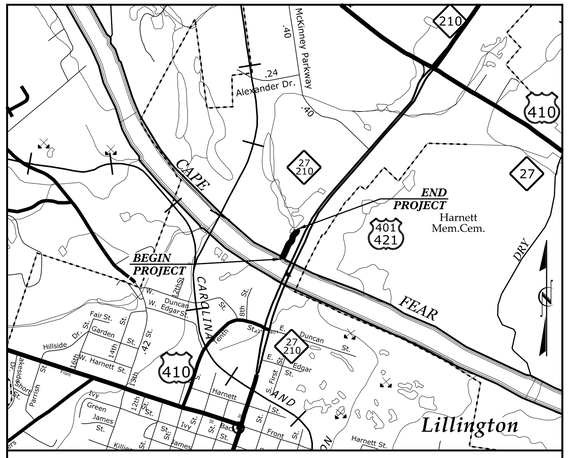
09/26/11

TIP PROJECT: B–4138WM

CONTRACT:

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4138WM	OSM-1	17

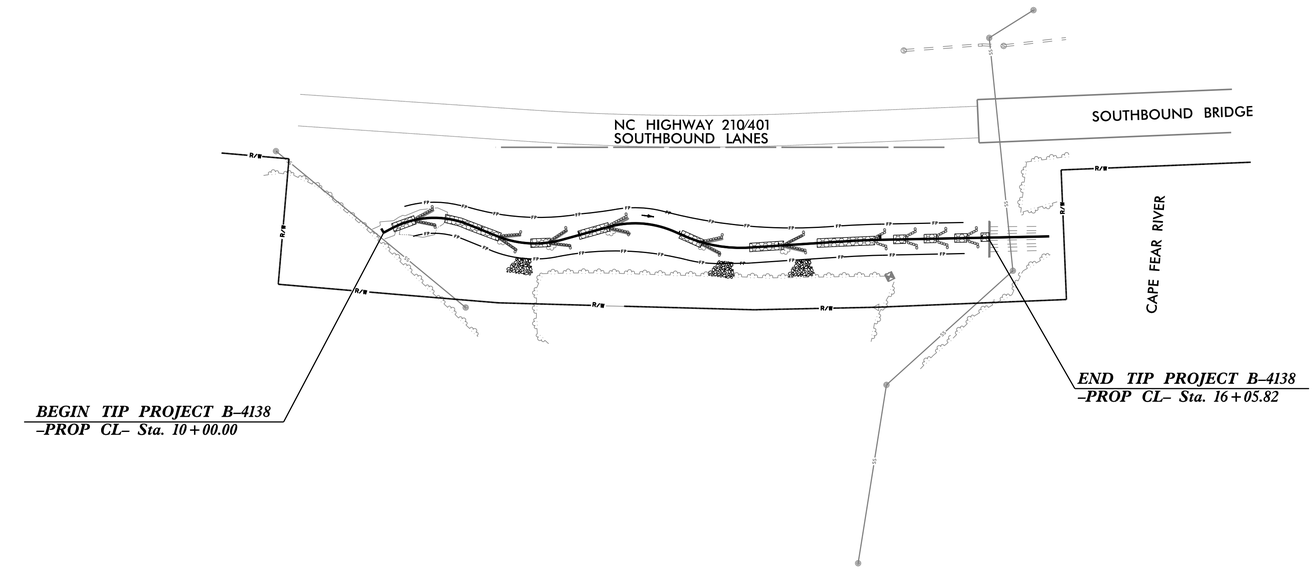
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33490.4.2		Const.

PLAN FOR ON–SITE MITIGATION REPAIR HARNETT COUNTY

LOCATION: TOWN OF LILLINGTON, WEST OF NC HIGHWAY 210 /401 NORTH OF THE CAPE FEAR RIVER

TYPE OF WORK: ON–SITE STREAM MITIGATION REPAIR / RESTORATION

NAD 83/2011



NC DOT CONTACT: JASON ELLIOTT

GRAPHIC SCALES

30 15 0 30 60
PLANS

30 15 0 30 60
PROFILE (HORIZONTAL)

6 3 0 6 12
PROFILE (VERTICAL)

DESIGN DATA

PROJECT LENGTH

MITIGATION TYPE	LENGTH
REPAIR /RESTORATION	606 LF

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn ©2018

NC LICENSE: NF-0102
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

2012 STANDARD SPECIFICATIONS

DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030000 ENGINEER DAREN M. PAIT
06-11-2018

SIGNATURE: ***P.E.***

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION · STATE OF NORTH CAROLINA · NOTH

STATE HIGHWAY DESIGN ENGINEER ***P.E.***

09/26/11

GENERAL NOTES

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING STANDARDS:

A) NORTH CAROLINA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, DATED JANUARY 2018, AND ANY SUPPLEMENTS THERETO ISSUED PRIOR TO THE DATE OF RECEIPT OF BIDS.

B) NORTH CAROLINA DEPARTMENT OF TRANSPORTATION "ROADWAY STANDARD DRAWINGS, ENGLISH" DATED JANUARY 2018, AND ANY SUPPLEMENTS ISSUED THERETO PRIOR TO THE DATE OF RECEIPT OF BIDS.

ALL RIGHT OF WAY CORNER MARKERS OR FENCING SHALL BE PLACED BY OTHERS AS NECESSARY.

THE CONTRACTOR IS RESPONSIBLE FOR AVOIDING ANY DISTURBANCE OR DAMAGE TO EXISTING UTILITIES AND SHALL BE RESPONSIBLE FOR IMMEDIATELY REPAIRING ANY DAMAGES AT A COST INCIDENTAL TO THIS CONTRACT.

ABANDONED SECTIONS OF THE EXISTING CHANNEL SHALL BE FILLED TO THE MAXIMUM EXTENT FEASIBLE WITH MATERIAL EXCAVATED ON–SITE. THIS EXCAVATED MATERIAL SHALL BE STOCKPILED ADJACENT TO THE REACHES OF CHANNEL OR DITCHES TO BE BACKFILLED.

THE CONTRACTOR MAY UTILIZE THE DESIGNATED STAGING AREA AND THE AREA INSIDE THE PROPOSED RIGHT OF WAY FOR STAGING AND STOCKPILING EQUIPMENT AND MATERIALS.

THE STREAM SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TYPICAL SECTIONS.

SUBSURFACE PLANS: NO SUBSURFACE PLANS ARE AVAILABLE ON THE PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

ROADWAY STANDARD DRAWINGS

(REV. JANUARY 2018)

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" – ROADWAY DESIGN UNIT – N.C. DEPARTMENT OF TRANSPORTATION – RALEIGH, N.C., DATED JANUARY 2018 AND THE LATEST REVISION THERETO ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS.

CONSTRUCTION SEQUENCING

LAYOUT LOCATION OF THE NEW STREAM CHANNEL, CONSTRUCTION EASEMENT LIMITS, AND GRADE STAKES. THE ENGINEER MUST INSPECT AND APPROVE ALL LAYOUT WORK BEFORE CONSTRUCTION MAY BEGIN.

MOBILIZE EQUIPMENT AND MATERIALS TO THE SITE.

INSTALL CONSTRUCTION ENTRANCE PER EROSION CONTROL PLAN.

ESTABLISH STAGING AREAS AND MARK CONSTRUCTION EQUIPMENT ACCESS LOCATIONS WITH VISIBLE MARKERS. CONSTRUCTION EQUIPMENT SHALL BE CONTAINED WITHIN THE LIMITS OF CONSTRUCTION AS DEPICTED IN THE PLANS OR SPECIFIED BY THE ENGINEER.

INSTALL TEMPORARY EROSION CONTROL MEASURES.

BEGIN FLOODPLAIN GRADING, INCLUDING EXCAVATION OF BANKFULL BENCHES AT LOCATIONS DEPICTED IN THE PLANS AND AS DIRECTED BY THE ENGINEER. STOCKPILE MATERIALS IN AREAS DESIGNATED ON THE PLANS.

AT THE COMPLETION OF GRADING ACTIVITIES TOPSOIL SHALL BE IMPORTED FROM OFF–SITE AND PLACED ON ALL GRADED CHANNEL BANKS, FLOODPLAIN, AND UPLAND SLOPE AREAS. TOPSOIL SHALL BE APPLIED AT A DEPTH OF 6 INCHES MINIMUM TO ALL FLOODPLAIN BENCHES, AND TERRACE OR UPLAND SLOPES UP TO THE POINT WHERE THEY TIE INTO NATURAL GROUND AND TOPSOIL SHALL BE APPLIED AT A DEPTH OF 6 INCHES MINIMUM TO ALL STREAM BANKS. FINAL GRADES AFTER THE PLACEMENT OF TOPSOIL SHALL MEET THE GRADES SHOWN IN THE CONSTRUCTION DRAWINGS. TOPSOIL IS ALSO TO BE PLACED ON BARE AREAS OF THE SITE THAT ARE OUTSIDE OF THE PROPOSED LIMITS OF GRADING. SEE TYPICAL SECTIONS FOR DETAIL. TOPSOIL SHALL BE OF SUFFICIENT QUALITY TO CONTAIN 4% TO 10% ORGANIC CONTENT. IMPORTING TOPSOIL FROM OFFSITE SHALL BE CONSIDERED INCIDENTAL TO THIS CONTRACT.

CONSTRUCTION SHALL PROCEED IN SUCCESSIVE REACHES WITH THE UPSTREAM REACH BEING COMPLETED PRIOR TO INITIATING CONSTRUCTION OF THE ADJACENT DOWNSTREAM REACH. EACH REACH SHALL BE LIMITED IN LENGTH TO WORK THAT CAN BE COMPLETED BEFORE ALLOWING WATER TO FLOW THROUGH THAT REACH. COMPLETION OF A REACH SHALL CONSIST OF CHANNEL CONSTRUCTION, FLOODPLAIN GRADING, IN–STREAM STRUCTURE INSTALLATION, BED MATERIAL INSTALLATION, AND EROSION CONTROL MEASURES. CONSTRUCTION SHALL BE DONE IN THE DRY. INSTALL IMPERVIOUS DIKES AND PUMP AROUND SYSTEM TO PUMP STREAM DISCHARGE AROUND THE IMMEDIATE WORK AREA AS NECESSARY.

AT THE END OF EACH DAYS CONSTRUCTION WORK, THE CONTRACTOR SHALL SEED ALL DISTURBED AREAS AND COVER THE STREAM BANKS AND BANKFULL BENCHES WITH COIR FIBER MATTING. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY EROSION CONTROL MEASURES ON A DAILY BASIS THROUGHOUT THE CONSTRUCTION PROCESS.

