

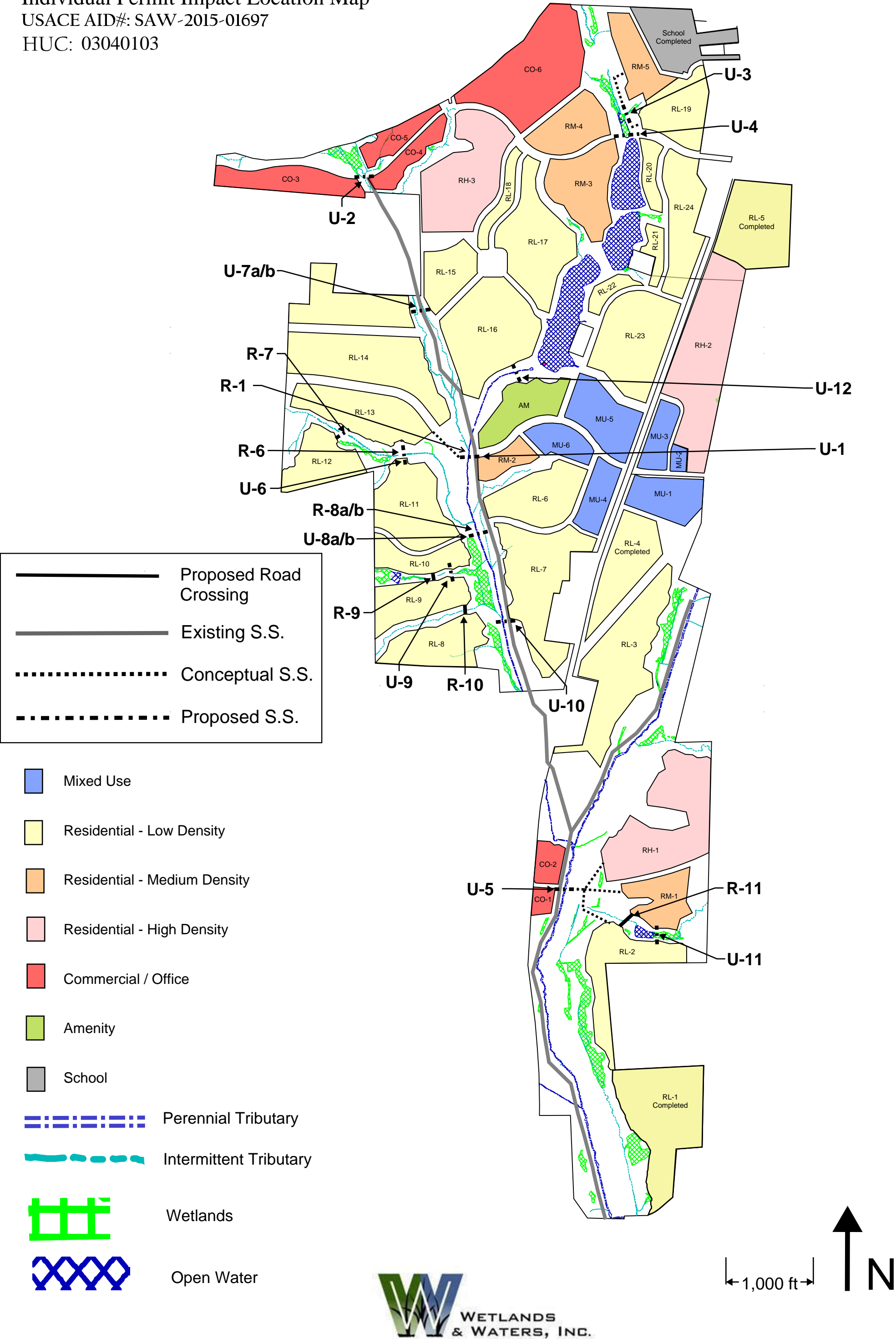
Exhibit A - Applicant's Preferred Alternative Impacts and Plans

