

CONTRACT: 48797.3.2 TIP PROJECT: R-5968BA

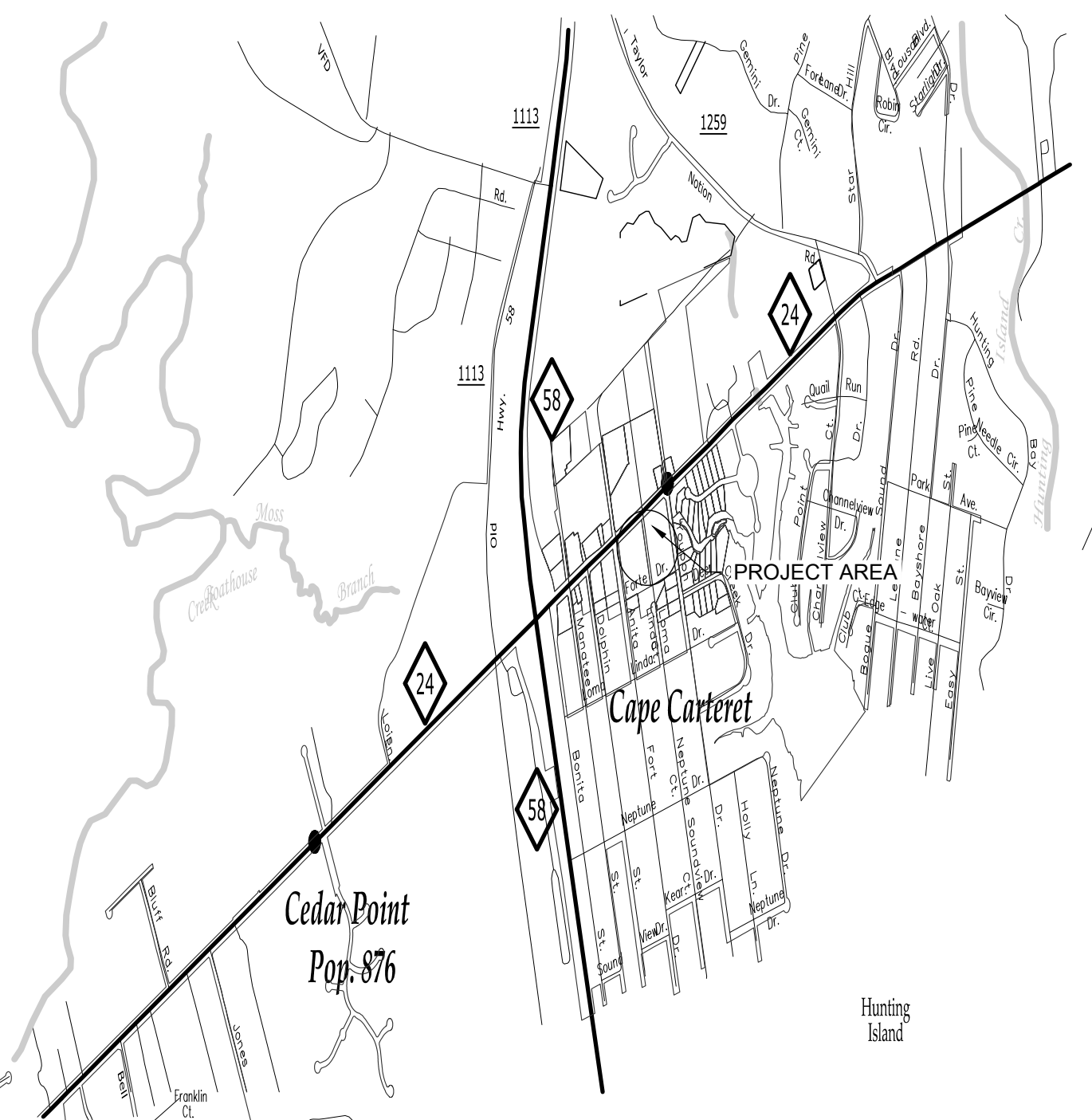
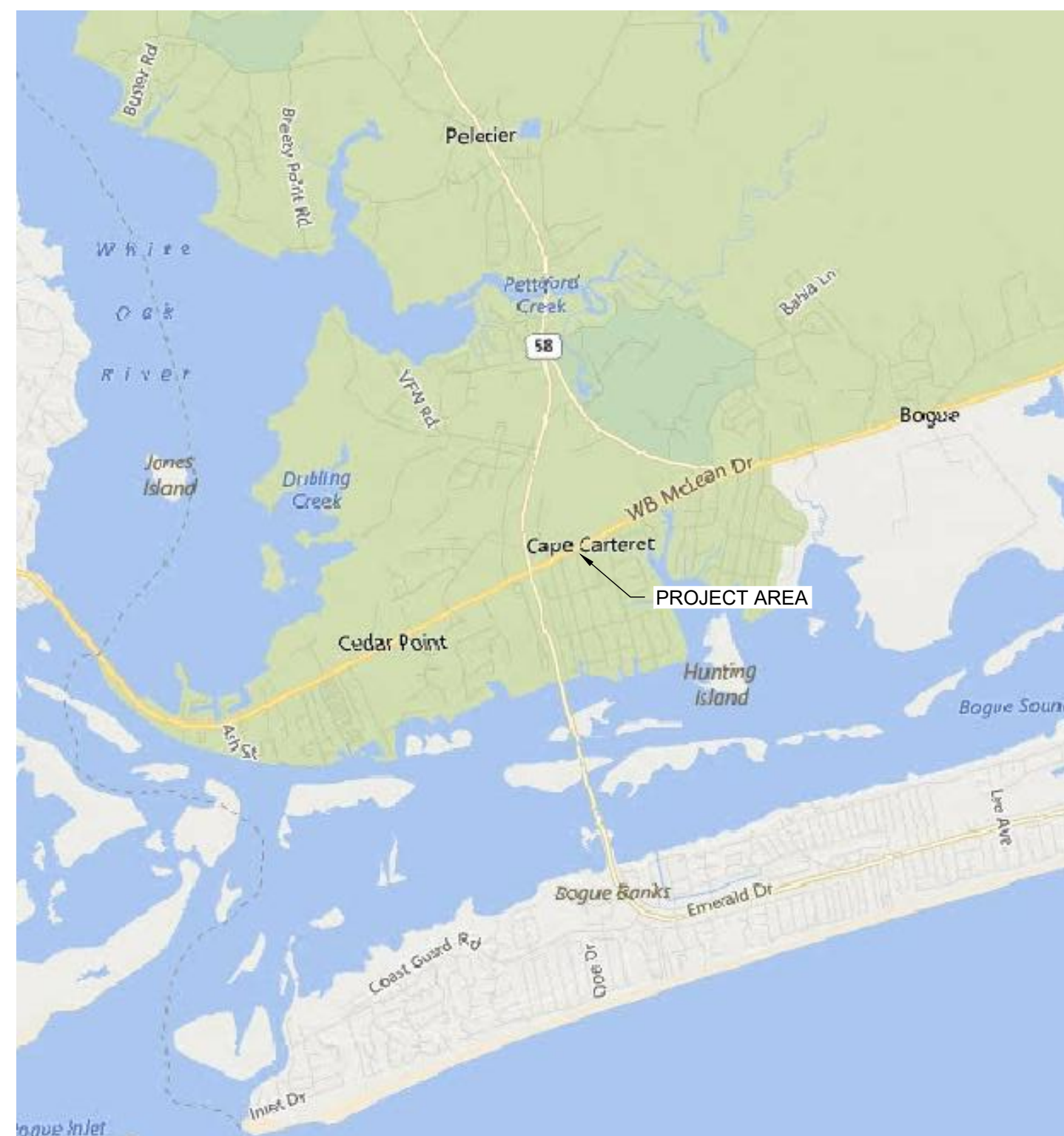
See Sheet 1A For Index of Sheets

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS CARTERET COUNTY

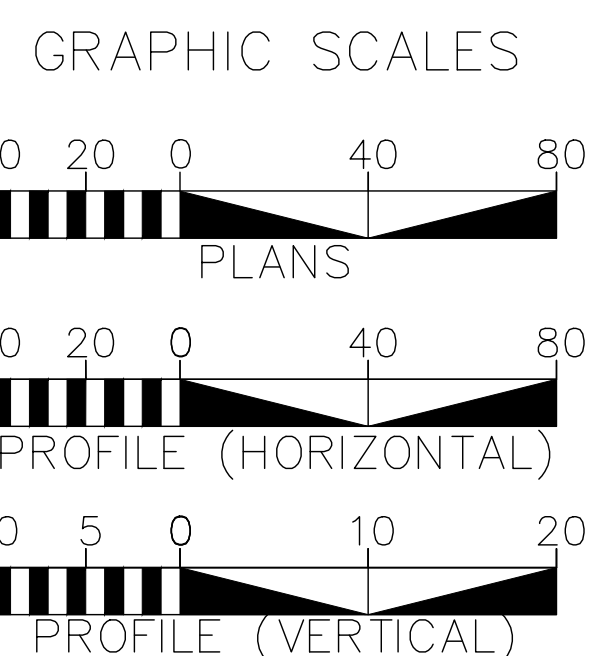
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
NC	R-5968BA	1	23
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
48797.3.2	0024088	CAPE CARTERET SCM	

LOCATION: STORMWATER BMP ALONG US HWY 24 BETWEEN YAUPON AND ANITA FORTE AND BAPTIST ON SOUTH SIDE NORTH OF CAPE CARTERET PRESBYTERIAN CHURCH

TYPE OF WORK: GRADING, STORM DRAINAGE, CONCRETE WEIR STRUCTURE, STORMWATER WETLAND GRADING AND PLANTING, EROSION CONTROL, SEEDING AND MULCHING, AND TRAFFIC CONTROL.



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PREPARED IN THE OFFICE OF:

GPI Formerly LDSI, Inc. **LDSI**

MANY TALENTS, ONE FIRM

CHARLOTTE OFFICE: 201 W 29TH STREET, CHARLOTTE NC 28206
 KINSTON OFFICE: 1308 HWY 258 N., KINSTON NC 28504
 PHONE: 704.337.8329 | FAX: 704.308.3153 | WEBSITE: WWW.LDSI-INC.COM NC FIRM #: F-0441

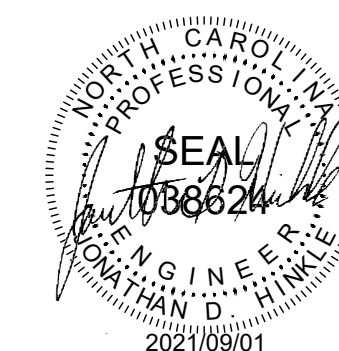
2018 STANDARD SPECIFICATIONS

LETTING DATE:
11/10/2021

JONATHAN D. HINKLE
PROJECT ENGINEER

JONATHAN D. HINKLE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER



SIGNATURE:

P.E.



STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale *S.U.E. = Subsurface Utility Engineering

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin
- Computed Property Corner
- Property Monument
- Parcel / Sequence Number
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary
- Proposed Wetland Boundary
- Existing Endangered Animal Boundary
- Existing Endangered Plant Boundary
- Existing Historic Property Boundary
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign
- Well
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream
- Buffer Zone 1
- Buffer Zone 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch
- False Sump

RAILROADS:

- Standard Gauge
- RR Signal Milepost
- Switch
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easement Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line
- New Right of Way Line with Pin and Cap
- New Right of Way Line with Concrete or Granite R/W Marker
- New Control of Access Line with Concrete C/A Marker
- Existing Control of Access
- New Control of Access
- Existing Easement Line
- New Temporary Construction Easement
- New Temporary Drainage Easement
- New Permanent Drainage Easement
- New Permanent Drainage/Util Easement
- New Permanent Utility Easement
- New Temporary Utility Easement
- New Aerial Utility Easement

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut
- Proposed Slope Stakes Fill
- Proposed Curb Ramp
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub

- Hedge
- Woods Line
- Orchard
- Vineyard

EXISTING STRUCTURES:

- MAJOR:
 - Bridge, Tunnel or Box Culvert
 - Bridge Wind, Head and End Wall
- MINOR:
 - Head and End Wall
 - Pipe Culvert
 - Footbridge
 - Drainage Box: Catch Basin, DI or JB
 - Paved Ditch Gutter
 - Storm Sewer Manhole
 - Storm Sewer

UTILITIES:

- POWER:
 - Existing Power Pole
 - Proposed Power Pole
 - Existing Joint Use Pole
 - Proposed Joint Use Pole
 - Power Manhole
 - Power Line Tower
 - Power Transformer
 - U/G Power Cable Hand Hole
 - H-Frame Pole
 - U/G Power Line LOS B (S.U.E.*)
 - U/G Power Line LOS C (S.U.E.*)
 - U/G Power Line LOS D (S.U.E.*)
- TELEPHONE:
 - Existing Telephone Pole
 - Proposed Telephone Pole
 - Telephone Manhole
 - Telephone Pedestal
 - Telephone Cell Tower
 - U/G Telephone Cable Hand Hole
 - U/G Telephone Cable LOS B (S.U.E.*)
 - U/G Telephone Cable LOS C (S.U.E.*)
 - U/G Telephone Cable LOS D (S.U.E.*)
 - U/G Telephone Conduit LOS B (S.U.E.*)
 - U/G Telephone Conduit LOS C (S.U.E.*)
 - U/G Telephone Conduit LOS D (S.U.E.*)
 - U/G Fiber Optics Cable LOS B (S.U.E.*)
 - U/G Fiber Optics Cable LOS C (S.U.E.*)
 - U/G Fiber Optics Cable LOS D (S.U.E.*)

WATER:

- Water Manhole
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E.*)
- U/G Water Line LOS C (S.U.E.*)
- U/G Water Line LOS D (S.U.E.*)
- Above Ground Water Line

TV:

- TV Pedestal
- TV Tower
- U/G TV Cable Hand Hole
- U/G TV Cable LOS B (S.U.E.*)
- U/G TV Cable LOS C (S.U.E.*)
- U/G TV Cable LOS D (S.U.E.*)
- U/G Fiber Optic Cable LOS B (S.U.E.*)
- U/G Fiber Optic Cable LOS C (S.U.E.*)
- U/G Fiber Optic Cable LOS D (S.U.E.*)

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*)
- U/G Gas Line LOS C (S.U.E.*)
- U/G Gas Line LOS D (S.U.E.*)
- Above Ground Gas Line

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line
- Above Ground Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*)
- SS Forced Main Line LOS C (S.U.E.*)
- SS Forced Main Line LOS D (S.U.E.*)

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box
- Utility Unknown U/G Line LOS B (S.U.E.*)
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx-Loc.
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records
- End of Information

EXISTING CONDITIONS SHEET



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 PHONE: 704.337.8329 | FAX: 704.308.3153 | WEBSITE:
 WWW.LDSHNC.COM NC FIRM #: F-0441

SCALE AS SHOWN DATE: 2021/09/30
 VERIFY SCALE DWG: 4519056-ENG
 BAR IS ONE INCH ON ORIGINAL DRAWING
 LDSI PROJECT NO.: 4519056

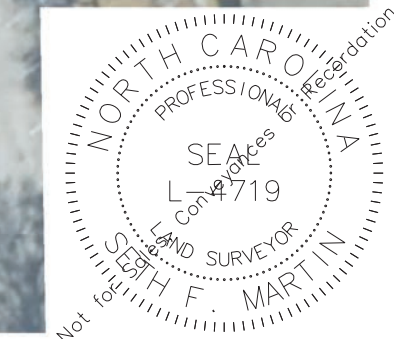
HORIZONTAL SCALE: 1" = 40'

PROJECT REFERENCE NO. R-5968BA		SHEET NO. 4	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
ISSUE FOR CONSTRUCTION			

LEGEND	
	EXISTING RIGHT OF WAY
	EXISTING PROPERTY LINE
	EXISTING OH POWER LINE
	EXISTING UG GAS LINE
	EXISTING UG COMMUNICATIONS
	EXISTING UG WATER LINE
	EXISTING MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING EROSION RIP RAP
	EXISTING CURB
	EXISTING SIDEWALK
	EXISTING POWER POLE
	EXISTING PIPE
	EXISTING MANHOLE



General Notes:
 1. Deed Reference(s) – DB 1090 PG 338, NO DB
 2. Tax Parcel ID – 538405176697000, 538405271748000.
 3. Current Owner – Cape Carteret Baptist Church, Cape Carteret Presbyterian Church.
 4. All distances are shown horizontal.
 5. Grid distance = Horizontal distance x Combined Grid Factor (0.9999250056245782)
 6. Zoning – Unrestricted.
 7. This property is located in a special Flood Hazard Area as determined by FEMA and the State of North Carolina. Reference Community Panel Number: 3720538400J Dated: 7/16/2003.
 8. This survey was performed without benefit of a Title Commitment Report. LDSI, Inc. does not claim that all matters of record which may affect the subject property are shown hereon.
 9. The location of underground utilities shown on this map are approximate, based on information provided by others or by field location. Utility locations as shown hereon are intended for planning only. Actual location, size or depth of line should be verified with the individual utility company before construction.
 10. The North Carolina Grid Coordinates shown on this map were derived by real-time kinematic GPS observations using Carlson BRx5 Receivers and processed using North Carolina Geodetic Survey Virtual Reference System.



"I, Seth F Martin, certify that this project was completed under my direct and responsible charge from an actual ground survey made under my supervision; that the original data was obtained on January 3rd 2020; and all coordinates are based on NAD83(2011), NAVD88."

**SURVEY CONTROL
PLAN VIEW**
(1" = 40' HORIZ.)

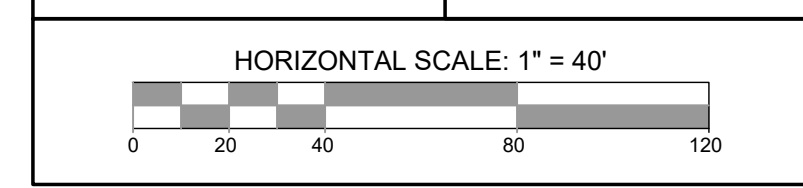


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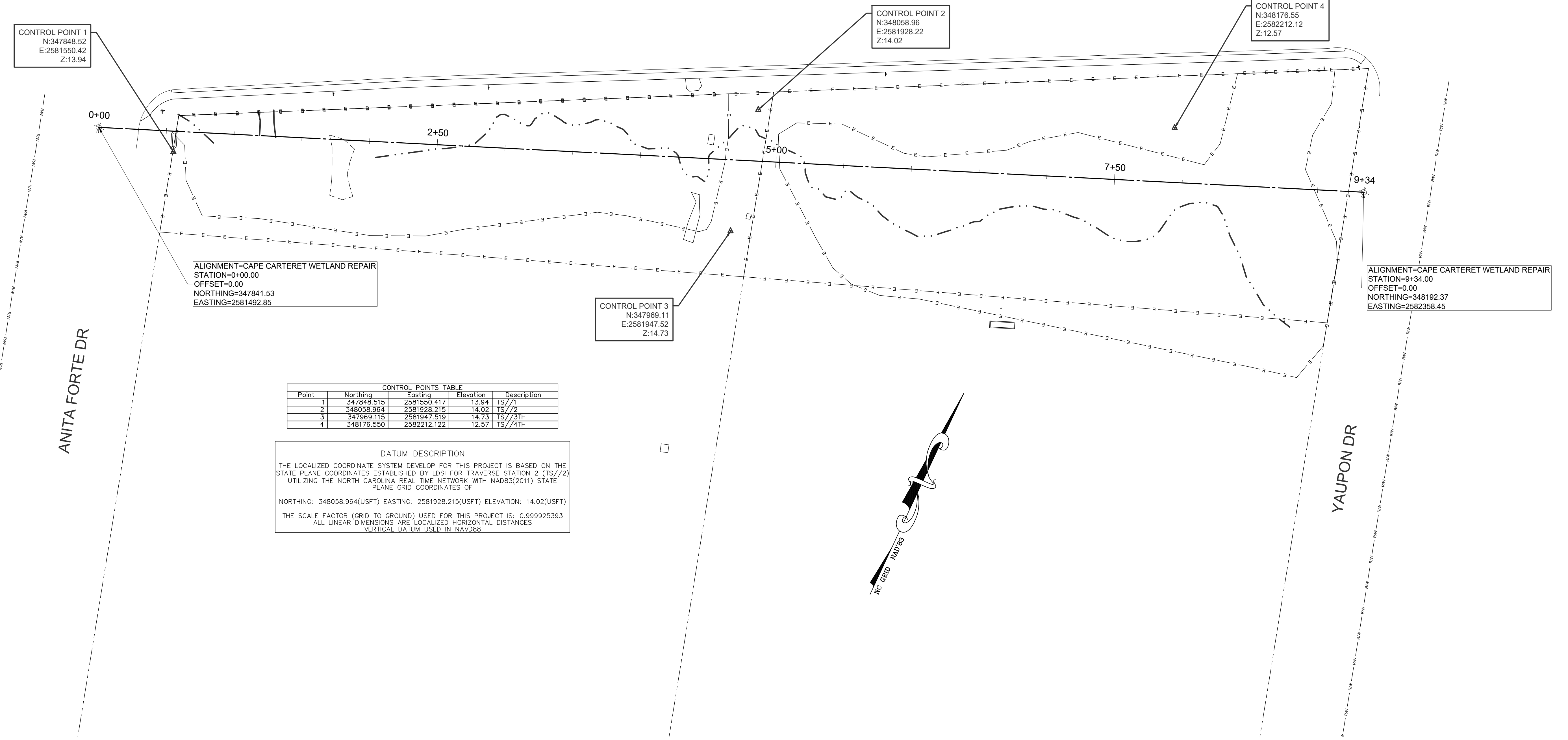
VERIFY SCALE DWG: 4519056-30% - CONTROL

BAR IS ONE INCH ON ORIGINAL DRAWING LDSI PROJECT NO.: 4519056



PROJECT REFERENC NO. R-5968BA	SHEET NO. 1 - C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p>ISSUE FOR CONSTRUCTION</p>	

NC HWY- 24

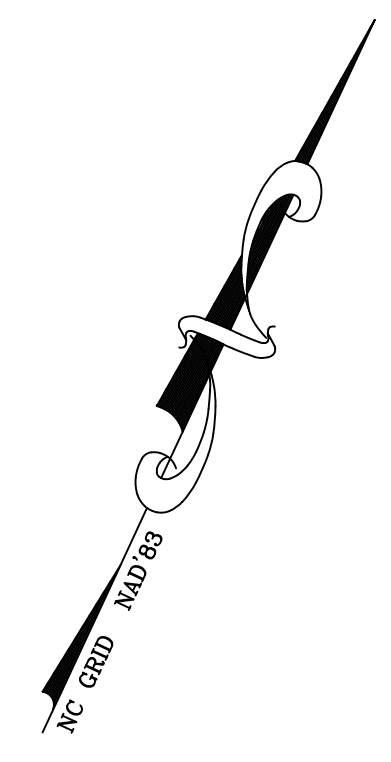


ALIGNMENT=CAPE CARTERET WETLAND REPAIR
STATION=0+00.00
OFFSET=0.00
NORTHING=347841.53
EASTING=2581492.85

ALIGNMENT=CAPE CARTERET WETLAND REPAIR
STATION=9+34.00
OFFSET=0.00
NORTHING=348192.37
EASTING=2582358.45

Point	Northing	Easting	Elevation	Description
1	347848.515	2581550.417	13.94	TS//1
2	348058.964	2581928.215	14.02	TS//2
3	347969.115	2581947.519	14.73	TS//3TH
4	348176.550	2582212.122	12.57	TS//4TH

DATUM DESCRIPTION
THE LOCALIZED COORDINATE SYSTEM DEVELOP FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY LDSI FOR TRAVERSE STATION 2 (TS//2) UTILIZING THE NORTH CAROLINA REAL TIME NETWORK WITH NAD83(2011) STATE PLANE GRID COORDINATES OF
NORTHING: 348058.964(USFT) EASTING: 2581928.215(USFT) ELEVATION: 14.02(USFT)
THE SCALE FACTOR (GRID TO GROUND) USED FOR THIS PROJECT IS: 0.999925393
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IN NAVD88

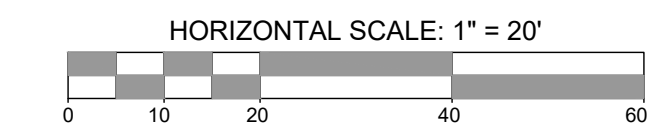


GENERAL NOTES 2



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SCALE AS SHOWN DATE: 2021/09/30
 VERIFY SHEEN DWG: 4519056-DETAILS
 LDSI PROJECT NO.: 4519056



PROJECT REFERENC NO. R-5968BA	SHEET NO. 1 - E
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
ISSUE FOR CONSTRUCTION	

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.

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' 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.

- EQUIPMENT AND VEHICLE MAINTENANCE**
1. MAINTAIN VEHICLES AND EQUIPMENT TO PREVENT DISCHARGE OF FLUIDS.
 2. PROVIDE DRIP PANS UNDER ANY STORED EQUIPMENT.
 3. IDENTIFY LEAKS AND REPAIR AS SOON AS FEASIBLE, OR REMOVE LEAKING EQUIPMENT FROM THE PROJECT.
 4. COLLECT ALL SPENT FLUIDS. STORE IN SEPARATE CONTAINERS AND PROPERLY DISPOSE AS HAZARDOUS WASTE (RECYCLE WHEN POSSIBLE).
 5. REMOVE LEAKING VEHICLES AND CONSTRUCTION EQUIPMENT FROM SERVICE UNTIL THE PROBLEM HAS BEEN CORRECTED.
 6. 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**
1. NEVER BURY OR BURN WASTE. PLACE LITTER AND DEBRIS IN APPROVED WASTE CONTAINERS.
 2. PROVIDE A SUFFICIENT NUMBER AND SIZE OF WASTE CONTAINERS (E.G DUMPSTER, TRASH RECEPTACLE) ON SITE TO CONTAIN CONSTRUCTION AND DOMESTIC WASTES.
 3. LOCATE WASTE CONTAINERS AT LEAST 50 FEET AWAY FROM STORM DRAIN INLETS AND SURFACE WATERS UNLESS NO OTHER ALTERNATIVES ARE REASONABLY AVAILABLE.
 4. 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.
 5. COVER WASTE CONTAINERS AT THE END OF EACH WORKDAY AND BEFORE STORM EVENTS OR PROVIDE SECONDARY CONTAINMENT. REPAIR OR REPLACE DAMAGED WASTE CONTAINERS.
 6. ANCHOR ALL LIGHTWEIGHT ITEMS IN WASTE CONTAINERS DURING TIMES OF HIGH WINDS.
 7. EMPTY WASTE CONTAINERS AS NEEDED TO PREVENT OVERFLOW. CLEAN UP IMMEDIATELY IF CONTAINERS OVERFLOW.
 8. DISPOSE WASTE OFF-SITE AT AN APPROVED DISPOSAL FACILITY.
 9. ON BUSINESS DAYS, CLEAN UP AND DISPOSE OF WASTE IN DESIGNATED WASTE CONTAINERS.

- PAINT AND OTHER LIQUID WASTE**
1. DO NOT DUMP PAINT AND OTHER LIQUID WASTE INTO STORM DRAINS, STREAMS OR WETLANDS.
 2. LOCATE PAINT WASHOUTS AT LEAST 50 FEET AWAY FROM STORM DRAIN INLETS AND SURFACE WATERS UNLESS NO OTHER ALTERNATIVES ARE REASONABLY AVAILABLE.
 3. CONTAIN LIQUID WASTES IN A CONTROLLED AREA.
 4. CONTAINMENT MUST BE LABELED, SIZED AND PLACED APPROPRIATELY FOR THE NEEDS OF SITE.
 5. PREVENT THE DISCHARGE OF SOAPS, SOLVENTS, DETERGENTS AND OTHER LIQUID WASTES FROM CONSTRUCTION SITES.

- PORTABLE TOILETS**
1. 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.
 2. PROVIDE STAKING OR ANCHORING OF PORTABLE TOILETS DURING PERIODS OF HIGH WINDS OR IN HIGH FOOT TRAFFIC AREAS.
 3. 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**
1. 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.
 2. PROTECT STOCKPILE WITH SILT FENCE INSTALLED ALONG TOE OF SLOPE WITH A MINIMUM OFFSET OF FIVE FEET FROM THE TOE OF STOCKPILE.
 3. PROVIDE STABLE STONE ACCESS POINT WHEN FEASIBLE.
 4. 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.

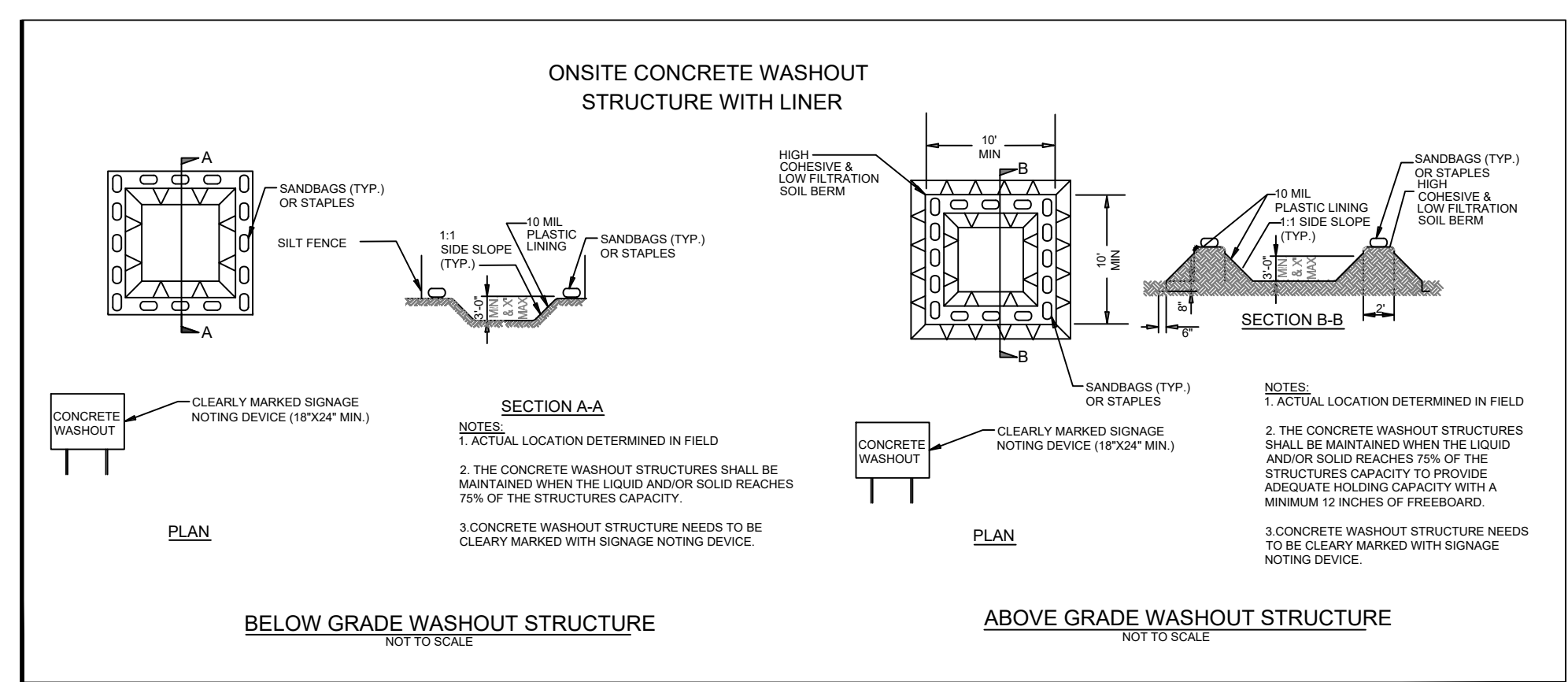
- HERBICIDES, PESTICIDES AND RODENTICIDES**
1. STORE AND APPLY HERBICIDES, PESTICIDES AND RODENTICIDES IN ACCORDANCE WITH LABEL RESTRICTIONS.
 2. STORE HERBICIDES, PESTICIDES AND RODENTICIDES IN THEIR ORIGINAL CONTAINERS WITH THE LABEL, WHICH LISTS DIRECTIONS FOR USE, INGREDIENTS AND FIRST AID STEPS IN CASE OF ACCIDENTAL POISONING.
 3. 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.
 4. DO NOT STOCKPILE THESE MATERIALS ONSITE.

