North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR NCDOT PROJECTS

(Version 2.06; Released June 2016)

WBS Element: 17BP.7.R.95 **TIP No.:** SF-670084 **County(ies):** Orange **Page** 1 **of** 1

General Project Information

WBS Element:	17BP.7.R.95	**TIP Number:**	SF-670084	**Project Type:**	Bridge Replacement	**Date:**	9/19/2016
NCDOT Contact:	Matthew Lauffer, PE			**Contractor / Designer:**	Fuh, David, PE		
Address:	NCDOT Hydraulics Unit 1590 Mail Services Unit Raleigh, NC 27560			**Address:**	ICA Engineering, Inc. 5121 Kingdom Way, Suite 100 Raleigh, NC 27607		
Phone:	(919) 707-6703			**Phone:**	(919) 900-1612		
Email:	mslauffer@ncdot.gov			**Email:**	david.fuh@hdrinc.com		
City/Town:	Chapel Hill			**County(ies):**	Orange		
River Basin(s):	Cape Fear			**CAMA County?**	No		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	0.27	**Surrounding Land Use:**	wooded, agricultural, scattered residential

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	1.0 ac.	0.8 ac.
Typical Cross Section Description:	Old Greensboro Road (SR 1005): 2 paved lanes (total 22' wide), 6' shoulder on each side (9' with guardrail). First 4' of shoulder is paved.	Old Greensboro Road (SR 1005): open shoulder section, 2 paved lane (total 20' wide) with 2' paved shoulder on each side;
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 5200 Year: 2025	Existing: 2600 Year: 2012

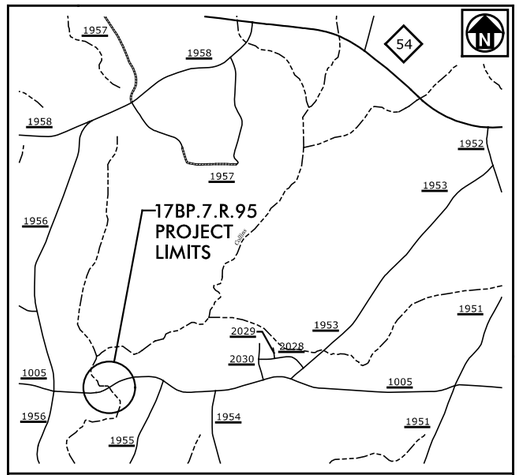
General Project Narrative: (Description of Minimization of Water Quality Impacts)

The North Carolina Department of Transportation (NCDOT) has proposed to replace Orange County Bridge #670084 on Old Greensboro Road (SR 1005) over Collins Creek. The existing structure is a three span bridge (1@30'3", 1@30', 1@30'3") and is steel plank deck on I-Beams supported by timber caps and timber piles. Interior bents are timber caps, posts, and concrete sills. The proposed structure is a Single Span 33" Box Beam with 4' Deep Caps, 1@90' and will be at downstream of the existing crossing. The proposed bridge will have spill through abutments. This structure has been designed to have as little environmental and surface water impacts as possible. To avoid direct discharge of bridge storm water into the receiving water, deck drains are not required for the proposed bridge. Storm water impacts to the stream have been minimized by utilizing grated inlets and pipes to collect bridge storm water and use rip rap outlet protection at 14+80 RT to dissipate energy to provide a diffuse flow (non-erosive sheet flow) before entering the buffer. This diffuse flow will run for a distance of 60'+/- in a wooded area before entering the stream. At the same (SW) quadrant, a Lateral 'V' ditch will have outlet at 14+50 RT and becomes diffuse flow for a distance of 40'+/- in a wooded area before entering the buffer. At the NW quadrant, a special cut ditch will have outlet at 14+80 LT into a grated inlet which will discharge at 14+80 RT and become diffuse flow for a distance of 10'+/- before entering the buffer. At the NE quadrant the roadway is in fill section. Toe protection with Class B rip rap will be installed to prevent erosion. In the SE quadrant there will be a Lateral 2' Base ditch to replace the existing ditch that has outlet to the stream. Rip rap at embankment will be installed at the outlet to prevent bank erosion. The existing road has two paved lanes (total 20' wide) with 2' paved shoulder on each side. The proposed road has two paved lanes (total 22' wide) with 4' paved shoulder on each side . The increases in impervious areas and stormwater discharges (post vs pre condition) are insignificant and the existing ditches do not need to be modified. Therefore, additional stormwater measures are not required.

Waterbody Information

Surface Water Body (1):	Collins Creek		**NCDWR Stream Index No.:**	16-30-(0.5)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply V (WS-V)			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)	None		
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:				**Buffer Rules in Effect:**	Jordan Lake	
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	No	
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

CONTRACT: TIP PROJECT: 17BP.7.R.95



VICINITY MAP
(NOT TO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ORANGE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.7.R.95	1	

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

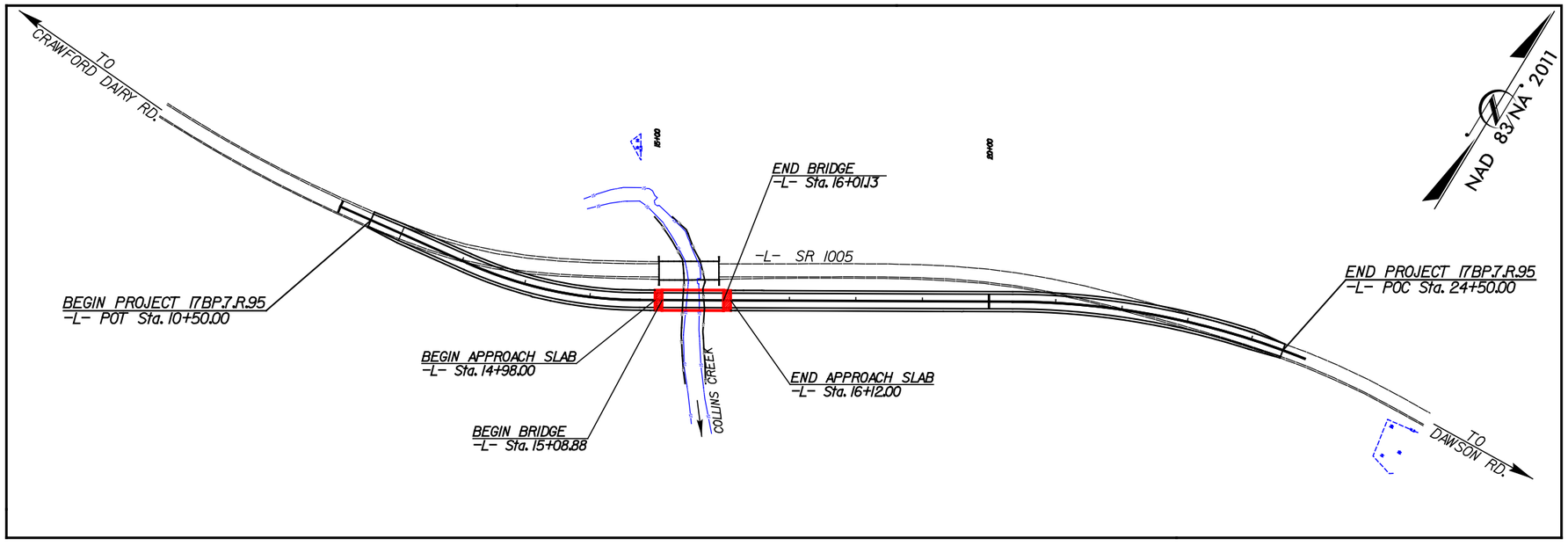
ENGLISH

PERMIT DRAWING
SHEET 1 OF 6

LOCATION: BRIDGE NO. 84 OVER COLLINS CREEK ON SR 1005 (OLD GREENSBORO ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

65% PLANS



WETLAND AND SURFACE WATER IMPACTS PERMIT

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

ADT 2012 = 2600

ADT 2025 = 5200

V = 45 MPH

SUB REGIONAL TIER
MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT = 0.248 MILES

LENGTH STRUCTURE TIP PROJECT = 0.017 MILES

TOTAL LENGTH TIP PROJECT = 0.265 MILES

Prepared In the Office of Hatch Mott MacDonald for
DIVISION 7
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

LETTING DATE:

TIM JORDAN, PE
PROJECT ENGINEER

DAVID FUH, PE
HYDRAULICS ENGINEER

NCDOT CONTACT: TIM POWERS, PE
DIVISION BRIDGE PROGRAM MANAGER

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

HYDRAULICS ENGINEER

SIGNATURE: P.E.

