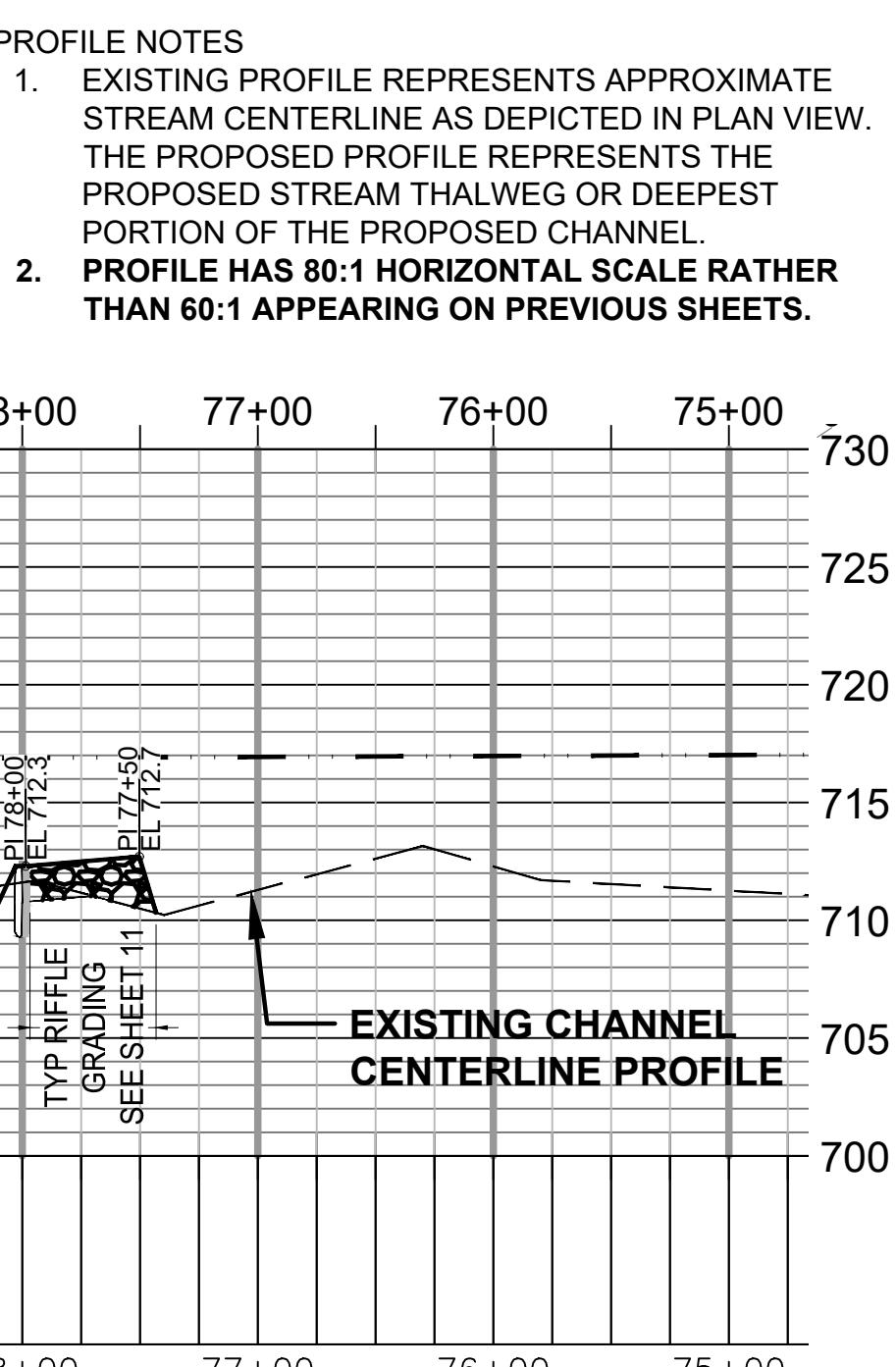
PROJECT # J19250050

SHEET TITLE 75+00 TO 97+00

SHEET NUMBER

LAND USE #

10

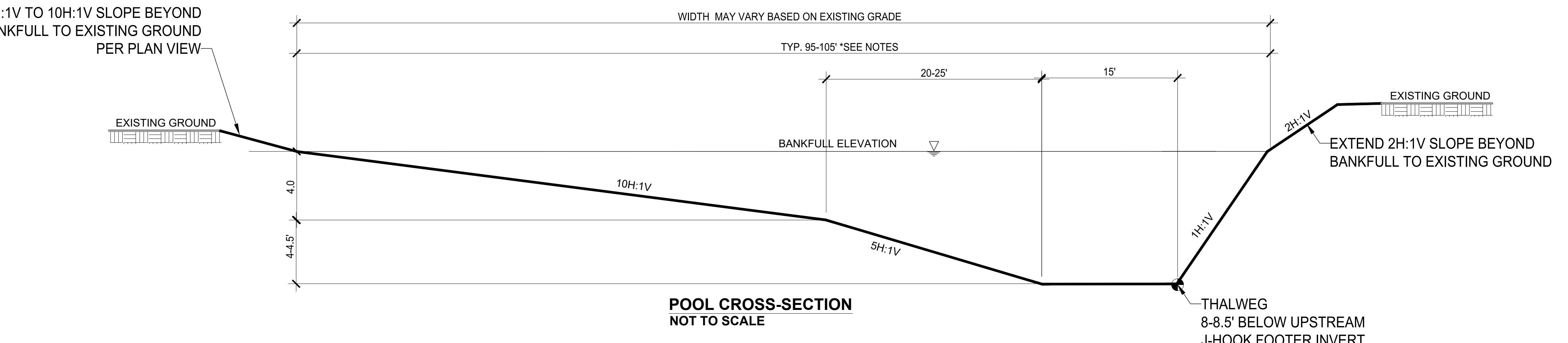
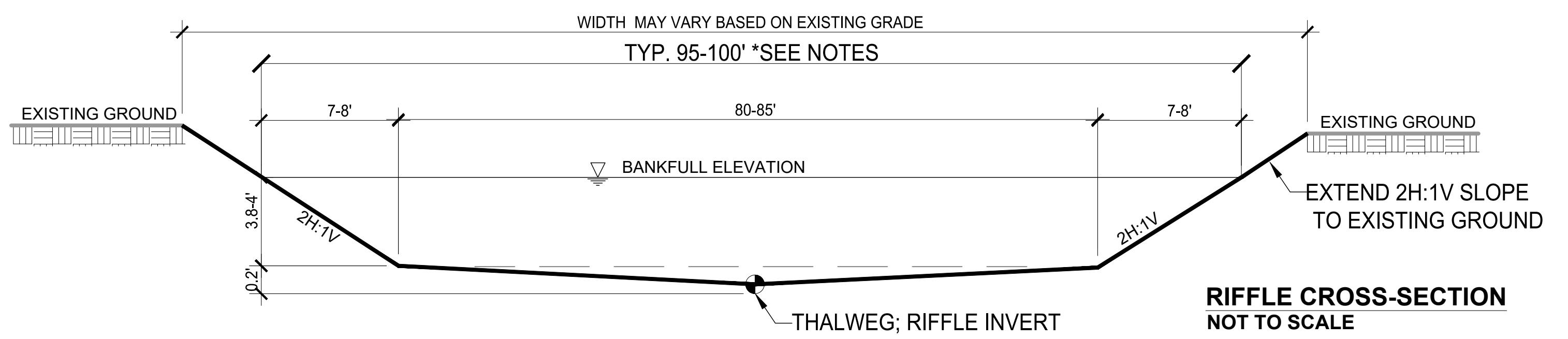


LAND USE #

10

NOTES

1. SEE PLAN AND PROFILE SHEETS FOR LOCATIONS TO APPLY TYPICAL CROSS-SECTIONS. RIFFLE CROSS SECTION TO BE APPLIED AT CONSTRUCTED RIFFLES. POOL CROSS SECTION TO BE APPLIED DOWNSTREAM OF J-HOOK OR CROSS VANE INVERT EXTENDING TO DOWNSTREAM BOULDER GLIDE STRUCTURE OR CROSS VANE WHICH CORRESPONDS WITH TOEWOOD OR ROOTWAD COMPOSITE.
 2. RIFFLE CROSS-SECTION TYPICALLY OCCURS AT MID-RIFFLE AND POOL CROSS-SECTION AT THE MID-POOL. CHANNEL DEPTH AND SIDE SLOPES WILL VARY ALONG TRANSITION FROM POOL CROSS-SECTION TO RIFFLE CROSS-SECTION. REFER TO PROPOSED PROFILE FOR BANKFULL ELEVATION AND CHANNEL INVERT/THALWEG ELEVATION.
 3. POOL TYPICAL FOR RIGHT MEANDER SHOWN. MIRROR SECTION FOR LEFT MEANDERS.
 4. INSIDE FLOODPLAIN GRADING MAY BE MODIFIED IN ORDER TO AVOID TREES LARGER THAN 10" DBH. MODIFICATIONS TO TYPICAL CROSS SECTIONS TO BE APPROVED BY ENGINEER.
 5. ALL TYPICAL DIMENSIONS MAY BE MODIFIED UPON APPROVAL BY THE ENGINEER BASED ON FIELD CONDITIONS.
 6. BANKFULL WIDTH OF CONSTRUCTED RIFFLE FROM STATION 63+50 TO 64+10 TO BE APPROX. 80-90'.



Constructed Riffle (CR)

Structure Type (Description)	Upstream Invert Station	Bankfull Elevation Start	Riffle Invert Elevation Start	Downstream Invert Station	Bankfull Elevation End	Riffle Invert Elevation End	Riffle Length (ft)
CR (Native Bedstone)	1900	725.15	721.15	1945	725.1	720.6	4
CR (Native Bedstone)	2190	724.75	720.6	2245	724.6	720.1	5
CR (Native Bedstone)	2680	723.9	719.9	2725	723.85	719.35	4
CR (Native Bedstone)	3475	722.6	718.3	3565	722.3	717.7	9
CR (Native Bedstone)	3800	722	717.7	3840	721.9	717.4	4
CR (Native Bedstone)	5120	719.75	715.75	5175	719.7	715.2	5
CR (Native Bedstone)	5395	719.3	715.2	5500	719.15	714.65	10
CR (Imported Bedstone)	6350	717.9	713.2	6410	717.8	712.9	6
CR (Imported Bedstone)	7080	717.2	713.2	7165	717.15	712.8	8
CR (Imported Bedstone)	7750	716.9	712.7	7800	716.9	712.3	5

CR NOTES:
1. (CR IMPORTED BEDSTONE) IF INSUFFICIENT QUANTITY OF BEDSTONE IS AVAILABLE ON SITE, AS AGREED UPON BY THE ENGINEER,
CONTRACTOR TO IMPORT MIXTURE OF INDOT REVETMENT RIPRAP & NO. 2 STONE TO SUBSTITUTE BEDSTONE.

Boulder Glide Structure (BGS) & Cross Vane (CV)

Structure Type (Description)	Streambed Invert Station	Invert Elevation - Footer Stone	Top of Surface Stone Elevation	Bankfull Elevation at Intercept Station ¹
BGS (Native Bedstone)	1438	721.4	721.7	725.
BGS (Native Bedstone)	2185	720.6	720.9	724.
BGS (Native Bedstone)	2425	720.1	720.4	724.
BGS (Native Bedstone)	2950	719.05	719.35	723.
BGS (Native Bedstone)	3795	717.7	718	721.
CV (Native Bedstone)	4035	717.4	717.7	721.
BGS (Native Bedstone)	4217	717.3	717.6	721.
BGS (Native Bedstone)	5390	715.2	715.5	719.
BGS (Imported Bedstone)	5730	714.65	714.95	718.
BGS (Imported Bedstone)	7370	712.6	712.9	717.
BGS (Imported Bedstone)	8060	712.3	712.6	716.
CV (Imported Bedstone)	8800	712	712.3	716.
CV (Imported Bedstone)	9560	711.5	711.8	716.

BGS & CV NOTES:

1. TOP OF SURFACE STONE TO EXTEND TO AT MINIMUM $\frac{3}{4}$ BANKFULL ELEVATION (1 FOOT BELOW LISTED BANKFULL ELEV.) AT POINT OF BANK INTERCEPT FOR CV AND $\frac{1}{2}$ BANKFULL (2 FEET BELOW LISTED BANKFULL ELEV) FOR BGS.
2. BGS (IMPORTED BEDSTONE) & CV (IMPORTED BEDSTONE - IF INSUFFICIENT QUANTITY OF BEDSTONE IS AVAILABLE ON SITE AS AGREED UPON BY THE ENGINEER, CONTRACTOR TO IMPORT MIXTURE OF INDOT REVETMENT RIPRAP & NO. 2 STONE TO SUBSTITUTE BEDSTONE.

J-Hook Rock Vane Structure (JH)

J-Hook Rock Vane Structure (JR)							
Structure Type (Description)	Streambed Invert Station	Invert Elevation - Footer Stone	Invert Elevation - Surface Stone	Vane Arm Length (ft)	Bankfull Intersect Station	Bankfull Elevation at Intercept Station ¹	
						Bankfull Elevation at Intercept Station ¹	Bankfull Elevation at Intercept Station ¹
J-HOOK	1945	720.6	720.9	90	2042	724.85	
J-HOOK	2245	720.1	720.4	90	2322		724.5
J-HOOK	2725	719.35	719.65	90	2825		723.6
J-HOOK	3565	717.7	718	90	3665		722.25
J-HOOK	3840	717.4	717.7	90	3932		721.8
J-HOOK	5175	715.2	715.5	90	5265		719.5
J-HOOK	5500	714.65	714.95	90	5585		719
J-HOOK	7165	712.8	713.1	90	7235		717.12
J-HOOK	7800	712.3	712.6	90	7875		716.9
J-HOOK	9175	711.8	712.1	90	9260		716.3
ROCK VANE	8290	712.3	712.6	110	8375		716.65
ROCK VANE	8500	712.2	712.5	110	8600		716.57

J-HOOK & ROCK VANE NOTES:

1. TOP OF SURFACE STONE TO EXTEND TO AT MINIMUM $\frac{3}{4}$ BANKFULL ELEVATION (1 FOOT BELOW LISTED BANKFULL ELEV.) AT POINT OF BANK INTERCEPT.
 2. UTILIZE EXISTING BEDSTONE (COBBLE AND/OR GRAVELS/FINES) TO BACKFILL UPSTREAM FACE OF STRUCTURES.
 3. ROCK VANE STREAMBED INVERT STATION AND ELEVATION MAY BE ADJUSTED WITH APPROVAL BY THE ENGINEER TO AVOID INSTALLATION IN OVERLY DEEP
THE RIVER. MAY SLOPE ON ROCK VANE ARM TO BE 6% AND MAY REQUIRE LOWERING OF BANK INTERCEPT ELEVATION AS APPROVED BY ENGINEER.

Toewood (TW) & Rootwad Composite (RWC)

Structure Type (Description)	Start	End	Length	Top of Root Collar Elevation	Bankfull Elevation Start	Bankfull Elevation End	Top of Lift Elevation	Max Lift Height (ft)	Max Lift Setback (ft)	No. of Lifts
TW (TYPE A)	2042	2185	143	721	724.85	724.7	722.5	1.5	1.5	1
TW (TYPE A)	2322	2435	113	720.5	724.5	724.3	722	1.5	1.5	1
TW (TYPE B)	2825	2960	135	719.7	723.6	723.45	721.2	1.5	1.5	1
RWC	3665	3790	125	718.1	722.25	722	NA	NA	NA	NA
TW (TYPE B)	3932	4060	128	717.8	721.8	721.6	719.3	1.5	1.5	1
TW (TYPE B)	4083	4227	144	717.7	721.7	721.5	719.2	1.5	1.5	1
TW (TYPE B)	5265	5400	135	717.7	719.5	719.3	719.2	1.5	1.5	1
TW (TYPE B)	5585	5740	155	715.6	719	718.7	NA	NA	NA	NA
RWC	7235	7380	145	715.05	717.15	717.1	NA	NA	NA	NA
RWC	7875	8070	195	712.7	716.9	716.85	714.2	1.5	1.5	1
TW (TYPE A)	8829	9100	269	712.7	716.5	716.3	714.2	1.5	1.5	1

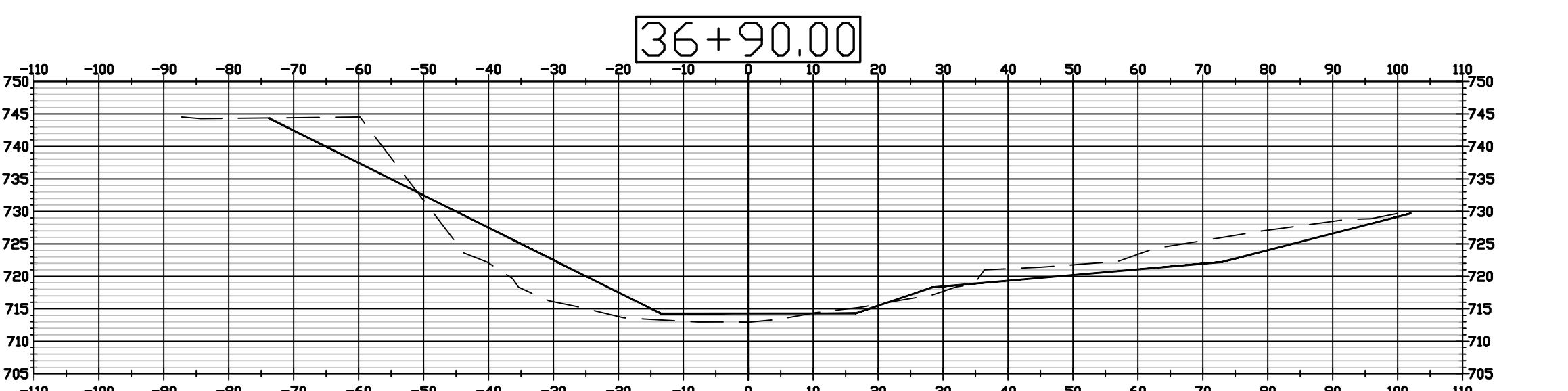
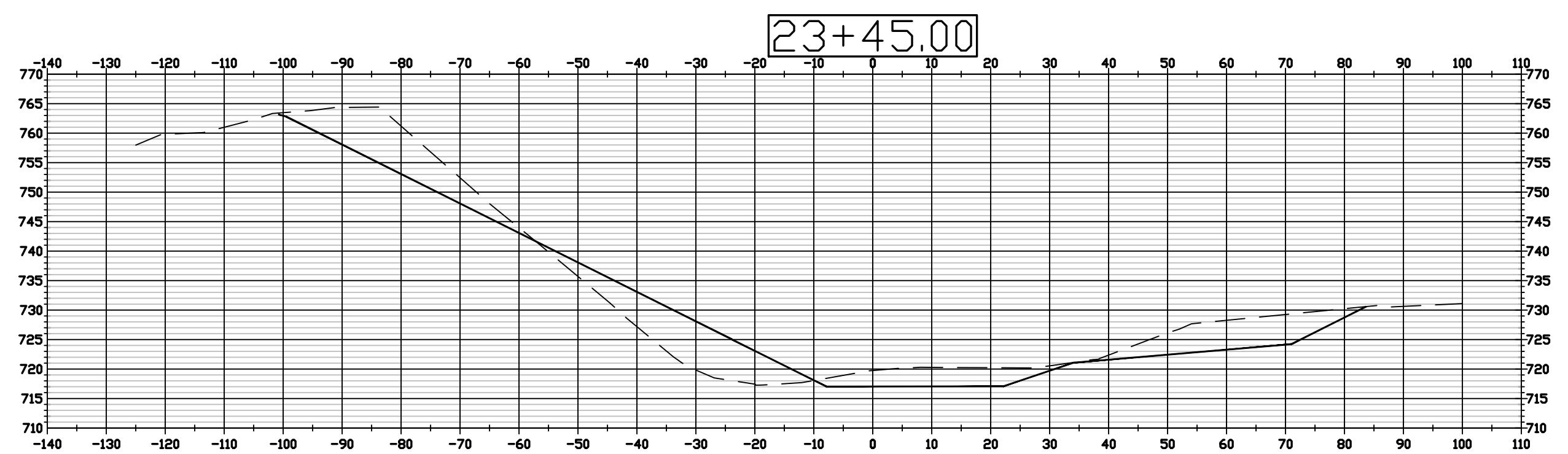
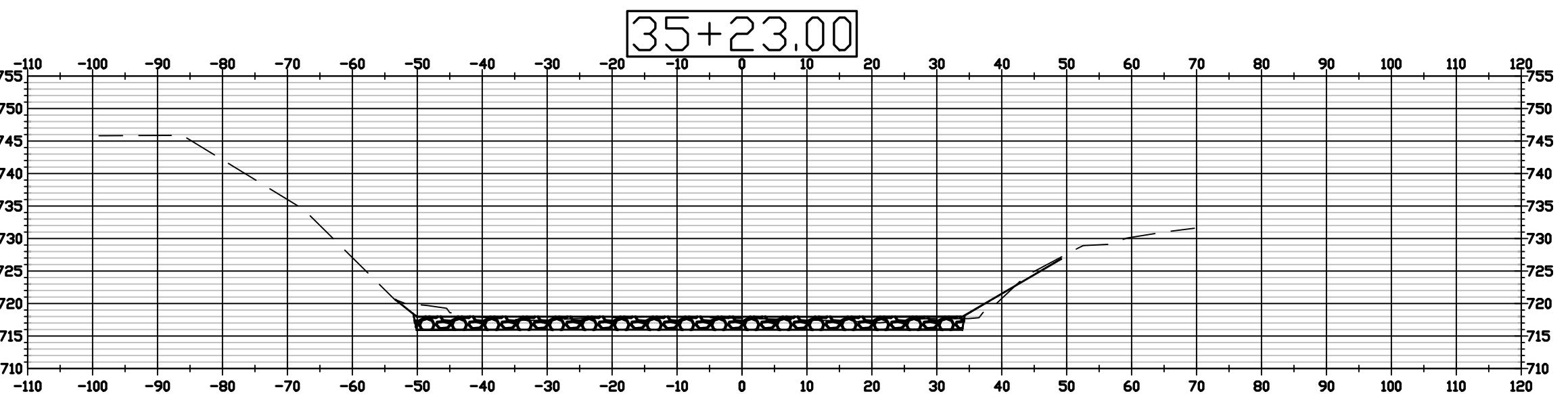
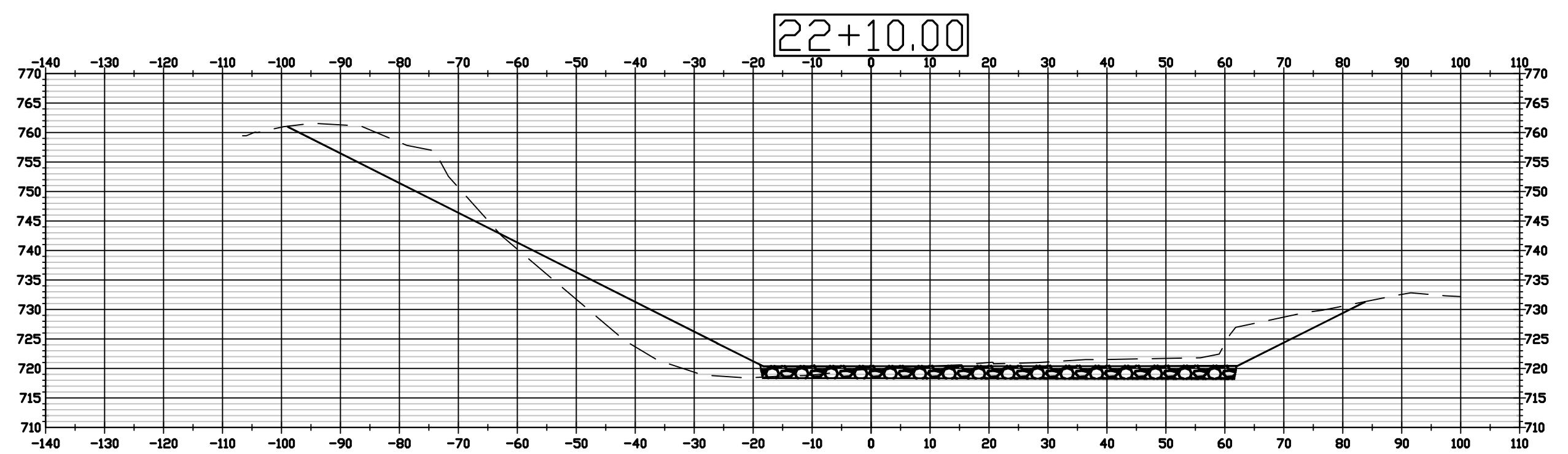
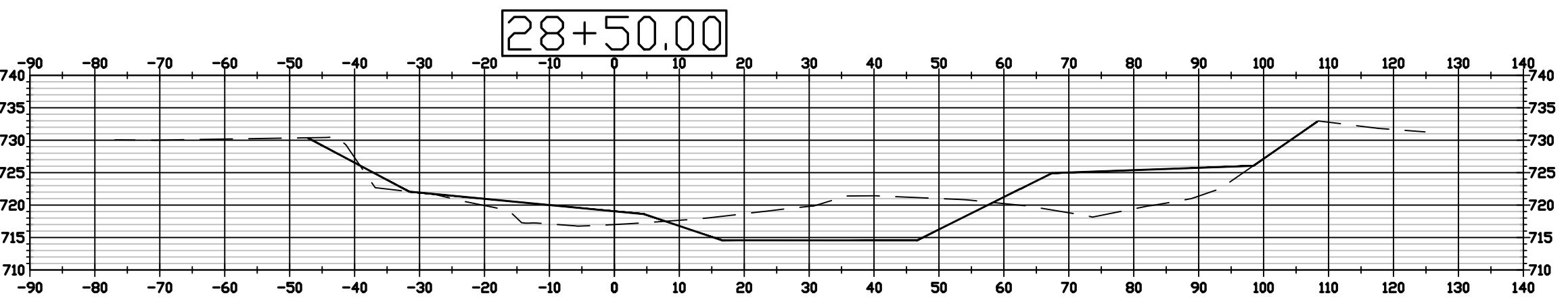
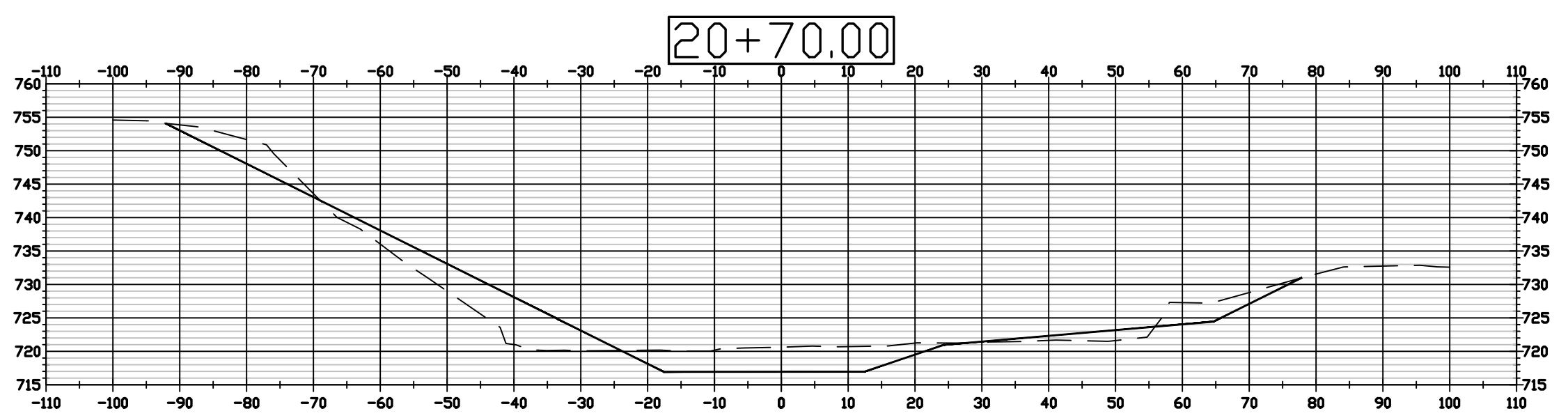
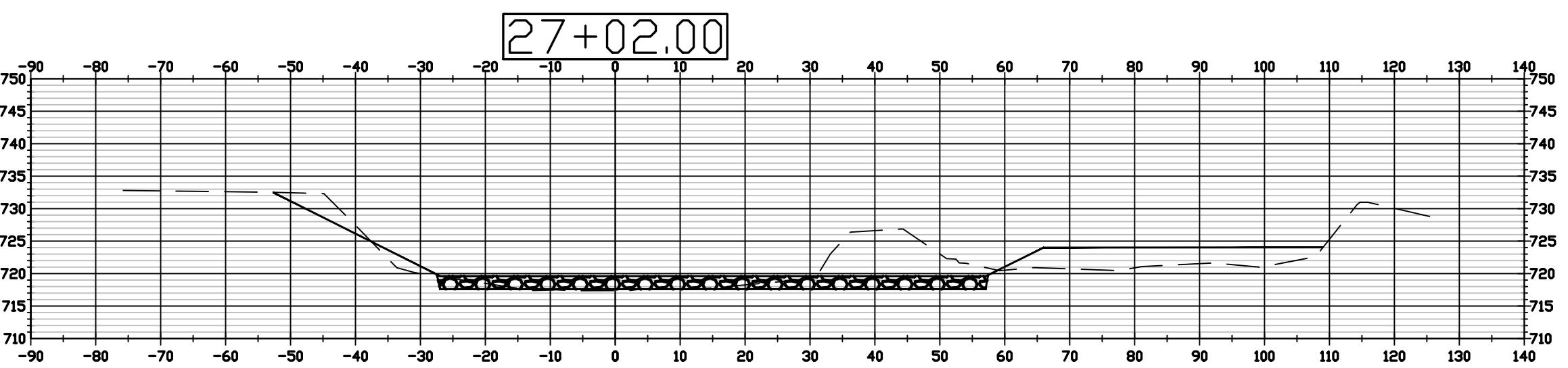
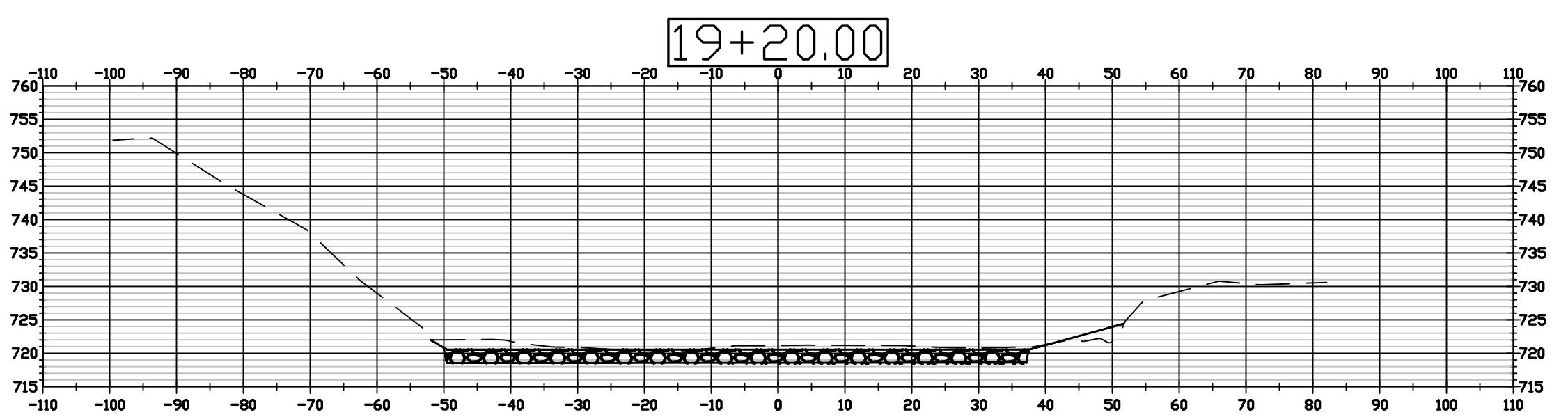
TW (TYPE A)

- TW & RWC NOTES:

1. EACH ROOTWAD REPRESENTS APPROXIMATELY 3-5 LINEAR FEET OF TOEWOOD TREATMENT. ALL WOOD HARVESTED FROM TREES REMOVED ONSITE.

