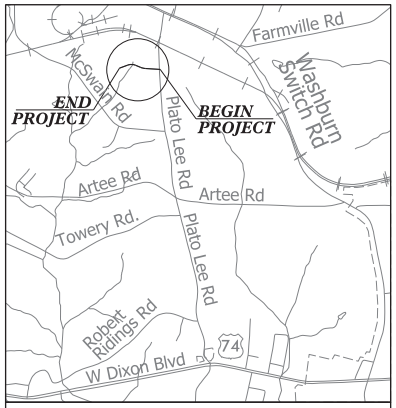
09/08/99

PROJECT: WBS 43–798

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



VICINITY MAP

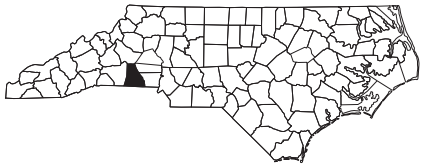
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	WBS 43–798	1	

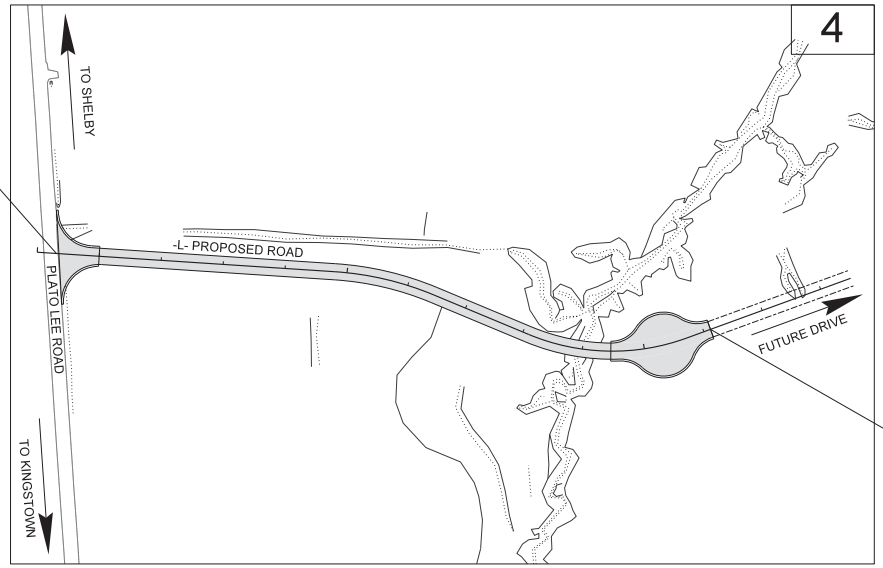
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
WBS 43–798		P.E., ROW, UTIL

CLEVELAND COUNTY

LOCATION: PROPOSED ROAD AT PLATO LEE ROAD BETWEEN WASHBURN SWITCH RD AND MCSWAIN RD

TYPE OF WORK: GRADING, PAVING, AND DRAINAGE



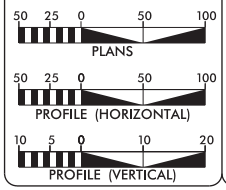


BEGIN PROJECT
–L– STA 10+31.00

END PROJECT
–L– STA 21+11.36

CLEARING ON THIS PROJECT SHALL BE TO THE LIMITS ESTABLISHED BY METHOD II.
THIS PROJECT IS NOT WITHIN ANY MUNCIPAL BOUNDARIES.
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

GRAPHIC SCALES



DESIGN DATA

ADT 2014 = 900
DHV = N/A %
D = N/A %
T = 30 %
V = 30 MPH

PROJECT LENGTH

LENGTH ROADWAY PROJECT = 0.205 MILES
LENGTH STRUCTURE PROJECT = 0.000 MILES
TOTAL LENGTH PROJECT = 0.205 MILES

PLANS PREPARED BY:

DRMP
ENGINEERS · PLANNERS · SCIENTISTS

DRMP, INC.
5950 FAIRVIEW ROAD, SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332-2289
NC LICENSE NO. C-2213

FOR CLEVELAND COUNTY

2012 STANDARD SPECIFICATIONS

LETTING DATE:
OCTOBER 18, 2013

JAMES E. BECK, P.E.
PROJECT ENGINEER
MIKE HAGE, E.I.
PROJECT DESIGN ENGINEER
CLEVELAND COUNTY CONTACT:
DAVID DEAR

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

FOR BIDDING PURPOSES ONLY

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

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9/25/2013

PROJECT REFERENCE NO.	SHEET NO.
43-798	1-A

ROADWAY DESIGN ENGINEER

FOR BIDDING PURPOSES ONLY

GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS

EFFECTIVE: 01–17–2012
REVISED: 07–30–2012

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE–IN.

CLEARING:

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

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

SHOULDER DRAINS:

SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 816.02 AND DETAILS IN PLANS AT LOCATIONS DIRECTED BY THE ENGINEER.

RIGHT–OF–WAY MARKERS:

ALL RIGHT–OF–WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

LIST OF ROADWAY STANDARD DRAWINGS

EFF. 01–17–2012
REV. 10–30–2012

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
225.02 Guide for Grading Subgrade – Secondary and Local

DIVISION 3 – PIPE CULVERTS

300.01 Method of Pipe Installation
310.03 Cross Pipe End Section – Precast Concrete Section for 18" to 30" Pipe

DIVISION 5 – SUBGRADE, BASES AND SHOULDERS

560.01 Method of Shoulder Construction – High Side of Superelevated Curve – Method I

DIVISION 8 – INCIDENTALS

815.03 Pipe Underdrain and Blind Drain
838.27 Reinforced Concrete Endwall – for Single 60" Pipe 90 Skew
838.57 Reinforced Brick Endwall – for Single 60" Pipe 90 Skew
840.01 Brick Catch Basin – 12" thru 54" Pipe
840.03 Frame, Grates and Hood – for Use on Standard Catch Basin
840.31 Concrete Junction Box – 12" thru 66" Pipe
840.32 Brick Junction Box – 12" thru 66" Pipe
840.54 Manhole Frame and Cover
846.01 Concrete Curb, Gutter and Curb & Gutter
876.01 Rip Rap in Channels
876.02 Guide for Rip Rap at Pipe Outlets
876.04 Drainage Ditches with Class 'B' Rip Rap

INDEX OF SHEETS

Sheet Number	Sheet
1	Title Sheet
1–A	Index of Sheets, General Notes, and List of Standards
1–B	Conventional Symbols
2	Typical Sections and Pavement Schedule
3	Summary of Quantities
3–A	Summary of Drainage and ROW Area Data
3–B	Summary of Earthwork
4	Plan Sheet
5	Profile Sheet
TMP–01	Transportation Management Plan
EC–1 Thru EC–05	Erosion Control Plans
X–0	Cross–Section Summary Sheet
X–1 Thru X–10	Cross–Sections
SW1	Stormwater BMP Plan

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9/19/2013

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
WBS 43-798	1-B

Note: Not to Scale

**S.U.E. = Subsurface Utility Engineering*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

FOR BIDDING PURPOSES ONLY

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP)
- Property Corner
- Property Monument (CM)
- Parcel/Sequence Number (23)
- 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)
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

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
- Recorded U/G Power Line (P)
- Designated U/G Power Line (S.U.E.*) (P)

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole (T)
- Telephone Booth
- Telephone Pedestal (T)
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole (HH)
- Recorded U/G Telephone Cable (T)
- Designated U/G Telephone Cable (S.U.E.*) (T)
- Recorded U/G Telephone Conduit (TC)
- Designated U/G Telephone Conduit (S.U.E.*) (TC)
- Recorded U/G Fiber Optics Cable (T FO)
- Designated U/G Fiber Optics Cable (S.U.E.*) (T FO)

WATER:

- Water Manhole (W)
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line (W)
- Designated U/G Water Line (S.U.E.*) (W)
- Above Ground Water Line (A/G Water)

TV:

- TV Satellite Dish
- TV Pedestal (C)
- TV Tower
- U/G TV Cable Hand Hole (HH)
- Recorded U/G TV Cable (TV)
- Designated U/G TV Cable (S.U.E.*) (TV)
- Recorded U/G Fiber Optic Cable (TV FO)
- Designated U/G Fiber Optic Cable (S.U.E.*) (TV FO)

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line (G)
- Designated U/G Gas Line (S.U.E.*) (G)
- Above Ground Gas Line (A/G Gas)

SANITARY SEWER:

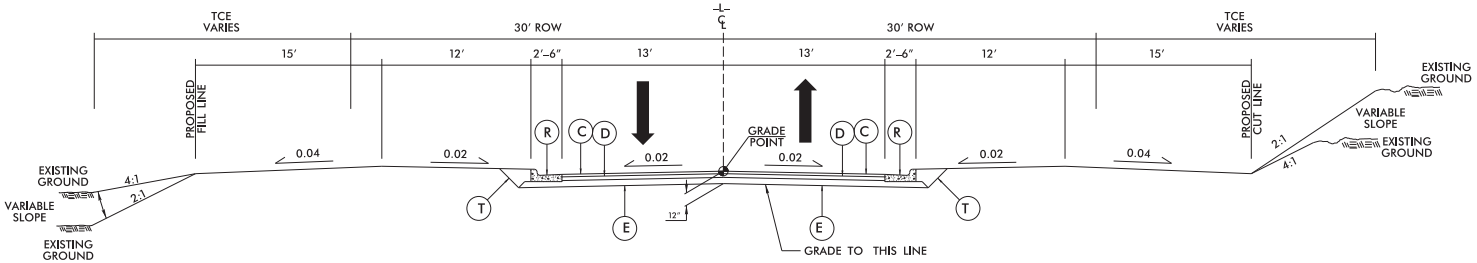
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line (SS)
- Above Ground Sanitary Sewer (A/G Sanitary Sewer)
- Recorded SS Forced Main Line (FSS)
- Designated SS Forced Main Line (S.U.E.*) (FSS)

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line (?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 (S.U.E.*)
- Abandoned According to Utility Records (AATUR)
- End of Information (E.O.I.)

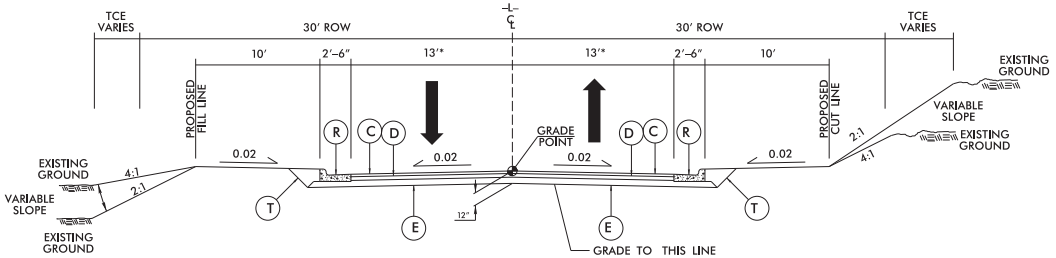
PROJECT REFERENCE NO.	SHEET NO.
WBS 43-798	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

FOR BIDDING PURPOSES ONLY



TYPICAL SECTION NO. 1

-L- STA 10+50.00 TO -L- STA 17+00.00



TYPICAL SECTION NO. 2

-L- STA 17+00.00 TO -L- STA 21+11.36

*NOTE: WIDTH VARIES AT CUL-DE-SAC
STA. 19+45.94 TO STA. 21+11.36

C	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS
D	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 228 LBS. PER SQ. YARD IN EACH OF TWO LAYERS
E	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YARD
R	2'-6" CONCRETE CURB AND GUTTER

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PROJECT REFERENCE NO.	SHEET NO.
WBS 43-798	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FOR BIDDING PURPOSES ONLY

SUMMARY OF QUANTITIES

Line Item	Des	Sec No.	Description	Quantity	Unit
0000100000-N		800	MOBILIZATION	1	LS
0000400000-N		801	CONSTRUCTION SURVEYING	1	LS
0000900000-N		SP	GENERIC MISCELLANEOUS ITEM - EMP SANDFILTER	1	LS
0043000000-N		226	COMPREHENSIVE GRADING	1	LS
0036000000-E		225	UNDERCUT EXCAVATION	200	CY
0196000000-E		270	GEOTEXTILE SOIL STABILIZATION	700	SY
0318000000-E		300	FOUNDATION CONDITIONING MATERIAL, MNOR STRUCTURES	6	TN
0360000000-E		310	12" RC PIPE CULV III	71	LF
0366000000-E		310	15" RC PIPE CULV III	163	LF
0372000000-E		310	18" RC PIPE CULV III	10	LF
0414000000-E		310	60" RC PIPE CULV III	107	LF
0453000000-E		310	18" PIPE END SECTION	1	EA
1489000000-E		610	ASP CONC EASE CRS B25.0B	1350	TON
1498000000-E		610	ASP CONC INTR CRS I19.0B	910	TON
1519000000-E		610	ASP CONC SURF CRS S9.5B	670	TON
1575000000-E		620	ASP FOR PLANT MIX	145	TON
2209000000-E		838	ENDWALLS	11.2	CY
2286000000-N		840	MASNRY DRAINAGE STRUCT	6	EA
2374000000-N		840	MASNRY DRAINAGE STRUCT	6	EA
2549000000-E		846	2'-6" CONC CURB & GUTTER	2265	LF
3628000000-E		876	RIP RAP, CLASS I	25	TON
3635000000-E		876	RIP RAP, CLASS II	53	TON
3656000000-E		876	GEOTEXTILE FOR DRAINGE	170	SY
3691000000-N		SP	SPECIAL SILT CHECK	13	EA
4399000000-N		1105	TEMP TRAFFIC CONTROL	1	LS
4410000000-E		1110	WORK ZONE SIGNS (BARR)	20	SF
4445000000-E		1145	BARRICADES (TYPE III)	32	LF
6000000000-E		1605	TEMPORARY SILT FENCE	2995	LF
6006000000-E		1610	EROS CONTRL STONE CL A	35	TON
6012000000-E		1610	SEDIMENT CONTROL STONE	10	TON
6015000000-E		1610	TEMPORARY MULCHING	3.5	ACR
6018000000-E		1620	SEED FOR TEMP SEEDING	150	LB
6021000000-E		1622	FERT FOR TEMP SEEDING	0.75	TON
6024000000-E		1622	TEMPORARY SLOPE DRAINS	200	LF
6029000000-E		SP	SAFETY FENCE	100	LF
6030000000-E		1630	SILT EXCAVATION	140	CY
6036000000-E		1631	MATTING FOR EROS CONTROL	11565	SY
6037000000-E		SP	COIR FIBER MAT	490	SY
6042000000-E		1632	1/4" HARDWARE CLOTH	35	LF
6084000000-E		1660	SEEDING AND MULCHING	2	ACR
6084000000-E		1660	NATIVE GRASS SEEDING AND MULCHING	0.55	ACR
6090000000-E		1661	SEED FOR REPAIR SEEDING	50	LB
6093000000-E		1661	FERT FOR REPAIR SEEDING	0.25	TON
6096000000-E		1662	SEED FOR SUPP SEEDING	100	LB
6108000000-E		1665	FERTILIZER TOPDRESSING	3	TON
6111000000-E		SP	IMPERVIOUS DIKE	170	LF
6117000000-N		SP	RESPONSE FOR EROSION CONTROL	7	EA

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5950 FAIRVIEW ROAD, SUITE 320
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10/2/2013

6/21/00

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CHECKED BY: _____ DATE: _____

PROJECT REFERENCE NO.	SHEET NO.
WBS 43-798	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUB–REGIONAL & REGIONAL

FOR BIDDING PURPOSES ONLY

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300–5".

