

PROJECT: 120857 UNNAMED TRIBUTARY TO TOWN CREEK

NC DIVISION OF MITIGATION SERVICES

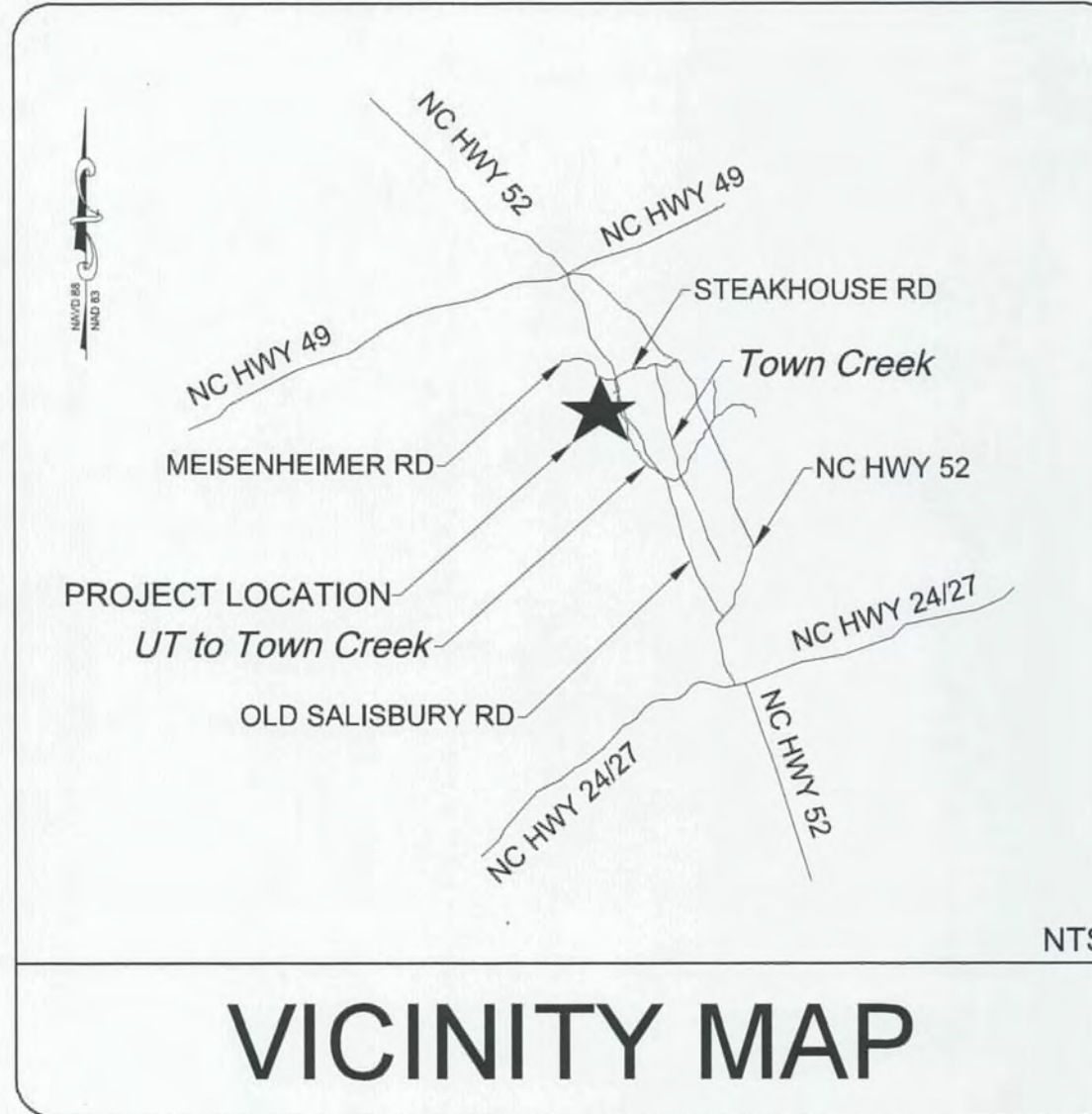
**STANLY COUNTY**

**UT TO TOWN CREEK RESTORATION SITE - OPTION A**

**LOCATION: APPROXIMATELY 1.7 MILES WEST OF THE TOWN OF NEW LONDON NEAR THE INTERSECTION OF MISENHEIMER ROAD AND OLD SALISBURY ROAD**

**TYPE OF WORK: AS-BUILT SURVEY / RECORD DRAWING**

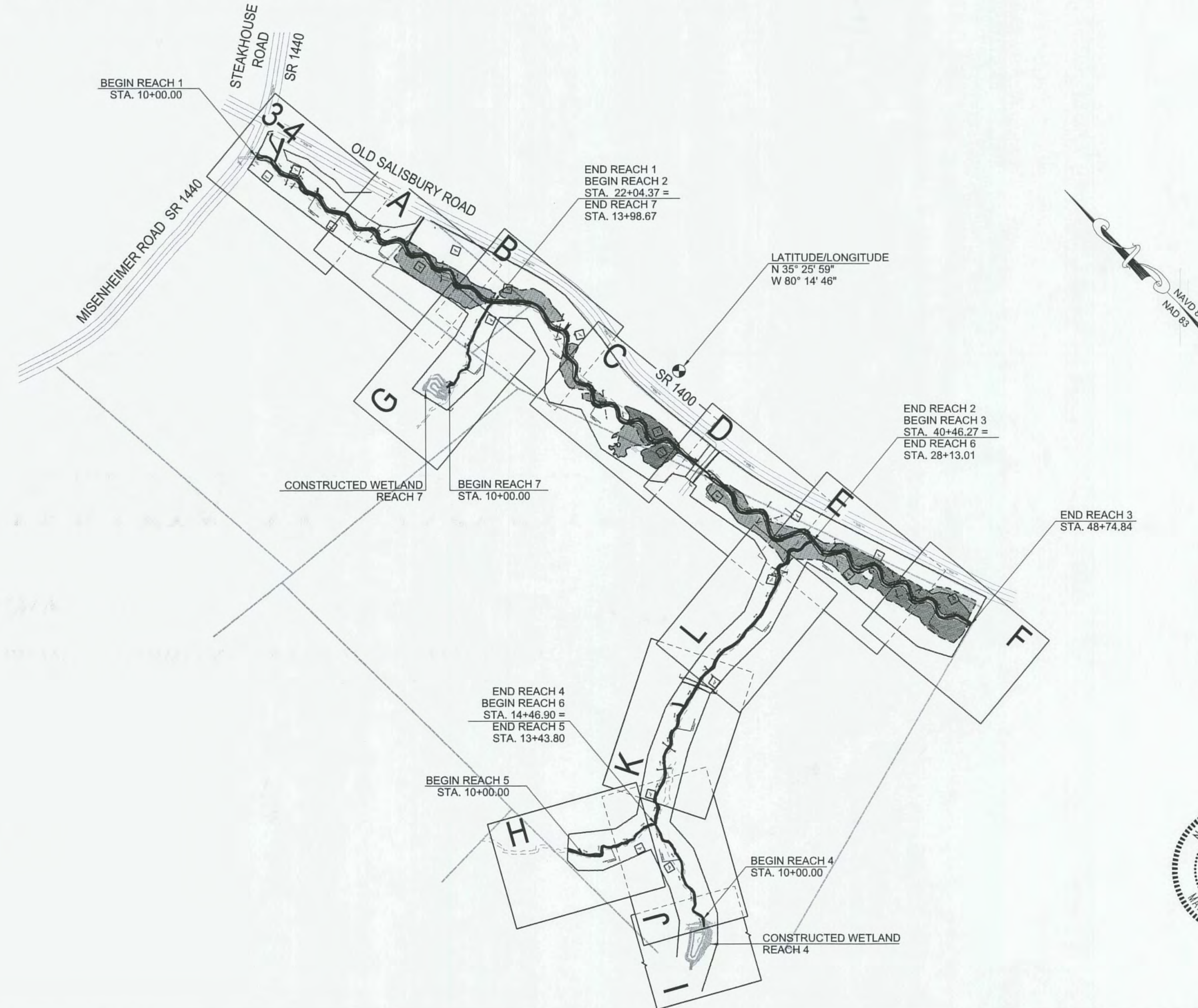
STATE	BAKER PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
NC	120857	1	39
NCDMS ID NO. 94648			
AS BUILT /RECORD DRAWING			



**SHEET INDEX**

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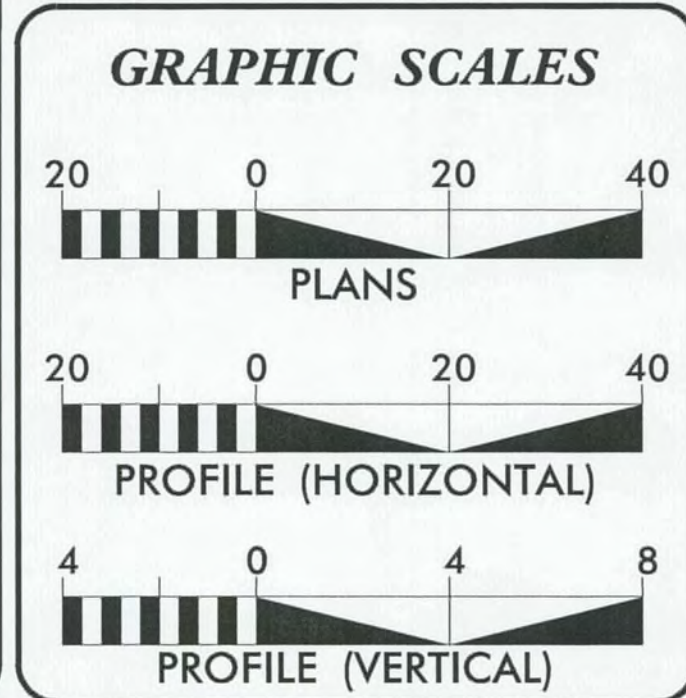
NCDMS PROJECT NO.: 94648  
NCDEQ CONTRACT NO.: 003277



I, MARSHALL G. WIGHT, AS A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF NORTH CAROLINA, HEREBY CERTIFY THAT THE DATA SHOWN ON THIS DRAWING, WAS OBTAINED UNDER MY SUPERVISION, IS AN ACCURATE AND COMPLETE REPRESENTATION OF WHAT WAS CONSTRUCTED IN THE FIELD, AND THAT THE PHYSICAL DIMENSIONS OR ELEVATIONS SHOWN THEREON ARE AS-BUILT CONDITIONS, EXCEPT WHERE OTHERWISE NOTED HEREON, WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS 14th DAY OF November 2016

*Marshall G. Wight*  
PROFESSIONAL LAND SURVEYOR L-5034

**WithersRavenel**  
Engineers | Planners | Surveyors  
115 Mackinnon Drive | Cary, NC 27511 | (919) 465-3340 | License #: C-6832 | www.wr-engineers.com



**STREAM LENGTH SUMMARY**

REACH 1	1,204 LF
REACH 2	1,782 LF
REACH 3	829 LF
REACH 4	447 LF
REACH 5	344 LF
REACH 6	1,340 LF
REACH 7	399 LF
<b>TOTAL</b>	<b>6,345 LF</b>

**WETLAND ACREAGE SUMMARY**

DESCRIPTION	ACREAGE
WETLAND RESTORATION	2.56
JURISDICTIONAL WETLANDS	1.00
WETLAND CREATION	1.56
CONSTRUCTED WETLAND REACH 4	0.13
CONSTRUCTED WETLAND REACH 7	0.08

**PREPARED FOR THE OFFICE OF:**

NCDEQ  
DIVISION OF MITIGATION SERVICES  
5 Ravenscroft Drive, #102  
Asheville, North Carolina  
28801

**NCDMS CONTACT:** HARRY TSOMIDES  
PROJECT MANAGER

**PREPARED IN THE OFFICE OF:**

**Michael Baker INTERNATIONAL**  
Michael Baker Engineering Inc.  
9716-B Rea Road #56  
Charlotte, NORTH CAROLINA 28277  
Phone: 704.665.2200  
Fax: 704.665.2201  
License #: F-1084

KRISTI SUGGS  
PROJECT MANAGER



JACOB M. BYERS, PE  
PROJECT ENGINEER

**PROJECT ENGINEER**

*Jacob M. Byers* 11/16/16 P.E.  
SIGNATURE:



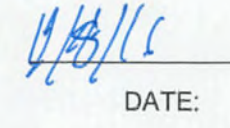


STREAM CONVENTIONAL SYMBOLS  
SUPERCEDES SHEET 1-B

 ROCK J-HOOK	 GRADE CONTROL LOG JAM	 FOOT BRIDGE
 ROCK VANE	 LOG AND ROCK STEP POOL	 TEMPORARY STREAM CROSSING
 OUTLET PROTECTION	 EXISTING WOOD LINE	 PERMANENT STREAM CROSSING
 ROCK CROSS VANE	 SAFETY FENCE	 TRANSPLANTED VEGETATION
 DOUBLE DROP ROCK CROSS VANE	 TAPE FENCE	 TREE REMOVAL
 BOULDER SILL	 PROPOSED FENCE	 TREE PROTECTION
 ROOT WAD	 100 YEAR FLOOD PLAIN	 CHANNEL PLUG
 LOG J-HOOK	 CONSERVATION EASEMENT	 CHANNEL FILL
 LOG VANE	 EXISTING MAJOR CONTOUR	 BRUSH MATTRESS
 LOG WEIR	 EXISTING MINOR CONTOUR	 GEOLIFT
 LOG CROSS VANE	 PROPOSED MAJOR CONTOUR	 PHOTO POINT
 CONSTRUCTED RIFFLE	 PROPOSED MINOR CONTOUR	 FLOW GAUGE
 BOULDER CLUSTER	 LIMITS OF DISTURBANCE	 CREST GAUGE

\*\*NOTE: ALL ITEMS ABOVE MAY NOT BE USED ON THIS PROJECT

NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL MARCH 2009 (REV 2013)
6.06 TEMPORARY GRAVEL CONSTRUCTION ENTRANCE 6.24 RIPARIAN AREA SEEDING 6.60 TEMPORARY SEDIMENT TRAP 6.62 TEMPORARY SILT FENCE 6.63 TEMPORARY ROCK DAM 6.70 TEMPORARY STREAM CROSSING

PROJECT REFERENCE NO. 120857	SHEET NO. 1A
PROJECT ENGINEER	
	APPROVED BY:  DATE: 
<b>Michael Baker</b> International Michael Baker Engineering Inc. 9716-B Res Road #55 Charlotte, NORTH CAROLINA 28277 Phone: 704.665.2200 Fax: 704.665.2201 License #: F-1084	
NCDMS ID NO. 94648 AS BUILT /RECORD DRAWING	

**GENERAL NOTES**

- CONSTRUCTION BEGAN IN JULY 2015 AND WAS COMPLETED IN FEBRUARY 2016
- RIPARIAN AND WETLAND VEGETATION PLANTING BEGAN IN MARCH 2016 AND WAS COMPLETED IN MARCH 2016
- HERBACEOUS WETLAND PLANTINGS BEGAN IN MARCH 2016 AND WAS COMPLETED IN MAY 2016

VEGETATION SELECTION

The following table lists the bare root vegetation selection for the project site. The planting area is approximately 23 acres. Species were planted at a density of 680 stems per acre and a minimum of 50 feet from stream banks to the conservation easement limits. Exact placement of species were determined prior to site planting and based on site wetness of the planting locations per the vegetation specialist. Refer to the Revegetation and Fencing Plan Sheets of the Construction Plan Set for vegetation planting locations and riparian buffer requirements.

Riparian Buffer - Overstory Trees (8' x 8' spacing - 680 stems / acre)				
Scientific Name	Common Name	% Planted by Species	Wetland Tolerance	Approx. Number of Stems
<i>Betula nigra</i>	river birch	5%	FACW	788
<i>Carpinus caroliniana</i>	ironwood	4%	FAC	600
<i>Fraxinus pennsylvanica</i>	green ash	7%	FACW	1111
<i>Liriodendron tulipifera</i>	tulip poplar	9%	FACU	1452
<i>Nyssa sylvatica</i>	black gum	5%	FAC	700
<i>Platanus occidentalis</i>	sycamore	7%	FACW	1158
<i>Quercus michauxii</i>	swamp chestnut oak	4%	FACW	600
<i>Quercus falcata</i>	Southern red oak	6%	FACU	860
<i>Quercus alba</i>	white oak	5%	FACU	800
<i>Quercus phellos</i>	willow oak	7%	FAC	1170
<i>Quercus lyrata</i>	overcup oak	4%	OBL	600
Riparian Buffer - Understory (8' x 8' spacing - 680 stems / acre)				
Scientific Name	Common Name	% Planted by Species	Wetland Tolerance	Approx. Number of Stems
<i>Callicarpa americana</i>	beautyberry	2%	FACU	250
<i>Cephalanthus occidentalis</i>	buttonbush	4%	OBL	600
<i>Asimina triloba</i>	paw paw	5%	FAC	812
<i>Cercis canadensis</i>	redbud	6%	FACU	900
<i>Cornus amomum</i>	silky dogwood	7%	FACW	1058
<i>Cornus florida</i>	flowering dogwood	5%	FACU	800
<i>Diospyros virginiana</i>	persimmon	4%	FAC	630
<i>Sambucus nigra</i>	elderberry	4%	FAC	600
<b>Total Species Planted</b>		<b>100%</b>		<b>15,490</b>
<b>Total Acreage Planted</b>		<b>23</b>	<b># Stems / Acre</b>	<b>681</b>

Herbaceous plugs were applied to constructed wetland zones according to the construction specifications.

Scientific Name	Common Name	% Planted by Species	Wetland Tolerance	Approx. Number of Stems
Constructed Wetland Zone Plantings				
<i>Juncus effusus</i>	soft rush	30%	FACW	-
<i>Carex lurida</i>	Lurid Sedge	25%	OBL	-
<i>Scirpus cyperinus</i>	wool grass	20%	FACW	-
<i>Acorus calamus</i>	sweetflag	15%	OBL	-
<i>Lobelia cardinalis</i>	cardinal flower	5%	FACW	-
<i>Hibiscus moscheutos</i>	swamp hibiscus	5%	OBL	-

Live staking was applied to all restored strambanks following the details in this plan set and according to the construction specifications.

Scientific Name	Common Name	% Planted by Species	Wetland Tolerance
<i>Cornus amomum</i>	silky dogwood	35%	FAC
<i>Salix nigra</i>	black willow	10%	OBL
<i>Salix sericea</i>	silky willow	35%	OBL
<i>Sambucus nigra</i>	elderberry	20%	FAC

Permanent herbaceous seed mixtures for the project site were planted throughout the floodplain and riparian buffer areas. Permanent seed mixtures were applied with temporary seed, as defined in the construction specifications.

Scientific Name	Common Name	% Planted by Species	Lbs. / Acre	Wetland Tolerance
<i>Agrostis gigantea</i>	red top	10%	1.5	FACW
<i>Elymus virginicus</i>	Virginia wild rye	15%	2.25	FACW
<i>Panicum virgatum</i>	switch grass	15%	2.25	FAC
<i>Tripsacum dactyloides</i>	gamma grass	5%	0.75	FACW
<i>Polygonum pennsylvanicum</i>	Pennsylvania smartweed	5%	0.75	FACW
<i>Schizachyrium scoparium</i>	little bluestem	5%	0.75	FACU
<i>Juncus effusus</i>	soft rush	5%	0.75	FACW
<i>Bidens aristosa</i>	tickseed	10%	1.5	FACW
<i>Coreopsis lanceolata</i>	lance-leaved coreopsis	10%	1.5	FACU
<i>Dichanthelium clandestinum</i>	deer tongue	10%	1.5	FAC
<i>Andropogon gerardii</i>	big bluestem	5%	0.75	FAC
<i>Sorghastrum nutans</i>	Indian grass	5%	0.75	FACU

The following table lists temporary seed mix for the project site. All disturbed areas were stabilized using mulch and temporary seed as defined in the construction specifications.

Planting Dates	Species Name	Rate (lbs./acre)
August 15 - May 1	<i>Secale cereale</i>	130
May 1 - August 15	<i>Panicum ramosum</i>	44



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL SYMBOLS

\*S.U.E = SUBSURFACE UTILITY ENGINEER

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	(23)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	--- WLB
Proposed Wetland Boundary	--- WLB
Existing Endangered Animal Boundary	--- EAB
Existing Endangered Plant Boundary	--- EPB

### BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	⋈
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	□

### HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
Jurisdictional Stream	--- JS
Buffer Zone 1	--- BZ 1
Buffer Zone 2	--- BZ 2
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	---
Proposed Lateral, Tail, Head Ditch	--- FLOW
False Sump	◇

### RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

### RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	○
Proposed Right of Way Line with Concrete or Granite Marker	△
Existing Control of Access	○
Proposed Control of Access	○
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

### ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	--- C ---
Proposed Slope Stakes Fill	--- F ---
Proposed Wheel Chair Ramp	WCR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	⊗

### VEGETATION:

Single Tree	⊕
Single Shrub	⊕
Hedge	-----
Woods Line	-----
Orchard	⊕
Vineyard	□ Vineyard

### EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊕
Storm Sewer	-----

### UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊗
Power Transformer	⊗
U/G Power Cable Hand Hole	⊕
H-Frame Pole	●
Recorded U/G Power Line	-----
Designated U/G Power Line (S.U.E.*)	-----

### TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	□
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	⊕
Recorded U/G Telephone Cable	-----
Designated U/G Telephone Cable (S.U.E.*)	-----
Recorded U/G Telephone Conduit	-----
Designated U/G Telephone Conduit (S.U.E.*)	-----
Recorded U/G Fiber Optics Cable	-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----

### WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
Above Ground Water Line	-----

### TV:

TV Satellite Dish	⊕
TV Pedestal	⊕
TV Tower	⊗
U/G TV Cable Hand Hole	⊕
Recorded U/G TV Cable	-----
Designated U/G TV Cable (S.U.E.*)	-----
Recorded U/G Fiber Optic Cable	-----
Designated U/G Fiber Optic Cable (S.U.E.*)	-----

### GAS:

Gas Valve	◇
Gas Meter	⊕
Recorded U/G Gas Line	-----
Designated U/G Gas Line (S.U.E.*)	-----
Above Ground Gas Line	-----

### SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
Recorded SS Forced Main Line	-----
Designated SS Forced Main Line (S.U.E.*)	-----

### MISCELLANEOUS:

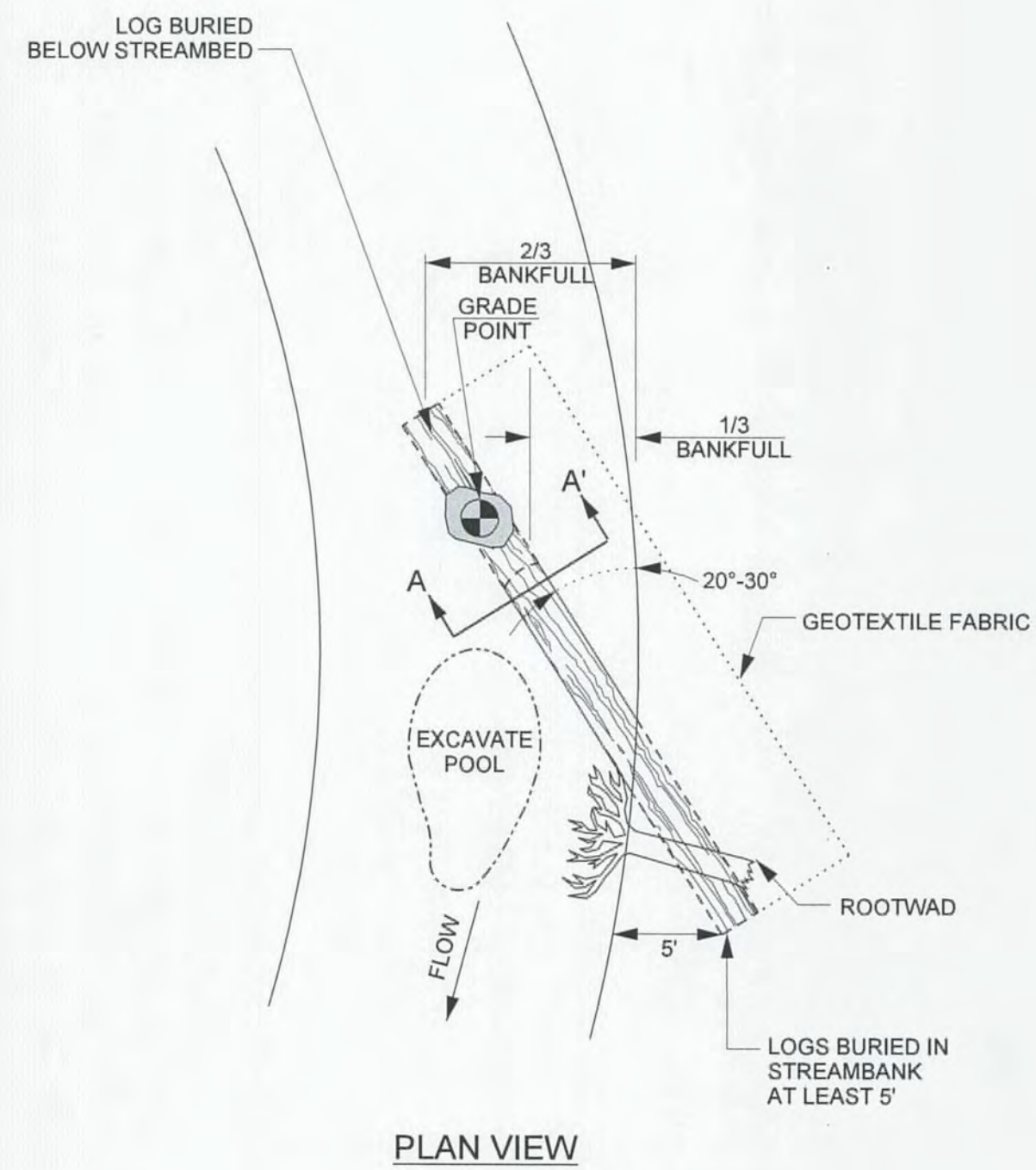
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line	-----
U/G Tank; Water, Gas, Oil	□
A/G Tank; Water, Gas, Oil	□
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

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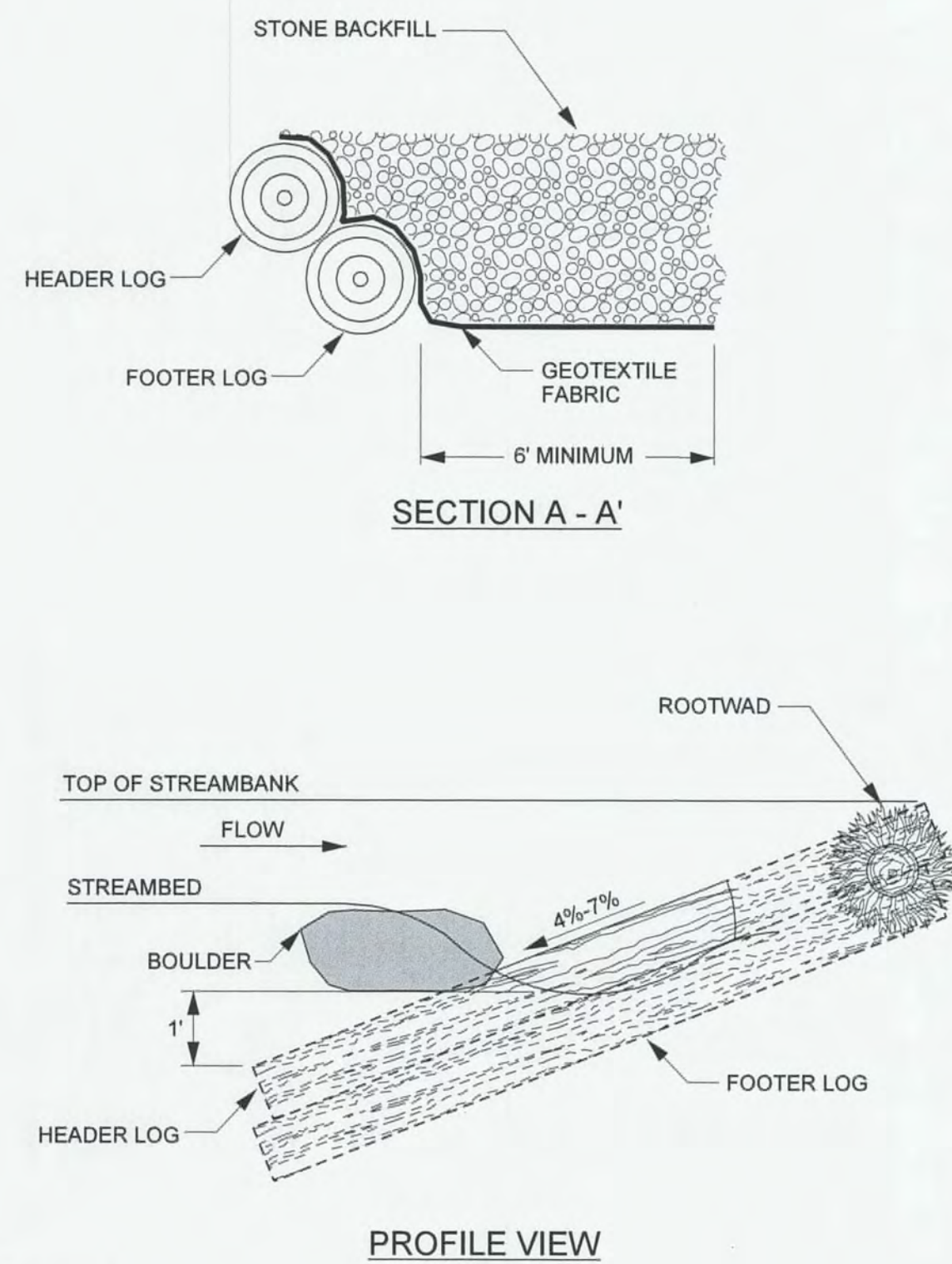
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### LOG VANE

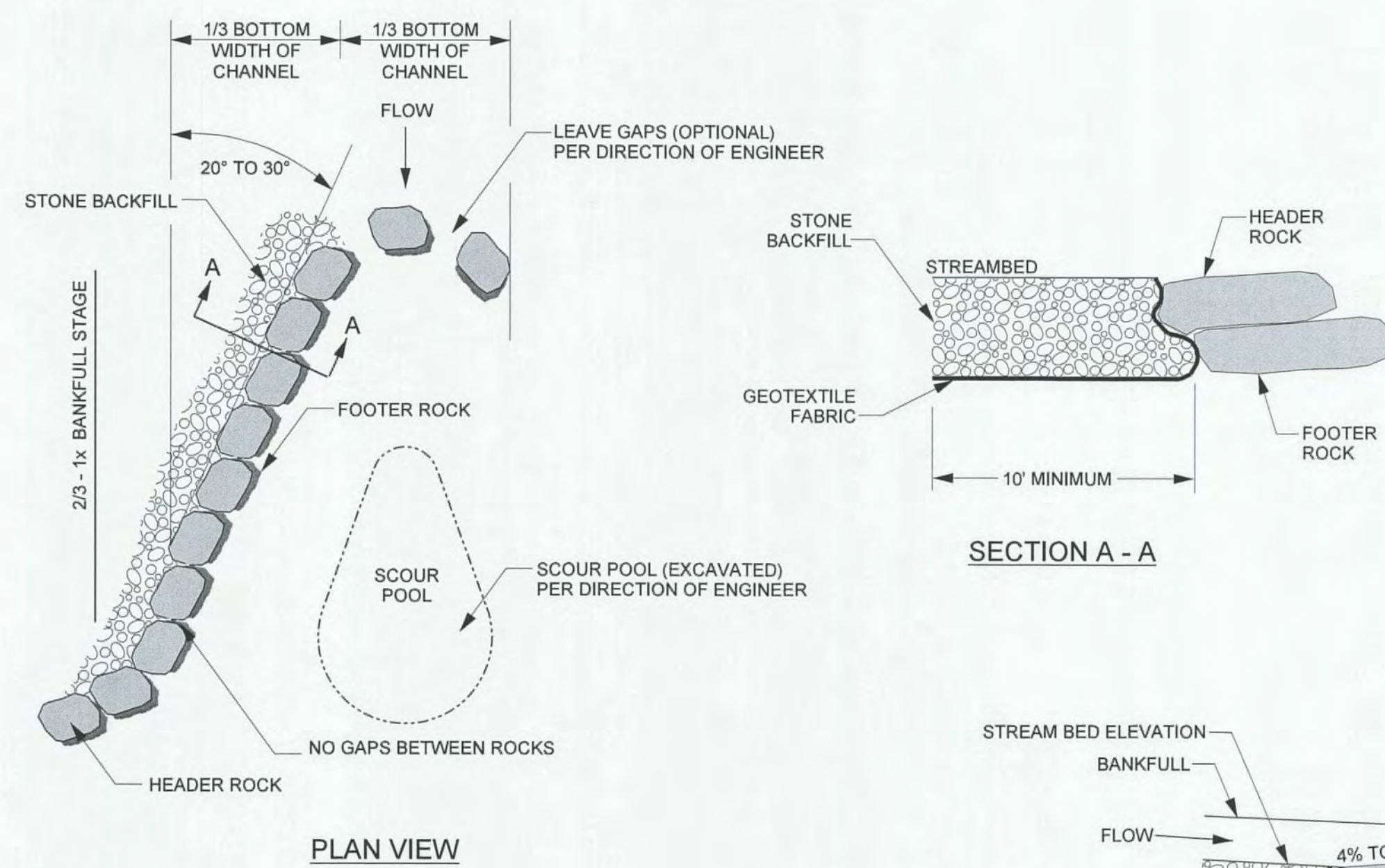


#### NOTES:

- LOGS SHOULD BE AT LEAST 10" IN DIAMETER, RELATIVELY STRAIGHT, HARDWOOD, AND RECENTLY HARVESTED.
- BOULDERS MUST BE OF SUFFICIENT SIZE TO ANCHOR LOGS.
- SOIL SHOULD BE COMPACTED WELL AROUND BURIED PORTIONS OF LOGS.
- ROOTWADS SHOULD BE PLACED BENEATH THE HEADER LOG AND PLACED SO THAT IT LOCKS THE HEADER LOG INTO THE BANK. SEE ROOTWAD DETAIL.
- BOULDER SHOULD BE PLACED ON TOP OF HEADER LOG FOR ANCHORING.
- GEOTEXTILE FABRIC SHOULD BE NAILED TO THE LOG BELOW THE BACKFILL.
- TRANSPLANTS CAN BE USED INSTEAD OF ROOTWADS, PER DIRECTION OF ENGINEER.