2. IF INSUFFICIENT QUANTITY OF BEDSTONE IS AVAILABLE ON SITE, AS AGREED UPON BY THE ENGINEER, CONTRACTOR TO IMPORT

STRUCTURE DETAIL TABLE



EXISTING VS PROPOSED SECTIONS

Yellow River Bank Reconstruction and Sediment Mitigation

Kankakee River Basin and Yellow River Basin Development Commission

Starke and Marshall Counties, Indiana



DATE	JUNE 2021
DRAWN	COD
DESIGNED	RAS
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HEET TITLE

SECTIONS

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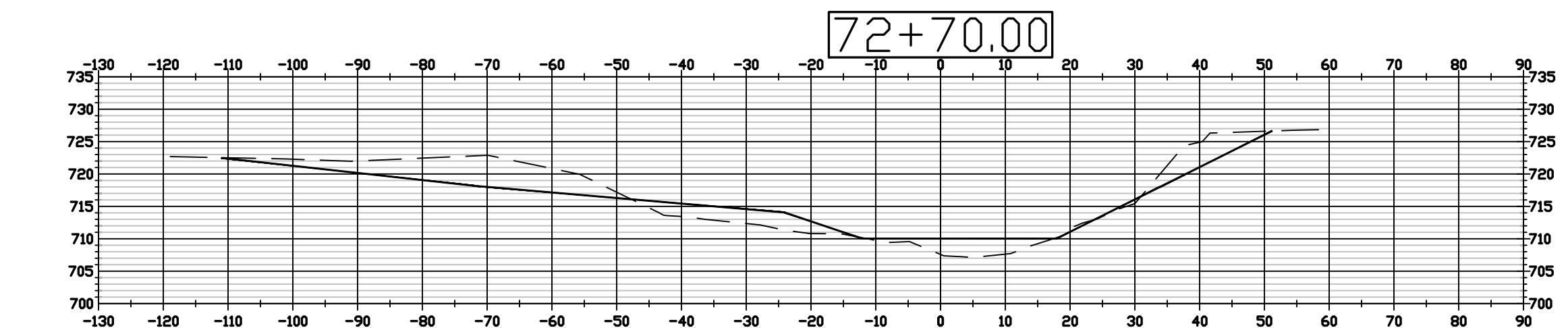
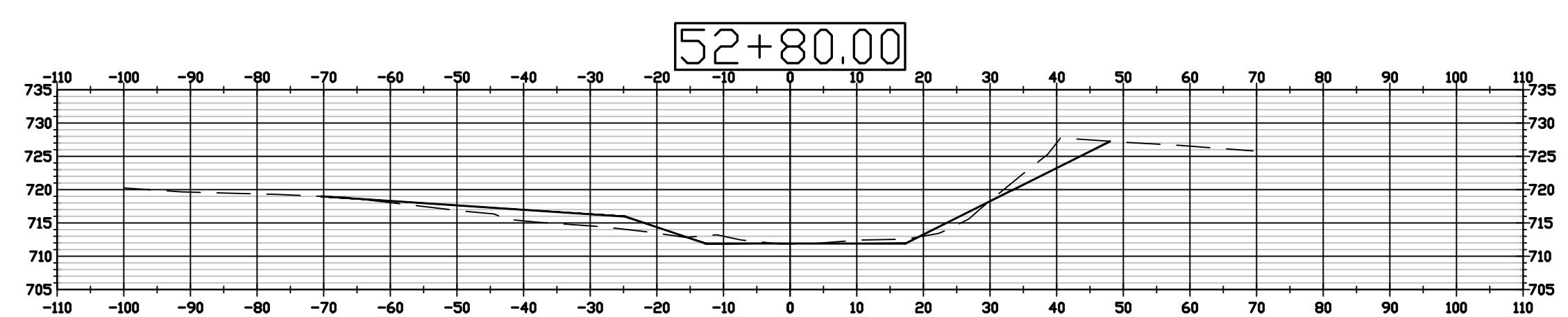
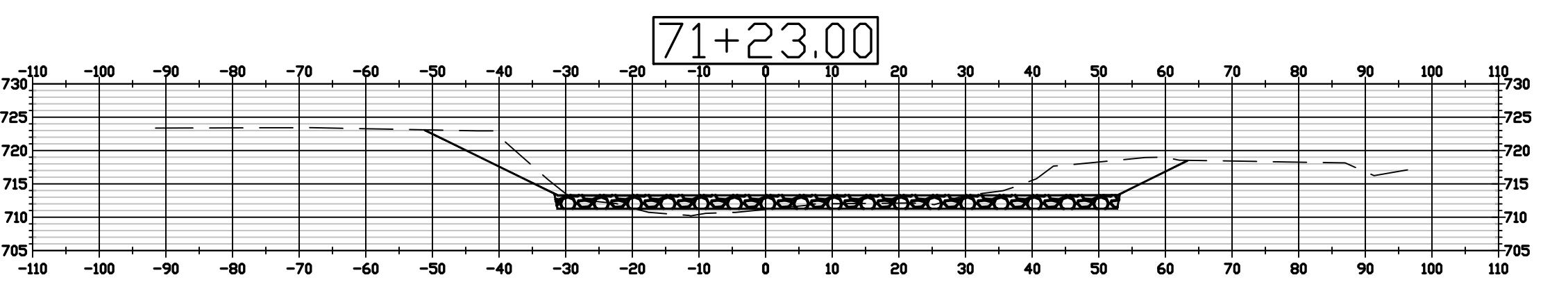
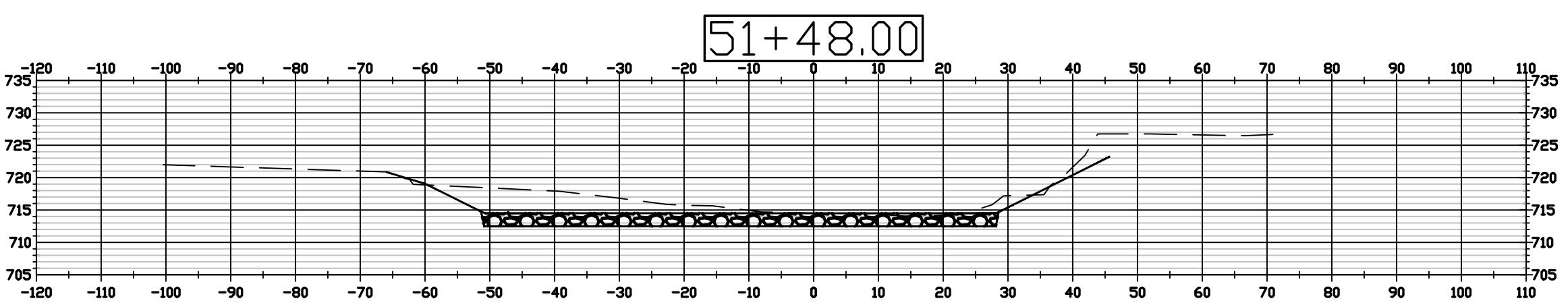
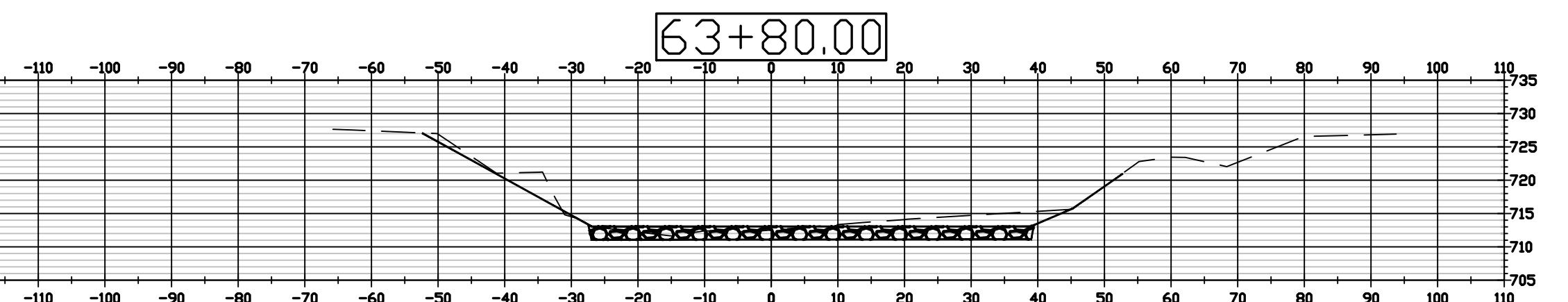
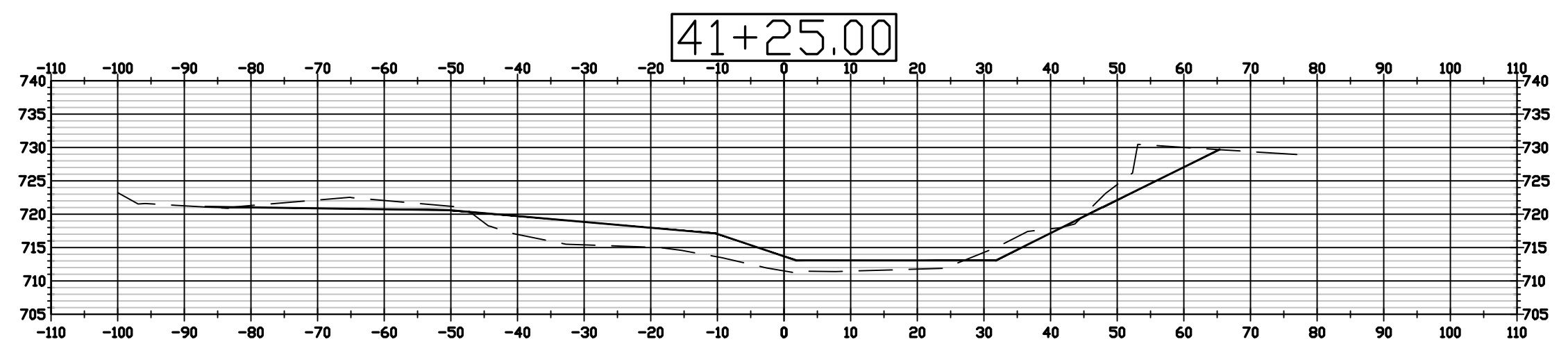
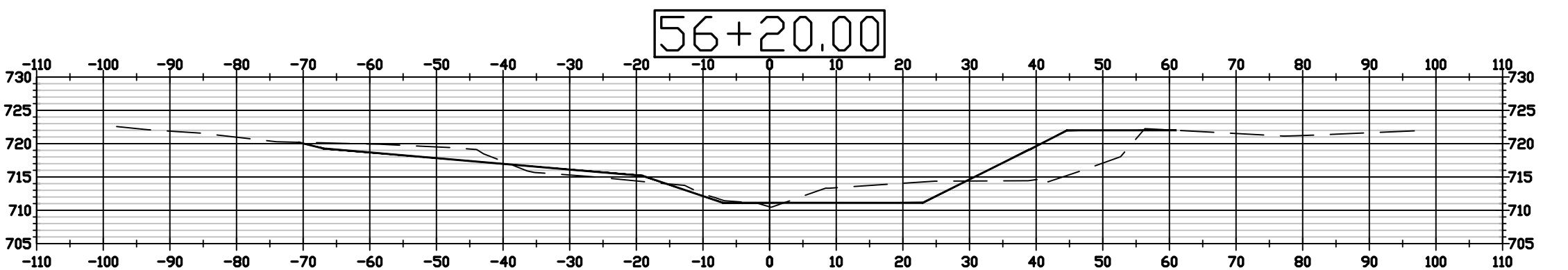
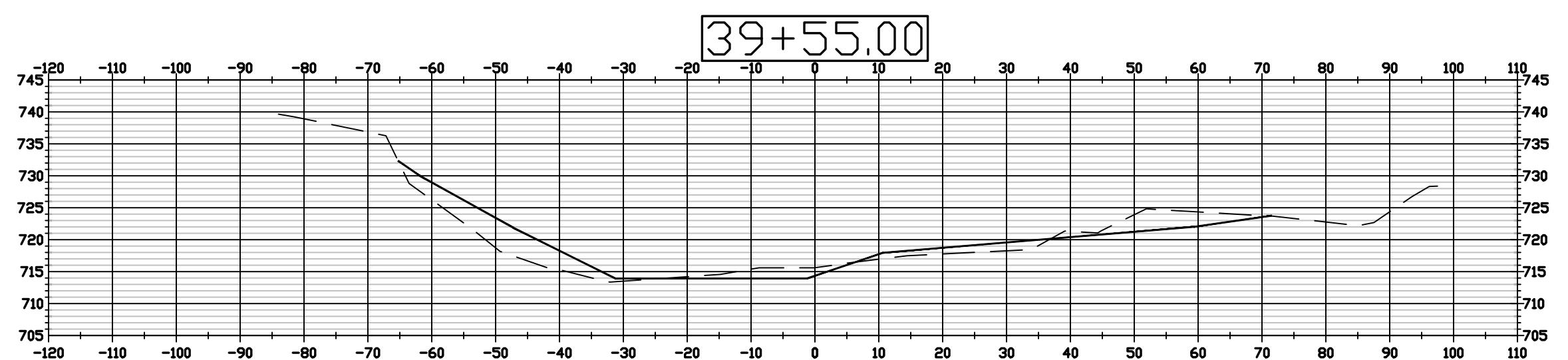
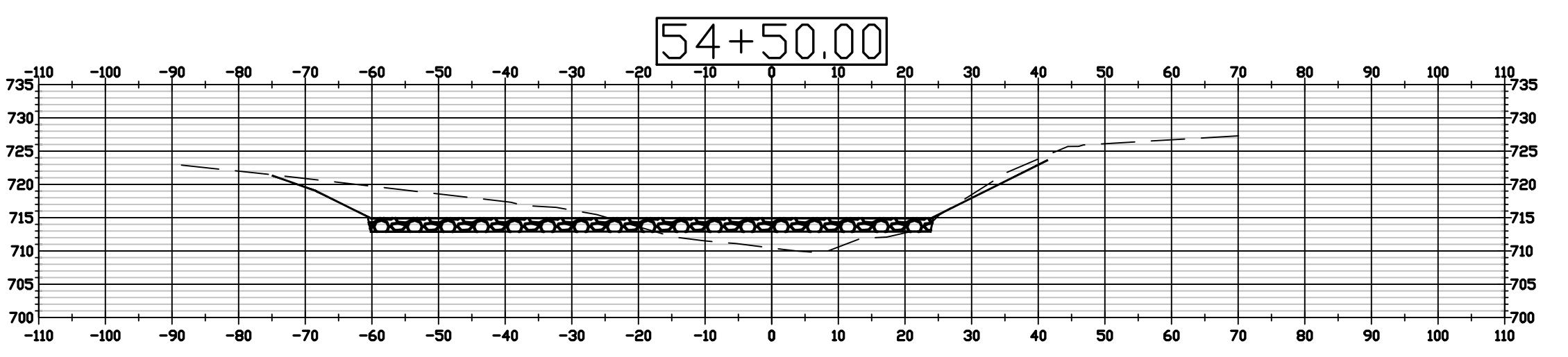
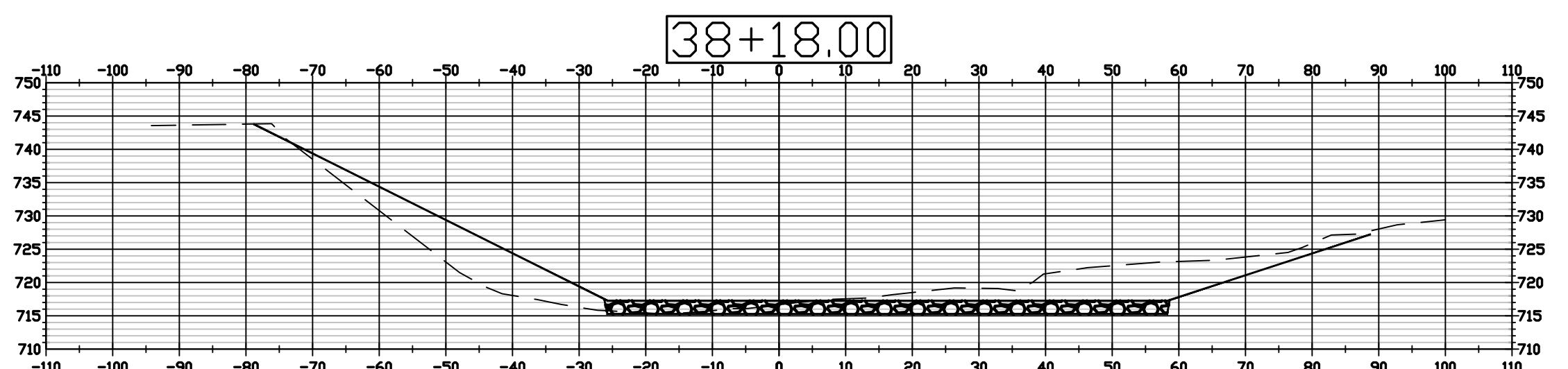
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EXISTING VS PROPOSED SECTIONS

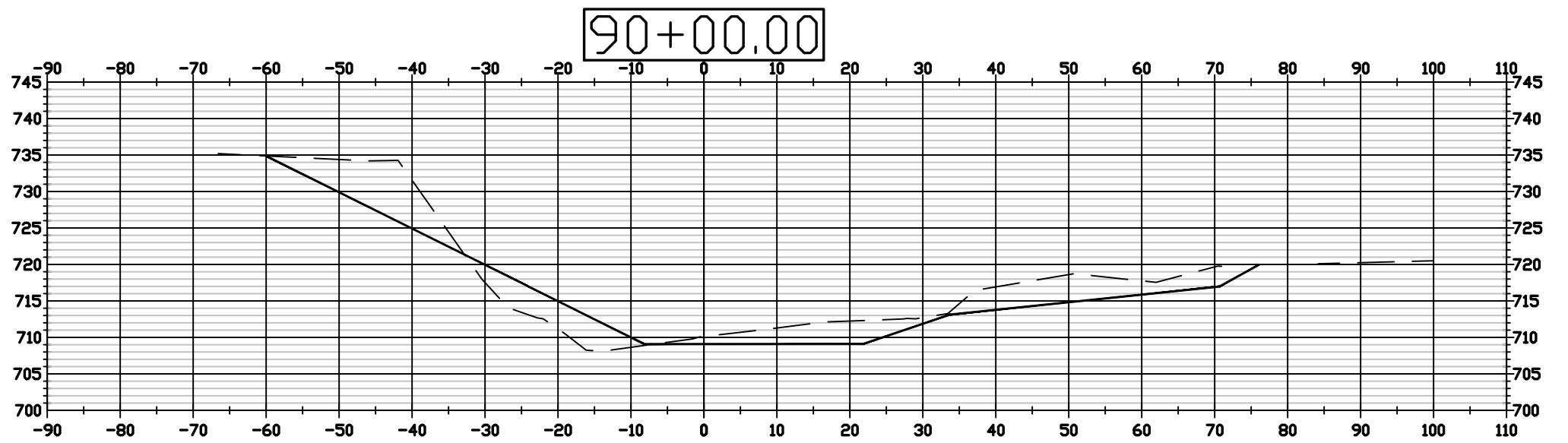
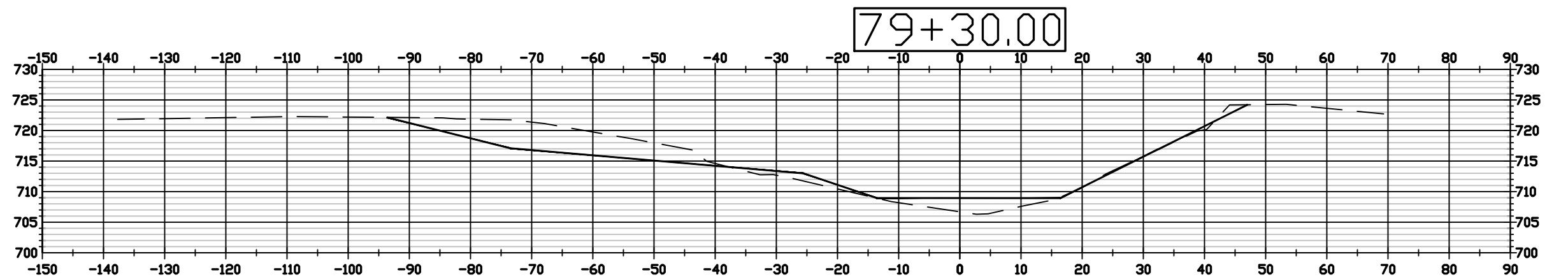
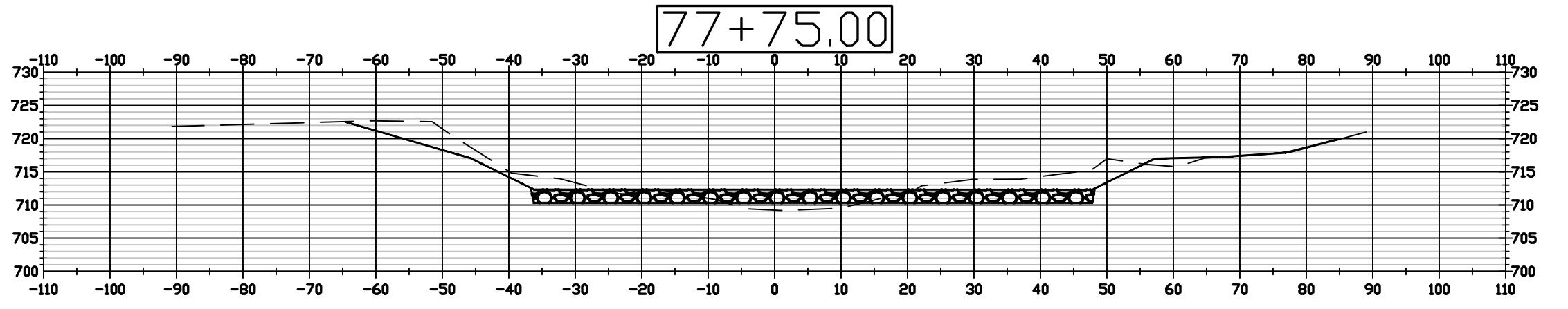
Yellow River Bank Reconstruction and Sediment Mitigation

Kankakee River Basin and Yellow River Basin Development

Starke and Marshall Counties, Indiana



BY						
DESCRIPTION						
DATE						
#						
<p>ROSS A. ST. CLAIR REGISTERED No. PE11900351 STATE OF INDIANA PROFESSIONAL ENGINEER <i>Ross A. St. Clair</i> 06/24/2021</p>						
DATE	JUNE 2021					
DRAWN	COD					
DESIGNED	RAS					
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PROJECT #	J19Z500500					
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www.cardno.com

EXISTING VS PROPOSED SECTIONS

Yellow River Bank Reconstruction and Sediment Mitigation
Kankakee River Basin and Yellow River Basin Development Commission
Starke and Marshall Counties, Indiana

BY _____



DATE	JUNE 2021
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DESIGNED	RAS
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PROJECT #	J19Z50050

SHEET TITLE	SECTIONS
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LAND USE #	_____
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- GENERAL NOTES**
1. COMMISSION SHALL SECURE LANDOWNER PERMISSIONS FOR ACCESS IN ADVANCE OF CONSTRUCTION.
 2. ALL IMPACTS SHOWN HERE ARE TEMPORARY. ALL ACCESS PATHS AND STOCKPILE AREAS WILL BE SEDED AND/OR RESTORED TO PREPROJECT CONDITION.
 3. TEMPORARY STREAM CROSSING AT INSTALLED CONSTRUCTED RIFFLES.

LEGEND

- EXISTING GRADE
- DRAINAGE FLOW
- POTENTIAL ACCESS PATH
- POTENTIAL STOCKPILE AREA
- TEMPORARY STREAM CROSSING

PLAN VIEW
SCALE: 1" = 200'
0 100 200 Feet



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SITE ACCESS & TEMPORARY IMPACTS

Yellow River Bank Reconstruction and Sediment Mitigation

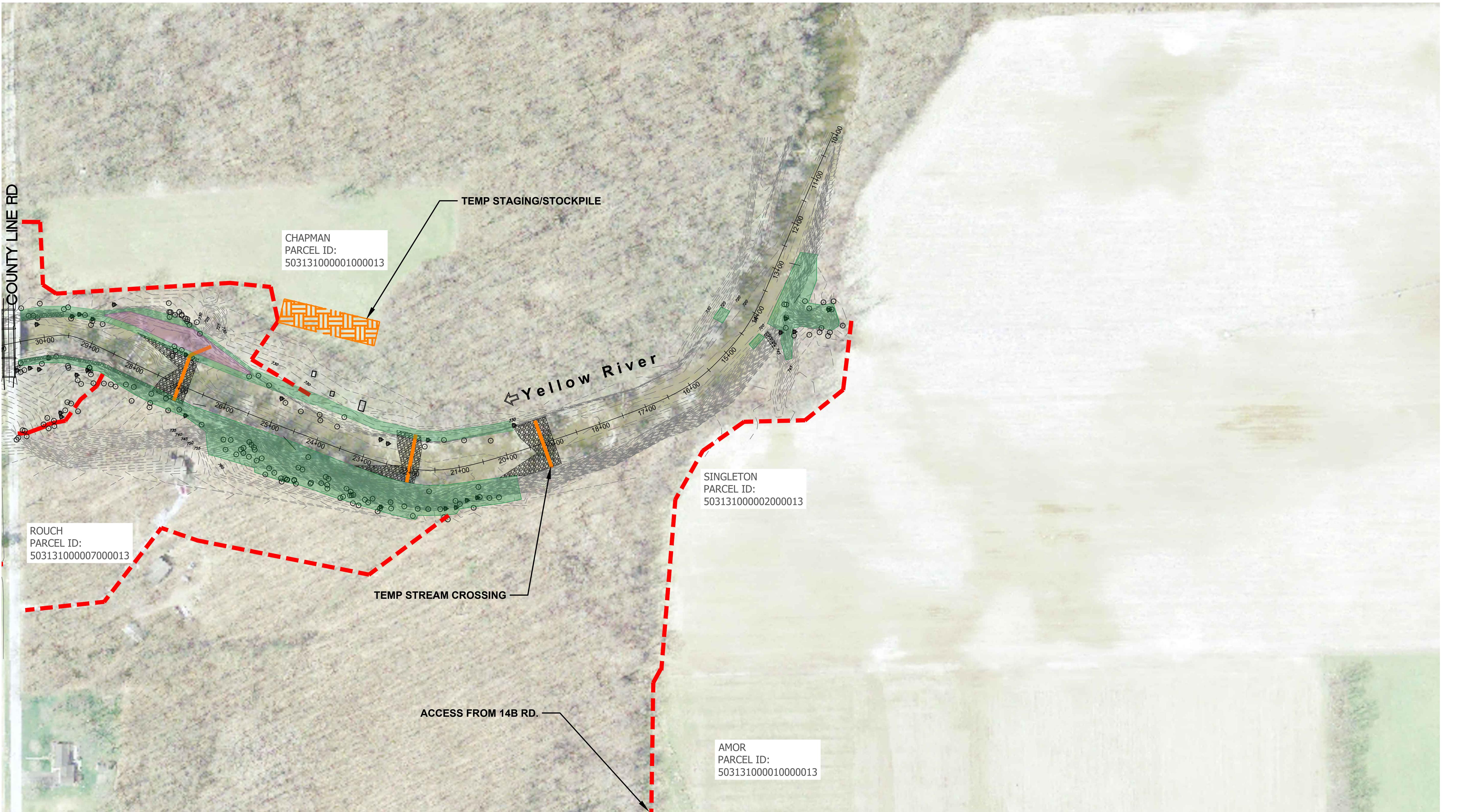
Kankakee River Basin and Yellow River Basin Development Commission

Starke and Marshall Counties, Indiana

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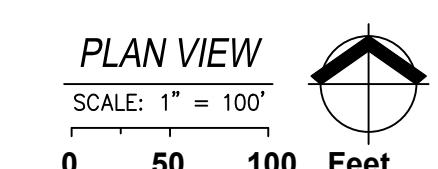
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GENERAL NOTES

1. THE COMMISSION SHALL SECURE LANDOWNER PERMISSIONS FOR ACCESS IN ADVANCE OF CONSTRUCTION.
2. ALL IMPACTS SHOWN HERE ARE TEMPORARY. ALL ACCESS PATHS AND STOCKPILE AREAS WILL BE SEEDED AND/OR RESTORED TO PREPROJECT CONDITION.
3. GRADING LIMITS REPRESENT PERMANENT IMPACTS AND INCLUDED FOR REFERENCE.
4. TEMPORARY STREAM CROSSING AT INSTALLED CONSTRUCTED RIFFLES.



LEGEND

-  EXISTING GRADE
 -  DRAINAGE FLOW
 -  POTENTIAL ACCESS PATH
 -  POTENTIAL STOCKPILE AREA
 -  TEMPORARY STREAM CROSSING
 -  PROPOSED BANK GRADING
 -  PROPOSED INSIDE FLOODPLAIN GRADING

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SHEET TITLE
10+00 TO 31+00

SHEET NUMBER
16

LAND USE # ----

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Yellow River Bank Reconstruction and Sediment Mitigation

Kankakee River Basin and Yellow River Basin Development Starke and Marshall Counties Indiana

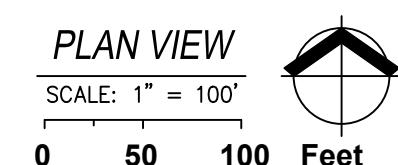
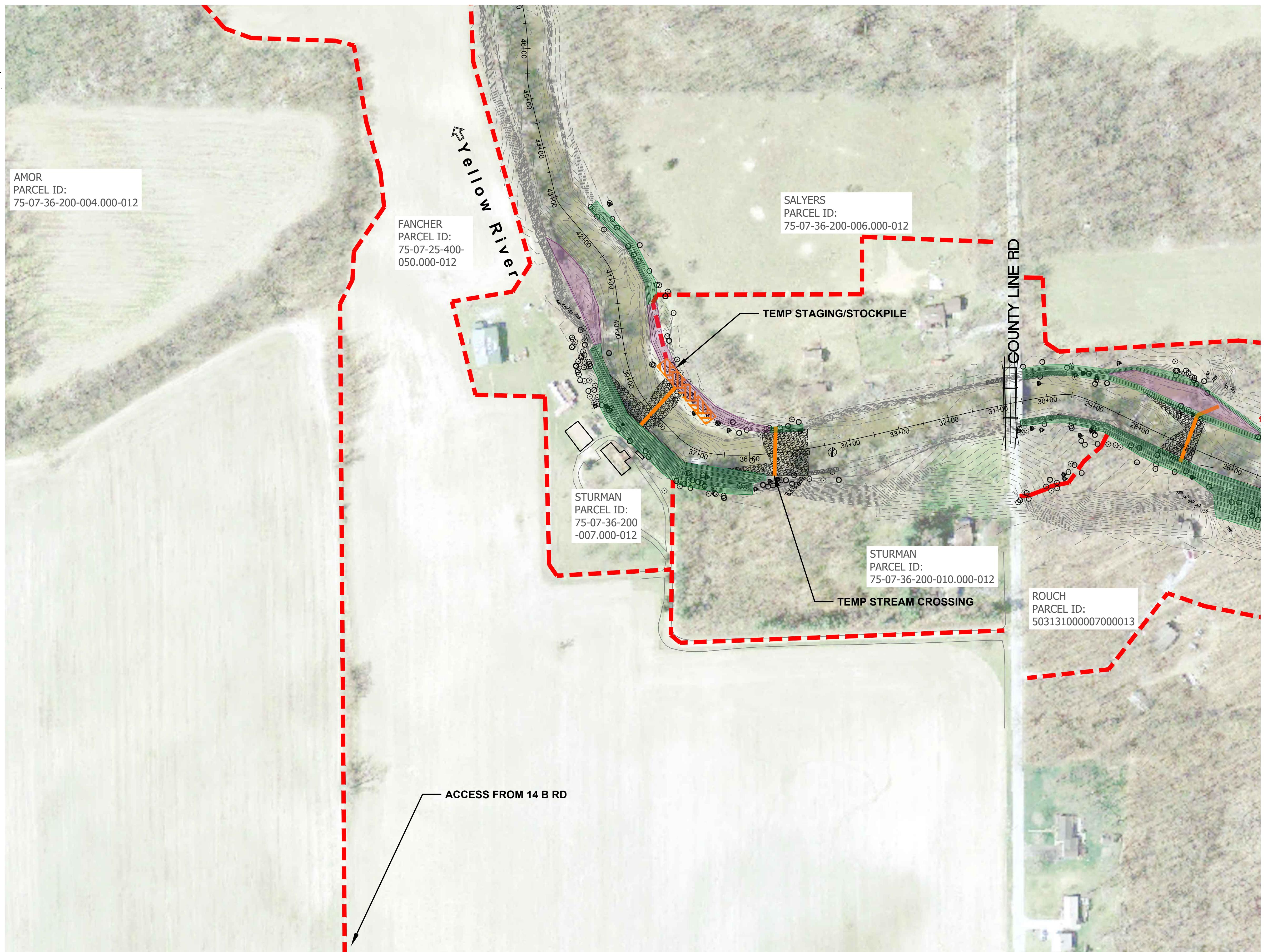
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GENERAL NOTES

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LEGEND

- EXISTING GRADE
 - DRAINAGE FLOW
 - POTENTIAL ACCESS PATH
 - POTENTIAL STOCKPILE AREA
 - TEMPORARY STREAM CROSSING
 - PROPOSED BANK GRADING
 - PROPOSED INSIDE FLOODPLAIN GRADING



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SIE ACCESS & TEMPORARY IMPACIS
W W P P S S I S I S I S I S

Yellow River Bank Reconstruction and Sediment Mitigation

Starke and Marshall Counties, Indiana

11900351

Ron & Clark
06/24/2021

DATE	JUNE 2021
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PROJECT #	J19Z500500

0 TO 46+50

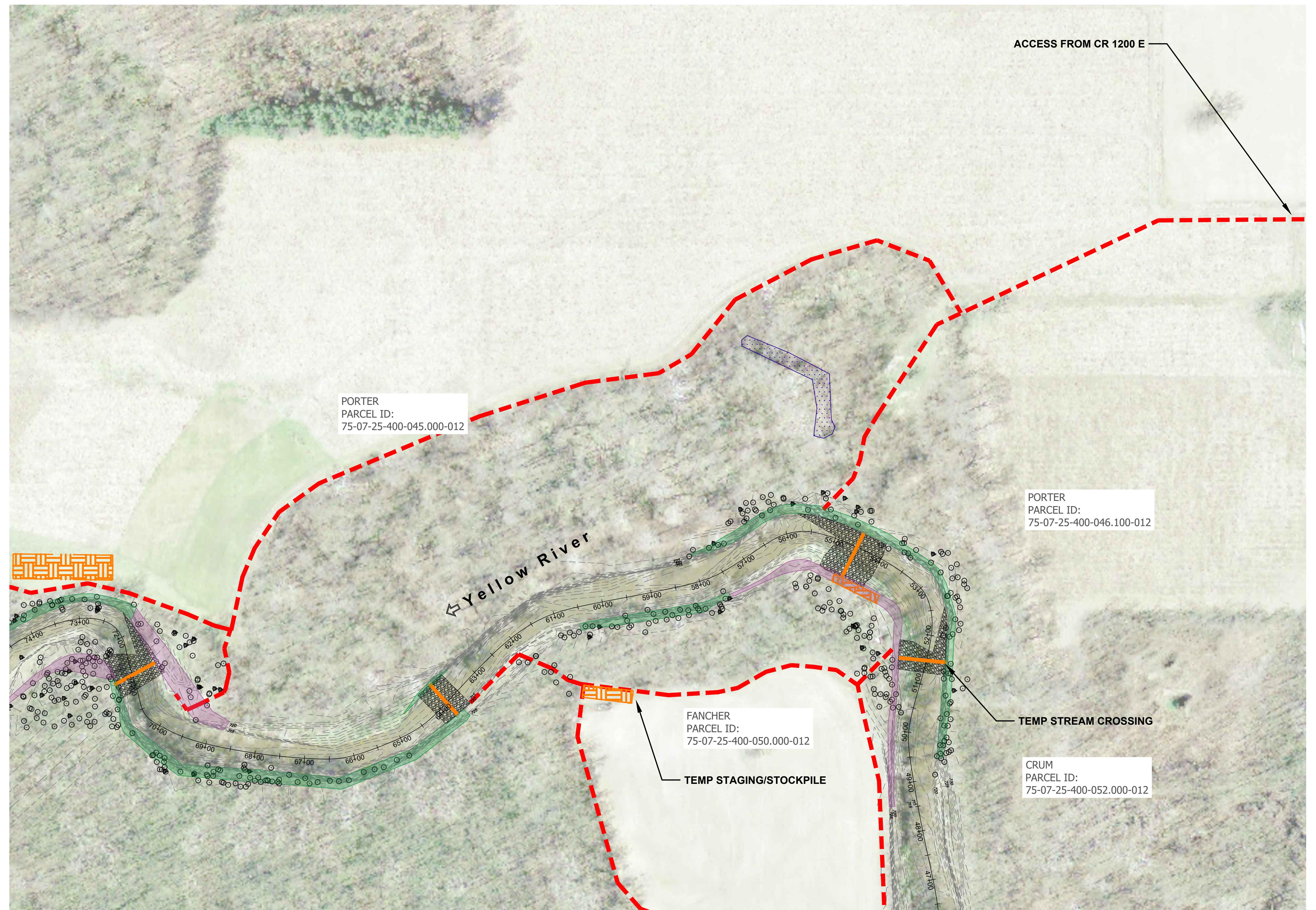
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GENERAL NOTES

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4. TEMPORARY STREAM CROSSING AT INSTALLED CONSTRUCTED RIFFLES.