RIGHT OF WAY AREA DATA

GIS PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL ACREAGE	ROW TAKEN	TEMP. CONST. EASE.	PERM. DRAIN. EASE.			
32573	CLEVELAND COUNTY	4.013	1.701	2.202	0.110			

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

STATION	LOCATION (LT, RT, OR C/L)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) THICKNESS OR GAUGE	C.S. PIPE SIZE	C.S. PIPE THICKNESS OR GAUGE	R.C. PIPE CLASS III SIZE	R.C. PIPE CLASS III THICKNESS OR GAUGE	R.C. PIPE CLASS IV SIZE	R.C. PIPE CLASS IV THICKNESS OR GAUGE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES (NOS. EACH (IF THRU 5.0')	QUANTITIES FOR DRAINAGE STRUCTURES (LIN. FT. A (5.0' THRU 10.0')	QUANTITIES FOR DRAINAGE STRUCTURES (LIN. FT. B (10.0' AND ABOVE)	*TOTAL L.F. FOR PIPE QUANTITY SHALL BE (CL. 'A' + (1.5 x CL. 'B')	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 DROP INLET	CATCH BASIN	REMARKS
17+84	RT	0405		886.19														1	4		1			1				
		0405	0406		878.01	877.86	0.01						29															
17+84	LT	0406		886.19														1	4		1			1				
		0406	0407		877.36	877.31	0.01						10															
17+84	LT	0407			877.31																							1 STRUCTURE (NCDOT STD. 310.03)
19+23	RT	0402		883.52														1			1			1				
		0402	0404		878.53	878.39	0.01						28															
19+23	LT	0404		883.52														1	1		1			1				
		0404	0406		878.29	877.61	0.01						135															
19+32	LT	0403		883.59														1	1		1			1				
		0403	404		878.43	878.39	0.01						8															
19+57	RT	0401		883.67														1			1			1				
		0401	0402		879.95	879.78	0.01						34															

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

STATION	LOCATION (LT, RT, OR C/L)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) THICKNESS OR GAUGE	C.S. PIPE SIZE	C.S. PIPE THICKNESS OR GAUGE	STRUCTURAL PLATE PIPE SIZE	STRUCTURAL PLATE PIPE THICKNESS OR GAUGE	REINFORCED ENDWALLS WITH R.C. - C.Y.	REINFORCED ENDWALLS WITH C.S. - C.Y.	MASONRY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR 840.02	FRAMES, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	REMARKS
16+70.40	RT	0408		871.23										5.6										
		0408	0408		864.50	862.50	0.019		107															
16+94.60	LT	0409		869.25										5.6										

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.)	(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

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6/18/2013

PROJECT REFERENCE NO.	SHEET NO.
WBS 43-798	3-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FOR BIDDING PURPOSES ONLY

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. +15%	BORROW	WASTE
PHASE I					
-L- 10+50.00	-L- 21+00.00	2,709	8,059	5,350	
SUBTOTALS:		2,709	8,059	5,350	
SUBTOTALS:					
SUBTOTAL:					
SUMMARIES SUBTOTAL:					
PROJECT TOTALS:		2,709	8,059	5,350	
EST. 5% FOR REPLACING TOP SOIL ON BORROW PITS				268	
GRAND TOTALS:		2,709	8,059	5,618	
SAY:		2,800	8,100	5,700	

NOTE:

Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing & Grubbing, and Removal & Breakup of existing pavement will be paid at the lump sum price for "Grading".

DRMP
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DRMP, INC.
5950 FAIRVIEW ROAD, SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332-2289
NC LICENSE NO. C-283

5/28/99
8:48:41 AM
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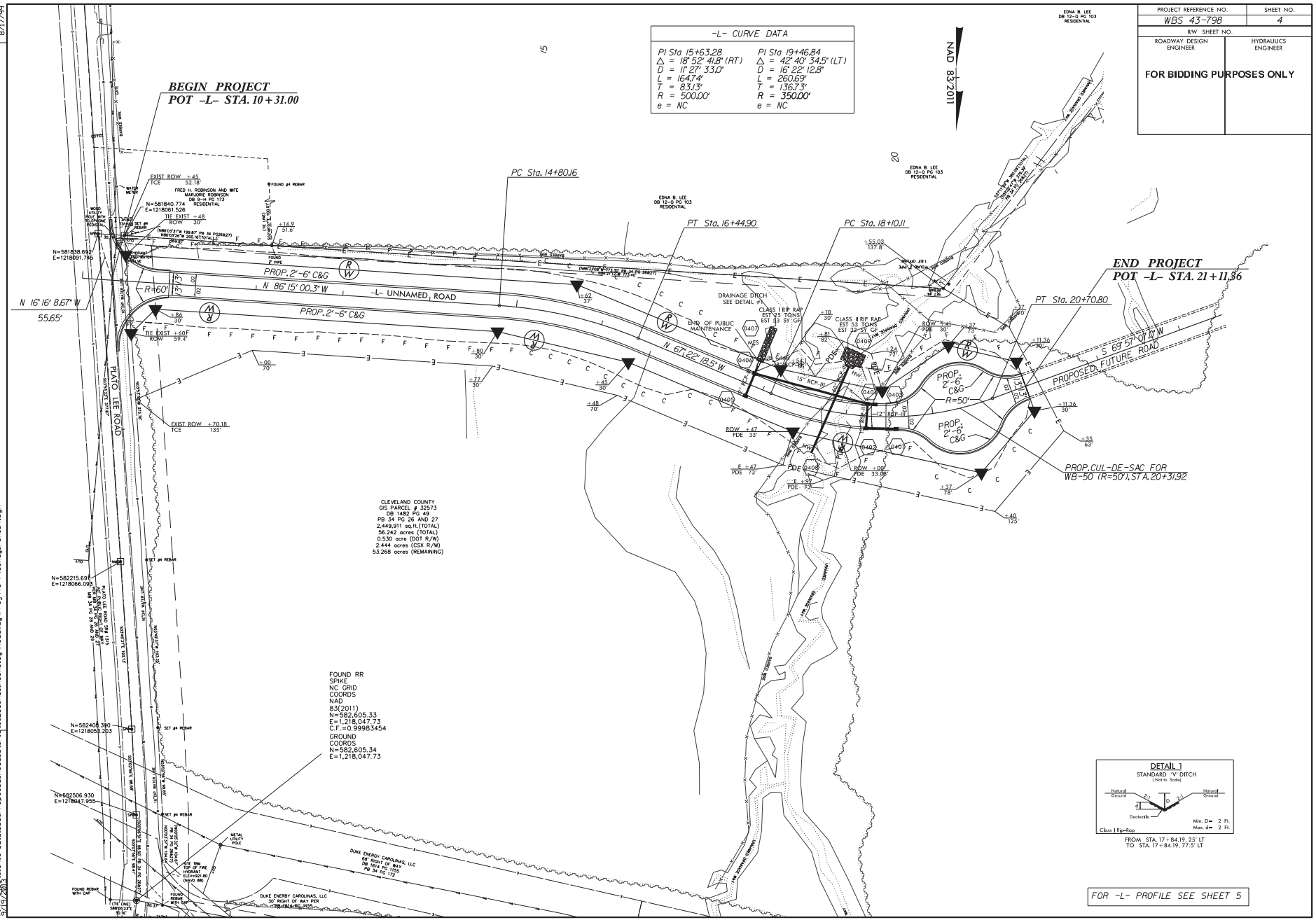
9/19/2013

PROJECT REFERENCE NO.	SHEET NO.
WBS 43-798	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FOR BIDDING PURPOSES ONLY



-L- CURVE DATA

PI Sta 15+63.28	PI Sta 19+46.84
Δ = 18° 52' 41.8" (RT)	Δ = 42° 40' 34.5" (LT)
D = 11° 27' 33.0"	D = 16° 22' 12.8"
L = 164.74'	L = 260.69'
T = 83.13'	T = 136.73'
R = 500.00'	R = 350.00'
e = NC	e = NC

DETAIL 1
STANDARD 'V' DITCH
(Not to Scale)

FROM STA. 17+84.19, 25' LT
TO STA. 17+84.19, 77.5' LT

FOR -L- PROFILE SEE SHEET 5

REVISIONS

8/17/99

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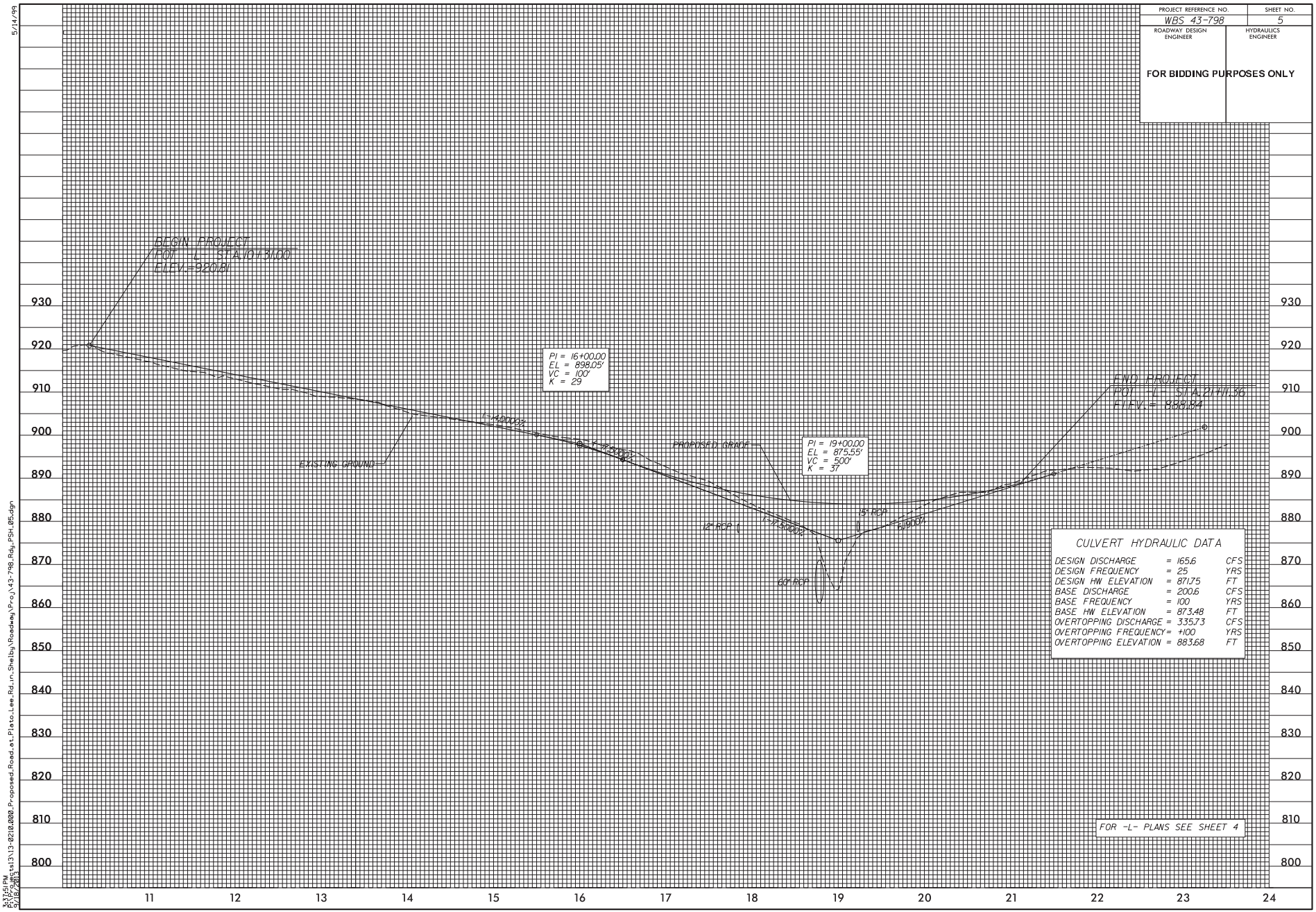
9/19/2013

PROJECT REFERENCE NO.	SHEET NO.
WBS 43-798	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FOR BIDDING PURPOSES ONLY



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 165.6	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 871.75	FT
BASE DISCHARGE	= 200.6	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 873.48	FT
OVERTOPPING DISCHARGE	= 335.73	CFS
OVERTOPPING FREQUENCY	= +100	YRS
OVERTOPPING ELEVATION	= 883.68	FT

FOR -L- PLANS SEE SHEET 4

5/14/99

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9/18/2013

PROJECT: WBS 43–798

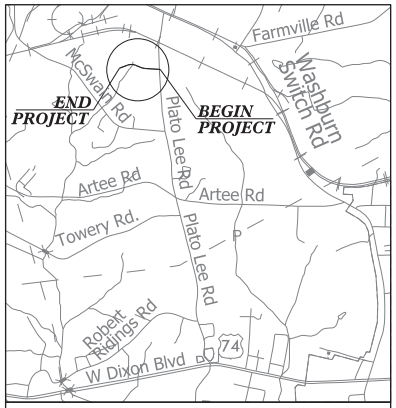
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	WBS 43–798	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
WBS 43–798		P.E., ROW, UTIL., CONST.