AFTER ALL IN–STREAM WORK IS COMPLETED, THE CONTRACTOR SHALL REMOVE TEMPORARY EROSION CONTROL MEASURES AND TEMPORARY STREAM ACCESS AND SCARIFY ANY COMPACTED AREAS AS DIRECTED BY THE ENGINEER. ALL PORTIONS OF THE SITE SHALL BE STABILIZED WITH TEMPORARY EROSION CONTROL MEASURES.

PREPARED IN THE OFFICE OF:

Kimley»Horn

NC LICENSE #F-0102
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

PROJECT REFERENCE NO.	SHEET NO.
B-4138WM	OSM-1A

PROJECT ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030000 ENGINEER DAREN M. PAIT 06-07-2018

APPROVED BY:

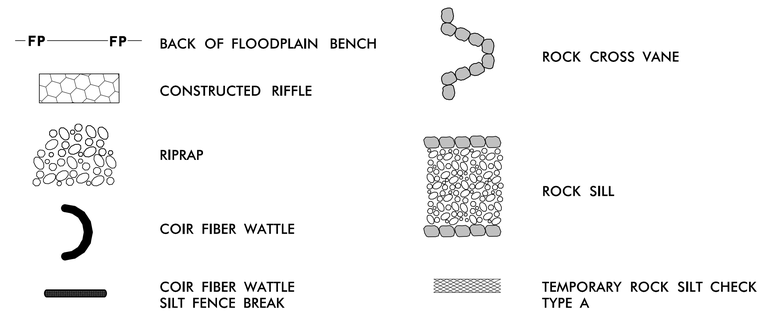
DATE:

INDEX OF SHEETS, CONSTRUCTION SEQUENCING, AND GENERAL NOTES

INDEX OF SHEETS

STREAM SYMBOLS

PLAN VIEW SYMBOLS



PROFILE SYMBOLS

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
B-4138WM	OSM-1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Computed 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 — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- 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 & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easment 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 — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New Aerial Utility Easement — AUE

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

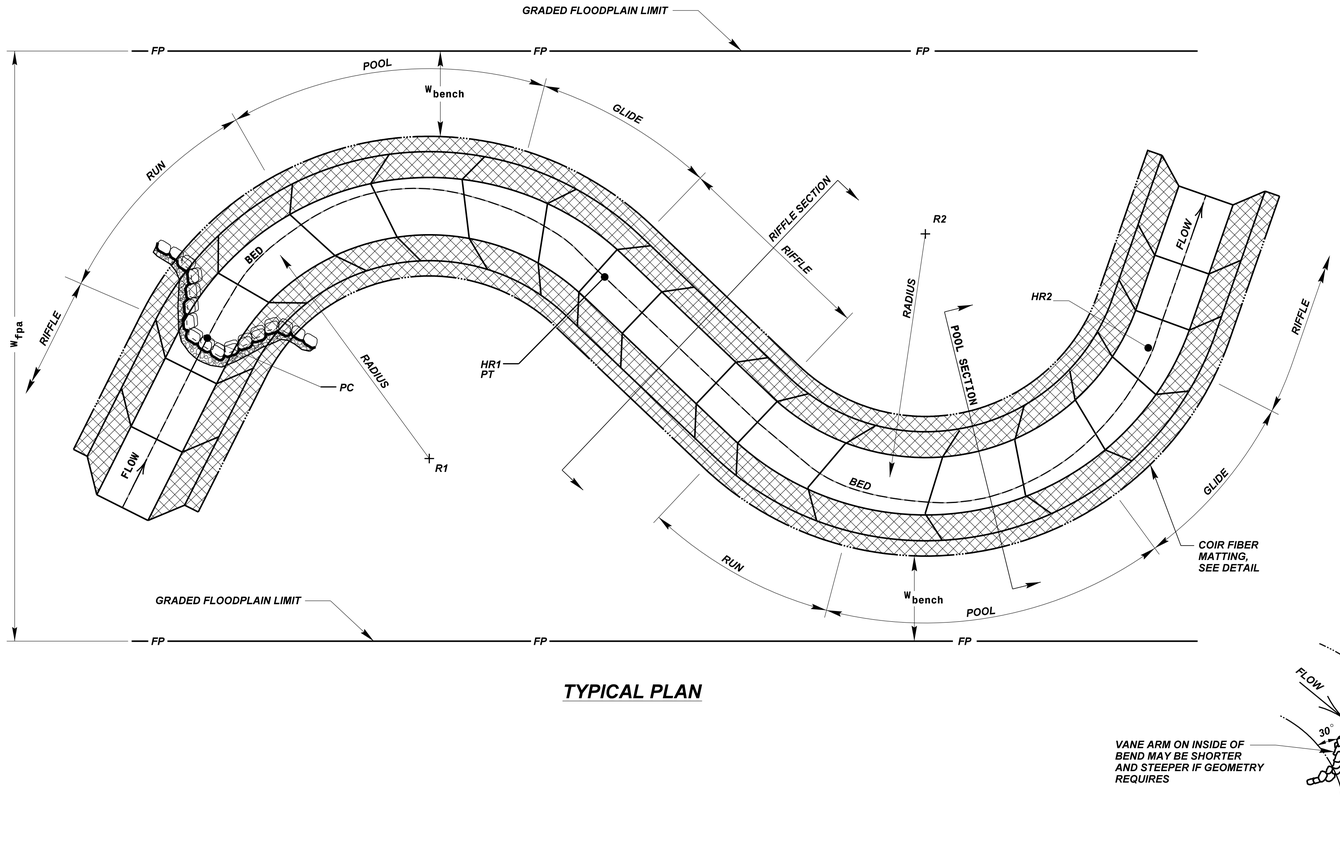
SANITARY SEWER:

- 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

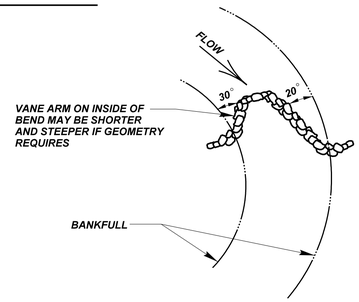
MISCELLANEOUS:

- 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.

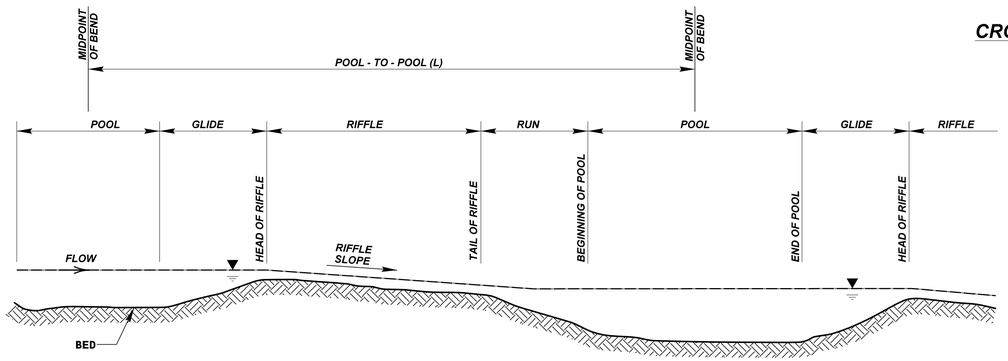
09/26/11



TYPICAL PLAN



CROSS VANE CONSTRUCTION IN MEANDER-BEND PLAN VIEW



TYPICAL PROFILE

CHANNEL TYPICAL DETAIL

NOT TO SCALE

PREPARED IN THE OFFICE OF:

Kimley»Horn ©2018

NC LICENSE #F-0102
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

PROJECT REFERENCE NO.	SHEET NO.
B-4138WM	OSM-2

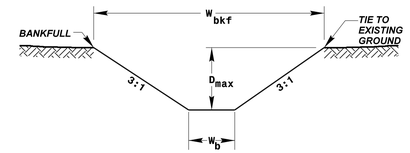
PROJECT ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030000 ENGINEER DAREN M. PAIT

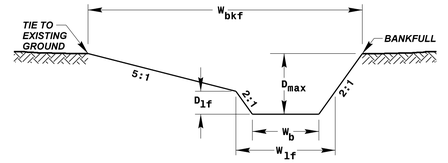
APPROVED BY:

DATE:

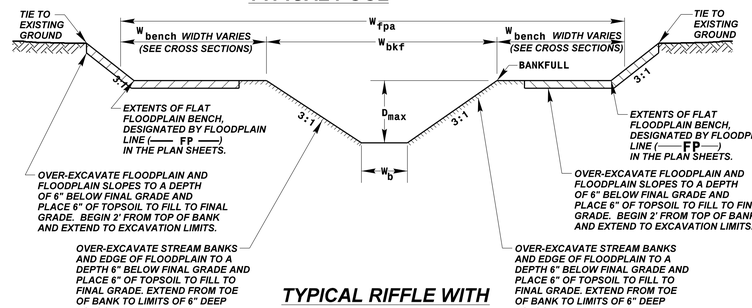
TYPICAL SECTIONS



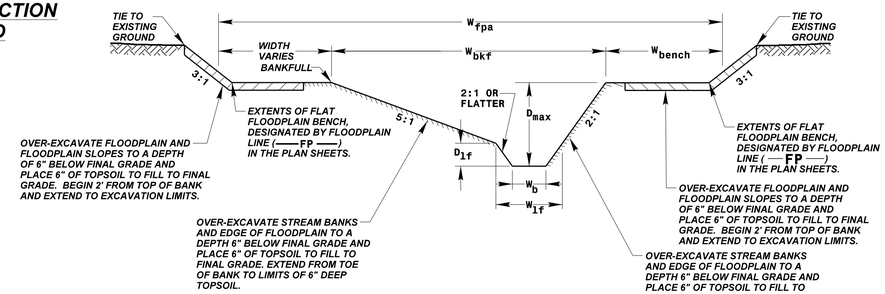
TYPICAL RIFFLE



TYPICAL POOL



TYPICAL RIFFLE WITH BANKFULL BENCH



TYPICAL POOL WITH BANKFULL BENCH

W_{bkf}	= BANKFULL WIDTH
D_{max}	= MAXIMUM DEPTH
W_b	= BOTTOM WIDTH
W_{fpa}	= FLOOD PRONE AREA WIDTH
W_{lf}	= LOW FLOW WIDTH
D_{lf}	= LOW FLOW DEPTH
W_{bench}	= BENCH WIDTH

CROSS-SECTION DIMENSIONS (IN FEET)

RIFFLE				POOL							
W_{bkf}	D_{max}	W_b	W_{fpa}	W_{bkf}	W_{lf}	D_{lf}	D_{max}	W_b	W_{fpa}	W_{bench}	Width/Depth Ratio
10.5	1.0	4.5	SEE CROSS SECTIONS	12.2	5.2	0.8	1.8	2.0	SEE CROSS SECTIONS	10.0 MIN.	15.2

