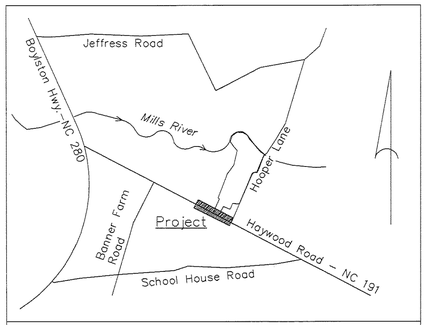
3/5/13

CONTRACT: HAYWOOD ROAD TURN LANE TIP PROJECT: NA

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.		1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HENDERSON COUNTY

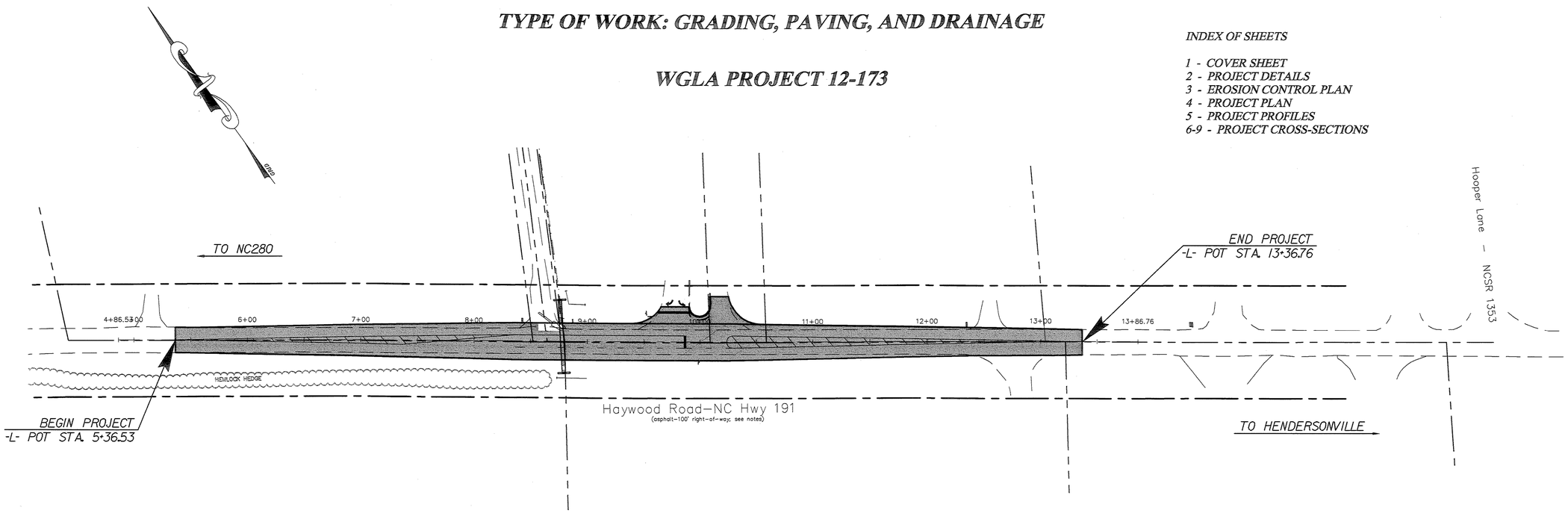
LOCATION: NC HWY 191, TOWN OF MILLS RIVER

TYPE OF WORK: GRADING, PAVING, AND DRAINAGE

WGLA PROJECT 12-173

INDEX OF SHEETS

1 - COVER SHEET
2 - PROJECT DETAILS
3 - EROSION CONTROL PLAN
4 - PROJECT PLAN
5 - PROJECT PROFILES
6-9 - PROJECT CROSS-SECTIONS



REVISIONS

6/12/13 ADDED GUARDRAIL

NORTH CAROLINA PROFESSIONAL SEAL 023091 ENGINEER THOMAS JONES

7/11/13

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

5 2.5 0 5 10
PROFILE (VERTICAL)

DESIGN DATA

POSTED SPEED LIMIT = 45 MPH
DESIGN SPEED = 50 MPH

10,000 VPD

PROJECT LENGTH

LENGTH OF ROADWAY	=0.018 MI
LENGTH OF STRUCTURES	=0.000 MI
TOTAL LENGTH	=0.018 MI

Prepared for Division of Highways in the Office of:
William G. Lapsley & Associates, P.A.
214 N King Street Hendersonville, NC 28792

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: N/A

LETTING DATE:

PROJECT ENGINEER

PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

P.E.
STATE HIGHWAY DESIGN ENGINEER

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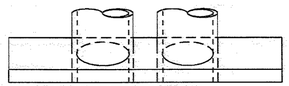
PROJECT REFERENCE NO.	SHEET NO.
12173	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

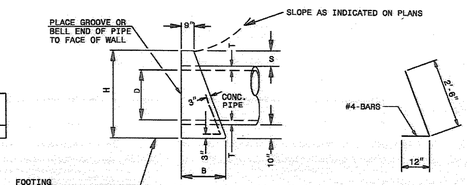
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR
CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS
15" THRU 48" PIPE - 90° SKEW

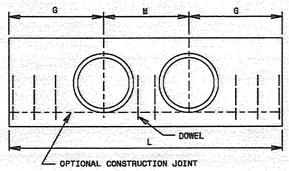


PLAN



END ELEVATION

DOWEL
BAR-"X"