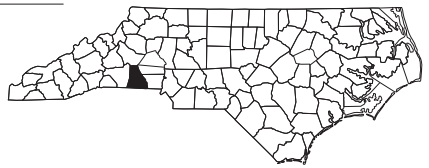
FOR BIDDING PURPOSES ONLY

PLAN FOR PROPOSED HIGHWAY EROSION CONTROL

CLEVELAND COUNTY



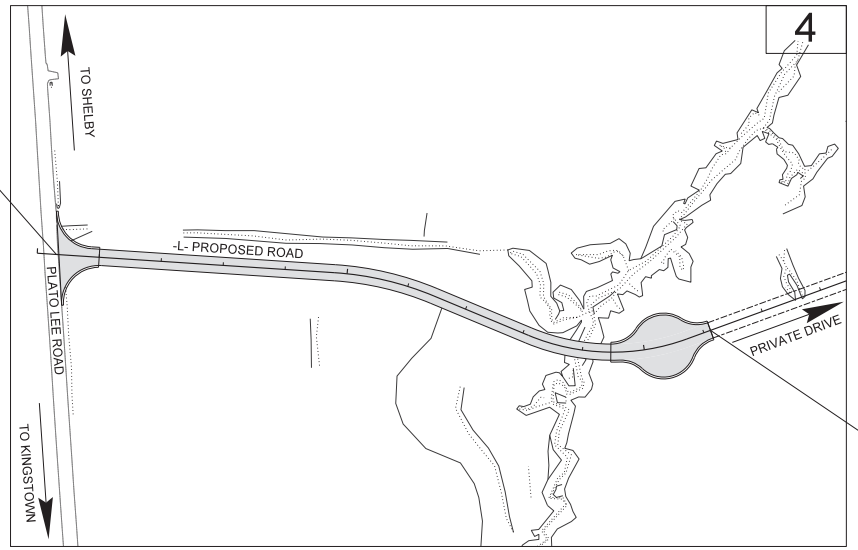
VICINITY MAP



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
	Clean Water Diversion	CWD CWD CWD
1630.05	Temporary Diversion	TD
1630.06	Special Stilling Basin	
1632.03	Rock Inlet Sediment Trap Type C	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle	
	Wattle with Polyacrylamide (PAM)	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	

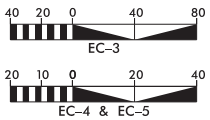
BEGIN PROJECT
–L– STA 10+31.00
LAT: 35.320460
LON: –81.621611



END PROJECT
–L– STA 21+11.36

CLEARING ON THIS PROJECT SHALL BE TO THE LIMITS ESTABLISHED BY METHOD II.
THIS PROJECT IS NOT WITHIN ANY MUNCIPAL BOUNDARIES.
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

GRAPHIC SCALES



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.

PLANS PREPARED BY:

DRMP
ENGINEERS · PLANNERS · SCIENTISTS
DRMP, INC.
5950 FAIRVIEW ROAD, SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332-2289
NC LICENSE NO. C-2213

FOR CLEVELAND COUNTY

2012 STANDARD SPECIFICATIONS

LETTING DATE:
OCTOBER 18, 2013

STEVEN E. FREY, P.E.
PROJECT ENGINEER
MIKE HAGE, E.I.
PROJECT DESIGN ENGINEER
CLEVELAND COUNTY CONTACT:
DAVID DEAR

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.

876.04	Drainage Ditches with Class 'B' Rip Rap	1631.01	Matting Installation
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

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9/18/2013

PROJECT REFERENCE NO.	SHEET NO.
WBS 43-798	EC-2

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
FOR BIDDING PURPOSES ONLY	

MAINTENANCE PLAN

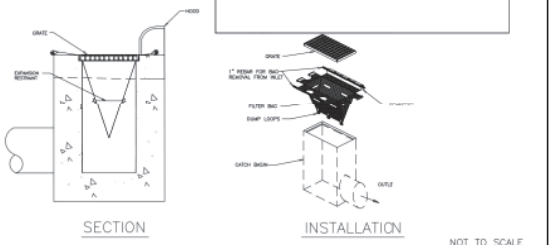
1. ALL TEMPORARY EROSION CONTROL AND SEDIMENT CONTROL PRACTICES WILL BE INSTALLED AS NOTED IN THE EROSION CONTROL DETAILS.
2. TRAPPED SEDIMENT SHALL BE PROPERLY REMOVED FROM THE EROSION CONTROL MEASURE AND DISPOSED OF PROPERLY.
3. INSPECT ALL SEDIMENT CONTROL MEASURES ON A WEEKLY BASIS AND/OR AFTER EACH RAIN EVENT.

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

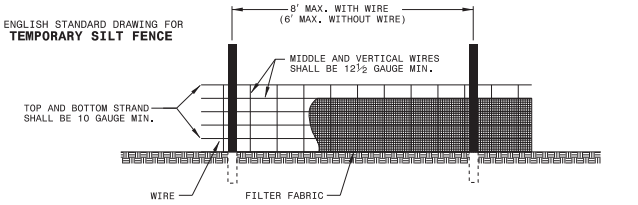
CATCH BASIN FILTER ASSEMBLY

NOTES:
1. FILTER BAGS SHALL BE REMOVED PRIOR TO STREET ACCEPTANCE.
2. FILTER BAGS SHALL BE CLEANED OR REPLACED ON A REGULAR BASIS. FILTER BAG MAY NOT BE MORE THAN HALF-FULL AT ANY TIME.

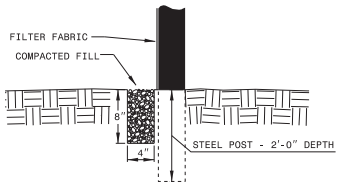


NOT TO SCALE

ENGLISH STANDARD DRAWING FOR TEMPORARY SILT FENCE

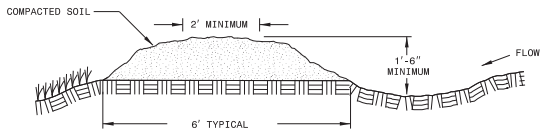


NOTES
USE WIRE A MINIMUM OF 32" IN WIDTH AND WITH A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.
USE FILTER FABRIC A MINIMUM OF 36" IN WIDTH AND FASTEN ADEQUATELY TO THE WIRE AS DIRECTED BY THE ENGINEER.
PROVIDE 5'-0" STEEL POST OF THE SELF-FASTENER ANGLE STEEL TYPE.



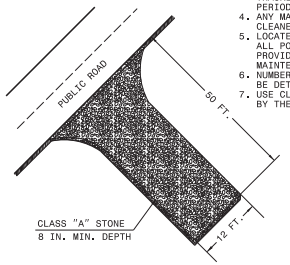
EXTENSION OF FABRIC AND WIRE INTO TRENCH

ENGLISH STANDARD DRAWING FOR TEMPORARY DIVERSION



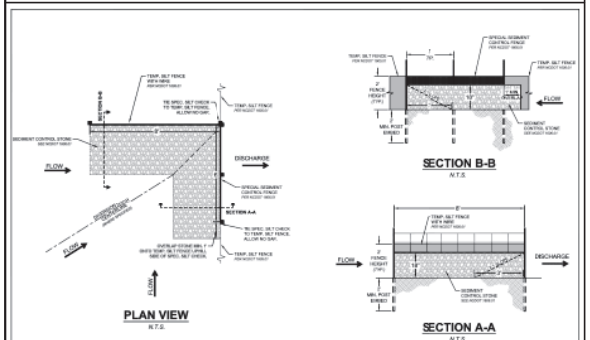
CROSS SECTIONAL VIEW

ENGLISH STANDARD DRAWING FOR GRAVEL CONSTRUCTION ENTRANCE



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.

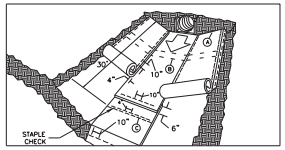
NOTE: PLACE FILTER FABRIC BENEATH STONE



SPECIAL SILT CHECK DETAIL

N T S

MATTING INSTALLATION DETAIL



MATTING IN DITCHES

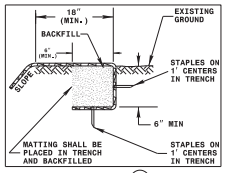
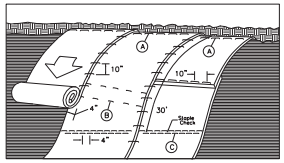


DIAGRAM (A)



MATTING ON SLOPES

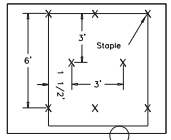


DIAGRAM (B)

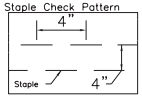
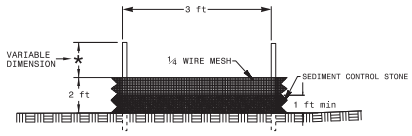


DIAGRAM (C)

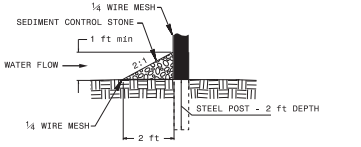
NOTES:
THIS DETAIL APPLIES TO STRAW, EXCELSIOR, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.
STAPLES SHALL BE NO. 11 GAUGE STEEL WIRE FORMED INTO A "U" SHAPE WITH A MINIMUM THROAT WIDTH OF 1 INCH AND NOT LESS THAN 6 INCHES IN LENGTH.

NOT TO SCALE

ENGLISH STANDARD DRAWING FOR SPECIAL SEDIMENT CONTROL FENCE



GENERAL NOTES:
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.
USE HARDWARE CLOTH 24 GAUGE WIRE MESH WITH 1/4 INCH MESH OPENINGS.
INSTALL 5 FT. SELF FASTENER ANGLE STEEL POST 2 FT. DEEP MINIMUM.
SPACE POST A MAXIMUM OF 3 FT.



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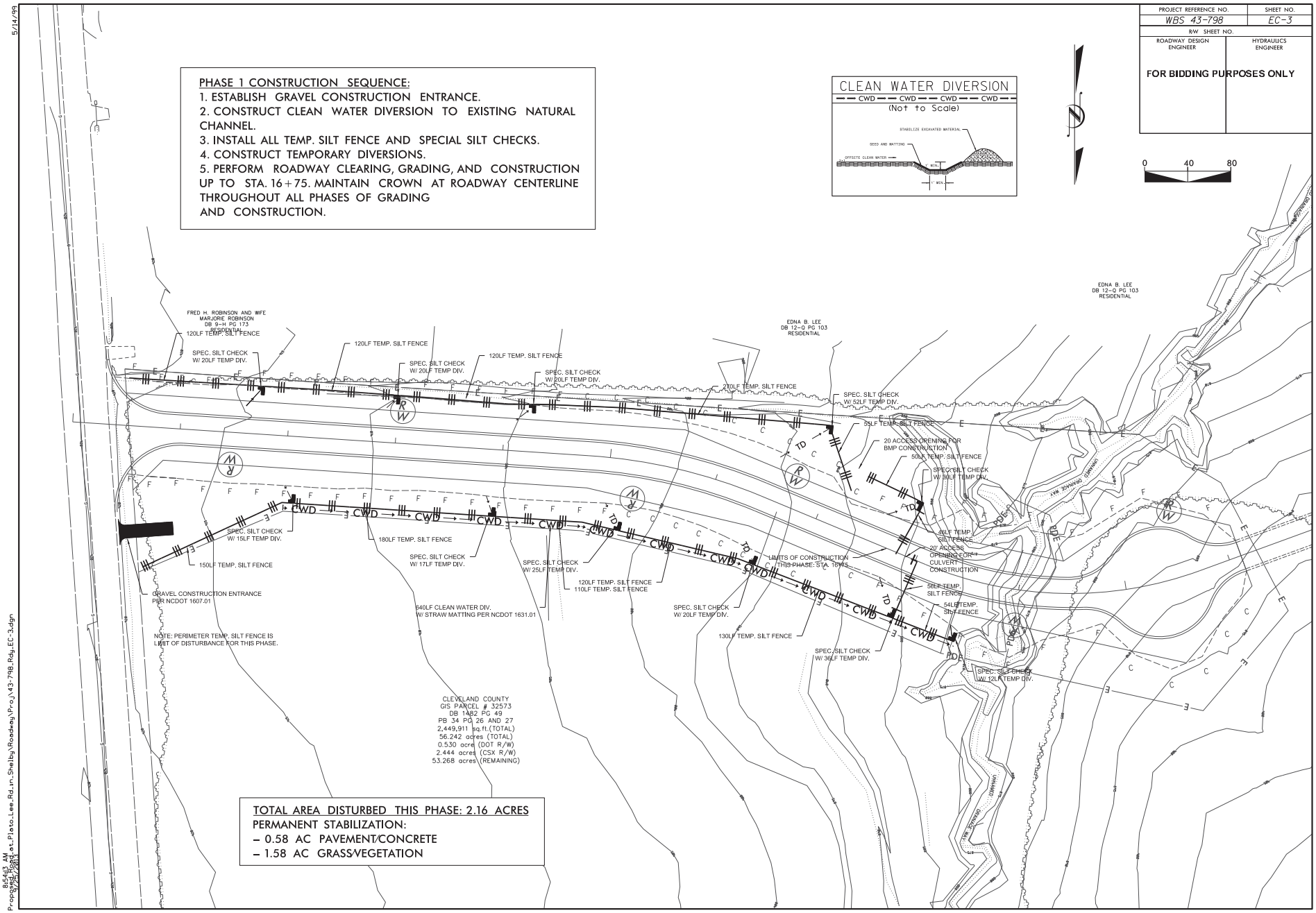
9/9/2013

PROJECT REFERENCE NO.	SHEET NO.
WBS 43-798	EC-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FOR BIDDING PURPOSES ONLY

PHASE 1 CONSTRUCTION SEQUENCE:

1. ESTABLISH GRAVEL CONSTRUCTION ENTRANCE.
2. CONSTRUCT CLEAN WATER DIVERSION TO EXISTING NATURAL CHANNEL.
3. INSTALL ALL TEMP. SILT FENCE AND SPECIAL SILT CHECKS.
4. CONSTRUCT TEMPORARY DIVERSIONS.
5. PERFORM ROADWAY CLEARING, GRADING, AND CONSTRUCTION UP TO STA. 16+75. MAINTAIN CROWN AT ROADWAY CENTERLINE THROUGHOUT ALL PHASES OF GRADING AND CONSTRUCTION.