LEGEND

- EXISTING GRADE
- DRAINAGE FLOW
- POTENTIAL ACCESS PATH
- POTENTIAL STOCKPILE AREA
- TEMPORARY STREAM CROSSING
- PROPOSED BANK GRADING
- PROPOSED INSIDE FLOODPLAIN GRADING



BID SET

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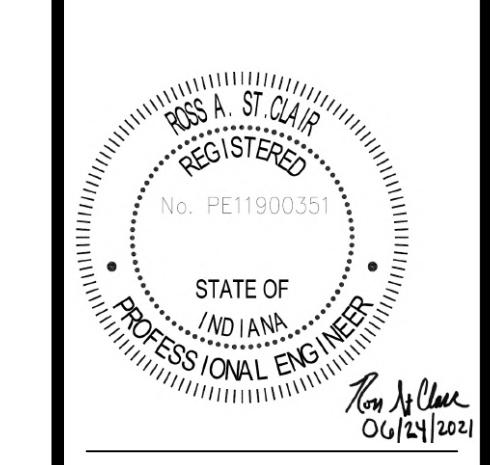
SITE ACCESS & TEMPORARY IMPACTS

Yellow River Bank Reconstruction and Sediment Mitigation

Kankakee River Basin and Yellow River Basin Development Commission

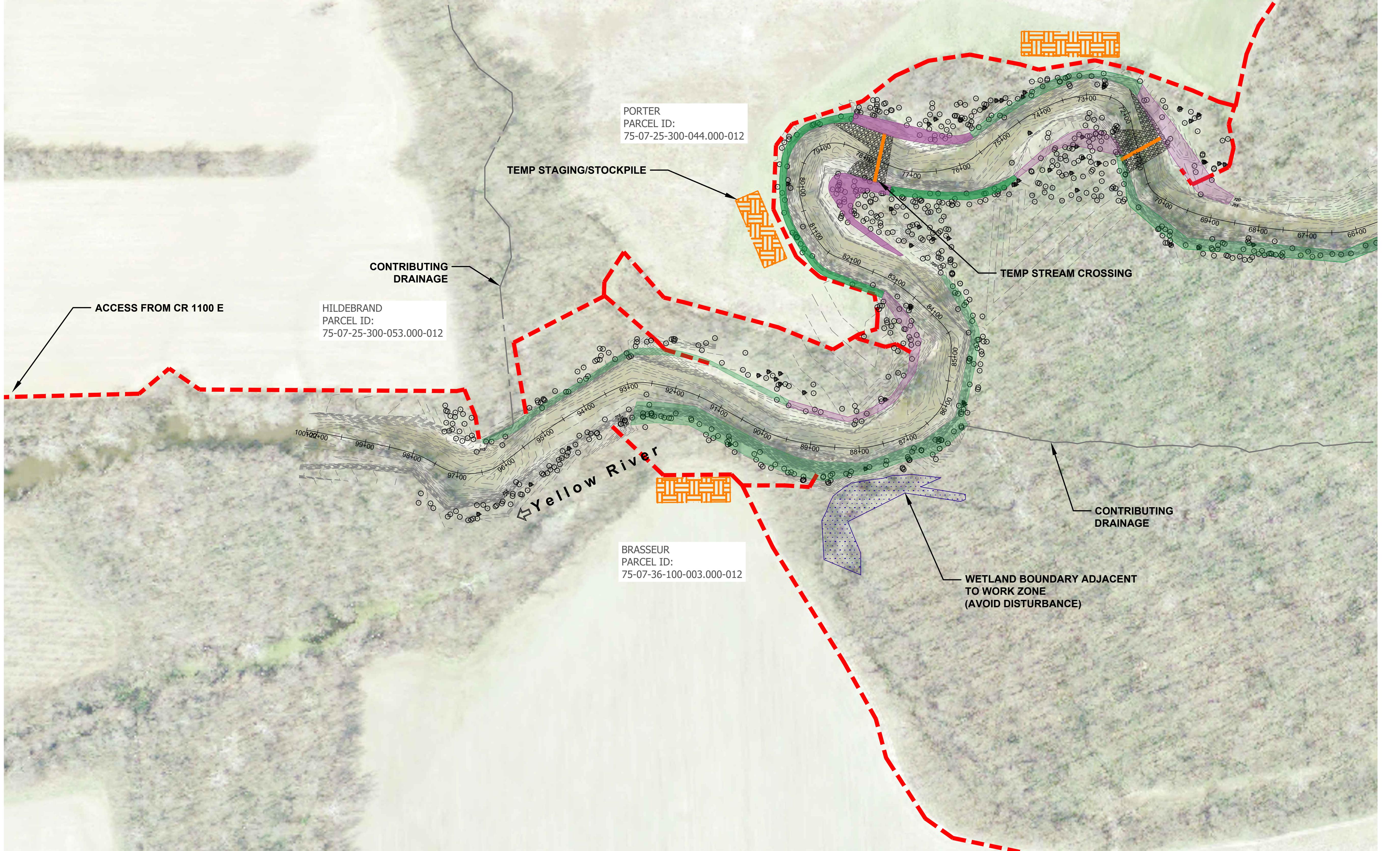
Starke and Marshall Counties, Indiana

#	DATE	DESCRIPTION	BY



DATE	JUNE 2021
DRAWN	COD
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PROJECT #	J19Z50050

46+50 TO 66+00
SHEET NUMBER
LAND USE #



BID SET

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SITE ACCESS & TEMPORARY IMPACTS

Yellow River Bank Reconstruction and Sediment Mitigation

Kankakee River Basin and Yellow River Basin Development Commission

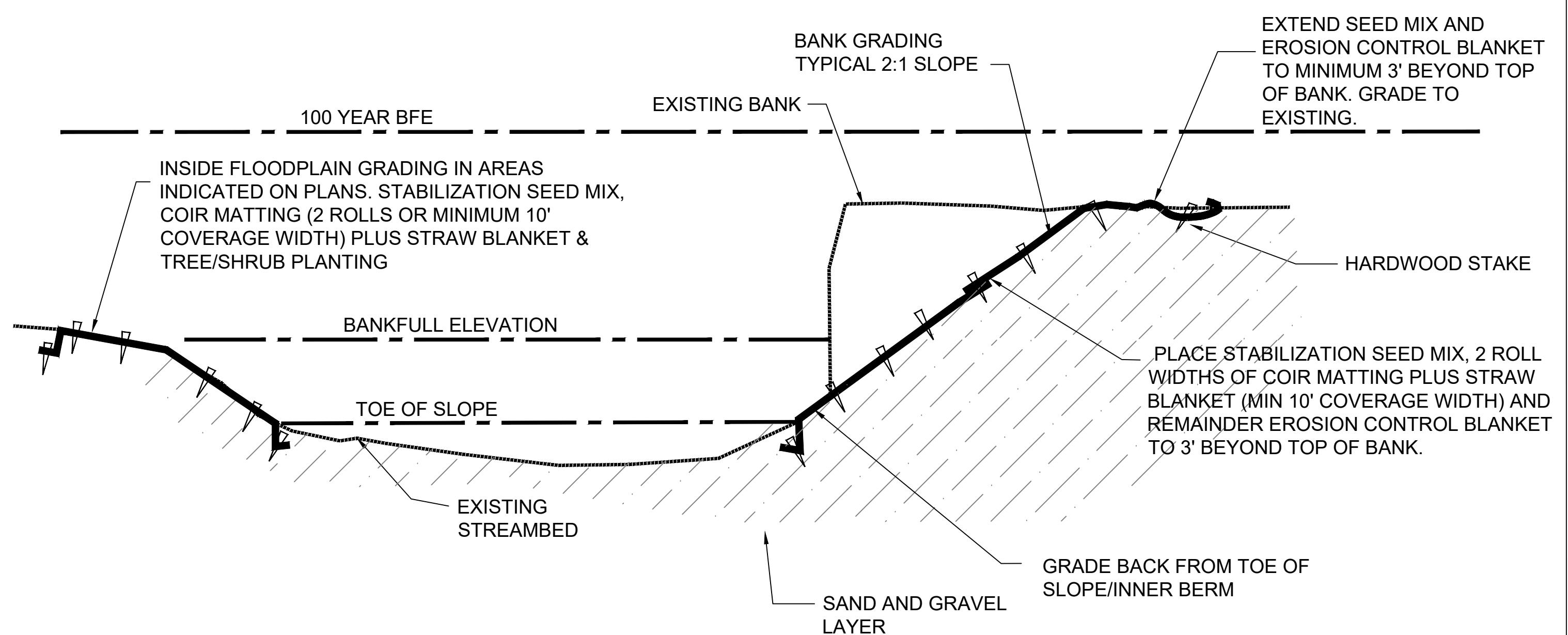
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PROJECT #	J19Z50050
SHEET TITLE	66+00 TO 100+00
SHEET NUMBER	

LAND USE #

DETAILS - BANK GRADING AND ECB

 Yellow River Bank Reconstruction and Sediment Mitigation
Starke and Marshall Counties, Indiana

1 BANK GRADING - TYPE 1

NOT TO SCALE

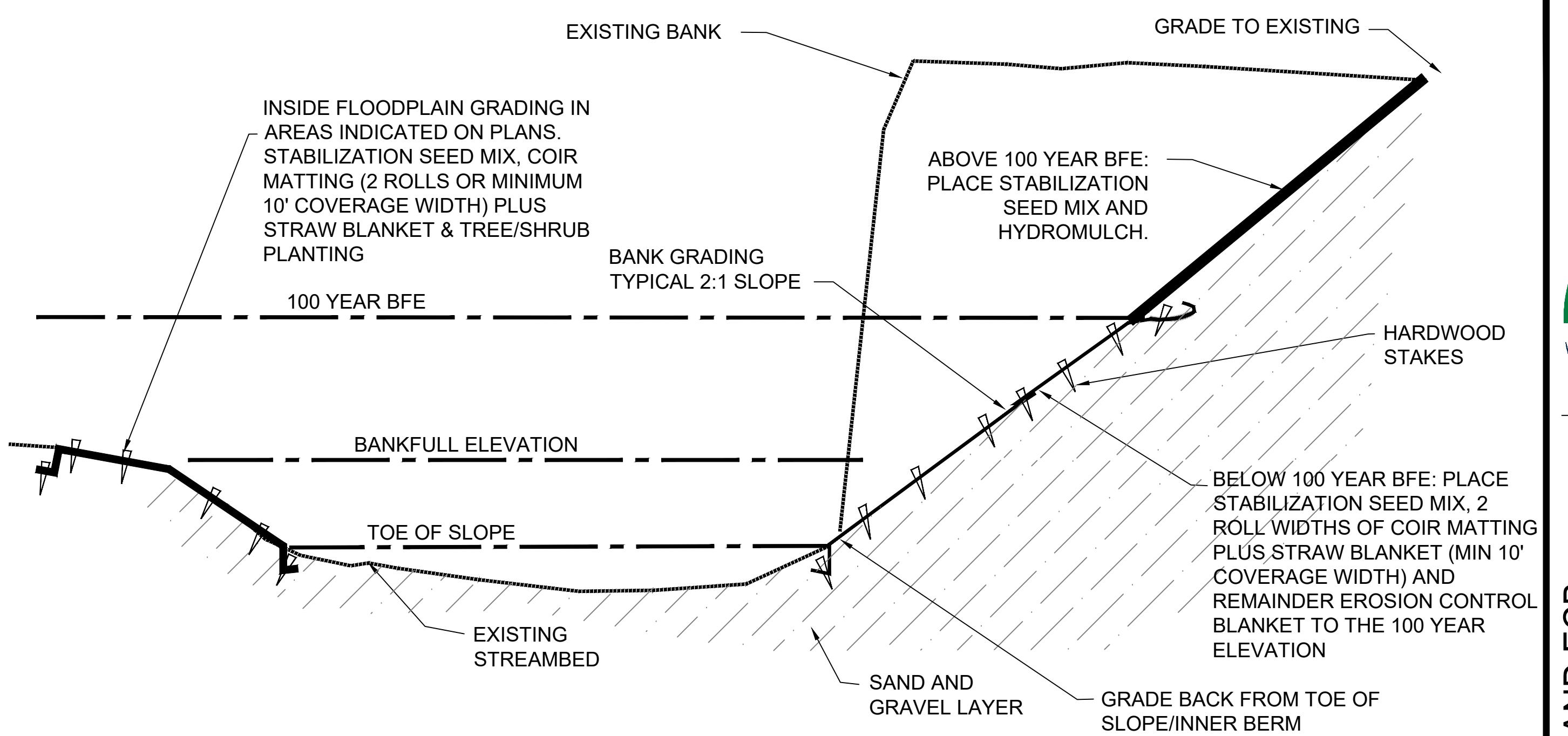
Stabilization Seed Mix		
Botanic Name	Common Name	PLS oz/ac
Avena sativa	Common Oat	640
Bromus latiglumis	Early-leaf Brome	1
Carex brevior	Plains Oval Sedge	1.5
Cinna arundinacea	Common Wood Reed	1
Elymus canadensis	Canada Wild Rye	80
Elymus virginicus	Virginia Wild Rye	80
Glyceria striata	Fowl Manna Grass	2
Leersia oryzoides	Rice Cut Grass	2.5
Monarda fistulosa	Wild Bergamot	1.5
Panicum virgatum	Switch Grass	8
Rudbeckia hirta	Black-Eyed Susan	3.5
Rudbeckia laciniata	Wild Golden Glow	1.5
Verbesina alternifolia	Wingstem	2.5
Verbena urticifolia	Hairy White Vervain	1
		826

PLANTING NOTES:

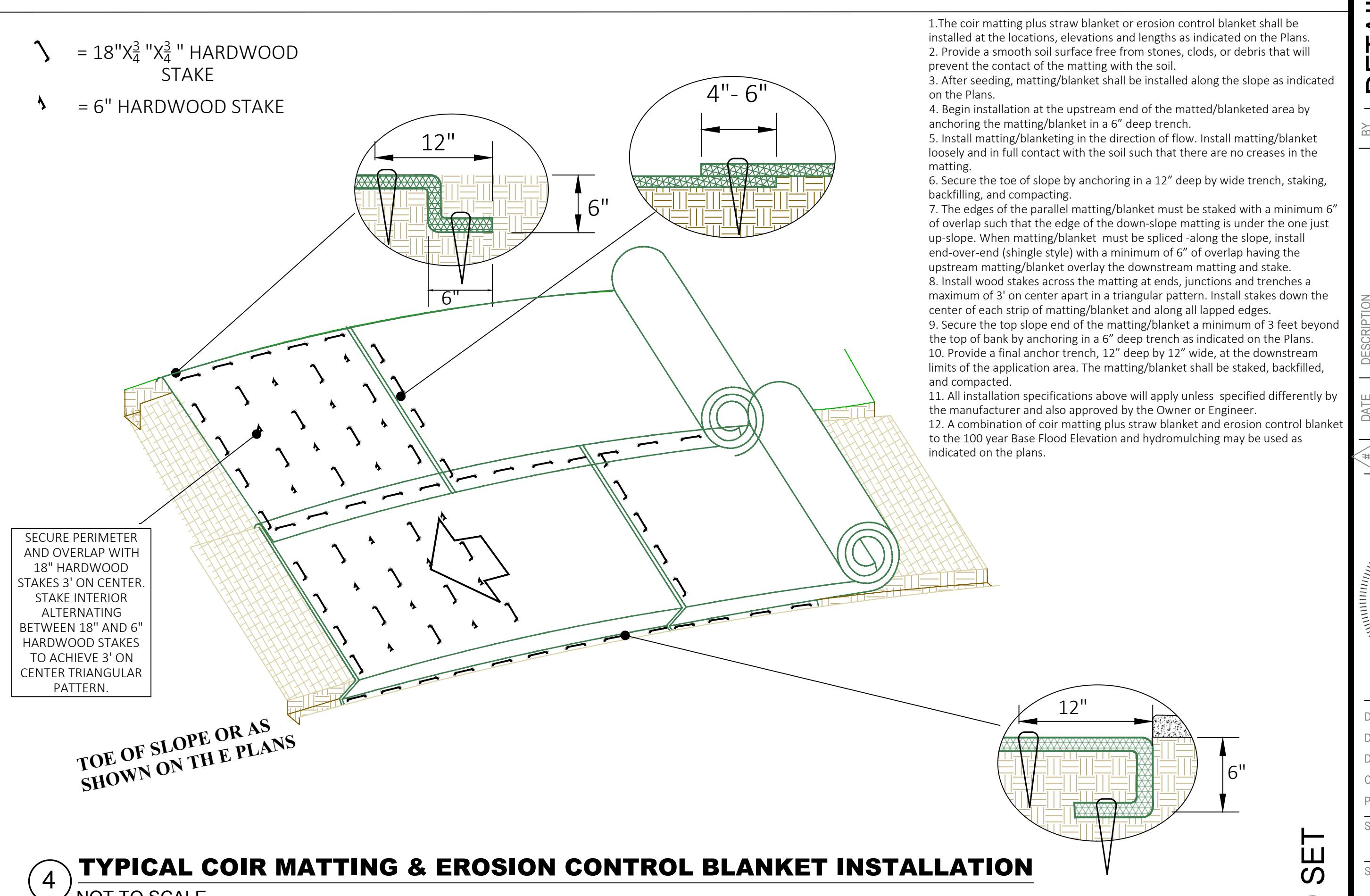
1. ALL DISTURBED AREAS TO BE SEADED WITH STABILIZATION SEED MIX. SEE DETAILS ABOVE FOR TYPICAL BANK GRADING AND INSTALLATION OF EROSION CONTROL BLANKET AND/OR HYDROMULCH.
2. INSIDE FLOODPLAIN GRADING AREAS (VIOLET HATCH) TO BE PLANTED WITH BARE ROOT TREES/SHRUBS AT A RATE OF 300/ACRE.
3. BANK GRADING AREAS (GREEN HATCH) TO BE PLANTED WITH SINGLE ROW OF TREES/SHRUBS 12'-13' O.C. AND PLANTED 3'-5' BEYOND TOP OF BANK.

Bank Grading Areas (Green Hatch)			
Trees & Shrubs			
Scientific Name	Common Name	TYPE	# trees
Acer saccharinum	sugar maple		50
Carya cordiformis	bitternut hickory		50
Celtis occidentalis	hackberry		75
Cercis canadensis	eastern redbud	Bareroot	75
Juglans nigra	black walnut		100
Plantanus occidentalis	american sycamore		100
Quercus macrocarpa	bur oak		50
Total Quantity for Bank Grading Areas - MARSHALL CTY			150
Total Quantity for Bank Grading Areas - STARKE CTY			350

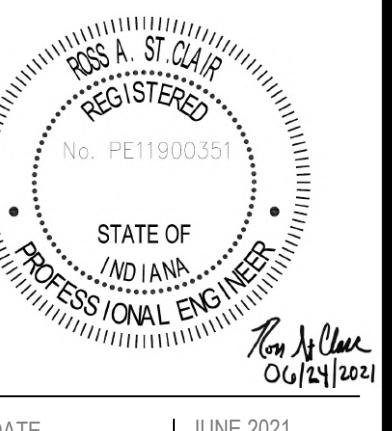
Inside Floodplain Grading Areas (Violet Hatch)			
Trees & Shrubs			
Scientific Name	Common Name	TYPE	# per acre
Acer saccharinum	silver maple		35
Carya cordiformis	bitternut hickory		35
Celtis occidentalis	hackberry		35
Cercis canadensis	eastern redbud	Bareroot	35
Lindera benzoin	spicebush		35
Plantanus occidentalis	american sycamore		35
Quercus alba	white Oak		35
Staphylea trifolia	bladdernut		35
Tilia americana	basswood		35
Total per Acre			325
Total Quantity for Floodplain Grading Areas - MARSHALL CTY			110
Total Quantity for Floodplain Grading Areas - STARKE CTY			380


2 BANK GRADING - TYPE 2

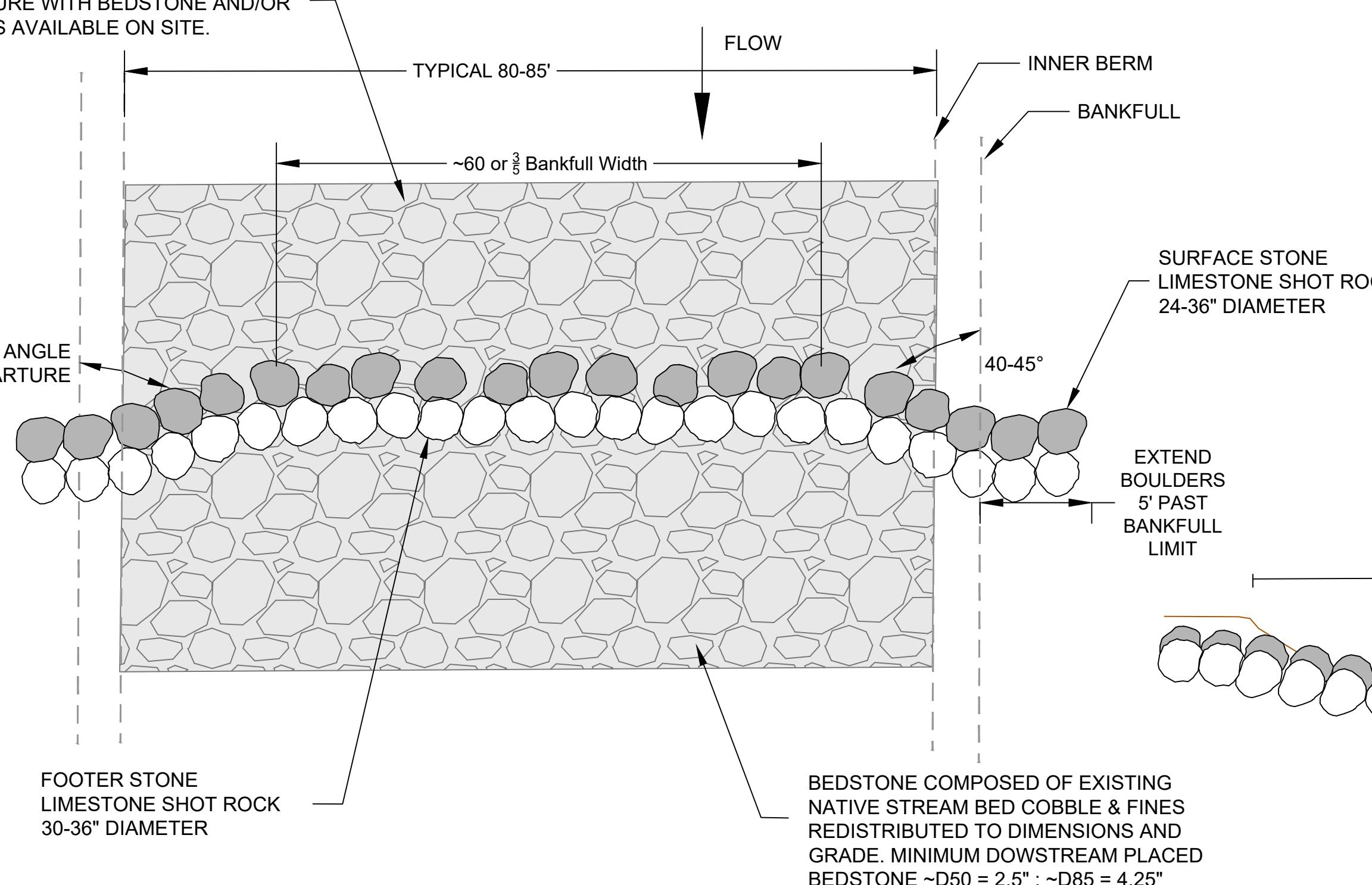
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4 TYPICAL COIR MATTING & EROSION CONTROL BLANKET INSTALLATION

NOT TO SCALE

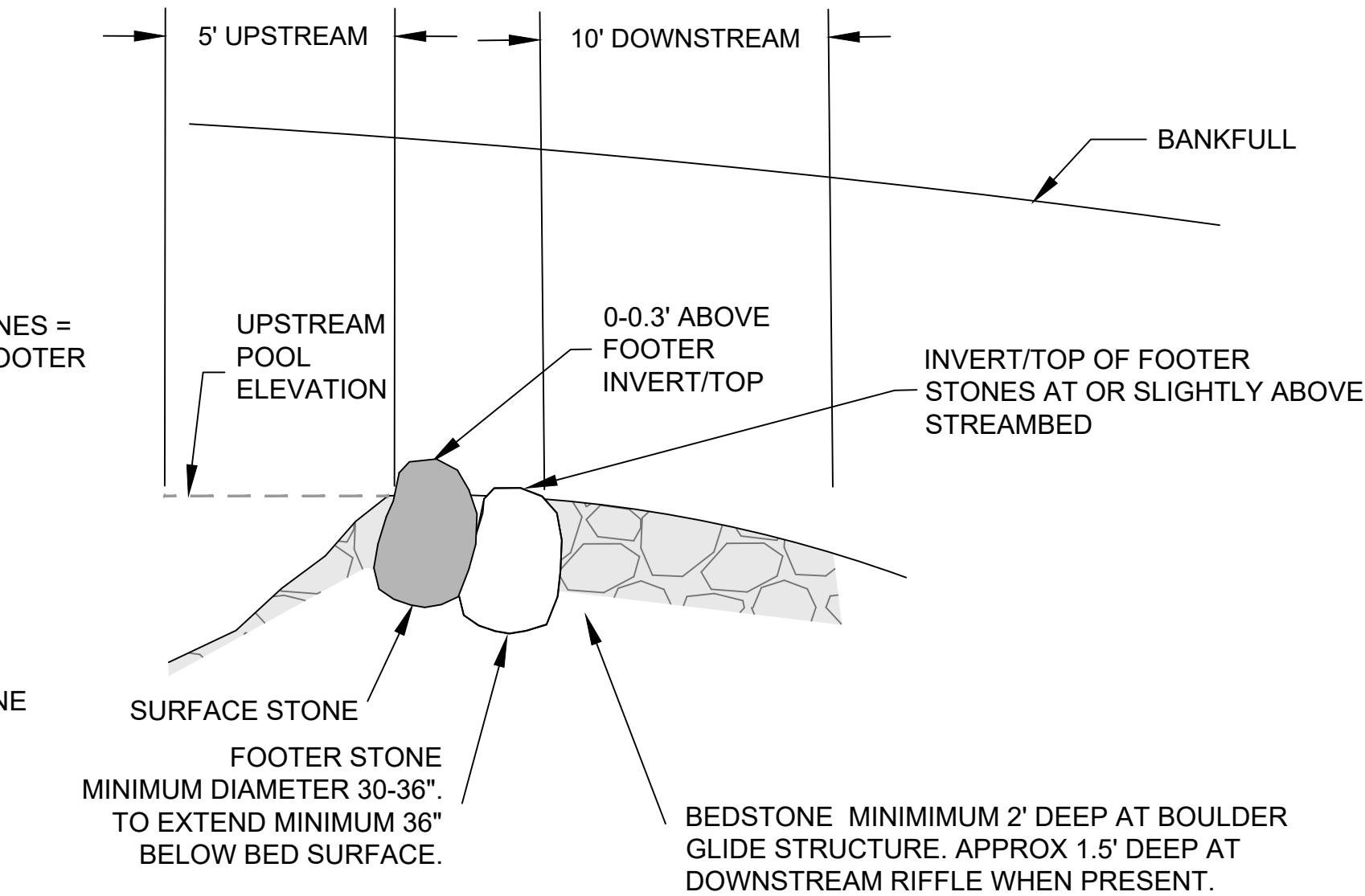
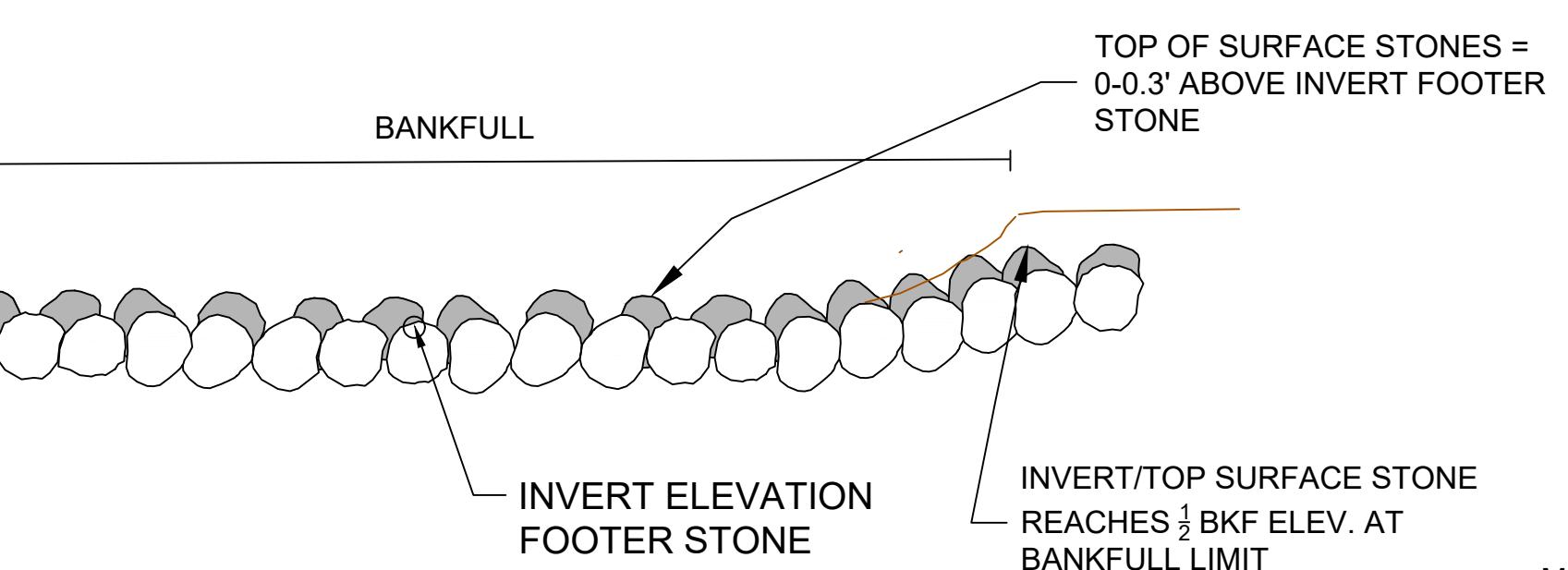

 DATE | JUNE 2021
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PROJECT # | J19Z50050
SHEET TITLE | DETAILS
SHEET NUMBER |
LAND USE # |
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BACKFILL UPSTREAM AREA OF
STRUCTURE WITH BEDSTONE AND/OR
GRAVELS AVAILABLE ON SITE.



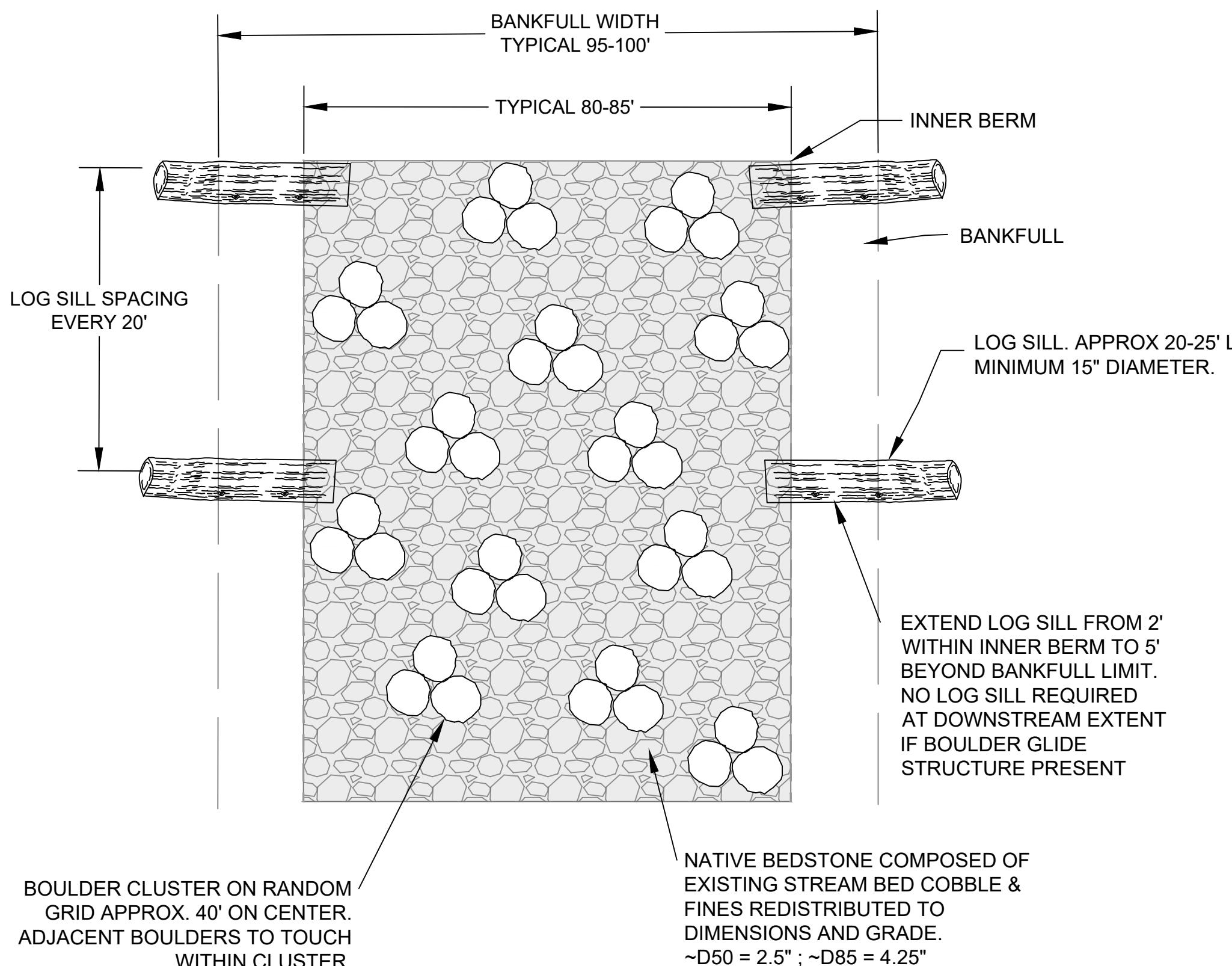
NOTES:

1. FOR BEDSTONE, UTILIZE EXISTING COBBLES AND GRAVELS TO REDISTRIBUTE BED MATERIAL TO THE GRADE AND DIMENSIONS SPECIFIED ON THE PLANS AND DETAIL. MINIMUM (~D50 = 2.5"; ~D85 = 4.25") FOR MATERIAL PLACED DOWNSTREAM OF THE BOULDER STRUCTURE. UPSTREAM PLACED BEDSTONE MAY CONTAIN GRAVELS AND FINES MINIMUM (~D50 = 0.75", ~D85 = 1.25"). NO MATERIAL IMPORT PROPOSED FOR UPSTREAM AREA.
2. IF INSUFFICIENT QUANTITY OF BEDSTONE IS AVAILABLE ON SITE FOR DOWNSTREAM PLACEMENT, AS AGREED UPON BY THE ENGINEER, CONTRACTOR MAY SUBSTITUTE MIXTURE OF 75% INDOT REVETMENT RIPRAP AND 25% ON-SITE GRAVELS/FINES.



5 BOULDER GLIDE STRUCTURE - PLANVIEW

NOT TO SCALE



6 CONSTRUCTED RIFFLE - CROSS SECTION

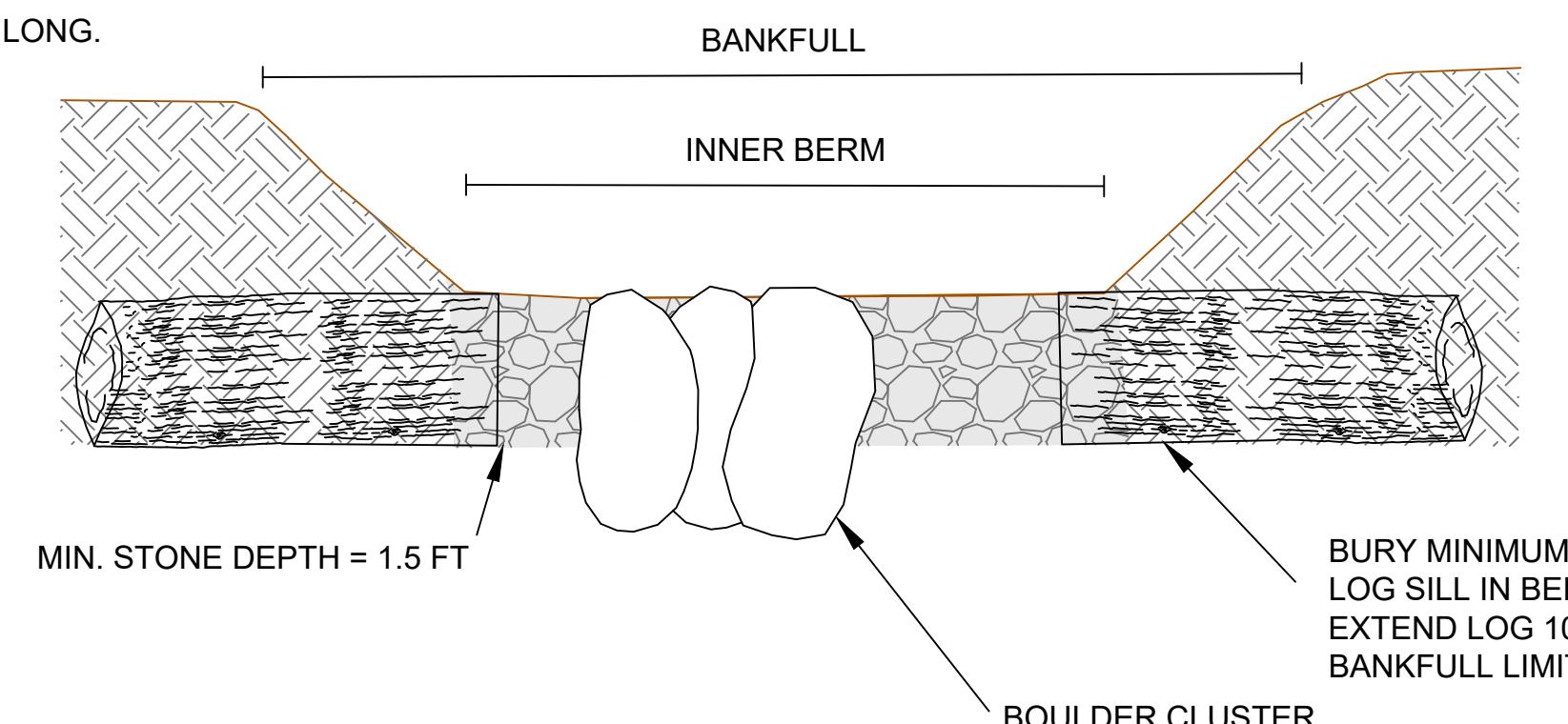
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NOTES:

1. FOR BEDSTONE, UTILIZE EXISTING COBBLES AND FINES (~D50 = 2.5"; ~D85 = 4.25") TO REDISTRIBUTE BED MATERIAL TO THE GRADE AND DIMENSIONS SPECIFIED ON THE PLANS AND DETAIL.
2. IF INSUFFICIENT QUANTITY OF BED STONE IS AVAILABLE ON SITE AS AGREED UPON BY THE ENGINEER, CONTRACTOR MAY SUBSTITUTE MIXTURE OF 75% INDOT REVETMENT RIPRAP AND 25% ON-SITE GRAVELS/FINES.