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200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

PROJECT REFERENCE NO.	SHEET NO.
B-4138WM	OSM-2A

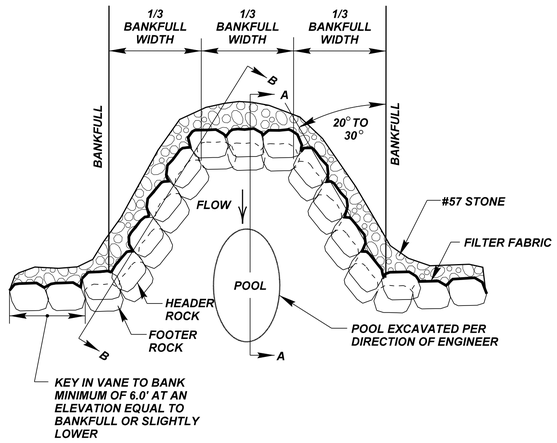
PROJECT ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030000 DARREN M. PAIT

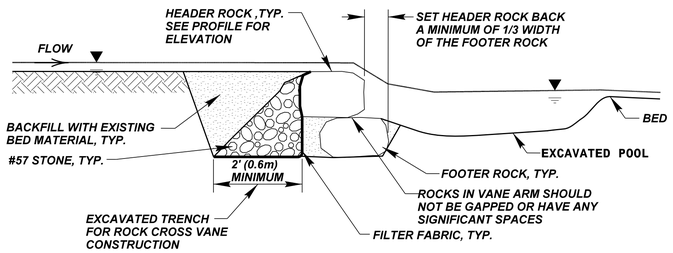
APPROVED BY:

DATE:

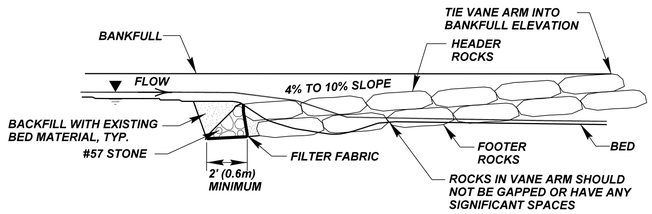
DETAILS 1 OF 4



PLAN VIEW



SECTION A-A



SECTION B-B

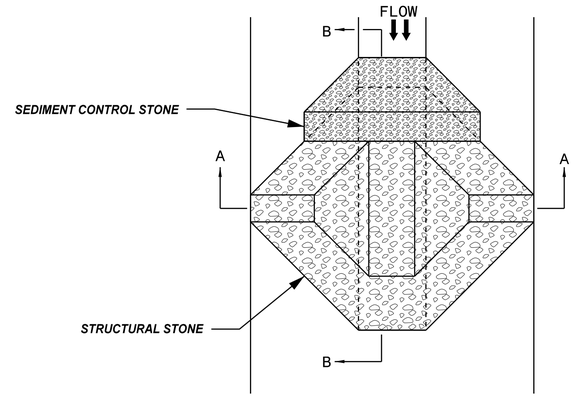
BOULDER SIZE DATA CHART		
BOULDER DIMENSIONS		
HEIGHT	WIDTH	LENGTH
2'	2.5'	3'

NOTE: THESE DIMENSIONS SPECIFY THE MINIMUM BOULDER SIZE

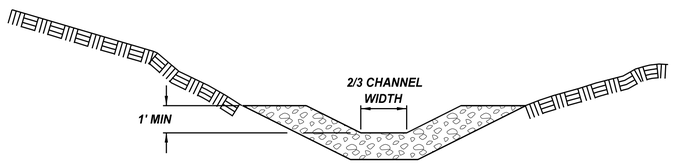
NOTES:
1. DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
2. DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
3. CLASS "A" STONE CAN BE USED TO REDUCE VOIDS BETWEEN HEADERS AND FOOTERS.
4. COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
5. POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.

ROCK CROSS VANE DETAIL

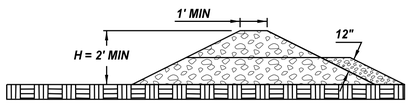
NOT TO SCALE



PLAN



SECTION A-A



SECTION B-B

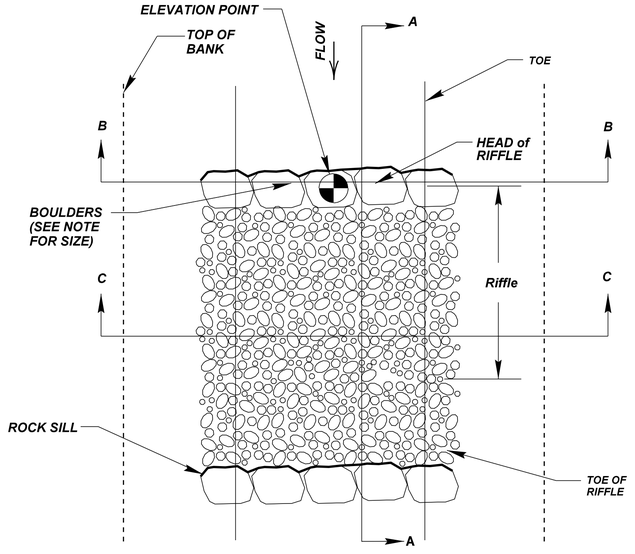
*T = 12″ MIN., 18″ MAX.

NOTE
USE CLASS 'B' EROSION CONTROL STONE FOR STRUCTURAL STONE.
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.

TEMPORARY ROCK SILT CHECK TYPE "A"

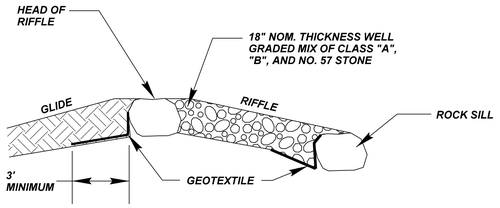
NOT TO SCALE

09/26/11

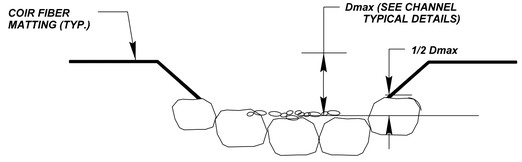


PLAN VIEW

REACH	
Wbkf (ft)	10.5
Dmax (ft)	1.0



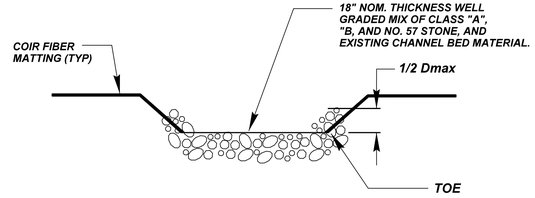
SECTION A-A



SECTION B-B

ROCK SILL DETAIL

NOT TO SCALE



SECTION C-C

NOTE:
1. BOULDERS SHOULD BE NATIVE STONES OR SHOT ROCK, ANGULAR AND OBLONG, WITH AN AXIS APPROXIMATELY 3.0'Lx2.5'Wx2.0'D

PREPARED IN THE OFFICE OF:

Kimley»Horn ©2018

NC LICENSE #F-0102
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

DETAILS 2 OF 4

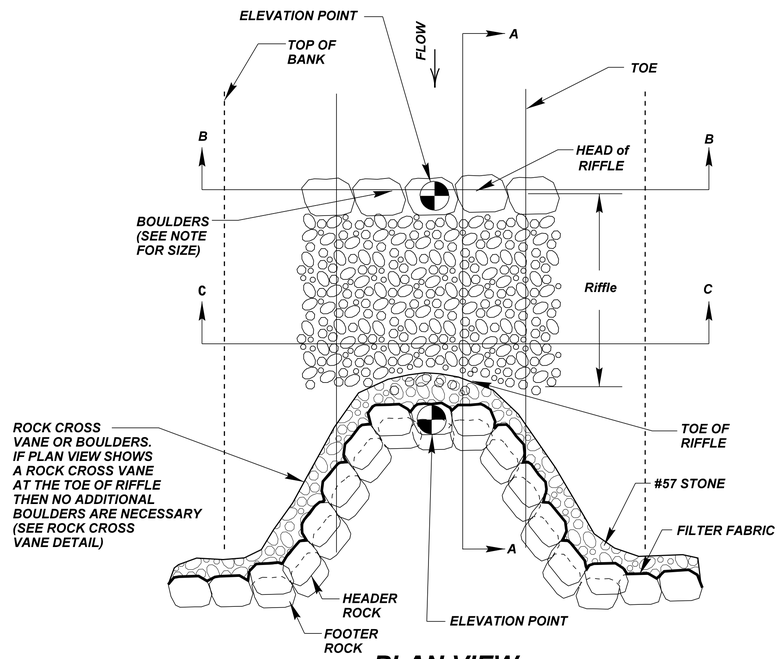
PROJECT REFERENCE NO.	SHEET NO.
B-4138WM	OSM-2B

PROJECT ENGINEER

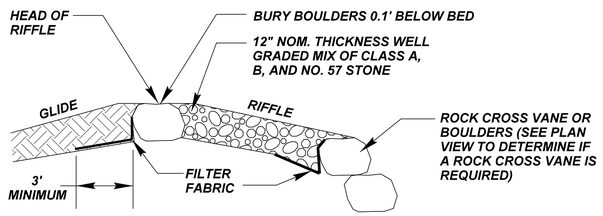
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030000 DARREN M. PAIT

APPROVED BY:

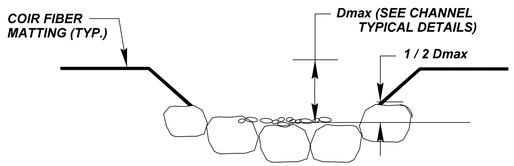
DATE:



PLAN VIEW



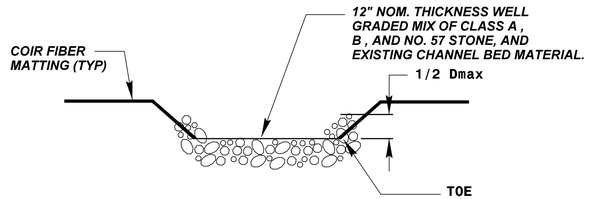
SECTION A-A



SECTION B-B

CONSTRUCTED RIFFLE DETAIL

NOT TO SCALE



SECTION C-C

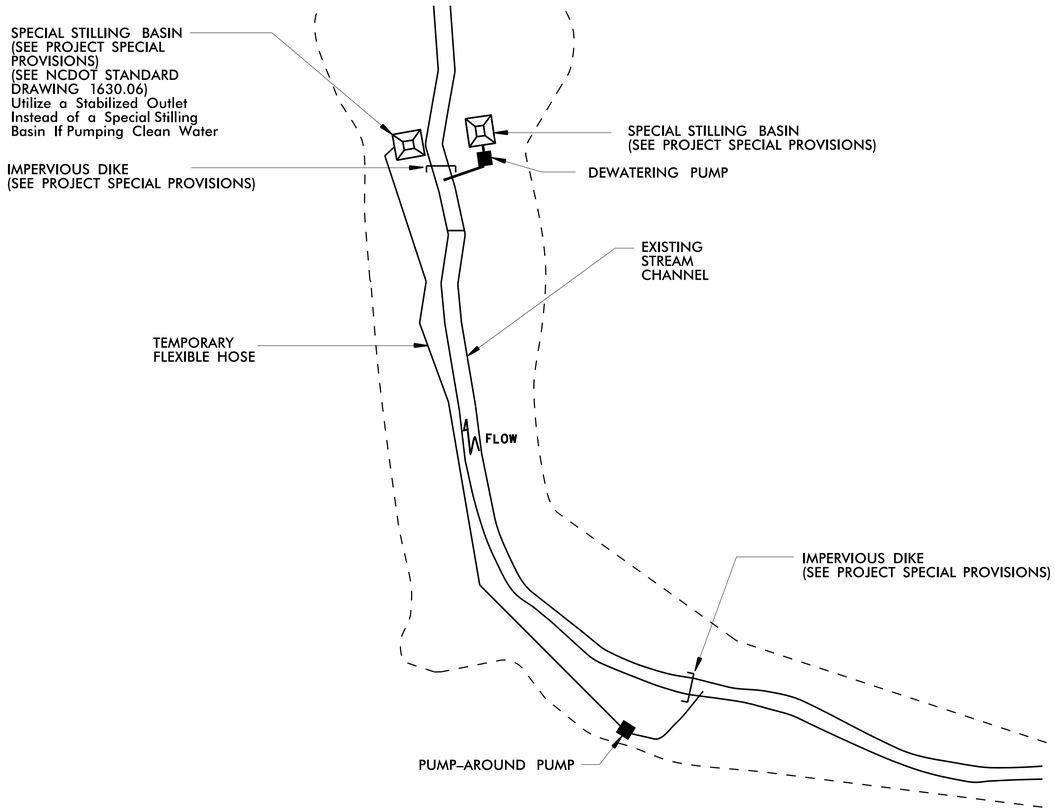
NOTE:
1. BOULDERS SHOULD BE NATIVE STONES OR SHOT ROCK, ANGULAR AND OBLONG, WITH AN AXIS APPROXIMATELY 3.0'Lx2.5'Wx2.0'D
2. NOT ALL CONSTRUCTED RIFFLES REQUIRE A ROCK CROSS VANE ON THE TOE OF RIFFLE.
3. IF NO ROCK CROSS VANE IS PROPOSED AT THE TOE OF RIFFLE, INSTALL BOULDERS AT THE TOE OF RIFFLE TO SECURE CONSTRUCTED RIFFLE MATERIAL.
4. ALL CONSTRUCTED RIFFLES UPSTREAM OF A ROCK VANE MUST HAVE A ROCK SILL INSTALLED AT THE HEAD OF RIFFLE AS SHOWN IN THIS DETAIL.

09/26/11

NOTES:
1) All excavation shall be performed in only dry or isolated sections of channel.
2) Impervious dikes are to be used to isolate work from stream flow when necessary.
3) All graded areas shall be stabilized within 24 hours.
4) Maintenance of stream flow operations shall be incidental to the work. This includes polyethylene sheeting, diversion pipes, pumps and hoses.
5) Pumps and hoses shall be of sufficicient size to dewater the work area.

SEQUENCE OF CONSTRUCTION FOR PUMP AROUND OPERATION

1. INSTALL SPECIAL STILLING BASIN(S).
2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA. AREA TO BE DEWATERED SHALL BE EQUAL TO ONE DAY'S WORK.
5. PERFORM STREAM RESTORATION WORK IN ACCORDANCE WITH THE PLANS.
6. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE. (DOWNSTREAM IMPERVIOUS DIKES FIRST).
7. ALL GRADING AND STABILIZATION MUST BE COMPLETED IN ONE DAY WITHIN THE PUMP AROUND AREAS BETWEEN THE IMPERVIOUS DIKES. THE IMPERVIOUS DIKE LOCATIONS AS SHOWN ON THIS SHEET ONLY SHOW THE UPPER AND LOWER EXTENT OF WORK FOR EACH STREAM SEGMENT. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF THE IMPERVIOUS DIKE(S) FOR EACH DAY'S WORK.
8. REMOVE SPECIAL STILLING BASIN(S) AND BACKFILL. STABILIZE DISTURBED AREA WITH SEED AND MULCH.



EXAMPLE OF PUMP-AROUND OPERATION
NOT TO SCALE

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200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

PROJECT REFERENCE NO.	SHEET NO.
B-4138WM	OSM-2C

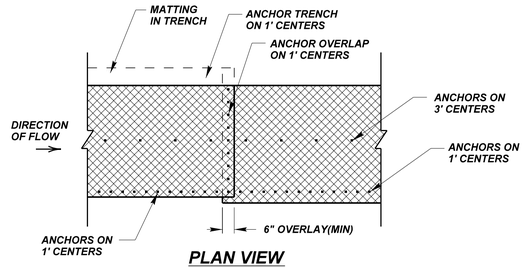
PROJECT ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030000 ENGINEER PATRICK M. 06-11-2018

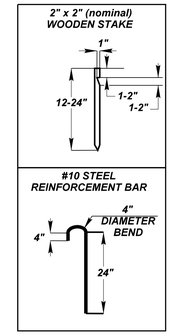
APPROVED BY:

DATE:

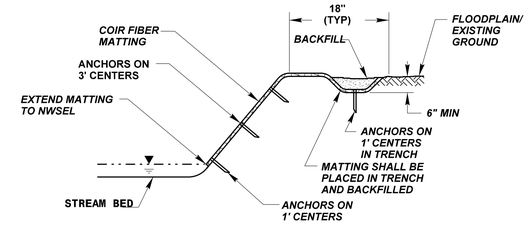
DETAILS 3 OF 4



PLAN VIEW

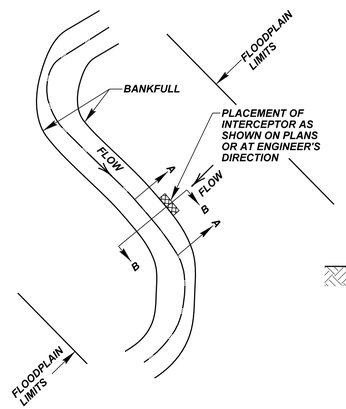


ANCHOR OPTIONS

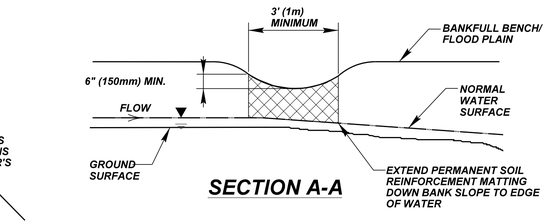


TYPICAL CROSS SECTION

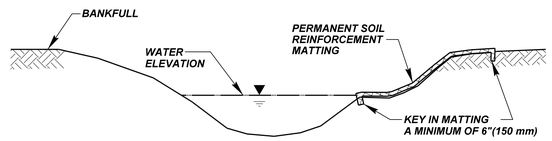
COIR FIBER MATTING DETAIL
NOT TO SCALE



PLAN VIEW



SECTION A-A



SECTION B-B

FLOODPLAIN INTERCEPTOR DETAIL
NOT TO SCALE

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200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

PROJECT REFERENCE NO.	SHEET NO.
B-4138WM	OSM-2D

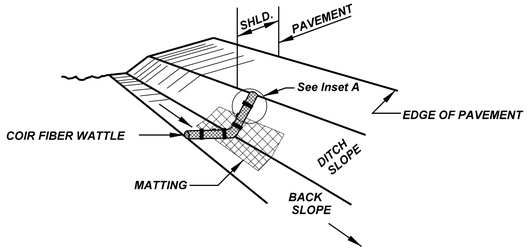
PROJECT ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030000 DARREN M. PA...
06-17-2021

APPROVED BY:

DATE:

DETAIL 4 OF 4



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.

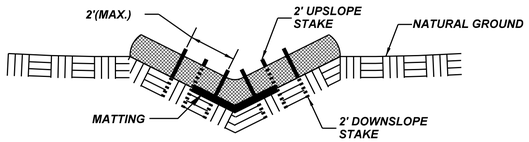
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

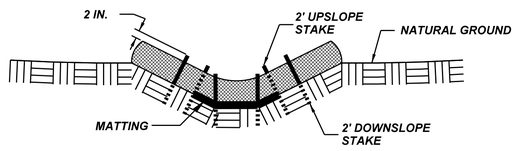
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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.

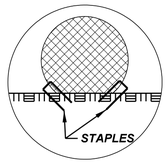


CROSS SECTION
VEE DITCH

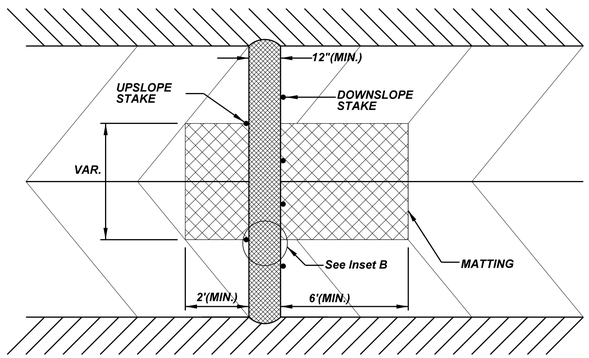


CROSS SECTION
TRAPEZOIDAL DITCH

INSET A



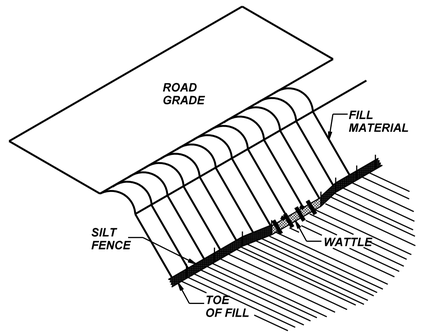
INSET B



TOP VIEW

COIR FIBER WATTLE DETAIL

NOT TO SCALE



ISOMETRIC VIEW

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

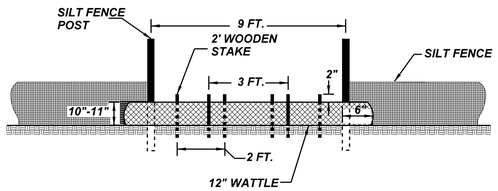
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

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

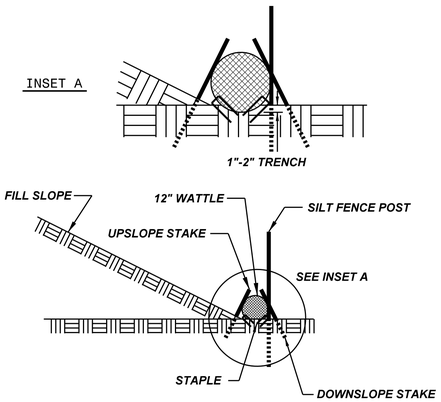
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.