TOTAL AREA DISTURBED THIS PHASE: 2.16 ACRES

PERMANENT STABILIZATION:

- 0.58 AC PAVEMENT/CONCRETE
- 1.58 AC GRASS/VEGETATION

5/14/99

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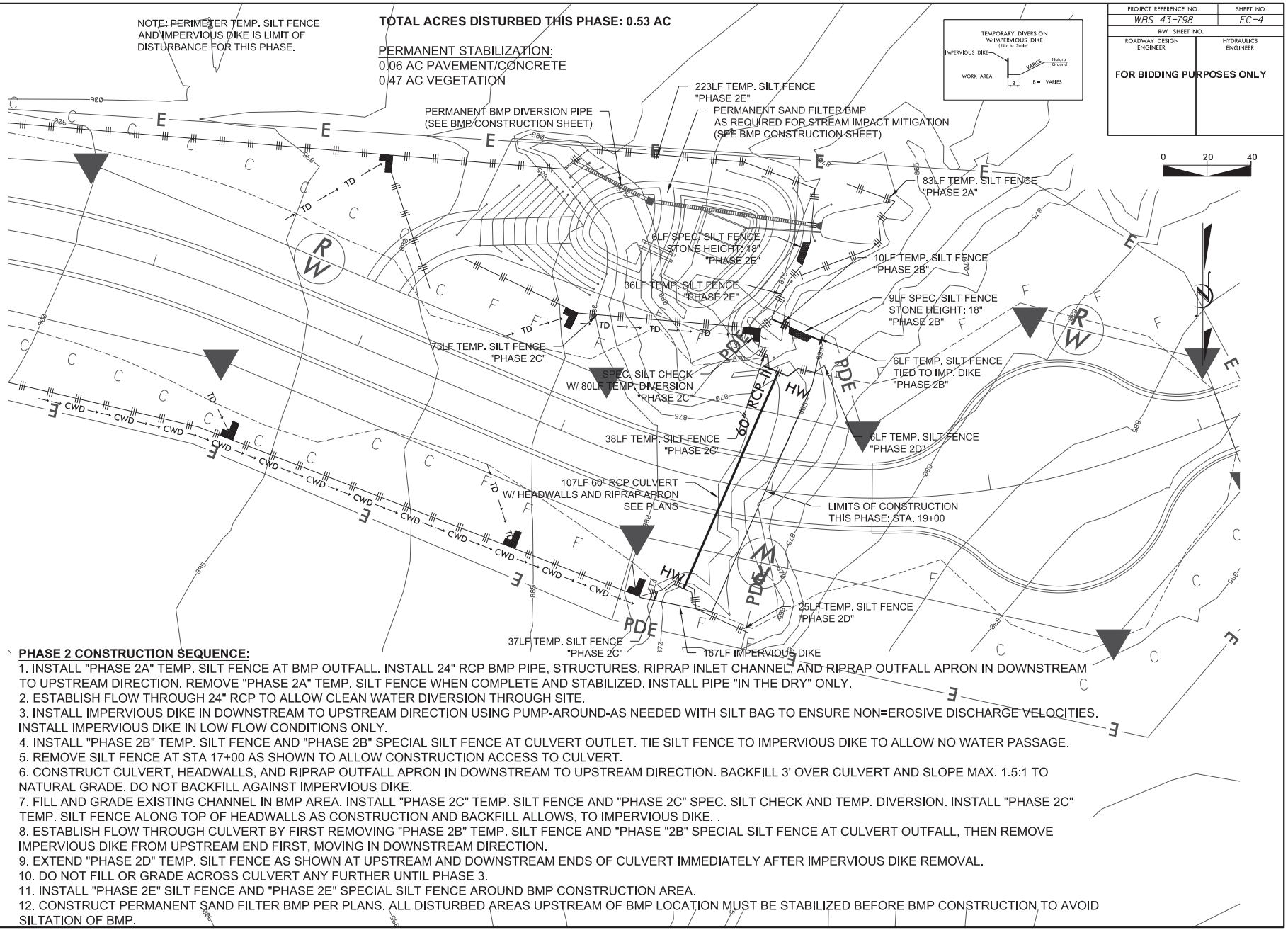
9/25/2013



PHASE 2 CONSTRUCTION SEQUENCE:

1. INSTALL "PHASE 2A" TEMP. SILT FENCE AT BMP OUTFALL. INSTALL 24" RCP BMP PIPE, STRUCTURES, RIPRAP INLET CHANNEL, AND RIPRAP OUTFALL APRON IN DOWNSTREAM TO UPSTREAM DIRECTION. REMOVE "PHASE 2A" TEMP. SILT FENCE WHEN COMPLETE AND STABILIZED. INSTALL PIPE "IN THE DRY" ONLY.
2. ESTABLISH FLOW THROUGH 24" RCP TO ALLOW CLEAN WATER DIVERSION THROUGH SITE.
3. INSTALL IMPERVIOUS DIKE IN DOWNSTREAM TO UPSTREAM DIRECTION USING PUMP-AROUND-AS NEEDED WITH SILT BAG TO ENSURE NON=EROSIVE DISCHARGE VELOCITIES. INSTALL IMPERVIOUS DIKE IN LOW FLOW CONDITIONS ONLY.
4. INSTALL "PHASE 2B" TEMP. SILT FENCE AND "PHASE 2B" SPECIAL SILT FENCE AT CULVERT OUTLET. TIE SILT FENCE TO IMPERVIOUS DIKE TO ALLOW NO WATER PASSAGE.
5. REMOVE SILT FENCE AT STA 17+00 AS SHOWN TO ALLOW CONSTRUCTION ACCESS TO CULVERT.
6. CONSTRUCT CULVERT, HEADWALLS, AND RIPRAP OUTFALL APRON IN DOWNSTREAM TO UPSTREAM DIRECTION. BACKFILL 3' OVER CULVERT AND SLOPE MAX. 1.5:1 TO NATURAL GRADE. DO NOT BACKFILL AGAINST IMPERVIOUS DIKE.
7. FILL AND GRADE EXISTING CHANNEL IN BMP AREA. INSTALL "PHASE 2C" TEMP. SILT FENCE AND "PHASE 2C" SPEC. SILT CHECK AND TEMP. DIVERSION. INSTALL "PHASE 2C" TEMP. SILT FENCE ALONG TOP OF HEADWALLS AS CONSTRUCTION AND BACKFILL ALLOWS, TO IMPERVIOUS DIKE. .
8. ESTABLISH FLOW THROUGH CULVERT BY FIRST REMOVING "PHASE 2B" TEMP. SILT FENCE AND "PHASE "2B" SPECIAL SILT FENCE AT CULVERT OUTFALL, THEN REMOVE IMPERVIOUS DIKE FROM UPSTREAM END FIRST, MOVING IN DOWNSTREAM DIRECTION.
9. EXTEND "PHASE 2D" TEMP. SILT FENCE AS SHOWN AT UPSTREAM AND DOWNSTREAM ENDS OF CULVERT IMMEDIATELY AFTER IMPERVIOUS DIKE REMOVAL.
10. DO NOT FILL OR GRADE ACROSS CULVERT ANY FURTHER UNTIL PHASE 3.
11. INSTALL "PHASE 2E" SILT FENCE AND "PHASE 2E" SPECIAL SILT FENCE AROUND BMP CONSTRUCTION AREA.
12. CONSTRUCT PERMANENT SAND FILTER BMP PER PLANS. ALL DISTURBED AREAS UPSTREAM OF BMP LOCATION MUST BE STABILIZED BEFORE BMP CONSTRUCTION TO AVOID SILTATION OF BMP.

8/17/99
REVISIONS
9:21:24 AM
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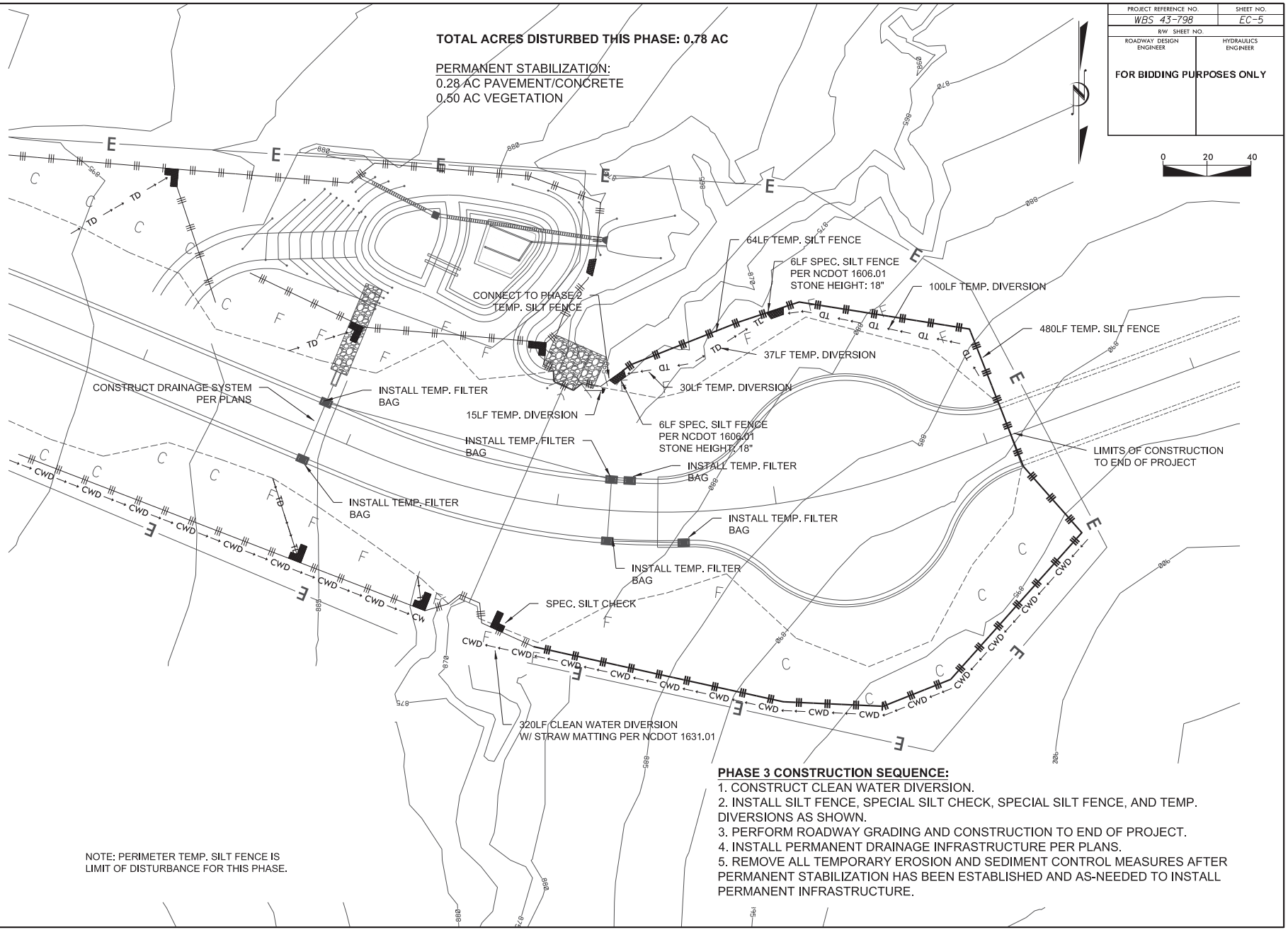
PROJECT REFERENCE NO.	SHEET NO.
WBS 43-798	EC-5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FOR BIDDING PURPOSES ONLY



PHASE 3 CONSTRUCTION SEQUENCE:

1. CONSTRUCT CLEAN WATER DIVERSION.
2. INSTALL SILT FENCE, SPECIAL SILT CHECK, SPECIAL SILT FENCE, AND TEMP. DIVERSIONS AS SHOWN.
3. PERFORM ROADWAY GRADING AND CONSTRUCTION TO END OF PROJECT.
4. INSTALL PERMANENT DRAINAGE INFRASTRUCTURE PER PLANS.
5. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AFTER PERMANENT STABILIZATION HAS BEEN ESTABLISHED AND AS-NEEDED TO INSTALL PERMANENT INFRASTRUCTURE.

NOTE: PERIMETER TEMP. SILT FENCE IS LIMIT OF DISTURBANCE FOR THIS PHASE.