PLANS PREPARED BY:

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LICENSE NO. F-0669

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5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: F-0258

9/19/2016
ICA ENGINEERING, INC.
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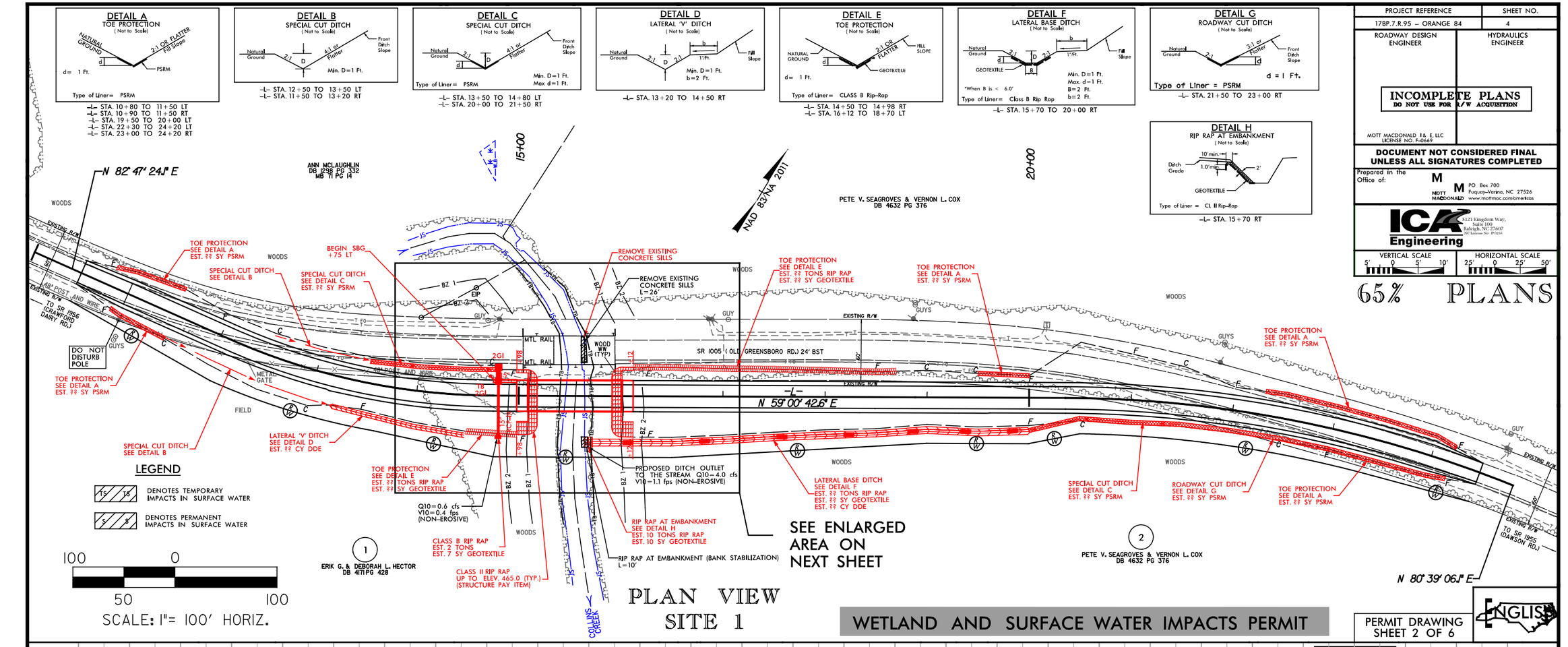
DETAIL A
TOE PROTECTION
(Not to Scale)
NATURAL GROUND
2:1 OR FLATTER Fill Slope
d
PSRM
d= 1 Ft.
Type of Liner= PSRM
-L- STA. 10+80 TO 11+50 LT
-L- STA. 10+90 TO 11+50 RT
-L- STA. 19+50 TO 20+00 LT
-L- STA. 22+30 TO 24+20 LT
-L- STA. 23+00 TO 24+20 RT
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
2:1
D
4:1 or Flatter
Front Ditch Slope
Min. D=1 Ft.
-L- STA. 12+50 TO 13+50 LT
-L- STA. 11+50 TO 13+20 RT
DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
2:1
d
D
4:1 or Flatter
Front Ditch Slope
Min. D=1 Ft.
Max d=1 Ft.
Type of Liner= PSRM
-L- STA. 13+50 TO 14+80 LT
-L- STA. 20+00 TO 21+50 RT
DETAIL D
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
2:1
D
2:1
b
1'/Ft.
Fill Slope
Min. D=1 Ft.
b=2 Ft.
-L- STA. 13+20 TO 14+50 RT
DETAIL E
TOE PROTECTION
(Not to Scale)
NATURAL GROUND
2:1 OR FLATTER
FILL SLOPE
d
GEOTEXTILE
d= 1 Ft.
Type of Liner= CLASS B Rip-Rap
-L- STA. 14+50 TO 14+98 RT
-L- STA. 16+12 TO 18+70 LT
DETAIL F
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
2:1
d
D
2:1
b
1'/Ft.
Fill Slope
GEOTEXTILE
B
*When B is < 6.0'
Min. D=1 Ft.
Max. d=1 Ft.
B=2 Ft.
b=2 Ft.
Type of Liner= Class B Rip Rap
-L- STA. 15+70 TO 20+00 RT
DETAIL G
ROADWAY CUT DITCH
(Not to Scale)
Natural Ground
2:1
3:1 or Flatter
Front Ditch Slope
d
d = 1 Ft.
Type of Liner = PSRM
-L- STA. 21+50 TO 23+00 RT
DETAIL H
RIP RAP AT EMBANKMENT
(Not to Scale)
10' min.
Ditch Grade
1.0' min.
2'
GEOTEXTILE
Type of Liner = CL II Rip-Rap
-L- STA. 15+70 RT
PROJECT REFERENCE
17BP.7.R.95 – ORANGE 84
SHEET NO.
4
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Prepared in the Office of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas
ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC. 27607
VERTICAL SCALE
5' 0 5' 10'
HORIZONTAL SCALE
25' 0 25' 50'
65% PLANS
N 82° 47' 24.1" E
WOODS
EXISTING R/W
ABI POST AND WIRE
TO SR 1956 (CRAWFORD DAIRY RD.)
DO NOT DISTURB POLE
GUYS
TOE PROTECTION SEE DETAIL A EST. ?? SY PSRM
SPECIAL CUT DITCH SEE DETAIL B
SPECIAL CUT DITCH SEE DETAIL C EST. ?? SY PSRM
BEGIN SBG +75 LT
ANN MCLAUGHLIN DB 1298 PG 332 MB 71 PG 14
15+00
20+00
NAD 83/NA 2011
PETE V. SEAGROVES & VERNON L. COX DB 4632 PG 376
REMOVE EXISTING CONCRETE SILLS
REMOVE EXISTING CONCRETE SILLS L=26'
