PROJECT: 17.BP.7.R.37

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.7.R.37	1	

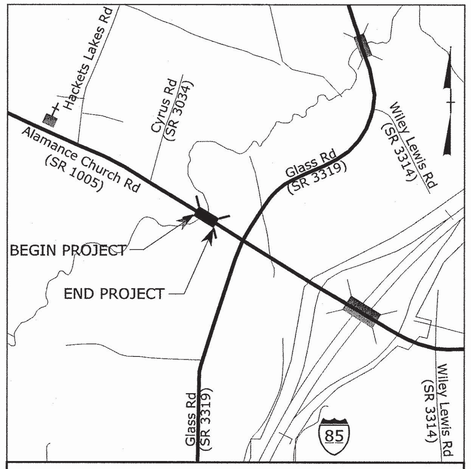
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

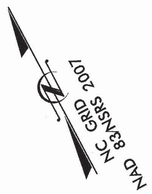
GUILFORD COUNTY

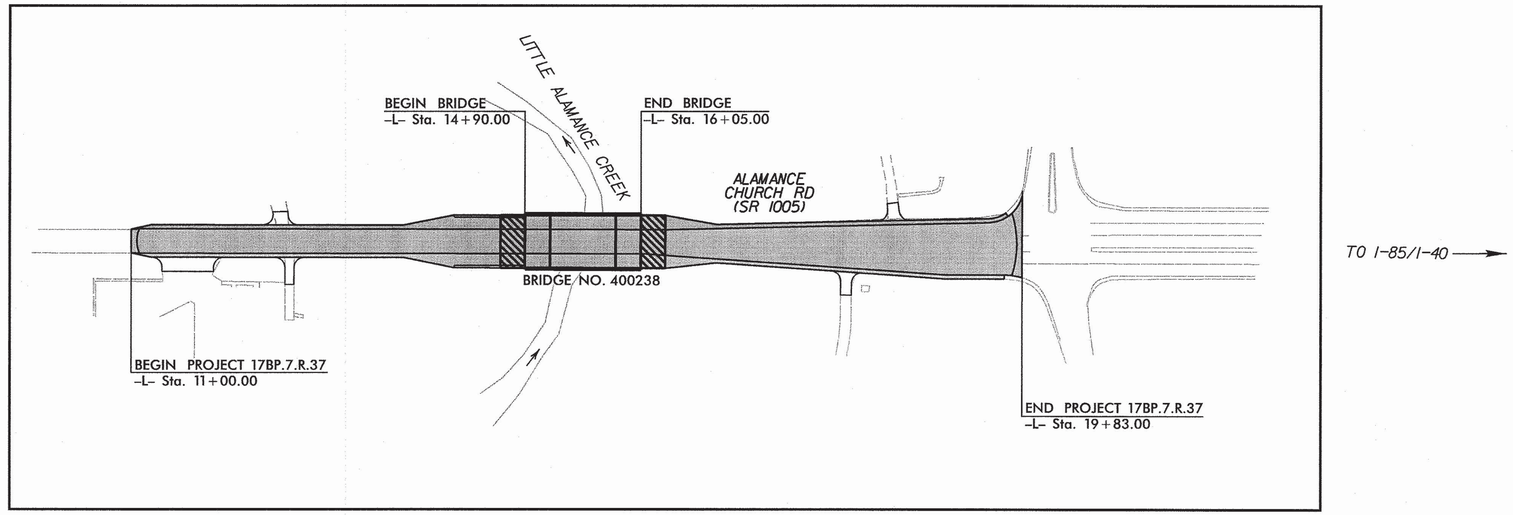
LOCATION: BRIDGE NO. 400238 OVER LITTLE ALAMANCE CREEK OVER SR 1005 (ALAMANCE CHURCH ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE



VICINITY MAP





* DESIGN EXCEPTION
SAG VERTICAL CURVE K
VERTICAL SSD

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

NCDOT CONTACT:

TIM POWERS, P.E.
DIVISION BRIDGE PROGRAM MANAGER
DIVISION 7

CONTRACT:

K:\RAL_Roadway\011036\89 - 400238\Roadway\Proj\400238_rdy_1sht.dgn

10/30/2014

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 = 8140 VPD
ADT 2033 = 17920 VPD
T = 6%
V = 55 MPH

FUNCTIONAL CLASSIFICATION = RURAL ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY PROJECT	=	0.145 MILES
LENGTH STRUCTURE PROJECT	=	0.022 MILES
TOTAL LENGTH OF PROJECT	=	0.167 MILES

PLANS PREPARED FOR THE NCDOT BY: Kimley-Horn and Associates, Inc.
© 2013
Post Office Box 33068
Raleigh, North Carolina 27636
PE NO. F-0102

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:
MAY 20, 2013

JEFFREY W. MOORE, P.E.
PROJECT ENGINEER

ELIZABETH W. LYNCH, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
10-30-14
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE
10-30-14
SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
17BP.7.R.37	1-A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

NORTH CAROLINA PROFESSIONAL SEAL 024436 10-30-14 ENGINEER JEFFREY W. MOORE

REVISIONS

INDEX OF SHEETS

SHEET NUMBER	DESCRIPTION
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
2 THRU 2-B	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND MISCELLANEOUS DETAILS
2-C	DETOUR PLAN SHEET
3 THRU 3-A	GUARDRAIL SUMMARY, DRAINAGE SUMMARY, AND SUMMARY OF EARTHWORK
4	PLAN AND PROFILE SHEET
TMP-1 THRU TMP-4	TRAFFIC CONTROL PLANS
EC-1 THRU EC-6	EROSION CONTROL PLANS
RF-1	REFORESTATION PLAN
X-1 THRU X-10	CROSS-SECTIONS
S-1 THRU S-32	STRUCTURE PLANS

GENERAL NOTES: 2012 SPECIFICATIONS

EFFECTIVE: 01-17-12
REVISED: 07-30-12

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.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

SUBSURFACE PLANS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY AND AT&T.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

2012 ROADWAY ENGLISH STANDARD DRAWINGS

EFFECTIVE: 01-17-12
REVISED: 07-30-12

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
225.04	Method of Obtaining Superelevation – Two Lane Pavement
DIVISION 3 – PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 8 – INCIDENTALS	
840.24	Frames and Narrow Slot Sag Grates
840.35	Traffic Bearing Grated Drop Inlet – for Cast Iron Double Frame and Grates
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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PROJECT REFERENCE NO.	SHEET NO.
17BP.7.R.37	1-B

Note: Not to Scale

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

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
- Property Corner
- Property Monument — EOM
- 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
- 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.
17BP.7.R.37	2

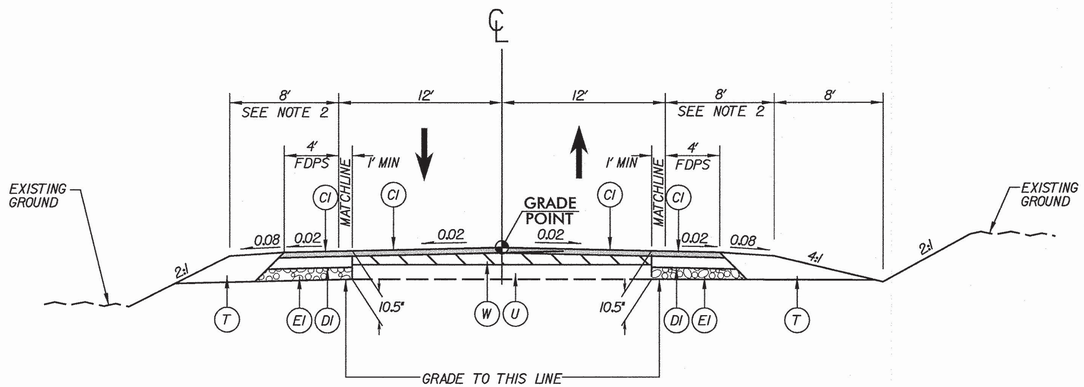
Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024436 10-30-14 ENGINEER JEFFREY W. HOOKS

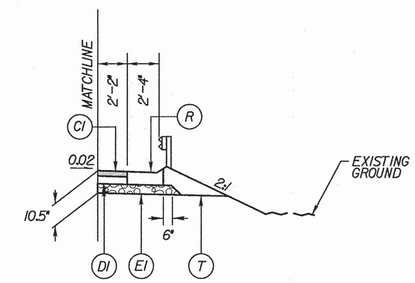
NOTES
1. MILL NOTCH TO KEY-IN S9.5B FROM -L- STA 11+00.00 TO STA 11+25.00 AND -L- STA 19+58.00 TO STA 19+83.00
2. WIDEN SHOULDER WIDTH BY 3' AT GUARDRAIL LOCATIONS
3. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE INDICATED

-L- SR 1005 (ALAMANCE CHURCH RD)



TYPICAL SECTION NO. 1

-L- STA 11+00.00 TO 14+90.00 (BEGIN BRIDGE)
-L- STA 16+05.00 (END BRIDGE) TO 19+83.00



TYPICAL SECTION NO. 1A

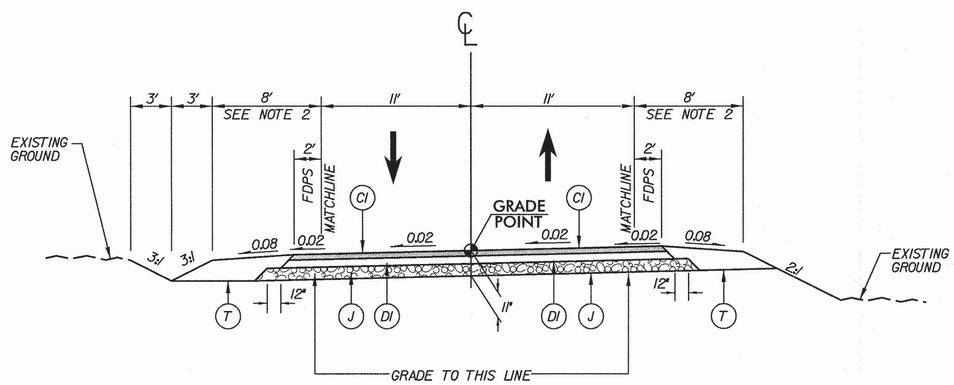
USE IN CONJUNCTION WITH TYPICAL SECTION 1

-L- STA 14+20.00 TO 14+65.00 (RT)
-L- STA 14+20.00 TO 14+65.00 (LT)

PAVEMENT SCHEDULE

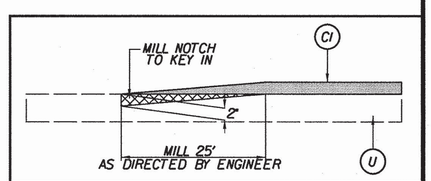
CI	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.
DI	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4" DEPTH
EI	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5.5" DEPTH
J	6" AGGREGATE BASE COURSE
R	PROPOSED SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL W)

-DET- SR 1005 DETOUR

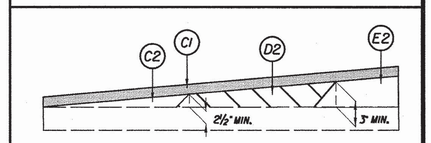


TYPICAL SECTION NO. 2

-DET- STA 11+42.00 TO 14+96.00 (BEGIN BRIDGE)
-DET- STA 15+66.00 (END BRIDGE) TO 19+81.00



MILLING DETAIL



DETAIL W SHOWING METHOD OF WEDGING

REVISIONS

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10/30/2014

PROJECT REFERENCE NO.	SHEET NO.
17BP.7.R.37	2-A

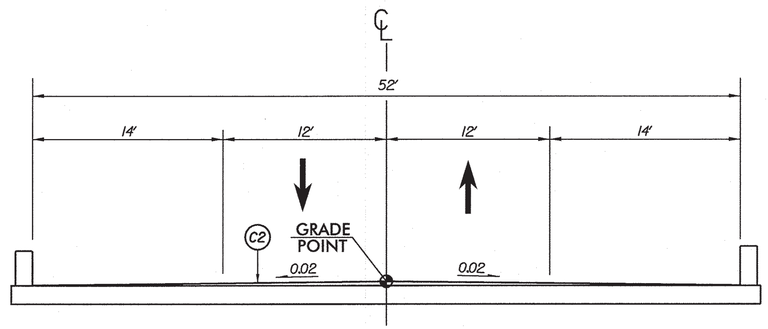
Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 10-30-14

REVISIONS

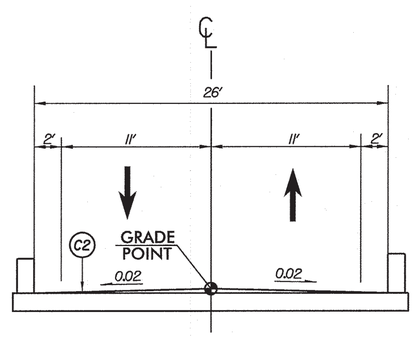
-L- SR 1005 (ALAMANCE CHURCH RD)



BRIDGE TYPICAL SECTION NO. 1

-L- STA 14+90.00 TO 16+05.00

-DET- SR 1005 DETOUR



BRIDGE TYPICAL SECTION NO. 2

-DET- STA 14+96.00 TO 15+66.00

K:\RAL_Roadway\011036189 - 400238\Roadway\Proj\400238_rdy_typ.dgn

10/30/2014

PROJECT REFERENCE NO.	SHEET NO.
17BP.7.R.37	2-B

Kimley-Horn and Associates, Inc.

