WBS ELEMENT: 51214.01D

CONTRACT: DL00125

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GASTON COUNTY

LOCATION: NC 16 BUSINESS JUST WEST OF NC 16

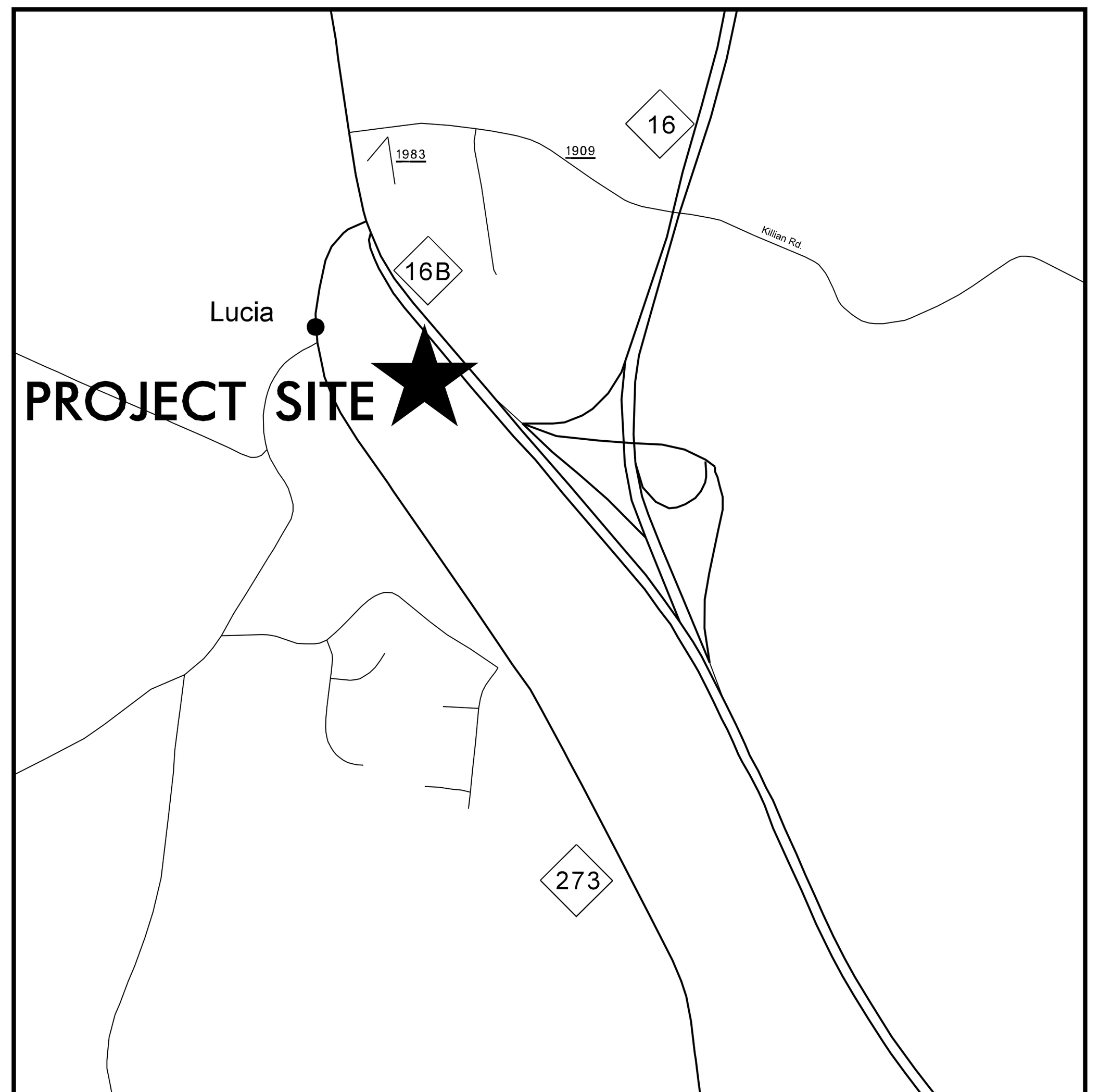
TYPE OF WORK: GRADING, DRAINAGE, EROSION CONTROL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	51214.01D	1	15

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
51214.01D		PE
51214.01D		CONST.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Vaughn & Melton
Consulting Engineers
Charlotte, North Carolina 704·357·0488
Asheville, NC 828·253·2796
Boone, NC 828·355·9933
Tri-Cities, TN 423·467·8401
Knoxville, TN 865·546·5800
Spartanburg, SC 864·574·4775
Charleston, SC 843·974·5650
Middlesboro, KY 606·248·6600
Atlanta, GA 770·627·3509



VICINITY MAP

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1B	CONVENTIONAL SYMBOLS
2	SUMMARY OF QUANTITIES & DRAINAGE SUMMARY
3	BYPASS PUMPING DETAIL
4	PLAN SHEET
EC-1 THRU EC-2	FLY ASH CLEAN-UP PLANS
EC-3	COIR FIBER BAFFLE DETAIL
EC-4	COIR FIBER WATTLE BARRIER DETAIL
EC-5	COIR FIBER WATTLER WITH POLYACRYLAMIDE (PAM) DETAIL
W-1 THRU W-5	SHORING PLANS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 10-31-2014

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

EFF. 01-17-2012
REV. 02-29-2016

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.22	Frames and Wide Slot Sag Grates
840.52	Precast Manhole - 4', 5' and 6' Diameter
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
DIVISION 11 - WORK ZONE TRAFFIC CONTROL	
1101.04	Temporary Shoulder Closures
1101.11	Traffic Control Design Tables
1110.01	Stationary Work Zone Signs
1130.01	Drums
DIVISION 16 - EROSION CONTROL AND ROADSIDE DEVELOPMENT	
1605.01	Temporary Silt Fence
1607.01	Gravel Construction Entrance
1630.04	Stilling Basin
1630.06	Special Stilling Basin
1632.01	Rock Inlet Sediment Trap Type C
1635.01	Rock Inlet Sediment Trap Type A
1640.01	Coir Fiber Baffle

GRAPHIC SCALES
VARIES
SEE PLANS

NCDOT CONTACT:
COLE GURLEY, PE

Prepared for the Office of:
DIVISION OF HIGHWAYS
1710 E. MARION ST., SHELBY NC, 28151

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:
JANUARY 31, 2017

REECE SCHULER, PE
PROJECT ENGINEER

DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER

1/10/2017 P.E.

SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

1/9/2017
S:\transportation\31535-07 NC16 Pipe Rehab\31535-07_rdy_tsh.dgn
user:amfitzpatrick

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
51214.01D	1-B

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 — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- 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 — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

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

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- 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 — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H–Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

6/21/00

COMPUTED BY:	DATE:
CHECKED BY:	DATE:

PROJECT REFERENCE NO.	SHEET NO.
51214.01D	2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

Line Item	Des	Description	Quantity	Unit
0000100000-N	800	Mobilization	1	LS
0000400000-N	801	Construction Surveying	1	LS
0000960000-N	SP	6 mil. Plastic Cover	360	SY
0001000000-E	200	Clearing & Grubbing	1.0	LS
0106000000-E	230	Borrow Excavation	1,380	CY
0234000000-E	SP	Exacavating, Hauling & Disposal of Fly Ash	2,500	Ton
0245000000-E	SP	Shovel and Bucket Fly Ash Clean Up	175	Ton
0255000000-E	SP	Mechanized Fly Ash Clean Up	200	Ton
0199000000-E	SP	Temporary Shoring (Four Sided Self Supporting)	4,285	SF
0318000000-E	300	Foundation Conditioning Material, Minor Strs	20	Tons
0320000000-E	300	Foundation Conditioning Geotextile	40	SY
0448200000-E	310	18" RC Pipe Culvert, CL. III	60	LF
0973300000-E	330	36" Welded Steel Pipe, 0.500" Thick, Grade B in Soil	186	LF
0973100000-E	330	36" Welded Steel Pipe, 0.500" Thick, Grade B Not in Soil	186	LF
0986000000-E	SP	36" Welded Steel Pipe, 0.500" Thick, (Open Cut)	36	LF
0995000000-E	340	Pipe Removal	100	LF
1220000000-E	545	Incidental Stone Base	100	Ton
2264000000-E	840	Pipe Plugs	1.500	CY
2275000000-E	SP	Flowable Fill	97	CY
2286000000-N	840	Masonry Drainage Structures	1	EA
2367000000-N	840	Masonry Drainage Structures	31	LF
2367000000-N	840	Frame with Two Grates, Std. 840.20	1	EA
3656000000-N	876	Geotextile for Drainage	600	SY
4400000000-N	1110	Work Zone Signs (Stationary)	53	SF
4430000000-N	1130	Drums	12	EA
6000000000-E	1605	Temporary Silt Fence	250	LF
6006000000-E	1610	Stone for Erosion Control, Class A	110	Ton
6009000000-E	1610	Stone for Erosion Control, Class B	5	Ton
6012000000-E	1610	Sediment Control Stone	100	Ton
6029000000-E	SP	Safety Fence	6,600	LF
6037000000-E	SP	Coir Fiber Mat	900	SY
6042000000-E	1632	1/4" Hardware Cloth	25	LF
6069000000-E	1638	Stilling Basin	100	CY
6070000000-E	1639	Special Stilling Basin	10	EA
6071012000-E	SP	Coir Fiber Wattle	170	LF
6071014000-E	SP	Coir Fiber Wattle Barrier	500	LF
6071020000-E	SP	Polyacrylamide (PAM)	15	LB
6071030000-E	SP	Coir Fiber Baffle	275	LF
6084000000-E	1660	Seeding & Mulching	1.0	Acre
6131000000-E	SP	Seeding & Mulching (Wetland Seed Mix)	0.5	Acre
6132000000-E	SP	Bypass Pump	3	EA

SUB–REGIONAL & REGIONAL LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION / SIZE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	WELDED STEEL PIPE (TRENCHLESS INSTALATION) 12"	15"	18"	24"	36"	42"	48"	WELDED STEEL PIPE (OPEN CUT) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS III) 12"	15"	18"	24"	30"	36"	42"	48"	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET		M.H. STD. 840.52	FRAME WITH TWO GRATES STD. 840.22				CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	FLOWABLE FILL (C.Y.)	REMARKS
THICKNESS OR GAUGE																								.500							.500																																						
		401	402		767.44'	765.15'																														60																																	REMOVE & REBUILD
		402		769.08'	739.08'																																												1	5	20									1	1						0.524	94	REMOVE & REBUILD
		402	OUT		739.08'	727.09'																		372							44																																						FIELD WELD 7.5° BEND AT END OF BORE & JACK PIPE
TOTAL																								372							44					60													1	5	20									1	1						0.524	94	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

1/10/2017
S:\transportation\31535-07 NC16 Pipe Rehab\NC16_sum.dgn
User:amfitzpatrick

BYPASS PUMPING DETAIL

PROJECT REFERENCE NO.	SHEET NO.
51214.01D	3
R/W SHEET NO.	

