Pender County, North Carolina
Department of Planning & Inspections
USDA Emergency Watershed Protection Program
EWP Event No. 5038 Hurricane Florence
CONTRACT No. 10-091-4002
DSR No. 489/ 269 Lake Road
Stream Bank Repair and Stabilization Site

INDEX SHEETS

AFFIX NC LICENSED/PROFESSIONAL ENGINEERING SEAL

"To the best of my professional knowledge, judgement and belief, these plans meet applicable NRCS Standards and Permitting requirements."

NORTH CAROLINA PROFESSIONAL SEAL 27790 ENGINEER J. MICHAEL HEALY

3/14/22

Project Location

PROJECT DESCRIPTION
STREAM BANK REPAIR AND STABILIZATION

SPONSOR: PENDER COUNTY: PLANNING & INSPECTION DEPARTMENT

ADDRESS: 805 South Walker Street
Burgaw, NC 28425
CONTACT: Mr. Daniel Adams, CFM-Ast Dir
PHONE: 910-259-0231
EMAIL: dadams@pendercountync.gov

PLANS & SPECIFICATIONS

THESE PLANS & SPECIFICATIONS, PREPARED BY ARDURRA, SHALL BE THE FINAL DOCUMENT USED BY THE CONTRACTOR(S) TO PERFORM THE PROJECTS AS SPECIFIED. PROVISIONS CONTAINED IN THE REQUEST FOR PROPOSAL SHALL ALSO BE INCORPORATED WITH THESE PLANS.

THE COUNTY OF PENDER APPROVALS

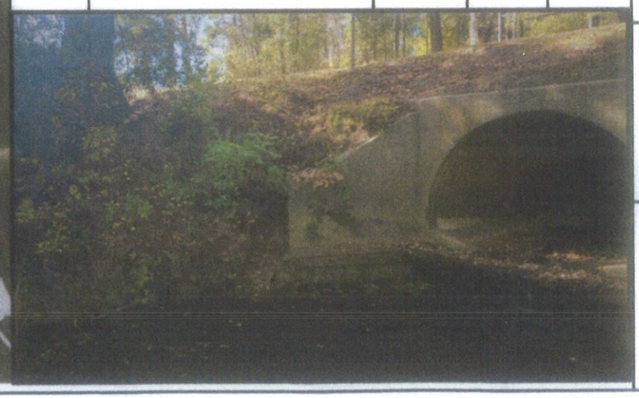
PENDER COUNTY SIGNATURES ON THIS PLAN SIGNIFY ONLY CONCURRENCE WITH THE GENERAL PURPOSE AND GENERAL LOCATIONS OF THE PROJECTS. ALL TECHNICAL DETAILS REMAIN THE RESPONSIBILITY OF THE ENGINEER PREPARING THE PLANS.

PENDER COUNTY INSPECTION & PLANNING DEPARTMENT — DATE

PENDER COUNTY MANAGER — DATE

USDA CONTRACT REPRESENTATIVE — DATE

REV NO	REVISION DESCRIPTION	SHEET(S)	INITIAL	DATE
1	FINAL PLANS & SPECIFICATIONS	1-8	RAS	2/23/2022



REPAIR PLANS & SPECIFICATIONS

County of Pender, North Carolina
Department of Planning & Inspections
Emergency Watershed Protection Program
EWP Event No. 5038 Hurricane Florence
DSR No. 489
Stream Bank Repair and Stabilization

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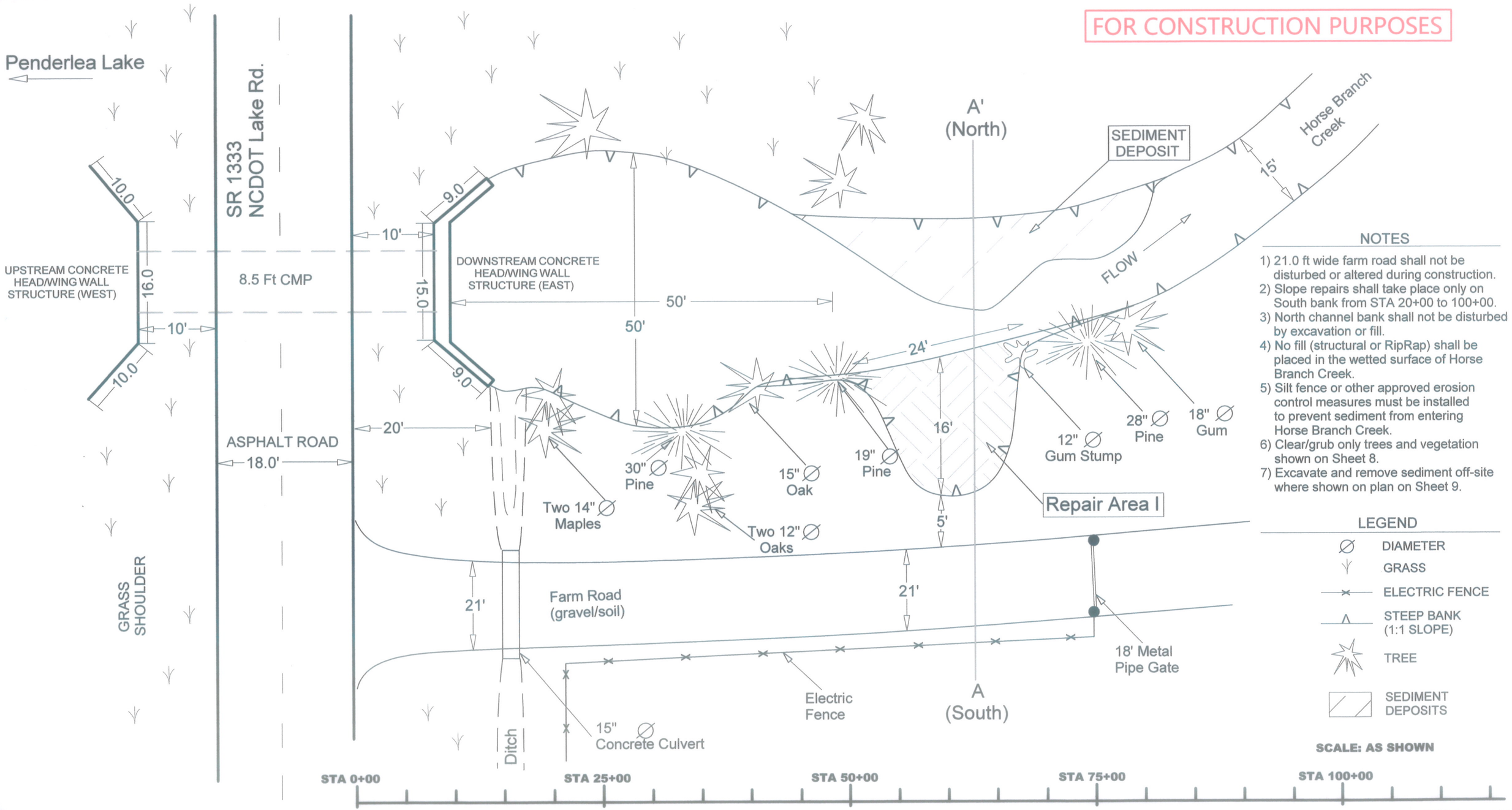
TITLE SHEET

FOR CONSTRUCTION PURPOSES



NOTES

1) 21.0 ft wide farm road shall not be disturbed or altered during construction.
2) Slope repairs shall take place only on South bank from STA 20+00 to 100+00.
3) North channel bank shall not be disturbed by excavation or fill.
4) No fill (structural or RipRap) shall be placed in the wetted surface of Horse Branch Creek.
5) Silt fence or other approved erosion control measures must be installed to prevent sediment from entering Horse Branch Creek.
6) Clear/grub only trees and vegetation shown on Sheet 8.
7) Excavate and remove sediment off-site where shown on plan on Sheet 9.