REVISIONS

8/17/99

11:44:00 AM
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9/19/2013

TRANSPORTATION MANAGEMENT PLAN

CLEVELAND COUNTY

FOR BIDDING PURPOSES ONLY

SHEET NO.
TMP-1

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.06	WARNING SIGNS FOR BLASTING ZONES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.03	PAVEMENT MARKINGS - EXITS AND ENTRANCE RAMPS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1205.11	PAVEMENT MARKINGS - RAILROAD CROSSINGS
1205.12	PAVEMENT MARKINGS - BRIDGES
1205.13	PAVEMENT MARKINGS - LANE REDUCTIONS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

GENERAL NOTES / LOCAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

PAVEMENT EDGE DROP OFF REQUIREMENTS

E) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

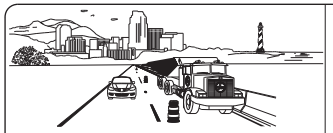
F) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

G) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

H) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

WBS PROJECT: 43-798



WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

DRMP
ENGINEERS · PLANNERS · SCIENTISTS
DRMP, INC.
5950 FAIRVIEW ROAD, SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332-2289
NC LICENSE NO. C-2213

PLANS PREPARED FOR CLEVELAND COUNTY

2012 STANDARD SPECIFICATIONS

LETTING DATE: OCTOBER 18, 2013

JAMES E. BECK, P.E.
PROJECT ENGINEER
MIKE HAGE, E.I.
PROJECT DESIGN ENGINEER
CLEVELAND COUNTY CONTACT:
DAVID DEAR

APPROVED: _____
DATE: _____

SEAL

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9/18/2013

COMPUTED BY: MDH DATE: 08-28-13
CHECKED BY: DATE:

PROJECT REFERENCE NO.	SHEET NO.
WBS 43-798	X-0

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FOR BIDDING PURPOSES ONLY

CROSS SECTION IN SUMMARY

LOCATION -L-	UNCLASSIFIED EXCAVATION	EMBANKMENT
10+50	0	0
10+75	9	91
11+00	6	96
11+25	3	105
11+50	2	121
11+75	2	122
12+00	4	109
12+25	4	106
12+50	2	112
12+75	5	99
13+00	6	90
13+25	13	83
13+50	31	64
13+75	37	56
14+00	24	68
14+25	14	82
14+50	21	76
14+75	34	61
15+00	47	48
15+25	58	40
15+50	62	39
15+75	70	39
16+00	107	38
16+25	151	38
16+50	187	38
16+75	212	38
17+00	183	38
17+25	122	38
17+50	82	40
17+75	47	48
18+00	11	90
18+25	0	282
18+50	0	520
18+75	0	657
19+00	0	1163
19+25	0	1176
19+50	0	574
19+75	0	336
20+00	85	270
20+25	284	287
20+50	391	302
20+75	269	247
21+00	124	133

EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT.

DRMP
DRMP, INC.
5950 FAIRVIEW ROAD, SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332-2289
NC LICENSE NO. C-283

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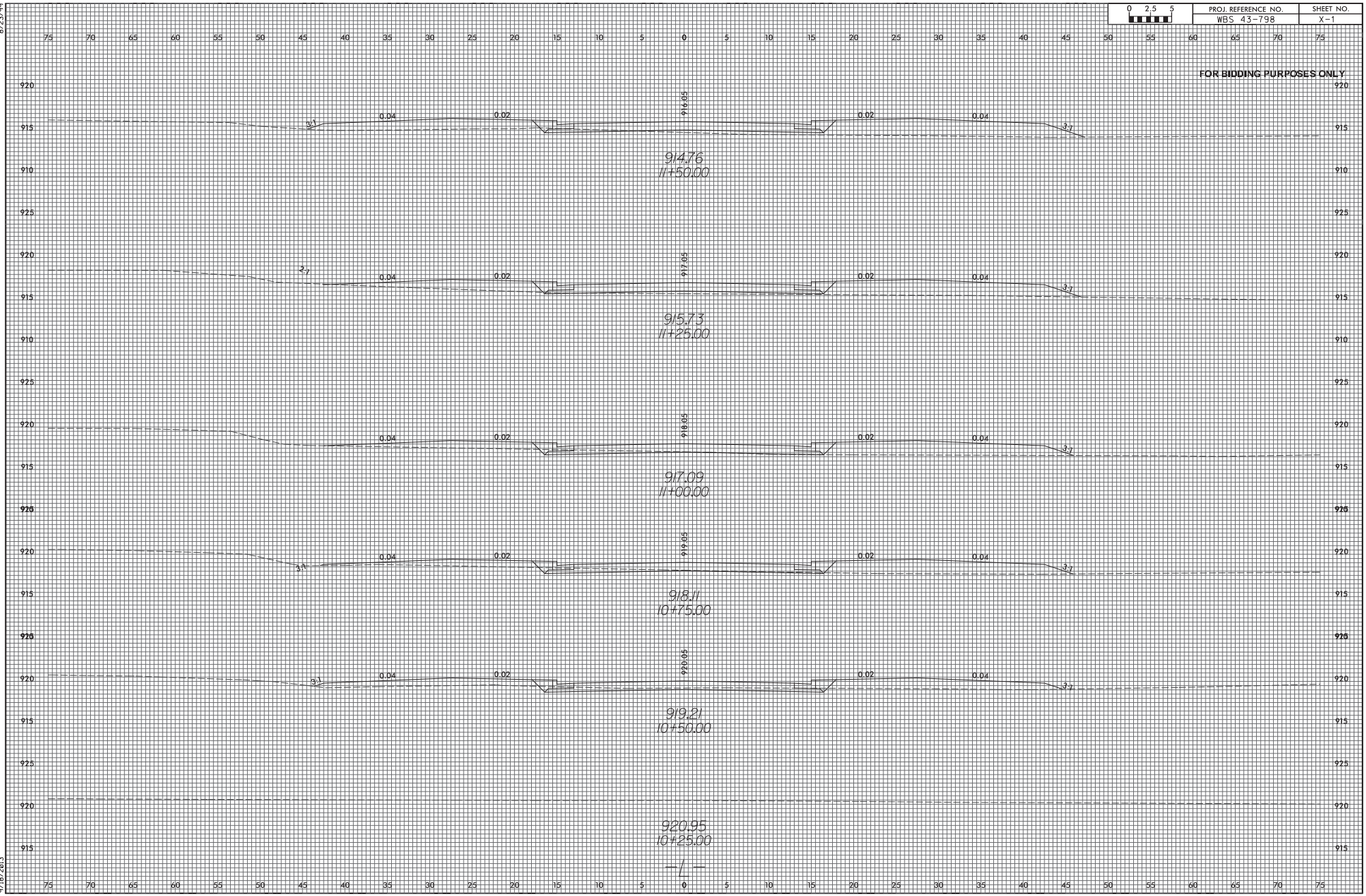

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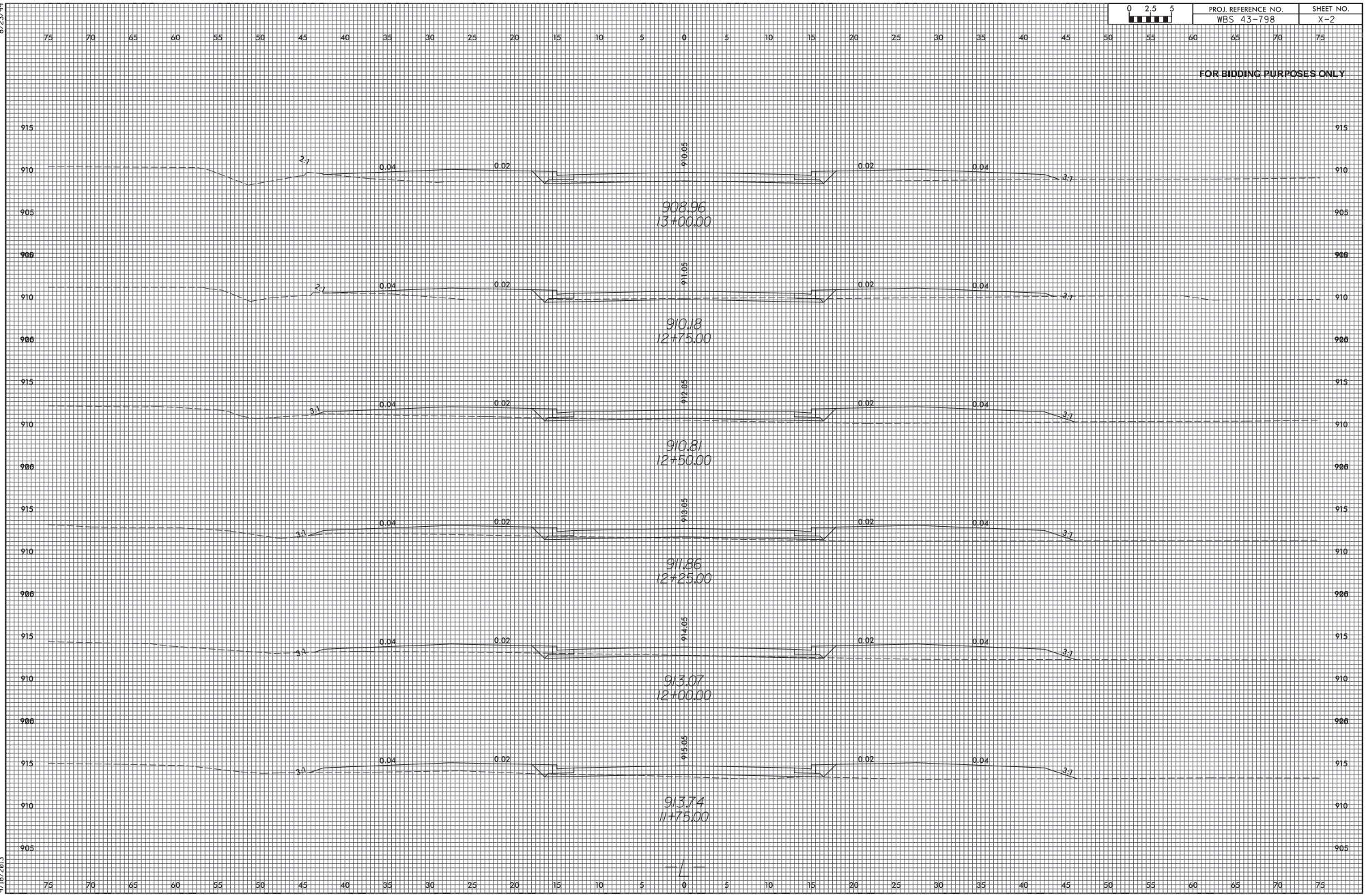

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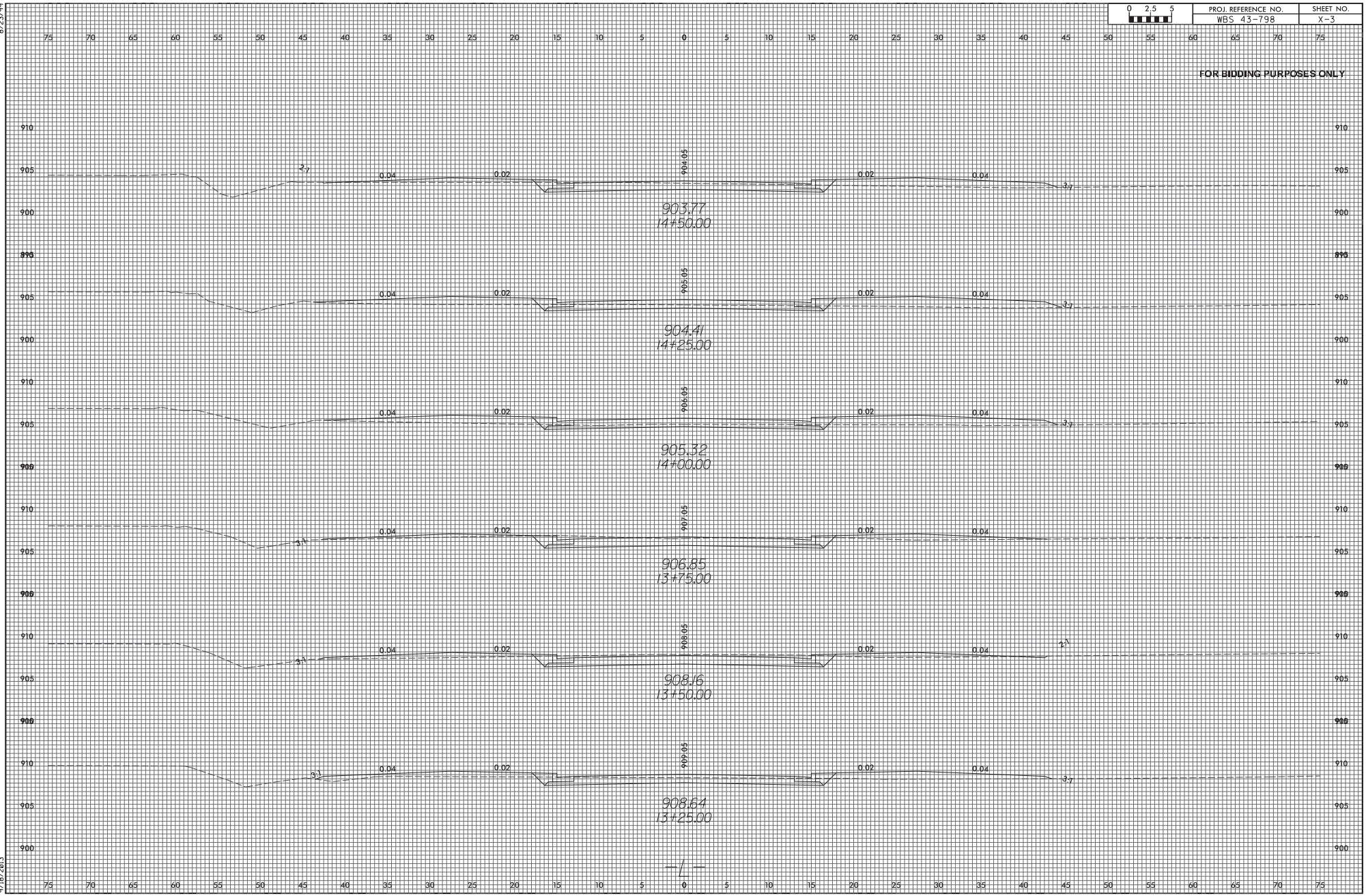

