PROJECT REFERENCE NO.	SHEET NO.
R-0623	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -Y2- SEE SHEET 51
FOR PROFILE OF LINE -L- SEE SHEETS 37 AND 38

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

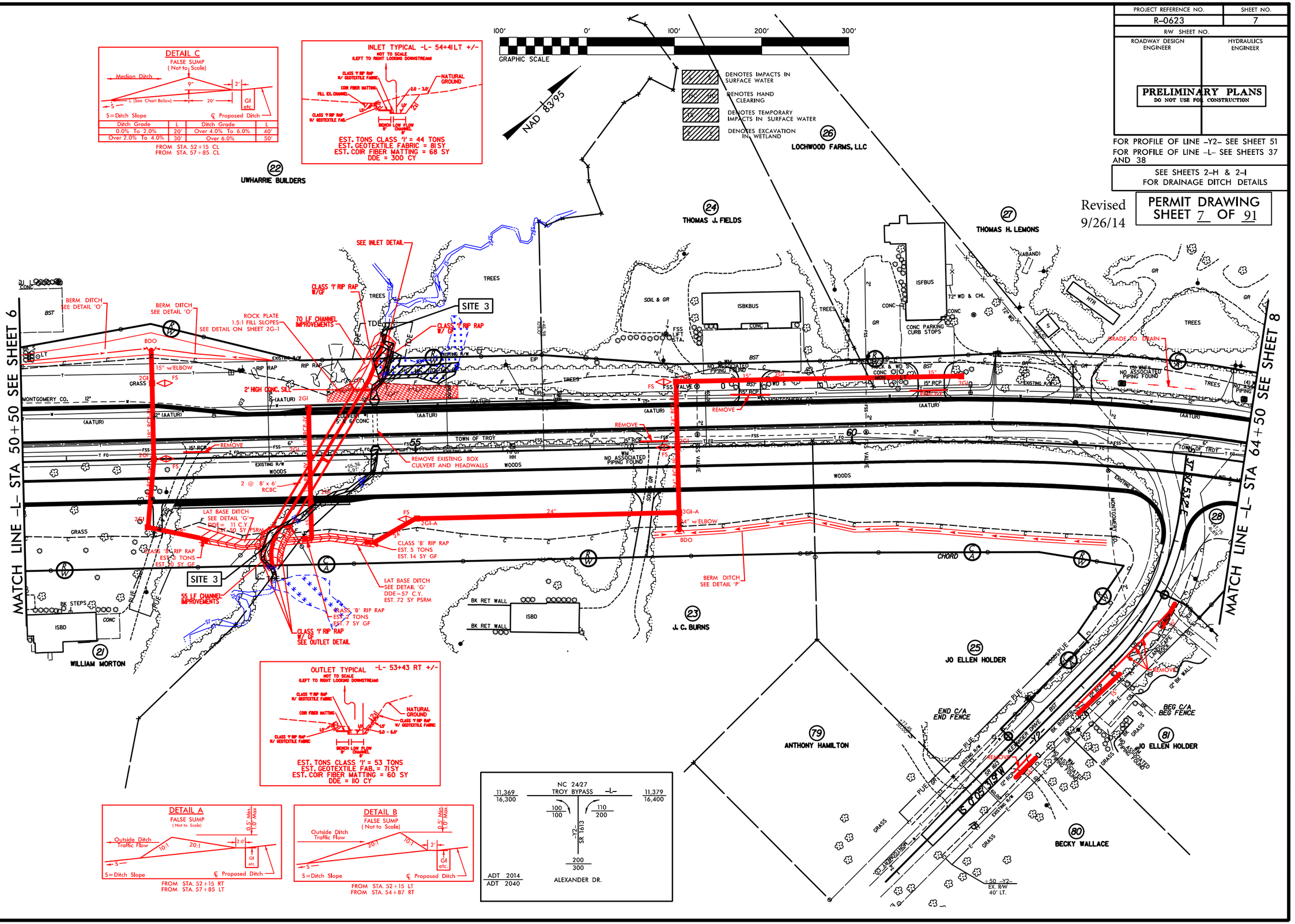
Revised 9/26/14

PERMIT DRAWING SHEET 7 OF 91

GRAPHIC SCALE 100' 0' 100' 200' 300'

NAD 83/95

DENOTES IMPACTS IN SURFACE WATER
DENOTES HAND CLEARING
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND



DETAIL C
FALSE SUMP
(Not to Scale)

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 52+15 CL
FROM STA. 57+85 CL

INLET TYPICAL -L- 54+41 LT +/-
NOT TO SCALE
(LEFT TO RIGHT LOOKING DOWNSTREAM)
EST. TONS CLASS 'I' = 44 TONS
EST. GEOTEXTILE FABRIC = 81 SY
EST. COIR FIBER MATTING = 68 SY
DDE = 300 CY

OUTLET TYPICAL -L- 53+43 RT +/-
NOT TO SCALE
(LEFT TO RIGHT LOOKING DOWNSTREAM)
EST. TONS CLASS 'I' = 53 TONS
EST. GEOTEXTILE FAB. = 71 SY
EST. COIR FIBER MATTING = 60 SY
DDE = 110 CY

DETAIL A
FALSE SUMP
(Not to Scale)
FROM STA. 52+15 RT
FROM STA. 57+85 LT

DETAIL B
FALSE SUMP
(Not to Scale)
FROM STA. 52+15 LT
FROM STA. 54+87 RT

REVISIONS

8/17/99

9/25/2014
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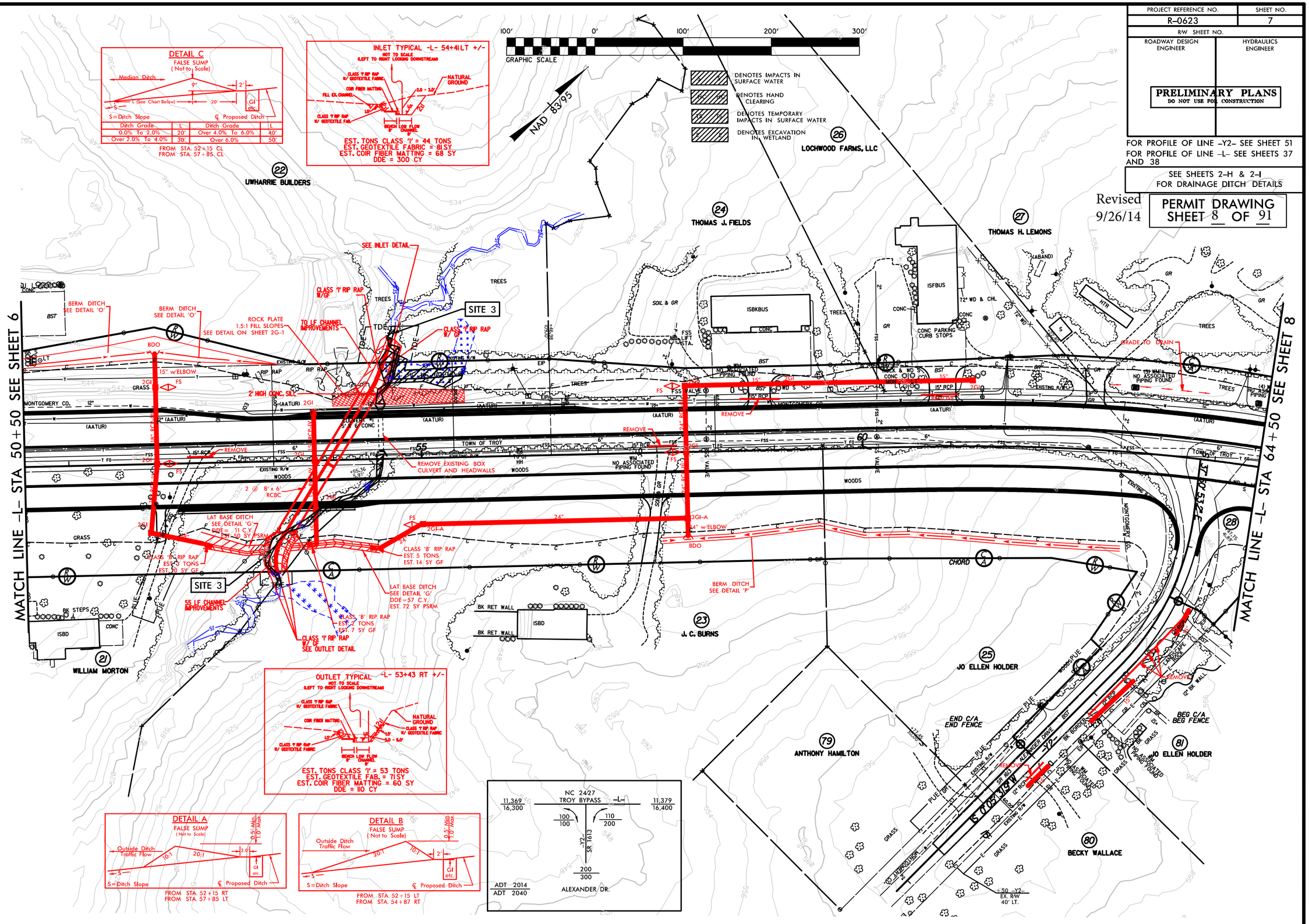

REVISIONS

8/17/99

9/25/2014
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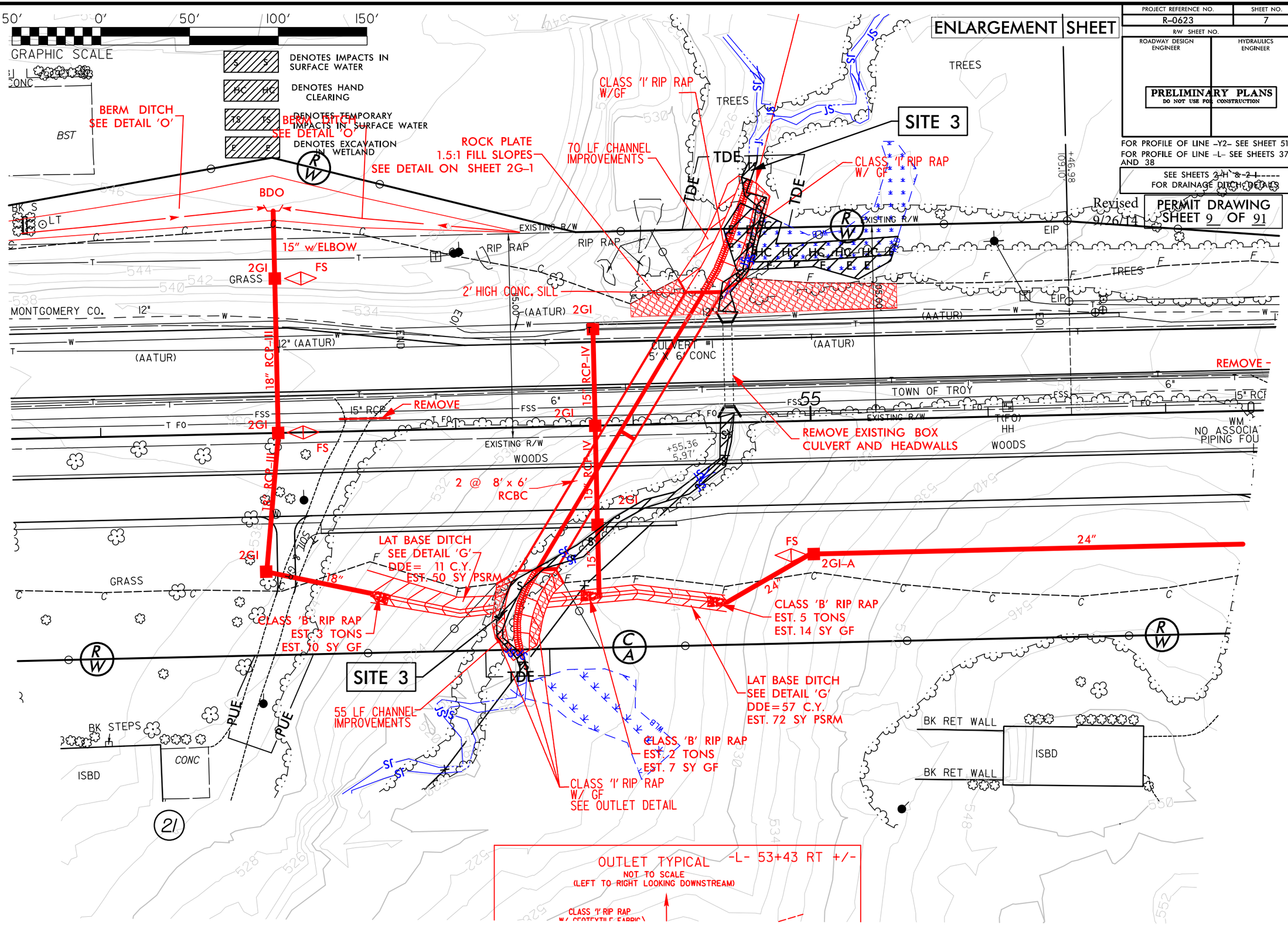

REVISIONS

8/17/99

9/25/2014
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2:00:01 PM

PROJECT REFERENCE NO.	SHEET NO.
R-0623	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

SEE SHEET 2-I FOR PREFORMED SCOUR HOLE DETAIL

BRIAN LASSITER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

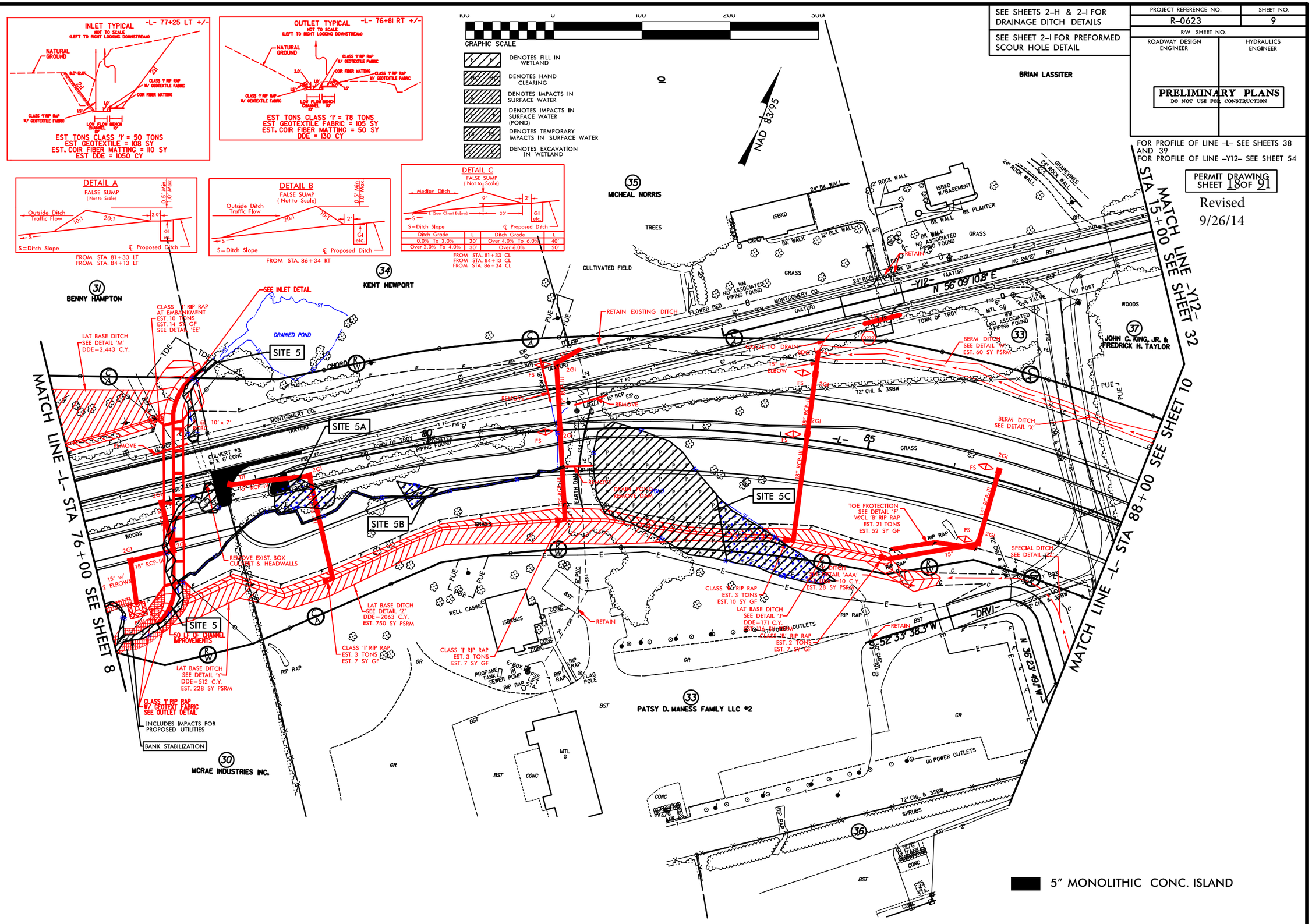
FOR PROFILE OF LINE -L- SEE SHEETS 38 AND 39
FOR PROFILE OF LINE -Y12- SEE SHEET 54