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER

1/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

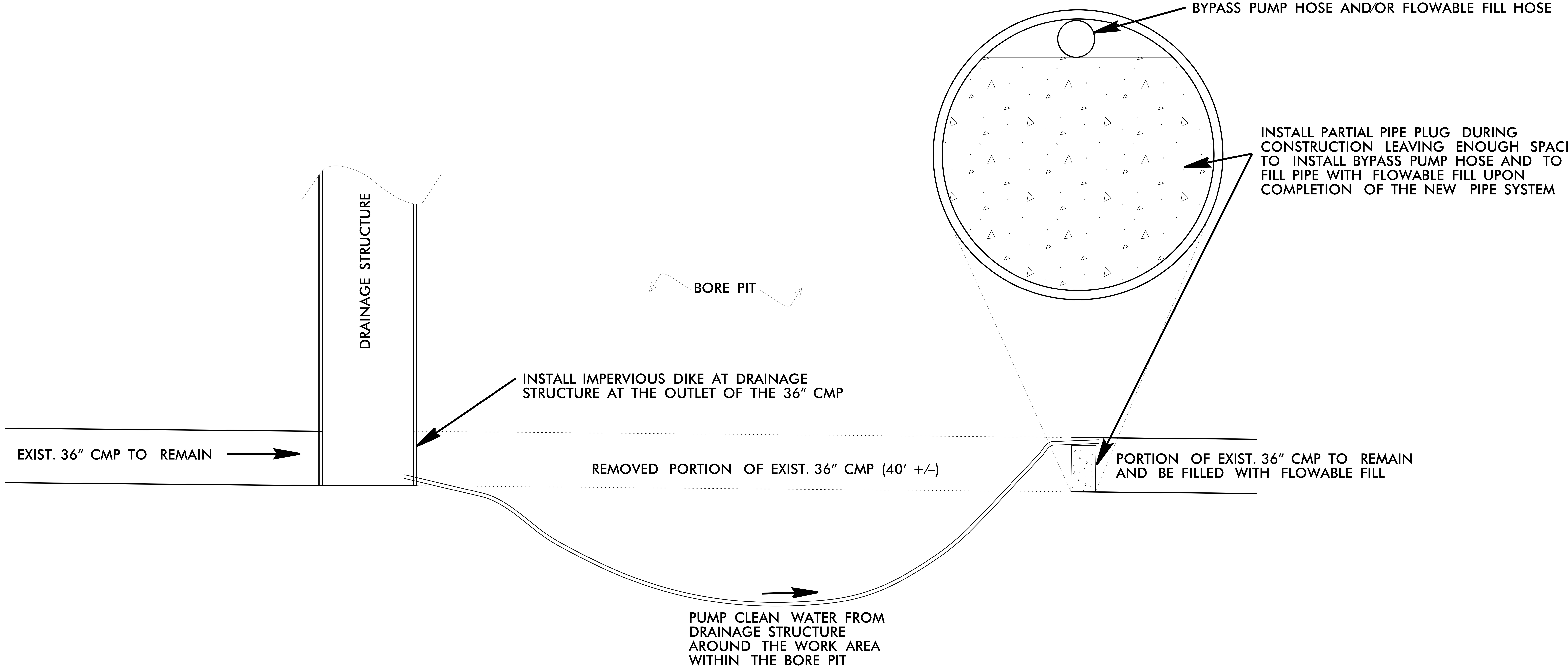
Impervious Dike:

The work covered by this section consists of furnishing, installing, maintaining, and removing an impervious dike for the purpose of diverting normal stream flow around the construction site. The Contractor shall construct an impervious dike in such a manner approved by the Engineer. The impervious dike shall not permit seepage of water into the construction site or contribute to siltation of the stream. The impervious dike shall be constructed of an acceptable material in the locations noted on the plans or as directed by the Engineer.

Acceptable materials shall include but not be limited to sheet piles, sandbags, and/or the placement of an acceptable size stone lined with polypropylene or other impervious fabric.

Earth material shall not be used to construct an impervious dike when it is in direct contact with the stream unless vegetation can be established before contact with the stream takes place.

No direct payment shall be made for the work of installation, maintenance, and removal of impervious dike(s) as described in this provision.



8/17/99

PROJECT REFERENCE NO.	SHEET NO.
51214.01D	4
R/W SHEET NO.	

V&M Vaughn & Melton Consulting Engineers

Asheville, North Carolina 828-253-2796
Tri-Cities, Tennessee 423-467-8401
Knoxville, Tennessee 865-546-5800
Middlesboro, Kentucky 606-248-6600
Spartanburg, South Carolina 864-574-4775
Charlotte, North Carolina 704-357-0488

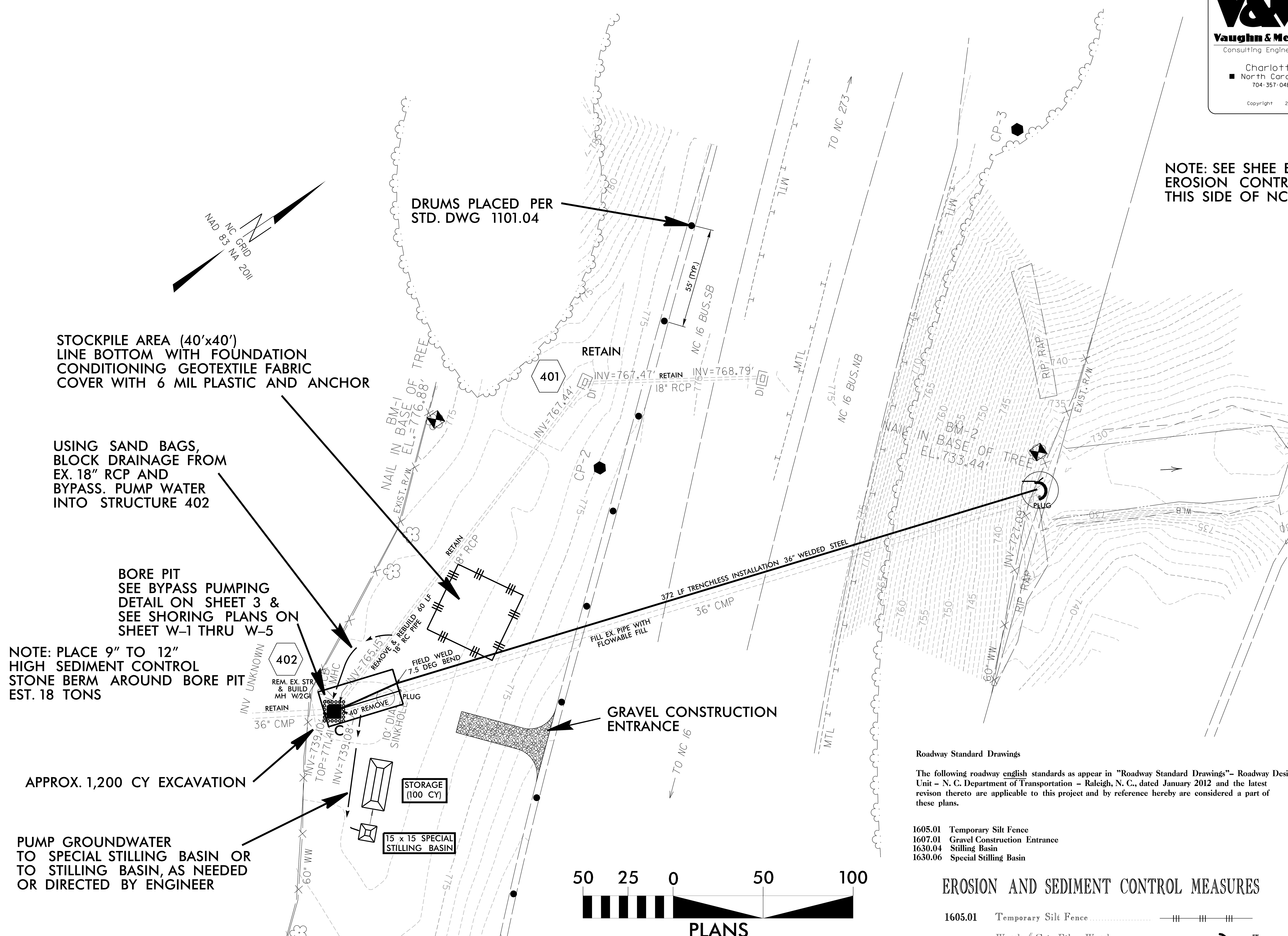
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER

1/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTE: SEE SHEE EC–1 FOR ADDITIONAL EROSION CONTROL MEASURES ON THIS SIDE OF NC16 BUSINESS

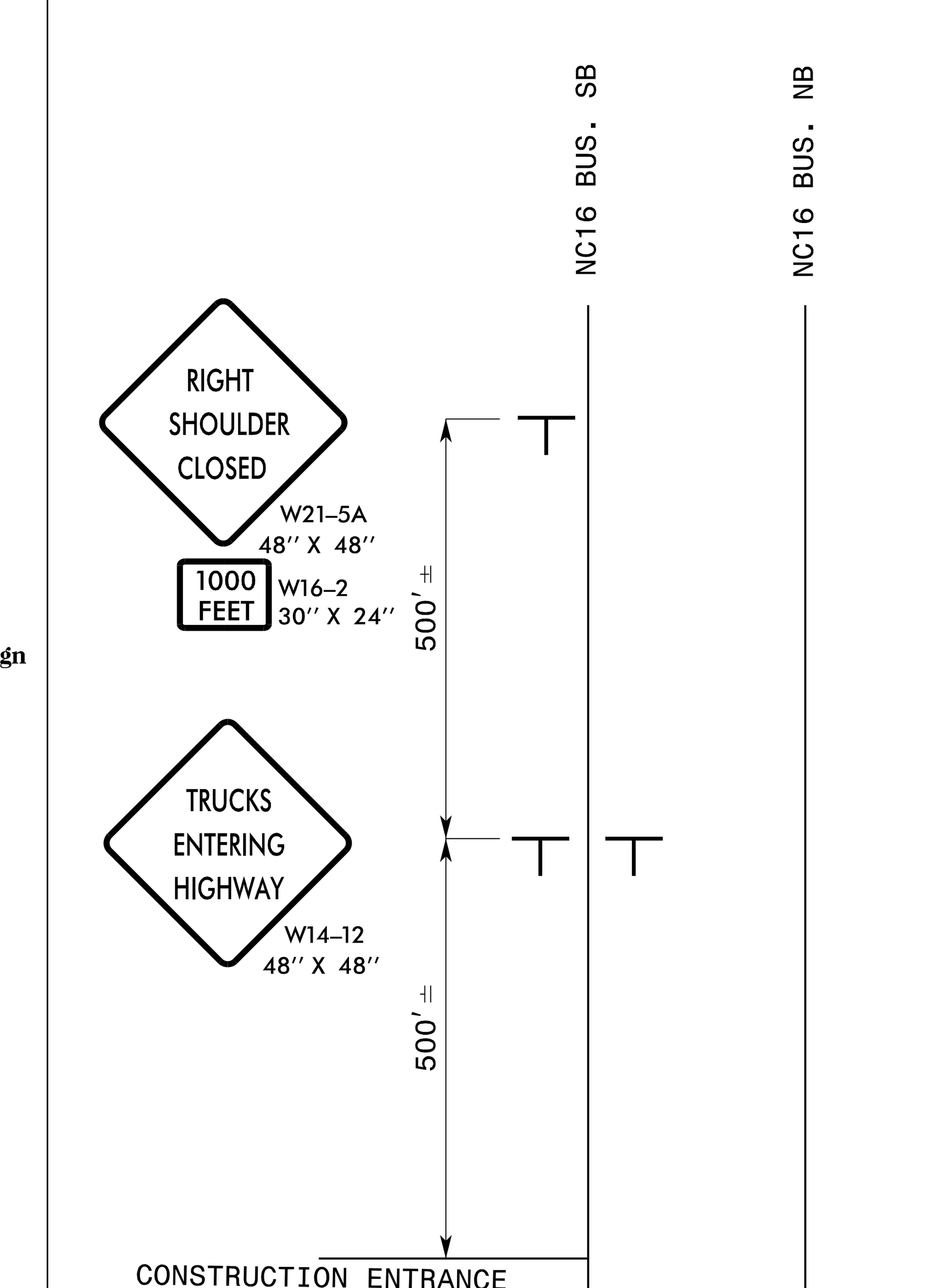


Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1605.01	Temporary Silt Fence
1607.01	Gravel Construction Entrance
1630.04	Stilling Basin
1630.06	Special Stilling Basin

TRAFFIC CONTROL SIGNAGE DETAIL



EROSION AND SEDIMENT CONTROL MEASURES

1605.01	Temporary Silt Fence
	Wattle / Coir Fiber Wattle
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)
1630.04	Stilling Basin
1630.06	Special Stilling Basin
1632.03	Rock Inlet Sediment Trap Type C

