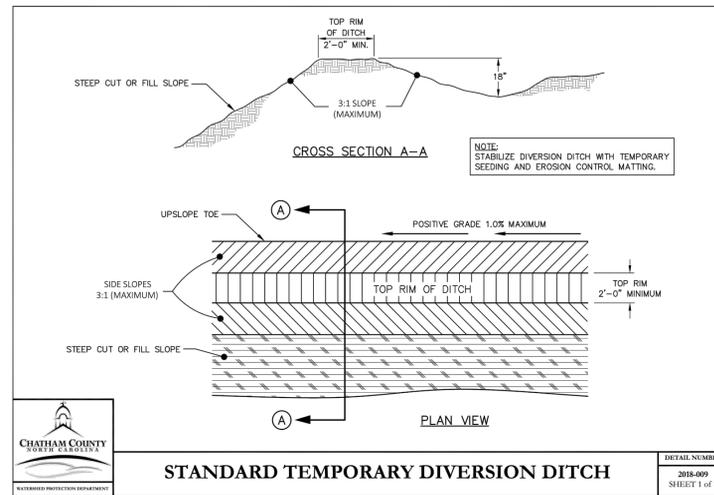


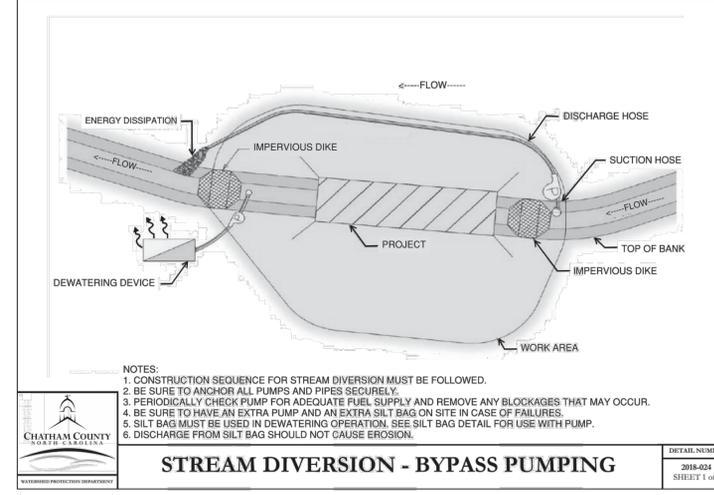
STANDARD ROCK CHECK DAM

2018-002
SHEET 1 of 1



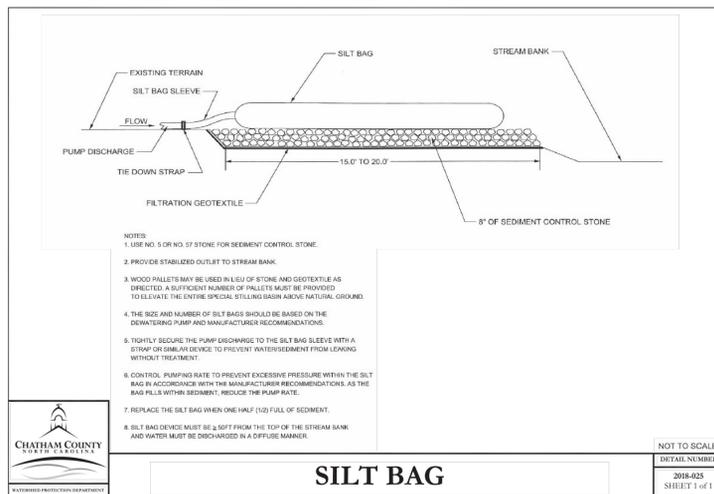
STANDARD TEMPORARY DIVERSION DITCH

2018-009
SHEET 1 of 1



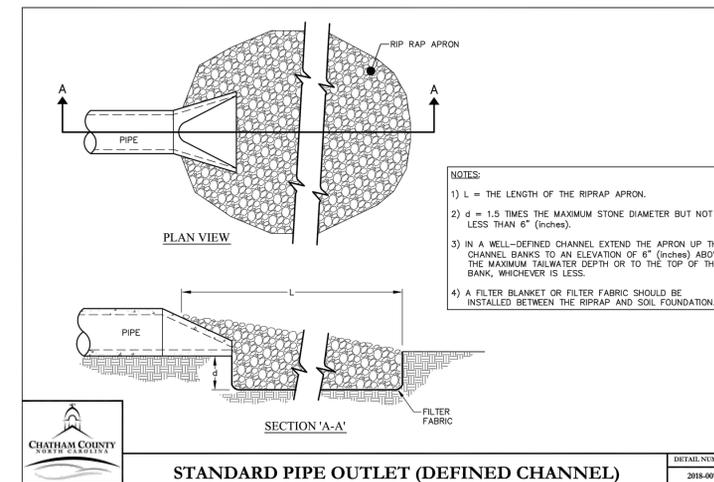
STREAM DIVERSION - BYPASS PUMPING

2018-004
SHEET 1 of 1



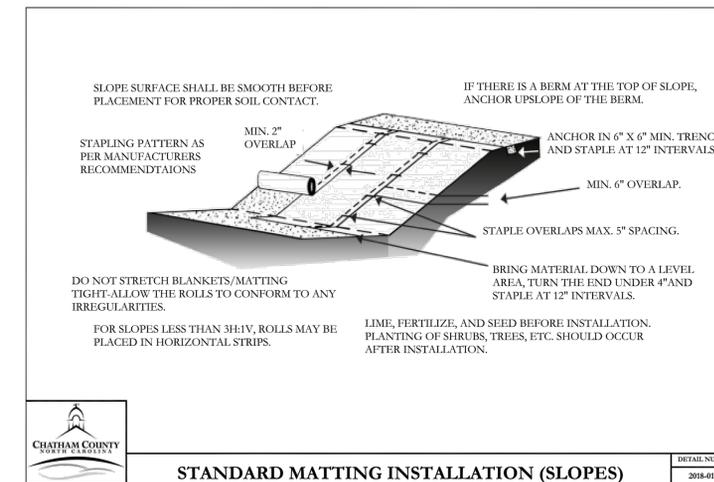
SILT BAG

NOT TO SCALE
2018-025
SHEET 1 of 1



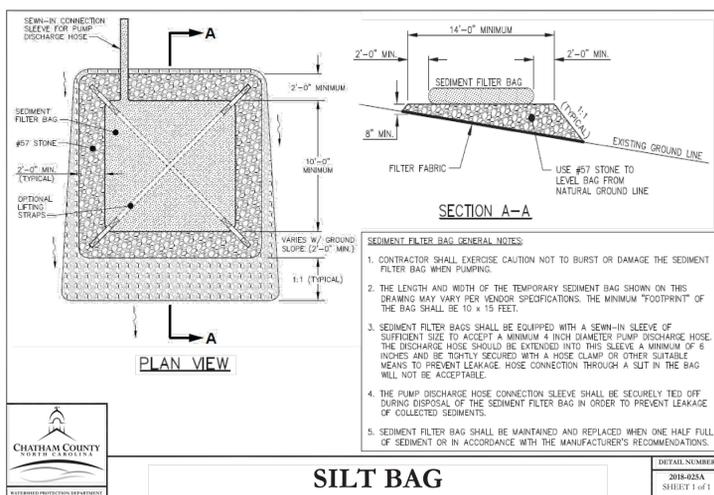
STANDARD PIPE OUTLET (DEFINED CHANNEL)

