



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

November 15, 2019

U.S. Army Corps of Engineers
Raleigh Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Raleigh, NC 27587

ATTN: Mr. David Bailey, NCDOT Regulatory Coordinator

Subject: **Request for Permit Revision to Section 404 Nationwide Permit 14, and Section 401 Water Quality Certification**, for the Proposed Replacement of Bridge No. 46 on US 70 Bypass, over the Eno River in Orange County, Federal Aid Project No. BRSTP-0070(120);
TIP B-4962, Division 7, Debit \$570 from WBS Element 40174.1.1

Reference: 404 Nationwide 14 Permit, Action ID SAW-2018-02345, issued 1/31/2019
401 Certification 4135, DWR Project No. 20181693, issued 1/31/2019

Dear Mr. Bailey:

The North Carolina Department of Transportation (NCDOT) proposes to replace bridge number 46 on US 70 Bypass over the Eno River in Orange County with a three span, 265 feet long, 54-inch girder bridge along the existing alignment. A detour bridge will be constructed to the north of the existing bridge as an onsite detour during construction.

Please see the attached revised permit drawings for B-4962. This application replaces the revised application distributed on October 11, 2019. Since receipt of the permits in January 2019, unanticipated bedrock has been found at the temporary bridge crossing. This requires temporary work pads for the installation of the supports for the temporary work bridges. These work pads would only be in place until the work bridge installation is complete. Temporary bank armoring will be utilized to install the detour bridge and will be removed when the detour bridge is removed. Temporary work pads under the current bridge will be used to remove the existing bents then will be removed upon completion of this work. This action will result in an additional 243 linear feet of temporary construction impacts (<0.01 ac) for a total of 263 linear feet of temporary stream impacts for the project. The permanent impacts have not changed with this modification.


Since the project let in April of 2019, the project is now located in Proposed Critical Habitat for the Atlantic pigtoe mussel.

Section 7 compliance for the Atlantic pigtoe, has been met through the Programmatic Biological Opinion (PBO) issued by the U.S. Fish & Wildlife Service (USFWS). The findings of the surveys or use of the PBO indicate the following biological conclusion: Atlantic pigtoe: May Affect, Likely to Adversely Affect. The Department will follow reporting requirements pursuant to the PBO. The appropriate payment to the NC Nongame Aquatic Species Fund will be submitted by the end of the next quarter.

A copy of this permit application and its distribution list will be posted on the NCDOT Website at: <https://xfer.services.ncdot.gov/pdea/PermApps/>. If you have any questions or need additional information, please contact Jeff Hemphill at (919) 707-6126.

Sincerely,

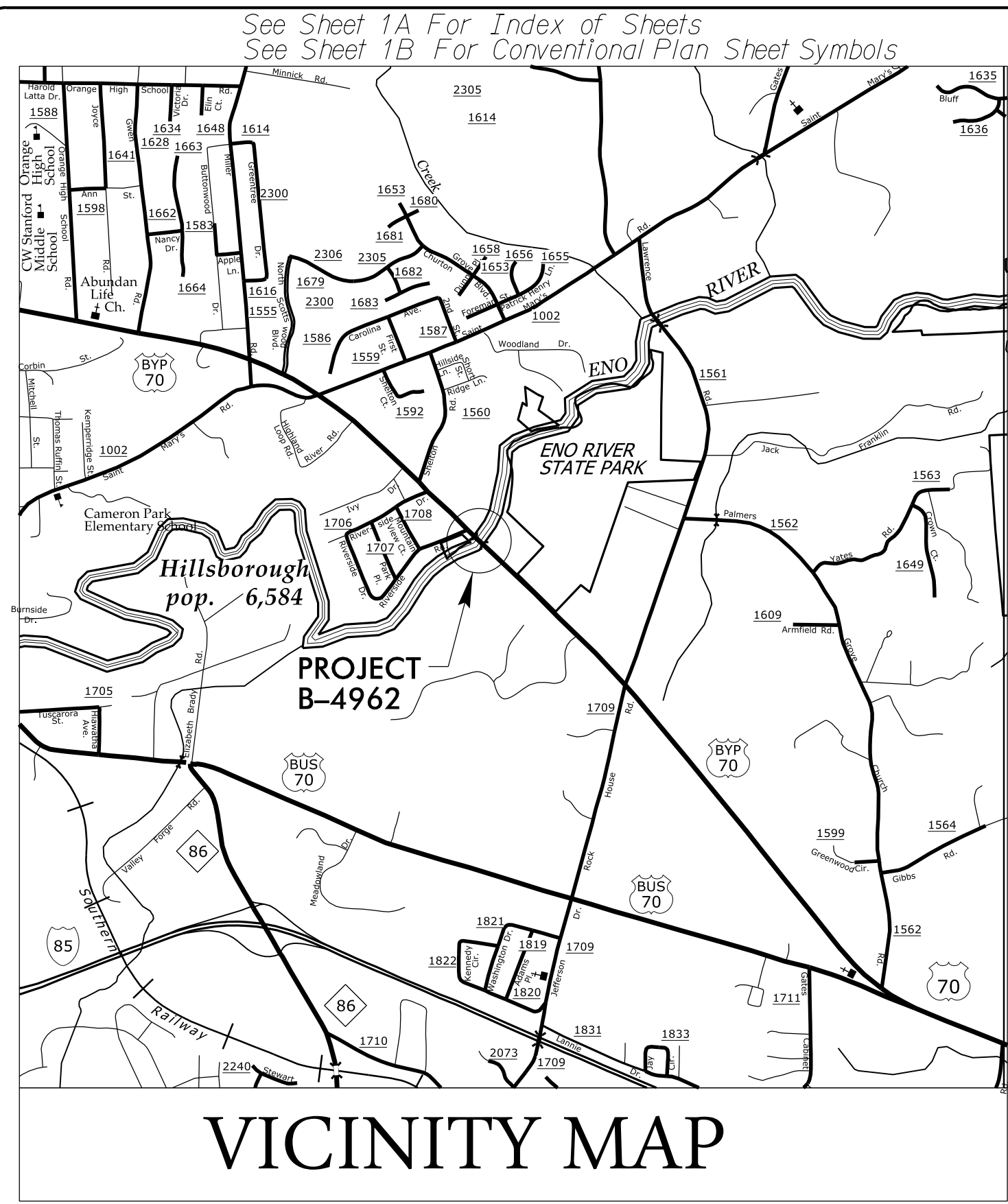


 Philip S. Harris III, P.E., C.P.M.
Environmental Analysis Unit Head

ec:

NCDOT Permit Application Standard Distribution List

TIP PROJECT: B-4962
CONTRACT: C204078



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ORANGE COUNTY

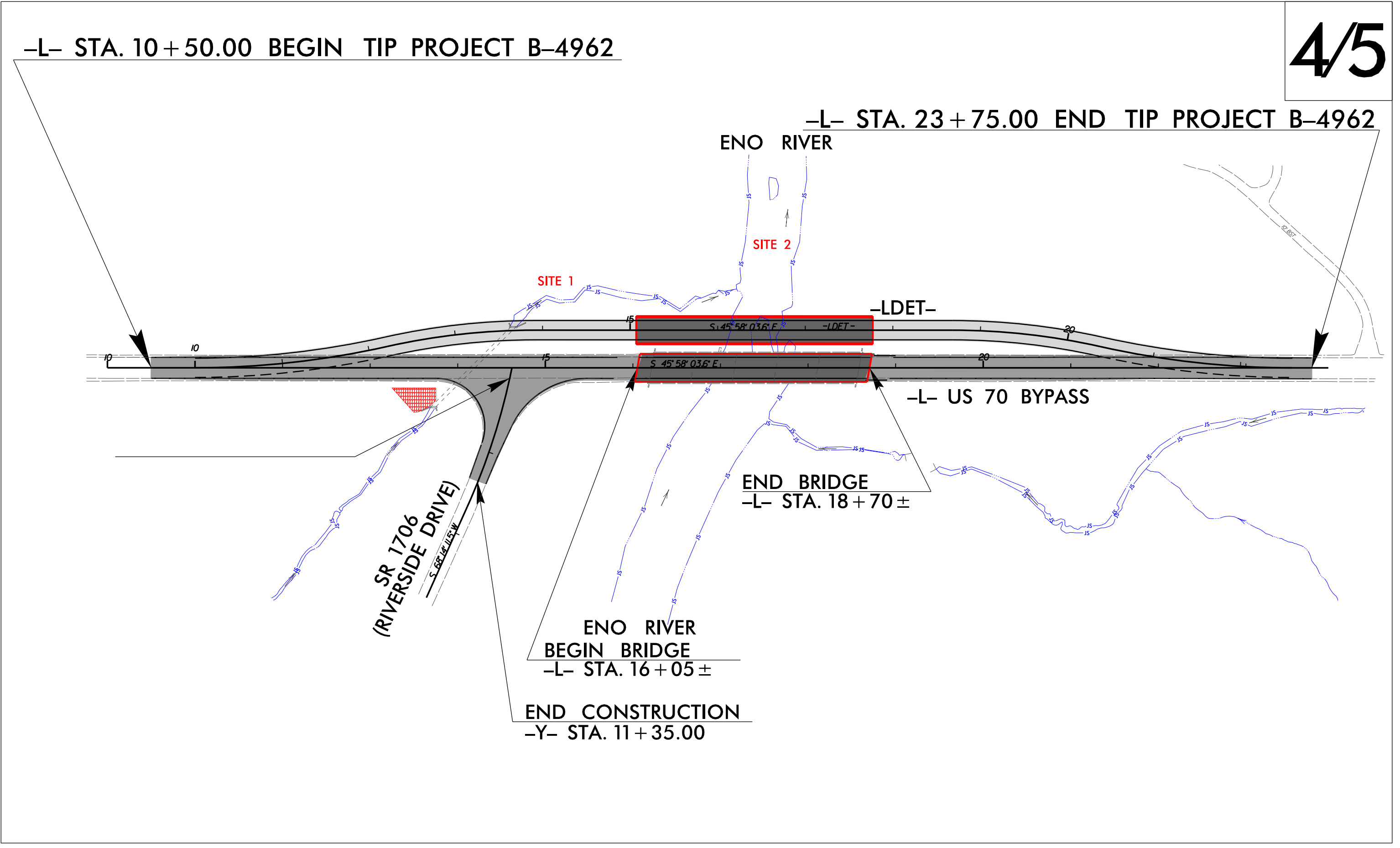
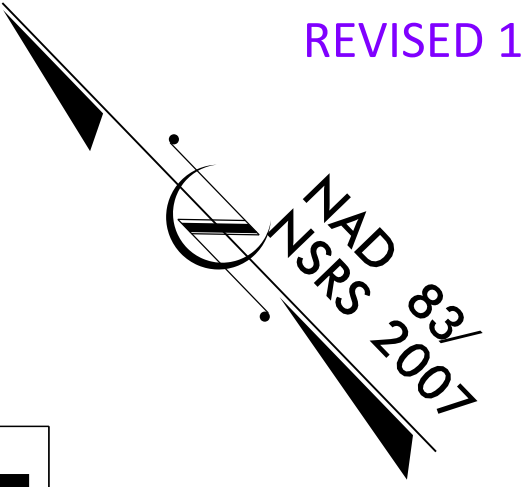
LOCATION: BRIDGE NO. 46 OVER ENO RIVER ON US 70 BYPASS
TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT EXTENSION, AND STRUCTURE

WETLAND AND SURFACE WATER IMPACTS PERMIT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4962	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40174.1.1	BRSTP-0070(120)	P.E.	
40174.2.1		ROW & UTILITIES	

PERMIT DRAWING SHEET 1 OF 13

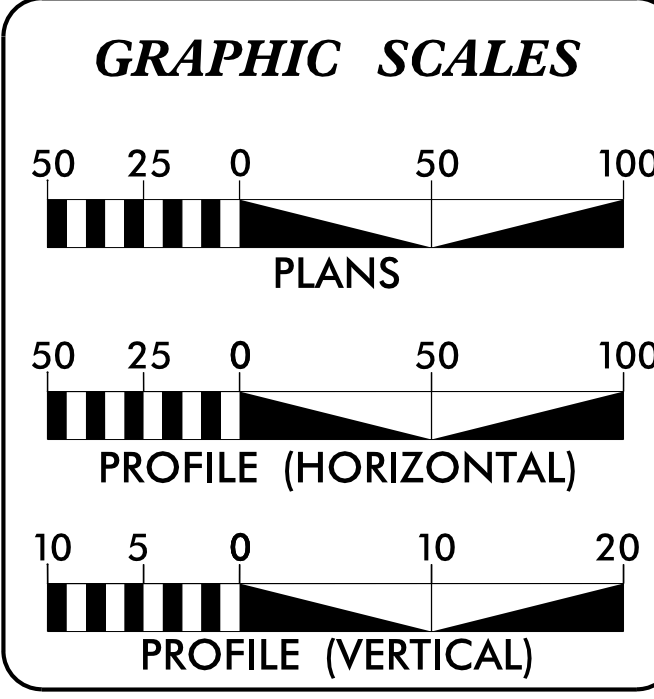
REVISED 11/13/2019



- 11/07/2019
Permit Modification
NCDOT Hydraulics
Craig J. Lee
- Added temporary work pads and bank armor to permit drawings.
 - L- Proposed bridge work pads - Temporary work pads are only for the removal of the existing bents and are to be installed for and removed upon completion of the stated work.
 - Detour bridge work pads - Temporary bank armoring for detour bridge; to be removed when detour bridge is removed.
 - L- Work bridge work pads and -DET- work bridge work pads - Temporary work pads are only for the installation/removal of the work bridge and are not to be used for construction of the detour or proposed bridges. Work pads should be removed once interior bents are in place.
 - Temporary work pads should not block more than 50% of the channel at any time.

