

PARK CROSSING CULVERT MODIFICATIONS

RUTHERFORDTON

RUTHERFORD COUNTY, N.C.

OWNER:
TOWN OF RUTHERFORDTON
D.B. PAGE:

DEVELOPER:
TOWN OF RUTHERFORDTON
129 NORTH MAIN STREET
RUTHERFORDTON, NC 28139
PHONE: 828-287-3520

VICINITY MAP
NTS

DATE: 04/06/21
BY: PED

REVISIONS:

REV	DESCRIPTION
1	REVISED PER NCFMP REVIEW DTD. MARCH 16, 2021
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GENERAL NOTES:

- A MANDATORY PRE-CONSTRUCTION MEETING SHALL OCCUR BEFORE ANY CONSTRUCTION BEGINS. A REPRESENTATIVE FROM THE CONTRACTOR'S OFFICE, ODOM ENGINEERING, AND NCDEQ ARO (828-296-4500).
- CONTRACTOR TO CALL NCDEQ ARO (828-296-4500) AT LEAST 48 HOURS PRIOR TO LAND DISTURBING ACTIVITY IS TO BEGIN.
- CONTRACTOR IS TO DO SELF-INSPECTIONS PER '15A NCAC 04B .0131 SELF INSPECTIONS'. SEE DETAIL SHEET.
- GRADED SLOPES AND FILLS SHALL BE PROTECTED WITH A ROLLED EROSION CONTROL PRODUCT IF COMPLETED OUTSIDE THE OPTIMUM GERMINATION SEASONS, WHEN UNFAVORABLE WEATHER CONDITIONS PREVENT ESTABLISHMENT OF VEGETATIVE COVER.
- CONTRACTOR TO CONTACT ENGINEER IMMEDIATELY UPON DISCOVERING ANY DISCREPANCIES IN THE FIELD NOT SHOWN ON PLANS.
- ANY ACTIONS OR COST INCREASE ABOVE AND BEYOND CONTRACT WITH OWNER/DEVELOPER SHALL BE APPROVED BY ENGINEER. ANY ADDITIONAL WORK OR COST INCREASE COMPLETED BY CONTRACTOR WITHOUT SAID WRITTEN APPROVAL FROM ENGINEER, SHALL BECOME CONTRACTORS FINANCIAL RESPONSIBILITY AND NOT THE OWNER/DEVELOPER.

I HEREBY CERTIFY THAT THIS PLAN AND SPECIFICATION WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT OR ENGINEER UNDER THE LAWS OF THE STATE OF NORTH CAROLINA AS SIGNIFIED BY MY HAND AND SEAL.

CONSTRUCTION PLANS for
PARK CROSSING CULVERT MODIFICATION
RUTHERFORD COUNTY, NC
COVER

LEGEND		
UTILITY/STRUCTURE	EXISTING	PROPOSED
OVERHEAD ELECTRICAL	—XOHE—	—OHE—
UNDERGROUND ELECTRICAL	—XUGE—	—UGE—
NATURAL GAS	—XG—	—G—
OVERHEAD TELEPHONE	—XOHT—	—OHT—
FIBER OPTIC	—XFQ—	—FO—
SANITARY SEWER	—XS—	—SS—
WATER	—XW—	—W—
FORCEMAIN	—XFM—	—FM—
CULVERT	====	—
FIRE HYDRANT		
GATE VALVE		
SEWER MANHOLE		
POWER POLE		
PROPERTY LINE	—	—
MAJOR CONTOURS	-----	-----
MINOR CONTOURS	---750---	---750---
CULVERT DRAINAGE AREA		
CHANNEL DRAINAGE AREA		
TSP DRAINAGE AREA		
TEMPORARY SILT FENCE		—SF—SF—
TEMPORARY DITCH/BERM		—TDB—

SHEET INDEX

TITLE	
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DETAILS	5

SCALE: N.T.S.
DATE: 12/01/2020
DRAWN BY: PED
CHECKED BY: DWO
PROJECT MGR: DWO
SHEET:
1 OF 5

Odom Engineering PLLC
100 Oak Street, Forest City, N.C. 28043
PH: 828.247.4496 FAX: 828.247.4498
N.C. ENGINEER # 21190

Z:\2020\20092 - 221-COWANS STORM DRAIN PIPE\DWG\20092 - PARK CROSSING FLOOD MAP.dwg, 11/4/2021 3:33:47 PM, _DWG To PDF.pc3
Drawing name: Z:\2020\20092 - 221-COWANS STORM DRAIN PIPE\DWG\20092 - PARK CROSSING FLOOD MAP.dwg
Plotted on: Nov 04, 2021 - 3:33pm

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GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

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.

SECTION E: GROUND STABILIZATION

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 (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' 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 HQW 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 HQW Zones. - 10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

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 • 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

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

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

LIQUID WASTE MANAGEMENT

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

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

- Never bury or burn waste. Place litter and debris in approved waste containers.
- Provide a sufficient number and size of waste containers (e.g. dumpster, trash receptacle) on site to contain construction and domestic wastes.
- Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- 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.
- Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
- Anchor all lightweight items in waste containers during times of high winds.
- Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
- Dispose waste off site at an approved disposal facility.
- On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

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

PORTABLE TOILETS

- 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.
- Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
- 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.

EARTHEN STOCKPILE MANAGEMENT

- Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
- Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
- Provide stable stone access point when feasible.
- 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.

CONCRETE WASHOUTS

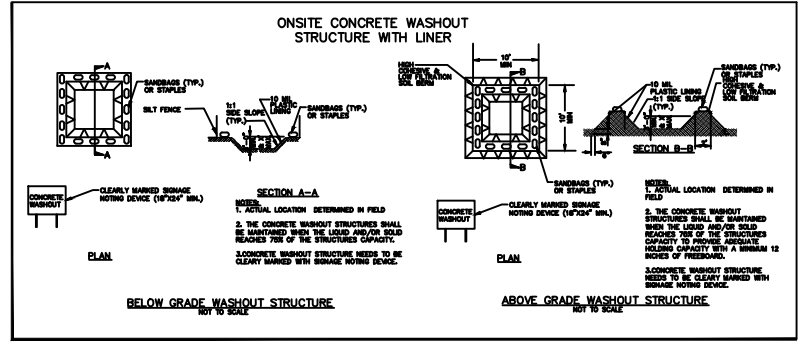
- Do not discharge concrete or cement slurry from the site.
- Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
- Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
- 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.
- 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.
- 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.
- 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.
- 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.
- Remove loadings 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.
- At the completion of the concrete work, remove remaining loadings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

- Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
- 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.
- 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.
- Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

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



NCG01 GROUND STABILIZATION AND MATERIALS HANDLING EFFECTIVE: 04/01/19

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 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 or holiday periods, no indication of rainfall information is available, record the cumulative rain measurement for those circumstances (and the soil saturation if a self-inspector is present). Days on which no rainfall occurs shall be recorded as "zero." The permittee may use either rain-monitoring devices approved by the Division.
(2) EESC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 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 all of the measures being operating properly. 5. Description of maintenance needs for the measures. 6. Description, extent, and date of corrective actions taken, if any.
(3) Stormwater discharge outfalls (SDOs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 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. Location of discharge to stormwater pollution such as soil stream, roadway or suspended solids or discharge area. 5. Indication of visible sediment leaving the site. 6. Description, extent, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Visible sedimentation is found outside site limits, then a record of the following shall be made: a. Actions taken to clean up or stabilize the sediment that has left the site limits. 2. Description, evidence, and date of corrective actions taken, and an explanation as to the action taken to correct those actions.
(5) Streams or wetlands onsite or offsite (where applicable)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: a. Description, evidence and date of corrective actions taken, and b. Records of the measure reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit if the permit. 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading installation of perimeter EESC measures, stormwater ponding, installation of storm storage facilities, completion of all land disturbing activities, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an 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

