See Sheet 1A For Index of Sheets
See Sheet 1B For Standard Symbology Sheet

Submittal February 6, 2024

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CRAVEN COUNTY

PERMIT DRAWING
SHEET 1 OF 89

DATE: 1/15/2024

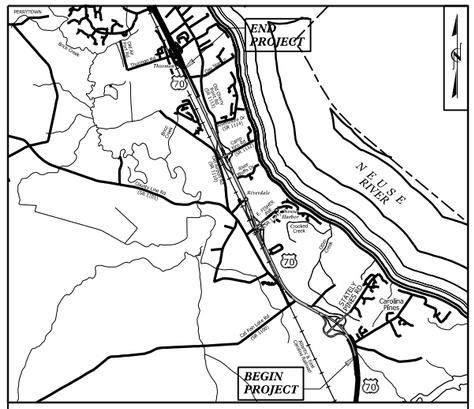
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5777C	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
44648.3.4	N/A	DESIGN-BUILD

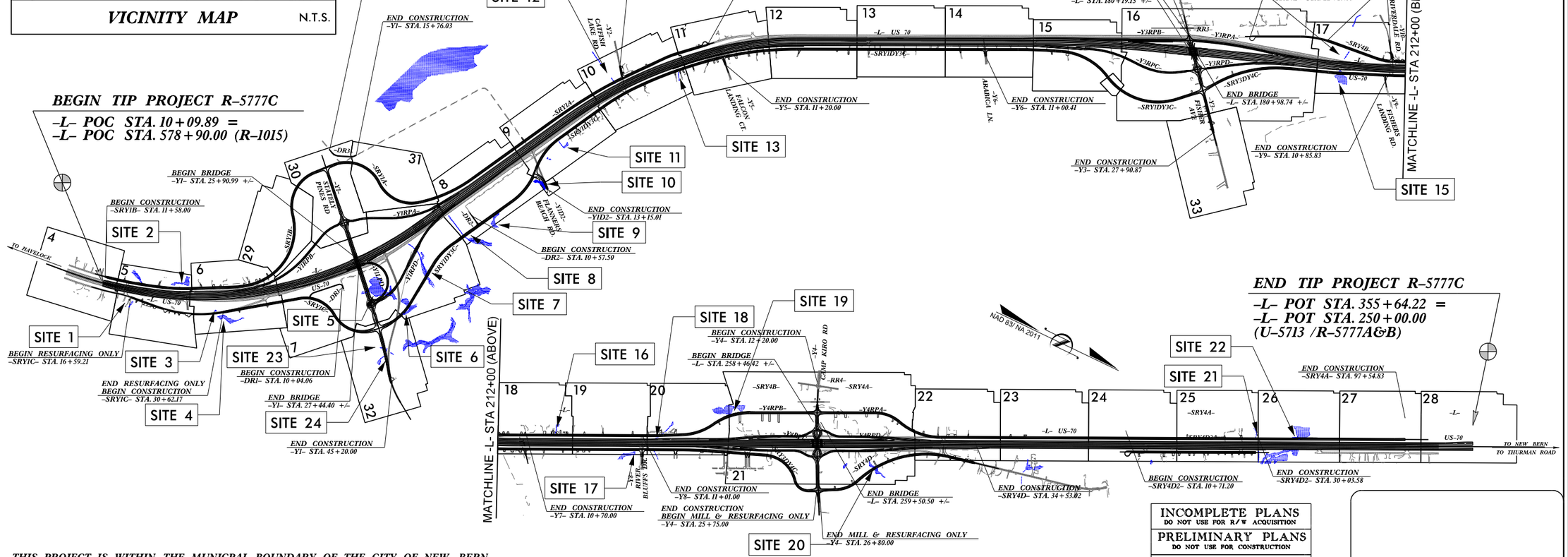
LOCATION: U.S. 70 FROM THE HAVELOCK BYPASS TO EAST OF S.R. 1116 (THURMAN ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNING, ITS AND STRUCTURES

WETLAND AND SURFACE WATER IMPACTS PERMIT



VICINITY MAP N.T.S.



BEGIN TIP PROJECT R-5777C
-L- POC STA. 10+09.89 =
-L- POC STA. 578+90.00 (R-1015)

END TIP PROJECT R-5777C
-L- POT STA. 355+64.22 =
-L- POT STA. 250+00.00
(U-5713 /R-5777A&B)

THIS PROJECT IS WITHIN THE MUNICPAL BOUNDARY OF THE CITY OF NEW BERN
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2019 = 31,800
ADT 2045 = 41,800
K = 9%
D = 55%
T = 8%*
V = 75 MPH
* (TTST=3%+DUAL 5%)
FUNC. CLASSIFICATION = INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-5777C = 6.486 MILES
LENGTH STRUCTURE TIP PROJECT R-5777C = 0.058 MILES
TOTAL LENGTH OF TIP PROJECT R-5777C = 6.544 MILES

NCDOT CONTACT: BYRON KYLE
NCDOT – DESIGN-BUILD UNIT

PLANS PREPARED FOR THE NCDOT BY:

Balfour Beatty

stv
NC LICENSE NUMBER F-0991
900 W TRADE ST STE 715, CHARLOTTE, NC 28202

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 17, 2023

LETTING DATE: JANUARY 17, 2023

J. ADAM FREEMAN, PE
PROJECT ENGINEER

NARONG PHAL, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

TIP PROJECT: R-5777C

CONTRACT: C204695

1/15/2024
R-5777C_Hyd_prm_wet_psh_01.dgn
bellam

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty

stv

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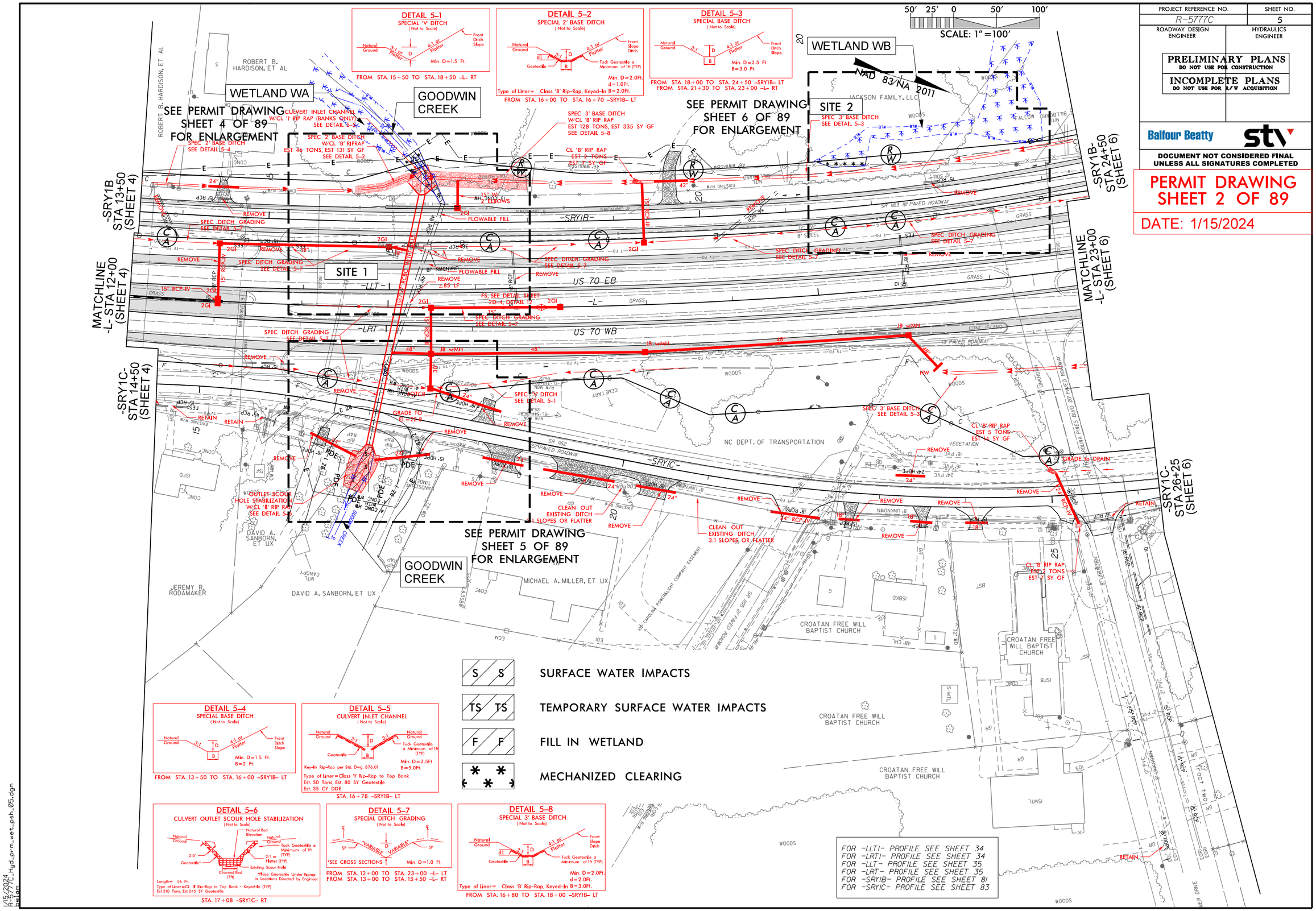
PERMIT DRAWING
SHEET 2 OF 89

DATE: 1/15/2024



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Relain

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

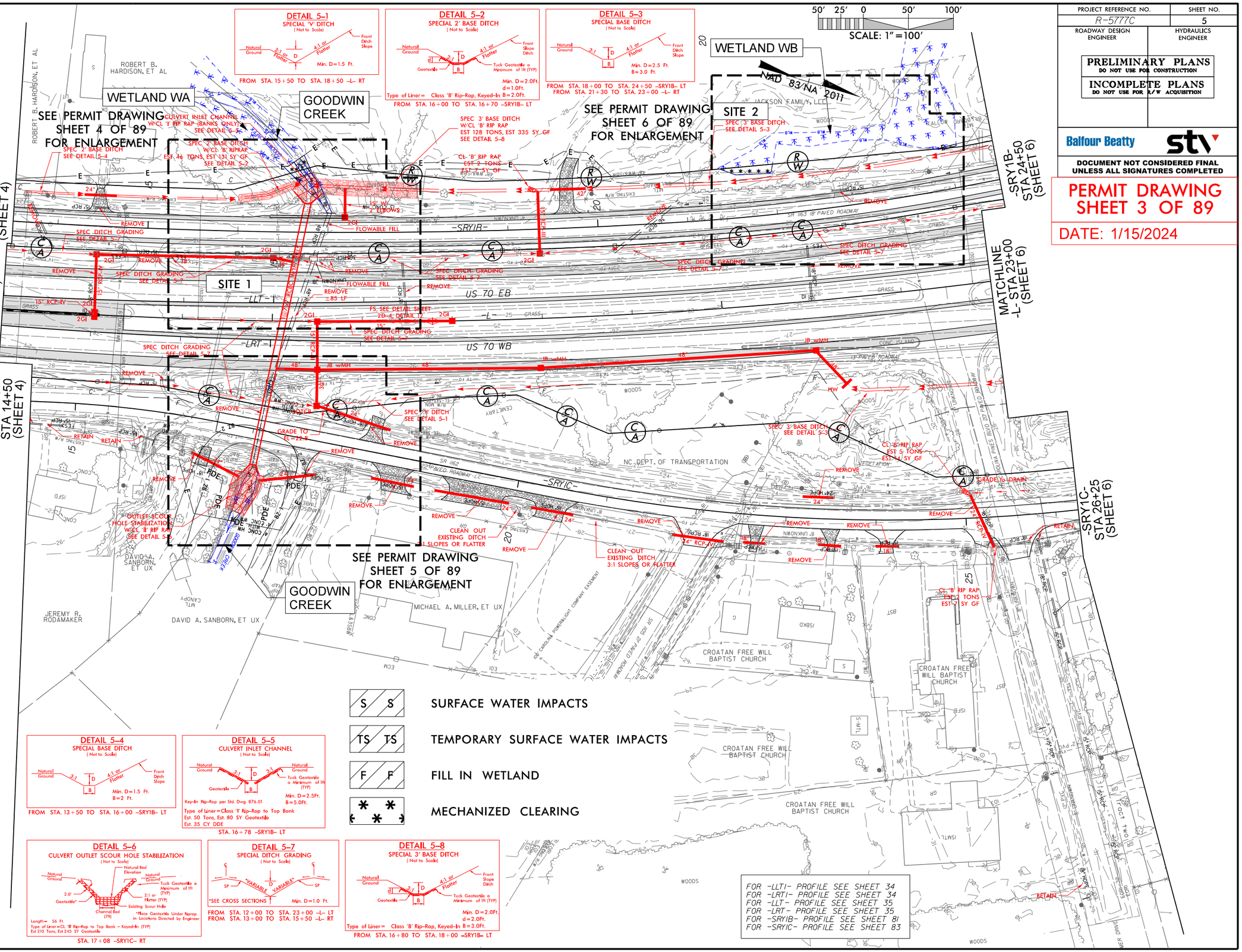
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty | stv

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 3 OF 89

DATE: 1/15/2024



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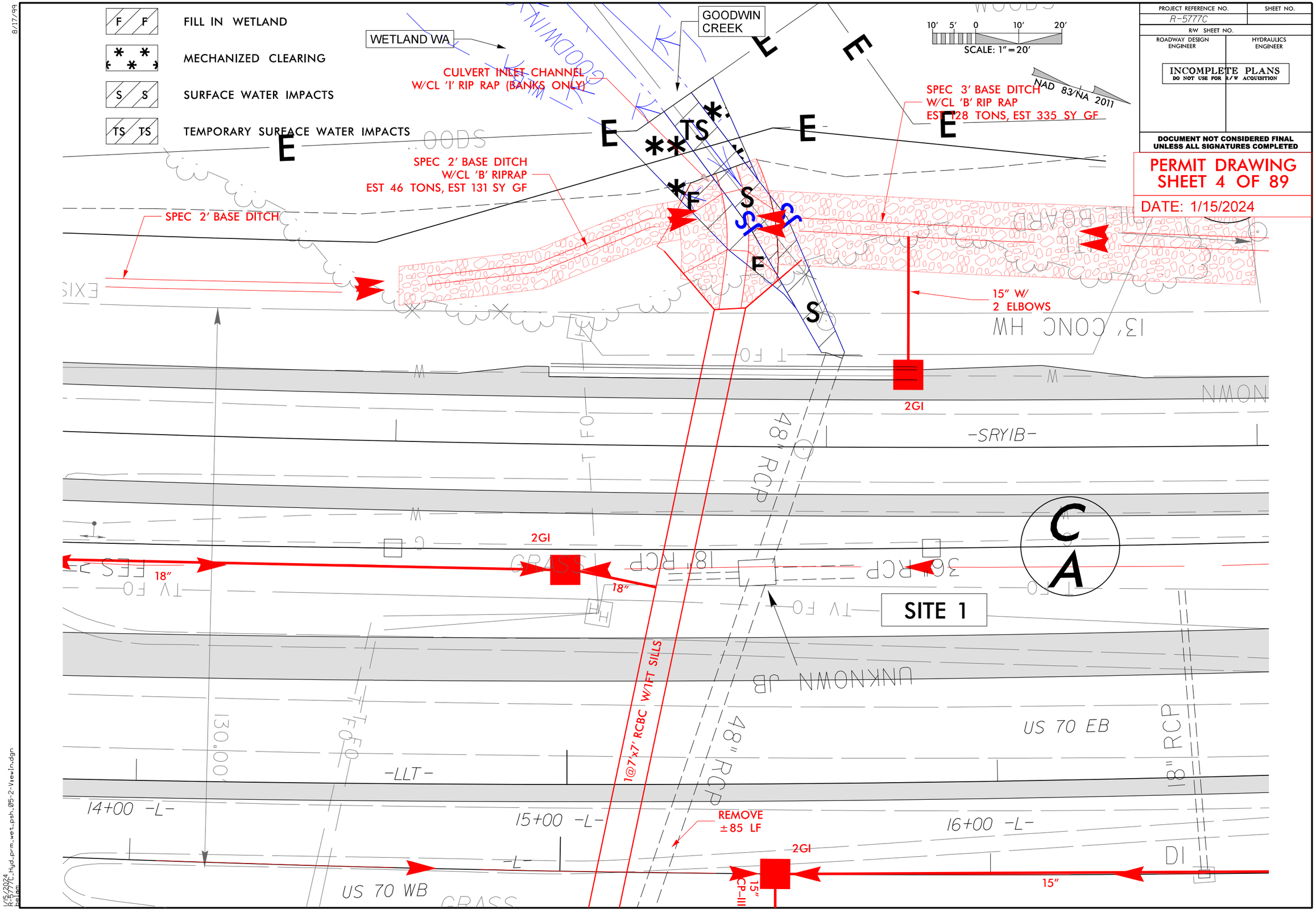

FILL IN WETLAND
MECHANIZED CLEARING
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
WETLAND WA
GOODWIN CREEK
CULVERT INLET CHANNEL
W/CL 'I' RIP RAP (BANKS ONLY)
SPEC 3' BASE DITCH
W/CL 'B' RIP RAP
EST 128 TONS, EST 335 SY GF
SPEC 2' BASE DITCH
W/CL 'B' RIPRAP
EST 46 TONS, EST 131 SY GF
SPEC 2' BASE DITCH
15" W/
2 ELBOWS
2GI
18"
1@7'x7' RCBC W/TFT SILLS
48" RCP
REMOVE
±85 LF
SITE 1
US 70 EB
US 70 WB
-SRYIB-
-LLT-
14+00 -L-
15+00 -L-
16+00 -L-
15"
SCALE: 1" = 20'
NAD 83/NA 2011
PROJECT REFERENCE NO.
R-5777C
SHEET NO.
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
PERMIT DRAWING
SHEET 4 OF 89
DATE: 1/15/2024

8/17/99

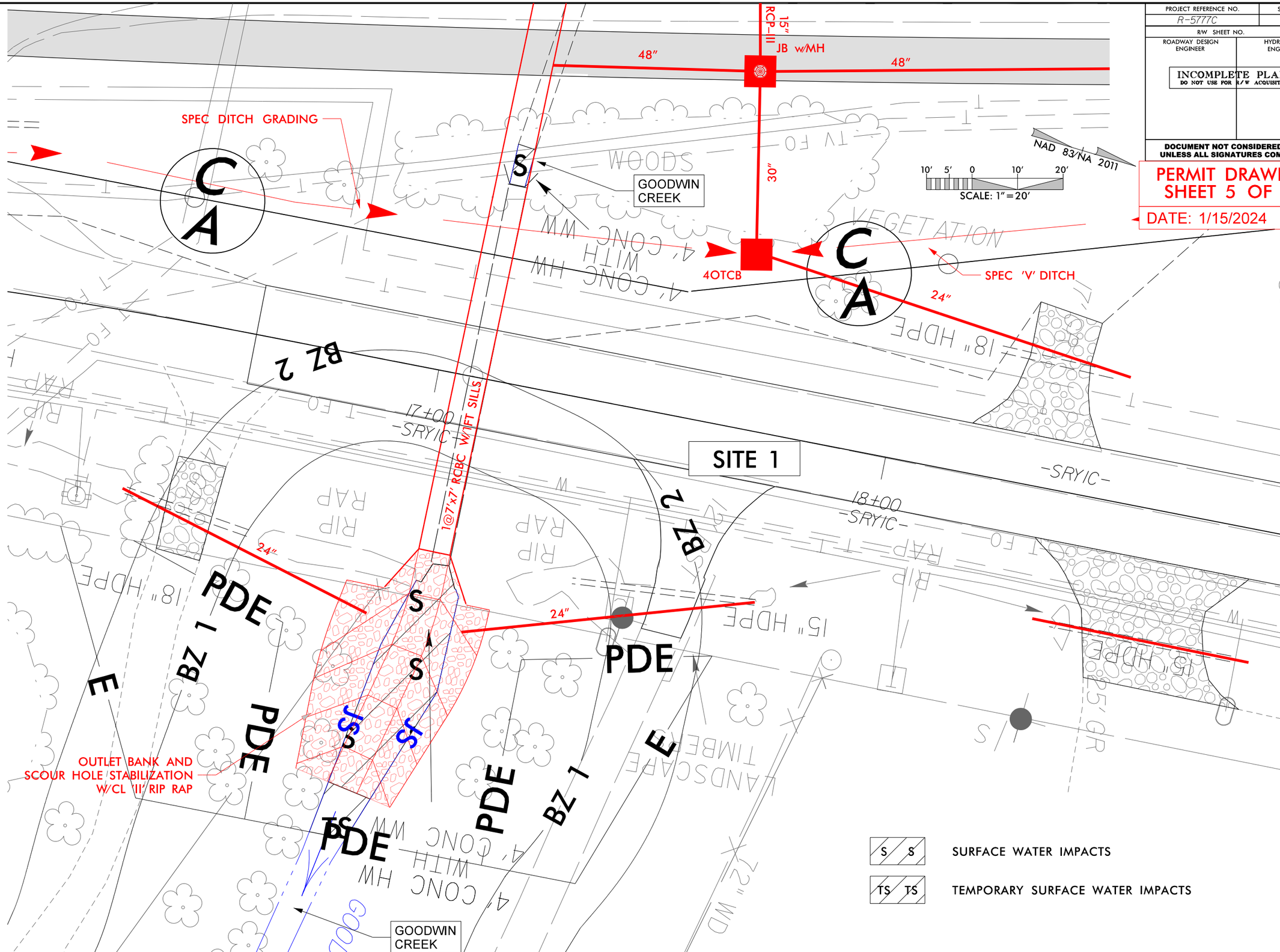
PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 5 OF 89

DATE: 1/15/2024



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pelam

8/17/99

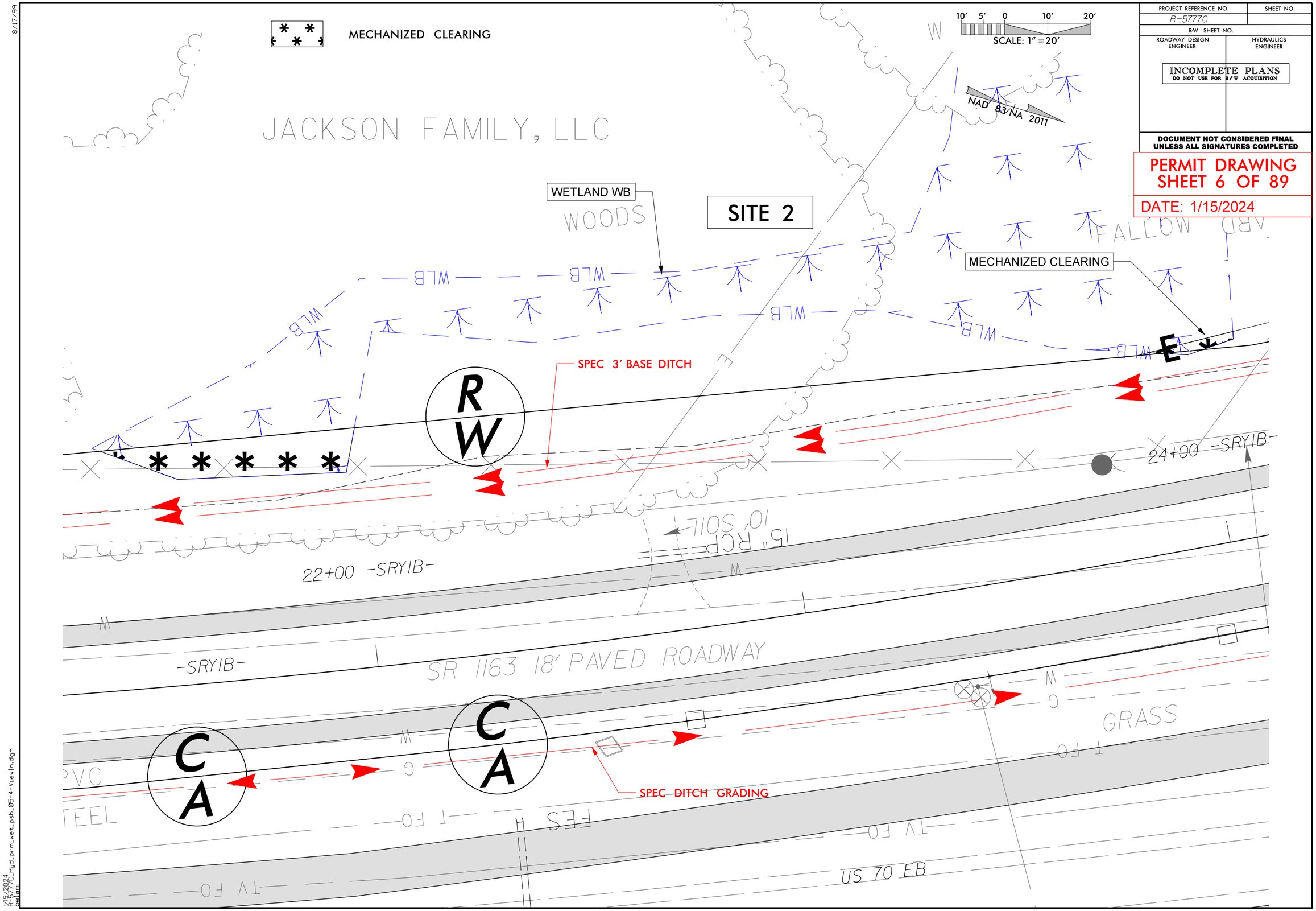
PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 6 OF 89

DATE: 1/15/2024



1/15/2024
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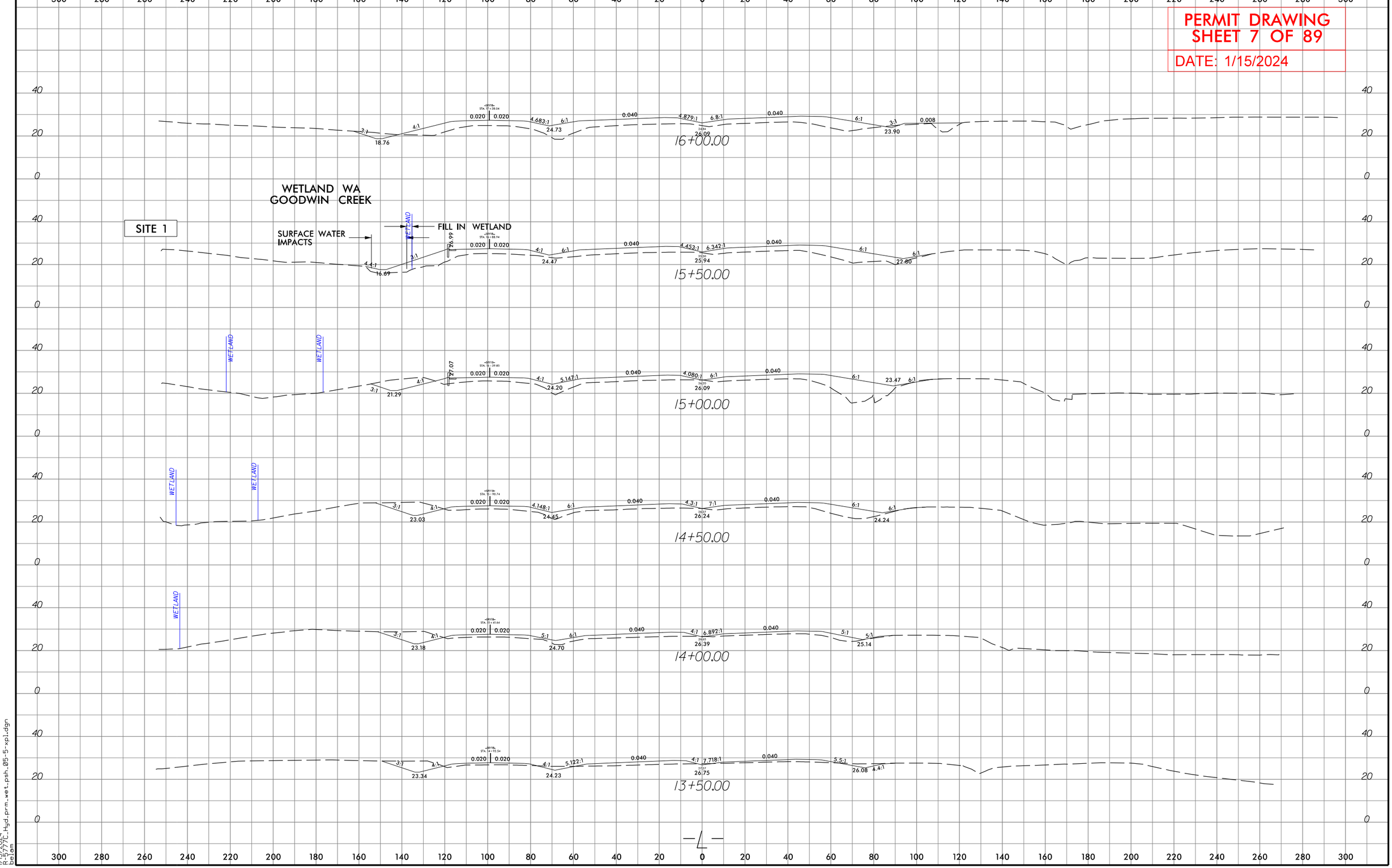
bellam

Submittal February 6, 2024

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-5777	L-2

PERMIT DRAWING
SHEET 7 OF 89
DATE: 1/15/2024



1/15/2024
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belam

Submittal February 6, 2024

6/23/16

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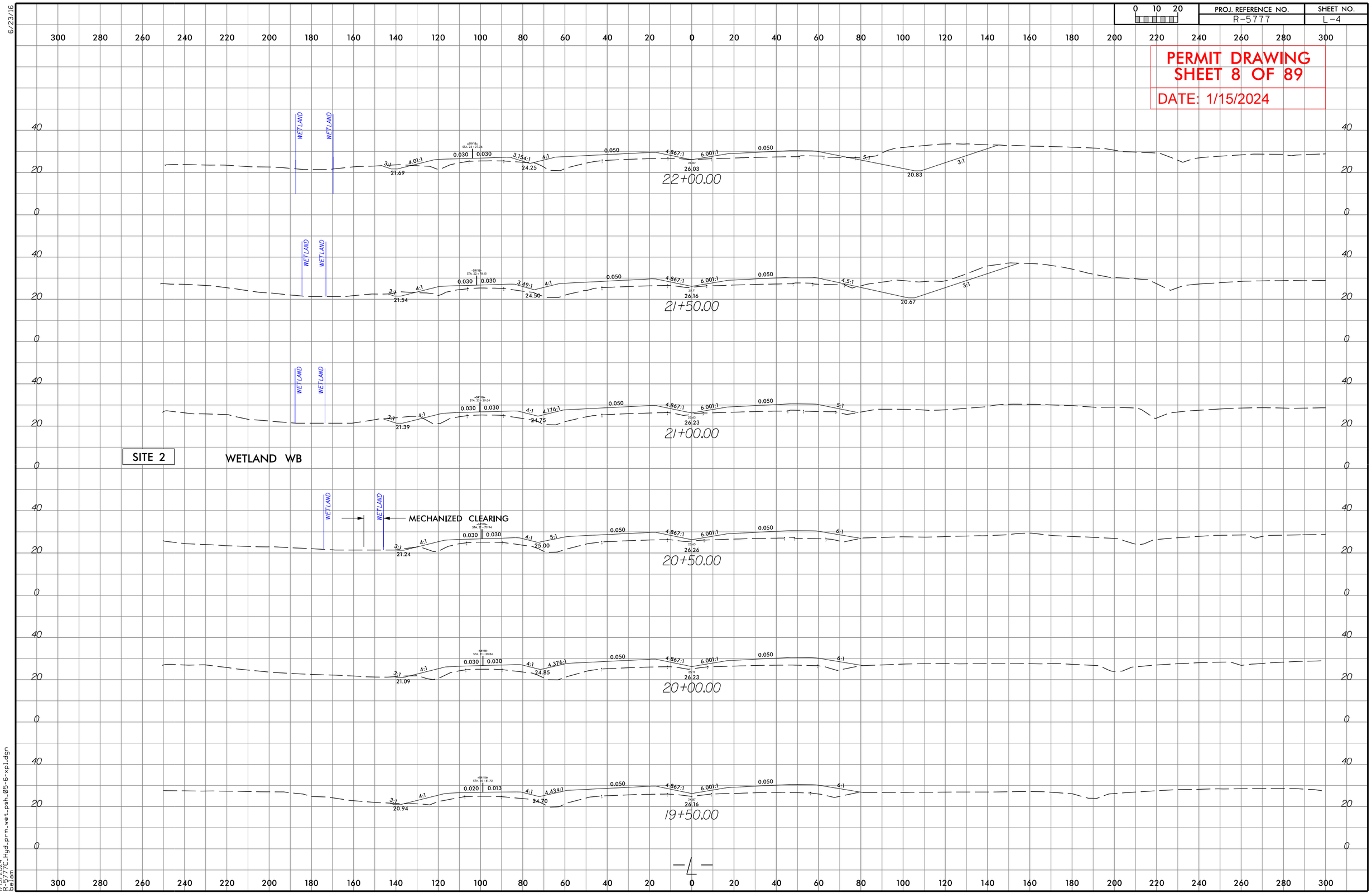
	R-5777	L-4

PERMIT DRAWING
SHEET 8 OF 89
DATE: 1/15/2024



1/15/2024
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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

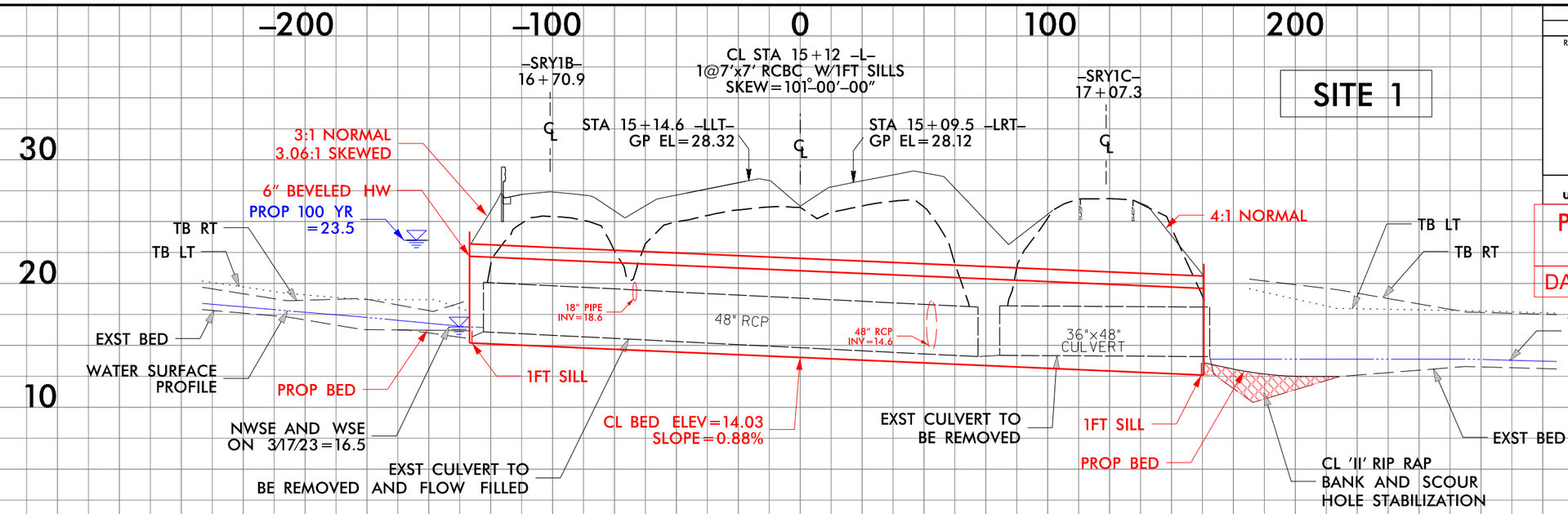
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 9 OF 89

DATE: 1/15/2024

SITE 1



DETAIL
(NOT TO SCALE)

SINGLE BARREL CULVERT W/SILLS

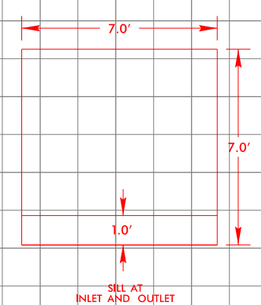
*NOTES:

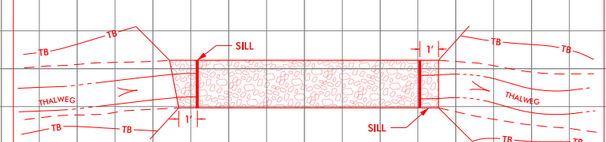
1) NATIVE MATERIAL BETWEEN SILLS IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT THE PROJECT SITE DURING CONSTRUCTION. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

2) SILLS ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

3) DO NOT SET ELEVATION OF SILL ABOVE BANK FULL.

4) NUMBER OF SILLS DETERMINED BY THE ENGINEER.





PLAN VIEW

9/13

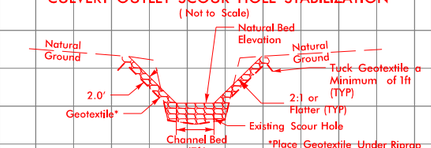
DETAIL
CULVERT INLET CHANNEL
(Not to Scale)

Key-In Rip-Rap per Std. Dwg. 876.01

Min. D=2.5Ft.
B=5.0Ft.

Type of Liner=Class 'I' Rip-Rap to Top Bank
Est. 50 Tons, Est. 80 SY Geotextile
Est. 35 CY DDE

DETAIL
CULVERT OUTLET SCOUR HOLE STABILIZATION
(Not to Scale)



*Place Geotextile Under Riprap in Locations Directed by Engineer

Length= 56 Ft.
Type of Liner=CL 'II' Rip-Rap to Top Bank - Keyed-In (TYP)
Est 210 Tons, Est 245 SY Geotextile

1/15/2024
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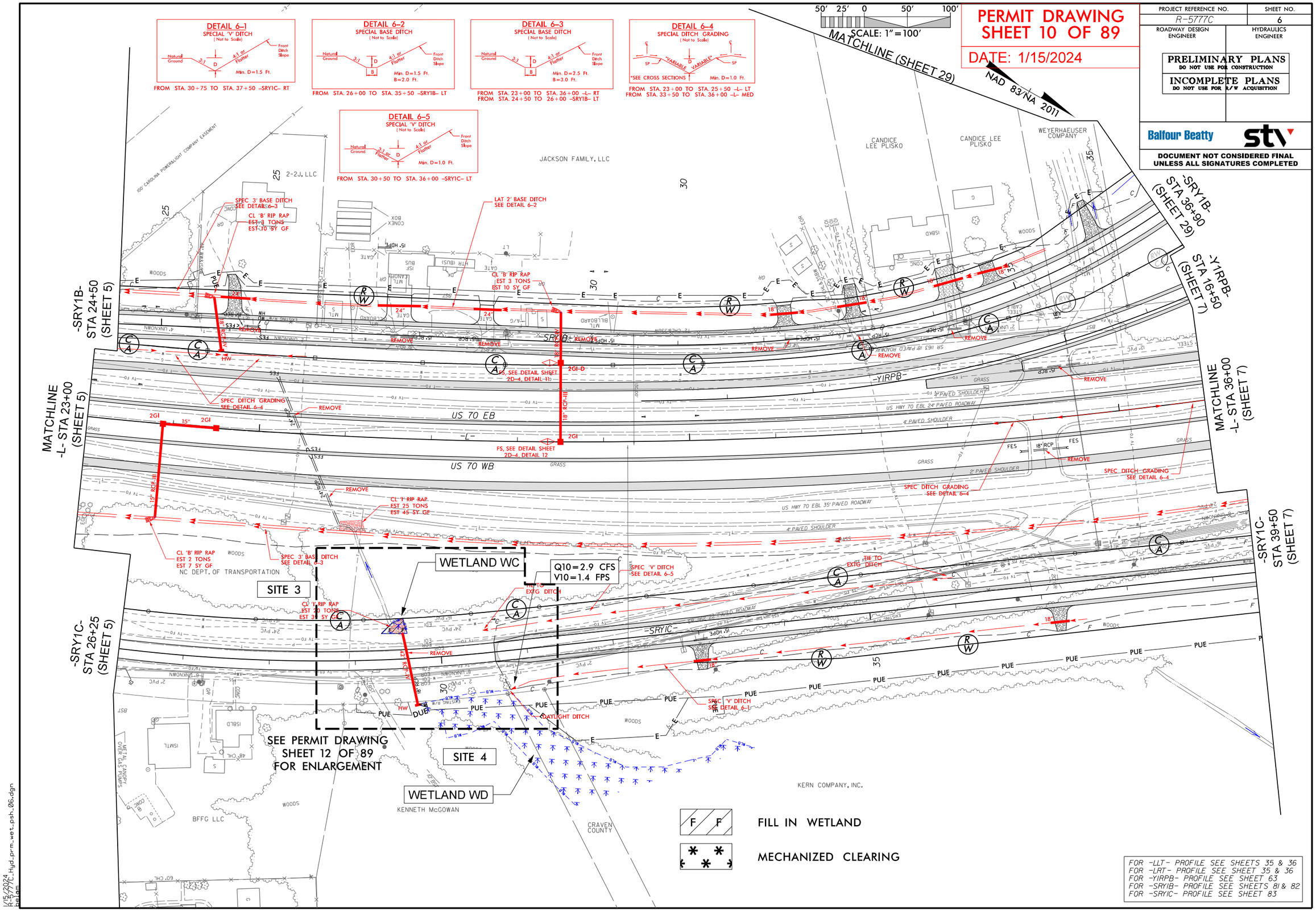
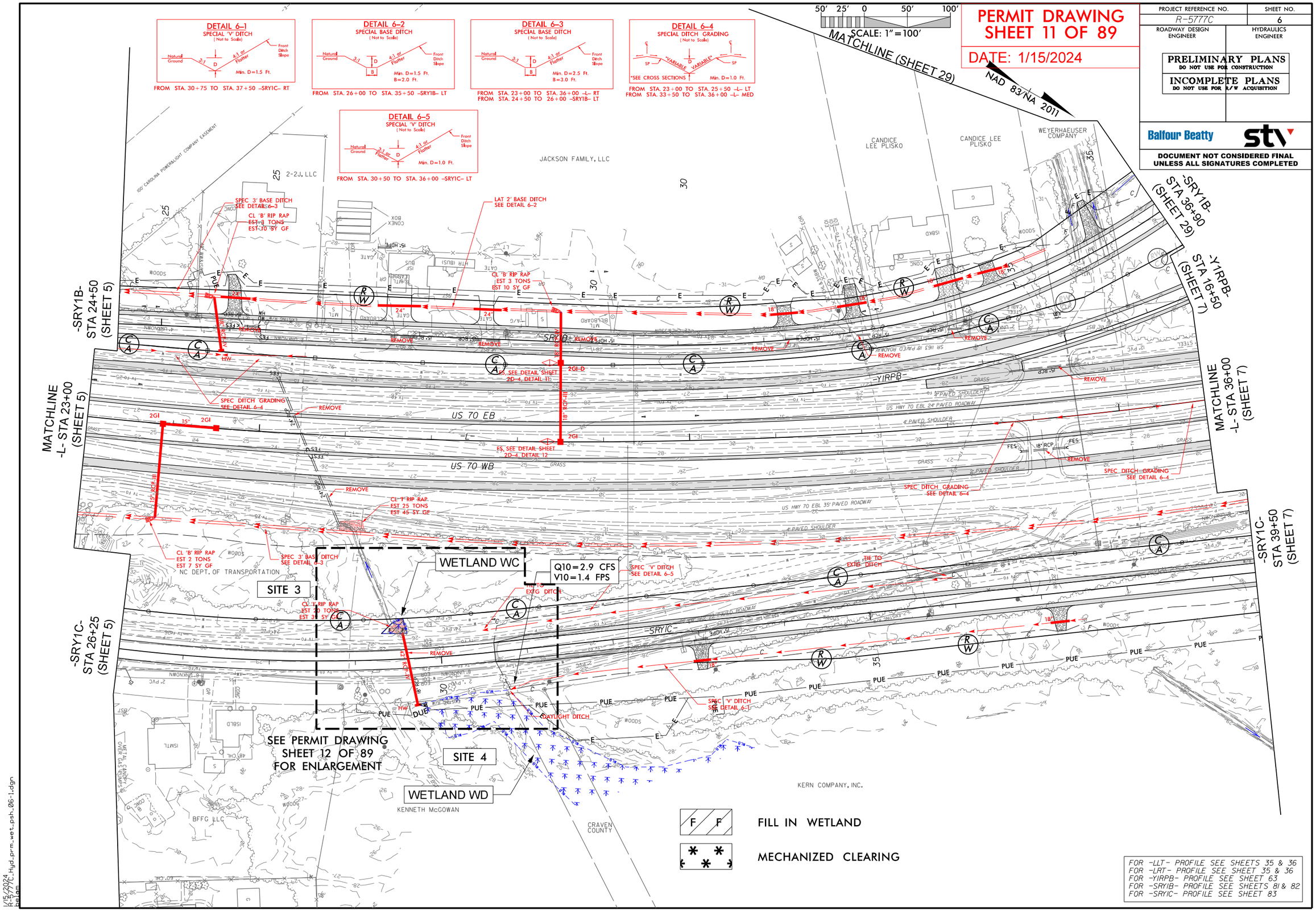
Submittal February 6, 2024



Submittal February 6, 2024



8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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PERMIT DRAWING
SHEET 12 OF 89

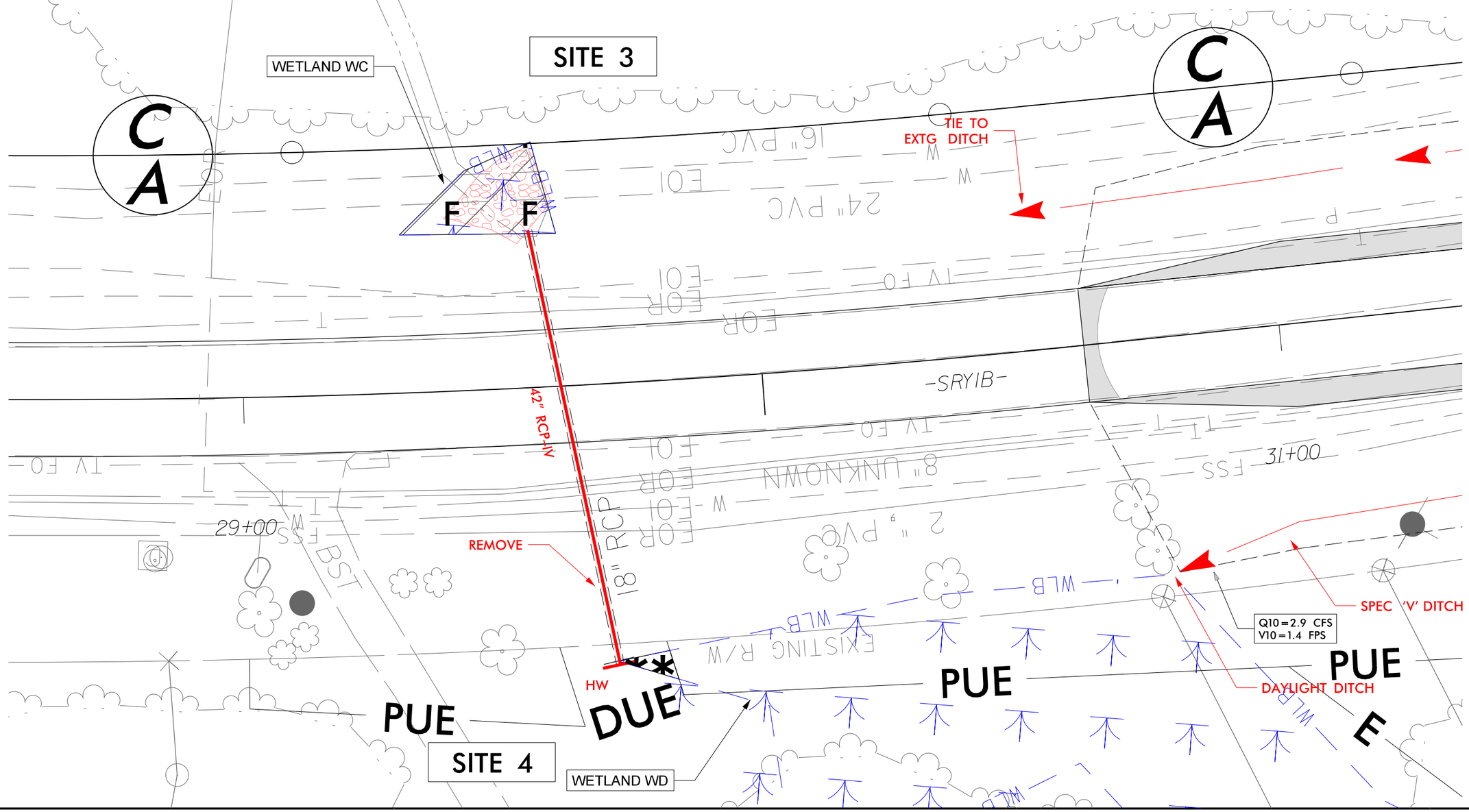
DATE: 1/15/2024

F F FILL IN WETLAND

* * MECHANIZED CLEARING

NAD 83/NA 2011

10' 5' 0 10' 20'
SCALE: 1" = 20'



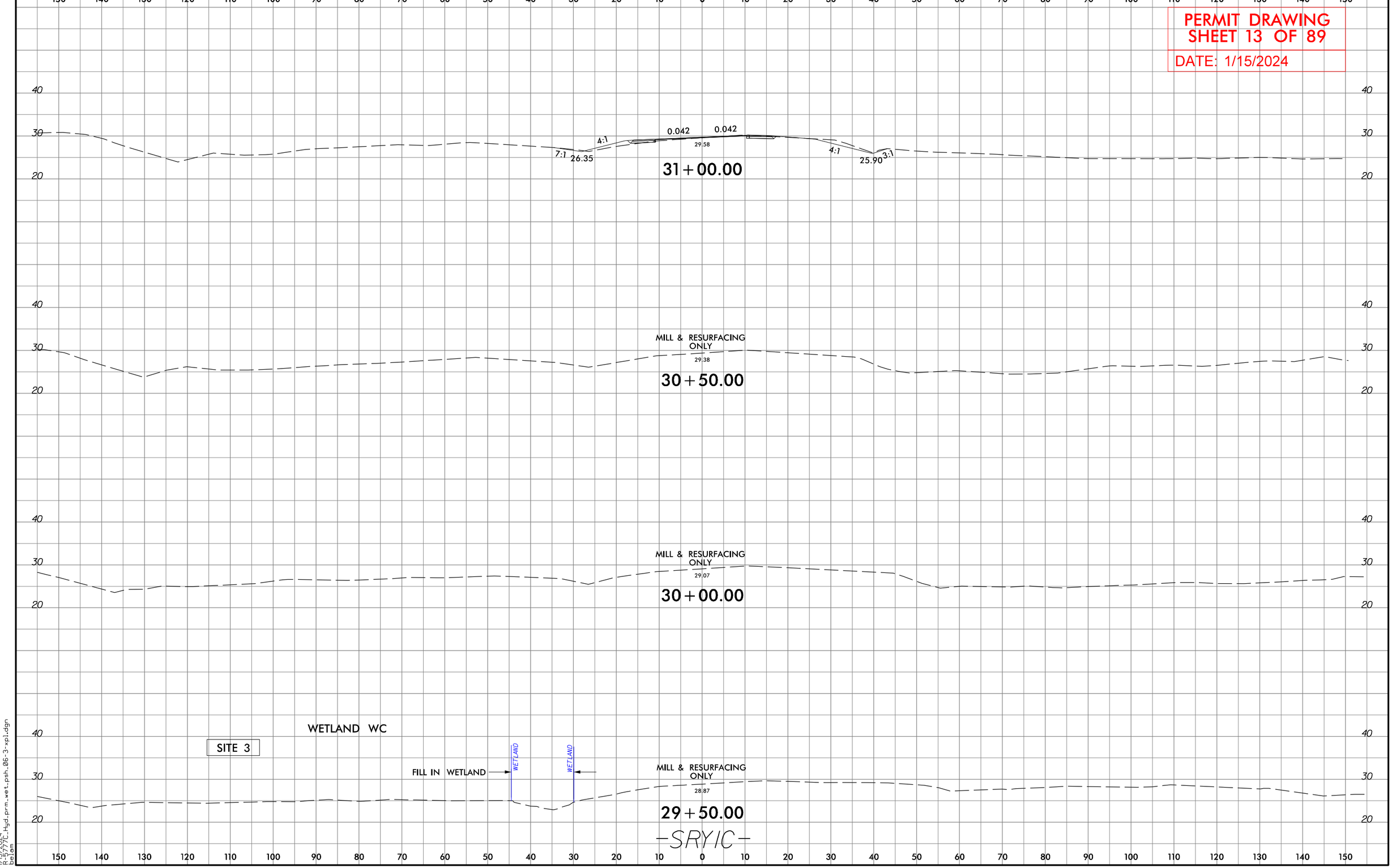
1/15/2024
R-5777C_Hyd_prm_wet_psh_06-2-View1.dgn
belam