2018-007
SHEET 1 of 1



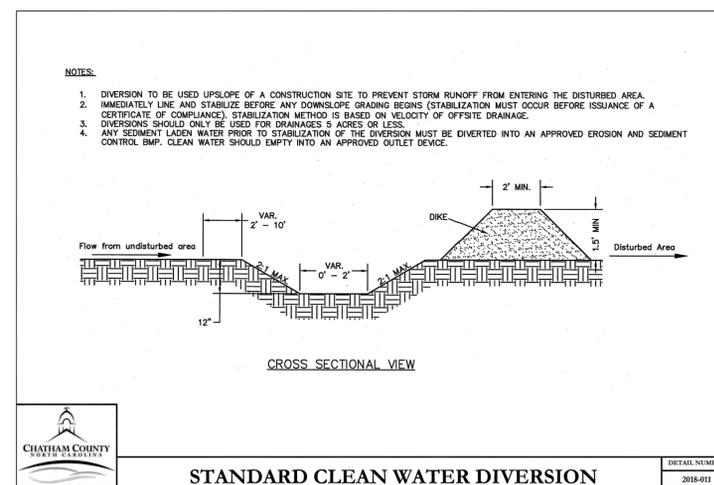
STANDARD MATTING INSTALLATION (SLOPES)

2018-008
SHEET 1 of 1



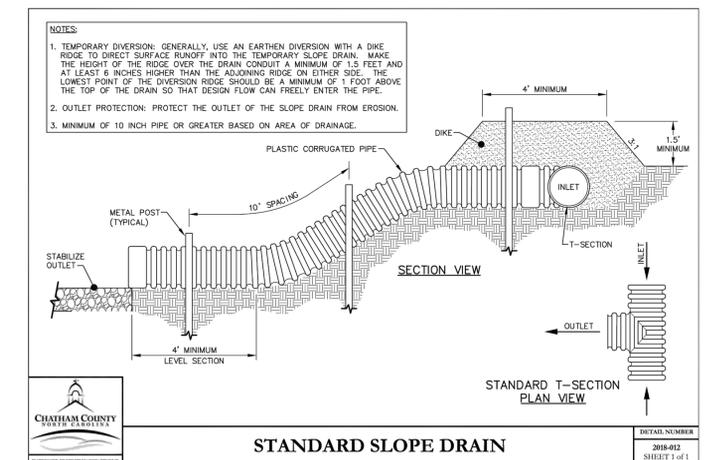
SILT BAG

2018-025A
SHEET 1 of 1



STANDARD CLEAN WATER DIVERSION

2018-011
SHEET 1 of 1



STANDARD SLOPE DRAIN

2018-012
SHEET 1 of 1

NO.	REVISIONS	DATE
1	REVISIONS PER CHATHAM COUNTY AND NCDOT COMMENTS	06/19/20
2	REVISIONS PER CHATHAM COUNTY EC & SW COMMENTS	06/12/20
3	REVISIONS PER CHATHAM COUNTY AND NCDOT COMMENTS	06/05/20

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CONSTRUCTION PLANS FOR
THE CONSERVANCY AT JORDAN LAKE

EROSION CONTROL DETAILS
CHATHAM COUNTY, NC

Date: JUNE 19, 2020

Scale: N/A

Drawn: JWA

Checked: JRF

Project No: 127-290

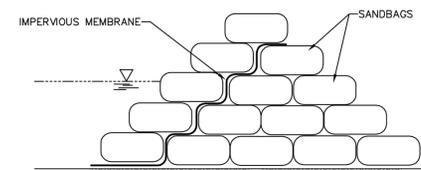
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Sheet No: ED-03
Of 3

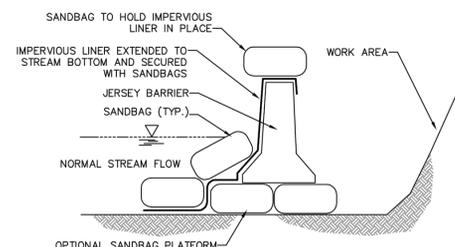


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FOR CONSTRUCTION

TSURUMI PUMP		LB-800/LBT-800		SPECIFICATIONS		
SEMI-VORTEX - DEWATERING PUMP						
FEATURES						
1. Semi-vortex, urethane rubber impeller, urethane front & rear wear plates and ethylene propylene rubber casing increases wear resistance when pumpage contains abrasive particles.	2. Double inside mechanical seals with silicon carbide faces, (both top and bottom) running in an oil filled chamber and further protected by a lip seal running against a replaceable, 304 stainless steel shaft sleeve, provides for the most durable seal design available.	3. Highly efficient, continuous duty air filled, copper wound motor with class B insulation minimizes the cost of operation.	4. Built in thermal protector prevents motor failure due to overloading or accidental run-dry conditions.	5. Double shielded, permanently lubricated, high temperature C3 ball bearings, extend operational life.	6. Top discharge, flow-thru design enables operation at low water levels for extended periods.	
APPLICATIONS						
1. Residential, commercial, industrial wastewater and construction site drainage.	2. Effluent transfer.	3. Decorative waterfalls and fountains.	4. Raw water supply from rivers or lakes.			
SPECIFICATIONS						
Discharge Size Horsepower Range Performance Range Capacity Head Maximum water temperature Materials of Construction Casing Impeller Shaft Motor Frame Fasteners Mechanical Seal Elastomers Impeller Type Solids Handling Capability Bearings Motor Nomenclature Type, Speed, Hz, Voltage, Phase Insulation Accessories Operational Mode	2" Npt (50 mm) 1 Hp. (.75 Kw) 10 - 82 Gpm. (.037 - .31 m ³ /min) 7 - 59 Ft. (2.1 - 17.9 m) 104° F. (40° C.) Ethylene Propylene Rubber Urethane Rubber 403 Stainless Steel Aluminum alloy 304 Stainless Steel Silicon Carbide/Silicon Carbide NBR (Nitril Buna Rubber) Semi-vortex, solids handling. Screen opening Pre-lubricated, Double Shielded C3 Air Filled, 3600 Rpm, 60 Hz: 115/230 V., 1 Phase 230/460/575 V. 3 Phase (LBT-800) Class E Submersible Power Cable 50' (9.75 m) Length as Required, (97' Max) Manual	STANDARD				OPTIONS
*See Technical Data section for details.						

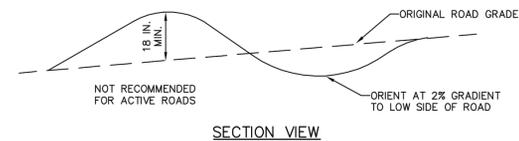


2 BAG MIN. HEIGHT ABOVE NORMAL BASE FLOW
STACKED SANDBAGS OPTION



JERSEY BARRIER OPTION

**STANDARD SANDBAG DIVERSION
DAM OR COFFERDAM DETAIL
NOT TO SCALE**



SECTION VIEW

NOTES:

WATERBARS SHALL DISCHARGE TO A STABLE AREA.

WATERBARS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS WITHIN 24 HOURS OF INSPECTION.

MAINTENANCE OF WATERBARS SHALL BE PROVIDED UNTIL ROADWAY, SKIDTRAIL, OR RIGHT-OF-WAY HAS ACHIEVED PERMANENT STABILIZATION.

WATERBARS ON RETIRED ROADWAYS, SKIDTRAILS, AND RIGHT-OF-WAYS SHALL BE LEFT IN PLACE AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED.

SEE PA DEP EROSION CONTROL MANUAL TABLE 3.1 FOR WATERBAR SPACING.