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2018	= 15000
ADT 2038	= 19000
K	= 10 %
D	= 70 %
T	= 5 % *
V	= 50 MPH
V _{DET}	= 40 MPH
*TTST	= 2% DUAL = 3%
FUNC CLASS	=
MINOR ARTERIAL "REGIONAL TIER"	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4962	= 0.201 MILES
LENGTH STRUCTURE TIP PROJECT B-4962	= 0.050 MILES
TOTAL LENGTH OF TIP PROJECT B-4962	= 0.251 MILES

Prepared in the Office of:

504 Meadowland Drive
Hillsborough, NC 27278-8551
Voice: (919) 732-3883
Fax: (919) 732-6776
www.summitde.net

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 18, 2018

LETTING DATE:
APRIL 16, 2019

JAMES A. SPEER, PE
PROJECT ENGINEER

BRANDON W. JOHNSON, PE
PROJECT DESIGN ENGINEER

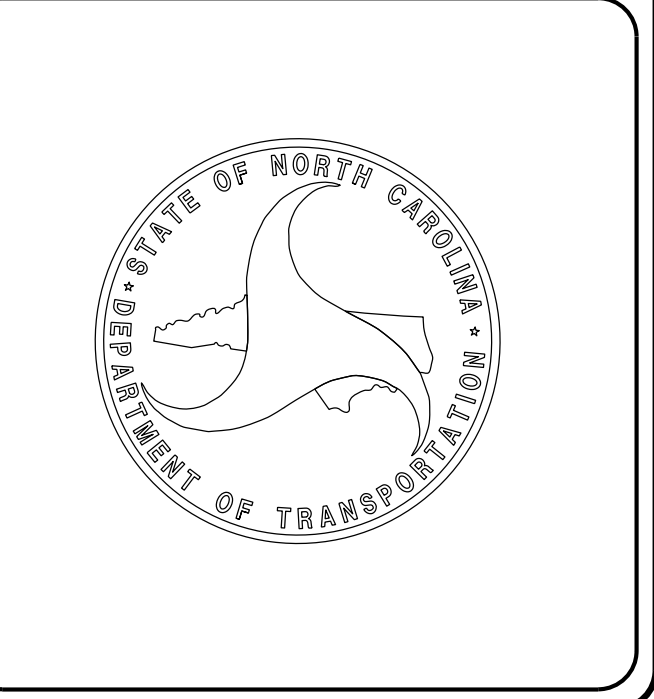
DAVID STUTTS, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: _____

ROADWAY DESIGN ENGINEER



SIGNATURE: _____

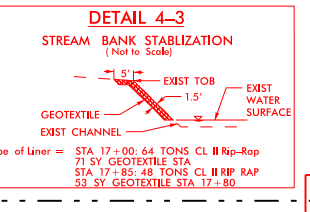
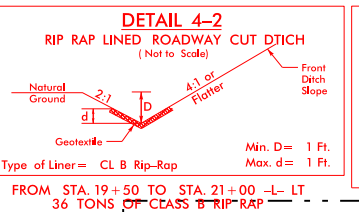
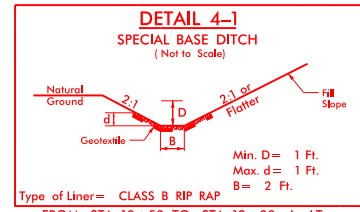
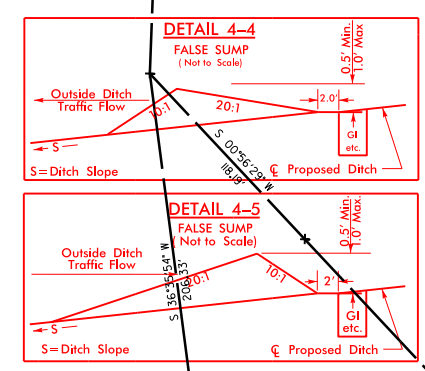
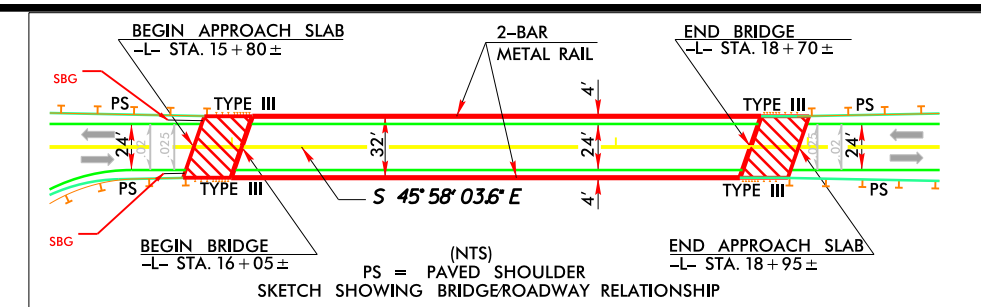
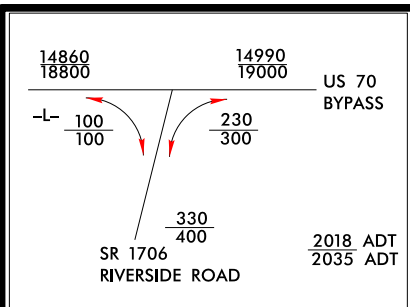


PROJECT REFERENCE NO.	SHEET NO.
B-4962	2/CONST. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 2 OF 13
REVISED 11/13/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

 DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



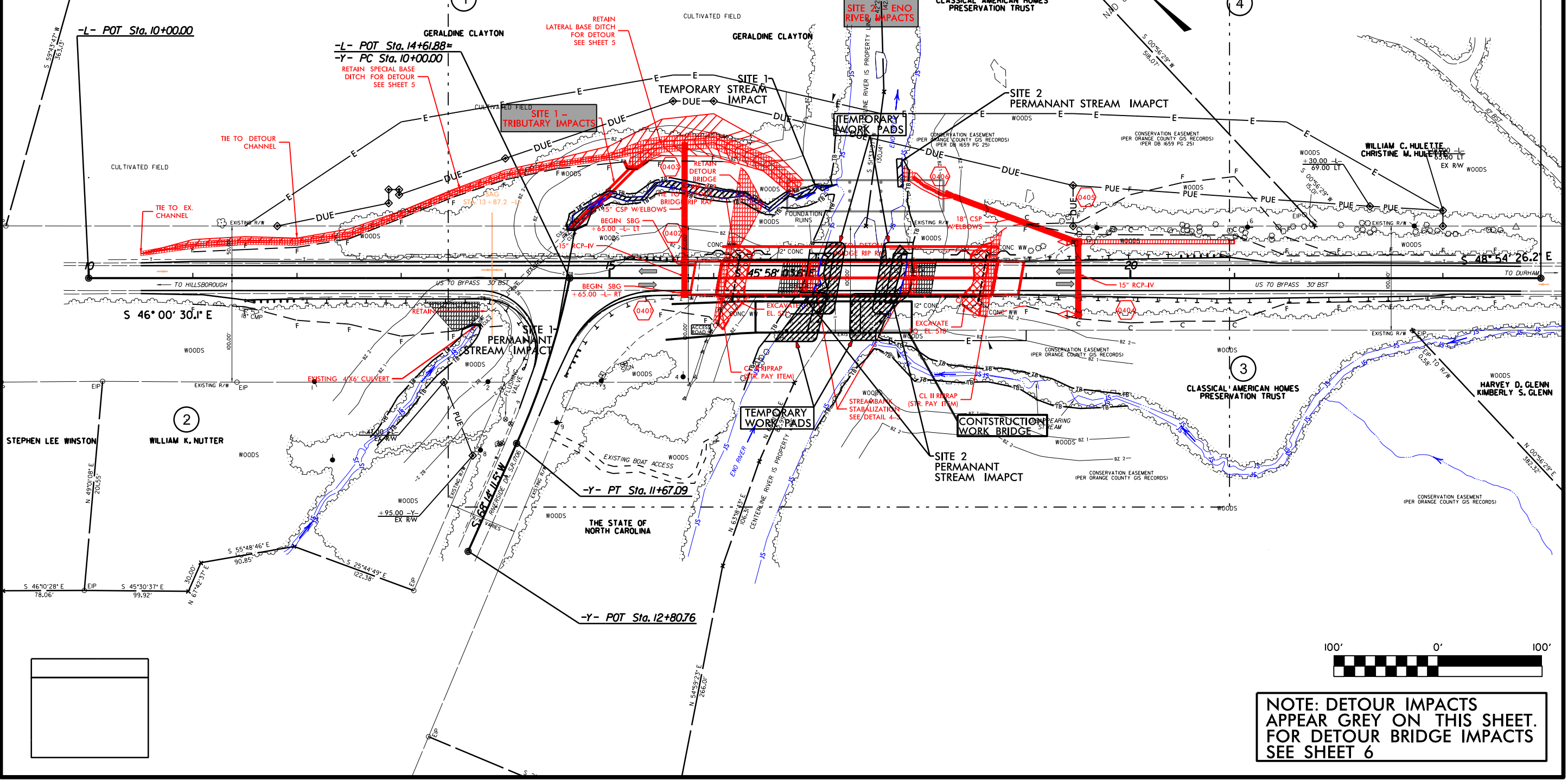
JOHN PILPCHUK
JOHNNA WEBB PILPCHUK

GERALDINE CLAYTON

FROM STA. 10+50 TO STA. 12+00 -L- LT
36 TONS OF CLASS B RIP RAP
108 SY OF GEOTEXTILE

FROM STA. 19+50 TO STA. 21+00 -L- LT
36 TONS OF CLASS B RIP RAP
106 SY OF GEOTEXTILE

SEE SHEET 4 FOR ENLARGEMENT



NOTE: DETOUR IMPACTS APPEAR GREY ON THIS SHEET. FOR DETOUR BRIDGE IMPACTS SEE SHEET 6

REVISIONS

SYTIME DESIGN



OF CLASS B RIP RAP
OF GEOTEXTILE

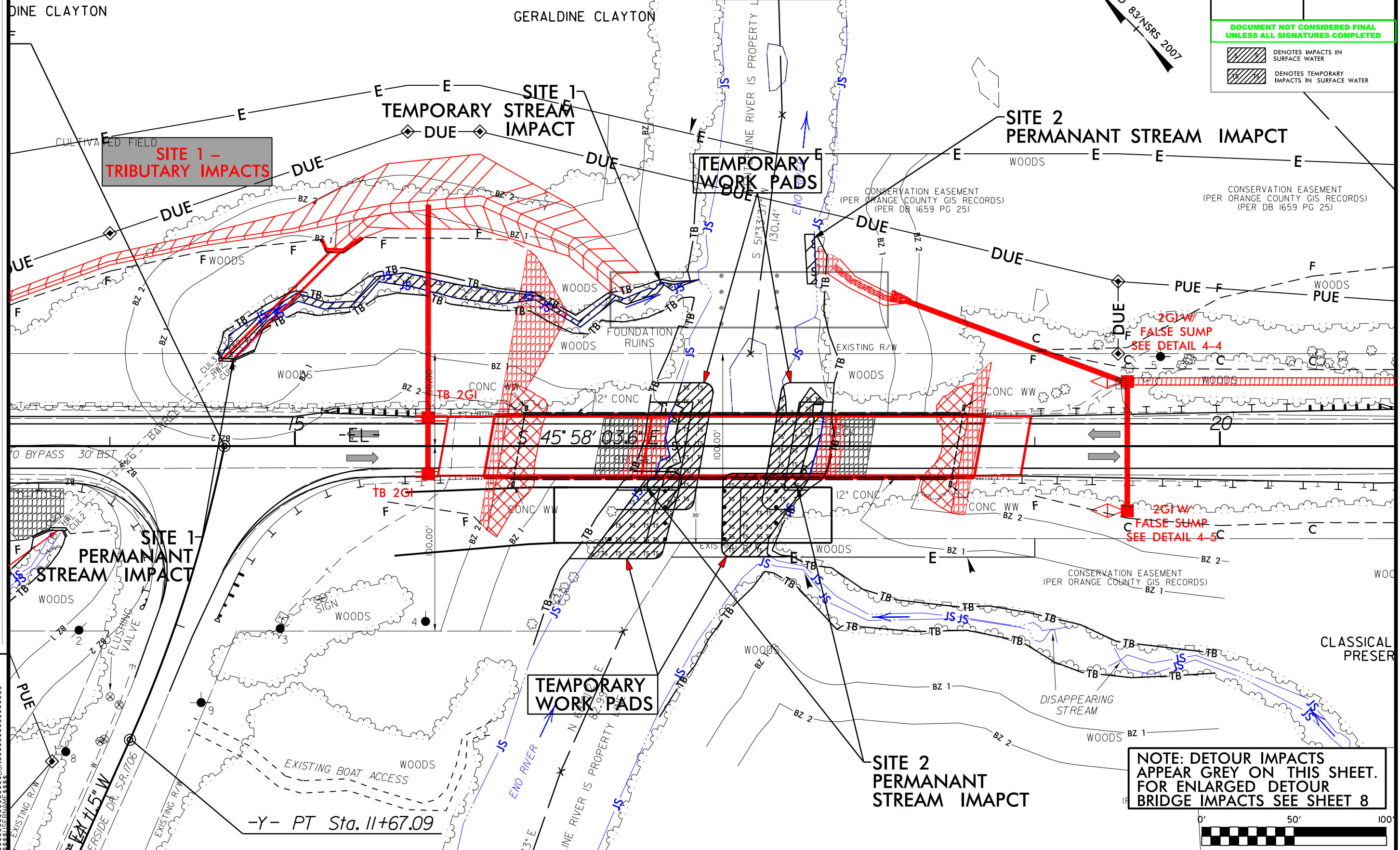
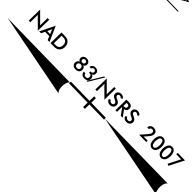
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-L- ENLARGEMENT

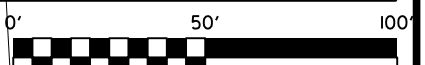
**PERMIT DRAWING
SHEET 4 OF 13**

CLASSICAL AMERICAN HOMES
PRESERVATION TRUST REVISED 11/13/2019

PROJECT REFERENCE NO. B-4962	SHEET NO. 4/CONST.4
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER



**NOTE: DETOUR IMPACTS
APPEAR GREY ON THIS SHEET.
FOR ENLARGED DETOUR
BRIDGE IMPACTS SEE SHEET 8**



REVISIONS

SYSTEMS
DESIGN
INC.

OF CLASS B RIP RAP
OF GEOTEXTILE

1



-L- ENLARGEMENT

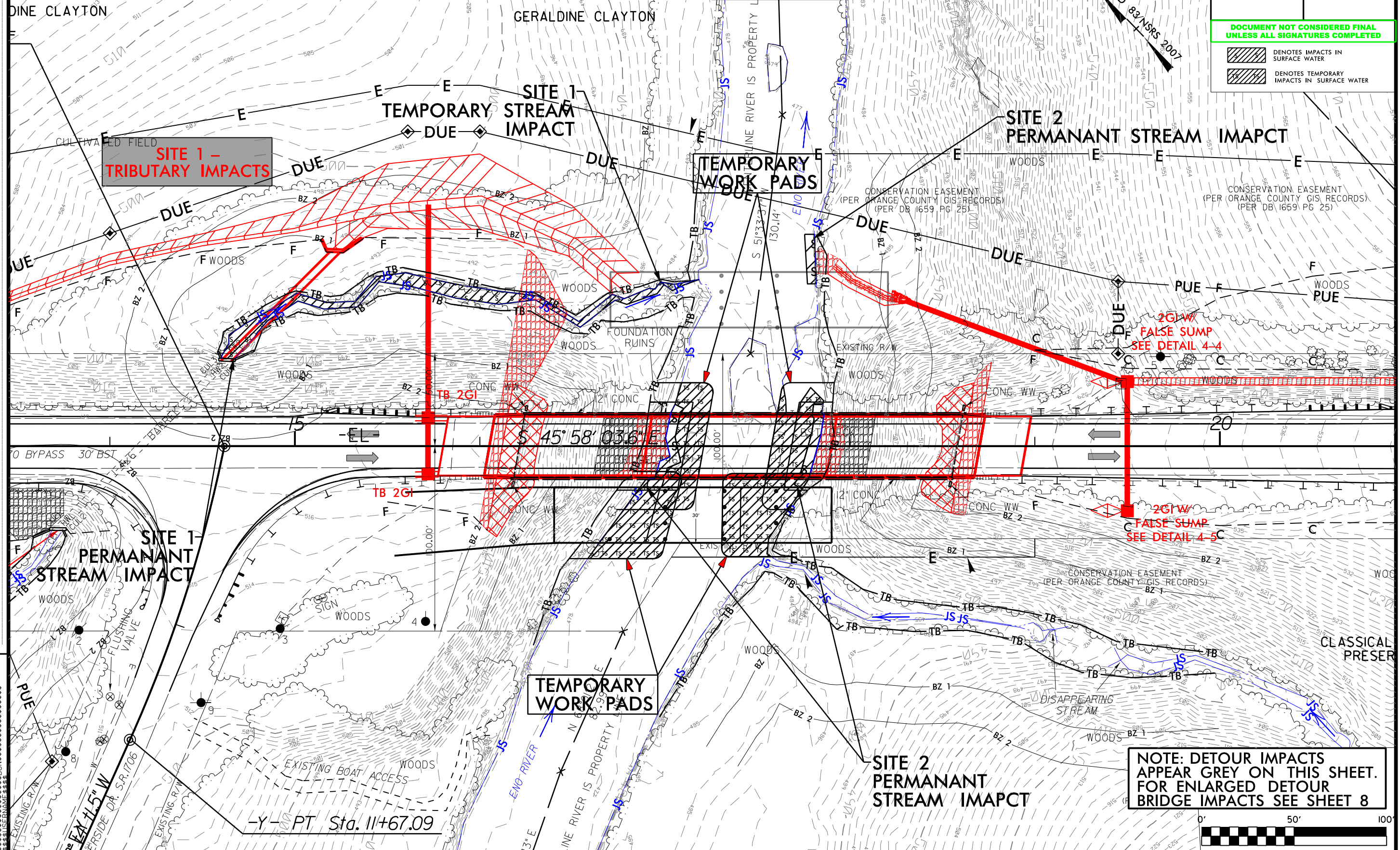
PERMIT DRAWING SHEET 5 OF 13

PROJECT REFERENCE NO. B-4962	SHEET NO. 4/CONST.4
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