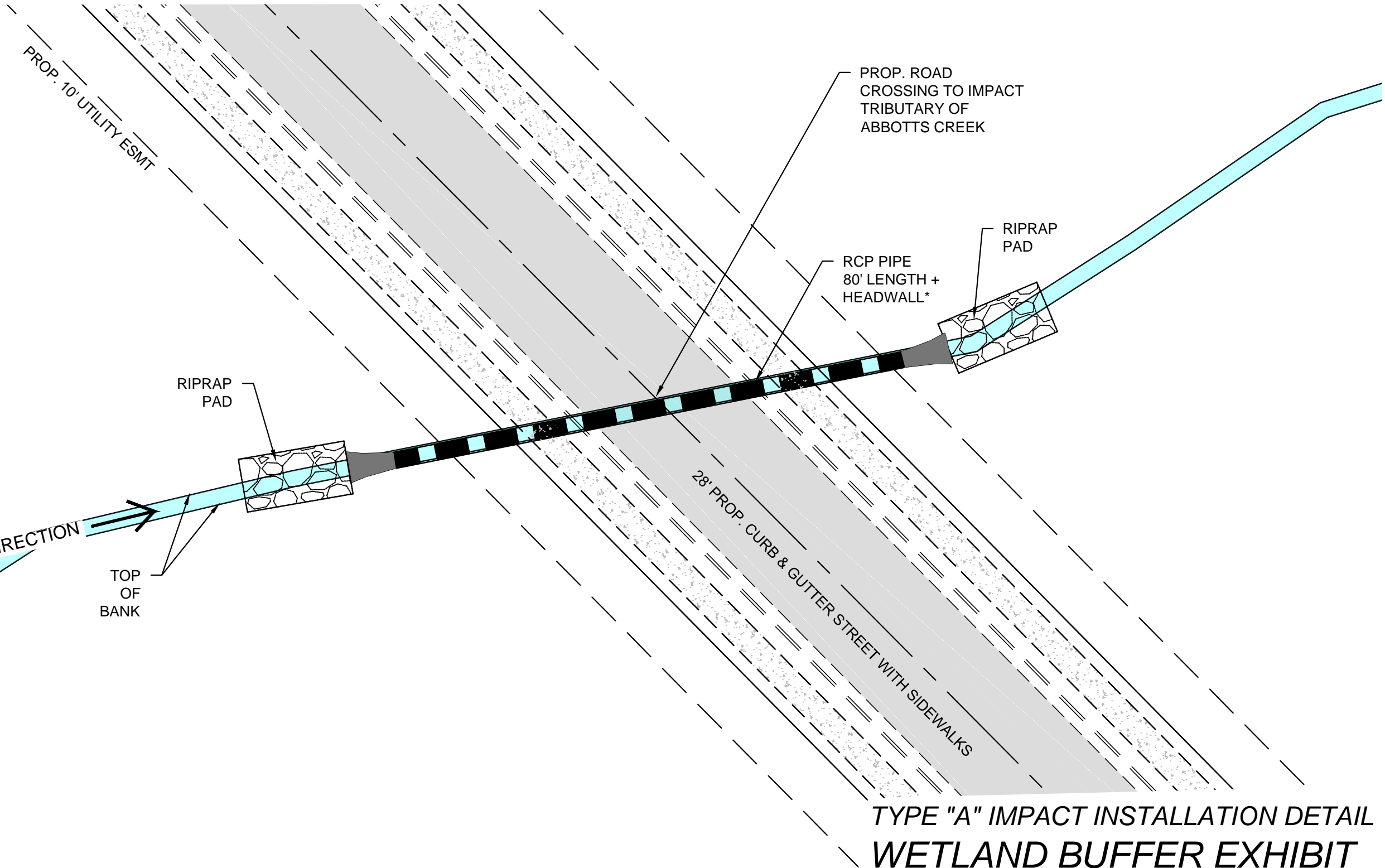
Caleb's Creek

Applicant's Preferred Alternative

DRAFT

Individual Permit Impact Location Map
USACE AID#: SAW-2015-01697
HUC: 03040103





*HEADWALL VARIABLE DEPENDS ON SLOPE AND SKEW, MINIMUM LENGTH NECESSARY TO ACHIEVE 80' IMPACT FROM HEADWALL TO HEADWALL



FORSYTH COUNTY NORTH CAROLINA DATE: 11-14-18

Fleming Engineering, Inc.
CONSULTING ENGINEERS & LAND SURVEYORS

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Phone (336) 852-9797 License No. C-0950
www.FlemingEngineering.com