1. EESC Plan Documentation

The approved EESC plan as well as any approved deviation shall be kept on the site. The approved EESC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the EESC plan shall be documented in the manner described:

Item to Document	Documentation Requirements
(a) Each EESC Measure has been installed and does not significantly deviate from the location, dimensions and relative elevations shown on the approved EESC Plan.	Initial and date each EESC Measure on a copy of the approved EESC Plan or complete, date and sign an inspection report that lists each EESC Measure shown on the approved EESC Plan. This documentation is required upon the initial installation of the EESC Measures or if the EESC Measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved EESC 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 EESC Plan.	Initial and date a copy of the approved EESC 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 EESC Measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to EESC Measures.	Initial and date a copy of the approved EESC Plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation

In addition to the EESC Plan documents above, the following items shall be kept on the site and available for agency 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 30 days. 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.
- All data used to complete the Notice of Intent and other inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.43]

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. 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. 149-215.85.
- Anticipated bypasses and unanticipated bypasses.
- Noncompliance with the conditions of this permit that may endanger health or the environment.

2. 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 Division's Emergency Response personnel at (800) 662-7956, (800) 858-0368 or (919) 733-3300.

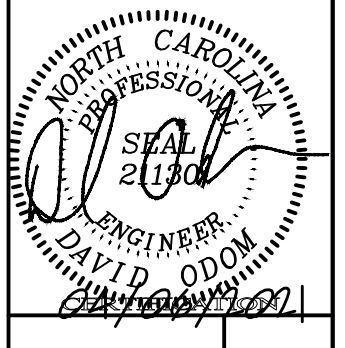
Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	<ul style="list-style-type: none">Within 24 hours, an oral or electronic notification.Within 7 calendar days, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis.
(b) Oil spills and releases of hazardous substances per Item 1(b)(i) above	<ul style="list-style-type: none">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.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.
(c) Anticipated bypasses [40 CFR 122.43(m)(3)]	<ul style="list-style-type: none">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.
(d) Noncompliance with the conditions of this permit that may endanger health or the environment [40 CFR 122.43(i)(7)]	<ul style="list-style-type: none">Within 24 hours, an oral or electronic notification.Within 7 calendar days, a report that contains a description of the noncompliance, and its cause; 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 recurrence of the noncompliance. [40 CFR 122.43(i)(6)].Division staff may waive the requirement for a written report on a case-by-case basis.

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING EFFECTIVE: 04/01/19

JOB NUMBER: 20092

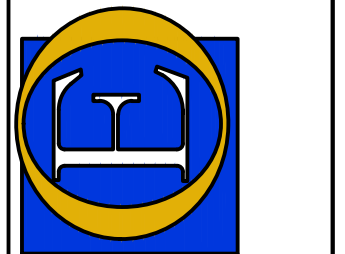
REV	DESCRIPTION	DATE	BY
1	DESIGN	04/06/21	PED
2	REVISED PER NCFMP	MARCH 16, 2021	
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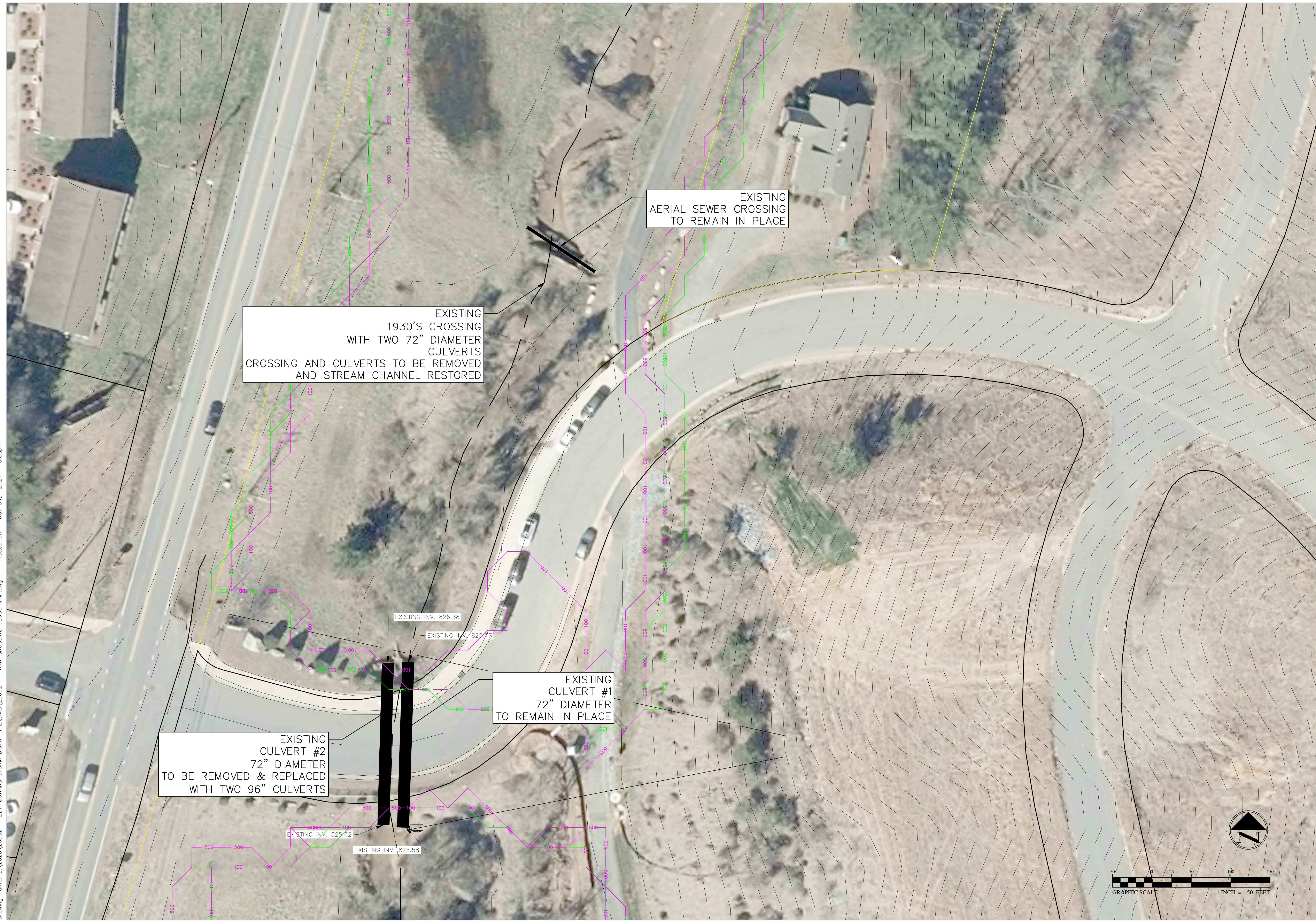