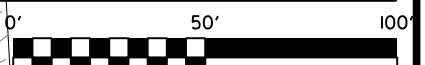
CLASSICAL AMERICAN HOMES PRESERVATION TRUST REVISED 11/13/2019

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 DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



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APPEAR GREY ON THIS SHEET.
FOR ENLARGED DETOUR
BRIDGE IMPACTS SEE SHEET 8**

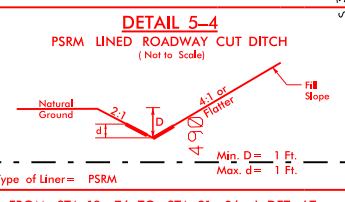
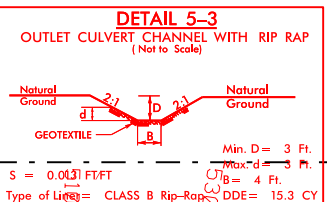
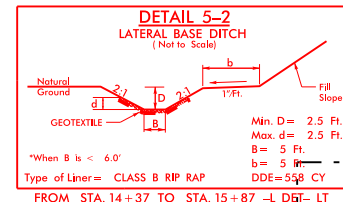
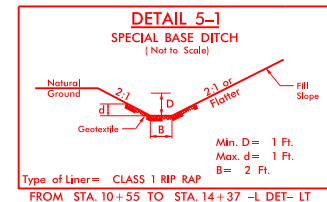
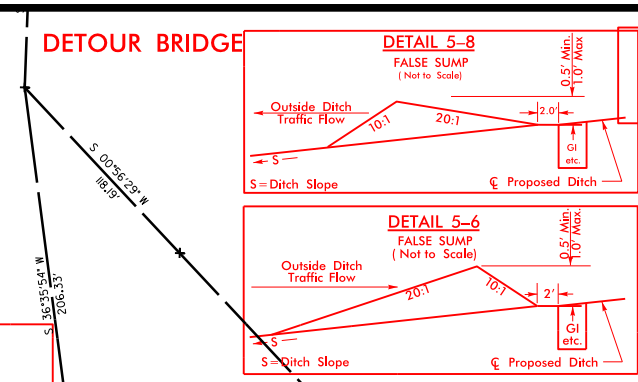
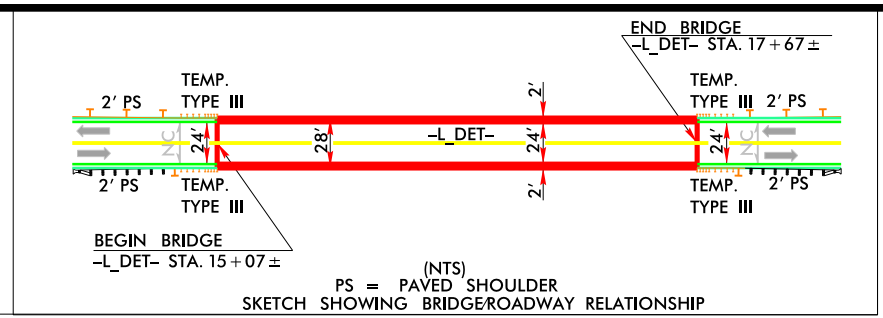
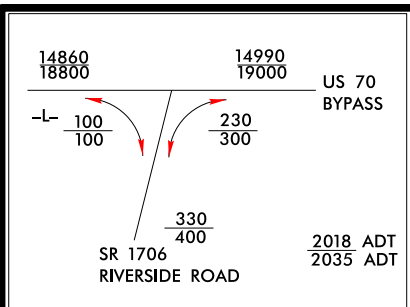


REVISIONS

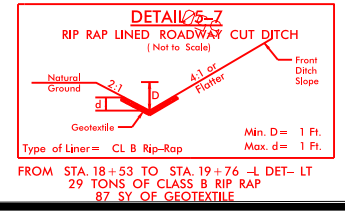
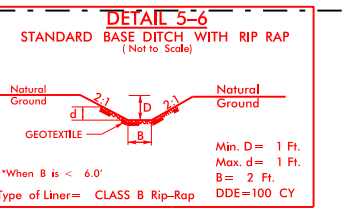
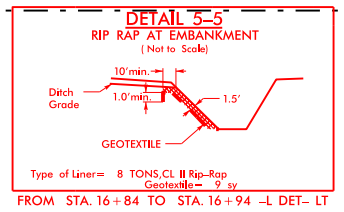
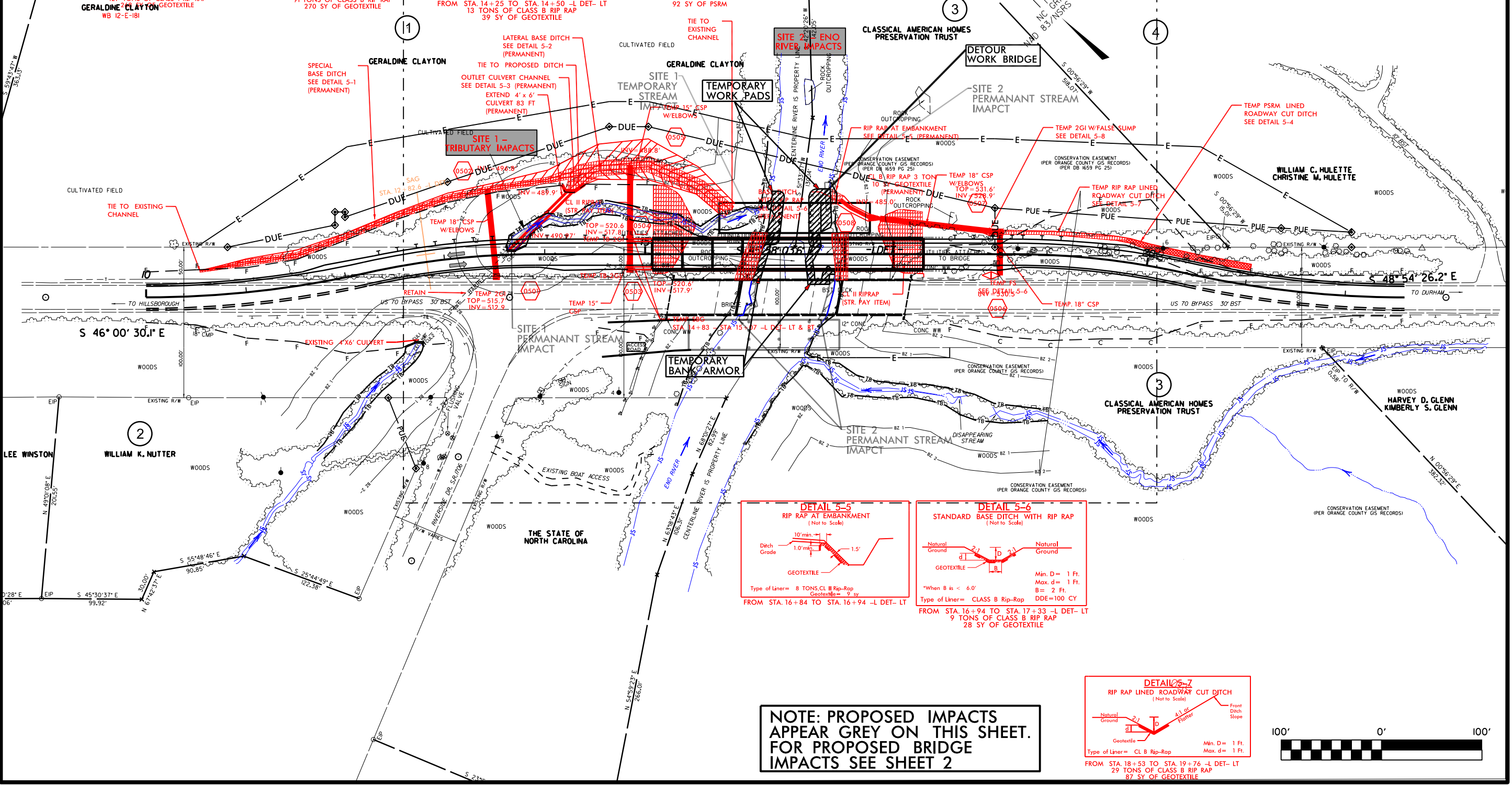
SYSTEMS TIME DESIGN

PROJECT REFERENCE NO. B-4962	SHEET NO. 6/CONST.5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

**PERMIT DRAWING
SHEET 6 OF 13**
REVISED 11/13/2019



SEE SHEET 8 FOR ENLARGEMENT



**NOTE: PROPOSED IMPACTS
APPEAR GREY ON THIS SHEET.
FOR PROPOSED BRIDGE
IMPACTS SEE SHEET 2**



REVISIONS

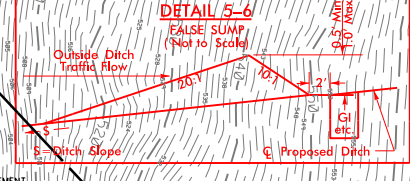
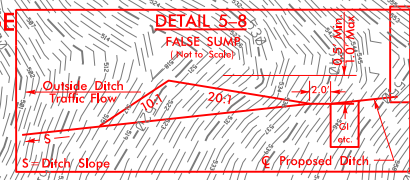
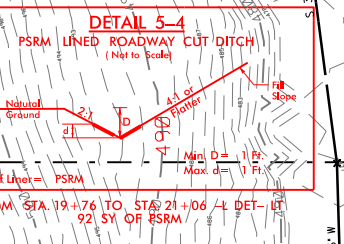
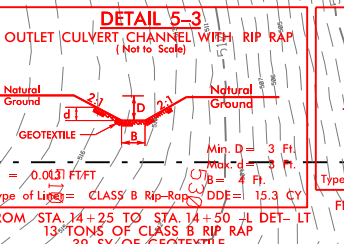
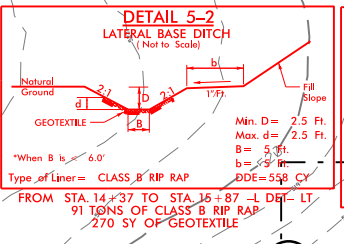
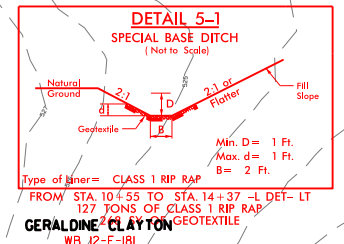
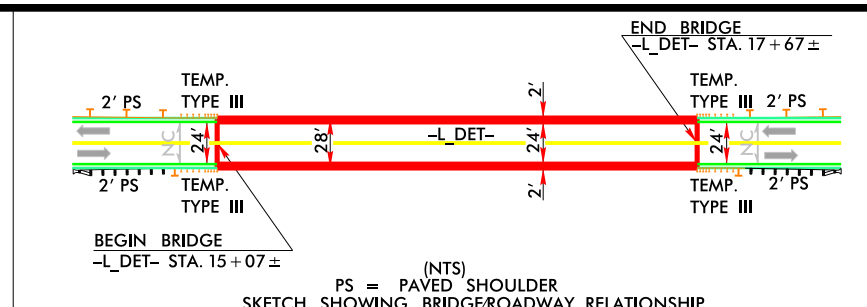
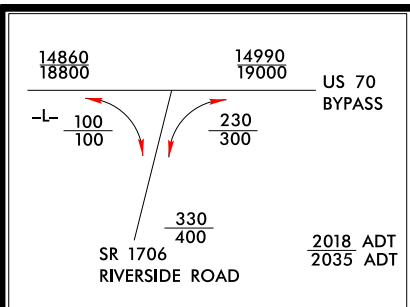
8/17/99 14860 18800 14990 19000 US 70 BYPASS SR 1706 RIVERSIDE ROAD 2018 ADT 2035 ADT PS = PAVED SHOULDER (NTS) SKETCH SHOWING BRIDGE/ROADWAY RELATIONSHIP

PROJECT REFERENCE NO. B-4962	SHEET NO. 6/CONST.5
RAW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

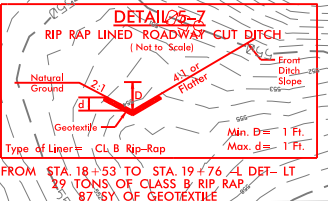
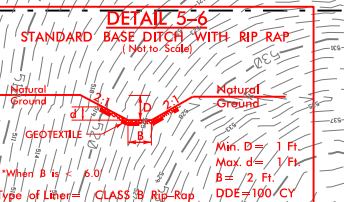
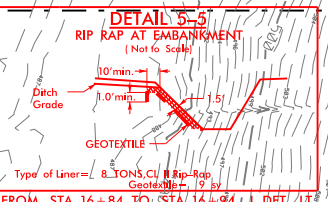
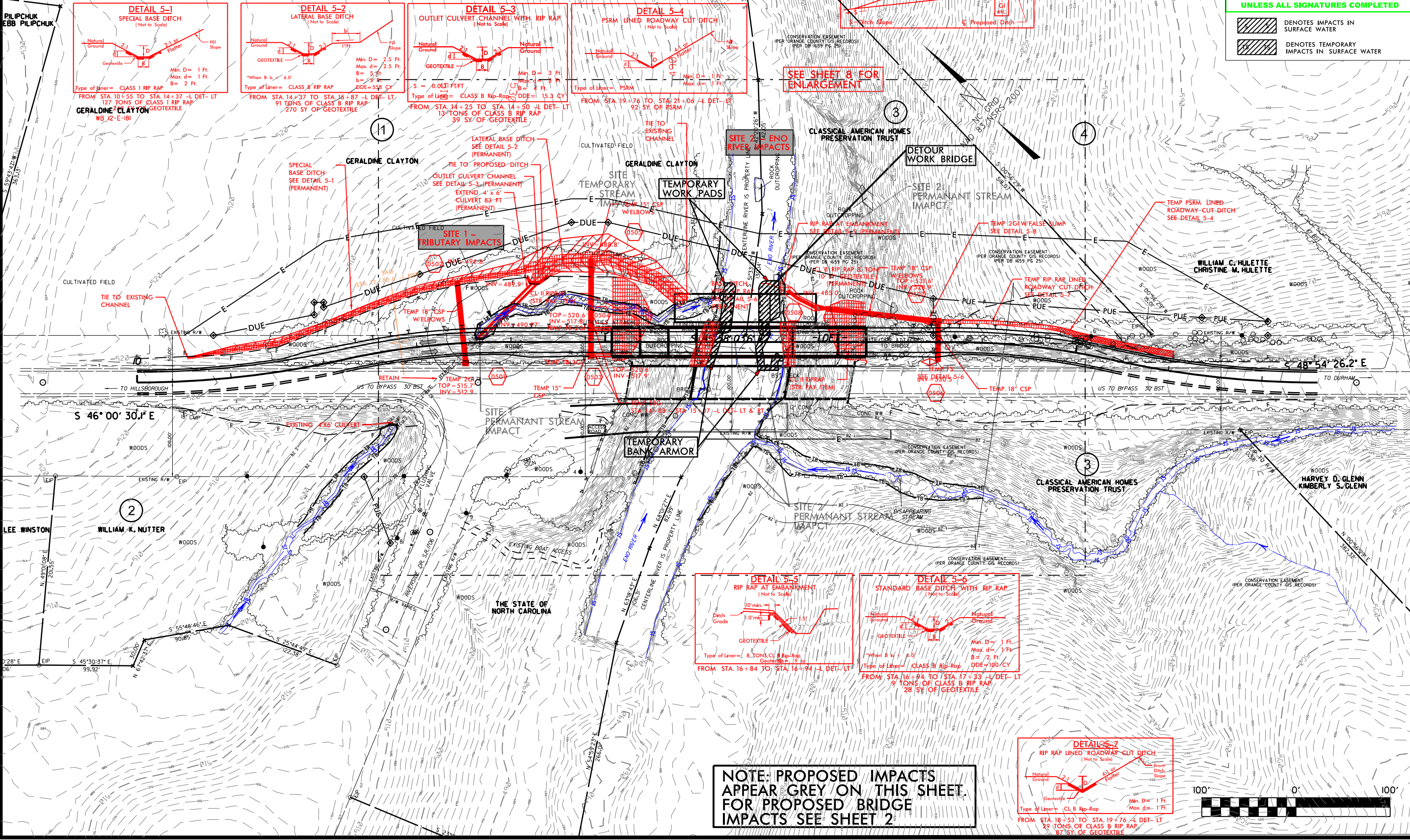
**PERMIT DRAWING
SHEET 7 OF 13**
REVISED 11/13/2019