NOTE: ALL MATERIAL EXCAVATED FOR THE BORE PIT SHALL BE HAULED OFF AND DISPOSED PER THE SPECIAL PROVISIONS

REVISIONS

8/17/99

1/3/2017 S:\Transportation\31535-07 NC16 Pipe Rehab\31535-07_rdy_psh04.dgn

PROJECT REFERENCE NO.	SHEET NO.
51214.01D	EC-1

V&M Vaughn & Melton Consulting Engineers

Charlotte, North Carolina 704·357·0488

Asheville, North Carolina 828·253·2796
Tri-Cities, Tennessee 423·467·8401
Knoxville, Tennessee 865·546·5800
Middlesboro, Kentucky 606·248·6600
Spartanburg, South Carolina 864·574·4775

ENGINEER

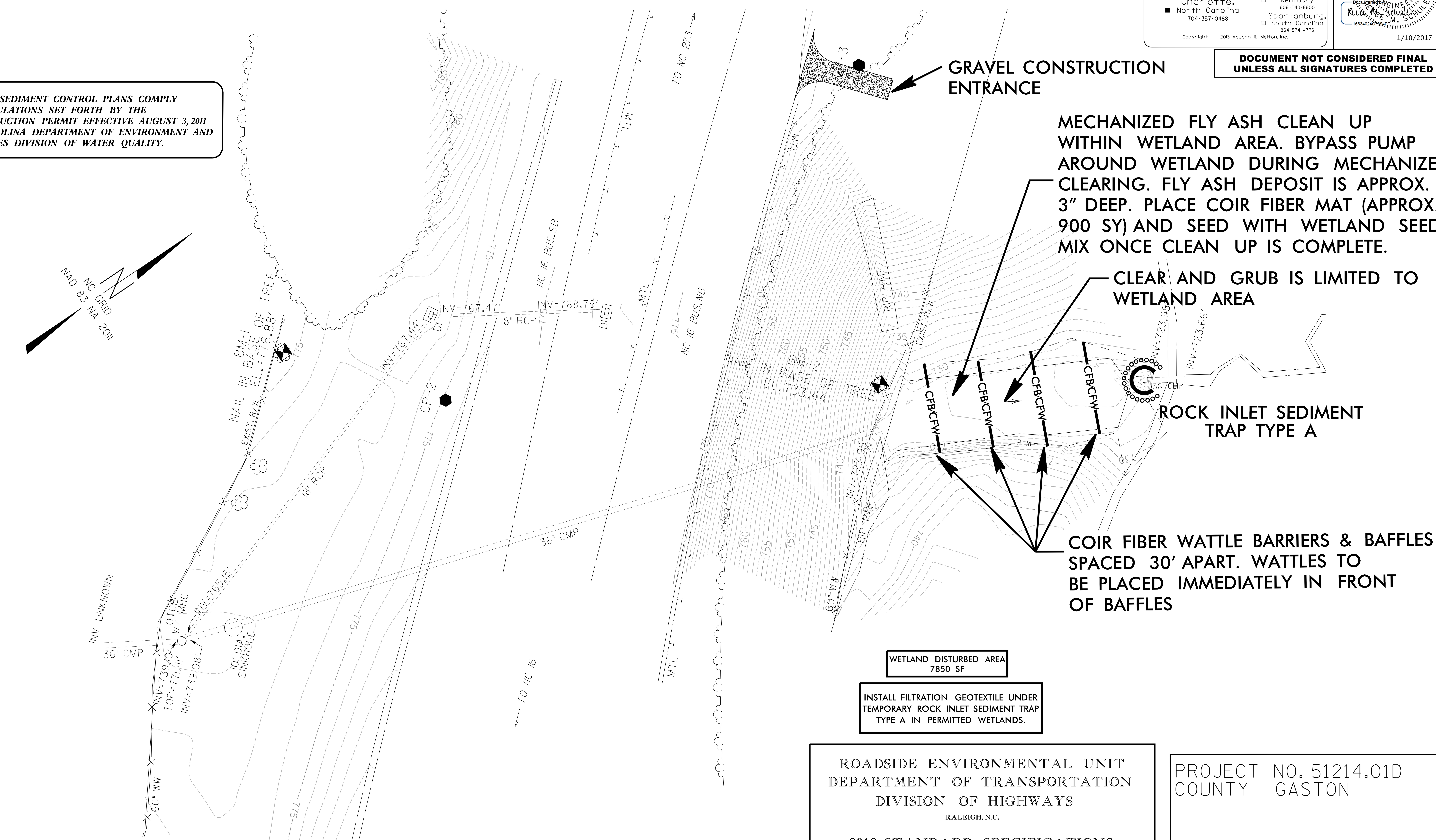
NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER RENEE M. SCHULER

DocuSigned by: 16634024C7824FC...

1/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG–010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.



WETLAND DISTURBED AREA 7850 SF

INSTALL FILTRATION GEOTEXTILE UNDER TEMPORARY ROCK INLET SEDIMENT TRAP TYPE A IN PERMITTED WETLANDS.

30' 0' 30' 60'
15'
(ENGLISH)

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2012 STANDARD SPECIFICATIONS

2012 STANDARD DRAWINGS

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

PROJECT NO. 51214.01D
COUNTY GASTON

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

NC 16 FLY ASH CLEAN UP

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	EC-1
1			3			TOTAL SHEETS
2			4			

PROJECT REFERENCE NO.	SHEET NO.
51214.01D	EC-2

ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER

DocuSigned by: Reece M. Schuler 16634024C7824FC...

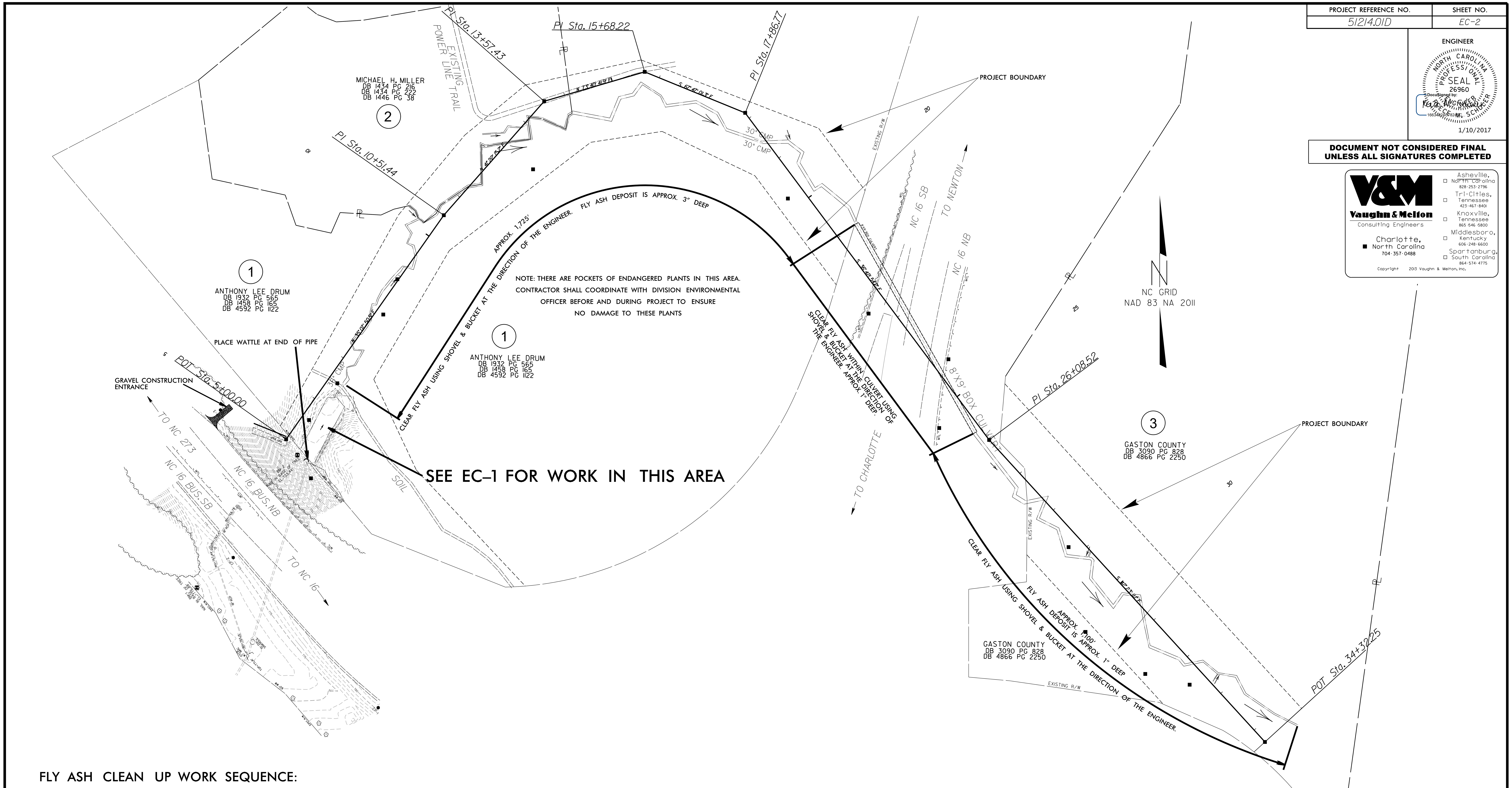
1/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Vaughn & Melton Consulting Engineers

Charlotte, North Carolina 704·357·0488

Asheville, North Carolina 828·253·2796
Tri-Cities, Tennessee 423·467·8401
Knoxville, Tennessee 865·546·5800
Middlesboro, Kentucky 606·248·6600
Spartanburg, South Carolina 864·574·4775



FLY ASH CLEAN UP WORK SEQUENCE:

1. CONTRACTOR SHALL PERFORM MECHANIZED CLEAN UP WITHIN THE WETLAND SHOWN ON EC-1.
2. BEGINNING AT THE UPSTREAM END, INSTALL WATTLES AS DIRECTED BY ENGINEER WITHIN THE STREAM.
3. BEGIN SHOVEL & BUCKET CLEAN UP OF THE FLY ASH DEPOSITS, STARTING AT THE UPSTREAM END AND COMPLETING A 100' SECTION BEFORE BEGINNING THE NEXT SECTION DOWNSTREAM.
4. ONCE THE FLY ASH DEPOSITS ARE COMPLETED AND ACCEPTED BY THE ENGINEER, REMOVE ALL WATTLES.