PERMIT DRAWING SHEET 18 OF 91

Revised 9/26/14

8/17/99

REVISIONS



9/25/2014
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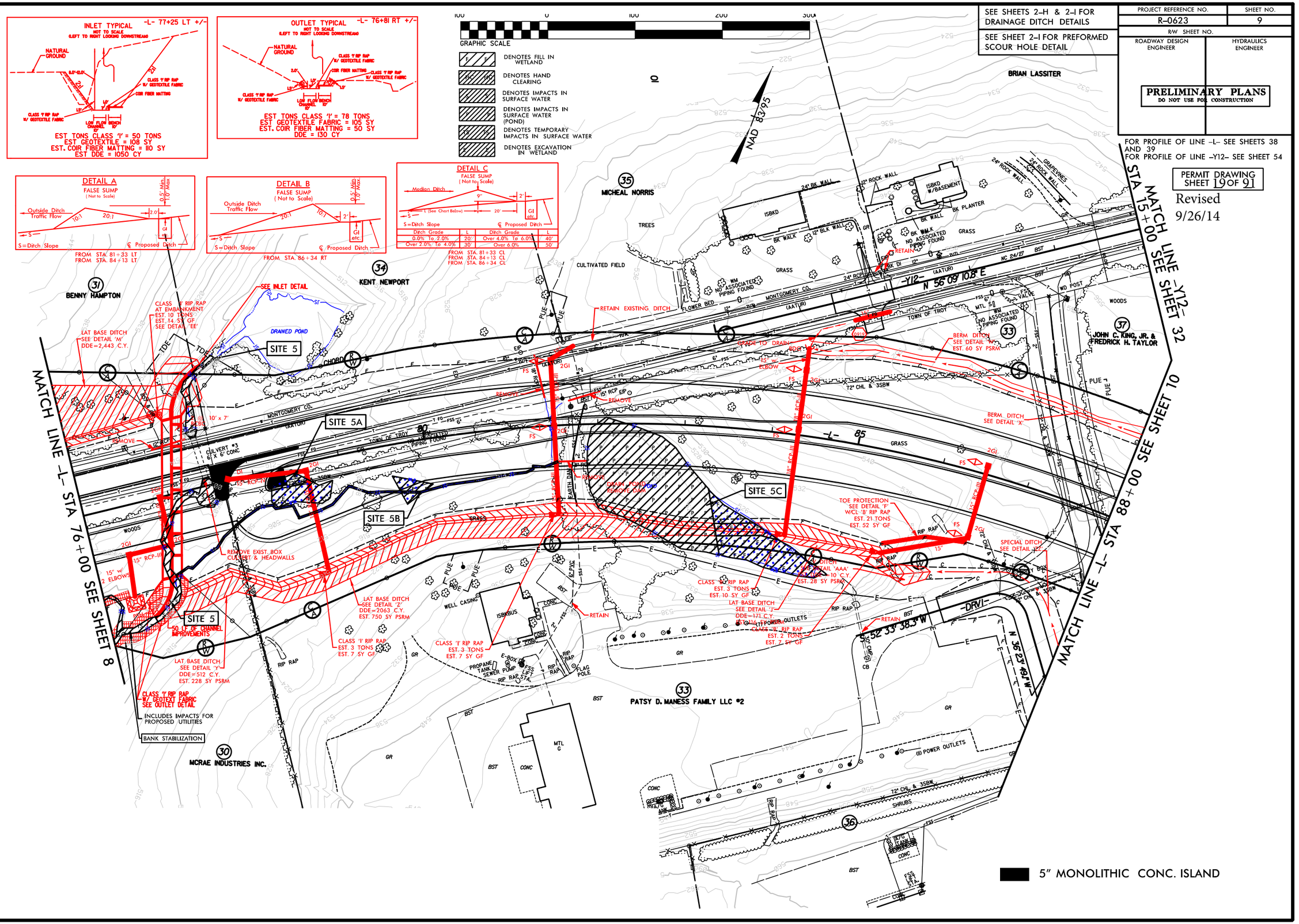
20:24:57 EDT



REVISIONS

8/17/99

9/25/2014
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

SEE SHEET 2-I FOR PREFORMED SCOUR HOLE DETAIL

FOR PROFILE OF LINE -L- SEE SHEETS 38 AND 39
FOR PROFILE OF LINE -Y12- SEE SHEET 54

PERMIT DRAWING SHEET 20 OF 91

Revised 9/26/14

ENLARGEMENT SHEET

S = Ditch Slope

℄ Proposed Ditch

FROM STA. 81+33 LT
FROM STA. 84+13 LT

FROM STA. 86+34 RT

FROM STA. 81+33 CL
FROM STA. 84+13 CL
FROM STA. 86+34 CL

F/F DENOTES FILL IN WETLAND
HC/HC DENOTES HAND CLEARING
S/S DENOTES IMPACTS IN SURFACE WATER
P/P DENOTES IMPACTS IN SURFACE WATER (POND)
TS/TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
E/E DENOTES EXCAVATION IN WETLAND

31 BENNY HAMPTON

34 KENT NEWPORT

NAD 83/95

SEE INLET DETAIL

CLASS 'I' RIP RAP
AT EMBANKMENT
EST. 10 TONS
EST. 14 SY GF
SEE DETAIL 'EE'

LAT BASE DITCH
SEE DETAIL 'M'
DDE=2,443 C.Y.

DRAINED POND

SITE 5

SITE 5A

SITE 5B

TDE

CHORD

MONTGOMERY CO.

(AATUR)

TOWN OF TROY

NO ASSOCIATED PIPING FOUND

10' x 7' RCBC

REMOVE

12" RCP

CULVERT #3
6' X 6' CONC

DI

15" RCP-IV

2GI

15" RCP-III

15" W/ 2 ELBOWS

REMOVE EXIST. BOX CULVERT & HEADWALLS

LAT BASE DITCH
SEE DETAIL 'Z'
DDE=2063 C.Y.
EST. 750 SY PSRM

50 LF OF CHANNEL IMPROVEMENTS

LAT BASE DITCH
SEE DETAIL 'Y'
DDE=512 C.Y.
EST. 228 SY PSRM

CLASS 'I' RIP RAP
EST. 3 TONS
EST. 7 SY GF

CLASS 'I' RIP RAP
EST. 3 TONS
EST. 7 SY GF

WOODS

GRASS

WELL CASING

ISBXBUS

PROPANE TANK

SEWER

EARTH DAM

RIP RAP

PUE

50' 0' 50' 100'
GRAPHIC SCALE

REVISIONS

8/17/99

9/25/2014
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

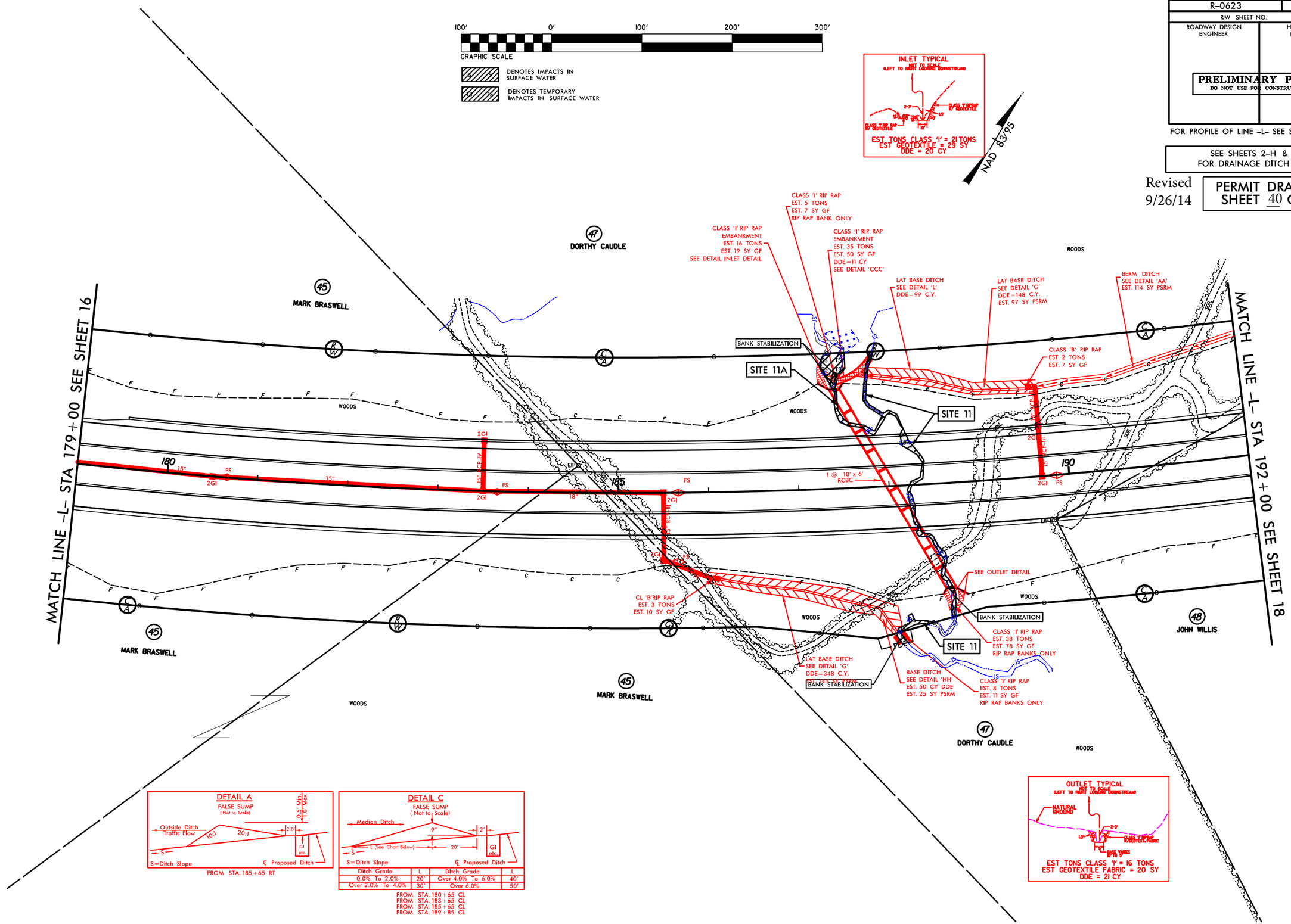
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 43

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

Revised 9/26/14

PERMIT DRAWING SHEET 40 OF 91



REVISIONS

8/17/99

8/25/2014
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2:43:21 PM

PROJECT REFERENCE NO.	SHEET NO.
R-0623	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

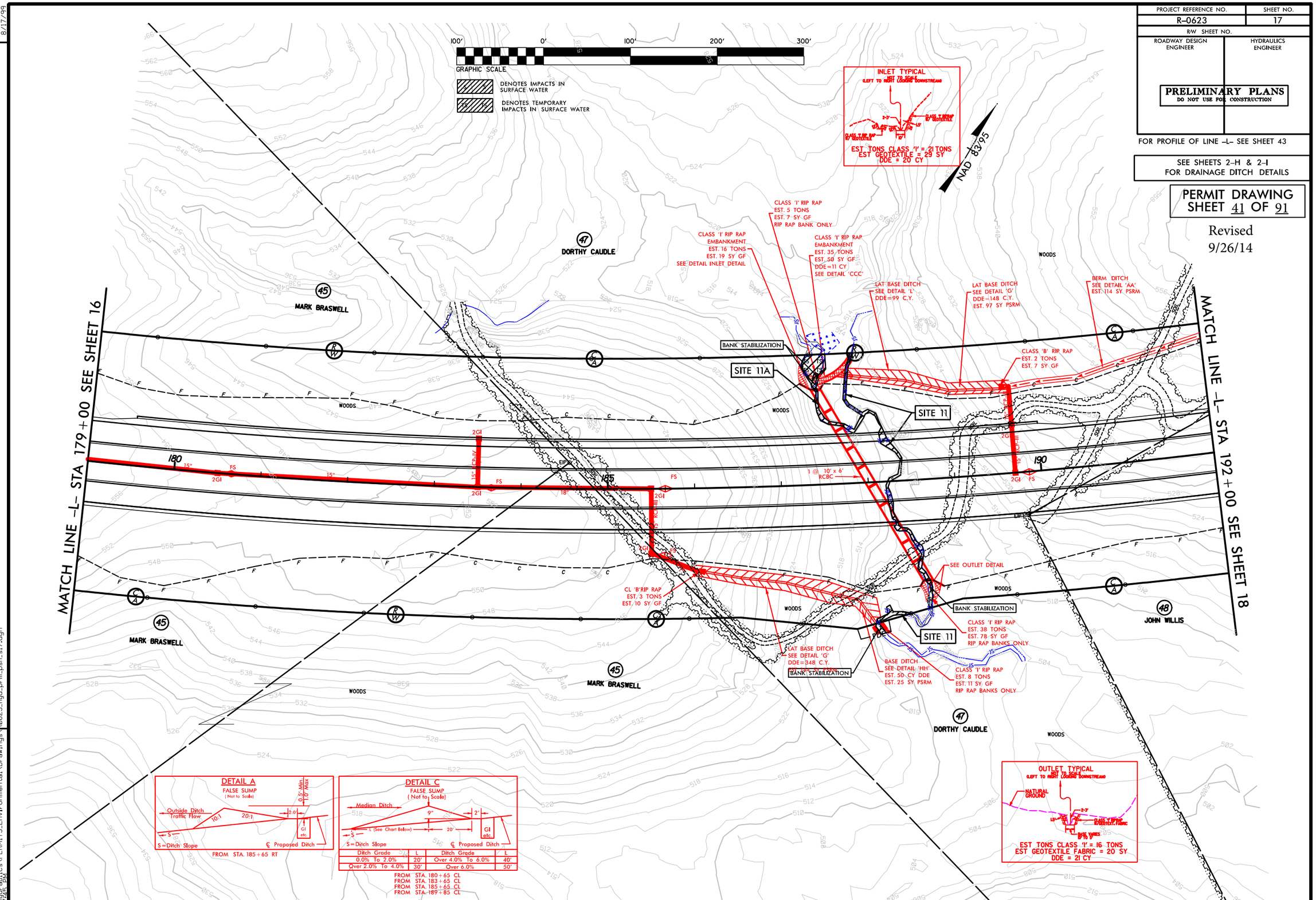
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 43