**STANDARD WATERBAR DETAIL
NOT TO SCALE**

NO.	REVISIONS	DATE
C	REVISIONS PER CHATHAM COUNTY AND NCDOT COMMENTS	06/19/20
B	REVISIONS PER CHATHAM COUNTY EC & SW COMMENTS	06/12/20
A	REVISIONS PER CHATHAM COUNTY AND NCDOT COMMENTS	06/05/20

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CONSTRUCTION PLANS FOR
THE CONSERVANCY AT JORDAN LAKE

EROSION CONTROL DETAILS
CHATHAM COUNTY, NC

Date:	JUNE 19, 2020
Scale:	N/A
Drawn:	JWA
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Project No.:	127-290
Computer Dwg. Name:	127-290_21-25-ed-01-ed-05_erosion control.dwg



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Sheet No:
ED-04
Of -

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCGS 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 NCGS 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	Required Ground Stabilization Timeframes	
	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
<ul style="list-style-type: none"> Temporary grass seed covered with straw or other mulches and tackifiers Hydroseeding Roll erosion control products with or without temporary grass seed Appropriately applied straw or other mulch Plastic sheeting 	<ul style="list-style-type: none"> 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 Roll 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.

**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 or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those unattended days (and 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&S 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 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	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. 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 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 a stream 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, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&S 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 an assurance that they will be provided as soon as possible.

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

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.

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION B: RECORDKEEPING

1. E&S Plan Documentation

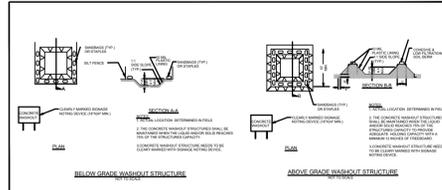
The approved E&S plan as well as any approved deviation shall be kept on the site. The approved E&S plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&S plan shall be documented in the manner described:

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

2. Additional Documentation

In addition to the E&S 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 older inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]



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.

**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 110.1 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.
- Anticipated bypasses and unanticipated bypasses.
- Noncompliance with the conditions of this permit that may endanger health or the environment.

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. If the stream is named on the NC 303(d) list as impaired for sediment-related causes, 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(c) 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.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	<ul style="list-style-type: none"> 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)]	<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.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment [40 CFR 122.41(j)(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 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 recurrence of the noncompliance. [40 CFR 122.41(j)(6)]. Division staff may waive the requirement for a written report on a case-by-case basis.

NO.	REVISIONS	DATE
C	REVISIONS PER CHATHAM COUNTY AND NCDOT COMMENTS	06/19/20
B	REVISIONS PER CHATHAM COUNTY EC & SW COMMENTS	06/12/20
A	REVISIONS PER CHATHAM COUNTY AND NCDOT COMMENTS	06/05/20

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CONSTRUCTION PLANS FOR
THE CONSERVANCY AT JORDAN LAKE

EC MATERIALS & INSPECTION
CHATHAM COUNTY, NC

Date: JUNE 19, 2020

Scale: N/A

Drawn: JWA

Checked: JRF

Project No: 127-290

Computer Dwg. Name: 127-290_21-25-ed-01-ed-05_erosion_control.dwg

Sheet No: ED-06

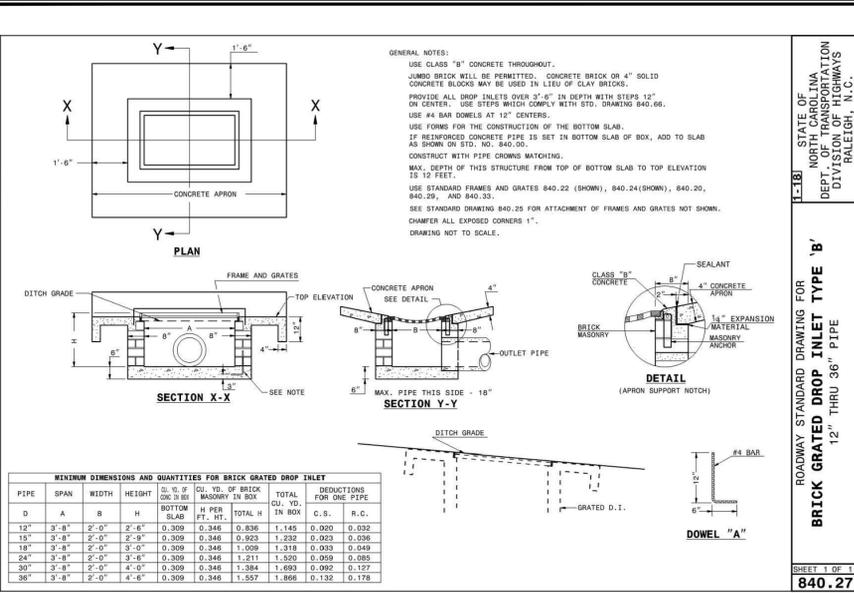
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FOR CONSTRUCTION

Temporary Swale Calculations																					Swale Calculations								
Drainage Area Data						Swale Data										Additional Flow		Swale Linings											
Swale ID	Disturbed (AC)	Woods (AC)	Paved (AC)	Grass (AC)	C	Upper Elev.	Lower Elev.	Ditch Length (ft)	Slope	Bottom Width (B) (ft)	Side Slope (x:1)	Depth d (guess) (ft)	D (ft)	A (sf)	P (ft)	R = A/P	Velocity (fps)	W (ft)	Q (CIA) (cfs)	Q (Compare) (cfs)	Ditch/Pipes	Flow (cfs)	Lining Type (or equal)	Mannings n	Shear Stress (Max)	Velocity (Max)	Check Shear Stress (T=yds)	Shear OK?	Velocity OK?
TDS-1	0.16				0.50	294.50	289.50	125.00	4.00%	0	2	0.4290	1.0	0.368	1.919	0.192	1.8	4.0	0.66	0.66			Eronet S75	0.055	1.55	5.00	1.07	YES	YES
TDS-2	0.80				0.50	297.50	288.50	244.00	3.69%	0	2	0.5545	1.1	0.615	2.480	0.248	5.4	4.4	3.31	3.31			Eronet S150	0.021	1.75	6.00	1.28	YES	YES
TDS-3	0.85				0.50	299.50	296.50	182.00	1.65%	0	2	0.6230	1.1	0.776	2.786	0.279	4.5	4.4	3.52	3.52			Eronet SC150	0.018	2.00	8.00	0.64	YES	YES
TDS-4	1.92				0.50	300.50	279.50	265.00	7.92%	0	2	0.8500	1.4	1.445	3.801	0.380	5.5	5.6	7.95	7.95			VMax SC250	0.04	10.00	15.00	4.20	YES	YES
TDS-5	0.75				0.50	286.50	279.50	210.00	3.33%	0	2	0.5520	1.1	0.609	2.469	0.247	5.1	4.4	3.11	3.11			Eronet S150	0.021	1.75	6.00	1.15	YES	YES
TDS-6	0.83				0.50	279.50	269.50	367.00	2.72%	0	2	0.5955	1.1	0.709	2.663	0.266	4.8	4.4	3.44	3.44			Eronet S150	0.021	1.75	6.00	1.01	YES	YES
TDS-7	0.65				0.50	286.50	273.50	343.00	3.79%	0	2	0.5105	1.0	0.521	2.283	0.228	5.2	4.0	2.69	2.69			Eronet S150	0.021	1.75	6.00	1.21	YES	YES
TDS-8	0.20				0.50	286.50	281.00	167.00	3.29%	0	2	0.4850	1.0	0.470	2.169	0.217	1.8	4.0	0.83	0.83			Eronet S75	0.055	1.55	5.00	1.00	YES	YES
TDS-9	0.81				0.50	282.50	276.50	412.00	1.46%	0	2	0.7205	1.2	1.038	3.222	0.322	4.0	4.8	4.18	4.18	TDS-8	0.83	Eronet S75	0.021	1.55	5.00	0.65	YES	YES
TDS-10	0.27				0.50	277.50	270.50	224.00	3.13%	0	2	0.5460	1.0	0.596	2.442	0.244	1.9	4.0	1.12	1.12			Eronet S75	0.055	1.55	5.00	1.06	YES	YES
TDS-11	1.80				0.50	280.50	274.50	283.00	2.12%	0	2	0.8342	1.3	1.392	3.731	0.373	5.4	5.2	7.45	7.45			Eronet S150	0.021	1.75	6.00	1.10	YES	YES
TDS-12	0.55				0.50	280.50	266.50	377.00	3.71%	0	2	0.6915	1.2	0.956	3.092	0.309	2.4	4.8	2.28	2.28			Eronet S150	0.055	1.75	6.00	1.60	YES	YES
TDS-13	0.86				0.50	280.50	268.50	403.00	2.98%	0	2	0.5936	1.1	0.705	2.655	0.265	5.1	4.4	3.56	3.56			Eronet S150	0.021	1.75	6.00	1.10	YES	YES
TDS-14	0.17				0.50	268.50	266.90	63.00	2.54%	0	2	0.4770	1.0	0.455	2.133	0.213	1.5	4.0	0.70	0.70			Eronet S75	0.055	1.55	5.00	0.76	YES	YES
TDS-15	1.11				0.50	273.50	271.50	285.00	0.70%	0	2	0.8562	1.4	1.466	3.829	0.383	3.1	5.6	4.60	4.60			Eronet S75	0.021	1.55	5.00	0.37	YES	YES
TDS-16	0.29				0.50	273.50	270.80	140.00	1.93%	0	2	0.6150	1.1	0.756	2.750	0.275	1.6	4.4	1.20	1.20			Eronet S75	0.055	1.55	5.00	0.74	YES	YES
TDS-17	6.84				0.50	277.50	270.80	153.00	4.38%	0	2	1.5296	2.0	4.679	6.841	0.684	6.1	8.0	28.32	28.32			VMax SC250	0.04	10.00	15.00	4.18	YES	YES
TDS-18	0.89				0.50	280.50	270.00	296.00	3.55%	0	2	0.5815	1.1	0.676	2.601	0.260	5.4	4.4	3.68	3.68			Eronet S150	0.021	1.75	6.00	1.29	YES	YES
TDS-19	0.24				0.50	271.50	266.90	217.00	2.12%	0	2	0.5610	1.1	0.629	2.509	0.251	1.6	4.4	0.99	0.99			Eronet S75	0.055	1.55	5.00	0.74	YES	YES
TDS-20	0.13				0.50	269.50	266.50	104.00	2.88%	0	2	0.4220	1.0	0.356	1.887	0.189	1.5	4.0	0.54	0.54			Eronet S75	0.055	1.55	5.00	0.76	YES	YES
TDS-21	0.71				0.50	270.50	266.50	179.00	2.23%	0	2	0.5825	1.1	0.679	2.605	0.261	4.3	4.4	2.94	2.94			Eronet S75	0.021	1.55	5.00	0.81	YES	YES