200' 0' 200' 400'
100'
(ENGLISH)

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2012 STANDARD SPECIFICATIONS

2012 STANDARD DRAWINGS

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

PROJECT NO. 51214.01D
COUNTY GASTON

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

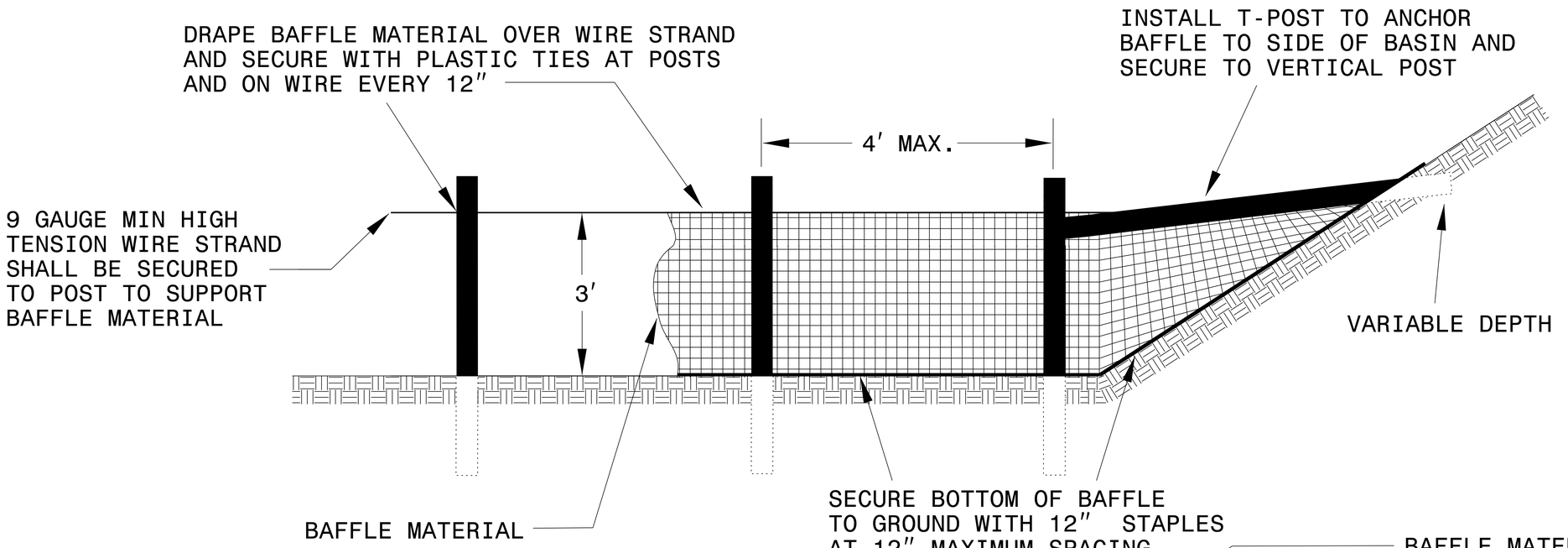
NC 16 FLY ASH CLEAN UP

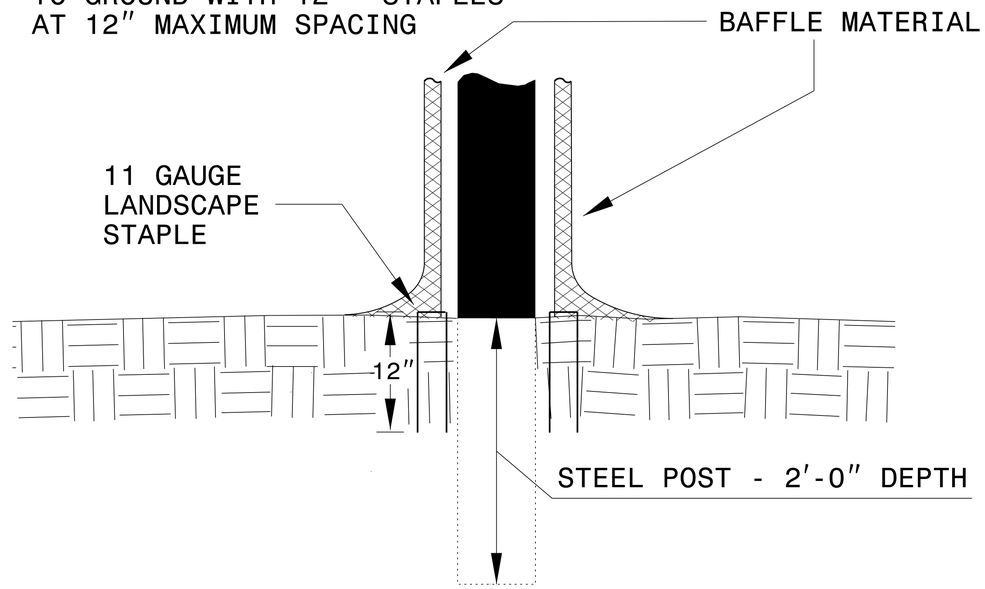
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. EC-2
TOTAL SHEETS

PROJECT REFERENCE NO.	SHEET NO.
51214.01D	EC-3

COIR FIBER BAFFLE DETAIL





BAFFLE MATERIAL SHALL BE SECURED
TO THE BOTTOM AND SIDES OF BASIN
USING 12″ LANDSCAPE STAPLES

NOTES:

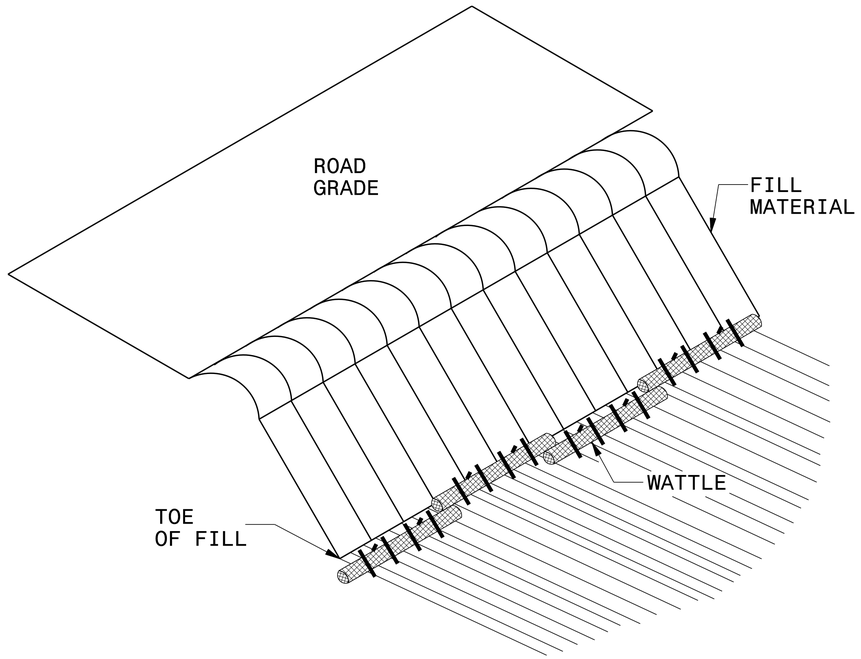
1. INSTALL THREE(3) COIR FIBER BAFFLES IN SILT BASINS AND SEDIMENT DAMS AT DRAINAGE OUTLETS WITH A SPACING OF ¼ THE BASIN LENGTH.

2. TWO(2) COIR FIBER BAFFLES CAN BE INSTALLED IN SILT BASINS AND DAMS LESS THAN 20 FT. IN LENGTH WITH A SPACING OF 1/3 THE BASIN LENGTH.

3. TOP HEIGHT OF COIR FIBER BAFFLES SHALL NOT BE BELOW BASE OF EMERGENCY SPILLWAY ELEVATION.

PROJECT REFERENCE NO.	SHEET NO.
51214.01D	EC-4

COIR FIBER WATTLE BARRIER DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 18 IN. NOMINAL DIAMETER COIR FIBER (COCONUT) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLES ON TOE OF SLOPE.

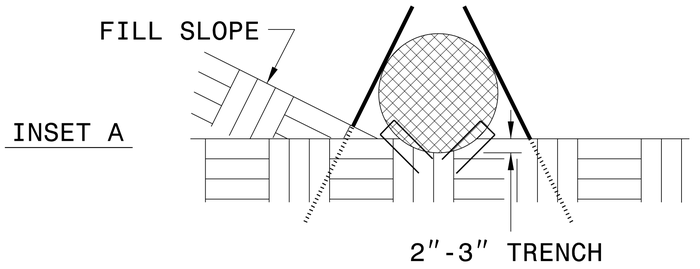
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

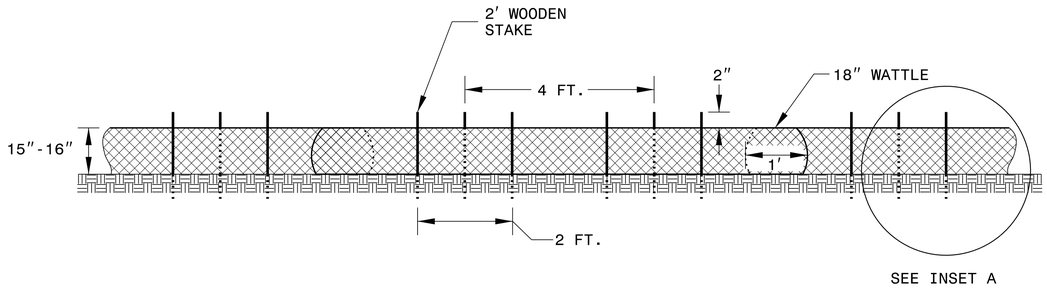
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

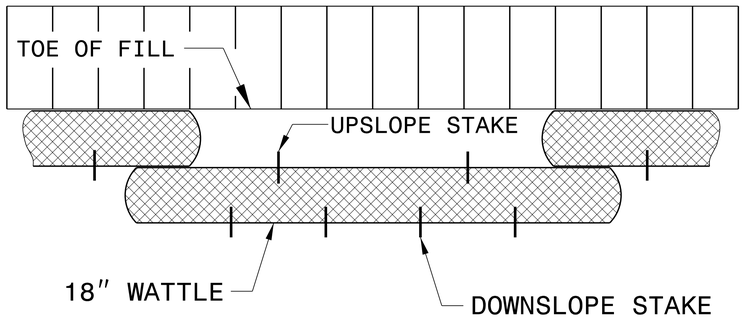
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.