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



SEE SHEET 8 FOR ENLARGEMENT



**NOTE: PROPOSED IMPACTS
APPEAR GREY ON THIS SHEET.
FOR PROPOSED BRIDGE
IMPACTS SEE SHEET 2**



REVISIONS

8.17.19
14860 18800 14990 19000
US 70 BYPASS
SR 1706 RIVERSIDE ROAD
2018 ADT 2035 ADT
PS = PAVED SHOULDER
SKETCH SHOWING BRIDGE/ROADWAY RELATIONSHIP
PSRM LINED ROADWAY CUT DITCH
OUTLET CULVERT CHANNEL WITH RIP RAP
PSRM LINED ROADWAY CUT DITCH
RIP RAP AT EMBANKMENT
STANDARD BASE DITCH WITH RIP RAP
RIP RAP LINED ROADWAY CUT DITCH
SPECIAL BASE DITCH
LATERAL BASE DITCH
OUTLET CULVERT CHANNEL WITH RIP RAP
PSRM LINED ROADWAY CUT DITCH
RIP RAP AT EMBANKMENT
STANDARD BASE DITCH WITH RIP RAP
RIP RAP LINED ROADWAY CUT DITCH

PROJECT REFERENCE NO. B-4962	SHEET NO. 8/CONST.5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

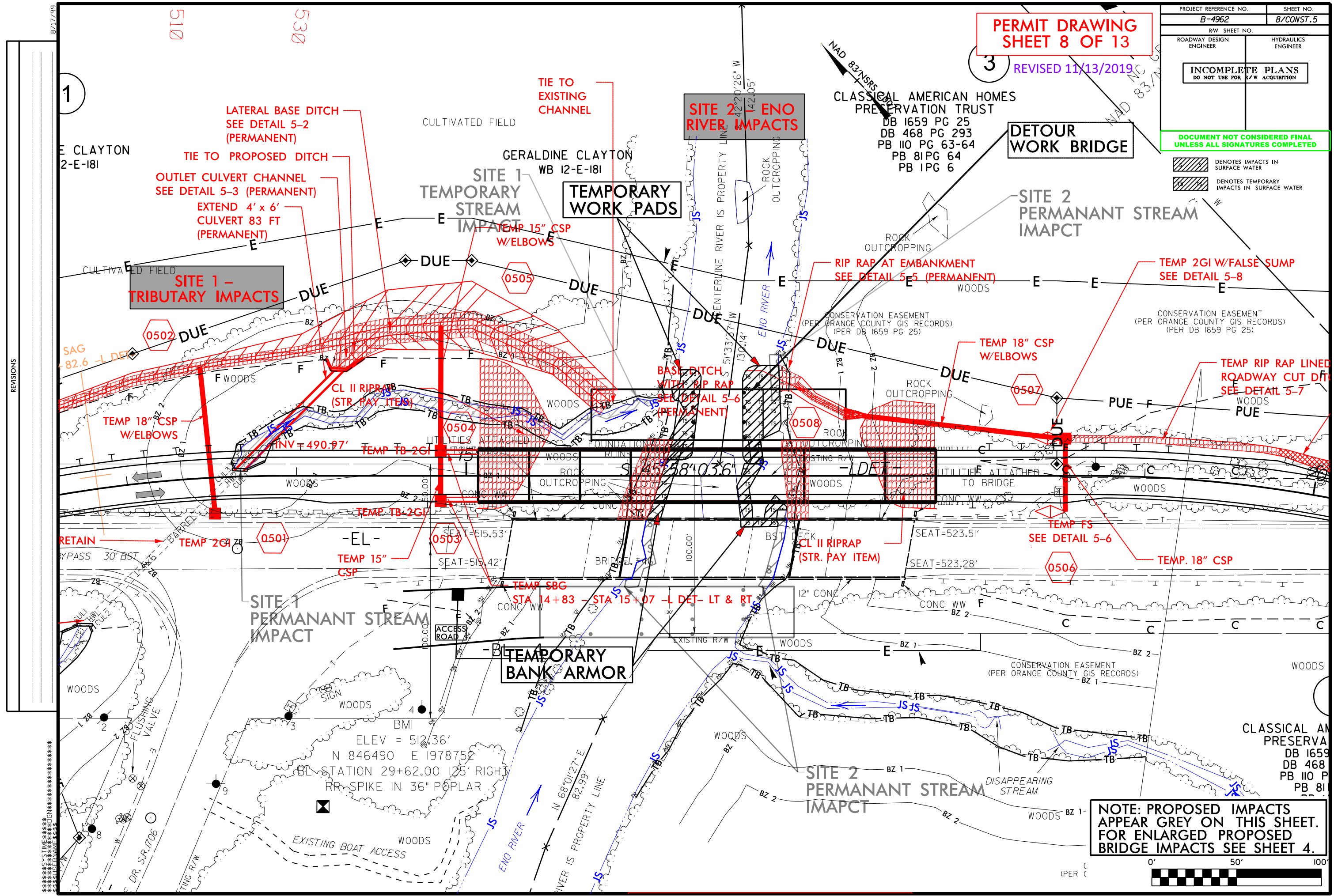
**PERMIT DRAWING
SHEET 8 OF 13**

REVISED 11/13/2019

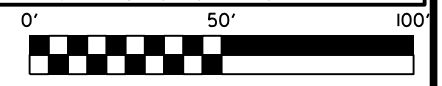
**DETOUR
WORK BRIDGE**

CLASSICAL AMERICAN HOMES
PRESERVATION TRUST
DB 1659 PG 25
DB 468 PG 293
PB 110 PG 63-64
PB 81 PG 64
PB 1 PG 6

/// DENOTES IMPACTS IN
SURFACE WATER
/// DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



**NOTE: PROPOSED IMPACTS
APPEAR GREY ON THIS SHEET.
FOR ENLARGED PROPOSED
BRIDGE IMPACTS SEE SHEET 4.**



REVISIONS

8/17/99

1

510
530

E CLAYTON
2-E-181

GERALDINE CLAYTON
WB 12-E-181

CULTIVATED FIELD

CULTIVATED FIELD

**SITE 2 ENO
RIVER IMPACTS**

**SITE 1 -
TRIBUTARY IMPACTS**

**SITE 1
TEMPORARY
STREAM
IMPACT**

**TEMPORARY
WORK PADS**

**SITE 2
PERMANENT STREAM
IMPACT**

TEMP 18" CSP
W/ELBOWS

TEMP 15" CSP
W/ELBOWS

RIP RAP AT EMBANKMENT
SEE DETAIL 5-5 (PERMANENT)

TEMP 2GI W/FALSE SUMP
SEE DETAIL 5-8

TEMP 18" CSP
W/ELBOWS

TEMP RIP RAP LINED
ROADWAY CUT DITCH
SEE DETAIL 5-7

TEMP 15" CSP

CL II RIPRAP
(STR. PAY ITEM)

TEMP FS
SEE DETAIL 5-6

TEMP. 18" CSP

**SITE 1
PERMANENT STREAM
IMPACT**

**TEMPORARY
BANK ARMOR**

**SITE 2
PERMANENT STREAM
IMPACT**

CLASSICAL AN
PRESERVA
DB 1659
DB 468
PB 110 P
PB 81

RETAIN

30' BST

WOODS

WOODS

WOODS

WOODS

WOODS

WOODS

WOODS

WOODS

WOODS

ELEV = 512.36'

N 846490 E 1978752

BL STATION 29+62.00 125' RIGHT

RR SPIKE IN 36" POPLAR

EXISTING BOAT ACCESS

WOODS

N 68°01'27"E
82.99'

RIVER IS PROPERTY LINE

ENO RIVER



ENO RIVER

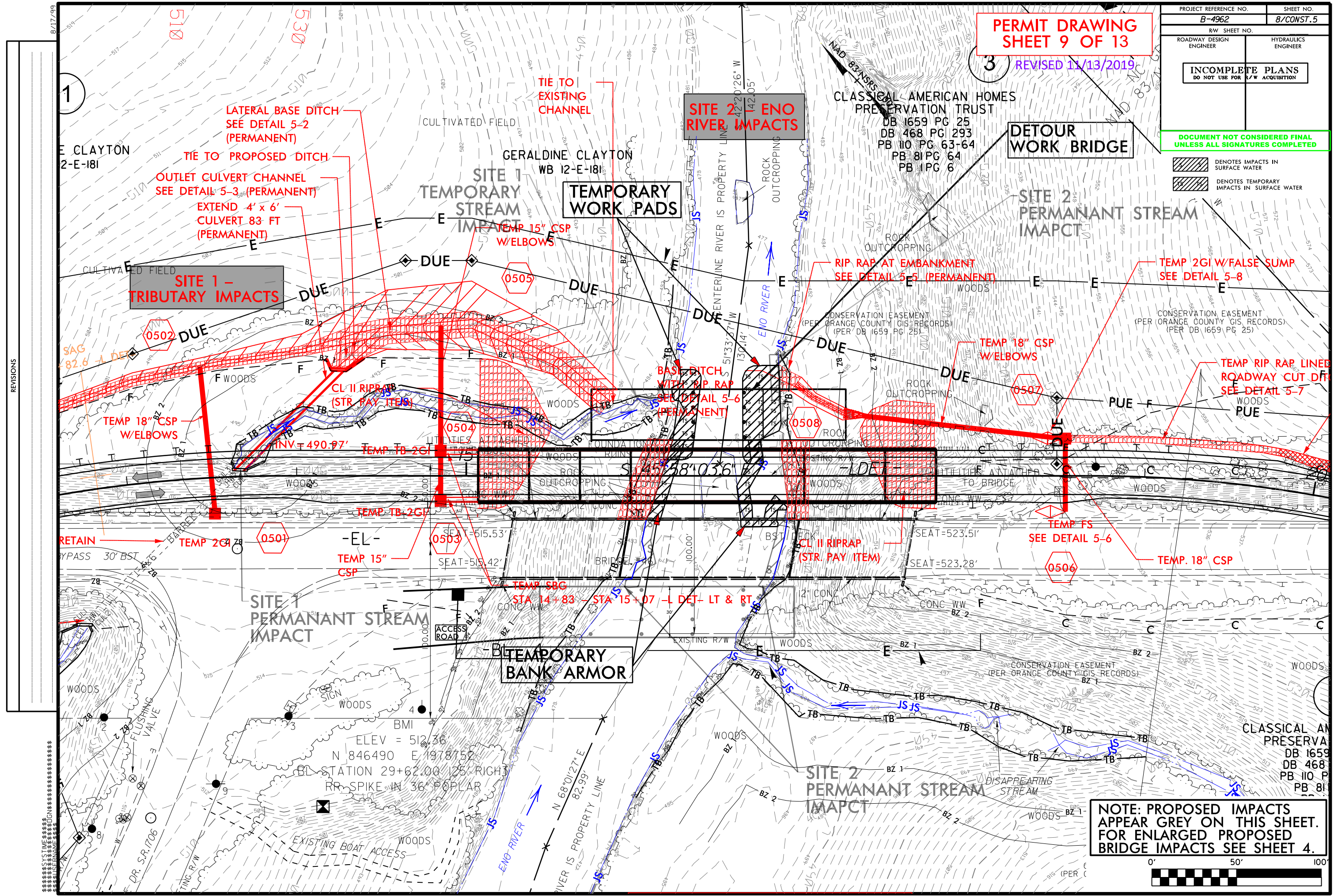
ENO RIVER

PROJECT REFERENCE NO. B-4962	SHEET NO. 8/CONST.5
RAW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

**PERMIT DRAWING
SHEET 9 OF 13**
REVISED 11/13/2019

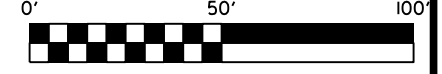
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER



REVISIONS

**NOTE: PROPOSED IMPACTS
APPEAR GREY ON THIS SHEET.
FOR ENLARGED PROPOSED
BRIDGE IMPACTS SEE SHEET 4.**



5/28/99

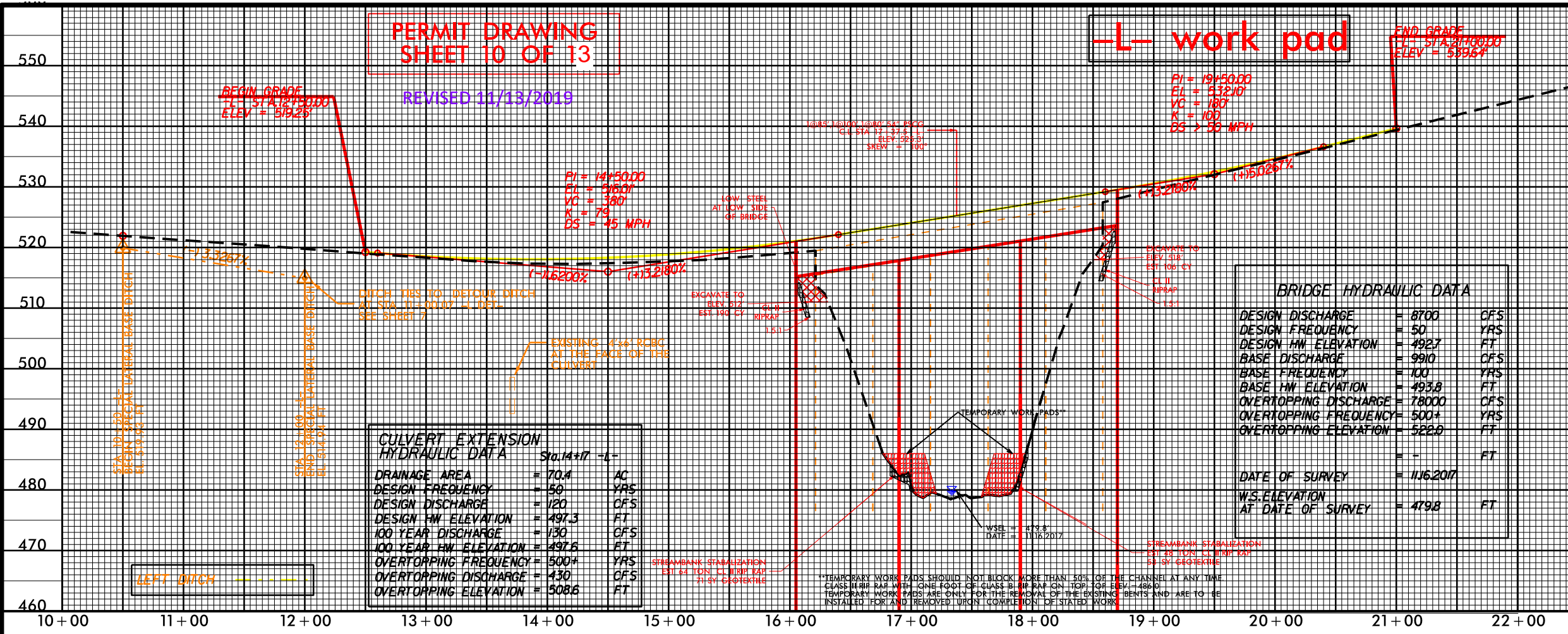
PERMIT DRAWING SHEET 10 OF 13

REVISED 11/13/2019

-L- work pad

PROJECT REFERENCE NO. B-4962	SHEET NO. 11A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SYSTEM TIME

5/28/99

PROJECT REFERENCE NO. B-4962	SHEET NO. 11A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE DO NOT USE FOR	PLANS R/W ACQUISITION