VIEW FROM SLOPE



SIDE VIEW

SILT FENCE COIR FIBER WATTLE BREAK DETAIL

NOT TO SCALE

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200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

PROJECT REFERENCE NO.	SHEET NO.
B-4138WM	OSM-2E

PROJECT ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030000 ENGINEER KAREN M. PAIT

APPROVED BY:

DATE:

MORPHOLOGICAL TABLE

VARIABLES	Reference Reach Tributary to Cape Fear (Upstream)			EXISTING			Regional Curves Peidmont Rural/Rosgen Reference Values			DESIGN		
1. Stream Type (Rosgen)	E4			E4			C/E			E4		
2. Drainage Area (sq. mile)	0.49			0.66			0.66			0.66		
3. Bankfull Width (W_{bkf})	**Mean:**	6.1		**Mean:**	5.4		**Mean:**	9.9		**Mean:**	10.5	
	Range:	5.3	6.5	Range:	*3.0*	7.2	Range:	--	--	Range:	--	--
4. Bankfull Mean depth (d_{bkf})	**Mean:**	0.7		**Mean:**	0.90		**Mean:**	1.3		**Mean:**	0.7	
	Range:	--	--	Range:	*0.7*	*1.1*	Range:	--	--	Range:	--	--
5. Width/Depth Ratio (W_{bkf}/d_{bkf})	**Mean:**	8.7		**Mean:**	6.0		**Mean:**	7.6		**Mean:**	15.2	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
6. Bankfull cross-sectional Area (Abkf)	**Mean:**	5.3		**Mean:**	3.8		**Mean:**	16.2		**Mean:**	7.5	
	Range:	4.3	6.6	Range:	*2.5*	*5.4*	Range:	--	--	Range:	--	--
7. Bankfull Mean Velocity (V_{bkf})	**Mean:**	--		**Mean:**	3.4		**Mean:**	4.1		**Mean:**	3.4	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
8. Bankfull Discharge, cfs (Q_{bkf})	**Mean:**	--		**Mean:**	12.9		**Mean:**	66.0		**Mean:**	25.5	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
9. Bankfull Maximum Depth (d_{max})	**Mean:**	1.3		**Mean:**	1.2		**Mean:**	--		**Mean:**	1.3	
	Range:	1.2	1.5	Range:	1.0	1.4	Range:	--	--	Range:	--	--
10. Max d_{max}/d_{bkf} ratio	**Mean:**	--		**Mean:**	1.3		**Mean:**	--		**Mean:**	1.9	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
11. Low Bank Height to max d_{bkf} ratio	**Mean:**	2.3		**Mean:**	4.2		**Mean:**	--		**Mean:**	1.0	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
12. Width of Flood Prone Area (W_{fpa})	**Mean:**	20.0		**Mean:**	14.9		**Mean:**	--		**Mean:**	36.0	
	Range:	7.0	50.0	Range:	10.0	24.8	Range:	--	--	Range:	--	--
13. Entrenchment Ratio (W_{fpa}/W_{bkf})	**Mean:**	3.3		**Mean:**	2.8		**Mean:**	--		**Mean:**	3.4	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
14. Meander Length (L_m)	**Mean:**	--		**Mean:**	194.7		**Mean:**	--		**Mean:**	194.7	
	Range:	--	--	Range:	184.0	207.0	Range:	--	--	Range:	--	--
15. Ratio of Meander Length to Bankfull Width (L_m/W_{bkf})	**Mean:**	--		**Mean:**	36.1		**Mean:**	--		**Mean:**	18.5	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
16. Radius of Curvature (R_c)	**Mean:**	--		**Mean:**	98.0		**Mean:**	--		**Mean:**	98.0	
	Range:	--	--	Range:	89.0	112.0	Range:	--	--	Range:	89.0	112.0
17. Ratio of Radius of Curvature to Bankfull Width (R_c/W_{bkf})	**Mean:**	--		**Mean:**	18.1		**Mean:**	--		**Mean:**	9.3	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
18. Belt Width (W_{blt})	**Mean:**	--		**Mean:**	35.0		**Mean:**	--		**Mean:**	24.4	
	Range:	--	--	Range:	30.0	40.0	Range:	--	--	Range:	--	--
19. Meander Width Ratio (W_{blt}/W_{bkf})	**Mean:**	--		**Mean:**	6.5		**Mean:**	--		**Mean:**	2.3	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
20. Sinuosity (k) (Stream Length / Valley Length)	**Mean:**	1.17		**Mean:**	1.02		**Mean:**	--		**Mean:**	1.02	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
21. Valley Slope (Sv_{alley}) (ft/ft)	**Mean:**	0.0780		**Mean:**	0.0676		**Mean:**	--		**Mean:**	0.0061	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
22. Average Stream Slope (S_{avg}) = (S_{valley}/k)	**Mean:**	0.0667		**Mean:**	0.0690		**Mean:**	0.0670		**Mean:**	0.0670	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
23. Riffle Slope (S_{riff})	**Mean:**	--		**Mean:**	0.0120		**Mean:**	--		**Mean:**	0.0066	
	Range:	--	--	Range:	0.0096	0.0147	Range:	--	--	Range:	--	--
24. Ratio of Riffle Slope to Avg. Slope (S_{riffle}/S_{avg})	**Mean:**	--		**Mean:**	0.2		**Mean:**	--		**Mean:**	0.1	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
25. Pool Slope (S_{pool})	**Mean:**	--		**Mean:**	0.0030		**Mean:**	--		**Mean:**	0.0001	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
26. Ratio of Pool Slope to Avg. Slope (S_{pool}/S_{avg})	**Mean:**	--		**Mean:**	0.04		**Mean:**	--		**Mean:**	0.001	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
27. Maximum Pool Depth (d_{pool})	**Mean:**	--		**Mean:**	2.0		**Mean:**	--		**Mean:**	1.8	
	Range:	--	--	**Range:**	--	--	**Range:**	--	--	**Range:**	--	--
28. Ratio of Pool Depth to Avg. Depth (d_{pool}/d_{bkf})	**Mean:**	--		**Mean:**	2.2		**Mean:**	--		**Mean:**	2.6	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
29. Pool Width (W_{pool})	**Mean:**	--		**Mean:**	11.9		**Mean:**	--		**Mean:**	12.2	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
30. Ratio of Pool Width to Bankfull Width (W_{pool}/W_{bkf})	**Mean:**	--		**Mean:**	2.2		**Mean:**	--		**Mean:**	1.2	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
31. Pool Area (A_{pool})	**Mean:**	--		**Mean:**	19.4		**Mean:**	--		**Mean:**	11.6	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
32. Ratio of Pool Area to Bankfull Area (A_{pool}/A_{bkf})	**Mean:**	--		**Mean:**	5.1		**Mean:**	--		**Mean:**	1.5	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--
33. Pool to Pool Spacing (p - p)	**Mean:**	--		**Mean:**	74.2		**Mean:**	--		**Mean:**	74.2	
	Range:	--	--	Range:	61.0	94.0	Range:	--	--	Range:	61.0	94.0
34. Ratio of Pool to Pool Spacing to Bankfull Width (p-p/Wbkf)	**Mean:**	--		**Mean:**	13.7		**Mean:**	--		**Mean:**	7.1	
	Range:	--	--	Range:	--	--	Range:	--	--	Range:	--	--

1. Geomorphic feature was not visibly present due to channelization and/or urban impacts to stream channel.
2. Feature was not measured as part of the project field effort

09/26/11

SUMMARY OF QUANTITIES

DESCRIPTION	SECTION	QUANTITIY	UNIT	ITEM DESCRIPTION
0000400000–N	SP	1	LS	CONSTRUCTION SURVEYING FOR MITIGATION
0043000000–N	SP	1	LS	GRADING FOR MITIGATION
1077000000–M	1610	80	TON	#57 STONE
3651000000–M	SP	70	TON	BOULDER
3642000000–M	**876**	90	TON	PLAIN RIP RAP, CLASS A
3649000000–M	**876**	180	TON	PLAIN RIP RAP, CLASS B
6037000000–E	SP	1080	SY	COIR FIBER MAT
6133000000–N	SP	1	LS	DIVERSION PUMPING FOR MITIGATION
6071012000–E	SP	60	LF	COIR FIBER WATTLE
6000000000–E	1605	1070	LF	TEMPORARY SILT FENCE
0000100000–N	800	1	LS	MOBILIZATION
	SP	905	CY	IMPORT TOPSOIL
6006000000–E	1610	140	TN	STONE FOR EROSION CONTROL, CLASS A
6009000000–E	1610	75	TN	STONE FOR EROSION CONTROL, CLASS B
6012000000–E	1610	7	TN	SEDIMENT CONTROL STONE
6038000000–E	SP	25	SY	PERMANENT SOIL REINFORCEMENT MATTING
6036000000–E	1631	2,000	SY	MATTING FOR EROSION CONTROL
6070000000–N	1639	**5**	EA	SPECIAL STILLING BASIN
6030000000–E	1630	4	CY	SILT EXCAVATION
6015000000–E	1615	1.2	AC	TEMPORARY MULCHING
6018000000–E	1620	60	LB	SEED FOR TEMPORARY SEEDING
6021000000–E	1620	0.24	TN	FERTILIZER FOR TEMPORARY SEEDING
6029000000–E	SP	650	LF	SAFETY FENCE
6084000000–E	1660	1.2	AC	SEEDING AND MULCHING
6087000000–E	1660	0.5	AC	MOWING
6090000000–E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000–E	1661	0.2	TN	FERTILIZER FOR REPAIR SEEDING
6096000000–E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000–E	1665	0.2	TN	FERTILIZER TOPDRESSING
6114500000–E	1667	32	MHR	SPECIALIZED HAND MOWING
6042000000–E	1632	44	LF	1/4" HARDWARE CLOTH
8622000000–E	876	650	SY	GEOTEXTILE FOR DRAINAGE, TYPE 2

PREPARED IN THE OFFICE OF:

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200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

PROJECT REFERENCE NO.	SHEET NO.
B-4138WM	OSM-3

PROJECT ENGINEER

APPROVED BY:

DATE:

SUMMARY OF QUANTITIES
SUMMARY OF EARTHWORK
FOR MITIGATION

DESC.	STATION	NORTHING	EASTING	ELEV.	RADIUS
Begin	10+00	603969.3699	2055861.6756	110.77	
R1		603958.7139	2055772.9391		89.00
RCV1	10+33	603936.3652	2055859.0874	110.56	
HR1	10+63	603909.3387	2055846.9870	110.41	
R2		603797.2213	2055873.8417		99.00
RCV2	11+21	603869.2118	2055805.8832	110.03	
HR2	11+51	603845.3289	2055787.3163	109.88	
RCV3	11+69	603828.4259	2055779.8882	109.75	
HR3	11+99	603799.6720	2055773.3431	109.60	
R3		603788.2969	2055673.5811		95.54
RCV4	12+30	603768.8919	2055767.1346	109.39	
HR4	12+60	603741.2940	2055756.7649	109.24	
R4		603601.8145	2055812.9028		136.93
RCV5	13+24	603695.2840	2055712.8297	108.83	
HR5	13+54	603671.3006	2055694.9076	108.68	
RCV6	14+08	603622.1019	2055672.7406	108.31	
R5		603903.9510	2054868.9524		850.00
HR6	14+38	603594.4906	2055661.0095	108.16	
RCV7	14+95	603541.5544	2055639.5898	108.01	
HR7	15+13	603526.0333	2055630.4027	107.81	
RCV8	15+25	603515.1152	2055625.4078	107.61	
HR8	15+43	603498.9855	2055617.4251	107.41	
RCV9	15+55	603488.1706	2055612.2258	107.21	
HR9	15+73	603471.9378	2055604.4474	107.01	
RCV10	15+85	603461.0577	2055599.3772	106.81	
HR10	15+98	603448.7308	2055593.3126	106.71	
End	16+05	603442.3476	2055590.2499	106.71	

SUMMARY OF EARTHWORK FOR MITIGATION

MITIGATION UNCLASSIFIED EXCAV. (CU.YD.)	MITIGATION BORROW (CU.YD.)	MITIGATION WASTE (CU.YD.)
1400	100	1300

APPROXIMATE QUANTITIES ONLY, MITIGATION UNCLASSIFIED EXCAVATION, MITIGATION BORROW EXCAVATION, MITIGATION FINE GRADING AND MITIGATION CLEARING AND GRUBBING WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING FOR MITIGATION".

09/26/11

CURVE DATA

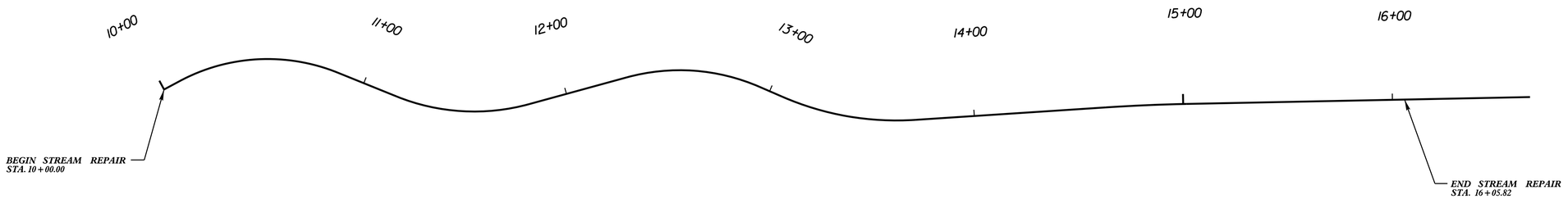
1
PI STA = 10+50.10 N = 603,919.2889 E = 2055,863.0776
DELTA = 50° 27' 16.18" (RT)
DEGREE = 64° 22' 38.21"
TANGENT = 41.93
LENGTH = 78.37
RADIUS = 89.00
PC STA = 10+08.17 N = 603,961.2044 E = 2,055,861.9042
PT STA = 10+86.54 N = 603,891.6969 E = 2,055,831.5029
CC N = 603,958.7139 E = 2,055,772.9391

2
PI STA = 10+50.39 N = 603,849.6867 E = 2,055,783.4288
DELTA = 37° 26' 59.47" (LT)
DEGREE = 57° 52' 28.29"
TANGENT = 33.56
LENGTH = 64.71
RADIUS = 99.00
PC STA = 11+16.83 N = 603,871.7683 E = 2,055,808.6978
PT STA = 11+81.54 N = 603,816.7912 E = 2,055,776.7953
CC N = 603,797.2213 E = 2,055,873.8417

3
PI STA = 12+63.64 N = 603,736.3092 E = 2,055,760.5656
DELTA = 38° 55' 42.29" (RT)
DEGREE = 59° 58' 02.62"
TANGENT = 33.77
LENGTH = 64.92
RADIUS = 95.54
PC STA = 12+29.87 N = 603,769.4099 E = 2,055,767.2406
PT STA = 12+94.79 N = 603,714.7532 E = 2,055,734.5742
CC N = 603,788.2969 E = 2,055,673.5811

4
PI STA = 13+39.86 N = 603,685.9799 E = 2,055,699.8802
DELTA = 27° 18' 37.89" (LT)
DEGREE = 41° 50' 29.80"
TANGENT = 33.27
LENGTH = 65.27
RADIUS = 136.93
PC STA = 13+06.59 N = 603,707.2172 E = 2,055,725.4874
PT STA = 13+71.86 N = 603,655.3610 E = 2,055,686.8712
CC N = 603,601.8145 E = 2,055,812.9028

5
PI STA = 14+82.29 N = 603,553.7286 E = 2,055,643.6911
DELTA = 2° 36' 46.61" (RT)
DEGREE = 6° 44' 26.45"
TANGENT = 19.39
LENGTH = 38.76
RADIUS = 850.00
PC STA = 14+62.90 N = 603,571.5703 E = 2,055,651.2714
PT STA = 15+01.67 N = 603,536.2510 E = 2,055,635.3052
CC N = 603,903.9510 E = 2,054,868.9524



PREPARED IN THE OFFICE OF:

Kimley»Horn ©2018

NC LICENSE #F-0102
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

CURVE DATA

PROJECT REFERENCE NO.	SHEET NO.
B-4138WM	OSM-3A

PROJECT ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030000 ENGINEER DARIN M. PAIT
9-6-11

APPROVED BY:

DATE:

09/26/11

Kimley»Horn
©2018
NC LICENSE #F-0102
P.O. BOX 33068
RALEIGH, NORTH CAROLINA 27636
PHONE: (919) 677-2000

PLAN SHEET

PROJECT REFERENCE NO.	SHEET NO.
B-4138WM	OSM-4

PROJECT ENGINEER

APPROVED BY:

DATE:

30 15 0 30 60

NAD 83/2011

CONTRACTOR TO INSTALL SAFETY FENCE ALONG CONSTRUCTION ENTRANCE, STAGING AND STOCKPOLE AREA, AND HAUL ROAD ADJACENT TO VEGETATED MEDIAN FOR THE PURPOSE OF PROTECTING EXISTING LANDSCAPING VEGETATION WITHIN THE MEDIAN.

PROPOSED TEMPORARY 20' WIDE GRAVEL CONSTRUCTION ENTRANCE

CONTRACTOR TO MODIFY EXTENT AND LAYOUT OF TEMPORARY CONSTRUCTION ENTRANCE AND STAGING AND STOCKPILE AREA TO MATCH EXISTING CONDITIONS AND MINIMIZE DISTURBANCE TO EXISTING VEGETATED MEDIAN.

PROPOSED TEMPORARY 15'-20' WIDE GRAVEL CONSTRUCTION ENTRANCE

ROCK CROSS VANE (RCV1)
ROCK CROSS VANE (RCV2)
ROCK CROSS VANE (RCV3)
ROCK CROSS VANE (RCV4)
ROCK CROSS VANE (RCV5)
ROCK CROSS VANE (RCV6)
ROCK CROSS VANE (RCV7)
ROCK CROSS VANE (RCV8)
ROCK CROSS VANE (RCV9)
ROCK CROSS VANE (RCV10)

STAGING AND STOCKPILE AREA

HAUL ROAD

GPS CONTROL POINT
REBAR & CAP SET
N: 603,440.6336'
E: 2,055,688.6215'
EL: 138.027'
NC GRID NAD 83(2011)
COMBINED FACTOR: 0.99987487

GPS CONTROL POINT
REBAR & CAP SET
N: 603,833.6676'
E: 2,055,887.0069'
EL: 137.024'
NC GRID NAD 83(2011)

NC HIGHWAY 210 /401
SOUTHBOUND LANES

440.26' (GRID DIST.)
N 26°46'57" E

SOUTHBOUND BRIDGE

ALL EXISTING LOG CROSS VANES ARE TO BE REMOVED AND WASTED OFF SITE AND WILL BE REPLACED WITH ROCK CROSS VANES

CONTRACTOR TO REMOVE THREE EXISTING ROCK CROSS VANES. ONLY RE-USE BOULDERS THAT ARE ANGULAR, WITH FLAT SIDES, THAT MEET THE BOULDER SIZE CRITERIA SPECIFIED IN THE ROCK CROSS VANE DETAIL.

EXISTING AERIAL 24" STEEL ENCASED SANITARY SEWER

BEGIN STREAM REPAIR STA. 10+00.00 TIE TO EXISTING GRADE. CONTRACTOR TO USE EXISTING STREAM ALIGNMENT FOR PROPOSED PROFILE AND GRADING.

CONTRACTOR TO REMOVE EXISTING BEAVER DAM

UT TO CAPE FEAR RIVER

EXISTING RIGHT OF WAY

TIE GRADING TO EXISTING TREE LINE

CONTRACTOR TO STABILIZE EXISTING DRAINAGE SWALE WITH A WELL GRADED MIX OF CLASS A RIPRAP, CLASS B RIPRAP, AND NO.57 STONE. CONTRACTOR TO PROVIDE A STABLE TRANSITION TO THE STREAM CHANNEL.

PLACE COIR FIBER MATTING ALONG SIDES OF SWALE AS SHOWN IN THE "COIR FIBER MATTING DETAIL" AND THE "FLOODPLAIN INTERCEPTOR DETAIL"

CONTRACTOR TO STABILIZE EXISTING DRAINAGE SWALE WITH A WELL GRADED MIX OF CLASS A RIPRAP, CLASS B RIPRAP, AND NO.57 STONE. CONTRACTOR TO PROVIDE A STABLE TRANSITION TO THE STREAM CHANNEL.