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 • ROLLED EROSION 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 TACKIFIERS • GEOTEXTILE FABRICS SUCH AS PERMANENT SOIL REINFORCEMENT MATTING OR BLANKETING • 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**
1. SELECT FLOCCULANTS THAT ARE APPROPRIATE FOR THE SOILS BEING EXPOSED DURING CONSTRUCTION, SELECTING FROM THE NC DWR LIST OF APPROVED PAMS/FLOCCULANTS.
 2. APPLY FLOCCULANTS AT OR BEFORE THE INLETS TO EROSION AND SEDIMENT CONTROL MEASURES.
 3. APPLY FLOCCULANTS AT THE CONCENTRATIONS SPECIFIED IN THE NC DWR LIST OF APPROVED PAMS/FLOCCULANTS AND IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
 4. PROVIDE PONDING AREA FOR CONTAINMENT OF TREATED STORMWATER BEFORE DISCHARGING OFFSITE.
 5. STORE FLOCCULANTS IN LEAK-PROOF CONTAINERS THAT ARE KEPT UNDER STORM-RESISTANT COVER OR SURROUNDED BY SECONDARY CONTAINMENT STRUCTURES.

- HAZARDOUS AND TOXIC WASTE**
1. CREATE DESIGNATED HAZARDOUS WASTE COLLECTION AREAS ON-SITE.
 2. PLACE HAZARDOUS WASTE CONTAINERS UNDER COVER OR IN SECONDARY CONTAINMENT.
 3. DO NOT STORE HAZARDOUS CHEMICALS, DRUMS OR BAGGED MATERIALS DIRECTLY ON THE GROUND.



- CONCRETE WASHOUTS**
1. DO NOT DISCHARGE CONCRETE OR CEMENT SLURRY FROM THE SITE.
 2. DISPOSE OF, OR RECYCLE SETTLED, HARDENED CONCRETE RESIDUE IN ACCORDANCE WITH LOCAL AND STATE SOLID WASTE REGULATIONS AND AT AN APPROVED FACILITY.
 3. 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.
 4. 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.
 5. 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.
 6. 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.
 7. 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.
 8. 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.
 9. 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.
 10. 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.

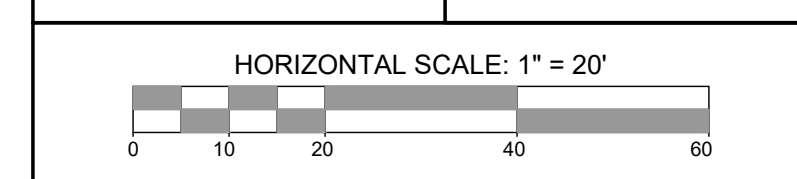


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LDSI PROJECT NO.: 4519056



PROJECT REFERENC NO. R-5968BA	SHEET NO. 1 - F
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
ISSUE FOR CONSTRUCTION	

GENERAL NOTES 3

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 UN-ATTENDED DAYS (AND THIS WILL DETERMINE OF 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 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.
(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 AN ASSURANCE THAT THEY WILL BE PROVIDED AS SOON AS POSSIBLE.

NOTE: THE RAIN INSPECTION RESETS THE REQUIRED 7 CALENDAR DAY INSPECTION REQUIREMENT.

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION 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).

(A) 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.

(B) ANTICIPATED BYPASSES AND UNANTICIPATED BYPASSES.

(C) 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(B)-(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 [40CFR 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(I)(7)]	<ul style="list-style-type: none"> • WITHIN 24 HOURS, AN ORAL OR ELECTRONIC NOTIFICATION. • WITHIN 7 CALENDAR DAYS, A REPORT THAT CONTAINS A DESCRIPTION OF THE NONCOMPLIANCE, AND ITS 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(I)(6)]. • DIVISION STAFF MAY WAIVE THE REQUIREMENT FOR A WRITTEN REPORT ON A CASE-BY-CASE BASIS.

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 DOCUMENTED IN THE MANNER DESCRIBED:

Item to Document	Documentation 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 OR IF 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

IN ADDITION TO THE E&SC 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:

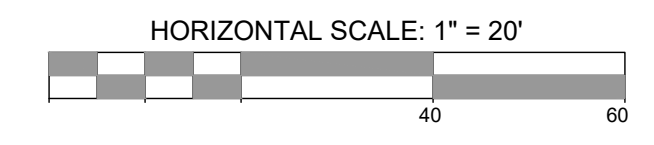
- (A) THIS GENERAL PERMIT AS WELL AS THE CERTIFICATE OF COVERAGE, AFTER IT IS RECEIVED.
- (B) RECORDS OF INSPECTIONS MADE DURING THE PREVIOUS 30 DAYS. THE PERMITTEE SHALL RECORD THE REQUIRED OBSERVATIONS ON THE INSPECTION RECORD FORM PROVIDED BY THE DIVISION OR A SIMILAR INSPECTION FORM THAT INCLUDES 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.
- (C) 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]

BERM DETAIL



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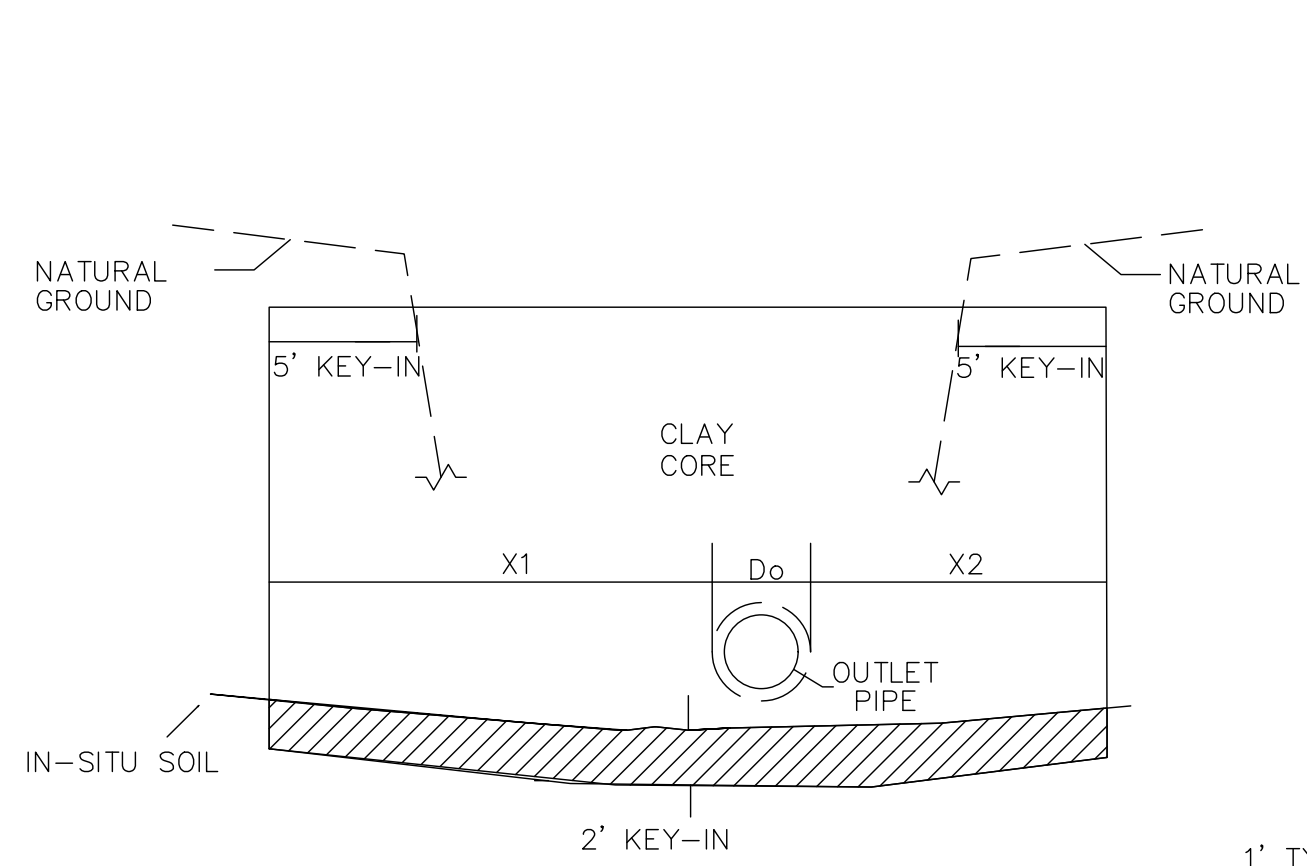


PROJECT REFERENC NO. R-5968BA	SHEET NO. 2 - A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p>ISSUE FOR CONSTRUCTION</p>	

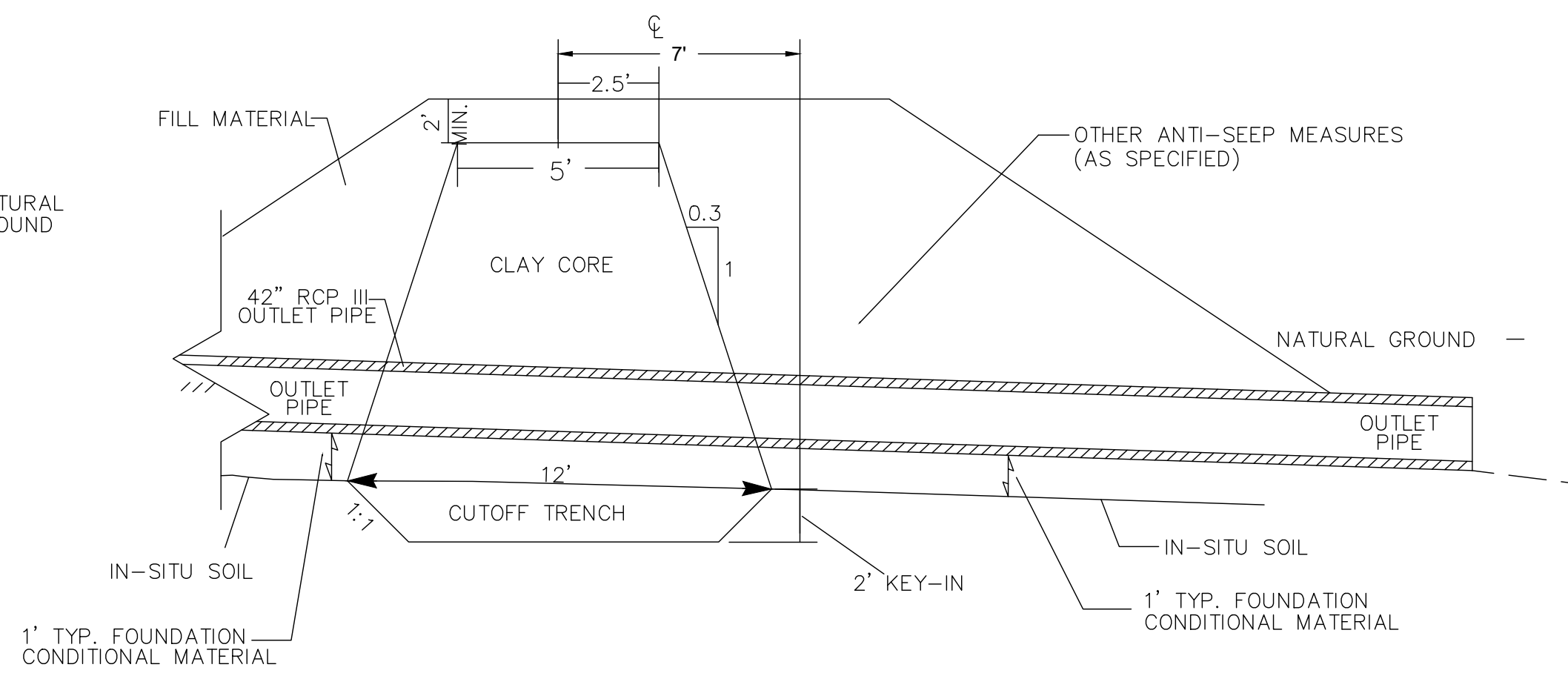
CLAY CORE IN BERM EMBANKMENT

N.T.S.

ELEVATION VIEW

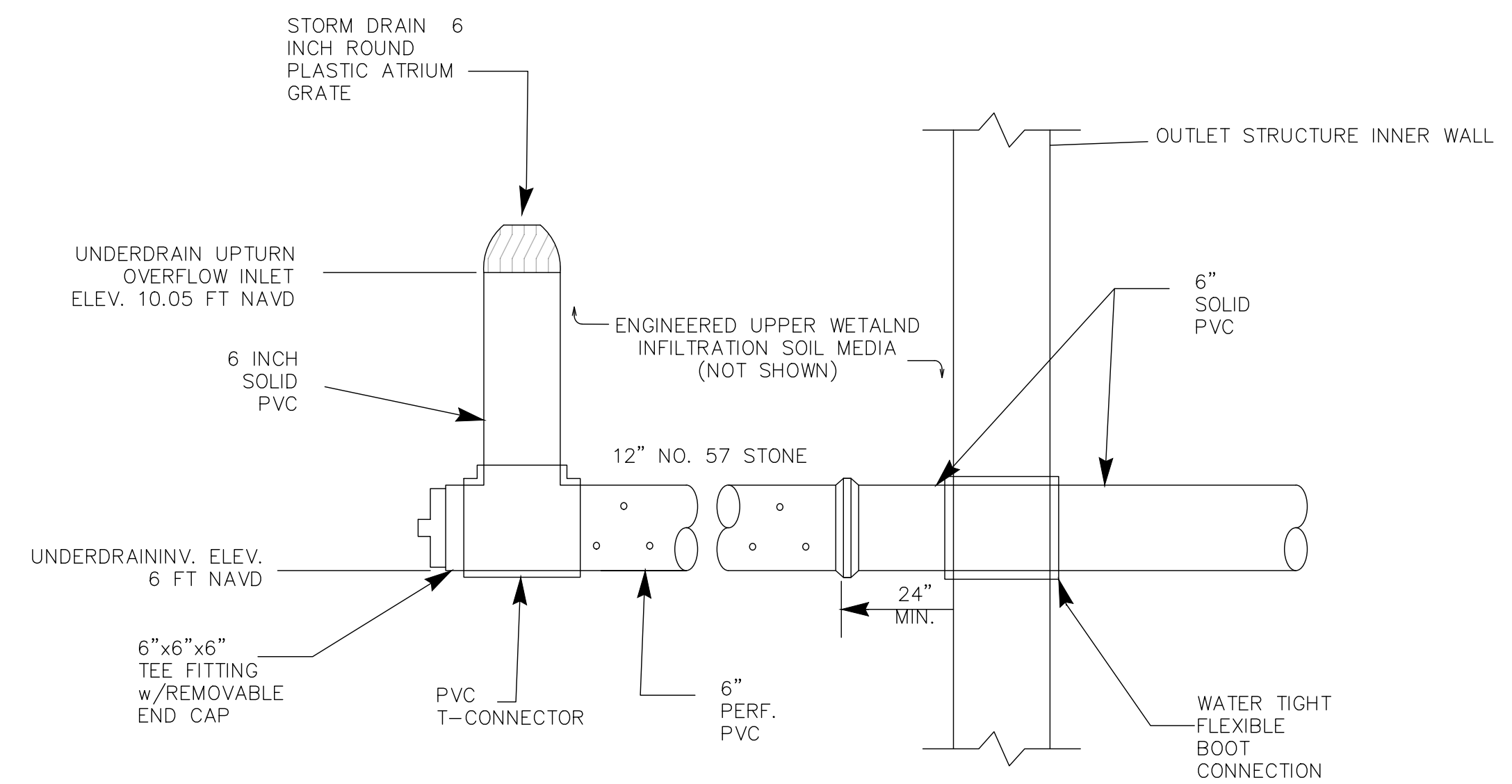


SECTION VIEW



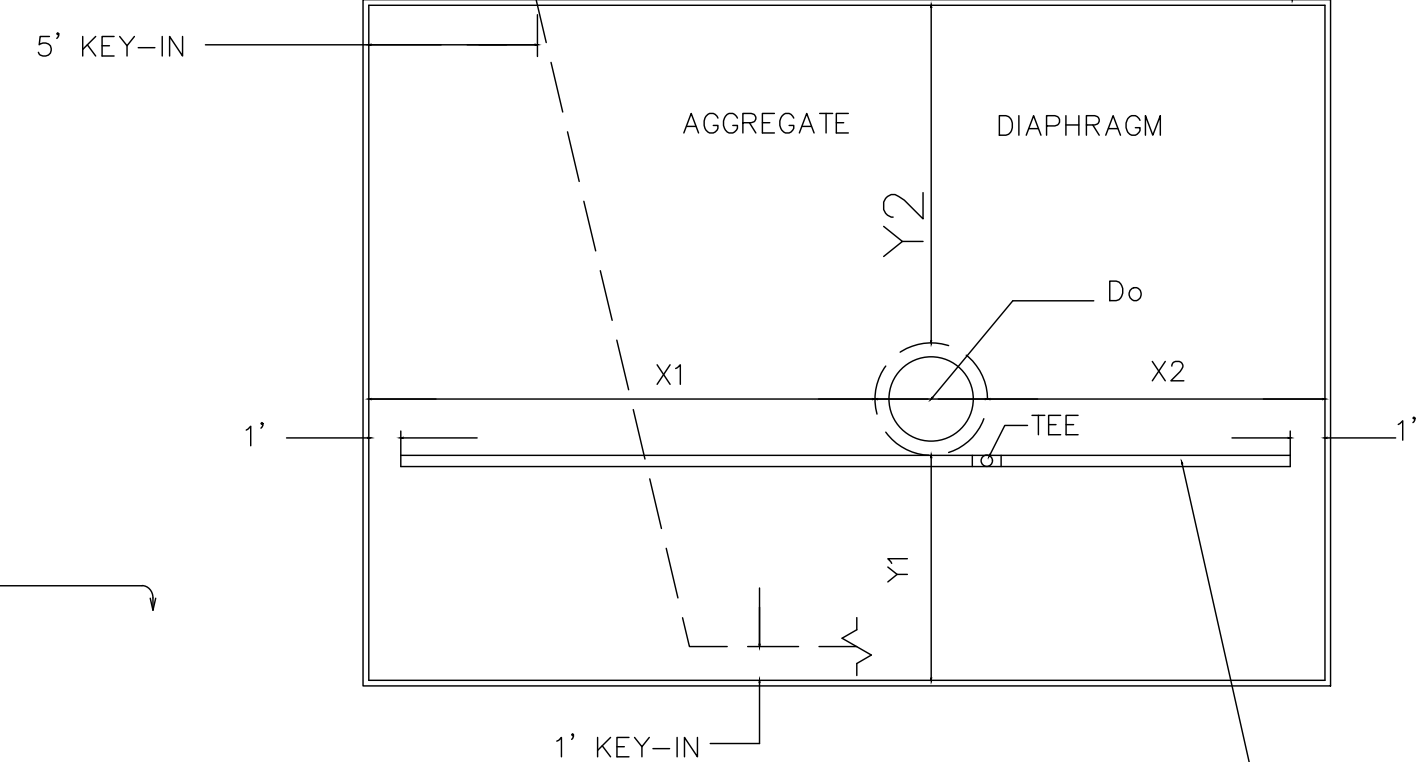
- NOTES**
- KEY IN CLAY CORE A MINIMUM OF 2' INTO IN-SITU SOIL FOUNDATION.
 - AT THE PIPE LOCATION THE CLAY CORE MATERIAL SHALL MAINTAIN A MINIMUM OF 2' OF COVER AROUND THE ENTIRE PIPE.
 - PROJECT-SPECIFIC DETAILS MUST REFLECT ACTUAL DESIGN CONDITIONS.

DIMENSIONS FOR CLAY CORE			
BMP/LOCATION DESCRIPTION	X1 FEET	X2 FEET	TOP WIDTH FEET
BERM PER SHEET 05	43	44	5.0



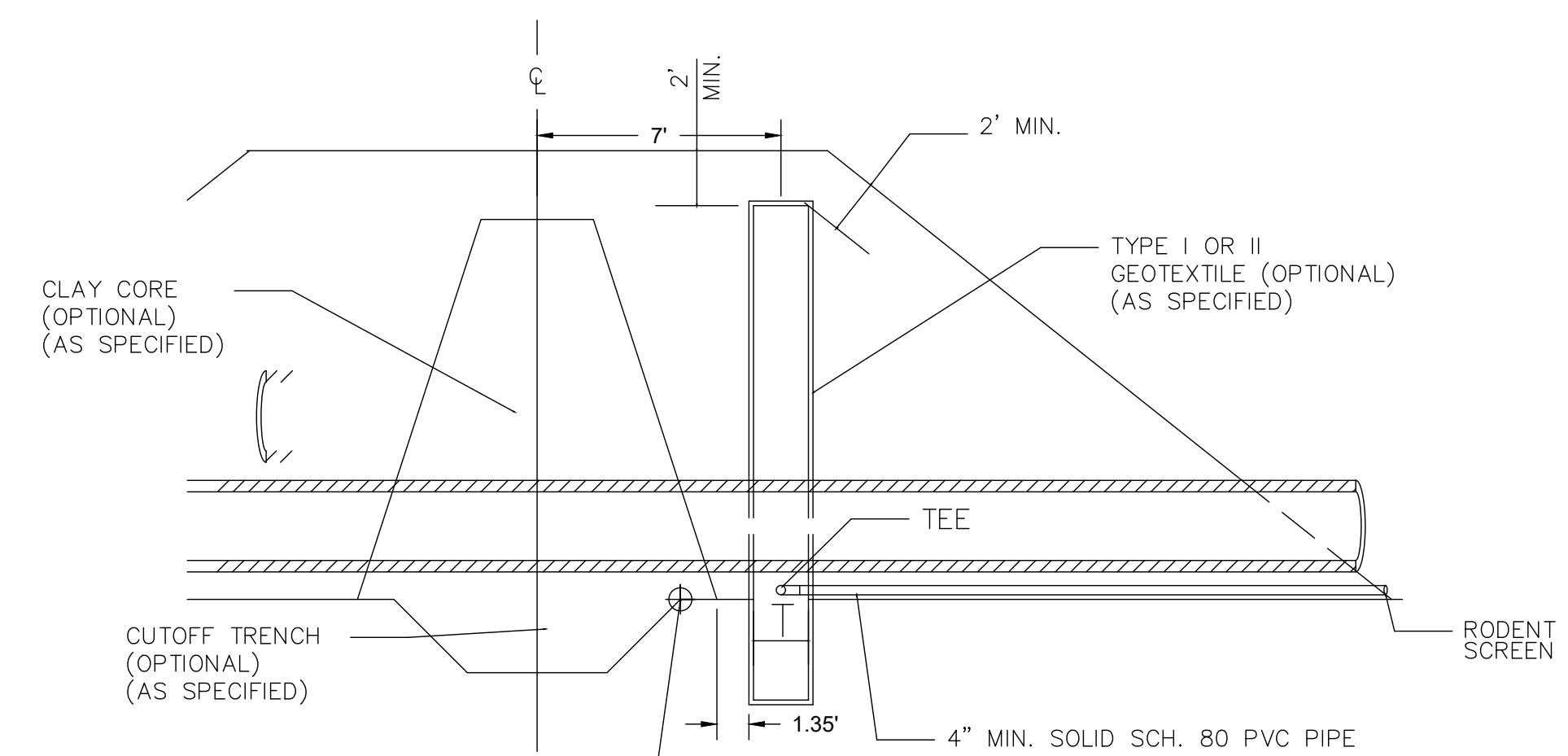
SUBDRAIN OUTLETS
N.T.S.

FILTER DIAPHRAGM

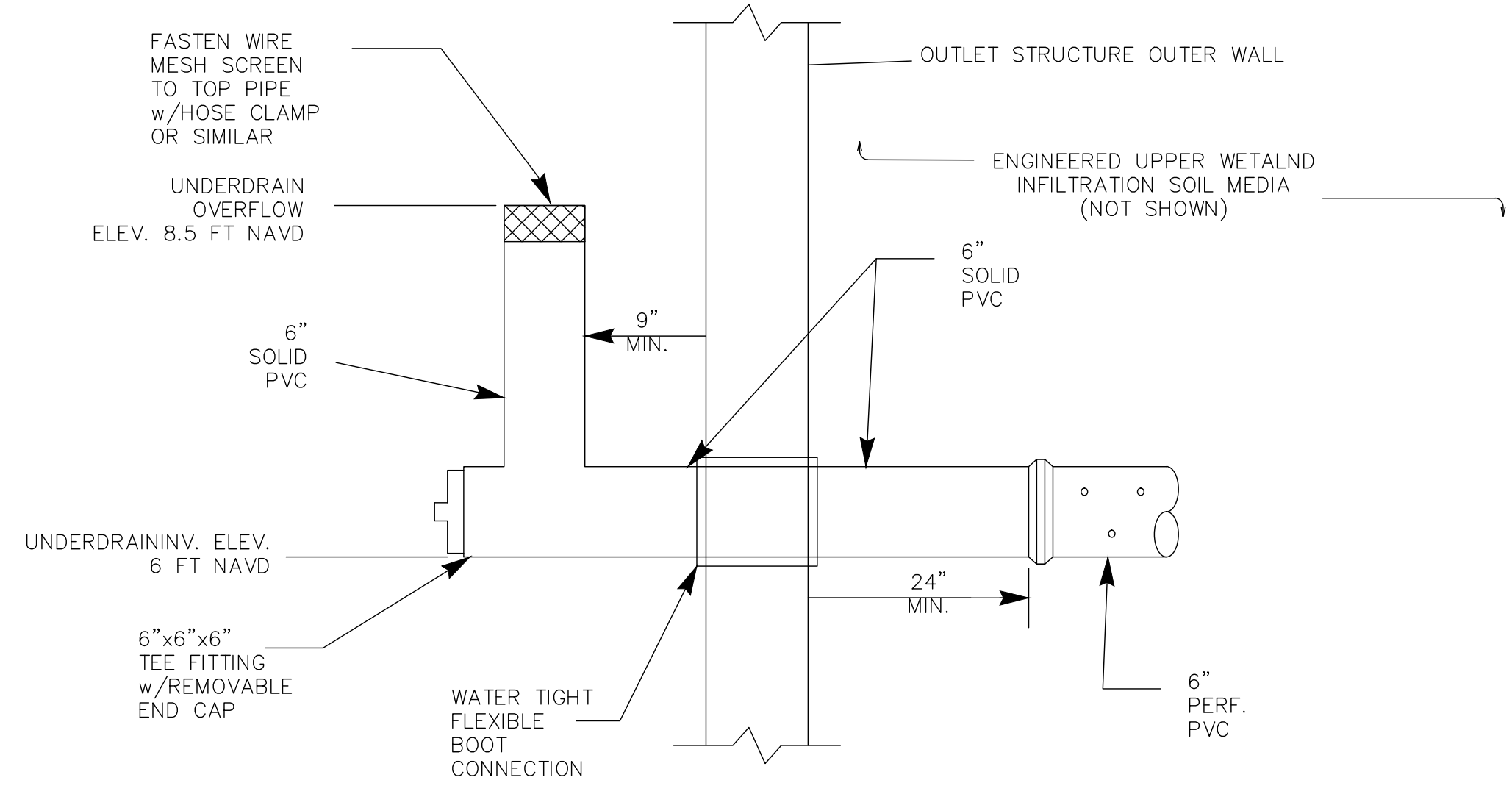


ELEVATION VIEW

- FILTER DIAPHRAGM NOTES:**
- X1, X2= 3D_o MIN. HOWEVER, DIAPHRAGM MUST BE KEYED-IN Laterally 5 FT. INTO EXISTING GROUND.
 - Y1= 2D_o MIN. HOWEVER, DIAPHRAGM SHOULD BE KEYED-IN 1 FT. INTO THE UNDERLYING EXISTING GROUND. Y1 MAY BE REDUCED IF BEDROCK IS ENCOUNTERED.
 - Y2= 3D_o MAX. IF THE MAXIMUM POTENTIAL WATER LEVEL IS BELOW THE TOP OF THE FILTER DIAPHRAGM, THEN Y2 MAY BE REDUCED SO THAT THE TOP OF THE FILTER DIAPHRAGM IS EQUAL TO THE MAXIMUM POTENTIAL WATER LEVEL.
 - MINIMUM FILTER THICKNESS IS 2 FT.



SECTION VIEW



UNDERDRAIN UPTURN BLOWUP
N.T.S.

