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MORRISVILLE TRIBUTARY STREAM RESTORATION CONSTRUCTION PLAN

APRIL 2026

Project Number: COMBO-25-0081



VICINITY MAP
1" = 400'

The work described herein may require a separate building permit(s). Approval of a MIN/MOD, Bulletin, CD or COMBO does not constitute approval as a building permit for work covered under the NC Building Codes. Please call 919.463.6190 for questions related to the building permit process.

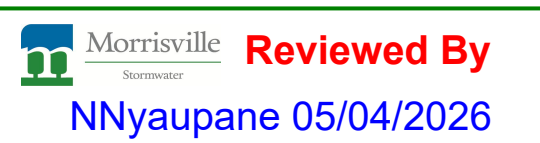
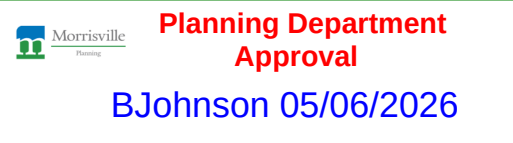
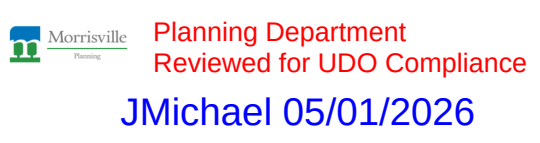
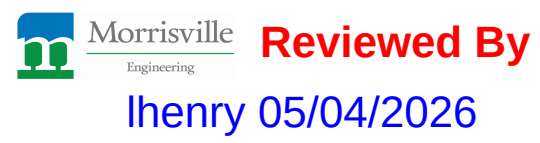
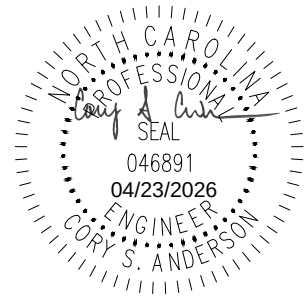
Separate building permits will be required per building and structure. Structures include, but are not limited to, retaining walls, canopies, trash enclosures, etc. Where fire walls meet the requirements of section 706.1 of the NC Building Code, they shall be considered separate buildings. Separate building permit submittals will require a complete separate plan set to be submitted by building, including code summary sheet, life safety plan, and all corresponding trades for that specific building.

OWNER/CLIENT
TOWN OF MORRISVILLE
100 TOWN HALL DRIVE
MORRISVILLE, NC 27560
(919) 463-6191
bmills@morrisvillenc.gov
ATTN: BEN MILLS, PE, CFM

ENGINEER
STANTEC CONSULTING SERVICES INC.
801 JONES FRANKLIN RD, SUITE 300
RALEIGH, NC 27606
(919) 851-6866
cory.anderson@stantec.com
ATTN: CORY ANDERSON, PE, CFM

SURVEYOR/BASE TOPOGRAPHY
STANTEC CONSULTING SERVICES INC.
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EROSION CONTROL INSPECTIONS
WAKE COUNTY
WATERSHED MANAGEMENT DIVISION
337 S. SALISBURY ST.
RALEIGH, NC 27601
919-856-7436



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SITE DATA TABLE

PROJECT NAME:	MORRISVILLE TRIBUTARY (SAWMILL CREEK) STREAM RESTORATION AND GREENWAY
COUNTY:	WAKE COUNTY
JURISDICTION:	TOWN OF MORRISVILLE
PROPERTY OWNER/DEVELOPER:	TOWN OF MORRISVILLE
PIN:	0755065099/0755058988/0755064609/ 0755058407/0755057528/0755058381/ 0755152323
SITE ACREAGE:	9.18 ACRES
SITE GRADING DISTURBANCE AREA:	5.79 ACRES
SITE SELECTIVE HAND CLEARING AREA (NO EXCAVATION OR GRADING DISTURBANCE)	±0.60 ACRES
SITE FRONTAGE: PAGE STREET	415 LF
SITE FRONTAGE: CHURCH STREET	248 LF
EXISTING ZONING:	TOWN CENTER RESIDENTIAL (TCR)
PROPOSED ZONING:	N/A
EXISTING USE:	VACANT LAND
PROPOSED USE:	PARK/GREENWAY
REQUIRED SURFACE PARKING:	N/A
PROVIDED SURFACE PARKING:	N/A
PROPOSED BICYCLE PARKING:	N/A
REQUIRED STREETScape:	N/A
REQUIRED PERIMETER BUFFER:	20' PRESERVED PERIMETER LANDSCAPE BUFFERS ALONG ADJACENT SOUTHERN AND EASTERN PROPERTY BOUNDARIES, 30' ALONG THE NORTHERN AND WESTERN PROPERTY BOUNDARIES
REQUIRED TREE CONSERVATION AREA (TCA):	15% MINIMUM OF SITE AREA (MINUS EXISTING AND PROPOSED UTILITY EASEMENTS) = 6.50 AC + 1.03 AC = 7.53 ACRES 7.53 ACRES * 0.15 = 1.13 ACRES OF TCA
PROVIDED TREE CONSERVATION AREA (TCA):	1.17 ACRES OF TCA (15.5%)
PERVIOUS/IMPERVIOUS AREAS:	IMPERVIOUS: 0.72 AC / 31,530 SQ-FT (8%) PERVIOUS: 8.46 AC / 368,518 SQ-FT (92%)
OPEN SPACE:	9.18 AC
PROPOSED PUBLIC INFRASTRUCTURE:	PUBLIC GREENWAY: 3153 LF

ABBREVIATIONS	
NCDOT	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
EX	EXISTING
ESC	EROSION AND SEDIMENTATION CONTROL
ELEV, EL	ELEVATION
BKF	BANKFULL ELEVATION
DIA	DIAMETER
RCP	REINFORCED CONCRETE PIPE
CMP	CORRUGATED METAL PIPE
STD	STANDARD
SCP	SURVEY CONTROL POINT
N	NORTHING
E	EASTING
WSE	WATER SURFACE ELEVATION
AC	ACRE
CY	CUBIC YARD
SY	SQUARE YARD
LF	LINEAR FOOT
TN	TON
W/	WITH
MIN	MINIMUM
MISC	MISCELLANEOUS
WFPA	WIDTH OF FLOODPRONE AREA
NTS	NOT TO SCALE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PROP	PROPOSED
SPEC	SPECIFICATION
STA	STATION
TYP	TYPICAL
V,VERT	VERTICAL
H,HOZ	HORIZONTAL
MAX	MAXIMUM
EA	EACH
D/S	DOWNSTREAM
U/S	UPSTREAM
APPROX	APPROXIMATE

- GENERAL
- EXISTING TOPOGRAPHY WAS GENERATED FROM FIELD RUN SURVEY PERFORMED BY STANTEC IN 2023 (REFER TO DRAWINGS FOR SPECIFIC EXTENTS). IT DOES NOT REFLECT ANY POTENTIAL EROSION OR DEPOSITIONAL CHANGES (I.E. FURTHER LATERAL SCOUR) TO THE SITE THAT MAY HAVE OCCURRED SINCE.
 - THE UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND POSSIBLY INCOMPLETE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM THE LOCATION OF ALL UTILITIES ONSITE PRIOR TO THE START OF WORK.
 - THE CONTRACTOR SHALL REFER TO THE ENTIRE SET OF CONSTRUCTION DOCUMENTS INCLUDING: DRAWINGS, SPECIAL PROVISIONS AND/OR SPECIFICATIONS, EXECUTED CONTRACT, PERMITS, AND OTHER PROJECT DOCUMENTS (MEETING MINUTES, PUNCH LISTS, ETC.) FOR COMPLETE INFORMATION ABOUT THE REQUIRED WORK. ANY PORTION OF THESE DOCUMENTS, LESS THAN THE ENTIRE SET OF THE CONSTRUCTION DOCUMENTS, MAY NOT CONTAIN ALL OF THE INFORMATION REQUIRED TO COMPLETE THE WORK.
 - PROPOSED TREATMENT TRANSITIONS BETWEEN THE PROPOSED AND EXISTING CHANNEL BED AND BANK GRADE SHALL BE EVENLY GRADED ALONG ENTIRE LENGTH OF TREATMENT TO PROVIDE FOR A SMOOTH (NOT ABRUPT) TRANSITION.
 - NATURAL VARIABILITY AT THE SITE MAY REQUIRE ADAPTATION OF THE PLANS, NOTES, QUANTITIES, ETC., AND WILL NOT CONSTITUTE A CHANGE IN THE WORK. ANY REQUESTED CHANGE IN PRICE (CHANGE ORDER) WILL BE IDENTIFIED, SPECIFIED IN WRITING, SUBMITTED FOR REVIEW AND APPROVED BY THE OWNER PRIOR TO PERFORMING ASSOCIATED CHANGE ORDER WORK.
 - ALL MANUFACTURED PRODUCTS REQUIRE REVIEW AND APPROVAL BY THE TOWN OF MORRISVILLE PRIOR TO INSTALLATION. NO PROPRIETARY PRODUCTS ARE SPECIFIED. PRODUCTS SHALL MEET TOWN STANDARDS; APPROVED EQUIVALENTS MAY BE ACCEPTED AT THE TOWN'S DISCRETION.
 - WORK IS PROPOSED IN THE ZONE AE SPECIAL FLOOD HAZARD AREA AND FLOODWAY. STOCKPILING AND STAGING WITHIN THE FLOODPLAIN IS TEMPORARY AND AREAS OUTSIDE STREAM AND GREENWAY GRADING SHALL BE RESTORED TO PRE-CONSTRUCTION GROUND ELEVATION AND REVEGETATED PER THE PLANTING PLANS. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING STAGING OF EQUIPMENT OUTSIDE OF THE FLOOD HAZARD AREA, AND MEASURES TO PROTECT TEMPORARILY STOCKPILED AND UNSTABILIZED AREAS WITHIN THE WORK AREA. CHEMICAL AND HAZARDOUS MATERIAL STORAGE ARE PROHIBITED WITHIN THE SPECIAL FLOOD HAZARD AREA.
- GRADING
- ALL BACKFILL, COMPACTION, SOIL TESTING, ETC. SHALL BE PERFORMED BY THE TOWNS INDEPENDENT GEOTECHNICAL ENGINEER AND LABORATORY.
 - THE CROSS SLOPE ON ALL TRAILS SHALL BE A MAXIMUM OF 2% AND SHALL BE CONSTRUCTED TO PROMOTE DRAINAGE AWAY FROM THE PAVEMENT SURFACE.

GREENWAY, UTILITY, AND DRAINAGE FACILITIES EASEMENT
ALL PUBLIC GREENWAY, UTILITY, AND DRAINAGE FACILITIES EASEMENTS WILL BE MAINTAINED BY THE TOWN OF MORRISVILLE AND PUBLIC ACCESS IS GRANTED.

EROSION AND SEDIMENT CONTROL NOTES

- TOTAL DISTURBED ACREAGE = 5.79 AC/252,212.4 SQ-FT
- TOTAL PROPOSED IMPERVIOUS SURFACE = 0.72 AC/31,530 SQ-FT (GREENWAY)
- EROSION AND SEDIMENT CONTROL (ESC) PERMITTING FOR THE TOWN OF MORRISVILLE IS ADMINISTERED BY WAKE COUNTY. E&SC PLANS MUST BE SUBMITTED TO WAKE COUNTY, NOT TO THE TOWN OF MORRISVILLE. PERMIT ISSUANCE, PLAN REVIEWS, AND INSPECTIONS ARE CONDUCTED BY WAKE COUNTY STAFF. WAKE COUNTY ESC CONTACT INFORMATION SHOULD BE INCLUDED IN YOUR CONSTRUCTION DOCUMENTS. TOWN REVIEWS THE OVERALL SITE PLAN AND STORMWATER, BUT NOT THE ESC PLAN ITSELF.
- EROSION AND SEDIMENT CONTROL MEASURES ARE REQUIRED AS A PART OF THIS PROJECT. THE EROSION AND SEDIMENTATION CONTROL PLANS REFLECTS A SCHEMATIC DIAGRAM OF THE INTENDED MEASURES FOR COMPLIANCE WITH THE STATE STANDARDS. GENERAL PRACTICE AND/OR SITE FIELD CONDITIONS MAY WARRANT VARIATION IN THE PLACEMENT OR USE OF THE SPECIFIED CONTROLS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING NECESSARY AND ADEQUATE MEASURES FOR PROPER CONTROL OF EROSION AND SEDIMENT RUNOFF FOR THE SITE ALONG WITH PROPER MAINTENANCE AND INSPECTION IN COMPLIANCE WITH LOGICAL AND STATE REGULATIONS.
- THE CONTRACTOR SHALL INSTALL AND MAINTAIN THROUGHOUT THE PROJECT CONSTRUCTION ALL EROSION CONTROL MEASURES WITHIN THESE PLANS IN ACCORDANCE WITH APPLICABLE LOCAL AND STATE EROSION AND SEDIMENT CONTROL REGULATIONS. ALL LAND-DISTURBING ACTIVITIES SHALL BE SUBJECT TO INSPECTION AND SITE INVESTIGATION.
- THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING ANY ADDITIONAL PERMITS OR MODIFICATIONS REQUIRED IF THEY CHOOSE TO DEViate FROM THE PROPOSED EROSIONS AND SEDIMENT CONTROL PLAN.
- THE CONTRACTOR WILL INSTALL EROSION CONTROL MEASURES (INCLUDING SILT FENCE) AS NEEDED PRIOR TO BEGINNING EACH PHASE OF CONSTRUCTION OR AREA OF LAND-DISTURBING ACTIVITY. THE INSPECTORS WILL BE NOTIFIED PRIOR TO INSTALLATION OF EROSION CONTROL MEASURES ON EACH PHASE OF CONSTRUCTION OR LAND DISTURBING ACTIVITY.
- EROSION CONTROL MEASURES SHALL BE MAINTAINED BY THE CONTRACTOR AND SHOULD BE CHECKED WEEKLY AND AFTER RAIN EVENTS FOR MAINTENANCE AND/OR REPAIR
- ALL DISTURBED SURFACES, INCLUDING EARTH STOCKPILE, TO REMAIN MORE THAN 14 DAYS SHALL RECEIVE TEMPORARY SEED AND MULCH PER THE PROPOSED PLANTING PLAN. ALL SURFACES DISTURBED AS PART OF THE PROPOSED WORK SHALL BE SEEDED AND VEGETATED PER THE PROPOSED PLANTING PLAN.
- ALL STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE PLACED PRIOR TO OR AS THE FIRST STEP IN GRADING FOR ALL SITES.
- AT THE COMPLETION OF CONSTRUCTION, ALL TEMPORARY SEDIMENT CONTROLS SHALL BE REMOVED AND ALL DENUDED AREAS SHALL BE STABILIZED.

GENERAL EROSION CONTROL SEQUENCE

- EROSION AND SEDIMENT CONTROL (ESC) INSPECTION FOR THE TOWN OF MORRISVILLE IS ADMINISTERED BY WAKE COUNTY. REFER TO ESC NOTES SHEETS FOR DETAILED CONSTRUCTION SEQUENCE.
- SCHEDULE A PRECONSTRUCTION CONFERENCE WITH THE ENVIRONMENTAL CONSULTANT. OBTAIN A LAND DISTURBING PERMIT.
 - INSTALL GRAVEL CONSTRUCTION PAD, TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS OR OTHER MEASURES AS SHOWN ON THE APPROVED PLAN. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. SEED TEMPORARY DIVERSIONS, BERMS AND BASINS IMMEDIATELY AFTER CONSTRUCTION.
 - CALL ENVIRONMENTAL CONSULTANT FOR AN ONSITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT TO OBTAIN A CERTIFICATE OF COMPLIANCE.
 - BEGIN CLEARING AND GRUBBING. MAINTAIN DEVICES AS NEEDED. ROUGH GRADE SITE.
 - STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. SEED AND MULCH DENUDED AREAS PER GROUND STABILIZATION TIME FRAMES.
 - WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL ENVIRONMENTAL CONSULTANT FOR AN INSPECTION.
 - IF SITE IS APPROVED, REMOVE TEMPORARY DIVERSIONS, SILT FENCE, , ETC., AND SEED OUT OR STABILIZE ANY RESULTING BARE AREAS. ALL REMAINING PERMANENT EROSION CONTROL DEVICES, SUCH AS VELOCITY DISSIPATORS, SHOULD NOW BE INSTALLED.
 - WHEN VEGETATION HAS BECOME ESTABLISHED, CALL FOR A FINAL SITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT. OBTAIN A CERTIFICATE OF COMPLETION.

TREE PROTECTION NOTES

(TOWN OF MORRISVILLE UDO SECTION 5.4.6)

- GENERAL RESPONSIBILITY**
THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND REPLACEMENT TREES LOCATED WITHIN DESIGNATED TREE PROTECTION AREAS (TPAS) IN ACCORDANCE WITH THE APPROVED PLANS AND THE REQUIREMENTS OF TOWN OF MORRISVILLE UNIFIED DEVELOPMENT ORDINANCE (UDO) SECTION 5.4.6.
- DURATION OF TREE PROTECTION MEASURES**
REQUIRED TREE PROTECTIVE FENCING AND SIGNAGE SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING, GRADING, OR OTHER LAND DISTURBING ACTIVITY AND SHALL BE MAINTAINED IN PLACE UNTIL ISSUANCE OF THE CERTIFICATE OF COMPLIANCE/OCCUPANCY FOLLOWING COMPLETION OF ALL DEVELOPMENT ACTIVITY IN THE IMMEDIATE AREA OF THE FENCING OR SIGNAGE.
- PROTECTIVE FENCING REQUIREMENTS**
CONTINUOUS PROTECTIVE FENCING CONSISTING OF BRIGHT ORANGE PLASTIC MESH A MINIMUM OF FOUR (4) FEET IN HEIGHT SHALL BE INSTALLED ALONG REQUIRED TREE PROTECTION AREAS AND ANY OTHER AREAS REQUIRED TO REMAIN UNDISTURBED. FENCING SHALL BE LOCATED NO CLOSER THAN THE REQUIRED DISTANCE FROM TREE TRUNKS AND SHALL BE POSITIONED TO INCLUDE THE CRITICAL ROOT ZONE(S) WHERE REQUIRED BY THE TOWN.
- PROTECTIVE SIGNAGE**
WARNING SIGNS SHALL BE INSTALLED ALONG REQUIRED TREE PROTECTION FENCING AT INTERVALS NOT EXCEEDING ONE HUNDRED FIFTY (150) FEET. SIGNS SHALL BE CLEARLY VISIBLE FROM ALL SIDES OUTSIDE THE FENCED AREA. SHALL BE A MINIMUM OF TWO (2) FEET BY TWO (2) FEET, AND SHALL INCLUDE MESSAGING IN BOTH ENGLISH AND SPANISH IDENTIFYING THE FENCED AREA AS A TREE PROTECTION AREA AND DIRECTING CONSTRUCTION PERSONNEL NOT TO ENTER OR ENCRoACH (E.G., "TREE PROTECTION AREA- DO NOT ENTER").
- TREE PROTECTION AREA LIMITATIONS**
EXCEPT WHERE EXPLICITLY AUTHORIZED BY THE APPROVED TREE PROTECTION PLAN, NO ENCROACHMENT INTO A TREE PROTECTION AREA IS PERMITTED. THE FOLLOWING ACTIVITIES ARE STRICTLY PROHIBITED WITHIN A TREE PROTECTION AREA:
A. GRADING OR SOIL DISTURBANCE
B. OPERATION, PARKING, OR STORAGE OF VEHICLES OR HEAVY EQUIPMENT
C. STOCKPILING OR STORAGE OF CONSTRUCTION MATERIALS, SUPPLIES, FUEL, CHEMICALS, OR DEBRIS
D. CONCRETE WASHOUT OR WASHING/CLEANING OF EQUIPMENT
E. DISPOSAL OF WASTE OR DEBRIS
- VEGETATION CLEARING**
ANY CLEARING OF VEGETATION WITHIN A TREE PROTECTION AREA, WHERE ALLOWED BY THE APPROVED PLANS, SHALL BE PERFORMED BY HAND ONLY. MECHANIZED CLEARING EQUIPMENT SHALL NOT BE PERMITTED WITHIN TREE PROTECTION AREAS.
- EXCAVATION ADJACENT TO EXISTING TREES**
WHERE EXCAVATION IS REQUIRED WITHIN OR ADJACENT TO TREE PROTECTION AREAS OR CRITICAL ROOT ZONES, WORK SHALL BE PERFORMED USING METHODS INTENDED TO MINIMIZE ROOT DISTURBANCE. HAND EXCAVATION SHALL BE USED WHERE ROOTS ARE ENCOUNTERED. ROOT PRUNING, BRIDGING, REROUTING OF UTILITIES, OR OTHER TREE PROTECTION MEASURES MAY BE IMPLEMENTED WHERE NECESSARY, PROVIDED SUCH METHODS MINIMIZE DAMAGE TO MAJOR ROOTS AND ARE PERFORMED USING CLEAN CUTS AND ACCEPTED ARBORICULTURAL PRACTICES. EXCAVATION LIMITS SHALL BE ADJUSTED AS PRACTICAL TO PRESERVE TREE HEALTH.
- COMPLIANCE**
FAILURE TO INSTALL OR MAINTAIN REQUIRED TREE PROTECTION MEASURES, OR UNAUTHORIZED DISTURBANCE WITHIN TREE PROTECTION AREAS, MAY RESULT IN ENFORCEMENT ACTION BY THE TOWN OF MORRISVILLE AND SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.

SEQUENCE OF CONSTRUCTION

- PRIOR TO MOBILIZATION CONTRACTOR SHALL CONFIRM WITH THE OWNER THAT ALL REQUIRED PERMITS HAVE BEEN SECURED, IN POSSESSION, AND BE FAMILIAR WITH ALL GENERAL/SPECIAL TERMS AND CONDITIONS.
- REFER TO EROSION CONTROL SEQUENCE FOR ACTIVITIES THAT MUST BE COMPLETED PRIOR TO STARTING WORK.
- LAND DISTURBING ACTIVITIES SHOULD BE LIMITED TO WHAT CAN BE COMPLETED IN ONE DAY.
- THE CONTRACTOR SHALL USE THEIR OWN DISCRETION IN SCHEDULING THE SITE SEQUENCING. ALTERNATE SEQUENCING SHALL BE SUBMITTED FOR REVIEW AND APPROVED BY THE OWNER, PRIOR TO PERFORMING WORK.

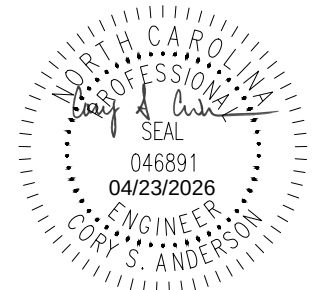


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801 Jones Franklin Road, Suite 300
Morrisville, NC 27560
Tel: +1 919 851 6868
www.stantec.com

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing. The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing. The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing.

26.04.23	26.02.13	25.12.19	25.07.04	25.02.07	Y1.MM.DD
CSA	CSA	CSA	CSA	CSA	Appt.
CSA	CSA	CSA	CSA	CSA	By
E SIGNATURE SET	D FOR APPROVAL	C FOR APPROVAL	B FOR APPROVAL	A FOR REVIEW	Issued
4 SIGNATURE SET	3 PER TOWN COMMENTS	2 PER TOWN COMMENTS	1 PER TOWN COMMENTS		Revision

Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA
Title
GENERAL NOTES



Project Number:		COMBO-25-0081	
File Name:		02295_Cover Sheet.dwg	
CP	CSA	CSA/CP	26.04.23
Dwn.	Chkd.	Dsgn.	YY.MM.DD
Drawing No.		G002	
Revision		Sheet	

EXISTING SANITARY SEWER STRUCTURE TABLE			
ID	RIM ELEVATION	INV IN (FROM)	INV OUT (TO)
80	295.40		289.36 (12" PVC Pipe) 81
81	296.90	290.30 (12" PVC Pipe @ -0.29%) 80	290.36 (12" PVC Pipe) 82
82	298.90	291.84 (12" PVC Pipe @ -0.49%) 81	291.96 (12" PVC Pipe) 83
83	299.51	294.75 (12" PVC Pipe @ -0.78%) 82	294.81 (12" PVC Pipe) 84
84	300.51	296.68 (12" PVC Pipe @ -0.76%) 83	295.11 (12" PVC Pipe) 85
85	304.68	296.57 (12" PVC Pipe @ -0.38%) 84	

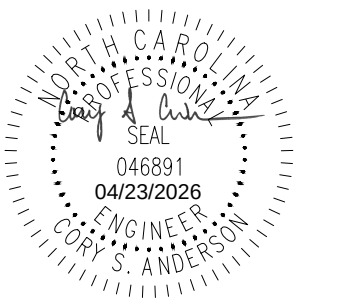
EXISTING SANITARY SEWER PIPE TABLE								
ID	FROM STRUCTURE	INV IN	TO STRUCTURE	INV OUT	DIAMETER (in)	MATERIAL	LENGTH (ft)	SLOPE
80 TO 81	80	289.36	81	290.30	12"	PVC Pipe	329'	0.29%
81 TO 82	81	290.36	82	291.84	12"	PVC Pipe	301'	0.49%
82 TO 83	82	291.96	83	294.75	12"	PVC Pipe	360'	0.78%
83 TO 84	83	294.81	84	294.86	12"	PVC Pipe	7'	0.76%
84 TO 85	84	295.11	85	296.57	12"	PVC Pipe	383'	0.38%



Revision		Issued	
	By	YYMMDD	
1	PER OWN COMMENTS	CSA	25/07/04
2	PER OWN COMMENTS	CSA	25/12/19
3	PER DOWN COMMENTS	CSA	26/02/13
4	SIGNATURE SET	CSA	26/04/20
			E SIGNATURE SET
			D FOR APPROVAL
			C FOR APPROVAL
			B FOR APPROVAL
			A FOR REVIEW
	By	YYMMDD	
			Appl

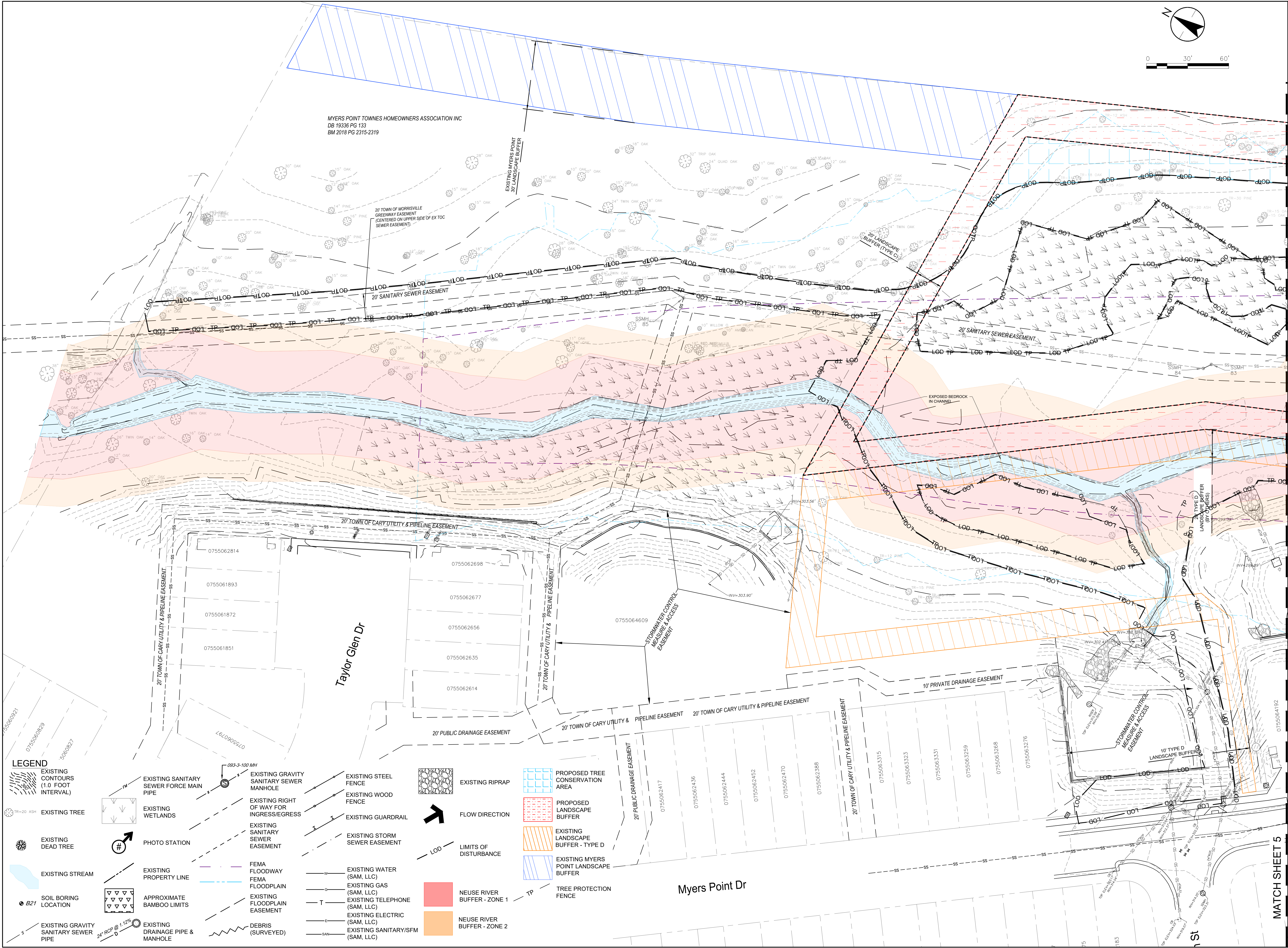
Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

EXISTING CONDITIONS (OVERALL)



Project Number:		COMBO-25-0081	
File Name:		02295_ex_con.dwg	
CP	CSA	CSA/CP	26.04.23
Dwn.	Chkd.	Dsgn.	YY.MM.DD
Drawing No.		V001	
Revision		Sheet	

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2024/04/23 4:29 PM By: Anderson, Cory (Relight)



LEGEND

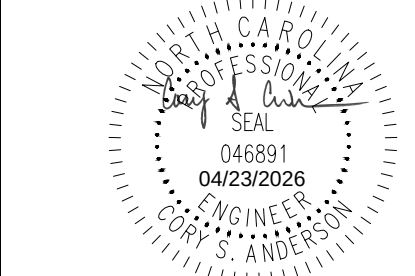
- EXISTING CONTOURS (1.0 FOOT INTERVAL)
- EXISTING TREE
- EXISTING DEAD TREE
- EXISTING STREAM
- SOIL BORING LOCATION
- EXISTING GRAVITY SANITARY SEWER PIPE
- EXISTING SANITARY SEWER FORCE MAIN PIPE
- EXISTING WETLANDS
- PHOTO STATION
- EXISTING PROPERTY LINE
- APPROXIMATE BAMBOO LIMITS
- EXISTING DRAINAGE PIPE & MANHOLE
- EXISTING GRAVITY SANITARY SEWER MANHOLE
- EXISTING RIGHT OF WAY FOR INGRESS/EGRESS
- EXISTING SANITARY SEWER EASEMENT
- FEMA FLOODWAY
- FEMA FLOODPLAIN
- EXISTING FLOODPLAIN EASEMENT
- DEBRIS (SURVEYED)
- EXISTING STEEL FENCE
- EXISTING WOOD FENCE
- EXISTING GUARDRAIL
- EXISTING STORM SEWER EASEMENT
- EXISTING WATER (SAM, LLC)
- EXISTING GAS (SAM, LLC)
- EXISTING TELEPHONE (SAM, LLC)
- EXISTING ELECTRIC (SAM, LLC)
- EXISTING SANITARY/SFM (SAM, LLC)
- EXISTING RIPRAP
- FLOW DIRECTION
- LIMITS OF DISTURBANCE
- NEUSE RIVER BUFFER - ZONE 1
- NEUSE RIVER BUFFER - ZONE 2
- PROPOSED TREE CONSERVATION AREA
- PROPOSED LANDSCAPE BUFFER
- EXISTING LANDSCAPE BUFFER - TYPE D
- EXISTING MYERS POINT LANDSCAPE BUFFER
- TREE PROTECTION FENCE

MATCH SHEET 5

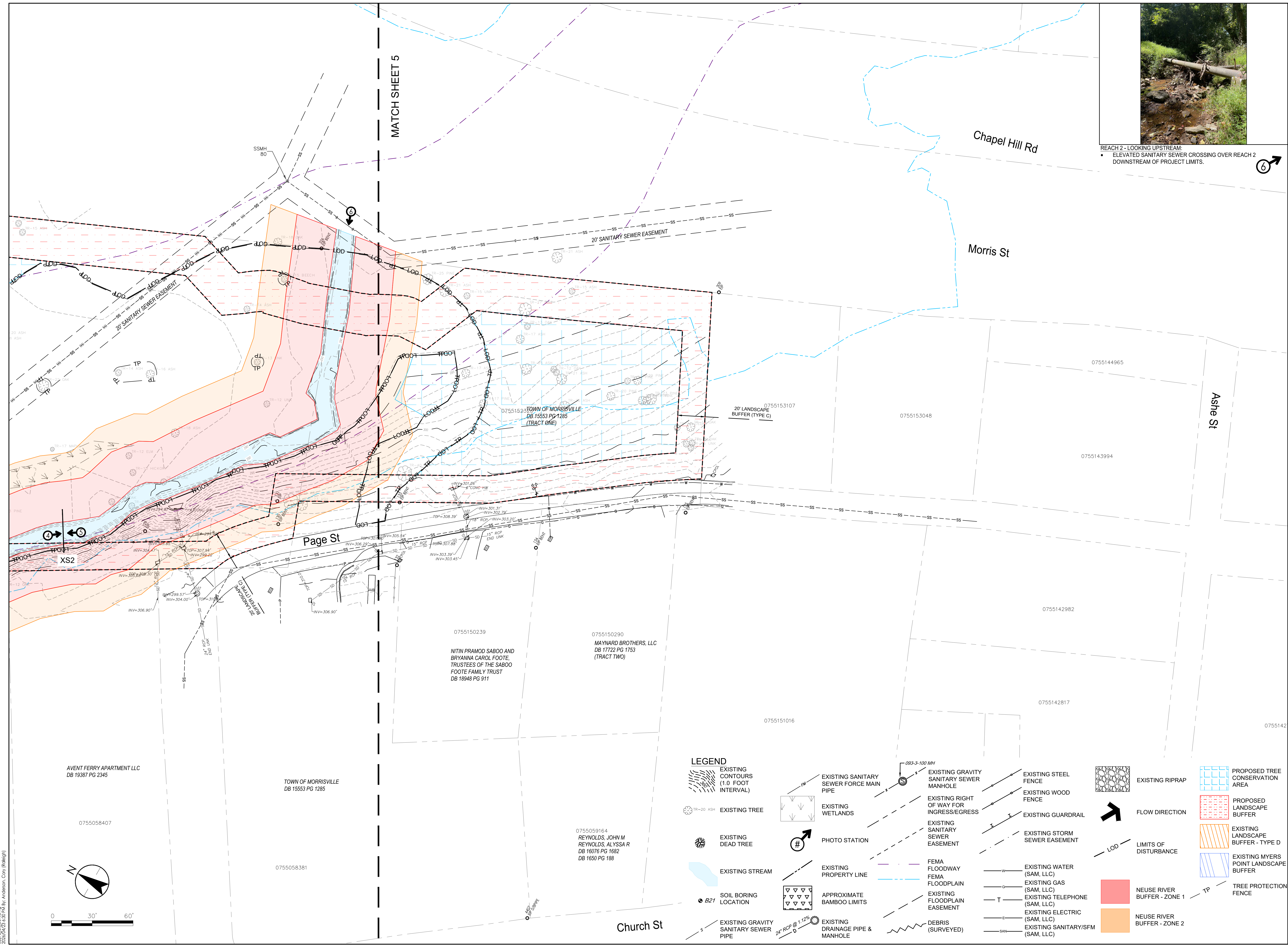
Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

Project Number: COMBO-25-0081
File Name: 02295_ex_con.dwg
CP CSA CSA/CP 26.04.23
Dwn Chld Dgr YTM.M.D.D
Drawing No. V101
Revision Sheet

Title
EXISTING CONDITIONS



Revision	By	Appd.	YTM.M.D.D	Issued
4	SIGNATURE SET	CSA	26.04.23	E SIGNATURE SET
3	PER TOWN COMMENTS	CSA	26.02.13	D FOR APPROVAL
2	PER TOWN COMMENTS	CSA	25.12.19	C FOR APPROVAL
1	PER TOWN COMMENTS	CSA	25.07.04	B FOR APPROVAL
		CSA	25.07.04	A FOR REVIEW
		CSA	25.02.07	YTM.M.D.D



REACH 2 - LOOKING UPSTREAM:

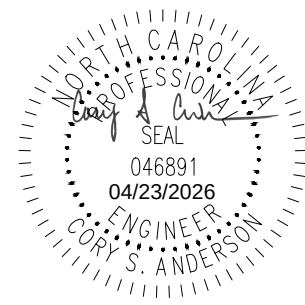
- ELEVATED SANITARY SEWER CROSSING OVER REACH 2 DOWNSTREAM OF PROJECT LIMITS.



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	SIGNATURE SET	CIA	26 JUL 02	CIA	26 JUL 02
4	SIGNATURE SET	CIA	26 JUL 02	E	SIGNATURE SET
3	PER TOWN COMMENTS	CIA	26 JUL 02	D	FOR APPROVAL
2	PER TOWN COMMENTS	CIA	26 JUL 02	C	FOR APPROVAL
1	PER TOWN COMMENTS	CIA	25 JUL 02	B	FOR APPROVAL
		CIA	25 JUL 02	A	FOR REVIEW
			Issued		
		By	TYAMJDO		TYAMJDO
			Revision		
		By	Appd.		Appd.

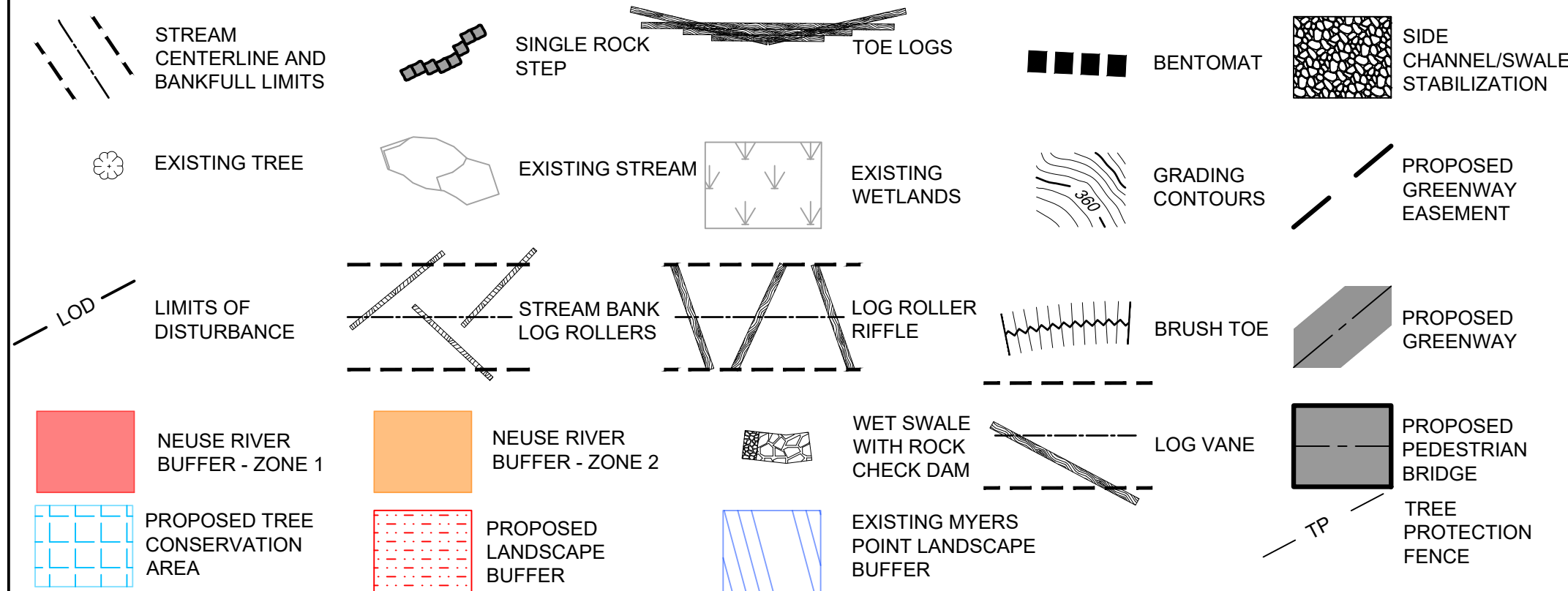
Client/Project	TOWN OF MORRISVILLE ENGINEERING DEPARTMENT - STORMWATER DIVISION
	MORRISVILLE TRIBUTARY (SAWMILL CREEK) STREAM RESTORATION
	MORRISVILLE, NORTH CAROLINA
Title	EXISTING CONDITIONS



Project Number: COMBO-25-0081			
File Name: 02295_ex_con.dwg			
CP	CSA	CSA/CP	26.04.23
Dwn.	Chkd.	Dsgn.	YY.MM.DD
Drawing No.		V103	
Revision		Sheet	

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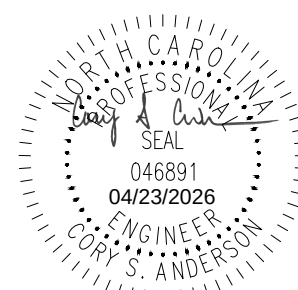
LEGEND



Client/Project

TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

Title
RESTORATION PLAN (OVERALL)



Project Number: COMBO-25-0081
File Name: 02295_restoration_dfl2.dwg

CP CSA CSA/CP 26.04.23
Dwn Chkd Dgrr YY-MM-DD
Drawing No. C001

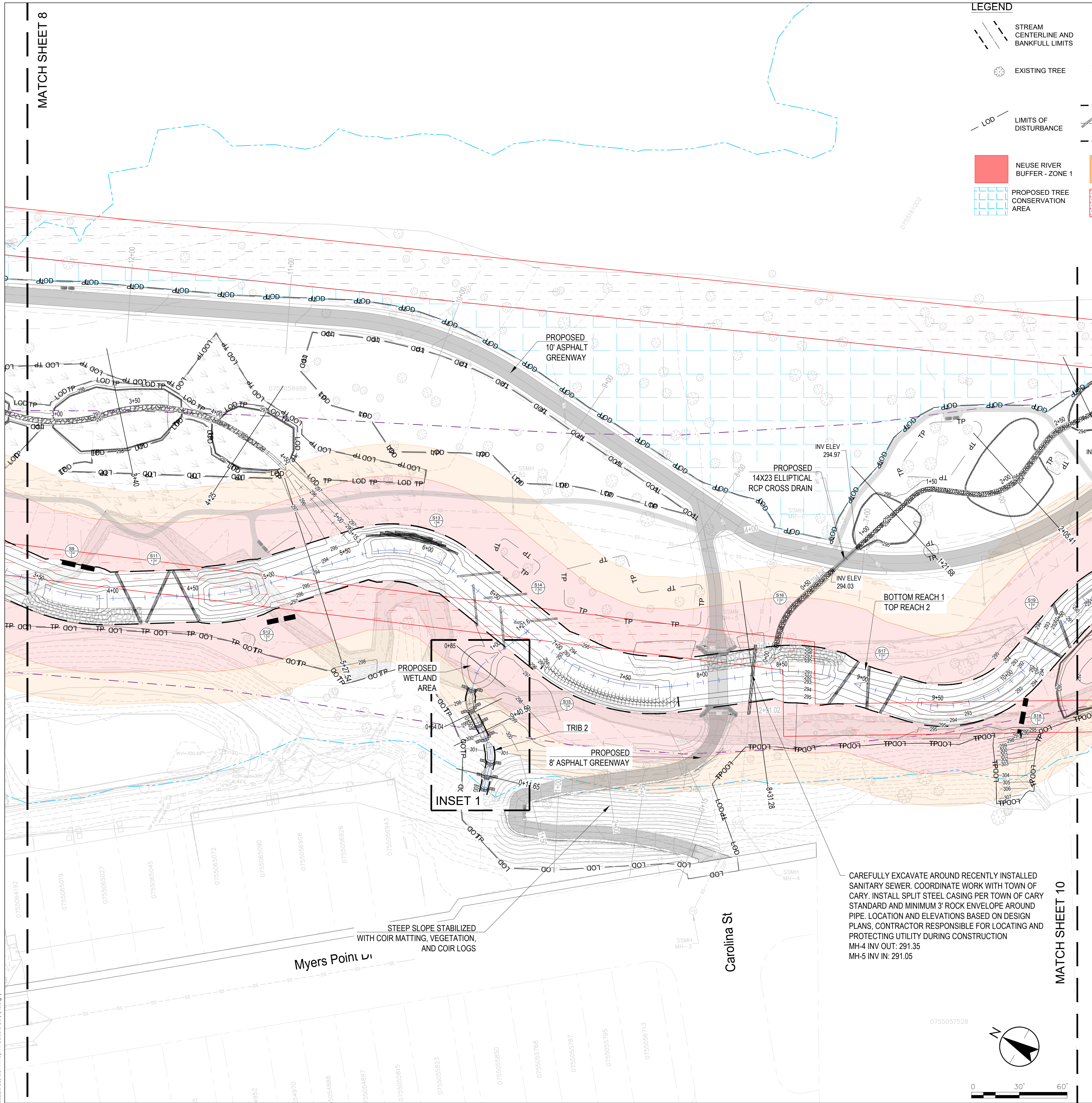
Revision Sheet

Revision	By	Appd.	Issued
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3	CSA	CSA	26.02.13
2	CSA	CSA	25.12.19
1	CSA	CSA	25.07.24