P.O. BOX 33068
RALEIGH, N.C. 27636-3068

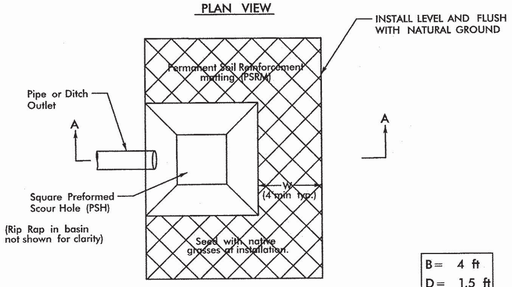
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 10-30-14

REVISIONS

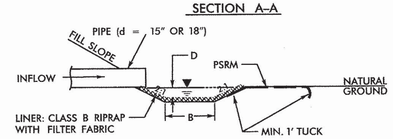
DETAIL 1
PREFORMED SCOUR HOLE
*NOT TO SCALE

PLAN VIEW



B= 4 ft
D= 1.5 ft
W= 4 ft

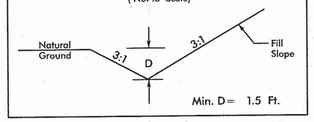
SECTION A-A



3/08

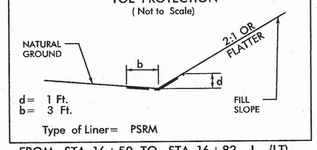
STA. 15+95 -L- (RT)

DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



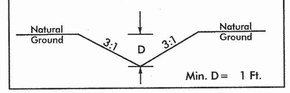
FROM STA. 16+50 TO STA. 18+00 -L- (RT)
FROM STA. 11+42 TO STA. 12+00 -DET- (LT)
FROM STA. 12+60 TO STA. 14+50 -DET- (LT)

DETAIL 3
TOE PROTECTION
(Not to Scale)



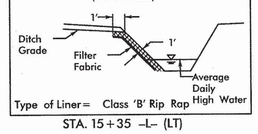
FROM STA. 16+50 TO STA. 16+82 -L- (LT)
FROM STA. 16+00 TO STA. 16+48 -DET- (RT)

DETAIL 4
STANDARD 'V' DITCH
(Not to Scale)



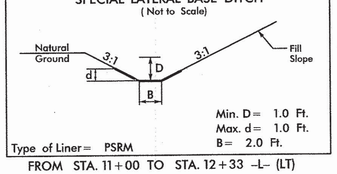
FROM STA. 16+15 TO STA. 16+50-L- (RT)

DETAIL 5
RIP RAP AT EMBANKMENT
(Not to Scale)



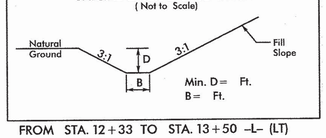
STA. 15+35 -L- (LT)

DETAIL 6
SPECIAL LATERAL BASE DITCH
(Not to Scale)



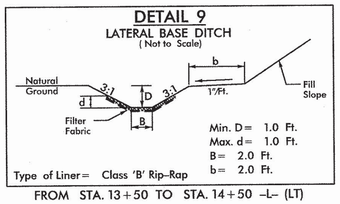
FROM STA. 11+00 TO STA. 12+33 -L- (LT)

DETAIL 7
SPECIAL LATERAL BASE DITCH
(Not to Scale)



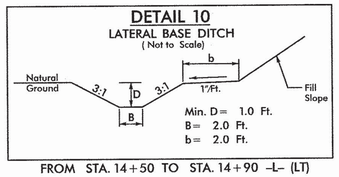
FROM STA. 12+33 TO STA. 13+50 -L- (LT)

DETAIL 9
LATERAL BASE DITCH
(Not to Scale)



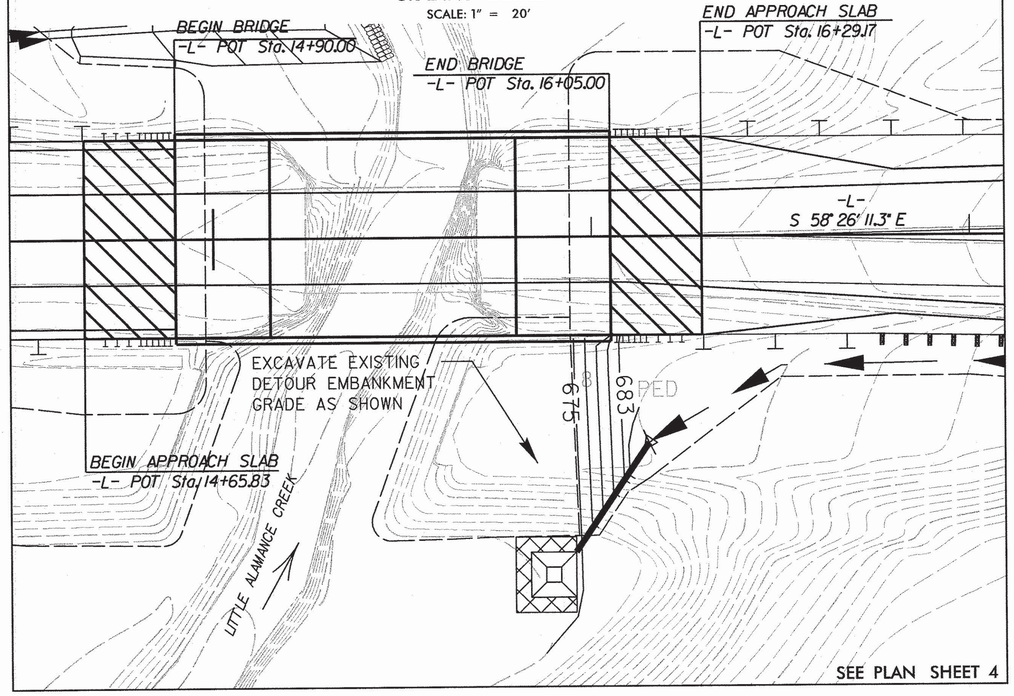
FROM STA. 13+50 TO STA. 14+50 -L- (LT)

DETAIL 10
LATERAL BASE DITCH
(Not to Scale)



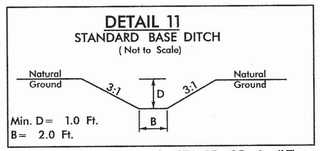
FROM STA. 14+50 TO STA. 14+90 -L- (LT)

DETAIL 8
GRADING DETAIL
SCALE: 1" = 20'



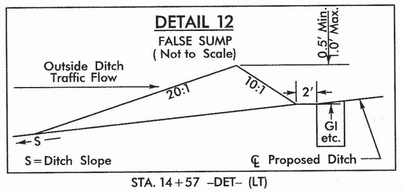
SEE PLAN SHEET 4

DETAIL 11
STANDARD BASE DITCH
(Not to Scale)



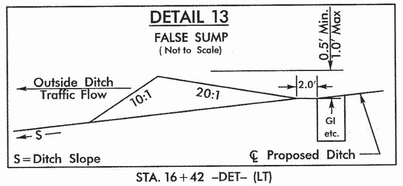
FROM STA. 14+90 TO STA. 15+35 -L- (LT)

DETAIL 12
FALSE SUMP
(Not to Scale)



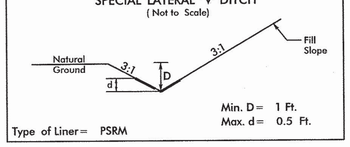
STA. 14+57 -DET- (LT)

DETAIL 13
FALSE SUMP
(Not to Scale)



STA. 16+42 -DET- (LT)

DETAIL 14
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 16+50 TO STA. 18+00 -DET- (LT)

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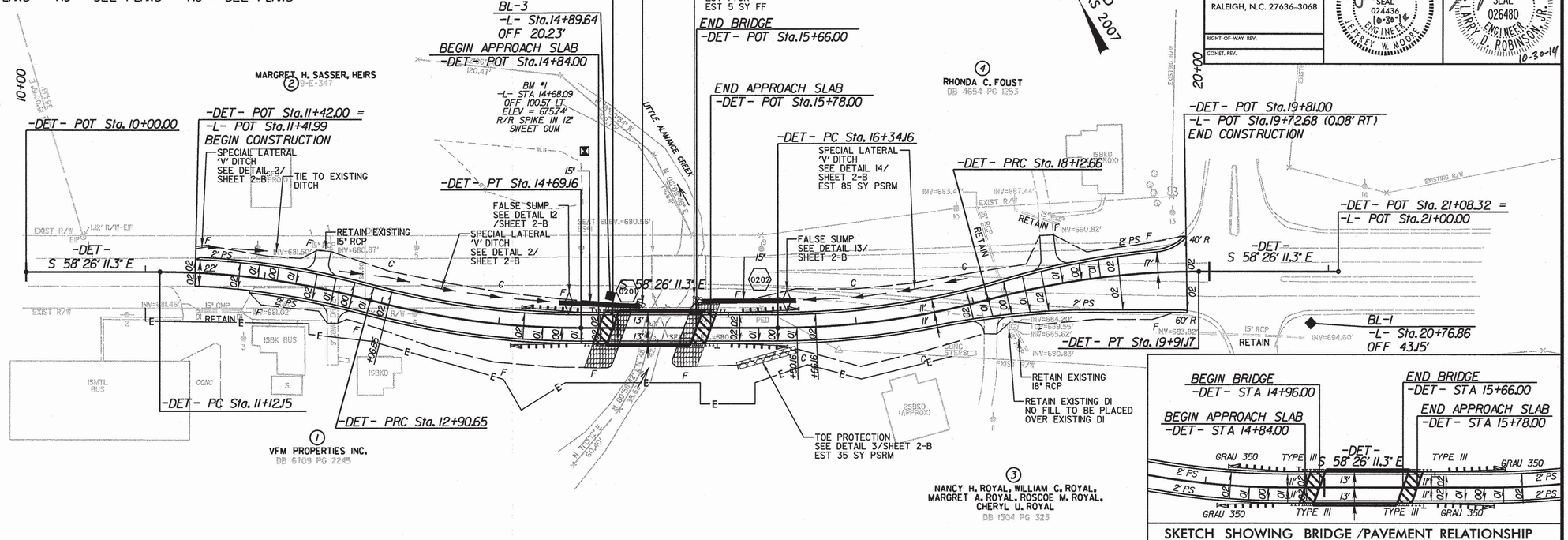
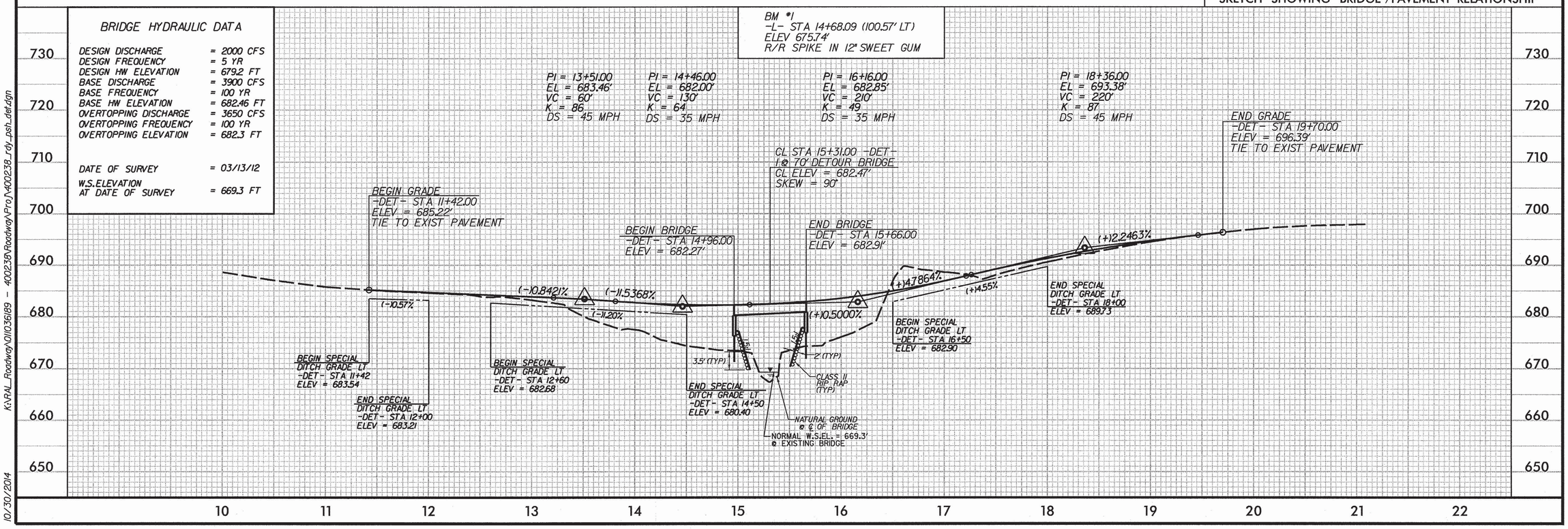
10/30/2014

-DET-			
PI Sta 12+01.93	PI Sta 13+80.43	PI Sta 17+23.94	PI Sta 19+02.44
Δ = 15° 10' 27.9" (RT)	Δ = 15° 10' 27.9" (LT)	Δ = 15° 10' 27.9" (LT)	Δ = 15° 10' 27.9" (RT)
D = 8° 30' 03.1"	D = 8° 30' 03.1"	D = 8° 30' 03.1"	D = 8° 30' 03.1"
L = 178.50'	L = 178.50'	L = 178.50'	L = 178.50'
T = 89.78'	T = 89.78'	T = 89.78'	T = 89.78'
R = 674.00'	R = 674.00'	R = 674.00'	R = 674.00'
SE = 0.02	SE = 0.02	SE = 0.02	SE = 0.02
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS



SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP

BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 2000 CFS
DESIGN FREQUENCY	= 5 YR
DESIGN HW ELEVATION	= 679.2 FT
BASE DISCHARGE	= 3900 CFS
BASE FREQUENCY	= 100 YR
BASE HW ELEVATION	= 682.46 FT
OVERTOPPING DISCHARGE	= 3650 CFS
OVERTOPPING FREQUENCY	= 100 YR
OVERTOPPING ELEVATION	= 682.3 FT
DATE OF SURVEY	= 03/13/12
W.S.ELEVATION AT DATE OF SURVEY	= 669.3 FT



Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
17BP.7.R.37	2-C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

RIGHT-OF-WAY REV.
CONST. REV.