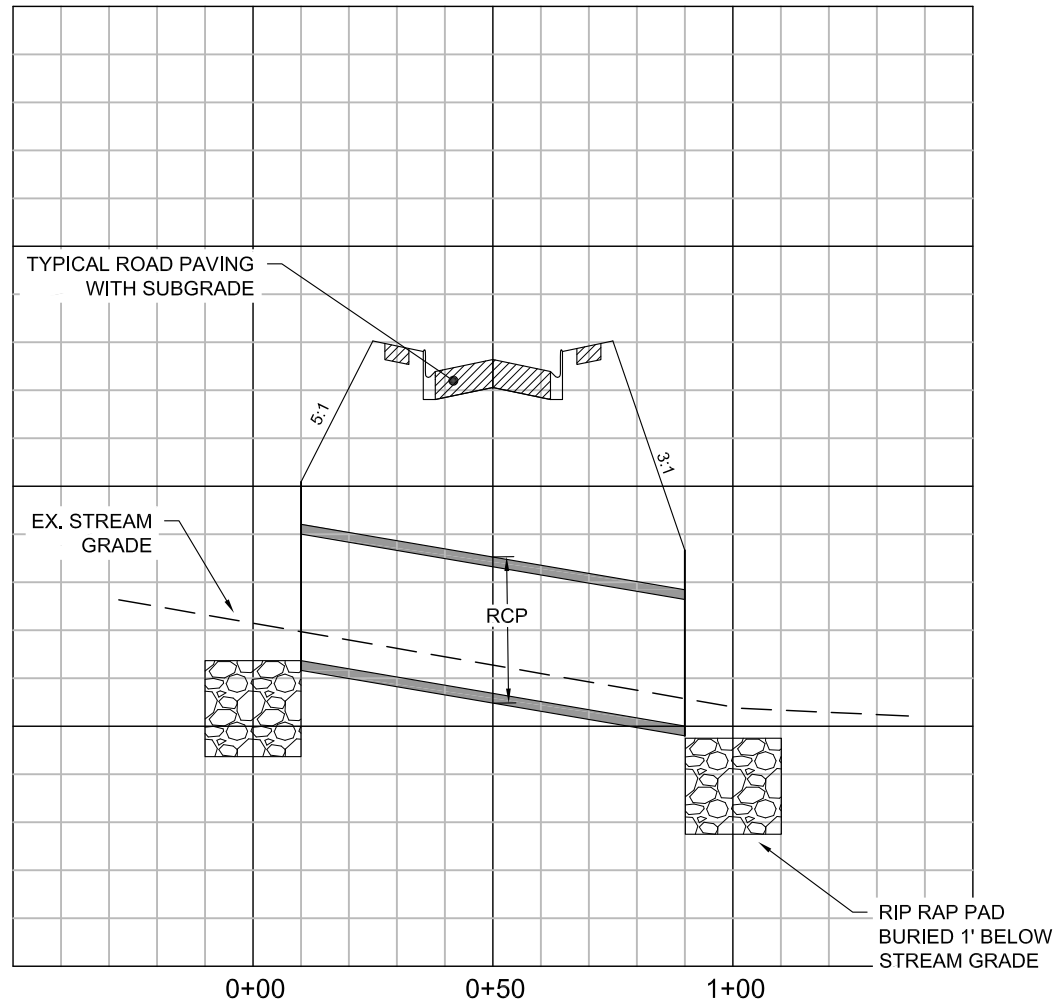
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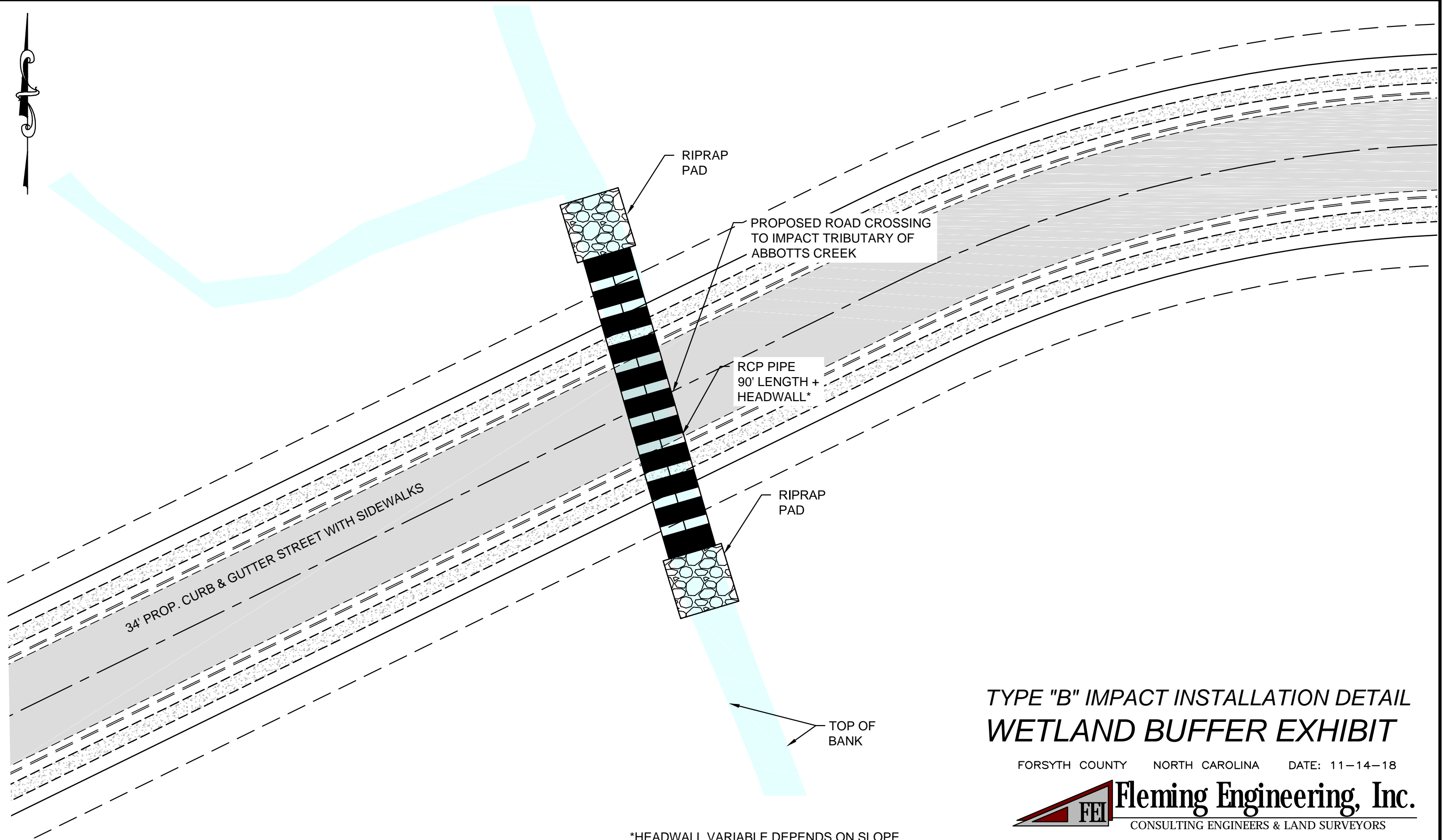
SCALE: 1" = 20'

DRAWN BY: LSM

TYPICAL ROAD CROSSING
TYPE "A"
80' HEADWALL
TO HEADWALL

SCALE: 1" = 40'





