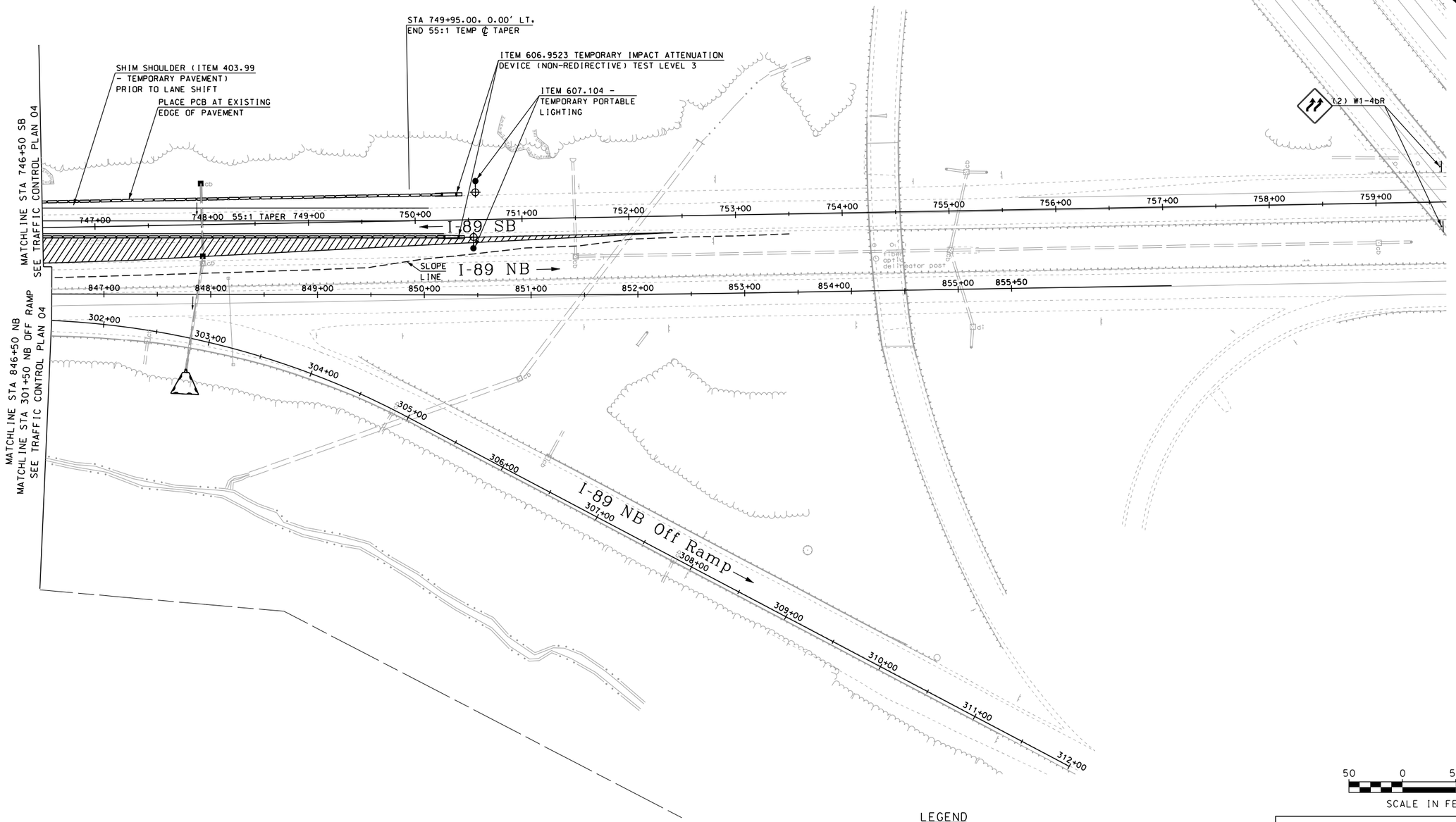


LEGEND

- PHASE 1 CONSTRUCTION
- TRAFFIC FLOW ARROW
- TRAFFIC BARRELS

50 0 50 100

SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 05
PHASE 1

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph1	16148	101	600

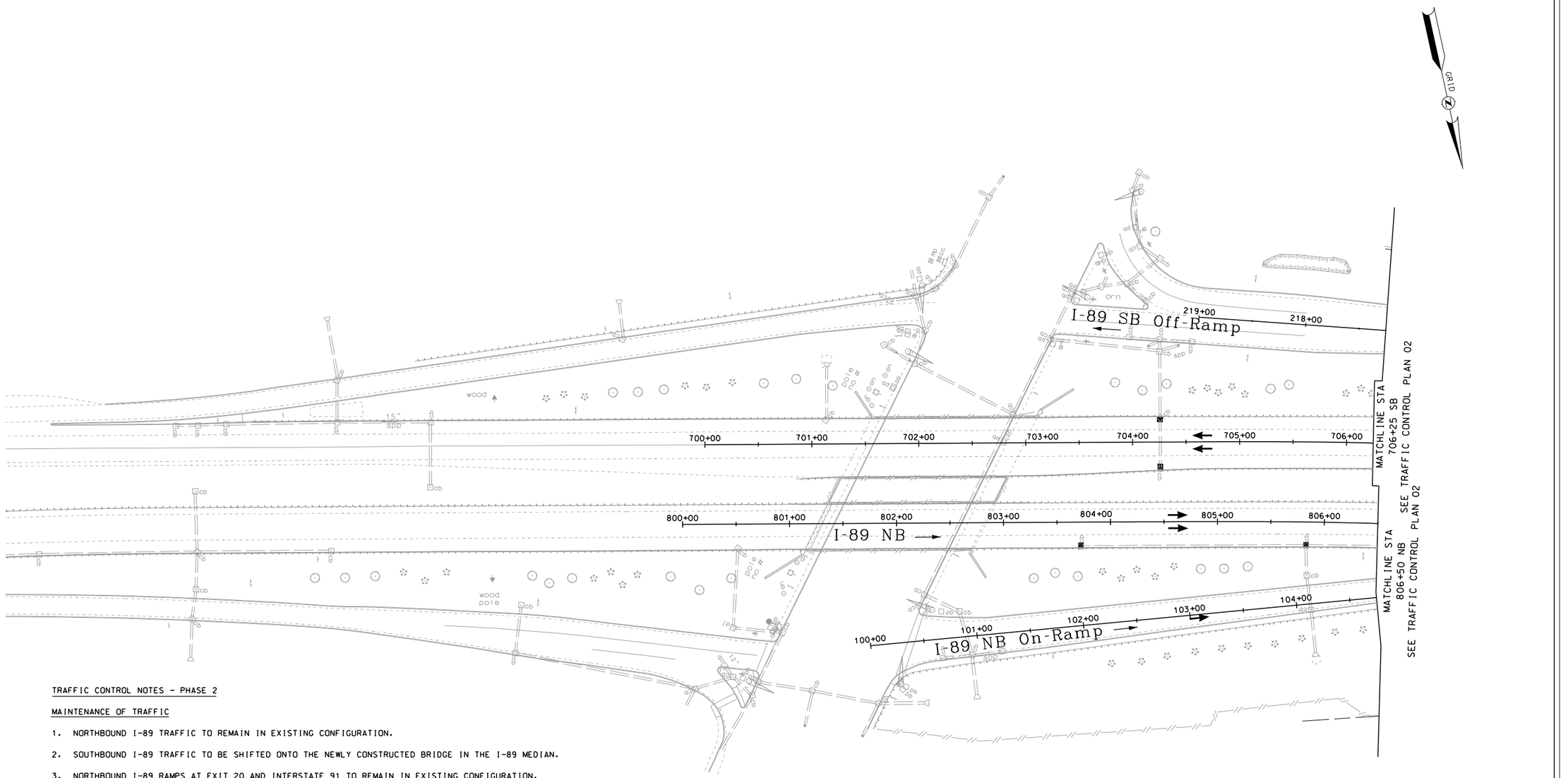
REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION



TRAFFIC CONTROL NOTES - PHASE 2

MAINTENANCE OF TRAFFIC

1. NORTHBOUND I-89 TRAFFIC TO REMAIN IN EXISTING CONFIGURATION.
2. SOUTHBOUND I-89 TRAFFIC TO BE SHIFTED ONTO THE NEWLY CONSTRUCTED BRIDGE IN THE I-89 MEDIAN.
3. NORTHBOUND I-89 RAMPS AT EXIT 20 AND INTERSTATE 91 TO REMAIN IN EXISTING CONFIGURATION.
4. SOUTHBOUND I-89 RAMPS AT EXIT 20 TO BE SHIFTED ONTO TEMPORARY ALIGNMENTS.
5. SOUTHBOUND I-89 TO BE REDUCED TO 1 LANE NORTH OF I-91 AND EXTEND SOUTH OVER THE RIVER.
6. SOUTHBOUND I-89 ENTRANCE RAMP FROM SOUTHBOUND I-91 TO ENTER I-89 ON ITS OWN BARRIER SEPARATED LANE.
7. SOUTHBOUND I-89 ENTRANCE RAMP FROM NORTHBOUND I-91 TO MERGE ONTO SEPARATE LANE WITH SOUTHBOUND I-89 ENTRANCE RAMP FROM SOUTHBOUND I-91. SEPARATED RAMP TO END SOUTH OF THE MERGE AND EXTEND OVER THE RIVER.

AREAS OF CONSTRUCTION

1. CONSTRUCT NEW I-89 SOUTHBOUND BRIDGE SUPERSTRUCTURE AND DECK OVER THE CONNECTICUT RIVER.
2. CONSTRUCT ROADWAY APPROACHES TO THE NEW I-89 SOUTHBOUND BRIDGE DECK.
3. CONSTRUCT PORTIONS OF THE I-89 SOUTHBOUND RAMPS AT EXIT 20 AND INTERSTATE 91.

LEGEND

- PHASE 2 CONSTRUCTION
- TRAFFIC FLOW ARROW
- TRAFFIC BARRELS

50 0 50 100
SCALE IN FEET

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 01 PHASE 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	102	600

TCP PHASE 2 SB I-89 CURVE NO.1	
PI	= 511+31.72
N	= 413273.61
E	= 810368.10
△	= 20°28'53.25"
Dc	= 2°13'14.76"
R	= 2580.00'
T	= 466.11'
L	= 922.27'
E	= 41.77'

TCP PHASE 2 SB I-89 CURVE NO.2	
PI	= 518+62.71
N	= 413692.71
E	= 809757.08
△	= 3°08'54.81"
Dc	= 0°34'22.65"
R	= 10,000.00'
T	= 274.83'
L	= 549.53'
E	= 3.78'

TCP PHASE 2 SB OFF RAMP CURVE NO.2	
PI	= 16+20.23
N	= 413552.04
E	= 809821.36
△	= 6°08'08.51"
Dc	= 1°05'43.88"
R	= 5230.00'
T	= 280.30'
L	= 560.08'
E	= 7.51'

I-89 SB Off-Ramp

I-89 SB

I-89 NB

I-89 NB On-Ramp

MATCH EXISTING PAVEMENT MARKINGS

TCP PHASE 2 SB OFF-RAMP CURVE NO.2

TCP PHASE 2 CURVE NO.2

TCP PHASE 2 CURVE NO.1

STA 16+01.20, 16.0' LT END 50:1 TEMPORARY LANE TAPER

PT 19+00.00

PRC 515+87.88

PC 506+65.61

R=2,580'

R=10,000'

TRAFFIC BARRELS (TYP.) SUBSIDIARY TO ITEM 619.1

6" SSL(Y)

6" SSL(W)

SLOPE LINE

BEGIN PCB

T102

T103

T104

6" SSL(W)

6" SSL(Y)

6" SBL(W)

I-89 NB STA 812+80.00, RT 24.00' = I-89 NB ON-RAMP STA 111+00.00

ITEM 606.9612 - TEMPORARY GUARDRAIL TO BARRIER TRANSITION (STEEL POST)

BEGIN PCB
ITEM 606.9523 TEMPORARY IMPACT ATTENUATION DEVICE (NON-REDIRECTIVE) TEST LEVEL 3

ITEM 670.104 - TEMPORARY PORTABLE LIGHTING

W1-4bR(2)

MATCHLINE STA 706+25 SB SEE TRAFFIC CONTROL PLAN 01

MATCHLINE STA 806+50 NB SEE TRAFFIC CONTROL PLAN 01

MATCHLINE STA 719+50 SB SEE TRAFFIC CONTROL PLAN 03

MATCHLINE STA 819+50 NB SEE TRAFFIC CONTROL PLAN 03

GRID

50 0 50 100

SCALE IN FEET

LEGEND

PHASE 2 CONSTRUCTION

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 02 PHASE 2

OGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	103	600

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

MATCHLINE STA 719+50 SB
SEE TRAFFIC CONTROL PLAN 02

MATCHLINE STA 819+50 NB
SEE TRAFFIC CONTROL PLAN 02

MATCHLINE STA 732+50 SB
SEE TRAFFIC CONTROL PLAN 04

MATCHLINE STA 832+50 NB
SEE TRAFFIC CONTROL PLAN 04

STA 14+00.53, 20' LT
BEGIN 50:1 TEMPORARY LANE TAPER

12" SSL(W)

SLOPE LINE

PRC 13+39.93

6" SSL(W)

TCP PHASE 2
SB OFF-RAMP
CURVE NO.1

W1-4bR

I-89 SB STA 723+21.07, LT 24.00' =
I-89 SB OFF-RAMP STA 200+03.43

I-89 SB

I-89 NB

PC 10+00.00

END PCB

PT 521+37.41

TCP PHASE 2 STA 523+50.00, LT 12.00' =
TCP PHASE 2 SB OFF-RAMP STA 10+00.00

6" SSL(W)

6" SBL(W)

6" SSL(Y)

TCP PHASE 2 SB OFF RAMP CURVE NO.1
PI = 11+70.08
N = 413839.39
E = 809474.56
△ = 5°09'58.26"
Dc = 1°31'11.22"
R = 3770.00'
T = 170.08'
L = 339.93'
E = 3.83'

LEGEND

PHASE 2 CONSTRUCTION

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

50 0 50 100
SCALE IN FEET

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN WJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018
AS BUILT DETAILS DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 03
PHASE 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	104	600

STA 44+00.00, 2.0' RT
END 50:1 TEMPORARY RAMP TAPER

I-89 SB STA 733+50.00, LT 24.00' =
I-89 SB ON-RAMP STA 413+50.00

STA 40+00.00, 10.0' RT
BEGIN 50:1 TEMPORARY RAMP TAPER

END PCB
ITEM 606.9523 TEMPORARY IMPACT ATTENUATION DEVICE (NON-REDIRECTIVE) TEST LEVEL 3

ITEM 670.104 - TEMPORARY
PORTABLE LIGHTING

W4-3R

TRAFFIC BARRELS (TYP.)
SUBSIDIARY TO ITEM 619.1

TCP PHASE 2
SB ON-RAMP
CURVE NO.2

TCP PHASE 2
SB ON-RAMP
CURVE NO.1

6" SSL(Y)

6" SSL(W)

PCC 33+84.20

27:1 LANE TAPER

12" SSL(W)

SLOPE LINE

BARRIER

50:1 TAPER

R=3,770'

R=2,860'

PC 536+37.10

PT 39+44.43

PT 541+34.22

PC 544+96.71

PC 30+00.00

GRID N

I-89 SB

I-89 NB

TCP PHASE 2
CURVE NO.3

BARRIER FROM PHASE 1
TO REMAIN IN PHASE 2

6" SSL(Y)
I-89 NB STA 845+00.00, RT 24.00' =
I-89 NB OFF-RAMP STA 300+00.00

ITEM 606.9612 - TEMPORARY
GUARDRAIL TO BARRIER
TRANSITION (STEEL POST)
FROM PHASE 1 TO REMAIN IN
PHASE 2

MATCHLINE STA 732+50 SB
SEE TRAFFIC CONTROL PLAN 03

MATCHLINE STA 832+50 NB
SEE TRAFFIC CONTROL PLAN 03

MATCHLINE STA 746+50 SB
SEE TRAFFIC CONTROL PLAN 05

MATCHLINE STA 846+50 NB
MATCHLINE STA 301+50 NB OFF RAMP
SEE TRAFFIC CONTROL PLAN 05

TCP PHASE 2 STA 533+00.00, LT 12.00' =
TCP PHASE 2 SB ON-RAMP STA 44+00.00

T201 T202 T203 T204 T205 T206

TCP PHASE 2 SB I-89 CURVE NO.3	
PI	= 538+86.29
N	= 414744.01
E	= 808027.87
△	= 9°57'32.03"
Dc	= 2°00'12.06"
R	= 2860.00'
T	= 249.18'
L	= 497.11'
E	= 10.83'

TCP PHASE 2 SB ON RAMP CURVE NO.1	
PI	= 31+95.55
N	= 414974.57
E	= 807443.38
△	= 26°18'12.31"
Dc	= 6°50'46.56"
R	= 836.89'
T	= 195.55'
L	= 384.20'
E	= 22.54'

TCP PHASE 2 SB ON RAMP CURVE NO.2	
PI	= 36+64.83
N	= 414798.98
E	= 807886.01
△	= 8°30'51.23"
Dc	= 1°31'11.22"
R	= 3770.00'
T	= 280.63'
L	= 560.23'
E	= 10.43'

50 0 50 100
SCALE IN FEET

LEGEND
PHASE 2 CONSTRUCTION
TRAFFIC FLOW ARROW
TRAFFIC BARRELS

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 04
PHASE 2

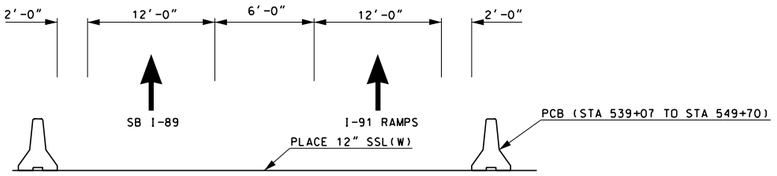
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	105	600

REVISIONS AFTER PROPOSAL	STATION	STATION	NUMBER	DATE
DESCRIPTION				

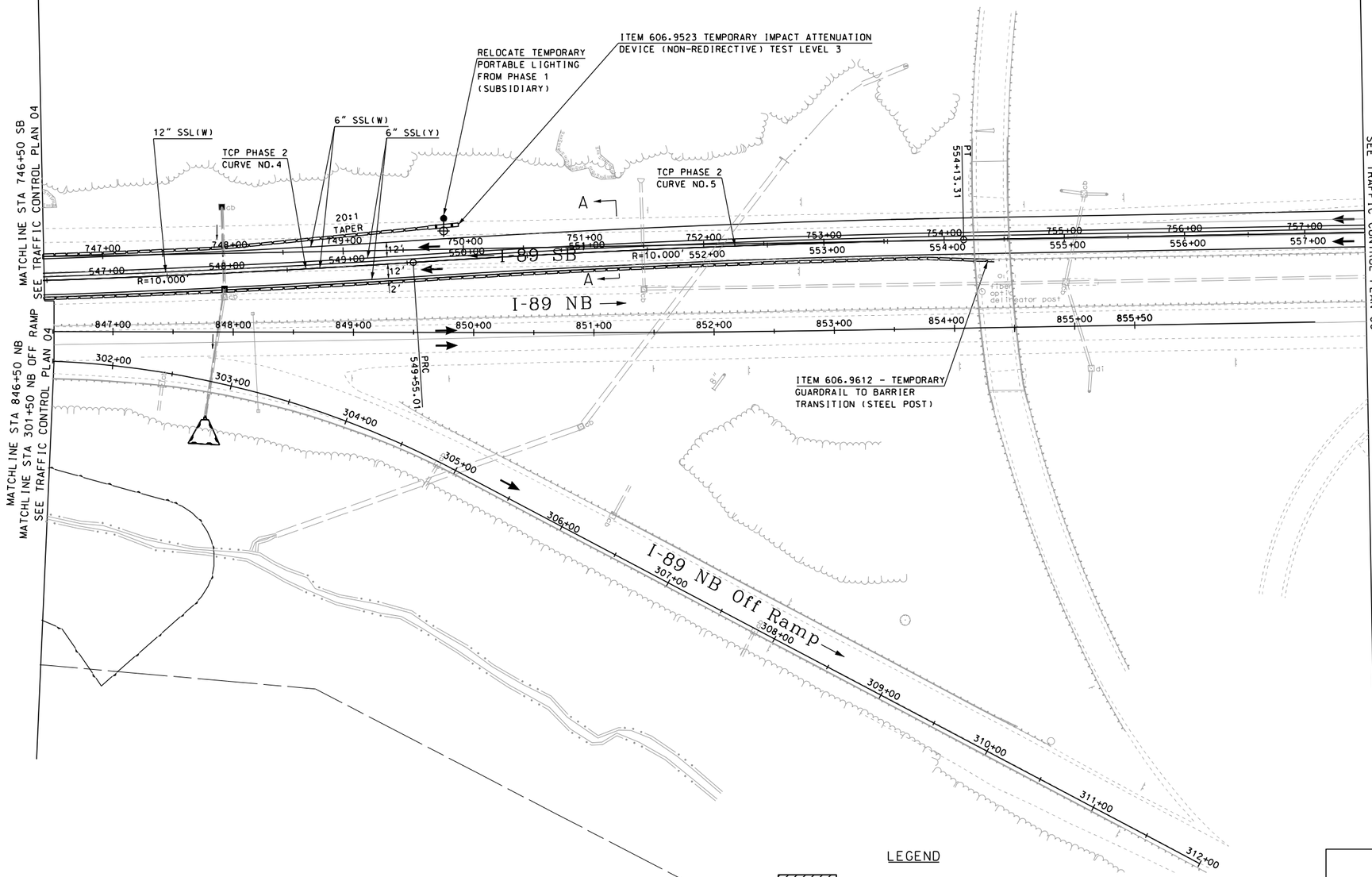
SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

TCP PHASE 2 SB I-89 CURVE NO.4	
PI	= 547+25.90
N	= 415298.51
E	= 807395.73
△	= 2°37'33.07"
Dc	= 0°34'22.65"
R	= 10,000.00'
T	= 229.19'
L	= 458.30'
E	= 2.63'

TCP PHASE 2 SB I-89 CURVE NO.5	
PI	= 551+84.20
N	= 415584.68
E	= 807037.66
△	= 2°37'33.07"
Dc	= 0°34'22.65"
R	= 10,000.00'
T	= 229.19'
L	= 458.30'
E	= 2.63'



SECTION A-A



LEGEND

- PHASE 2 CONSTRUCTION
- TRAFFIC FLOW ARROW
- TRAFFIC BARRELS

50 0 50 100

SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

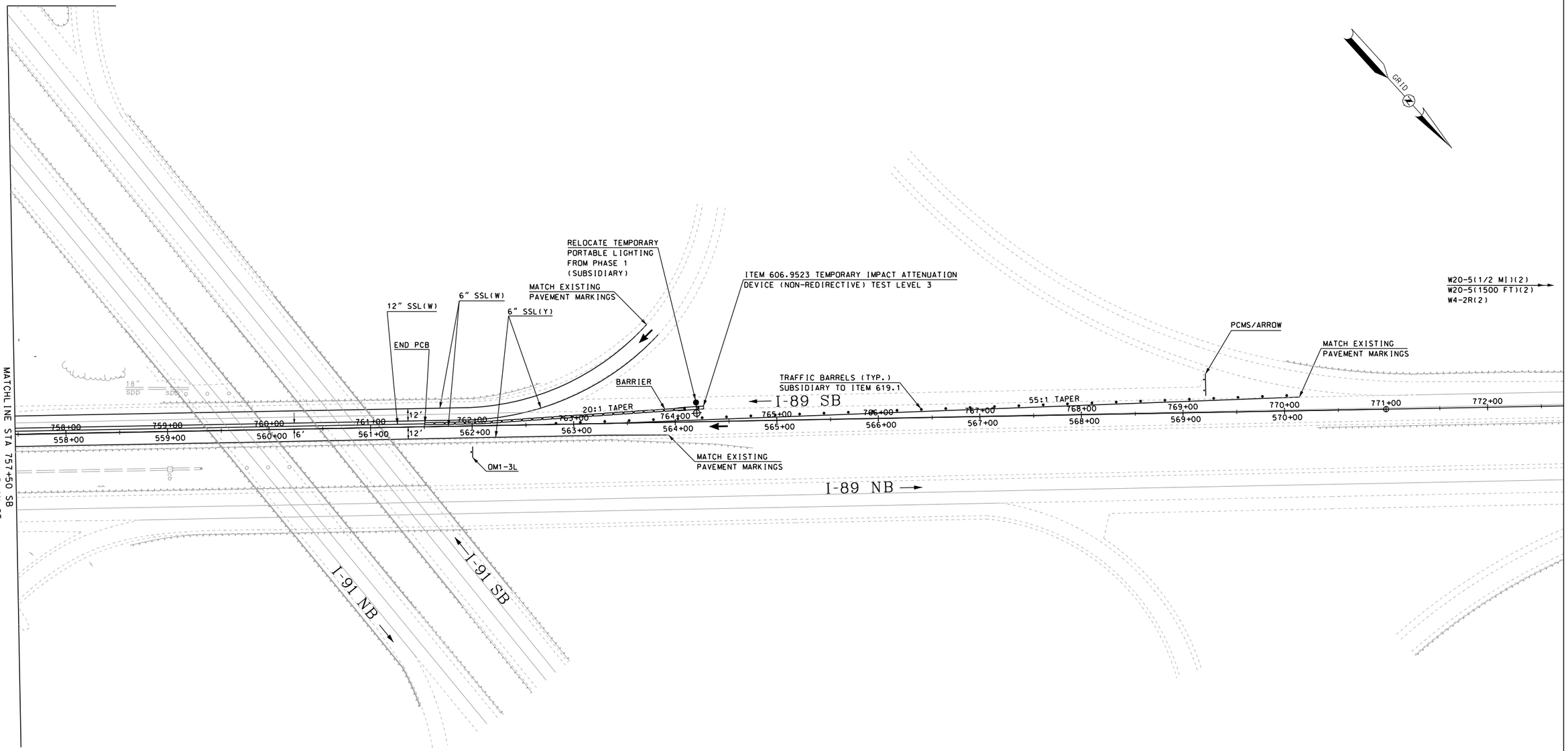
TRAFFIC CONTROL PLAN 05 PHASE 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	106	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

LEGEND

PHASE 2 CONSTRUCTION

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

50 0 50 100

SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE

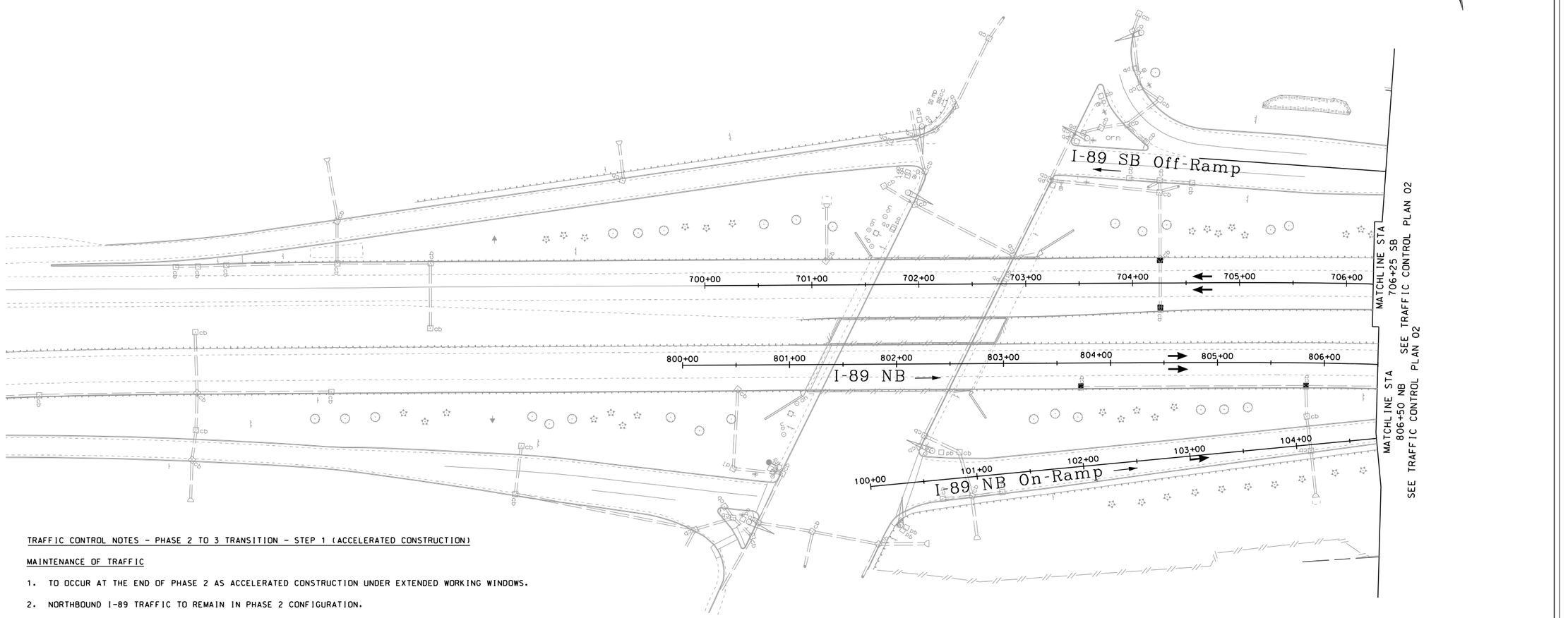
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 06
PHASE 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	107	600

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION



TRAFFIC CONTROL NOTES - PHASE 2 TO 3 TRANSITION - STEP 1 (ACCELERATED CONSTRUCTION)

MAINTENANCE OF TRAFFIC

1. TO OCCUR AT THE END OF PHASE 2 AS ACCELERATED CONSTRUCTION UNDER EXTENDED WORKING WINDOWS.
2. NORTHBOUND I-89 TRAFFIC TO REMAIN IN PHASE 2 CONFIGURATION.
3. SOUTHBOUND I-89 TRAFFIC TO REMAIN IN PHASE 2 CONFIGURATION (1 LANE) NORTH OF CONNECTICUT RIVER.
4. SOUTHBOUND I-89 TO REMAIN 1 LANE SOUTH TO THE PLAZA CONNECTOR ROAD BRIDGE.
5. SOUTHBOUND I-89 ENTRANCE RAMP FROM I-91 NORTHBOUND TO BE CLOSED.
6. SOUTHBOUND I-89 ENTRANCE RAMP FROM I-91 SOUTHBOUND TO REMAIN OPEN AND TO MERGE ONTO THE SINGLE I-89 LANE.
7. SOUTHBOUND I-89 EXIT RAMP AT EXIT 20 TO BE CLOSED.

AREAS OF CONSTRUCTION

1. SOUTHBOUND I-89 EXIT RAMP TO EXIT 20 GORE AREA.
2. PORTION OF SOUTHBOUND I-89 FROM THE PLAZA CONNECTOR ROAD BRIDGE TO THE EXIT 20 RAMP GORE.
3. SOUTHBOUND I-89 ENTRANCE RAMP FROM I-91 NORTHBOUND GORE AREA.
4. PORTION OF SOUTHBOUND I-89 FROM ENTRANCE RAMP GORE TO THE END OF CONSTRUCTION.

LEGEND

- PHASE 2-3 ACCELERATED CONSTRUCTION AREA
- TRAFFIC FLOW ARROW
- TRAFFIC BARRELS

50 0 50 100

SCALE IN FEET

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 01 PHASE 2 TO PHASE 3 TRANSITION - STEP 1

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	108	600

TCP PHASE 2 SB I-89 CURVE NO.1	
PI	= 511+31.72
N	= 413273.61
E	= 810368.10
△	= 20°28'53.25"
Dc	= 2°13'14.76"
R	= 2580.00'
T	= 466.11'
L	= 922.27'
E	= 41.77'

TCP PHASE 2 SB I-89 CURVE NO.2	
PI	= 518+62.71
N	= 413692.71
E	= 809757.08
△	= 3°08'54.81"
Dc	= 0°34'22.65"
R	= 10,000.00'
T	= 274.83'
L	= 549.53'
E	= 3.78'

GRID

I-89 SB Off-Ramp

I-89 SB

I-89 NB

I-89 NB On-Ramp

MATCHLINE STA 706+25 SB
SEE TRAFFIC CONTROL PLAN 01

MATCHLINE STA 806+50 NB
SEE TRAFFIC CONTROL PLAN 01

MATCHLINE STA 719+50 SB
SEE TRAFFIC CONTROL PLAN 03

MATCHLINE STA 819+50 NB
SEE TRAFFIC CONTROL PLAN 03

PC
506+65.61

R=2,580'

TRAFFIC BARRELS (TYP)
SUBSIDIARY TO ITEM 619.1

TCP PHASE 2
CURVE NO.1

TCP PHASE 2
CURVE NO.2

T102

T103

12'

2'

I-89 NB STA 812+80.00, RT 24.00' =
I-89 NB ON-RAMP STA 111+00.00

I-89 NB STA 812+80.00, RT 24.00' =
I-89 NB ON-RAMP STA 111+00.00

ITEM 606.9612 - TEMPORARY
GUARDRAIL TO BARRIER
TRANSITION (STEEL POST)

BEGIN PCB
ITEM 606.9523 TEMPORARY IMPACT ATTENUATION
DEVICE (NON-REDIRECTIVE) TEST LEVEL 3

ITEM 670.104 - TEMPORARY
PORTABLE LIGHTING

TCP PHASE 2 SB OFF RAMP CURVE NO.2	
PI	= 16+20.23
N	= 413552.04
E	= 809821.36
△	= 6°08'08.51"
Dc	= 1°05'43.88"
R	= 5230.00'
T	= 280.30'
L	= 560.08'
E	= 7.51'

50 0 50 100

SCALE IN FEET

LEGEND

PHASE 2-3 ACCELERATED CONSTRUCTION AREA

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 02
PHASE 2 TO PHASE 3
TRANSITION - STEP 1

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	109	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

MATCHLINE STA 719+50 SB
SEE TRAFFIC CONTROL PLAN 02

MATCHLINE STA 819+50 NB
SEE TRAFFIC CONTROL PLAN 02

MATCHLINE STA 732+50 SB
SEE TRAFFIC CONTROL PLAN 04

MATCHLINE STA 832+50 NB
SEE TRAFFIC CONTROL PLAN 04

I-89 SB STA 723+21.07, LT 24.00' =
I-89 SB OFF-RAMP STA 200+03.43

TRAFFIC BARRELS (TYP)
SUBSIDIARY TO ITEM 619.1

Connecticut River

I-89 SB

720+00 721+00 722+00 723+00 724+00 725+00 726+00 727+00 728+00 729+00 730+00 731+00 732+00

819+00 820+00 821+00 822+00 823+00 824+00 825+00 826+00 827+00 828+00 829+00 830+00 831+00 832+00

12' 12'

I-89 NB

END PCB

TCP PHASE 2 STA 523+50.00, LT 12.00' =
TCP PHASE 2 SB OFF-RAMP STA 10+00.00

Connecticut River

GRID N

TCP PHASE 2 SB OFF RAMP CURVE NO.1
PI = 11+70.08
N = 413839.39
E = 809474.56
△ = 5°09'58.26"
Dc = 1°31'11.22"
R = 3770.00'
T = 170.08'
L = 339.93'
E = 3.83'

LEGEND

PHASE 2-3 ACCELERATED CONSTRUCTION AREA

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

50 0 50 100
SCALE IN FEET

McFarland Johnson

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN WJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018
AS BUILT DETAILS DATE

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

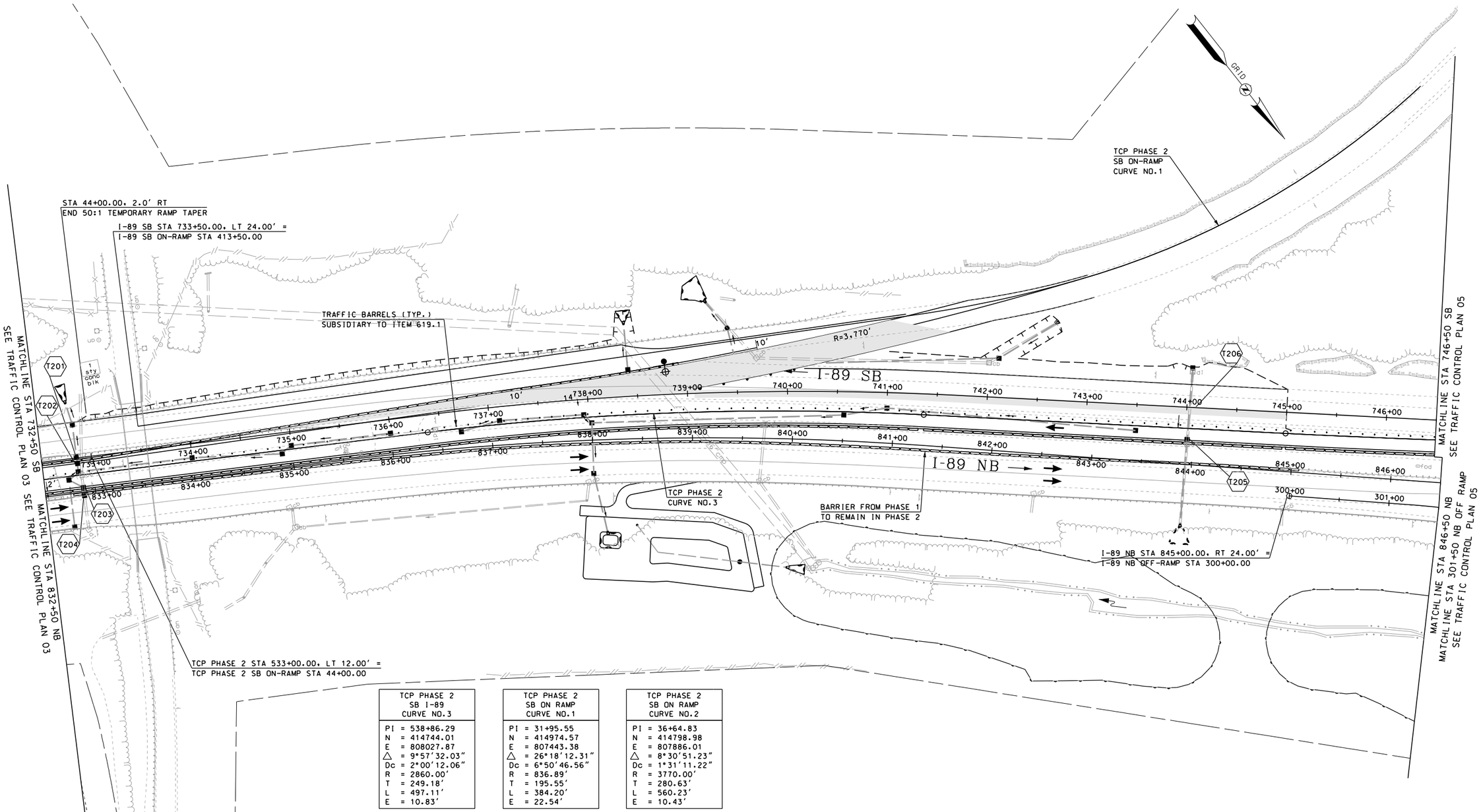
TRAFFIC CONTROL PLAN 03
PHASE 2 TO PHASE 3
TRANSITION - STEP 1

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	110	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



TCP PHASE 2 SB I-89 CURVE NO.3	
PI	= 538+86.29
N	= 414744.01
E	= 808027.87
△	= 9°57'32.03"
Dc	= 2°00'12.06"
R	= 2860.00'
T	= 249.18'
L	= 497.11'
E	= 10.83'

TCP PHASE 2 SB ON RAMP CURVE NO.1	
PI	= 31+95.55
N	= 414974.57
E	= 807443.38
△	= 26°18'12.31"
Dc	= 6°50'46.56"
R	= 836.89'
T	= 195.55'
L	= 384.20'
E	= 22.54'

TCP PHASE 2 SB ON RAMP CURVE NO.2	
PI	= 36+64.83
N	= 414798.98
E	= 807886.01
△	= 8°30'51.23"
Dc	= 1°31'11.22"
R	= 3770.00'
T	= 280.63'
L	= 560.23'
E	= 10.43'

50 0 50 100

SCALE IN FEET

LEGEND

PHASE 2-3 ACCELERATED CONSTRUCTION AREA

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

McFarland Johnson

STATE OF NEW HAMPSHIRE

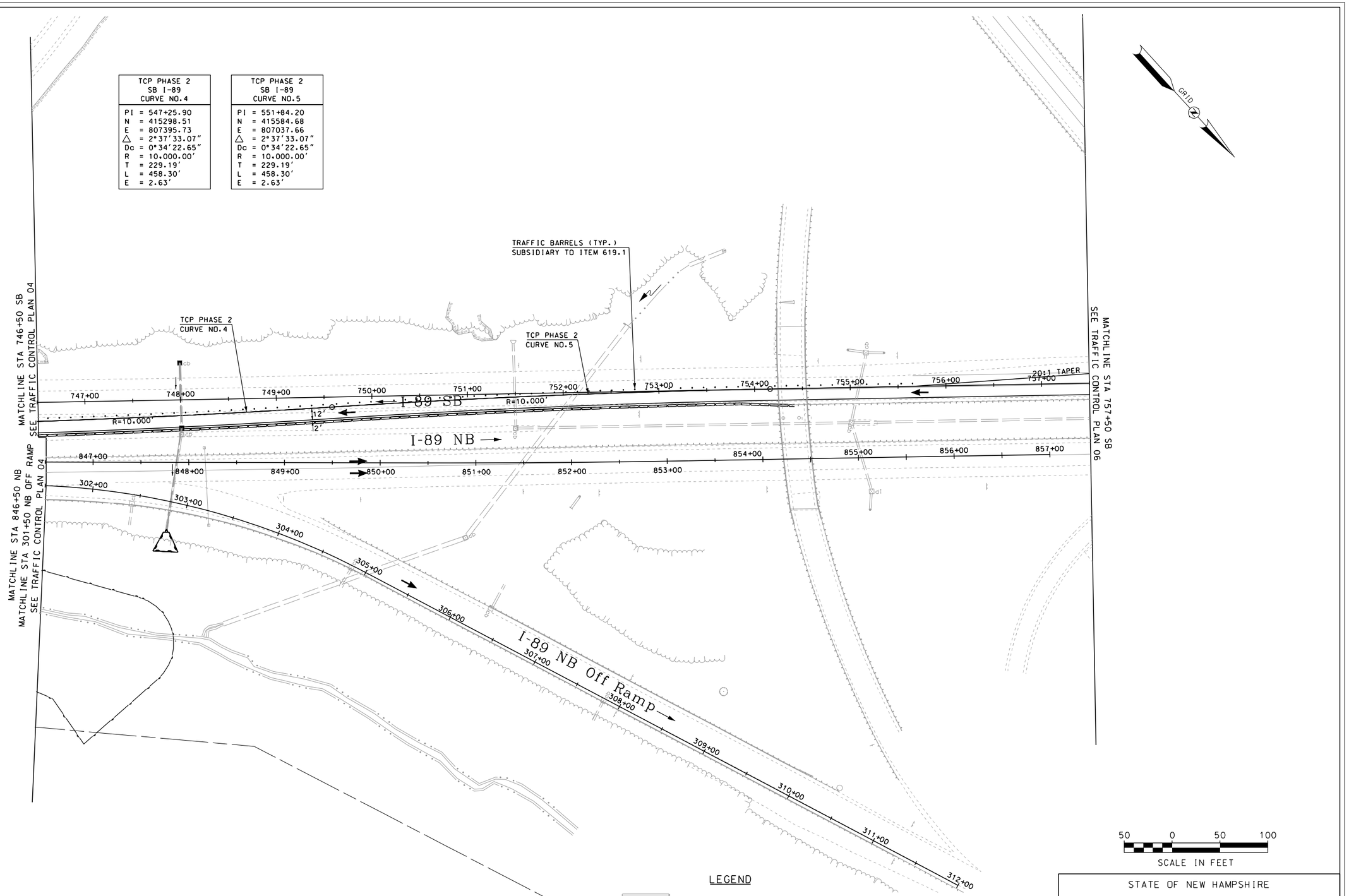
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 04
PHASE 2 TO PHASE 3
TRANSITION - STEP 1

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	111	600

TCP PHASE 2 SB I-89 CURVE NO.4
PI = 547+25.90
N = 415298.51
E = 807395.73
△ = 2°37'33.07"
Dc = 0°34'22.65"
R = 10,000.00'
T = 229.19'
L = 458.30'
E = 2.63'

TCP PHASE 2 SB I-89 CURVE NO.5
PI = 551+84.20
N = 415584.68
E = 807037.66
△ = 2°37'33.07"
Dc = 0°34'22.65"
R = 10,000.00'
T = 229.19'
L = 458.30'
E = 2.63'



LEGEND

- PHASE 2-3 ACCELERATED CONSTRUCTION AREA
- TRAFFIC FLOW ARROW
- TRAFFIC BARRELS

50 0 50 100

SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

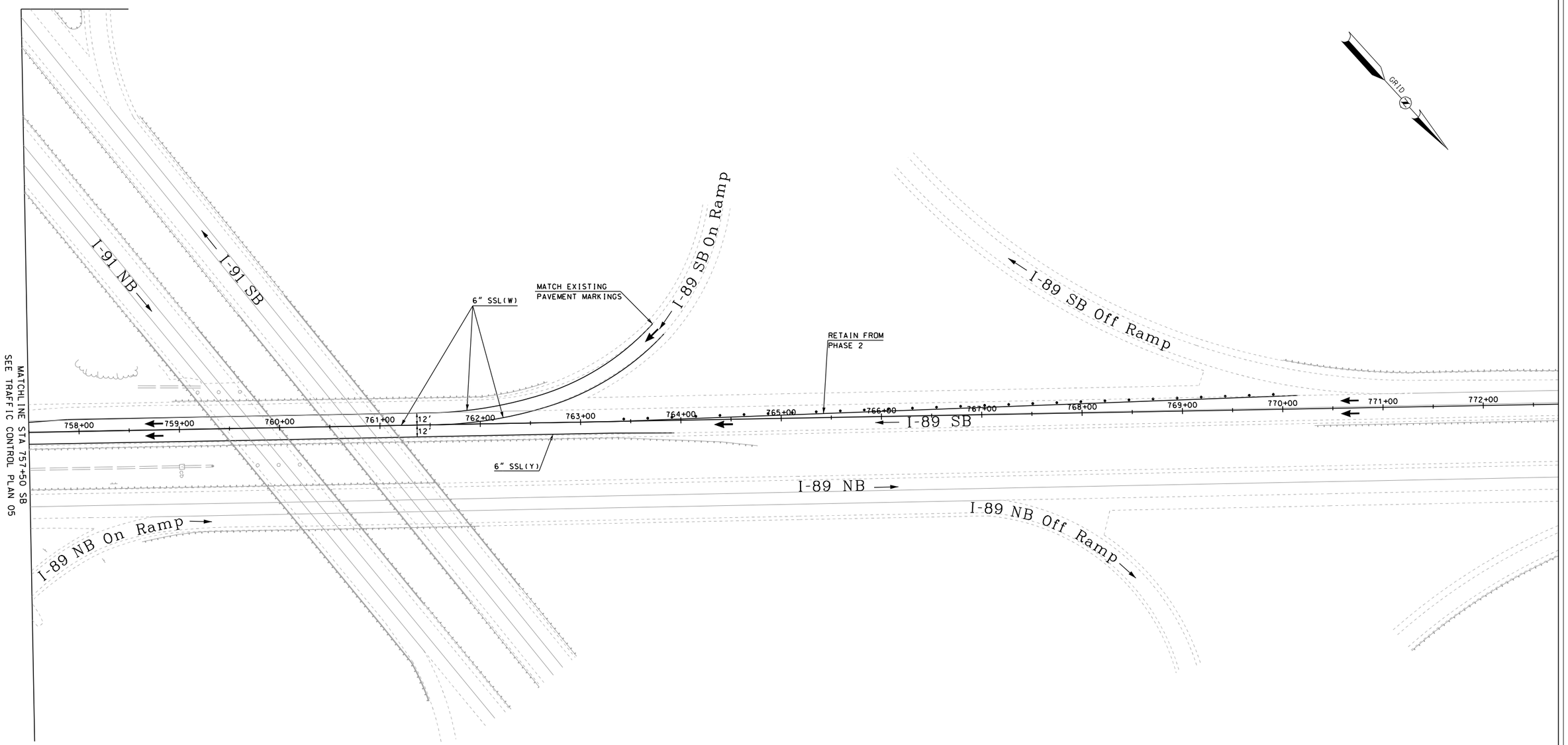
TRAFFIC CONTROL PLAN 05 PHASE 2 TO PHASE 3 TRANSITION - STEP 1

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	112	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

50 0 50 100

SCALE IN FEET

LEGEND

PHASE 2-3 ACCELERATED CONSTRUCTION AREA

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

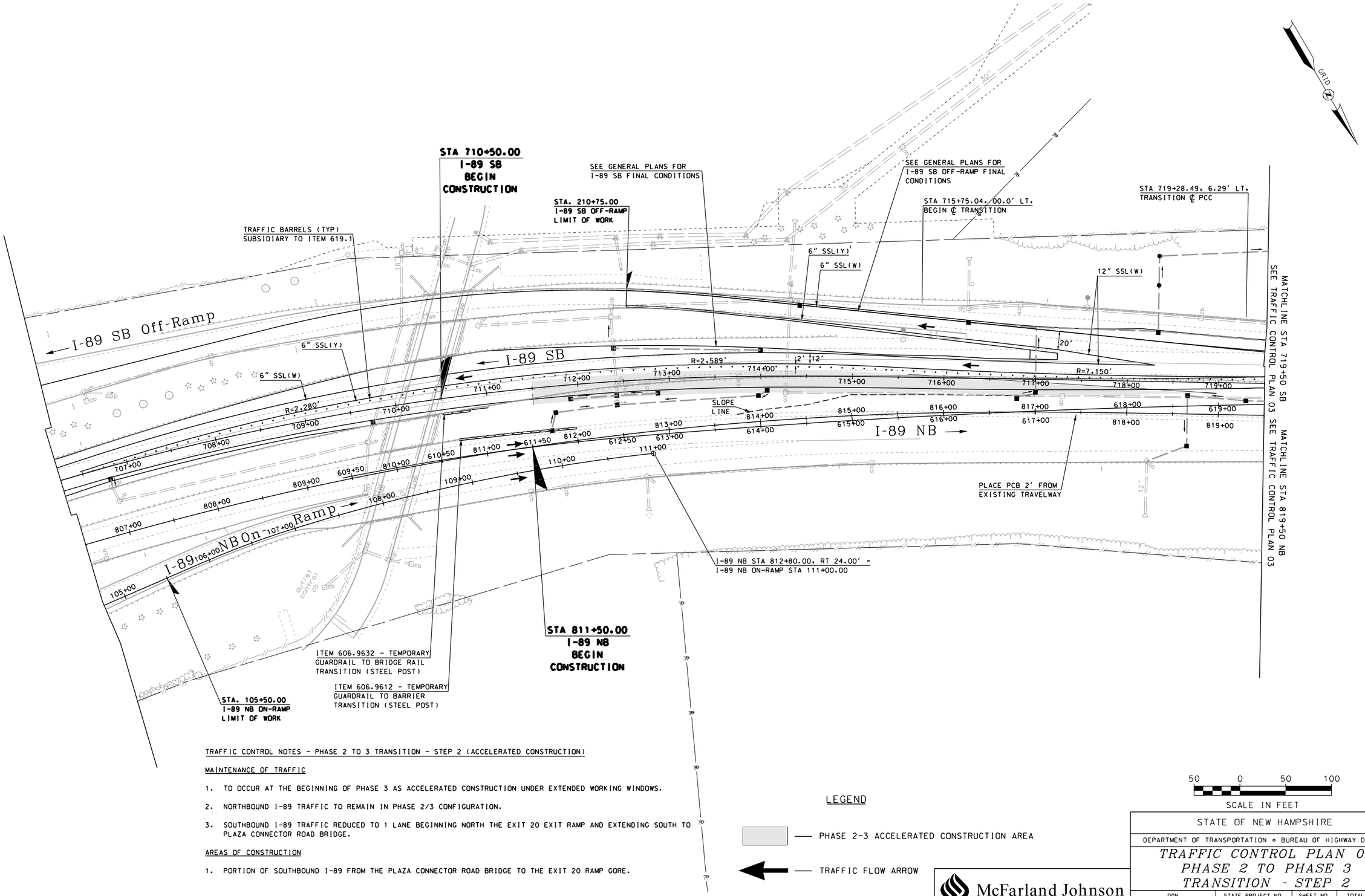
TRAFFIC CONTROL PLAN 06
PHASE 2 TO PHASE 3
TRANSITION - STEP 1

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	113	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



TRAFFIC CONTROL NOTES - PHASE 2 TO 3 TRANSITION - STEP 2 (ACCELERATED CONSTRUCTION)

MAINTENANCE OF TRAFFIC

1. TO OCCUR AT THE BEGINNING OF PHASE 3 AS ACCELERATED CONSTRUCTION UNDER EXTENDED WORKING WINDOWS.
2. NORTHBOUND I-89 TRAFFIC TO REMAIN IN PHASE 2/3 CONFIGURATION.
3. SOUTHBOUND I-89 TRAFFIC REDUCED TO 1 LANE BEGINNING NORTH THE EXIT 20 EXIT RAMP AND EXTENDING SOUTH TO PLAZA CONNECTOR ROAD BRIDGE.

AREAS OF CONSTRUCTION

1. PORTION OF SOUTHBOUND I-89 FROM THE PLAZA CONNECTOR ROAD BRIDGE TO THE EXIT 20 RAMP GORE.

LEGEND

- PHASE 2-3 ACCELERATED CONSTRUCTION AREA
- TRAFFIC FLOW ARROW
- TRAFFIC BARRELS

50 0 50 100
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 02
PHASE 2 TO PHASE 3
TRANSITION - STEP 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	114	600

MATCHLINE STA 719+50 SB
SEE TRAFFIC CONTROL PLAN 02

MATCHLINE STA 819+50 NB
SEE TRAFFIC CONTROL PLAN 02

I-89 SB STA 723+21.07, LT 24.00' =
I-89 SB OFF-RAMP STA 200+03.43

STA 722+83.19, 12.58' LT.
END ℄ TRANSITION

STA 722+50, LT.
BEGIN 55:1 TEMPORARY
LANE DROP TAPER

TRAFFIC BARRELS (TYP)
SUBSIDIARY TO ITEM 619.1

6" SSL(Y)
6" SBL(W)
6" SSL(W)

STA 729+10, LT.
END 55:1 TEMPORARY
LANE DROP TAPER

R=3,770'
R=10,000'

I-89 SB

11.42'
12'
12'
2'

720+00 721+00 722+00 723+00 724+00 725+00 726+00 727+00 728+00 729+00 730+00 731+00 732+00

620+00 621+00 622+00 623+00 624+00 625+00 626+00 627+00 628+00 629+00 630+00 631+00 632+00

820+00 821+00 822+00 823+00 824+00 825+00 826+00 827+00 828+00 829+00 830+00 831+00 832+00

I-89 NB

ITEM 606.9612 - TEMPORARY
GUARDRAIL TO BARRIER
TRANSITION (STEEL POST)

GRID N

LEGEND

PHASE 2-3 ACCELERATED CONSTRUCTION AREA

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

50 0 50 100
SCALE IN FEET

McFarland Johnson

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

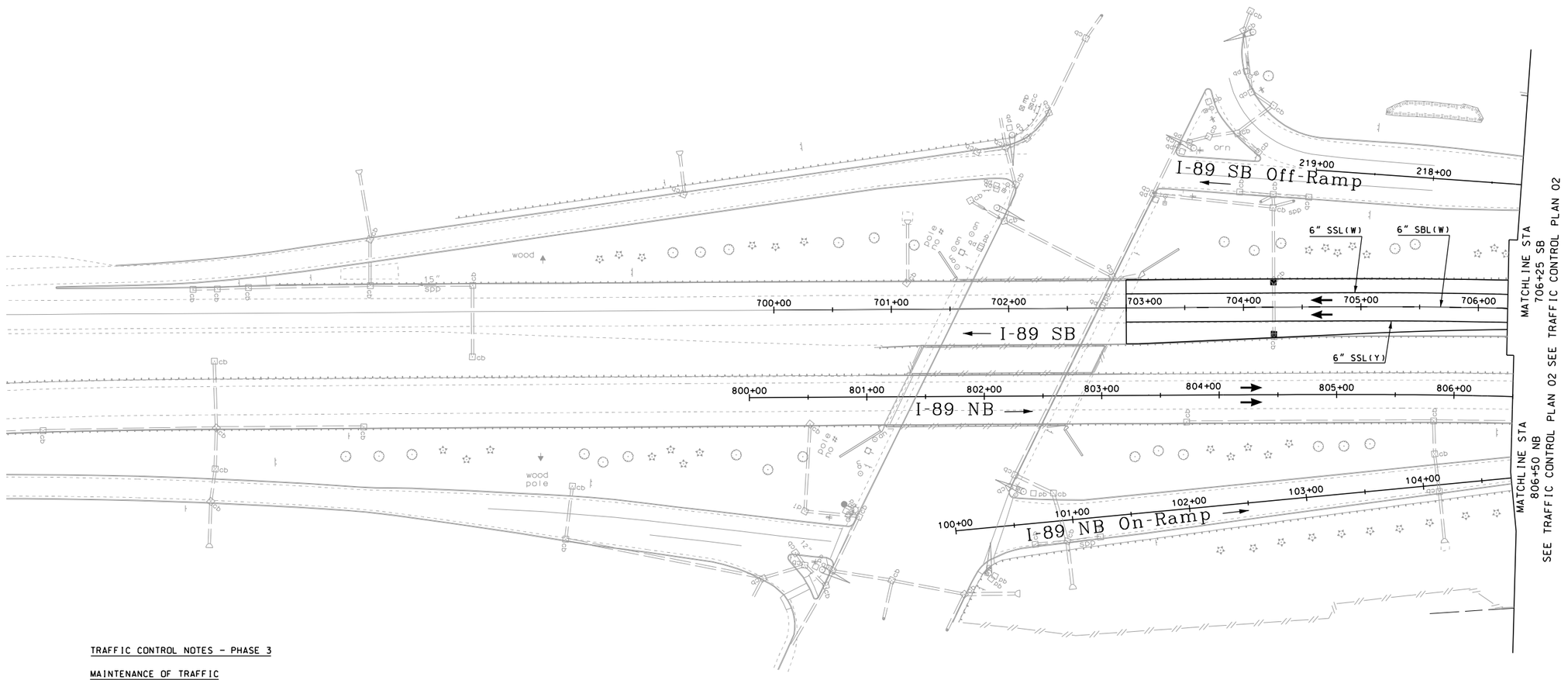
TRAFFIC CONTROL PLAN 03
PHASE 2 TO PHASE 3
TRANSITION - STEP 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	115	600

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



TRAFFIC CONTROL NOTES - PHASE 3

MAINTENANCE OF TRAFFIC

1. NORTHBOUND I-89 TRAFFIC TO REMAIN IN EXISTING CONFIGURATION.
2. SOUTHBOUND I-89 TRAFFIC TO BE SHIFTED ONTO THE NEWLY CONSTRUCTED SOUTHBOUND BRIDGE DECK.
3. NORTHBOUND I-89 RAMPS AT EXIT 20 AND INTERSTATE 91 TO REMAIN IN EXISTING CONFIGURATION.
4. SOUTHBOUND I-89 RAMPS AT EXIT 20 AND INTERSTATE 91 TO BE SHIFTED ONTO TEMPORARY ALIGNMENTS.
5. THE ENGINEER CAN INSTRUCT THE CONTRACTOR TO KEEP THE SOUTHBOUND I-89 RAMP FROM INTERSTATE 91 CLOSED UNTIL THE RAMP AND MAINLINE ARE CONSTRUCTED TO THE FINAL CONDITION.

AREAS OF CONSTRUCTION

1. CONSTRUCT NB DIVERSION IN THE I-89 MEDIAN NORTH AND SOUTH OF THE NEW BRIDGE

LEGEND

- PHASE 3 CONSTRUCTION
- TRAFFIC FLOW ARROW
- TRAFFIC BARRELS

50 0 50 100

SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 01 PHASE 3

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph3	16148	116	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN MJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018

AS BUILT DETAILS DATE

GRID

SEE GENERAL PLANS FOR
I-89 SB FINAL CONDITIONS

SEE GENERAL PLANS FOR
I-89 SB OFF-RAMP FINAL
CONDITIONS

STA 715+75.04, 00.0' LT.
BEGIN ℄ TRANSITION

STA 719+28.49, 6.29' LT.
TRANSITION ℄ PCC

MATCHLINE STA 719+50 SB
SEE TRAFFIC CONTROL PLAN 03

MATCHLINE STA 819+50 NB
SEE TRAFFIC CONTROL PLAN 03

I-89 SB Off-Ramp

I-89 SB

I-89 NB

I-89 NB On-Ramp

6" SSL(Y)
6" SBL(W)
6" SSL(W)

R=2.743'
R=10.000'

SLOPE
LINE

PLACE PCB 2' FROM
EXISTING TRAVELWAY

I-89 NB STA 812+80.00, RT 24.00' =
I-89 NB ON-RAMP STA 111+00.00

ITEM 606.9612 - TEMPORARY
GUARDRAIL TO BARRIER
TRANSITION (STEEL POST)

ITEM 606.9632 - TEMPORARY
GUARDRAIL TO BRIDGE RAIL
TRANSITION (STEEL POST)

MATCHLINE STA 706+25 SB
SEE TRAFFIC CONTROL PLAN 01

MATCHLINE STA 806+50 NB
SEE TRAFFIC CONTROL PLAN 01

Outlet control str.

LEGEND

PHASE 3 CONSTRUCTION

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

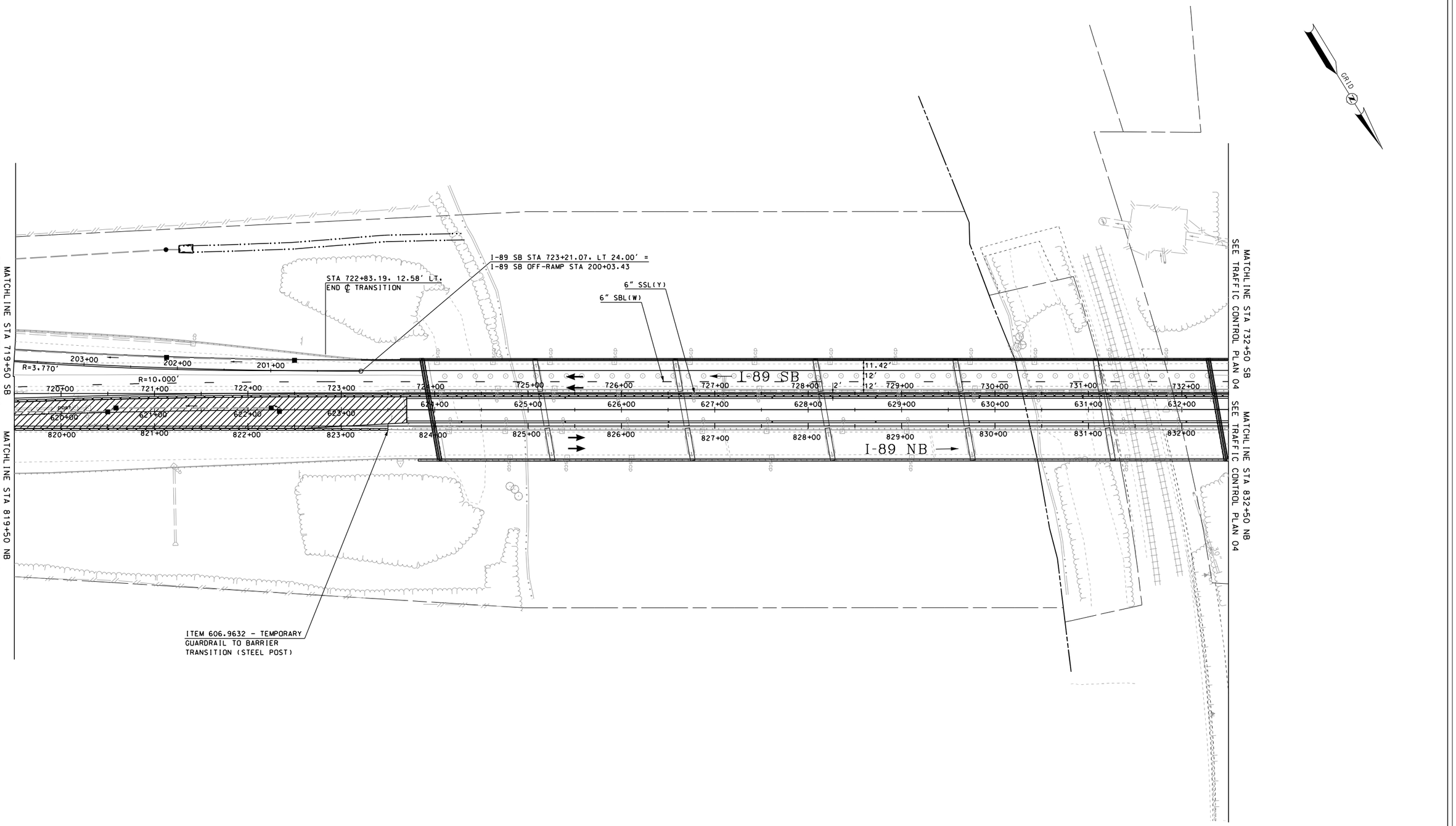
50 0 50 100
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 02
PHASE 3

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph3	16148	117	600



REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

LEGEND

PHASE 3 CONSTRUCTION

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

50 0 50 100

SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 03 PHASE 3

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph3	16148	118	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN MJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018

AS BUILT DETAILS DATE

MATCHLINE STA 732+50 SB
SEE TRAFFIC CONTROL PLAN 03

MATCHLINE STA 832+50 NB
SEE TRAFFIC CONTROL PLAN 03

I-89 SB STA 733+50.00, LT 24.00' =
I-89 SB ON-RAMP STA 413+50.00

STA 736+40.58, 12.58' LT.
BEGIN ℄ TRANSITION PC

STA 741+34.12, 9.20' LT.
TRANSITION ℄ PT

SEE GENERAL PLANS
FOR I-89 ON-RAMP
FINAL CONDITIONS

TEMPORARY WIDENING CONSTRUCTED
AS PART OF PHASE 2

STA 745+50.00, 9.00' LT.
TRANSITION ℄ PC

6" SSL(W)
12" SSL(W)
6" SSL(Y)
6" SBL(W)
6" SSL(W)

R=2,850'
R=10,000'

I-89 SB
I-89 NB

T201 T202 T203 T204 T300 T301 T302 T303

I-89 NB STA 845+00.00, RT 24.00' =
I-89 NB OFF-RAMP STA 300+00.00

EXISTING DIVERSION FROM PHASE 2
TO REMAIN FOR USE IN PHASE 4

ITEM 606.9632 - TEMPORARY
GUARDRAIL TO BRIDGE RAIL
TRANSITION (STEEL POST)

MATCHLINE STA 746+50 SB
SEE TRAFFIC CONTROL PLAN 05

MATCHLINE STA 846+50 NB
SEE TRAFFIC CONTROL PLAN 05

MATCHLINE STA 301+50 NB OFF RAMP
SEE TRAFFIC CONTROL PLAN 05

50 0 50 100
SCALE IN FEET

LEGEND

PHASE 3 CONSTRUCTION

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

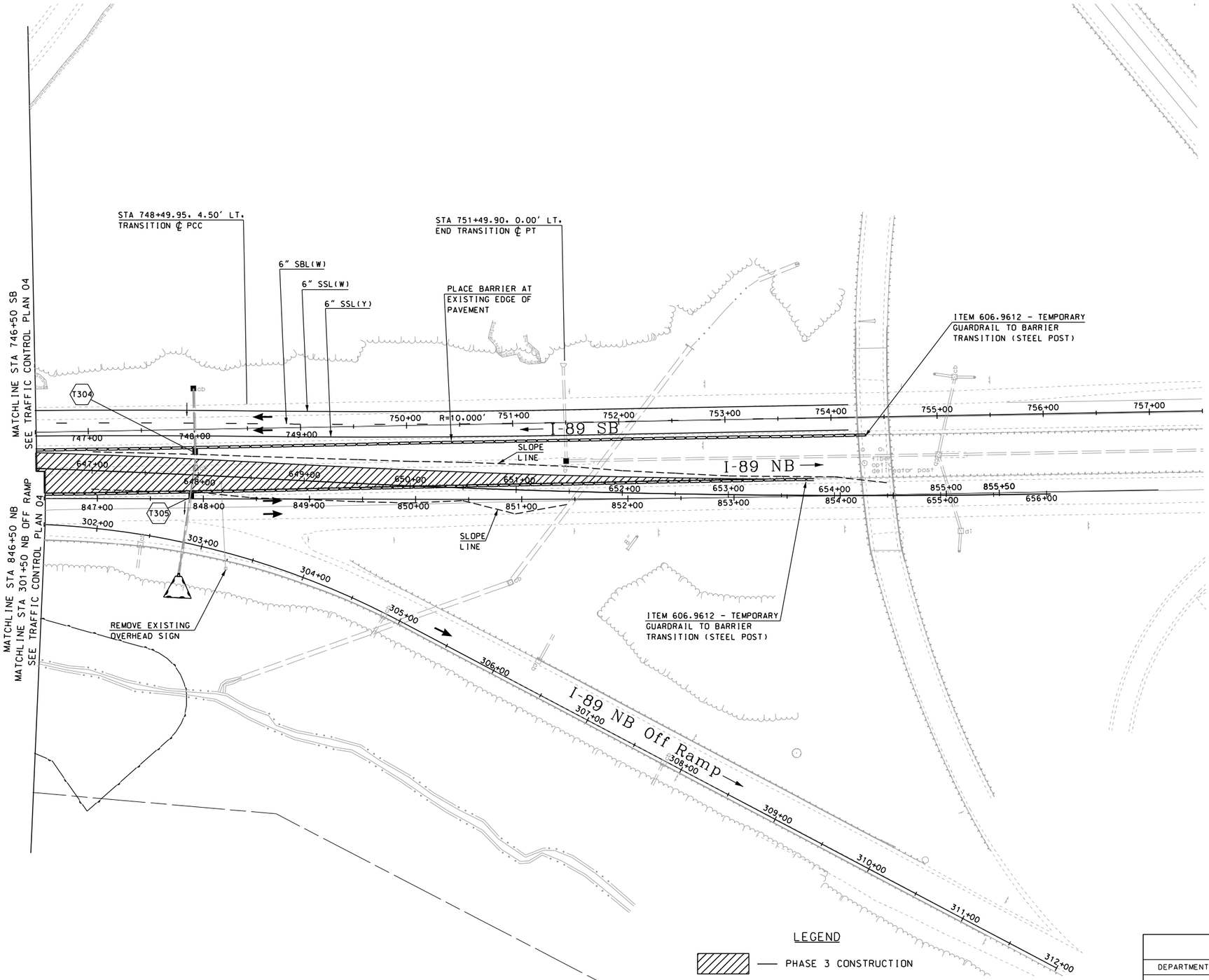
TRAFFIC CONTROL PLAN 04
PHASE 3

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph3	16148	119	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



LEGEND

PHASE 3 CONSTRUCTION

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

50 0 50 100

SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE

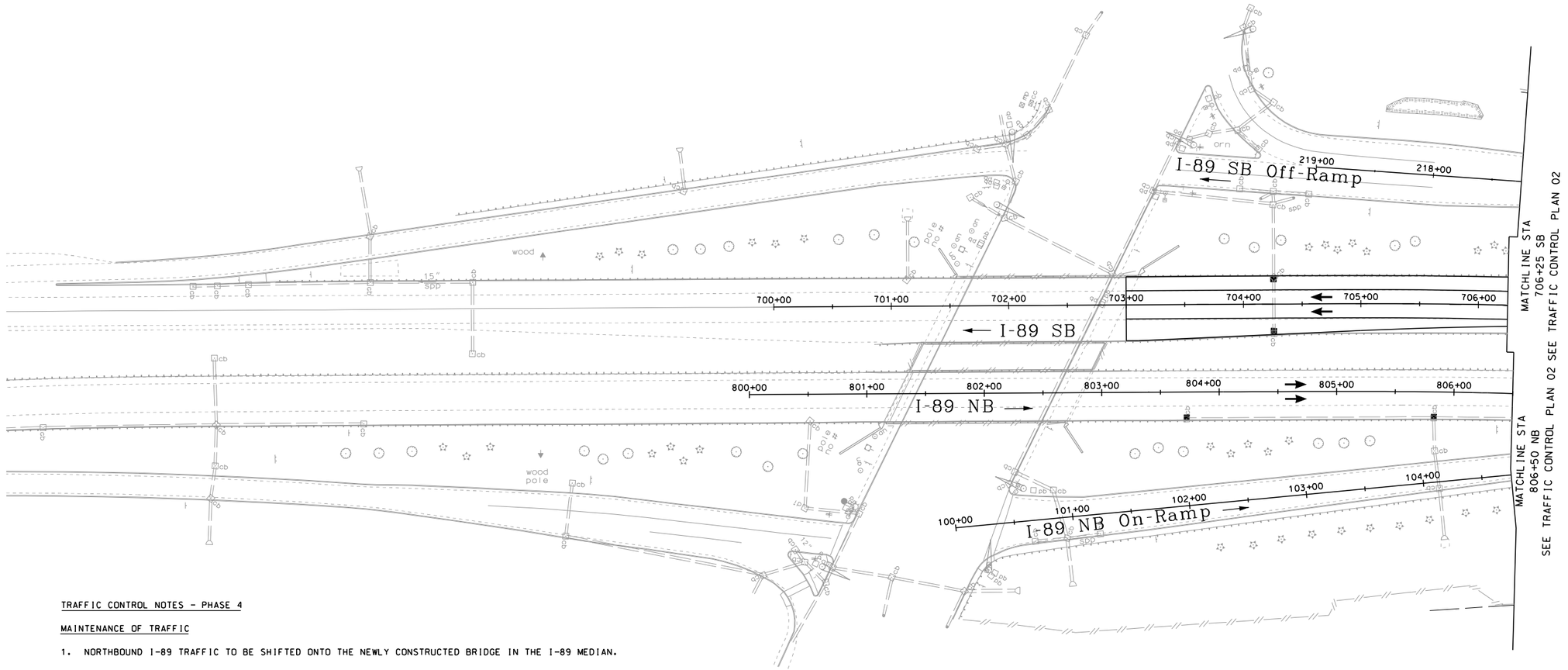
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 05 PHASE 3

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph3	16148	120	600

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION
		STATION
		STATION



TRAFFIC CONTROL NOTES - PHASE 4

MAINTENANCE OF TRAFFIC

1. NORTHBOUND I-89 TRAFFIC TO BE SHIFTED ONTO THE NEWLY CONSTRUCTED BRIDGE IN THE I-89 MEDIAN.
2. SOUTHBOUND I-89 TRAFFIC TO REMAIN IN SAME CONFIGURATION AS PHASE 3.
3. NORTHBOUND I-89 RAMPS AT EXIT 20 AND INTERSTATE 91 TO BE SHIFTED ONTO TEMPORARY ALIGNMENTS.
4. SOUTHBOUND I-89 RAMPS AT EXIT 20 AND INTERSTATE 91 TO REMAIN IN SAME CONFIGURATION AS PHASE 3.
5. THE ENGINEER CAN INSTRUCT THE CONTRACTOR TO KEEP THE SOUTHBOUND I-89 RAMP FROM INTERSTATE 91 CLOSED UNTIL THE RAMP AND MAINLINE ARE CONSTRUCTED TO THE FINAL CONDITION.
6. NORTHBOUND I-89 RAMP AT INTERSTATE 91 SHALL BE TEMPORARILY CLOSED TO ACCOMMODATE PAVEMENT REMOVAL. GRAVEL SHIMMING. AND BASE PAVING ON THE RAMP. INFORMATION ON LANE CLOSURES. RAMP CLOSURES. AND DETOURS CAN BE FOUND IN THE TRAFFIC CONTROL PLAN CONTAINED IN THE PROPOSAL.