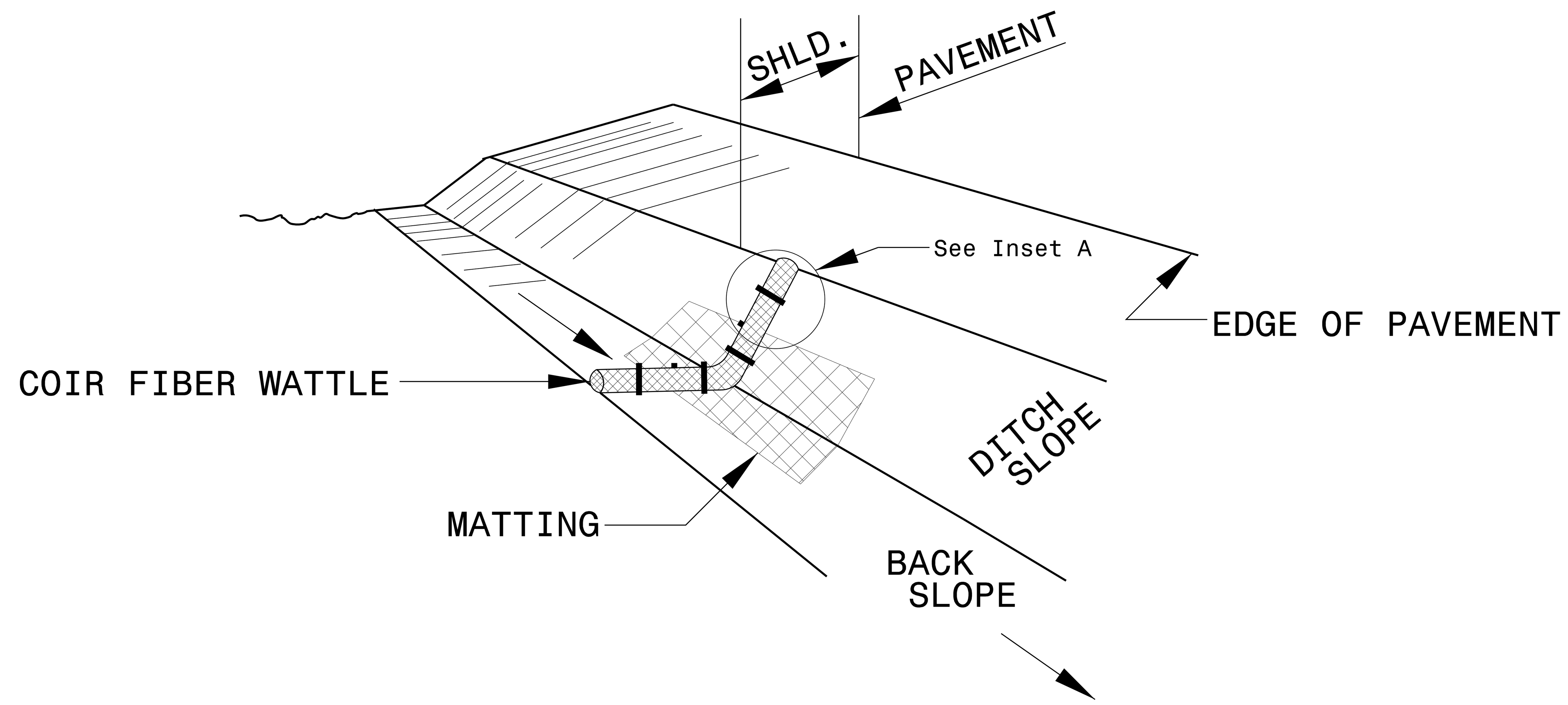


FRONT VIEW



TOP VIEW

COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

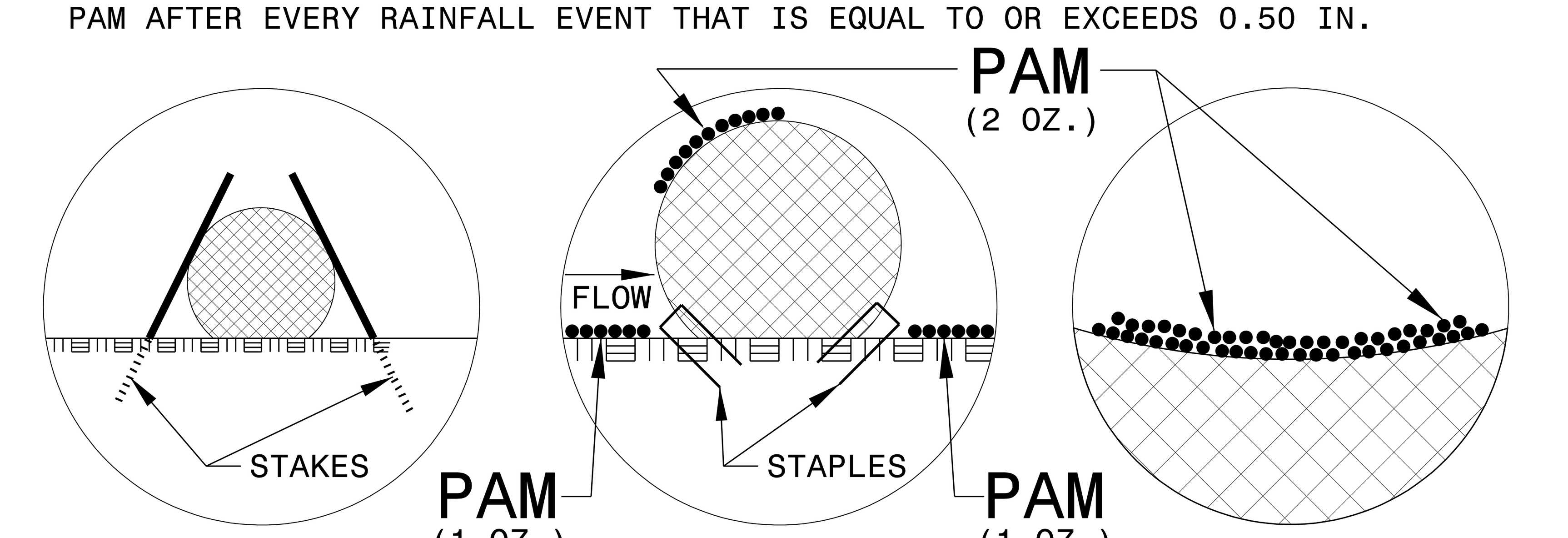
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

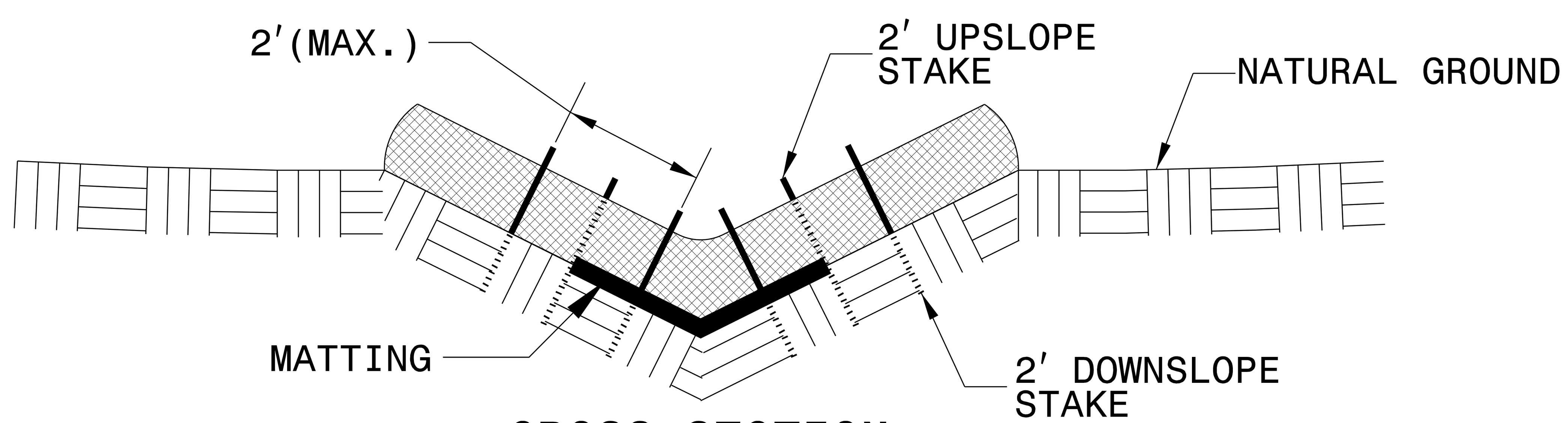
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

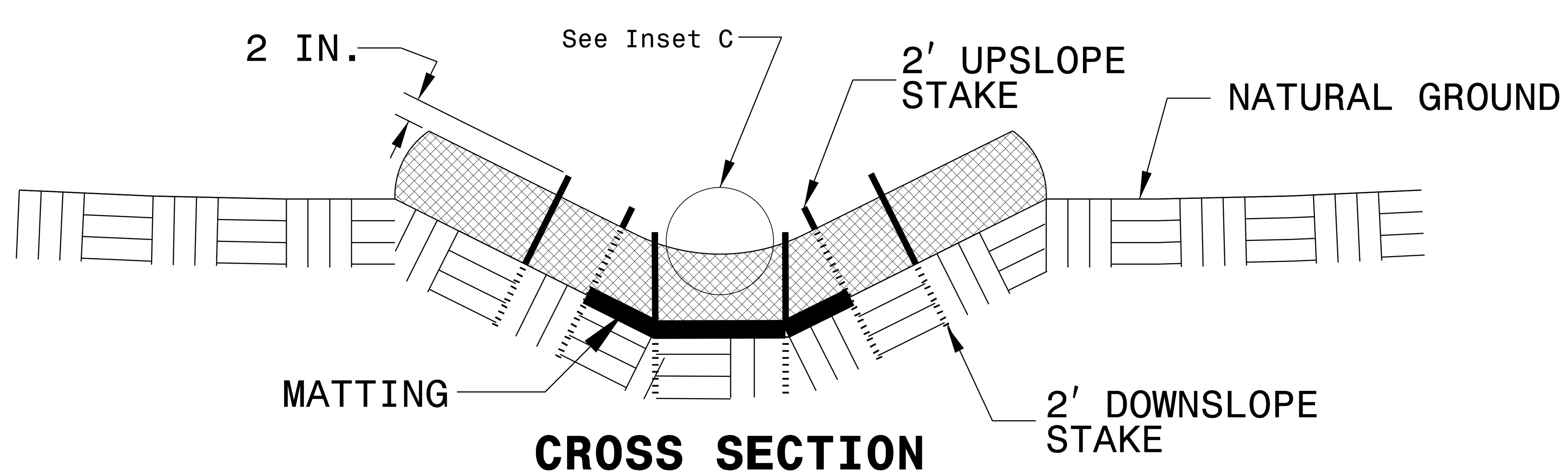
INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



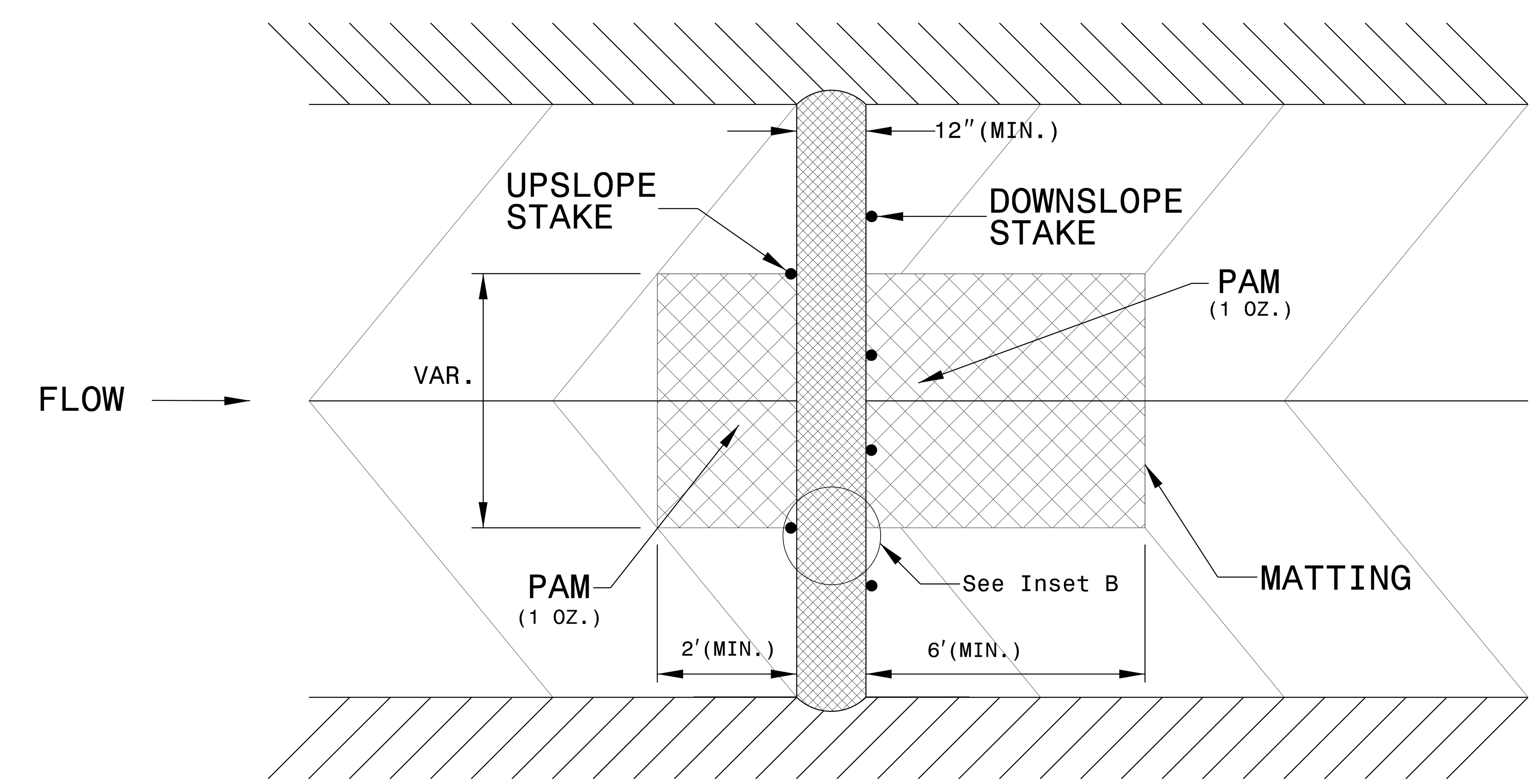
INSET A — INSET B — INSET C



CROSS SECTION
VEE DITCH



CROSS SECTION
TRAPEZOIDAL DITCH



TOP VIEW

5214.01C, WESTERN REGION DIVISION ON CALL
(NC-16 BUS. PIPE CULVERT FAILURE)
TEMPORARY EXCAVATION SUPPORT SYSTEM
LUCIA, NORTH CAROLINA