### J-HOOK VANE



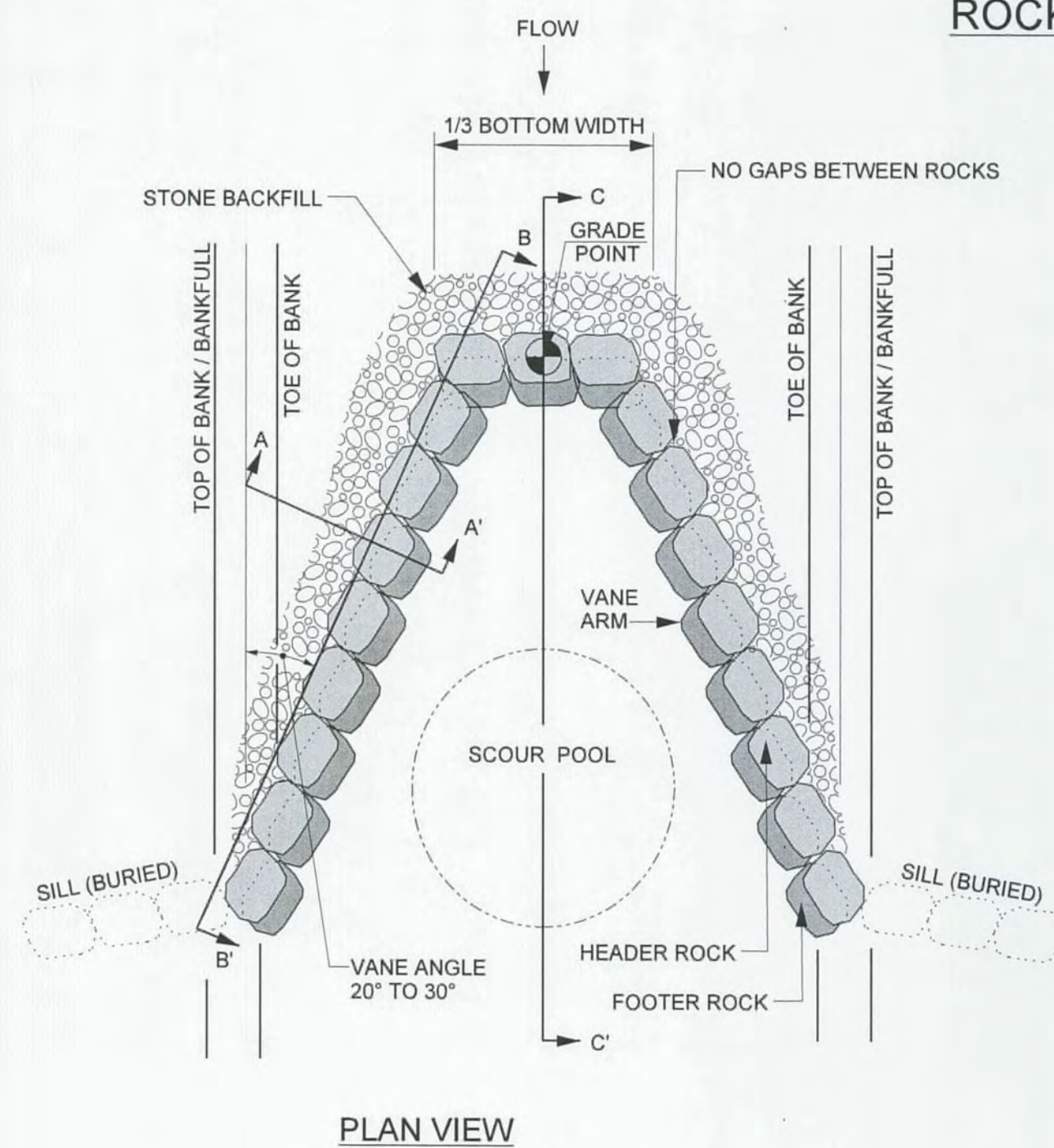
#### NOTES FOR ALL VANE STRUCTURES:

- INSTALL GEOTEXTILE FABRIC BEGINNING AT THE TOP OF THE HEADER ROCKS AND EXTEND DOWNWARD TO THE DEPTH OF THE BOTTOM FOOTER ROCK, AND THEN UPSTREAM TO A MINIMUM OF TEN FEET.
- DIG A TRENCH BELOW THE BED FOR FOOTER ROCKS AND PLACE FILL ON UPSTREAM SIDE OF VANE ARM, BETWEEN THE ARM AND STREAMBANK.
- START AT BANK AND PLACE FOOTER ROCKS FIRST AND THEN HEADER (TOP) ROCK.
- CONTINUE WITH STRUCTURE, FOLLOWING ANGLE AND SLOPE SPECIFICATIONS.
- AN EXTRA ROCK CAN BE PLACED IN SCOUR POOL FOR HABITAT IMPROVEMENT.
- USE HAND PLACED STONE TO FILL GAPS ON UPSTREAM SIDE OF HEADER AND FOOTER ROCKS.
- AFTER ALL STONE BACKFILL HAS BEEN PLACED, FILL IN THE UPSTREAM SIDE OF THE STRUCTURE WITH ON-SITE ALLUVIUM TO THE ELEVATION OF THE TOP OF THE HEADER ROCK.

**Michael Baker Engineering Inc.**  
 8716-B Reg Road #58  
 Charlotte, NORTH CAROLINA 28277  
 Phone: 704.665.2200  
 Fax: 704.665.2201  
 License #: F-1084

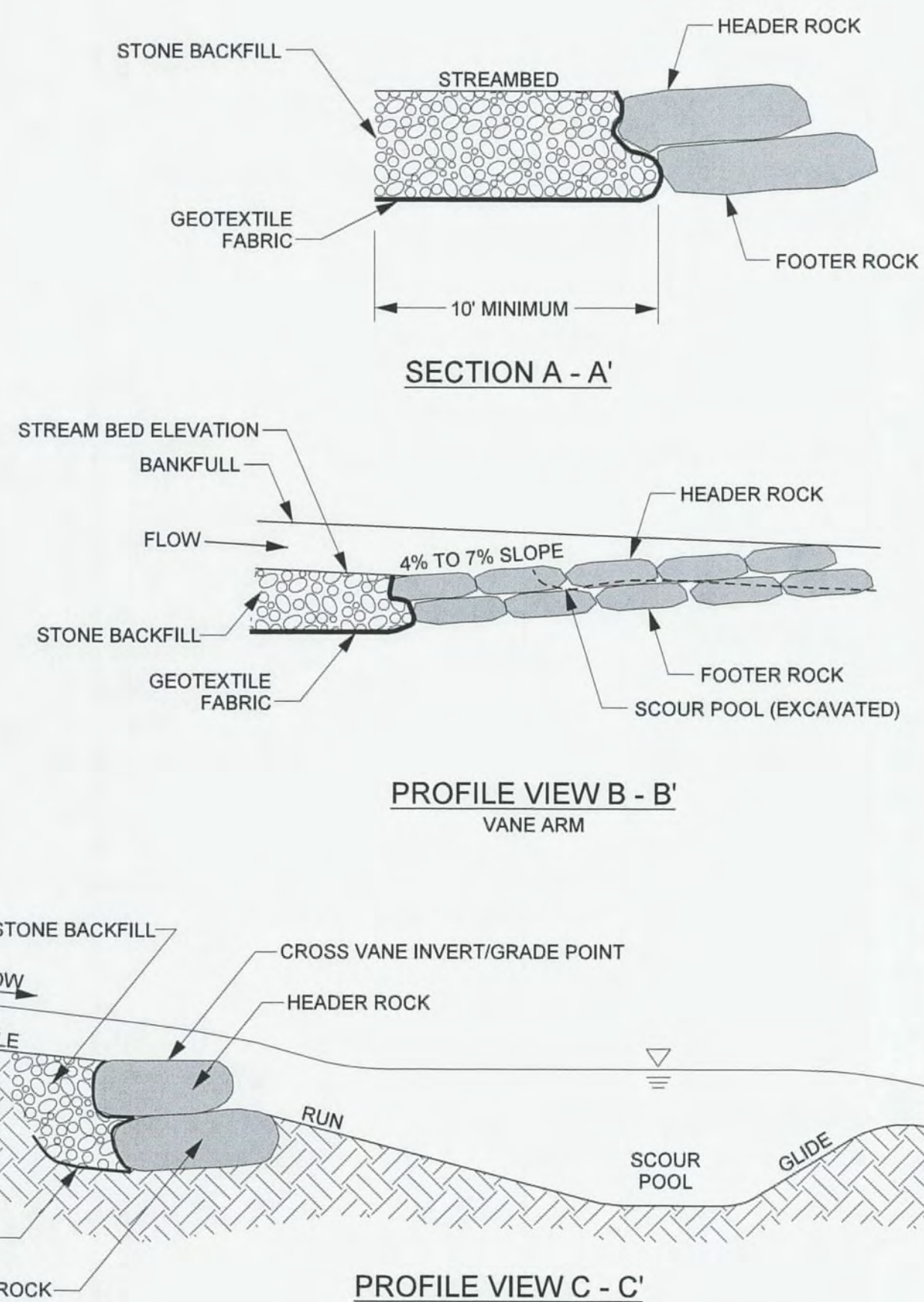
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### ROCK CROSS VANE

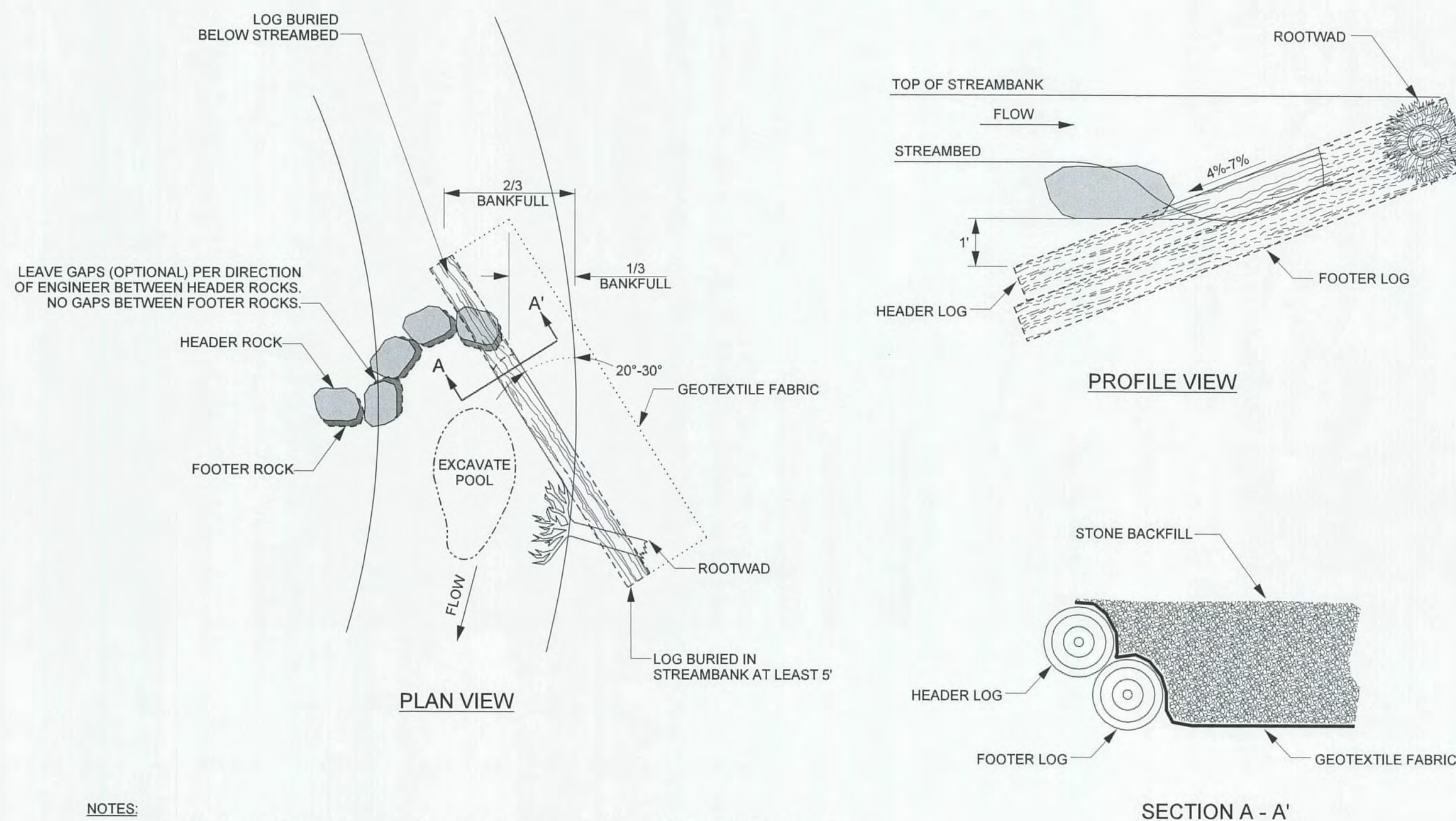


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- AFTER ALL STONE BACKFILL HAS BEEN PLACED, FILL IN THE UPSTREAM SIDE OF THE STRUCTURE WITH ON-SITE ALLUVIUM TO THE ELEVATION OF THE TOP OF THE HEADER ROCK.



### GRADE CONTROL LOG J-HOOK VANE



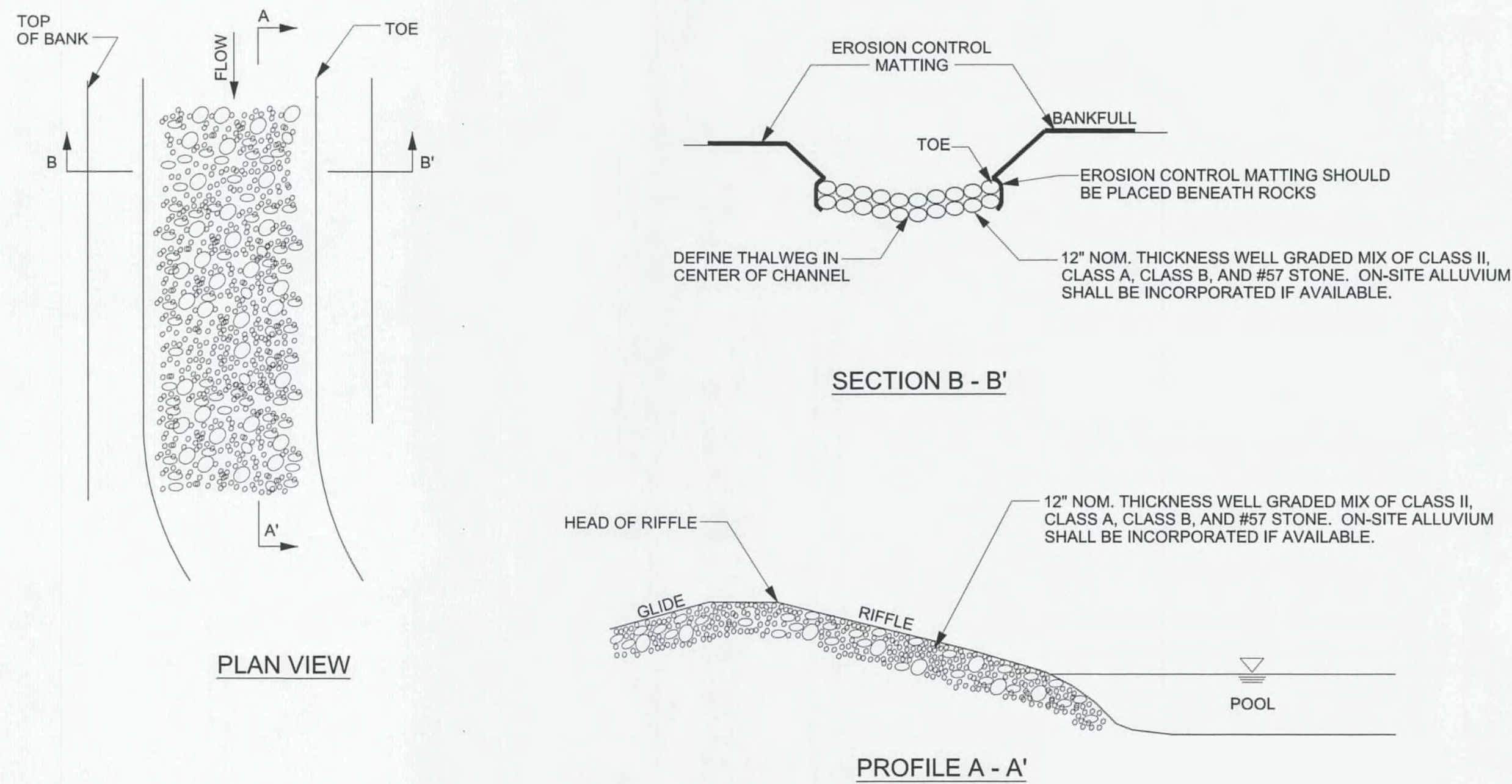
#### NOTES:

- LOGS SHOULD BE AT LEAST 10" IN DIAMETER, RELATIVELY STRAIGHT, HARDWOOD, AND RECENTLY HARVESTED.
- SOIL SHOULD BE COMPACTED WELL AROUND BURIED PORTIONS OF LOG.
- ROOTWADS SHOULD BE PLACED BENEATH THE HEADER LOG AND PLACED SO THAT IT LOCKS THE HEADER LOG INTO THE BANK. SEE ROOTWAD DETAIL.
- BOULDERS SHOULD BE PLACED ON TOP OF HEADER LOG FOR ANCHORING.
- GEOTEXTILE FABRIC SHOULD BE NAILED TO THE LOG BELOW THE BACKFILL.
- TRANSPLANTS CAN BE USED INSTEAD OF ROOTWADS, PER DIRECTION OF ENGINEER.

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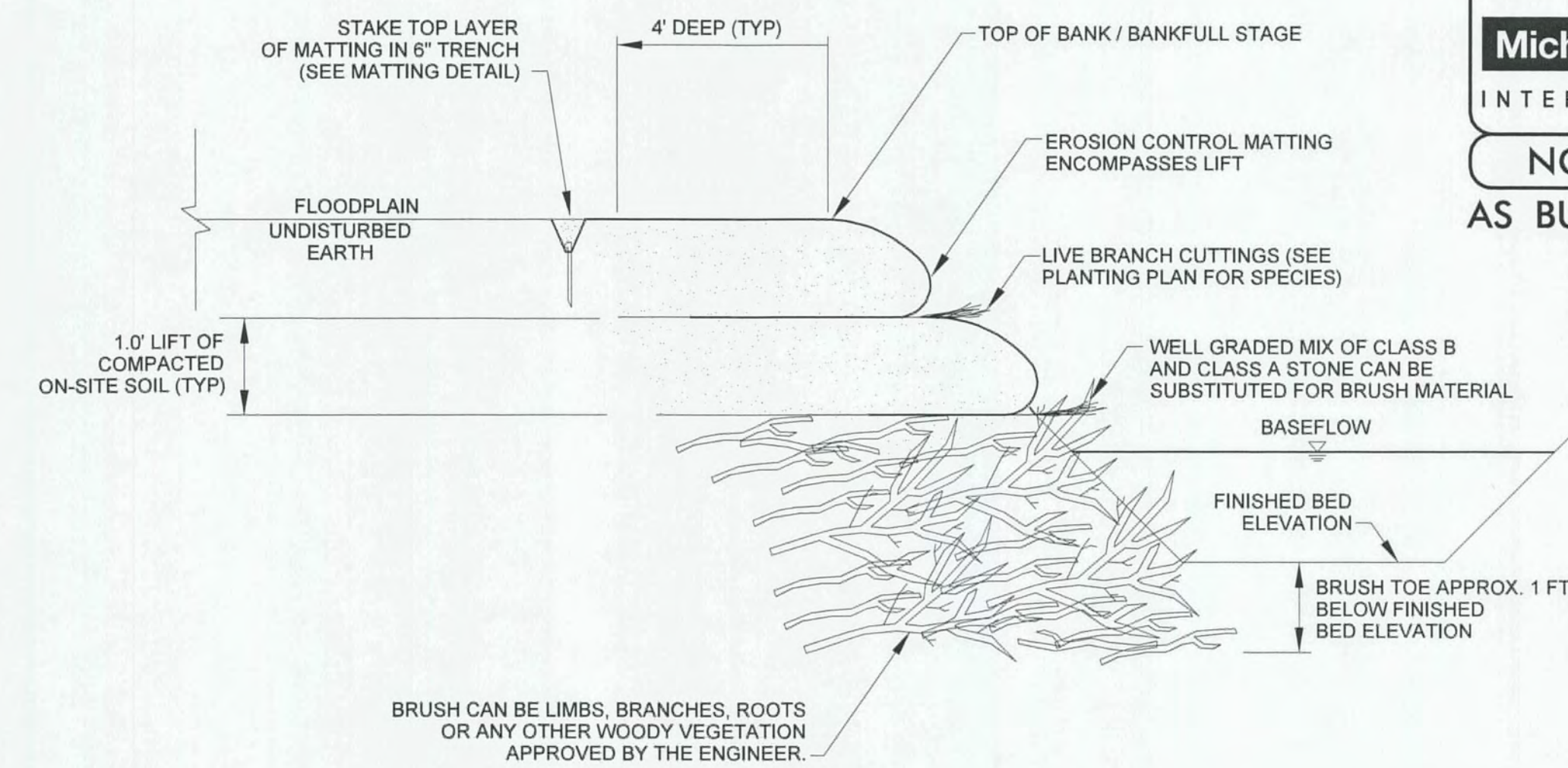


**CONSTRUCTED RIFFLE**



- NOTES:**
1. DIG A TRENCH BELOW THE BED FOR THE BED MATERIAL INSTALLATION.
  2. FILL TRENCH WITH WELL GRADED MIX OF CLASS 2, CLASS A, CLASS B, AND #57 STONE. TO THE BED ELEVATION OF THE CHANNEL. ON-SITE ALLUVIUM SHALL BE INCORPORATED IF AVAILABLE.
  3. DEFINE THALWEG IN CENTER OF CHANNEL.

**GEOLIFT WITH BRUSH TOE**



- NOTES:**
1. LIVE BRANCH CUTTINGS SHALL BE THE SAME SPECIES AS THE LIVE STAKES AND SHALL BE INSTALLED DURING VEGETATION DORMANCY.
  2. LIVE BRANCH CUTTINGS SHALL BE INSTALLED AT A DENSITY OF 20-30 CUTTINGS PER LINEAR FOOT AND A MAXIMUM DIAMETER OF 2.5 INCHES.
  3. NUMBER OF SOIL LIFTS MAY VARY. IN GENERAL LIFTS SHALL EXTEND TO THE TOP OF BANK OR BANKFULL STAGE.
  4. GEOLIFTS TO BE INSTALLED IN CHANNEL SECTIONS ALONG SIDE SLOPES STEEPER THAN 2:1 AND/OR ADJACENT TO HILL SLOPES.

BAKER PROJECT REFERENCE NO. 120857 SHEET NO. 2A

PROJECT ENGINEER

**Michael Baker Engineering Inc.**  
 9715-B Res Road #55  
 Charlotte, NORTH CAROLINA 28277  
 Phone: 704.665.2200  
 Fax: 704.665.2201  
 License #: F-1084

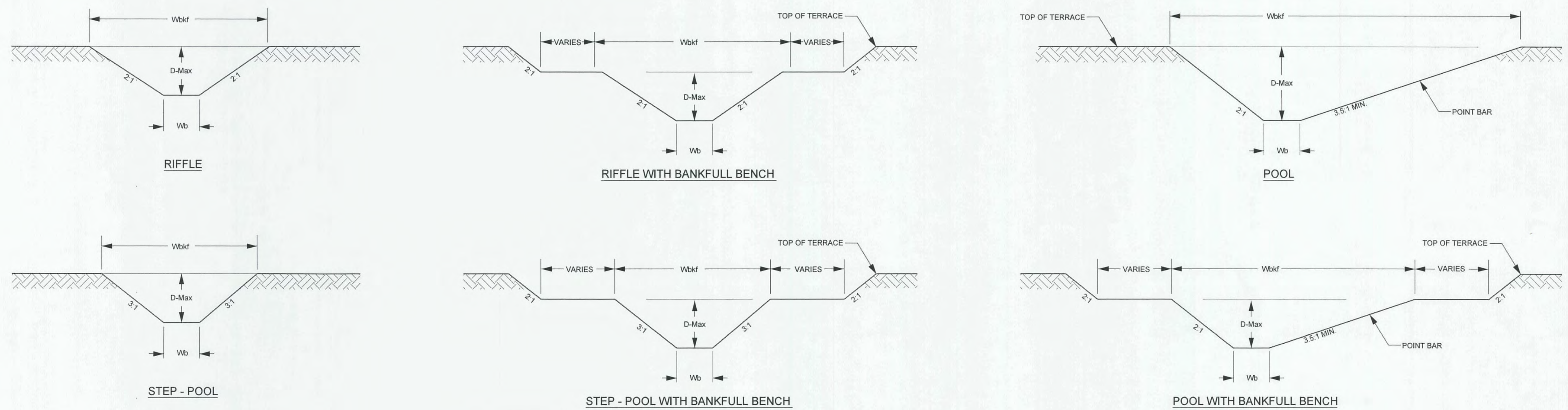
APPROVED BY: *[Signature]*  
 DATE: 4/9/16

**Michael Baker INTERNATIONAL**

NCDMS ID NO. 94648

AS BUILT / RECORD DRAWING

**TYPICAL RIFFLE, POOL, AND BANKFULL BENCH CROSS SECTIONS**



REACH 1		REACH 2		REACH 3		REACH 4		REACH 5		REACH 6		REACH 7	
RIFFLE	POOL	RIFFLE	POOL	RIFFLE	POOL	RIFFLE	POOL	RIFFLE	POOL	RIFFLE	POOL	RIFFLE	POOL
13.0	17.5	14.0	18.5	15.1	21.0	6.2	11.0	6.6	8.5	8.1	11.0	5.1	7.0
1.0	1.6	1.1	1.6	1.2	1.7	0.5	1.1	0.5	0.8	0.6	1.1	0.4	0.7
1.2	2.7	1.3	2.8	1.4	3.0	0.7	1.8	0.6	1.5	0.8	2.0	0.5	1.2
13.0	11.3	13.0	11.3	13.0	12.3	13.0	10.3	13.0	10.1	13.0	10.1	13.0	10.2
13.0	27.2	15.0	30.2	17.5	36.0	3.0	11.7	3.4	7.1	5.0	12.0	2.0	4.8
8.1	2.7	8.7	3.1	9.4	3.0	3.0	2.0	3.2	1.0	3.9	1.0	2.4	1.0

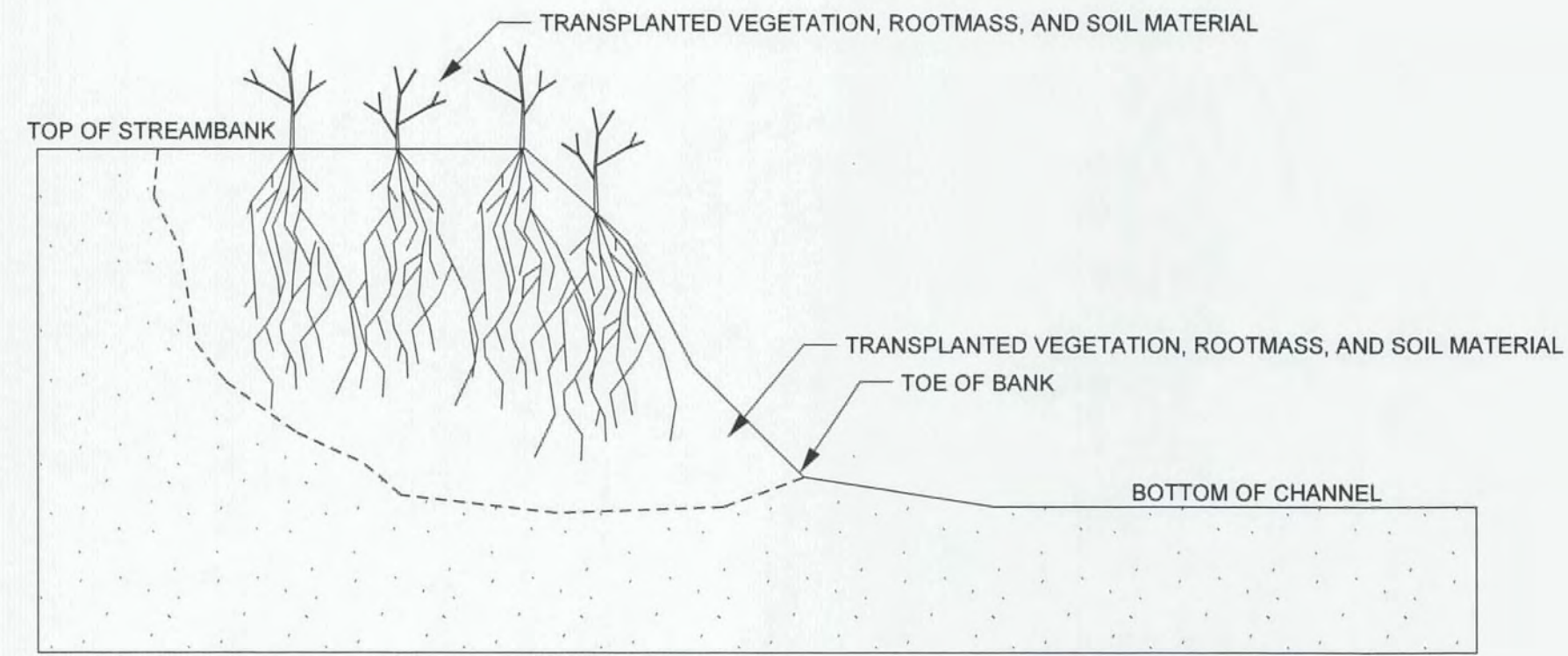
WIDTH OF BANKFULL (Wb<sub>kf</sub>)  
 AVERAGE DEPTH  
 MAXIMUM DEPTH (D-Max)  
 WIDTH TO DEPTH RATIO (Wb<sub>kf</sub> / D)  
 BANKFULL AREA (Ab<sub>kf</sub>)  
 BOTTOM WIDTH (W<sub>b</sub>)

- NOTES:**
1. DURING CONSTRUCTION CORNERS OF DESIGN CHANNEL WILL BE ROUNDED AND A THALWEG WILL BE SHAPED PER DIRECTION OF ENGINEER.



2/26/03

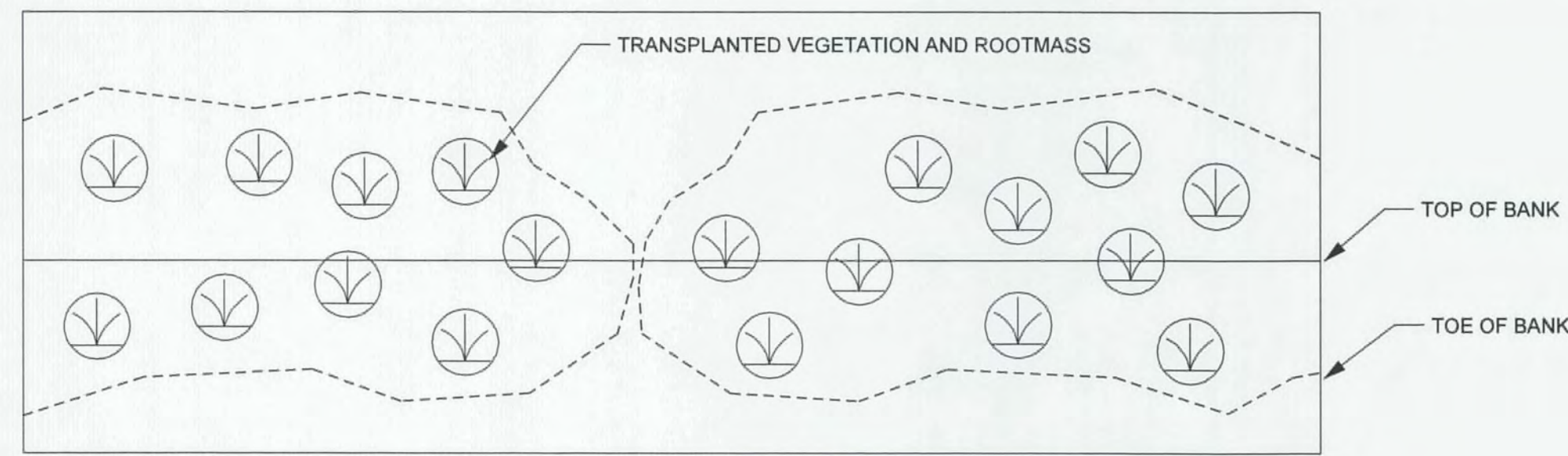
**TRANSPLANTED VEGETATION**



CROSS SECTION VIEW

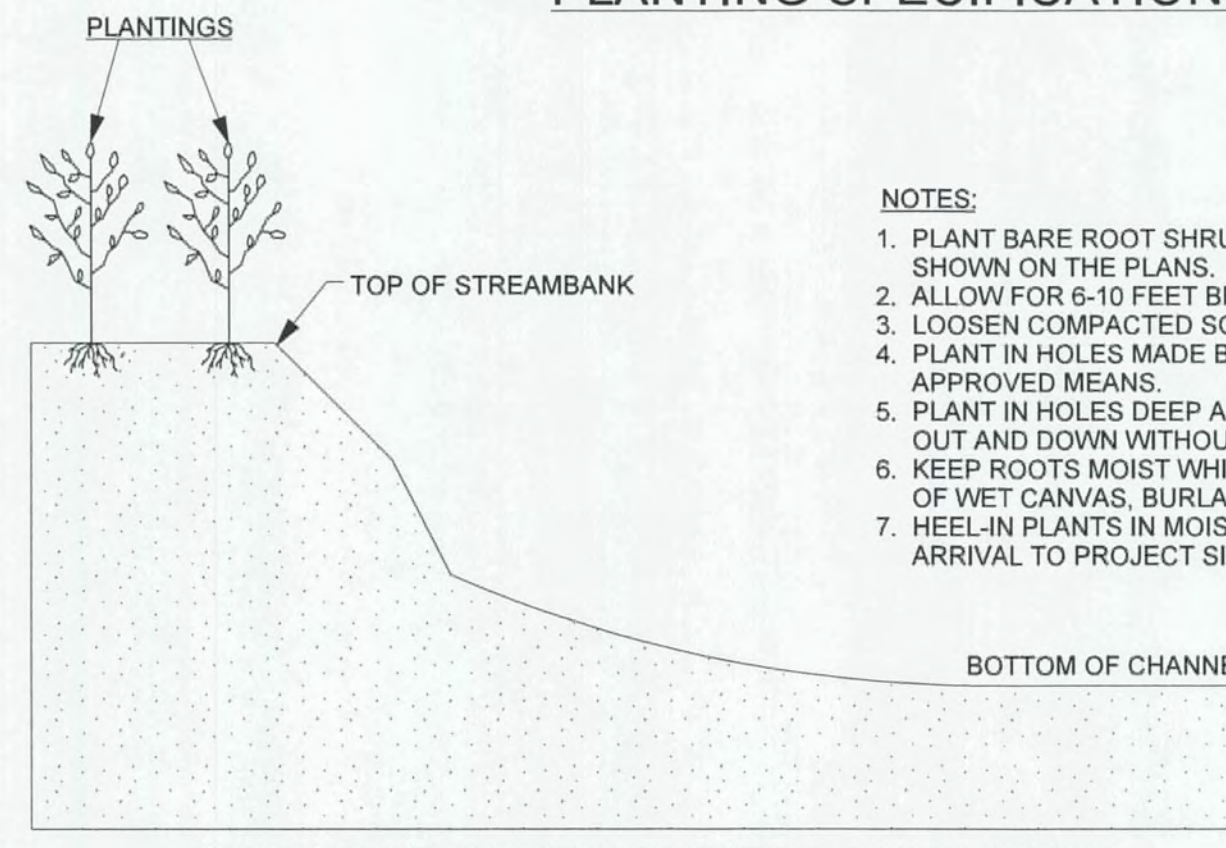
**NOTES:**

1. EXCAVATE A HOLE IN THE BANK TO BE STABILIZED THAT WILL ACCOMMODATE THE SIZE OF TRANSPLANT TO BE PLACED. BEGIN EXCAVATION AT THE TOE OF THE BANK.
2. EXCAVATE THE ENTIRE ROOT MASS AND AS MUCH ADDITIONAL SOIL MATERIAL AS POSSIBLE. IF ENTIRE ROOT MASS CAN NOT BE EXCAVATED AT ONCE, THE TRANSPLANT IS TOO LARGE AND ANOTHER SHOULD BE SELECTED.
3. PLACE TRANSPLANT IN THE BANK TO BE STABILIZED SO THAT VEGETATION IS ORIENTATED VERTICALLY.
4. FILL IN ANY HOLES AROUND THE TRANSPLANT AND COMPACT.
5. ANY LOOSE SOIL LEFT IN THE STREAM SHOULD BE REMOVED.
6. WHEN POSSIBLE, PLACE MULTIPLE TRANSPLANTS CLOSE TOGETHER SUCH THAT THEY TOUCH.