AREAS OF CONSTRUCTION

1. CONSTRUCT NEW I-89 NORTHBOUND BRIDGE SUPERSTRUCTURE AND DECK OVER THE CONNECTICUT RIVER.
2. CONSTRUCT ROADWAY APPROACHES TO THE NEW NORTHBOUND I-89 BRIDGE DECK.
3. CONSTRUCT THE NEW HAMPSHIRE INFILTRATION BASIN.

LEGEND

- PHASE 4 CONSTRUCTION
- TRAFFIC FLOW ARROW
- TRAFFIC BARRELS

50 0 50 100
SCALE IN FEET

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 01 PHASE 4

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph4	16148	121	600

TCP PHASE 4 MAINLINE NB CURVE NO.1
PI = 611+01.27
N = 413357.00
E = 810441.29
△ = 6°32'45.78"
Dc = 2°01'54.35"
R = 2820.00'
T = 161.27'
L = 322.19'
E = 4.61'

TCP PHASE 4 CURVE NO.2
PI = 617+73.41
N = 413645.93
E = 809834.03
△ = 5°51'11.13"
Dc = 0°34'22.65"
R = 10.000.00'
T = 511.22'
L = 1021.56'
E = 13.06'

TCP PHASE 4 NB ON RAMP CURVE NO.1
PI = 55+12.22
N = 413665.85
E = 809847.41
△ = 5°52'55.56"
Dc = 0°34'28.85"
R = 9970.00'
T = 512.22'
L = 1023.54'
E = 13.15'

GRID

I-89 SB Off-Ramp

I-89 SB

I-89 NB

I-89 NB On-Ramp

ITEM 606.9632 - TEMPORARY GUARDRAIL TO BRIDGE RAIL TRANSITION (STEEL POST) FROM PHASE 3 TO REMAIN IN PHASE 4

MATCHLINE STA 706+25 SB SEE TRAFFIC CONTROL PLAN 01

MATCHLINE STA 806+50 NB SEE TRAFFIC CONTROL PLAN 01

MATCHLINE STA 719+50 SB SEE TRAFFIC CONTROL PLAN 03

MATCHLINE STA 819+50 NB SEE TRAFFIC CONTROL PLAN 03

TCP PHASE 4 CURVE NO.1

PC 50+00.00

MATCH EXISTING PAVEMENT MARKINGS

ITEM 606.9612 - TEMPORARY GUARDRAIL TO BARRIER TRANSITION (STEEL POST)

12" SSL(W)

TCP PHASE 4 NB ON-RAMP CURVE NO.1

6" SBL(W)

6" SSL(Y)

SLOPE LINE

TCP PHASE 4 CURVE NO.2

6" SSL(W)

ITEM 606.9612 - TEMPORARY GUARDRAIL TO BARRIER TRANSITION (STEEL POST)

outlet control cb

50 0 50 100

SCALE IN FEET

LEGEND

PHASE 4 CONSTRUCTION

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 02 PHASE 4

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph4	16148	122	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN WJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018
AS BUILT DETAILS DATE

MATCHLINE STA 719+50 SB
SEE TRAFFIC CONTROL PLAN 02

MATCHLINE STA 819+50 NB
SEE TRAFFIC CONTROL PLAN 02

MATCHLINE STA 732+50 SB
SEE TRAFFIC CONTROL PLAN 04

MATCHLINE STA 832+50 NB
SEE TRAFFIC CONTROL PLAN 04

GRID N

I-89 SB

I-89 NB

6" SSL(W)
6" SBL(W)
6" SSL(Y)

R=3,770'

203+00 202+00 201+00
720+00 721+00 722+00 723+00 724+00 725+00 726+00 727+00 728+00 729+00 730+00 731+00 732+00
620+00 621+00 622+00 623+00 624+00 625+00 626+00 627+00 628+00 629+00 630+00 631+00 632+00
+10 820+00 821+00 822+00 823+00 824+00 825+00 826+00 827+00 828+00 829+00 830+00 831+00 832+00
57+00 58+00 59+00 60+00 61+00

2' 12' 2' 12' 2' 12'

10' 50:1 BARRIER TAPER

PI 60+23.09

POE 61+10.00

TCP PHASE 4 STA 623+70.00, RT 12.00' =
TCP PHASE 4 NB ON-RAMP STA 61+10.00

LEGEND

PHASE 4 CONSTRUCTION

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

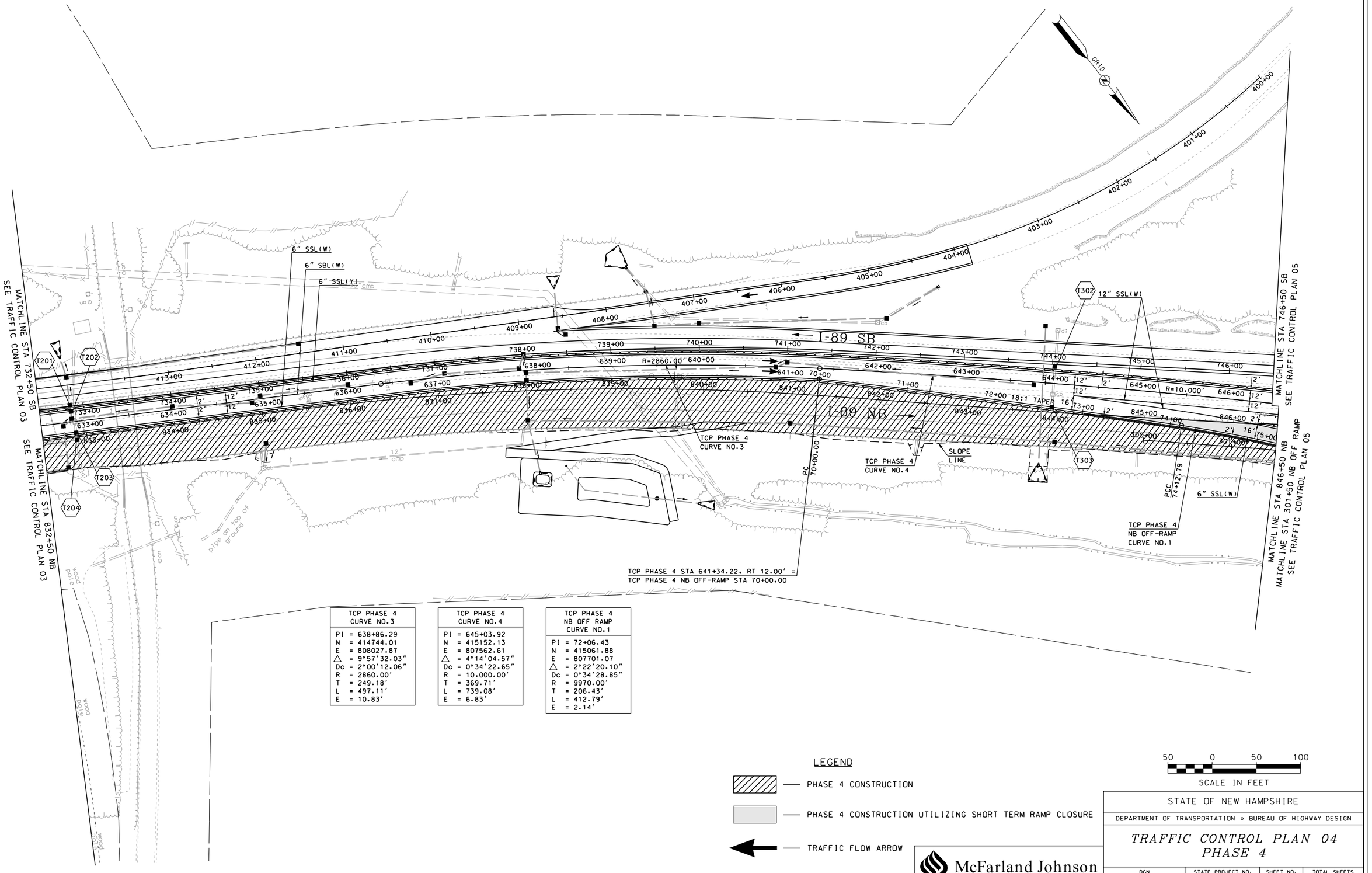
50 0 50 100
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 03 PHASE 4

OGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph4	16148	123	600



TCP PHASE 4 CURVE NO.3	
PI	= 638+86.29
N	= 414744.01
E	= 808027.87
△	= 9°57'32.03"
Dc	= 2°00'12.06"
R	= 2860.00'
T	= 249.18'
L	= 497.11'
E	= 10.83'

TCP PHASE 4 CURVE NO.4	
PI	= 645+03.92
N	= 415152.13
E	= 807562.61
△	= 4°14'04.57"
Dc	= 0°34'22.65"
R	= 10,000.00'
T	= 369.71'
L	= 739.08'
E	= 6.83'

TCP PHASE 4 NB OFF RAMP CURVE NO.1	
PI	= 72+06.43
N	= 415061.88
E	= 807701.07
△	= 2°22'20.10"
Dc	= 0°34'28.85"
R	= 9970.00'
T	= 206.43'
L	= 412.79'
E	= 2.14'

LEGEND

- PHASE 4 CONSTRUCTION
- PHASE 4 CONSTRUCTION UTILIZING SHORT TERM RAMP CLOSURE
- TRAFFIC FLOW ARROW
- TRAFFIC BARRELS

50 0 50 100

SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 04
PHASE 4

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph4	16148	124	600

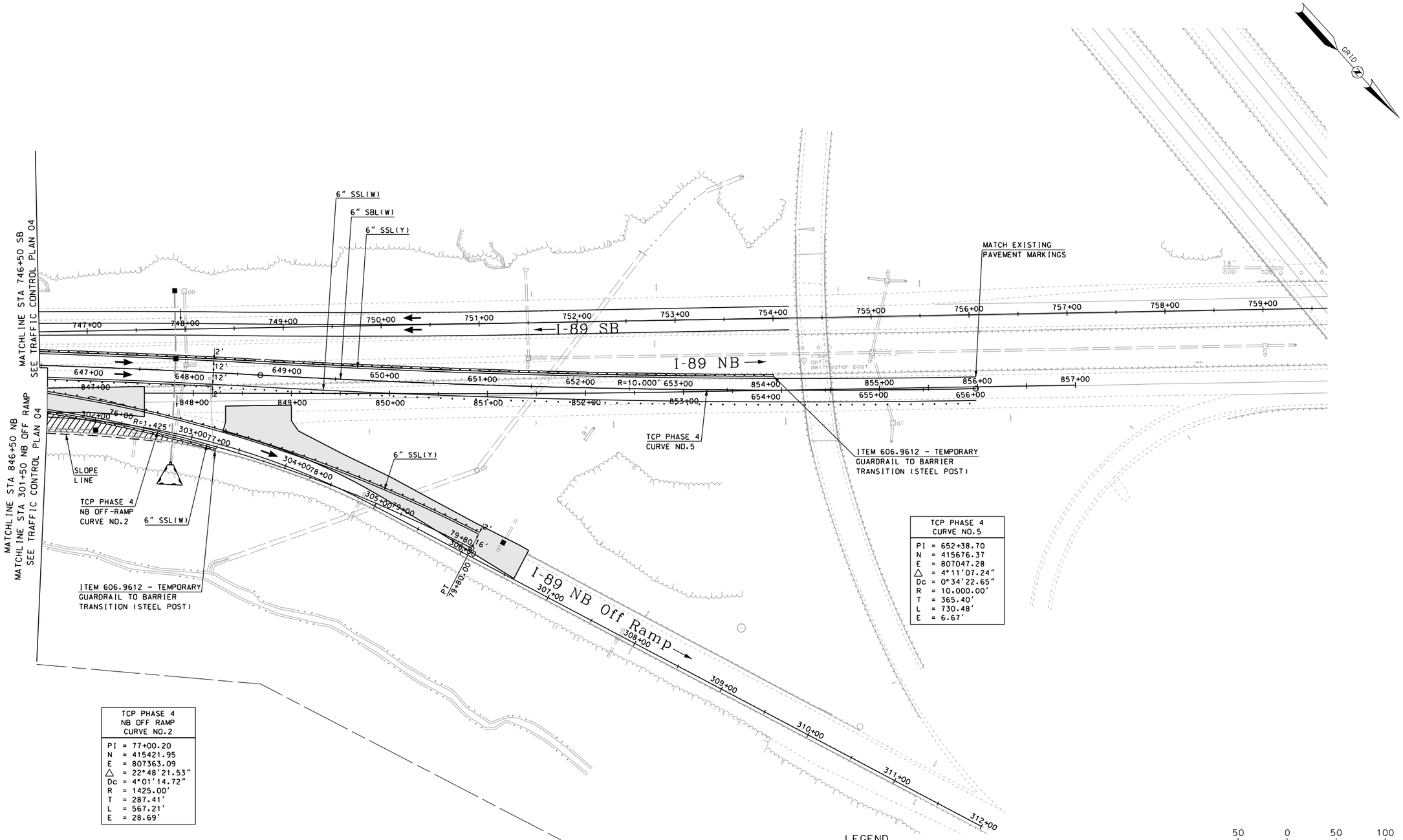
REVISIONS AFTER PROPOSAL			
NUMBER	DESCRIPTION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN MJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018
AS BUILT DETAILS DATE



TCP PHASE 4 CURVE NO.5
PI = 652+38.70
N = 415676.37
E = 807047.28
△ = 4°11'07.24"
Dc = 0°34'22.65"
R = 10,000.00'
T = 365.40'
L = 730.48'
E = 6.67'

TCP PHASE 4 NB OFF RAMP CURVE NO.2
PI = 77+00.20
N = 415421.95
E = 807363.09
△ = 22°48'21.53"
Dc = 4°01'14.72"
R = 1425.00'
T = 287.41'
L = 567.21'
E = 28.69'

LEGEND

- PHASE 4 CONSTRUCTION
- PHASE 4 CONSTRUCTION UTILIZING SHORT TERM RAMP CLOSURE
- TRAFFIC FLOW ARROW
- TRAFFIC BARRELS

50 0 50 100
SCALE IN FEET

McFarland Johnson

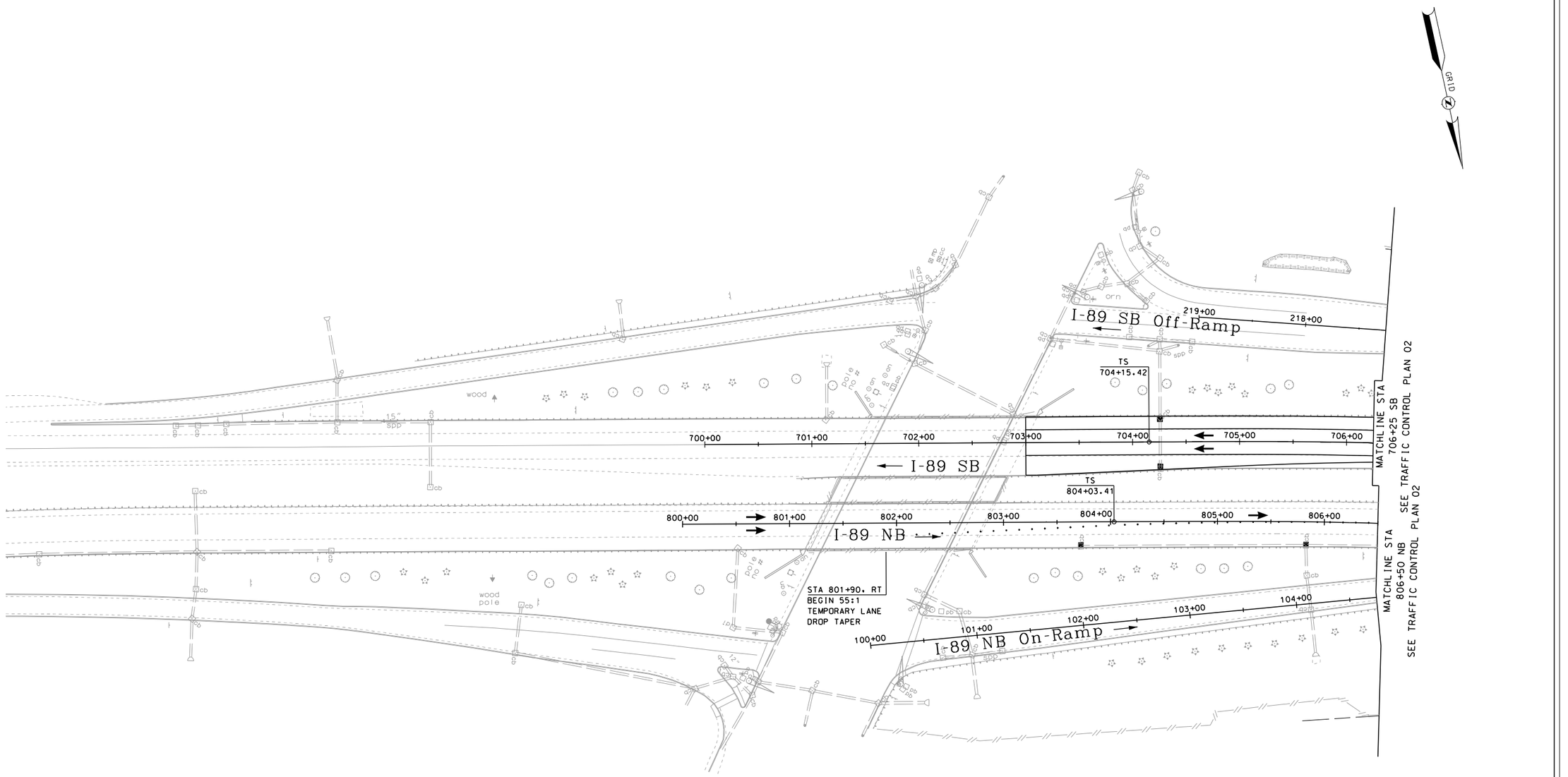
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 05 PHASE 4

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph4	16148	125	600

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION



TRAFFIC CONTROL NOTES - PHASE 4 TO 5A TRANSITION (ACCELERATED CONSTRUCTION)

MAINTENANCE OF TRAFFIC

1. TO OCCUR AT THE END OF PHASE 4 AS ACCELERATED CONSTRUCTION UNDER EXTENDED WORKING WINDOWS.
2. SOUTHBOUND I-89 TRAFFIC TO REMAIN IN PHASE 4/5A CONFIGURATION.
3. NORTHBOUND I-89 TRAFFIC REDUCED TO 1 LANE BEGINNING SOUTH OF THE PLAZA CONNECTOR ROAD BRIDGE AND EXTENDING NORTH TO SOUTH OF THE CONNECTICUT RIVER.
4. NORTHBOUND I-89 ENTRANCE RAMP AT EXIT 20 TO REMAIN OPEN ON TEMPORARY ALIGNMENT.

AREAS OF CONSTRUCTION

1. PORTION OF NORTHBOUND I-89 AND EXIT 20 ENTRANCE RAMP GORE.

LEGEND

- PHASE 4-5A ACCELERATED CONSTRUCTION AREA
- TRAFFIC FLOW ARROW
- TRAFFIC BARRELS

50 0 50 100
SCALE IN FEET

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 01 PHASE 4 TO PHASE 5A TRANSITION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	126	600

TCP PHASE 4 MAINLINE NB CURVE NO.1
PI = 611+01.27
N = 413357.00
E = 810441.29
△ = 6°32'45.78"
Dc = 2°01'54.35"
R = 2820.00'
T = 161.27'
L = 322.19'
E = 4.61'

TCP PHASE 4 CURVE NO.2
PI = 617+73.41
N = 413645.93
E = 809834.03
△ = 5°51'11.13"
Dc = 0°34'22.65"
R = 10.000.00'
T = 511.22'
L = 1021.56'
E = 13.06'

TCP PHASE 4 NB ON RAMP CURVE NO.1
PI = 55+12.22
N = 413665.85
E = 809847.41
△ = 5°52'55.56"
Dc = 0°34'28.85"
R = 9970.00'
T = 512.22'
L = 1023.54'
E = 13.15'

GRID

ITEM 606.9632 - TEMPORARY GUARDRAIL TO BRIDGE RAIL TRANSITION (STEEL POST) FROM PHASE 3 TO REMAIN IN PHASE 4

PT 214+66.58

PC 209+74.27

PT 205+07.61

I-89 SB Off-Ramp

I-89 SB

CS 713+40.26

ST 715+90.26

R=2,743'

PCC 612+62.19

I-89 NB

R=2,820'

R=9,970'

R=10,000'

SC 706+65.42

SC 806+53.41

ST 818+56.80

CS 816+06.80

MATCHLINE STA 706+25 SB
SEE TRAFFIC CONTROL PLAN 01

MATCHLINE STA 806+50 NB
SEE TRAFFIC CONTROL PLAN 01

MATCHLINE STA 719+50 SB
SEE TRAFFIC CONTROL PLAN 03

MATCHLINE STA 819+50 NB
SEE TRAFFIC CONTROL PLAN 03

I-89 NB On-Ramp

19:1 TAPER

TCP PHASE 4 CURVE NO.1

PC 50+00.00

TRAFFIC BARRELS (TYP)
SUBSIDIARY TO ITEM 619.1

I-89 NB STA 812+80.00, RT 24.00' =
I-89 NB ON-RAMP STA 111+00.00

TCP PHASE 4 NB ON-RAMP CURVE NO.1

SLOPE LINE

TCP PHASE 4 CURVE NO.2

STA 808+50, LT
END 55:1 TEMPORARY
LANE DROP TAPER

OUTLET CONTROL CB

PCC 609+40.00

TRAFFIC BARRELS (TYP)
SUBSIDIARY TO ITEM 619.1

50 0 50 100

SCALE IN FEET

LEGEND

PHASE 4-5A ACCELERATED CONSTRUCTION AREA

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 02
PHASE 4 TO PHASE 5A TRANSITION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	127	600

REVISIONS AFTER PROPOSAL			
NUMBER	DESCRIPTION	STATION	STATION

REVISIONS AFTER PROPOSAL

DESCRIPTION	STATION	STATION	NUMBER	DATE

MATCHLINE STA 719+50 SB
SEE TRAFFIC CONTROL PLAN 02

MATCHLINE STA 819+50 NB
SEE TRAFFIC CONTROL PLAN 02

I-89 SB STA 723+21.07, LT 24.00' =
I-89 SB OFF-RAMP STA 200+03.43

TCP PHASE 4 STA 623+70.00, RT 12.00' =
TCP PHASE 4 NB ON-RAMP STA 61+10.00

PT 622+83.74
PC 200+03.43
PT 60+23.54
POE 61+10.00

6" SSL(W)
6" SBL(W)
6" SSL(Y)

I-89 SB
I-89 NB

R=3,770'

GRID

LEGEND

PHASE 4-5A ACCELERATED CONSTRUCTION AREA

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

50 0 50 100
SCALE IN FEET

McFarland Johnson

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

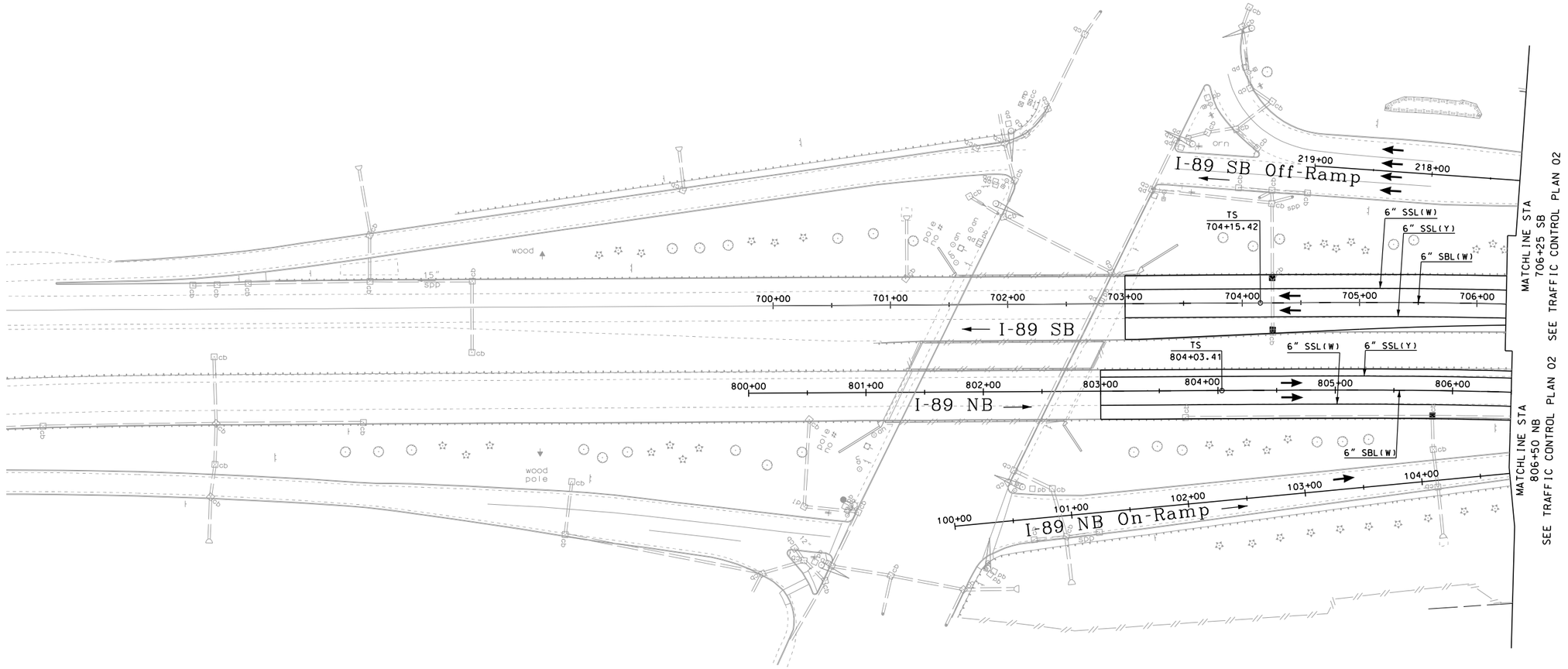
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 03
PHASE 4 TO PHASE 5A TRANSITION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph2	16148	128	600

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION



TRAFFIC CONTROL NOTES - PHASE 5A

MAINTENANCE OF TRAFFIC

1. NORTHBOUND I-89 AND RAMPS TO BE SHIFTED ONTO FINAL AND TEMPORARY CONFIGURATIONS.
2. SOUTHBOUND I-89 AND RAMPS TO BE SHIFTED ONTO FINAL AND TEMPORARY CONFIGURATIONS.

AREAS OF CONSTRUCTION

1. CONSTRUCT FINAL MEDIAN CONFIGURATION NORTH AND SOUTH OF THE NEW BRIDGE.
2. CONSTRUCT FINAL DECK CONFIGURATION ON THE NEW BRIDGE FOR THE INSIDE LANES AND MEDIAN.

LEGEND

- PHASE 5A CONSTRUCTION
- TRAFFIC FLOW ARROW
- TRAFFIC BARRELS

50 0 50 100

SCALE IN FEET

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

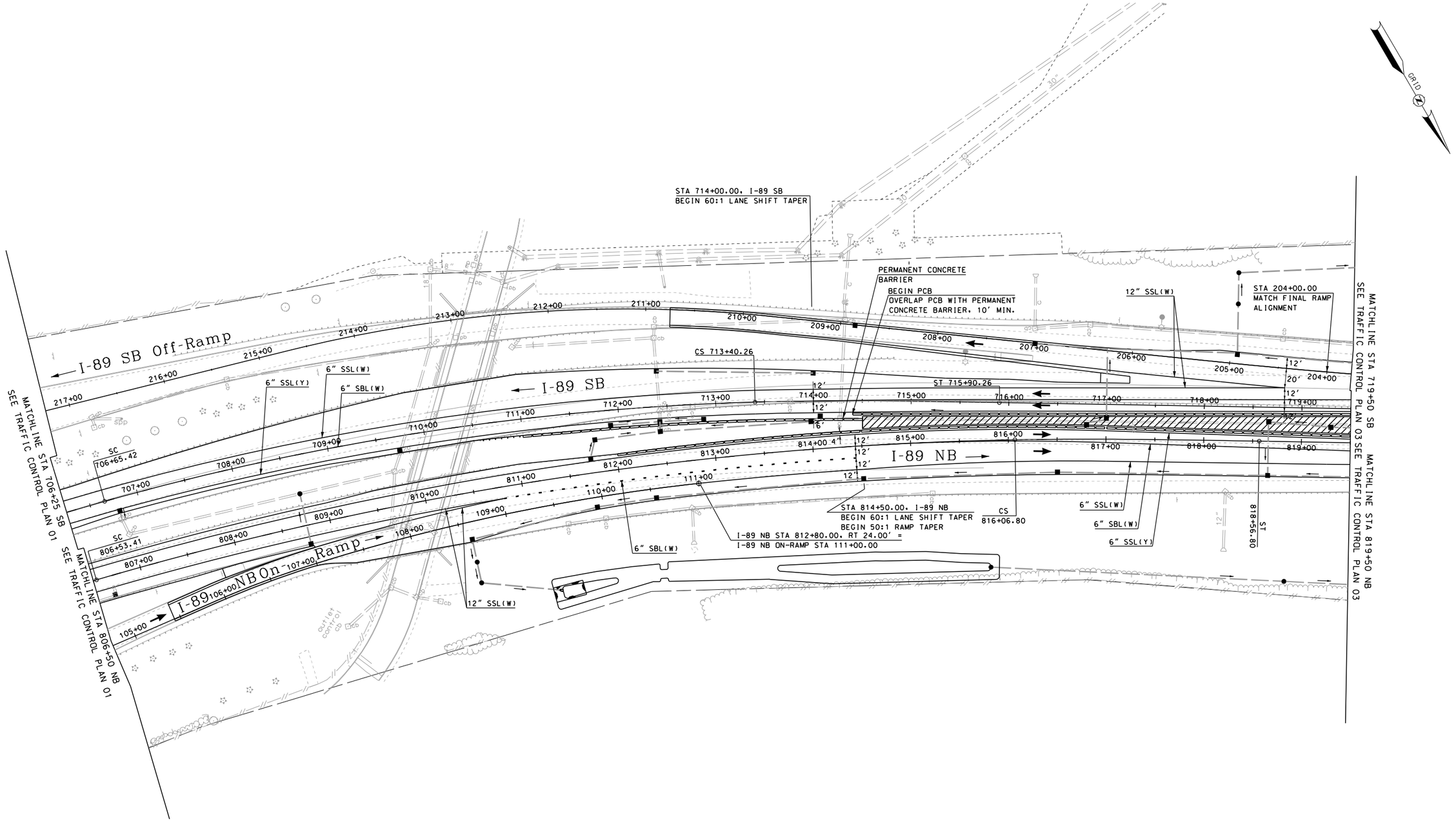
TRAFFIC CONTROL PLAN 01 PHASE 5A

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph5a	16148	129	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



LEGEND

- PHASE 5A CONSTRUCTION
- TRAFFIC FLOW ARROW
- TRAFFIC BARRELS

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 02 PHASE 5A

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph5a	16148	130	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

MATCHLINE STA 719+50 SB
SEE TRAFFIC CONTROL PLAN 02

MATCHLINE STA 819+50 NB
SEE TRAFFIC CONTROL PLAN 02

MATCHLINE STA 732+50 SB
SEE TRAFFIC CONTROL PLAN 04

MATCHLINE STA 832+50 NB
SEE TRAFFIC CONTROL PLAN 04

STA 723+00.00, I-89 SB
END 60:1 LANE SHIFT TAPER

I-89 SB STA 723+21.07, LT 24.00' =
I-89 SB OFF-RAMP STA 200+03.43

STA 820+50.00,
END 50:1 RAMP TAPER

STA 823+50.00, I-89 SB
END 60:1 LANE SHIFT TAPER

6" SSL(W)
6" SBL(W)
6" SSL(Y)

6" SSL(W)
6" SBL(W)
6" SSL(Y)

I-89 SB

I-89 NB

GRID N

LEGEND

PHASE 5A CONSTRUCTION

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

50 0 50 100
SCALE IN FEET

McFarland Johnson

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 03 PHASE 5A

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph5a	16148	131	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED NHDOT DATE 04-2015
NEW DESIGN NJ DATE 04-2016
SHEET CHECKED BRC DATE 02-2018

AS BUILT DETAILS DATE

STA 732+75.00, I-89 SB
BEGIN 60:1 LANE SHIFT TAPER

STA 741+75.00, I-89 SB
END 60:1 LANE SHIFT TAPER

I-89 SB STA 733+50.00, LT 24.00' =
I-89 SB ON-RAMP STA 413+50.00

6" SSL(W)
6" SSL(Y)
12" SSL(W)
6" SBL(W)
PC 736+47.14
I-89 SB
I-89 NB
PT 741+68.59
END PCB
PLACE PCB BEHIND PERMANENT MEDIAN BARRIER
PT 841+33.28
PC 835+50.00
STA 839+84.00, I-89 SB
BEGIN 18:1 RAMP TAPER
STA 842+00.00, I-89 NB
END 60:1 LANE SHIFT TAPER
END 18:1 RAMP TAPER
I-89 NB STA 845+00.00, RT 24.00' =
I-89 NB OFF-RAMP STA 300+00.00
STA 833+00.00, I-89 NB
BEGIN 60:1 LANE SHIFT TAPER
MATCHLINE STA 732+50 SB
SEE TRAFFIC CONTROL PLAN 03
MATCHLINE STA 832+50 NB
SEE TRAFFIC CONTROL PLAN 03
MATCHLINE STA 746+50 SB
SEE TRAFFIC CONTROL PLAN 05
MATCHLINE STA 846+50 NB
MATCHLINE STA 301+50 NB OFF RAMP
SEE TRAFFIC CONTROL PLAN 05
96" cmp
12" cmp
pipe on top of ground
wood pole
400+00 401+00 402+00 403+00 404+00 405+00 406+00 407+00 408+00 409+00 410+00 411+00 412+00 413+00 733+00 734+00 735+00 832+00 833+00 834+00 835+00 836+00 837+00 838+00 839+00 840+00 841+00 842+00 843+00 844+00 845+00 846+00 300+00 301+00 738+00 739+00 740+00 741+00 742+00 743+00 744+00 745+00 746+00

LEGEND

PHASE 5A CONSTRUCTION

TRAFFIC FLOW ARROW

TRAFFIC BARRELS

50 0 50 100
SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

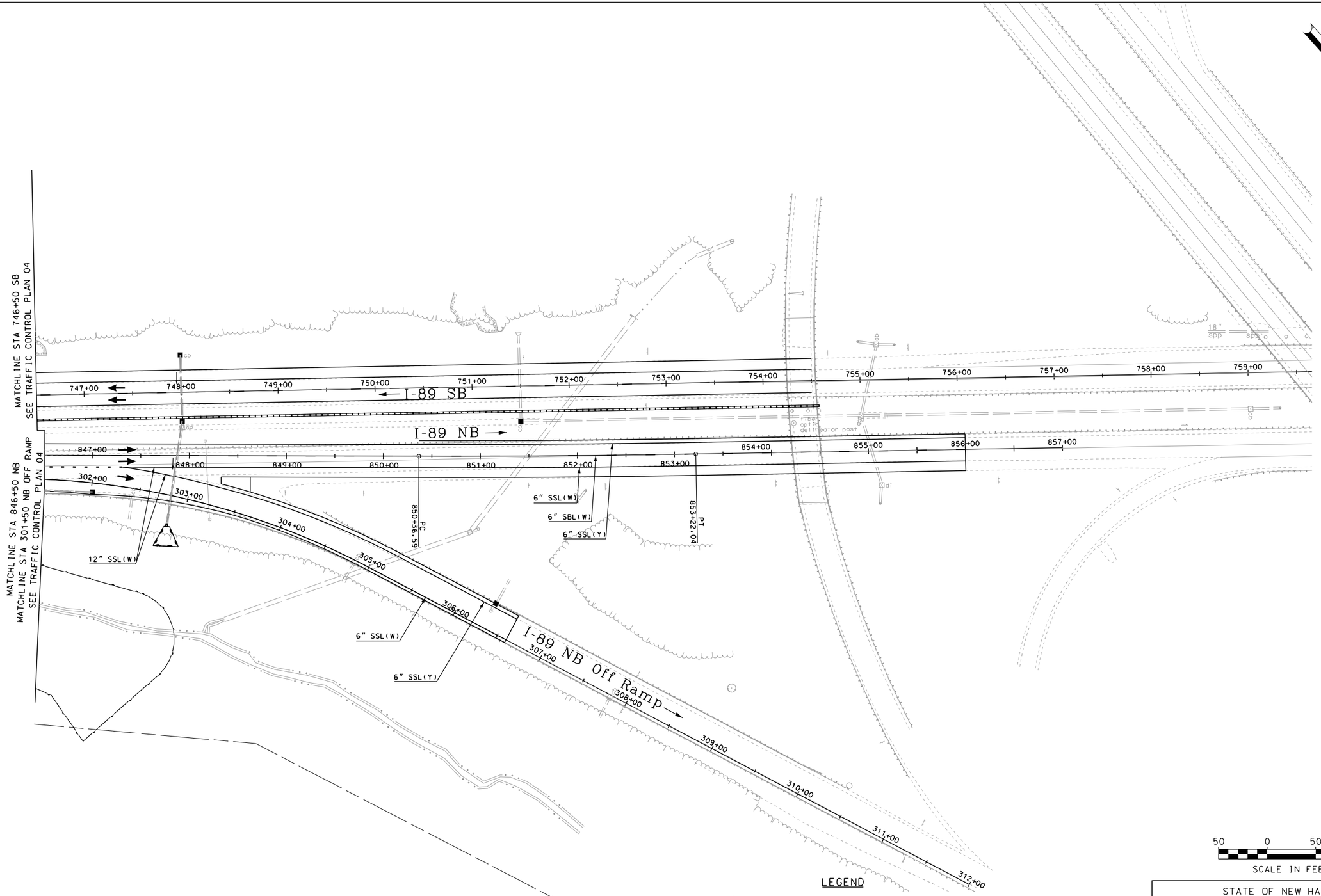
TRAFFIC CONTROL PLAN 04 PHASE 5A

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph5a	16148	132	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



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STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

TRAFFIC CONTROL PLAN 05 PHASE 5A

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph5a	16148	133	600

TRAFFIC CONTROL NOTES - PHASE 5B

MAINTENANCE OF TRAFFIC

1. NORTHBOUND I-89 TRAFFIC TO BE SHIFTED ONTO FINAL LANE CONFIGURATIONS.
2. NORTHBOUND I-89 RAMPS AT INTERSTATE 91 TO BE SHIFTED ONTO TEMPORARY ALIGNMENT.
3. SOUTHBOUND I-89 AND RAMPS SHIFTED ONTO FINAL LANE CONFIGURATION.

AREAS OF CONSTRUCTION

1. CONSTRUCT I-89 NB OFF-RAMP (PARTIALLY UNDER TRAFFIC)

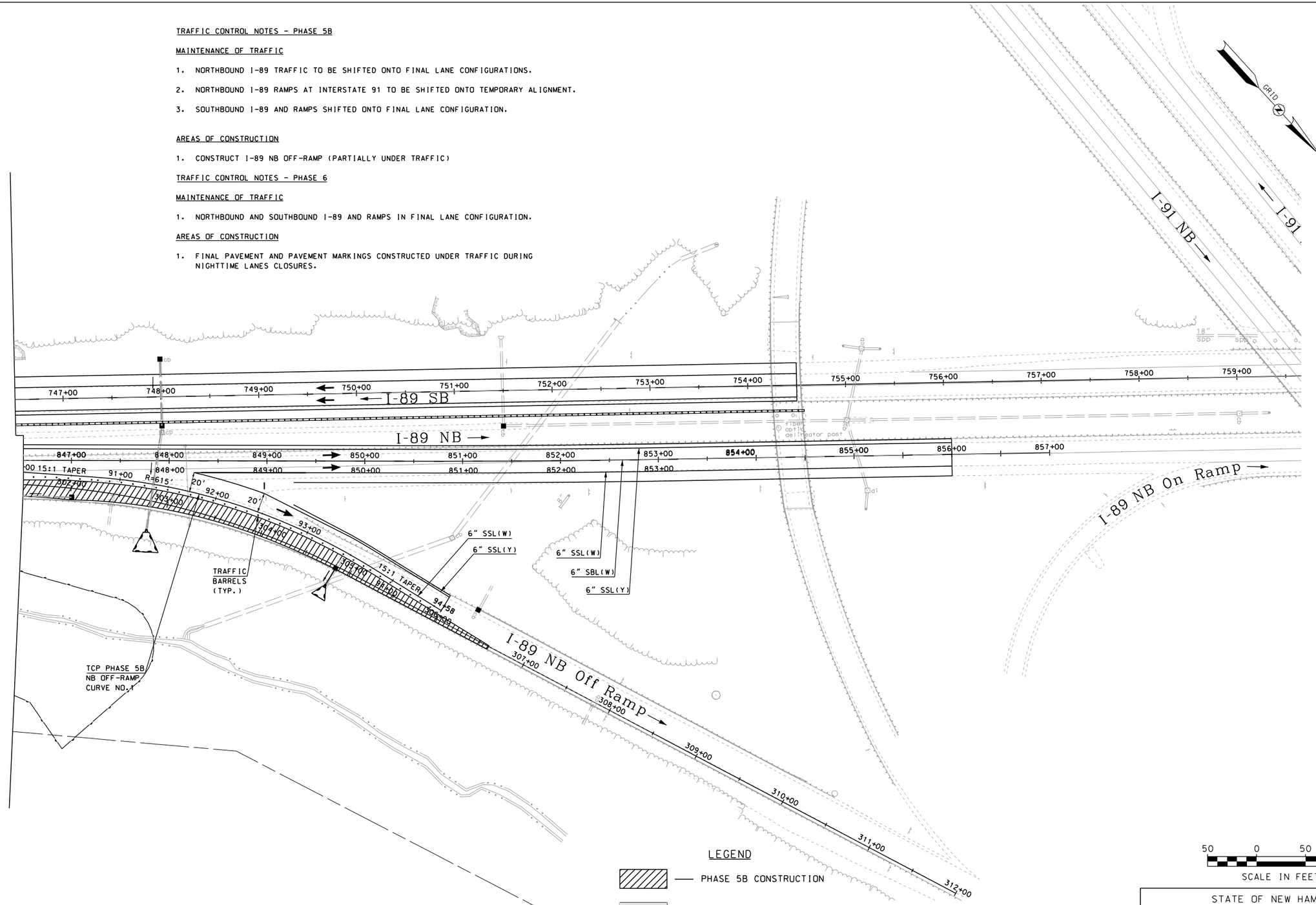
TRAFFIC CONTROL NOTES - PHASE 6

MAINTENANCE OF TRAFFIC

1. NORTHBOUND AND SOUTHBOUND I-89 AND RAMPS IN FINAL LANE CONFIGURATION.

AREAS OF CONSTRUCTION

1. FINAL PAVEMENT AND PAVEMENT MARKINGS CONSTRUCTED UNDER TRAFFIC DURING NIGHTTIME LANES CLOSURES.



50 0 50 100

SCALE IN FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

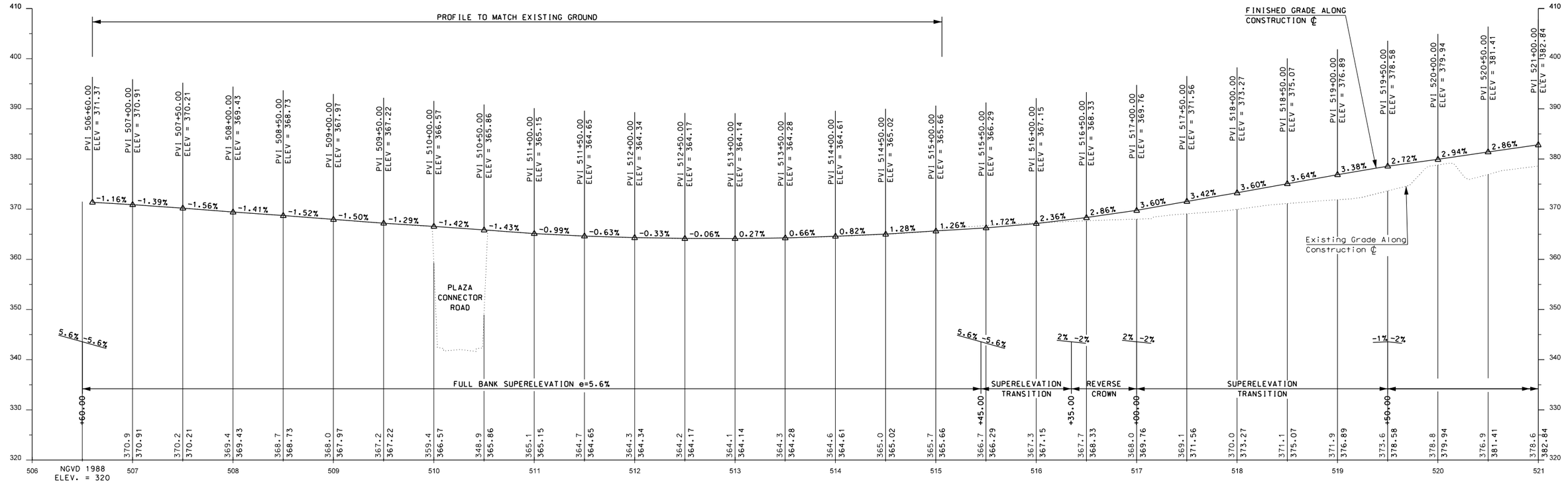
TRAFFIC CONTROL PLAN 05
PHASE 5B

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpph5b	16148	134	600

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



TCP - I-89 SOUTHBOUND

NOTE :

1. SB ON-RAMP CONSTRUCTIONSHOWN ON TEMPORARY SB ON-RAMP PROFILE. ALL OTHER TEMPORARY RAMP ALIGNMENTS FOLLOW EXISTING OR PROPOSED GRADES. (SEE CROSS SECTIONS)

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

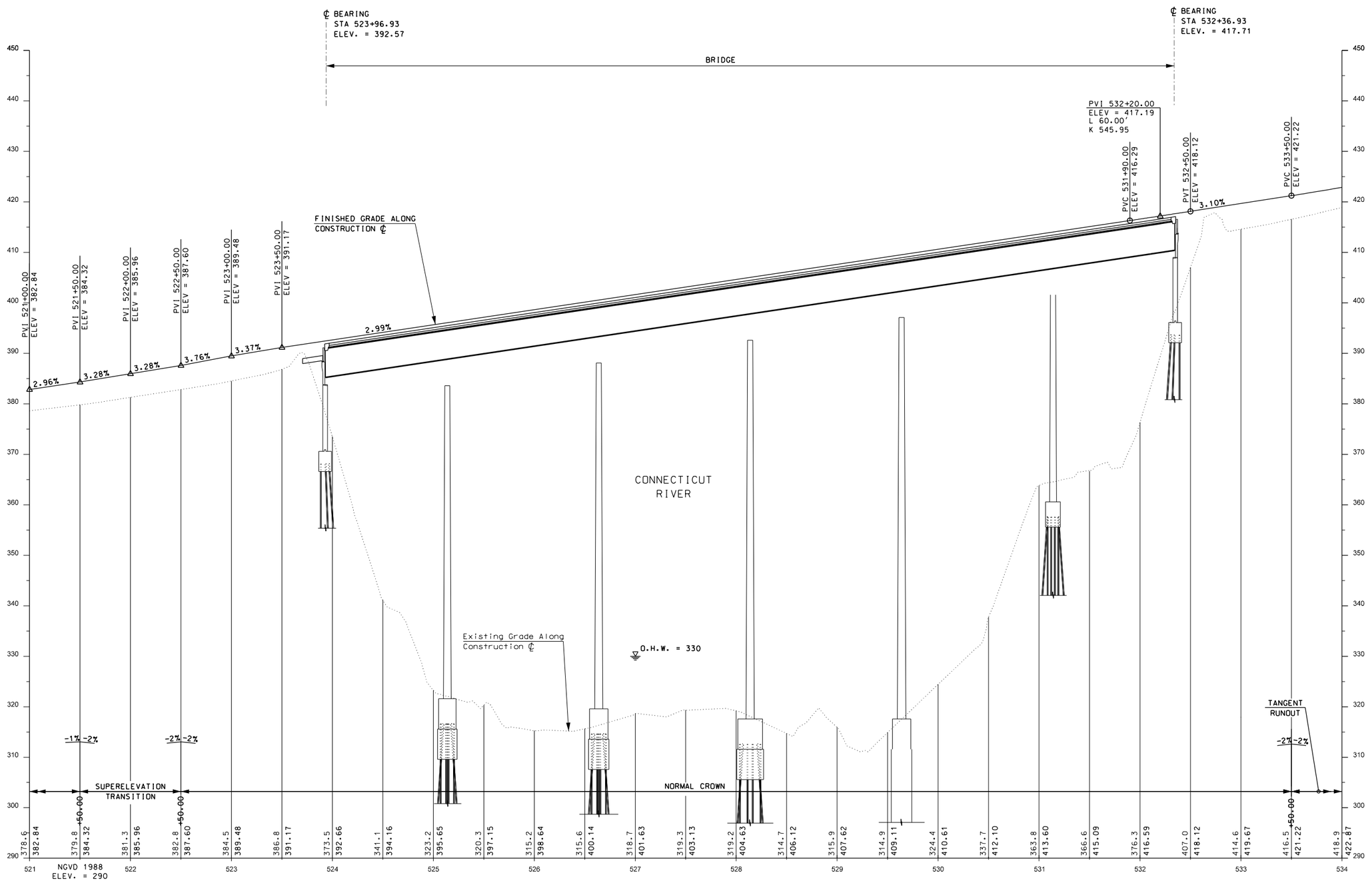
McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

SB DIVERSION PROFILE 01
PHASE 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpprofs	16148	135	600



TCP - I-89 SOUTHBOUND

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

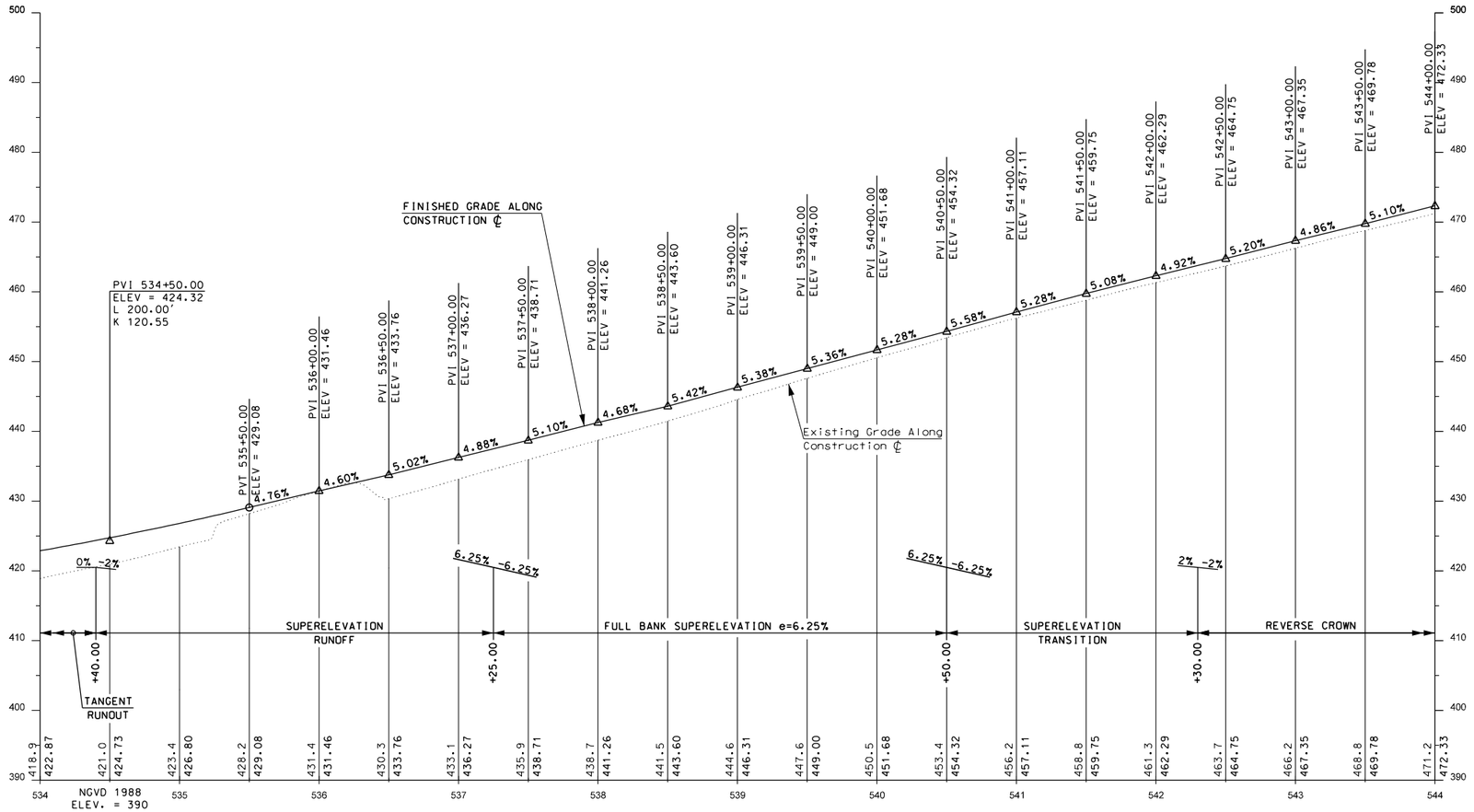
SB DIVERSION PROFILE 02
PHASE 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpprofs	16148	136	600

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION



TCP - I-89 SOUTHBOUND

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

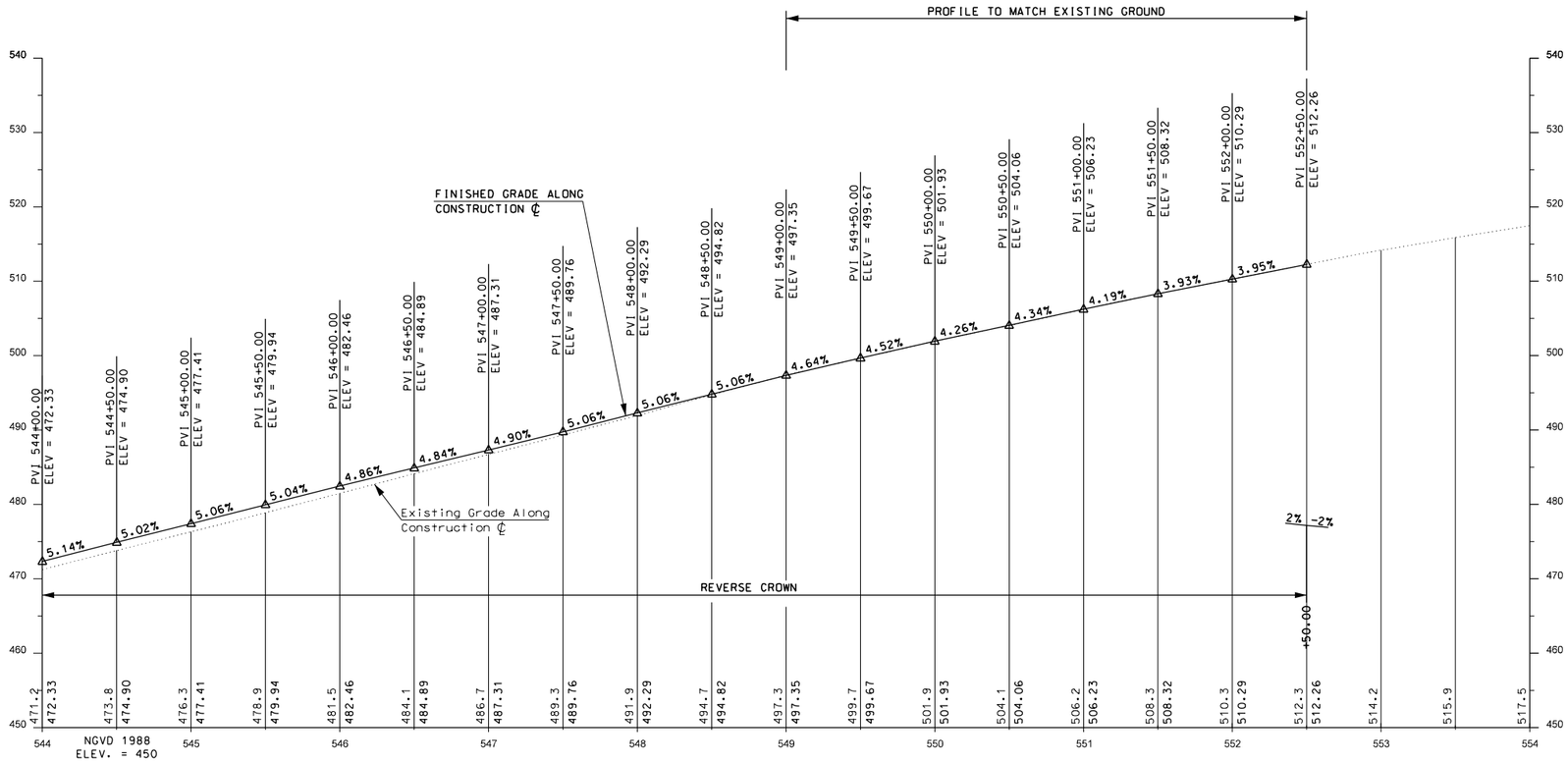
McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

SB DIVERSION PROFILE 03
PHASE 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpprofs	16148	137	600



TCP - I-89 SOUTHBOUND

REVISIONS AFTER PROPOSAL

STATION	DESCRIPTION	NUMBER	DATE
STATION			

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

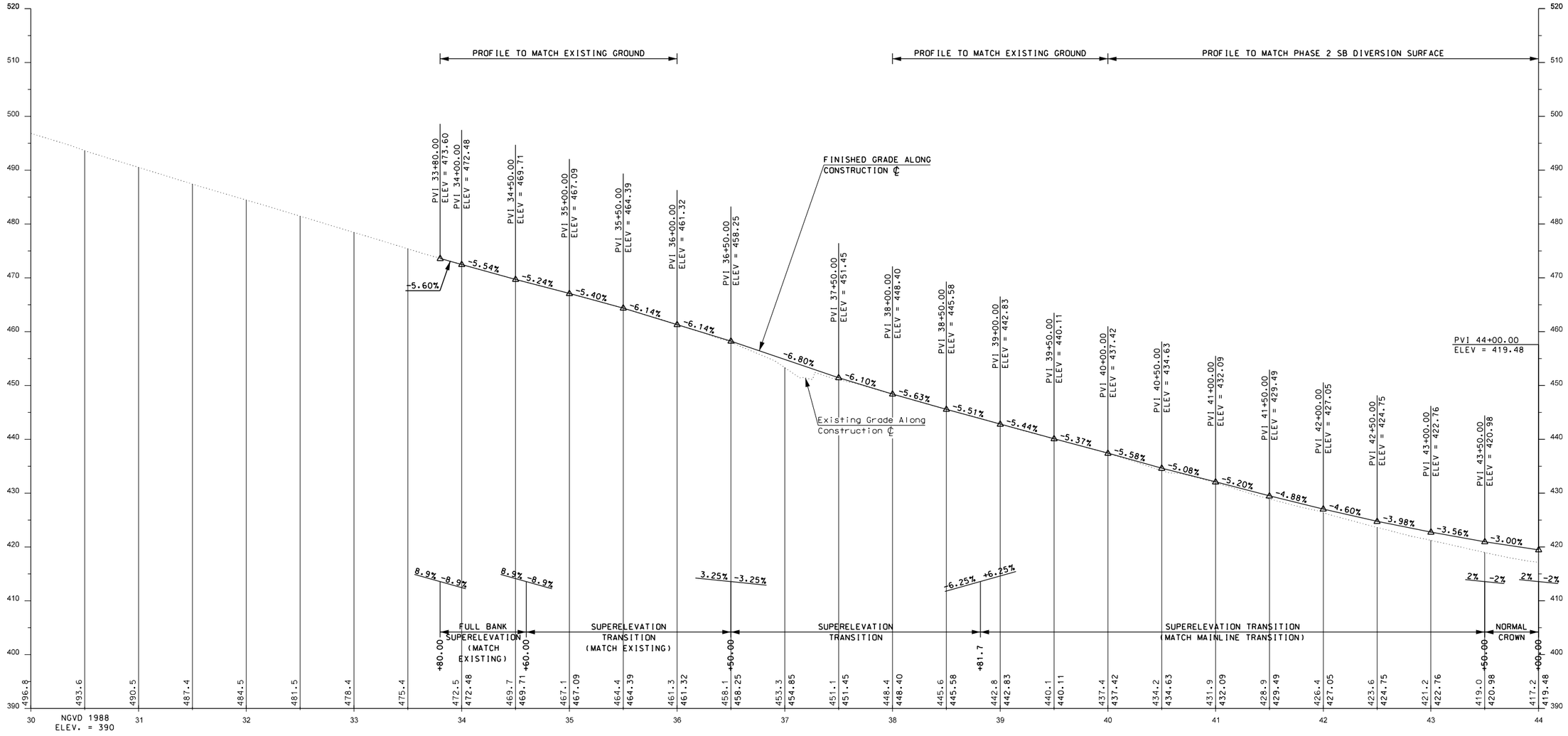
SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

SB DIVERSION PROFILE 04
PHASE 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpprofs	16148	138	600



TCP - I-89 SOUTHBOUND ON-RAMP

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

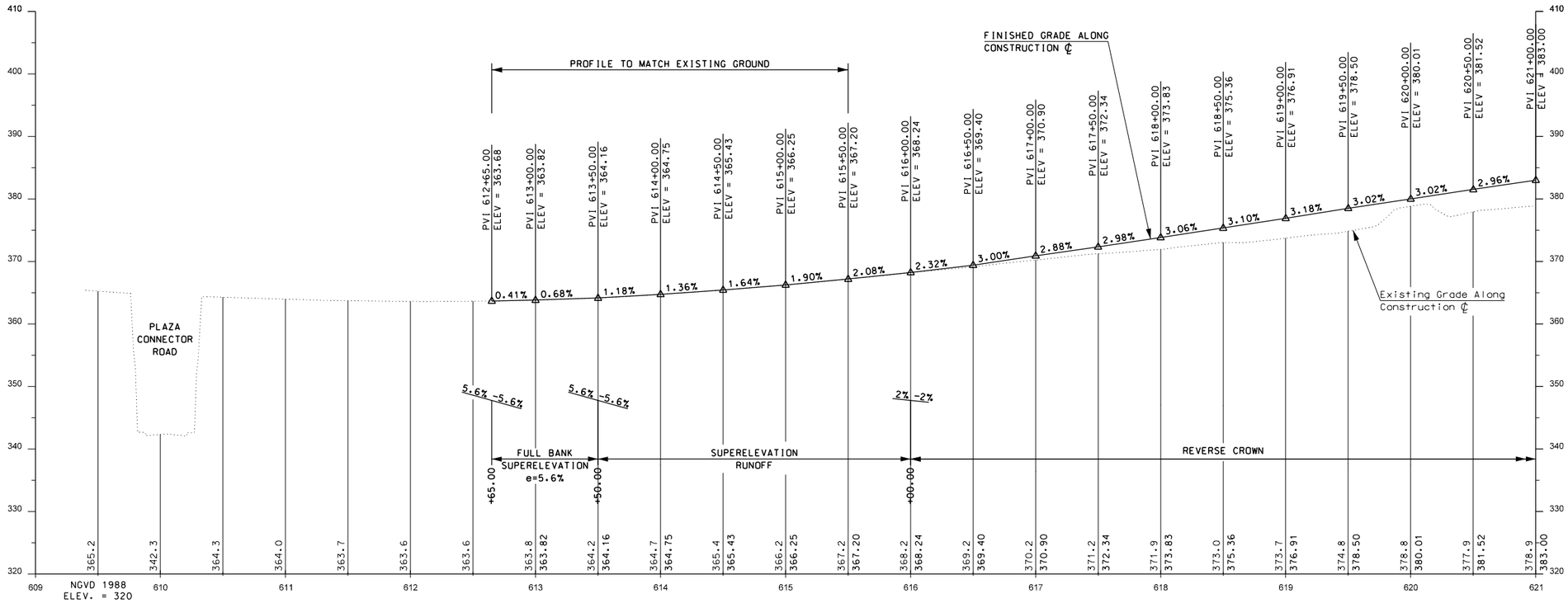
McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

SB ON RAMP DIVERSION PROFILE PHASE 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpprofs	16148	139	600



TCP - I-89 NORTHBOUND

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

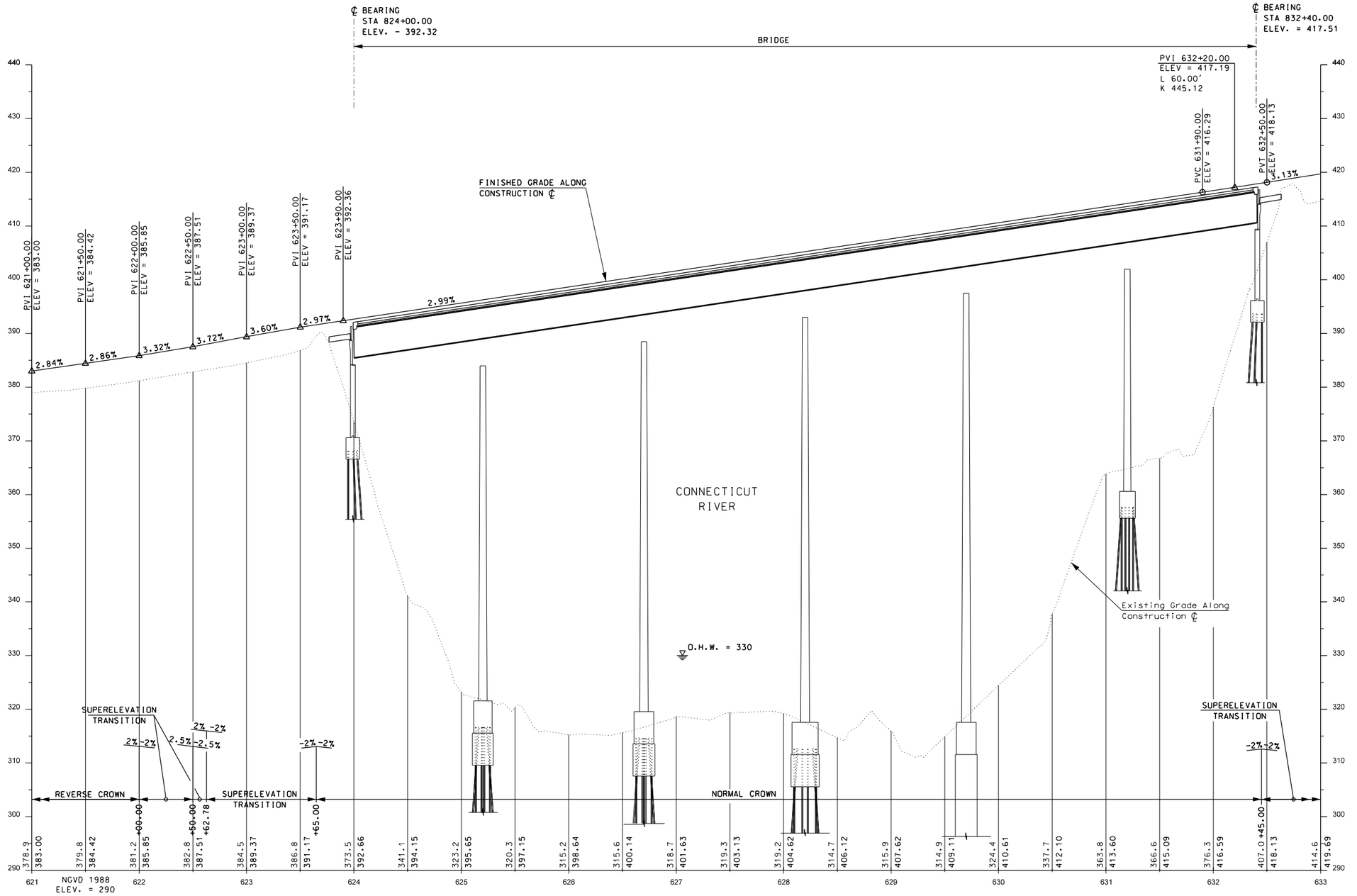
NB DIVERSION PROFILE 01
PHASE 4

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpprofs	16148	140	600

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



TCP - I-89 NORTHBOUND

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

McFarland Johnson

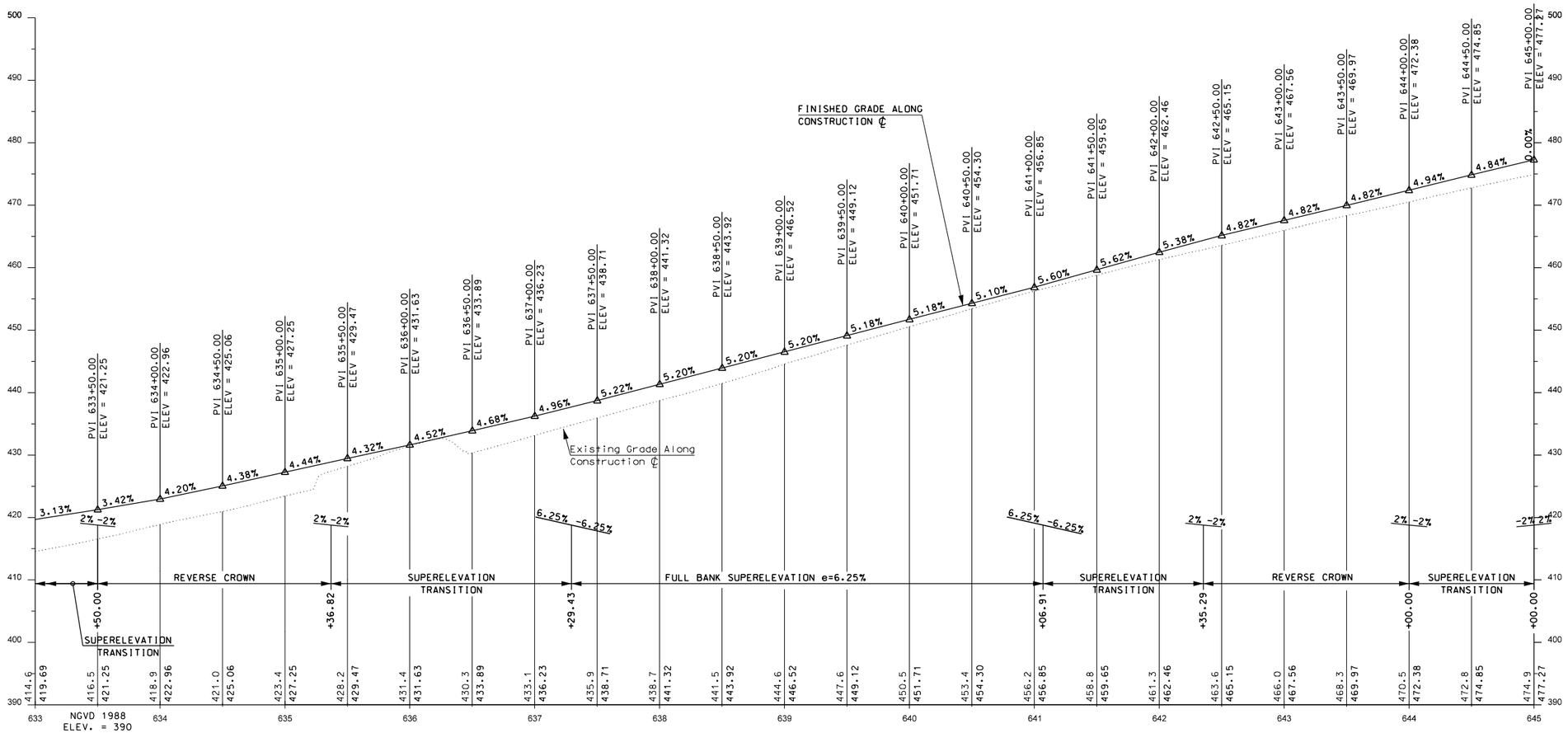
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

NB DIVERSION PROFILE 02
PHASE 4

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpprofs	16148	141	600

NUMBER	DATE	STATION	DESCRIPTION
			REVISIONS AFTER PROPOSAL

		DATE
SDR PROCESSED	NHDOT	04-2015
NEW DESIGN	WJ	04-2016
SHEET CHECKED	BRC	02-2018
AS BUILT DETAILS		DATE



TCP - I-89 NORTHBOUND

SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

McFarland Johnson

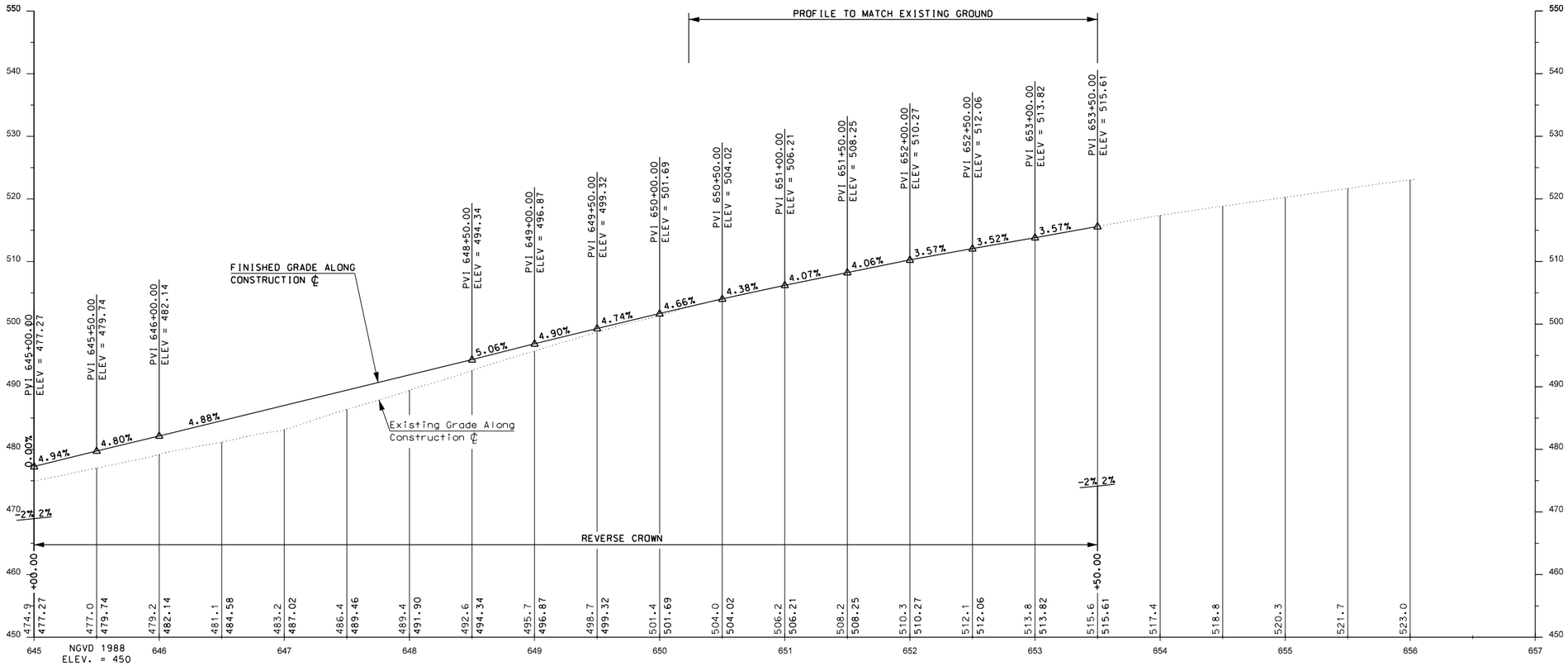
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

NB DIVERSION PROFILE 03
PHASE 4

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpprofs	16148	142	600

REVISIONS AFTER PROPOSAL				
NUMBER	DATE	DESCRIPTION	STATION	STATION

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	WJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE



TCP - I-89 NORTHBOUND

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

SDR PROCESSED	NHDOT	DATE 04-2015
NEW DESIGN	MJ	DATE 04-2016
SHEET CHECKED	BRC	DATE 02-2018
AS BUILT DETAILS		DATE

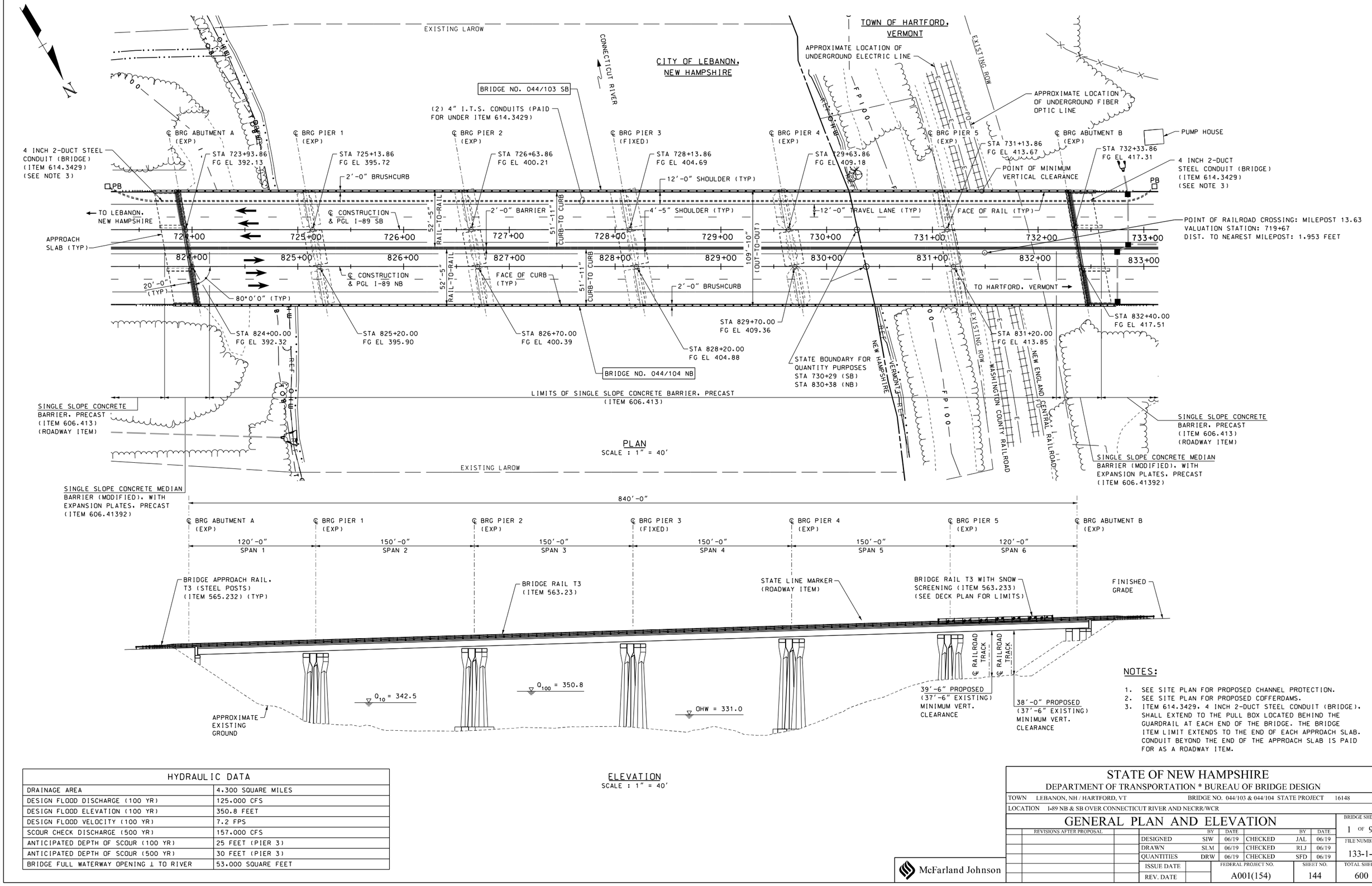
SCALE:
1"= 50' HORIZ.
1"= 10' VERT.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

NB DIVERSION PROFILE 04
PHASE 4

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16148tcpprofs	16148	143	600



NOTES:

1. SEE SITE PLAN FOR PROPOSED CHANNEL PROTECTION.
2. SEE SITE PLAN FOR PROPOSED COFFERDAMS.
3. ITEM 614.3429, 4 INCH 2-DUCT STEEL CONDUIT (BRIDGE), SHALL EXTEND TO THE PULL BOX LOCATED BEHIND THE GUARDRAIL AT EACH END OF THE BRIDGE. THE BRIDGE ITEM LIMIT EXTENDS TO THE END OF EACH APPROACH SLAB. CONDUIT BEYOND THE END OF THE APPROACH SLAB IS PAID FOR AS A ROADWAY ITEM.