FOR

VAUGHN & MELTON

ECS CAROLINAS, LLP
1812 CENTER PARK DR, SUITE D
CHARLOTTE, NORTH CAROLINA 28217
(704) 525-5152

SHEET	TITLE	REVISION	REVISION	DATE ISSUED
W-1	COVER SHEET			10/07/16
W-2	PILE AND LAGGING LAYOUT			10/07/16
W-3	PILE AND LAGGING SECTION - OPTION A			10/07/16
W-4	PILE AND LAGGING SECTION - OPTION B			10/07/16
W-5	PILE AND LAGGING DETAILS			10/07/16

DESIGNED BY:	CHECKED BY:			DRAWN BY:
MEH	MFP	10/07/2016	ECS PROJECT NO. 08-11810	DFA

5214.01C, WESTERN REGION ON CALL
(NC-16 BUS. PIPE CULVERT FAILURE)
TEMPORARY EXCAVATION SUPPORT
LUCIA, NORTH CAROLINA

ECS CAROLINAS, LLP
1812 CENTER PARK DRIVE
SUITE D
CHARLOTTE NC 28217
(704)525-5152 [PHONE]
(704)357-0023 [FAX]
NC REGISTERED
ENGINEERING
FIRM #F-1078

NORTH CAROLINA PROFESSIONAL SEAL 039550 ENGINEER MARC F. PLOTNIK 10-7-16

COVER SHEET

ECS REVISIONS

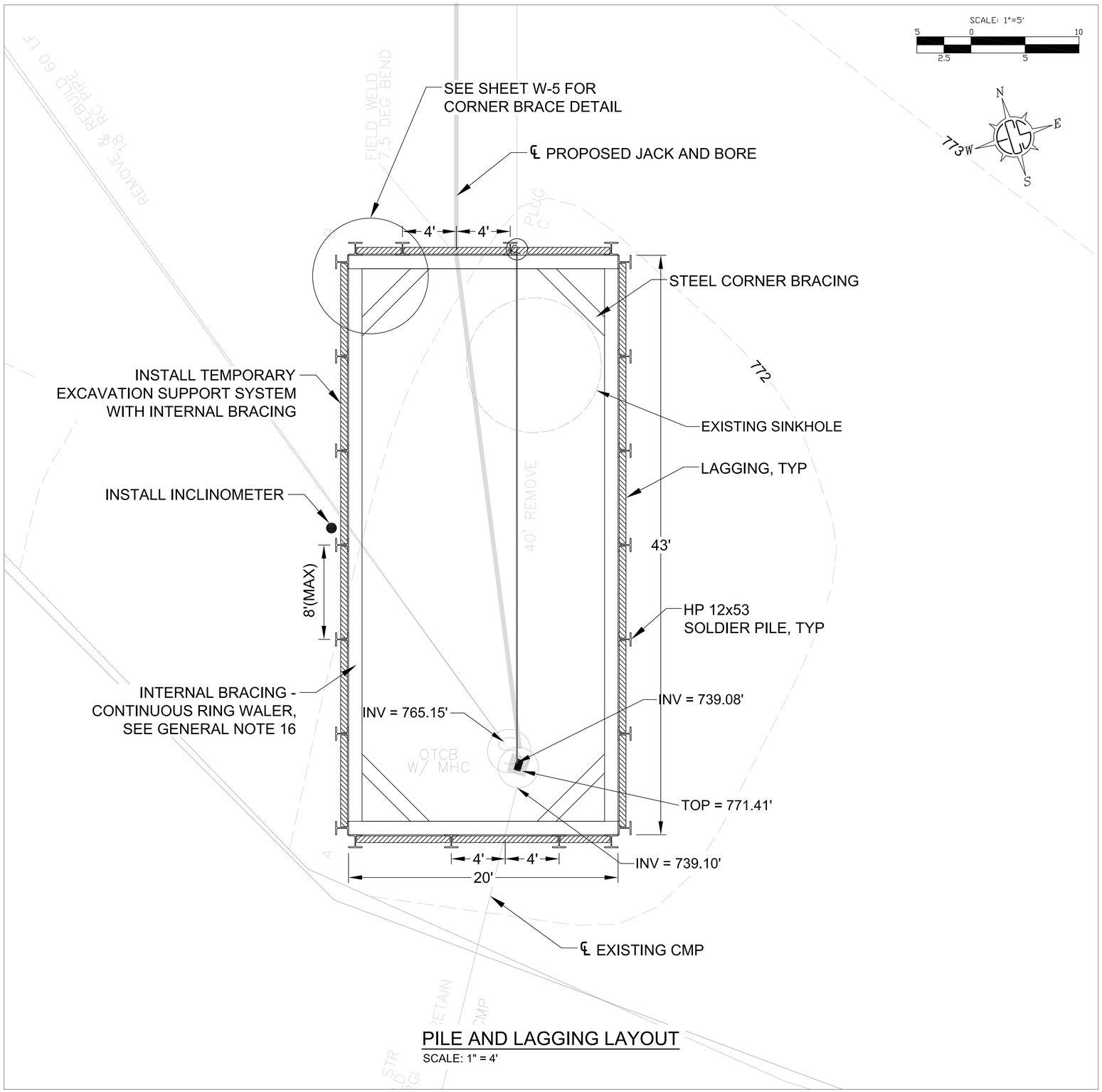
ENGINEER	DRAFTING
MEH	**DFA**

SCALE **AS SHOWN**

PROJECT NO. **08-11810**

W-1

DATE: 10-07-2016



PILE AND LAGGING LAYOUT

SCALE: 1" = 4'

GENERAL NOTES

1. BASEMAP PROVIDED BY: VAUGHN & MELTON.
2. CONTRACTOR SHALL CONFORM TO THE NOTES AND DETAILS PROVIDED ON THESE DRAWINGS.
3. TESS IS DESIGNED FOR TEMPORARY SURCHARGE LOADING OF 450 PSF.
4. TEMPORARY CONSTRUCTION DEWATERING IS REQUIRED TO INSTALL THE TEMPORARY EXCAVATION SUPPORT SYSTEM (TESS) AND ALLOW THE UTILITY REPAIR. THE TESS IS NOT DESIGNED TO RESIST HYDROSTATIC PRESSURES. INTERNAL AND EXTERNAL DEWATERING IS REQUIRED.
5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SITE SAFETY AND UNDER NO CIRCUMSTANCES SHALL THE ENGINEER BE RESPONSIBLE FOR CONSTRUCTION SITE SAFETY.
6. THE CONTRACTOR SHALL PROVIDE A SAFETY RAIL AND MEANS OF EGRESS AND INGRESS IN COMPLIANCE WITH OSHA STANDARDS.
7. CONTRACTOR SHALL STRICTLY ADHERE TO THE CONSTRUCTION SEQUENCING AND STAGING OUTLINED ON SHEET W-3 AND W-4.
8. CONTRACTOR SHALL MAINTAIN A MINIMUM CONSTRUCTION EQUIPMENT SET-BACK OF 5 FEET FROM THE PILE AND LAGGING WALL AT ALL TIMES.
9. BACKFILL SHALL BE PLACED IN ACCORDANCE WITH NCDOT REQUIREMENTS. WALERS SHALL NOT BE REMOVED UNTIL STRUCTURAL BACKFILL IS PLACED WITHIN 6 INCHES FROM BOTTOM OF INDIVIDUAL WALERS.
10. THE CONSTRUCTION OF THE SOLDIER PILE AND LAGGING WALL SHOWN ON THESE PLANS SHALL BE MONITORED AND TESTED BY THE CE&I ON A FULL TIME BASIS TO CONFIRM THAT THE CONSTRUCTION IS IN ACCORDANCE WITH THE INTENT OF THE DESIGN.
11. IF THE ELEVATION, LOCATION, SURCHARGE LOADING, OR GRADING SURROUNDING THE WALL CHANGES FROM THOSE DEPICTED ON THESE PLANS, ECS SHALL BE NOTIFIED SO THAT MODIFICATIONS TO THE GEOTECHNICAL DESIGN CAN BE MADE, IF NECESSARY.
12. THE CE&I SHOULD OBSERVE ALL WALL CONSTRUCTION ACTIVITIES TO CONFIRM THAT THE SITE CONDITIONS ARE CONSISTENT WITH THE DESIGN PARAMETERS.
13. WHERE DISCREPANCIES ARE NOTED WITHIN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF SUCH DISCREPANCIES IN WRITING.
14. THESE PLANS SHALL NOT BE SCALED OR USED FOR LOCATION OF PAVEMENTS, STRUCTURES OR RETAINING WALLS. THE CONTRACTOR SHALL PROVIDE LAYOUT AND COORDINATION AS NEEDED BY THE WALL CONTRACTOR.
15. SOLDIER PILES MAY BE INSTALLED AS DRILLED-IN PILES OR BY DRIVEN METHODS. IF DRILLED-IN IS CHOSEN, THE ANNULUS BETWEEN THE SOLDIER PILE AND BOREHOLE SHALL BE BACKFILLED WITH CONCRETE WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI BELOW THE TOP OF FOOTING ELEVATION. CONTRACTOR MAY PRE-DRILL FOR DRIVING.
16. CONTRACTOR MAY INSTALL WALER OPTION A OR B. CONTRACTOR SHALL NOTIFY THE ENGINEER OF THE SELECTED WALER OPTION TWO WEEKS PRIOR TO MOBILIZATION.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL SHALL BE OF THE GRADES INDICATED BELOW, UNLESS NOTED OTHERWISE ON PLANS OR DETAILS:
   a. HP SHAPES ASTM A572 GR50.
   b. WIDE FLANGE SHAPES ASTM A992 GR50.
   c. OTHER ROLLED SHAPES ASTM A36 TYPICALLY, U.N.O.
2. ALL STRUCTURAL STEEL SHALL BE DETAILED AND FABRICATED IN ACCORDANCE WITH THE AISC CODE OF STANDARD PRACTICE AS MODIFIED IN THESE NOTES AND THE PROJECT SPECIFICATIONS AND SPECIAL PROVISIONS.
3. ALL WELDING SHALL BE IN ACCORDANCE WITH THE "STRUCTURAL WELDING CODE - STEEL" (AWS D1.1) OF THE AMERICAN WELDING SOCIETY OR NCDOT SPECIFICATIONS.
4. FILLET WELDS SHALL USE THE SMAW PROCESS WITH E70XX LOW HYDROGEN ELECTRODES.
5. ELECTRODES FOR WELDING SHALL COMPLY WITH THE REQUIREMENTS OF AWS D1.1 TABLE 4.1.1.
6. SPLICING OF STEEL MEMBERS, UNLESS SHOWN ON THE DRAWINGS, IS PROHIBITED WITHOUT WRITTEN APPROVAL OF THE ENGINEER.
7. NO CHANGE IN SIZE OR POSITION OF ANY STRUCTURAL ELEMENT NOR HOLES, SLOTS, CUTS, ETC. SHALL BE MADE UNLESS DETAILED AND NOTED AS PROPOSED CHANGE ON THE SHOP DRAWINGS AND REVIEWED AND ACCEPTED BY THE STRUCTURAL ENGINEER.
8. FIELD USE OF GAS CUTTING TORCHES IS PROHIBITED FOR CORRECTING FABRICATION ERRORS IN PRIMARY STRUCTURAL FRAMING.
9. PARAGRAPH 3.3 OF THE AISC CODE OF STANDARD PRACTICE SHALL BE SUPERSEDED BY THE FOLLOWING: "ALL THINGS WHICH IN THE OPINION OF THE CONTRACTOR APPEAR TO BE DEFICIENCIES, OMISSIONS, CONTRADICTIONS, OR AMBIGUITIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER. CORRECTIONS OR WRITTEN INTERPRETATIONS WILL BE MADE BEFORE AFFECTED WORK PROCEEDS."
10. PARAGRAPH 4.2.1 OF THE AISC CODE OF STANDARD PRACTICE SHALL BE SUPERSEDED BY THE FOLLOWING: SUBSTITUTE FOLLOWING: INDICATION OF COMPLIANCE BY THE OWNER OF SHOP DRAWINGS PREPARED BY THE FABRICATOR INDICATES THAT THE FABRICATOR HAS CORRECTLY INTERPRETED THE CONTRACT REQUIREMENTS. SUCH INDICATION DOES NOT RELIEVE THE FABRICATOR OF THE RESPONSIBILITY ASSIGNED TO HIM FOR THE DESIGN AND DETAILING OF CONNECTIONS ASSIGNED TO HIM, NOR FOR THE ACCURACY OF DIMENSIONS ON THE SHOP DRAWINGS, NOR FOR GENERAL FIT UP OF PARTS TO BE ASSEMBLED IN FIELD.