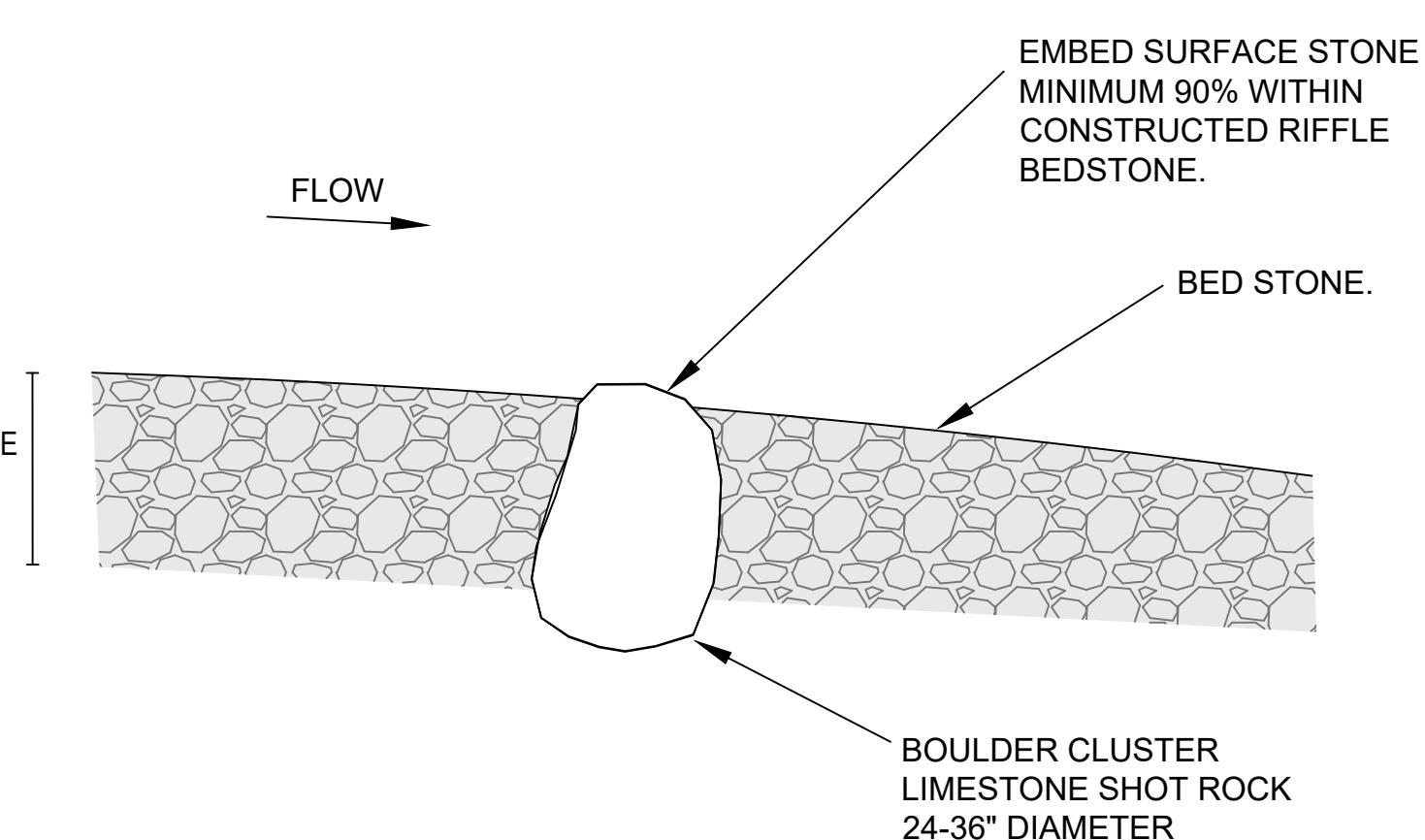
5 BOULDER GLIDE STRUCTURE- CROSS SECTION

NOT TO SCALE

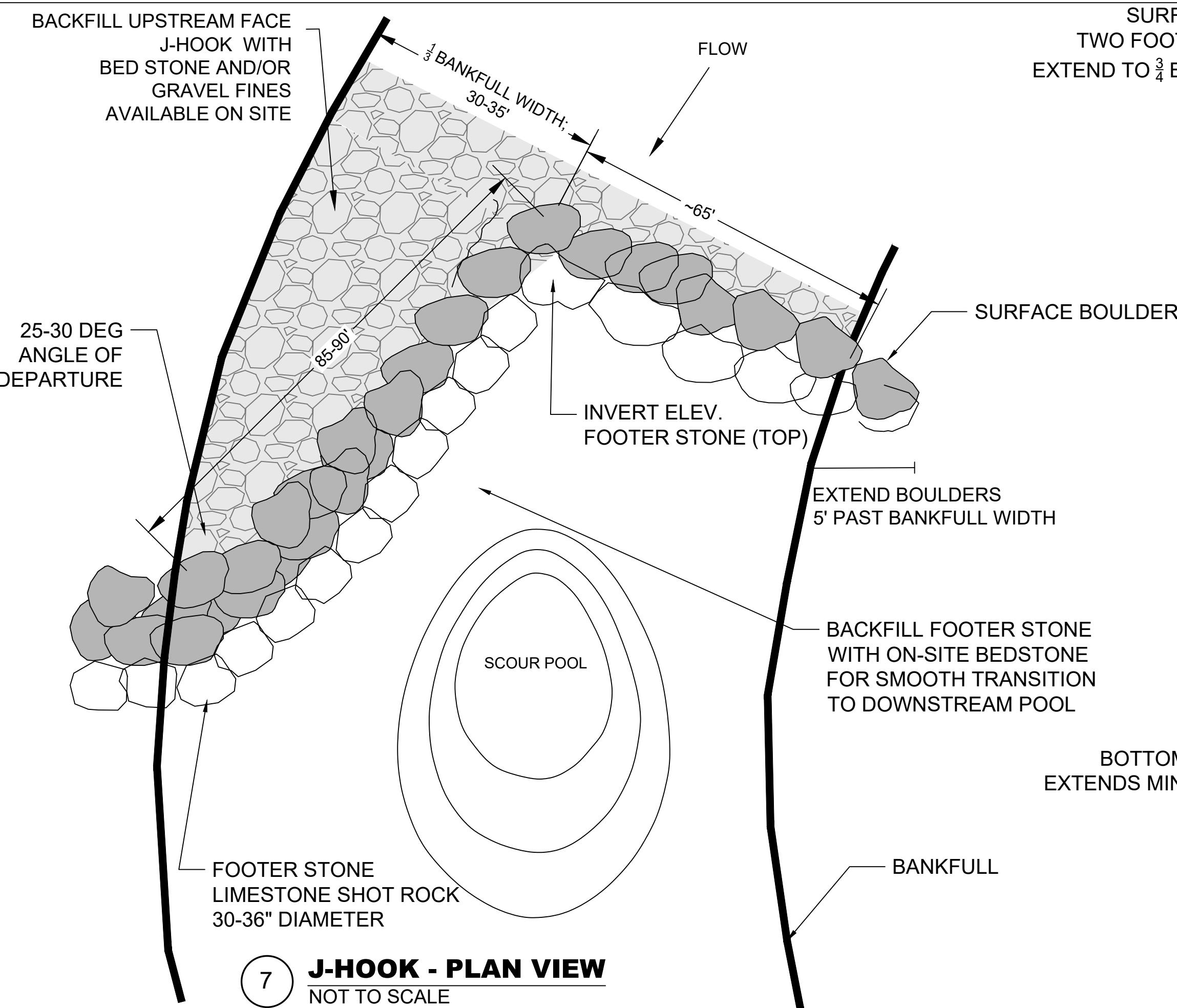


6 CONSTRUCTED RIFFLE - PROFILE

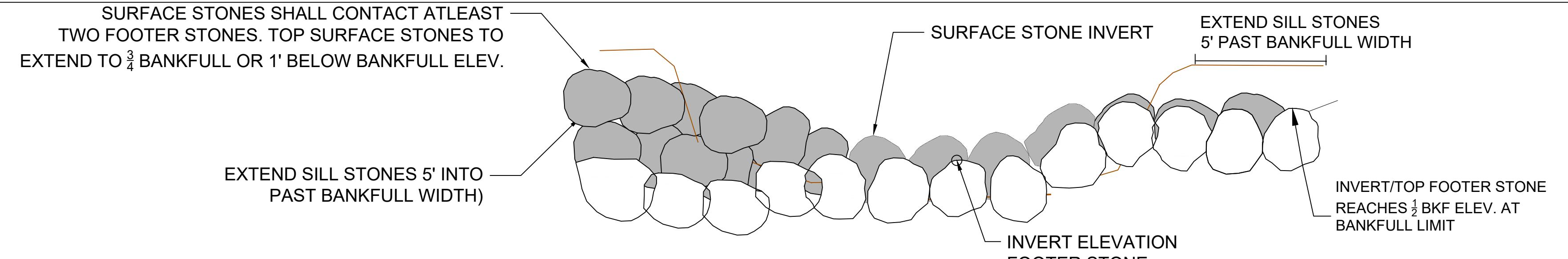
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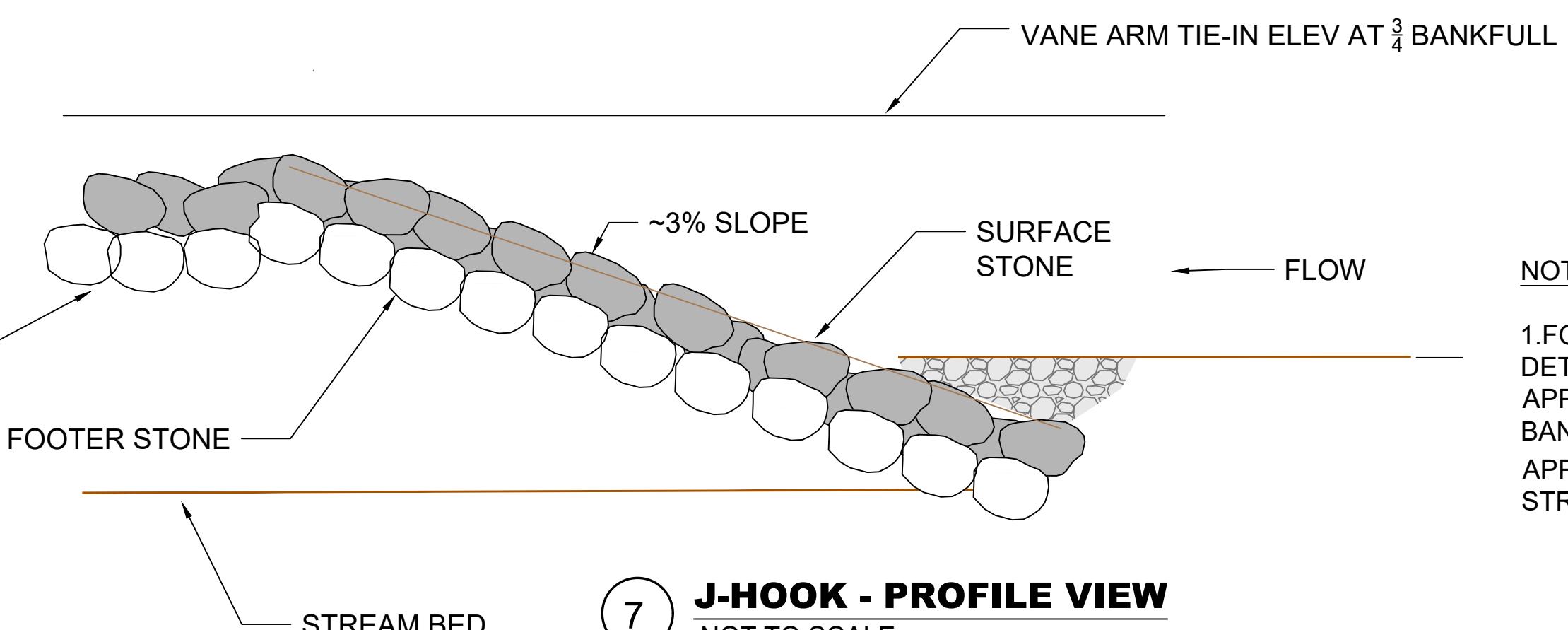
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J-HOOK - PLAN VIEW



J-HOOK VANE - CROSS SECTION VIEW

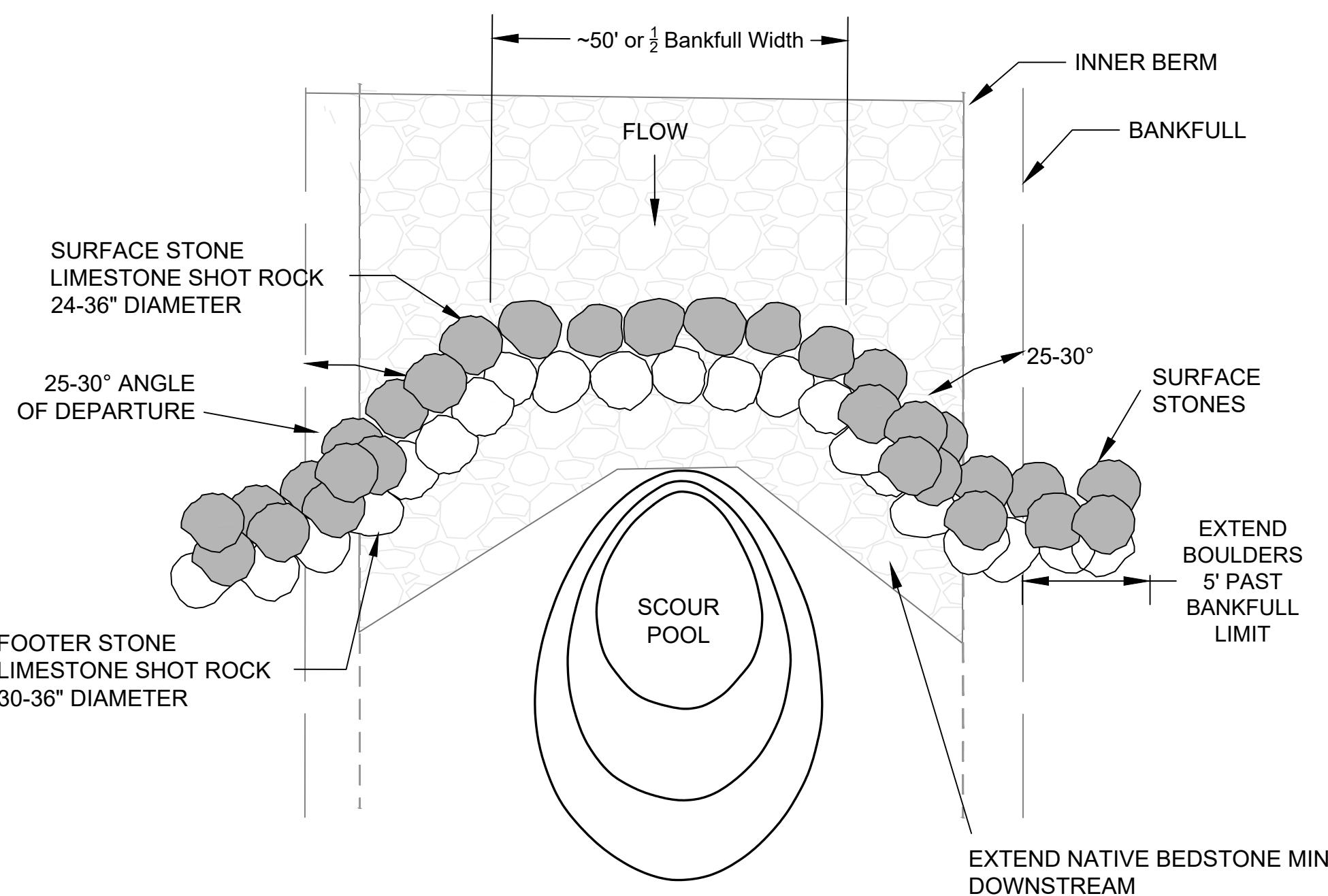


J-HOOK - PROFILE VIEW

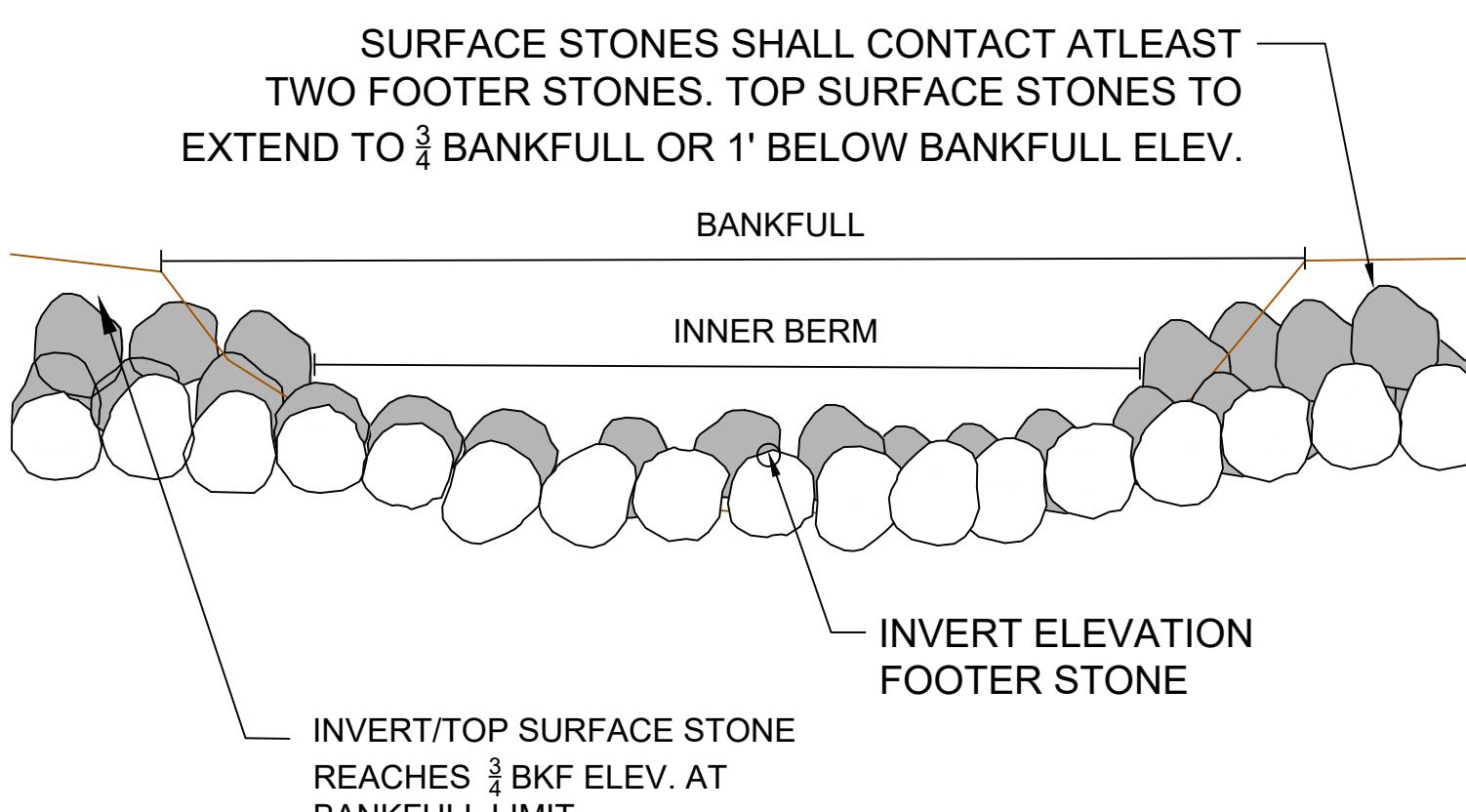
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NOTES:

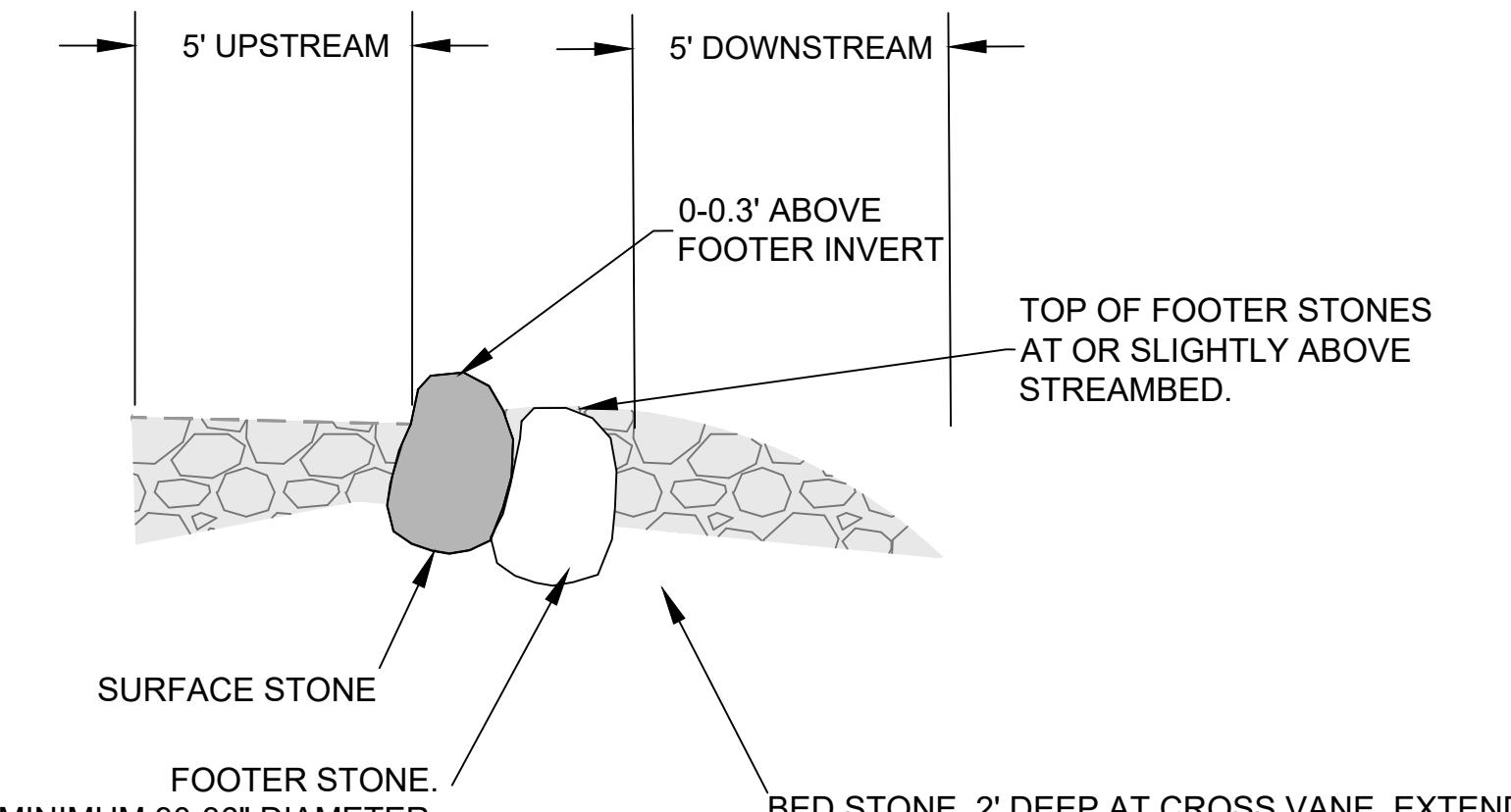
1.FOR ROCK VANE STRUCTURES, THE J-HOOK DETAIL MINUS THE "HOOK" PORTION SHOULD BE APPLIED. ROCK VANE TO BE KEYED INTO BANKFULL AND TERMINATE IN RIVER BOTTOM AT APPROXIMATELY $\frac{1}{3}$ BANKFULL WIDTH. SEE STRICTURES TABLE FOR FURTHER DETAIL



CROSS VANE - PLAN VIEW



CROSS VANE - CROSS SECTION

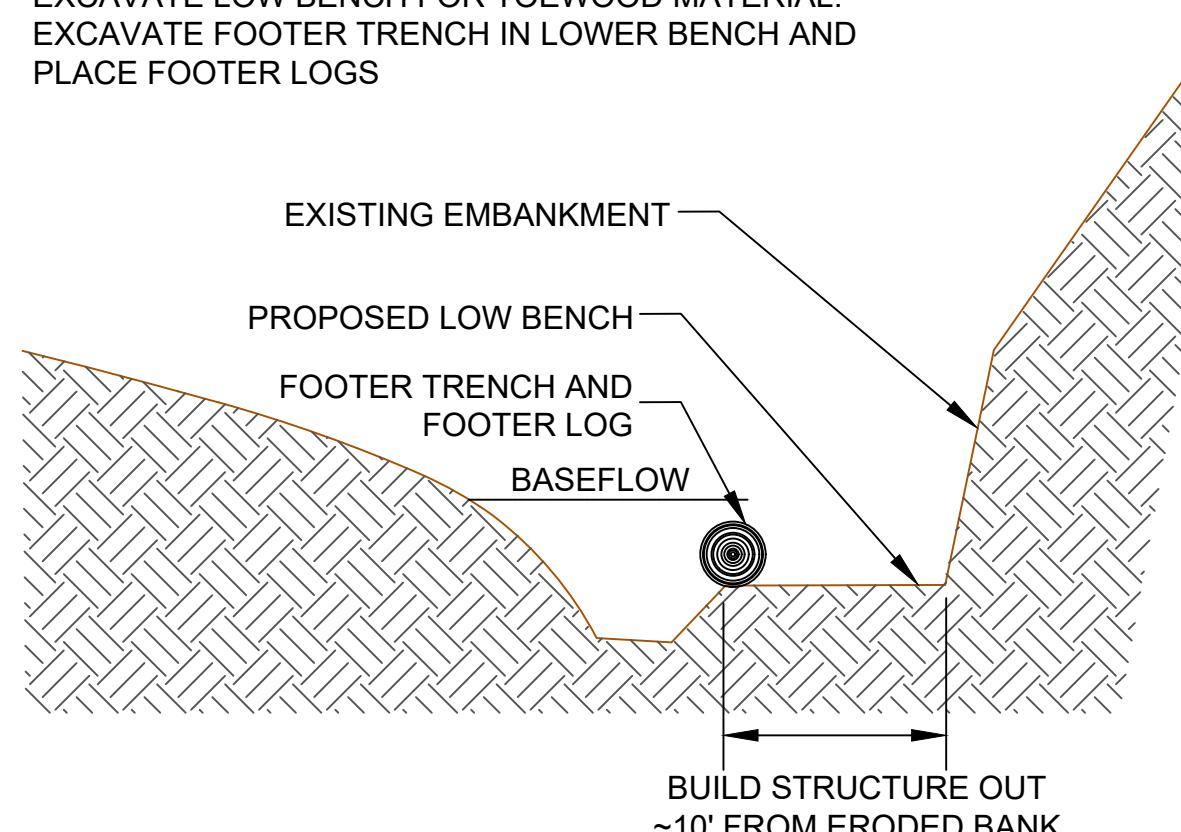


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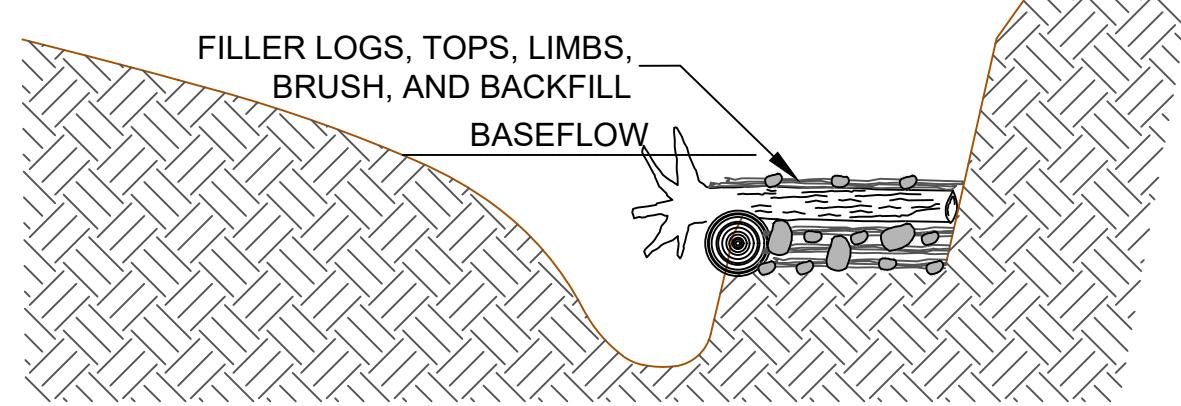
CROSS VANE - PROFILE

STEP 1:

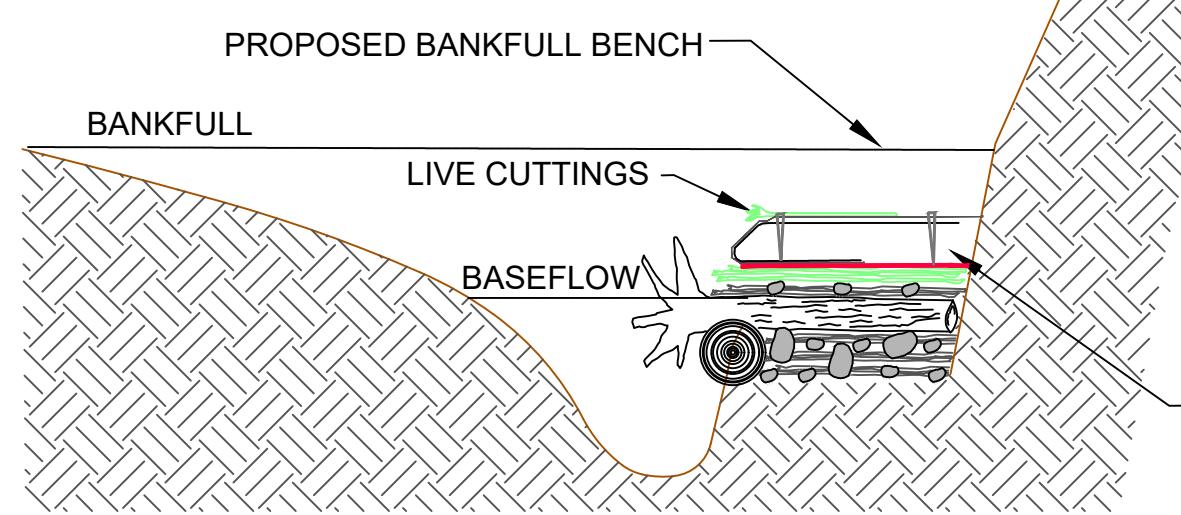
EXCAVATE LOW BENCH FOR TOEWOOD MATERIAL.
EXCAVATE FOOTER TRENCH IN LOWER BENCH AND
PLACE FOOTER LOGS

**SECTION****STEP 3:**

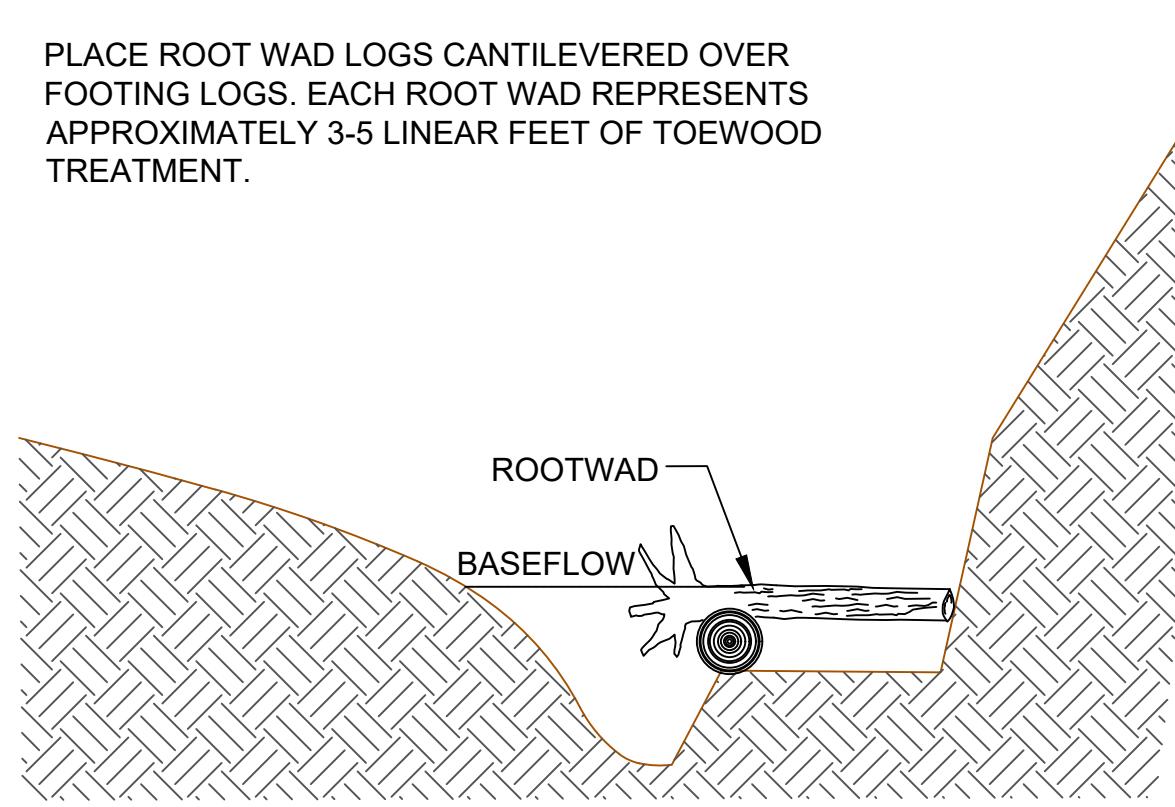
PLACE FILLER MATERIAL (SMALL LOGS, LIMBS, TREE TOPS AND BRUSH) BETWEEN AND ON TOP OF THE ROOT WADS. COMPRESS FILLER MATERIAL WITH EXCAVATOR BUCKET TO MINIMIZE VOID SPACES. THEN PLACE ON-SITE BED STONE MATERIAL (NO IMPORT) TO FURTHER FILL Voids. BED STONE SHOULD COMPOSE APPROXIMATELY 25% OF MATERIAL BELOW ROOT COLLAR. CONTINUE TO BACKFILL WITH FILLER MATERIAL AND BED STONE TO 0.5' ABOVE ROOT COLLAR ELEVATION. COMPACT WITH EXCAVATOR.

**SECTION****STEP 5:**

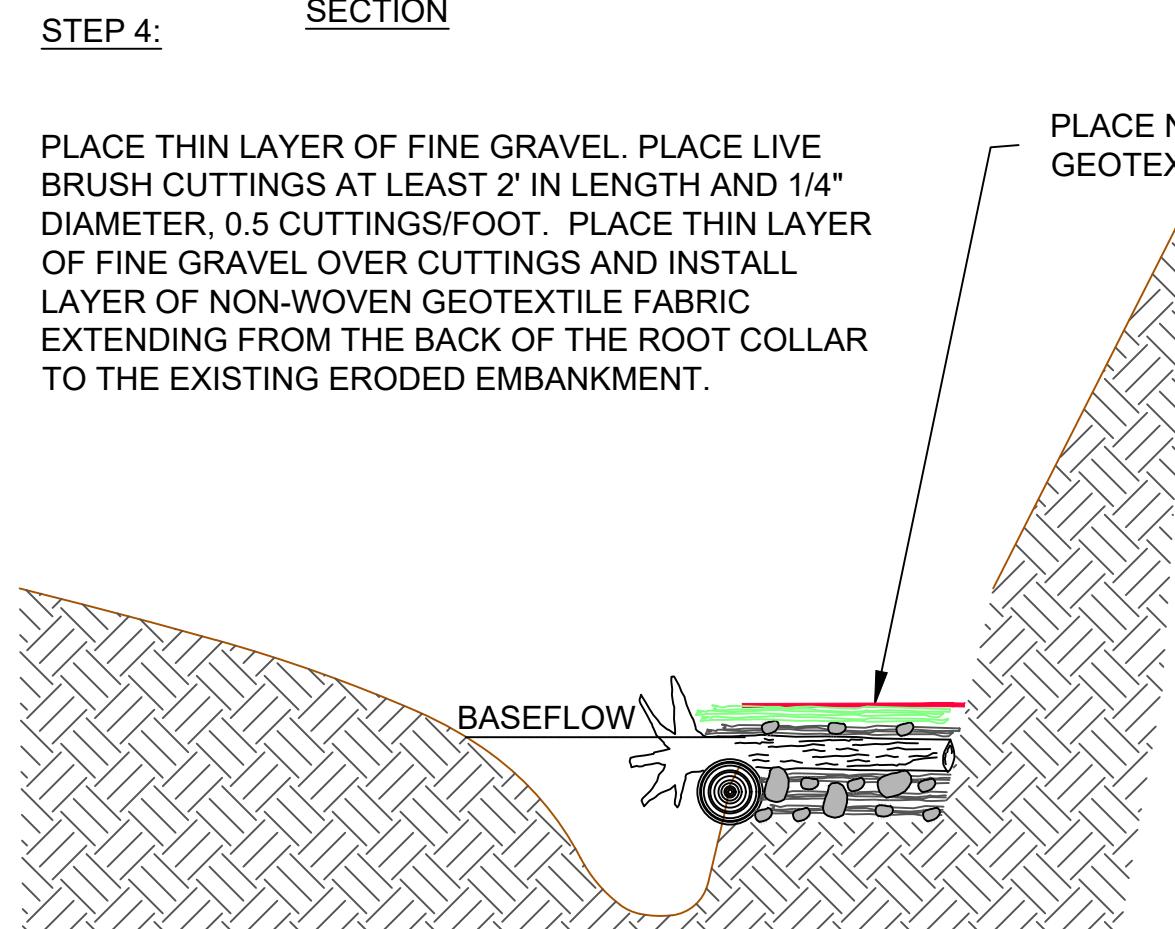
INSTALL 1.5' TALL SOIL LIFT (SEED SOIL FACE) AND LAYER OF CUTTING OVERTOP (0.5 CUTTINGS/FOOT). COVER WITH SOIL. SEE TOEWOOD WITH SOIL LIFT SPECIFICATION. SOIL LIFT COMPOSED OF COIR MATTING (700 GRAM/M² WOVEN COIR) AND UNDERLayment FABRIC (NAG SC 150BN OR EQUIVALENT), 18" HARDWOOD STAKES WITH COMPACTED 6" LIFTS OF SOIL. ANCHOR SOIL LIFT WITH LOG SILL AS DESCRIBED IN THE SPECIFICATION.