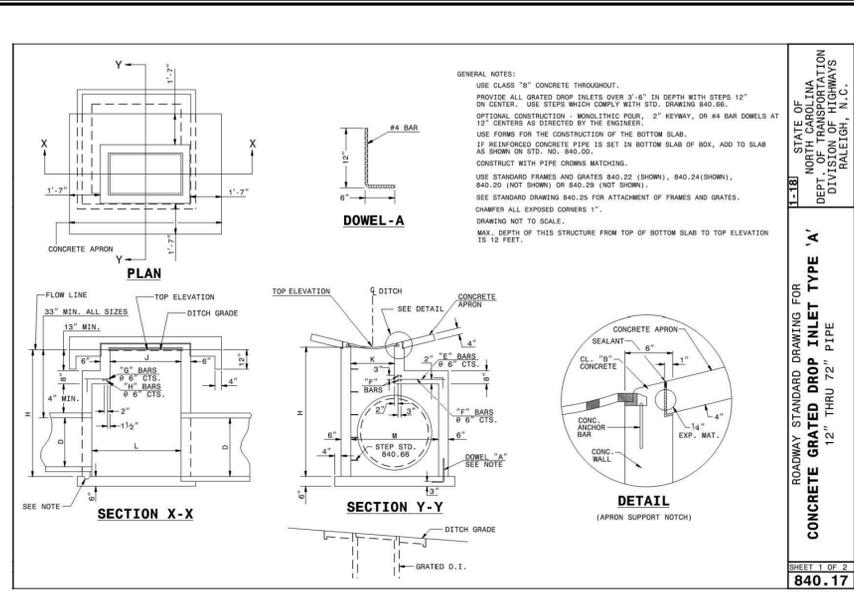
Permanent Swale Calculations																					Swale Calculations							
Drainage Area Data						Swale Data										Additional Flow		Swale Linings										
Swale ID	Woods (AC)	Paved (AC)	Grass (AC)	C	Upper Elev.	Lower Elev.	Ditch Length (ft)	Slope	Bottom Width (B) (ft)	Side Slope (x:1)	Depth d (guess) (ft)	D (ft)	A (sf)	P (ft)	R = A/P	Velocity (fps)	W (ft)	Q (CIA) (cfs)	Q (Compare) (cfs)	Ditch/Pipes	Flow (cfs)	Lining Type	Mannings n	Shear Stress (Max)	Velocity (Max)	Check Shear Stress (T=yds)	Shear OK?	Velocity OK?
PDS-1	0.00	0.04	0.13	0.59	291.00	283.07	161.00	4.93%	0	4	0.3400	1.0	0.462	2.804	0.165	1.8	8.0	0.84	0.84			Eronet S75	0.055	1.55	5.00	1.04	YES	YES
PDS-2	0.20	0.08	0.13	0.58	291.00	283.58	152.00	4.88%	0	4	0.4680	1.0	0.876	3.859	0.227	2.2	8.0	1.95	1.95			Eronet S75	0.055	1.55	5.00	1.43	YES	YES
PDS-3	0.00	0.04	0.06	0.64	303.80	291.00	137.00	9.34%	0	4	0.2550	1.0	0.260	2.103	0.124	2.0	8.0	0.53	0.53			Eronet S75	0.055	1.55	5.00	1.49	YES	YES
PDS-4	0.15	0.03	0.22	0.53	303.80	291.00	182.00	7.03%	0	4	0.4060	1.0	0.659	3.348	0.197	2.7	8.0	1.76	1.76			Eronet SC150	0.05	2.00	8.00	1.78	YES	YES
PDS-5	0.00	0.08	0.14	0.65	316.00	306.50	338.00	2.81%	0	4	0.4300	1.0	0.740	3.546	0.209	1.6	8.0	1.18	1.18			Eronet S75	0.055	1.55	5.00	0.75	YES	YES
PDS-6	0.00	0.05	0.06	0.67	312.90	303.80	136.00	6.69%	0	4	0.2850	1.0	0.325	2.350	0.138	1.9	8.0	0.61	0.61			Eronet S75	0.055	1.55	5.00	1.19	YES	YES
PDS-7	0.01	0.02	0.06	0.60	315.95	312.90	75.00	4.07%	0	4	0.2680	1.0	0.287	2.210	0.130	1.4	8.0	0.40	0.40			Eronet S75	0.055	1.55	5.00	0.68	YES	YES
PDS-8	0.00	0.02	0.06	0.60	315.95	315.50	80.00	0.56%	0	4	0.3875	1.0	0.601	3.195	0.188	0.7	8.0	0.40	0.40			Eronet S75	0.055	1.55	5.00	0.14	YES	YES
PDS-9	0.00	0.03	0.11	0.59	315.50	312.00	173.00	2.02%	0	4	0.3720	1.0	0.554	3.068	0.180	1.2	8.0	0.68	0.68			Eronet S75	0.055	1.55	5.00	0.47	YES	YES
PDS-10	0.06	0.09	0.28	0.59	316.00	312.00	278.00	1.44%	0	4	0.6030	1.1	1.454	4.972	0.292	1.4	8.8	2.08	2.08			Eronet S75	0.055	1.55	5.00	0.54	YES	YES
PDS-11	0.00	0.07	0.17	0.61	315.00	312.00	171.00	1.75%	0	4	0.4740	1.0	0.899	3.909	0.230	1.3	8.0	1.21	1.21			Eronet S75	0.055	1.55	5.00	0.52	YES	YES
PDS-12	0.09	0.15	0.34	0.60	320.00	312.00	402.00	1.99%	0	4	0.6425	1.1	1.651	5.298	0.312	1.8	8.8	2.90	2.90			Eronet S75	0.055	1.55	5.00	0.80	YES	YES
PDS-13	0.00	0.03	0.09	0.61	309.50	304.50	157.00	3.18%	0	4	0.3280	1.0	0.430	2.705	0.159	1.4	8.0	0.61	0.61			Eronet S75	0.055	1.55	5.00	0.65	YES	YES
PDS-14	0.00	0.07	0.13	0.64	294.50	280.50	376.00	3.72%	0	4	0.3910	1.0	0.612	3.224	0.190	1.7	8.0	1.06	1.06			Eronet S75	0.055	1.55	5.00	0.91	YES	YES
PDS-15	0.93	0.32	0.76	0.56	308.00	281.50	839.00	3.16%	0	4	0.6020	1.1	1.450	4.964	0.292	6.5	8.8	9.39	9.39			Eronet SC150	0.018	2.00	8.00	1.19	YES	YES
PDS-16	0.01	0.03	0.13	0.56	288.50	284.50	109.00	3.67%	0	4	0.3510	1.0	0.493	2.894	0.170	1.6	8.0	0.79	0.79			Eronet S75	0.055	1.55	5.00	0.80	YES	YES
PDS-17	1.10	0.28	0.23	0.57	280.00	274.50	249.00	2.21%	0	4	0.6305	1.1	1.590	5.199	0.306	4.8	8.8	7.61	7.61			Eronet S75	0.021	1.55	5.00	0.87	YES	YES
PDS-18	0.66	0.28	0.31	0.59	280.00	265.50	400.00	3.63%	0	4	0.7325	1.2	2.146	6.040	0.355	2.8	9.6	6.11	6.11			Eronet SC150	0.05	2.00	8.00	1.66	YES	YES
PDS-19	0.04	0.02	0.06	0.56	266.95	265.50	67.00	2.16%	0	4	0.3410	1.0	0.465	2.812	0.165	1.2	8.0	0.56	0.56			Eronet S75	0.055	1.55	5.00	0.46	YES	YES
PDS-20	0.98	0.22	0.16	0.57	272.50	270.80	305.00	0.56%	0	4	0.7633	1.3	2.331	6.294	0.370	2.7	10.4	6.37	6.37			Eronet S75	0.021	1.55	5.00	0.27	YES	YES
PDS-21	0.12	0.17	0.06	0.69	272.50	270.80	121.00	1.40%	0	4	0.5980	1.1	1.430	4.931	0.290	1.4	8.8	2.01	2.01			Eronet S75	0.055	1.55	5.00	0.52	YES	YES
PDS-22	7.22	0.18	0.19	0.51	275.50	270.80	219.00	2.15%	0	4	1.0254	1.5	4.206	8.456	0.497	7.6	12.0	32.02	32.02			Eronet SC150	0.018	2.00	8.00	1.37	YES	YES
PDS-23	0.30	0.04	0.09	0.54	277.50	274.50	111.00	2.70%	0	4	0.5200	1.0	1.082	4.288	0.252	1.8	8.0	1.92	1.92			Eronet S75	0.055	1.55	5.00	0.88	YES	YES
PDS-24	1.06	0.30	0.17	0.58	274.50	267.90	298.00	2.21%	0	4	0.6210	1.1	1.543	5.121	0.301	4.7	8.8	7.32	7.32			Eronet S75	0.021	1.55	5.00	0.86	YES	YES
PDS-25	0.17	0.17	0.19	0.63	265.50	264.50	118.00	0.85%	10	6	0.6734	1.2	9.455	18.192	0.520	4.2	24.4	39.92	39.92	A48	37.1							