CONSTRUCTION PLANS for
PARK CROSSING CULVERT MODIFICATION
RUTHERFORD COUNTY, NC
NOTES

Odom Engineering PLLC
100 Oak Street, Forest City, N.C. 28043
ph: 828.247.4496 fax: 828.247.4498
www.odomeng.com



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SHEET:
2 OF 5



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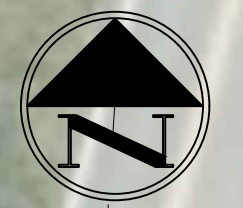
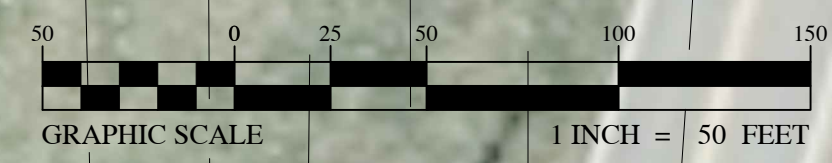
CONSTRUCTION PLANS for
PARK CROSSING CULVERT MODIFICATION
 RUTHERFORD COUNTY, NC
EXISTING CONDITIONS

Odom Engineering PLLC
 100 Oak Street, Forest City, N.C. 28043
 ph: 828.247.4496 fax: 828.247.4498
 NC License # 28443

SCALE: 1" = 50'
 DATE: 12/01/2020
 DRAWN BY: PED
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Drawing name: Z:\2020\20092 - 221-COWANS STORM DRAIN PIPE\DWG\20092 - PARK CROSSING FLOOD MAP.dwg Plotted on: Nov 04, 2021 - 3:34pm



NOTE:
CONTRACTOR IS RESPONSIBLE TO MAINTAIN CONTINUOUS ACCESS FOR VEHICULAR TRAFFIC FROM US 221 TO PARK CROSSING APARTMENTS

EXISTING AERIAL SEWER CROSSING TO REMAIN IN PLACE

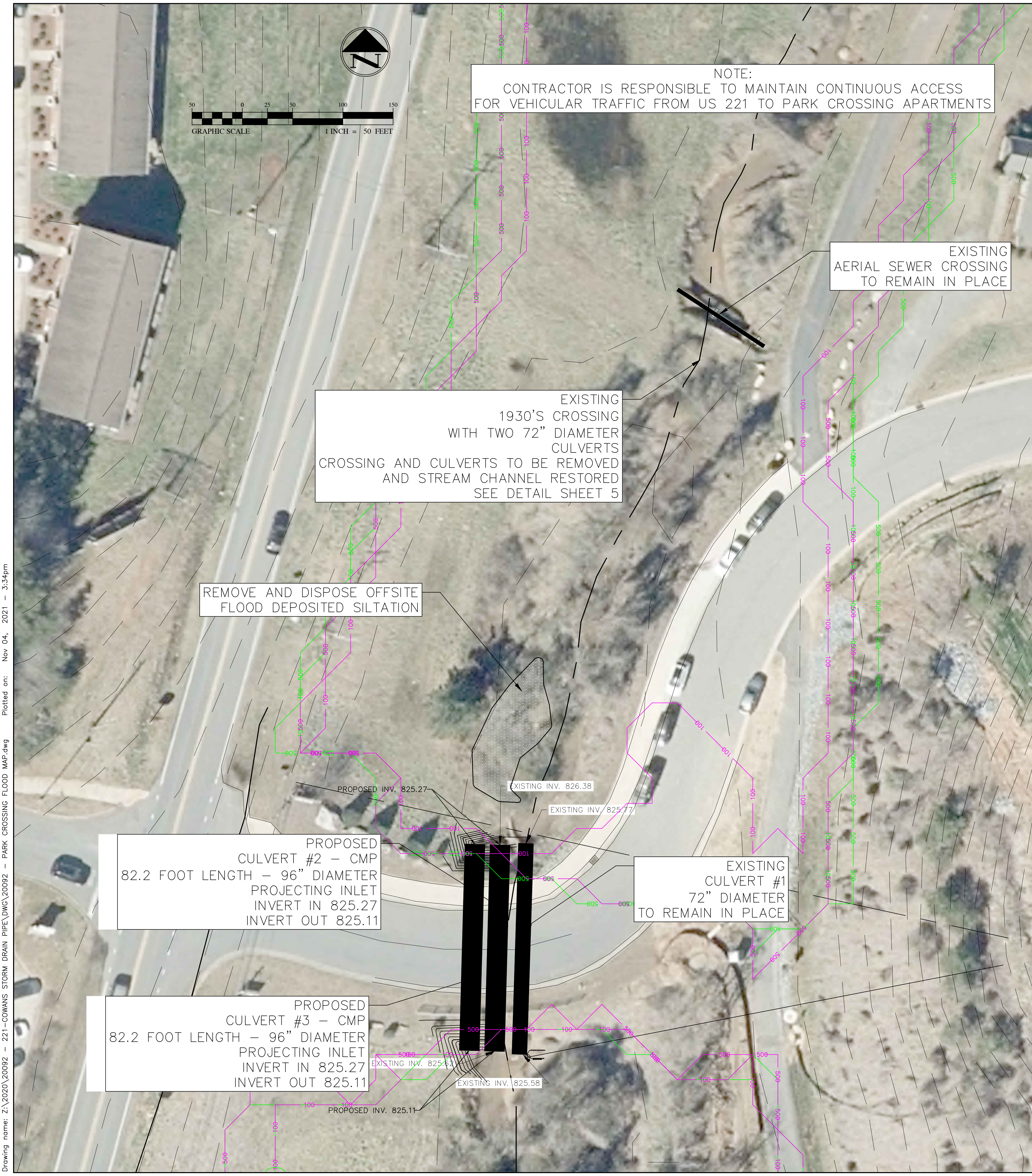
EXISTING 1930'S CROSSING WITH TWO 72" DIAMETER CULVERTS CROSSING AND CULVERTS TO BE REMOVED AND STREAM CHANNEL RESTORED SEE DETAIL SHEET 5