ELEVATION

DOWELS IN ENDWALL WITH REINFORCED CONCRETE PIPE																			
LOC.	PIPE	SINGLE PIPE								DOUBLE PIPE									
	DIA.	15"	18"	24"	30"	36"	42"		48"		15"	18"	24"	30"	36"	42"		48"	
	BARS	"X"	"X"	"X"	"X"	"X"	"X"	Y*	"X"	Y*	"X"	"X"	"X"	"X"	"X"	"X"	Y*	"X"	Y*
G	QTY.	2	2	3	3	4	4	2	5	2	2	2	3	3	4	4	2	5	2
M	QTY.	-	-	-	-	-	-		-		1	1	2	2	2	2		3	
G	QTY.	2	2	3	3	4	4		5		2	2	3	3	4	4		5	
TOTAL LBS.		9	9	14	14	19	55		65		12	12	19	19	23	77		92	

DIMENSIONS AND CONCRETE QUANTITIES										
USING CONCRETE PIPE										
	COMMON DIMENSIONS					SINGLE PIPE		DOUBLE PIPE		
D	H	B	G	T	S	L	YD³	M	L	YD³
15"	3'-3"	1'-8"	2'-9"	2¼"	9½"	5'-6"	0.7	2'-2"	7'-8"	1.0
18"	3'-7"	1'-10"	3'-2"	2½"	10"	6'-4"	1.0	2'-7"	8'-11"	1.3
24"	4'-2"	2'-1"	4'-0"	3"	10"	8'-0"	1.5	3'-5"	11'-5"	2.0
30"	5'-0"	2'-6"	4'-7"	4¼"	11½"	9'-2"	2.3	4'-3"	13'-5"	3.1
36"	5'-8"	2'-8"	5'-6"	4¾"	11½"	11'-0"	3.4	5'-0"	16'-0"	4.5
42"	6'-2"	3'-1"	6'-4"	5¼"	11½"	12'-8"	4.5	5'-10"	18'-6"	6.0
48"	6'-9"	3'-5"	7'-2"	5¾"	11½"	14'-4"	6.0	6'-8"	21'-0"	8.0

*SEE SHEET 3

SHEET 1 OF 3
838.01

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

1-12

ENGLISH STANDARD DRAWING FOR
CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS
15" THRU 48" PIPE - 90° SKEW

GENERAL NOTES:

CHAMFER ALL CORNERS 1" OR HAVE A RADIUS OF 1".

PLACE 2 #6 "Y" BARS IN THE TOP OF ALL ENDWALL FOR PIPE CULVERTS 42" AND OVER WITH A MINIMUM OF 3" COVER AND A LENGTH OF 6" LESS THAN ENDWALL LENGTH.

CONSTRUCT BOTTOM SLAB WITH FORMS.

DO NOT INTERPRET WALL THICKNESS (T) SHOWN FOR THE THICKNESS ACCEPTABLE, BUT IS USED IN COMPUTING ENDWALL QUANTITIES.

WHEN THE CONTRACTOR ELECTS TO USE A CONSTRUCTION JOINT AT THE BOTTOM OF THE PIPE, PLACE BAR "X" DOWELS IN THE BASE AS SHOWN ON PLANS. SPACE BARS APPROXIMATELY ON 12" CENTERS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

WHEN THE CONTRACTOR ELECTS TO USE A CONSTRUCTION JOINT AT THE BOTTOM OF THE PIPE AND POUR THE BASE SEPARATELY LEAVE THE POUR ROUGH.

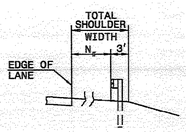
USE CLASS "B" CONCRETE.

SHEET 3 OF 3
838.01

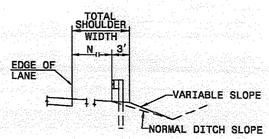
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR
GUARDRAIL PLACEMENT

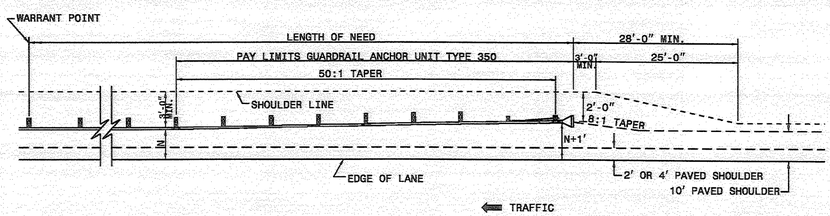


FILL SECTION



CUT SECTION

"N"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



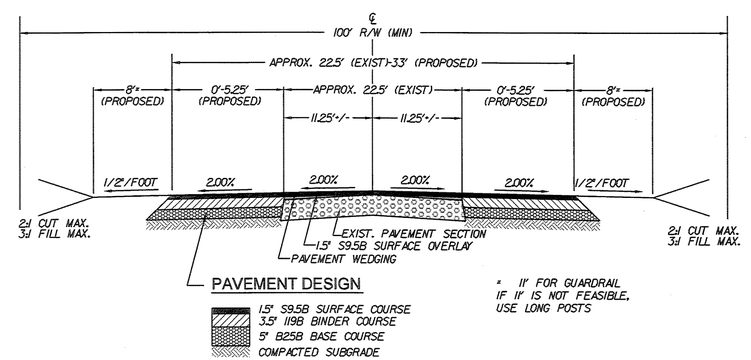
DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