QUALITY ASSURANCE, INSPECTION AND TESTING

1. ENSURE THE TESS IS IN THE PROPER ALIGNMENT, A CONCRETE TEMPLATE MAY BE USED TO FACILITATE INSTALLATION.
2. PILE AND LAGGING WALL LENGTH SHALL NOT VARY BY MORE THAN 12" IN ANY DIRECTION.
3. A CE&I FIRM SHALL BE RETAINED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS TO PERFORM TESTING OF STEEL AND WELDING. SEE PROJECT SPECIFICATIONS FOR REQUIREMENTS.
4. THE CONTRACTOR, IN CONJUNCTION WITH THE CE&I AND IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, SHALL DETERMINE THE FREQUENCY OF THE TESTING NECESSARY TO INSURE THAT THE DESIGN REQUIREMENTS ARE BEING MET.
5. THE CE&I SHALL VERIFY THAT ALL WELDERS HAVE SATISFACTORILY PASSED AWS QUALIFICATION TESTS FOR THE WELDS WHICH THEY WILL PERFORM.
6. ALL WELDING SHALL BE INSPECTED AND TESTED IN ACCORDANCE WITH AWS D1.1 AS APPROPRIATE TO THE MATERIAL THICKNESS.
7. SPECIAL INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH PROJECT SPECIFICATIONS, SEE INSPECTION TABLE SHEET W-3.

INSTRUMENTATION AND MONITORING

1. INCLINOMETER CASING SHALL BE ATTACHED TO SOLDIER PILES PRIOR TO INSTALLATION OR INSTALLED IN A SECONDARY DRILL HOLE WITHIN ONE FOOT OF THE WALL FACE.
2. INCLINOMETER CASING SHALL CONSIST OF 2.75" O.D. CASING.
3. INCLINOMETER CASINGS SHALL BE INSTALLED AT THE LOCATIONS SHOWN ON THESE DRAWINGS. ECS SHALL BE PRESENT DURING INCLINOMETER INSTALLATION.
4. INCLINOMETERS SHALL BE MEASURE WHEN EACH WALER EXCAVATION IS COMPLETE AND WEEKLY ONCE THE FINAL EXCAVATION DEPTH IS ACHIEVED.

5214.01C, WESTERN REGION ON CALL
(NC-16 BUS. PIPE CULVERT FAILURE)
TEMPORARY EXCAVATION SUPPORT
LUCIA, NORTH CAROLINA

ECS CAROLINAS, LLP
1812 CENTER PARK DRIVE
SUITE D
CHARLOTTE NC 28217
(704)525-5152 [PHONE]
(704)357-0023 [FAX]
NC REGISTERED
ENGINEERING
FIRM #F-1078

NORTH CAROLINA PROFESSIONAL SEAL 039550 ENGINEER MARC F. PLOTKIN 10-7-16

TEMPORARY EXCAVATION SUPPORT SYSTEM (TESS) LAYOUT AND NOTES

ECS REVISIONS

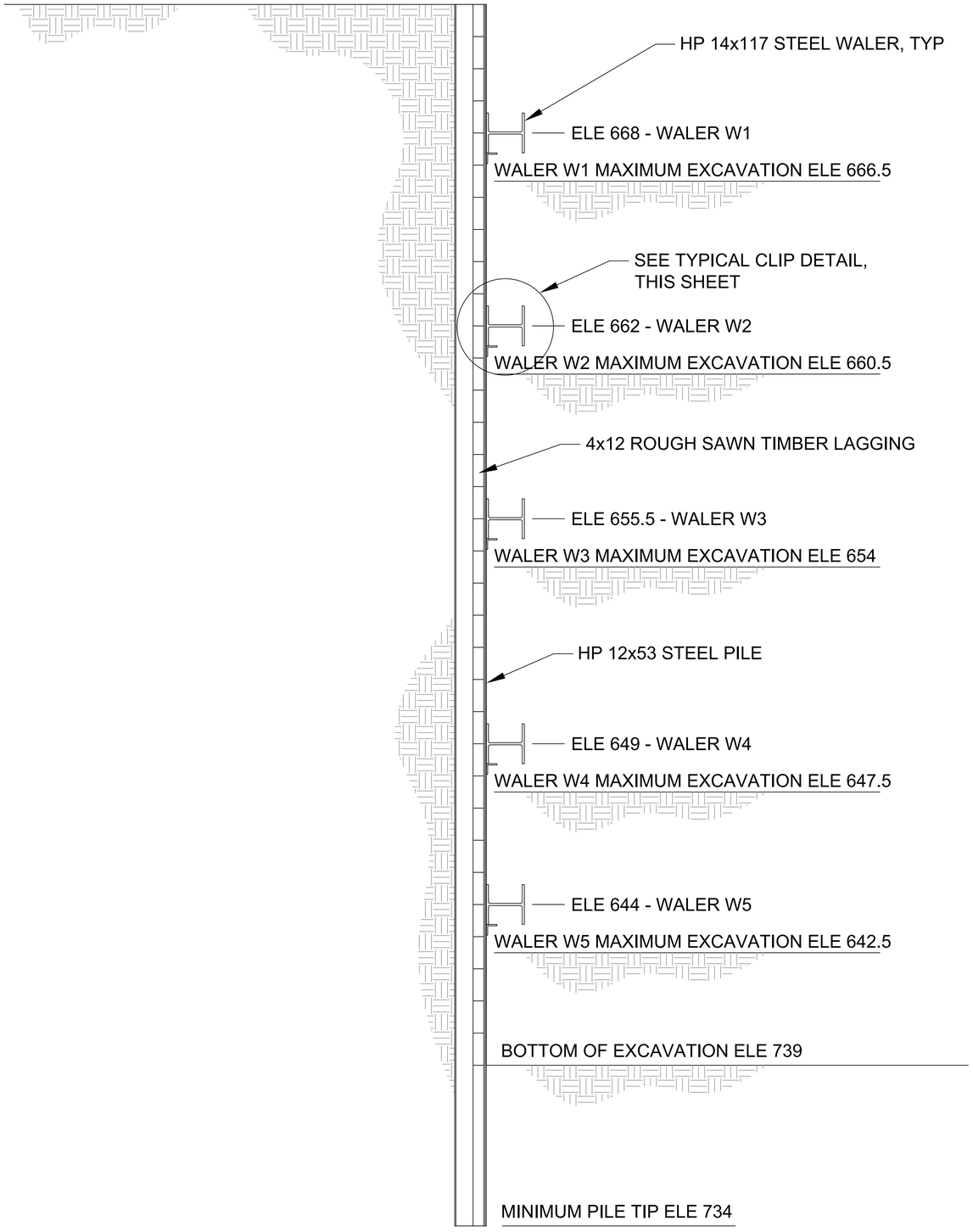
ENGINEER	DRAFTING
MEH	**DFA**

SCALE **AS SHOWN**

PROJECT NO. **08-11810**

W-2

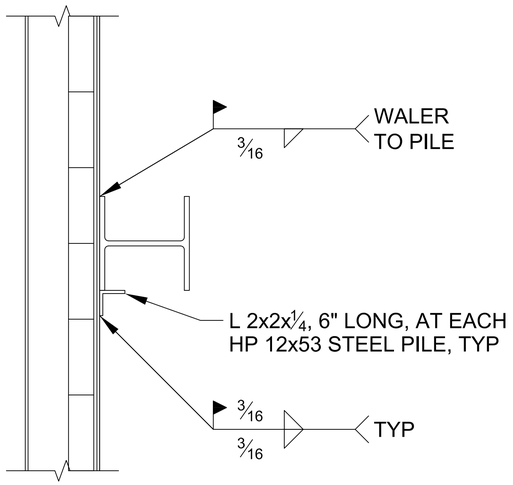
DATE: 10-07-2016



TYPICAL CROSS SECTION - WALER OPTION A
NTS

SEQUENCING NOTES - WALER OPTION A:

1. INSTALL SOLDIER PILES AT LOCATIONS SHOWN ON SHEET W-2.
2. INSTALL INCLINOMETER AND OBTAIN BASELINE MEASUREMENTS.
3. EXCAVATE TO INSTALL LEVEL W1 WALER. EXCAVATION SHALL EXTEND NO DEEPER THAN WALER W1 MAXIMUM EXCAVATION ELEVATION. INSTALL TIMBER LAGGING DURING EXCAVATION IN A MANNER THAT SOIL LOSS DOES NOT OCCUR.
4. INSTALL WALER W1 AND CORNER BRACES.
5. REPEAT STEP 3 AND EXCAVATE TO NO DEEPER THAN WALER W2 MAXIMUM EXCAVATION ELEVATION.
6. INSTALL WALER W2 AND CORNER BRACES.
7. REPEAT STEP 3 AND EXCAVATE TO NO DEEPER THAN WALER W3 MAXIMUM EXCAVATION ELEVATION.
8. INSTALL WALER W3 AND CORNER BRACES.
9. REPEAT STEP 3 AND EXCAVATE TO NO DEEPER THAN WALER W4 MAXIMUM EXCAVATION ELEVATION.
10. INSTALL WALER W4 AND CORNER BRACES.
11. REPEAT STEP 3 AND EXCAVATE TO NO DEEPER THAN WALER W5 MAXIMUM EXCAVATION ELEVATION.
12. INSTALL WALER W5 AND CORNER BRACES.
13. COMPLETE EXCAVATION TO BOTTOM OF EXCAVATION ELEVATION 739'.
14. INSTALL NEW UTILITIES AS PROVIDED ON THE CIVIL DRAWINGS.
15. BACKFILL TO BOTTOM OF WALER W5 AND REMOVE TIMBER LAGGING IN A MANNER THAT SOIL LOSS DOES NOT OCCUR.
16. REMOVE WALER W5 AND CORNER BRACING.
17. REPEAT STEPS 15 AND 16 UNTIL ENTIRE EXCAVATION IS BACKFILLED AND ALL TIMBER LAGGING IS REMOVED.
18. REMOVE SOLDIER PILES.