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 10-30-14

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR. 10-30-14

REVISIONS

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10/30/2014

COMPUTED BY: MTH	DATE: 02-20-2013
CHECKED BY: JWM	DATE: 02-20-2013

PROJECT REFERENCE NO.	SHEET NO.
17BP.7.R.37	3

NORTH CAROLINA PROFESSIONAL SEAL 024436 10-30-14 ENGINEER JEFFREY W. MOORE

G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	ANCHORS GRAU 350	ANCHORS TYPE III	ANCHORS CAT-1	ANCHORS AT-1	IMPACT ATTENUATOR TYPE 350 EA	IMPACT ATTENUATOR TYPE 350 G	IMPACT ATTENUATOR TYPE 350 NG				REMARKS
-DET-	14+15.25	14+96.50	LT	81.25			14+65		1	1									TEMPORARY GUARDRAIL
-DET-	14+05.75	14+87.00	RT	81.25			14+55		1	1									TEMPORARY GUARDRAIL
-DET-	15+66.50	16+47.75	LT	81.25			15+97		1	1									TEMPORARY GUARDRAIL
-DET-	15+57.00	16+38.25	RT	81.25			15+88		1	1									TEMPORARY GUARDRAIL
		SUBTOTAL		325															
		LESS ANCHOR DEDUCTIONS																	
		GRAU 350 4 @ 50.00' =		200															
		TYPE III 4 @ 18.75' =		75															
		TOTAL		50															TEMPORARY GUARDRAIL
		SAY		50															TEMPORARY GUARDRAIL
-L-	13+71.25	14+90.00	LT	118.75			14+71		1	1									
-L-	12+83.75	14+90.00	RT	206.25			13+33		1	1									
-L-	16+05.00	18+11.25	LT	206.25			17+61		1	1									
-L-	16+05.00	17+23.75	RT	118.75			16+24		1	1									
		SUBTOTAL		650															
		LESS ANCHOR DEDUCTIONS																	
		GRAU 350 4 @ 50.00' =		200															
		TYPE III 4 @ 18.75' =		75															
		TOTAL		375															
		SAY		375															

ADDITIONAL GUARDRAIL POSTS = 5 EA

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE / THICKNESS OR GAUGE	12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12"	15"	18"	24"	30"	36"	42"	48"	.064	.064	.064	.064	.079	.079	.079	.109	.109	.109
12+45 -L-	LT	406																																				
14+28 -L-	RT	403		683.0	680.0																																	
14+28 -L-	CL	403	402		680.0	679.5																																
14+28 -L-	LT	402		683.0	675.3																																	
14+28 -L-	LT	402	401		675.3	675.1					20																											
16+15 -L-	RT	405	404		682.7	674.6				36																												
14+50 -DET-	LT	201			680.4	673.9				68																												
16+50 -DET-	LT	202			682.9	673.7				80																												
SHEET TOTALS										184	20																											

STATION	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** R.C. PIPE (CLASS V)	*** RC PIPE CULVERTS, CONTRACTOR DESIGN	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	5.0' THRU 10.0'	10.0' AND ABOVE	LIN. FT. A	LIN. FT. B	"TOTAL LF FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. '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	D.I. STD. 840.16	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	TRAFFIC BEARING G.D.I. STD. 840.35	STEEL GRATE AND FRAME STD. 840.37	TRAFFIC BEARING J.B. STD. 840.34	PARALLEL PIPE END SECTION STD. 310.02	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL, LIN. FT.	REMARKS
12+45 -L-																				28																		16
14+28 -L-																								1														
14+28 -L-																							48															
14+28 -L-																								1	2.7													
14+28 -L-																																						
16+15 -L-																																						1
14+50 -DET-																																						
16+50 -DET-																																						
SHEET TOTALS																				28				2	2.7													1

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

NOTE: "QUANTITIES ARE APPROXIMATE ONLY. THE RESIDENT ENGINEER WILL RE-CROSS-SECTION THE WORK ACCURATELY WHEN THE PROJECT IS STAKED OUT. THESE CROSS-SECTION NOTES WILL BE USED IN COMPUTING THE FINAL QUANTITIES FOR WHICH THE CONTRACTOR WILL BE PAID."

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

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10/30/2014

COMPUTED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

PROJECT REFERENCE NO.	SHEET NO.
17BP.7.R.37	3-A

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 10-30-14

SUMMARY OF EARTHWORK
IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-DET- STA 10+00.00 TO STA 14+96.00	100		1823	1723	0
-DET- STA 15+66.00 TO STA 19+81.00	691		915	224	0
-L- STA 11+00.00 TO STA 14+90.00	1155		529	0	626
-L- STA 16+05.00 TO STA 19+83.00	500		294	0	206
TOTALS	2446		3561	1947	832
WASTE TO REPLACE BORROW				-832	-832
PROJECT TOTALS	2446		3561	1115	0
REPLACE TOPSOIL ON BORROW (5%)				56	
GRAND TOTALS	2446		3561	1171	0
SAY	2500			1200	

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PROJECT REFERENCE NO.	SHEET NO.
17BP.7.R.37	4
R/W SHEET NO.	

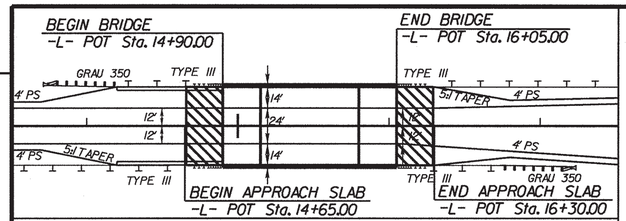
Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.
CONST. REV.

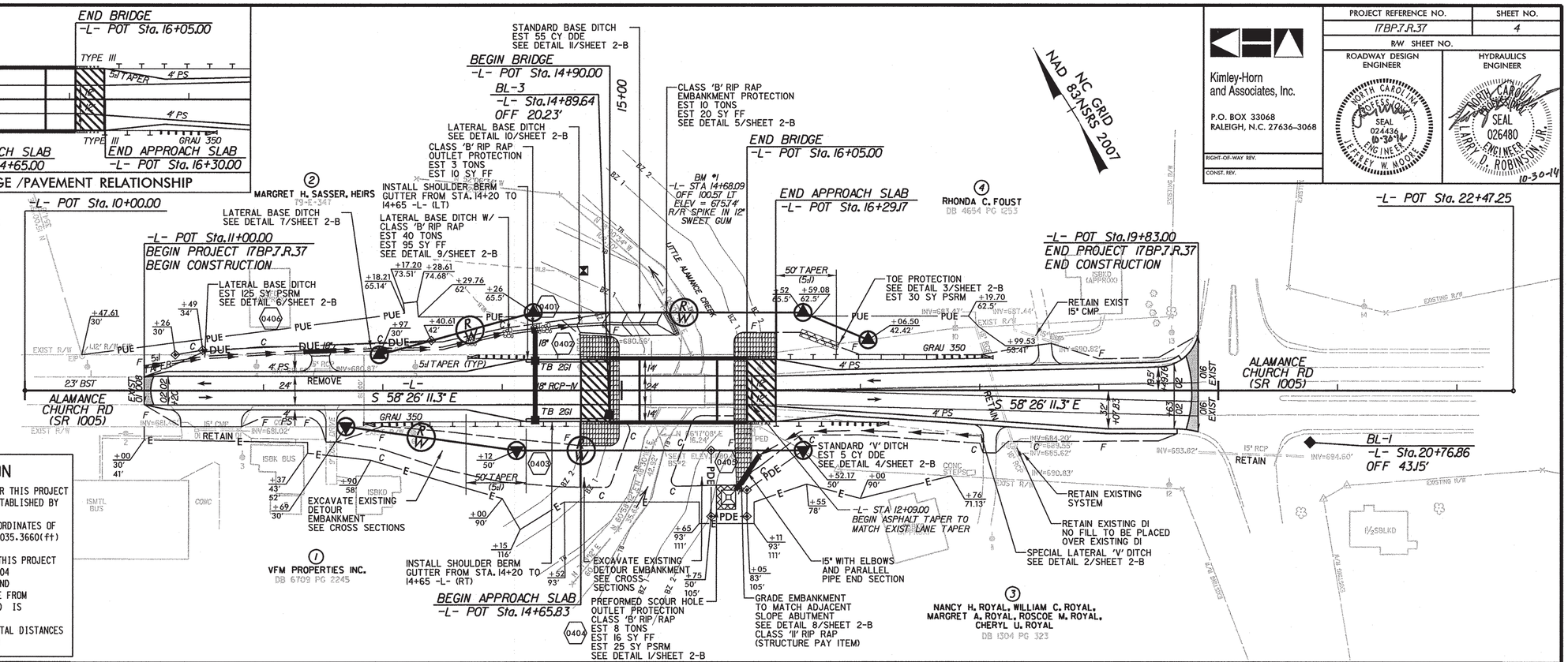
ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 10-30-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR. 10-30-14

REVISIONS



SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP



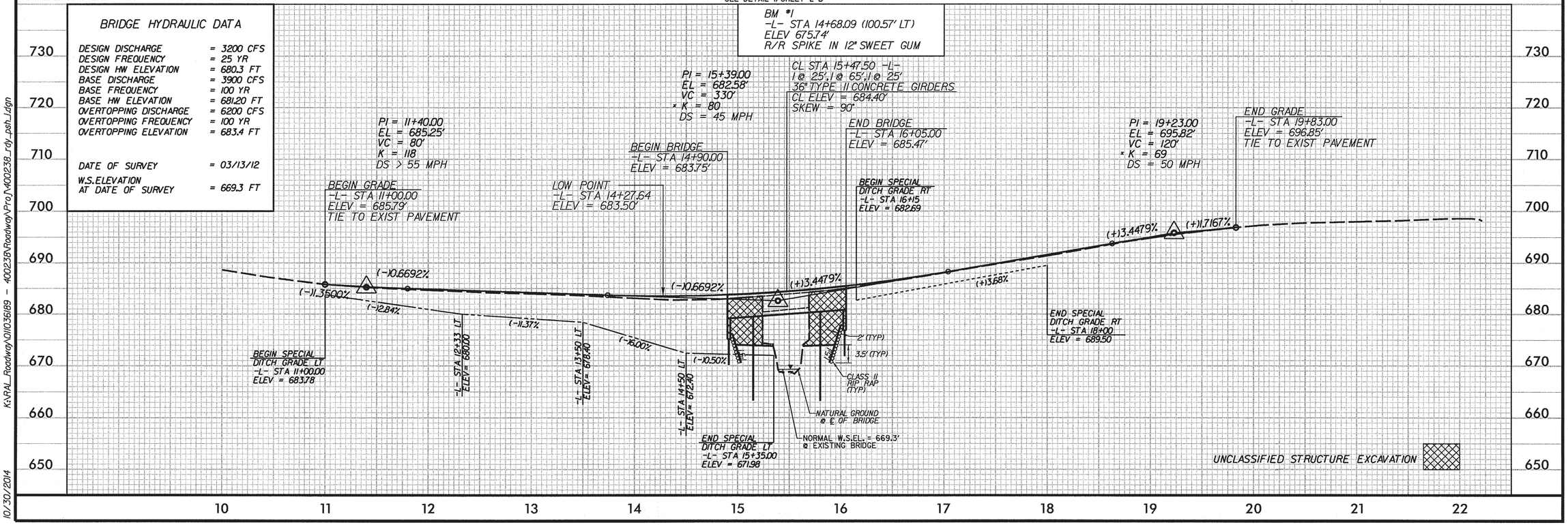
* DESIGN EXCEPTION
VERTICAL CURVE K
VERTICAL SSD

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "400238-1"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 829065.8200(ft) EASTING: 1783035.3660(ft)
ELEVATION: 696.91'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999352304
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "400238-1" TO -L- STATION 10+00.00 IS N 56°08'31" W 1077.72'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 3200 CFS
DESIGN FREQUENCY	= 25 YR
DESIGN HW ELEVATION	= 680.3 FT
BASE DISCHARGE	= 3900 CFS
BASE FREQUENCY	= 100 YR
BASE HW ELEVATION	= 681.20 FT
OVERTOPPING DISCHARGE	= 6200 CFS
OVERTOPPING FREQUENCY	= 100 YR
OVERTOPPING ELEVATION	= 683.4 FT
DATE OF SURVEY	= 03/13/12
W.S.ELEVATION AT DATE OF SURVEY	= 669.3 FT



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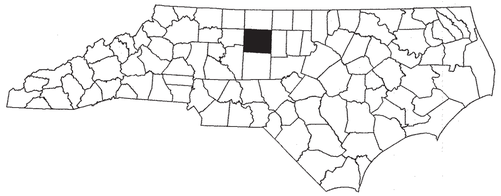
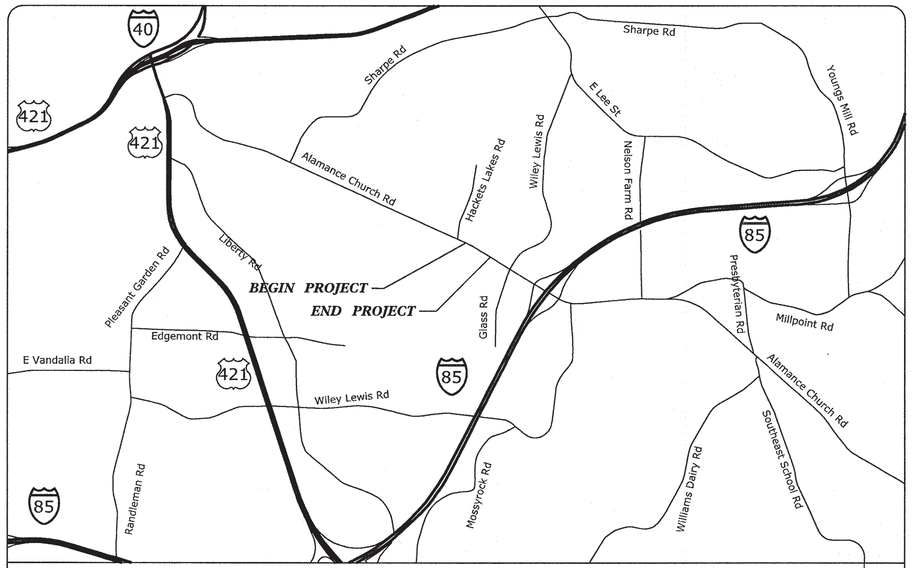
10/30/2014

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

GUILFORD COUNTY





VICINITY MAP

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET AND INDEX OF SHEETS
TMP-2	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKING LEGEND
TMP-2A	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES)
TMP-3	TEMPORARY TRAFFIC CONTROL PHASING
TMP-4	TEMPORARY TRAFFIC CONTROL PHASE I & II DETAILS

SHEET NO.
TMP-1

17BP.7.R.37

PROJECT:

Kimley-Horn and Associates, Inc.

APPROVED:
DATE:

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 10-30-14

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

N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773-2800 FAX: (919) 771-2745

J. S. BOURNE, P.E. *STATE TRAFFIC MANAGEMENT ENGINEER*
JOSEPH ISHAK *TRAFFIC CONTROL PROJECT ENGINEER*
_____ *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*
_____ *TRAFFIC CONTROL DESIGN ENGINEER*

DIVISION OF HIGHWAYS * STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION * WORK ZONE TRAFFIC CONTROL

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10/30/2014

PROJ. REFERENCE NO.	SHEET NO.
17BP.7.R.37	TMP-2

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
1101.11	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
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA
- REMOVAL
- USER DEFINED (IF NEEDED)
- USER DEFINED (IF NEEDED)

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM — SKINNY DRUM — TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

PAVEMENT MARKING LINES

PA - PAINT (4" WHITE, 2X)	EDGELINE
PD - PAINT (4" WHITE, 2X)	4" x 2' MINISKIP
PE - PAINT (4" WHITE, 2X)	SOLID LANE LINE
PH - PAINT (4" YELLOW, 2X)	SINGLE CENTER LINE
PI - PAINT (4" YELLOW, 2X)	DOUBLE CENTER LINE
P2 - PAINT (24" WHITE, 2X)	STOP BAR

PAVEMENT MARKING SYMBOLS

QB - PAINT 2X (RIGHT TURN ARROW)

Kimley-Horn and Associates, Inc.

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 10-30-14

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

ROADWAY STANDARD DRAWINGS & LEGEND

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PROJ. REFERENCE NO.	SHEET NO.
17BP.7.R.37	TMP-2A

MANAGEMENT STRATEGIES

BRIDGE NO. 400238 OVER LITTLE ALAMANCE CREEK WILL BE CONSTRUCTED AWAY FROM TRAFFIC. EXISTING ALAMANCE CHURCH ROAD TRAFFIC WILL BE DIVERTED ONTO A TEMPORARY ROAD AND BRIDGE. ASSOCIATED ROADWAY IMPROVEMENTS WILL BE CONSTRUCTED USING A COMBINATION OF LANE AND SHOULDER CLOSURES.