BMP/LOCATION DESCRIPTION	OUTLET PIPE OUTSIDE DIA. (D _o) FEET	X1 FEET (SEE NOTE 1)	X2 FEET (SEE NOTE 1)	Y1 FEET (SEE NOTE 2)	Y2 FEET (SEE NOTE 3)	FILTER THICKNESS (T) FEET (SEE NOTE 4)	PVC PIPE DIAMETER INCHES	AGGREGATE			FILTER FABRIC (OPTIONAL)	
								TYPE	QUANTITY	UNITS CY, TON	TYPE I, II	QUANTITY S.Y.
								BERM PER SHEET 05	4.25	43	44	2.9

ARTICULATED CONCRETE BLOCK DETAILS

GPI Formerly LDSI, Inc. **LDSI**
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HORIZONTAL SCALE: 1" = 20'

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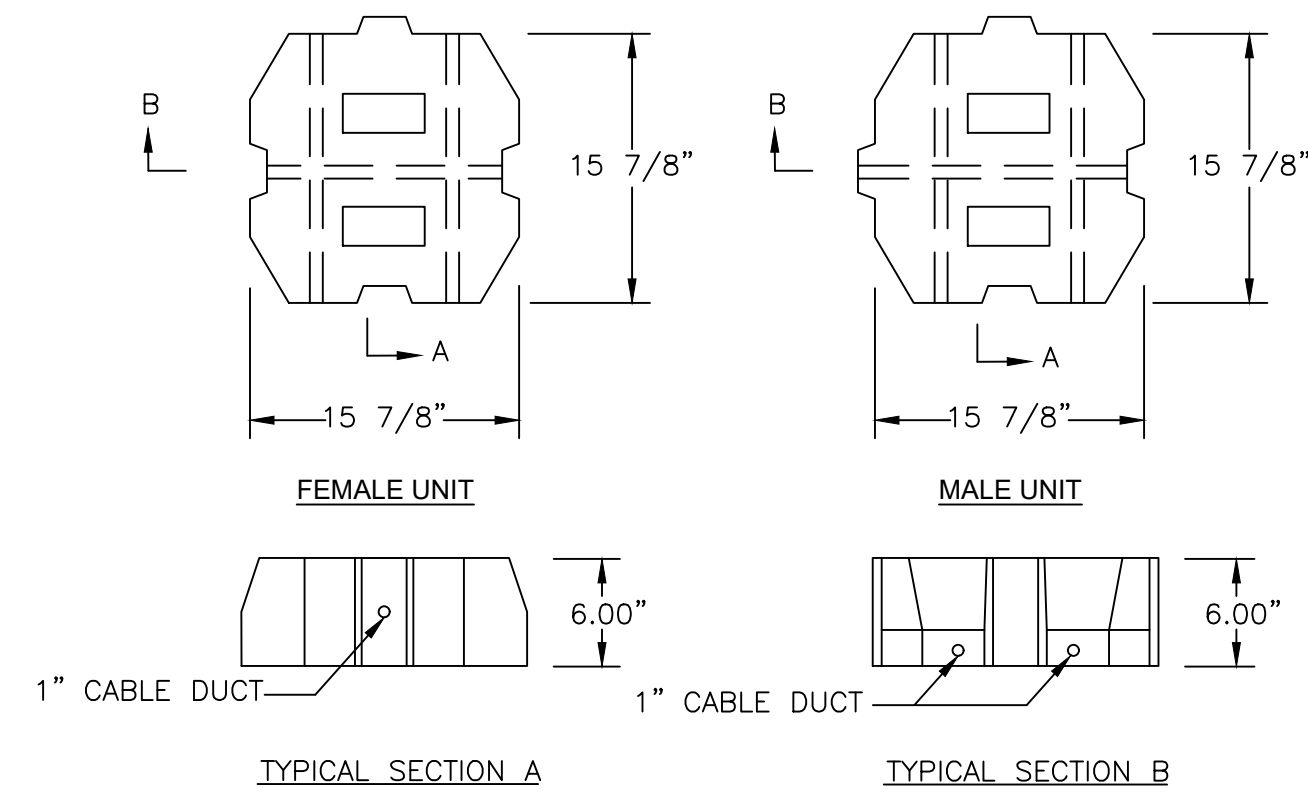
NOTE:
FEMALE BLOCKS ARE USED ON THE OUTSIDE OF THE MATS TO ALLOW CRIMPING.

TECHNICAL SPECIFICATIONS
1) UNITS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM 90 AND C140 AND THE FOLLOWING CRITERIA:
A) CONCRETE UNIT WEIGHT 130-150 LBS/CF.
B) MINIMUM COMPRESSIVE STRENGTH - 4,000 PSI.
C) MAXIMUM ABSORPTION - 5%.
D) DIMENSIONAL TOLERANCE +/- 1/8".

2) POLYESTER CABLING.

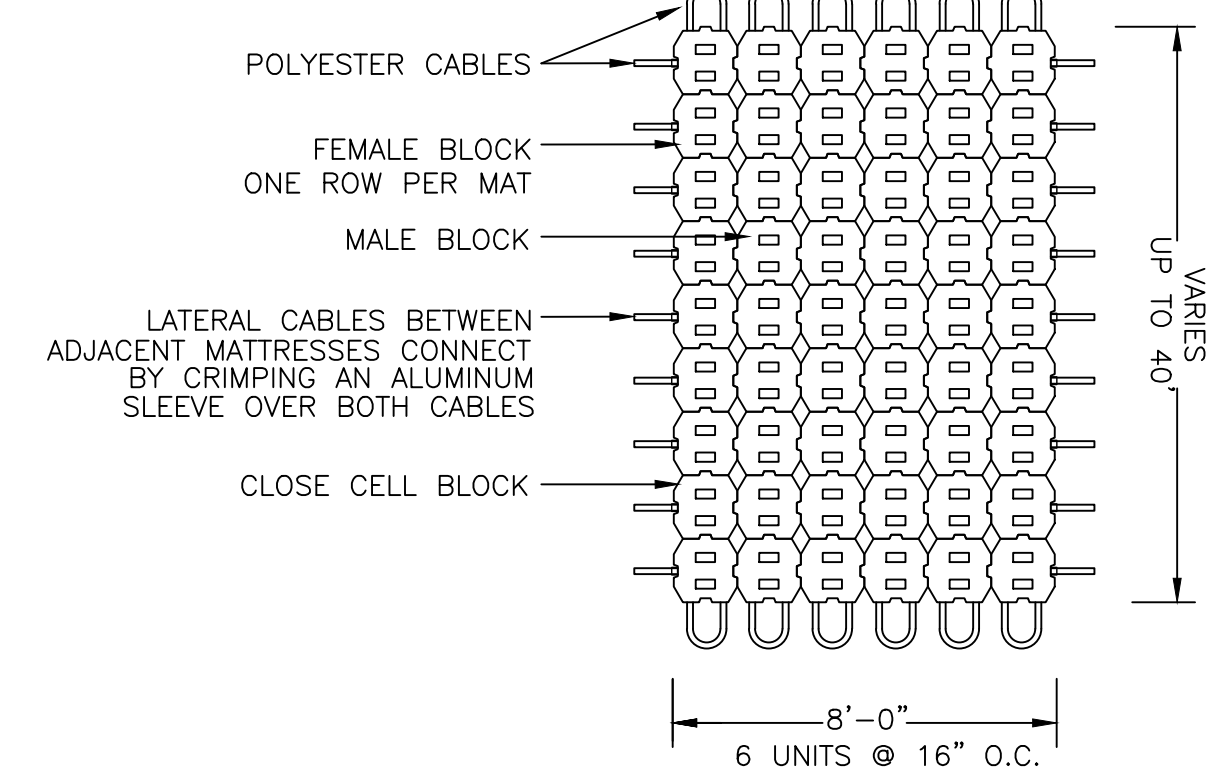
ASSEMBLY SPECIFICATIONS

- UNITS ARE SHOP ASSEMBLED IN A CABLED MATTRESS AS SHOWN ABOVE.
- MATS ARE PLACED BY THE CONTRACTOR IN THE FIELD ON PREPARED SLOPES PER THE CONTRACT DRAWINGS.



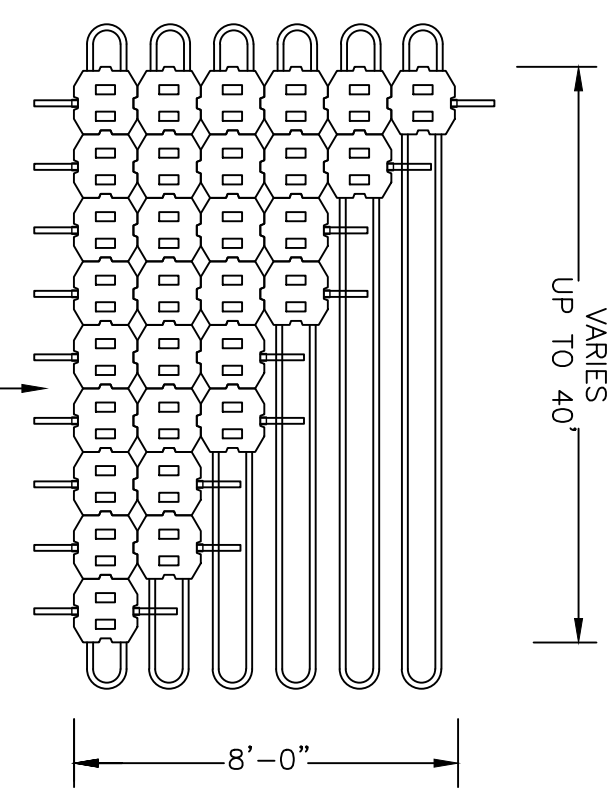
UNIT	WEIGHT LBS.	COVERAGE (lbs/sq.ft)	OPEN AREA
BD-400-OC®	86-93	50-54	20%

1 APPROVED BLOCK
NOT TO SCALE

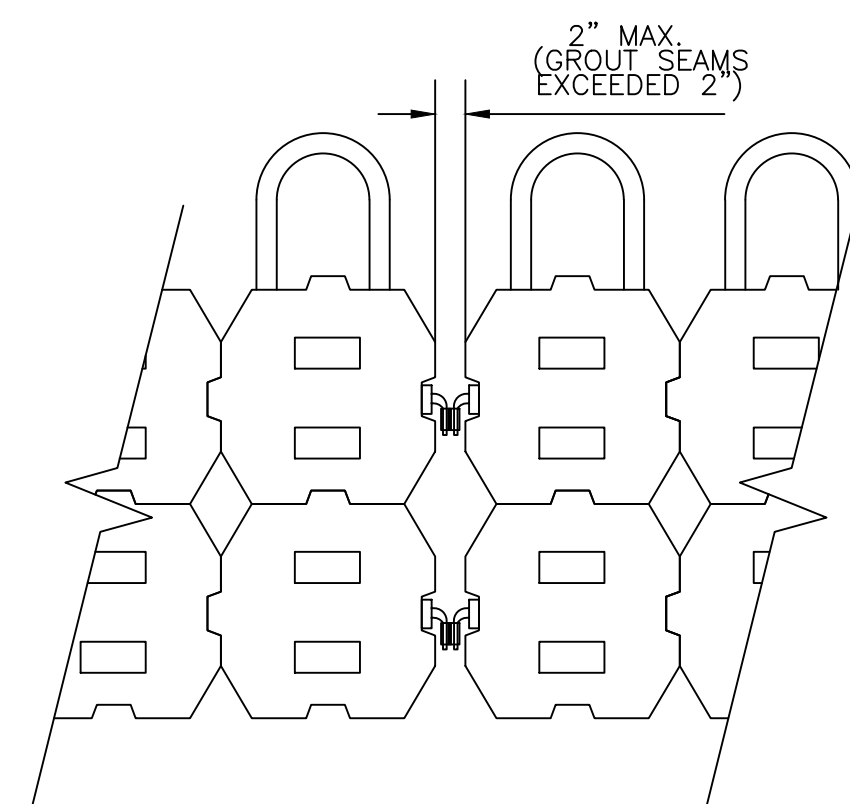


2 APPROVED MATTRESS
NOT TO SCALE

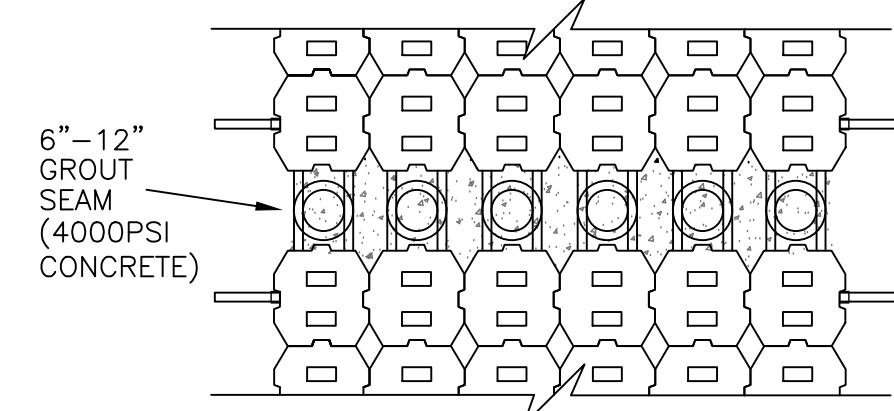
NOTE:
ANGLE MATS WILL BE CONSTRUCTED BY OMITTING THE REQUIRED UNITS SO THE REQUIRED MAT DIMENSIONS CAN BE OBTAINED.



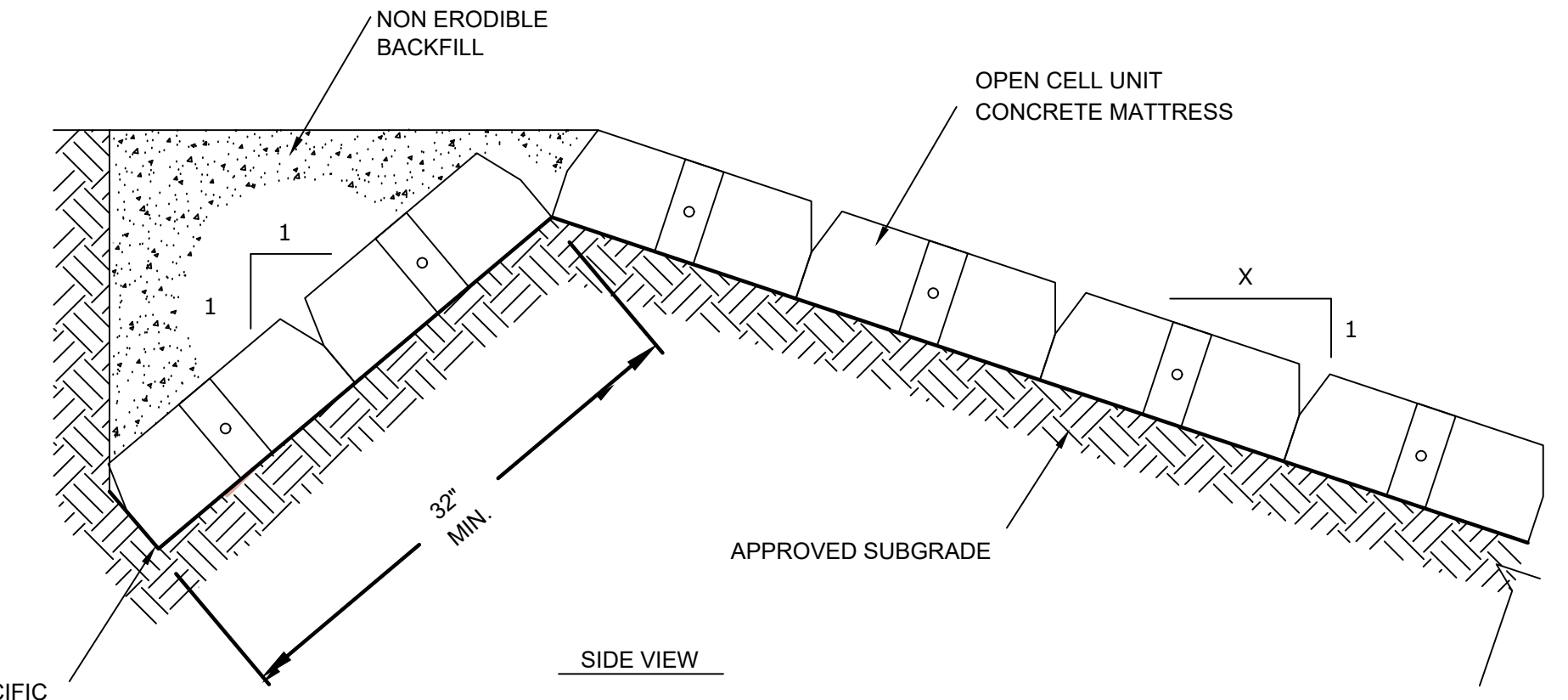
3 TYP. ANGLE MAT
NOT TO SCALE



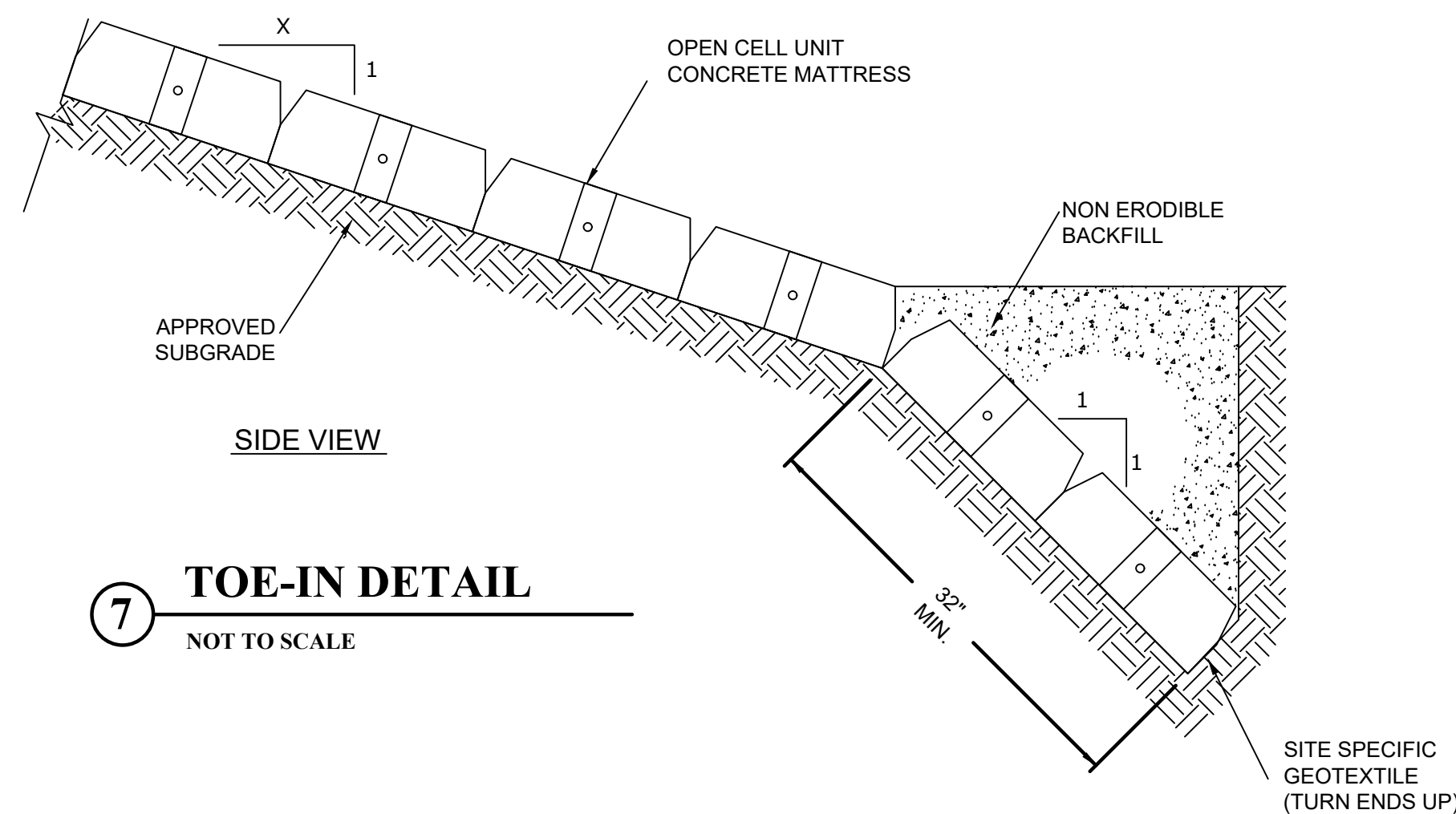
4 MAT TO MAT CONNECTION
NOT TO SCALE



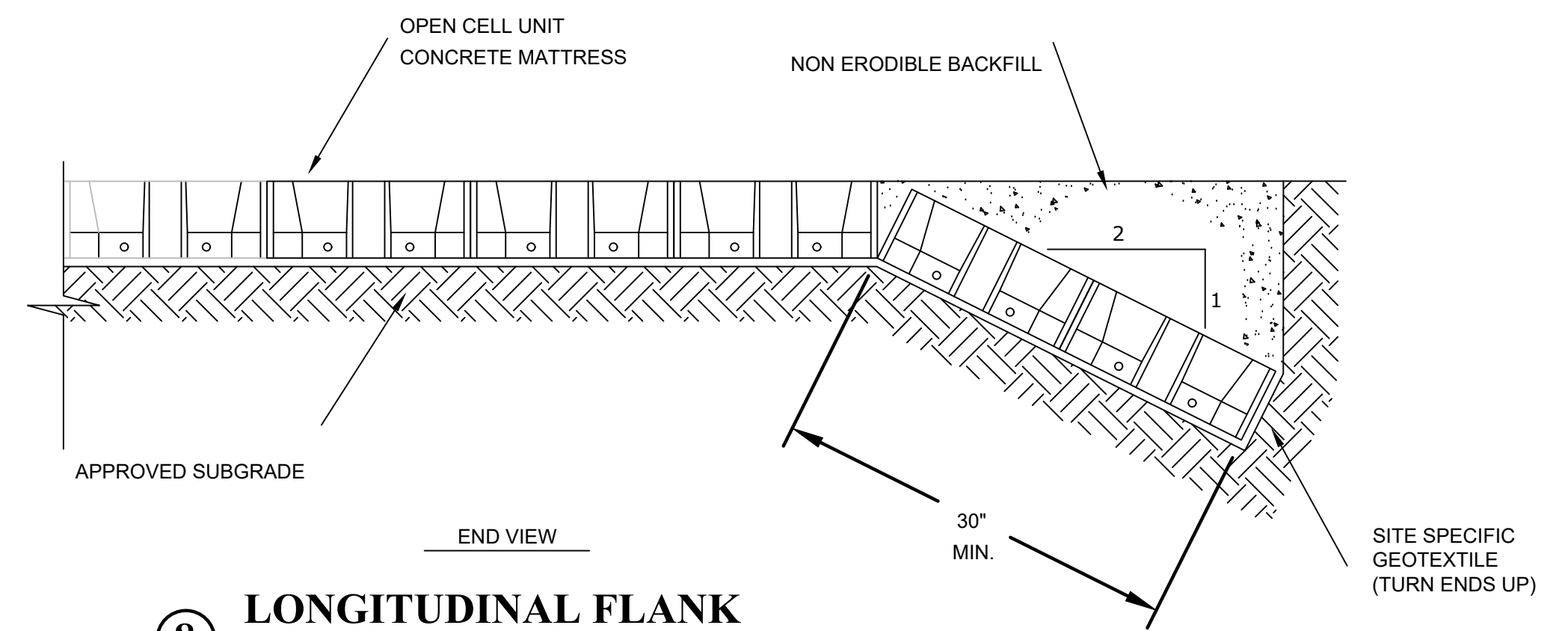
5 END TO END CONNECTION
NOT TO SCALE



6 TOP OF DETAIL
NOT TO SCALE



7 TOE-IN DETAIL
NOT TO SCALE



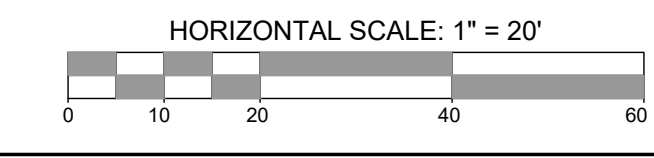
8 LONGITUDINAL FLANK
NOT TO SCALE

TRASH RACK AND SIDEWALK REPAIR DETAILS

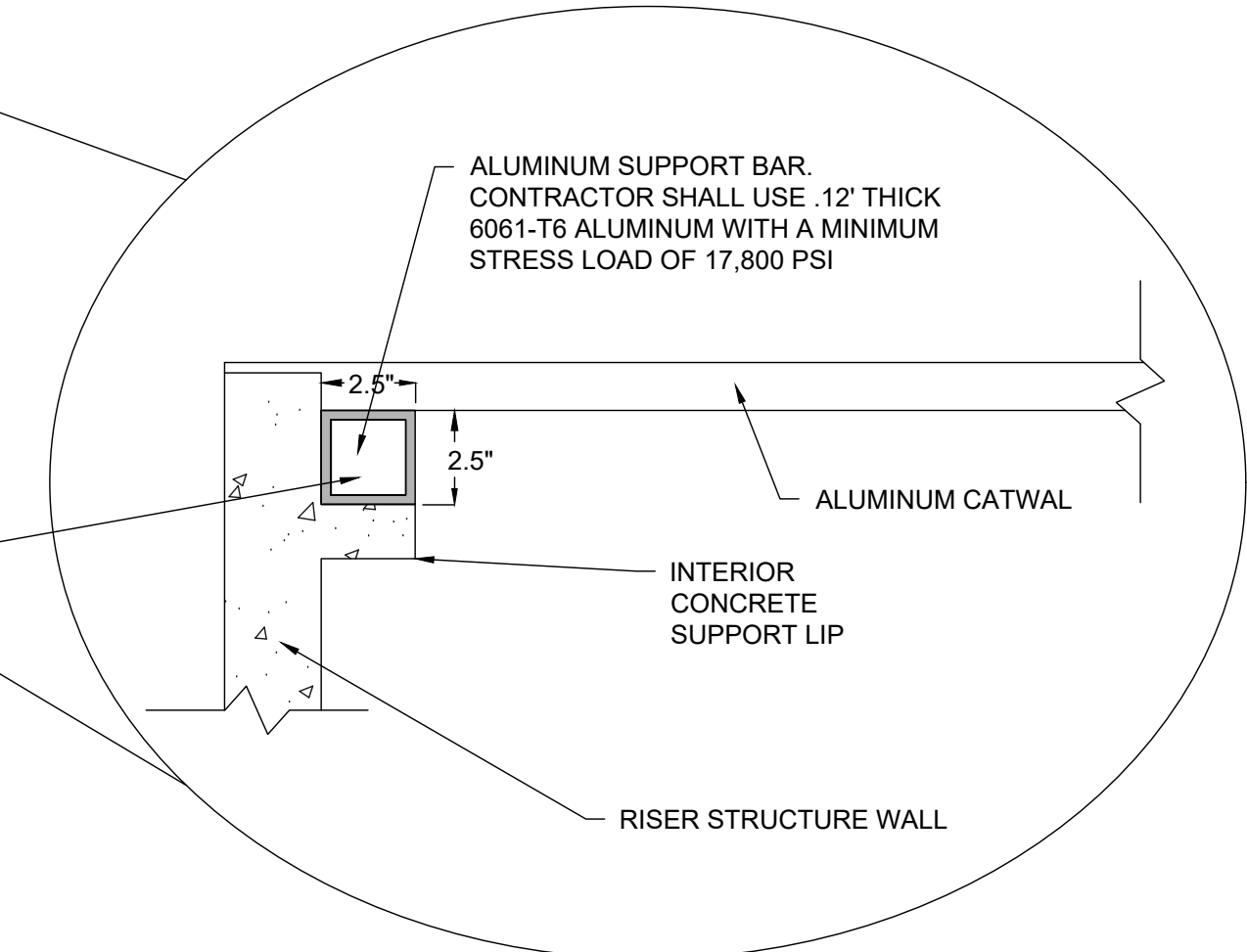
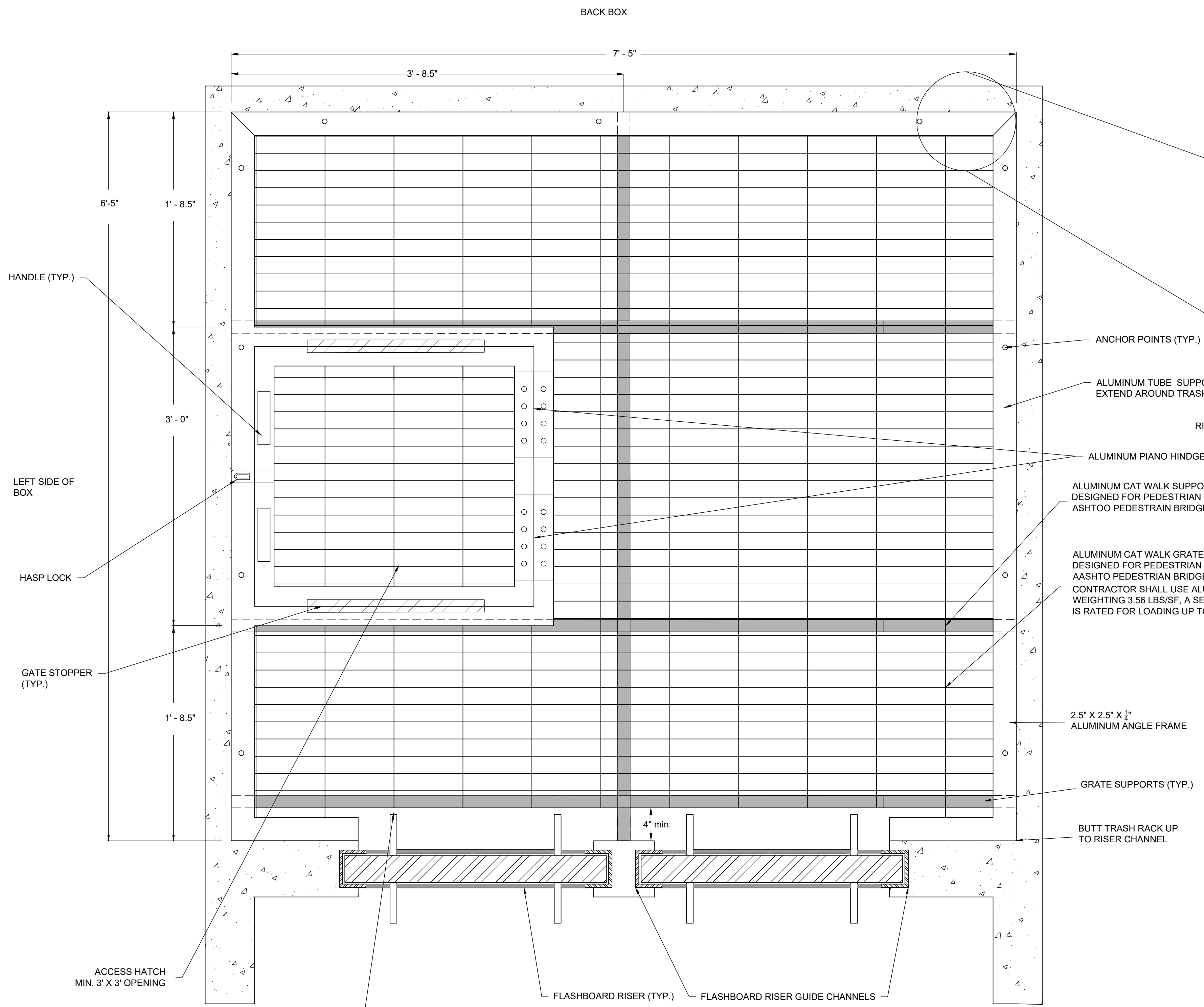


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TRASH RACK PROFILE VIEW
N.T.S.