SHEET 6 OF 12
862.01

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

1-12

ENGLISH STANDARD DRAWING FOR
GUARDRAIL PLACEMENT



USE TYPICAL SECTION NO. 1
-L- STATION 5+36.53 TO -L- STATION 13+36.76

PAVEMENT DESIGN

1.5" S9.5B SURFACE COURSE
3.5" I19B BINDER COURSE
5" B25B BASE COURSE
COMPACTED SUBGRADE

* 11' FOR GUARDRAIL
IF 11' IS NOT FEASIBLE,
USE LONG POSTS

TYPICAL SECTION NO.1

7/11/13

NORTH CAROLINA PROFESSIONAL SEAL 023091 ENGINEER G. THOMAS JONES III

PLANS PREPARED BY :
William G. Lapsley & Associates, P.A.
214 N. King Street
Hendersonville, NC 28792
(828) 687-7177
wgla.com
FOR
DIVISION OF HIGHWAYS

REVISIONS

6/12/13	ADDED GUARDRAIL	
7/11/13	UPDATED GUARDRAIL END, TOP OF HEADWALL	

3/5/13

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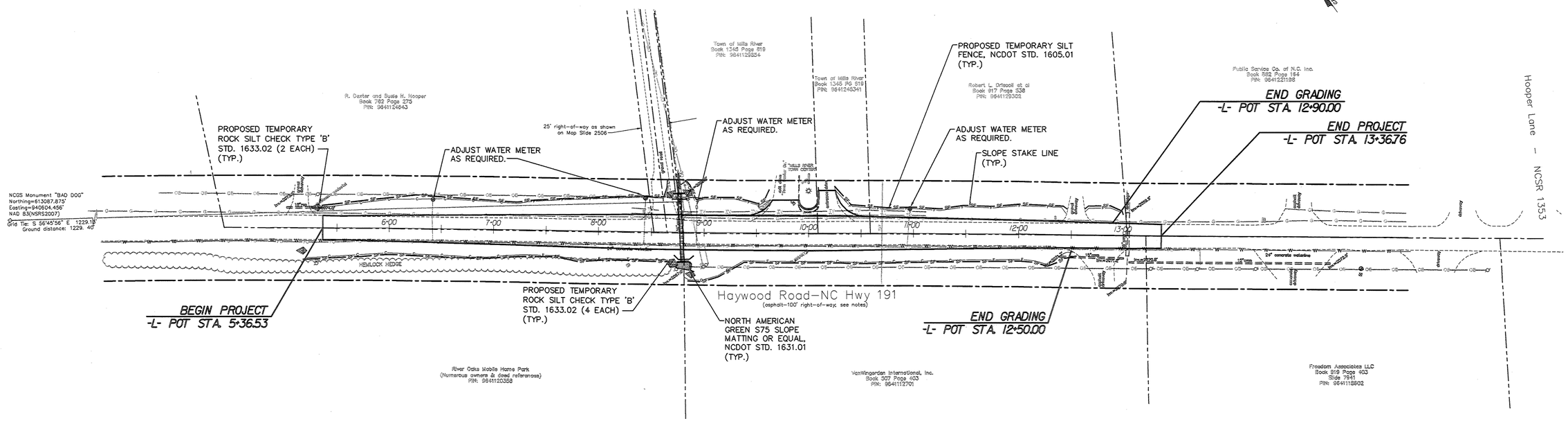
PROJECT REFERENCE NO.	SHEET NO.
12173	3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



REVISIONS	
6/12/13	ADDED GUARDRAIL
7/11/13	UPDATED GUARDRAIL END, TOP OF HEADWALL

LEGEND

OE	EXISTING OVERHEAD POWER
FO	EXISTING FIBER OPTIC
W	EXISTING WATER MAIN
G	EXISTING GAS MAIN
TV	EXISTING CABLE TV
	EXISTING STORM PIPE
	EXISTING TELEPHONE PEDESTAL
	EXISTING WATER METER
	EXISTING POWER POLE WITH GUY WIRE
	EXISTING TELECOM PEDESTAL
	EXISTING MAILBOX
SF	PROPOSED SILT FENCE
	PROPOSED TEMPORARY ROCK SILT CHECK
C	PROPOSED CUT LIMITS
F	PROPOSED FILL LIMITS

NOTE:
SURVEY INFO BY ED HOLMES & ASSOCIATES
Corporate License C-2806
1567 Haywood Road Asheville, N.C. 28806
(828)225-6562

7/11/13

NORTH CAROLINA PROFESSIONAL SEAL 023091 ENGINEER C. THOMAS JONES III

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

811 Know what's below. Call before you dig.

EROSION CONTROL PLAN

PLANS PREPARED BY :
William G. Lapsley & Associates, P.A.
214 N. King Street
Hendersonville, NC 28792
(828) 687-7177
wgla.com
FOR
DIVISION OF HIGHWAYS