GENERAL 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.

E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

F) 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.

G) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500 ft IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

H) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

I) 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.

J) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

K) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

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

M) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 500 ft IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES

N) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

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

P) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES DRUMS PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 500 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

PAVEMENT MARKINGS AND MARKERS

Q) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
DETOUR	PAINT	TEMPORARY RAISED

R) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

S) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

T) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

U) TRACE THE EXISTING AND PROPOSED MONOLITHIC ISLAND LOCATIONS WITH PROPER COLOR PAVEMENT MARKINGS PRIOR TO REMOVAL AND INSTALLATION. PLACE DRUMS TO DELINEATE ANY EXISTING AND PROPOSED MONOLITHIC ISLANDS AFTER REMOVAL AND BEFORE INSTALLATION

Kimley-Horn and Associates, Inc.

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 10-30-14

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

TRANSPORTATION OPERATIONS PLAN

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PROJ. REFERENCE NO.	SHEET NO.
17BP.7.R.37	TMP-3

PHASE I

PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, THE CONTRACTOR SHALL INSTALL WORK ZONE ADVANCE WARNING SIGNS AS SHOWN IN THE NCDOT ROADWAY STANDARD DRAWING NO. 1101.01.

AWAY FROM TRAFFIC, CONSTRUCT TEMPORARY DETOUR ROAD AND BRIDGE AS SHOWN ON SHEET TMP-4. INSTALL TEMPORARY PAVEMENT MARKINGS.

WHILE MAINTAINING EXISTING TRAFFIC ON ALAMANCE CHURCH RD (SR 1005), GLASS RD (SR 3319), AND ALL INTERSECTING DRIVEWAYS, USING NCDOT ROADWAY STANDARD DRAWING NO. 1101.02 FOR TEMPORARY LANE CLOSURES, TIE-IN ALAMANCE CHURCH RD WITH TEMPORARY DETOUR.

PHASE 2

SHIFT EXISTING TRAFFIC ONTO NEW DETOUR PATTERN AS SHOWN ON SHEET TMP-4.

IMPLEMENT A TEMPORARY CLOSURE OF ALAMANCE CHURCH RD.

AWAY FROM TRAFFIC, CONSTRUCT PROPOSED BRIDGE NO. 400238 OVER LITTLE ALAMANCE CREEK AND ALL OTHER ASSOCIATED ROADWAY IMPROVEMENTS. INSTALL FINAL PAVEMENT MARKINGS AND MARKERS.

PHASE 3

SHIFT DIVERTED TRAFFIC BACK ONTO NEWLY CONSTRUCTED ALAMANCE CHURCH RD AND BRIDGE.

AWAY FROM TRAFFIC, REMOVE TEMPORARY DETOUR ROAD AND BRIDGE.

WHILE MAINTAINING EXISTING TRAFFIC ON ALAMANCE CHURCH RD (SR 1005), GLASS RD (SR 3319), AND ALL INTERSECTING DRIVEWAYS, USING NCDOT ROADWAY STANDARD DRAWING NO. 1101.02 FOR TEMPORARY LANE CLOSURES, COMPLETE ANY REMAINING IMPROVEMENTS ALONG ALAMANCE CHURCH RD.

REMOVE ALL TRAFFIC CONTROL DEVICES.

Kimley-Horn and Associates, Inc.

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 10-30-14

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

PHASING

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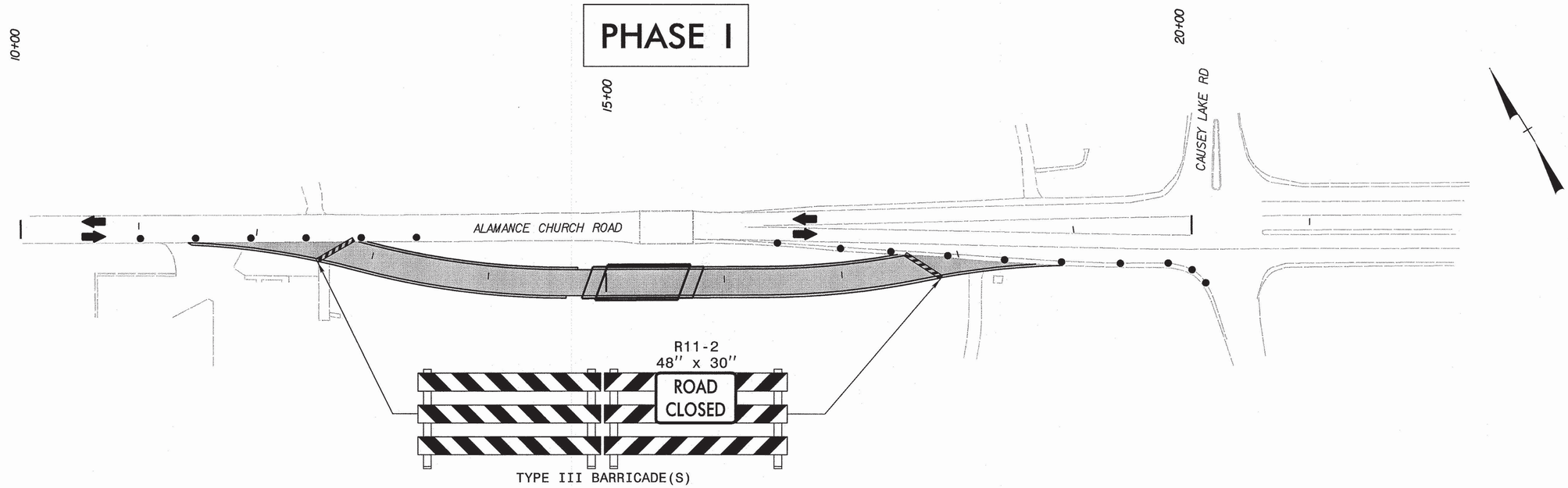
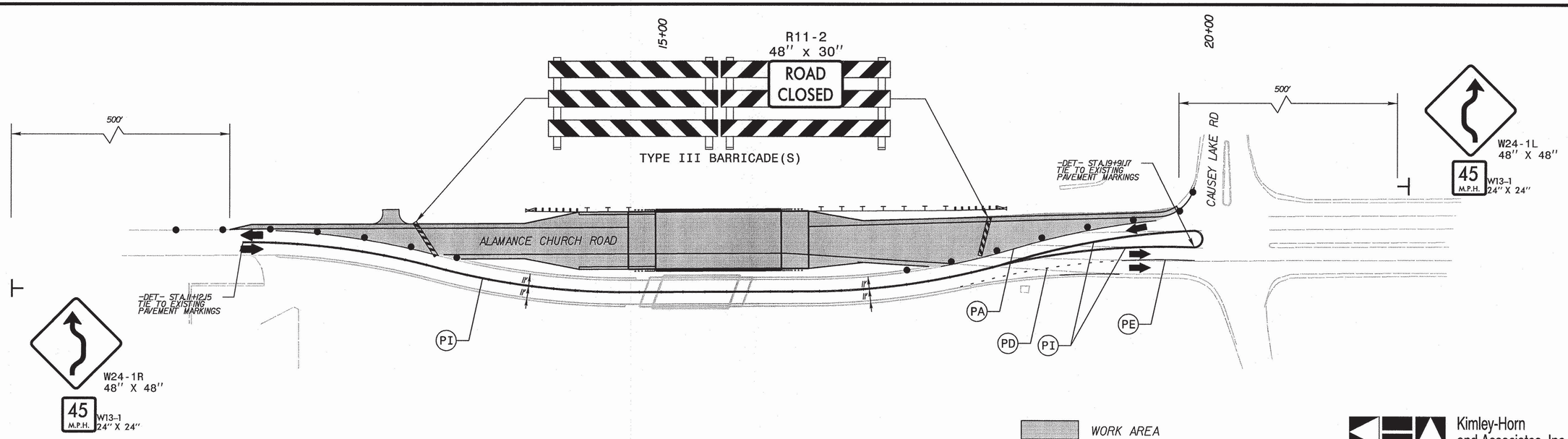
PROJ. REFERENCE NO.	SHEET NO.
17BP.7.R.37	TMP-4

PHASE I





WORK AREA

PHASE II

Kimley-Horn and Associates, Inc.

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 10-30-14

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

TRAFFIC CONTROL DETAILS

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PROJECT: 17BP.7.R.33

CONTRACT:

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10/30/2014

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

GUILFORD COUNTY

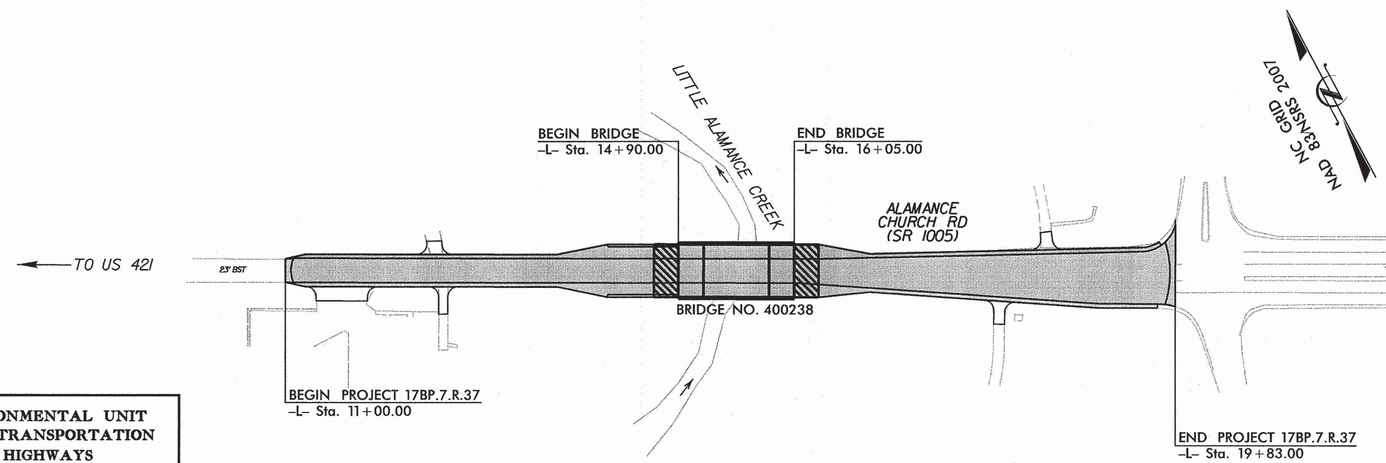
LOCATION: BRIDGE NO. 338 OVER LITTLE ALAMANCE CREEK OVER SR 1005 (ALAMANCE CHURCH ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.7.R.37	EC-1	

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

NORTH CAROLINA PROFESSIONAL SEAL 024436 10-30-14 ENGINEER JEFFREY W. MOORE



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	
1630.02	Silt Basin Type B	
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 / 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	

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

2012 STANDARD SPECIFICATIONS

Catherine A. Murrell
LEVEL IIIA NAME

706
LEVEL IIIA CERTIFICATION NO.

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

GRAPHIC SCALE

25 0 50
PLANS

25 0 50
PROFILE (HORIZONTAL)

5 0 10
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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 FOR THE NCDOT BY:

Kimley-Horn and Associates,
© 2013
Post Office Box 33068
Raleigh, North Carolina 27636
PE NO. F-0102

2012 STANDARD SPECIFICATIONS

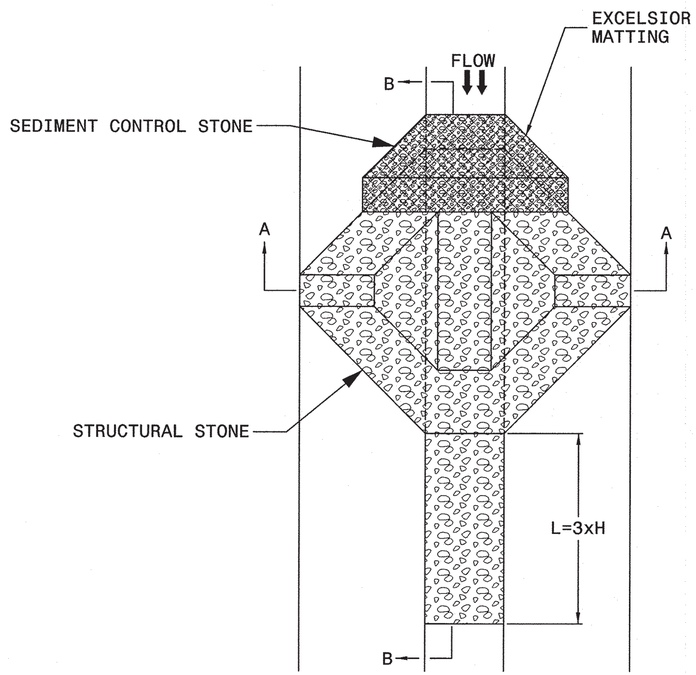
Roadway Standard Drawings

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.

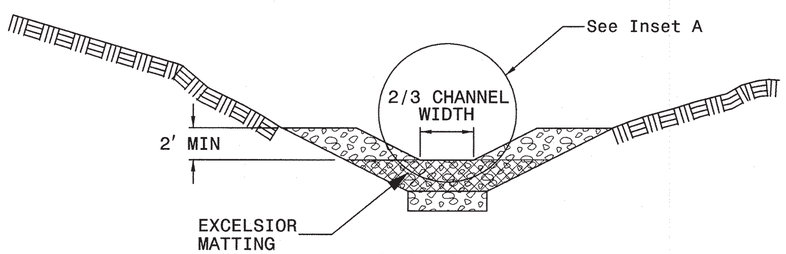
1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type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

PROJECT REFERENCE NO.	SHEET NO.
17BP.7.R.37	EC-2

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN



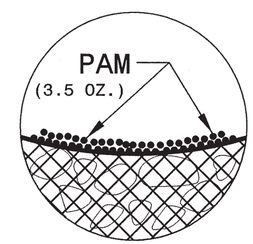
SECTION A-A

NOTES

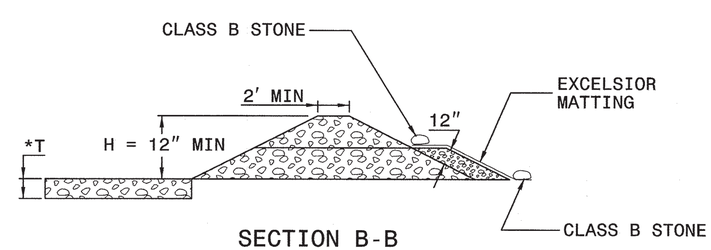
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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

INITIALLY APPLY 3.5 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION B-B

*T = 12" MIN., 18" MAX.