-LDET-

PERMIT DRAWING SHEET 11 OF 13

REVISED 11/13/2019

PI = 13+40.00
 EL = 516.43
 VC = 280'
 K = 54
 DS = 40 MPH

FOR DETOUR BRIDGE
 CULVERT 12.00' DIAMETER
 ELEV. 525.7'
 NEW 1-1-99

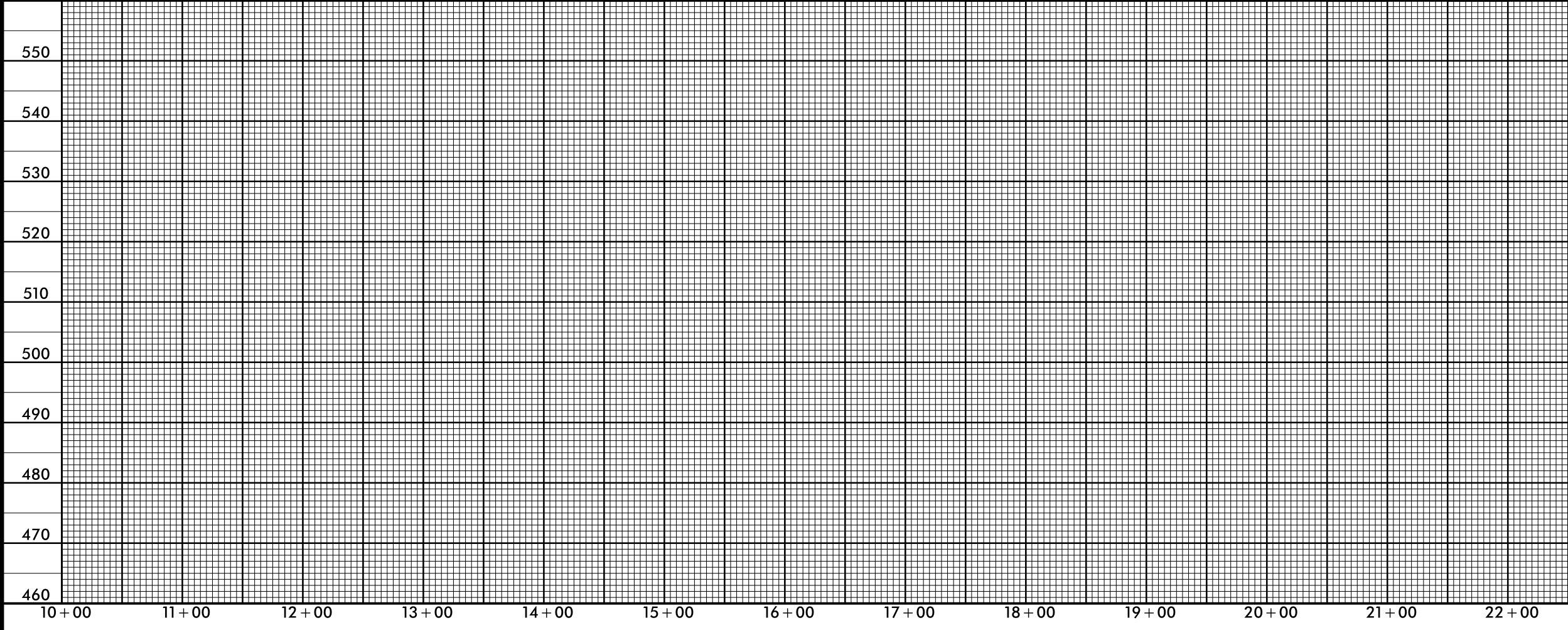
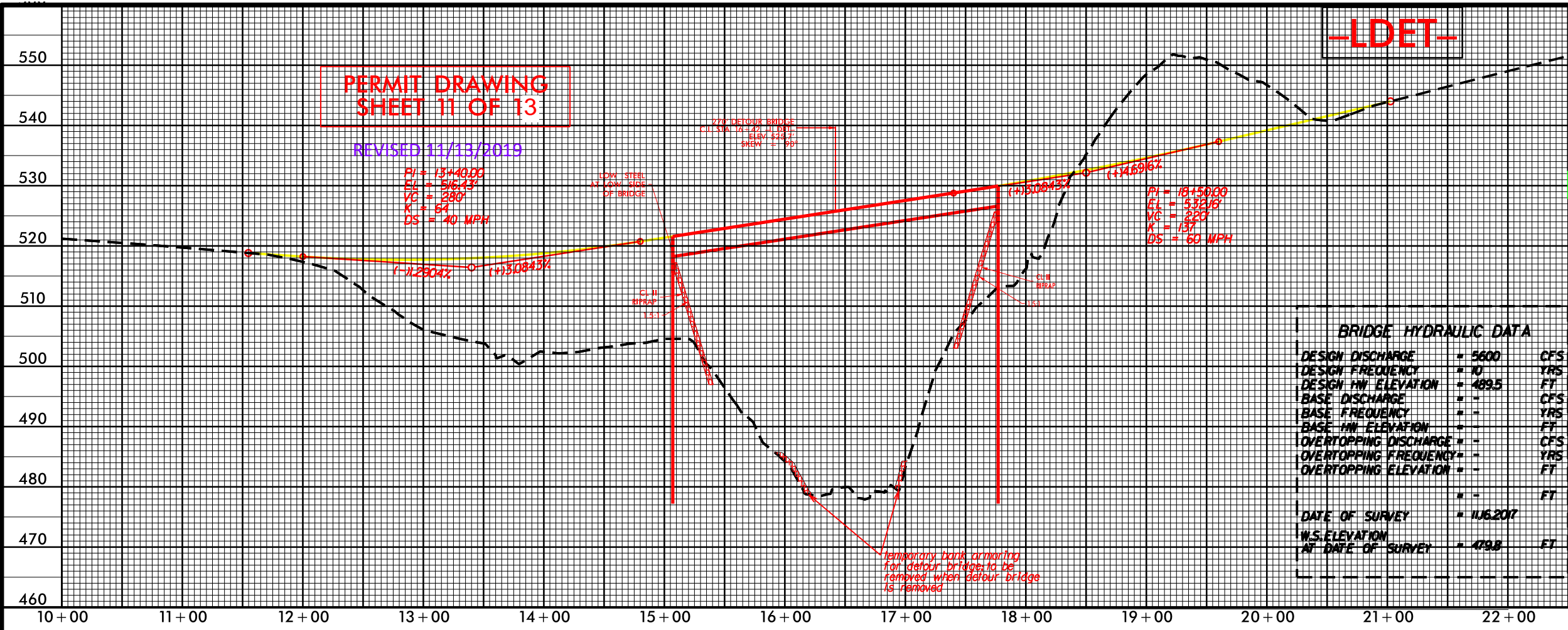
DOWN STEEL LOW SIDE OF BRIDGE

PI = 18+50.00
 EL = 532.16
 VC = 220'
 K = 134
 DS = 60 MPH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 5600	CFS
DESIGN FREQUENCY	= 10	YRS
DESIGN HW ELEVATION	= 489.5	FT
BASE DISCHARGE	= -	CFS
BASE FREQUENCY	= -	YRS
BASE HW ELEVATION	= -	FT
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING FREQUENCY	= -	YRS
OVERTOPPING ELEVATION	= -	FT
	= -	FT
DATE OF SURVEY	= 11/6/2017	
W.S. ELEVATION AT DATE OF SURVEY	= 479.8	FT

temporary bank armoring for detour bridge to be removed when detour bridge is removed



\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DATE\$\$\$\$\$

5/28/19

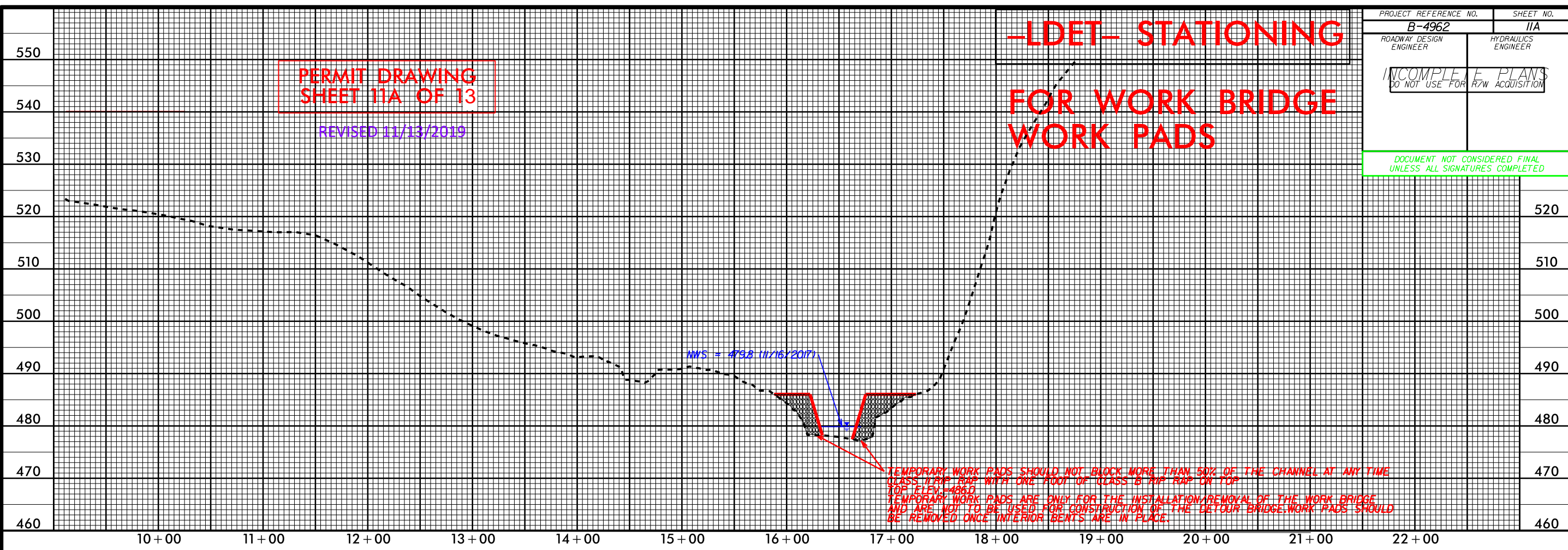
PROJECT REFERENCE NO. B-4962	SHEET NO. 11A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 11A OF 13

REVISED 11/13/2019

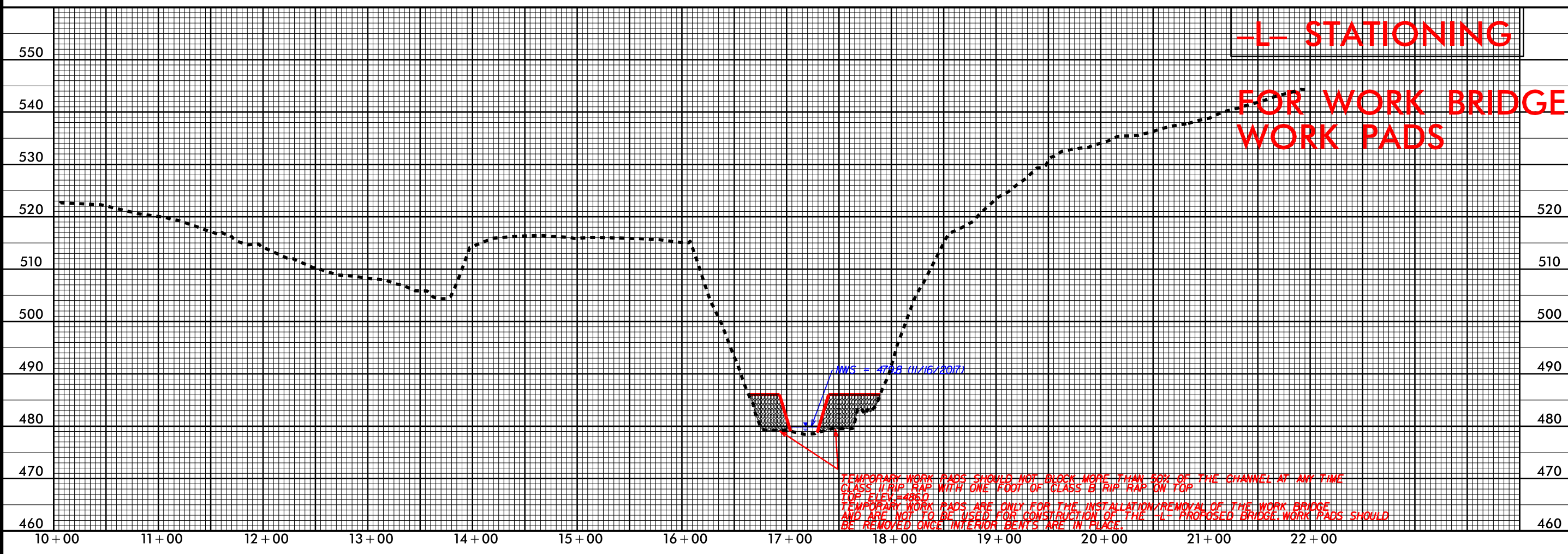
-LDET- STATIONING
FOR WORK BRIDGE WORK PADS



TEMPORARY WORK PADS SHOULD NOT BLOCK MORE THAN 50% OF THE CHANNEL AT ANY TIME
CLASS II RIP RAP WITH ONE FOOT OF CLASS B RIP RAP ON TOP
TOP ELEV = 486.0
TEMPORARY WORK PADS ARE ONLY FOR THE INSTALLATION/REMOVAL OF THE WORK BRIDGE
AND ARE NOT TO BE USED FOR CONSTRUCTION OF THE DETOUR BRIDGE. WORK PADS SHOULD
BE REMOVED ONCE INTERIOR BENTS ARE IN PLACE.