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 41 OF 91

Revised
9/26/14



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

REVISIONS

8/17/99

9/25/2014
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

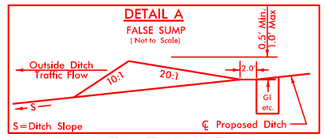
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 43 AND 44

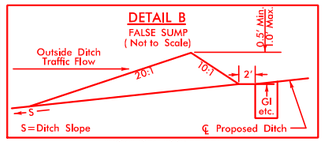
SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

Revised 9/26/14

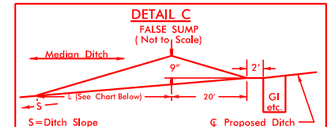
PERMIT DRAWING SHEET 44 OF 91



FROM STA. 193+15 RT
FROM STA. 196+65 RT
FROM STA. 199+65 RT

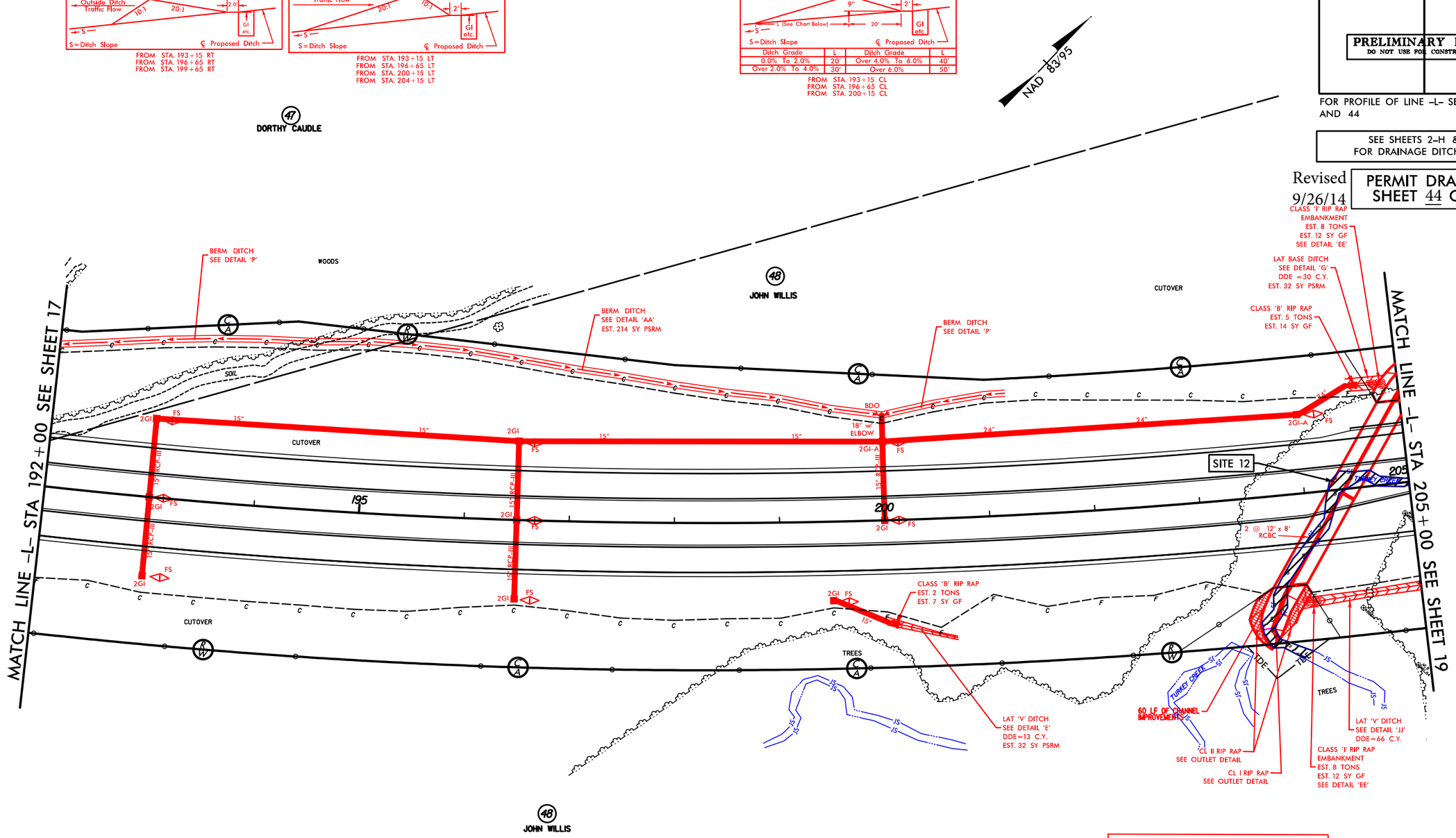


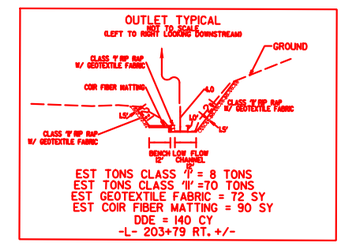
FROM STA. 193+15 LT
FROM STA. 196+65 LT
FROM STA. 200+15 LT
FROM STA. 204+15 LT



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 193+15 CL
FROM STA. 196+65 CL
FROM STA. 200+15 CL





EST TONS CLASS 'I' = 8 TONS
EST TONS CLASS 'II' =70 TONS
EST GEOTEXTILE FABRIC = 72 SY
EST COIR FIBER MATTING = 90 SY
DDE = 140 CY
-L- 203+79 RT. +/-

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100' 200' 300'

GRAPHIC SCALE

REVISIONS

8/17/99

9/25/2014
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

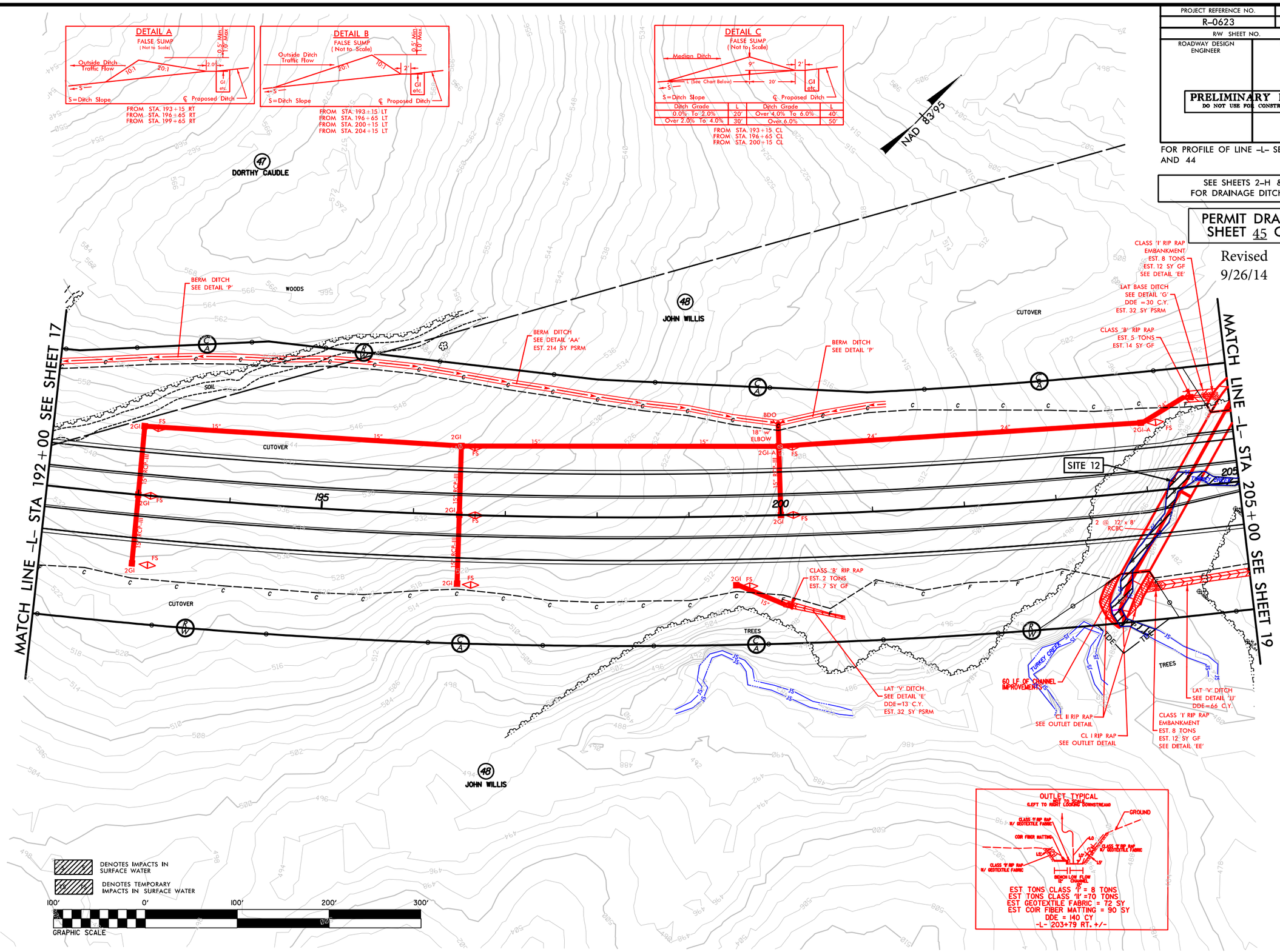
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 43 AND 44

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 45 OF 91

Revised 9/26/14



REVISIONS

8/17/99

8/25/2014
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 44

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

Revised 9/26/14

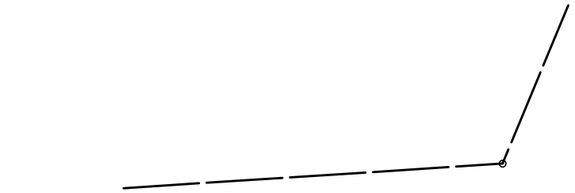
PERMIT DRAWING SHEET 48 OF 91

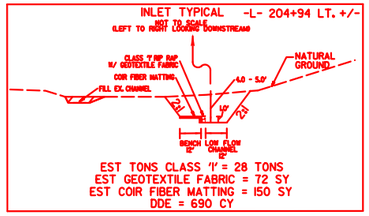
GRAPHIC SCALE 100' 0' 100' 200' 300'

DENOTES IMPACTS IN SURFACE WATER

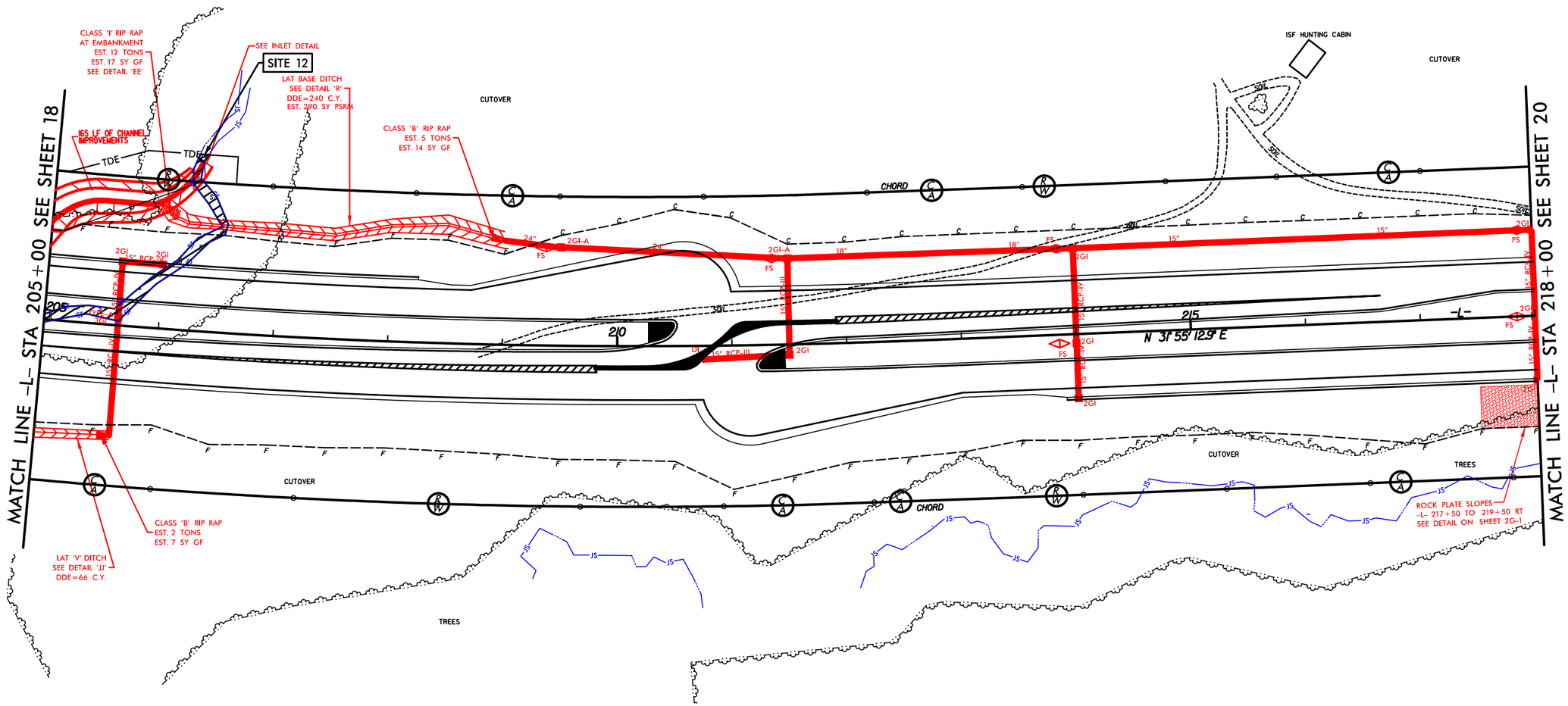
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/95



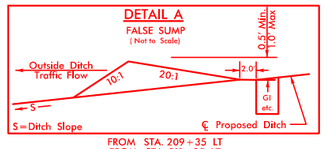


48
JOHN WILLIS



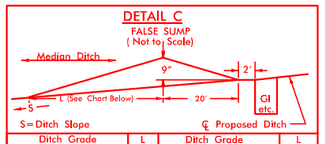
48
JOHN WILLIS

DETAIL A
FALSE SUMP
(Not to Scale)



FROM STA. 209+35 LT
FROM STA. 211+35 LT
FROM STA. 213+85 LT
FROM STA. 217+85 LT

DETAIL C
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 211+35 CL
FROM STA. 213+85 CL
FROM STA. 217+85 CL