NOTES:

CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4" THICK UNLESS OTHERWISE DENOTED ON PLANS.

PLACE A GROOVE JOINT 1" DEEP WITH 1/8" RADII IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS. A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.

SEE STD. DWG. 848.05 FOR CURB RAMP LOCATION REQUIREMENTS AND CONSTRUCTION GUIDELINES.

TRANSVERSE EXPANSION JOINT IN SIDEWALK

DETAILS SHOWING JOINTS IN CONCRETE SIDEWALK

- GENERAL NOTES**
- TRASH RACK DESIGN SHALL APPROVED AND SEALED BY STRUCTURE ENGINEER.
 - ALUMINUM SHALL BE 6061 - T6, UNLESS OTHERWISE APPROVED BY PROJECT ENGINEER.
 - ACCESS AREA SHALL BE FREE OF BURRS, SHARP EDGES, OR POTENTIAL HAZARDS. HATCH AREA SHOULD HAVE A HANDLE AND SHOULD BE ABLE TO BE PINNED OPEN DURING MAINTENANCE ACTIVITY.
 - TRASH RACK SHALL BE FABRICATED IN A MANNER THAT DOES NOT IMPACT THE STOP LOGS.
 - CONTRACTOR SHALL INSTALL ABUT GASKET BETWEEN THE TRASH RACK AND THE TOP OF THE WATER CONTROL STRUCTURE, AS SPECIFIED BETWEEN THE ALUMINUM GUIDE CHANNEL.
 - CONTRACTOR SHALL USE TRASH RACK THAT MEETS AASHTO PEDESTRIAN BRIDGE LOADING SPECIFICATION WITH MINIMUM OF 900 LB POINT LOADING

TRASH RACK PLAN VIEW
N.T.S.

SIDEWALK REPAIR DETAIL
N.T.S.

NOTE:
ALL DIMENSIONS SHOWN ARE MINIMUM. FABRICATION ENGINEER SHALL SIZE STRUCTURES IN ACCORDANCE WITH THEIR CALCULATIONS.

CONTRACTOR SHALL ENSURE SPACING IN TRASH RACK DESIGN TO ALLOW FOR EASY INSTALLATION AND REMOVAL OF FLASHBOARD RISERS

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.
 ROADWAY STANDARD DRAWING FOR
CONCRETE SIDEWALK
 SHEET 1 OF 1
848.01

FLASH BOARD RISER CONTROL STRUCTURE DETAIL

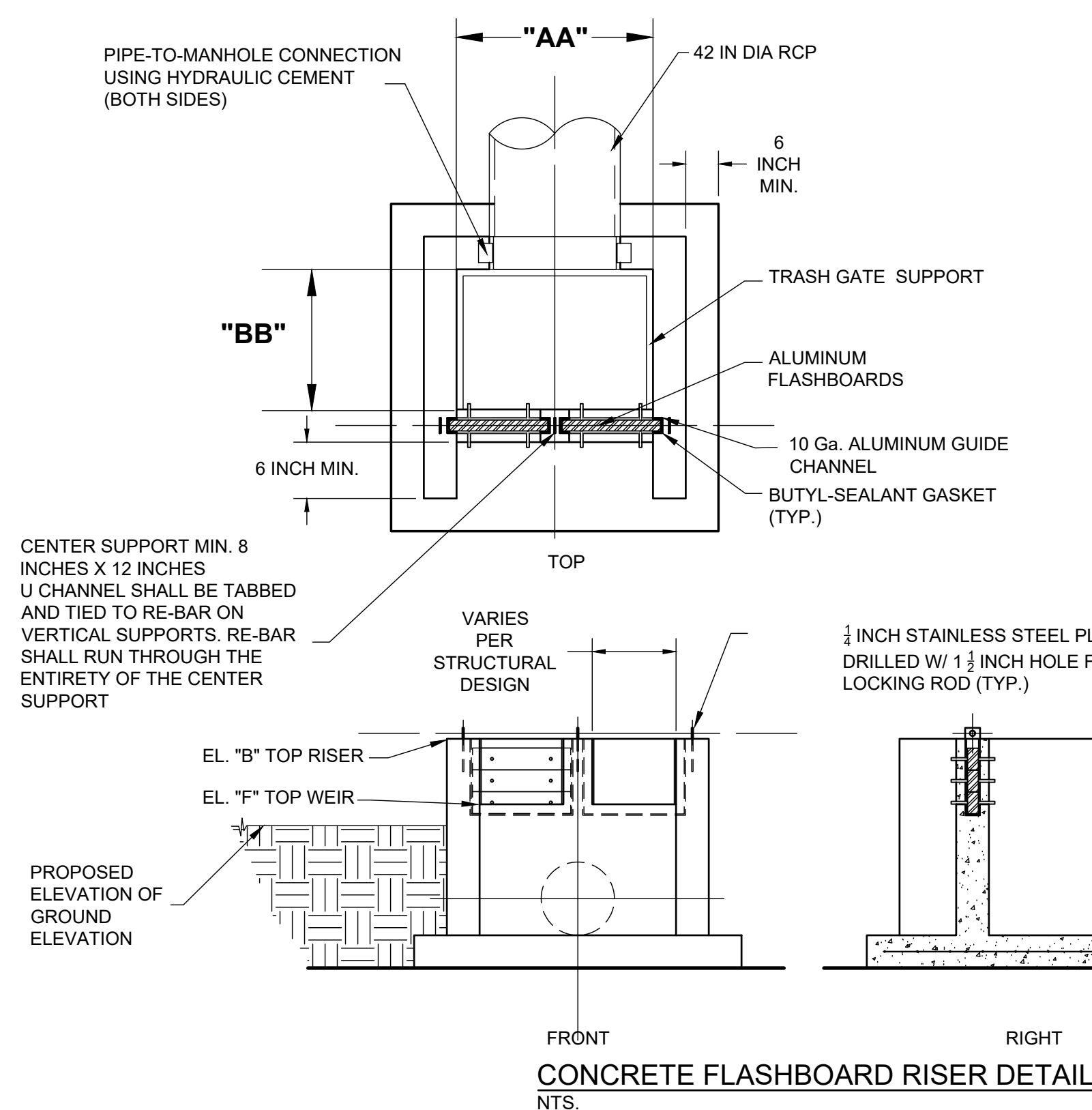


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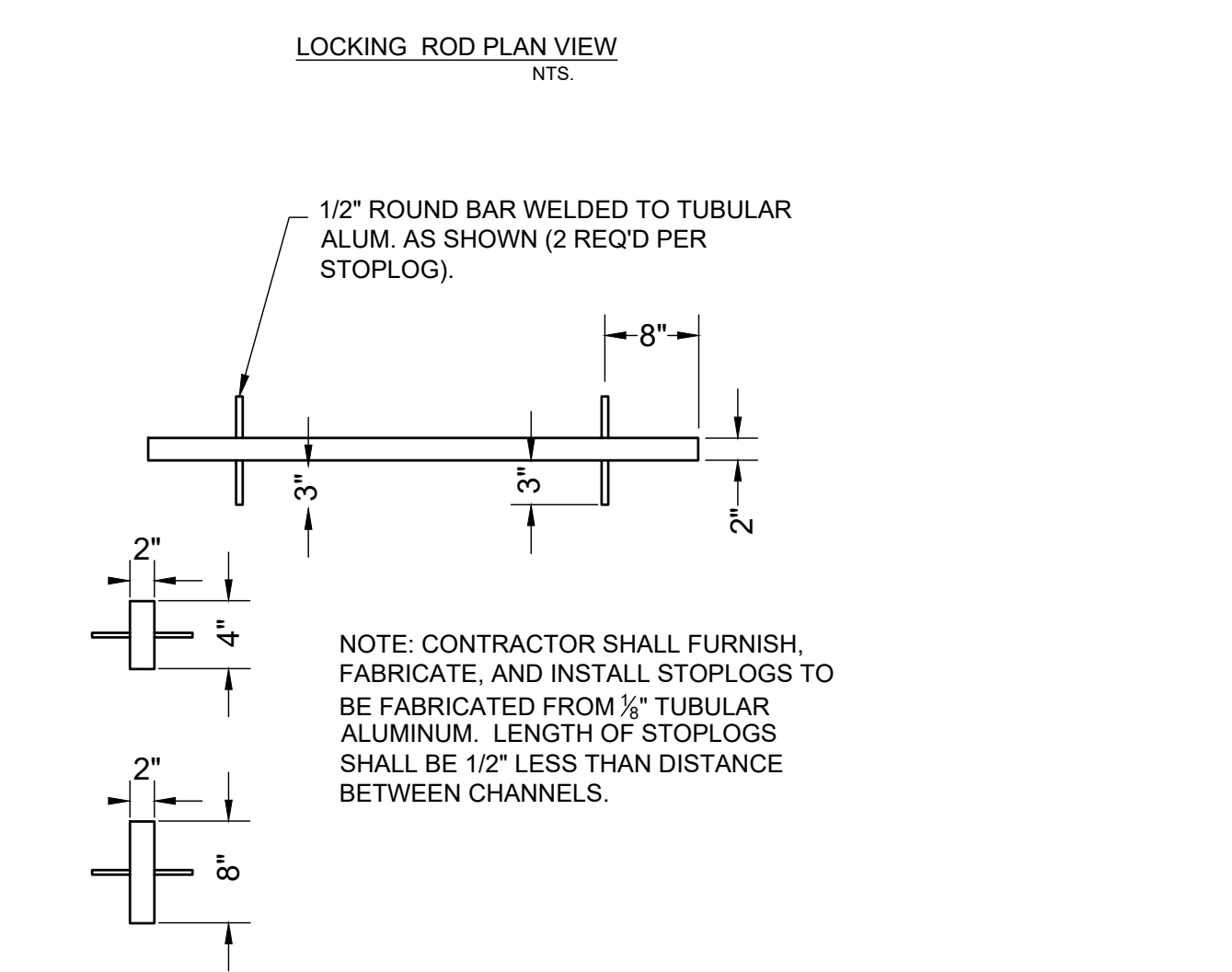
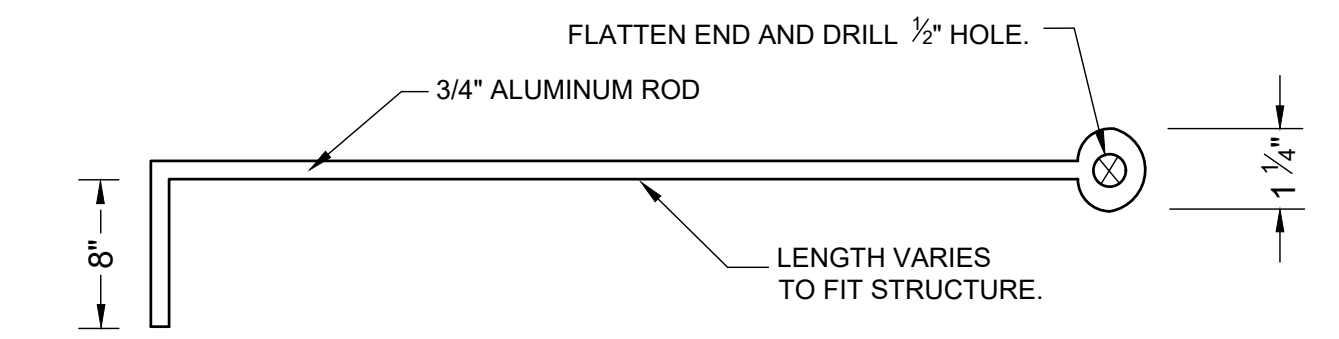
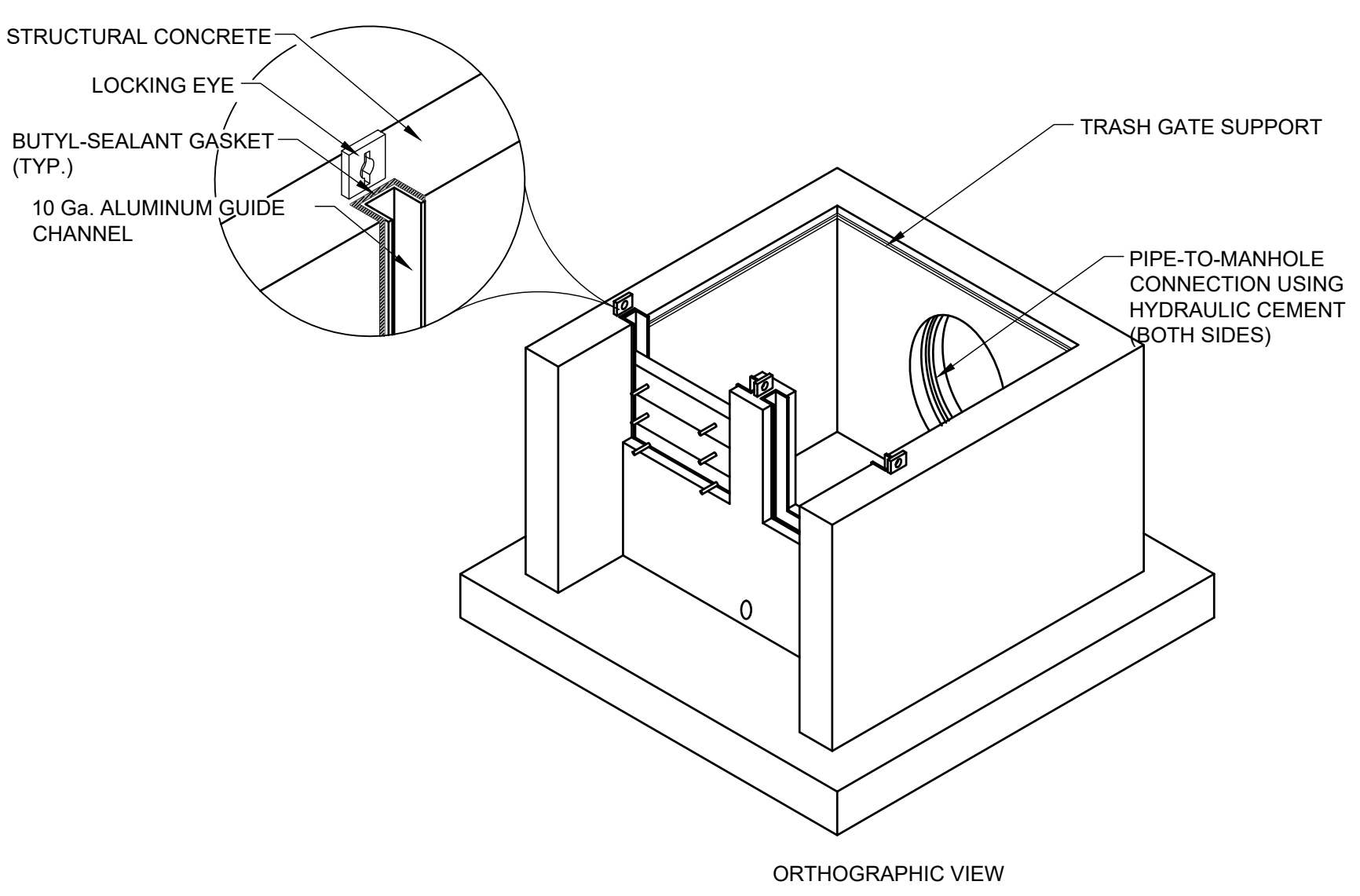
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 LDSI PROJECT NO.: 4519056

HORIZONTAL SCALE: 1" = 20'
 0 10 20 40 60

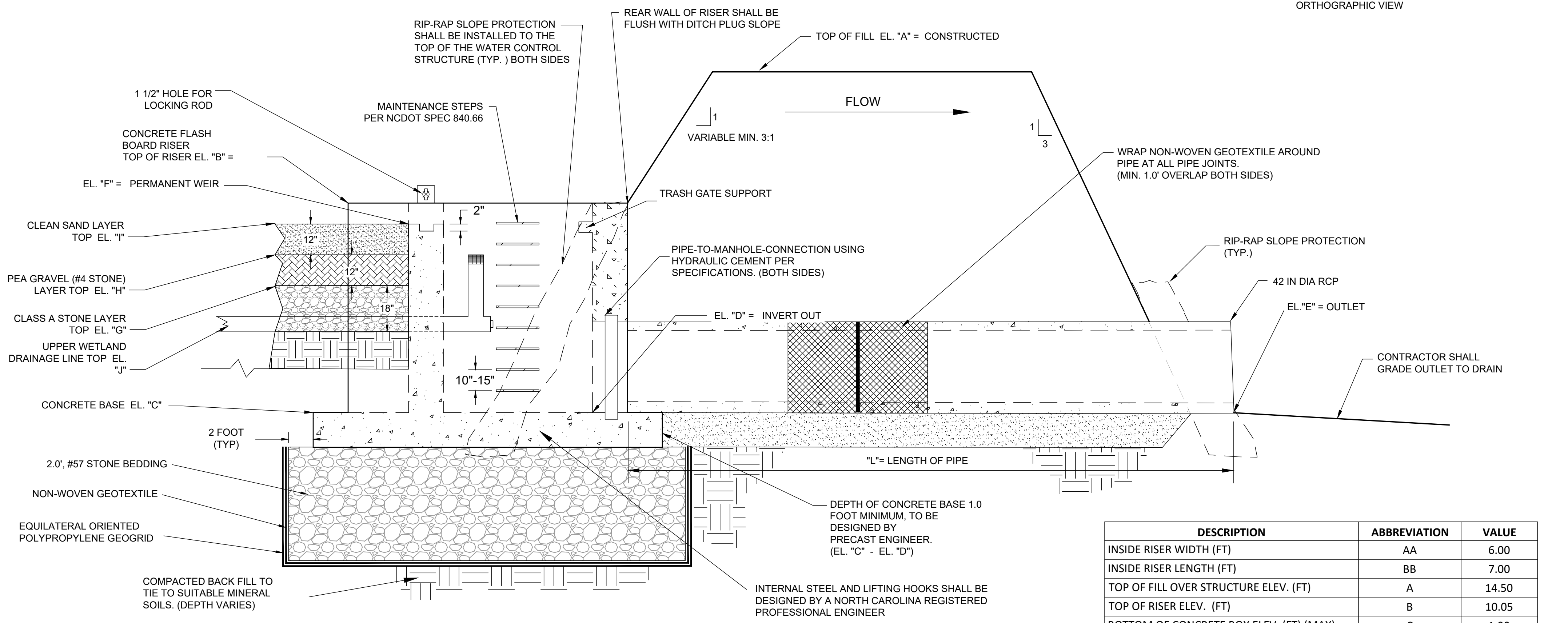
PROJECT REFERENCE NO. R-5968BA	SHEET NO. 2 - D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
ISSUE FOR CONSTRUCTION	



NOTE:
 ALL DIMENSIONS SHOWN ARE MINIMUM. FABRICATION ENGINEER SHALL SIZE STRUCTURES IN ACCORDANCE WITH THEIR CALCULATIONS, MAINTAINING THE WEIR LENGTH SPECIFIED WITHIN THE TABLE BELOW.



STANDARD ALUMINUM STOPLOG DETAIL
 NTS



TYPICAL SECTION OF WATER CONTROL STRUCTURE LOCATION
 NTS

LEGEND OF TABLE

DIM. "AA" = INSIDE RISER WIDTH
 DIM. "BB" = INSIDE RISER LENGTH
 EL. "A" = TOP OF FILL OVER STRUCTURE ELEV.
 EL. "B" = TOP OF RISER
 EL. "C" = BOTTOM OF CONCRETE
 EL. "D" = UPPER INVERT OF PIPE
 EL. "E" = LOWER INVERT OF PIPE
 EL. "F" = PERMANENT WEIR
 EL. "G" = TOP OF CLASS A STONE LAYER
 EL. "H" = TOP OF PEA GRAVEL (#4 STONE) LAYER
 EL. "I" = TOP OF CLEAN SAND LAYER
 EL. "J" = TOP OF UPPER WETLAND UNDER-DRAIN PIPE
 L = LENGTH OF PIPE

DESCRIPTION	ABBREVIATION	VALUE
INSIDE RISER WIDTH (FT)	AA	6.00
INSIDE RISER LENGTH (FT)	BB	7.00
TOP OF FILL OVER STRUCTURE ELEV. (FT)	A	14.50
TOP OF RISER ELEV. (FT)	B	10.05
BOTTOM OF CONCRETE BOX ELEV. (FT) (MAX)	C	1.00
INLET INVERT PIPE ELEV. (FT)	D	2.00
OUTLET INVERT PIPE ELEV. (FT)	E	1.50
PERMANENT WEIR ELEV. (FT)	F	9.50
CLASS A STONE LATER TOP ELEV. (FT)	G	7.50
PEA GRAVEL (#4 STONE) LAYER TOP ELEV. (FT)	H	8.50
CLEAN SAND LAYER TOP ELEV. (FT)	I	9.50
UPPER WETLAND DRAINAGE LINE TOP ELEV. (FT)	J	6.50
LENGTH OF PIPE 42"(LFT)	N/A	70.00

NOTE: ALL STONE SHALL BE NON-LIMESTONE SOURCE STONE

FABRICATION NOTES:

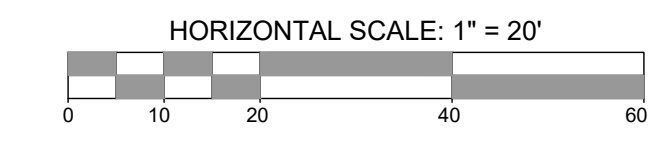
- THE PLANS (SHOP DRAWINGS) FOR PRECAST UNITS SHALL BE DRAWINGS FURNISHED BY THE CONTRACTOR FOR APPROVAL BY THE PROJECT ENGINEER. THESE DRAWINGS SHALL SHOW COMPLETE DESIGN, INSTALLATION, STRUCTURAL LOADING, AND CONSTRUCTION INFORMATION IN SUCH DETAIL AS TO ENABLE THE PROJECT ENGINEER TO DETERMINE THE ADEQUACY OF THE PROPOSED UNITS FOR THE INTENDED PURPOSE. DETAILS OF THE STEEL REINFORCEMENT SIZE AND PLACEMENT SHALL BE INCLUDED. THE DRAWINGS SHALL INCLUDE A SCHEDULE WHICH WILL LIST THE SIZE AND TYPE OF PRECAST UNIT AT EACH LOCATION WHERE THE UNITS ARE TO BE USED. DRAWINGS SHALL BE CERTIFIED BY A NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER. THESE DRAWINGS SHALL BE SUBMITTED TO THE PROJECT ENGINEER SIX (6) WEEKS PRIOR TO THE UNITS BEING INSTALLED FOR APPROVAL. THE PRECAST UNITS SHALL BE PRODUCED IN ACCORDANCE WITH THE APPROVED DRAWINGS.
- TOLERANCE SHALL BE ± 1/4" FROM APPROVED SHOP DRAWINGS.
- THE FABRICATION ENGINEER IS TO CERTIFY THAT UNITS ARE BUILT IN ACCORDANCE WITH SHOP DRAWINGS. FABRICATION ENGINEER, REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF NORTH CAROLINA, SHALL SEND A SEALED CERTIFICATION LETTER TO PROJECT ENGINEER UPON PRODUCT DELIVERY ONSITE THAT PRECAST UNITS MEET OR EXCEED THE APPROVED SHOP DRAWINGS.

MANHOLE AND PIPE OUTLET DETAILS



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 BAR IS ONE INCH ON ORIGINAL DRAWING LDSI PROJECT NO.: 4519056



PROJECT REFERENCE NO. R-59688A	SHEET NO. 2 - E
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
ISSUE FOR CONSTRUCTION	

OUTLET W/DITCH				OUTLET W/O DITCH						
D	CLASS 'B' RIP RAP	CLASS 'I' RIP RAP	CLASS 'B' RIP RAP	CLASS 'I' RIP RAP	D	CLASS 'B' RIP RAP	CLASS 'I' RIP RAP			
TONS	S.Y.	TONS	S.Y.	TONS	TONS	S.Y.	TONS			
12"	2	5	2	5	1	4	2	1	4	
15"	2	7	3	7	1	5	3	2	6	
18"	3	10	4	10	2	7	4	2	8	
24"	5	14	7	15	3	11	7	4	12	
30"	8	21	11	22	5	16	11	7	17	
36"	11	28	15	30	7	22	16	10	23	
42"	15	37	20	39	10	28	22	13	30	
48"	-	-	49	26	50	-	-	29	17	38
54"	-	-	60	33	62	-	-	36	21	47
60"	-	-	73	40	75	-	-	44	26	56
66"	-	-	87	48	89	-	-	54	32	67
72"	-	-	102	57	104	-	-	64	38	78

NOTE: FOR CALCULATION PURPOSES
 CLASS 'B' RIP RAP = 100 LBS./FT³
 CLASS 'I' RIP RAP = 105 LBS./FT³

SECTION A-A PIPE OUTLET WITH DITCH
 H = RIP RAP TO TOP OF PIPE (MAX. H = D + T)
 T = 15" CLASS 'B' RIP RAP, UNLESS OTHERWISE SHOWN ON PLANS
 T = 12" CLASS 'B' RIP RAP, UNLESS OTHERWISE SHOWN ON PLANS

SECTION B-B PIPE OUTLET WITHOUT DITCH

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
 ROADWAY STANDARD DRAWING FOR GUIDE FOR RIP RAP AT PIPE OUTLETS
 SHEET 1 OF 1 **876.02**

GENERAL NOTES:
 USE 4000 PSI MINIMUM COMPRESSIVE STRENGTH CONCRETE.
 USE ASTM A615 GRADE 60 REINFORCING STEEL. USE ASTM A1064 WELDED WIRE FABRIC (WWF).
 FABRICATE, ASSEMBLE AND DESIGN PRECAST MANHOLE COMPONENTS ACCORDANCE WITH AASHTO M199.
 ASSEMBLE RISER AND GRADE RINGS WITH THE STEPS SPACED 12" FROM THE TOP TO THE BOTTOM OF THE MANHOLE.
 WHERE THE MANHOLE IS EXPOSED TO ROAD TRAFFIC, CONSTRUCT THE TOP OF THE MANHOLE FLUSH WITH THE GROUND AND A MINIMUM OF 9" ABOVE THE GROUND AT OTHER LOCATIONS.
 LIMIT DEPTH OF FILL TO 30'-0" FROM FINISH GRADE TO TOP OF BOTTOM SLAB.
 THE MIN. SLAB THICKNESS 'T' IS THE DIMENSION OF THE THINEST POSITION OF THE TOP/BOTTOM SLAB.
 * TOP MAT OF REINFORCEMENT MAY BE NEGLECTED IF TOP SLAB HAS A DISTINGUISHABLE TOP AND BOTTOM.

ALTERNATE CONE SECTION
FLAT TOP SLAB
TYPICAL MANHOLE SECTION
GRADED INLET OPTION
MANHOLE OPTION

D	W	T	AS
INTERNAL DIAMETER (FT.)	MIN. WALL THICKNESS (IN.)	MIN. TOP/BOTTOM SLAB THICKNESS (IN.)	MIN. AREA OF STEEL PER VERTICAL FT. (SQ. IN.)
4	4	6	0.12
5	5	8	0.15
6	6	8	0.18

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
 ROADWAY STANDARD DRAWING FOR PRECAST MANHOLE 4', 5' AND 6' DIAMETER 12" THRU 48" PIPE
 SHEET 1 OF 1 **840.52**

PLAN OF FRAME
PLAN OF COVER
SECTION A-A
SECTION B-B

SOLID COVER SHOWN PERFORATED. PERFORATED AVAILABLE IF SPECIFIED.
 STATE USE OF SYSTEM ON COVER (I.E.: SEWER, STORM DRAIN, ELECTRICAL)

MINIMUM WEIGHTS - LBS.
 FRAME - 180
 COVER - 120
 TOTAL - 300

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
 ROADWAY STANDARD DRAWING FOR MANHOLE FRAME AND COVER
 SHEET 1 OF 1 **840.54**

NOTES:
 INSTALL ALL STEPS PROTRUDING 4" FROM INSIDE FACE OF STRUCTURE WALL.
 STEPS DIFFERING IN DIMENSIONS, CONFIGURATION, OR MATERIALS FROM THOSE SHOWN MAY ALSO BE USED PROVIDED THE CONTRACTOR HAS FURNISHED THE ENGINEER WITH DETAILS OF THE PROPOSED STEPS AND HAS RECEIVED WRITTEN APPROVAL FROM THE ENGINEER FOR THE USE OF SUCH STEPS.

CAST IRON
REINFORCING STEEL

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
 ROADWAY STANDARD DRAWING FOR DRAINAGE STRUCTURE STEPS
 SHEET 1 OF 1 **840.66**

NOTES:
 * THIS PRECAST ENDWALL MAY BE USED FOR THE FOLLOWING STANDARDS: 838.01, 838.11, 838.21, 838.27, 838.33, 838.39, 838.51, 838.57, 838.63 AND 838.69.
 * INSTALL PRECAST ENDWALLS WITH RISERS AND RAYS FOR IN ACCORDANCE WITH SPECIFICATION SECTION 838.
 * USE 4000 PSI CONCRETE.
 * PROVIDE ALL REINFORCING STEEL WHICH MEETS ASTM #615 FOR GRADE 60 AND WELDED WIRE FABRIC CONFORMING TO ASTM A1064 WITH 2" MIN. CLEARANCE.
 * PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.
 * PIPE TO BE GRADED INTO HEADWALL AT JOB SITE BY CONTRACTOR.
 * ALL ELEMENTS PRECAST TO MEET ASTM C913.
 * WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR AS LONG AS THE SAME AREA OF STEEL IS PROVIDED.
 * CHAMFER ALL CORNERS 1" OR HAVE A RADIUS OF 1".