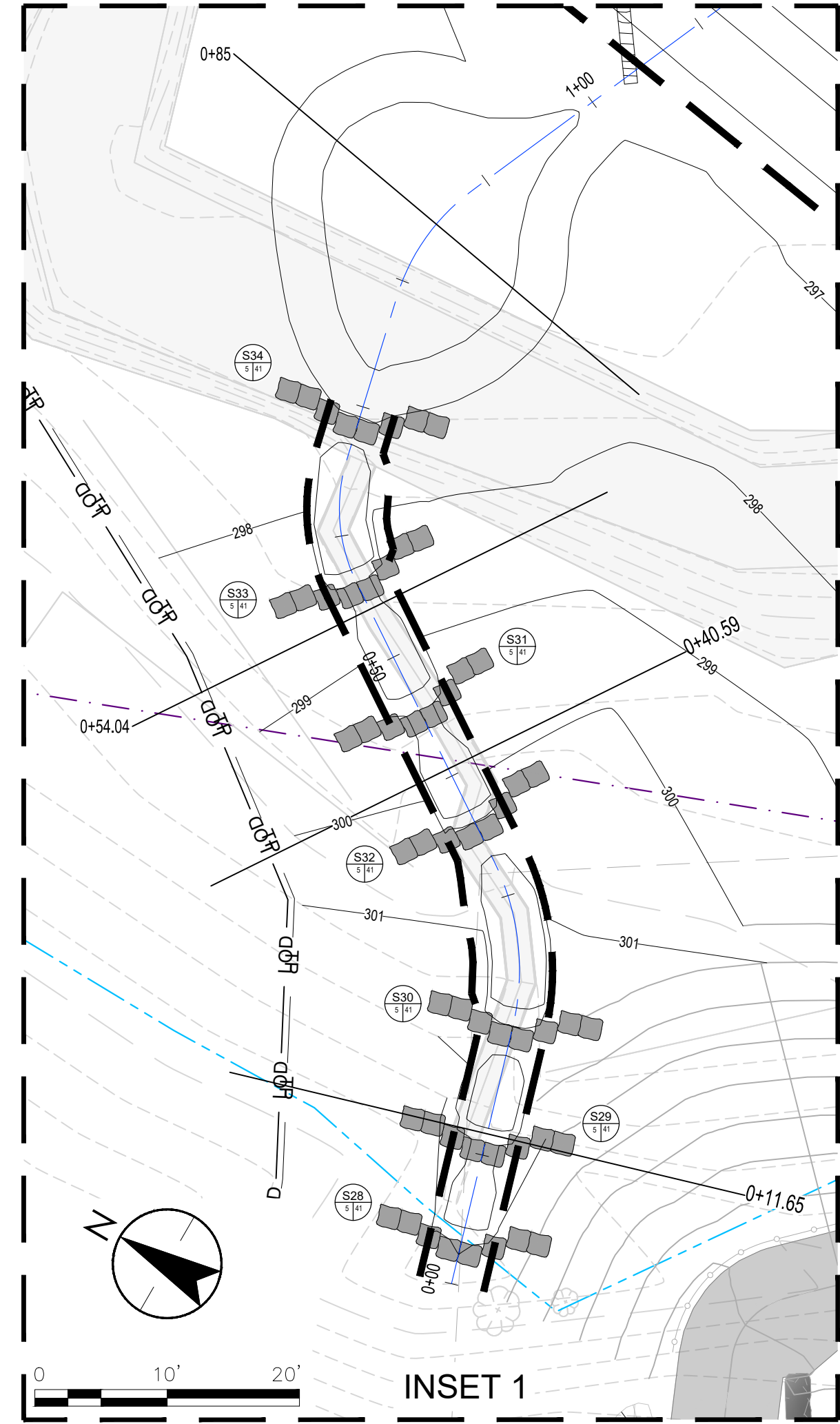
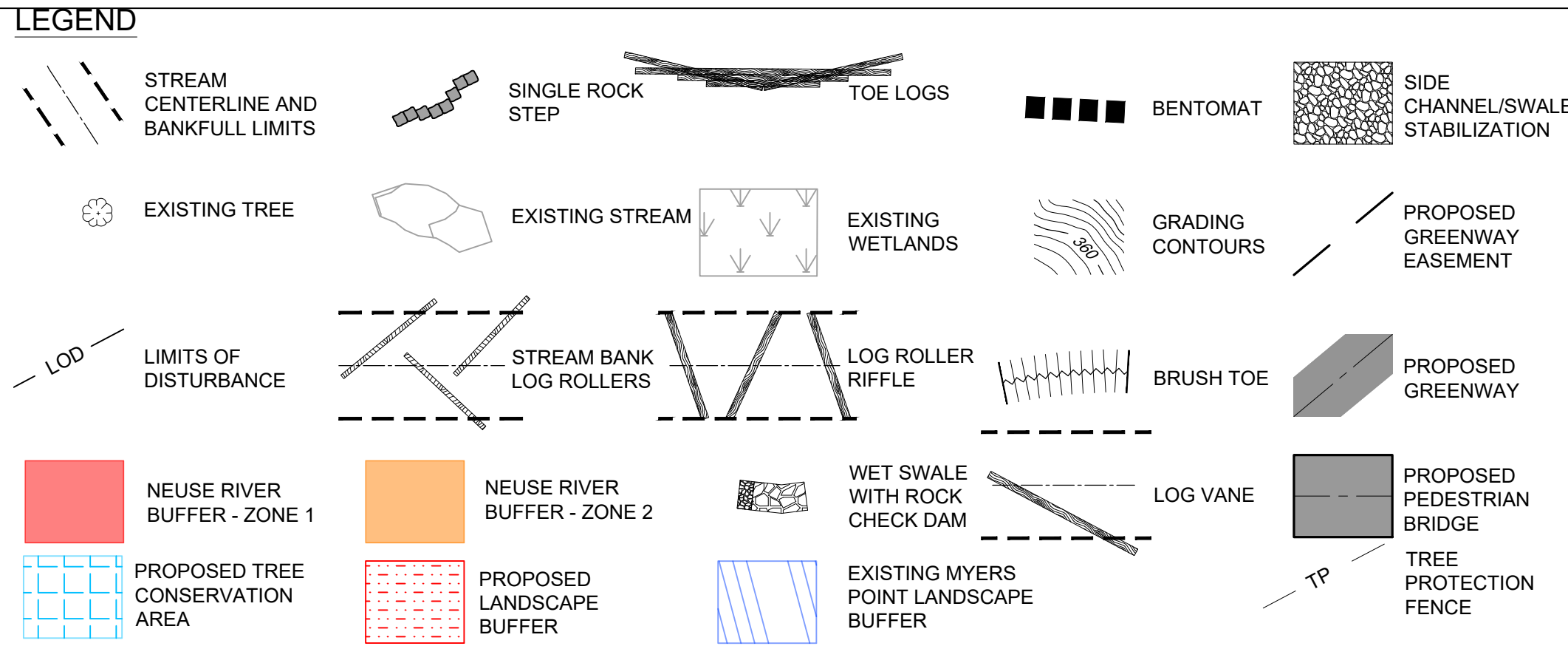
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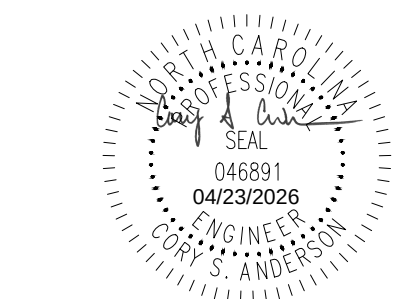
MATCH SHEET 8



MATCH SHEET 10



Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA



Project Number: COMBO-25-0081
File Name: 02295_restoration_dfl2.dwg
CP CSA CSA/CP 26.04.23
Dwn. Chkd. Dggn. YY-MM-DD
Drawing No. C105
Revision Sheet

3

9 of 46

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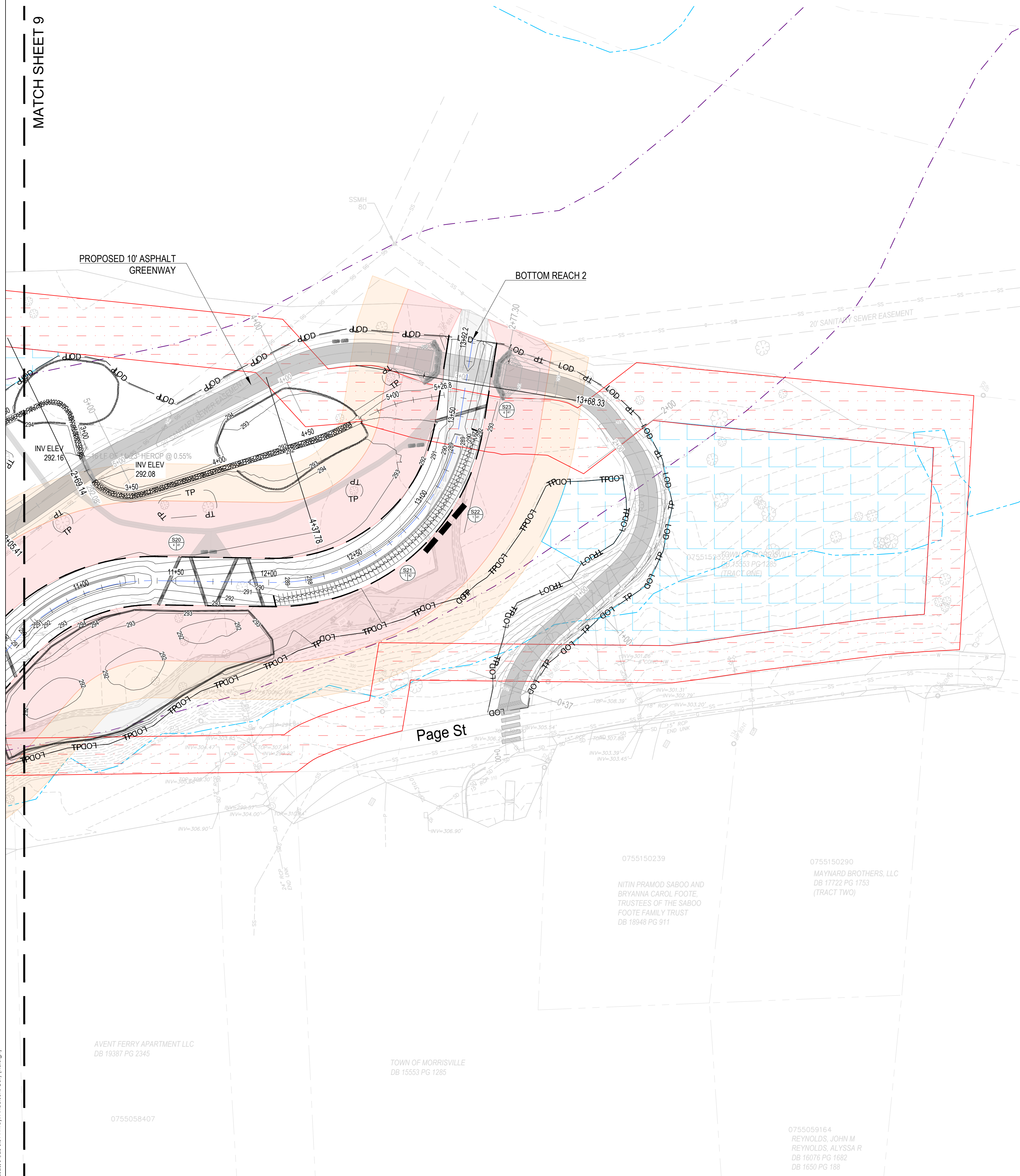
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3	CSA	CSA	26.02.13
2	CSA	CSA	25.12.19
1	CSA	CSA	25.07.24

NOTE: THIS SHEET IS INTENDED TO HIGHLIGHT STREAM DESIGN ELEMENTS ONLY. FOR GREENWAY DESIGN ELEMENTS, REFER TO SHEETS 13 - 16

02295_restoration_dfl2.dwg
2026/04/23 8:31 PM Br. Anderson, Cory (Raleigh)

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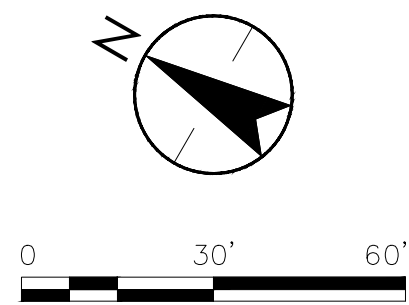
MATCH SHEET 9



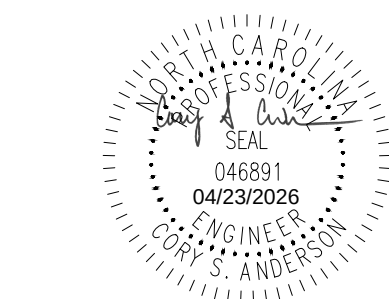
NOTE: THIS SHEET IS INTENDED TO HIGHLIGHT STREAM DESIGN ELEMENTS ONLY. FOR GREENWAY DESIGN ELEMENTS, REFER TO SHEETS 13 - 16

LEGEND

- | | | | | | | | | | |
|--|---------------------------------------|--|-----------------------------|--|---------------------------------------|--|-----------------------|--|----------------------------------|
| | STREAM CENTERLINE AND BANKFULL LIMITS | | SINGLE ROCK STEP | | TOE LOGS | | BENTOMAT | | SIDE CHANNEL/SWALE STABILIZATION |
| | EXISTING TREE | | EXISTING STREAM | | EXISTING WETLANDS | | GRADING CONTOURS | | PROPOSED GREENWAY EASEMENT |
| | LIMITS OF DISTURBANCE | | STREAM BANK LOG ROLLERS | | LOG ROLLER RIFFLE | | BRUSH TOE | | PROPOSED GREENWAY |
| | NEUSE RIVER BUFFER - ZONE 1 | | NEUSE RIVER BUFFER - ZONE 2 | | WET SWALE WITH ROCK CHECK DAM | | LOG VANE | | PROPOSED PEDESTRIAN BRIDGE |
| | PROPOSED TREE CONSERVATION AREA | | PROPOSED LANDSCAPE BUFFER | | EXISTING MYERS POINT LANDSCAPE BUFFER | | TREE PROTECTION FENCE | | |



Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA



Project Number: COMBO-25-0081

File Name: 02295_restoration_dfl2.dwg

CP	CSA	CSA/CP	26.04.23
Dwn	Chkd	Dggn	YY-MM-DD

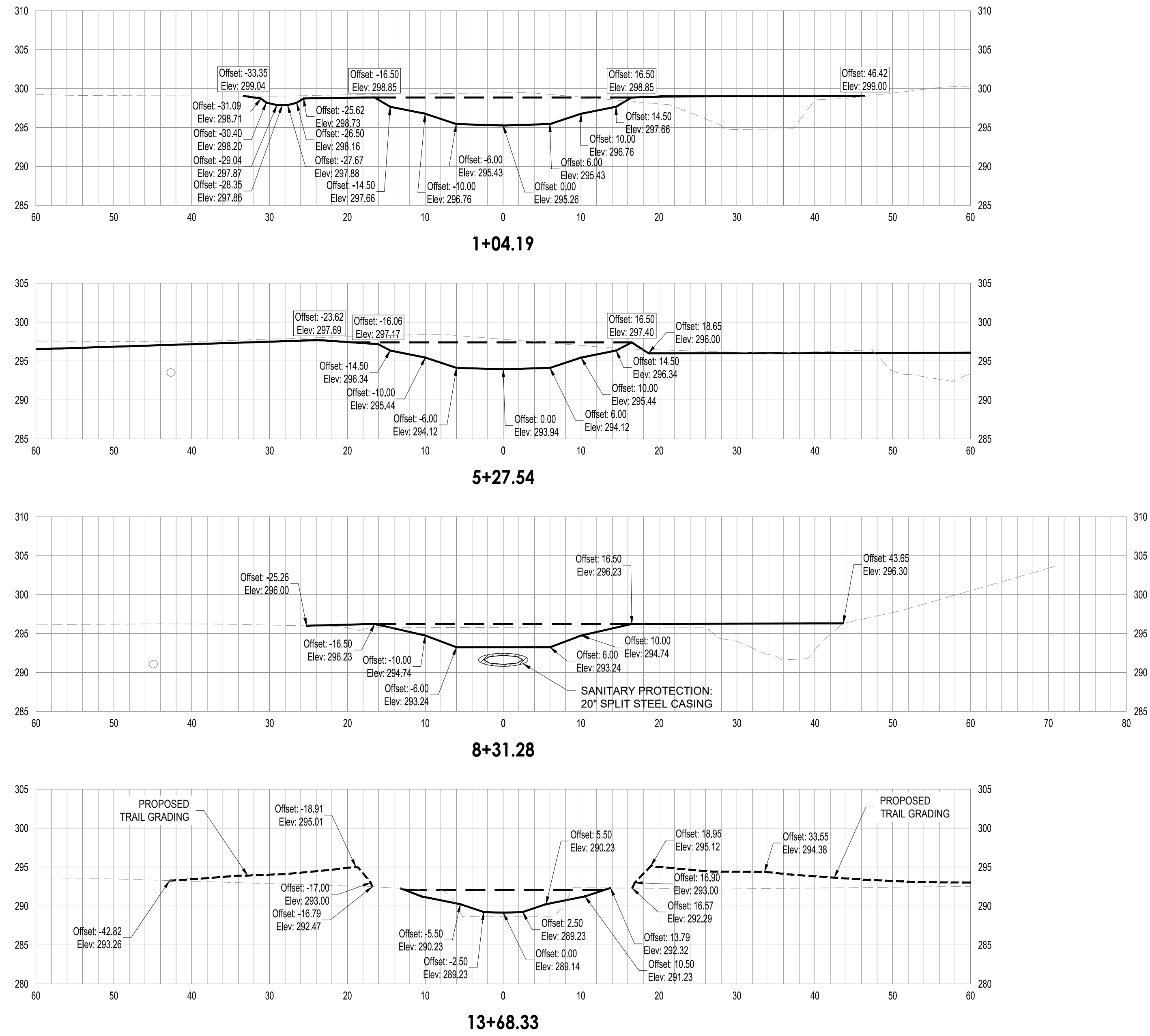
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Revision Sheet

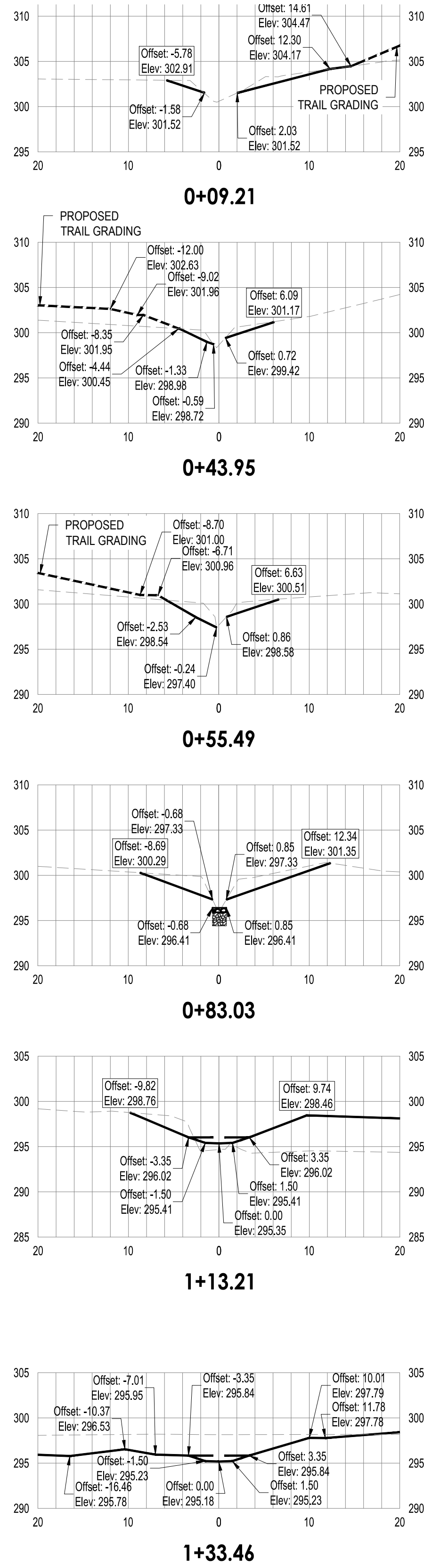
3 10 of 46

Revision				Issued			
4	SIGNATURE SET	CSA	CSA	E	SIGNATURE SET	CSA	CSA
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2	PER TOWN COMMENTS	CSA	CSA	C	FOR APPROVAL	CSA	CSA
1	PER TOWN COMMENTS	CSA	CSA	B	FOR APPROVAL	CSA	CSA
		CSA	CSA	A	FOR REVIEW	CSA	CSA
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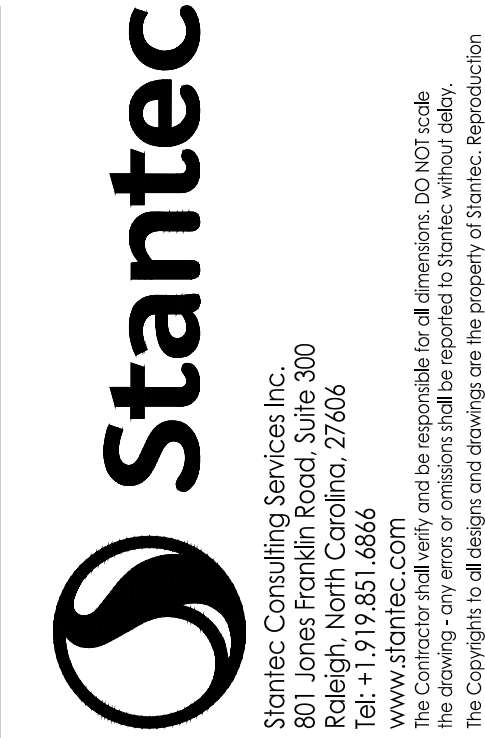
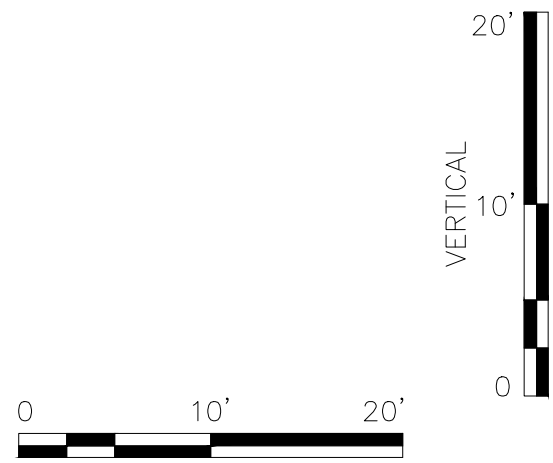
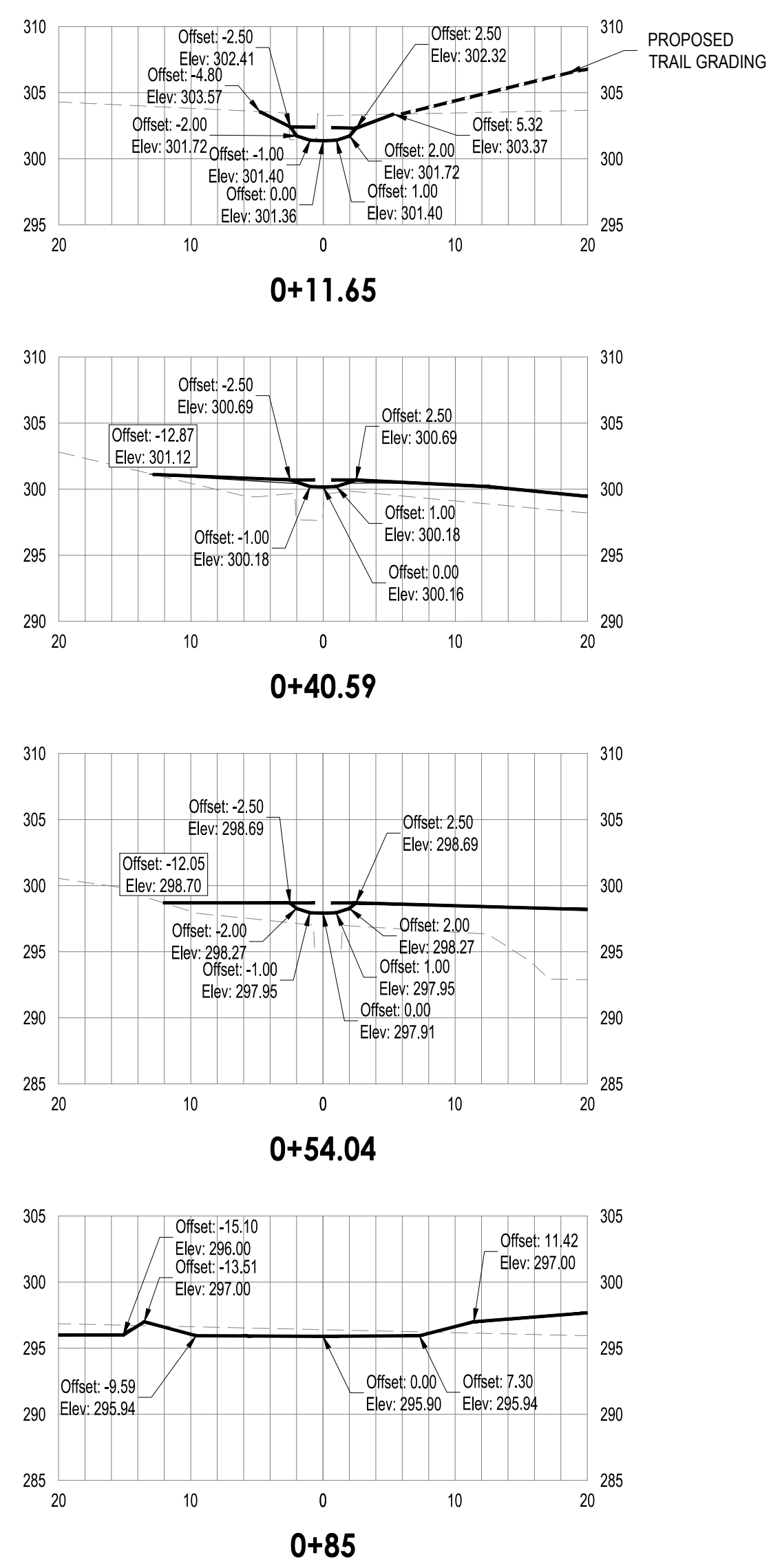
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TRIB 1



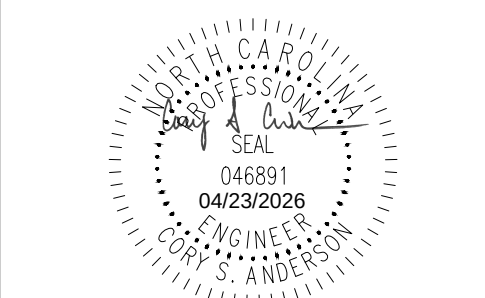
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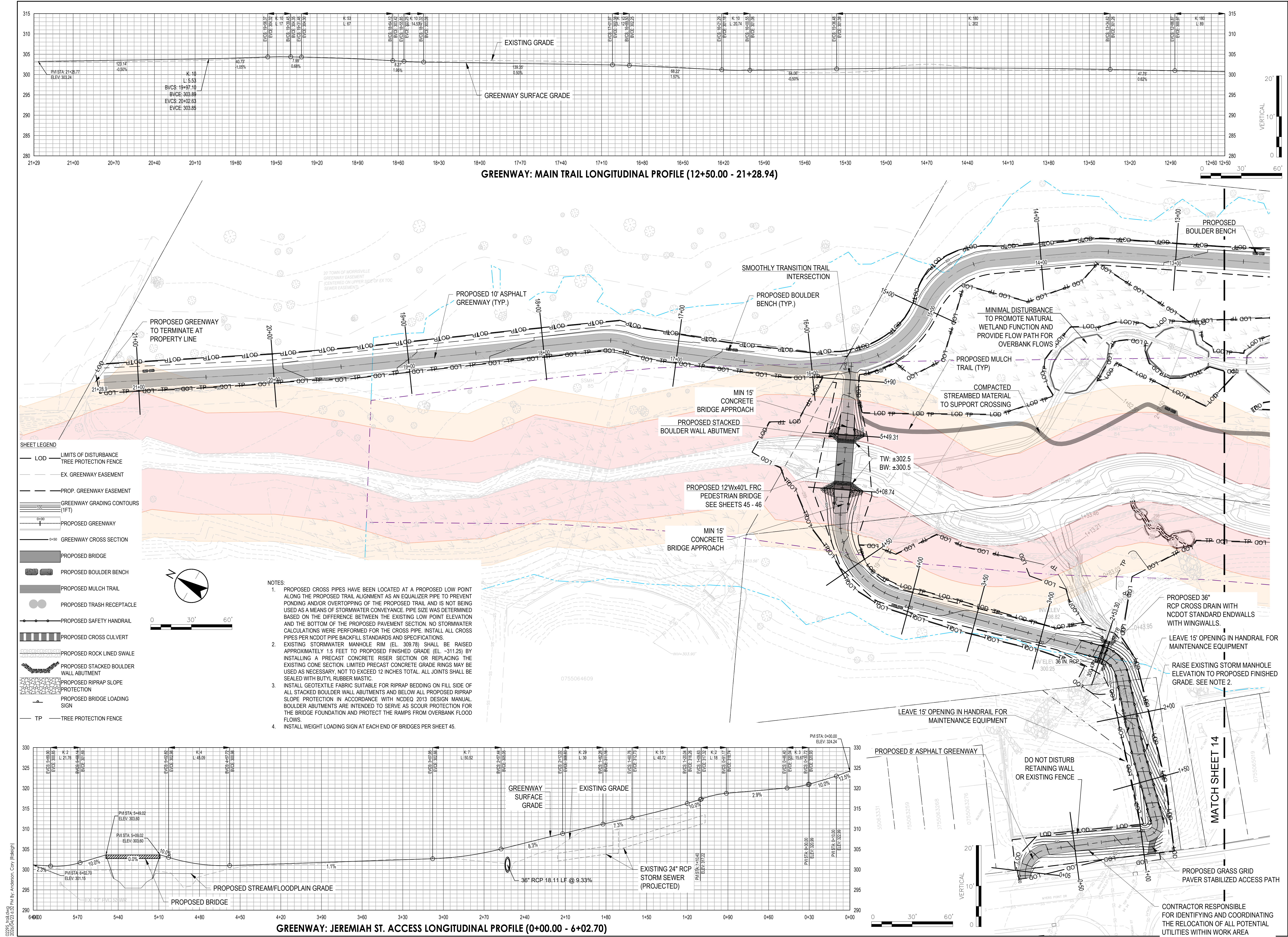
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26.04.23	CSA	CSA	E	SIGNATURE SET	Issued
26.02.13	CSA	CSA	D	FOR APPROVAL	
25.12.19	CSA	CSA	C	FOR APPROVAL	
25.07.04	CSA	CSA	B	FOR APPROVAL	
25.02.07	CSA	CSA	A	FOR REVIEW	
YY.MM.DD	CSA	CSA	By	Appd.	
26.04.23	CSA	CSA	By	Appd.	
26.02.13	CSA	CSA	By	Appd.	
25.12.19	CSA	CSA	By	Appd.	
25.07.04	CSA	CSA	By	Appd.	
25.02.07	CSA	CSA	By	Appd.	
YY.MM.DD	CSA	CSA	By	Appd.	

Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA
Title
SECTIONS - STREAMS



Project Number:		COMBO-25-0081	
File Name:		02295_xs_082.dwg	
CP	CSA	CSA/CP	26.04.23
Dwn.	Chkd.	Dsgn.	YY.MM.DD
Drawing No.		C302	
Revision		Sheet	



- SHEET LEGEND**
- LOD — LIMITS OF DISTURBANCE
 - TREE PROTECTION FENCE
 - EX. GREENWAY EASEMENT
 - PROP. GREENWAY EASEMENT
 - GREENWAY GRADING CONTOURS (1FT)
 - PROPOSED GREENWAY
 - GREENWAY CROSS SECTION
 - PROPOSED BRIDGE
 - PROPOSED BOULDER BENCH
 - PROPOSED MULCH TRAIL
 - PROPOSED TRASH RECEPTACLE
 - PROPOSED SAFETY HANDRAIL
 - PROPOSED CROSS CULVERT
 - PROPOSED ROCK LINED SWALE
 - PROPOSED STACKED BOULDER WALL ABUTMENT
 - PROPOSED RIPRAP SLOPE PROTECTION
 - PROPOSED BRIDGE LOADING SIGN
 - TP — TREE PROTECTION FENCE

- NOTES:**
- PROPOSED CROSS PIPES HAVE BEEN LOCATED AT A PROPOSED LOW POINT ALONG THE PROPOSED TRAIL ALIGNMENT AS AN EQUALIZER PIPE TO PREVENT PONDING AND/OR OVERTOPPING OF THE PROPOSED TRAIL AND IS NOT BEING USED AS A MEANS OF STORMWATER CONVEYANCE. PIPE SIZE WAS DETERMINED BASED ON THE DIFFERENCE BETWEEN THE EXISTING LOW POINT ELEVATION AND THE BOTTOM OF THE PROPOSED PAVEMENT SECTION. NO STORMWATER CALCULATIONS WERE PERFORMED FOR THE CROSS PIPE. INSTALL ALL CROSS PIPES PER NCDOT PIPE BACKFILL STANDARDS AND SPECIFICATIONS. EXISTING STORMWATER MANHOLE RIM (EL. 308.78) SHALL BE RAISED APPROXIMATELY 1.5 FEET TO PROPOSED FINISHED GRADE (EL. 311.25) BY INSTALLING A PRECAST CONCRETE RISER SECTION OR REPLACING THE EXISTING CONE SECTION. LIMITED PRECAST CONCRETE GRADE RINGS MAY BE USED AS NECESSARY. NOT TO EXCEED 12 INCHES TOTAL. ALL JOINTS SHALL BE SEALED WITH BUTYL RUBBER MASTIC.
 - INSTALL GEOTEXTILE FABRIC SUITABLE FOR RIPRAP BEDDING ON FILL SIDE OF ALL STACKED BOULDER WALL ABUTMENTS AND BELOW ALL PROPOSED RIPRAP SLOPE PROTECTION IN ACCORDANCE WITH NCDEQ 2013 DESIGN MANUAL. BOULDER ABUTMENTS ARE INTENDED TO SERVE AS SCOUR PROTECTION FOR THE BRIDGE FOUNDATION AND PROTECT THE RAMPS FROM OVERBANK FLOOD FLOWS.
 - INSTALL WEIGHT LOADING SIGN AT EACH END OF BRIDGES PER SHEET 45.

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Revision	By	Appd.	Issued
1	CSA	CSA	26.02.13
2	CSA	CSA	25.12.19
3	CSA	CSA	25.07.24
4	CSA	CSA	25.02.07

Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION

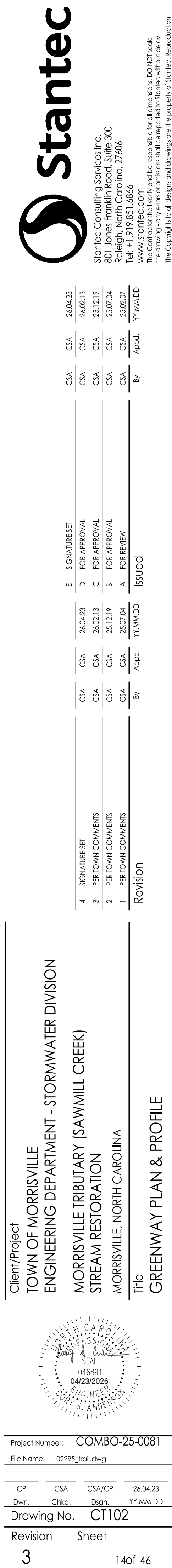
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

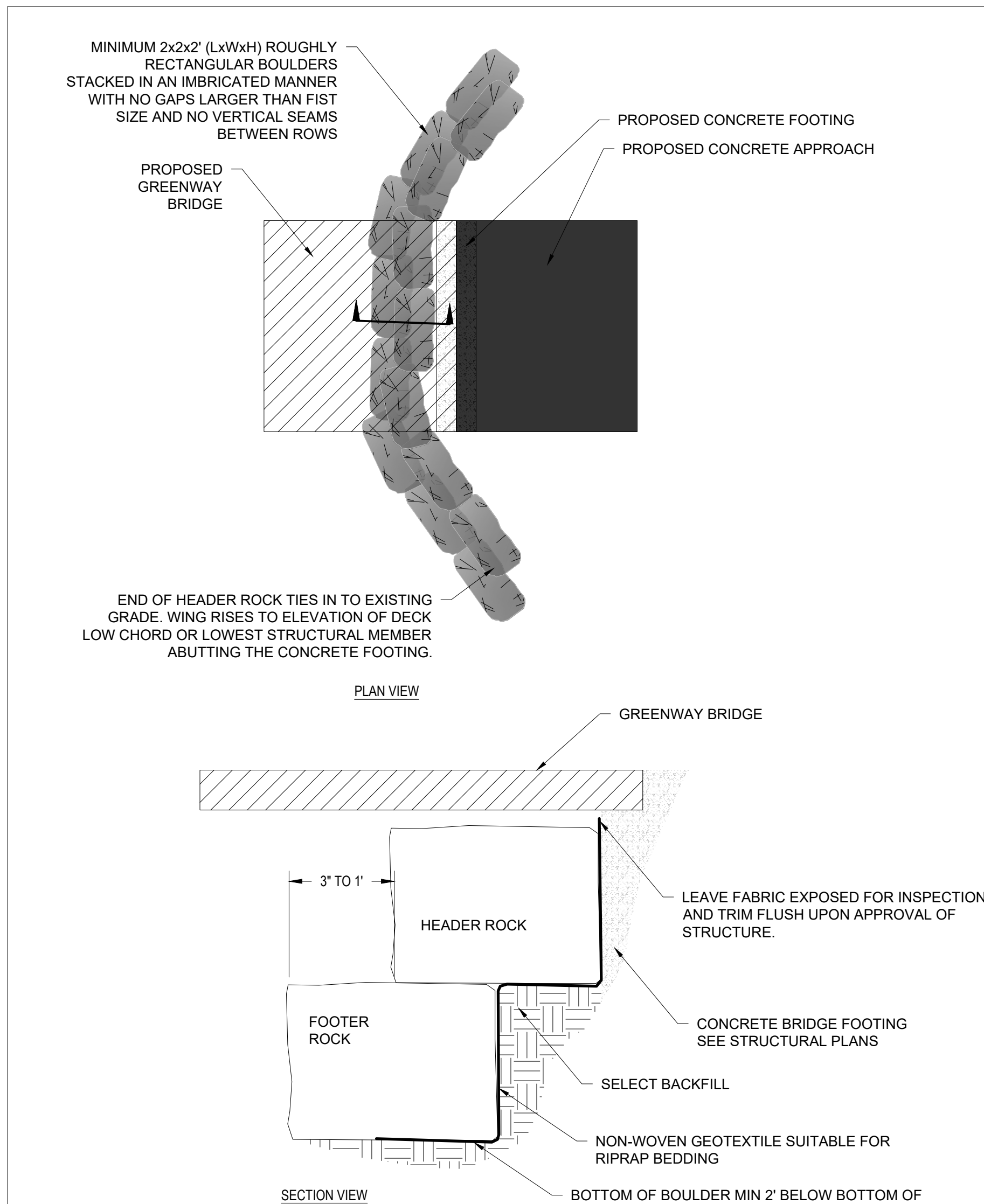
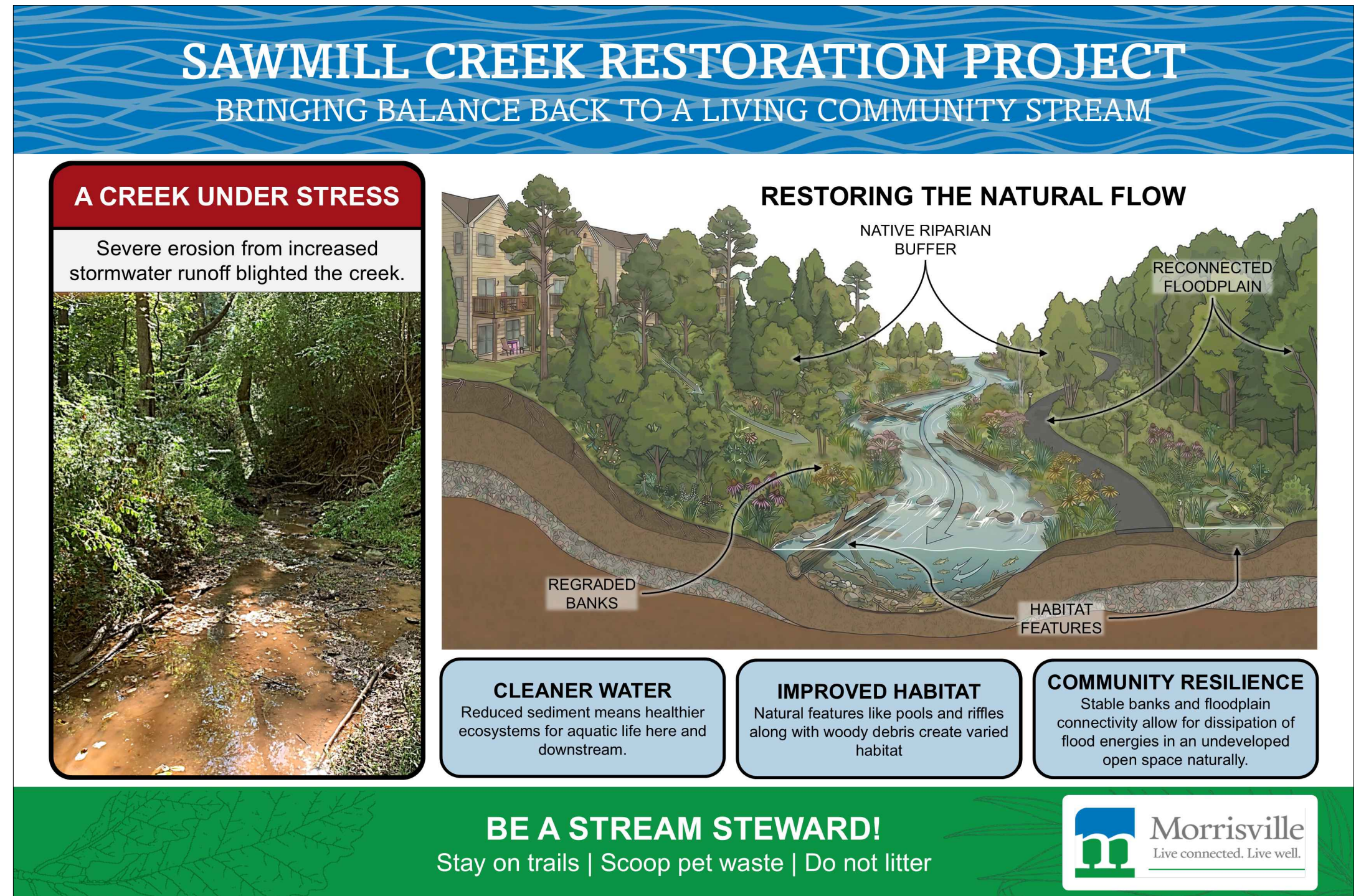
Title
GREENWAY PLAN & PROFILE

Project Number: COMBO-25-0081
File Name: 02295_trail.dwg

CP	CSA	CSA/CP	26.04.23
Dwn	Chld	Dgn	YTM/DD

Drawing No. CT101
Revision Sheet
3 13of 46



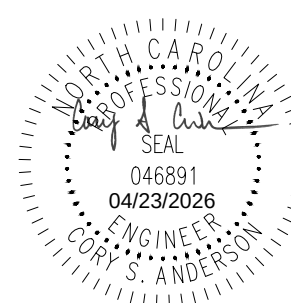


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DETAIL: STACKED BOULDER WALL ABUTMENT
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Revision		Issued	
	By	YY/MM/DD	
1	PER TOWN COMMENTS	CSA	25.07/24
2		CSA	25.07/24
3	PER TOWN COMMENTS	CSA	26.02/23
4	SIGNATURE SET	CSA	26.04/23
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6		CSA	26.02/23
7		CSA	25.12/19
8		CSA	25.07/24
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Client/Project	TOWN OF MORRISVILLE ENGINEERING DEPARTMENT - STORMWATER DIVISION MORRISVILLE TRIBUTARY (SAWMILL CREEK) STREAM RESTORATION
Title	MORRISVILLE, NORTH CAROLINA GREENWAY PLAN & PROFILE