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR BRICK GRATED DROP INLET TYPE 'b' 12" THRU 36" PIPE

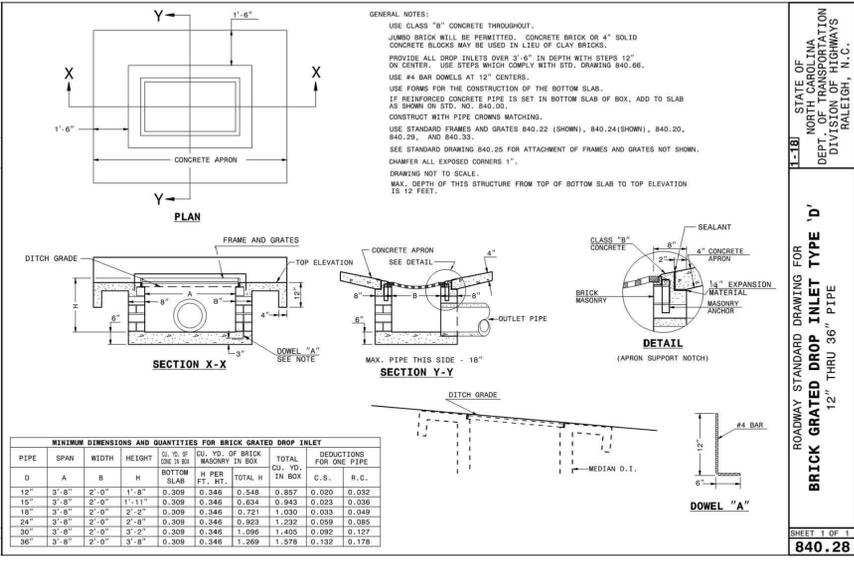
SHEET 1 OF 1
840.27



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR CONCRETE GRATED DROP INLET TYPE 'A' 12" THRU 72" PIPE

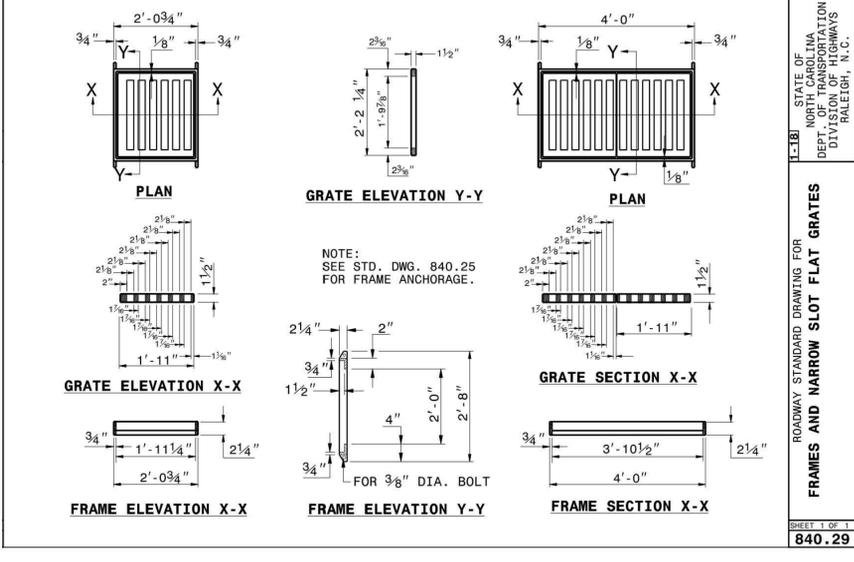
SHEET 1 OF 2
840.17



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR BRICK GRATED DROP INLET TYPE 'd' 12" THRU 36" PIPE