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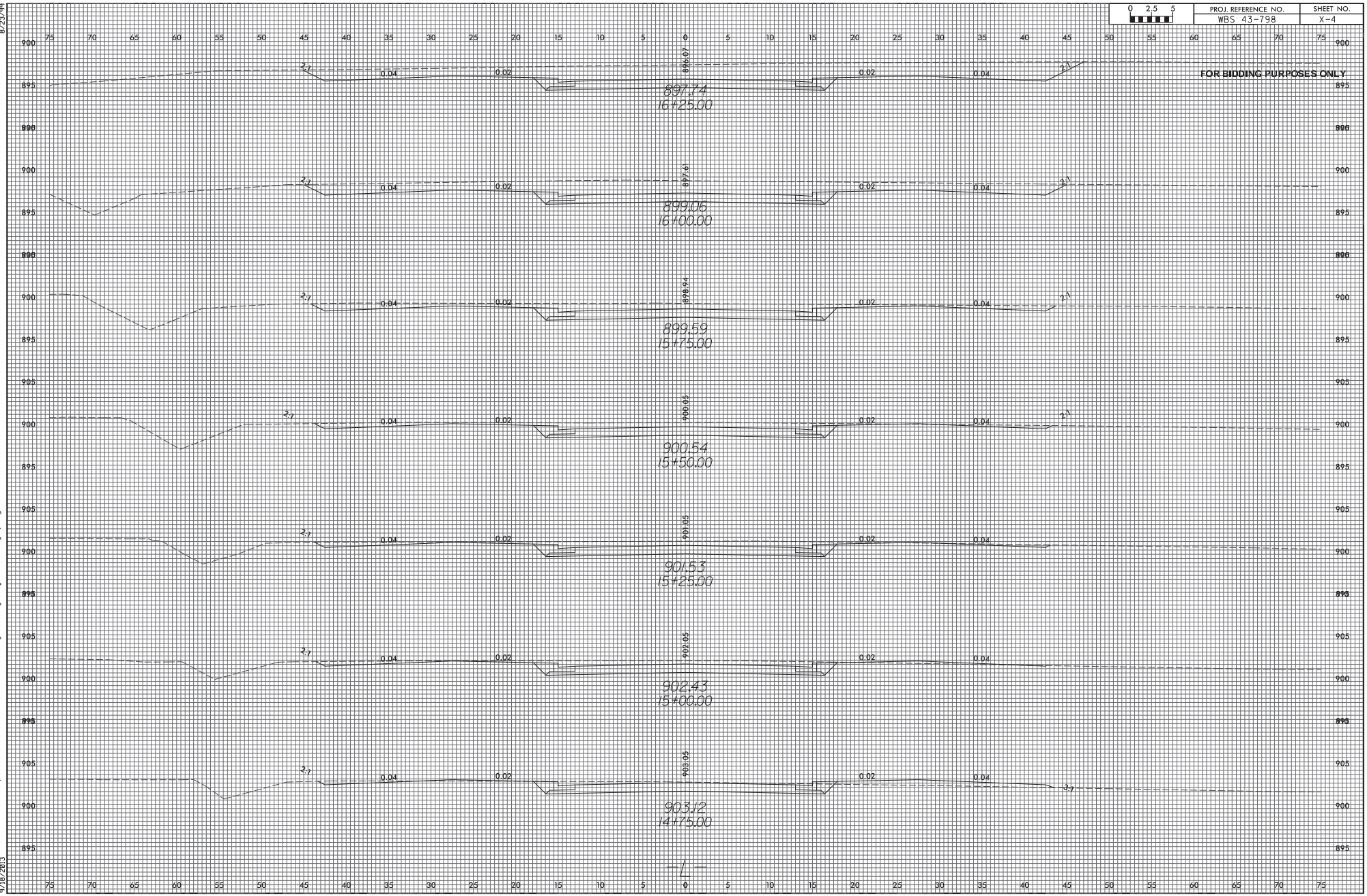

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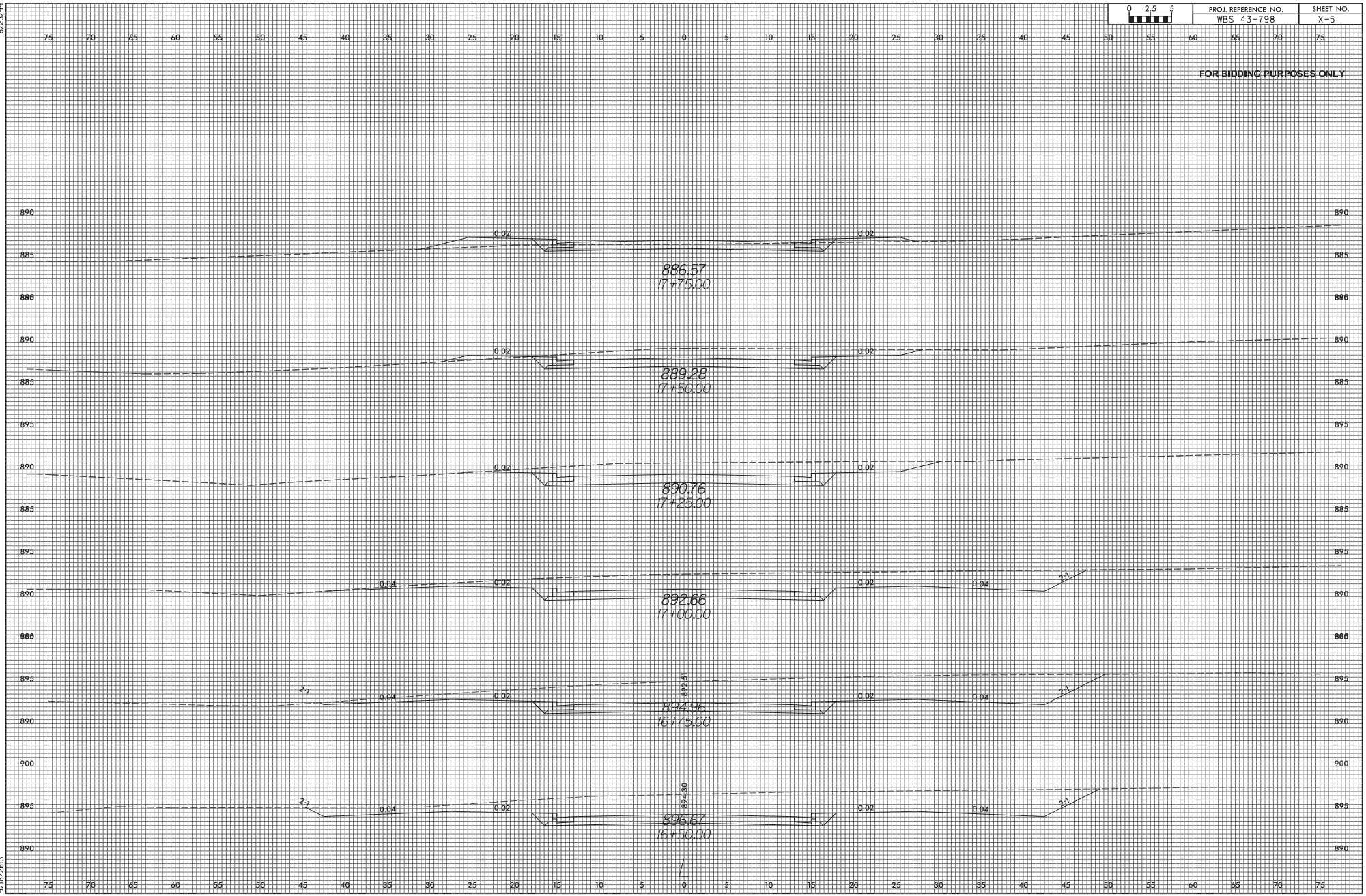
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PROJ. REFERENCE NO.
WBS 43-798
SHEET NO.
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FOR BIDDING PURPOSES ONLY
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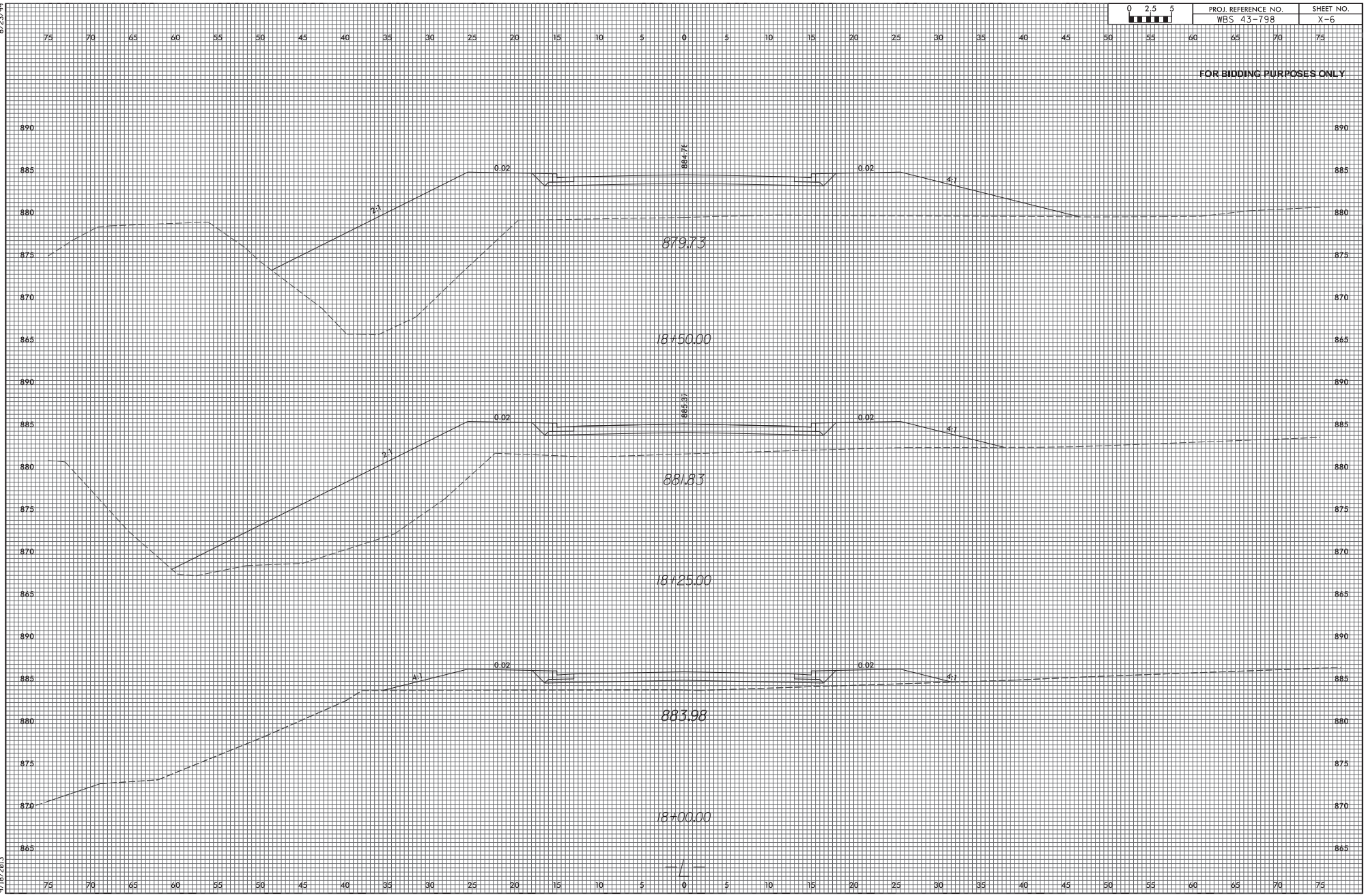