PLAN VIEW

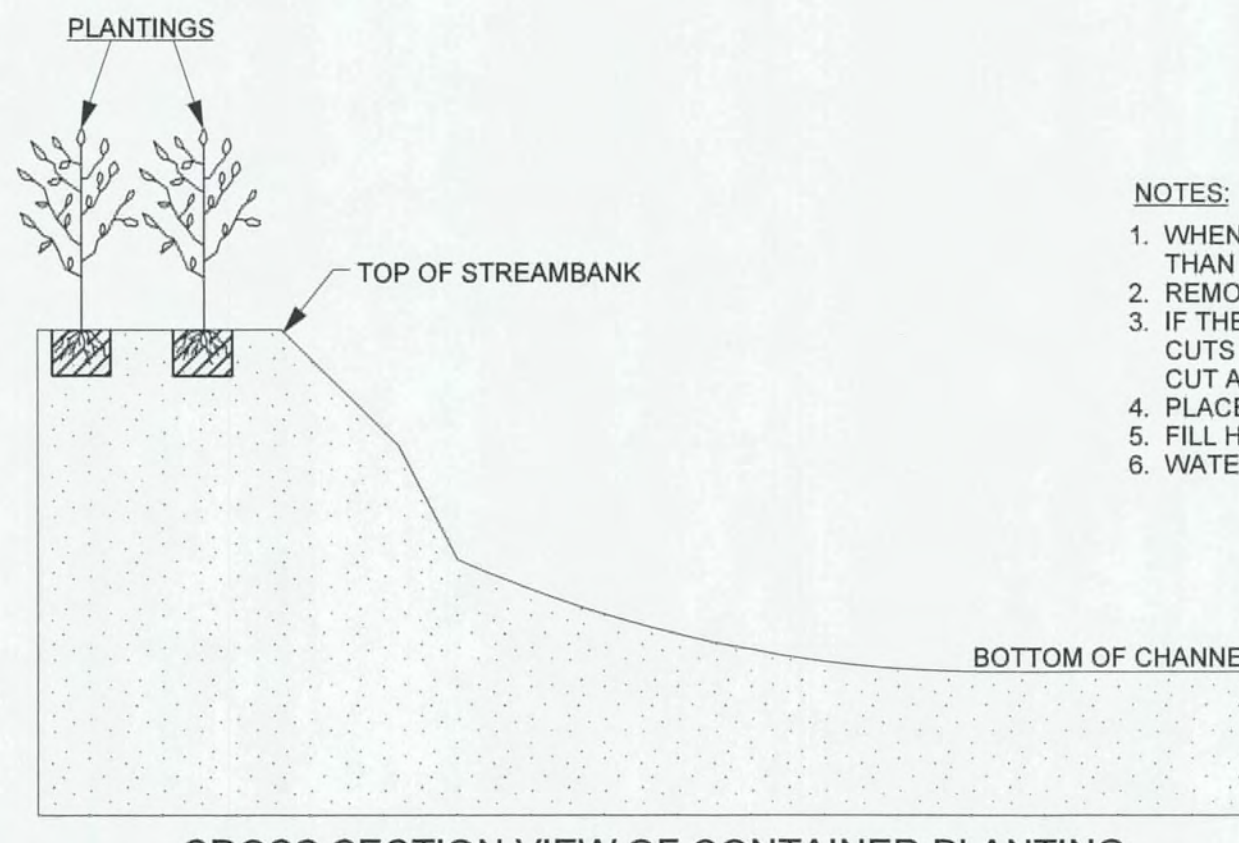
**PLANTING SPECIFICATIONS**



CROSS SECTION VIEW OF BARE ROOT PLANTING

**NOTES:**

1. PLANT BARE ROOT SHRUBS AND TREES TO THE WIDTH OF THE BUFFER AS SHOWN ON THE PLANS.
2. ALLOW FOR 6-10 FEET BETWEEN PLANTINGS, DEPENDING ON SIZE.
3. LOOSEN COMPACTED SOIL.
4. PLANT IN HOLES MADE BY A MATTOCK, DIBBLE, PLANTING BAR, OR OTHER APPROVED MEANS.
5. PLANT IN HOLES DEEP AND WIDE ENOUGH TO ALLOW THE ROOTS TO SPREAD OUT AND DOWN WITHOUT J-ROOTING.
6. KEEP ROOTS MOIST WHILE DISTRIBUTING OR WAITING TO PLANT BY MEANS OF WET CANVAS, BURLAP, OR STRAW.
7. HEEL-IN PLANTS IN MOIST SOIL OR SAWDUST IF NOT PROMPTLY PLANTED UPON ARRIVAL TO PROJECT SITE.



CROSS SECTION VIEW OF CONTAINER PLANTING

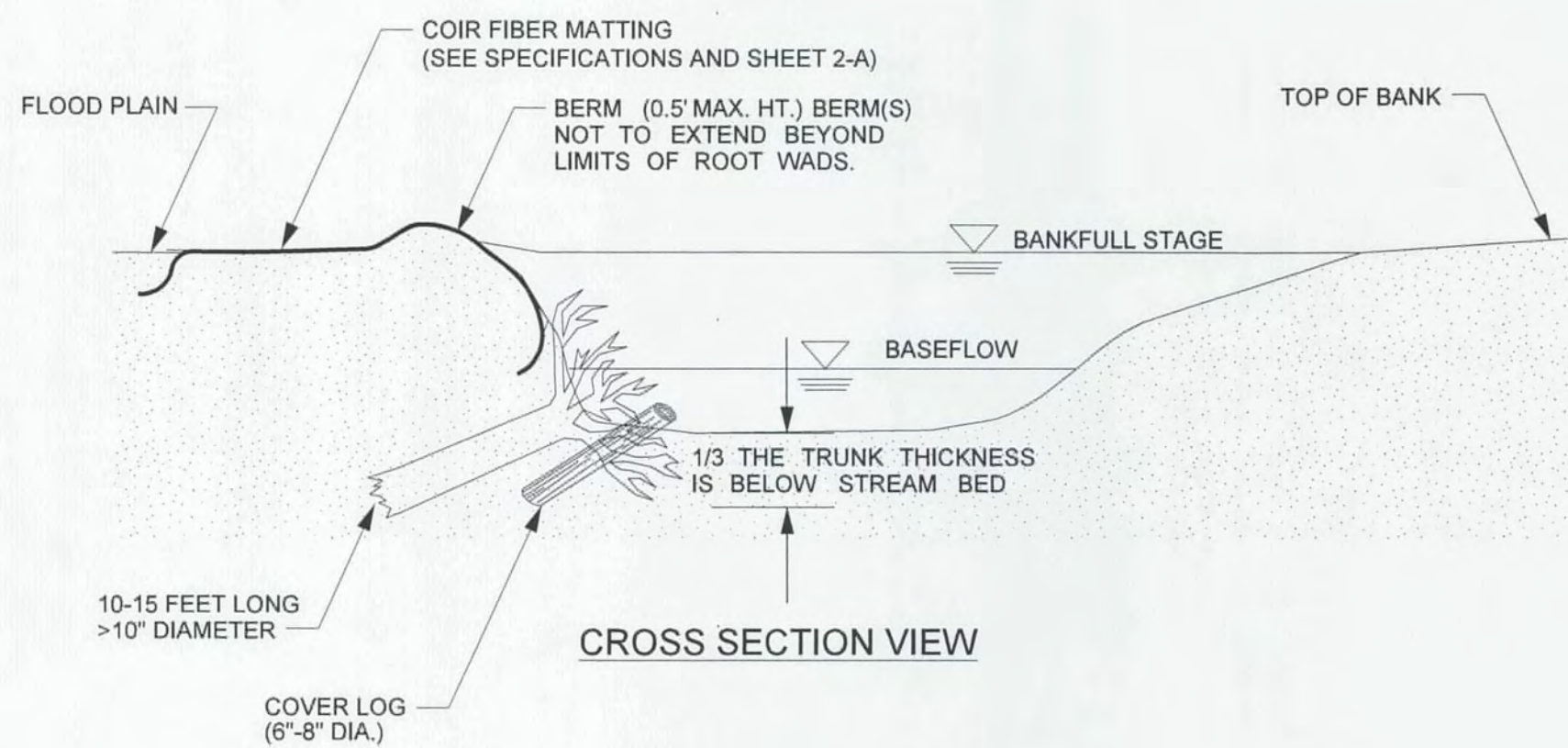
**NOTES:**

1. WHEN PREPARING THE HOLE FOR A POTTED PLANT OR SHRUB DIG THE HOLE 8-12 INCHES LARGER THAN THE DIAMETER OF THE POT AND THE SAME DEPTH AS THE POT.
2. REMOVE THE PLANT FROM THE POT. LAY THE PLANT ON ITS SIDE IF NECESSARY TO REMOVE THE POT.
3. IF THE PLANT IS ROOTBOUND (ROOTS GROWING IN A SPIRAL AROUND THE ROOT BALL), MAKE VERTICAL CUTS WITH A KNIFE OR SPADE JUST DEEP ENOUGH TO CUT THE NET OF ROOTS. ALSO MAKE A CRISS-CROSS CUT ACROSS THE BOTTOM OF THE BALL.
4. PLACE THE PLANT IN THE HOLE.
5. FILL HALF OF THE HOLE WITH SOIL (SAME SOIL REMOVED FOR BACKFILL).
6. WATER THE SOIL TO REMOVE AIR POCKETS AND FILL THE REST OF THE HOLE WITH THE REMAINING SOIL.

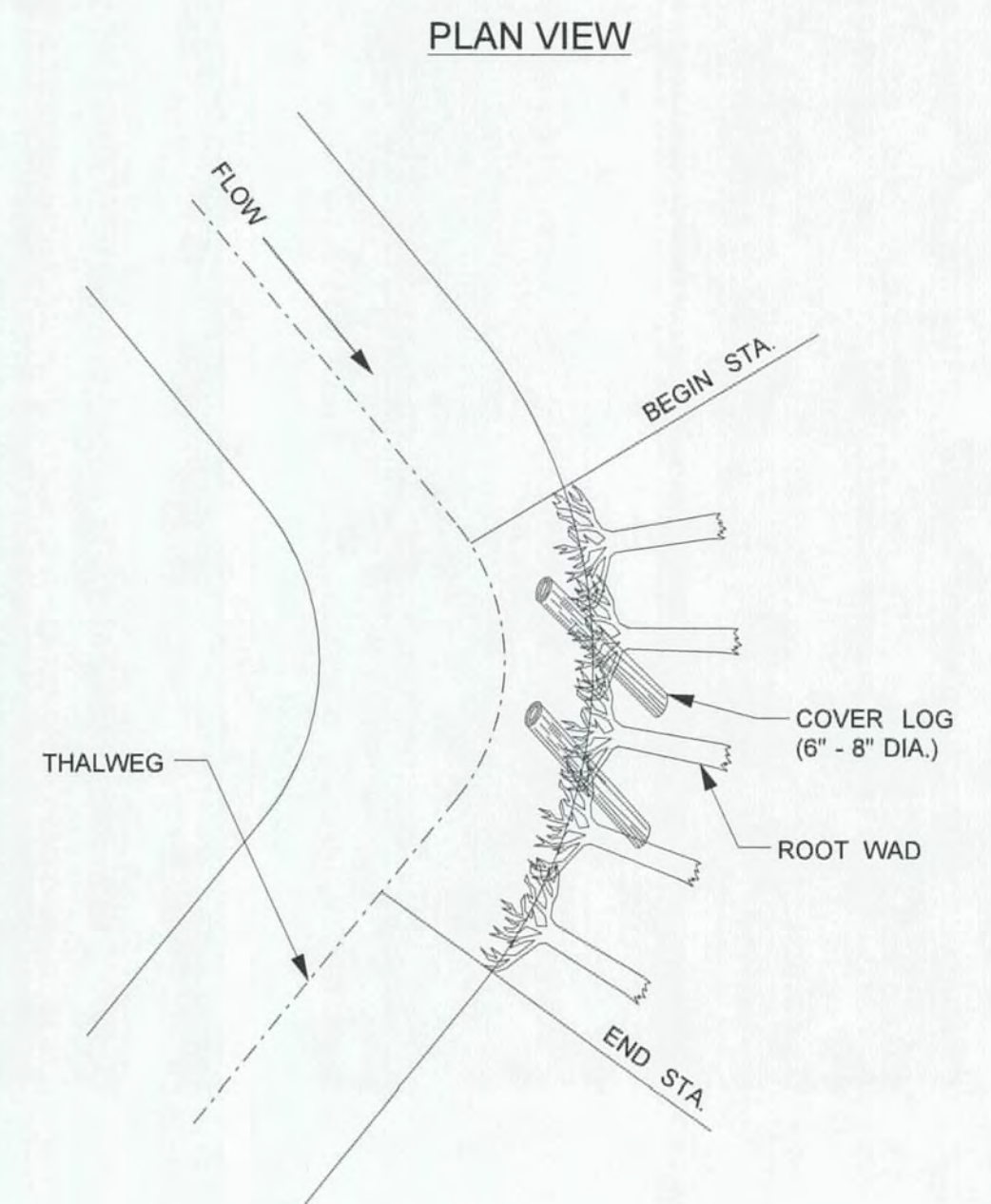
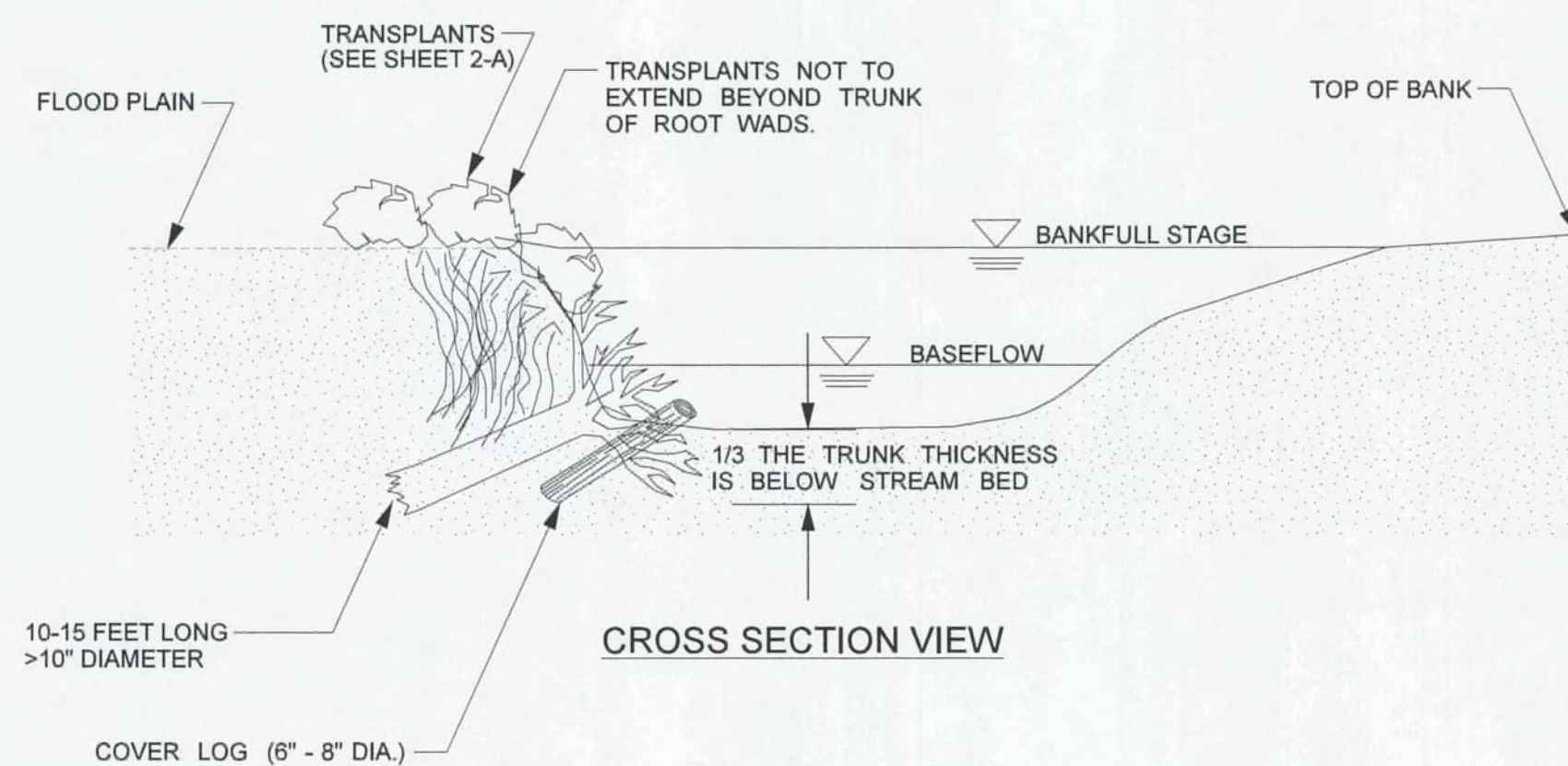
BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 2B
PROJECT ENGINEER	
APPROVED BY: 	
DATE: 11/6/16	
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**ROOT WADS**

**ROOT WADS WITHOUT TRANSPLANTS**  
USE IF TRANSPLANTS ARE NOT AVAILABLE ON-SITE



**ROOT WADS WITH TRANSPLANTS**  
USE IF TRANSPLANTS ARE AVAILABLE ON-SITE



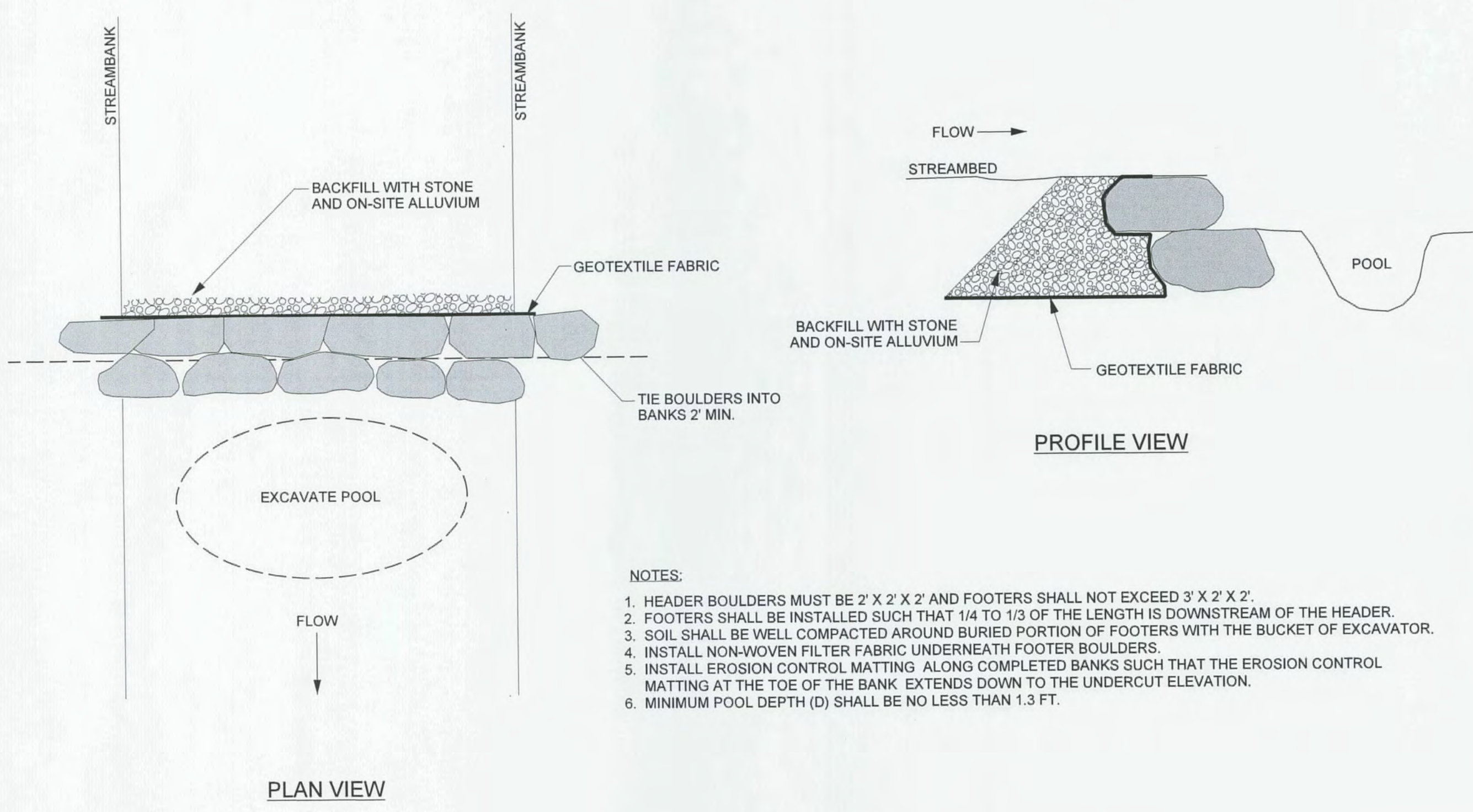
**NOTES:**

1. INSTALLATION USING THE TRENCHING METHOD REQUIRES THAT A TRENCH BE EXCAVATED FOR THE LOG PORTION OF THE ROOT WAD. ONE-THIRD OF THE ROOT WAD SHOULD REMAIN BELOW NORMAL BASE FLOW CONDITIONS OR CHANNEL BOTTOM.
2. THE NUMBER OF ROOTWADS ESTIMATED MAY VARY DEPENDING ON THE ROOTMASS SIZE. IN GENERAL, ROOTWADS SHOULD PROTECT THE OUTER MEANDER BEND AS SHOWN. SEE STRUCTURE TABLE FOR APPROXIMATE STATION AND LOCATION.
3. INSTALL COVER LOGS BETWEEN ROOTWADS TO PROVIDE HABITAT ONLY WHEN AVAILABLE FROM ON-SITE HARVESTING.

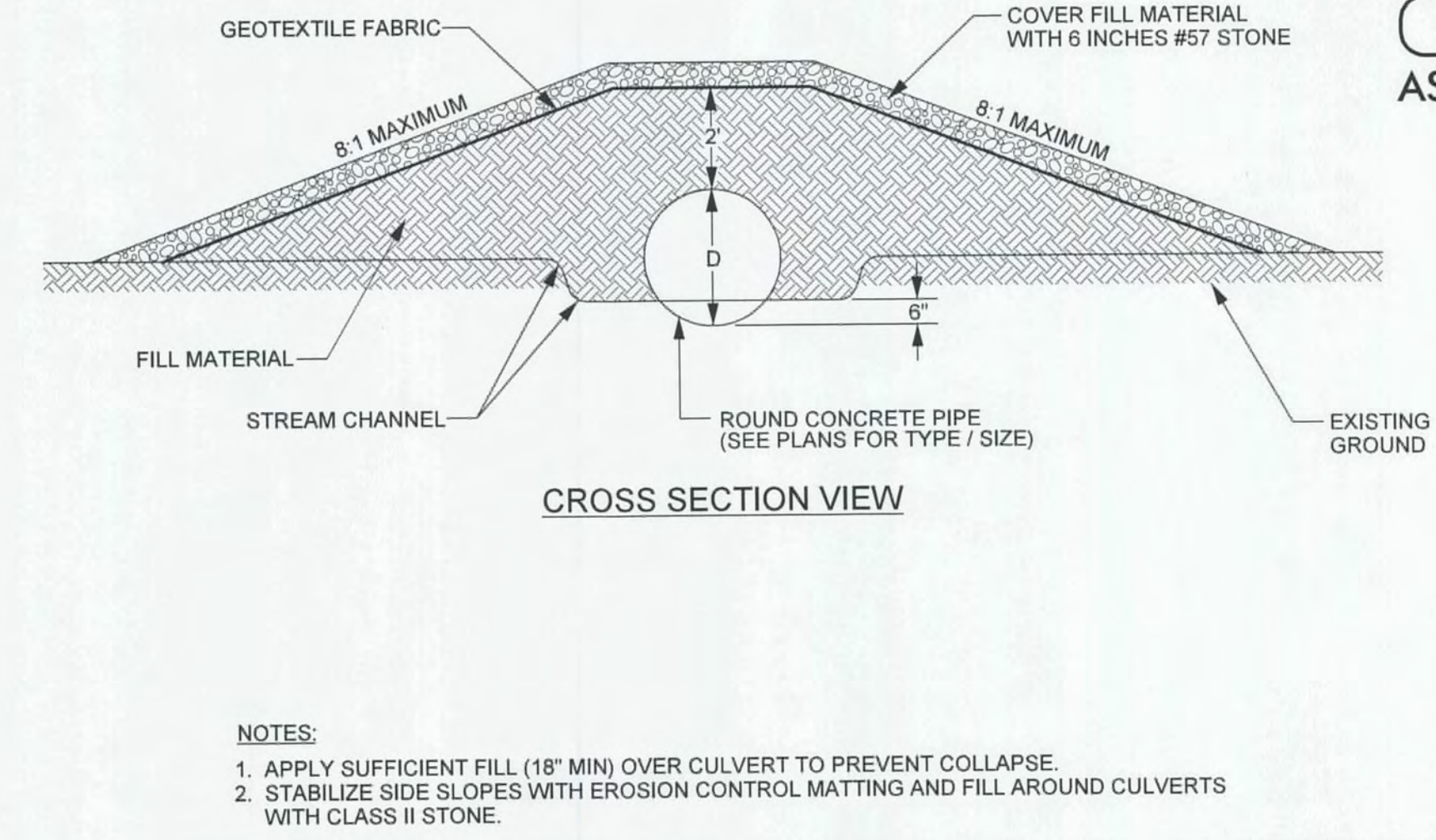
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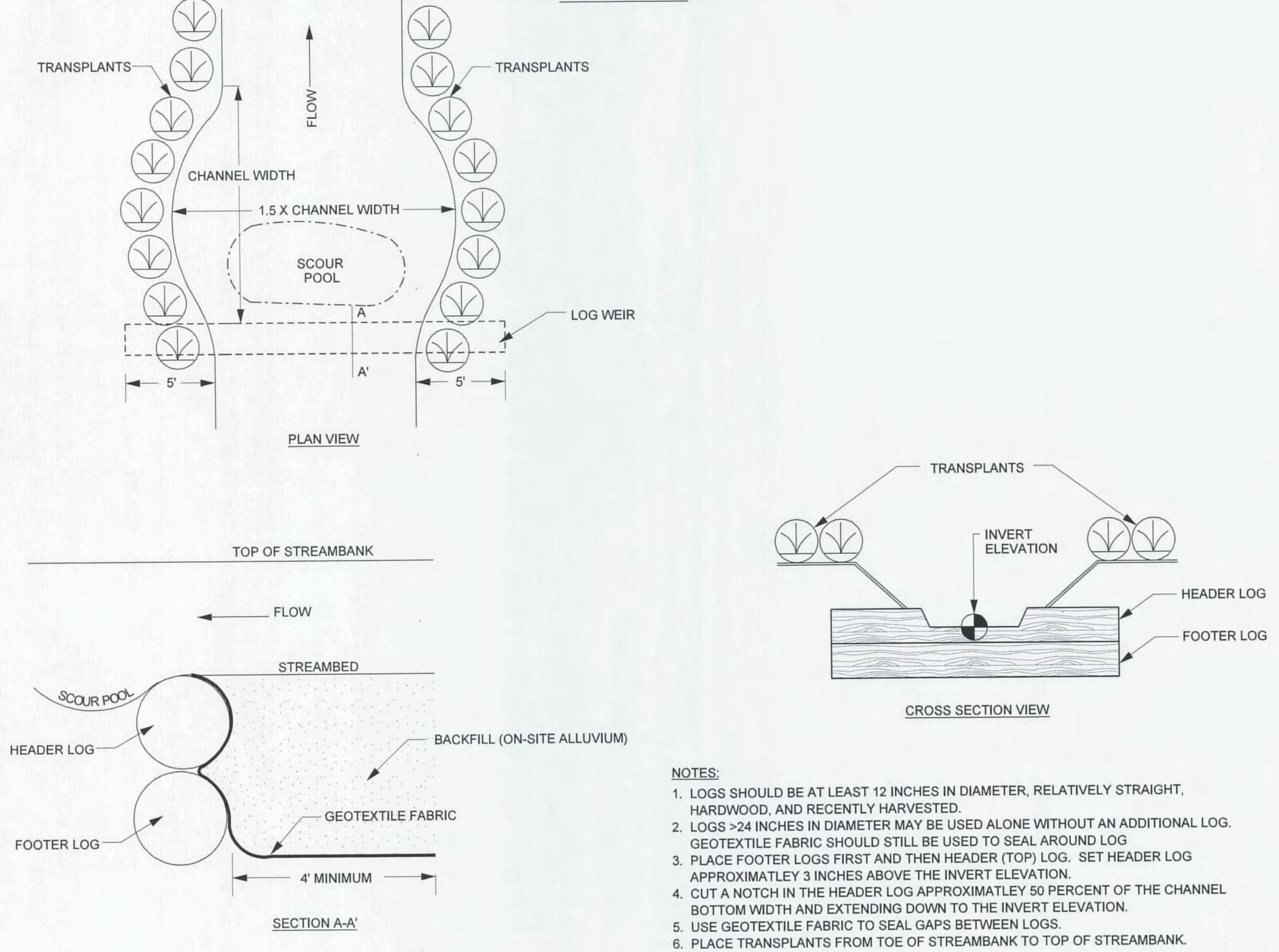
**BOULDER SILL**