Submittal February 6, 2024

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5777C	SRY1C-8

PERMIT DRAWING
SHEET 13 OF 89
DATE: 1/15/2024



1/15/2024
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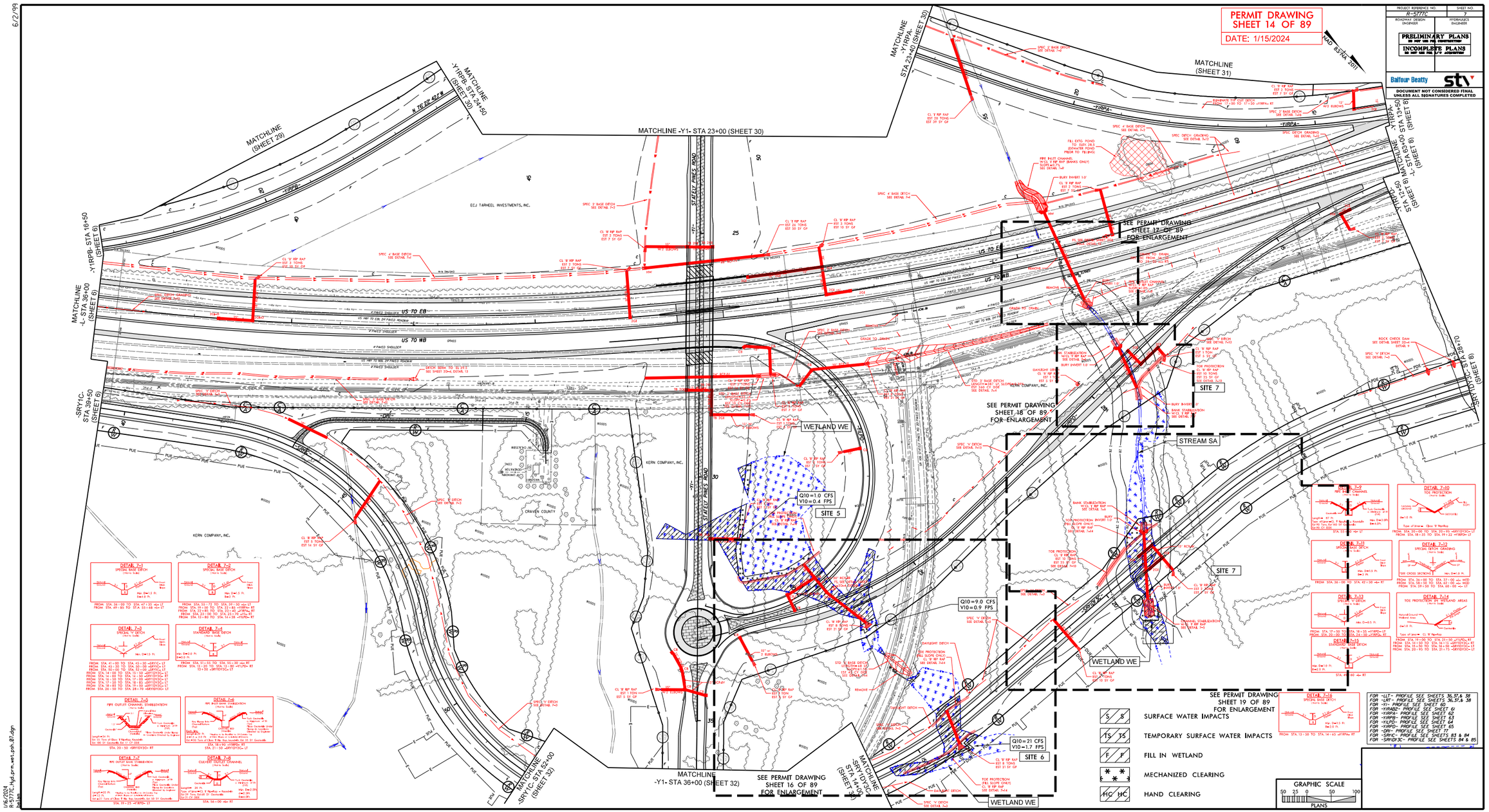
belam

Submittal February 6, 2024



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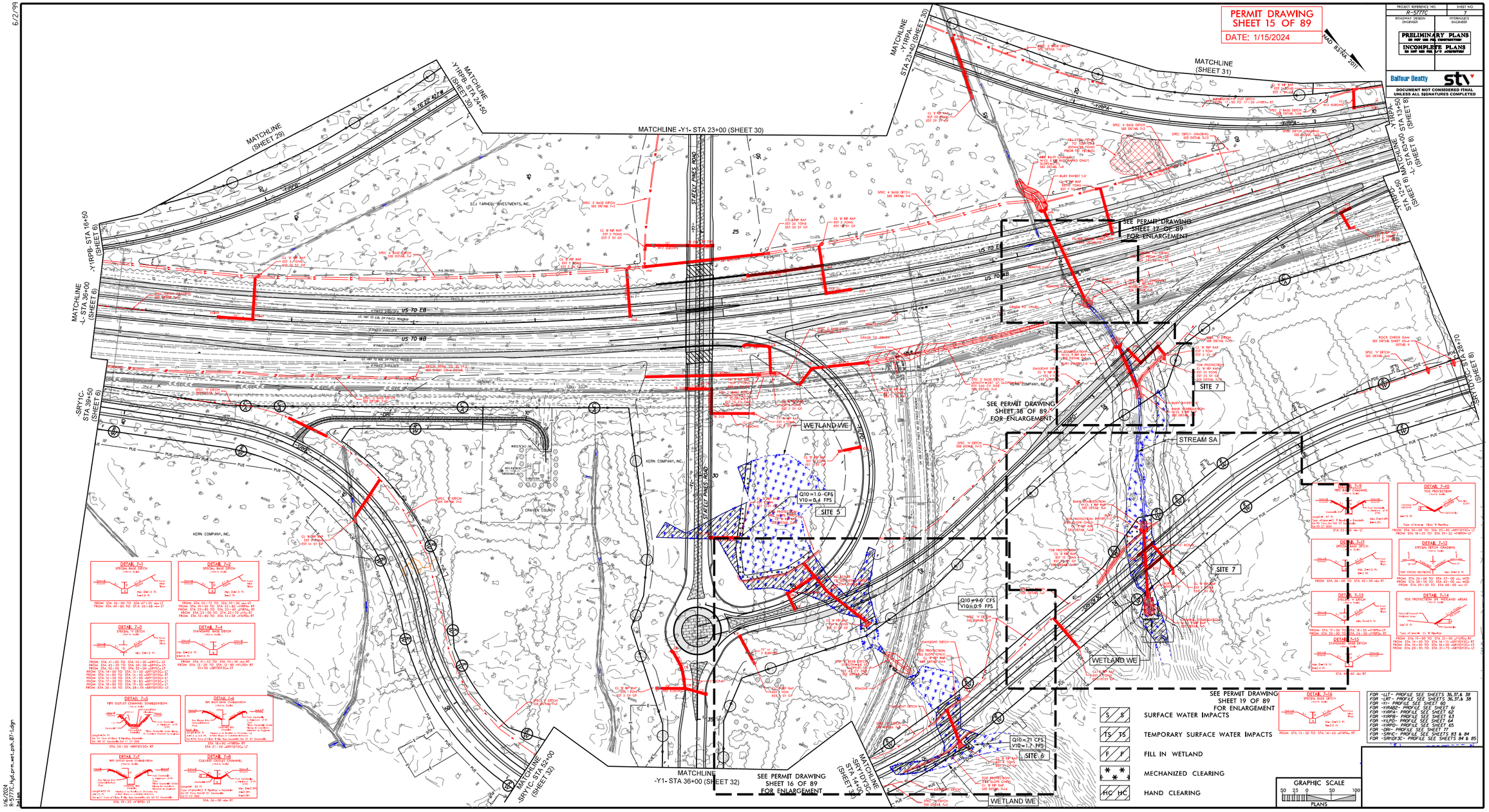
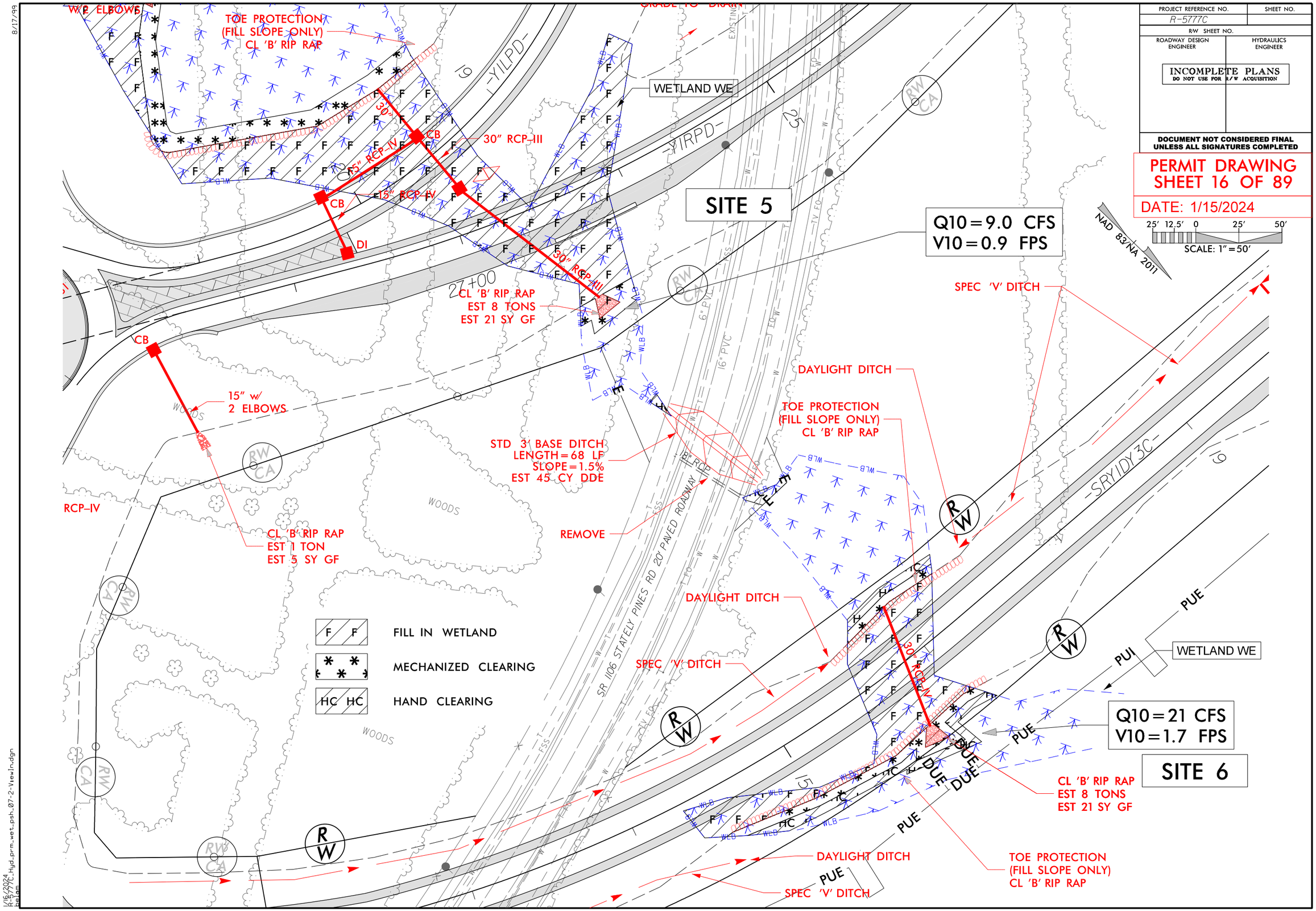
1/16/2024
R-5777C_Hyd_prm_wet_psh_07.dgn
jsalem

Submittal February 6, 2024




PROJECT REFERENCE NO.
R-5777C
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
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PERMIT DRAWING
SHEET 16 OF 89
DATE: 1/15/2024
SCALE: 1" = 50'
NAD 83/NA 2011
SITE 5
Q10 = 9.0 CFS
V10 = 0.9 FPS
SITE 6
Q10 = 21 CFS
V10 = 1.7 FPS
WETLAND WE
TOE PROTECTION (FILL SLOPE ONLY) CL 'B' RIP RAP
30" RCP-III
15" RCP-IV
30" RCP-III
CB
DI
27+00
CL 'B' RIP RAP
EST 8 TONS
EST 21 SY GF
15" w/ 2 ELBOWS
RCP-IV
CL 'B' RIP RAP
EST 1 TON
EST 5 SY GF
STD 3' BASE DITCH
LENGTH = 68 LF
SLOPE = 1.5%
EST 45 CY DDE
REMOVE
DAYLIGHT DITCH
SPEC 'V' DITCH
TOE PROTECTION (FILL SLOPE ONLY) CL 'B' RIP RAP
30" RCP-IV
CL 'B' RIP RAP
EST 8 TONS
EST 21 SY GF
TOE PROTECTION (FILL SLOPE ONLY) CL 'B' RIP RAP
DAYLIGHT DITCH
SPEC 'V' DITCH
SR 1106 STATELY PINES RD 20' PAVED ROADWAY
-YILPD-
-YIRPD-
SRYIDY3C
WOODS
FILL IN WETLAND
MECHANIZED CLEARING
HAND CLEARING
RW CA
RW
PUE
DUE
8/17/99
1/16/2024
R-5777C_Hyd_prm_wet_psh_07-2-View1n.dgn
Belain

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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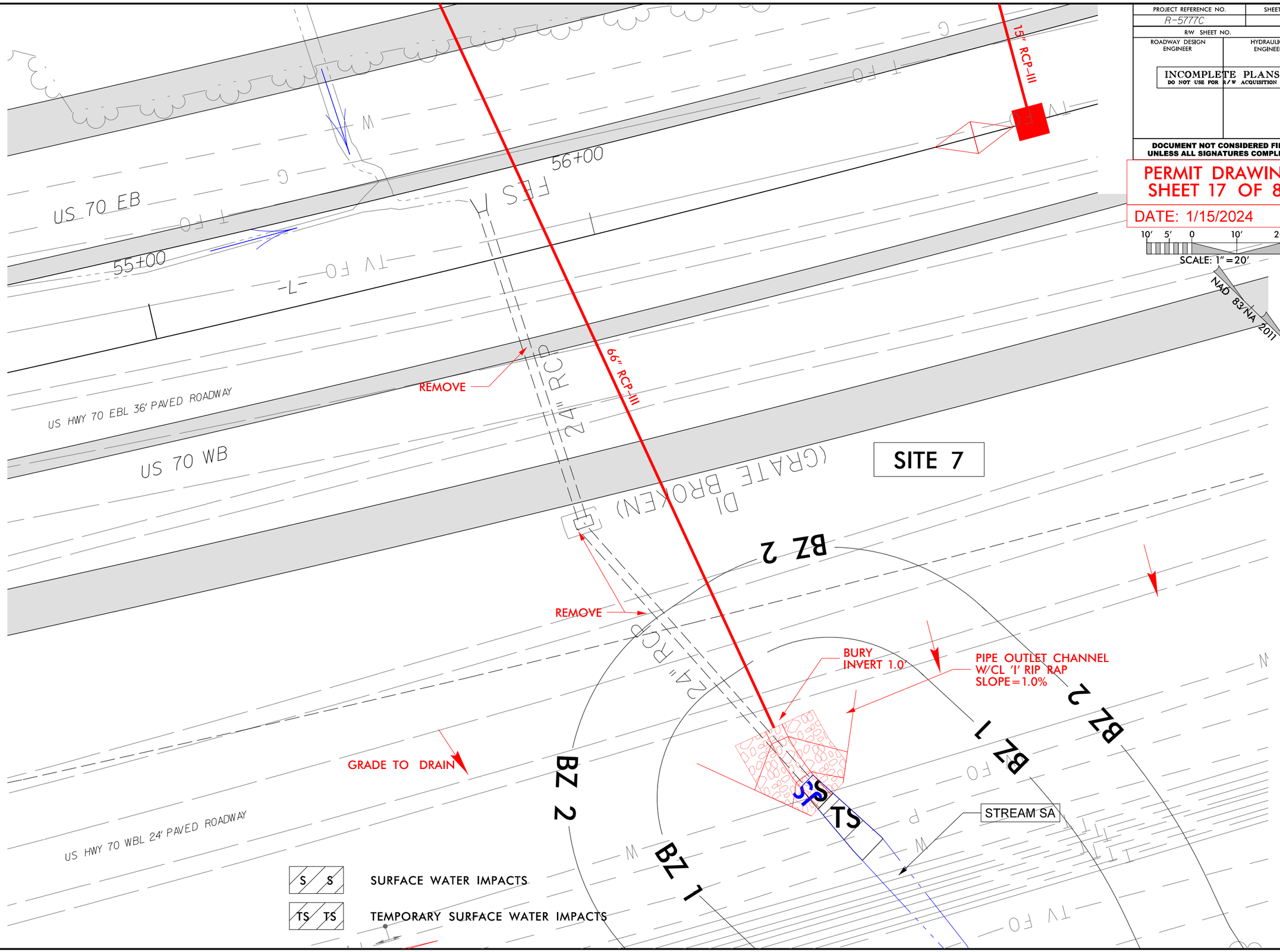
PERMIT DRAWING
SHEET 17 OF 89

DATE: 1/15/2024

10' 5' 0 10' 20'
SCALE: 1" = 20'

NAD 83/NA 2011



1/15/2024
R-5777C_Hyd_prm_wet_psh_07-3-View1n.dgn
ralam

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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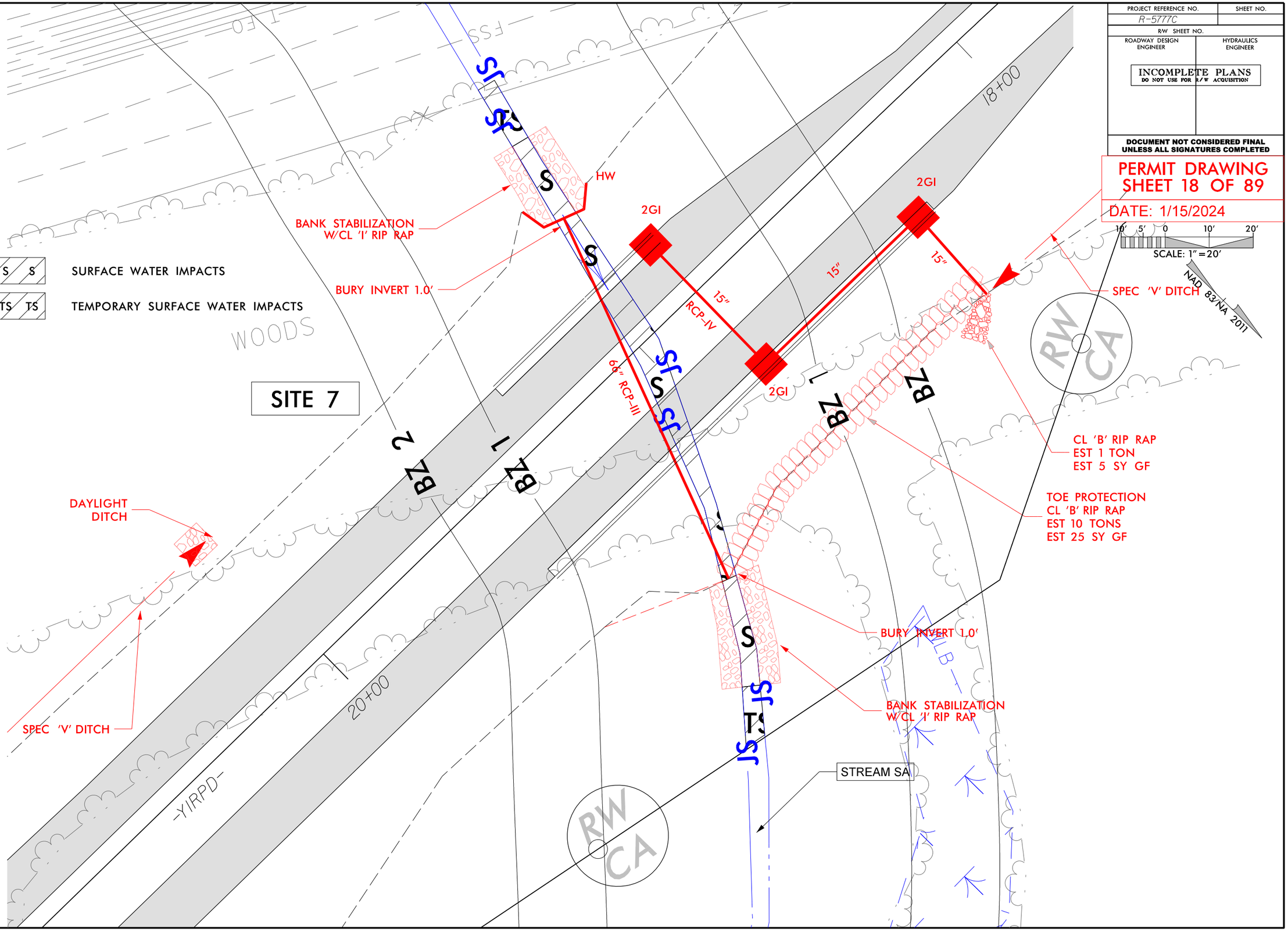
PERMIT DRAWING
SHEET 18 OF 89

DATE: 1/15/2024

SCALE: 1" = 20'

NAD 83/NA 2011



1/15/2024
R-5777C_Hyd_prm_wet_psh_07-4-View1n.dgn
belam

Submittal February 6, 2024

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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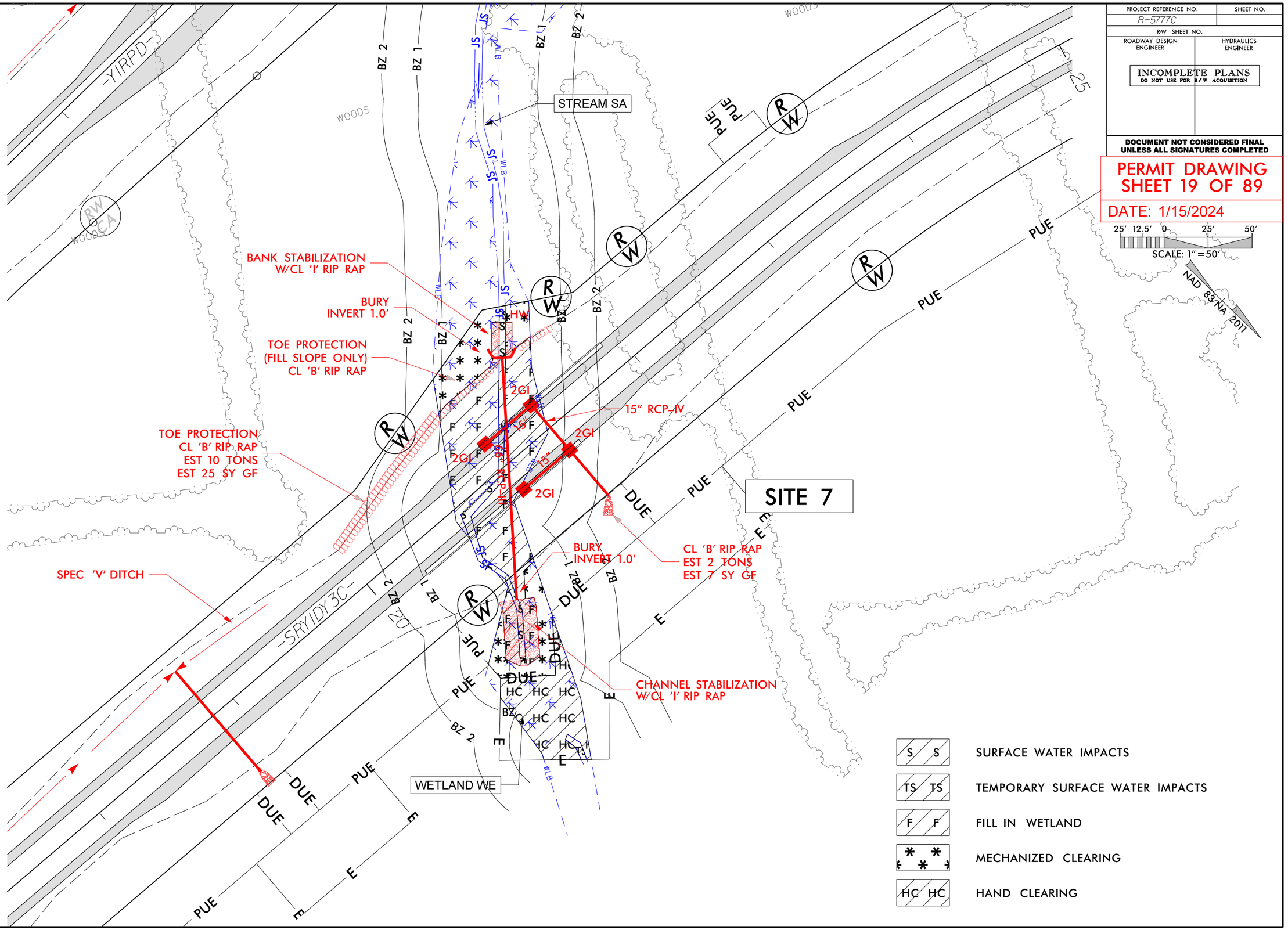
PERMIT DRAWING
SHEET 19 OF 89

DATE: 1/15/2024

25' 12.5' 0 25' 50'
SCALE: 1" = 50'

NAD 83/NA 2011



1/15/2024
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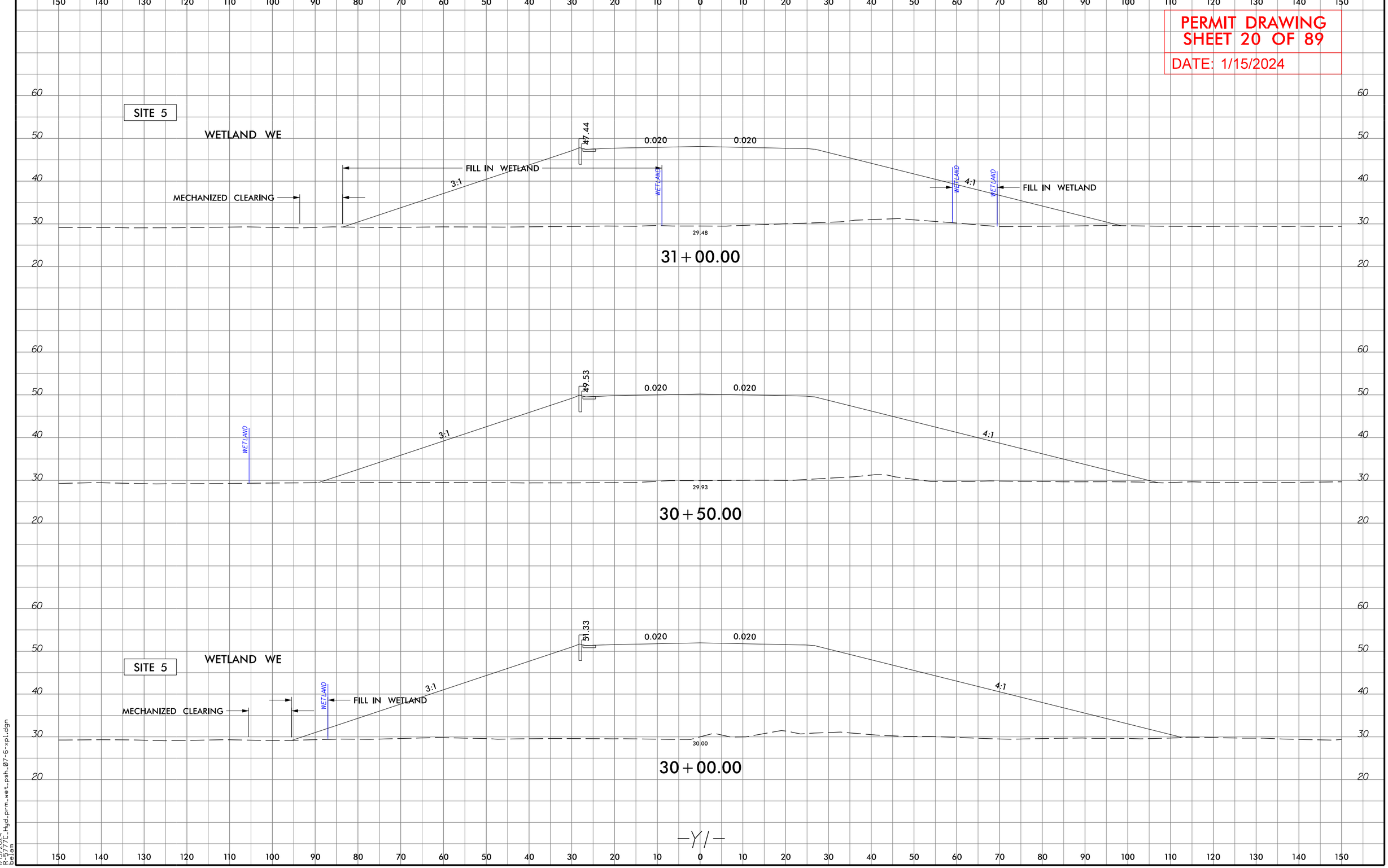
belam

Submittal February 6, 2024

PROJ. REFERENCE NO.	SHEET NO.
R-5777C	Y1-11

PERMIT DRAWING
SHEET 20 OF 89
DATE: 1/15/2024



6/23/16

1/15/2024
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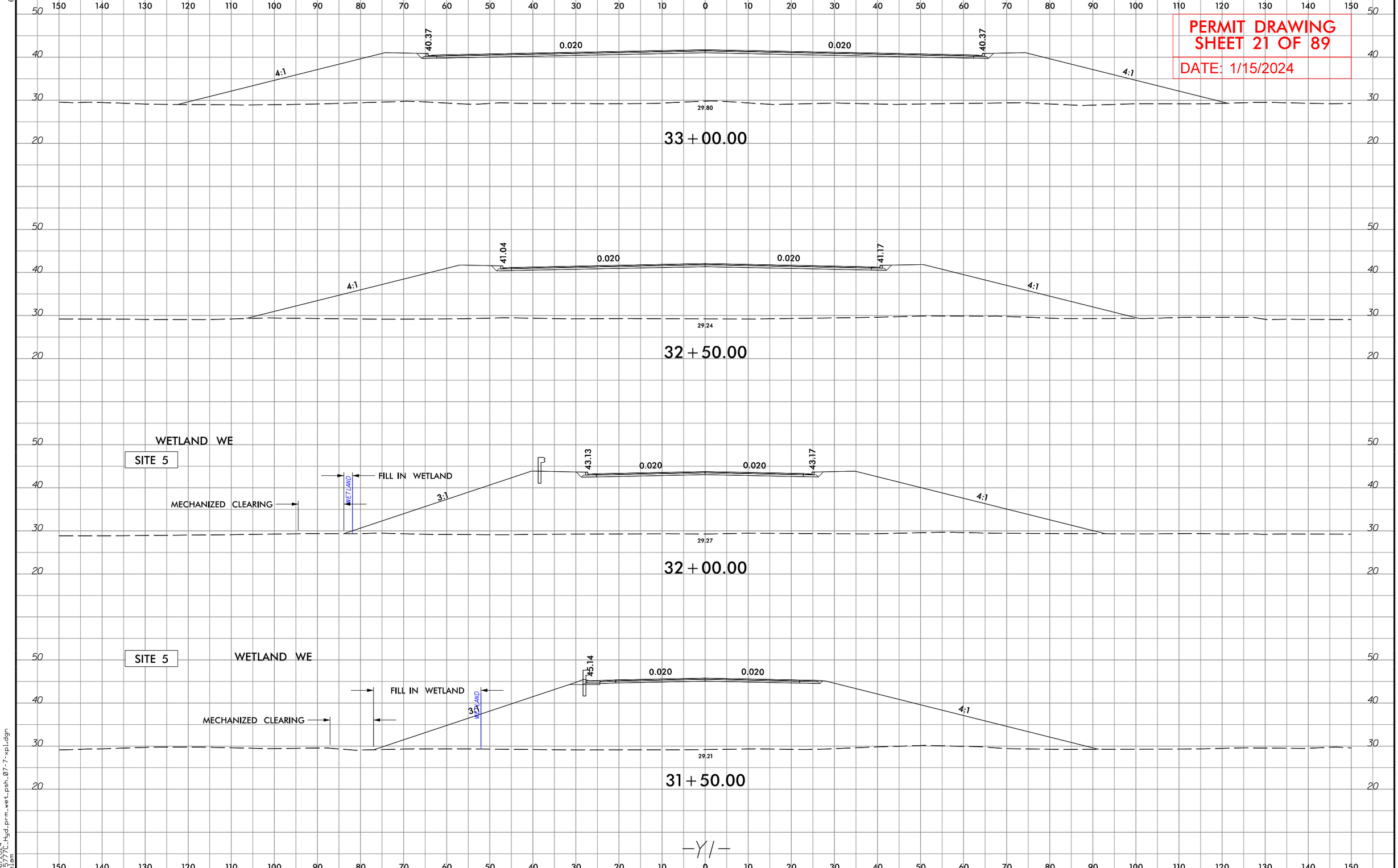
betom

Submittal February 6, 2024

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5777C	Y1-12

PERMIT DRAWING
SHEET 21 OF 89
DATE: 1/15/2024



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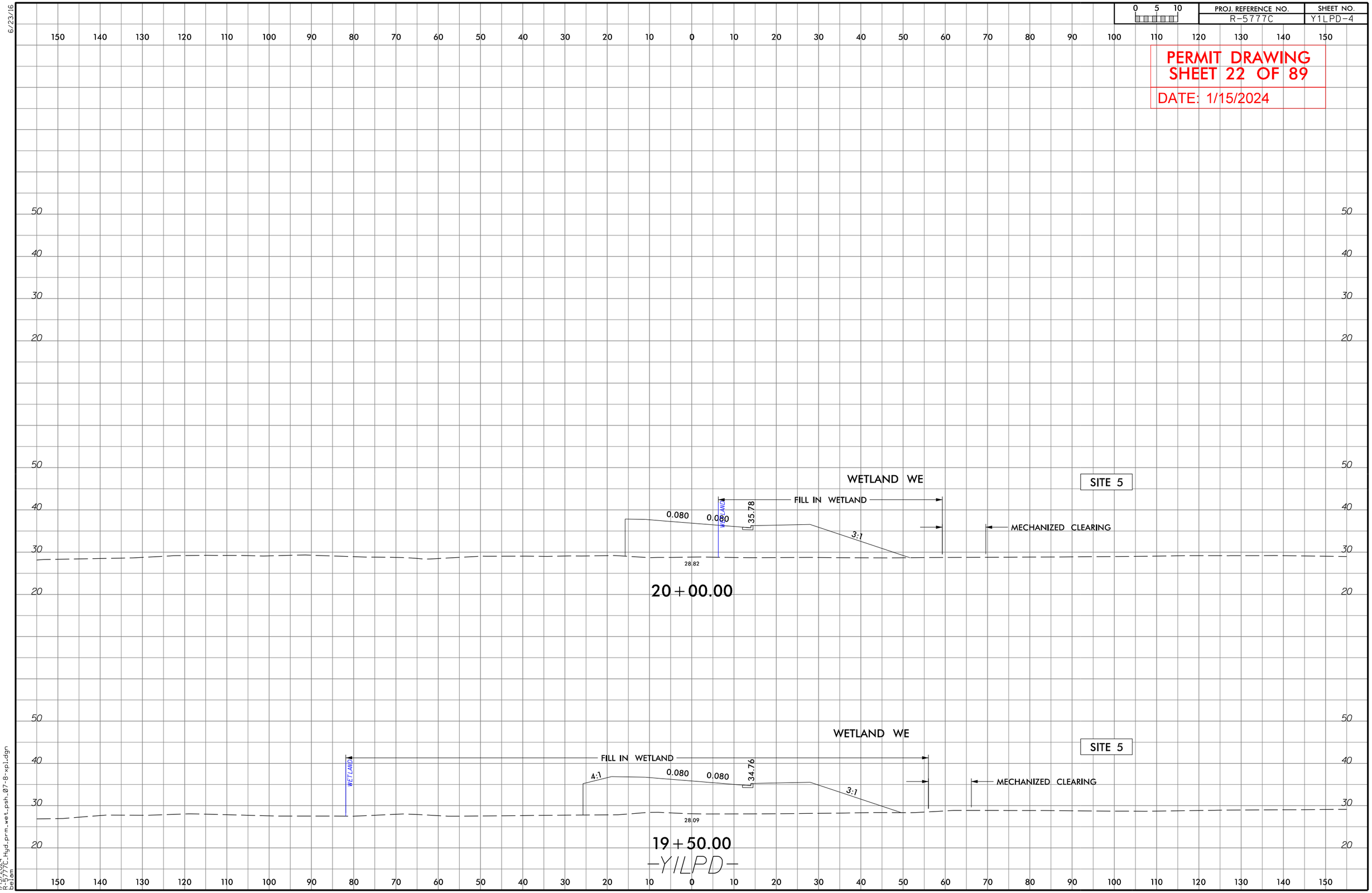
1/16/2024
R-5777C_Hyd_prm_wet_psh_07-7-xpl.dgn
belam

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-5777C	Y1LPD-4

0 5 10

PERMIT DRAWING
SHEET 22 OF 89
DATE: 1/15/2024



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belam

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5777C	Y1RPD-6

PERMIT DRAWING
SHEET 23 OF 89
DATE: 1/15/2024

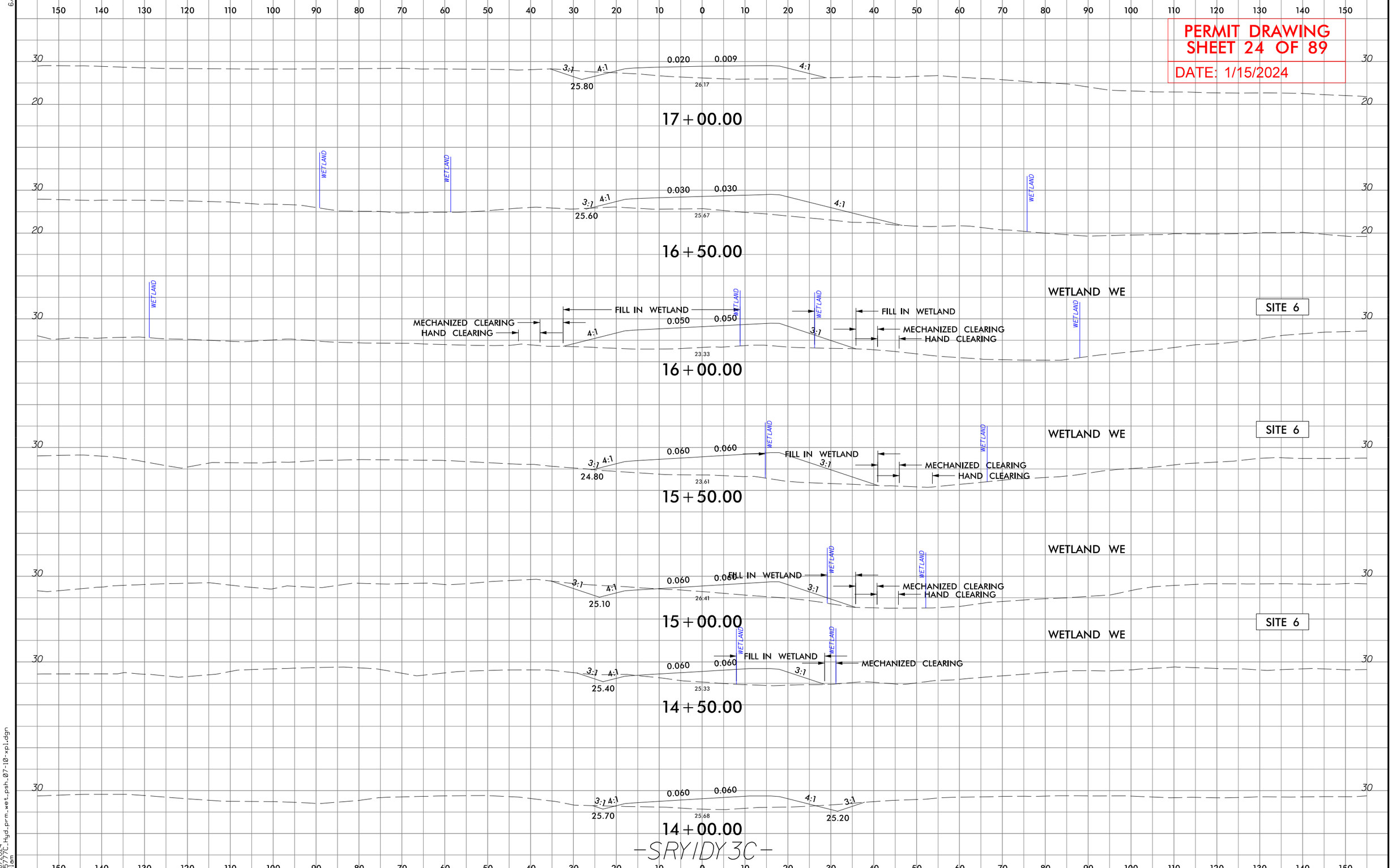
1/15/2024
R-5777C_Hyd_prm_wet_psh_07-9-xpl.dgn
belam

Submittal February 6, 2024

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5777C	$RY1DY3C-2

PERMIT DRAWING
SHEET 24 OF 89
DATE: 1/15/2024



-SRY1DY3C-

1/16/2024
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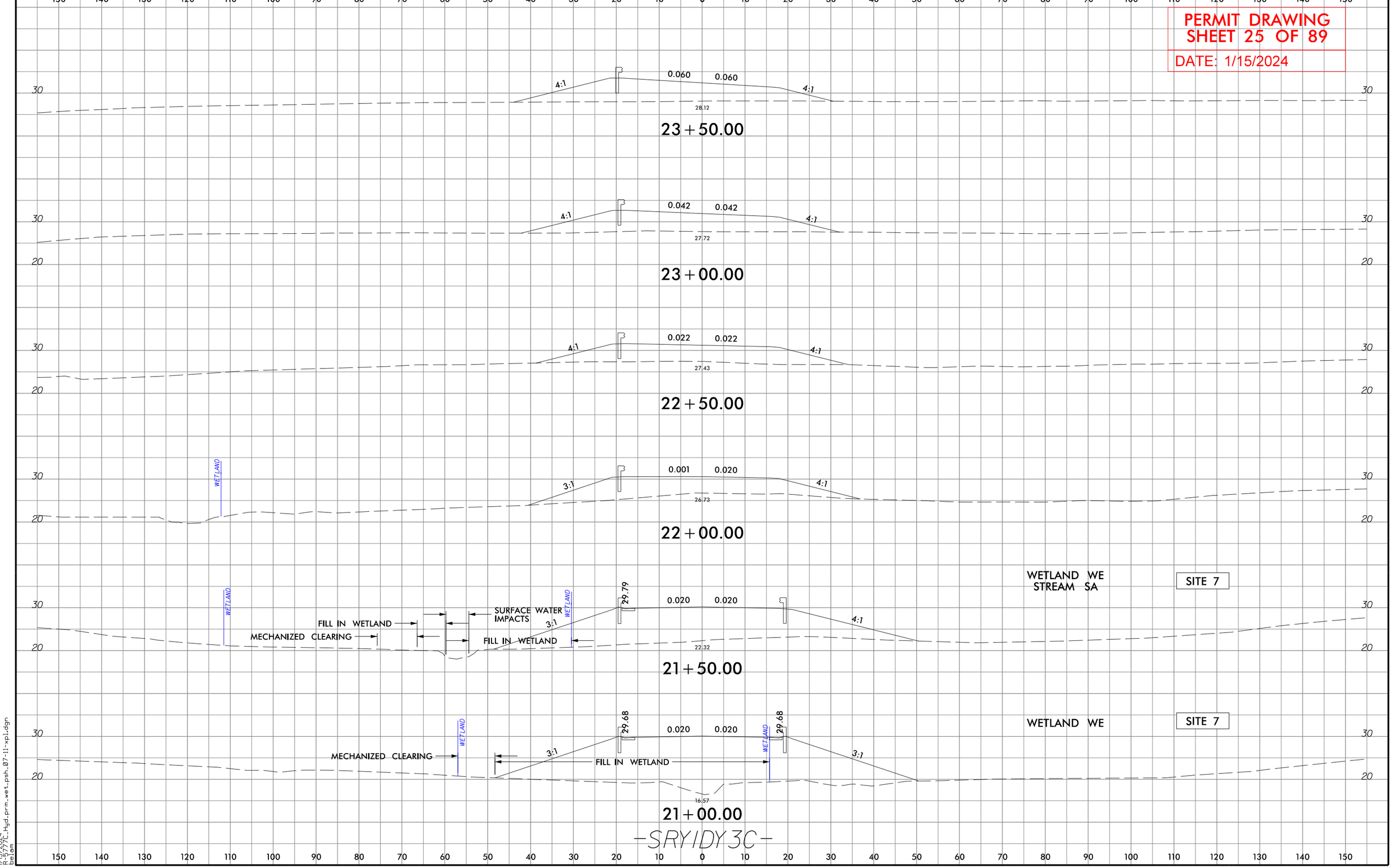
belam

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5777C	SRY1DY3C-4

PERMIT DRAWING
SHEET 25 OF 89
DATE: 1/15/2024



1/15/2024
R-5777C_Hyd_prm_wet_psh_07-11-xpl.dgn
belam

5/14/99

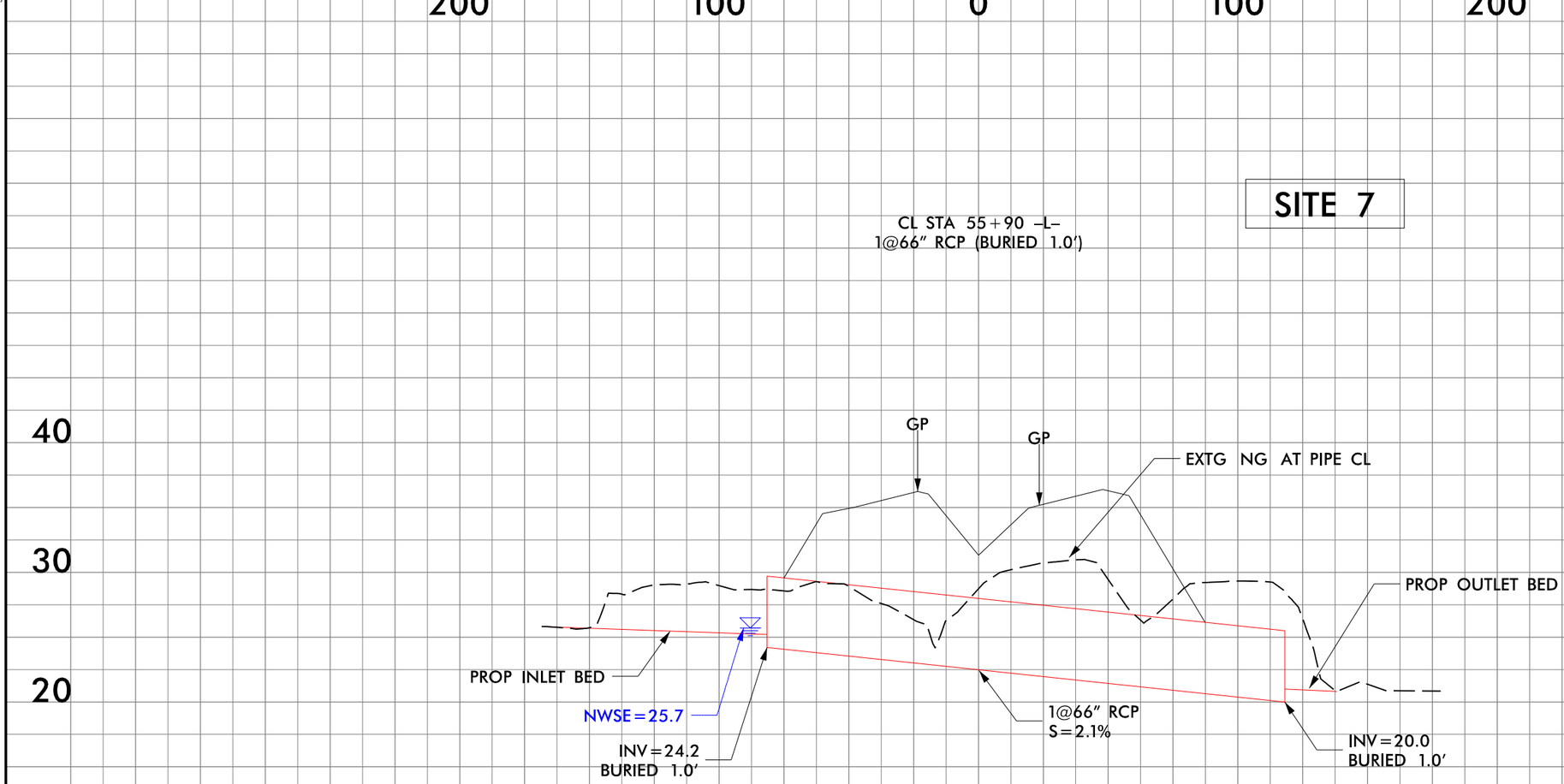
PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 26 OF 89

DATE: 1/15/2024



1/15/2024
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telgm

Submittal February 6, 2024

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

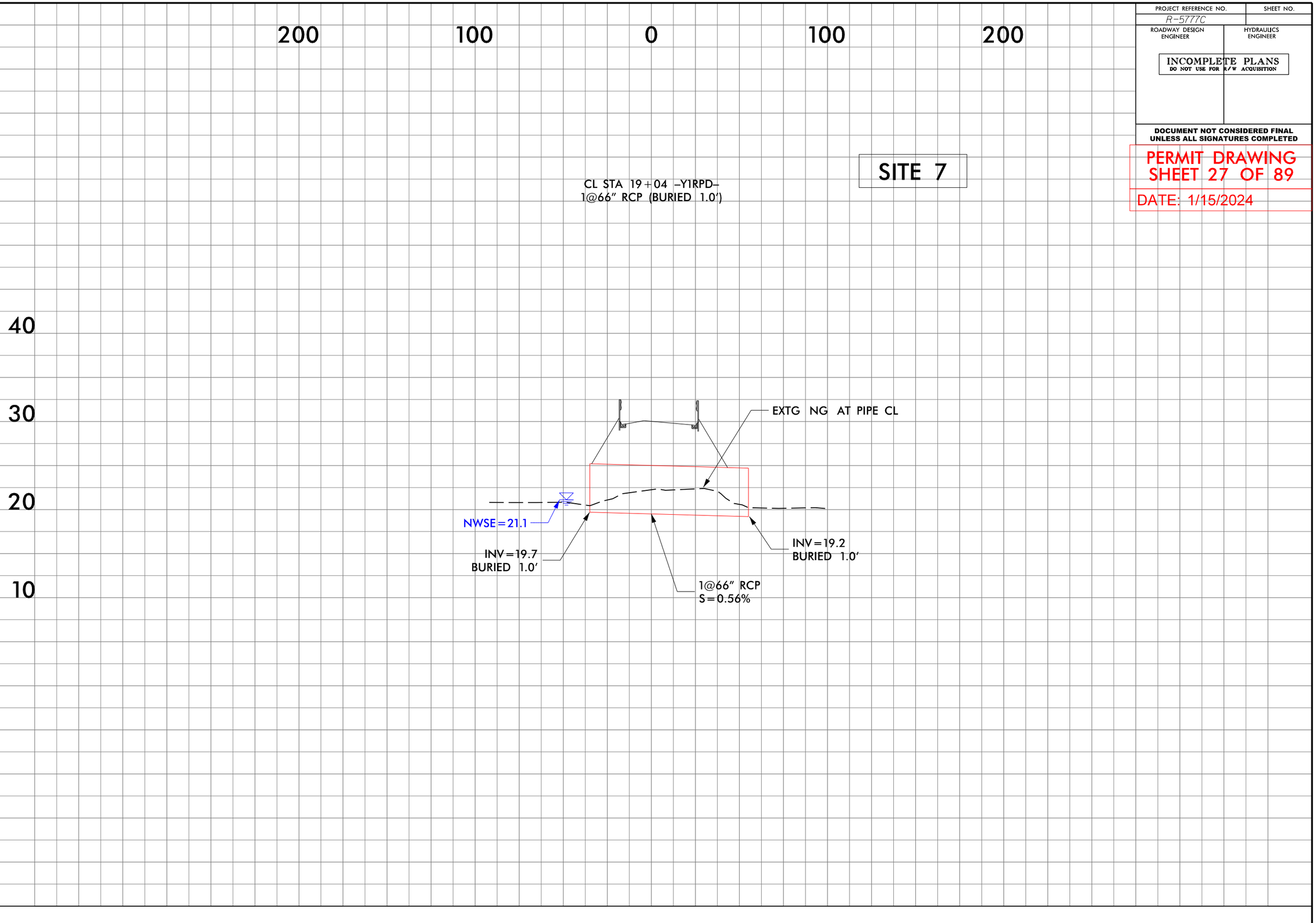
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 27 OF 89