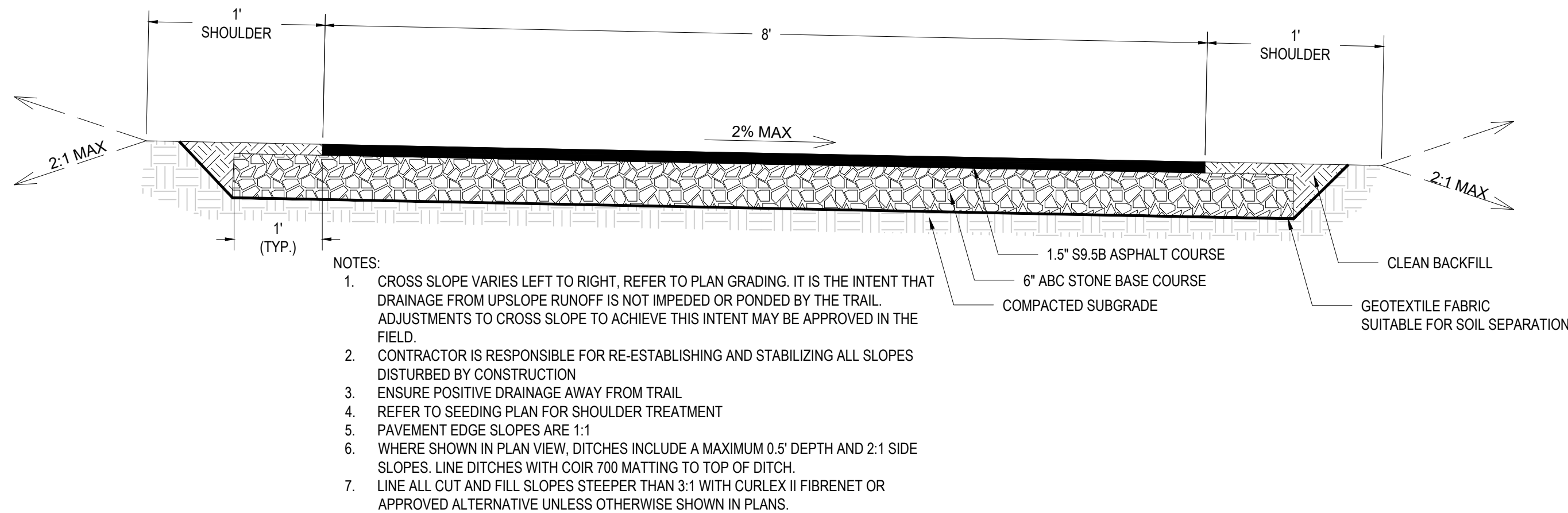
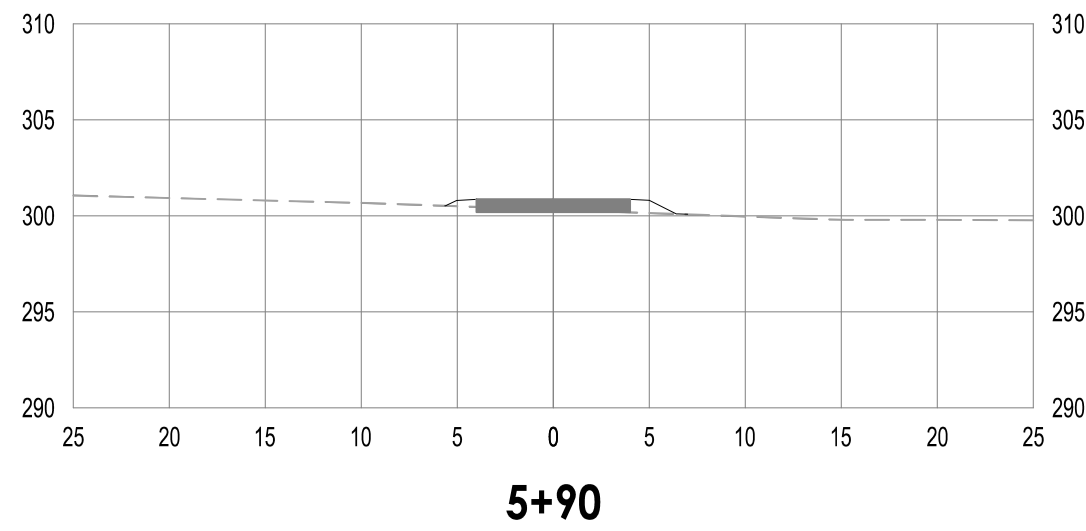
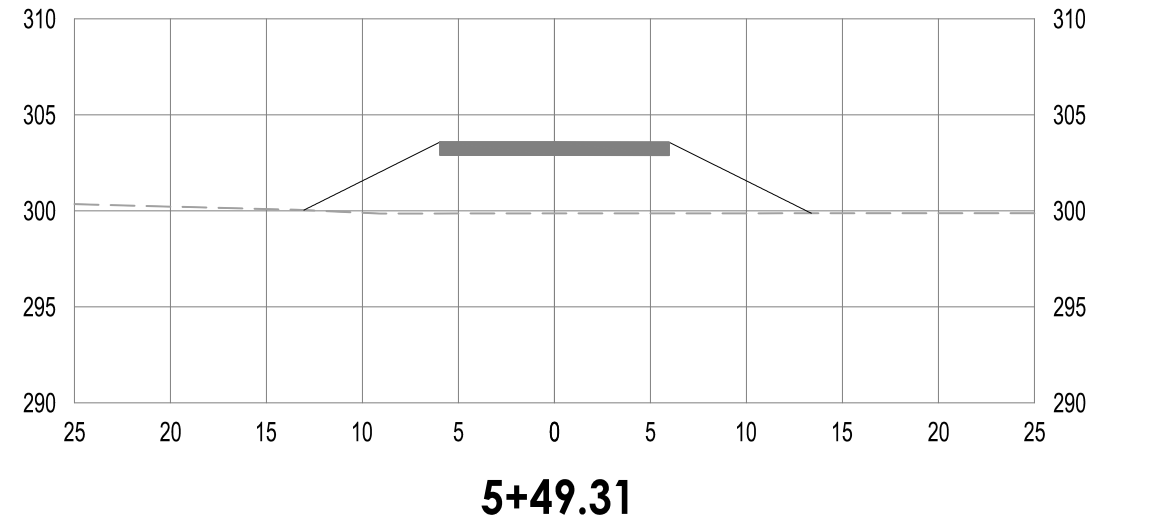
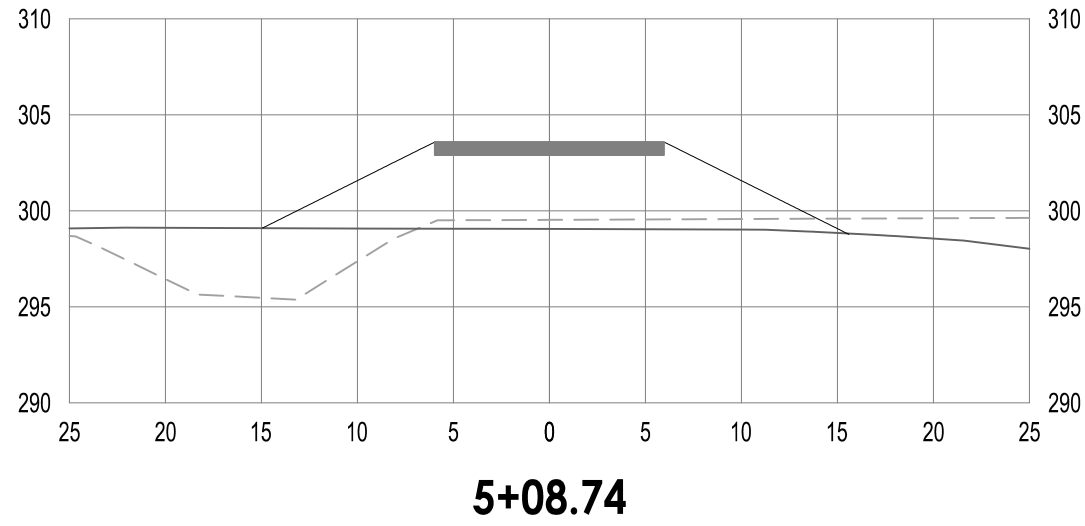
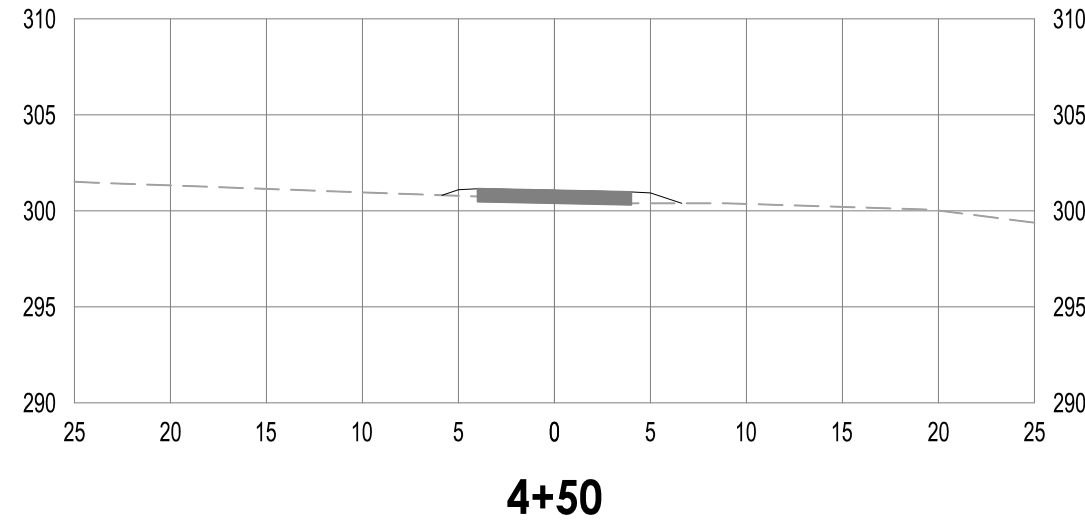
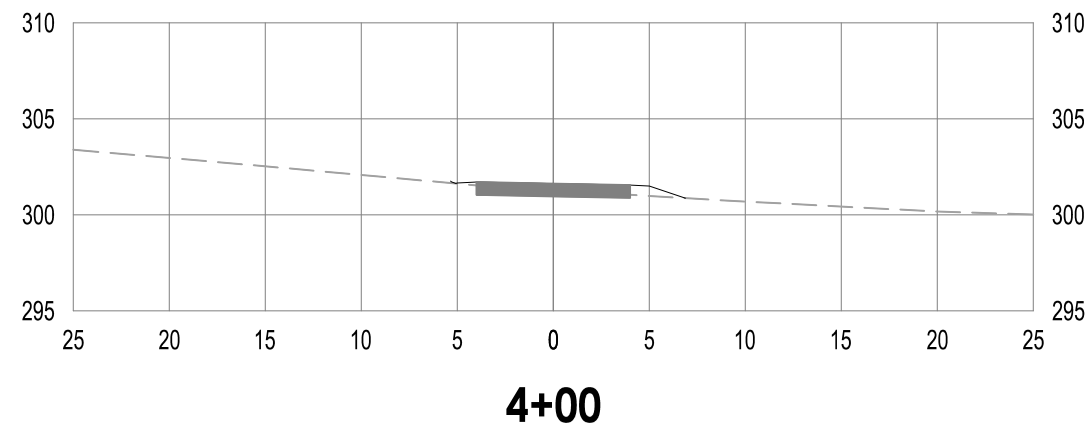
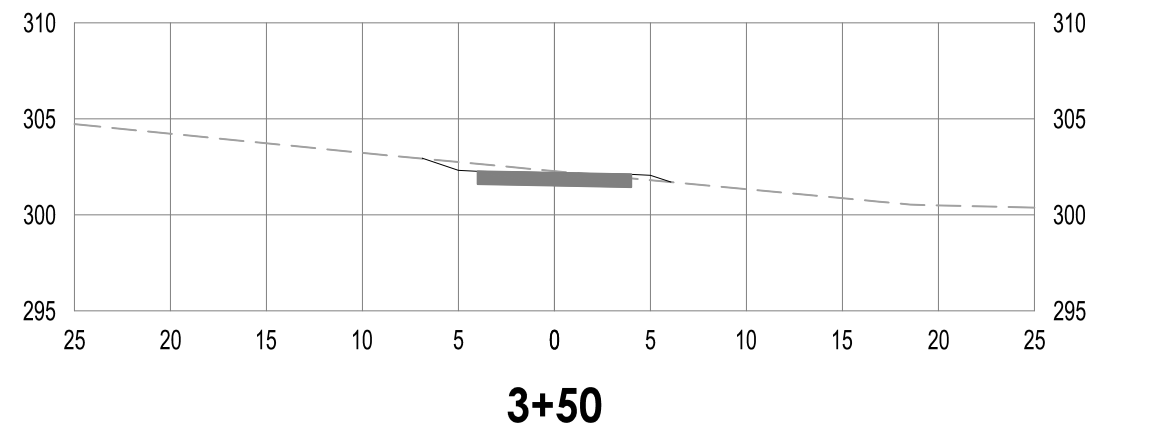
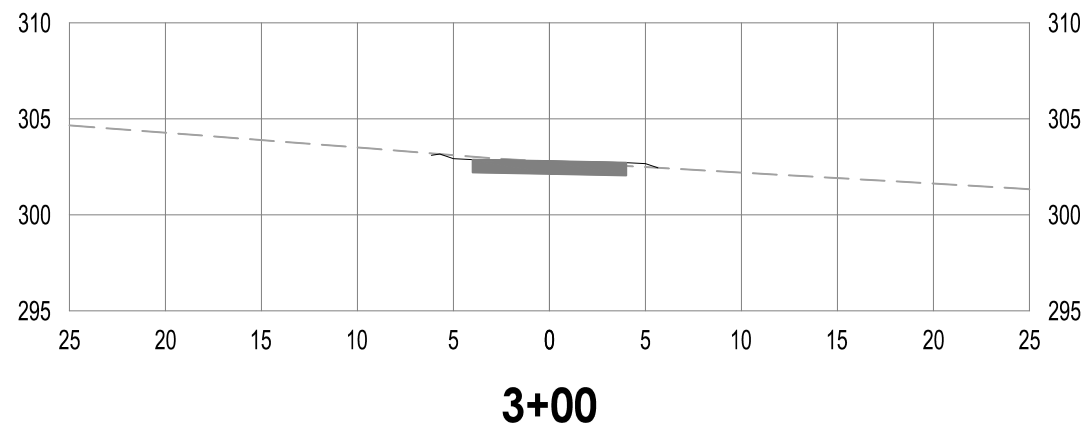
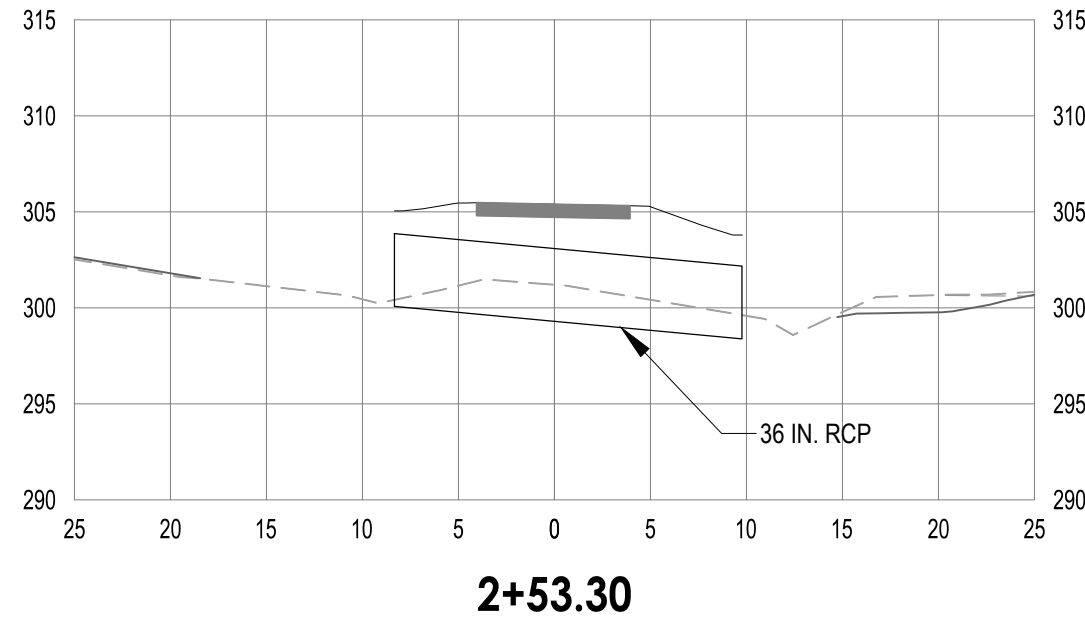
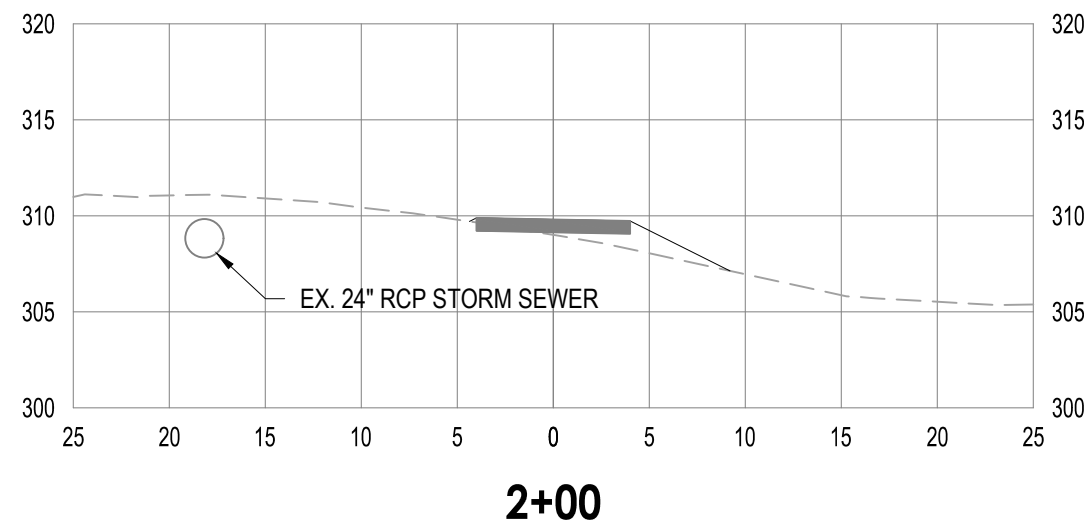
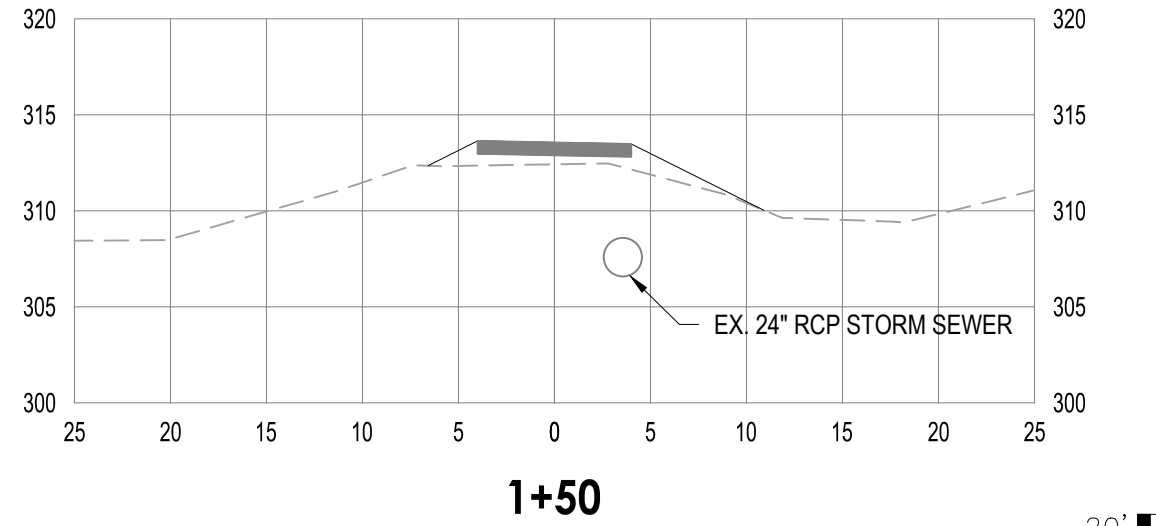
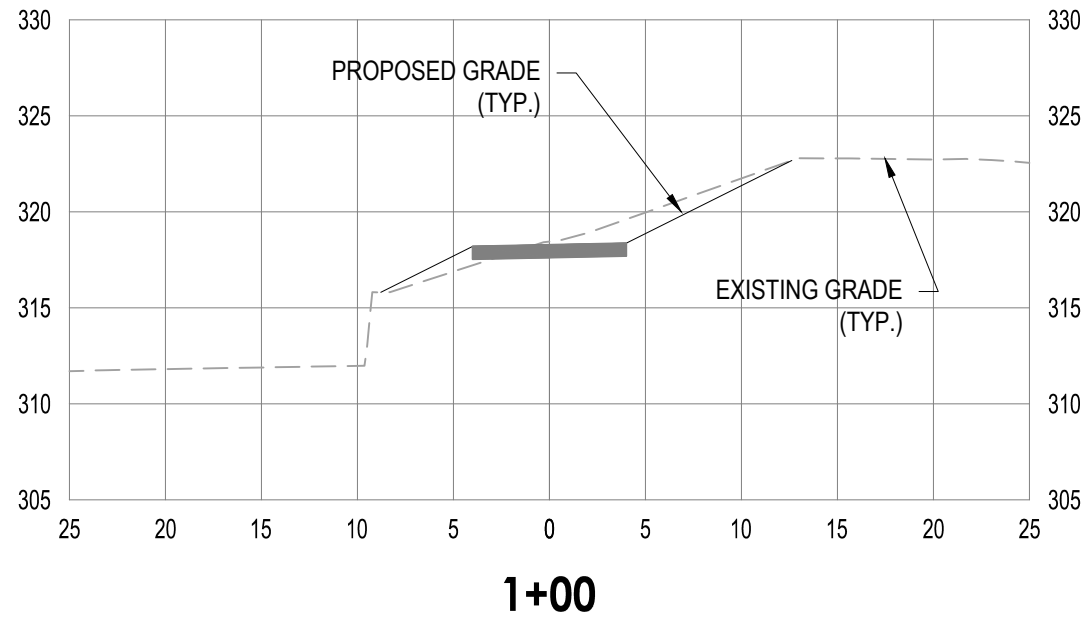
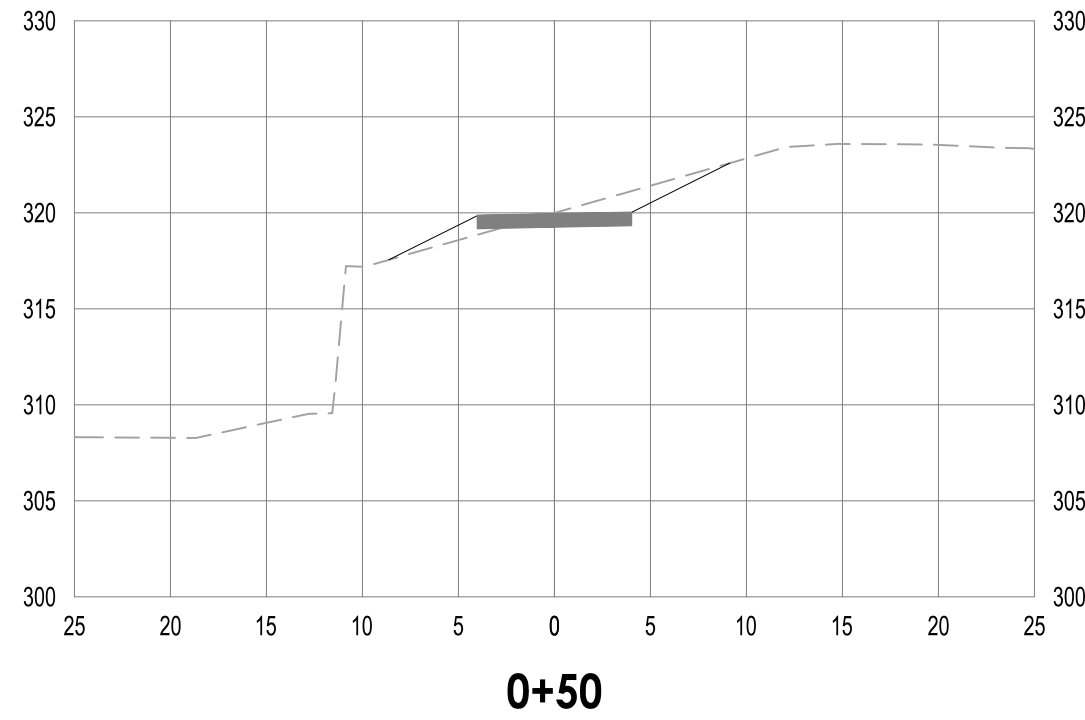
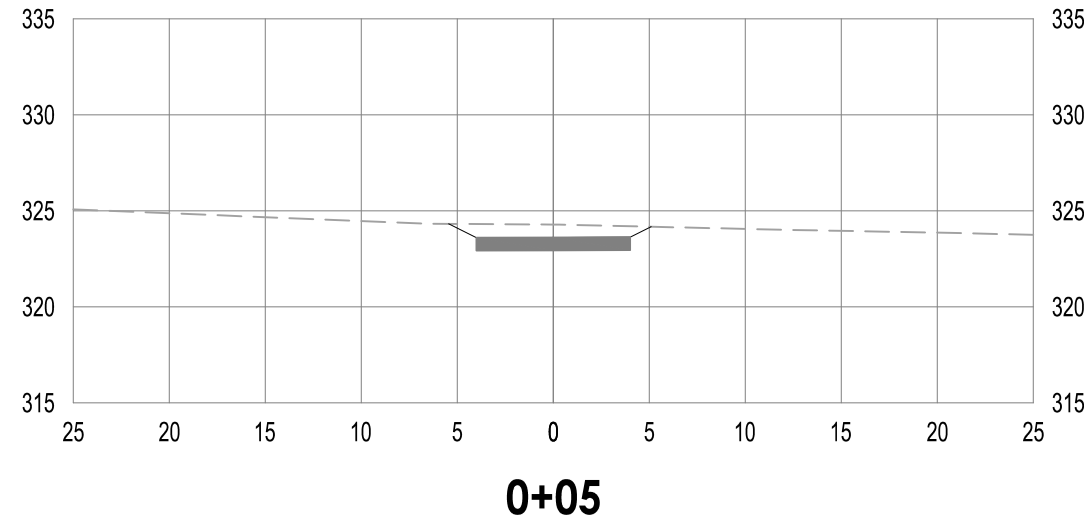
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CP	CSA	CSA/CP	26.04.23
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Drawing No. CT103

Revision	Sheet

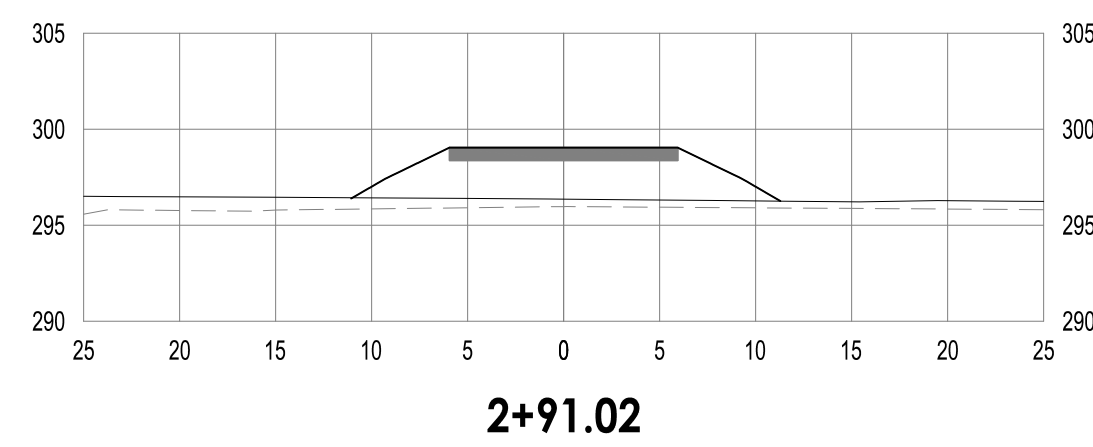
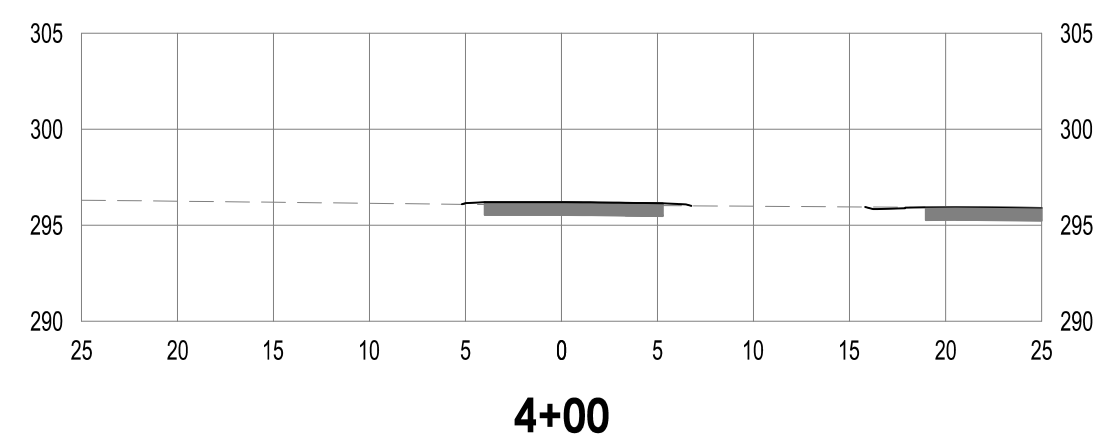
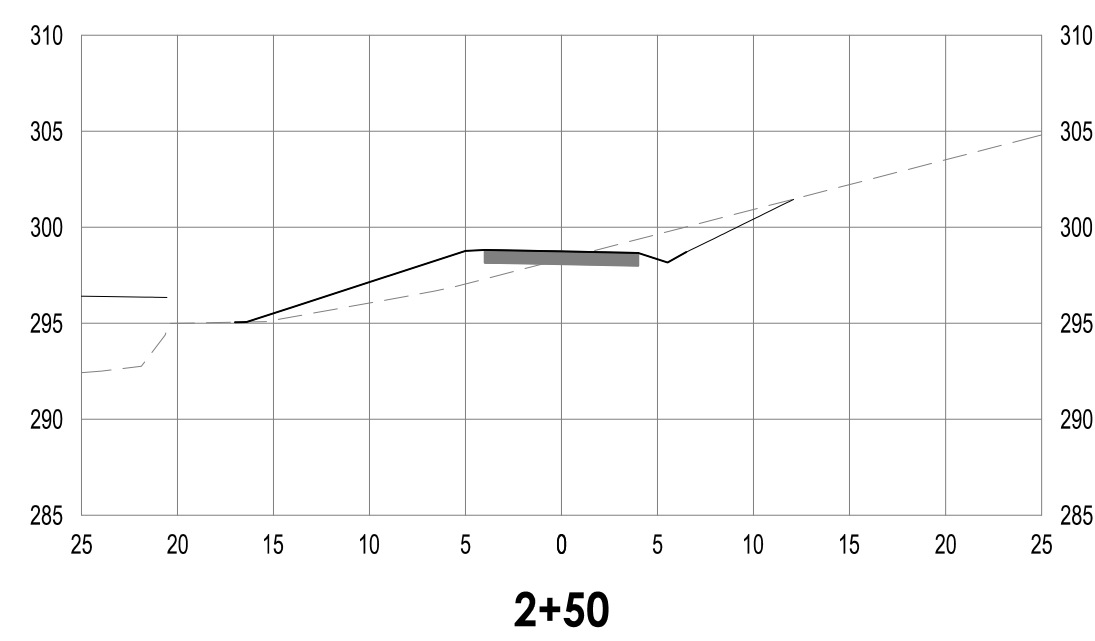
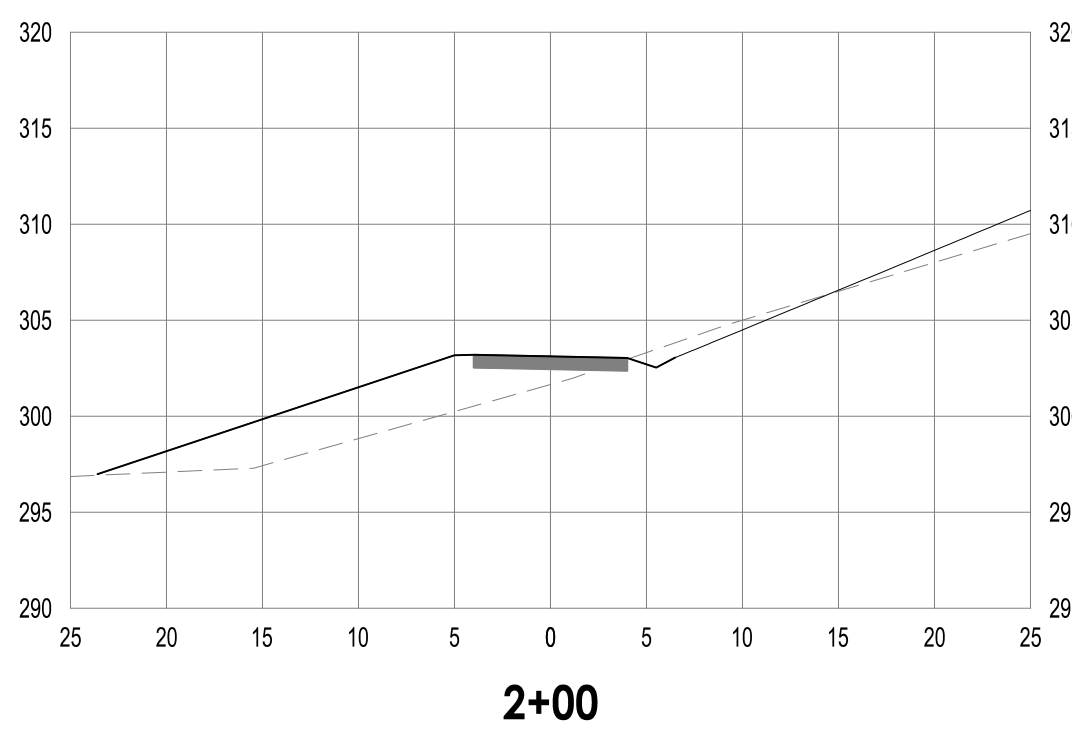


1 C308 NTS TYPICAL ALTERNATE GREENWAY SECTION

JEREMIAH STREET ACCESS SECTIONS

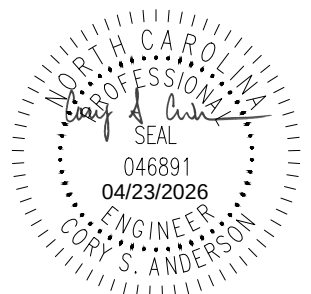
Revision	By	Appd.	Issued
4	CSA	CSA	26.04.23
3	CSA	CSA	26.02.13
2	CSA	CSA	25.12.19
1	CSA	CSA	25.07.04

			
Project Number:		COMBO-25-0081	
File Name:		02295_b_to_trails.dwg	
CP	CSA	CSA/CP	26.04.23
Dwn.	Chkd.	Dsgn.	YY-MM-DD
Drawing No.		C308	
Revision		Sheet	



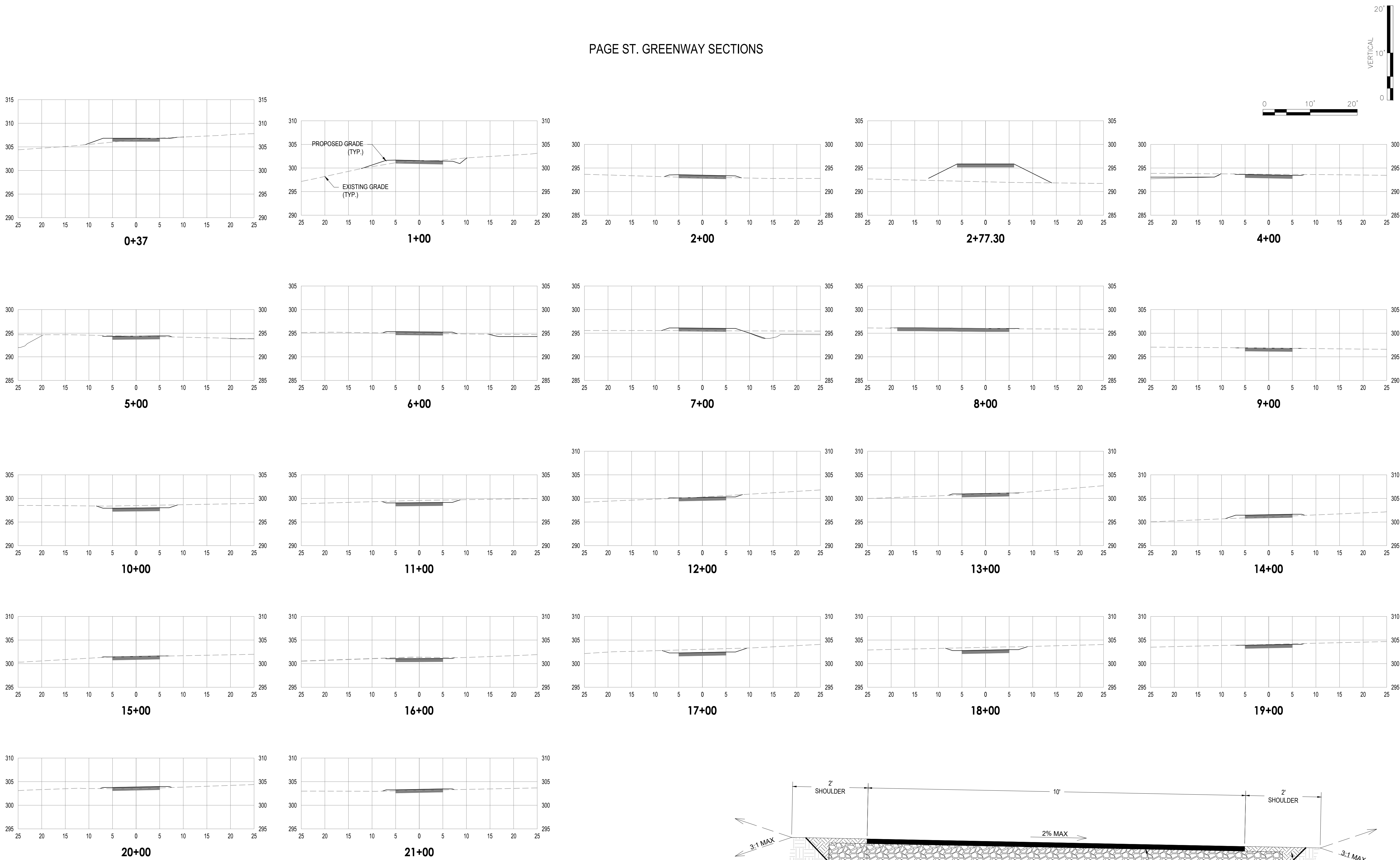
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3	PER TOWN COMMENTS	CSA	26.02.13	D	FOR APPROVAL	CSA	26.02.13
2	PER TOWN COMMENTS	CSA	26.02.13	C	FOR APPROVAL	CSA	26.12.19
1	PER TOWN COMMENTS	CSA	25.03.19	B	FOR APPROVAL	CSA	25.07.04
		CSA	25.07.04	A	FOR REVIEW	CSA	25.02.20
1				ISSUED			
		By	YY/MM/DD			By	YY/MM/DD

Client/Project	TOWN OF MORRISVILLE ENGINEERING DEPARTMENT - STORMWATER DIVISION MORRISVILLE TRIBUTARY (SAWMILL CREEK) STREAM RESTORATION MORRISVILLE, NORTH CAROLINA
Title	GREENWAY SECTIONS

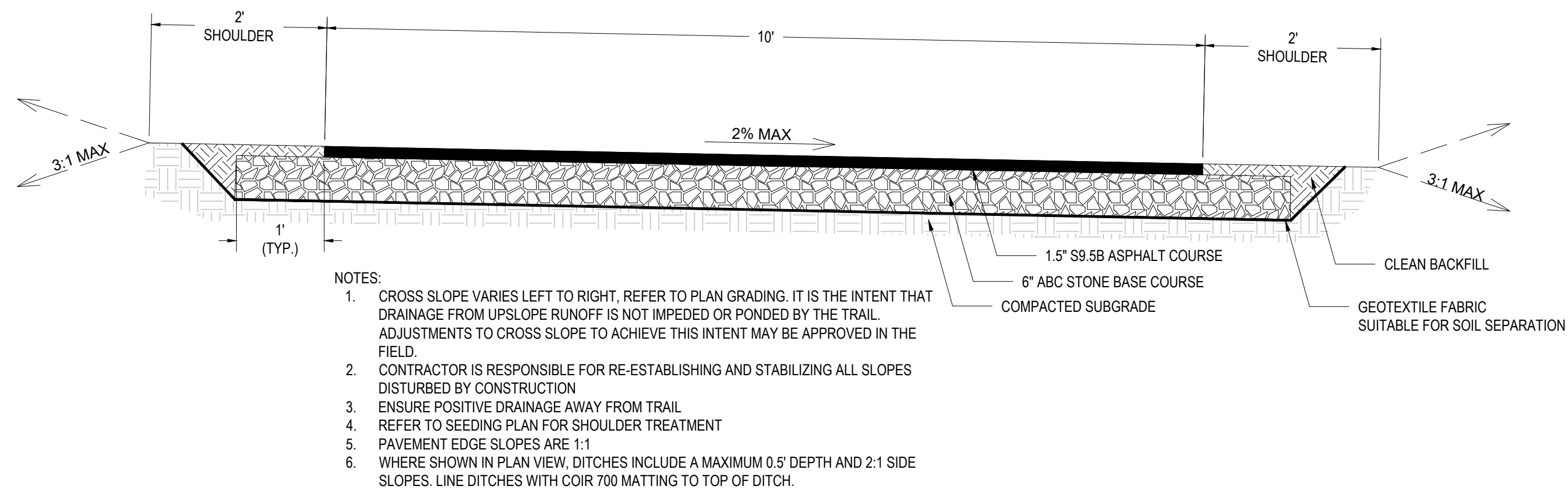


Project Number:		COMBO-25-0081	
File Name:		02295_lo_trails.dwg	
CP	CSA	CSA/CP	26.04.23
Dwn.	Chkd.	Dsgn.	YY.MM.DD
Drawing No.		C307	
Revision		Sheet	

PAGE ST. GREENWAY SECTIONS



2 TYPICAL SWALE DETAIL
C306 NTS



1 TYPICAL GREENWAY SECTION
C306 NTS

Revision		YYMMDD		Issued		By	
4	SIGNATURE SET	CSA	26.04.23	E	SIGNATURE SET	CSA	26.04.23
3	PER TOWN COMMENTS	CSA	26.02.13	D	FOR APPROVAL	CSA	26.02.13
2	PER TOWN COMMENTS	CSA	26.02.13	C	FOR APPROVAL	CSA	26.02.13
1	PER TOWN COMMENTS	CSA	25.12.19	B	FOR APPROVAL	CSA	25.12.19
1	PER TOWN COMMENTS	CSA	25.07.04	A	FOR REVIEW	CSA	25.07.04
		CSA	25.02.07			CSA	25.02.07
		By	Appd.			By	YYMMDD

Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

Project Number:		COMBO-25-0081	
File Name:		02295_lp_trails.dwg	
CP	CSA	CSA/CP	26.04.23
Dwn.	Chkd.	Dsgn.	YY.MM.DD
Drawing No.		C306	
Revision		Sheet	

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

Required Ground Stabilization Timeframes		
Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQP) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10 feet or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQP Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQP Zones -10 days for Falls Lake Watershed unless there is zero slope

Temporary Stabilization	Permanent Stabilization
- Temporary grass seed covered with straw or other mulches and tackifiers. - Hydroseeding - Rolled erosion control products with or without temporary grass seed - Appropriately applied straw or other mulch - Plastic sheeting	- Permanent grass seed covered with straw or other mulches and tackifiers - Geotextile fabrics such as permanent soil reinforcement matting (PRSM) - Hydroseeding - Shrubs or other permanent plantings covered with mulch - Uniform and evenly distributed ground cover sufficient to restrain erosion - Structural methods such as concrete, asphalt or retaining walls - Rolled erosion control products with grass seed

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the NC DWR List of Approved PAMS/Flocculants
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the NC DWR List of Approved PAMS/Flocculants and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g. dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets and surface waters unless it can be shown no other alternatives are reasonably available. It is recommended to locate stockpile areas at least 50 feet away from skimmer basins and anywhere stormwater flow is concentrated.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

The diagram shows a rectangular containment berm. The top view is a square with a smaller square in the center, creating a border. The border is composed of alternating sandbags and staples. A cross-section view on the right shows the berm's profile. It has a 1:1 side slope, a 3'-0" depth, and a minimum width of 8' and a maximum width of 10'. The bottom of the berm is lined with 10 mil plastic lining. A silt fence is shown on the outer edge of the berm. Labels include: A, SILT FENCE, 1:1 SIDE SLOPE (TYP.), 3'-0", MIN. 8' MAX., 10 MIL PLASTIC LINING, and SANDBAGS (TYP.) OR STAPLES.

The drawing consists of two parts: a plan view labeled 'SECTION B-B' and a cross-section view.

SECTION B-B (Plan View): Shows a square structure with an outer dimension of 10' MIN. and an inner dimension of 10' MIN. The structure is composed of sandbags (typ.) or staples. A label 'HIGH COHESIVE & LOW FILTRATION SOIL BERM' points to the outer edge. A label 'CONCRETE WASHOUT' points to a central square area. A label 'CLEARLY MARKED SIGNAGE NOTING DEVICE (18"x24" MIN.)' points to a signpost. A label '10' MIN' points to the inner square area.

Cross-section View: Shows a cross-section of the structure. The outer edge is labeled 'HIGH COHESIVE & LOW FILTRATION SOIL BERM'. The inner edge is labeled '10 MIL PLASTIC LINING'. The structure is supported by 'SANDBAGS (TYP.) OR STAPLES'. The height of the structure is labeled '1:1 SIDE SLOPE (TYP.)'. The width of the structure is labeled '3'-0" MIN. & X' MAX.'. The base is labeled '6"'. The top is labeled '6"'. The bottom is labeled '6"'. The side slope is labeled '1:1 SIDE SLOPE (TYP.)'. The structure is labeled 'CONCRETE WASHOUT'.

3. CONCRETE WASHOUT STRUCTURE
NEEDS TO BE CLEARLY MARKED WITH
SIGNAGE NOTING DEVICE.

1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.



GROUND COVER & MATERIALS HANDLING

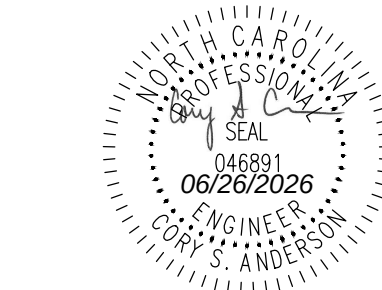
Effective:
April 1, 2024

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2/26/2026 10:26:13 AM
J. Anderson, Cory (Raleigh)



INSPECTION, RECORD KEEPING AND REPORTING

Effective:
April 1, 2024

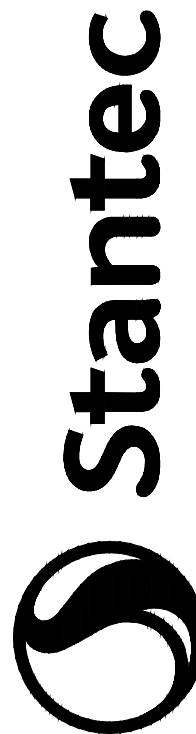


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File Name: 02295_ESC.dwg			
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Dwn	Chkd	Dgn	YY-MM-DD
Drawing No. CG002			
Revision Sheet			

Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

Title
ESC NOTES

5	PER NCDCR REVIEW COMMENTS	CSA	CSA	26.06.16	E	SIGNATURE SET	CSA	CSA	26.04.23
4	SIGNATURE SET	CSA	CSA	26.04.23	D	FOR APPROVAL	CSA	CSA	26.02.13
3	PER TOWN COMMENTS	CSA	CSA	26.02.13	C	FOR APPROVAL	CSA	CSA	25.12.19
2	PER TOWN COMMENTS	CSA	CSA	25.12.19	B	FOR APPROVAL	CSA	CSA	25.07.04
1	PER TOWN COMMENTS	CSA	CSA	25.07.04	A	FOR REVIEW	CSA	CSA	25.02.07
Revision				By	Appd.	Issued			
				By	Appd.	Issued			



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The Contractor shall verify and be responsible for all dimensions. DO NOT scale.
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PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend on holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those unattended days (this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "Zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event $\geq$ 1.0 inch in 24 hours.	1. Identification of the measures inspected 2. Date and Time of the inspection 3. Name of the person performing the inspection 4. Indication of whether the measures were operating properly 5. Description of maintenance needs for the measure 6. Description, Evidence, and date of corrective actions taken
(3) Stormwater discharge outfalls(SDOs)	At least once per 7 calendar days and within 24 hours of a rain event $\geq$ 1.0 inch in 24 hours.	1. Identification of the discharge outfalls inspected 2. Date and Time of the inspection 3. Name of the person performing the inspection 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration 5. Indication of visible sediment leaving the site 6. Description, Evidence, and date corrective actions taken
(4) Perimeter of Site	At least once per 7 calendar days and within 24 hours of a rain event $\geq$ 1.0 inch in 24 hours.	If visible Sedimentation is found outside site limits, then record of the following shall be made: 1) Actions taken to clean up or stabilize sediment that has left the site limits 2) Description, Evidence and date of corrective actions taken 3) An explanation as to the actions taken to control future releases
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event $\geq$ 1.0 inch in 24 hours.	If the stream or wetland has increased visible sedimentation or has visible increased turbidity from the construction activity, then a record of the following shall be made: 1) Description, Evidence and date of corrective actions taken 2)Records of required reports to the appropriate Division Regional Office per Part III, Section C, Item(2)(a) of this permit
(6) Ground Stabilization Measures	After each phase of grading.	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING SECTION B: RECORDKEEPING

- E&SC Plan Documentation
The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Document Requirements
(a) Each E&SC measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC plan.	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

- Additional Documentation to be Kept on Site
In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:
 - This General Permit as well as the Certificate of Coverage, after it is received.
 - Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.
- Documentation to be Retained for Three Years*
*All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING SECTION C: REPORTING

- Occurrences that Must be Reported
Permittees shall report the following occurrences:
 - Visible sediment deposition in a stream or wetland.
 - Oil spills if:
 - They are 25 gallons or more,
 - They are less than 25 gallons but cannot be cleaned up within 24 hours,
 - They cause sheen on surface waters (regardless of volume), or
 - They are within 100 feet of surface waters (regardless of volume).
 - Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.
 - Anticipated bypasses and unanticipated bypasses.
 - Noncompliance with the conditions of this permit that may endanger health or the environment.
- Reporting Timeframes and Other Requirements
After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframe (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	- Within 24 hours, an oral or electronic notification. - Within 7 Calendar Days, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. - If the stream is named on the NC 303(d) list as impaired for sediment-related caused, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per item 1(b)-(c) above	Within 24 Hours, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	A report at least ten days before the date of the bypass, if possible. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	- Within 24 Hours, an oral or electronic notification - Within 7 calendar days, a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment [40 CFR 122.41(l)(7)]	- Within 24 Hours, an oral or electronic notification - Within 7 calendar days, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6). - Division staff may waive the requirement for a written report on a case-by-case basis.

PART II, SECTION G, ITEM (4) DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

- The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,
- The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,
- Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,
- Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,
- Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
- Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

LAND CONSERVATION AND CONSTRUCTION NOTES

ALL CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO THE CONSTRUCTION STANDARDS AND SPECIFICATIONS OF THE PROJECT, THE TOWN OF MORRISVILLE (TOWN, OWNER), THE TOWN OF CARY, WAKE COUNTY, NC00T, AND NCDEQ AS APPLICABLE.

THE CONTRACTOR IS REQUIRED TO NOTIFY THE TOWN PRIOR TO ANY CONSTRUCTION, INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:

- A. INSTALLATION OF APPROVED EROSION CONTROL DEVICES
- B. CLEARING AND GRUBBING
- C. SUBGRADE EXCAVATION
- D. INSTALLING STORM SEWERS OR CULVERTS
- E. PLACING GRAVEL BASE

BEFORE ANY WORK BEGINS A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD TO ENSURE THAT ALL AFFECTED PARTIES (DESIGN ENGINEER, CONSTRUCTION CONTRACTOR, TOWN OF MORRISVILLE, WAKE COUNTY, CARY PUBLIC WORKS, AND OTHER STAKEHOLDERS IDENTIFIED PRIOR TO CONSTRUCTION) FULLY UNDERSTAND THE CONSTRUCTION PLANS, E&S CONTROL PLANS, SPECIFICATIONS, AND SEQUENCE OF CONSTRUCTION. THE PRE-CONSTRUCTION CONFERENCE SHALL BE SCHEDULED BY THE TOWN OF MORRISVILLE.

MEASURES TO CONTROL EROSION AND SEDIMENT MUST BE PROVIDED PRIOR TO PLAN APPROVAL. PLAN APPROVAL IN NO WAY RELIEVES THE CONTRACTOR OF THE RESPONSIBILITIES CONTAINED WITHIN THE EROSION AND SEDIMENT CONTROL REGULATIONS.

THE CONTRACTOR SHALL MAINTAIN AN APPROVED SET OF PLANS INCLUDING THIS E&S CONTROL PLAN AND ALL PERMITS ON THE CONSTRUCTION SITE AT ALL TIMES.

THE INFORMATION CONTAINED WITHIN THE CONSTRUCTION PLANS AND/OR THE APPROVAL OF THE PLANS SHALL IN NO WAY RELIEVE THE CONTRACTOR OR HIS AGENT OF ANY LEGAL RESPONSIBILITY WHICH MAY BE REQUIRED BY THE STATE LAW OR ANY ORDINANCE ENACTED BY THE TOWN OR WAKE COUNTY.

ALL UNSUITABLE MATERIAL SHALL BE REMOVED FROM THE CONSTRUCTION LIMITS OF THE PROJECT AS REQUIRED BY THE SPECIFICATIONS AND IN ACCORDANCE WITH NCDEQ GUIDELINES.

CONSTRUCTION DEBRIS SHALL BE CONTAINERIZED IN ACCORDANCE WITH THE STATE LAW. NO LESS THAN ONE LITTER RECEPTACLE SHALL BE PROVIDED ON SITE.

FIELD CORRECTIONS SHALL BE APPROVED BY THE DESIGN ENGINEER AND THE TOWN. WRITTEN DOCUMENTATION OF ANY DESIGN CHANGES DURING CONSTRUCTION ARE TO BE DOCUMENTED IN WRITING AND SUBMITTED TO THE TOWN. A COPY OF ALL APPROVED CHANGES SHALL BE KEPT ON SITE BY THE CONTRACTOR.

THE TOWN MAY ADD TO, DELETE, RELOCATE, CHANGE, OR OTHERWISE MODIFY CERTAIN EROSION AND SEDIMENT CONTROL MEASURES WHERE FIELD CONDITIONS ARE ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS. A COPY OF ALL APPROVED CHANGES SHALL BE KEPT ON SITE BY THE CONTRACTOR.

THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE TOWN.

THE DEVELOPER IS RESPONSIBLE FOR THE CONTROL OF SEDIMENT ON-SITE. IF THE APPROVED EROSION AND SEDIMENTATION CONTROL MEASURES PROVE INSUFFICIENT, THE DEVELOPER MUST TAKE THOSE ADDITIONAL STEPS NECESSARY TO STOP SEDIMENT FROM LEAVING THIS SITE.