TOE PROTECTION SEE DETAIL E EST. ?? TONS RIP RAP EST. ?? SY GEOTEXTILE
TOE PROTECTION SEE DETAIL A EST. ?? SY PSRM
BZ 1
BZ 2
EIP
GUY
MTL RAIL
WOOD WW (TYP)
2GI
TR 2GI
SR 1005 (OLD GREENSBORO RD.) 24' BST
-L-
N 59° 00' 42.6" E
METAL GATE
FIELD
LATERAL 'V' DITCH SEE DETAIL D EST. ?? CY DDE
TOE PROTECTION SEE DETAIL E EST. ?? TONS RIP RAP EST. ?? SY GEOTEXTILE
PROPOSED DITCH OUTLET TO THE STREAM Q10=4.0 cfs V10=1.1 fps (NON-EROSIVE)
Q10=0.6 cfs V10=0.4 fps (NON-EROSIVE)
RIP RAP AT EMBANKMENT SEE DETAIL H EST. 10 TONS RIP RAP EST. 10 SY GEOTEXTILE
RIP RAP AT EMBANKMENT (BANK STABILIZATION) L=10'
CLASS B RIP RAP EST. 2 TONS EST. 7 SY GEOTEXTILE
CLASS II RIP RAP UP TO ELEV. 465.0 (TYP.) (STRUCTURE PAY ITEM)
LATERAL BASE DITCH SEE DETAIL F EST. ?? TONS RIP RAP EST. ?? SY GEOTEXTILE EST. ?? CY DDE
SPECIAL CUT DITCH SEE DETAIL E EST. ?? SY PSRM
ROADWAY CUT DITCH SEE DETAIL G EST. ?? SY PSRM
TOE PROTECTION SEE DETAIL A EST. ?? SY PSRM
TO SR 1955 (DAWSON RD.)
N 80° 39' 06.1" E
COLLINS CREEK
LEGEND
TS / TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S / S DENOTES PERMANENT IMPACTS IN SURFACE WATER
SEE ENLARGED AREA ON NEXT SHEET
1 ERIK G. & DEBORAH L. HECTOR DB 4171 PG 428
2 PETE V. SEAGROVES & VERNON L. COX DB 4632 PG 376
100 0 50 100
SCALE: 1"= 100' HORIZ.
PLAN VIEW SITE 1
WETLAND AND SURFACE WATER IMPACTS PERMIT
PERMIT DRAWING SHEET 2 OF 6
-L-
PI = 23+00.00
EL = 495.30'
VC = 200'
K = 75
PI = 18+25.00
EL = 470.22'
VC = 390'
K = 79
BEGIN PROJECT STA. 10+50.00
BEGIN GRADE STA. 11+00.00 EL = 467.52
BLEND TO EXIST
END GRADE STA. 24+00.00 EL = 497.92
END PROJECT STA. 24+50.00
BRIDGE ℄ STA. 15+55 -L- SINGLE SPAN 33" BOX BEAM W/4" DEEP CAPS 1 @ 90'; SKEW 90° GP ELEV. = 469.21
3.5' KEY DEPTH (TYP.)
NORMAL WS ELEV. = 454.8 DATE: 3-2-2016
CLASS II RIP RAP SLOPE 1.5:1 (2' FT. THICK) (NORMAL TO CAP) (TYP.) (STRUCTURE PAY ITEM)
(-)0.3000%
(-)0.7400%
(-)4.0000%
(-)1.8000%
(+)0.3724%
(+)0.5000%
(+)2.0200%
(+)4.5000%
(+)7.0000%
(+)9.4000%
(+)11.4600%
(+)13.1200%
(+)16.5400%
(+)5.2800%
(+)2.6200%
BRIDGE HYDRAULIC DATA
DESIGN DISCHARGE = 2700 CFS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = 463.9 FT
BASE DISCHARGE = 3982 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 466.24 FT
OVERTOPPING DISCHARGE = 6100 CFS
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING ELEVATION = 467.8 FT
DATE OF SURVEY = 3-2-2016
W.S.ELEVATION AT DATE OF SURVEY = 454.8 FT
500
490
480
470
460
450
440
430
11
12
13
14
15
16
17
18
19
20
21
22
23
24
9/19/2016
ICA ENGINEERING, INC.
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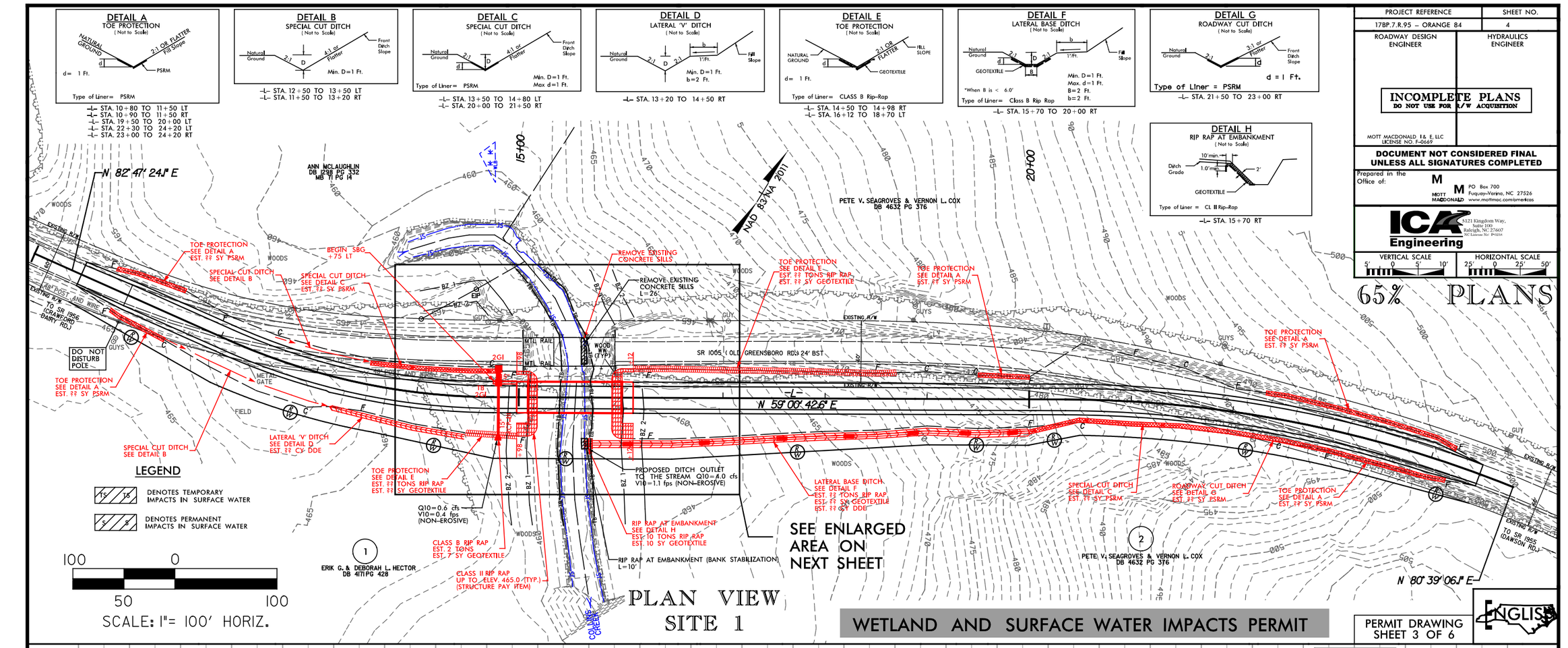