DATE: 1/15/2024

SITE 7



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R-5777C_Hyd_prm_wet_psh_07-13-Sect.dgn
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Submittal February 6, 2024

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

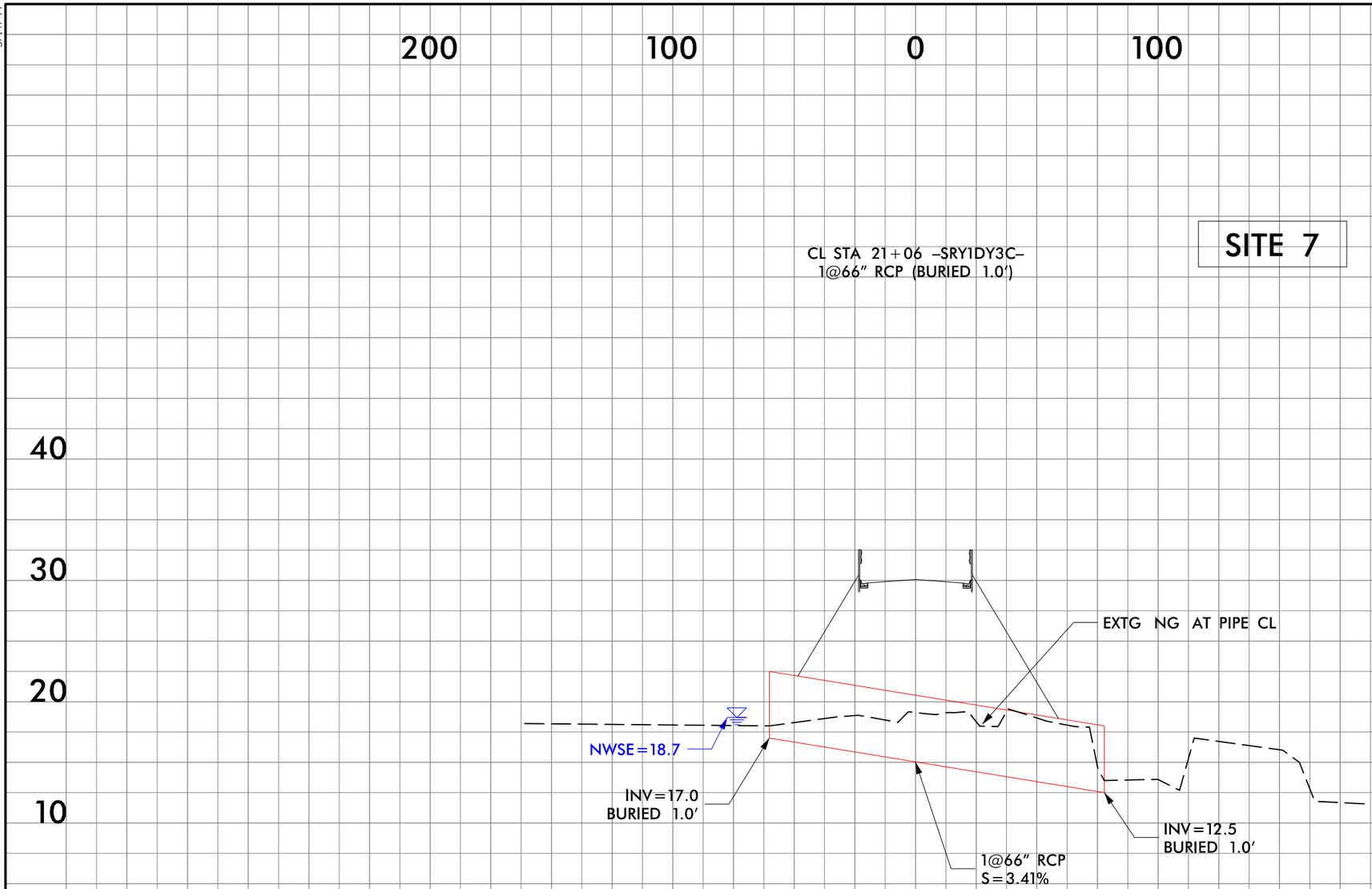
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 28 OF 89

DATE: 1/15/2024

SITE 7



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belam

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty | stv

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 29 OF 89

DATE: 1/15/2024

NAD 83/NA 2011

SCALE: 1"=100'

DETAIL 8-1
SPECIAL BASE DITCH
(Not to Scale)
Natural Ground, 3:1, D, B, 4:1 or Flatter, Front Ditch Slope
Min. D=1.5 Ft.
B=2 Ft.
FROM STA. 63+50 TO STA. 77+00 -L- RT
FROM STA. 29+00 TO STA. 42+50 -SRY1A- LT

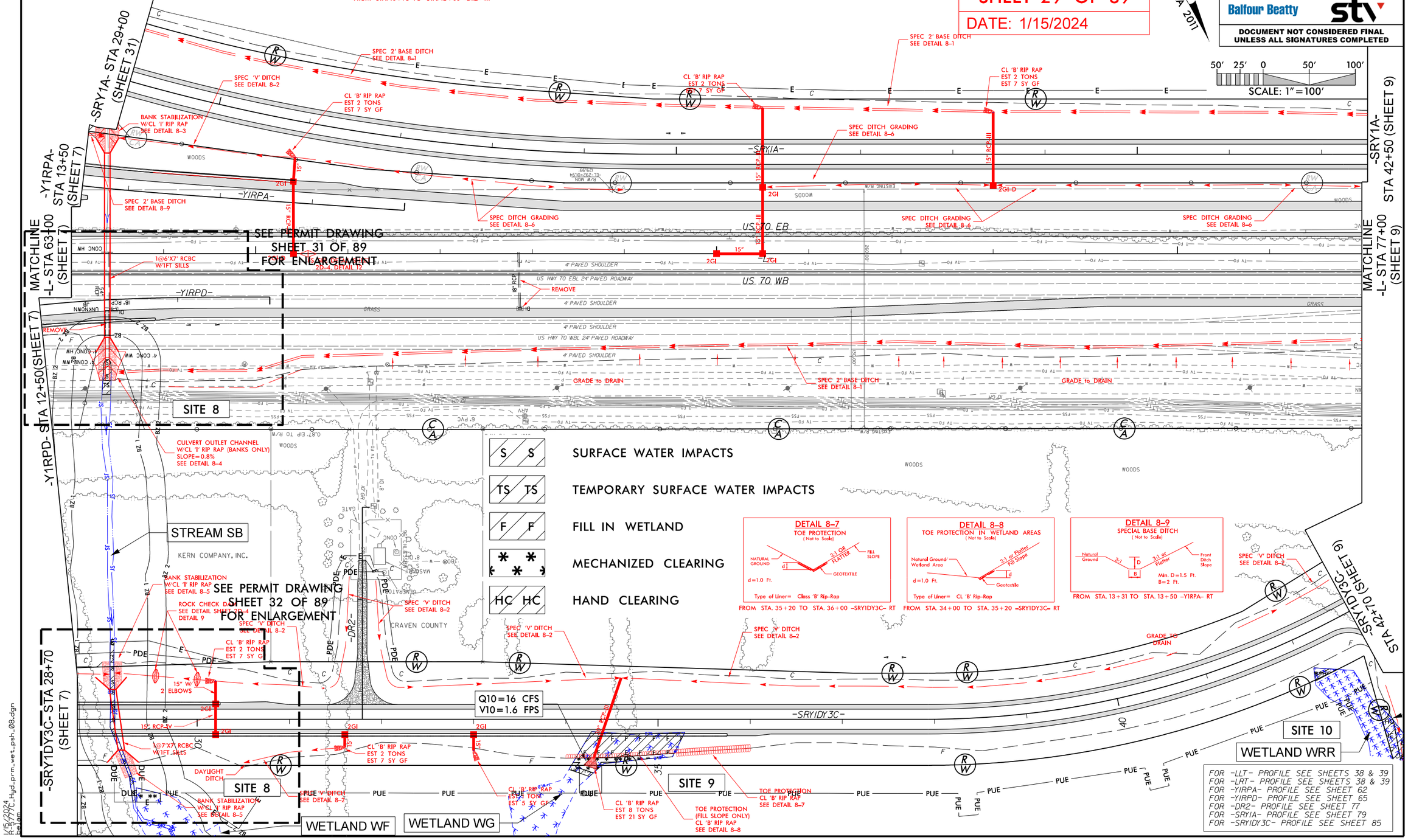
DETAIL 8-2
SPECIAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 4:1 or Flatter, Front Ditch Slope
*3:1 BEHIND GUARDRAIL
Min. D=1.5 Ft.
FROM STA. 63+45 TO STA. 66+00 -L- LT
FROM STA. 28+70 TO STA. 29+05 -SRY1DY3C- LT
FROM STA. 29+10 TO STA. 31+50 -SRY1DY3C- LT
FROM STA. 30+50 TO STA. 31+60 -SRY1DY3C- RT
FROM STA. 32+10 TO STA. 34+60 -SRY1DY3C- LT
FROM STA. 34+60 TO STA. 40+50 -SRY1DY3C- LT
FROM STA. 41+50 TO STA. 42+70 -SRY1DY3C- LT
FROM STA. 10+75 TO STA. 12+00 -DR2- LT
FROM STA. 10+75 TO STA. 12+00 -DR2- RT

DETAIL 8-3
CULVERT INLET BANK STABILIZATION
(Not to Scale)
Natural Ground, 2:1, Tuck Geotextile* a Minimum of 1ft (TYP), CHANNEL BED (Variable), Key Riprap into Channel Bottom(Typ)
Length=41 Ft.
Est. 60 Tons of Class 'I' Rip-Rap, Keyed-In to Top of Bank, Est. 24 CY DDE
Est. 105 SY Geotextile
*Place Geotextile Under Riprap in Locations Directed by Engineer
STA. 13+30 -Y1RPA- RT

DETAIL 8-4
CULVERT OUTLET CHANNEL
(Not to Scale)
Natural Ground, 3:1, D, d, B, Geotextile, Tuck Geotextile a Minimum of 1ft (TYP)
Length= 47 Ft.
Type of Liner= CL 'I' Rip-Rap - Keyed-In
Est 50 Tons, Est 85 SY Geotextile
Est 170 CY DDE
Min. D=2.5Ft.
d=2.5Ft.
B=4.0Ft.
STA. 11+78 -Y1RPD- LT

DETAIL 8-5
CULVERT INLET/OUTLET BANK STABILIZATION
(Not to Scale)
Natural Ground, Riprap, Geotextile, d*, Tuck Geotextile a Minimum of 1ft (Typ), Natural Ground, Key Riprap into Channel Bottom (Typ), CHANNEL BED (Variable), Place Geotextile Under Riprap in Locations Directed by Engineer
Each Side
Length=30 Ft.
d=2.0 - 3.0 Ft.
*Rip-Rap to be Installed to 2ft Outside Top of Ditch Slopes on Jurisdictional Streams
Est.=30 Tons of Class 'I' Rip Rap, keyed-In, Est. 68 SY Geotextile
STA. 29+10 -SRY1DY3C- LT
STA. 29+25 -SRY1DY3C- RT

DETAIL 8-6
SPECIAL DITCH GRADING
(Not to Scale)
SP, "VARIABLE", "VARIABLE", SP
*SEE CROSS SECTIONS
Min. D=1.0 Ft.
FROM STA. 66+00 TO STA. 69+00 -L- LT
FROM STA. 70+50 TO STA. 77+00 -L- LT



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R-5777C_Hyd_prm_wet_psh_08.dgn

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty | stv

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 30 OF 89
DATE: 1/15/2024

NAD 83/NA 2011

SCALE: 1" = 100'

DETAIL 8-1
SPECIAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, B, 4:1 or Flatter, Front Ditch Slope
Min. D=1.5 Ft.
B=2 Ft.

FROM STA. 63+50 TO STA. 77+00 –L– RT
FROM STA. 29+00 TO STA. 42+50 –SRY1A– LT

DETAIL 8-2
SPECIAL 'V' DITCH
(Not to Scale)

Natural Ground, 3:1, D, 4:1 or Flatter, Front Ditch Slope
*3:1 BEHIND GUARDRAIL
Min. D=1.5 Ft.

FROM STA. 63+45 TO STA. 66+00 –L– LT
FROM STA. 28+70 TO STA. 29+05 –SRY1DY3C– LT
FROM STA. 29+10 TO STA. 31+50 –SRY1DY3C– LT
FROM STA. 30+50 TO STA. 31+60 –SRY1DY3C– RT
FROM STA. 32+10 TO STA. 34+60 –SRY1DY3C– LT
FROM STA. 34+60 TO STA. 40+50 –SRY1DY3C– LT
FROM STA. 41+50 TO STA. 42+70 –SRY1DY3C– LT
FROM STA. 10+75 TO STA. 12+00 –DR2– LT
FROM STA. 10+75 TO STA. 12+00 –DR2– RT

DETAIL 8-3
CULVERT INLET BANK STABILIZATION
(Not to Scale)

Natural Ground, 2:1, Natural Ground, Tuck Geotextile* a Minimum of 1ft (TYP), CHANNEL BED (Variable), Key Riprap into Channel Bottom(Typ)
Length=41 Ft.
Est. 60 Tons of Class 'I' Rip-Rap, Keyed-In to Top of Bank, Est. 24 CY DDE
Est. 105 SY Geotextile
*Place Geotextile Under Riprap in Locations Directed by Engineer

STA. 13+30 –Y1RPA– RT

DETAIL 8-4
CULVERT OUTLET CHANNEL
(Not to Scale)

Natural Ground, 3:1, D, 3:1, Natural Ground, d, Geotextile, B, Tuck Geotextile a Minimum of 1ft (TYP)
Length= 47 Ft.
Type of Liner= CL 'I' Rip-Rap – Keyed-In
Est 50 Tons, Est 85 SY Geotextile
Est 170 CY DDE
Min. D=2.5Ft.
d=2.5Ft.
B=4.0Ft.

STA. 11+78 –Y1RPD– LT

DETAIL 8-5
CULVERT INLET/OUTLET BANK STABILIZATION
(Not to Scale)

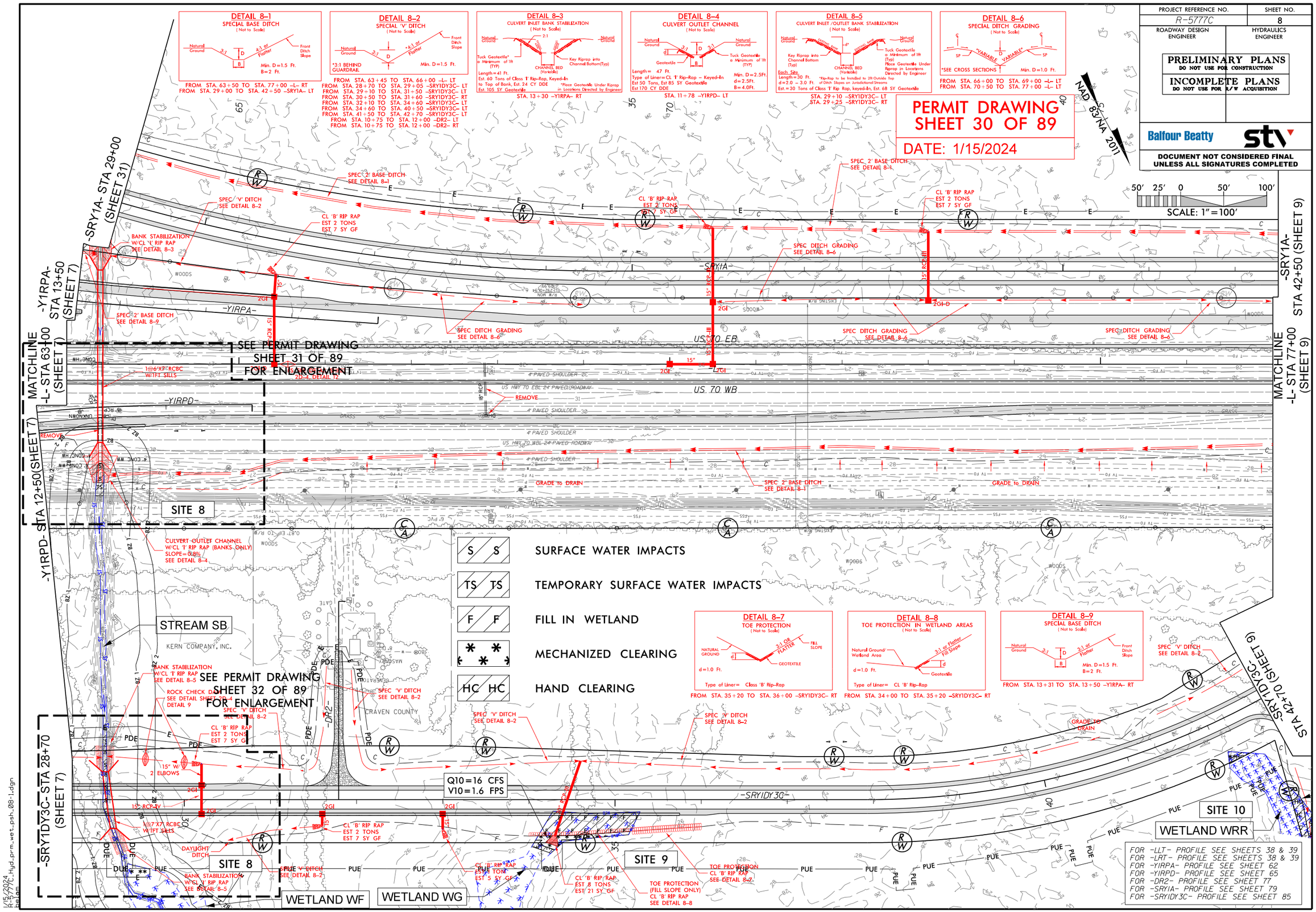
Natural Ground, Natural Ground, d*, Natural Ground, Key Riprap into Channel Bottom (Typ), CHANNEL BED (Variable), Tuck Geotextile a Minimum of 1ft (Typ), Place Geotextile Under Riprap in Locations Directed by Engineer
Each Site:
Length=30 Ft.
d=2.0 – 3.0 Ft.
Est.=30 Tons of Class 'I' Rip Rap, keyed-In, Est. 68 SY Geotextile
*Rip-Rap to be Installed to 2ft Outside Top of Ditch Slopes on Jurisdictional Streams

STA. 29+10 –SRY1DY3C– LT
STA. 29+25 –SRY1DY3C– RT

DETAIL 8-6
SPECIAL DITCH GRADING
(Not to Scale)

SP, "VARIABLE", "VARIABLE", SP
*SEE CROSS SECTIONS
Min. D=1.0 Ft.

FROM STA. 66+00 TO STA. 69+00 –L– LT
FROM STA. 70+50 TO STA. 77+00 –L– LT



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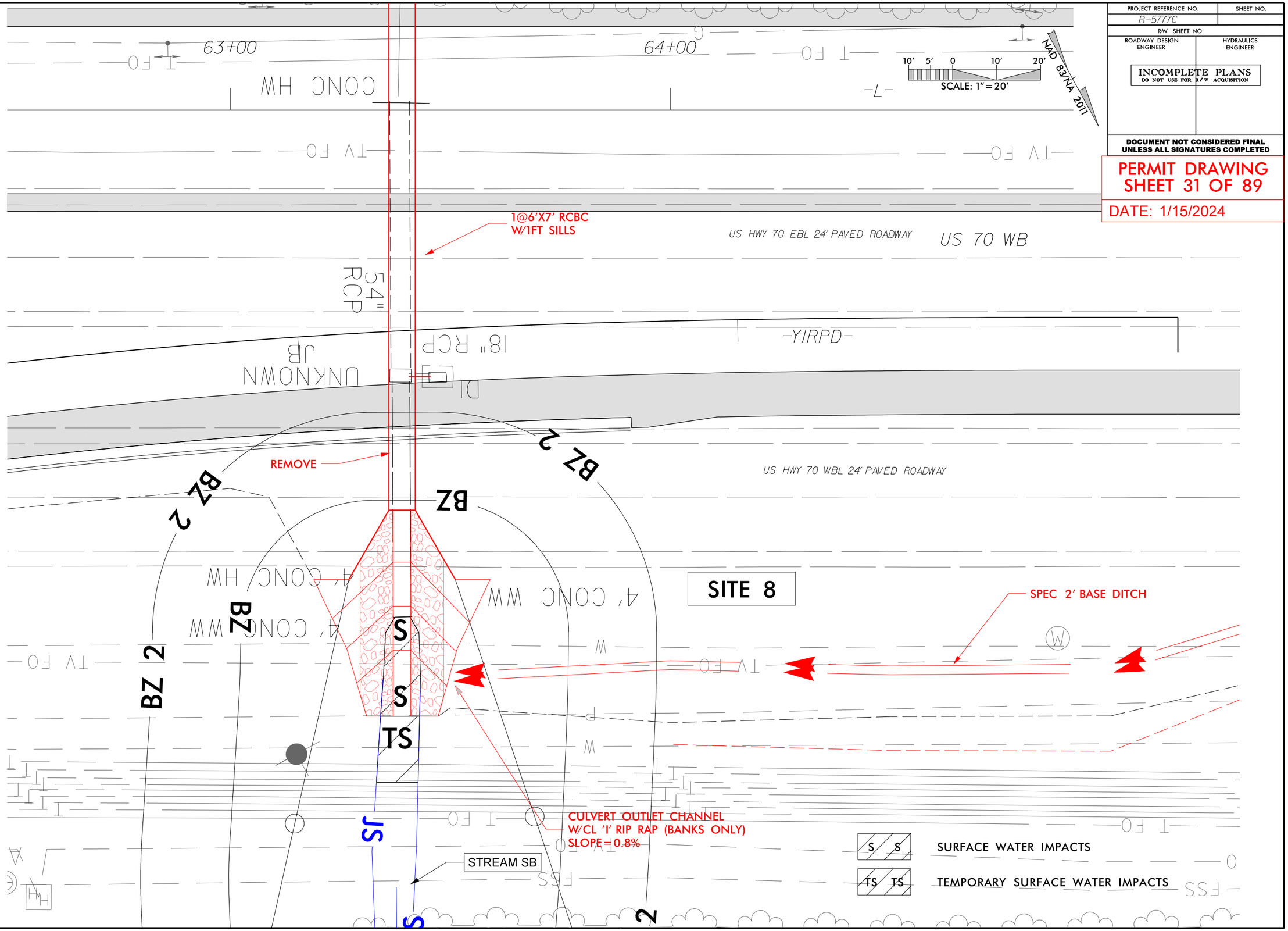
PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

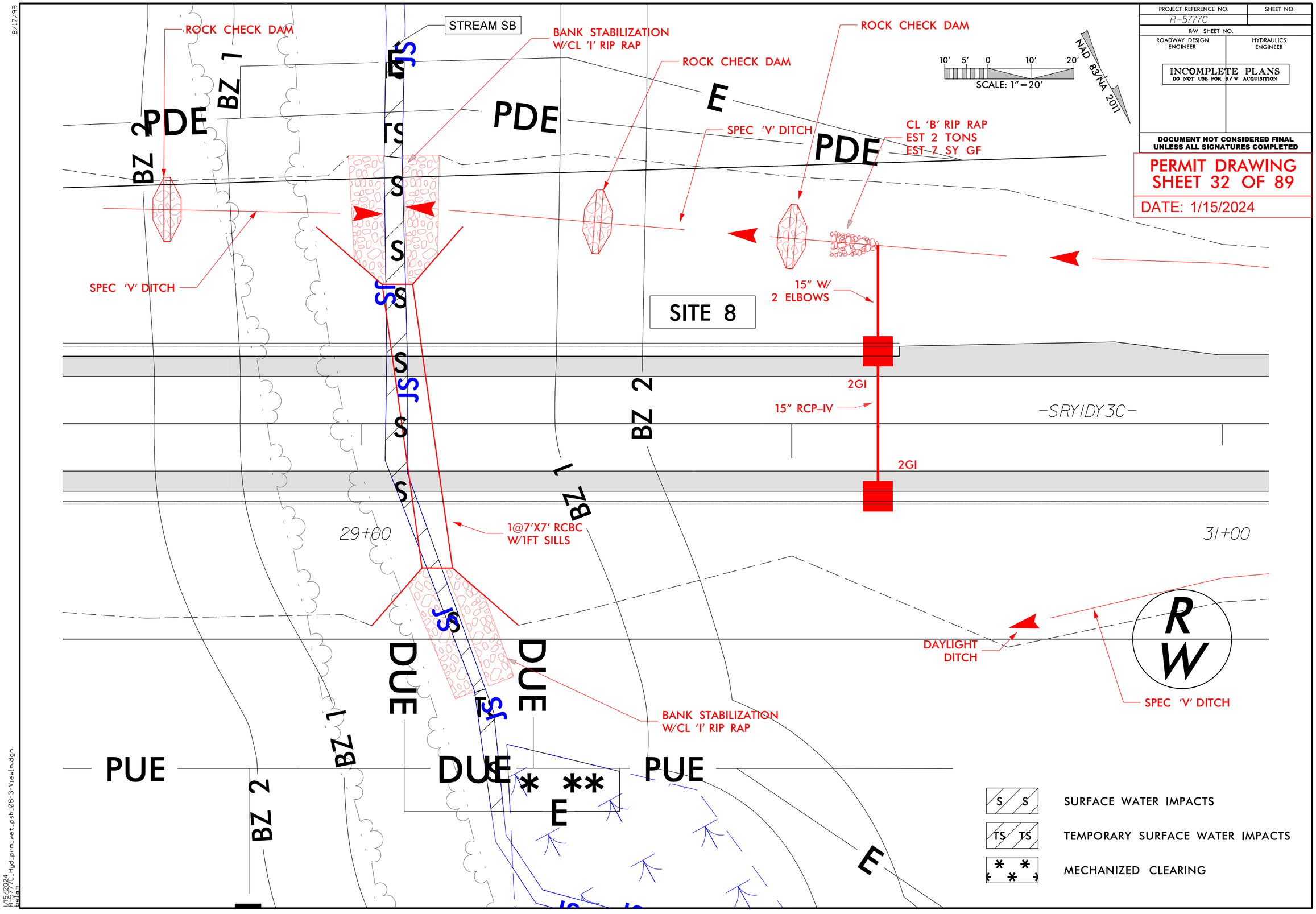
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 31 OF 89

DATE: 1/15/2024



1/15/2024
R-5777C_Hyd_prm_wet_psh_08-2-View1.dgn
belam


PROJECT REFERENCE NO.
R-5777C
SHEET NO.
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
PERMIT DRAWING
SHEET 32 OF 89
DATE: 1/15/2024
SCALE: 1"=20'
NAD 83/NA 2011
ROCK CHECK DAM
STREAM SB
BANK STABILIZATION W/CL 'I' RIP RAP
ROCK CHECK DAM
ROCK CHECK DAM
SPEC 'V' DITCH
CL 'B' RIP RAP
EST 2 TONS
EST 7 SY GF
SPEC 'V' DITCH
15" W/ 2 ELBOWS
SITE 8
2GI
15" RCP-IV
2GI
-SRYIDY3C-
1@7'X7' RCBC W/1FT SILLS
29+00
31+00
DAYLIGHT DITCH
SPEC 'V' DITCH
BANK STABILIZATION W/CL 'I' RIP RAP
PDE
PDE
PDE
PUE
PUE
DUE
DUE
BZ 1
BZ 2
BZ 1
BZ 2
BZ 1
BZ 2
E
E
E
R/W
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
MECHANIZED CLEARING

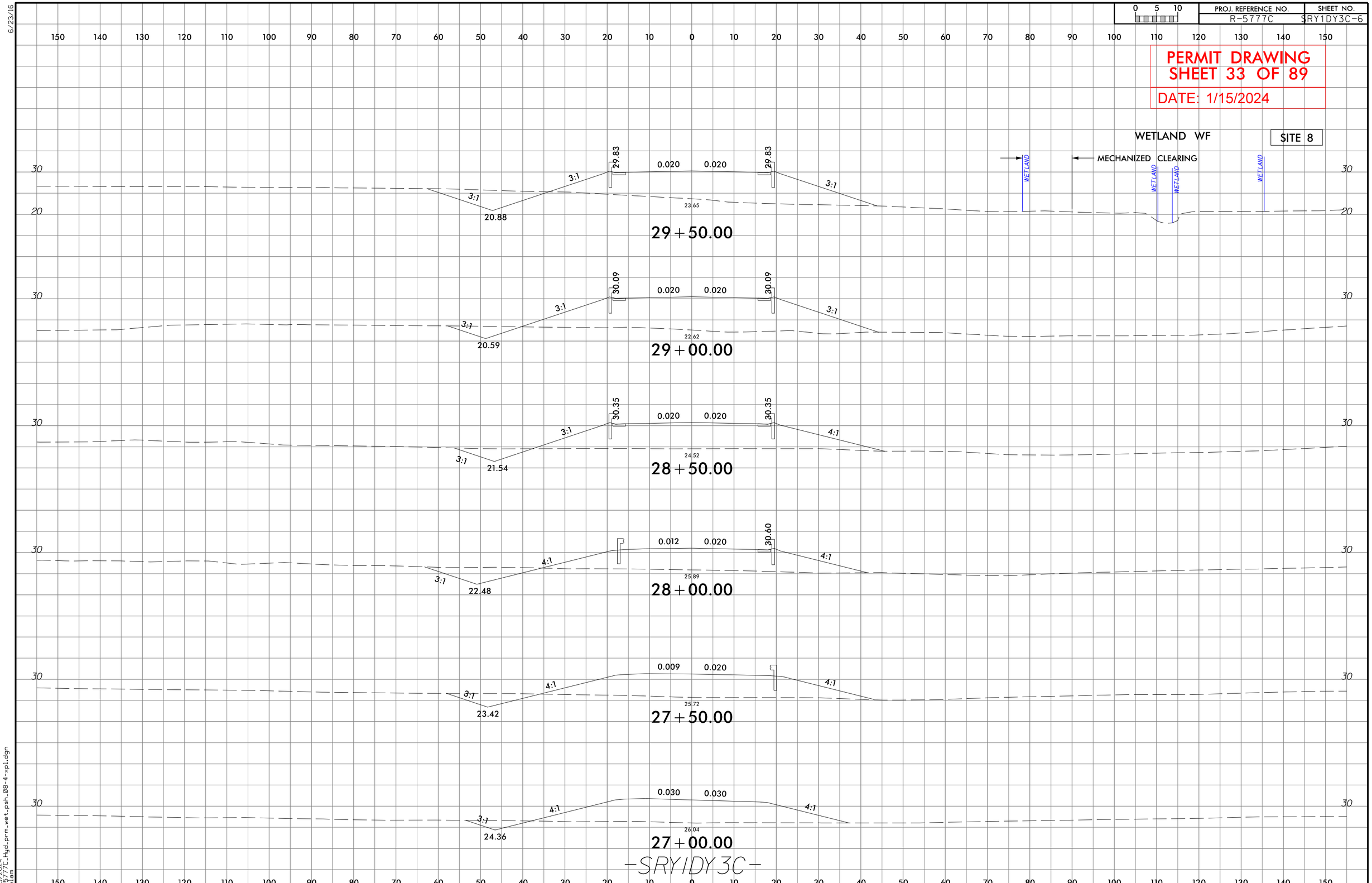
Submittal February 6, 2024

PROJ. REFERENCE NO.	SHEET NO.
R-5777C	SRY1DY3C-6

PERMIT DRAWING
SHEET 33 OF 89
DATE: 1/15/2024

WETLAND WF

SITE 8



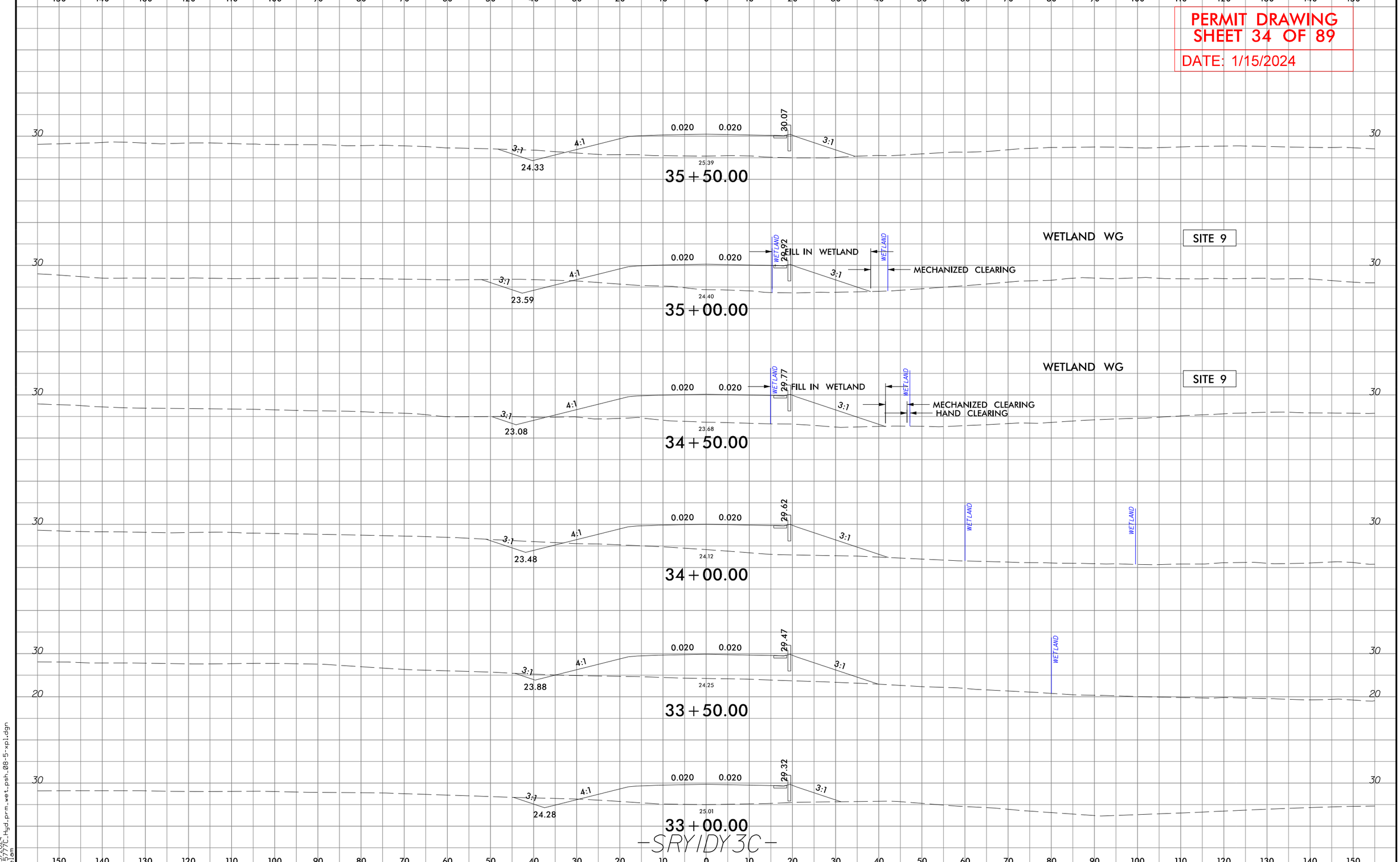
6/23/16

1/15/2024
R-5777C_Hyd_prm_wet_psh_08-4-xpl.dgn
belam

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5777C	SRY1DY3C-8

PERMIT DRAWING
SHEET 34 OF 89
DATE: 1/15/2024



-SRY1DY3C-

1/15/2024
R-5777C_Hyd_prm_wet_psh_08-5-xpl.dgn
belam

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

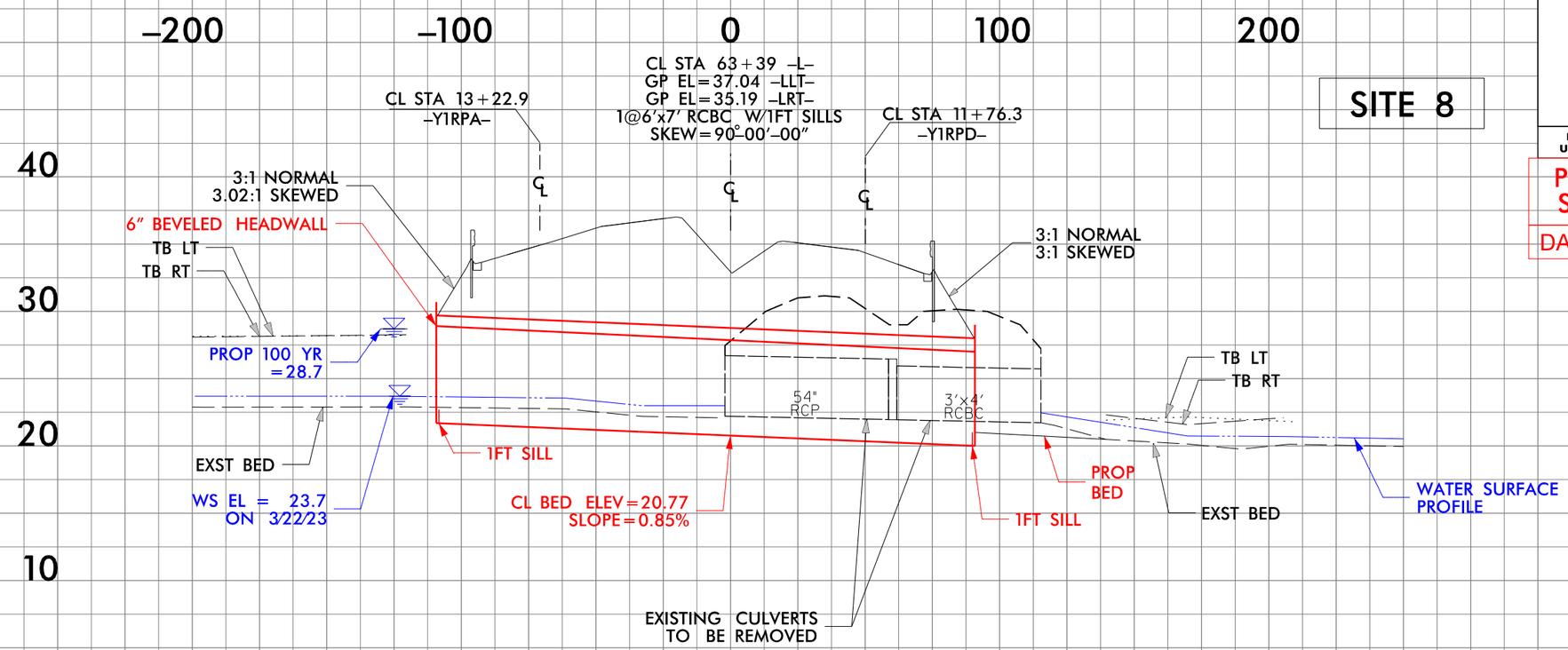
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 35 OF 89

DATE: 1/15/2024

SITE 8



DETAIL
(NOT TO SCALE)

SINGLE BARREL CULVERT W/SILLS

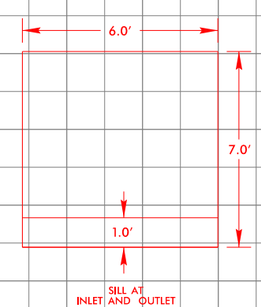
*NOTES:

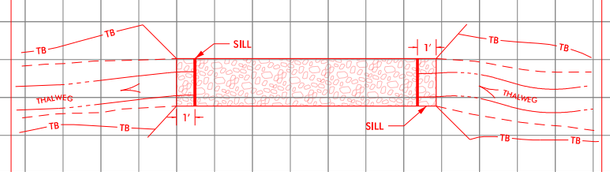
1) NATIVE MATERIAL BETWEEN SILLS IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW-FLOW CHANNEL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT THE PROJECT SITE DURING CONSTRUCTION. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

2) SILLS ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

3) DO NOT SET ELEVATION OF SILL ABOVE BANK FULL.

4) NUMBER OF SILLS DETERMINED BY THE ENGINEER.

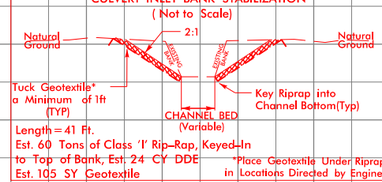




PLAN VIEW

9/13

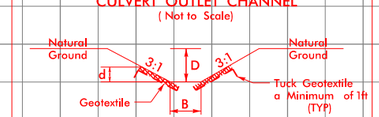
DETAIL
CULVERT INLET BANK STABILIZATION
(Not to Scale)



Length = 41 Ft.
Est. 60 Tons of Class 'I' Rip-Rap, Keyed-In to Top of Bank, Est. 24 CY DDE
Est. 105 SY Geotextile

*Place Geotextile Under Riprap in Locations Directed by Engineer

DETAIL
CULVERT OUTLET CHANNEL
(Not to Scale)



Length = 47 Ft.
Type of Liner = CL 'I' Rip-Rap - Keyed-In
Est 50 Tons, Est 85 SY Geotextile
Est 170 CY DDE

Min. D = 2.5Ft.
d = 2.5Ft.
B = 4.0Ft.

1/15/2024
R-5777C_Hyd_prm_wet_psh_08-6-Sect.dgn
Detail

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

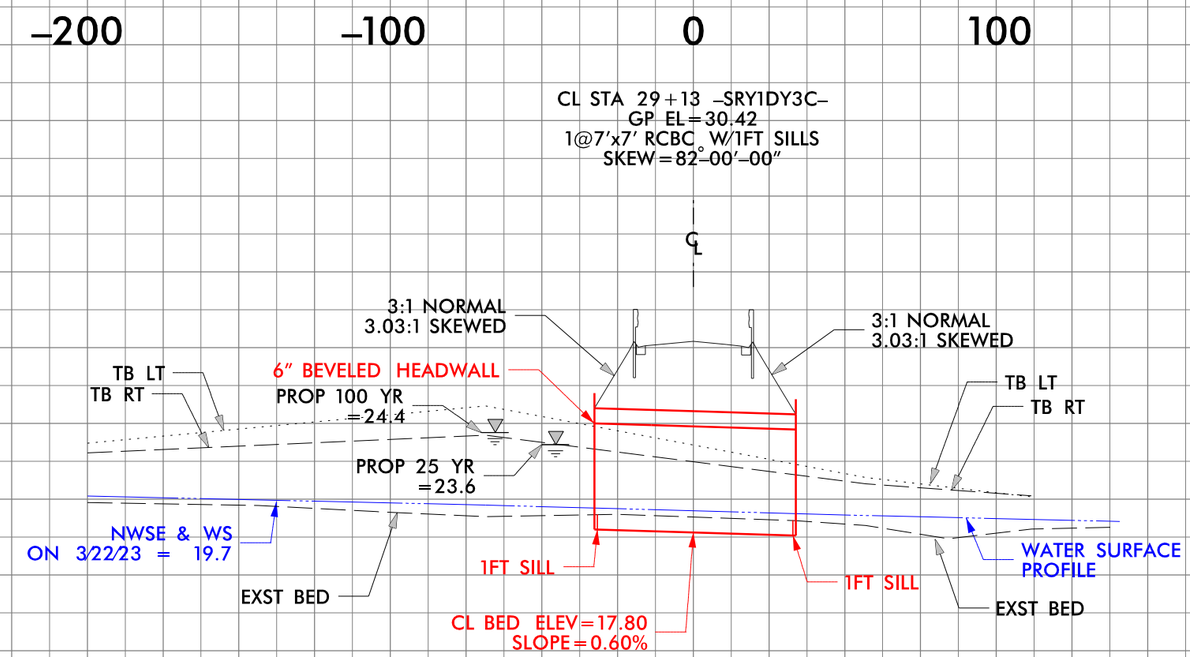
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 36 OF 89

DATE: 1/15/2024

SITE 8



DETAIL
(NOT TO SCALE)

SINGLE BARREL CULVERT W/SILLS

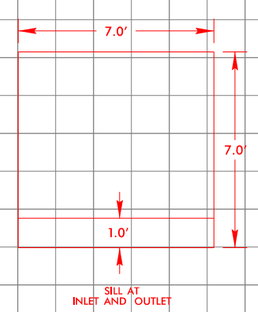
*NOTES:

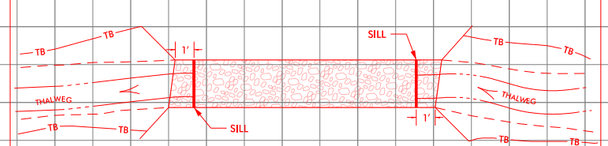
1) NATIVE MATERIAL BETWEEN SILLS IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT THE PROJECT SITE DURING CONSTRUCTION. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

2) SILLS ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

3) DO NOT SET ELEVATION OF SILL ABOVE BANK FULL.

4) NUMBER OF SILLS DETERMINED BY THE ENGINEER.