HYDRAULIC DATA	
DRAINAGE AREA	4.300 SQUARE MILES
DESIGN FLOOD DISCHARGE (100 YR)	125.000 CFS
DESIGN FLOOD ELEVATION (100 YR)	350.8 FEET
DESIGN FLOOD VELOCITY (100 YR)	7.2 FPS
SCOUR CHECK DISCHARGE (500 YR)	157.000 CFS
ANTICIPATED DEPTH OF SCOUR (100 YR)	25 FEET (PIER 3)
ANTICIPATED DEPTH OF SCOUR (500 YR)	30 FEET (PIER 3)
BRIDGE FULL WATERWAY OPENING ⊥ TO RIVER	53.000 SQUARE FEET

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

GENERAL PLAN AND ELEVATION

BRIDGE SHEET: 1 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SJW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

ISSUE DATE		FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		A001(154)	144	600

FILE NUMBER: 133-1-1

SUMMARY OF BRIDGE QUANTITIES

	ITEM NO.	ITEM DESCRIPTION	UNIT	NH QUANTITY	VT QUANTITY	TOTAL QUANTITY
	207.3	UNCLASSIFIED CHANNEL EXCAVATION	CY	3340	50	3,390
	209.201	GRANULAR BACKFILL (BRIDGE) (F)	CY	896	706	1,602
	211.11	VIBRATION MONITORING SERVICES	HR	200	80	280
	211.12	DEFORMATION MONITORING SERVICES	HR	0	320	320
	403.61	PAVEMENT JOINT ADHESIVE (BRIDGE BASE)	LF	2810	1070	3,880
	403.911	HOT BITUMINOUS BRIDGE PAVEMENT, 1" BASE COURSE	TON	420	140	560
	500.02	ACCESS FOR BRIDGE CONSTRUCTION	U	0.76	0.24	1
	502.	REMOVAL OF EXISTING BRIDGE STRUCTURE	U	0.76	0.24	1
	503.201	COFFERDAMS	U	1	0	1
	503.202	COFFERDAMS	U	1	0	1
	503.203	COFFERDAMS	U	1	0	1
	503.204	COFFERDAMS	U	1	0	1
	503.205	COFFERDAMS	U	1	0	1
	503.206	COFFERDAMS	U	0	1	1
	503.207	COFFERDAMS	U	0	1	1
	504.1	COMMON BRIDGE EXCAVATION (F)	CY	660	930	1,590
	504.25	ROCK BRIDGE EXCAVATION MECHANICAL METHODS	CY	30	0	30
**	508	STRUCTURAL FILL	CY	26	52	78
	510.1	PILE DRIVING EQUIPMENT	U	0.67	0.33	1
	510.22	HIGH-STRAIN DYNAMIC TESTING	EA	8	4	12
	510.61	FURNISHING & DRIVING STEEL BEARING PILES	LB	796200	190800	987,000
	510.65	DRIVING-POINTS FOR STEEL BEARING PILES	EA	103	37	140
	510.9	PILE SPLICES	EA	103	19	122
	512.02	PREPARATION FOR CONCRETE REPAIRS, CLASS II	SY	216	176	392
	520.01	CONCRETE CLASS AA	CY	30	26	56
	520.02	CONCRETE CLASS AA, ABOVE FOOTINGS (F)	CY	1482	202	1,684
	520.0302	CONCRETE CLASS AA APPROACH SLABS (QC/QA) (F)	CY	98	98	196
	520.12	CONCRETE CLASS A, ABOVE FOOTINGS (F)	CY	124	122	246
	520.21	CONCRETE CLASS B, FOOTINGS (F)	CY	632	176	808
	520.6	CONCRETE CLASS T, FOUNDATION SEAL	CY	990	0	990
	520.7002	CONCRETE BRIDGE DECK (QC/QA) (F)	CY	1630	556	2,186
	526.3	HIGH MOLECULAR WEIGHT METHACRYLATE CRACK SEALER	GAL	152	50	202
	528.51	PRESTRESSED CONCRETE DECK PANELS (F)	SF	51594	16294	67,888
	534.3	WATER REPELLENT (SILANE/SILOXANE)	GAL	426	98	524
	538.2	BARRIER MEMBRANE, PEEL AND STICK - VERTICAL SURFACES (F)	SY	78	78	156
	538.6	BARRIER MEMBRANE, HEAT WELDED - MACHINE METHOD (F)	SY	7350	2322	9,672
	540.31	CONCRETE ARMOR MATRIX COMPONENT	EA	17200	0	17,200
	541.1	PVC WATERSTOPS, NH TYPE 1 (F)	LF	108	108	216
	541.2	PVC WATERSTOPS, NH TYPE 2 (F)	LF	80	80	160
	544.3	REINFORCING STEEL (CONTRACTOR DETAILED)	LB	421800	77000	498,800
	544.302	REINFORCING STEEL - COUPLERS (CONTRACTOR DETAILED)	EA	208	42	250
	544.31	REINFORCING STEEL, EPOXY COATED (CONTRACTOR DETAILED)	LB	444700	148020	592,720
	544.311	REINFORCING STEEL, EPOXY COATED - MECHANICAL CONNECTORS (CONTRACTOR DETAILED)	LB	39000	12320	51,320
	544.7	SYNTHETIC FIBER REINFORCEMENT (F)	LB	686	686	1,372
	547	SHEAR CONNECTORS (F)	EA	26814	8468	35,282
	550.1	STRUCTURAL STEEL (F)	LB	2509118	792354	3,301,472
	550.2101	BRIDGE SHOES - HLMR	EA	60	24	84
	550.33	BRIDGE SCUPPER	EA	16	4	20
	561.3001	PREFABRICATED FINGER EXPANSION JOINT (F)	LF	112	112	224
	562.1	SILICONE JOINT SEALANT (F)	LF	242	126	368
	563.23	BRIDGE RAIL T3	LF	1356	226	1,582
	563.233	BRIDGE RAIL T3 WITH SNOW SCREENING	LF	0	202	202
	565.232	BRIDGE APPROACH RAIL T3 (STEEL POSTS)	U	2	2	4
**	585.3	STONE FILL, CLASS C	CY	510	190	700
	593.411	GEOTEXTILE; PERM CONTROL CL.1, NON-WOVEN	SY	210	100	310
**	606.413	SINGLE SLOPE CONCRETE MEDIAN BARRIER, PRECAST	LF	608	192	800
	606.41392	SINGLE SLOPE CONCRETE MEDIAN BARRIER (MODIFIED), WITH EXPANSION PLATES, PRECAST	LF	39	39	78
	606.41741	PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL - BRIDGE	LF	1277	403	1,680
**	614.3429	4 INCH 2-DUCT STEEL CONDUIT (BRIDGE)	LF	674	213	887
	645.0001	TURBIDITY BARRIER	LF	470	0	470
	692.	MOBILIZATION	U	0.76	0.24	1.00
	1002.1	REPAIRS OR REPLACEMENTS AS NEEDED - BRIDGE STRUCTURES	$	*	*	*
	1010.41	QUALITY CONTROL QUALITY ASSURANCE (QC/QA) FOR CONCRETE	$	*	*	*

* = SEE PROPOSAL
** = NOT AN ITEM TOTAL

INDEX OF BRIDGE SHEETS

BRIDGE SHEET NO.	DESCRIPTION	BRIDGE SHEET NO.	DESCRIPTION
1	GENERAL PLAN AND ELEVATION	48	IN-FILL PIERS 1 THRU 4 REINFORCEMENT
2	INDEX OF SHEETS & SUMMARY OF QUANTITIES	49	IN-FILL PIERS 1 AND 2 REINFORCEMENT SECTIONS
3	PROJECT NOTES (1 OF 2)	50	IN-FILL PIERS 3 AND 4 REINFORCEMENT SECTIONS
4	PROJECT NOTES (2 OF 2)	51	IN-FILL PIER 5 STEM REINFORCEMENT
5	CONSTRUCTION PHASING SECTIONS (1 OF 2)	52	TYPICAL IN-FILL PIER CAP REINFORCEMENT
6	CONSTRUCTION PHASING SECTIONS (2 OF 2)	53	EXISTING PIER CAP EXTENSION DETAILS
7	SITE PLAN (1 OF 2)	54	FRAMING PLAN (1 OF 2)
8	SITE PLAN (2 OF 2)	55	FRAMING PLAN (2 OF 2)
9	BRIDGE PROFILES	56	GIRDER ELEVATION (1 OF 2)
10	EARTHWORK SECTIONS (1 OF 2)	57	GIRDER ELEVATION (2 OF 2)
11	EARTHWORK SECTIONS (2 OF 2)	58	CROSS FRAME DETAILS
12	PRECAST CONCRETE REVETMENT DETAILS	59	SUPERSTRUCTURE DETAILS (1 OF 2)
13	BORING LOGS (1 OF 9)	60	SUPERSTRUCTURE DETAILS (2 OF 2)
14	BORING LOGS (2 OF 9)	61	CAMBER TABLES (1 OF 2)
15	BORING LOGS (3 OF 9)	62	CAMBER TABLES (2 OF 2)
16	BORING LOGS (4 OF 9)	63	BOTTOM OF SLAB ELEVATION TABLES (1 OF 2)
17	BORING LOGS (5 OF 9)	64	BOTTOM OF SLAB ELEVATION TABLES (2 OF 2)
18	BORING LOGS (6 OF 9)	65	TYPICAL DECK SECTIONS
19	BORING LOGS (7 OF 9)	66	DECK PLAN (1 OF 2)
20	BORING LOGS (8 OF 9)	67	DECK PLAN (2 OF 2)
21	BORING LOGS (9 OF 9)	68	DECK REINFORCEMENT SECTIONS (1 OF 2)
22	ABUTMENT CONSTRUCTION PHASING (1 OF 3)	69	DECK REINFORCEMENT SECTIONS (2 OF 2)
23	ABUTMENT CONSTRUCTION PHASING (2 OF 3)	70	PRECAST CONCRETE DECK PANEL - STEEL GIRDER
24	ABUTMENT CONSTRUCTION PHASING (3 OF 3)	71	APPROACH SLAB DETAILS (1 OF 2)
25	ABUTMENT AND WINGWALL REMOVAL LIMITS	72	APPROACH SLAB DETAILS (2 OF 2)
26	ABUTMENT AND WINGWALL REMOVAL DETAILS	73	EXPANSION JOINT DETAILS (1 OF 5)
27	ABUTMENT A FOOTING	74	EXPANSION JOINT DETAILS (2 OF 5)
28	ABUTMENT A MASONRY	75	EXPANSION JOINT DETAILS (3 OF 5)
29	ABUTMENT A WINGWALL MODIFICATIONS	76	EXPANSION JOINT DETAILS (4 OF 5)
30	ABUTMENT B FOOTING	77	EXPANSION JOINT DETAILS (5 OF 5)
31	ABUTMENT B MASONRY	78	TEMPORARY EXPANSION JOINT DETAILS (1 OF 2)
32	ABUTMENT B WINGWALL MODIFICATIONS	79	TEMPORARY EXPANSION JOINT DETAILS (2 OF 2)
33	ABUTMENT DETAILS (1 OF 3)	80	BEARING LOCATION PLAN
34	ABUTMENT DETAILS (2 OF 3)	81	BEARING DETAILS (1 OF 2)
35	ABUTMENT DETAILS (3 OF 3)	82	BEARING DETAILS (2 OF 2)
36	CONCRETE REPAIR DETAILS	83	BRIDGE SCUPPER DETAILS
37	PIER 1 MASONRY (1 OF 2)	84	TEMPORARY BRIDGE SCUPPER DETAILS
38	PIER 1 MASONRY (2 OF 2)	85	PORTABLE CONCRETE BARRIER - BRACED (1 OF 2)
39	PIER 2 MASONRY (1 OF 2)	86	PORTABLE CONCRETE BARRIER - BRACED (2 OF 2)
40	PIER 2 MASONRY (2 OF 2)	87	TEXAS RESTRAINED BARRIER (X-BOLT) (1 OF 3)
41	PIER 3 MASONRY (1 OF 2)	88	TEXAS RESTRAINED BARRIER (X-BOLT) (2 OF 3)
42	PIER 3 MASONRY (2 OF 2)	89	TEXAS RESTRAINED BARRIER (X-BOLT) (3 OF 3)
43	PIER 4 MASONRY (1 OF 2)	90	CONCRETE MEDIAN BARRIER DETAILS
44	PIER 4 MASONRY (2 OF 2)	91	MEDIAN BARRIER DETAILS (AT EXPANSION JOINT)
45	PIER 5 MASONRY (1 OF 2)	92	T3 STEEL BRIDGE RAIL
46	PIER 5 MASONRY (2 OF 2)	93	T3 STEEL BRIDGE APPROACH RAIL (STEEL POSTS)
47	PIER FOOTING REINFORCEMENT	94	PROTECTIVE SCREEN WITH STEEL BRIDGE RAIL

BRIDGE CONSTRUCTION ACCESS - RAILROAD CORRIDOR

	ITEM NO.	ITEM DESCRIPTION	UNIT	NH QUANTITY	VT QUANTITY	TOTAL QUANTITY
**	606.417	PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL	LF	0	900	900
	607.72620	20' OPENING DOUBLE GATE, CHAIN LINK ALUM. COATED STEEL FABRIC, 6' HIGH	U	0	1	1

NOTE: ALL OTHER WORK FOR THIS ACCESS IS INCLUDED IN ITEM 500.02

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

INDEX OF SHEETS & SUMMARY OF QUANTITIES

BRIDGE SHEET 2 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	JAL	06/19
DRAWN	SLM	06/19	CHECKED	RLJ	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

ISSUE DATE
REV. DATE

FEDERAL PROJECT NO. A001(154)
SHEET NO. 145
TOTAL SHEETS 600
FILE NUMBER 133-1-1

McFarland Johnson

DESIGN LOADS, MATERIALS AND SPECIFICATIONS

(1) DESIGN LOADING: HL-93

(2) DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN METHOD (LRFD)

(3) SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7th ED., 2014 AS AMENDED
NHDOT 2016 STANDARD SPECIFICATIONS AS AMENDED

(4) FOUNDATION DATA: ABUTMENTS:
SPREAD FOOTINGS SUPPORTED ON STEEL BEARING PILES

PIERS 1, 2, 3, AND 5:
SPREAD FOOTING SUPPORTED ON STEEL BEARING PILES

PIER 4:
SPREAD FOOTING SUPPORTED ON A FOUNDATION SEAL ON BEDROCK WITH A NOMINAL BEARING RESISTANCE OF 160 KSF IN COMBINATION WITH A RESISTANCE FACTOR OF 0.45.

(5) REINFORCING STEEL: AASHTO M31 (ASTM A 615) GRADE 60
EPOXY COATED BARS:
DECK, BRUSH CURBS, APPROACH SLABS, APPROACH SLAB DOWELS, BACKWALL BLOCKOUT FOR EXPANSION JOINT (ABOVE CONSTRUCTION JOINT), BACKWALL, CORNERS OF ABUTMENTS ABOVE TOP OF BACKWALL, ABUTMENT PEDESTALS, ABUTMENT SEAT AND WINGWALL COPING.

(6) STRUCTURAL STEEL: AASHTO M270, GRADE 50W (ASTM A709, GRADE 50W), UNPAINTED (EXCEPT NOTED OTHERWISE)

(7) CONCRETE: C.I.P PORTION OF DECK, BRUSH CURBS, WINGWALL COPINGS, AND BACKWALLS:
ITEM 520.7002, CONCRETE BRIDGE DECK (QC/QA) (F)
4,000 PSI (AT 28 DAYS)

APPROACH SLABS:
ITEM 520.0302, CONCRETE CLASS AA, APPROACH SLABS (QC/QA) (F)
4,000 PSI (AT 28 DAYS)

PIER STEMS & PIER CAPS:
ITEM 520.02, CONCRETE CLASS AA, ABOVE FOOTINGS (F)
4,000 PSI (AT 28 DAYS)
INCLUDE CORROSION INHIBITOR ADMIXTURE IN PIER CAPS, SEE PIER NOTES.

ABUTMENT STEMS:
ITEM 520.12, CONCRETE CLASS A, ABOVE FOOTINGS (F)
3,000 PSI (AT 28 DAYS)

FOOTINGS (ABUTMENTS, AND PIERS):
ITEM 520.21, CONCRETE CLASS B, FOOTINGS (F)
3,000 PSI (AT 28 DAYS)

TREMIE SEAL (FOUNDATION SEALS AT PIERS 1 THRU 4):
ITEM 520.6, CONCRETE CLASS T, FOUNDATION SEAL
3,000 PSI (AT 28 DAYS)

SUBSTRUCTURE REPAIRS:
ITEM 520.01, CONCRETE CLASS AA
4,000 PSI (AT 28 DAYS)

(8) PRESTRESSED CONCRETE:

ITEM 528.51, PRESTRESSED CONCRETE DECK PANELS (F)
6,000 PSI (AT RELEASE)
8,000 PSI (AT 28 DAYS)

(9) SEISMIC: PEAK GROUND ACCELERATION (PGA) = 0.082g
SITE CLASS = D
ZONE = 1

GENERAL NOTES

(1) THE CONTRACTOR SHOULD BE AWARE THAT THE EXISTING STRUCTURE DIMENSIONS AND ELEVATIONS SHOWN ON THESE PLANS WERE TAKEN FROM THE ORIGINAL BRIDGE PLANS AND DO NOT NECESSARILY REPRESENT THE "AS BUILT" DIMENSIONS AND ELEVATIONS. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS OF THE EXISTING STRUCTURE AND BE PREPARED TO MAKE ANY ADJUSTMENTS REQUIRED TO PROPERLY REHABILITATE THE BRIDGE. ANY DISCREPANCIES IN DIMENSIONS, CHARACTER, OR EXTENT OF THE EXISTING STRUCTURE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO ADVANCING THE WORK.

(2) EXISTING PLANS (FILE NO. 17-4-1) ARE AVAILABLE, ON-LINE IN THE BID PACKAGE ON THE INVITATION TO BID WEBPAGE DURING THE BIDDING PERIOD. AFTER THE CONTRACT HAS BEEN AWARDED A COMPLETE SET OF EXISTING PLANS WILL BE FORWARDED TO THE CONTRACTOR UPON REQUEST.

(3) CARE SHALL BE TAKEN NOT TO DAMAGE PORTIONS OF THE EXISTING STRUCTURES THAT ARE TO REMAIN. ANY DAMAGE SHALL BE REPORTED IMMEDIATELY TO THE NHDOT BUREAU OF BRIDGE DESIGN AND REPAIRED AS DIRECTED AT THE CONTRACTOR'S EXPENSE.

(4) THE CONTRACTOR SHALL CONTACT DIG SAFE TO SURVEY AND TAG ALL BRIDGE COPING AND UNDERGROUND LOCATIONS NEAR THE BRIDGE, FOR POSSIBLE UTILITIES.

(5) THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO ENSURE THAT DEBRIS DOES NOT FALL ON ANY ROADWAY, RAILROAD, OR WATERWAY BELOW THE EXISTING STRUCTURE. ALL COSTS INCLUDING ERECTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURES OR OTHER SUCH APPROVED METHODS, SHALL BE SUBSIDIARY TO THE APPROPRIATE ITEMS OF WORK BEING PERFORMED.

(6) ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4", UNLESS OTHERWISE NOTED.

(7) SHEAR KEYS SHALL BE 3" HIGH BY ONE-THIRD THE WIDTH OF THE WALL, CENTERED.

(8) ALL EXISTING BRONZE DISCS REPRESENTING STATE BENCHMARKS OR SURVEY TRIANGULATION POINTS MUST NOT BE DISTURBED. WHEN THE WORK CALLED FOR INVOLVES DISTURBING A BRONZE DISC THE CONTRACTOR SHALL NOTIFY THE ENGINEER SUFFICIENTLY IN ADVANCE OF THE WORK TO PERMIT THE STATE TO TEMPORARILY RELOCATE THE AFFECTED MARKER.

(9) APPLY PAVEMENT JOINT ADHESIVE ALONG ALL LONGITUDINAL JOINTS BETWEEN PAVEMENT PASSES AND ALONG BRIDGE CURB LINES AND EXPANSION JOINT ARMORING PRIOR TO PLACING ALL PAVEMENT COURSES. FOR BRIDGE BASE COURSE APPLY ITEM 403.61, PAVEMENT JOINT ADHESIVE (BRIDGE BASE) AND FOR WEARING COURSE APPLY ITEM 403.6, PAVEMENT JOINT ADHESIVE – ROADWAY ITEM.

(10) THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE EXISTING BRIDGES OPEN TO TRAFFIC DURING CONSTRUCTION. ALL COSTS FOR APPROVED REPAIRS SHALL BE PAID UNDER ITEM 1002.1, REPAIRS OR REPLACEMENTS AS NEEDED – BRIDGE STRUCTURES. ALL WORK SHALL BE DIRECTED BY THE ENGINEER.

(11) VIBRATION MONITORING FOR THE PROTECTION OF EXISTING BRIDGES AND RAILROAD TRACKS SHALL BE PROVIDED UNDER ITEM 211.11, VIBRATION MONITORING SERVICES.

(12) DEFORMATION MONITORING OF THE EXISTING RAILROAD TRACKS SHALL BE PROVIDED UNDER ITEM 211.12, DEFORMATION MONITORING SERVICES.

(13) REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION ON VIBRATION AND DEFORMATION MONITORING.

(14) FOR SURVEY LAYOUT OF PIERS SEE BRIDGE SHEETS 37 THRU 46.

(15) FOR BORING NOTES SEE BRIDGE SHEET 13.

(16) FOR HYDRAULIC DATA SEE BRIDGE SHEET 1.

(17) FOR DECK SLAB ELEVATION NOTES SEE BRIDGE SHEET 63.

(18) FOR EXPANSION JOINT NOTES SEE BRIDGE SHEET 75.

(19) FOR BRIDGE SHOE NOTES, SEE BRIDGE SHEET 80.

(20) FOR SCUPPER NOTES, SEE BRIDGE SHEETS 83 AND 84.

BRIDGE REMOVAL NOTES

(1) THE CONTRACTOR'S METHOD FOR REMOVAL OF THE EXISTING BRIDGE SHALL BE SUBMITTED FOR DOCUMENTATION, IN ACCORDANCE WITH SECTION 105.02, PRIOR TO THE COMMENCEMENT OF ANY REMOVAL OPERATIONS.

(2) PORTABLE CONCRETE BARRIER SHALL BE IN PLACE BEFORE REMOVAL OPERATIONS BEGIN FOR EACH CONSTRUCTION PHASE.

(3) ITEM 502., REMOVAL OF EXISTING BRIDGE STRUCTURE, SHALL INCLUDE THE REMOVAL OF THE FOLLOWING:

- PIER CAP CONCRETE TO THE LIMITS SHOWN ON BRIDGE SHEET 53.
- ENTIRE SUPERSTRUCTURE INCLUDING BEARINGS, BRIDGE RAIL, AND EXPANSION JOINTS.
- WINGWALL, BRIDGE RAIL, CONCRETE COPING, AND CONCRETE AS SHOWN ON BRIDGE SHEETS 25-26.
- EXISTING SHEETING THAT INTERFERES WITH THE PROPOSED FOUNDATION SEALS AS REQUIRED, OR AS DIRECTED BY THE ENGINEER.
- APPROACH SLABS.
- ABUTMENT BACKWALLS, AND BEAM SEATS TO THE LIMITS IDENTIFIED ON BRIDGE SHEETS 25-26.

ACCESS FOR BRIDGE CONSTRUCTION

(1) ITEM 500.02, ACCESS FOR BRIDGE CONSTRUCTION, SHALL CONSIST OF THE DESIGN, CONSTRUCTION, MAINTENANCE, AND REMOVAL OF ANY TEMPORARY ACCESS BY THE CONTRACTOR. SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.

(2) TEMPORARY FILLS SHALL BE LOCATED WITHIN WETLAND IMPACT AREAS SHOWN IN THE WETLAND PERMIT. A GEOTEXTILE FABRIC SHALL BE PLACED UNDER ALL TEMPORARY FILLS TO MINIMIZE DISRUPTION OF NATIVE SOILS AND VEGETATION. ALL COSTS SUBSIDIARY TO ITEM 500.02.

(3) CONSTRUCTION LOADING OF THE EXISTING IN-SERVICE OR PROPOSED BRIDGE DECKS SHALL NOT EXCEED THE OPERATING CAPACITY OF THE BRIDGE DECK AND GIRDERS.

(4) THE CONTRACTOR SHALL SUBMIT PLANS AND CALCULATIONS FOR ALL PROPOSED CONSTRUCTION LOADING OF THE BRIDGES FOR APPROVAL IN ACCORDANCE WITH 105.02. PLANS AND CALCULATIONS SHALL BE PREPARED BY A LICENSED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE. ALL COSTS SHALL BE SUBSIDIARY TO THE ITEMS OF WORK BEING PERFORMED.

(5) CRANE MATS, TEMPORARY PAVEMENT, OR OTHER APPROVED METHODS SHALL BE USED TO PREVENT DAMAGE TO THE BRIDGE DECK SURFACES DURING CONSTRUCTION OPERATIONS. ALL COSTS SHALL BE SUBSIDIARY TO THE ITEMS OF WORK BEING PERFORMED. DAMAGE AS A RESULT OF INSUFFICIENT SURFACE PROTECTION SHALL BE REPAIRED, AS DIRECTED, AT THE CONTRACTOR'S EXPENSE.

PILE NOTES

(1) MAXIMUM FACTORED AXIAL PILE LOAD: ABUTMENT A – 220 KIPS PER PILE (STRENGTH I)
ABUTMENT B – 220 KIPS PER PILE (STRENGTH I)
PIERS 1, 2, & 3 – 270 KIPS PER PILE (STRENGTH V)
PIER 5 – 270 KIPS PER PILE (STRENGTH I)

(2) STEEL H-PILES SHALL CONFORM TO AASHTO M270, GRADE 50 (ASTM A 709, GRADE 50). ALL ABUTMENT PILES SHALL BE HP14 X 73. ALL PIER PILES SHALL BE HP14 X 89. DRIVING POINTS ARE REQUIRED FOR ALL PILES AND SHALL BE PAID FOR UNDER ITEM 510.65.

(3) THE PILES SHALL BE DRIVEN IN ACCORDANCE WITH SECTION 510 TO A MINIMUM NOMINAL GEOTECHNICAL RESISTANCE EQUAL TO THE MAXIMUM FACTORED LOAD DIVIDED BY A RESISTANCE FACTOR OF 0.65. THE CONTRACTOR WILL CONDUCT PILE DYNAMIC ANALYZER (PDA) TESTS IN ACCORDANCE WITH ITEM 510.22 TO VERIFY THE NOMINAL GEOTECHNICAL RESISTANCE AND THE ACCEPTABILITY OF THE CONTRACTOR'S DRIVING SYSTEM.

(4) ESTIMATED PILE LENGTHS:
ABUTMENT A – 115 FEET (VERTICAL), 120 FEET (BATTERED)
ABUTMENT B – 70 FEET (VERTICAL), 75 FEET (BATTERED)
PIER 1 – 90 FEET (1:12 BATTER), 95 FEET (4:12 BATTER)
PIER 2 – 90 FEET (1:12 BATTER), 95 FEET (4:12 BATTER)
PIER 3 EASTERN PILES – 70 FEET (1.75:12 BATTER), 75 FEET (2.5:12 & 4:12 BATTER)
PIER 3 WESTERN PILES – 70 FEET (1.75:12, 2.5:12 & 4:12 BATTER)
PIER 5 – 55 FEET (ALL PILES)

(5) ONE SPLICE PER PILE WITHIN THE ESTIMATED LENGTH AND SPLICES REQUIRED FOR PILES THAT EXCEED THE ESTIMATED LENGTH WILL BE PAID. NO PAYMENT FOR ADDITIONAL PILE SPLICES WITHIN THE ESTIMATED LENGTH WILL BE PAID UNLESS ORDERED. APPROVED ADDITIONAL PILE SPLICES WILL BE PAID UNDER ITEM 510.9.

(6) PILE LOCATION AND ALIGNMENT TOLERANCES AT ABUTMENTS AND PIERS 1, 2, 3, AND 5 SHALL CONFORM TO SECTION 510.3.6.4 REQUIREMENTS FOR BENT CAPS SUPPORTED BY PILES.

(7) PILE LAYOUT DIMENSIONS ARE GIVEN AT THE BOTTOM OF THE ABUTMENT AND PIER FOOTINGS.

(8) PLACE REINFORCING STEEL TO CLEAR PILES.

COFFERDAM NOTES

(1) ALL ITEMS COVERED UNDER SECTION 503 OF THE SPECIFICATIONS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER, LICENSED IN THE STATE IN WHICH THE COFFERDAM IS PLACED. THE CONTRACTOR SHALL SUBMIT STAMPED WORKING DRAWINGS AND CALCULATIONS FOR REVIEW AND DOCUMENTATION IN ACCORDANCE WITH SECTION 105.02. SUBMITTALS SHALL INCLUDE THE PROPOSED METHOD OF DEWATERING AND THE METHOD FOR DISPOSAL OF WATER PUMPED FROM THE EXCAVATIONS.

(2) COFFERDAMS ARE REQUIRED AT ABUTMENT AND PIER LOCATIONS TO TEMPORARILY SUPPORT EARTH, TRAFFIC AND RAILROAD LOAD, CONTROL THE RIVER INFLOW, ADEQUATELY DEWATER THE FOOTING EXCAVATION, AND ALLOW CONSTRUCTION OF FOUNDATION UNITS IN THE DRY.

(3) THE COFFERDAM ITEMS SHALL BE PAID AS FOLLOWS: ABUTMENT A (ITEM 503.201); PIER 1 (ITEM 503.202); PIER 2 (ITEM 503.203); PIER 3 (ITEM 503.204); PIER 4 (ITEM 503.205); PIER 5 (ITEM 503.206); ABUTMENT B (ITEM 503.207). ALL COSTS FOR MATERIAL, INSTALLATION, MAINTENANCE, AND REMOVAL SHALL BE INCLUDED IN THE COFFERDAM ITEMS. ALL WORK REQUIRED TO MAINTAIN A PROPERLY DEWATERED CONDITION SHALL BE INCLUDED IN THE COFFERDAM ITEMS.

(4) THE COFFERDAM LOCATED AT PIER 5 ADJACENT TO THE RAILROAD TRACKS SHALL REMAIN IN PLACE AND BE CUT OFF 1'-0" BELOW PROPOSED GRADE, UNLESS OTHERWISE APPROVED BY THE RAILROAD AND THE ENGINEER. ALL COSTS SUBSIDIARY TO ITEM 503.206. SEE BRIDGE SHEET 8 FOR LIMITS TO REMAIN IN PLACE.

(5) THE INCORPORATION OF CROSS BRACES AND OTHER COFFERDAM COMPONENTS WITHIN THE COMPLETED ABUTMENT/PIER FOOTING OR ABUTMENT/PIER STEM SHALL NOT BE PERMITTED.

(6) THE COFFERDAM LIMITS SHOWN ON THE PLANS ARE APPROXIMATE AND SHALL BE ADJUSTED AS NECESSARY TO SUIT THE CONTRACTOR'S METHOD OF CONSTRUCTION. IN-WATER PIERS 1 THRU 4 INCLUDE THE CONSTRUCTION OF A FOUNDATION SEAL. THE COFFERDAM LIMITS SHOWN FOR IN-WATER PIERS REFLECT MINIMUMS TO MATCH EXISTING ADJACENT FOUNDATION SEALS. ANY ALTERATIONS TO THE DIMENSIONS SHOWN TO SUIT THE CONTRACTOR'S METHOD OF CONSTRUCTION SHALL BE CHECKED FOR CONFORMANCE WITH THE WETLAND PERMIT. ADDITIONAL COSTS FOR PERMITS OR MATERIAL/EQUIPMENT/LABOR ASSOCIATED WITH A CHANGE TO THE DIMENSIONS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

(7) THE MAXIMUM ALLOWABLE VENT ELEVATION, BASED ON THE PLAN DIMENSIONS, TO PROVIDE A 1.1 SAFETY FACTOR AGAINST HYDRAULIC UPLIFT OF THE SEAL IS ELEVATION 335.0 (PIER 1 & 2), 333.0 (PIER 3), AND 332.0 (PIER 4).

(8) THE CONTRACTOR SHALL BE REQUIRED TO PLACE SUBSTRUCTURE CONCRETE IN THE DRY.

(9) DEWATERING SHALL BE CONTINUOUS UNTIL SUBSTRUCTURES ARE BACKFILLED TO THE ELEVATIONS OF THE SURROUNDING WATER TABLE, UNLESS OTHERWISE DIRECTED.

(10) ALL MEANS AND METHODS ASSOCIATED WITH HANDLING WATER DURING CONSTRUCTION OF FOUNDATIONS SHALL BE LOCATED WITHIN THE LIMITS OF WORK SHOWN ON THE WETLANDS PERMIT APPROVED FOR THE PROJECT. ALL COSTS ASSOCIATED WITH DEWATERING SHALL BE INCLUDED IN THE RESPECTIVE COFFERDAM ITEM.

(11) THE COFFERDAM DESIGN SHALL ACCOUNT FOR THE EFFECTS OF UNBALANCED EARTH PRESSURE AND PILE DRIVING ON THE COFFERDAM STABILITY.

(12) SHEETING OR OTHER APPROVED EARTH SUPPORT SYSTEMS SHALL BE REQUIRED FOR MAINTENANCE OF TRAFFIC AND PROTECTION OF EXISTING BRIDGE ABUTMENT FOUNDATIONS DURING CONSTRUCTION OF THE PROPOSED BRIDGE. THE LOCATION AND LIMITS FOR TEMPORARY SUPPORTS DETAILED ON THE PLANS ARE APPROXIMATE AND SHALL BE ADJUSTED AS REQUIRED TO ACCOMMODATE THE CONTRACTOR'S MEANS AND METHOD OF CONSTRUCTION. ALL COSTS SHALL BE INCLUDED IN ITEMS 503.201 AND 503.207.

(13) IT SHOULD BE NOTED THAT IN SOME LOCATIONS PRE-EXCAVATION OF COBBLES AND BOULDERS MAY BE REQUIRED PRIOR TO PLACING STEEL SHEETING. DURING EXCAVATION THE CONTRACTOR SHALL DISTURB THE AREA AS LITTLE AS POSSIBLE AND USE NECESSARY PRECAUTIONS TO MINIMIZE THE IMPACTS TO THE RIVER. ALL COSTS INCLUDED IN ASSOCIATED COFFERDAM ITEMS.

(14) EXCAVATION BACKSLOPES BELOW IN-SERVICE ROADWAYS THAT ARE USED IN COMBINATION WITH, OR IN-PLACE OF, A COFFERDAM SHALL MEET THE FOLLOWING CRITERIA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND MAINTENANCE OF ALL EXCAVATION BACKSLOPES.

A) THE EXCAVATION BACKSLOPE SHALL BE NO STEEPER THAN 1.5H:1V. A FLATTER BACKSLOPE SHALL BE USED IF THE CONTRACTOR'S CALCULATIONS INDICATE INSUFFICIENT SLOPE STABILITY AT 1.5H:1V.

B) FOR CASES WHERE THE EXISTING GUARDRAIL IS USED FOR TRAFFIC BARRIER ABOVE THE EXCAVATION, THE CREST OF EXCAVATED BACKSLOPES SHALL BE OFFSET A MINIMUM OF 3 FEET FROM FACE OF EXISTING GUARDRAIL. THE EXISTING GROUND SURFACES BETWEEN THE GUARDRAIL AND THE EXCAVATED BACKSLOPES SHALL BE MAINTAINED IN ITS ORIGINAL CONFIGURATION.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

PROJECT NOTES (1 OF 2)

BRIDGE SHEET 3 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
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COFFERDAM NOTES (CONT.)

C) FOR CASES WHERE CONCRETE TRAFFIC BARRIERS ARE USED IN PLACE OF EXISTING GUARDRAIL, THE CREST OF EXCAVATED BACKSLOPES SHALL BE OFFSET A MINIMUM OF 2 FEET FROM THE OUTSIDE EDGE OF THE CONCRETE BARRIER.

(15) THE CONTRACTOR SHOULD BE PREPARED TO PERFORM ANY SUBSURFACE INVESTIGATIONS NEEDED FOR THE COFFERDAM DESIGN. ALL COSTS ASSOCIATED WITH THE COMPLETION OF SUBSURFACE INVESTIGATIONS, THE REDESIGN, OR THE REINSTALLATION OF COFFERDAMS DUE TO SUBSURFACE CONDITIONS ENCOUNTERED DURING THE COFFERDAM INSTALLATION THAT ARE DIFFERENT FROM WHAT THE COFFERDAM DESIGNER ASSUMED AND/OR INTERPRETED FROM THE AVAILABLE SUBSURFACE INFORMATION, SHALL BE SUBSIDIARY TO THE ASSOCIATED COFFERDAM ITEM. SECTION 102.05 SHALL BE REFERENCED REGARDING THE SUBSURFACE INFORMATION PROVIDED IN THE CONTRACT.

(16) COFFERDAMS LOCATED WITHIN THE DEFLECTION DISTANCE OF THE TRAFFIC BARRIER SHALL BE DESIGNED TO WITHSTAND A TRAFFIC BARRIER COLLISION LOAD OF 2.7 K/FT APPLIED AT 32-IN. ABOVE THE GROUND SURFACE BEHIND THE COFFERDAM. THIS LOAD MAY BE REDUCED LINEARLY BY THE OFFSET OF THE BARRIER TO THE COFFERDAM (E.G., IF THE BARRIER SYSTEM HAS A 4-FT. DEFLECTION AND IT IS SET 2-FT. FROM THE FACE OF THE COFFERDAM, THE COLLISION LOAD MAY BE REDUCED BY ONE HALF). THE COFFERDAM SHALL EXTEND UP TO A HEIGHT THAT IS EQUAL TO OR HIGHER THAN THE TOP OF THE ADJACENT TRAFFIC BARRIER.

(17) AT PIERS 1 THROUGH 3, A BOND BREAKER SHALL BE PLACED BETWEEN EXISTING AND PROPOSED FOUNDATION SEALS. THE FUNCTION OF THE BOND BREAKER IS TO ENSURE NO LOAD TRANSFER BETWEEN THE SEALS AND PREVENT ADDITIONAL LOADING FROM BEING APPLIED TO THE EXISTING PIER PILES. DETAILS OF THE BOND BREAKER SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. COFFERDAM SHEETING INSTALLED BETWEEN EXISTING AND PROPOSED SEALS AND EITHER LEFT IN PLACE OR REMOVED WILL BE CONSIDERED AN ADEQUATE BOND BREAKER. ALL COSTS SHALL BE SUBSIDIARY TO THE APPROPRIATE COFFERDAM ITEM.

(18) SEE PROSECUTION OF WORK FOR USGS AND CONNECTICUT RIVER GAGING STATIONS FLOW INFORMATION.

FOUNDATION NOTES

(1) PROTRUDING BOULDERS OR COBBLES ENCOUNTERED AT THE FINAL EXCAVATION DEPTH SHALL BE REMOVED OR SPLIT TO PROVIDE A LEVEL BEARING SURFACE.

(2) THE FOOTINGS LOCATED AT THE ABUTMENTS AND PIER 5 SHALL BE FOUNDED ON STEEL H-PILES. THE FOOTINGS SHALL BE INSTALLED ON A 1'-0" THICK LAYER OF STRUCTURAL FILL PLACED OVER UNDISTURBED SOIL. CLEAN STONE FILL, MEETING THE REQUIREMENTS OF SECTION 508.2.1.3 MAY BE SUBSTITUTED FOR STRUCTURAL FILL IF THE MAXIMUM DEPTH IS LESS THAN 1'-0" AND DIRECTED BY THE ENGINEER.

(3) THE FOOTINGS FOR PIERS 1-4 SHALL BE FOUNDED ON A FOUNDATION SEAL SUPPORTED BY EITHER STEEL H-PILES OR BEDROCK. PLACEMENT OF THE FOUNDATION SEAL CONCRETE SHALL BE IN ACCORDANCE WITH SECTION 520.3.5.5. FOUNDATION SEAL CONCRETE SHALL BE PAID FOR UNDER ITEM 520.6, CONCRETE CLASS T, FOUNDATION SEAL, AND POURED TO THE ELEVATION INDICATED ON THE PLANS.

(4) SURFACE PREPARATION OF BEDROCK PRIOR TO FOUNDATION SEAL CONCRETE PLACEMENT AT PIER 4 SHALL BE IN ACCORDANCE WITH SECTION 504.3.2. ALL SOIL OVERBURDEN AND LOOSE ROCK SHALL BE REMOVED FROM THE BEDROCK SURFACE PRIOR TO CONCRETE PLACEMENT. ALL COSTS FOR SURFACE PREPARATION SHALL BE INCLUDED UNDER ITEM 504.25, ROCK BRIDGE EXCAVATION MECHANICAL METHODS.

(5) EXISTING SHEETING ENCOUNTERED DURING INSTALLATION OF THE PROPOSED FOUNDATION SEALS AT PIERS 1 THROUGH 3 SHALL BE REMOVED. ALL COSTS SHALL BE INCLUDED IN ITEM 502., REMOVAL OF EXISTING BRIDGE STRUCTURE.

ABUTMENT AND WINGWALL NOTES

(1) ITEM 534.3, WATER REPELLENT (SILANE-SILOXANE), SHALL BE APPLIED TO ALL EXPOSED NEW CONCRETE SURFACES OF ABUTMENTS (INCL. BRIDGE SEATS), WINGWALLS, AND BACKWALLS TO 1'-0" BELOW FILL LINES.

(2) ITEM 538.2, BARRIER MEMBRANE, PEEL AND STICK – VERTICAL SURFACES (F), 2' WIDE WITH PROTECTION BOARD (SUBSIDIARY), SHALL BE PLACED CENTERED OVER THE BEARING SEAT CONSTRUCTION JOINT AND CENTERED OVER THE VERTICAL AND HORIZONTAL CONSTRUCTION JOINTS. ITEM 538.2 PLACED ALONG THE HORIZONTAL CONSTRUCTION JOINTS LOCATED AT THE WINGWALLS SHALL HAVE THE PROTECTION BOARD OMITTED.

(3) WEEPERS SHALL BE PLACED SYMMETRICALLY 10'-0" APART AND CENTERED AT 12" ABOVE THE TOP OF FOOTINGS. WEEPERS SHALL BE 4" Ø AND SLOPED TO DRAIN WITH A 12:1 SLOPE. ALL COSTS SHALL BE SUBSIDIARY TO ITEM 520.12.

(4) ABUTMENTS SHALL BE BACKFILLED TO THE LEVEL OF THE BRIDGE SEAT ELEVATION PRIOR TO ERECTING THE GIRDERS.

(5) PLACE 1/2" THICK SELF-EXPANDING CORK FILLER BETWEEN ABUTMENT MASONRY AND WINGWALLS. SET CORK FILLER 1/2" BELOW EXPOSED SURFACE AND APPLY 1/2" x 1/2" SILICONE JOINT SEALER OVER FILLER. ALL COSTS INCLUDED IN ITEM 562.1. SEAL EXISTING 1/2" EXPOSED ABUTMENT AND WINGWALL JOINTS WITH 1/2" x 1/2" SILICONE JOINT SEALER (ITEM 562.1).

(6) ALL ANCHOR BOLTS AT THE ABUTMENTS SHALL BE CAST-IN-PLACE OR CORED DRILLED, USING A TEMPLATE. ROCK DRILLING IS NOT ALLOWED.

(7) BLOCKOUTS SHALL BE PROVIDED IN THE ABUTMENT BACKWALLS TO ALLOW FOR THE INSTALLATION OF THE 2 - 4" DIAMETER I.T.S. CONDUITS. FOR THE LOCATION OF THE BLOCKOUTS SEE BRIDGE SHEETS 28 AND 31. FOR BLOCKOUT DETAILS SEE BRIDGE SHEET 34.

SUBSTRUCTURE – REHABILITATION NOTES

(1) EXISTING ABUTMENTS, WINGWALLS, AND PIERS SHALL BE INSPECTED FOR DETERIORATED CONCRETE JOINTLY BY THE ENGINEER AND CONTRACTOR. ALL DETERIORATED CONCRETE SHALL BE REMOVED. CONCRETE SURFACES OF THE REMOVAL LIMITS SHALL BE SAWCUT TO A 1" DEPTH TO PROVIDE CLEAN REMOVAL LINES. ALL INSPECTION, REMOVAL, AND CLEANING SHALL BE AS SPECIFIED IN SECTION 512 AND PAID FOR UNDER ITEM 512.02. NEW CONCRETE PLACED IN THESE AREAS SHALL BE PAID UNDER 520.01, CONCRETE CLASS AA. SEE CONCRETE REPAIR DETAILS ON BRIDGE SHEET 36 FOR ADDITIONAL INFORMATION.

(2) PRIOR TO PLACING NEW CONCRETE AGAINST EXISTING CONCRETE SURFACES, THE EXISTING CONCRETE SURFACES SHALL BE BLAST CLEANED AND PREPARED TO A SATURATED SURFACE-DRY CONDITION. ALL COSTS SHALL BE SUBSIDIARY TO THE CONCRETE ITEM TO BE PLACED.

(3) EXISTING ABUTMENTS, WINGWALLS, AND PIERS SHALL BE POWER WASHED (SUBSIDIARY TO ITEM 534.3), IN SUCH A MANNER THAT OVERSPRAY INTO SURFACE WATERS IS KEPT TO A MINIMUM. IF THE WATER BEADS, NO COATING NEEDS TO BE APPLIED. IF THE WATER DOES NOT BEAD, COAT THE SURFACE WITH ITEM 534.3, WATER REPELLENT (SILANE-SILOXANE). APPLICATION RATE = 150 SF/GAL.

(4) LIGHTLY BLAST-CLEAN ABUTMENTS, WINGWALLS, AND PIERS TO REMOVE GRAFFITI AS DIRECTED BY THE ENGINEER. ALL COSTS SHALL BE INCLUDED IN ITEM 534.3, WATER REPELLENT (SILANE-SILOXANE).

PIER NOTES

(1) THE CONTRACTOR IS REQUIRED TO PLACE ALL PIER CONCRETE, EXCEPT FOR THE FOUNDATION SEAL, IN THE DRY.

(2) WATER LEVELS WITHIN THE COFFERDAM AT THE PIER SHALL BE MAINTAINED AT THE SAME LEVEL AS THE RIVER UNTIL THE FOUNDATION SEAL (ITEM 520.6) IS IN PLACE AND CURED.

(3) THE TOP SURFACE OF THE FOUNDATION SEAL WHICH WILL BE IN CONTACT WITH THE PIER FOOTING SHALL HAVE A ROUGHENED SURFACE.

(4) SEE COFFERDAM NOTE 6 FOR MAXIMUM VENT ELEVATION.

(5) COAT ALL SURFACES OF THE PIER ABOVE THE FOOTING, INCLUDING THE BEARING SEAT AND PEDESTALS, WITH ITEM 534.3, WATER REPELLENT (SILANE-SILOXANE).

(6) ALL ANCHOR BOLTS AT THE PIERS SHALL BE SET BY A TEMPLATE BEFORE CONCRETE IS PLACED. DRILLING IS NOT ALLOWED.

(7) AN APPROVED CORROSION INHIBITOR ADMIXTURE FROM THE QUALIFIED PRODUCTS LIST SHALL BE ADDED TO THE PIER CAP CONCRETE (ALL CONCRETE ABOVE THE CONSTRUCTION JOINT WITH THE PIER COLUMN) FOR THE PROPOSED IN-FILL PIERS AND ALL CONCRETE USED IN THE REHABILITATION OF THE EXISTING PIER CAPS. ALL COSTS SHALL BE SUBSIDIARY TO ITEM 520.02, CONCRETE CLASS AA, ABOVE FOOTINGS (F).

REINFORCEMENT NOTES

(1) REINFORCEMENT IN THE FOOTINGS AND APPROACH SLABS SHALL HAVE 3" CLEAR COVER. ALL OTHER REINFORCEMENT SHALL HAVE 2 ½" CLEAR COVER, UNLESS OTHERWISE NOTED.

(2) PLACE REINFORCING STEEL TO AVOID WEEPERS, RAIL POST ANCHORAGE ASSEMBLIES, SCUPPERS, PILES, AND EXPANSION JOINT STEEL.

(3) REINFORCING IN TOP OF PIER CAP AND ABUTMENT BEAM SEATS SHALL BE ADJUSTED TO CLEAR ANCHOR BOLTS.

(4) ANY EPOXY COATED REBARS CUT TO FIT SHALL BE TOUCHED UP WITH AN APPROVED EPOXY COATING MATERIAL. ALL COSTS SHALL BE INCLUDED IN ITEM 544.31 REINFORCING STEEL, EPOXY COATED (CONTRACTOR DETAILED).

(5) EXISTING REINFORCING STEEL THAT IS TO REMAIN IN PLACE WITHIN THE REMOVAL AREAS SHALL BE CUT OR BENT AS REQUIRED TO PROVIDE 2½" MINIMUM CLEAR COVER FOR THE PROPOSED CONCRETE SURFACES, UNLESS NOTED OTHERWISE. THE ENGINEER SHALL APPROVE ANY BARS TO BE CUT. ALL COSTS INCLUDED IN ITEM 502.

(6) REINFORCING STEEL SPECIFIED TO BE DRILLED AND GROUTED INTO EXISTING CONCRETE SHALL BE INSTALLED IN STRICT CONFORMANCE TO THE PROCEDURES OF THE ANCHORAGE MATERIAL (GROUT) MANUFACTURER, AS NECESSARY TO DEVELOP THE FULL PULL-OUT FORCE OF THE REBAR. THE EMBEDMENT DEPTH SHALL EQUAL THE DEPTH REQUIRED TO DEVELOP THE PULL-OUT FORCE, BUT NOT LESS THAN THE MINIMUM DEPTH SPECIFIED ON THE PLANS. THE ANCHORAGE MATERIAL SHALL BE A HIGH STRENGTH NON-SHRINK GROUT LISTED ON THE NHDOT'S QUALIFIED PRODUCTS LIST OR APPROVED EQUAL. ALL COSTS FOR DRILLING AND GROUTING SHALL BE INCLUDED UNDER ITEM 544.3 REINFORCING STEEL (CONTRACTOR DETAILED), AND ITEM 544.31 REINFORCING STEEL, EPOXY COATED (CONTRACTOR DETAILED).

(7) REINFORCING LEGEND:

ALT = ALTERNATE	BOT = BOTTOM	BRG = BEARING
CLR = CLEAR	DOW = DOWEL	EQ = EQUAL
FS = FAR SIDE	MAX = MAXIMUM	MC = MECHANICAL CONNECTION
MID = MIDDLE	MIN = MINIMUM	NS = NEAR SIDE
SECT = SECTION	SP = SPACE	SPL = SPLICE
SYM = SYMMETRICAL	TYP = TYPICAL	E = EPOXY COATED
SS = STAINLESS STEEL	ES = EACH SIDE	

APPROACH SLAB NOTES

(1) ITEM 544.7, SYNTHETIC FIBER REINFORCEMENT (F), SHALL BE ADDED TO THE CONCRETE USED FOR THE APPROACH SLABS.

(2) FILL SPACE BETWEEN TIPPED DOWN APPROACH SLAB AND ROADWAY CURB WITH ITEM 520.0302, CONCRETE CLASS AA, APPROACH SLABS (QC/QA) (F) (6" MIN. DEPTH), EXTEND CONCRETE FROM ABUTMENT END OF APPROACH SLAB 6' ALONG SLAB, OR AS DIRECTED BY THE ENGINEER (QC/QA TESTING REQUIREMENTS WAIVED).

(3) ITEM 520.0302 SHALL BE FORMED INTO 1'-0" x 2'-0" BLOCKS AT ENDS OF U-BACK WINGWALLS TO SUPPORT APPROACH CURBS. (QC/QA TESTING REQUIREMENTS WAIVED).

STRUCTURAL STEEL AND SUPERSTRUCTURE NOTES

(1) ALL STRUCTURAL STEEL SHALL BE PAID UNDER ITEM 550.1, STRUCTURAL STEEL (F), INCLUDING THE GIRDERS, CROSS FRAMES, INTERMEDIATE UTILITY SUPPORTS, GUSSET PLATES, CONNECTION PLATES, SPLICE PLATES, STIFFENERS, TEMPORARY SCUPPERS, PIER NOSE ARMOR, FIELD DRILLING AND FASTENERS.

(2) THE NHDOT WILL INSPECT THE SHOP FABRICATION OF THE STRUCTURAL STEEL.

(3) NOTCH TOUGHNESS REQUIREMENTS SHALL BE IN ACCORDANCE TO NHDOT STANDARD SPECIFICATIONS SECTION 550.2.3

(4) ALL BOLTED CONNECTIONS SHALL BE SLIP-CRITICAL (CLASS-B) MADE WITH 7/8" Ø HIGH STRENGTH BOLTS IN 15/16" Ø HOLES. ALL FASTENERS SHALL CONFORM TO REQUIREMENTS FOR AASHTO M164 (ASTM A325) TYPE 3. (IN PAINTED AREAS, BOLTS SHALL BE TYPE 1 GALVANIZED)

(5) DIRECT TENSION INDICATORS SHALL BE INSTALLED WITH HIGH STRENGTH BOLTS.

(6) INTENDED FINAL ERECTED POSITION OF I-GIRDER WEBS SHALL BE VERTICAL OR PLUMB. THIS SHALL BE ACHIEVED BY DETAILING FOR 'FULL DEAD LOAD FIT CONDITION' FOR STRAIGHT I-GIRDERS WITH A SKEW.

(7) GIRDERS SHALL BE CAMBERED FOR VERTICAL CURVATURE AND TO FULL DEAD LOAD DEFLECTION. THE CAMBER SHALL BE ACHIEVED BY CUTTING THE WEB PLATE ACCORDING TO CAMBER TABLES ON BRIDGE SHEETS 61-62. THE CAMBER TOLERANCE IS +1½ TO -0.

(8) BEARING STIFFENERS AND THE ENDS OF GIRDERS SHALL BE VERTICAL UNDER FULL DEAD LOAD DEFLECTION.

(9) ALL WELDS SHALL HAVE CORROSION RESISTANCE AND WEATHERING APPEARANCE AS SPECIFIED FOR WEATHERING STRUCTURAL STEEL.

(10) THE STRUCTURAL STEEL FABRICATOR SHALL ARRANGE FOR NON-DESTRUCTIVE TESTING OF THE WELDS. ALL COSTS TO BE INCLUDED IN ITEM 550.1.

(11) SHOP DRAWINGS SHALL INDICATE THE METHOD AND SEQUENCE TO BE FOLLOWED IN WELDING THE GIRDER COMPONENTS.

(12) CROSS FRAMES SHALL BE FABRICATED IN THE SHOP WITH 1/4" FILLET WELDS, UNLESS NOTED OTHERWISE. GRAVITY AXES OF THE MEMBERS SHALL INTERSECT AS NEARLY AS PRACTICABLE AT THE CENTERLINE OF THE GIRDER.

(13) LOCATION OF WELDED SHOP SPLICES SHALL BE APPROVED BY THE BUREAU OF BRIDGE DESIGN. WEB SPLICES SHALL BE LOCATED A MINIMUM OF 9" FROM WELDED FLANGE SPLICES. WEB AND FLANGE SPLICES SHALL BE LOCATED A MINIMUM OF 6" FROM TRANSVERSE STIFFENERS OR CONNECTION PLATES.

(14) HOLES FOR FIELD SPLICES SHALL BE DRILLED IN THE SHOP WHILE GIRDERS ARE ASSEMBLED TO FINAL BEARING ELEVATIONS.

(15) ANY SHOP OR FIELD WELDING OF ATTACHMENTS TO ANY PORTION OF THE PLATE GIRDERS FOR CONSTRUCTION PURPOSES WILL NOT BE PERMITTED, UNLESS APPROVED BY THE BUREAU OF BRIDGE DESIGN.

(16) THE CONTRACTOR SHALL SUBMIT A HANDLING AND ERECTION PROCEDURE TO THE ENGINEER PRIOR TO HANDLING THE STRUCTURAL STEEL IN ACCORDANCE WITH SECTIONS 550.3.14 AND 550.3.15. THE ERECTION PROCEDURE SHALL INDICATE THE LOCATION AND NUMBER OF LIFTING POINTS AS DETERMINED BY CHECKING THE L/B RATIOS IN ACCORDANCE WITH SECTION 550.3.14.2.4 TO GUARD AGAINST LATERAL BUCKLING OF THE GIRDERS. THESE DRAWINGS SHALL BE DOCUMENTED BEFORE ERECTION STARTS.

(17) STEEL ERECTION SHALL NOT BE PERMITTED UNTIL THE ABUTMENTS HAVE BEEN BACKFILLED TO THE LEVEL OF THE BRIDGE SEATS.

(18) ALL SHEAR CONNECTORS SHALL BE FIELD WELDED TO THE TOP FLANGE WITH AUTOMATICALLY TIMED STUD WELDING EQUIPMENT. RELOCATE SHEAR CONNECTORS AT SPLICE LOCATIONS TO AVOID INTERFERENCE WITH FASTENERS.

(19) SCREED RAIL SUPPORTS REQUIRED FOR PLACEMENT OF THE DECK SLAB CONCRETE SHALL BE LOCATED AT THE CENTERLINE OF GIRDERS.

(20) ALL WELDING AND FABRICATION SHALL BE PERFORMED IN CONFORMANCE WITH NHDOT STANDARD SPECIFICATION SECTION 550.

(21) ALL STRUCTURAL STEEL (INCLUDING BRIDGE SHOES) SHALL BE PAINTED WITHIN 10 FEET OF THE END OF GIRDER, BOTH ENDS OF THE BRIDGE.

(22) THE TOP OF TOP FLANGE SHALL BE PAINTED WITH A LIGHT RUST PROTECTIVE COAT OF PRIMER WITHIN 10 FEET OF THE END OF GIRDER. ALL COSTS INCLUDED IN ITEM 550.1, STRUCTURAL STEEL (F).

(23) THE BRIDGE DECK SHALL BE PLACED AS SHOWN ON BRIDGE SHEET 69. FOR EACH PHASE THE BRIDGE DECK CONCRETE SHALL BE PLACED IN NUMERICAL ORDER. THE NEXT PLACEMENT SHALL NOT BEGIN UNTIL 72 HOURS AFTER THE COMPLETION OF THE PREVIOUS PLACEMENT. ALL AREAS OF THE SAME NUMBER MAY BE PLACED IN A SINGLE OPERATION PROVIDED THE CONCRETE IN ALL AREAS REMAINS PLASTIC. ALTERNATE PLACEMENT SEQUENCES SHALL BE SUBMITTED IN ACCORDANCE WITH 105.02 AND SUBJECT TO APPROVAL OF THE BUREAU OF BRIDGE DESIGN. BRIDGE DECK CONCRETE SHALL REMAIN PLASTIC THROUGHOUT THE ENTIRE POURING SEQUENCE.

(24) PRIOR TO PLACING NEW CONCRETE AGAINST EXISTING CONCRETE SURFACES IN THE DECK CLOSURE POURS, THE EXISTING CONCRETE SURFACES SHALL BE BLAST CLEANED AND PREPARED TO A SATURATED SURFACE-DRY CONDITION. ALL COSTS SHALL BE SUBSIDIARY TO ITEM 520.7002.

(25) ALL PLAN DIMENSIONS ARE MEASURED HORIZONTAL AT 45°F WITHOUT ACCOUNT FOR PROFILE GRADE, UNLESS OTHERWISE NOTED.

(26) HOLES IN THE CONNECTION PLATES FOR THE BOLTS CONNECTING THE INTERMEDIATE CROSS FRAMES TO GIRDER 4 IN BAY 4, AND GIRDER 8 IN BAY 9, SHALL BE FIELD DRILLED USING THE CROSS FRAME GUSSET PLATES AS A TEMPLATE AFTER THE CLOSURE POUR, AND BASE COURSE PAVEMENT HAS BEEN PLACED ON THE BRIDGE DECK IN EACH SUCCESSIVE PHASE. ALL COSTS SHALL BE INCLUDED IN ITEM 550.1.

UTILITY NOTES – I.T.S. CONDUITS

(1) EXPANSION COUPLINGS CAPABLE OF 4 7/8" OF MOVEMENT SHALL BE PROVIDED AT EACH ABUTMENT.

(2) ALL THREADED RODS, WASHERS, AND NUTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M232 (ASTM A153).

(3) THE 2 – 4" DIAMETER STEEL CONDUITS, HARDWARE CONNECTING THE CONDUITS TO THE INTERMEDIATE UTILITY SUPPORTS AND CROSS FRAMES, GROUTING AT THE BLOCKOUTS IN THE ABUTMENT BACKWALLS, AND EXPANSION DEVICES LOCATED AT THE ABUTMENTS SHALL BE INCLUDED IN ITEM 614.3429.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

PROJECT NOTES (2 OF 2)

BRIDGE SHEET 4 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
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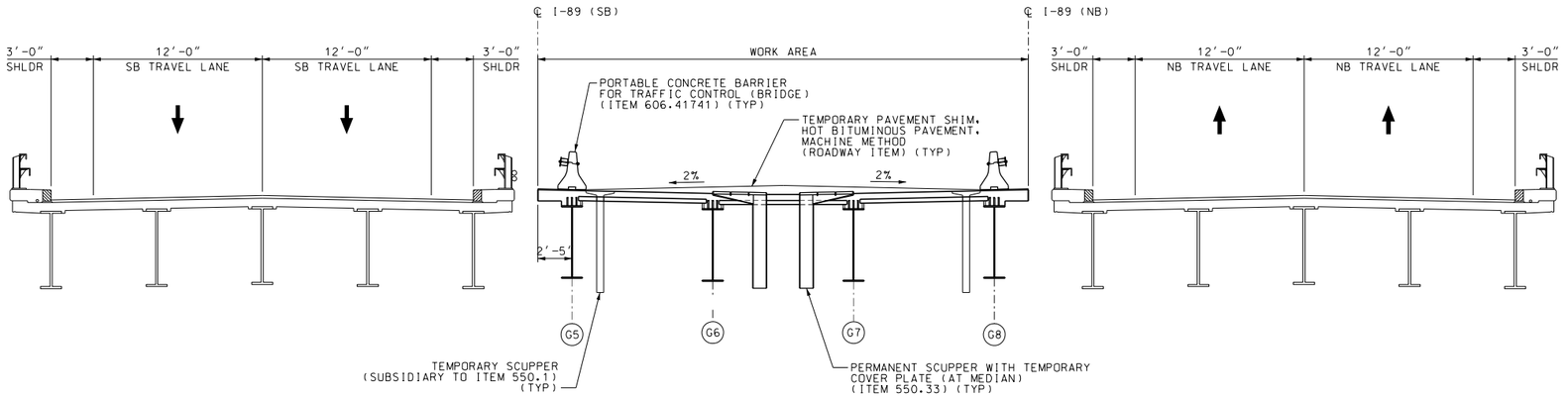
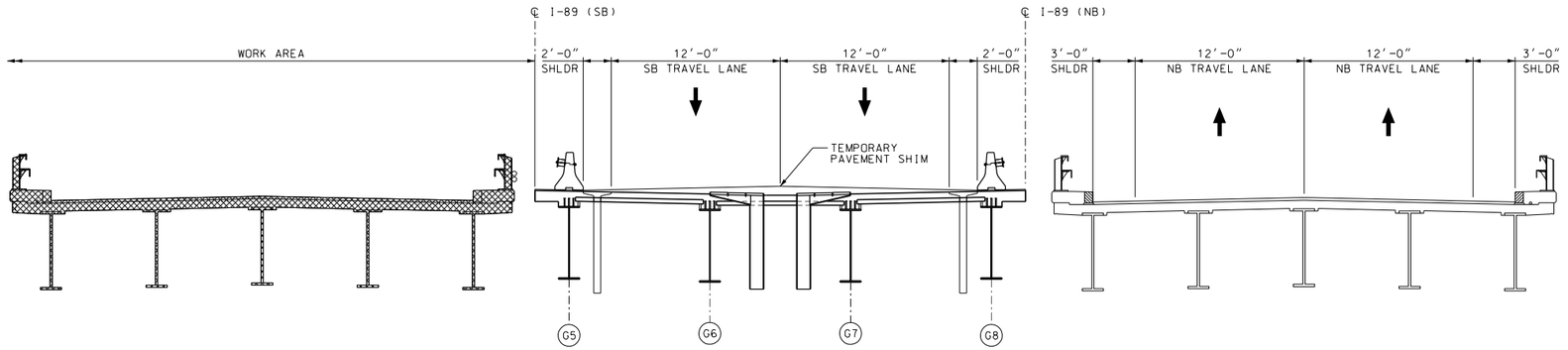
FILE NUMBER 133-1-1

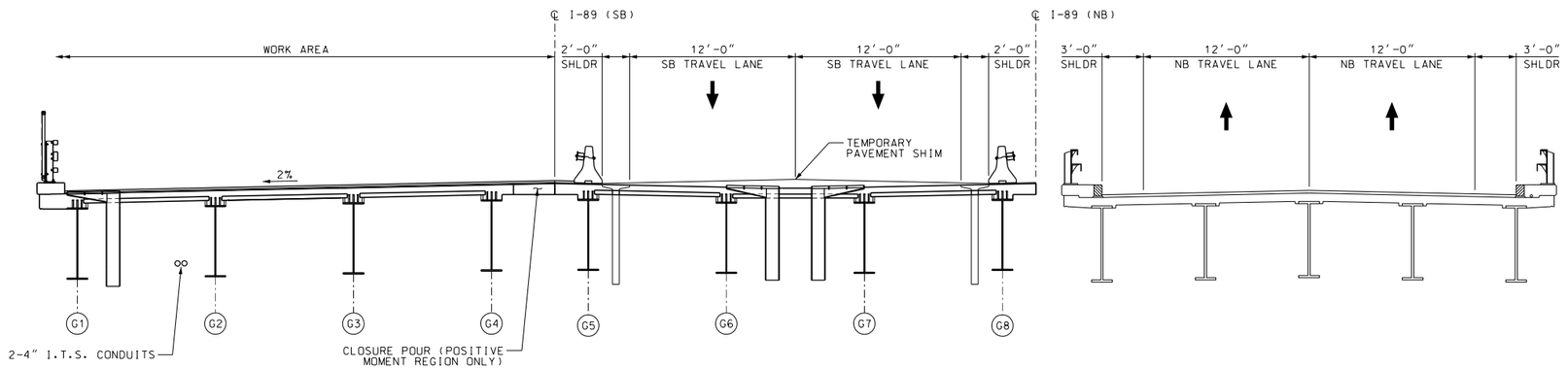
McFarland Johnson



PHASE 1
(ROADWAY TRAFFIC CONTROL PHASE 1)
SCALE: 3/16" = 1'-0"



PHASE 2A
(ROADWAY TRAFFIC CONTROL PHASE 2)
SCALE: 3/16" = 1'-0"



PHASE 2B
(ROADWAY TRAFFIC CONTROL PHASE 2)
SCALE: 3/16" = 1'-0"

LEGEND

- BRIDGE REMOVAL
- DIRECTION OF TRAFFIC

CONSTRUCTION SEQUENCE NOTES

PHASE 1 (CORRESPONDS TO ROADWAY TRAFFIC CONTROL PHASE 1)

1. CONSTRUCT NEW ABUTMENTS, PIERS, AND INFILL SUPERSTRUCTURE INCLUDING TEMPORARY AND PERMANENT SCUPPERS. TRAFFIC REMAINS ON EXISTING STRUCTURES.
2. INSTALL PORTABLE CONCRETE BARRIER.
3. INSTALL BARRIER MEMBRANE, BASE COURSE PAVEMENT, AND TEMPORARY PAVEMENT SHIM.

PHASE 2A (CORRESPONDS TO ROADWAY TRAFFIC CONTROL PHASE 2)

1. NORTHBOUND TRAFFIC REMAINS ON EXISTING STRUCTURE.
2. MOVE SOUTHBOUND TRAFFIC TO NEW INFILL BRIDGE.
3. DEMOLISH EXISTING SOUTHBOUND SUPERSTRUCTURE.
4. REMOVE EXISTING PIER BEAM SEATS AND UPPER PORTION OF EXISTING ABUTMENTS.

PHASE 2B (CORRESPONDS TO ROADWAY TRAFFIC CONTROL PHASE 2)

1. CONSTRUCT PIER CAP EXTENSIONS AND ABUTMENT MODIFICATIONS ON EXISTING SOUTHBOUND STRUCTURE.
2. CONSTRUCT NEW SOUTHBOUND SUPERSTRUCTURE AND CONNECT TO NEW INFILL SUPERSTRUCTURE.
3. INSTALL BARRIER MEMBRANE AND BASE COURSE PAVEMENT.

PHASE 3A (CORRESPONDS TO ROADWAY TRAFFIC CONTROL PHASE 4)

1. MOVE SOUTHBOUND TRAFFIC TO NEW SOUTHBOUND SUPERSTRUCTURE.
2. MOVE NORTHBOUND TRAFFIC TO NEW INFILL SUPERSTRUCTURE.
3. DEMOLISH EXISTING NORTHBOUND SUPERSTRUCTURE.
4. REMOVE EXISTING PIER BEAM SEATS AND UPPER PORTION OF EXISTING ABUTMENTS.

PHASE 3B (CORRESPONDS TO ROADWAY TRAFFIC CONTROL PHASE 4)

1. CONSTRUCT PIER CAP EXTENSIONS AND ABUTMENT MODIFICATIONS ON EXISTING NORTHBOUND STRUCTURE.
2. CONSTRUCT NEW NORTHBOUND SUPERSTRUCTURE AND CONNECT TO NEW INFILL SUPERSTRUCTURE.
3. INSTALL BARRIER MEMBRANE AND BASE COURSE PAVEMENT.

PHASE 4A (CORRESPONDS TO ROADWAY TRAFFIC CONTROL PHASE 5A)

1. MOVE NORTHBOUND TRAFFIC TO NEW NORTHBOUND SUPERSTRUCTURE.
2. MOVE TEMPORARY BARRIERS.
3. REMOVE PAVEMENT SHIM.
4. REMOVE TEMPORARY SCUPPERS AND FILL BLOCKOUTS WITH APPROVED RAPID-HARDENING PATCHING MATERIAL.
5. CONSTRUCT FINAL PAVEMENT ON INFILL SUPERSTRUCTURE.
6. INSTALL MEDIAN BARRIER.
7. REMOVE TEMPORARY BARRIERS.