NOTE: THE MINIMUM BAR SIZE SHALL BE #5 BARS AT 9" C/S; THE CONTRACTOR WILL HAVE THE OPTION TO INCREASE THIS BAR SIZE AS NEEDED.

ELEVATION
SIDE
PLAN

ENDWALL DIMENSIONS							
PIPE DIA.	BAR SIZE	MIN./MAX. H1 (FT.)	MIN./MAX. H2 (FT.)	MIN./MAX. D (FT.)	MIN./MAX. W1	MIN./MAX. W2	
1.0	#5 @ 8"	1.25/2.00	2.00/3.75	1.25/1.75	3.00/3.75	5.50/6.00	
1.25	#5 @ 8"	1.25/2.00	3.00/3.75	1.25/2.00	3.50/3.75	6.50/6.75	
1.50	#5 @ 8"	1.25/2.00	3.00/4.25	1.50/2.50	3.50/3.75	6.50/6.75	
2.0	#5 @ 8"	1.50/2.50	4.00/4.75	1.75/2.50	4.00/4.25	7.50/8.25	
2.5	#5 @ 8"	2.50/3.50	4.00/6.00	2.00/3.00	4.50/5.50	10.00/11.50	
3.0	#5 @ 8"	3.00/3.50	5.00/6.00	2.75/3.50	5.25/5.75	11.50/11.75	
3.5	#5 @ 8"	3.25/4.50	6.00/6.75	3.25/3.50	6.00/6.75	12.00/13.25	
4.0	#5 @ 8"	3.50/4.50	6.50/7.00	3.25/3.50	6.50/6.75	13.00/13.25	
4.5	#5 @ 8"	4.00/5.00	6.50/8.50	3.25/4.00	7.00/9.25	13.50/15.75	
5.0	#5 @ 8"	4.50/5.00	7.00/8.50	3.25/4.00	7.25/9.25	13.75/15.75	
5.5	#5 @ 8"	4.50/5.00	7.50/8.50	3.25/4.00	7.25/9.25	14.00/15.75	
6.0	#5 @ 8"	4.50/5.00	7.50/8.50	3.25/4.00	7.75/9.25	14.75/16.75	

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
 ROADWAY STANDARD DRAWING FOR PRECAST CONCRETE ENDWALL FOR SINGLE 12" THRU 72" PIPE - 90° SKEW
 SHEET 1 OF 1 **838.80**

NOTES:
 CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4" THICK UNLESS OTHERWISE DENOTED ON PLANS.
 PLACE A GROOVE JOINT 1" DEEP WITH 1/8" RADII IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS. A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.

SEE STD. DWG. 848.05 FOR CURB RAMP LOCATION REQUIREMENTS AND CONSTRUCTION GUIDELINES.

TRANSVERSE EXPANSION JOINT IN SIDEWALK
DETAILS SHOWING JOINTS IN CONCRETE SIDEWALK

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
 ROADWAY STANDARD DRAWING FOR CONCRETE SIDEWALK
 SHEET 1 OF 1 **848.01**

DRAINAGE AND STRUCTURES SUMMARY SHEET

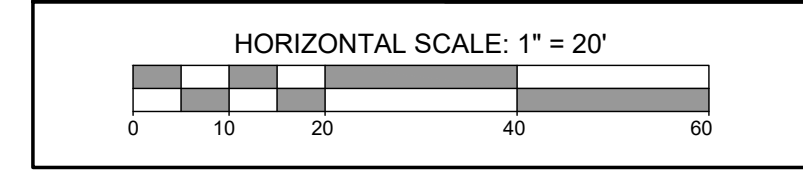


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VERIFY SCALE DWG: 4519056-DETAILS

BAR IS ONE INCH ON ORIGINAL DRAWING LDSI PROJECT NO.: 4519056



PROJECT REFERENC NO. R-59688A	SHEET NO. 3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
ISSUE FOR CONSTRUCTION	

STRUCTURE TABLE										
STRUCTURE	STRUCTURE SIZE	STATION	OFFSET FT	BASE ELEV.	INVERT OUT	PERMANENT WEIR	NUM. OF 3 INCH BOARDS	DEWATERING BOARD	WEIR LENGTH	NOTES
				FT	FT	FT				
FLASH BOARD RISER	6' X 7'	4+54.51	18.94 L	0.55	2.00	9.50	4		23.3'	TOP OF RISER 10.05'
FES	42"	5+38.30	4.53 R		1.50					
FES	24"	4+81.80	40.89 R		10.25					
MANHOLE	5' DIA	22.74	0.00	8.50	10.00					NCDOT spec 840.52

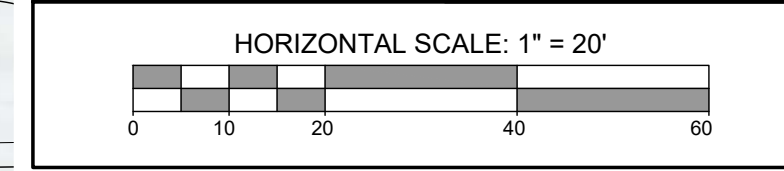
PIPE TABLE									
PIPE	MATERIAL	DIAMETER (ID)		STATION	OFFSET	INVERT OUT	STATION	OFFSET	PIPE LENGTH
		IN	FT		FT	FT			
SOUTH INLET PIPE	RCP	24		22.75	0.00	9.50	32.28	0.00	8.0
RISER OUTLET	RCP	42		4+61.72	17.07 L	1.50	5+38.30	4.53 R	77.0
UNDER DRAIN (NORTH)	PERFERATED PVC	6		2+78.15	1.54 L	6.00	4+34.20	14.80 L	156.6
UNDER DRAIN (SOUTH)	PERFERATED PVC	6		2+82.01	13.98 R	6.00	4+34.91	0.44 L	153.6
UNDER DRAIN (CONNECTOR)	PVC	6		4+34.20	14.80 L	6.00	4+34.91	0.44 L	14.0
UNDER DRAIN (TEE)	PVC	8		4+34.20	14.80 L	6.00	4+54.90	16.60 L	20.0

UPPER WETLAND REPAIR
PLAN VIEW
(1" = 20' HORIZ.)

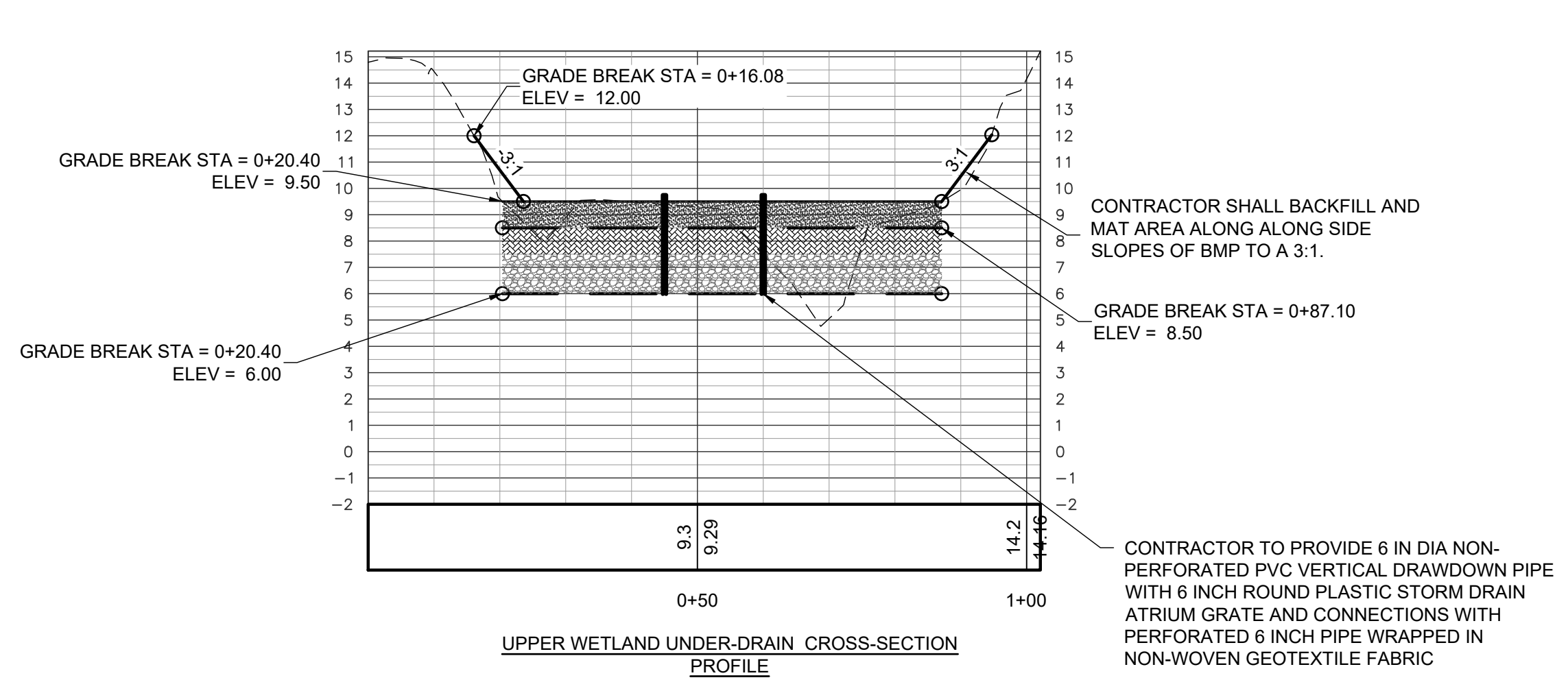
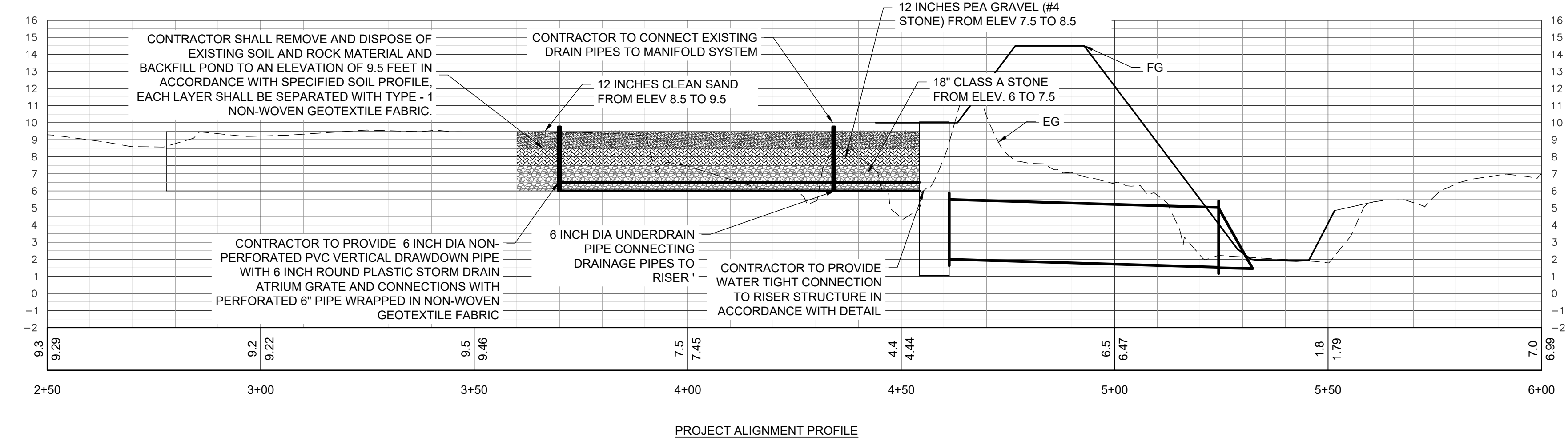
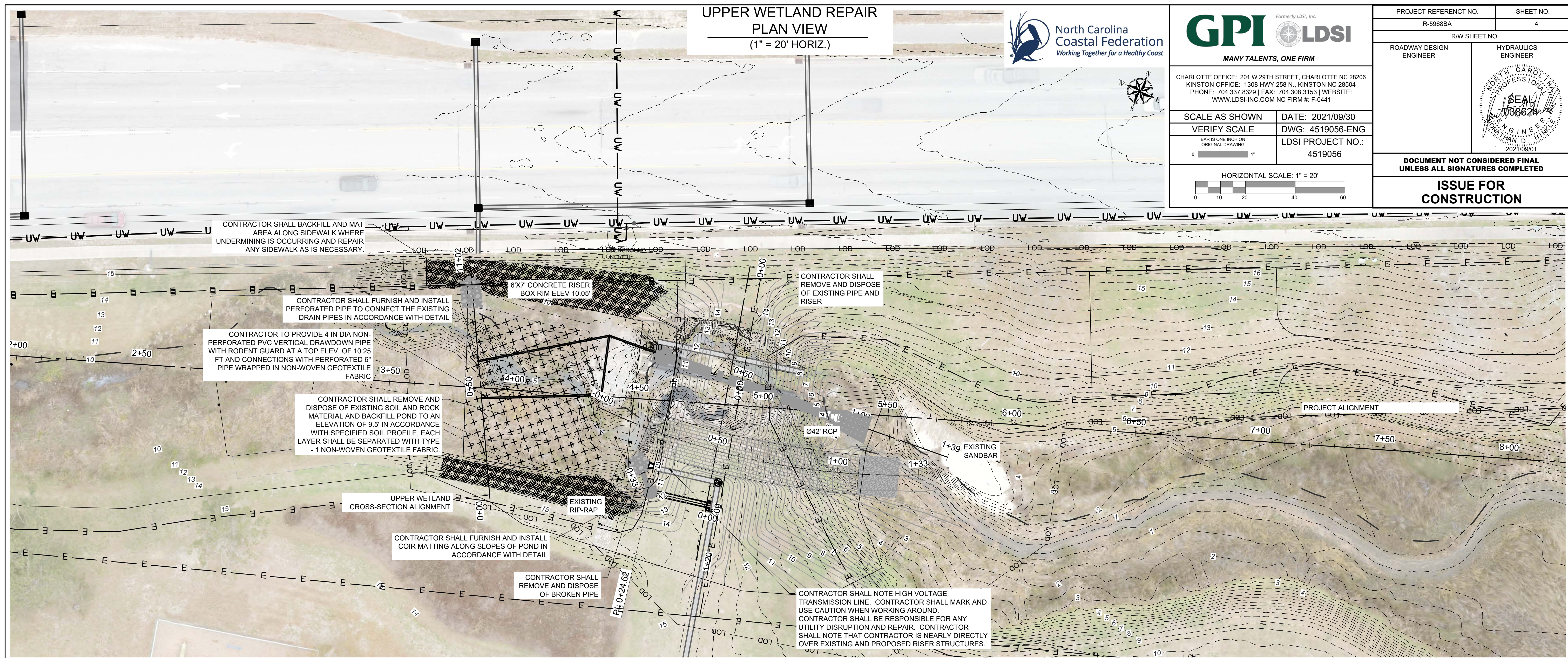


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LDSI PROJECT NO.: 4519056



PROJECT REFERENCE NO. R-59688A	SHEET NO. 4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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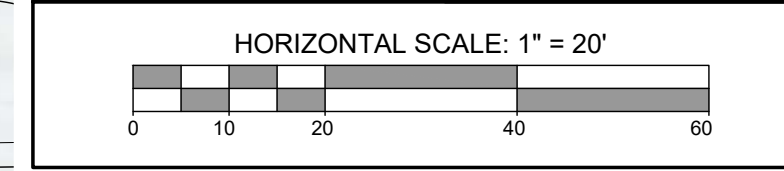
PROFILE VIEW
(1" = 20' HORIZ. 1" = 5' VERT.)

**AUXILIARY SPILLWAY
PLAN VIEW
(1" = 20' HORIZ.)**

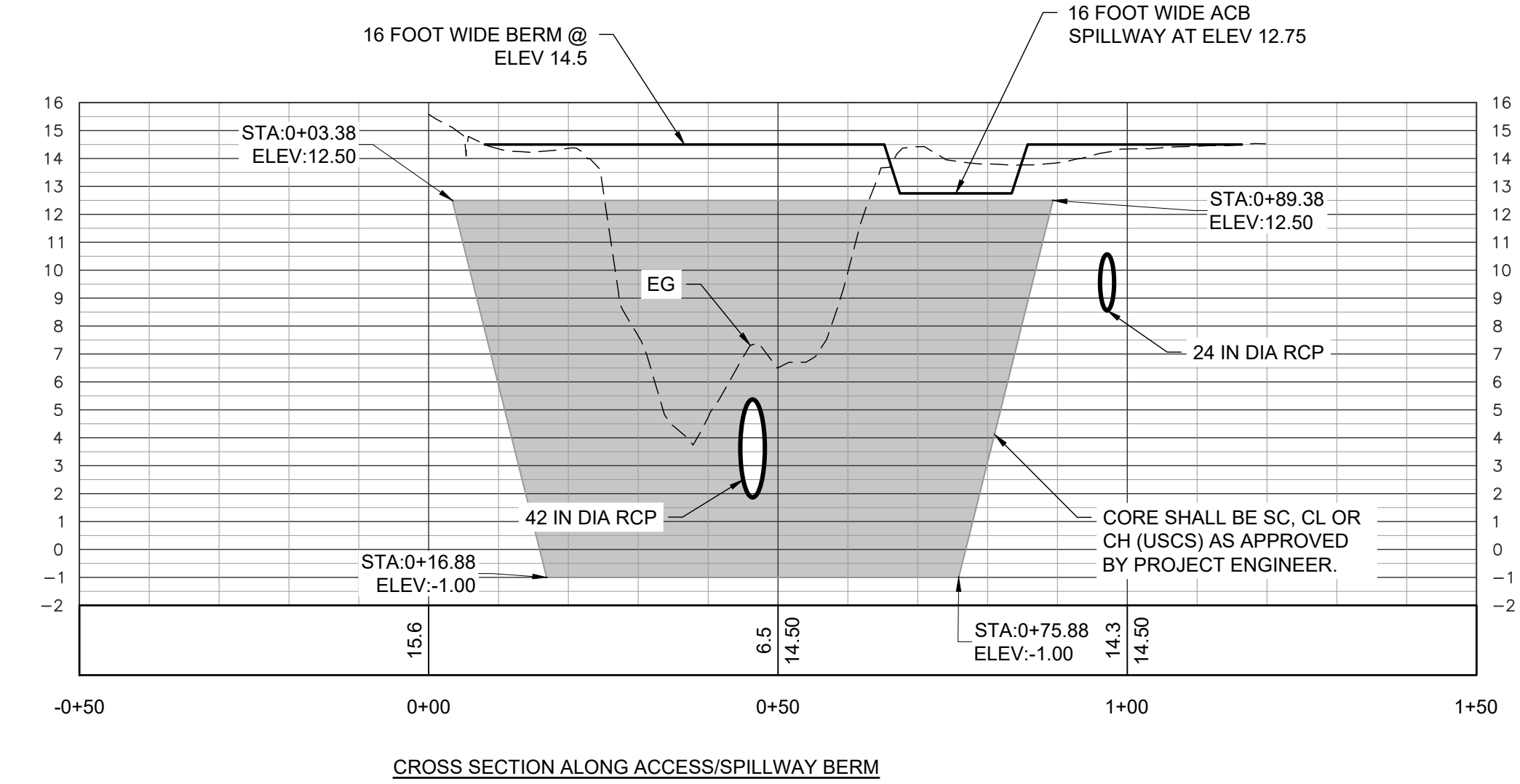
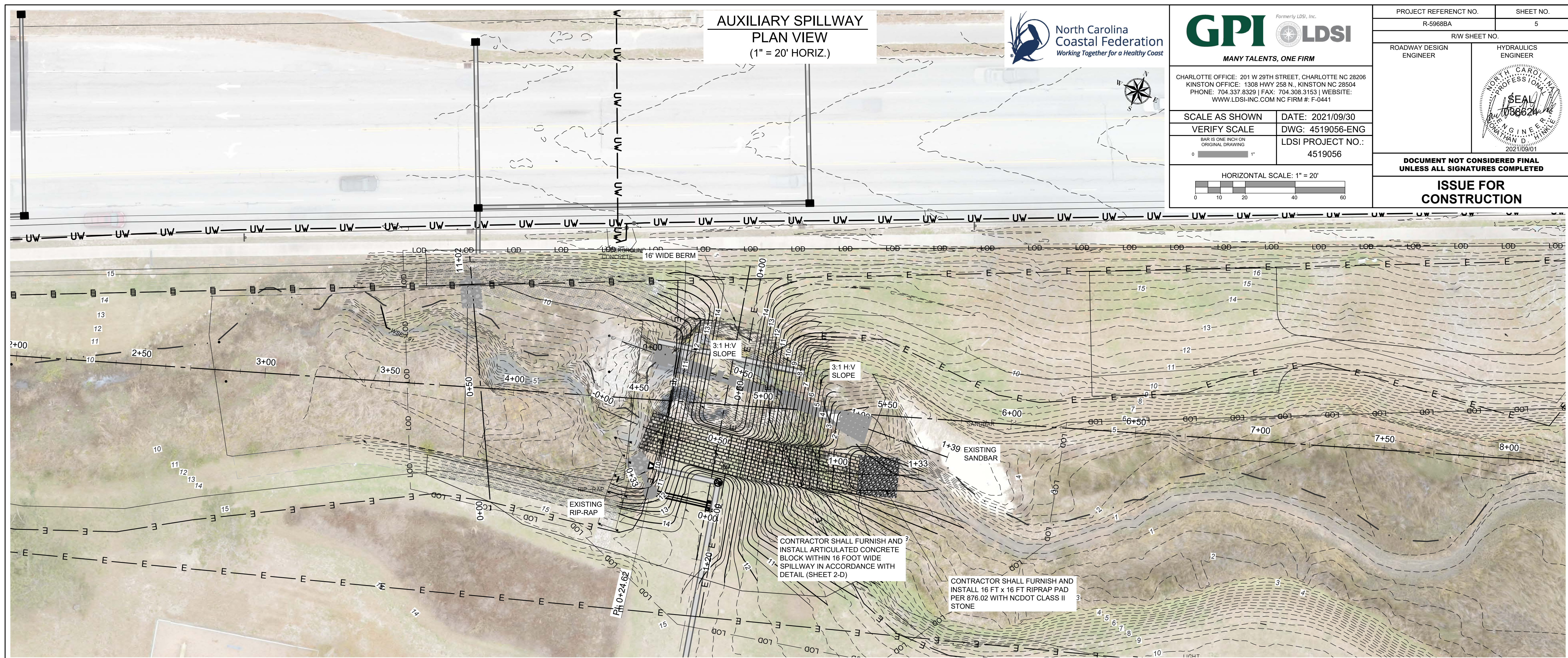


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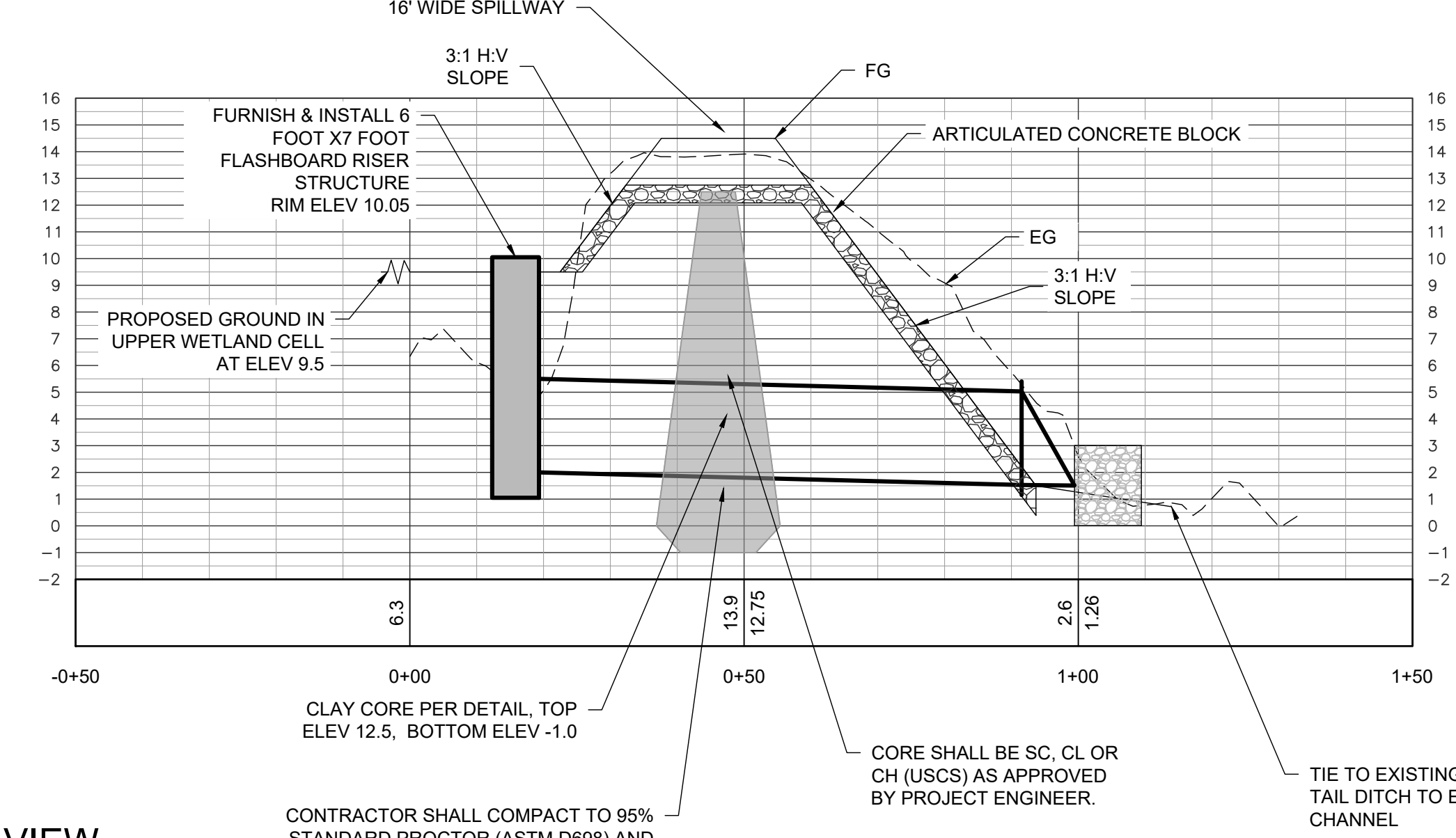
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LDSI PROJECT NO.: 4519056



PROJECT REFERENC NO. R-59688A	SHEET NO. 5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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ISSUE FOR CONSTRUCTION	



CROSS SECTION ALONG ACCESS/SPILLWAY BERM



**PROFILE VIEW
(1" = 20' HORIZ. 1" = 5' VERT.)**

CONTRACTOR SHALL COMPACT TO 95% STANDARD PROCTOR (ASTM D698) AND EACH LIFT SHALL BE NO MORE THE 6 INCHES IN THICKNESS.