LEGEND

- ∅ DIAMETER
- GRASS
- ELECTRIC FENCE
- STEEP BANK (1:1 SLOPE)
- TREE
- SEDIMENT DEPOSITS

SCALE: AS SHOWN

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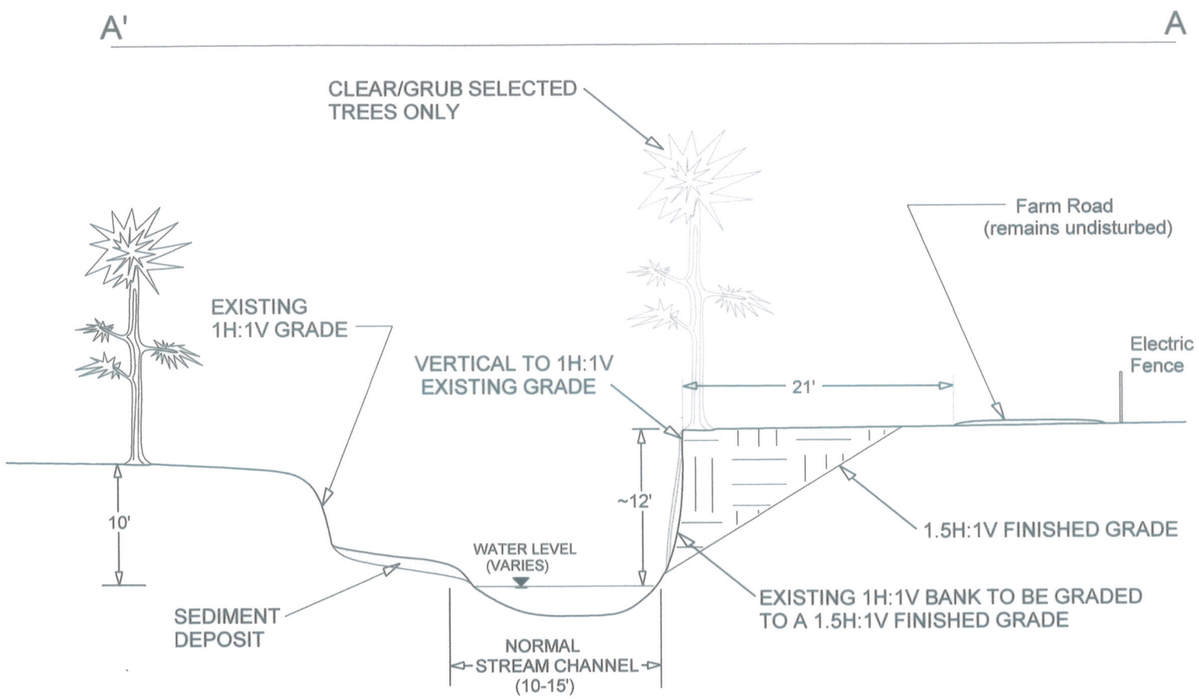
269 Lake Road, Willard NC
Stream Bank Repair and Stabilization Site

PLAN VIEW OF EXISTING CHANNEL CONDITIONS

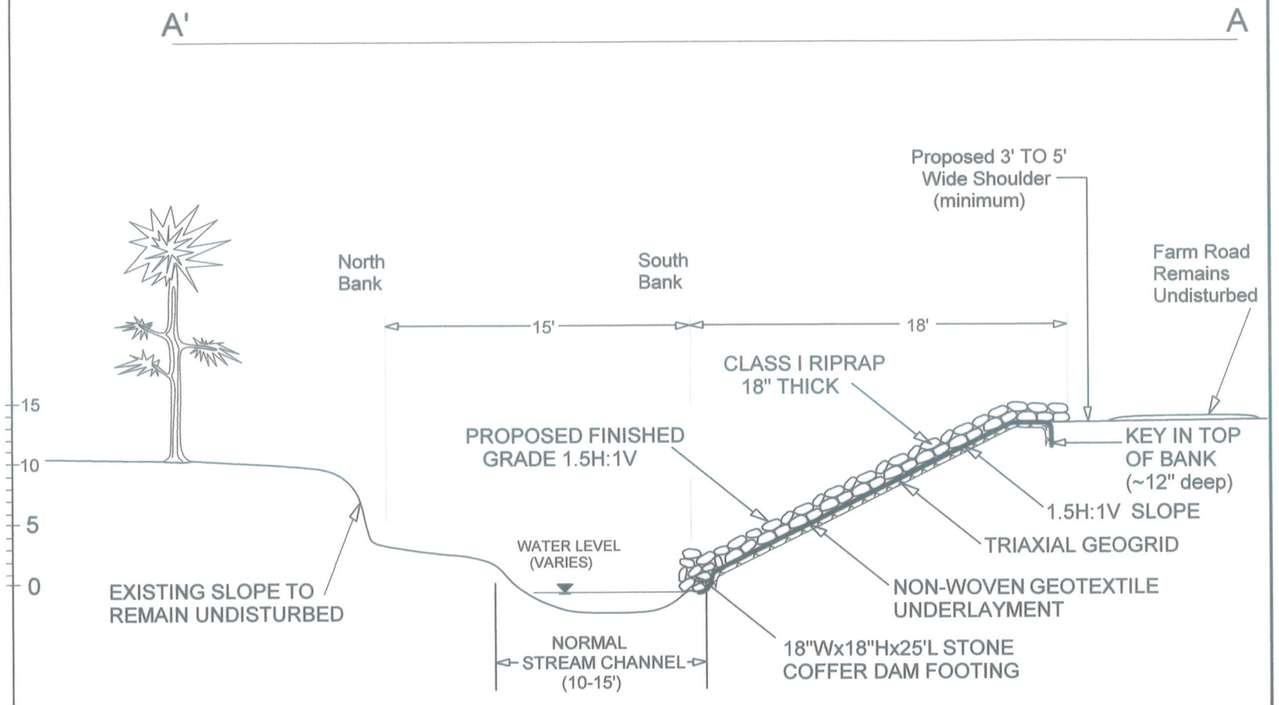
SHEET 2

EXISTING GRADE
Adjacent to
Downstream Spillway
Outlet Structure



STA 70+00

PROPOSED FINISHED GRADE
Adjacent to
Downstream Spillway
Outlet Structure



STA 70+00

NOTES:

1) Approved non-woven Geotextile underlayment shall be applied to prepared substrate; anchor at top of slope and toe of slope. Apply Triaxial Geogrid to all cut slope faces beneath non-woven geotextile.
2) Stabilize ~100LF of eroded channel bank using Class I RipRap; apply to bank per Plans & Specifications.
3) Seed and mulch all graded or disturbed areas per project Plan & Specifications.
4) Shape damaged channel bank to 1.5H: 1V finished slope; apply RipRap armor layer 1.5 foot thick for specified length of south bank.
5) Do not excavate or disturb existing 15" culvert under Farm Road adjacent to NC SR 1333.
6) Construct RipRap coffer dam 18"Wx18'Hx26'L across repair Area I as shown on Sheet 4 prior to placing earthfill.
7) Remove trees and vegetation only where specified on Sheet 8.