-L- STATIONING

FOR WORK BRIDGE WORK PADS



TEMPORARY WORK PADS SHOULD NOT BLOCK MORE THAN 50% OF THE CHANNEL AT ANY TIME
CLASS II RIP RAP WITH ONE FOOT OF CLASS B RIP RAP ON TOP
TOP ELEV = 486.0
TEMPORARY WORK PADS ARE ONLY FOR THE INSTALLATION/REMOVAL OF THE WORK BRIDGE
AND ARE NOT TO BE USED FOR CONSTRUCTION OF THE -L- PROPOSED BRIDGE. WORK PADS SHOULD
BE REMOVED ONCE INTERIOR BENTS ARE IN PLACE.

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DATE\$\$\$\$\$

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4962	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40174.1.1	BRSTP-0070(120)	P.E.	
40174.2.1		ROW & UTILITIES	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ORANGE COUNTY

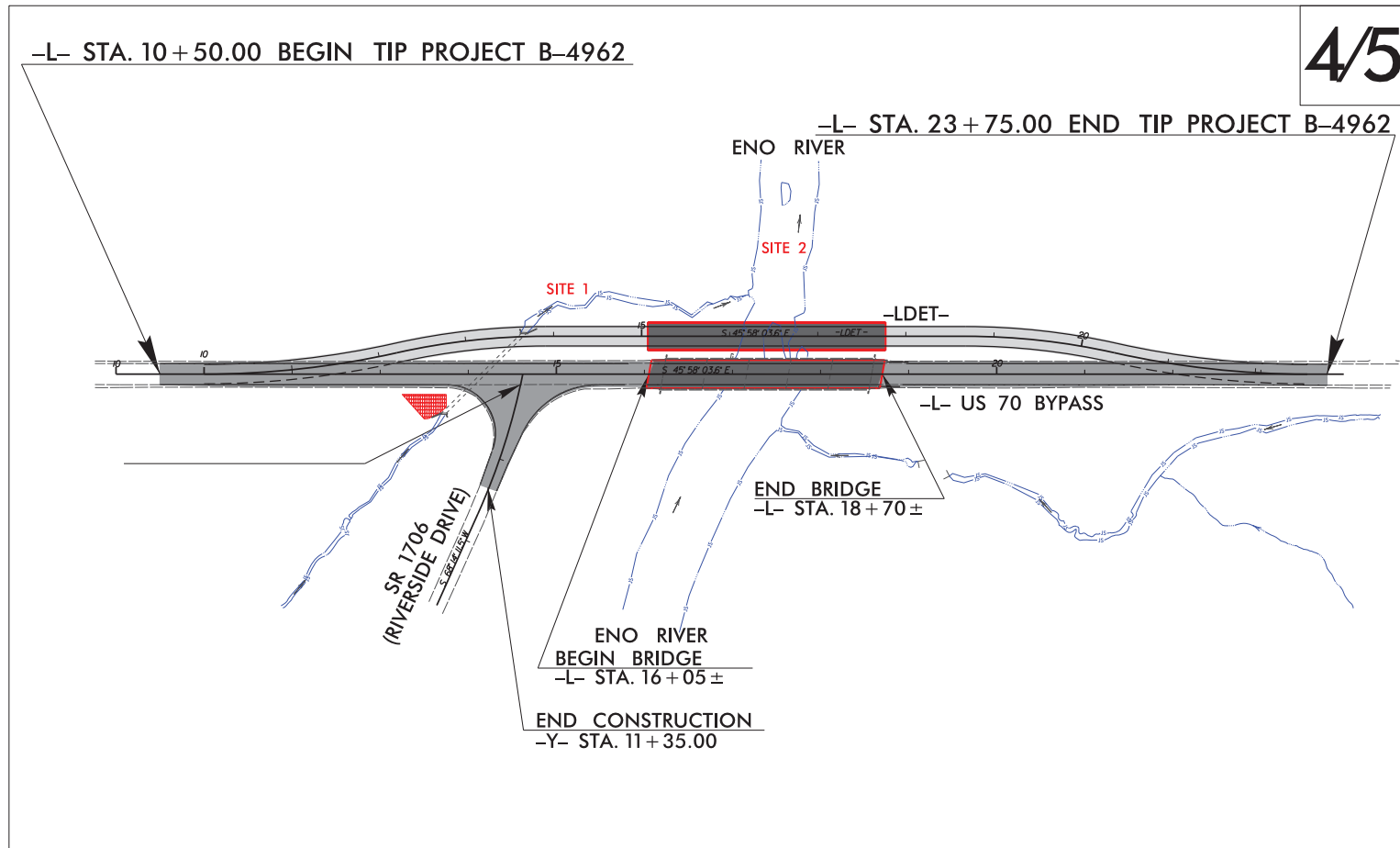
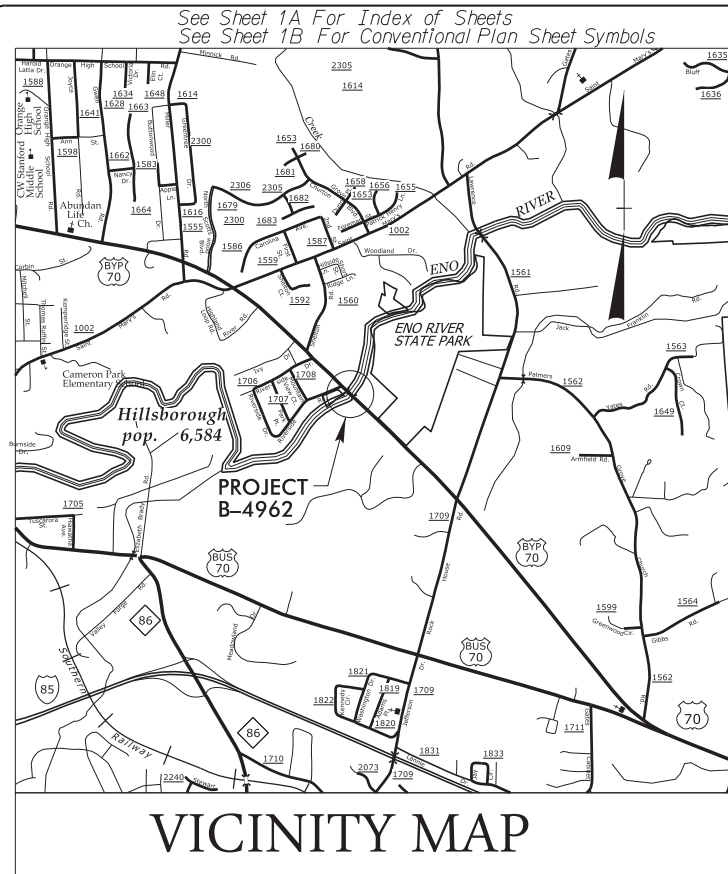
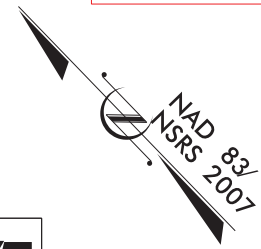
LOCATION: BRIDGE NO. 46 OVER ENO RIVER ON US 70 BYPASS

TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT

EXTENSION, AND STRUCTURE

BUFFER IMPACTS PERMIT

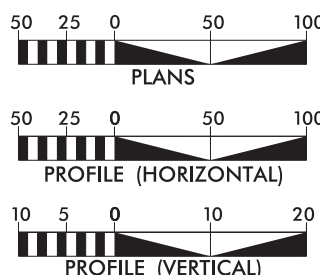
BUFFER DRAWING SHEET 1 OF 8



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

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2018 = 15000
ADT 2038 = 19000
K = 10 %
D = 70 %
T = 5 % *
V = 50 MPH
V_{DET} = 40 MPH
*TTST = 2% DUAL = 3%
FUNC CLASS =
MINOR ARTERIAL
"REGIONAL TIER"

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4962 = 0.201 MILES
LENGTH STRUCTURE TIP PROJECT B-4962 = 0.050 MILES
TOTAL LENGTH OF TIP PROJECT B-4962 = 0.251 MILES

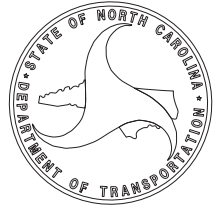
Prepared in the Office of:
SUMMIT
DESIGN AND ENGINEERING SERVICES
FIRM NO. P-4239
504 Meadowland Drive
Hillsborough, NC 27278-8551
Voice: (919) 732-3883
Fax: (919) 732-6776
www.summitde.net

2018 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE:
MAY 18, 2018
LETTING DATE:
APRIL 16, 2019

JAMES A. SPEER, PE
PROJECT ENGINEER
BRANDON W. JOHNSON, PE
PROJECT DESIGN ENGINEER
DAVID STUTTS, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

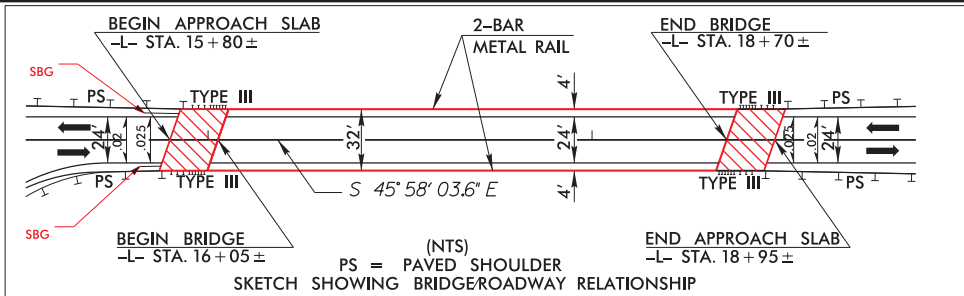
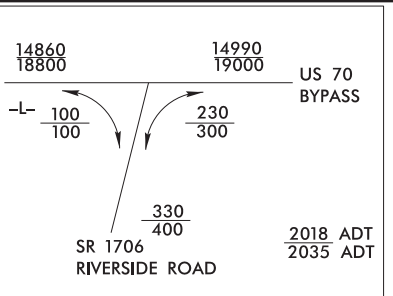
SIGNATURE: _____
ROADWAY DESIGN ENGINEER
SIGNATURE: _____



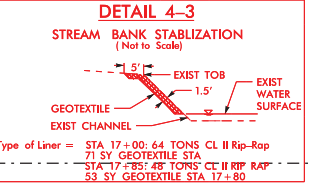
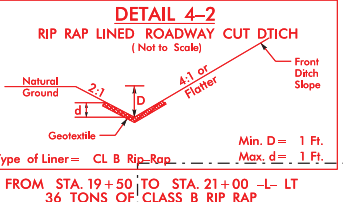
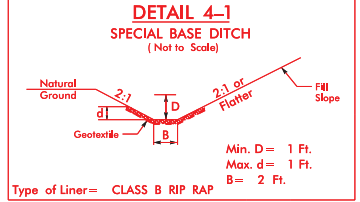
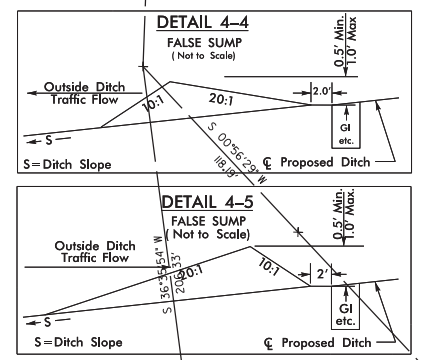
09/08/1999
31-JAN-2019 14:39
B4962_Hyd_buff_prm_tsh.dgn
jason.patyskoski

TIP PROJECT: B-4962
CONTRACT: C204078

8/17/99



BUFFER DRAWING SHEET 2 OF 8



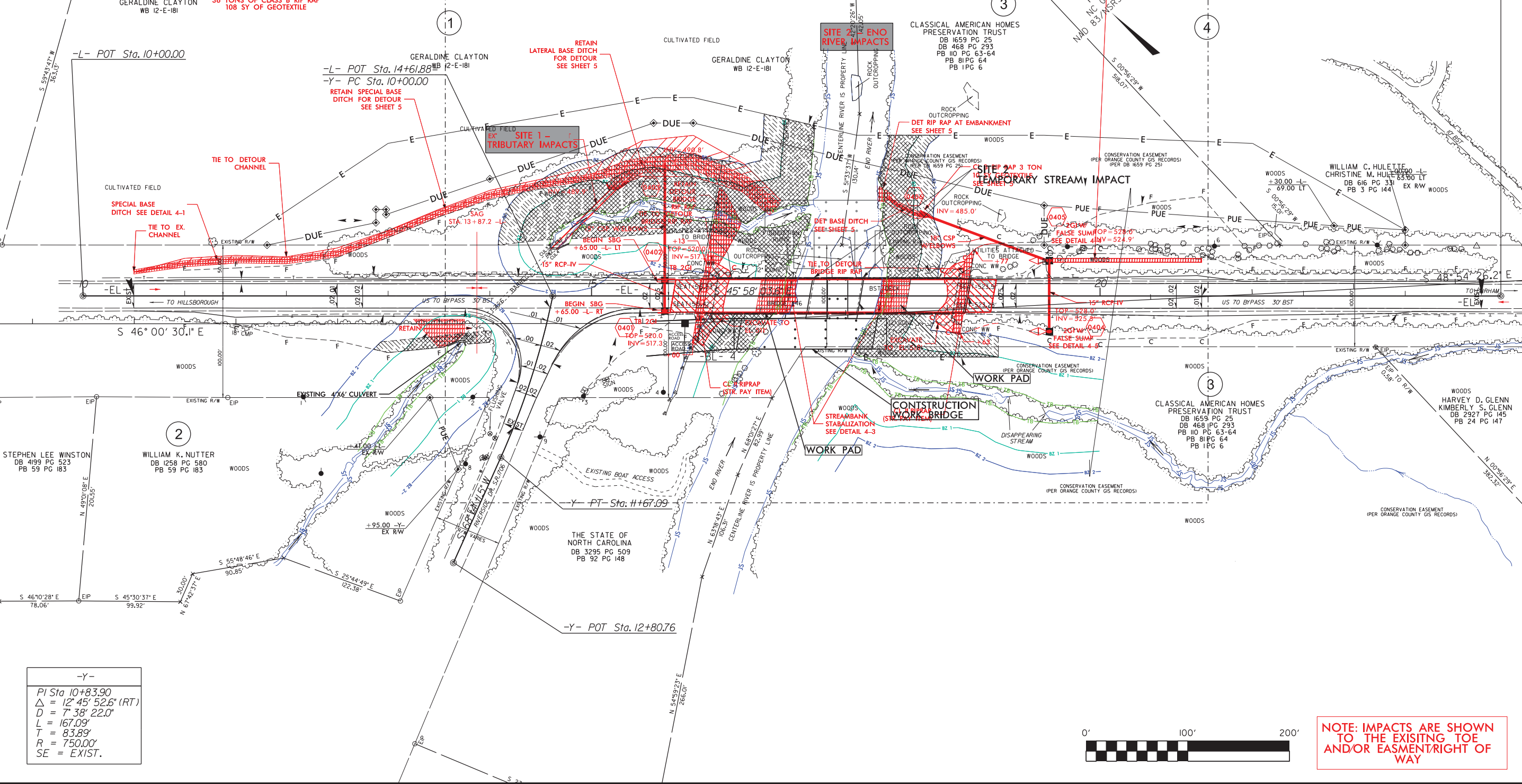
SEE SHEET 4 FOR ENLARGEMENT

PROJECT REFERENCE NO. B-4962	SHEET NO. 2/CONST.4
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

[Hatched Pattern]	ALLOWABLE IMPACTS ZONE 1
[Dotted Pattern]	ALLOWABLE IMPACTS ZONE 2

REVISIONS



-Y-
PI Sta 10+83.90
$\Delta = 12' 45' 52.6" (RT)$
$D = 7' 38' 22.0"$
$L = 167.09'$
$T = 83.89'$
$R = 750.00'$
SE = EXIST.