3/5/13

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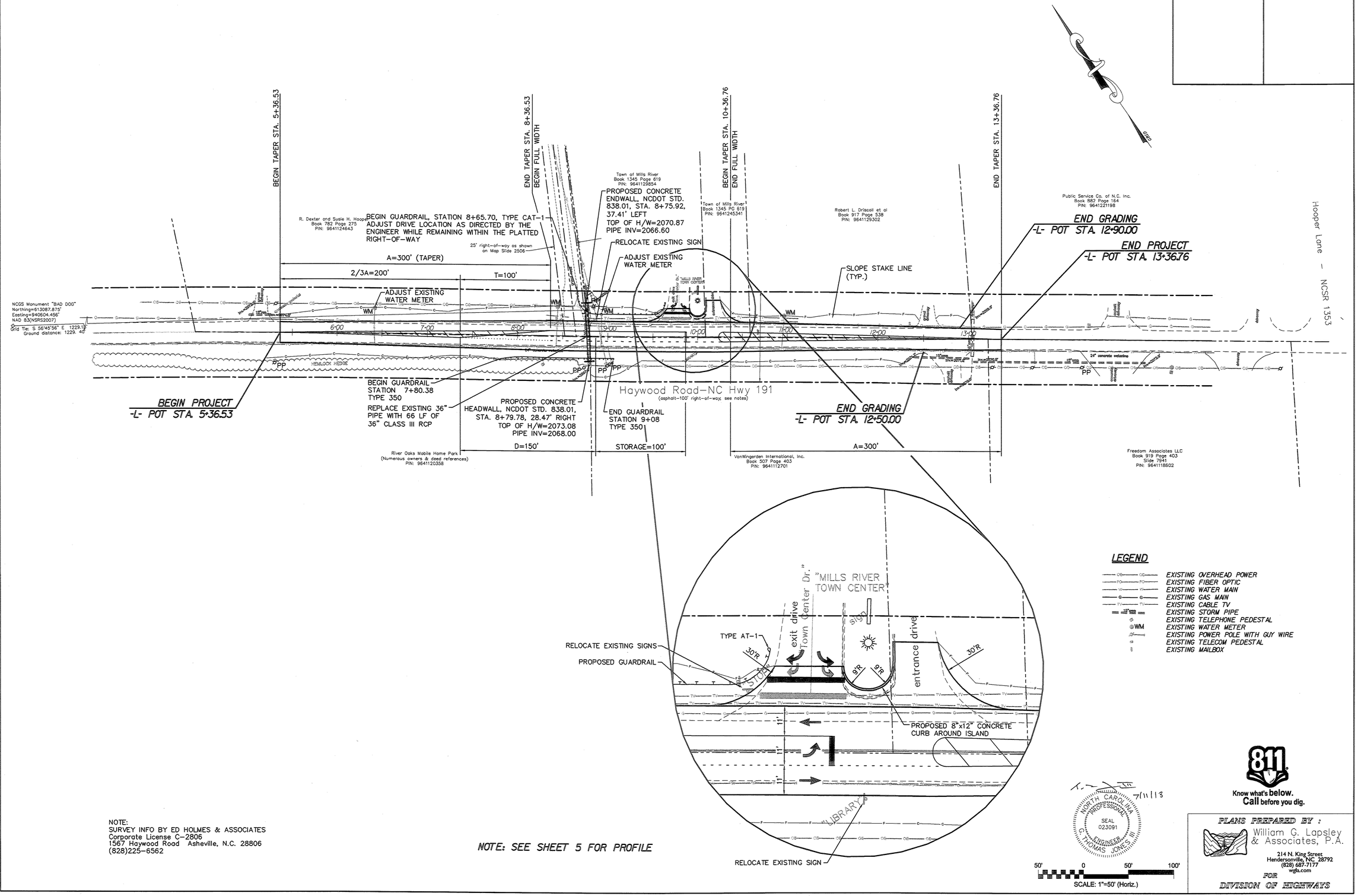
PROJECT REFERENCE NO.	SHEET NO.
12173	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

3/5/13

REVISIONS

6/12/13	ADDED GUARDRAIL
7/11/13	UPDATED GUARDRAIL END, TOP OF HEADWALL



NOTE:
SURVEY INFO BY ED HOLMES & ASSOCIATES
Corporate License C-2806
1567 Haywood Road Asheville, N.C. 28806
(828)225-6562

NOTE: SEE SHEET 5 FOR PROFILE

LEGEND

- EXISTING OVERHEAD POWER
- EXISTING FIBER OPTIC
- EXISTING WATER MAIN
- EXISTING GAS MAIN
- EXISTING CABLE TV
- EXISTING STORM PIPE
- EXISTING TELEPHONE PEDESTAL
- WM EXISTING WATER METER
- EXISTING POWER POLE WITH GUY WIRE
- EXISTING TELECOM PEDESTAL
- EXISTING MAILBOX

7/11/13

NORTH CAROLINA PROFESSIONAL SEAL 023091 ENGINEER G. THOMAS JONES, III

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

811 Know what's below. Call before you dig.

PLANS PREPARED BY :
William G. Lapsley & Associates, P.A.
214 N. King Street
Hendersonville, NC 28792
(828) 687-7177
wgla.com
FOR
DIVISION OF HIGHWAYS