REVISIONS 8/17/99

9/26/2014
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

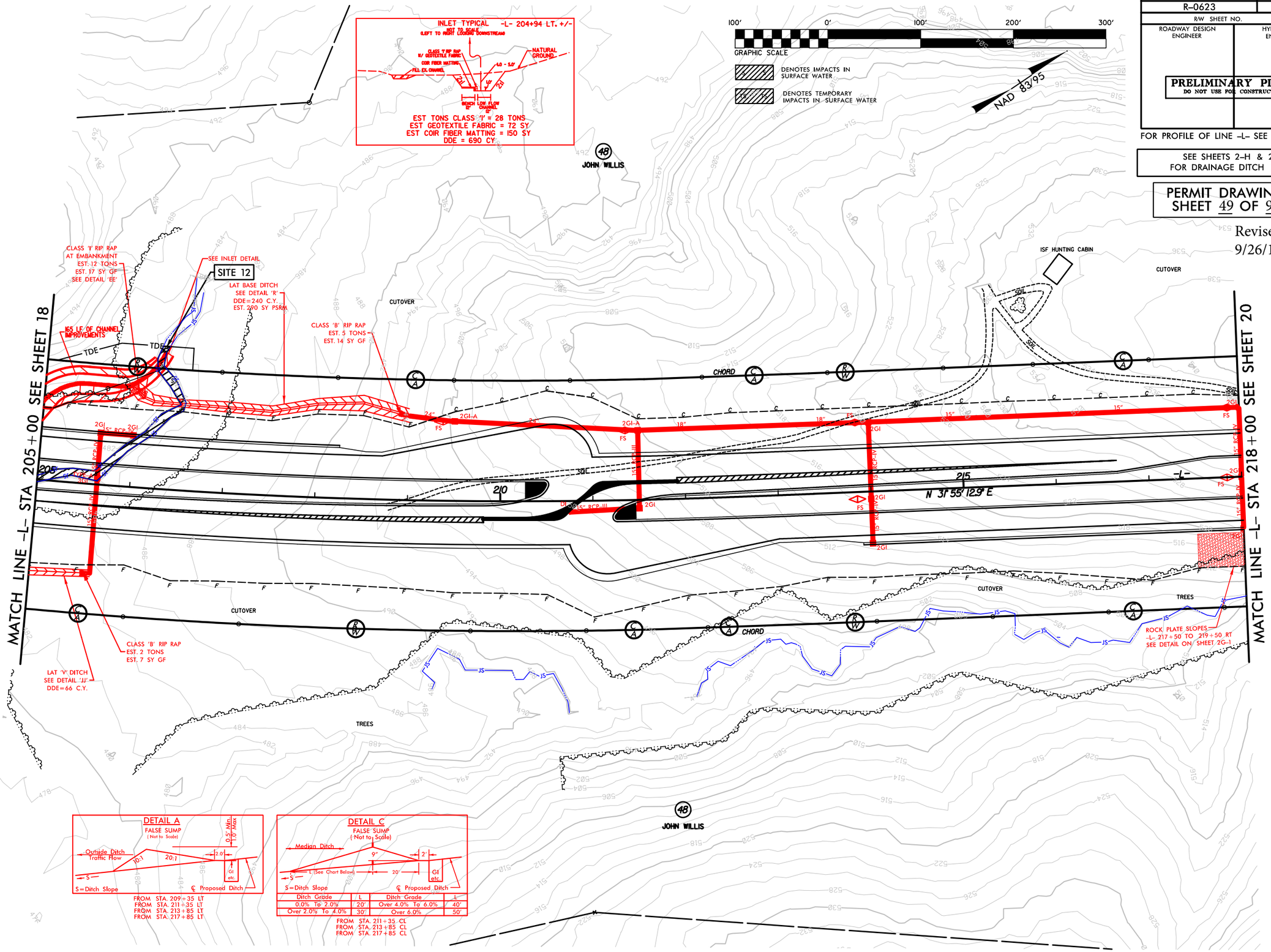
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 44

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 49 OF 91

Revised
9/26/14



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

REVISIONS

8/17/99

9/26/2014
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

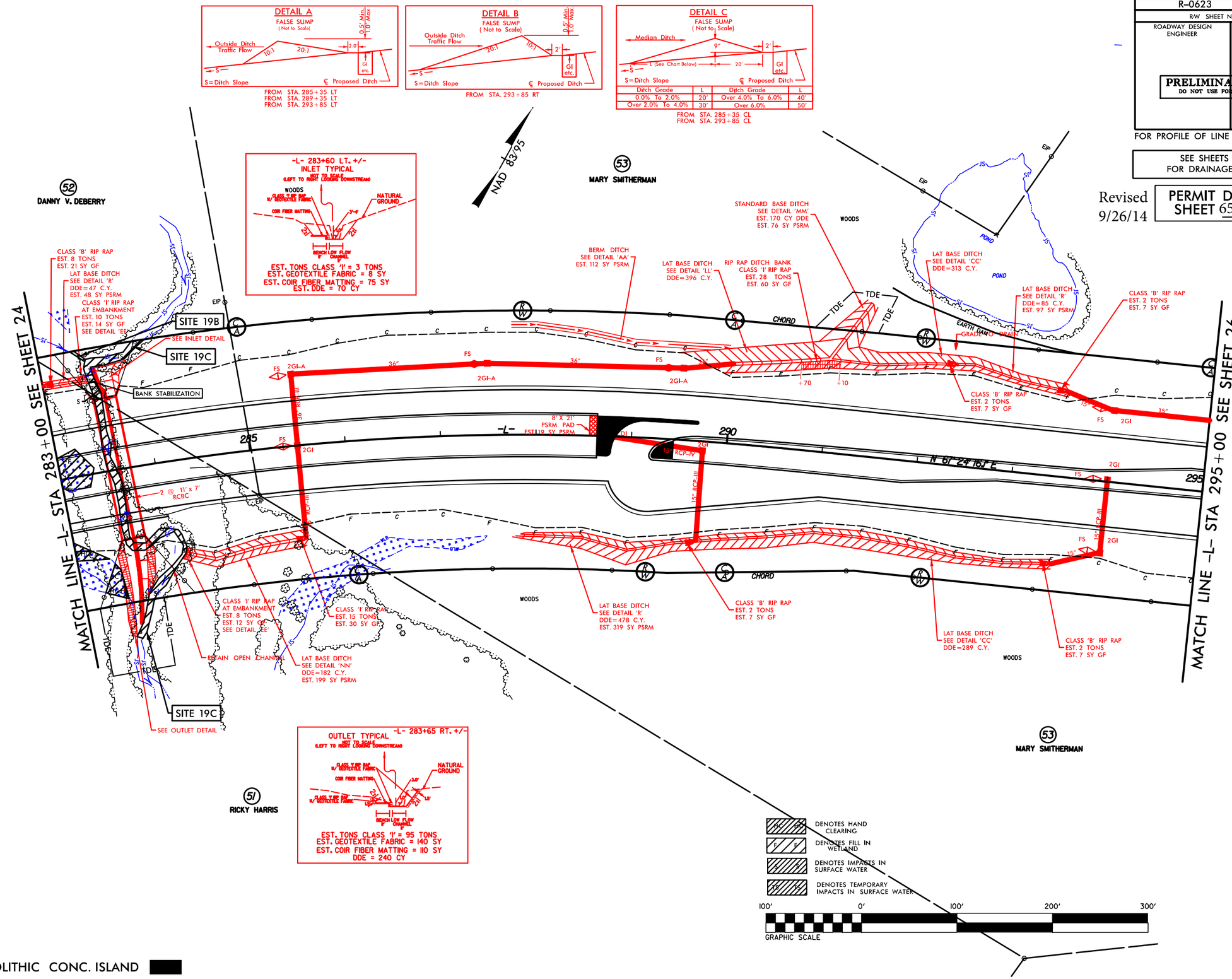
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 47

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

Revised 9/26/14

PERMIT DRAWING SHEET 65 OF 91



REVISIONS

8/17/99

3/25/2014
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

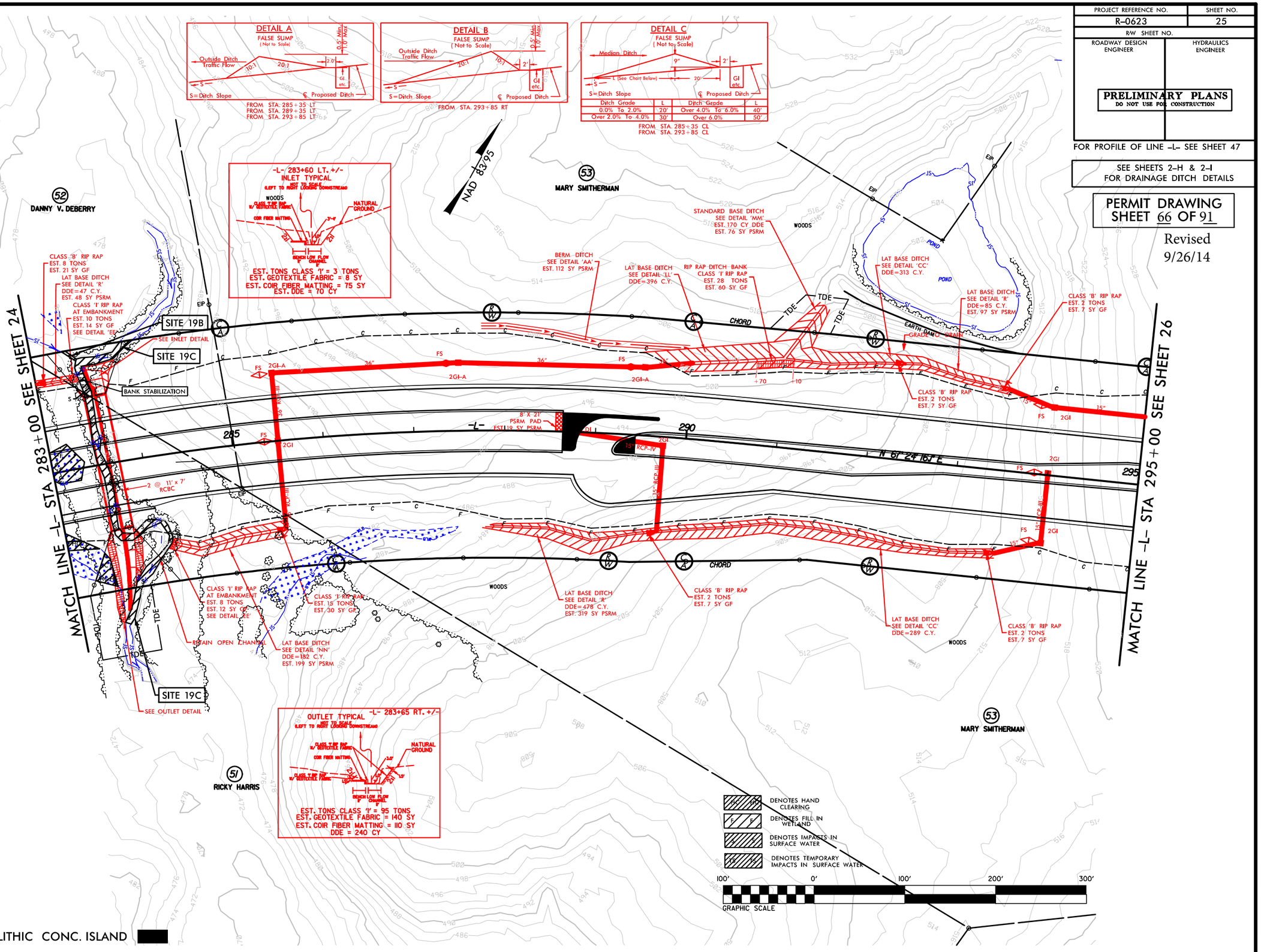
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 47

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 66 OF 91

Revised
9/26/14



REVISIONS

8/17/99

3/25/2014
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3:01:48 PM

PROJECT REFERENCE NO.	SHEET NO.
R-0623	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

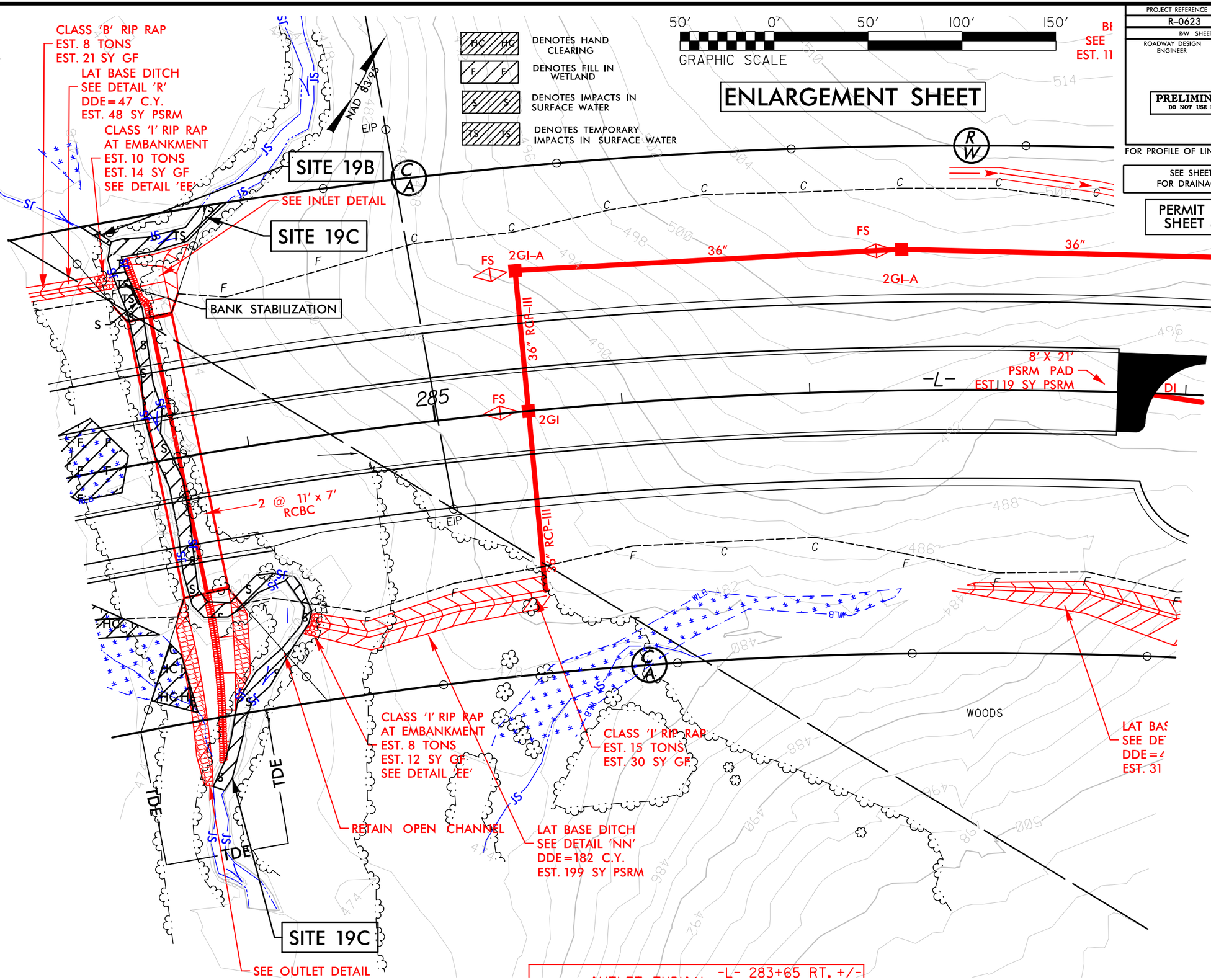
FOR PROFILE OF LINE -L- SEE SHEET 47

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 67 OF 91

Revised
9/26/14

ENLARGEMENT SHEET



REVISIONS

8/17/99

9/25/2014
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	2D-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

DocuSigned by: Gregory Brew 8/9/2014
3870F25E22C3496...

