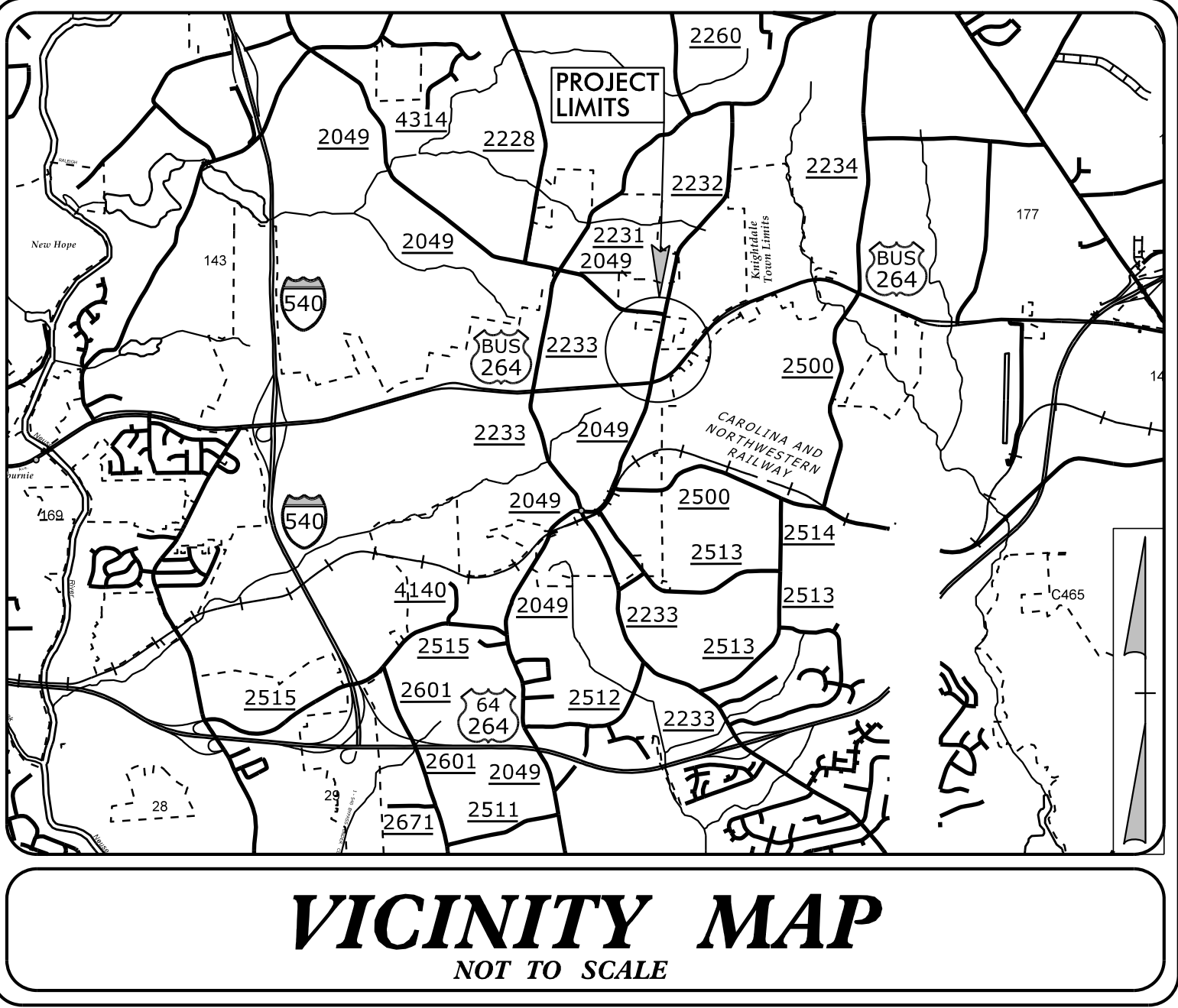


12/10/2024
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EC_PSH_01.dgn
jharvey

TIP PROJECT: TC002-BL



TOWN OF KNIGHTDALE

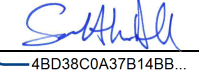
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

WAKE COUNTY

LOCATION: WEST SIDE OF SR 2049 (OLD KNIGHT RD)
FROM US 64 TO SR 2049 (FORESTVILLE RD)

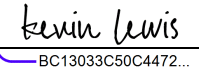
TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIDEWALK

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

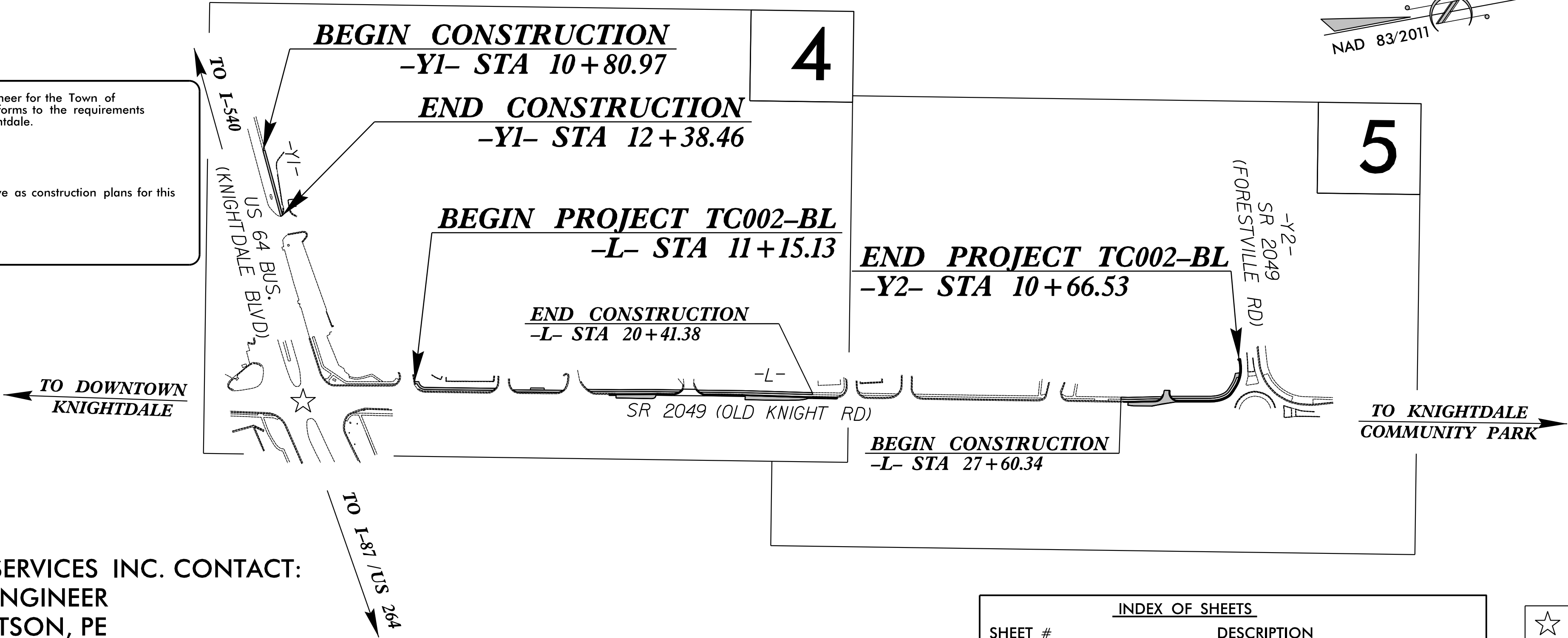
By:  Date: 12/15/2025

Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

Signed by:  Date: 12/15/2025

Land Use Administrator



STANTEC CONSULTING SERVICES INC. CONTACT:
PROJECT ENGINEER
BETSY WATSON, PE
SUNGATE DESIGN GROUP, P.A. CONTACT:
HYDRAULICS ENGINEER
JOSHUA G. DALTON, PE

PROJECT LENGTH: 0.362 MILES

INDEX OF SHEETS			
SHEET #		DESCRIPTION	
EC-01		EROSION CONTROL COVER SHEET	
EC-02 THRU EC-03	EC-02D THRU EC-03D	EROSION CONTROL NOTES	
EC-04 THRU RF-1	EC-07	EROSION CONTROL DETAILS	
		EROSION CONTROL PLAN	
		REFORESTATION DETAIL SHEET	

★ EXISTING SIGNAL

TOTAL DISTURBED
AREA = 0.95 ACRES

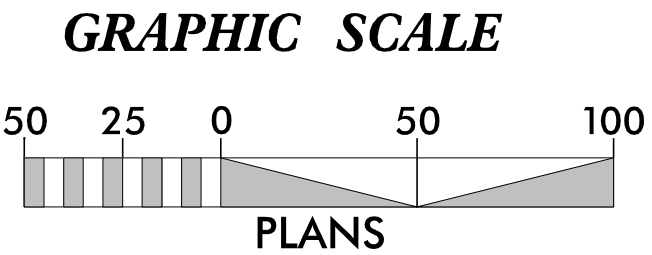
NEUSE RIVER BASIN

THIS PROJECT CONTAINS
EROSION CONTROL PLANS
FOR CLEARING AND
GRUBBING PHASE OF
CONSTRUCTION.

THIS PROJECT HAS
BEEN DESIGNED TO
SENSITIVE WATERSHED
STANDARDS.

ENVIRONMENTALLY
SENSITIVE AREA(S) EXIST
ON THIS PROJECT

Refer To E. C. Special Provisions
for Special Considerations.



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY
WITH THE REGULATIONS SET FORTH BY THE NCG 010000
GENERAL STORMWATER CONSTRUCTION PERMIT ISSUED BY THE NORTH
CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION
OF ENERGY, MINERAL, AND LAND RESOURCES.

Prepared in the Office of:
SUNGATE DESIGN GROUP, P.A.

905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-890

2024 STANDARD SPECIFICATIONS

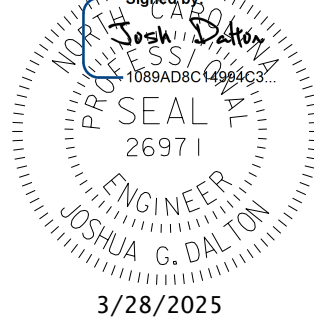
Designed by:
JOSHUA G. DALTON **3552**

NAME LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

The "Roadway Standard Drawings"- Roadway Design Unit - N. C.
Department of Transportation - Raleigh, N. C., dated January 2024
and the latest revision thereto are applicable to this project and by
reference hereby are considered a part of these plans.

EROSION CONTROL SHEET EC-02

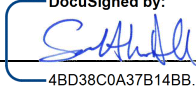
PROJECT REFERENCE NO.		SHEET NO.
TC002-BL		EC-02
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
		
3/28/2025		

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Required Town of Knightdale Construction Sequence

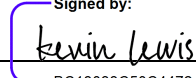
1. Schedule an Initial Pre-construction conference with the Town of Knightdale. Obtain a land-disturbance permit.
2. Install all perimeter controls as shown on the approved plans, CLEAR ONLY AS NECCESSARY TO INSTALL THESE DEVICES. Clearing should be limited to a maximum 35' "ribbon" around perimeter to install controls. No grading or excavation should occur.
3. Schedule an Onsite Pre-Construction Meeting with the Town of Knightdale to inspect the installed perimeter controls
4. If approved, proceed with installing gravel construction pad, temporary diversions, silt fence, sediment basins or other measures as shown on the approved plans. CLEAR ONLY AS NECCESSARY TO INSTALL THESE DEVICES. Seed temporary diversions, berms, and basins immediately after construction.
5. Call Town of Knightdale Erosion Control Inspector to schedule an onsite inspection and obtain a Certificate of Compliance.
6. Begin clearing and grubbing. Maintain Devices as needed. Rough grade site.
7. Install storm sewer, if shown, and protect inlets with block and gravel controls, sediment traps or other approved measures as shown in the approved plan. Being construction, building, etc.
8. 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.
9. When construction is complete and all areas are stabilized completely, call Erosion Control Inspector for an inspection.
10. If site is approved, remove temporary diversions, silt fence, sediment basins, etc., and seed out or stabilize any resulting bare areas. All remaining permanent erosion control devices, such as velocity dissipators, should now be installed.
11. When vegetation has become established (90% germination), call for a final inspection be the Erosion Control Inspector. Obtain a Certificate of Completion.

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By:  Date: 12/15/2025

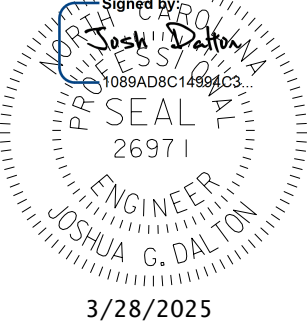
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By:  Date: 12/15/2025

Land Use Administrator

EROSION CONTROL SHEET EC-02A

PROJECT REFERENCE NO.		SHEET NO.
TC002-BL		EC-02A
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
		

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UNLESS ALL SIGNATURES COMPLETED

Date:			Page:
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TEMPORARY SEEDING RECOMMENDATIONS
FOR LATE WINTER AND EARLY SPRING

Seeding Mixture

Species	Rate (lb/acre)
Rye (grain)	120
Annual lespedeza (Kobe in Piedmont and Coastal Plain, Korean in Mountains)	50

Omit annual lespedeza when duration of temporary cover is not to extend beyond June.

Seeding Dates
Mountains—Above 2500 feet: Feb. 15 - May 15
Below 2500 feet: Feb. 1- May 1
Piedmont—Jan. 1 - May 1
Coastal Plain—Dec. 1 - Apr. 15

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
Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

TEMPORARY SEEDING RECOMMENDATIONS FOR SUMMER

Seeding Mixture

Species	Rate (lb/acre)
German millet	40

In the Piedmont and Mountains, a small-stemmed Sudangrass may be substituted at a rate of 50 lb/acre.

Seeding Dates
Mountains—May 15 - Aug. 15
Piedmont—May 1 - Aug. 15
Coastal Plain—Apr. 15 - Aug. 15

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
Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

TEMPORARY SEEDING RECOMMENDATIONS FOR FALL

Seeding Mixture

Species	Rate (lb/acre)
Rye (grain)	120

Seeding Dates
Mountains—Aug. 15 - Dec. 15
Coastal Plain and Piedmont—Aug. 15 - Dec. 31

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.