LEGEND

- Class I RipRap (~100 LF)
- Non-Woven Geotextile Underlayment
- Triaxial Geogrid
- Proposed Cut Bank

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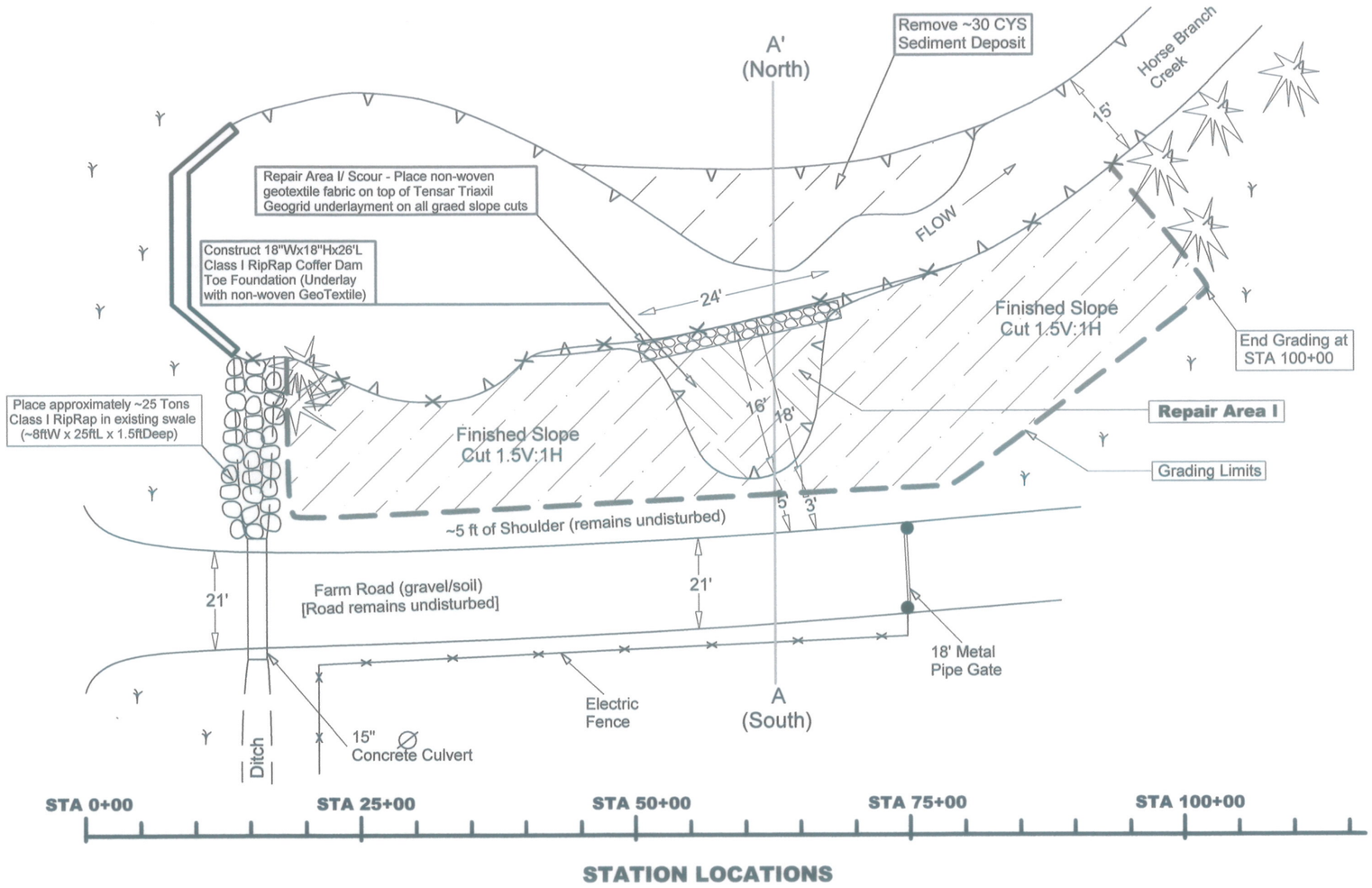
CROSS-SECTION A TO A' FOR EXISTING CONDITIONS AND PROPOSED FINISHED GRADE

SHEET 3



NOTES

1) Use approved suitable fill for backfilling Repair Area I (SW, SC, SP and SM).
2) Underlay and wrap backside (upslope) of RipRap coffer dam with non-woven Geotextile fabric.
3) Underlay Repair Area I with Tensar Triaxial Geogrid prior to placement of earthfill (~375 SF).
4) Place and compact ~100CYS of approved earthfill in Repair Area I. Place no greater than 8" to 9" lifts. At any time during earthfill operations.
5) Compact earthfill placed in Repair Area I to no less than 91% MDD. Moisture content shall not exceed +1% of Optimum Moisture.
6) Provide vegetative groundcover to all disturbed or graded areas that are not covered with RipRap armor.
7) Remove all cleared vegetative debris (trees, stumps, roots, etc.) and dispose of at an approved off-site LCID or CDLF. Provide Sponsor with all time-stamped weigh tickets or manifest to document disposal.
8) Perform geotechnical testing to document that all earthfill (cut or placed/ compacted) meets density specifications of >91% MDD.
9) Remove sediment blockage from Horse Branch Creek only where shown (Sediment Deposit ~30 CYS).
10) Do not operate or place ant equipment in Horse Branch Creek during construction.
11) Grading limits shown shall not be exceeded for any reason.
12) Sediment fence or other approved (by Sponsor) erosion control measures shall be placed along Horse Branch Creek from STA 20+00 to STA 100.00 and maintained at all times during construction.
13) Place Class I RipRap in existing swale located at STA 15+00 along SR 1333 near south wing wall.
14) RipRap shall be placed on all graded slopes within the grading limits.

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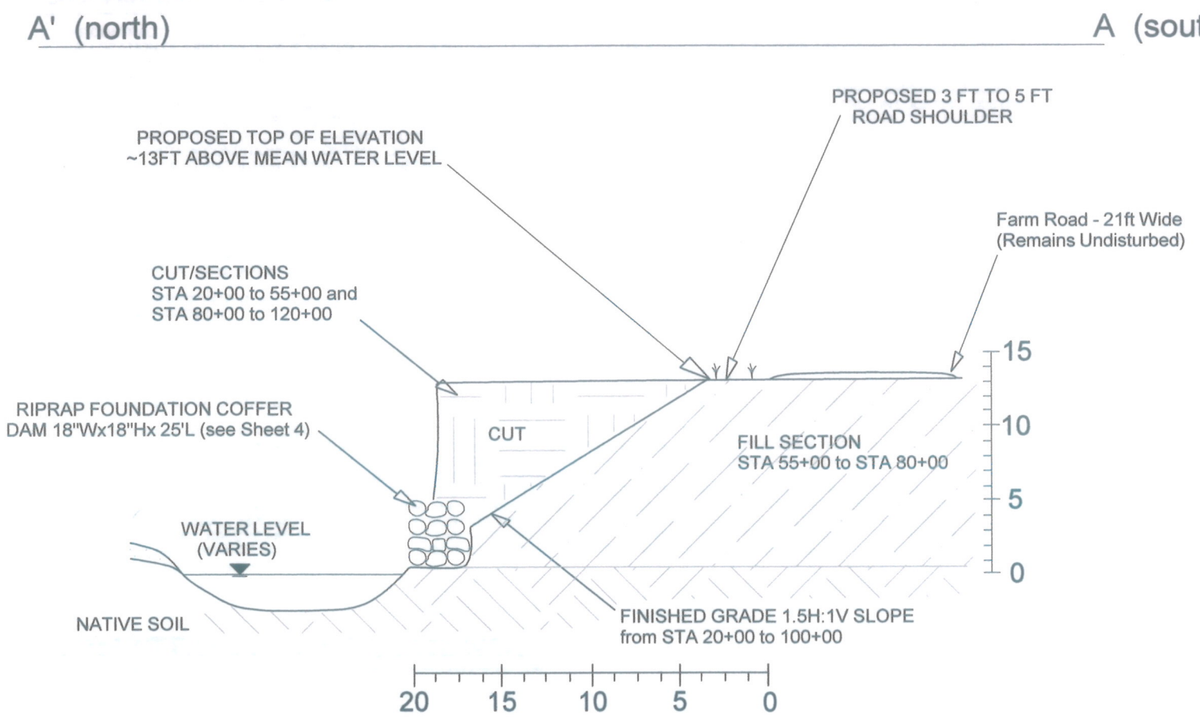
Stream Bank Repair and Stabilization Site

PLAN VIEW FOR GRADING AND STABILIZING REPAIR AREA I AND SOUTH BANK (STA 0+20 TO STA 100+00)

SHEET
4



STA 70+00

LEGEND

- RIPRAP
- FILL SECTION
- NATIVE SOIL
- NATIVE SOIL TO BE CUT

NOTES

1) Bank cut earth shall be re-used on-site for general purpose slope fill STA 20+00 to STA 100+00.
2) Unstable bank cut earth shall not be used for general purpose fill; dispose of unsuitable fill at Sponsor approved landfill location.
3) All 1.5H:2V finished slopes shown in cross section above shall be stabilized with a 1.5ft thick RipRap layer from Top of Bank to Toe from STA 20+00to 100+00.