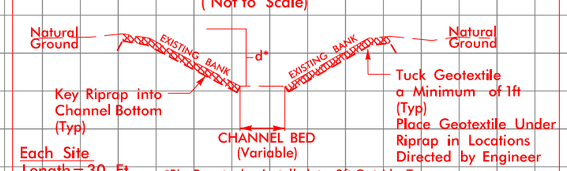




PLAN VIEW

9-13

DETAIL
CULVERT INLET /OUTLET BANK STABILIZATION
(Not to Scale)



Each Site
Length=30 Ft.
d=2.0 - 3.0 Ft.
*Rip-Rap to be Installed to 2ft Outside Top of Ditch Slopes on Jurisdictional Streams
Est.=30 Tons of Class 'I' Rip Rap, keyed-In, Est. 68 SY Geotextile

5/14/99

1/15/2024
R-5777C_Hyd_prm_wet_psh_08-7-Sect.dgn
pelan

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

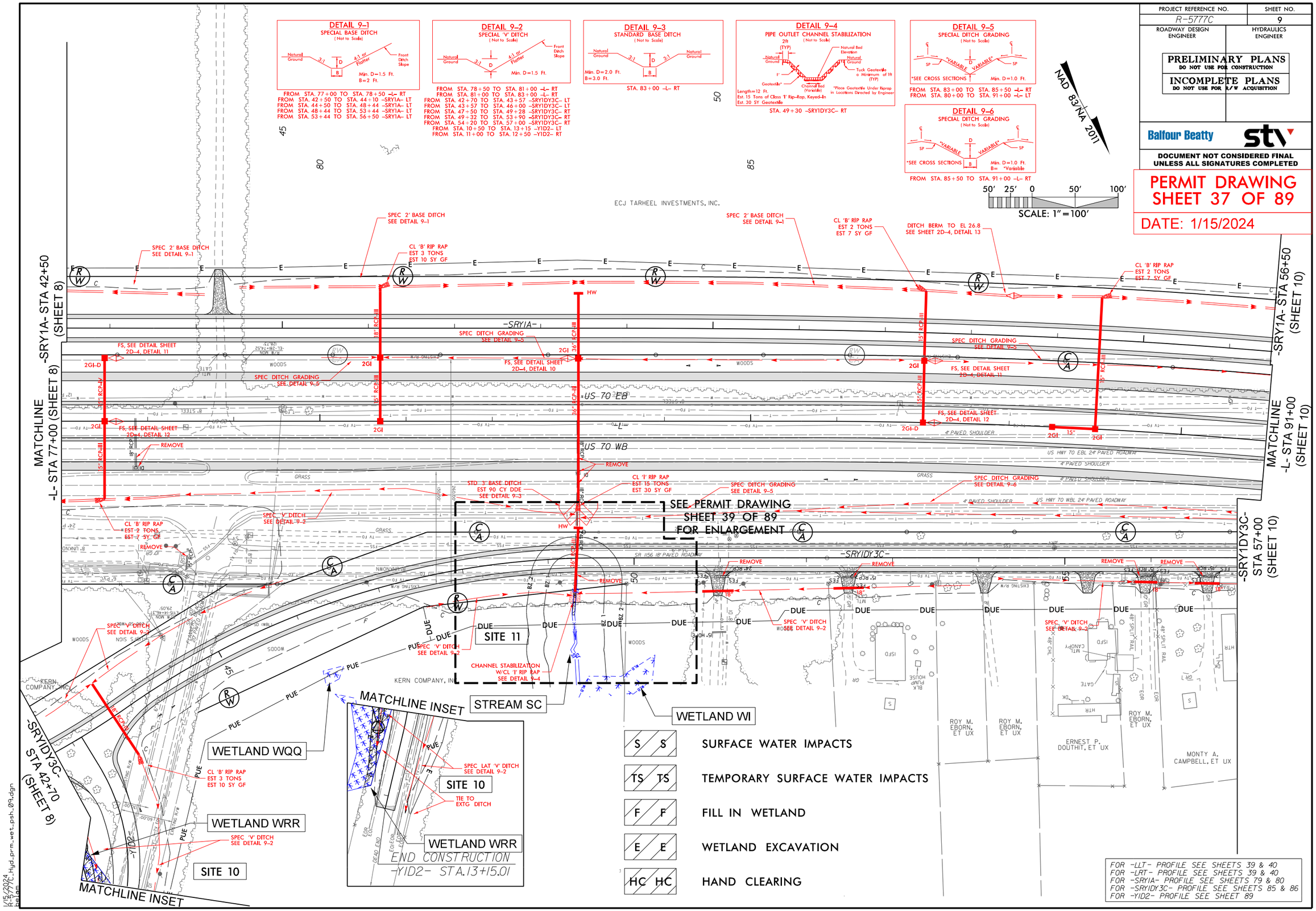
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty stv

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 37 OF 89

DATE: 1/15/2024



Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

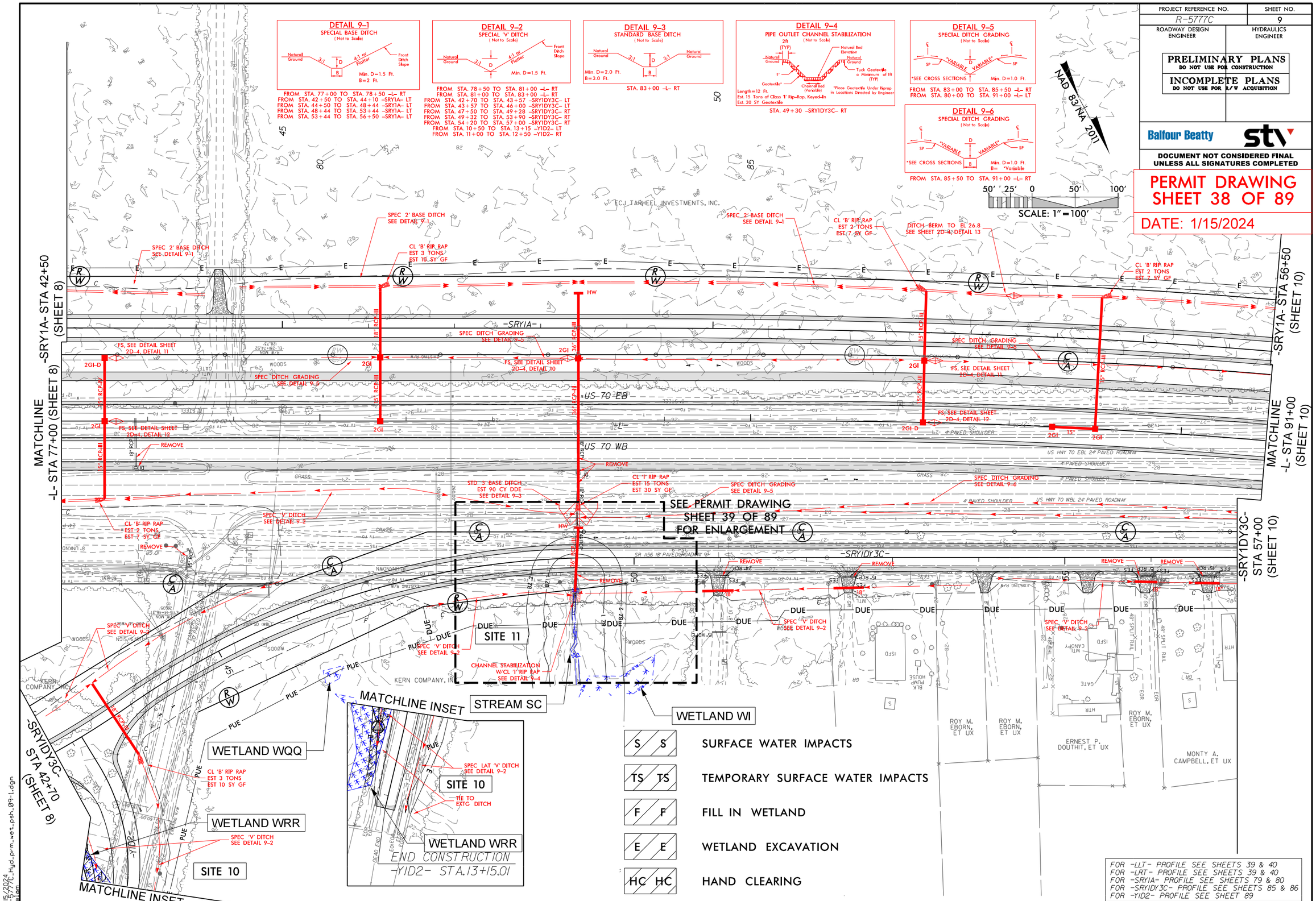
Balfour Beatty

stv

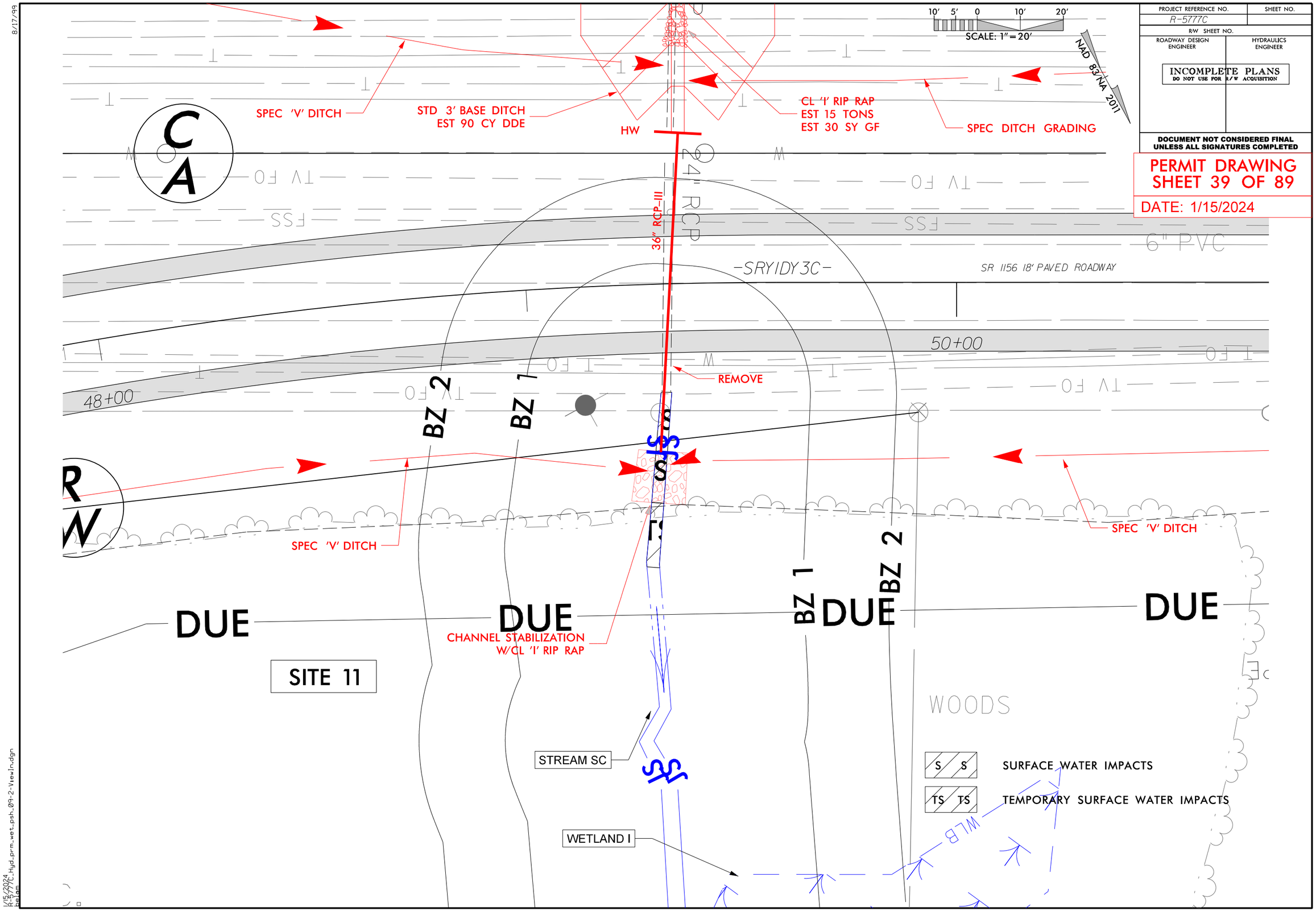
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 38 OF 89

DATE: 1/15/2024



1/15/2024
R-5777C_Hyd_prm_wet_psh_09-1.dgn
Bolam

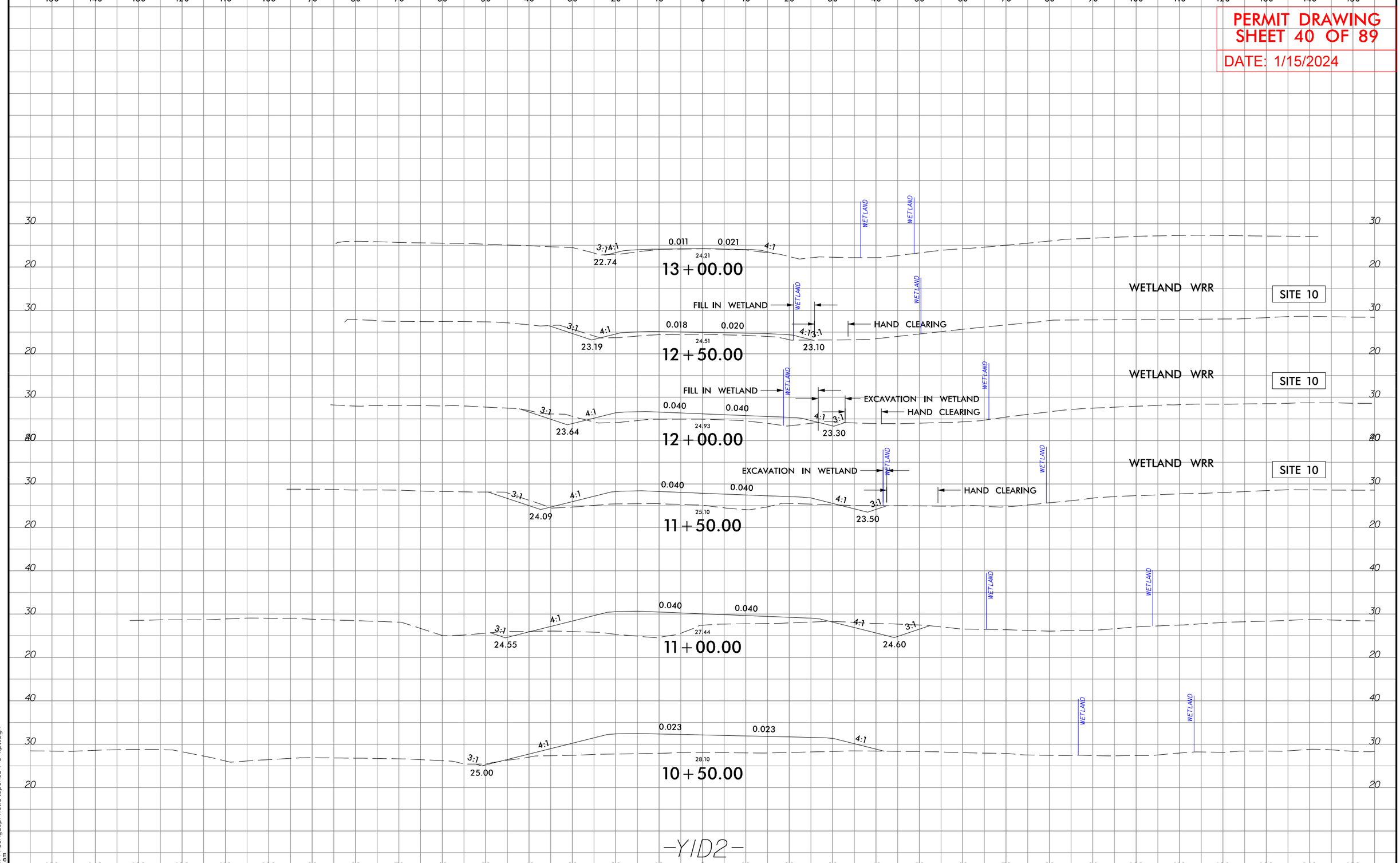

8/17/99
10' 5' 0 10' 20'
SCALE: 1" = 20'
NAD 83/NA 2011
PROJECT REFERENCE NO.
R-5777C
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING
SHEET 39 OF 89
DATE: 1/15/2024
SPEC 'V' DITCH
STD 3' BASE DITCH
EST 90 CY DDE
HW
CL 'I' RIP RAP
EST 15 TONS
EST 30 SY GF
SPEC DITCH GRADING
24" RCP
36" RCP-III
6" PVC
-SRYIDY3C-
SR 1156 18' PAVED ROADWAY
50+00
48+00
REMOVE
BZ 2
BZ 1
SPEC 'V' DITCH
SPEC 'V' DITCH
DUE
DUE
DUE
DUE
CHANNEL STABILIZATION
W/CL 'I' RIP RAP
SITE 11
WOODS
STREAM SC
WETLAND I
WLB
S S SURFACE WATER IMPACTS
TS TS TEMPORARY SURFACE WATER IMPACTS
1/15/2024
R-5777C_Hyd_prm_wet_psh_09-2-View1n.dgn
Reform

Submittal February 6, 2024

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-5777C	Y1D2-1

PERMIT DRAWING
SHEET 40 OF 89
DATE: 1/15/2024



1/15/2024
R-5777C_Hyd_prm_wet_psh_09-3-xpl.dgn
belsm

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty | stv

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 41 OF 89

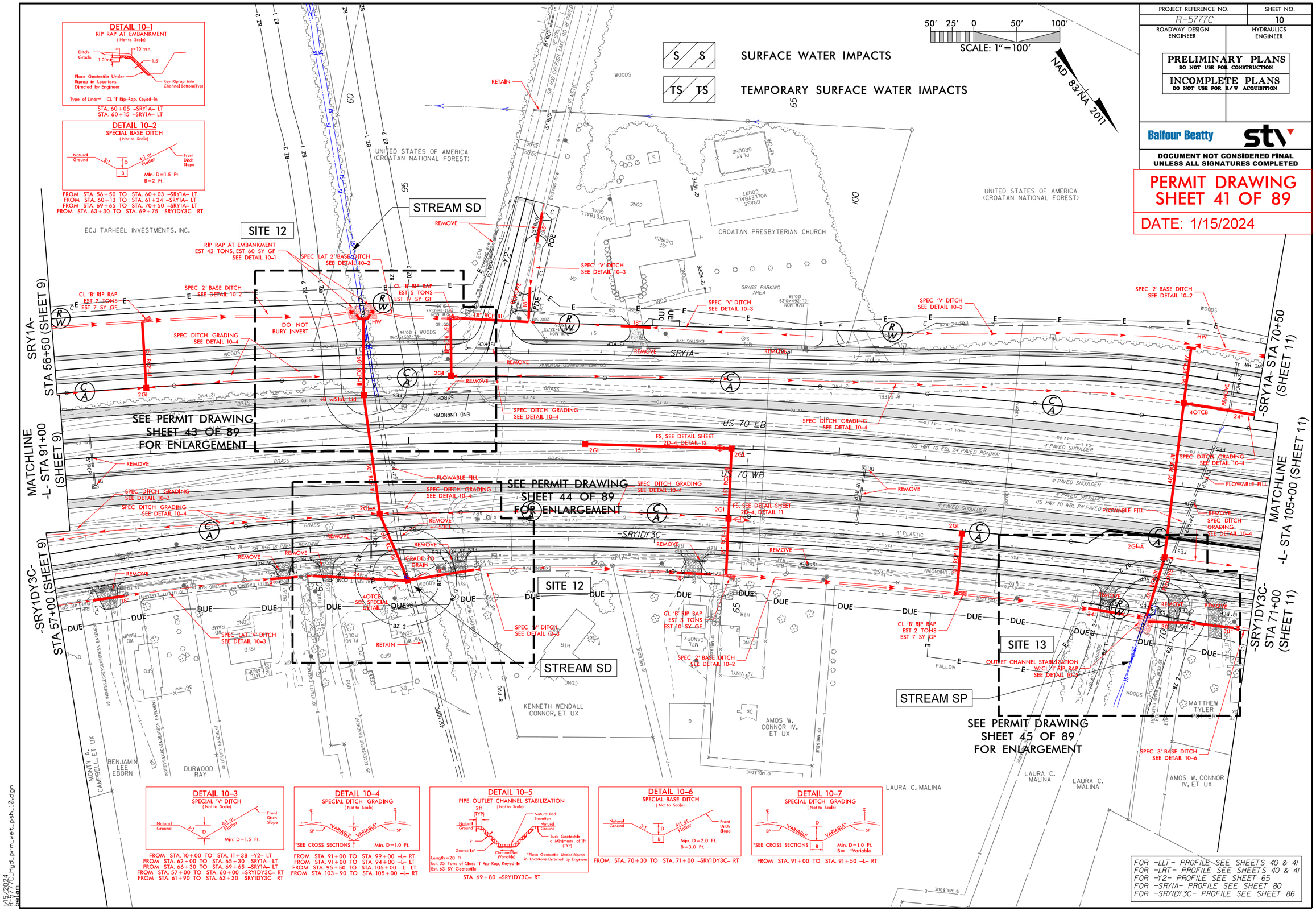
DATE: 1/15/2024

SCALE: 1"=100'

NAD 83/NA 2011

S S SURFACE WATER IMPACTS

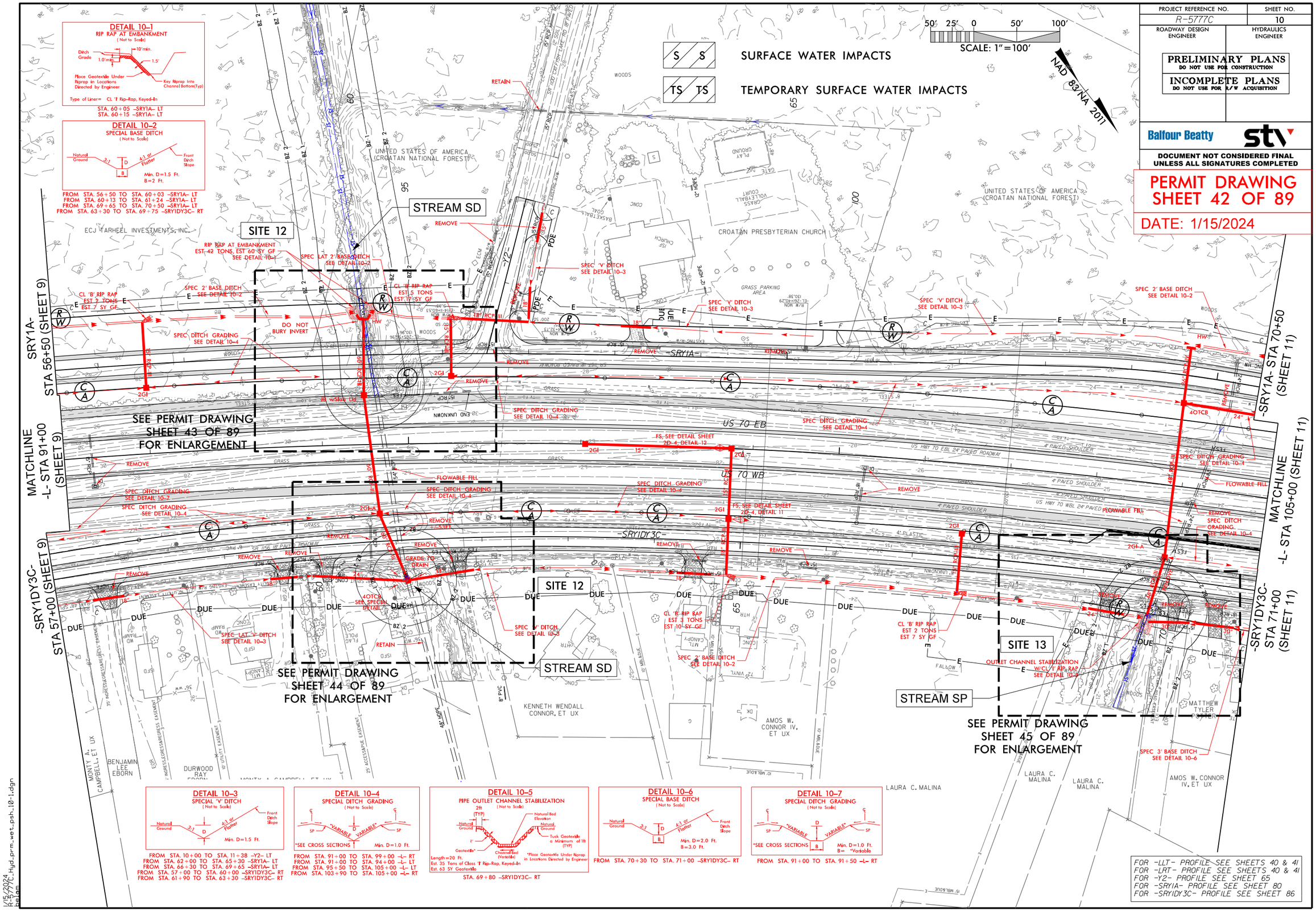
TS TS TEMPORARY SURFACE WATER IMPACTS



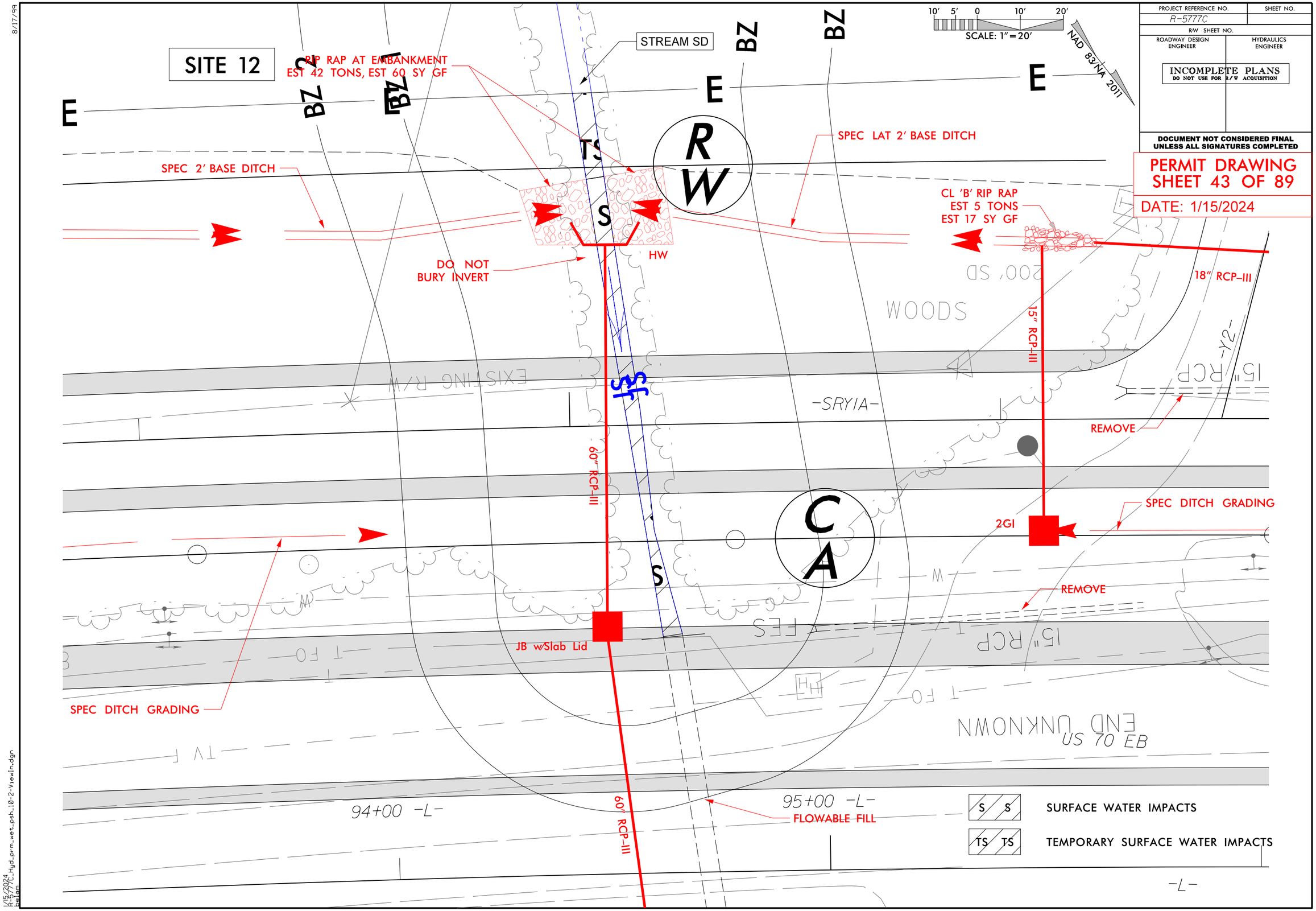
FOR -LLT- PROFILE SEE SHEETS 40 & 41
FOR -LRT- PROFILE SEE SHEETS 40 & 41
FOR -Y2- PROFILE SEE SHEET 65
FOR -SRY1A- PROFILE SEE SHEET 80
FOR -SRY1DY3C- PROFILE SEE SHEET 86

1/15/2024
R-5777C_Hyd_prm_wet_psh_10.dgn
Balgam

Submittal February 6, 2024

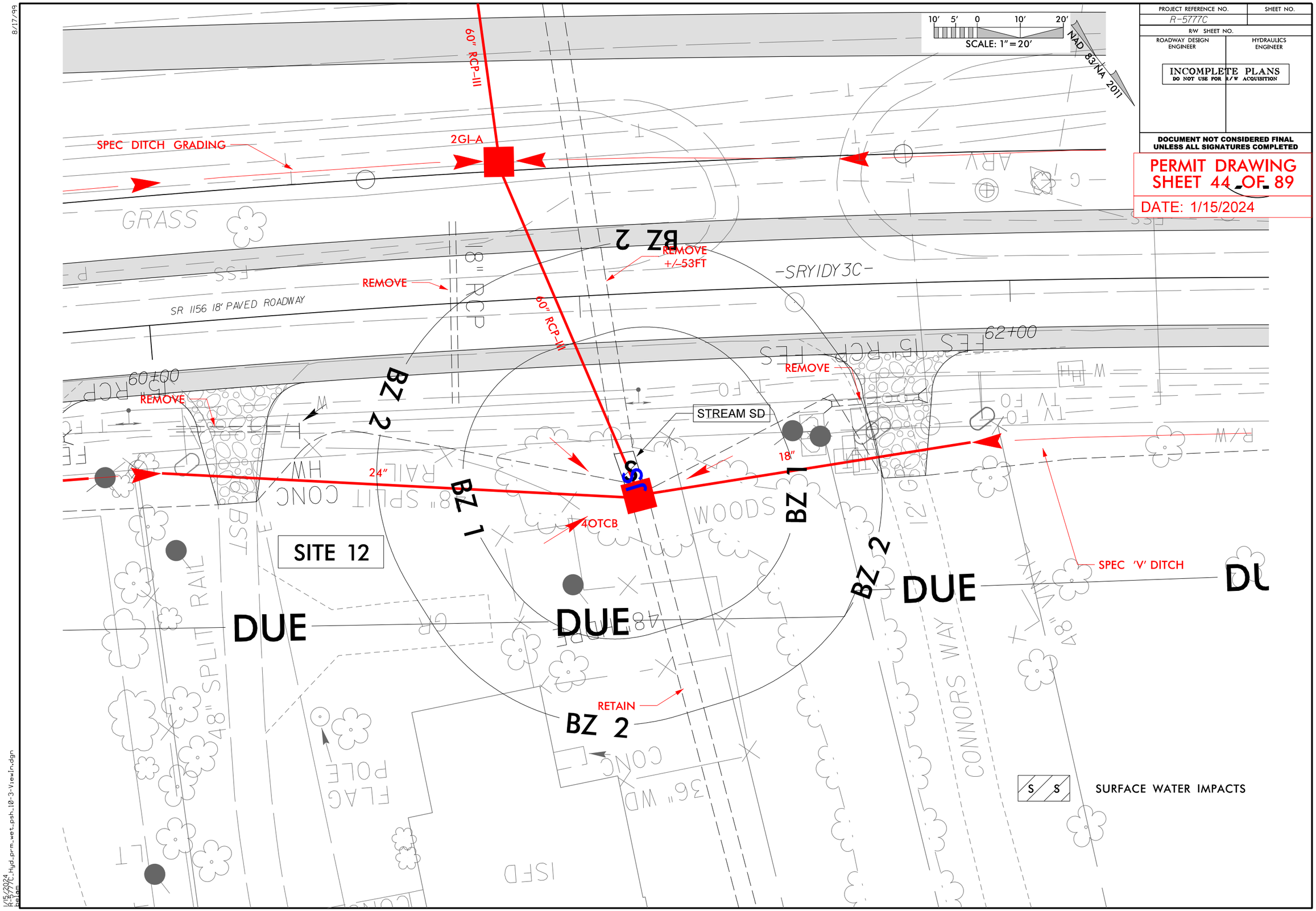


8/17/99



1/15/2024
R-5777C_Hyd_prm_wet_psh_10-2-View1n.dgn
belam

Submittal February 6, 2024



8/17/99

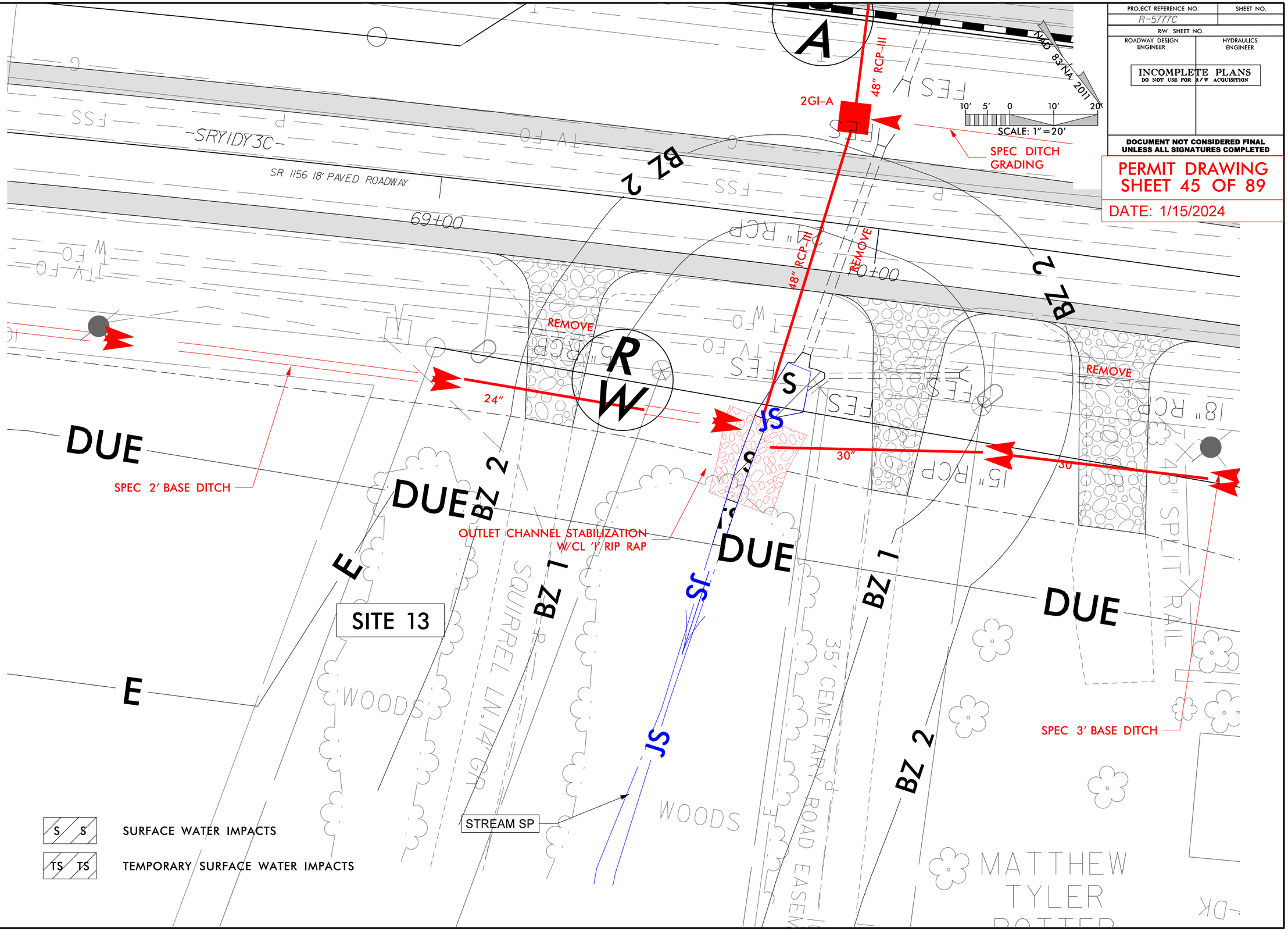
PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 45 OF 89

DATE: 1/15/2024



1/15/2024
R-5777C_Hyd_prm_wet_psh_10-4-ViewIn.dgn
aalam

Submittal February 6, 2024

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

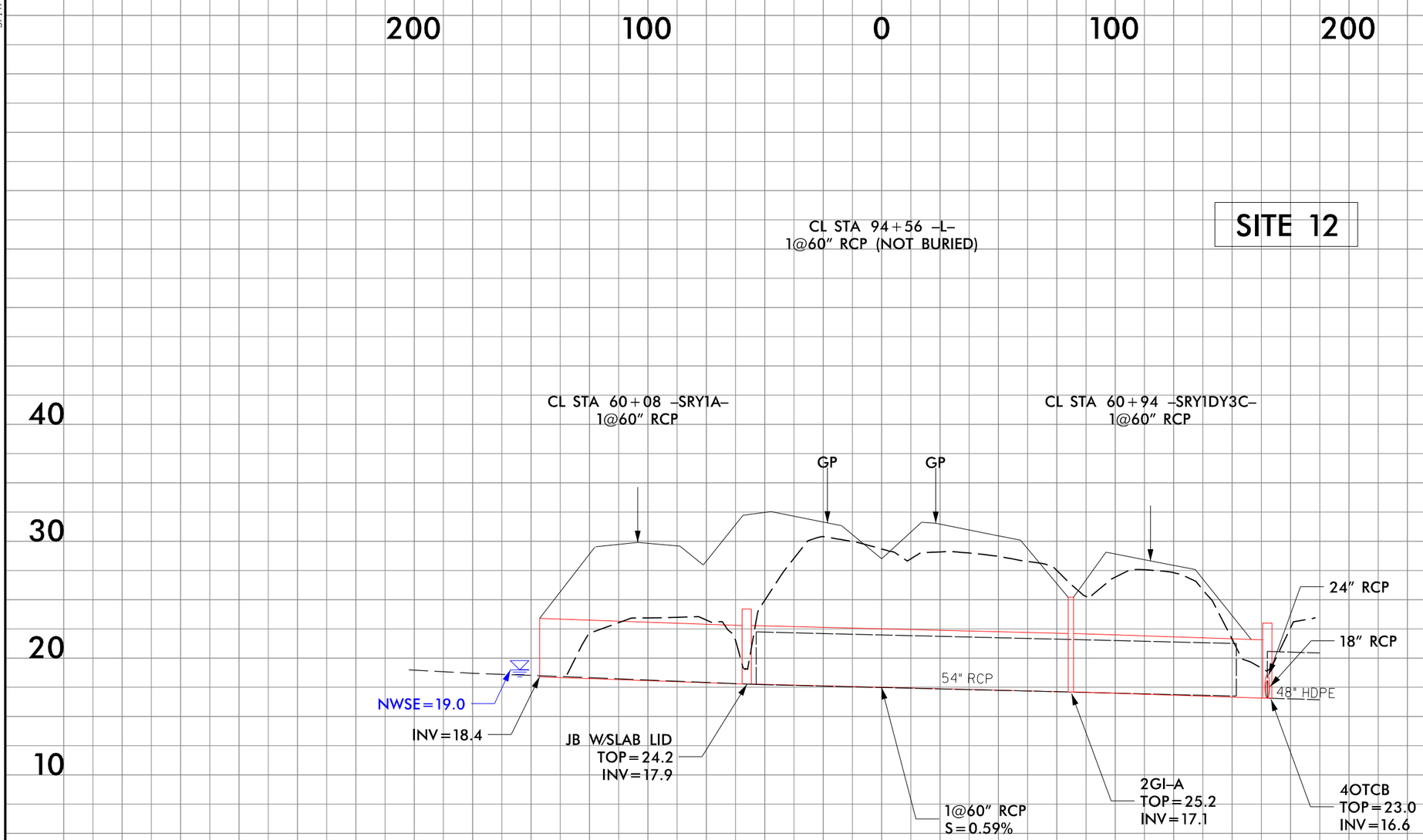
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 46 OF 89

DATE: 1/15/2024

SITE 12



1/15/2024
R-5777C_Hyd_prm_wet_psh_10-5-Sect.dgn
Beton

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty | stv

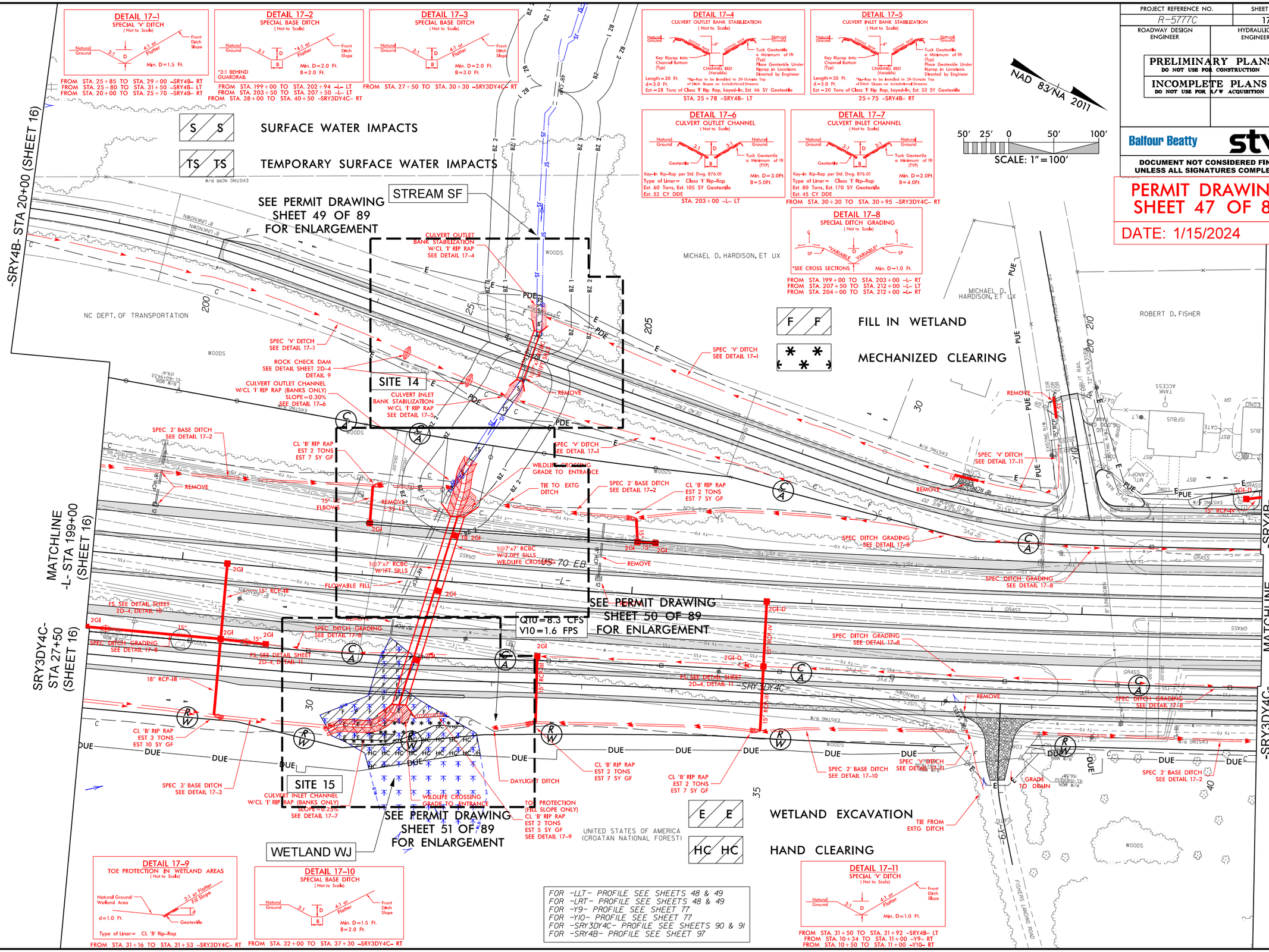
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 47 OF 89

DATE: 1/15/2024

NAD 83/NA 2011

50' 25' 0 50' 100'
SCALE: 1" = 100'



1/15/2024
R-5777C_Hyd_prm_wet_psh_17.dgn
ralam

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty | stv

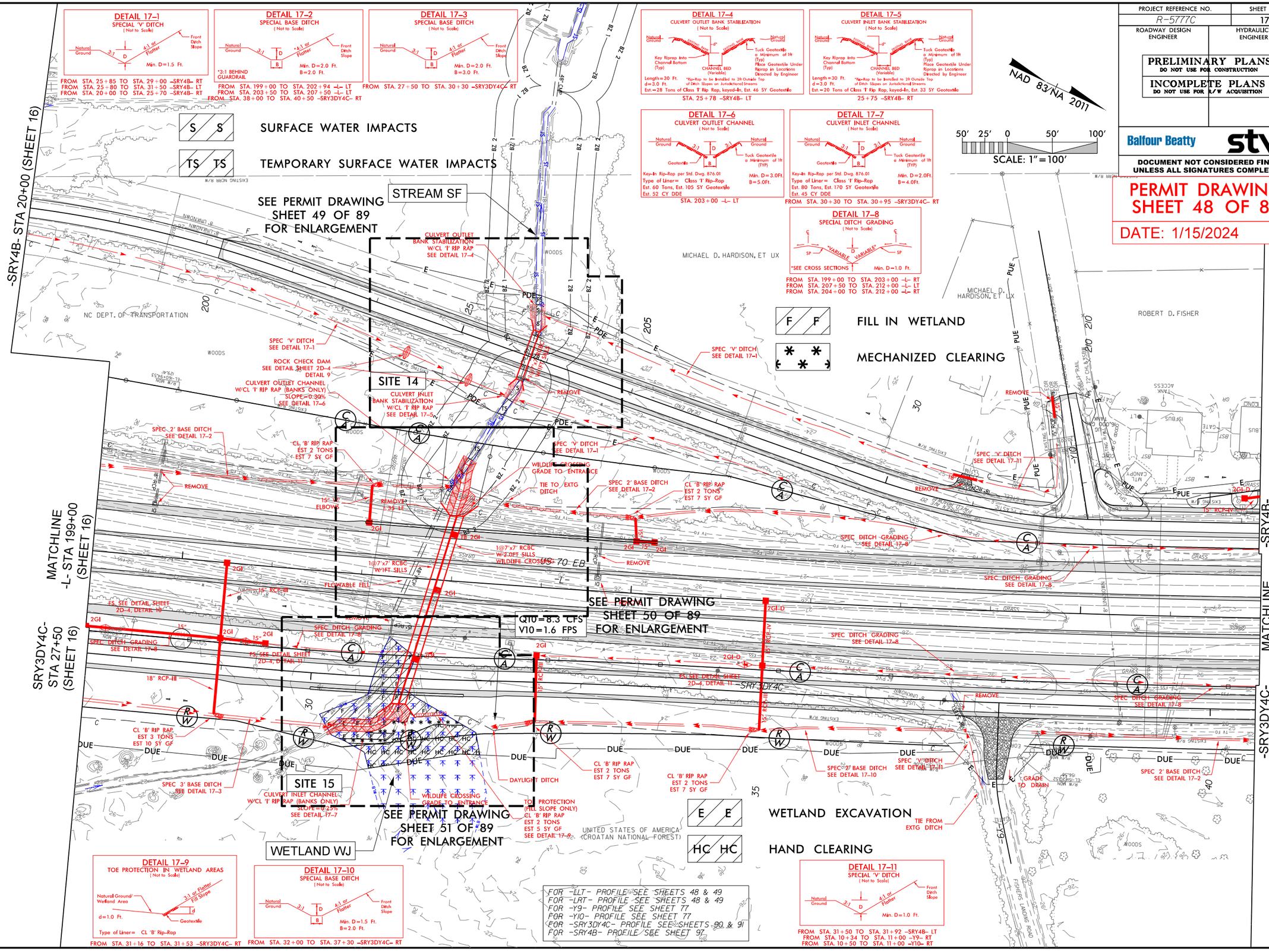
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 48 OF 89

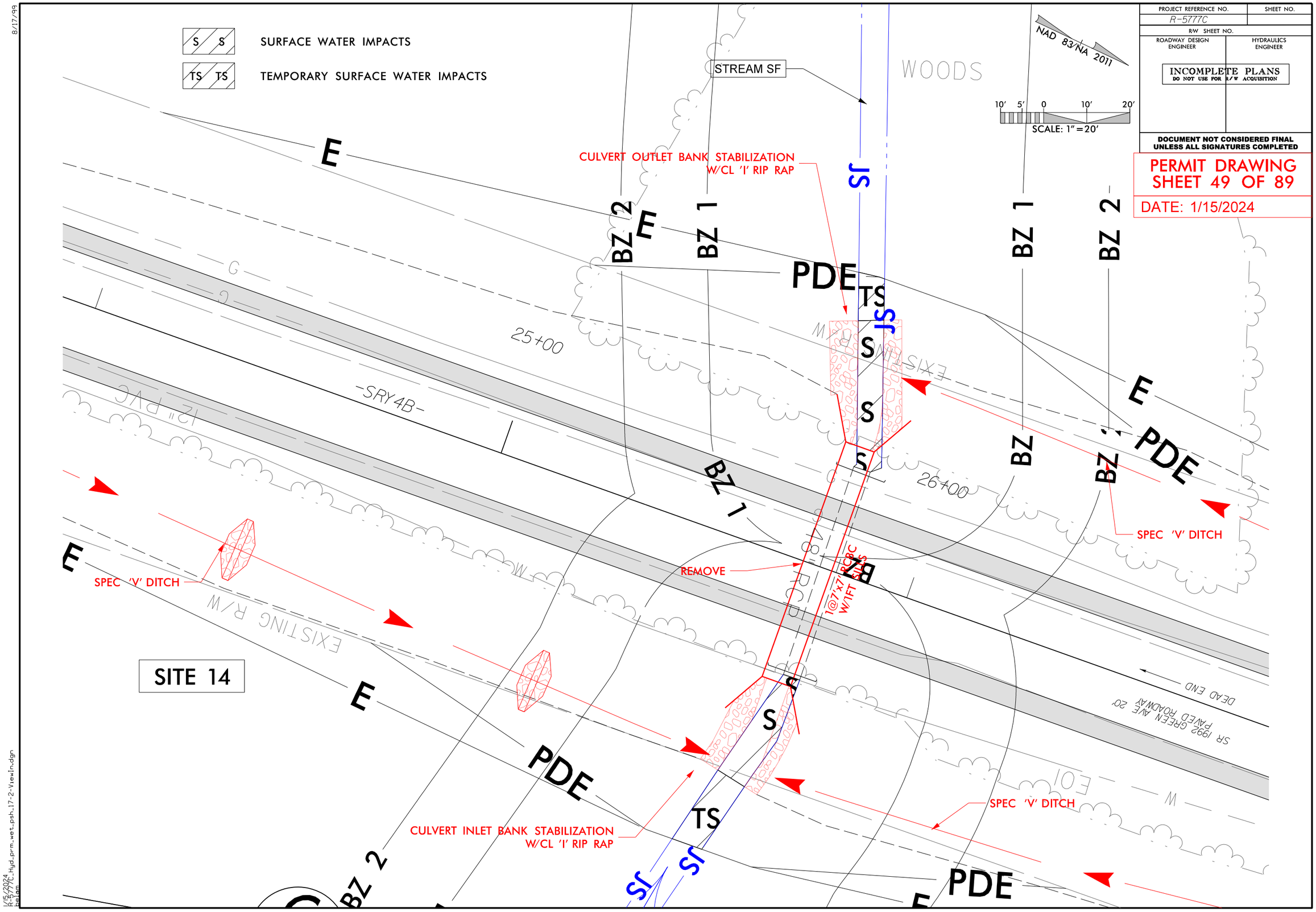
DATE: 1/15/2024

NAD 83/NA 2011

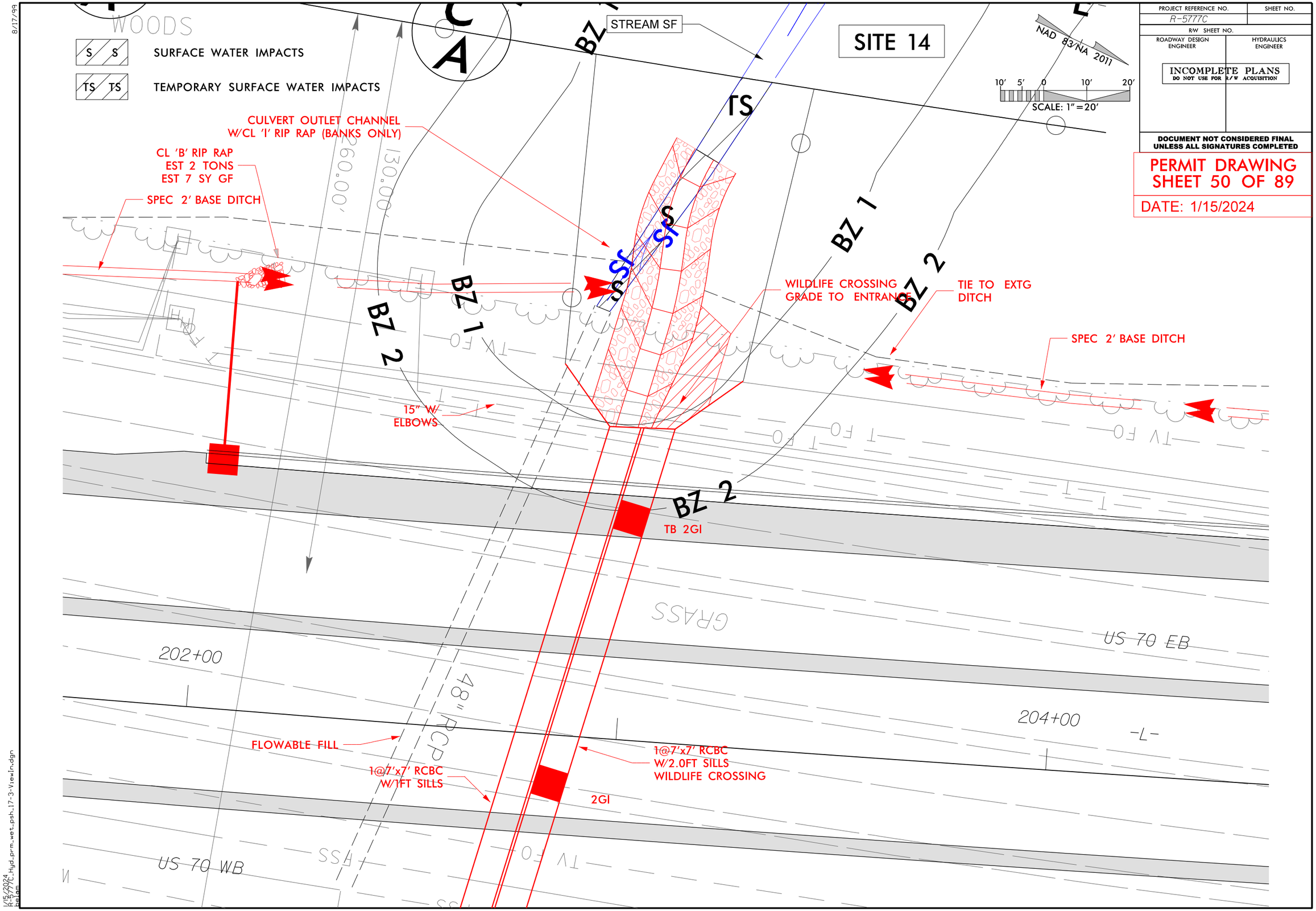
50' 25' 0 50' 100'
SCALE: 1" = 100'



1/15/2024
R-5777C_Hyd_prm_wet_psh_17-1.dgn
aalam

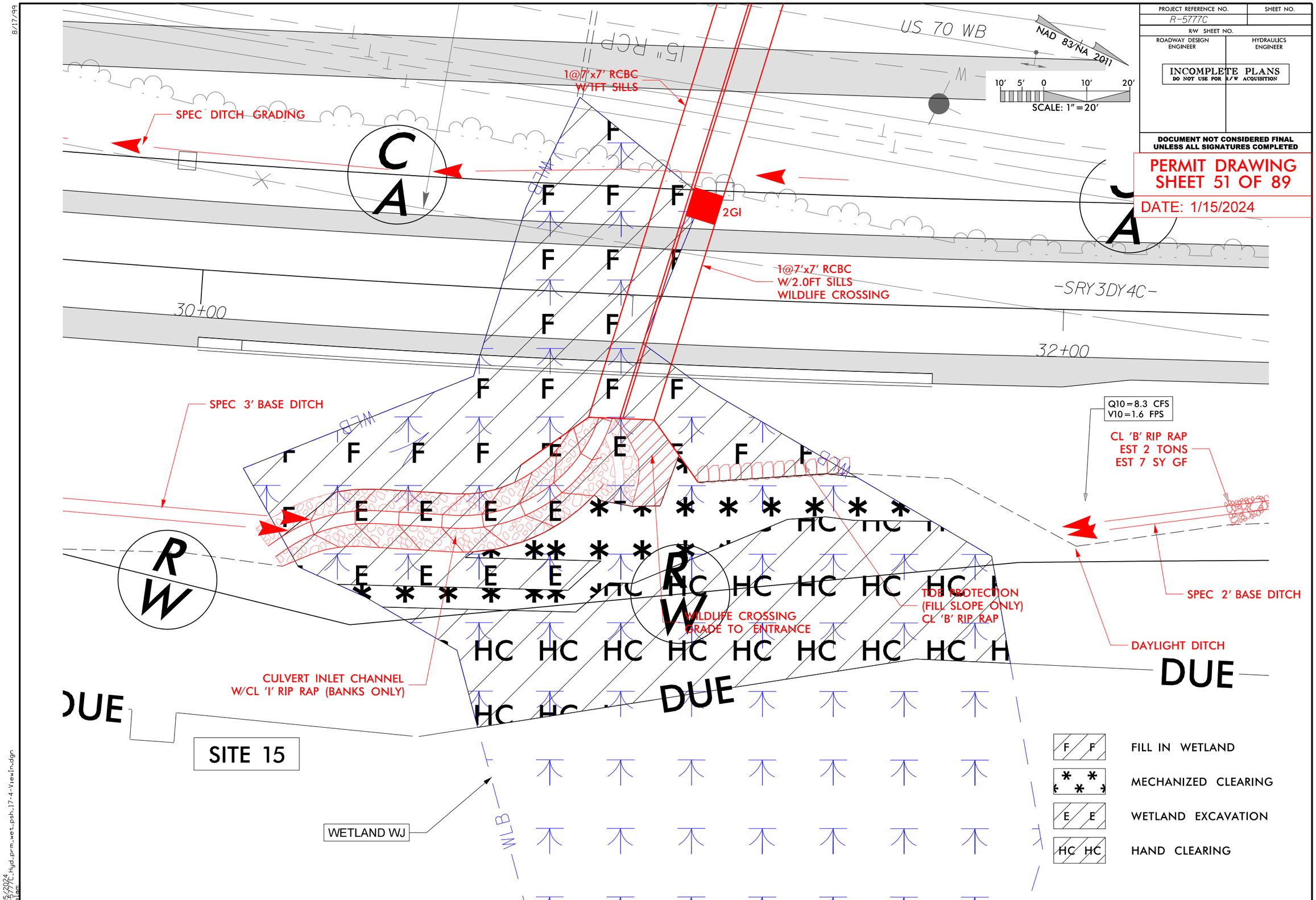

SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
STREAM SF
WOODS
NAD 83/NA 2011
SCALE: 1" = 20'
PROJECT REFERENCE NO.
R-5777C
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING
SHEET 49 OF 89
DATE: 1/15/2024
CULVERT OUTLET BANK STABILIZATION W/CL 'I' RIP RAP
CULVERT INLET BANK STABILIZATION W/CL 'I' RIP RAP
SPEC 'V' DITCH
REMOVE
1@7'x7' RCBC W/1FT FILL
SITE 14
25+00
26+00
-SRY4B-
12" PVC
EXISTING R/W
SR 1992 GREEN AVE 20' PAVED ROADWAY
DEAD END
BZ 1
BZ 2
PDE
TS
JS
S
E
8/17/99
1/15/2024
R-5777C_Hyd_prm_wet_psh_17-2-View1n.dgn