- SEQUENCE OF CONSTRUCTION: EROSION AND SEDIMENT CONTROL (E&S) PERMIT AND A CERTIFICATE OF COVERAGE (COC) MUST BE OBTAINED BEFORE ANY LAND DISTURBING ACTIVITIES (INCLUDING TIMBERING AND DEMOLITION) OCCUR. THE COC CAN BE OBTAINED BY FILLING OUT THE ELECTRONIC NOTICE OF INTENT (E-NOI) FORM AT [HTTPS://WWW.DEQ.NC.GOV/NGC01](https://www.deq.nc.gov/ngc01). PLEASE NOTE, THE E-NOI FORM MAY ONLY BE FILLED OUT ONCE THE PLANS HAVE BEEN APPROVED. A COPY OF THE E&S PERMIT, THE COC, AND A HARD COPY OF THE PLAN MUST BE KEPT ON SITE, PREFERABLY IN A PERMITS BOX, AND ACCESSIBLE DURING INSPECTION.
- STAKE OUT LIMITS OF DISTURBANCE. INSTALL STABILIZED CONSTRUCTION ENTRANCE. PLACE ALL EROSION AND SEDIMENT CONTROL MEASURES AND OBTAIN INSPECTION AND APPROVAL FROM WAKE COUNTY PRIOR TO ANY UPSLOPE LAND DISTURBANCE. CONTACT THE DEMILR RALEIGH REGIONAL OFFICE AT (919) 791-4200 AT LEAST 48 HOURS PRIOR TO COMMENCING THE LAND-DISTURBING ACTIVITY.
- SEDIMENT BASINS, SEDIMENT TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS, AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
- IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN PROVIDED.
- DURING DEWATERING OPERATIONS, WATER SHALL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
- SOIL STABILIZATION
 - PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDDED AREAS WITHIN 7 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE.
 - NO AREA SHALL BE LEFT DENUDDED FOR A PERIOD LONGER THAN 14 DAYS EXCEPT FOR THAT PORTION OF THE SITE IN WHICH WORK WILL BE CONTINUOUS BEYOND 14 DAYS.
 - TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN 7 DAYS TO DENUDDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 14 DAYS, BUT LESS THAN ONE YEAR.
 - PERMANENT STABILIZATION SHALL BE APPLIED WITHIN 7 DAYS TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
 - ACCEPTABLE STABILIZATION SHALL CONSIST OF PERMANENT GRASS SEED MIXTURE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 - ALL SLOPES 2:1 AND GREATER SHALL BE SODDED AND STAKED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE ENGINEER.
 - SOD SHALL NOT BE LAID IN EXCESSIVELY WET OR DRY WEATHER AND SHOULD NOT BE LAID ON FROZEN SOIL SURFACE.
 - SOD SHALL BE DELIVERED AND INSTALLED WITHIN 36 HOURS.
 - ANY DISTURBED AREA NOT PAVED, PERMANENTLY SEEDED, SODDED, OR BUILT UPON BY 1 NOVEMBER OR DISTURBED AFTER THAT DATE, SHALL BE MULCHED AT THE RATE OF 2 TONS PER ACRE AND OVER-SEEDED BY APRIL 15.
- ALL TEMPORARY EARTH BERMS, DIVERSIONS, AND SEDIMENT CONTROL DAMS SHALL BE SEEDED AND MULCHED FOR TEMPORARY VEGETATIVE COVER IMMEDIATELY (AS SOON AS POSSIBLE BUT NO LATER THAN 48 HOURS) AFTER COMPLETION OF GRADING. STRAW OR HAY MULCH IS REQUIRED.
- SOIL STOCKPILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. ANY STOCKPILED MATERIAL WHICH WILL REMAIN IN PLACE LONGER THAN 14 DAYS IS TO BE SEEDED FOR TEMPORARY VEGETATION AND MULCHED WITHIN 7 DAYS AFTER GRADING. TEMPORARY PROTECTION AND PERMANENT STABILIZATION SHALL BE APPLIED TO ALL SOIL STOCKPILES ON SITE AND BORROW AREAS OR SOIL INTENTIONALLY TRANSFERRED OFF-SITE.
- PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS:
 - UNIFORM
 - MATURE ENOUGH TO SURVIVE
 - WILL INHIBIT EROSIONTHE SEEDED AREAS SHALL BE CHECKED REGULARLY TO ENSURE A GOOD STAND IS MAINTAINED. AREAS SHALL BE RE-SEEDED AS NEEDED.
- DURING CONSTRUCTION, ALL STORM SEWER INLETS SHALL BE PROTECTED BY SEDIMENT TRAPS, MAINTAINED AND MODIFIED DURING CONSTRUCTION PROGRESS AS REQUIRED.
- CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.
- CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.
- WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED. ALL STORM SEWER INLETS MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE STORMWATER CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED/TREATED TO REMOVE SEDIMENT.
- BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND THE RECEIVING CHANNEL.
- WHEN WORK IS IN A LIVE WATERCOURSE IS PERFORMED:

- PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT, AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION.
 - NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS.
 - EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.
 - NO MATERIAL OR EQUIPMENT IS TO BE PLACED IN AN ACTIVE STREAM.
- WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION MORE THAN TWICE IN ANY SIX-MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL WITH TEMPORARY CULVERTS SHALL BE PROVIDED. ANY PUMPS USED FOR CHANNEL FLOW DIVERSION FOR THE STREAM CROSSINGS FOR ROADWAY AND UTILITY CROSSINGS ARE TO BE MONITORED 24/7 UNTIL CONSTRUCTION ACTIVITY IS COMPLETE. THE BANKS AND CHANNELS ARE STABILIZED, AND FLOW IS RESTORED TO CHANNELS. ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.
 - EACH SECTION OF THE STREAM RESTORATION THAT IS COMPLETED WITHIN THE CONFINES OF THE PUMP AROUND FEATURE WILL BE PERMANENTLY STABILIZED BEFORE RESTORING FLOW THROUGH THE SECTION AND MOVING ON TO THE NEXT SECTION OF RESTORATION ACTIVITIES. THE BED AND BANKS OF THE WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.
 - UNDERGROUND UTILITY LINES INCLUDING STORM AND SANITARY SEWER LINES, ELECTRIC POWER, TELEPHONE AND GAS LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
 - NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
 - EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES. WHERE SOIL IS PLACED ON DOWNHILL SIDE OF TRENCH, IT IS TO BE BACK-SLOPED TO DRAIN TOWARD TRENCH.
 - MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
 - ALL DISTURBED AREAS ARE TO BE SEEDED AND MULCHED OR SODDED WITHIN 7 DAYS AFTER BACKFILL OF THE APPLICABLE TRENCH SECTION. IN ACCORDANCE WITH THE PROVISIONS CONTAINED IN THE PROJECT SPECIFICATIONS RELATING TO SEEDING AND SODDING.
 - COMPLY WITH APPLICABLE SAFETY REGULATIONS.

- WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS:
 - PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE.
 - WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AS REQUIRED BY COUNTY AND AT A MINIMUM AT THE END OF EACH DAY.
 - SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER.

- THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES DAILY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION DEVICES SHALL BE MADE IMMEDIATELY.

- PERIMETER MEASURES MUST BE LEFT IN PLACE UNTIL ALL UPLAND AREAS ARE PERMANENTLY STABILIZED. AFTER THE SITE IS PERMANENTLY STABILIZED, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AND PROVIDE PERMANENT SEEDING WHERE TEMPORARY MEASURES HAVE BEEN REMOVED AND GROUND COVER IS NOT ADEQUATE. SEDIMENT BASINS MAY NOT BE REMOVED OR CONVERTED TO PERMANENT SOMS UNTIL ALL UPLAND AREAS ARE PERMANENTLY STABILIZED. NC DEQ SHOULD BE NOTIFIED 10-DAYS PRIOR TO REMOVAL OF A BASIN.

- ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE TOWN. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION. ALL TEMPORARY SEDIMENT CONTROLS SHALL BE REMOVED AND ALL DENUDDED AREAS SHALL BE STABILIZED PRIOR TO BOND RELEASE.

- FOR FURTHER REQUIREMENTS AND DETAILS OF TREE PROTECTION, PLANTING, EROSION AND SEDIMENT CONTROL, SEE TOWN DESIGN AND CONSTRUCTION STANDARDS AND NCDEQ EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.

- WHEN THE PROJECT IS COMPLETE AND PERMANENT STABILIZATION IS ACHIEVED, THE PERMITTEE SHALL CONTACT DEMILR TO CLOSE OUT THE E&S PLAN. AFTER DEMILR INFORMS THE PERMITTEE OF THE PROJECT CLOSE OUT, VIA INSPECTION REPORT, THE PERMITTEE SHALL VISIT [HTTPS://WWW.DEQ.NC.GOV/NGC01](https://www.deq.nc.gov/ngc01) TO SUBMIT AN ELECTRONIC NOTICE OF TERMINATION (E-NOT). A \$127 ANNUAL GENERAL PERMIT FEE WILL BE CHARGED UNTIL THE E-NOT HAS BEEN FILLED OUT.

NCDEQ NOTE

APPROVAL OF THIS EROSION AND SEDIMENTATION CONTROL PLAN DOES NOT AUTHORIZE IMPACTS TO WETLANDS, COASTAL MARSH, STREAMS OR OTHER WATERS OF THE STATE OR UNITED STATES OR SUPERSEDE ANY OTHER PERMITTING REQUIREMENT OF ANY FEDERAL, STATE OR LOCAL AGENCY. NOTICE OF TERMINATION (E-NOT).

I. PROJECT DESCRIPTION
THE PURPOSE OF THE MORRISVILLE TRIBUTARY STREAM RESTORATION AND GREENWAY PROJECT IS TO RESTORE APPROXIMATELY 1400 LINEAR FEET OF MORRISVILLE TRIBUTARY (SAWMILL CREEK) AND TO CREATE APPROXIMATELY 3,500 LF OF GREENWAY CONNECTING ADJACENT RESIDENTIAL DEVELOPMENT, EXPANDING THE EXISTING GREENWAY NETWORK IN THE TOWN. THE LOCATION OF THE SITE IS SHOWN ON SHEET 1. THE GOALS OF THE DESIGN ARE TO STABILIZE ACTIVELY ERODING BANKS, RESTORE FLOODPLAIN CONNECTIVITY, REDUCE NUTRIENT TRANSPORT, RESTORE RIPARIAN VEGETATION, AND IMPROVE OVERALL WATER QUALITY LEAVING THE SITE. NATURAL CHANNEL DESIGN WILL BE IMPLEMENTED TO THE EXTENT PRACTICABLE. A GEOMORPHIC ASSESSMENT OF THE SITE WAS PERFORMED BY STANTEC IN 2014, RECONFIRMED IN 2023, AND HAS BEEN USED TO DEVELOP TARGET GEOMORPHOLOGICAL RATIOS FOR DESIGN. INVASIVE PLANTS WILL BE REMOVED AND REPLACED WITH NATIVE TREES, SHRUBS, AND HERBACEOUS VEGETATION. THE TOTAL LIMITS OF PROPOSED DISTURBANCE ARE 5.79 ACRES.

II. EXISTING SITE CONDITIONS
THE PROJECT WATERSHED IS CHARACTERIZED MOSTLY BY A MIX OF DEVELOPED RESIDENTIAL AREAS, PRIVATE PROPERTIES, AND WOODED RIPARIAN AREAS DIRECTLY ADJACENT TO THE STREAM AND SURROUNDING HOUSES. THE IMMEDIATE RIPARIAN BUFFER CONSISTS PRIMARILY OF MIXED DECIDUOUS FLOODPLAIN FOREST, EARLY SUCCESSIONAL FOREST COVER, AND OPEN LAND ASSOCIATED WITH MAINTAINED LAWN AND SANITARY SEWER EASEMENT, WITH INVASIVE SPECIES COVER THROUGHOUT THE RIPARIAN BUFFER. RUNOFF IS CONVEYED PRIMARILY THROUGH ROADSIDE DITCHES AND CURBS WHICH DRAIN TO STORMWATER INLETS. EXISTING TOPOGRAPHY AND DRAINAGE PATTERNS ARE ILLUSTRATED ON SHEETS 3 THROUGH 5.

III. ADJACENT PROPERTY
THE PROJECT EXISTS MOSTLY WITHIN TOWN PROPERTY OR PROPERTY GRANTED TO THE TOWN BY EASEMENT. ADJACENT RESIDENTIAL NEIGHBORHOODS ARE ACTIVELY OR NEWLY DEVELOPED, WITH SOME PRIOR DEVELOPED SINGLE FAMILY LOTS. THE PROJECT IS BOUND TO THE EAST BY A RAILROAD RIGHT OF WAY. THE SITE IS ACCESSED NEAR 338 PAGE STREET.

IV. OFF-SITE AREAS
NO UNPERMITTED OFFSITE SPOIL OR BORROW AREAS ARE PROPOSED FOR THIS PROJECT. SOME AREAS OF PLANTING ARE DEPICTED OUTSIDE OF THE LIMITS OF DISTURBANCE. HOWEVER, THESE AREAS WILL BE ACCESSED ONLY BY FOOT, NO VEHICLES OR EQUIPMENT WILL BE USED. OTHERWISE, NO OFF-SITE AREAS WILL BE DISTURBED BY THE PROPOSED PROJECT. ANY SPOIL FROM SHOVEL SCALE PLANTINGS WILL BE IMMEDIATELY STABILIZED WITH SEED AND STRAW. THE GRADING/EXCAVATION CONTRACTOR FOR THE SUBJECT SITE IS REQUIRED TO NOTIFY, IN WRITING, THE ASSIGNED SITE INSPECTOR REGARDING ANY EXCESS MATERIAL PROPOSED TO BE HAULED OFFSITE PRIOR TO HAULING. THE NOTIFICATION MUST INCLUDE THE QUANTITY OF MATERIAL, TO BE MOVED OFFSITE, IDENTIFICATION OF THE RECEIVING SITE WHERE THE EXCESS WILL BE TAKEN, AND ALL INFORMATION NECESSARY TO SHOW THAT SUCH RECEIVING SITE HAS BEEN PROPERLY PERMITTED AND HAS E&S CONTROLS INSTALLED.

V. CRITICAL AREAS
THE PROJECT IS WITHIN THE NEUSE RIVER WATERSHED. THE WORK PROPOSED AS PART OF THIS PLAN IS DEEMED ALLOWABLE WITHIN THE BUFFER (STREAM RESTORATION AND RECREATIONAL TRAILS) PER ARTICLE 11 OF THE WAKE COUNTY UNIFIED DEVELOPMENT ORDINANCE. APPLICABLE PERMITS SHALL BE ACQUIRED BEFORE WORK COMMENCES. DUE TO SLOPE STEEPNESS AND SOIL ERODIBILITY, THE PROJECT SITE HAS HIGH EROSION POTENTIAL. TO MINIMIZE EROSIONS AND SEDIMENT TRANSPORT INTO DOWNSTREAM WATERWAYS, EROSIONS AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH NCDEQ STANDARDS. THE PROJECT IS ALSO WITHIN THE REGULATED FLOODWAY OF THE CHANNEL AS DEPICTED ON MAP PANEL 3720075500K EFFECTIVE 07/2022. BASED ON HYDRAULIC MODELING OF THE PROPOSED PROJECT, THE PROJECT CREATES NO-RISE IN WATER SURFACE ELEVATIONS. NO PERMANENT FILL OUTSIDE OF WHAT IS SHOWN IN THE PLANS AND MODELING WILL BE PERMITTED. THE MODELING INDICATES THAT THE PROJECT AREA IS WITHIN A SIGNIFICANT BACKWATER AREA BEHIND THE CULVERTS CROSSING CHAPEL HILL ROAD AND THE ADJACENT RAILROAD. REFER TO STORMWATER REPORT FOR ADDITIONAL INFORMATION ON FLOODPLAIN MODELING AND DEMONSTRATION OF NO-RISE.

VI. SOIL
THE PREDOMINANT SOILS IN THE CONTRIBUTING WATERSHED ARE CHEWACLA AND WEHADKEE SOILS, WHICH ARE SOMEWHAT POORLY DRAINED SILTY TO CLAY LOAMS CLASSIFIED AS HYDROLOGIC SOIL GROUP "D". IT IS THE CONTRACTOR'S RESPONSIBILITY TO TAKE NECESSARY PROVISIONS DURING BIDDING AND CONSTRUCTION TO ACCOUNT FOR SUBSURFACE CONDITIONS. A SOIL SUMMARY TABLE AND BOUNDARY MAPPING BASED ON USDA SOIL SURVEY DATA IS CONTAINED WITHIN THE STORMWATER REPORT.

VII. EROSION AND SEDIMENT CONTROL MEASURES
THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES ARE RECOMMENDED IN ACCORDANCE WITH THE NCDEQ EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.

A. STRUCTURAL PRACTICES

SAFETY FENCE - A PROTECTIVE BARRIER INSTALLED TO PREVENT ACCESS TO AN EROSION CONTROL MEASURE.

TEMPORARY STONE CONSTRUCTION ENTRANCE - A STABILIZED STONE PAD WITH A FILTER FABRIC UNDERLINER LOCATED AT THE POINT OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE. ITS PURPOSE IS TO REDUCE THE AMOUNT OF MUD TRANSPORTED ONTO PAVED PUBLIC ROADS BY MOTOR VEHICLES OR RUNOFF.

SUPER SILT FENCE-A TEMPORARY SEDIMENT BARRIER TO INTERCEPT AND DETAIN SMALL AMOUNTS OF SEDIMENT FROM DISTURBED AREAS. IT WILL BE PLACED AROUND STAGING/STOCKPILE AREAS, (INCLUDES TRENCHLESS SUPER SILT FENCE)

INLET PROTECTION - A SEDIMENT FILTER AT CURB INLETS WITHIN THE AREA OF DISTURBANCE.

OUTLET PROTECTION - STRUCTURALLY LINEAL APRONS OR OTHER ACCEPTABLE ENERGY DISSIPATING DEVICES PLACED AT THE OUTLETS OF PIPES OR PAVED CHANNEL SECTIONS.

ROCK CHECK DAMS - SMALL TEMPORARY STONE DAMS CONSTRUCTED ACROSS A SWALE OR DRAINAGE DITCH TO REDUCE VELOCITY OF CONCENTRATED STORM FLOWS.

STRUCTURAL STREAMBANK STABILIZATION - PERMANENT STRUCTURAL MEASURES USED TO PROTECT LIVE STREAMBANKS FROM THE EROSIIVE FORCES OF FLOWING WATER (INCLUDING VANE STRUCTURES, STONE TOE PROTECTION, RIPRAP SLOPE PROTECTION, SOIL LIFTS, ETC.)

TEMPORARY VEHICULAR STREAM CROSSING - A TEMPORARY STRUCTURAL SPAN INSTALLED ACROSS A FLOWING WATERCOURSE FOR CONSTRUCTION TRAFFIC USE.

DEWATERING STRUCTURE - A PUMP AROUND DIVERSION OR SIMILAR ACCEPTABLE TECHNOLOGY FOR DISCHARGING WATER FROM DEWATERING ACTIVITIES. PRACTICE IS USED TO FILTER SEDIMENT-LADEN WATER PRIOR TO THE WATER BEING DISCHARGED OFF-SITE.

SOIL STABILIZATION BLANKETS AND MATTING - THE INSTALLATION OF A PROTECTIVE COVERING OR A SOIL STABILIZATION MAT ON A PREPARED PLANTING AREA OF A STEEP SLOPE, CHANNEL OR SHORELINE.

TREE PRESERVATION AND PROTECTION - SAFETY FENCE, PLANKING, AND OTHER MEASURES INTENDED TO PROTECT THE TRUNK, BRANCHES, AND ROOT SYSTEMS OF EXISTING TREES WITHIN THE PROJECT AREA TO BE PRESERVED.

B. VEGETATIVE PRACTICES

SEED MIXES AND LARGER SPECIES TO BE INCORPORATED AS SHOWN IN THE PLAN TO PROVIDE STABILIZATION.

TOPSOIL (STOCKPILE)- EXCAVATED TOPSOIL SHALL BE REAPPLIED TO AREAS BEING PLANTED AFTER CONSTRUCTION TO PROVIDE A SUITABLE GROWTH MEDIUM FOR FINAL SITE STABILIZATION WITH VEGETATION.

TEMPORARY SEEDING - RAPIDLY GROWING ANNUAL PLANTS SHALL BE SEEDED ON DISTURBED AREAS NOT YET BROUGHT TO FINAL GRADE.

PERMANENT SEEDING- THE ESTABLISHMENT OF PERENNIAL VEGETATIVE COVER ON DISTURBED AREAS BY PLANTING SEED.

MULCHING- MULCH SHALL BE APPLIED TO AREAS THAT REQUIRE TEMPORARY SEEDING TO PREVENT EROSION BY PROTECTING THE SOIL FROM RAIN DROP IMPACT AND REDUCING THE VELOCITY OF OVERLAND FLOW. IN ADDITION THE MULCH WILL FOSTER THE GROWTH OF VEGETATION BY INCREASING AVAILABLE MOISTURE AND PROVIDING INSULATION AGAINST EXTREME HEAT OR COLD. STRAW MULCH MUST BE APPLIED AT 2 TONS/ACRE. MULCH MUST BE WEED FREE.

VIII. STORMWATER MANAGEMENT

THIS PROJECT WILL PROVIDE WATER QUALITY AS WELL AS CHANNEL PROTECTION. THE PROPOSED IMPERVIOUS SURFACE ASSOCIATED WITH THIS PROJECT REPRESENTS LESS THAN 10% OF THE BUILT UPON AREA PROPOSED FOR THE PROJECT

IX. EROSION AND SEDIMENTATION CONTROL PHASING

PRE-CONSTRUCTION:

- PRIOR TO PRE-CONSTRUCTION MEETING, THE CONTRACTOR SHALL CLEARLY STAKE THE LIMITS OF DISTURBANCE (LOD), CONSTRUCTION ACCESS, CONSTRUCTION ENTRANCE, PLANNED TREE REMOVALS AND STOCKPILE LOCATIONS. CARE SHALL BE TAKEN TO AVOID LARGE WOODY VEGETATION (TREES WITH DBH > 12") WHERE POSSIBLE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS OF ALL EXISTING UTILITIES WITHIN THE PROJECT AREA PRIOR TO CONSTRUCTION OPERATIONS, AND MUST CONTACT 811 PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION AND NECESSARY RELOCATIONS IDENTIFIED DURING PROJECT EXECUTION.
- CONTRACTOR SHALL SCHEDULE AN ON-SITE PRE-CONSTRUCTION MEETING WITH THE TOWN AND ENGINEER. THE TOWN AND ENGINEER SHALL APPROVE THE LOD PRIOR TO CONSTRUCTION ACTIVITIES. DURING THIS PRE-CONSTRUCTION MEETING THE TOWN AND THE ENGINEER MAY CHOOSE TO ALTER THE LOD TO AVOID LARGE WOODY VEGETATION.
- THE TOWN WILL ESTABLISH PARKING AREAS FOR CONTRACTOR.
- CONTACT THE DEMILR RALEIGH REGIONAL OFFICE AT (919)791-4200 AT LEAST 48 HOURS PRIOR TO COMMENCING THE LAND-DISTURBING ACTIVITY.
- EROSION AND SEDIMENT CONTROL (E&S) PERMIT AND A CERTIFICATE OF COVERAGE (COC) MUST BE OBTAINED BEFORE ANY LAND DISTURBING ACTIVITIES (INCLUDING TIMBERING AND DEMOLITION) OCCUR. THE COC CAN BE OBTAINED BY FILLING OUT THE ELECTRONIC NOTICE OF INTENT (E-NOI) FORM AT [HTTPS://WWW.DEQ.NC.GOV/NGC01](https://www.deq.nc.gov/ngc01). PLEASE NOTE, THE E-NOI FORM MAY ONLY BE FILLED OUT ONCE THE PLANS HAVE BEEN APPROVED. A COPY OF THE E&S PERMIT, THE COC, AND A HARD COPY OF THE PLAN MUST BE KEPT ON SITE, PREFERABLY IN A PERMITS BOX, AND ACCESSIBLE DURING INSPECTION.

PHASE I:

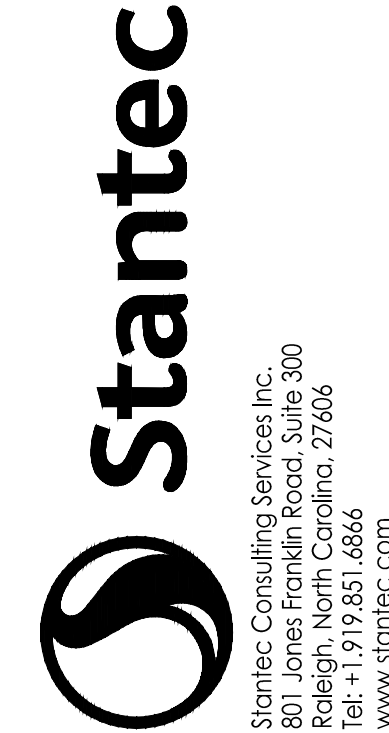
- INSTALL STONE CONSTRUCTION ENTRANCES.
- INSTALL ORANGE SAFETY FENCE AROUND THE ENTIRE PERIMETER OF THE LOD.
- TREE ROOT PRUNING SHALL OCCUR PRIOR TO GRADING (CUT OR FILL) ACTIVITIES, AND/OR PRIOR TO RUNNING HEAVY EQUIPMENT UNDER CERTAIN SPECIMEN CANOPY TREES. IN ADDITION, BRANCH PRUNING SHALL OCCUR DURING CONSTRUCTION IN ORDER TO SAVE EXISTING VEGETATION TO THE GREATEST EXTENT PRACTICABLE AND ALLOW A REASONABLE WORK AREA. ALL TREE CANOPY PRUNING MUST BE BY AN ISA CERTIFIED ARBORIST.
- INSTALL SUPER SILT FENCE, TREE PLANKING, AND TREE PROTECTION WHERE SHOWN.
- INSTANT PHASE I EROSION AND SEDIMENT CONTROL MEASURES ACCORDING TO STANDARDS SET FORTH IN THE NCDEQ PLANNING AND DESIGN MANUAL. THESE MEASURES SHALL BE IMPLEMENTED PRIOR TO THE COMMENCEMENT OF ANY EARTHWORK ACTIVITIES ON-SITE.
- UPON APPROVAL BY THE TOWN, THE CONTRACTOR WILL COMMENCE WITH TREE REMOVAL AND CLEARING AND GRUBBING OPERATIONS. TREE REMOVAL, CLEARING AND GRUBBING, AND ANY DEMOLITION SHALL BE PERFORMED IN PHASES TO MINIMIZE EARTH DISTURBANCE DURING CONSTRUCTION.
- CONCURRENT WITH THE TREE REMOVAL AND CLEARING AND GRUBBING OPERATIONS, CONTRACTOR SHALL INSTALL TIMBER MATS WHERE SPECIFIED ON THE PLANS. INSTALLATION SHALL PROGRESS IN ADVANCE OF HEAVY EQUIPMENT USED TO PLACE THESE PRACTICES SUCH THAT THE WEIGHT OF THE EQUIPMENT IS BORNE BY PREVIOUSLY INSTALLED SECTION OF THE ROAD AS IT IS CONSTRUCTED.
- INVASIVE PLANT SPECIES SHALL BE REMOVED AND/OR CONTROLLED.
- IT IS THE INTENT OF THESE PLANS TO AVOID CLEARING TO THE GREATEST EXTENT PRACTICAL. HOWEVER, CLEARING AND GRUBBING OPERATIONS SHALL PROCEED AS NECESSARY TO FACILITATE EARTHWORK ACTIVITIES. EXISTING VEGETATION CALLED OUT TO BE PRESERVED SHALL BE PROTECTED FROM DISTURBANCE AND COMPACTION OF HEAVY EQUIPMENT. ALL ADDITIONAL CLEARED WOODY NATIVE VEGETATION SHALL BE SAVED FOR USE AS IN STREAM STRUCTURES, AND/OR CHIPPED, STOCKPILED, AND USED FOR ORGANIC MATTER ON-SITE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT ALL EXISTING UTILITIES THROUGHOUT THE PROJECT USING APPROPRIATE MEASURES.
- CONTRACTOR SHALL ONLY GRADE AN AREA THAT CAN BE STABILIZED WITHIN THE SAME DAY.
- AT COMPLETION OF PHASE I, ALL E&S PHASE I PROTECTION MEASURES, ACCESS ROADS, STAGING AREAS SHALL BE ESTABLISHED.

PHASE II (STREAM AND GREENWAY):

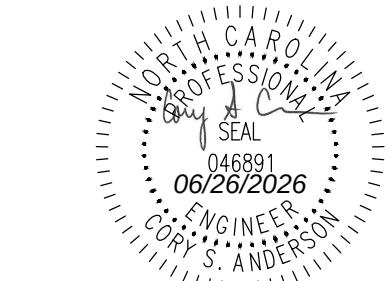
- CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN REACH SEGMENTS/PHASES IN AN EFFORT TO MINIMIZE DISTURBANCE AND SUCH THAT MATERIAL HAUL-OFF IS ALSO MINIMIZED. THE FOLLOWING IS A SUGGESTED SEQUENCE, BUT FINAL SEQUENCING SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE TOWN PRIOR TO INITIATION OF WORK.
 - CONTRACTOR SHALL COMMENCE WITH GRADING, STABILIZATION AND RESTORATION ACTIVITIES.
 - WITHIN A RESPECTIVE REACH SEGMENT, IN-STREAM WORK SHALL BE DONE FROM UPSTREAM TO DOWNSTREAM UNLESS AN ALTERNATIVE PLAN IS APPROVED BY THE TOWN AND THE ENGINEER.
- ALL WORK SHALL BE PERFORMED IN THE DRY. APPROVED CLEAN WATER DIVERSION MEASURES (CHECK DAM, PUMP AROUND DIVERSION PUMP WITH DEWATERING BAG) SHALL BE UTILIZED TO ENSURE THAT SEDIMENT LADEN WATER IS NOT DISCHARGED INTO THE STREAM CHANNEL. THE CLEAN WATER DIVERSION SHALL BE OF SUFFICIENT LENGTH TO ENSURE THAT ALL WORK WITHIN THE DAILY WORK ZONE IS PERFORMED IN THE DRY. DEWATERING BAG TO BE CONTINUOUSLY MONITORED DURING OPERATION.
- EACH SECTION OF THE STREAM RESTORATION THAT IS COMPLETED WITHIN THE CONFINES OF THE PUMP AROUND FEATURE WILL BE PERMANENTLY STABILIZED BEFORE RESTORING FLOW THROUGH THE SECTION AND MOVING ON TO THE NEXT SECTION OF RESTORATION ACTIVITIES. ANY PUMPS USED FOR CHANNEL FLOW DIVERSION FOR THE STREAM CROSSINGS FOR ROADWAY AND UTILITY CROSSINGS ARE TO BE MONITORED 24/7 UNTIL CONSTRUCTION ACTIVITY IS COMPLETE. THE BANKS AND CHANNELS ARE STABILIZED, AND FLOW IS RESTORED TO CHANNELS.
- THE DAILY CONSTRUCTION SEGMENTS SHALL BE DETERMINED BY THE CONTRACTOR BUT THE STREAM SHALL BE PERMANENTLY OR TEMPORARILY STABILIZED AND/OR RECONNECTED AT THE END OF EACH WORK DAY.
- PUMP AROUND DIVERSIONS SHALL NOT BE OPERATED AT NIGHT, UNLESS APPROVED UNDER A SEPARATE COVER BY THE TOWN OF MORRISVILLE.
- CONTRACTOR SHALL SALVAGE STREAM BED SUBSTRATE MATERIAL FROM THE EXISTING CHANNEL IF PRESENT. THIS MATERIAL WILL BE USED AS INFILL FOR STREAMBED REINFORCEMENT AREAS.
- INSTALLED E&S MEASURES (E.G. TREE PROTECTION, SUPER SILT FENCE, AND SAFETY FENCE) TO REMAIN IN PLACE UNTIL FINAL STABILIZATION OF ALL DISTURBED AREAS HAS BEEN ACHIEVED. CONTRACTOR SHALL MAINTAIN EROSION AND SEDIMENT CONTROL PRACTICES THROUGHOUT THE PROJECT AREA FOR THE DURATION OF THE PROJECT TO ENSURE PROPER FUNCTION OF THE PRACTICES. PERIMETER MEASURES MUST BE LEFT IN PLACE UNTIL ALL UPLAND AREAS ARE PERMANENTLY STABILIZED. AFTER THE SITE IS PERMANENTLY STABILIZED, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AND PROVIDE PERMANENT SEEDING WHERE TEMPORARY MEASURES HAVE BEEN REMOVED AND GROUND COVER IS NOT ADEQUATE. SEDIMENT BASINS MAY NOT BE REMOVED OR CONVERTED TO PERMANENT SOMS UNTIL ALL UPLAND AREAS ARE PERMANENTLY STABILIZED. NC DEQ SHOULD BE NOTIFIED 10-DAYS PRIOR TO REMOVAL OF A BASIN.
- COMMENCE WITH GRADING OF THE NEW STREAM CHANNEL, SECTIONS, PROFILE, AND INSTALLATION OF IN-STREAM STRUCTURES AS CONSTRUCTION MOVES DOWNSTREAM.
- DURING GRADING OPERATIONS, STRIP EXISTING TOPSOIL AND STOCKPILE SEPARATELY. TOPSOIL MUST BE FREE OF UNSUITABLES PER THE SPECIFICATIONS. STRIPPED TOPSOIL SHALL BE USED FOR THE BANK PROTECTION AND FOR FINAL SOIL AMENDMENTS ELSEWHERE.
- NO STREAM BANKS SHALL BE LEFT EXPOSED (I.E. BARE) AT THE END OF THE WORK DAY. ALL STREAM BANKS SHALL BE COVERED WITH MATTING (OR OTHER APPROVED MATERIAL) BEFORE THE CONTRACTOR STOPS WORK FOR THE DAY. CONTRACTOR SHALL TEMPORARILY COVER ANY DISTURBED AREAS WITH MATTING AT THE END OF EACH WORK DAY, ONLY IF FINAL STABILIZATION IS NOT COMPLETED BY THE END OF THE DAY. IN ADDITION, ANY REMAINING DISTURBED AREAS IN THE OVERBANK ZONES SHALL BE PROTECTED FROM SHEET FLOW WITH SILT FENCE UNTIL WORK CONTINUES THE NEXT DAY.
- AFTER ALL STREAM WORK IS COMPLETE AND APPROVED BY TOWN AND ENGINEER, THE CONTRACTOR MAY COMMENCE WITH DEMOBILIZING PUMP-AROUND DIVERSIONS.
- GREENWAY CONSTRUCTION IS RECOMMENDED TO OCCUR CONCURRENT WITH THE STREAM RESTORATION AS IT PROGRESSES DOWNSTREAM. PRIMARY ACCESS IS PROPOSED ALONG THE GREENWAY CORRIDOR AND PERMANENT GREENWAY FEATURES MAY IMPEDE OR NOT BE SUITABLE FOR CONSTRUCTION TRAFFIC.
- SOIL CONDITIONS MAY REQUIRE SUPPLEMENTAL TREATMENTS FOR THE INSTALLATION OF ASPHALT SUBGRADE. CONTRACTOR SHALL CONSIDER THESE CONDITIONS IN BID AND PROVIDE FOR ALTERNATIVE BASE TREATMENTS IN AREAS WHERE STANDARD IS NOT ACHIEVABLE DUE TO UNSUITABLE SUBGRADE.
- INSTALL BRIDGES AND STRUCTURAL ELEMENTS WITH APPROVAL OF TOWN. A SEPARATE BUILDING PERMIT IS REQUIRED FOR BRIDGE CONSTRUCTION.
- UPON COMPLETION OF ALL CONSTRUCTION ACTIVITIES, ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS OF THE SITE REACHING A FINAL STABILIZATION CONDITION, WITH APPROVAL OF TOWN.
- PERIMETER MEASURES MUST BE LEFT IN PLACE UNTIL ALL UPLAND AREAS ARE PERMANENTLY STABILIZED. AFTER THE SITE IS PERMANENTLY STABILIZED, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AND PROVIDE PERMANENT SEEDING WHERE TEMPORARY MEASURES HAVE BEEN REMOVED AND GROUND COVER IS NOT ADEQUATE. SEDIMENT BASINS MAY NOT BE REMOVED OR CONVERTED TO PERMANENT SOMS UNTIL ALL UPLAND AREAS ARE PERMANENTLY STABILIZED. NC DEQ SHOULD BE NOTIFIED 10-DAYS PRIOR TO REMOVAL OF A BASIN.
- CONCENTRATED SEDIMENT ALONG THE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE RESPREAD AND STABILIZED WITH SEED/MULCH IN UPLAND AREAS PRIOR TO BOND RELEASE.
- CONTRACTOR SHALL NOTIFY THE TOWN AND ENGINEER UPON COMPLETION OF CLEANUP ACTIVITIES TO ARRANGE AN FINAL SITE INSPECTION.
- CONTRACTOR SHALL COORDINATE WITH THE TOWN TO SCHEDULE INSTALLATION OF WOODY VEGETATION INCLUDING TREES AND SHRUBS. AS THE PLANTING WINDOW FOR THIS VEGETATION MAY NOT FALL WITHIN THE CONSTRUCTION WINDOW, THE PLANTING SHALL BE SCHEDULED AT THE EARLIEST TIME POSSIBLE AS SHOWN IN SPECIFICATIONS OR AS APPROVED BY TOWN AND ENGINEER.
- WHEN THE PROJECT IS COMPLETE AND PERMANENT STABILIZATION IS ACHIEVED, THE PERMITTEE SHALL CONTACT DEMILR TO CLOSE OUT THE E&S PLAN. AFTER DEMILR INFORMS THE PERMITTEE OF THE PROJECT CLOSE OUT, VIA INSPECTION REPORT, THE PERMITTEE SHALL VISIT [HTTPS://WWW.DEQ.NC.GOV/NGC01](https://www.deq.nc.gov/ngc01) TO SUBMIT AN ELECTRONIC NOTICE OF TERMINATION (E-NOT). A \$127 ANNUAL GENERAL PERMIT FEE WILL BE CHARGED UNTIL THE E-NOT HAS BEEN FILLED OUT.

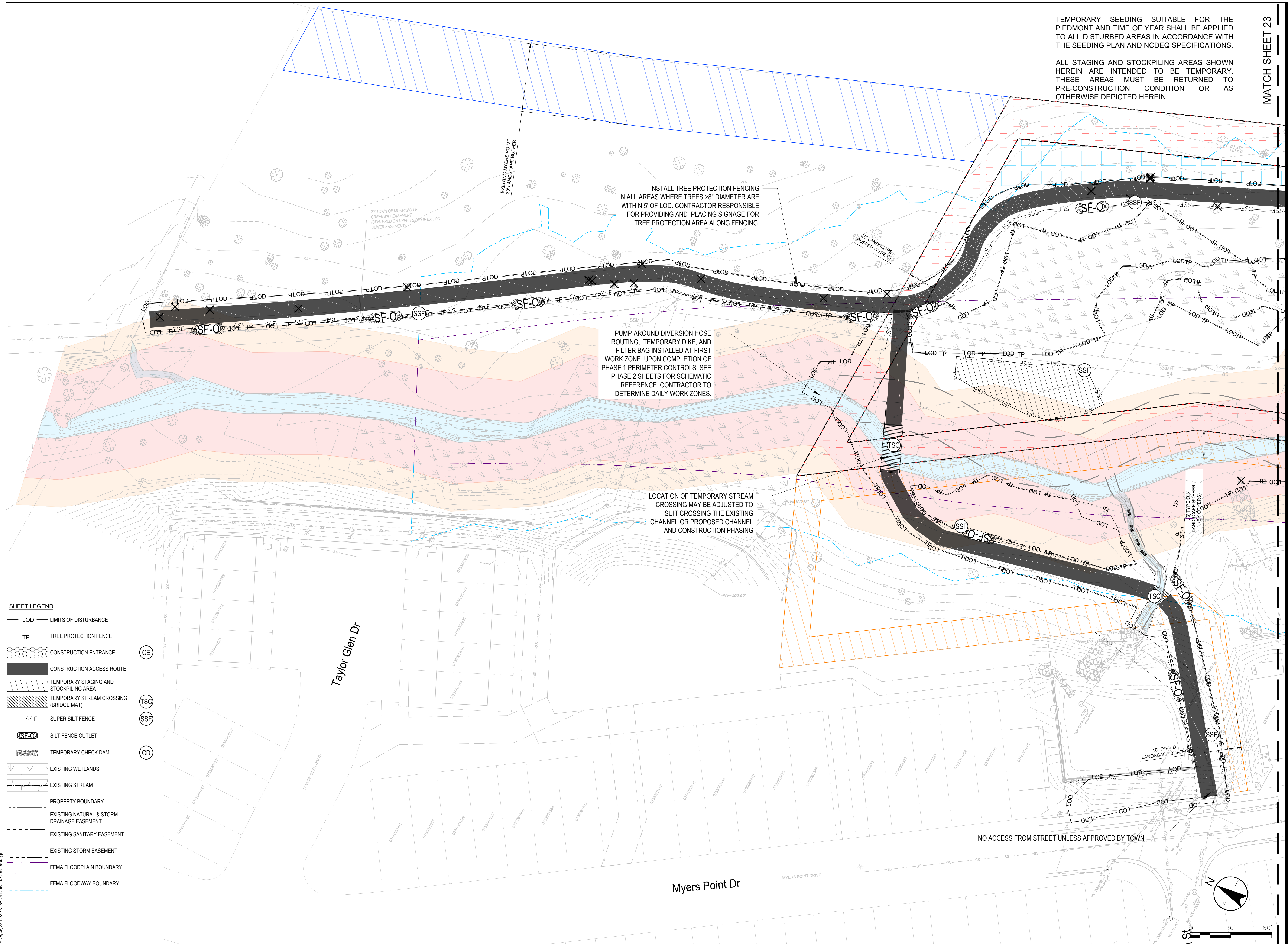
TEMPORARY STAGING & STOCKPILE NOTES

- SEEDING OR COVERING STOCKPILES WITH TARPS OR MULCH IS REQUIRED AND WILL REDUCE EROSION PROBLEMS. TARPS SHOULD BE KEPT KEYED IN AT THE TOP OF THE SLOPE TO KEEP WATER FROM RUNNING UNDERNEATH THE PLASTIC.
- IF A STOCKPILE IS TO REMAIN FOR FUTURE USE AFTER THE PROJECT IS COMPLETE (BUILDERS, ETC.), THE FINANCIAL RESPONSIBLE PARTY MUST NOTIFY WAKE COUNTY OF A NEW RESPONSIBLE PARTY FOR THAT STOCKPILE.
- THE APPROVED PLAN SHALL PROVIDE FOR THE USE OF STAGED SEEDING AND MULCHING ON A CONTINUAL BASIS WHILE THE STOCKPILE IS IN USE.
- ESTABLISH AND MAINTAIN A VEGETATIVE BUFFER AT THE TOE OF THE SLOPE (WHERE PRACTICAL).
- THE CONTRACTOR SHALL NOT DISTURB ANY AREA FOR LAYDOWN/STAGING THAT IS NOT WITHIN THE DISTURBED LIMITS. NOTIFY THE ENGINEER AND NCDEQ IF ADDITIONAL AREAS ARE NEEDED OUTSIDE OF THE DISTURBED LIMITS. THE CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING MEASURES AS NECESSARY TO PREVENT TRACKING DIRT AND MUD ONTO PUBLIC ROADWAYS, AND ADDITIONAL EROSION CONTROL MEASURES TO PREVENT SEDIMENT FROM RUNNING OFF THE SITE ONTO ROADWAYS OR ADJACENT PROPERTIES.



Client/Project					TOWN OF MORRISVILLE ENGINEERING DEPARTMENT - STORMWATER DIVISION					MORRISVILLE TRIBUTARY (SAWMILL CREEK) STREAM RESTORATION MORRISVILLE, NORTH CAROLINA					Title ESC NOTES				
5	PER NCDEQ REVIEW COMMENTS				CSA	26.06.16	E	SIGNATURE SET		CSA	26.04.23								
4	SIGNATURE SET				CSA	26.04.23	D	FOR APPROVAL		CSA	26.02.13								
3	PER TOWN COMMENTS				CSA	26.02.13	C	FOR APPROVAL		CSA	25.12.19								
2	PER TOWN COMMENTS				CSA	25.12.19	B	FOR APPROVAL		CSA	25.07.24								
1	PER TOWN COMMENTS				CSA	25.07.24	A	FOR REVIEW		CSA	25.02.07								
Revision									By	Y1MM.DD									





TEMPORARY SEEDING SUITABLE FOR THE
PIEDMONT AND TIME OF YEAR SHALL BE APPLIED
TO ALL DISTURBED AREAS IN ACCORDANCE WITH
THE SEEDING PLAN AND NCDEQ SPECIFICATIONS.

MATCH SHEET 23

INSTALL TREE PROTECTION FENCING
IN ALL AREAS WHERE TREES >8" DIAMETER ARE
WITHIN 5' OF LOD. CONTRACTOR RESPONSIBLE
FOR PROVIDING AND PLACING SIGNAGE FOR
TREE PROTECTION AREA ALONG FENCING.