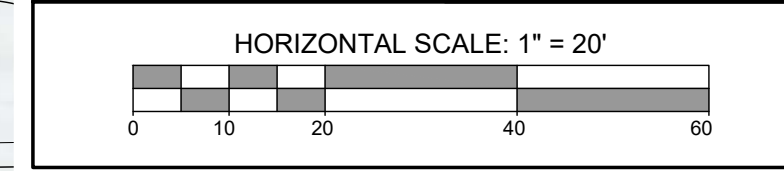
TIE TO EXISTING GRADE, TAIL DITCH TO EXISTING CHANNEL

**24 IN DIA RCP
PLAN VIEW
(1" = 20' HORIZ.)**

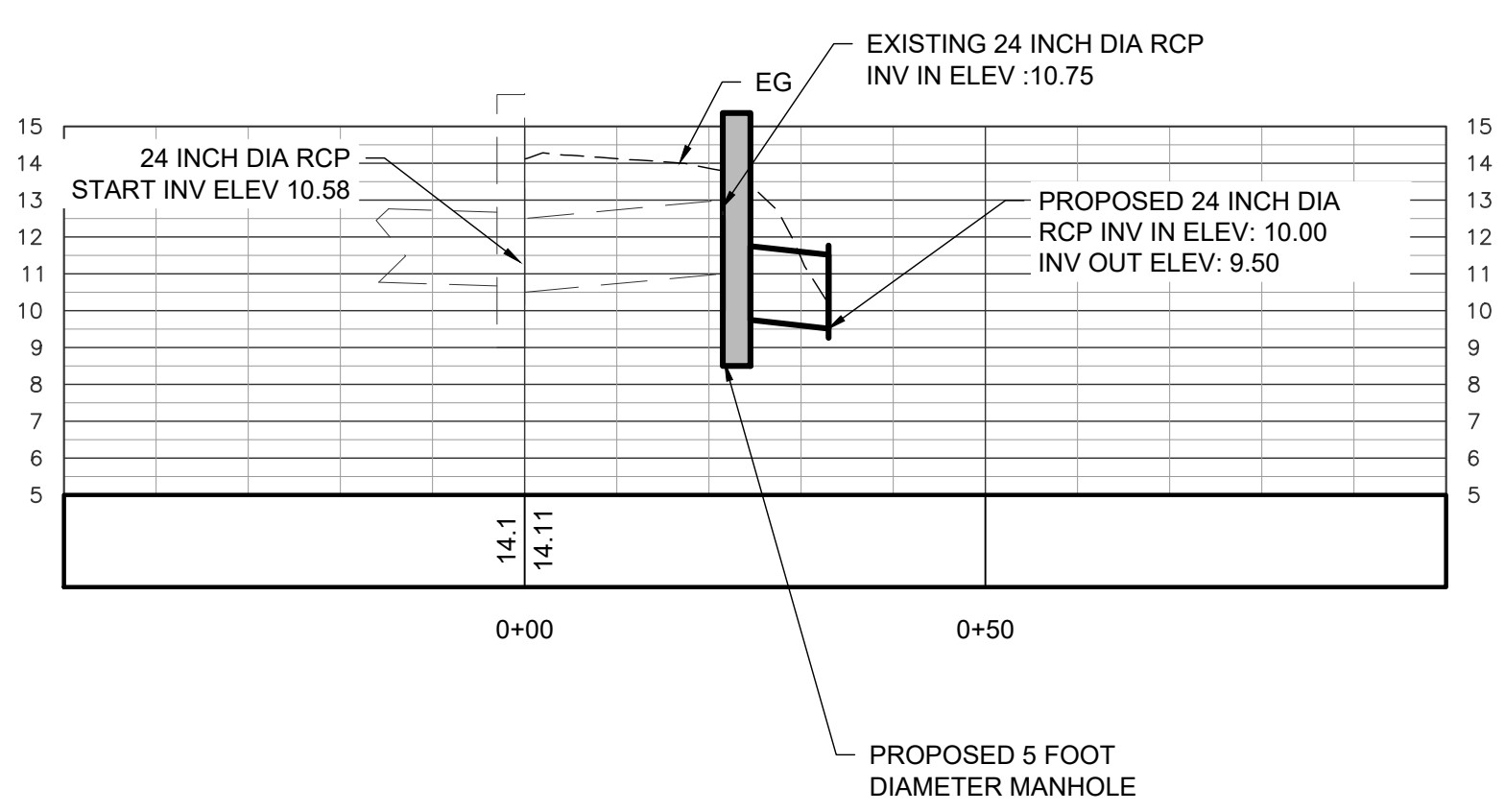
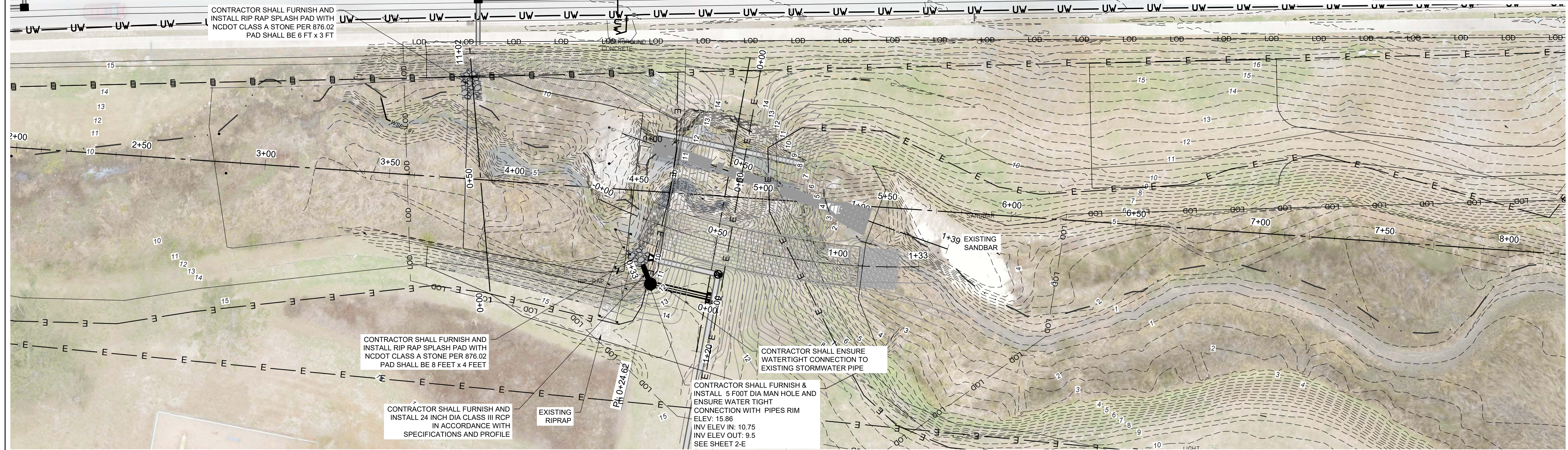


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LDSI PROJECT NO.: 4519056	



PROJECT REFERENT NO. R-59688A	SHEET NO. 6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p>ISSUE FOR CONSTRUCTION</p>	



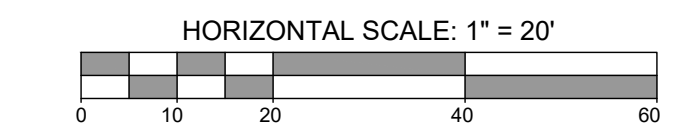
**PROFILE VIEW
(1" = 20' HORIZ. 1" = 5' VERT.)**

**PRINCIPLE SPILLWAY
RISER - BARREL
PLAN VIEW
(1" = 20' HORIZ.)**

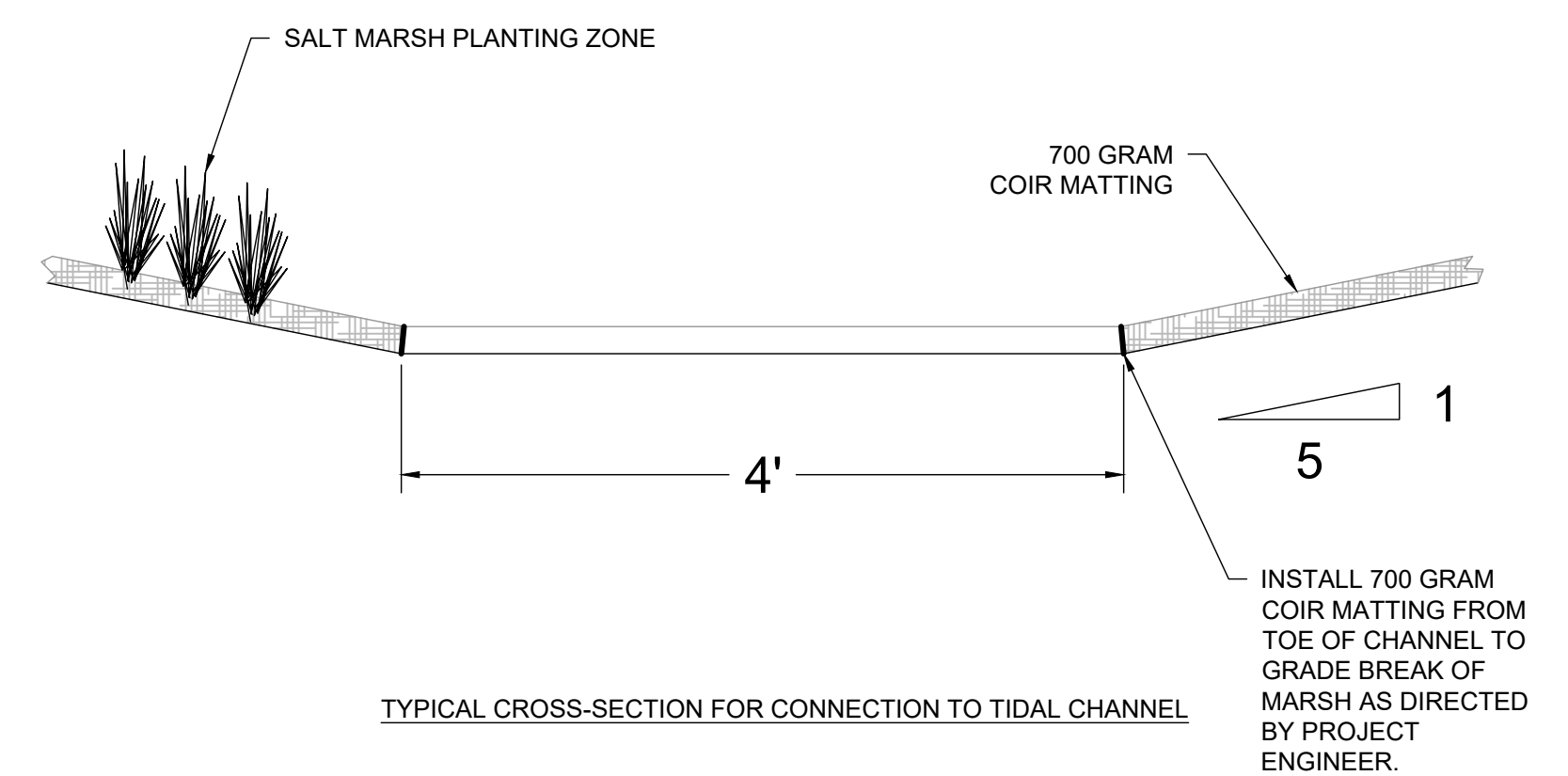
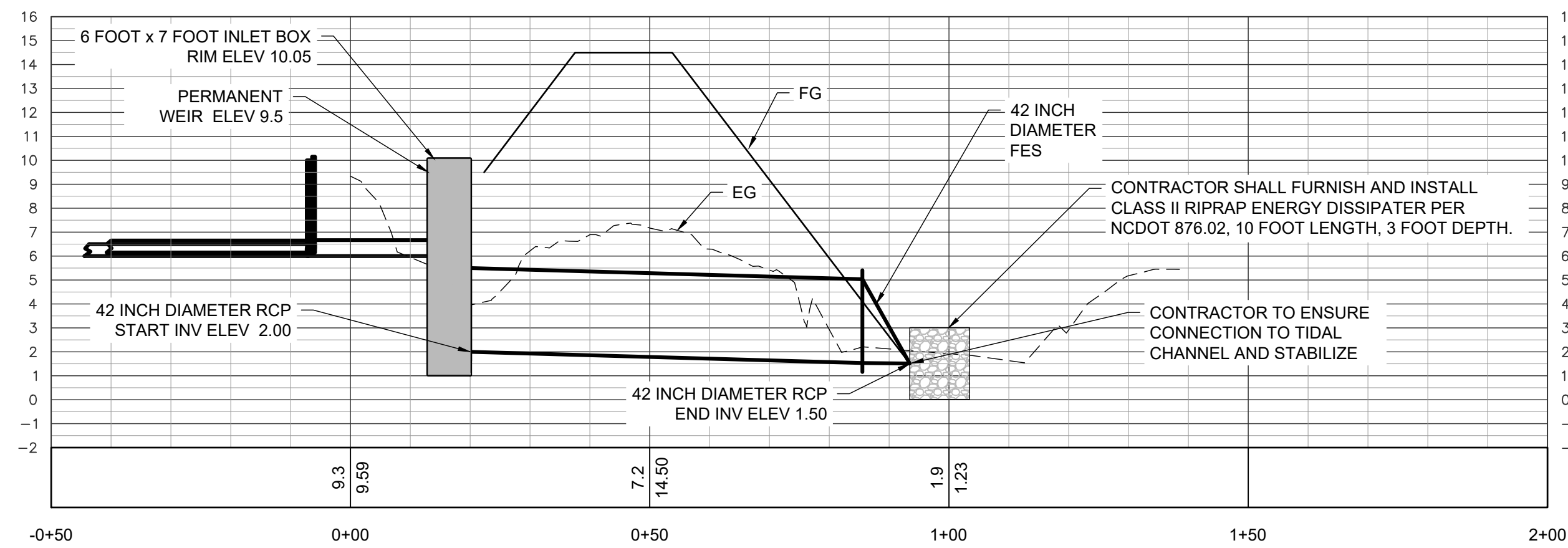
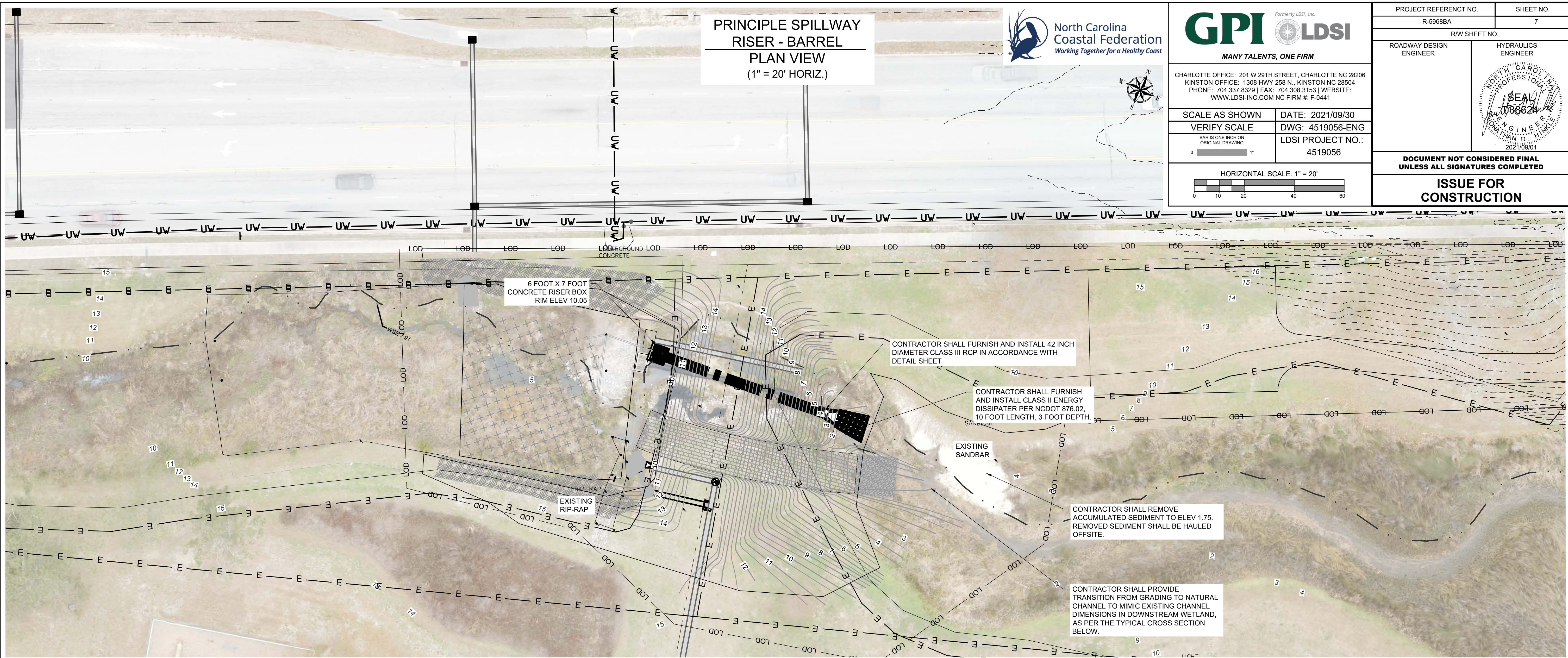


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SCALE AS SHOWN DATE: 2021/09/30
VERIFY SCALE DWG: 4519056-ENG
LDSI PROJECT NO.: 4519056



PROJECT REFERENT NO. R-5968BA	SHEET NO. 7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
ISSUE FOR CONSTRUCTION	



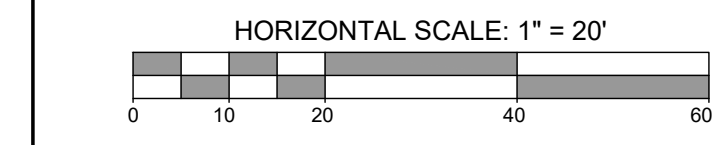
**PROFILE VIEW
(1" = 20' HORIZ. 1" = 5' VERT.)**

TRAFFIC CONTROL DETAILS



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LDSI PROJECT NO.: 4519056	



PROJECT REFERENC NO. R-5968BA	SHEET NO. TC-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
ISSUE FOR CONSTRUCTION	

GENERAL NOTES

THE FOLLOWING GENERAL NOTES SHALL APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

THE TRAFFIC CONTROL PLAN FOR THIS PROJECT CONSISTS OF STANDARD DETAIL DRAWINGS. THESE DRAWINGS ARE TYPICAL SITUATIONS AND SHOULD BE ADAPTED TO THE ACTUAL FIELD CONDITIONS, SUCH AS WHEN PHYSICAL DIMENSIONS ARE NOT ATTAINABLE, OR WHEN MORE THAN ONE DRAWING IS APPLIED SIMULTANEOUSLY RESULTING IN DUPLICATE SIGNING, OR UNDESIRABLE OVERLAPPING OF DEVICES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADAPTING THE TRAFFIC CONTROL PLAN TO FIELD CONDITIONS TO PROVIDE SAFE AND EFFICIENT TRAFFIC MOVEMENT.

SHOULDER CLOSURE

- SHOULDER CLOSURES SHALL BE REMOVED AS SOON AS PRACTICAL AFTER WORK BEHIND THE CLOSURE IS COMPLETED OR WHEN SHOULDER CLOSURE IS NO LONGER NEEDED.
- CONTRACTOR SHALL MAINTAIN EXISTING TRAFFIC PATTERNS AND LANE CONFIGURATION AT THE END OF EACH DAYS OPERATION AND DURING CONSTRUCTION INACTIVITY, EXCEPT AS OTHERWISE INDICATED ON THE PHASING PLAN.
- WHEN SHOULDER CLOSURES ARE NOT IN EFFECT, CHANNELIZING DEVICES IN WORK AREAS SHALL BE SPACED NO GREATER THAN TWICE THE POSTED SPEED LIMIT, EXCEPT 10 - FT ON CENTER IN RADII, AND SHALL BE SET 3 FT OFF THE EDGE OF AN EXISTING TRAVEL LANE.
- DURING SHOULDER CLOSURES, FLAGGER SHALL BE USED WHEN DELIVERING MATERIALS TO LOCATIONS CLOSE TO THE PAVEMENT. FLAGGERS AND PROPER VEHICLE ACCESS TECHNIQUES SHALL BE USED FOR AREAS WHERE CONSTRUCTION TRAFFIC IS UTILIZING STANDARD CONSTRUCTION ENTRANCES.

SIGNING

- EXISTING TRAFFIC SIGNAGE SHALL BE MOVED AND OTHERWISE MAINTAINED BY THE CONTRACTOR AS APPROPRIATE DURING CONSTRUCTION.
- ALL NECESSARY TRAFFIC CONTROL SIGNING SHALL BE IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TWO-WAY UNDIVIDED (L-LINES)

POSTED SPEED LIMIT (MPH)	RECOMMENDED MINIMUM SIGN SPACING
≤ 50	500'
55	1000'

ROADWAYS INTERSECTING ALONG TWO-WAY UNDIVIDED WORK ZONE (Y-LINES)

NO STATIONARY Y-LINE ADVANCE WARNING SIGNAGE IS REQUIRED UNLESS THERE IS MORE THAN 1000' OF CONSTRUCTION ALONG THE "Y" LINE.

GENERAL NOTES

- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK UNLESS COVERED.
- SIGNS SHOWN ARE REQUIRED FOR WORK ZONES THAT WILL REMAIN IN EFFECT LONGER THAN 3 CONSECUTIVE DAYS.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- ERECT SIGNS PER RSD 1110.01. PAYMENT FOR WOOD POSTS, 3LB STEEL U-CHANNEL AND SQUARE STEEL TUBING POSTS WITH SIGNS WILL BE MADE ACCORDING TO STANDARD SPECIFICATIONS FOR WORK ZONE SIGNS.
- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH RSD. 1110.01.
- DO NOT BACK BRACE SIGN SUPPORTS.

LEGEND

— STATIONARY SIGN

→ DIRECTION OF TRAFFIC FLOW

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ROADWAY STANDARD DRAWING FOR
WORK ZONE ADVANCE WARNING SIGNS FOR TWO-WAY UNDIVIDED FACILITIES

SHEET 3 OF 3
1101.01

SHOULDER CLOSURE ON CONTROLLED ACCESS FACILITIES

SHOULDER CLOSURE ON DIVIDED FACILITIES

GENERAL NOTES

- PLACE SHOULDER CLOSURE SIGNS ON THE SAME SIDE AS THE SHOULDER THAT IS CLOSED.
- PLACE DRUMS IN THE SHOULDER TAPER AT THE MAXIMUM SPACING EQUAL IN FEET TO THE POSTED SPEED LIMIT. THE MAXIMUM SPACING OF DRUMS ALONG THE WORK AREA IS EQUAL IN FEET TO 2 TIMES THE POSTED SPEED LIMIT.
- USE STATIONARY SIGNS FOR OPERATIONS IN EFFECT LONGER THAN 3 DAYS.
- REFER TO RSD. 1101.11, SHEETS 1, 3 & 4, FOR "L" DISTANCE, BARRIER FLARE RATES, AND SIGN SPACING.

LEGEND

● DRUM

— STATIONARY SIGN

⊞ PORTABLE SIGN

— PORTABLE CONCRETE BARRIER

→ DIRECTION OF TRAFFIC FLOW

— TEMPORARY CRASH CUSHION

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ROADWAY STANDARD DRAWING FOR
TEMPORARY SHOULDER CLOSURES

SHEET 1 OF 1
1101.04

DURING LANE CLOSURE

DETAIL SHOWN FOR LEFT SIDE, SAME PRINCIPLE APPLIES FOR RIGHT SIDE ACCESS

ALL LANES OPEN

DETAIL SHOWN FOR LEFT SIDE, SAME PRINCIPLE APPLIES FOR RIGHT SIDE ACCESS

GENERAL NOTES

- MOUNT SIGNS ON BOTH LEFT AND RIGHT SIDES ON DIVIDED ROADWAYS. SIGNS ARE REQUIRED ONLY ON THE RIGHT SIDE OF THE ROADWAY FOR UNDIVIDED ROADWAYS.
- REFER TO RSD. 1101.11, SHEETS 2, 3 & 4, FOR STOPPING SIGHT DISTANCE, BARRIER FLARE RATES, AND SIGN SPACING.
- UPON COMPLETION OF EACH HAULING OPERATION, REPAIR, SWEEP, AND RESTORE THE ROADWAY TO BE SAFELY TRAVERSABLE AT NORMAL OPERATING SPEEDS.

LEGEND

— PORTABLE CONCRETE BARRIER

— TEMPORARY CRASH CUSHION

● DRUM

— STATIONARY SIGN

→ DIRECTION OF TRAFFIC FLOW

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ROADWAY STANDARD DRAWING FOR
WORK ZONE VEHICLE ACCESS THROUGH TEMPORARY BARRIER

SHEET 2 OF 2
1101.05

STOP/SLOW PADDLE

NOTE: FOR OPERATIONS THAT ARE RESTRICTED FROM DUSK TO DAWN ONLY, USE REFLECTORIZED LEGENDS, BORDERS AND BACKGROUNDS.

FLAGGER AND PADDLE PLACEMENT

GENERAL NOTES

- USE HAND SIGNALING DEVICES SUCH AS STOP-SLOW PADDLES, FLASHLIGHTS TO CONTROL TRAFFIC. USE STOP-SLOW PADDLES AS THE PRIMARY DEVICE.
- FABRICATE STOP-SLOW PADDLES FROM SHEET METAL OR OTHER LIGHT SEMI RIGID MATERIAL. PROVIDE A RIGID HANDLE OF SUFFICIENT LENGTH SO THE PADDLE IS HELD AT 6-7' ABOVE GROUND LEVEL.
- PROVIDE STOPPING SIGHT DISTANCE TO EACH FLAGGER STATION. REFER TO RSD. 1101.11, SHEET 2.
- ILLUMINATE FLAGGER STATIONS DURING NIGHT OPERATIONS.
- FOLLOW FLAGGER QUALIFICATIONS AND METHODS OF HAND-SIGNALING PROCEDURES IN ACCORDANCE WITH PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- ALL FLAGGERS MUST BE CERTIFIED BY AN NCDOT APPROVED TRAINING RESOURCE.

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ROADWAY STANDARD DRAWING FOR
FLAGGERS

SHEET 1 OF 1
1150.01

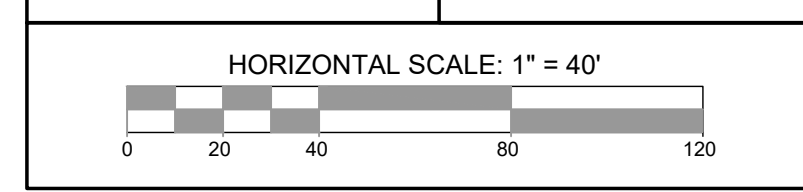
**EROSION & SEDIMENT CONTROL
PLAN VIEW**
(1" = 40' HORIZ.)



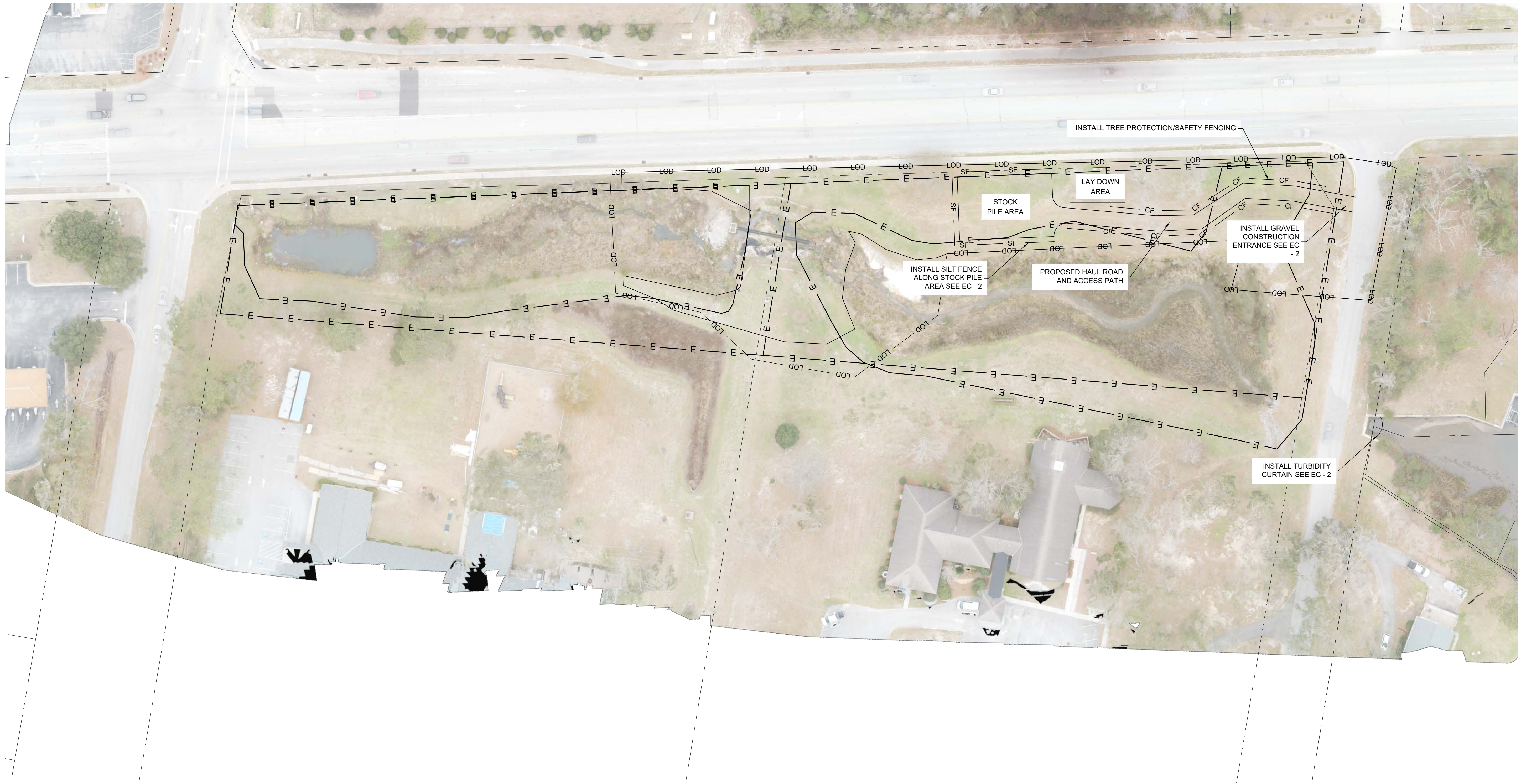
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PROJECT REFERENC NO. R-5968BA	SHEET NO. EC-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

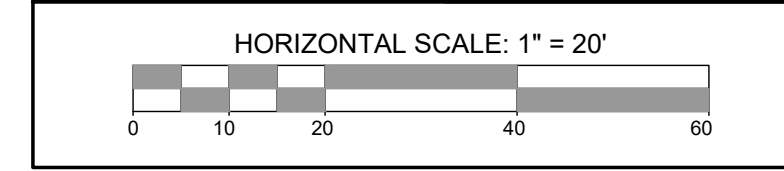


E&SC DETAILS



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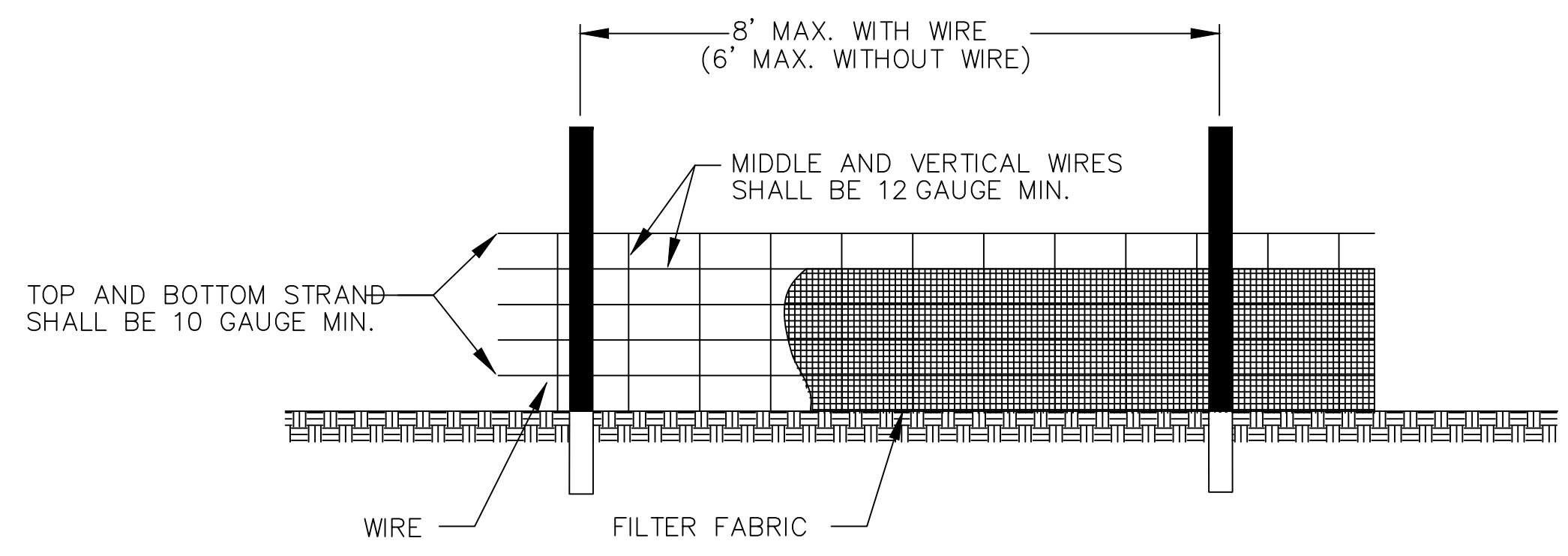


PROJECT REFERENC NO. R-5968BA	SHEET NO. EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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ISSUE FOR CONSTRUCTION	

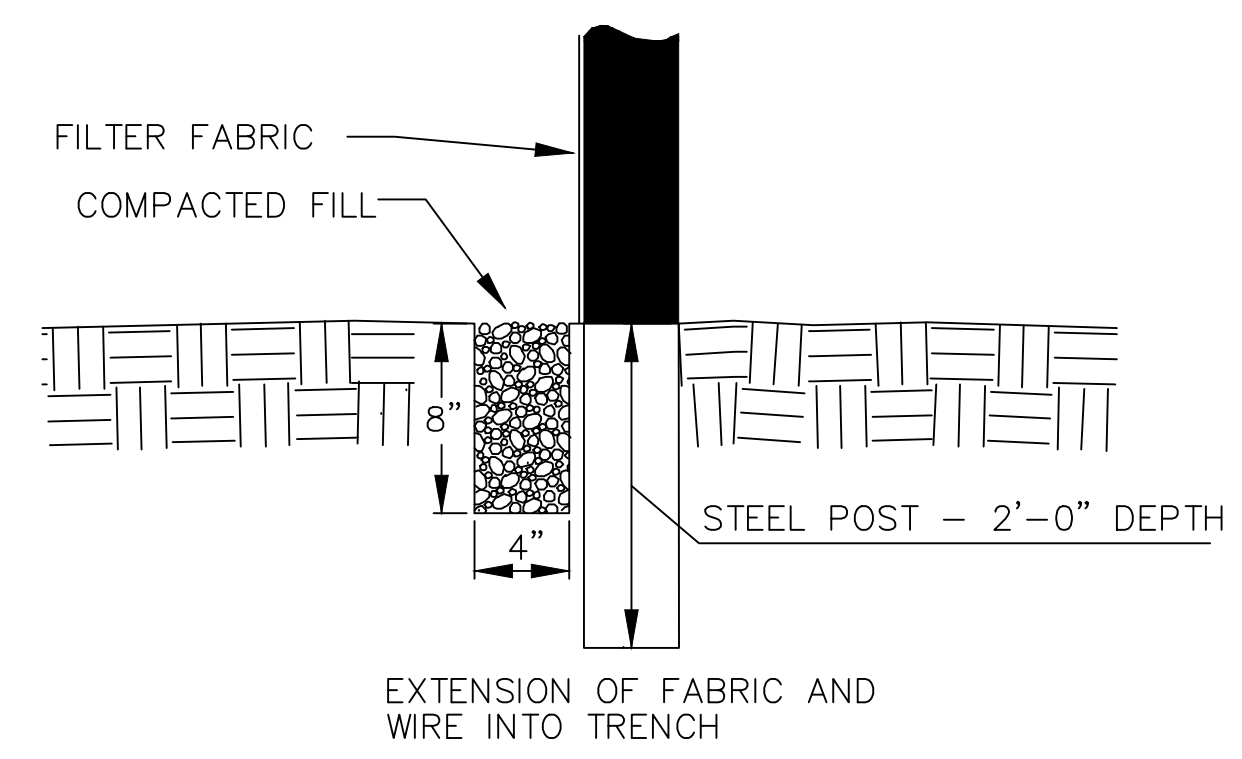
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RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
TEMPORARY SILT FENCE

SHEET 1 OF 1
1605.01



NOTES
 USE WIRE A MINIMUM OF 32" IN WIDTH AND WITH A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.
 USE FILTER FABRIC A MINIMUM OF 36" IN WIDTH AND FASTEN ADEQUATELY TO THE WIRE AS DIRECTED BY THE ENGINEER.
 PROVIDE 5'-0" STEEL POST OF THE SELF-FASTENER ANGLE STEEL TYPE.