PLACE COIR FIBER MATTING ALONG SIDES OF SWALE AS SHOWN IN THE "COIR FIBER MATTING DETAIL" AND THE "FLOODPLAIN INTERCEPTOR DETAIL"

END STREAM REPAIR STA. 16+05.82 TIE TO EXISTING 4-48" RCP

INSTALL FILTER FABRIC AND CLASS B STONE TO THE EXTENT NECESSARY TO ALLOW ACCESS

EXISTING SANITARY SEWER LINE
NOTE: PER THE PUBLIC WORKS DEPARTMENT OF HARNETT COUNTY, THERE IS NO DOCUMENTED EASEMENT FOR THIS SEWER LINE, AS IT IS ENTIRELY WITHIN THE BOUNDARY OF HARNETT COUNTY PROPERTY, OR NCDOT RIGHT-OF-WAY

EXISTING SANITARY SEWER LINE
SEE: D.B. 1792, PG. 553 & P.B. 2001, PG. 1312
NOTE: THESE DOCUMENTS REFER TO THE ORIGINAL LOCATION OF THIS LINE, PRIOR TO THE RELOCATION OF THE SOUTHBOUND LANES OF US 210/401

HARNETT COUNTY
D.B. 2147, PAGE 433
PIN # 0650-64-1818

BENCHMARK
BENCH TIE NAIL IN 12" HARDWOOD TREE
ELEV.=117.57'

CAPE FEAR RIVER

R/W
FP
SSMH RIM=134.28'
SSMH RIM=118.39'
SSMH RIM=123.12'
SSMH RIM=119.12'
SSMH RIM=123.51'
SSMH RIM=118.71'
STMH RIM=124.31' INV.=115.22'
STMH RIM=117.44' INV.=108.97' INV.=108.93'
DI TOP=116.78' INV.=109.25' INV.=109.19'
24" RCP INV.=108.58'
18" RCP INV.=106.55'
18" RCP INV.=106.51'
48" RCP INV.=106.43'
48" RCP INV.=106.39'
INV.=106.78'
INV.=106.8
INV.=106.58'
GUARD RAIL
SIGN
WOODS
BEAVER DAM
RIP RAP

09/26/11

PREPARED IN THE OFFICE OF:

Kimley»Horn ©2018

NC LICENSE #F-0102
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

PROJECT REFERENCE NO.	SHEET NO.
B-4138WM	OSM-5

PROJECT ENGINEER

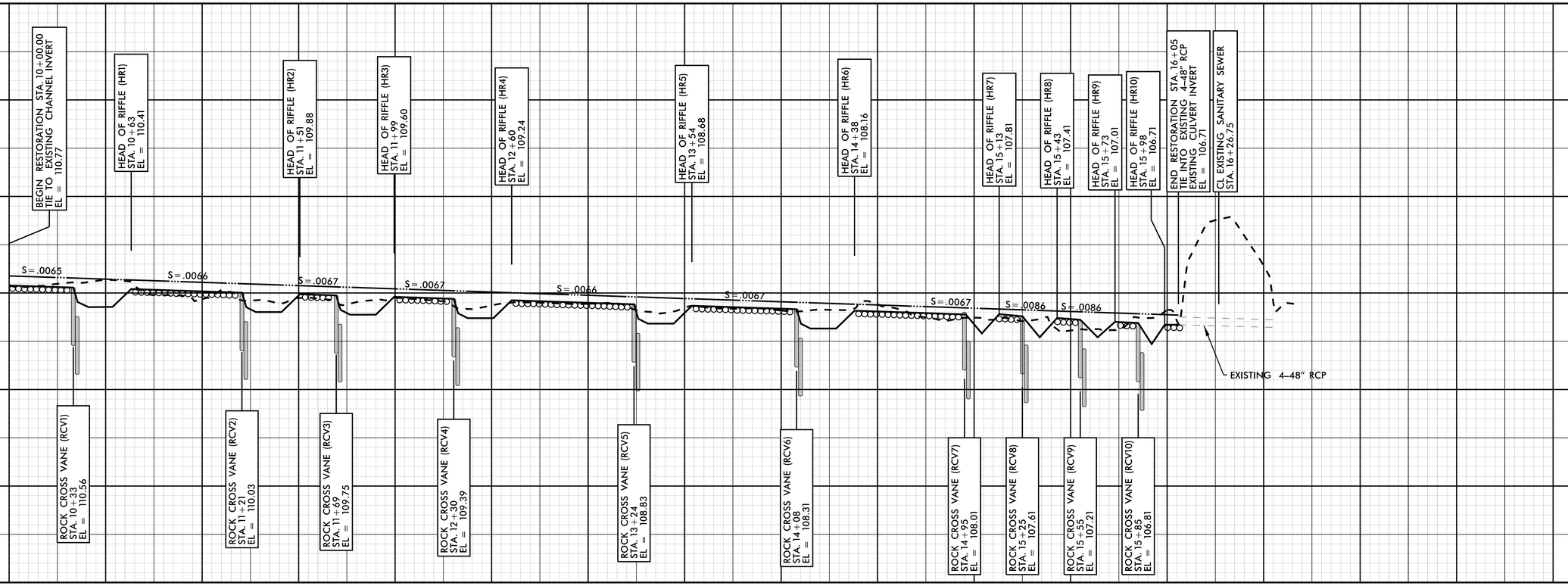
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030000 DARREN M. PRATT

Darren Pratt 06-11-2021

APPROVED BY:

DATE:

PROFILE



LEGEND

EXISTING GROUND ELEVATION

PROPOSED GROUND ELEVATION

PROPOSED BANKFULL

CONSTRUCTED RIFFLE

PROPOSED ROCK CROSS VANE

HORIZONTAL 15 0 30

VERTICAL 3 0 6

09/26/11

CONTRACT: **TIP PROJECT: B–4138WM**

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	
1622.01	Temporary Berms and Slope Drains	
	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

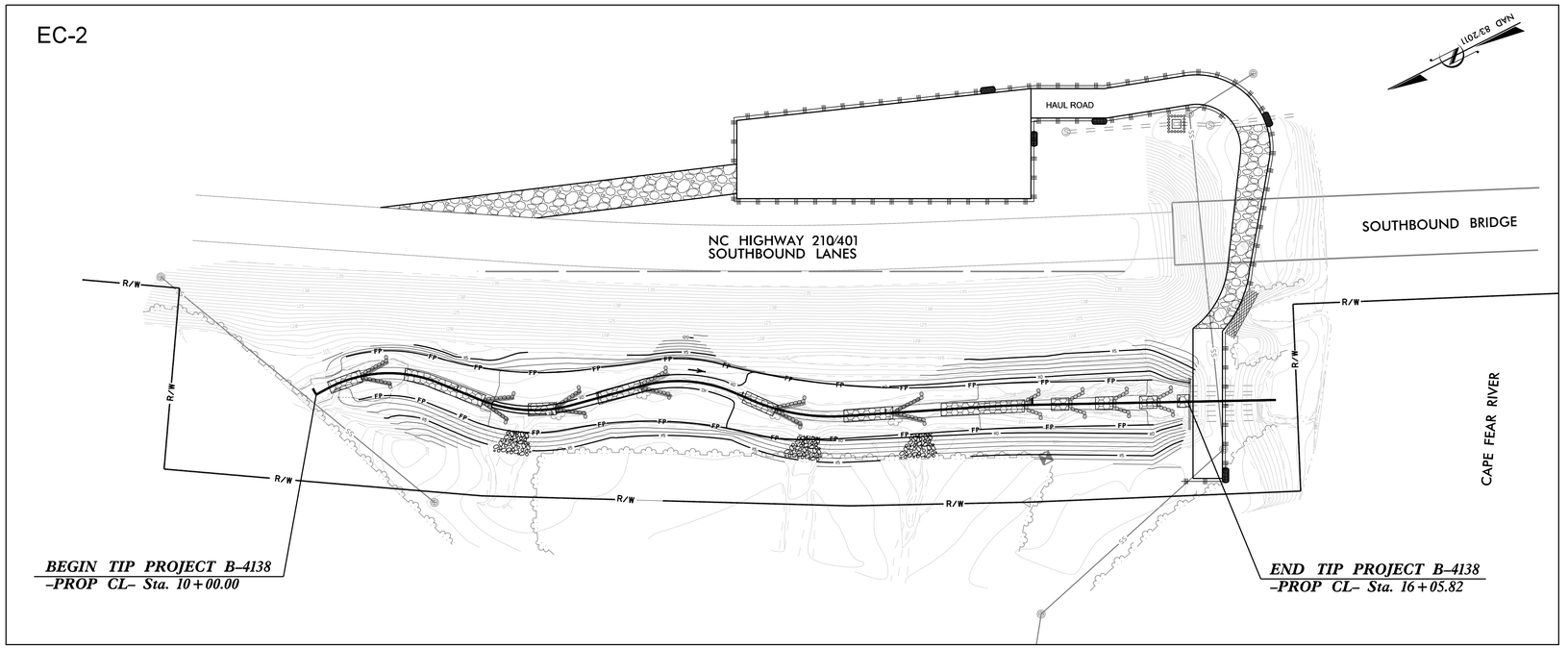
PLAN FOR PROPOSED
EROSION CONTROL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4138WM	EC-1	17

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33490.4.2		Const.

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 RESOURCES.

EC-2



NC DOT CONTACT: JASON ELLIOTT

ELIZABETH W. LYNCH, P.E.
LEVEL III NAME

3716
LEVEL III CERTIFICATION NO.

GRAPHIC SCALES

30 15 0 30 60
PLANS

PROJECT LENGTH

EXISTING STREAM LENGTH = 610 FT
PROPOSED DESIGN STREAM LENGTH = 606 FT

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 2018 and the latest revision 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 Special Stilling Basin
1632.03 Rock Inlet Sediment Trap Type C
1633.01 Temporary Rock Silt Check Type A

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn ©2018
NC LICENSE: P-0102
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030000 ENGINEER DAREN M. PAIT
Daren Pait 06-11-2018

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION · STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

09/26/11

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NC LICENSE #F-0102
P.O. BOX 33068
RALEIGH, NORTH CAROLINA 27636
PHONE: (919) 677-2000

PROJECT REFERENCE NO.	SHEET NO.
B-4138WM	EC-2

PROJECT ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030000 ENGINEER DARREN M. PAIT

APPROVED BY:

DATE:

EROSION CONTROL

NAD 83/2011

30 15 0 30 60

CONTRACTOR TO INSTALL SAFETY FENCE ALONG CONSTRUCTION ENTRANCE, STAGING AND STOCKPOLE AREA, AND HAUL ROAD ADJACENT TO VEGETATED MEDIAN FOR THE PURPOSE OF PROTECTING EXISTING LANDSCAPING VEGETATION WITHIN THE MEDIAN.