34' PROP. CURB & GUTTER STREET WITH SIDEWALKS

RIPRAP PAD

PROPOSED ROAD CROSSING TO IMPACT TRIBUTARY OF ABBOTTS CREEK

RCP PIPE 90' LENGTH + HEADWALL*

RIPRAP PAD

TOP OF BANK

TYPE "B" IMPACT INSTALLATION DETAIL WETLAND BUFFER EXHIBIT

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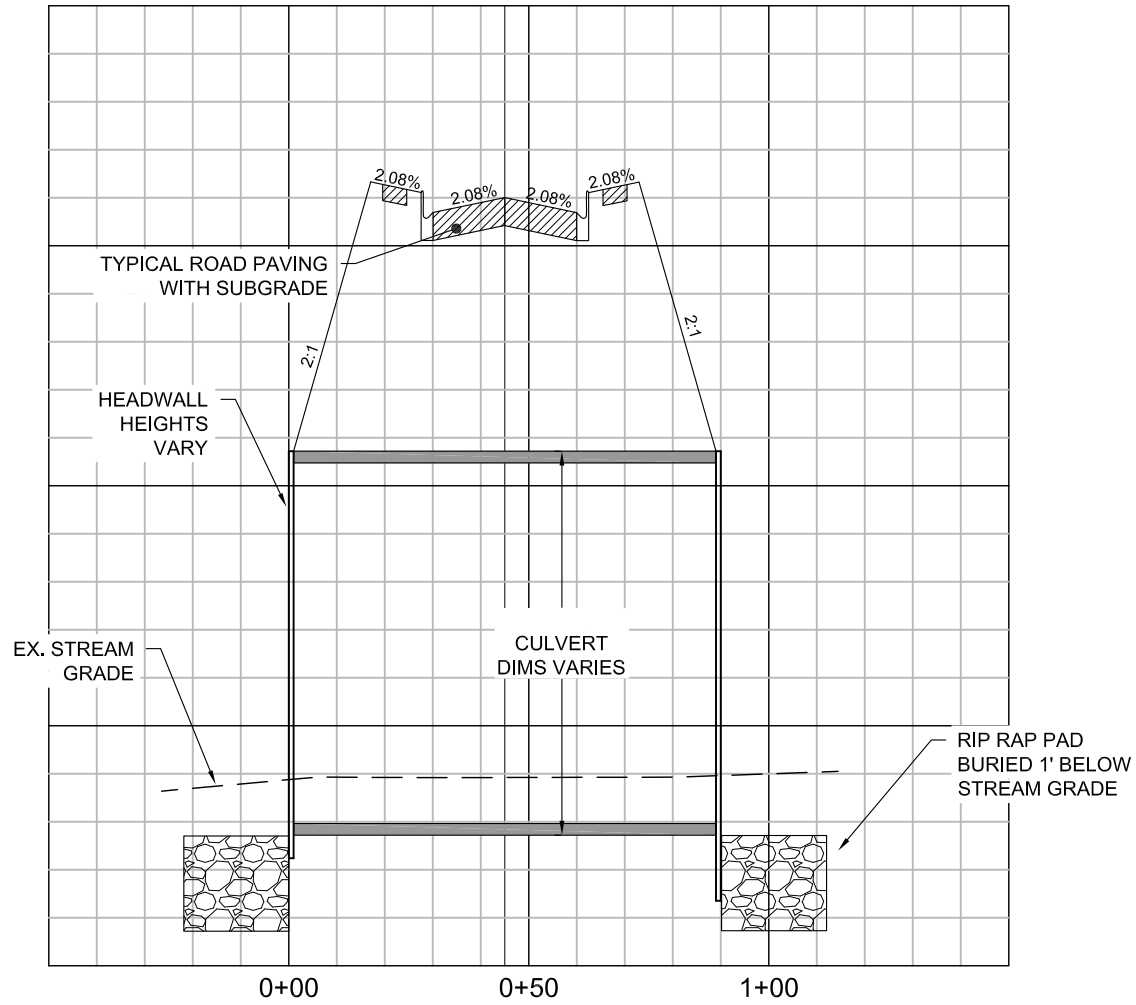
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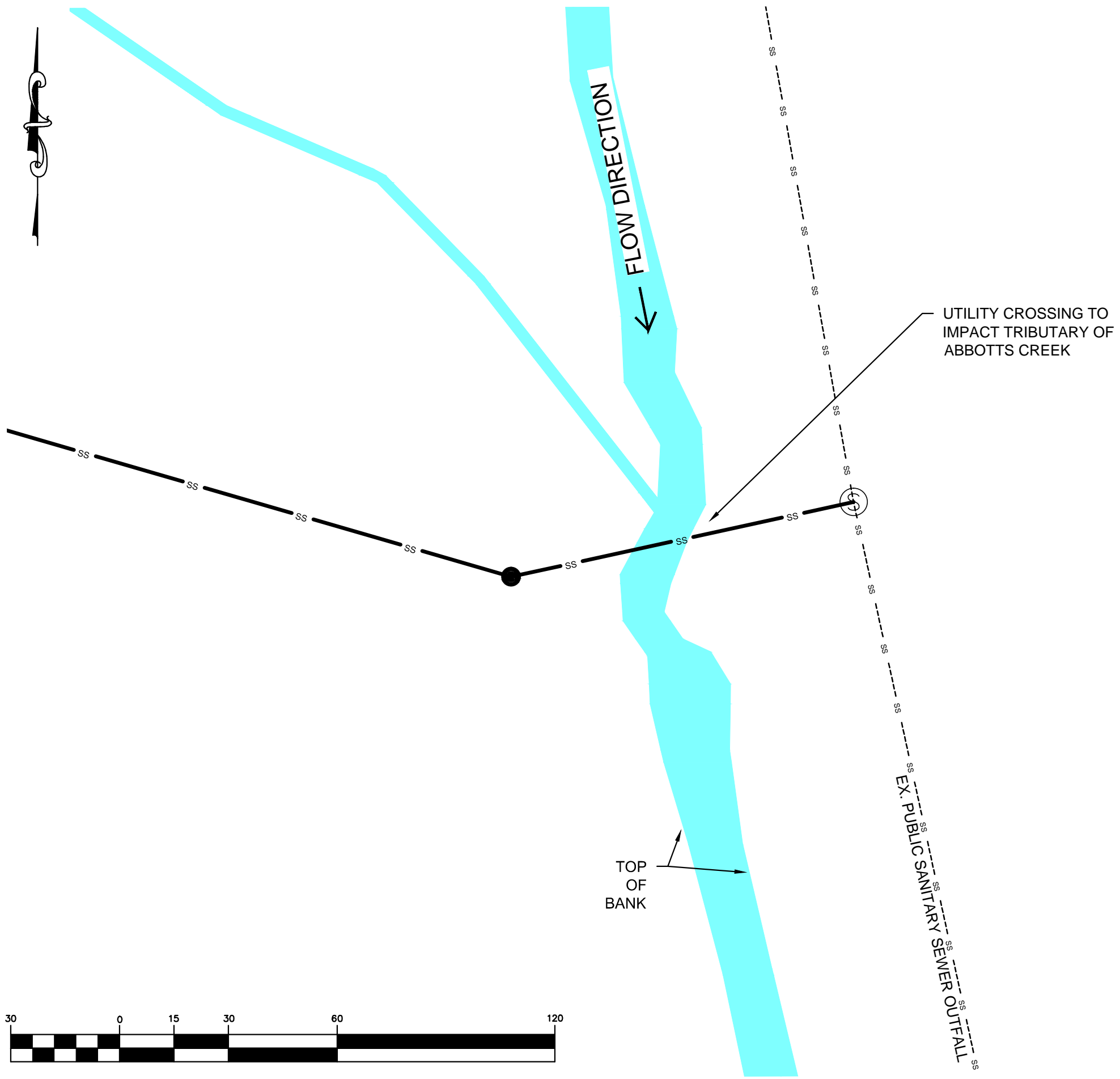
SCALE: 1" = 30'