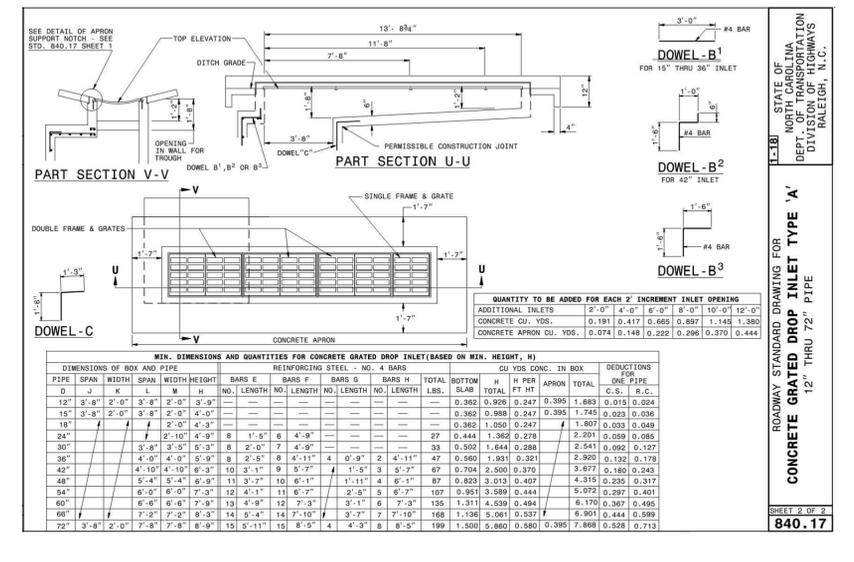
SHEET 1 OF 1
840.28



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR FRAMES AND NARROW SLOT FLAT GRATES

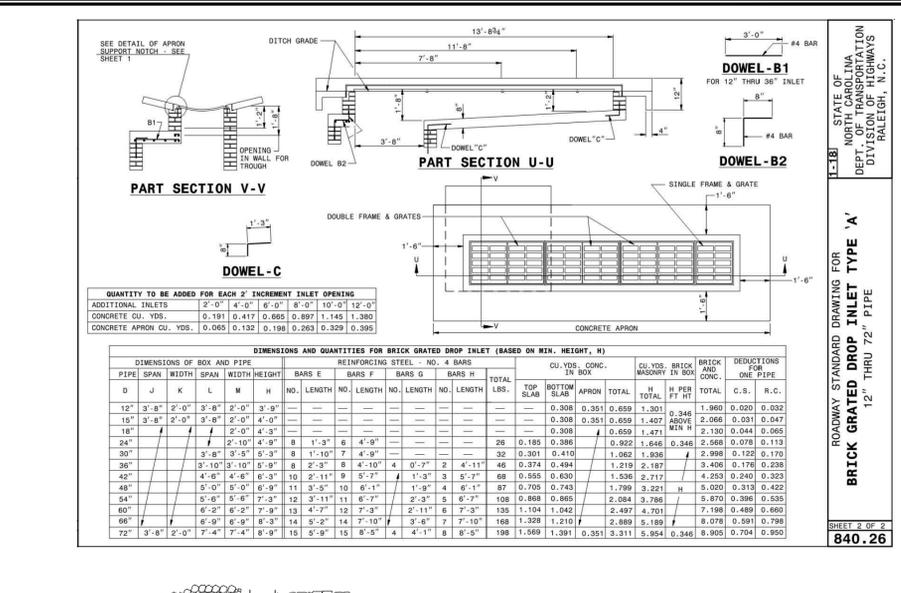
SHEET 1 OF 1
840.29



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR CONCRETE GRATED DROP INLET TYPE 'A' 12" THRU 72" PIPE

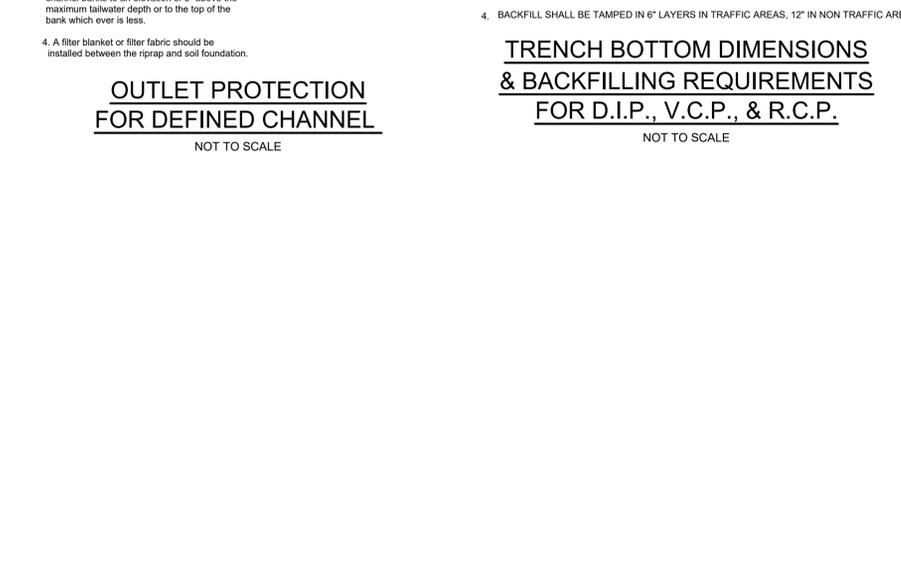
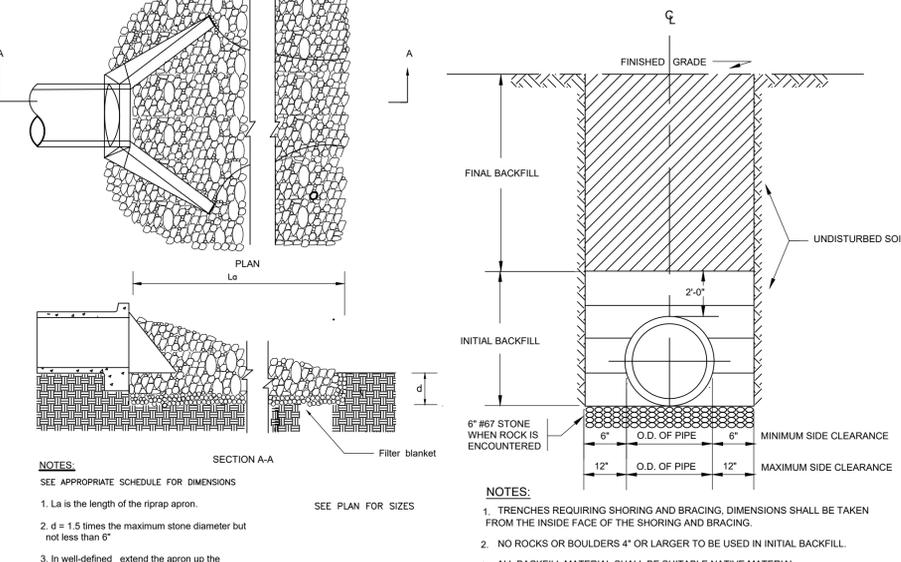
SHEET 2 OF 2
840.17



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR BRICK GRATED DROP INLET TYPE 'A' 12" THRU 72" PIPE

SHEET 2 OF 2
840.26



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR BRICK GRATED DROP INLET TYPE 'A' 12" THRU 72" PIPE

SHEET 1 OF 2
840.26

NO.	REVISIONS	DATE
1	REVISED PER CHATHAM COUNTY AND NCDOT COMMENTS	06/19/20
2	REVISED PER CHATHAM COUNTY EC & SW COMMENTS	06/12/20
3	REVISED PER CHATHAM COUNTY AND NCDOT COMMENTS	06/05/20