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PROJECT REFERENCE NO.	SHEET NO.
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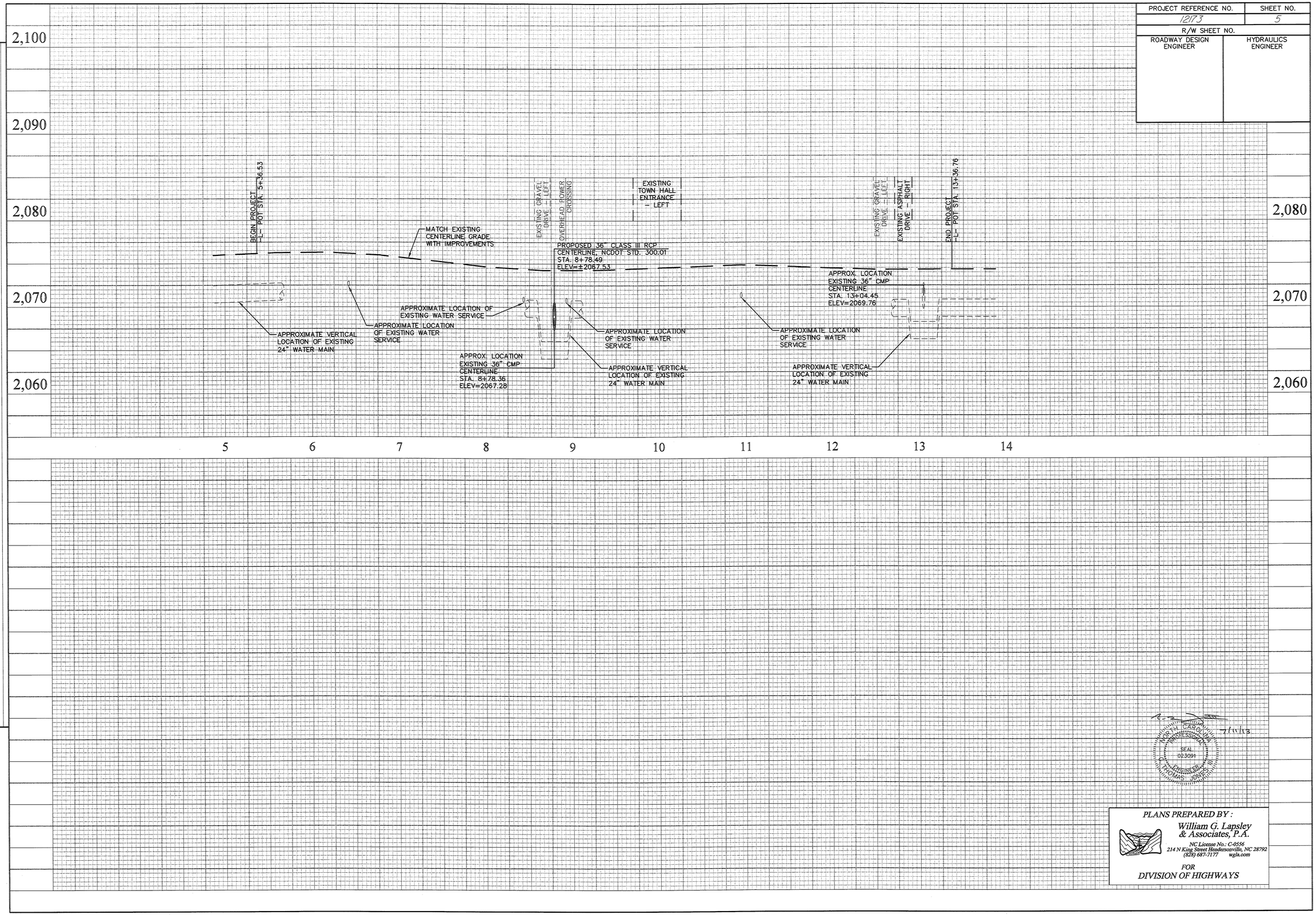
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



REVISIONS

6/12/13	ADDED GUARDRAIL
7/11/13	UPDATED GUARDRAIL END, TOP OF HEADWALL

NORTH CAROLINA PROFESSIONAL SEAL 023091 ENGINEER G. THOMAS JONES III

7/11/13

PLANS PREPARED BY :

William G. Lapsley & Associates, P.A.

NC License No.: C-0556
214 N King Street Hendersonville, NC 28792
(828) 687-7177 wgla.com