REMOVE AND DISPOSE OFFSITE FLOOD DEPOSITED SILTATION

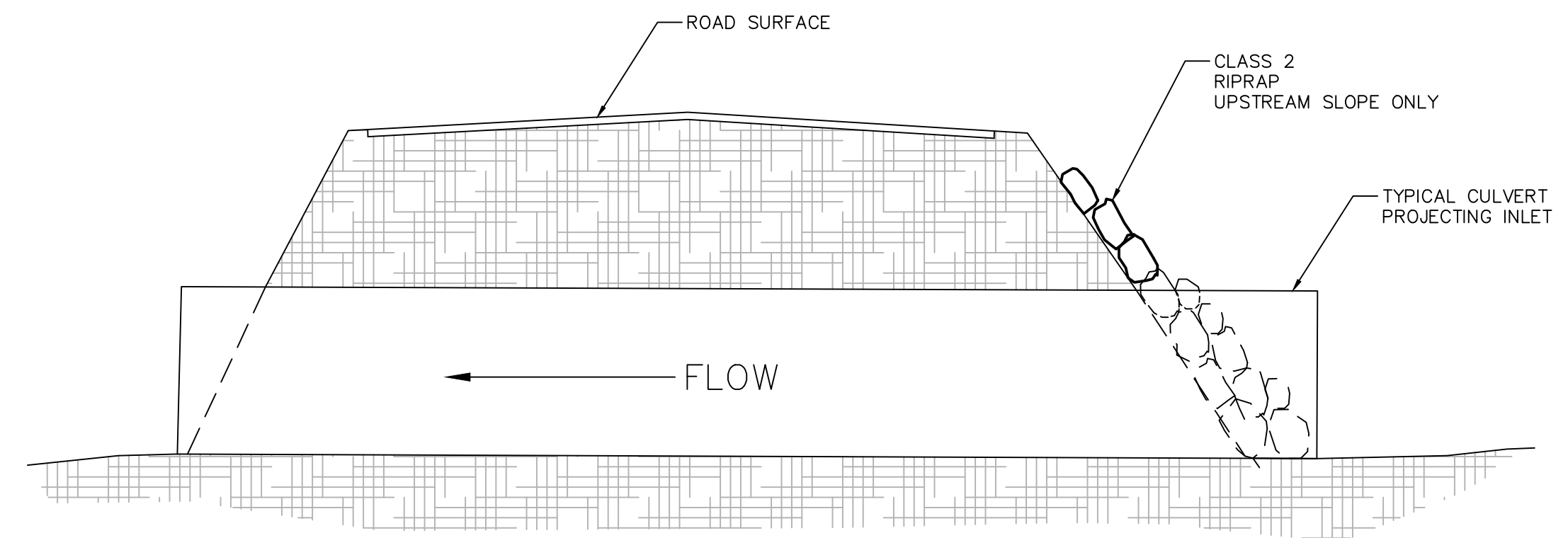
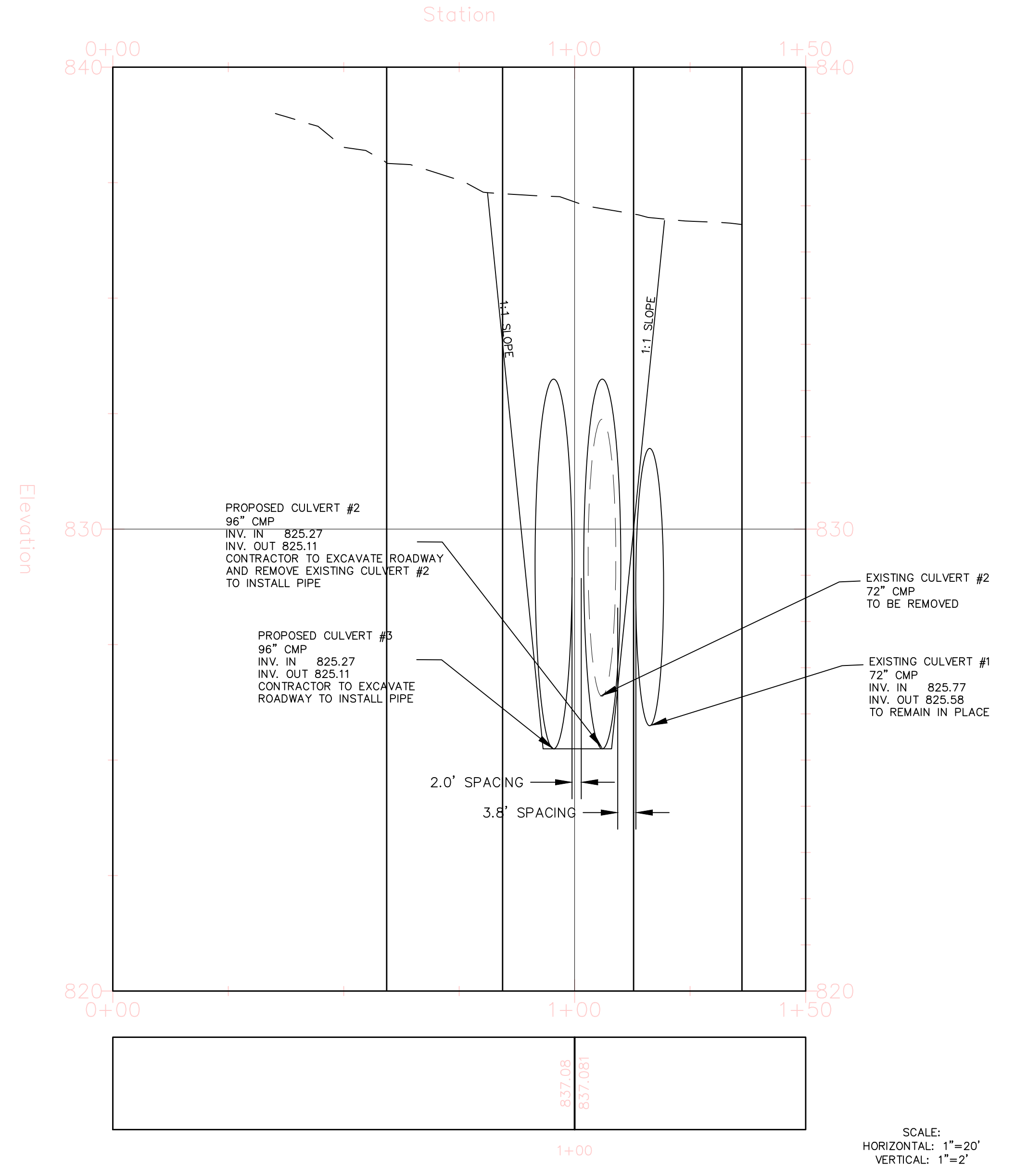
PROPOSED CULVERT #2 - CMP
82.2 FOOT LENGTH - 96" DIAMETER
PROJECTING INLET
INVERT IN 825.27
INVERT OUT 825.11