**SECTION****STEP 2:**

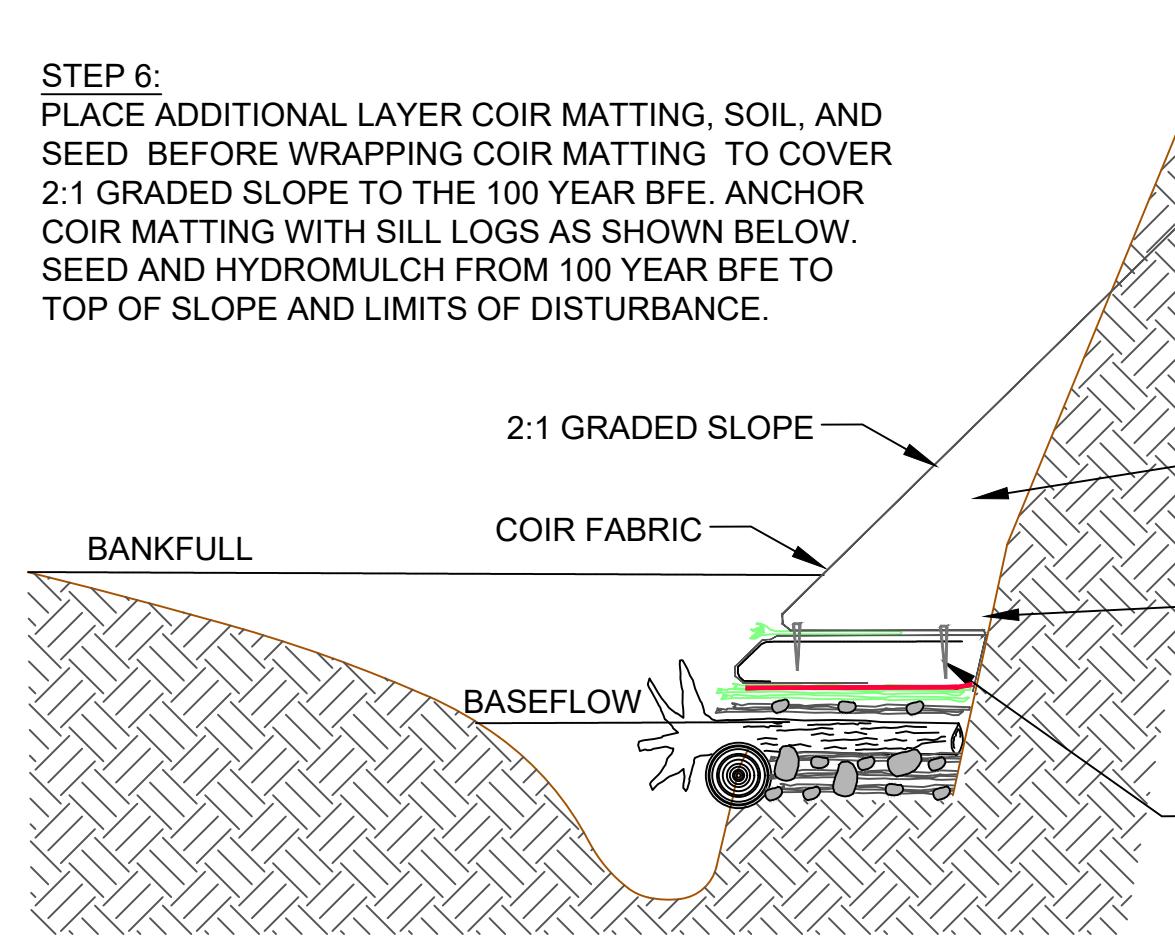
PLACE ROOT WAD LOGS CANTILEVERED OVER FOOTING LOGS. EACH ROOT WAD REPRESENTS APPROXIMATELY 3-5 LINEAR FEET OF TOEWOOD TREATMENT.

**SECTION****STEP 4:**

PLACE THIN LAYER OF FINE GRAVEL. PLACE LIVE BRUSH CUTTINGS AT LEAST 2' IN LENGTH AND 1/4" DIAMETER, 0.5 CUTTINGS/FOOT. PLACE THIN LAYER OF FINE GRAVEL OVER CUTTINGS AND INSTALL LAYER OF NON-WOVEN GEOTEXTILE FABRIC EXTENDING FROM THE BACK OF THE ROOT COLLAR TO THE EXISTING ERODED EMBANKMENT.

**SECTION****STEP 6:**

PLACE ADDITIONAL LAYER COIR MATTING, SOIL, AND SEED BEFORE WRAPPING COIR MATTING TO COVER 2:1 GRADED SLOPE TO THE 100 YEAR BFE. ANCHOR COIR MATTING WITH SILL LOGS AS SHOWN BELOW. SEED AND HYDRUMULCH FROM 100 YEAR BFE TO TOP OF SLOPE AND LIMITS OF DISTURBANCE.

**SECTION**

2015



2016



2019

**NOTES:**

1. PLACE ROOTWAD SO THAT ROOTFAN PROVIDES NEAR-BANK PROTECTION. KEY FOOTER LOG INTO THE STREAMBED THROUGH EXCAVATION AND/OR TRENCHING.
2. THE TOP OF THE ROOTWAD SHOULD BE INSTALLED AT AN ELEVATION SUCH THAT IT REMAINS INUNDATED DURING LOW FLOW EVENTS. THE ELEVATION SHOULD BE APPROXIMATELY 0.3-0.4' ABOVE THE DOWNSTREAM RIFFLE INVERT ELEVATION.
3. LIVE CUTTINGS TO BE SPACED 0.5' ON CENTER AND TO CONSIST OF ELDERBERRY, BUTTON BUSH, COMMON NINEBARK, AND SILKY DOGWOOD. IF LIVE CUTTINGS UNAVAILABLE DURING CONSTRUCTION, INSTALL TO TAKE PLACE DURING NEXT DORMANT SEASON.
4. EACH ROOTWAD REPRESENTS APPROXIMATELY 3-5 LINEAR FEET OF TOEWOOD TREATMENT. ALL WOOD HARVESTED FROM TREES REMOVED ON SITE.
5. IF INSUFFICIENT QUANTITY OF BEDSTONE IS AVAILABLE ON SITE, AS AGREED UPON BY THE ENGINEER, CONTRACTOR TO IMPORT INDOT REVETMENT RIPRAP TO SUBSTITUTE BEDSTONE.

TOEWOOD WITH SOIL LIFT - TYPE A

NOT TO SCALE

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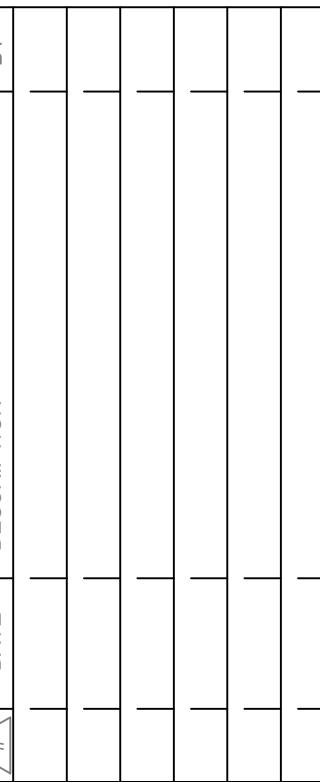
DETAILS

Yellow River Bank Reconstruction and Sediment Mitigation

Starke and Marshall Counties, Indiana

CardnoWALKERTON
720 Roosevelt Road Walkerton, IN 46574 USA
TEL (574) 565-3400**BID SET**

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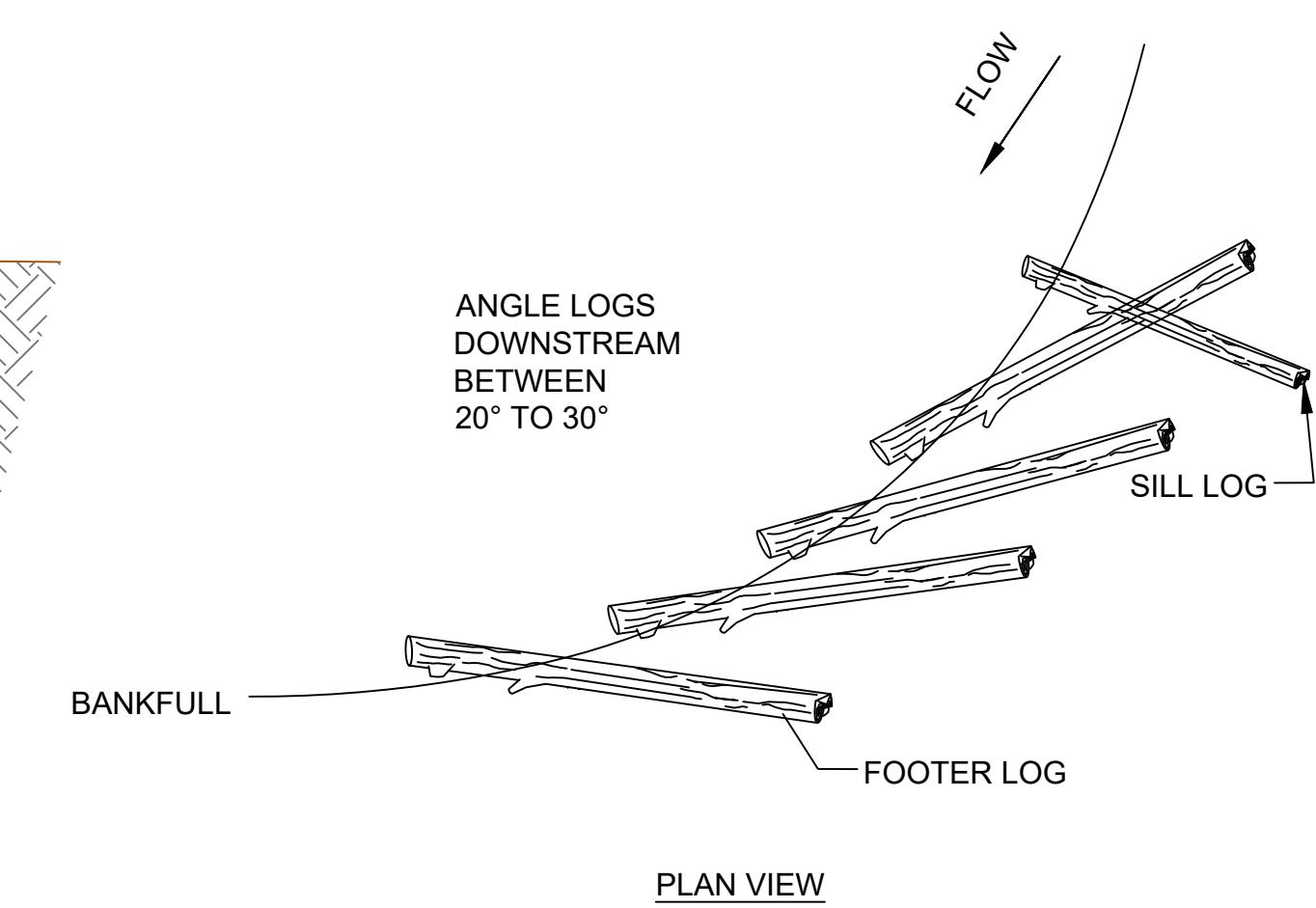
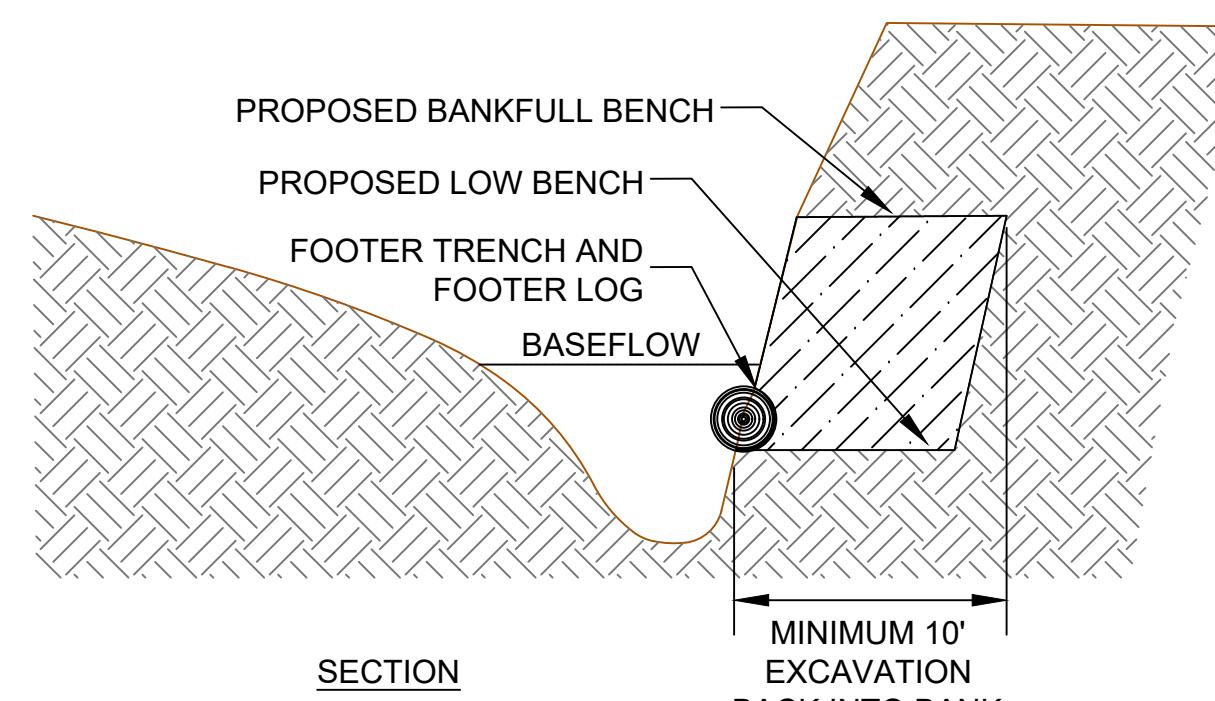
DATE	JUNE 2021
DRAWN	COD
DESIGNED	RAS
CHECKED	
PROJECT #	J19Z50050
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DETAILS

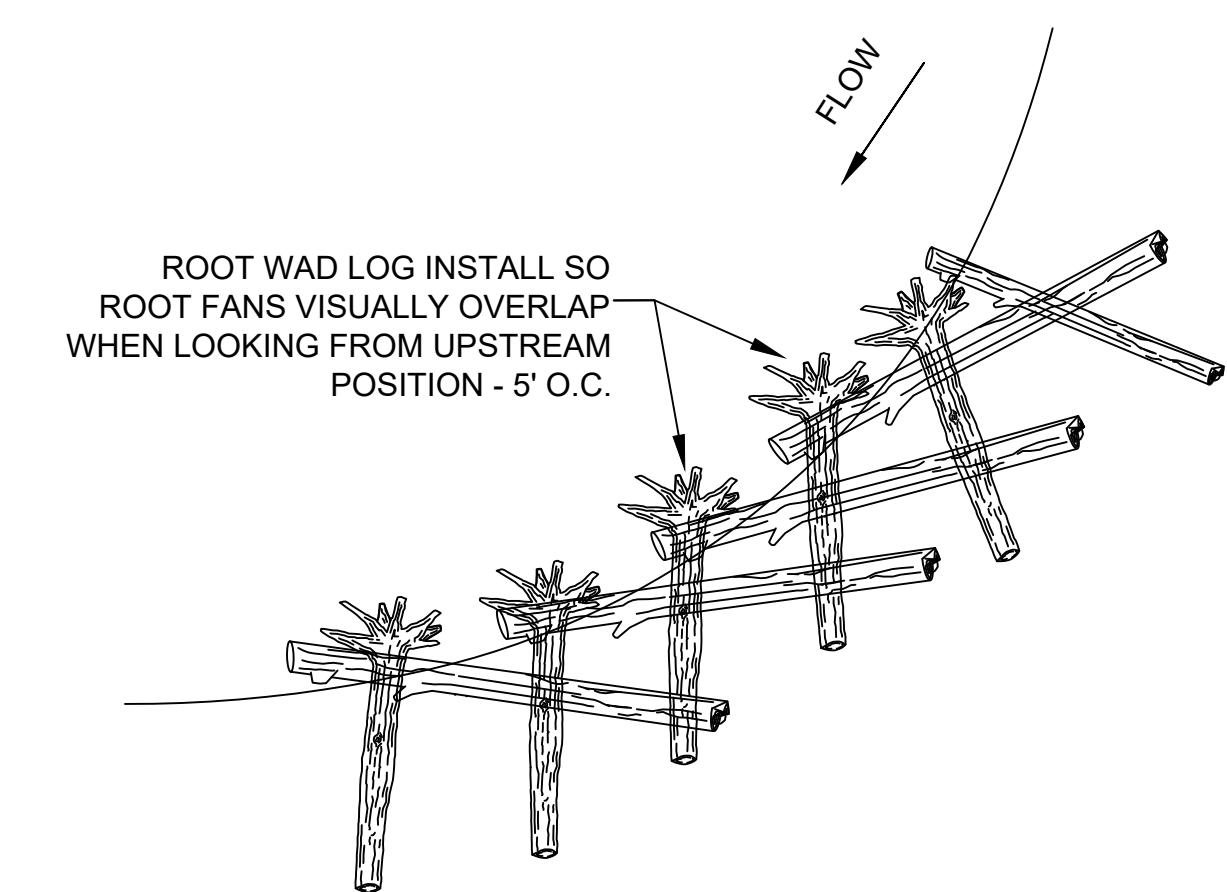
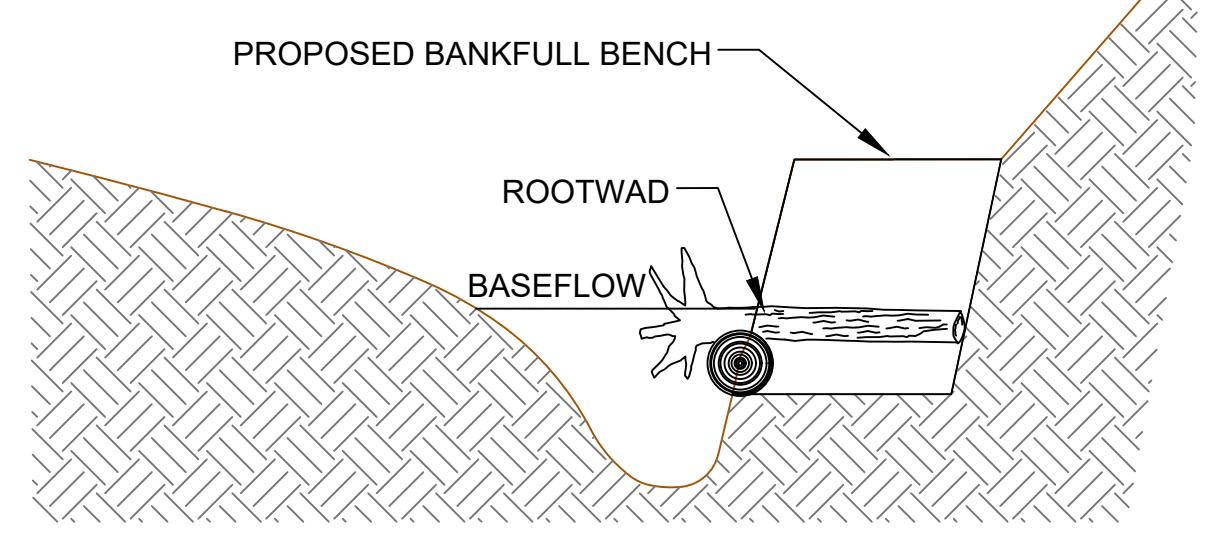
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LAND USE #

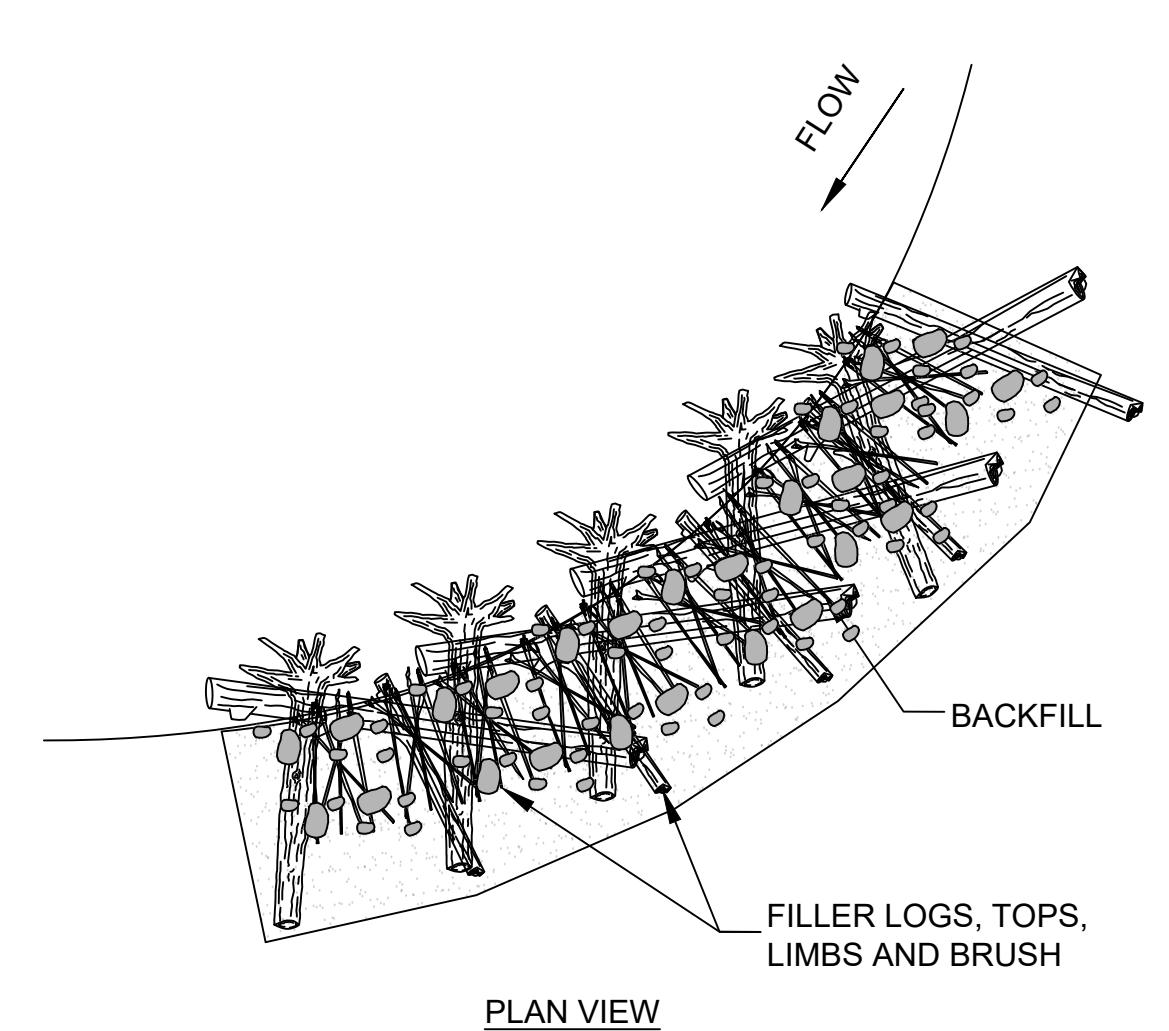
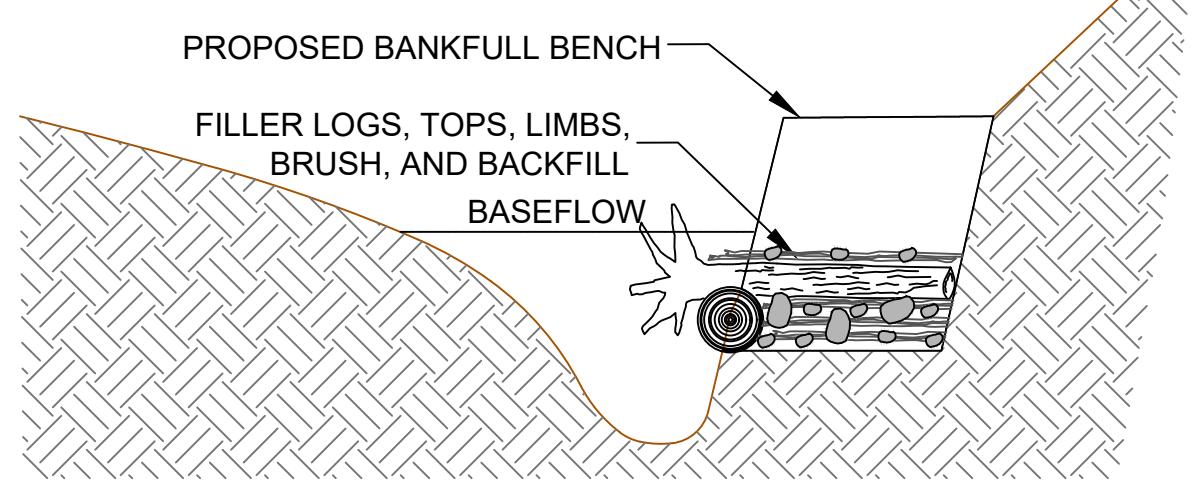
STEP 1:
EXCAVATE LOW BENCH FOR TOEWOOD MATERIAL.
EXCAVATE FOOTER TRENCH IN LOWER BENCH AND
PLACE FOOTER LOGS



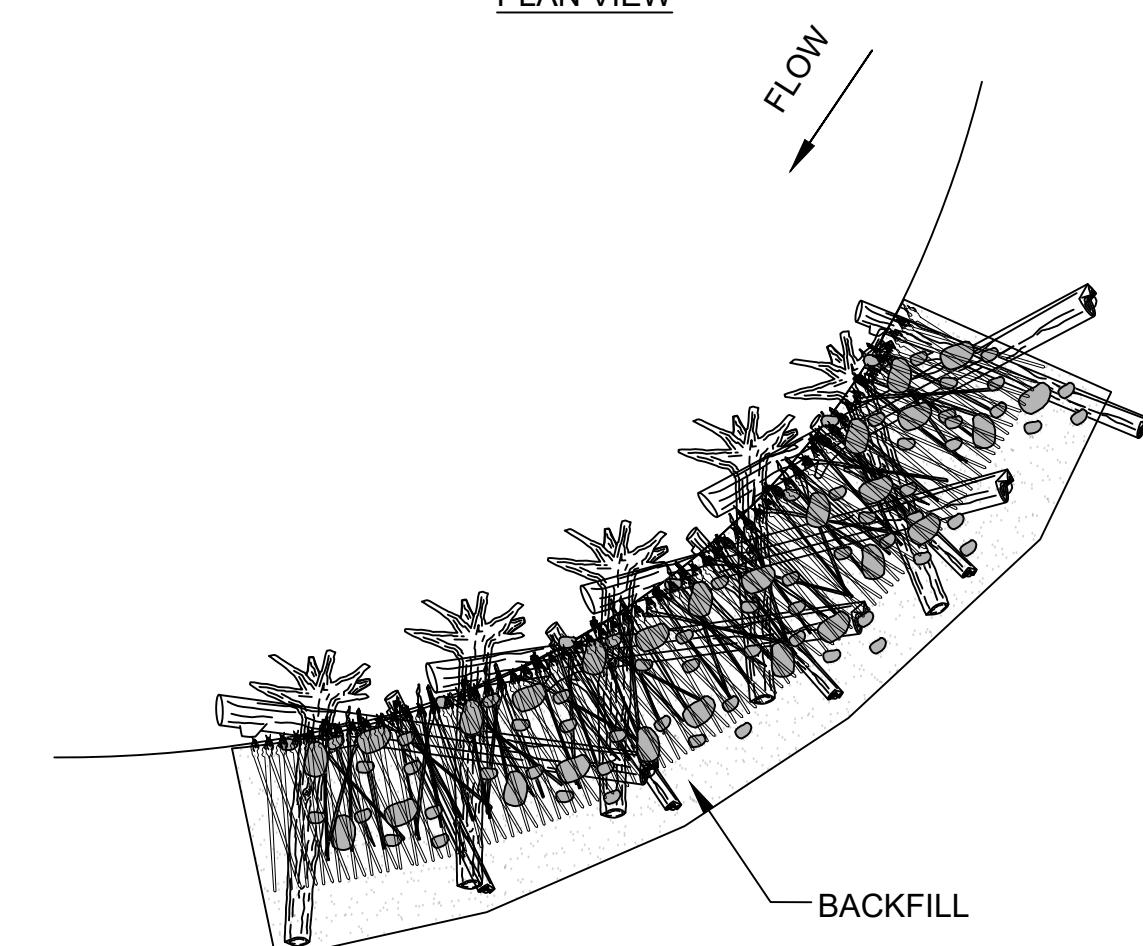
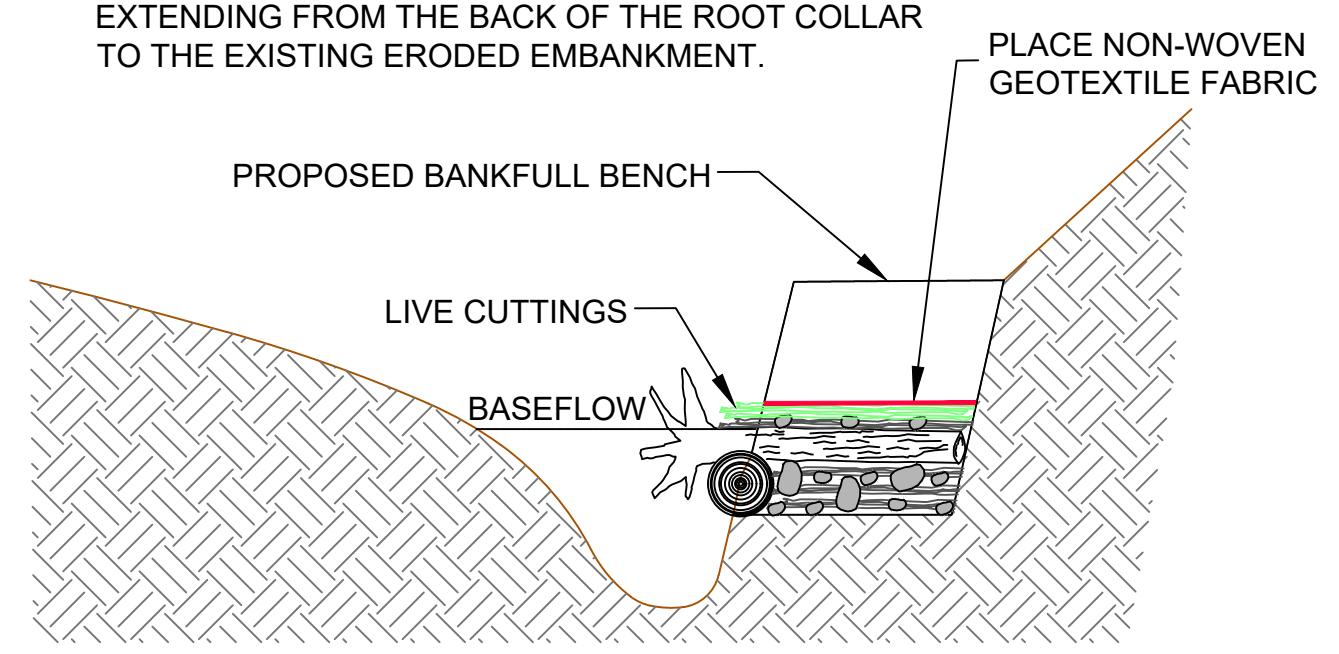
STEP 2:
PLACE ROOT WAD LOGS CANTILEVERED OVER
FOOTING LOGS. EACH ROOT WAD REPRESENTS
APPROXIMATELY 3-5 LINEAR FEET OF TOEWOOD
TREATMENT.



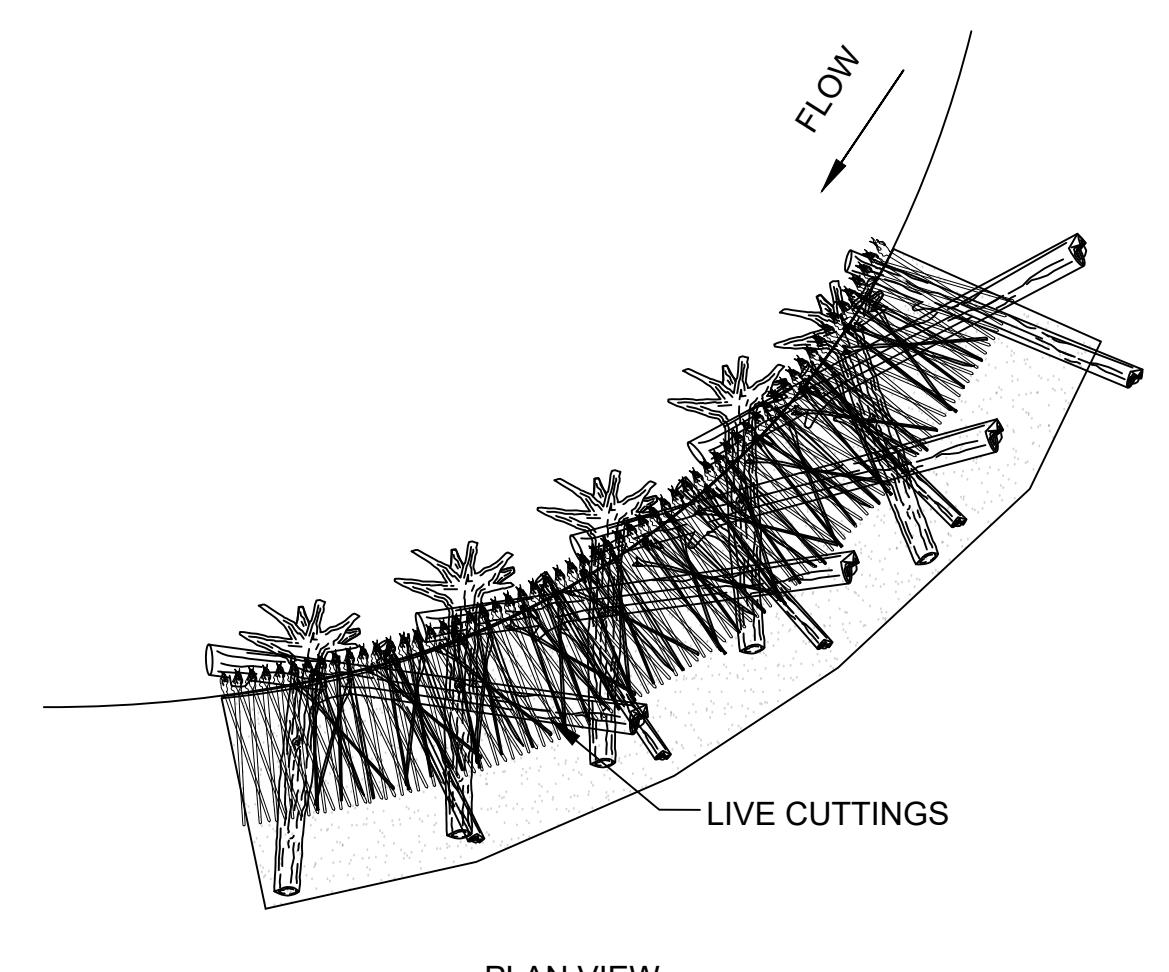
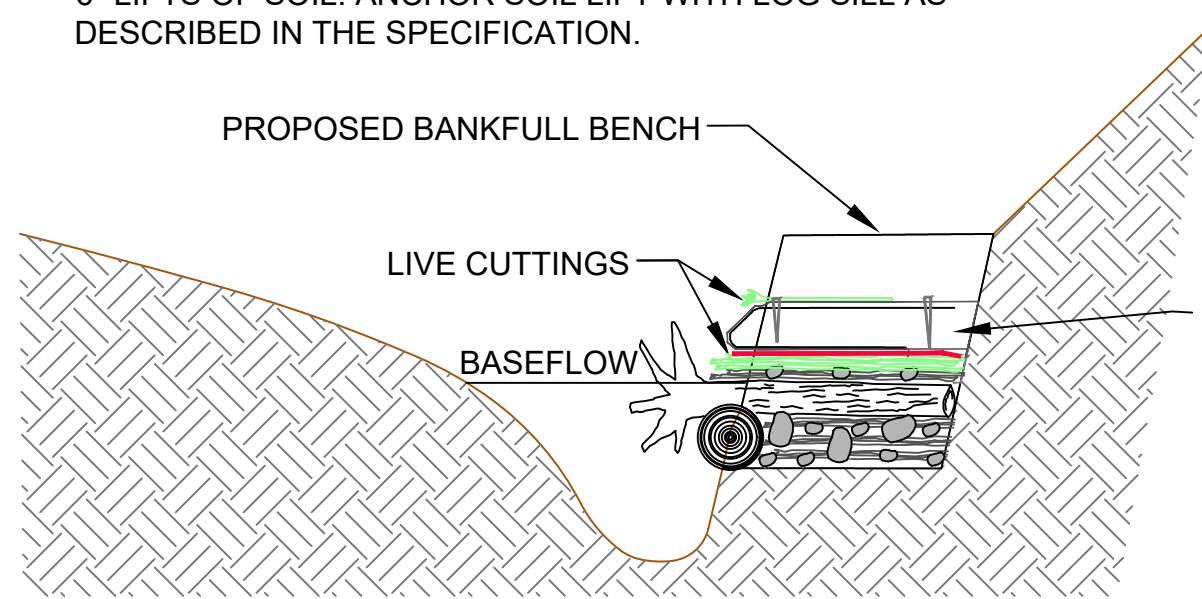
STEP 3:
PLACE FILLER MATERIAL (SMALL LOGS, LIMBS, TREE TOPS AND BRUSH)
BETWEEN AND ON TOP OF THE ROOT WADS. COMPRESS FILLER
MATERIAL WITH EXCAVATOR BUCKET TO MINIMIZE VOID SPACES. THEN
PLACE ON-SITE BED STONE MATERIAL (NO IMPORT) TO FURTHER FILL
VOIDS. BED STONE SHOULD COMPOSE APPROXIMATELY 25% OF
MATERIAL BELOW ROOT COLLAR. CONTINUE TO BACKFILL WITH FILLER
MATERIAL AND BED STONE TO 0.5' ABOVE ROOT COLLAR ELEVATION.
COMPACT WITH EXCAVATOR.