FOR
DIVISION OF HIGHWAYS

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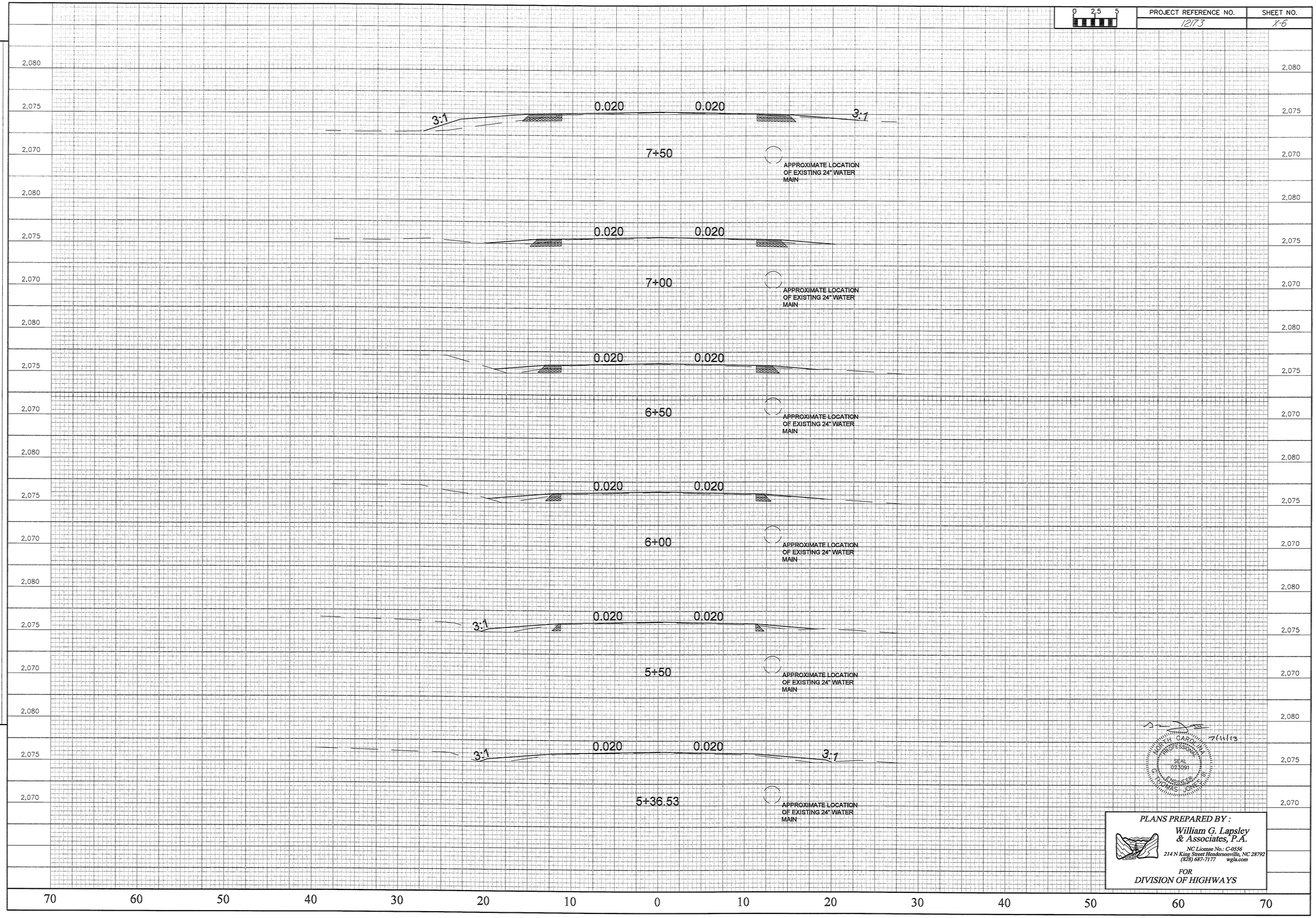

REVISIONS

6/12/13	ADDED GUARDRAIL
7/11/13	UPDATED GUARDRAIL END, TOP OF HEADWALL

NORTH CAROLINA PROFESSIONAL SEAL 021091 ENGINEER THOMAS JOHN HILL 7/11/13

PLANS PREPARED BY :

William G. Lapsley & Associates, P.A.

NC License No. C-0556
214 N King Street Hendersonville, NC 28792
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FOR
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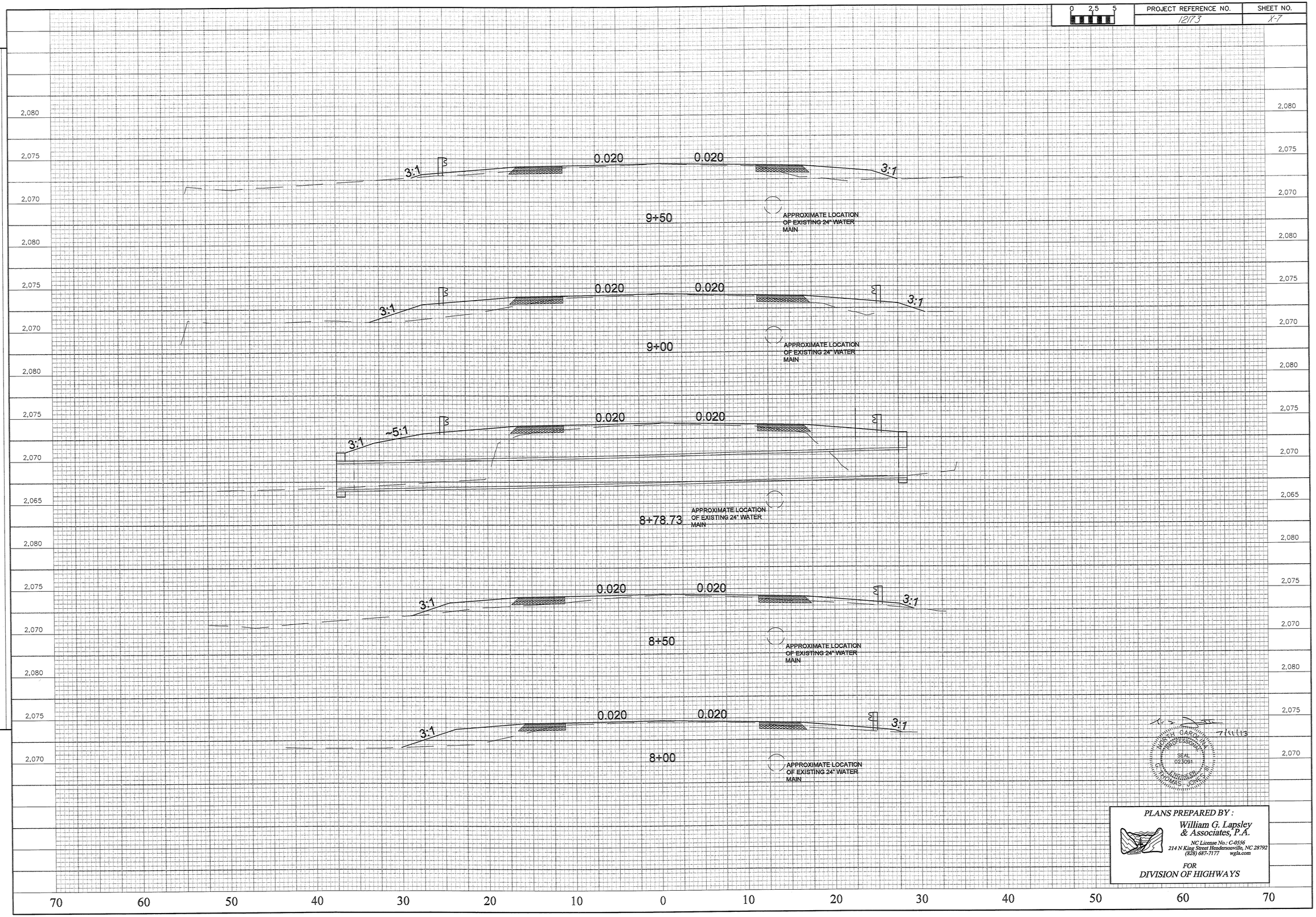