PLAN 2019 14.79 pr_m_psh_02.dgn

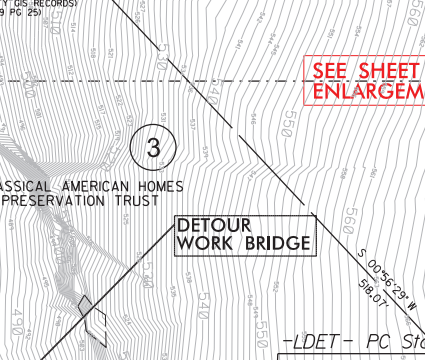
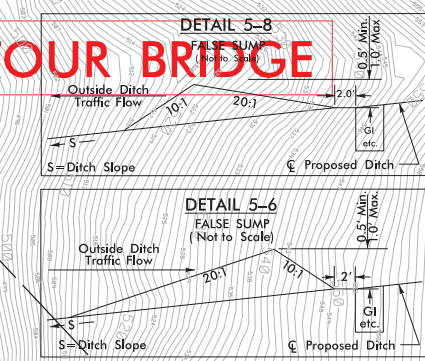
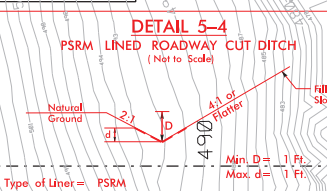
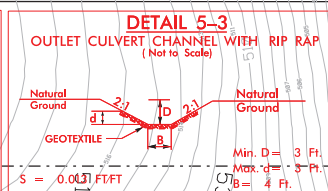
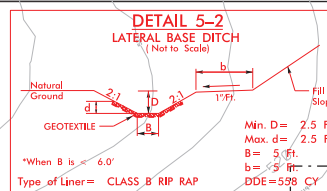
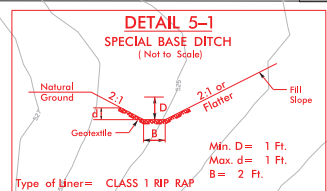
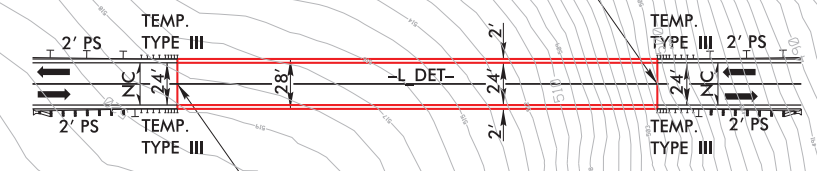
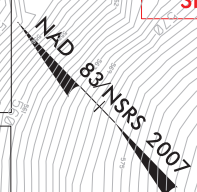


NOTE: IMPACTS ARE SHOWN TO THE EXISTING TOE AND/OR EASMENT RIGHT OF WAY

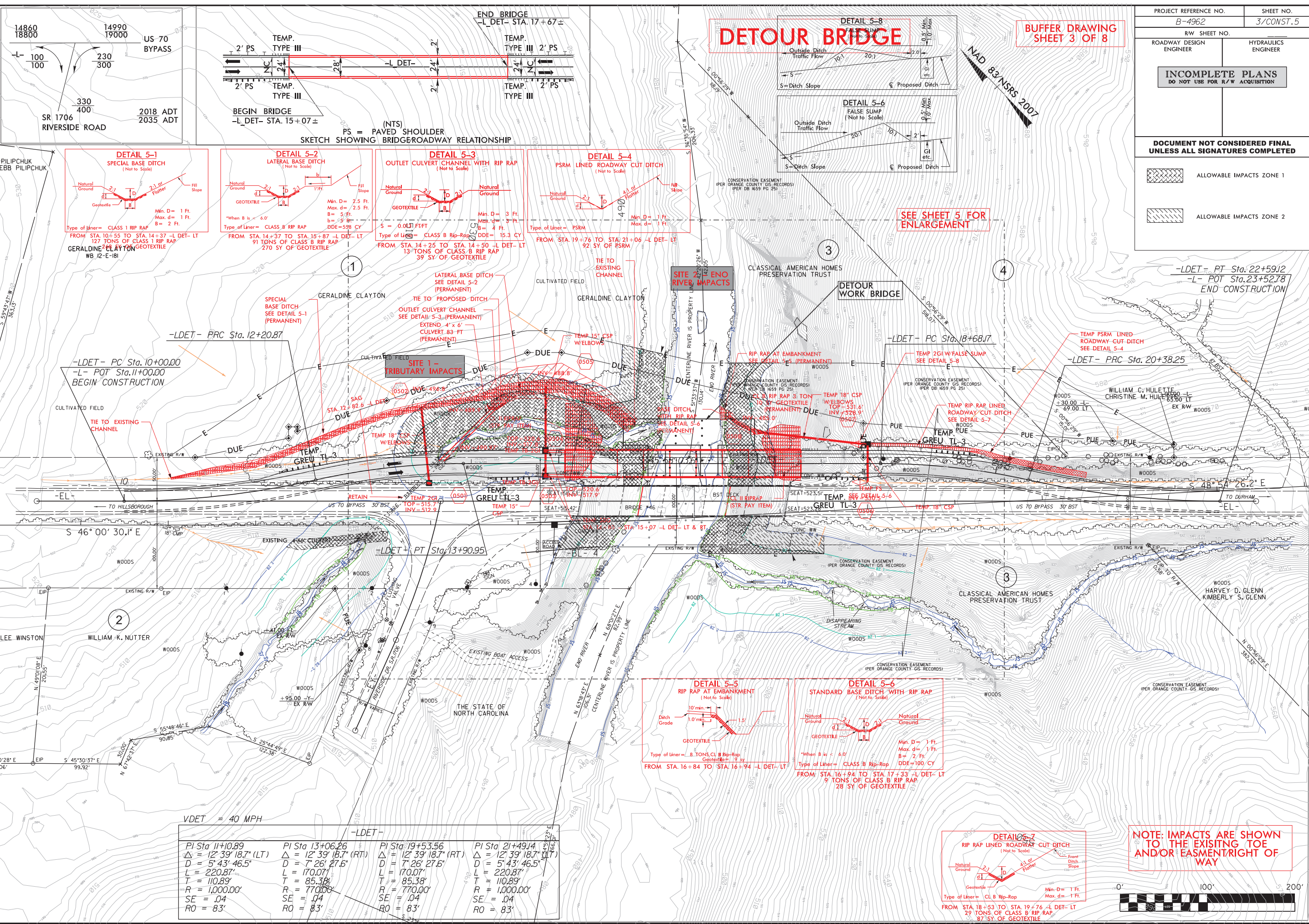
PROJECT REFERENCE NO. B-4962	SHEET NO. 3/CONST.5
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	ALLOWABLE IMPACTS ZONE 1
	ALLOWABLE IMPACTS ZONE 2

DETOUR BRIDGE

BUFFER DRAWING
SHEET 3 OF 8

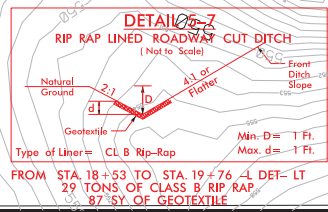


SEE SHEET 5 FOR ENLARGEMENT



VDET = 40 MPH

PI Sta	Δ	D	L	T	R	SE	RO
11+10.89	12° 39' 18.7" (LT)	5' 43' 46.5"	220.87'	110.89'	1,000.00'	.04	83°
13+06.26	12° 39' 18.7" (RT)	7' 26' 27.6"	170.07'	85.38'	770.00'	.04	83°
19+53.56	12° 39' 18.7" (RT)	7' 26' 27.6"	170.07'	85.38'	770.00'	.04	83°
21+49.14	12° 39' 18.7" (LT)	5' 43' 46.5"	220.87'	110.89'	1,000.00'	.04	83°



NOTE: IMPACTS ARE SHOWN TO THE EXISTING TOE AND/OR EASEMENT/RIGHT OF WAY

REVISIONS

3/14/2019 14:39 pr.m.psh_03.dgn

8/17/99
OF CLASS B RIP RAP
OF GEOTEXTILE

1

-L- ENLARGEMENT

**BUFFER DRAWING
SHEET 4 OF 8**

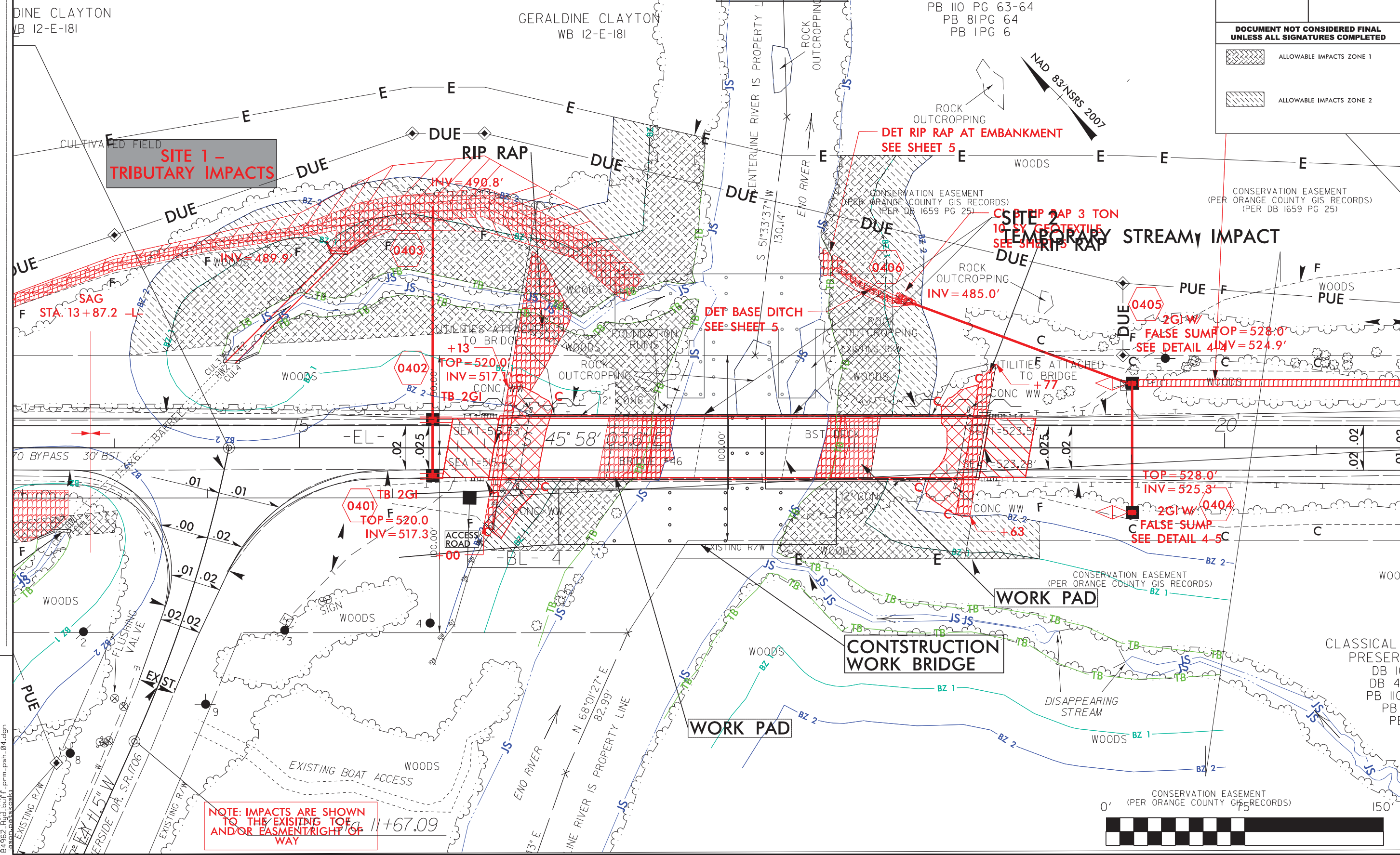
PROJECT REFERENCE NO. B-4962	SHEET NO. 4/CONST.4
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	ALLOWABLE IMPACTS ZONE 1
	ALLOWABLE IMPACTS ZONE 2

CLASSICAL AMERICAN HOMES
PRESERVATION TRUST
DB 1659 PG 25
DB 468 PG 293
PB 110 PG 63-64
PB 81 PG 64
PB 1 PG 6

SITE 2 - ENO RIVER IMPACTS

SITE 1 - TRIBUTARY IMPACTS

SITE 2 - TEMPORARY STREAM IMPACT



NOTE: IMPACTS ARE SHOWN TO THE EXISTING TOP AND/OR EASEMENT RIGHT OF WAY



REVISIONS

8/17/99
pr-m-psh_04.dgn
js

PROJECT REFERENCE NO. B-4962	SHEET NO. 5/CONST.5
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

DETOUR BRIDGE ENLARGEMENT

**BUFFER DRAWING
SHEET 5 OF 8**

NOTE: IMPACTS ARE SHOWN TO THE EXISTING TOE AND/OR EASMENT/RIGHT OF WAY

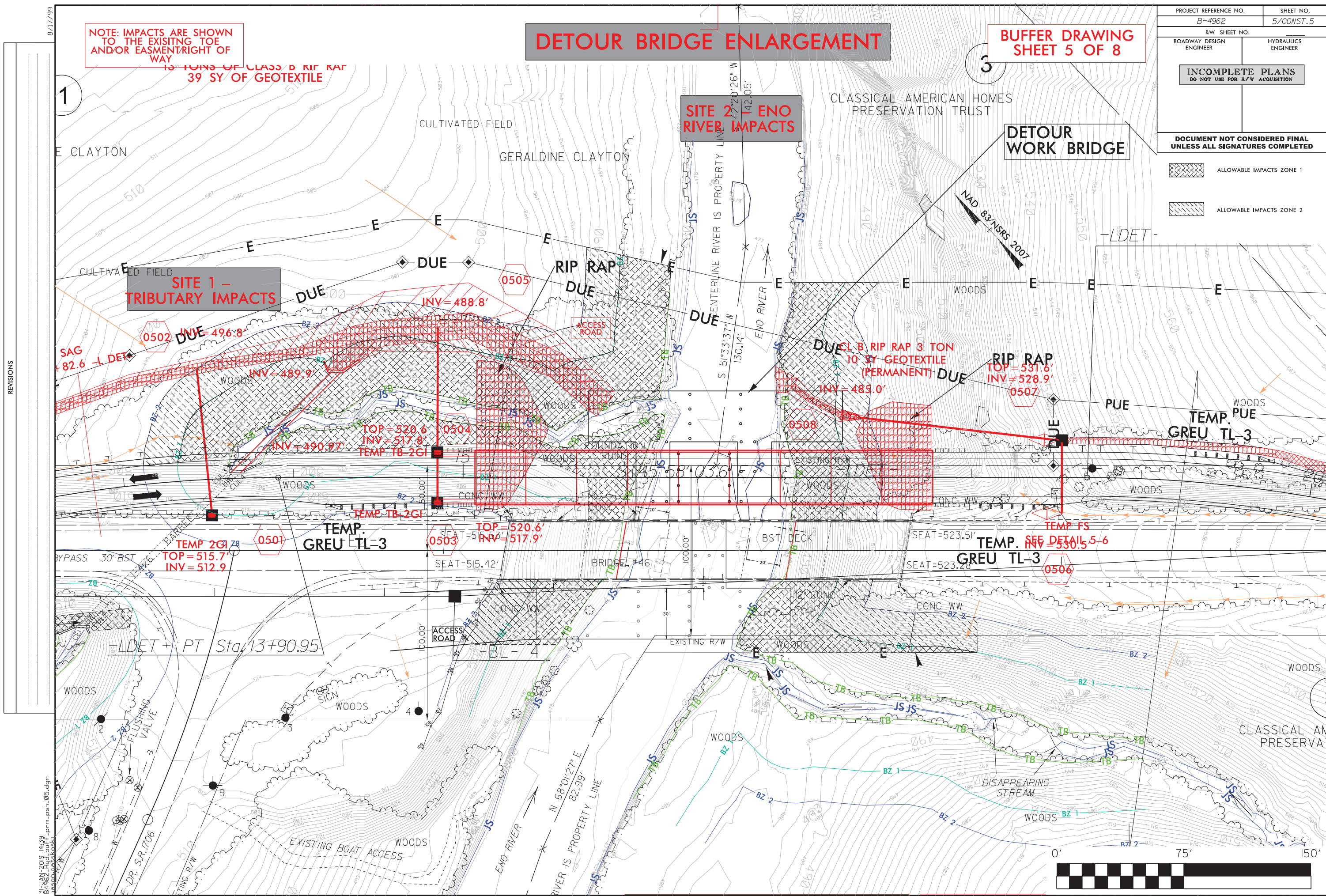
13 TONS OF CLASS B RIP RAP
39 SY OF GEOTEXTILE