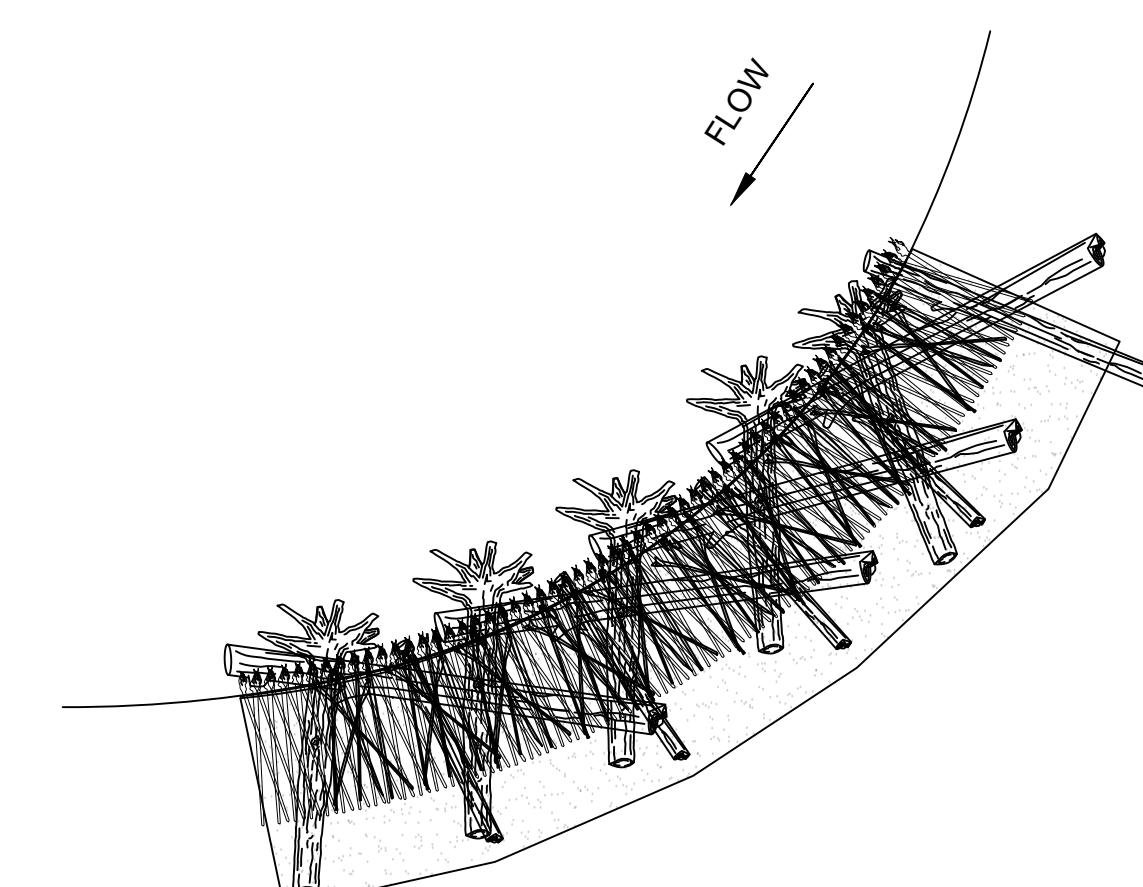
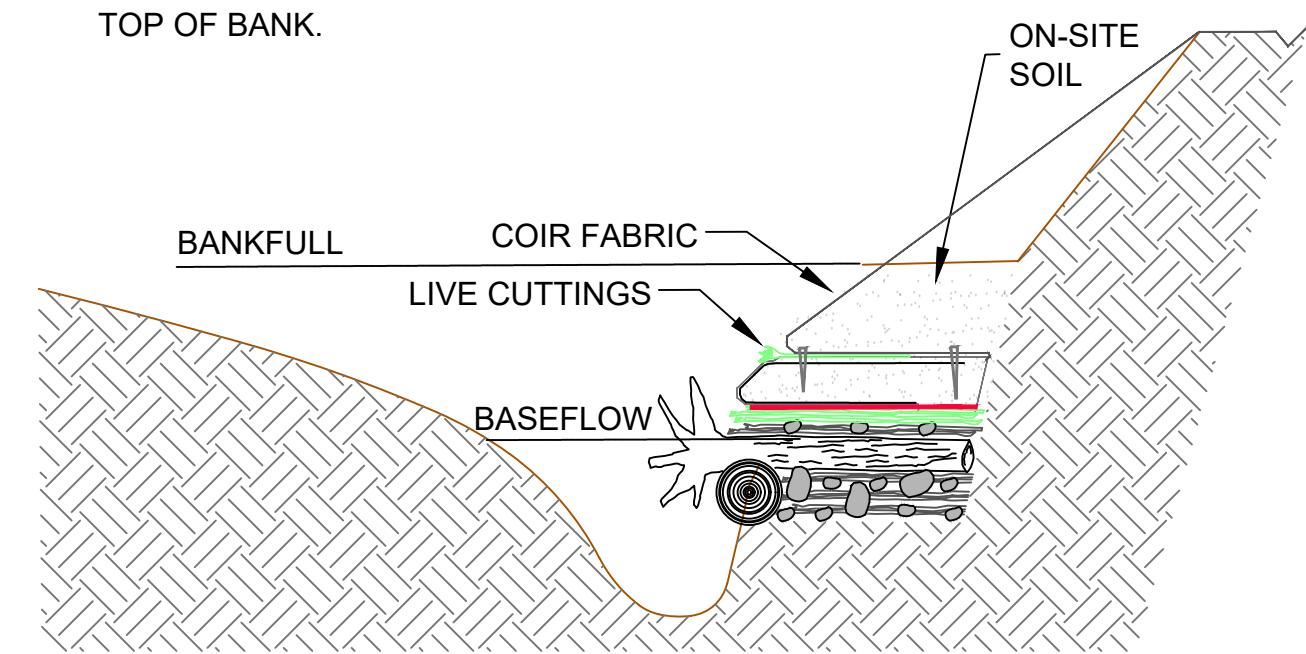
STEP 4:
PLACE THIN LAYER OF FINE GRAVEL/SAND. PLACE
LIVE BRUSH CUTTINGS AT LEAST 2' IN LENGTH AND
1/4" DIAMETER, 0.5 CUTTINGS/FOOT. PLACE THIN
LAYER OF FINE GRAVEL OVER CUTTINGS AND
INSTALL LAYER OF NON-WOVEN GEOTEXTILE FABRIC
EXTENDING FROM THE BACK OF THE ROOT COLLAR
TO THE EXISTING ERODED EMBANKMENT.



STEP 5:
INSTALL 1.5' TALL SOIL LIFT (SEED SOIL FACE) AND LAYER
OF CUTTING OVERTOP (0.5 CUTTINGS/FOOT). COVER WITH
SOIL. SEE TOEWOOD WITH SOIL LIFT SPECIFICATION. SOIL
LIFT COMPOSED OF COIR MATTING (700 GRAM/M² WOVEN
COIR) AND UNDERLAYMENT FABRIC (NAG SC 150BN OR
EQUIVALENT), 18" HARDWOOD STAKES WITH COMPACTED
6" LIFTS OF SOIL. ANCHOR SOIL LIFT WITH LOG SILL AS
DESCRIBED IN THE SPECIFICATION.



STEP 6:
PLACE ADDITIONAL LAYER COIR MATTING, SOIL, AND
SEED BEFORE WRAPPING COIR MATTING TO COVER
2:1 GRADED SLOPE TO THE BANKFULL BENCH AND
TOP OF BANK.



NOTES:

- 1.PLACE ROOTWAD SO THAT ROOTFAN PROVIDES NEAR-BANK PROTECTION. KEY FOOTER LOG INTO THE STREAMBED THROUGH EXCAVATION AND/OR TRENCHING.
- 2.THE TOP OF THE ROOTWAD COLLAR SHOULD BE INSTALLED AT AN ELEVATION SUCH THAT IT REMAINS INUNDATED DURING LOW FLOW EVENTS. THE ELEVATION SHOULD BE APPROXIMATELY 0.3-0.4' ABOVE THE DOWNSTREAM RIFFLE INVERT ELEVATION.
- 3.THE WOOD SHOULD BE BURIED A MINIMUM OF 10 FEET INTO THE BANK.
- 4.LIVE CUTTINGS TO BE SPACED 0.5' ON CENTER AND TO CONSIST OF ELDERBERRY, BUTTON BUSH, COMMON NINEBARK, AND SILKY DOGWOOD. IF LIVE CUTTINGS UNAVAILABLE DURING CONSTRUCTION, INSTALL TO TAKE PLACE DURING NEXT DORMANT SEASON.
- 5.EACH ROOTWAD REPRESENTS APPROXIMATELY 3-5 LINEAR FEET OF TOEWOOD TREATMENT. ALL WOOD HARVESTED FROM TREES REMOVED ON SITE.
- 6.IF INSUFFICIENT QUANTITY OF BEDSTONE IS AVAILABLE ON SITE, AS AGREED UPON BY THE ENGINEER, CONTRACTOR TO IMPORT INDOT REVETMENT RIPRAP TO SUBSTITUTE BEDSTONE.

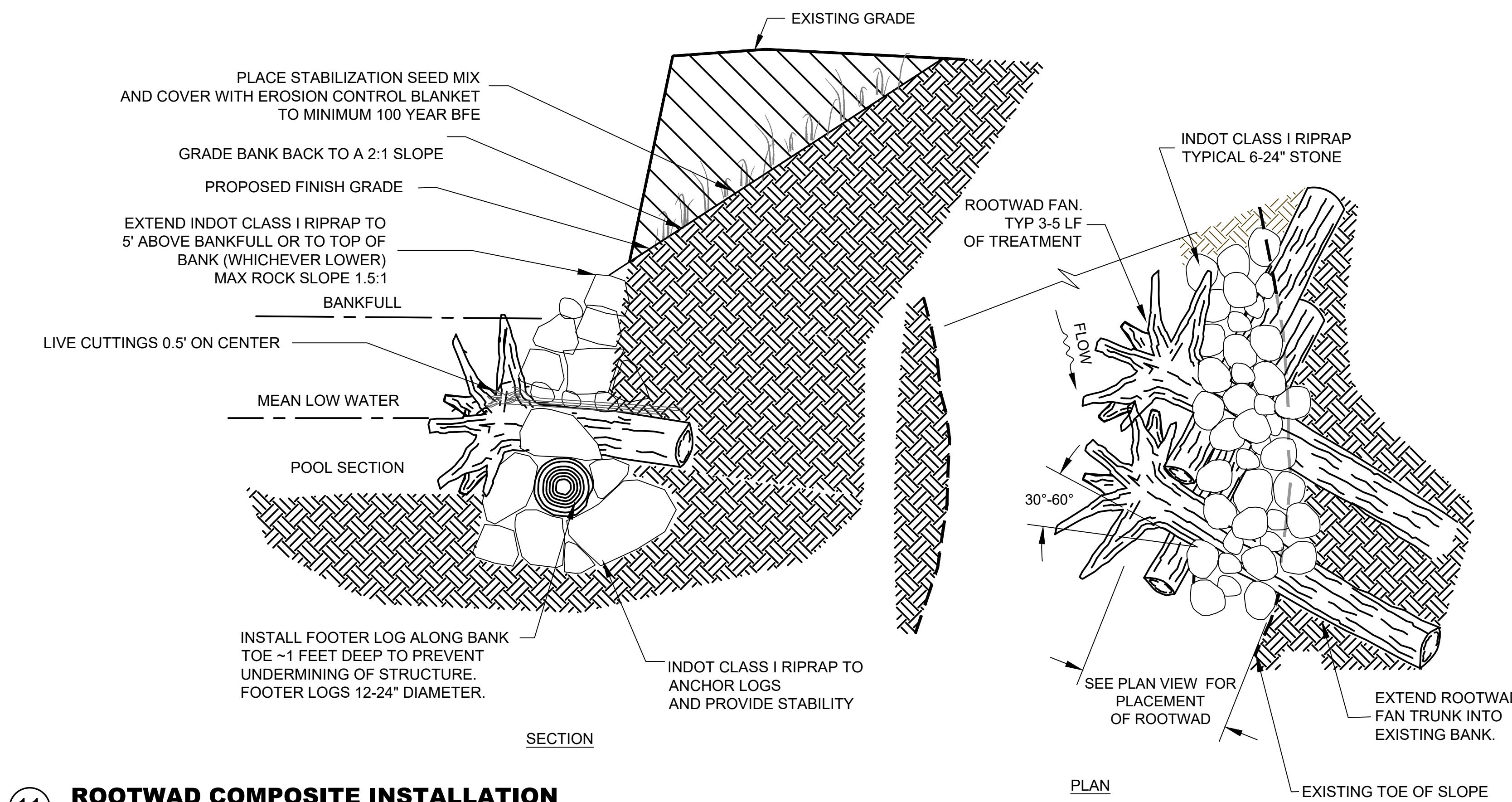
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	BY	DATE	DESCRIPTION
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DESIGNED			RAS
CHECKED			
PROJECT #			J19Z50050
SHEET TITLE			
SHEET NUMBER			



DATE | JUNE 2021
DRAWN | COD
DESIGNED | RAS
CHECKED |
PROJECT # | J19Z50050

SHEET TITLE
DETAILS
SHEET NUMBER


⑪ ROOTWAD COMPOSITE INSTALLATION

NOT TO SCALE

- NOTES**
1. PLACE ROOTWAD SO THAT ROOTFAN PROVIDES NEAR-BANK PROTECTION. KEY FOOTER LOG INTO THE STREAMBED THROUGH EXCAVATION AND/OR TRENCHING.
 2. ANGLE ROOTWAD 30-60 DEGREES PERPENDICULARLY FROM FLOW DIRECTION TO PROVIDE ADEQUATE DEFLECTION. EACH ROOT WAD REPRESENTS APPROXIMATELY 3-5 LINEAR FEET OF TOEWOOD TREATMENT.
 3. FOOTER LOGS TO BE KEYED INTO BANK TO PROTECT AGAINST UNDERCUTTING AND PROVIDE STABILITY FOR ROOTWAD.
 4. PLACE EXISTING BED STONE AT LEAST 5 FEET DEEP INTO BANK AT BASE TO STABILIZE AND ANCHOR LOGS KEYED WITHIN STREAMBANK. BED STONE MAY BE USED UP TO THE ROOT COLLAR ELEVATION. INDOT CLASS I RIPRAP TO BE UTILIZED ABOVE ROOT COLLAR TO THE 100 YEAR BFE.
 5. BACKFILL OVER TOP OF ROOTWAD REVETMENT WITH EXISTING SOIL.
 6. KEY ROOTWAD AND FOOTER LOGS INTO STREAMBANK THROUGH EXCAVATION AND/OR TRENCHING.
 7. LIVE CUTTINGS TO BE SPACED 0.5' ON CENTER AND TO CONSIST OF ELDERBERRY, BUTTON BUSH, COMMON NINEBARK, AND SILKY DOGWOOD. IF LIVE CUTTINGS UNAVAILABLE DURING CONSTRUCTION, INSTALL TO TAKE PLACE DURING NEXT DORMANT SEASON.


DETAILS

#	DATE	DESCRIPTION	BY

ROSS A. ST CLAIR
REGISTERED
No. PE1190035
STATE OF
INDIANA
PROFESSIONAL ENGINEER
*Ross A. St. Clair
06/14/2021*

DATE | JUNE 2021
DRAWN | COD
DESIGNED | RAS
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PROJECT # | J19Z50050
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GENERAL NOTES

1. There shall be no storage of equipment, materials, debris, soil, etc. in streets, parking areas, or the public right-of-way without written permission from the local jurisdiction.
2. Coordinate locations for all required access with OWNER and ENGINEER.
3. CONTRACTOR shall minimize interference with adjoining roads and other adjacent occupied or used facilities during construction operations. CONTRACTOR shall not close or obstruct roads without permission from the OWNER and authorities having jurisdiction. CONTRACTOR shall protect all roads at heavy-equipment crossings as needed to protect pavement. CONTRACTOR shall provide road barriers and/or a flag person to control traffic during all times when construction equipment is crossing public roads or when otherwise warranted.
4. CONTRACTOR shall be responsible to secure the construction site against unauthorized entrance by persons and vehicles outside of and during working hours. If CONTRACTOR fails to maintain security or safety measures at the project site, OWNER may at the expiration of a period of 48 hours, after having given CONTRACTOR written notice, proceed to provide additional measures as deemed necessary, and the cost thereof shall be deducted from any compensation due, or which may become due to CONTRACTOR under this contract.
5. CONTRACTOR shall allow OWNER, ENGINEER, OWNER'S REPRESENTATIVE(s), and other contractors working for OWNER access to the site at all times.
6. If CONTRACTOR finds a conflict, error or discrepancy in the construction documents or plans, CONTRACTOR shall report it immediately to ENGINEER in writing or by email before proceeding with the work affected thereby and shall obtain a written interpretation or clarification from ENGINEER.
7. All work shall be constructed in accordance with the lines and grades shown on the plans. The full responsibility for keeping alignment and grade shall rest upon CONTRACTOR at no additional cost to OWNER.
8. CONTRACTOR shall be fully responsible to OWNER for all acts and omissions of his SUB-CONTRACTORS, suppliers, and other persons and organizations performing or furnishing any of the work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR'S own acts and omissions. CONTRACTOR shall assume sole obligation for the payment of any monies due to any SUB-CONTRACTOR, supplier, or other person or organization, except as may be otherwise required by laws and regulations.
9. The Owner shall provide permission from the necessary landowners for all work performed outside of OWNER'S easement.
10. CONTRACTOR shall stake out and mark limits of construction so they are clearly visible. All construction activities shall be performed within the designated construction limits.
11. OWNER does not bear any responsibility for the cost of injuries to CONTRACTOR, SUBCONTRACTOR, or employees injured during the course of the contract. CONTRACTOR shall be responsible for the transport of injured employees needing medical or other attention.
12. CONTRACTOR shall, at all times, keep the premises free from accumulation of waste materials or rubbish caused by his/her employees or work and prevent the spread of debris during windy conditions. At the completion of work, CONTRACTOR shall leave the premises in a neat, clean, and orderly fashion.
13. CONTRACTOR shall power wash any mechanical equipment or vehicle to be used on the job site to remove all mud and debris prior to unloading on the site. No other vehicles/machines shall be permitted in the project area. All other equipment or project-related vehicles must be parked in specified parking areas.
14. CONTRACTOR shall immediately remove mud tracked by vehicles onto the public roadways when the road is in use, otherwise, before a closed section is returned to service.
15. Temporary traffic control is the responsibility of the CONTRACTOR. The CONTRACTOR shall coordinate with the local authorities and/or other authorities having jurisdiction to determine exact traffic control requirements.
16. Shop drawings or product certification information of all constructed or supplied project materials shall be submitted to OWNER or ENGINEER for review prior to installation.
17. Upon substantial completion and again at final completion of construction, prior to demobilization, CONTRACTOR shall ensure that all excess construction materials and debris, including soil, aggregate, trash, temporary erosion control measures, and miscellaneous construction materials are removed from the project site and disposed of properly. All disturbed areas shall be restored to the satisfaction of OWNER and ENGINEER.
18. Upon completion of the work and prior to acceptance of the project, CONTRACTOR shall be required to furnish the ENGINEER with one set of marked-up prints showing the as-built location of improvements, field changes, and details not on original drawings.
19. CONTRACTOR shall attend a pre-construction meeting at the project site prior to beginning work.
20. CONTRACTOR shall submit a project schedule for review by OWNER and ENGINEER prior to beginning work. Submit revised schedules with each application for payment.
21. CONTRACTOR shall provide, maintain, and pay for temporary facilities and utilities as required to complete the work. Remove temporary facilities prior to the application for final payment.
22. CONTRACTOR shall restore existing and permanent facilities used during construction to original condition or as otherwise specified.

CONSTRUCTION NOTES

1. CONTRACTOR shall clearly mark all underground utilities, culverts, and underground drains prior to construction.
2. Responsibility for the repair of utilities and structures when broken or otherwise damaged shall be borne by CONTRACTOR. Materials damaged by CONTRACTOR during handling or placement operations shall be replaced in-kind by CONTRACTOR at CONTRACTOR'S sole expense. Such damaged materials shall be removed from the site by CONTRACTOR.
3. CONTRACTOR shall deploy suitable equipment for the excavation, compaction, and grading of soil to construct the work. CONTRACTOR shall perform excavation to the lines and grades shown on the plans.

4. Positive drainage shall be provided and maintained at all times. CONTRACTOR shall be responsible for all costs associated with dewatering of any excavation in order to provide positive drainage and any costs associated with the disposal of such water.
5. Uniformly grade areas to create a smooth surface to the cross-sections, lines, and elevations indicated on the drawings. Provide a smooth transition between existing grades and new grades.

DEMOLITION NOTES

1. CONTRACTOR shall be responsible for the protection of all facilities during the entire period of service. Any damages to the existing facilities, roads, or other property caused by CONTRACTOR or SUBCONTRACTOR shall be repaired at CONTRACTOR'S expense and in a manner and schedule approved by OWNER.
2. Notify ENGINEER immediately upon the discovery of any hazardous materials.
3. Protect and maintain survey benchmarks from disturbance.
4. Protect existing vegetation, structures, utilities, and other items to remain.
5. Regularly clean-up and remove demolished materials from the site so that they do not accumulate.

UTILITY NOTES

- CONTRACTOR shall call the Indiana Underground Plant Protection Service ("Indiana 811") by dialing 811 at least 48 hours prior to commencement of land-disturbing activities to schedule a utility locate. It is CONTRACTOR'S responsibility to verify the location of all existing utilities and to report any discrepancies or omissions with the existing utilities shown on the plans to ENGINEER immediately.
6. CONTRACTOR shall protect all existing utilities as required to prevent damage.
 7. All utilities must be fully operational and accessible throughout the project unless otherwise coordinated with and approved by OWNER, ENGINEER, and utility company at least two (2) days in advance of the proposed interruption.
 8. Any and all damage to existing utilities must be repaired in kind at CONTRACTOR'S expense..

EROSION PREVENTION AND SEDIMENT CONTROL

1. The Contractor shall secure a local 327 IAC 15-5 (Rule 5) Permit required for all disturbances 1 acre or larger.
2. The temporary erosion control systems installed by CONTRACTOR shall be properly maintained as indicated on the plans and indicated in the acquired Rule 5 Permit or as directed by OWNER or ENGINEER to control erosion and siltation at all times during the life of the contract. This work shall include repair of the various systems, removal of trapped sediment, and cleaning or replacement of erosion control measures. Accumulated silt in the work area shall be removed from the site as an incidental cost to the project or shall be used on-site if approved by OWNER. Any additional materials and work required by ENGINEER to control erosion shall be measured and paid for as specified. If CONTRACTOR fails to maintain the erosion control systems as directed by ENGINEER, OWNER may at the expiration of a period of 48 hours, after having given CONTRACTOR written notice, proceed to maintain the systems as deemed necessary, and the cost thereof shall be deducted from any compensation due to CONTRACTOR.
3. CONTRACTOR shall install temporary erosion control measures as indicated on the erosion control plans prior to commencement of land-disturbing activities.
4. CONTRACTOR shall repair erosion damage to the finished surfaces at no additional cost to OWNER

STAGING/STOCKPILE AREA

1. All excavated material not immediately reused shall be placed within previously identified temporary stockpile areas. The Contractor shall ensure that silt fence is properly installed between the stockpile area and the existing stream channel.

TEMPORARY STREAM CROSSING

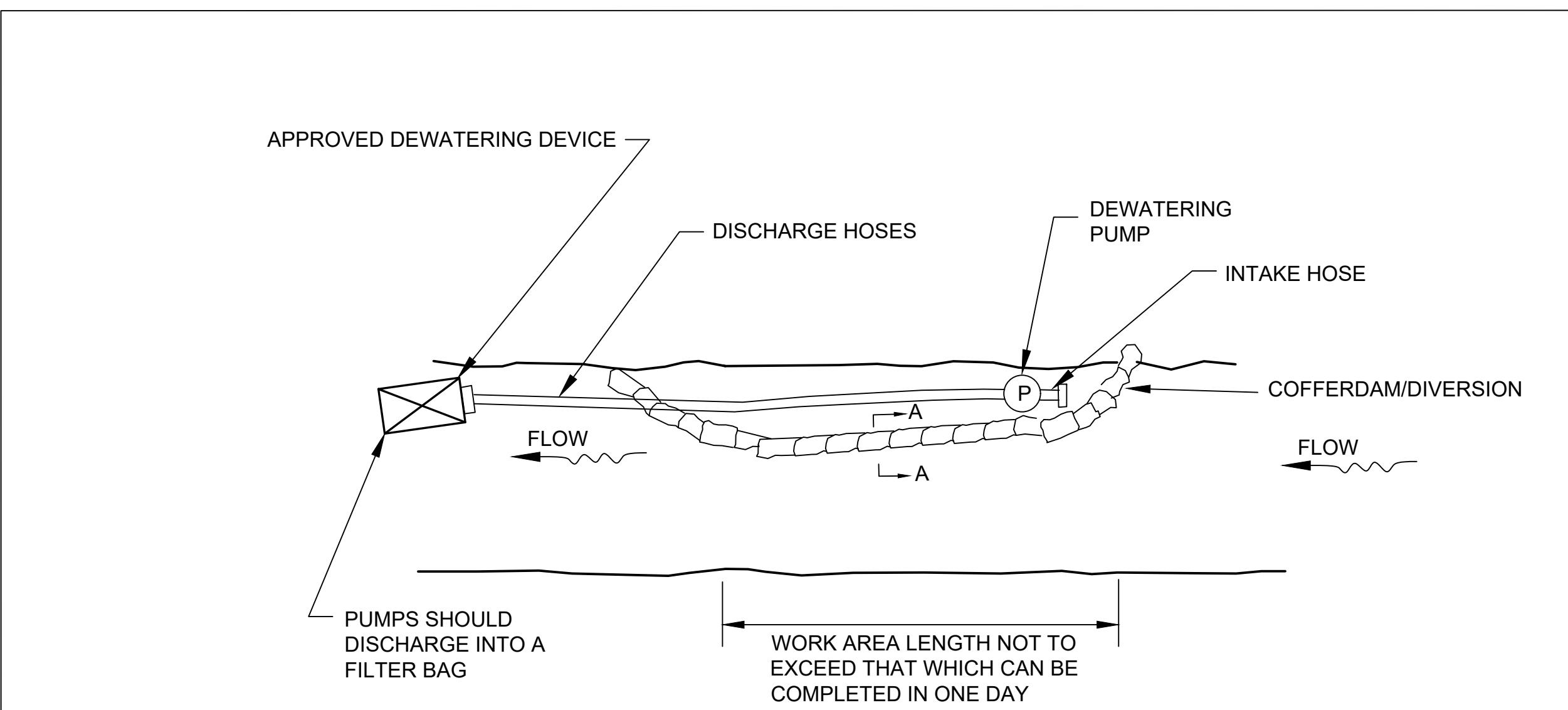
1. Temporary stream crossings as identified on the plans shall be utilized when equipment to cross the river from one bank to another.
2. Temporary stream crossings to consist of the proposed constructed riffle structures identified on the plans. These constructed riffles consist of a minimum depth of 1.5' of native bedstone (cobbles and gravel) or substituted bedstone material consisting of INDOT revetment riprap and INDOT No. 2 stone.
3. If equipment must cross the river in areas outside the limits of the designated stream crossings, native bedstone or substitute bedstone must be built up a minimum 1.5' above the existing channel bottom to facilitate crossing. Furthermore, alternative stream crossings should be approved by the Engineer and should be located in the vicinity of other rock based structures so that the applied bedstone may be repurposed for proposed structure installation.

SILT FENCE

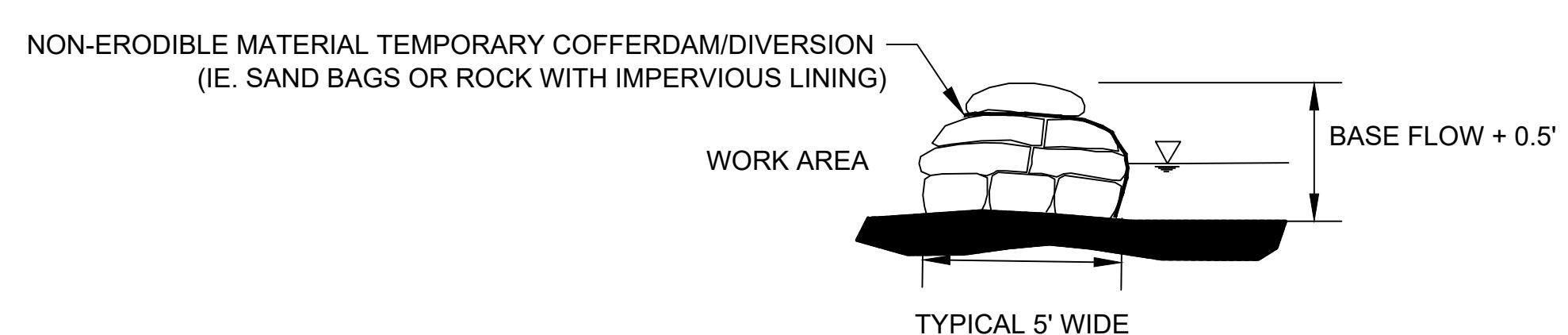
1. The Contractor shall utilize silt fence as required to prevent loose sediment from leaving overbank areas and entering the river. Silt fence should not be placed in locations of concentrated flow.

CONTROL OF WATER

1. The Contractor shall utilize an appropriate system during earthwork, toewood and rock placement below existing water line in order to maintain non-flowing water conditions within the portions of stream embankment being worked on during a given time period. Work included in this Section includes furnishing all labor, equipment, materials, and performing all operations necessary to control water during installation of structures. This work shall include the provision, operation and maintenance of pumps and/or diversion systems along with any temporary barriers, water plugs, or temporary piping necessary to allow the safe and proper construction of the Work.
2. Contractor is required to manage the work during construction to account for fluctuations in water flow and water levels as necessary to protect the Work and Contractor's equipment, material, and personnel according to all applicable laws and regulations.
3. Contractor shall be responsible for detailed development of sequencing and staging for control of water in the work area. Acceptable methods for water control include temporary cofferdams/diversions made of non-erodible material such as sand bags or rocks. Temporary cofferdams may need to be paired with a pump around system to ensure non-flowing conditions in the work area.
4. Contractor must be aware that significant changes in flow and water level can occur in the project area at any given time. Contractor is responsible for any impacts that could result from changing water flow/level conditions.
5. Water levels and flow volumes shall be controlled in the work area by pumping or by-passing to an extent that the permanent work being performed is not adversely affected.
6. Contractor shall provide filter bags where pumped water re-enters the river.
7. Contractor shall include adequate costs in the Contract Price to assure that the water in the work areas can be controlled and the work completed.
8. Contractor shall maintain all systems for controlling water for the period required to complete the Work.
9. Contractor shall be solely responsible for means and methods, integrity of any cofferdams or dewatering methods, and maintaining integrity of the river.
10. Contractor shall be responsible for re-grading, filling or otherwise removing temporary water control features upon completion of that portion of the water control Work. The areas shall be permanently restored as shown on the Drawings.



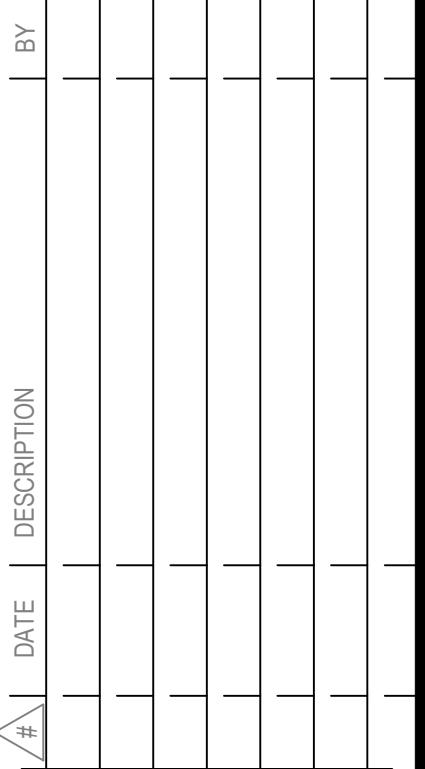
13 CONTROL OF WATER - PLAN VIEW
NOT TO SCALE



14 COFFERDAM/WATER DIVERSION - CROSS SECTION
NOT TO SCALE

NOTES

1. PUMP AROUND AND/OR COFFERDAM (SAND, ROCK, SHEET PILE) ARE PROVIDED AS EXAMPLES OF ACCEPTABLE CONTROL OF WATER. CONTRACTOR RESPONSIBLE FOR MEANS AND METHODS OF MAINTAINING NON-FLOWING CONDITIONS WHEN REQUIRED FOR INSTALL.



Legend

- TREE REMOVAL
 - TREE REMOVAL -POTENTIAL BAT TREE PROPOSED GRADING AREAS

Notes:

1. All trees proposed for removal to be marked, measured and counted by Contractor in advance of construction. Engineer and/or Owner to Confirm. All trees removed less than 10" to be included in Clearing, Grubbing, and Obstruction Removal and considered incidental to that line item.
 2. Trees inventoried on this plan were mapped using GPS unit typically accurate to less than five feet but final marking and count prior to construction to represent final quantity paid to Contractor.
 3. Trees to be repurposed for proposed Toewood and/or Rootwad Composite. One mature trees typically represents 3-5 linear feet of toewood treatment.
 4. Typical tree removal includes rootball, tree trunk and branches. Rootball section typically includes rootball and approximately 10-15 feet of trunk.
 5. All excess trees to be disposed of on-site in accordance with the "Tree and Stump Removal" and "Clearing, Grubbing, and Obstruction Removal" specification.



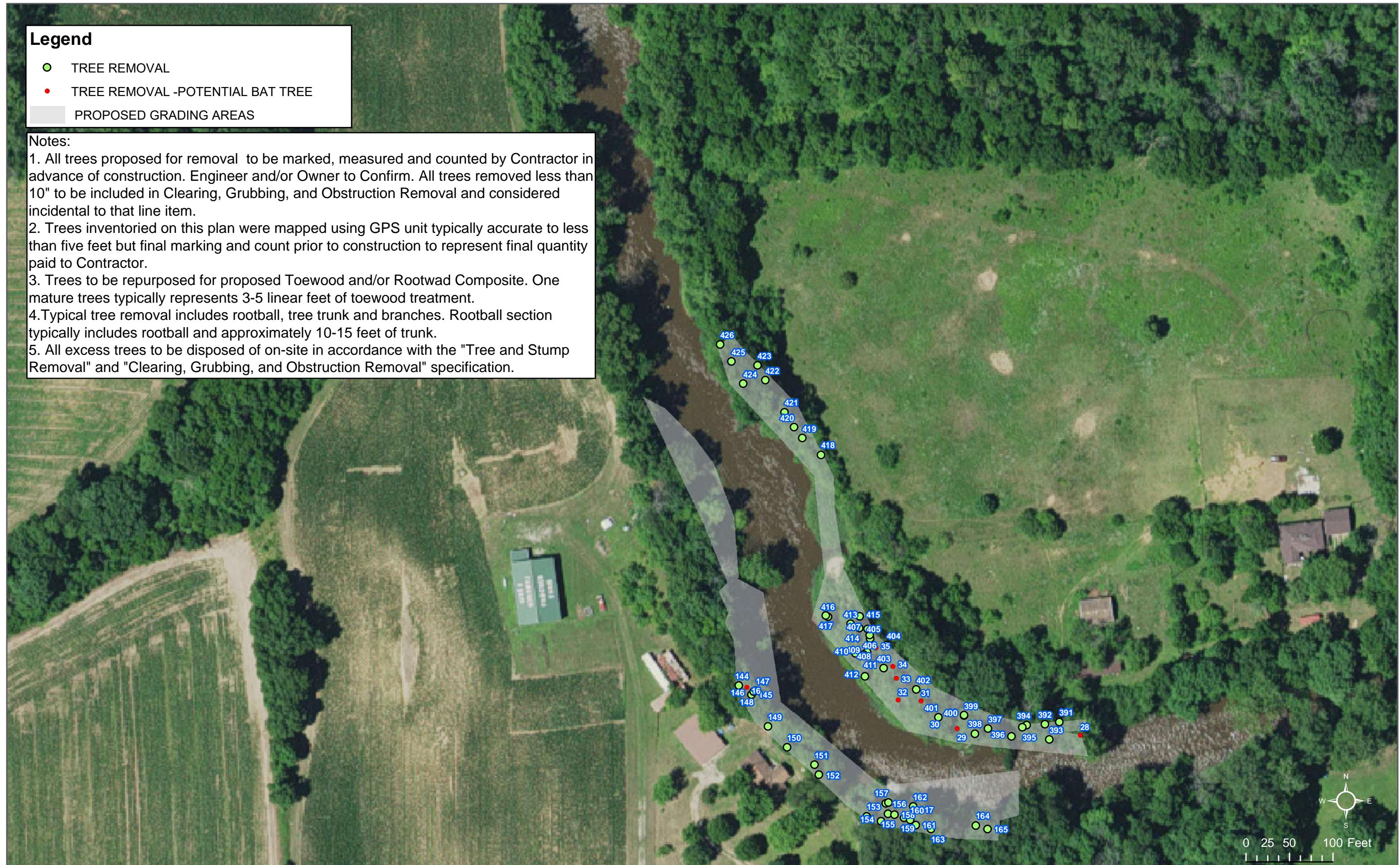
STATION 10+00 TO 31+00

Legend

- TREE REMOVAL
- TREE REMOVAL -POTENTIAL BAT TREE
- PROPOSED GRADING AREAS

Notes:

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3. Trees to be repurposed for proposed Toewood and/or Rootwad Composite. One mature trees typically represents 3-5 linear feet of toewood treatment.
4. Typical tree removal includes rootball, tree trunk and branches. Rootball section typically includes rootball and approximately 10-15 feet of trunk.
5. All excess trees to be disposed of on-site in accordance with the "Tree and Stump Removal" and "Clearing, Grubbing, and Obstruction Removal" specification.