65% PLANS

PROJECT REFERENCE	SHEET NO.
17BP.7.R.95 – ORANGE 84	4A

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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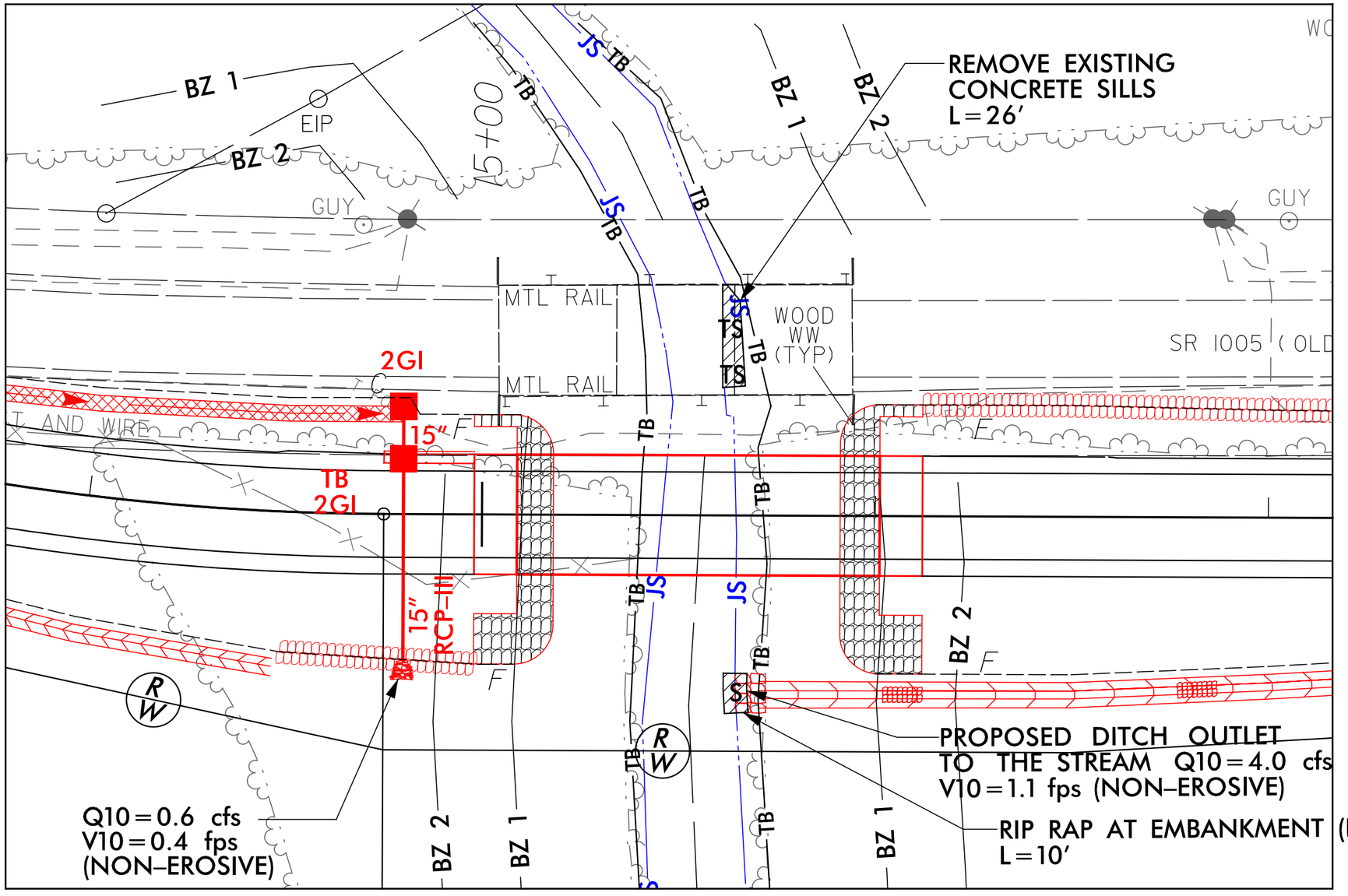
PERMIT DRAWING
SHEET 4 OF 6

ENGLISH

WETLAND AND SURFACE WATER IMPACTS PERMIT



30 0 15 30

SCALE: 1"= 30' HORIZ.

DETAIL SHEET FOR
SITE 1

LEGEND

S / S — DENOTES PERMANENT IMPACTS IN SURFACE WATER

TS / TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

9/19/2016
ICA ENGINEERING, INC.
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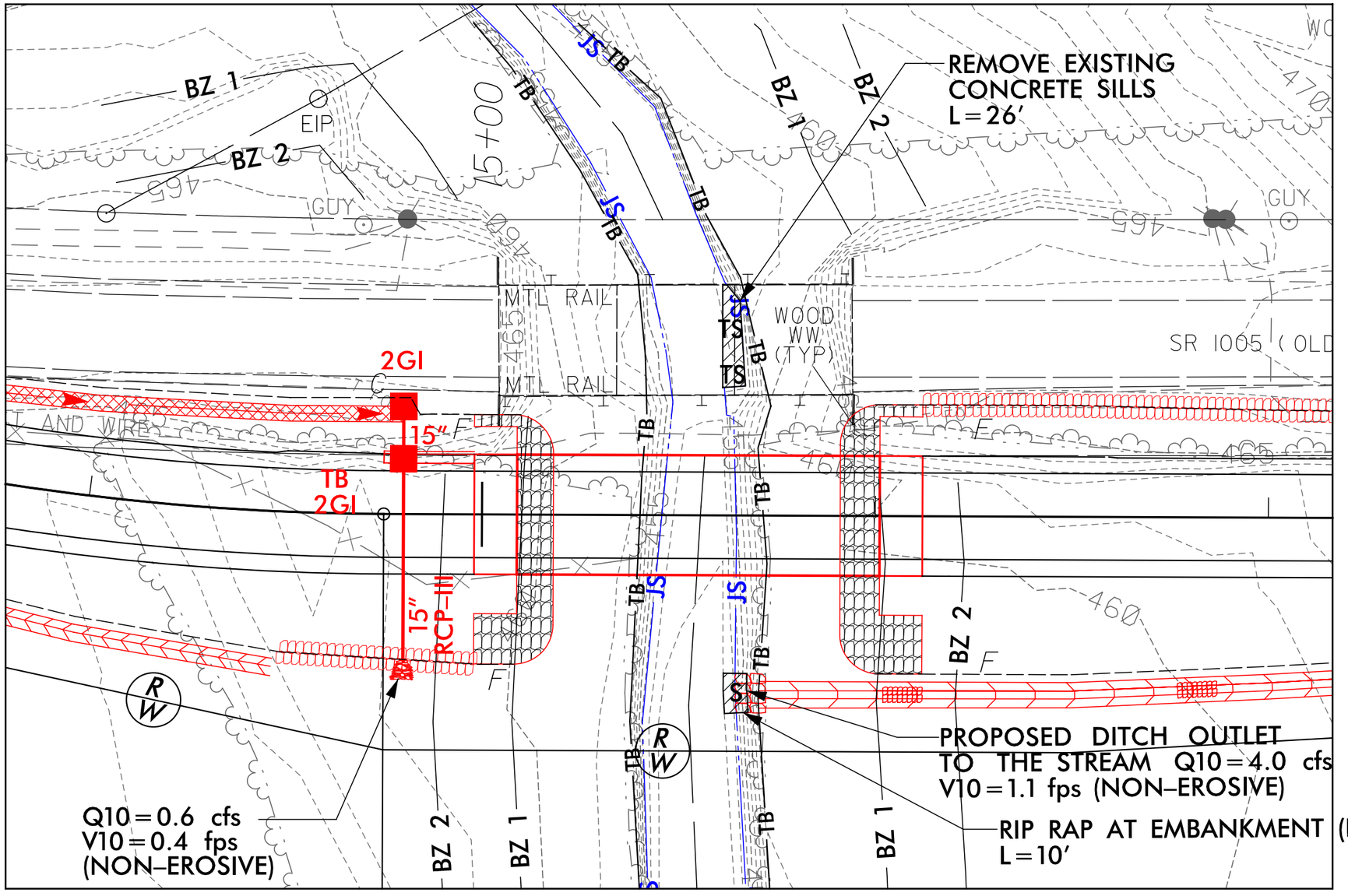

30 0 15 30

SCALE: 1"= 30' HORIZ.