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TYPICAL ROAD CROSSING
TYPE "B"
90' HEADWALL
TO HEADWALL


SCALE: 1" = 40'





TYPICAL UTILITY INSTALLATION DETAIL WETLAND BUFFER EXHIBIT

FORSYTH COUNTY NORTH CAROLINA DATE: 11-14-18

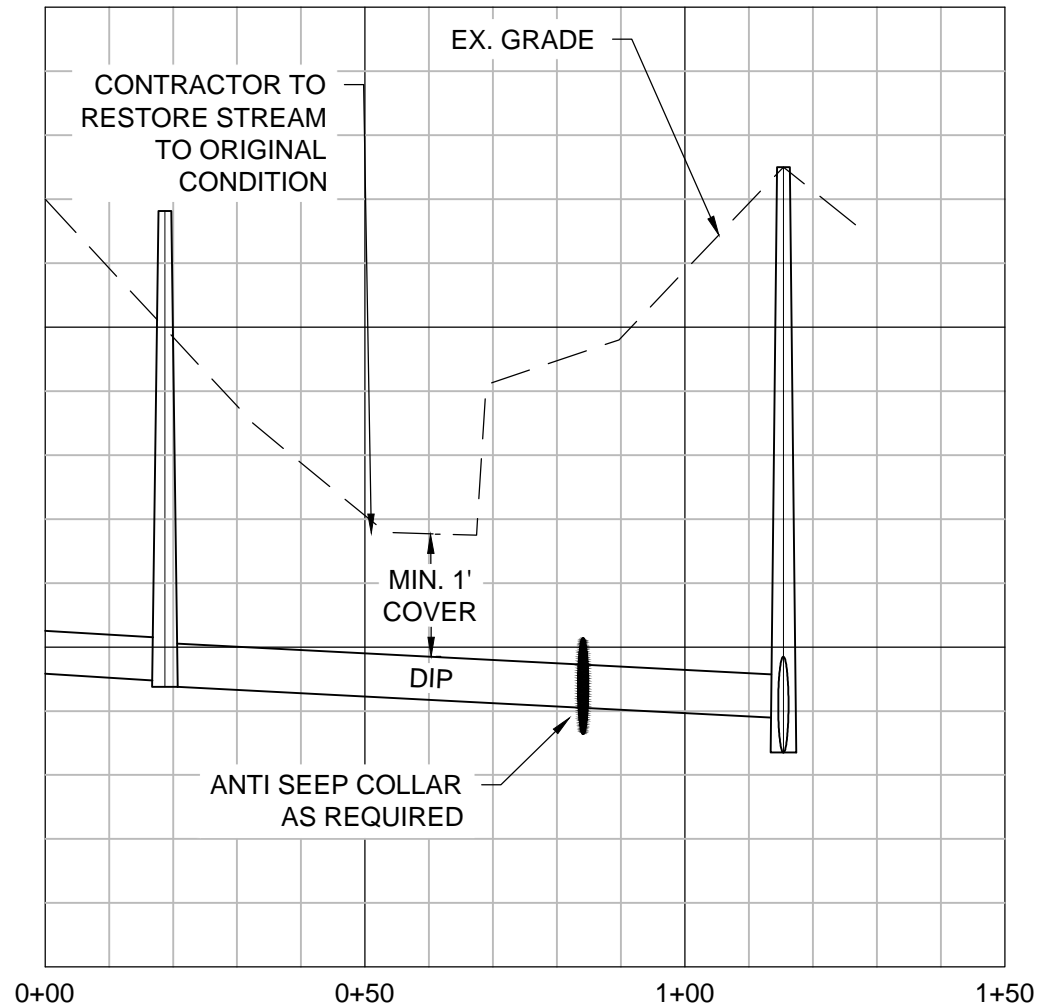
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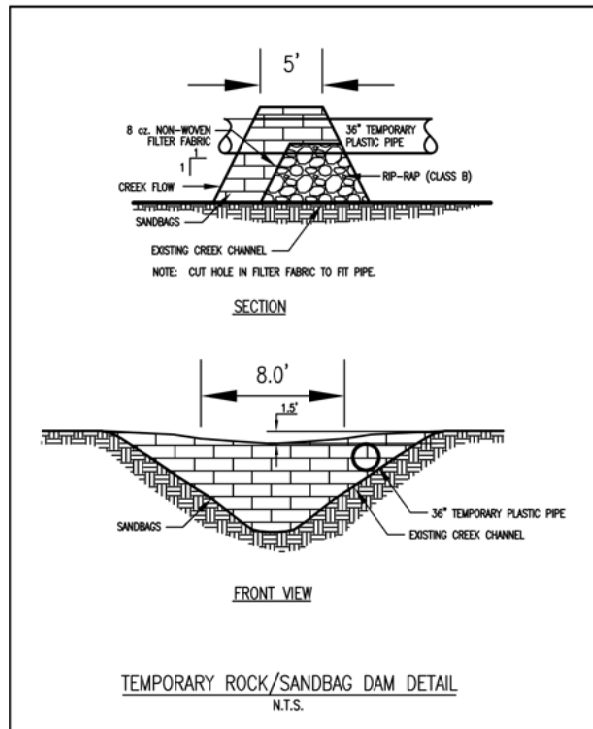
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|---------------------|-----------------|---------------|
| PROJ. NO. 02820.005 | SCALE: 1" = 30' | DRAWN BY: LSM |
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TYPICAL UTILITY CROSSING