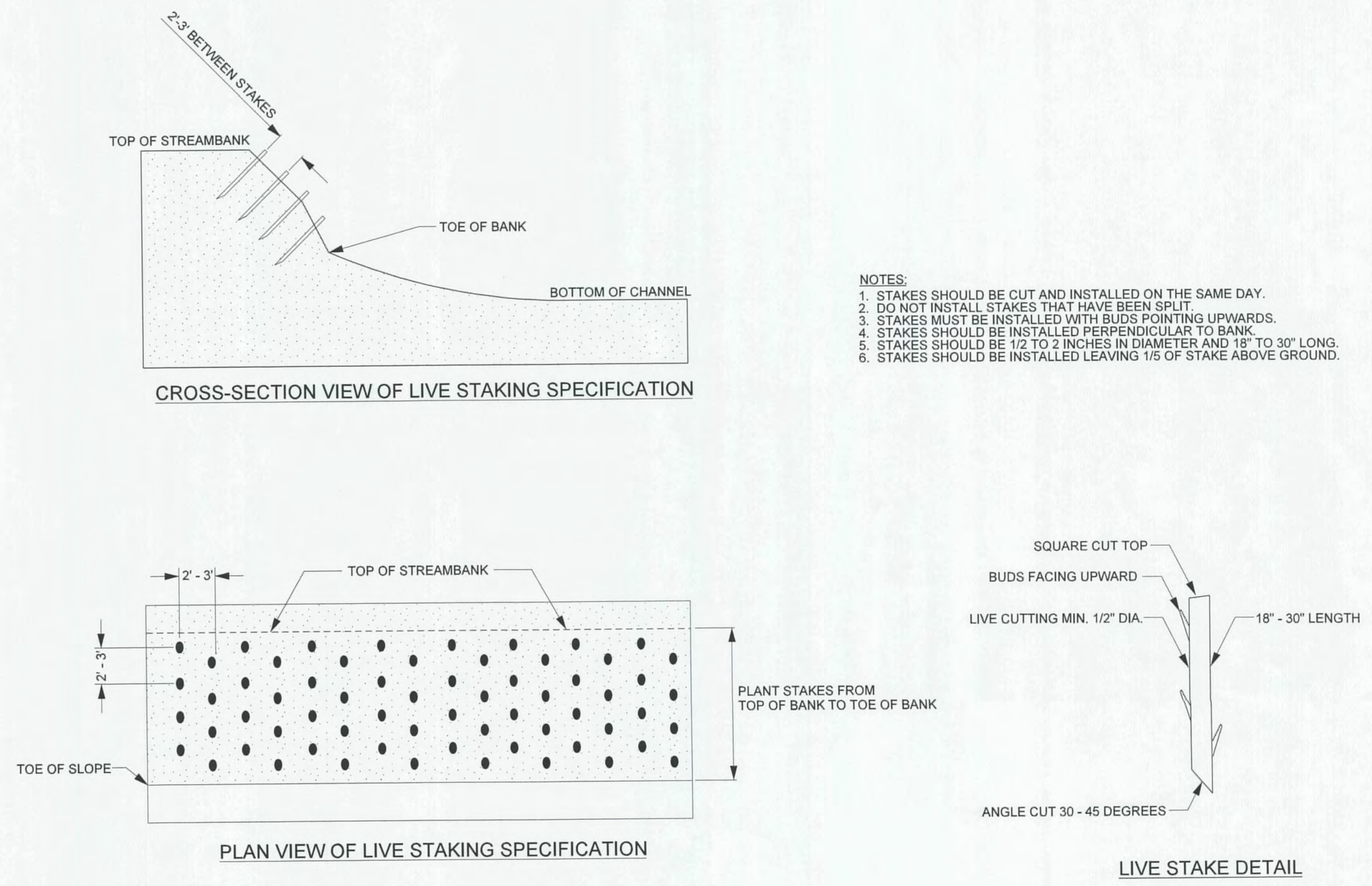
**PERMANENT CULVERT STREAM CROSSING**



**LOG WEIR**



**LIVE STAKING**



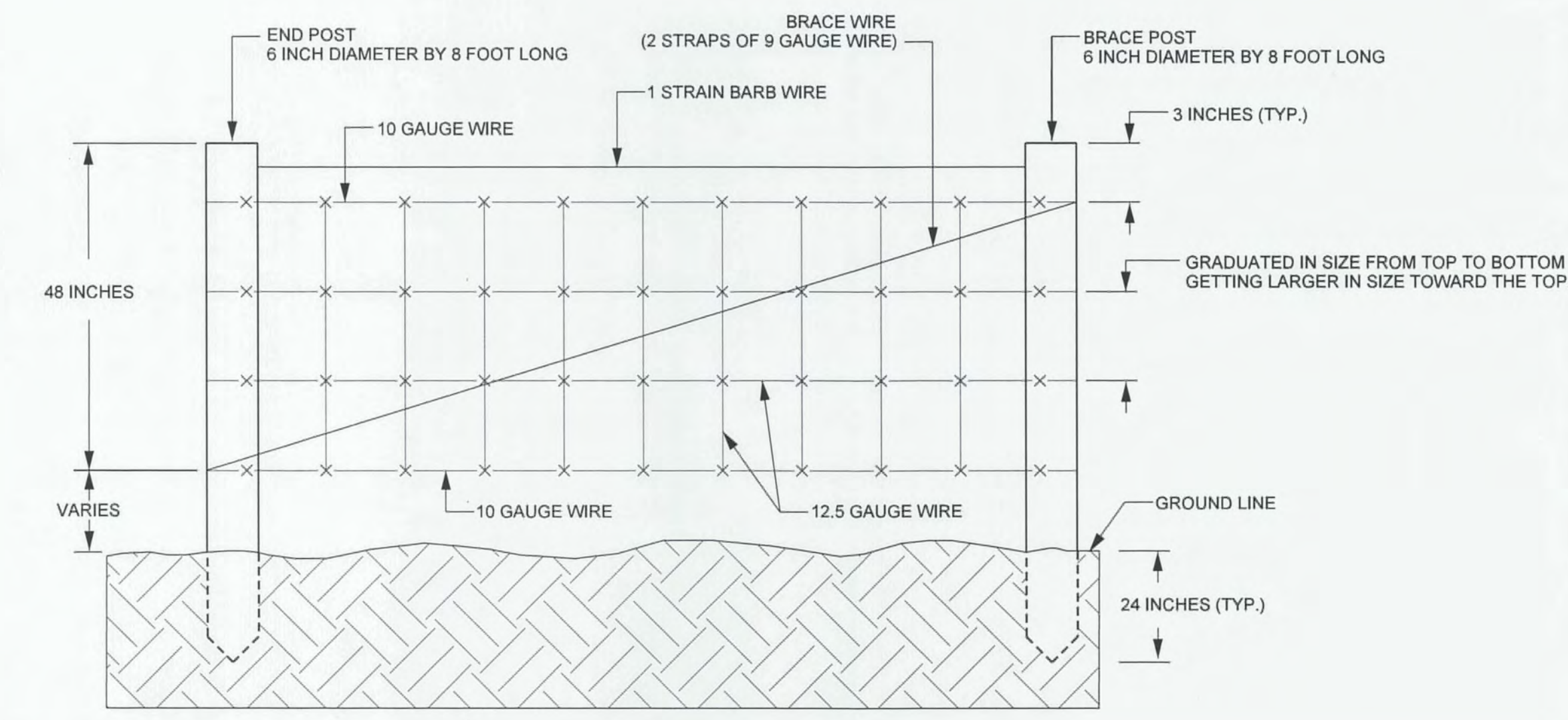
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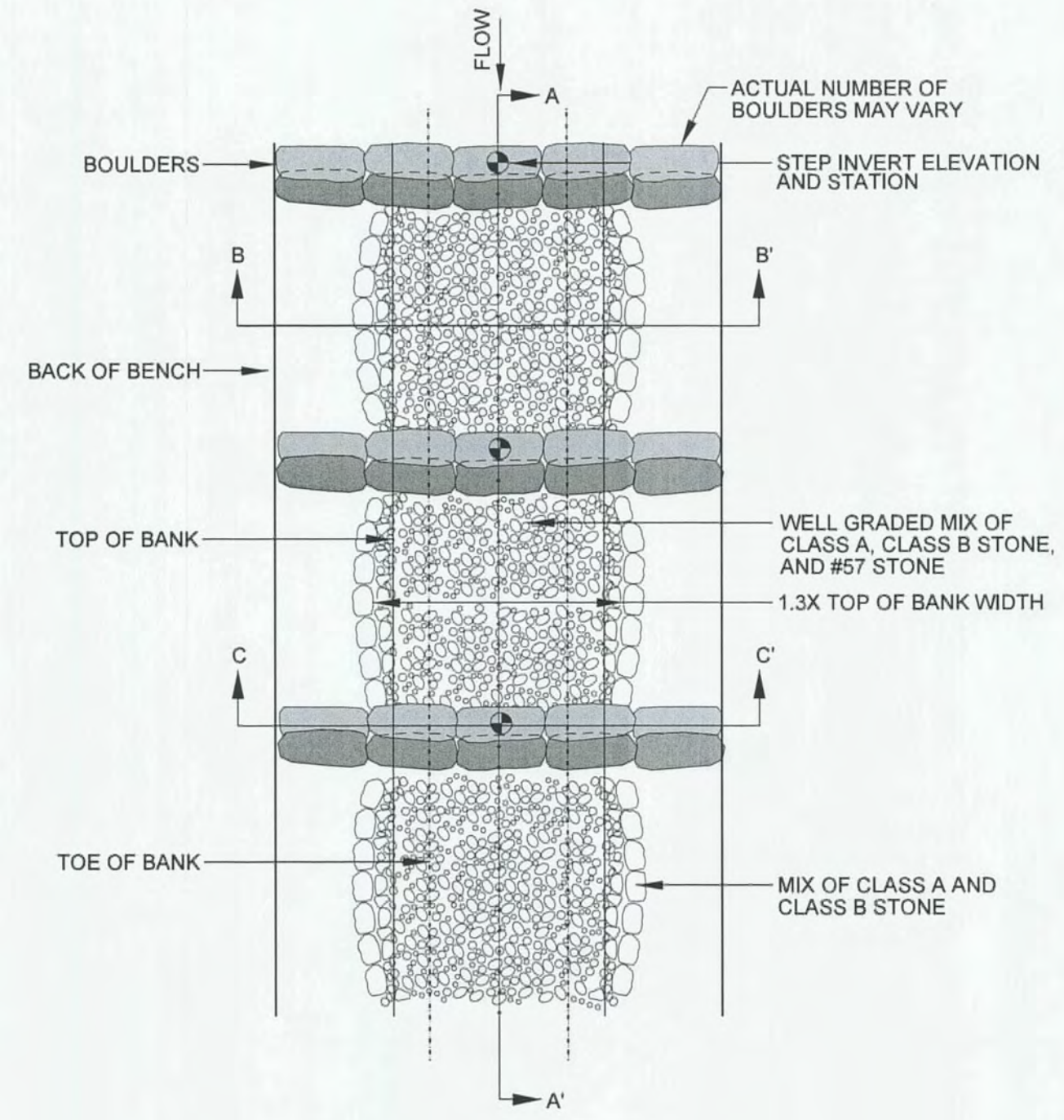
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### WOVEN FIELD FENCE



NOTE:  
1. END POSTS SHALL BE INSTALLED AT A SPACING OF 10-15 FEET.

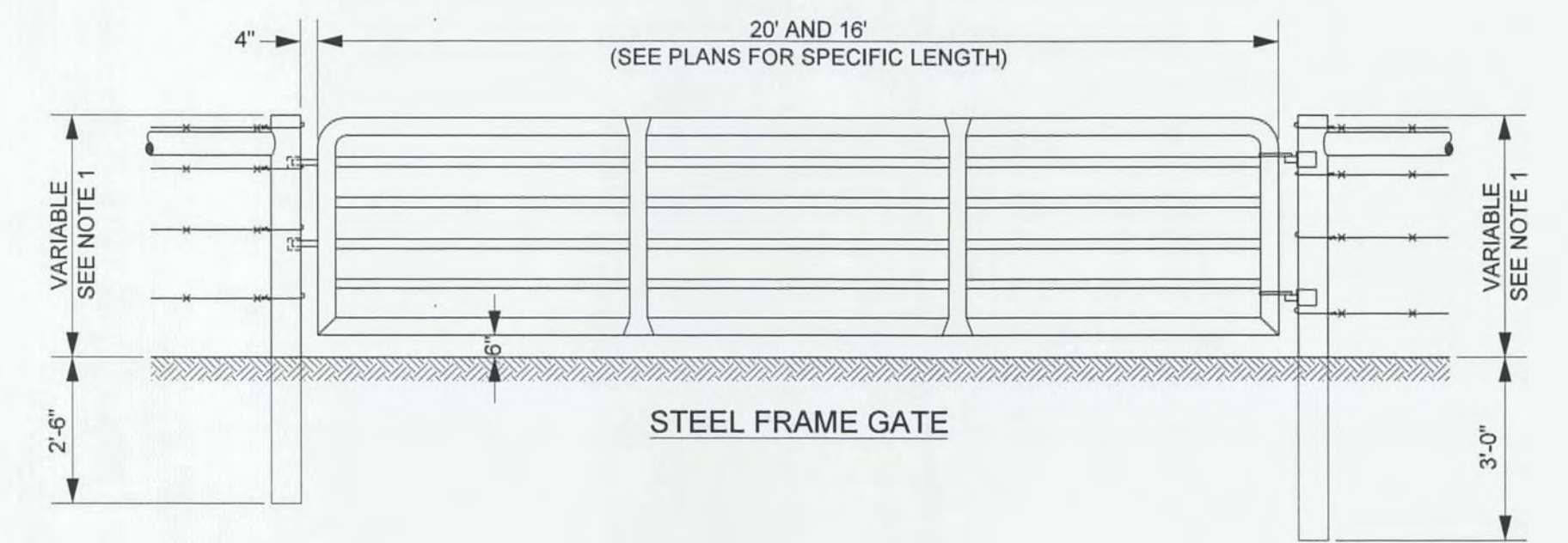
### BOULDER STEP



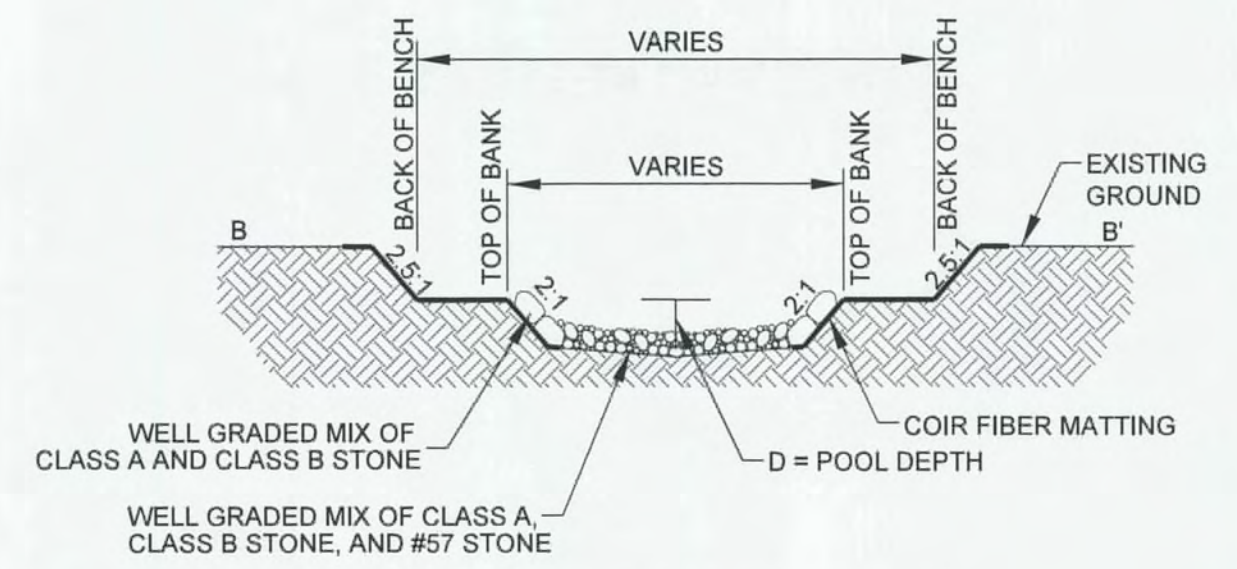
PLAN VIEW

- NOTES:
1. HEADER BOULDERS MUST BE 2' X 2' X 2' AND FOOTERS SHALL NOT EXCEED 3' X 2' X 2'.
  2. FOOTERS SHALL BE INSTALLED SUCH THAT 1/4 TO 1/3 OF THE LENGTH IS DOWNSTREAM OF THE HEADER.
  3. SOIL SHALL BE WELL COMPACTED AROUND BURIED PORTION OF FOOTERS WITH THE BUCKET OF EXCAVATOR.
  4. INSTALL NON-WOVEN FILTER FABRIC UNDERNEATH FOOTER BOULDERS.
  5. UNDERCUT POOL BED ELEVATION 8 INCHES TO ALLOW FOR LAYER OF STONE.
  6. INSTALL EROSION CONTROL MATTING ALONG COMPLETED BANKS SUCH THAT THE EROSION CONTROL MATTING AT THE TOE OF THE BANK EXTENDS DOWN TO THE UNDERCUT ELEVATION.
  7. INSTALL WELL GRADED MIX OF CLASS A AND CLASS B STONE ALONG SIDE SLOPES.
  8. FINAL CHANNEL BED SHAPE SHOULD BE ROUNDED, COMPACTED, AND CONCAVE, WITH THE ELEVATION OF THE BED APPROXIMATELY 0.5 FT DEEPER IN THE CENTER THAN AT THE EDGES.
  9. STEP HEIGHT (H) SHALL NOT EXCEED 1.0 FT.
  10. MINIMUM POOL DEPTH (D) SHALL BE NO LESS THAN 1.3 FT.

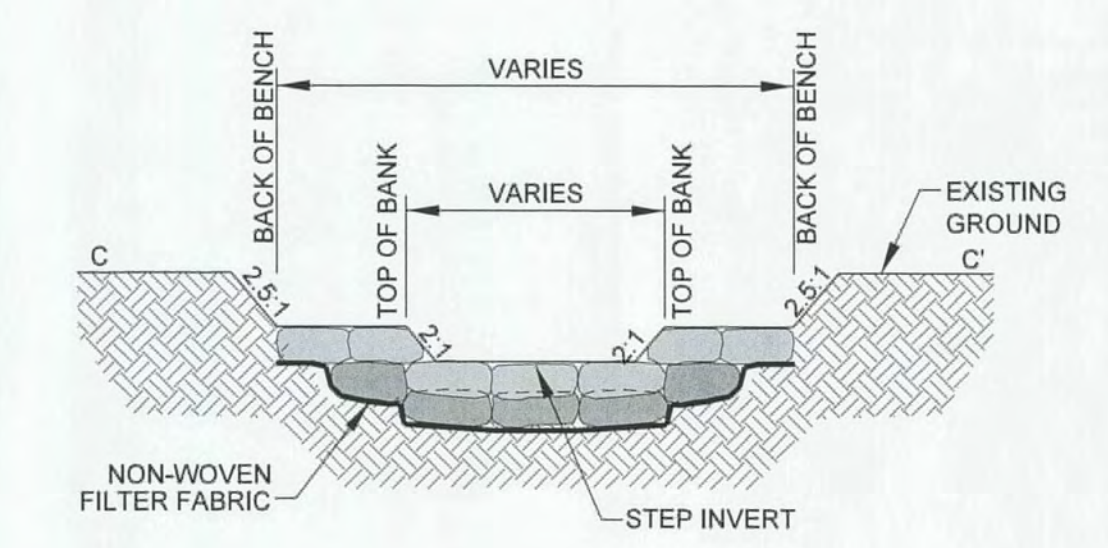
### STEEL GATES



- NOTES:
1. POST HEIGHT DIMENSION SHALL BE THE SAME AS REQUIRED FOR THE ADJACENT FENCE.
  2. CONSTRUCT AN END OR STRESS PANEL, AS REQUIRED IN THE SPECIFICATION, ON EACH SIDE OF GATE.
  3. HINGES AND LOCKS SHALL BE INSTALLED AS SPECIFIED BY GATE MANUFACTURER.

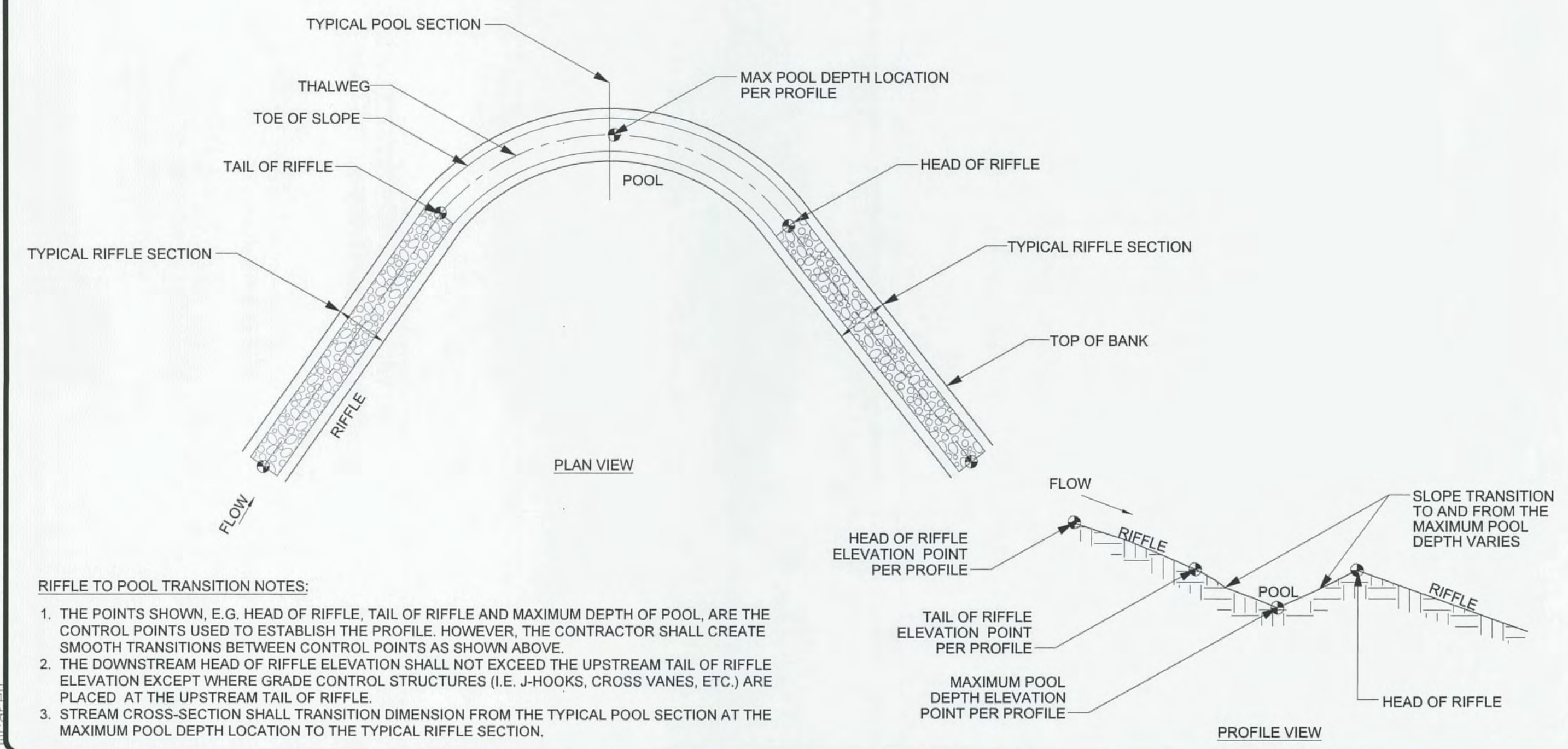


POOL CROSS SECTION B-B'

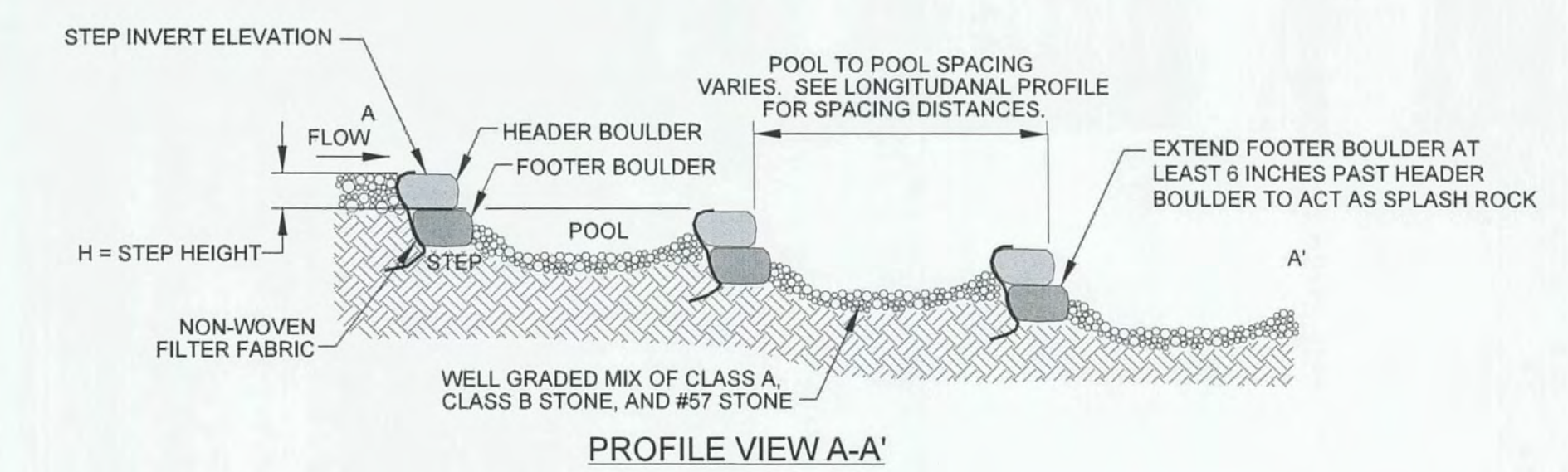


POOL CROSS SECTION C-C'

### RIFFLE TO POOL TRANSITION



- RIFFLE TO POOL TRANSITION NOTES:
1. THE POINTS SHOWN, E.G. HEAD OF RIFFLE, TAIL OF RIFFLE AND MAXIMUM DEPTH OF POOL, ARE THE CONTROL POINTS USED TO ESTABLISH THE PROFILE. HOWEVER, THE CONTRACTOR SHALL CREATE SMOOTH TRANSITIONS BETWEEN CONTROL POINTS AS SHOWN ABOVE.
  2. THE DOWNSTREAM HEAD OF RIFFLE ELEVATION SHALL NOT EXCEED THE UPSTREAM TAIL OF RIFFLE ELEVATION EXCEPT WHERE GRADE CONTROL STRUCTURES (I.E. J-HOOKS, CROSS VANES, ETC.) ARE PLACED AT THE UPSTREAM TAIL OF RIFFLE.
  3. STREAM CROSS-SECTION SHALL TRANSITION DIMENSION FROM THE TYPICAL POOL SECTION AT THE MAXIMUM POOL DEPTH LOCATION TO THE TYPICAL RIFFLE SECTION.



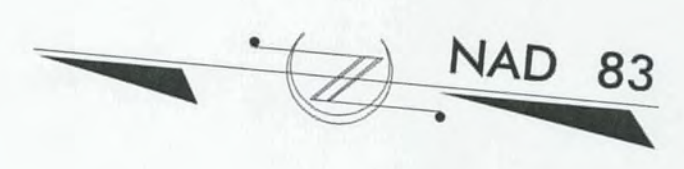
PROFILE VIEW A-A'

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PROJECT ENGINEER	
APPROVED BY:	
DATE: 1/5/16	
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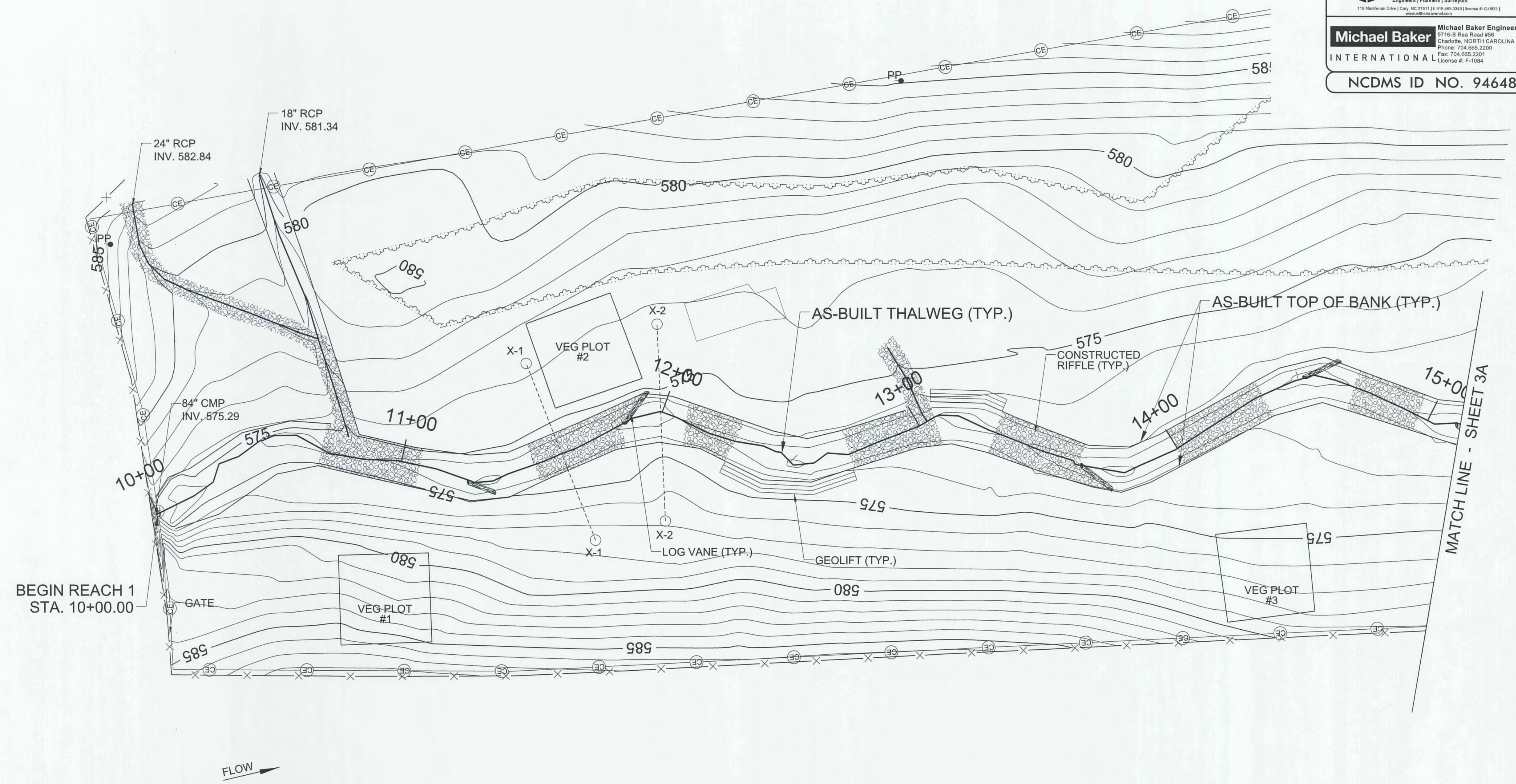


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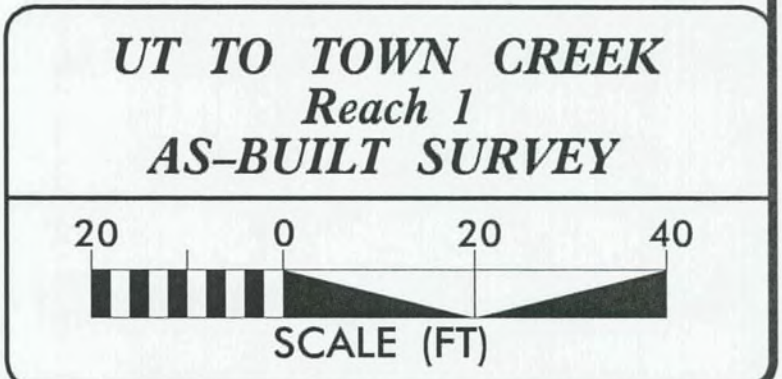
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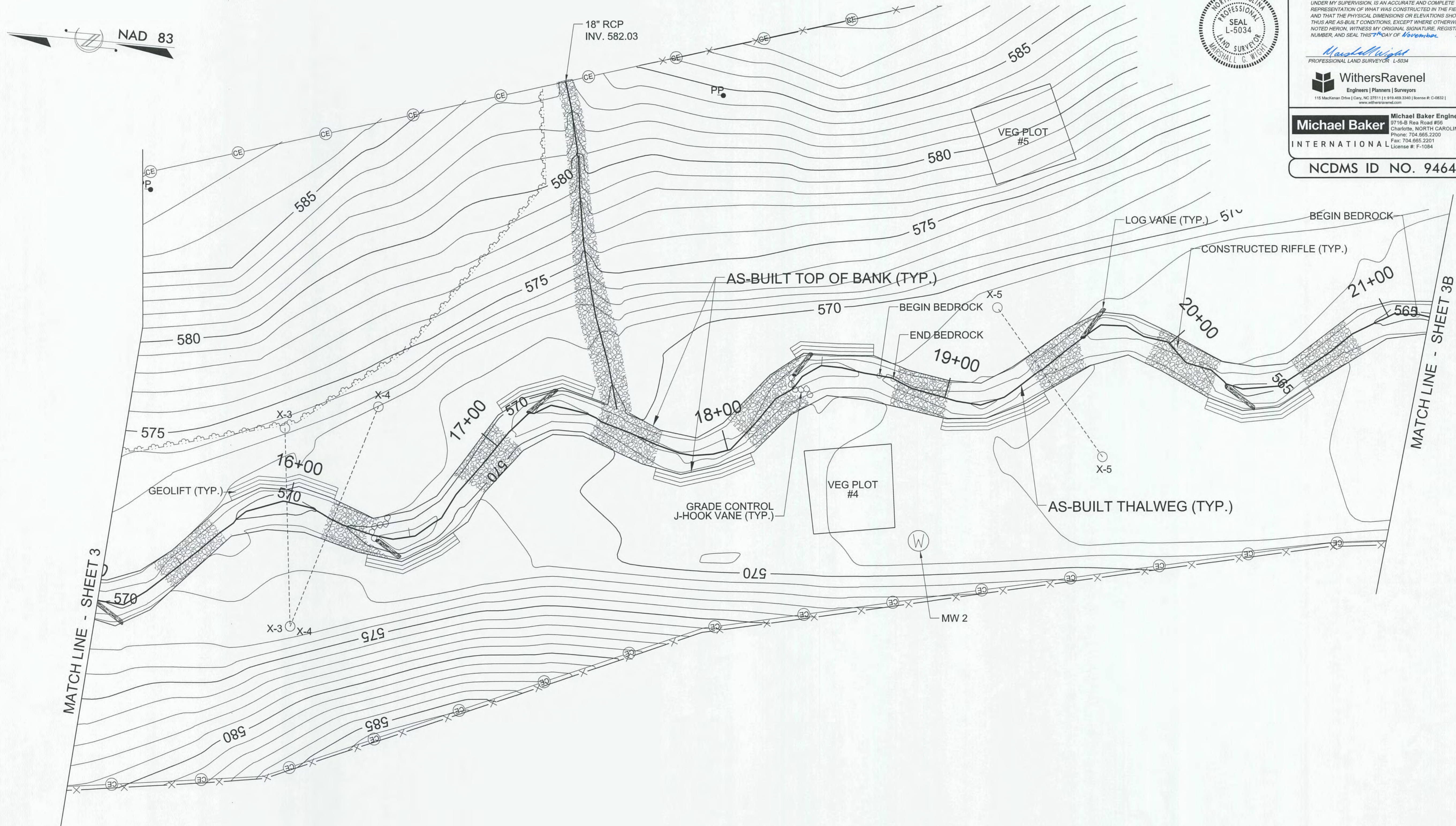