SEED BED PREPARATION:

LIMING- Apply lime according to soil test recommendations. If the pH (acidity) of the soil is not known, an application of ground agricultural limestone at the rate of 1-1 ½ tons/acre on coarse-textured soils and 2-3 tons/acre on fine-textured soils is usually sufficient. Apply limestone uniformly and incorporate into the top 4-6 inches of soil. Soils with a pH of 6 or higher need not be limed.

FERTILIZER- Base application rates on soil tests. When these are not possible, apply a 10-10-10 grade fertilizer at 700-1,000 lb/acre. Both fertilizer and lime should be incorporated into the top 4-6 inches of soil. If a hydraulic seeder is used, do not mix seed and fertilizer more than 30 minutes before application.

SURFACE ROUGHENING- If recent tillage operations have resulted in a loose surface additional roughening may not be required, except to break up large clods. If rainfall causes the surface to become sealed or crusted, loosen it just prior to seeding by raking, harrowing, or other suitable methods for fine grading. The finished grade shall be a smooth even soil surface with a loosen uniformly fine texture. All ridges and depressions shall be removed and filled to provide the approved surface drainage. Planting is to be done immediately after finished grades are obtained and seedbed preparation is completed.



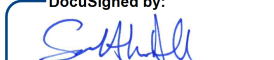
NORTH CAROLINA

Environmental Quality

EFFECTIVE DATE: 11/12/2020

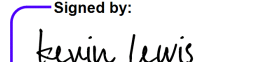
TEMPORARY SEEDING RECOMMENDATIONS

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By:  Date: 12/15/2025
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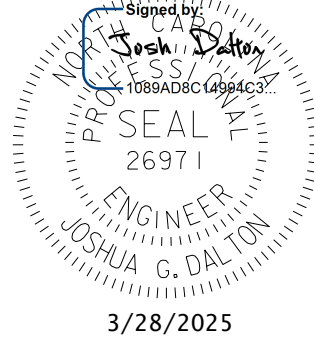
Town Engineer

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By:  Date: 12/15/2025
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Land Use Administrator

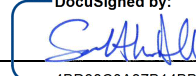
EROSION CONTROL SHEET EC-02B

PROJECT REFERENCE NO.	SHEET NO.
TC002-BL	EC-02B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	

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UNLESS ALL SIGNATURES COMPLETED

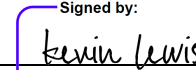
Date:	Page:																														
NON-INVASIVE PERMANENT SEEDING RECOMMENDATIONS FOR LATE WINTER AND EARLY SPRING SEEDING MIXTURE<table><tr><th>Species</th><th>Rate</th></tr><tr><td>Centipede</td><td>5 lbs/acre</td></tr><tr><td>Indian Woodoats</td><td>1.5-2.5 lbs/acre*</td></tr><tr><td>Virginia Wild Rye</td><td>4-6 lbs/acre*</td></tr></table> *Depending upon mix with other species. See table 6.11.d from Chapter 6 of the NC Erosion and Sediment Control Planning and Design Manual. Seeding Dates Coastal or Eastern Piedmont for Centipede- Sept. 1 - May 1 Coastal and Piedmont for Indian Woodoats and Virginia Wild Rye- Feb 15 - April 1 Mountains for Indian Woodoats and Virginia Wild Rye- March 1 - May 15 Maintenance: Significant maintenance may be required to obtain desired cover once centipede is planted. Acceptable for sodding. SEEDING MIXTURE<table><tr><th>Species</th><th>Rate</th></tr><tr><td>Indian Woodoats</td><td>1.5-2.5 lbs/acre*</td></tr><tr><td>Virginia Wild Rye</td><td>4-6 lbs/acre*</td></tr></table> *Depending upon mix with other species. See table 6.11.d from Chapter 6 of the NC Erosion and Sediment Control Planning and Design Manual. Seeding Dates Mountains - July 15- Aug 15 Piedmont - Aug 15 - Oct 15 Maintenance: Indian Woodoats and Virginia Wild Rye are both sun and shade tolerant. SEEDING MIXTURE<table><tr><th>Species</th><th>Rate</th></tr><tr><td>Hard Fescue</td><td>15 lbs/acre</td></tr><tr><td>Switchgrass</td><td>2.5-3.5 lbs/acre*</td></tr><tr><td>Indian Grass</td><td>5-7 lbs/acre*</td></tr><tr><td>Big Bluestem</td><td>5-7 lbs/acre*</td></tr><tr><td>Indian Woodoats</td><td>1.5-2.5 lbs/acre*</td></tr><tr><td>Virginia Wild Rye</td><td>4-6 lbs/acre*</td></tr></table> *Depending upon mix with other species. See table 6.11.d from Chapter 6 of the NC Erosion and Sediment Control Planning and Design Manual. Seeding Dates Mountains - Hard Fescue- Aug 1 - June 1 Mountains- Switchgrass, Indian Grass, Big Bluestem- Dec 1 - April 15 Piedmont and Coastal- Switchgrass, Indian Grass, Big Bluestem- Dec 1 - April 1 Coastal- Indian Woodoats and Virginia Wild Rye- Sept 1 - Nov 1 Maintenance: Hard Fescue is not recommended for slopes > 5%. Prefers shade. SEED BED PREPARATION: LIMING- Apply lime according to soil test recommendations. If the pH (acidity) of the soil is not known, an application of ground agricultural limestone at the rate of 1 to 1 ½ tons/acre on coarse-textured soils and 2-3 tons/acre on fine-textured soils is usually sufficient. Apply limestone uniformly and incorporate into the top 4-6 inches of soil. Soils with a pH of 6 or higher need not be limed. FERTILIZER- Base application rates on soil tests. When these are not possible, apply a 10-10-10 grade fertilizer at 700-1,000 lb/acre. Both fertilizer and lime should be incorporated into the top 4-6 inches of soil. If a hydraulic seeder is used, do not mix seed and fertilizer more than 30 minutes before application. SURFACE ROUGHENING- If recent tillage operations have resulted in a loose surface additional roughening may not be required, except to break up large clods. If rainfall causes the surface to become sealed or crusted, loosen it just prior to seeding by raking, harrowing, or other suitable methods for fine grading. The finished grade shall be a smooth even soil surface with a loosen uniformly fine texture. All ridges and depressions shall be removed and filled to provide the approved surface drainage. Planting is to be done immediately after finished grades are obtained and seedbed preparation is completed. NOTES: - Permanent seeding, sodding or other means of stabilization are required when all construction work is completed according to the NPDES timeframe's table. - A North Carolina Department of Agriculture soils test (or equal) is highly recommended to be obtained for all areas to be seeded, sprigged, sodded or planted. - Use a seeding mix that will produce fast growing nurse crops and includes non-invasive species that will eventually provide a permanent groundcover. Soil blankets may be used in lieu of nurse crops. Mat, tack or crimp mulch, as needed to stabilize seeded areas until root establishment. Mulch must be applied uniformly over the soil with a cover density of at least 80%. - Ground cover shall be maintained until permanent vegetation is established and stable against accelerated erosion. <tr><td>  NORTH CAROLINA Environmental Quality EFFECTIVE DATE: 11/12/2020 PERMANENT SEEDING RECOMMENDATIONS </td></tr>			Species	Rate	Centipede	5 lbs/acre	Indian Woodoats	1.5-2.5 lbs/acre*	Virginia Wild Rye	4-6 lbs/acre*	Species	Rate	Indian Woodoats	1.5-2.5 lbs/acre*	Virginia Wild Rye	4-6 lbs/acre*	Species	Rate	Hard Fescue	15 lbs/acre	Switchgrass	2.5-3.5 lbs/acre*	Indian Grass	5-7 lbs/acre*	Big Bluestem	5-7 lbs/acre*	Indian Woodoats	1.5-2.5 lbs/acre*	Virginia Wild Rye	4-6 lbs/acre*	 NORTH CAROLINA Environmental Quality EFFECTIVE DATE: 11/12/2020 PERMANENT SEEDING RECOMMENDATIONS
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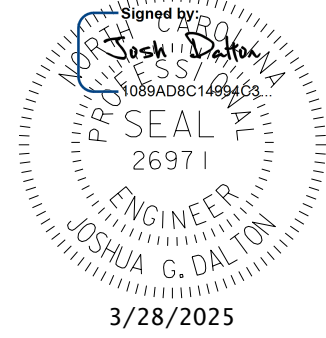
By:  Date: 12/15/2025
DocuSigned by: 48D38CDA37B146B...

Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By:  Date: 12/15/2025
Signed by: BC13033C50C4472...
Land Use Administrator

EROSION CONTROL SHEET EC-02C

PROJECT REFERENCE NO.	SHEET NO.
TC002-BL	EC-02C
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Date:

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

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 (HQW) 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 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 inlets to 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.

- EQUIPMENT AND VEHICLE MAINTENANCE**
- 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.

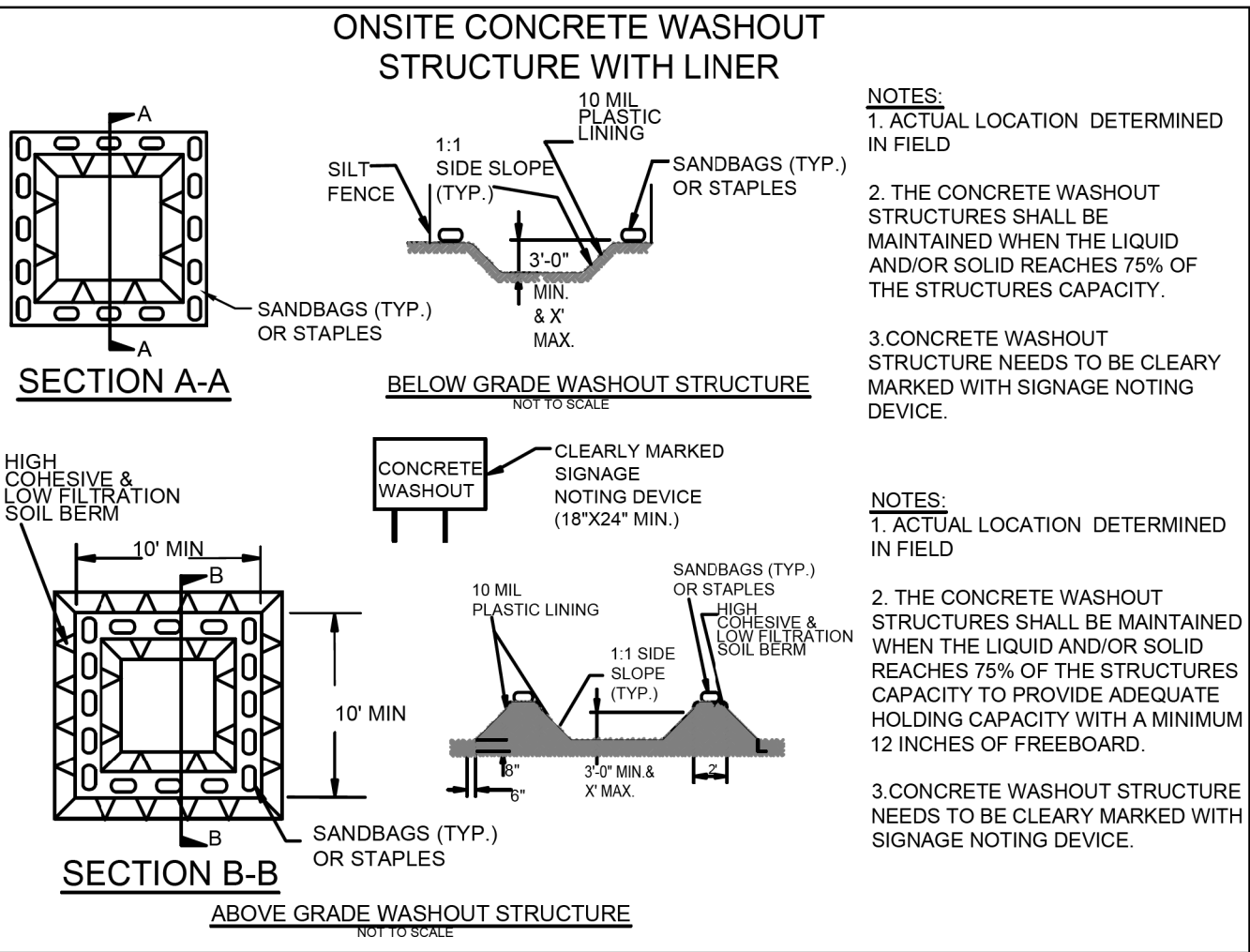
- LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE**
- Never bury or burn waste. Place litter and debris in approved waste containers.
 - Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
 - Locate waste containers 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, sized 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.

- 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.



- 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 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.
 - 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.

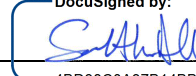
- HERBICIDES, PESTICIDES AND RODENTICIDES**
- Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
 - Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in 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.

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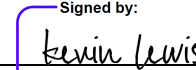
NCG-01 GROUND COVER & MATERIALS HANDLING

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By:  Date: 12/15/2025

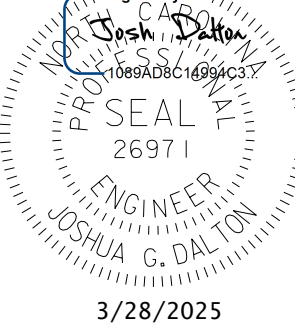
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By:  Date: 12/15/2025

Land Use Administrator

EROSION CONTROL SHEET EC-02D

PROJECT REFERENCE NO.	SHEET NO.
TC002-BL	EC-02D
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	

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UNLESS ALL SIGNATURES COMPLETED

Date:

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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:

- (a) 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,
- (b) 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,
- (c) 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
- (d) 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,
- (e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
- (f) 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.

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 ≥ 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 ≥ 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 ≥ 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 ≥ 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

1. 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 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.

2. 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:

- (a) This General Permit as well as the Certificate of Coverage, after it is received.
- (b) 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.

3. 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

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

- (a) Visible sediment deposition in a stream or wetland.
- (b) 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).
- (c) 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.
- (d) Anticipated bypasses and unanticipated bypasses.
- (e) Noncompliance with the conditions of this permit that may endanger health or the environment.

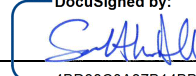
2. Reporting Timeframes and Other Requirements

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 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.