SCALE: 1" = 30'





| SEEDING MIXTURE | SEEDING RATE | PLANTING DATES |
|---|---------------------|-------------------|
| Rye Grain and Kobe Lespedeza | 120 lbs. 50 lbs. | Jan. 1 - May 1 |
| German Millet | 40-50 lbs. | May 1 - Aug. 15 |
| Rye (Grain) (may substitute oats before Oct. 1 or wheat from Oct. 1-Nov. 15) | 120 lbs. | Aug. 15 - Dec. 30 |

| PLANTS & MIXTURE | PLANTING RATE/ACRE | PLANTING DATES |
|--|--------------------------|--------------------|
| Tall Fescue (Low Maintenance) | 100-150 lbs. | Sept. 1 - April 15 |
| Tall Fescue Waterways and Lawns (High Maint.) | 200-250 lbs. | Sept. 1 - April 15 |
| Blend of two turf-type tall Fescues (90%) and two or more improved Kentucky bluegrass varieties (10%) (high maintenance) | 200-250 lbs. | Sept. 1 - April 15 |
| Tall Fescue and Kobe or Korean Lespedeza | 100 lbs. and 10 lbs. | May 1 - Sept. 1 |
| Tall Fescue and Sericea Lespedeza | 50 lbs. and 15 lbs./acre | Sept. 1 - April 15 |
| Tall Fescue and German Millet or Sudangrass | 60 lbs. and 30 lbs. | Sept. 1 - April 15 |
| Tall Fescue and Ryegrass | 70 lbs. and 25 lbs. | Sept. 1 - April 15 |
| Common Bermudagrass | 25 lbs. | April 15 - June 30 |

- 1/ For spring seedings, use Scarified Lespedeza seed. For late fall and winter seedings, use unscarified seed.
- 2/ Annuals such as Millet, Sudangrass and Ryegrass must be kept at 10-12" maximum height.
- PREPARATION**
Prepare seedbed by ripping, chiseling, harrowing or plowing to depth of six inches so as to produce a loose, friable surface. Remove all stones, boulders, stumps or debris from the surface which would prohibit germination or plant growth.
- Incorporate into the soil 800 to 1,000 pounds of 10-10-10 fertilizer plus 500 pounds of twenty percent (20%) superphosphate per acre and two tons of dolomitic lime per acre unless soil tests indicate that a lower rate of lime be used.
- Mulch after seeding with 2.0 tons of grain straw per acre and either crimp straw into soil or tack with liquid asphalt at 400 gallons per acre or emulsified asphalt at 300 gallons per acre.

CONSTRUCTION SEQUENCE

PHASE 1 (PRE-CONSTRUCTION):

1. SET UP A PRE-CONSTRUCTION MEETING ON SITE WITH NCDEM INSPECTOR.
2. INSTALL CONSTRUCTION ENTRANCE AND OTHER EROSION CONTROL MEASURES AS REQUIRED TO BEGIN EXCAVATION OPERATIONS. INSTALL ANY ADDITIONAL MEASURES AS DIRECTED BY INSPECTOR AT PRE-CONSTRUCTION MEETING.
3. INFORM INSPECTOR OF INSTALLATION OF NECESSARY EROSION CONTROL DEVICES AND SET UP AN INSPECTION FOR COMPLIANCE WITH STANDARDS.

PHASE 2 (CLEARING OPERATIONS):

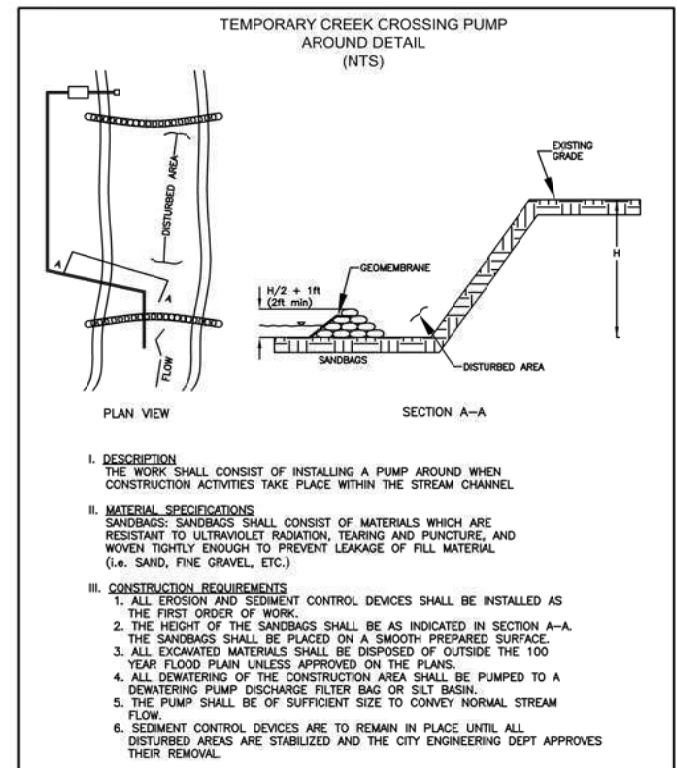
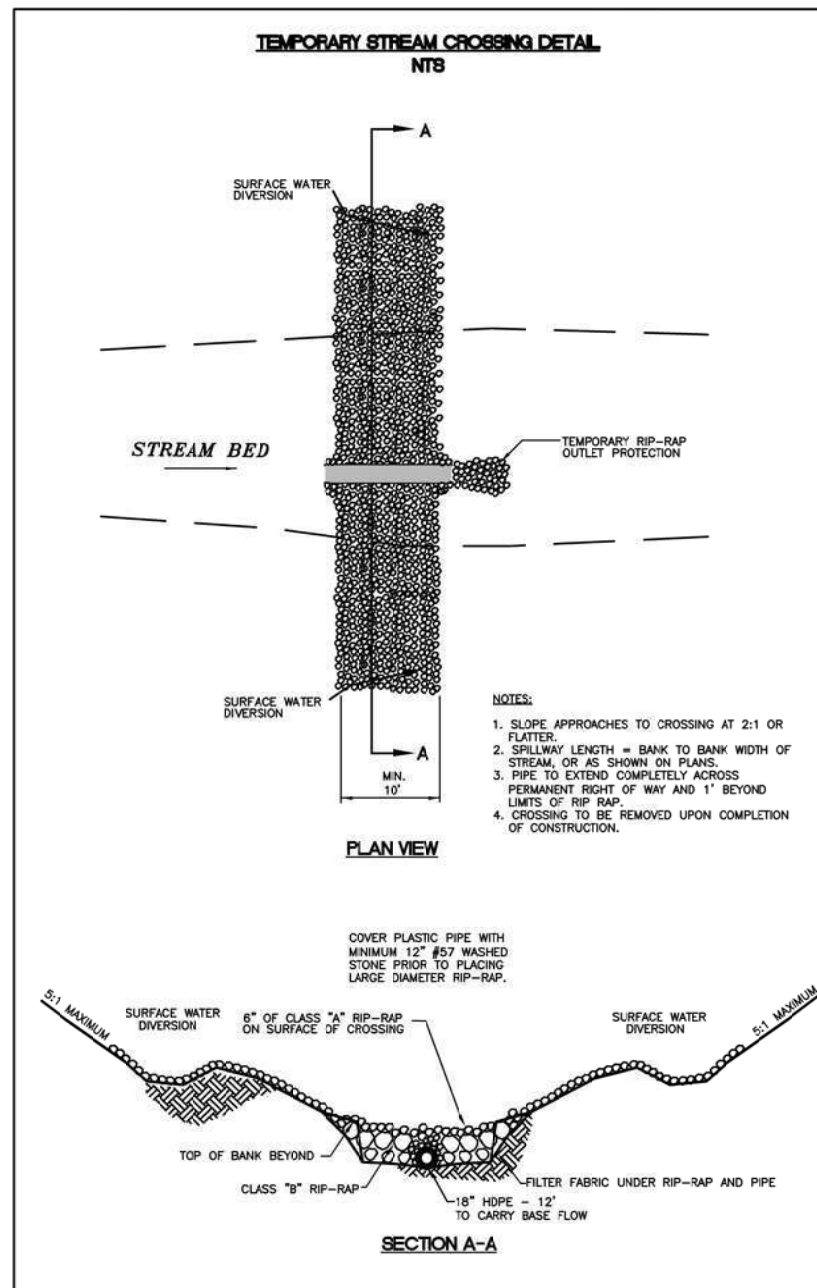
4. BEGIN CLEARING AND GRUBBING THE SITE AS REQUIRED.
5. DILIGENTLY MAINTAIN EROSION CONTROL DEVICES DURING CLEARING AND GRUBBING OPERATIONS.