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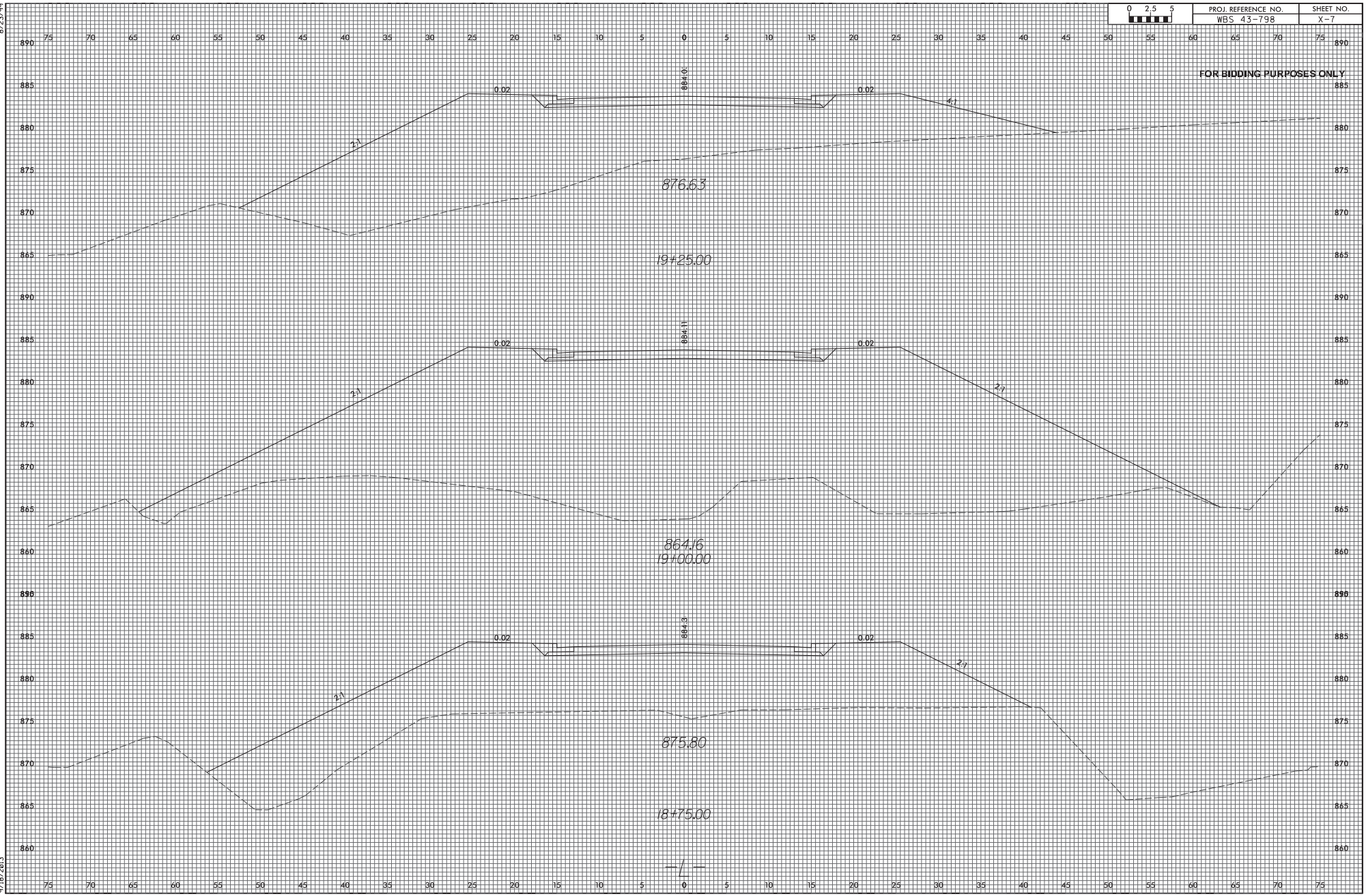

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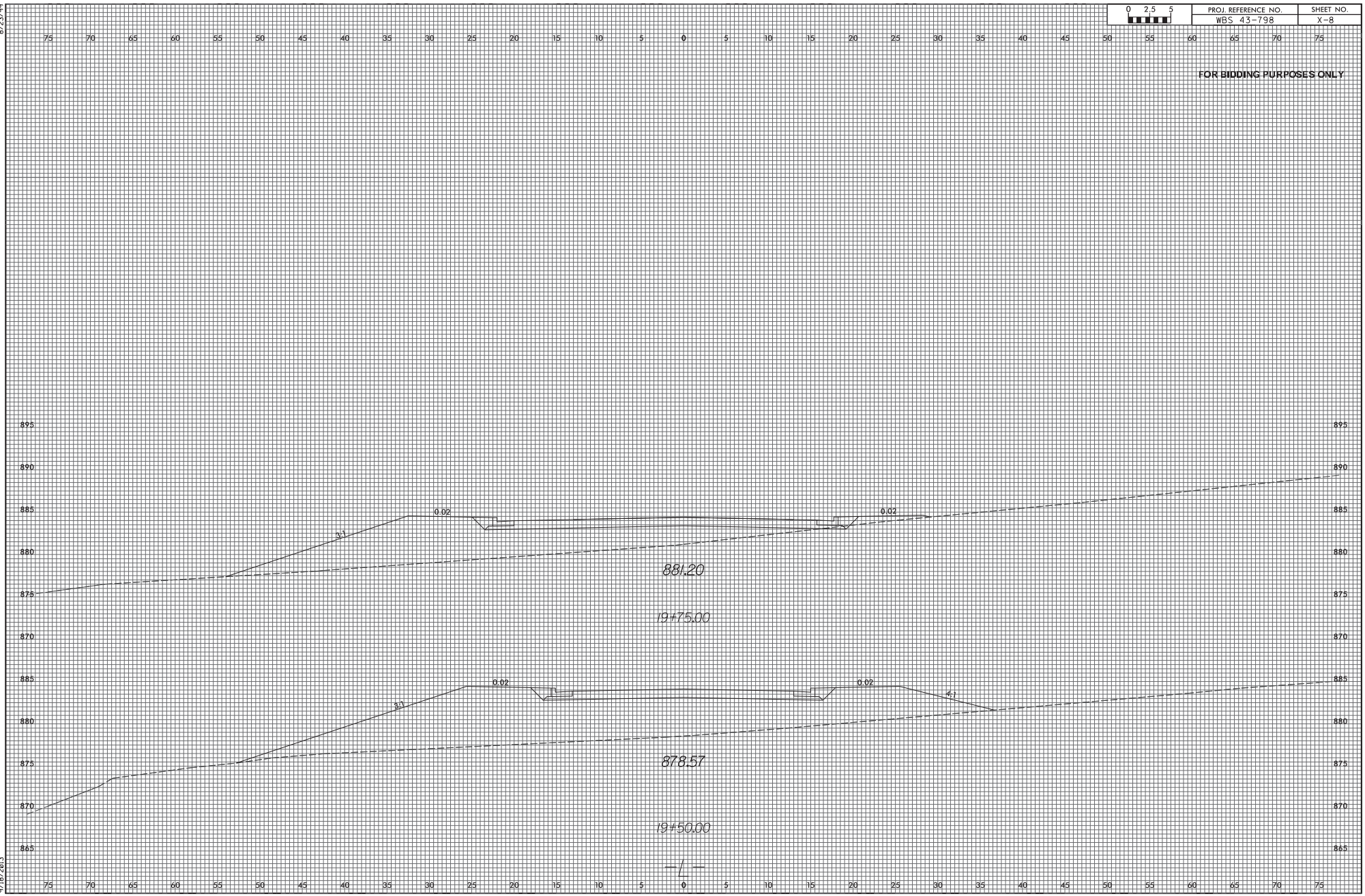

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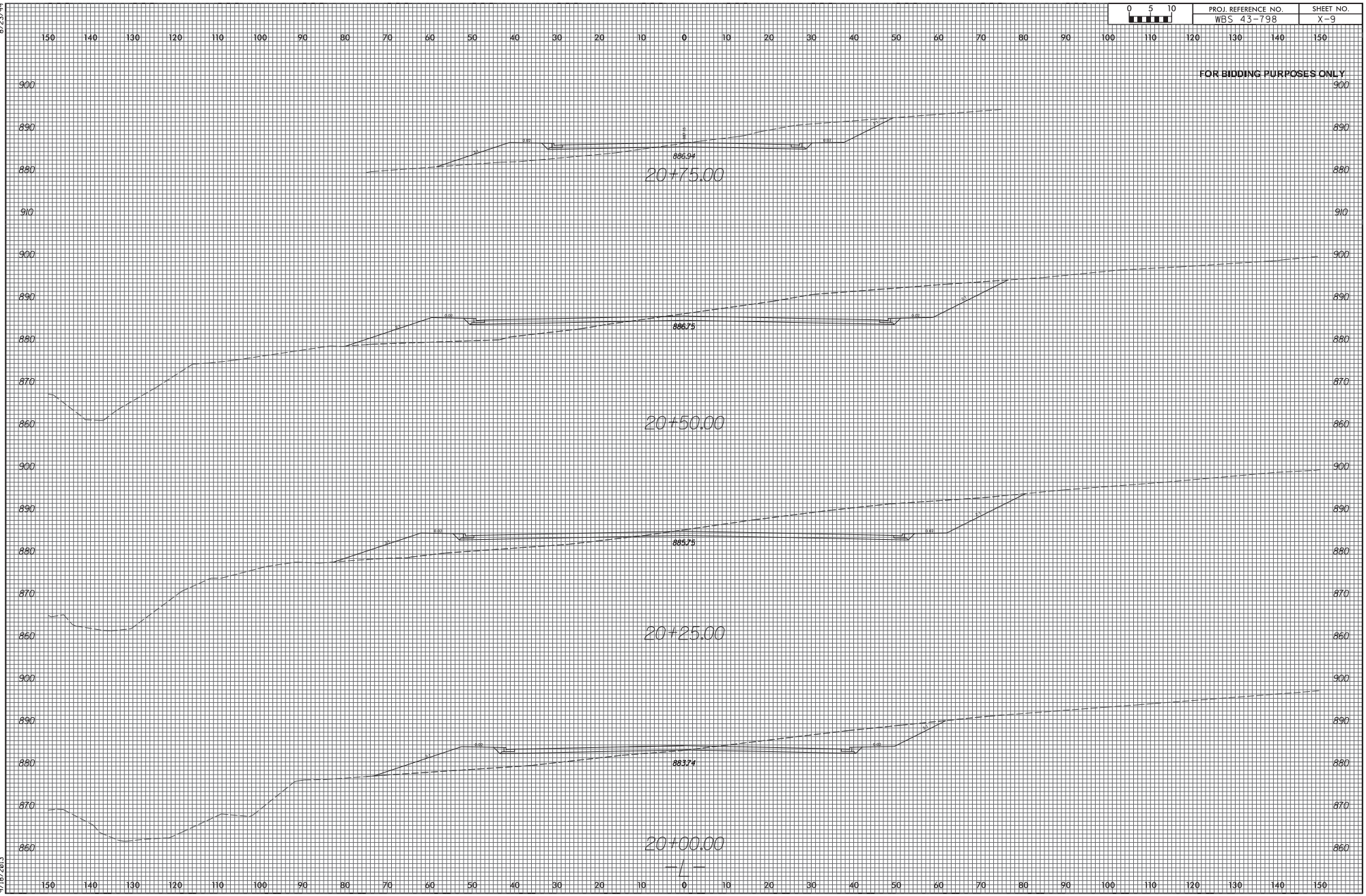

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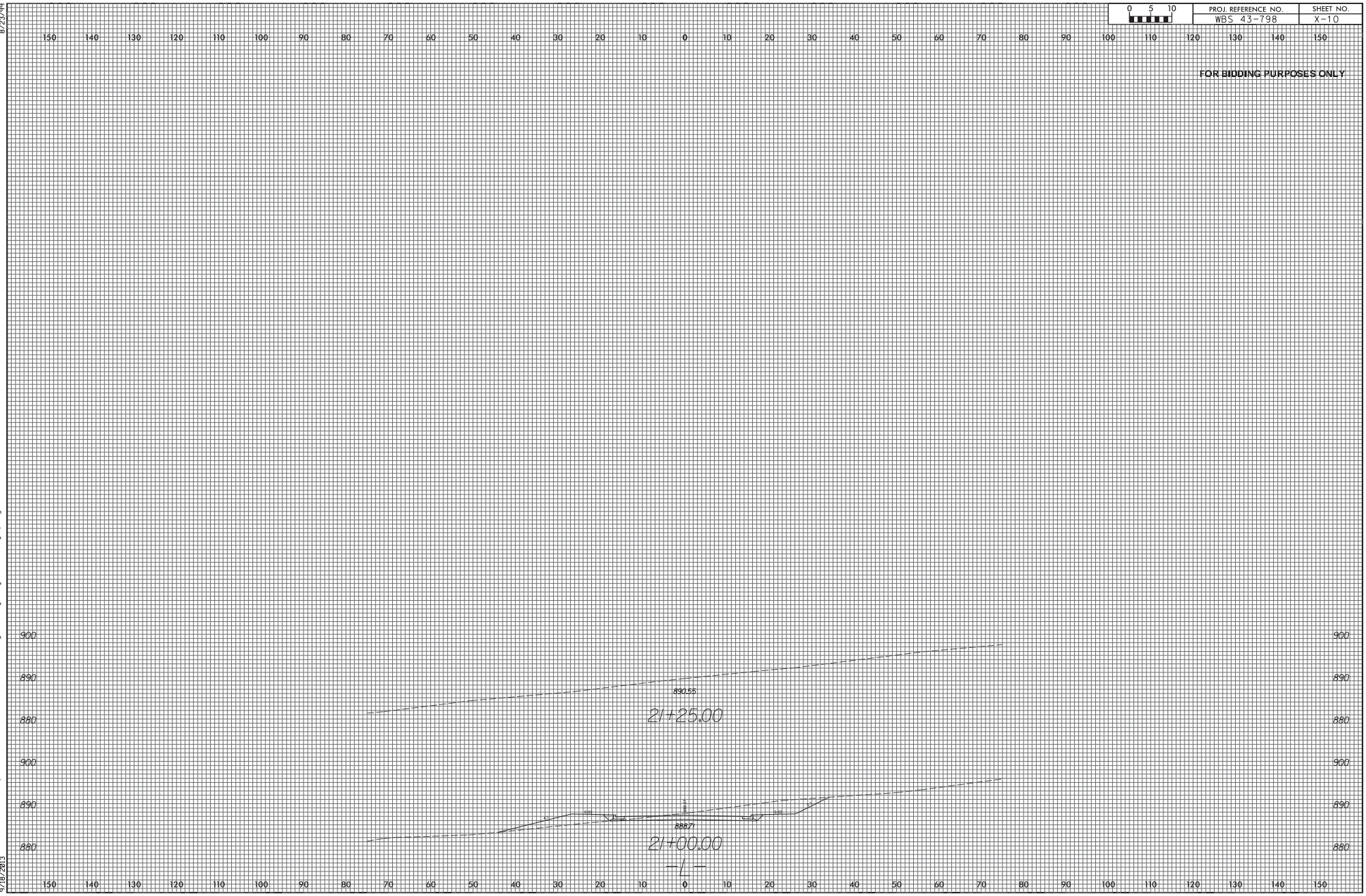
WBS 43-798	X-10