PHASE 4B (CORRESPONDS TO ROADWAY TRAFFIC CONTROL PHASE 5B)

1. MOVE SOUTHBOUND AND NORTHBOUND TRAFFIC TO FINAL LANE CONFIGURATIONS.

NOTES

1. FOR TRAFFIC CONTROL PLANS, SEE HIGHWAY PLANS.
2. PHASING SECTIONS ARE LOOKING AHEAD STATION.
3. ANY TEMPORARY BITUMINOUS PAVEMENT REQUIRED (OTHER THAN TEMPORARY PAVEMENT SHIM SHOWN) TO PROVIDE AN ADEQUATE DRIVING SURFACE DURING PHASED CONSTRUCTION TO BE PAID UNDER ITEM 619.1, MAINTENANCE OF TRAFFIC.
4. SEE STRUCTURAL STEEL NOTE 26 ON BRIDGE SHEET 4, REGARDING THE INSTALLATION OF INTERMEDIATE CROSS FRAMES BETWEEN PHASES.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

CONSTRUCTION PHASING SECTIONS (1 OF 2)

BRIDGE SHEET: 5 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		148	600

FILE NUMBER: 133-1-1

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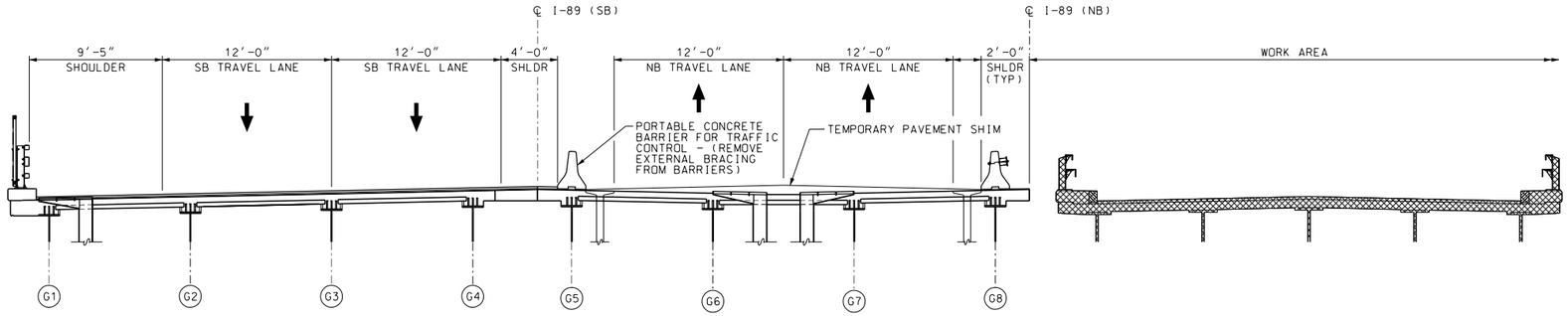
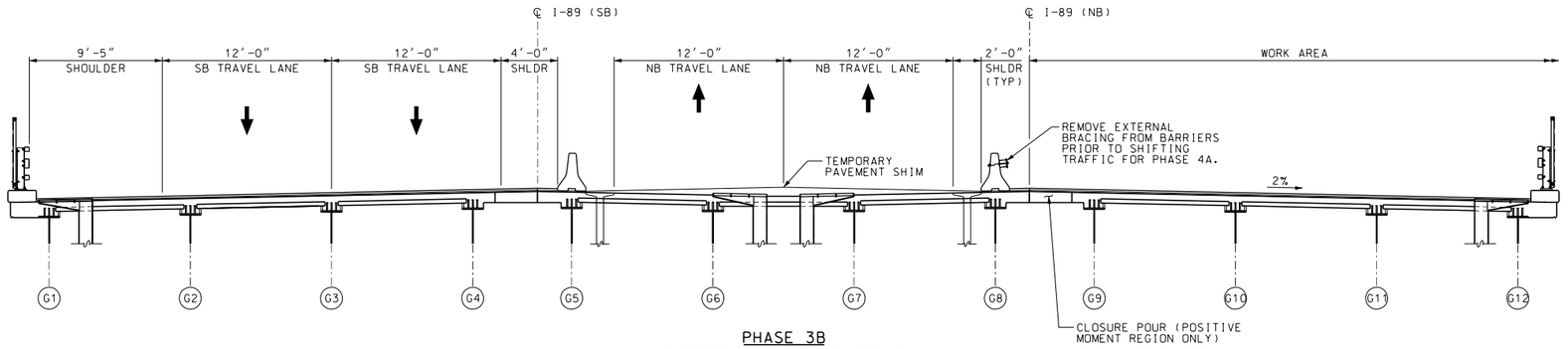
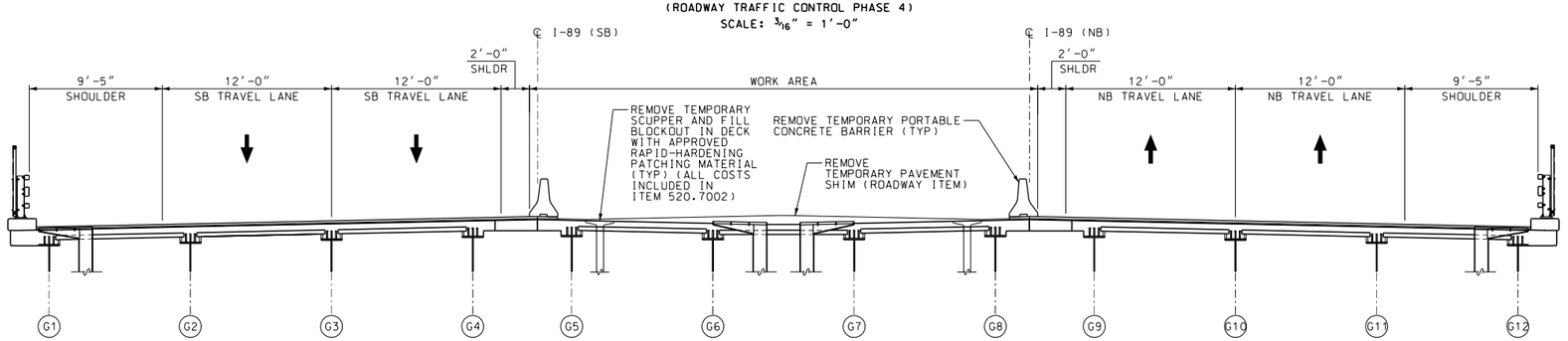


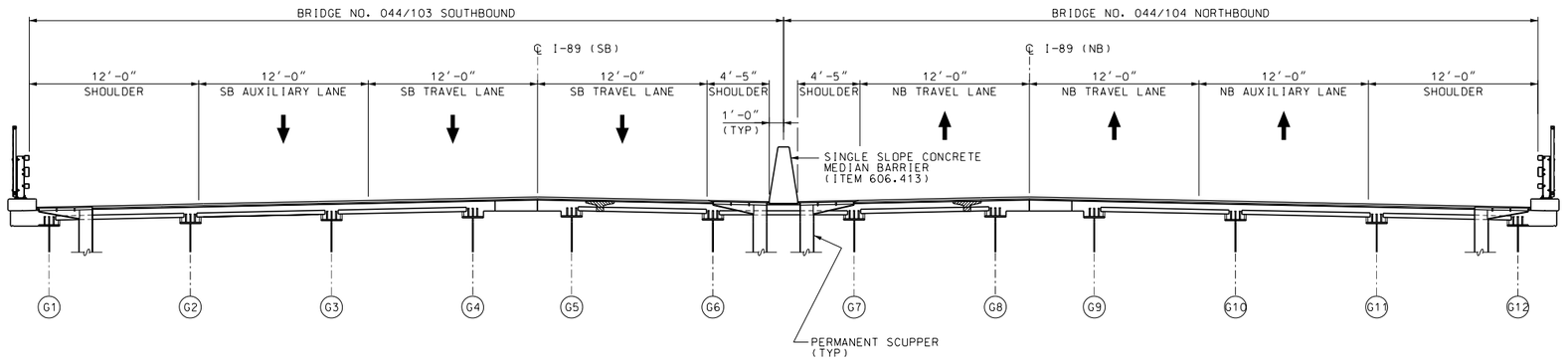
PHASE 3A
(ROADWAY TRAFFIC CONTROL PHASE 4)
SCALE: 3/16″ = 1′-0″



PHASE 3B
(ROADWAY TRAFFIC CONTROL PHASE 4)
SCALE: 3/16″ = 1′-0″



PHASE 4A
(ROADWAY TRAFFIC CONTROL PHASE 5A)
SCALE: 3/16″ = 1′-0″



PHASE 4B (FINAL CONDITION)
(ROADWAY TRAFFIC CONTROL PHASE 5B)
SCALE: 3/16″ = 1′-0″

LEGEND

BRIDGE REMOVAL

DIRECTION OF TRAFFIC

NOTES

1. FOR CONSTRUCTION SEQUENCE NOTES, SEE BRIDGE SHEET 5.

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 — STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

CONSTRUCTION PHASING SECTIONS (2 OF 2)

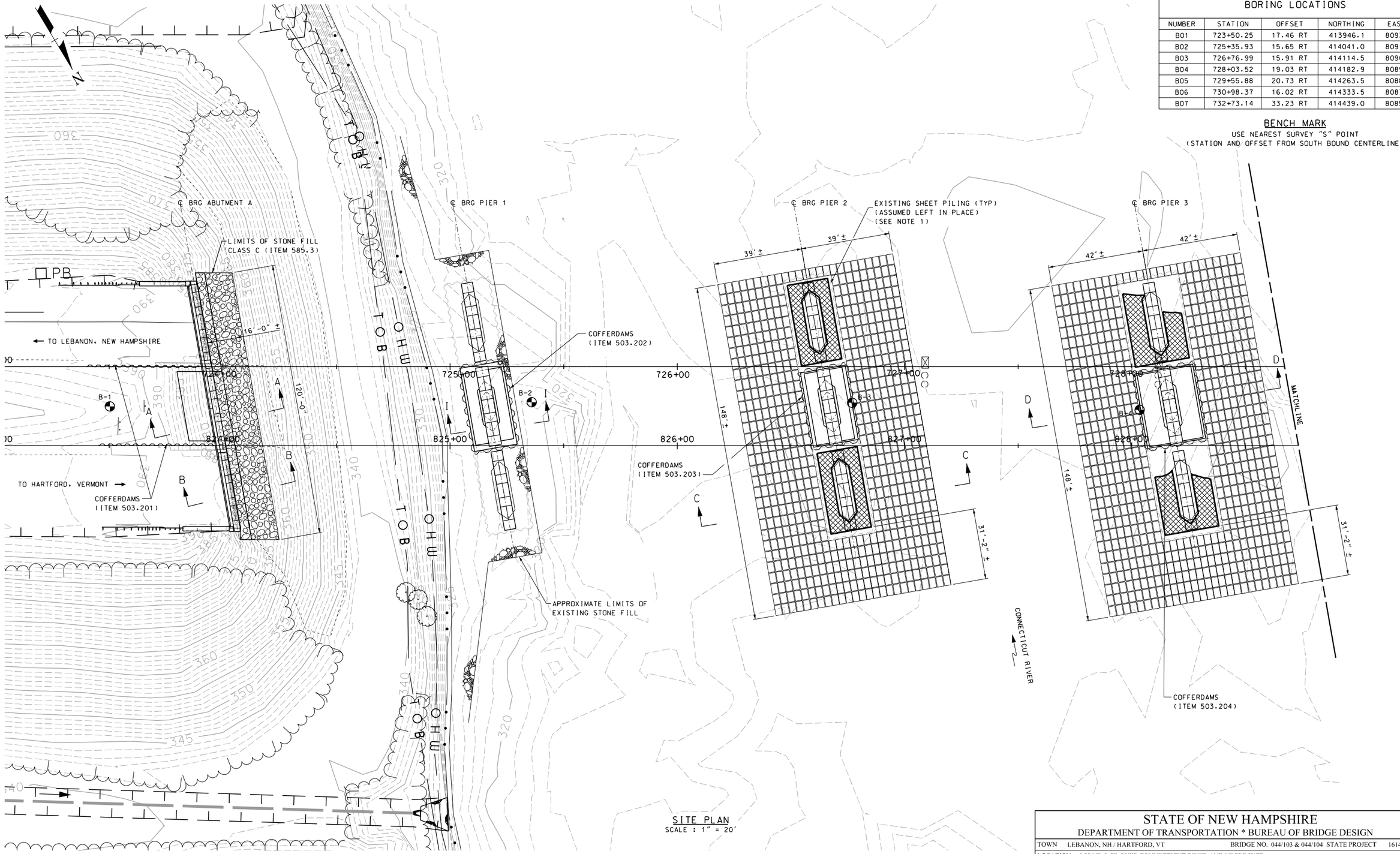
BRIDGE SHEET: 6 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		149	600

FILE NUMBER: 133-1-1

BORING LOCATIONS				
NUMBER	STATION	OFFSET	NORTHING	EASTING
B01	723+50.25	17.46 RT	413946.1	809340.4
B02	725+35.93	15.65 RT	414041.0	809180.8
B03	726+76.99	15.91 RT	414114.5	809060.4
B04	728+03.52	19.03 RT	414182.9	808953.9
B05	729+55.88	20.73 RT	414263.5	808824.6
B06	730+98.37	16.02 RT	414333.5	808700.4
B07	732+73.14	33.23 RT	414439.0	808560.0

BENCH MARK
USE NEAREST SURVEY "S" POINT
(STATION AND OFFSET FROM SOUTH BOUND CENTERLINE)



SITE PLAN
SCALE : 1" = 20'

LEGEND

- APPROXIMATE PORTION OF EXISTING FOOTING EXPOSED (PER 2012 NHDOT UNDERWATER INSPECTION REPORT)
- OUTSIDE LIMITS OF CONCRETE ARMOR MATRIX COMPONENTS (ITEM 540.31)

NOTES:

1. UNDERWATER INSPECTION REPORT NOTED SECTIONS OF EXPOSED SHEET PILING AT VARIOUS LOCATIONS AROUND EXISTING PIER FOUNDATION SEALS.
2. INSIDE LIMITS OF CONCRETE ARMOR MATRIX COMPONENTS SHALL BE THE FACE OF CONCRETE FOOTINGS.
3. FOR SECTIONS A-A, B-B, C-C, AND D-D, SEE BRIDGE SHEET 10.
4. FOR DETAILS OF CONCRETE ARMOR MATRIX COMPONENTS, SEE BRIDGE SHEET 12.

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

SITE PLAN (1 OF 2)

BRIDGE SHEET: 7 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

FILE NUMBER: 133-1-1

FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
A001(154)	150	600

SITE PLAN
SCALE : 1" = 20'

NOTE:

1. FOR SECTIONS E-E, F-F, G-G, AND H-H SEE BRIDGE SHEET 11.

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

SITE PLAN (2 OF 2)

BRIDGE SHEET: 8 OF 94

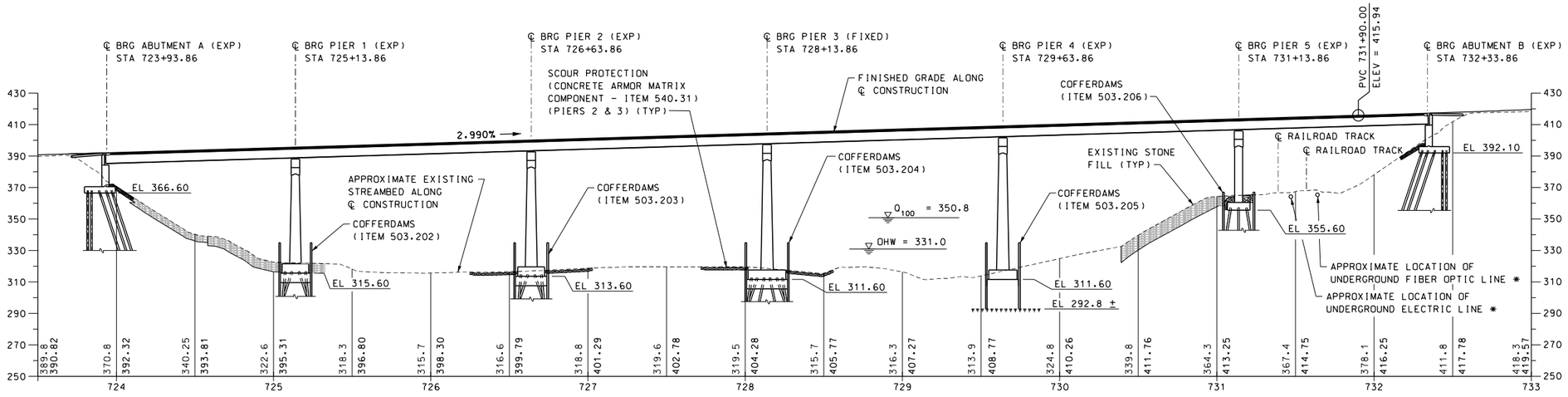
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

FEDERAL PROJECT NO.: A001(154)

SHEET NO.: 151

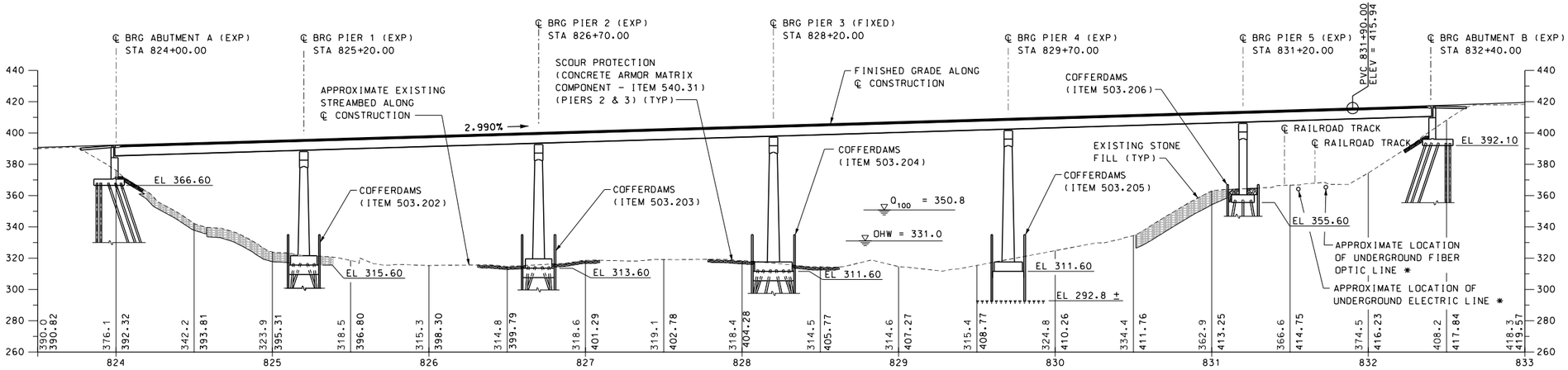
FILE NUMBER: 133-1-1

TOTAL SHEETS: 600



PROFILE - INTERSTATE 89 SOUTHBOUND
SCALE : 1" = 40'

* THE DEPTH AND PLAN LOCATION OF UNDERGROUND UTILITIES IS UNKNOWN



PROFILE - INTERSTATE 89 NORTHBOUND
SCALE : 1" = 40'

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

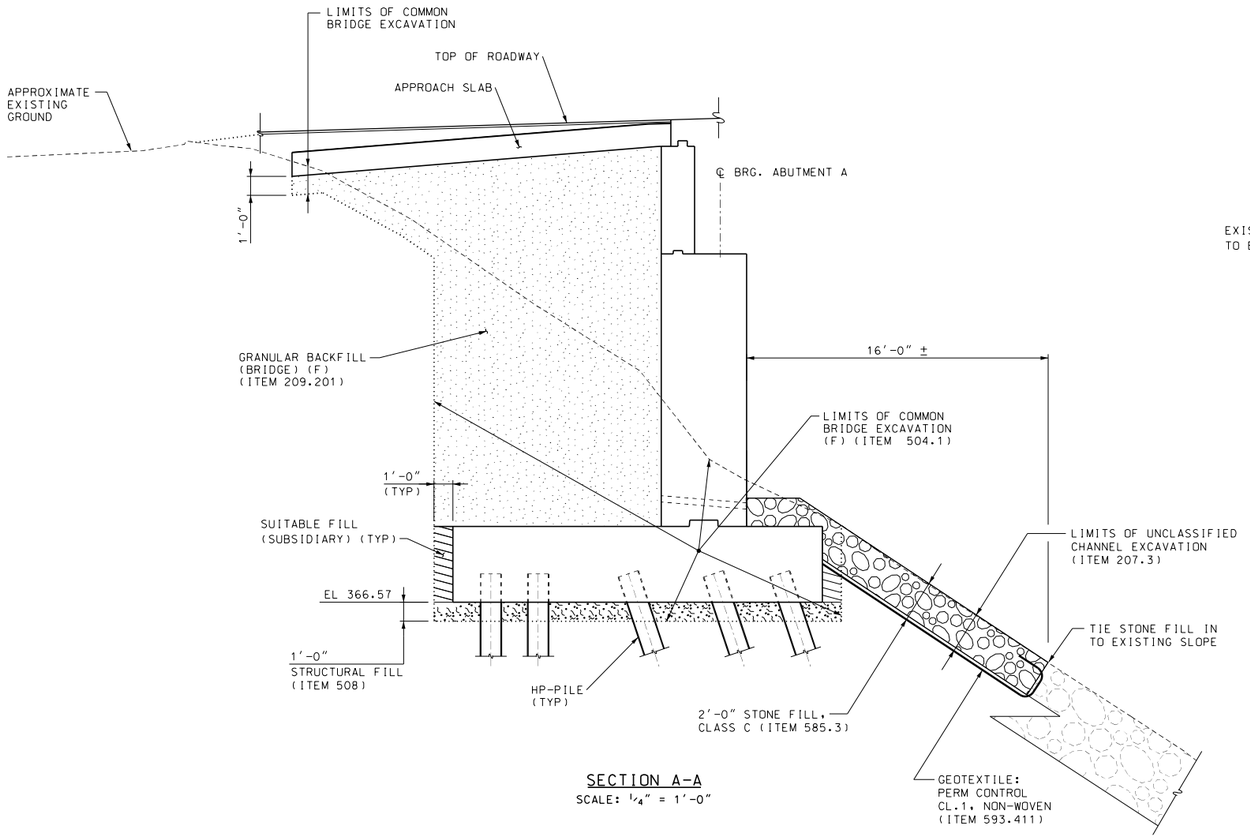
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

BRIDGE PROFILES

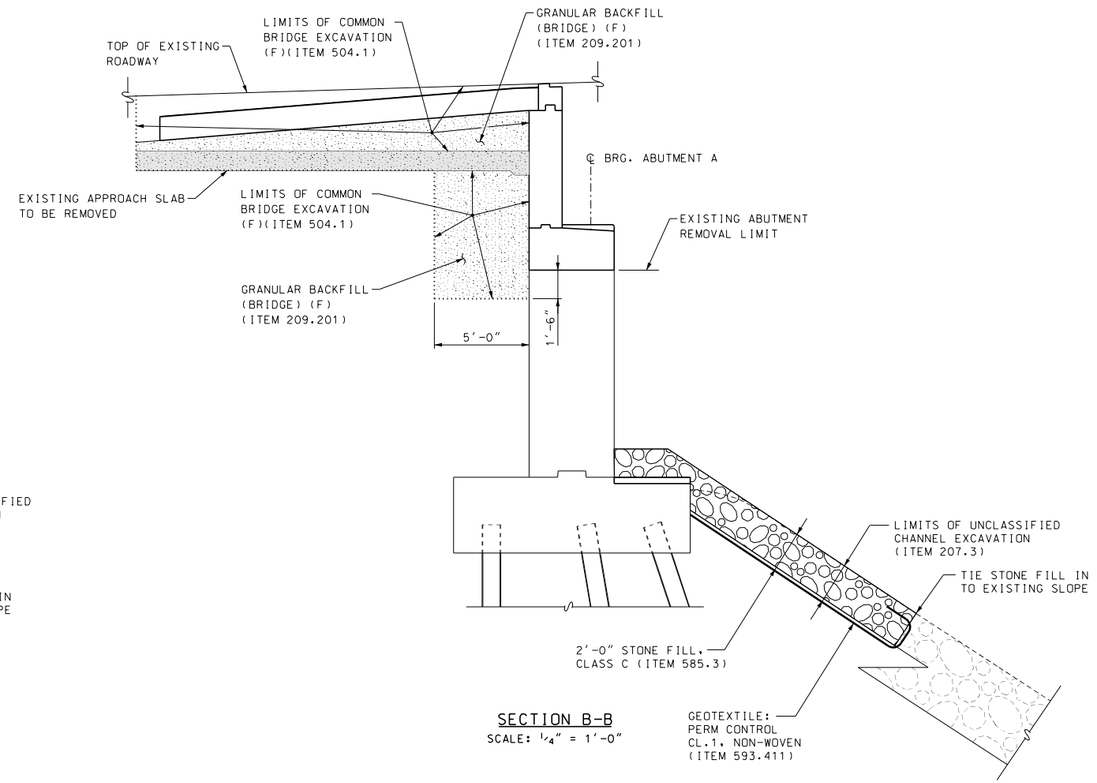
BRIDGE SHEET: 9 OF 94

FILE NUMBER: 133-1-1

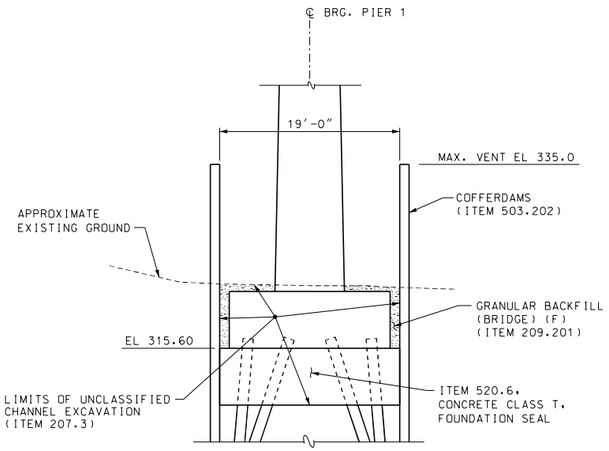
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		152	600



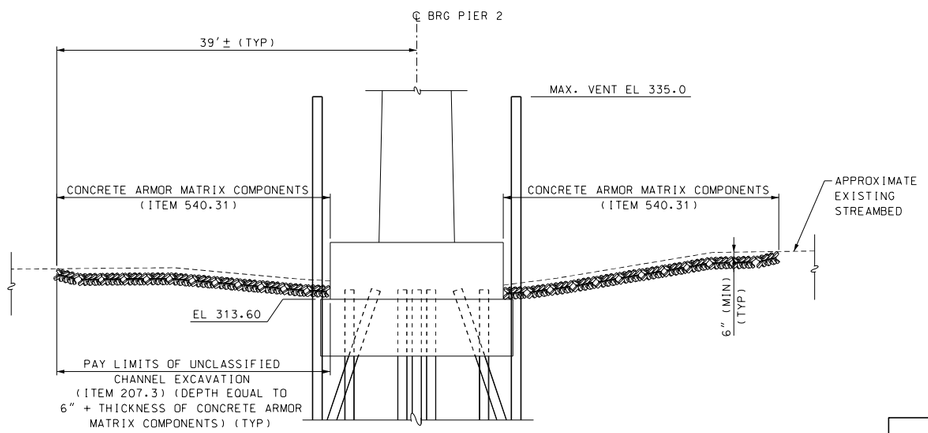
SECTION A-A
SCALE: 1/4" = 1'-0"



SECTION B-B
SCALE: 1/4" = 1'-0"



SECTION I-I
SCALE: 1/8" = 1'-0"



SECTION C-C
SCALE: 1/8" = 1'-0"

LEGEND:

GRANULAR BACKFILL (BRIDGE) (F) (ITEM 209.201)

EXISTING APPROACH SLAB TO BE REMOVED (ITEM 502. - REMOVAL OF EXISTING BRIDGE STRUCTURE)

NOTE:

1. FOR LOCATION OF SECTIONS, SEE BRIDGE SHEET 7.

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

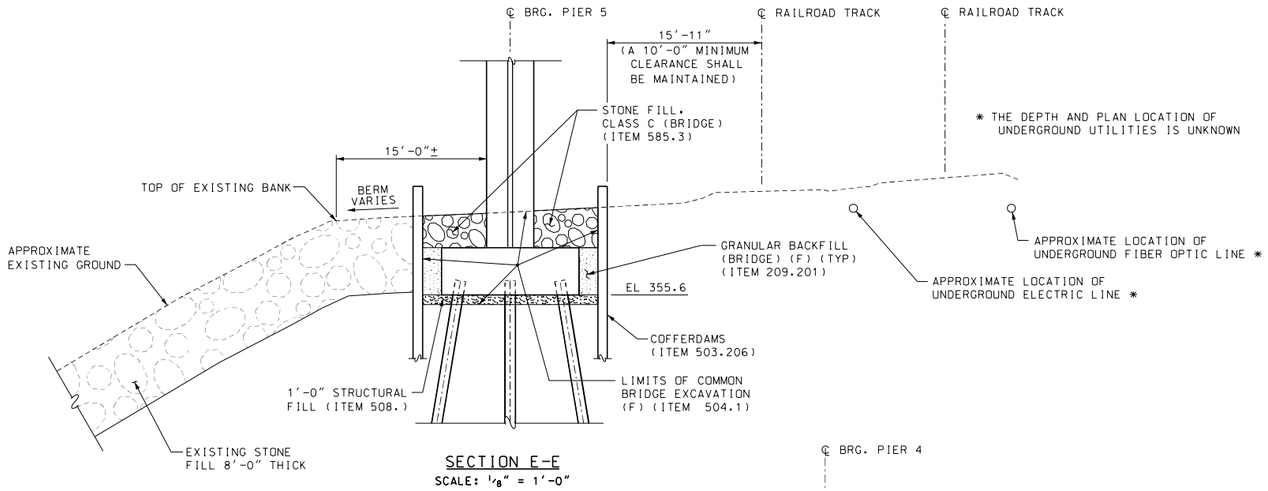
EARTHWORK SECTIONS (1 OF 2)

BRIDGE SHEET: 10 OF 94

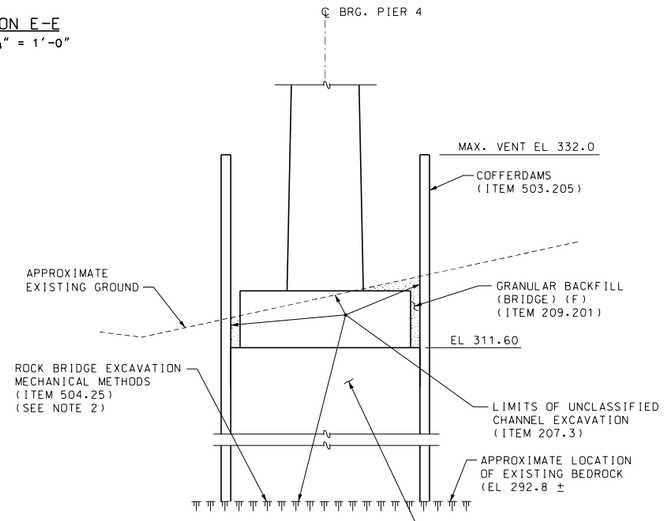
REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	JAL	06/19
DRAWN	SLM	06/19	CHECKED	RLJ	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

FILE NUMBER: 133-1-1

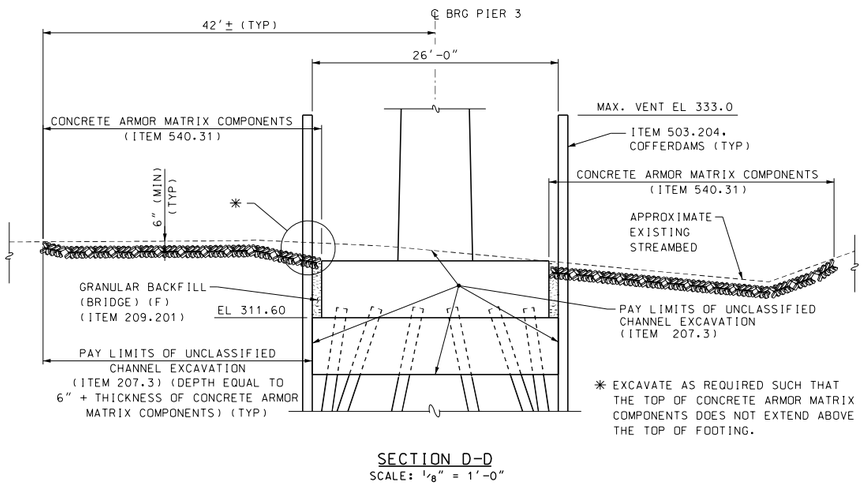
ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	153	600



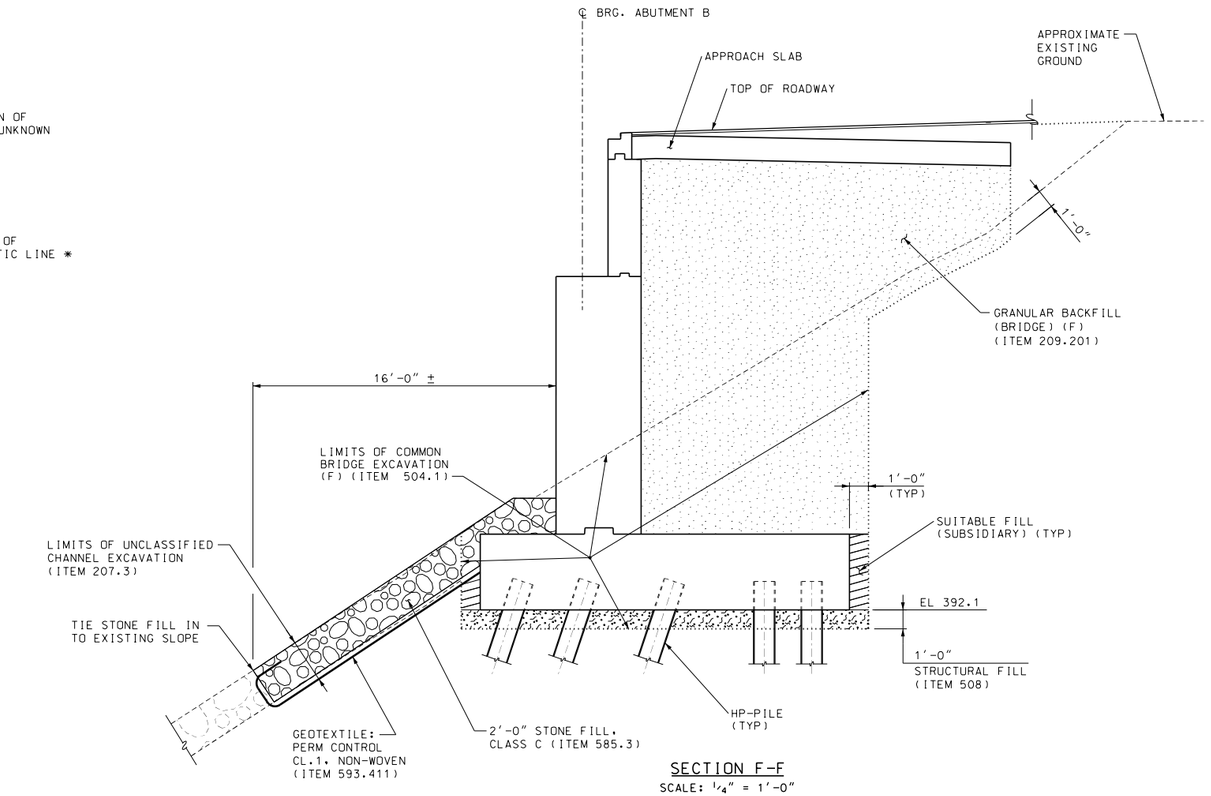
SECTION E-E
SCALE: 1/8" = 1'-0"



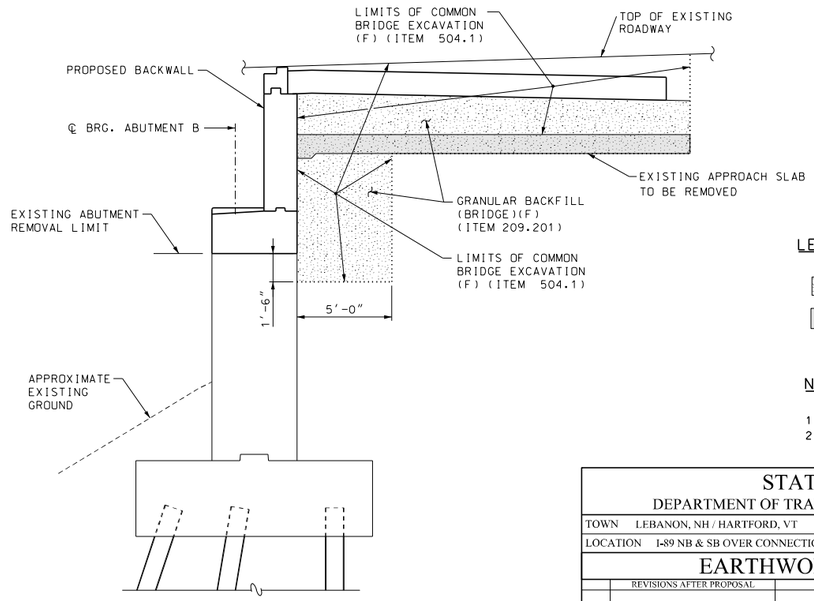
SECTION H-H
SCALE: 1/8" = 1'-0"



SECTION D-D
SCALE: 1/8" = 1'-0"



SECTION F-F
SCALE: 1/4" = 1'-0"



SECTION G-G
SCALE: 1/4" = 1'-0"

LEGEND:

GRANULAR BACKFILL (BRIDGE) (F) (ITEM 209.201)

EXISTING APPROACH SLAB TO BE REMOVED (ITEM 502. - REMOVAL OF EXISTING BRIDGE STRUCTURE)

NOTES:

1. FOR LOCATION OF SECTIONS, SEE BRIDGE SHEETS 7 & 8.
2. SEE FOUNDATION NOTE 4 ON BRIDGE SHEET 4.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

EARTHWORK SECTIONS (2 OF 2)

BRIDGE SHEET 11 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE

	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	JAL	06/19
DRAWN	SLM	06/19	CHECKED	RLJ	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

FILE NUMBER 133-1-1

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	154	600

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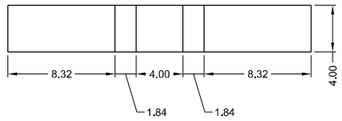
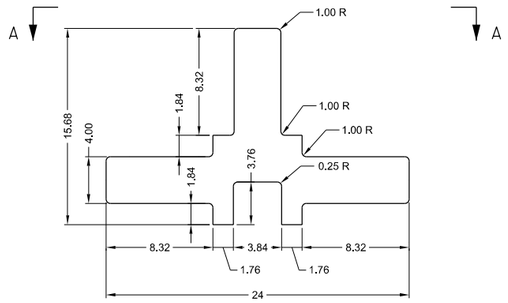


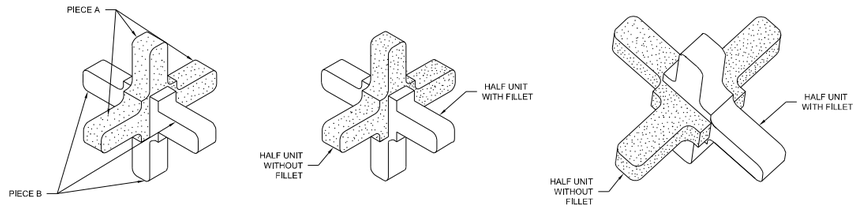
VIEW A-A
N.T.S.



ALL DIMENSIONS IN INCHES.

ELEVATION
N.T.S.

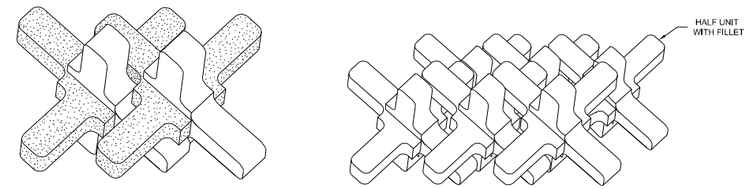
A-JACKS HALF COMPONENT (24-INCH)



1. IDENTIFY A-JACKS COMPONENTS

2. IDENTIFY CORNERS WITH AND WITHOUT FILLETS

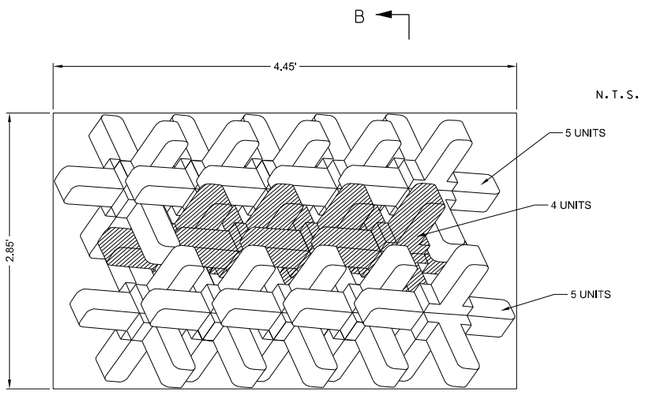
3. PROPER ROTATION OF A-JACKS



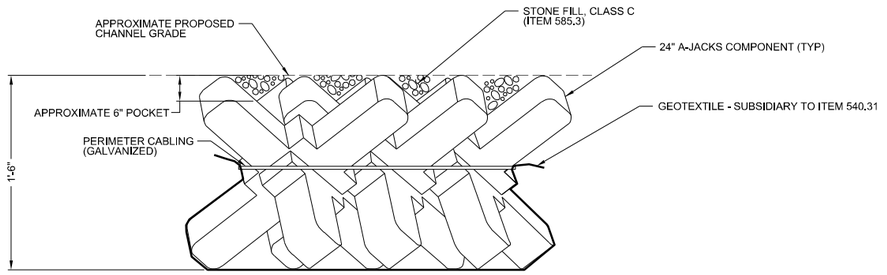
4. ALIGN ALL A-JACKS IN SAME DIRECTION CORNERS WITHOUT FILLET MUST LINE UP.

5. INSTALL 2ND ROW OF A-JACKS USING SAME ALIGNMENT

A-JACKS LAYOUT DETAIL
N.T.S.



24" A-JACKS BUNDLE
(14 UNITS = 1,064 LBS)
N.T.S.
(SEE NOTE 1)



SECTION B-B
N.T.S.

NOTES

1. THE 5-4-5 BUNDLE IS A REPRESENTATIVE MINIMUM. ACTUAL BUNDLE SIZE TO BE DETERMINED BY THE CONTRACTOR BASED ON THE CONTRACTOR'S LIFTING EQUIPMENT CAPACITY.
2. PLACE BUNDLES WITH LONG AXIS PARALLEL TO THE FLOW OF THE RIVER.
3. EXISTING STREAMBED IS APPROXIMATELY BASED ON CONTOURS FROM 2015 SURVEY. THE CONTRACTOR SHALL DETERMINE STREAMBED ELEVATIONS AND PREPARE A CHANNEL BOTTOM CONTOUR MAP PRIOR TO COMMENCEMENT OF WORK.
4. REFER TO SECTION 540 SPECIAL PROVISION FOR ADDITIONAL INFORMATION.

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 — STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

PRECAST CONCRETE REVETMENT DETAILS

BRIDGE SHEET: 12 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

FEDERAL PROJECT NO.: A001(154)
SHEET NO.: 155
FILE NUMBER: 133-1-1
TOTAL SHEETS: 600

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-1
SHEET: 1 of 5
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Ben Cross

Type of Rig: ATV
Rig Model: Mobile B-53
Drilling Method: Drive & Wash

Boring Location: 413946.1N, 809340.4E
Ground Surface Elev. (ft.): 387
Final Boring Depth (ft.): 138
Date Start - Finish: 10/6/2014 - 10/14/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5" & 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/14/14	0807	67	3.5 hrs

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Elev. (ft.)
		S-1	0-2	24	18	3 4 8 15	12	S-1: Medium dense, brown, fine to medium SAND, trace Silt, trace root fibers.					
5		S-2	4-6	24	8	10 28 29 28	57	S-2: Very dense, brown, fine to coarse SAND, some Gravel, trace Silt.	1				
10		S-3	9-11	24	6	8 12 12 12	24	S-3: Medium dense, brown, SILT, little fine to coarse Sand, trace Gravel.					
15		S-4	14-15.3	16	5	44 56 50/4"	R	S-4: Very dense, brown, fine to coarse SAND, trace Silt, trace Gravel.				FILL	
20		S-5	19-21	24	7	16 46 31 24	77	S-5: Very dense, brown, fine to medium SAND, little Silt, trace Gravel.					
25		S-6	24-26	24	1	10 22 31 37	53	S-6: Very dense, brown, fine to medium SAND, trace Gravel, trace Silt.					
30		S-7	29-	15	5	24 62	R	S-7: Very dense, gray-brown, fine to medium SAND, little					

BOTTOM OF ABUTMENT A FOOTING EL 366.60

REMARKS

1 - Advanced 5-inch-diameter casing to 75 feet below ground surface then telescoped with 4-inch-diameter casing to 128 feet below ground surface.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-1

GZA TEMPLATE TEST BORING, 11/19/2014 1:34:23 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-1
SHEET: 2 of 5
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Ben Cross

Type of Rig: ATV
Rig Model: Mobile B-53
Drilling Method: Drive & Wash

Boring Location: 413946.1N, 809340.4E
Ground Surface Elev. (ft.): 387
Final Boring Depth (ft.): 138
Date Start - Finish: 10/6/2014 - 10/14/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5" & 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/14/14	0807	67	3.5 hrs

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Elev. (ft.)
			30.3			50/3"		Silt, little Gravel.					
35		S-8	34-35.3	15	7	9 68 50/3"	R	S-8: Very dense, gray-brown, fine to coarse SAND, some Gravel, trace Silt.				FILL	
40		S-9	39-41	24	8	8 61 35 42	96	S-9: Very dense, gray-brown, fine to medium SAND, some Gravel, little Silt.					
45		S-10	44-46	24	10	12 36 37 34	73	S-10: Very dense, gray-brown, fine to medium SAND, little Gravel, trace Silt.					
50		S-11	49-51	24	7	23 30 22 22	52	S-11: Very dense, gray, fine SAND, some Silt, trace Gravel.				SILTY SAND	
55		S-12	54-56	24	10	13 12 12 16	24	S-12: Medium dense, brown, fine SAND, some Silt, trace Gravel.					
60		S-13	59-	7	0	52 50/1"	R	S-13: No recovery.				GRAVELLY SAND	

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-1

GZA TEMPLATE TEST BORING, 11/19/2014 1:34:23 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-1
SHEET: 3 of 5
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Ben Cross

Type of Rig: ATV
Rig Model: Mobile B-53
Drilling Method: Drive & Wash

Boring Location: 413946.1N, 809340.4E
Ground Surface Elev. (ft.): 387
Final Boring Depth (ft.): 138
Date Start - Finish: 10/6/2014 - 10/14/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5" & 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/14/14	0807	67	3.5 hrs

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Elev. (ft.)
			59.6										
65		S-14	64-66	24	6	17 21 18 29	39	S-14: Dense, gray-brown, fine to medium SAND, little Gravel, trace Silt.				GRAVELLY SAND	
70		S-15	69-69.8	10	3	76 50/4"	R	S-15: Very dense, gray-brown, fine to coarse SAND, some Gravel, trace Silt.					
75		S-16	74-76	24	10	24 31 35 38	66	S-16: Very dense, gray, fine SAND and Silt.					
80		S-17	79-81	24	3	15 33 46 61	79	S-17: Very dense, gray, fine SAND and Silt.				SILTY SAND	
85		S-18	84-86	24	8	20 36 37 43	73	S-18: Very dense, gray, fine SAND and Silt.					
90		S-19	89-91	24	10	23 23		S-19: Dense, gray, fine to medium SAND and Silt.					

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-1

GZA TEMPLATE TEST BORING, 11/19/2014 1:34:23 PM

BORING NOTES

1. BORINGS INDICATED THUS ⊕ , SEE BRIDGE SHEETS 7 & 8. BORINGS WERE MADE BY NEW ENGLAND BORING, INC. AND OBSERVED BY GZA GEOENVIRONMENTAL, INC. IN JUNE, JULY, AND OCTOBER 2014.
2. BORINGS ARE FOR DESIGN PURPOSES SHOWING CONDITIONS AT BORING POINTS ONLY AND DO NOT NECESSARILY INDICATE MATERIAL TO BE ENCOUNTERED DURING CONSTRUCTION.
3. THE GEOTECHNICAL ENGINEERING REPORT IS AVAILABLE IN THE NHDOT BUREAU OF MATERIALS AND RESEARCH OFFICE. SEE PROSECUTION OF WORK FOR MORE INFORMATION.
4. WATER LEVELS INDICATED THUS ⏚ WERE MEASURED AT THE TIME OF EXPLORATION. THE WATER LEVELS ENCOUNTERED DURING CONSTRUCTION MAY VARY CONSIDERABLY DUE TO RAINFALL, OR OTHER FACTORS.
5. FOR BORING LOGS, SEE BRIDGE SHEETS 13 THROUGH 21.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

BORING LOGS (1 OF 9)

BRIDGE SHEET 13 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	156	600

FILE NUMBER 133-1-1

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-1
SHEET: 4 of 5
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Ben Cross

Type of Rig: ATV
Rig Model: Mobile B-53
Drilling Method: Drive & Wash

Boring Location: 413946.1N, 809340.4E
Ground Surface Elev. (ft.): 387
Final Boring Depth (ft.): 138
Date Start - Finish: 10/6/2014 - 10/14/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5" & 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/14/14	0807	67	3.5 hrs

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Depth (ft.)	Stratum Description	Elev. (ft.)
						22 26	45						
95		S-20	94-96	24	12	24 35 36 36	71	S-20: Very dense, gray, fine to coarse SAND, little Silt.				SILTY SAND	
100		S-21	99-101	24	24	9 6 11 16	17	S-21: Very stiff, gray, SILT & CLAY, trace fine Sand.			99		288.0
105		S-22	104-106	24	24	5 6 6 6	12	S-22: Stiff, gray, SILT & CLAY, trace fine Sand.				SILT & CLAY	
110		S-23	109-111	24	10	26 27 39 47	66	S-23: Very dense, gray, fine to medium SAND, trace Silt.			109		278.0
115		S-24	114-116	24	6	19 19 21 22	40	S-24: Dense, gray, fine to coarse SAND, trace Silt.				SAND	
									2		116		271.0
120												GLACIAL TILL	

REMARKS

2 - Based on drill action and cuttings observed, soil from 116 to 124 feet below ground surface appears to be glacial till.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-1

GZA TEMPLATE TEST BORING, 11/19/2014 - I:\Jnl\JS\ PM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-1
SHEET: 5 of 5
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Ben Cross

Type of Rig: ATV
Rig Model: Mobile B-53
Drilling Method: Drive & Wash

Boring Location: 413946.1N, 809340.4E
Ground Surface Elev. (ft.): 387
Final Boring Depth (ft.): 138
Date Start - Finish: 10/6/2014 - 10/14/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5" & 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/14/14	0807	67	3.5 hrs

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Depth (ft.)	Stratum Description	Elev. (ft.)
												GLACIAL TILL	
125		S-25	124-124.2	2	0	70/2"	R	S-25: No recovery.	3		124.2		262.8
130	9 6 6 5	C-1	128-133	60	60	RQD = 30%		C-1: Hard, fresh, gray and white, fine grained, METAGRAYWACKE. Joints are low angle, close to moderate, undulating, rough, fresh to discolored, partially open to wide.				BEDROCK	
135	6 6 6 5 6	C-2	133-138	60	59	RQD = 47%		C-2: Hard, fresh, gray and white, fine grained, METAGRAYWACKE. Primary joints are low angle, close to moderate, undulating, rough, fresh, partially open to open. Secondary joint is vertical, undulating, smooth, fresh, partially open.			138		248.0
140	6							End of exploration at 138 feet.					
145													
150													

REMARKS

3 - Encountered top of bedrock at approximately 124.2 feet below ground surface. Advanced roller bit to approximately 128 feet below ground surface and began coring.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-1

GZA TEMPLATE TEST BORING, 11/19/2014 - I:\Jnl\JS\ PM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-2
SHEET: 1 of 4
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Sam Cooley

Type of Rig: Skid
Rig Model: CME 45
Drilling Method: Drive & Wash

Boring Location: 414041.0N, 809180.8E
Ground Surface Elev. (ft.): 321
Final Boring Depth (ft.): 109.8
Date Start - Finish: 7/15/2014 - 7/18/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
	See Note 1		

BOTTOM OF PIER 1 FOUNDATION SEAL EL 309.60

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Depth (ft.)	Stratum Description	Elev. (ft.)
		S-1	0-2	24	1	6 13 9 5	22	S-1: Medium dense, gray and brown, GRAVEL, little fine to coarse Sand, trace Silt.	1		1	GRAVEL	
5		S-2	5-7	24	5	11 5 6 6	11	S-2: Medium dense, brown, fine to medium SAND, little Silt, trace Gravel.			3		318.0
10		S-3	10-12	24	15	7 6 8 10	14	S-3: Medium dense, brown, fine to medium SAND, little Silt.				SILTY SAND	
15		S-4	15-17	24	15	3 6 10 12	16	S-4: Medium dense, brown, fine to medium SAND, some Silt, trace Gravel.					
20		S-5	20-22	24	15	3 7 10 21	17	S-5: Medium dense, brown, fine to medium SAND, some Silt.					
25		S-6	25-27	24	9	5 9 9 11	18	S-6: Medium dense, gray, fine SAND, little Silt.	2		25	SAND	296.0
30													

REMARKS

1 - Boring drilled from deck of barge in the Connecticut River. All depths are measured from mud line.
2 - Was\ water changed from brown to gray at approx. 25 feet below mudline.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-2

GZA TEMPLATE TEST BORING, 11/19/2014 - I:\Jnl\JS\ PM

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

BORING LOGS (2 OF 9)

BRIDGE SHEET 14 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		157	600

FILE NUMBER 133-1-1

McFarland Johnson

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-2
SHEET: 2 of 4
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Sam Cooley

Type of Rig: Skid
Rig Model: CME 45
Drilling Method: Drive & Wash

Boring Location: 414041.0N, 809180.8E
Ground Surface Elev. (ft.): 321
Final Boring Depth (ft.): 109.8
Date Start - Finish: 7/15/2014 - 7/18/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)			
Date	Time	Water Depth	Stab. Time
	See Note 1		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-7	30-32	24	10	8 11 22 29	33	S-7: Dense, gray, fine to medium SAND, little Silt.					
35		S-8	35-37	24	16	8 15 12 12	27	S-8: Medium dense, gray, fine to medium SAND, little Silt.				SAND	
40		S-9	40-42	24	24	5 8 7 7	15	S-9: Stiff, gray, SILT & CLAY, trace fine Sand.			45	SILT & CLAY	276.0
45		S-10	45-47	24	20	6 7 6 8	13	S-10: Medium dense, gray fine SAND, little Silt.					
50		S-11	50-52	24	6	8 13 22 25	35	S-11: Dense, gray, fine to medium SAND, trace Silt.				SAND	
55		S-12	55-57	24	15	11 24 32 27	56	S-12: Very dense, gray, fine to medium SAND, trace Gravel, trace Silt.					
60													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-2

GZA TEMPLATE TEST BORING: 11/19/2014 11:34:28 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-2
SHEET: 3 of 4
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Sam Cooley

Type of Rig: Skid
Rig Model: CME 45
Drilling Method: Drive & Wash

Boring Location: 414041.0N, 809180.8E
Ground Surface Elev. (ft.): 321
Final Boring Depth (ft.): 109.8
Date Start - Finish: 7/15/2014 - 7/18/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)			
Date	Time	Water Depth	Stab. Time
	See Note 1		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-13	60-62	24	15	7 10 14 21	24	S-13: Medium dense, gray, fine to medium SAND, trace Silt.					
65		S-14	65-67	24	16	8 15 27 30	42	S-14: Dense, gray, fine to medium SAND, trace Silt.					
70		S-15	70-72	24	21	4 9 17 44	26	S-15: Medium dense, gray, fine to medium SAND, trace Silt.				SAND	
75		S-16	75-77	24	6	21 10 9 10	19	S-16: Medium dense, gray, fine to medium SAND, little Silt, little Gravel.			78		243.0
80		S-17	80-80.8	9	9	49 50/3"	R	S-17: Very dense, gray, fine to coarse SAND, some Silt, little Gravel.				GLACIAL TILL	
85		S-18	85-87	24	15	37 31 34 43	65	S-18: Very dense, gray, fine to coarse SAND, little Silt, trace Gravel.			87.5		233.5
90									3			BEDROCK	

REMARKS

3 - Encountered top of bedrock at approximately 87.5 feet below mudline. Advanced roller bit to approximately 89.8 feet below mudline and began coring.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-2

GZA TEMPLATE TEST BORING: 11/19/2014 11:34:28 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-2
SHEET: 4 of 4
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Sam Cooley

Type of Rig: Skid
Rig Model: CME 45
Drilling Method: Drive & Wash

Boring Location: 414041.0N, 809180.8E
Ground Surface Elev. (ft.): 321
Final Boring Depth (ft.): 109.8
Date Start - Finish: 7/15/2014 - 7/18/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)			
Date	Time	Water Depth	Stab. Time
	See Note 1		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
	10	C-1	89.8-94.8	60	51	RQD = 79%		C-1: Hard, fresh, gray, fine grained METAGRAYWACKE. Joints are moderately dipping, moderately to widely spaced, rough, undulating, fresh, partially open.					
95	7 6 8	C-2	94.8-99.8	60	55	RQD = 74%		C-2: Hard, fresh, gray, fine grained METAGRAYWACKE. Joints are moderately dipping, moderately spaced, rough, undulating, fresh, open.					
100	11 7 8 8	C-3	99.8-104.8	60	58	RQD = 82%		C-3: Hard, fresh, gray, fine grained METAGRAYWACKE. Joints are moderately dipping, closely to widely spaced, rough, undulating, fresh, open.				BEDROCK	
105	6 7 5 5 5 10	C-4	104.8-109.8	60	66	RQD = 73%		C-4: Hard, fresh, gray, fine grained METAGRAYWACKE. Joints are moderately dipping, very closely to moderately spaced, rough, undulating, fresh, partially open to open.			109.8		211.2
110								End of exploration at 109.8 feet.					
115													
120													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-2

GZA TEMPLATE TEST BORING: 11/19/2014 11:34:28 PM

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

BORING LOGS (3 OF 9)

BRIDGE SHEET: 15 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE				
	REV. DATE				

FILE NUMBER: 133-1-1

FEDERAL PROJECT NO.: A001(154)

SHEET NO.: 158

TOTAL SHEETS: 600

McFarland Johnson

BOTTOM OF PIER 2 FOUNDATION SEAL
EL 307.60

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-3
SHEET: 1 of 4
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Sam Cooley

Type of Rig: Skid
Rig Model: CME 45
Drilling Method: Drive & Wash

Boring Location: 414114.5N, 809060.4E
Ground Surface Elev. (ft.): 318
Final Boring Depth (ft.): 97
Date Start - Finish: 7/2/2014 - 7/11/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
	See Note 1		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
0		S-1	0-2	24	11	6 18 13 14	31	S-1: Dense, brown, fine to coarse SAND, little Gravel, trace Silt.	1				
5		S-2	5-7	24	9	11 25 28 25	53	S-2: Very dense, brown, fine to coarse SAND, little Gravel, trace Silt.				GRAVELLY SAND	
10		S-3	10-12	24	6	6 9 9 10	18	S-3: Medium dense, brown, fine to coarse SAND, little Gravel, trace Silt.			12		306.0
15		S-4	17-19	24	14	4 6 11 13	17	S-4: Medium dense, brown, fine to medium SAND, some Silt, trace Gravel.					
20		S-5	22-24	24	16	3 5 7 9	12	S-5: Medium dense, gray, fine to medium SAND, some Silt.				SILTY SAND	
25		S-6	27-29	24	19	2 4 8 13	12	S-6: Medium dense, gray, fine to medium SAND, some Silt.					
30													

REMARKS
1 - Boring drilled from deck of barge in the Connecticut River. All depths are measured from mud line.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-3

GZA TEMPLATE TEST BORING, 11/19/2014, 1:34:27 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-3
SHEET: 2 of 4
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Sam Cooley

Type of Rig: Skid
Rig Model: CME 45
Drilling Method: Drive & Wash

Boring Location: 414114.5N, 809060.4E
Ground Surface Elev. (ft.): 318
Final Boring Depth (ft.): 97
Date Start - Finish: 7/2/2014 - 7/11/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
	See Note 1		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
35		S-7	32-34	24	15	7 11 12 17	23	S-7: Medium dense, gray, fine to medium SAND, some Silt.				SILTY SAND	
40		S-8	37-39	24	24	4 7 8 10	15	S-8: Stiff, gray, Clayey SILT.			37		281.0
45		S-9	42-44	24	19	4 4 4 4	8	S-9: Stiff, gray, Clayey SILT, trace fine to medium Sand.				CLAYEY SILT	
50		S-10	47-49	24	20	5 5 5 7	10	S-10: Stiff, gray, Clayey SILT, little fine Sand.					
55		S-11	52-54	24	13	14 32 26 24	58	S-11: Very dense, gray, fine to medium SAND, trace Gravel, trace Silt.			52		266.0
									2		54.5	SAND	263.5
											56	BOULDER	262.0
60		S-12	56.5-58.5	24	10	14 13 10 11	23	S-12: Medium dense, gray, GRAVEL, little fine to coarse Sand, trace Silt.				GLACIAL TILL	

REMARKS
2 - Encountered 1.5' thick boulder at approximately 54.5 feet below mudline.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-3

GZA TEMPLATE TEST BORING, 11/19/2014, 1:34:28 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-3
SHEET: 3 of 4
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Sam Cooley

Type of Rig: Skid
Rig Model: CME 45
Drilling Method: Drive & Wash

Boring Location: 414114.5N, 809060.4E
Ground Surface Elev. (ft.): 318
Final Boring Depth (ft.): 97
Date Start - Finish: 7/2/2014 - 7/11/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
	See Note 1		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
65		S-13	61-63	24	4	19 18 18 25	36	S-13: Dense, gray, GRAVEL, little fine to coarse Sand, trace Silt.				GLACIAL TILL	
70		S-14	65-66.1	17	5	40 88 50/1"	R	S-14: Very dense, gray, fine to coarse SAND, little Gravel, little Silt.			65		253.0
75		S-15	70-71.3	15	4	67 53 58/3"	R	S-15: Very dense, gray, fine to coarse SAND, little Silt, trace Gravel.					
		S-16	75-77	24	16	25 36 33 43	69	S-16: Very dense, gray, fine to coarse SAND, little Silt, trace Gravel.					
80													
85		S-17	80-82	24	13	38 56 44 42	100	S-17: Very dense, gray, fine to coarse SAND, little Silt, trace Gravel.					
	5	C-1	87-92	60	40	RQD = 55%		C-1: Hard, fresh, gray, fine grained METAGRAYWACKE. Joints are moderately dipping, moderately spaced, rough, undulating, fresh, and open.	3				
90	7 7										84.5	BEDROCK	233.5

REMARKS
3 - Encountered top of bedrock at approximately 84.5 feet below mudline. Advanced roller bit to approximately 87.0 feet below mudline and began coring.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-3

GZA TEMPLATE TEST BORING, 11/19/2014, 1:34:28 PM

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

BORING LOGS (4 OF 9)

BRIDGE SHEET 16 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED SIW	06/19	CHECKED JAL		06/19
	DRAWN SLM	06/19	CHECKED RLJ		06/19
	QUANTITIES DRW	06/19	CHECKED SFD		06/19
	ISSUE DATE		FEDERAL PROJECT NO.	SHEET NO.	
	REV. DATE		A001(154)	159	

FILE NUMBER 133-1-1

TOTAL SHEETS 600

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-3
SHEET: 4 of 4
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Sam Cooley

Type of Rig: Skid
Rig Model: CME 45
Drilling Method: Drive & Wash

Boring Location: 414114.5N, 809060.4E
Ground Surface Elev. (ft.): 318
Final Boring Depth (ft.): 97
Date Start - Finish: 7/2/2014 - 7/11/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
	See Note 1		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
95	6 6 7 10 9 8 9	C-2	92-97	60	55	ROD = 70%		C-2: Hard, fresh, gray and white, fine grained METAGRAYWACKE. Joints are moderately dipping, moderately spaced, rough, undulating, fresh, and open.				BEDROCK	97 221.0
								End of exploration at 97 feet.					
100													
105													
110													
115													
120													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-3

GZA TEMPLATE TEST BORING, 11/19/2014 - 1:34:28 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-4
SHEET: 1 of 3
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: C. Melby/J. Szmyt
Drilling Co.: NEBC
Foreman: Sam Cooley

Type of Rig: Skid
Rig Model: CME 45
Drilling Method: Drive & Wash

Boring Location: 414182.9N, 808953.9E
Ground Surface Elev. (ft.): 320
Final Boring Depth (ft.): 89
Date Start - Finish: 6/24/2014 - 7/2/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
	See Note 1		

BOTTOM OF PIER 3 FOUNDATION SEAL EL 305.60

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
0		S-1	0-2	24	4	5 5 7 8	12	S-1: Medium dense, gray, GRAVEL and fine to coarse Sand, trace Silt.	1				
5		S-2	3-5	24	4	8 5 4 6	9	S-2: Loose, gray, GRAVEL and fine to coarse Sand, trace Silt.				GRAVEL	
10		S-3	8-10	24	8	6 3 5 5	8	S-3: Loose, gray, fine to medium SAND, trace Silt.			8		312.0
15		S-4	13-15	24	12	3 5 7 6	12	S-4: Medium dense, gray, fine to medium SAND, trace Silt.					
20		S-5	18-20	24	14	1 5 8 10	13	S-5: Medium dense, gray, fine to medium SAND, trace Silt.				SAND	
25		S-6	23-25	24	14	3 7 9 12	16	S-6: Medium dense, gray, fine to medium SAND, trace Silt.					
30		S-7	28-30	24	16	5 13 18 16	31	S-7: Dense, gray, fine to medium SAND, trace Silt.					

REMARKS

1 - Boring drilled from deck of barge in the Connecticut River. All depths are measured from mud line.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-4

GZA TEMPLATE TEST BORING, 11/19/2014 - 1:34:28 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-4
SHEET: 2 of 3
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: C. Melby/J. Szmyt
Drilling Co.: NEBC
Foreman: Sam Cooley

Type of Rig: Skid
Rig Model: CME 45
Drilling Method: Drive & Wash

Boring Location: 414182.9N, 808953.9E
Ground Surface Elev. (ft.): 320
Final Boring Depth (ft.): 89
Date Start - Finish: 6/24/2014 - 7/2/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
	See Note 1		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
35		S-8	33-35	24	16	5 11 13 18	24	S-8: Medium dense, gray, fine to medium SAND, trace Silt.				SAND	
40		S-9	38-40	24	16	8 12 16 21	28	S-9: Medium dense, gray, fine to medium SAND, trace Silt. Bottom 2" of spoon is gray, fine SAND, little Silt.					
45		S-10	43-45	24	24	7 9 11 14	20	S-10: Very stiff, gray, SILT & CLAY.			43		277.0
50		S-11	48-50	24	24	6 10 14 10	24	S-11: Very stiff, gray, SILT & CLAY, with 4-inch-thick layer of fine Sand at bottom of sample.				SILT & CLAY	
55		S-12	53-55	24	20	10 8 11 14	19	S-12: Very stiff, gray, SILT & CLAY, with 4-inch-thick layer of fine Sand at top of sample.					
60		S-13	58-60	24	22	8 14 15 18	29	S-13: Mlediu m dense, gray, fine to medium SAND, trace Silt.			58		262.0
												SAND	

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-4

GZA TEMPLATE TEST BORING, 11/19/2014 - 1:34:28 PM

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

BORING LOGS (5 OF 9)

BRIDGE SHEET: 17 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		160	600

FILE NUMBER: 133-1-1

McFarland Johnson

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-4
SHEET: 3 of 3
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: C. Melby/J. Szmyt
Drilling Co.: NEBC
Foreman: Sam Cooley

Type of Rig: Skid
Rig Model: CME 45
Drilling Method: Drive & Wash

Boring Location: 414182.9N, 808953.9E
Ground Surface Elev. (ft.): 320
Final Boring Depth (ft.): 89
Date Start - Finish: 6/24/2014 - 7/2/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
	See Note 1		

Depth (ft)	Casing Blows/ Core Rate	No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Depth (ft.)	Stratum Description	Elev. (ft.)
65		S-14	63-65	24	20	11 12 15 27	27	S-14: Medium dense, gray, fine to medium SAND (top 12"); grading to gray SILT & CLAY (bottom 8")			58	SAND	256.0
70	5	S-15 / C-1	68-68.8 / 69-74	10 / 60	5 / 55	70 100/4" / RQD = 72%	R	S-15: Very dense, gray, GRAVEL, some fine to coarse SAND, trace Silt. (Weathered bedrock) C-1: Hard, fresh, gray and white, fine grained METAGRAYWACKE. Joints are low angle, very closely to moderately spaced, rough, undulating, discolored, and open.			68	GLACIAL TILL	251.0
75	6	C-2	74-79	60	47	RQD = 37%		C-2: Hard, fresh, gray and white, fine grained METAGRAYWACKE. Joints are low angle, closely to moderately spaced, rough, undulating, fresh, open.					
80	9	C-3	79-84	60	53	RQD = 62%		C-3: Hard, fresh, gray and white, fine grained METAGRAYWACKE. Joints are low angle, very closely to moderately spaced, rough, undulating, fresh, partially open.				BEDROCK	
85	7	C-4	84-89	60	47	RQD = 43%		C-4: Hard, fresh, gray, fine grained METAGRAYWACKE. Joints are low angle, very closely to moderately spaced, fresh, partially open.			85		235.0
90								End of exploration at 89 feet.					

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-4

GZA TEMPLATE TEST BORING, 11/19/2014 - I:\MI\30 FM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-5
SHEET: 1 of 2
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Sam Cooley

Type of Rig: Skid
Rig Model: CME 45
Drilling Method: Drive & Wash

Boring Location: 414263.5N, 808824.6E
Ground Surface Elev. (ft.): 317
Final Boring Depth (ft.): 46.2
Date Start - Finish: 7/11/2014 - 7/14/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
	See Note 1		

BOTTOM OF PIER 4 FOOTING EL 311.60

Depth (ft)	Casing Blows/ Core Rate	No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Depth (ft.)	Stratum Description	Elev. (ft.)
0		S-1	0-2	24	2	WOH/18" 3		S-1: Very loose, gray, fine to medium SAND, some wood, trace Silt.	1				
5		S-2	5-7	24	8	16 29 22 16	51	S-2: Very dense, brown and gray, GRAVEL, some fine to coarse Sand, trace Silt.				GRAVEL	
10		S-3	10-12	24	5	12 36 26 6	62	S-3: Very dense, brown and gray, GRAVEL, some fine to coarse Sand, trace Silt.			12		308.0
15		S-4	15-17	24	11	4 5 6 9	11	S-4: Medium dense, brown, fine to medium SAND, trace Silt.				SAND	
20		S-5	20-22	24	16	11 7 8 10	15	S-5: Stiff, gray, Clayey SILT, little fine Sand.			20		297.0
25	8 9 12	C-1	26.2-31.2	60	38	RQD = 14%		C-1: Hard, fresh, gray and white, fine grained METAGRAYWACKE. Joints are moderately dipping, very close to moderate, rough, undulating, discolored, open.	2		24.2	CLAYEY SILT	292.8
30	6											BEDROCK	

REMARKS

1 - Boring drilled from deck of barge in the Connecticut River. All depths are measured from mud line.
2 - Encountered top of bedrock at approximately 24.2 feet below mudline. Advanced roller bit to approximately 26.2 feet below mudline and began coring.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-5

GZA TEMPLATE TEST BORING, 11/19/2014 - I:\MI\31 FM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-5
SHEET: 2 of 2
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Sam Cooley

Type of Rig: Skid
Rig Model: CME 45
Drilling Method: Drive & Wash

Boring Location: 414263.5N, 808824.6E
Ground Surface Elev. (ft.): 317
Final Boring Depth (ft.): 46.2
Date Start - Finish: 7/11/2014 - 7/14/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
	See Note 1		

Depth (ft)	Casing Blows/ Core Rate	No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Depth (ft.)	Stratum Description	Elev. (ft.)
35	6 5 5 5	C-2	31.2-36.2	60	31	RQD = 52%		C-2: Hard, fresh, gray and white, fine grained METAGRAYWACKE. Joints are moderately dipping, close to moderately spaced, rough, undulating, discolored, open.					
40	5 4 5 4	C-3	36.2-41.2	60	55	RQD = 75%		C-3: Hard, fresh, gray and white, fine grained METAGRAYWACKE. Joints are moderately dipping, very close to moderately spaced, rough, undulating, fresh, and open with sand and silt infilling.				BEDROCK	
45	6 4 7 7 7 7	C-4	41.2-46.2	60	60	RQD = 57%		C-4: Hard, fresh, gray and white, fine grained METAGRAYWACKE. Joints are moderately high angle to moderately dipping, very close to moderately spaced, rough, undulating, fresh and open with sand and silt infilling.			46.2		270.8
50								End of exploration at 46.2 feet.					
55													
60													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-5

GZA TEMPLATE TEST BORING, 11/19/2014 - I:\MI\31 FM

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

BORING LOGS (6 OF 9)

BRIDGE SHEET: 18 OF 94

FILE NUMBER: 133-1-1

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

ISSUE DATE		FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		A001(154)	161	600

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-6
SHEET: 1 of 3
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Ben Cross

Type of Rig: ATV
Rig Model: Mobile B-53
Drilling Method: ODEX

Boring Location: 414333.5N, 808700.4E
Ground Surface Elev. (ft.): 365
Final Boring Depth (ft.): 68
Date Start - Finish: 10/24/2014 - 10/28/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)			
Date	Time	Water Depth	Stab. Time
10/28/14	1300	36	0.5 hrs

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Elev. (ft.)
		S-1	C-1.2	14	9	7 24 50/2"	R	S-1: Very dense, brown, fine to coarse SAND, little Silt, trace Gravel, trace root fibers.					
5		S-2	4-6	24	0	13 51 21 40	72	S-2: No recovery.	1			RIP RAP	
		S-3	9-11	24	10	14 22 27 20	49	S-3: Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt.					
15		S-4	14-16	24	13	10 7 8 16	16	S-4: Medium dense, brown, fine to coarse SAND, little Gravel, little Silt.				FILL	
20		S-5	19-21	24	19	3 4 5 5	9	S-5: Stiff, gray, Clayey SILT, trace fine Sand.				CLAYEY SILT	
25		S-6	24-26	24	13	6 7 8 10	15	S-6: Stiff, gray, Clayey SILT, trace fine Sand, with seam of brown, fine to medium Sand from approximately 24 to 24.2 feet below ground surface.					
30		S-7	29-31	24	7	14 22		S-7: Very dense, brown, fine to coarse SAND, little				GLACIAL TILL	

BOTTOM OF PIER 5 FOOTING EL 355.60

REMARKS
1 - Cobble/boulders (rip rap) encountered from 0 to 8 feet below ground surface.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-6

GZA TEMPLATE TEST BORING, 11/19/2014, 1:34:10 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-6
SHEET: 2 of 3
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Ben Cross

Type of Rig: ATV
Rig Model: Mobile B-53
Drilling Method: ODEX

Boring Location: 414333.5N, 808700.4E
Ground Surface Elev. (ft.): 365
Final Boring Depth (ft.): 68
Date Start - Finish: 10/24/2014 - 10/28/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)			
Date	Time	Water Depth	Stab. Time
10/28/14	1300	36	0.5 hrs

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Elev. (ft.)
						30 32	52	Gravel, trace Silt.					
35		S-8	34-34.3	4	0	70/4"	R	S-8: No recovery. Rock in tip of spoon.				GLACIAL TILL	
40		S-9	39-41	24	24	5 7 9 7	16	S-9: Medium dense, gray-brown, SILT, trace fine Sand.					
45		S-10	44-46	24	9	11 19 27 19	46	S-10: Dense, gray-brown, fine to coarse SAND and Gravel, little Silt.	2			BOULDER	
50		S-11	49-51	24	7	14 8 14 25	22	S-11: Medium dense, brown, fine to coarse SAND, little Gravel, trace Silt.				GLACIAL TILL	
55		S-12	54-54.3	3	0	50/3"	R	S-12: No recovery. Rock in tip of spoon.	3			BEDROCK	
60	5 7	C-1	58-63	60	59	RQD = 82%		C-1: Hard, fresh, gray and white, fine grained METAGRAYWACKE. Joints are moderately dipping, very					

REMARKS
2 - Cored through boulder from approximately 41.5 to 44 feet below ground surface.
3 - Top of bedrock encountered at approximately 56 feet below ground surface. Advanced ODEX to 58 feet below ground surface and began coring.
4 - Poor water return during coring at approximately 60 feet below ground surface.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-6

GZA TEMPLATE TEST BORING, 11/19/2014, 1:34:10 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-6
SHEET: 3 of 3
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Ben Cross

Type of Rig: ATV
Rig Model: Mobile B-53
Drilling Method: ODEX

Boring Location: 414333.5N, 808700.4E
Ground Surface Elev. (ft.): 365
Final Boring Depth (ft.): 68
Date Start - Finish: 10/24/2014 - 10/28/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)			
Date	Time	Water Depth	Stab. Time
10/28/14	1300	36	0.5 hrs

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Elev. (ft.)
	7 6							close to moderately spaced, rough, undulating, fresh, partially open to open.	4 5				
65	6 4 4 4 6 4	C-2	63-68	60	57	RQD = 38%		C-2: Hard, fresh, gray and white, fine grained METAGRAYWACKE. Joints are low angle to moderately dipping, extremely close to moderately spaced, rough, undulating, fresh to discolored, partially open with gray silt infilling observed at approximately 67 feet below ground surface.	6			BEDROCK	
70								End of exploration at 68 feet.					
75													
80													
85													
90													

REMARKS
5 - Regained good water return during coring at approximately 60.5 feet below ground surface.
6 - No water return during coring at approximately 63 feet below ground surface.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-6

GZA TEMPLATE TEST BORING, 11/19/2014, 1:34:10 PM

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

BORING LOGS (7 OF 9)

BRIDGE SHEET 19 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

FEDERAL PROJECT NO. A001(154)

SHEET NO. 162

TOTAL SHEETS 600

FILE NUMBER 133-1-1

McFarland Johnson

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-7
SHEET: 1 of 4
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Ben Cross

Type of Rig: ATV
Rig Model: Mobile B-53
Drilling Method: Spin Casing ODEX

Boring Location: 414439.0N, 808560.0E
Ground Surface Elev. (ft.): 418
Final Boring Depth (ft.): 98.5
Date Start - Finish: 10/15/2014 - 10/23/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5" & 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/23/14	1230	52	1.5 hrs

Depth (ft)	Casing Blows/ Core Rate	No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Elev. (ft.)
											0.25	ASPHALT	417.8
0		S-1	0.3-2.3	24	11	26 29 21 11	50	S-1: Very dense, brown, fine to medium SAND, some Gravel, trace Silt.	1				
5		S-2	4-4.2	2	0	50/2"	R	S-2: No recovery. Rock in tip of spoon.	2				
10		S-3	9-11	24	0	12 20 33 22	53	S-3: No recovery. Rock in tip of spoon.					
15		S-4	14-14.7	8	2	52 50/2"	R	S-4: Very dense, gray, GRAVEL, little fine to coarse Sand, trace Silt.				FILL	
20		S-5	19-21	24	10	30 31 30 27	61	S-5: Very dense, brown, fine to coarse SAND, some Gravel, little Silt.					
25		S-6	24-24.2	2	0	50/2"	R	S-6: No recovery.					
30		S-7	29-	8	0	19 50/2"	R	S-7: No recovery. Rock in tip of spoon.					