PROPOSED CULVERT #3 - CMP
82.2 FOOT LENGTH - 96" DIAMETER
PROJECTING INLET
INVERT IN 825.27
INVERT OUT 825.11

EXISTING CULVERT #1
72" DIAMETER
TO REMAIN IN PLACE



SKYLINE DRIVE CL PROFILE



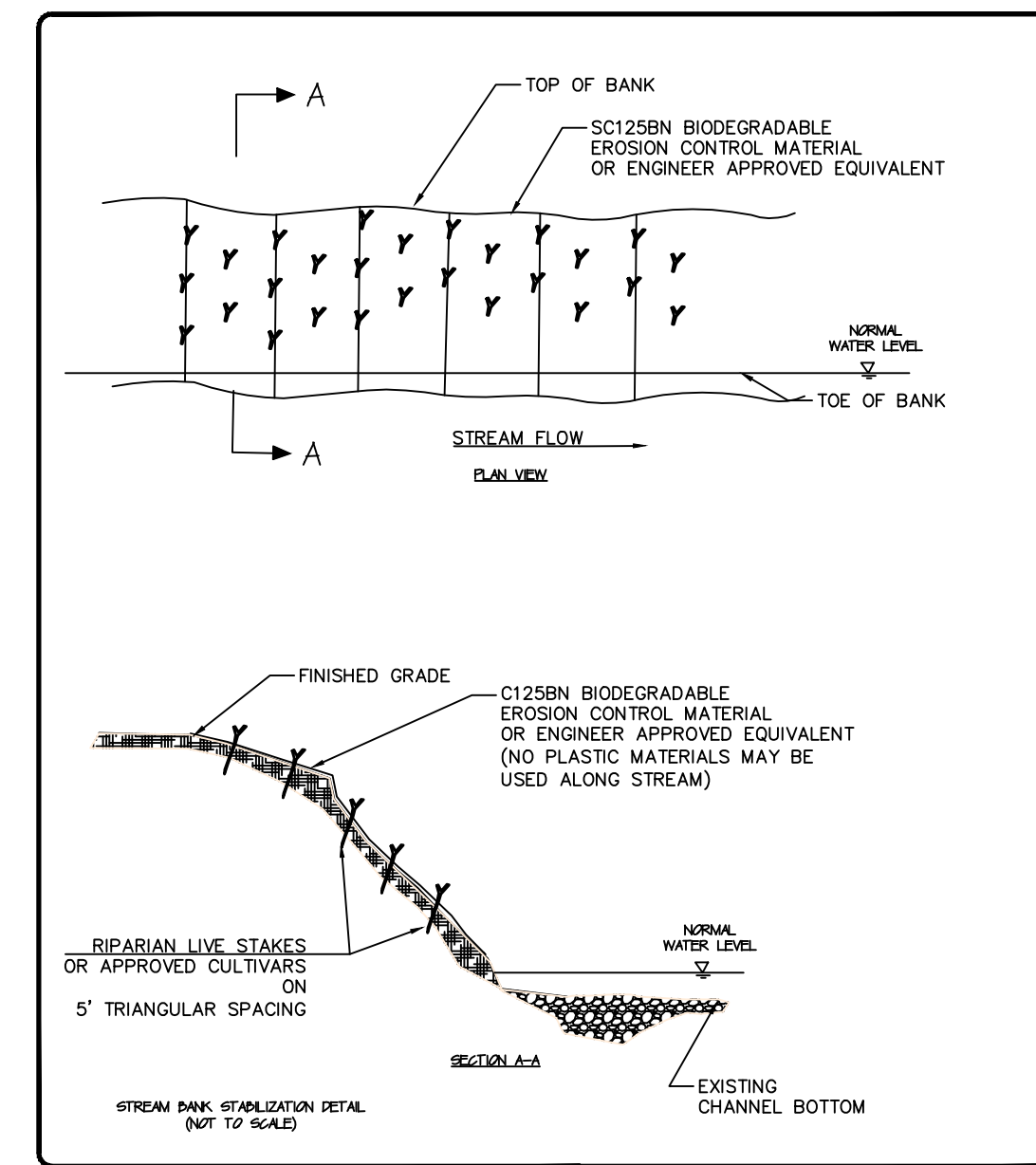
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<p>CONSTRUCTION PLANS FOR PARK CROSSING CULVERT MODIFICATION RUTHERFORD COUNTY, NC</p>	
<p>Engineering PLLC 100 Oak Street, Forest City, N.C. 28043 Ph: 828.274.4986 Fax: 828.274.4988 N.C. License # 4986</p>	
<p>SITE PLAN</p>	
SCALE: VARIES	
DATE: 12/01/2020	
DRAWN BY: PED	
CHECKED BY: DWO	
PROJECT MGR: DWO	
SHEET: 4 OF 5	

STREAMBANK RESTORE / RIPARIAN STABILIZATION WITH SEEDING.

CONSTRUCTION SEQUENCE:

1. PLACE SAND BAG COFFER DAM
2. BACKFILL TO ORIGINAL PROFILE.
3. SEED DISTURBED AREA WITH RIPARIAN BUFFER SEED MIX.
4. PLACE C125BN BIODEGRADABLE EROSION CONTROL MATERIAL OR ENGINEER APPROVED EQUIVALENT FROM TOP OF FILL TO APPROXIMATELY ONE FOOT ABOVE NORMAL WATER LEVEL. (NO PLASTIC MATERIALS PERMITTED ALONG STREAM)
5. PLANT LIVESTAKES ON 5' TRIANGULAR SPACING.

Note: The activity will not exceed an average of one cubic yard per running foot, as measured along the length of the treated bank, below the plane of the ordinary high water mark or the high tide line, unless the district engineer waives this criterion by making a written determination concluding that the discharge will result in no more than minimal adverse environmental