NOT TO SCALE

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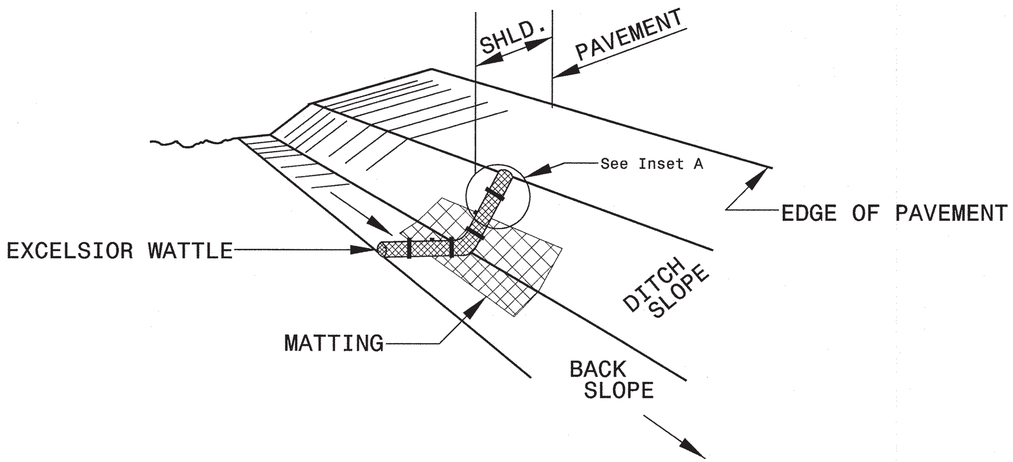
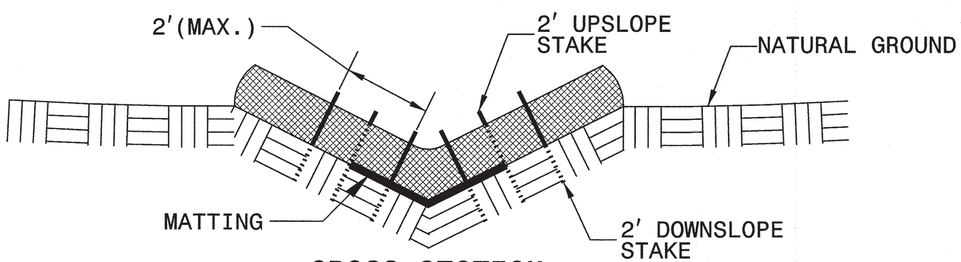
PROJECT REFERENCE NO.	SHEET NO.
17BP.7.R.37	EC-2A

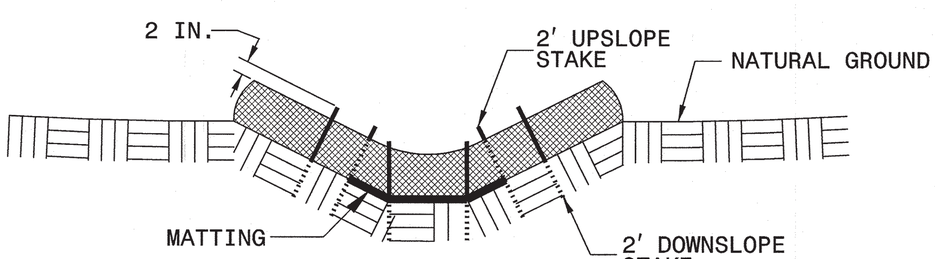
WATTLE DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

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

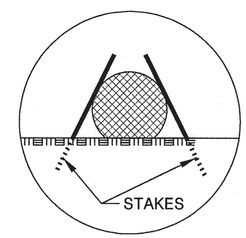
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

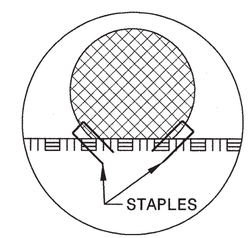
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

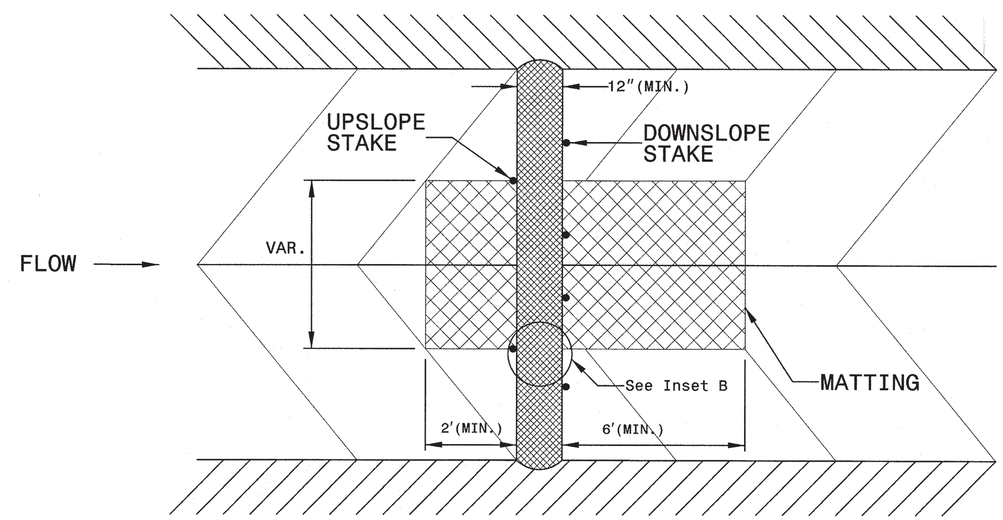
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



INSET B



TOP VIEW

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PROJECT REFERENCE NO.	SHEET NO.
17BP.7.R.37	EC-3

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
2-C	-DET-	12+60	14+50	LT	65
4	-L-	11+40	12+35	LT	15
4	-L-	16+15	18+00	RT	55
				SUBTOTAL	135
		MATTING FOR WATTLE INSTALLATION			110
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					7515
				TOTAL	7760
				SAY	7800

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

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PROJECT REFERENCE NO.	SHEET NO.
17BP.7.R.37	EC-3A

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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.

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EROSION CONTROL PLAN

PROJECT REFERENCE NO.	SHEET NO.
TIBP.T.R.37	EC-4/CONST.2-C
R/W SHEET NO.	

Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.
CONST. REV.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 10-30-14

HYDRAULICS ENGINEER

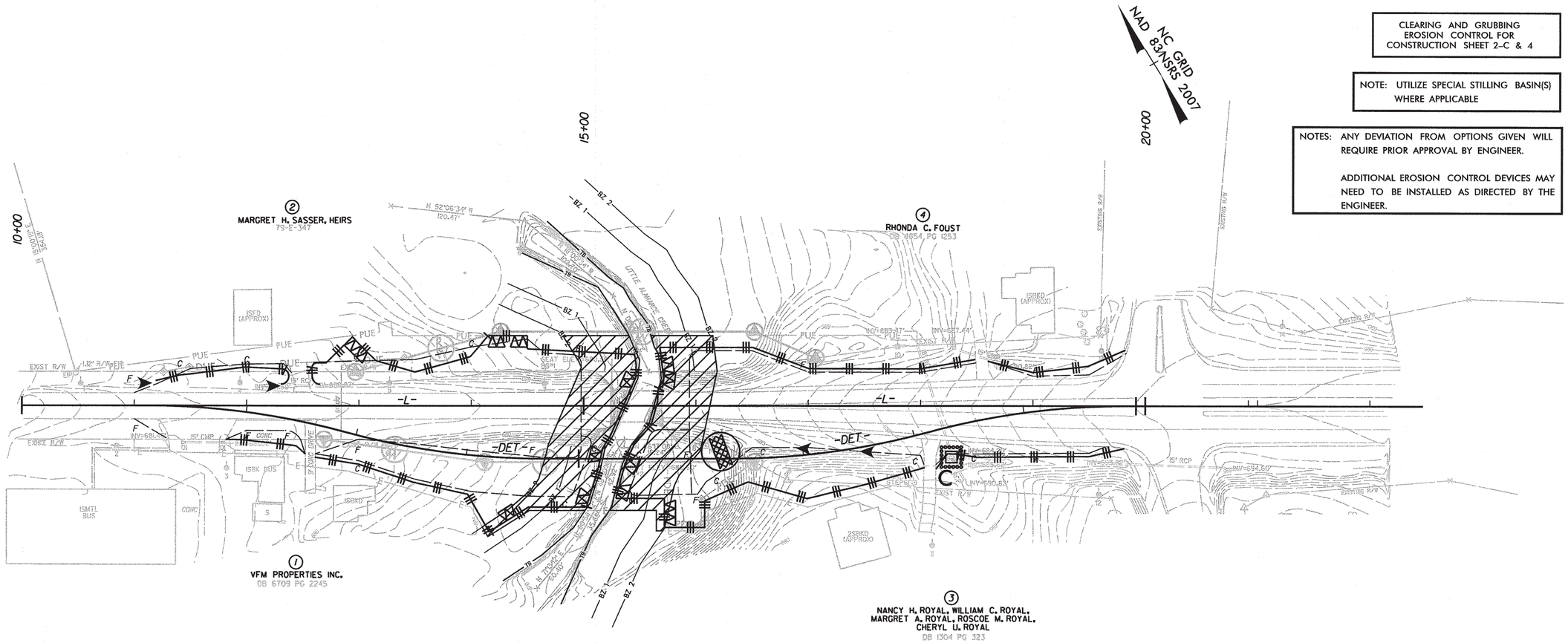
REVISIONS

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 2-C & 4

NOTE: UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.



ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

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10/30/2014

EROSION CONTROL PLAN

PROJECT REFERENCE NO.	SHEET NO.
17BP.7.R.37	EC-5/CONST.2-C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Kimley-Horn and Associates, Inc.

P.O. BOX 33068
RALEIGH, N.C. 27636-3068

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 10-30-14

RIGHT-OF-WAY REV.

CONST. REV.

REVISIONS

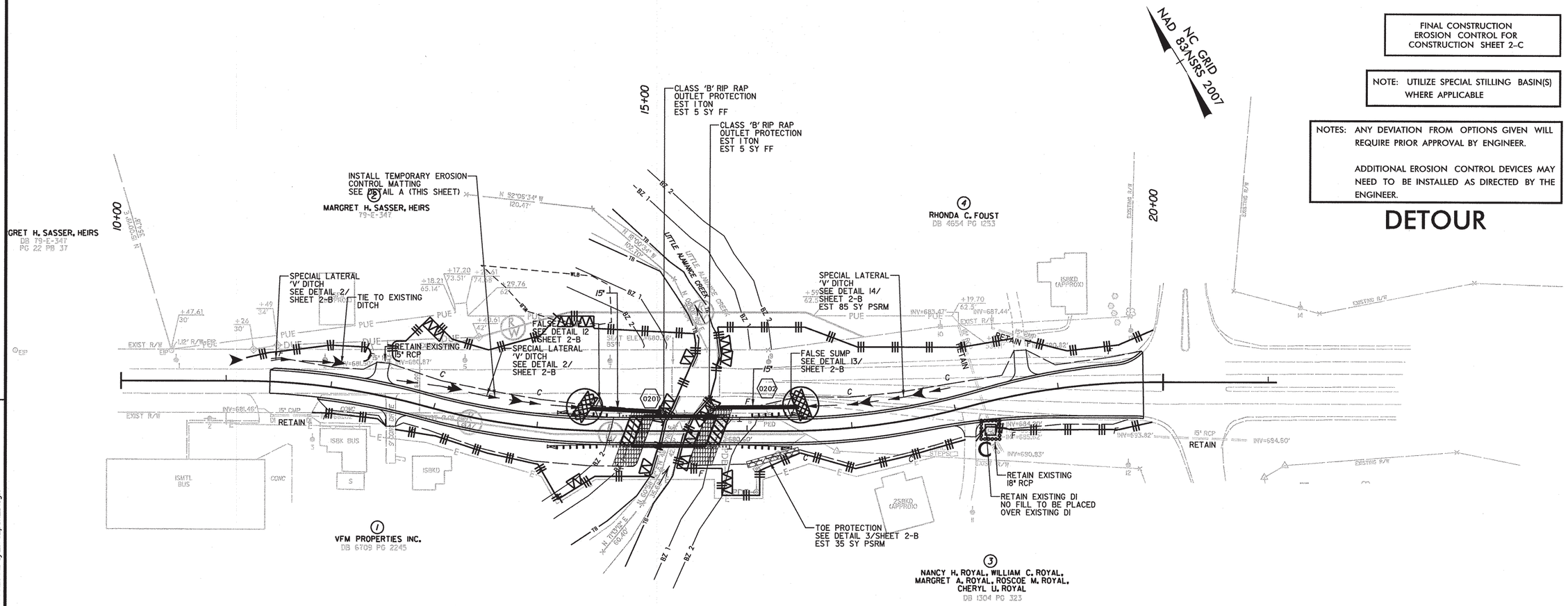
FINAL CONSTRUCTION EROSION CONTROL FOR CONSTRUCTION SHEET 2-C

NOTE: UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

DETOUR



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10/30/2014

EROSION CONTROL PLAN

PROJECT REFERENCE NO.	SHEET NO.
17BP.7.R.37	EC-6/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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P.O. BOX 33068
RALEIGH, N.C. 27636-3068

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 10-30-14

RIGHT-OF-WAY REV.

CONST. REV.