Submittal February 6, 2024



8/17/99

1/15/2024
R-5777C_Hyd_prm_wet_psh_17-3-View1n.dgn
Beigam



8/17/99

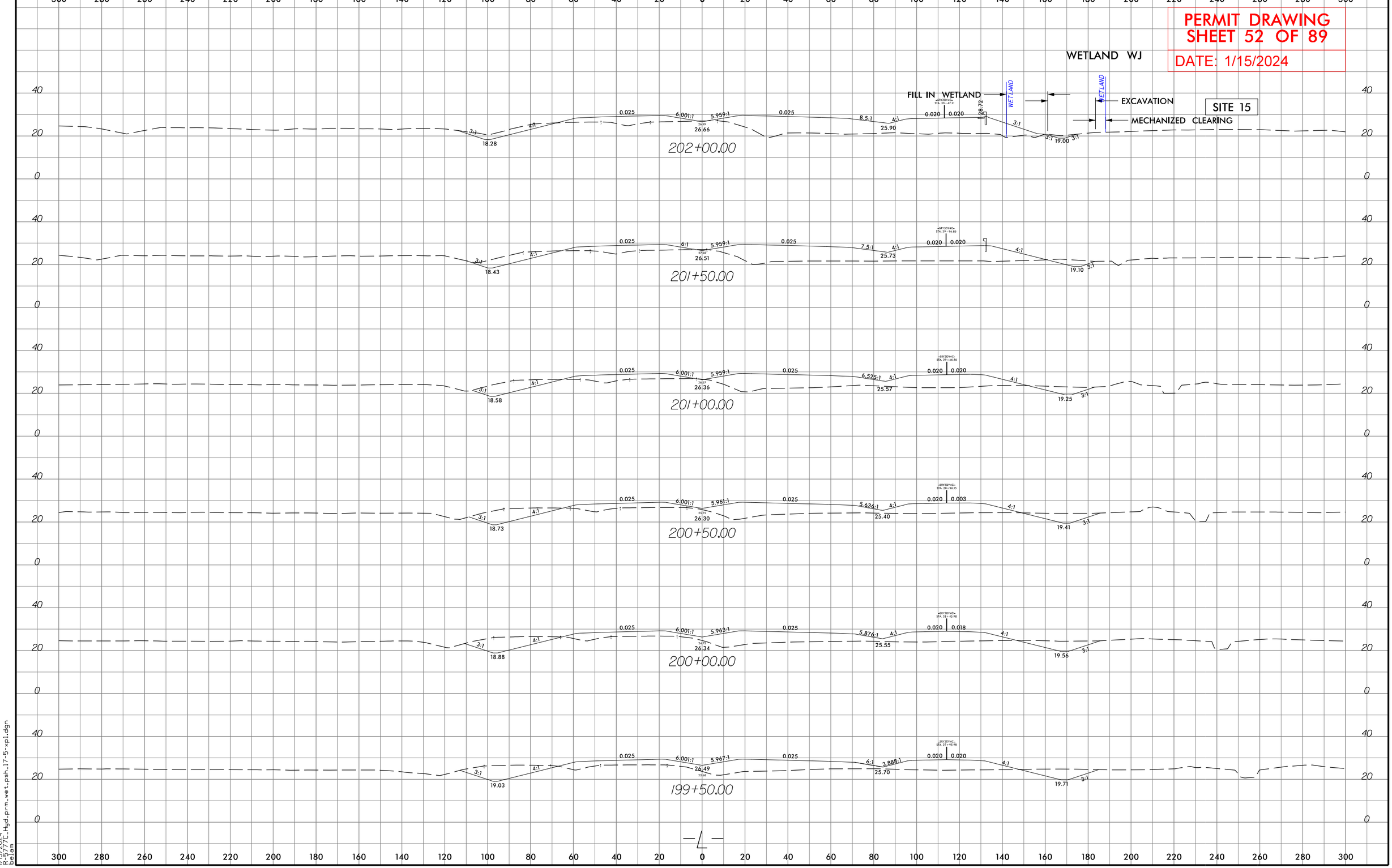
1/15/2024
R-5777C_Hyd_prm_wet_psh_17-4-View1n.dgn
pelam

Submittal February 6, 2024

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-5777	L-69

PERMIT DRAWING
SHEET 52 OF 89
DATE: 1/15/2024



1/15/2024
R-5777C_Hyd_prm_wet_psh_17-5-xpl.dgn
belam

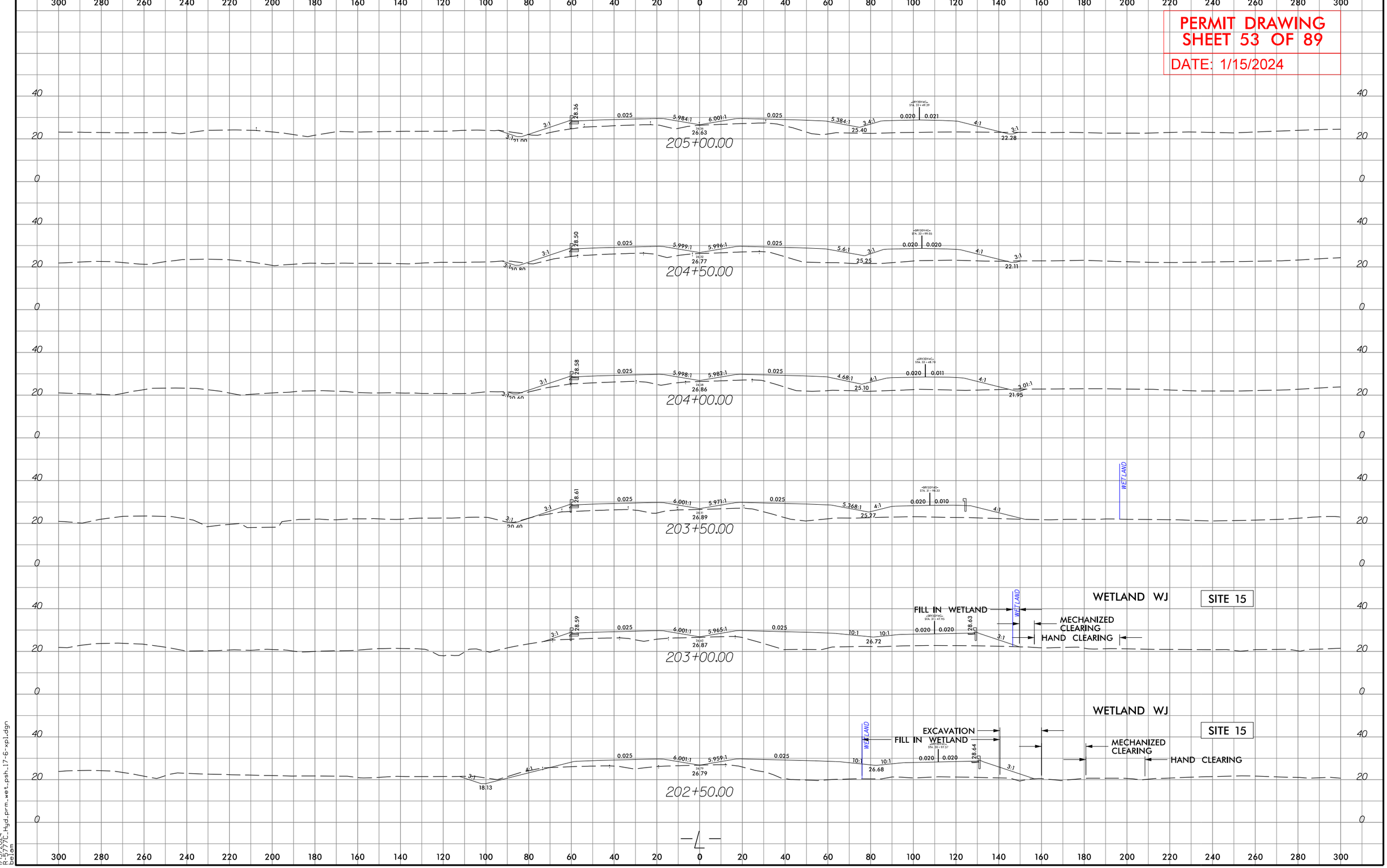
Submittal February 6, 2024

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-5777	L-70

0 10 20

PERMIT DRAWING
SHEET 53 OF 89
DATE: 1/15/2024



1/15/2024
R-5777C_Hyd_prm_wet_psh_17-6-xpl.dgn
belam

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

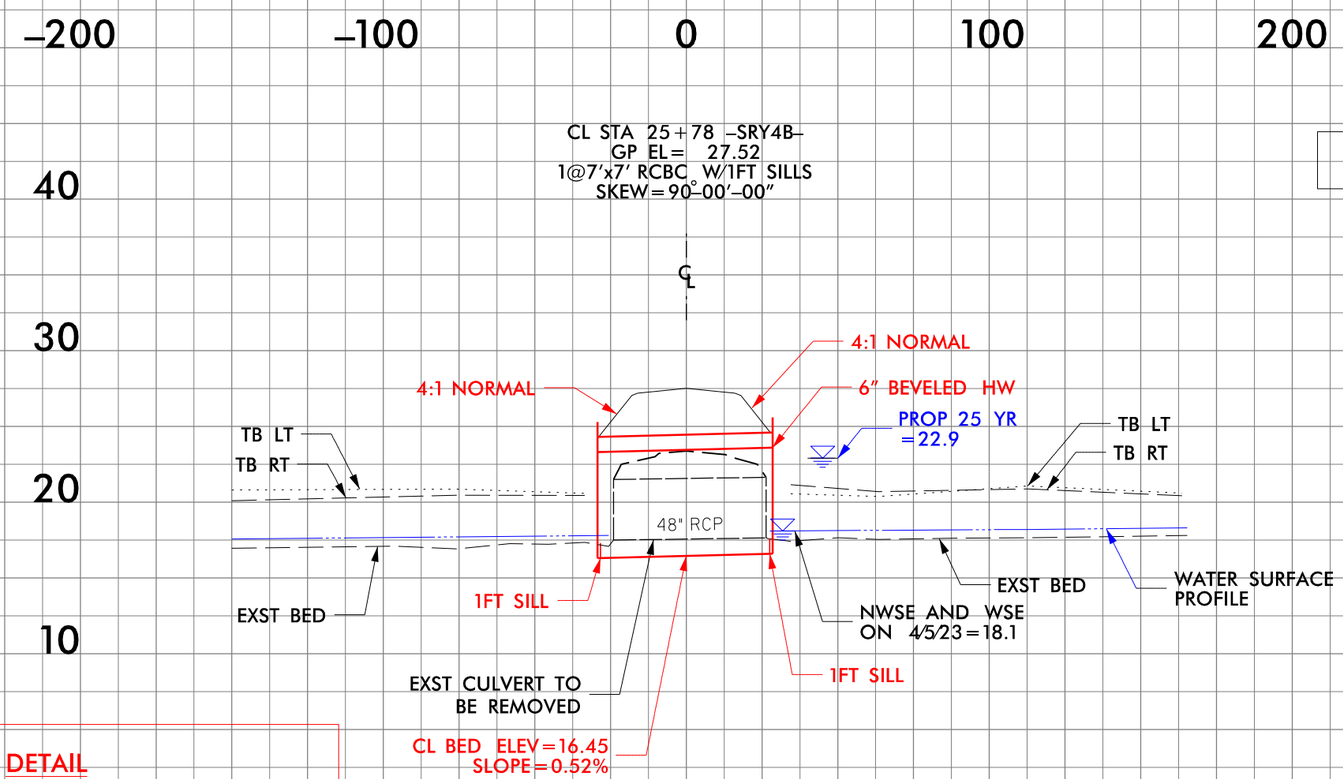
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 54 OF 89

DATE: 1/15/2024

SITE 14



DETAIL
(NOT TO SCALE)

SINGLE BARREL CULVERT W/SILLS

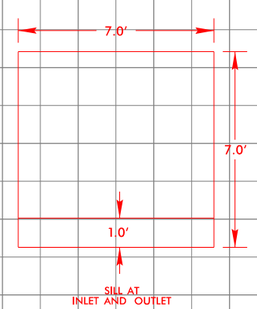
*NOTES:

1) NATIVE MATERIAL BETWEEN SILLS IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT THE PROJECT SITE DURING CONSTRUCTION. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

2) SILLS ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

3) DO NOT SET ELEVATION OF SILL ABOVE BANK FULL.

4) NUMBER OF SILLS DETERMINED BY THE ENGINEER.



PLAN VIEW

913

DETAIL
CULVERT OUTLET BANK STABILIZATION
(Not to Scale)

Length=30 Ft.
d=3.0 Ft.
Est.=28 Tons of Class 'I' Rip Rap, keyed-In, Est. 46 SY Geotextile

*Rip-Rap to be Installed to 2ft Outside Top of Ditch Slopes on Jurisdictional Streams

DETAIL
CULVERT INLET BANK STABILIZATION
(Not to Scale)

Length=25 Ft.
d=3.0 Ft.
Est.=20 Tons of Class 'I' Rip Rap, keyed-In, Est. 33 SY Geotextile

*Rip-Rap to be Installed to 2ft Outside Top of Ditch Slopes on Jurisdictional Streams

5/14/99

1/15/2024
R-5777C_Hyd-prm_wet_psh_17-7-Sect.dgn
belan

Submittal February 6, 2024

5/14/99

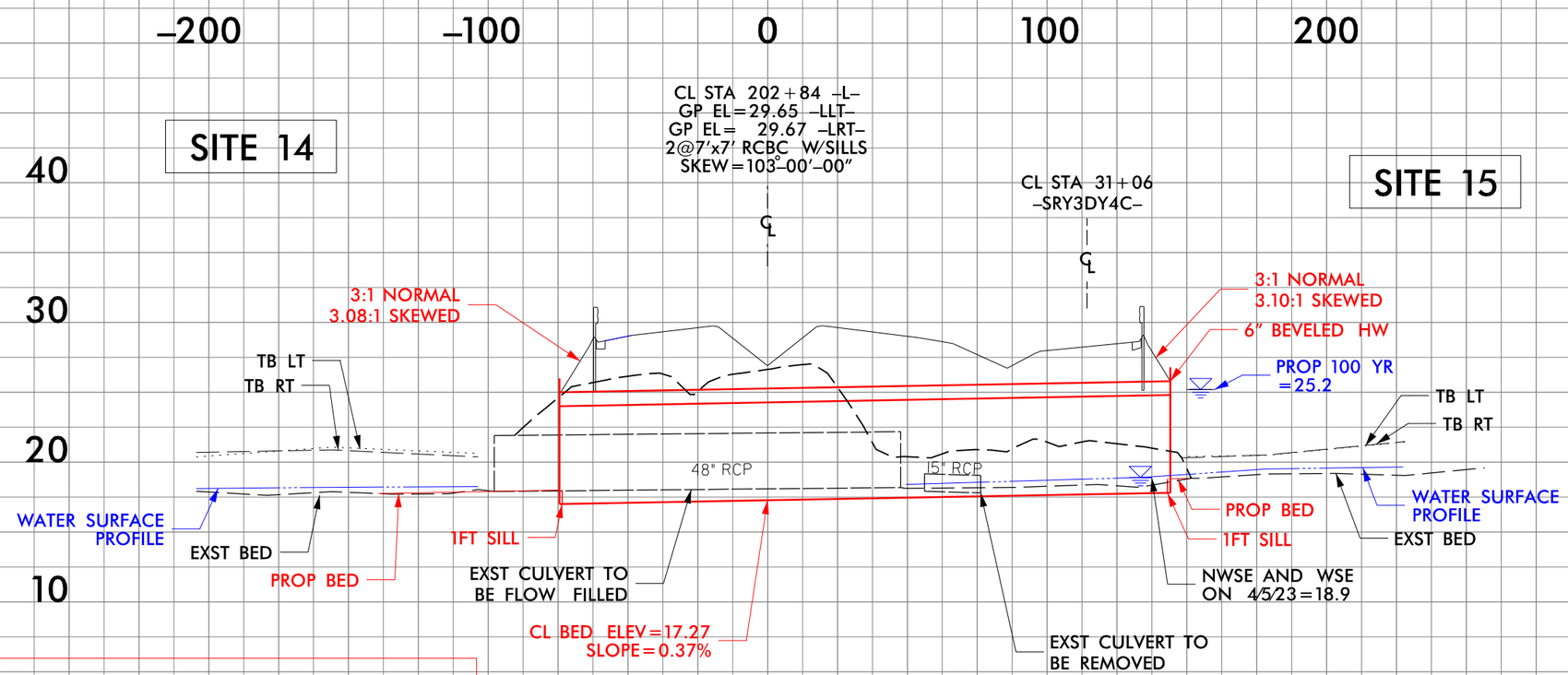
PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 55 OF 89

DATE: 1/15/2024



DETAIL
(NOT TO SCALE)
MULTI-BARREL CULVERT
HYDRAULIC BARREL W/1FT SILLS
WILDLIFE CROSSING W/2FT SILLS

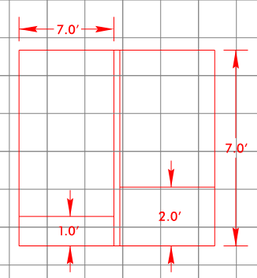
*NOTES:

1) NATIVE MATERIAL BETWEEN SILLS IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT THE PROJECT SITE DURING CONSTRUCTION. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

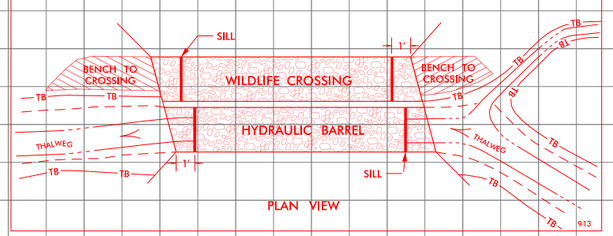
2) SILLS ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

3) DO NOT SET ELEVATION OF SILL ABOVE BANK FULL.

4) NUMBER OF SILLS DETERMINED BY THE ENGINEER.

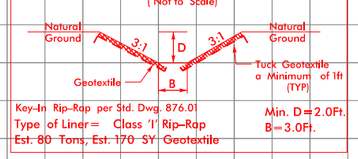


SILLS AT INLET AND OUTLET



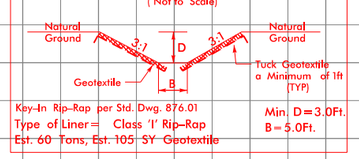
PLAN VIEW

DETAIL
CULVERT INLET CHANNEL
(Not to Scale)



Key-In Rip-Rap per Std. Dwg. 876.01
Type of Liner= Class 'I' Rip-Rap
Est. 80 Tons, Est. 170 SY Geotextile
Min. D=2.0Ft.
B=3.0Ft.

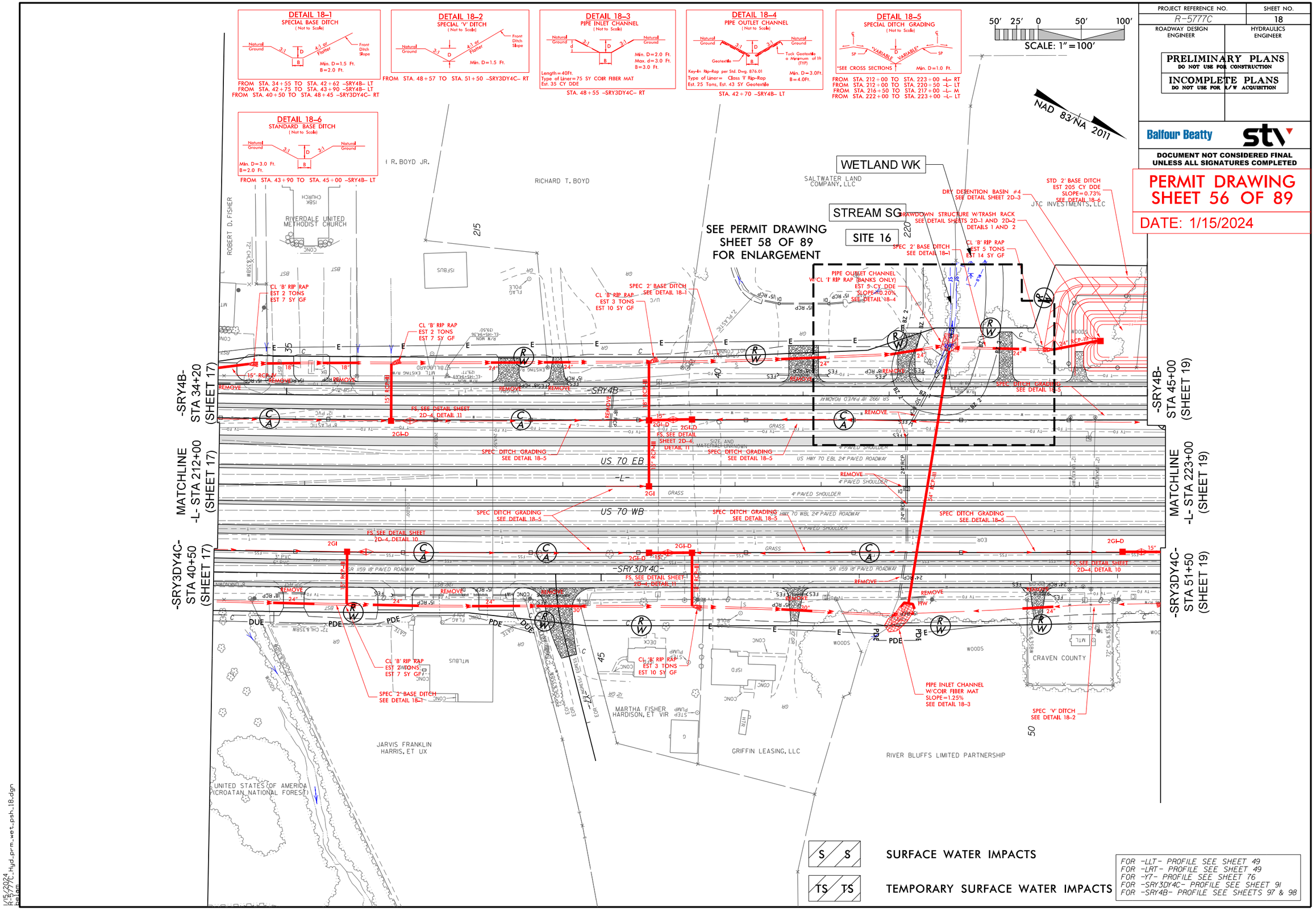
DETAIL
CULVERT OUTLET CHANNEL
(Not to Scale)



Key-In Rip-Rap per Std. Dwg. 876.01
Type of Liner= Class 'I' Rip-Rap
Est. 60 Tons, Est. 105 SY Geotextile
Min. D=3.0Ft.
B=5.0Ft.

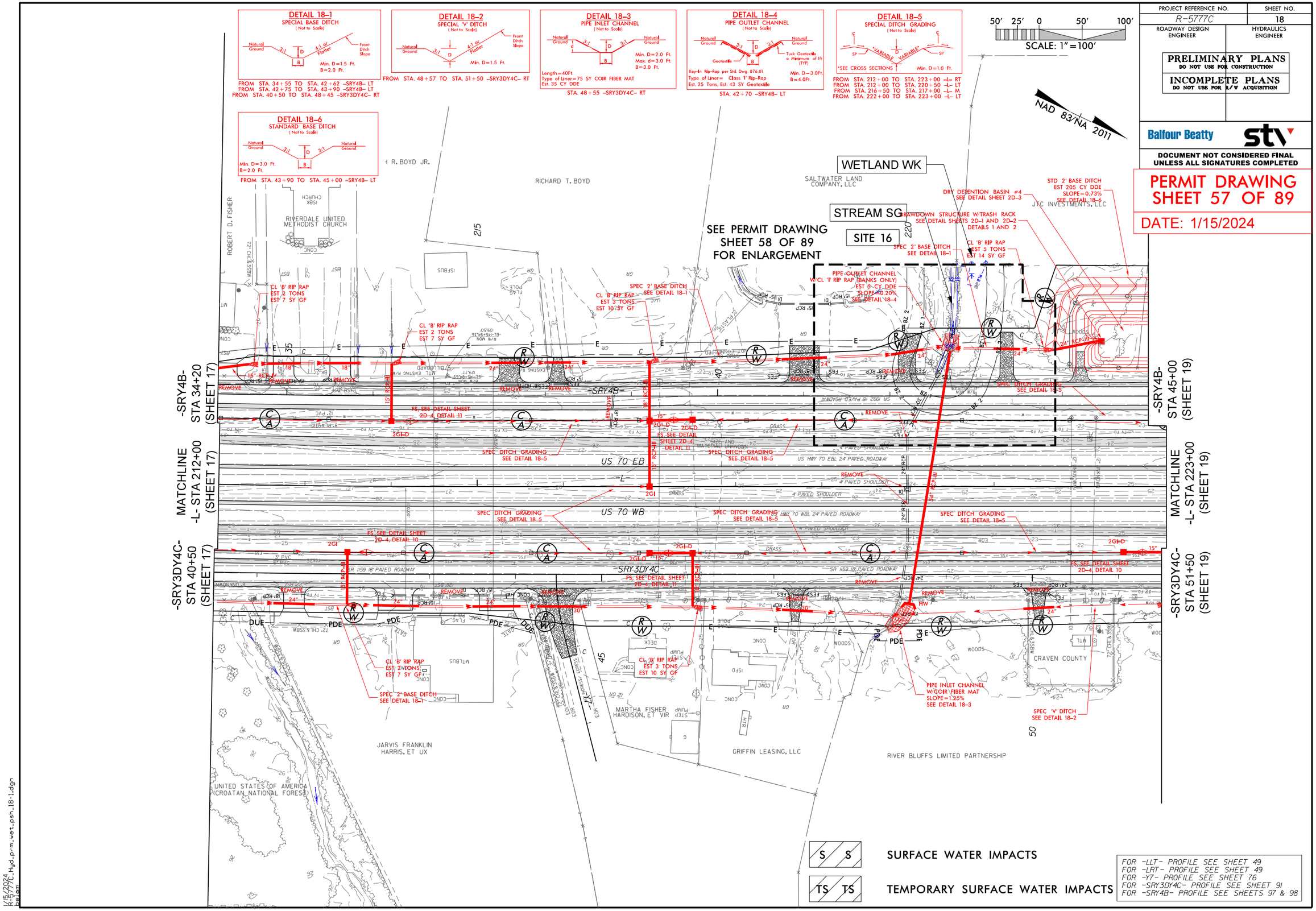
1/15/2024
R-5777C_Hyd_prm_wet_psh_17-8-Sect.dgn
Aaron

Submittal February 6, 2024



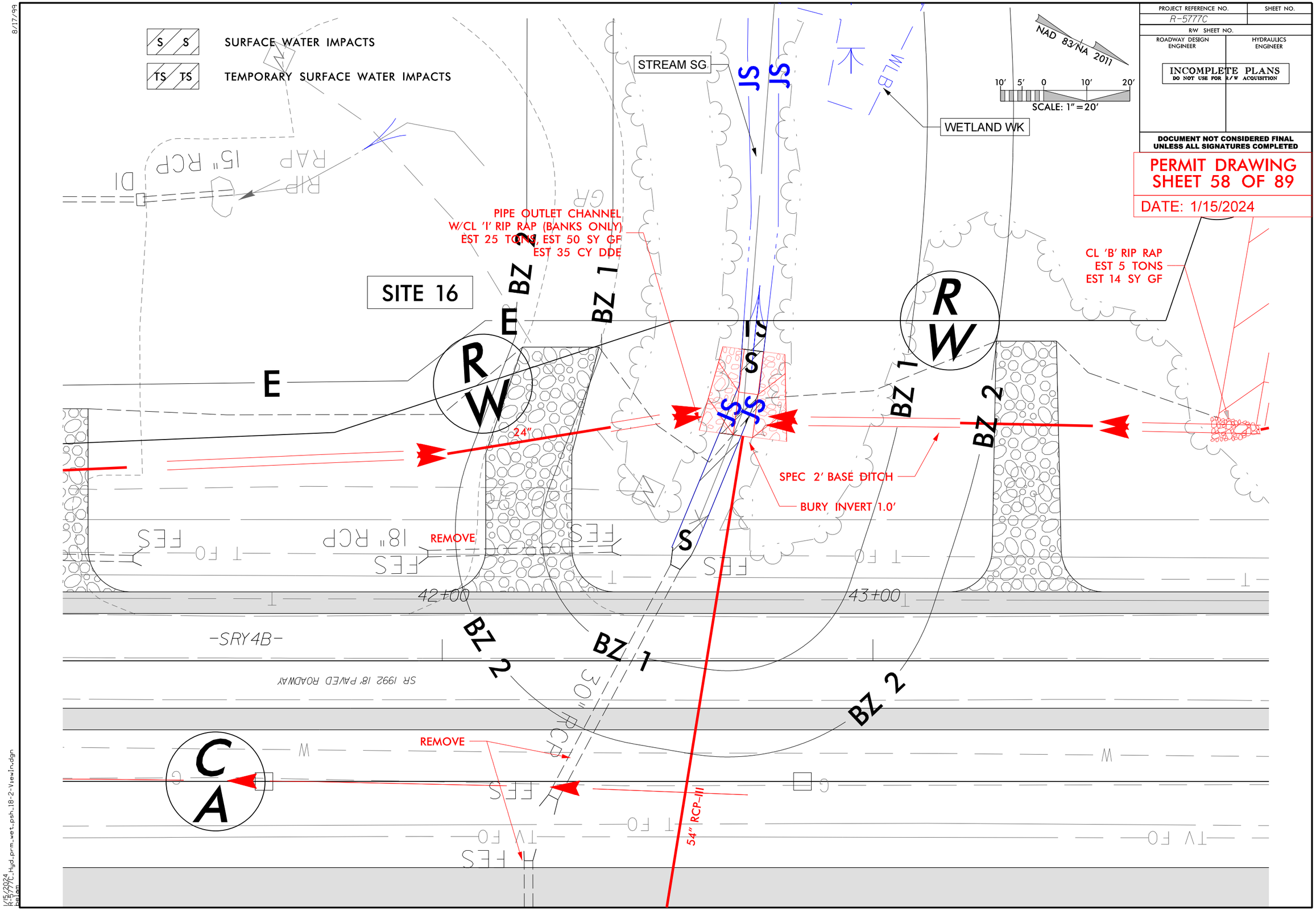
1/15/2024
R-5777C_Hyd_prm_wet_psh_18.dgn
Balam

Submittal February 6, 2024



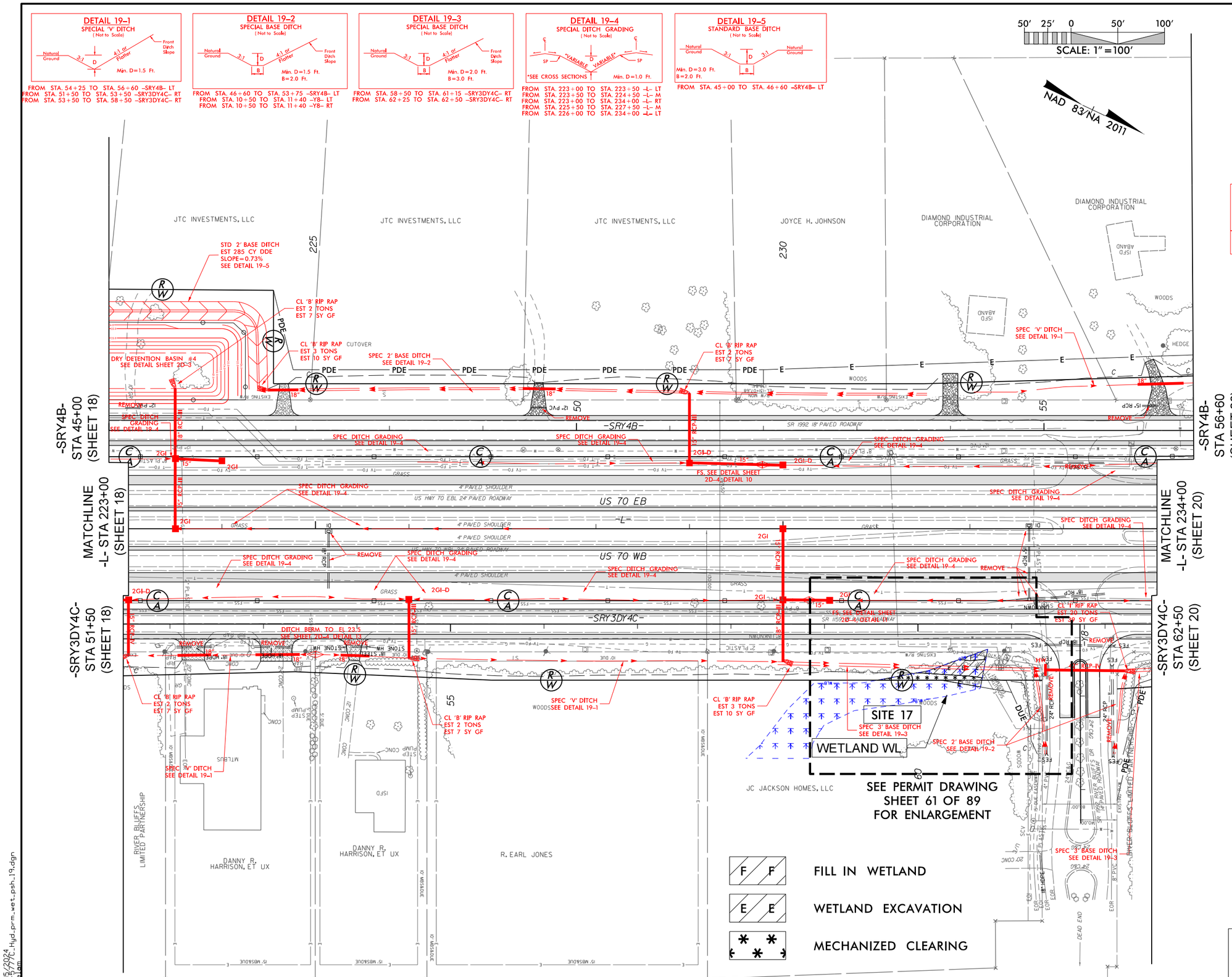
Submittal February 6, 2024

8/17/99



1/15/2024
R-5777C_Hyd_prm_wet_psh_18-2-View1n.dgn
Reigom

Submittal February 6, 2024



PROJECT REFERENCE NO.	SHEET NO.
R-5777C	19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty

stv

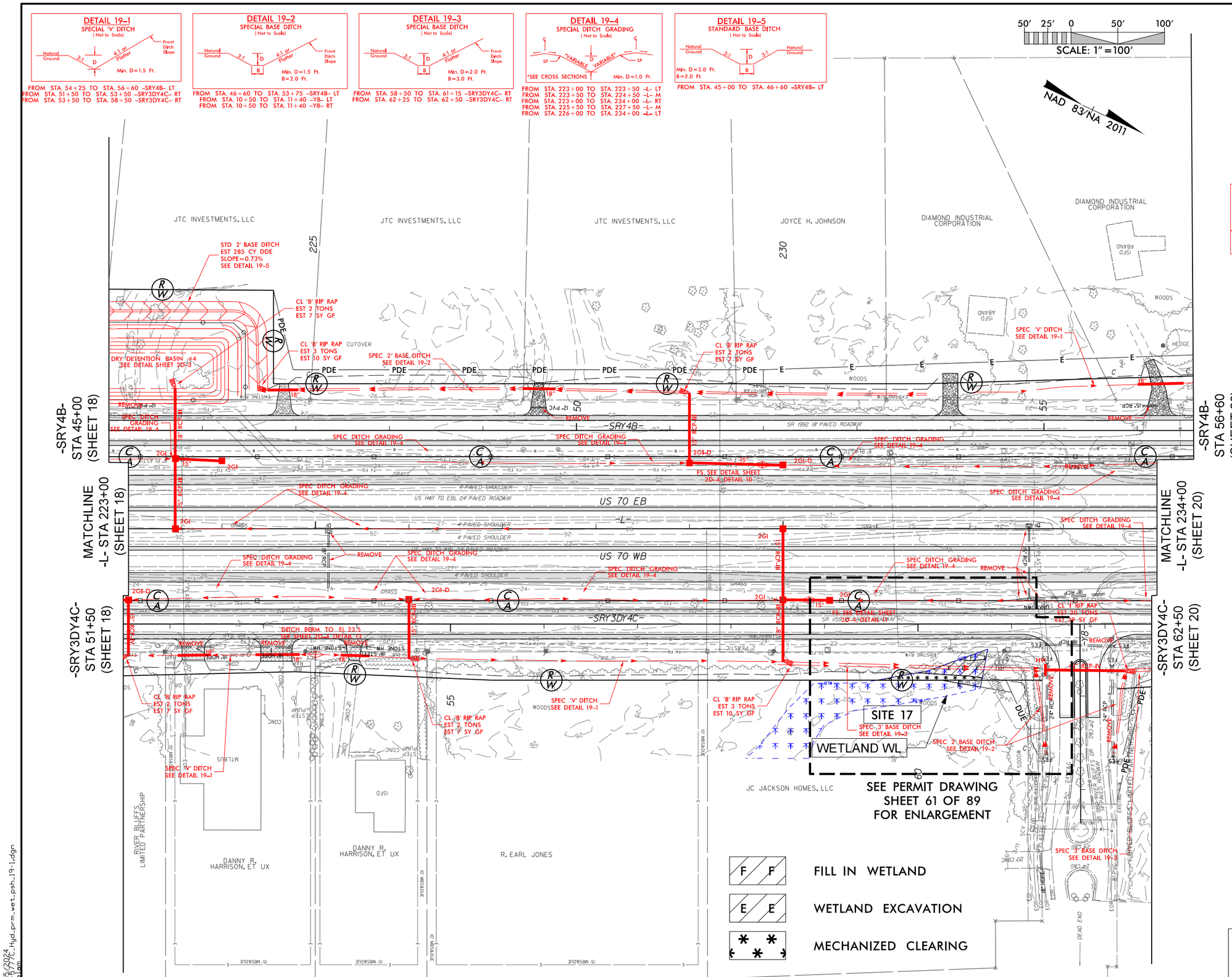
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 59 OF 89

DATE: 1/15/2024

1/15/2024
R-5777C_Hyd_prm_wet_psh_19.dgn
aalam

Submittal February 6, 2024



PROJECT REFERENCE NO.	SHEET NO.
R-5777C	19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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PERMIT DRAWING
SHEET 60 OF 89

DATE: 1/15/2024

FOR -LLT- PROFILE SEE SHEET 50
FOR -LRT- PROFILE SEE SHEET 50
FOR -Y8- PROFILE SEE SHEET 76
FOR -SRY3DY4C- PROFILE SEE SHEET 91
FOR -SRY4B- PROFILE SEE SHEET 98

1/15/2024
R-5777C_Hyd_prm_wet_psh_19-1.dgn
aalam

8/17/99

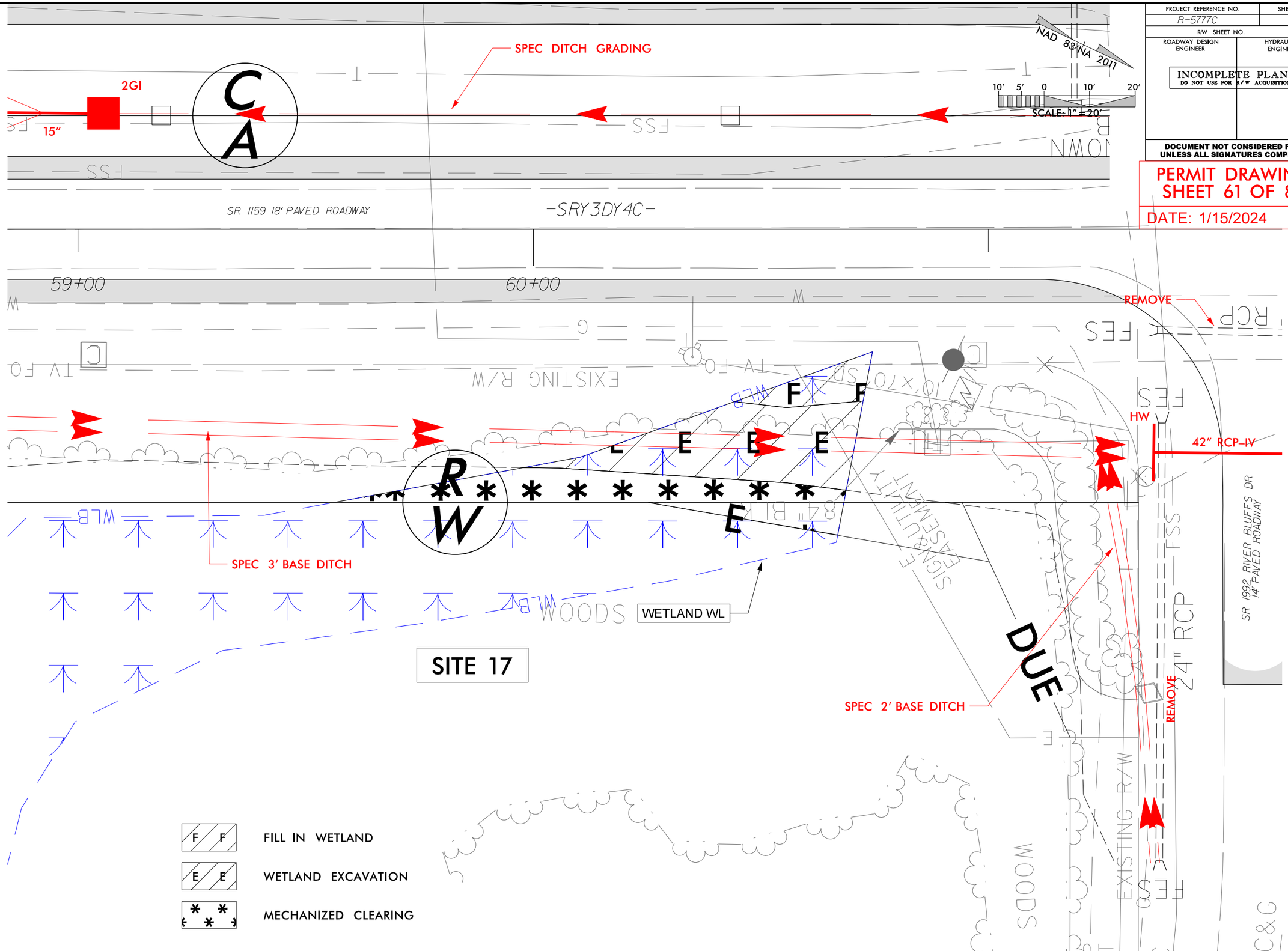
PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 61 OF 89

DATE: 1/15/2024



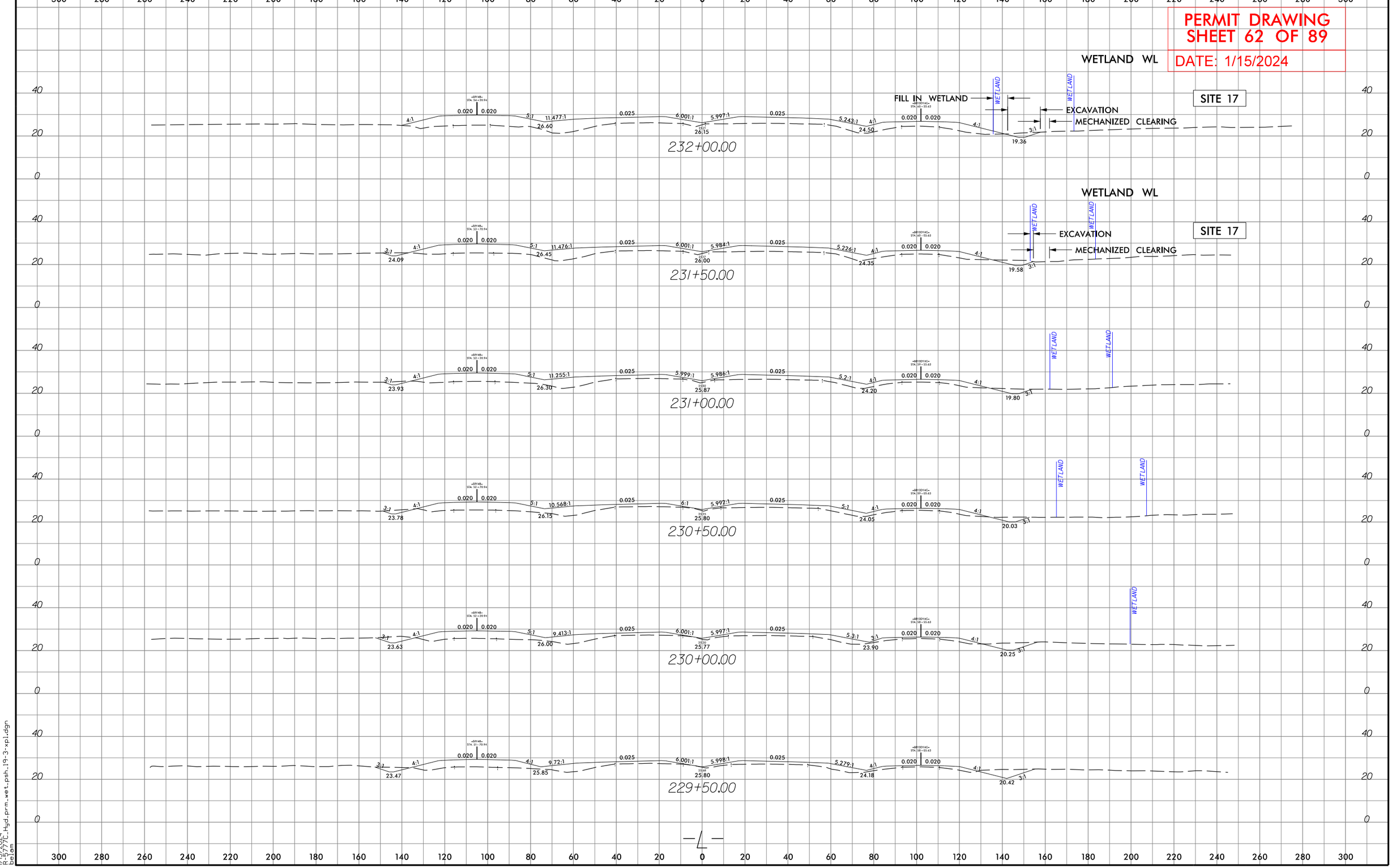
1/15/2024
R-5777C_Hyd_prm_wet_psh_19-2-View1.dgn
belam

Submittal February 6, 2024

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-5777	L-79

PERMIT DRAWING
SHEET 62 OF 89
DATE: 1/15/2024



1/15/2024
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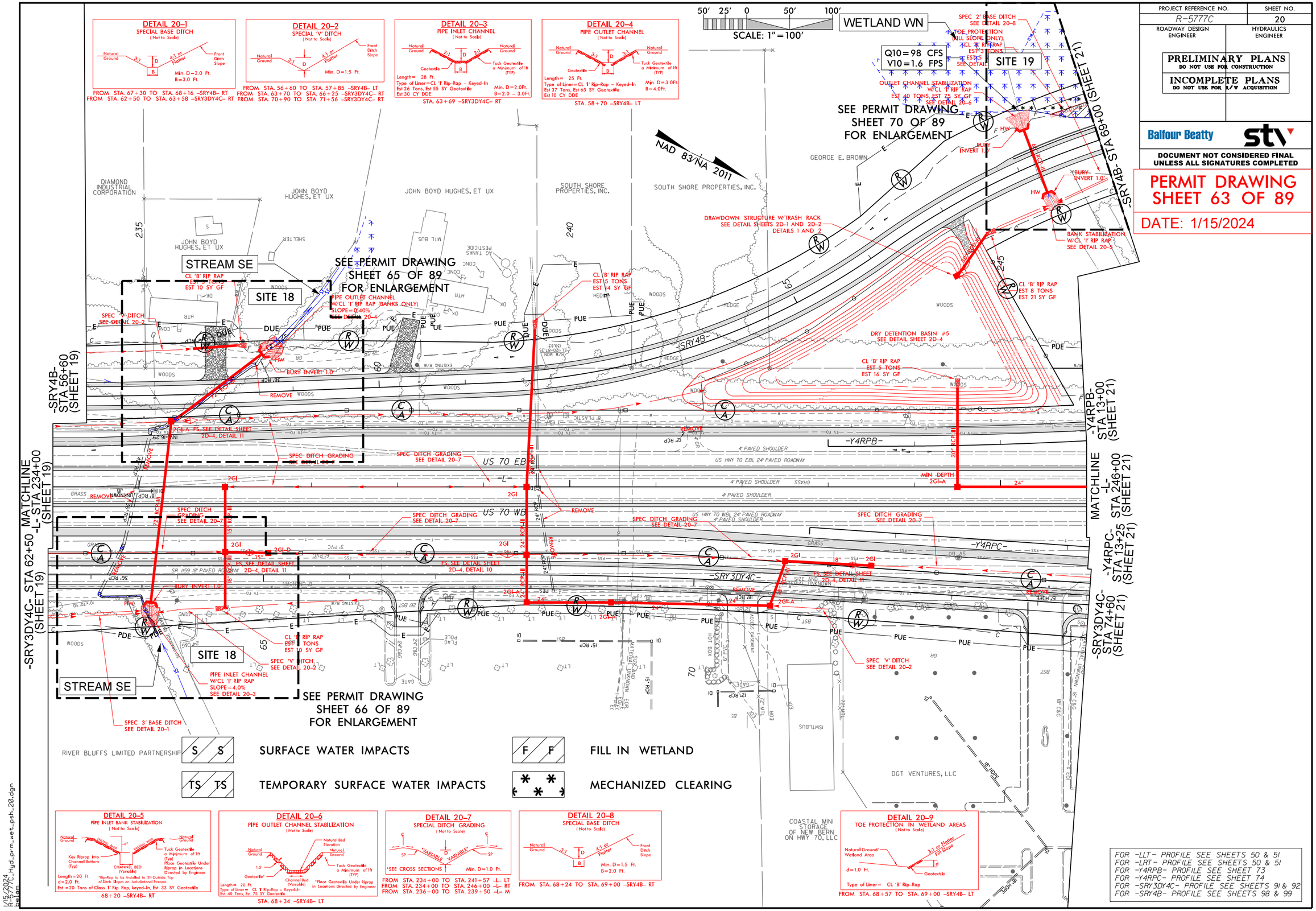
belam

Submittal February 6, 2024



Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	20
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