FOR CONSTRUCTION PURPOSES

ESTIMATE OF CUT/FILL QUANTITIES (EARTHFILL)

STATION LOCATION	CUT/FILL	EST. QUANTITY	EST. LENGTH OF REPAIR
WingWall to Scour STA 20+00 to STA 55+00	CUT	±101 CYS	~35 LF
Scour Section (Repair Area I) STA 55+00 to STA 80+00	FILL	±100 CYS	~25 LF
Scour Section to Downstream STA 80+00 to STA 100+00	CUT	±116 CYS	~ 20 LF
TOTAL	CUT	±217 CYS	
	FILL	±100 CYS	
SURPLUS ~117 CYS CUT			

ESTIMATED QUANTITIES FOR MATERIALS

ITEM	EST. QUANTITY	LOCATION
Earthfill	~100 CYS	Scour STA 55+00 to STA 80+00
RipRap (100FT x 20LFx 1.5FT)	~ 90 CYS say ~100 CYS = 230 Tons	Top of Bank to Toe STA 20+00 to STA 100+00
Non-Woven GeoTextile Fabric 21ft x 100ft	~2100 SF	Same as Above
Triaxial Geogrid 1.5ftx 1.5ft x 25ft	~2100 SF	Same as Above 1.5ftx 1.5ft x 25ft
Coffer Dam 1.5ft x 1.5ft x 25ft	15 CYS = 35 Tons	STA 55+00 to STA 80+00
Clear/Grub (as specified)	~200CYS	see Sheet 8
RipRap STA15+00	~25 Tons	15" Culvert Outlet

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ESTIMATED QUANTITIES AND CROSS-SECTION FOR STABILIZING SLOPES AND REPAIR AREA I (SOUTH BANK)

SHEET 5

GENERAL NOTES

1. THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS FOR THIS PROJECT FROM THE LOCAL AND STATE AGENCIES.
2. THE LOCATION OF EXISTING SEWER, WATER OR TELEPHONE LINES, CONDUITS OR OTHER STRUCTURES ACROSS, UNDERNEATH OR OTHERWISE ALONG THE LINE OF PROPOSED WORK ARE NOT NECESARILY SHOWN ON THE PLANS, AND IF SHOWN ARE ONLY APPROXIMATE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES SHOWN ON THE PLANS IN AREAS OF CONSTRUCTION PRIOR TO STARTING WORK. CONTACT ENGINEER IMMEDIATELY IF LOCATION OR ELEVATION IS DIFFERENT FROM THAT SHOWN ON THE PLANS, IF THERE APPEARS TO BE A CONFLICT, OR UPON DISCOVERY OF ANY UTILITY NOT SHOWN ON THE PLANS CALL NORTH CAROLINA 811 FOR ASSISTANCE IN LOCATING EXISTING UTILITIES.
3. WHERE ASPHALT PAVEMENT IS ENCOUNTERED, THE CONTRACTOR SHALL NOT DISTURB REMOVE AGGREGATE BASE MATERIAL TO SUB-GRADE OR PAVEMENT.
4. DAMAGE TO THE UTILITIES (INCLUDING UNDERGROUND) OR PROPERTY OF OTHERS BY CONTRACTOR DURING CONSTRUCTION SHALL BE REPAIRED TO PRE-CONSTRUCTION CONDITIONS BY CONTRACTOR AT NO COST TO OWNER.
5. EXISTING PAVEMENT AND OTHER SURFACES DISTURBED BY CONTRACTOR (WHICH ARE NOT TO BE REMOVED) SHALL BE REPAIRED TO LIKE-NEW CONDITION.
6. THE CONTRACTOR IS REQUIRED TO MAINTAIN ALL DITCHES, PIPES, AND OTHER DRAINAGE STRUCTURES FREE FROM OBSTRUCTION OR SEDIMANT UNTIL WORK IS ACCEPTED BY THE OWNER. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGES CAUSED BY FAILURE TO MAINTAIN DRAINAGE STRUCTURES IN OPERABLE CONDITION.
7. THE CONTRACTOR SHALL HAVE A SET OF APPROVED PLANS AVAILABLE AT THE SITE AT ALL TIMES WHEN WORK IS BEING PERFORMED. A DESIGNATED RESPONSIBLE EMPLOYEE SHALL BE AVAILABLE FOR CONTACT BY THE SPONSORS INSPECTOR.
8. THE CONTRACTOR SHALL NOTIFY ALL APPLICABLE REGULATORY AGENCIES AND THE SPONSOR AT LEAST 24 HOURS PRIOR TO STARTING WORK ON THIS PROJECT.
9. UNLESS OTHERWISE NOTED. ALL CONCRETE PIPE OTLET STRUCTURES, HEADWALLS AND WINGWALLS SHALL NOT BE ALTERED OR DISTURBED DURING CONSTRUCTION.
10. ALL EXCAVATION FOR UNDERGROUND INSTALLATIONS OR SOIL REMOVAL MUST COMPLY WITH OSHA STANDARDS FOR THE CONSTRUCTION INDUSTRY (29 CFR PART 1926).
11. CONTRACTOR SHALL VERIFY THE PROPOSED LAYOUT WITH ITS RELATIONSHIP TO THE EXISTING SITE SURVEY, ALSO VERIFY ALL DIMENSIONS, SITE CONDITIONS, AND MATERIAL SPECIFICATIONS AND NOTIFY THE SPONSOR AND ENGINEER OF ANY ERRORS, OMISSIONS, OR DISCREPANCES BEFORE COMMENCING OR PROCEEDING WITH WORK.
12. DEVIATIONS FROM, OR CHANGES TO THESE PLANS SHALL OCCUR ONLY WITH WRITTEN CONCURRANCE FROM THE SPONSOR OR USDA/NACS.
13. CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS AND LOCATE EXISTING UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO THE PLANS IF NECESSARY. THE EXISTENCE AND/OR LOCATION OF UTILITIES SHOWN ON THESE PLANS MAY BE ONLY APPROXIMATELY CORRECT. TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN HEREON AND ANY OTHER EXISTING UTILITIES NOT OF RECORD OR NOT SHOWN ON THESE PLANS. REPAIR AT YOUR OWN EXPENSE, ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION. IF A UTILITY IS DAMAGED DURING CONSTRUCTION, STOP WORK AND NOTIFY THE ENGINEER AND SPONSOR.
14. PROPERLY SECURE THE CONSTRUCTION AREA AT ALL TIMES AGAINST UNAUTHORIZED ENTRY AND ADEQUATLEY PROTECT EQUIPMENT, MATERIALS, AND COMPLETED WORK FROM THEFT AND VANDALISM. THE SPONSOR IS NOT REPONSIBLE FOR THE LOSS OF ANY MATERIAL STORED AT THE SITE.
15. THE CONTRACTOR SHALL IMPLEMENT MUTCD TRAFFIC CONTROL MEASURES IN ACCORDANCE WITH THE APPROVED TRAFFIC CONTROL PLAN.
16. CONTRACTOR SHALL SECURE AND PREVENT ACCESS TO ANY OPEN EXCAVATIONS OR TRENCHES TO PREVENT INADVERTENT ENTRY BY THE PUBLIC BARRICADES AND FENCING SHALL BE USED TO MARK AND PROTECT OPEN EXCAVATIONS UNTIL ADEQUATE STABILIZATION OR SUCH AREAS HAVE BEEN CLOSED TO PREVENT FALLS OR CAVE-IN.