LOCATION OF TEMPORARY STREAM
CROSSING MAY BE ADJUSTED TO
SUIT CROSSING THE EXISTING
CHANNEL OR PROPOSED CHANNEL
AND CONSTRUCTION PHASING

NO ACCESS FROM STREET UNLESS APPROVED BY TOWN

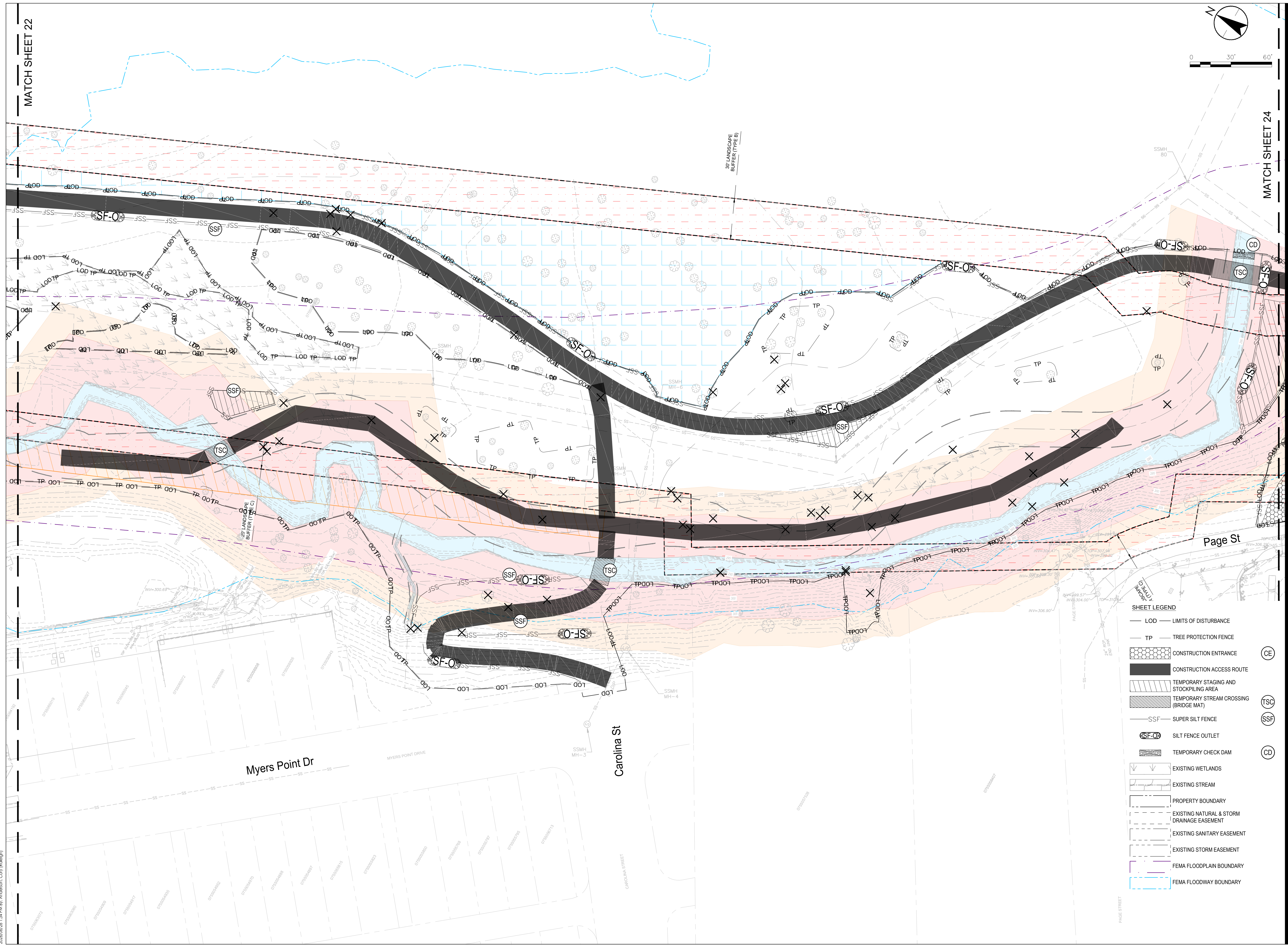
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Client/Project	Title
TOWN OF MORRISVILLE ENGINEERING DEPARTMENT - STORMWATER DIVISION	ESC PHASE 1
MORRISVILLE TRIBUTARY (SAWMILL CREEK) STREAM RESTORATION	
MORRISVILLE, NORTH CAROLINA	

Project Number: COMBO-25-0081			
File Name: 02295_ESC.dwg			
CP	CSA	CSA/CP	26.04.23
Dwn.	Chkd.	Dsgn.	YY.MM.DD
Drawing No.		CG101	
Revision		Sheet	



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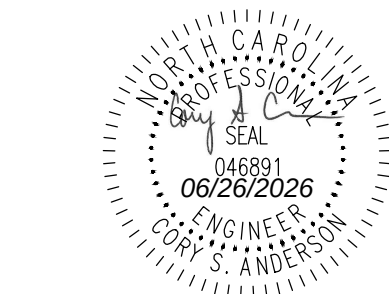
SHEET LEGEND

- LOD — LIMITS OF DISTURBANCE
- TP — TREE PROTECTION FENCE
- CONSTRUCTION ENTRANCE
- CONSTRUCTION ACCESS ROUTE
- TEMPORARY STAGING AND STOCKPILING AREA
- TEMPORARY STREAM CROSSING (BRIDGE MAT)
- SSF — SUPER SILT FENCE
- SSF-O — SILT FENCE OUTLET
- TEMPORARY CHECK DAM
- EXISTING WETLANDS
- EXISTING STREAM
- PROPERTY BOUNDARY
- EXISTING NATURAL & STORM DRAINAGE EASEMENT
- EXISTING SANITARY EASEMENT
- EXISTING STORM EASEMENT
- FEMA FLOODPLAIN BOUNDARY
- FEMA FLOODWAY BOUNDARY

Client/Project

TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

Title
ESC PHASE 1



Project Number: COMBO-25-0081

File Name: 02295_ESC.dwg

CP CSA CSA/CP 26.04.23

Dwn Chtd. Dgr. YTM.M.D.D

Drawing No. CG103

Revision Sheet

3 24 of 46

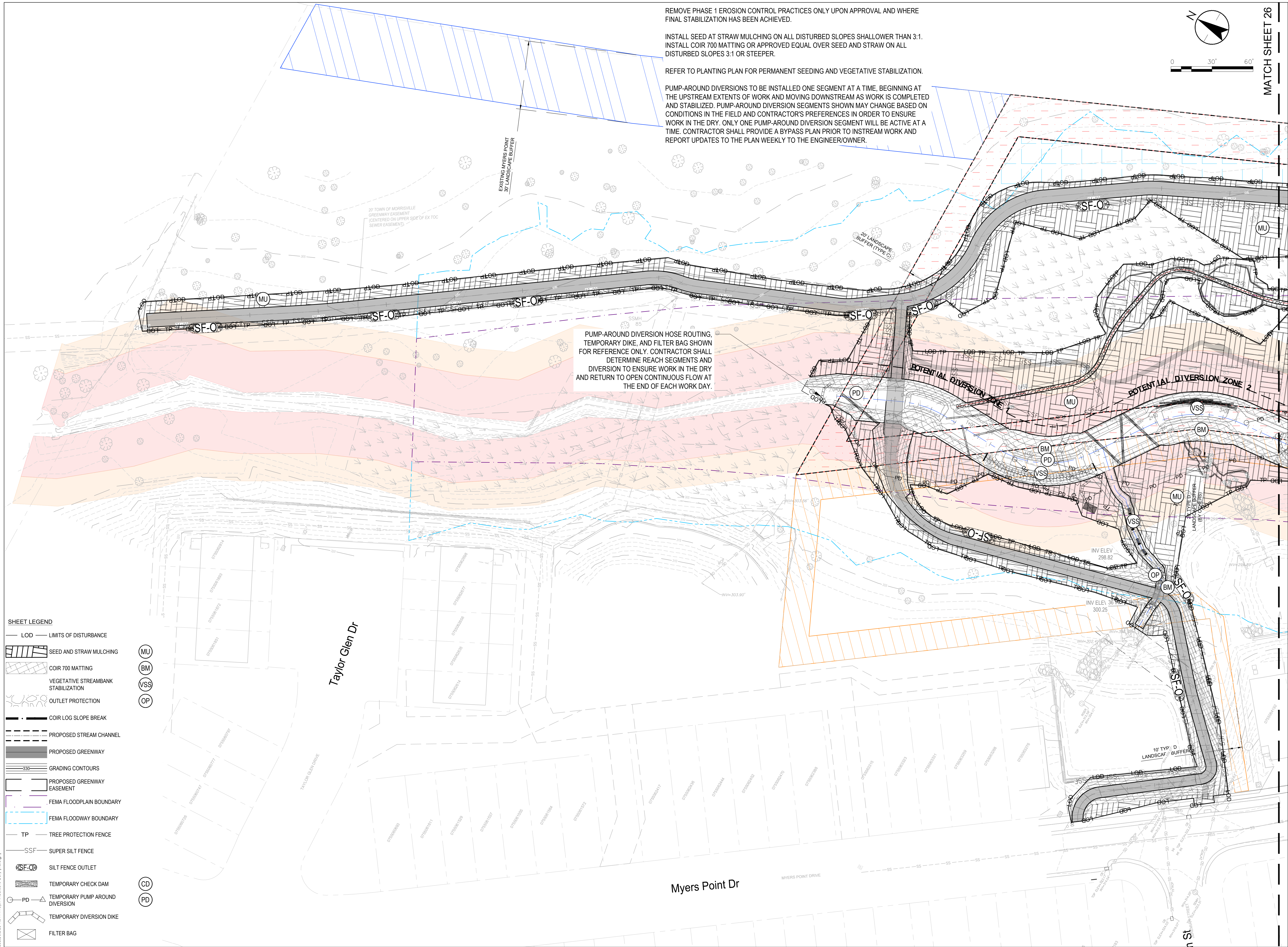


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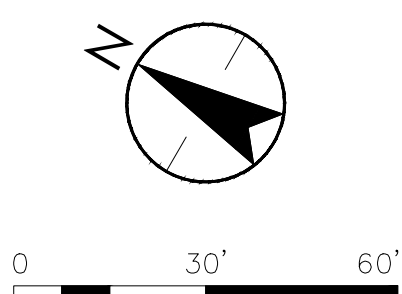
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4	SIGNATURE SET	CSA	26.04.23
3	PER TOWN COMMENTS	CSA	26.02.13
2	PER TOWN COMMENTS	CSA	25.12.19
1	PER TOWN COMMENTS	CSA	25.07.04

Signature Set	For Approval	For Approval	For Approval	For Approval	For Approval
E	D	C	B	A	YTM.M.D.D
26.06.16	26.04.23	26.02.13	25.12.19	25.07.04	25.02.07



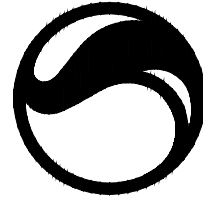
REMOVE PHASE 1 EROSION CONTROL PRACTICES ONLY UPON APPROVAL AND WHERE FINAL STABILIZATION HAS BEEN ACHIEVED.

PUMP-AROUND DIVERSIONS TO BE INSTALLED ONE SEGMENT AT A TIME, BEGINNING AT THE UPSTREAM EXTENTS OF WORK AND MOVING DOWNSTREAM AS WORK IS COMPLETED AND STABILIZED. PUMP-AROUND DIVERSION SEGMENTS SHOWN MAY CHANGE BASED ON CONDITIONS IN THE FIELD AND CONTRACTOR'S PREFERENCES IN ORDER TO ENSURE WORK IN THE DRY. ONLY ONE PUMP-AROUND DIVERSION SEGMENT WILL BE ACTIVE AT A TIME. CONTRACTOR SHALL PROVIDE A BYPASS PLAN PRIOR TO INSTREAM WORK AND REPORT UPDATES TO THE PLAN WEEKLY TO THE ENGINEER/OWNER.



	By	Appd.	TramDD	Issued	For Review	8	For Approval	C	D	E	SIGNAL-SET	CSA	26/04/16	CSA	26/04/25
5 PER-CDSQ REVIEW COMMENTS															CSA
4 SIGNALING SET															CSA
3 PER TOWN COMMENTS															CSA
2 PER TOWN COMMENTS															CSA
1 PER TOWN COMMENTS															CSA
Revision	By	Appd.	TramDD	Issued	For Review	8	For Approval	C	D	E	SIGNAL-SET	CSA	26/04/16	CSA	26/04/25

ESC PHASE 2



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ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

Project Number: COMBO-25-0081
File Name: 02295_ESC.dwg

CP	CSA	CSA/CP	26.04.23
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Revision Sheet

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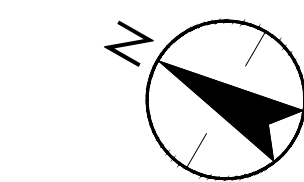
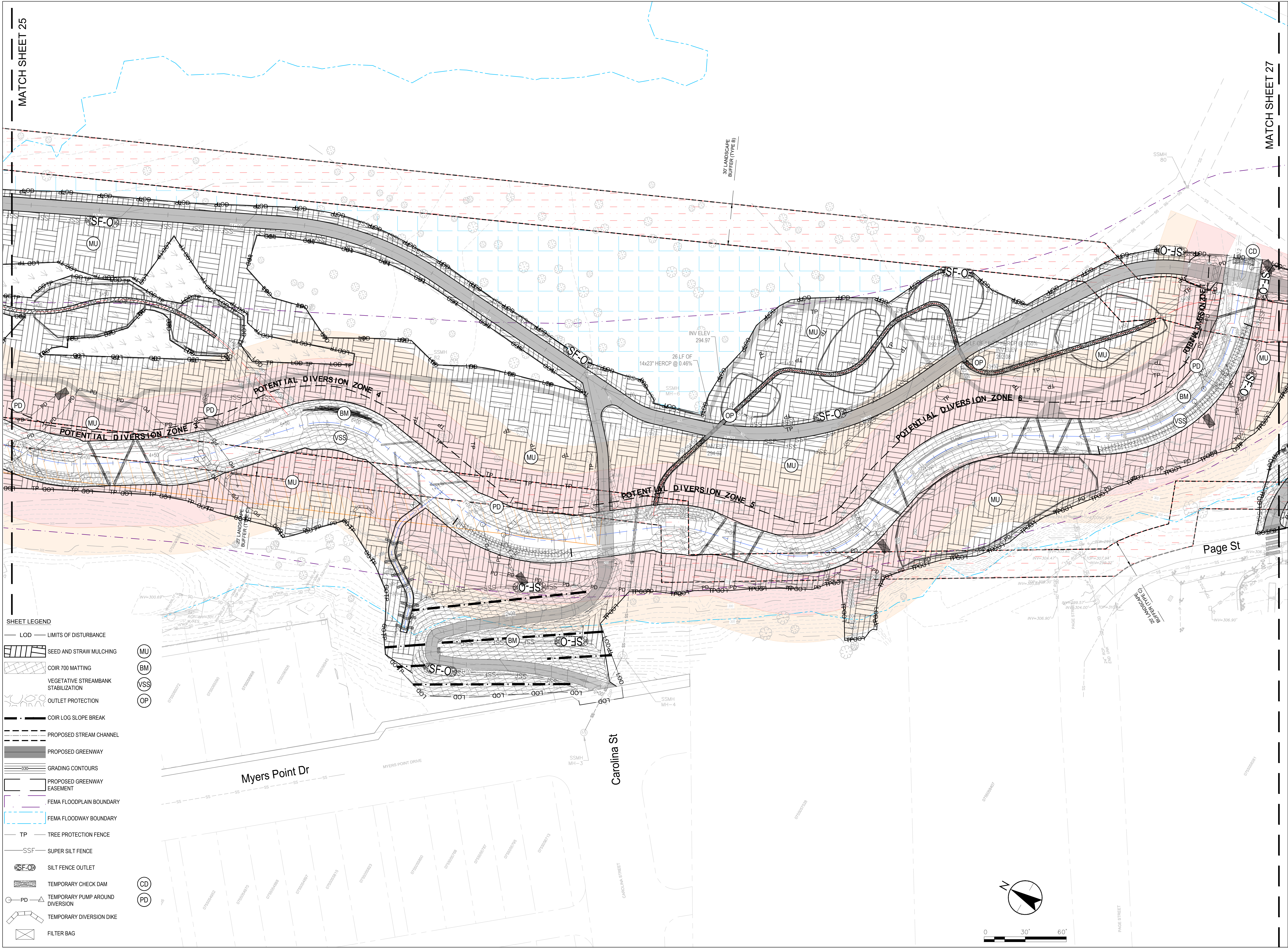
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ORIGINAL SHEET - ARCH'D

- SHEET LEGEND**
- LOD — LIMITS OF DISTURBANCE
 - SEED AND STRAW MULCHING
 - COIR 700 MATTING
 - VEGETATIVE STREAMBANK STABILIZATION
 - OUTLET PROTECTION
 - COIR LOG SLOPE BREAK
 - PROPOSED STREAM CHANNEL
 - PROPOSED GREENWAY
 - GRADING CONTOURS
 - PROPOSED GREENWAY EASEMENT
 - FEMA FLOODPLAIN BOUNDARY
 - FEMA FLOODWAY BOUNDARY
 - TP — TREE PROTECTION FENCE
 - SSF — SUPER SILT FENCE
 - SF-O — SILT FENCE OUTLET
 - TEMPORARY CHECK DAM
 - TEMPORARY PUMP AROUND DIVERSION
 - TEMPORARY DIVERSION DIKE
 - FILTER BAG

(MU)
(BM)
(VSS)
(OP)

(CD)
(PD)

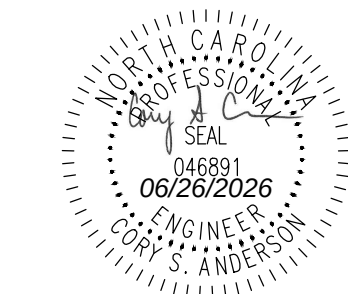


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Client/Project

TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

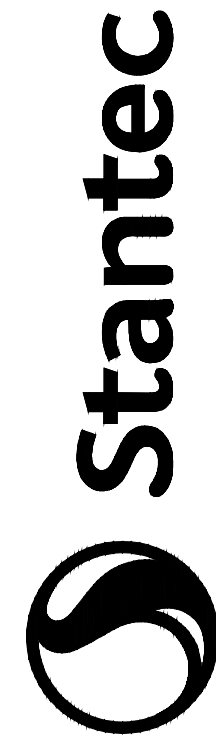
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Project Number: COMBO-25-0081			
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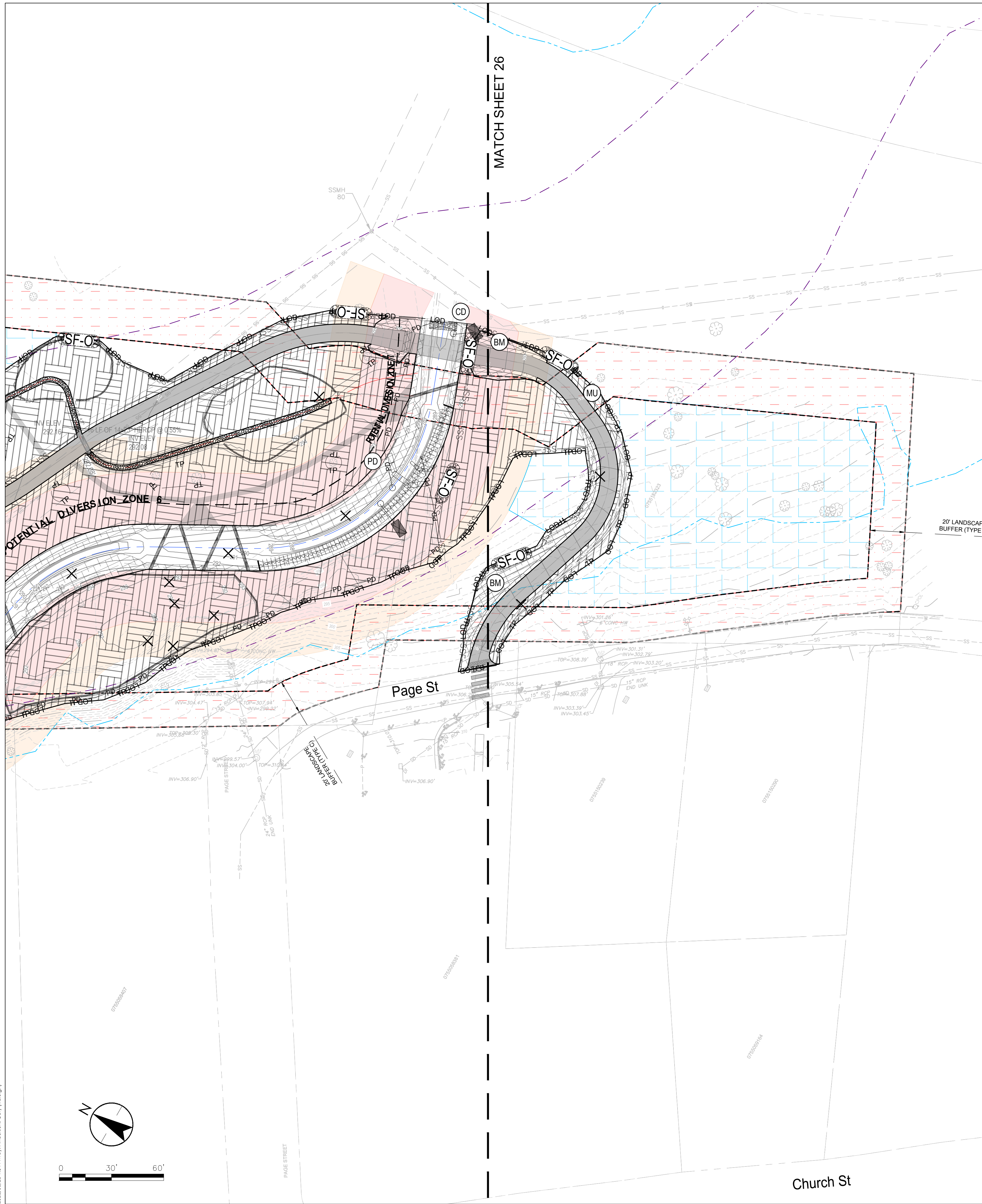
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5	PER NEEDED REVIEW COMMENTS	CSA	CSA	26.06.16	E	SIGNATURE SET	CSA	CSA	26.04.23
4	SIGNATURE SET	CSA	CSA	26.04.23	D	FOR APPROVAL	CSA	CSA	26.02.13
3	PER TOWN COMMENTS	CSA	CSA	26.02.13	C	FOR APPROVAL	CSA	CSA	25.12.19
2	PER TOWN COMMENTS	CSA	CSA	25.12.19	B	FOR APPROVAL	CSA	CSA	25.07.04
1	PER TOWN COMMENTS	CSA	CSA	25.07.04	A	FOR REVIEW	CSA	CSA	25.02.07
Revision		By	Appd.	YT-MM-DD	Issued				



SHEET LEGEND

— LOD —	LIMITS OF DISTURBANCE
	SEED AND STRAW MULCHING
	COIR 700 MATTING
	VEGETATIVE STREAMBANK STABILIZATION
	OUTLET PROTECTION
■ — ■ — ■ — ■ — ■	COIR LOG SLOPE BREAK
— — — — —	PROPOSED STREAM CHANNEL
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— TP —	TREE PROTECTION FENCE
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	TEMPORARY CHECK DAM
	TEMPORARY PUMP AROUND DIVERSION
	TEMPORARY DIVERSION DIKE
	FILTER BAG

MU
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VSS
OP

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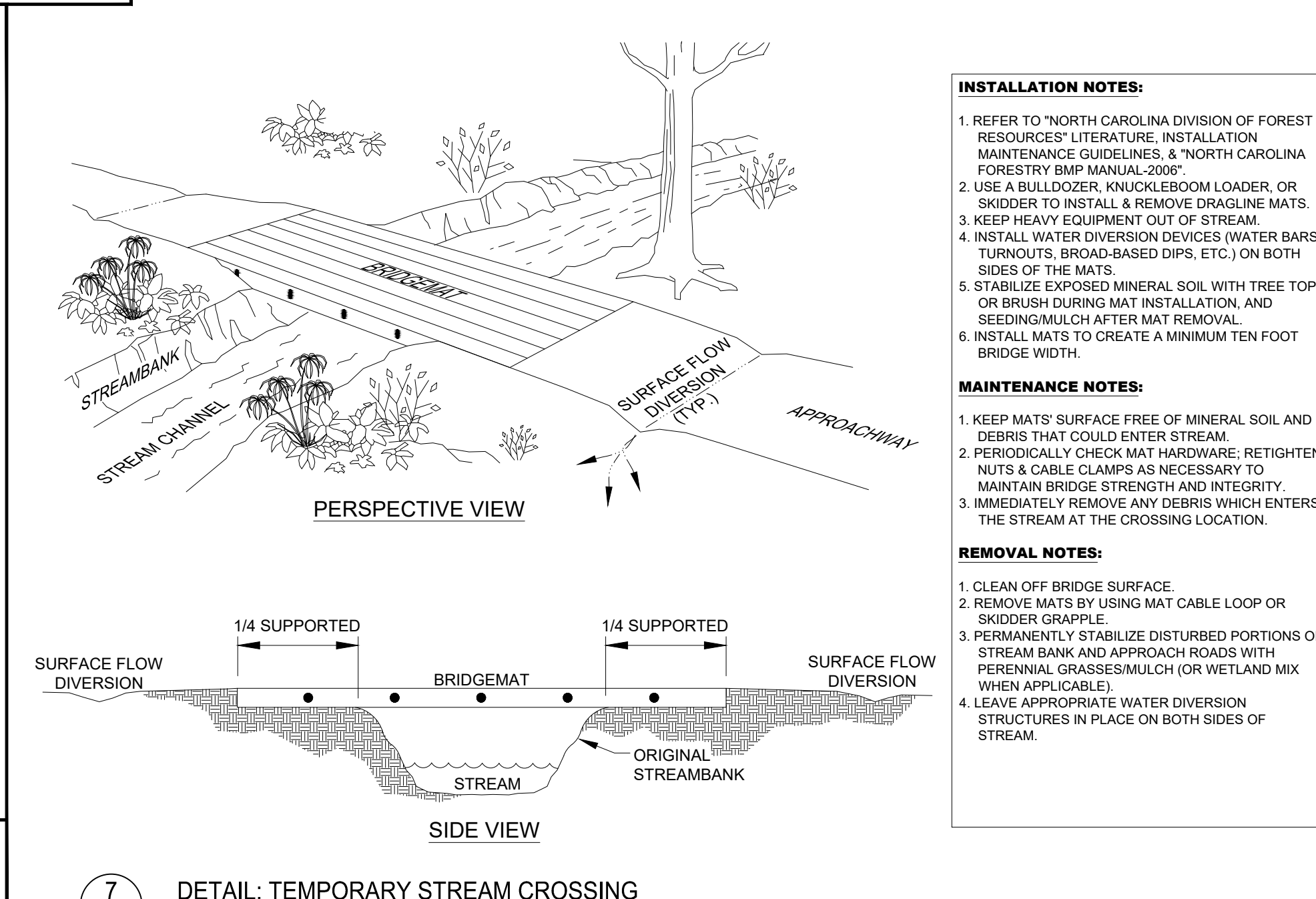
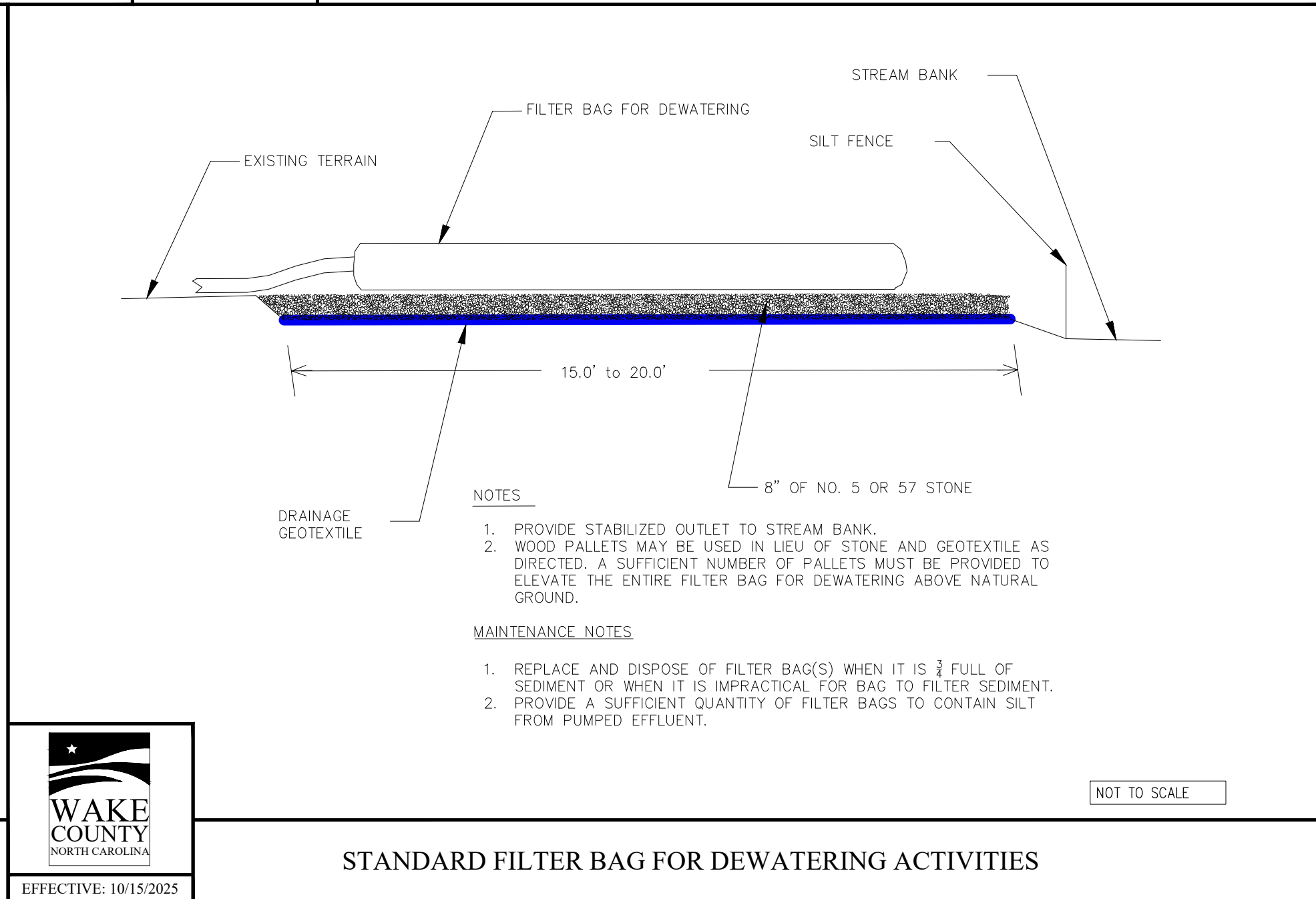
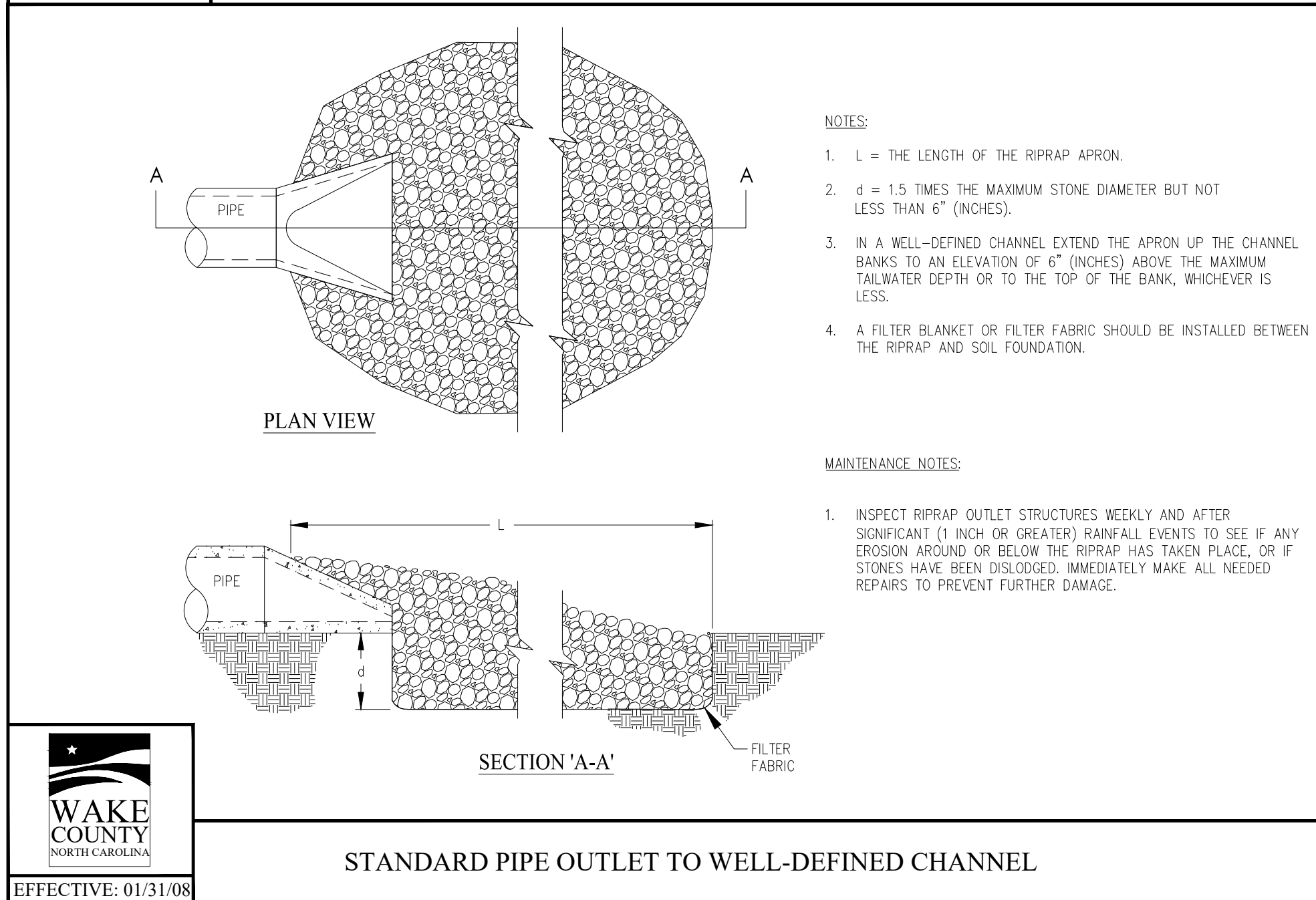
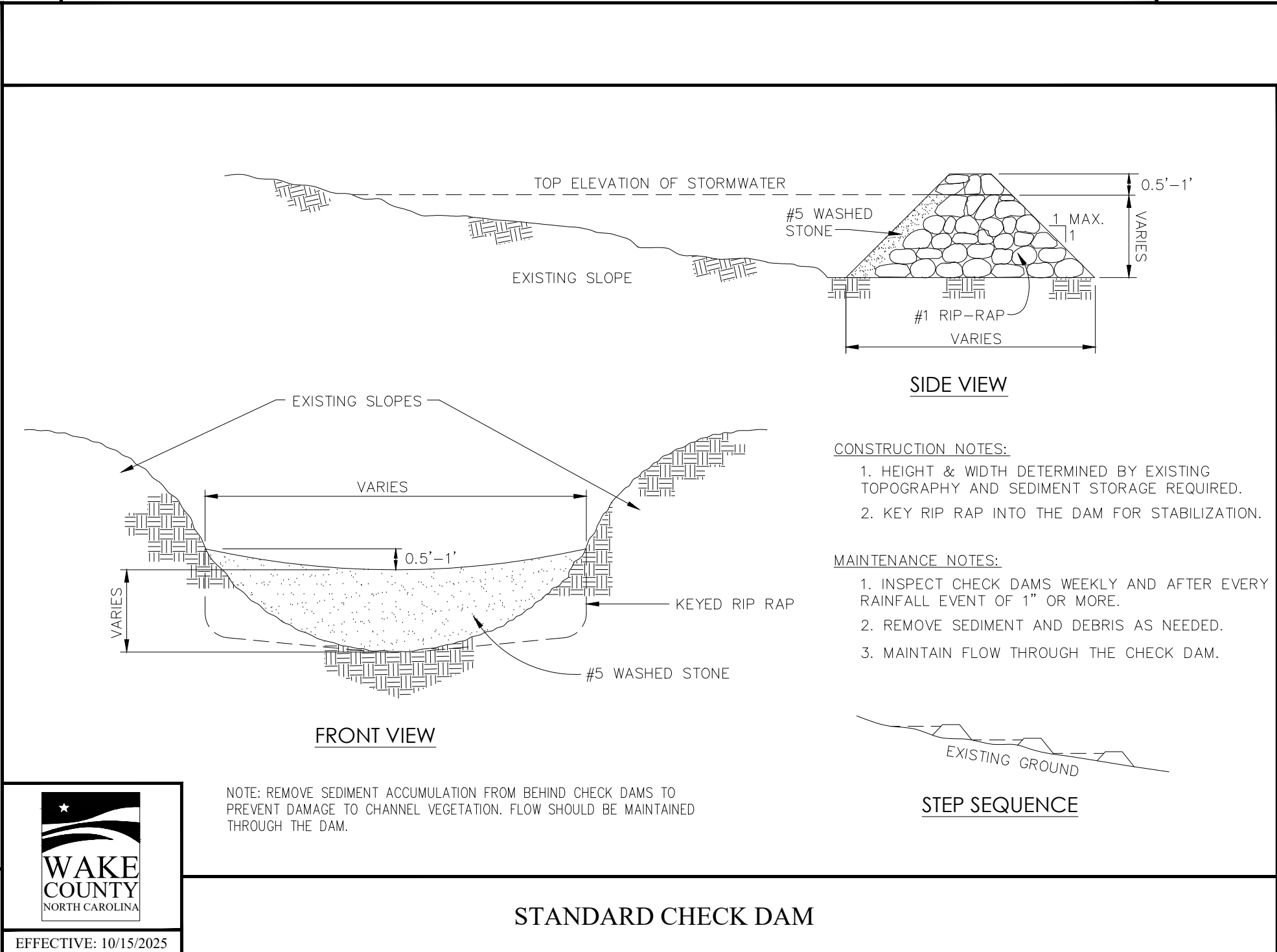
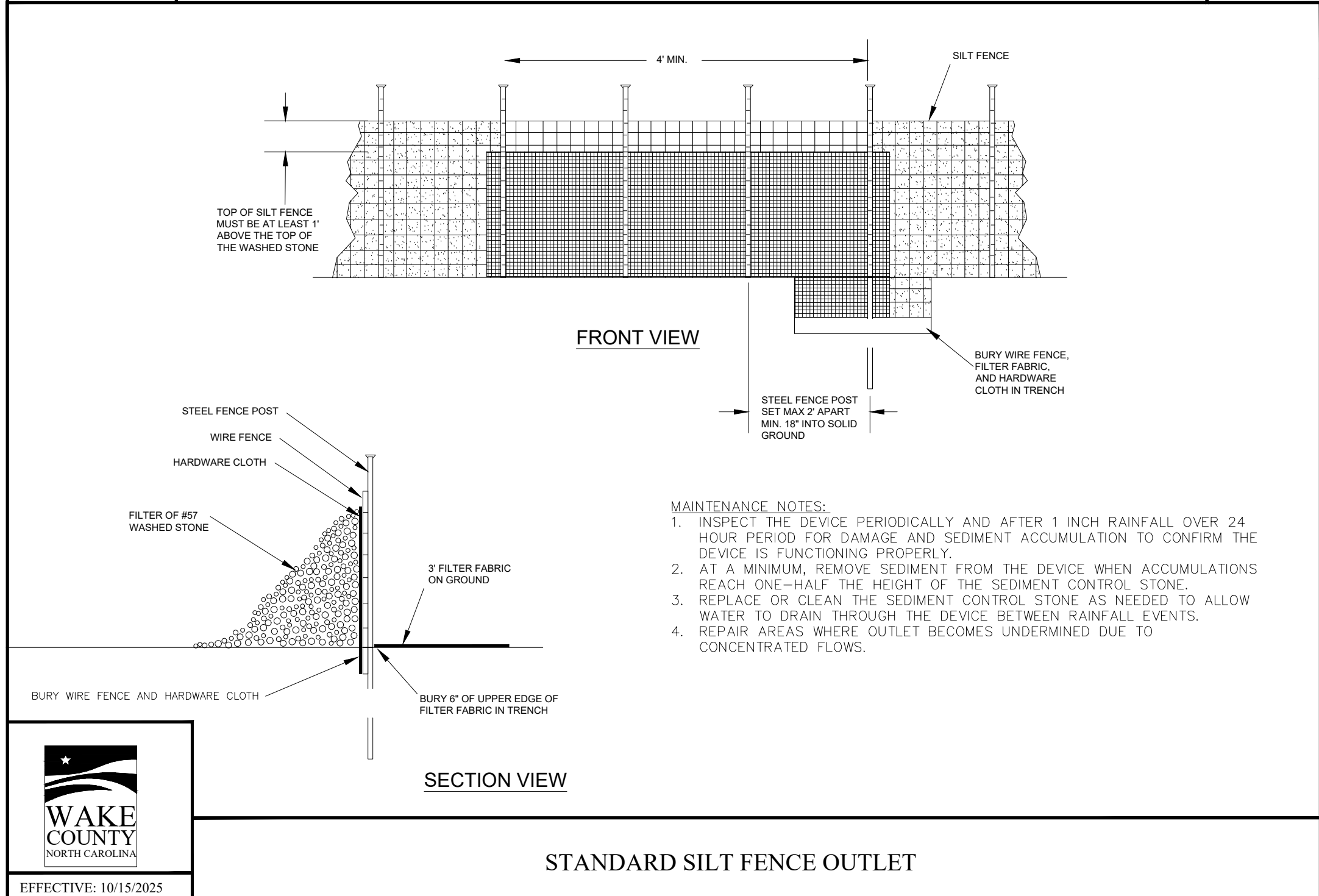
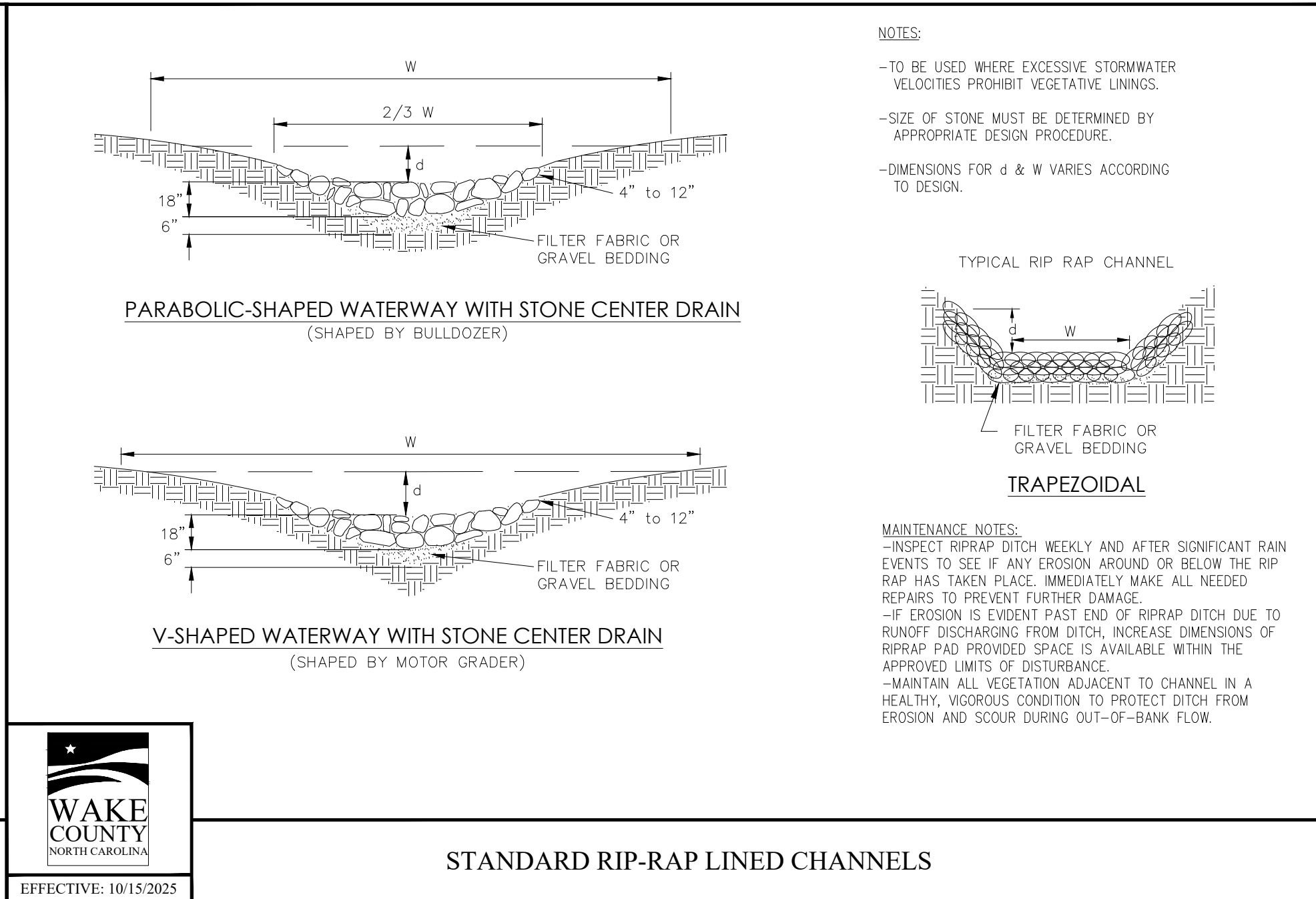
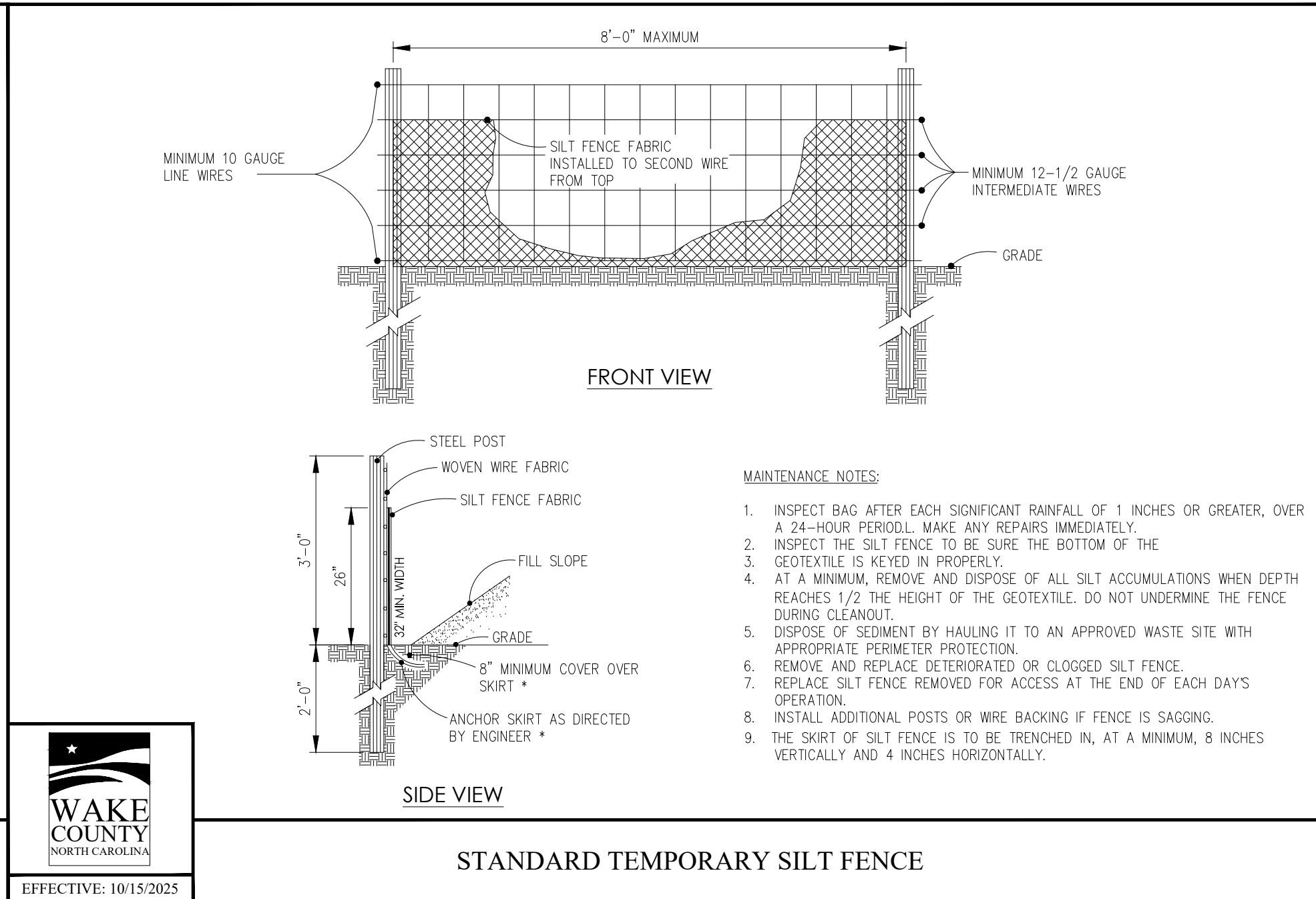
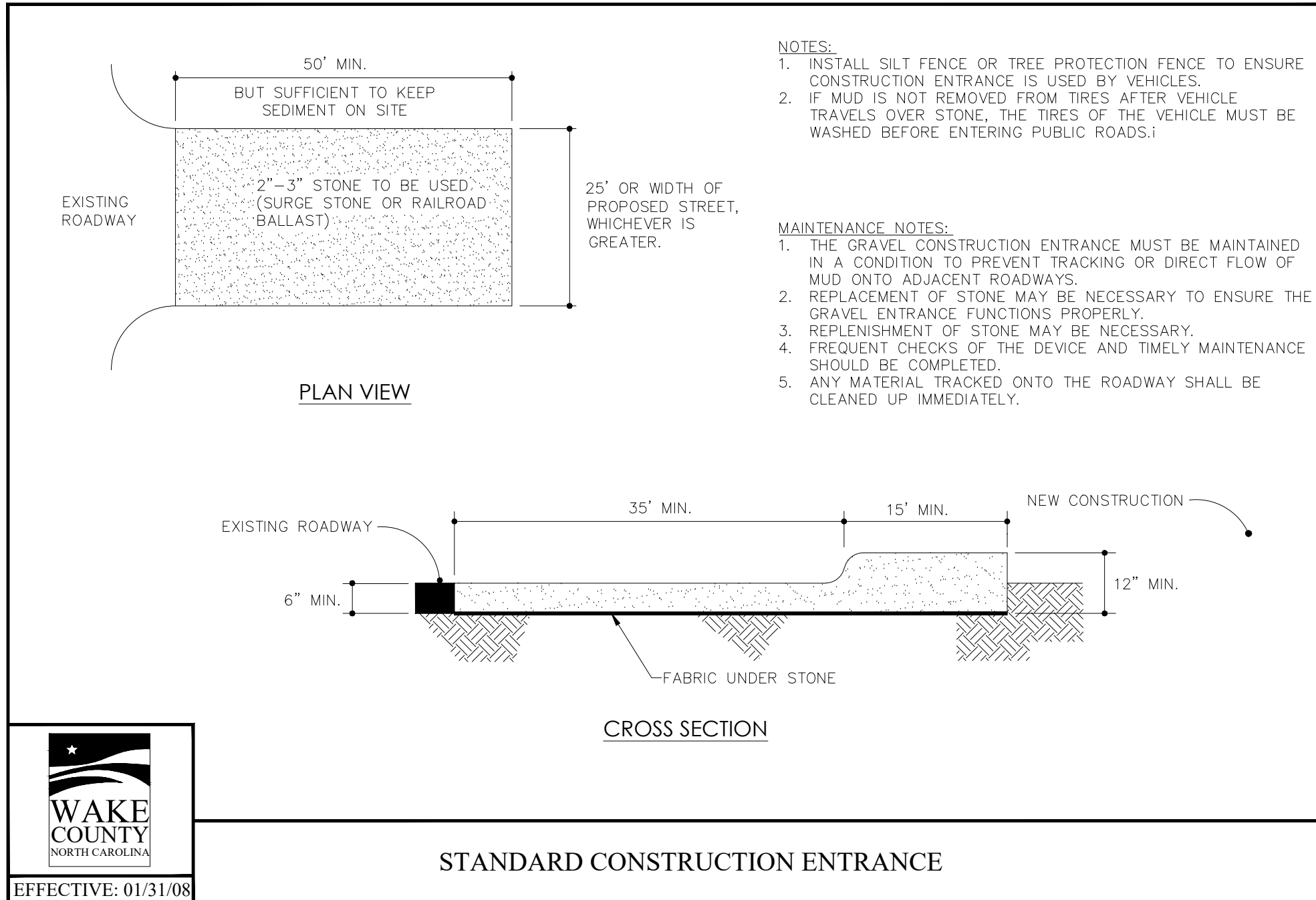


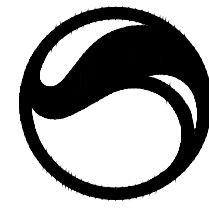
Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

Title
ESC PHASE 2

Project Number: COMBO-25-0081			
File Name: 02295_ESC.dwg			
CP	CSA	CSA/CP	26.04.23
Dwn.	Chkd.	Dsgn.	YY.MM.DD
Drawing No.		CG106	
Revision		Sheet	

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MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

Title

ESC DETAILS

Project Number: COMBO-25-0081

File Name: 02295_ESC.dwg

CP	CSA	CSA/CP	26.04.23
Dwn	Chkd	Dggn	YY-MM-DD

Drawing No. CG501

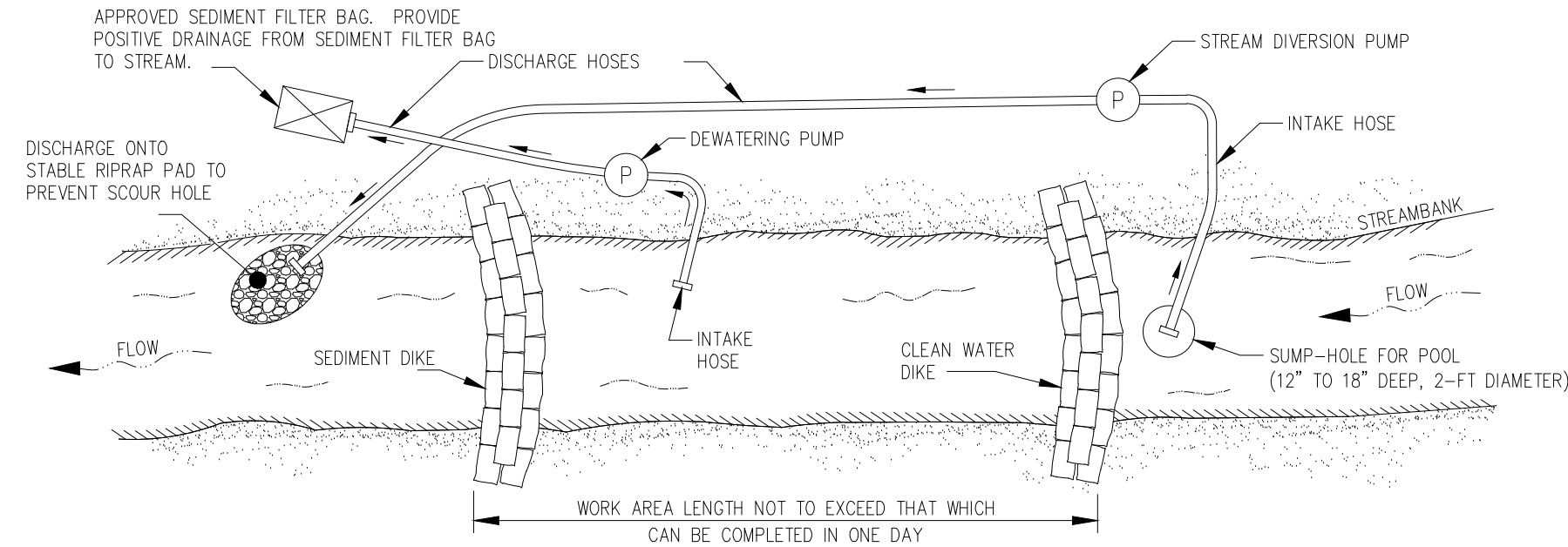
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5	PER NEEDED REVIEW COMMENTS	CSA	26.06.16	E	SIGNATURE SET	CSA	26.04.23
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	Revision	By	YY-MM-DD		Issued	By	YY-MM-DD

PAGE:



- GENERAL NOTES
1. THIS PRACTICE LIMITS POTENTIAL FOR DOWNSTREAM SEDIMENTATION BECAUSE IN-STREAM WORK WILL BE COMPLETED IN THE DRY AND ALL DENUDED AREAS WILL BE STABILIZED BEFORE RE-INTRODUCTION OF WATER BACK INTO THE STREAM CHANNEL.
 2. THE TOTAL WORK AREA OF THE PUMP-AROUND DIVERSION SHALL NOT EXCEED THE LENGTH OF AREA THAT CAN BE COMPLETED AND STABILIZED IN ONE WORKING DAY.
 3. COMPLETE THE ASSOCIATED WORK AND REMOVE THE PUMP-AROUND DIVERSION AT THE END OF EACH WORKING DAY AND STABILIZE THE WORK AREA.
 4. LIMIT THE USE OF THIS PRACTICE TO BASE- OR LOW-FLOW CONDITIONS WHERE APPLICABLE TO ENSURE ADEQUACY OF PUMP EQUIPMENT. REMOVE THE DIVERSION AND ENSURE STABLE CONTINUOUS FLOW FROM UPSTREAM OF THE WORK AREA TO AN UNDISTURBED SEGMENT OF THE EXISTING CHANNEL DOWNSTREAM OF THE WORK AREA AT THE END OF EACH WORKING DAY.
 5. SIZE THE PUMP SELECTED TO ADEQUATELY PUMP BASE FLOW AT A HEAD GREATER THAN THE IN-STREAM BARRIER HEIGHT.
 6. A DOWNSTREAM RIPRAP OR SANDBAG-LINED "PLUNGE POOL" MAY BE USED AT THE PUMP DISCHARGE LOCATION TO ALLOW FOR DISPERSION OF PUMP DISCHARGE TO A NON-EROSIVE VELOCITY WITHIN THE EXISTING STREAM CHANNEL.
 7. WATER FROM THE WORK AREA SHALL BE PUMPED TO A SEDIMENT FILTERING MEASURE SUCH AS A SEDIMENT BAG OR OTHER APPROVED DEVICE. THE MEASURE SHALL BE LOCATED SUCH THAT THE WATER DRAINS BACK INTO THE CHANNEL BELOW THE DOWNSTREAM SANDBAG DIKE WITHOUT CAUSING EROSION BETWEEN THE SEDIMENT FILTER BAG AND THE STREAM CHANNEL.
 8. TEMPORARY PUMP-AROUND IS LIMITED TO BASEFLOW AND LOW-FLOW CONDITIONS ONLY. IN-STREAM WORK SHALL NOT OCCUR DURING SIGNIFICANT PRECIPITATION EVENTS OR WHEN FLOWS EXCEED PUMP CAPACITY. TEMPORARY DIKES SHALL BE BREACHED OR REMOVED AS NECESSARY TO PREVENT BACKWATERING OR FAILURE, AND WORK SHALL NOT RELY ON THE PUMP-AROUND SYSTEM TO CONVEY STORM FLOWS.