CE GROUP

301 GLENWOOD AVE. 220
 RALEIGH, NC 27603
 PHONE: 919-367-8790
 FAX: 919-322-0032

www.cegroupinc.com

License # C-1739



CONSTRUCTION PLANS FOR THE CONSERVANCY AT JORDAN LAKE

STORM DETAILS CHATHAM COUNTY, NC

Date: JUNE 19, 2020

Scale: N/A

Drawn: JPD

Checked: MPA

Project No: 127-290

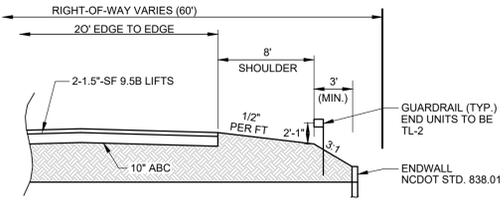
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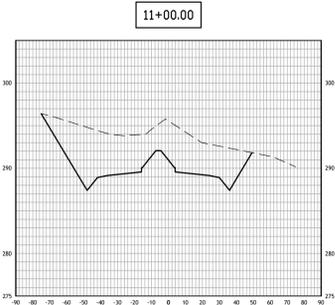
Of: 1



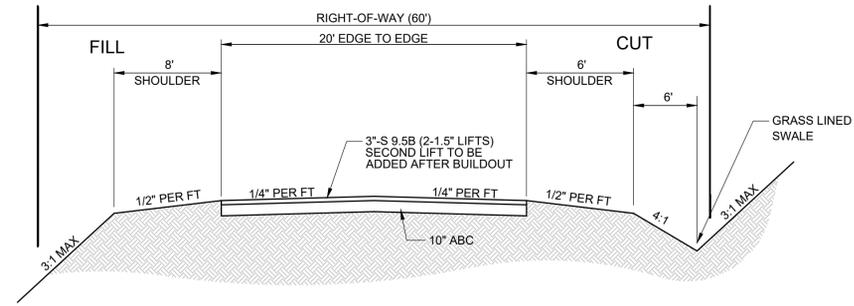
FINAL DESIGN
 NOT RELEASED FOR CONSTRUCTION



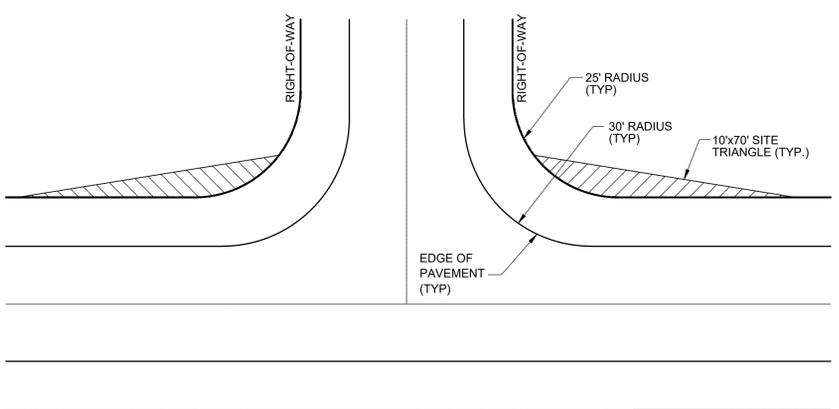
TYPICAL GUARDRAIL AT CROSSING
N.T.S.



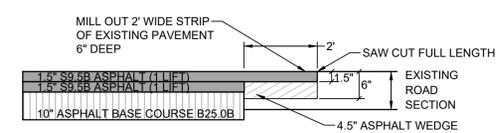
ENTRANCE CROSS-SECTION STA. 11+00
SCALE: 1"=50' H, 1"=10' V



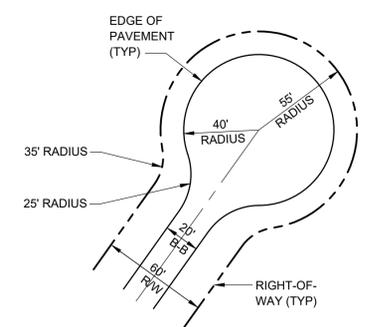
TYPICAL 20' ROADWAY WITH DRAINAGE SWALE SECTION
NOT TO SCALE



TYPICAL INTERSECTION DETAIL
NOT TO SCALE



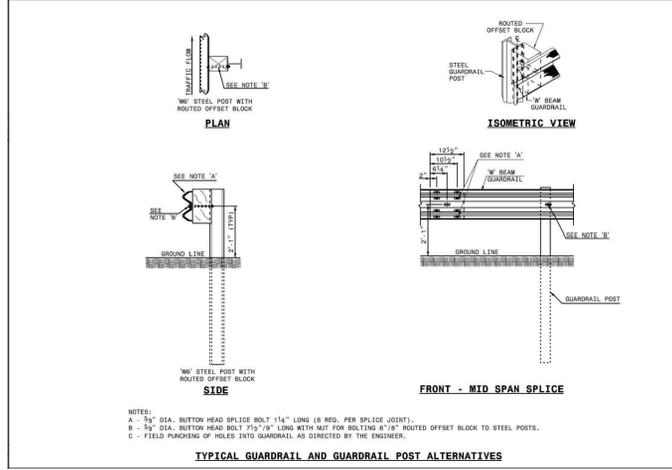
LAP JOINT DETAIL (AT ENTRANCE)
NOT TO SCALE