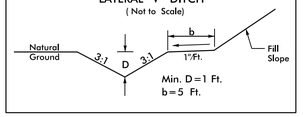
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20754 ENGINEER WILLIAM T. STEPHENSON III

DocuSigned by: William T. Stephenson III
0995996B6E2542E...

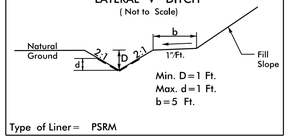
DRAINAGE DITCH DETAILS

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



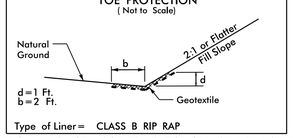
FROM –L1– STA. 23+00 TO –L1– STA. 25+00 RT
FROM –Y3– STA. 11+15 +/– TO STA. 11+75 +/– RT

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



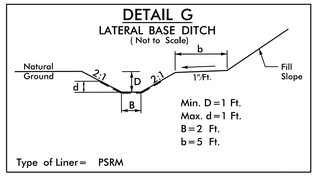
FROM –L– STA. 90+50 TO STA. 92+90 RT.
FROM –L– STA. 90+50 TO STA. 92+00 LT.
FROM –L– STA. 105+70 TO STA. 105+90 RT.
FROM –L– STA. 171+70 TO STA. 172+65 LT
FROM –L– STA. 200+00 TO STA. 200+65 RT
FROM –L– STA. 229+50 TO STA. 230+50 LT
FROM –L– STA. 303+00 TO STA. 304+50 RT
FROM –L– STA. 307+00 TO STA. 310+35 LT

DETAIL F
TOE PROTECTION
(Not to Scale)



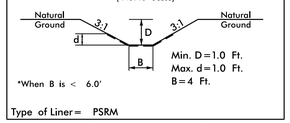
FROM –L2– STA. 26+52 +/– TO STA. 27+80 +/– LT
FROM –L– STA. 49+20 TO STA. 50+00 RT
FROM –L– STA. 67+00 TO STA. 68+70 LT
FROM –L– STA. 85+50 TO STA. 86+50 RT
FROM –L– STA. 121+40 TO STA. 122+20 +/– RT
FROM –L– STA. 250+00 TO STA. 252+50 RT
FROM –L– STA. 252+50 TO STA. 253+50 LT
FROM –L– STA. 254+50 TO STA. 255+20 RT
FROM –L– STA. 254+90 TO STA. 255+25 LT
FROM –L– STA. 270+00 +/– TO STA. 271+00 +/–RT
FROM –Y7– STA. 15+50 TO STA. 17+50 LT

DETAIL G
LATERAL BASE DITCH
(Not to Scale)



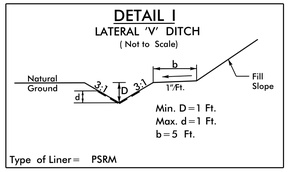
FROM –L– STA. 52+50 TO STA. 53+20 +/– RT
FROM –L– STA. 53+50 +/– TO STA. 54+50 RT
FROM –L– STA. 92+00 TO STA. 95+00 LT.
FROM –L– STA. 103+00 TO STA. 105+70 RT.
FROM –L– STA. 120+50 TO STA. 121+00 LT.
FROM –L– STA. 188+35 TO STA. 189+70 LT
FROM –L– STA. 186+00 TO STA. 188+00 RT
FROM –L– STA. 204+45 TO STA. 204+90 LT
FROM –L– STA. 251+25 +/– TO STA. 252+60 LT
FROM –L– STA. 261+25 TO STA. 262+00 +/– LT
FROM –L– STA. 261+50 TO 263+85 +/– RT
FROM –L– STA. 264+80 +/– TO 266+00 RT
FROM –L– STA. 328+50 TO STA. 331+00 LT
FROM –Y7– STA. 13+80 TO STA. 15+65 RT
FROM –Y7– STA. 16+30 TO STA. 18+00 RT

DETAIL H
STANDARD BASE DITCH
(Not to Scale)



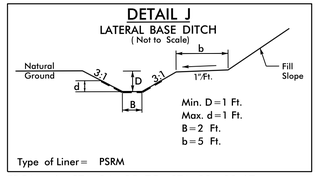
STA. –L– 30+50 +/– RT

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



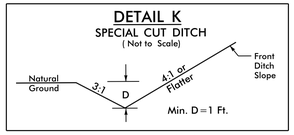
FROM –L– STA. 34+20 TO STA. 38+10 +/– RT

DETAIL J
LATERAL BASE DITCH
(Not to Scale)



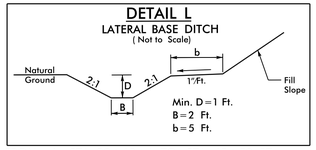
FROM –L– STA. 34+25 TO STA. 38+00 LT
FROM –L– STA. 66+00 TO STA. 66+75 RT
FROM –L– STA. 72+44 +/– TO STA. 74+50 LT
FROM –L– STA. 43+00 TO STA. 48+85 +/– LT
FROM –L– STA. 84+25 TO STA. 85+50 RT
FROM –L– STA. 340+62 +/– TO STA. 342+50 RT

DETAIL K
SPECIAL CUT DITCH
(Not to Scale)



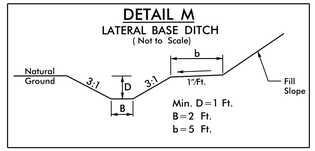
FROM –Y1– STA. 17+85 +/– TO STA. 19+50 LT
FROM –Y1– STA. 18+55 +/– TO STA. 19+50 RT
FROM –Y3– STA. 11+75 TO STA. 12+25 +/– RT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)



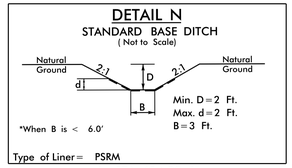
FROM –L– STA. 39+60 +/– TO STA. 45+50 RT
FROM –L– STA. 48+50 +/– TO STA. 49+00 RT
FROM –L– STA. 122+20 TO STA. 123+65 RT
FROM –L– STA. 152+00 TO STA. 152+36 +/– LT
FROM –L– STA. 187+80 TO STA. 188+35 LT
FROM –L– STA. 232+50 TO STA. 234+00 RT
FROM –L– STA. 265+35 +/– TO STA. 266+65 LT
FROM –L– STA. 269+00 +/– TO 271+80 +/– LT
FROM –L– STA. 351+00 TO STA. 352+20 LT
FROM –Y7– STA. 18+00 TO STA. 18+70 RT

DETAIL M
LATERAL BASE DITCH
(Not to Scale)



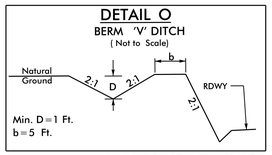
FROM –L– STA. 47+00 TO STA. 47+75 RT
FROM –L– STA. 74+50 TO STA. 77+00 +/– LT

DETAIL N
STANDARD BASE DITCH
(Not to Scale)



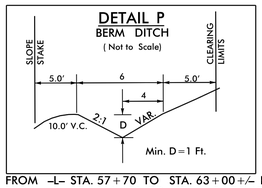
–L– STA. 49+20 RT

DETAIL O
BERM 'V' DITCH
(Not to Scale)



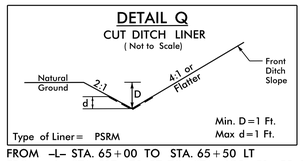
FROM –L– STA. 50+20 TO STA. 53+40 LT

DETAIL P
BERM DITCH
(Not to Scale)



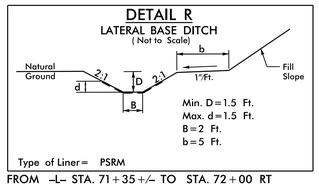
FROM –L– STA. 57+70 TO STA. 63+00 +/– RT
FROM –L– STA. 166+50 TO STA. 168+00 LT
FROM –L– STA. 192+00 TO STA. 195+70 LT
FROM –L– STA. 200+00 TO STA. 201+20 LT
FROM –L– STA. 267+00 TO STA. 269+00 LT
FROM –L– STA. 232+50 TO STA. 234+25 LT
FROM –L– STA. 151+00 TO STA. 152+00 RT
FROM –L– STA. 319+85 TO STA. 322+00 RT
FROM –L– STA. 325+00 TO STA. 326+50 RT

DETAIL Q
CUT DITCH LINER
(Not to Scale)



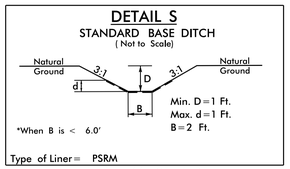
FROM –L– STA. 65+00 TO STA. 65+50 LT
FROM –L– STA. 317+70 RT TO STA. –Y10– 21+50 RT
FROM –DET4– STA. 11+00 LT TO –L– STA. 327+50 –L– LT

DETAIL R
LATERAL BASE DITCH
(Not to Scale)



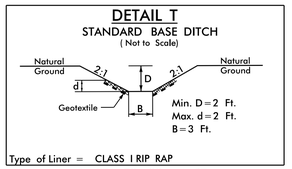
FROM –L– STA. 71+35 +/– TO STA. 72+00 RT
FROM –L– STA. 171+00 TO STA. 173+40 RT
FROM –L– STA. 206+00 TO STA. 209+00 LT
FROM –L– STA. 249+50 TO STA. 251+25 +/– LT
FROM –L– STA. 283+00 +/– TO STA. 283+50 LT
FROM –L– STA. 287+70 +/– TO STA. 291+00 RT
FROM –L– STA. 292+50 TO STA. 293+50 LT

DETAIL S
STANDARD BASE DITCH
(Not to Scale)



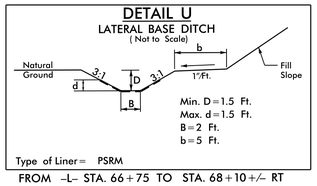
–L– STA. 66+85 +/– RT
FROM –L– STA. +/– 343+00 TO STA. +/– 344+20 – LT

DETAIL T
STANDARD BASE DITCH
(Not to Scale)



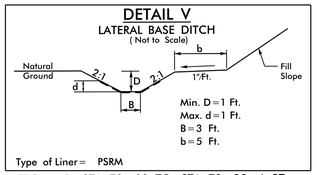
–L– STA. 73+22 +/– RT
–L– STA. 251+50 +/– RT

DETAIL U
LATERAL BASE DITCH
(Not to Scale)



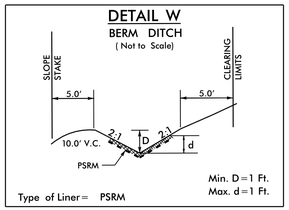
FROM –L– STA. 66+75 TO STA. 68+10 +/– RT
FROM –L– STA. 68+45 TO STA. 70+25 +/– RT

DETAIL V
LATERAL BASE DITCH
(Not to Scale)



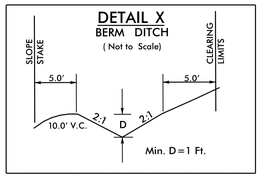
FROM –L– STA. 72+00 TO STA. 73+23 +/– RT

DETAIL W
BERM DITCH
(Not to Scale)



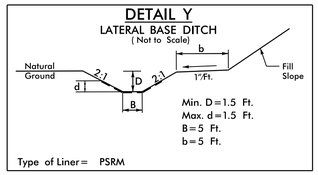
FROM –L– STA. 84+30 TO STA. 85+50 LT

DETAIL X
BERM DITCH
(Not to Scale)



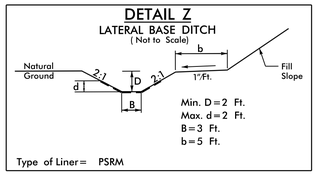
FROM –L– STA. 85+50 TO STA. 88+00 LT

DETAIL Y
LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 76+85 +/– TO STA. 78+60 RT

DETAIL Z
LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 78+60 TO STA. 84+25 RT

5/14/99
08-SEP-2014 15:15
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es$:$HYDRAULICS$$

PROJECT REFERENCE NO.	SHEET NO.
R-0623	2D-2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

DocuSigned by: Gregory Brew 9/9/2014

3870F25E22C3496...

HYDRAULICS ENGINEER

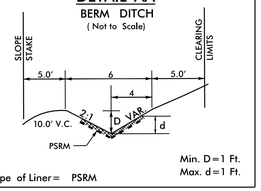
NORTH CAROLINA PROFESSIONAL SEAL 20754 ENGINEER WILLIAM T. STEPHENS, JR.

DocuSigned by: William T. Stephens Jr. 9/9/2014

0995996B6E2542E...

DRAINAGE DITCH DETAILS

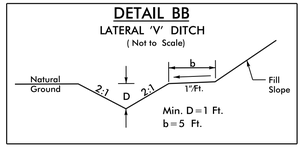
DETAIL AA
BERM DITCH
(Not to Scale)



Type of Liner = PSRM

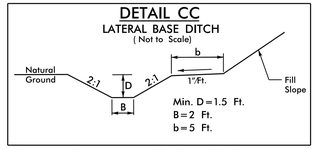
FROM –L– STA. 95+00 TO STA. 98+50 LT
FROM –L– STA. 150+00 TO STA. 151+00 RT
FROM –L– STA. 287+75 TO STA. 290+00 LT
FROM –L– STA. 322+00 TO STA. 326+00 RT
FROM –L– STA. 322+50 TO STA. 325+00 LT
FROM –L– STA. 326+50 TO STA. 328+50 LT
FROM –L– STA. 357+50 TO STA. 362+50 LT
FROM –L– STA. 315+00 TO STA. 318+25+/– RT
FROM –L– STA. 195+70 TO STA. 200+00 LT
FROM –L– STA. 165+00 TO STA. 166+50 LT
FROM –L– STA. 189+70 TO STA. 192+00 LT

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



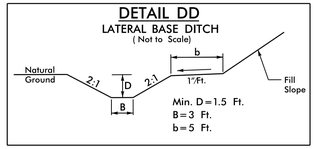
FROM –L– STA. 92+90 TO STA. 94+00 RT
FROM –L– STA. 262+00+/– TO STA. 263+50 LT
FROM –L– STA. 263+50 TO STA. 264+50 LT
FROM –L– STA. 300+50 TO STA. 305+00 LT
FROM –L– STA. 319+50 TO STA. 321+50 LT
FROM –Y12– STA. 16+00 TO STA. 17+50 RT

DETAIL CC
LATERAL BASE DITCH
(Not to Scale)



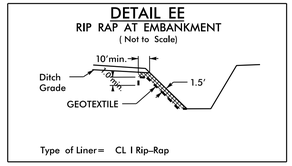
FROM –L– STA. 121+00 TO STA. 122+90 LT
FROM –L– STA. 241+80+/– TO STA. 246+65+/– LT
FROM –L– STA. 291+00 TO STA. 293+50 RT
FROM –L– STA. 291+00 TO STA. 292+50 LT
FROM –L– STA. 241+80+/– TO STA. 246+65+/– LT

DETAIL DD
LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 124+50 TO STA. 125+80 LT

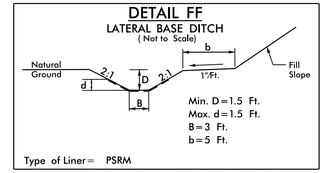
DETAIL EE
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = CL I Rip-Rap

–L– STA. 77+00 LT
–L– STA. 122+90 LT
–L– STA. 123+65 RT
–L– STA. 124+50 LT
–L– STA. 203+95+/– RT
–L– STA. 204+90+/–LT
–L– STA. 206+10+/– LT
–L– STA. 283+40 LT
–L– STA. 284+15 RT

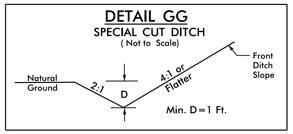
DETAIL FF
LATERAL BASE DITCH
(Not to Scale)



Type of Liner = PSRM

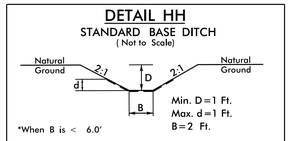
FROM –L– STA. 125+80 TO STA. 127+00 LT
FROM –L– STA. 125+00 TO STA. 127+85 RT

DETAIL GG
SPECIAL CUT DITCH
(Not to Scale)



FROM –L– STA. 150+50 TO STA. 153+00 RT
FROM –Y11– STA. 20+00 TO STA. 21+75 RT
FROM –Y13– STA. 22+00 LT. TO –L– STA. 90+50 LT.