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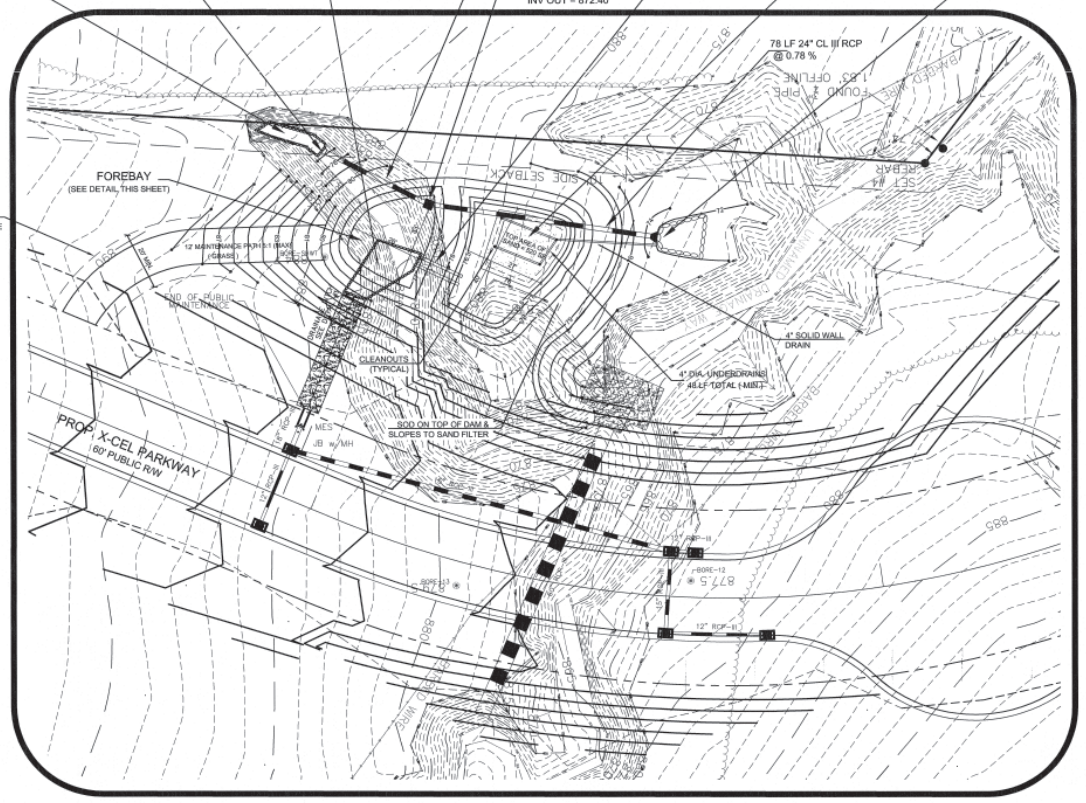
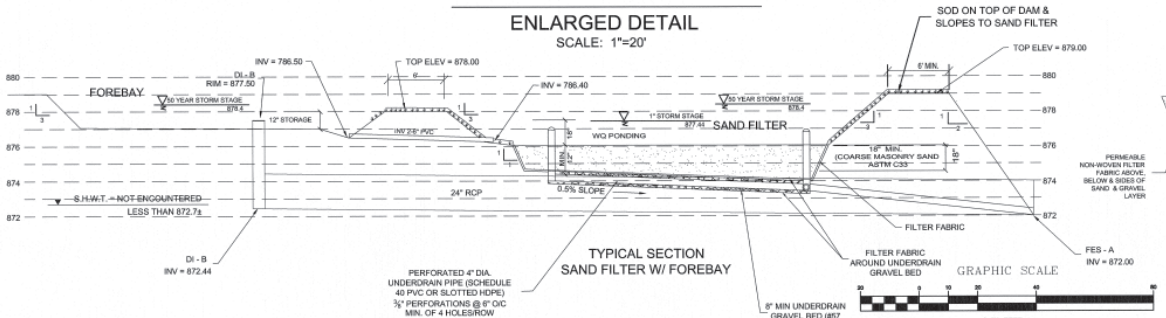


SAND FILTER #1

ENLARGED DETAIL

SCALE: 1"=20'



TYPICAL SECTION
SAND FILTER W/ FOREBAY

PERFORATED 4" DIA. UNDERDRAIN PIPE (SCHEDULE 40 PVC OR SLOTTED HDPE)
⅜" PERFORATIONS @ 6" O/C MIN. OF 4 HOLES/ROW

FILTER FABRIC AROUND UNDERDRAIN GRAVEL BED

8" MIN UNDERDRAIN GRAVEL BED (#57 WASHED STONE)

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

NOTE:

THE STORMWATER DETENTION BASINS / WATER QUALITY PONDS,AND STORM DRAINAGE SYSTEM SHALL BE BUILT TO THE GRADES AND INVERTS SHOWN ON THE PLAN. THE CONTRACTOR SHALL PROVIDE & SUBMIT ASBUILTS OF STORM DRAINAGE & STORMWATER DETENTION POND (SEALED BY NCPLS) TO THE ENGINEER PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY BY THE CITY. THE ENGINEER SHALL BE COMPENSATED FOR ANY ANALYSIS NECESSARY DUE TO CONSTRUCTION NOT IN ACCORDANCE WITH THESE PLANS.

CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO INSPECTOR FOR ALL NON-STANDARD DRAINAGE STRUCTURES PRIOR TO CONSTRUCTION.

ALL SLOPES DRAINING TO SAND FILTER AREAS SHALL BE STABILIZED PER THE NORTH CAROLINA STATE EROSION CONTROL SEDIMENT CONTROL PLANNING & DESIGN MANUAL BEFORE MEDIA IS PLACED.

DRAINAGE AREA MUST BE STABILIZED BEFORE FILTRATION CONTROLS & FILTER MEDIA ARE INSTALLED. ANY SILT THAT ENTERS THE FACILITY SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF OFFSITE.

RIP-RAP CHART

STRUCTURE No.	PEAK Q-FLOW (CFS)	DIA. OF PIPE (IN.)	(L) APRON LEN. (FT.)	(W) APRON WID (FT.)	STONE CLASS	MIDRANGE GRADATION (IN.)	THICKNESS (IN.)	STD. NO
FES-A	31.4	24	8	12	B	9	18	876.01
HW-C	4.9	18	22	4	B	9	18	876.02

SEDIMENT BASIN CONVERSION NOTES:

ALL AREAS ABOVE THE SAND FILTER SHALL BE PREPARED & SEEDED TO PERMANENT GROUND COVER SPECIFICATIONS.

THE PERMANENTSTORMWATER MANAGEMENT FACILITY SHALL NOT BE CONSTRUCTED UNTIL THE CONTRIBUTING DRAINAGE IS STABILIZED. ANY SEDIMENT THAT ACCUMULATES WITHIN THE POND SHALL BE REMOVED AND THE FINAL GRADE RESTORED TO THE DESIGN CONTOURS SHOWN.

THE PROPOSED STORMWATER MANAGEMENT PONDS ARE TO BE CONVERTED FROM SEDIMENT AND EROSION CONTROL BASINS. THIS CONVERSION SHOULD BE COMPLETED AFTER THE ENTIRE DRAIN AREA IS STABILIZED AND APPROVAL GIVEN FOR THE LOCAL & STATE AUTHORITY.

THE CONVERSION TO A PERMANENT STORMWATER BMP SHALL BE ACCOMPLISHED BY INSTALLING THE PERM. OUTLET STRUCTURE AND REGRADING THE BASIN CONTOURS TO THOSE SHOWN ON THE PLAN.

ANY SEDIMENT LADEN WATER WITHIN THE SEDIMENT BASIN SHALL BE DRAWN DOWN BY USE OF PUMPS AND DISCHARGES THROUGH A 'BLADDER' TYPE SYSTEM OR DISPOSED OF OFFSITE IN AN APPROVED SYSTEM.

ALL SEDIMENT REMOVED SHALL BE PLACED IN A DESIGNATED SPOIL PILE AND ADEQUATELY PROTECTED WITH EROSION CONTROL MEASURES AND PERMANENTLY STABILIZED WITH PERMANENT SEEDING.

FOR BIDDING PURPOSES ONLY

SAND FILTER DESIGN SUMMARY

DRAINAGE AREA:	1.8 AC TOTAL
W.Q. PONDING:	1.5' MAX
SAND DEPTH:	1.5'
TIME TO DRAIN:	40 HOURS
WATER QUALITY VOL..	3,323 CF
SEDIMENT CHAMBER:	2,200 SF (ELEV 877)
SAND FILTER MEDIA	400 SF (ELEV 876.5)

SAND FILTER OPERATION & MAINTENANCE PLAN

SAND FILTER MAINTENANCE IS THE RESPONSIBILITY OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

IMPORTANT MAINTENANCE PROCEDURES:

THE DRAINAGE AREA WILL BE CAREFULLY MANAGED TO REDUCE SEDIMENT LOAD TO THE SAND FILTER.

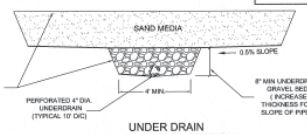
THE SEDIMENTATION CHAMBER OR FOREBAY WILL BE CLEANED OUT WHENEVER SEDIMENT DEPTH EXCEEDS SIX INCHES
ONCE A YEAR, SAND MEDIA WILL BE SKIMMED.
THE SAND FILTER MEDIA WILL BE REPLACED WHENEVER IT FAILS TO FUNCTION PROPERLY AFTER MAINTENANCE.

THE SAND FILTER WILL BE INSPECTED QUARTERLY AND WITHIN 24 HOURS AFTER EVERY STORM EVENT GREATER THAN 1.0 INCHES. RECORDS OF OPERATION AND MAINTENANCE W2LL BE KEPT IN A KNOWN SET LOCATION AND WILL BE AVAILABLE UPON REQUEST.

INSPECTION ACTIVITIES SHALL BE PERFORMED AS FOLLOWS: ANY PROBLEMS THAT ARE FOUND SHALL BE REPAIRED IMMEDIATLEY.

BMP ELEMENT:	POTENTIAL PROBLEM:	HOW I WILL REMEDIATE THE PROBLEM
ENTIRE BMP	TRASH DEBRIS PRESENT.	REMOVE THE TRASH/DEBRIS
ADJACENT PAVEMENT (IF APPLICABLE)	SEDIMENT IS PRESENT ON THE PAVEMENT SURFACE.	REGRADE THE SOIL IF NECESSARY TO REMOVE THE GULLY, AND THEN PLANT A GROUND COVER AND WATER UNTIL IT IS ESTABLISHED. PROVIDE LIME AND A ONE-TIME FERTILIZER APPLICATION.
	VEGETATION IS TOO SHORT OR TOO LONG.	MAINTAIN VEGETATION AT AN APPROPRIATE HEIGHT.
FLOW DIVERSION STRUCTURE	THE STRUCTURE IS CLOGGED.	UNCLOG THE CONVEYANCE AND DISPOSE OF ANY SEDIMENT OFFSITE.
	THE STRUCTURE IS DAMAGED.	MAKE ANY NECESSARY REPAIRS OR REPLACE IF DAMAGE IS TOO LARGE FOR REPAIR.
FOREBAY OR PRETREATMENT AREA	SEDIMENT HAS ACCUMULATED TO A DEPTH OF GREATER THAN SIX INCHES.	SEARCH FOR THE SOURCE OF THE SEDIMENT AND REMEDY THE PROBLEM IF POSSIBLE. REMOVE THE SEDIMENT AND STABILIZE OR DISPOSE OF IT IN A LOCATION WHERE IT WILL NOT CAUSE IMPACTS TO STREAMS OR THE BMP.
	EROSION HAS OCCURRED.	PROVIDE ADDITIONAL EROSION PROTECTION SUCH AS REINFORCED TURF MATTING OR RIPRAP IF NEEDED TO PREVENT FUTURE EROSION PROBLEMS.
	WEEDS ARE PRESENT.	REMOVE THE WEEDS, PREFERABLY BY HAND. IF A PESTICIDE IS USED, WIPE IT ON PLANTS RATHER THAN SPRAYING.
FILTER BED AND UNDERDRAIN COLLECTION SYSTEM	WATER IS PONDING ON THE SURFACE FOR MORE THAN 24 HOURS AFTER A STORM.	CHECK TO SEE IF THE COLLECTOR SYSTEM IS CLOGGED AND FLUSH IF NECESSARY. IF WATER STILL PONDS, REMOVE THE TOP FEW INCHES OF FILTER BED MEDIA AND REPLACE. IF WATER STILL PONDS, THEN CONSULT AN EXPERT.
OUTLET DEVICE	CLOGGING HAS OCCURRED.	CLEAN OUT THE OUTLET DEVICE. DISPOSE OF THE SEDIMENT OFFSITE.
	THE OUTLET DEVICE IS DAMAGED.	REPAIR OR REPLACE THE OUTLET DEVICE
RECEIVING WATER	EROSION OF OTHER SIGNS OF DAMAGE HAVE OCCURRED AT THE OUTLET.	CONTACT THE NC DIVISION OF WATER QUALITY 401 OVERSIGHT UNIT AT 919-733-1786.

Call Before You Dig!
800-632-4949
www.ncocc.org



UNDER DRAIN
TYPICAL CROSS SECTION
(NOT TO SCALE)

BURTON ENGINEERING ASSOCIATES
CIVIL ENGINEERS
LAND PLANNERS

5950 FAIRVIEW RD.
SUITE 100
CHARLOTTE, NC 28210
(704) 553-8881
(704) 553-8860 FAX
FIRM LICENSE #C-1157

No.	Date	By	Revision
3.	9/28/13	GDM	NCDOT COMMENTS
2.	9/20/13	GDM	NCDENR DWQ SUBMITTAL
1.	9/3/13	GDM	COORDINATION

520-010 Job No. | File No.

Scales: PLAN 1" = 20' | PROFILE Horiz. / Vert.

As Built | Date

FORESITE Surveyed by | BEA Designed by | GDM Drawn by | CTB Project Engr | Approved By | 06/14/13 Date | Sheet SWT of 1

PROJECT X-CEL
FOR
CITY OF SHELBY

STORMWATER BMP PLAN

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