PHASE 3 (SANITARY SEWER INSTALLATION):

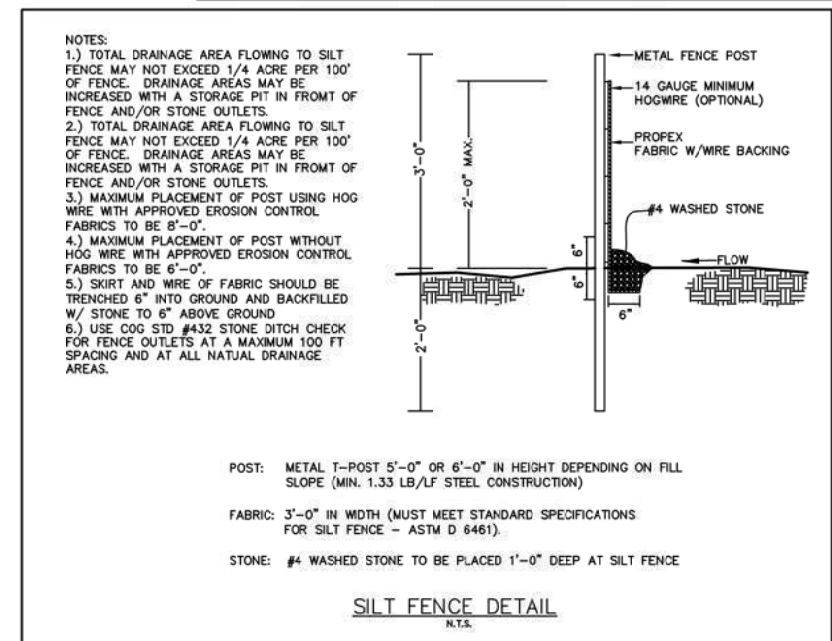
6. BEGIN CONSTRUCTION OF SANITARY SEWER.
7. AFTER INSTALLATION OF SANITARY SEWER, RETURN GRADE TO PRE-EXCAVATION ELEVATION.
8. INSTALL STREAM BANK STABILIZATION AS EACH WATER COURSE IS CROSSED TO STABILIZE THE STREAM BANK.
9. DILIGENTLY MAINTAIN EROSION CONTROL DEVICES DURING SANITARY SEWER INSTALLATION.
10. STABILIZE ALL DISTURBED AREAS UPON COMPLETION OF INSTALLATION.

PHASE 4 (PROJECT COMPLETION):

11. CONTACT INSPECTOR FOR INSPECTION OF COMPLETED CONSTRUCTION.
12. UPON INSPECTION AND APPROVAL, REMOVE ONLY THOSE EROSION CONTROL DEVICES AS INSTRUCTED BY THE INSPECTOR.
13. STABILIZE ANY REMAINING AREAS AS INSTRUCTED BY THE INSPECTOR.
14. REQUEST FINAL INSPECTION FROM INSPECTOR.
15. UPON APPROVAL, REMOVE ALL REMAINING EROSION CONTROL DEVICES, SEEDING AS NECESSARY UPON THIS REMOVAL.