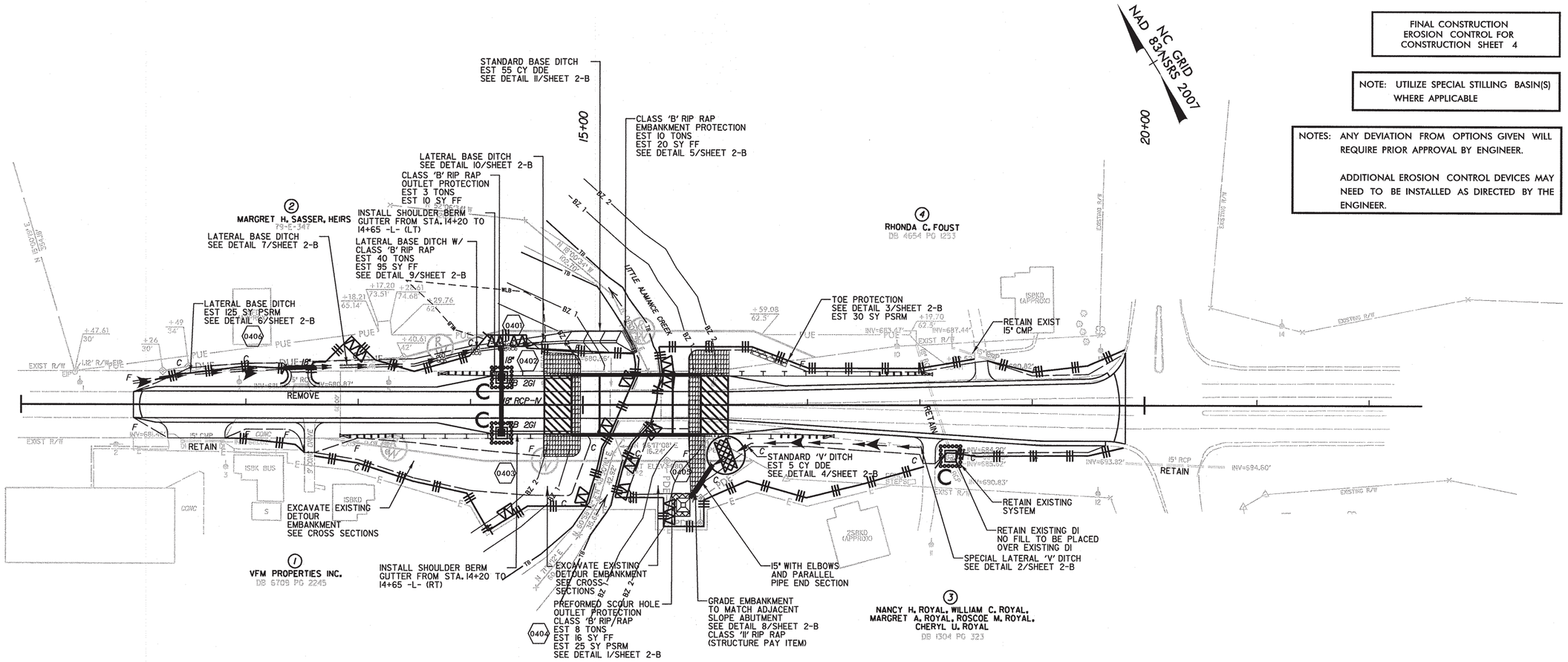
REVISIONS

FINAL CONSTRUCTION EROSION CONTROL FOR CONSTRUCTION SHEET 4

NOTE: UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.



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10/30/2014

PROJECT REFERENCE NO.	SHEET NO.
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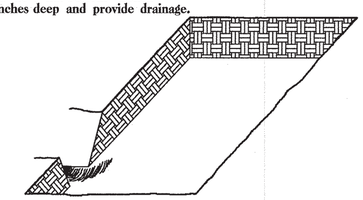
PLANTING DETAILS

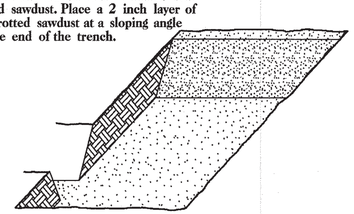
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

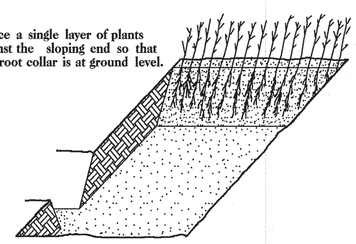
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



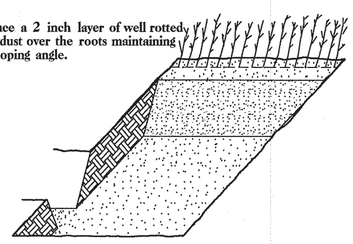
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

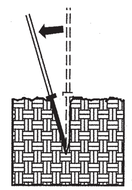


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

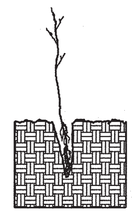


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

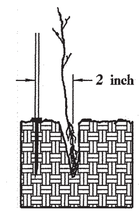
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



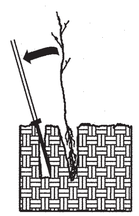
1. Insert planting bar as shown and pull handle toward planter.



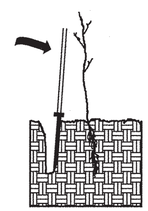
2. Remove planting bar and place seedling at correct depth.



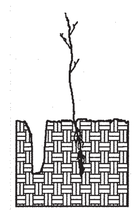
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12in - 18in BR
25% PLATANUS OCCIDENTALIS	SYCAMORE	12in - 18in BR
25% FRAXINUS PENNSYLVANICA	GREEN ASH	12in - 18in BR
25% BETULA NIGRA	RIVER BIRCH	12in - 18in BR

REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

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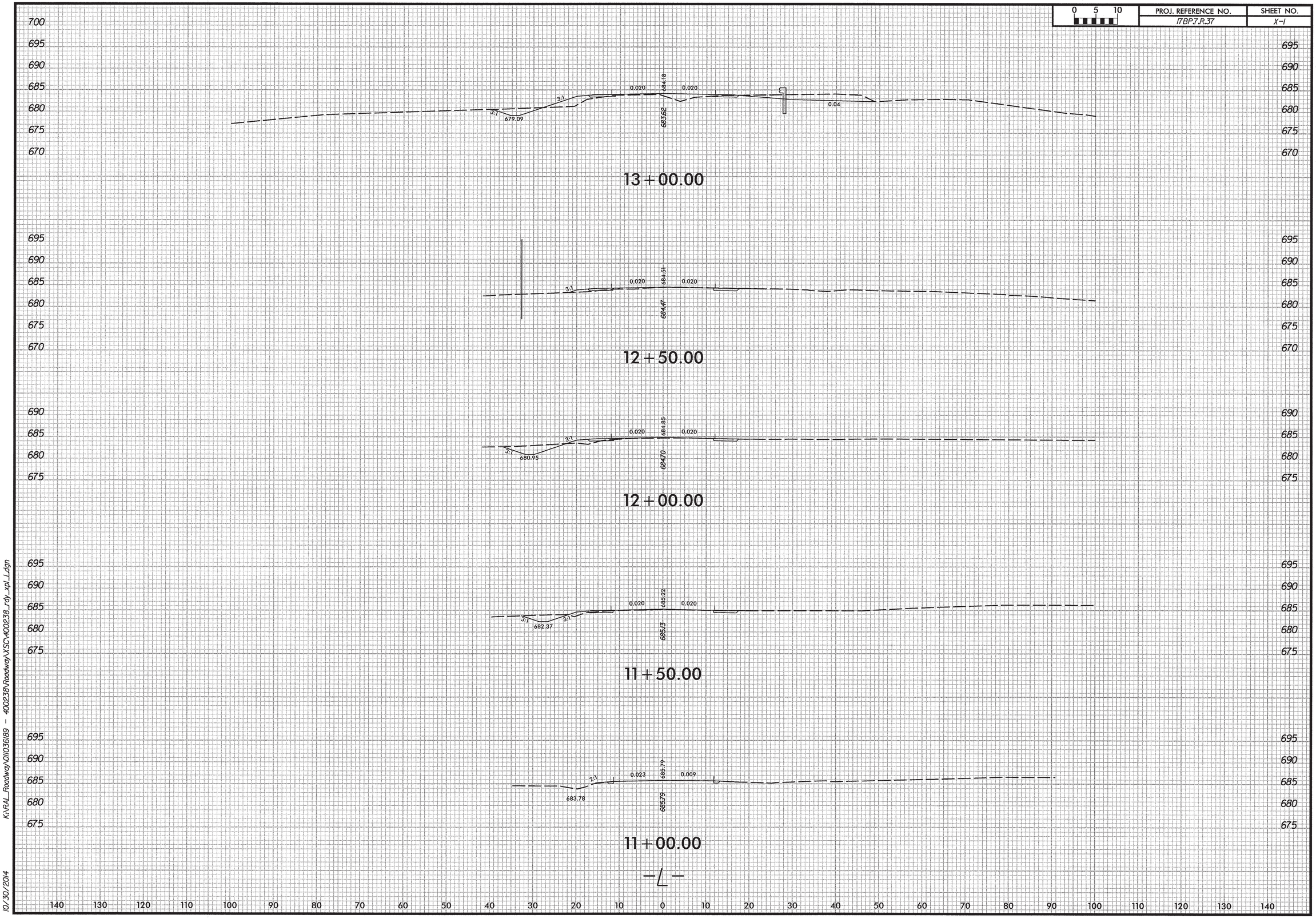

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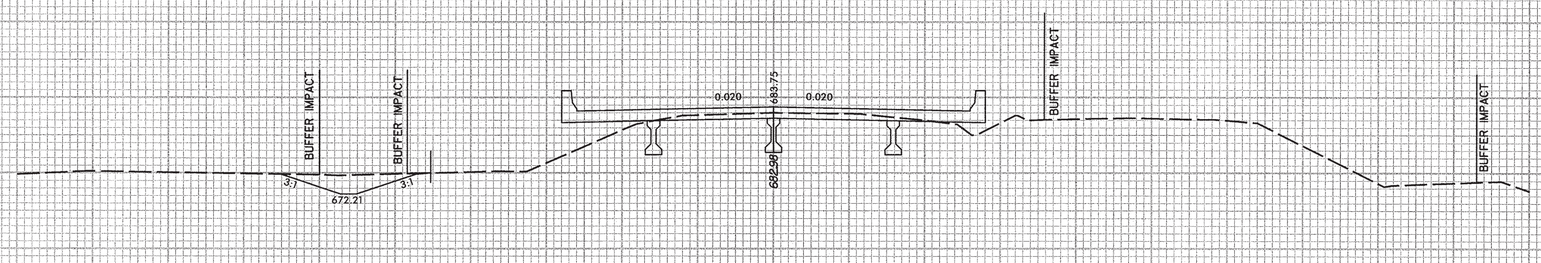

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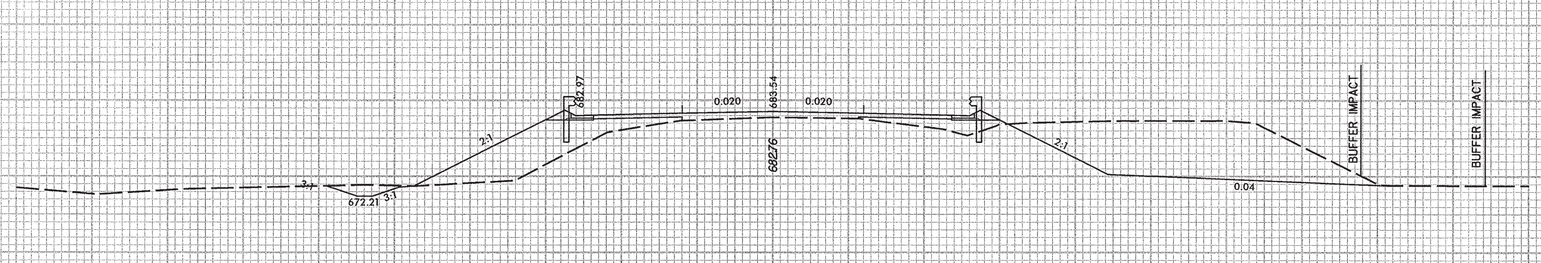

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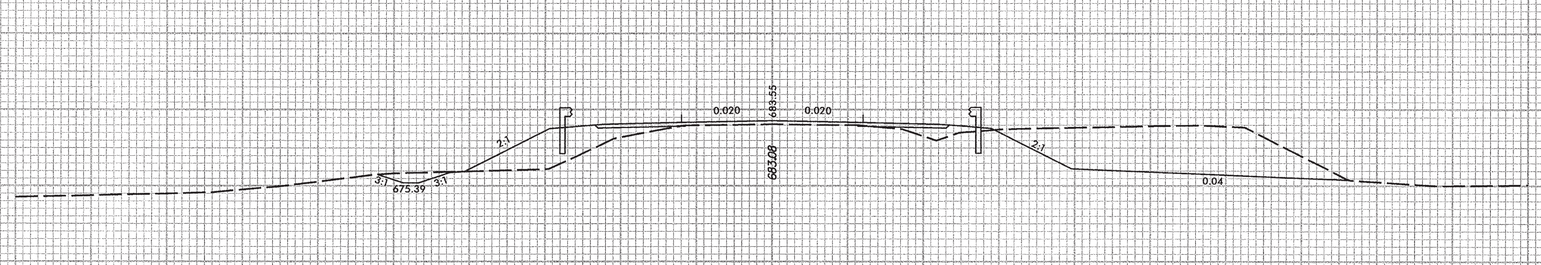

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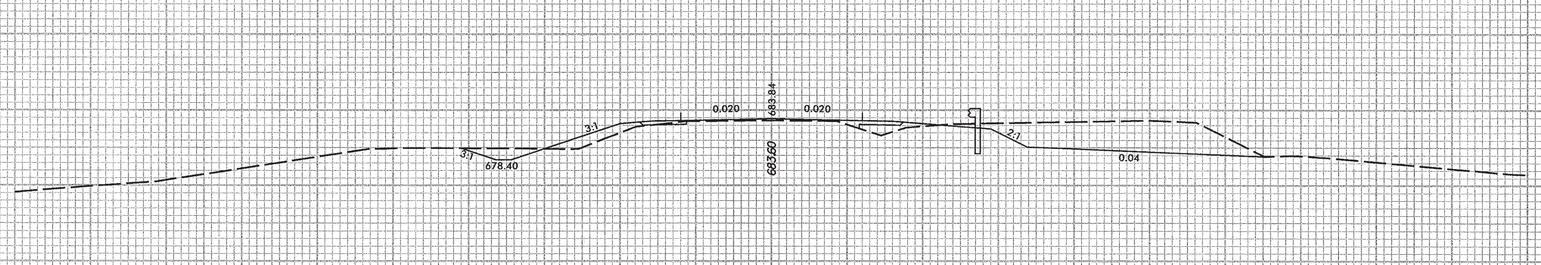

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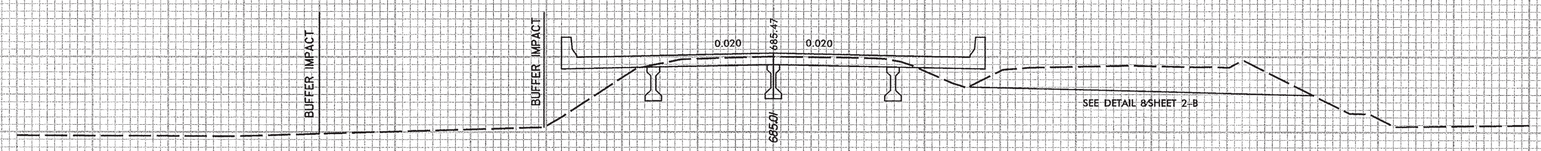

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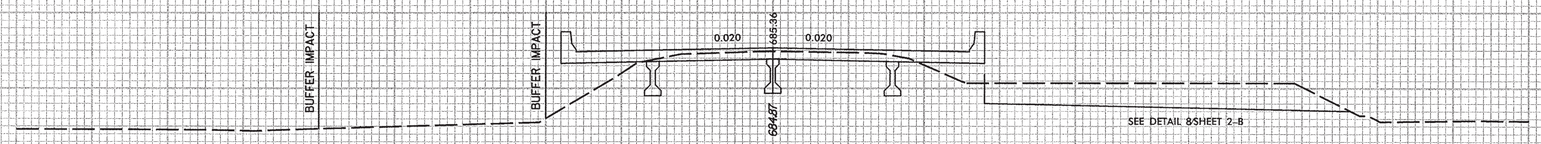