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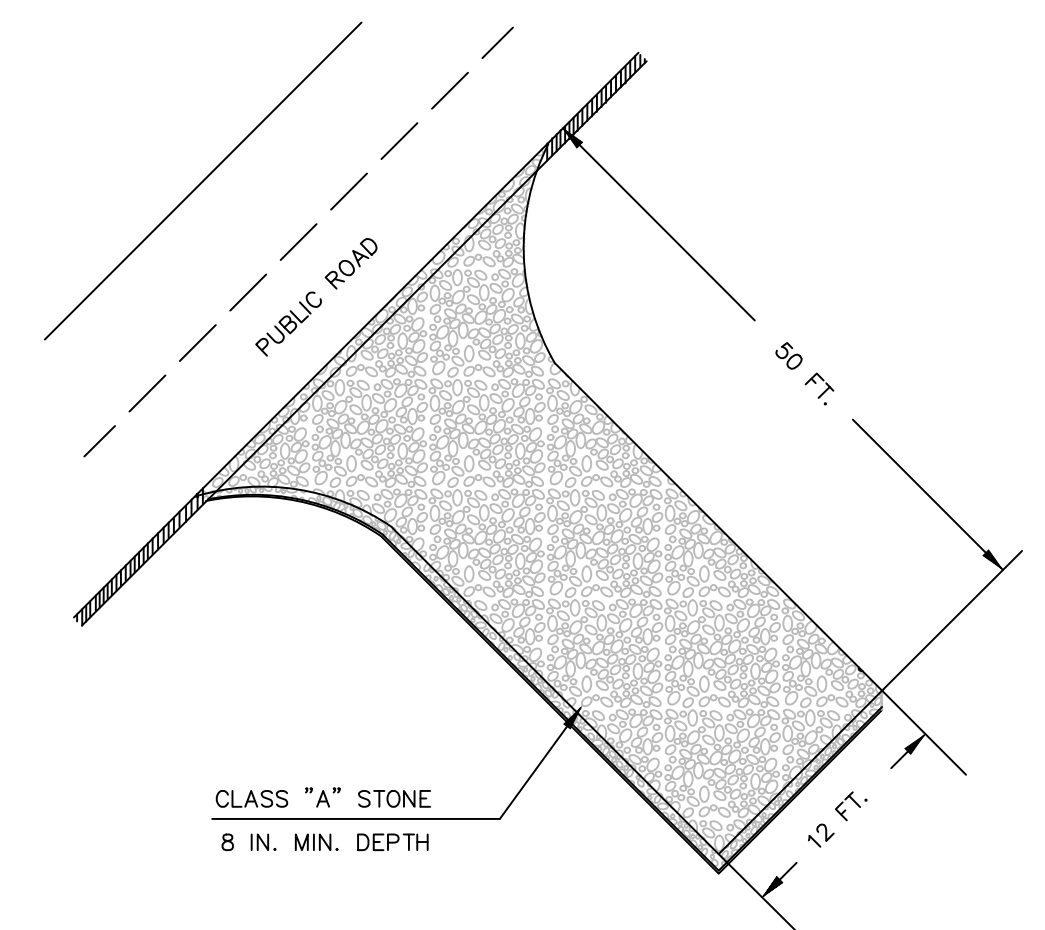
ENGLISH STANDARD DRAWING FOR
TEMPORARY SILT FENCE

SHEET 1 OF 1
1605.01

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ENGLISH STANDARD DRAWING FOR
GRAVEL CONSTRUCTION ENTRANCE

SHEET 1 OF 1
1607.01



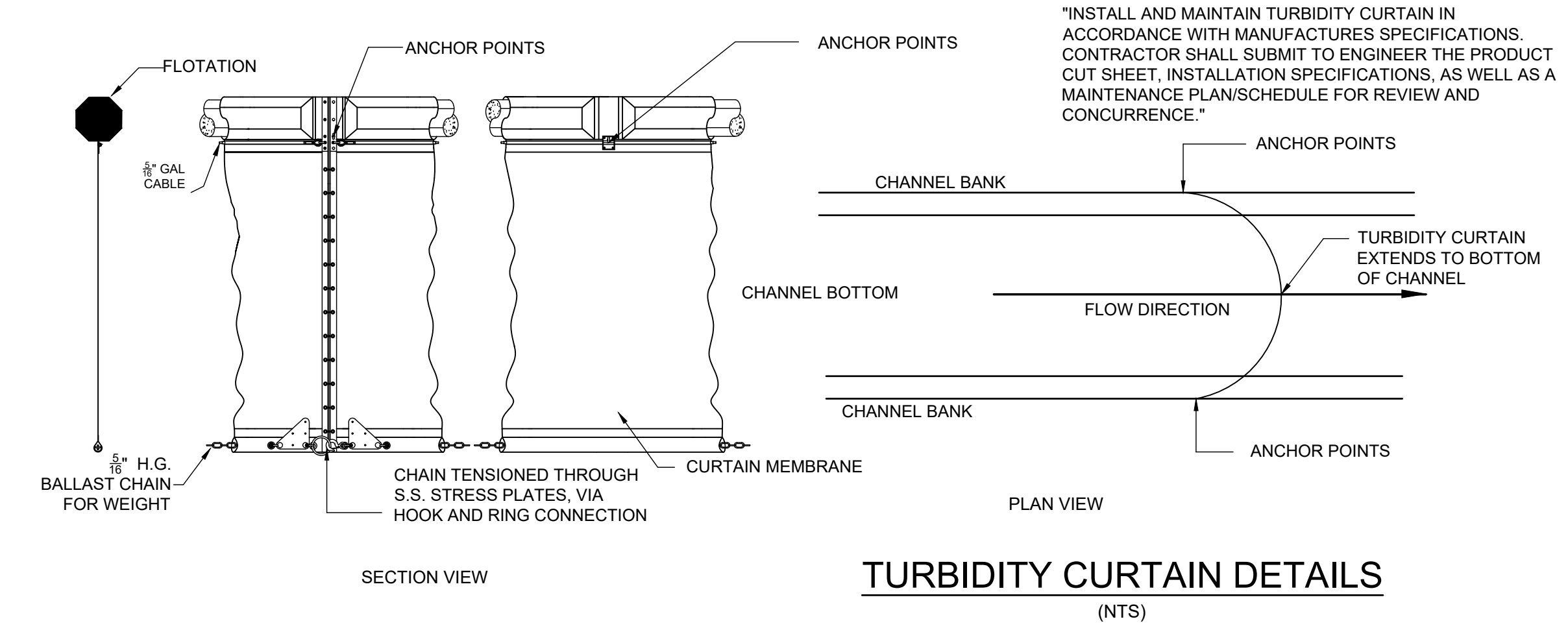
- NOTES:
1. PROVIDE TURNING RADIUS SUFFICIENT TO ACCOMMODATE LARGE TRUCKS.
 2. LOCATE ENTRANCE(S) TO PROVIDE FOR UTILIZATION BY ALL CONSTRUCTION VEHICLES.
 3. MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO STREETS. PERIODIC TOPDRESSING WITH STONE WILL BE NECESSARY.
 4. ANY MATERIAL TRACKED ONTO THE ROADWAY MUST BE CLEANED UP IMMEDIATELY.
 5. LOCATE GRAVEL CONSTRUCTION ENTRANCE AT ALL POINTS OF INGRESS AND EGRESS UNTIL SITE IS STABILIZED. PROVIDE FREQUENT CHECKS OF THE DEVICE AND TIMELY MAINTENANCE.
 6. NUMBER AND LOCATION OF CONSTRUCTION ENTRANCES TO BE DETERMINED BY THE ENGINEER.
 7. USE CLASS 'A' STONE OR OTHER COARSE AGGREGATE APPROVED BY THE ENGINEER.

NOTE: PLACE FILTER FABRIC BENEATH STONE

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ENGLISH STANDARD DRAWING FOR
GRAVEL CONSTRUCTION ENTRANCE

SHEET 1 OF 1
1607.01



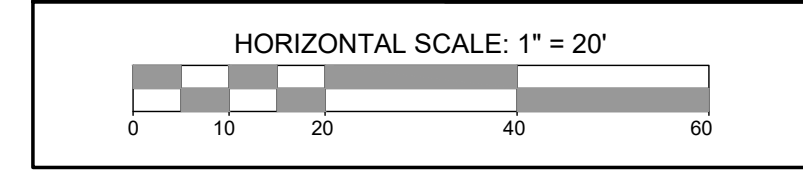
TURBIDITY CURTAIN DETAILS
(NTS)

COIR MAT AND EROSION CONTROL BLANKET DETAILS



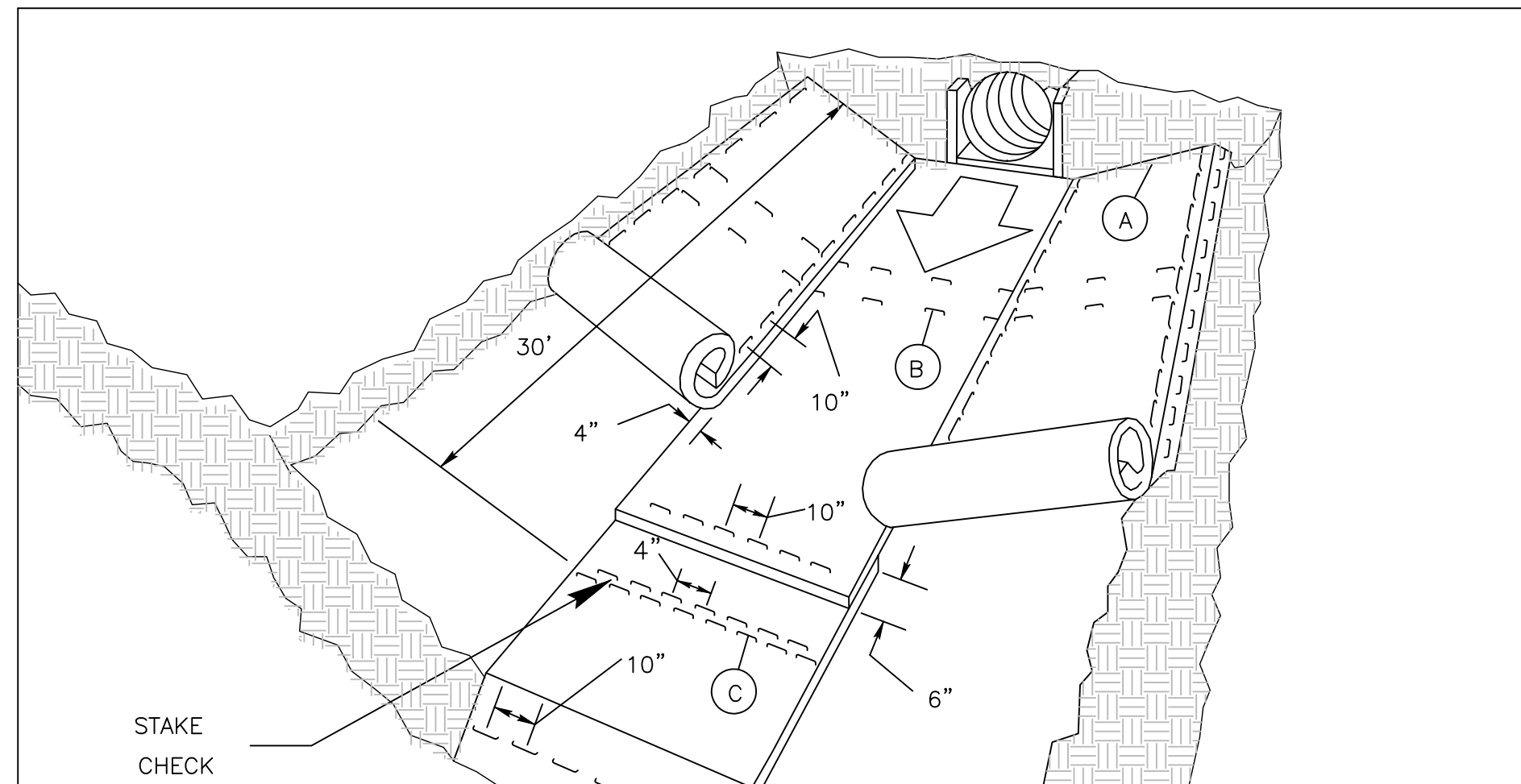
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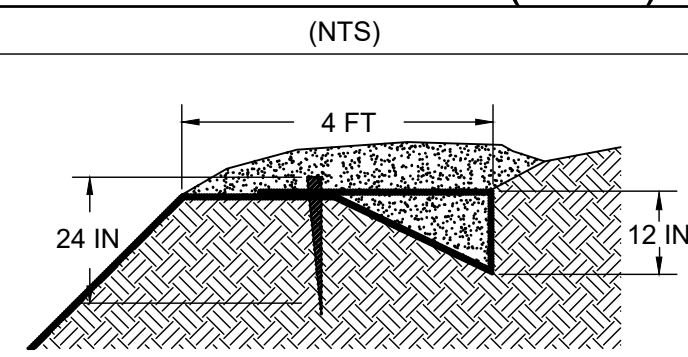


PROJECT REFERENCE NO. R-59688A	SHEET NO. EC-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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COIR FIBER MAT IN DITCHES

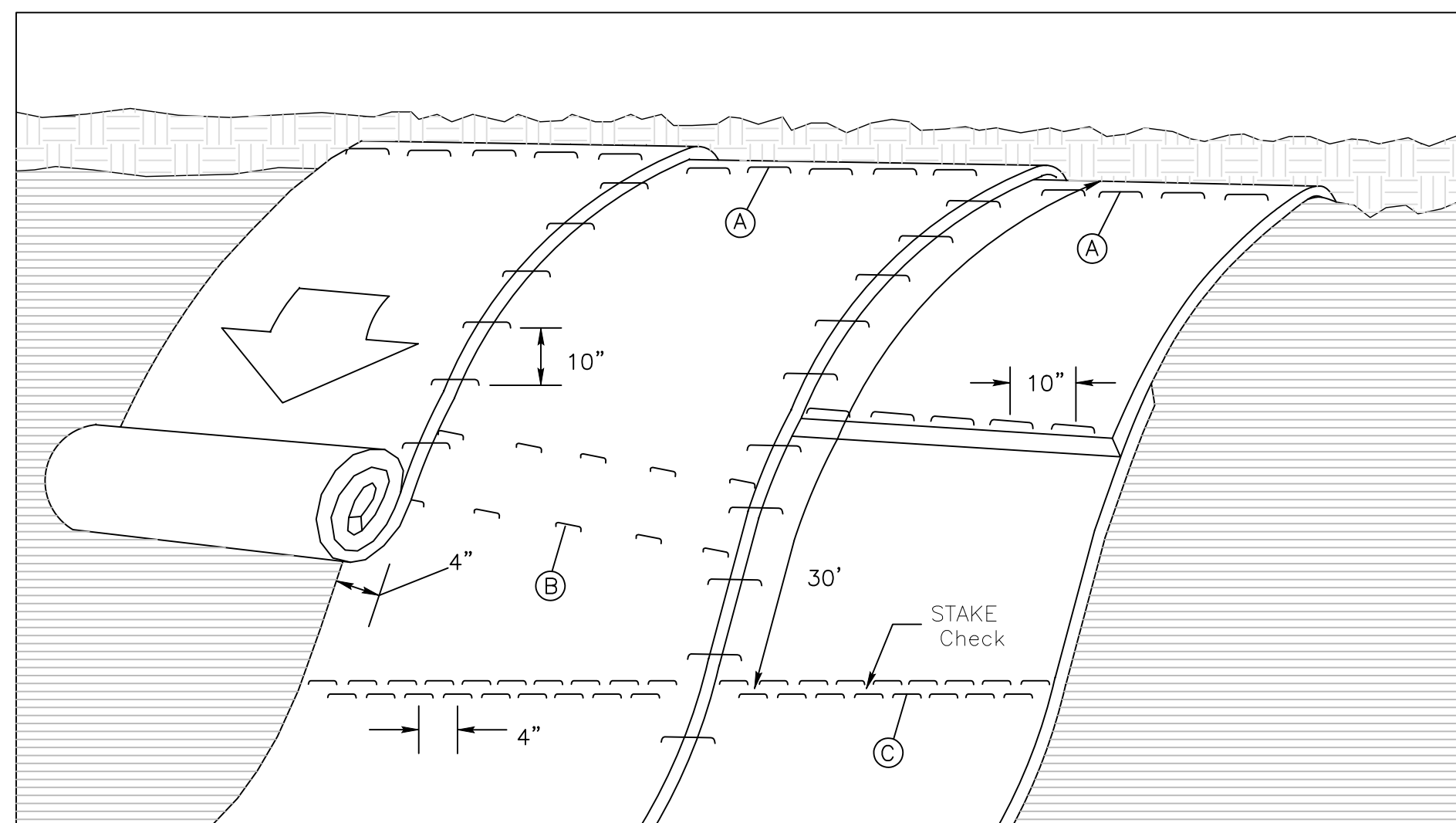


EROSION CONTROL MAT (ECM) DETAIL

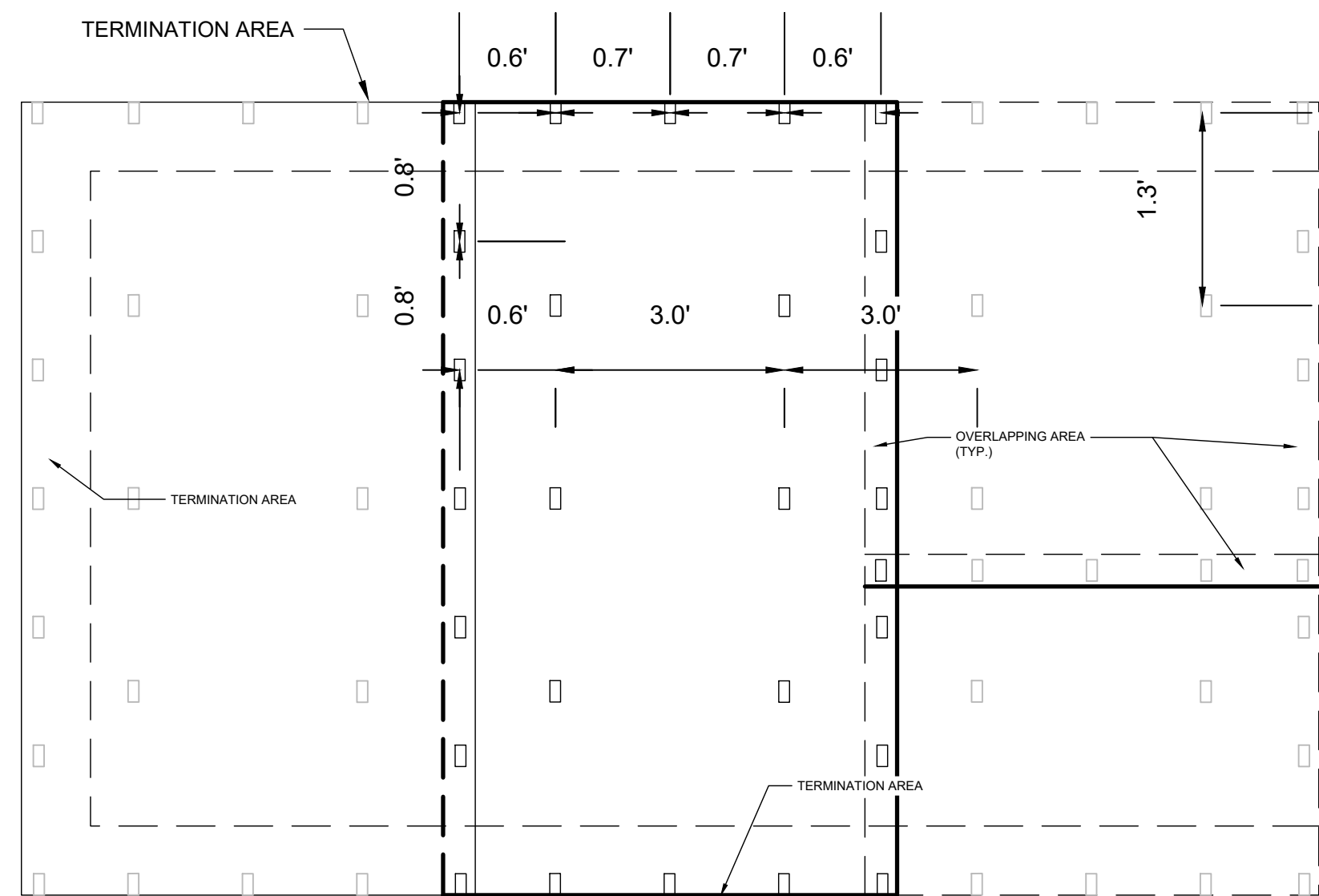


- NOTES:
- SEEDING AND MULCH SHALL BE INSTALLED PRIOR TO INSTALLATION OF EROSION CONTROL MATTING.
 - MATting SHALL BE PLACED LOOSELY AND IN FULL CONTACT WITH THE SOIL. THE CONTRACTOR SHALL UNROLL THE COIR FIBER MATting ALONG THE SLOPE FACE ANCHORING THE BLANKET INTO THE TOP END OF THE SLOPE BY 'KEYING' THE BLANKET A MINIMUM OF ONE (1) FOOT INTO THE EXISTING GROUND. MATting SHALL BE 'KEYED' INTO GROUND ONE (1) FOOT ON THE TOP AND BOTTOM OF SLOPES. BEGIN AT THE TOP OF THE SLOPE AND ANCHOR FIBER MATting IN A 12" DEEP INITIAL ANCHOR TRENCH. BACKFILL TRENCH AND TAMP EARTH FIRMLY. ANCHOR, FILL, AND COMPACT END OF FIBER MATting IN 12"x48" TERMINAL ANCHOR TRENCH (MIRROR IMAGE OF INITIAL TRENCH).
 - BLANKET EDGES (BLANKET SIDE BY SIDE AT A GIVEN ELEVATION) SHALL OVERLAP APPROXIMATELY SIX (6) INCHES, WITH THE UPSTREAM BLANKET ON TOP. STAKES SHALL STRADDLE THE EDGES OF THE BLANKET ON TOP AND THE UNDERLYING BLANKET. BLANKET ENDS (BLANKETS ENDING UPSLOPE FROM DOWN SLOPE BLANKETS) SHALL OVERLAP APPROXIMATELY SIX (6) INCHES WITH THE UPSLOPE BLANKET OVER THE DOWN SLOPE BLANKET.
 - THE OVERLAPPING AREA AND TERMINATION AREA SHALL BE SECURED WITH STAKES SPACED AT A MINIMUM OF ONE (1) STAKE EVERY TWO (2) LINEAR FEET ON CENTER. IN ADDITION TO THE STAKES LOCATED AT THE OVERLAPPING AND TERMINATION AREA, STAKE MATting AT A MINIMUM RATE OF TWO (2) PER SQUARE YARD. AS SHOWN ON THE TYPICAL DETAIL ON THE CONSTRUCTION DRAWINGS.
 - ALL STAKES FOR SECURING MATting SHALL BE 24"x2"x4" BIODEGRADABLE "WEDGE" STAKES.
 - CONTRACTOR SHALL INSTALL MATting FROM THE UPSTREAM RIFFLE GRADE BOTTOM ELEVATION TO THE HALF WAY POINT OF THE BANKFULL BENCH, AS SHOWN ON TYPICAL CROSS-SECTIONS WITHIN CONSTRUCTION DRAWINGS. THE MATting LIMITS AS SHOWN IN THE PLAN AND PROFILE DRAWINGS ARE FOR GRAPHICAL REPRESENTATION PURPOSES ONLY AS THE MATting INSTALLATION LIMITS MAY VARY DEPENDING ON FIELD ELEVATIONS.