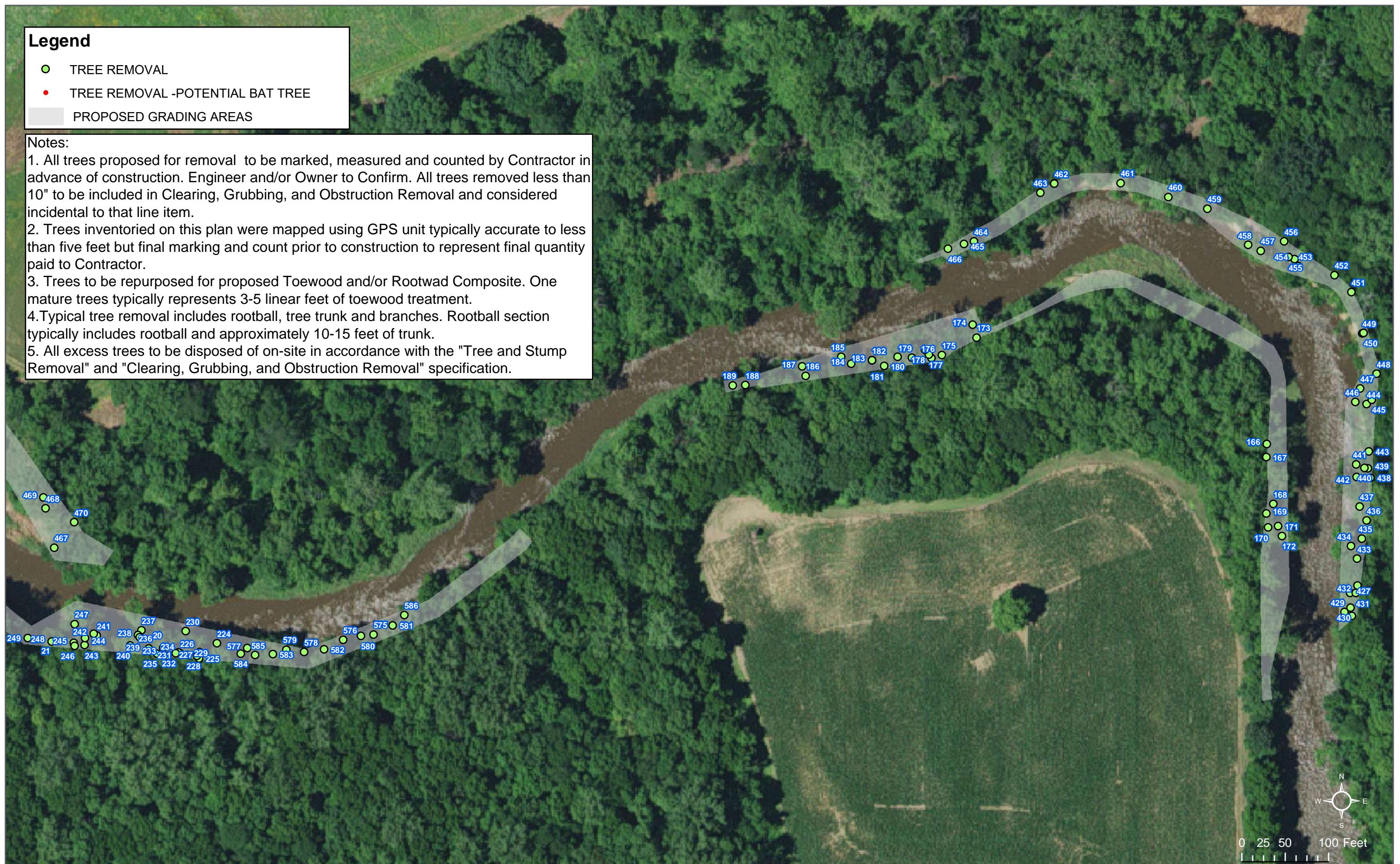


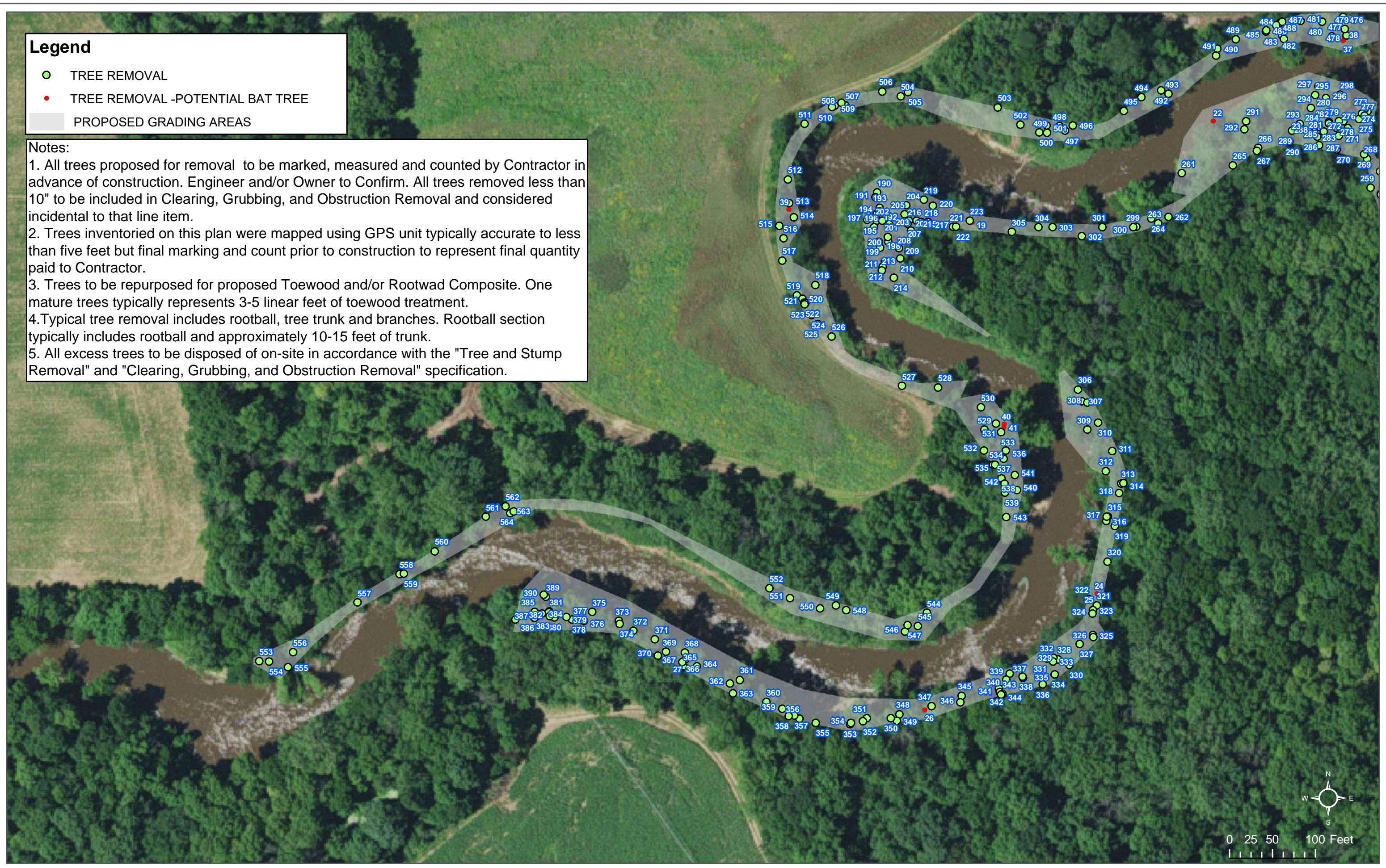
Legend

- TREE REMOVAL
- TREE REMOVAL -POTENTIAL BAT TREE
- PROPOSED GRADING AREAS

Notes:

1. All trees proposed for removal to be marked, measured and counted by Contractor in advance of construction. Engineer and/or Owner to Confirm. All trees removed less than 10" to be included in Clearing, Grubbing, and Obstruction Removal and considered incidental to that line item.
2. Trees inventoried on this plan were mapped using GPS unit typically accurate to less than five feet but final marking and count prior to construction to represent final quantity paid to Contractor.
3. Trees to be repurposed for proposed Toewood and/or Rootwad Composite. One mature tree typically represents 3-5 linear feet of toewood treatment.
4. Typical tree removal includes rootball, tree trunk and branches. Rootball section typically includes rootball and approximately 10-15 feet of trunk.
5. All excess trees to be disposed of on-site in accordance with the "Tree and Stump Removal" and "Clearing, Grubbing, and Obstruction Removal" specification.





TREE REMOVAL PLAN LIST								
County	LABEL #	DIAMETER AT BREAST HEIGHT	SPECIES	X	Y	10" OR GREATER?	18" OR GREATER?	POTENTIAL BAT TREE?
MARSHALL	1	12	green ash	-86.46637770850	41.27158156410	TRUE	FALSE	TRUE
MARSHALL	2	6	hickory	-86.46506295490	41.27161928320	FALSE	FALSE	TRUE
MARSHALL	3	29	cottonwood	-86.46602912130	41.27161802920	TRUE	TRUE	TRUE
MARSHALL	4	31	silver maple	-86.46593147190	41.27160333420	TRUE	TRUE	TRUE
MARSHALL	5	24	ash dead	-86.4645303170	41.27115027390	TRUE	TRUE	TRUE
MARSHALL	6	28	silver maple	-86.46379645720	41.27092535570	TRUE	TRUE	TRUE
MARSHALL	7	33	sycamore	-86.46374230400	41.27090518270	TRUE	TRUE	TRUE
MARSHALL	8	30	sycamore	-86.46434855250	41.27091293190	TRUE	TRUE	TRUE
MARSHALL	9	32	white oak	-86.46308702900	41.27058776400	TRUE	TRUE	TRUE
MARSHALL	10	13	sassafras	-86.46316359070	41.27057345040	TRUE	FALSE	TRUE
MARSHALL	11	37	red oak	-86.46324515720	41.27053534510	TRUE	TRUE	TRUE
MARSHALL	12	26	red oak	-86.46380289780	41.27054047500	TRUE	TRUE	TRUE
MARSHALL	13	19	dead ash	-86.46625757720	41.27139052070	TRUE	TRUE	TRUE
MARSHALL	14	13	silver maple	-86.46643540410	41.27135448130	TRUE	FALSE	TRUE
MARSHALL	15	21	silver maple	-86.46647774790	41.27136056990	TRUE	TRUE	TRUE
MARSHALL	42	30	cottonwood	-86.46538973160	41.2713561320	TRUE	TRUE	TRUE
MARSHALL	44	25	red oak	-86.4653991940	41.27158413900	TRUE	TRUE	FALSE
MARSHALL	45	8	huckleberry	-86.46540628800	41.27162371660	FALSE	FALSE	FALSE
MARSHALL	46	8	hickory	-86.46637020220	41.27162438940	FALSE	FALSE	FALSE
MARSHALL	47	24	red oak	-86.46614367300	41.27165912130	TRUE	TRUE	FALSE
MARSHALL	48	15	red oak	-86.46611232820	41.27166965760	TRUE	FALSE	FALSE
MARSHALL	49	7	basswood	-86.46606067870	41.27160650460	FALSE	FALSE	FALSE
MARSHALL	51	8	red oak	-86.4659326750	41.27159119440	FALSE	FALSE	FALSE
MARSHALL	52	6	hickory	-86.46594325890	41.27156997870	FALSE	FALSE	FALSE
MARSHALL	53	12	red oak	-86.46585731040	41.27157409760	TRUE	FALSE	FALSE
MARSHALL	55	23	basswood	-86.46513608220	41.27151633070	TRUE	TRUE	FALSE
MARSHALL	56	8	silver maple	-86.46477251800	41.27127524380	FALSE	FALSE	FALSE
MARSHALL	57	4, 8 multiple stem	basswood	-86.46470343430	41.27128002110	FALSE	FALSE	FALSE
MARSHALL	59	15, 16, 18 multiple stem	silver maple	-86.46450947810	41.27112645650	TRUE	TRUE	FALSE
MARSHALL	60	8, 8 multiple stem	basswood	-86.46440085070	41.27104509020	FALSE	FALSE	FALSE
MARSHALL	61	16	black walnut	-86.46425170550	41.27105851040	TRUE	FALSE	FALSE
MARSHALL	62	12	huckleberry	-86.46424691770	41.27102649580	TRUE	FALSE	FALSE
MARSHALL	63	9, 11 multiple stem	mulberry	-86.46412239770	41.27099114070	TRUE	FALSE	FALSE
MARSHALL	64	7, 8 multiple stem	basswood	-86.46406877910	41.27104417600	FALSE	FALSE	FALSE
MARSHALL	65	15	huckleberry	-86.46347088130	41.27089075780	TRUE	FALSE	FALSE
MARSHALL	66	22	silver maple	-86.46333071450	41.27091139640	TRUE	TRUE	FALSE
MARSHALL	67	17, 17, 8 multiple stem	silver maple	-86.46318135220	41.27091693650	TRUE	TRUE	FALSE
MARSHALL	68	18	silver maple	-86.46299472560	41.27092617350	TRUE	TRUE	FALSE
MARSHALL	69	6	sugar maple	-86.46078509160	41.27158044490	FALSE	FALSE	FALSE
MARSHALL	70	11	basswood	-86.46044639190	41.27162730660	TRUE	FALSE	FALSE
MARSHALL	71	20	basswood	-86.46046777220	41.27162978600	TRUE	TRUE	FALSE
MARSHALL	72	24	red oak	-86.46061472860	41.27162193340	TRUE	TRUE	FALSE
MARSHALL	73	8	sugar maple	-86.46064478940	41.27167446870	FALSE	FALSE	FALSE
MARSHALL	74	18	red oak	-86.46078294380	41.27165622390	TRUE	TRUE	FALSE
MARSHALL	75	7	sugar maple	-86.46079819670	41.27165772670	FALSE	FALSE	FALSE
MARSHALL	76	17	red oak	-86.46292579500	41.27058832540	TRUE	FALSE	FALSE
MARSHALL	77	14	black oak	-86.46299664480	41.27058583410	TRUE	FALSE	FALSE
MARSHALL	78	15	red oak	-86.46307776020	41.27064722150	TRUE	FALSE	FALSE
MARSHALL	79	6	ironwood	-86.46306795670	41.27059083240	FALSE	FALSE	FALSE
MARSHALL	80	11	white oak	-86.463121612130	41.27055276710	TRUE	FALSE	FALSE
MARSHALL	81	9	red oak	-86.46324834870	41.27057042520	FALSE	FALSE	FALSE
MARSHALL	83	19	red oak	-86.46345090790	41.27052556970	TRUE	TRUE	FALSE
MARSHALL	84	8	black gum	-86.46352958210	41.27052744700	FALSE	FALSE	FALSE
MARSHALL	85	15	red oak	-86.46356594930	41.27048821170	TRUE	FALSE	FALSE
MARSHALL	86	18, 18 multiple stem	red oak	-86.46362839110	41.27054189640	TRUE	TRUE	FALSE
MARSHALL	87	10	white oak	-86.46372615100	41.27053060090	TRUE	FALSE	FALSE
MARSHALL	88	19	red oak	-86.46373008780	41.27056546240	TRUE	TRUE	FALSE
MARSHALL	89	6	sassafras	-86.46380911730	41.27053145190	FALSE	FALSE	FALSE
MARSHALL	90	10	red oak	-86.46386132950	41.27058613810	TRUE	FALSE	FALSE
MARSHALL	91	18	red oak	-86.46352958450	41.27056598210	TRUE	TRUE	FALSE
MARSHALL	92	12	red oak	-86.46392090930	41.27058066440	TRUE	FALSE	FALSE
MARSHALL	93	10	red oak	-86.46401841720	41.27060607550	TRUE	FALSE	FALSE
MARSHALL	94	8	sassafras	-86.46400604500	41.27060782470	FALSE	FALSE	FALSE
MARSHALL	95	16	red oak	-86.46403088990	41.27060613740	TRUE	FALSE	FALSE
MARSHALL	96	10	tulip	-86.46402567010	41.27082649440	TRUE	FALSE	FALSE
MARSHALL	97	7	sassafras	-86.46405181500	41.27059866370	FALSE	FALSE	FALSE
MARSHALL	98	10	tulip	-86.46405682200	41.27064367630	TRUE	FALSE	FALSE
MARSHALL	99	11	red oak	-86.46410277290	41.27059182020	TRUE	FALSE	FALSE
MARSHALL	100	6	red oak	-86.46419832610	41.27064458010	FALSE	FALSE	FALSE
MARSHALL	101	22	red oak	-86.46419934890	41.27066549240	TRUE	TRUE	FALSE
MARSHALL	102	10	basswood	-86.46418953190	41.27069933590	TRUE	FALSE	FALSE
MARSHALL	103	14	basswood	-86.46420980030	41.27070979550	TRUE	FALSE	FALSE
MARSHALL	104	7	white oak	-86.46424312640	41.27067465600	FALSE	FALSE	FALSE
MARSHALL	105	6	red oak	-86.46432411260	41.27067266110	FALSE	FALSE	FALSE
MARSHALL	106	9	red oak	-86.46431889360	41.27067866970	FALSE	FALSE	FALSE
MARSHALL	107	20	red oak	-86.46438251520	41.27075218760	TRUE	TRUE	FALSE
MARSHALL	108	12	basswood	-86.46441228610	41.27076303330	TRUE	FALSE	FALSE
MARSHALL	109	7	red oak	-86.46444332600	41.27069450920	FALSE	FALSE	FALSE
MARSHALL	110	6	red oak	-86.46449476700	41.27069603520	FALSE	FALSE	FALSE
MARSHALL	111	7	red oak	-86.46449938910	41.27069844430	FALSE	FALSE	FALSE
MARSHALL	112	14	red oak	-86.46444444820	41.27069050950	TRUE	FALSE	FALSE
MARSHALL	113	13	red oak	-86.46444159300	41.27067272060	TRUE	FALSE	FALSE
MARSHALL	114	7	red oak	-86.46451226110	41.27070337190	FALSE	FALSE	FALSE
MARSHALL	115	12	red oak	-86.46454192330	41.27070368970	TRUE	FALSE	FALSE
MARSHALL	116	7	red oak	-86.46459116060	41.27073484750	FALSE	FALSE	FALSE
MARSHALL	117	18	tulip	-86.46462951510	41.27076047850	TRUE	FALSE	FALSE
MARSHALL	118	13	red oak	-86.46465845590	41.27072618870	TRUE	FALSE	FALSE
MARSHALL	119	19	red oak	-86.46468372330	41.27081658660	TRUE	TRUE	FALSE
MARSHALL	120	23	red oak	-86.46472173840	41.27080419470	TRUE	TRUE	FALSE

CONSTRUCTION PHASE:	PHASE 1 & 2	PHASE 1	PHASE 2
	OVERALL	MARSHALL	STARKE
APPROX TREES REMOVED ¹	581	125	456
TREES 10-17"	333	45	288
TREES 18"	112	37	75
POTENTIAL BAT ROOST TREES ²	40	16	24

1. All trees proposed for removal to be marked and diameter listed prior to construction by the Contractor. Engineer/Owner to approve marked trees.

2. All trees removed less than 10" to be included in Clearing, Grubbing, and Obstruction Removal and considered incidental to that line item.

3. Potential bat roost trees are included in the tree counts listed in the two prior rows. It is anticipated that potential bat roost trees will require a bat emergence survey which will be coordinated and paid for by the Owner. The Contractor to coordinate with the Owner in advance of tree removal of potential bat roost trees so that surveys can be scheduled.

4. Digital file with located trees to be made available to awarded contractor.

TREE REMOVAL PLAN LIST									
County	LABEL #	DIAMETER AT BREAST HEIGHT	SPECIES	X	Y	10° OR GREATER?	18° OR GREATER?	POTENTIAL BAT TREE?	
									CONSTRUCTION PHASE:
MARSHALL	121	12	tulip	-86.46473577830	41.27086448250	TRUE	FALSE	FALSE	OVERALL
MARSHALL	122	23	white oak	-86.46475915470	41.27089239440	TRUE	TRUE	FALSE	MARSHALL
MARSHALL	123	6	ironwood	-86.46477484390	41.27090796700	FALSE	FALSE	FALSE	STARKE
MARSHALL	124	6	ironwood	-86.46474081330	41.27087849570	FALSE	FALSE	FALSE	
MARSHALL	125	9	sugar maple	-86.46481808510	41.27087629970	FALSE	FALSE	FALSE	
MARSHALL	126	6	sugar maple	-86.46477866440	41.27082572110	FALSE	FALSE	FALSE	
MARSHALL	127	13	tulip	-86.46481979100	41.27084730820	TRUE	FALSE	FALSE	
MARSHALL	128	15	red oak	-86.46483754380	41.27086682610	TRUE	FALSE	FALSE	
MARSHALL	129	12	tulip	-86.46487253470	41.27083904260	TRUE	FALSE	FALSE	
MARSHALL	130	7	sugar maple	-86.46491325640	41.27092028620	FALSE	FALSE	FALSE	
MARSHALL	131	9	basswood	-86.46495197840	41.27086646820	FALSE	FALSE	FALSE	
MARSHALL	132	12	sugar maple	-86.46496703480	41.27092296440	TRUE	FALSE	FALSE	
MARSHALL	133	25	maple	-86.46490397020	41.27085915840	TRUE	TRUE	FALSE	
MARSHALL	134	6	ironwood	-86.46529284430	41.27109212530	FALSE	FALSE	FALSE	
MARSHALL	135	9	sassafras	-86.46539055300	41.27115553290	FALSE	FALSE	FALSE	
MARSHALL	136	8	red oak	-86.46550808970	41.27113453310	FALSE	FALSE	FALSE	
MARSHALL	137	9	tulip	-86.46562895990	41.27122081100	FALSE	FALSE	FALSE	
MARSHALL	138	13	red oak	-86.46568716320	41.27123492010	TRUE	FALSE	FALSE	
MARSHALL	139	15	basswood	-86.46595541630	41.27132871430	TRUE	FALSE	FALSE	
MARSHALL	140	22	basswood	-86.46595756210	41.27133231380	TRUE	TRUE	FALSE	
MARSHALL	141	12, 12, 9, 14 multiple stem	basswood	-86.46620319500	41.27139420040	TRUE	TRUE	FALSE	
MARSHALL	142	6	elm	-86.46626012870	41.27138843320	FALSE	FALSE	FALSE	
MARSHALL	565	18	hickory	-86.46080031270	41.27153371430	TRUE	TRUE	FALSE	
MARSHALL	566	18	elm	-86.46292745610	41.27064758270	TRUE	TRUE	FALSE	
MARSHALL	567	11	basswood	-86.46046771370	41.27162479040	TRUE	FALSE	FALSE	
MARSHALL	568	10	basswid	-86.465464605800	41.27138886810	TRUE	FALSE	FALSE	
MARSHALL	569	18	silver maple	-86.46543264690	41.27136971670	TRUE	TRUE	FALSE	
MARSHALL	570	15	silver maple	-86.46543532910	41.27134552550	TRUE	FALSE	FALSE	
MARSHALL	571	10	hickory	-86.46540716590	41.27136770080	TRUE	FALSE	FALSE	
MARSHALL	572	15	elm	-86.46536961500	41.27133846980	TRUE	FALSE	FALSE	
MARSHALL	573	10	basswood	-86.46538302610	41.27132330500	TRUE	FALSE	FALSE	
MARSHALL	574	10	red oak	-86.465332358610	41.27052366120	TRUE	FALSE	FALSE	
STARKE	16	8	hickory	-86.46946251600	41.27146794360	FALSE	FALSE	TRUE	
STARKE	17	12	shagbark hickory	-86.46874214420	41.27108024880	TRUE	FALSE	TRUE	
STARKE	19	31	cottonwood	-86.47772497660	41.27462301670	TRUE	TRUE	TRUE	
STARKE	20	10	Elm	-86.47503957420	41.27430644430	TRUE	FALSE	TRUE	
STARKE	21	8	Black walnut	-86.47894509810	41.27230710860	TRUE	FALSE	TRUE	
STARKE	22	8	Elm dead	-86.47669840140	41.27494362490	FALSE	FALSE	TRUE	
STARKE	23	27	silver maple	-86.47630725460	41.27491857790	TRUE	TRUE	TRUE	
STARKE	24	26	cottonwood	-86.47720373270	41.27343308070	TRUE	TRUE	TRUE	
STARKE	25	15	elm dead	-86.47719749290	41.27342253530	TRUE	FALSE	TRUE	
STARKE	26	13	shagbark	-86.47793673770	41.27306484360	TRUE	FALSE	TRUE	
STARKE	27	10	elm	-86.47894509810	41.27230710860	TRUE	FALSE	TRUE	
STARKE	28	32	silver maple	-86.48080817290	41.27131167700	TRUE	TRUE	TRUE	
STARKE	30	32	silver maple	-86.46856650705	41.27137432290	TRUE	TRUE	TRUE	
STARKE	31	13	elm dead	-86.46857182860	41.27142227970	TRUE	FALSE	TRUE	
STARKE	32	22	elm dead	-86.46882394020	41.27142534850	TRUE	TRUE	TRUE	
STARKE	33	37	silver maple	-86.46883527420	41.27149428970	TRUE	TRUE	TRUE	
STARKE	34	15	ash dead	-86.46885001500	41.27153163620	TRUE	FALSE	TRUE	
STARKE	35	9	redbud	-86.46891991120	41.27158894150	FALSE	FALSE	TRUE	
STARKE	37	28	silver maple	-86.47614469400	41.27519829930	TRUE	TRUE	TRUE	
STARKE	38	26	silver maple	-86.47614086060	41.27521019290	TRUE	TRUE	TRUE	
STARKE	41	31	silver	-86.47759379000	41.27396699700	TRUE	TRUE	TRUE	
STARKE	143	7	elm	-86.46464670416	41.27135941730	FALSE	FALSE	FALSE	
STARKE	144	9	hickory	-86.46949549700	41.27147432000	FALSE	FALSE	FALSE	
STARKE	145	14	red oak	-86.46944146000	41.27144528840	TRUE	FALSE	FALSE	
STARKE	146	13	red oak	-86.46944289790	41.27144519800	TRUE	FALSE	FALSE	
STARKE	147	22	red oak	-86.46942407220	41.27145694850	TRUE	TRUE	FALSE	
STARKE	148	8	hickory	-86.46943377650	41.27145416090	FALSE	FALSE	FALSE	
STARKE	149	14	river birch	-86.46937459190	41.27134412230	TRUE	FALSE	FALSE	
STARKE	150	6	red maple	-86.46929423739	41.27127776350	FALSE	FALSE	FALSE	
STARKE	151	12	huckleberry	-86.46918057520	41.27123099200	TRUE	FALSE	FALSE	
STARKE	152	8, 11, 9 multiple stem	black cherry	-86.46916135740	41.27119079230	TRUE	TRUE	FALSE	
STARKE	153	10	Jack pine	-86.46896240820	41.2710590810	TRUE	FALSE	FALSE	
STARKE	154	7	Jack pine	-86.46893739050	41.27104285300	FALSE	FALSE	FALSE	
STARKE	155	9	Jack pine	-86.46888461280	41.27106585730	FALSE	FALSE	FALSE	
STARKE	156	8	Jack pine	-86.46888295130	41.27109909020	FALSE	FALSE	FALSE	
STARKE	157	9	white oak	-86.46887192570	41.27110178620	FALSE	FALSE	FALSE	
STARKE	158	9	Jack pine	-86.46886447880	41.27106347240	FALSE	FALSE	FALSE	
STARKE	159	7	Jack pine	-86.46880604590	41.27105299330	FALSE	FALSE	FALSE	
STARKE	160	7	Jack pine	-86.46878048080	41.27104708190	FALSE	FALSE	FALSE	
STARKE	161	8	Jack pine	-86.46875848400	41.27103046740	FALSE	FALSE	FALSE	
STARKE	162	12	white oak	-86.46876881260	41.27108918990	TRUE	FALSE	FALSE	
STARKE	163	12	elm	-86.46869384560	41.27104285300	FALSE	FALSE	FALSE	
STARKE	164	6	shagbark hickory	-86.46550723360	41.27102813710	FALSE	FALSE	FALSE	
STARKE	165	12, 16 multiple stem	red oak	-86.46584821820	41.27101723110	TRUE	FALSE	FALSE	
STARKE	166	14	honey locust	-86.47033914770	41.27489628160	TRUE	FALSE	FALSE	
STARKE	167	13	river birch	-86.47034279560	41.27485496100	TRUE	FALSE	FALSE	
STARKE	168	7	huckleberry	-86.47031489450	41.27470652890	FALSE	FALSE	FALSE	
STARKE	169	13	silver maple	-86.47034405900	41.27467725560	TRUE	FALSE	FALSE	
STARKE	170	13	sycamore	-86.47029511960	41.27463243040	TRUE	FALSE	FALSE	
STARKE	171	15	silver maple	-86.47029511960	41.27463630030	TRUE	FALSE	FALSE	
STARKE	172	13	silver maple	-86.47027895650	41.27460540270	TRUE	FALSE	FALSE	
STARKE	173	6	box elder	-86.47155088770	41.27523925510	FALSE	FALSE	FALSE	
STARKE	174	20	silver maple	-86.47157066340	41.27528010310	TRUE	TRUE	FALSE	
STARKE	175	11	huckleberry	-86.47170065690	41.27518450200	TRUE	FALSE	FALSE	
STARKE	176	8	huckleberry	-86.47174459550	41.27517469600	FALSE	FALSE	FALSE	
STARKE	177	13	silver maple	-86.47175597900	41.27518565130	TRUE	FALSE	FALSE	
STARKE	178	14	huckleberry	-86.47177270790	41.27520418980	TRUE	FALSE	FALSE	
STARKE	179	9	basswood	-86.47182734860	41.27517678900	FALSE	FALSE	FALSE	
STARKE	180	8	huckleberry	-86.47188625110	41.27518002240	FALSE	FALSE	FALSE	
STARKE	181	8	huckleberry	-86.47194304750	41.27515057970	FALSE	FALSE	FALSE	
STARKE	182	6, 8 multiple stem	redbud	-86.47199492860	41.27516935690	FALSE	FALSE	FALSE	
STARKE	183	6, 8 multiple stem	redbud	-86.47199492860	41.27516935690	FALSE	FALSE	FALSE	
STARKE	184	6	redbud	-86.47208112510	41.27515807820	FALSE	FALSE	FALSE	
STARKE	185	10, 6, 6 multiple stem	ash	-86.47212404960	41.27518099350	TRUE	FALSE	FALSE	
STARKE	186	8	huckleberry	-86.47227332550	41.27512103770	FALSE	FALSE	FALSE	

TREE REMOVAL PLAN LIST									
County	LABEL #	DIAMETER AT BREAST HEIGHT	SPECIES	X	Y	10° OR GREATER?	18° OR GREATER?	POTENTIAL BAT TREE?	
									CONSTRUCTION PHASE:
									OVERALL MARSHALL STARKE
STARKE	187	6	basswood	-86.47228745480	41.27515065680	FALSE	FALSE	FALSE	
STARKE	188	6	basswood	-86.47252644830	41.27509295490	FALSE	FALSE	FALSE	
STARKE	189	9	elm	-86.47257871100	41.27509276900	FALSE	FALSE	FALSE	
STARKE	190	12, 6 multiple stem	honey locust	-86.47812483090	41.27472157560	TRUE	FALSE	FALSE	
STARKE	191	6	honey locust	-86.47813552870	41.27470552830	FALSE	FALSE	FALSE	
STARKE	192	17	silver maple	-86.47812718750	41.27465305680	TRUE	FALSE	FALSE	
STARKE	193	9	sycamore	-86.47811593810	41.27467235590	FALSE	FALSE	FALSE	
STARKE	194	16	sycamore	-86.47811766610	41.27466035100	TRUE	FALSE	FALSE	
STARKE	195	16	honey locust	-86.47812760430	41.27463120690	TRUE	FALSE	FALSE	
STARKE	196	6	sycamore	-86.47813850380	41.27460976850	FALSE	FALSE	FALSE	
STARKE	197	10	sycamore	-86.47816792820	41.27463412490	TRUE	FALSE	FALSE	
STARKE	198	13	honey locust	-86.47811416190	41.27454390790	TRUE	FALSE	FALSE	
STARKE	199	13	silver maple	-86.47811863880	41.27456303770	TRUE	FALSE	FALSE	
STARKE	200	17	silver maple	-86.47808010920	41.27462978800	TRUE	FALSE	FALSE	
STARKE	201	13	silver maple	-86.47808140550	41.27457884850	TRUE	FALSE	FALSE	
STARKE	202	24	silver maple	-86.47810373130	41.27463029930	TRUE	TRUE	FALSE	
STARKE	203	15	silver maple	-86.47807534770	41.27461941380	TRUE	FALSE	FALSE	
STARKE	204	9	silver maple	-86.47800291960	41.27465953230	FALSE	FALSE	FALSE	
STARKE	205	6	elm	-86.47800968490	41.27465041370	FALSE	FALSE	FALSE	
STARKE	206	7	hackberry	-86.4779170940	41.27463045300	FALSE	FALSE	FALSE	
STARKE	207	9	silver maple	-86.47799631590	41.27462027960	FALSE	FALSE	FALSE	
STARKE	208	6	hackberry	-86.47798243860	41.27459834270	FALSE	FALSE	FALSE	
STARKE	209	9	elm	-86.47803478800	41.27454209560	FALSE	FALSE	FALSE	
STARKE	210	9	silver maple	-86.47802818970	41.27451001600	FALSE	FALSE	FALSE	
STARKE	211	25	sycamore	-86.47809505450	41.27450006550	TRUE	TRUE	FALSE	
STARKE	212	12	box elder	-86.47810323710	41.27448390520	TRUE	FALSE	FALSE	
STARKE	213	25	sycamore	-86.47810807100	41.27447181070	TRUE	TRUE	FALSE	
STARKE	214	21	sycamore	-86.47805644700	41.27444827670	TRUE	TRUE	FALSE	
STARKE	215	9	hackberry	-86.47795880270	41.27462997930	FALSE	FALSE	FALSE	
STARKE	216	16	honey locust	-86.47793909990	41.27462600920	TRUE	FALSE	FALSE	
STARKE	217	14	elm	-86.47790884410	41.27462560560	TRUE	FALSE	FALSE	
STARKE	218	10	elm	-86.47791104130	41.27462529190	TRUE	FALSE	FALSE	
STARKE	219	11	black walnut	-86.47792733700	41.27469704380	TRUE	FALSE	FALSE	
STARKE	220	8	box elder	-86.4778988790	41.27467708870	FALSE	FALSE	FALSE	
STARKE	221	15	elm	-86.47780463520	41.27461003230	TRUE	FALSE	FALSE	
STARKE	222	6	hackberry	-86.47779222230	41.27460962540	FALSE	FALSE	FALSE	
STARKE	223	13	honey locust	-86.47773445610	41.27462885010	TRUE	FALSE	FALSE	
STARKE	224	10	Hackberry	-86.47475003010	41.27428635880	TRUE	FALSE	FALSE	
STARKE	225	15	Pignut	-86.47482430880	41.27423917160	TRUE	FALSE	FALSE	
STARKE	226	11	Basswood	-86.47490373450	41.27425507000	TRUE	FALSE	FALSE	
STARKE	227	11	Basswood	-86.47482343480	41.27425959330	TRUE	FALSE	FALSE	
STARKE	228	7	Hackberry	-86.47483335290	41.27424773960	FALSE	FALSE	FALSE	
STARKE	229	16	Basswood	-86.47487453250	41.27424991690	TRUE	FALSE	FALSE	
STARKE	230	15	Basswood	-86.4748067890	41.27432558680	TRUE	FALSE	FALSE	
STARKE	231	6	Basswood	-86.47491221840	41.274225814960	FALSE	FALSE	FALSE	
STARKE	232	10	Hackberry	-86.47492302570	41.27425560490	TRUE	FALSE	FALSE	
STARKE	233	7	Elm	-86.47497595770	41.27427301220	FALSE	FALSE	FALSE	
STARKE	234	8	Hackberry	-86.47495747460	41.27424793350	FALSE	FALSE	FALSE	
STARKE	235	7	Elm	-86.47500041330	41.274245472670	FALSE	FALSE	FALSE	
STARKE	236	7	Elm	-86.47503523250	41.27421723260	FALSE	FALSE	FALSE	
STARKE	237	11	Elm	-86.47506594670	41.27432897400	TRUE	FALSE	FALSE	
STARKE	238	7	Hackberry	-86.47508018680	41.27431411580	FALSE	FALSE	FALSE	
STARKE	239	15	Basswood	-86.47507271340	41.27430784350	TRUE	FALSE	FALSE	
STARKE	240	22	Silver maple	-86.47511362720	41.27428160620	TRUE	TRUE	FALSE	
STARKE	241	9	Basswood	-86.47525303210	41.27431314730	FALSE	FALSE	FALSE	
STARKE	242	7	Basswood	-86.47526668320	41.27431923180	FALSE	FALSE	FALSE	
STARKE	243	13	Hackberry	-86.47530484840	41.27428309160	TRUE	FALSE	FALSE	
STARKE	244	7	Elm	-86.47530260040	41.27430583530	FALSE	FALSE	FALSE	
STARKE	245	11	Hackberry	-86.47535062620	41.27424902560	TRUE	FALSE	FALSE	
STARKE	246	10	Hackberry	-86.47534592780	41.27428121730	TRUE	FALSE	FALSE	
STARKE	247	14	Elm	-86.47534633200	41.27435013280	TRUE	FALSE	FALSE	
STARKE	248	10	Elm	-86.47544344240	41.27429573630	TRUE	FALSE	FALSE	
STARKE	249	10	Pignut	-86.47554370350	41.27430730060	TRUE	FALSE	FALSE	
STARKE	250	6	Pignut	-86.47566224280	41.27436271590	FALSE	FALSE	FALSE	
STARKE	251	6	Pignut	-86.47565853780	41.27438262500	FALSE	FALSE	FALSE	
STARKE	252	6	Pignut	-86.47565948780	41.27439675410	FALSE	FALSE	FALSE	
STARKE	253	9	Pignut	-86.47571864670	41.27441364570	FALSE	FALSE	FALSE	
STARKE	254	8	Pignut	-86.47574131210	41.27440063030	FALSE	FALSE	FALSE	
STARKE	255	8	Pignut	-86.47574872940	41.27439786850	FALSE	FALSE	FALSE	
STARKE	256	9	Pignut	-86.47589210020	41.27452173480	FALSE	FALSE	FALSE	
STARKE	257	6	Hackberry	-86.47598919920	41.27470800560	FALSE	FALSE	FALSE	
STARKE	258	11	Hackberry	-86.47598868580	41.27470478880	TRUE	FALSE	FALSE	
STARKE	259	6	Hackberry	-86.47603247670	41.27472690430	FALSE	FALSE	FALSE	
STARKE	260	11	Hackberry	-86.47609133440	41.27477863940	TRUE	FALSE	FALSE	
STARKE	261	24	silver maple	-86.47683244300	41.27477669590	TRUE	TRUE	FALSE	
STARKE	262	12	black walnut	-86.47693406200	41.27461720810	TRUE	FALSE	FALSE	
STARKE	264	22	elm	-86.476962950120	41.27463233390	TRUE	TRUE	FALSE	
STARKE	265	20	Sycamore	-86.47661627440	41.27480062370	TRUE	TRUE	FALSE	
STARKE	267	7	Hackberry	-86.47651438320	41.27484743950	FALSE	FALSE	FALSE	
STARKE	268	7	Basswood	-86.476506481760	41.27481952760	FALSE	FALSE	FALSE	
STARKE	269	21	silver maple	-86.47650863180	41.27483358500	TRUE	TRUE	FALSE	
STARKE	270	11	elm	-86.47651702702	41.27485033420	TRUE	FALSE	FALSE	
STARKE	271	9	silver maple	-86.47651651890	41.27489345230	FALSE	FALSE	FALSE	
STARKE	272	9	elm	-86.47612657400	41.27491827530	FALSE	FALSE	FALSE	
STARKE	273	13	Basswood	-86.47604367580	41.27497194870	TRUE	FALSE	FALSE	
STARKE	274	9	Basswood	-86.47605333690	41.27497974970	FALSE	FALSE	FALSE	
STARKE	275	22	Basswood	-86.47608001940	41.27494732300	TRUE	TRUE	FALSE	
STARKE	276	18	Basswood	-86.476060655350	41.27496440490	TRUE	TRUE	FALSE	
STARKE	277	6	Basswood	-86.47605652550	41.27495712330	FALSE	FALSE	FALSE	
STARKE	278	18	sycamore	-86.47614523970	41.27493966210	TRUE	TRUE	FALSE	
STARKE	279	19	sycamore	-86.47616555920	41.27494050920	TRUE	TRUE	FALSE	
STARKE	280	14	silver maple	-86.47620233950	41.27497076940	TRUE	FALSE	FALSE	
STARKE	281	18	silver maple	-86.47620640810	41.27493822050	TRUE	TRUE	FALSE	
STARKE	282	18	silver maple	-86.47620769620	41.27493369340	TRUE	TRUE	FALSE	
STARKE	283	17	sycamore	-86.4761766180	41.2749200300	TRUE	FALSE	FALSE	
STARKE	284	12	silver maple	-86.47625096720	41.27492297220	TRUE	FALSE	FALSE	
STARKE	285	18	silver maple	-86.47622885590	41.27490792460	TRUE	TRUE	FALSE	
STARKE	286	15	silver maple	-86.47625682530	41.27480968630	TRUE	FALSE	FALSE	