REVISIONS

6/12/13	ADDED GUARDRAIL
7/11/13	UPDATED GUARDRAIL END, TOP OF HEADWALL

NORTH CAROLINA PROFESSIONAL SEAL 021091 ENGINEER THOMAS JONES, III

7/11/13

PLANS PREPARED BY :

William G. Lapsley & Associates, P.A.

NC License No.: C-0556
214 N King Street Hendersonville, NC 28792
(828) 687-7177 wgla.com

FOR
DIVISION OF HIGHWAYS

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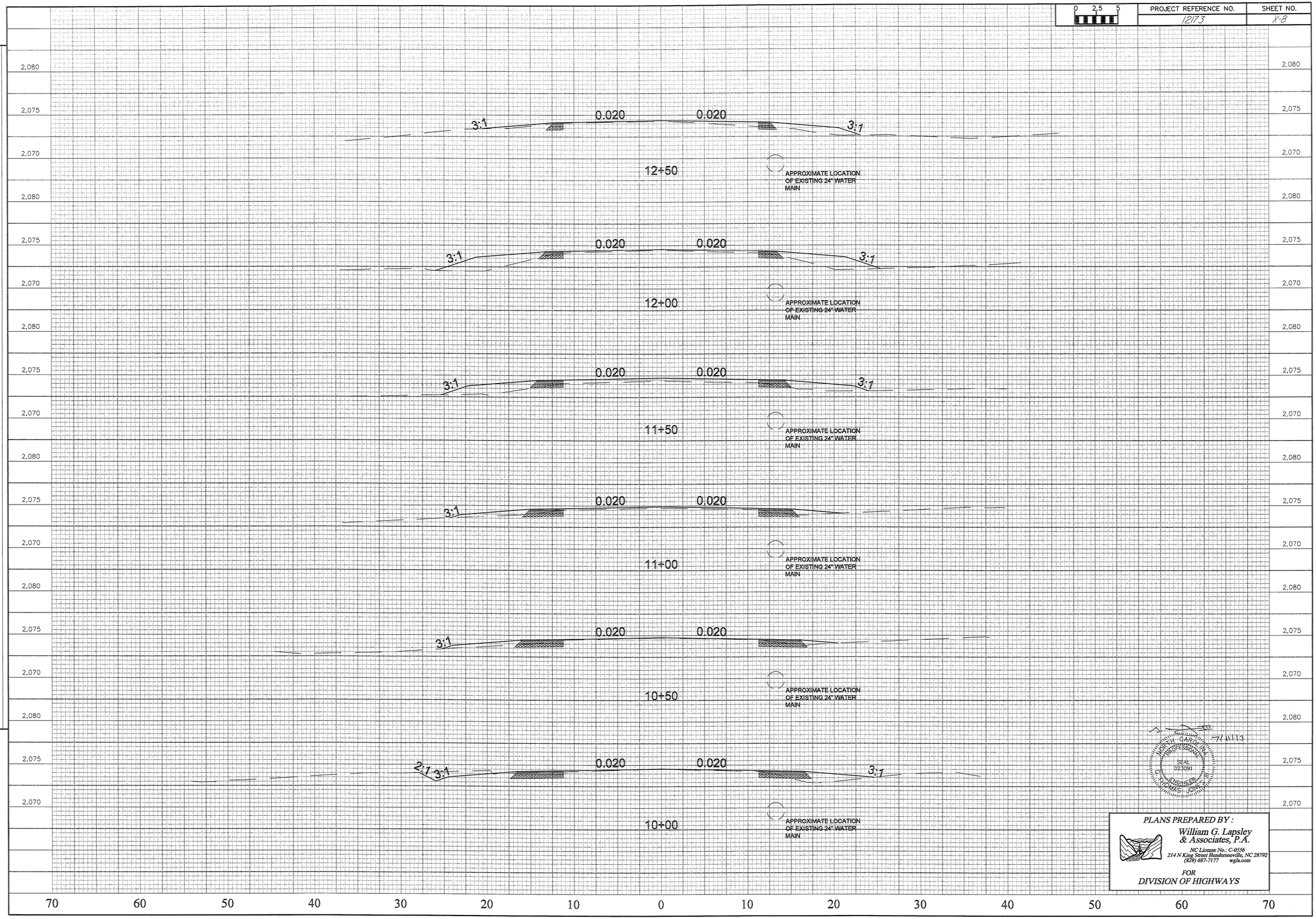