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<b>NCDMS ID NO. 94648</b>	




NAD 83

MATCH LINE - SHEET 3

MATCH LINE - SHEET 3B

**UT TO TOWN CREEK**  
Reach 1  
**AS-BUILT SURVEY**

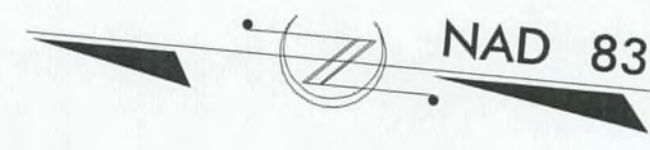


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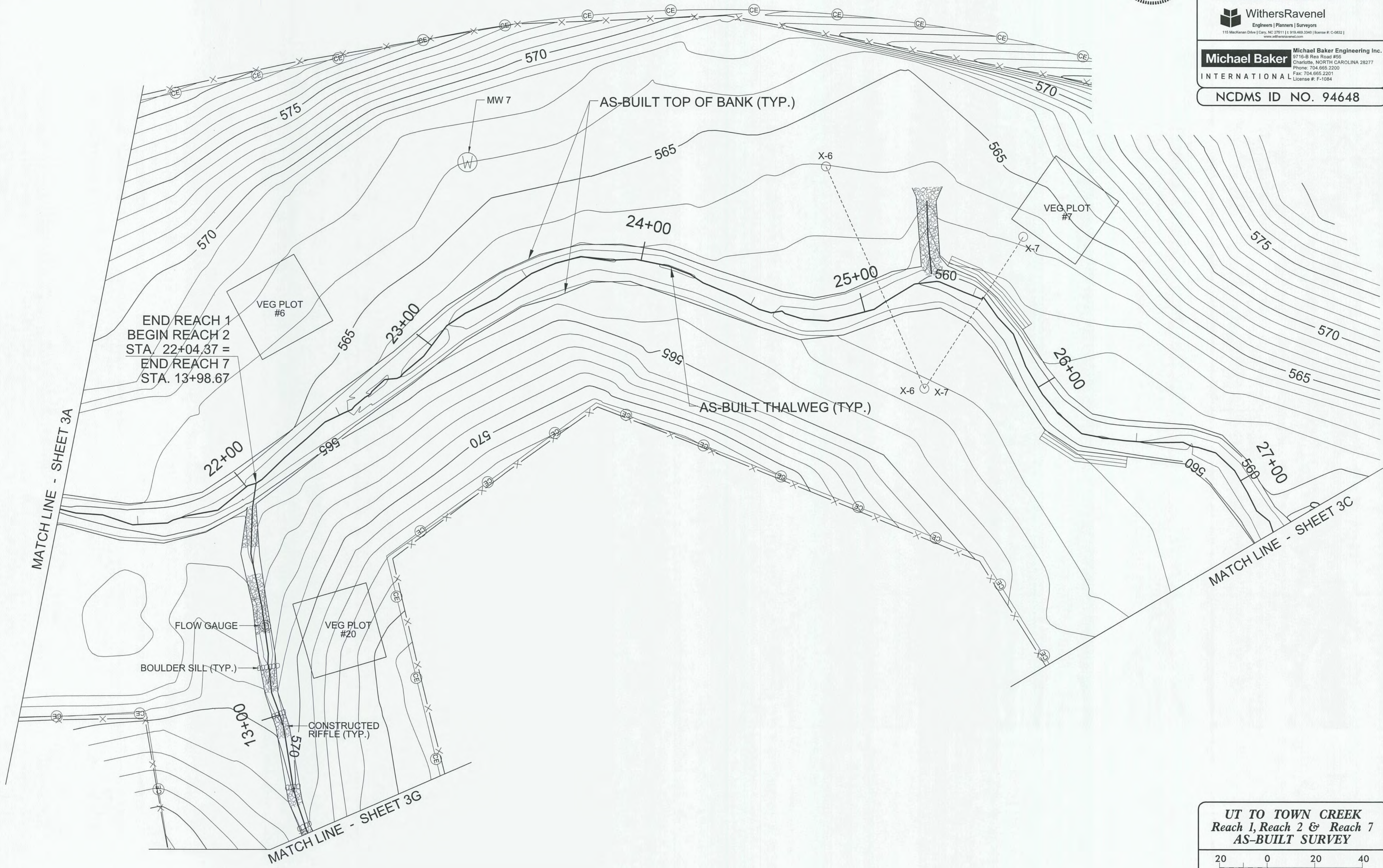


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END REACH 1  
BEGIN REACH 2  
STA. 22+04.37 =  
END REACH 7  
STA. 13+98.67

UT TO TOWN CREEK  
Reach 1, Reach 2 & Reach 7  
AS-BUILT SURVEY

SCALE (FT)

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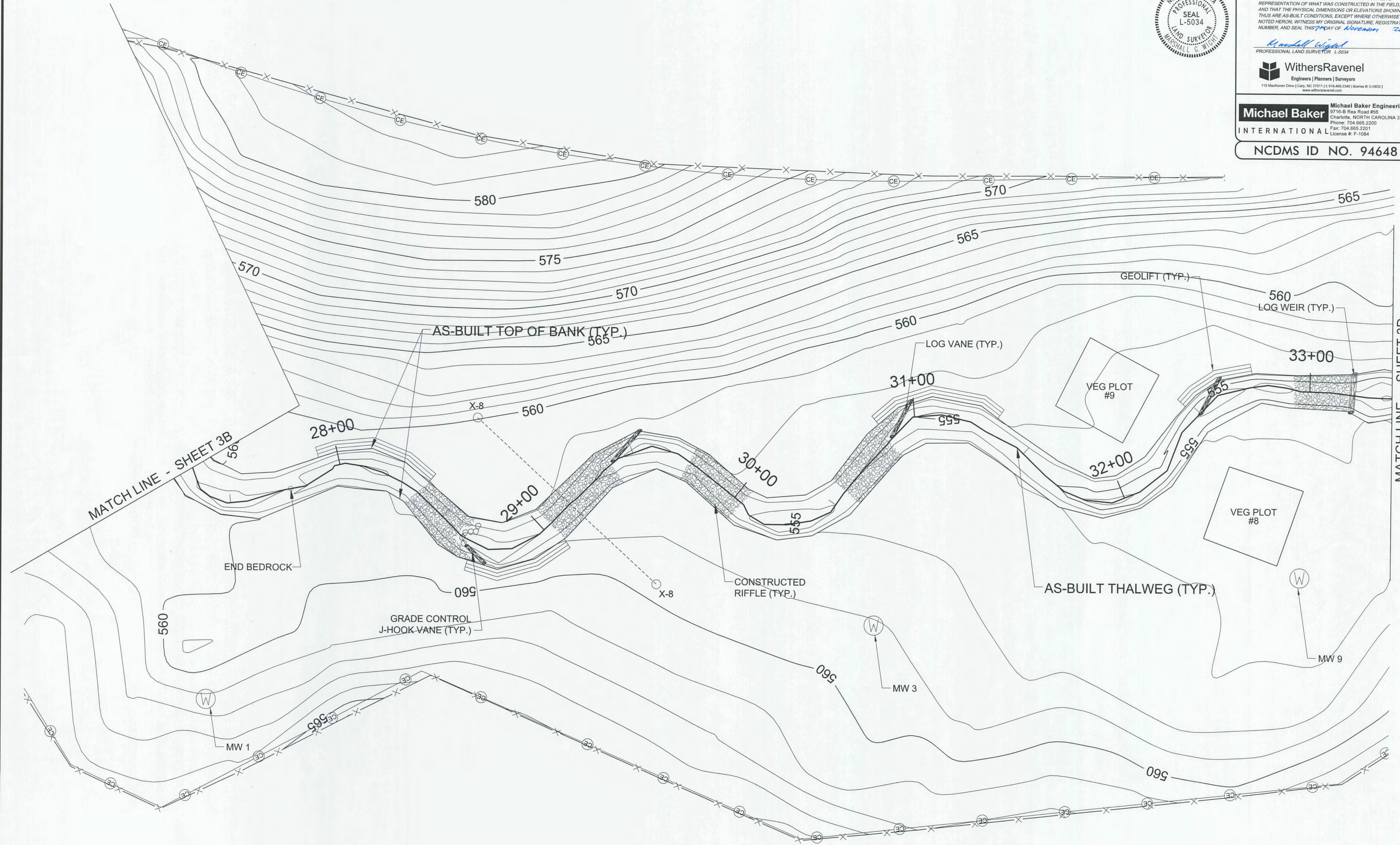
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*Marshall G. Wright*  
PROFESSIONAL LAND SURVEYOR, L-5034

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MATCH LINE - SHEET 3D

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**UT TO TOWN CREEK**  
Reach 2  
**AS-BUILT SURVEY**

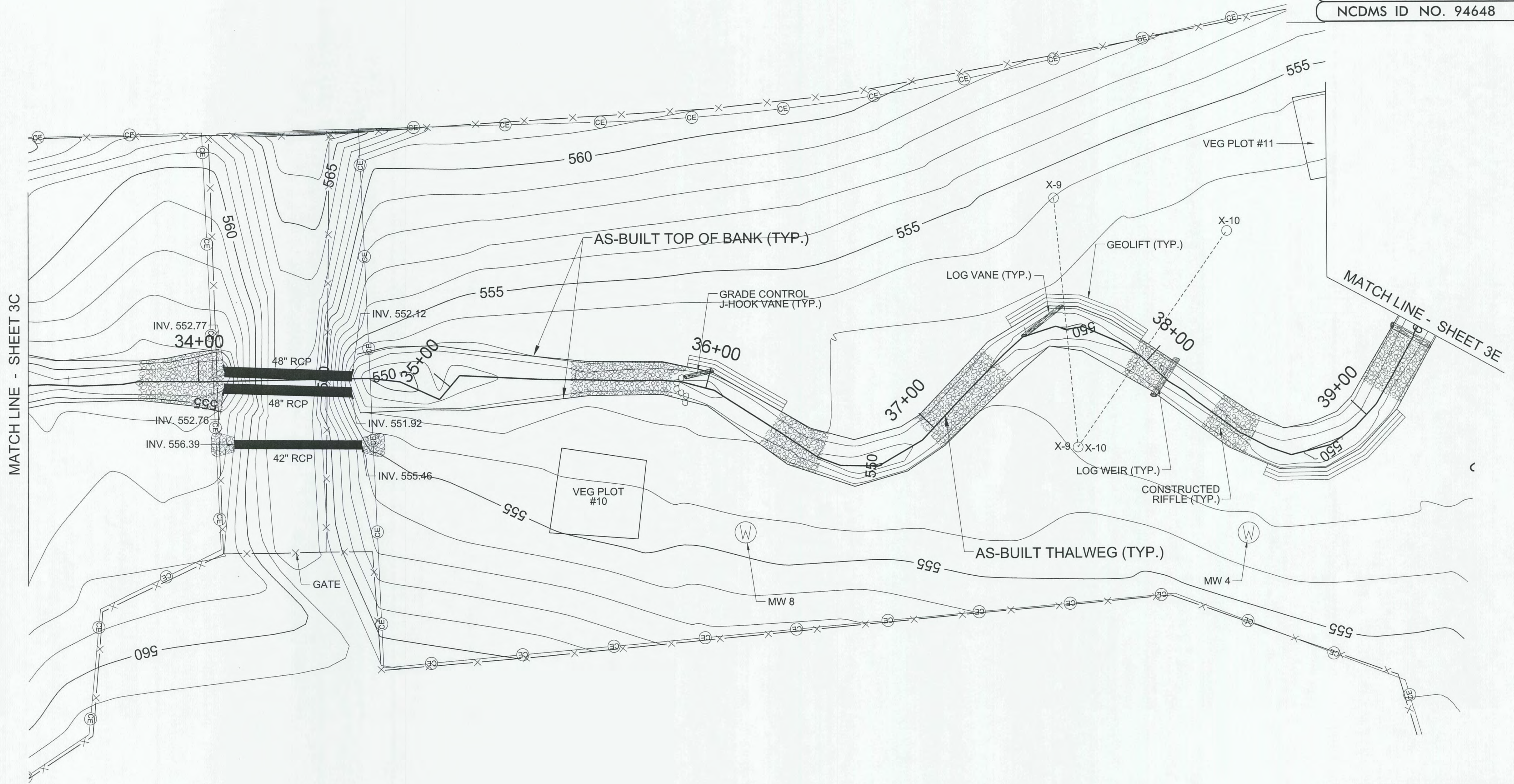
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 <small>Engineers   Planners   Surveyors</small> <small>115 MacArthur Drive   Cary, NC 27511   P: 919.466.2340   F: 919.466.2342   www.wr.com</small>	
 <small>Michael Baker Engineering Inc.</small> <small>9716-B Rees Road #550</small> <small>Charlotte, NORTH CAROLINA 28277</small> <small>Phone: 704.665.2200</small> <small>Fax: 704.665.2201</small> <small>License #: F-1084</small>	
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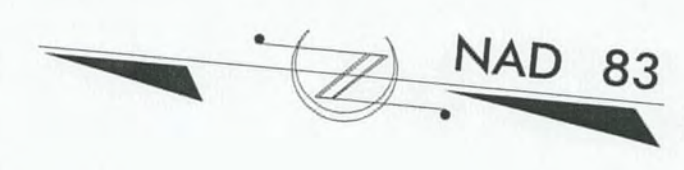
**UT TO TOWN CREEK**  
**Reach 2**  
**AS-BUILT SURVEY**

SCALE (FT)

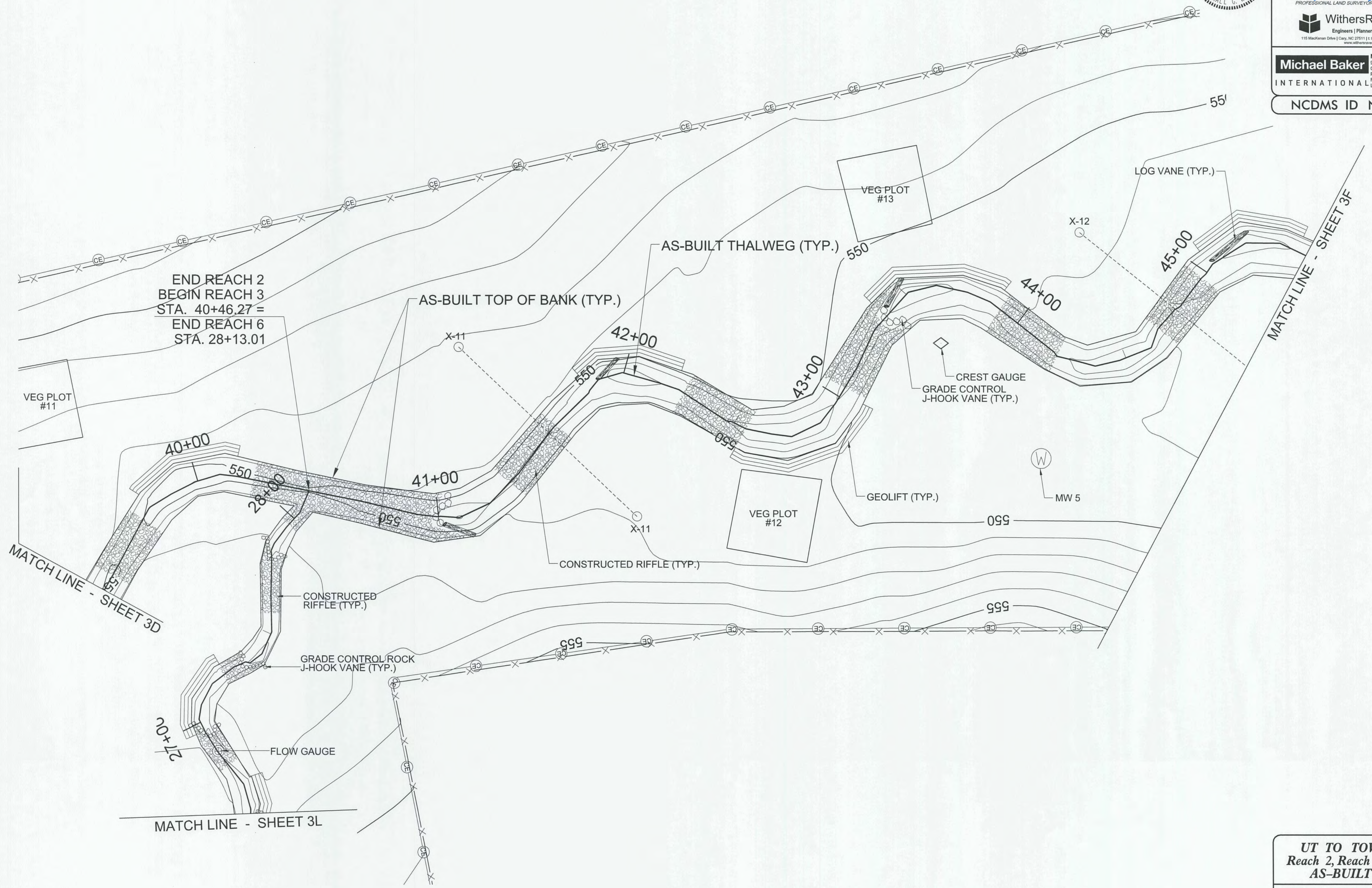
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<b>Michael Baker INTERNATIONAL</b> <small>9716-B Rea Road #50        Charlotte, NORTH CAROLINA 28277        Phone: 704.665.2200        Fax: 704.665.2201        License #: F-1084</small>	
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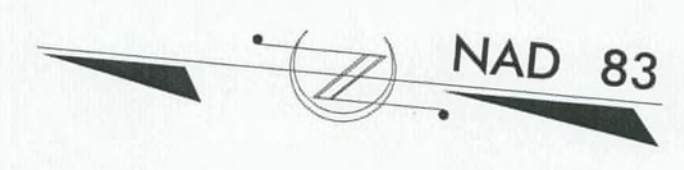
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**UT TO TOWN CREEK**  
**Reach 2, Reach 3 & Reach 6**  
**AS-BUILT SURVEY**

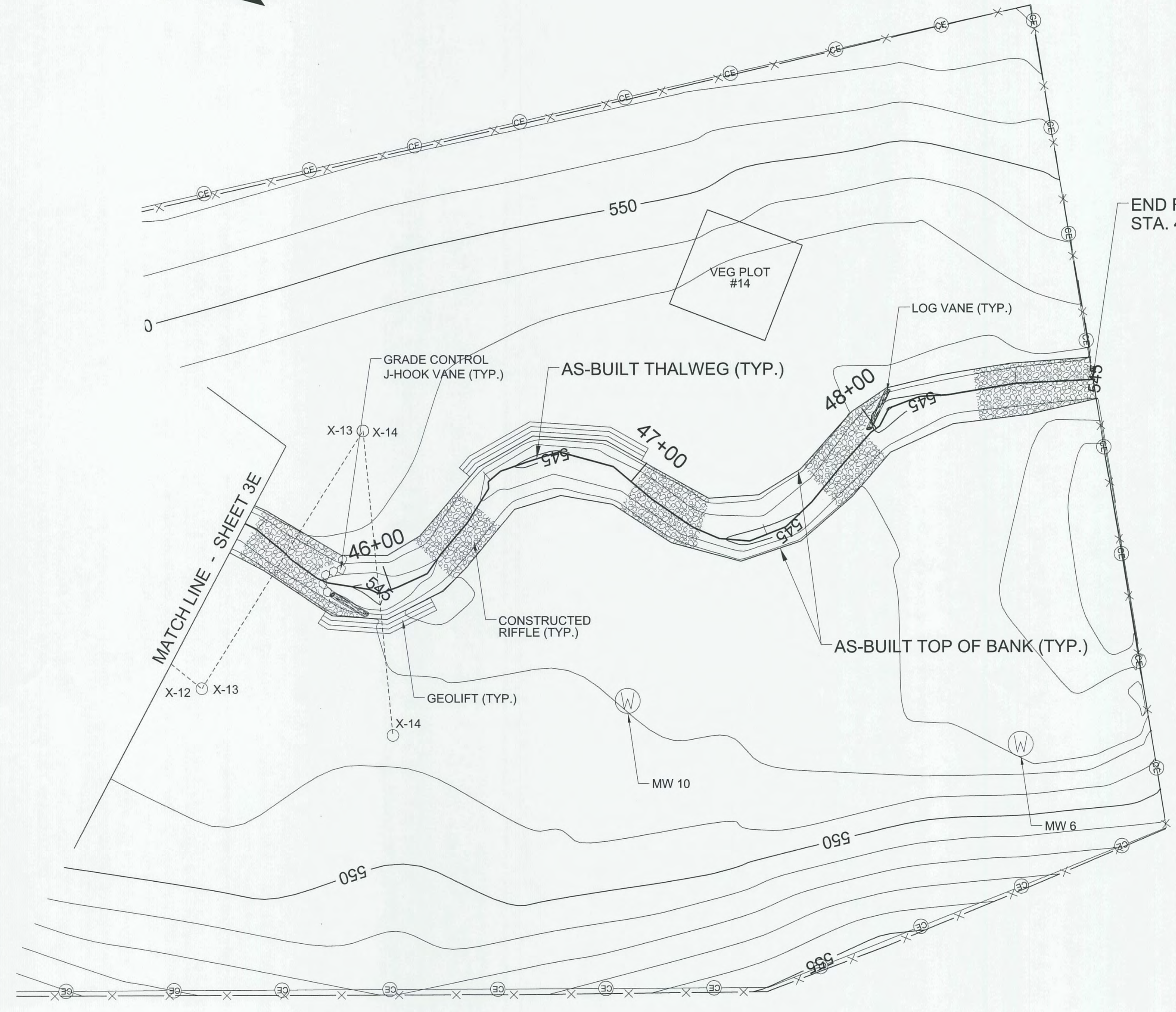
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<b>WithersRavenel</b> <small>Engineers   Planners   Surveyors</small> <small>115 MacKenzie Drive   Cary, NC 27511   E: 919.469.3340   License #: C-6832   www.withersravenel.com</small>	
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END REACH 3  
STA. 48+74.84

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**UT TO TOWN CREEK**  
**Reach 3**  
**AS-BUILT SURVEY**

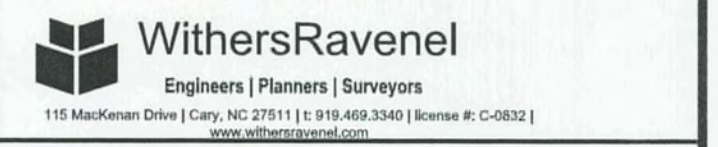
SCALE (FT)





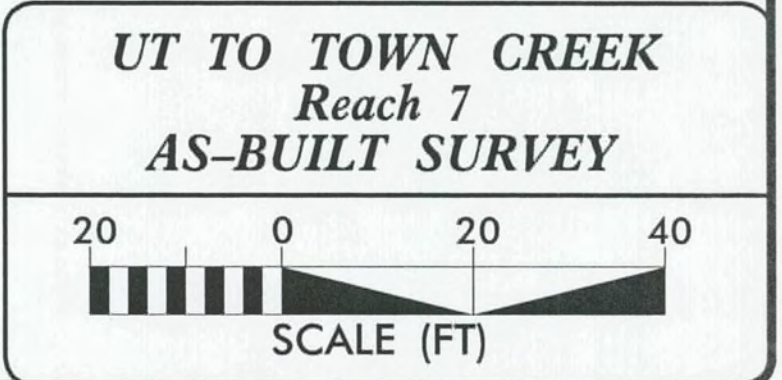
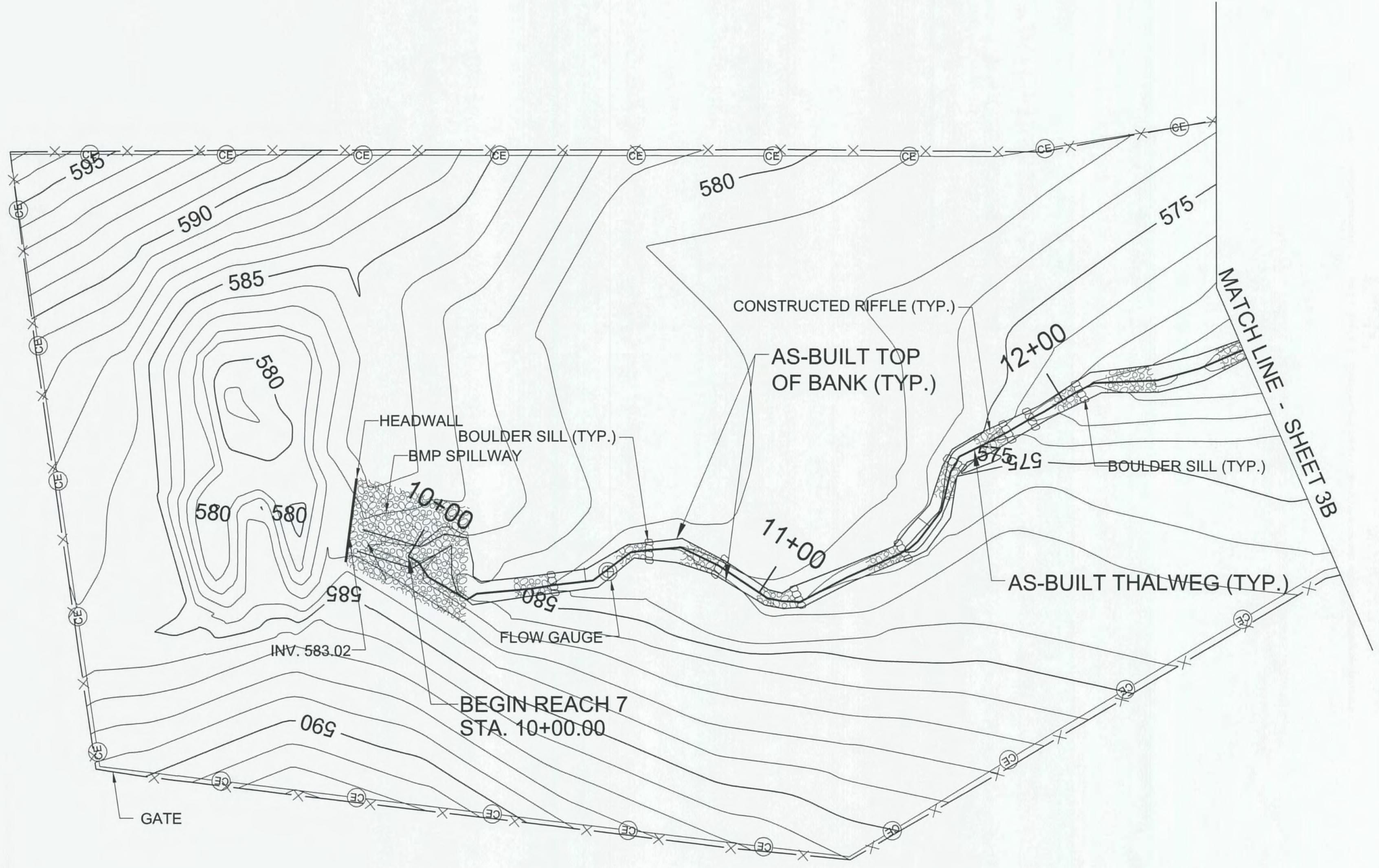
I, MARSHALL G. WIGHT, AS A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF NORTH CAROLINA, HEREBY CERTIFY THAT THE DATA SHOWN ON THIS DRAWING WAS OBTAINED UNDER MY SUPERVISION, IS AN ACCURATE AND COMPLETE REPRESENTATION OF WHAT WAS CONSTRUCTED IN THE FIELD, AND THAT THE PHYSICAL DIMENSIONS OR ELEVATIONS SHOWN THEREON ARE AS-BUILT CONDITIONS, EXCEPT WHERE OTHERWISE NOTED HEREON. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS 7<sup>TH</sup> DAY OF November, 2016.

*Marshall G. Wight*  
PROFESSIONAL LAND SURVEYOR L-5034



**Michael Baker** ENGINEERING INC.  
INTERNATIONAL  
3715-B Reeb Road #55  
Charlotte, NORTH CAROLINA 28277  
Phone: 704.665.2200  
Fax: 704.665.2201  
License #: F-1084

NCDMS ID NO. 94648





2/26/03

BAKER PROJECT REFERENCE NO. 120857 SHEET NO. 3H

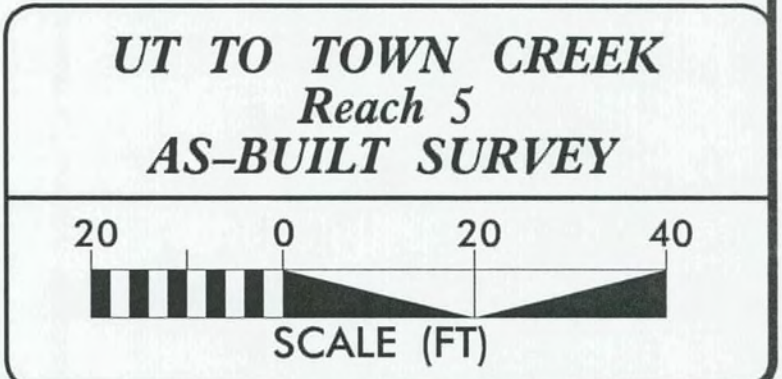
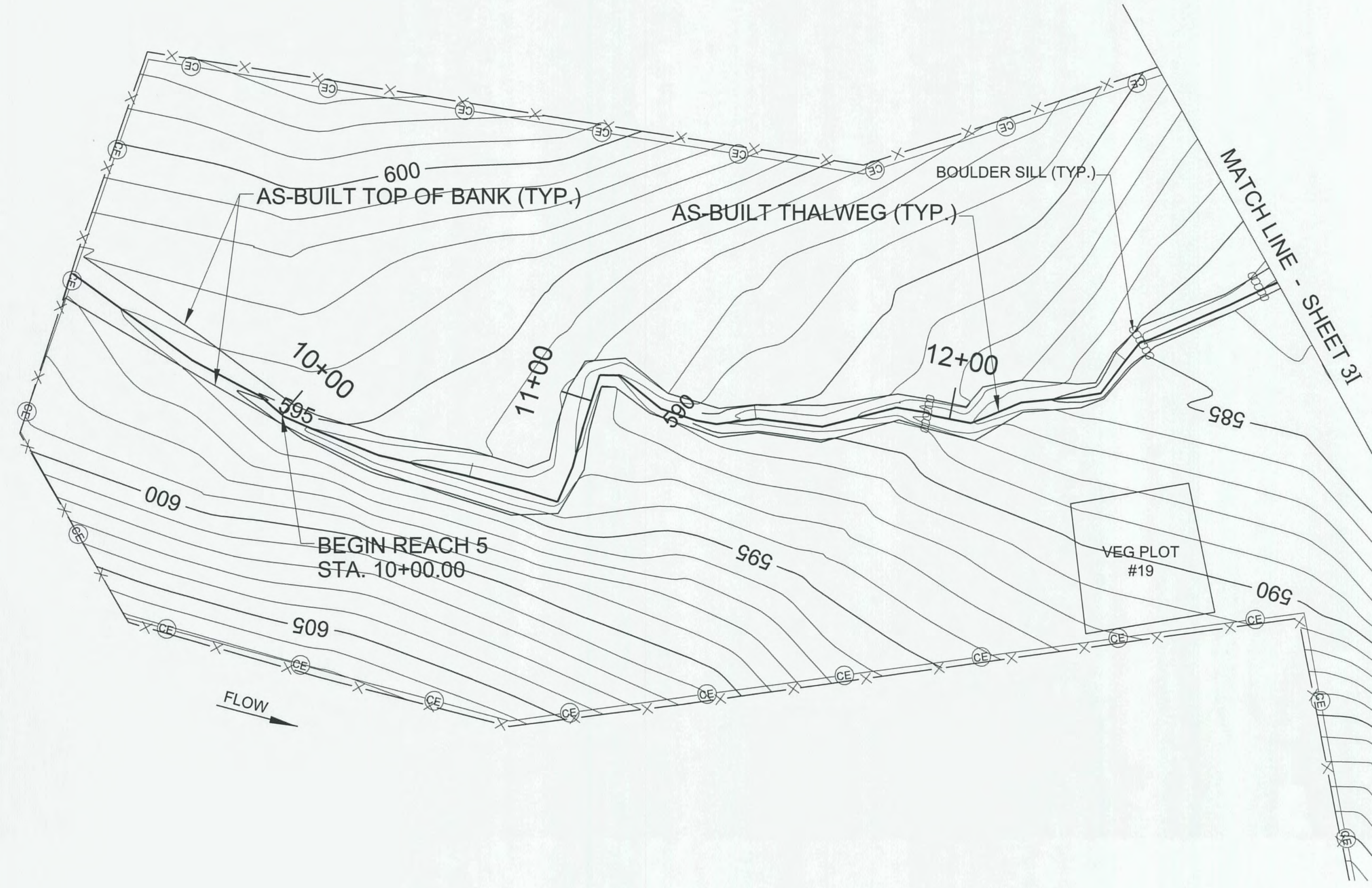
I, MARSHALL G. WIGHT, AS A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF NORTH CAROLINA, HEREBY CERTIFY THAT THE DATA SHOWN ON THIS DRAWING WAS OBTAINED UNDER MY SUPERVISION, IS AN ACCURATE AND COMPLETE REPRESENTATION OF WHAT WAS CONSTRUCTED IN THE FIELD, AND THAT THE PHYSICAL DIMENSIONS OR ELEVATIONS SHOWN THEREIN ARE AS-BUILT CONDITIONS, EXCEPT WHERE OTHERWISE NOTED HEREON, WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS 26th DAY OF NOVEMBER, 2016.