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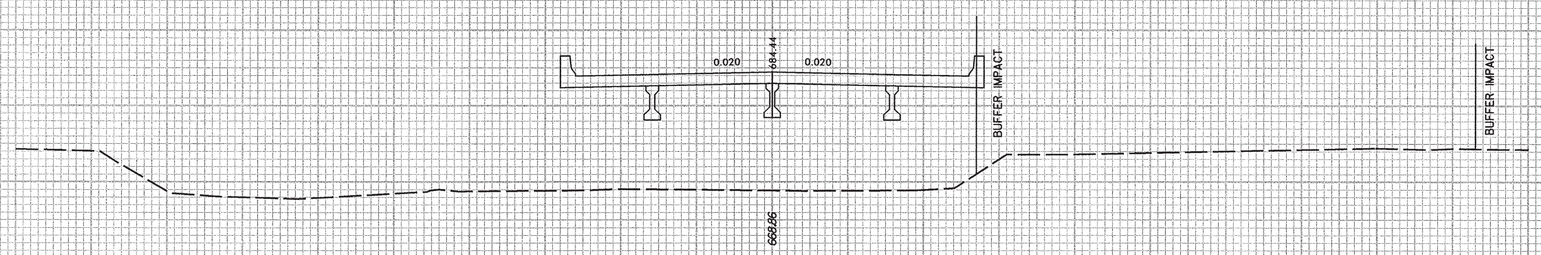

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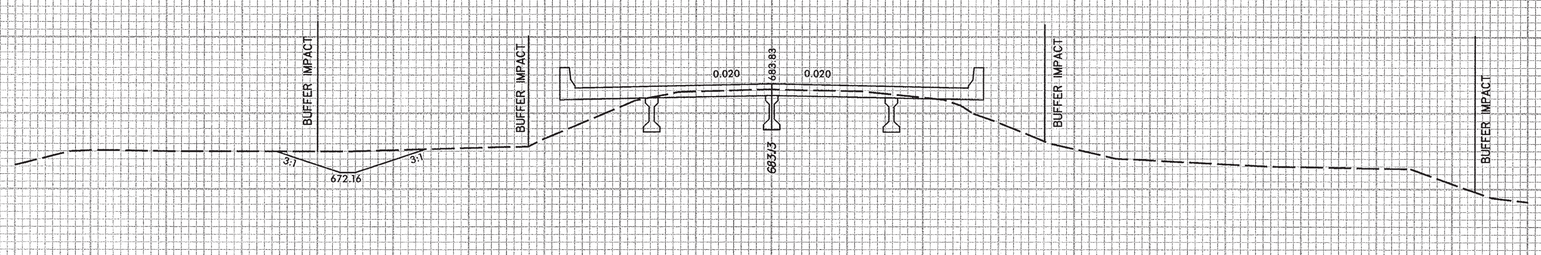

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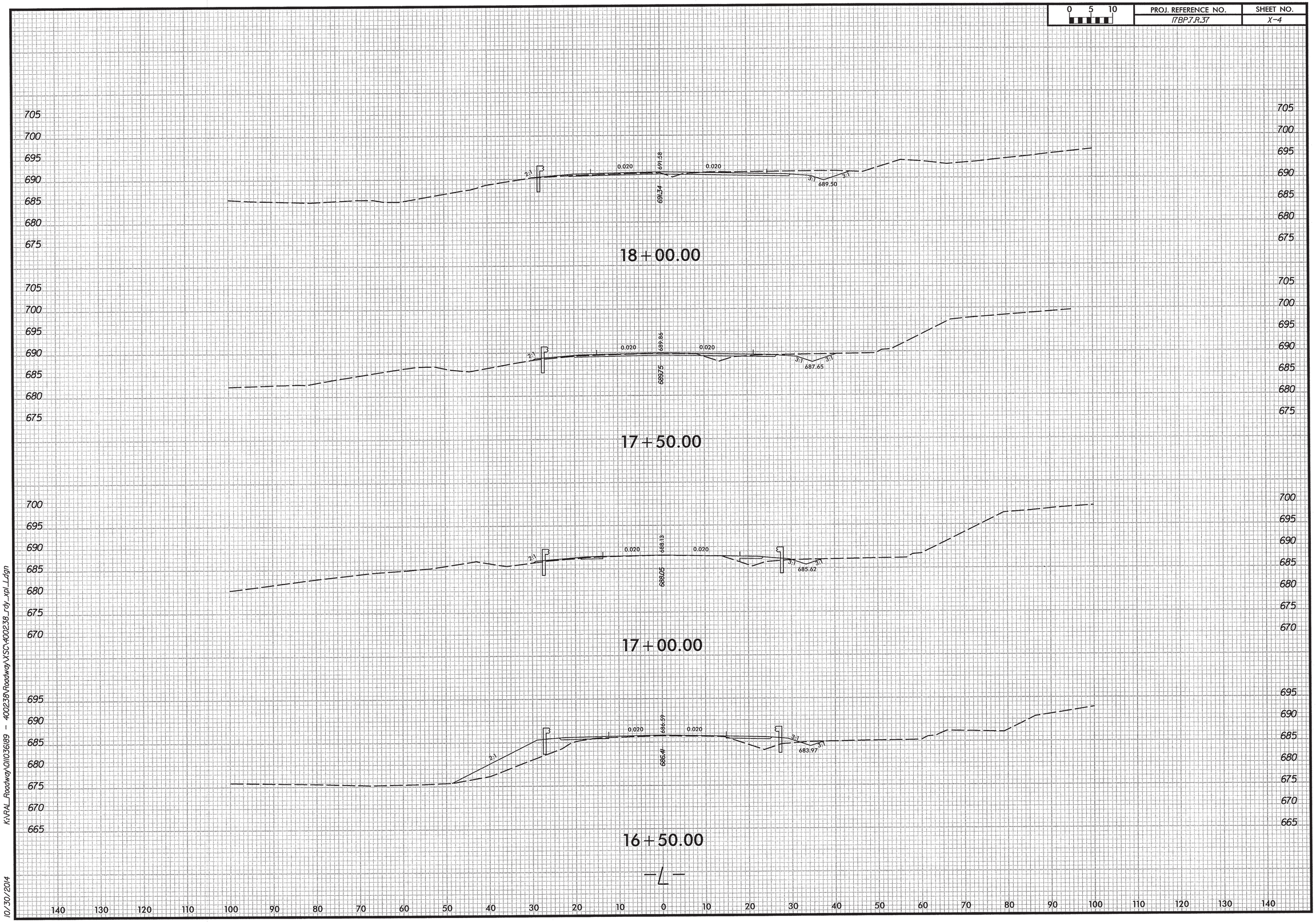

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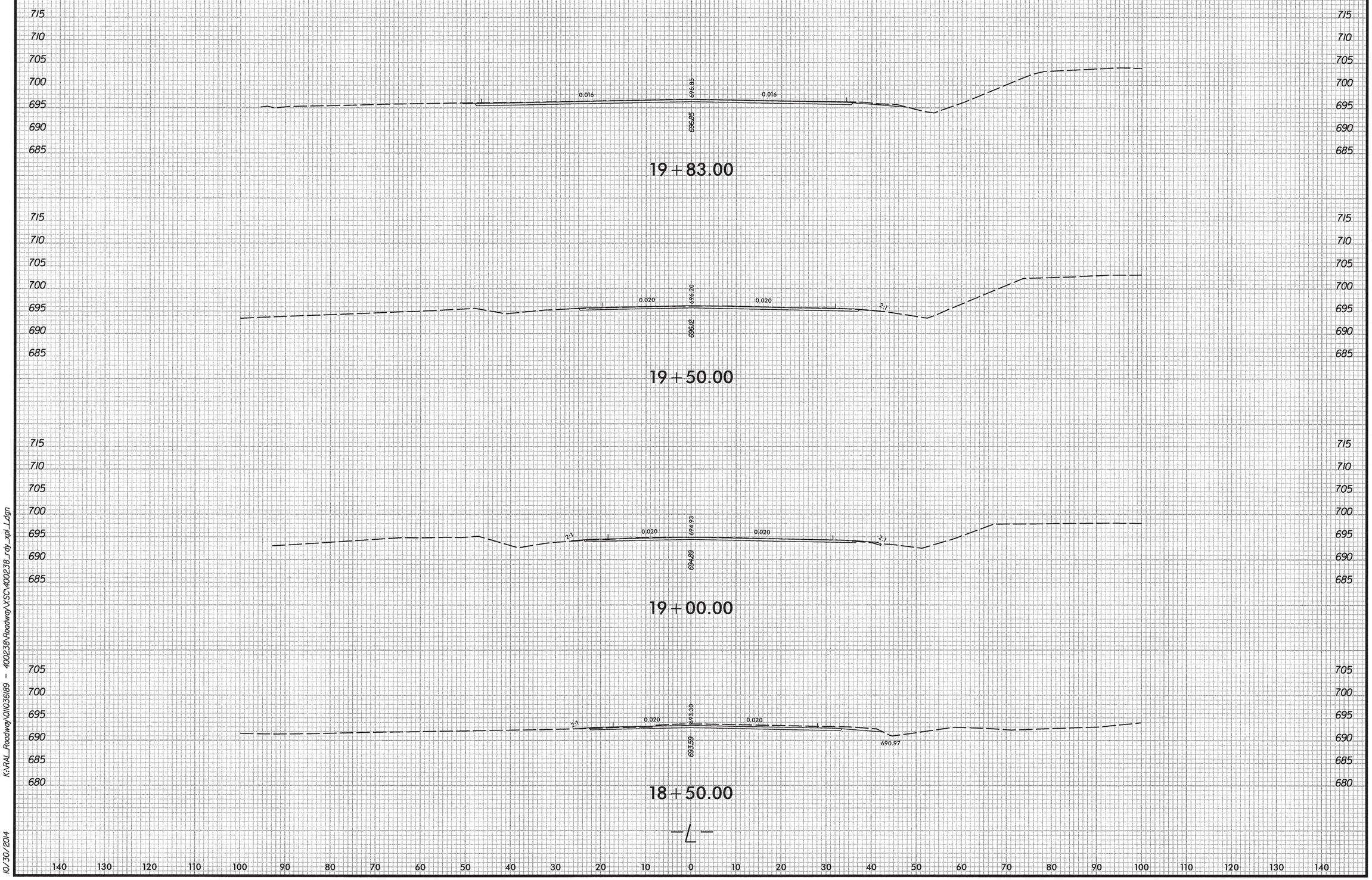

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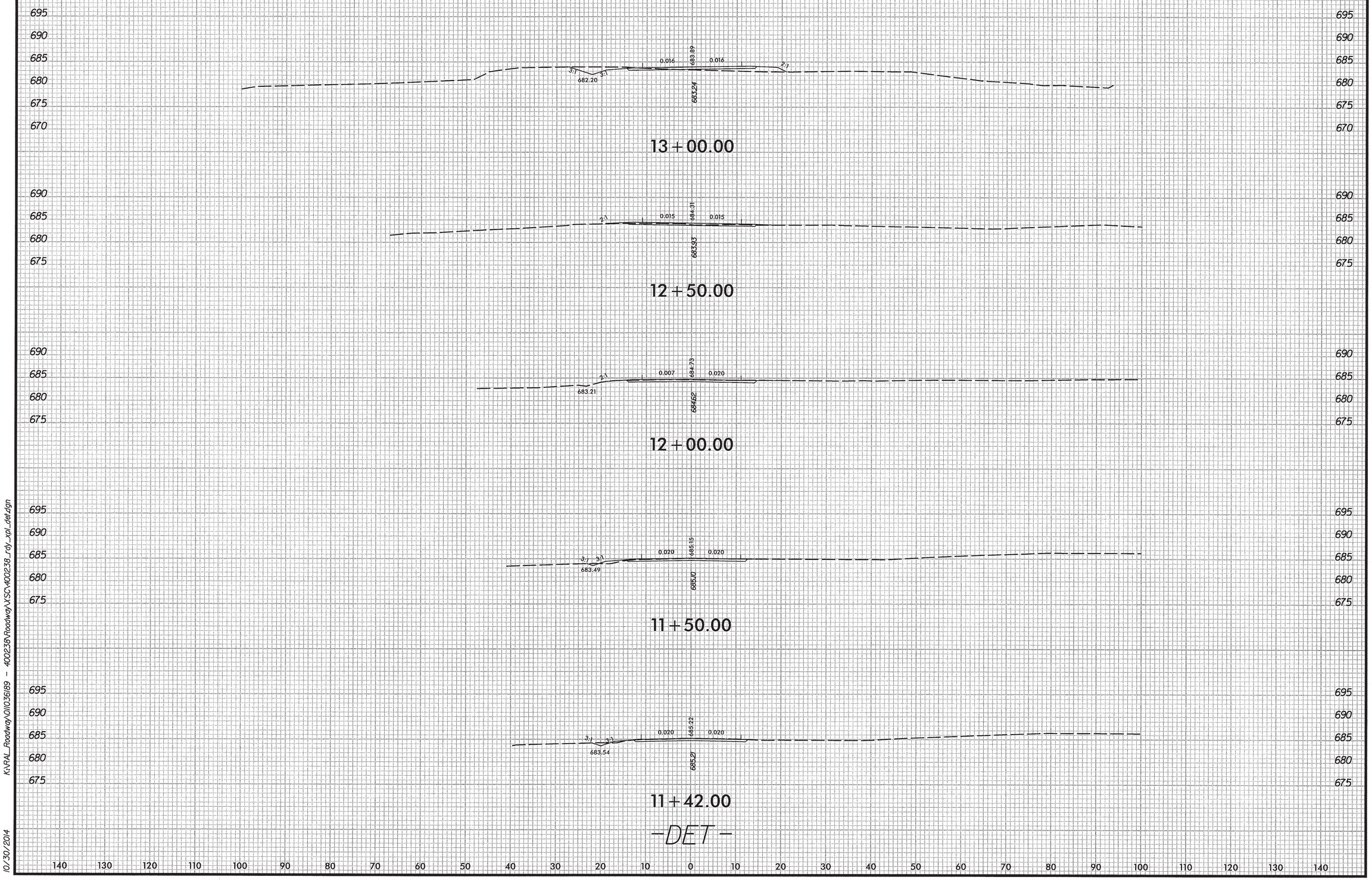