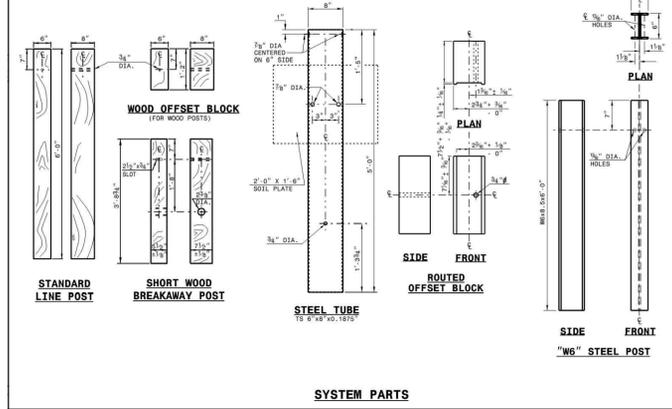
CUL-DE-SAC DETAIL
NOT TO SCALE

GENERAL CONSTRUCTION NOTES

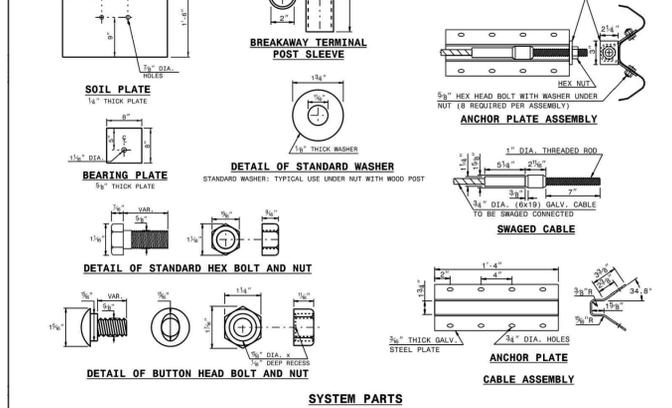
- EXISTING UNDERGROUND STRUCTURES AND UTILITIES SHOWN ARE BASED ON FIELD SURVEYS AND BEST AVAILABLE RECORD DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY CONDITIONS, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES, PRIOR TO STARTING CONSTRUCTION AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
- THE CONTRACTOR SHALL CONTACT NORTH CAROLINA ONE CALL AT 1-800-632-4949. THE CONTRACTOR SHALL CALL AT LEAST 48 HOURS PRIOR TO ANY DIGGING.
- THE SUBJECT PROPERTY IS LOCATED IN ZONE X, A MINIMAL FLOOD RISK AREA PER FEMA FIRM PANEL 0608, MAP NUMBER 3720060800K, DATED 02/02/07 AND PANEL 9699, MAP NUMBER 3710969900K, DATED 11/17/17.
- IN-STREAM WORK SHALL BE PROHIBITED FROM MARCH 15 THROUGH JUNE 30 TO MINIMIZE IMPACTS TO SPAWNING FISH.
- TOPOGRAPHIC INFORMATION PROVIDED BY CE GROUP, INC. RALEIGH, NC. PROFILE DATA FROM FIELD SURVEY, AND BACKGROUND TOPOGRAPHY FROM AERIAL MAPPING.
- DISTURBANCE IS LIMITED TO NO MORE THAN 15 AC OF GRADUAL SLOPED LAND AT ANY ONE TIME (5% - 24.9% SLOPE).
- DISTURBANCE IS LIMITED TO NO MORE THAN 10 AC OF MODERATELY SLOPED LAND AT ANY ONE TIME (25% - 34.9% SLOPE).
- NC DOT ASSUMES NO RESPONSIBILITY FOR OPERATION, MAINTENANCE OR LIABILITY OF THE STRUCTURAL STORMWATER BMP'S OR ANY DRAINAGE OUTSIDE OF THE RIGHTS-OF-WAY.
- ALL GRATED INLETS IN DITCHES ARE TO BE NC DOT STD 840.17 OR 840.26 TYPE A 2GI NARROW SLOT INLETS.
- GUARDRAIL INSTALLATION SHALL BE IN ACCORDANCE WITH SECTION 862 OF NC DOT CURRENT ROADWAY STANDARD DRAWINGS. CONTRACTOR TO CONSULT WITH NC DOT PRIOR TO OBTAINING GUARDRAIL TO VERIFY LENGTHS FOR INSTALLATION.



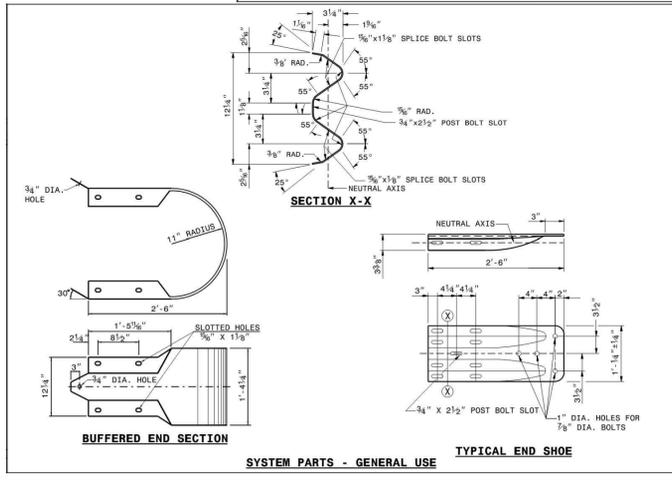
TYPICAL GUARDRAIL AND GUARDRAIL POST ALTERNATIVES



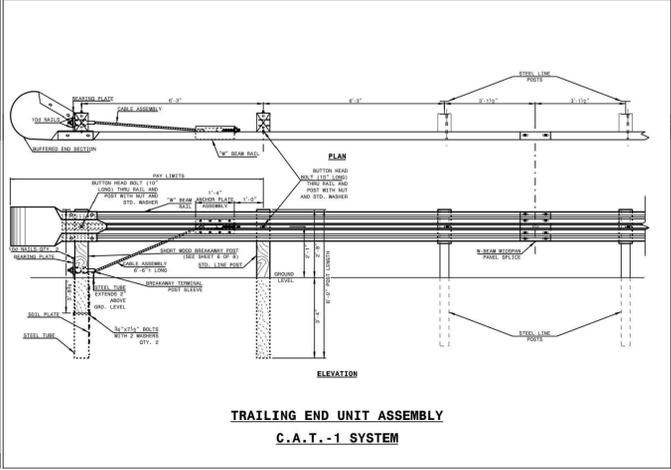
SYSTEM PARTS



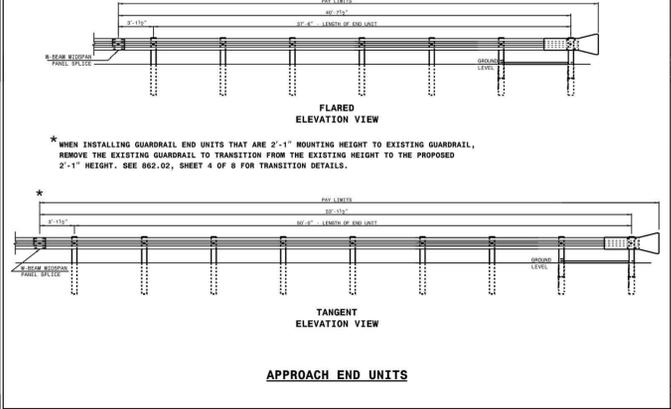
SYSTEM PARTS



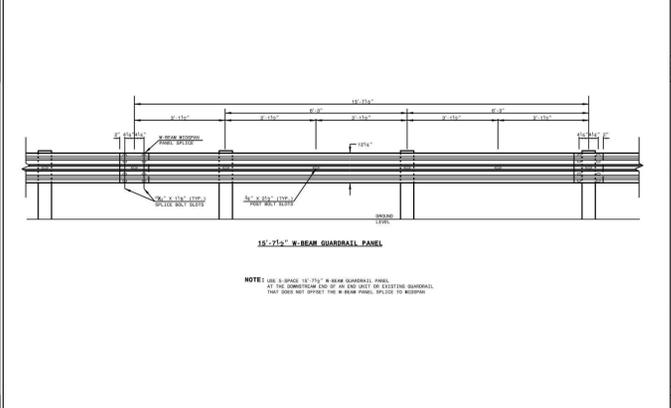
BUFFERED END SECTION **TYPICAL END SHOE**



TRAILING END UNIT ASSEMBLY
C.A.T. - 1 SYSTEM



APPROACH END UNITS



15'-7 1/2" W-BEAM GUARDRAIL PANEL

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ROADWAY STANDARD DRAWING FOR GUARDRAIL INSTALLATION
SHEET 6 OF 8
862.02

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ROADWAY STANDARD DRAWING FOR GUARDRAIL INSTALLATION
SHEET 6 OF 8
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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ROADWAY STANDARD DRAWING FOR GUARDRAIL INSTALLATION
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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ROADWAY STANDARD DRAWING FOR GUARDRAIL INSTALLATION
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ROADWAY STANDARD DRAWING FOR GUARDRAIL INSTALLATION
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862.02

NO.	REVISIONS	DATE
A	REVISIONS PER CHATHAM COUNTY AND NCDOT COMMENTS	06/12/20
B	REVISIONS PER CHATHAM COUNTY EC & SW COMMENTS	06/19/20
C	REVISIONS PER CHATHAM COUNTY AND NCDOT COMMENTS	06/19/20

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CONSTRUCTION PLANS FOR
THE CONSERVANCY AT JORDAN LAKE

ROADWAY DETAILS
CHATHAM COUNTY, NC

Date: JUNE 19, 2020

Scale: N/A

Drawn: JPD

Checked: MPA

Project No: 127-290

Computer Dwg. Name: 127-290_2b-rd-01_roadway_details

Sheet No: RD-01
Of 1



FINAL DESIGN
NOT RELEASED
FOR CONSTRUCTION