WithersRavenel  
Engineers | Planners | Surveyors  
115 MacKean Drive | Cary, NC 27511 | P: 919.468.5240 | License #: C-0882 | www.withersravenel.com

Michael Baker International  
Michael Baker Engineering Inc.  
9716-B Rea Road #50  
Charlotte, NORTH CAROLINA 28277  
Phone: 704.665.2200  
Fax: 704.665.2201  
License #: F-1084

NCDMS ID NO. 94648



10/31/2016  
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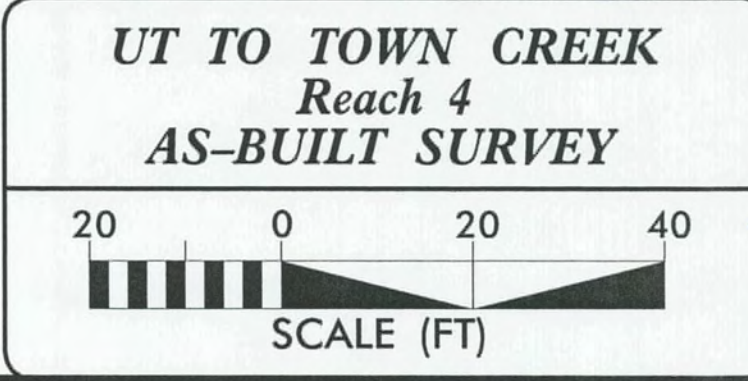
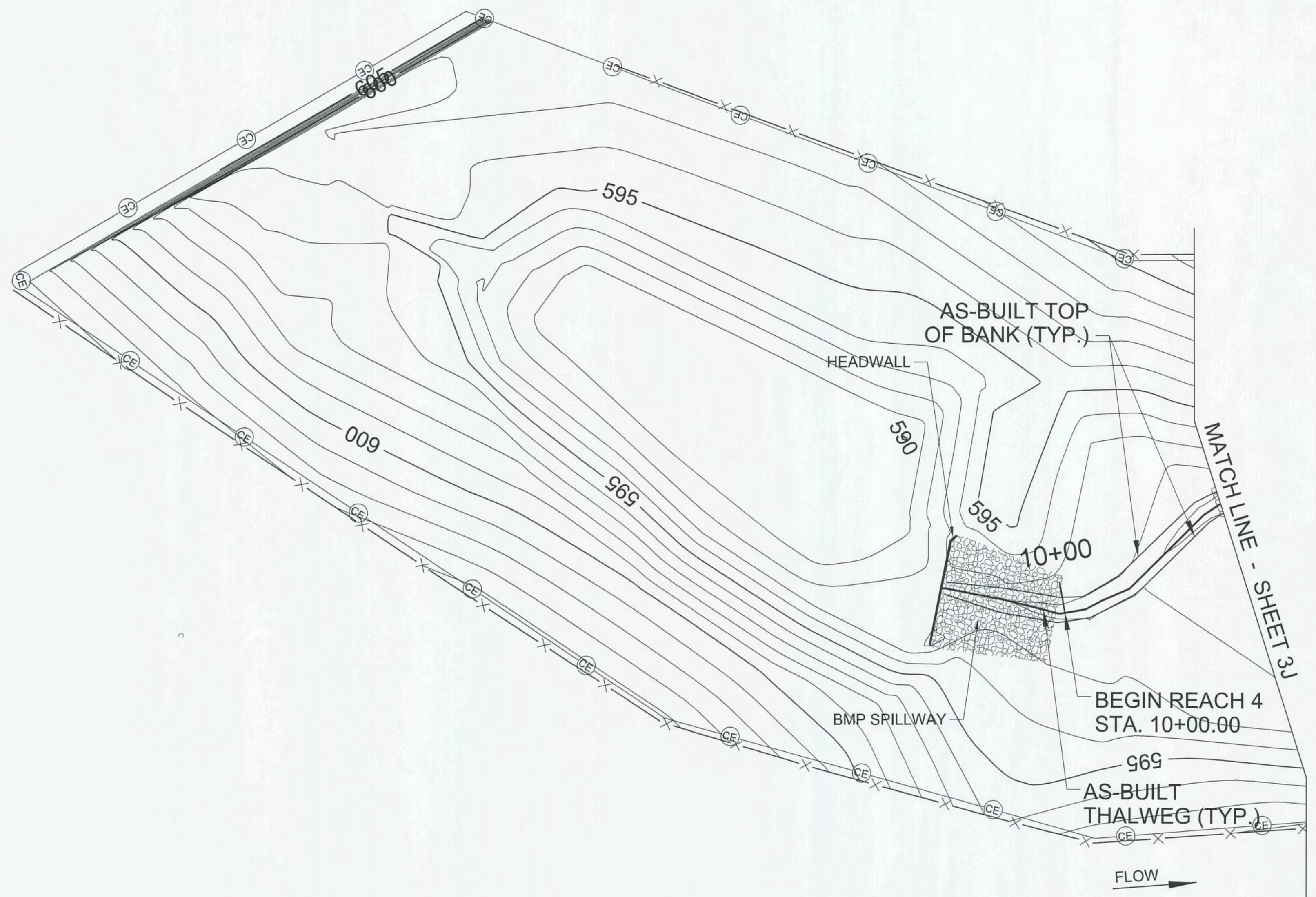
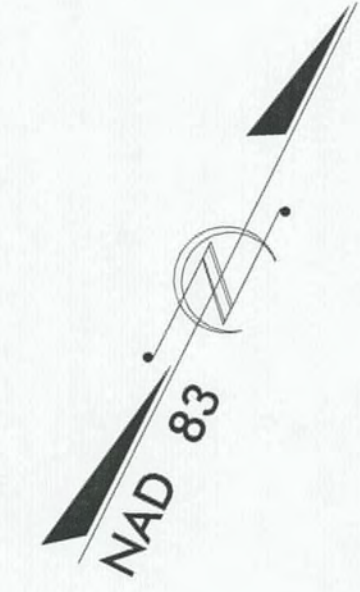
I, MARSHALL G. WIGHT, AS A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF NORTH CAROLINA, HEREBY CERTIFY THAT THE DATA SHOWN ON THIS DRAWING, WAS OBTAINED UNDER MY SUPERVISION, IS AN ACCURATE AND COMPLETE REPRESENTATION OF WHAT WAS CONSTRUCTED IN THE FIELD, AND THAT THE PHYSICAL DIMENSIONS OR ELEVATIONS SHOWN THEREON ARE AS-BUILT CONDITIONS, EXCEPT WHERE OTHERWISE NOTED HEREON. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS 26<sup>th</sup> DAY OF November, 2006

*Marshall Wight*  
PROFESSIONAL LAND SURVEYOR L-5034



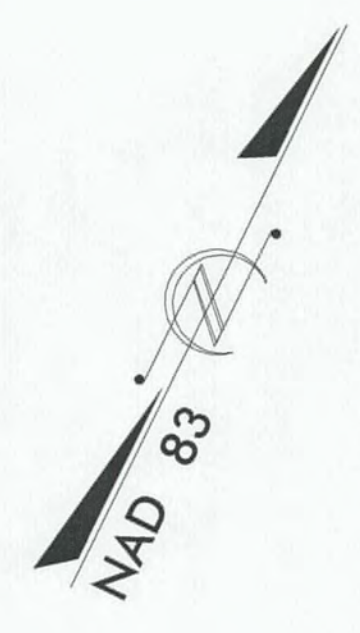
**Michael Baker** International  
Michael Baker Engineering Inc.  
9715-B Red Road #55  
Charlotte, NORTH CAROLINA 28277  
Phone: 704.655.2200  
Fax: 704.655.2201  
License #: F-1084

NCDMS ID NO. 94648

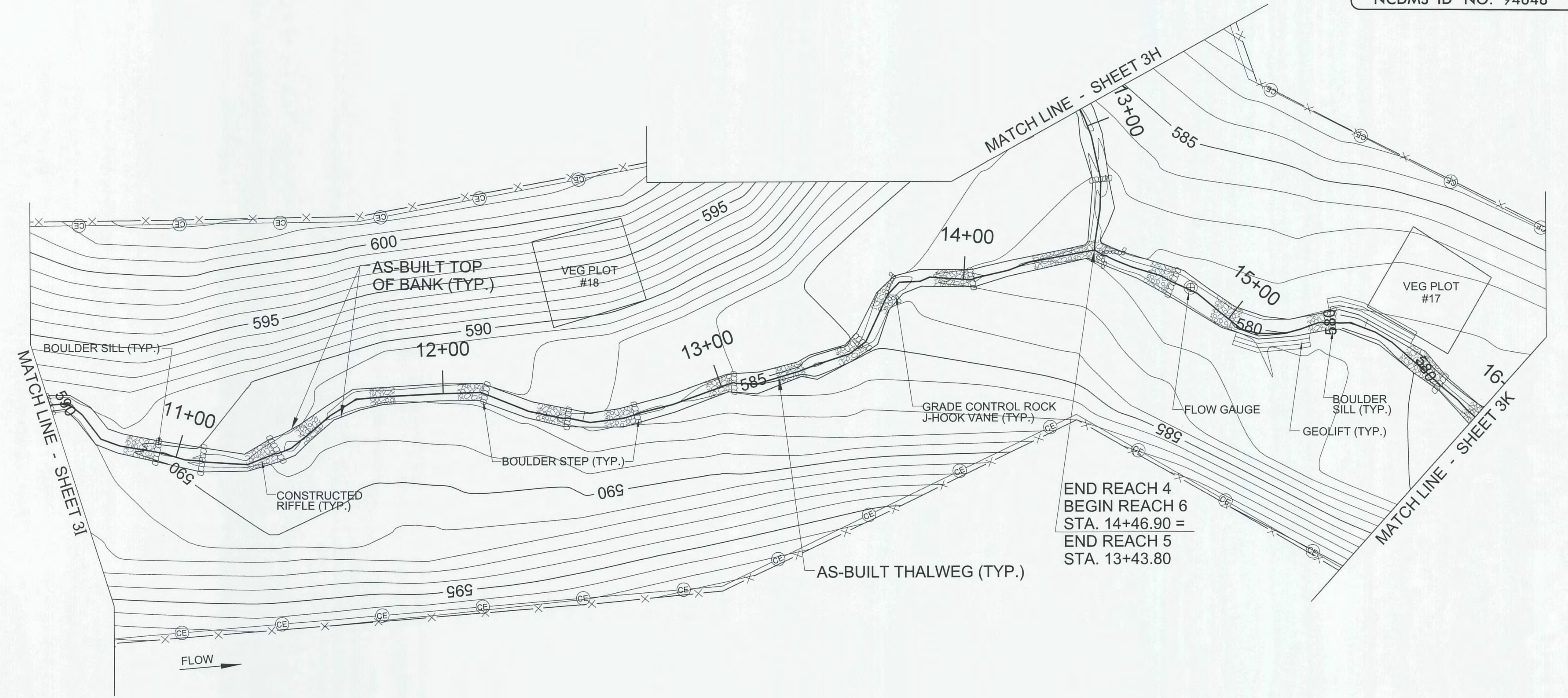




2/26/03



BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 3J
<small>I, MARSHALL G. WIGHT, AS A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF NORTH CAROLINA, HEREBY CERTIFY THAT THE DATA SHOWN ON THIS DRAWING, WAS OBTAINED UNDER MY SUPERVISION, IS AN ACCURATE AND COMPLETE REPRESENTATION OF WHAT WAS CONSTRUCTED IN THE FIELD, AND THAT THE PHYSICAL DIMENSIONS OR ELEVATIONS SHOWN THEREON ARE AS-BUILT CONDITIONS, EXCEPT WHERE OTHERWISE NOTED HEREON. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS 7<sup>TH</sup> DAY OF November 2016</small>	
<b>Michael Baker Engineering Inc.</b> <small>9716-B Rea Road #56        Charlotte, NORTH CAROLINA 28277        Phone: 704.685.2200        Fax: 704.685.2201        License #: F-1084</small>	
<b>Michael Baker INTERNATIONAL</b> <small>115 MacFarlan Drive   Cary, NC 27511   (919) 469-3340   (license) #: C-0832   www.michaelbaker.com</small>	
<b>NCDMS ID NO. 94648</b>	



END REACH 4  
 BEGIN REACH 6  
 STA. 14+46.90 =  
 END REACH 5  
 STA. 13+43.80

**UT TO TOWN CREEK**  
**Reach 4, Reach 5 & Reach 6**  
**AS-BUILT SURVEY**




SCALE (FT)

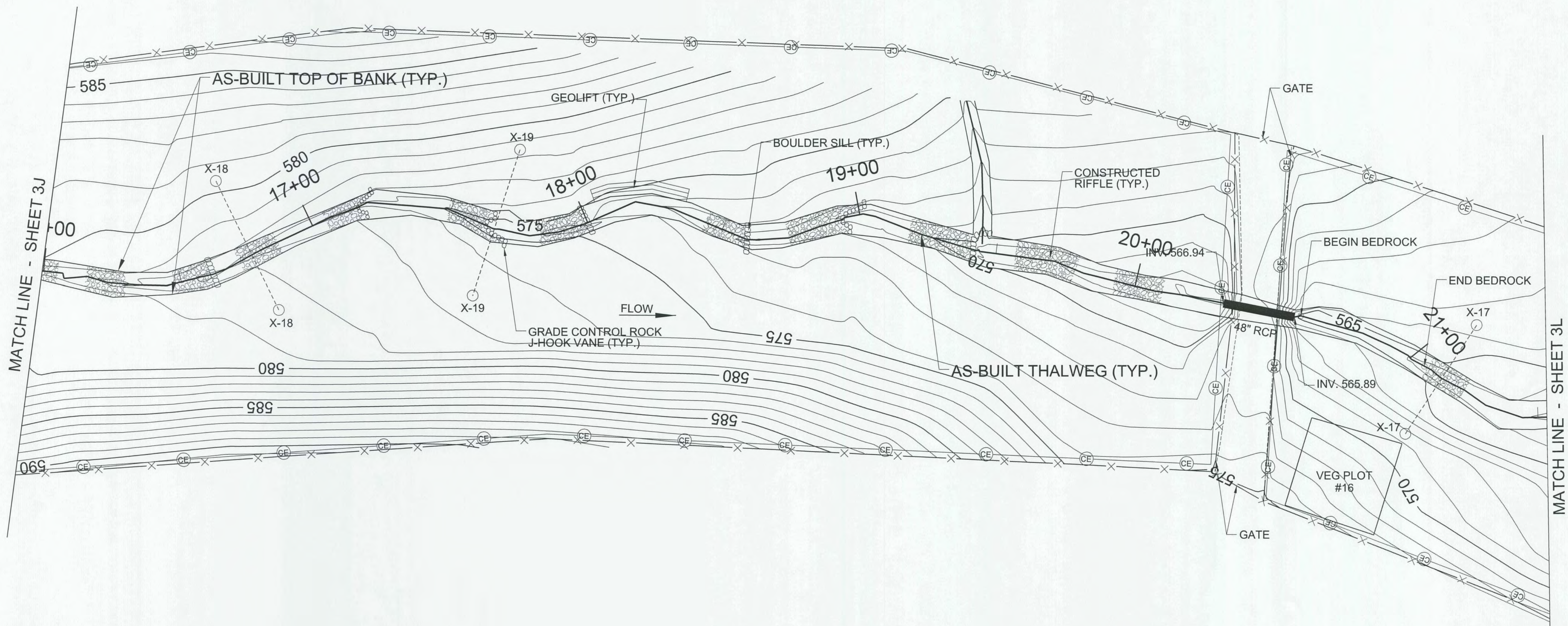
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 11/14/2016



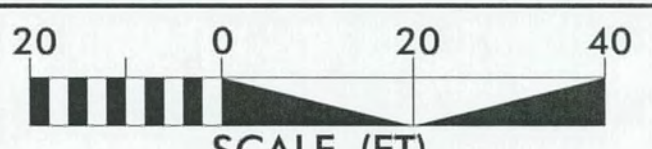
2/26/03



BAKER PROJECT REFERENCE NO. <b>120857</b>	SHEET NO. <b>3K</b>
<small>I, MARSHALL G. WRIGHT, AS A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF NORTH CAROLINA, HEREBY CERTIFY THAT THE DATA SHOWN ON THIS DRAWING, WAS OBTAINED UNDER MY SUPERVISION, IS AN ACCURATE AND COMPLETE REPRESENTATION OF WHAT WAS CONSTRUCTED IN THE FIELD, AND THAT THE PHYSICAL DIMENSIONS OR ELEVATIONS SHOWN THEREON ARE AS-BUILT CONDITIONS, EXCEPT WHERE OTHERWISE NOTED HEREON. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS 24<sup>TH</sup> DAY OF NOVEMBER 2016.</small>	
 <small>PROFESSIONAL LAND SURVEYOR L-5034</small>	
 <small>Engineers   Planners   Surveyors</small> <small>115 MacKean Drive   Cary, NC 27511   919.469.3360   License # C-08321</small> <small>www.witnersravenel.com</small>	
 <small>Michael Baker Engineering Inc.</small> <small>9715-B Riva Road #55</small> <small>Charlotte, NORTH CAROLINA 28277</small> <small>Phone: 704.665.2200</small> <small>Fax: 704.665.2201</small> <small>License #: F-1084</small>	
<b>NC DMS ID NO. 94648</b>	



**UT TO TOWN CREEK**  
**Reach 6**  
**AS-BUILT SURVEY**



SCALE (FT)

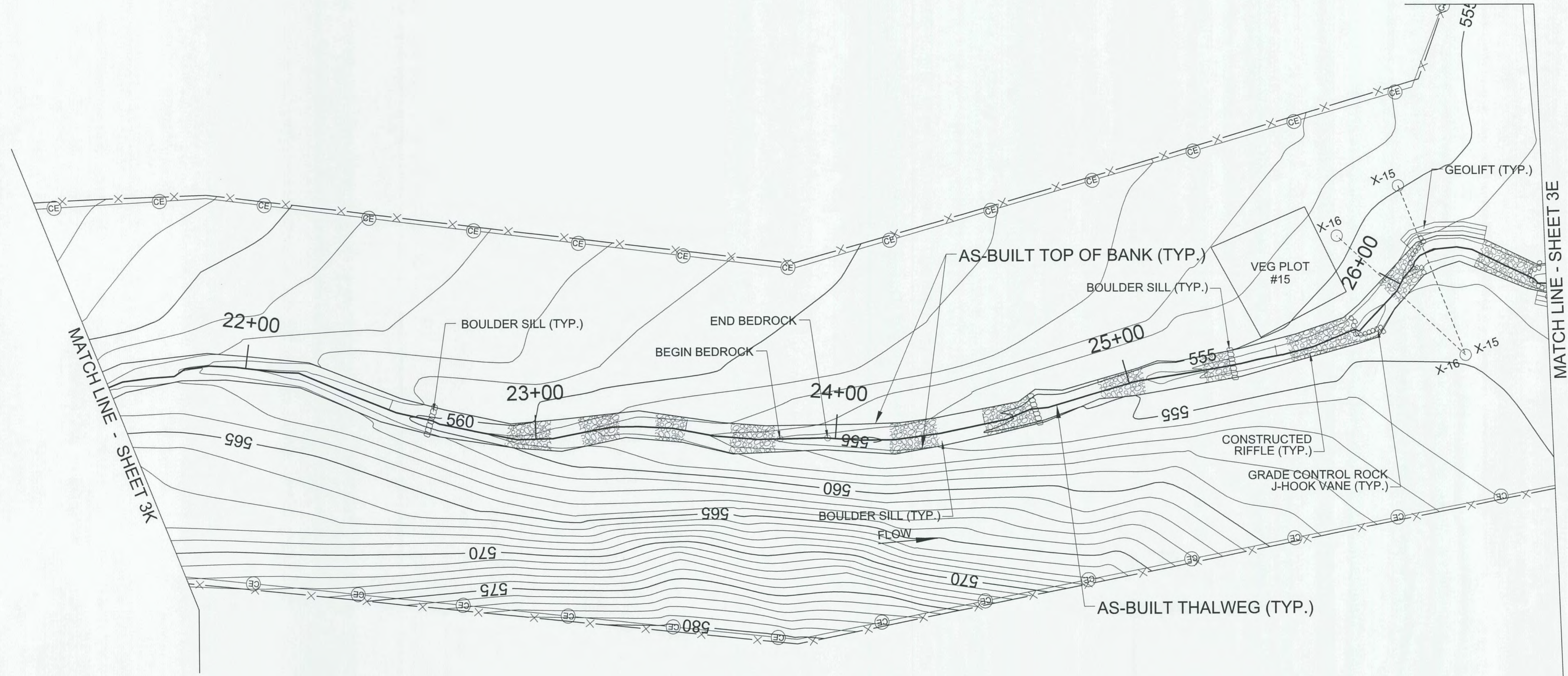
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2/26/03



BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 3L
<small>I, MARSHALL G. WIGHT, AS A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF NORTH CAROLINA, HEREBY CERTIFY THAT THE DATA SHOWN ON THIS DRAWING, WAS OBTAINED UNDER MY SUPERVISION, IS AN ACCURATE AND COMPLETE REPRESENTATION OF WHAT WAS CONSTRUCTED IN THE FIELD, AND THAT THE PHYSICAL DIMENSIONS OR ELEVATIONS SHOWN THEREON ARE AS-BUILT CONDITIONS, EXCEPT WHERE OTHERWISE NOTED HEREON, WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS 14th DAY OF November, 2016.</small>	
<p>WithersRavenel Engineers   Planners   Surveyors 115 MacFarlan Drive   Cary, NC 27511   919.469.3340   License #: C-0832   www.wr-engineers.com</p>	
<p>Michael Baker Engineering Inc. 9716-B Rea Road #56 Charlotte, NORTH CAROLINA 28277 Phone: 704.665.2200 Fax: 704.665.2201 License #: F-1084</p>	
<p>NCDMS ID NO. 94648</p>	



UT TO TOWN CREEK  
Reach 6  
AS-BUILT SURVEY

SCALE (FT)

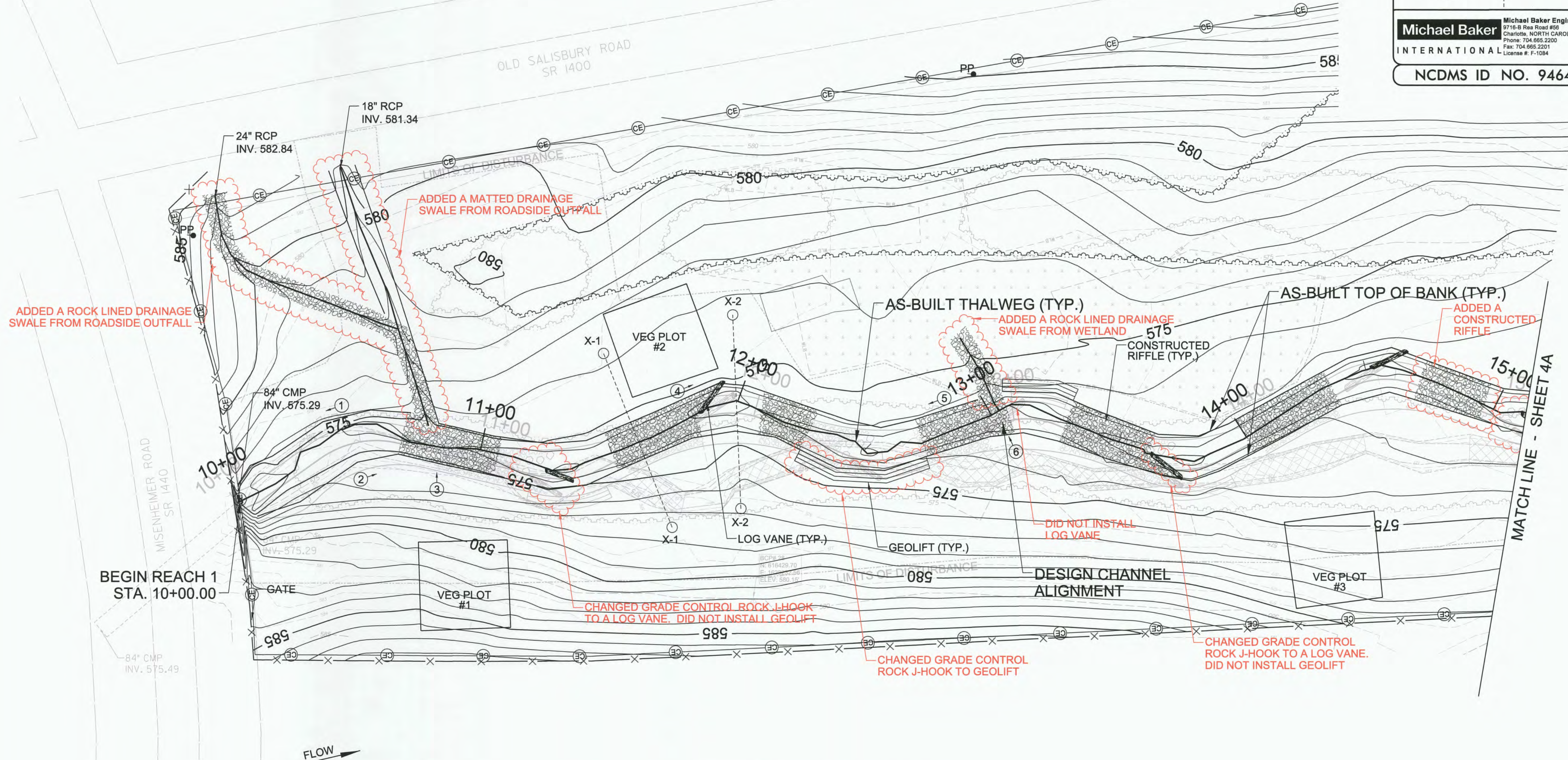
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2/26/03




BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 4
PROJECT ENGINEER	
APPROVED BY: 	
DATE: 11/21/11	
	
<b>Michael Baker International</b>	
<small>Michael Baker Engineering Inc. 9716-B Rea Road #50 Charlotte, NORTH CAROLINA 28227 Phone: 704.665.2200 Fax: 704.665.2201 License #: F-1084</small>	
<b>NCDMS ID NO. 94648</b>	



-  JURISDICTIONAL WETLANDS
-  WETLAND RESTORATION
-  WETLAND CREATION

**UT TO TOWN CREEK  
Reach 1  
RECORD DRAWING**



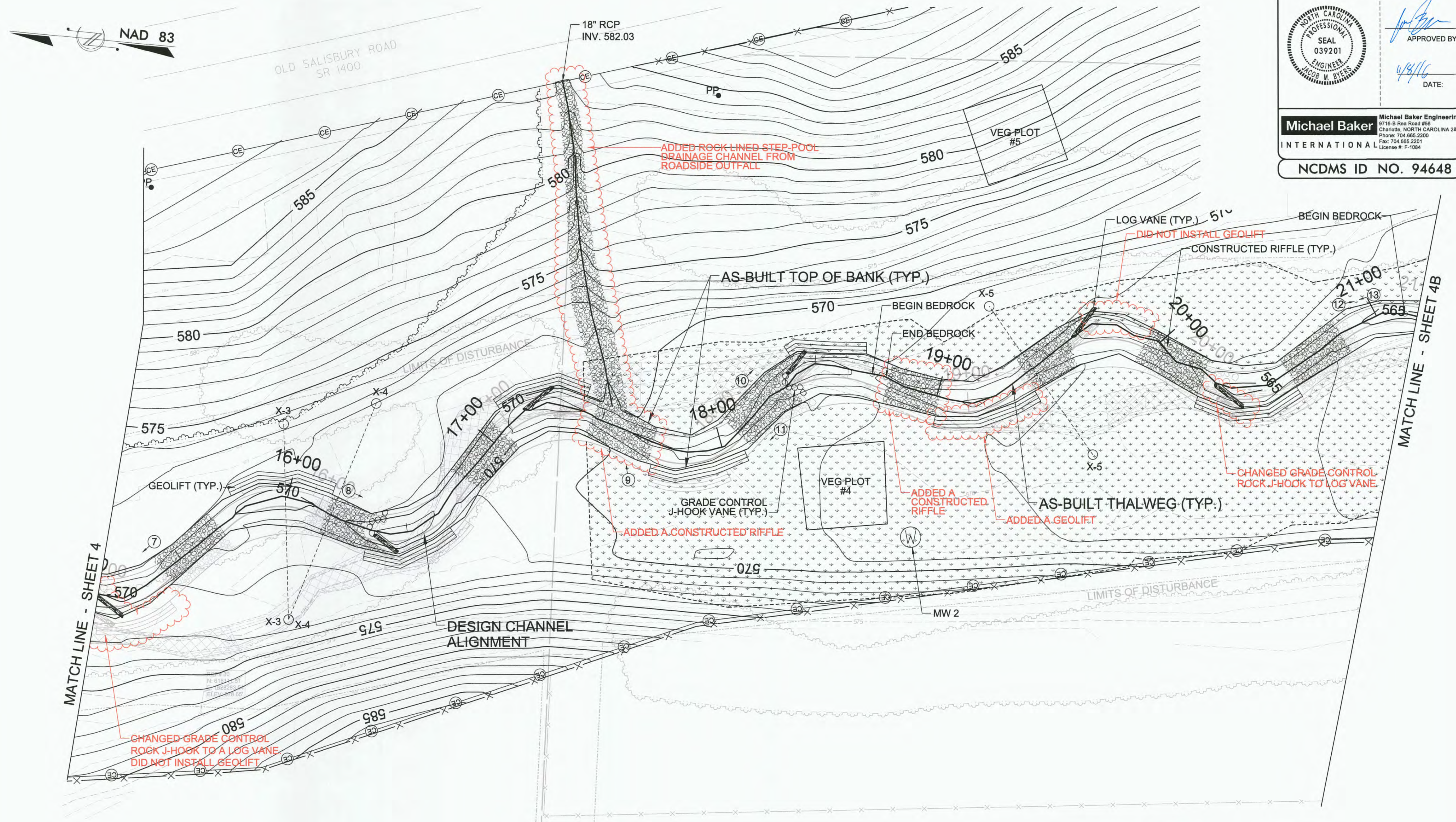
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2/26/03

BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 4A
PROJECT ENGINEER	
	
APPROVED BY: 	
DATE: 4/8/16	
<b>Michael Baker International</b>	
Michael Baker Engineering Inc. 9716-B Rea Road #58 Charlotte, NORTH CAROLINA 28277 Phone: 704.665.2200 Fax: 704.665.2201 License #: F-1084	
NCDMS ID NO. 94648	



NAD 83


OLD SALISBURY ROAD  
SR 1400

MATCH LINE - SHEET 4

MATCH LINE - SHEET 4B

-  JURISDICTIONAL WETLANDS
-  WETLAND RESTORATION
-  WETLAND CREATION

**UT TO TOWN CREEK  
Reach 1  
RECORD DRAWING**



SCALE (FT)

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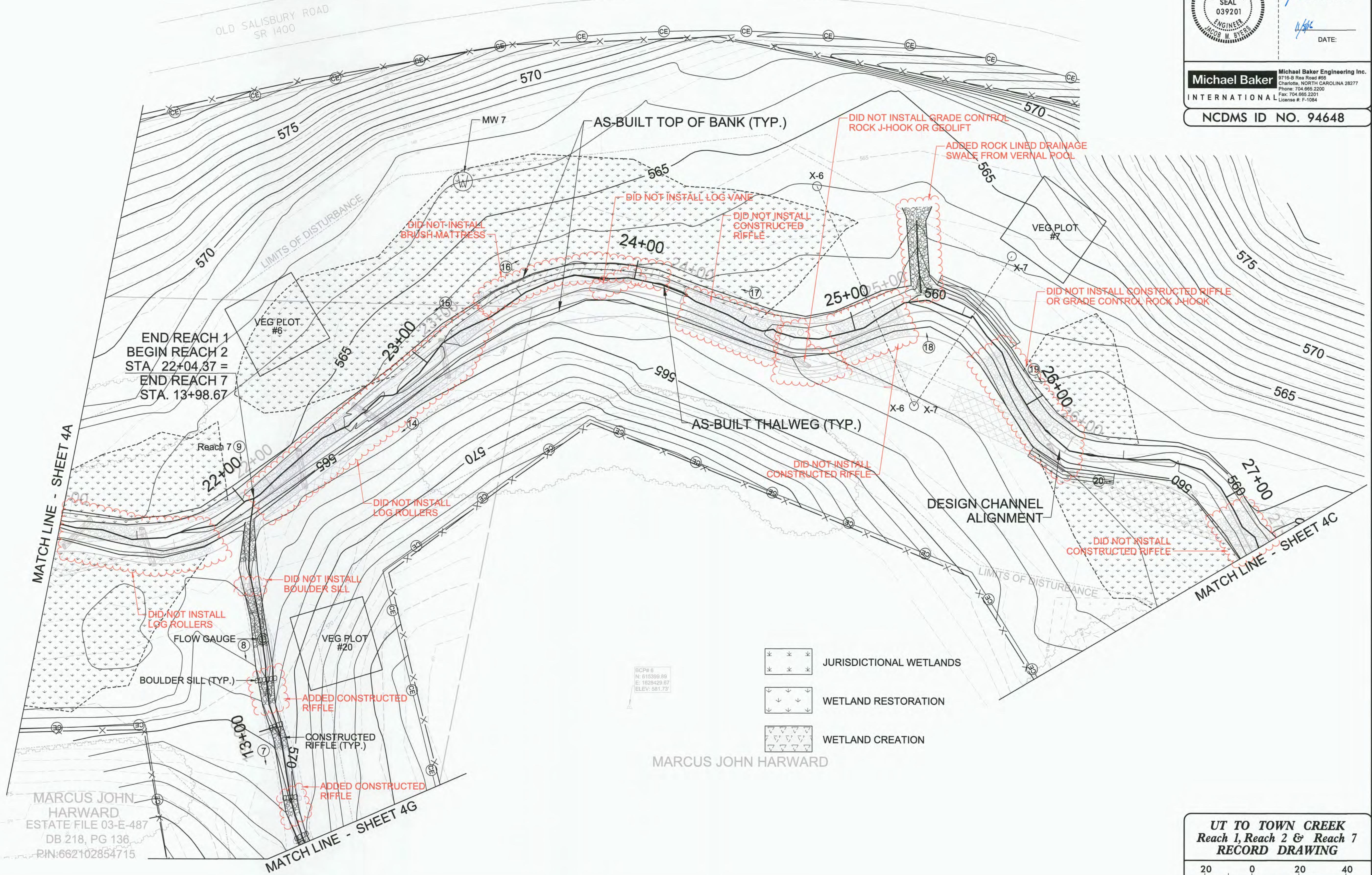


2/26/03



OLD SALISBURY ROAD  
SR 1400

BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 4B
PROJECT ENGINEER	
APPROVED BY:	
DATE:	
<b>Michael Baker International</b> Michael Baker Engineering Inc. 8716-B Rex Road #68 Charlotte, NORTH CAROLINA 28277 Phone: 704.695.2200 Fax: 704.695.2201 License #: F-1084	
NCDMS ID NO. 94648	



MATCH LINE - SHEET 4A

MATCH LINE - SHEET 4C

MATCH LINE - SHEET 4G

MARCUS JOHN HARWARD  
 ESTATE FILE 03-E-487  
 DB 218, PG 136  
 PIN:662102854715

BCP# 6  
 N: 615399.89  
 E: 1829429.67  
 ELEV: 561.73'