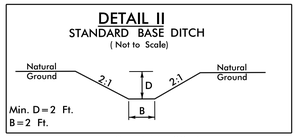
DETAIL HH
STANDARD BASE DITCH
(Not to Scale)



Type of Liner = PSRM

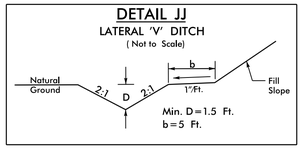
FROM –L– STA. 171+50 TO STA. 171+70 LT
FROM –L– STA. 187+80 +/– TO STA. 188+00+/– RT
–L– STA. 255+30+/– LT
–L– STA. 297+40+/– RT
FROM –Y6– STA. 13+84 TO STA. 14+38 RT

DETAIL II
STANDARD BASE DITCH
(Not to Scale)



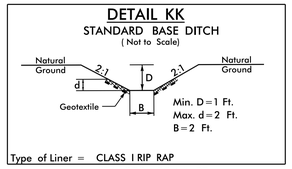
–L– STA. 167+00 RT

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



FROM –L– STA. 203+90 TO STA. 205+65 RT
FROM –L– STA. 228+00 TO STA. 230+50 RT
FROM –L– STA. 307+00 TO STA. 308+50 RT

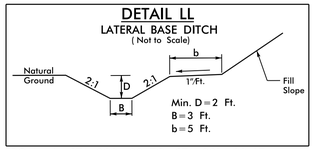
DETAIL KK
STANDARD BASE DITCH
(Not to Scale)



Type of Liner = CLASS I RIP RAP

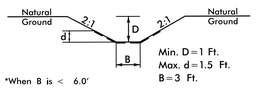
–L– STA. 270+00+/– RT

DETAIL LL
LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 290+00 TO STA. 291+00 LT

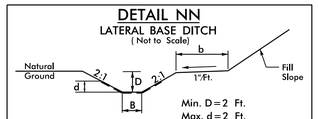
DETAIL MM
STANDARD BASE DITCH
(Not to Scale)



Type of Liner = PSRM

FROM –L– STA. 291+00 TO STA. 291+37+/– LT

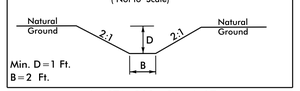
DETAIL NN
LATERAL BASE DITCH
(Not to Scale)



Type of Liner = PSRM

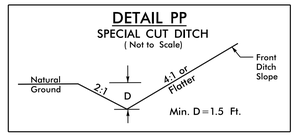
FROM –L– STA. 284+18+/– TO STA. 285+50 RT

DETAIL OO
STANDARD BASE DITCH
(Not to Scale)



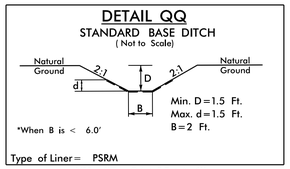
–L– STA. 303+00+/– LT
–L– STA. 303+00+/– RT

DETAIL PP
SPECIAL CUT DITCH
(Not to Scale)



FROM –L– STA. 308+50 TO STA. 310+00 RT

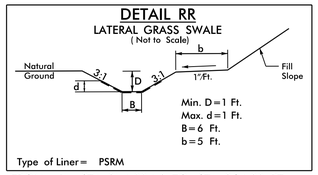
DETAIL QQ
STANDARD BASE DITCH
(Not to Scale)



Type of Liner = PSRM

–Y11– STA. 34+05+/– CL
–L– STA. 351+00+/– LT

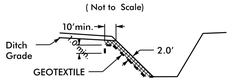
DETAIL RR
LATERAL GRASS SWALE
(Not to Scale)



Type of Liner = PSRM

FROM –L1– STA. 25+00+/– TO STA. 26+90 RT
FROM –L1– STA. 26+90+/– TO STA. 28+91.37 RT
FROM –L– STA. 28+83.70 TO STA. 29+00 RT
FROM –L– STA. 339+50+/– TO STA. 343+00 LT

DETAIL SS
RIP RAP AT EMBANKMENT
(Not to Scale)



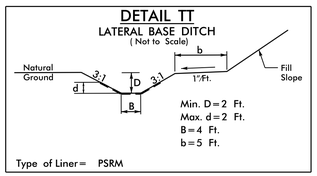
Type of Liner = CLASS II RIP RAP

–L– STA. 339+50+/– RT
EST. 32 TONS CL II RIP RAP
EST. 62 SY GF

–L– STA. 339+63+/– LT
EST. 32 TONS CL II RIP RAP
EST. 62 SY GF

–L– STA. 341+10+/– RT
EST. 14 TONS CL II RIP RAP
EST. 30 SY GF

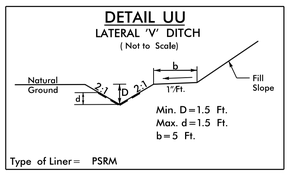
DETAIL TT
LATERAL BASE DITCH
(Not to Scale)



Type of Liner = PSRM

FROM –L– STA. 334+00 TO STA. 335+15+/– RT
FROM –L– STA. 335+65+/– TO STA. 339+50+/– RT

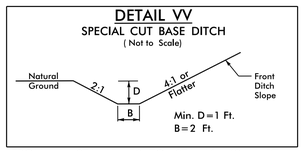
DETAIL UU
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner = PSRM

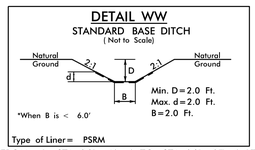
FROM –L– STA. 102+50 TO STA. 105+20 LT.
FROM –L– STA. 264+50 TO STA. 265+30+/– LT
FROM –Y11– STA. 21+75+/– TO STA. 25+00+/– RT

DETAIL VV
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM –L– STA. 45+50 TO STA. 46+40+/– RT

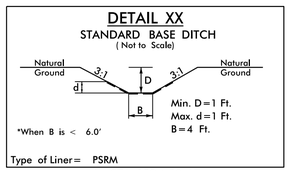
DETAIL WW
STANDARD BASE DITCH
(Not to Scale)



Type of Liner = PSRM

FROM –L– STA. 261+40+/– TO STA. 261+97+/– LT

DETAIL XX
STANDARD BASE DITCH
(Not to Scale)



Type of Liner = PSRM

–L– STA. 152+50 LT

FROM –Y6– STA. 13+84+/– TO STA. 14+38+/– RT
DITCH SLOPE FROM END OF PIPE:
40' AT 4.0%+/–, 12' AT 2% +/–

5/14/99
08-SEP-2014 15:52
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$$$$USERNAME$$$$

DRAINAGE DITCH DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-0623	2D-3

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

DocuSigned by: Gregory Brew 9/2014
3870F28E22C3496...

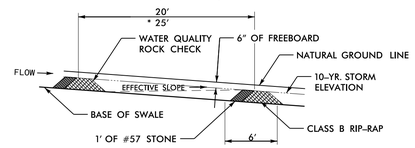
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20754 ENGINEER WILLIAM T. STEPHENS, JR.

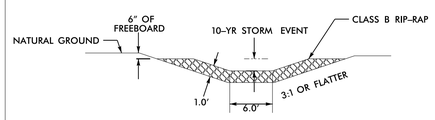
DocuSigned by: William T. Stephens, Jr.
0995996B8E2542E...

DETAIL WWW

TRAPEZOIDAL GRASSED SWALE wROCK CHECK DAM
(Not to Scale)



PROFILE



TYPICAL SECTION

NOTES:

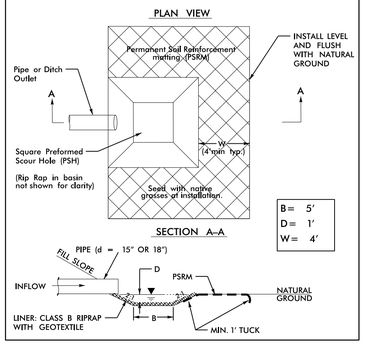
1) DO NOT USE INSIDE CLEAR RECOVERY AREA.
2) NOT PRACTICAL TO USE ON SLOPES > 5%.
3) FOR PERMANENT STRUCTURES IN GRASS SWALE.
4) CHECK DAMS SHOULD BE SPACED SUCH THAT THE BASE OF THE UPSTREAM CHECK IS AT THE SAME ELEVATION AS THE TOP OF THE DOWNSTREAM CHECK.

FROM STA. -L1- 25+00 TO STA. -L1- 29+00 RT
* FROM STA. -L- 339+50 TO STA. -L- 340+50 LT

PREFORMED SCOUR HOLE

*NOT TO SCALE

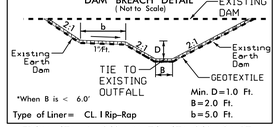
PLAN VIEW



FROM -L1- STA. 76+35 RT

DETAIL YY

DAM BREACH DETAIL
(Not to Scale)

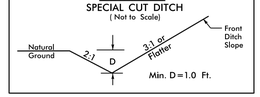


*When B is < 6.0'
Min. D=1.0 Ft.
B=2.0 Ft.
b=5.0 Ft.
Type of Liner= CL. I Rip-Rap

FROM STA. -L- 362+44 TO STA. 362+94 RT.

DETAIL ZZ

SPECIAL CUT DITCH
(Not to Scale)

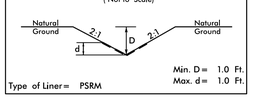


Min. D=1.0 Ft.

FROM -DRV1- STA. 10+25 TO STA. 12+75 Rt
FROM -DET1- STA. 10+12 TO STA. 13+50 Rt
FROM -DR4A- STA. 10+25 TO STA. 11+00 Rt
FROM -DR11A- STA. 10+75 TO STA. 11+00 Rt
FROM -DR11A- STA. 10+77 TO STA. 11+00 Lt
FROM -DR11A- STA. 13+25 TO STA. 14+25 Rt
FROM -DR11A- STA. 13+25 TO STA. 14+25 Lt
FROM -DET7- STA. 24+50 TO STA. 25+00 Lt

DETAIL AAA

STANDARD 'V' DITCH
(Not to Scale)

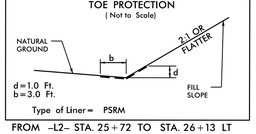


Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
Type of Liner= PSRM

FROM -DRV1- STA. 12+75 TO STA. 13+32 RT

DETAIL BB1

TOE PROTECTION
(Not to Scale)

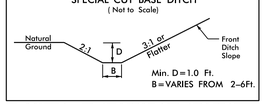


d=1.0 Ft.
b=3.0 Ft.
Type of Liner= PSRM

FROM -L2- STA. 25+72 TO STA. 26+13 LT

DETAIL BBB

SPECIAL CUT BASE DITCH
(Not to Scale)

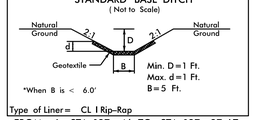


Min. D=1.0 Ft.
B=VARIES FROM 2-6Ft.

FROM -DET7- STA. 25+00 TO STA. 25+50
FROM -DET7- STA. 28+50 TO STA. 29+00

DETAIL CCC

STANDARD BASE DITCH
(Not to Scale)



Min. D=1 Ft.
Max. d=1 Ft.
B=5 Ft.
*When B is < 6.0'
Type of Liner= CL I Rip-Rap

FROM -L- STA. 187+46 TO STA. 187+87 LT

5/14/99
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0623	7
R/W SHEET NO.	

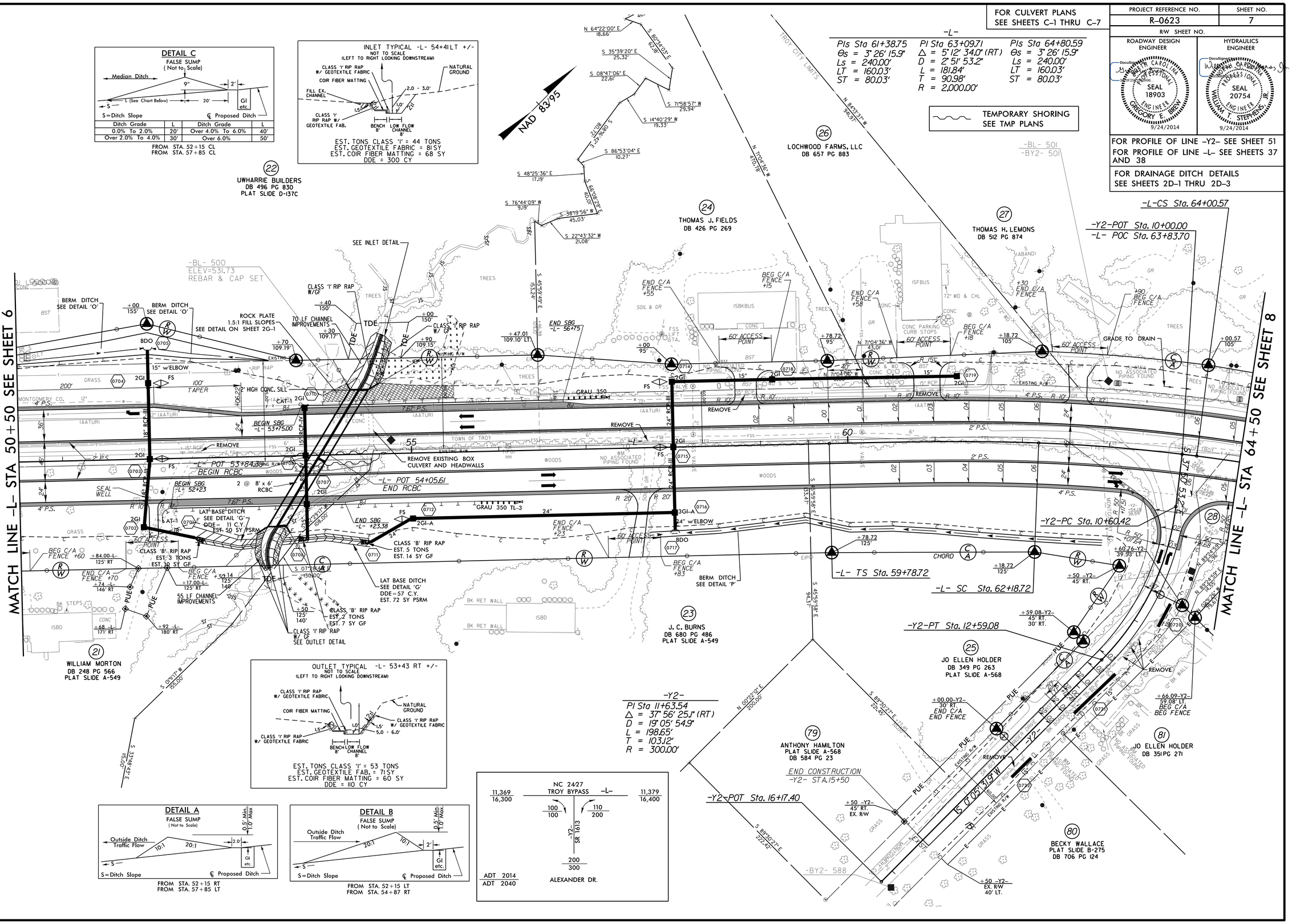
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW — 9/24/2014