- CONSTRUCTION & MAINTENANCE NOTES:
1. SANDY MATERIAL MAY BE USED TO FILL SANDBAGS. MATERIAL FROM THE CHANNEL MAY BE USED TO FILL THE BAGS.
2. DETERMINE THE LENGTH OF STREAM TO BE DEWATERED BY THE AMOUNT OF WORK THAT CAN BE COMPLETED IN ONE WORK DAY.
3. WHERE POSSIBLE, USE EXISTING POOLS WITHIN THE STREAM IN PLACE OF AN EXCAVATED SUMP HOLE.
4. STRATEGIC PLACEMENT OF THE IN-STREAM BARRIER CAN ELIMINATE MULTIPLE INSTALLATIONS DURING CONSTRUCTION. COORDINATE THE WORK AREAS AND PUMP AROUND LOCATIONS WITH THE TOWN AND ENGINEER FOR CONCURRENCE.
5. REMOVE ALL LARGE DEBRIS LOCATED WITHIN THE FOUNDATION OF THE BARRIER TO ENSURE PROPER SEALING AND REDUCE LEAKAGE THROUGH THE BARRIER.
6. SANDSTONE BARRIER SHOULD BE MONITORED CONTINUOUSLY FOR LEAKAGE AND REPAIRED AS NECESSARY.
7. DURING ACTIVE PUMP-AROUNDS, THE PERFORMANCE OF THE CONFIGURATION AND SURROUNDING AREA IS TO BE MONITORED CONTINUOUSLY FOR ANY CHANGES IN THE STREAM FLOW OR PUMP PERFORMANCE.
- 7.1. THE BACKWATERED AREA IS TO BE MONITORED FOR HEADWATER DEPTHS TO NOT RISE TO THE TOP OF THE WATER BARRICADE OR START FLOWING IN UNDESIRABLE DIRECTIONS OUT OF THE STREAM CHANNEL.
- 7.2. THE TAKE TO THE PUMP IS TO BE MONITORED FOR DEBRIS. CONFIRM THAT THE INTAKE PROTECTION IS FUNCTIONING. MAINTAIN THE PUMP IN OPERATING CONDITION, AND ENSURE THAT ADEQUATE FUEL IS IMMEDIATELY AVAILABLE FOR THE EXPECTED WORK DURATION UNTIL COMPLETION.
- 7.3. MONITOR THE STABLE DISCHARGE POINT FOR INDICATORS OF EROSION AND REVISE AS NECESSARY TO MAINTAIN A STABLE DISCHARGE POINT.
8. BEFORE COMPLETE DEWATERING OF THE WORK AREA, REMOVE TRAPPED FISH AND OTHER AQUATIC WILDLIFE, AND RELOCATE TO THE WATERBODY DOWNSTREAM OF THE LOWER BARRIER.
9. ENSURE THAT THE FILTERED WATER IS DISCHARGED IN A MANNER THAT DOES NOT CAUSE EROSION. PROVIDE STABILIZATION MEASURES TO THE FLOW PATH FROM THE POINT OF DISCHARGE TO THE RECEIVING WATERBODY AS REQUIRED.

TYPICAL INSTALLATION SEQUENCE

1. LIMIT WORK AREA TO ONE DAY'S CONSTRUCTION AND INSTALL UPSTREAM AND DOWNSTREAM IMPERVIOUS DIKES TO ISOLATE THE ACTIVE WORK AREA.
2. INSTALL PUMP, INTAKE, AND DISCHARGE HOSE/PIPE AND INITIATE PUMP-AROUND TO DIVERT BASEFLOW AROUND THE WORK AREA.
3. DEWATER THE ISOLATED AREA AND COMPLETE STREAM CONSTRUCTION ACTIVITIES IN THE DRY.
4. REMOVE ACCUMULATED SEDIMENT AND FULLY STABILIZE ALL DISTURBED AREAS BY THE END OF THE WORK DAY.
5. REMOVE PUMP-AROUND EQUIPMENT AND DIKES (DOWNSTREAM FIRST), AND REINTRODUCE FLOW THROUGH THE STABILIZED CHANNEL.

DETAIL: TEMPORARY PUMPAROUND DEWATERING
N.T.S (SOURCE: TOWN OF APEX STANDARDS)

NOTES:

1. Select material based on site and practice requirements, availability of material, labor and equipment.
2. Before mulching, complete grading, install sediment control practices, and prepare the seedbed. Apply seed before mulching **except** when seed is applied as part of a hydroseeded slurry containing wood fiber mulch or a hydroseeder slurry is applied over straw.

APPLICATION OF ORGANIC MULCH

1. Spread mulch uniformly by hand, or with a mulch blower.
2. When spreading straw mulch by hand, divide the area to be mulched into sections of approximately 1,000 ft², and place 70-90 lb. of straw (1 1/2 to 2 bales) in each section to facilitate uniform distribution.
3. After Spreading, no more than 25% of the ground surface should be visible.
4. In hydroseeding operations a green dye, added to the slurry, assures a uniform application.

ANCHORING ORGANIC MULCH

1. Straw mulch must be anchored immediately after spreading.
2. A tractor-drawn implement designed to punch mulch into the soil or a mulch anchoring tool provides maximum erosion control with straw. A regular farm disk, weighted and set nearly straight, may substitute, but will not do a job comparable to the mulch anchoring tool. The disk should not be sharp enough to cut the straw. These methods are limited to slopes no steeper than 3:1, where equipment can operate safely.
3. Application of liquid mulch binders and tackifiers should be heaviest at the edges of areas and at crests of ridges and banks, to resist winds. Binder should be applied uniformly to the rest of the area. Binders may be applied after mulch is spread, or may be sprayed into the mulch as it is being blown onto the soil. Applying straw and binder together is the most effective method.
4. Emulsified asphalt should be applied at 0.10 gallons per square yard (10 gal/1,000 ft²). Heavier applications cause straw to "perch" over rills. Use Rapid setting (RS or CRS) designated asphalt in traffic areas to prevent uncurd asphalt from being picked up on shoes and causing damage to rugs, clothes, etc.
5. Synthetic binders may be used as recommended by the manufacturer.
6. Lightweight plastic, cotton, jute, wire or paper nets may be stapled over the mulch according to the manufacturer's recommendations.
7. For small areas where other methods cannot be used, peg and twine anchoring can be used. Drive 8-10 inch wooden pegs into within 3 inches of the soil surface, every 4 feet in all directions. Stakes can be driven before or after straw is spread. Secure mulch by stretching twine between pegs in a criss-cross-within-a-square pattern. Turn twine two or more times around each peg.
8. Rye Grain may be used to anchor mulch in fall plantings, and German Millet in spring. Broadcast at 15 lb/acre before applying mulch.

CHEMICAL MULCHES

1. May be effective for soil stabilization if used between May 1 and June 15, or Sept. 15 and Oct. 15, provided that they are used on slopes no **steeper** than 4:1, and that proper seedbed preparation has been accomplished, including surface roughening where required.
2. Chemical mulches cannot be used to bind other mulches, or with wood fiber in a hydroseeded slurry at any time. Follow the manufacturer's recommendations for application.

FIBERGLASS ROVING

1. Spread roving uniformly over the area at a rate of 0.25 to 0.35 lb/yd². Anchor with asphalt immediately after application, at a rate of 0.25-0.35 gal/yd².
2. As a channel lining, and at other sites of concentrated flow, the roving mat must be further anchored to prevent undermining.
3. It may be secured with stakes placed at intervals no greater than 10 feet along the drainageway, and randomly throughout its width, but not more than 10 feet apart.
4. As an option to stacking, the roving can be buried to a depth of 5 inches at the upgrade end and at intervals of 50 feet along the length of the channel.

NETS AND MATS

1. Nests alone generally provide little moisture conservation benefits and only limited erosion protection. Therefore, typically use in conjunction with an organic mulch such as straw.
2. Except when wood fiber slurry is used, netting should always be installed **over** the mulch. Wood fiber may be sprayed on top of an installed net.
3. Mats, including "excelsior" (wood fiber) blankets, are considered protective mulches and may be used alone.
4. Place the matting in firm contact with the soil, and staple securely.

**Use of trade names does not imply endorsement of product.

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29

DETAIL: MULCHING
NTS (SOURCE: NCDEQ EROSION CONTROL MANUAL)

 **Stantec**

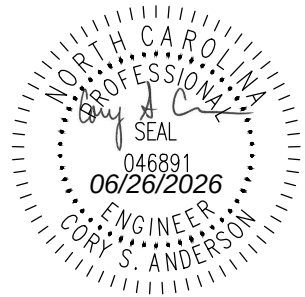
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5	PER ICDQ REVIEW COMMENTS	CSA	26/04/16	E	SIGNATURE SET	CSA	26/04/25
4	SIGNATURE SET	CSA	26/04/23	D	FOR APPROVAL	CSA	26/02/13
3	PER TOWN COMMENTS	CSA	26/02/13	C	FOR APPROVAL	CSA	25/12/19
2	PER TOWN COMMENTS	CSA	25/12/19	B	FOR APPROVAL	CSA	25/07/04
1	PER TOWN COMMENTS	CSA	25/07/04	A	FOR REVIEW	CSA	25/02/07
revision		By	Y1AMMDD	Issued		By	Y1AMMDD

Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

ESC DETAILS



Project Number:		COMBO-25-0081	
File Name:		02295_ESC.dwg	
CP	CSA	CSA/CP	26.04.23
Dwn.	Chkd.	Dsgn.	YY.MM.DD
Drawing No.		CG502	
Revision		Sheet	



NOTES:

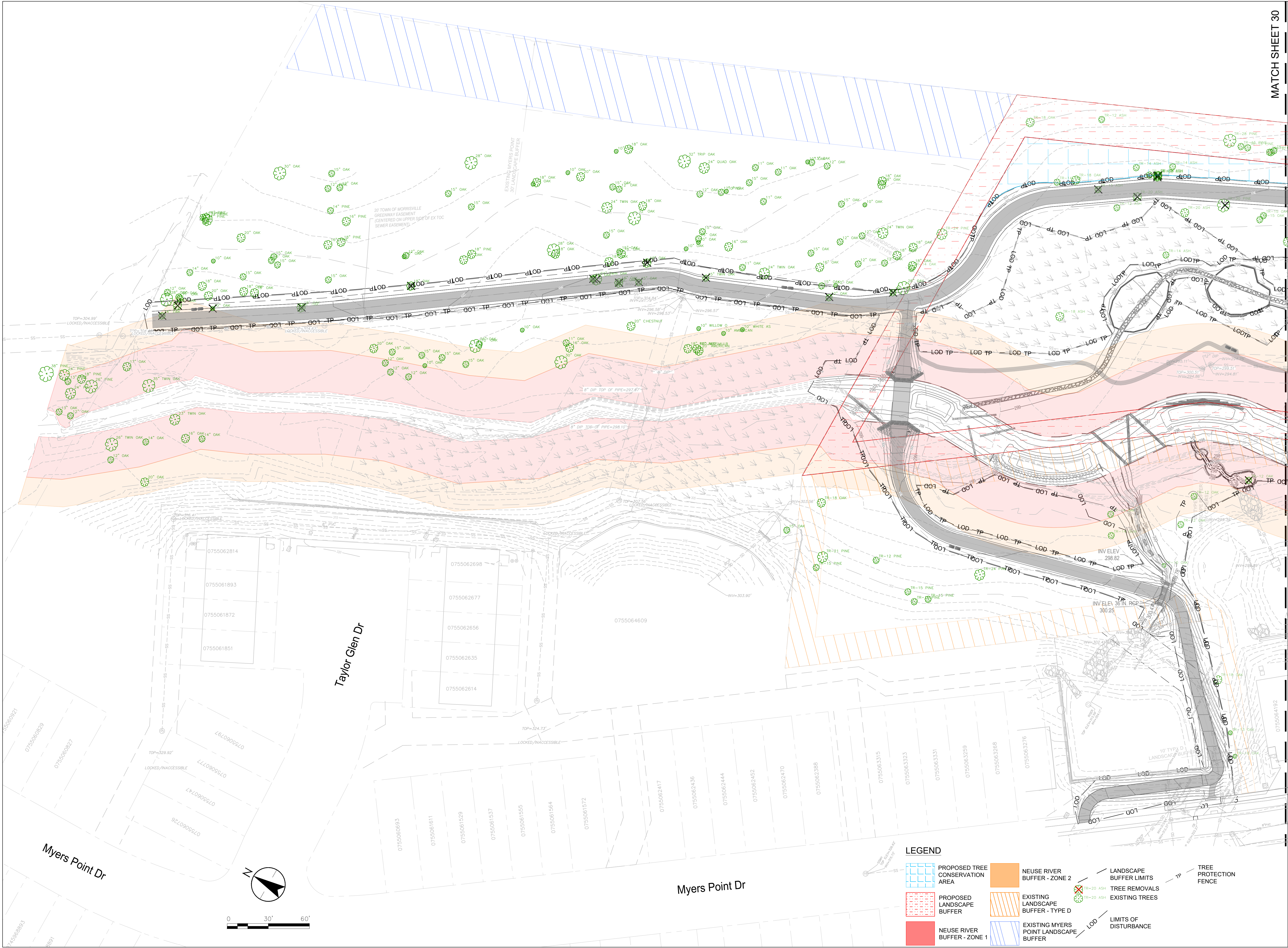
1. EXISTING VEGETATION AND RIPARIAN BUFFER PLANTING WILL BE USED TO FULFILL LANDSCAPE BUFFER REQUIREMENTS.

Revision

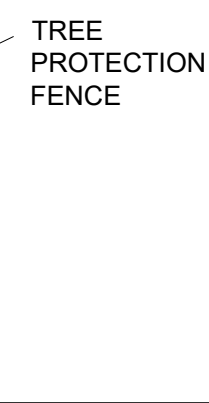
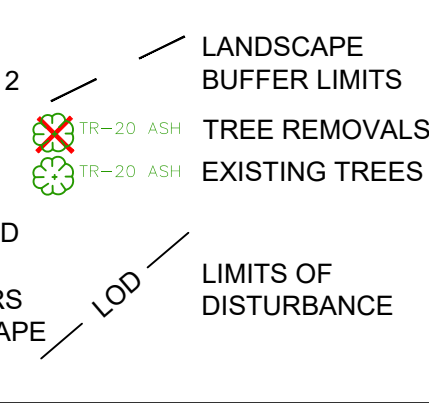
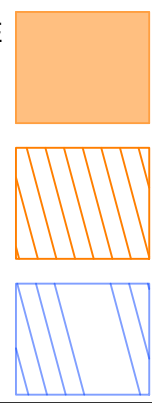
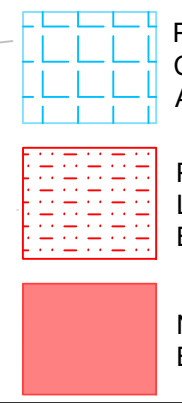
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02295_PLANTING_PLAN.dwg
2026/04/23 6:35 PM By: Anderson, Cory (Relight)

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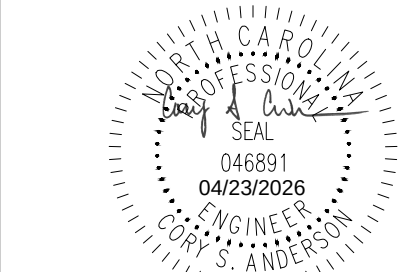


LEGEND



Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

Title
TREE PROTECTION PLAN



Project Number: COMBO-25-0081
File Name: 02295_PLANTING_PLAN.dwg

CP	CSA	CSA/CP	26.04.23
Dwn	Chkd	Dgn	YY-MM-DD

Drawing No. L102

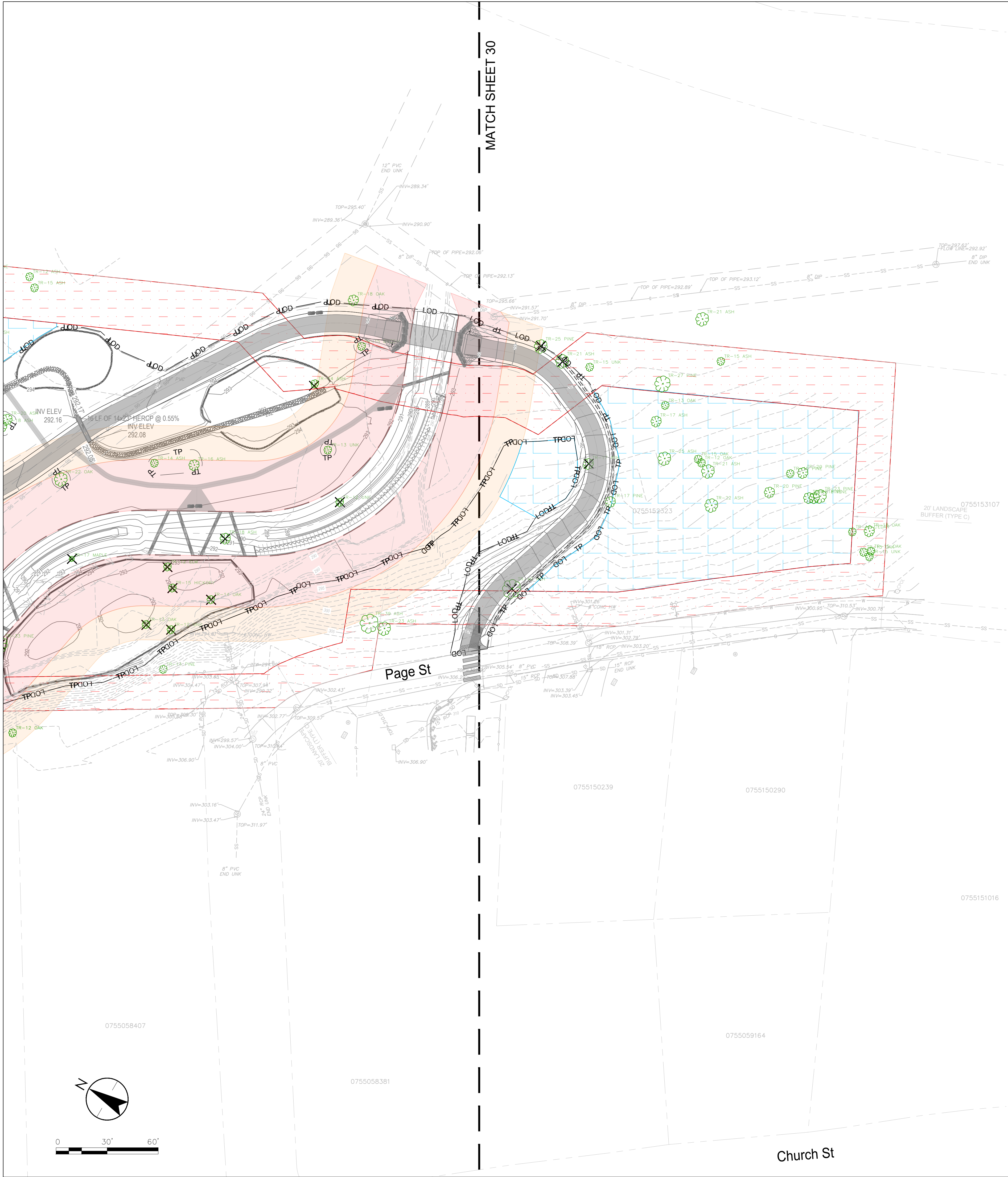
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3 31 of 46

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						By	Appl.	YY-MM-DD	YY-MM-DD

MATCH SHEET 30





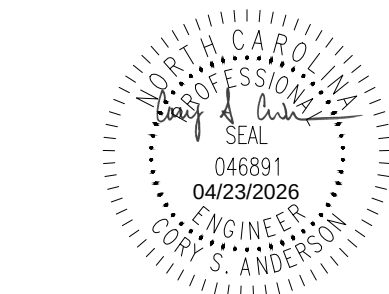
LEGEND

- | | | | | | | | |
|--|---------------------------------|--|---------------------------------------|--|-------------------------|--|-----------------------|
| | PROPOSED TREE CONSERVATION AREA | | NEUSE RIVER BUFFER - ZONE 2 | | LANDSCAPE BUFFER LIMITS | | TREE PROTECTION FENCE |
| | PROPOSED LANDSCAPE BUFFER | | EXISTING LANDSCAPE BUFFER - TYPE D | | TREE REMOVALS | | EXISTING TREES |
| | NEUSE RIVER BUFFER - ZONE 1 | | EXISTING MYERS POINT LANDSCAPE BUFFER | | LIMITS OF DISTURBANCE | | |

Client/Project

TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

Title
TREE PROTECTION PLAN



Project Number: COMBO-25-0081

File Name: 02295_PLANTING_PLAN.dwg

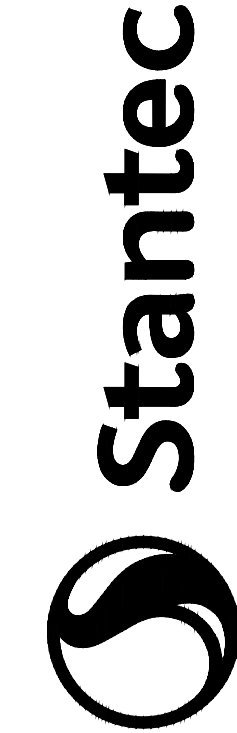
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Dwn	Chkd	Dgn	YY-MM-DD

Drawing No. L104

Revision Sheet

3

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ORIGINAL SHEET - ARCH D

LEGEND

STREAMBANK
STABILIZATION/
COIR MATTING

WETLAND
STABILIZATION

RIPARIAN
STABILIZATION

TURF GRASS
STABILIZATION

RIPARIAN BUFFER
PLANTING

PFO WETLAND
PLANTING

PSS WETLAND
PLANTING

KEYSTONE
SPECIES BUFFER
PLANTING

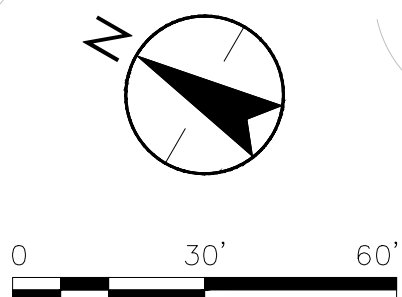
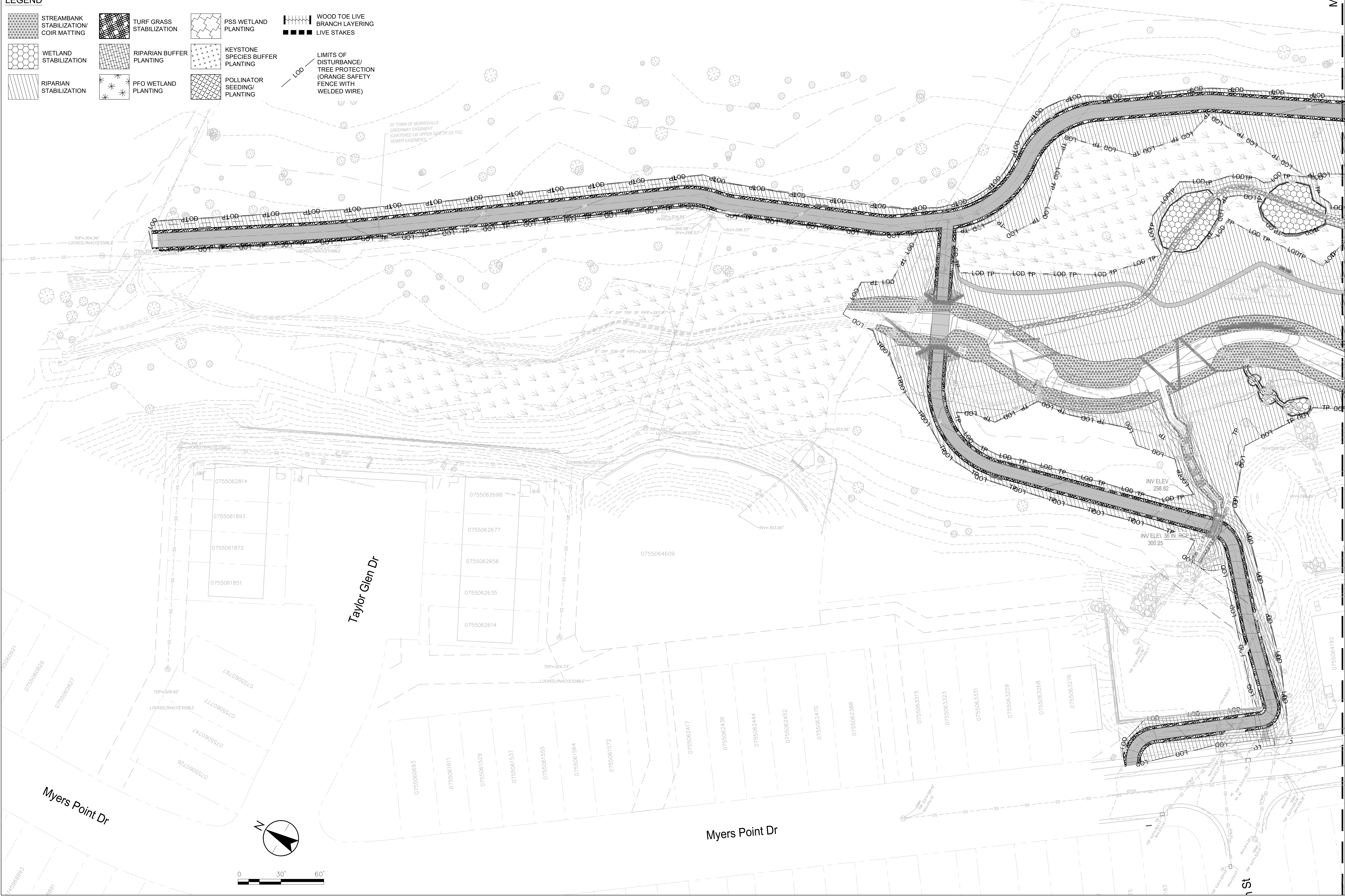
POLLINATOR
SEEDING/
PLANTING

WOOD TOE LIVE
BRANCH LAYERING

LIVE STAKES

LIMITS OF
DISTURBANCE/
TREE PROTECTION
(ORANGE SAFETY
FENCE WITH
WELDED WIRE)

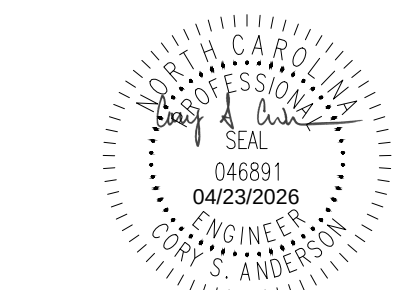
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MATCH SHEET 33

Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

Title
SEEDING PLAN



Project Number: COMBO-25-0081

File Name: 02295_PLANTING_PLAN.dwg

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Dwn	Chkd	Dgn	YY-MM-DD

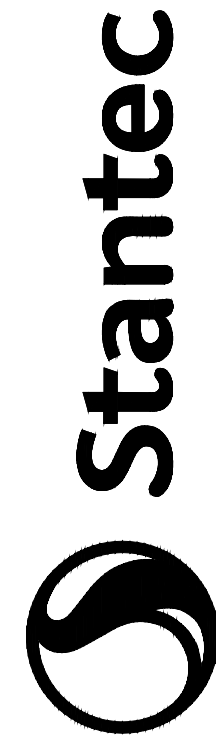
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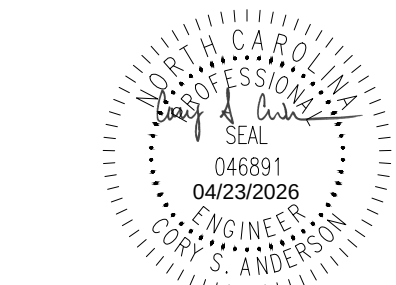
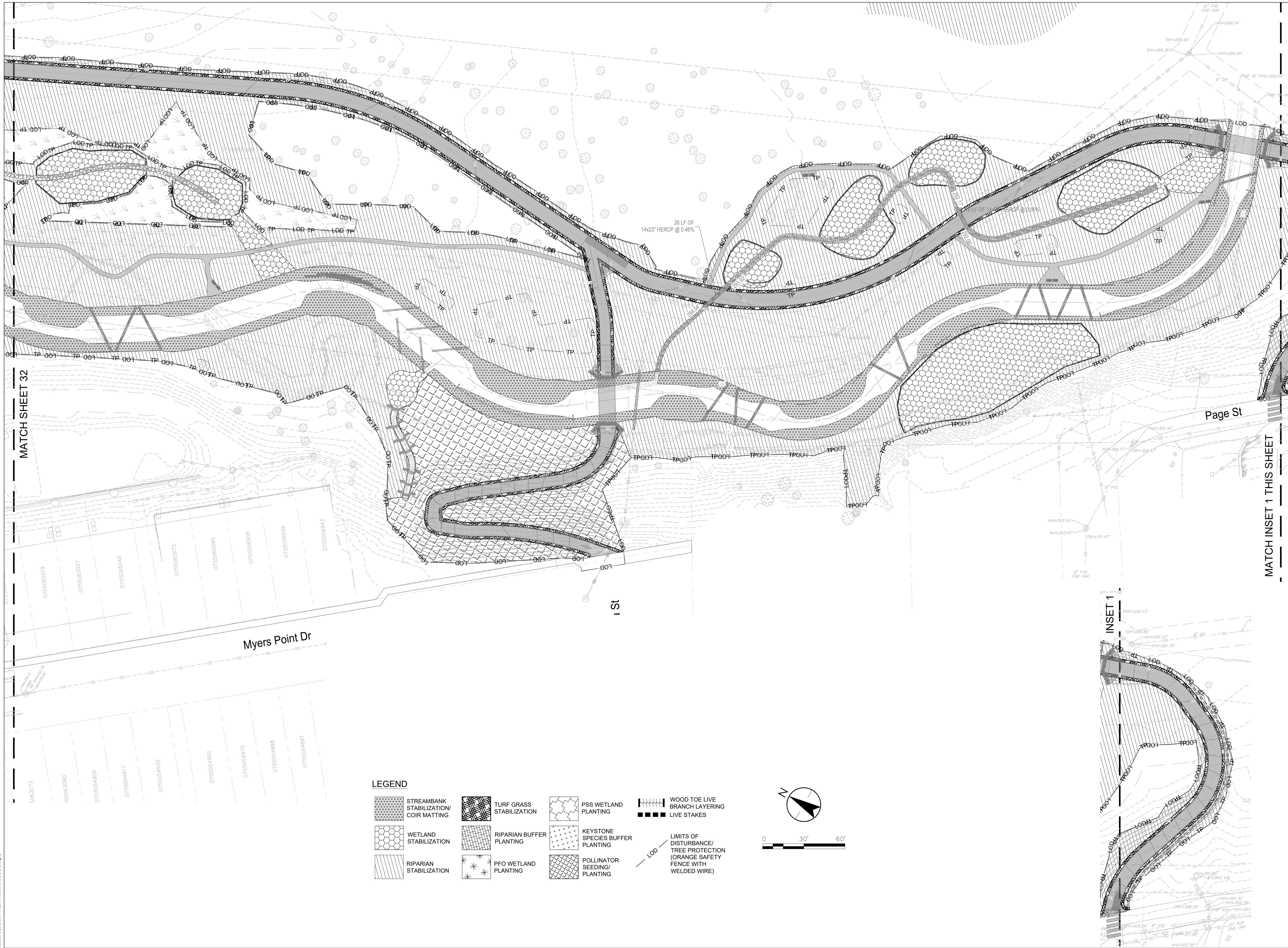
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2	PER TOWN COMMENTS	CSA	CSA	C FOR APPROVAL
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		CSA	CSA	A FOR REVIEW
		CSA	CSA	YY-MM-DD
		CSA	CSA	By
		CSA	CSA	Appd.
		CSA	CSA	Issued



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Project Number: COMBO-25-0081

File Name: 02295_PLANTING_PLAN.dwg

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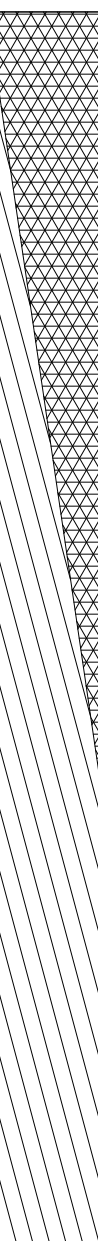
Revision Sheet

3 35 of 46

POLLINATOR AREA: 0.3 ACRES

	2%	ACHILLEA MILLEFOLIUM	YARROW,COMMON	SEED	FACU	APPLY SEED MIX AT 15 LBS/ACRE. COVER CROP SHALL BE APPLIED WITH PERMENANT SEED MIX. APPLY SHREDDED STRAW MULCH AT RATE OF 1,200 LBS/ACRE WITH SEED MIX.
	3%	AGROSTIS PERENNANS	BENTGRASS,PERENNIAL	SEED	FACU	
	10%	ANDROPOGON GERARDII	BLUESTEM,BIG	SEED	FAC	
	3%	ASCLEPIAS TUBEROSA	MILKWEED,BUTTERFLY	SEED	UPL	CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL AMOUNT OF MIX REQUIRED BASED ON ACTUAL DISTURBANCE.
	3%	ASTER LAEVIS	ASTER, SMOOTH	SEED	FACU	
	3%	ASTER NOVAE-ANGLIAE	ASTER,NEW ENGLAND	SEED	FACW-	
	3%	BIDENS ARISTOSA	BEGGAR-TICKS,BEARDED	SEED	FACW-	
	4%	CHAMAECRISTA FASCICULATA	PEA,PARTRIDGE	SEED	FACU	
	3%	COREOPSIS LANCEOLATA	TICKSEED,LANCE-LEAF	SEED	FACU	
	3%	COREOPSIS TINCTORIA	TICKSEED,GOLDEN	SEED	FAC-	
	2%	COREOPSIS TRIPTERIS	TICKSEED,TALL	SEED	FAC	
	3%	ECHINACEA PURPUREA	CONEFLOWER, PURPLE	SEED	FACU	
	7%	ELYMUS CANADENSIS	WILD-RYE,NODDING	SEED	FACU+	
	5%	ELYMUS VIRGINICUS	WILD-RYE,VIRGINIA	SEED	FACW-	
	2%	MONARDA DIDYMA	BEEBALM,OSWEGO TEA	SEED	FAC+	
	2%	MONARDA FISTULOSA	BERGAMOT,WILD	SEED	UPL	
	10%	PANICUM VIRGATUM	SWITCHGRASS	SEED	FAC	
	3%	PENSTEMON DIGITALIS	BEARDTONGUE,FOXGLOVE	SEED	FAC	
	2%	RUDBECKIA FULGIDA	CONEFLOWER,ORANGE	SEED	FAC	
	2%	RUDBECKIA HIRTA	SUSAN,BLACK-EYED	SEED	FACU-	
2%	RUDBECKIA TRILOBA	SUSAN,BROWN-EYED	SEED	FACU		
10%	SCHIZACHYRIUM SCOPARIUM	BLUESTEM,LITTLE	SEED	FACU-		
2%	SOLIDAGO RIGIDA	GOLDEN-ROD,STIFF	SEED	UPL		
2%	SOLIDAGO RUGOSA	GOLDEN-ROD,WRINKLELEAF	SEED	FAC		
10%	SORGHASTRUM NUTANS	GRASS,INDIAN	SEED	UPL		

STREAM BUFFER STABILIZATION SEED MIX: 3.75 ACRES (3.17 AC. RIPARIAN BUFFER AND 0.58 AC. RIPARIAN STREAMBANK STABILIZATION AREA)

	0.75%	AGROSTIS PERENNANS	AUTUMN BENTGRASS	SEED	FACU	APPLY SEED MIX AT 40 LBS/ACRE. NURSE CROP SHALL BE APPLIED WITH PERMANENT SEED MIX. APPLY SHREDED STRAW MULCH AT RATE OF 1,200 LBS/ACRE WITH SEED MIX.
	1.0%	ANDROPOGON VIRGINICUS	BROOMEDGE	SEED	FAC	
	4.0%	ASCLEPIAS SYRIACA	COMMON MILKWEED	SEED	UPL	
	3.0%	ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED	SEED	UPL	REFER TO NOTES ON SHEET 52-55 FOR SEEDING APPLICATION AREAS.
	2.0%	BIDENS ARISTOSA	SHOWY TICKSEED SUNFLOWER	SEED	FACW	
	2.0%	BIDENS FRONDOSA	BEGGAR TICKS	SEED	OBL	
	1.0%	CAREX VULPINOIDEA	FOX SEDGE	SEED	FACU	CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL AMOUNT OF MIX REQUIRED BASED ON ACTUAL DISTURBANCE.
	12.0%	CHAMAECRISTA FASCICULATA	PARTRIDGE PEA	SEED	FAC	
	5.0%	DESMODIUM CANADENSE	SHOWING TICKTREFOL	SEED	FAC	
	5.0%	DICHANTHELIUM CLANDESTINUM	DEER TONGUE	SEED	FACW	
	25.0%	ELYMUS VIRGINICUS	VIRGINIA WILD RYE	SEED	UPL	
	3.0%	ERAGROSTIS SPECTABILIS, VA ECOTYPE	PURPLE LOVEGRASS	SEED	FAC	
	0.5%	EUTHAMIA GRAMINIFOLIA	GRASS LEAVED GOLDENROD	SEED	FACW	
	1.5%	EUTROCHIUM FISTULOSUM	HOLLOW JOE-PYE WEED	SEED	FACW	
	0.5%	HELENIUM AUTUMNALE	COMMON SNEEZEWEED (FL)	SEED	FACU	
	3.0%	HELIOPSIS HELIANTHOIDES	OX EYE SUNFLOWER	SEED	FAC	
	0.25%	JUNCUS TENUIS	PATH RUSH	SEED	UPL	
	1.0%	MONARDA FISTULOSA	WILD BERGAMOT	SEED	FAC	
	1.0%	OENOTHERA FRUTICOSA	NARROW-LEAVED SUNDROPS	SEED	FACU	
	5.0%	PANICUM ANCEPS	BEAKED PANIC GRASS	SEED	FACU	
	0.5%	RUDBECKIA HIRTA	BLACKEYED SUSAN	SEED	FACU	
	15.0%	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	SEED	FAC	
	5.0%	SENNA MARILANDICA	MARYLAND SENNA	SEED	UPL	
0.5%	SOLIDAGO JUNCEA	EARLY GOLDENROD	SEED	UPL		
1.0%	SOLIDAGO NEMORALIS	GRAY GOLDENROD	SEED	FAC		
1.5%	SYMPHYOTRICHUM PILOSUM	HAIRY WHITE FIELD ASTER	SEED	FAC		

LEGEND	QUANTITY	BOTANICAL NAME
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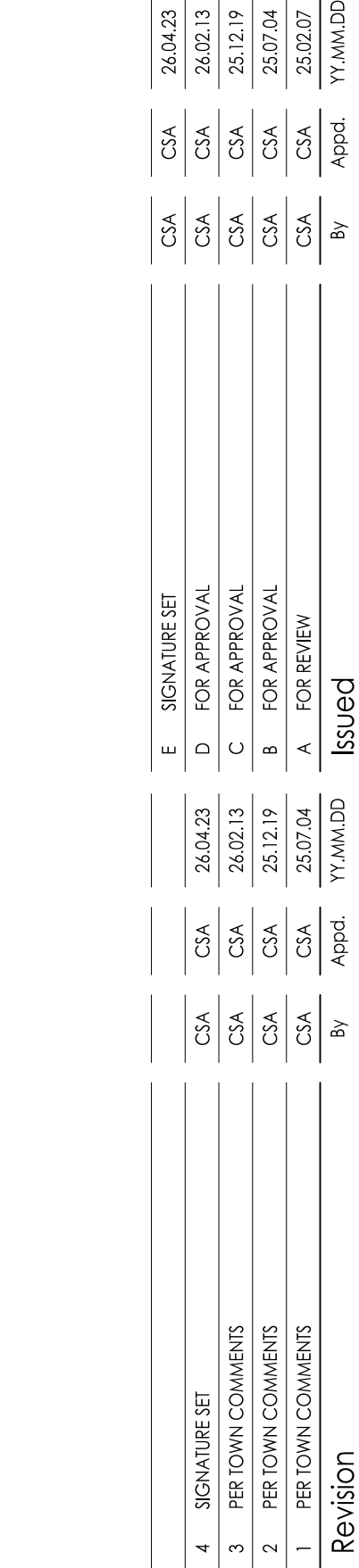
	2.00%	BIDENS CERNUA	NODDING BUR MARIGOLD	SEED	OBL	BE APPLIED WITH PERMENANT SEED MIX. APPLY SHREDDED STRAW MULCH AT RATE OF 1,200 LBS/ACRE WITH SEED MIX.
	3.00%	CAREX LUPULINA	HOP SEGE	SEED	OBL	
	3.00%	CAREX LURIDA	SHALLOW SEDGE	SEED	OBL	
	5.00%	CAREX SCOPARIA	BLUNT BROOM SEDGE	SEED	FACW	REFER TO NOTES ON SHEET 52-55 FOR SEEDING APPLICATION AREAS.
	15.00%	CAREX VULPINOIDEA	FOX SEDGE	SEED	OBL	
	0.10%	CHELONE GLABRA	TURTLEHEAD	SEED	OBL	CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL AMOUNT OF MIX REQUIRED BASED ON ACTUAL DISTURBANCE.
	1.00%	CINNA ARUNDINACEA	WOOD REEDGRASS	SEED	FACW	
	1.00%	CONOCLINIUM COELESTINUM	MISTFLOWER	SEED	FAC	
	3.00%	DICHANTHELIUM CLANDESTINUM	DEER TONGUE	SEED	FAC	
	3.00%	DICHANTHELIUM DICHOTOMIFLORUM	SMOOTH PANIC GRASS	SEED	FACW	
	0.40%	DOELLINGERIA UMBELLATA	FLAT TOPPED WHITE ASTER	SEED	FACW	
	8.00%	ELYMUS RIPARIUS	RIVERBANK WILD RYE	SEED	FACW	
	20.00%	ELYMUS VIRGINICUS	VIRGINIA WILD RYE	SEED	FACW	
	1.00%	EUPATORIUM PERFOLIATUM	BONESET	SEED	FACW	
	0.50%	EUTHAMIA GRAMINIFOLIA	GRASS LEAVED GOLDENROD	SEED	FAC	
	2.00%	EUTROCHIUM FISTULOSUM	HOLLOW JOE-PYE WEED	SEED	FACW	
	1.00%	HELENIUM AUTUMNALE	COMMON SNEEZEWEED (FL)	SEED	FACW	
	0.50%	JUNCUS EFFUSUS	SOFT RUSH	SEED	FACW	
	5.00%	LOBELIA CARDINALIS	CARDINAL FLOWER	SEED	FACW	
	5.00%	MIMULUS RINGENS	ALLEGHENY MONKEYFLOWER	SEED	OBL	
	3.00%	PELTANDRA VIRGINICA	MORONG WHITE ARROW ARUM	SEED	OBL	
	5.00%	PONTERERIA CORDATA	PICKERELWEED	SEED	OBL	
	0.25%	PENTHORUM SEDOIDES	DITCH STONECROP	SEED	OBL	
	5.00%	SAURURUS CERNUUS	LIZARD'S TAIL	SEED	OBL	
	0.25%	SCIRPUS CYPERINUS	WOOL GRASS	SEED	FACW	
	1.00%	SOLIDAGO RUGOSA	WRINKLE LEAF GOLDENROD	SEED	FAC	
	1.00%	SYMPHYOTRICHUM NOVAE-ANGLIAE	NEW ENGLAND ASTER	SEED	FACW	
	1.00%	SYMPHYOTRICHUM PRENANTHOIDES	ZIGZAG ASTER	SEED	FAC	
	1.00%	SYMPHYOTRICHUM PUNICEUM	PURPLE STEMMED ASTER	SEED	OBL	
	1.50%	ZIZIA AUREA	GOLDEN ALEXANDERS	SEED	FAC	

LEGEND	QUANTITY	BOTANICAL NAME	COMMON NAME
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		JULY 2014; UPDATED: APRIL 2023)	SECTION 2930			CROP TO ALL DISTURBED AREAS IN ACCORDANCE WITH SEEDING DATES AND RATES AS SHOWN IN SPECIFICATIONS.