DETAIL SHEET FOR SITE 1

LEGEND

S / S — DENOTES PERMANENT IMPACTS IN SURFACE WATER

TS / TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

9/19/2016
ICA ENGINEERING, INC.
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WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 15+61 to 15+67	REMOVE EXISTING CONCRETE SILLS							< 0.01		26	
1	-L- 15+62 to 15+68	BANK STABILIZATION						< 0.01		10		
TOTALS*:								0.00	0.00	10	26	

*Rounded totals are sum of actual impacts

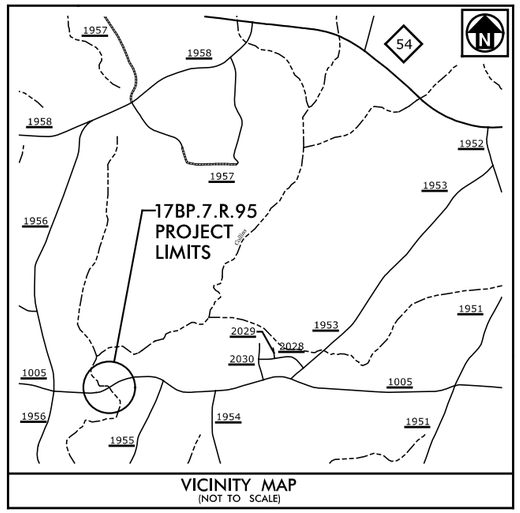
NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
SEPTEMBER 19, 2016
ORANGE COUNTY
SF-670084
17BP.7.R.95

Revised 2013 10 24

TIP PROJECT: 17BP.7.R.95

CONTRACT:



VICINITY MAP
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ORANGE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
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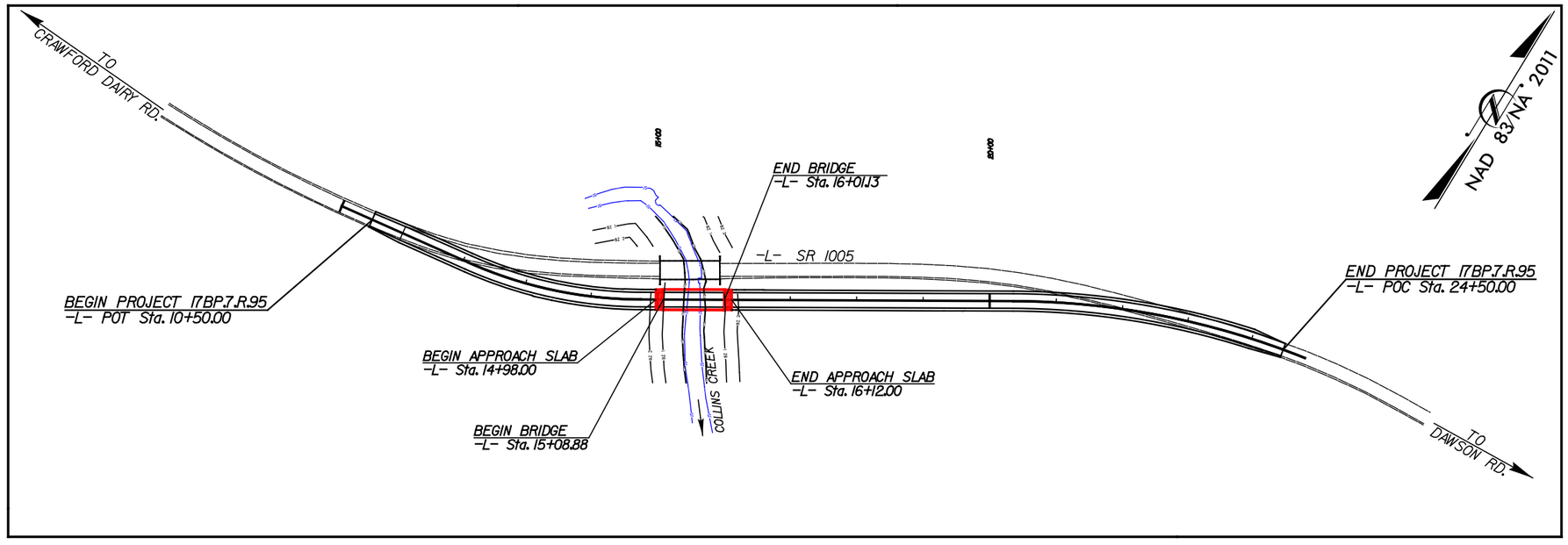
PERMIT DRAWING
SHEET 1 OF 6

LOCATION: BRIDGE NO. 84 OVER COLLINS CREEK ON SR 1005 (OLD GREENSBORO ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

65% PLANS



BUFFER IMPACTS PERMIT

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DESIGN DATA

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MAJOR COLLECTOR

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NCDOT CONTACT: TIM POWERS, PE
DIVISION BRIDGE PROGRAM MANAGER

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ *P.E.*

HYDRAULICS ENGINEER

SIGNATURE: _____ *P.E.*

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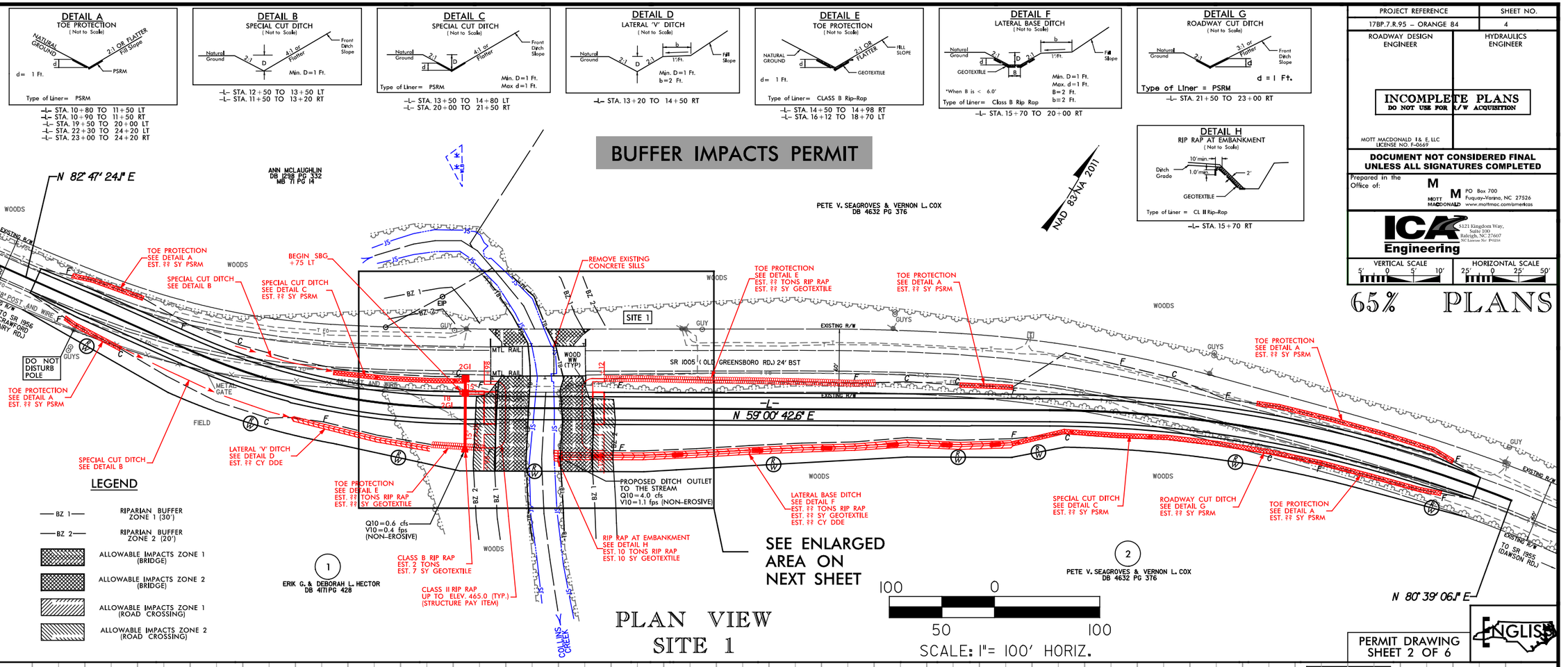