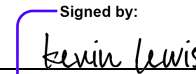
NCG-01 SELF INSPECTION

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By:  Date: 12/15/2025
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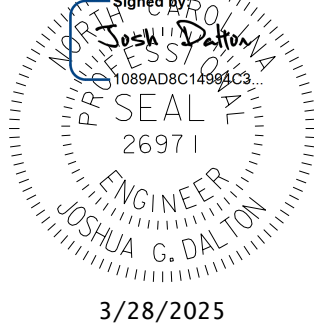
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

Signed by:  Date: 12/15/2025
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Land Use Administrator

EROSION CONTROL SHEET EC-03

PROJECT REFERENCE NO.	SHEET NO.
TC002-BL	EC-03
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Town of Knightdale Required ESC Plan Maintenance Notes

- Provide a plan detail, construction specifications, and specific maintenance requirements for all proposed sediment and erosion control structures included on the plan. Recommend placing maintenance requirements with the associated construction detail.
- Maintenance and/or clean out, is necessary anytime the device is at 50% capacity. All sediment storage measures will remain on site and functional until all grading and final landscaping of the project is complete.
- As designated by NCDEQ NCG01 permitting, self-inspections for erosion and sedimentation control measures are to be performed at least once every seven calendar days and within 24 hours of every rain event of 1 inch or greater. Any needed repairs shall be made immediately to maintain measures as designed.
- Provide the minimum maintenance standards as specified below:

SURVEYOR FLAGS/TAPE/STAKES:

- Replace identifiers if damaged or knocked down during development.
- Ensure key environmental and/or cultural resources maintain identifiers.
- Colors should adhere to the APWA Uniform Color Code. Use accepted survey symbols and ensure operators understand designations. Utility line owners/operators shall identify the designating firm.

PERMITS/NCGOJ INSPECTIONS BOX:

- Confirm box is securely fashions to a post or wall in a visible location in proximity to the construction entrance.
- Maintain relevant identification on the exterior of the box.
- Ensure paper documents remain dry / legible (lamination, ticket holders, binders, etc.)
- Replace any missing documents immediately. Consider placing ties or fasteners if necessary.

RAIN GUAGE:

- Check and remove any items from the rain funnel and the debris filter (e.g., dust, bugs and other debris).
- Open the rain gauge and remove any foreign objects.
- Perform routine maintenance as specified by the manufacturer.
- Check that the gauge is not being obstructed from rain capture and is level before and after reassembly.

TREE PROTECTION FENCE:

- Prune any damaged trees. (If) damage to protected trees occurs, repair any damage to the crown, trunk, or root system immediately.
- Repair roots by cutting off the damaged areas and painting them with tree paint. Spread peat moss or moist topsoil over exposed roots.
- Repair damage to bark by trimming around the damaged area, taper the cut to provide drainage and paint with tree paint.
- Cut off all damaged tree limbs above the tree collar at the trunk or main branch. Use three separate cuts to avoid peeling bark from healthy areas of the tree.

SILT FENCE:

- Should the fabric of a sediment fence collapse, tear, decompose, or become ineffective, replace it promptly.
- Remove sediment deposits as necessary to provide adequate storage volume for the next rain and reduce pressure on the fence. Take care to avoid undermining the fence during cleanouts.
- 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.

SILT FENCE OUTLET:

- Freshen stone when sediment accumulation exceeds 6 inches.
- Keep mesh free of debris to provide adequate flow and replace stone as needed to facilitate de-watering.

CONSTRUCTION ENTRANCE:

- Maintain the gravel pad in a condition to prevent mud or sediment from leaving the construction site. This may require periodic tpdressing with 2-inch stone.
- Immediately remove all objectionable materials spilled, washed, or tracked onto public roadways.

SKIMMER:

- Confirm skimmer is functional, installed in the correct orientation and has mobility to float on top of the water column.
- Ensure rock pad stabilization is present under the skimmer.
- Repair any structural deficiencies (e.g., orifice disk, flex hose connection, vent functioning, cracked PVC)

SEDIMENT BASIN

- Basin requires maintenance when the inlet zone (1st quadrant) has been filled with sediment.
- Baffle material shall be maintained in good condition for the life of the pond until removal or conversion.

SEDIMENT BASIN / ROLLED EROSION CONTROL PRODUCT:

- Inspect initial channel anchoring has been installed correctly, confirm segments are rolled in correct orientation.
- Any areas that are damaged or not in close contact with the ground shall be repaired and stapled.
- Monitor and repair the RECP as necessary until ground cover is established.

BASIN CONVEYANCES / SLOPE DRAIN / RIP-RAP LINED CHANEL

- Any erosion of the slope, berm or outlet should be repaired immediately to prevent head cutting back into the slope.
- Conveyance should be refreshed if pore space has been compromised. Clogged drains should be flushed out or replaced.
- Additional performance measures may be required at conveyance entrance to slow water entering the basin.

FILTER BAG / DEWATERING ACTIVITIES

- Ensure the dewatering pad is in a good stabilized condition.
- Prior to use inspect bags for any defects. Ensure pump hoe is secure and a floating intake is being used (when possible).

FILTER BAG / DEWATERING ACTIVITIES (CONTINUED):

- Follow all manufacturer recommendations for inspection and maintenance guidelines. Replace when trapped sediment has accumulated to 50% of the bag capacity or in accordance with the manufacturer's recommendations.

TEMPORARY DIVERSION DITCHES / ROLLED EROSION CONTROL PRODUCT:

- Any areas that are damaged or not in close contact with the ground shall be repaired and stapled.
- Monitor and repair the RECP as necessary until ground cover is established.

WITH WATTLES / SILT SOCKS

- Remove sediment accumulation behind measure as necessary to prevent damage to channel vegetation.
- Replace wattle/sock if clogged or torn. Reinstall per detail if damaged or dislodged.
- If ponding becomes excessive, replace with a larger diameter wattle/sock or a different measure.

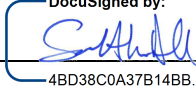
WITH CHECK DAMS

- Remove sediment accumulation behind measure as necessary to prevent damage to channel vegetation.
- Check for erosion, piping, rock displacement, and correct stone sizes. Repair immediately.
- Confirm weir present and located at the center of the device.

INLET PROTECTIONS (PIPE / YARD / DROP / CURB)

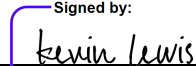
- Inspect inlet protection and remove sediment after each rain event.
- Keep free of debris to provide adequate flow and if present replace stone as needed to facilitate de-watering.

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By:  Date: 12/15/2025

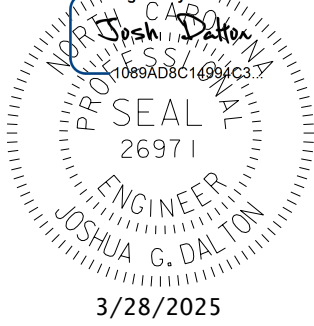
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By:  Date: 12/15/2025

Land Use Administrator

EROSION CONTROL SHEET EC-03A

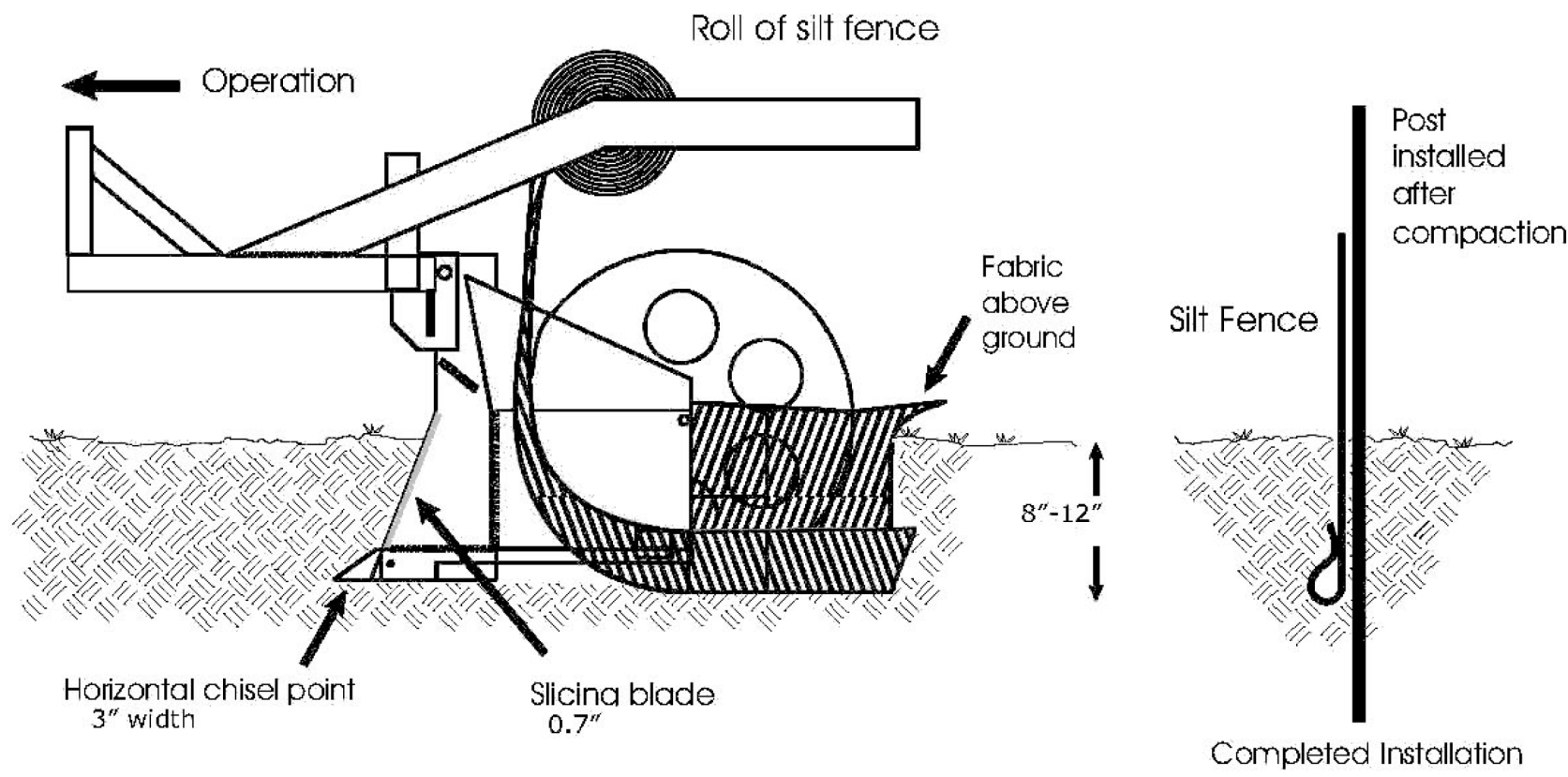
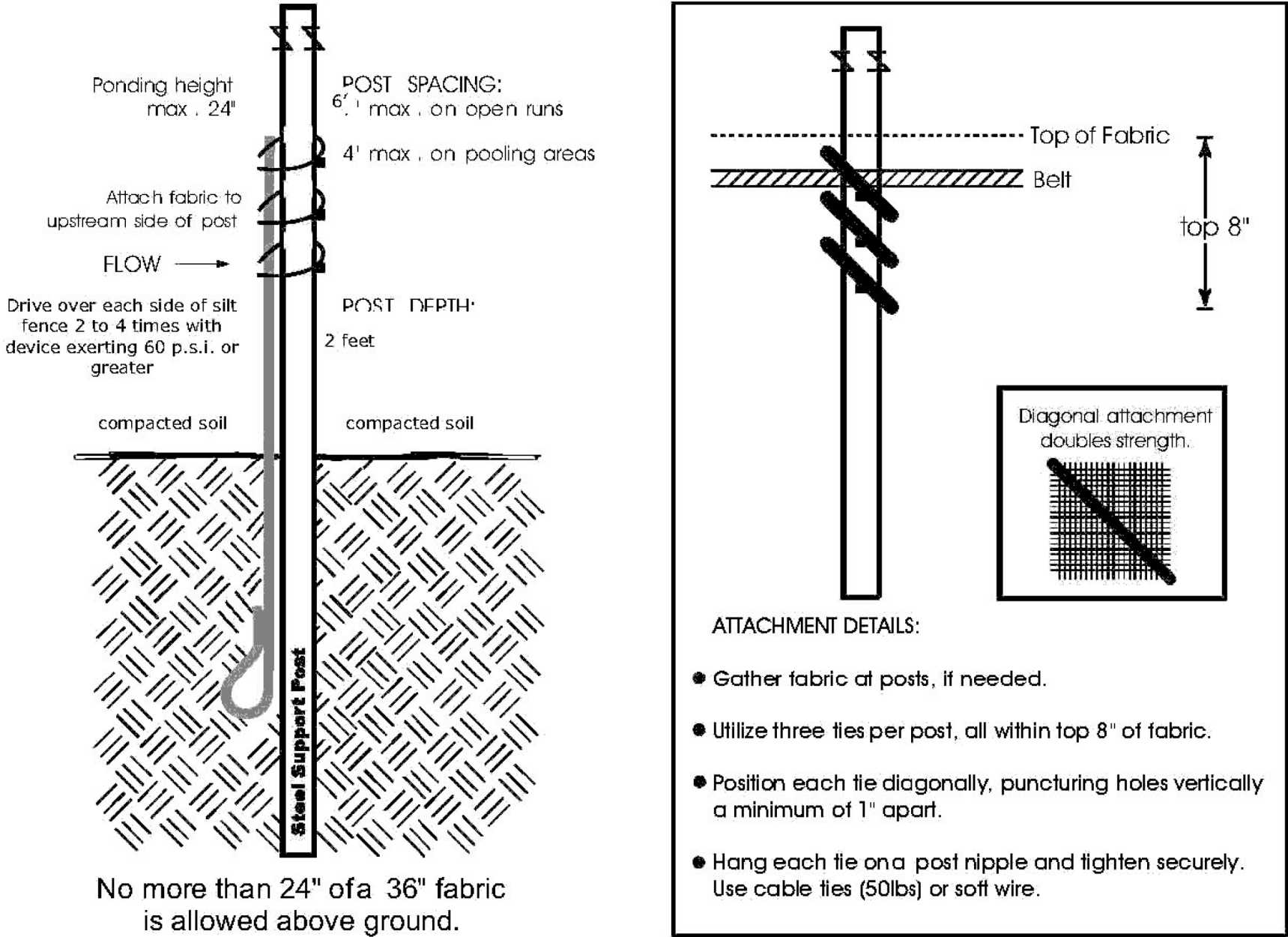
PROJECT REFERENCE NO.		SHEET NO.
TC002-BL		EC-03A
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
		