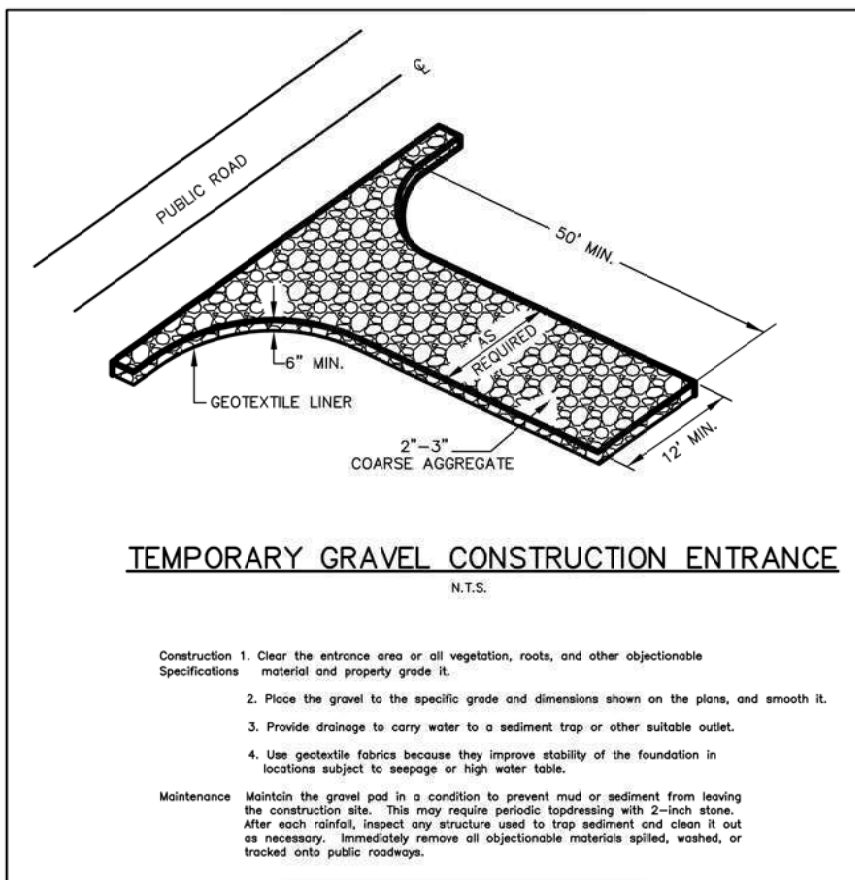


- I. DESCRIPTION**
THE WORK SHALL CONSIST OF INSTALLING A PUMP AROUND WHEN CONSTRUCTION ACTIVITIES TAKE PLACE WITHIN THE STREAM CHANNEL.
- II. MATERIAL SPECIFICATIONS**
SANDBAGS: SANDBAGS SHALL CONSIST OF MATERIALS WHICH ARE RESISTANT TO ULTRAVIOLET RADIATION, TEARING AND PUNCTURE, AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL (i.e. SAND, FINE GRAVEL, ETC.).
- III. CONSTRUCTION REQUIREMENTS**
1. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED AS THE FIRST ORDER OF WORK.
 2. THE HEIGHT OF THE SANDBAGS SHALL BE AS INDICATED IN SECTION A-A. THE SANDBAGS SHALL BE PLACED ON A SMOOTH PREPARED SURFACE.
 3. ALL EXCAVATED MATERIALS SHALL BE DISPOSED OF OUTSIDE THE 100 YEAR FLOOD PLAIN UNLESS APPROVED ON THE PLANS.
 4. ALL DEWATERING OF THE CONSTRUCTION AREA SHALL BE PUMPED TO A DEWATERING PUMP DISCHARGE FILTER BAG OR SILT BASIN.
 5. THE PUMP SHALL BE OF SUFFICIENT SIZE TO CONVEY NORMAL STREAM FLOW.
 6. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED AND THE CITY ENGINEERING DEPT APPROVES THEIR REMOVAL.



- NOTES:**
1. TOTAL DRAINAGE AREA FLOWING TO SILT FENCE MAY NOT EXCEED 1/4 ACRE PER 100' OF FENCE. DRAINAGE AREAS MAY BE INCREASED WITH A STORAGE PIT IN FRONT OF FENCE AND/OR STONE OUTLETS.
 2. TOTAL DRAINAGE AREA FLOWING TO SILT FENCE MAY NOT EXCEED 1/4 ACRE PER 100' OF FENCE. DRAINAGE AREAS MAY BE INCREASED WITH A STORAGE PIT IN FRONT OF FENCE AND/OR STONE OUTLETS.
 3. MAXIMUM PLACEMENT OF POST USING HOG WIRE WITH APPROVED EROSION CONTROL FABRICS TO BE 8'-0".
 4. MAXIMUM PLACEMENT OF POST WITHOUT HOG WIRE WITH APPROVED EROSION CONTROL FABRICS TO BE 6'-0".
 5. SKIRT AND WIRE OF FABRIC SHOULD BE TRENCHED 6" INTO GROUND AND BACKFILLED W/ STONE TO 6" ABOVE GROUND.
 6. USE COG STD #432 STONE DITCH CHECK FOR FENCE OUTLETS AT A MAXIMUM 100 FT SPACING AND AT ALL NATURAL DRAINAGE AREAS.

- POST: METAL T-POST 5'-0" OR 6'-0" IN HEIGHT DEPENDING ON FILL SLOPE (MIN. 1.33 LB/LF STEEL CONSTRUCTION)
- FABRIC: 3'-0" IN WIDTH (MUST MEET STANDARD SPECIFICATIONS FOR SILT FENCE - ASTM D 6461).
- STONE: #4 WASHED STONE TO BE PLACED 1'-0" DEEP AT SILT FENCE



- Construction**
1. Clear the entrance area of all vegetation, roots, and other objectionable material and property grade it.
 2. Place the gravel to the specific grade and dimensions shown on the plans, and smooth it.
 3. Provide drainage to carry water to a sediment trap or other suitable outlet.
 4. Use geotextile fabrics because they improve stability of the foundation in locations subject to seepage or high water table.
- Maintenance**
Maintain the gravel pad in a condition to prevent mud or sediment from leaving the construction site. This may require periodic topdressing with 2-inch stone. After each rainfall, inspect any structure used to trap sediment and clean it out as necessary. Immediately remove all objectionable materials spilled, washed, or tracked onto public roadways.

CALEBS CREEK STREAM IMPACT AREAS DETAIL SHEET

FORSYTH COUNTY NORTH CAROLINA DATE:

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PROJ. NO. 02820.005

SCALE: NTS

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