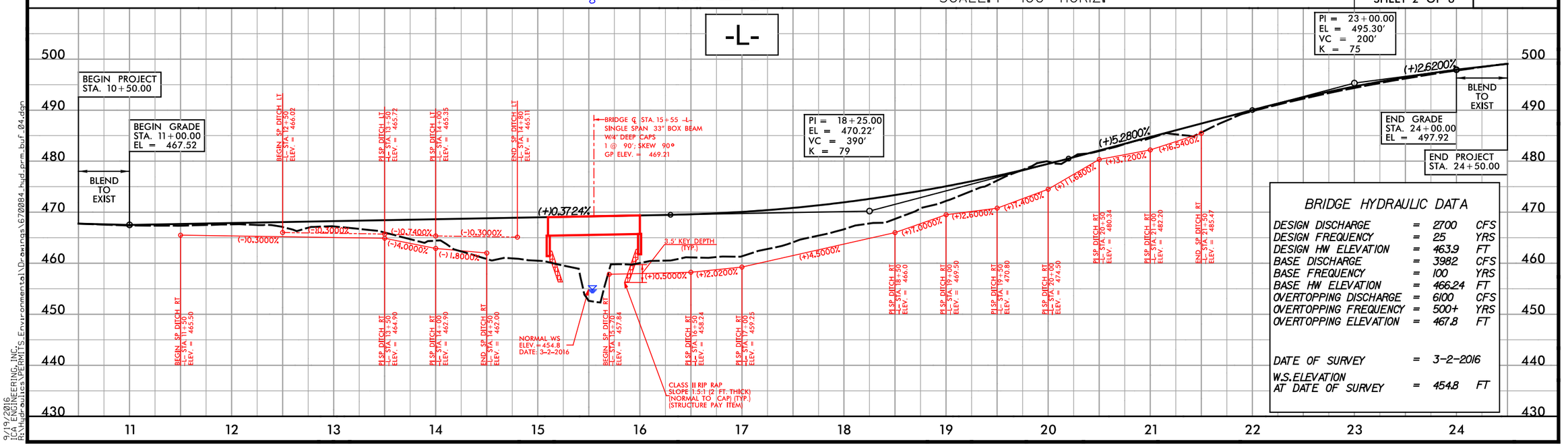

9/19/2016
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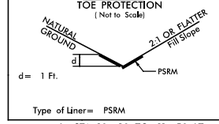
BUFFER IMPACTS PERMIT

DETAIL A
TOE PROTECTION
(Not to Scale)

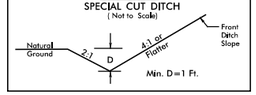


d= 1 Ft.

Type of Liner= PSRM

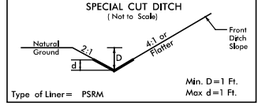
-L- STA. 10+80 TO 11+50 LT
-L- STA. 10+90 TO 11+50 RT
-L- STA. 19+50 TO 20+00 LT
-L- STA. 22+30 TO 24+20 LT
-L- STA. 23+00 TO 24+20 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



-L- STA. 12+50 TO 13+50 LT
-L- STA. 11+50 TO 13+20 RT

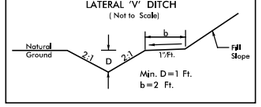
DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= PSRM

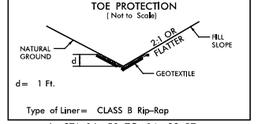
-L- STA. 13+50 TO 14+80 LT
-L- STA. 20+00 TO 21+50 RT

DETAIL D
LATERAL 'V' DITCH
(Not to Scale)



-L- STA. 13+20 TO 14+50 RT

DETAIL E
TOE PROTECTION
(Not to Scale)

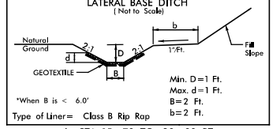


d= 1 Ft.

Type of Liner= CLASS B Rip-Rap

-L- STA. 14+50 TO 14+98 RT
-L- STA. 16+12 TO 18+70 LT

DETAIL F
LATERAL BASE DITCH
(Not to Scale)



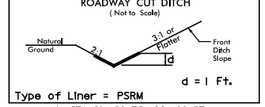
*When B is < 6.0'

Min. D=1 Ft.
Max. d=1 Ft.
B=2 Ft.
b=2 Ft.

Type of Liner= Class B Rip Rap

-L- STA. 15+70 TO 20+00 RT

DETAIL G
ROADWAY CUT DITCH
(Not to Scale)

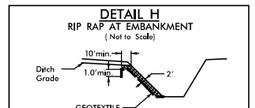


d = 1 Ft.

Type of Liner = PSRM

-L- STA. 21+50 TO 23+00 RT

DETAIL H
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = CL II Rip-Rap

-L- STA. 15+70 RT

PROJECT REFERENCE	SHEET NO.
17BP.7.R.95 – ORANGE 84	4

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC Licensure No: P-1016

VERTICAL SCALE 5' 0 5' 10'
HORIZONTAL SCALE 25' 0 25' 50'

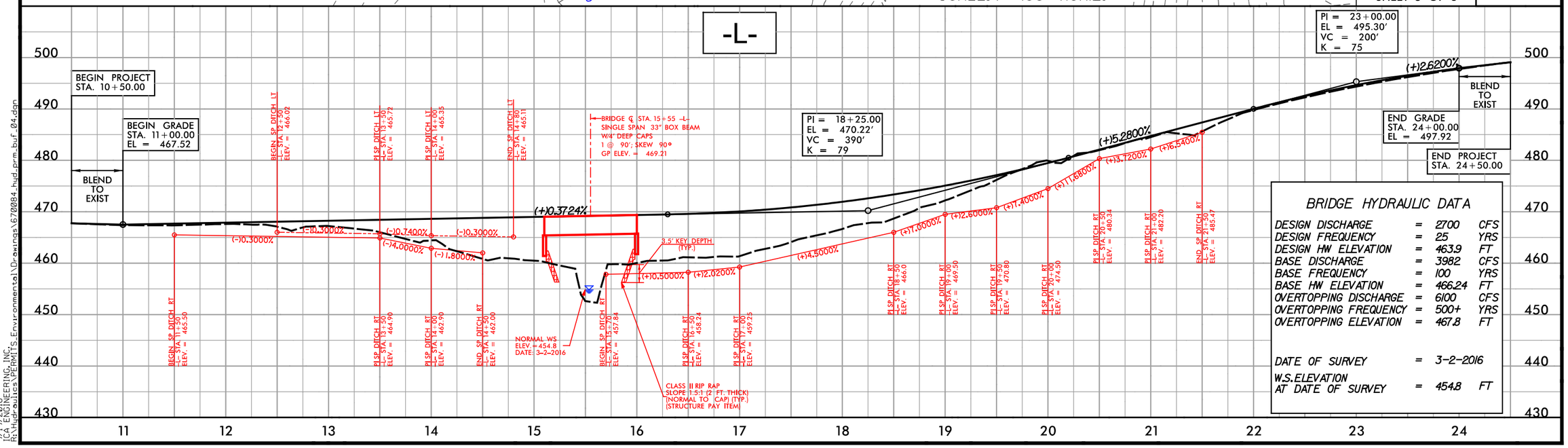
65% PLANS

LEGEND

- BZ 1 — RIPARIAN BUFFER ZONE 1 (30')
- BZ 2 — RIPARIAN BUFFER ZONE 2 (20')
- ALLOWABLE IMPACTS ZONE 1 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 2 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)