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Table 6.62b Specifications For Sediment Fence Fabric

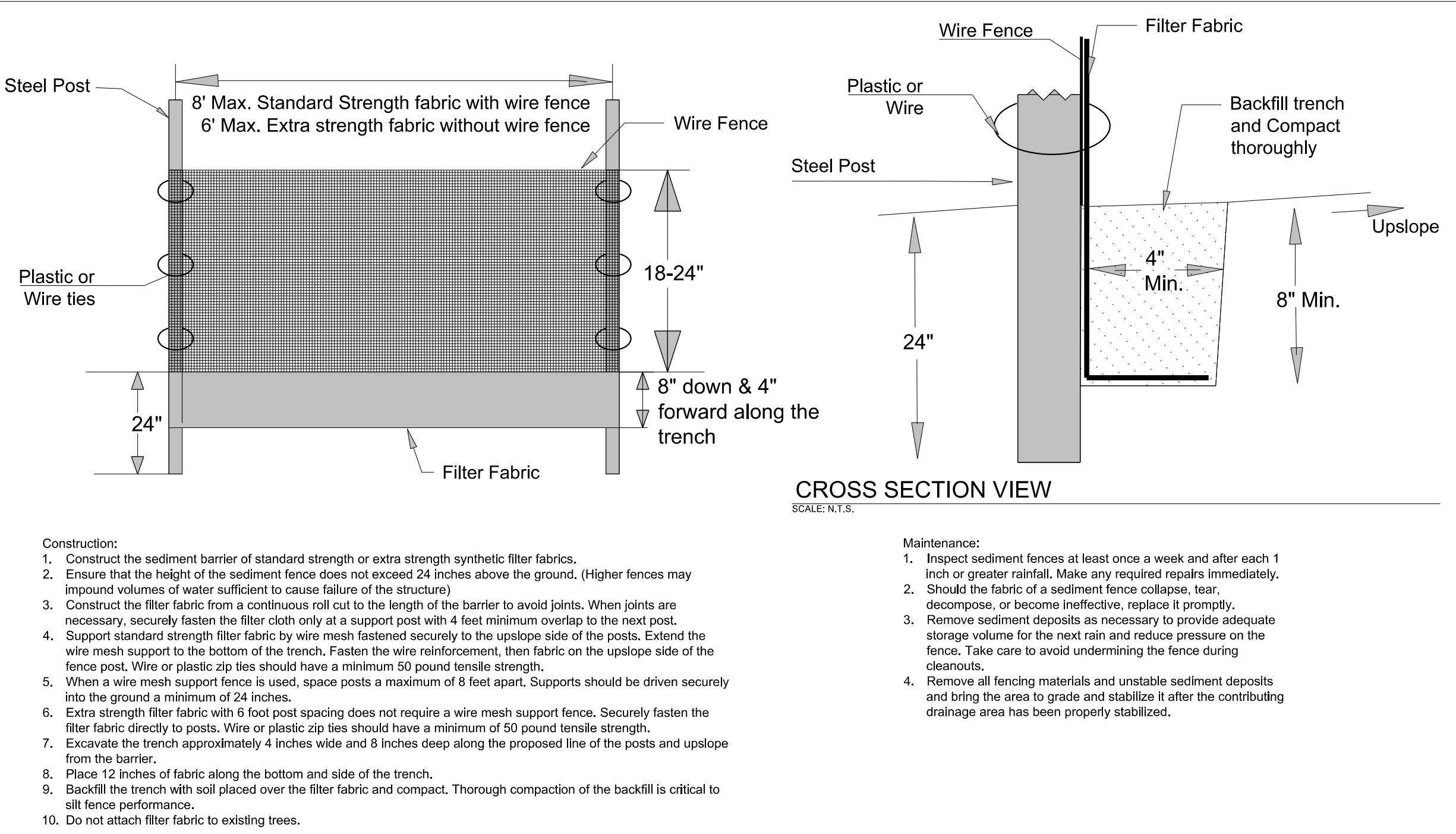
Temporary Silt Fence Material Property Requirements					
	Test Material	Units	Supported ¹ Silt Fence	Un-Supported ¹ Silt Fence	Type of Value
Grab Strength	ASTM D 4632	N (lbs)			
Machine Direction			400	550	MARV
			(90)	(90)	
X-Machine Direction			400	450	MARV
			(90)	(90)	
Permittivity ²	ASTM D 4491	sec-1	0.05	0.05	MARV
Apparent Opening Size ²	ASTM D 4751	mm	0.60	0.60	Max. ARV ³
		(US Sieve #)	(30)	(30)	
Ultraviolet Stability	ASTM D 4355	% Retained Strength	70% after 500h of exposure	70% after 500h of exposure	Typical
¹ Silt Fence support shall consist of 14 gage steel wire with a mesh spacing of 150 mm (6 inches), or prefabricated poylmer mesh of equivalent strength. ² These default values are based on empirical evidence with a variety of sediment. For environmentally sensitive areas, a review of previous experience and/or site or regionally specific geotextile tests in accordance with Test Method D 5141 should be performed by the agency to confirm suitability of these requirements. ³ As measured in accordance with Test Method D 4632.					

The Slicing Method



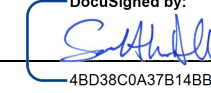
Vibratory plow is not acceptable because of horizontal compaction

Figure 6.62b Schematics for using the slicing method to install a sediment fence. Adapted from *Silt Fence that Works*



DETAIL - SILT FENCE
SCALE: N.T.S.

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By:  Date: 12/15/2025
48D38CDA37B146B1

Town Engineer

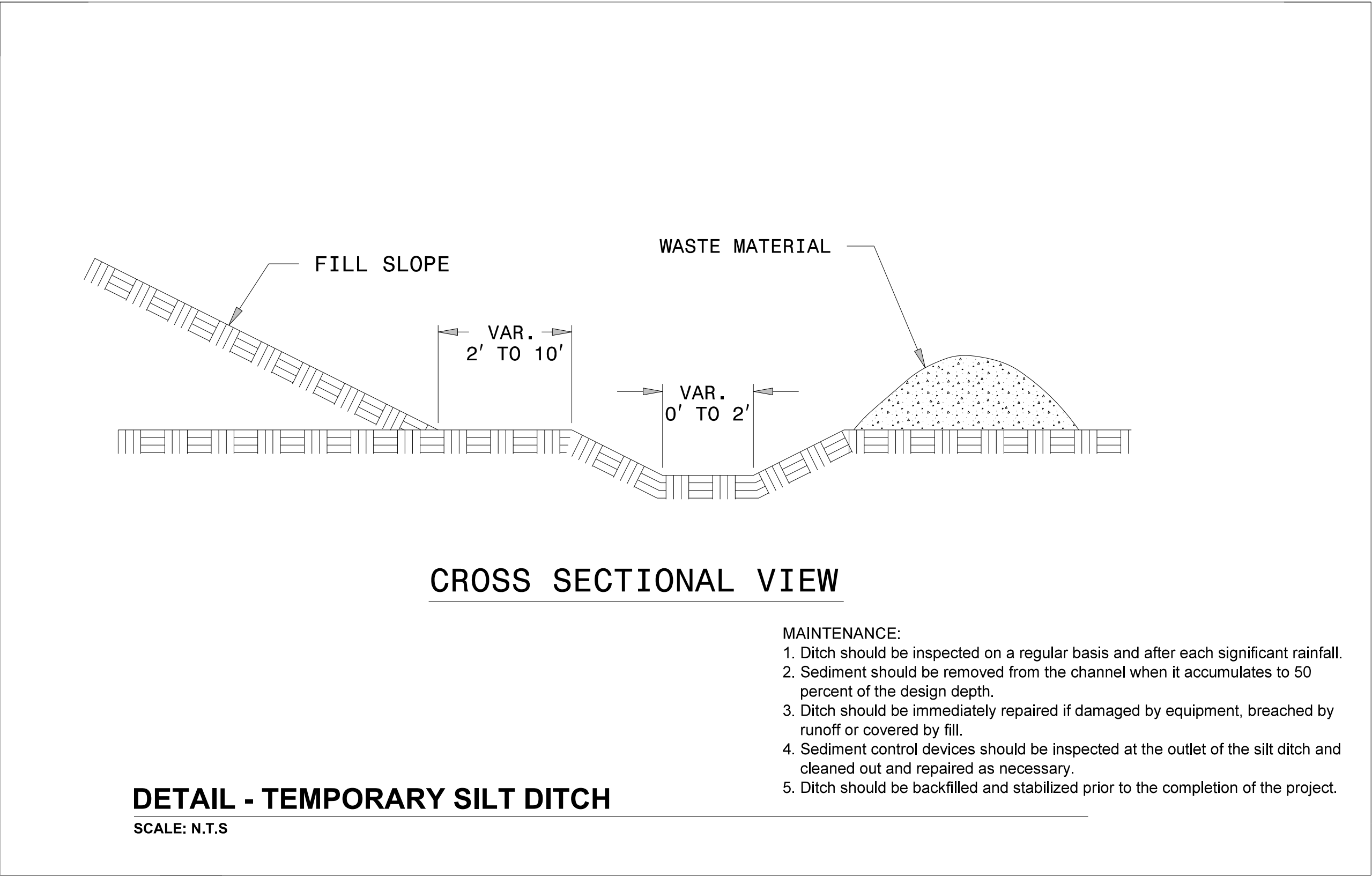
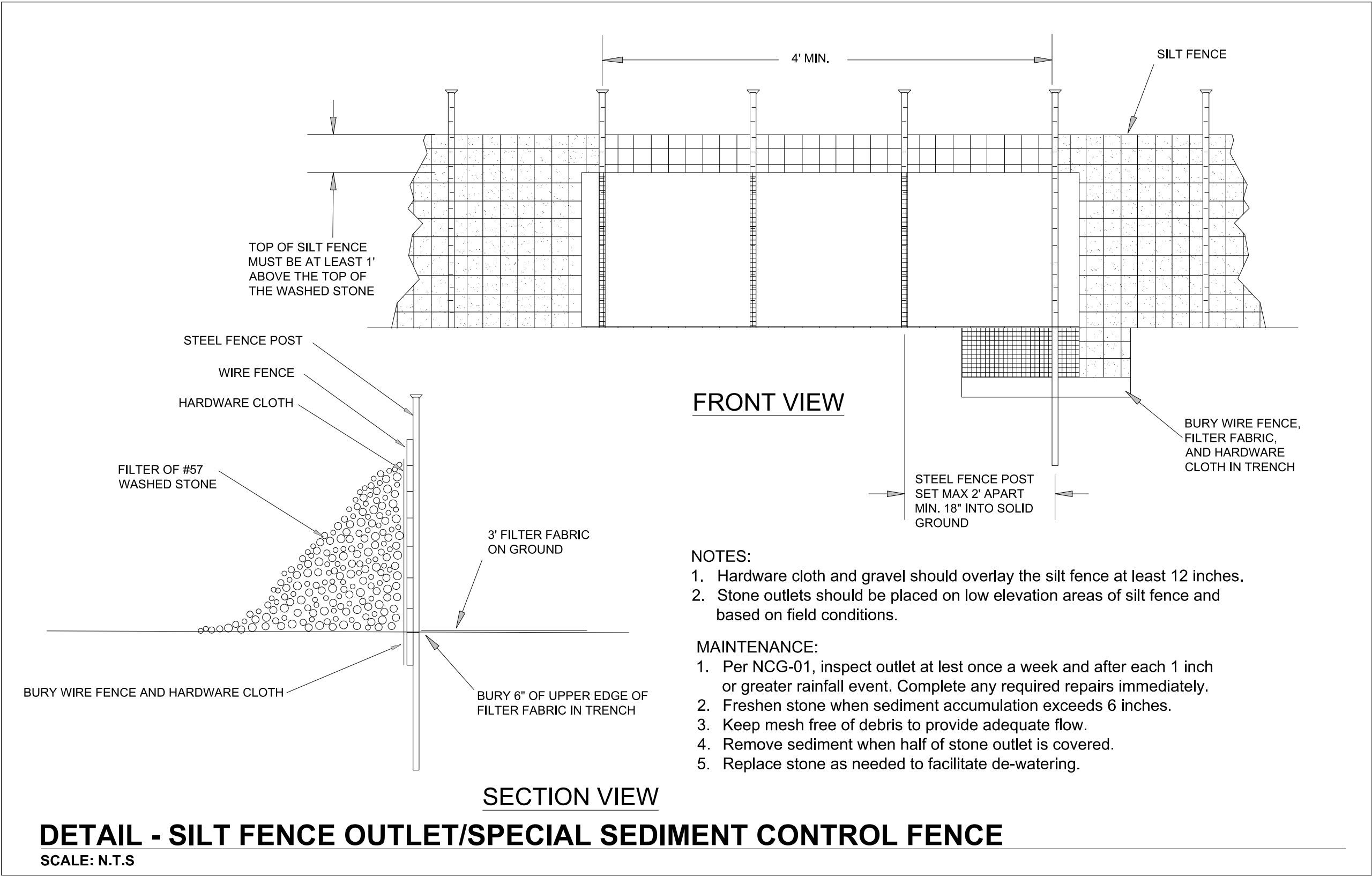
These plans are approved by the Town of Knightdale and serve as construction plans for this project.