TREE REMOVAL PLAN LIST												
County	Label #	Diameter at Breast Height	Species	X	Y	10° or Greater?	18° or Greater?	Potential Bat Tree?	Construction Phase:	Phase 1 & 2	Phase 1	Phase 2
									Overall	Marshall	Starke	
STARKE	287	13	silver maple	-86.47624891110	41.27486413930	TRUE	FALSE	FALSE				
STARKE	288	13	silver maple	-86.47626861579	41.27492312770	TRUE	FALSE	FALSE				
STARKE	289	9	silver maple	-86.47634085204	41.27491090410	FALSE	FALSE	FALSE				
STARKE	290	23	sycamore	-86.476375828210	41.27487610840	TRUE	TRUE	FALSE				
STARKE	291	7	elm	-86.47655842020	41.27494211020	FALSE	FALSE	FALSE				
STARKE	292	7	honey locust	-86.47656542010	41.27491648370	FALSE	FALSE	FALSE				
STARKE	293	7	river birch	-86.47633033520	41.27493250260	FALSE	FALSE	FALSE				
STARKE	294	10	honey locust	-86.47628288640	41.27498354800	TRUE	FALSE	FALSE				
STARKE	295	18	sycamore	-86.47626490380	41.27502475840	TRUE	TRUE	FALSE				
STARKE	296	17	sycamore	-86.47621874940	41.27501437160	TRUE	FALSE	FALSE				
STARKE	297	9	sycamore	-86.47625232120	41.27505299920	FALSE	FALSE	FALSE				
STARKE	298	19	sycamore	-86.47615914140	41.27502560400	TRUE	TRUE	FALSE				
STARKE	299	21	black walnut	-86.47702783690	41.27466378200	TRUE	TRUE	FALSE				
STARKE	300	10	hackberry	-86.47703963620	41.27460485800	TRUE	FALSE	FALSE				
STARKE	301	15	hackberry	-86.47717134460	41.27460614680	TRUE	FALSE	FALSE				
STARKE	302	6	red bud	-86.47725820970	41.27475763550	FALSE	FALSE	FALSE				
STARKE	303	13	hackberry	-86.47738226510	41.27460728930	TRUE	FALSE	FALSE				
STARKE	304	6	elm	-86.47744248140	41.27460964340	FALSE	FALSE	FALSE				
STARKE	305	11	basswood	-86.47755165650	41.27459253090	TRUE	FALSE	FALSE				
STARKE	306	12	hackberry	-86.47727809150	41.27408612890	TRUE	FALSE	FALSE				
STARKE	307	6	elm	-86.47726207000	41.27404887200	FALSE	FALSE	FALSE				
STARKE	308	6	red bud	-86.47723943060	41.27404380210	FALSE	FALSE	FALSE				
STARKE	309	3, 6 multiple stem	basswood	-86.47724014030	41.27395774450	FALSE	FALSE	FALSE				
STARKE	310	7	red bud	-86.47719363250	41.27397944390	FALSE	FALSE	FALSE				
STARKE	311	9	bitternut	-86.47713516610	41.27388945320	FALSE	FALSE	FALSE				
STARKE	312	9	walnut	-86.47716297000	41.27382501330	FALSE	FALSE	FALSE				
STARKE	313	9	bitternut	-86.47709672460	41.27378459310	FALSE	FALSE	FALSE				
STARKE	314	7	elm	-86.47708805140	41.27378547240	FALSE	FALSE	FALSE				
STARKE	315	8	hackberry	-86.47715484230	41.27367919640	FALSE	FALSE	FALSE				
STARKE	316	8	hackberry	-86.47716279480	41.27366467750	FALSE	FALSE	FALSE				
STARKE	317	9	hackberry	-86.47716005610	41.27367856520	FALSE	FALSE	FALSE				
STARKE	318	9	hackberry	-86.47710620920	41.27375380520	FALSE	FALSE	FALSE				
STARKE	319	12	walnut	-86.47712583230	41.27364911390	TRUE	FALSE	FALSE				
STARKE	320	13, 10 stump	hickory	-86.47715706090	41.27353437580	TRUE	TRUE	FALSE				
STARKE	321	6	hackberry	-86.47720404710	41.27339421350	FALSE	FALSE	FALSE				
STARKE	322	10	walnut	-86.47723866870	41.27341522760	TRUE	FALSE	FALSE				
STARKE	323	14	hickory	-86.47722152690	41.27337955960	TRUE	FALSE	FALSE				
STARKE	324	15	hackberry	-86.47722314730	41.27336818870	TRUE	FALSE	FALSE				
STARKE	325	8	walnut	-86.47722033770	41.27330004960	FALSE	FALSE	FALSE				
STARKE	326	50	sycamore	-86.47720206110	41.27329266630	TRUE	TRUE	FALSE				
STARKE	327	12	hackberry	-86.47727753440	41.27327139510	TRUE	FALSE	FALSE				
STARKE	328	7	hackberry	-86.47737303650	41.27322312420	FALSE	FALSE	FALSE				
STARKE	329	8	elm	-86.47736940010	41.27322274740	FALSE	FALSE	FALSE				
STARKE	330	32	white oak	-86.47732290200	41.27320417500	TRUE	TRUE	FALSE				
STARKE	331	9	hackberry	-86.47741628160	41.27322489380	FALSE	FALSE	FALSE				
STARKE	332	8	hackberry	-86.47738954610	41.27322816200	FALSE	FALSE	FALSE				
STARKE	333	9	elm	-86.47739123795	41.27322163380	FALSE	FALSE	FALSE				
STARKE	334	9	hickory	-86.47738454730	41.27317505400	FALSE	FALSE	FALSE				
STARKE	335	11	hickory	-86.47738414460	41.27317513820	TRUE	FALSE	FALSE				
STARKE	336	9	hackberry	-86.47743634500	41.27314258130	FALSE	FALSE	FALSE				
STARKE	337	6	hickory	-86.47751942010	41.27316473940	FALSE	FALSE	FALSE				
STARKE	338	7	hickory	-86.47752113990	41.273136812370	FALSE	FALSE	FALSE				
STARKE	339	8	sugar maple	-86.47757654050	41.27317880120	FALSE	FALSE	FALSE				
STARKE	340	7	hickory	-86.47759400030	41.27313587560	FALSE	FALSE	FALSE				
STARKE	341	8	basswood	-86.47762214560	41.27312994240	FALSE	FALSE	FALSE				
STARKE	342	11	basswood	-86.47761775360	41.273131951870	TRUE	FALSE	FALSE				
STARKE	343	9	basswood	-86.47760764040	41.27313239300	FALSE	FALSE	FALSE				
STARKE	344	10	hickory	-86.47761188520	41.27311144810	TRUE	FALSE	FALSE				
STARKE	345	16	hickory	-86.4777057830	41.27313083040	TRUE	FALSE	FALSE				
STARKE	346	18	hickory	-86.47778519360	41.27306845150	TRUE	TRUE	FALSE				
STARKE	347	12	hickory	-86.47790739160	41.27307488600	TRUE	FALSE	FALSE				
STARKE	348	14	hickory	-86.47804004710	41.27305023240	TRUE	FALSE	FALSE				
STARKE	349	8	hickory	-86.47805616290	41.27302868490	FALSE	FALSE	FALSE				
STARKE	350	10	hickory	-86.47808102040	41.27303755300	TRUE	FALSE	FALSE				
STARKE	351	15	cherry	-86.478183033440	41.27303791950	TRUE	FALSE	FALSE				
STARKE	352	7	hackberry	-86.47819820640	41.27302860490	FALSE	FALSE	FALSE				
STARKE	353	9	white oak	-86.47825301210	41.27301905650	FALSE	FALSE	FALSE				
STARKE	354	7	basswood	-86.47825035250	41.27302389110	FALSE	FALSE	FALSE				
STARKE	355	8	sassafras	-86.47839874080	41.27302423720	FALSE	FALSE	FALSE				
STARKE	356	11	red oak	-86.47846813820	41.27303844370	TRUE	FALSE	FALSE				
STARKE	357	10	red oak	-86.47849044160	41.27304836450	TRUE	FALSE	FALSE				
STARKE	358	11	red oak	-86.47851432720	41.27304664790	TRUE	FALSE	FALSE				
STARKE	359	11	basswood	-86.4785184590	41.27306946270	TRUE	FALSE	FALSE				
STARKE	360	13	red oak	-86.47860795300	41.27309246360	TRUE	FALSE	FALSE				
STARKE	361	12	hackberry	-86.47872090600	41.27316319460	TRUE	FALSE	FALSE				
STARKE	362	30	red oak	-86.47876319230	41.27315247020	TRUE	TRUE	FALSE				
STARKE	363	14	elm	-86.47874974130	41.27312049110	TRUE	FALSE	FALSE				
STARKE	364	11	hickory	-86.47890260150	41.27320804840	TRUE	FALSE	FALSE				
STARKE	365	16	red oak	-86.47895681110	41.27320758300	TRUE	FALSE	FALSE				
STARKE	366	13	red oak	-86.47894927020	41.27323124040	TRUE	FALSE	FALSE				
STARKE	367	12	hickory	-86.47892266150	41.27334522110	TRUE	FALSE	FALSE				
STARKE	368	16	red oak	-86.47895230650	41.27325146790	TRUE	FALSE	FALSE				
STARKE	369	14	red oak	-86.47903254840	41.27325507500	TRUE	FALSE	FALSE				
STARKE	370	7	hickory	-86.47906746030	41.27324316730	FALSE	FALSE	FALSE				
STARKE	371	15	red oak	-86.47907976620	41.27329415880	TRUE	FALSE	FALSE				
STARKE	372	10	white oak	-86.47917000580	41.27332209840	TRUE	FALSE	FALSE				
STARKE	373	12	white oak	-86.47923212830	41.27335387900	TRUE	FALSE	FALSE				
STARKE	374	17	white oak	-86.4792966150	41.27334522110	TRUE	FALSE	FALSE				
STARKE	375	17	red oak	-86.47934502030	41.2733858770	TRUE	FALSE	FALSE				
STARKE	376	7	hickory	-86.479399558830	41.27335802270	FALSE	FALSE	FALSE				
STARKE	377	6,6,6,8 multiple stem	basswood	-86.47939558830	41.27335802270	FALSE	FALSE	FALSE				
STARKE	378	9	hickory	-86.479403094910	41.27335988950	FALSE	FALSE	FALSE				
STARKE	379	21	red oak	-86.47945446830	41.27336824960	TRUE	TRUE	FALSE				
STARKE	380	7	hickory	-86.47950529370	41.27336793530	FALSE	FALSE	FALSE				
STARKE	381	9	hickory	-86.47952618770	41.27338602250	FALSE	FALSE	FALSE				
STARKE	382	16	red oak	-86.47952885450	41.27338335320	TRUE	FALSE	FALSE				
STARKE	383	16	red oak	-86.47952434830	41.27337104240	TRUE	FALSE	FALSE				
STARKE	384	8	elm	-86.47955690090	41.27337938790	FALSE	FALSE	FALSE				
STARKE	385	6	elm	-86.47958847250	41.27338543000	FALSE	FALSE	FALSE				

TREE REMOVAL PLAN LIST						
County	LABEL #	DIAMETER AT BREAST HEIGHT	SPECIES	X	Y	10° OR GREATER? 18° OR GREATER? POTENTIAL BAT TREE?
STARKE	386	8	elm	-86.47959102220	41.27336630990	FALSE FALSE FALSE
STARKE	387	8	white oak	-86.4795808150	41.27336521170	FALSE FALSE FALSE
STARKE	389	7	hickory	-86.47954164920	41.27343247330	FALSE FALSE FALSE
STARKE	390	8	hickory	-86.47954918060	41.27344013980	FALSE FALSE FALSE
STARKE	391	7,7,8 multiple stem	basswood	-86.46815519530	41.27135320140	FALSE FALSE FALSE
STARKE	392	19	butternut hickory	-86.46821418550	41.27134586600	TRUE TRUE FALSE
STARKE	393	8, 9 multiple stem	basswood	-86.46819703460	41.27129752370	FALSE FALSE FALSE
STARKE	394	6, 12 multiple stem	basswood	-86.46829027150	41.27134359760	TRUE FALSE FALSE
STARKE	395	12	basswood	-86.46831007820	41.27133688860	TRUE FALSE FALSE
STARKE	396	8	basswood	-86.46835412880	41.27130801210	FALSE FALSE FALSE
STARKE	397	14, 14, 6 multiple stem	basswood	-86.46845341170	41.27133227900	TRUE TRUE FALSE
STARKE	398	16	red oak	-86.46850755590	41.27131750240	TRUE FALSE FALSE
STARKE	399	11	hackberry	-86.46855209830	41.27137469390	TRUE FALSE FALSE
STARKE	400	11	hickory	-86.46855207360	41.27137707780	TRUE FALSE FALSE
STARKE	401	23	silver maple	-86.46865965960	41.27137002670	TRUE TRUE FALSE
STARKE	402	19	black walnut	-86.46875286980	41.27145867920	TRUE TRUE FALSE
STARKE	403	9	hackberry	-86.46888284740	41.27152630500	FALSE FALSE FALSE
STARKE	404	11	pignut hickory	-86.46887499660	41.27159841910	TRUE FALSE FALSE
STARKE	405	8	hackberry	-86.46894401020	41.27161989260	FALSE FALSE FALSE
STARKE	406	7	hackberry	-86.468954614220	41.27163065180	FALSE FALSE FALSE
STARKE	407	6	ash dead	-86.46895543580	41.27165062260	FALSE FALSE FALSE
STARKE	408	9	hackberry	-86.46895591000	41.2715971230	FALSE FALSE FALSE
STARKE	409	8	honey locust	-86.46895783160	41.27157702790	FALSE FALSE FALSE
STARKE	410	14	box elder	-86.46900703380	41.27157381030	TRUE FALSE FALSE
STARKE	411	12	willow	-86.46897175810	41.27156918440	TRUE FALSE FALSE
STARKE	412	6	sycamore	-86.46896682200	41.27150105570	FALSE FALSE FALSE
STARKE	413	18	sycamore	-86.46902499730	41.27166644210	TRUE TRUE FALSE
STARKE	414	17	sycamore	-86.46898888400	41.27165347700	TRUE FALSE FALSE
STARKE	415	6	redbud	-86.46899778910	41.27168968810	FALSE FALSE FALSE
STARKE	416	6	honey locust	-86.46911951180	41.27168972380	FALSE FALSE FALSE
STARKE	417	10	sycamore	-86.46912993870	41.27169341940	TRUE FALSE FALSE
STARKE	418	6	redbud	-86.46914535860	41.27220070740	FALSE FALSE FALSE
STARKE	419	6, 6 multiple stem	mulberry	-86.46922198110	41.27225378480	FALSE FALSE FALSE
STARKE	420	7	mulberry	-86.46925658210	41.27228894510	FALSE FALSE FALSE
STARKE	421	7	mulberry	-86.46929700480	41.27233592810	FALSE FALSE FALSE
STARKE	422	6	redbud	-86.46937515270	41.27243733790	FALSE FALSE FALSE
STARKE	423	6	redbud	-86.46940857920	41.27248435990	FALSE FALSE FALSE
STARKE	424	14, 10, 6, 16 multiple stem	basswood	-86.4694977620	41.27247210570	TRUE TRUE FALSE
STARKE	425	11	hackberry	-86.46951790770	41.27249713280	TRUE FALSE FALSE
STARKE	426	16, 16 multiple stem	hackberry	-86.46954640400	41.27255104890	TRUE TRUE FALSE
STARKE	427	6, 6, 7 multiple stem	basswood	-86.46999405900	41.27442448430	FALSE FALSE FALSE
STARKE	429	14	hackberry	-86.470013897380	41.27436375750	TRUE FALSE FALSE
STARKE	430	18	black walnut	-86.46999312080	41.27437746030	TRUE TRUE FALSE
STARKE	431	9	hackberry	-86.46999127730	41.27442324680	FALSE FALSE FALSE
STARKE	432	16	elm	-86.46996360980	41.27444771730	TRUE FALSE FALSE
STARKE	433	10	hackberry	-86.46996453630	41.27453202600	TRUE FALSE FALSE
STARKE	434	8, 17 multiple stem	elm	-86.46999040990	41.27457204530	TRUE TRUE FALSE
STARKE	435	6	elm	-86.46994367780	41.27459540240	FALSE FALSE FALSE
STARKE	436	6	redbud	-86.46999361640	41.27465328270	FALSE FALSE FALSE
STARKE	437	14	black walnut	-86.469995250820	41.27469674820	TRUE FALSE FALSE
STARKE	438	9	black walnut	-86.46999618390	41.27478747560	FALSE FALSE FALSE
STARKE	439	6	redbud	-86.469991571350	41.27481822890	FALSE FALSE FALSE
STARKE	440	10, 10, 6, 7 multiple stem	black walnut	-86.469993050600	41.27484070808	TRUE TRUE FALSE
STARKE	441	7	elm	-86.46996508700	41.27483012140	FALSE FALSE FALSE
STARKE	442	8	black walnut	-86.46996484150	41.27487996890	FALSE FALSE FALSE
STARKE	443	6	elm	-86.46991269850	41.27487196250	FALSE FALSE FALSE
STARKE	444	6	hackberry	-86.469992022550	41.27502098190	FALSE FALSE FALSE
STARKE	445	6	black walnut	-86.46999804040	41.27503455780	FALSE FALSE FALSE
STARKE	446	7	hackberry	-86.46999715610	41.27502787470	FALSE FALSE FALSE
STARKE	447	6	black walnut	-86.46999470809	41.27507050750	FALSE FALSE FALSE
STARKE	448	7	black walnut	-86.46987725970	41.27511665950	FALSE FALSE FALSE
STARKE	449	6	hackberry	-86.469993607870	41.27524428040	FALSE FALSE FALSE
STARKE	450	9	hackberry	-86.469993071810	41.27524612080	FALSE FALSE FALSE
STARKE	451	9	hackberry	-86.46999140030	41.27537521610	FALSE FALSE FALSE
STARKE	452	8, 10, 10, 8 multiple stem	basswood	-86.47005189500	41.27542978570	TRUE TRUE FALSE
STARKE	453	6	black cherry	-86.47020189750	41.27545836770	FALSE FALSE FALSE
STARKE	454	6, 6, 6 multiple stem	basswood	-86.47026118110	41.27548158690	FALSE FALSE FALSE
STARKE	455	6	redbud	-86.470242496450	41.27548732590	FALSE FALSE FALSE
STARKE	456	10, 10 multiple stem	honey locust	-86.47026202120	41.27553717420	TRUE TRUE FALSE
STARKE	457	13	sycamore	-86.47036122330	41.27550817760	TRUE FALSE FALSE
STARKE	458	12	mulberry	-86.47041343870	41.27552738520	TRUE FALSE FALSE
STARKE	459	9	black walnut	-86.47058366610	41.27564229070	FALSE FALSE FALSE
STARKE	460	9	box elder	-86.47074682870	41.27568042780	FALSE FALSE FALSE
STARKE	461	7	box elder	-86.47094751550	41.27572530620	FALSE FALSE FALSE
STARKE	462	8	silver maple	-86.47122435340	41.27572476460	FALSE FALSE FALSE
STARKE	463	8	silver maple	-86.47128399390	41.27569625480	FALSE FALSE FALSE
STARKE	464	6	hickory	-86.47156355120	41.27554329690	FALSE FALSE FALSE
STARKE	465	6	redbud	-86.47160593640	41.27553575000	FALSE FALSE FALSE
STARKE	466	10	redbud	-86.47167246090	41.27552003210	TRUE FALSE FALSE
STARKE	467	9	honey locust	-86.47542895310	41.27459208920	FALSE FALSE FALSE
STARKE	468	8	honey locust	-86.47546431270	41.27471711720	FALSE FALSE FALSE
STARKE	469	12, 14 multiple stem	silver maple	-86.47547373020	41.274751581370	TRUE TRUE FALSE
STARKE	470	8	basswood	-86.47548545080	41.27476182690	FALSE FALSE FALSE
STARKE	471	6	box elder	-86.47567296740	41.27488403080	FALSE FALSE FALSE
STARKE	472	6	box elder	-86.47565197830	41.27490503860	FALSE FALSE FALSE
STARKE	473	9	box elder	-86.47571227270	41.2750266090	FALSE FALSE FALSE
STARKE	474	9, 12, 16 multiple stem	silver maple	-86.47582053250	41.27512382580	TRUE TRUE FALSE
STARKE	475	7	hackberry	-86.47584542490	41.27512046390	FALSE FALSE FALSE
STARKE	476	12	black walnut	-86.47614459830	41.27527376040	TRUE FALSE FALSE
STARKE	477	8	hackberry	-86.47619311030	41.27521254170	FALSE FALSE FALSE
STARKE	478	18	silver	-86.47613037350	41.27521428180	TRUE TRUE FALSE
STARKE	479	20	silver maple	-86.47613664470	41.27523510290	TRUE TRUE FALSE
STARKE	480	6	hackberry	-86.47623465670	41.27525971990	FALSE FALSE FALSE
STARKE	481	7	honey locust	-86.47632566020	41.27526238960	FALSE FALSE FALSE
STARKE	482	16	elm	-86.47640341720	41.27521598540	TRUE FALSE FALSE

CONSTRUCTION PHASE:	PHASE 1 & 2	PHASE 1	PHASE 2
	OVERALL	MARSHALL	STARKE

TREE REMOVAL PLAN LIST												
County	LABEL #	DIAMETER AT BREAST HEIGHT	SPECIES	X	Y	10° OR GREATER?	18° OR GREATER?	POTENTIAL BAT TREE?	CONSTRUCTION PHASE:	PHASE 1 & 2	PHASE 1	PHASE 2
									OVERALL	MARSHALL	STARKE	
STARKE	483	12	river birch	-86.47639624760	41.27520480010	TRUE	FALSE	FALSE				
STARKE	484	8	huckleberry	-86.47641362940	41.27525494020	FALSE	FALSE	FALSE				
STARKE	485	9	honey locust	-86.47647204030	41.27522852820	FALSE	FALSE	FALSE				
STARKE	486	6	honey locust	-86.47647022160	41.27523222870	FALSE	FALSE	FALSE				
STARKE	487	12	honey locust	-86.47640381260	41.27525994580	TRUE	FALSE	FALSE				
STARKE	488	13	honey locust	-86.47642891880	41.27524969240	TRUE	FALSE	FALSE				
STARKE	489	9	honey locust	-86.47659934990	41.27520431060	FALSE	FALSE	FALSE				
STARKE	490	12	huckleberry	-86.47667781860	41.27517463200	TRUE	FALSE	FALSE				
STARKE	491	12, 14, 18 multiple stem	honey locust	-86.47668410930	41.27515338880	TRUE	TRUE	TRUE				
STARKE	492	11	huckleberry	-86.47691858780	41.27504215650	TRUE	FALSE	FALSE				
STARKE	493	6	huckleberry	-86.47688656140	41.27503083170	FALSE	FALSE	FALSE				
STARKE	494	11	huckleberry	-86.47700183110	41.27502081420	TRUE	FALSE	FALSE				
STARKE	495	16	basswood	-86.47707683780	41.27497768710	TRUE	FALSE	FALSE				
STARKE	496	18	sycamore	-86.47729439690	41.27493235980	TRUE	TRUE	FALSE				
STARKE	497	17	box elder	-86.47736462920	41.27491490220	TRUE	FALSE	FALSE				
STARKE	498	18	honey locust	-86.47739504285	41.27493022510	TRUE	TRUE	FALSE				
STARKE	499	8	box elder	-86.47740414630	41.27490838660	FALSE	FALSE	FALSE				
STARKE	500	14	honey locust	-86.47743547810	41.27491089080	TRUE	FALSE	FALSE				
STARKE	501	8	honey locust	-86.47740428050	41.27493231470	FALSE	FALSE	FALSE				
STARKE	502	8	black walnut	-86.47751639500	41.27493516700	FALSE	FALSE	FALSE				
STARKE	503	7	black walnut	-86.47761234660	41.27499115480	FALSE	FALSE	FALSE				
STARKE	504	9, 8, 10 multiple stem	basswood	-86.47802337510	41.27502897350	TRUE	TRUE	FALSE				
STARKE	505	16	red oak	-86.47799240780	41.27504252640	TRUE	FALSE	FALSE				
STARKE	506	14	honey locust	-86.47810127230	41.27504449330	TRUE	FALSE	FALSE				
STARKE	507	6	black cherry	-86.47825771480	41.27500072340	FALSE	FALSE	FALSE				
STARKE	508	10	basswood	-86.47827435300	41.27500826210	TRUE	FALSE	FALSE				
STARKE	509	7	mulberry	-86.47830328310	41.2749988180	FALSE	FALSE	FALSE				
STARKE	510	6	basswood	-86.47831360050	41.27499501540	FALSE	FALSE	FALSE				
STARKE	511	6	box elder	-86.47843048980	41.27494245540	FALSE	FALSE	FALSE				
STARKE	512	16	elm	-86.47850368400	41.27476468780	TRUE	FALSE	FALSE				
STARKE	513	15, 12 multiple stem	black walnut	-86.47849924700	41.27468850640	TRUE	TRUE	FALSE				
STARKE	514	8	huckleberry	-86.47847982220	41.27464370360	FALSE	FALSE	FALSE				
STARKE	515	9	elm	-86.47854224550	41.27461629990	FALSE	FALSE	FALSE				
STARKE	516	19	honey locust	-86.47852335800	41.27457640400	TRUE	TRUE	FALSE				
STARKE	517	12	honey locust	-86.47852921020	41.27450510600	TRUE	FALSE	FALSE				
STARKE	518	0, 10, 10, 14 multiple stem	basswood	-86.47839012930	41.27442635280	TRUE	TRUE	FALSE				
STARKE	519	11, 9 multiple stem	huckleberry	-86.47846860680	41.27479286050	TRUE	FALSE	FALSE				
STARKE	520	6	elm	-86.47844539450	41.27438223450	FALSE	FALSE	FALSE				
STARKE	521	6	elm	-86.47843714520	41.27436991670	FALSE	FALSE	FALSE				
STARKE	522	12	black walnut	-86.47843299650	41.27436798600	TRUE	FALSE	FALSE				
STARKE	523	8	hickory	-86.47843640980	41.27436457540	FALSE	FALSE	FALSE				
STARKE	524	8, 13 multiple stem	huckleberry	-86.47840733960	41.27432975480	TRUE	FALSE	FALSE				
STARKE	525	15	huckleberry	-86.47830362320	41.27430079650	TRUE	FALSE	FALSE				
STARKE	526	8	huckleberry	-86.47832174230	41.27426082680	FALSE	FALSE	FALSE				
STARKE	527	6	black walnut	-86.47802492670	41.27410097950	FALSE	FALSE	FALSE				
STARKE	528	13	black walnut	-86.47787224970	41.27409569760	TRUE	FALSE	FALSE				
STARKE	529	12	elm	-86.47767721460	41.27395988350	TRUE	FALSE	FALSE				
STARKE	530	12	basswood	-86.47769038160	41.27403079690	TRUE	FALSE	FALSE				
STARKE	531	11	basswood	-86.47762675180	41.27397893600	TRUE	FALSE	FALSE				
STARKE	532	25	silver maple	-86.47767979880	41.27389323180	TRUE	TRUE	FALSE				
STARKE	533	10	elm	-86.47760644450	41.27395129430	TRUE	FALSE	FALSE				
STARKE	534	8	box elder	-86.47762400010	41.27384754570	FALSE	FALSE	FALSE				
STARKE	535	10	box elder	-86.47763232100	41.27384649530	TRUE	FALSE	FALSE				
STARKE	536	21	silver maple	-86.47758694300	41.27389264500	TRUE	TRUE	FALSE				
STARKE	537	8	box elder	-86.47759556600	41.27386620260	FALSE	FALSE	FALSE				
STARKE	538	7, 7, 18 multiple stem	silver maple	-86.47760498920	41.27380302630	TRUE	TRUE	FALSE				
STARKE	539	12	sycamore	-86.47759042120	41.27375823110	TRUE	FALSE	FALSE				
STARKE	540	11	honey locust	-86.47753992920	41.27376620170	TRUE	FALSE	FALSE				
STARKE	541	17	sycamore	-86.47754865040	41.27381371300	TRUE	FALSE	FALSE				
STARKE	542	7	silver maple	-86.47759207830	41.27376843630	FALSE	FALSE	FALSE				
STARKE	543	14	river birch	-86.47758519770	41.27367955230	TRUE	FALSE	FALSE				
STARKE	544	12	honey locust	-86.47792448100	41.27337428320	TRUE	FALSE	FALSE				
STARKE	545	6	honey locust	-86.47796323940	41.27333167470	FALSE	FALSE	FALSE				
STARKE	546	8	honey locust	-86.47801757820	41.27331502230	FALSE	FALSE	FALSE				
STARKE	547	12	honey locust	-86.47800794500	41.27333536850	TRUE	FALSE	FALSE				
STARKE	548	18	silver maple	-86.47826270680	41.27338540420	TRUE	TRUE	FALSE				
STARKE	549	11	silver maple	-86.47831099120	41.27339950460	TRUE	FALSE	FALSE				
STARKE	550	8	silver maple	-86.47837824980	41.27339025010	FALSE	FALSE	FALSE				
STARKE	551	6, 8, 10 multiple stem	box elder	-86.47850585940	41.27342342200	TRUE	FALSE	FALSE				
STARKE	552	22	sycamore	-86.47852889900	41.27345596720	TRUE	TRUE	FALSE				
STARKE	553	10	hardwood	-86.48075863190	41.27323621410	TRUE	FALSE	FALSE				
STARKE	554	11	hardwood	-86.48071719050	41.27323143400	TRUE	FALSE	FALSE				
STARKE	555	10	hardwood	-86.48063734270	41.27321219990	TRUE	FALSE	FALSE				
STARKE	556	6	hardwood	-86.48061484330	41.27326017850	FALSE	FALSE	FALSE				
STARKE	557	9	hardwood	-86.48033996060	41.27341882070	FALSE	FALSE	FALSE				
STARKE	558	18	hardwood	-86.48016065130	41.27350860910	TRUE	TRUE	FALSE				
STARKE	559	9	hardwood	-86.48014272500	41.27350926860	FALSE	FALSE	FALSE				
STARKE	560	27	hardwood	-86.48001156700	41.27358111990	TRUE	TRUE	FALSE				
STARKE	561	11	hardwood	-86.47979436850	41.27369009340	TRUE	FALSE	FALSE				
STARKE	562	6	hardwood	-86.47970911740	41.27372315210	FALSE	FALSE	FALSE				
STARKE	563	6	hardwood	-86.47968977000	41.27370158610	FALSE	FALSE	FALSE				
STARKE	564	8	hardwood	-86.47967575660	41.27370628140	FALSE	FALSE	FALSE				
STARKE	575	10	walnut	-86.47409159800	41.27431147310	TRUE	FALSE	FALSE				
STARKE	576	10	hardwood	-86.47422034400	41.27429534640	TRUE	FALSE	FALSE				
STARKE	577	12	hardwood	-86.47462267520	41.27427115630	TRUE	FALSE	FALSE				
STARKE	578	12	hardwood	-86.47438395870	41.27425704540	TRUE	FALSE	FALSE				
STARKE	579	10	hardwood	-86.47445906050	41.27426510880	TRUE	FALSE	FALSE				
STARKE	580	12	hardwood	-86.47414524210	41.27430744140	TRUE	FALSE	FALSE				
STARKE	581	12	hardwood	-86.47401113170	41.27433969490	TRUE	FALSE	FALSE				
STARKE	582	12	hardwood	-86.47430081020	41.27426510880	TRUE	FALSE	FALSE				
STARKE	583	12	hardwood	-86.47451538690	41.27425099790	TRUE	FALSE	FALSE				
STARKE	584	12	hardwood	-86.47464949730	41.27425301380	TRUE	FALSE	FALSE				
STARKE	585	12	hardwood	-86.47459048870	41.27424898120	TRUE	FALSE	FALSE				
STARKE	586	12	hardwood	-86.47396285200	41.27437194830	TRUE	FALSE	FALSE				
TOTAL						333	112	40				