CONSTRUCTION SEQUENCE

1. CONDUCT MANDATORY PRE-CONSTRUCTION MEETING BETWEEN CONTRACTOR AND SPONSOR.
2. INSTALL SILT FENCE AND OTHER PERIMETER CONTROLS TO PREVENT OFF-SITE SEDIMENTATION.
3. INSTALL EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED OR DETERMINED NECESSARY BY THE SPONSOR OR CFR.
4. MINIMIZE DISTURBED AREAS AT ANY GIVEN TIME TO THOSE AREAS THAT ARE TO BEING ACTIVELY EXCAVATED OR GRADED.
5. INSPECT AND ADJUST AS NECESSARY ALL EROSION CONTROL DEVICES IN ORDER TO MAINTAIN PROPER FUNCTION.
6. COMPLETE ALL TEMPORARY SITE ACCESS REQUIREMENTS, INCLUDING GRAVEL ENTRANCE, UTILITY CLEARANCE, CLEARING AND GRUBBING AND INSTALLATION OF EROSION CONTROL MEASURES.
7. REMOVE MISCELLANEOUS DEBRIS BOTH IDENTIFIED AND AS ENCOUNTERED THAT IS NOT EXPLICITLY IDENTIFIED IN THE DESCRIPTION OF EACH STABILIZATION PROJECT. DISPOSE OF DEBRIS AT AN APPROVED PERMITTED LANDFILL FACILITY.
8. INSTALL COFFER DAM AS SPECIFIED.
9. PERFORM GRADING/FILLING OPERATIONS IN ACCORDANCE WITH SPECIFICATIONS SHOWN ON APPLICABLE PLAN SHEETS
10. NO AREAS OUTSIDE OF THE INDICATED CONSTRUCTION LIMITS SHALL BE AFFECTED OR DISTURBED AT ANY TIME.
11. STABILIZE SITE DURING AND AT THE CONCLUSION OF CONSTRUCTION IN ACCORDANCE WITH THE NOTES AND DETAILS IN THESE PLANS AND AS INSPECTOR HAS INSTRUCTED.
12. ONCE ALL AREAS HAVE BEEN STABILIZED, AND ONLY WITH THE APPROVAL OF THE SPONSOR REMOVE ALL REMAINING EROSION CONTROL DEVICES.
13. REMOVE AND REPLACE ANY FENCING, DISTURBED AND/OR REMOVED DURING ACCESS OR CONSTRUCTION ACTIVITIES REMOVE TEMPORARY ACCESS FEATURES UNLESS INDICATED TO REMAIN.

GENERAL UTILITY NOTES

1. NEITHER THE SPONSOR NOR PROJECT ENGINEER WARRANT THAT ANY UTILITIES PRESENT ARE IN THE EXACT LOCATION AS INDICATED IN THIS PLAN, UTILITIES ARE DEPICTED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE BUT IS APPROXIMATE AND MUST BE CONFIRMED BY THE CONTRACTOR PRIOR TO BEGINNING CONSTRUCTION.
2. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION SO THAT CONTRACTOR IS FAMILIAR AND UNDERSTANDS EXISTING CONDITIONS AND UTILITIES.
3. FIELD CHANGES MAY BE NECESSARY DUE EXISTING UTILITY LOCATIONS OR SITE CONDITIONS. THE SPONSOR AND ENGINEER SHALL BE CONTACTED BEFORE MAKING ANY CHANGES TO THESE PLANS.
4. CONTRACTOR SHALL CONTACT 811- NO CUTS AND VERIFY THE PRESENCE AND LOCATION OF ALL UTILITIES ON-SITE, IN THE NCDOT RIGHT-OF-WAY, AND IN THE PROPOSED WORK ZONE.
5. CONTRACTOR MAY HIRE A PRIVATE UTILITY LOCATION FIRM TO VERIFY THE PRESENCE AND LOCATION OF ALL SITE UTILITIES. CONTRACTOR SHALL BEAR SUCH COSTS FOR ALL UTILITY LOCATIONS.
6. CONTRACTOR SHALL PROVIDE SPONSOR WITH WRITTEN EVIDENCE THAT UTILITY CLEARANCE/IDENTIFICATION HAS BEEN PERFORMED BY NORTH CAROLINA 811 OR A PRIVATE LOCATOR BY PROVIDING A CALL-IN-TICKET, CASE NUMBER, REPORT OR MAP/DRAWING SHOWING THE LOCATION OF ALL MARKED UTILITIES.

EROSION CONTROL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ALL EROSION AND SEDIMENT CONTROL DEVICES AND MEASURES DURING CONSTRUCTION IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL MANUAL.
2. ALL DISTURBED AREAS SHALL BE PERMANENTLY SEEDED AND MULCHED PER THE SEEDING SCHEDULE AFTER REACHING FINAL GRADE. AREAS WHICH HAVE BEEN DISTURBED AND HAVE NOT REACHED FINAL GRADE, BUT WHICH ARE TO REMAIN UNDISTURBED FOR LONGER THEN 14 DAYS ARE TO BE TEMPORARILY SEEDED AND MULCHED PER THE SCHEDULE AS UPSTREAM AREAS ARE STABILIZED WITH PERMANENT GROUND COVER, DOWNSTREAM TEMPORARY EROSION CONTROL DEVICES ARE TO BE REMOVED AFTER A VEGETATIVE GROUNDCOVER IS ESTABLISHED.
3. IT IS THE CONTRACTORS RESPONSIBILITY TO PERIODICALLY INSPECT ALL SEDIMENT CONTROL DEVICES TO ENSURE THEY ARE IN GOOD WORKING ORDER. AT A MINIMUM, ALL DEVICES SHALL BE INSPECTED DAILY AND AFTER MAJOR RAINFALL EVENTS. REPAIRS SHALL BE MADE WITHIN 24 HOURS.
4. THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION AND SEDIMENT CONTROL DEVICES IF DURING THE COURSE OF CONSTRUCTION THE ENGINEER OR NCDEQ INSPECTOR DETERMINES THAT THEY ARE REQUIRED.
5. SILT SHALL BE REMOVED FROM SILT FENCES WHEN THE SILT REACHES APPROXIMATELY ONE-THIRD (1/3) THE HEIGHT OF THE BARRIER.
6. THE CONTRACTOR SHALL PERIODICALLY TOP DRESS THE CONSTRUCTION ENTRANCE WITH CLEAN AGGREGATE. IF THE AGGREGATE PLACED IN THE CONSTRUCTION ENTRANCE FAILS TO REMOVE DIRT FROM THE TIRES OF VEHICLES ENTERING A PUBLIC RIGHT-OF-WAY ADDITIONAL MEASURES MAY BE REQUIRED.
7. ALL EROSION AND SILTATION MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN GRADING.
8. ALL TEMPORARY EARTH BERMS, DIVERSIONS, AND SILT DAMS ARE TO BE MULCHED AND SEEDED FOR VEGETATIVE COVER IMMEDIATLEY AFTER GRADING. STRAW OR HAY MULCH IS REQUIRED. ADDITIONALY ALL DIVERSION SWALES WILL BE PROTECTED AGAINST HIGH VELOCITY WITH EROSION CONTROL MEASURES AS DENOTED ON THESE PLANS. THE SAME APPLIES TO STOCKPILES ON SITE AS WELL AS SOIL (INTENTIONALLY) TRANSPORTED FROM THE PROJECT SITE.
9. ANY DISTURBED AREA NOT PAVED, SODDED, OR BUILT UPON IS TO BE SEEDED PER THE TEMPORARY AND PERMANENT SEEDING SCHEDULE INCLUDED IN THESE DRAWINGS.
10. CONTRACTOR STAGING AREA(S) SHALL BE RETURNED TO AS-GOOD OR BETTER THAN ORIGINAL CONDITIONS AT THE COMPLETION OF THE WORK.
11. ALL DRAINAGE FROM DISTURBED AREAS SHALL FLOW INTO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPEMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
12. A PRE-CONSTRUCTION MEETING IS REQUIRED PRIOR TO THE SPONSOR ISSUING TASK ORDER TO PROCEED. THE CONTRACTOR SHALL SCHEDULE THE MEETING WITH THE SPONSOR.
13. PERMANENT GROUNDCOVER SHOULD BE PROVIDED FOR ALL DISTURBED AREAS WITHIN 14 DAYS FOLLOWING THE COMPLETION OF CONSTRUCTION OR DEVELOPEMENT, OR DISTURBING ANY PROJECT AREA.
14. A SILT FENCE OR OTHER APPROVED EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO CONSTRUCTION ADJACENT TO ANY CREEK.
15. ADDITIONAL TEMPORARY EROSION CONTROL DEVICES OR MEASURES BEYOND THESE SPECIFIED IN THIS PLAN MAYBE REQUIRED BY THE SPONSOR.