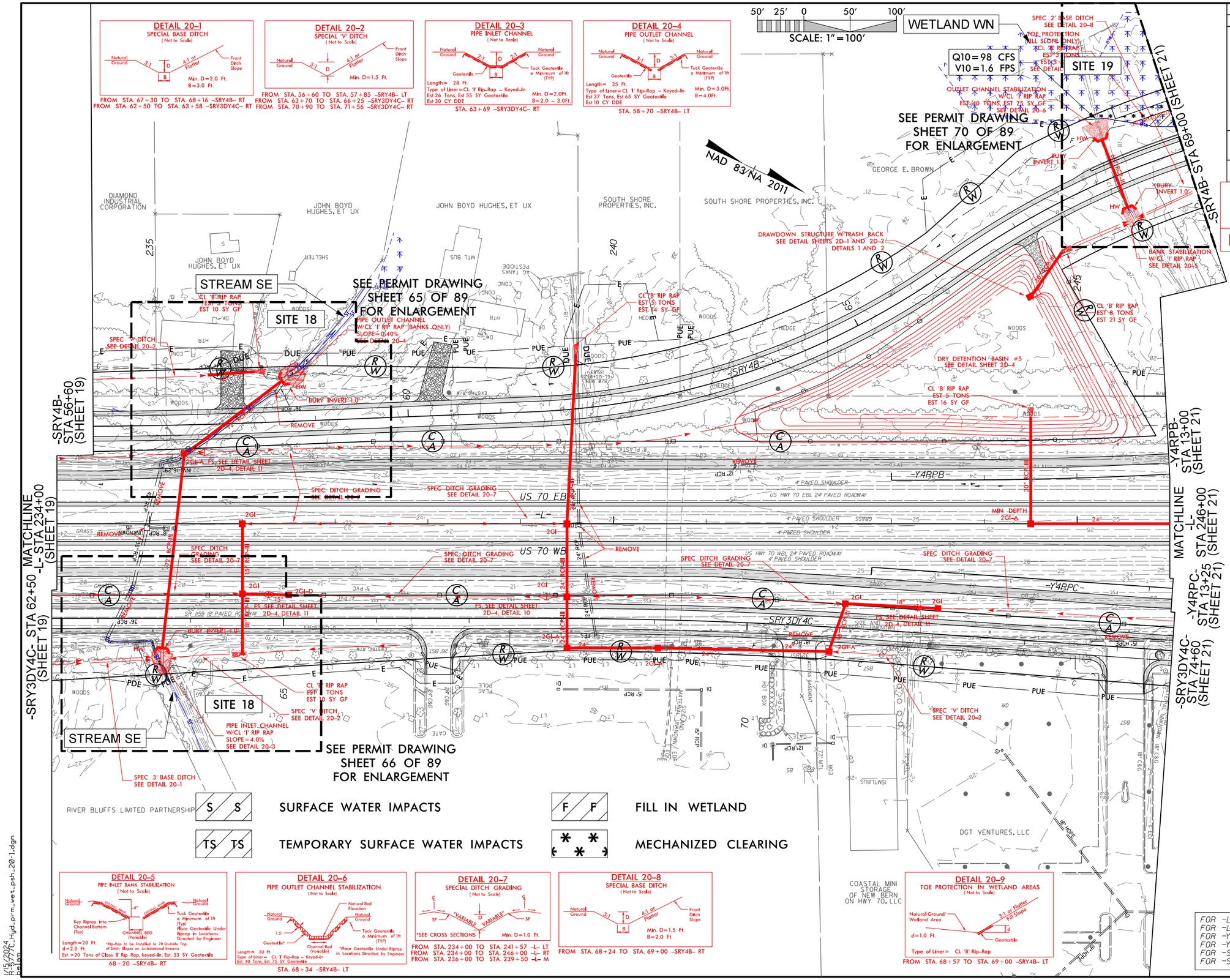
Balfour Beatty

stv

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 64 OF 89

DATE: 1/15/2024



1/15/2024
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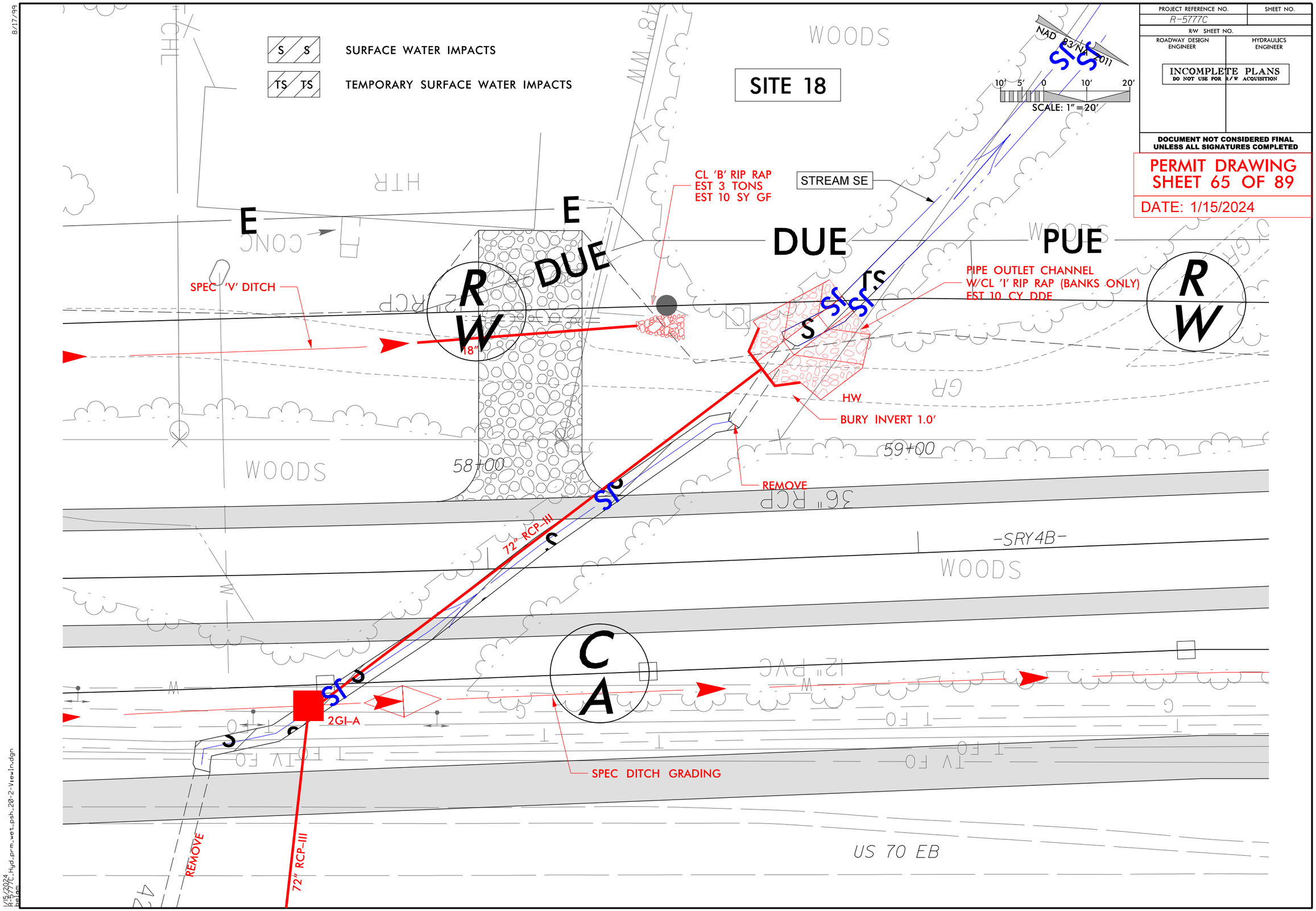
Submittal February 6, 2024



8/17/99

1/15/2024
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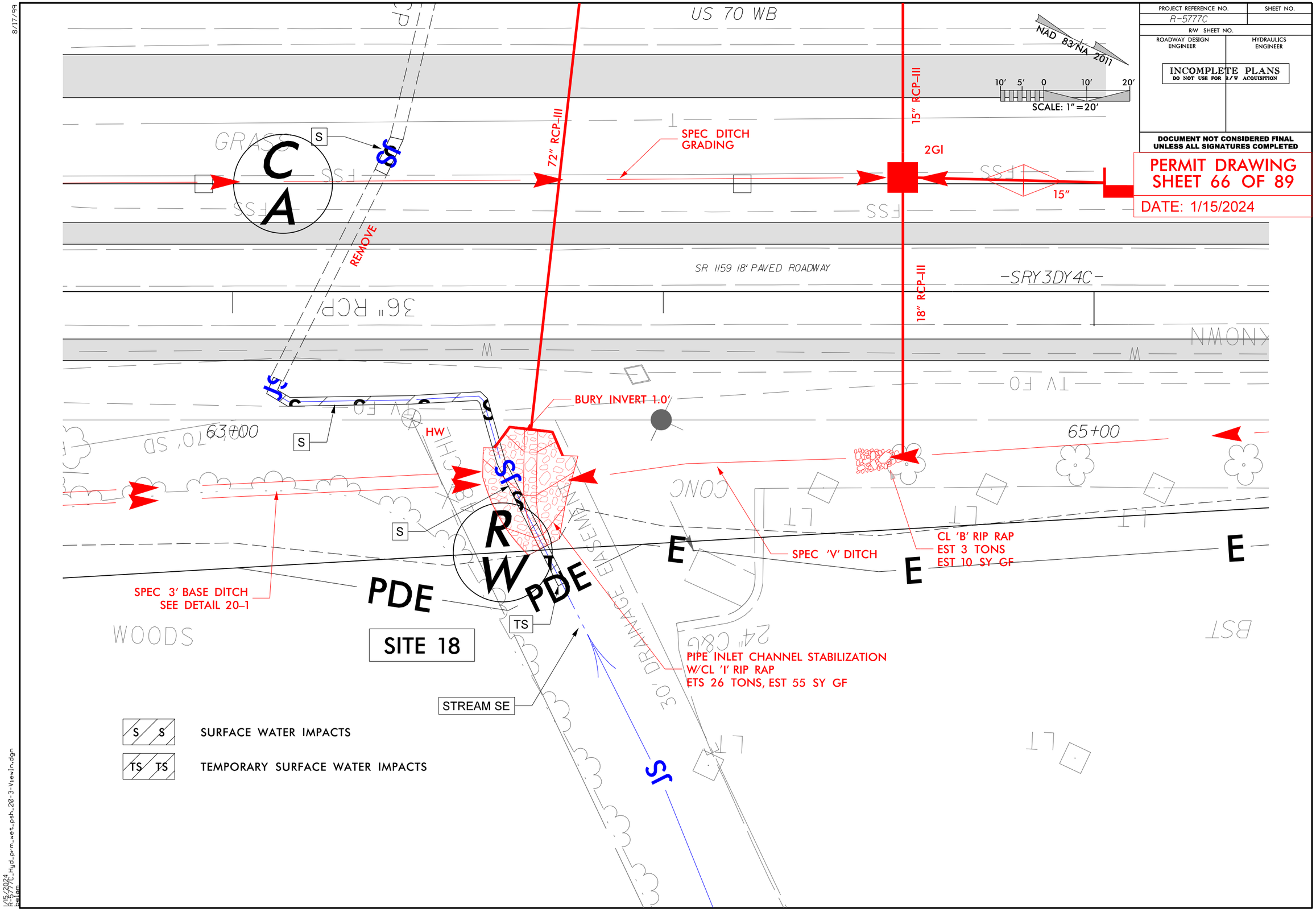
belam

Submittal February 6, 2024



Submittal February 6, 2024

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

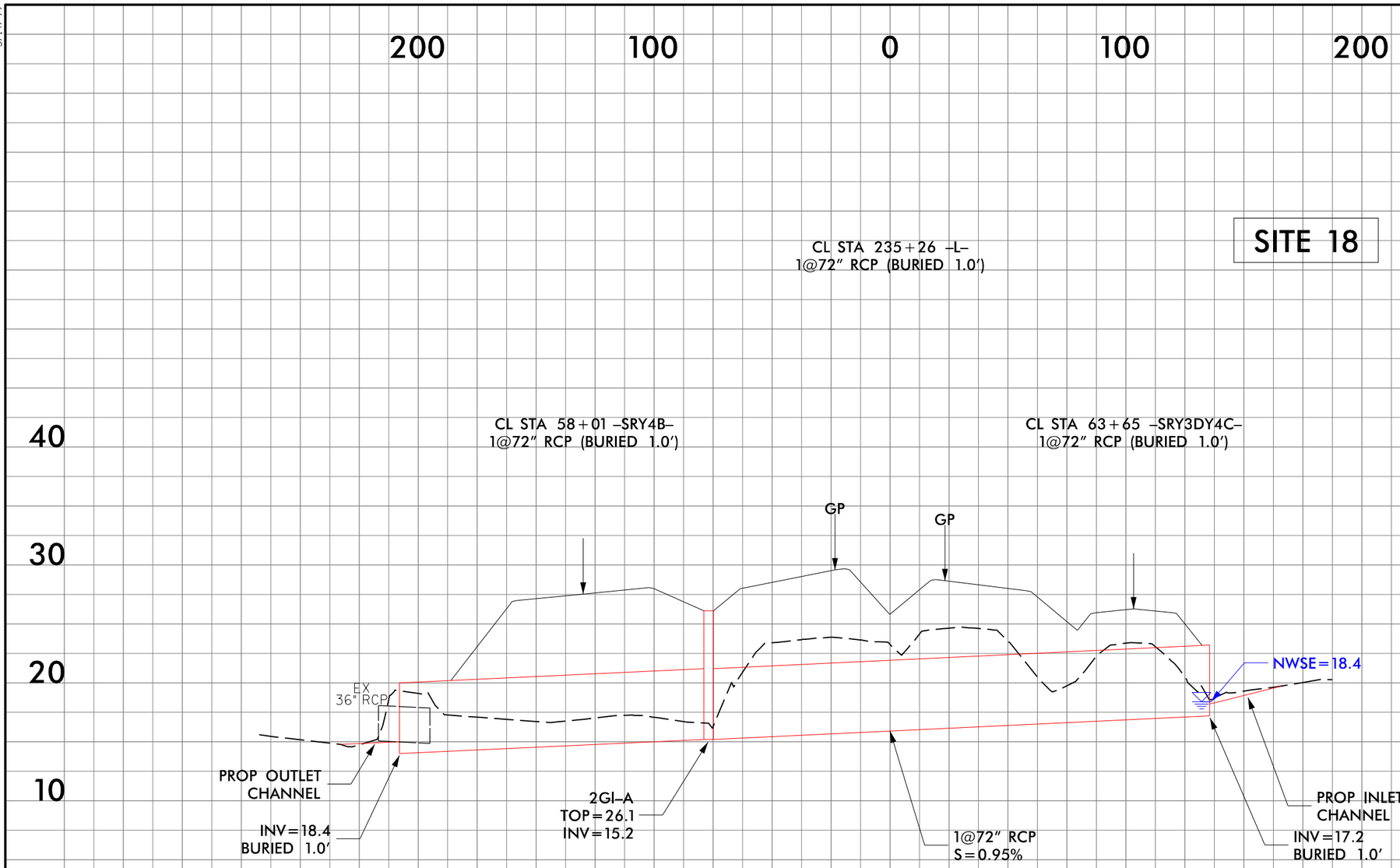
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 67 OF 89

DATE: 1/15/2024

SITE 18



1/15/2024
R-5777C_Hyd_prm_wet_psh_20-4-Sect.dgn
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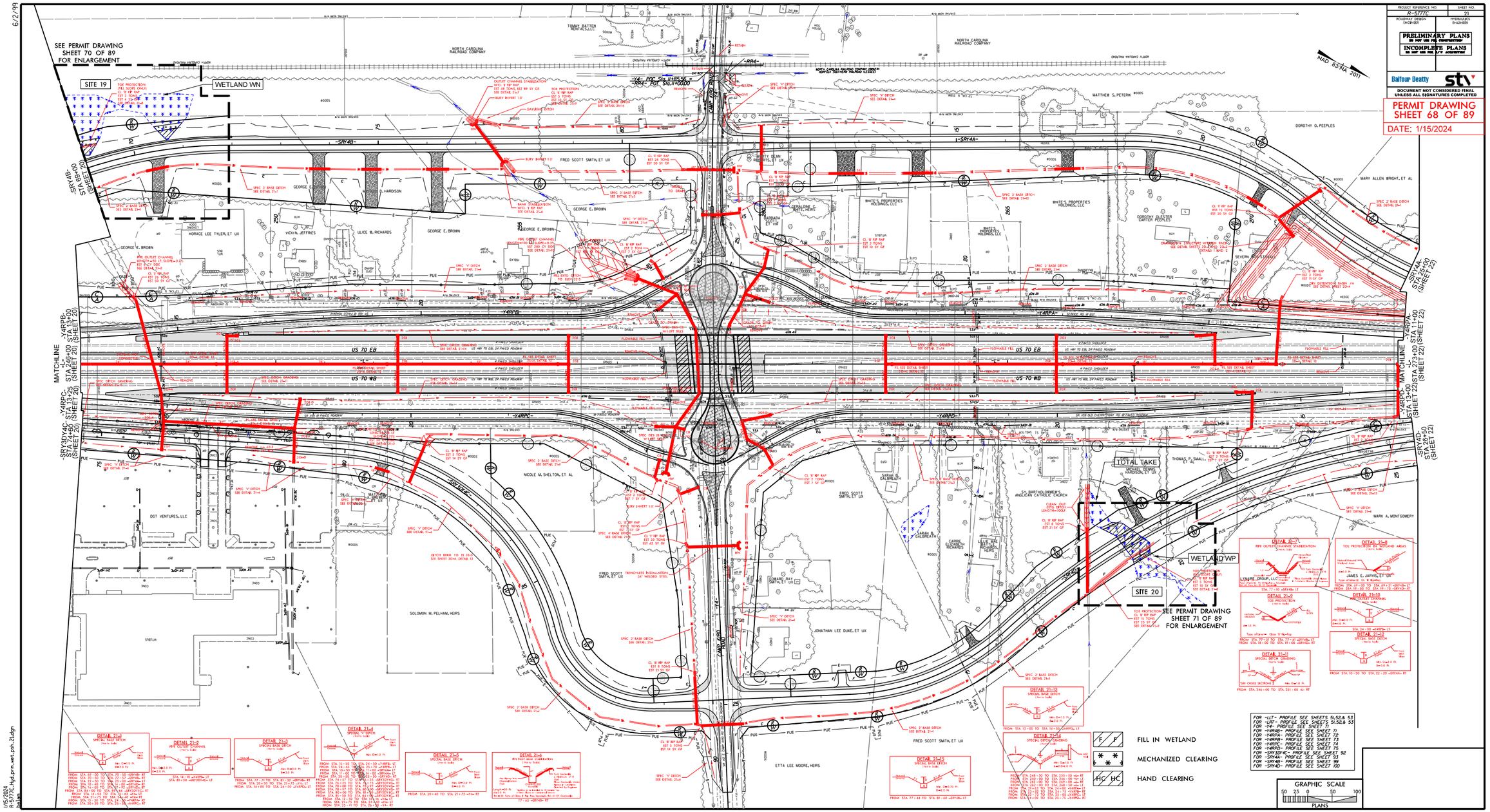
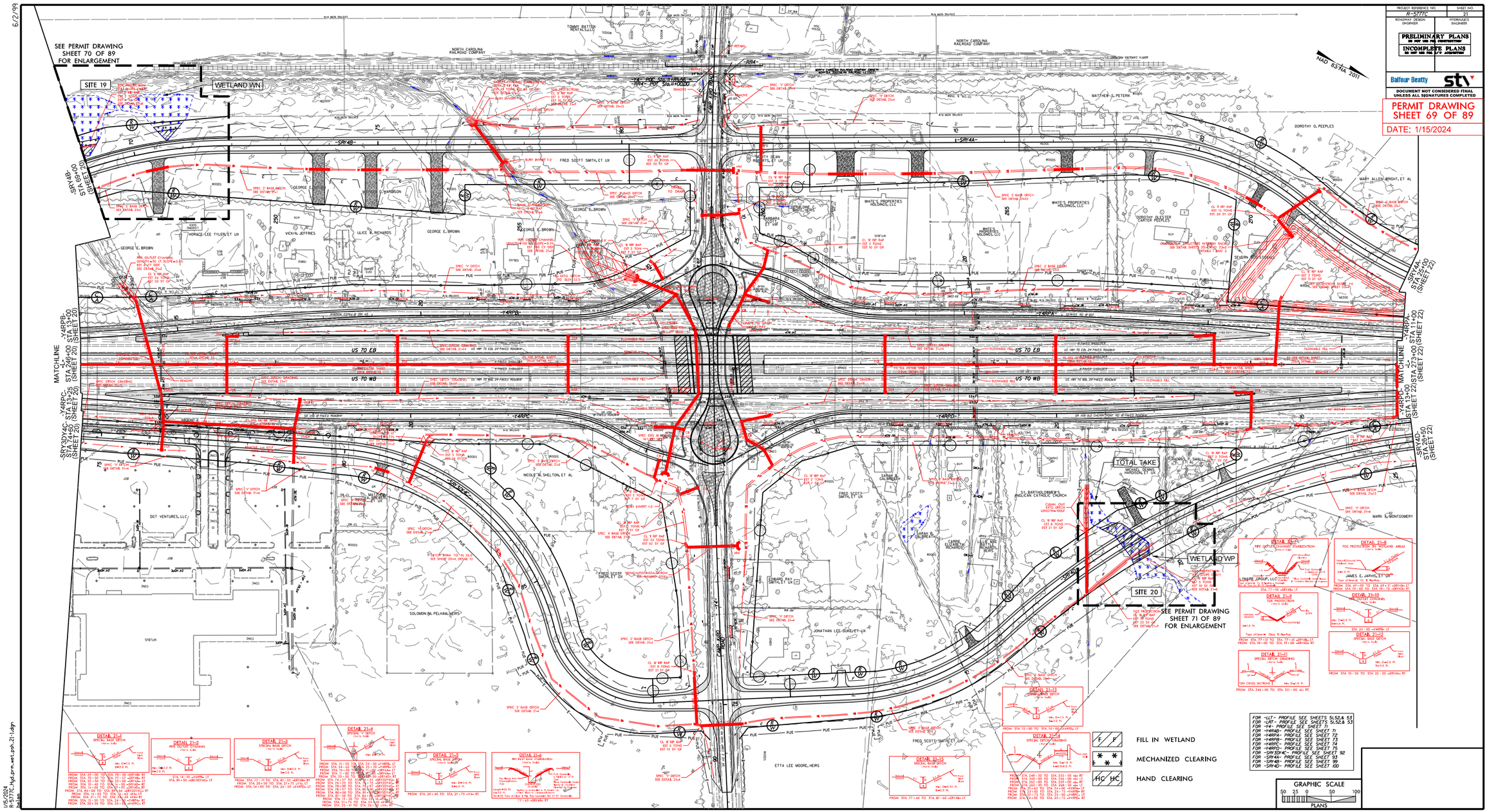
Submittal February 6, 2024



Submittal February 6, 2024



1/15/2024
R-5777C_hyd_prm_wet_psh_21.dgn

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
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

PERMIT DRAWING
SHEET 70 OF 89

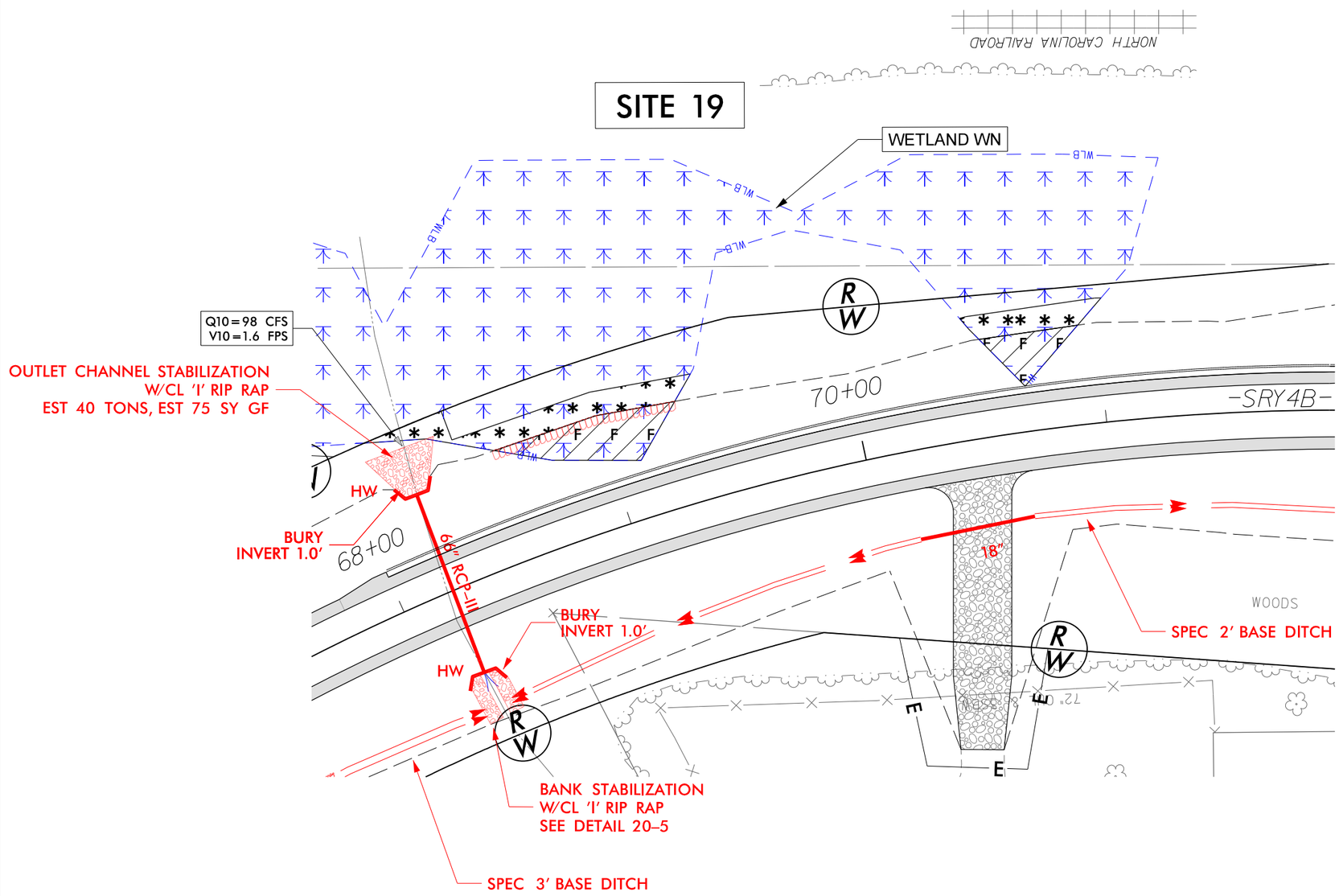
DATE: 1/15/2024

NAD 83/NA 2011

25' 12.5' 0 25' 50'
SCALE: 1"=50'

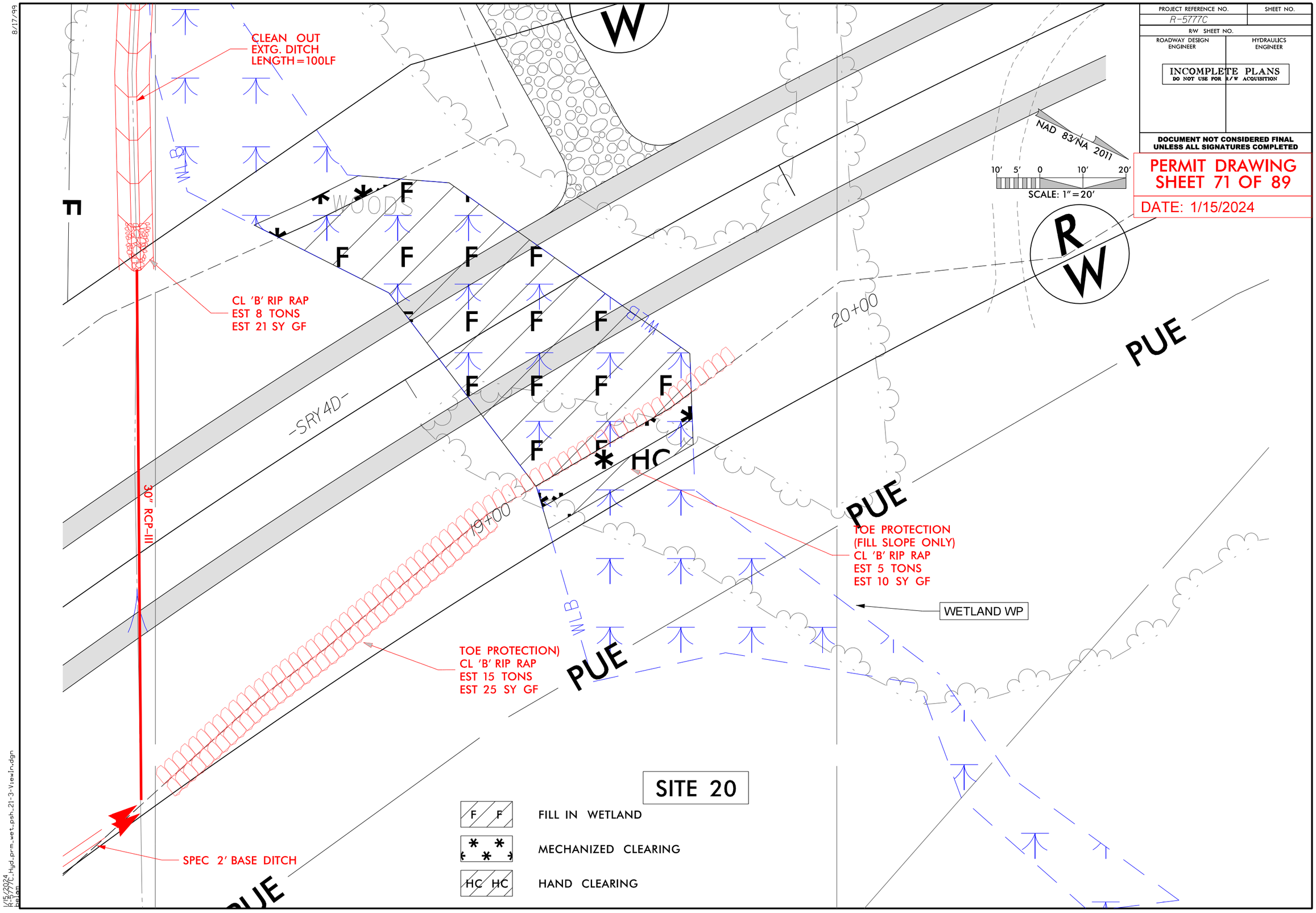
F F FILL IN WETLAND

* * MECHANIZED CLEARING



1/15/2024
R-5777C_Hyd_prm_wet_psh_21-2-View1n.dgn
pelam

Submittal February 6, 2024

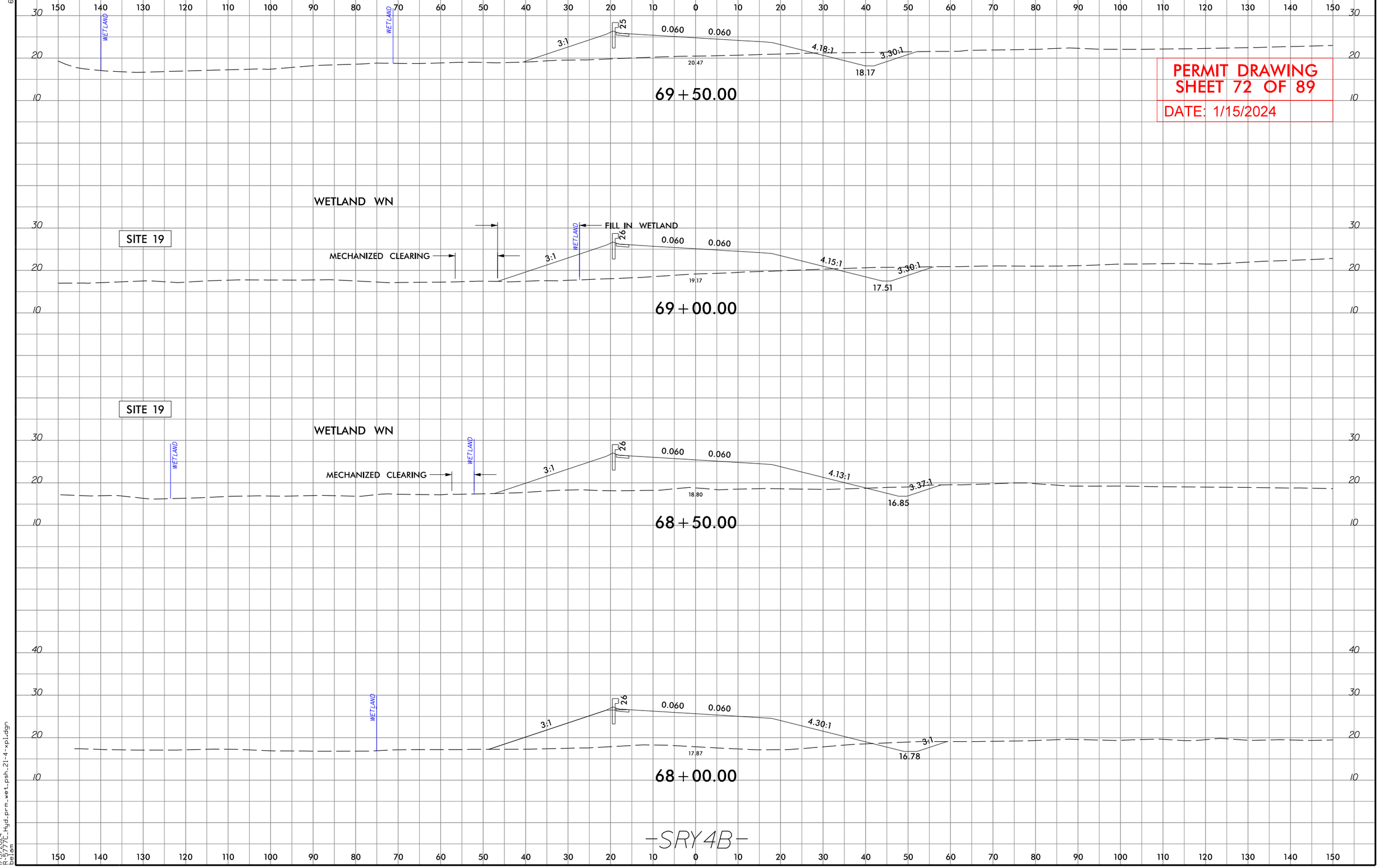


Submittal February 6, 2024

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-5777C	SRY4B-7

PERMIT DRAWING
SHEET 72 OF 89
DATE: 1/15/2024

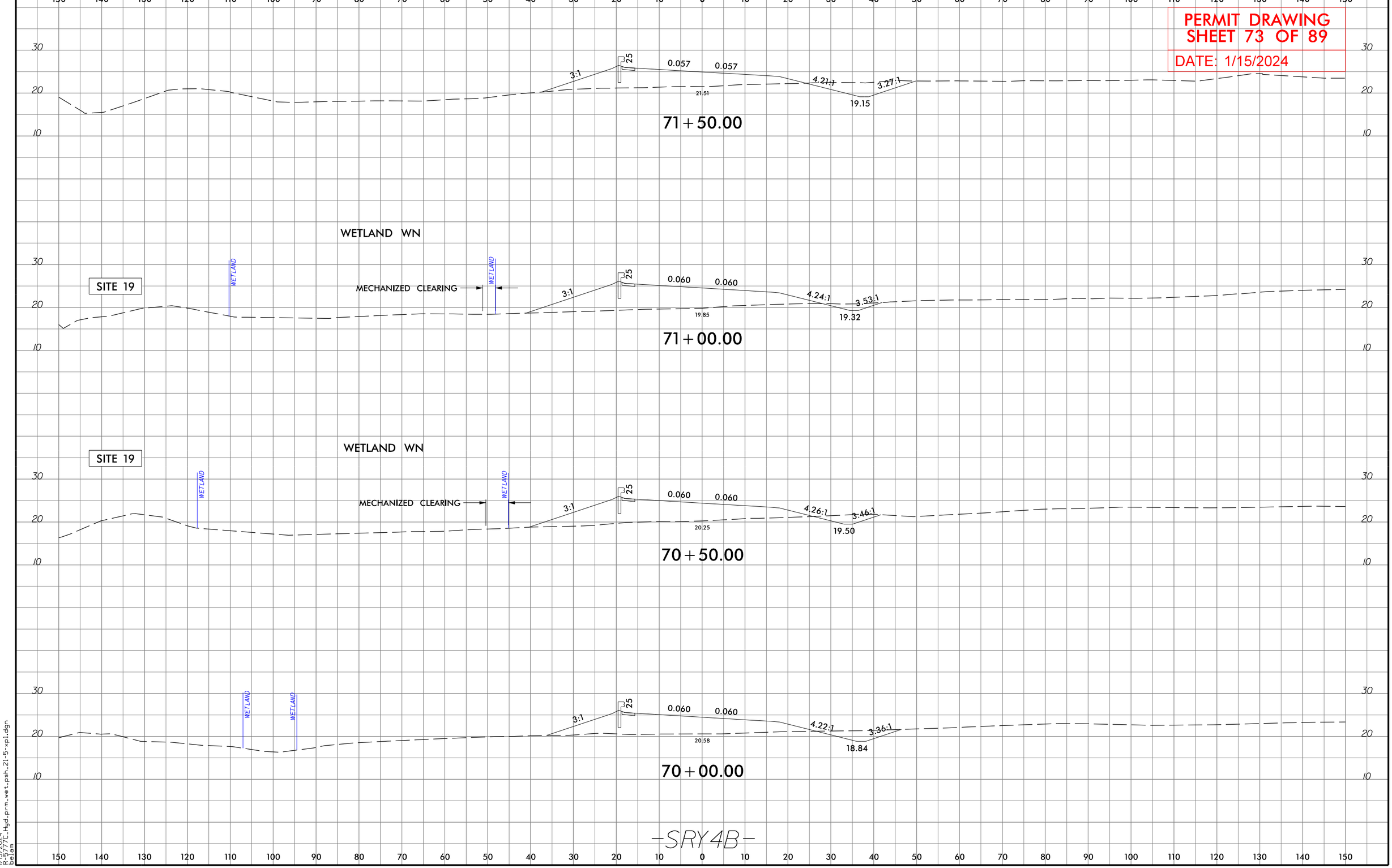


1/15/2024
R-5777C_Hyd_prm_wet_psh_21-4-xpl.dgn
belam

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5777C	SRY4B-8

PERMIT DRAWING
SHEET 73 OF 89
DATE: 1/15/2024



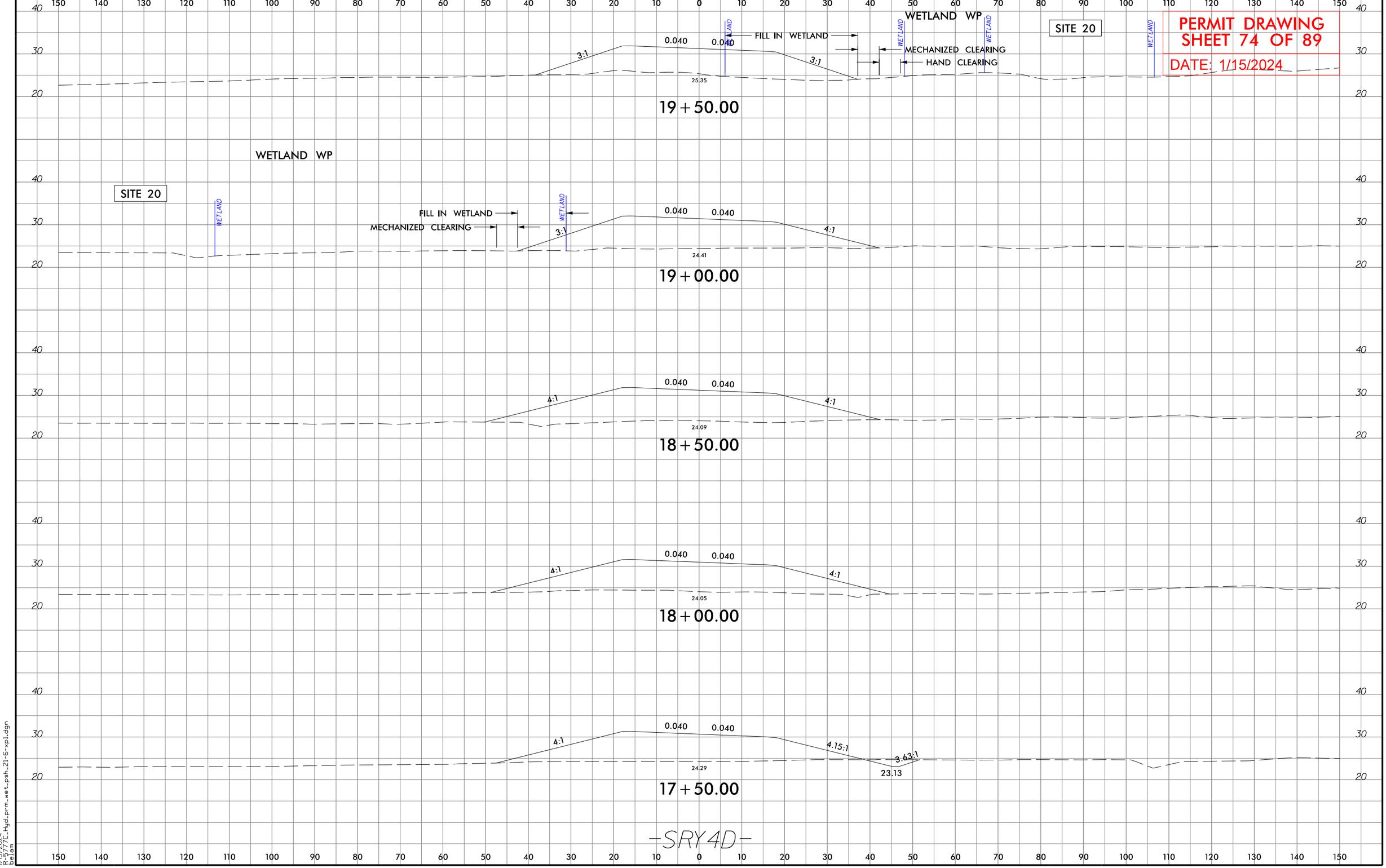
1/15/2024
R-5777C_Hyd_prm_wet_psh_21-5-xpl.dgn
belam

Submittal February 6, 2024

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5777C	SRY4D-4

PERMIT DRAWING
SHEET 74 OF 89
DATE: 1/15/2024



1/15/2024
R-5777C_Hyd_prm_wet_psh_21-6-xpl.dgn
belam

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

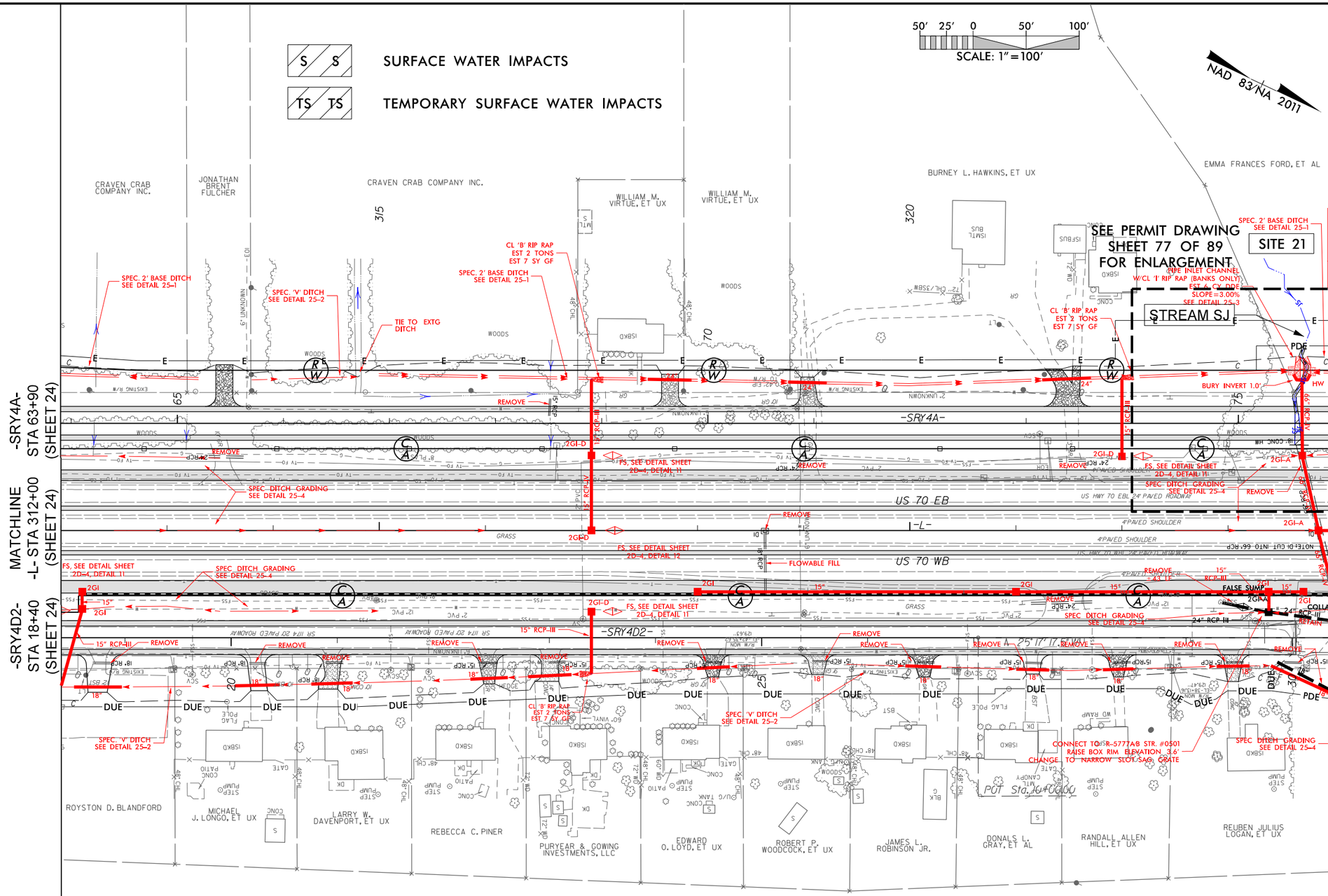
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty | stv

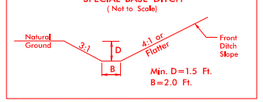
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 75 OF 89

DATE: 1/15/2024



DETAIL 25-1
SPECIAL BASE DITCH
(Not to Scale)

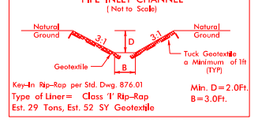


FROM STA. 63+90 TO STA. 65+20 –SRY4A– LT
FROM STA. 66+90 TO STA. 75+47 –SRY4A– LT
FROM STA. 75+70 TO STA. 75+90 –SRY4A– LT

DETAIL 25-2
SPECIAL 'V' DITCH
(Not to Scale)

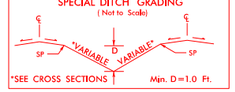
FROM STA. 65+70 TO STA. 66+70 –SRY4A– LT
FROM STA. 18+40 TO STA. 25+30 –SRY4D2– RT
FROM STA. 25+80 TO STA. 29+80 –SRY4D2– RT

DETAIL 25-3
PIPE INLET CHANNEL
(Not to Scale)



STA. 75+60 –SRY4A– LT

DETAIL 25-4
SPECIAL DITCH GRADING
(Not to Scale)



FROM STA. 312+00 TO STA. 313+50 –L– LT
FROM STA. 312+00 TO STA. 315+00 –L– RT
FROM STA. 312+50 TO STA. 316+00 –L– M
FROM STA. 322+50 TO STA. 324+00 –L– M

FOR –LLT– PROFILE SEE SHEETS 56 & 57
FOR –LRT– PROFILE SEE SHEETS 56 & 57
FOR –SRY4A– PROFILE SEE SHEETS 94 & 95
FOR –SRY4D2– PROFILE SEE SHEET 101

1/15/2024
R-5777C_Hyd_prm_wet_psh_25.dgn
Reform

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

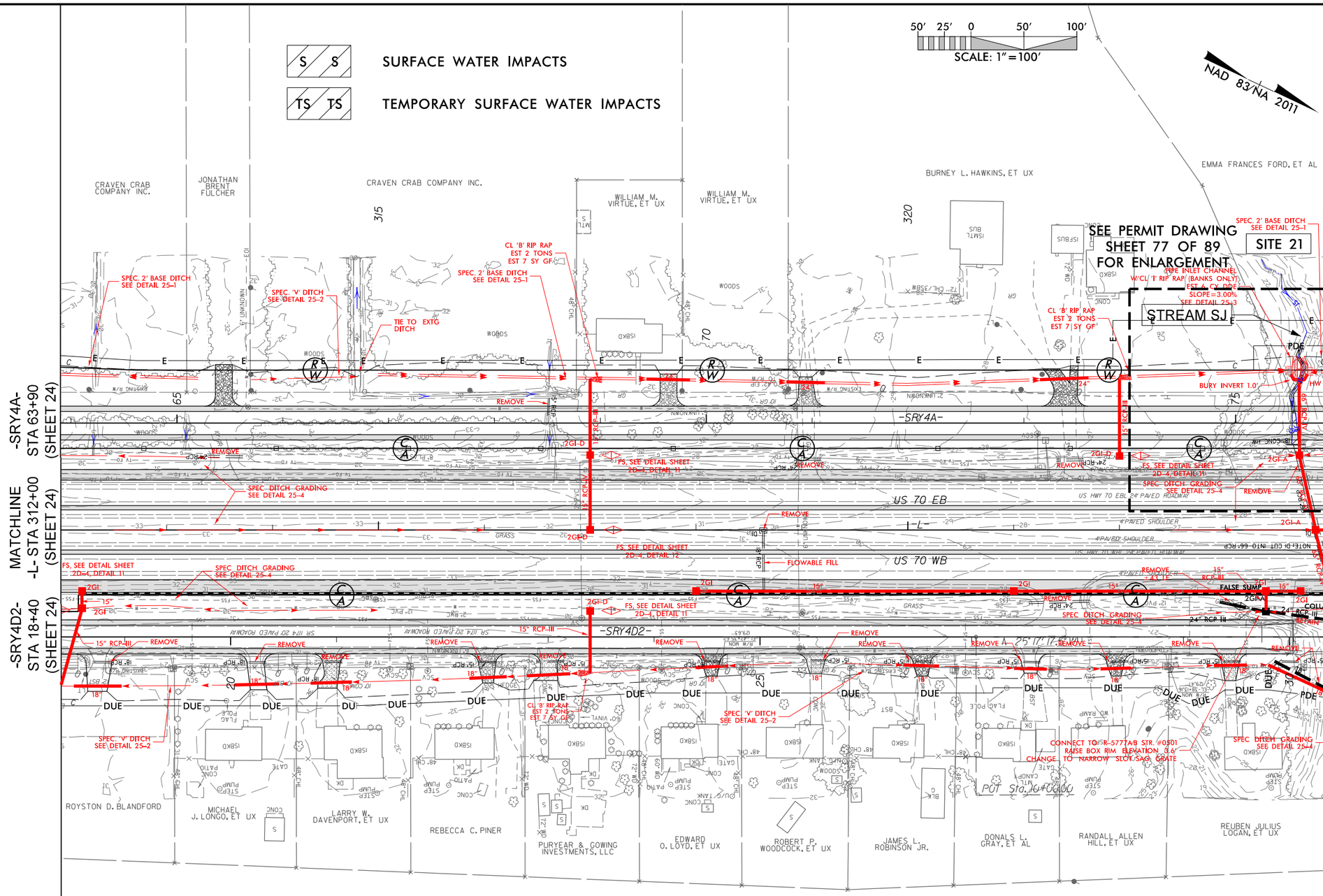
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty stv

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 76 OF 89

DATE: 1/15/2024



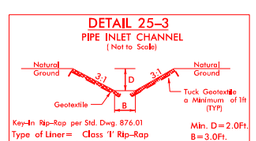
DETAIL 25-1
SPECIAL BASE DITCH
(Not to Scale)

FROM STA. 63+90 TO STA. 65+20 -SRY4A- LT
FROM STA. 66+90 TO STA. 75+47 -SRY4A- LT
FROM STA. 75+70 TO STA. 75+90 -SRY4A- LT

DETAIL 25-2
SPECIAL 'V' DITCH
(Not to Scale)

FROM STA. 65+70 TO STA. 66+70 -SRY4A- LT
FROM STA. 18+40 TO STA. 25+30 -SRY4D2- RT
FROM STA. 25+80 TO STA. 29+80 -SRY4D2- RT