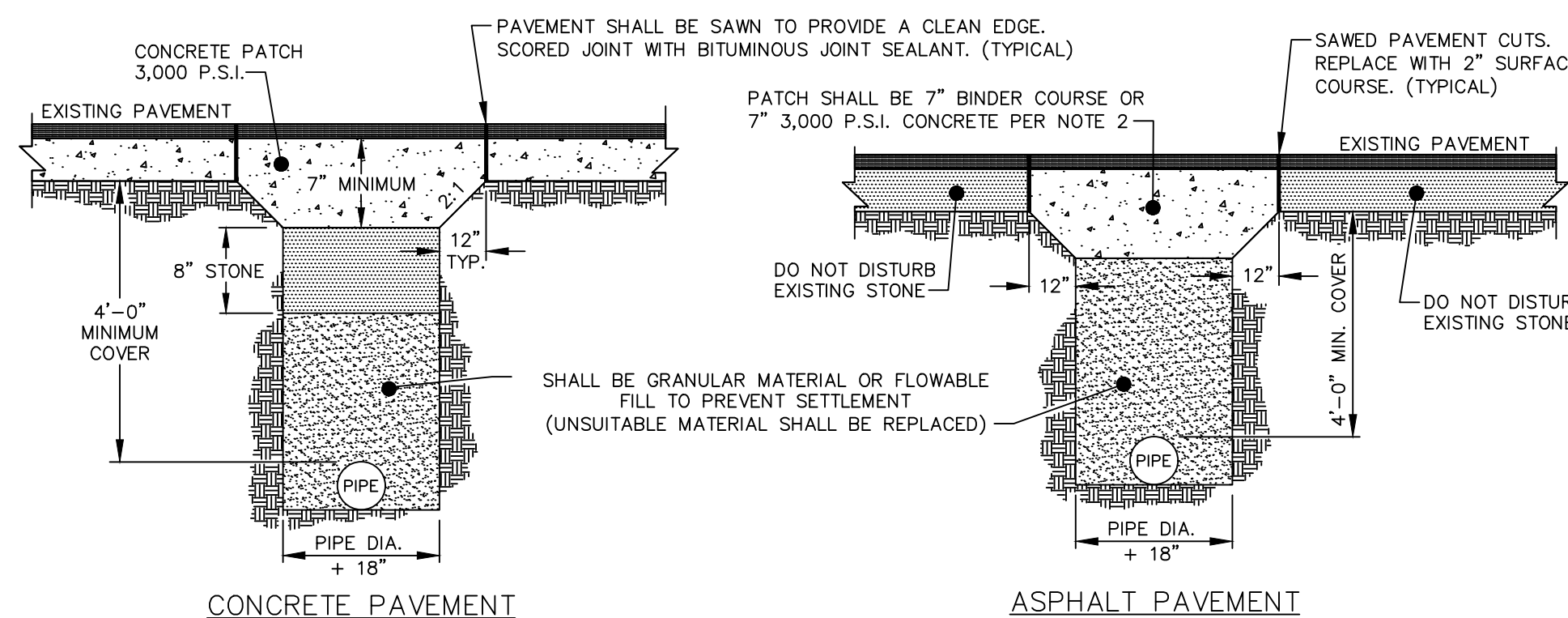
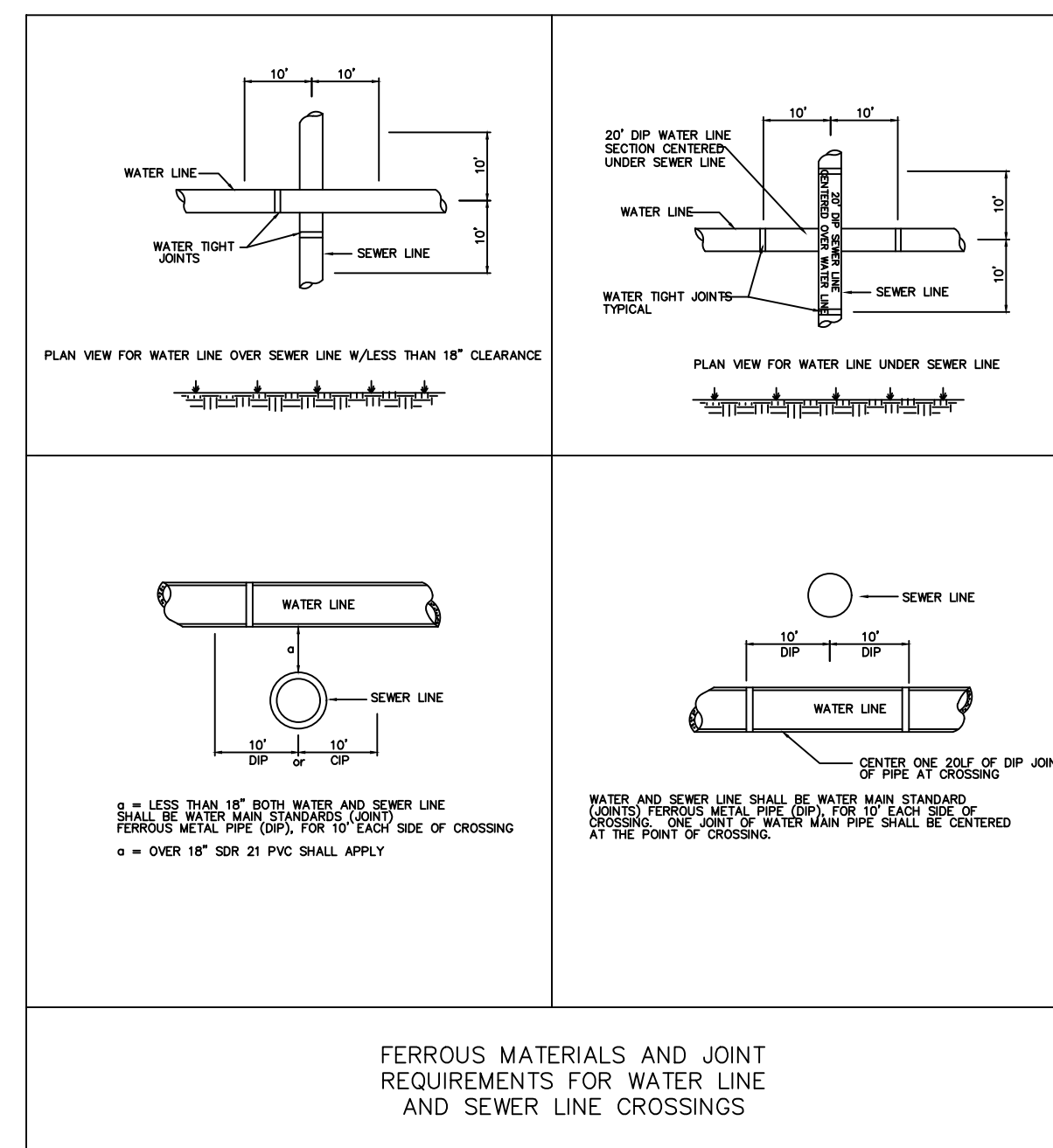
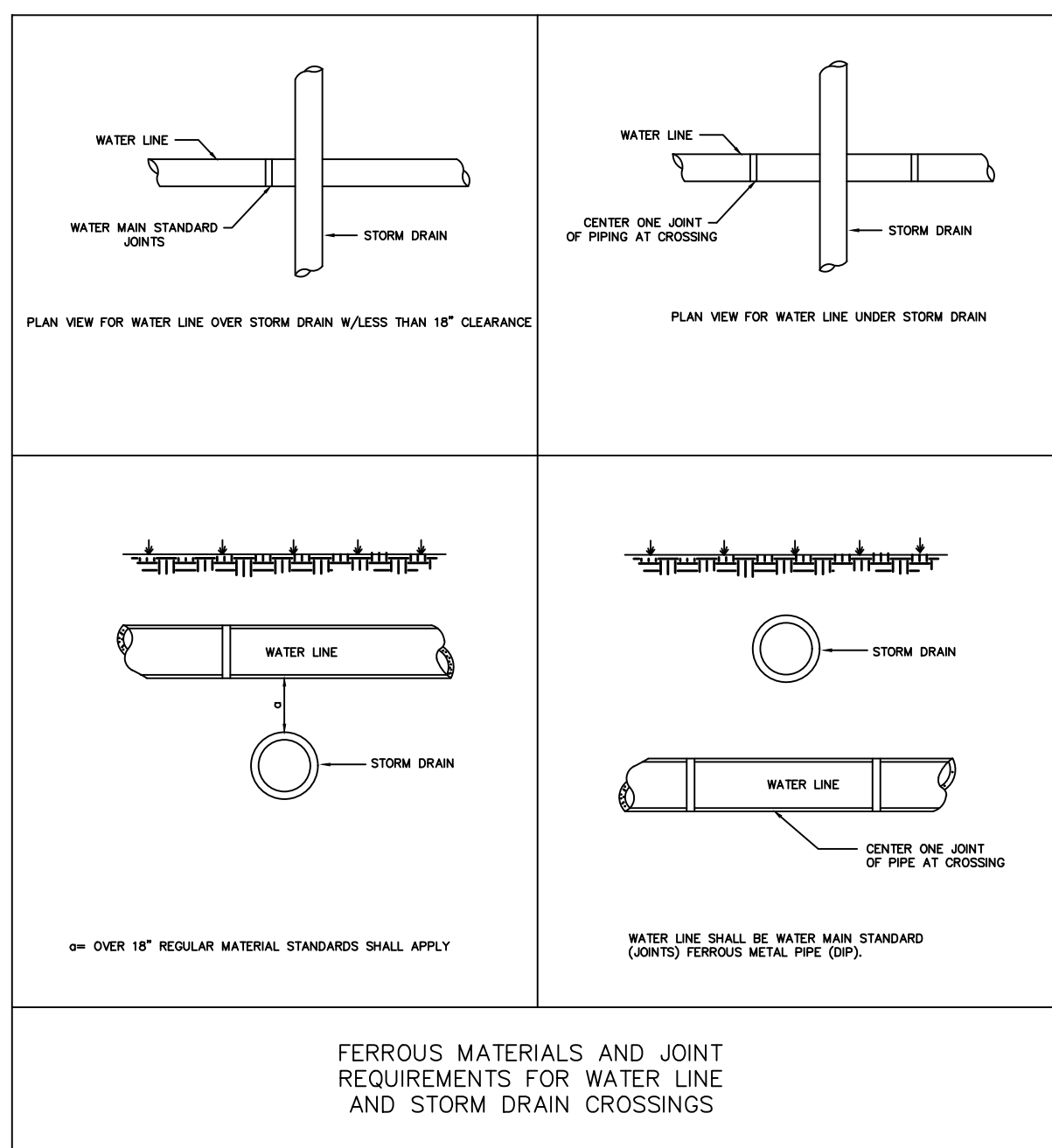