PROPOSED TEMPORARY 20' WIDE GRAVEL CONSTRUCTION ENTRANCE

CONTRACTOR TO MODIFY EXTENT AND LAYOUT OF TEMPORARY CONSTRUCTION ENTRANCE AND STAGING AND STOCKPILE AREA TO MATCH EXISTING CONDITIONS AND MINIMIZE DISTURBANCE TO EXISTING VEGETATED MEDIAN.

PROPOSED TEMPORARY SILT FENCE

PROPOSED TEMPORARY ACCESS ROAD

PROPOSED TEMPORARY 15'-20' WIDE GRAVEL CONSTRUCTION ENTRANCE

COIR FIBER WATTLE SILT FENCE BREAK (TYP.)

PROPOSED DROP INLET PROTECTION

STAGING AND STOCKPILE AREA

HAUL ROAD

SSMH RIM=123.12'

DI TOP=116.78'

SSMH RIM=119.12'

STMH RIM=117.44'

STMH RIM=124.31'

24" RCP

RIP RAP

SOUTHBOUND BRIDGE

NC HIGHWAY 210 /401 SOUTHBOUND LANES

440.26' (GRID DIST.)

N 26°46'57" E

GUARD RAIL

SSMH RIM=134.28'

R/W

10+00 11+00 12+00 13+00 14+00 15+00 16+00

SIGN

FP

BEAVER DAM

WOODS

SS

SSMH RIM=118.39'

TEMPORARY ROCK SILT CHECK TYPE A

INSTALL FILTER FABRIC AND CLASS B STONE TO THE EXTENT NECESSARY TO ALLOW ACCESS

INV.=106.78'

INV.=106.55'

INV.=106.51'

INV.=106.43'

INV.=106.39'

INV.=106.58'

SSMH RIM=118.71'

CAPE FEAR RIVER

EXISTING SANITARY SEWER LINE
NOTE: PER THE PUBLIC WORKS DEPARTMENT OF HARNETT COUNTY, THERE IS NO DOCUMENTED EASEMENT FOR THIS SEWER LINE, AS IT IS ENTIRELY WITHIN THE BOUNDARY OF HARNETT COUNTY PROPERTY, OR NCDOT RIGHT-OF-WAY

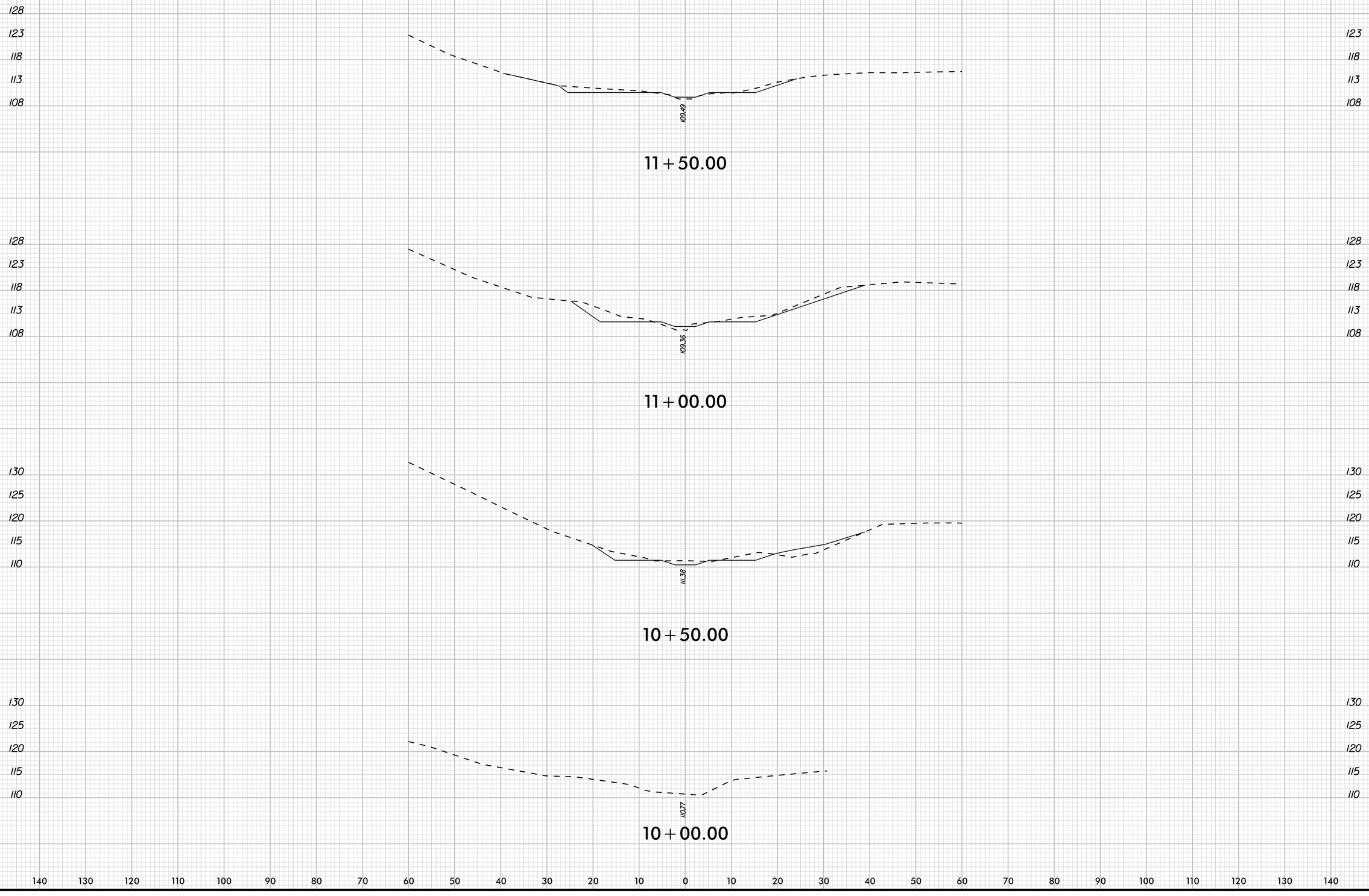
SSMH RIM=123.51'

EXISTING SANITARY SEWER LINE
SEE: D.B. 1792, PG. 553 & P.B. 2001, PG. 1312
NOTE: THESE DOCUMENTS REFER TO THE ORIGINAL LOCATION OF THIS LINE, PRIOR TO THE RELOCATION OF THE SOUTHBOUND LANES OF US 210/401

NOTE:
UTILIZE SPECIAL STILLING BASIN TO DEWATER WORK SITE AS DIRECTED.

09/26/11

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4138WM	XS-01



09/26/11

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4138WM	XS-02

127
122
117
112
107

108.48

13+50.00

128
123
118
113
108

108.88

13+00.00

128
123
118
113
108

108.71

12+50.00

128
123
118
113
108

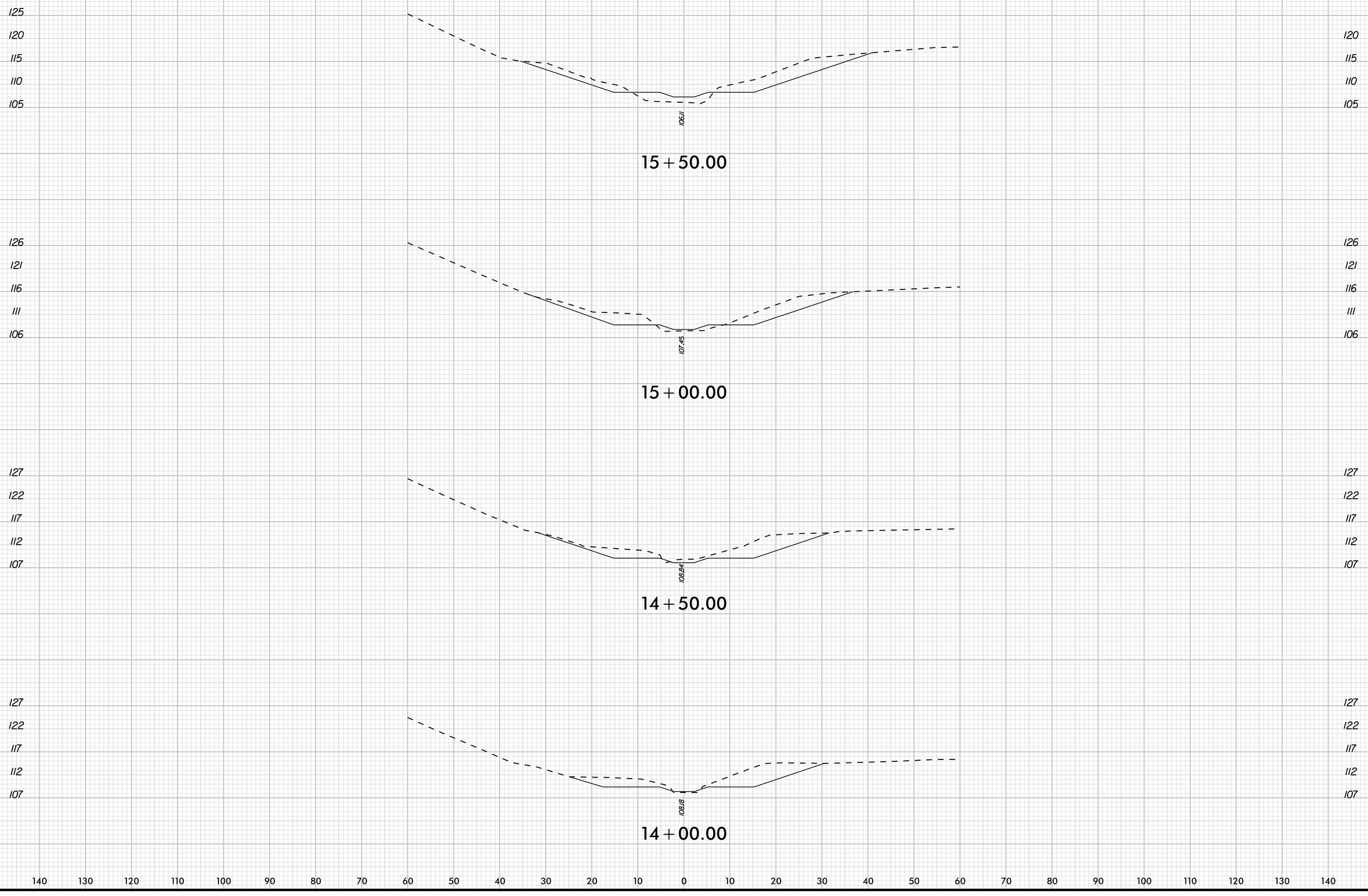
109.52

12+00.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

09/26/11

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4138WM	XS-03



09/26/11

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4138WM	XS-04

126
121
116
111
106

112.82

16+50.00

126
121
116
111
106

108.25

16+00.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140