SEEDING SCHEDULE

PERMANENT SEEDING SCHEDULE FOR ALL AREAS GRADED OR DISTURBED

DATES	SPECIES	RATE (LB/1,000 SFT)
SEP 1 to MAR 31	KENTUCKY 31 TALL FESCUE	1.7
	PENSACOLA BAHIA GRASS	1.1
FEB 1 to to AUG 31	KENTUCKY 31 TALL FESCUE	1.1
	PENSACOLA BAHIA GRASS	1.7

SOIL AMENDMENTS: FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 12 LB/1,000 10-20-20 FERTILIZER.
MULCH: 70 LBS HAY OR SMALL GRAIN STRAW MULCH.
NOTE: SHOULD LOCALITY, CLIMATE AND/OR GROUND CONDITIONS WARRANT, THE SPONSOR MAY ALTER THE PLANTING DATES TO AN EARLIER OR LATER PERIOD, SEED MIX AND QUALITY, OR MULCH REQUIREMENTS FROM THOSE SHOWN ABOVE. ANY CHANGE OF THE SEEDING-MULCHING SPECIFICATIONS COULD BE CHANGED UPON THE RECOMMENDATIONS OF THE USDA/NRCS CONTRACT PERSONNEL PROVIDING CONSTRUCTION OVERSIGHT OF THESE PROJECTS. THE CONTRACTOR SHALL INSTALL THE USDA/NRCS RECOMMENDED FINAL SEEDING SPECIFICATION IF THAT DEVIATES FROM THE SCHEDULE SHOWN ABOVE.

FOR CONSTRUCTION PURPOSES

GENERAL NOTES
(Utility, Seeding and Construction)

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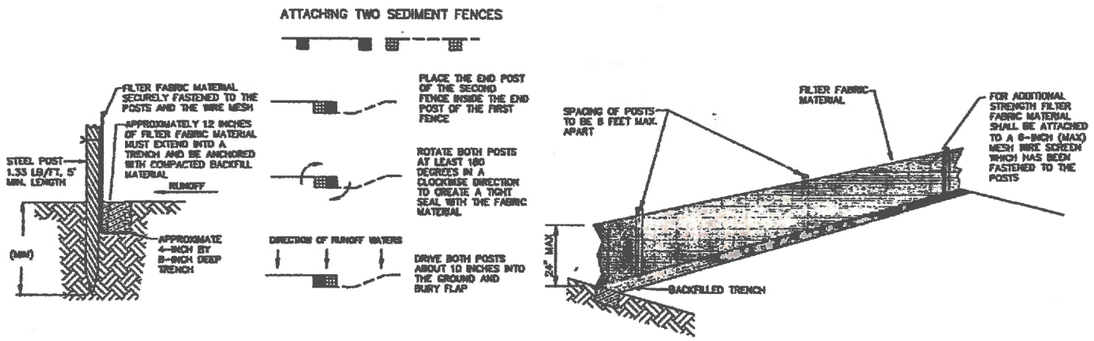
SHEET 6

SEDIMENT FENCE DETAIL



MATERIALS

1. USE A SYNTHETIC FILTER FABRIC OF AT LEAST 95% BY WEIGHT OF POLYOLEFINS OR POLYESTER, WHICH IS CERTIFIED BY THE MANUFACTURER OR SUPPLIER AS CONFORMING TO THE REQUIREMENTS IN ASTM D 6461. SYNTHETIC FILTER FABRIC SHOULD CONTAIN ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF 6 MONTHS OF EXPECTED USABLE CONSTRUCTION LIFE AT A TEMPERATURE RANGE OF 0 TO 120 F.
2. ENSURE THAT POSTS FOR SEDIMENT FENCES ARE 1.33 LB/LINEAR FT STEEL WITH A MIMINUM LENGTH OF 5 FEET. MAKE SURE THAT STEEL POSTS HAVE PROJECTIONS TO FACILITATE FASTENING THE FABRIC.
3. FOR REINFORCEMENT OF STANDARD STRENGTH FILTER FABRIC, USE WIRE FENCE WITH A MINIMUM 14 GAUGE AND A MAXIMUM MESH SPACING OF 6 INCHES.

CONSTRUCTION

1. CONSTRUCT THE SEDIMENT BARRIER OF STANDARD STRENGTH OR EXTRA STRENGTH SYNTHETIC FILTER FABRIC.
2. ENSURE THAT THE HEIGHT OF THE SEDIMENT FENCE DOES NOT EXCEED 24 INCHES ABOVE THE GROUND SURFACE. (HIGHER FENCES MAY IMPOUND VOLUMES OF ATER SUFFIENT TO CAUSE FAILURE OF THE STRUCTURE.)
3. CONSTRUCT THE FILTER FABRIC FROM A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID JOINTS. WHEN JOINTS ARE NECESSARY, SECURE FASTEN THE FILTER CLOTH ONLY AT A SUPPORT POST WITH 4 FT OF MINIMUM OVERLAP TO THE NEXT POST.
4. SUPPORT STANDARD STRENGTH FILTER FABRIC BY WIRE MESH FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS, EXTEND THE WIRE MESH SUPPORT TO THE BOTTOM OF THE TRENCH, FASTEN THE WIRE REINFORCEMENT, THEN FABRIC ON THE UPSLOPE SIDE OF THE FENCE POST. WIRE OR PLASTIC ZIP TIES SHOULD HAVE MINIMUM 50 POUND TENSILE STRENGTH.
5. WHEN A WIRE MESH SUPPORT FENCE IS USED, SPACE POSTS A MAXIMUM OF 8 FEET APART. SUPPORT POSTS SHOULD BE DRIVEN SECURELY INTO THE GROUND A MIMIMUM OF 24 INCHES.
6. EXTRA STRENGTH FILTER FABRIC WITH 6 FEET POST SPACING DOES NOT REQUIRE WIRE MESH SUPPORT FENCE. SECURELY FASTEN THE FILTER FABRIC DIRECTLY TO POSTS. WIRE OOR PLASTIC ZIP TIES SHOULD HAVE A MINIMUM OF 50 POUND TENSILE STRENGTH.
7. EXCAVATE TRENCH APPROXIMATELY 4 INCHES WIDE AND 8 INCHES DEEP ALONG THE PROPOSED LINE OF POSTS AND UPSLOPE FROM THE BARRIER.
8. PLACE 12 INCHES OF THE FABRIC ALONG THE BOTTOM AND SIDE OF THE TRENCH.
9. BACKFILL THE TRENCH WITH COMPACTED SOIL PLACED OVER THE FILTER FABRIC, THROUGH COMPACTION OF THE BACKFILL IS CRITICAL TO SILT FENCE PERFORMANCE.
10. DO NOT ATTACH FILTER FABRIC TO EXISTING TREES.