BOTTOM OF ABUTMENT B FOOTING EL 392.10

REMARKS
1 - After several attempts to drive casing, switched to spun casing from 0 to 45 feet below ground surface. ODEX casing used to advance boring from 45 to 87 feet below ground surface.
2 - Frequent cobbles and boulders encountered from 4 feet to 87 feet below ground surface.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-7

GZA TEMPLATE TEST BORING; 11/19/2014; 1:34:34 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-7
SHEET: 2 of 4
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Ben Cross

Type of Rig: ATV
Rig Model: Mobile B-53
Drilling Method: Spin Casing ODEX

Boring Location: 414439.0N, 808560.0E
Ground Surface Elev. (ft.): 418
Final Boring Depth (ft.): 98.5
Date Start - Finish: 10/15/2014 - 10/23/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5" & 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/23/14	1230	52	1.5 hrs

Depth (ft)	Casing Blows/ Core Rate	No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Elev. (ft.)
			29.7										
35		S-8	34-36	24	1	7 3 15 33	18	S-8: Medium dense, gray GRAVEL, little fine to medium Sand, trace Silt.					
40		S-9	39-41	24	5	26 15 32 48	47	S-9: Dense, brown, fine to coarse SAND and Gravel, trace Silt.					
45		S-10	44.5-46.5	24	6	57 39 18 42	57	S-10: Very dense, gray-brown, GRAVEL, some fine to coarse Sand, trace Silt.	3			FILL	
50		S-11	50-52	24	1	47 17 13 17	30	S-11: Dense, gray-brown, GRAVEL, little fine to medium Sand, trace Silt.	4				
55		S-12	54.5-56.5	24	1	31 32 23 12	55	S-12: Very dense, gray-brown, GRAVEL, little fine to medium Sand, trace Silt.					
60													

REMARKS
3 - Encountered approximately 1.5-foot-diameter boulder at approximately 43 feet below ground surface.
4 - Encountered approximately 2-foot-diameter boulder at approximately 48 feet below ground surface.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-7

GZA TEMPLATE TEST BORING; 11/19/2014; 1:34:34 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-7
SHEET: 3 of 4
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Ben Cross

Type of Rig: ATV
Rig Model: Mobile B-53
Drilling Method: Spin Casing ODEX

Boring Location: 414439.0N, 808560.0E
Ground Surface Elev. (ft.): 418
Final Boring Depth (ft.): 98.5
Date Start - Finish: 10/15/2014 - 10/23/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5" & 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/23/14	1230	52	1.5 hrs

Depth (ft)	Casing Blows/ Core Rate	No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Elev. (ft.)
60		S-13	59.5-61.5	24	4	16 14 12 19	26	S-13: Medium dense, gray-brown, fine to coarse SAND and Gravel, trace Silt.	5			FILL	
65		S-14	64-65.7	20	9	18 28 25 50/2"	53	S-14: Very dense, brown, fine to medium SAND, some Gravel, trace Silt.			64	SAND	354.0
70		S-15	69-71	24	12	19 25 26 18	51	S-15: Very dense, gray-brown, GRAVEL, little Silt, little fine to coarse Sand.			69	GLACIAL TILL	349.0
75		S-16	74-76	24	10	17 25 15 12	40	S-16: Dense, brown, fine to coarse SAND, some Gravel, little Silt.	6				
80		S-17	79-81	24	4	6 3 8 11	11	S-17: Medium dense, brown, fine to coarse SAND, little Silt, little Gravel.					
85									7		87	BEDROCK	331.0
90	4	C 1	88.5	60	54	RQD = 33%		C 1: Hard, fresh, gray and white, fine grained METAGRAYWACKE. Joints are low angle to moderately	8				

REMARKS
5 - Encountered approximately 2.2-foot-diameter encountered at approximately 65.7 feet below ground surface.
6 - Encountered approximately 2.9-foot-diameter at approximately 83 feet below ground surface.
7 - Top of bedrock encountered at approximately 87 feet below ground surface. Advanced ODEX to 88.5 feet below ground surface and began coring.
8 - No water returned during coring.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-7

GZA TEMPLATE TEST BORING; 11/19/2014; 1:34:34 PM

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

BORING LOGS (8 OF 9)

BRIDGE SHEET 20 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

FILE NUMBER 133-1-1

FEDERAL PROJECT NO. A001(154)

SHEET NO. 163

TOTAL SHEETS 600

McFarland Johnson

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*

McFarland Johnson, Inc.
Br. Nos. 044/103 and 044/104
I-89 over Connecticut River
Lebanon, NH - Hartford, VT

EXPLORATION NO.: B-7
SHEET: 4 of 4
PROJECT NO: 04.0190052.00
REVIEWED BY: DGL

Logged By: J. Szmyt
Drilling Co.: NEBC
Foreman: Ben Cross

Type of Rig: ATV
Rig Model: Mobile B-53
Drilling Method: Spin Casing ODEX

Boring Location: 414439.0N, 808560.0E
Ground Surface Elev. (ft.): 418
Final Boring Depth (ft.): 98.5
Date Start - Finish: 10/15/2014 - 10/23/2014

H. Datum: NH State Plane
V. Datum: NAVD88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5" & 4"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NX

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/23/14	1230	52	1.5 hrs

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remarks	Field Test Data	Elev. (ft.)	Stratum Description	Elev. (ft.)
	4							dipping, extremely close to close, rough, undulating, fresh to discolored, partially open to open.					
	4												
	4												
	6	C-2	93.5-98.5	60	60	RQD = 65%		C-2: Hard, fresh, gray and white, fine grained METAGRAYWACKE. Joints are low angle to moderately dipping, very close to wide, rough, undulating, fresh, partially open to open.				BEDROCK	
95	8												
	6												
	8												
	8										98.5		319.5
								End of exploration at 98.5 feet.					
100													
105													
110													
115													
120													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-7

GZA TEMPLATE TEST BORING, 11/19/2014 - 1:34:34 PM

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

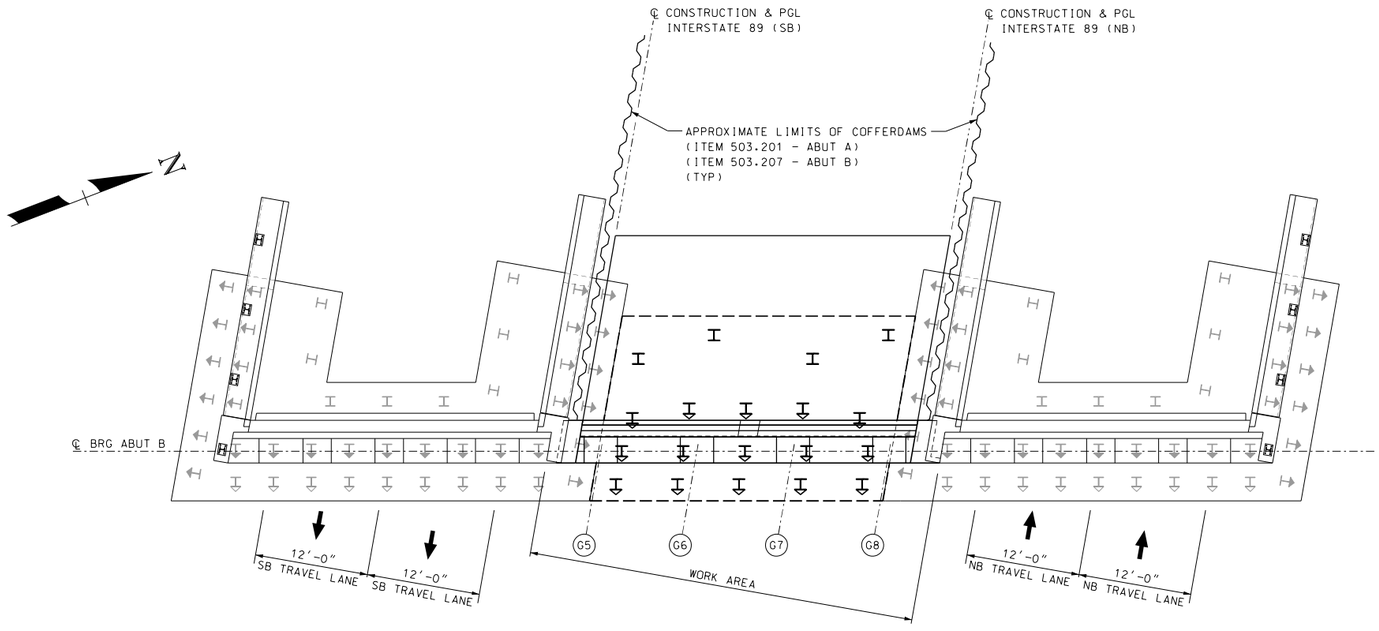
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

BORING LOGS (9 OF 9)

BRIDGE SHEET 21 OF 94

REVISIONS AFTER PROPOSAL			BY	DATE		BY	DATE
		DESIGNED	SIW	06/19	CHECKED	JAL	06/19
		DRAWN	SLM	06/19	CHECKED	RLJ	06/19
		QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
		ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
		REV. DATE		A001(154)		164	600

FILE NUMBER 133-1-1



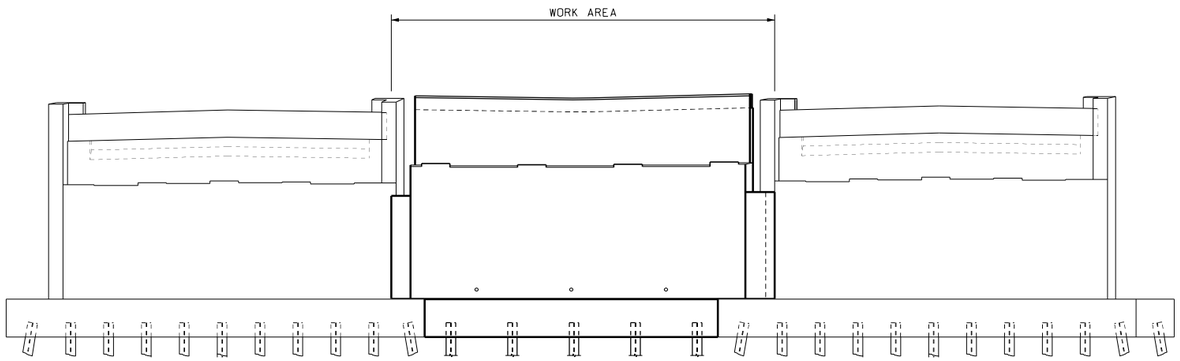
SOUTHBOUND NORTHBOUND

PHASE 1 - PLAN

SCALE: 1/8" = 1'-0"

(ABUTMENT B SHOWN, ABUTMENT A SIMILAR)

(ROADWAY TRAFFIC CONTROL PLAN - PHASE 1)



SOUTHBOUND NORTHBOUND

PHASE 1 - ELEVATION

SCALE: 1/8" = 1'-0"

(ABUTMENT B SHOWN, ABUTMENT A SIMILAR)

(ROADWAY TRAFFIC CONTROL PLAN - PHASE 1)

NOTES

1. FOR CONSTRUCTION SEQUENCE NOTES, SEE BRIDGE SHEET 5.

LEGEND

➡ DIRECTION OF TRAFFIC

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

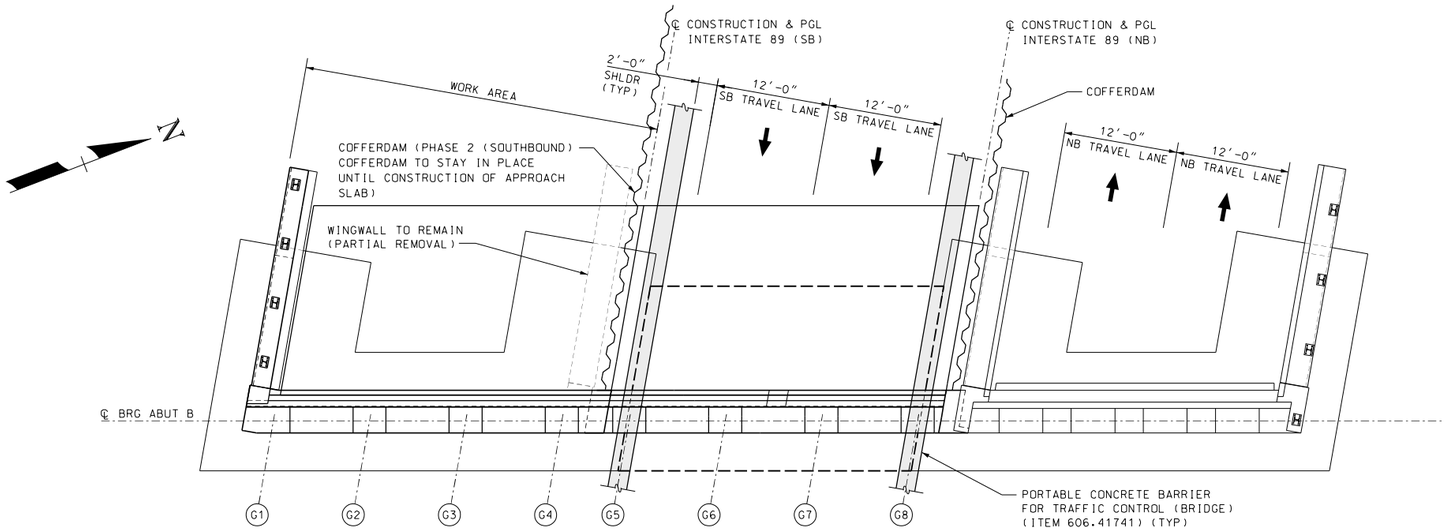
ABUTMENT CONSTRUCTION PHASING (1 OF 3)

BRIDGE SHEET 22 OF 94

FILE NUMBER 133-1-1

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	165	600



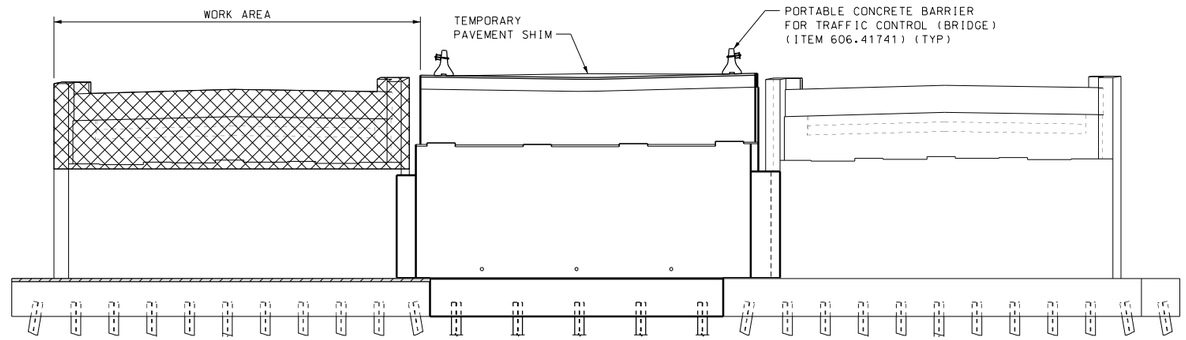
SOUTHBOUND (EXISTING AND PROPOSED PILES NOT SHOWN FOR CLARITY) NORTHBOUND

PHASE 2B - PLAN

SCALE: 1/8" = 1'-0"

(ABUTMENT B SHOWN, ABUTMENT A SIMILAR)

(ROADWAY TRAFFIC CONTROL PLAN - PHASE 2)



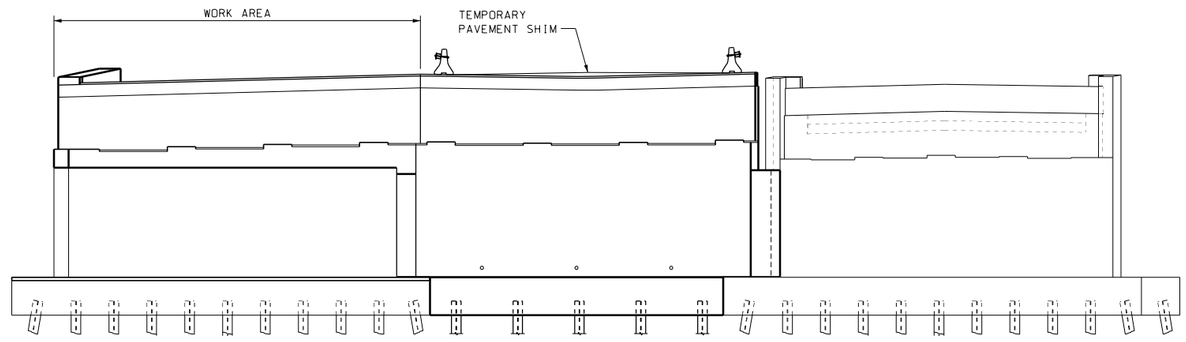
SOUTHBOUND NORTHBOUND

PHASE 2A - ELEVATION

SCALE: 1/8" = 1'-0"

(ABUTMENT B SHOWN, ABUTMENT A SIMILAR)

(ROADWAY TRAFFIC CONTROL PLAN - PHASE 2)



SOUTHBOUND NORTHBOUND

PHASE 2B - ELEVATION

SCALE: 1/8" = 1'-0"

(ABUTMENT B SHOWN, ABUTMENT A SIMILAR)

(ROADWAY TRAFFIC CONTROL PLAN - PHASE 2)

LEGEND

ABUTMENT REMOVAL

FOOTING REMOVAL (ABUTMENT A ONLY)

DIRECTION OF TRAFFIC

NOTES

1. FOR CONSTRUCTION SEQUENCE NOTES, SEE BRIDGE SHEET 5.

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

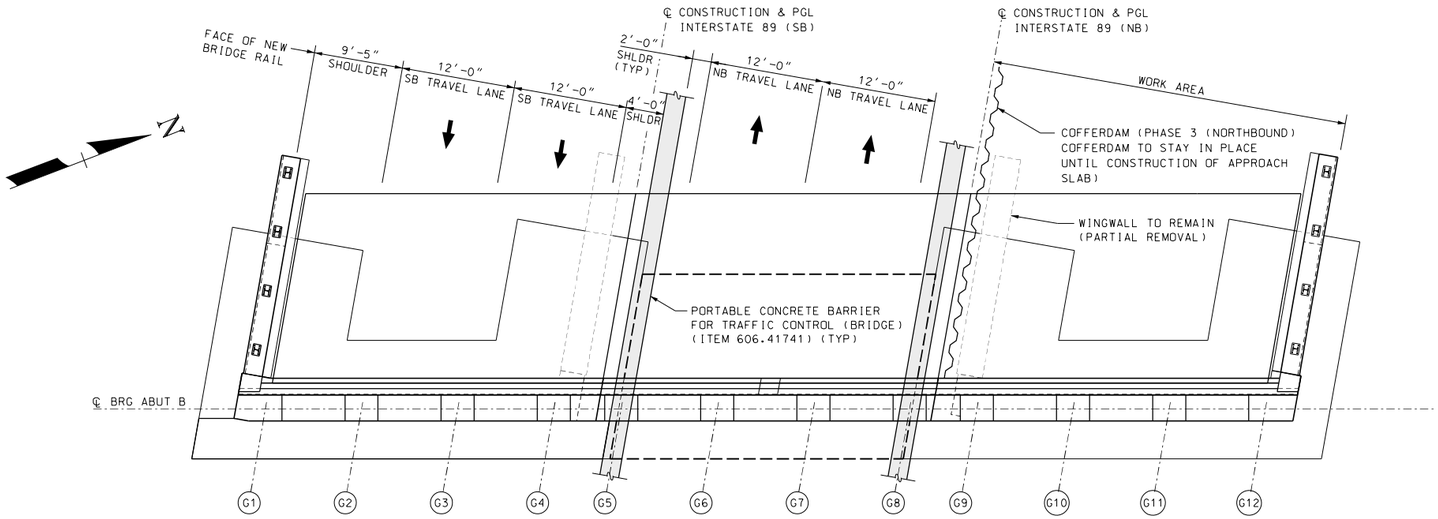
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

ABUTMENT CONSTRUCTION PHASING (2 OF 3)

BRIDGE SHEET 23 OF 94

FILE NUMBER 133-1-1

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		166	600



SOUTHBOUND

(EXISTING AND PROPOSED PILES NOT SHOWN FOR CLARITY)

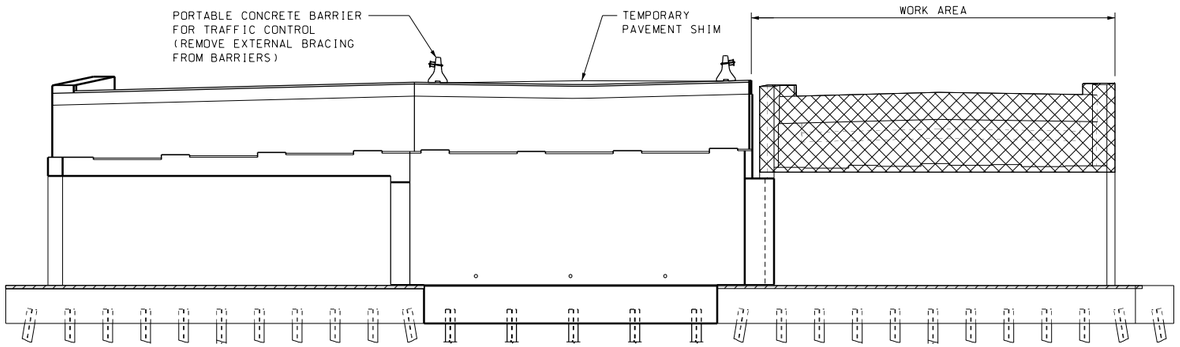
NORTHBOUND

PHASE 3B – PLAN

SCALE: 1/8" = 1'-0"

(ABUTMENT B SHOWN, ABUTMENT A SIMILAR)

(ROADWAY TRAFFIC CONTROL PLAN – PHASE 4)



SOUTHBOUND

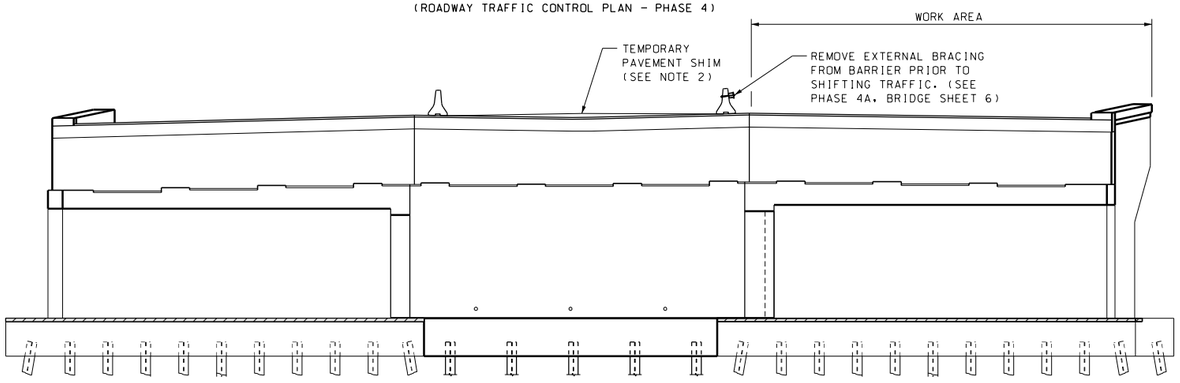
NORTHBOUND

PHASE 3A – ELEVATION

SCALE: 1/8" = 1'-0"

(ABUTMENT B SHOWN, ABUTMENT A SIMILAR)

(ROADWAY TRAFFIC CONTROL PLAN – PHASE 4)



SOUTHBOUND

NORTHBOUND

PHASE 3B – ELEVATION

SCALE: 1/8" = 1'-0"

(ABUTMENT B SHOWN, ABUTMENT A SIMILAR)

(ROADWAY TRAFFIC CONTROL PLAN – PHASE 4)

LEGEND

- ABUTMENT REMOVAL
- FOOTING REMOVAL (ABUTMENT A ONLY)
- DIRECTION OF TRAFFIC

NOTES

1. FOR CONSTRUCTION SEQUENCE NOTES, SEE BRIDGE SHEET 5.
2. PHASE 3B REPRESENTS THE FINAL MASONRY FOR BOTH ABUTMENT A AND B. THE TEMPORARY PAVEMENT SHIM AND PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL WILL BE REMOVED AS PART OF PHASE 4A WHICH IS SHOWN ON BRIDGE SHEET 6.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

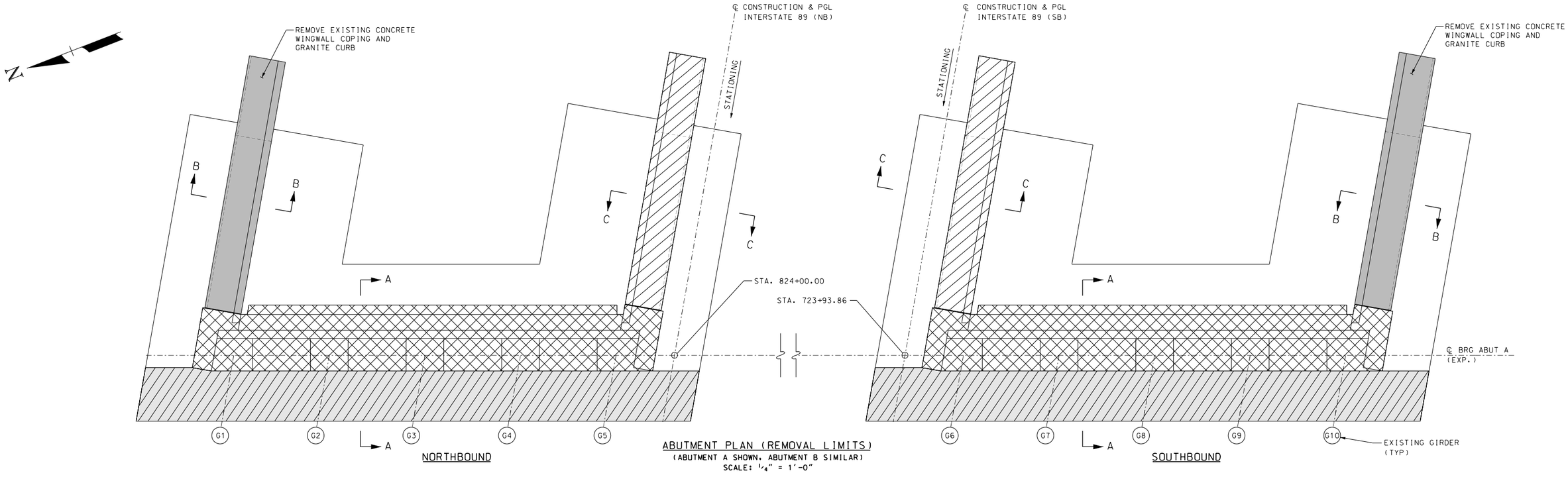
ABUTMENT CONSTRUCTION PHASING (3 OF 3)

REVISIONS AFTER PROPOSAL			BY	DATE		BY	DATE
		DESIGNED	SIW	06/19	CHECKED	JAL	06/19
		DRAWN	SLM	06/19	CHECKED	RLJ	06/19
		QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
		ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	
		REV. DATE		A001(154)		167	

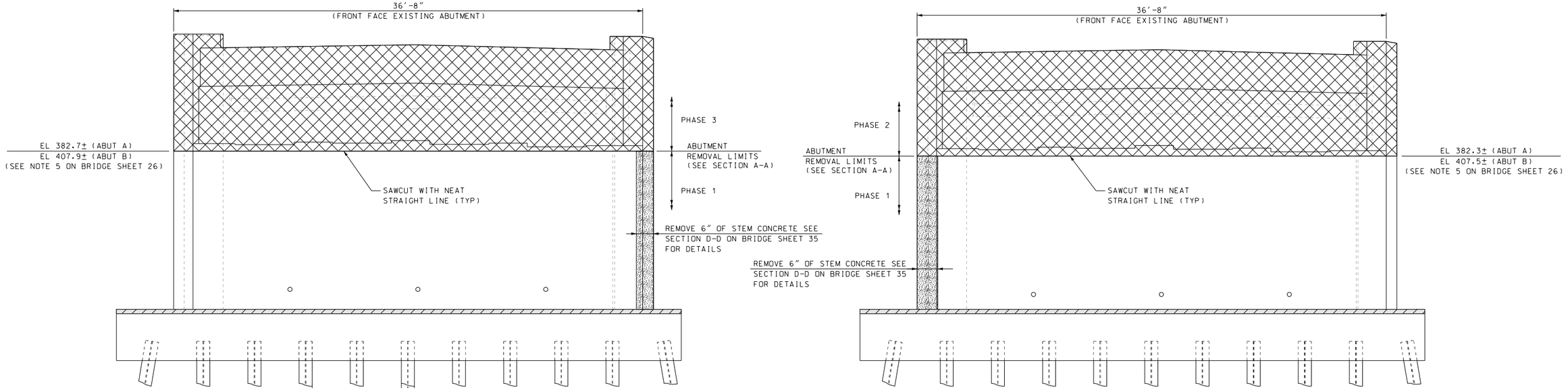
BRIDGE SHEET 24 OF 94

FILE NUMBER 133-1-1

TOTAL SHEETS 600



ABUTMENT PLAN (REMOVAL LIMITS)
(ABUTMENT A SHOWN, ABUTMENT B SIMILAR)
SCALE: 1/4" = 1'-0"



ABUTMENT ELEVATION (REMOVAL LIMITS)
(ABUTMENT A SHOWN, ABUTMENT B SIMILAR)
SCALE: 1/4" = 1'-0"

LEGEND

- ABUTMENT REMOVAL LIMITS
- WINGWALL REMOVAL LIMITS
- WINGWALL COPING REMOVAL LIMITS
- 6" PORTION OF ABUTMENT STEM REMOVAL LIMITS
- FOOTING REMOVAL LIMITS (ABUTMENT A ONLY) (ITEM 512.02, PREPARATION FOR CONCRETE REPAIRS, CLASS II)

NOTES

1. FOR PROJECT NOTES, SEE BRIDGE SHEET 3.
2. FOR INFORMATION REGARDING PROJECT ELEVATIONS, SEE BRIDGE SHEET 3, GENERAL NOTE 1.
3. FOR SECTIONS A-A, B-B, AND C-C, SEE BRIDGE SHEET 26.
4. FOR WINGWALL ELEVATIONS, SEE BRIDGE SHEET 26.
5. ABUTMENT AND WINGWALL REMOVAL PAID UNDER ITEM 502., REMOVAL OF EXISTING BRIDGE STRUCTURE.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 — STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

ABUTMENT AND WINGWALL REMOVAL LIMITS

BRIDGE SHEET: 25 OF 94

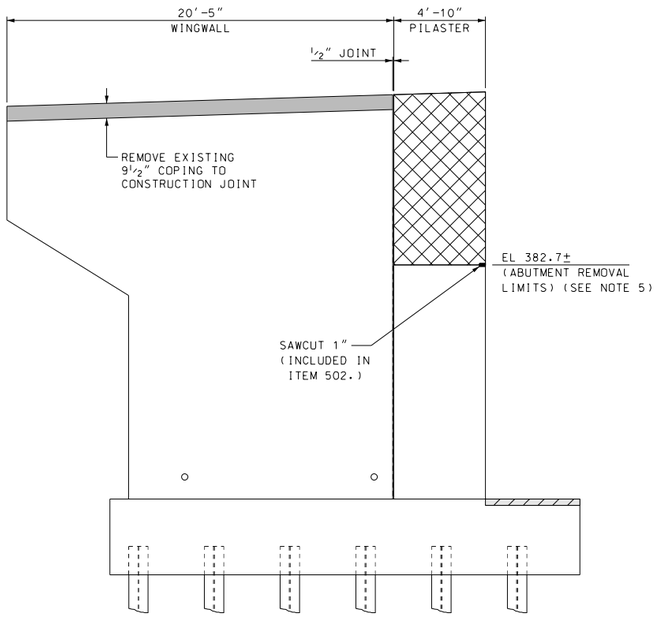
REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	JAL	06/19
DRAWN	SLM	06/19	CHECKED	RLJ	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
ISSUE DATE					
REV. DATE					

FILE NUMBER: 133-1-1

FEDERAL PROJECT NO.: A001(154)

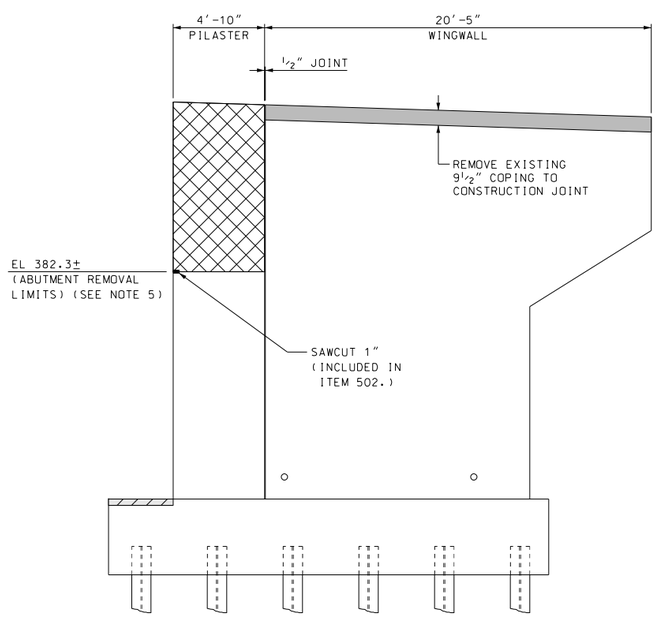
SHEET NO.: 168

TOTAL SHEETS: 600



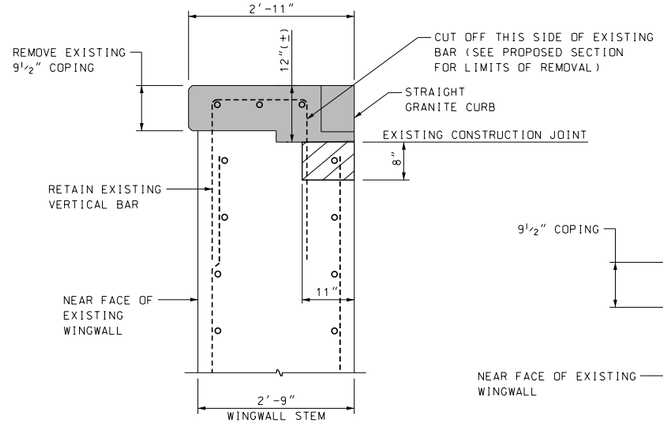
NE WINGWALL ELEVATION (ABUTMENT A - NORTHBOUND)

SCALE: 1/4" = 1'-0"



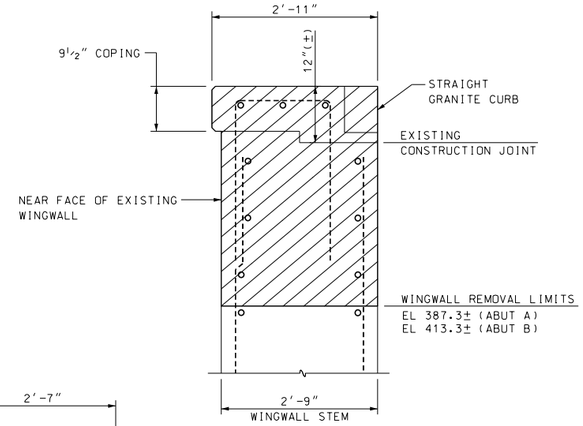
SE WINGWALL ELEVATION (ABUTMENT A - SOUTHBOUND)

SCALE: 1/4" = 1'-0"



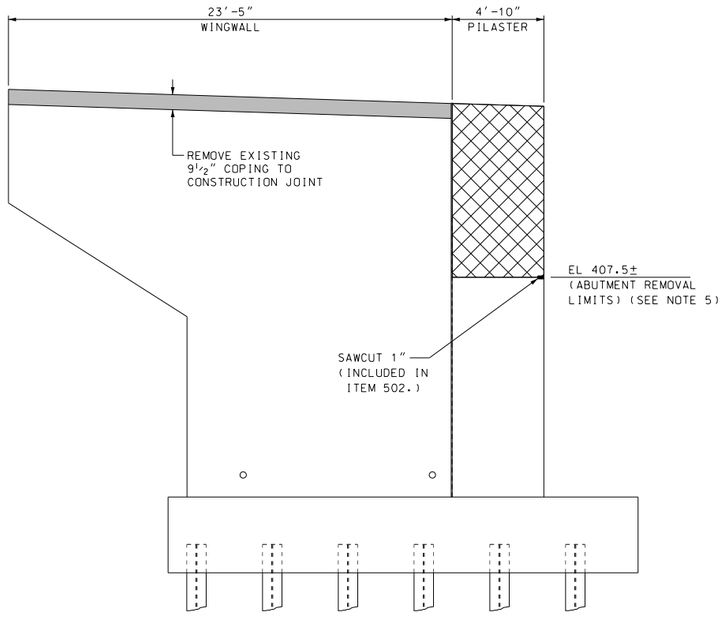
SECTION B-B

SCALE: 3/4" = 1'-0"



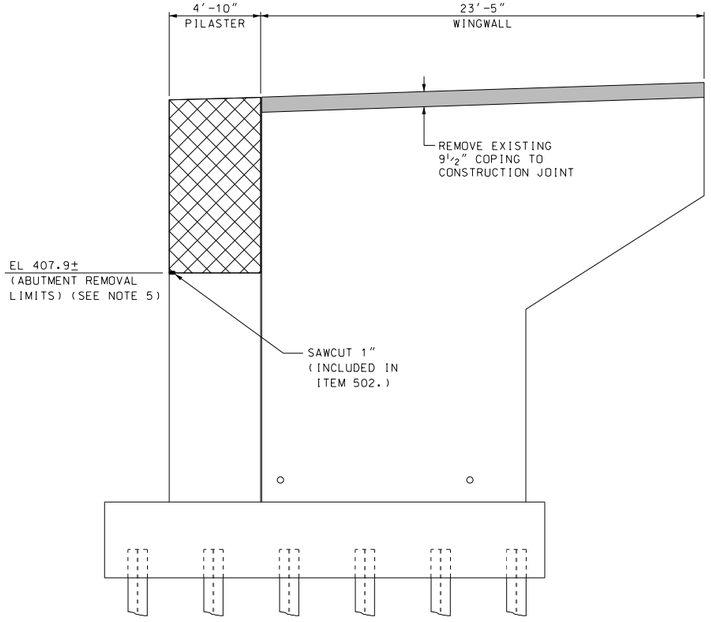
SECTION C-C

SCALE: 3/4" = 1'-0"



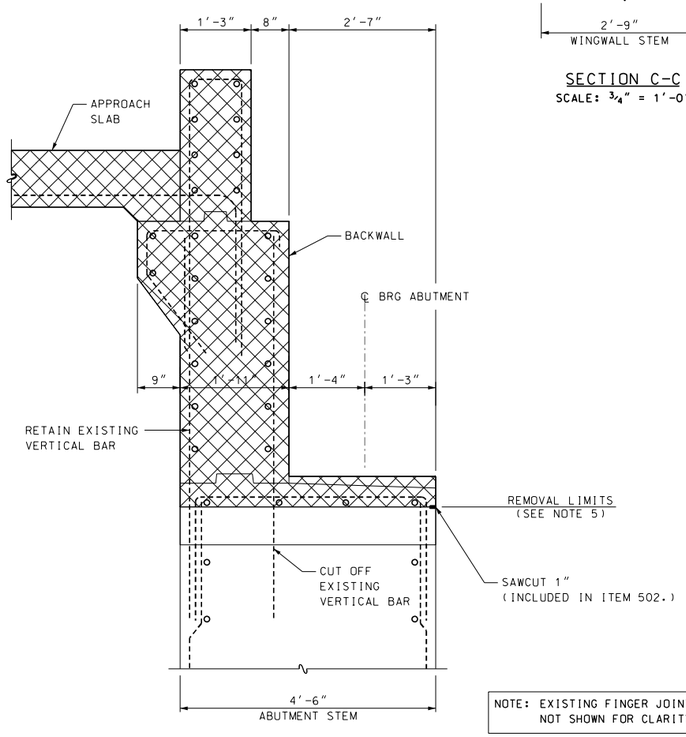
SW WINGWALL ELEVATION (ABUTMENT B - SOUTHBOUND)

SCALE: 1/4" = 1'-0"



NW WINGWALL ELEVATION (ABUTMENT B - NORTHBOUND)

SCALE: 1/4" = 1'-0"



SECTION A-A

SCALE: 3/4" = 1'-0"

NOTE: EXISTING FINGER JOINT STRUCTURAL STEEL NOT SHOWN FOR CLARITY.

LEGEND

- ABUTMENT AND APPROACH SLAB REMOVAL LIMITS
- WINGWALL REMOVAL LIMITS
- WINGWALL COPING REMOVAL LIMITS
- FOOTING REMOVAL LIMITS (ABUTMENT A ONLY) (ITEM 512.02, PREPARATION FOR CONCRETE REPAIRS, CLASS II)

NOTES

1. FOR PROJECT NOTES, SEE BRIDGE SHEET 3.
2. FOR INFORMATION REGARDING PROJECT ELEVATIONS, SEE BRIDGE SHEET 3, GENERAL NOTE 1.
3. FOR LOCATION OF SECTIONS A-A, B-B, AND C-C, SEE BRIDGE SHEET 25.
4. ABUTMENT AND WINGWALL REMOVAL PAID UNDER ITEM 502., REMOVAL OF EXISTING BRIDGE STRUCTURE.
5. 1" SAWCUT SHALL BE A NEAT STRAIGHT LINE FROM END TO END OF ABUTMENT STEM. REMOVAL OF CONCRETE AT THE TOP OF THE EXISTING ABUTMENT STEMS SHALL BE MINIMIZED SUCH THAT THE TOP LONGITUDINAL BARS ARE EXPOSED SO THAT THEIR LOCATION CAN BE CONFIRMED PRIOR TO DRILLING AND GROUTING BARS.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

ABUTMENT AND WINGWALL REMOVAL DETAILS

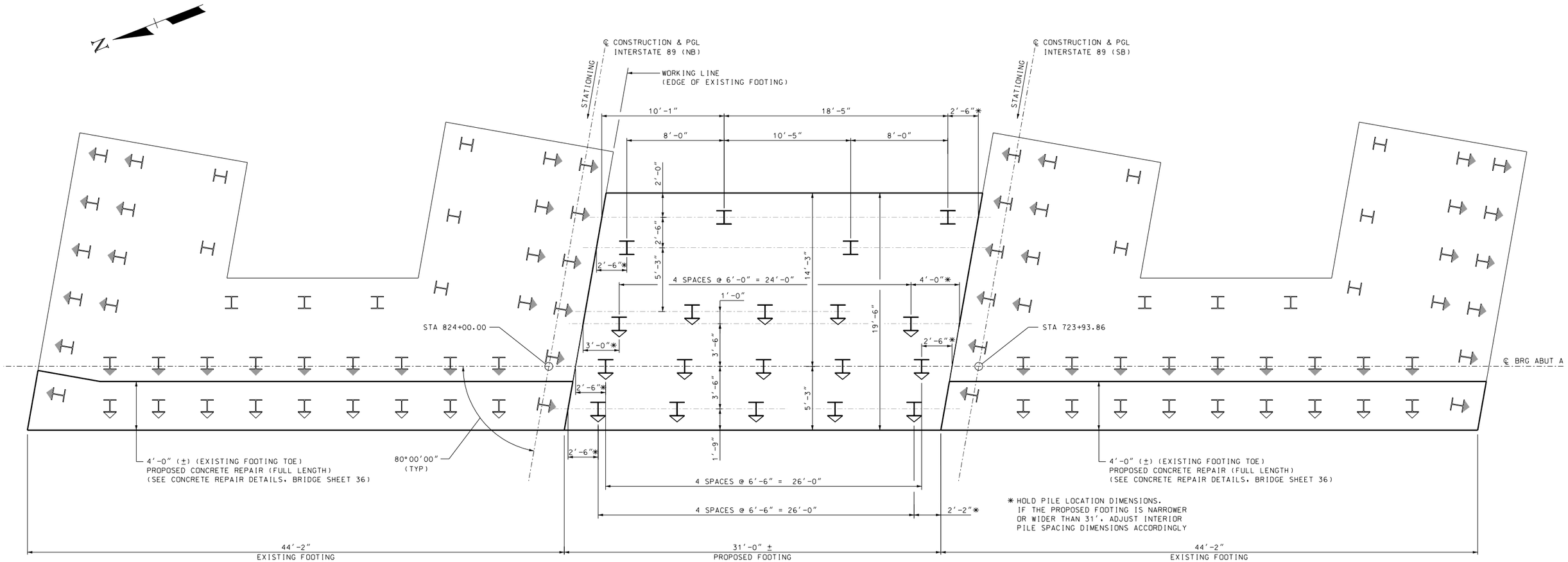
REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	JAL	06/19
DRAWN	SLM	06/19	CHECKED	RLJ	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	169	600

BRIDGE SHEET 26 OF 94

FILE NUMBER 133-1-1



ABUTMENT A FOOTING AND PILE LAYOUT PLAN
SCALE: 1/4″ = 1′-0″

LEGEND

- PROPOSED VERTICAL PILE
- PROPOSED BATTERED PILE
  4 HORIZONTAL TO 12 VERTICAL
- EXISTING VERTICAL PILE
- EXISTING BATTERED PILE
  4 HORIZONTAL TO 12 VERTICAL
- EXISTING BATTERED PILE
  2 HORIZONTAL TO 12 VERTICAL

NOTES

1. FOR PROJECT NOTES AND PILE NOTES, SEE BRIDGE SHEET 3.
2. EXISTING PILES ARE 12BP53 AND PROPOSED PILES ARE HP14X73.

McFarland Johnson

STATE OF NEW HAMPSHIRE
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TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

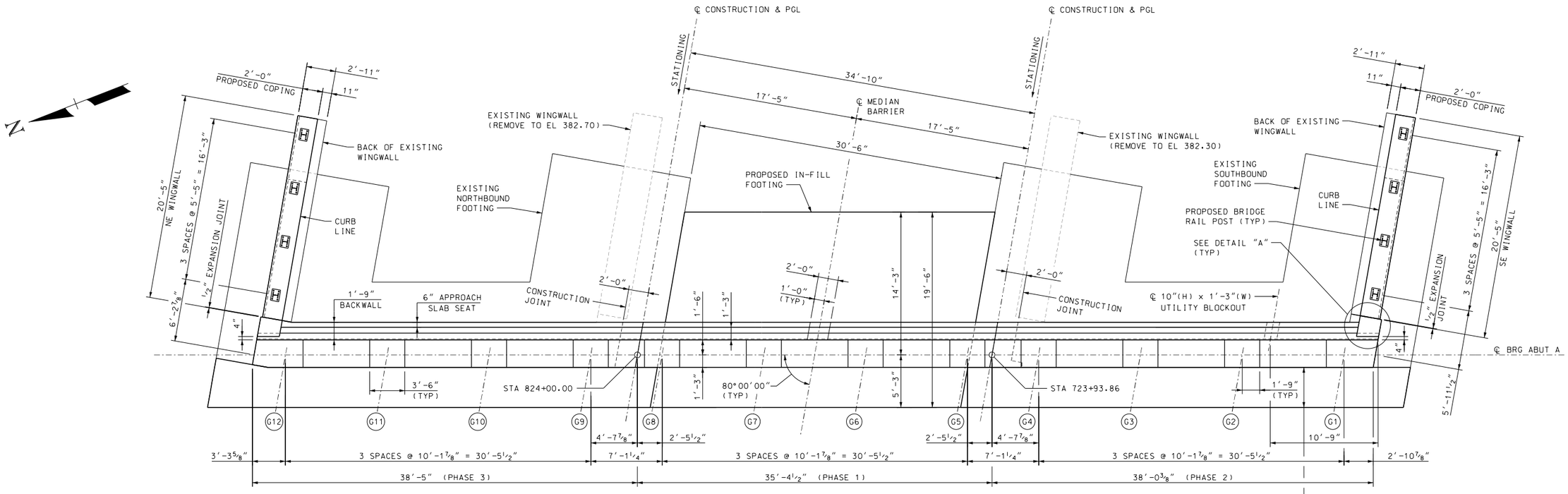
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

ABUTMENT A FOOTING

BRIDGE SHEET 27 OF 94

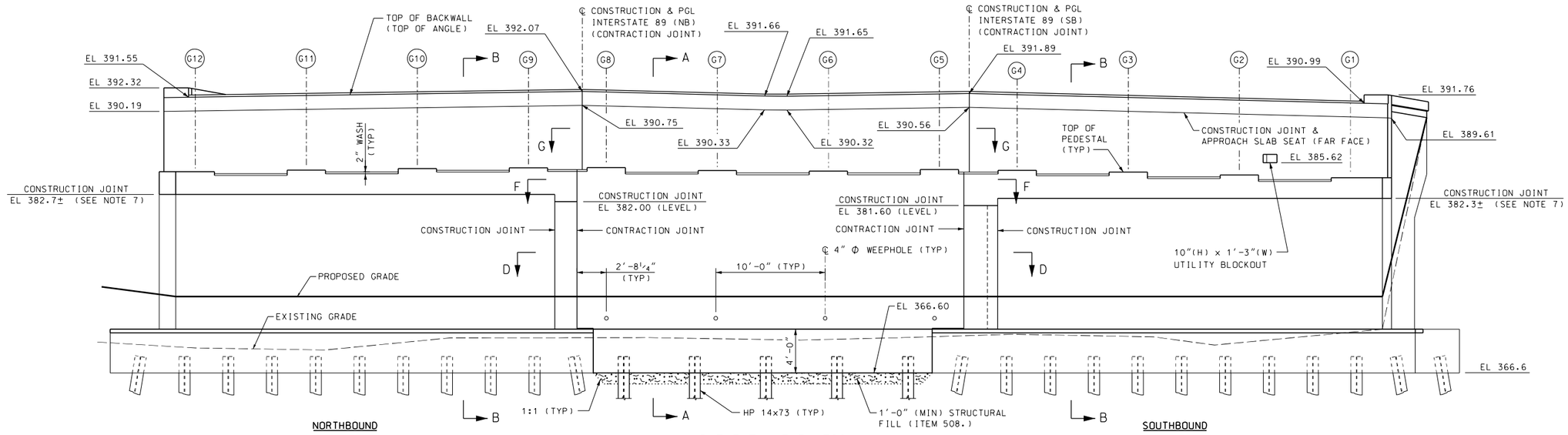
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

FEDERAL PROJECT NO. A001(154)
SHEET NO. 170
FILE NUMBER 133-1-1
TOTAL SHEETS 600



ABUTMENT A PLAN

SCALE: 3/16″ = 1′-0″
(PILES NOT SHOWN FOR CLARITY)



ABUTMENT A ELEVATION

SCALE: 3/16″ = 1′-0″

TOP OF PEDESTAL ELEVATIONS (SEE NOTE 1)

GIRDER	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12
ELEVATION	384.18	384.44	384.69	384.86	384.94	384.79	384.85	385.10	385.09	385.03	384.88	384.73

NOTES

1. THE ELEVATIONS SHOWN IN THE TOP OF PEDESTAL ELEVATIONS TABLE ARE APPROXIMATE. THE FINAL TOP OF PEDESTAL ELEVATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED WITH THE BEARING SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION OF THE ABUTMENT PEDESTALS.
2. TOP OF BACKWALL ELEVATIONS ARE GIVEN AT THE NEAR FACE OF BACKWALL (TOP OF 8″x 8″x 1″ ANGLE).
3. APPROACH SLAB SEAT/CONSTRUCTION JOINT ELEVATIONS ARE GIVEN AT THE FAR FACE OF BACKWALL.
4. FOR SECTIONS A-A AND B-B, SEE BRIDGE SHEET 33.
5. FOR SECTIONS D-D, F-F AND G-G, SEE BRIDGE SHEET 35.
6. FOR DETAIL "A", SEE BRIDGE SHEET 34.
7. 1″ SAWCUT SHALL BE A NEAT STRAIGHT LINE FROM END TO END OF ABUTMENT STEM. REMOVAL OF CONCRETE AT THE TOP OF THE EXISTING ABUTMENT STEMS SHALL BE MINIMIZED SUCH THAT THE LOCATION OF THE TOP LONGITUDINAL BARS CAN BE CONFIRMED PRIOR TO DRILLING AND GROUTING BARS.
8. FOR UTILITY BLOCKOUT DETAIL, SEE BRIDGE SHEET 34.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

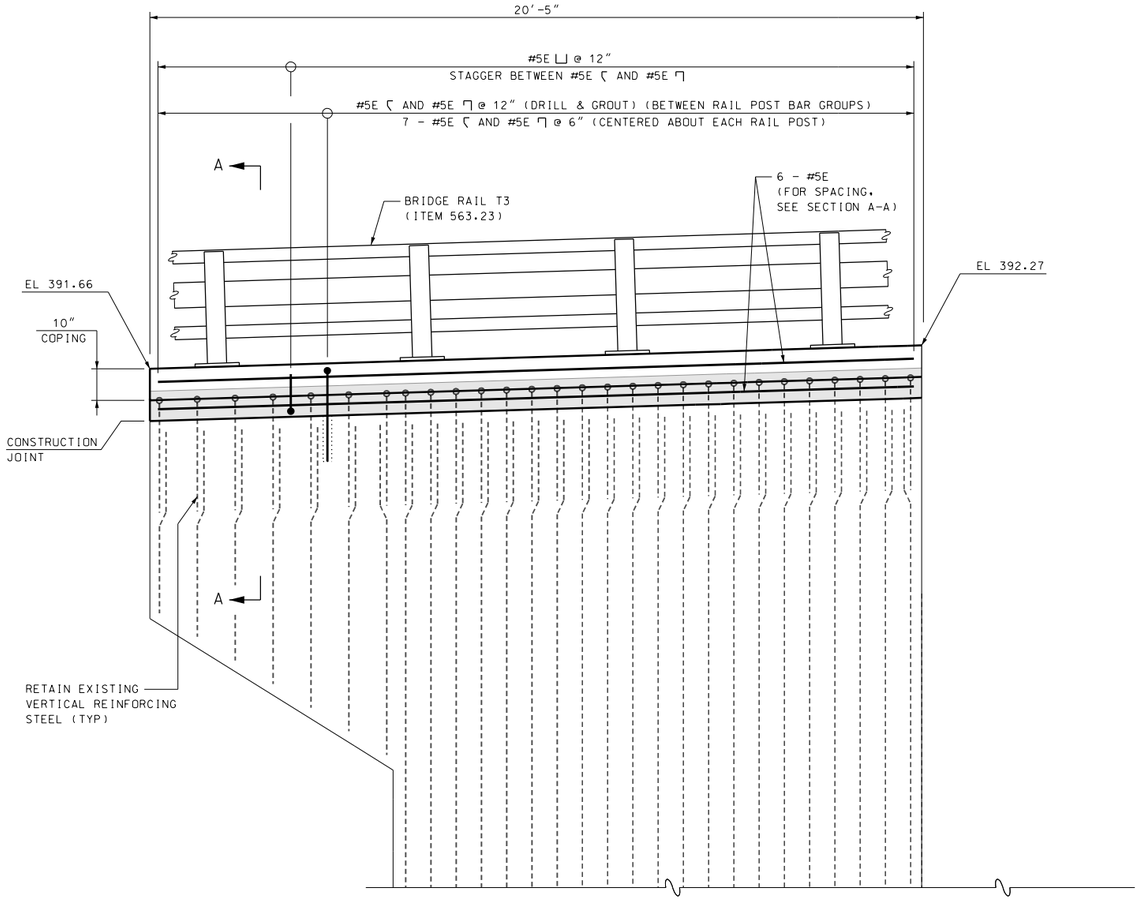
ABUTMENT A MASONRY

BRIDGE SHEET: 28 OF 94

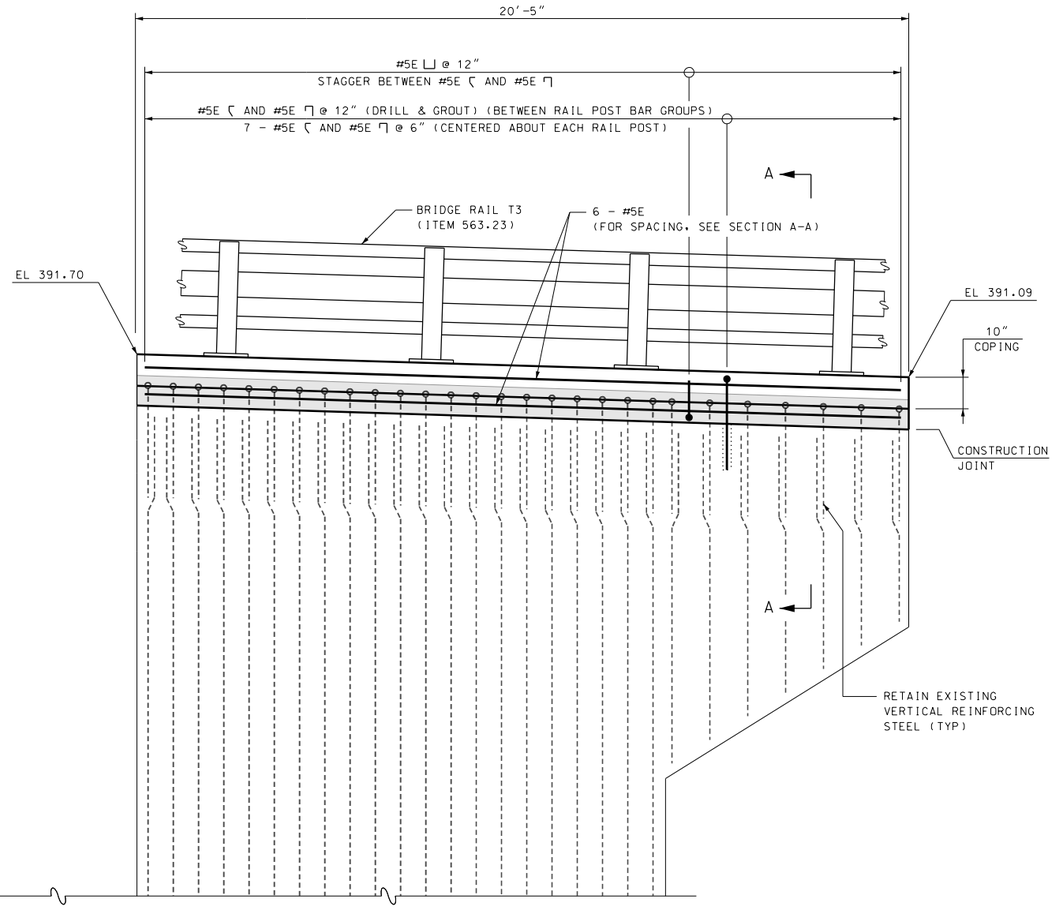
FILE NUMBER: 133-1-1

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

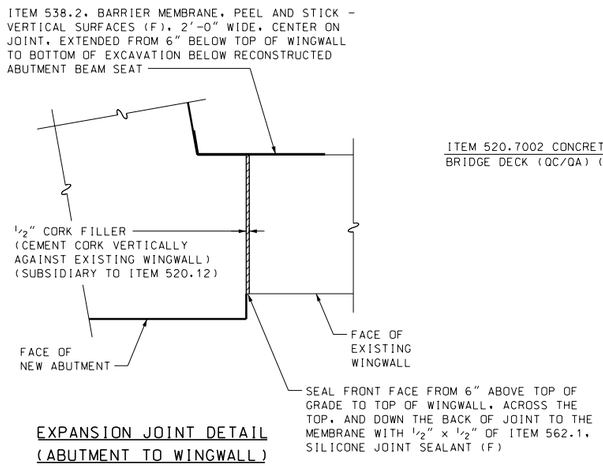
ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	171	600



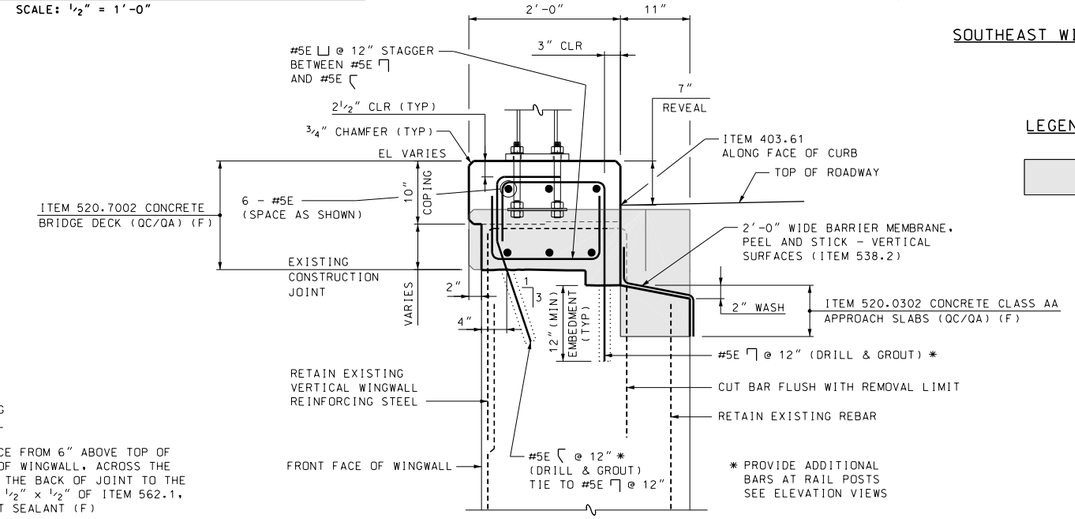
NORTHEAST WINGWALL ELEVATION (ABUTMENT A - NORTHBOUND)
SCALE: 1/2″ = 1′-0″



SOUTHEAST WINGWALL ELEVATION (ABUTMENT A - SOUTHBOUND)
SCALE: 1/2″ = 1′-0″



EXPANSION JOINT DETAIL
(ABUTMENT TO WINGWALL)
SCALE: 1″ = 1′-0″



SECTION A-A
SCALE: 1″ = 1′-0″

LEGEND

PORTION OF EXISTING WINGWALL TO BE REMOVED

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

ABUTMENT A WINGWALL MODIFICATIONS

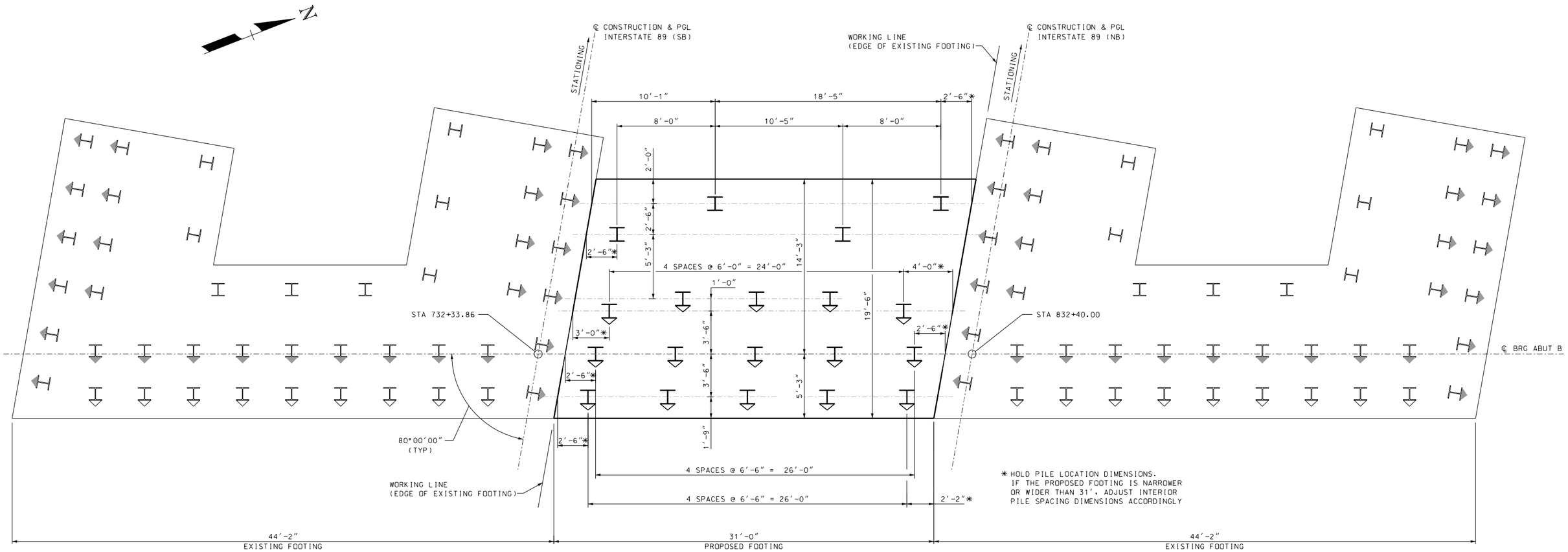
BRIDGE SHEET 29 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	JAL	06/19
DRAWN	SLM	06/19	CHECKED	RLJ	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

FILE NUMBER 133-1-1

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	172	600



* HOLD PILE LOCATION DIMENSIONS.
IF THE PROPOSED FOOTING IS NARROWER
OR WIDER THAN 31′, ADJUST INTERIOR
PILE SPACING DIMENSIONS ACCORDINGLY

ABUTMENT B FOOTING & PILE LAYOUT PLAN

SCALE: 1/4″ = 1′-0″

LEGEND

- PROPOSED VERTICAL PILE
- PROPOSED BATTERED PILE
  4 HORIZONTAL TO 12 VERTICAL
- EXISTING VERTICAL PILE
- EXISTING BATTERED PILE
  4 HORIZONTAL TO 12 VERTICAL
- EXISTING BATTERED PILE
  2 HORIZONTAL TO 12 VERTICAL

NOTES

1. FOR PROJECT NOTES AND PILE NOTES, SEE BRIDGE SHEETS 3 AND 4.
2. EXISTING PILES ARE 12BP53 AND PROPOSED PILES ARE HP14X73.

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LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

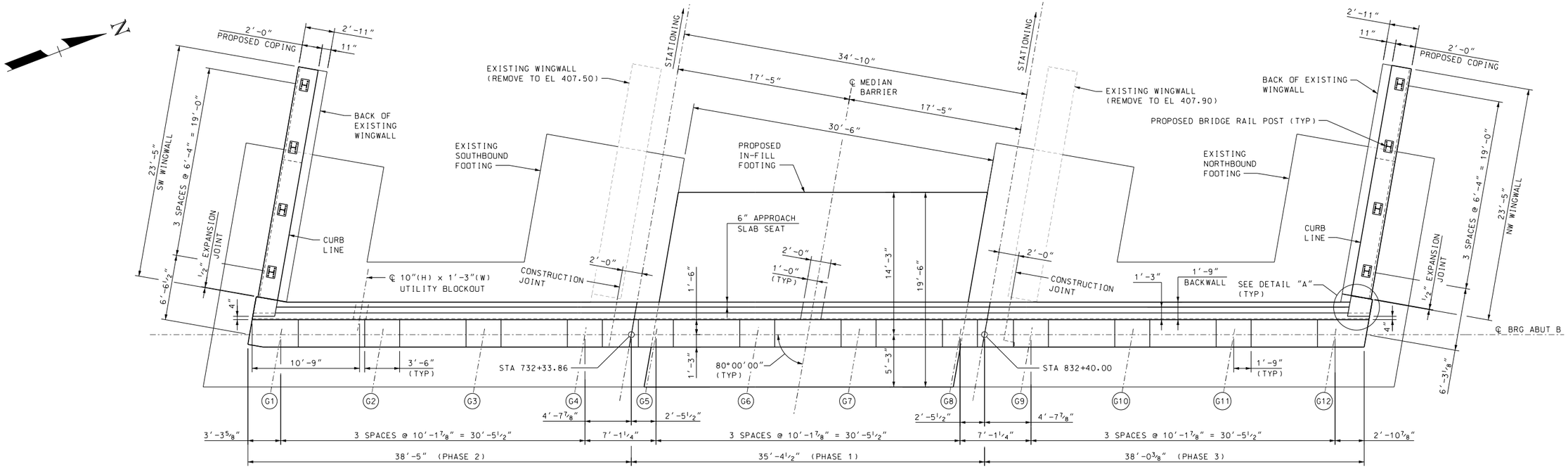
ABUTMENT B FOOTING

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

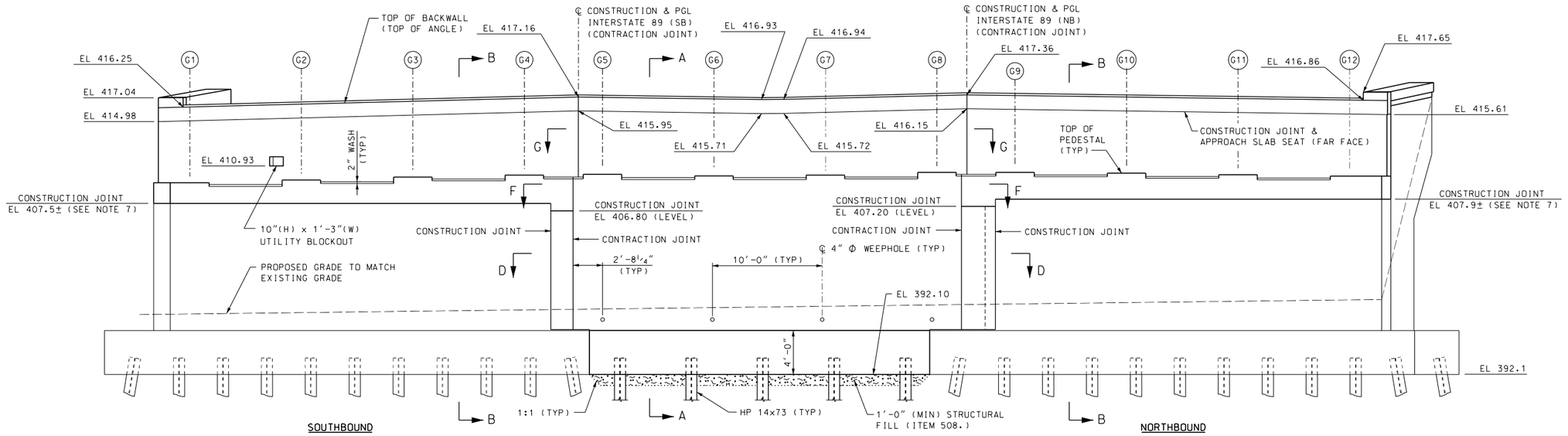
FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
A001(154)	173	600

BRIDGE SHEET 30 OF 94

FILE NUMBER 133-1-1



ABUTMENT B PLAN
SCALE: 3/16" = 1'-0"



ABUTMENT B ELEVATION
SCALE: 3/16" = 1'-0"

TOP OF PEDESTAL ELEVATIONS (SEE NOTE 1)

GIRDER	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12
ELEVATION	409.35	409.60	409.86	410.03	410.12	409.97	410.03	410.29	410.29	410.23	410.09	409.94

NOTES

1. THE ELEVATIONS SHOWN IN THE TOP OF PEDESTAL ELEVATIONS TABLE ARE APPROXIMATE. THE FINAL TOP OF PEDESTAL ELEVATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED WITH THE BEARING SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION OF THE ABUTMENT PEDESTALS.
2. TOP OF BACKWALL ELEVATIONS ARE GIVEN AT THE NEAR FACE OF BACKWALL (TOP OF 8"x 8"x 1" ANGLE).
3. APPROACH SLAB SEAT/CONSTRUCTION JOINT ELEVATIONS ARE GIVEN AT THE FAR FACE OF BACKWALL.
4. FOR SECTIONS A-A AND B-B, SEE BRIDGE SHEET 33.
5. FOR SECTIONS D-D, F-F AND G-G, SEE BRIDGE SHEET 35.
6. FOR DETAIL "A", SEE BRIDGE SHEET 34.
7. 1" SAWCUT SHALL BE A NEAT STRAIGHT LINE FROM END TO END OF ABUTMENT STEM. REMOVAL OF CONCRETE AT THE TOP OF THE EXISTING ABUTMENT STEMS SHALL BE MINIMIZED SUCH THAT THE LOCATION OF THE TOP LONGITUDINAL BARS CAN BE CONFIRMED PRIOR TO DRILLING AND GROUTING BARS.
8. FOR UTILITY BLOCKOUT DETAIL, SEE BRIDGE SHEET 34.