Signed by:  Date: 12/15/2025
By:  Date: 12/15/2025
BC13033C50C4472
Land Use Administrator

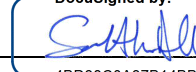
EROSION CONTROL SHEET EC-03B

PROJECT REFERENCE NO.	SHEET NO.
TC002-BL	EC-03B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	Signature of Joshua Dalton Professional Engineer No. 26971 JOSHUA G. DALTON 3/28/2025

DOCUMENT NOT CONSIDERED FINAL
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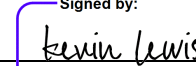


Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By:  Date: 12/15/2025

Town Engineer

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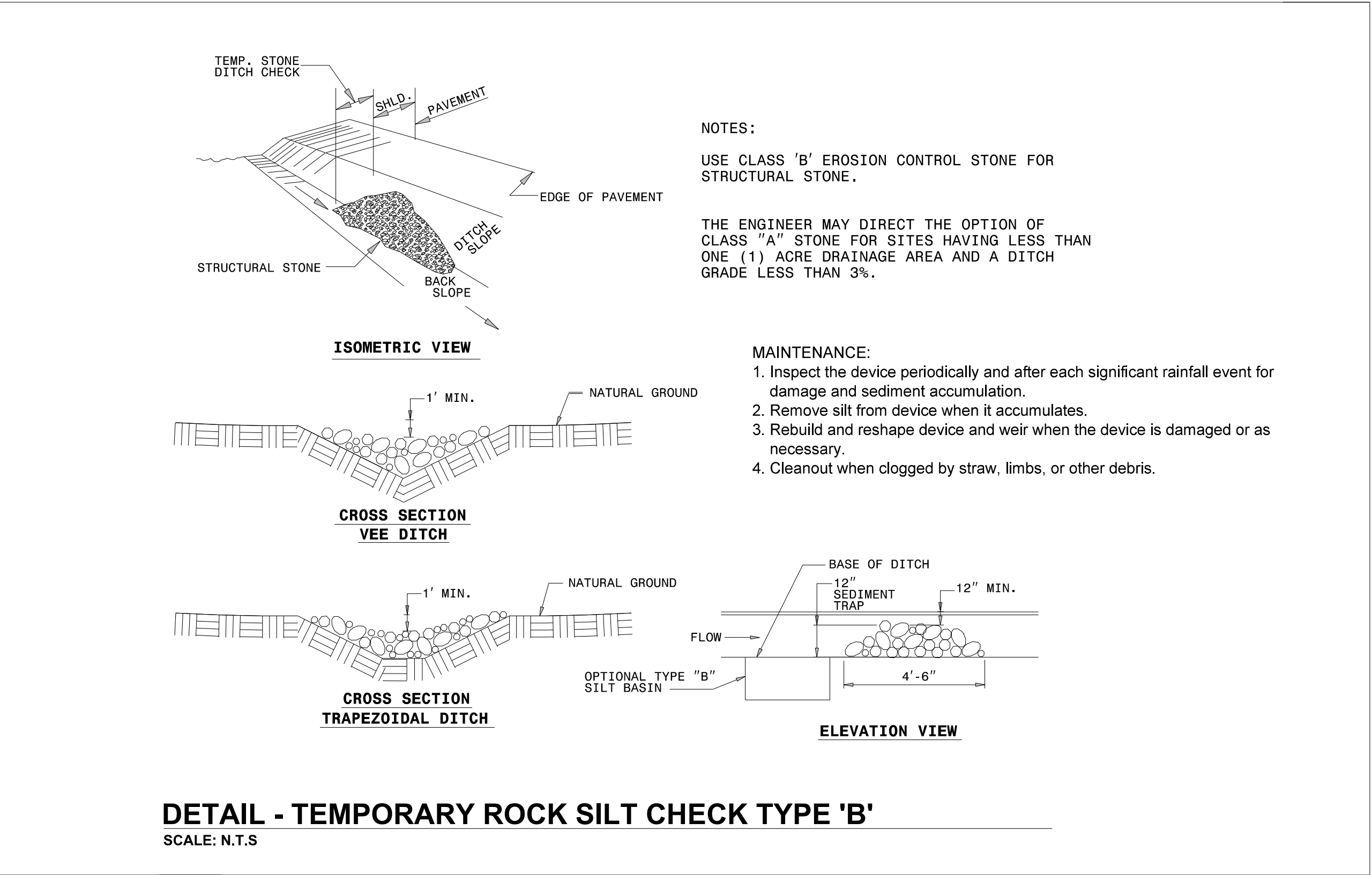
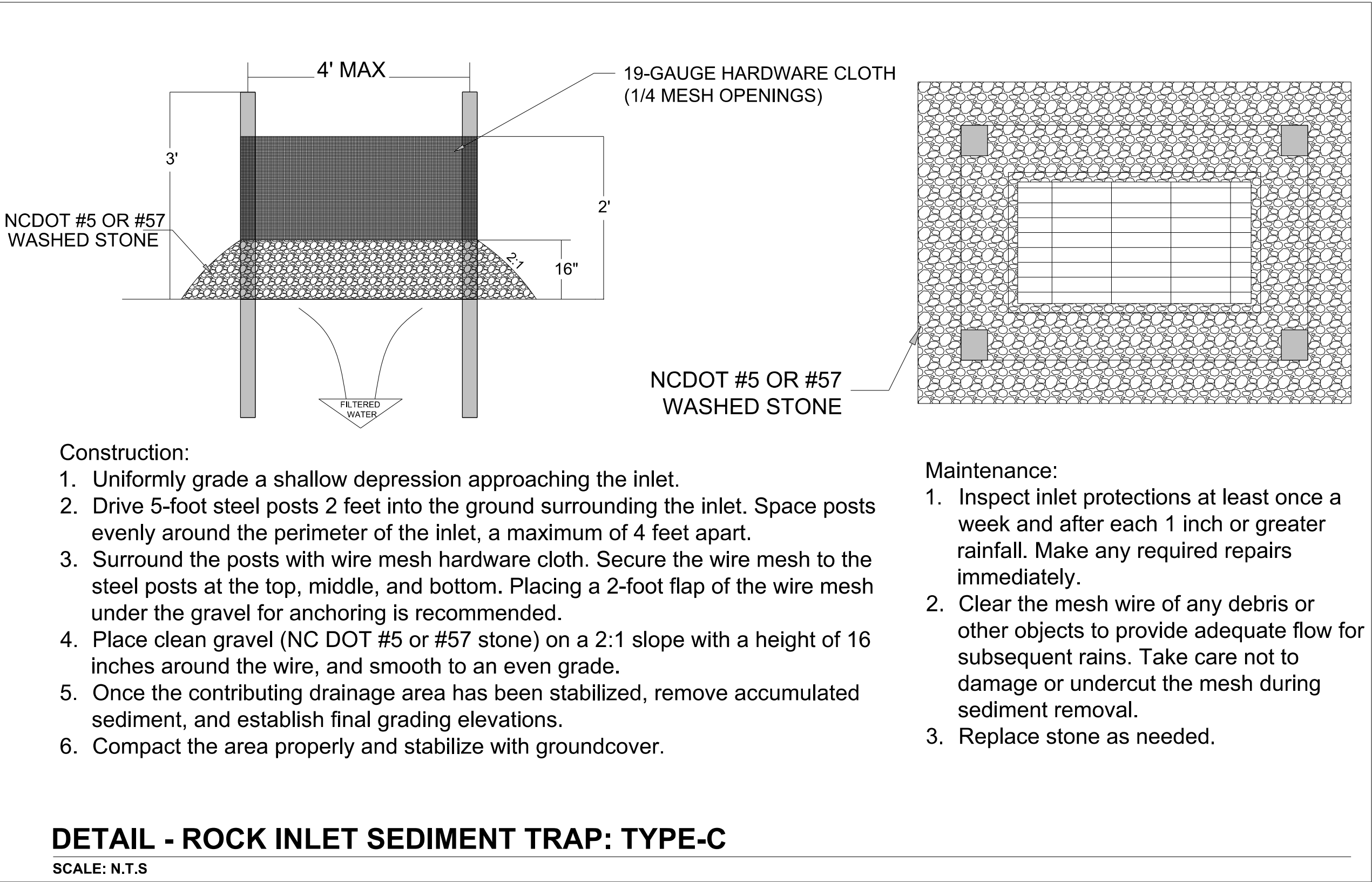
By:  Date: 12/15/2025

Land Use Administrator

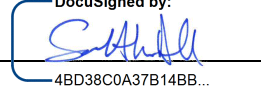
EROSION CONTROL SHEET EC-03C

PROJECT REFERENCE NO.	SHEET NO.
TC002-BL	EC-03C
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	 Joshua Dalton Professional Seal 26971 ENGINEER JOSHUA G. DALTON 3/28/2025

DOCUMENT NOT CONSIDERED FINAL
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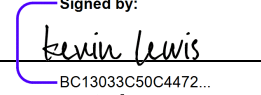


Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

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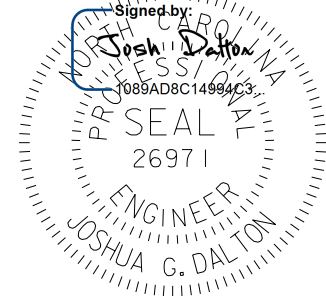
Town Engineer

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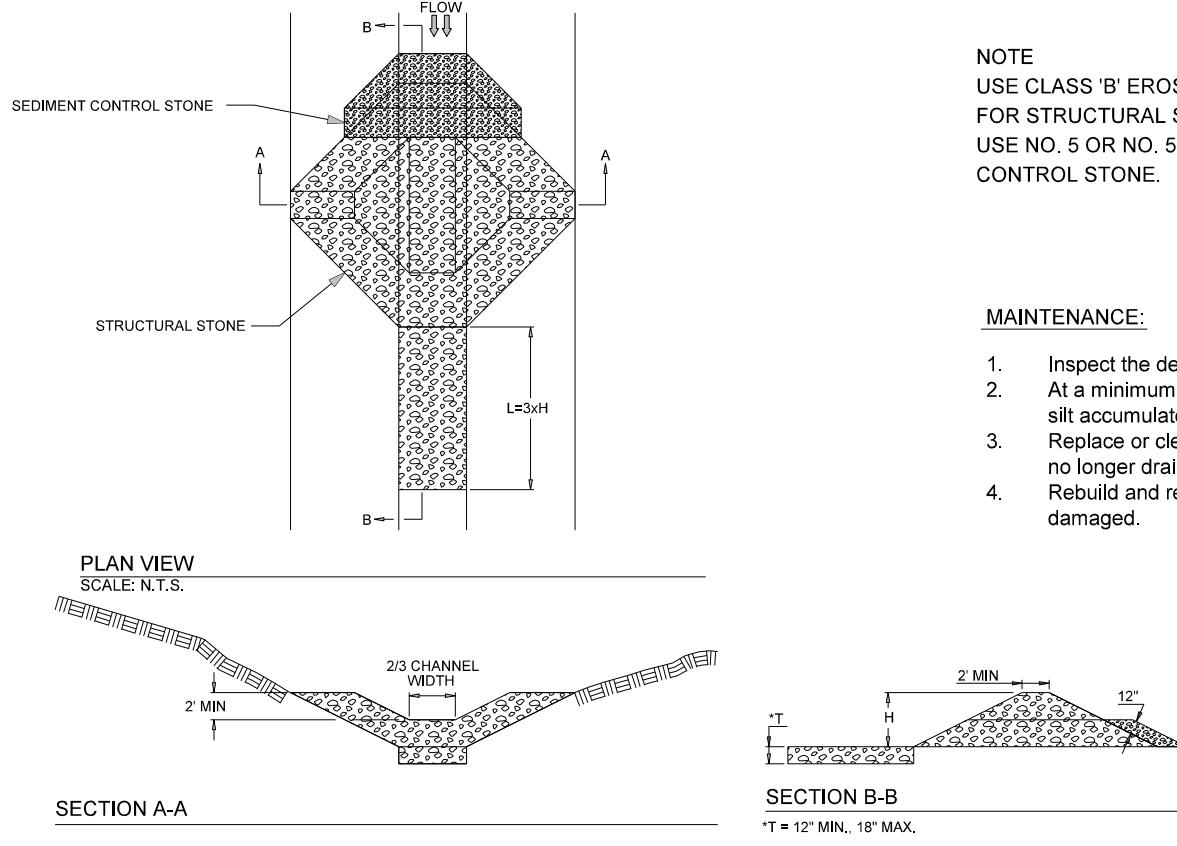
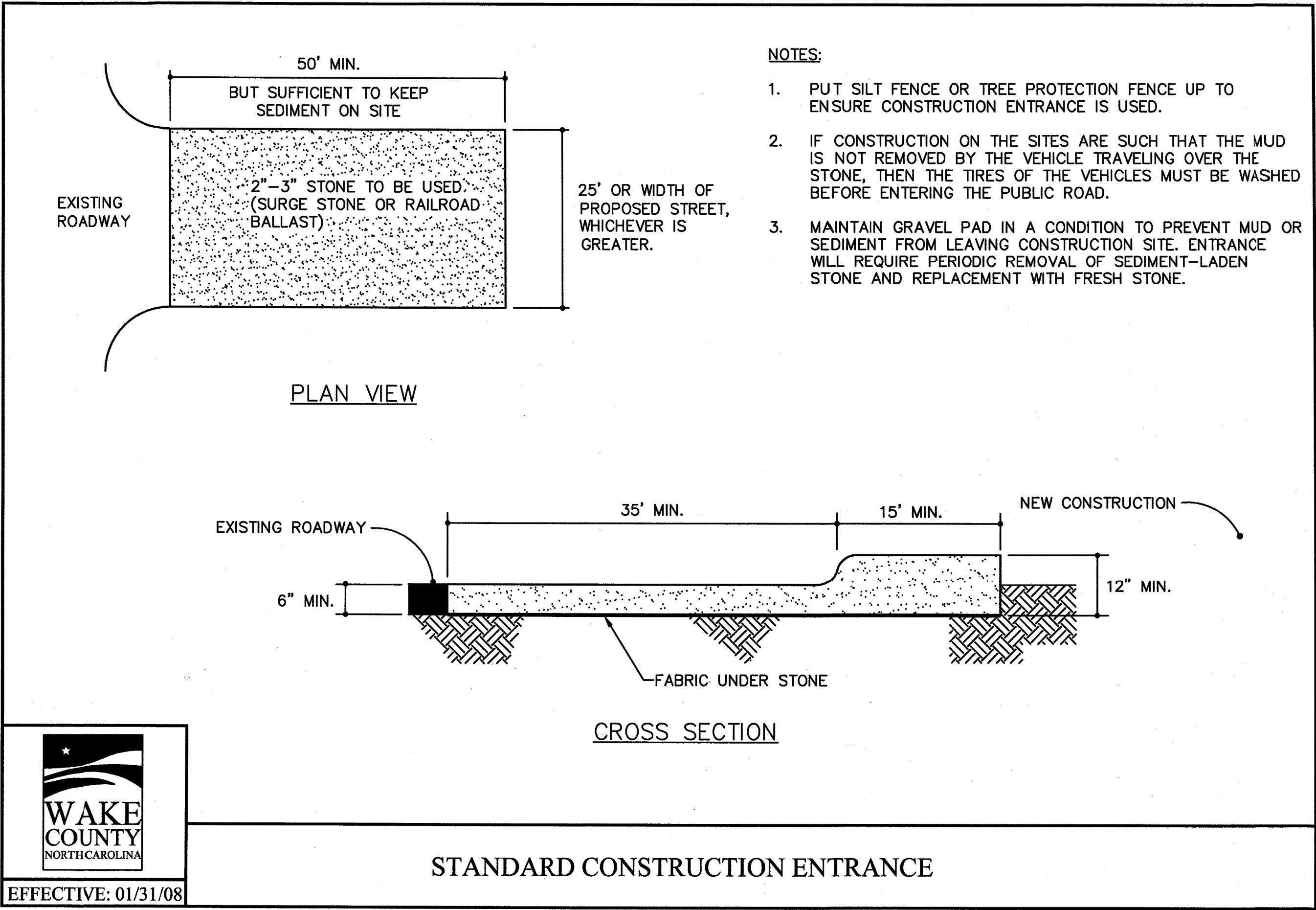
By:  Date: 12/15/2025