REVISIONS		
6/12/13	ADDED GUARDRAIL	
7/11/13	UPDATED GUARDRAIL END, TOP OF HEADWALL	

NORTH CAROLINA PROFESSIONAL SEAL 023091 ENGINEER THOMAS JONES III

7/11/13

PLANS PREPARED BY :

William G. Lapsley & Associates, P.A.

NC License No.: C-0536
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FOR
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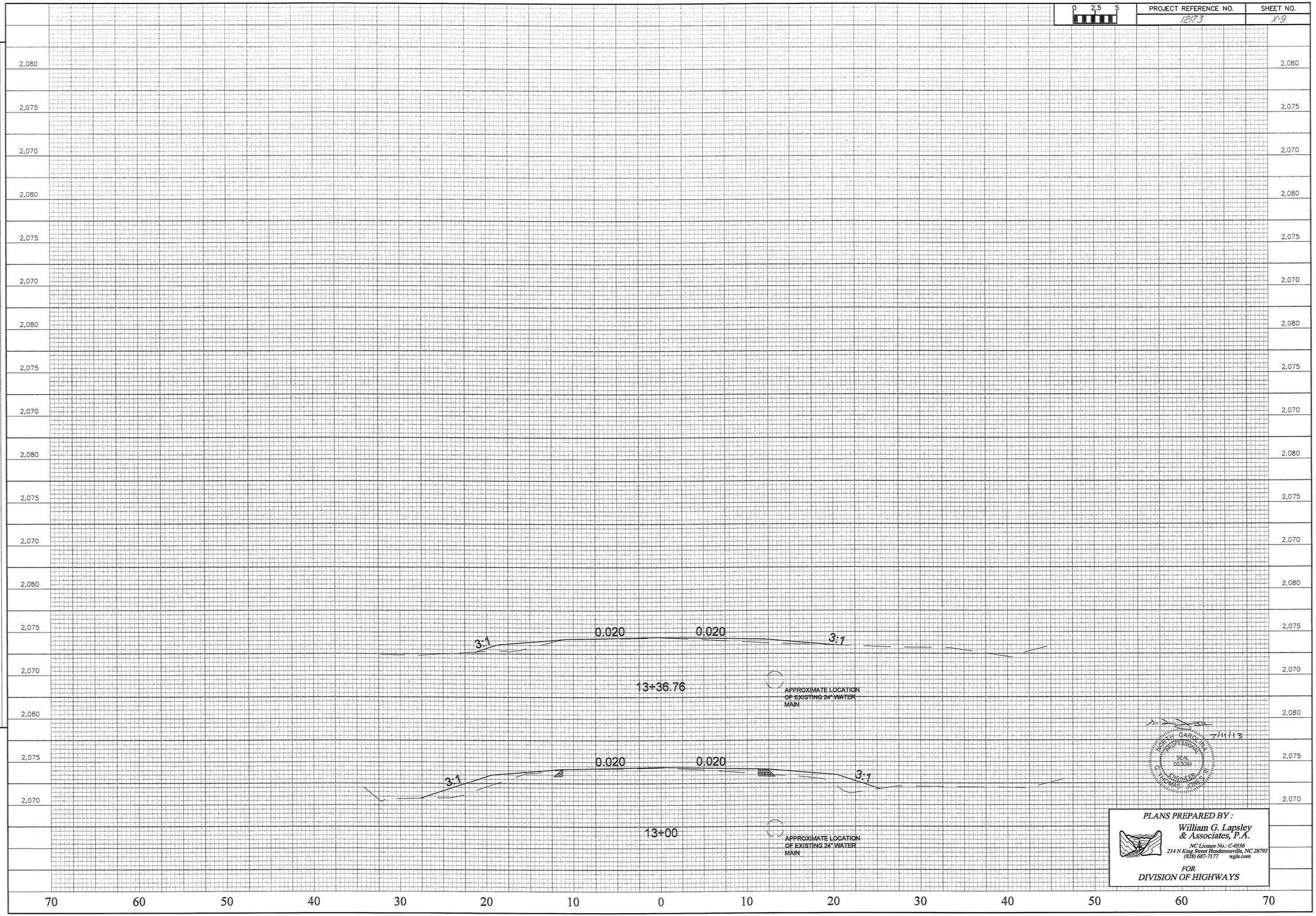

REVISIONS

6/12/13	ADDED GUARDRAIL
7/11/13	UPDATED GUARDRAIL END, TOP OF HEADWALL

NORTH CAROLINA PROFESSIONAL SEAL 023091 ENGINEER GARY THOMAS JOHNSON 7/11/13

PLANS PREPARED BY :

William G. Lapsley & Associates, P.A.

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214 N King Street Hendersonville, NC 28792
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FOR
DIVISION OF HIGHWAYS

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