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

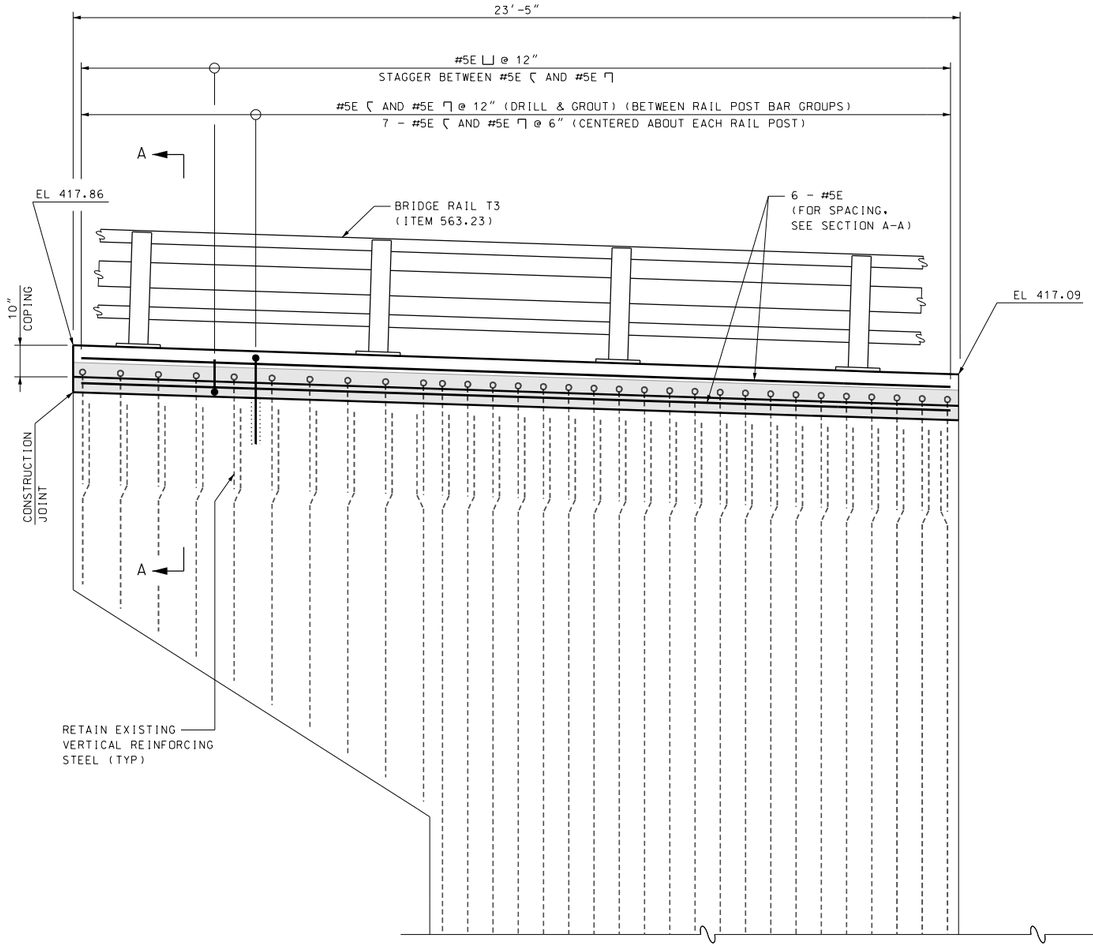
ABUTMENT B MASONRY

BRIDGE SHEET: 31 OF 94

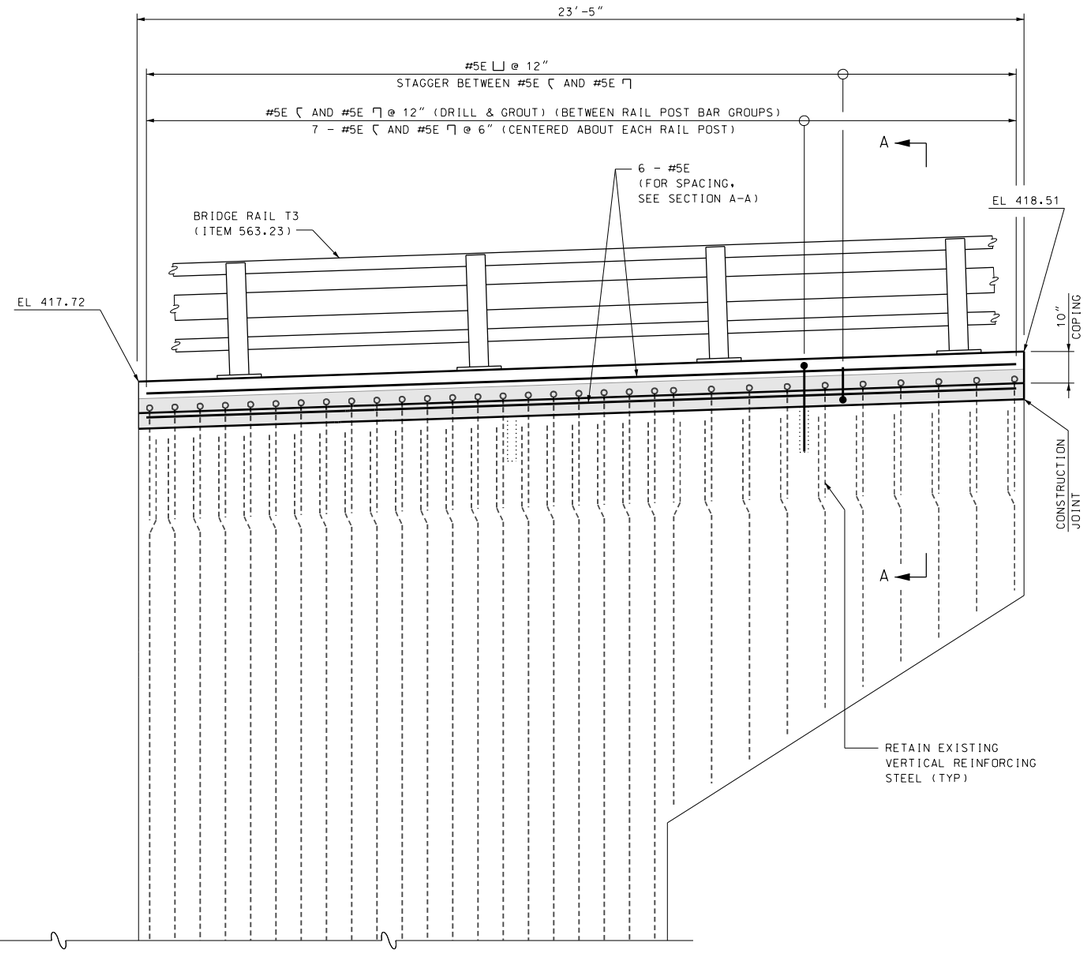
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

FILE NUMBER: 133-1-1

FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
A001(154)	174	600



SOUTHWEST WINGWALL ELEVATION (ABUTMENT B - SOUTHBOUND)
SCALE: 1/2" = 1'-0"



NORTHWEST WINGWALL ELEVATION (ABUTMENT B - NORTHBOUND)
SCALE: 1/2" = 1'-0"

LEGEND

PORTION OF EXISTING
WINGWALL TO BE REMOVED

NOTES

1. FOR SECTION A-A, SEE BRIDGE SHEET 29.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

ABUTMENT B WINGWALL MODIFICATIONS

BRIDGE SHEET: 32 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

FEDERAL PROJECT NO.: A001(154)
SHEET NO.: 175
TOTAL SHEETS: 600
FILE NUMBER: 133-1-1

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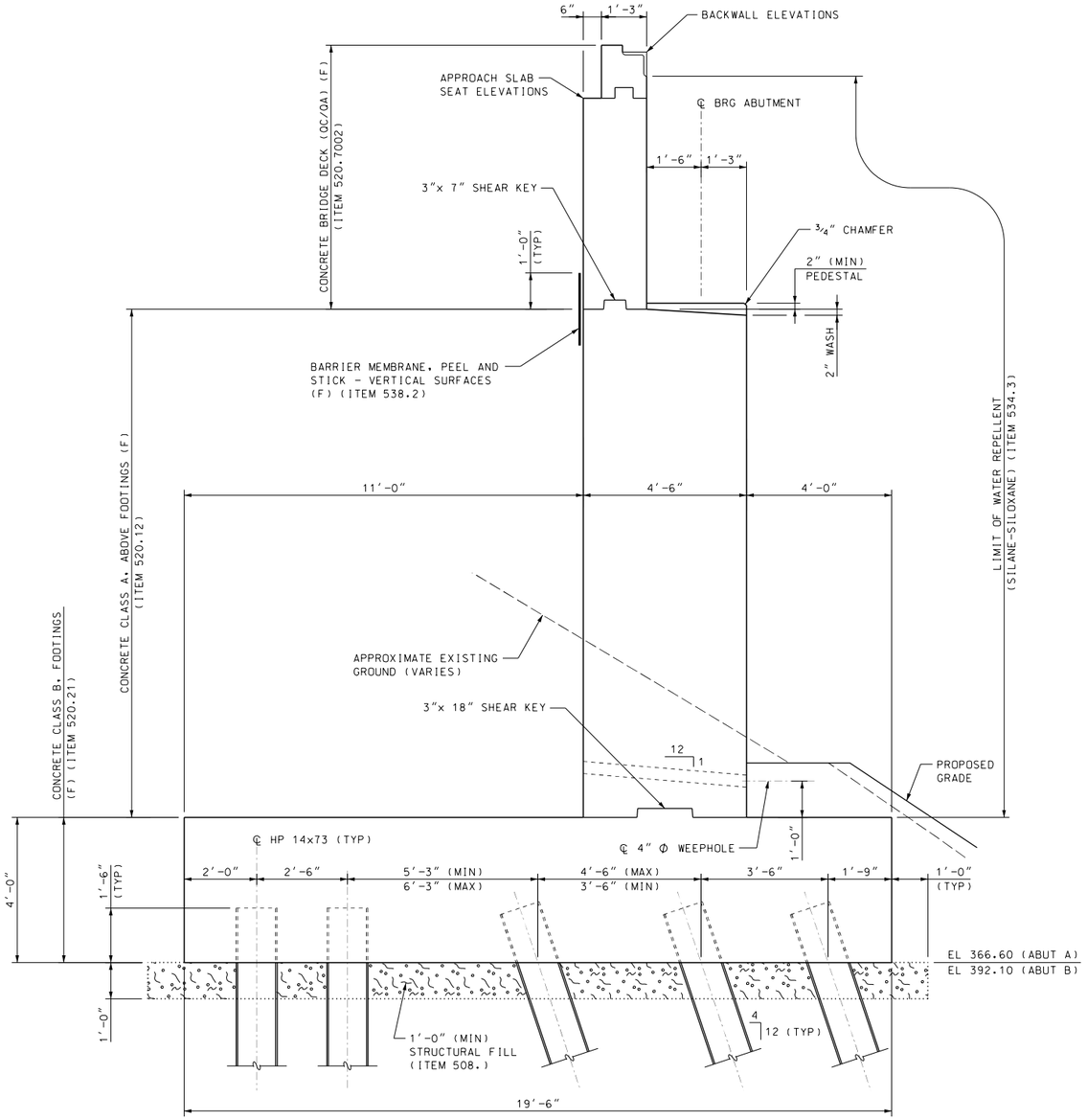
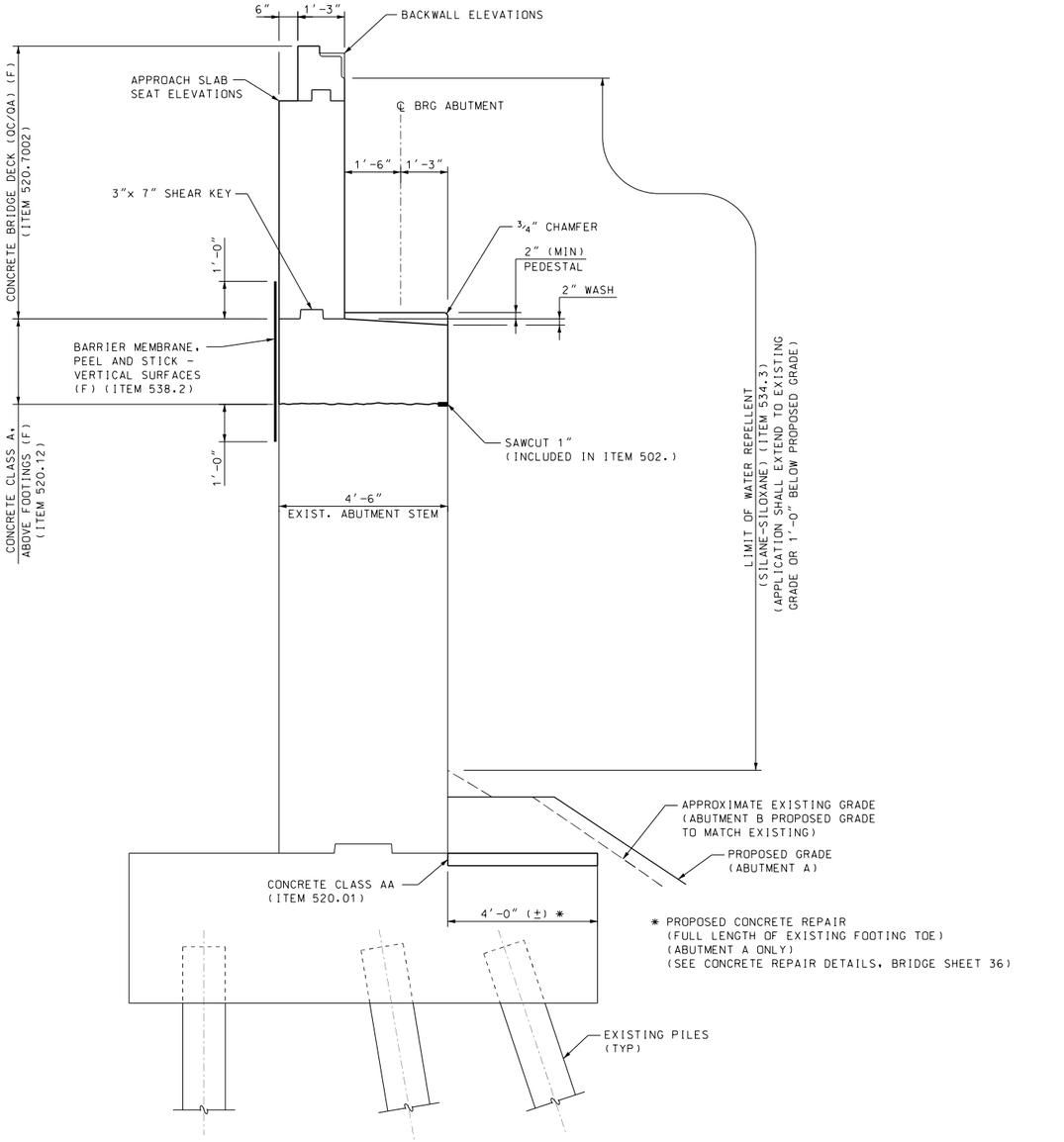


SECTION A-A (PHASE 1) - MASONRY

SCALE: 1/2" = 1'-0"



SECTION B-B (PHASES 2 & 3) - MASONRY

SCALE: 1/2" = 1'-0"

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

ABUTMENT DETAILS (1 OF 3)

BRIDGE SHEET: 33 OF 94

FILE NUMBER: 133-1-1

TOTAL SHEETS: 600

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	WRB	06/19	CHECKED	JAL	06/19
DRAWN	SLM	06/19	CHECKED	RLJ	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
ISSUE DATE			FEDERAL PROJECT NO.		SHEET NO.
REV. DATE			A001(154)		176

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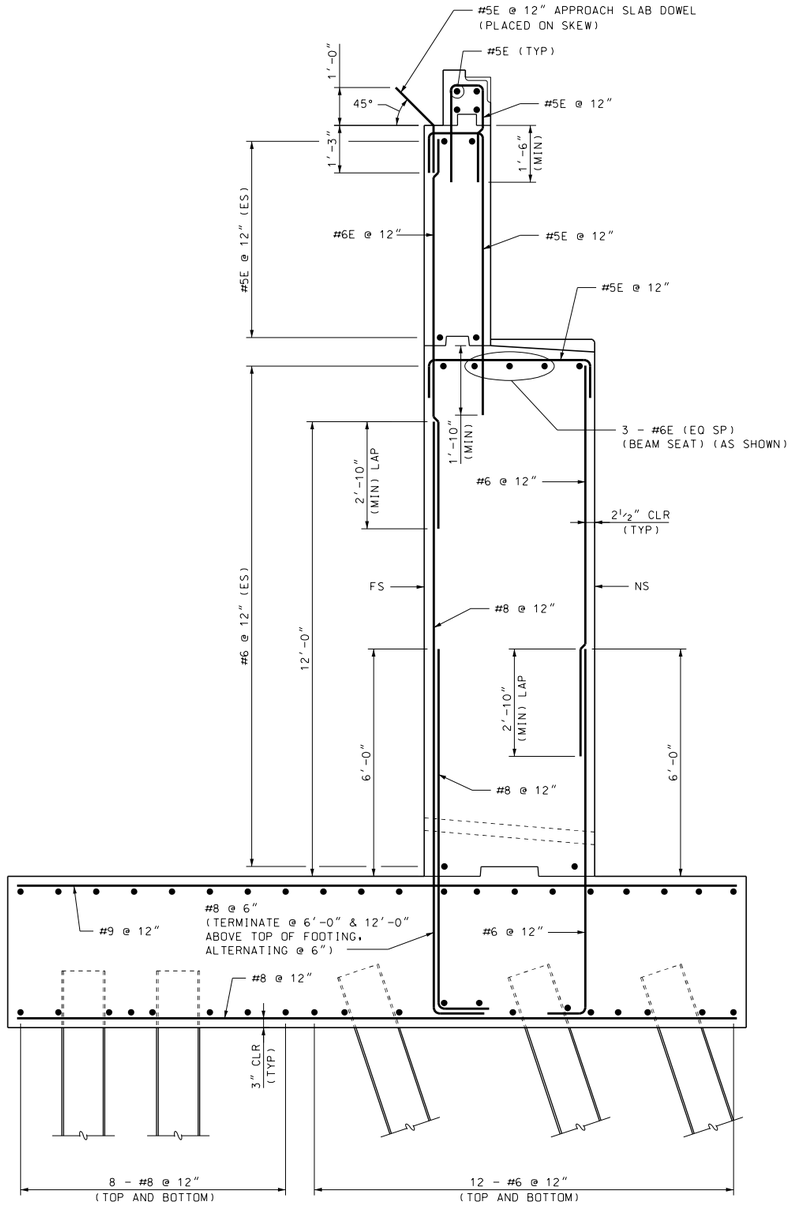
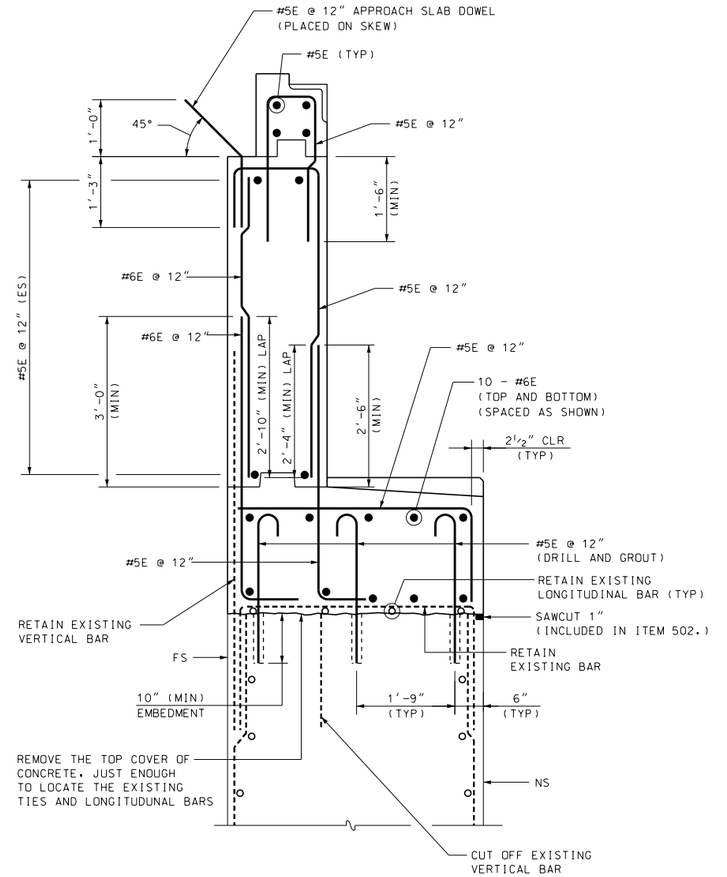


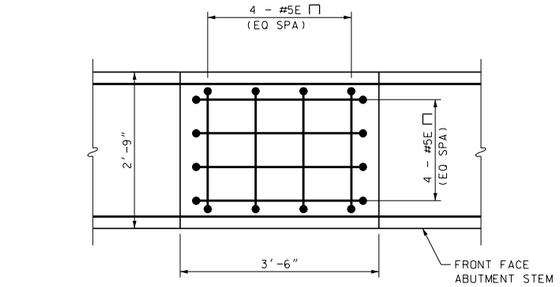
SECTION A-A (PHASE 1) - REINFORCEMENT

SCALE: ½" = 1'-0"

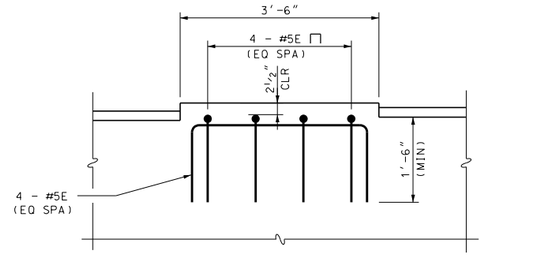


SECTION B-B (PHASES 2 & 3) - REINFORCEMENT

SCALE: ¾" = 1'-0"



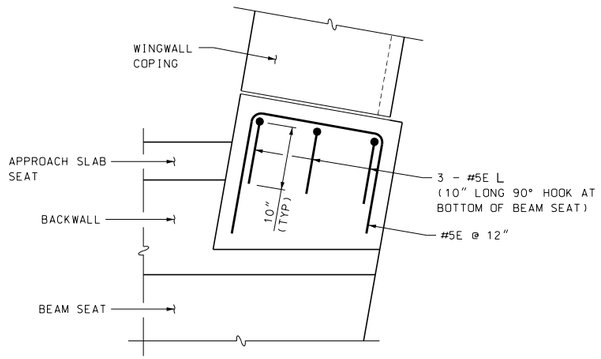
PLAN



ELEVATION

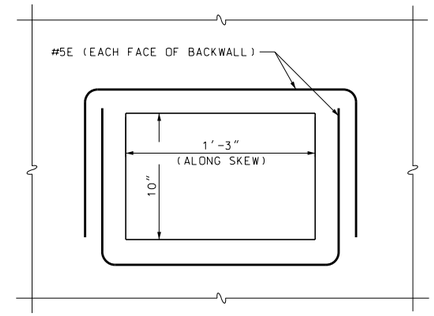
PEDESTAL REINFORCEMENT

SCALE: ¾" = 1'-0"



DETAIL "A"

SCALE: 1" = 1'-0"



UTILITY BLOCKOUT DETAIL

SCALE: 2" = 1'-0"

NOTES

1. FOR LOCATION OF DETAIL "A", SEE BRIDGE SHEETS 28 AND 31.
2. FOR LOCATION OF SECTIONS A-A AND B-B, SEE BRIDGE SHEETS 28 AND 31.

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

ABUTMENT DETAILS (2 OF 3)

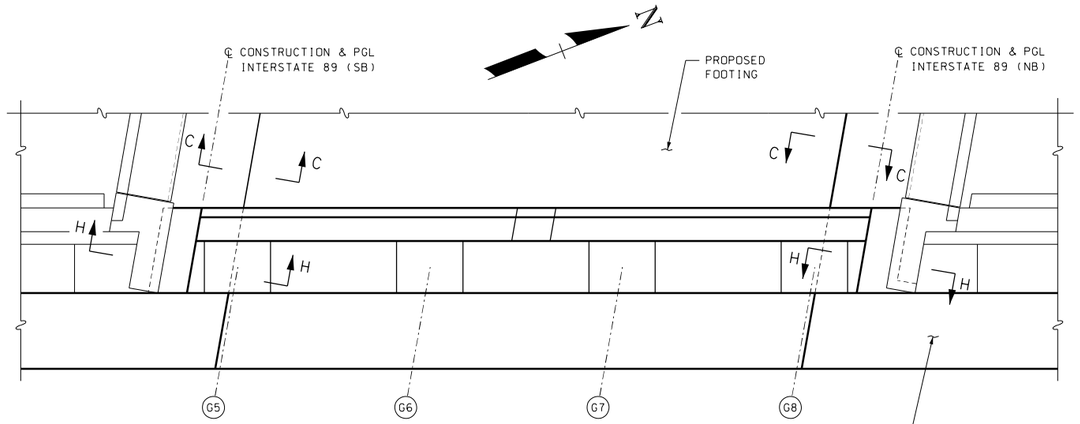
BRIDGE SHEET: 34 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
			DESIGNED	WRB	06/19
			DRAWN	SLM	06/19
			QUANTITIES	DRW	06/19
			ISSUE DATE		
			REV. DATE		

CHECKED	JAL	06/19
CHECKED	RLJ	06/19
CHECKED	SFD	06/19

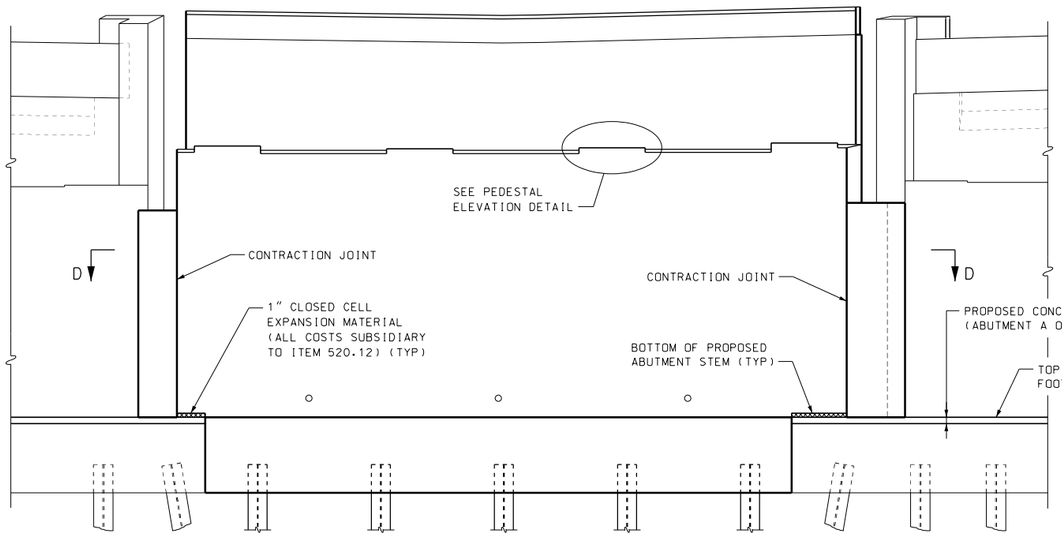
FILE NUMBER: 133-1-1

FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
A001(154)	177	600



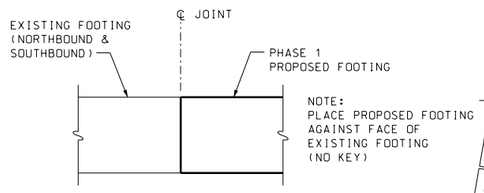
SOUTHBOUND NORTHBOUND

PHASE 1 – PLAN
(ABUTMENT B SHOWN, ABUTMENT A SIMILAR)
SCALE: 1/4" = 1'-0"

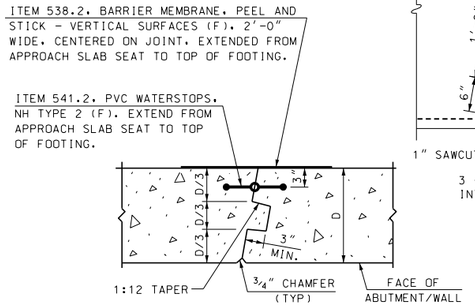


SOUTHBOUND NORTHBOUND

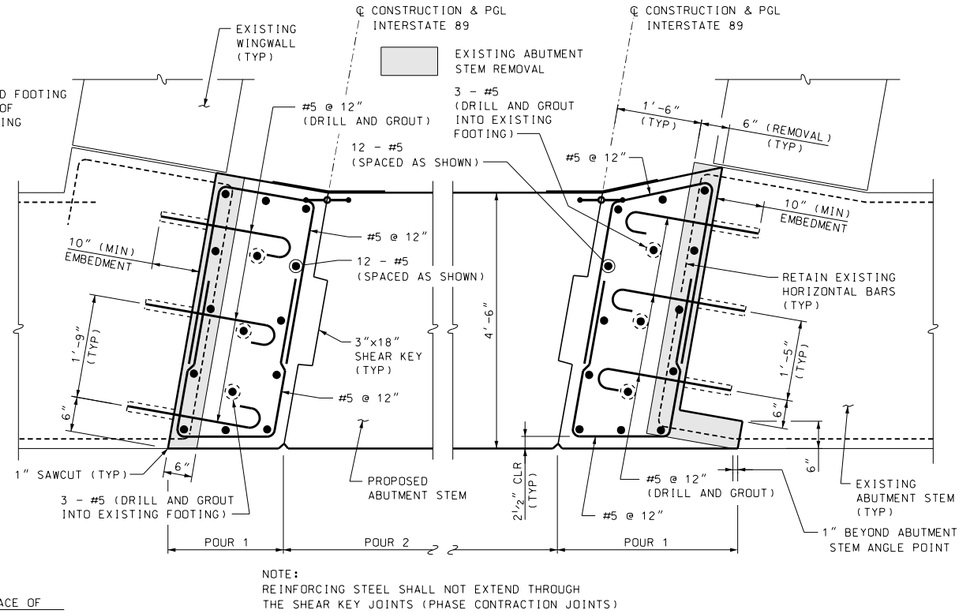
PHASE 1 – ELEVATION
(ABUTMENT B SHOWN, ABUTMENT A SIMILAR)
SCALE: 1/4" = 1'-0"



SECTION C-C
FOOTING CONSTRUCTION JOINT
SCALE: 1/4" = 1'-0"



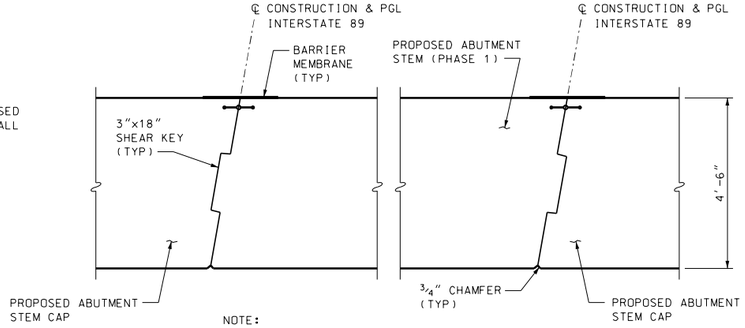
CONTRACTION JOINT DETAIL
SCALE: 1" = 1'-0"



NOTE:
REINFORCING STEEL SHALL NOT EXTEND THROUGH THE SHEAR KEY JOINTS (PHASE CONTRACTION JOINTS)

SECTION D-D
ABUTMENT STEM CONTRACTION JOINT
SCALE: 3/4" = 1'-0"

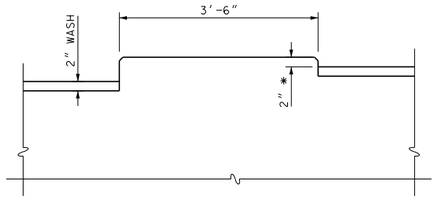
SECTION H-H
SCALE: 3/8" = 1'-0"



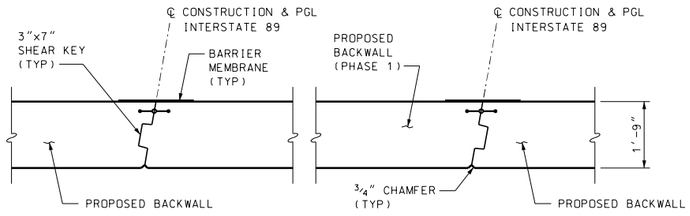
NOTE:
REINFORCING STEEL SHALL NOT EXTEND THROUGH THE SHEAR KEY JOINTS (PHASE CONTRACTION JOINTS)

SECTION F-F
ABUTMENT STEM CAP CONTRACTION JOINT
SCALE: 1/2" = 1'-0"

* ALL ABUTMENT PEDESTALS SHALL HAVE A HEIGHT OF 2" ABOVE THE TOP OF WASH MEASURED ON THE SHORT SIDE OF THE PEDESTAL.



PEDESTAL ELEVATION DETAIL
SCALE: 3/4" = 1'-0"



NOTE:
REINFORCING STEEL SHALL NOT EXTEND THROUGH THE SHEAR KEY JOINTS (PHASE CONTRACTION JOINTS)

SECTION G-G
BACKWALL CONTRACTION JOINT
SCALE: 1/2" = 1'-0"

NOTES

1. FOR LOCATION OF SECTIONS F-F AND G-G, SEE SHEETS 28 AND 31.

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LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

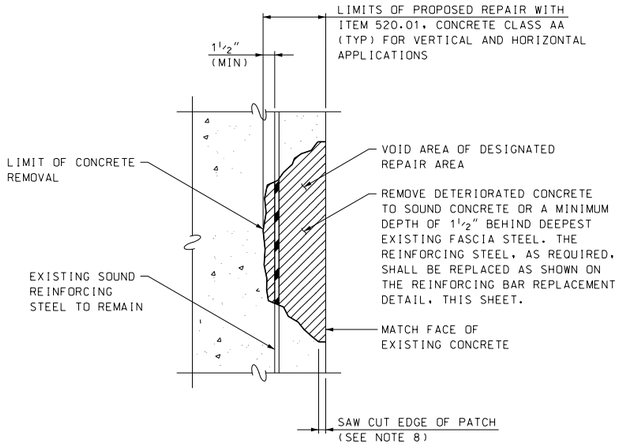
ABUTMENT DETAILS (3 OF 3)

BRIDGE SHEET 35 OF 94

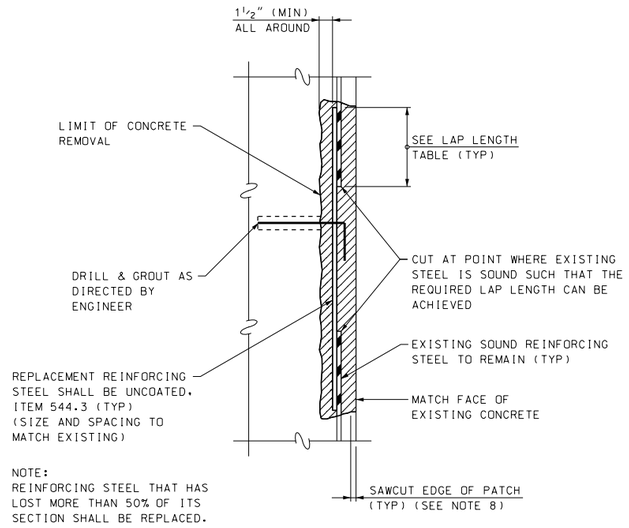
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	WRB	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		178	600

FILE NUMBER 133-1-1

McFarland Johnson



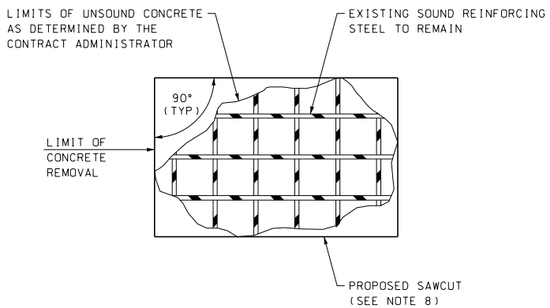
SECTION
CONCRETE REPAIRS
PARTIAL DEPTH SUBSTRUCTURE REPAIR DETAIL
NOT TO SCALE



SECTION
CONCRETE REPAIRS
REINFORCING BAR REPLACEMENT DETAIL
NOT TO SCALE

CONCRETE REPAIR NOTES

1. CONCRETE REPAIR LOCATIONS FOR ABUTMENT A FOOTING TOE SHALL BE DETERMINED BY JOINT INSPECTION OF CONTRACTOR AND ENGINEER.
2. CONCRETE FOR REPAIR AREAS SHALL BE CONCRETE CLASS AA, ITEM 520.01.
3. IF DURING REMOVAL OF DETERIORATED CONCRETE, THE CONTRACTOR DAMAGES EXISTING REINFORCEMENT TO THE EXTENT REQUIRING REPLACEMENT, ANY ADDITIONAL CONCRETE REMOVAL, PATCHING MATERIAL, CLEANING EXISTING REINFORCING STEEL, AND FURNISHING AND INSTALLING REPLACEMENT REINFORCING STEEL SHALL BE AT THE CONTRACTOR'S EXPENSE. INSTALL ACCORDING TO REINFORCING REPLACEMENT DETAIL.
4. REINFORCEMENT USED TO REPLACE EXISTING DETERIORATED REINFORCING STEEL SHALL BE UNCOATED AND PAID FOR UNDER ITEM 544.3.
5. SEE SUBSTRUCTURE - REHABILITATION NOTES, NOTE 2, BRIDGE SHEET 4, FOR PREPARATION OF EXISTING CONCRETE SURFACES.
6. ALL EXISTING SURFACES THAT WILL HAVE NEW CONCRETE CAST AGAINST IT MUST BE ROUGHENED TO A MINIMUM AMPLITUDE OF 1/4".
7. CONCRETE REPAIRS INCLUDE REMOVING DETERIORATED, LOOSE AND MAP CRACKED CONCRETE OR CONCRETE WHICH HAS SPALLED OR OTHERWISE DETERIORATED.
8. ALL DETERIORATED AREAS SHALL BE DELINEATED BY A SAWCUT. SAWCUT SHALL BE A MINIMUM OF 1" DEEP.
9. ALL EXPOSED STEEL SHALL BE THOROUGHLY BLAST CLEANED.
10. PREPARATION FOR CONCRETE REPAIRS TO BE AS SPECIFIED IN SECTION 512 AND PAID FOR UNDER ITEM 512.02.
11. ALL SURFACES SHALL BE RUBBED TO PROVIDE A SMOOTH FINISH. NO ADDITIONAL MATERIAL SHALL BE ADDED TO THE CONCRETE.



ELEVATION
CONCRETE REPAIRS
PARTIAL DEPTH SUBSTRUCTURE REPAIR DETAIL
NOT TO SCALE

LAP LENGTH	
BAR SIZE	LAP LENGTH
#4	20"
#5	24"
#6	29"
#7	37"
#8	47"
#9	60"
#10	77"

LAP LENGTHS PROVIDED IN TABLE ABOVE ARE FOR REPAIR WORK ONLY.

LEGEND

DETERIORATED CONCRETE TO BE REMOVED

EXPOSED EXISTING REINFORCING STEEL

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

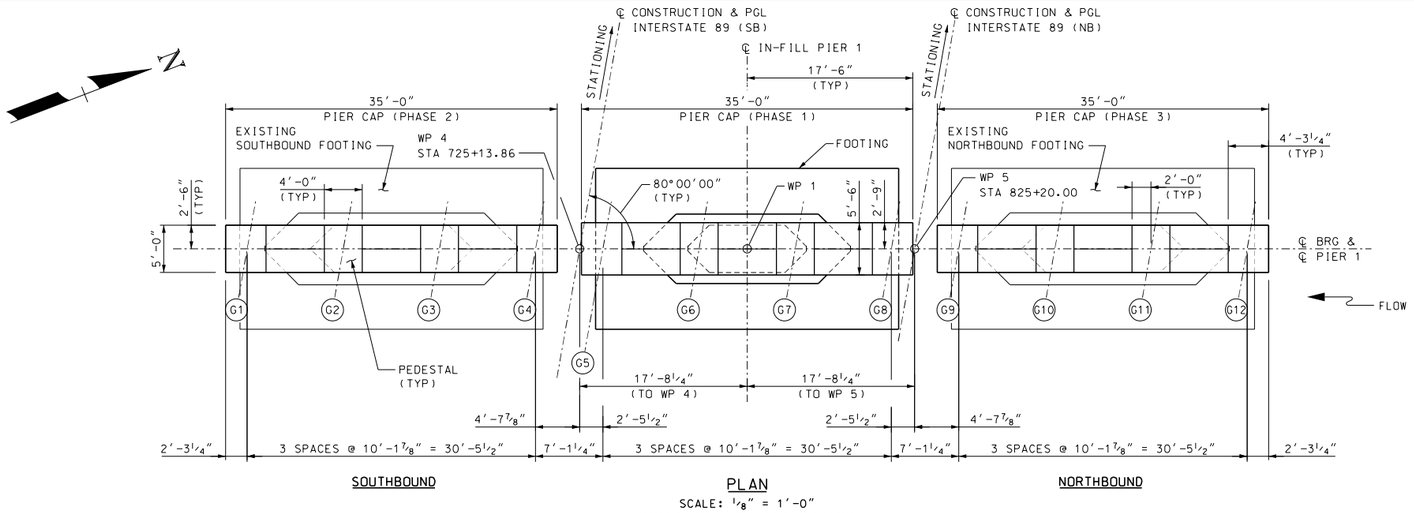
CONCRETE REPAIR DETAILS

BRIDGE SHEET 36 OF 94

FILE NUMBER 133-1-1

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

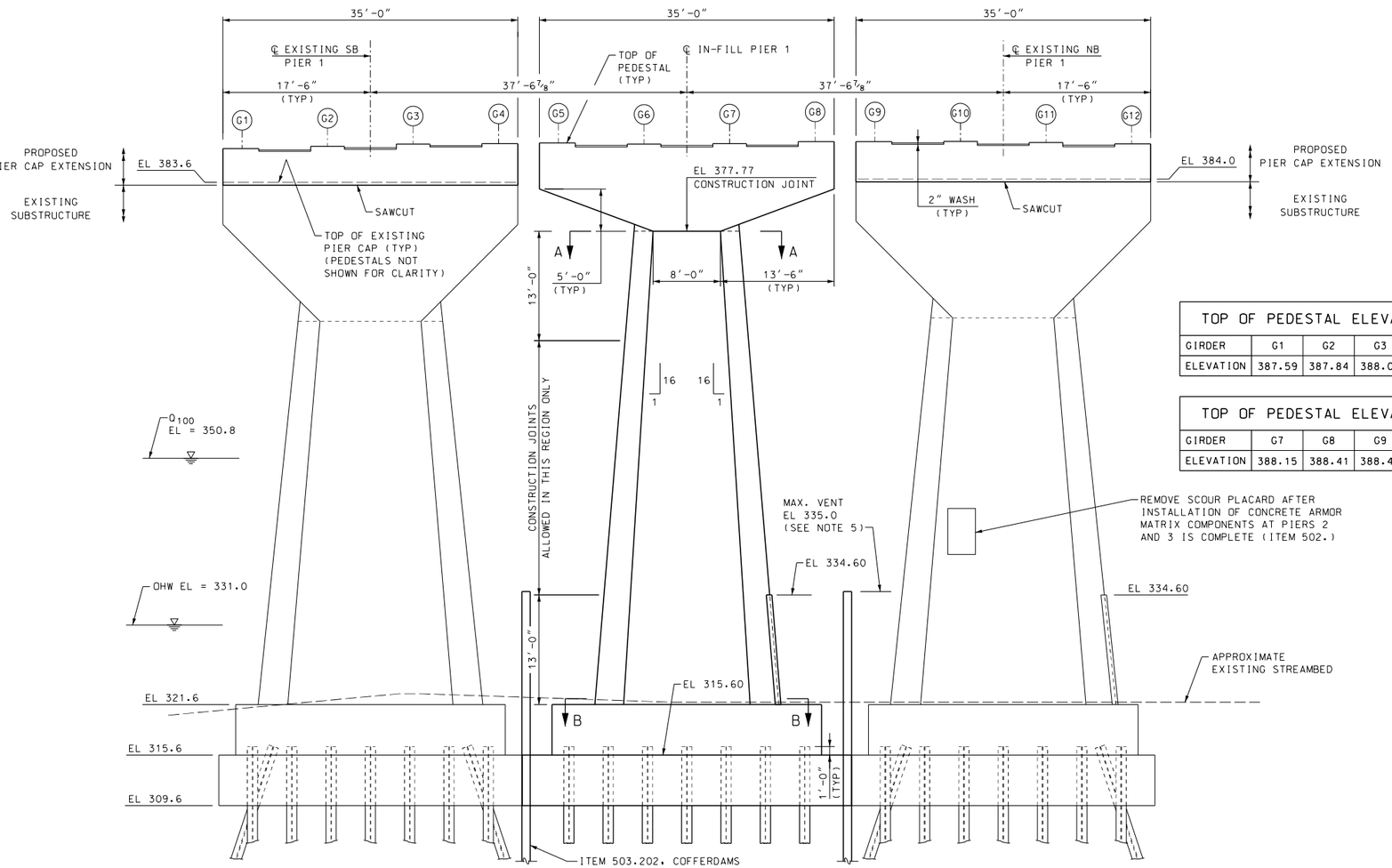
ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	179	600



PLAN

SCALE: ⅛" = 1'-0"
(PILES NOT SHOWN FOR CLARITY)

WORKING POINT COORDINATES NH GRID SYSTEM		
WORKING POINT	NORTH	EAST
WP 1	414032.64	809197.95
WP 2	414017.74	809192.14
WP 3	414047.55	809203.76
WP 4 (STA 725+13.86)	414016.16	809191.53
WP 5 (STA 825+20.00)	414049.12	809204.38

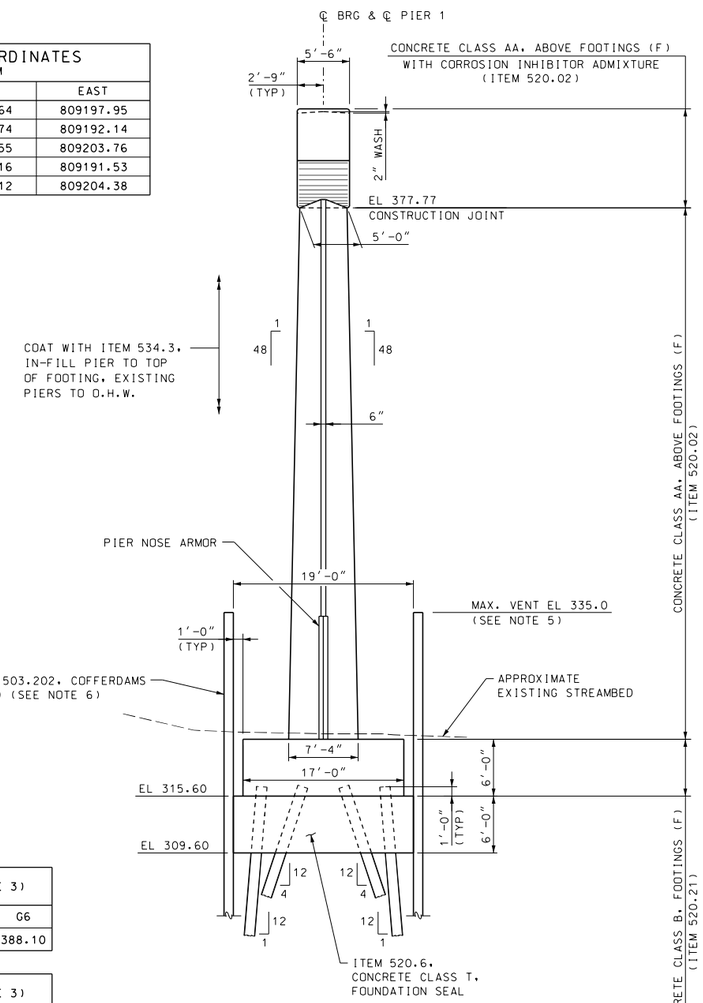


ELEVATION

SCALE: ⅛" = 1'-0"

TOP OF PEDESTAL ELEVATIONS (SEE NOTE 3)						
GIRDER	G1	G2	G3	G4	G5	G6
ELEVATION	387.59	387.84	388.09	388.17	388.25	388.10

TOP OF PEDESTAL ELEVATIONS (SEE NOTE 3)						
GIRDER	G7	G8	G9	G10	G11	G12
ELEVATION	388.15	388.41	388.40	388.43	388.28	388.13



SIDE ELEVATION (IN-FILL PIER 1)

(LOOKING DOWNSTREAM)
SCALE: ⅛" = 1'-0"

NOTES

1. FOR SECTIONS A-A AND B-B, SEE BRIDGE SHEET 38.
2. ONLY REPRESENTATIVE PILES ARE SHOWN IN ELEVATION VIEWS FOR CLARITY. FOR PILE LAYOUT, SEE BRIDGE SHEET 38.
3. THE ELEVATIONS SHOWN IN THE TOP OF PEDESTAL ELEVATIONS TABLE ARE APPROXIMATE. THE FINAL TOP OF PEDESTAL ELEVATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED WITH THE BEARING SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION OF THE PIER PEDESTALS.
4. FOR EXTENSION OF EXISTING PIER CAP, SEE BRIDGE SHEET 53.
5. MAXIMUM VENT ELEVATION BASED ON 6'-0" FOUNDATION SEAL THICKNESS.
6. SEE COFFERDAM NOTE 3, BRIDGE SHEET 3.
7. SEE PEDESTAL ELEVATION DETAIL, BRIDGE SHEET 38.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

PIER 1 MASONRY (1 OF 2)

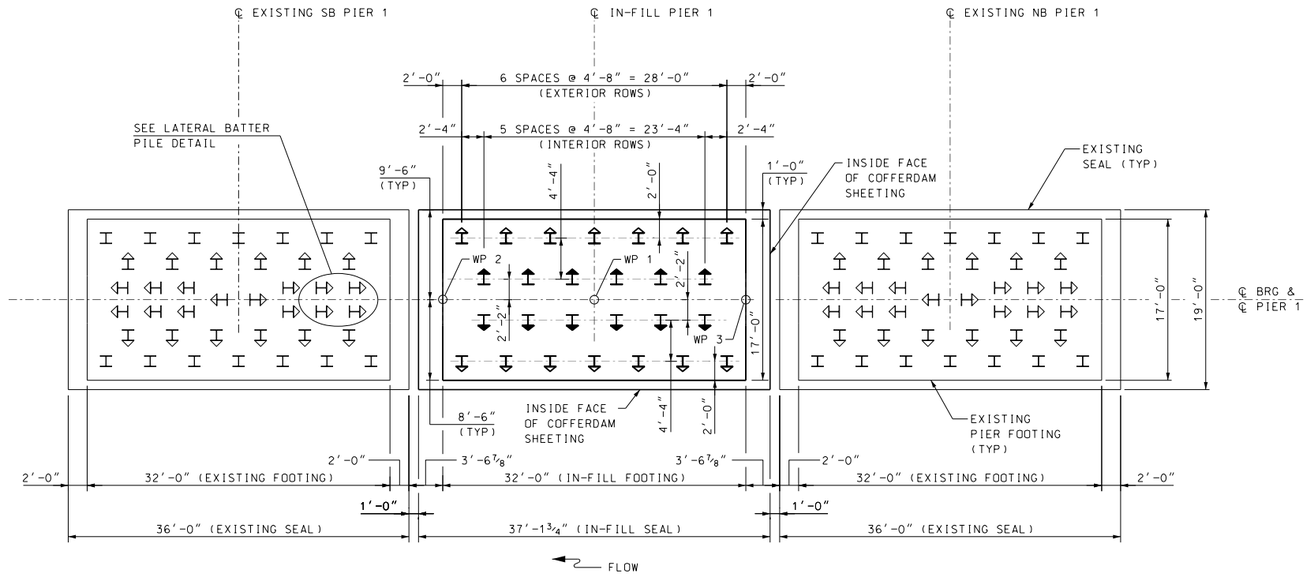
BRIDGE SHEET: 37 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	DMK	06/19
	DRAWN	SLM	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		180	600

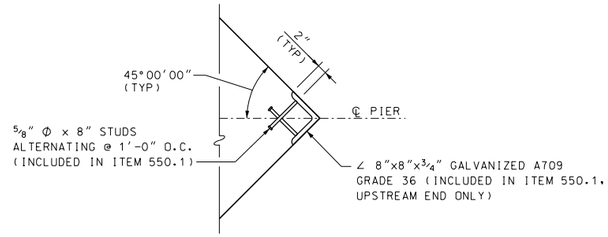
FILE NUMBER: 133-1-1

McFarland Johnson

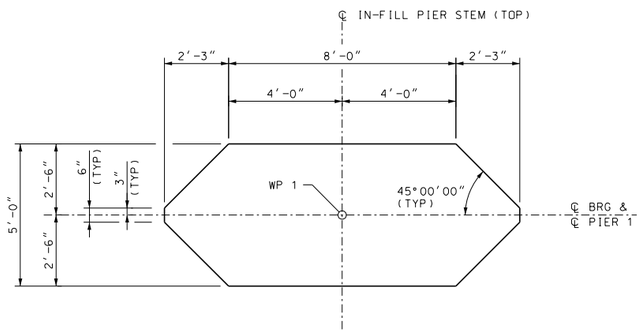
LATERAL BATTER PILE DETAIL
NOT TO SCALE
(APPLIES TO UPSTREAM PILES ON EXISTING SOUTHBOUND PIER AS DETAILED ON PIER 1 FOOTING)



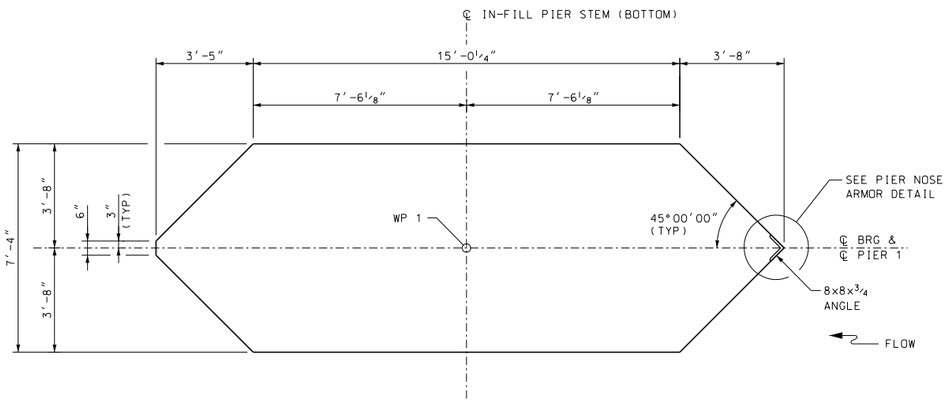
PIER 1 FOOTING
SCALE: 1/8" = 1'-0"



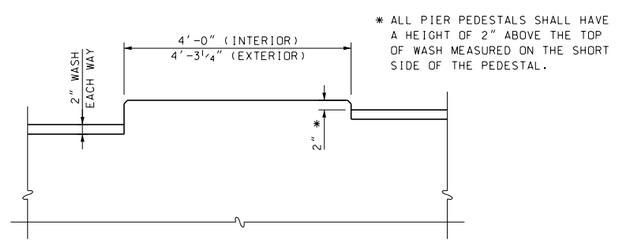
PIER NOSE ARMOR DETAIL
SCALE: 3/4" = 1'-0"



SECTION A-A (MASONRY)
SCALE: 3/8" = 1'-0"



SECTION B-B (MASONRY)
SCALE: 3/8" = 1'-0"



PEDESTAL ELEVATION DETAIL
SCALE: 3/4" = 1'-0"

LEGEND

- PROPOSED BATTERED PILE 4 HORIZONTAL TO 12 VERTICAL
- PROPOSED BATTERED PILE 1 HORIZONTAL TO 12 VERTICAL
- EXISTING VERTICAL PILE
- EXISTING BATTERED PILE 4 HORIZONTAL TO 12 VERTICAL

NOTES

1. PILE LAYOUT DIMENSIONS SHOWN ARE HORIZONTAL AND AT THE INTERSECTION OF THE PILE AND BOTTOM OF FOOTING.
2. EXISTING PILES ARE 14BP73.
3. PROPOSED PILES ARE HP14x89.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

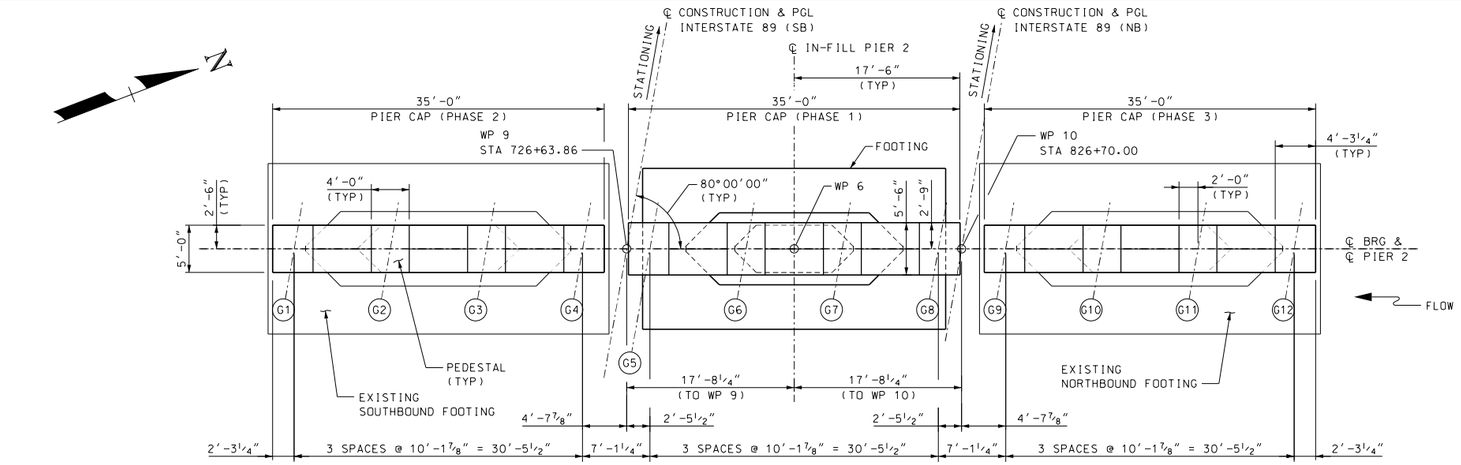
PIER 1 MASONRY (2 OF 2)

BRIDGE SHEET 38 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	DMK	06/19
	DRAWN	SLM	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

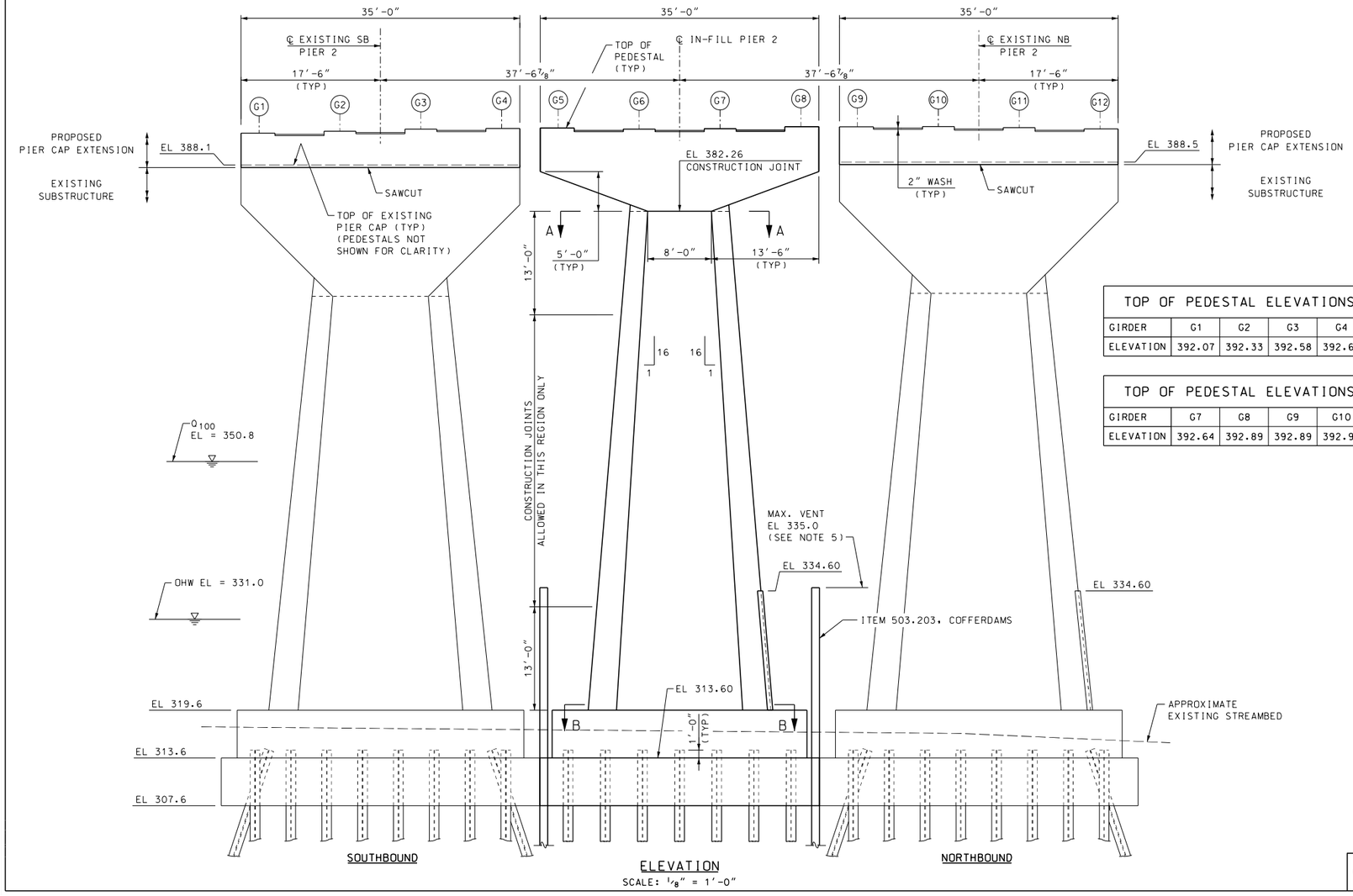
FILE NUMBER 133-1-1

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	181	600



PLAN

SCALE: ⅛″ = 1′-0″
(PILES NOT SHOWN FOR CLARITY)



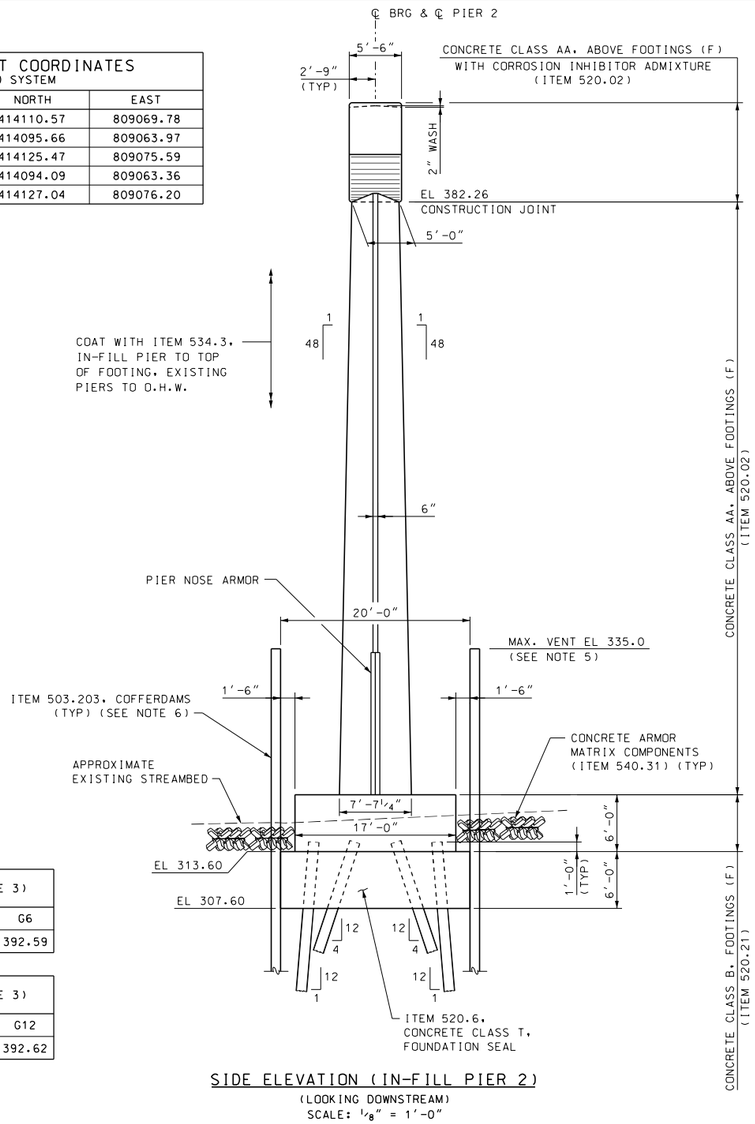
ELEVATION

SCALE: ⅛″ = 1′-0″

WORKING POINT COORDINATES NH GRID SYSTEM		
WORKING POINT	NORTH	EAST
WP 6	414110.57	809069.78
WP 7	414095.66	809063.97
WP 8	414125.47	809075.59
WP 9 (STA 726+63.86)	414094.09	809063.36
WP 10 (STA 826+70.00)	414127.04	809076.20

TOP OF PEDESTAL ELEVATIONS (SEE NOTE 3)						
GIRDER	G1	G2	G3	G4	G5	G6
ELEVATION	392.07	392.33	392.58	392.65	392.73	392.59

TOP OF PEDESTAL ELEVATIONS (SEE NOTE 3)						
GIRDER	G7	G8	G9	G10	G11	G12
ELEVATION	392.64	392.89	392.89	392.92	392.77	392.62



SIDE ELEVATION (IN-FILL PIER 2)

(LOOKING DOWNSTREAM)
SCALE: ⅛″ = 1′-0″

NOTES

1. FOR SECTIONS A-A AND B-B, SEE BRIDGE SHEET 40.
2. ONLY REPRESENTATIVE PILES ARE SHOWN IN ELEVATION VIEWS FOR CLARITY. FOR PILE LAYOUT, SEE BRIDGE SHEET 40.
3. THE ELEVATIONS SHOWN IN THE TOP OF PEDESTAL ELEVATIONS TABLE ARE APPROXIMATE. THE FINAL TOP OF PEDESTAL ELEVATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED WITH THE BEARING SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION OF THE PIER PEDESTALS.
4. FOR EXTENSION OF EXISTING PIER CAP, SEE BRIDGE SHEET 53.
5. MAXIMUM VENT ELEVATION BASED ON 6′-0″ FOUNDATION SEAL THICKNESS.
6. SEE COFFERDAM NOTE 3, BRIDGE SHEET 3.
7. SEE PEDESTAL ELEVATION DETAIL, BRIDGE SHEET 38.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

PIER 2 MASONRY (1 OF 2)

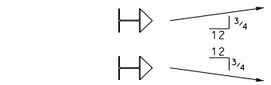
BRIDGE SHEET 39 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE

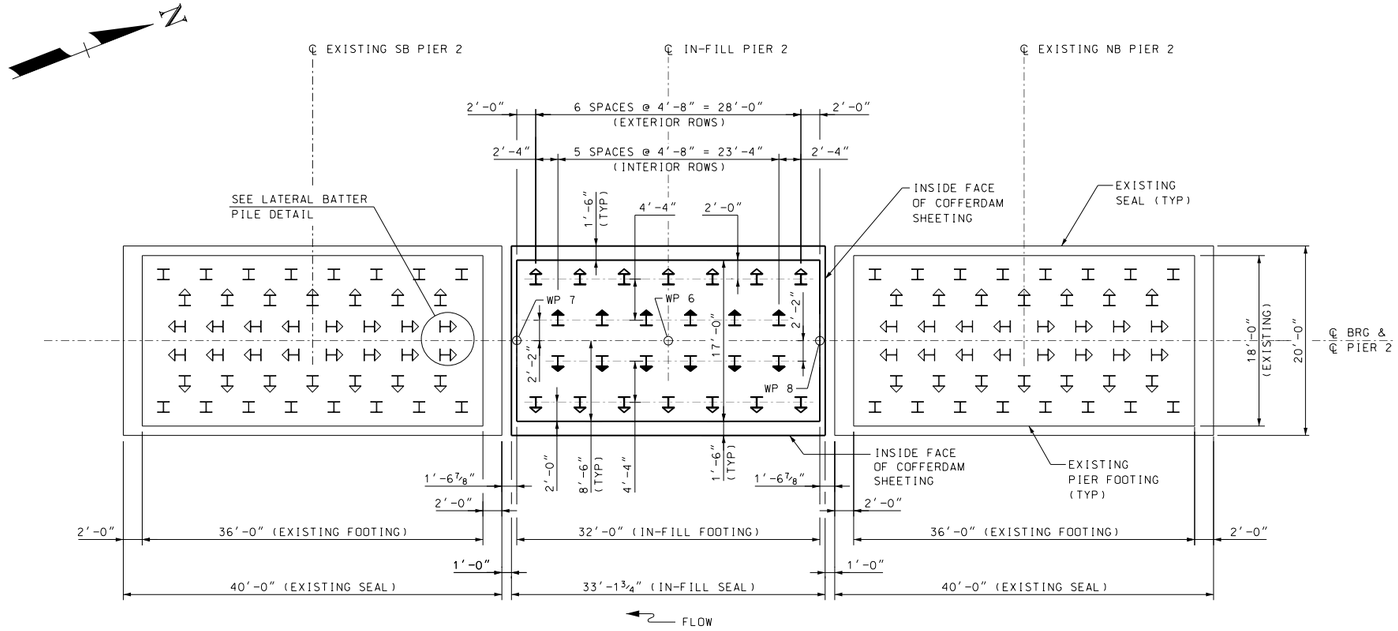
	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	DMK	06/19
DRAWN	SLM	06/19	CHECKED	WRB	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
ISSUE DATE			FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE			A001(154)	182	600

FILE NUMBER 133-1-1

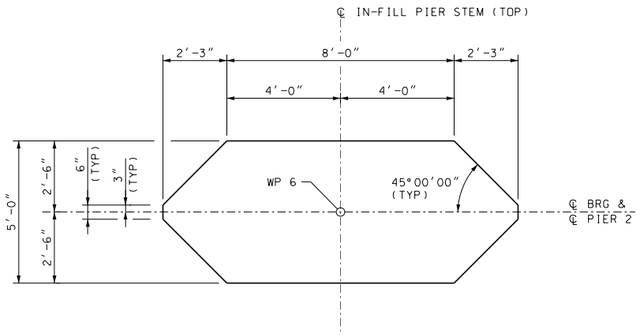
McFarland Johnson



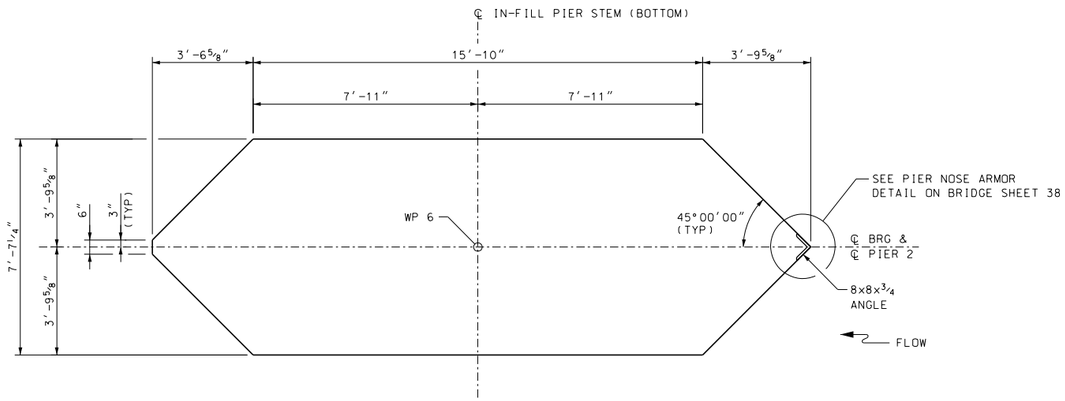
LATERAL BATTER PILE DETAIL
NOT TO SCALE
(APPLIES TO UPSTREAM PILES ON EXISTING SOUTHBOUND PIER AS DETAILED ON PIER 2 FOOTING)



PIER 2 FOOTING
SCALE: 1/8" = 1'-0"



SECTION A-A (MASONRY)
SCALE: 3/8" = 1'-0"



SECTION B-B (MASONRY)
SCALE: 3/8" = 1'-0"

LEGEND

- PROPOSED BATTERED PILE 4 HORIZONTAL TO 12 VERTICAL
- PROPOSED BATTERED PILE 1 HORIZONTAL TO 12 VERTICAL
- EXISTING VERTICAL PILE
- EXISTING BATTERED PILE 4 HORIZONTAL TO 12 VERTICAL

NOTES

1. PILE LAYOUT DIMENSIONS SHOWN ARE HORIZONTAL AND AT THE INTERSECTION OF THE PILE AND BOTTOM OF FOOTING.
2. EXISTING PILES ARE 14BP73.
3. PROPOSED PILES ARE HP14x89.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

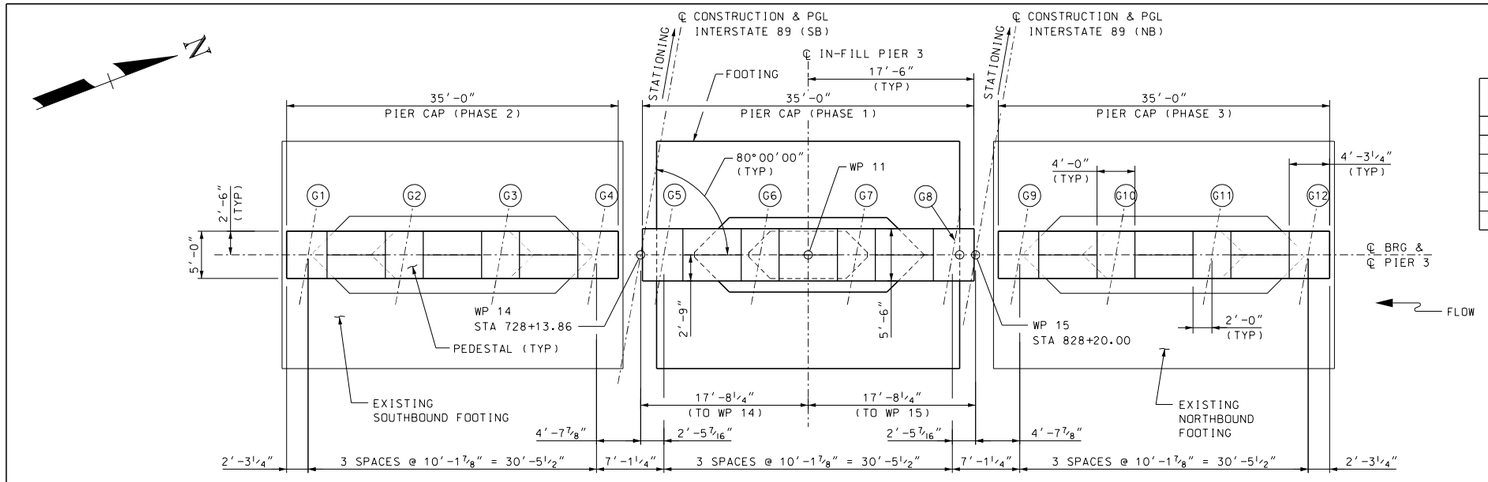
PIER 2 MASONRY (2 OF 2)

BRIDGE SHEET 40 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	DMK	06/19
	DRAWN	SLM	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	
	REV. DATE		A001(154)		183	