RIPARIAN BUFFER SEEDING	
SUMMER (May 15 - Aug 15)	
INDIANGRASS (<i>Sorghastrum nutans</i>)	15 lb/oc
LITTLE BLUESTEM (<i>Schizopygium scoparium</i>)	15 lb/oc
FALL (Aug 15 - Dec 15)	
VRGINIA WLDYRE (<i>Elymus virginicus</i>)	15 lb/oc
WINTER/EARLY SPRING (Feb 1 - May 15)	
VRGINIA WLDYRE (<i>Elymus virginicus</i>)	15 lb/oc
WETLAND SHALLOW SEDGE (<i>Carex flurida</i>)	10 lb/oc
Lime	2000 lb/oc
10-10-10 straw	750 lb/oc 4000 lb/oc

SUGGESTED APPROVED CULTIVARS

- redtwig dogwood (*Cornus sericea*) 'kelsey' grows to 2.5' - 3' tall and 'arctic fire' grows to 4.5' tall.
- dwarf varieties of ninebark (*Physocarpus opulifolius*) - tiny wine, nanus, little devil, little joker all grow to 3-4' tall.
- dwarf buttonbush (*Cephalanthus occidentalis*) grows to 3-4' tall (half the straight species height)
- Coralberry (*Symphoricarpos orbiculatus*) grows to ~4' tall

DETAIL "A"
STREAM BANK STABILIZATION DETAIL
RIPARIAN SEEDING & LIVESTAKES OR CULTIVARS
(NOT TO SCALE)



- NOTES:**
1. ALL PAVEMENT CUTS SHALL BE REPAIRED WITHIN A MAXIMUM OF THREE (3) DAYS FROM THE DATE THE CUT IS MADE.
 2. CONCRETE TRENCH CAP ON ASPHALT STREETS SHALL BE USED ONLY DURING INCLEMENT WEATHER WHEN ASPHALT PLANTS ARE NOT OPERATING.
 3. IN ALL OPEN TRENCHES, BACKFILL SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING COMPACTION REQUIREMENTS BY SOILS TESTING CERTIFIED BY A LICENSED PROFESSIONAL GEOTECHNICAL ENGINEER.
 4. BACKFILL WITH A HIGH CLAY CONTENT, HIGH SHRINK-SWELL POTENTIAL, OR HIGH MOISTURE CONTENT THAT CANNOT MEET COMPACTION REQUIREMENTS SHALL BE DEEMED UNSUITABLE AND SHALL BE REPLACED WITH SUITABLE BACKFILL MATERIAL.
 5. ALL PAVEMENT PATCHES SHALL PROVIDE A UNIFORM AND SMOOTH DRIVING SURFACE.

STANDARD TRENCH AND PAVEMENT REPAIR SECTIONS

SEEDING

TEMPORARY SEEDING

WINTER/EARLY SPRING SEEDING MIXTURE
SPECIES RATE (LB/ACRE)
RYE (GRAIN) 120

USE ONE OF THE FOLLOWING AT SPECIFIED RATE:
SWITCHGRASS (*Panicum virgatum*),
SPURBEARD BLUESTEM (*Andropogon ternarius*),
BEGGARICE (*Desmodium spp.*), PARTRIDGE PEA (*Chamaecrista fasciculata*)

PERMANENT SEEDING

AREAS TO BE SEEDDED:
TILL OR DISC THE PREPARED AREAS TO BE SEEDDED TO A MINIMUM DEPTH OF FOUR (4) INCHES. REMOVE STONES LARGER THAN THREE (3) INCHES ON ANY SIDE, STICKS, ROOTS AND OTHER EXTRANEUS MATERIALS THAT SURFACE. IF NOT INCORPORATED DURING THE SOIL PREPARATION PROCESS, ADD PH MODIFIER AND FERTILIZERS AT THE RATE SPECIFIED IN THE SOIL TEST REPORT.

RE-COMPACT THE AREA UTILIZING A MULTIPACKER ROLLER. THE FINISHED GRADE SHALL BE A SMOOTH EVEN SOIL SURFACE WITH A LOOSE, UNIFORMLY FINE TEXTURE. ALL RIDGES AND DEPRESSIONS SHALL BE REMOVED AND FILLED TO PROVIDE THE APPROVED SURFACE DRAINAGE. SEEDING OF GRADED AREAS IS TO BE DONE IMMEDIATELY AFTER FINISHED GRADES ARE OBTAINED AND SEEDBED PREPARATION IS COMPLETED.

AREAS TO BE SPRIGGED, SODED, AND/OR PLANTED:
AT THE TIME OF PLANTING TILL OR DISC THE PREPARED AREAS TO A DEPTH OF FOUR (4) TO SIX (6) INCHES BELOW THE APPROVED FINISHED GRADE. REMOVE ALL STONES LARGER THAN THREE (3) INCHES ON ANY SIDE, STICKS, ROOTS AND OTHER EXTRANEUS MATERIALS THAT SURFACE. IF NOT INCORPORATED IN THE RIPPER PROCESS, ADD PH MODIFIER, FERTILIZER, AND OTHER RECOMMENDED SOIL AMENDMENTS.

RE-COMPACT THE AREA UTILIZING A MULTIPACKER ROLLER AND PREPARE FINAL GRADES AS DESCRIBED ABOVE. INSTALL SPRIGS, SOO AND PLANTS AS DIRECTED IMMEDIATELY AFTER FINE GRADING IS COMPLETE. MULCH, MAT AND/OR TACK AS SPECIFIED.

GRASS-LINED CHANNELS
KY 31 TALL FESCUE 100 LB/AC
KENTUCKY BLUEGRASS 15 LB/AC
RYE (GRAIN) 40 LB/AC
LIME 4000 LB/AC
10-10-10 FERTILIZER 1200 LB/AC
STRAW 4000 LB/AC

ALL OTHER SURFACES
KY 31 TALL FESCUE 100 LB/AC
RYE (GRAIN) 40 LB/AC
LIME 4000 LB/AC
10-10-10 FERTILIZER 1000 LB/AC
STRAW 4000 LB/AC