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 20754 ENGINEER WILLIAM T. STEPHENS, JR. — 9/24/2014

FOR CULVERT PLANS SEE SHEETS C-1 THRU C-7

FOR PROFILE OF LINE -Y2- SEE SHEET 51
FOR PROFILE OF LINE -L- SEE SHEETS 37 AND 38

FOR DRAINAGE DITCH DETAILS SEE SHEETS 2D-1 THRU 2D-3



DETAIL C
FALSE SUMP (Not to Scale)
Median Ditch
9" 2' GI etc.
L (See Chart Below) 20'
S = Ditch Slope ℄ Proposed Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 52+15 CL
FROM STA. 57+85 CL

INLET TYPICAL -L- 54+41 LT +/-
NOT TO SCALE (LEFT TO RIGHT LOOKING DOWNSTREAM)
CLASS 'I' RIP RAP W/ GEOTEXTILE FABRIC
COIR FIBER MATTING
FILL EX. CHANNEL
CLASS 'I' RIP RAP W/ GEOTEXTILE FAB.
NATURAL GROUND
2.0 - 3.0'
1.0'
2:1
BENCH 8' LOW FLOW CHANNEL 8'
EST. TONS CLASS 'I' = 44 TONS
EST. GEOTEXTILE FABRIC = 81 SY
EST. COIR FIBER MATTING = 68 SY
DDE = 300 CY

OUTLET TYPICAL -L- 53+43 RT +/-
NOT TO SCALE (LEFT TO RIGHT LOOKING DOWNSTREAM)
CLASS 'I' RIP RAP W/ GEOTEXTILE FABRIC
COIR FIBER MATTING
NATURAL GROUND
CLASS 'I' RIP RAP W/ GEOTEXTILE FABRIC
5.0 - 6.0'
BENCH 8' LOW FLOW CHANNEL 8'
EST. TONS CLASS 'I' = 53 TONS
EST. GEOTEXTILE FAB. = 71 SY
EST. COIR FIBER MATTING = 60 SY
DDE = 110 CY

DETAIL A
FALSE SUMP (Not to Scale)
Outside Ditch Traffic Flow
10:1 20:1 2.0' 0.5' Min. 1.0' Max. GI etc.
S = Ditch Slope ℄ Proposed Ditch
FROM STA. 52+15 RT
FROM STA. 57+85 LT

DETAIL B
FALSE SUMP (Not to Scale)
Outside Ditch Traffic Flow
10:1 2' 0.5' Min. 1.0' Max. GI etc.
S = Ditch Slope ℄ Proposed Ditch
FROM STA. 52+15 LT
FROM STA. 54+87 RT

REVISIONS

8/17/99

23-SEP-2014 14:05
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW 9/24/2014

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 20754 ENGINEER WILLIAM T. STEPHENS, JR. 9/24/2014

FOR U-TURN BULB DETAIL SEE SHEET 2B-5

FOR CUVERT PLANS SEE SHEETS C-8 THRU C-14

FOR DRAINAGE DITCH DETAILS SEE SHEETS 2D-1 THRU 2D-3

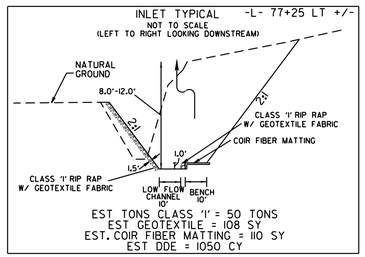
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET 2D-3

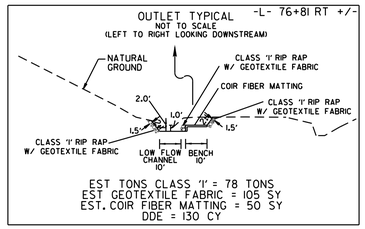
FOR PROFILE OF LINE -L- SEE SHEETS 38 AND 39

FOR PROFILE OF LINE -Y12- SEE SHEET 54

TEMPORARY SHORING SEE TMP PLANS

BRIAN LASSITER
DB 528 PG 685
PC D SLIDE 181D

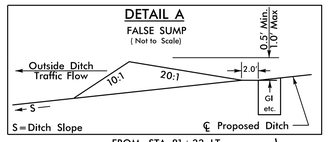




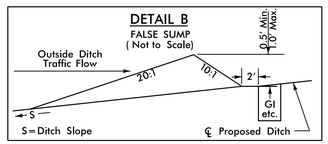
-L-

PIs Sta 79+12.74
Θs = 4° 35' 01.2"
Ls = 240.00'
LT = 160.05'
ST = 80.05'

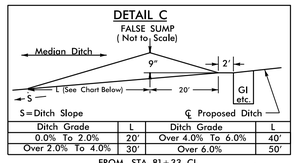
PI Sta 88+07.62
Δ = 57° 01' 47.7" (RT)
D = 3° 49' 11.0"
L = 1,493.04'
T = 814.94'
R = 1,500.00'



FROM STA. 81+33 LT
FROM STA. 84+13 LT

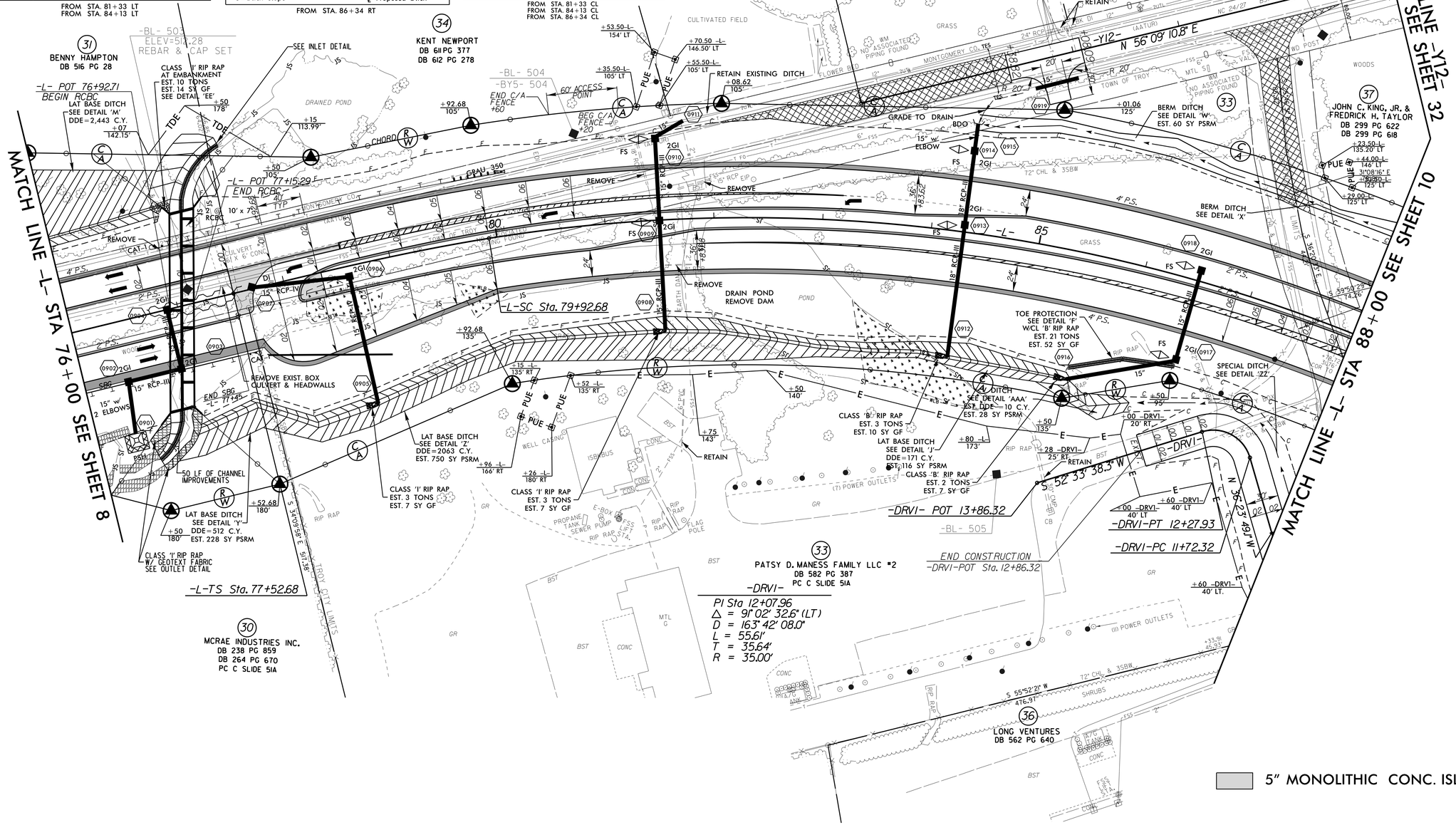


FROM STA. 86+34 RT



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 81+33 CL
FROM STA. 84+13 CL
FROM STA. 86+34 CL



5" MONOLITHIC CONC. ISLAND

REVISIONS

8/17/99

23-SEP-2014 14:06
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FOR CULVERT PLANS SEE SHEETS C-15 THRU C-19

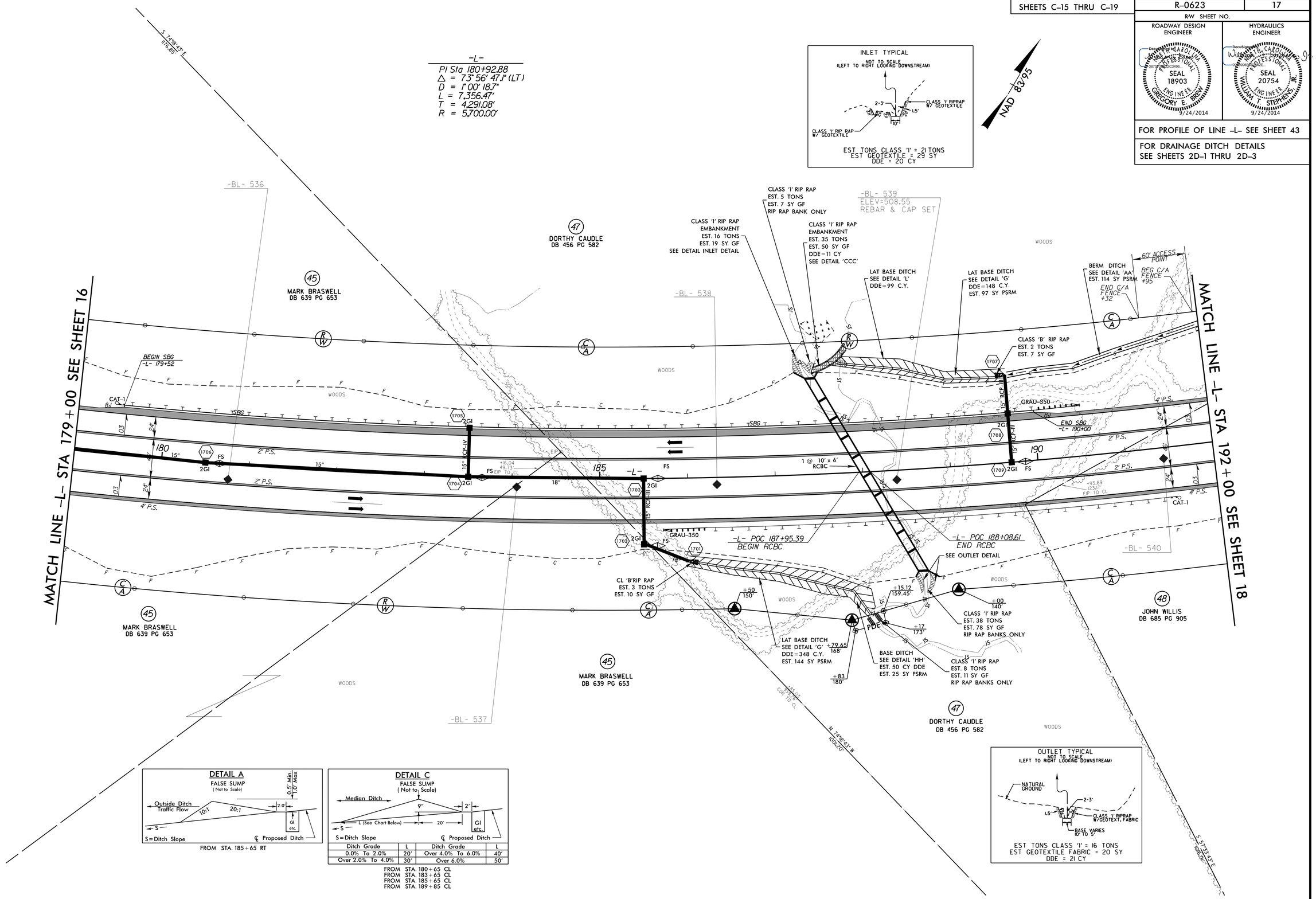
PROJECT REFERENCE NO.	SHEET NO.
R-0623	17
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BRENT	NORTH CAROLINA PROFESSIONAL SEAL 20754 ENGINEER WILLIAM T. STEPHENS JR.
9/24/2014	9/24/2014

FOR PROFILE OF LINE -L- SEE SHEET 43

FOR DRAINAGE DITCH DETAILS SEE SHEETS 2D-1 THRU 2D-3

-L-
PI Sta 180+92.88
Δ = 73° 56' 47.1" (LT)
D = 1° 00' 18.7"
L = 7,356.47'
T = 4,291.08'
R = 5,700.00'



DETAIL A
FALSE SUMP
(Not to Scale)

FROM STA. 185+65 RT

DETAIL C
FALSE SUMP
(Not to Scale)

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 180+65 CL
FROM STA. 183+65 CL
FROM STA. 185+65 CL
FROM STA. 189+85 CL

REVISIONS

8/17/99

23-SEP-2014 14:00
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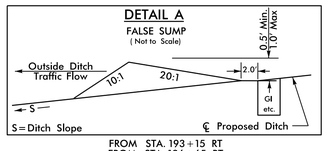
PROJECT REFERENCE NO.	SHEET NO.
R-0623	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