DETAIL 25-3
PIPE INLET CHANNEL
(Not to Scale)



STA. 75+60 -SRY4A- LT

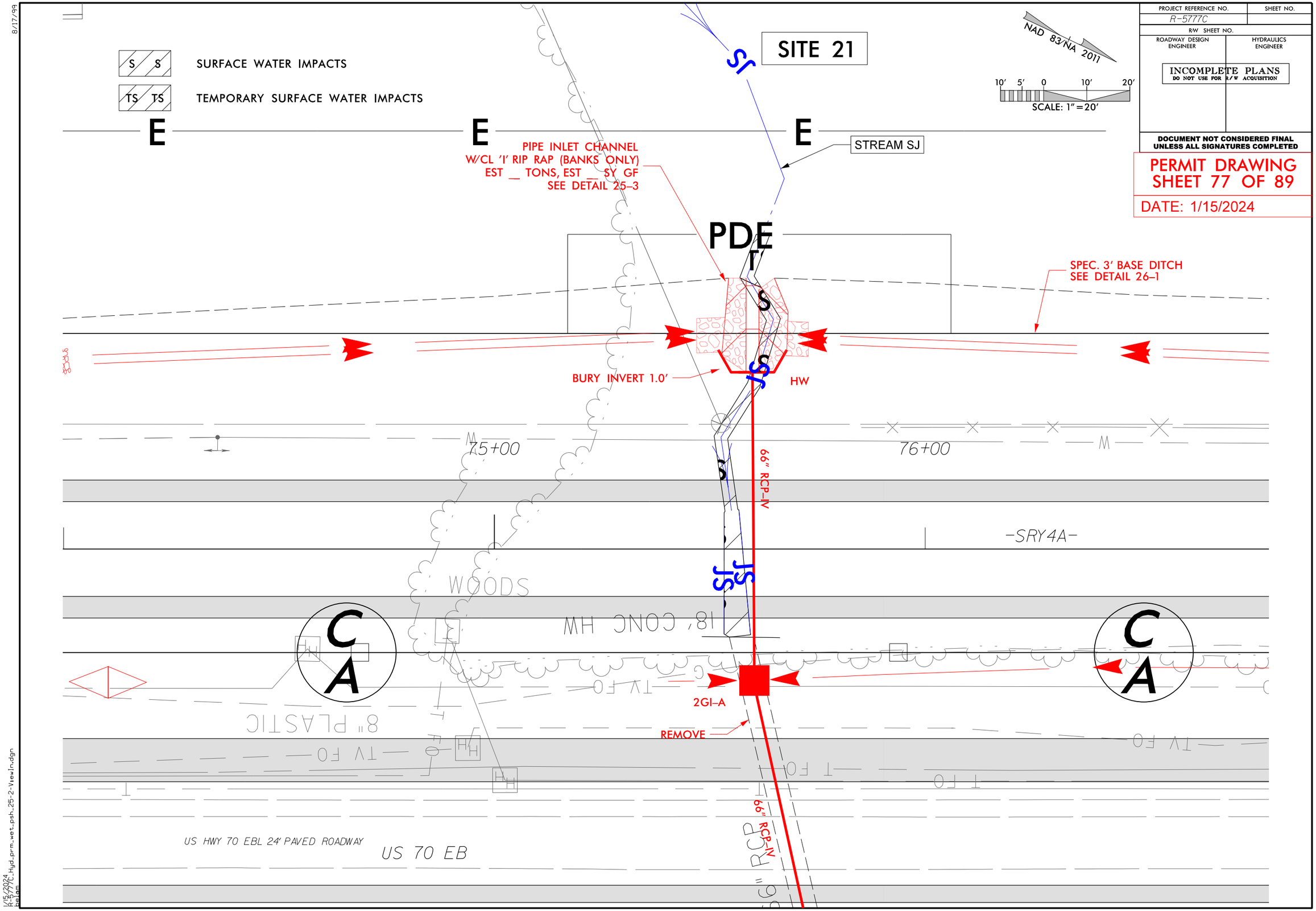
DETAIL 25-4
SPECIAL DITCH GRADING
(Not to Scale)

FROM STA. 312+00 TO STA. 313+50 -L- LT
FROM STA. 312+00 TO STA. 315+00 -L- RT
FROM STA. 312+50 TO STA. 316+00 -L- M
FROM STA. 322+50 TO STA. 324+00 -L- M

PAVEMENT REMOVAL

FOR -LLT- PROFILE SEE SHEETS 56 & 57
FOR -LRT- PROFILE SEE SHEETS 56 & 57
FOR -SRY4A- PROFILE SEE SHEETS 94 & 95
FOR -SRY4D2- PROFILE SEE SHEET 101

1/15/2024
R-5777C_Hyd_prm_wet_psh_25-1.dgn
bplam


SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
SITE 21
NAD 83/NA 2011
SCALE: 1"=20'
PROJECT REFERENCE NO.
R-5777C
SHEET NO.
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
PERMIT DRAWING
SHEET 77 OF 89
DATE: 1/15/2024
STREAM SJ
PIPE INLET CHANNEL
W/CL 'I' RIP RAP (BANKS ONLY)
EST __ TONS, EST __ SY GF
SEE DETAIL 25-3
SPEC. 3' BASE DITCH
SEE DETAIL 26-1
BURY INVERT 1.0'
HW
75+00
76+00
66" RCP-IV
-SRY4A-
WOODS
18' CONC HW
2GI-A
REMOVE
8" PLASTIC
US HWY 70 EBL 24' PAVED ROADWAY
US 70 EB

Submittal February 6, 2024

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

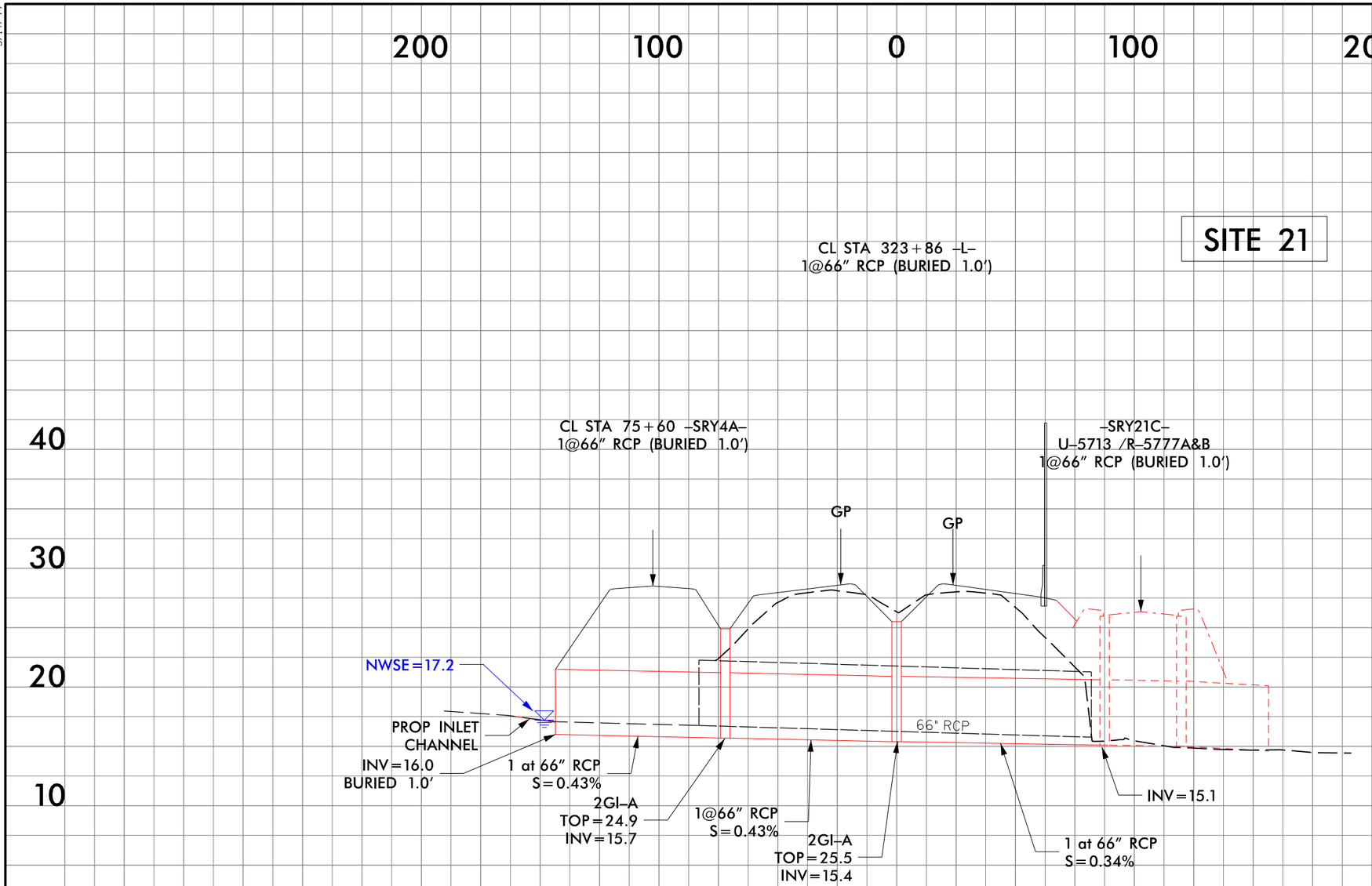
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 78 OF 89

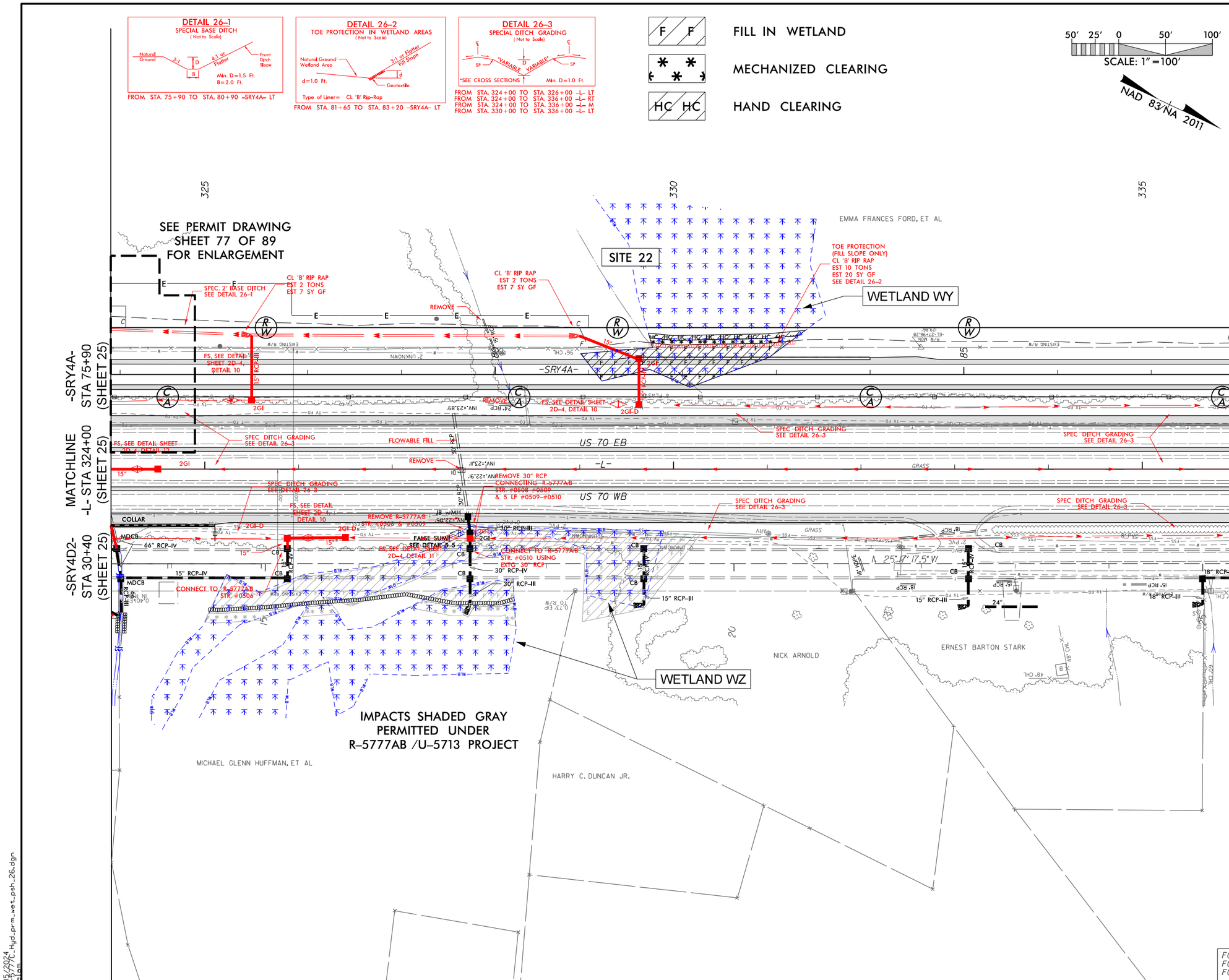
DATE: 1/15/2024

SITE 21



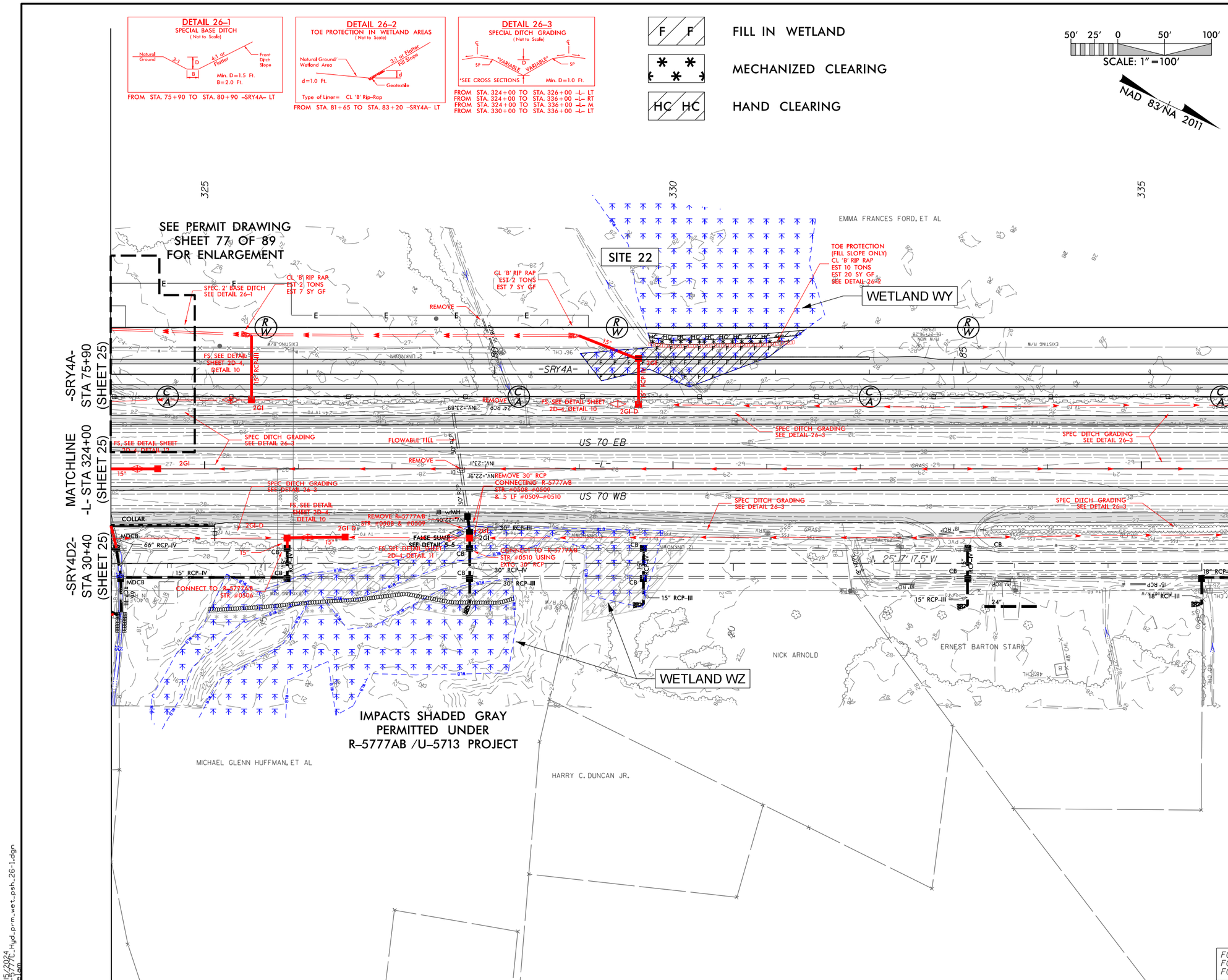
1/15/2024
R-5777C_Hyd_prm_wet_psh_25-3-Sect.dgn
ptelom

Submittal February 6, 2024



1/15/2024
R-5777C_Hyd_prm_wet_psh_26.dgn
belam

Submittal February 6, 2024



PROJECT REFERENCE NO.	SHEET NO.
R-5777C	26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 80 OF 89

DATE: 1/15/2024

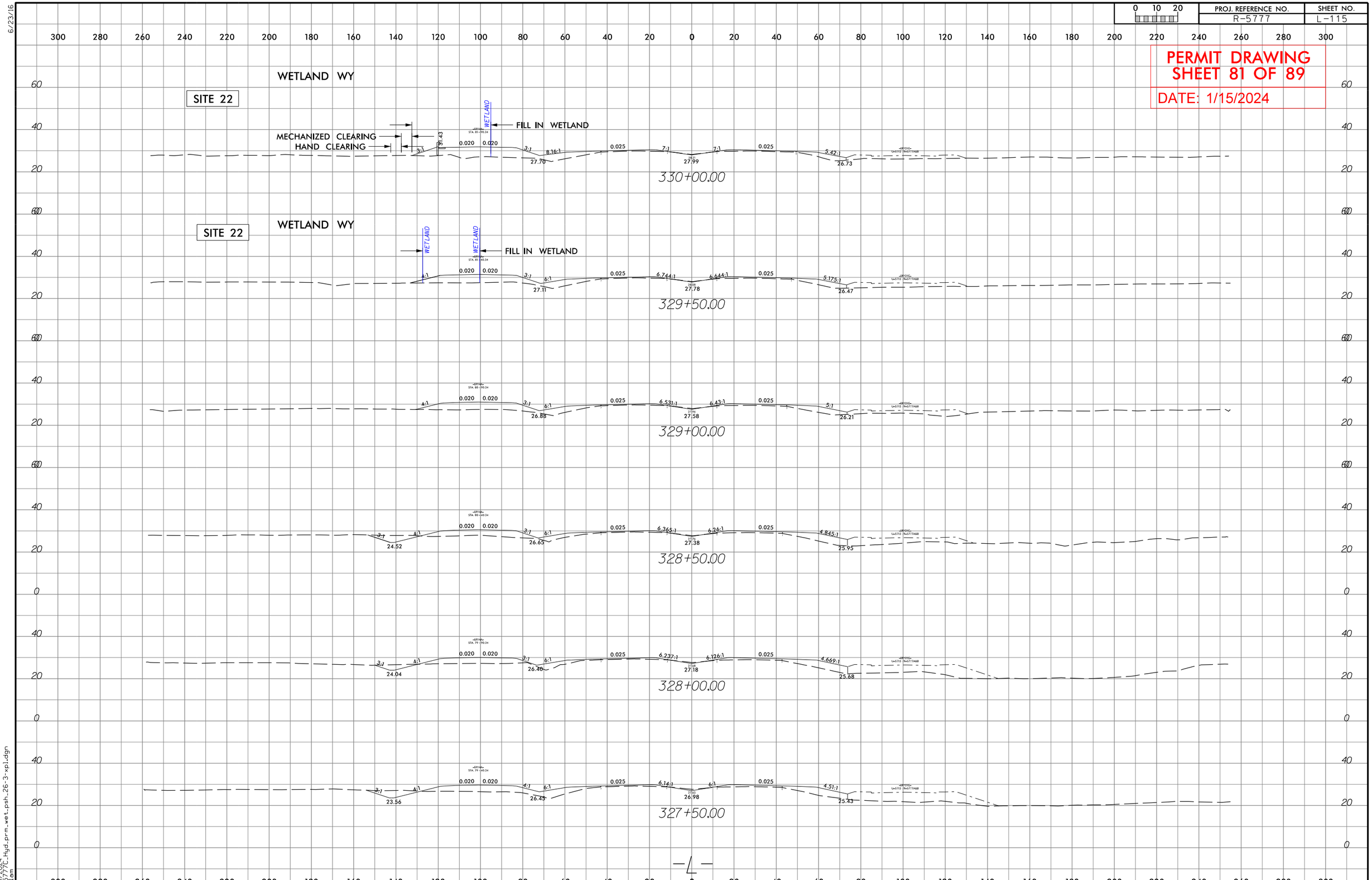
1/15/2024
R-5777C_Hyd_prm_wet_psh_26-1.dgn
bellam

Submittal February 6, 2024

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-5777	L-115

PERMIT DRAWING
SHEET 81 OF 89
DATE: 1/15/2024



1/15/2024
R-5777C_Hyd_prm_wet_psh_26-3-xpl.dgn
belam

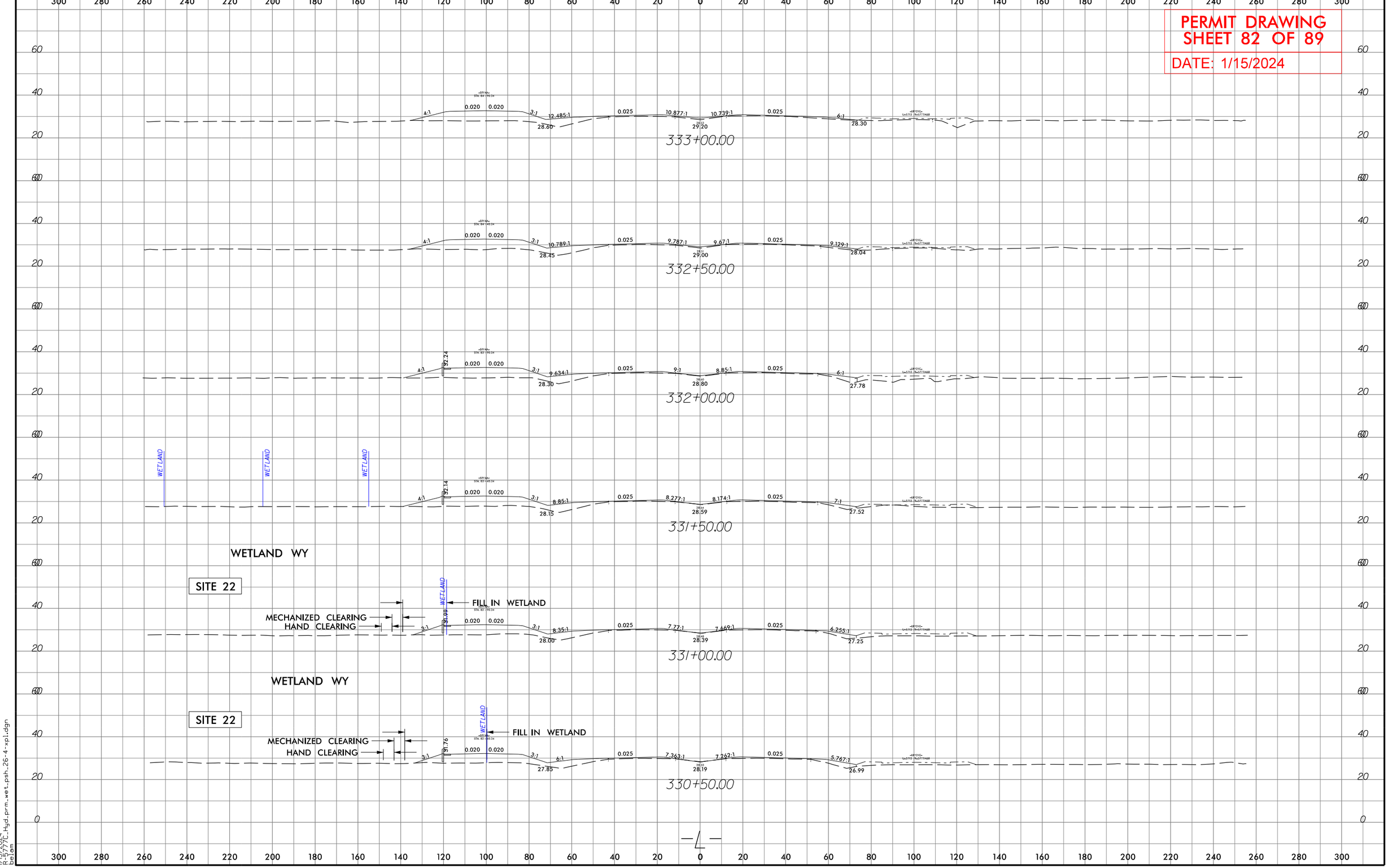
Submittal February 6, 2024

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-5777	L-116

0 10 20

PERMIT DRAWING
SHEET 82 OF 89
DATE: 1/15/2024



1/15/2024
R-5777C_Hyd_prm_wet_psh_26-4-xpl.dgn
betom

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

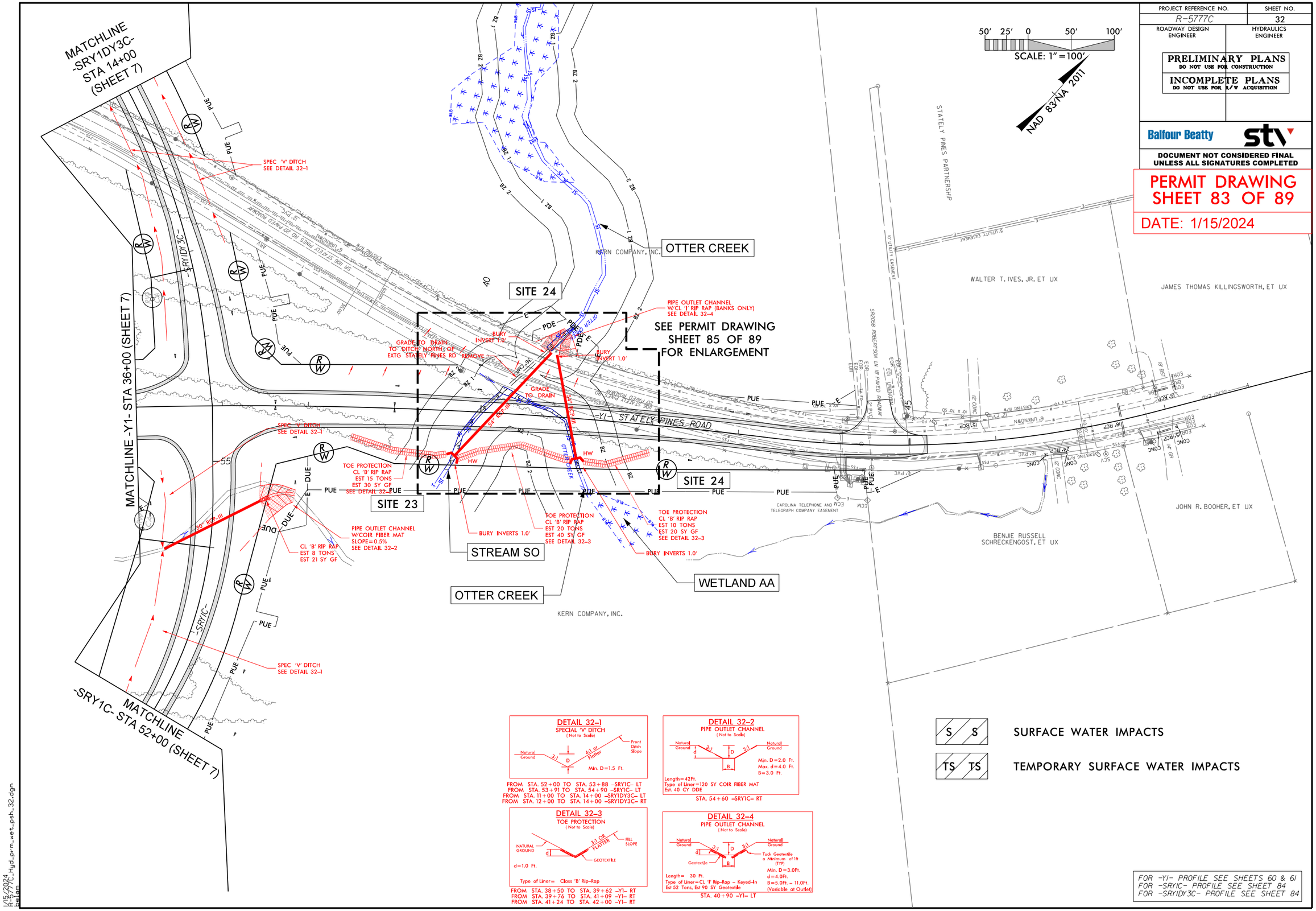
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty stv

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 83 OF 89

DATE: 1/15/2024



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R-5777C_Hyd_prm_wet_psh_32.dgn
Beam

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

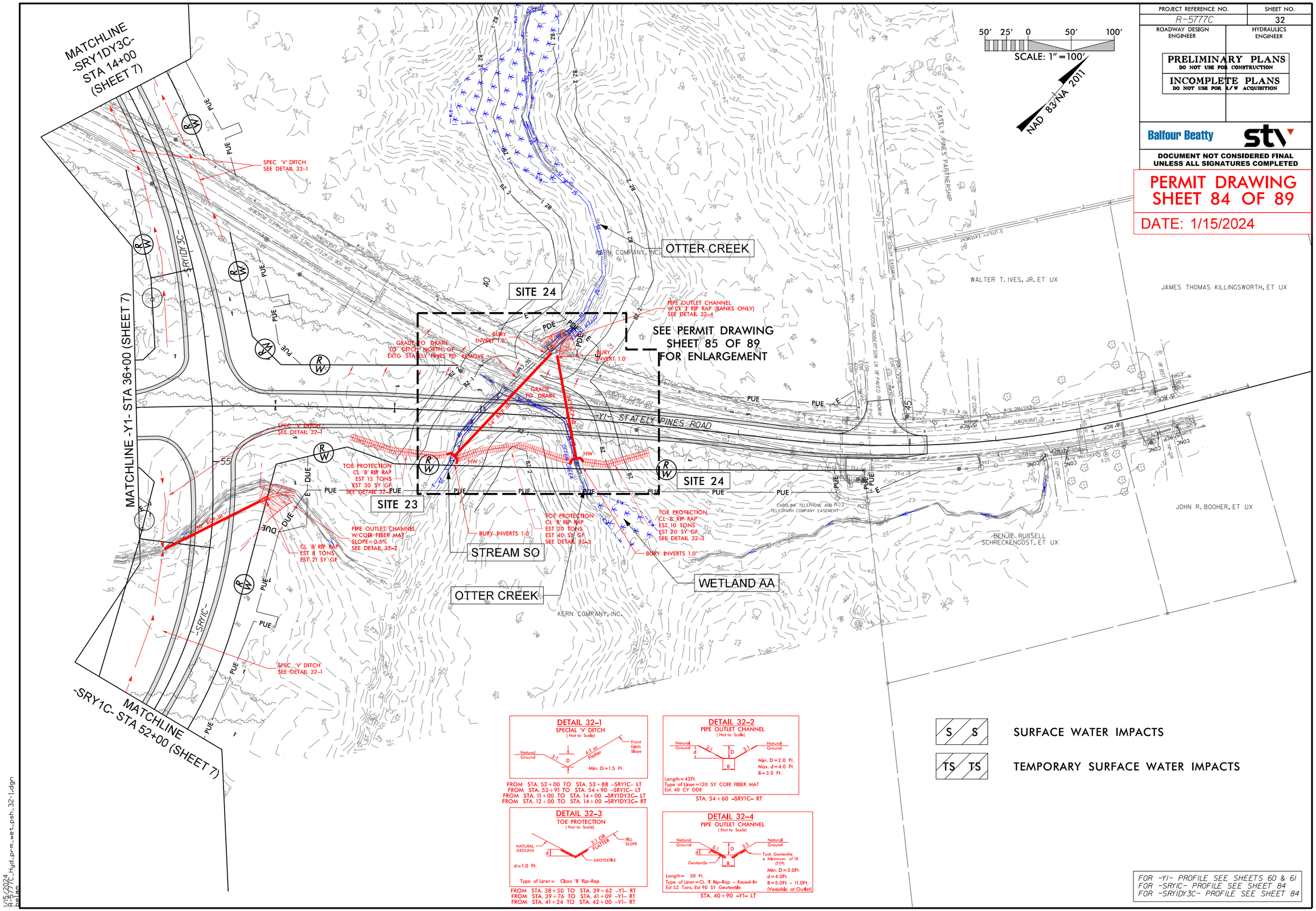
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty stv

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 84 OF 89

DATE: 1/15/2024



DETAIL 32-1
SPECIAL 'V' DITCH
(Not to Scale)

FROM STA. 52+00 TO STA. 53+88 -SRY1C- LT
FROM STA. 53+91 TO STA. 54+90 -SRY1C- LT
FROM STA. 11+00 TO STA. 14+00 -SRY1DY3C- LT
FROM STA. 12+00 TO STA. 14+00 -SRY1DY3C- RT

DETAIL 32-2
PIPE OUTLET CHANNEL
(Not to Scale)

Length=42Ft.
Type of Liner=120 SY COIR FIBER MAT
Est. 40 CY DDE

STA. 54+60 -SRY1C- RT

DETAIL 32-3
TOE PROTECTION
(Not to Scale)

d=1.0 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA. 38+50 TO STA. 39+62 -Y1- RT
FROM STA. 39+76 TO STA. 41+09 -Y1- RT
FROM STA. 41+24 TO STA. 42+00 -Y1- RT

DETAIL 32-4
PIPE OUTLET CHANNEL
(Not to Scale)

Length= 30 Ft.
Type of Liner=CL 'I' Rip-Rap - Keyed-In
Est 52 Tons, Est 90 SY Geotextile

STA. 40+90 -Y1- LT

S S SURFACE WATER IMPACTS

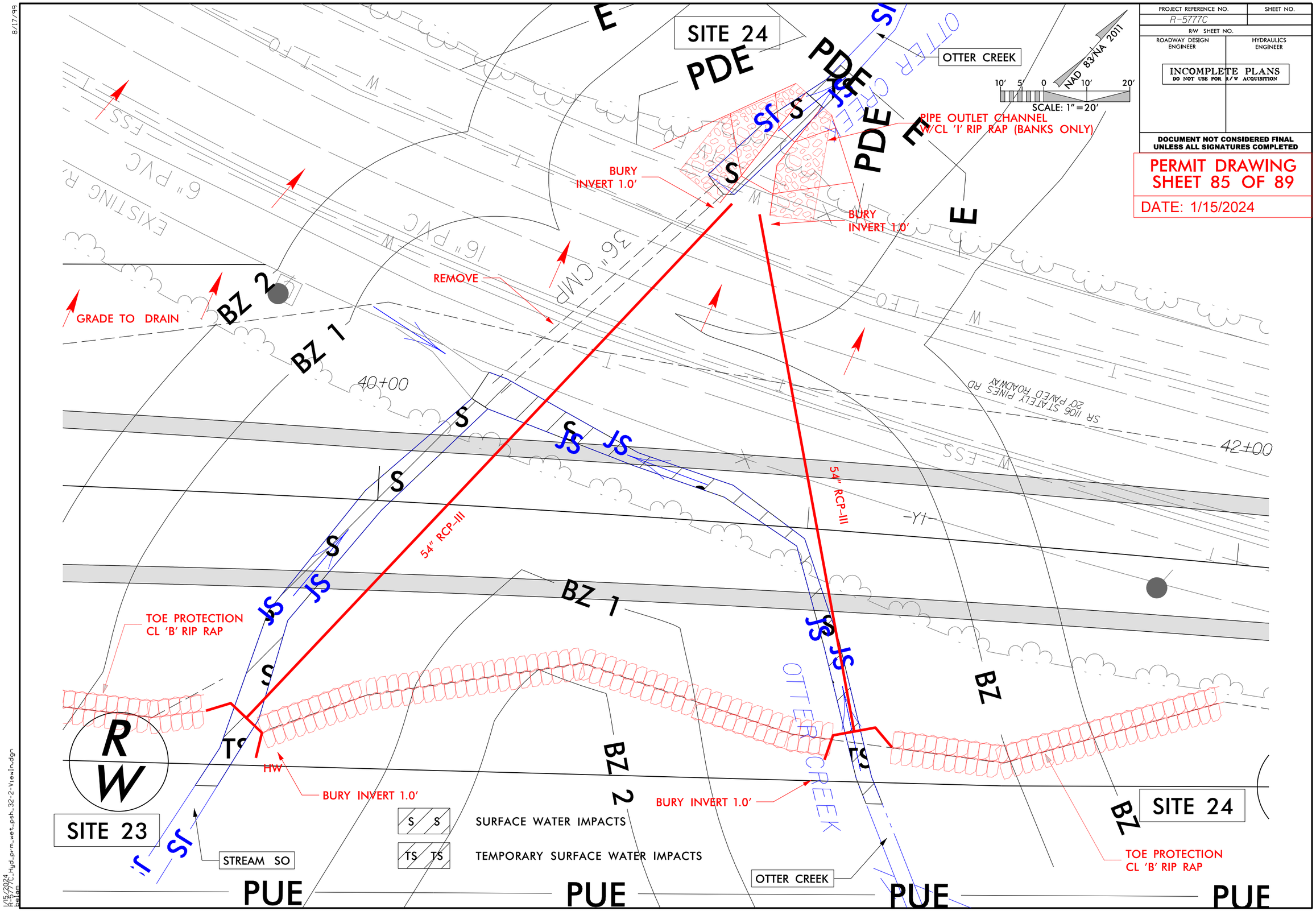
TS TS TEMPORARY SURFACE WATER IMPACTS

FOR -Y1- PROFILE SEE SHEETS 60 & 61
FOR -SRY1C- PROFILE SEE SHEET 84
FOR -SRY1DY3C- PROFILE SEE SHEET 84

1/15/2024
R-5777C_Hyd_prm_wet_psh_32-1.dgn
Balfour

Submittal February 6, 2024

8/17/99



PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
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

PERMIT DRAWING
SHEET 85 OF 89

DATE: 1/15/2024

1/15/2024
R-5777C_Hyd_prm_wet_psh_32-2-View1.dgn
belam

WETLAND AND SURACE WATER IMPACTS 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	14+56 to 15+65-L-	1@7'x7' RCBC	0.005			0.006		0.006		40		
	15+16 to 15+65-L-LT	INLET CHANNEL						0.005	0.004	19	19	
	14+56 to 14+87-L-RT	OUTLET CHANNEL						0.015	0.002	54	11	
2	20+07 to 20+70-L-LT	ROADWAY FILL				0.010						
	22+60 to 22+81-L-LT					0.001						
3	29+31 to 29+62-SRY1C-LT	42" RCP	0.007									
4	29+69 to 29+80-SRY1C-RT	42" RCP				0.001						
5	29+70 to 32+33-Y1-	ROADWAY FILL	0.494			0.080	0.001					
	18+37 to 22+01-Y1LPD-											
	26+34-26+38-Y1RPD-LT											
6	14+31 to 16+39-SRY1DY3C-	30" RCP	0.121			0.030	0.032					
7	56+14 to 56+26-L-RT	66" RCP OUTLET CHANNEL						0.001	0.002	6	15	
	18+83 to 19+46 -Y1RPD-	66" RCP						0.010		91		
	18+81 to 18+94-Y1RPD-RT	INLET CHANNEL							0.002		15	
	18+85 to 18+94-Y1RPD-RT	INLET BANK STABILIZATION								20		
	19+20 to 19+46-Y1RPD-LT	OUTLET CHANNEL							0.001		13	
	19+20 to 19+37-Y1RPD-LT	OUTLET BANK STABILIZATION								25		
TOTALS*:			**0.627**	**0.000**	**0.000**	**0.128**	**0.033**	**0.037**	**0.011**	**255**	**73**	**0**

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1-15-2024
CRAVEN
R-5777C
44648.3.4

Revised 2018 Feb

WETLAND AND SURACE WATER IMPACTS 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)
7	20+16 to 21+75-SRY1DY3C-	66" RCP	0.126			0.050	0.043	0.013		156		
	21+38 to 21+56-SRY1DY3C-LT	INLET CHANNEL							0.001		9	
	21+41 to 21+56-SRY1DY3C-LT	INLET BANK STABILIZATION								20		
	20+39 to 20+60-SRY1DY3C-	OUTLET CHANNEL						0.002	0.001	34	17	
8	63+34 to 63+43-L-RT	1@6'x7' RCBC OUTLET CHANNEL						0.004	0.003	23	15	
	29+06 to 29+10-SRY1DY3C-	1@7'x7' RCBC				0.007		0.007		67		
	29+05 to 29+10-SRY1DY3C-LT	INLET CHANNEL							0.002		22	
	29+05 to 29+10-SRY1DY3C-LT	INLET BANK STABILIZATION								30		
	29+15 to 29+33-SRY1DY3C-RT	OUTLET CHANNEL							0.002		28	
	29+15 to 29+29-SRY1DY3C-RT	OUTLET BANK STABILIZATION								30		
9	34+03 to 35+29-SRY1DY3C-RT	ROADWAY FILL	0.062			0.014	0.004					
10	42+04 to 42+30-SRY1DY3C-RT	ROADWAY FILL				0.002	0.002					
	11+24 to 12+95-Y1D2-RT	ROADWAY FILL	0.013		0.010		0.029					
11	49+26 to 49+33-SRY1DY3C-RT	36" RCP						0.001		14		
	49+28 to 49+32-SRY1DY3C-RT	OUTLET CHANNEL						0.001	0.001	12	15	
12	94+40 to 94+99-L-	60" RCP						0.008		105		
	61+06 to 61+14-SRY1DY3C-RT											
	94+40 to 94+53-L-LT	INLET CHANNEL							0.002		20	
	94+47 to 94+53-L-LT	INLET BANK STABILIZATION								16		
TOTALS*:			**0.201**	**0.000**	**0.010**	**0.073**	**0.078**	**0.036**	**0.012**	**507**	**126**	**0**

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1-15-2024
CRAVEN
R-5777C
44648.3.4

Revised 2018 Feb

WETLAND AND SURACE WATER IMPACTS 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)
13	103+70 to 103+91-L-RT	48" RCP						0.003		18		
	103+70 to 103+79-L-RT	OUTLET CHANNEL						0.001	0.001	20	11	
14	25+64 to 25+84-SRY4B-	1@7'x7' RCBC						0.001		7		
	25+68 to 25+83-SRY4B-RT	INLET CHANNEL							0.003		18	
	25+72 to 25+83-SRY4B-RT	INLET BANK STABILIZATION								25		
	25+64 to 25+84-SRY4B-LT	OUTLET CHANNEL							0.001		10	
	25+68 to 25+84-SRY4B-LT	OUTLET BANK STABILIZATION								30		
	202+88 to 203+25-L-LT	1 at 7'x7' RCBC						0.001		11		
	202+95 to 203+14-L-LT	OUTLET CHANNEL						0.004	0.003	31	21	
15	201+66 to 203+45-L-RT	2@7'x7' RCBC	0.099		0.043	0.033	0.089					
16	220+32 to 220+55-L-LT	54" RCP						0.004		33		
	220+43 to 220+55-L-LT	OULET CHANNEL						0.002	0.001	20	7	
17	231+01 to 232+19-L-RT	ROADWAY FILL	0.004		0.019	0.016						
18	234+52 to 236+79-L-	72" RCP						0.017		223		
	235+03 to 235+22-L-RT	INLET CHANNEL						0.001	0.001	26	10	
	236+47 to 236+79-L-LT	OUTLET CHANNEL						0.002	0.002	16	21	
TOTALS*:			**0.103**	**0.000**	**0.062**	**0.049**	**0.089**	**0.036**	**0.012**	**460**	**98**	**0**

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1-15-2024
CRAVEN
R-5777C
44648.3.4

Revised 2018 Feb

WETLAND AND SURACE WATER IMPACTS 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)
19	68+13 to 69+40-SRY4B-LT	ROADWAY FILL	0.022			0.025						
	70+47 to 71+03-SRY4B-LT		0.010			0.012						
20	18+84 to 19+61-SRY4D-	ROADWAY FILL	0.069			0.008	0.005					
21	323+61 to 323+76-L-LT	66" RCP						0.006		64		
	323+61 to 323+69-L-LT	INLET CHANNEL						0.002	0.001	23	12	
22	329+01 to 331+42-L-LT	ROADWAY FILL	0.138			0.018	0.019					
23	39+61 to 40+24-Y1-	54" RCP						0.011	0.002	93	18	
24	40+20 to 41+30-Y1-	54" RCP						0.012	0.001	126	18	
	40+71 to 41+03-Y1-LT	OUTLET CHANNEL						0.005	0.001	30	10	
	TOTAL	SHEET 84 OF 87	0.627	0.000	0.000	0.128	0.033	0.037	0.011	255	73	0
	TOTAL	SHEET 85 OF 87	0.201	0.000	0.010	0.073	0.078	0.036	0.012	507	126	0
	TOTAL	SHEET 86 OF 87	0.103	0.000	0.062	0.049	0.089	0.036	0.012	460	98	0
	TOTAL	SHEET 87 OF 87	0.239	0.000	0.000	0.063	0.024	0.036	0.005	336	58	0
TOTALS*:			**1.170**	**0.000**	**0.072**	**0.313**	**0.224**	**0.145**	**0.040**	**1558**	**355**	**0**

*Rounded totals are sum of actual impacts

NOTES:

Site 20: Wetland WP Total Take West of -SRY4D- Due to Loss of Function: 0.039 ac (Impacts not included in table above)

Fill Mitigation = 2:1, Total Take Mitigation = 1:1

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1-15-2024
CRAVEN
R-5777C
44648.3.4

See Sheet 1A For Index of Sheets
See Sheet 1B For Standard Symbology Sheet

Submittal February 6, 2024

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CRAVEN COUNTY

PERMIT DRAWING
SHEET 1 OF 14

DATE: 1/15/2024

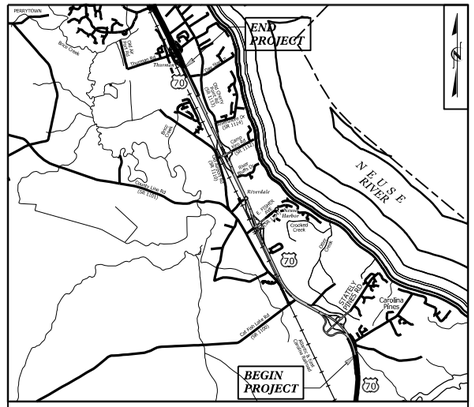
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5777C	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
44648.3.4	N/A	DESIGN-BUILD

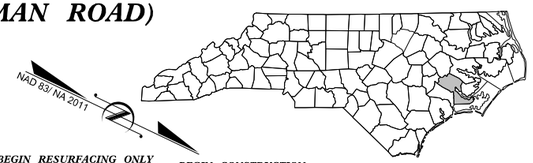
LOCATION: U.S. 70 FROM THE HAVELOCK BYPASS TO EAST OF S.R. 1116 (THURMAN ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNING, ITS AND STRUCTURES

UTILITY WETLAND AND SURFACE WATER IMPACTS PERMIT

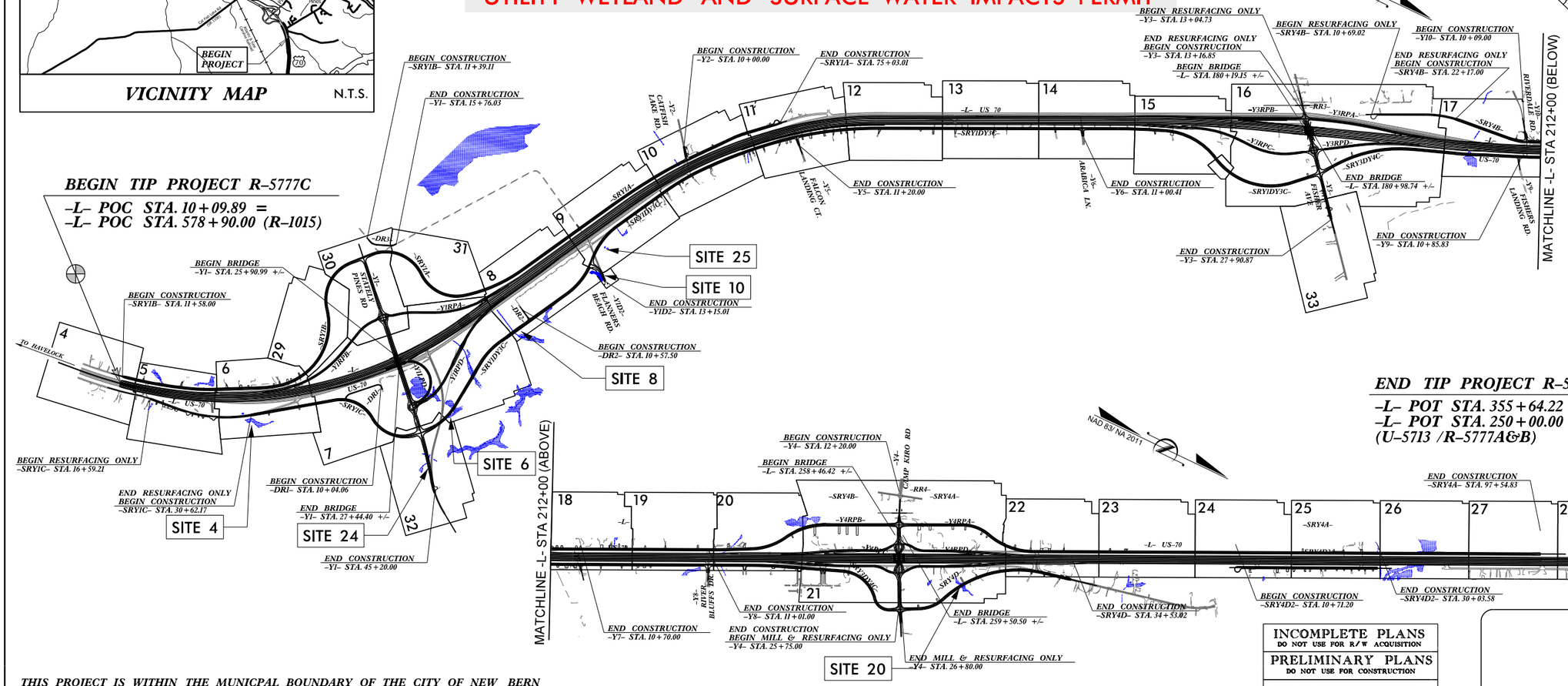


VICINITY MAP N.T.S.