LEGEND	QUANTITY	BOTANICAL NAME
	THREE (3) LBS EACH VARIATION	

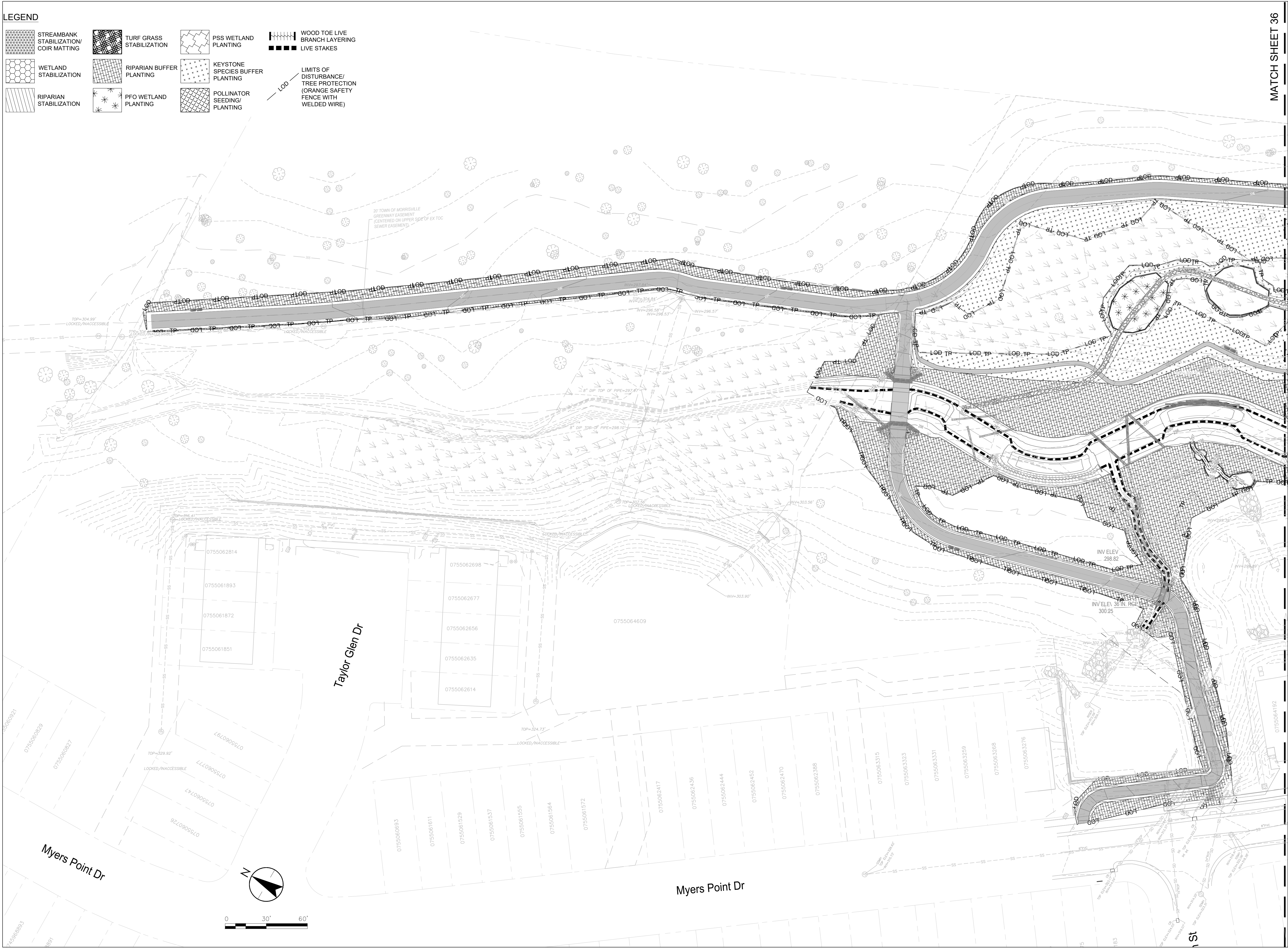
	JULY 2014; UPDATED: APRIL 2023)	SEE NEXT PAGE	SPECIFICATIONS.
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3 36 of 46

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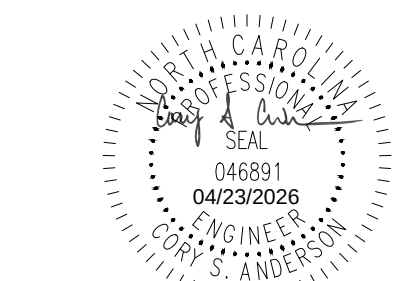
ORIGINAL SHEET - ARCH D



LEGEND

- | | | | | | | | |
|--|--|--|---------------------------|--|----------------------------------|--|---|
| | STREAMBANK STABILIZATION/ COIR MATTING | | TURF GRASS STABILIZATION | | PSS WETLAND PLANTING | | WOOD TOE LIVE BRANCH LAYERING |
| | WETLAND STABILIZATION | | RIPIARIAN BUFFER PLANTING | | KEYSTONE SPECIES BUFFER PLANTING | | LIVE STAKES |
| | RIPIARIAN STABILIZATION | | PFO WETLAND PLANTING | | POLLINATOR SEEDING/ PLANTING | | LIMITS OF DISTURBANCE/ TREE PROTECTION (ORANGE SAFETY FENCE WITH WELDED WIRE) |

MATCH SHEET 36



Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA

Title
PLANTING PLAN

Project Number: COMBO-25-0081

File Name: 02295_PLANTING_PLAN.dwg

CP	CSA	CSA/CP	26.04.23
Dwn	Chkd	Dgn	YY.MM.DD

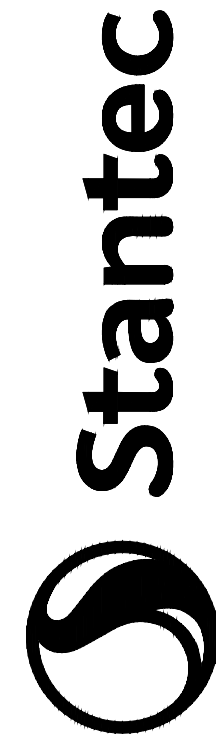
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Revision Sheet

3

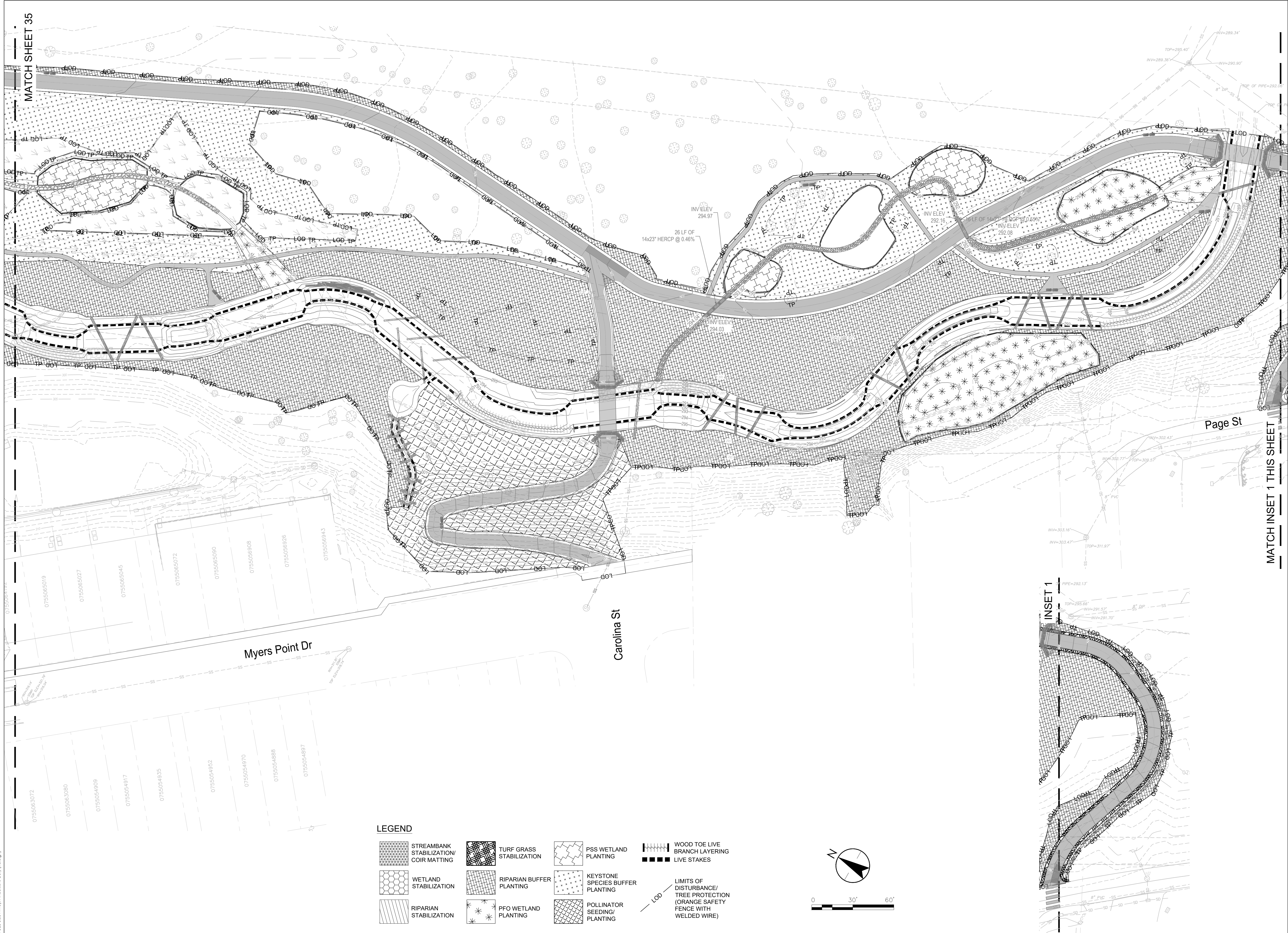
37 of 46

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3	PER TOWN COMMENTS	CSA	CSA	26.02.13	C FOR APPROVAL	CSA	CSA	26.02.13
2	PER TOWN COMMENTS	CSA	CSA	25.12.19	B FOR APPROVAL	CSA	CSA	25.12.19
1	PER TOWN COMMENTS	CSA	CSA	25.07.04	A FOR REVIEW	CSA	CSA	25.07.04
		By	Appd.	YY.MM.DD				



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Morrisville, NC 27560
Tel: +1 919 851 6864
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Client/Project

TOWN OF MORRISVILLE

ENGINEERING DEPARTMENT - STORMWATER DIVISION

MORRISVILLE TRIBUTARY (SAWMILL CREEK)

STREAM RESTORATION

MORRISVILLE, NORTH CAROLINA

Title

PLANTING PLAN

Project Number: COMBO-25-0081

File Name: 02295_PLANTING_PLAN.dwg

CP	CSA	CSA/CP	26.04.23
Dwn	Chkd	Dgn	YY-MM-DD

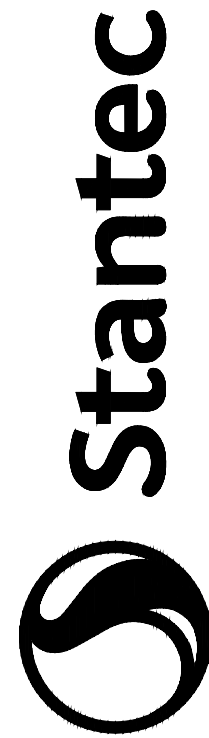
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1	PER TOWN COMMENTS	CSA	CSA	25.07.04
E SIGNATURE SET		CSA	CSA	26.04.23
D FOR APPROVAL		CSA	CSA	26.02.13
C FOR APPROVAL		CSA	CSA	25.12.19
B FOR APPROVAL		CSA	CSA	25.07.04
A FOR REVIEW		CSA	CSA	25.02.07
TY-MM-DD		By	Appd.	Issued



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PSS WETLAND PLANTING: 0.1 ACRES

NOTES: DISTRIBUTION OF ALL TREES AND SHRUBS SHALL BE WITHIN PLANTING CLUMPS. SEE DETAILS FOR ARRANGEMENT WITHIN CLUMPING TYPES. ARRANGED RANDOMLY BETWEEN SPECIES, AND LOCATED ACCORDING TO INDICATOR STATUS. LOCATE PLANTS ACCORDING TO SUN/SHADE TOLERANCES. TREES NOTED WITH AN "*" ARE CONSIDERED TO BE A FAST GROWING CANOPY TREE SPECIES.

PFO WETLAND PLANTING: 0.27 ACRES

NOTES: DISTRIBUTION OF ALL TREES AND SHRUBS SHALL BE WITHIN PLANTING CLUMPS. SEE DETAILS FOR ARRANGEMENT WITHIN CLUMPING TYPES. ARRANGED RANDOMLY BETWEEN SPECIES, AND LOCATED ACCORDING TO INDICATOR STATUS. LOCATE PLANTS ACCORDING TO SUN/SHADE TOLERANCES. TREES NOTED WITH AN "" ARE CONSIDERED TO BE A FAST GROWING CANOPY TREE SPECIES.

POLLINATOR AREA PLANTING: 0.3 ACRES

NOTES: ARRANGED RANDOMLY BETWEEN SPECIES, AND LOCATED ACCORDING TO INDICATOR STATUS.

STREAM CHANNEL LIVE STAKES: 2898 LF (BANK LENGTH)

PROPOSED WOOD TOE WITH COIR WRAPPED SOIL LIFTS PLANTING SCHEDULE

STREAM CHANNEL WOOD TOE WITH COIR WRAPPED SOIL LIFTS: 327 LF

NOTES:

1. ALL LANDSCAPING SHALL BE MAINTAINED IN PERPETUITY.
2. ALL HOTBOXES AND OTHER ON GROUND/FREE STANDING MECHANICAL EQUIPMENT SHALL BE SCREENED WITH DENSE EVERGREEN VEGETATION AT LEAST THE HEIGHT OF THE EQUIPMENT PRIOR TO THE ISSUANCE OF A CERTIFICATE OF COMPLIANCE/OCCUPANCY.



ORIGINAL SHEET - ARCH D

RIPARIAN BUFFER PLANTING: 2.06 ACRES

NOTES: DISTRIBUTION OF ALL TREES AND SHRUBS SHALL BE WITHIN PLANTING CLUMPS. SEE DETAILS FOR ARRANGEMENT WITHIN CLUMPING TYPES. ARRANGED RANDOMLY BETWEEN SPECIES, AND LOCATED ACCORDING TO INDICATOR STATUS. LOCATE PLANTS ACCORDING TO SUN/SHADE TOLERANCES. TREES NOTED WITH AN "*" ARE CONSIDERED TO BE A FAST GROWING CANOPY TREE SPECIES.

KEYSTON SPECIES RIPARIAN BUFFER PLANTING: 1.18 ACRES

NOTES: DISTRIBUTION OF ALL TREES AND SHRUBS SHALL BE WITHIN PLANTING CLUMPS. SEE DETAILS FOR ARRANGEMENT WITHIN CLUMPING TYPES. ARRANGED RANDOMLY BETWEEN SPECIES, AND LOCATED ACCORDING TO INDICATOR STATUS. LOCATE PLANTS ACCORDING TO SUN/SHADE TOLERANCES. TREES NOTED WITH AN "*" ARE CONSIDERED TO BE A FAST GROWING CANOPY TREE SPECIES.



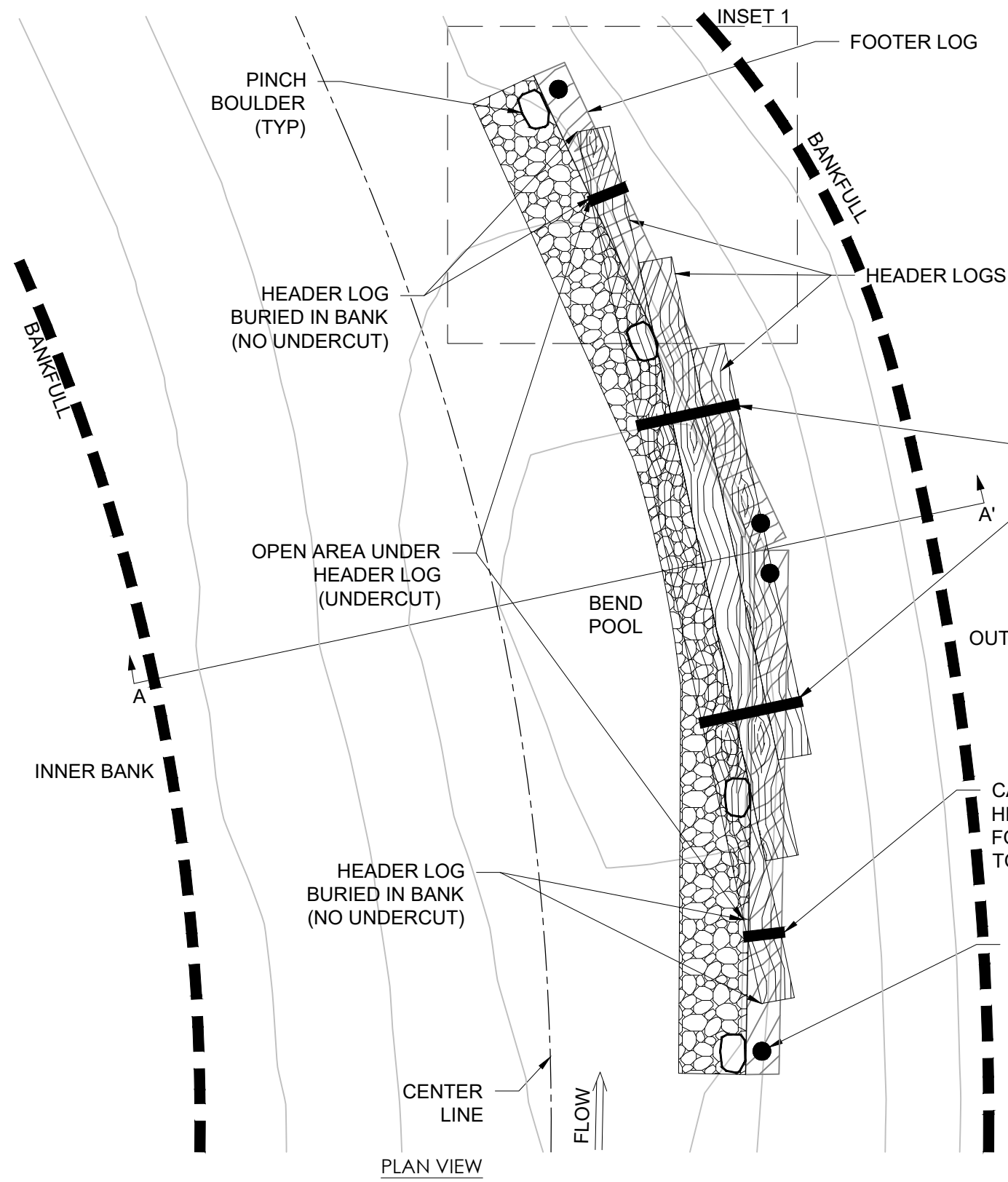
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Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA



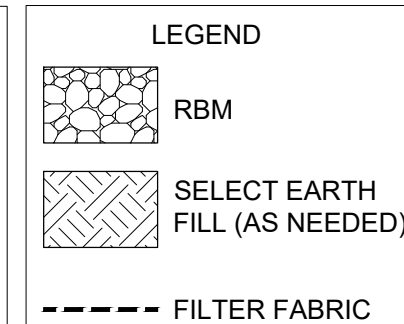
Revision Sheet

1
40
DETAIL: TOE LOGS
NTS

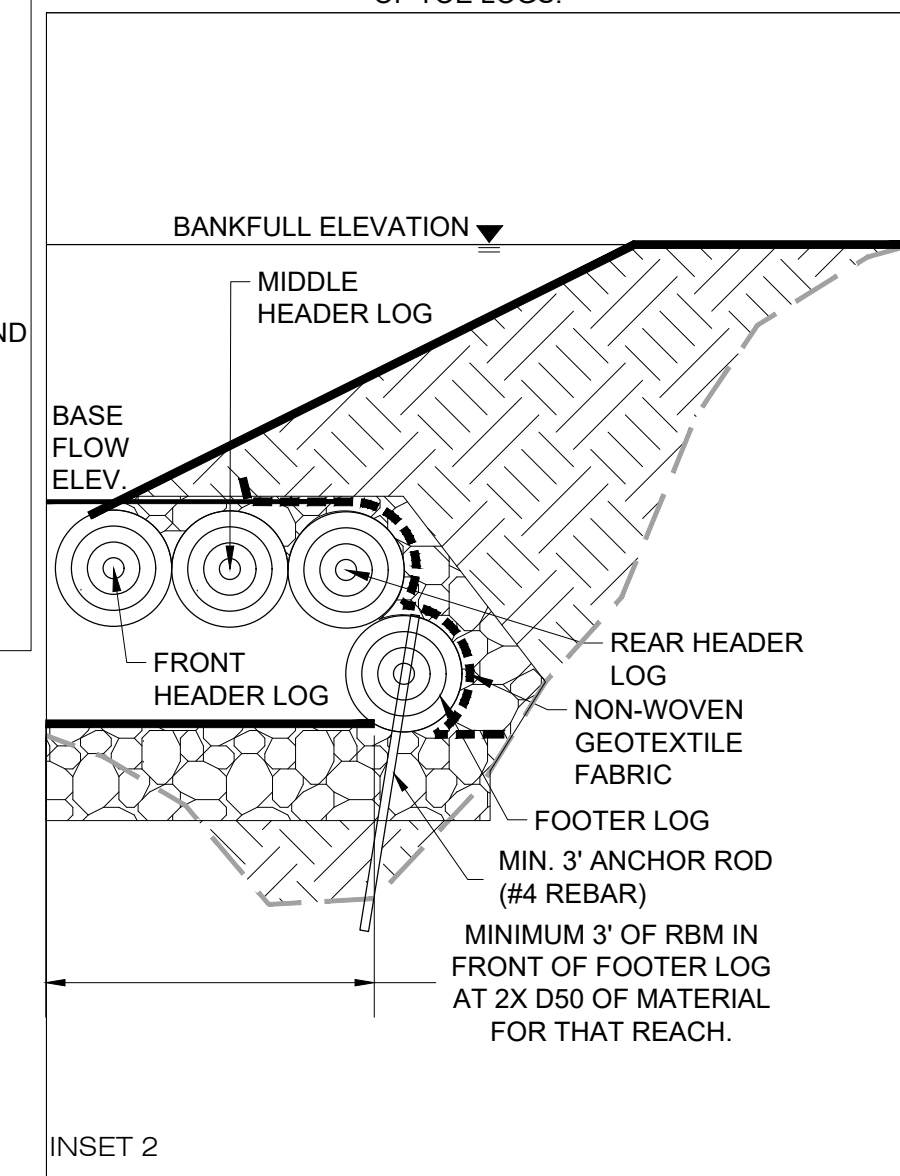
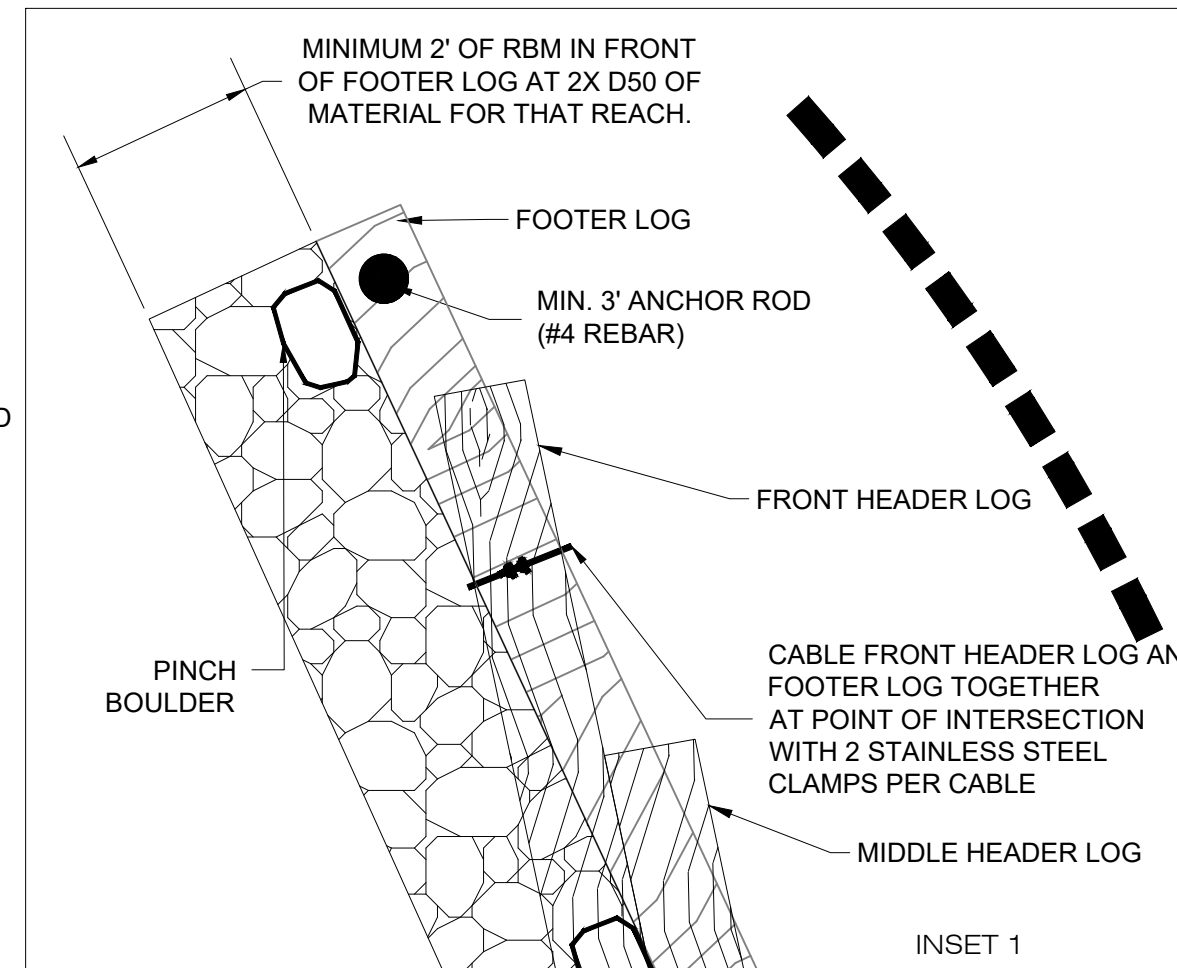
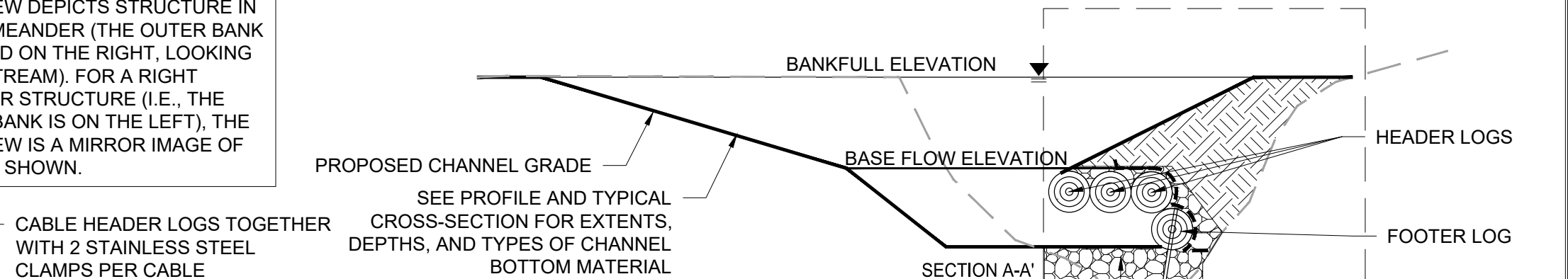


PLAN VIEW DEPICTS STRUCTURE IN A LEFT MEANDER (THE OUTER BANK SITUATED ON THE RIGHT, LOOKING DOWNSTREAM). FOR A RIGHT MEANDER STRUCTURE (I.E., THE OUTER BANK IS ON THE LEFT), THE PLAN VIEW IS A MIRROR IMAGE OF WHAT IS SHOWN.

- NOTE:
1. FOOTER LOG PLACEMENT TO BE APPROVED BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION OF TOP LOG FOR ALL STRUCTURES.
 2. FINAL PLACEMENT OF LOGS ALONG POOL TO BE COORDINATED AND APPROVED BY PROJECT ENGINEER AND THE OWNER.
 3. WHERE SIZE VARIABILITY EXISTS IN LOG DIAMETER UTILIZE THE LARGEST DIAMETER LOG FOR THE FOOTER LOGS, AND THE SMALLEST DIAMETER LOG AS THE FRONT (EXPOSED) TOE LOG.
 4. HEADER LOGS CAN BE SET BELOW MAXIMUM ELEVATION IN ORDER TO HAVE FOOTER LOGS EXTEND BELOW CHANNEL BOTTOM ELEVATION. TOE LOG STRUCTURES SHOULD BE PLANNED AND CONSTRUCTED FROM THE BOTTOM UP IN REGARDS TO ELEVATIONS FOR HEADER LOGS AND TO GUARANTEE FOOTER LOGS EXTEND BELOW CHANNEL BOTTOM.

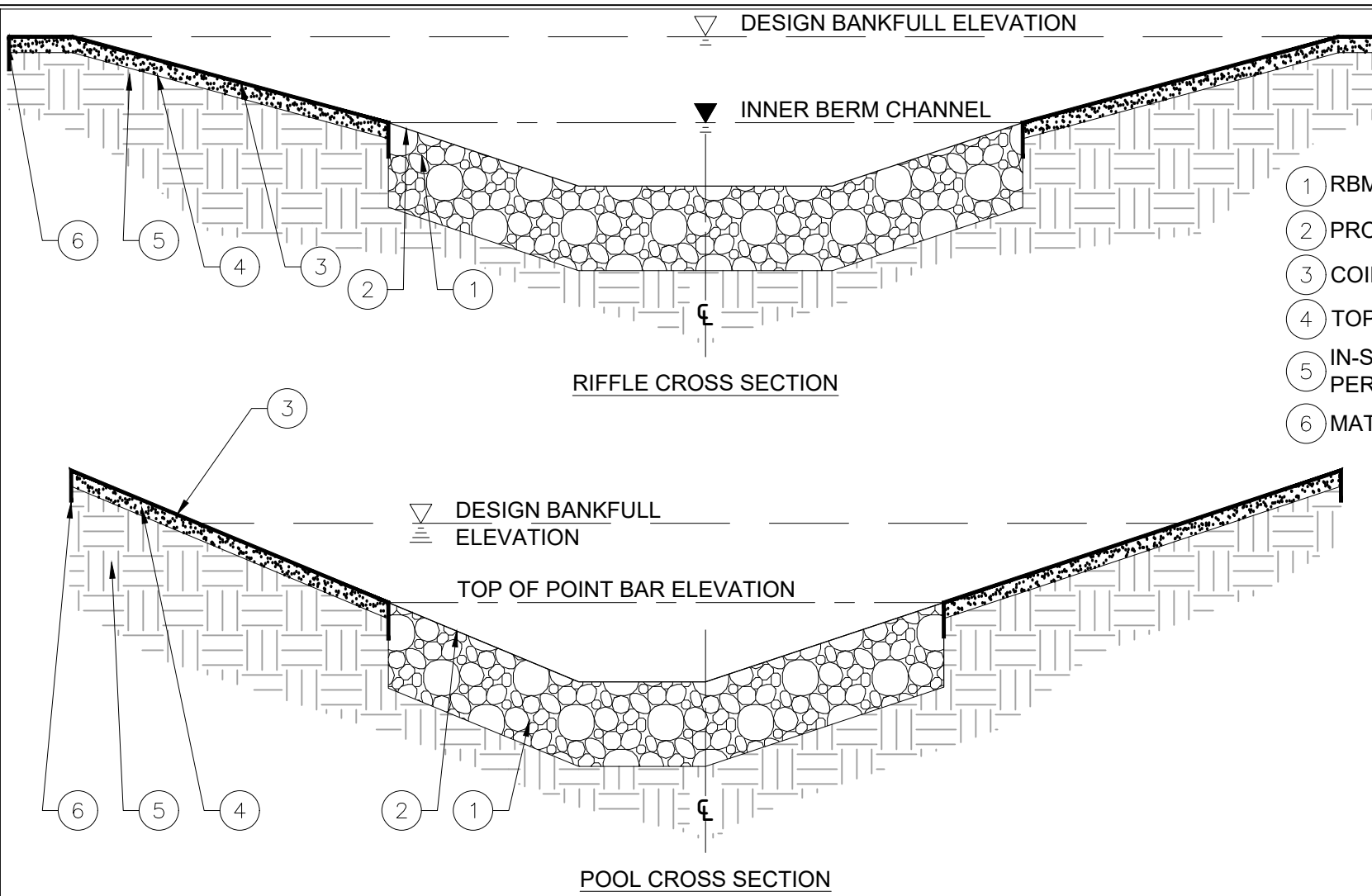


ELEVATIONS GIVEN IN STRUCTURE STAKEOUT TABLES ARE APPROXIMATE AND HAVE A 1-2 FT. MARGIN OF ADJUSTMENT, AND HORIZONTAL AND VERTICAL LOCATION MAY BE ADJUSTED IN THE FIELD UPON APPROVAL OF THE ENGINEER/DESIGNER AND THE OWNER. CHANGES MAY BE MADE IN FIELD TO ENSURE CORRECT LOG PLACEMENT.



2

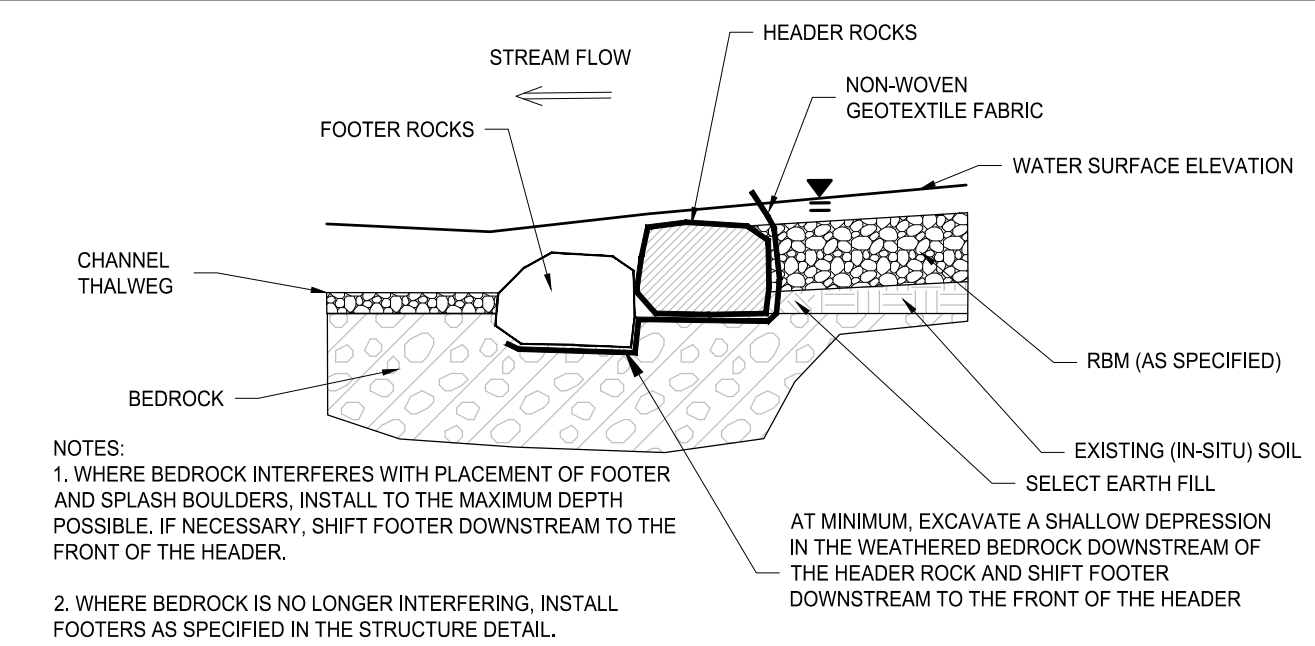
DETAIL: RBM PLACEMENT
NTS



- 1 RBM (MINIMUM THICKNESS = 2 x D50)
- 2 PROPOSED FINAL GRADE
- 3 COIR FIBER MATTING PER SPECIFICATIONS
- 4 TOPSOIL PER SPECIFICATIONS
- 5 IN-SITU MATERIAL OR SELECT EARTH FILL PER SPECIFICATIONS
- 6 MATTING KEY TRENCH

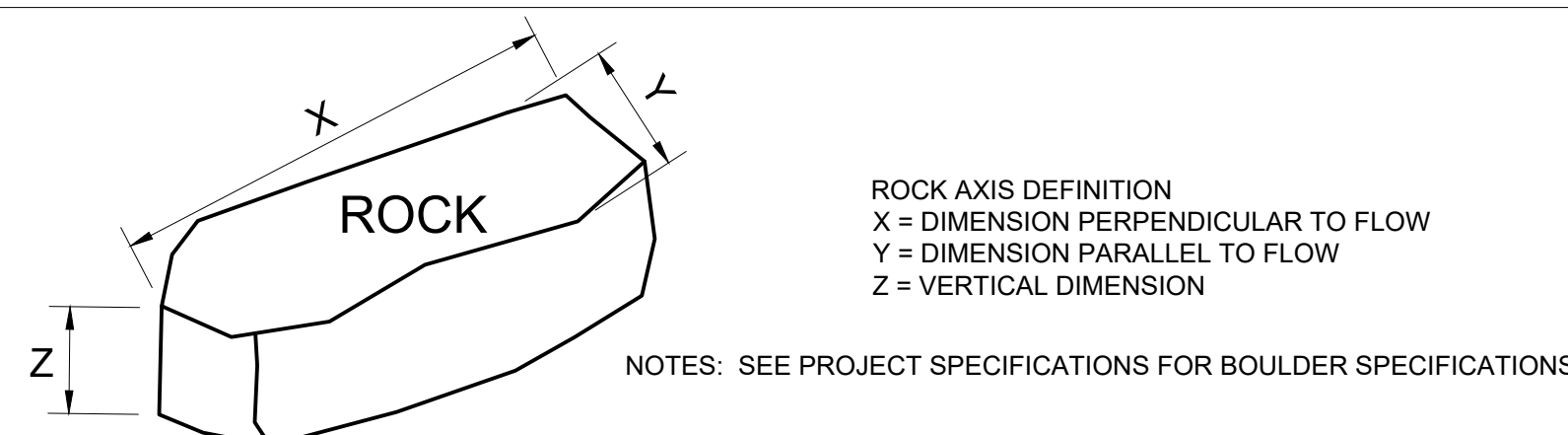
IN RIFFLE, EXTEND RBM TO INNER EDGE OF INNER BERM BENCH. REFER TO TYPICAL CROSS-SECTIONS, SHEET 56, FOR INNER BERM MEASUREMENTS.

IN POOLS, EXTEND RBM TO 1/2 BANKFULL ELEVATION ALONG BOTH BANKS. DETAIL CROSS SECTION REPRESENTS A RIGHT BEND. THE RBM EXTENTS WILL BE MIRRORED ON A LEFT BEND.



- NOTES:
1. WHERE BEDROCK INTERFERES WITH PLACEMENT OF FOOTER AND SPLASH BOULDERS, INSTALL TO THE MAXIMUM DEPTH POSSIBLE, IF NECESSARY, SHIFT FOOTER DOWNSTREAM TO THE FRONT OF THE HEADER.
 2. WHERE BEDROCK IS NO LONGER INTERFERING, INSTALL FOOTERS AS SPECIFIED IN THE STRUCTURE DETAIL.

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DETAIL: ALTERNATE FOOTER PLACEMENT FOR BEDROCK CONDITIONS
NTS



STRUCTURE ROCK SIZE SPECIFICATION TABLE			
STRUCTURE	MINIMUM X-AXIS DIMENSION	MINIMUM Y-AXIS DIMENSION	MINIMUM Z-AXIS DIMENSION
CROSS-VANE, SINGLE ROCK STEP	1.5'	1.5'	1.5'
ANCHOR BOULDER, PINCH BOULDER	CLASS I RIPRAP		

6
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DETAIL: BOULDER / ROCK DEFINITION
NTS

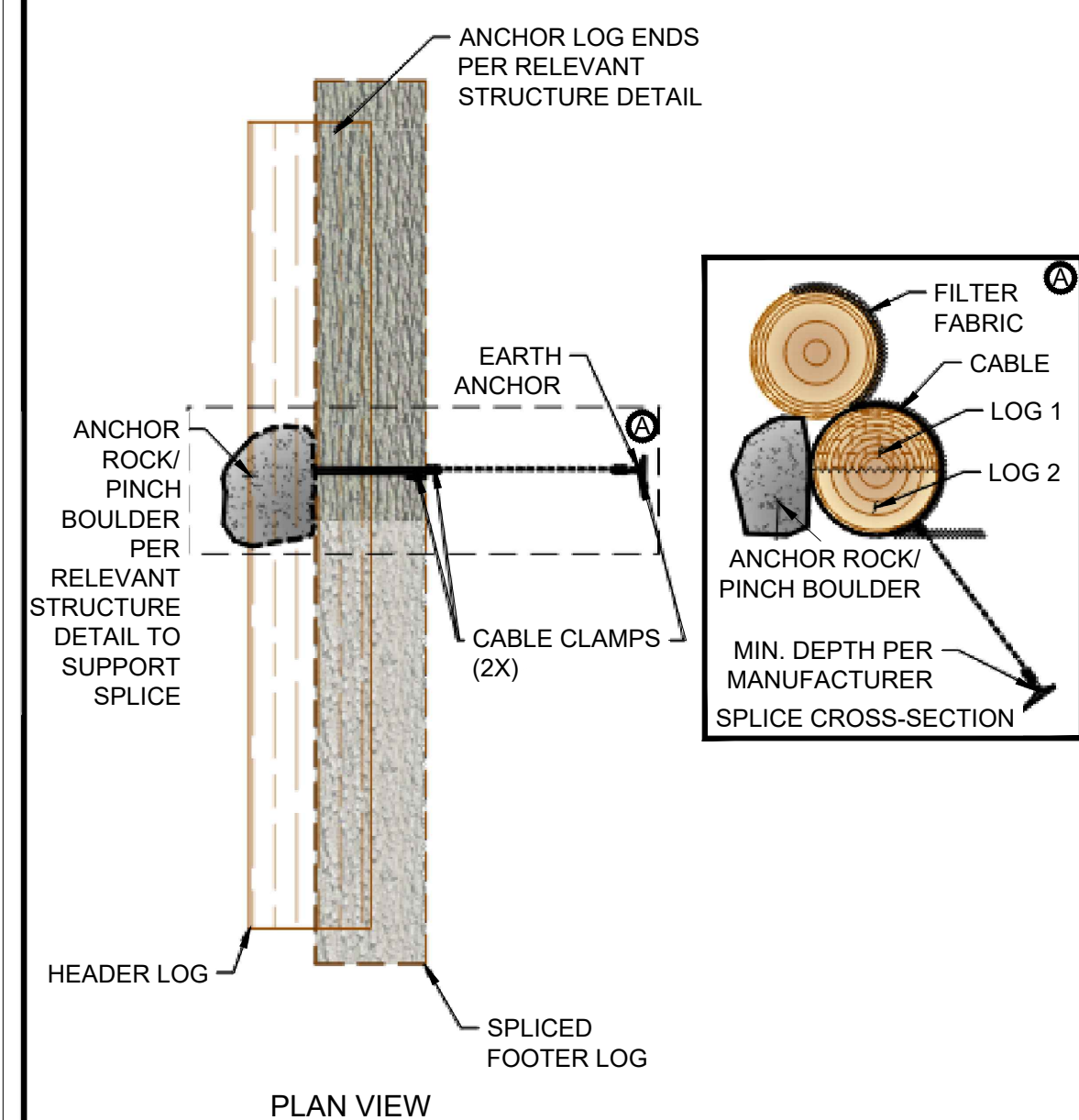
THE REINFORCED BED MIXTURE (RBM) SPECIFIED BELOW IS SUBJECT TO INSPECTION UPON DELIVERY AND MUST BE APPROVED BY THE PROJECT ENGINEER PRIOR TO BEING PLACED IN THE STREAM CHANNEL.

MATERIAL	SIZE (D)	CUBIC YARDS (CY)	PERCENT (%)
LARGE ROUND COBBLE ⁵	8" - 12"	1	20%
SMALL ROUND COBBLE ⁵	4" - 8"	2	40%
BANK RUN GRAVEL ⁷	0.08" - 2.5"	1	20%
COARSE SAND ⁸	0.04 - 0.08 in (1 - 2 mm)	1	20%

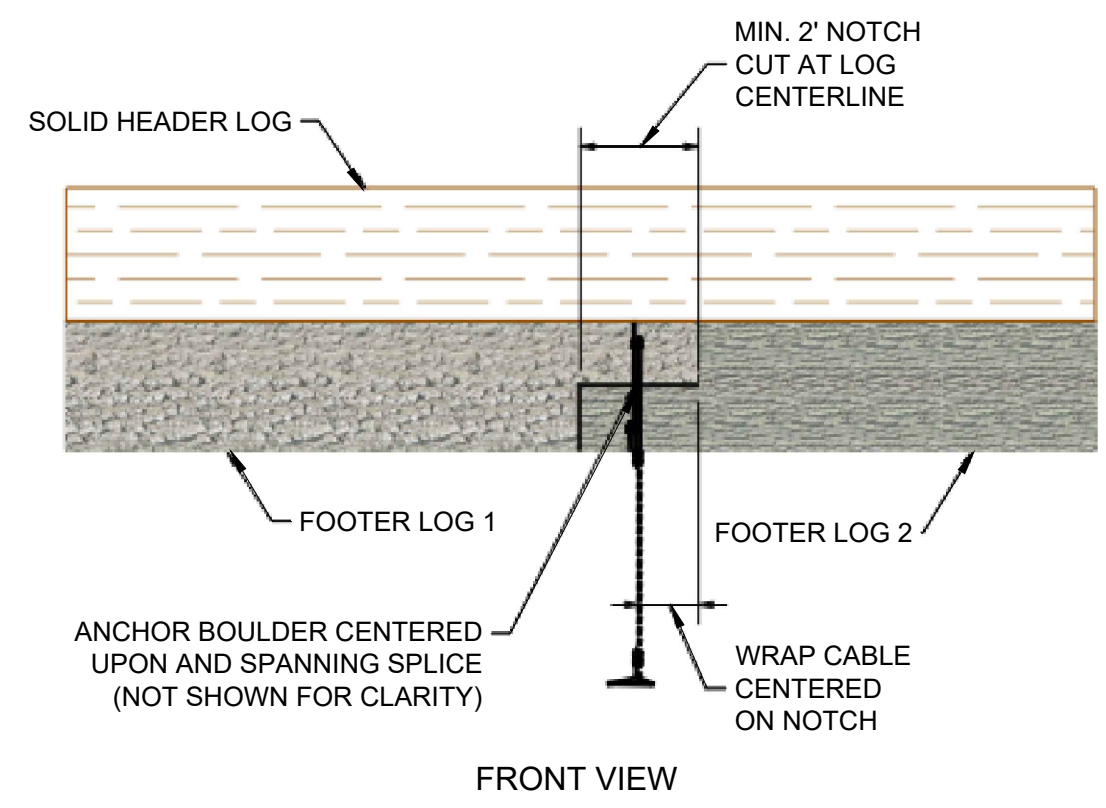
1. THE TARGET D₅₀ OF THE STREAM BED RBM IS 6". ADJUSTMENTS TO THE MIXTURE UPON DELIVERY AND THROUGHOUT CONSTRUCTION MAY BE REQUIRED BASED ON THE SOURCE MATERIAL.
2. THE MIXTURE MAY BE SUPPLEMENTED WITH ON SITE MATERIAL HARVESTED FROM THE EXISTING STREAM BED. HARVESTED MATERIAL MUST BE REVIEWED BY THE ON SITE INSPECTOR FOR APPROVAL. APPROVED HARVESTED MATERIAL MAY BE USED AT THE BOTTOM OF POOLS.
3. UNLESS OTHERWISE SPECIFIED, THE MINIMUM THICKNESS OF THE RBM LINING IS 12".
4. RBM COMPONENTS MUST BE WELL DISTRIBUTED IN THE MIX SUCH THAT WHEN THE MATERIAL IS PLACED IN THE CHANNEL, VOIDS IN THE ROCK AND LARGE COBBLE COMPONENTS ARE FILLED WITH SMALLER STONE AND FINE MATERIAL TO THE MAXIMUM EXTENT PRACTICABLE. THE SUBSTRATE IS INTENDED TO BOTH ARMOR THE STREAMBED AGAINST EROSION HYDRAULIC FORCES AND TO PRESENT A NATURAL, EMBEDDED, WELL GRADED APPEARANCE.
5. ROUNDED RIVER WASHED COBBLE HAVING A NATURAL COLOR (WHITE, TAN, YELLOW OR BROWN). MAY BE SUPPLEMENTED UP TO 50% WITH EQUALLY SIZED LARGE AGGREGATE (CLASS A OR B STONE).
6. BANK RUN GRAVEL MAY INCLUDE UP TO 5% CLAY, SILT, AND/OR SAND, AND UP TO 25% ROUND COBBLE (D₅₀ = 3" TO 8"). GRAVEL MUST HAVE NATURAL COLOR (WHITE, TAN, YELLOW OR BROWN).
7. THE SAND PORTION OF THE MIXTURE CONSISTS OF A WELL MIXED SAND PREDOMINANTLY 1.0 MILLIMETERS TO 2.0 MILLIMETERS IN SIZE, SUBJECT TO ENGINEER APPROVAL. WASHED CONCRETE SAND IS NOT REQUIRED. SAND MUST BE WHITE, YELLOW, OR BROWN IN COLOR. RBM WAS SIZED BASED ON THE MAXIMUM SHEAR ESTIMATES FOR THE 2- AND 10- YEAR RECURRENCE INTERVALS.