SITE 2 - ENO RIVER IMPACTS

SITE 1 - TRIBUTARY IMPACTS

DETOUR WORK BRIDGE

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



REVISIONS

8/17/99

PLAN 2019 14.79 pr-m-psh_05.dgn
14.79 pr-m-psh_05.dgn
14.79 pr-m-psh_05.dgn

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

-L-

SEE SHEET 4 FOR PLAN VIEW

-Y-

SEE SHEET 4 FOR PLAN VIEW

**BUFFER DRAWING
SHEET 6 OF 8**

SITE 2

BM #1 EL = 512.36
N 846490 E 1978752
BL STA.29+62.00 125' RT
RR SPIKE IN 36" POPLAR

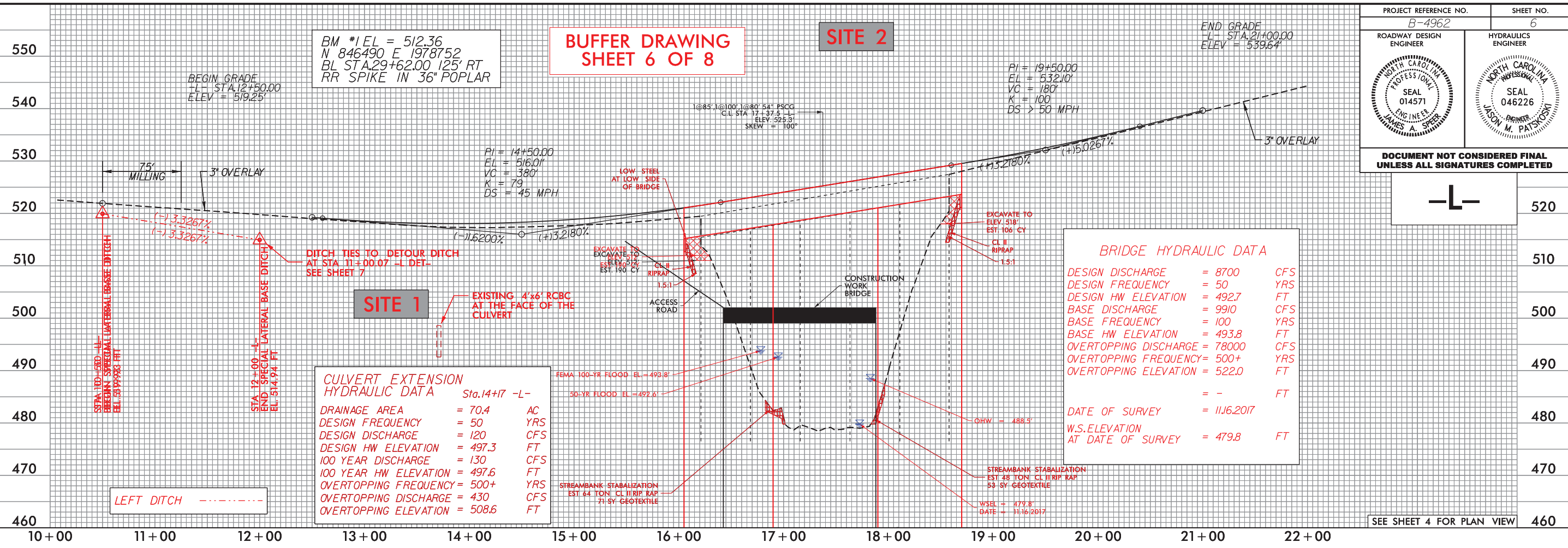
END GRADE
L- STA.21+00.00
ELEV = 539.64'

PI = 19+50.00
EL = 532.10'
VC = 180'
K = 100
DS > 50 MPH

PI = 14+50.00
EL = 516.01'
VC = 380'
K = 79
DS = 45 MPH

BEGIN GRADE
L- STA.12+50.00
ELEV = 519.25'

1@85' 1@100' 1@80' 54' PSCG
CL STA 17+37.5' L
ELEV. 525.31'
SKEW = 100'

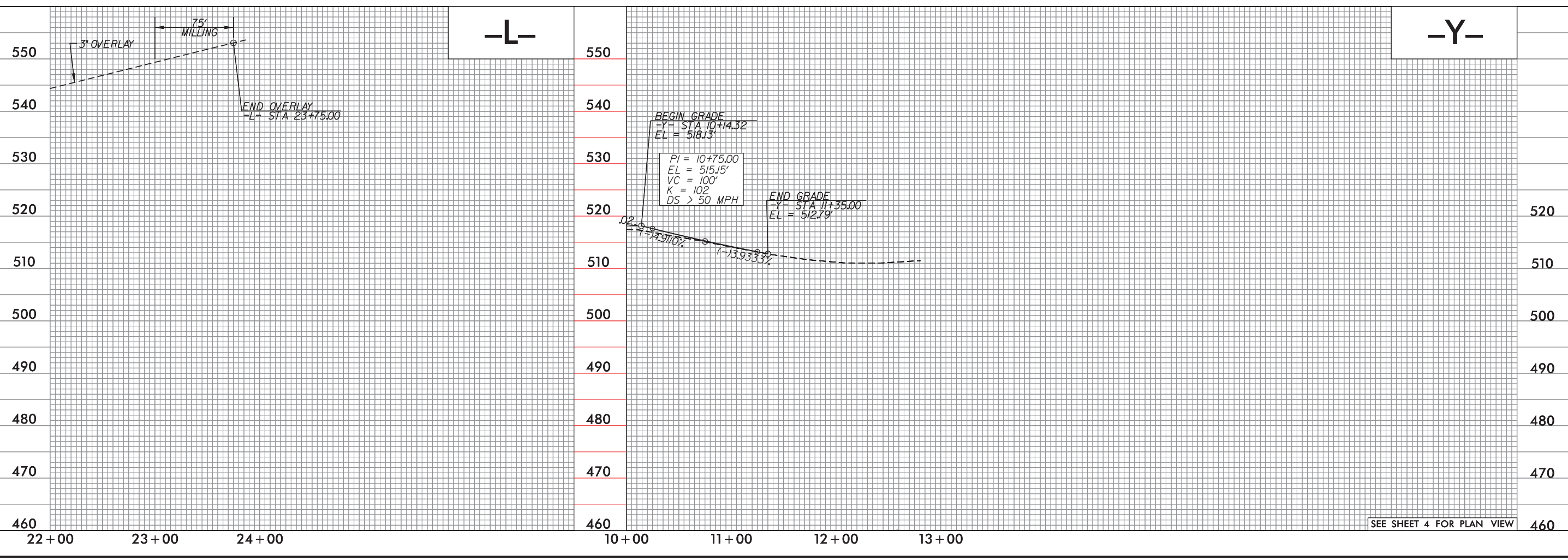


BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 8700	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 492.7	FT
BASE DISCHARGE	= 9910	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 493.8	FT
OVERTOPPING DISCHARGE	= 78000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 522.0	FT
	= -	FT
DATE OF SURVEY	= 11/16/2017	
W.S.ELEVATION AT DATE OF SURVEY	= 479.8	FT

CULVERT EXTENSION HYDRAULIC DATA Sta.14+17 -L-

DRAINAGE AREA	= 70.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 120	CFS
DESIGN HW ELEVATION	= 497.3	FT
100 YEAR DISCHARGE	= 130	CFS
100 YEAR HW ELEVATION	= 497.6	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 430	CFS
OVERTOPPING ELEVATION	= 508.6	FT



5/28/99

2/2/2019 14:39
Lesson.patkoski

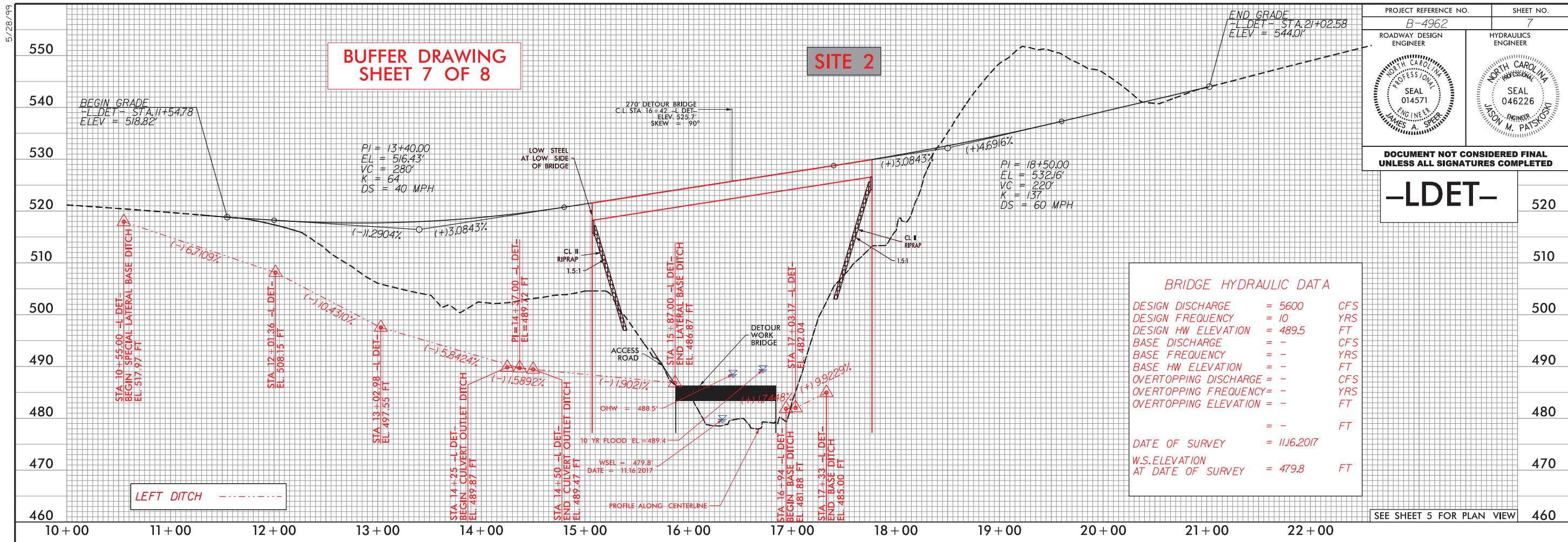
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

-LDET- 520

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 5600	CFS	500
DESIGN FREQUENCY	= 10	YRS	490
DESIGN HW ELEVATION	= 489.5	FT	480
BASE DISCHARGE	= -	CFS	470
BASE FREQUENCY	= -	YRS	460
BASE HW ELEVATION	= -	FT	
OVERTOPPING DISCHARGE	= -	CFS	
OVERTOPPING FREQUENCY	= -	YRS	
OVERTOPPING ELEVATION	= -	FT	
DATE OF SURVEY	= 11/16/2017		
W.S. ELEVATION AT DATE OF SURVEY	= 479.8	FT	

SEE SHEET 5 FOR PLAN VIEW



RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft ²)	ZONE 2 (ft ²)
			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)		
1	14+08-L- LT to 16+29 -L- LT	Culvert			X	8148	4999	13147					
1	12+86 -L- RT to 14+02 -L- RT	Culvert			X	834	335	1169					
2	15+20 -L_DET- LT to 17+48 -L_DET- LT	Detour Work Bridge		X		9037	4185	13222					
2	15+56 -L_DET- LT to 17+48 -L_DET- LT	Detour Bridge		X		1854	659	2513					
2	15+96 -L- RT to 18+64 -L- RT	Bridge		X		3597	2202	5799					
2	18+60 -L- RT to 19+00 -L- RT	Roadway			X	105	766	871					
TOTALS*:						23575	13146	36721	0	0	0	0	0

NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 9/10/18
 ORANGE COUNTY
 B-4962
 BRIDGE REPLACEMENT ON US 70 BYPASS OVER
 ENO RIVER
 SHEET 8 OF 8

WETLAND AND SURFACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Temp Fill In Wetlands (ac)	Permanent 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	14+60 -L- LT to 17+15 -L- LT	Proposed Fill Slope						0.03	<0.01*	267	20	
2	16+90 to 17+86 -L- CL	Stream Bank Stabilization						0.01		74*****		
2	17+24 to 17+54 -L- LT	Detour Bridge							< 0.01 **			
2	17+09 to 17+69 -L- LT	Detour Work Bridge							< 0.01 ***			
2	16+43 -L- RT to 17+76 -L- RT	Construction Work Bridge							< 0.01 ****			
2	16+58 -L- RT to 17+78 -L- RT	Temporary Work Pads (-L-)									73*****	
2	16+58 -L- RT to 17+78 -L- RT	Temporary Work Pads (-L- Work Bridge)									60*****	
2	16+15 -LDET- LT to 16+85 -LDET- LT	Temporary Bank Armor (-L DET-)									52*****	
2	16+15 -LDET- LT to 16+85 -LDET- LT	Temporary Work Pads (-L DET- Work Bridge)									58*****	
TOTALS#:								0.04	< 0.01	341	263	

NOTES:

#Rounded totals are sum of actual impacts

*Temp SW impacts of Proposed fill slope= 31.9 sf

**Detour Bridge = 28 sf

***Detour Work Bridge = 57 sf

****Construction Work Bridge = 85 sf

*****Stream Bank Stabilization, Temp. Work Pad(-L-), and Temp Work Pad(-L- Work Bridge) overlap. Along the centline of stream there is a total of 46' of Stream Bank Stabilization and 60' of Temporary impacts under the -L- bridge an -L- work bridge. The remaining 26' of Stream Bank Stabilization is located north of -L- at the ditch outlet.

*****Along the center line of stream there is a additional 55' of temporary impacts due to the Temp. Bank Armor (-LDET-) and Temp. Work Pad(-LDET- Work Bridge) beyond the amount accounted for in the above *****. Total impacts along river are 74' of Stream Bank Stabilization and 115' of Temp. Surface Water Impacts equaling 189' total.

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 11/07/2019 Revised
 ORANGE COUNTY
 B-4962
 ENO RIVER
 SHEET 13 OF 13