BEGIN TIP PROJECT R-5777C
-L- POC STA. 10+09.89 =
-L- POC STA. 578+90.00 (R-1015)

END TIP PROJECT R-5777C
-L- POT STA. 355+64.22 =
-L- POT STA. 250+00.00
(U-5713 /R-5777A&B)



THIS PROJECT IS WITHIN THE MUNICPAL BOUNDARY OF THE CITY OF NEW BERN
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2019 = 31,800
ADT 2045 = 41,800
K = 9%
D = 55%
T = 8%*
V = 75 MPH
* (TTST=3%+DUAL 5%)
FUNC. CLASSIFICATION = INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-5777C = 6.486 MILES
LENGTH STRUCTURE TIP PROJECT R-5777C = 0.058 MILES
TOTAL LENGTH OF TIP PROJECT R-5777C = 6.544 MILES

NCDOT CONTACT: BYRON KYLE
NCDOT - DESIGN-BUILD UNIT

PLANS PREPARED FOR THE NCDOT BY:

Balfour Beatty

stv
NC LICENSE NUMBER F-0991
900 W TRADE ST STE 715,
CHARLOTTE, NC 28202

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 17, 2023

LETTING DATE:
JANUARY 17, 2023

J. ADAM FREEMAN, PE
PROJECT ENGINEER

NARONG PHAL, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

TIP PROJECT: R-5777C

CONTRACT: C204695

1/16/2024
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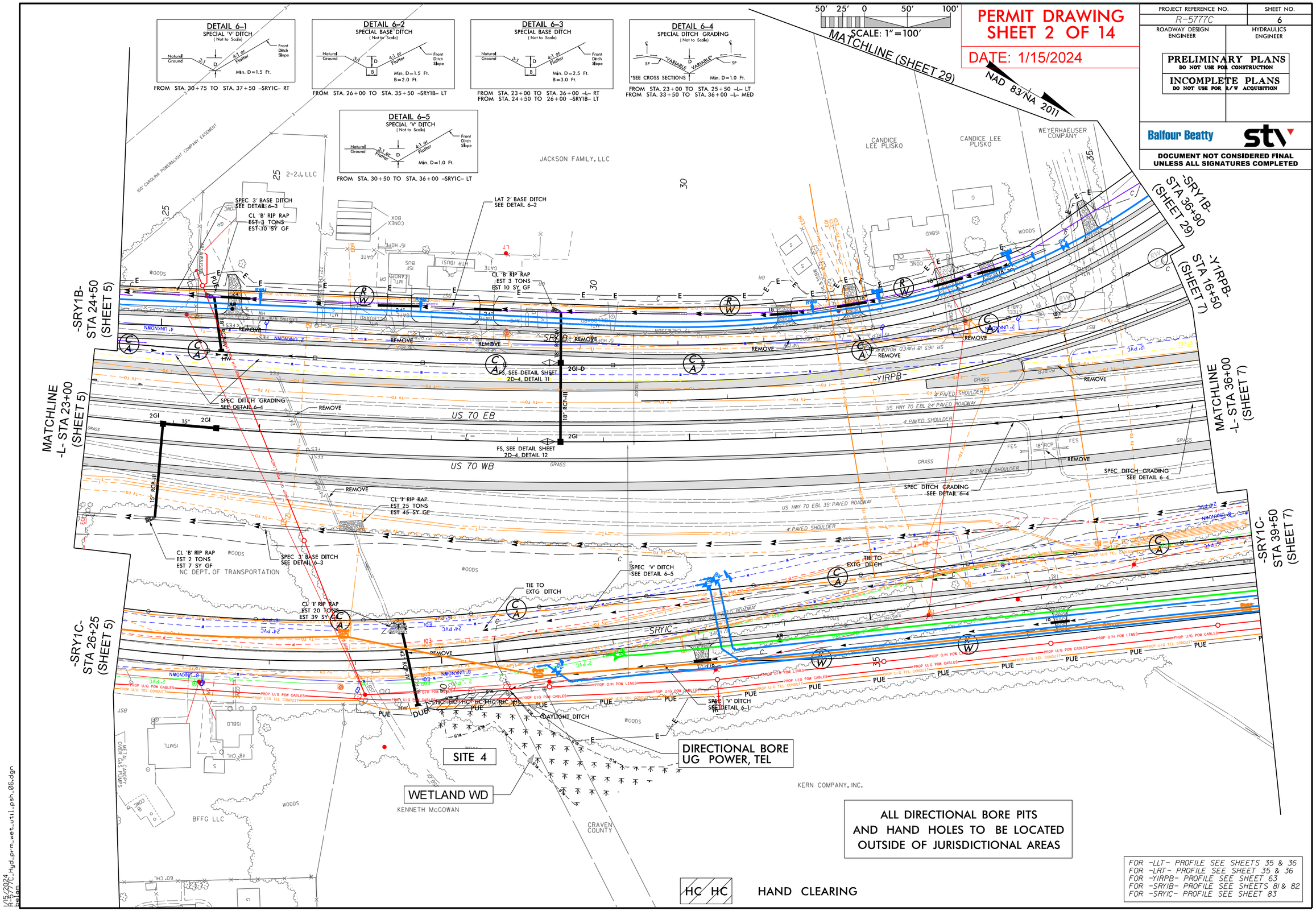
belam

Submittal February 6, 2024

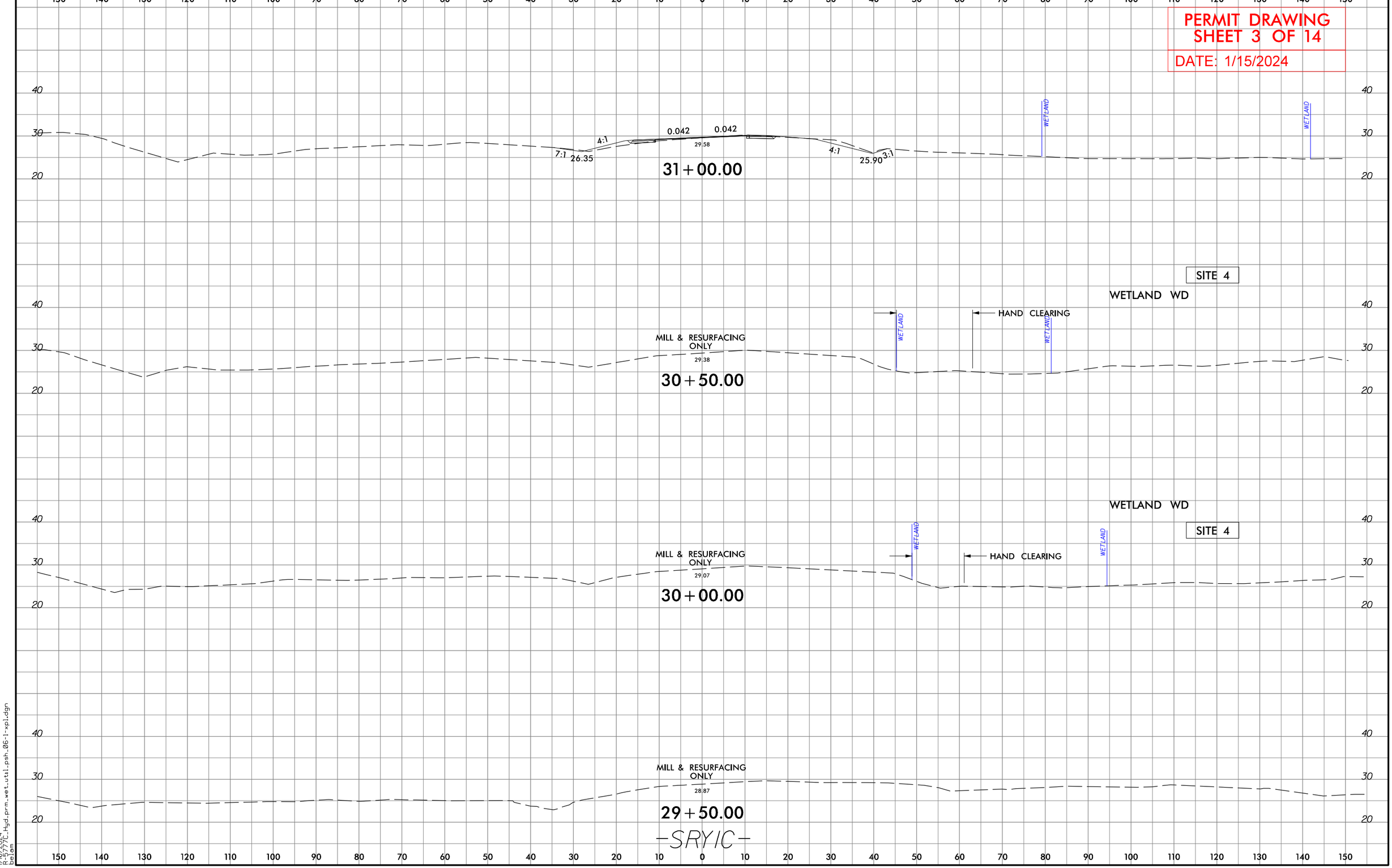


Submittal February 6, 2024

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5777C	SRY1C-8

PERMIT DRAWING
SHEET 3 OF 14
DATE: 1/15/2024



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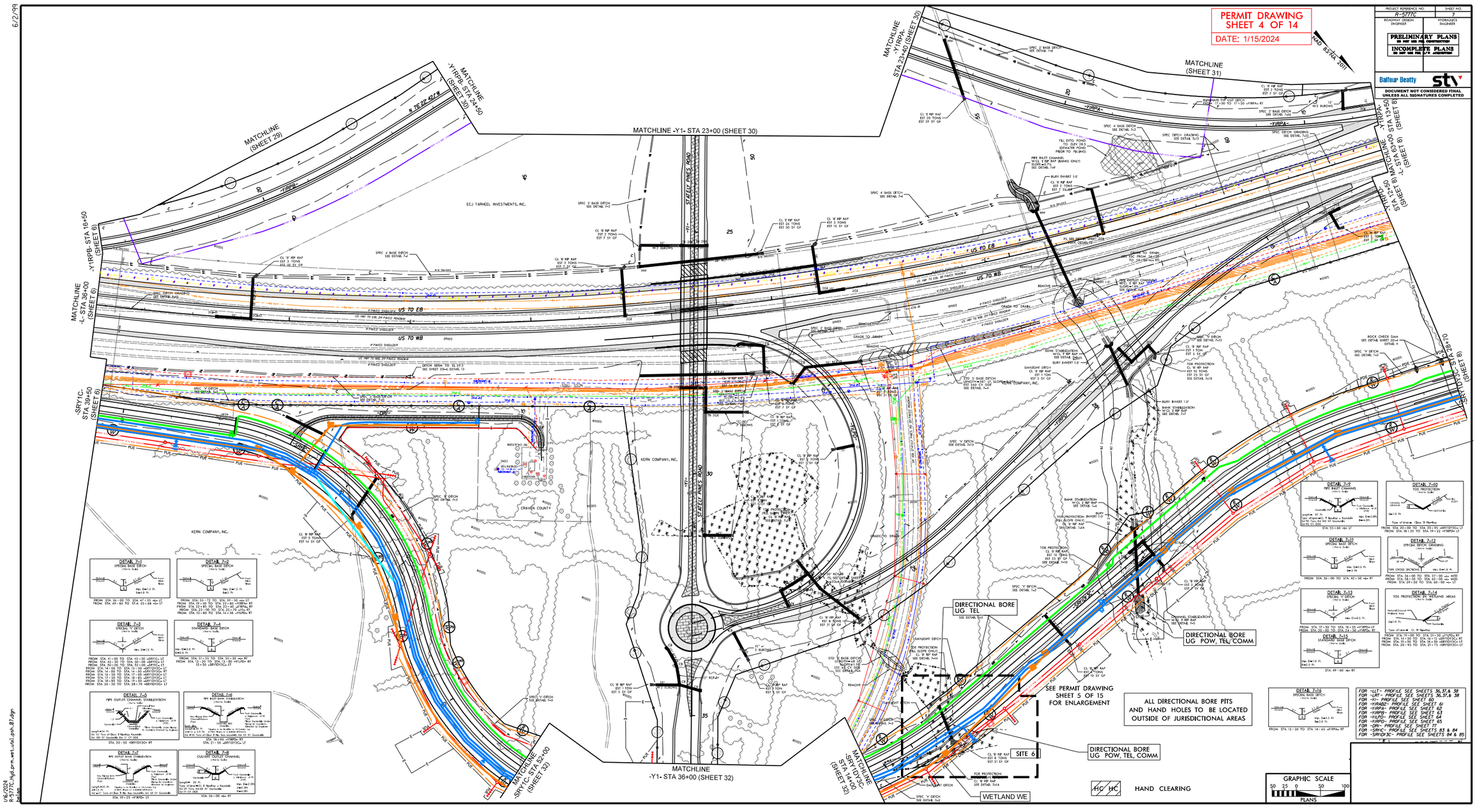
belam

Submittal February 6, 2024



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1/16/2024
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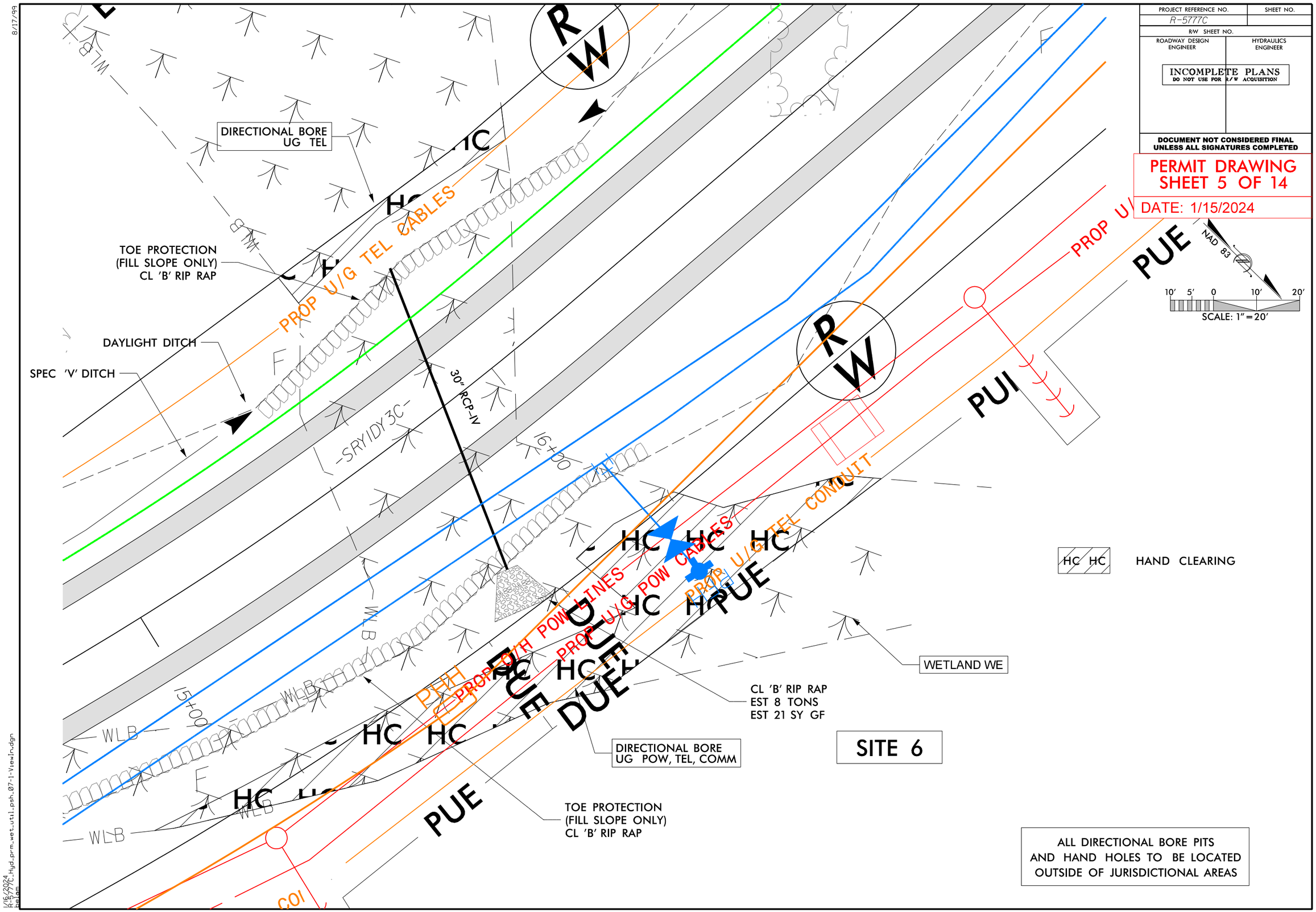
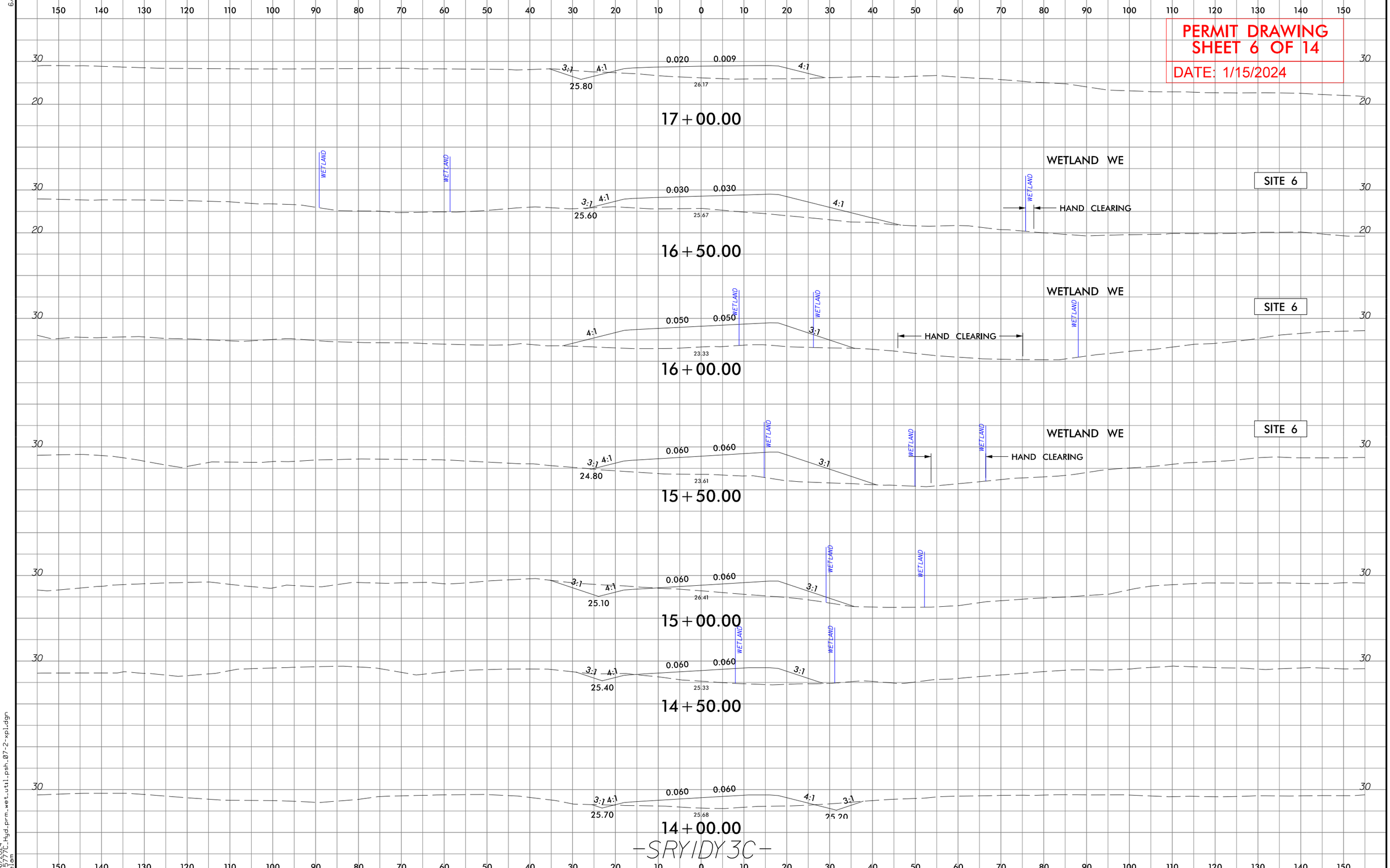

PROJECT REFERENCE NO.
R-5777C
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING
SHEET 5 OF 14
DATE: 1/15/2024
NAD 83
10' 5' 0 10' 20'
SCALE: 1" = 20'
DIRECTIONAL BORE UG TEL
TOE PROTECTION (FILL SLOPE ONLY) CL 'B' RIP RAP
DAYLIGHT DITCH
SPEC 'V' DITCH
PROP U/G TEL CABLES
30" RCP-IV
SRYIDY3C
16+00
15+00
PROP U/G TEL CONDUIT
PROP U/G POW CABLES
PROP OHTH POW LINES
PUE
PUI
WLB
HC
HAND CLEARING
WETLAND WE
CL 'B' RIP RAP
EST 8 TONS
EST 21 SY GF
DIRECTIONAL BORE UG POW, TEL, COMM
SITE 6
TOE PROTECTION (FILL SLOPE ONLY) CL 'B' RIP RAP
ALL DIRECTIONAL BORE PITS AND HAND HOLES TO BE LOCATED OUTSIDE OF JURISDICTIONAL AREAS
8/17/99
1/16/2024
R-5777C_Hyd_prm_wet_util_psh_07-1-View1n.dgn
Delam

Submittal February 6, 2024

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5777C	$RY1DY3C-2

PERMIT DRAWING
SHEET 6 OF 14
DATE: 1/15/2024



1/16/2024
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belam

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty | stv

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 7 OF 14
DATE: 1/15/2024

NAD 83/NA 2011

SCALE: 1"=100'

DETAIL 8-1
SPECIAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, B, 4:1 or Flatter, Front Ditch Slope
Min. D=1.5 Ft.
B=2 Ft.

FROM STA. 63+50 TO STA. 77+00 –L– RT
FROM STA. 29+00 TO STA. 42+50 –SRY1A– LT

DETAIL 8-2
SPECIAL 'V' DITCH
(Not to Scale)

Natural Ground, 3:1, D, 4:1 or Flatter, Front Ditch Slope
*3:1 BEHIND GUARDRAIL
Min. D=1.5 Ft.

FROM STA. 63+45 TO STA. 66+00 –L– LT
FROM STA. 28+70 TO STA. 29+05 –SRY1DY3C– LT
FROM STA. 29+10 TO STA. 31+50 –SRY1DY3C– LT
FROM STA. 30+50 TO STA. 31+60 –SRY1DY3C– RT
FROM STA. 32+10 TO STA. 34+60 –SRY1DY3C– LT
FROM STA. 34+60 TO STA. 40+50 –SRY1DY3C– LT
FROM STA. 41+50 TO STA. 42+70 –SRY1DY3C– LT
FROM STA. 10+75 TO STA. 12+00 –DR2– LT
FROM STA. 10+75 TO STA. 12+00 –DR2– RT

DETAIL 8-3
CULVERT INLET BANK STABILIZATION
(Not to Scale)

Natural Ground, 2:1, Tuck Geotextile* a Minimum of 1ft (TYP), CHANNEL BED (Variable), Key Riprap into Channel Bottom(Typ)
Length=41 Ft.
Est. 60 Tons of Class 'I' Rip-Rap, Keyed-In to Top of Bank, Est. 24 CY DDE
Est. 105 SY Geotextile
*Place Geotextile Under Riprap in Locations Directed by Engineer

STA. 13+30 –Y1RPA– RT

DETAIL 8-4
CULVERT OUTLET CHANNEL
(Not to Scale)

Natural Ground, 3:1, D, d, B, Geotextile, Tuck Geotextile a Minimum of 1ft (TYP)
Length= 47 Ft.
Type of Liner= CL 'I' Rip-Rap – Keyed-In
Est 50 Tons, Est 85 SY Geotextile
Est 170 CY DDE
Min. D=2.5Ft.
d=2.5Ft.
B=4.0Ft.

STA. 11+78 –Y1RPD– LT

DETAIL 8-5
CULVERT INLET/OUTLET BANK STABILIZATION
(Not to Scale)

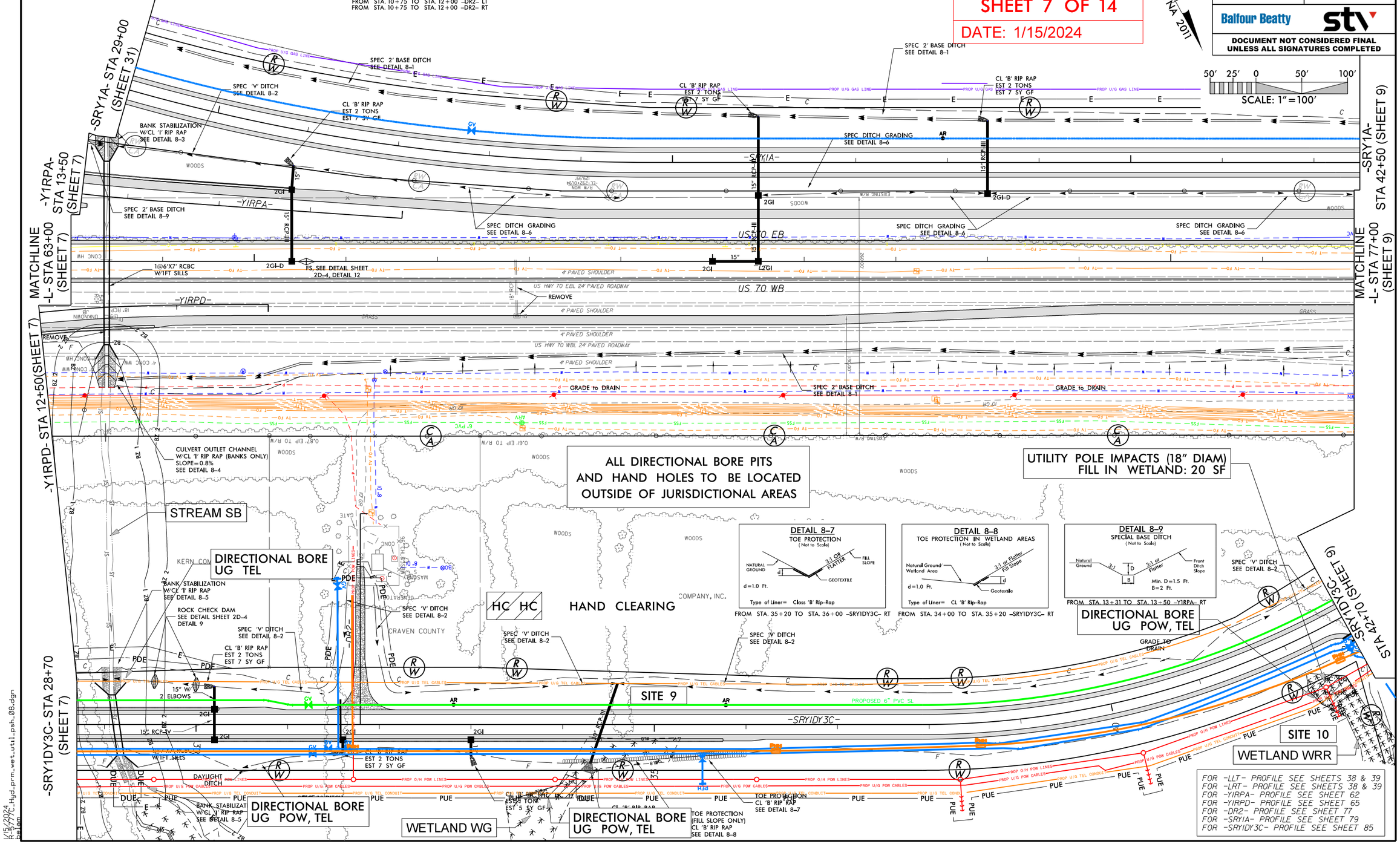
Natural Ground, Minimum Width, d*, Minimum Width, Tuck Geotextile a Minimum of 1ft (Typ), Key Riprap into Channel Bottom (Typ), CHANNEL BED (Variable), Place Geotextile Under Riprap in Locations Directed by Engineer
Each Side:
Length=30 Ft.
d=2.0 – 3.0 Ft.
*Rip-Rap to be Installed to 2ft Outside Top of Ditch Slopes on Jurisdictional Streams
Est.=30 Tons of Class 'I' Rip Rap, keyed-In, Est. 68 SY Geotextile

STA. 29+10 –SRY1DY3C– LT
STA. 29+25 –SRY1DY3C– RT

DETAIL 8-6
SPECIAL DITCH GRADING
(Not to Scale)

SP, "VARIABLE", D, "VARIABLE", SP
*SEE CROSS SECTIONS
Min. D=1.0 Ft.

FROM STA. 66+00 TO STA. 69+00 –L– LT
FROM STA. 70+50 TO STA. 77+00 –L– LT



DETAIL 8-7
TOE PROTECTION
(Not to Scale)

Natural Ground, d, 3:1 OR FLATTER, FILL SLOPE, GEOTEXTILE
d=1.0 Ft.
Type of Liner= Class 'B' Rip-Rap

FROM STA. 35+20 TO STA. 36+00 –SRY1DY3C– RT

DETAIL 8-8
TOE PROTECTION IN WETLAND AREAS
(Not to Scale)

Natural Ground/ Wetland Area, 3:1 or Flatter, Fill Slope, d, Geotextile
d=1.0 Ft.
Type of Liner= CL 'B' Rip-Rap

FROM STA. 34+00 TO STA. 35+20 –SRY1DY3C– RT

DETAIL 8-9
SPECIAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, B, 3:1 or Flatter, Front Ditch Slope
Min. D=1.5 Ft.
B=2 Ft.

FROM STA. 13+31 TO STA. 13+50 –Y1RPA– RT

FOR -LLT- PROFILE SEE SHEETS 38 & 39
FOR -LRT- PROFILE SEE SHEETS 38 & 39
FOR -Y1RPA- PROFILE SEE SHEET 62
FOR -Y1RPD- PROFILE SEE SHEET 65
FOR -DR2- PROFILE SEE SHEET 77
FOR -SRY1A- PROFILE SEE SHEET 79
FOR -SRY1DY3C- PROFILE SEE SHEET 85

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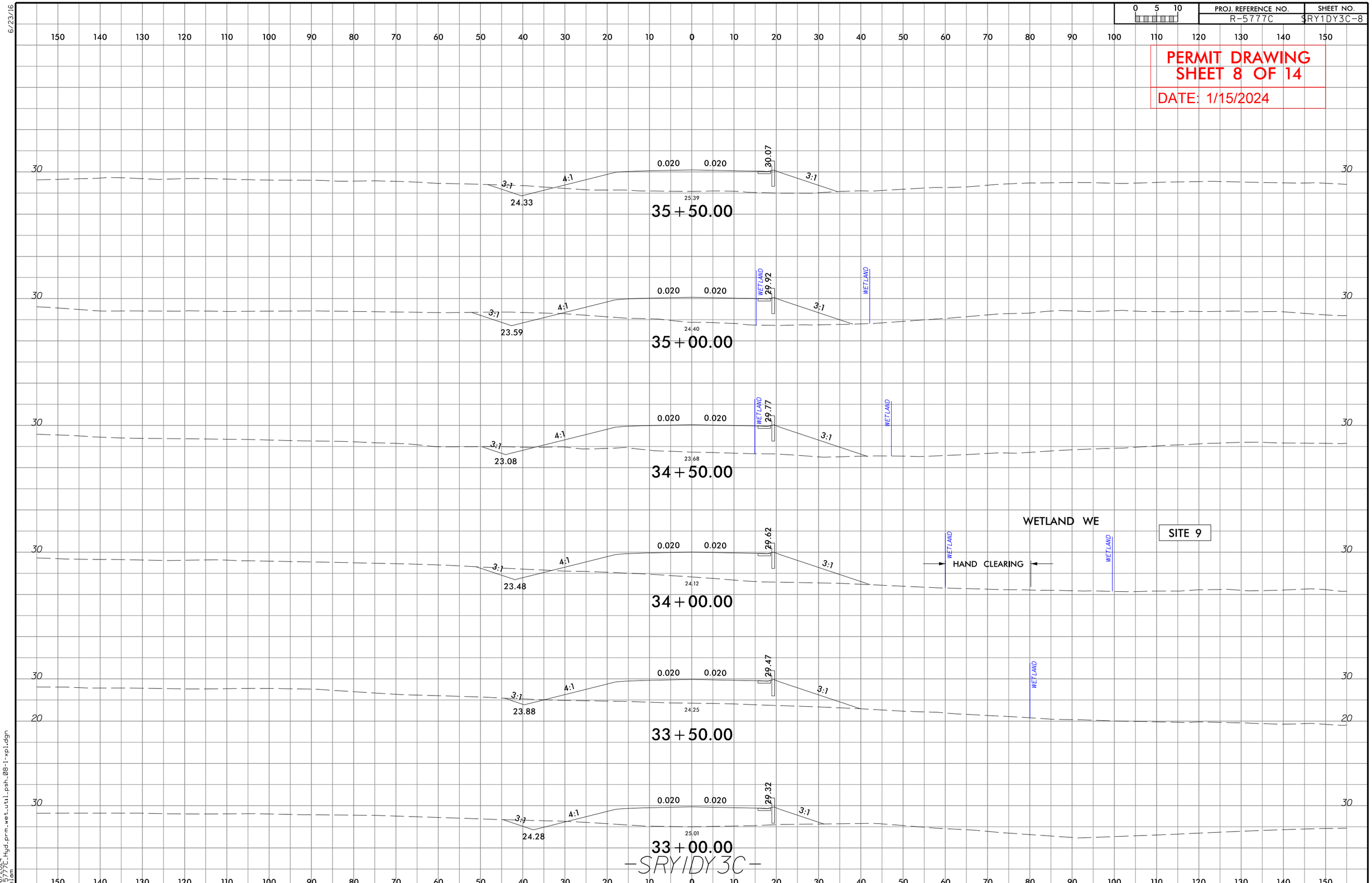
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5777C	SRY1DY3C-8

PERMIT DRAWING
SHEET 8 OF 14
DATE: 1/15/2024



1/16/2024
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belam

Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty

stv

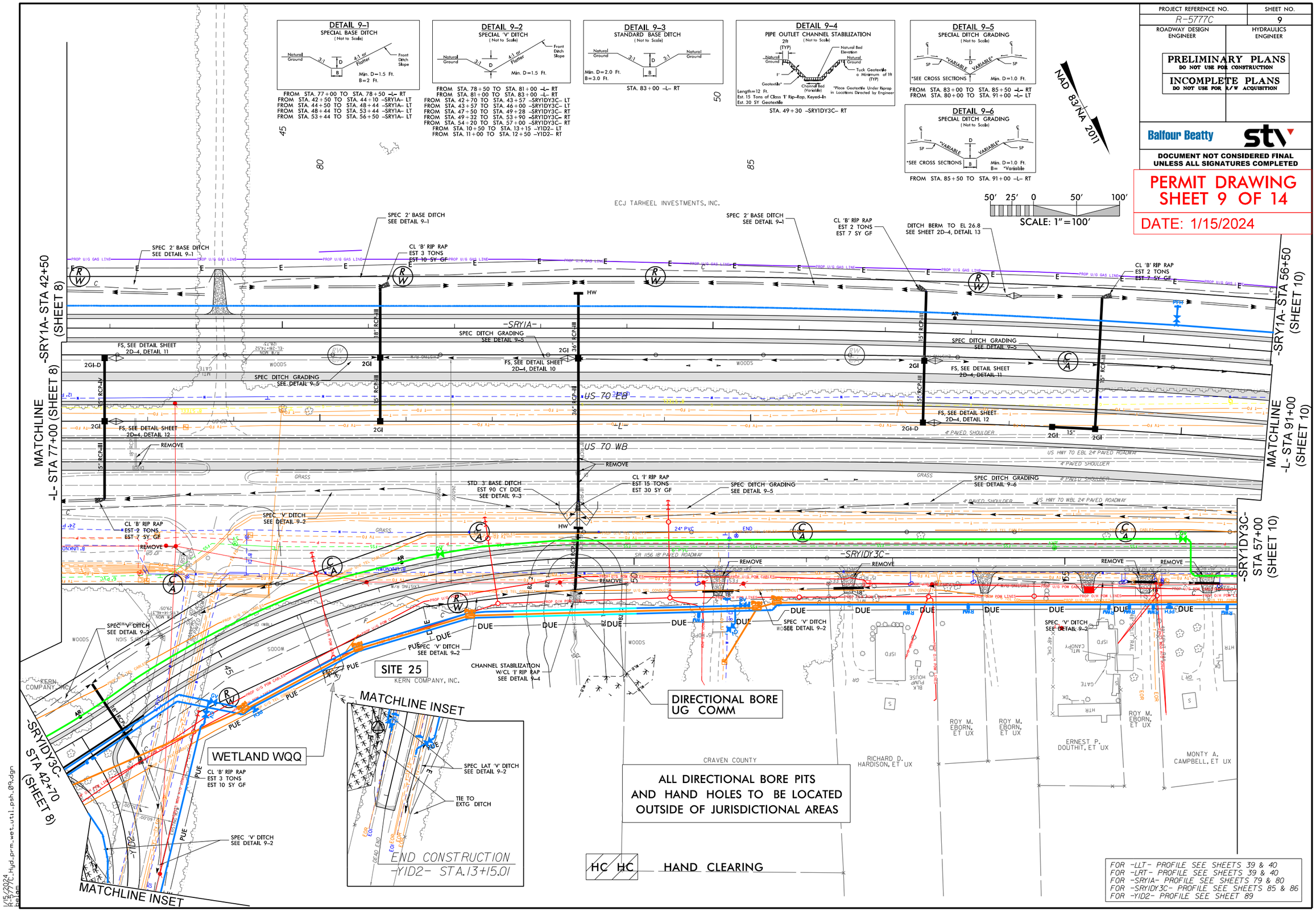
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 9 OF 14

DATE: 1/15/2024

NAD 83/NA 2011

SCALE: 1" = 100'



1/15/2024
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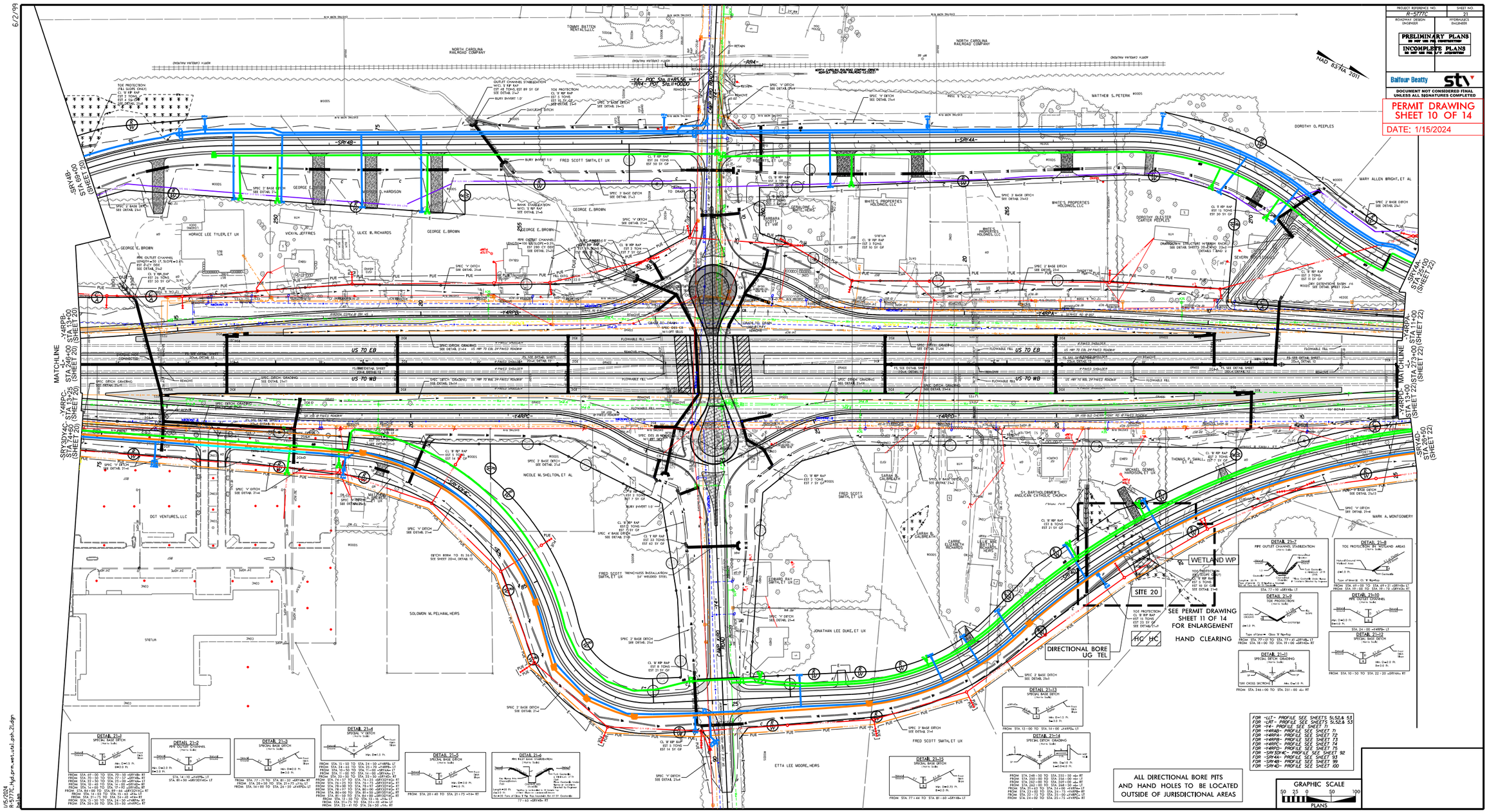
Bejam

Submittal February 6, 2024


PROJECT REFERENCE NO.
R-5777C
SHEET NO.
21
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
Balfour Beatty
sty
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING
SHEET 10 OF 14
DATE: 1/15/2024
NAD 83/NA 2011
NORTH CAROLINA RAILROAD COMPANY
TOMMY BATTEN RENTALS, LLC
MATTHEW S. PETERIK
DOROTHY O. PEEPLES
MARY ALLEN WRIGHT, ET AL
GEORGE E. BROWN
HORACE LEE TYLER, ET UX
VICKI N. JEFFRIES
ULICE W. RICHARDS
FRED SCOTT SMITH, ET UX
WHITE'S PROPERTIES HOLDINGS, LLC
DOROTHY DUNSTER CARTER PEEPLES
NICOLE M. SHELTON, ET AL
DGT VENTURES, LLC
SOLOMON M. PELHAM, HEIRS
ST. BARTHOLOMEW'S ANGLICAN CATHOLIC CHURCH
THOMAS P. SMALL, (1/2 UNDIV INT) ET AL
MICHAEL DENNIS HARDISON, ET UX
MARK A. MONTGOMERY
JONATHAN LEE DUKE, ET UX
ETTA LEE MOORE, HEIRS
-SR4A-
-SR4B-
-SR4C-
-SR4D-
-SR3D/4C-
-SR3D/4D-

Submittal February 6, 2024

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	
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

PERMIT DRAWING
SHEET 11 OF 14

DATE: 1/15/2024

10' 5' 0 10' 20'
SCALE: 1" = 20'

NAD 83/NA 2011

CLEAN OUT EXTG. DITCH

WOODS

CL 'B' RIP RAP
EST 11 TONS
EST 28 SY GF

SRY 4D

30" RCP-III

20+00

19+00

PUE

R/W

HC HC HC HC HC HC HC HC

PROP O/H POW LINES

PROP U/G TEL CONDUIT

TOE PROTECTION
(FILL SLOPE ONLY)
CL 'B' RIP RAP

WETLAND WP

DIRECTIONAL BORE
UG TEL

PEH

PROP U/G TEL CONDUIT

SITE 20

ALL DIRECTIONAL BORE PITS AND HAND HOLES TO BE LOCATED OUTSIDE OF JURISDICTIONAL AREAS

SPEC 21 BASE DITCH

HC HC HAND CLEARING

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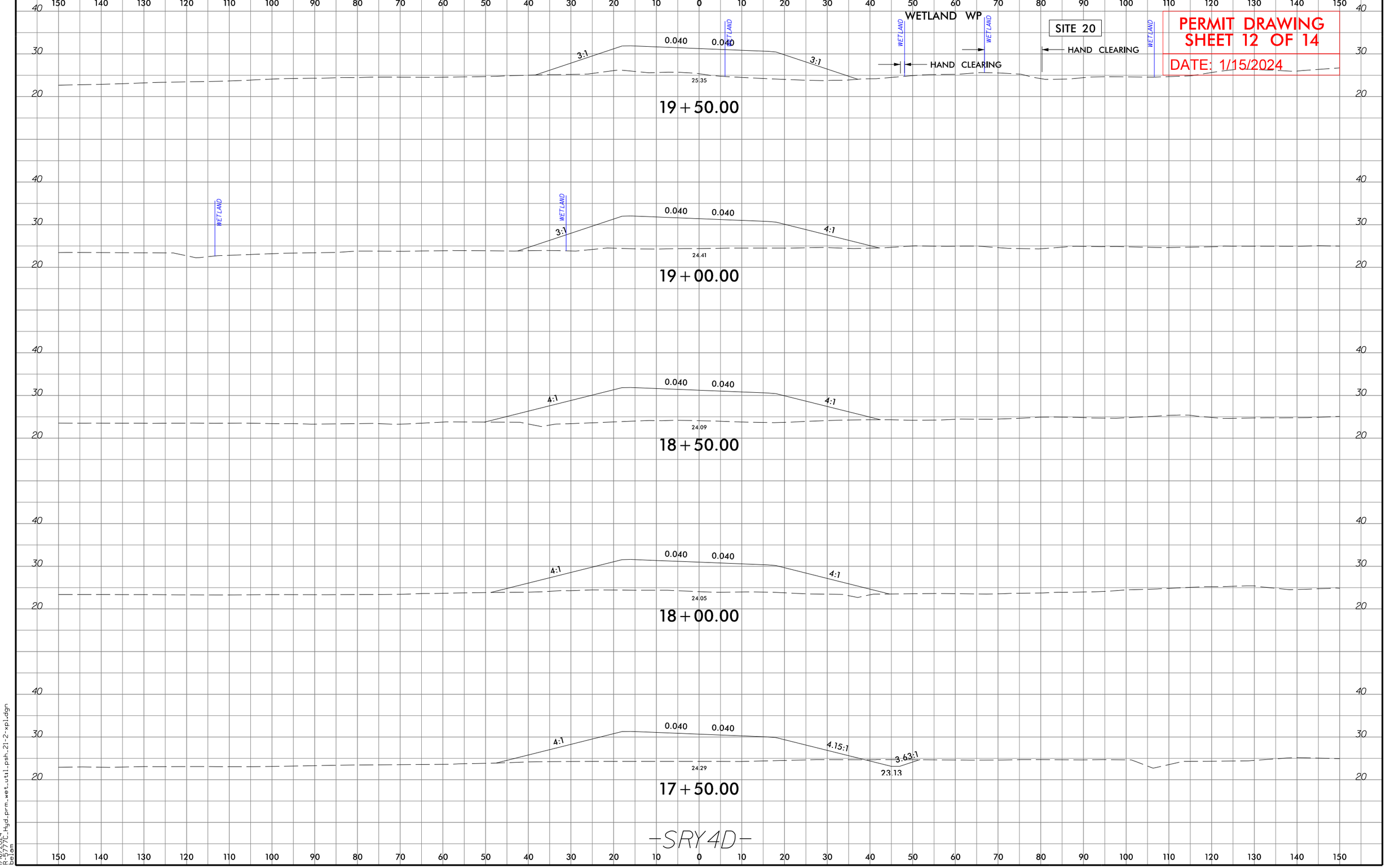
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5777C	SRY4D-4

PERMIT DRAWING
SHEET 12 OF 14
DATE: 1/15/2024



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Submittal February 6, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-5777C	32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Balfour Beatty stv

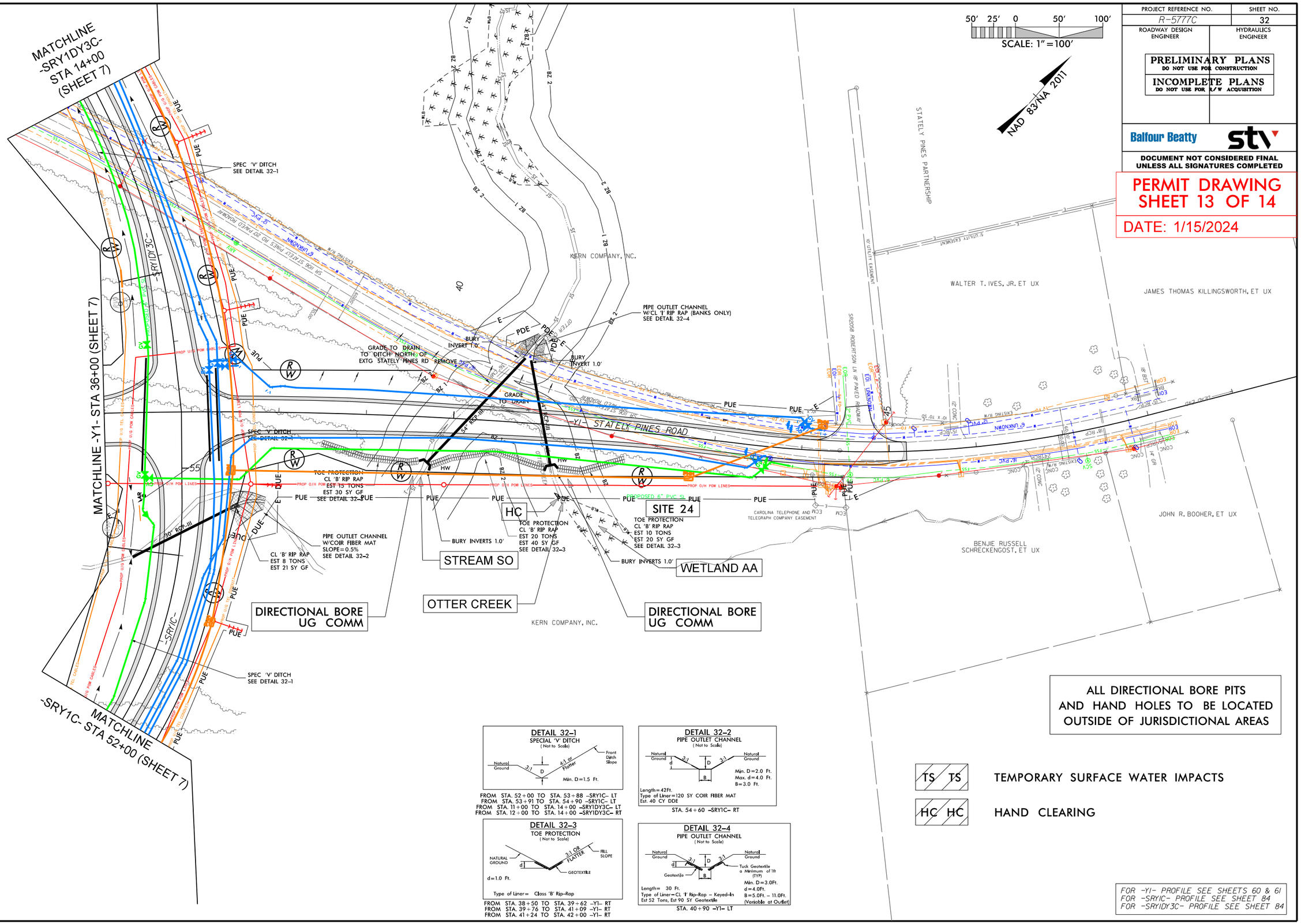
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 13 OF 14

DATE: 1/15/2024

50' 25' 0 50' 100'
SCALE: 1" = 100'

NAD 83/NA 2011



ALL DIRECTIONAL BORE PITS AND HAND HOLES TO BE LOCATED OUTSIDE OF JURISDICTIONAL AREAS

DETAIL 32-1
SPECIAL 'V' DITCH
(Not to Scale)

FROM STA. 52+00 TO STA. 53+88 -SRY1C- LT
FROM STA. 53+91 TO STA. 54+90 -SRY1C- LT
FROM STA. 11+00 TO STA. 14+00 -SRY1DY3C- LT
FROM STA. 12+00 TO STA. 14+00 -SRY1DY3C- RT

DETAIL 32-2
PIPE OUTLET CHANNEL
(Not to Scale)

STA. 54+60 -SRY1C- RT

DETAIL 32-3
TOE PROTECTION
(Not to Scale)

FROM STA. 38+50 TO STA. 39+62 -Y1- RT
FROM STA. 39+76 TO STA. 41+09 -Y1- RT
FROM STA. 41+24 TO STA. 42+00 -Y1- RT

DETAIL 32-4
PIPE OUTLET CHANNEL
(Not to Scale)

STA. 40+90 -Y1- LT

TS TS — TEMPORARY SURFACE WATER IMPACTS

HC HC — HAND CLEARING

FOR -Y1- PROFILE SEE SHEETS 60 & 61
FOR -SRY1C- PROFILE SEE SHEET 84
FOR -SRY1DY3C- PROFILE SEE SHEET 84

1/15/2024
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bellam

WETLAND AND SURACE WATER IMPACTS 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)
4	29+79 to 30+89-SRY1C-RT	UTILITY					0.037					
6	15+01 to 16+52-SRY1DY3C-RT	UTILITY					0.065					
9	33+49 to 34+26-SRY1DY3C-RT	UTILITY					0.018					
10	42+03 to 42+44-SRY1DY3C-RT	UTILITY					0.029					
20	19+01 Tto 19+56-SRY4D-RT	UTILITY					0.032					
24	41+21 to 41+38-Y1-RT	UTILITY					0.001					
25	46+04 to 46+32-SRY1DY3C-RT	UTILITY					0.003					
TOTALS*:			**0.000**	**0.000**	**0.000**	**0.000**	**0.185**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

*Rounded totals are sum of actual impacts

NOTES:

Site 10: Utility Pole Impacts (Fill -18" Diameter Pole) = 20 sf

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1-15-2024
CRAVEN
R-5777C
44648.3.4

Revised 2018 Feb