PLAN VIEW SITE 1

PERMIT DRAWING SHEET 3 OF 6



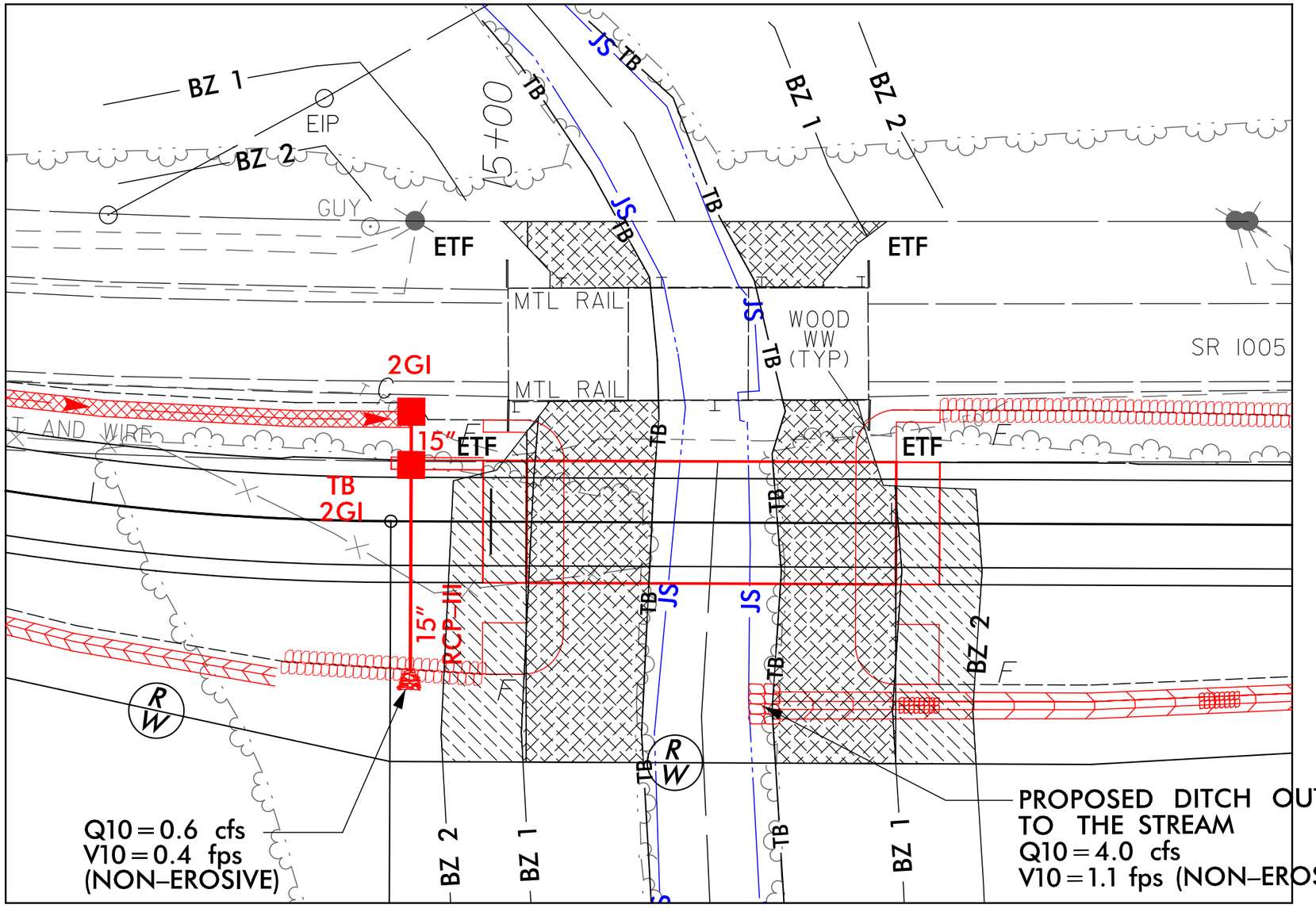
BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	2700	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	463.9	FT
BASE DISCHARGE	=	3982	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	466.24	FT
OVERTOPPING DISCHARGE	=	6100	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	467.8	FT
DATE OF SURVEY	=	3-2-2016	
W.S. ELEVATION AT DATE OF SURVEY	=	454.8	FT

9/19/2016
ICA ENGINEERING, INC.
R:\Highways\PERMITS_Environmental\Drawings\6700084_hyd_prim_buf_04.dgn

65% PLANS

BUFFER IMPACTS PERMIT



30 0 15 30

SCALE: 1"= 30' HORIZ.

NAD 83/NA 2011

LEGEND

BZ 1	RIPARIAN BUFFER ZONE 1 (30')
BZ 2	RIPARIAN BUFFER ZONE 2 (20')
	ALLOWABLE IMPACTS ZONE 1 (BRIDGE)
	ALLOWABLE IMPACTS ZONE 2 (BRIDGE)
	ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
	ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)

ETF – EXISTING TRANSPORTATION FACILITY

PROJECT REFERENCE	SHEET NO.
17BP.7.R.95 – ORANGE 84	4A

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

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Prepared in the Office of:

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PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com/americas

ICA Engineering
5121 Kingdom Way, Suite 103
Raleigh, NC 27607
NC License No: P0258

BUFFER DRAWING SHEET 4 OF 6

ENGLISH

9/19/2016
ICA ENGINEERING, INC.
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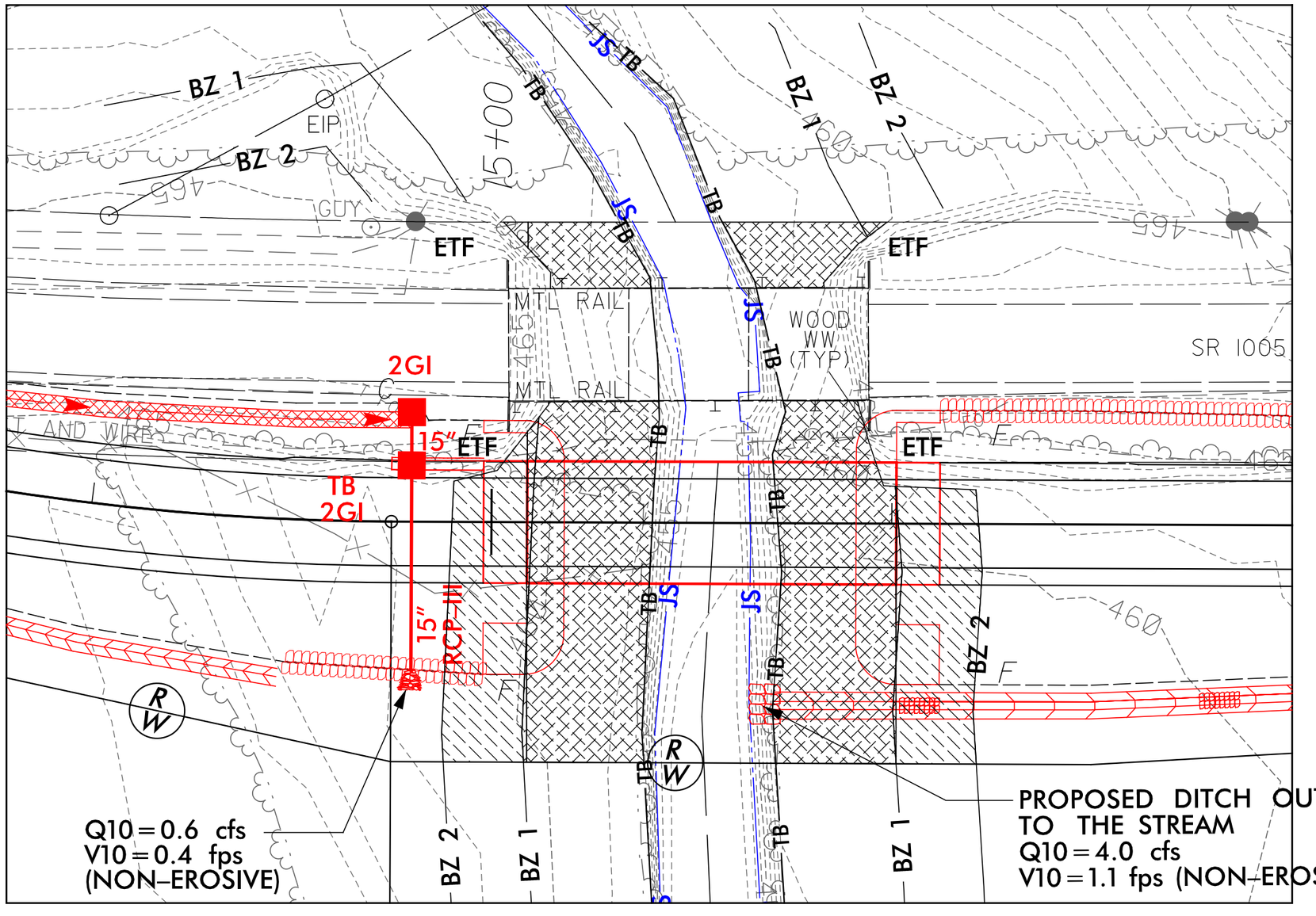
65% PLANS