SEDIMENT FENCE INSTALLATION USING THE SLICING METHOD

1. INSTEAD OF EXCAVATING A TRENCH, PLACING FABRIC AND THEN BACKFILLING TRENCH, SEDIMENT FENCE MAY BE INSTALLED USING SPECIFICALLY DESIGNED EQUIPMENT THAT INSERTS THE FABRIC INTO A CUT SLICED IN THE GROUND WITH A DISC.
2. REFER TO "NC EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL", PRACTICE STANDARDS AND SPECIFICATIONS, SECTION 6.62 SEDIMENT FENCE.

INSTALLATION SPECIFICATIONS

1. THE BASE OF BOTH POSTS SHOULD BE AT LEAST ONE FOOT HIGHER THAN THE MIDDLE OF THE FENCE. CHECK WITH LEVEL IF NECESSARY.
2. INSTALL POSTS 4 FEET APART IN CRITICAL AREAS AND 6 FEET APART ON STANDARD APPLICATIONS.
3. INSTALL POSTS 2 FEET DEEP ON THE DOWNSTREAM SIDE OF THE SILT FENCE, AND AS CLOSE AS POSSIBLE TO THE FABRIC ENABLING POSTS TO SUPPORT THE FABRIC FROM UPSTREM PRESSURE.
4. INSTALL POSTS WITH THE NIPPLES FACING AWAY FROM THE FABRIC.
5. ATTACH THE FABRIC TO EACH POST WITH THREE TIES, ALL SPACED WITHIN THE TOP 8 INCHES OF THE FABRIC, ATTACH EACH TIE DIAGONALLY 45 DEGREES THROUGH THE FABRIC, WITH EACH PUNCTURE AT LEAST 1 INCH VERTICALLY APART. ALSO EACH TIE SHOULD BE POSITIONED TO HANG ON A POST NIPPLE WHEN TIGHTENED TO PREVENT SAGGING.
6. WRAP APPROXIMATELY 6 INCHES OF FABRIC AROUND THE END POSTS AND SECURE WITH 3 TIES.
7. SUPPORT STANDARD STRENGTH FILTER FABRIC BY WIRE MESH FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS, EXTEND THE WIRE MESH SUPPORT TO THE BOTTOM OF THE TRENCH, FASTEN THE WIRE REINFORCEMENT, THEN FABRIC ON THE UPSLOPE SIDE OF THE FENCE POST. WIRE OR PLASTIC ZIP TIES SHOULD HAVE MINIMUM 50 POUND TENSILE STRENGTH.
5. WHEN A WIRE MESH SUPPORT FENCE IS USED, SPACE POSTS A MAXIMUM OF 8 FEET APART. SUPPORT POSTS SHOULD BE DRIVEN SECURELY INTO THE GROUND A MIMIMUM OF 24 INCHES.
6. EXTRA STRENGTH FILTER FABRIC WITH 6 FEET POST SPACING DOES NOT REQUIRE WIRE MESH SUPPORT FENCE. SECURELY FASTEN THE FILTER FABRIC DIRECTLY TO POSTS. WIRE OR PLASTIC ZIP TIES SHOULD HAVE A MINIMUM OF 50 POUND TENSILE STRENGTH.
7. NO MORE THAN 24 INCHES OF A 3 INCH FABRIC IS ALLOWED ABOVE GROUND LEVEL.
8. THE INSTALLATION SHOULLD BE CHECKED AND CORRECTED FOR ANY DEVIATIONS BEFORE COMPACTION.
9. COMPACTION IS VITALY IMPORTANT FOR EFFECTIVE RESULTS. COMPACT THE SOIL IMMEDIATELY NEXT TO THE SILT FENCE FABRIC WITH THE FRONT WHEEL OF THE TRACTOR, SKID STEER, OR ROLLER EXERTING AT LEAST 60 POUNDS PER SQUARE INCH. COMPACT THE UPSTREAM SIDE FIRST, AND THEN EACH SIDE TWICE FOR A TOTAL OF 4 TRIPS.

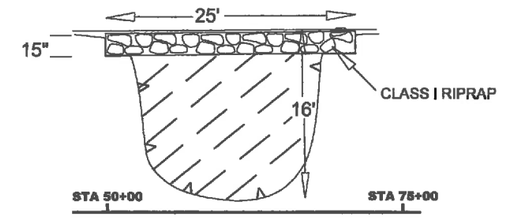
MAINTENANCE

1. INSPECT SEDIMENT FENCES AT LEAST ONCE PER WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
2. SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.
3. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE, TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.
4. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND RESTORE THE AREA TO GRADE.

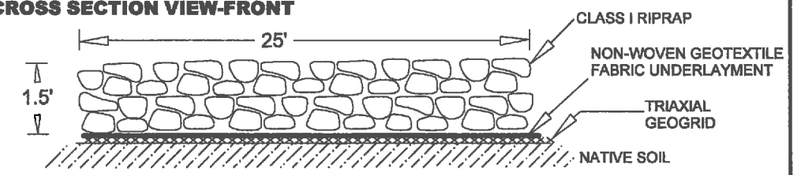
FOR CONSTRUCTION PURPOSES

COFFER DAM DETAILS

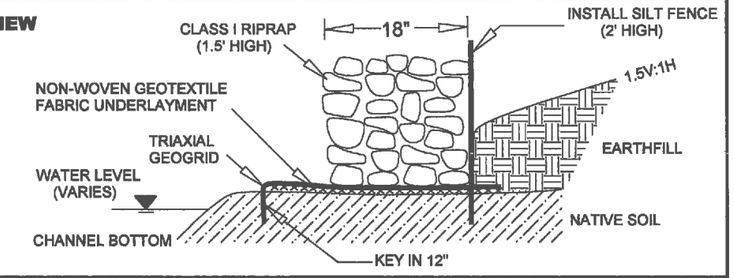
PLAN VIEW



CROSS SECTION VIEW-FRONT



SIDE VIEW



INSTALLATION SPECIFICATIONS

1. ENSURE THAT THE SUBGRADE FOR THE RIPRAP COFFER DAM CONFORMS TO THE REQUIRED LINES AND GRADES SHOWN IN THE PLAN. COMPACT FILL AND SUBGRADE TO THE REQUIRED DENSITY.
2. THE RIPRAP COFFER DAM MUST CONFIRM TO THE SPECIFIED DIMENSIONS AND GRADING LIMITS SHOWN ON THE PLANS.
3. NON-WOVEN GEOTEXTILE UNDERLAYMENT, MUST MEET DESIGN REQUIREMENTS AND BE PROPERLY PROTECTED FROM PUNCHING OR TEARING DURING INSTALLATION. REPAIR ANY DAMAGE BY REMOVING THE RIPRAP AND PLACING ANOTHER PIECE OF FILTER CLOTH OVER DAMAGED AREA. ALL CONNECTING JOINTS SHOULD BE OVERLAP A MINIMUM OF 1 FT. IF THE DAMAGE IS EXTENSIVE, REPLACE THE ENTIRE FILTER CLOTH.
4. RIPRAP MAY BE PLACED BY EQUIPMENT, BUT USE CARE TO AVOID DAMAGING THE FILTER FABRIC.
5. THE MINIMUM THICKNESS OF THE RIPRAP SHOULD BE 1.5FT THICK IN ALL AREAS WHERE APPLIED.
6. RIPRP MAY BE FIELD STONE OR ROUGH QUARRY STONE. IT SHOULD BE HARD, ANGULAR, HIGHLY WEATHER-RESISTANT AND WELL GRADED.
7. CONSTRUCT THE COFFER DAM ON ZERO GRADE WITH NO OVERFALL AT THE END.
8. ENSURE THAT THE COFFER DAM IS PROPERLY ALIGNED WITH THE RECEIVING STREAM AND PREFERABLY STRAIGHT THROUGHOUT ITS LENGTH. A CURVE MAY BE NEEDED TO FIT SITE CONDITIONS. IMMEDIATELY AFTER CONSTRUCTION REMOVE SILT FENCE AND STABILIZE ALL DISTURBED AREAS WITH VEGETATIVE COVER.