FILE NUMBER 133-1-1

TOTAL SHEETS 600



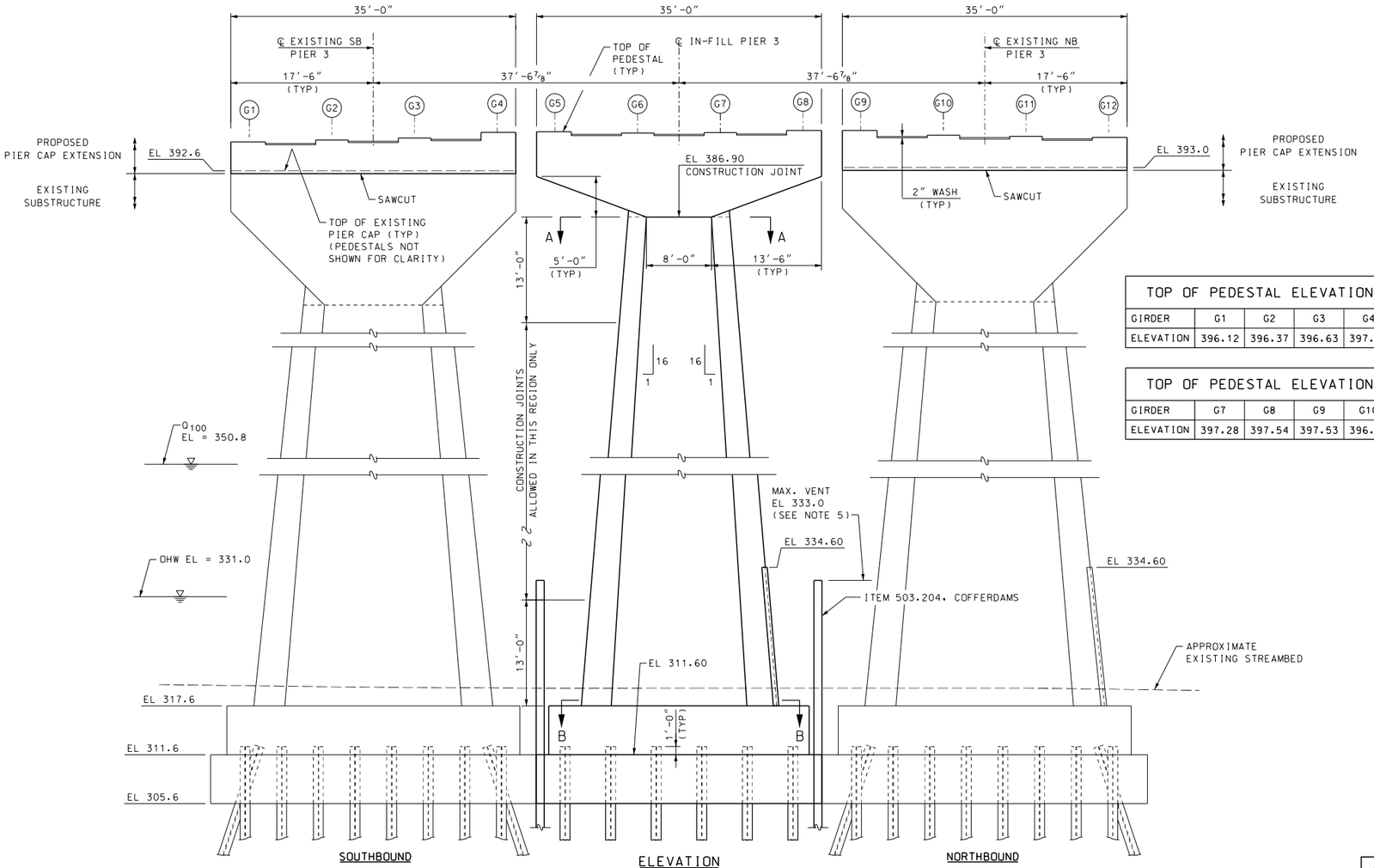
SOUTHBOUND NORTHBOUND

PLAN

SCALE: ⅛″ = 1′-0″

(PILES NOT SHOWN FOR CLARITY)

WORKING POINT COORDINATES NH GRID SYSTEM		
WORKING POINT	NORTH	EAST
WP 11	414188.49	808941.61
WP 12	414173.58	808935.80
WP 13	414203.40	808947.42
WP 14 (STA 728+13.86)	414172.01	808935.18
WP 15 (STA 828+20.00)	414204.97	808948.03



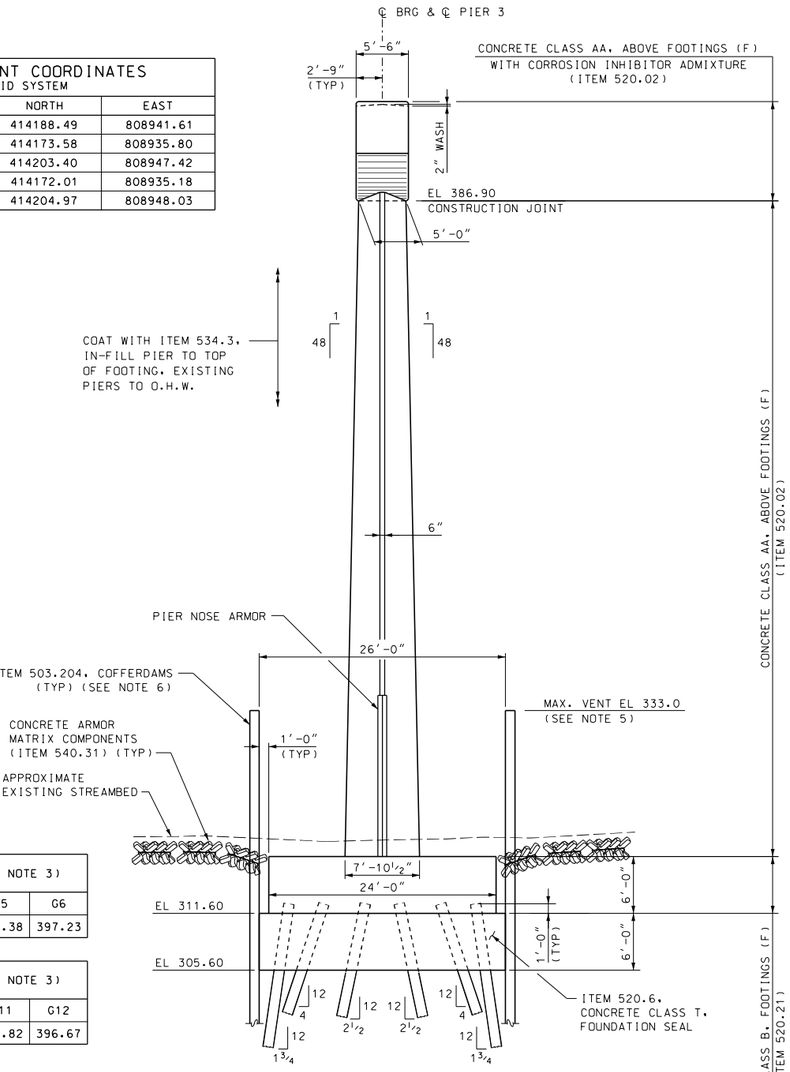
SOUTHBOUND NORTHBOUND

ELEVATION

SCALE: ⅛″ = 1′-0″

TOP OF PEDESTAL ELEVATIONS (SEE NOTE 3)						
GIRDER	G1	G2	G3	G4	G5	G6
ELEVATION	396.12	396.37	396.63	397.30	397.38	397.23

TOP OF PEDESTAL ELEVATIONS (SEE NOTE 3)						
GIRDER	G7	G8	G9	G10	G11	G12
ELEVATION	397.28	397.54	397.53	396.96	396.82	396.67



SIDE ELEVATION (IN-FILL PIER 3)

(LOOKING DOWNSTREAM)

SCALE: ⅛″ = 1′-0″

NOTES

1. FOR SECTIONS A-A AND B-B, SEE BRIDGE SHEET 42.
2. ONLY REPRESENTATIVE PILES ARE SHOWN IN ELEVATION VIEWS FOR CLARITY. FOR PILE LAYOUT, SEE BRIDGE SHEET 42.
3. THE ELEVATIONS SHOWN IN THE TOP OF PEDESTAL ELEVATIONS TABLE ARE APPROXIMATE. THE FINAL TOP OF PEDESTAL ELEVATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED WITH THE BEARING SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION OF THE PIER PEDESTALS.
4. FOR EXTENSION OF EXISTING PIER CAP, SEE BRIDGE SHEET 53.
5. MAXIMUM VENT ELEVATION BASED ON 6′-0″ FOUNDATION SEAL THICKNESS.
6. SEE COFFERDAM NOTE 3, BRIDGE SHEET 3.
7. SEE PEDESTAL ELEVATION DETAIL, BRIDGE SHEET 38.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

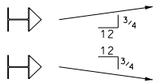
PIER 3 MASONRY (1 OF 2)

BRIDGE SHEET 41 OF 94

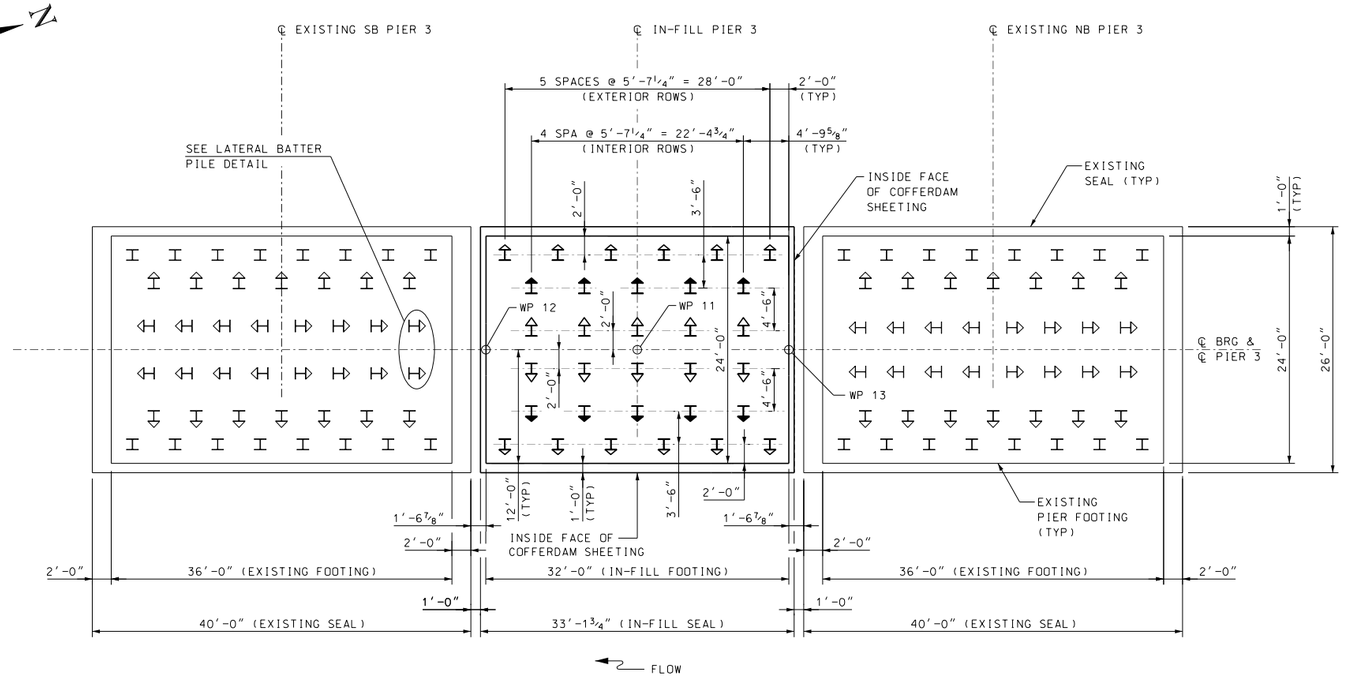
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	DMK	06/19
	DRAWN	SLM	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

FEDERAL PROJECT NO. A001(154) SHEET NO. 184 TOTAL SHEETS 600

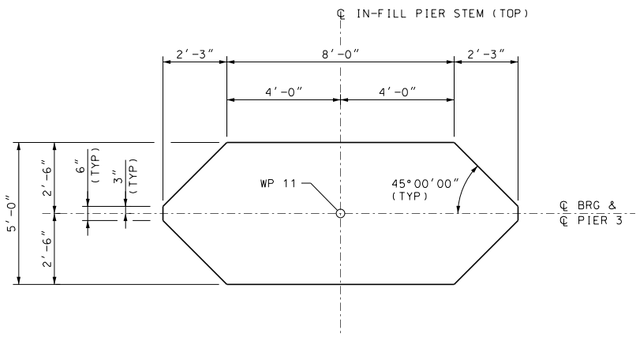
FILE NUMBER 133-1-1



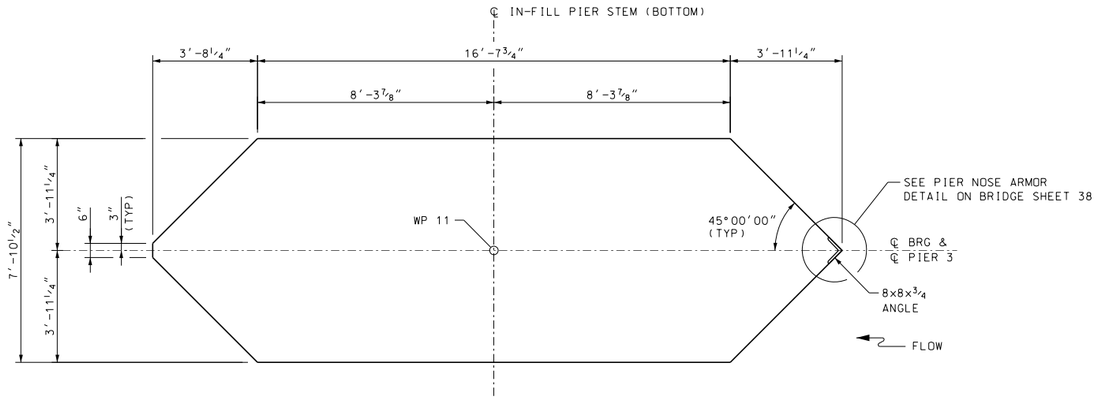
LATERAL BATTER PILE DETAIL
NOT TO SCALE
(APPLIES TO UPSTREAM PILES ON EXISTING SOUTHBOUND PIER AS DETAILED ON PIER 3 FOOTING)



PIER 3 FOOTING
SCALE: 1/8" = 1'-0"



SECTION A-A (MASONRY)
SCALE: 3/8" = 1'-0"



SECTION B-B (MASONRY)
SCALE: 3/8" = 1'-0"

LEGEND

- PROPOSED BATTERED PILE 4 HORIZONTAL TO 12 VERTICAL
- PROPOSED BATTERED PILE 1 3/4 HORIZONTAL TO 12 VERTICAL
- PROPOSED BATTERED PILE 2 1/2 HORIZONTAL TO 12 VERTICAL
- EXISTING VERTICAL PILE
- EXISTING BATTERED PILE 4 HORIZONTAL TO 12 VERTICAL

NOTES

1. PILE LAYOUT DIMENSIONS SHOWN ARE HORIZONTAL AND AT THE INTERSECTION OF THE PILE AND BOTTOM OF FOOTING.
2. EXISTING PILES ARE 14BP73.
3. PROPOSED PILES ARE HP14x89.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

PIER 3 MASONRY (2 OF 2)

BRIDGE SHEET 42 OF 94

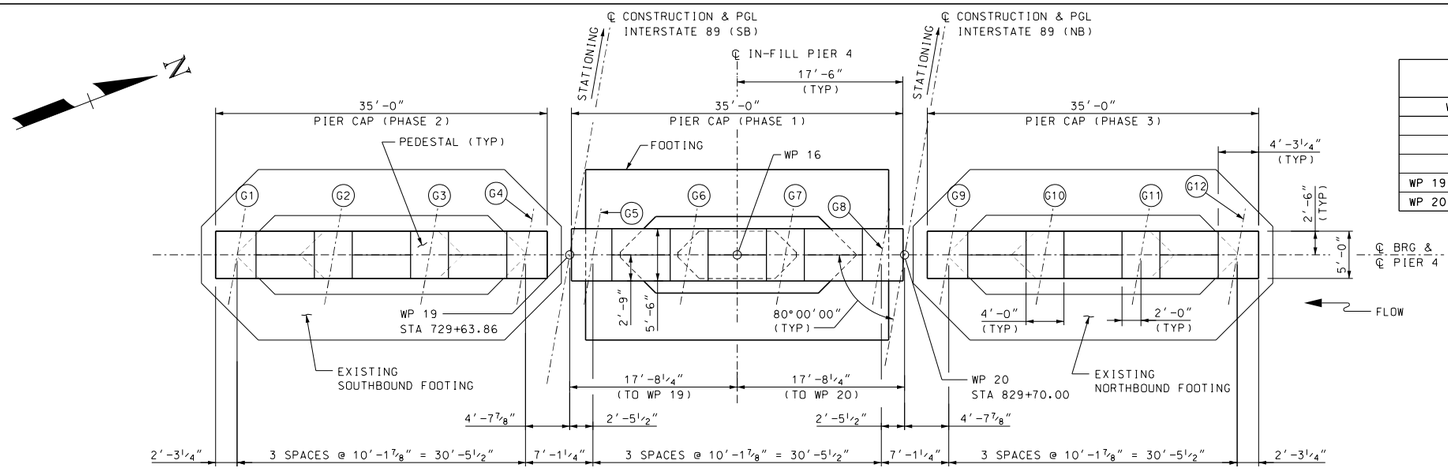
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	DMK	06/19
	DRAWN	SLM	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

FILE NUMBER 133-1-1

FEDERAL PROJECT NO. A001(154)

SHEET NO. 185

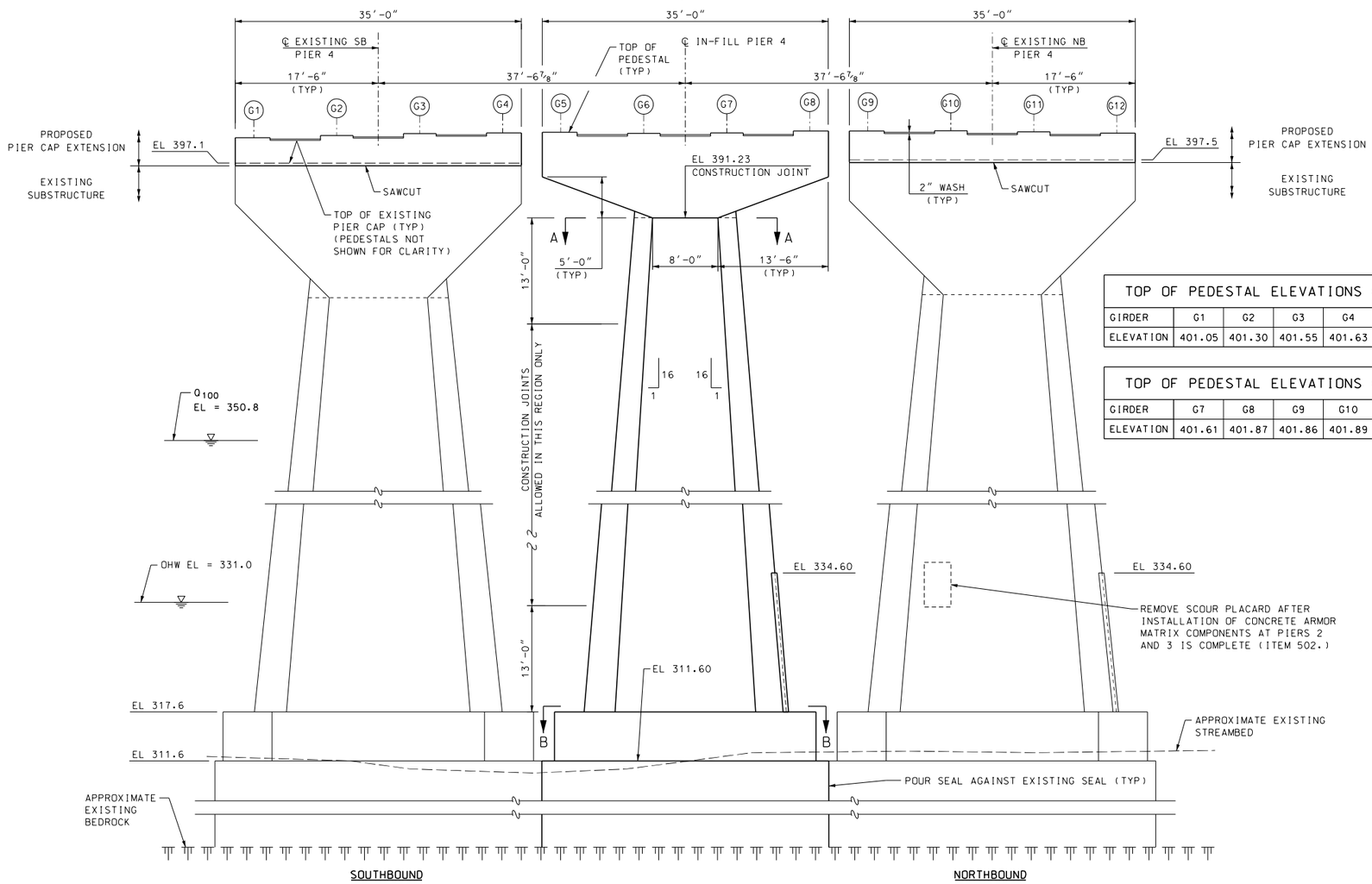
TOTAL SHEETS 600



SOUTHBOUND

PLAN

SCALE: ⅛" = 1'-0"



SOUTHBOUND NORTHBOUND

ELEVATION

SCALE: ⅛" = 1'-0"

WORKING POINT COORDINATES
NH GRID SYSTEM

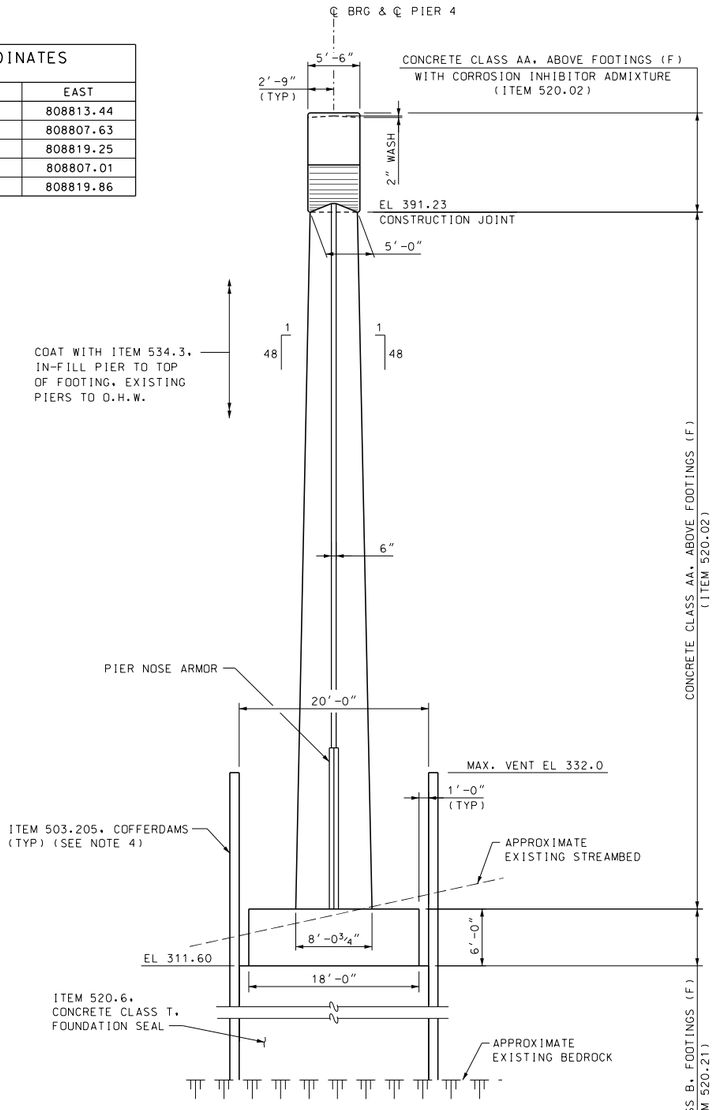
WORKING POINT	NORTH	EAST
WP 16	414266.41	808813.44
WP 17	414251.51	808807.63
WP 18	414281.32	808819.25
WP 19 (STA 729+63.86)	414249.93	808807.01
WP 20 (STA 829+70.00)	414282.89	808819.86

TOP OF PEDESTAL ELEVATIONS (SEE NOTE 2)

GIRDER	G1	G2	G3	G4	G5	G6
ELEVATION	401.05	401.30	401.55	401.63	401.71	401.56

TOP OF PEDESTAL ELEVATIONS (SEE NOTE 2)

GIRDER	G7	G8	G9	G10	G11	G12
ELEVATION	401.61	401.87	401.86	401.89	401.74	401.59



SIDE ELEVATION (IN-FILL PIER 4)

(LOOKING DOWNSTREAM)
SCALE: ⅛" = 1'-0"

NOTES

1. FOR SECTIONS A-A AND B-B, SEE BRIDGE SHEET 44.
2. THE ELEVATIONS SHOWN IN THE TOP OF PEDESTAL ELEVATIONS TABLE ARE APPROXIMATE. THE FINAL TOP OF PEDESTAL ELEVATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED WITH THE BEARING SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION OF THE PIER PEDESTALS.
3. FOR EXTENSION OF EXISTING PIER CAP, SEE BRIDGE SHEET 53.
4. SEE COFFERDAM NOTE 3, BRIDGE SHEET 3.
5. SEE PEDESTAL ELEVATION DETAIL, BRIDGE SHEET 38.
6. FOR SURFACE PREPARATION OF BEDROCK, SEE FOUNDATION NOTE 4, BRIDGE SHEET 4.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

PIER 4 MASONRY (1 OF 2)

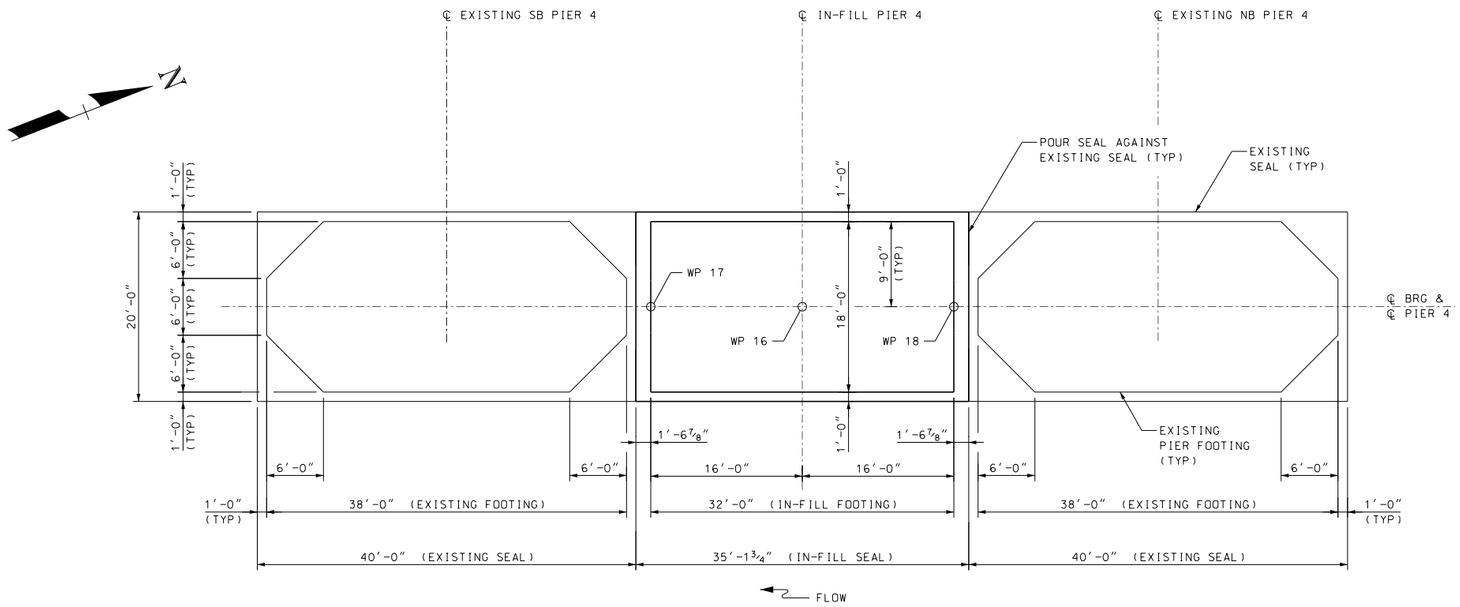
BRIDGE SHEET 43 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SJW	06/19	CHECKED	DMK	06/19
	DRAWN	SLM	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

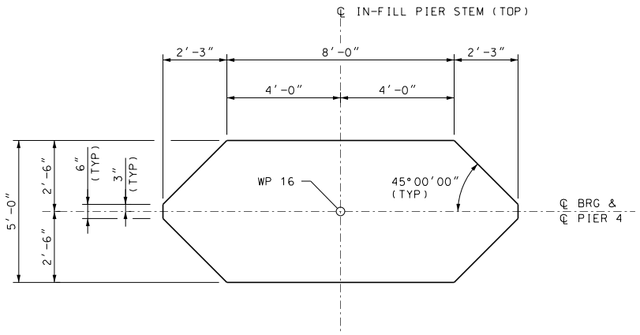
FILE NUMBER 133-1-1

FEDERAL PROJECT NO. A001(154) — SHEET NO. 186 — TOTAL SHEETS 600

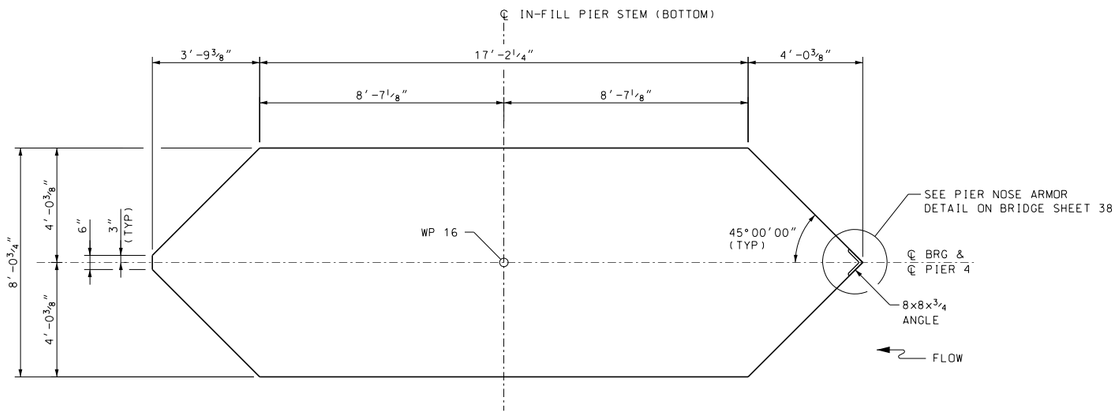
McFarland Johnson



PIER 4 FOOTING
SCALE: 1/8" = 1'-0"



SECTION A-A (MASONRY)
SCALE: 3/8" = 1'-0"



SECTION B-B (MASONRY)
SCALE: 3/8" = 1'-0"

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

PIER 4 MASONRY (2 OF 2)

BRIDGE SHEET: 44 OF 94

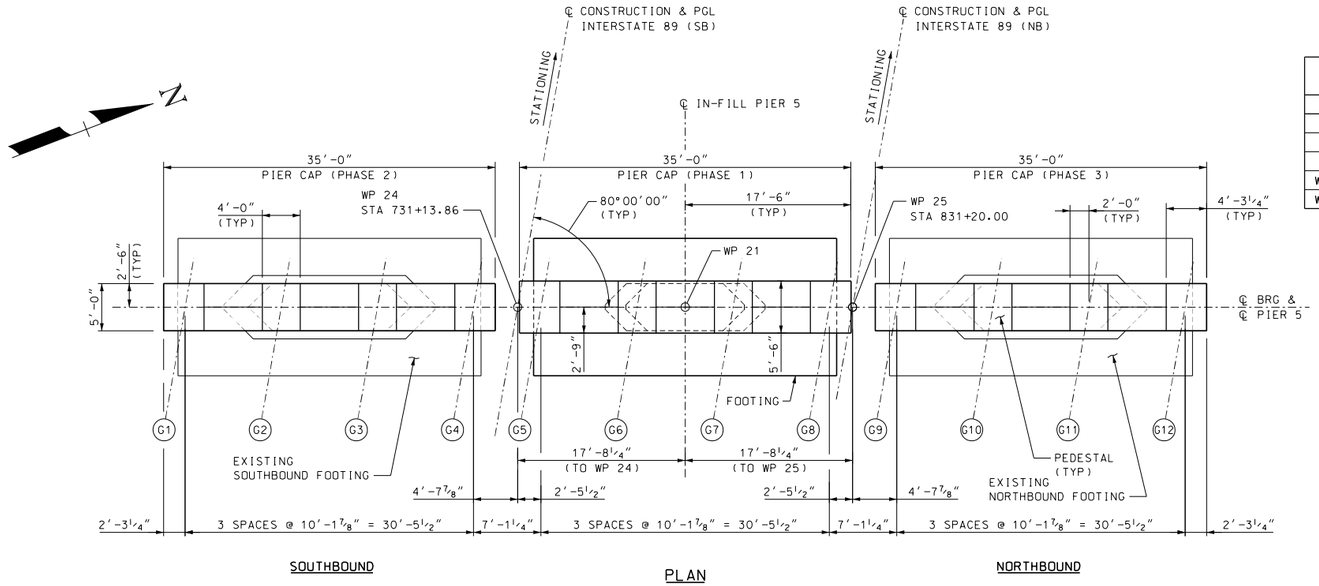
REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	DMK	06/19
DRAWN	SLM	06/19	CHECKED	WRB	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
ISSUE DATE			FEDERAL PROJECT NO.		SHEET NO.
REV. DATE			A001(154)		187

FILE NUMBER: 133-1-1

TOTAL SHEETS: 600

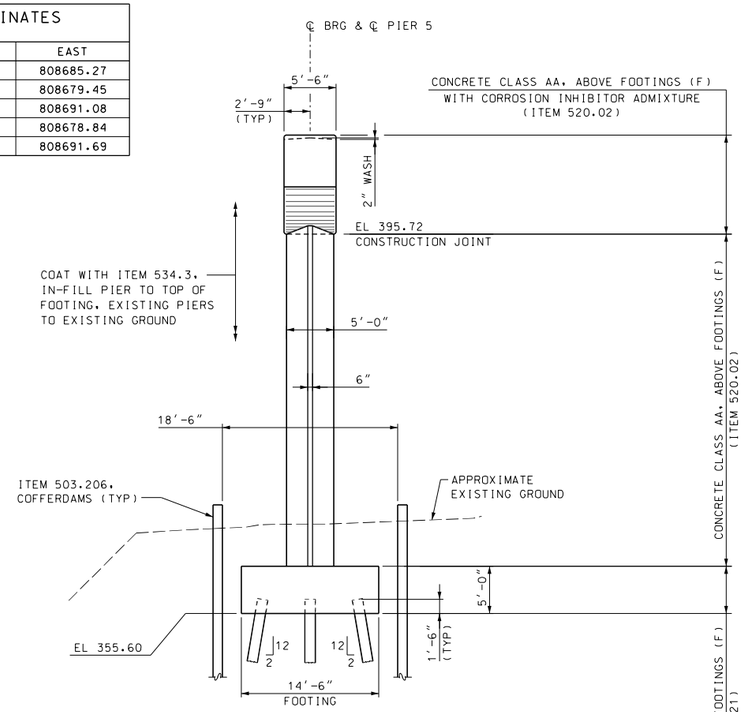
McFarland Johnson



PLAN

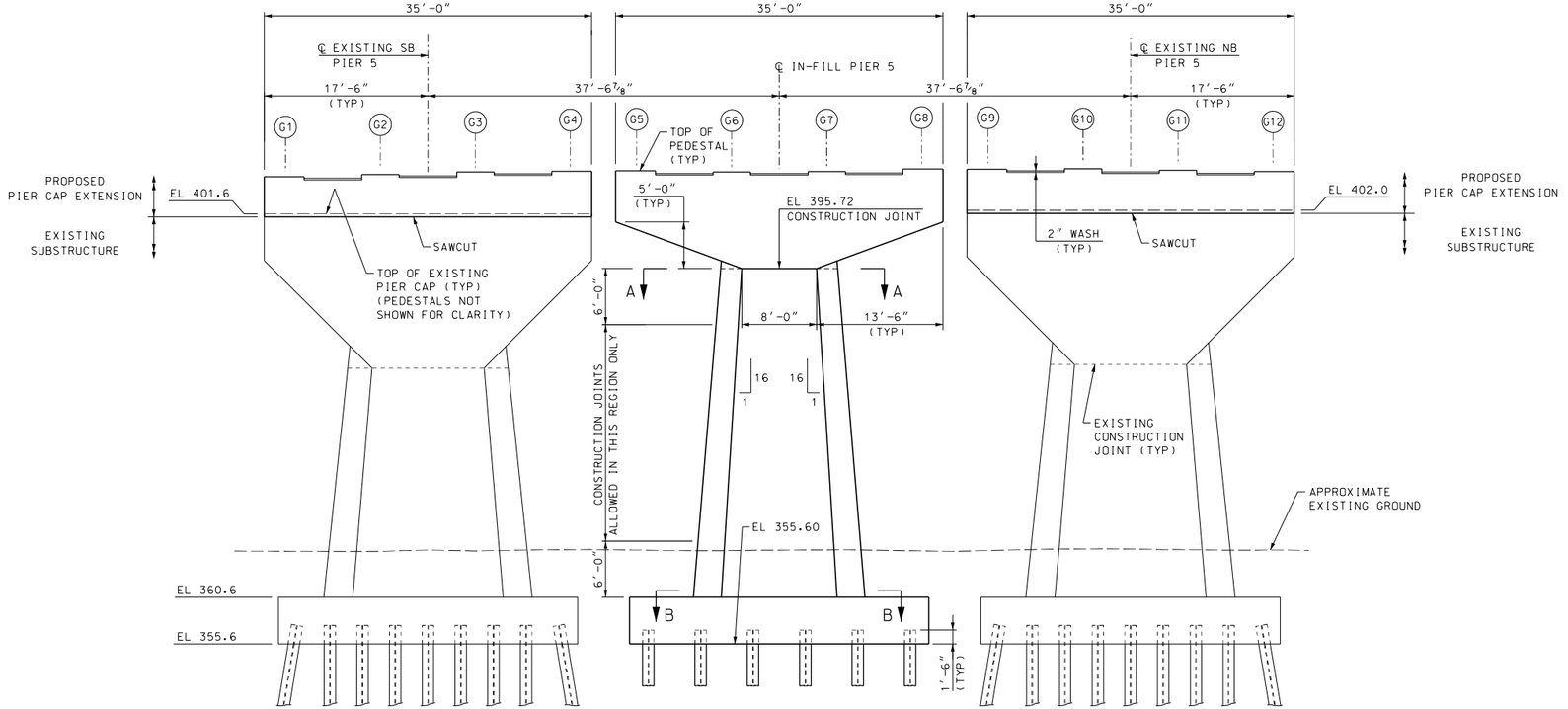
SCALE: 1/8" = 1'-0"
(PILES NOT SHOWN FOR CLARITY)

WORKING POINT COORDINATES NH GRID SYSTEM		
WORKING POINT	NORTH	EAST
WP 21	414344.34	808685.27
WP 22	414329.43	808679.45
WP 23	414359.24	808691.08
WP 24 (STA 731+13.86)	414327.86	808678.84
WP 25 (STA 831+20.00)	414360.81	808691.69



SIDE ELEVATION (IN-FILL PIER 5)

SCALE: 1/8" = 1'-0"



SOUTHBOUND

ELEVATION

SCALE: 1/8" = 1'-0"

NORTHBOUND

TOP OF PEDESTAL ELEVATIONS (SEE NOTE 3)												
GIRDER	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12
ELEVATION	405.53	405.79	406.04	406.11	406.19	406.05	406.10	406.35	406.35	406.38	406.23	406.08

NOTES

1. FOR SECTIONS A-A AND B-B, SEE BRIDGE SHEET 46.
2. ONLY REPRESENTATIVE PILES ARE SHOWN IN ELEVATION VIEWS FOR CLARITY. FOR PILE LAYOUT, SEE BRIDGE SHEET 46.
3. THE ELEVATIONS SHOWN IN THE TOP OF PEDESTAL ELEVATIONS TABLE ARE APPROXIMATE. THE FINAL TOP OF PEDESTAL ELEVATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED WITH THE BEARING SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION OF THE PIER PEDESTALS.
4. FOR EXTENSION OF EXISTING PIER CAP, SEE BRIDGE SHEET 53.
5. SEE PEDESTAL ELEVATION DETAIL, BRIDGE SHEET 38.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

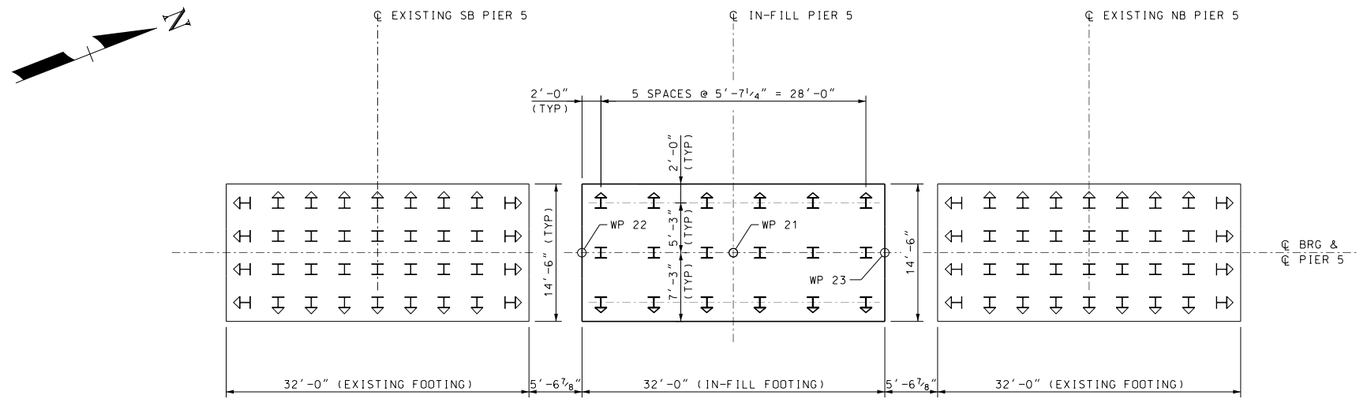
PIER 5 MASONRY (1 OF 2)

BRIDGE SHEET 45 OF 94

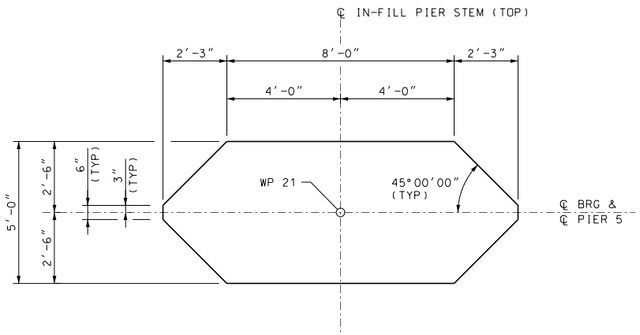
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	DMK	06/19
	DRAWN	SLM	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		188	600

FILE NUMBER 133-1-1

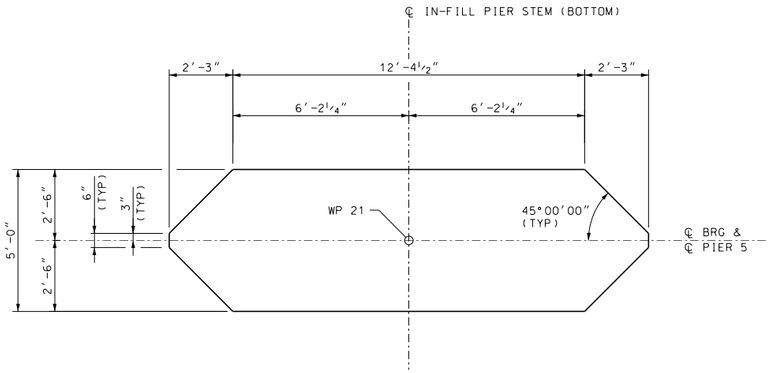
McFarland Johnson



PIER 5 FOOTING
SCALE: 1/8" = 1'-0"



SECTION A-A (MASONRY)
SCALE: 3/8" = 1'-0"



SECTION B-B (MASONRY)
SCALE: 3/8" = 1'-0"

LEGEND

- PROPOSED VERTICAL PILE
- PROPOSED BATTERED PILE 2 HORIZONTAL TO 12 VERTICAL
- EXISTING VERTICAL PILE
- EXISTING BATTERED PILE 2 HORIZONTAL TO 12 VERTICAL

NOTES

1. PILE LAYOUT DIMENSIONS SHOWN ARE HORIZONTAL AND AT THE INTERSECTION OF THE PILE AND BOTTOM OF FOOTING.
2. EXISTING PILES ARE 12BP53.
3. PROPOSED PILES ARE HP14x89.

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

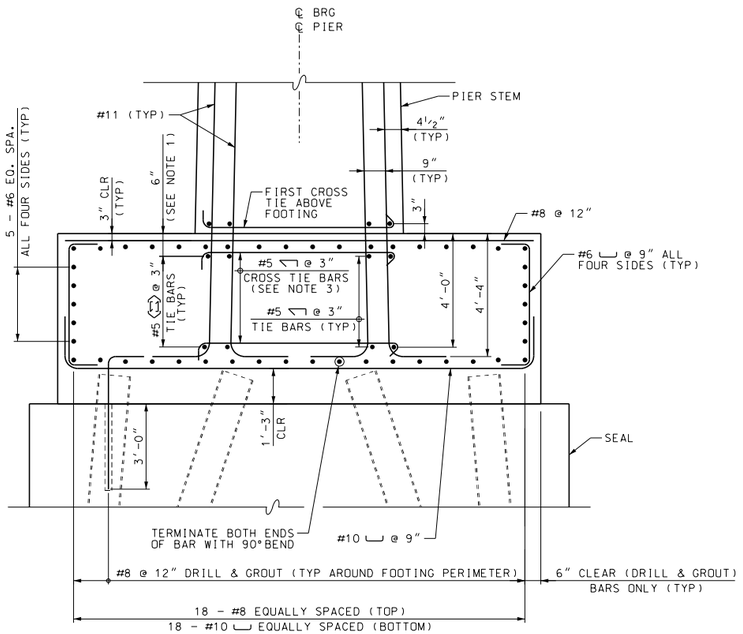
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

PIER 5 MASONRY (2 OF 2)

BRIDGE SHEET 46 OF 94

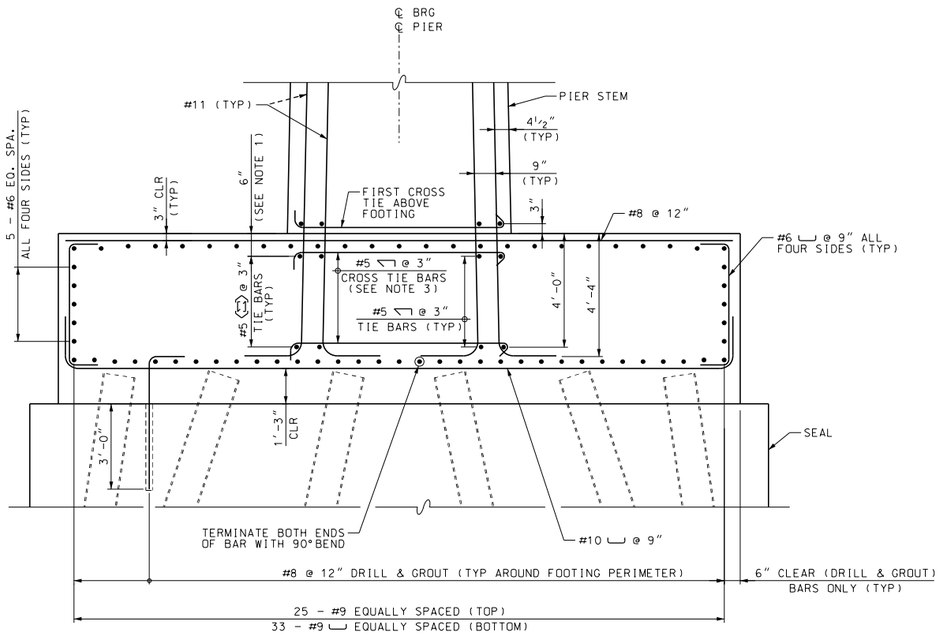
REVISIONS AFTER PROPOSAL			BY	DATE		BY	DATE
		DESIGNED	SIW	06/19	CHECKED	DMK	06/19
		DRAWN	SLM	06/19	CHECKED	WRB	06/19
		QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
		ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
		REV. DATE		A001(154)		189	600

FILE NUMBER 133-1-1



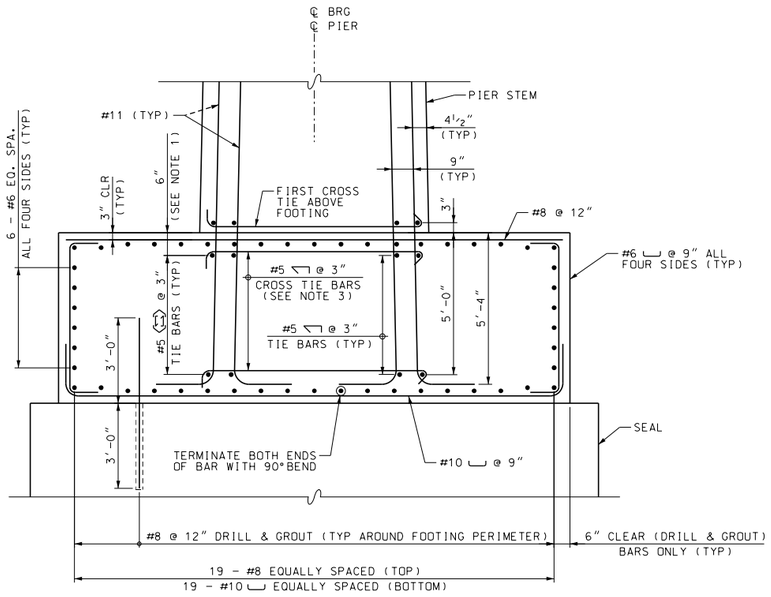
PIER 1 & 2 FOOTING REINFORCEMENT

SCALE: 3/8" = 1'-0"



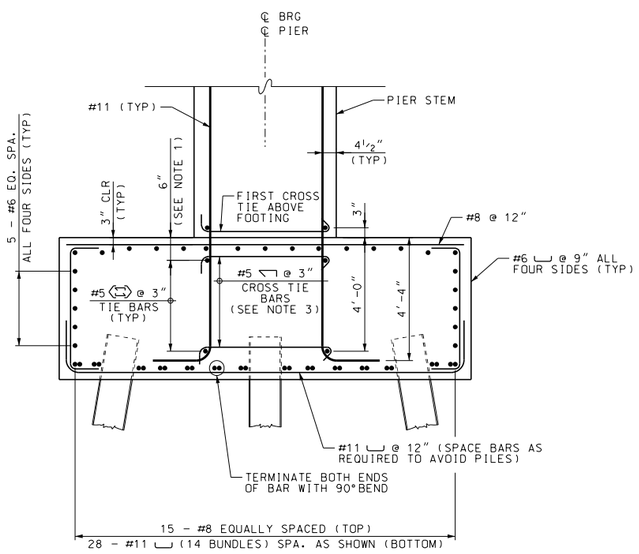
PIER 3 FOOTING REINFORCEMENT

SCALE: 3/8" = 1'-0"



PIER 4 FOOTING REINFORCEMENT

SCALE: 3/8" = 1'-0"



PIER 5 FOOTING REINFORCEMENT

SCALE: 3/8" = 1'-0"

NOTES

1. TO MINIMIZE CONGESTION OF REINFORCING, OMIT TIES AND CROSS TIES WITHIN 6" REGION BELOW TOP OF FOOTING.
2. PLACE CROSS TIE BARS IN FOOTING AS SHOWN IN SECTION D-D, BRIDGE SHEET 49.
3. PLACE CROSS TIE BARS IN FOOTING AS SHOWN IN SECTION D-D, BRIDGE SHEET 50.
4. PLACE CROSS TIE BARS IN FOOTING AS SHOWN IN SECTION D-D, BRIDGE SHEET 51.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

PIER FOOTING REINFORCEMENT

BRIDGE SHEET: 47 OF 94

FILE NUMBER: 133-1-1

TOTAL SHEETS: 600

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	WRB	06/19
	DRAWN	SIW	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	
	REV. DATE		A001(154)		190	

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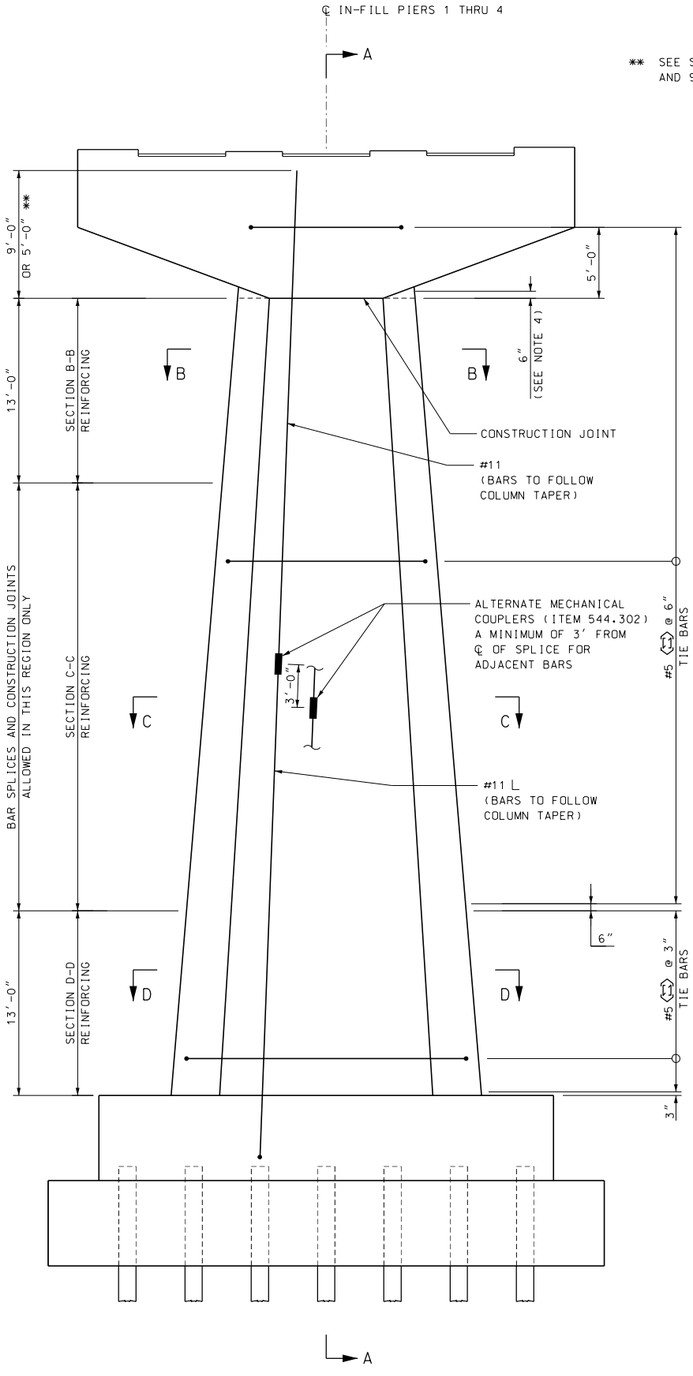
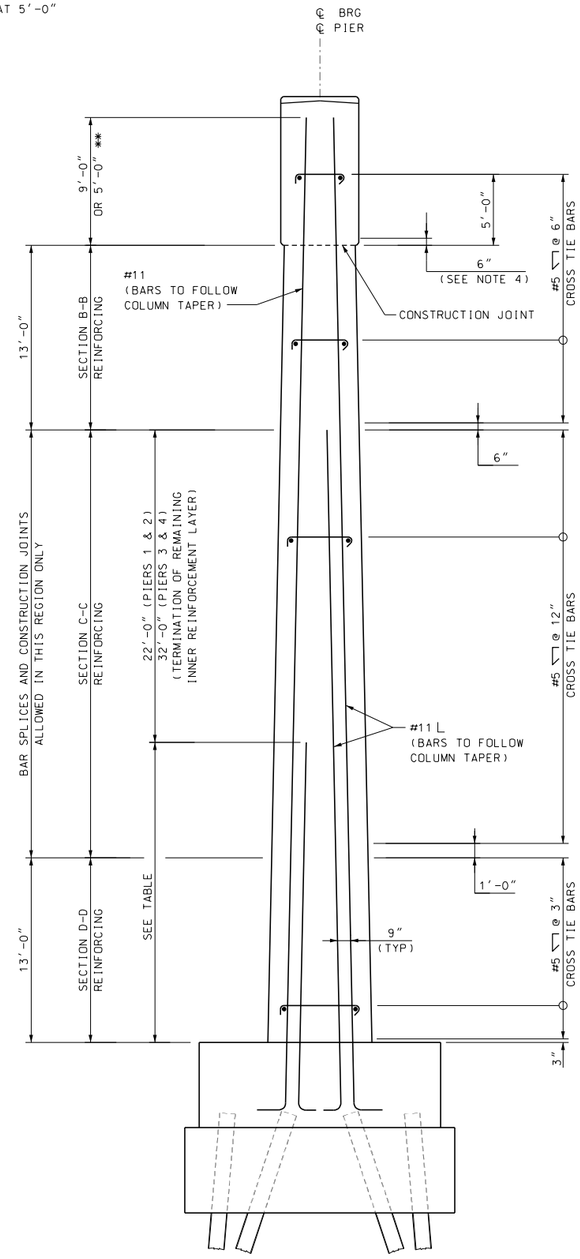


ELEVATION

(PIER 1 SHOWN, PIERS 2 THRU 4 SIMILAR)

SCALE: $\frac{3}{16}$" = 1'-0"



SECTION A-A

SCALE: $\frac{3}{16}$" = 1'-0"

STEM REINFORCING CUTOFF TABLE ✳	
PIER NO.	LENGTH
1	21'-2"
2	27'-8"
3	24'-4"
4	28'-8"

✳ SEE DESIGNATED BARS TO BE TERMINATED IN SECTION C-C ON BRIDGE SHEET 49.

NOTES:

1. FOR SECTIONS B-B, C-C, AND D-D (PIERS 1 AND 2), SEE BRIDGE SHEET 49.
2. FOR SECTIONS B-B, C-C, AND D-D (PIERS 3 AND 4), SEE BRIDGE SHEET 50.
3. PRIMARY VERTICAL REINFORCING IN PIER (#11 BARS) SHALL BE SPLICED WITH MECHANICAL COUPLERS. LAP SPLICES ARE NOT PERMITTED.
4. TO MINIMIZE CONGESTION OF REINFORCING, OMIT TIES AND CROSS TIES WITHIN 6" REGION ABOVE BOTTOM OF PIER CAP.

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

IN-FILL PIERS 1 THRU 4 REINFORCEMENT

BRIDGE SHEET 48 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	DMK	06/19
	DRAWN	SLM	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

FEDERAL PROJECT NO. A001(154)

SHEET NO. 191

FILE NUMBER 133-1-1

TOTAL SHEETS 600

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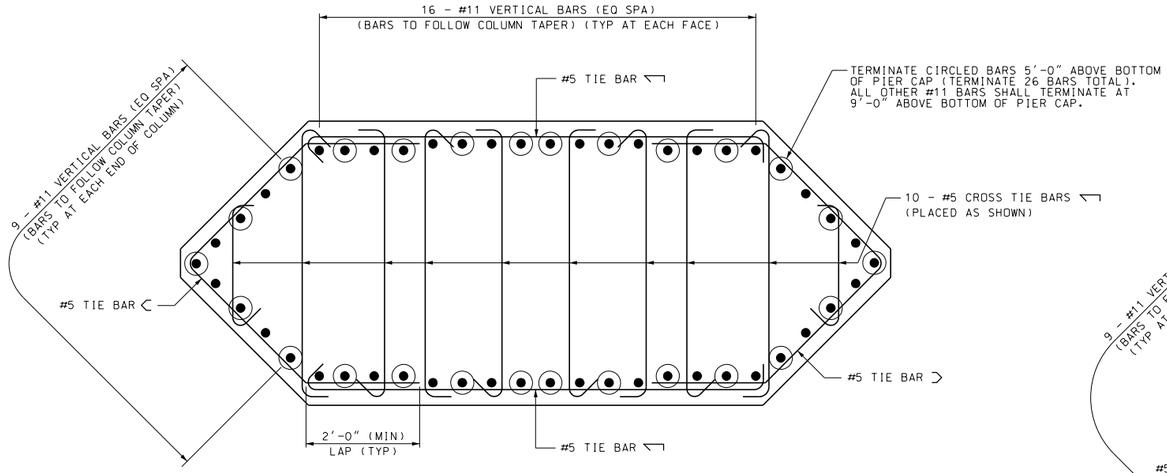
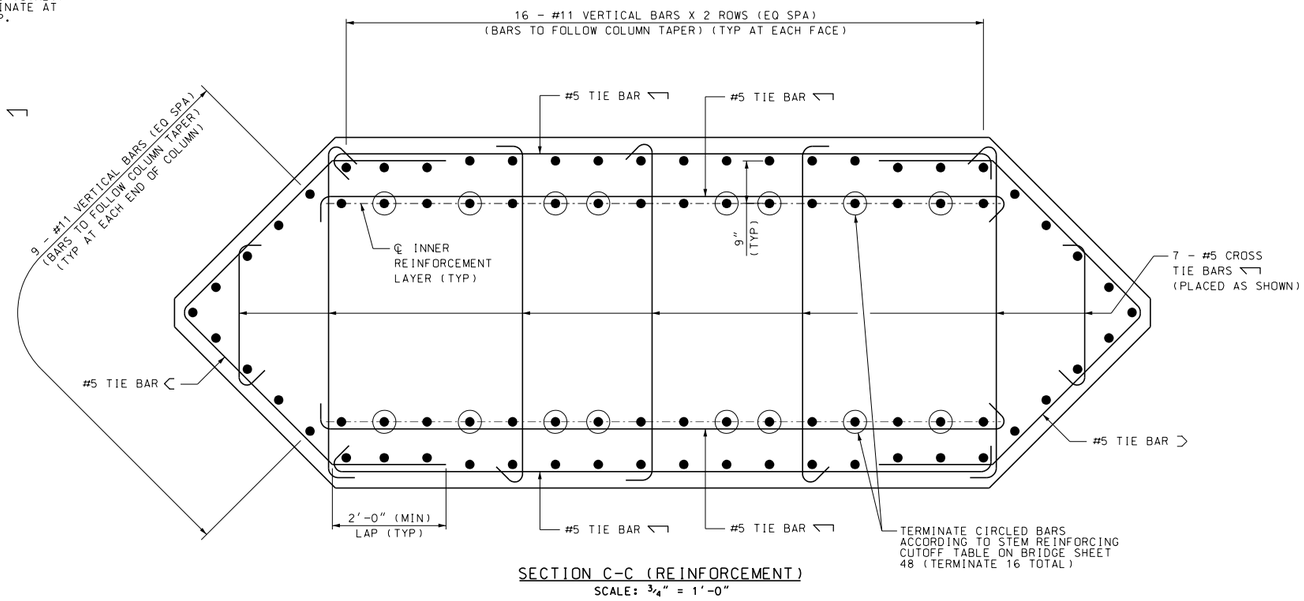
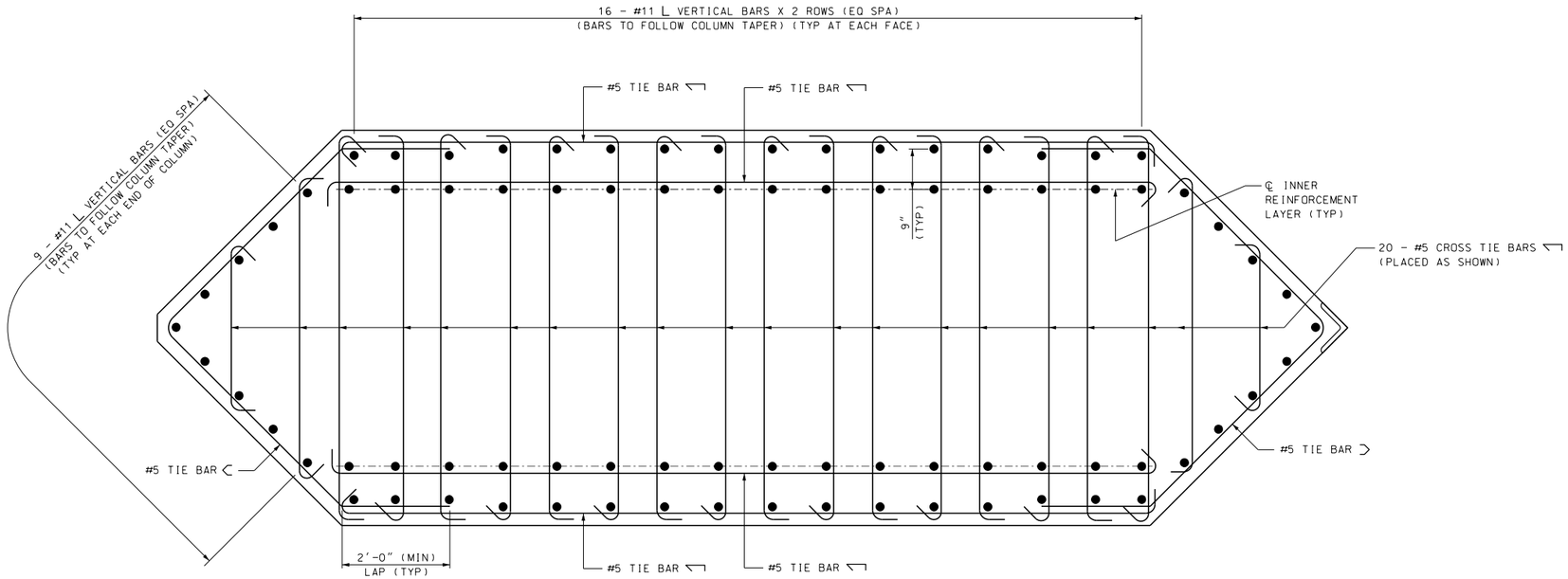


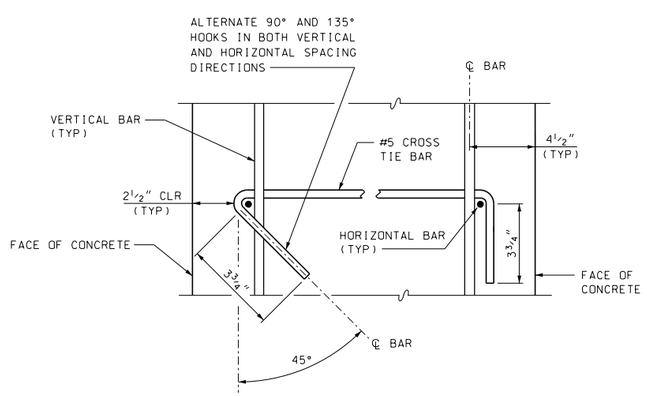
SECTION B-B (REINFORCEMENT)
SCALE: 3/4" = 1'-0"



SECTION C-C (REINFORCEMENT)
SCALE: 3/4" = 1'-0"



SECTION D-D (REINFORCEMENT)
SCALE: 3/4" = 1'-0"



TYPICAL CROSS TIE BAR DETAIL
NOT TO SCALE

NOTES

1. FOR LOCATION OF SECTIONS B-B, C-C, AND D-D, SEE BRIDGE SHEET 48.
2. FOR STEM REINFORCING CUTOFF TABLE, SEE BRIDGE SHEET 48.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

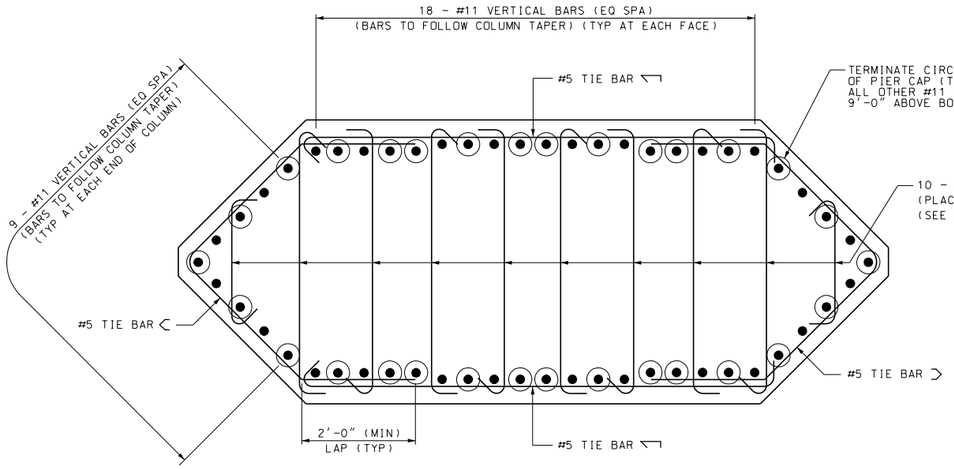
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

IN-FILL PIERS 1 AND 2 REINFORCEMENT SECTIONS

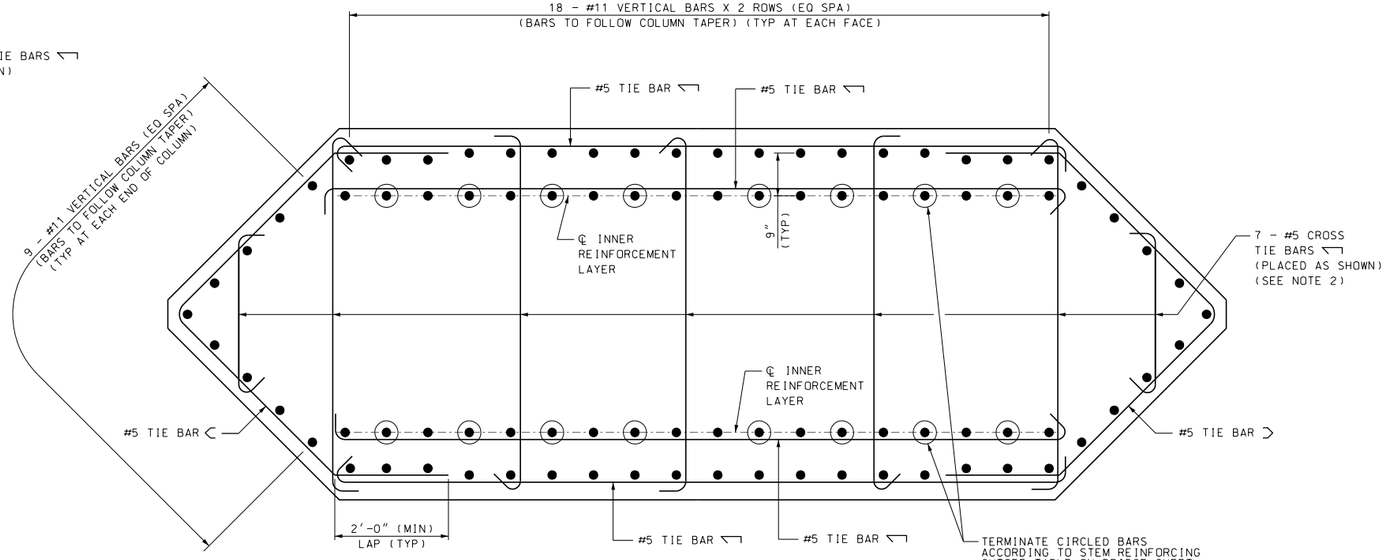
BRIDGE SHEET 49 OF 94

FILE NUMBER 133-1-1

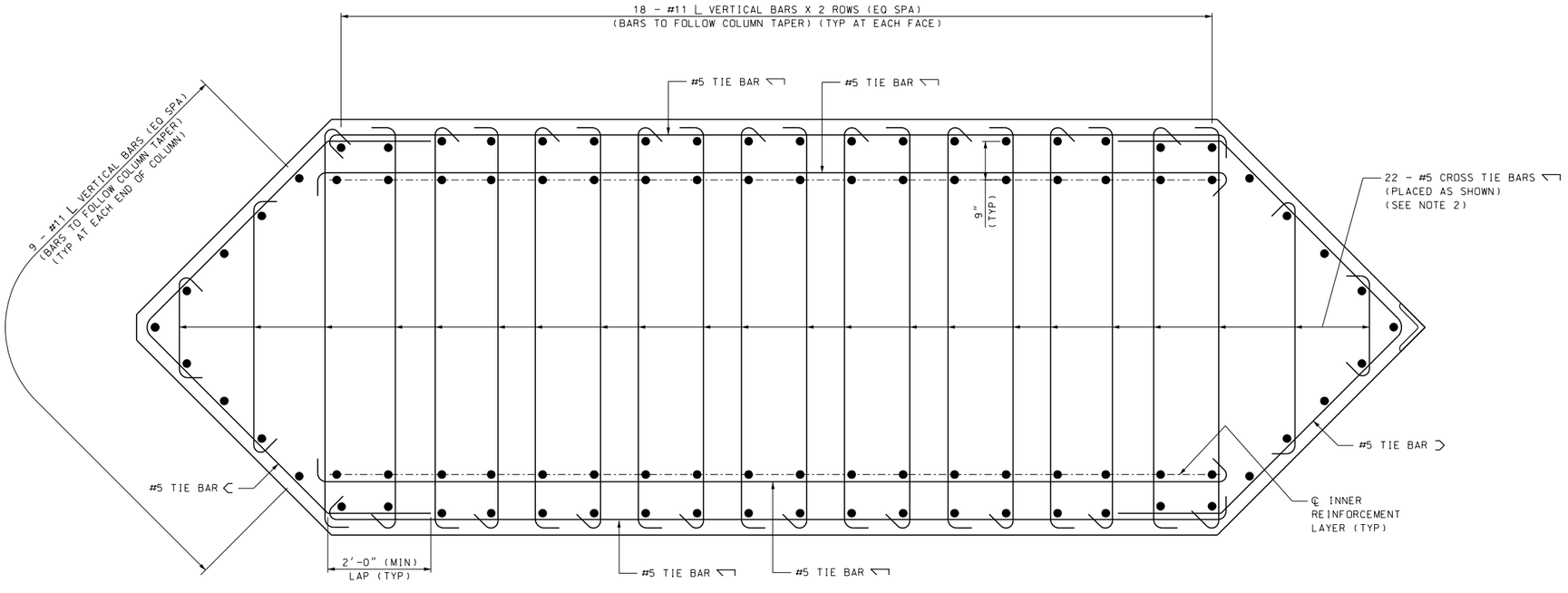
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	DMK	06/19
	DRAWN	SLM	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		192	600



SECTION B-B (REINFORCEMENT)
SCALE: $\frac{3}{4}$" = 1'-0"



SECTION C-C (REINFORCEMENT)
SCALE: $\frac{3}{4}$" = 1'-0"



SECTION D-D (REINFORCEMENT)
SCALE: $\frac{3}{4}$" = 1'-0"

NOTES

1. FOR LOCATION OF SECTIONS B-B, C-C, AND D-D, SEE BRIDGE SHEET 48.
2. FOR TYPICAL CROSS TIE BAR DETAIL, SEE BRIDGE SHEET 49.
3. FOR STEM REINFORCING CUTOFF TABLE, SEE BRIDGE SHEET 48.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