Land Use Administrator

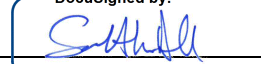
EROSION CONTROL SHEET EC-03D

PROJECT REFERENCE NO.	SHEET NO.
TC002-BL	EC-03D
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
	3/28/2025

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

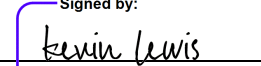


Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By:  Date: 12/15/2025

Town Engineer

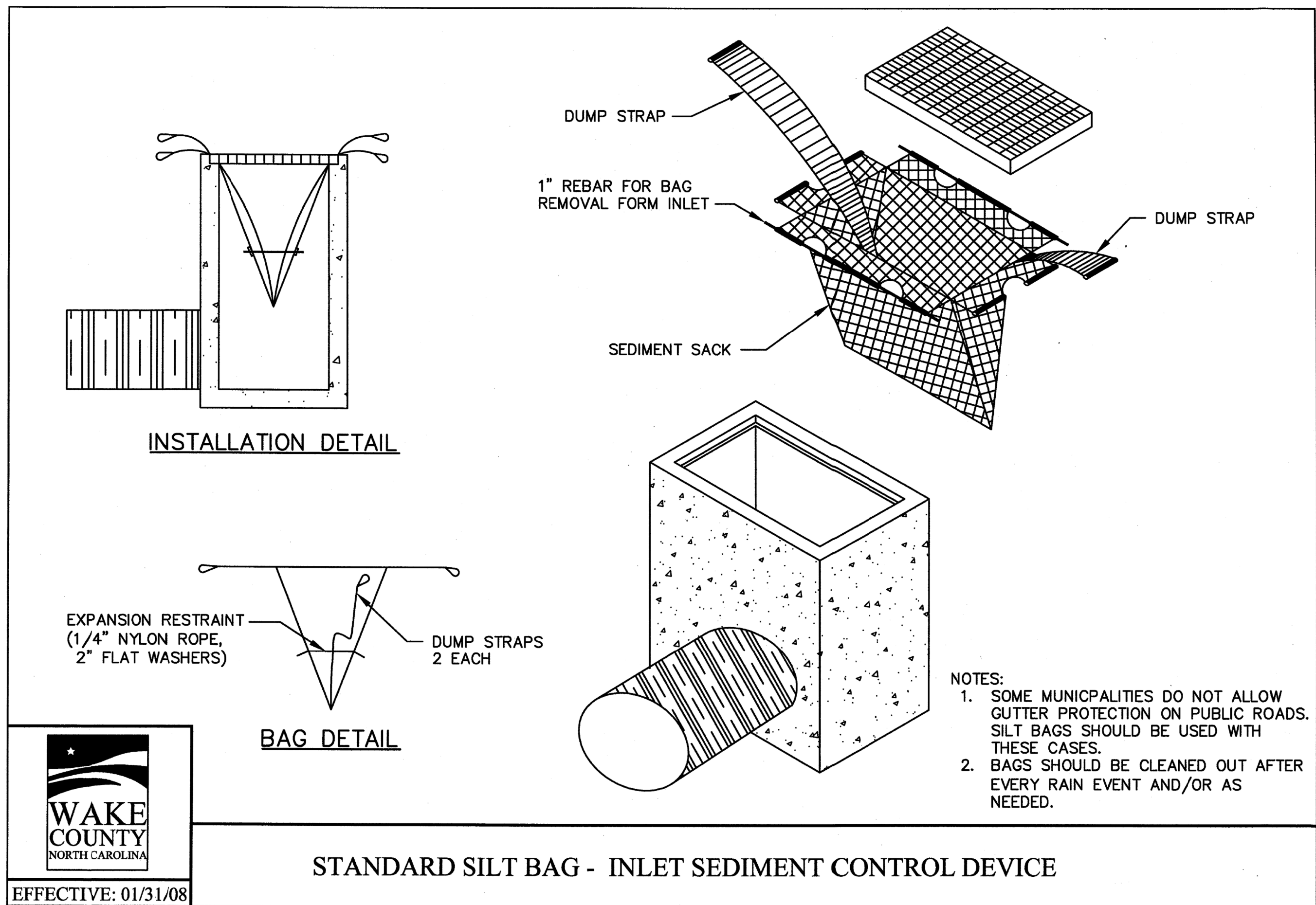
These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By:  Date: 12/15/2025

Land Use Administrator

PROJECT REFERENCE NO.	SHEET NO.
TC002-BL	EC-03E
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	Seal of the State of California Professional Engineer No. 26971 Mechanical Engineering JOSHUA G. DALTON
	3/28/2025

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



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By:  Date: 12/15/2025

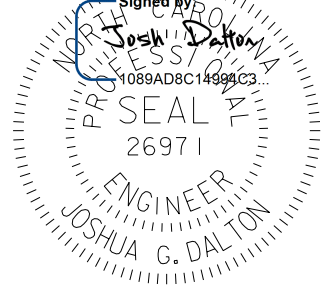
Town Engineer

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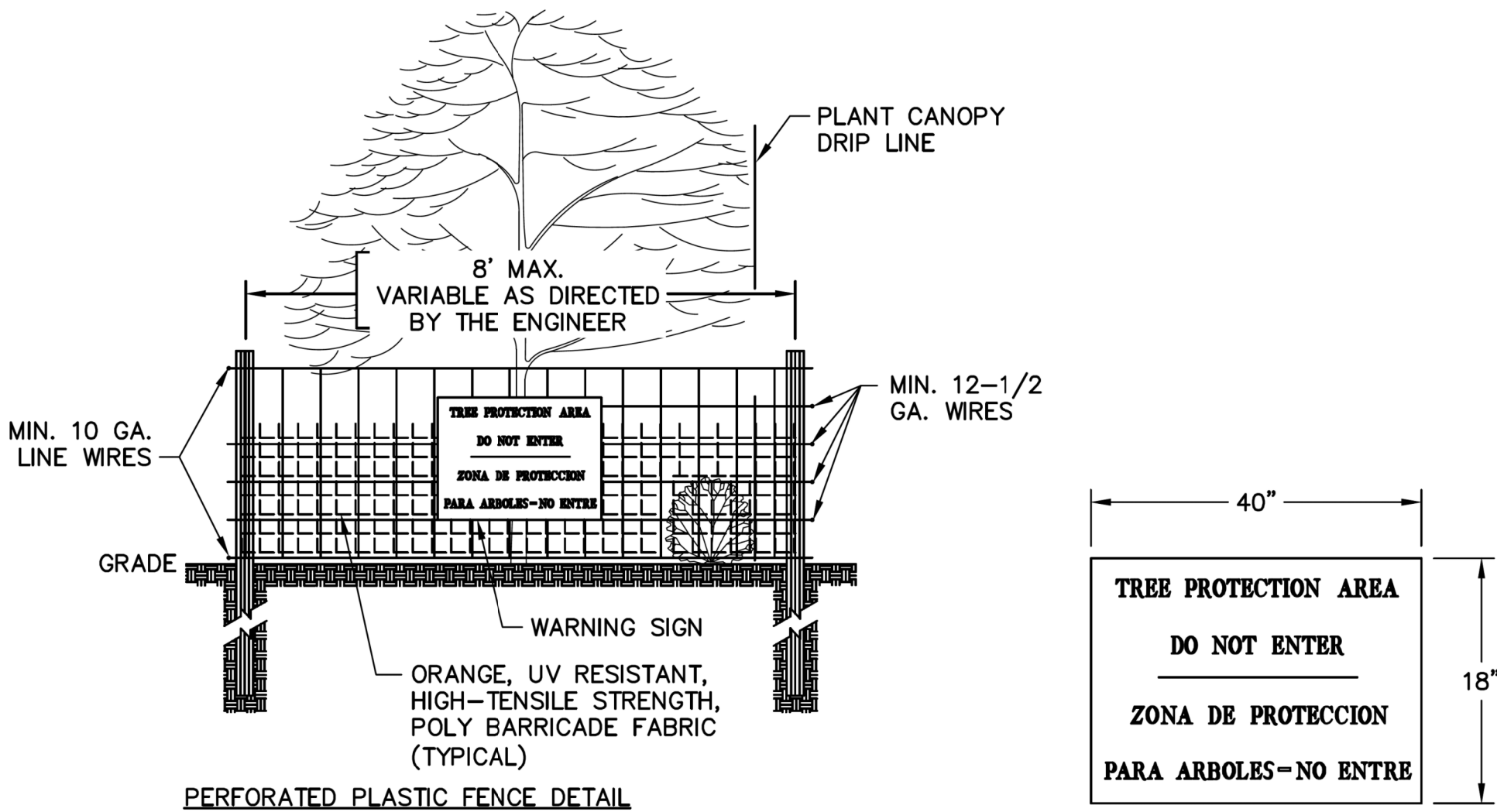
Signed by: _____
By: Kevin Lewis Date: 12/15/2025

Land Use Administrator

EROSION CONTROL SHEET EC-03F

PROJECT REFERENCE NO.	SHEET NO.
TC002-BL	EC-03F
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
	3/28/2025

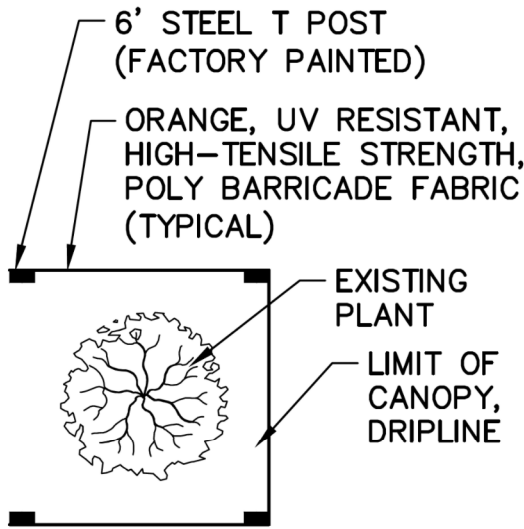
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



NOTES:

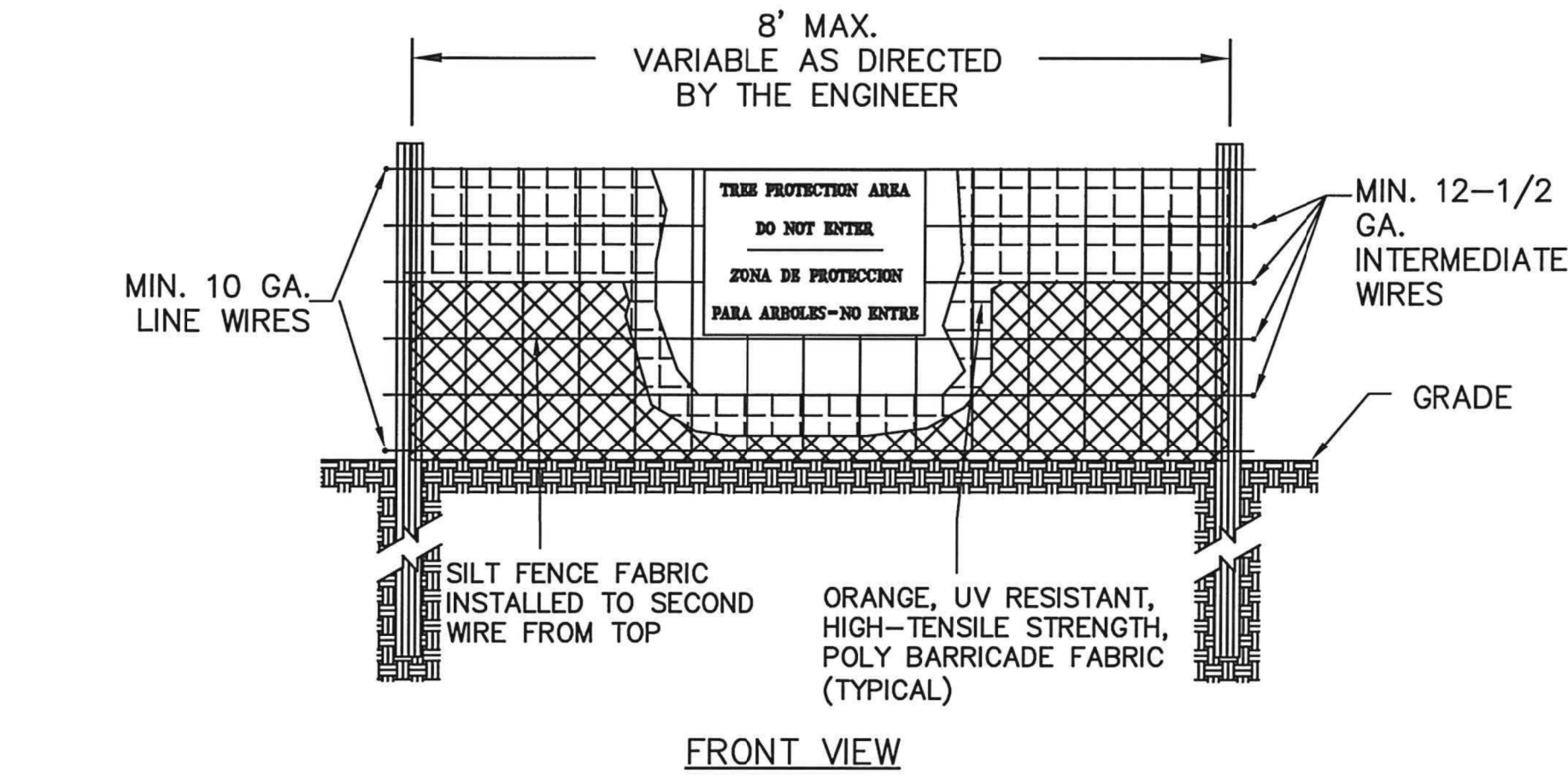
1. REMOVE ALL BARRIERS UPON COMPLETION OF PROJECT.
2. LANDSCAPING PLANS SHALL SHOW LOCATIONS OF ALL TREE PROTECTION FENCES.
3. ALL PLANTS TO BE SAVED SHALL BE PROTECTED BY FENCING AS SHOWN IN THIS DETAIL.
4. CONTRACTOR SHALL INSTALL FENCING PRIOR TO BEGINNING ANY CONSTRUCTION OR GRADING ACTIVITY.
5. CONTRACTOR SHALL CALL FOR INSPECTION AND APPROVAL OF PROTECTIVE FENCING PRIOR TO BEGINNING ANY CONSTRUCTION OR GRADING.
6. PROTECTIVE FENCING SHALL BE LOCATED 5' OUTSIDE DRIPLINE OF TREES AND 1' MINIMUM OUTSIDE SHRUBS OR OTHER PLANTS.