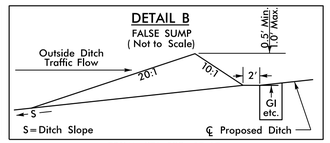
FOR CULVERT PLANS SEE SHEETS C-20 THRU C-24

FOR PROFILE OF LINE -L- SEE SHEETS 43 AND 44

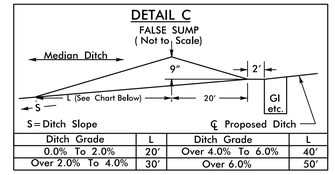
FOR DRAINAGE DITCH DETAILS SEE SHEETS 2D-1 THRU 2D-3



FROM STA. 193+15 RT
FROM STA. 196+65 RT
FROM STA. 199+65 RT



FROM STA. 193+15 LT
FROM STA. 196+65 LT
FROM STA. 200+15 LT
FROM STA. 204+15 LT

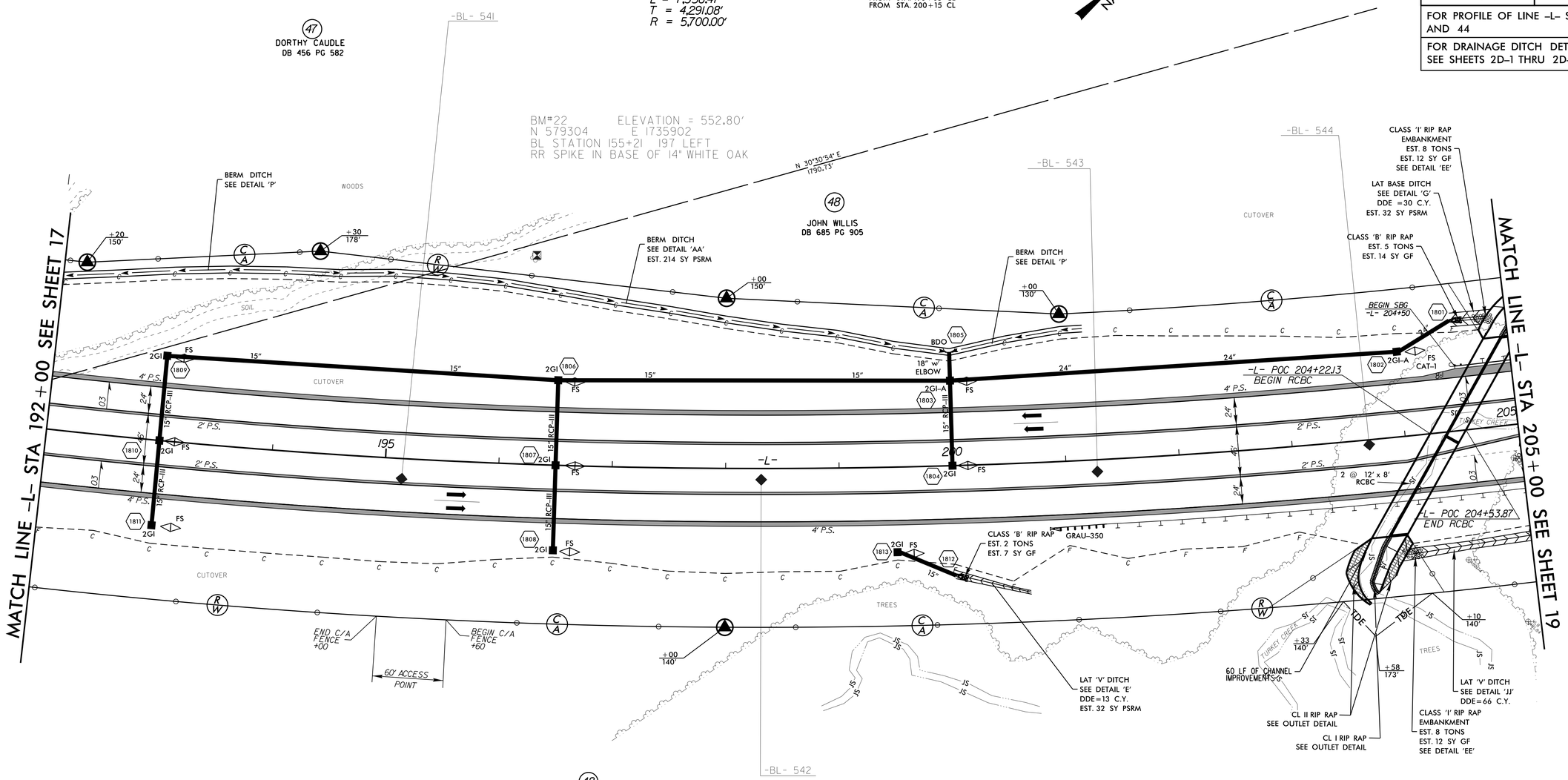


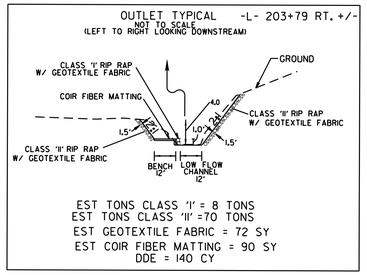
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 193+15 CL
FROM STA. 196+65 CL
FROM STA. 200+15 CL

-L-
PI Sta 180+92.88
Δ = 73° 56' 47.1" (LT)
D = 1° 00' 18.7"
L = 7,356.47'
T = 4,291.08'
R = 5,700.00'

NAD 83/95





REVISIONS

8/17/99

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FOR CULVERT PLANS SEE SHEETS C-20 THRU C-24

PROJECT REFERENCE NO.	SHEET NO.
R-0623	19
R/W SHEET NO.	

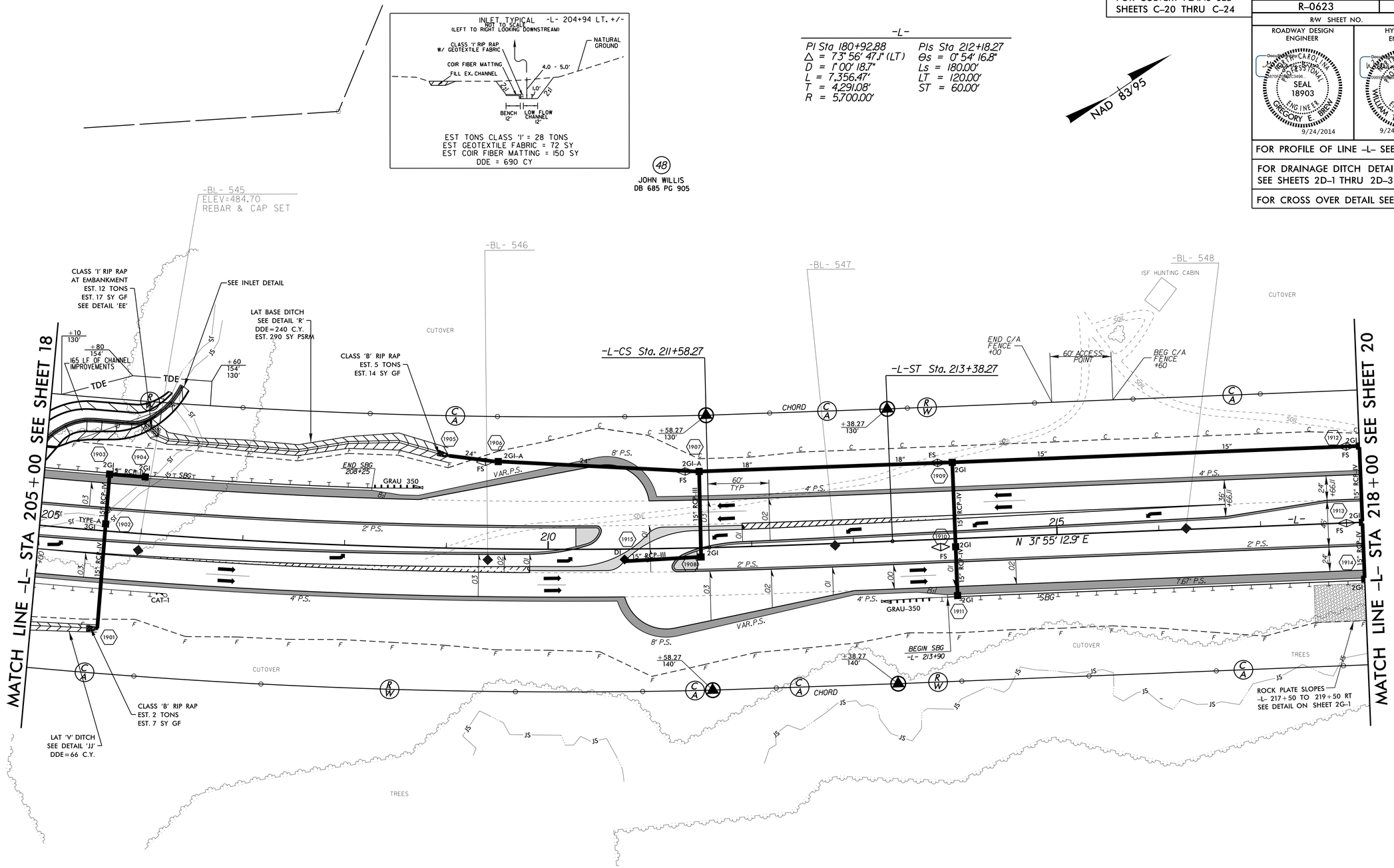
ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW 9/24/2014

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 20754 ENGINEER WILLIAM T. STEPHENS, JR. 9/24/2014

FOR PROFILE OF LINE -L- SEE SHEET 44

FOR DRAINAGE DITCH DETAILS SEE SHEETS 2D-1 THRU 2D-3

FOR CROSS OVER DETAIL SEE SHEET 2B-5



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

REVISIONS

8/17/99

23-SEP-2014 14:01
R:\Roadway\Proj\R0623_rdy_psh_s19.dgn
$$$$USERNAME$$$$

FOR CULVERT PLANS SEE SHEETS C-25 THRU C-29

PROJECT REFERENCE NO.	SHEET NO.
R-0623	25
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 18903 — GREGORY E. GREY — ENGINEER — 9/24/2014

HYDRAULICS ENGINEER — SEAL 20754 — WILLIAM T. STEPHENS JR. — ENGINEER — 9/24/2014

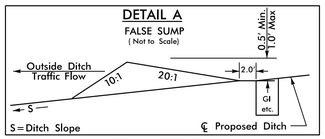
FOR PROFILE OF LINE -L- SEE SHEET 47

FOR DRAINAGE DITCH DETAILS SEE SHEETS 2D-1 THRU 2D-3

FOR U-TURN BULB DETAIL SEE SHEET 2B-6

DETAIL A

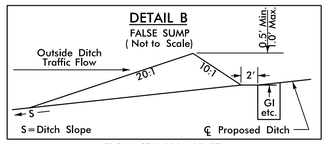
FALSE SUMP (Not to Scale)



FROM STA. 285+35 LT
FROM STA. 289+35 LT
FROM STA. 293+85 LT

DETAIL B

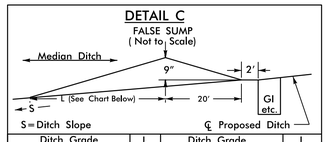
FALSE SUMP (Not to Scale)



FROM STA. 293+85 RT

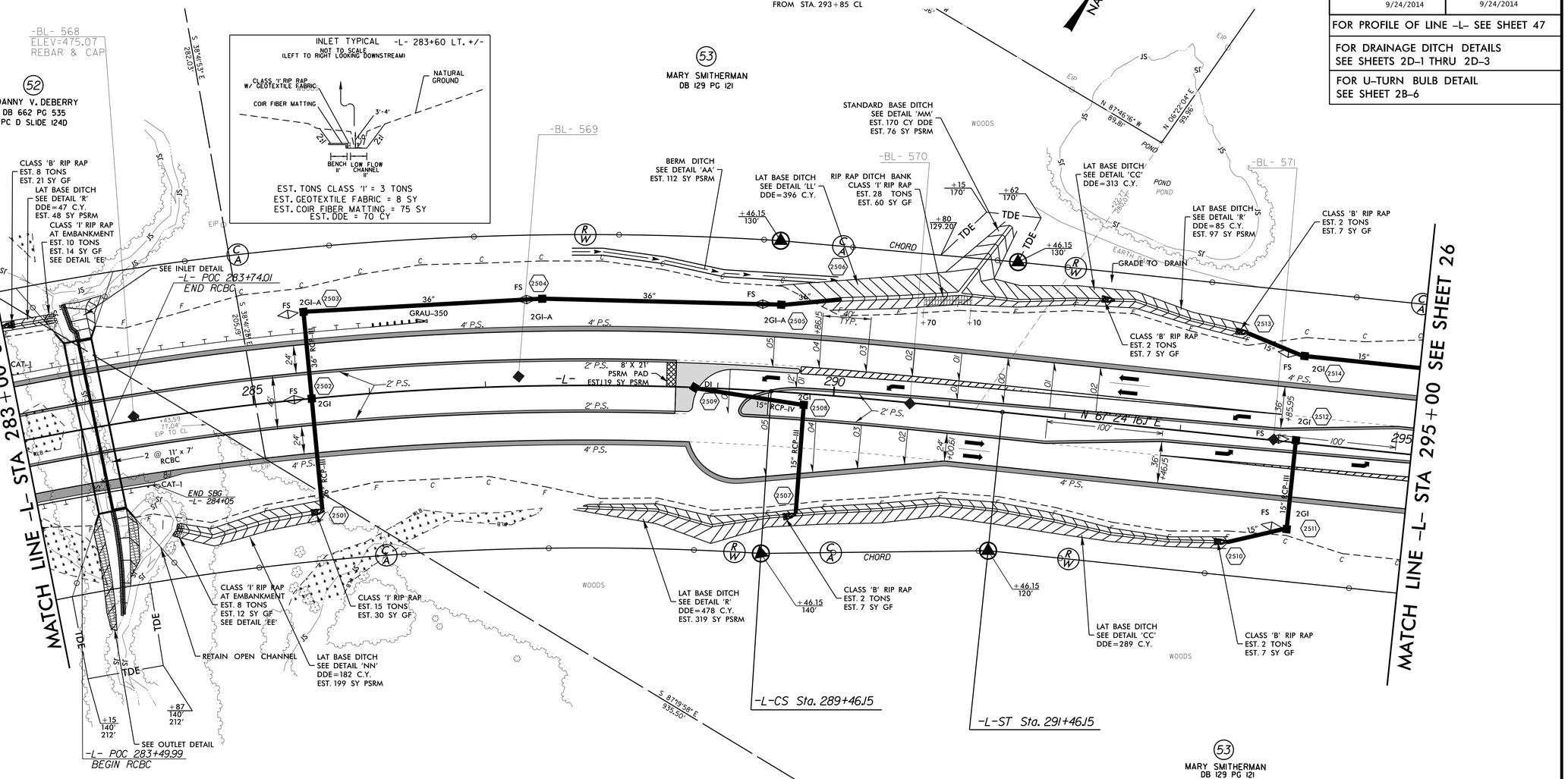
DETAIL C

FALSE SUMP (Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 285+35 CL
FROM STA. 293+85 CL



5" MONOLITHIC CONC. ISLAND

REVISIONS

8/17/99

23-SEP-2014 14:02
R:\Roadway\Proj\PlanSheets\R0623_rdy_psh_s25.dgn
$$$$USERNAME$$$$