5
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DETAIL: REINFORCED BED MIX
N.T.S

- NOTES:
1. CLIENT AND ENGINEER MUST APPROVE LOGS TO BE SPLICED AND ANCHORING.
 2. REFER TO SPECIFICATIONS FOR CABLE, CLAMP, AND EARTH ANCHOR REQUIREMENTS.
 3. IT IS PREFERRED THAT SPLICED LOGS ARE USED AS FOOTER LOGS. DIAMETER OF LOGS TO BE SPLICED MUST BE WITHIN 2 INCHES UNLESS OTHERWISE APPROVED.
 4. WHERE BOTH THE HEADER AND FOOTER LOGS ARE SPLICED (NOT PREFERRED) OFFSET THE SPLICES BY A MINIMUM OF 5 FEET.
 5. REFER TO STRUCTURE ROCK SIZE SPECIFICATION TABLE (2/34) FOR ANCHOR BOULDERS.

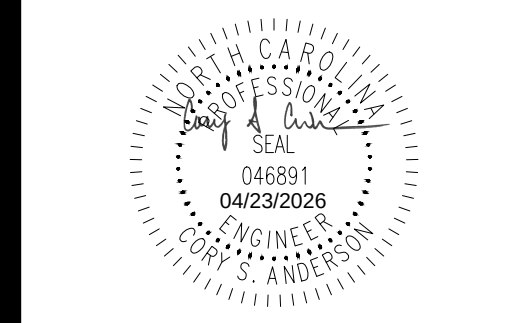


4
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DETAIL: LOG SPLICING
NTS



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CSA	26.04.23	CSA	26.02.13	CSA	25.12.19	CSA	25.07.04	CSA	25.02.07	Issued	

Client/Project
TOWN OF MORRISVILLE
ENGINEERING DEPARTMENT - STORMWATER DIVISION
MORRISVILLE TRIBUTARY (SAWMILL CREEK)
STREAM RESTORATION
MORRISVILLE, NORTH CAROLINA
Title
DETAILS

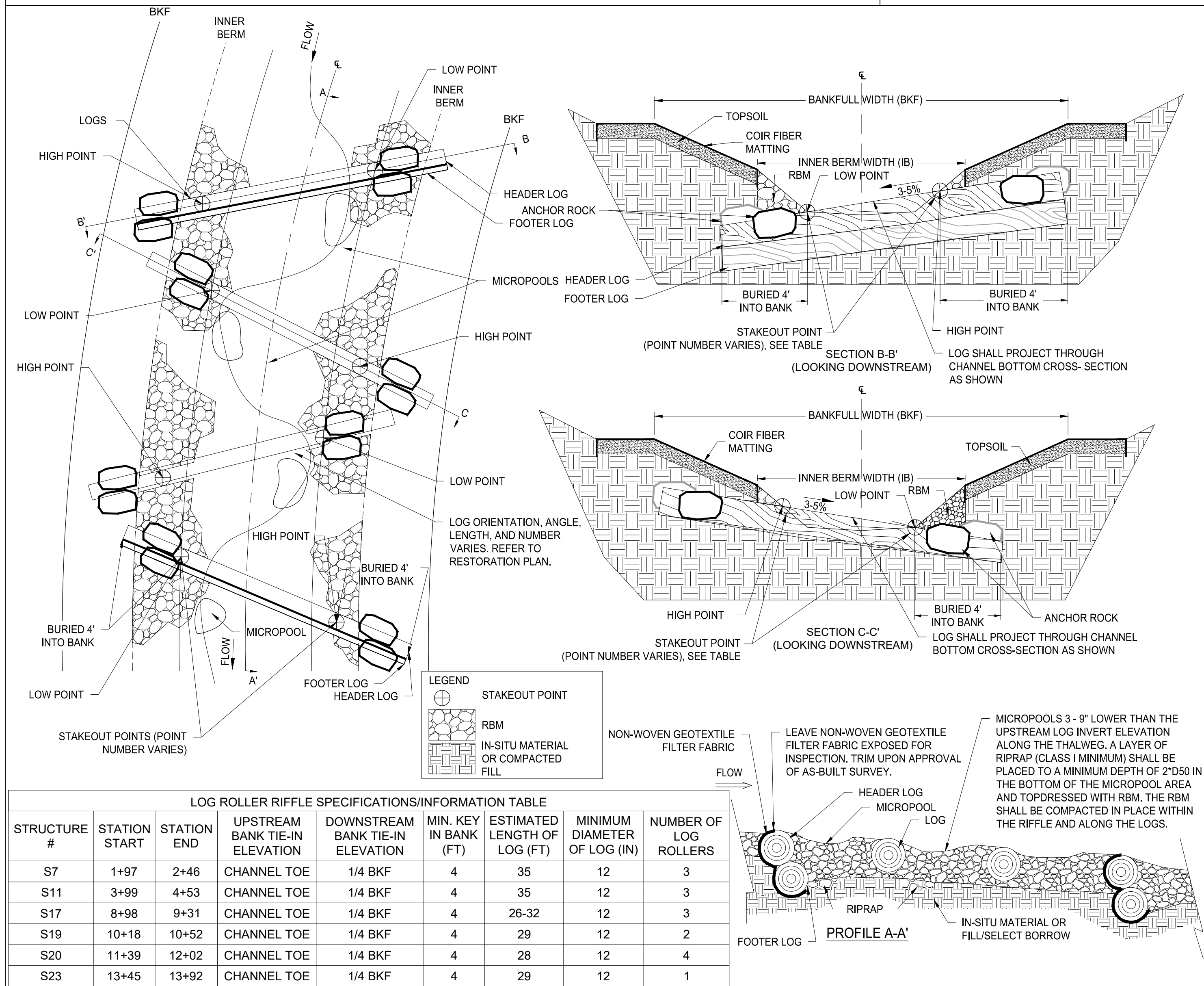
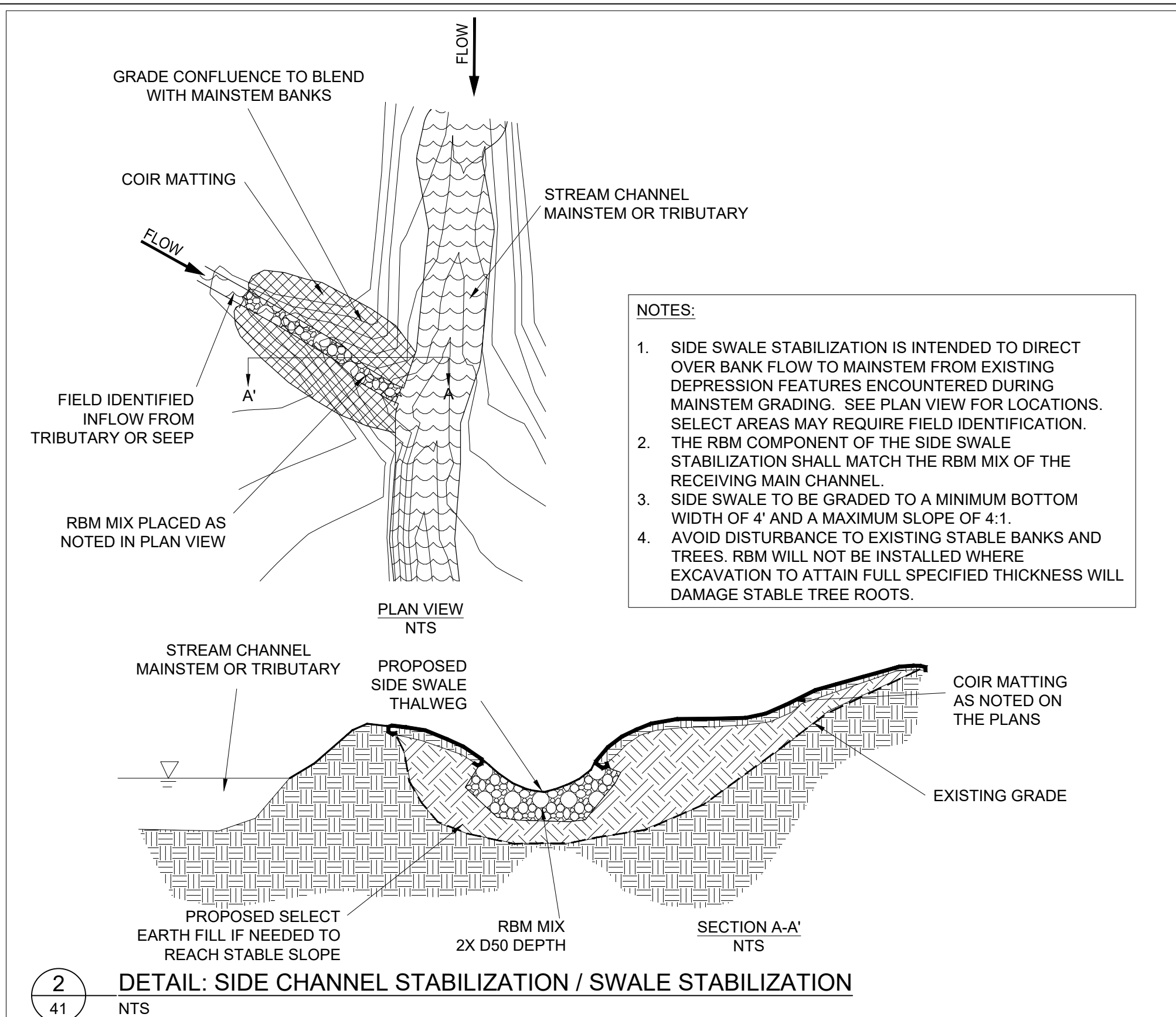
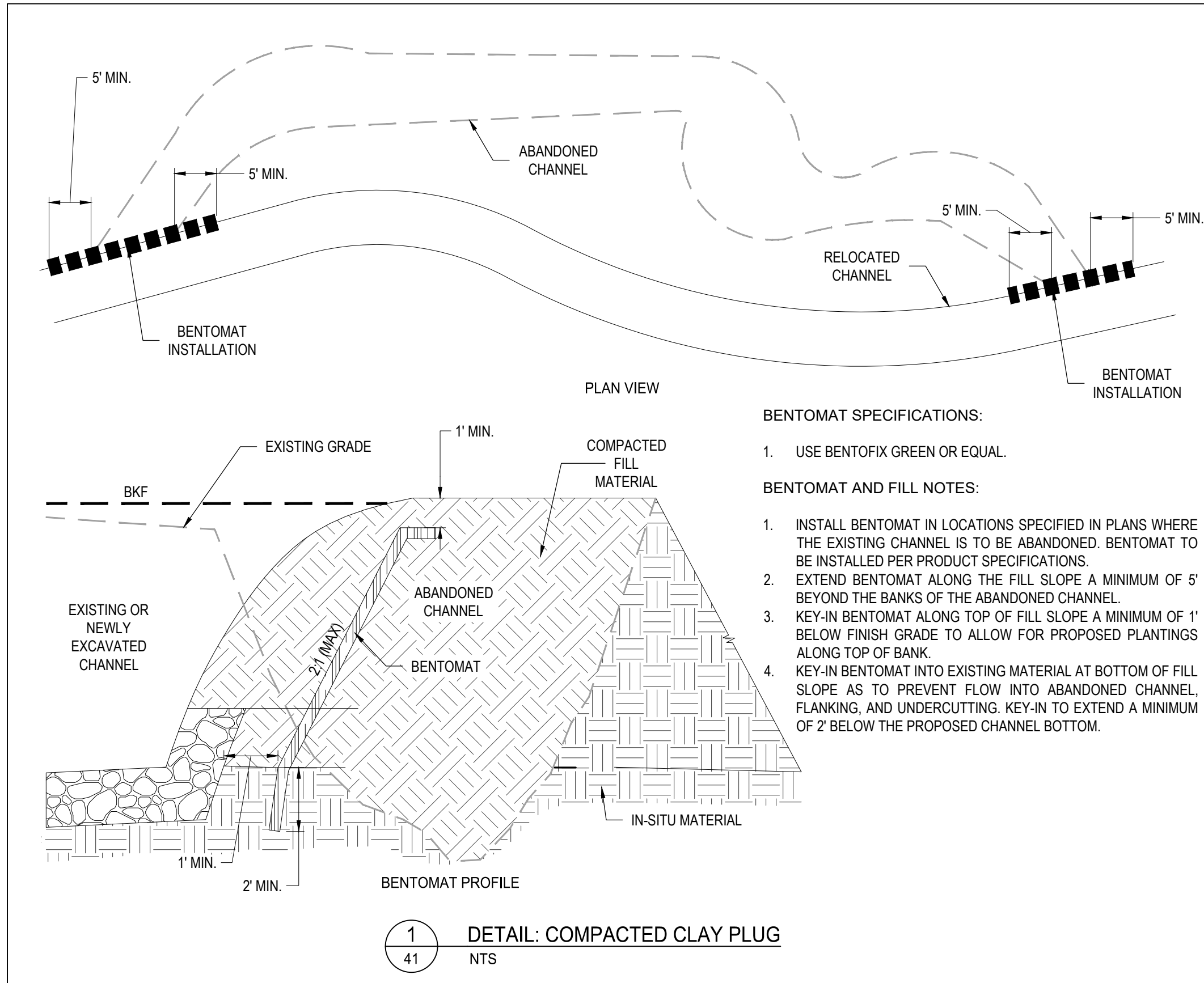


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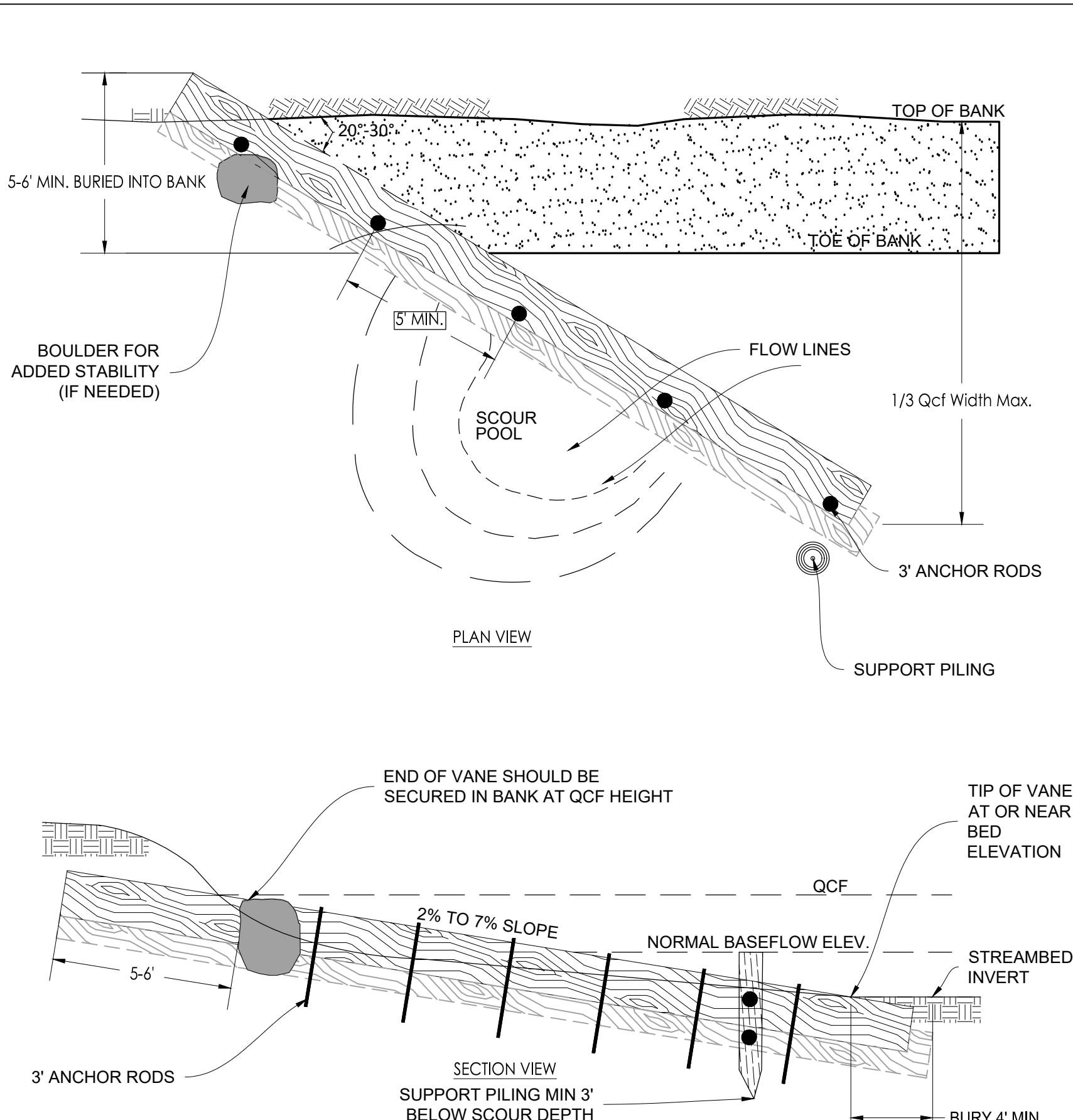
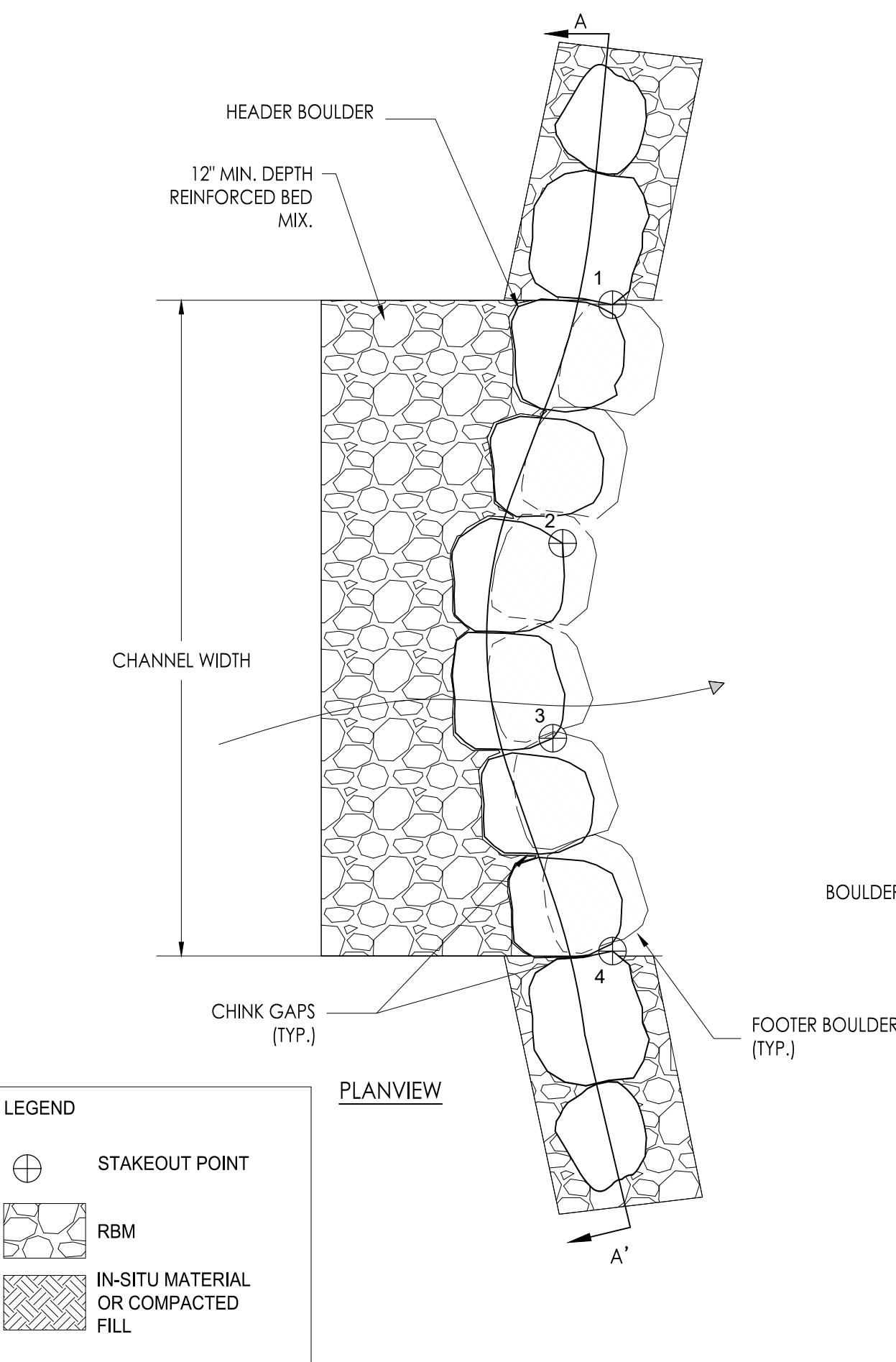
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Revision	Sheet		

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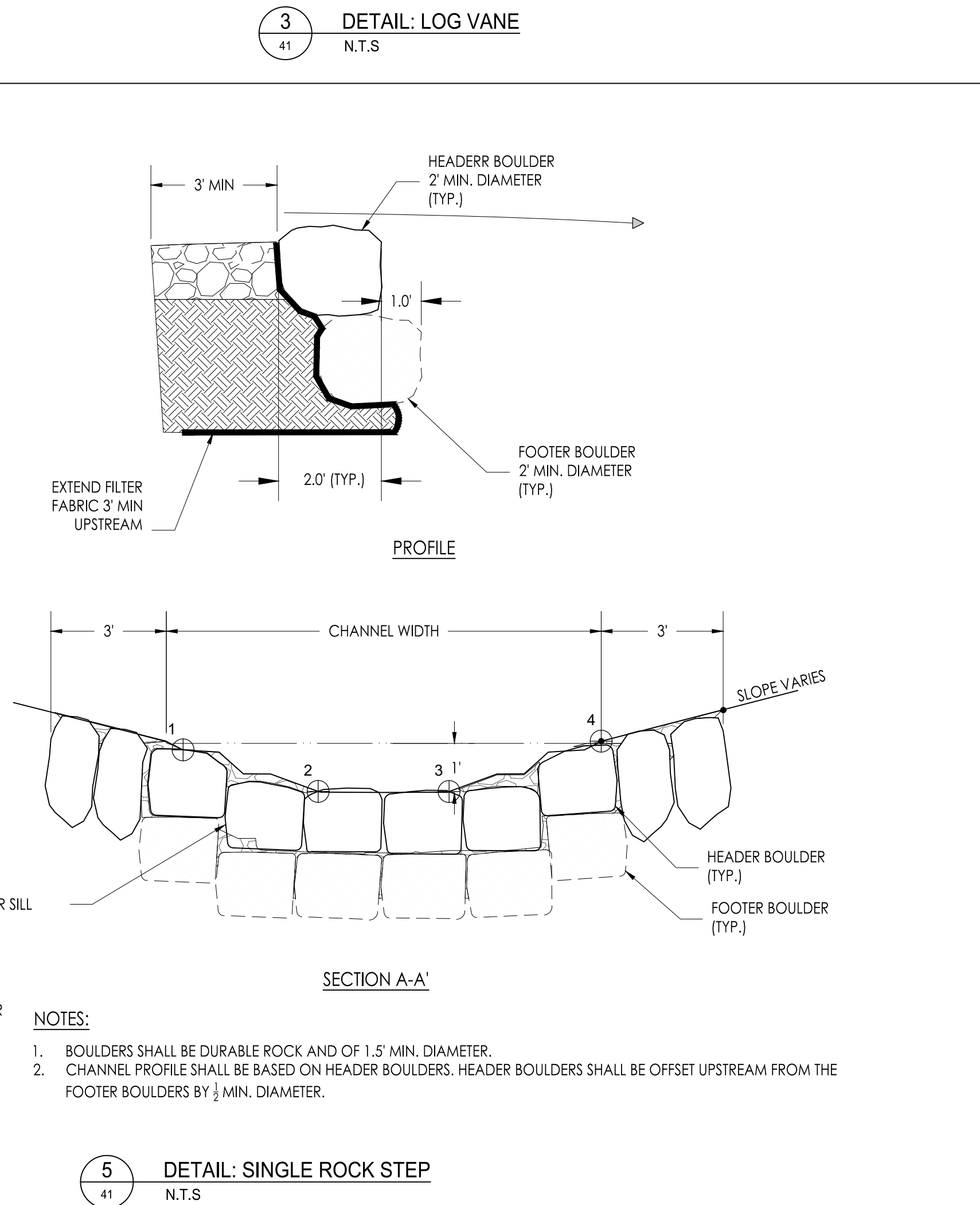
ORIGINAL SHEET - ARCH D

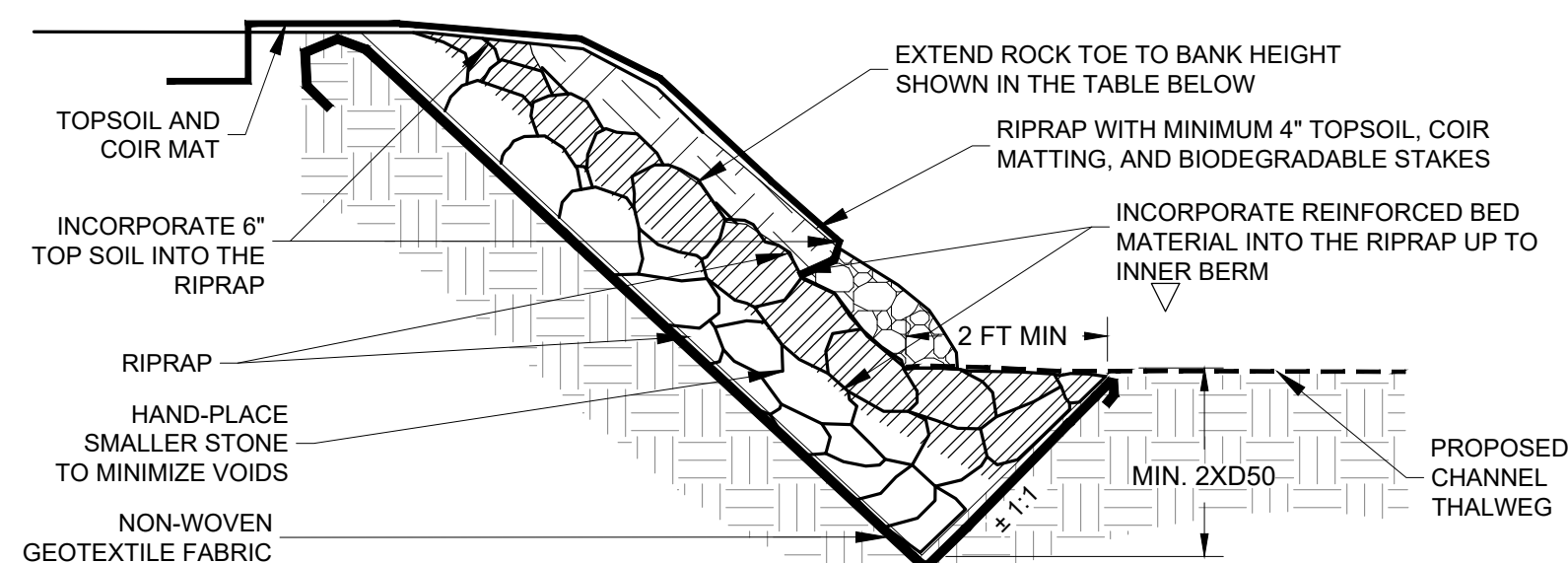


SINGLE ROCK STEP SPECIFICATIONS/INFORMATION TABLE						
STRUCTURE #	REACH	STATION	POINT 1 ELEVATION	POINT 2 ELEVATION	POINT 3 ELEVATION	POINT 4 ELEVATION
S29	TRIB 2	0+03	303.50	302.97	302.97	303.50
S30	TRIB 2	0+11	302.47	301.94	301.94	302.47
S31	TRIB 2	0+20	301.57	301.04	301.04	301.57
S32	TRIB 2	0+36	300.62	300.09	300.09	300.62
S33	TRIB 2	0+46	299.46	298.93	298.93	299.46
S34	TRIB 2	0+56	298.48	297.95	297.95	298.48
S35	TRIB 2	0+69	297.53	297.00	297.00	297.53



LOG VANE SPECIFICATIONS/INFORMATION TABLE								
STRUCTURE #	STATION START	STATION END	UPSTREAM BANK TIE-IN ELEVATION	DOWNSIDE BANK TIE-IN ELEVATION	MIN. KEY IN BANK (FT)	ESTIMATED LENGTH OF LOG (FT)	MINIMUM DIAMETER OF LOG (IN)	NUMBER OF VANE LOGS
S1	0+06	0+36	295.61	1/2 BKF	5	34	12	2

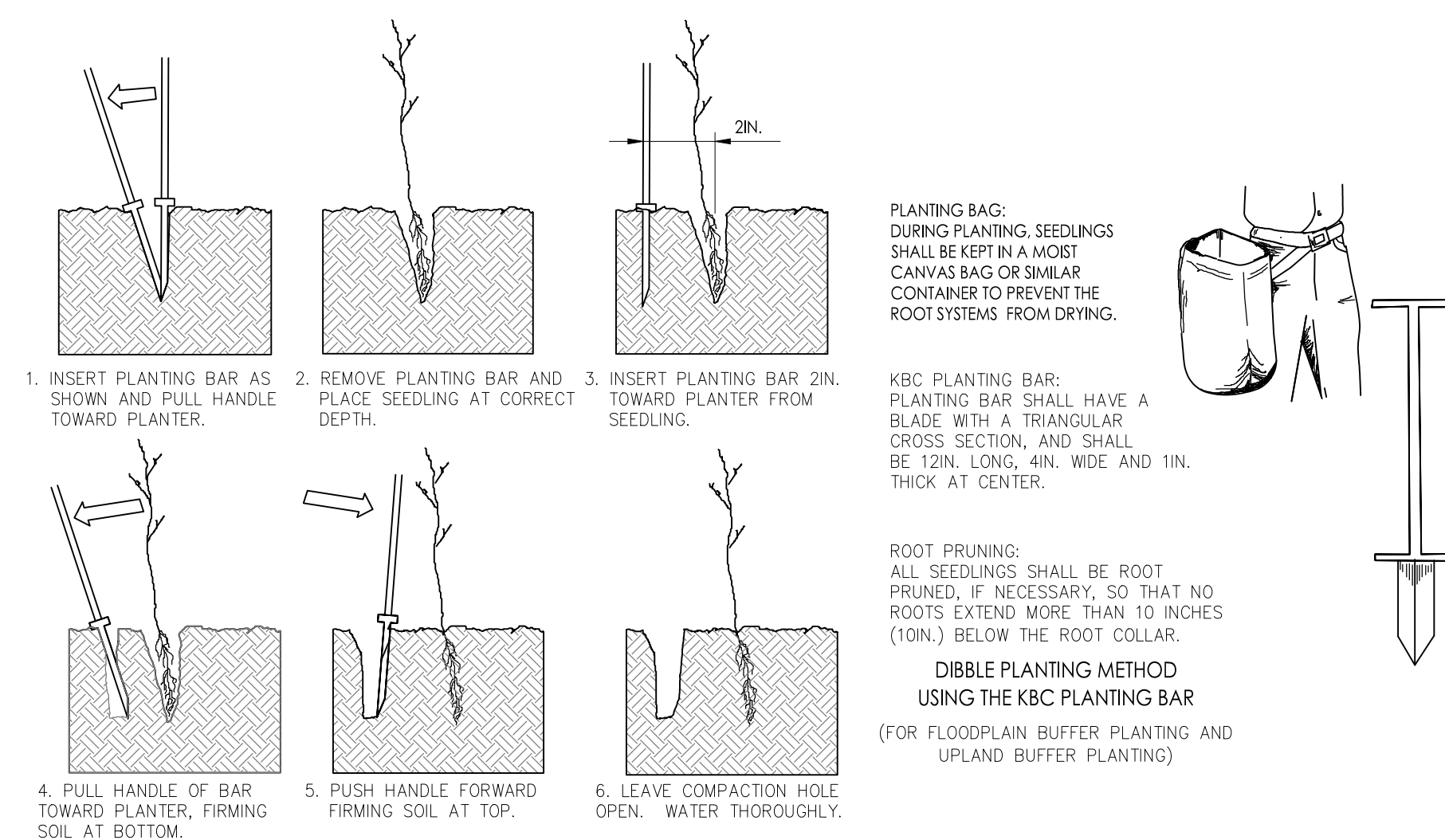




BURIED VEGETATED ROCK TOE/BANK PROTECTION SPECIFICATION TABLE					
APPX. STA	MAX SLOPE	LENGTH (LF)	RIPRAP SIZE	BANK (R/L)	MAX HEIGHT
3+47 - 4+17	2:1	70	CLASS 1 (D50=10")	RIGHT	BANKFULL
8+00 - 8+55	2:1	55	CLASS 1 (D50=10")	LEFT	BANKFULL

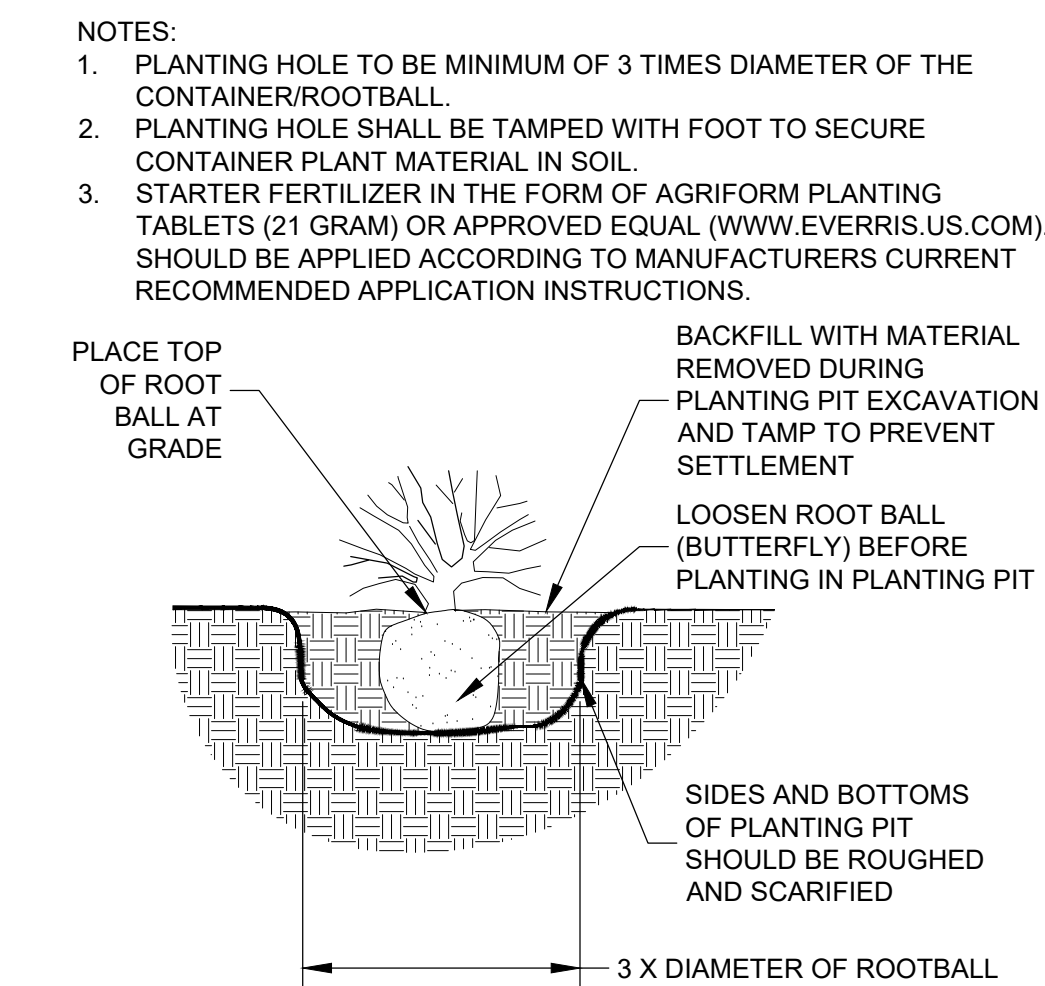
4
43

DETAIL: BURIED VEGETATED ROCK TOE/BANK PROTECTION
NTS



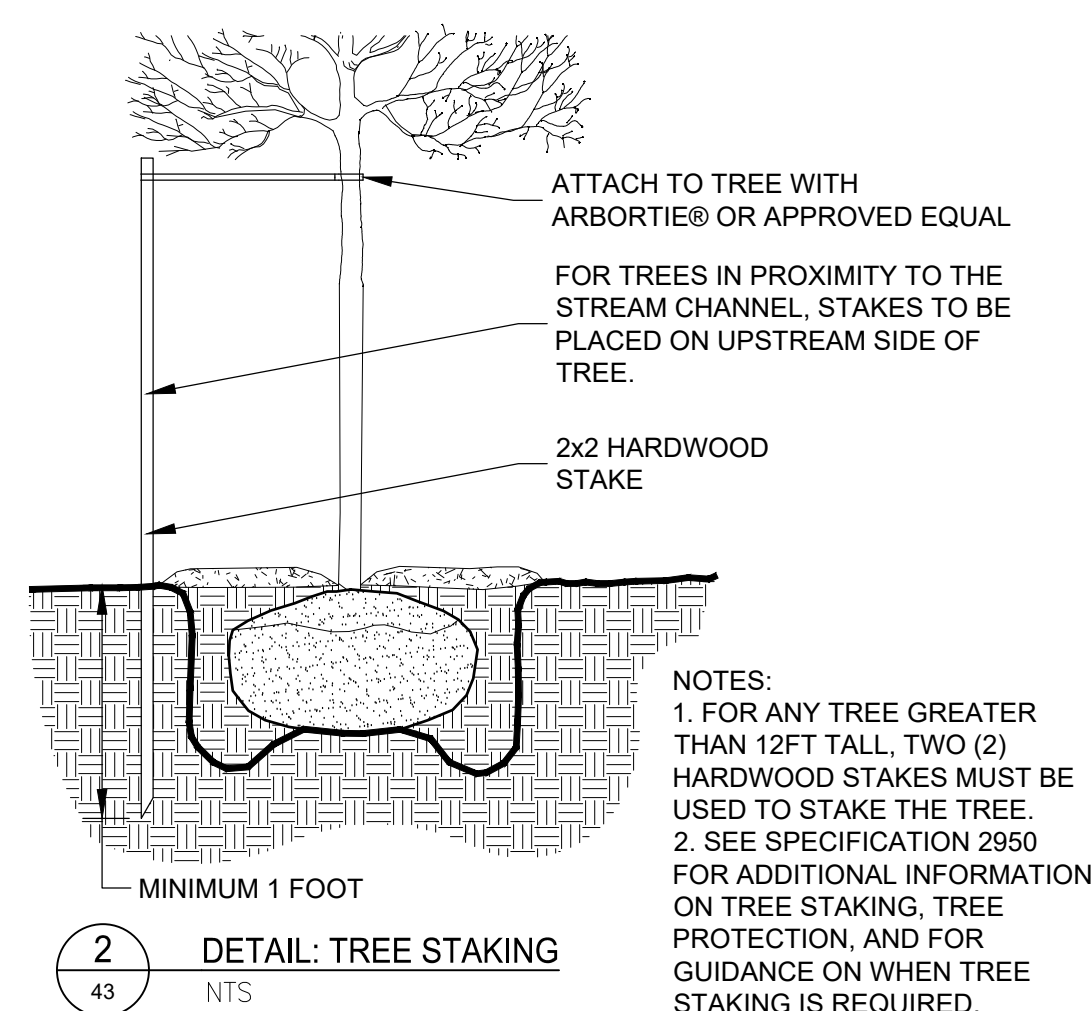
5
43

DETAIL: BARE ROOT PLANTING
N.T.S



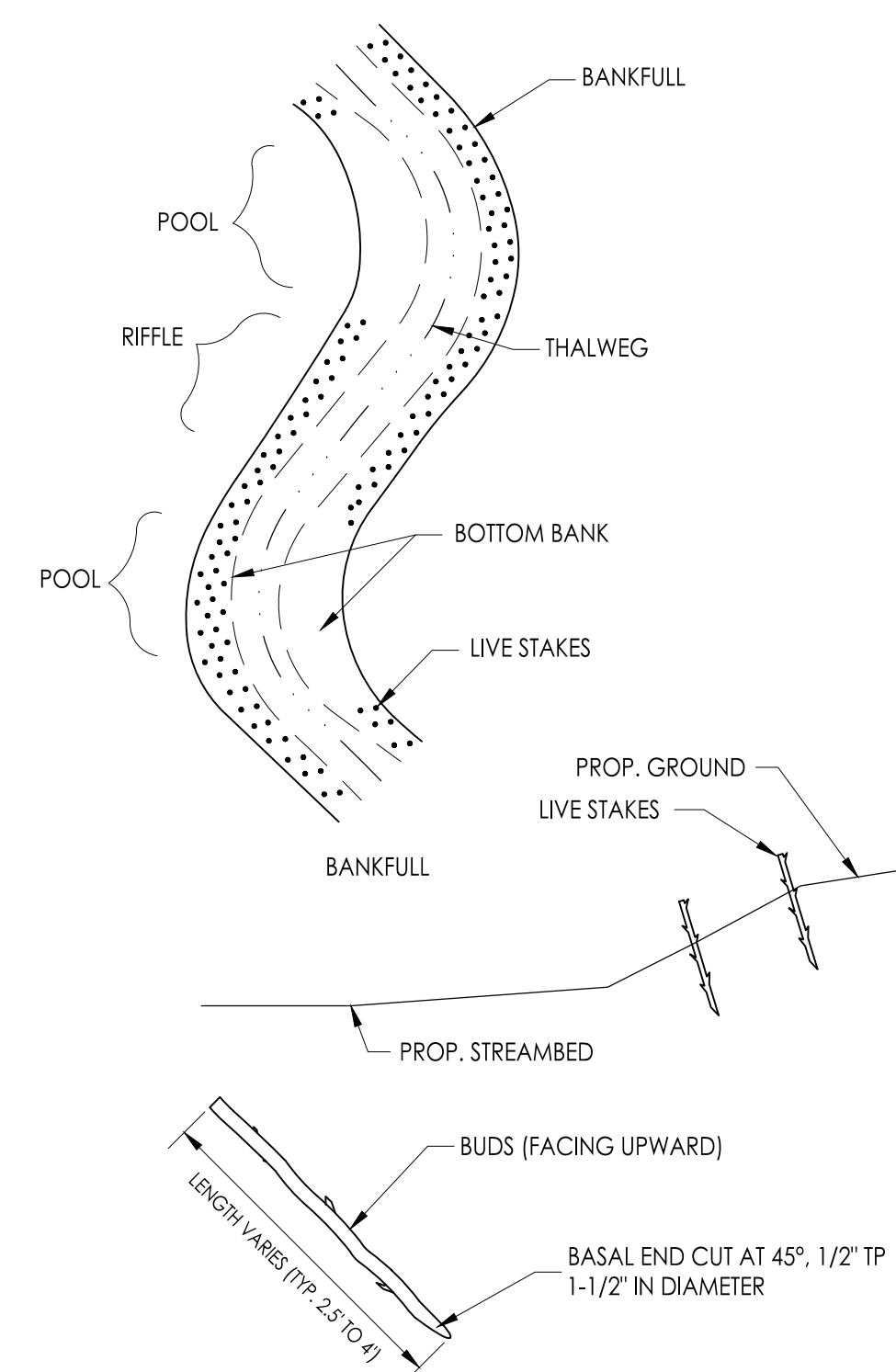
1
43

DETAIL: CONTAINER INSTALLATION
NTS



2
43

DETAIL: TREE STAKING
NTS



6 DETAIL: LIVE STAKE PLANTING
43 NTS

- NOTES:
1. PLANTING HOLE TO BE MINIMUM OF 3 TIMES DIAMETER OF THE CONTAINER/ROOTBALL.
 2. PLANTING HOLE SHALL BE TAMPED WITH FOOT TO SECURE CONTAINER PLANT MATERIAL IN SOIL.
 3. STARTER FERTILIZER IN THE FORM OF AGRIFORM PLANTING TABLETS (21 GRAM) OR APPROVED EQUAL (WWW.EVERRIS.US.COM) SHOULD BE APPLIED ACCORDING TO MANUFACTURERS CURRENT RECOMMENDED APPLICATION INSTRUCTIONS.

- NOTES:**
1. LIVE STAKES SHALL BE INSTALLED WHERE INDICATED ON THE DRAWINGS AND DETAILS AND IN DENSITIES SPECIFIED IN DETAIL 1/10 - PLANTING SCHEDULE.
 2. LIVE STAKES SHALL BE CUT FROM AN APPROVED SOURCE WITH A SHARP TOOL. STAKE SHALL BE FREE FROM DISEASE AND DEFECTS. DEAD TWIGS: 2 1/2 TO 4 FEET IN LENGTH WITH A BASAL END 0.5 TO 1.5 INCH IN DIAMETER. PRIOR TO INSTALLATION BASAL END SHALL BE CUT AT A 45 DEGREE ANGLE AND THE TOP END SHALL BE CUT FLAT WITHOUT CRACKS.
 3. LIVE STAKES SHALL BE INSTALLED WITH GENTLY TAMPING INTO THE SOIL. LEAVING 20% EXPOSED. STAKES SHALL BE PLACED IN A RANDOM PATTERN. REFER TO THE PLANTING SUMMARY FOR MINIMUM SPACING.
 4. LIVE STAKES SHALL BE INSTALLED WHEN THEY ARE DORMANT, WHICH TYPICALLY OCCURS BETWEEN OCTOBER 31 AND MARCH 31.
 5. SEE PLANTING SCHEDULE.

4	SIGNATURE SET	CSA	26.04.23	E	SIGNATURE SET	CSA	26.04.23
3	PER TOWN COMMENTS	CSA	26.02.13	D	FOR APPROVAL	CSA	26.02.13
2	PER TOWN COMMENTS	CSA	26.02.13	C	FOR APPROVAL	CSA	26.12.19
1	PER TOWN COMMENTS	CSA	25.03.19	B	FOR APPROVAL	CSA	25.07.04
		CSA	25.07.04	A	FOR REVIEW	CSA	25.02.20
1				ISSUED			
		By	YY/MM/DD			By	YY/MM/DD