- JURISDICTIONAL WETLANDS
- WETLAND RESTORATION
- WETLAND CREATION

MARCUS JOHN HARWARD

**UT TO TOWN CREEK**  
 Reach 1, Reach 2 & Reach 7  
**RECORD DRAWING**

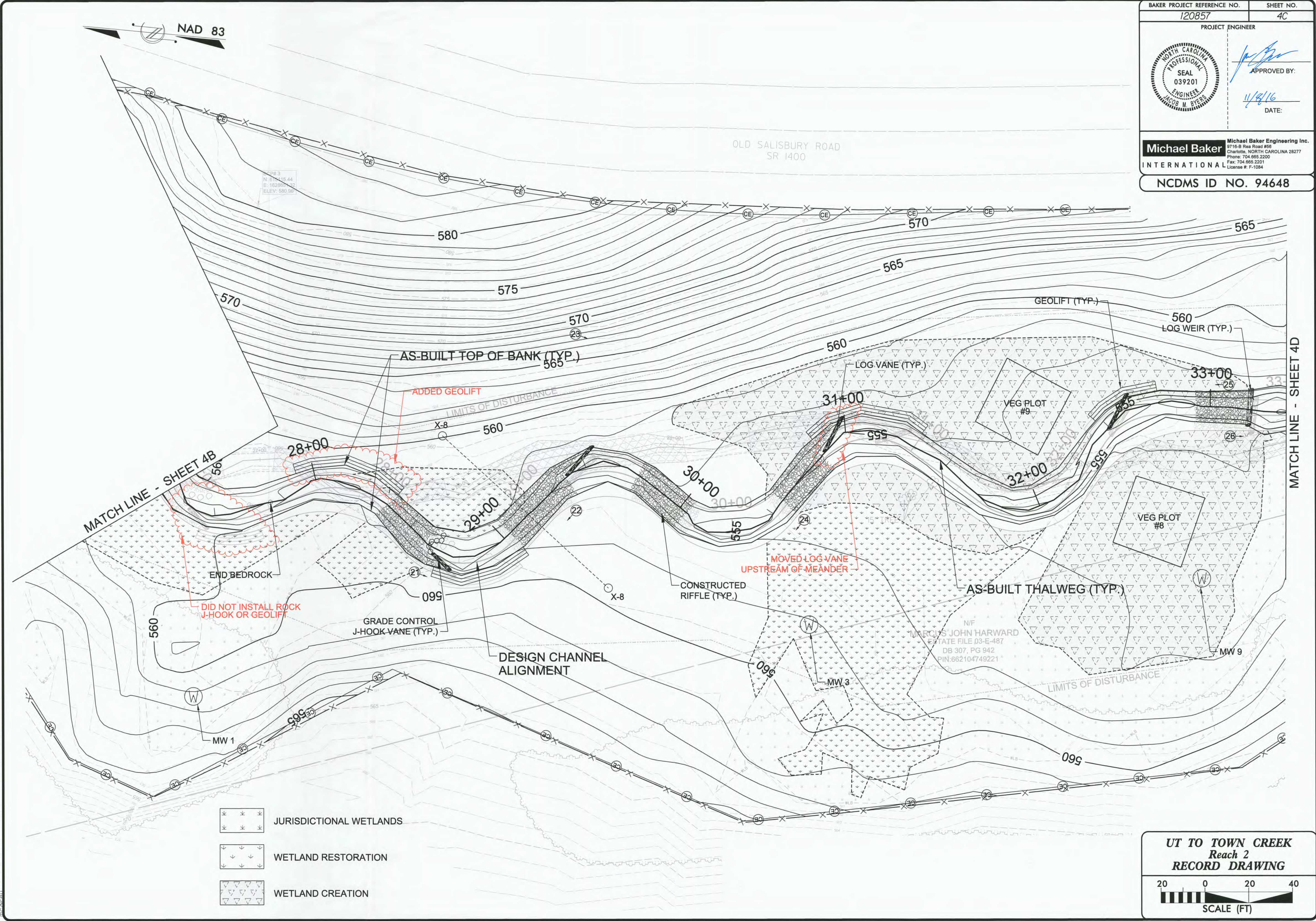
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2/26/03

BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 4C
PROJECT ENGINEER	
	
APPROVED BY: 	
DATE: 11/8/16	
<b>Michael Baker International</b>	
Michael Baker Engineering Inc. 8716-B Rea Road #68 Charlotte, NORTH CAROLINA 28227 Phone: 704.965.2200 Fax: 704.965.2201 License #: F-1084	
<b>NCDCMS ID NO. 94648</b>	



-  JURISDICTIONAL WETLANDS
-  WETLAND RESTORATION
-  WETLAND CREATION

**UT TO TOWN CREEK**  
 Reach 2  
 RECORD DRAWING



SCALE (FT)

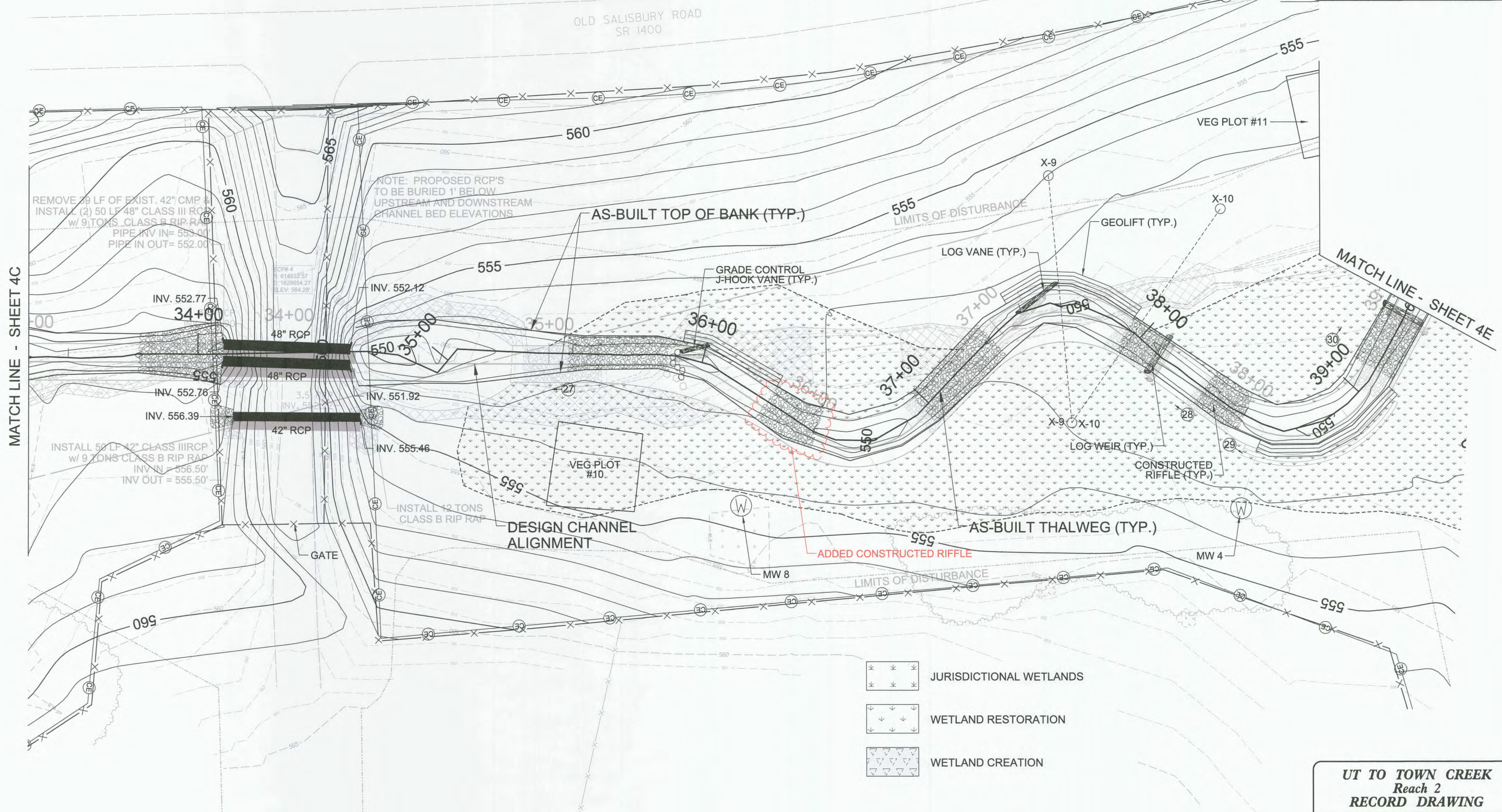
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2/26/03



BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 4D
PROJECT ENGINEER	
APPROVED BY: <i>J. Evers</i>	
DATE: 11/16/16	
<b>Michael Baker International</b>	
<small>Michael Baker Engineering Inc. 9716-B Rea Road #56 Charlotte, NORTH CAROLINA 28277 Phone: 704.686.2200 Fax: 704.686.2201 License #: F-1084</small>	
<b>NCDMS ID NO. 94648</b>	



10/31/2016 12:08:57 Charlotte\CAD from Charlotte\Design\AS-BUILT\PLANS\120857\_AB-PSH\_04D.dgn

**UT TO TOWN CREEK**  
Reach 2  
**RECORD DRAWING**

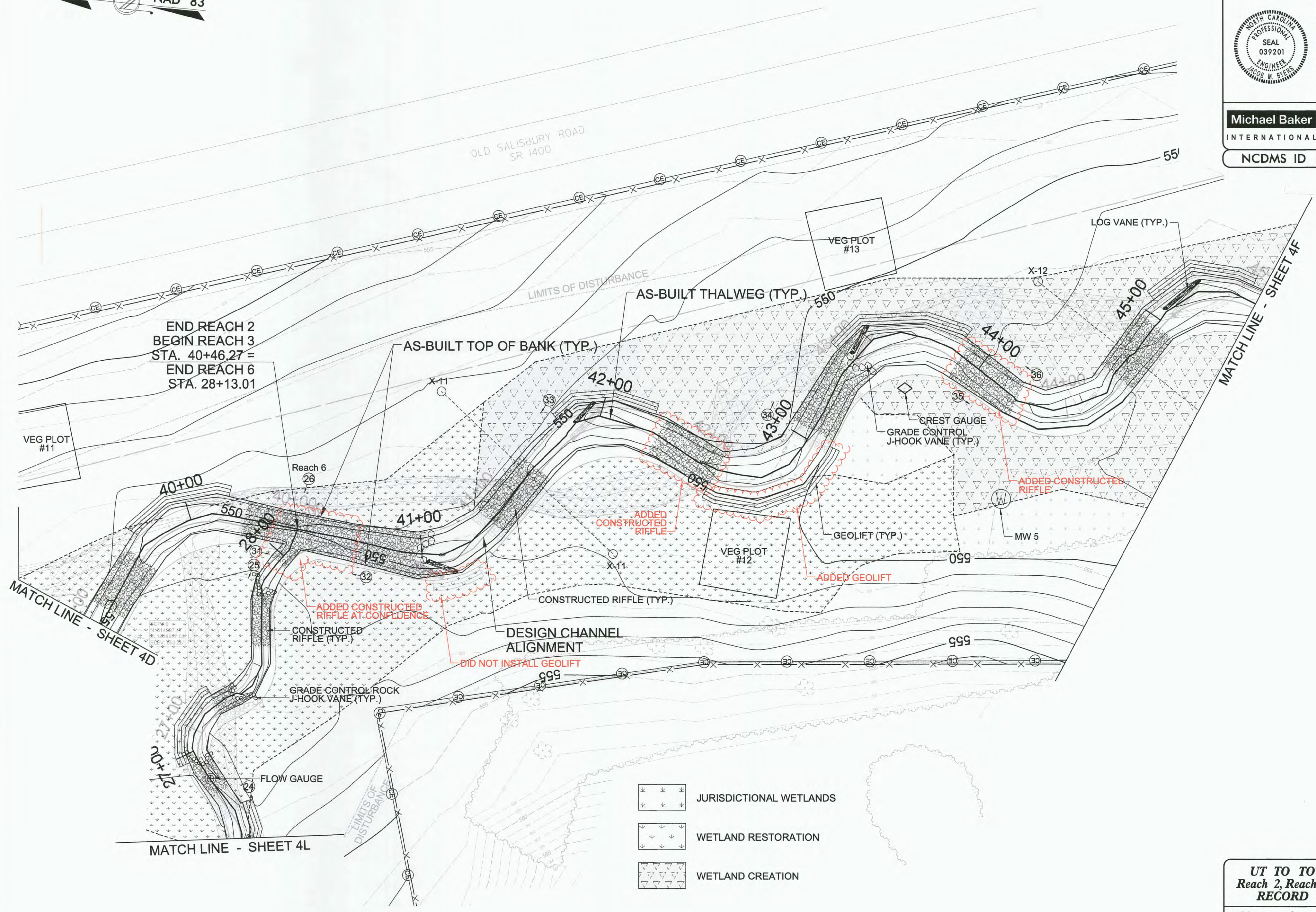
SCALE (FT)



2/26/03



BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 4E
PROJECT ENGINEER	
APPROVED BY: 	
DATE: 11/2/16	
<b>Michael Baker International</b> <small>Michael Baker Engineering Inc.          9716-B Rsa Road #69          Charlotte, NORTH CAROLINA 28277          Phone: 704.685.2200          Fax: 704.685.2201          License #: F-1084</small>	
NCDMS ID NO. 94648	



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**UT TO TOWN CREEK**  
**Reach 2, Reach 3 & Reach 6**  
**RECORD DRAWING**

SCALE (FT)



2/26/03



MATCH LINE - SHEET 4E

OLD SALISBURY ROAD  
SR 1400

END REACH 3  
STA. 48+74.84

BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 4F
PROJECT ENGINEER	
APPROVED BY: 	
DATE: 11/8/16	
<b>Michael Baker International</b>	
<small>Michael Baker Engineering Inc. 9716-B Rea Road #25 Charlotte, NORTH CAROLINA 28277 Phone: 704.665.2200 Fax: 704.665.2001 License #: F-1084</small>	
NCDMS ID NO. 94648	

- JURISDICTIONAL WETLANDS
- WETLAND RESTORATION
- WETLAND CREATION

**UT TO TOWN CREEK  
Reach 3  
RECORD DRAWING**

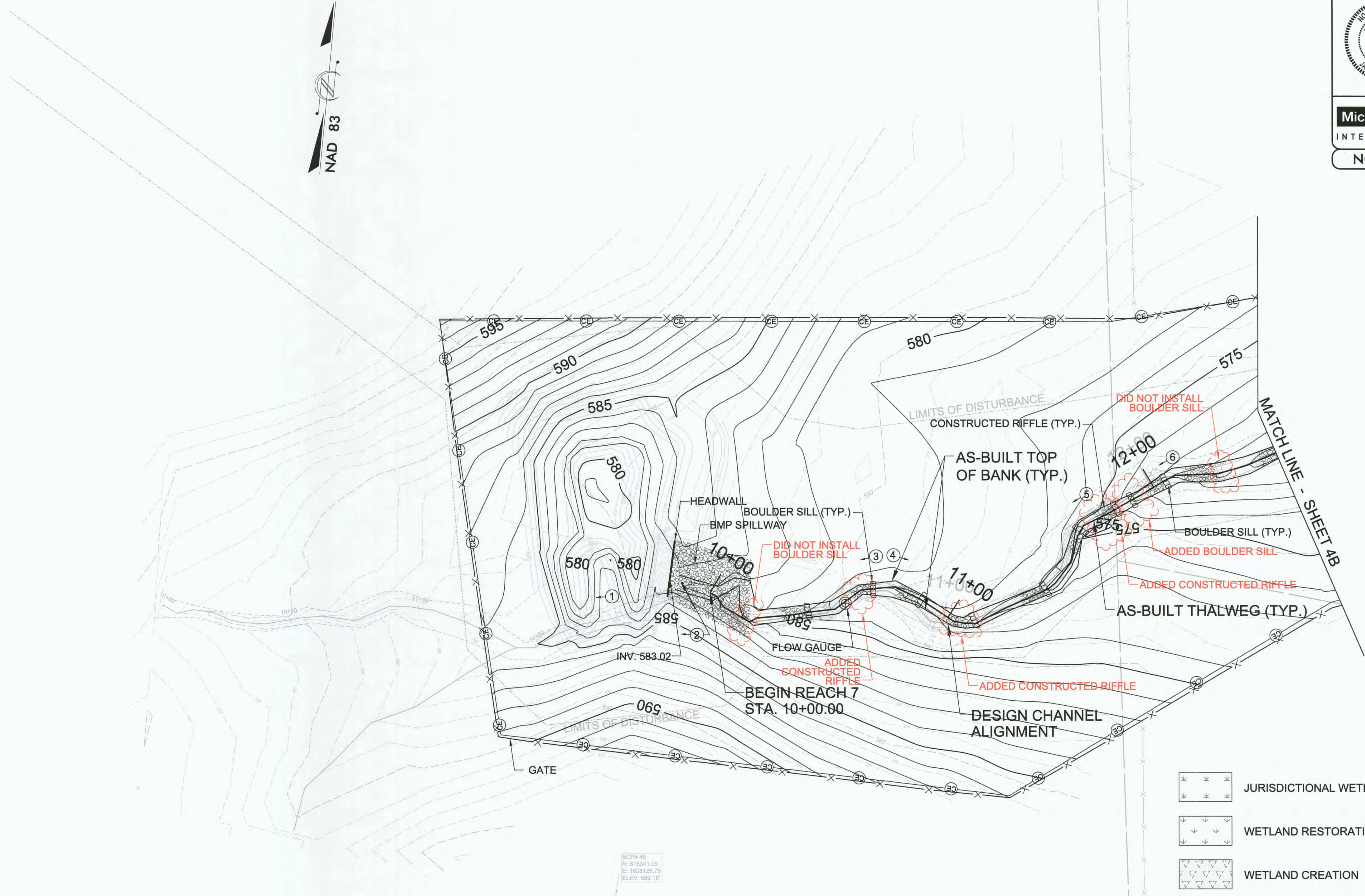
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2/26/03


BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 4G
PROJECT ENGINEER	
	APPROVED BY: 
	DATE: 11/9/16
<b>Michael Baker International</b>	
<small>Michael Baker Engineering Inc. 3716-S Rice Road #65 Charlotte, NORTH CAROLINA 28277 Phone: 704.685.2200 Fax: 704.685.2201 License #: F-1084</small>	
<b>NCDMS ID NO. 94648</b>	



BCP8-45  
N: 615341.05  
E: 1628125.75  
ELEV: 999.18'

-  JURISDICTIONAL WETLANDS
-  WETLAND RESTORATION
-  WETLAND CREATION


**UT TO TOWN CREEK  
Reach 7  
RECORD DRAWING**

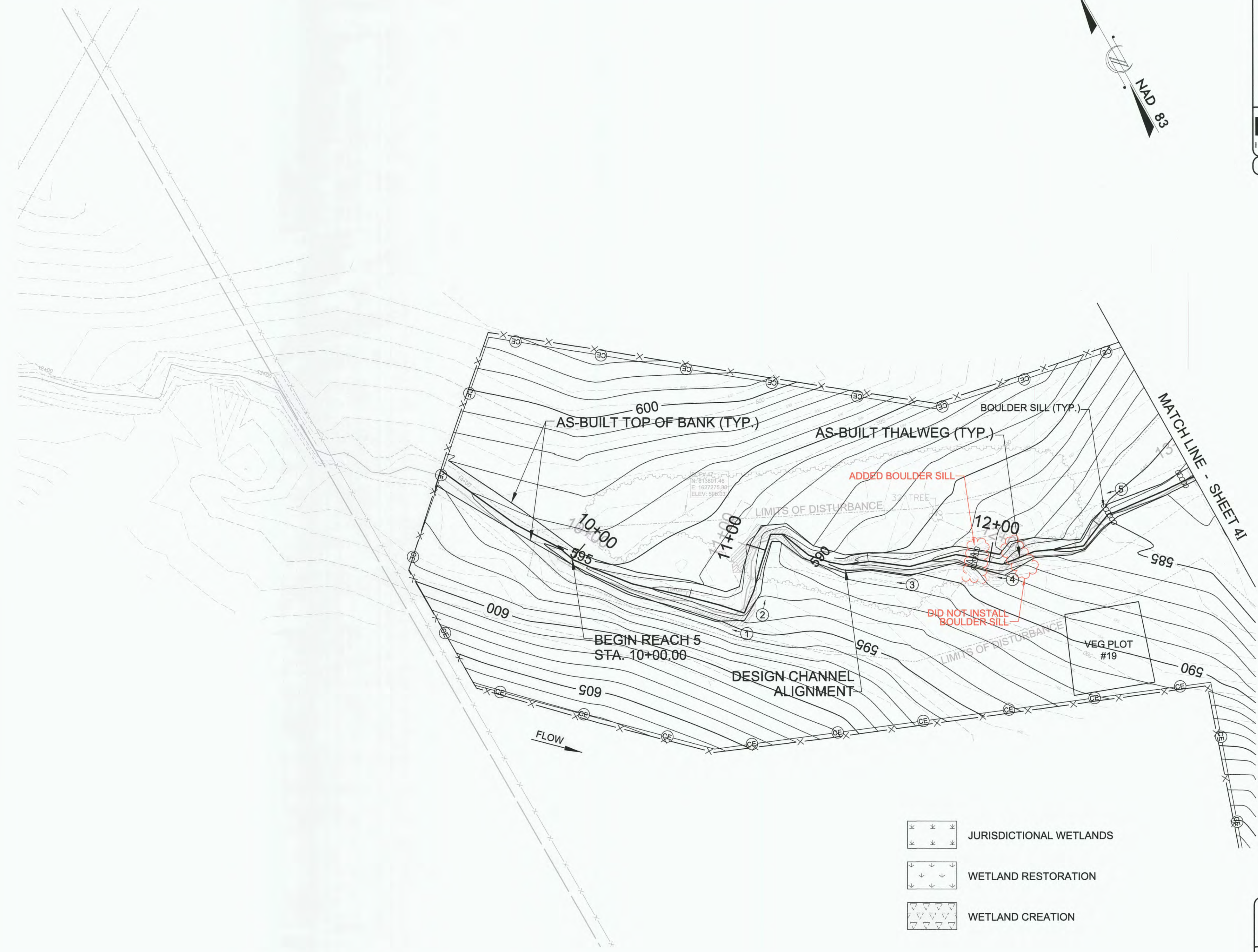
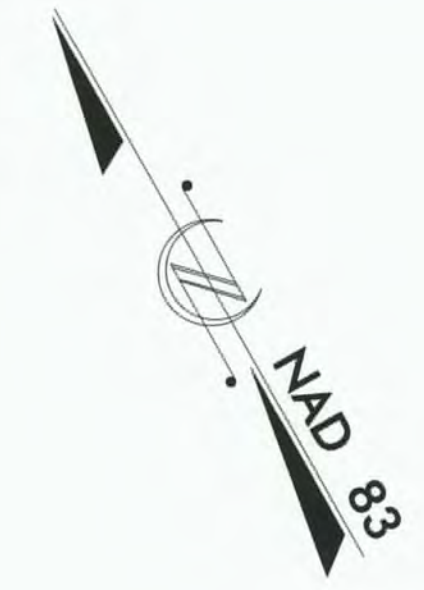


SCALE (FT)

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 R:\120857




BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 4H
PROJECT ENGINEER	
	
APPROVED BY: 	
DATE: 4/4/16	
<b>Michael Baker International</b>	
<small>Michael Baker Engineering Inc. 9716-B Riva Road #59 Charlotte, NORTH CAROLINA 28277 Phone: 704.685.2200 Fax: 704.685.2201 License #: F-1084</small>	
<b>NCDMS ID NO. 94648</b>	



-  JURISDICTIONAL WETLANDS
-  WETLAND RESTORATION
-  WETLAND CREATION

**UT TO TOWN CREEK  
Reach 5  
RECORD DRAWING**



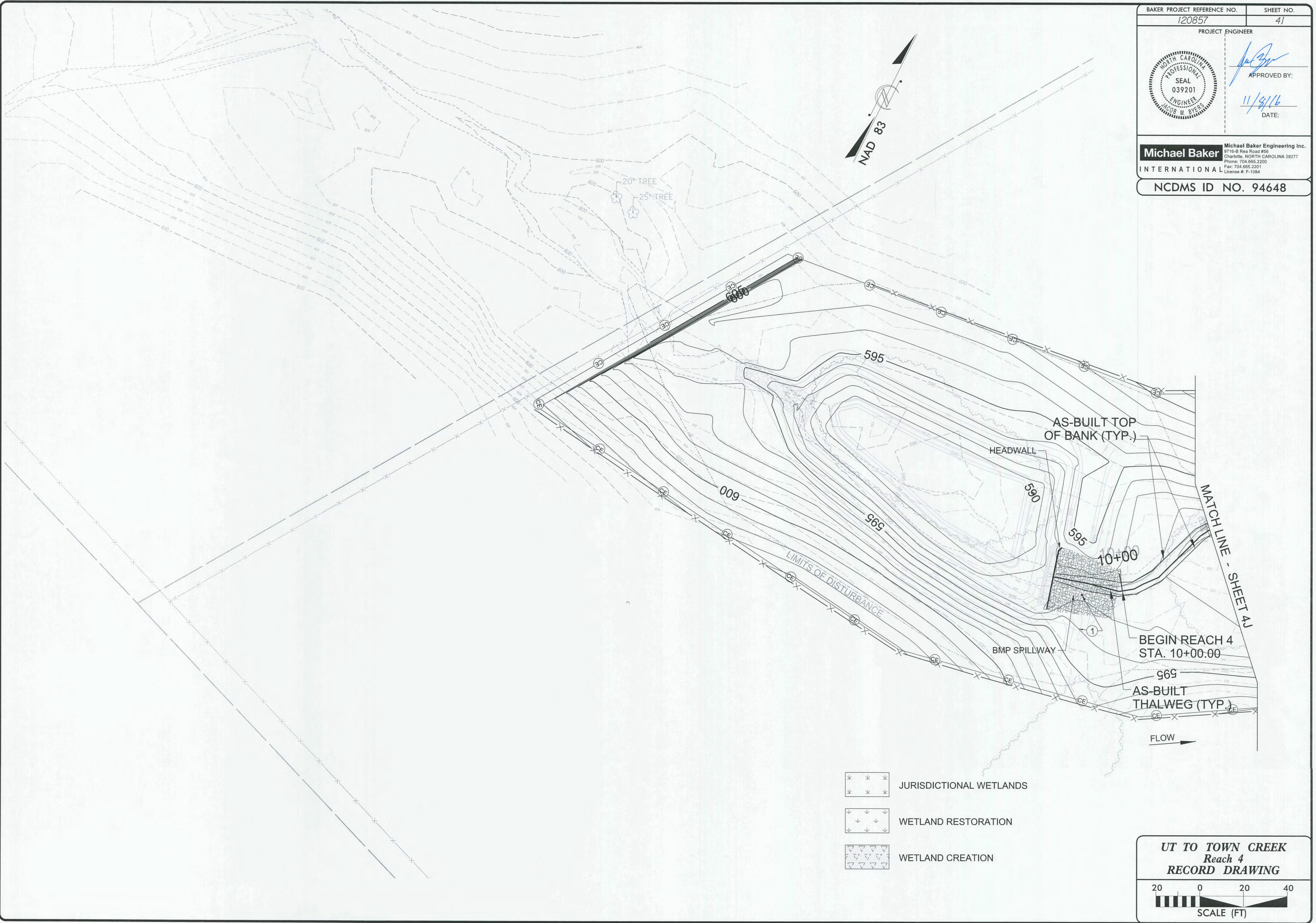
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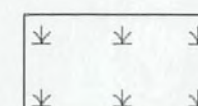
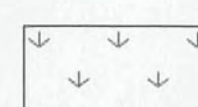
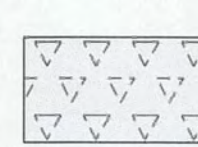


2/26/03


BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 41
PROJECT ENGINEER	
	
APPROVED BY: 	
DATE: 11/9/16	
<b>Michael Baker International</b>	
<small>Michael Baker Engineering Inc. 9716-B Resa Road #50 Charlotte, NORTH CAROLINA 28277 Phone: 704.665.2200 Fax: 704.665.2201 License #: F-1084</small>	
NCDMS ID NO. 94648	

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-  JURISDICTIONAL WETLANDS
-  WETLAND RESTORATION
-  WETLAND CREATION

**UT TO TOWN CREEK**  
Reach 4  
**RECORD DRAWING**



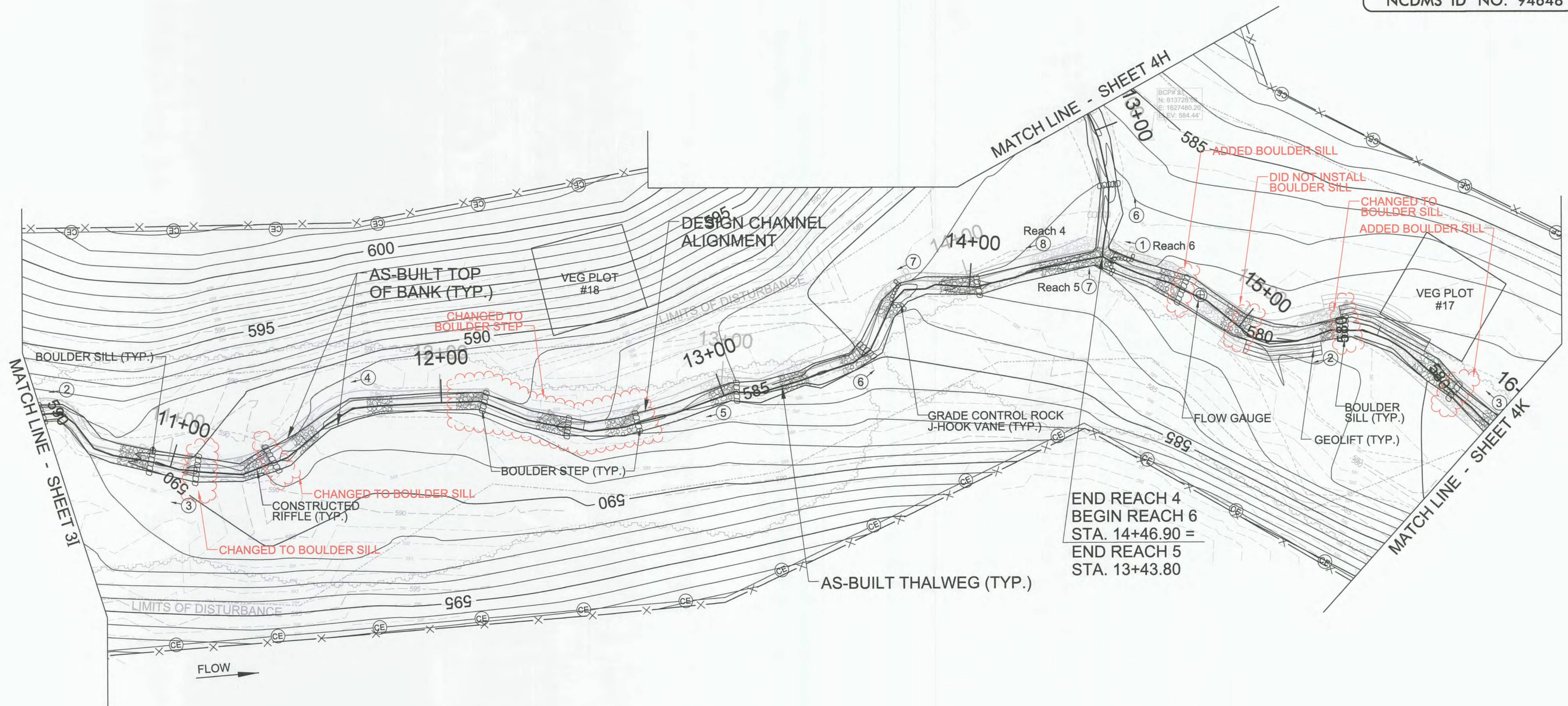
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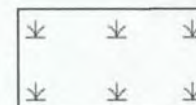
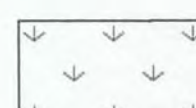
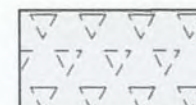
2/26/03



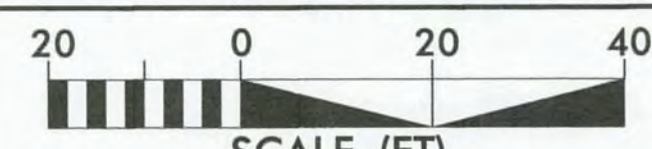
BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 4J
PROJECT ENGINEER	
	
APPROVED BY: 	
DATE: 1/4/16	
<b>Michael Baker International</b>	
Michael Baker Engineering Inc. 9716-B Rea Road #58 Charlotte, NORTH CAROLINA 28277 Phone: 704.665.2200 Fax: 704.665.2201 License #: F-1084	
NCDMS ID NO. 94648	



END REACH 4  
 BEGIN REACH 6  
 STA. 14+46.90 =  
 END REACH 5  
 STA. 13+43.80

-  JURISDICTIONAL WETLANDS
-  WETLAND RESTORATION
-  WETLAND CREATION

**UT TO TOWN CREEK  
 Reach 4, Reach 5 & Reach 6  
 RECORD DRAWING**



SCALE (FT)

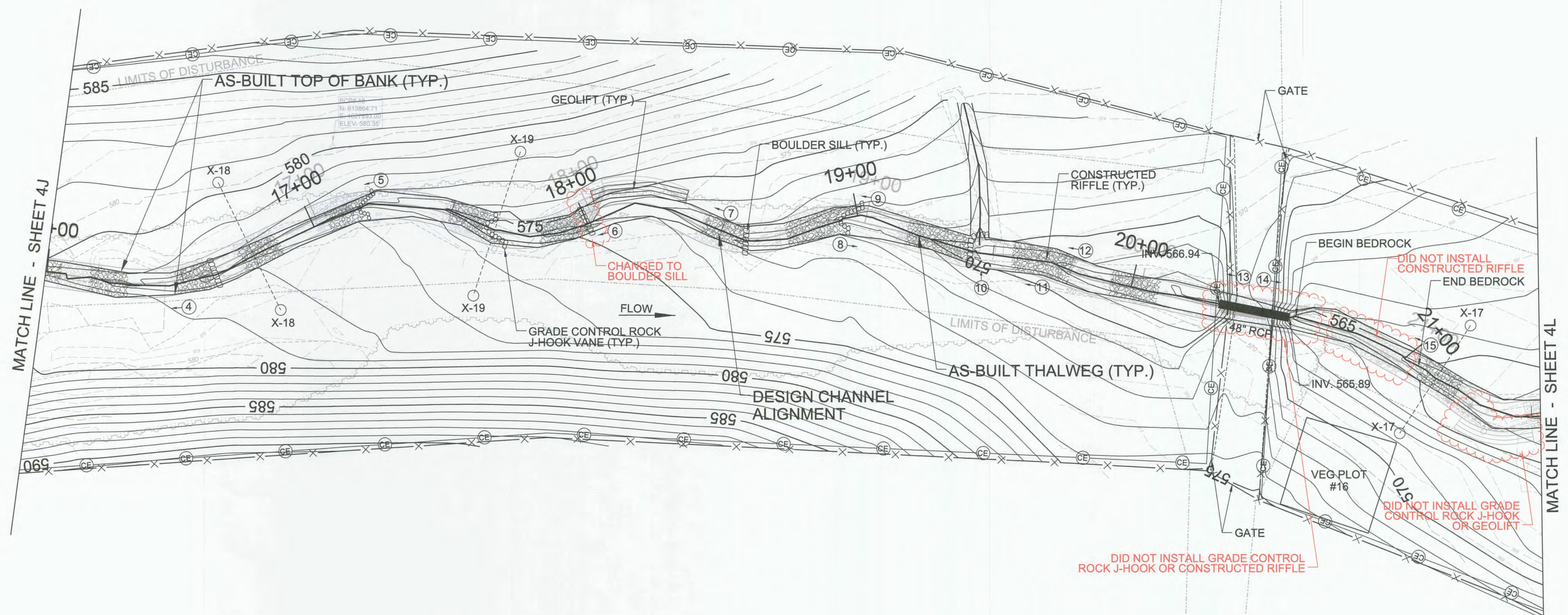
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2/26/03



BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 4K
PROJECT ENGINEER	
	APPROVED BY: <i>Jacob M. Biers</i>
	DATE: 4/2/16
<b>Michael Baker International</b> Michael Baker Engineering Inc. 9716-S Riva Road #66 Charlotte, NORTH CAROLINA 28277 Phone: 704.665.2200 Fax: 704.665.2201 License #: F-1084	
NCDMS ID NO. 94648	



- JURISDICTIONAL WETLANDS
- WETLAND RESTORATION
- WETLAND CREATION

**UT TO TOWN CREEK  
Reach 6  
RECORD DRAWING**

SCALE (FT)

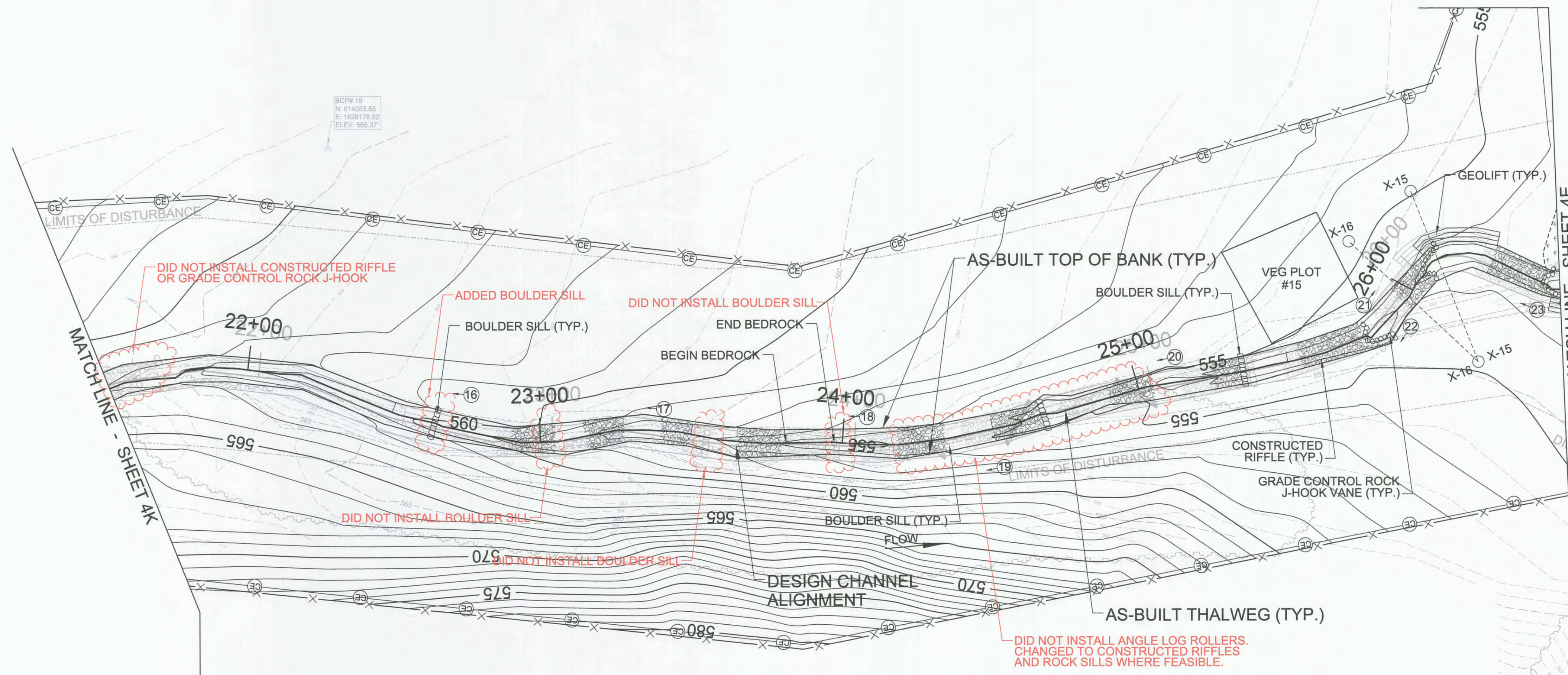
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2/26/03



BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 4L
PROJECT ENGINEER	
APPROVED BY: 	
DATE: 10/8/16	
<b>Michael Baker International</b>	
<small>Michael Baker Engineering Inc. 9716-B Rea Road #56 Charlotte, NORTH CAROLINA 28277 Phone: 704.685.2200 Fax: 704.685.2201 License #: F-1084</small>	
NCDMS ID NO. 94648	



BCPW 19  
N: 614053.85  
E: 1628178.82  
ELEV: 565.37

- JURISDICTIONAL WETLANDS
- WETLAND RESTORATION
- WETLAND CREATION

**UT TO TOWN CREEK**  
Reach 6  
**RECORD DRAWING**

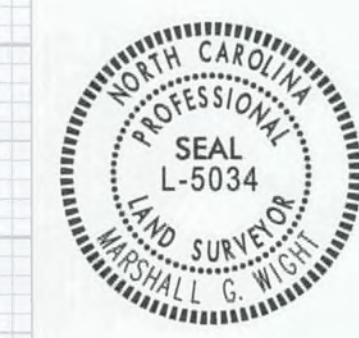
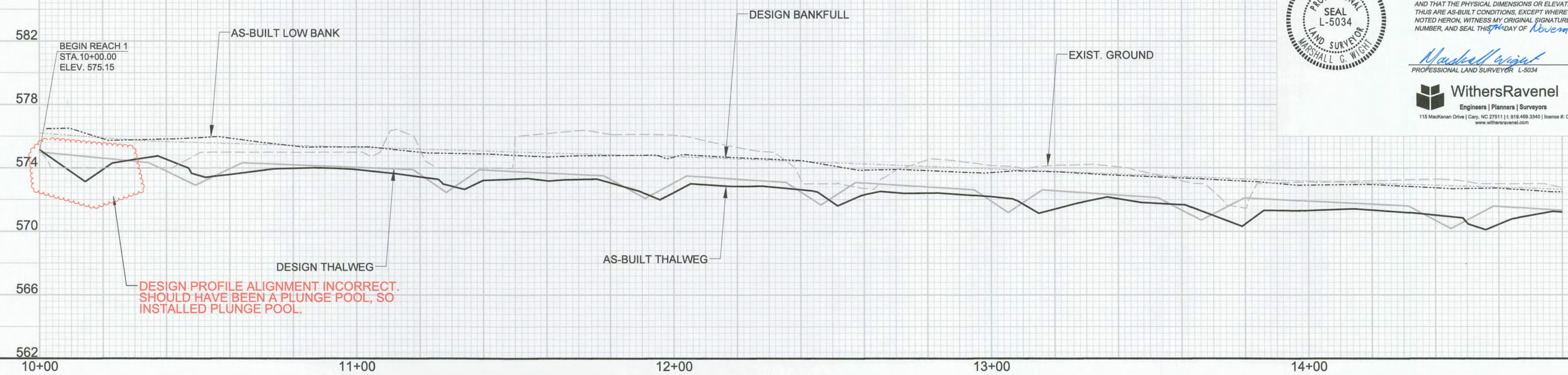
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11/1/2016  
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2/26/03

### REACH 1



I, MARSHALL G. WIGHT, AS A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF NORTH CAROLINA, HEREBY CERTIFY THAT THE DATA SHOWN ON THIS DRAWING WAS OBTAINED UNDER MY SUPERVISION, IS AN ACCURATE AND COMPLETE REPRESENTATION OF WHAT WAS CONSTRUCTED IN THE FIELD, AND THAT THE PHYSICAL DIMENSIONS OR ELEVATIONS SHOWN THIS ARE AS-BUILT CONDITIONS, EXCEPT WHERE OTHERWISE NOTED HERON, WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS Monday DAY OF November 2016

*Marshall Wight*  
PROFESSIONAL LAND SURVEYOR L-5034

**WithersRavenel**  
Engineers | Planners | Surveyors  
115 MacKenzie Drive | Cary, NC 27511 | P: 919.489.3340 | License #: C-0832 | www.wr-engineers.com

BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 5
PROJECT ENGINEER	
APPROVED BY: <i>[Signature]</i>	
DATE: 11/8/16	

**Michael Baker International**  
Michael Baker Engineering Inc.  
6715-B Riva Road #66  
Charlotte, NORTH CAROLINA 28277  
Phone: 704.865.2200  
Fax: 704.865.2201  
License #: F-1084

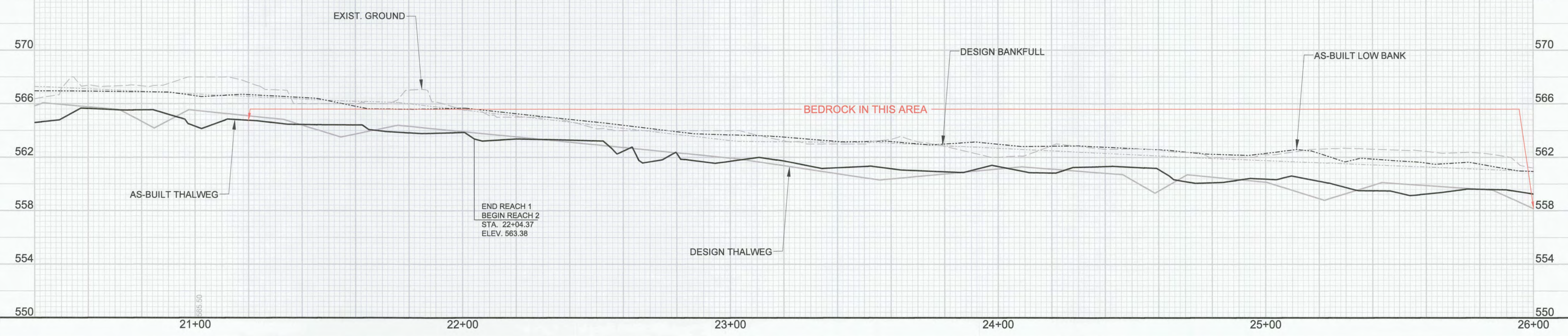
**NCDMS ID NO. 94648**  
**AS BUILT /RECORD DRAWING**

### REACH 1



### REACH 1

### REACH 2

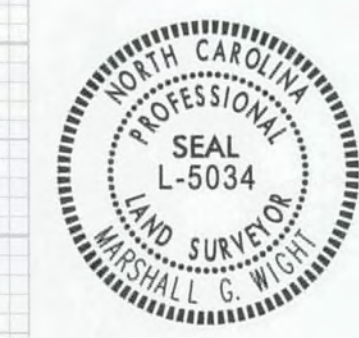
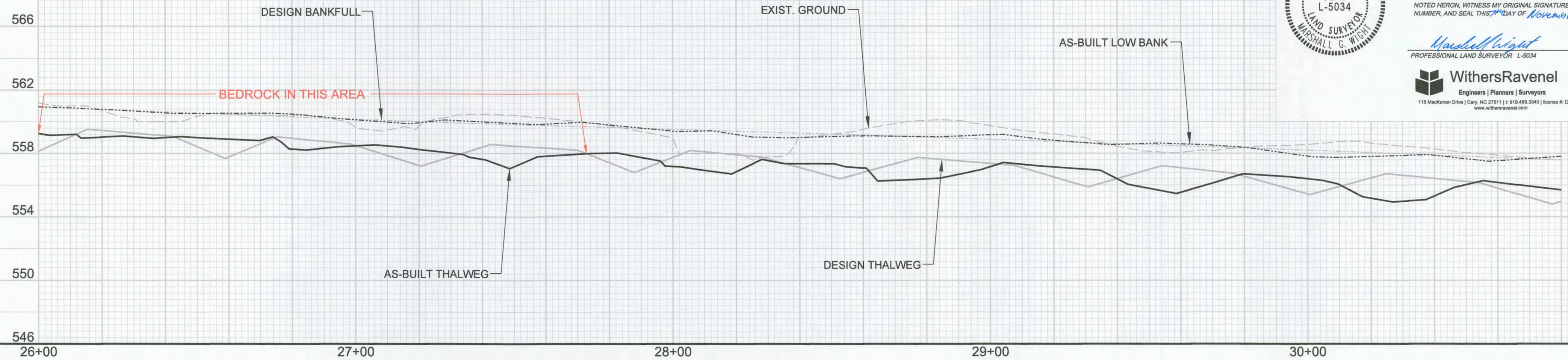


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2/26/03

REACH 2



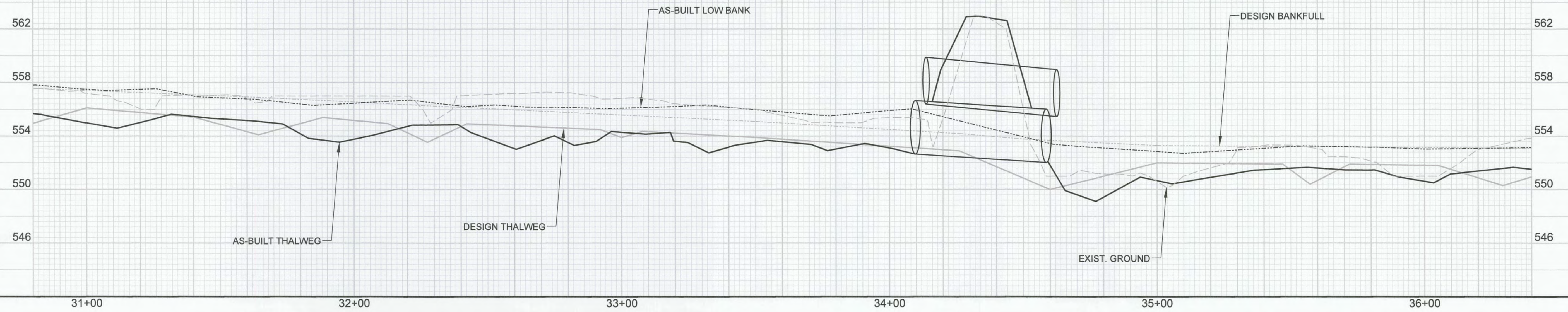
I, MARSHALL G. WIGHT, AS A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF NORTH CAROLINA, HEREBY CERTIFY THAT THE DATA SHOWN ON THIS DRAWING WAS OBTAINED UNDER MY SUPERVISION, IS AN ACCURATE AND COMPLETE REPRESENTATION OF WHAT WAS CONSTRUCTED IN THE FIELD, AND THAT THE PHYSICAL DIMENSIONS OR ELEVATIONS SHOWN THEREON ARE AS-BUILT CONDITIONS, EXCEPT WHERE OTHERWISE NOTED HEREON, WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS DAY OF *November* 2016

*Marshall G. Wight*  
PROFESSIONAL LAND SURVEYOR L-5034

**WithersRavenel**  
Engineers | Planners | Surveyors  
115 MacKenzie Drive | Cary, NC 27511 | P: 919.469.3340 | License #: C-0832 | www.wrsr.com

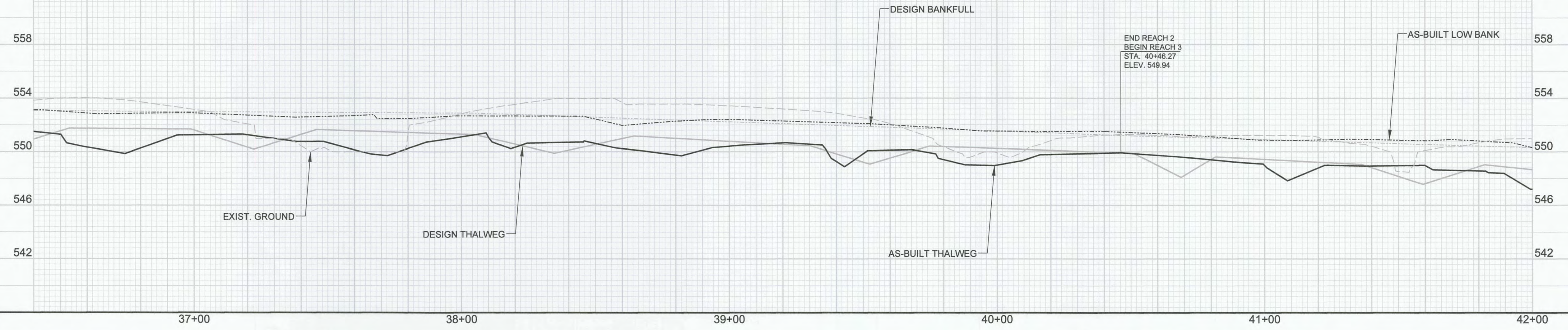
BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 6
PROJECT ENGINEER	
APPROVED BY: <i>[Signature]</i>	
DATE: 11/16	
<b>Michael Baker International</b> Michael Baker Engineering Inc. 9715-B Riva Road #50 Charlotte, NORTH CAROLINA 28277 Phone: 704.685.2200 Fax: 704.685.2201 License #: F-1084	
<b>NCDMS ID NO. 94648</b> <b>AS BUILT /RECORD DRAWING</b>	

REACH 2



REACH 2

REACH 3

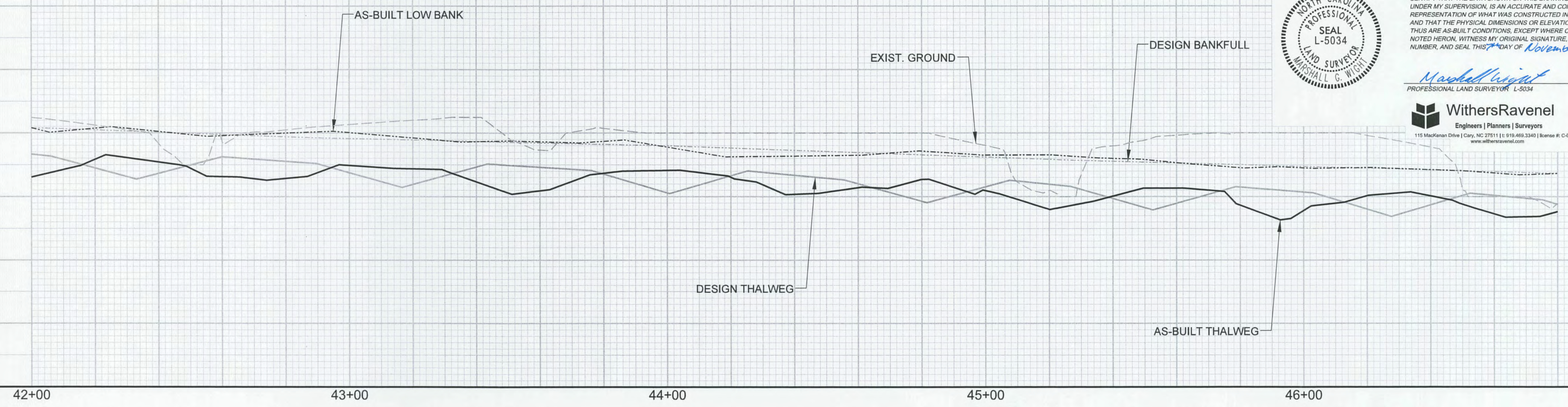


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2/26/03

### REACH 3



I, MARSHALL G. WIGHT, AS A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF NORTH CAROLINA, HEREBY CERTIFY THAT THE DATA SHOWN ON THIS DRAWING WAS OBTAINED UNDER MY SUPERVISION, IS AN ACCURATE AND COMPLETE REPRESENTATION OF WHAT WAS CONSTRUCTED IN THE FIELD, AND THAT THE PHYSICAL DIMENSIONS OR ELEVATIONS SHOWN THEREON ARE AS-BUILT CONDITIONS, EXCEPT WHERE OTHERWISE NOTED HEREON. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS DAY OF *November*, 2016.

*Marshall Wight*  
PROFESSIONAL LAND SURVEYOR L-5034  
**WithersRavenel**  
Engineers | Planners | Surveyors  
115 MacFarlan Drive | Cary, NC 27511 | 919.469.3340 | License #: C-0832 | www.wr-engineers.com

BAKER PROJECT REFERENCE NO. <b>120857</b>	SHEET NO. <b>7</b>
PROJECT ENGINEER <i>[Signature]</i>	
APPROVED BY: <i>[Signature]</i>	
DATE: <b>4/8/16</b>	

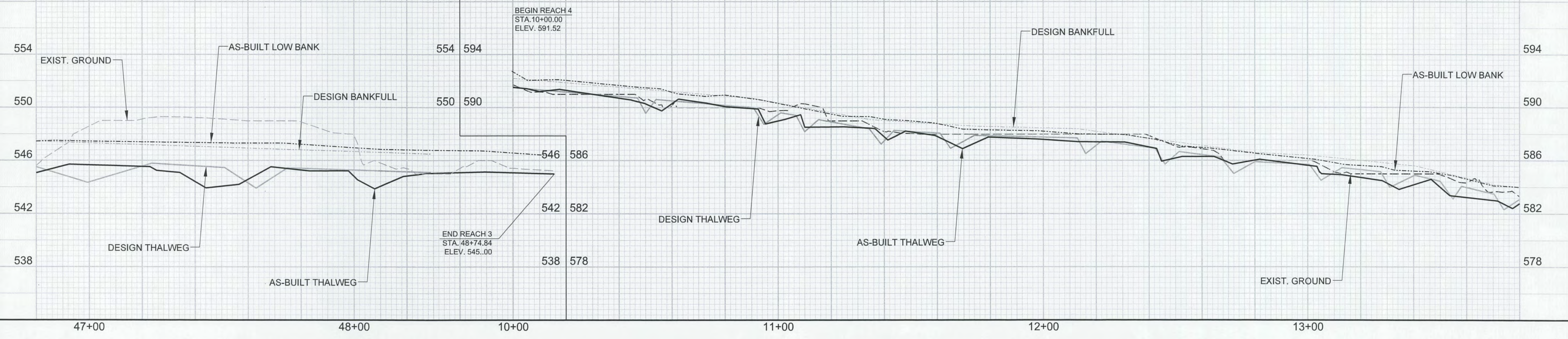
**Michael Baker International** Michael Baker Engineering Inc.  
9716-B Rea Road #55  
Charlotte, NORTH CAROLINA 28277  
Phone: 704.665.2200  
Fax: 704.665.2201  
License #: F-1084

**NCDMS ID NO. 94648**  
**AS BUILT /RECORD DRAWING**

538

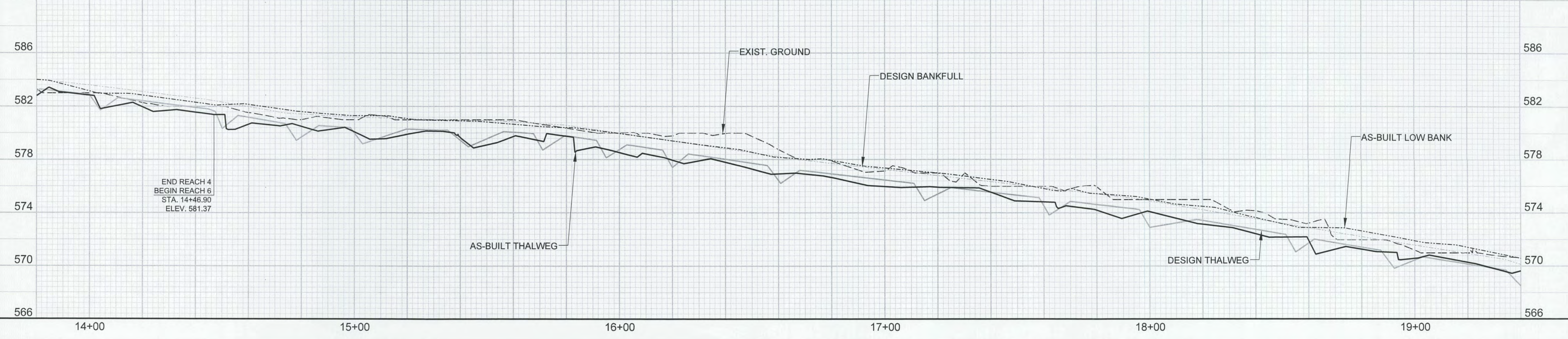
### REACH 3

### REACH 4



### REACH 4

### REACH 6

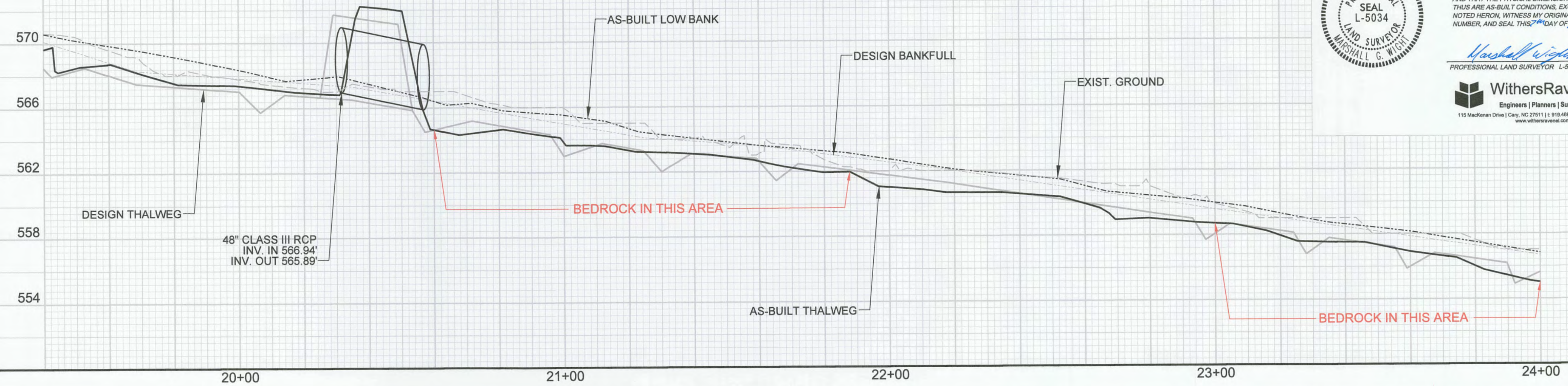


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2/26/03

### REACH 6



I, MARSHALL G. WIGHT, AS A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF NORTH CAROLINA, HEREBY CERTIFY THAT THE DATA SHOWN ON THIS DRAWING WAS OBTAINED UNDER MY SUPERVISION, IS AN ACCURATE AND COMPLETE REPRESENTATION OF WHAT WAS CONSTRUCTED IN THE FIELD, AND THAT THE PHYSICAL DIMENSIONS OR ELEVATIONS SHOWN THEREON ARE AS-BUILT CONDITIONS, EXCEPT WHERE OTHERWISE NOTED HEREON. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS 27th DAY of November 2016.

*Marshall G. Wight*  
PROFESSIONAL LAND SURVEYOR L-5034

**WithersRavenel**  
Engineers | Planners | Surveyors  
116 Macken Drive | Cary, NC 27511 | 919.489.3340 | License #: C-0832 | www.withersravenel.com

BAKER PROJECT REFERENCE NO. 120857	SHEET NO. 8
PROJECT ENGINEER	
APPROVED BY: <i>J. Baker</i>	
DATE: 11/28/16	

**Michael Baker International**  
Michael Baker Engineering Inc.  
9716-B Rea Road #50  
Charlotte, NORTH CAROLINA 28277  
Phone: 704.665.2200  
Fax: 704.665.2201  
License #: F-1084

**NCDMS ID NO. 94648**  
**AS BUILT / RECORD DRAWING**

554

### REACH 6



562

558

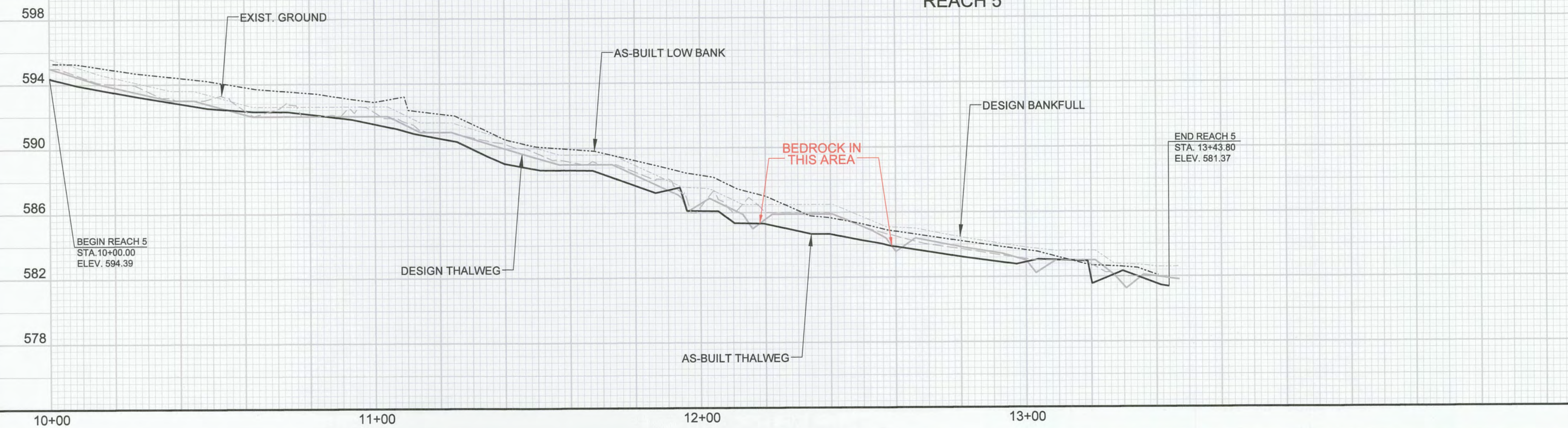
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550

546

END REACH 6  
STA. 28+13.01  
ELEV. 549.94

### REACH 5



598

594

590

586

582

578

BEGIN REACH 5  
STA. 10+00.00  
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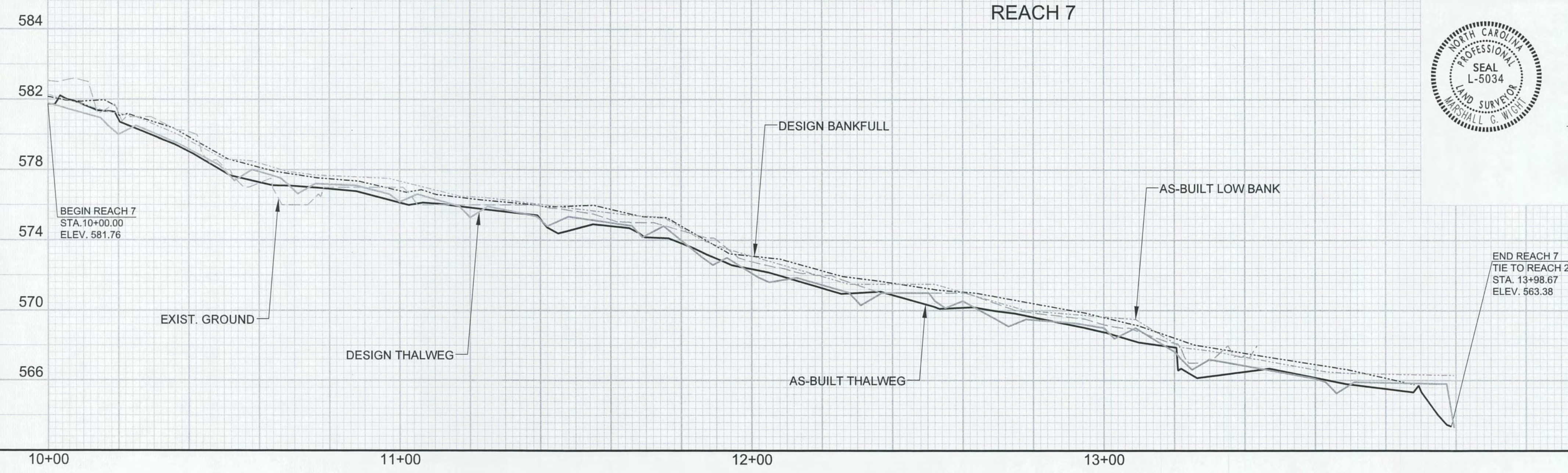
END REACH 5  
STA. 13+43.80  
ELEV. 581.37

I:\120857\Charlotte\Design\AS-BUILT\PLANS\120857-AB-PFL\_8.dgn



2/26/03

# REACH 7



I, MARSHALL G. WIGHT, AS A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF NORTH CAROLINA, HEREBY CERTIFY THAT THE DATA SHOWN ON THIS DRAWING, WAS OBTAINED UNDER MY SUPERVISION, IS AN ACCURATE AND COMPLETE REPRESENTATION OF WHAT WAS CONSTRUCTED IN THE FIELD, AND THAT THE PHYSICAL DIMENSIONS OR ELEVATIONS SHOWN THIS ARE AS-BUILT CONDITIONS, EXCEPT WHERE OTHERWISE NOTED HERON, WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS DAY OF November 2016

*Marshall G. Wight*  
PROFESSIONAL LAND SURVEYOR L-5034

**WithersRavenel**  
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115 Mackanan Drive | Cary, NC 27511 | 919.468.3340 | License #: C-6832 | www.witthersravenel.com

BAKER PROJECT REFERENCE NO. <b>120857</b>	SHEET NO. <b>9</b>
PROJECT ENGINEER	
APPROVED BY: <i>[Signature]</i>	
DATE: <b>11/8/16</b>	

**Michael Baker International**  
Michael Baker Engineering Inc.  
9716-B Rea Road #50  
Charlotte, NORTH CAROLINA 28277  
Phone: 704.665.2200  
Fax: 704.665.2201  
License #: F-1084

**NCDMS ID NO. 94648**  
**AS BUILT /RECORD DRAWING**

566

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