TYPICAL CLIP DETAIL
NTS

5214.01C, WESTERN REGION ON CALL (NC-16 BUS. PIPE CULVERT FAILURE) TEMPORARY EXCAVATION SUPPORT
LUCIA, NORTH CAROLINA

ECS CAROLINAS, LLP
1812 CENTER PARK DRIVE
SUITE D
CHARLOTTE NC 28217
(704)525-5152 [PHONE]
(704)357-0023 [FAX]
NC REGISTERED ENGINEERING FIRM #F-1078

NORTH CAROLINA PROFESSIONAL SEAL 039550 ENGINEER 10-7-16

TEMPORARY EXCAVATION SUPPORT SYSTEM (TESS) SECTIONS

ECS REVISIONS

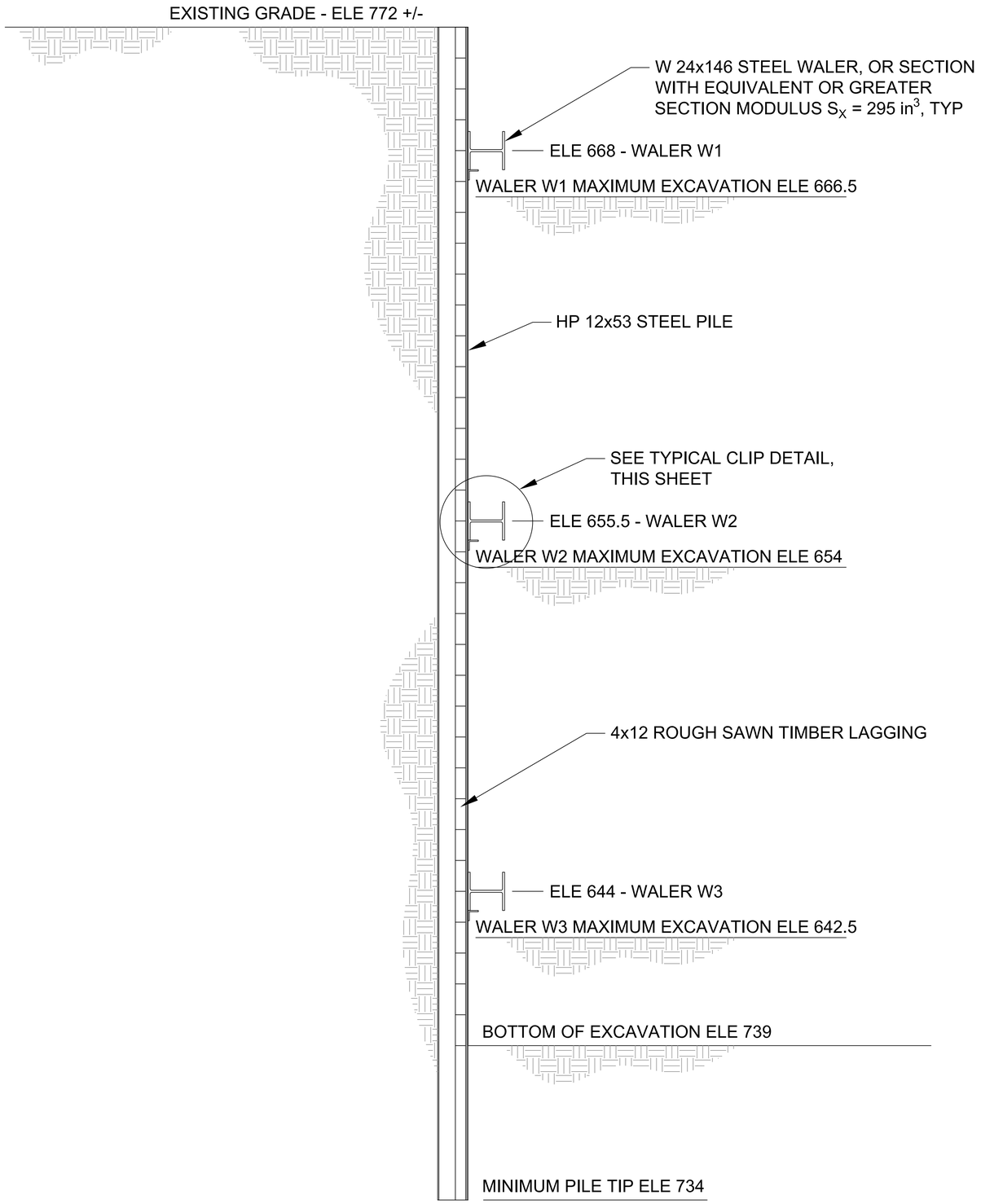
ENGINEER	DRAFTING
MEH	**DFA**

SCALE **AS SHOWN**

PROJECT NO. **08-11810**

W-3

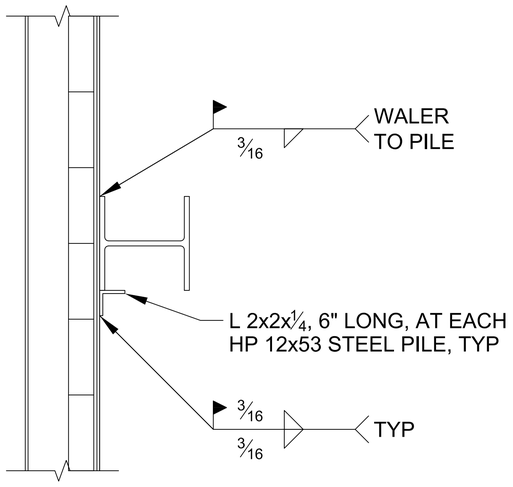
DATE: 10-07-2016



TYPICAL CROSS SECTION - WALER OPTION B
NTS

SEQUENCING NOTES - WALER OPTION A:

1. INSTALL SOLDIER PILES AT LOCATIONS SHOWN ON SHEET W-2.
2. INSTALL INCLINOMETER AND OBTAIN BASELINE MEASUREMENTS.
3. EXCAVATE TO INSTALL LEVEL W1 WALER. EXCAVATION SHALL EXTEND NO DEEPER THAN WALER W1 MAXIMUM EXCAVATION ELEVATION. INSTALL TIMBER LAGGING DURING EXCAVATION IN A MANNER THAT SOIL LOSS DOES NOT OCCUR.
4. INSTALL WALER W1 AND CORNER BRACES.
5. REPEAT STEP 3 AND EXCAVATE TO NO DEEPER THAN WALER W2 MAXIMUM EXCAVATION ELEVATION.
6. INSTALL WALER W2 AND CORNER BRACES.
7. REPEAT STEP 3 AND EXCAVATE TO NO DEEPER THAN WALER W3 MAXIMUM EXCAVATION ELEVATION.
8. INSTALL WALER W3 AND CORNER BRACES.
9. COMPLETE EXCAVATION TO BOTTOM OF EXCAVATION ELEVATION 739'.
10. INSTALL NEW UTILITIES AS PROVIDED ON THE CIVIL DRAWINGS.
11. BACKFILL TO BOTTOM OF WALER W3 AND REMOVE TIMBER LAGGING IN A MANNER THAT SOIL LOSS DOES NOT OCCUR.
12. REMOVE WALER W3 AND CORNER BRACING.
13. REPEAT STEPS 11 AND 12 UNTIL ENTIRE EXCAVATION IS BACKFILLED AND ALL TIMBER LAGGING IS REMOVED.
14. REMOVE SOLDIER PILES.



TYPICAL CLIP DETAIL
NTS

5214.01C, WESTERN REGION ON CALL (NC-16 BUS. PIPE CULVERT FAILURE)
TEMPORARY EXCAVATION SUPPORT
LUCIA, NORTH CAROLINA

ECS CAROLINAS, LLP
1812 CENTER PARK DRIVE
SUITE D
CHARLOTTE NC 28217
(704)525-5152 [PHONE]
(704)357-0023 [FAX]
NC REGISTERED ENGINEERING FIRM #F-1078

NORTH CAROLINA PROFESSIONAL SEAL 039550 ENGINEER 10-7-16

TEMPORARY EXCAVATION SUPPORT SYSTEM (TESS) SECTION - OPTION B

ECS REVISIONS

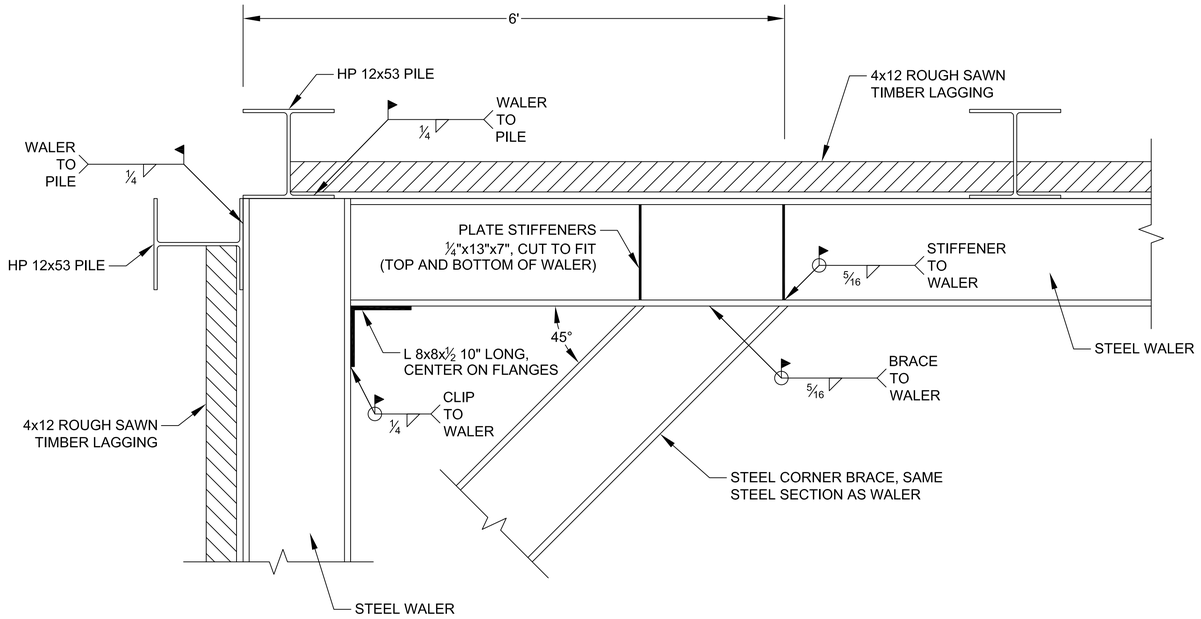
ENGINEER	DRAFTING
MEH	**DFA**

SCALE **AS SHOWN**

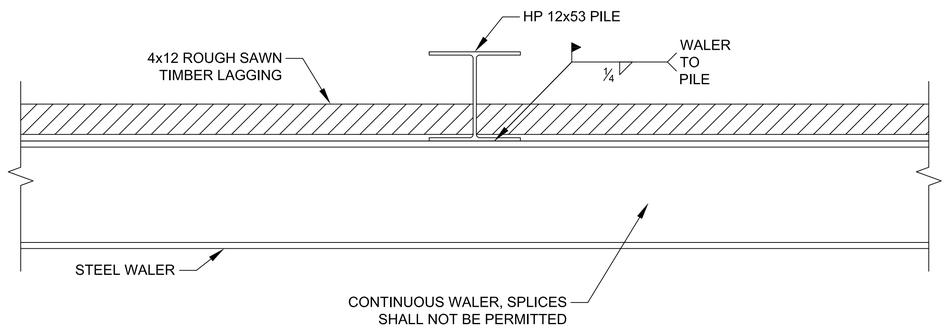
PROJECT NO. **08-11810**

W-4

DATE: 10-07-2016



CORNER DETAIL
NTS



SPLICE AT WALER DETAIL
NTS

5214.01C, WESTERN REGION ON CALL (NC-16 BUS. PIPE CULVERT FAILURE)
TEMPORARY EXCAVATION SUPPORT
LUCIA, NORTH CAROLINA

ECS CAROLINAS, LLP
1812 CENTER PARK DRIVE
SUITE D
CHARLOTTE NC 28217
(704)525-5152 [PHONE]
(704)357-0023 [FAX]
NC REGISTERED ENGINEERING FIRM #F-1078

NORTH CAROLINA PROFESSIONAL SEAL 039550 ENGINEER MARK F. PLOTNIK
10-7-16

TEMPORARY EXCAVATION SUPPORT SYSTEM (TESS) DETAILS

ECS REVISIONS

ENGINEER	DRAFTING
MEH	**DFA**

SCALE **AS SHOWN**

PROJECT NO. **08-11810**

W-5

DATE: 10-07-2016