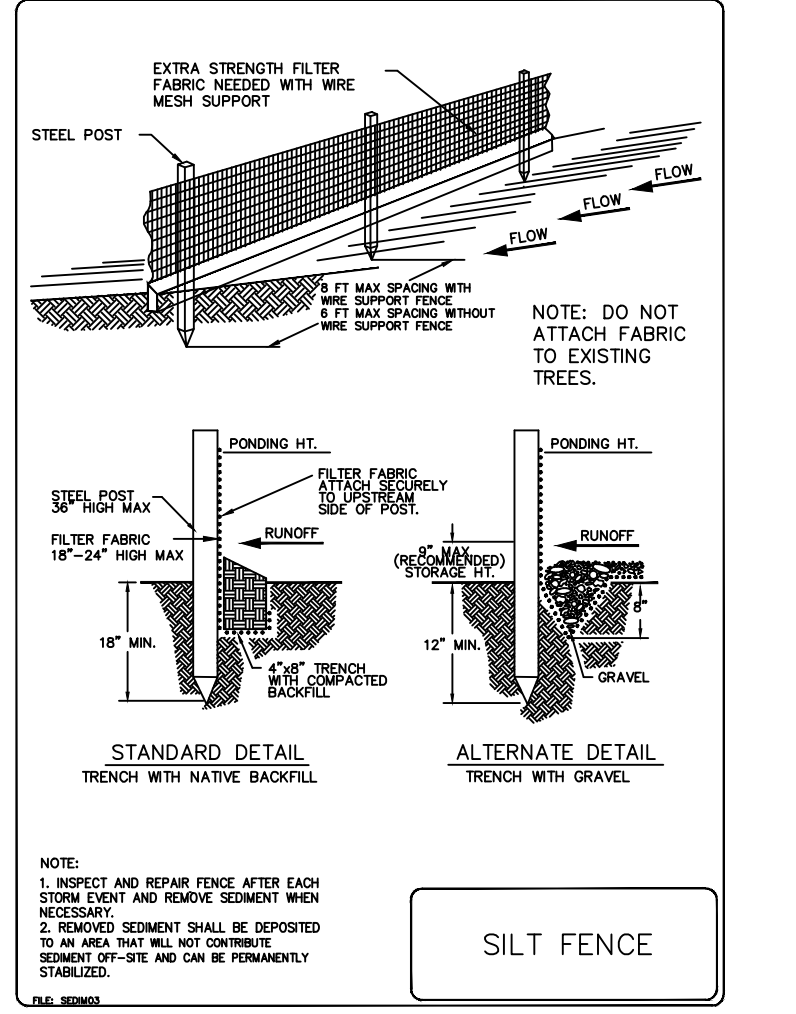
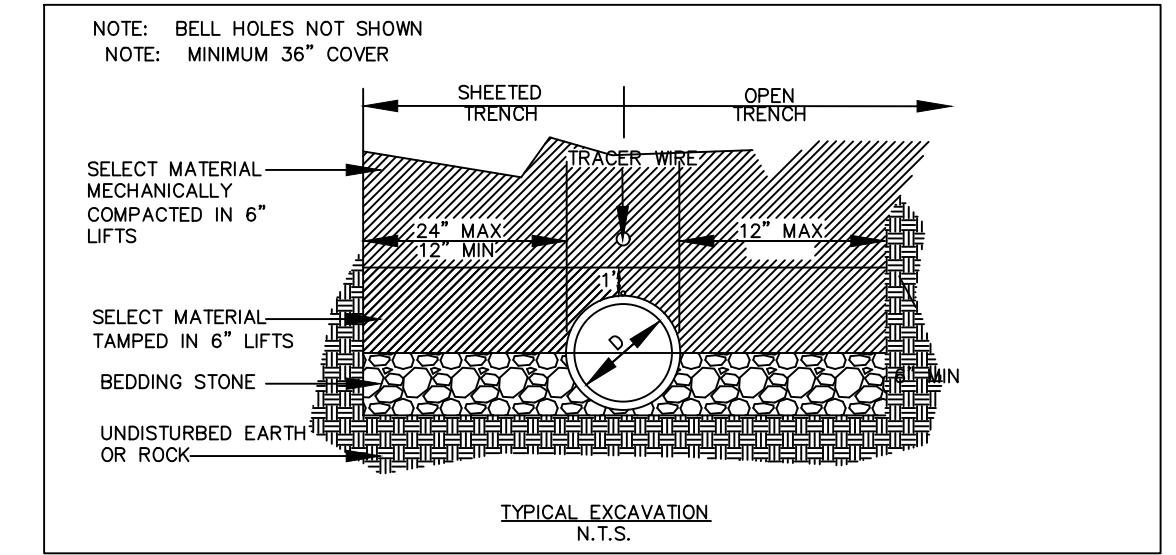
FALL SEEDING MIXTURE
SPECIES RATE (LB/ACRE)
RYE (GRAIN) 120

SEEDING DATES
MOUNTAINS-AUG. 15 - DEC. 15
COASTAL PLAIN AND PIEDMONT-AUG. 15 - DEC. 30

SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 LB/ACRE AGRICULTURAL LIMESTONE AND 1,000 LB/ACRE 10-10-10 FERTILIZER.

MULCH
APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE
REPAIR AND REFERTILIZE DAMAGED AREAS IMMEDIATELY. TOPDRESS WITH 50 LB/ACRE OF NITROGEN IN MARCH. IF IT IS NECESSARY TO EXTEND TEMPORARY COVER BEYOND JUNE 15, OVERSEED WITH 50 LB/ACRE KOBE (PIEDMONT AND COASTAL PLAIN) OR KOREAN (MOUNTAINS) LESPEDEZA IN LATE FEBRUARY OR EARLY MARCH.



- CONSTRUCTION SPECIFICATIONS**
- CONSTRUCTION MATERIAL**
1. Use synthetic filter fabric or pervious sheet of polypropylene, nylon, polyester, or polyethylene yarn, which is certified by the manufacturer or supplier as having a minimum filtering efficiency of 85%, tensile strength of 30 lb/in (standard) or 50 lb/in (extra strength) at 20% elongation, and a slurry flow rate of 0.3 gal/sq ft. Synthetic fabric should contain ultraviolet ray inhibitors and stabilizers to provide min. 6 months expected usable life at 0-120 deg. F.
 2. Ensure that posts are 1.33 lb/ft steel with a minimum length of 4 feet.
 3. Use min. #4 gauge wire fence with max mesh spacing of 6".
- CONSTRUCTION**
1. Ensure height of fence does not exceed 18" above ground surface.
 2. Construct fabric from continuous roll cut to length of barrier to avoid joints. When joints are necessary, securely fasten the filter cloth only at a support post with overlap to the next post.
 3. Support standard strength fabric with wire mesh fastened securely to updrain side of posts using heavy duty wire staples at least 1" long. Extend wire mesh to bottom of trench.
- MAINTENANCE**
1. Inspect sediment fence at least once a week 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 cleaning.
 4. Remove all fencing materials and unstable sediment deposits and bring the area to grade and stabilize it after the contributing drainage area has been properly stabilized.

JOB NUMBER: 20092

DATE: 04/06/21

BY: PED

DESCRIPTION: PARK CROSSING CULVERT MODIFICATION

REVISED PER NCFPM REVIEW DTD. MARCH 16, 2021

REV: 1 2 3 4 5 6

I HEREBY CERTIFY THAT THIS PLAN AND SPECIFICATION WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT OR ENGINEER UNDER THE LAWS OF THE STATE OF NORTH CAROLINA AS SIGNIFIED BY MY HAND AND SEAL.

Professional Engineer Seal: NORTH CAROLINA PROFESSIONAL ENGINEER, STATE NO. 2130, NAME: DAVID ODUM, LICENSE EXPIRES: 03/31/2021

CONSTRUCTION PLANS for PARK CROSSING CULVERT MODIFICATION, RUTHERFORD COUNTY, NC

Odum Engineering PLLC, 100 Oak Street, Forest City, N.C. 28043, PH: 828.247.4496, FAX: 828.247.4498, www.odumeng.com

SCALE: N.T.S.

DATE: 12/01/2020

DRAWN BY: PED

CHECKED BY: DWO

PROJECT MGR: DWO

SHEET: 5 OF 5

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