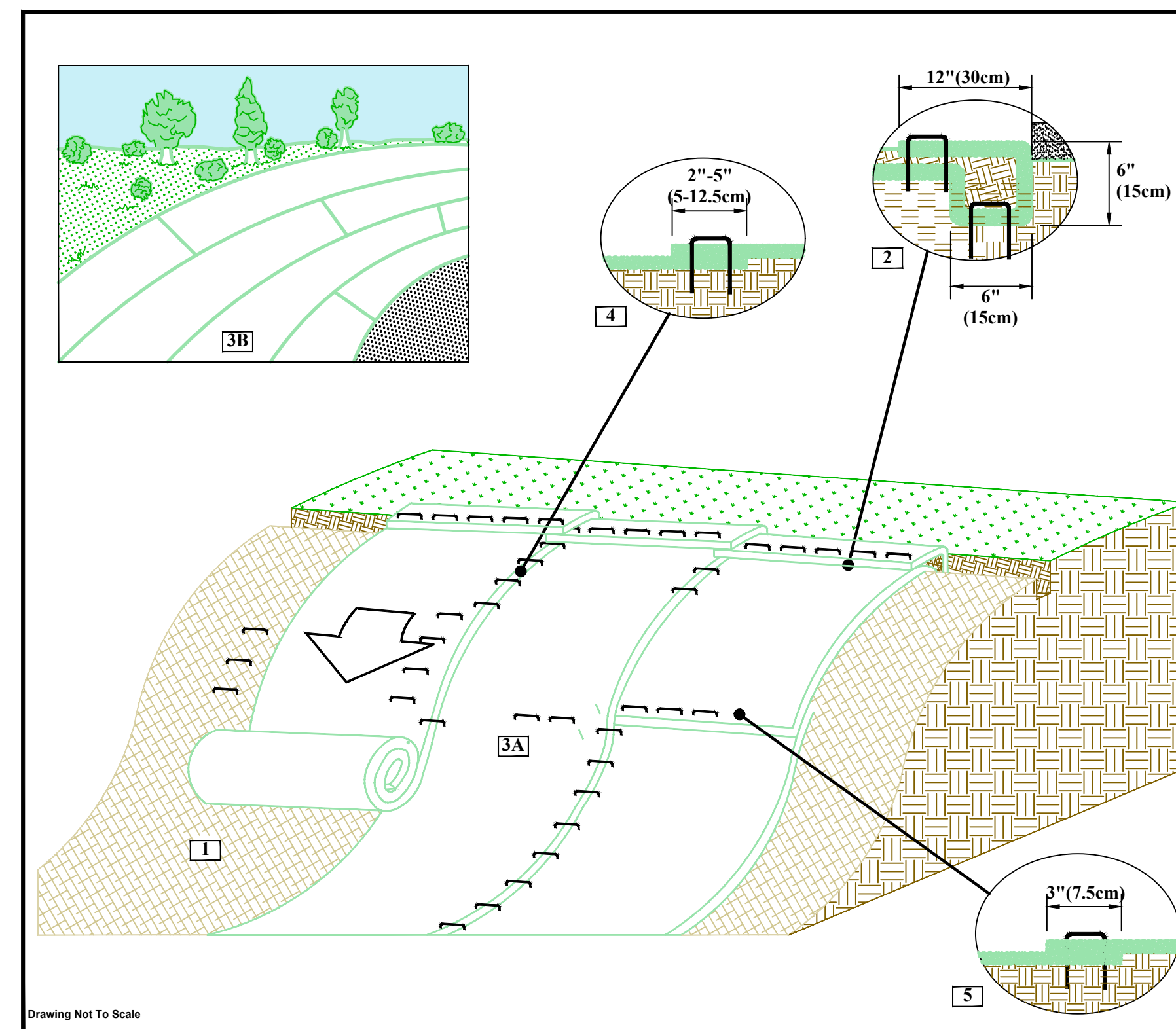
COIR MAT ON SLOPES



COIR MAT STAKING PATTERN GUIDE



EROSION CONTROL BLANKETING

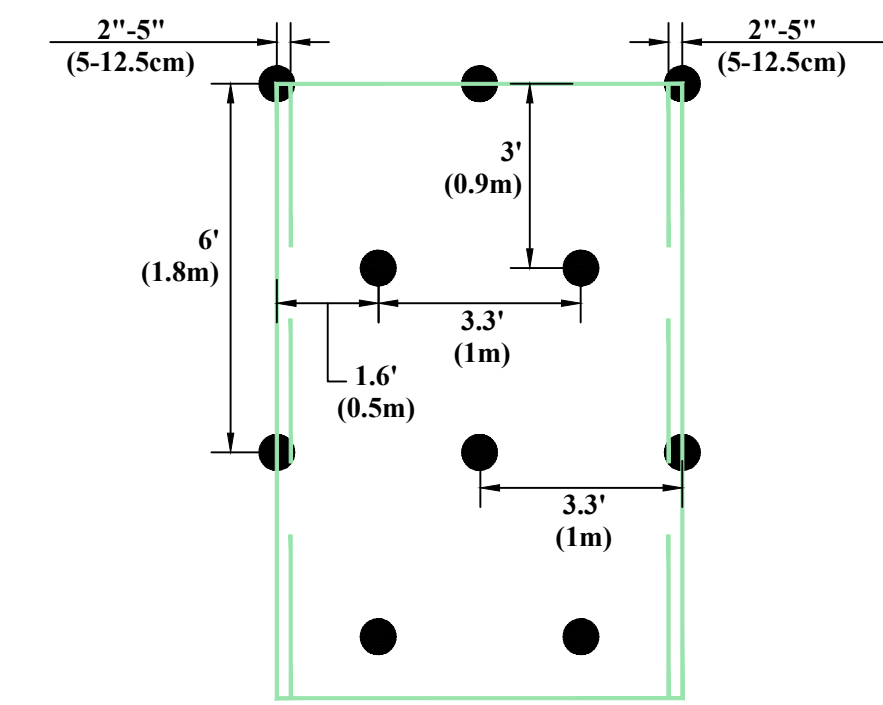


EROSION CONTROL BLANKETING

NOTES

- CONTRACTOR SHALL USE ROLLMAX BIONET EROSION CONTROL BLANKET OR EQUIVALENT PRODUCT APPROVED BY ENGINEER
- PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECPS), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
- BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECPS IN A 6" (15CM) DEEP X 6" (15CM) WIDE TRENCH WITH APPROXIMATELY 12" (30CM) OF RECPS EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECPS WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO THE COMPACTED SOIL AND FOLD THE REMAINING 12" (30CM) PORTION OF RECPS BACK OVER THE SEED AND COMPACTED SOIL. SECURE RECPS OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30CM) APART ACROSS THE WIDTH OF THE RECPS.
- ROLL THE RECPS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. RECPS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECPS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
- THE EDGES OF PARALLEL RECPS MUST BE STAPLED WITH APPROXIMATELY 2" - 5" (5-12.5CM) OVERLAP DEPENDING ON THE RECPS TYPE.
- CONSECUTIVE RECPS SPLICED DOWN THE SLOPE MUST BE END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30CM) APART ACROSS ENTIRE RECPS WIDTH.
- IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECPS.

ESC BLANKETING STAPLE PATTERN GUIDE



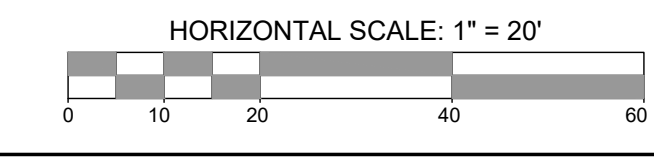
1.15 Staples per SQ.YD.

**PLANTING
PLAN VIEW**
(1" = 20' HORIZ.)



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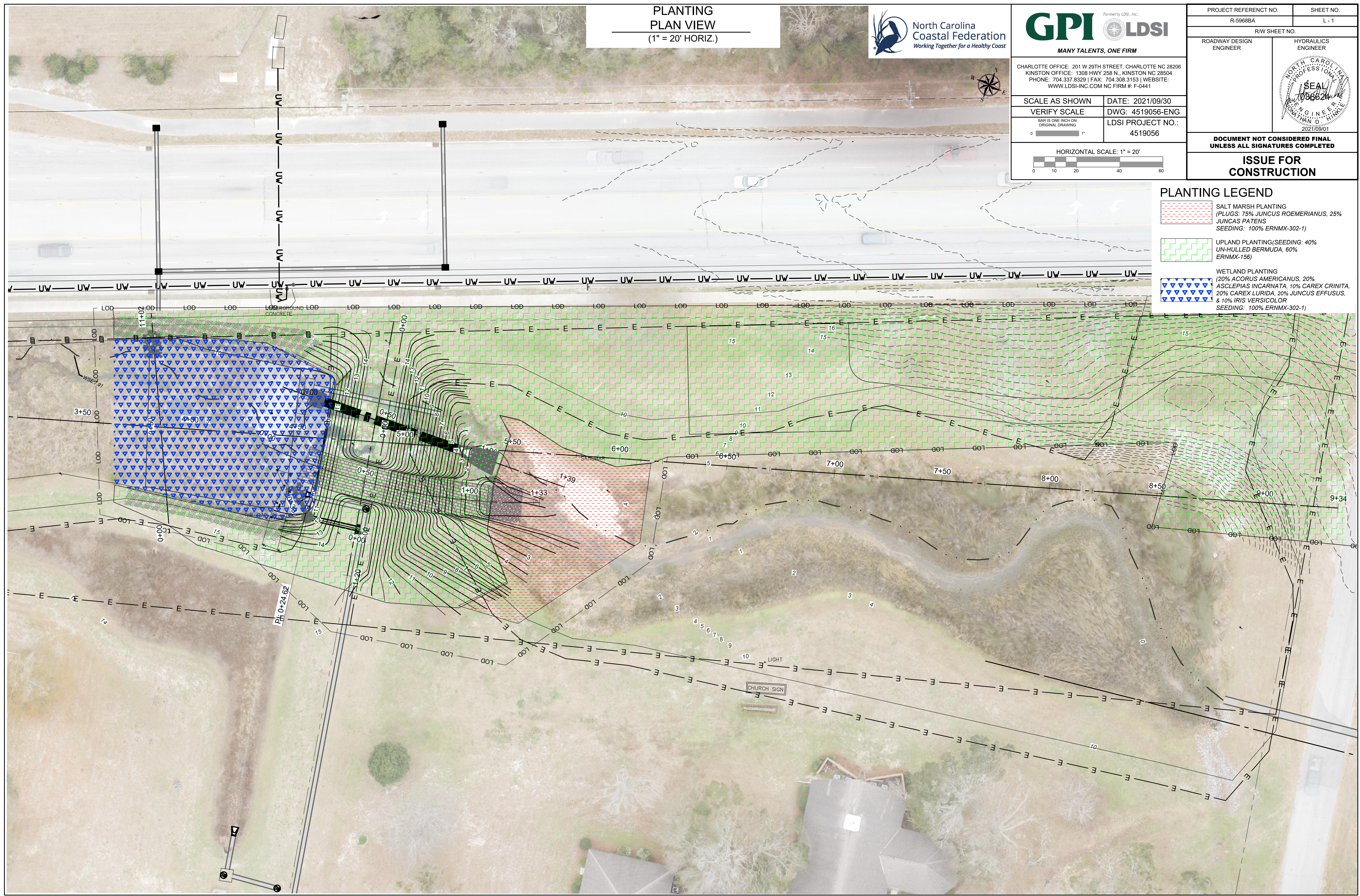
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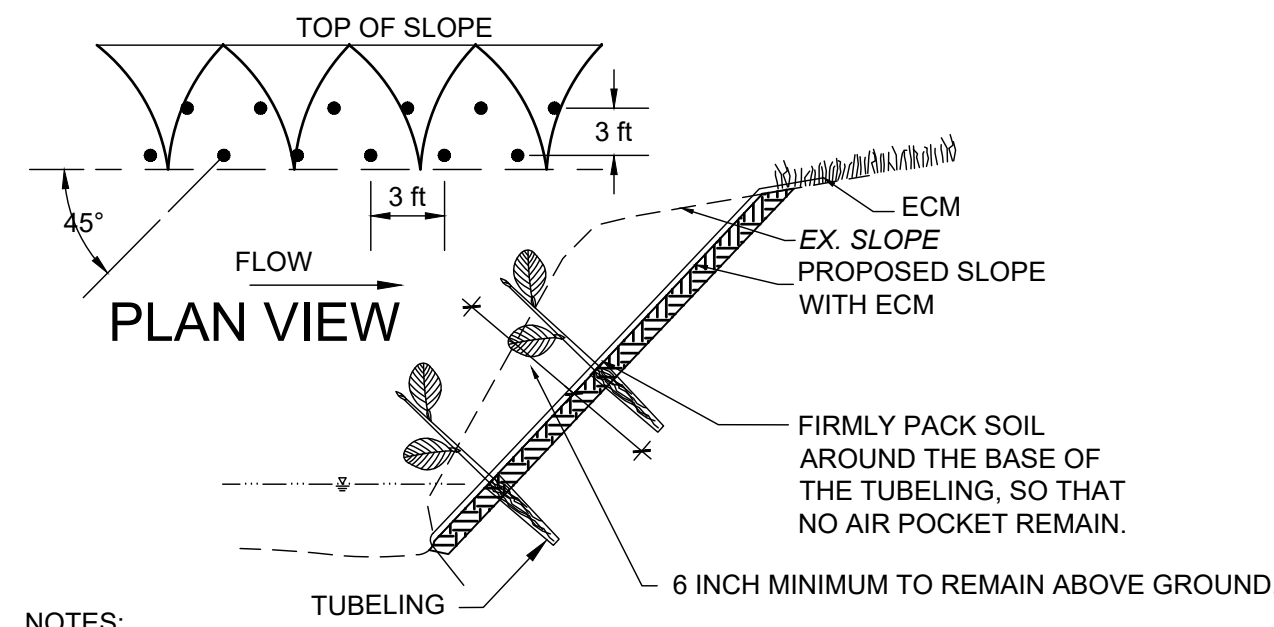
PROJECT REFERENCE NO. R-59688A	SHEET NO. L-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p>ISSUE FOR CONSTRUCTION</p>	

PLANTING LEGEND

	SALT MARSH PLANTING (PLUGS: 75% JUNCUS ROEMERIANUS, 25% JUNCAS PATENS SEEDING: 100% ERNMX-302-1)
	UPLAND PLANTING (SEEDING: 40% UN-HULLED BERMUDA, 60% ERNMX-156)
	WETLAND PLANTING (20% ACORUS AMERICANUS, 20% ASCLEPIAS INCARNATA, 10% CAREX CRINITA, 20% CAREX LURIDA, 20% JUNCUS EFFUSUS, & 10% IRIS VERSICOLOR SEEDING: 100% ERNMX-302-1)

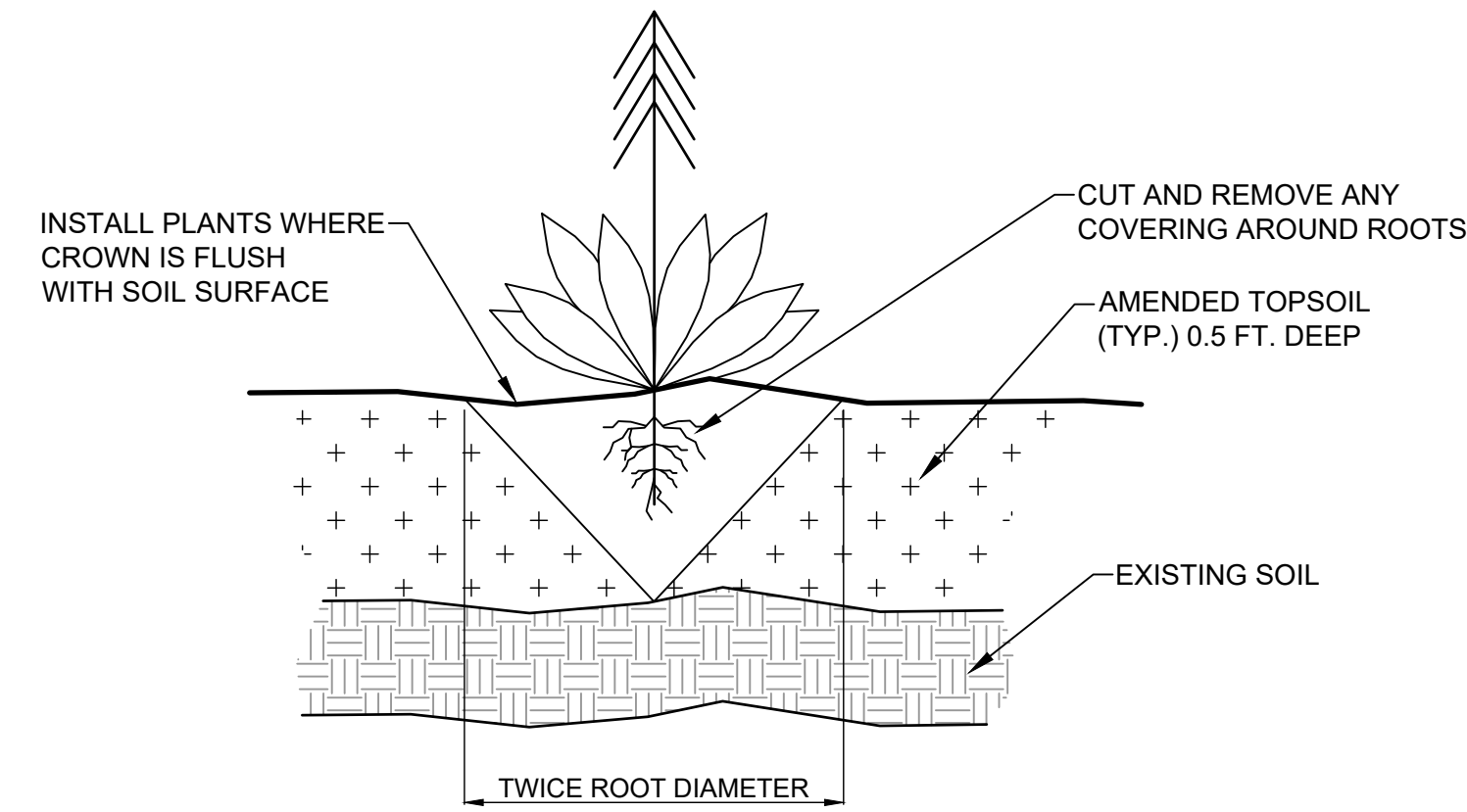


PLANTING DETAILS



- NOTES:
1. SEE PLANTING SCHEDULE FOR DESIRABLE SPECIES AND SIZE.
 2. SPACE AT 3.0' O.C. (TRIANGULAR SPACING).
 3. ALL TUBELINGS SHALL COMPLY WITH THE RECOMMENDATIONS AND REQUIREMENTS OF ANSI Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK."
 4. CUT AND FOLD BACK SLOT IN MAT TO INSTALL TUBELING. SEAL SLOT WITH COMPOST AND STAPLE. ALLOW 6" DIAMETER AROUND TUBELING WITH NO ECM.
 5. PLANT THE ROOT BALL SLIGHTLY DEEPER THAN IT WAS IN THE TUB.

TUBELING DETAILS (NTS)



GENERAL PLANTING NOTES:

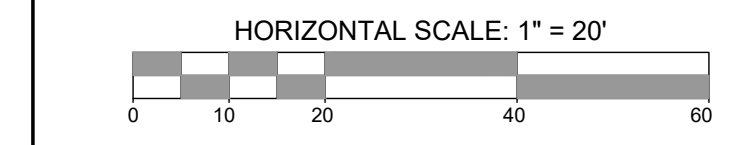
1. DO NOT COMPACT TOPSOIL, TO PROMOTE HEALTHY ENVIRONMENTAL CONDITIONS FOR THE PLANTS.
2. PLANTS OF THE SAME SPECIES SHOULD BE PLANTED IN CLUSTERS. THESE CLUSTERS SHOULD CONTAIN (5) FIVE PLANTS OF THAT SPECIES. NO MORE THAN ONE (1) CLUSTER OR FIVE (5) PLUGS OF THE SAME SPECIES WITHIN A 10 FT BY 10 FT GRID.
3. ALL PLANTS SHOULD BE PLANTED IN THE INDICATED RANGE TO ENSURE SURVIVAL.

TYPICAL PLANTING DETAIL (NTS.)



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SCALE AS SHOWN DATE: 2021/09/30
VERIFY SCALE DWG: 4519056-ENG
LDSI PROJECT NO.: 4519056



PROJECT REFERENC NO.	SHEET NO.
R-5968BA	L-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
ISSUE FOR CONSTRUCTION	

GENERAL PLANTING NOTES:

SEEDING TEMPORARY & PERMANENT

- PERMANENT SEED MIX SHALL BE ERNST SEED NORTH CAROLINA MOUNTAIN RIPARIAN MIX OR EQUIVALENT
- SEEDING SHALL BE IN ACCORDANCE WITH CONSTRUCTION SPECIFICATION 006 - SEEDING, SPRIGGING, AND MULCHING.
- DELIVERY TICKETS SHOWING QUALITY AND QUANTITY OF MATERIALS SHALL BE FURNISHED TO THE ENGINEER (1) WEEK PRIOR TO USING MATERIALS FOR APPROVAL.
- AREAS TO BE SEEDED SHALL BE DRESSED TO A SMOOTH, FIRM SURFACE. ON SITES WHERE EQUIPMENT CAN OPERATE ON SLOPES SAFELY, THE SEEDBED SHALL BE ADEQUATELY LOOSENEED (4 TO 6 INCHES DEEP) AND SMOOTHED. DEPENDING ON SOIL AND MOISTURE CONDITIONS, DISKING OR CULTIPACKING, OR BOTH, MAY BE NECESSARY TO PROPERLY PREPARE A SEEDBED. WHERE EQUIPMENT CANNOT OPERATE SAFELY, THE SEEDBED SHALL BE PREPARED BY HAND METHODS BY SCARIFYING TO PROVIDE A ROUGHENED SOIL SURFACE SO THAT BROADCAST SEED WILL REMAIN IN PLACE.
- FERTILIZER, LIME, AND OTHER SOIL AMENDMENTS SHALL BE APPLIED AS SPECIFIED IN SPECIFICATIONS. THE FERTILIZER AND SOIL AMENDMENTS SHALL BE THOROUGHLY INCORPORATED INTO THE SOIL IMMEDIATELY FOLLOWING SURFACE APPLICATION.
- ALL DISTURBED AREAS SHALL BE SEEDED WHEN THEY ARE EXPECTED TO BE BARE OF GROUND OVER FOR MORE THAN 15 CALENDAR DAYS; WHERE ACTIVE CONSTRUCTION IS NOT BEING UNDERTAKEN, OR AS DIRECTED BY THE ENGINEER/INSPECTOR. THESE AREAS SHALL BE SEEDED (TEMPORARY SEED MIX) AT THE END OF EACH DAY UNLESS OTHERWISE DIRECTED BY THE ENGINEER/INSPECTOR.
- SEEDING (PERMANENT SEED MIX) SHALL BE ACCOMPLISHED WITHIN TWO (2) DAYS AFTER FINAL GRADING IS COMPLETED AND APPROVED BY THE ENGINEER.
- FERTILIZER SHALL BE APPLIED AT THE RATE OF 1,000 LBS. PER ACRE. THE FERTILIZER SHALL BE 10-10-10, OR EQUIVALENT. LIME SHALL BE APPLIED AT THE RATE OF TWO (2) TONS PER ACRE. MULCH SHALL BE APPLIED AT A RATE OF TWO (2) TONS PER ACRE. ALL SOIL AMENDMENTS SHALL BE THOROUGHLY INCORPORATED, AS SPECIFIED IN SECTION 5 OF THIS CONSTRUCTION SPECIFICATION. THE AREA SHOULD THEN BE SMOOTHED AND ANY DEBRIS LARGER THAN 3 INCHES IN DIAMETER OR WHICH WOULD INTERFERE WITH MOWING SHALL BE REMOVED FROM THE SURFACE. A CYCLONE SEEDER, DRILL OR CULTIPACKER SEEDER SHALL BE USED TO APPLY THE SPECIFIED SEED EVENLY ON THE FRESHLY PREPARED SEEDBED. WHEN SEED IS BROADCAST, A CULTIPACKER OR OTHER APPROPRIATE EQUIPMENT SHALL BE USED IMMEDIATELY FOLLOWING SEEDING TO INCORPORATE THE SEED.

TRANSPLANTS

- THE WORK CONSISTS OF HARVESTING, TRANSPORTING, INSTALLING, AND MAINTAINING TRANSPLANT (HERBACEOUS PLUGS) MATERIALS: INSTALLED IN THE WETLAND AREAS AS SHOW ON THE CONSTRUCTION DRAWINGS. TRANSPLANTS MAY ALSO BE PURCHASED AT THE DISCRETION OF THE CONTRACTOR, WITH PRIOR APPROVAL FROM THE PROJECT ENGINEER.
- THREE (3) WEEKS PRIOR TO INSTALLATION OF TRANSPLANTS, CONTRACTOR SHALL SUBMIT A PROPOSED HARVESTING AND CONSTRUCTION SCHEDULE, INCLUDING SOURCE OF SUPPLY OF TRANSPLANTS, TO PROJECT ENGINEER FOR REVIEW AND APPROVAL. NO WORK SHALL BE PERFORMED UNTIL PROJECT ENGINEER APPROVES THE SOURCE AND SCHEDULE. HARVESTING, TRANSPORTING, AND INSTALLATION SHALL TAKE PLACE WHEN PLANTS ARE DORMANT (DECEMBER 1 THROUGH APRIL 1).

MATERIALS:

- PLANT MATERIALS SHALL BE GROWN FROM SEEDLINGS OR SEED SOURCES THAT ORIGINATED WITHIN PLANT HARDINESS ZONES 7 OR 8 EAST OF THE MISSISSIPPI RIVER. PLANT MATERIAL SHALL BE DELIVERED IN 2" PEAT POTS IN CELL PACKS OF APPROXIMATELY 50 PLANTS PER TRAY. PLANT TRAYS SHALL BE LABELED WITH SCIENTIFIC AND COMMON NAMES FOR INSPECTION. PLANT MATERIAL SHALL CONSIST OF 3 TO 5 STEMS PER PLANT AND SHALL BE ROOTED THROUGH THE SIDES AND BOTTOM OF THE PEAT POT.

METHODS:

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING SUFFICIENT SOIL SAMPLES FOR TESTING BY THE NORTH CAROLINA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES, AGRONOMIC DIVISION, SOIL TESTING SECTION, TO DETERMINE THE SOIL PH AND NUTRIENT CONTENT. SAMPLES SHALL BE TAKEN IN THE PRESENCE OF THE ENGINEER. RESULTS SHALL BE RECEIVED BY THE ENGINEER DIRECTLY FROM THE NORTH CAROLINA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADDITION OF FERTILIZER AND/OR OTHER SOIL AMENDMENTS AS NEEDED TO ENSURE LIVABILITY OF THE WETLAND PLUGS.
- THE PLUGS SHALL BE PLANTED UPRIGHT, NOT AT AN ANGLE. PLANTING HOLES SHALL BE DUG LARGE ENOUGH AND DEEP ENOUGH TO ACCOMMODATE THE ENTIRE ROOT MASS. THE PLUGS SHALL BE PLANTED WITHOUT TWISTED, BALLED, J OR U ROOTS. THE PLANT PLUGS SHALL BE PLANTED WITH NO ROOTS EXPOSED ABOVE THE GROUND LINE. SOIL SHALL BE PACKED FIRMLY AROUND THE ENTIRE ROOT MASS.
- THE CONTRACTOR SHALL SUPPLY AND INSTALL A SLOW RELEASE, COATED FERTILIZER (19-6-12) AT THE RATE OF ONE OUNCE PER PLANT HOLE AND SHALL BE PLACED IN THE TRANSPLANT HOLE PRIOR TO PLACING THE PLUG. ANOTHER FERTILIZER ANALYSIS MAY BE SUBSTITUTED, UPON WRITTEN APPROVAL OF THE ENGINEER. CONTRACTOR SHALL SUBMIT TO ENGINEER FERTILIZER SPECIFICATIONS FOUR (4) WEEKS PRIOR TO PLANTING.

- SEASONAL LIMITATIONS: TRANSPLANTS SHALL BE COMPLETED BETWEEN APRIL 15TH THROUGH JUNE 30TH OR SEPTEMBER 1ST THROUGH NOVEMBER 15TH. NO PLANTING SHALL BE DONE WHEN THE TEMPERATURE IS BELOW 32 DEGREES F, WHEN THE SOIL TO BE EXCAVATED FOR THE PLANTING HOLE IS FROZEN, OR WHEN THE BOTTOMS OF THE PLANT HOLES ARE FROZEN.
- STOCKING RATE - PLUGS SHALL BE PLANTED ON A 1 FT BY 1 FT GRID UNIFORMLY YIELDING 43,560 PLUGS PER ACRE. PLUGS SHALL BE PLANTED IN ZONES IN ACCORDANCE WITH CONSTRUCTION DRAWINGS. PLUGS SHALL BE PLACED IN GROUPS/CLUSTERS OF 15 - 25 PLUGS IN ADJOINING LOCATION. CONTRACTOR SHALL NOT PLANT ANY GROUPS/CLUSTERS WITH MORE THAN 25 PLUGS IN ANY ONE LOCATION (5 FT X 5 FT) PLOT UNLESS ONLY 1 SPECIES IS INDICATED FOR PLANTING AREA. CONTRACTOR SHALL NOT PLANT AN ADJOINING PLOT WITH A GROUPING OR CLUSTER OF THE SAME SPECIES, I.E. NO 5 FT X 10 FT PLOT WILL HAVE THE SAME CLUSTER SPECIES GROUPED TOGETHER.
- SUBMITTAL - CONTRACTOR SHALL SUBMIT TO THE ENGINEER IN WRITING THE NURSERY LOCATION FROM WHICH THE PLUGS WILL BE SHIPPED FROM. THE CONTRACTOR SHALL ALSO PROVIDE THE ENGINEER WITH 5 SPECIMENS OF EACH SPECIES FOR QUALITY ASSURANCE PURPOSES FOUR (4) WEEKS PRIOR TO INSTALLING THE PLUGS.
- INSPECTION - INSPECTION OF PLUG QUALITY BY THE SHALL BE PERFORMED UNDER THIS CONTRACT PRIOR TO OR AT THE BEGINNING OF THE PLANTING OF THE PLUGS. ENGINEER SHALL BE GIVEN AT LEAST ONE (1) WEEK NOTICE OF THE ANTICIPATED ARRIVAL OF PLUGS AND PLANTING CREW TO EACH SITE TO FACILITATE THE COMPLETION OF THIS INSPECTION REQUIREMENT. INSPECTION OF THE PLANTING BY THE ENGINEER SHALL BE PERFORMED UNDER THIS CONTRACT BY MEASURING SAMPLE PLOTS. IN THE EVENT A SAMPLE PLOT FAILS TO MEET CONTRACT REQUIREMENTS, THE CONTRACTOR WILL BE REQUIRED TO RE-WORK THE REPRESENTATIVE AREA PRIOR TO RE-INSPECTION. THE RE-INSPECTION SAMPLE PLOT SHALL NOT BE THE ORIGINAL SAMPLE PLOT.
- IRRIGATION - CONTRACTOR SHALL BE RESPONSIBLE FOR IRRIGATION OF PLUGS FOR ESTABLISHMENT PURPOSES FOR NO LESS THAN ONE MONTH AFTER PLANTING. CONTRACTOR SHALL SUBMIT TO ENGINEER AN IRRIGATION PLAN, AND SCHEDULE TWO WEEKS PRIOR TO PLANTING. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR REMOVING FLOOD WATERS FROM THE PLUGS.

PLANTING TABLE					
PLUGS					
	SPECIES COMMON NAME	SPECIES SCIENTIFIC NAME	PERCENT MIIX	ESTIMATED # OF PLANTS	PLANTING AREA (ACRES)
SALT MARSH	BLACK NEEDLE RUSH	JUNCAS ROEMERIANUS	75%	3600	0.11
	SPREADING RUSH	JUNCAS PATENS	25%	1200	
WETLAND PLANTINGS	AMERICAN SWEET FLAG	ACORUS AMERICANUS	20%	1480	0.17
	SWAMP MILKWEED	ASCLEPIAS INCARNATA	20%	1480	
	FRINGED SEDGE	CAREX CRINITA	10%	740	
	SALLOW SEDGE	CAREX LURIDA	20%	1480	
	SOFT RUSH	JUNCUS EFFUSUS	20%	1480	
	BLUE FLAG	IRIS VERSICOLOR	10%	740	
SEEDING					
	PLANTING MIX/ SEED	PERCENT MIIX	APPLICATION RATE (LBS/ACRE)	PLANTING AREA (ACRES)	
UPLAND PLANTING	UN-HULLED BERMUDA	40%	20	1.10	
	ERNMIX 156 (LOW-GROWING WILDFLOWER AND GRASS MIX)	60%	30		
SALT MARSH	ERNMIX 302-1 (NC COASTAL PLAIN DETENTION BASIN MIX)	100%	20	0.11	
WETLAND PLANTINGS	ERNMIX 302-1 (NC COASTAL PLAIN DETENTION BASIN MIX)	100%	20	0.17	