BUFFER IMPACTS PERMIT



30 0 15 30

SCALE: 1"= 30' HORIZ.

NAD 83/NA 2011

LEGEND

- BZ 1 — RIPARIAN BUFFER ZONE 1 (30')
- BZ 2 — RIPARIAN BUFFER ZONE 2 (20')
- ALLOWABLE IMPACTS ZONE 1 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 2 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)

ETF – EXISTING TRANSPORTATION FACILITY

PROJECT REFERENCE	SHEET NO.
17BP.7.R.95 – ORANGE 84	4A

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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BUFFER DRAWING SHEET 5 OF 6

ENGLISH

9/19/2016
ICA ENGINEERING, INC.
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BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	SINGLE SPAN 33" BOX BEAM W/ 4.0' DEEP CAPS, 1@90'	-L- 14+88 to 16+23	X			72	2815	2887					
				X		6074	88	6162					
TOTAL:						6146	2903	9049	0	0	0		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

ORANGE COUNTY
PROJECT: 17BP.7.R.95 (BRIDGE #84)

9/19/2016
SHEET 6 OF 6

Rev. May 2006

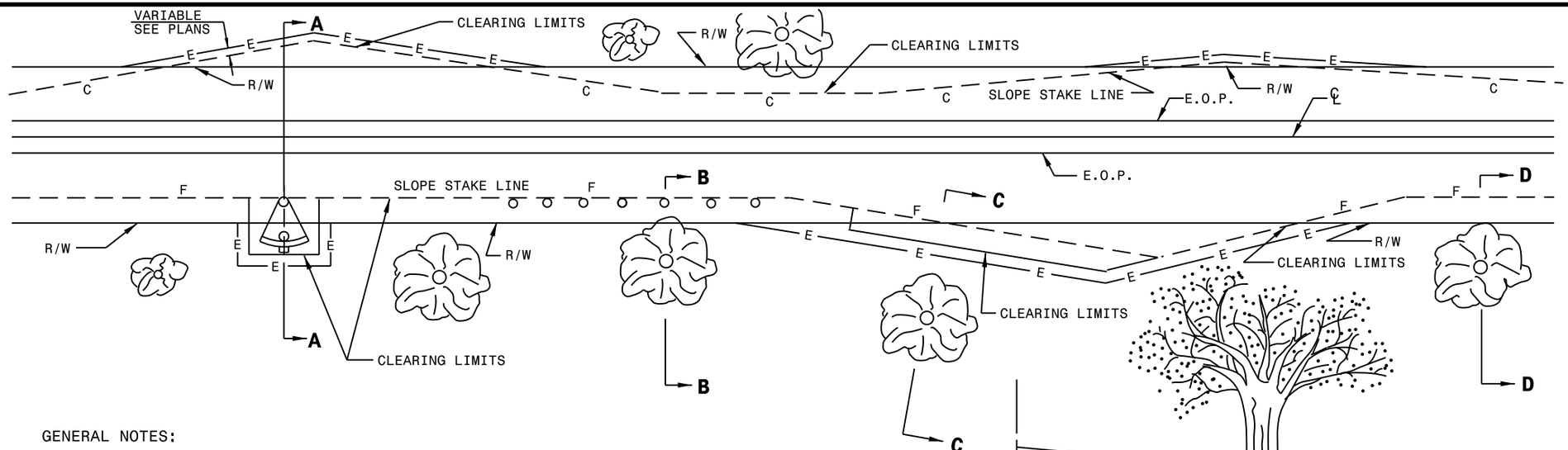
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR

METHOD OF CLEARING

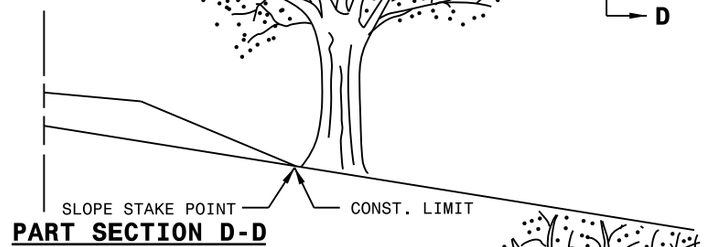
METHOD - II



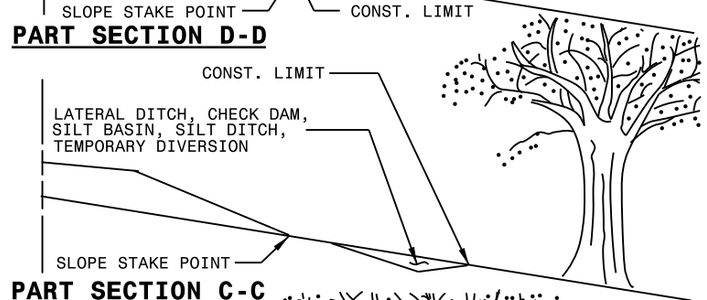
GENERAL NOTES:

1. REMOVE TREES OUTSIDE THE CLEARING LIMIT WHEN, IN THE OPINION OF THE ENGINEER, THE UTILITY OF A TREE WILL BE DESTROYED BY THE CONSTRUCTION OR THE CLEARING OPERATION.
2. CLEAR IN ACCORDANCE WITH THIS STANDARD EXCEPT WHERE ADDITIONAL CLEARING IS REQUIRED FOR SAFETY AS SHOWN ON THE PLANS.
3. FOR SECTIONS WITH WIDE MEDIANS WHERE TREES ARE TO REMAIN, CLEAR THE MEDIAN SIDE IN THE SAME MANNER AS ON THE OUTSIDE.

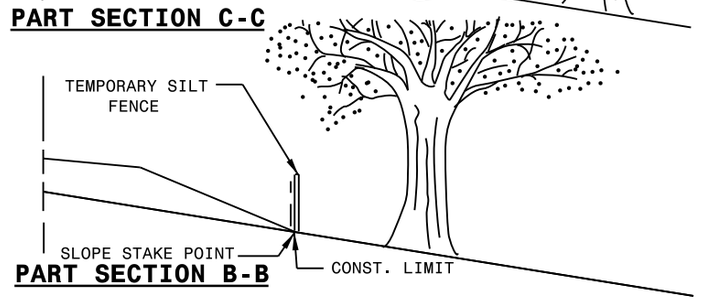
CLEAR TO SLOPE STAKE LINE OR CONSTRUCTION LIMITS



PART SECTION D-D



PART SECTION C-C



PART SECTION B-B

SECTION A-A

SHEET 1 OF 1

200.02

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

1-12

ENGLISH STANDARD DRAWING FOR

METHOD OF CLEARING

METHOD - II

SHEET 1 OF 1

200.02