MAINTENANCE

1. INSPECT COFFER DAM STRUCTURE DAILY AND AFTER SIGNIFICANT (1/2 INCHOR GREATER) RAINFALL EVENTS TO DETERMINE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS OCCURED, OR IF STONES HAVE BEEN DISLODGED. PROMPLY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.
2. COFFER DAM SHALL REMAIN PERMANENTLY IN PLACE DURING ALL EARTHFILL PLACEMENT AND SLOPE CONSTRUCTION. THE COFFER DAM WILL BE INCORPORATED PERMANENTLY INTO THE ALIGNMENT OF ADJACENT RIPRAP SECTIONS INSTALLED TO STABALIZE THE 100LF ERODED STREAM BANK.

SEDIMENT FENCE AND COFFER DAM DETAILS

Pender County, North Carolina
Department of Planning & Inspections
Emergency Watershed Protection Program
EWP Event No. 5038 Hurricane Florence
DSR No. 37-03-5038-489
Stream Bank Repair and Stabilization

ARDURRA
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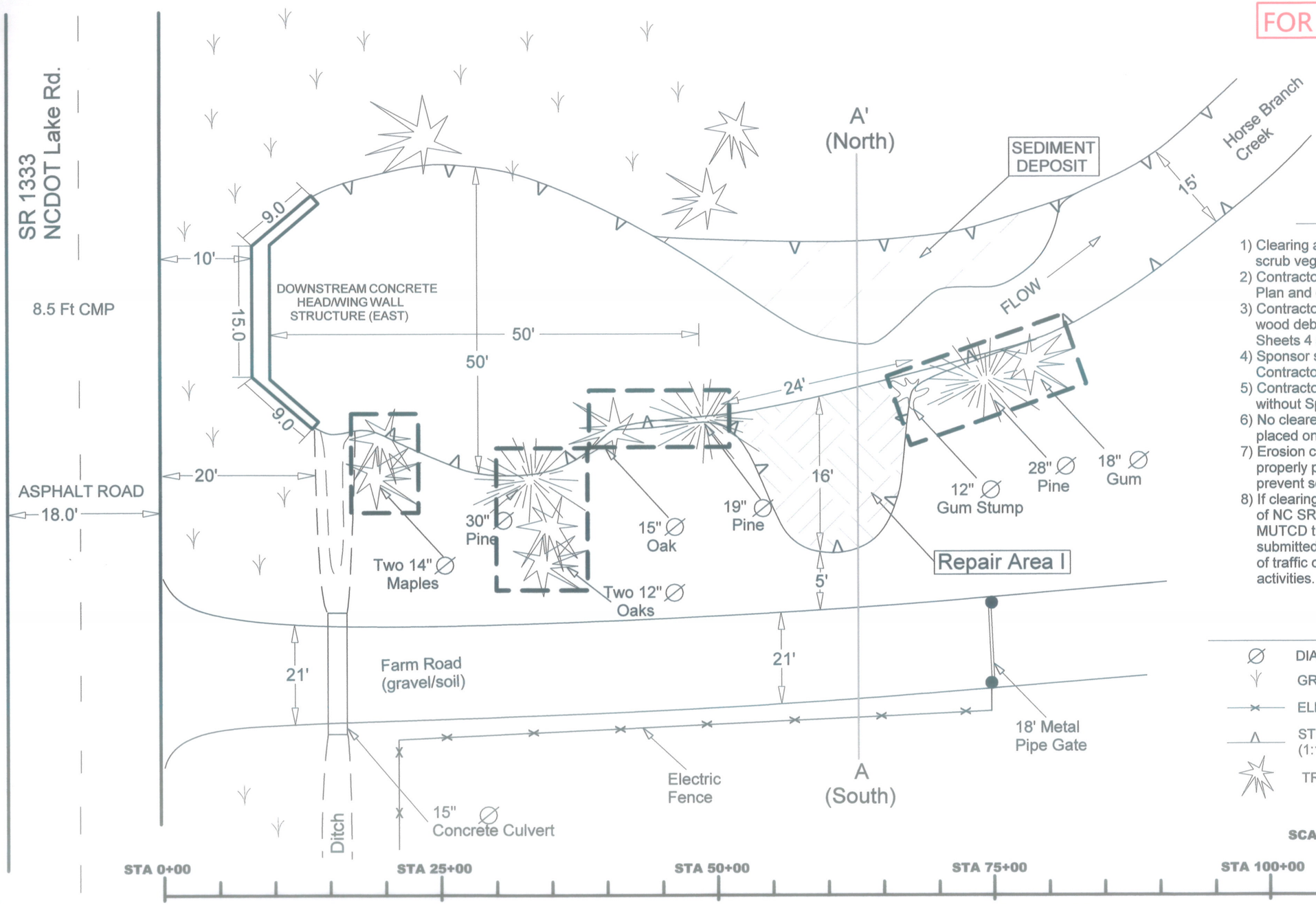
North Carolina Offices
Charlotte, NC
704 343 8973
Raleigh, NC
919 277 0494
Wilmington, NC
910 397 2929

SHEET 7

FOR CONSTRUCTION PURPOSES



NOTES

1) Clearing and grubbing to remove trees, roots, stumps and scrub vegetation where shown in Sheet 8.
2) Contractor shall remove only the 10 mature trees shown in this Plan and dispose of at an approved permitted LCID or CDLF.
3) Contractor shall not clear, grub, grade or remove any trees or wood debris outside of the designated clearing limits shown on Sheets 4 and 8.
4) Sponsor shall approve proposed disposal locations prior to Contractor removing any vegetation or cleared debri.
5) Contractor shall not perform any clearing or grubbing activities without Sponsor representative (CFR) on-site.
6) No cleared or grubbed woody debris or vegetation shall be placed on-site or into Horse Branch Creek at any time.
7) Erosion control measures shall be installed and operating properly prior to commencement of clearing/grubbing to prevent sediment from entering Horse Branch Creek.
8) If clearing and grubbing interfers with the normal traffic flow of NC SR 1333, the Contractor shall implement NCDOT-MUTCD traffic control measures. A MUTCD Plan must be submitted to the Sponsor for approval prior to implementation of traffic control/commencement of clearing and grubbing activities.

LEGEND

- ∅ DIAMETER
- GRASS
- ELECTRIC FENCE
- STEEP BANK (1:1 SLOPE)
- TREE
- SEDIMENT DEPOSITS
- TREES/VEGETATION TO BE REMOVED

SCALE: AS SHOWN

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Drawn By: ST | Checked By: RS

EWP Event No. 5038 Hurricane Florence
Contract No. 10-091-4002
DRS No. 489
269 Lake Road, Willard NC
Stream Bank Repair and Stabilization Site

VEGETATION CLEARING/ GRUBBING PLAN

SHEET 8