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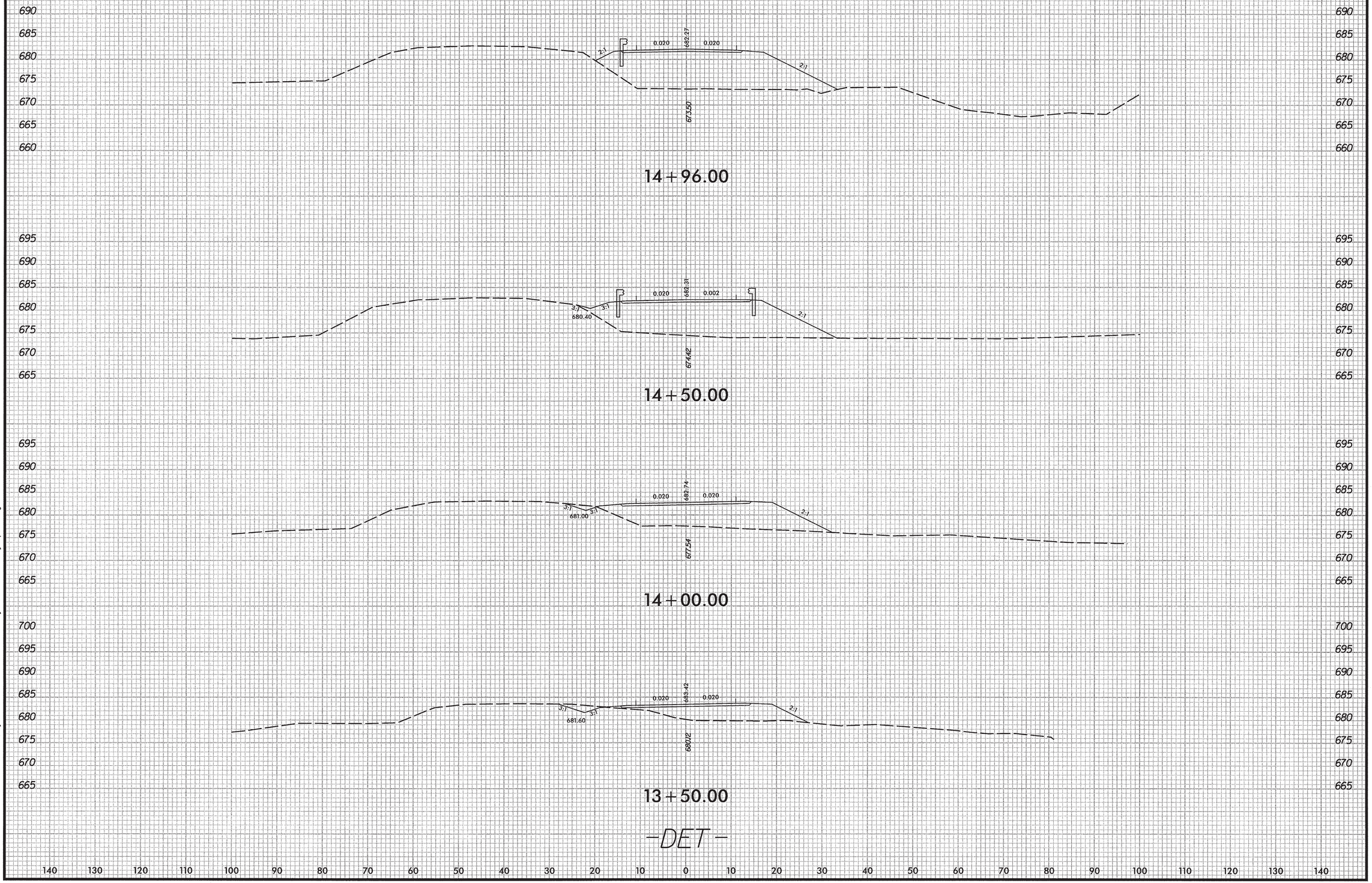

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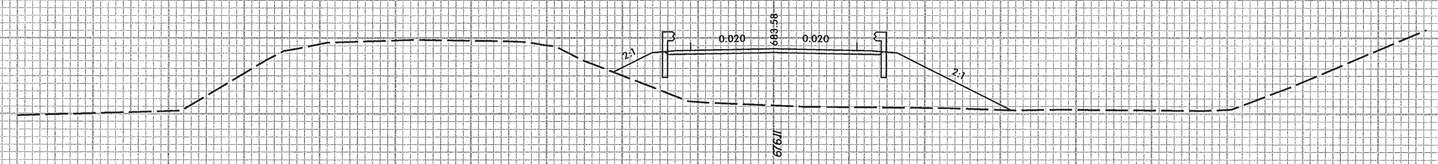

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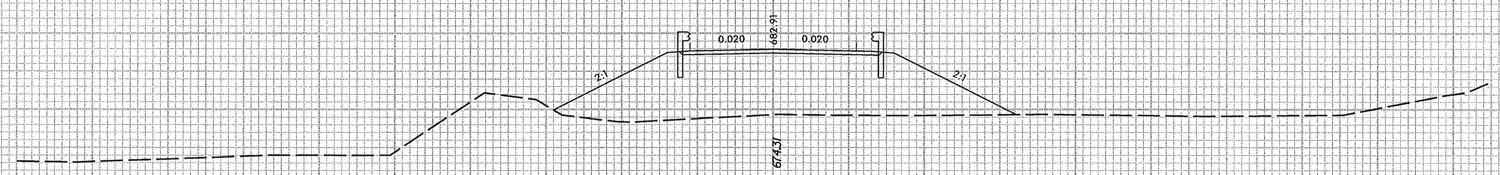

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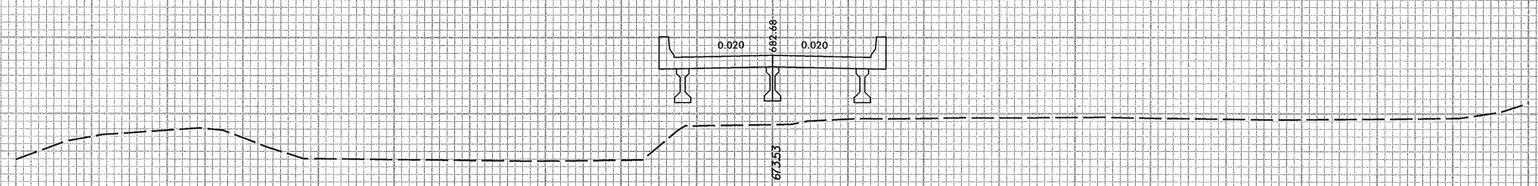

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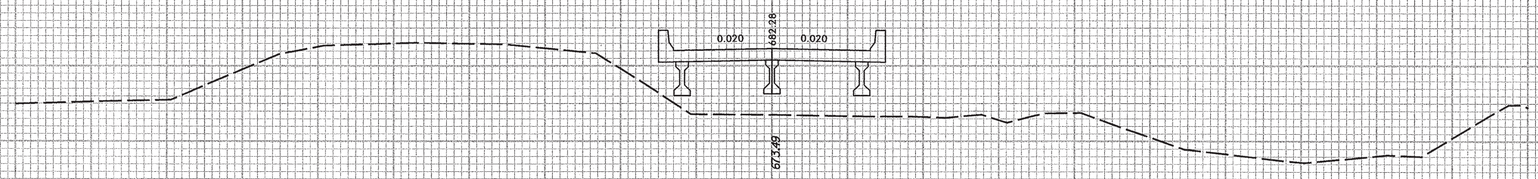

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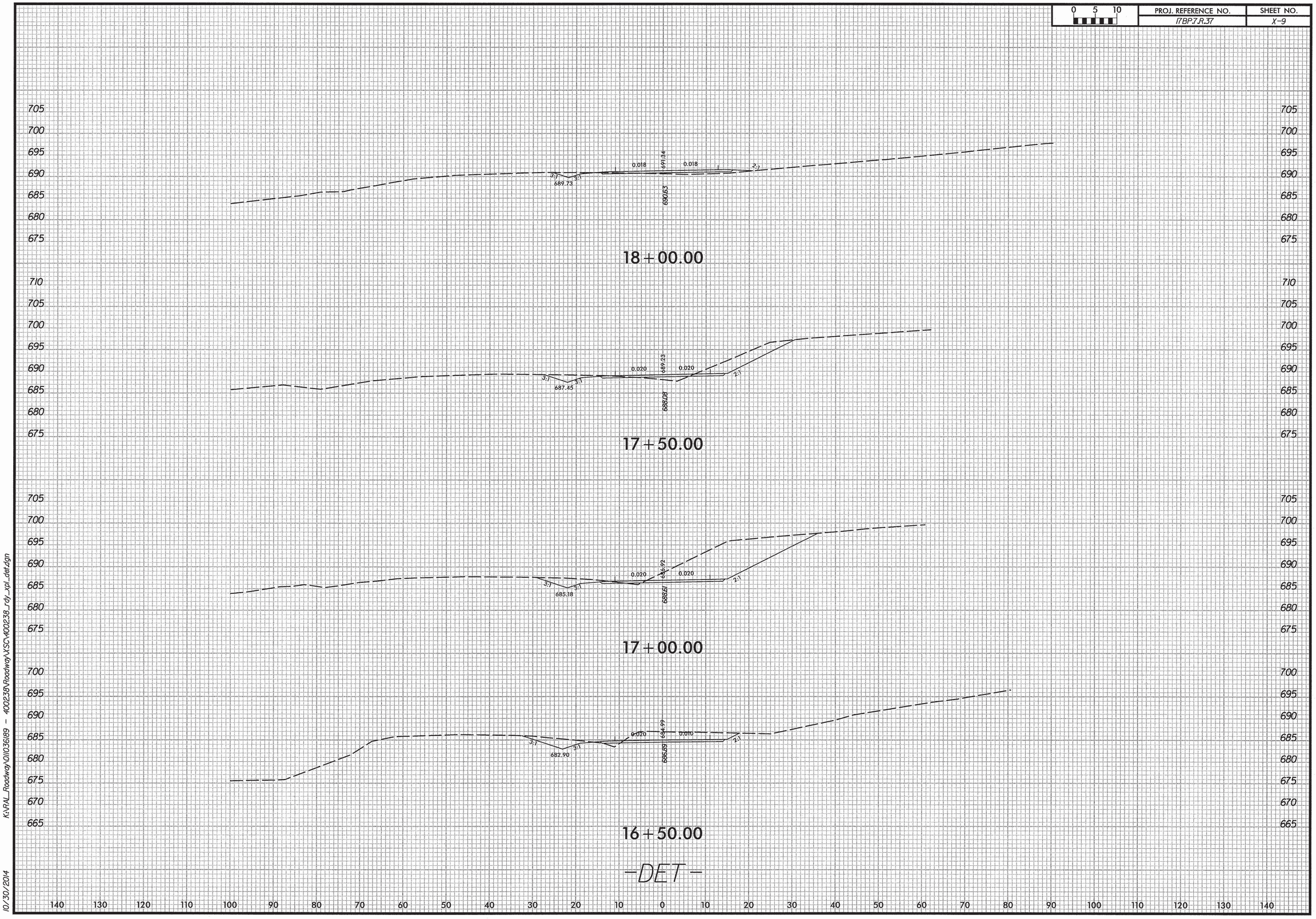

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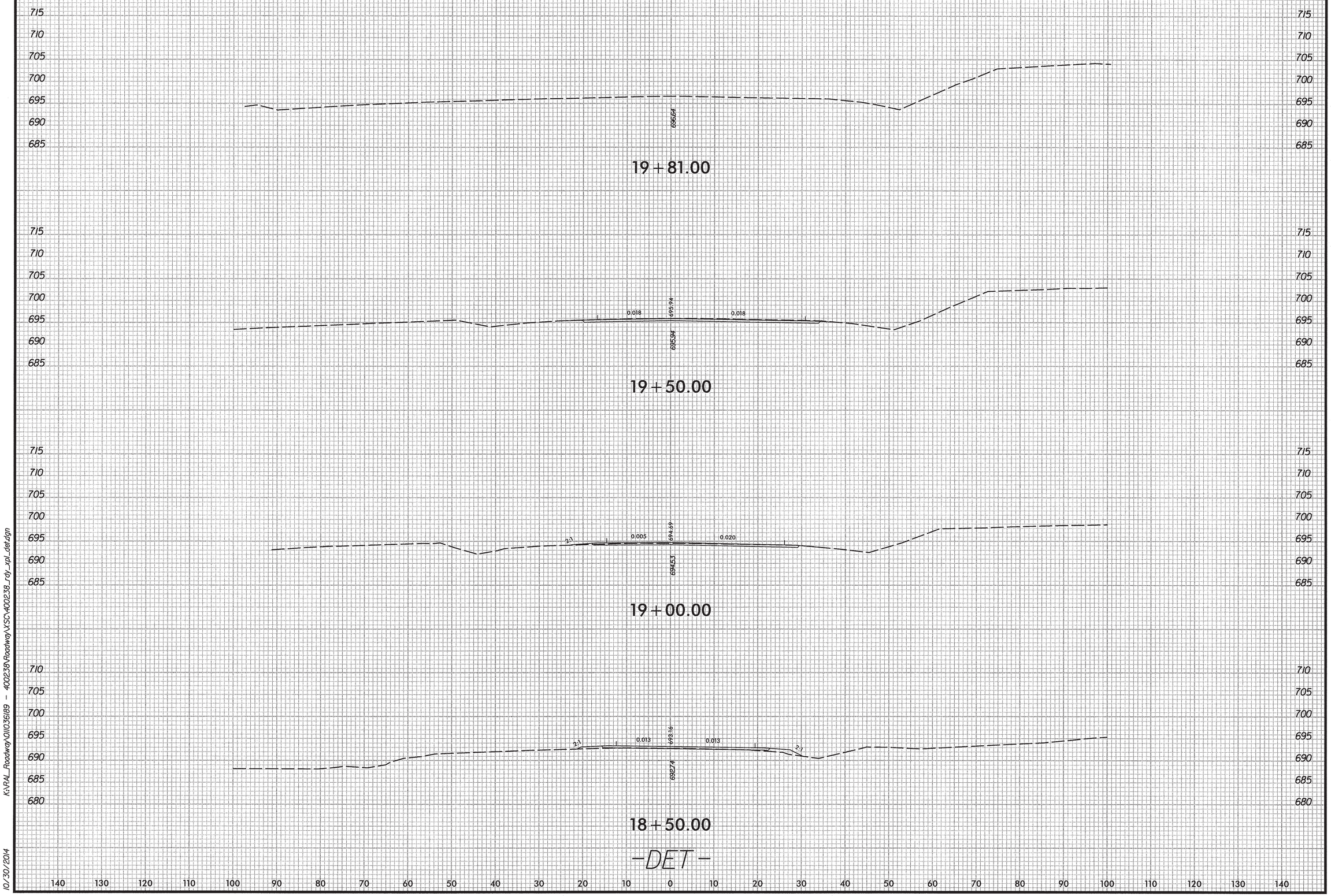

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