WARNING SIGN DETAIL



PLAN VIEW OF PROTECTIVE FENCING
AROUND SINGLE TREE- EXPAND AS NECESSARY

REVISIONS		STD. NO.
DATE	DESCRIPTION	
TOWN OF KNIGHTDALE STANDARD DETAILS		PLANT PROTECTIVE FENCING 2.10-1



WARNING SIGN DETAIL

NOTES:

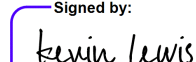
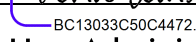
1. ORANGE SILT FENCE REQUIRED.
2. USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.
3. ORANGE, UV RESISTANT, HIGH-TENSIL STRENGTH, POLY BARRICADE FABRIC MUST BE USED.
4. END OF SILT FENCE MUST BE TURNED UPHILL.
5. WARNING SIGNS ARE TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL.
6. LETTERS TO BE 3" HIGH MINIMUM, CLEARLY LEGIBLE AND SPACED AS DETAILED IN "WARNING SIGN DETAIL" (THIS SHEET).
7. SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS.
8. SIGNS SHALL BE PLACED AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER.
9. FOR TREE PROTECTION WITH AREAS LESS THAN A 200' PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTION AREA.
10. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC.
11. MAINTAIN TREE PROTECTION FENCE THROUGHOUT DURATION OF PROJECT.
12. ADDITIONAL SIGNS MAY BE REQUIRED BY TOWN OF KNIGHTDALE ENGINEERING DEPARTMENT BASED ON ACTUAL FIELD CONDITIONS.

REVISIONS		STD. NO.
DATE	DESCRIPTION	
TOWN OF KNIGHTDALE STANDARD DETAILS		STANDARD TEMPORARY SILT/TREE PROTECTION FENCE 2.10-2

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By:  Date: 12/15/2025
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

Signed by: 
By:  Date: 12/15/2025
Land Use Administrator

— LOD —	LIMITS OF DISTURBANCE		SILT CHECK - TYPE 'A'
	TEMPORARY SILT FENCE	— TPF —	TREE PROTECTION FENCE
	ROCK INLET SEDIMENT TRAP - TYPE 'C'		
	SPECIAL SEDIMENT CONTROL FENCE BREAK		

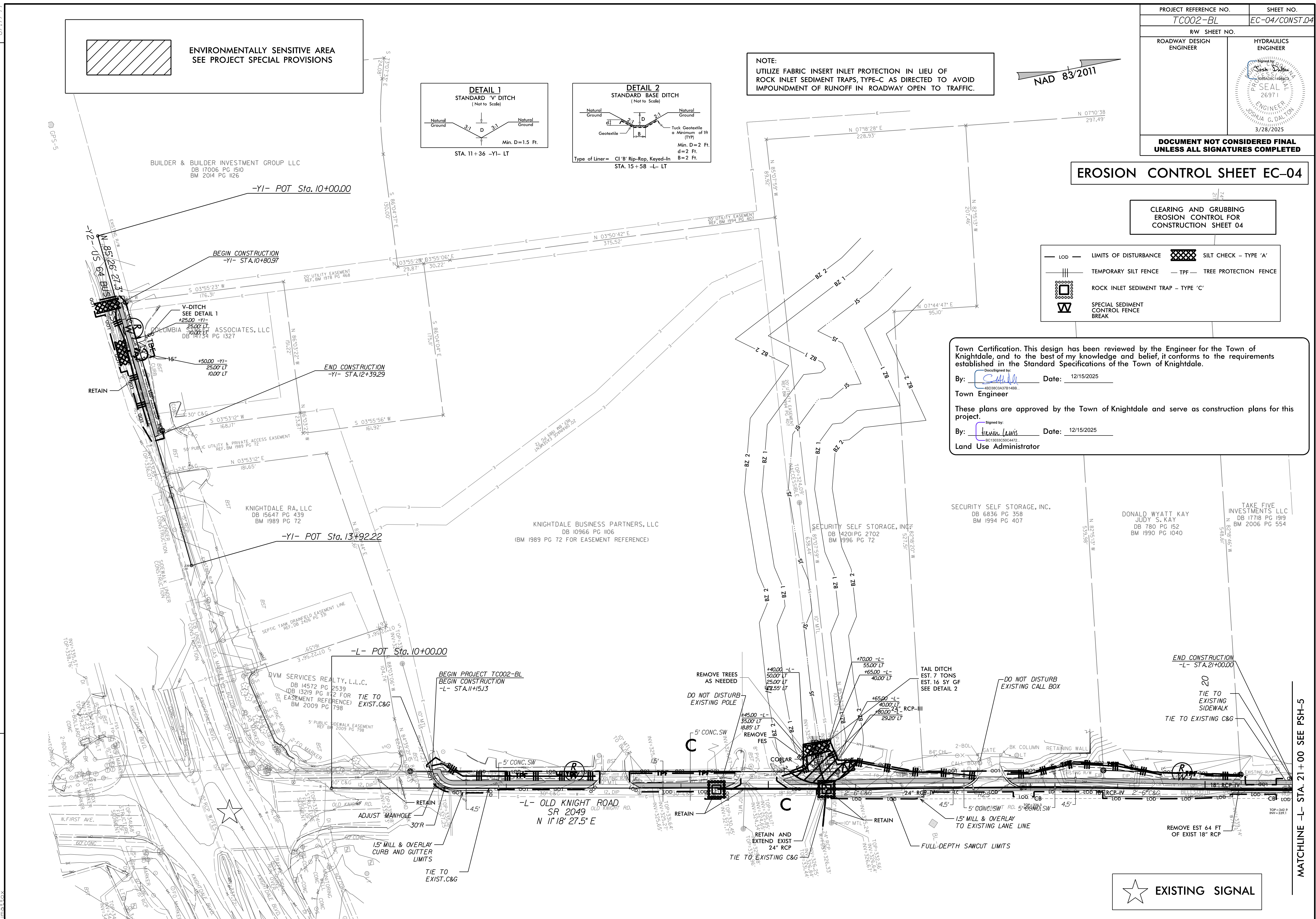
Signed by: _____
By: Kevin Lewis Date: 12/15/2025
BC13033C50C4472...
Land Use Administrator

TAKE FIVE
INVESTMENTS LLC
DB 17718 PG 1919
BM 2006 PG 554

OF EXIST 18 RCP

★ EXISTING SIGNAL

MATCHLINE -L- STA. 21+00 SEE PSH-5



EROSION CONTROL SHEET EC-05

NAD 83/2011

— LOD —	LIMITS OF DISTURBANCE		SPECIAL SEDIMENT CONTROL FENCE BREAK
	TEMPORARY SILT FENCE		
	ROCK INLET SEDIMENT TRAP – TYPE 'C'		
— TPF —	TREE PROTECTION FENCE		

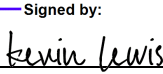
TOWN OF KNIGHTDALE
DB 18857 PG 687
BM 2021PG 2328

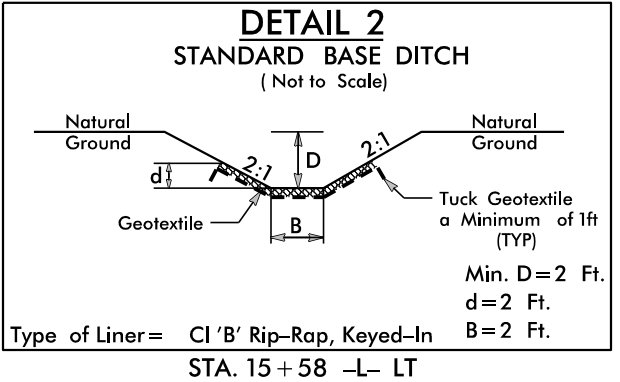
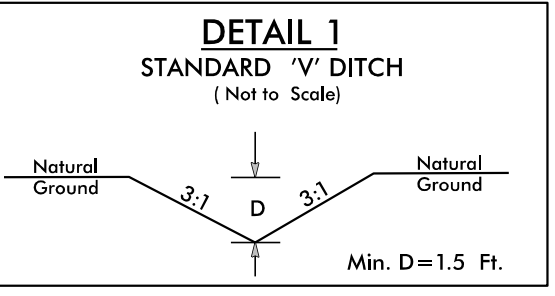
Land Use Administrator

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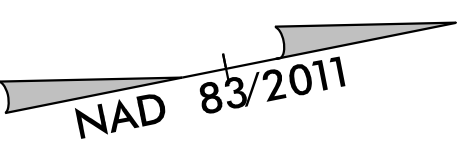
By:  Date: 12/15/2025
Town Engineer

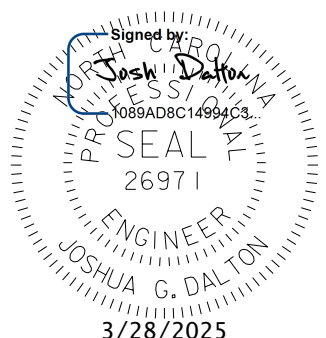
These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By:  Date: 12/15/2025
Land Use Administrator



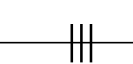
NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF
ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID
IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.



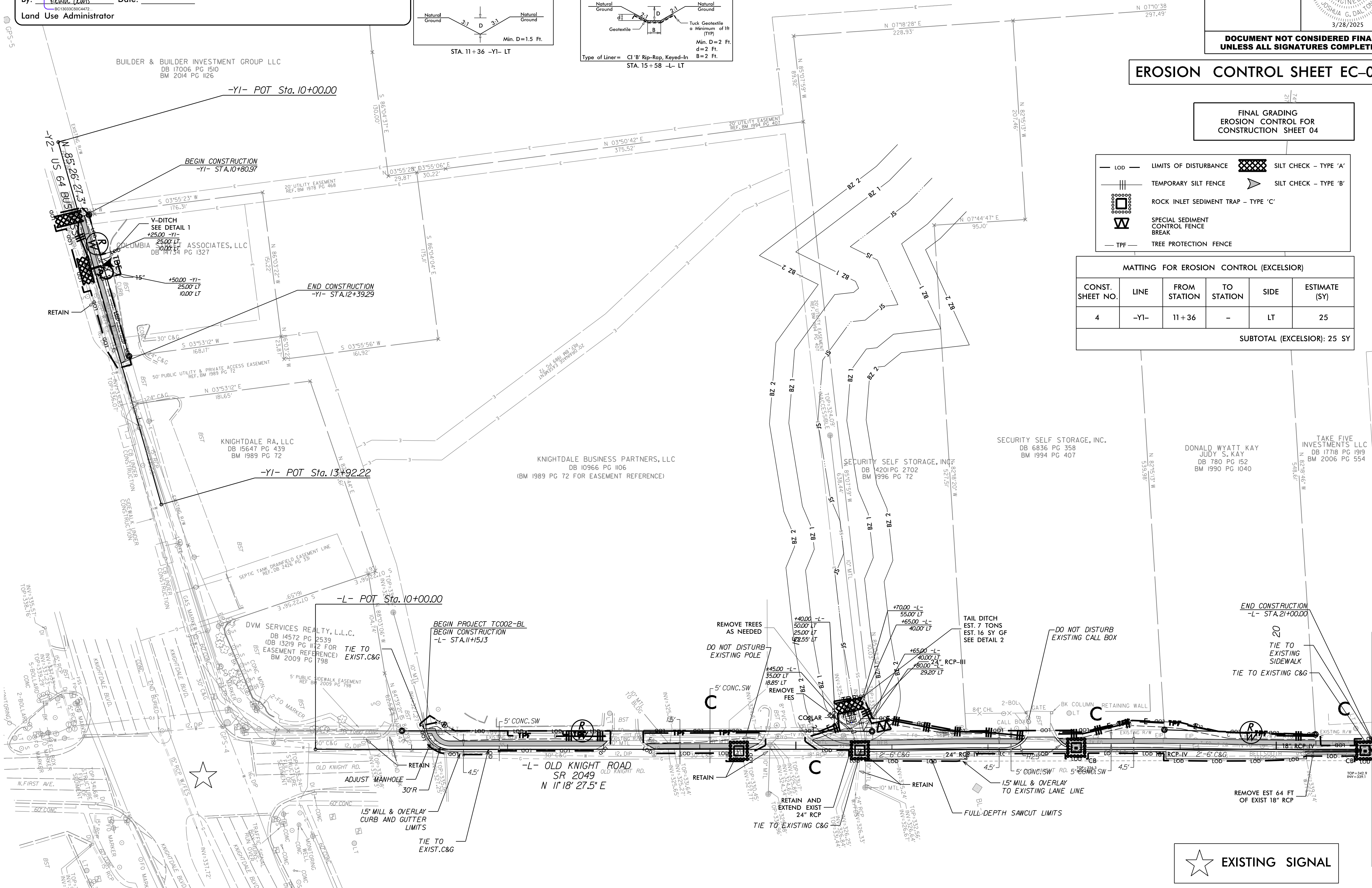
PROJECT REFERENCE NO.		SHEET NO.	
TC002-BL		EC-06/CONST.04	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		ENGINEER	
			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

EROSION CONTROL SHEET EC-06

FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

LOD	LIMITS OF DISTURBANCE		SILT CHECK - TYPE 'A'
	TEMPORARY SILT FENCE		SILT CHECK - TYPE 'B'
	ROCK INLET SEDIMENT TRAP - TYPE 'C'		
	SPECIAL SEDIMENT CONTROL FENCE BREAK		
TPF	TREE PROTECTION FENCE		

MATTING FOR EROSION CONTROL (EXCELSIOR)					
CONST. SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-YI-	11+36	-	LT	25
SUBTOTAL (EXCELSIOR): 25 SY					



★ EXISTING SIGNAL

MATCHLINE -L- STA. 21+00 SEE PSH-5

REVISIONS

8/17/99

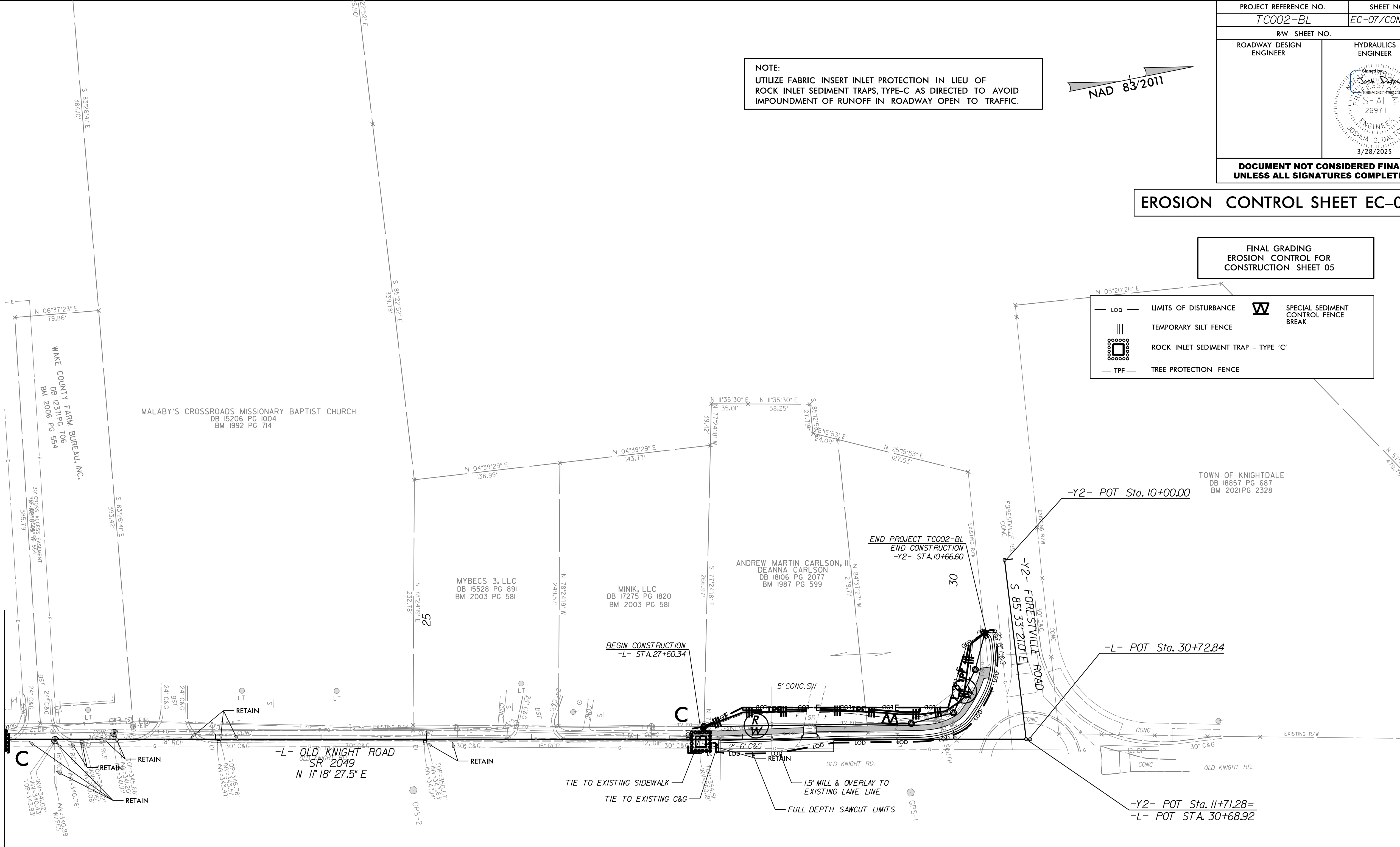
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8/17/99

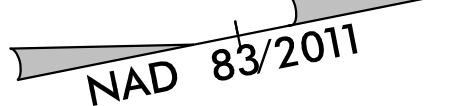
REVISIONS

3/28/2025
EC-SH_07.dgn
matt

MATCHLINE -L- STA. 21+00 SEE PSH-4



NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF
ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID
IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.



PROJECT REFERENCE NO.		SHEET NO.
TC002-BL		EC-07/CONST.05
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

EROSION CONTROL SHEET EC-07

FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 05

— LOD —	LIMITS OF DISTURBANCE		SPECIAL SEDIMENT CONTROL FENCE BREAK
	TEMPORARY SILT FENCE		
	ROCK INLET SEDIMENT TRAP - TYPE 'C'		
— TPF —	TREE PROTECTION FENCE		

TOWN OF KNIGHTDALE
DB 18857 PG 687
BM 2021 PG 2328

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By: Date: 12/15/2025

Town Engineer

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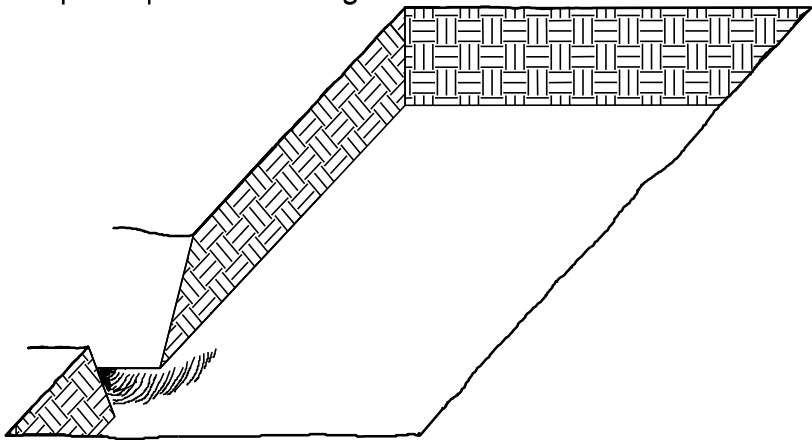
Signed by: Date: 12/15/2025

Land Use Administrator

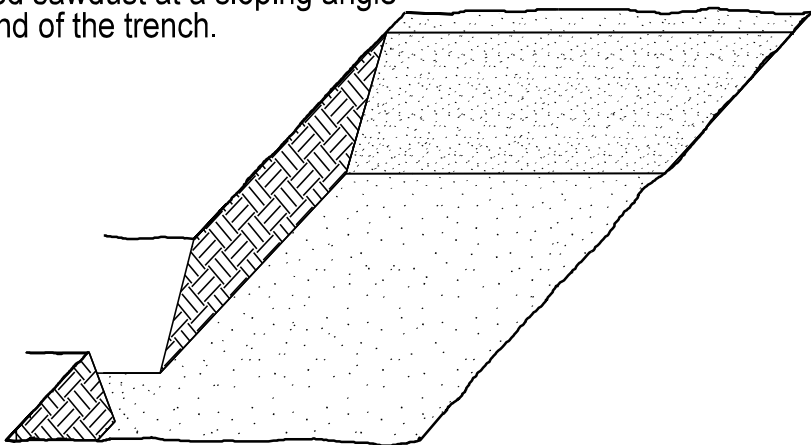
PLANTING DETAILS
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

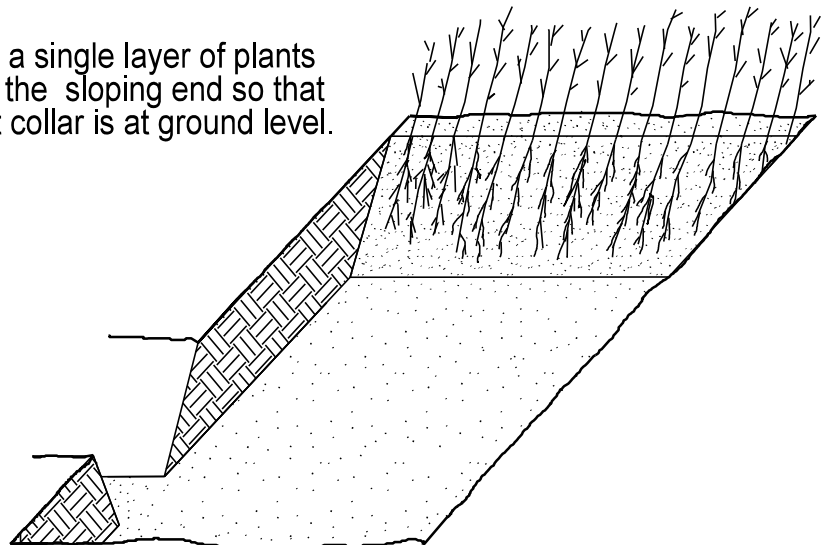
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



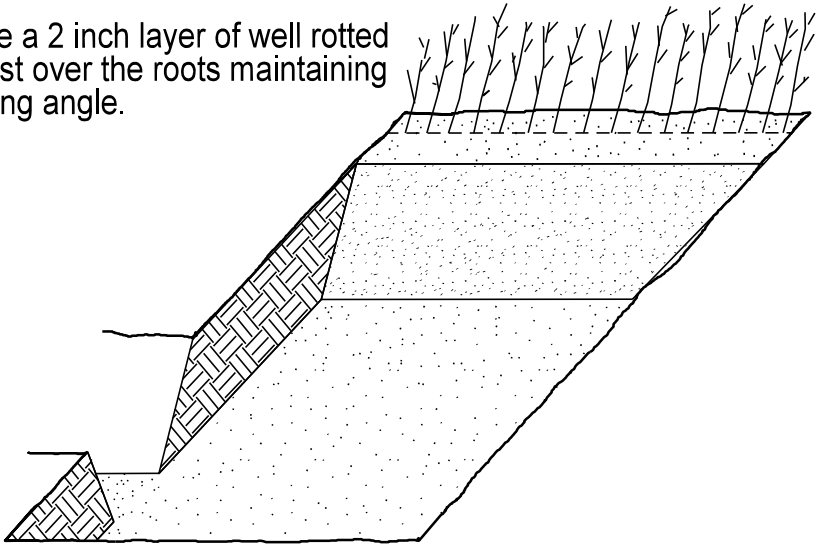
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

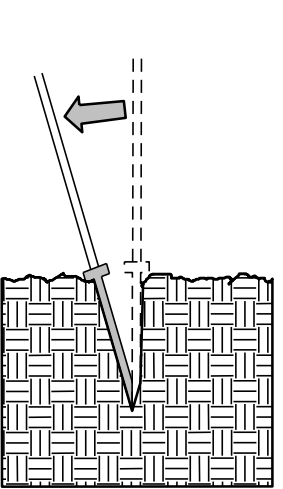


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

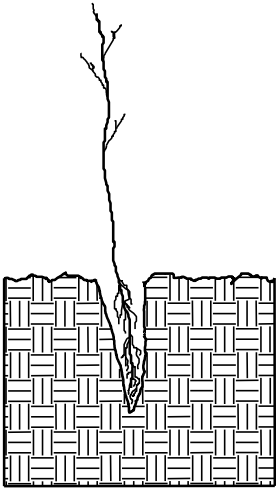


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

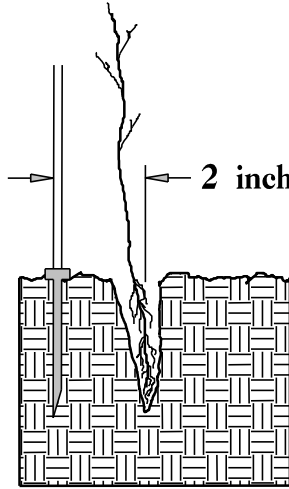
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



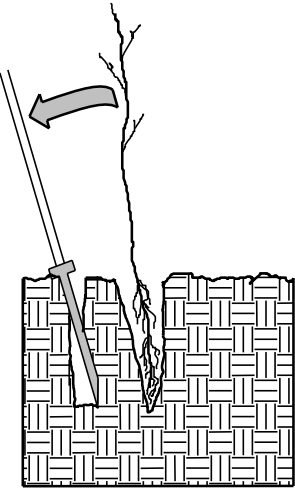
1. Insert planting bar as shown and pull handle toward planter.



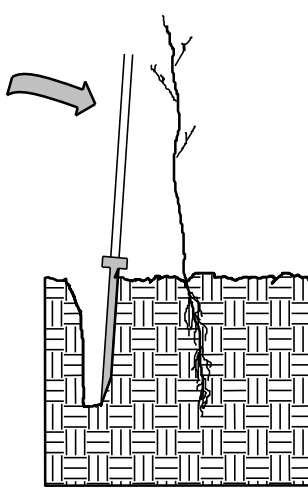
2. Remove planting bar and place seedling at correct depth.



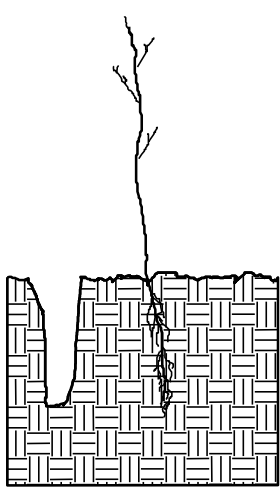
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



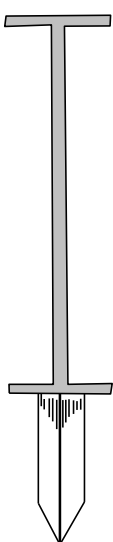
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.



KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

EROSION CONTROL SHEET RF-1

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	TC002-BL	RF-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

REFORESTATION

- ☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
25% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
25% NYSSA SYLVATICA	BLACK GUM	12 in - 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

Town Certification: This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By: [Signature] Date: 12/15/2025

Town Engineer

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By: [Signature] Date: 12/15/2025

Land Use Administrator

REFORESTATION DETAIL SHEET