IN-FILL PIERS 3 AND 4 REINFORCEMENT SECTIONS

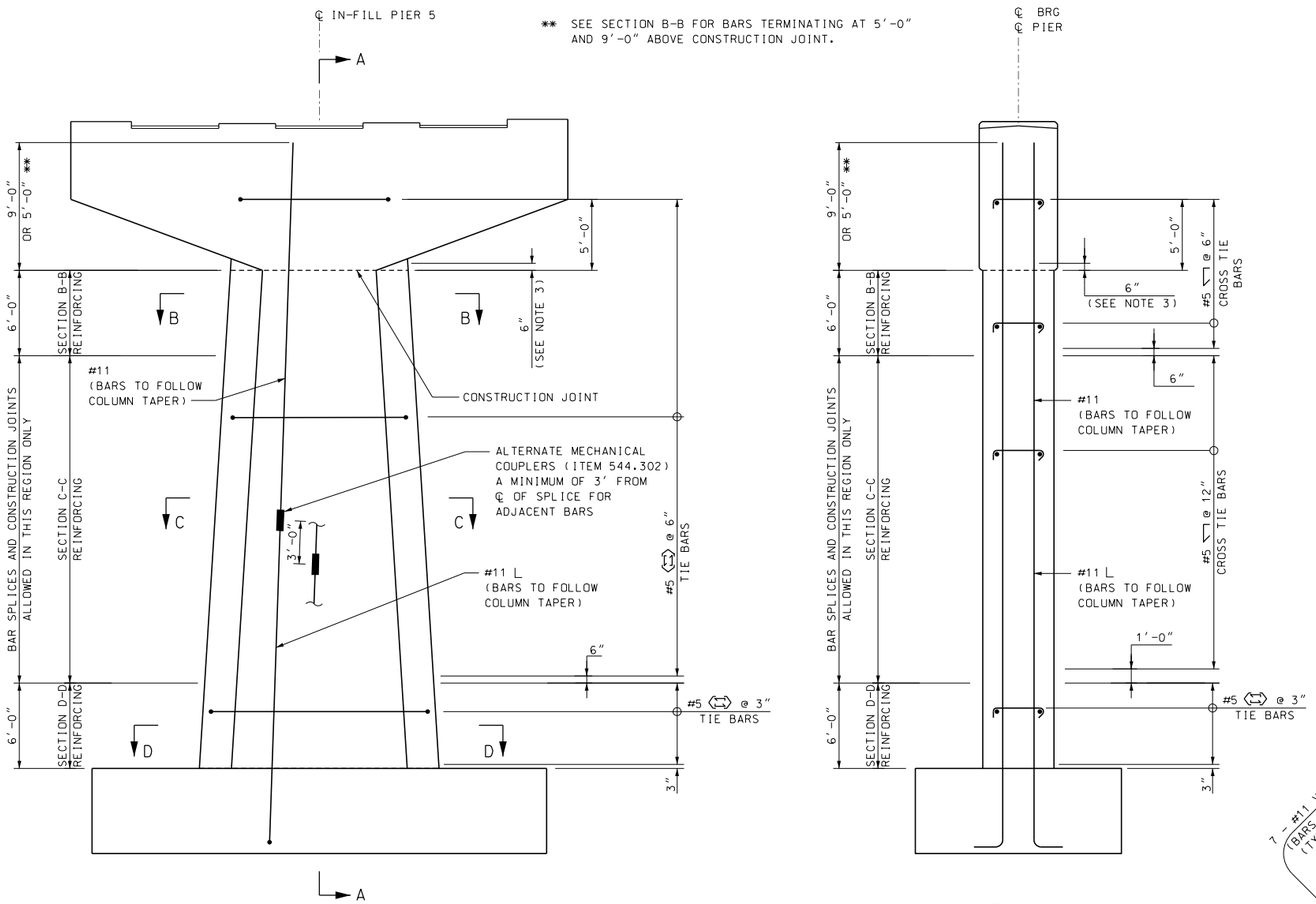
BRIDGE SHEET: 50 OF 94

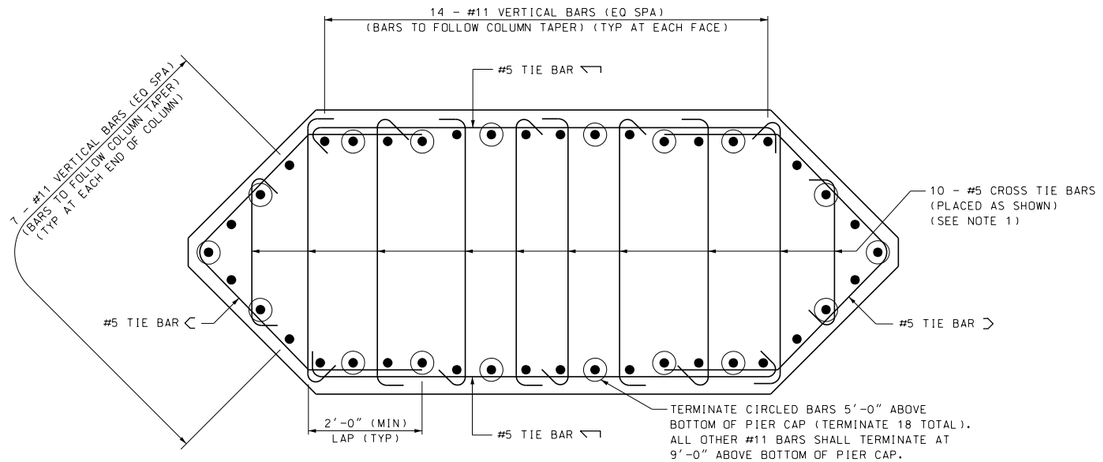
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	DMK	06/19
	DRAWN	SLM	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	193	600

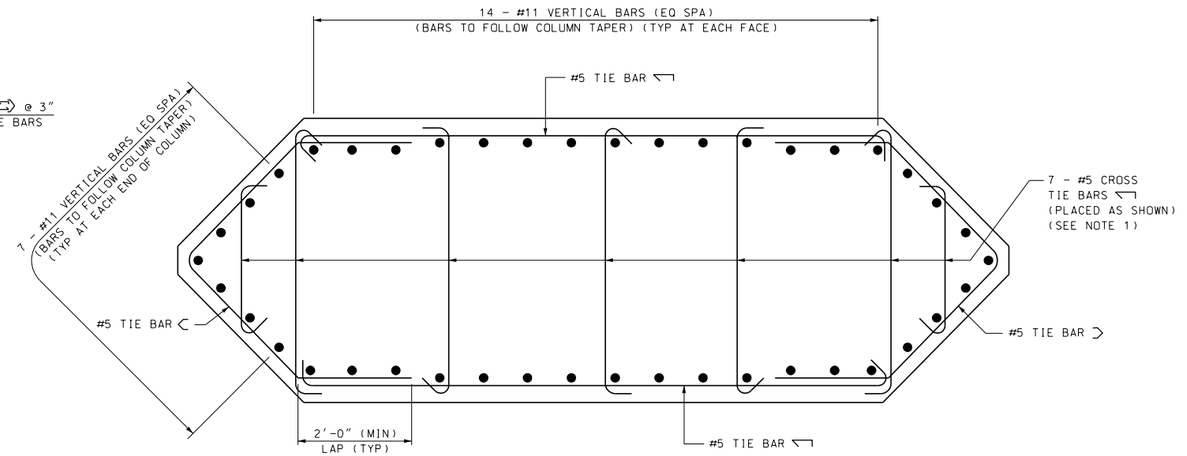
FILE NUMBER: 133-1-1

McFarland Johnson

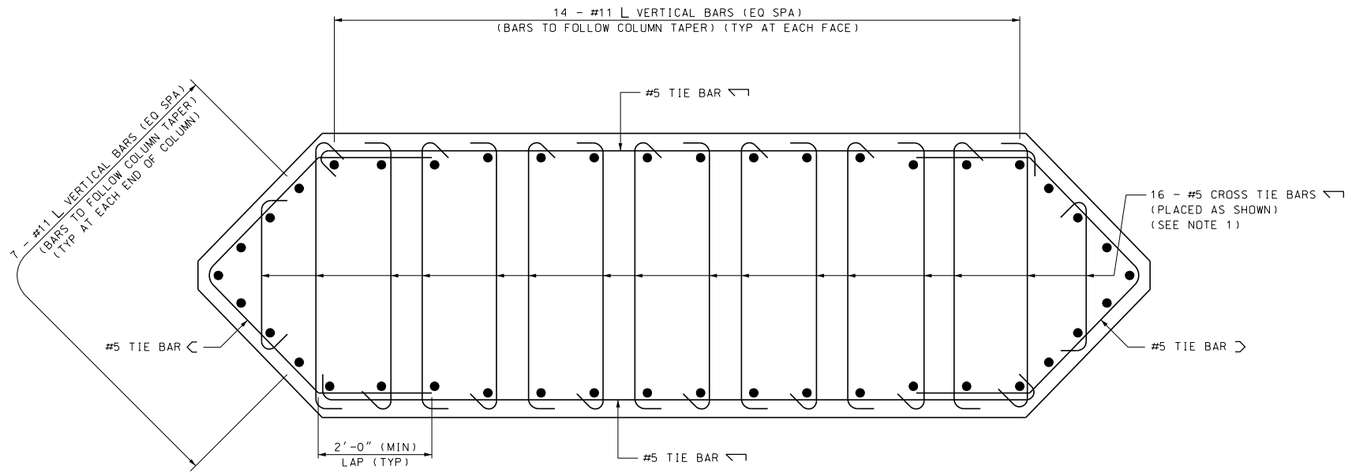




SECTION B-B (REINFORCEMENT)
SCALE: 3/4" = 1'-0"



SECTION C-C (REINFORCEMENT)
SCALE: 3/4" = 1'-0"



SECTION D-D (REINFORCEMENT)
SCALE: 3/4" = 1'-0"

NOTES:

1. FOR TYPICAL CROSS TIE BAR DETAIL, SEE BRIDGE SHEET 49.
2. PRIMARY VERTICAL REINFORCING IN PIER (#11 BARS) SHALL BE SPLICED WITH MECHANICAL COUPLERS. LAP SPLICES ARE NOT PERMITTED.
3. TO MINIMIZE CONGESTION OF REINFORCING, OMIT TIES AND CROSS TIES WITHIN 6" REGION ABOVE BOTTOM OF PIER CAP.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

IN-FILL PIER 5 STEM REINFORCEMENT

BRIDGE SHEET 51 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	DMK	06/19
	DRAWN	SLM	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

FILE NUMBER 133-1-1

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	194	600

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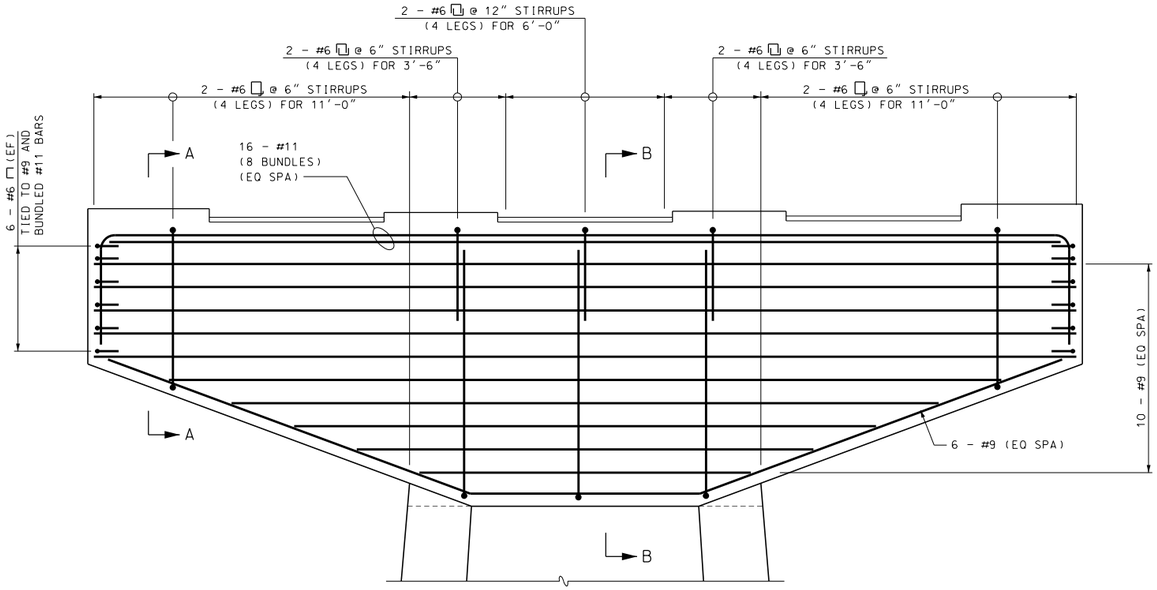
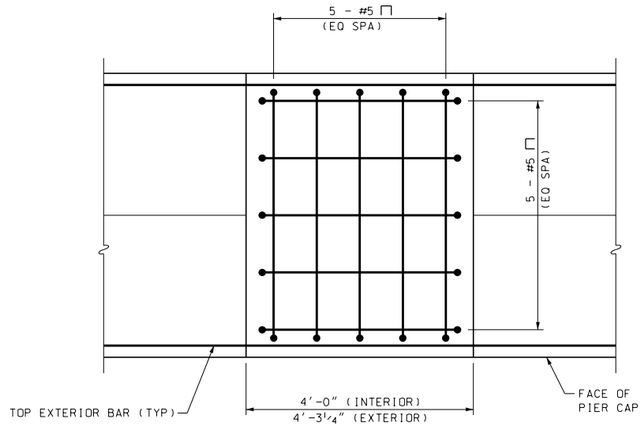
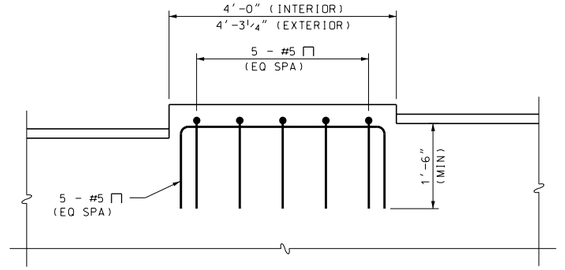


TYPICAL IN-FILL PIER CAP ELEVATION

SCALE: $^{3}/_{8}$" = 1'-0"



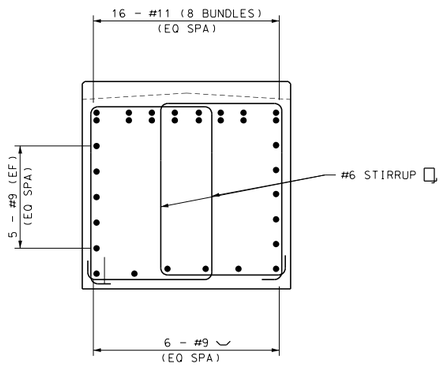
PLAN



ELEVATION

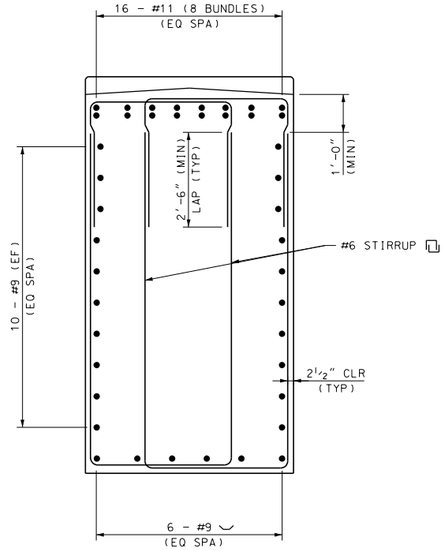
PEDESTAL REINFORCEMENT

SCALE: $^{3}/_{4}$" = 1'-0"



SECTION A-A

SCALE: $^{1}/_{2}$" = 1'-0"



SECTION B-B

SCALE: $^{1}/_{2}$" = 1'-0"

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECR/WCR

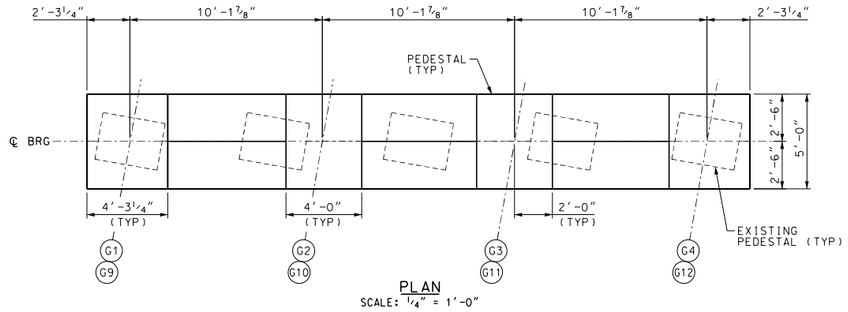
TYPICAL IN-FILL PIER CAP REINFORCEMENT

BRIDGE SHEET 52 OF 94

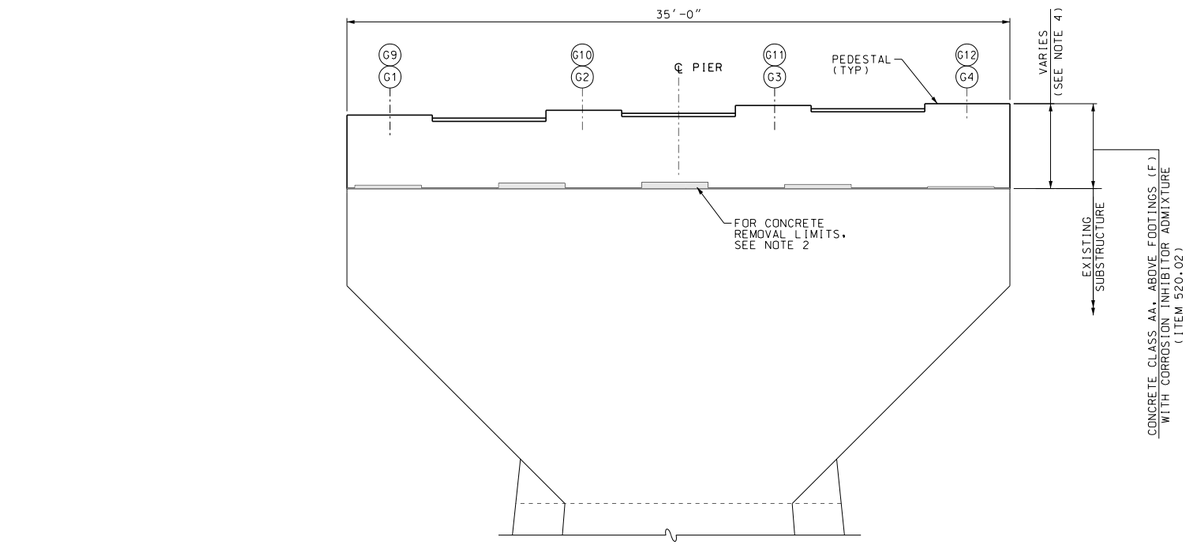
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	DMK	06/19
	DRAWN	SLM	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

FILE NUMBER 133-1-1

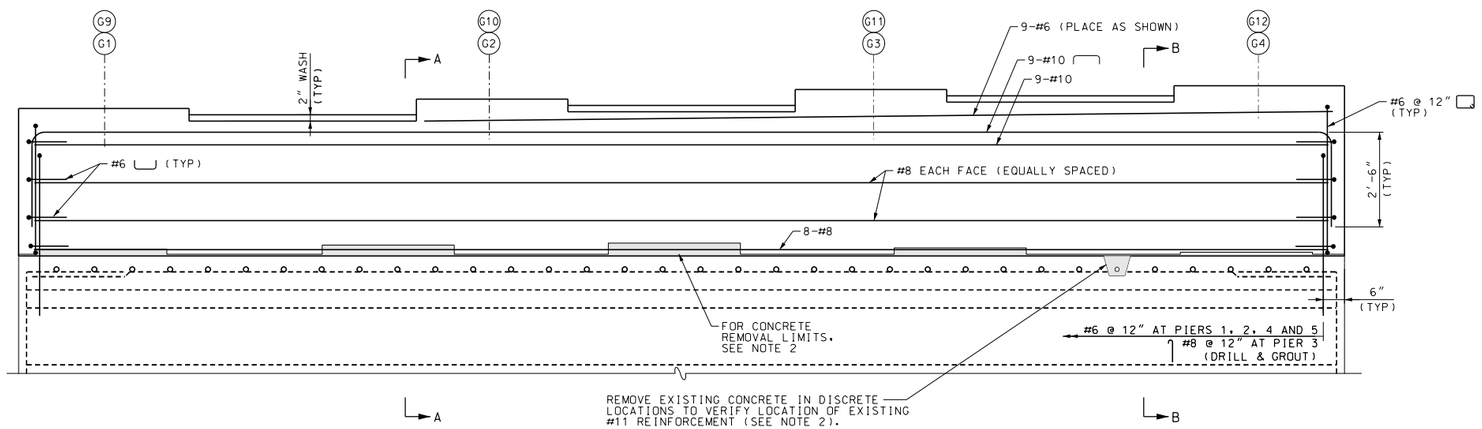
ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	195	600



PLAN
SCALE: ¼″ = 1′-0″

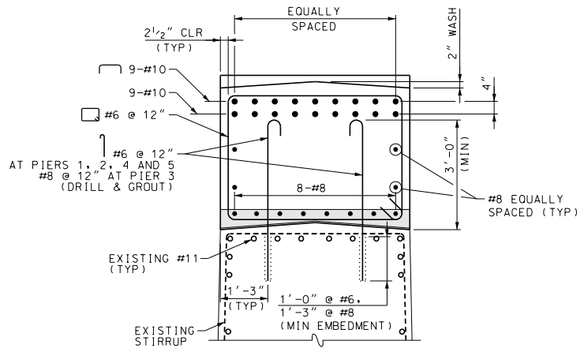


PARTIAL PIER ELEVATION – MASONRY
SCALE: ¼″ = 1′-0″

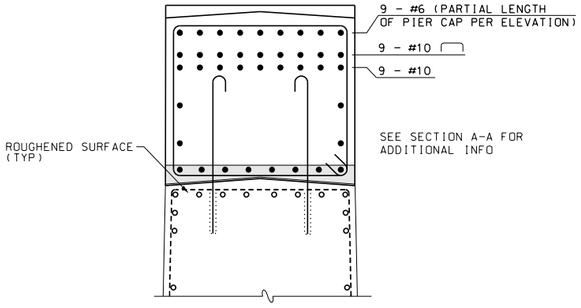


PARTIAL PIER ELEVATION – REINFORCEMENT
SCALE: ½″ = 1′-0″

TOP OF PEDESTAL ELEVATIONS (SEE NOTE 1)								
PIER	G1	G2	G3	G4	G9	G10	G11	G12
1	387.59	387.84	388.09	388.17	388.40	388.43	388.28	388.13
2	392.07	392.33	392.58	392.65	392.89	392.92	392.77	392.62
3	396.12	396.37	396.63	397.30	397.53	396.96	396.82	396.67
4	401.05	401.30	401.55	401.63	401.86	401.89	401.74	401.59
5	405.53	405.79	406.04	406.11	406.35	406.38	406.23	406.08



SECTION A-A
SCALE: ½″ = 1′-0″



SECTION B-B
SCALE: ½″ = 1′-0″

PIER CAP EXTENSION NOTES:

1. THE ELEVATIONS SHOWN IN THE TOP OF PEDESTAL ELEVATIONS TABLE ARE APPROXIMATE. THE FINAL TOP OF PEDESTAL ELEVATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED WITH THE BEARING SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION OF THE PIER PEDESTALS.
2. CONTRACTOR SHALL REMOVE EXISTING CONCRETE BEAM SEATS AND ROUGHEN ENTIRE EXPOSED PIER CAP SURFACE TO A ¼″ AMPLITUDE. UNSOUND CONCRETE ENCOUNTERED SHALL BE REMOVED. CONTRACTOR SHALL LOCATE EXISTING #11 BARS TO PREVENT CONFLICT WITH PROPOSED DRILL AND GROUT BARS.
3. CONCRETE REMOVAL SHALL BE PAID UNDER ITEM 502. – REMOVAL OF EXISTING BRIDGE STRUCTURE.
4. THE DEPTH OF CONCRETE TO BE PLACED ABOVE THE EXISTING PIER WILL VARY FROM PIER TO PIER DEPENDING UPON THE PROPOSED AND EXISTING ELEVATIONS AT EACH PIER. THE PARTIAL PIER ELEVATION SHOWN ON THIS SHEET IS SCHEMATIC AND DOES NOT REPRESENT ONE PARTICULAR PIER.
5. FOR PEDESTAL MASONRY AND REINFORCEMENT DETAILING SEE BRIDGE SHEETS 38 AND 52.
6. EXISTING BRIDGE SHOE ANCHOR BOLTS TO BE CUT FLUSH WITH REMOVAL SURFACE. ITEM 502.
7. SEE BRIDGE SHEET 52 FOR PEDESTAL REINFORCEMENT.
8. IF CONCRETE REMOVAL LIMITS EXCEED ½″, CONTRACTOR SHALL PROVIDE 1″ SAWCUT TO PROVIDE A NEAT STRAIGHT LINE. ALL COSTS SHALL BE INCLUDED UNDER ITEM 502.

LEGEND

▭ – AREAS OF EXISTING CONCRETE REMOVAL

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

EXISTING PIER CAP EXTENSION DETAILS

BRIDGE SHEET 53 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	DRW	06/19	CHECKED	WRB	06/19
	DRAWN	DJD	06/19	CHECKED	WRB	06/19
	QUANTITIES	SFD	06/19	CHECKED	DMK	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		196	600

FILE NUMBER 133-1-1

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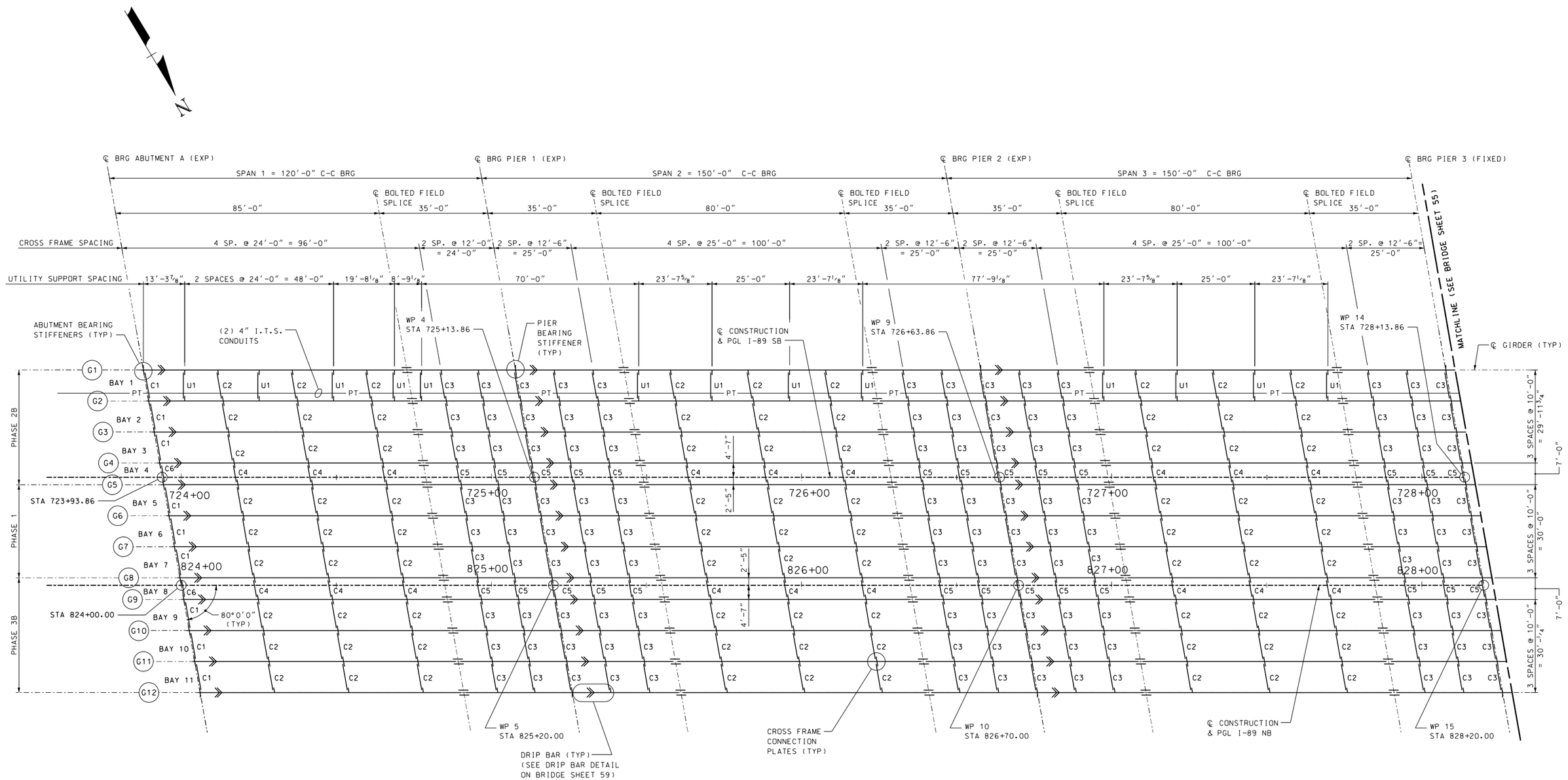


FRAMING PLAN

SCALE: 1/16" = 1'-0"

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

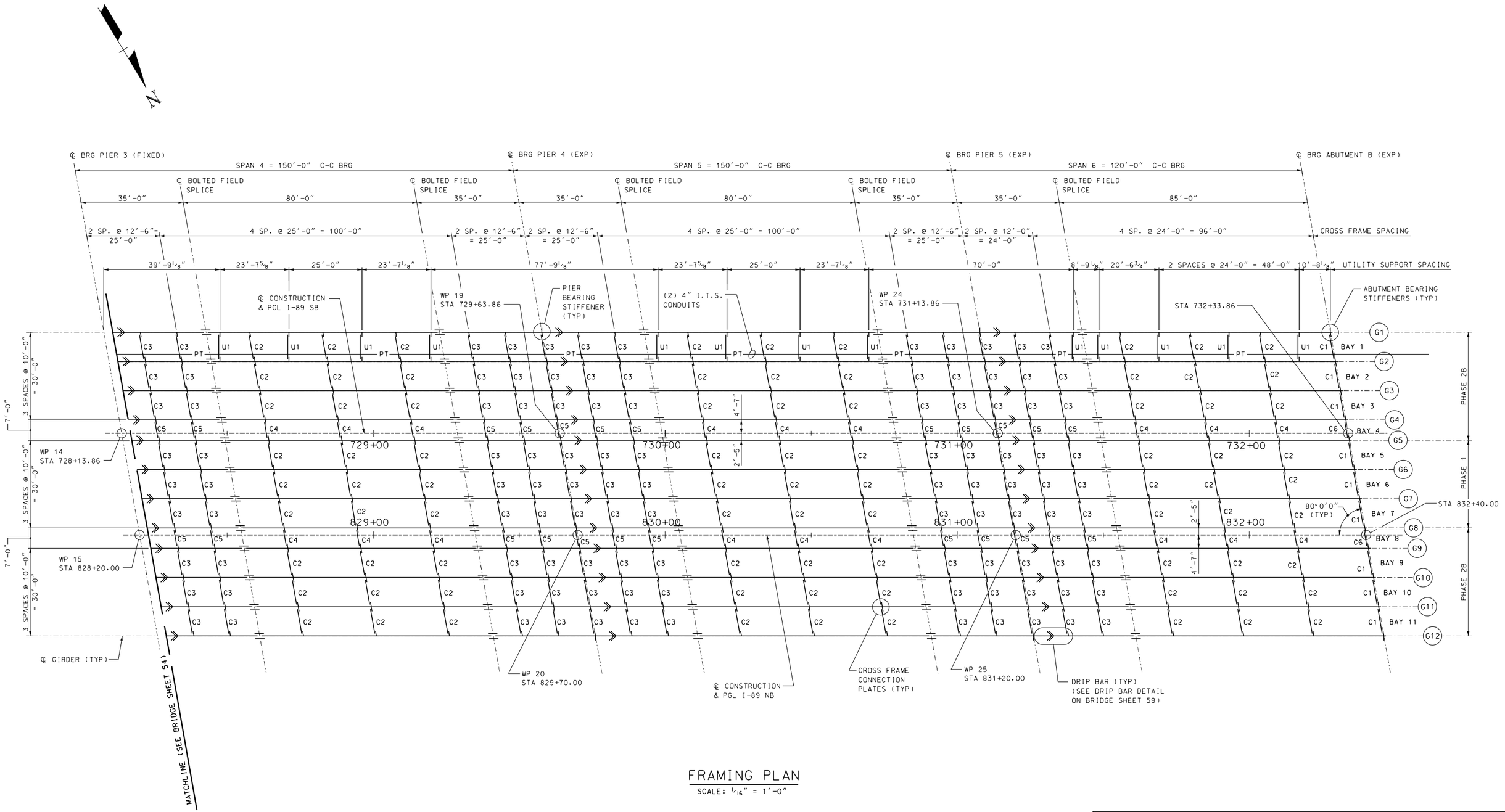
FRAMING PLAN (1 OF 2)

BRIDGE SHEET: 54 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		197	600

FILE NUMBER: 133-1-1

McFarland Johnson



FRAMING PLAN

SCALE: 1/16" = 1'-0"

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

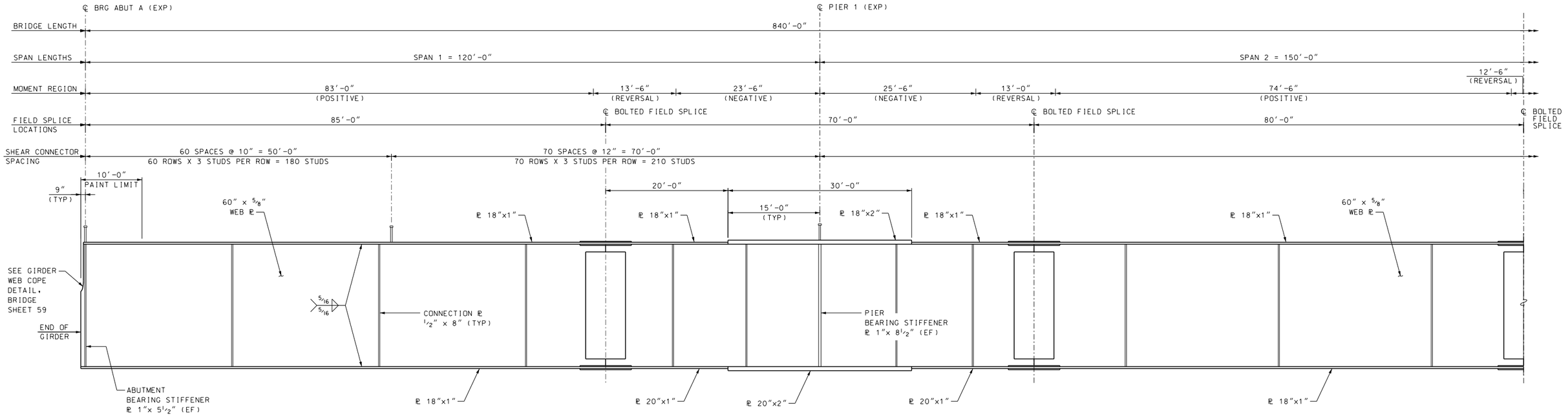
FRAMING PLAN (2 OF 2)

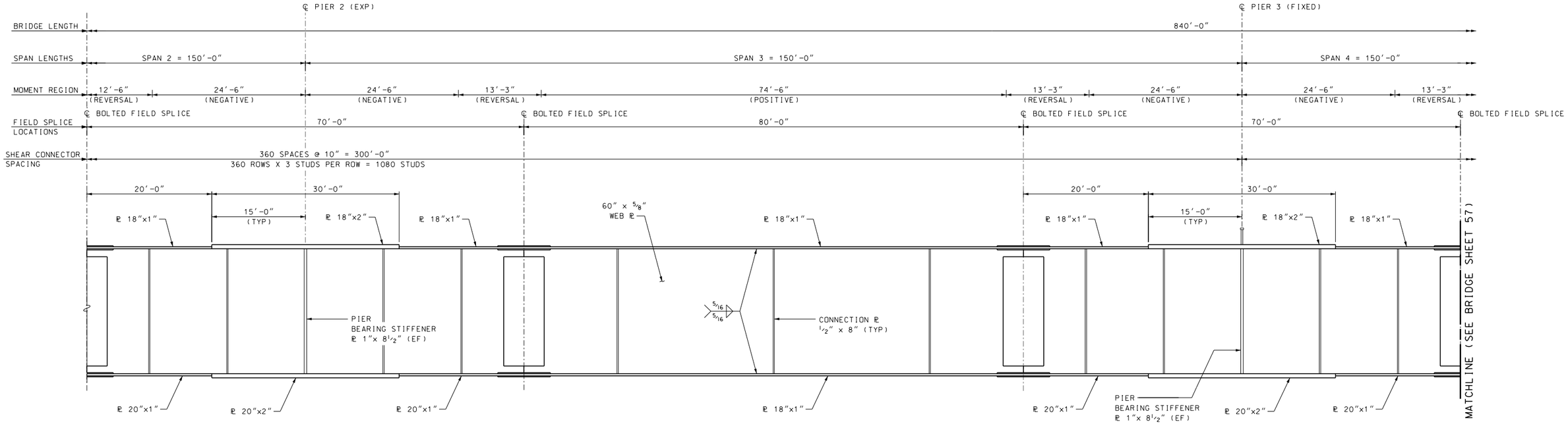
BRIDGE SHEET: 55 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	JAL	06/19
DRAWN	SLM	06/19	CHECKED	RLJ	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	198	600

FILE NUMBER: 133-1-1





GIRDER ELEVATION

NOT TO SCALE

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

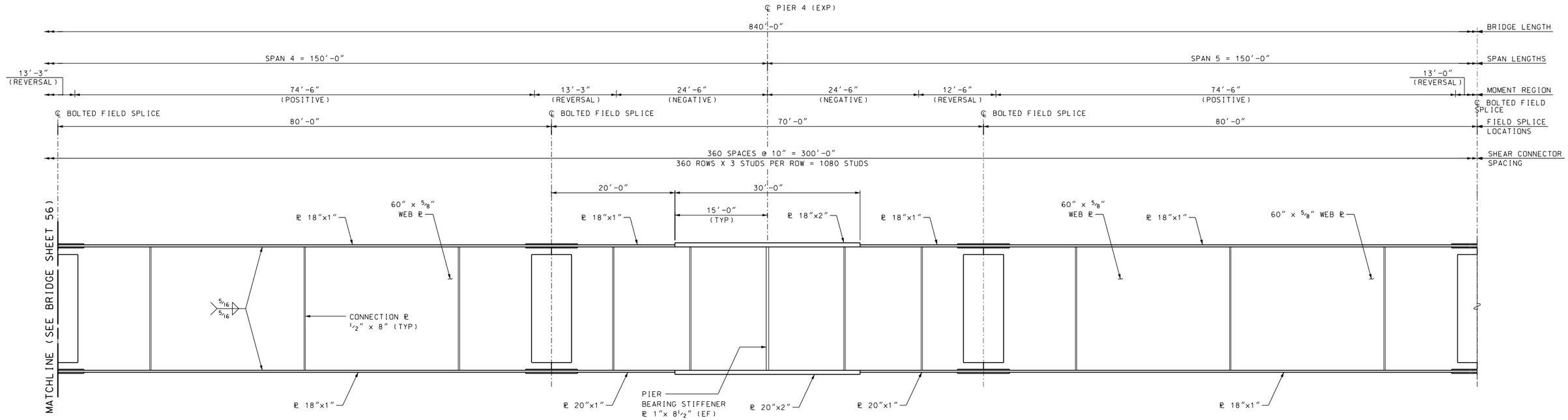
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

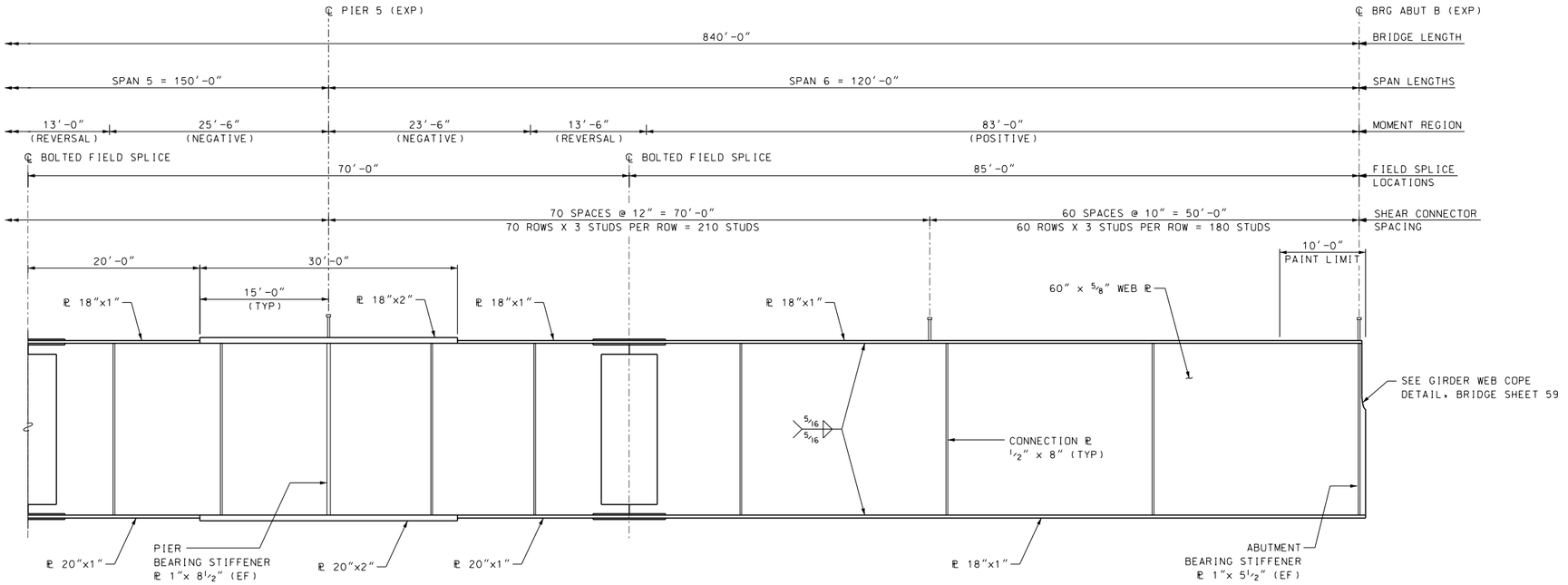
GIRDER ELEVATION (1 OF 2)

BRIDGE SHEET: 56 OF 94

FILE NUMBER: 133-1-1

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	JAL	06/19
DRAWN	SLM	06/19	CHECKED	RLJ	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
ISSUE DATE			FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE			A001(154)	199	600





GIRDER ELEVATION

NOT TO SCALE

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

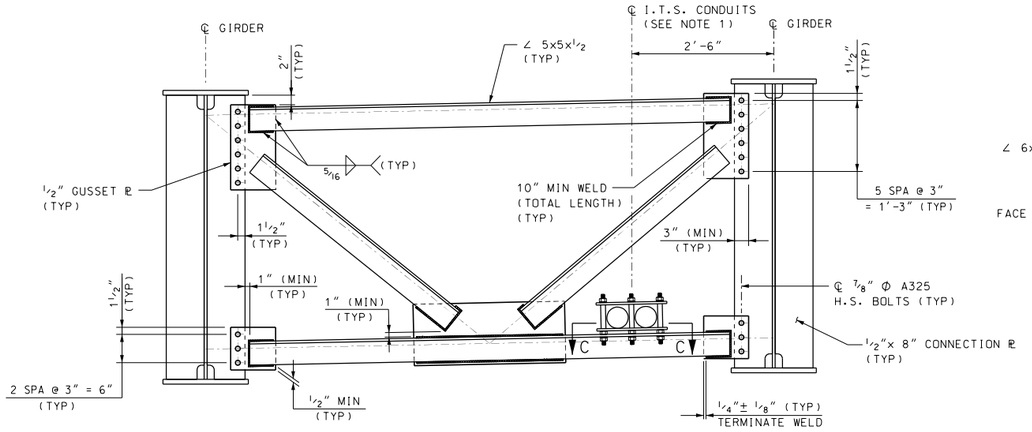
GIRDER ELEVATION (2 OF 2)

BRIDGE SHEET: 57 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	JAL	06/19
DRAWN	SLM	06/19	CHECKED	RLJ	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

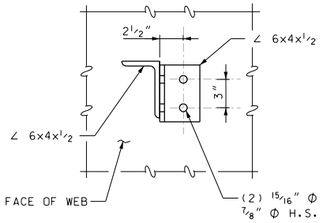
ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	200	600

FILE NUMBER: 133-1-1



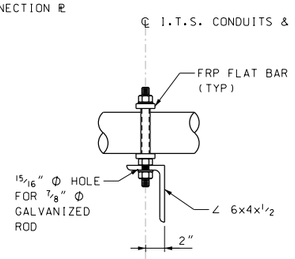
INTERMEDIATE CROSS FRAME (POSITIVE MOMENT REGION) (TYPE C2)

(10'-0" GIRDER SPACING)
SCALE: 3/4" = 1'-0"



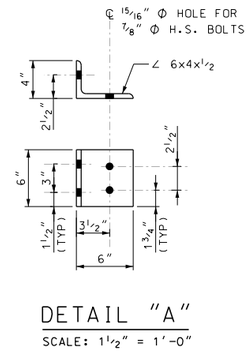
SECTION A-A

SCALE: 1 1/2" = 1'-0"



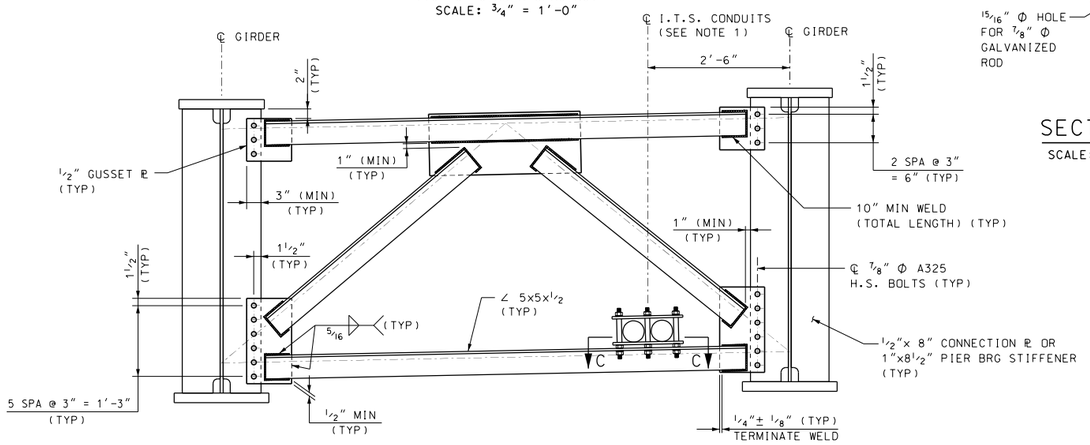
SECTION B-B

SCALE: 1 1/2" = 1'-0"



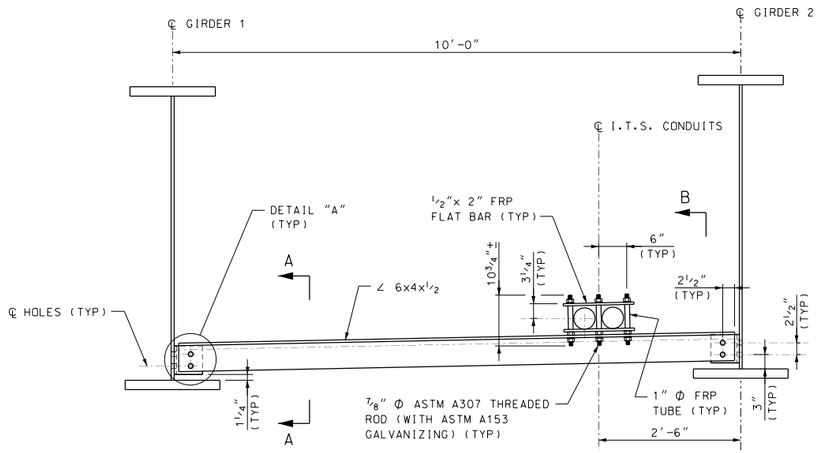
DETAIL "A"

SCALE: 1 1/2" = 1'-0"



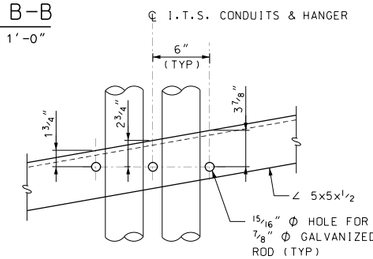
INTERMEDIATE AND PIER CROSS FRAME (NEGATIVE MOMENT REGION) (TYPE C3)

(10'-0" GIRDER SPACING)
SCALE: 3/4" = 1'-0"



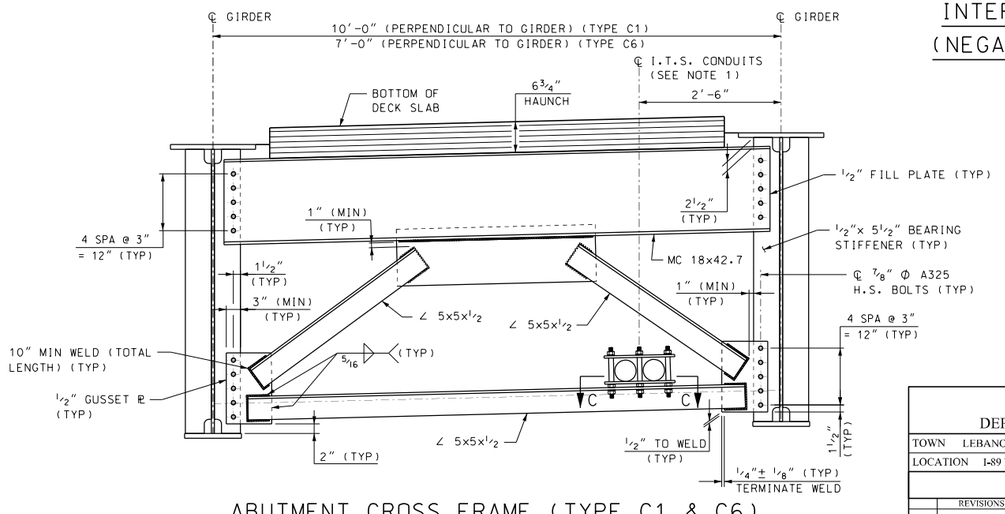
INTERMEDIATE UTILITY SUPPORT (TYPE U1)

SCALE: 3/4" = 1'-0"



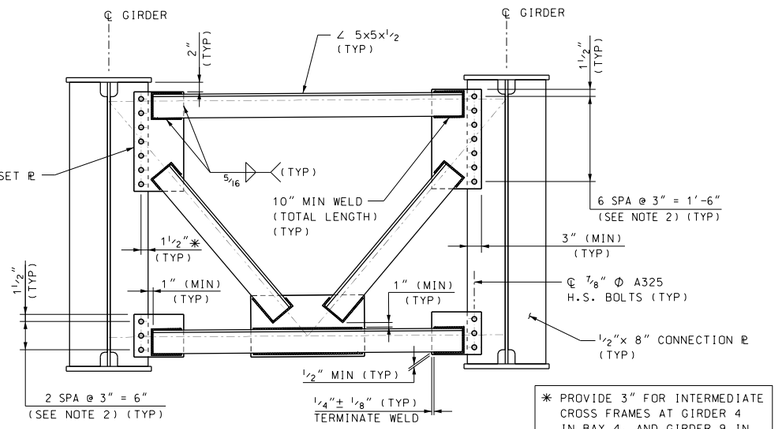
SECTION C-C

SCALE: 1 1/2" = 1'-0"



ABUTMENT CROSS FRAME (TYPE C1 & C6)

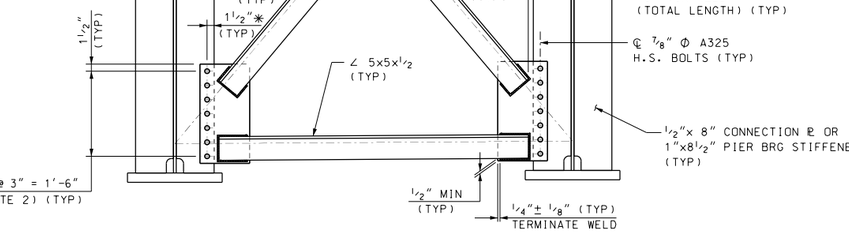
SCALE: 3/4" = 1'-0"



✳ PROVIDE 3" FOR INTERMEDIATE CROSS FRAMES AT GIRDER 4 IN BAY 4, AND GIRDER 9 IN BAY 8.

INTERMEDIATE CROSS FRAME (POSITIVE MOMENT REGION) (TYPE C4)

(7'-0" GIRDER SPACING)
SCALE: 3/4" = 1'-0"



INTERMEDIATE AND PIER CROSS FRAME (NEGATIVE MOMENT REGION) (TYPE C5)

(7'-0" GIRDER SPACING)
SCALE: 3/4" = 1'-0"

✳ PROVIDE 3" FOR INTERMEDIATE CROSS FRAMES AT GIRDER 4 IN BAY 4, AND GIRDER 9 IN BAY 8.

NOTES

1. THE (2) 4" I.T.S. CONDUITS ARE LOCATED IN BAY 1 ONLY.
2. SEE STRUCTURAL STEEL NOTE 26 ON BRIDGE SHEET 4, REGARDING FIELD DRILLING HOLES FOR INTERMEDIATE CROSS FRAME CONNECTION BETWEEN PHASES.
3. FOR WELD TERMINATION DETAILS, SEE BRIDGE SHEET 60.

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LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

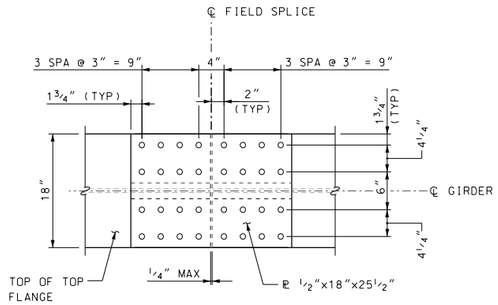
CROSS FRAME DETAILS

BRIDGE SHEET 58 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE			FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE			A001(154)		201	600

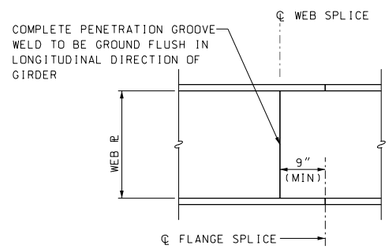
FILE NUMBER 133-1-1

McFarland Johnson



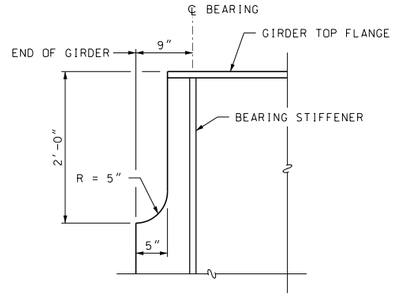
TOP FLANGE PLAN

(OUTSIDE FACE SHOWN)



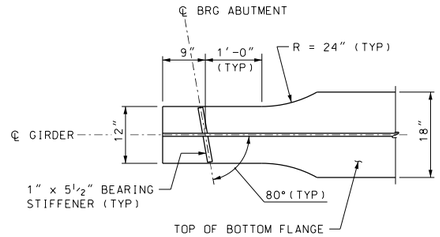
SHOP WELD SPLICE DETAIL

NOT TO SCALE



GIRDER WEB COPE DETAIL

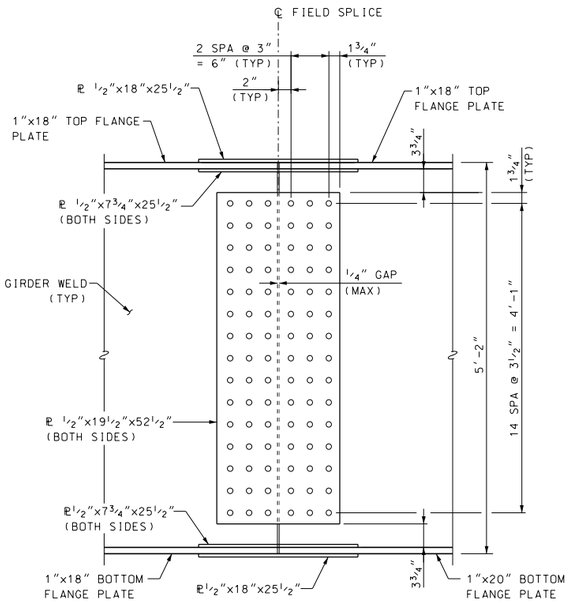
SCALE: 1" = 1'-0"



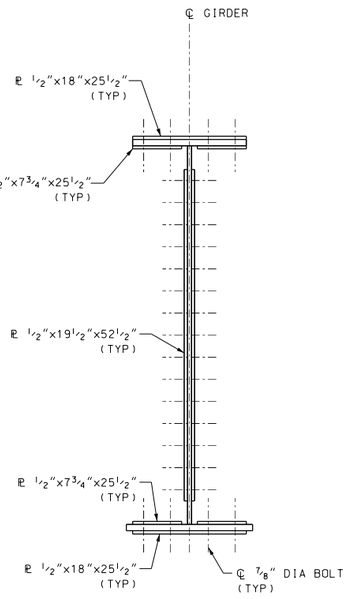
BOTTOM FLANGE WIDTH TRANSITION DETAIL

(AT BOTH ABUTMENTS)

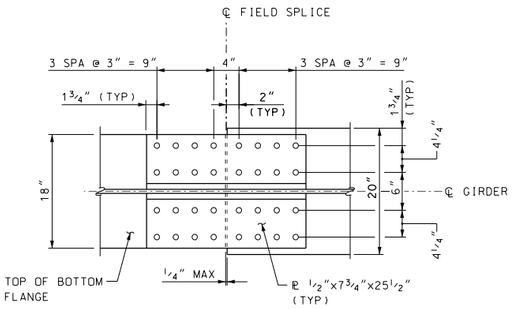
SCALE: ¾" = 1'-0"



ELEVATION

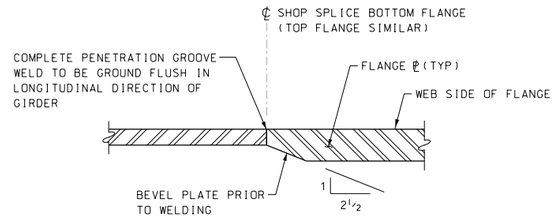


SECTION



BOTTOM FLANGE PLAN

(INSIDE FACE SHOWN)

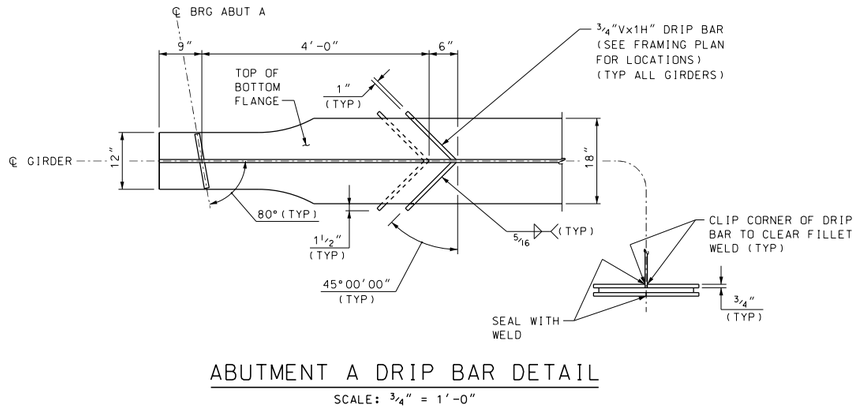


FLANGE THICKNESS TRANSITION DETAIL

NOT TO SCALE

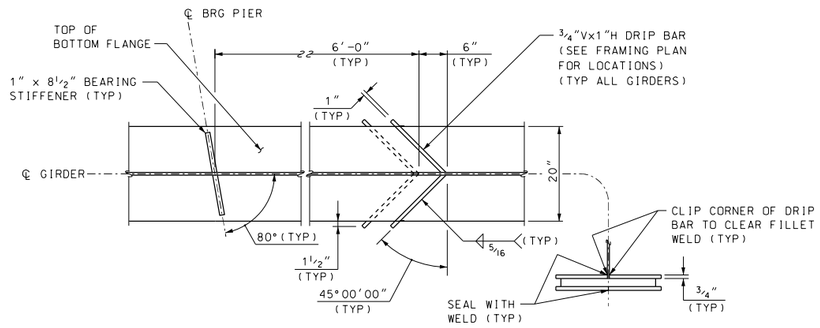
FIELD SPLICE DETAILS

SCALE: 1" = 1'-0"



ABUTMENT A DRIP BAR DETAIL

SCALE: ¾" = 1'-0"



PIER DRIP BAR DETAIL

SCALE: ¾" = 1'-0"

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

SUPERSTRUCTURE DETAILS (1 OF 2)

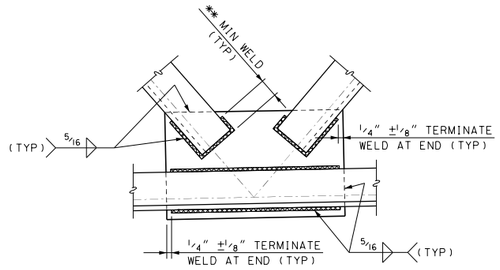
BRIDGE SHEET 59 OF 94

FILE NUMBER 133-1-1

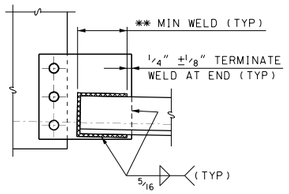
REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED SIW	06/19	CHECKED	JAL	06/19
	DRAWN DJD	06/19	CHECKED	RLJ	06/19
	QUANTITIES DRW	06/19	CHECKED	SFD	06/19

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	202	600

McFarland Johnson

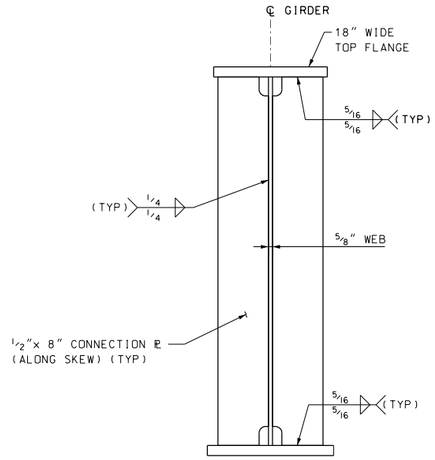


** 3" MIN WELD @ INTERMEDIATE AND ABUTMENT CROSS FRAMES
5" MIN WELD @ PIER CROSS FRAMES



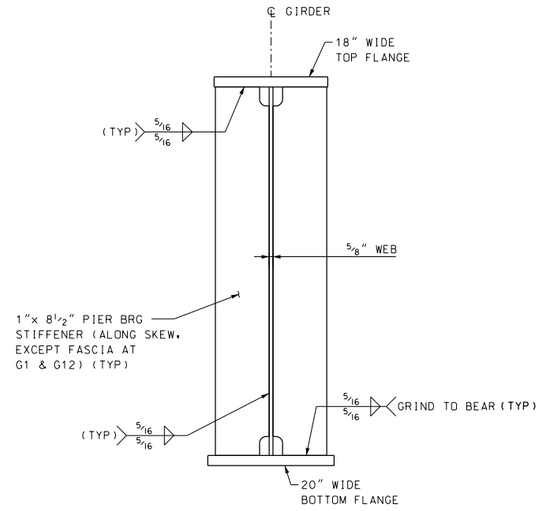
WELD TERMINATION DETAILS

SCALE: 1 1/2" = 1'-0"
(INTERMEDIATE CROSS FRAMES SHOWN, PIER CROSS FRAMES SIMILAR)



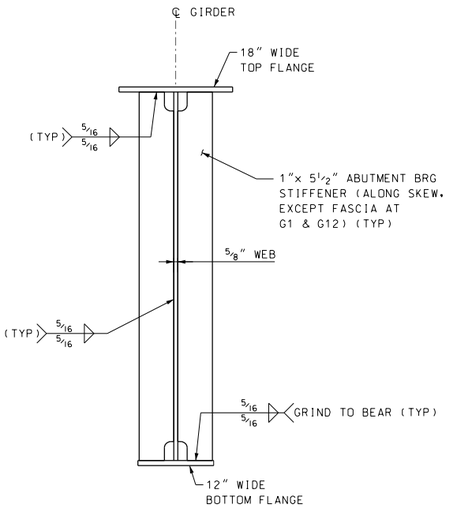
CONNECTION PLATE

SCALE: 1" = 1'-0"



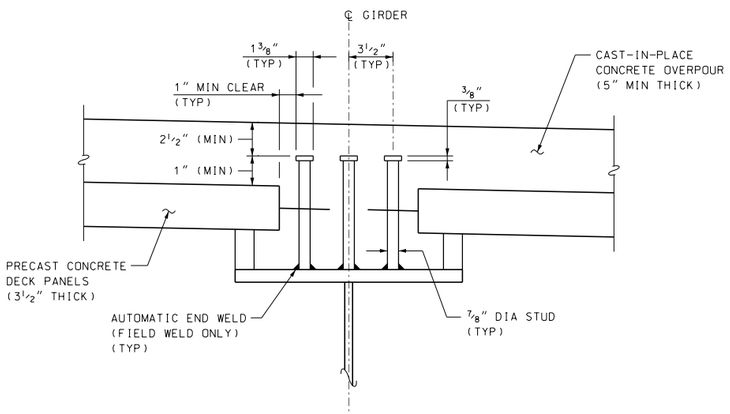
PIER BEARING STIFFENER

SCALE: 1" = 1'-0"



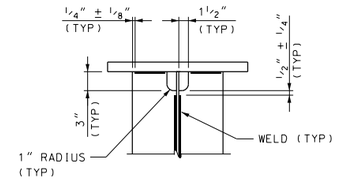
ABUTMENT BEARING STIFFENER

SCALE: 1" = 1'-0"



SHEAR CONNECTOR DETAIL

SCALE: 2" = 1'-0"



COPE AND WELD DETAIL

SCALE: 1" = 1'-0"

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

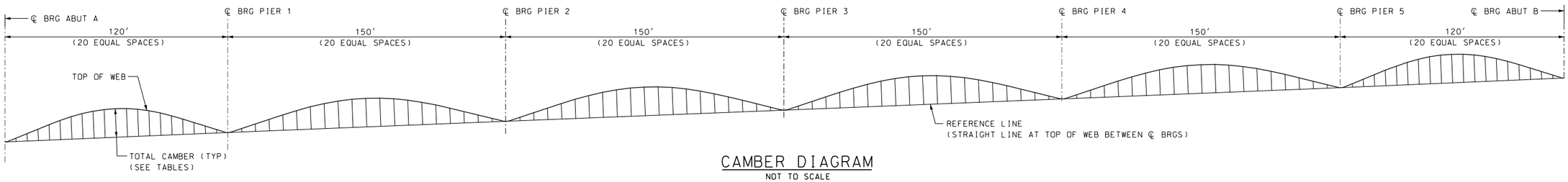
SUPERSTRUCTURE DETAILS (2 OF 2)

BRIDGE SHEET: 60 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	DJD	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

FILE NUMBER: 133-1-1

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	203	600



CAMBER DIAGRAM

NOT TO SCALE

CAMBER TABLE - GIRDERS G1 TO G4 AND G9 TO G12 - SPAN 1 (INCHES)

	CL BRG. ABUT. A	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 1
STEEL DL	0.00	0.07	0.14	0.21	0.26	0.30	0.34	0.36	0.36	0.36	0.34	0.31	0.28	0.23	0.18	0.14	0.09	0.05	0.02	0.01	0.00
8.5" CONCRETE SLAB	0.00	0.24	0.47	0.68	0.86	1.01	1.12	1.19	1.22	1.20	1.15	1.06	0.94	0.79	0.64	0.48	0.32	0.19	0.09	0.03	0.00
SUPERIMPOSED DL	0.00	0.05	0.09	0.13	0.17	0.20	0.22	0.24	0.24	0.24	0.23	0.21	0.19	0.16	0.13	0.10	0.07	0.04	0.02	0.01	0.00
VERTICAL ORDINATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CAMBER	0.00	0.36	0.71	1.02	1.29	1.51	1.68	1.78	1.82	1.80	1.72	1.58	1.40	1.19	0.95	0.71	0.48	0.28	0.14	0.04	0.00

CAMBER TABLE - GIRDERS G1 TO G4 AND G9 TO G12 - SPAN 2 (INCHES)

	CL BRG. PIER 1	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 2
STEEL DL	0.00	0.01	0.04	0.09	0.15	0.22	0.28	0.33	0.38	0.40	0.41	0.40	0.37	0.33	0.28	0.21	0.15	0.09	0.04	0.01	0.00
8.5" CONCRETE SLAB	0.00	0.03	0.11	0.25	0.43	0.63	0.82	0.99	1.12	1.20	1.23	1.21	1.13	1.00	0.83	0.64	0.44	0.26	0.12	0.03	0.00
SUPERIMPOSED DL	0.00	0.01	0.03	0.06	0.09	0.13	0.17	0.20	0.23	0.25	0.25	0.25	0.23	0.20	0.17	0.13	0.09	0.06	0.03	0.01	0.00
VERTICAL ORDINATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CAMBER	0.00	0.05	0.19	0.40	0.68	0.98	1.27	1.53	1.73	1.85	1.90	1.85	1.73	1.53	1.28	0.99	0.69	0.41	0.19	0.05	0.00

CAMBER TABLE - GIRDERS G1 TO G4 AND G9 TO G12 - SPAN 3 (INCHES)

	CL BRG. PIER 2	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 3
STEEL DL	0.00	0.01	0.04	0.09	0.14	0.21	0.27	0.32	0.37	0.39	0.40	0.39	0.37	0.33	0.27	0.21	0.15	0.09	0.04	0.01	0.00
8.5" CONCRETE SLAB	0.00	0.04	0.13	0.27	0.46	0.66	0.85	1.02	1.15	1.23	1.26	1.23	1.15	1.02	0.85	0.65	0.45	0.27	0.13	0.03	0.00
SUPERIMPOSED DL	0.00	0.01	0.03	0.06	0.10	0.14	0.17	0.21	0.23	0.25	0.25	0.25	0.23	0.21	0.17	0.13	0.09	0.06	0.03	0.01	0.00
VERTICAL ORDINATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CAMBER	0.00	0.05	0.20	0.42	0.70	1.00	1.29	1.55	1.75	1.87	1.92	1.87	1.75	1.55	1.29	1.00	0.69	0.41	0.19	0.05	0.00

CAMBER TABLE - GIRDERS G1 TO G4 AND G9 TO G12 - SPAN 4 (INCHES)

	CL BRG. PIER 3	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 4
STEEL DL	0.00	0.01	0.04	0.09	0.15	0.21	0.27	0.33	0.37	0.39	0.40	0.39	0.37	0.32	0.27	0.21	0.14	0.09	0.04	0.01	0.00
8.5" CONCRETE SLAB	0.00	0.03	0.13	0.27	0.45	0.65	0.85	1.02	1.15	1.23	1.26	1.23	1.15	1.02	0.85	0.66	0.46	0.27	0.13	0.04	0.00
SUPERIMPOSED DL	0.00	0.01	0.03	0.06	0.09	0.13	0.17	0.21	0.23	0.25	0.25	0.25	0.23	0.21	0.17	0.14	0.10	0.06	0.03	0.01	0.00
VERTICAL ORDINATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CAMBER	0.00	0.05	0.19	0.41	0.69	1.00	1.29	1.55	1.75	1.87	1.92	1.87	1.75	1.55	1.29	1.00	0.70	0.42	0.20	0.05	0.00

CAMBER TABLE - GIRDERS G1 TO G4 AND G9 TO G12 - SPAN 5 (INCHES)

	CL BRG. PIER 4	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 5
STEEL DL	0.00	0.01	0.04	0.09	0.15	0.21	0.28	0.33	0.37	0.40	0.41	0.40	0.38	0.33	0.28	0.22	0.15	0.09	0.04	0.01	0.00
8.5" CONCRETE SLAB	0.00	0.03	0.12	0.26	0.44	0.64	0.83	1.00	1.13	1.21	1.23	1.20	1.12	0.99	0.82	0.63	0.43	0.25	0.11	0.03	0.00
SUPERIMPOSED DL	0.00	0.01	0.03	0.06	0.09	0.13	0.17	0.20	0.23	0.25	0.25	0.25	0.23	0.20	0.17	0.13	0.09	0.06	0.03	0.01	0.00
VERTICAL ORDINATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CAMBER	0.00	0.05	0.19	0.41	0.69	0.99	1.28	1.53	1.73	1.85	1.90	1.85	1.73	1.53	1.27	0.98	0.68	0.40	0.19	0.05	0.00

CAMBER TABLES FOR GIRDERS G1-G4 & G9-G12 FOR SPANS 1 THROUGH 5

CAMBER TABLE - GIRDERS G5 TO G8 - SPAN 1 (INCHES)

	CL BRG. ABUT. A	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 1
STEEL DL	0.00	0.07	0.14	0.21	0.26	0.30	0.34	0.36	0.36	0.36	0.34	0.31	0.28	0.23	0.18	0.14	0.09	0.05	0.02	0.01	0.00
8.5" CONCRETE SLAB	0.00	0.24	0.48	0.69	0.87	1.02	1.14	1.21	1.23	1.22	1.16	1.07	0.94	0.81	0.65	0.48	0.33	0.20	0.10	0.03	0.00
SUPERIMPOSED DL	0.00	0.12	0.23	0.33	0.42	0.50	0.55	0.58	0.60	0.59	0.57	0.52	0.47	0.40	0.32	0.24	0.17	0.10	0.05	0.01	0.00
VERTICAL ORDINATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CAMBER	0.00	0.43	0.85	1.23	1.56	1.82	2.02	2.15	2.19	2.17	2.07	1.91	1.69	1.43	1.15	0.86	0.58	0.35	0.17	0.05	0.00

CAMBER TABLE - GIRDERS G5 TO G8 - SPAN 2 (INCHES)

	CL BRG. PIER 1	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 2
STEEL DL	0.00	0.01	0.04	0.09	0.15	0.22	0.28	0.33	0.38	0.40	0.41	0.40	0.37	0.33	0.28	0.21	0.15	0.09	0.04	0.01	0.00
8.5" CONCRETE SLAB	0.00	0.03	0.12	0.26	0.44	0.64	0.83	1.00	1.14	1.22	1.25	1.22	1.14	1.01	0.84	0.65	0.45	0.27	0.12	0.03	0.00
SUPERIMPOSED DL	0.00	0.02	0.07	0.14	0.24	0.34	0.43	0.52	0.58	0.62	0.64	0.62	0.58	0.52	0.43	0.34	0.24	0.14	0.07	0.02	0.00
VERTICAL ORDINATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CAMBER	0.00	0.06	0.23	0.49	0.83	1.19	1.55	1.85	2.09	2.24	2.30	2.25	2.10	1.86	1.55	1.20	0.84	0.50	0.23	0.06	0.00

CAMBER TABLE - GIRDERS G5 TO G8 - SPAN 3 (INCHES)

	CL BRG. PIER 2	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 3
STEEL DL	0.00	0.01	0.04	0.09	0.14	0.21	0.27	0.32	0.37	0.39	0.40	0.39	0.37	0.33	0.27	0.21	0.15	0.09	0.04	0.01	0.00
8.5" CONCRETE SLAB	0.00	0.04	0.13	0.28	0.46	0.67	0.86	1.03	1.17	1.25	1.28	1.25	1.16	1.03	0.86	0.66	0.46	0.27	0.13	0.04	0.00
SUPERIMPOSED DL	0.00	0.02	0.07	0.15	0.24	0.34	0.44	0.52	0.59	0.63	0.64	0.63	0.59	0.52	0.44	0.34	0.24	0.15	0.07	0.02	0.00
VERTICAL ORDINATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CAMBER	0.00	0.07	0.24	0.51	0.85	1.22	1.57	1.88	2.12	2.27	2.32	2.27	2.12	1.88	1.57	1.21	0.85	0.51	0.24	0.07	0.00

CAMBER TABLE - GIRDERS G5 TO G8 - SPAN 4 (INCHES)

	CL BRG. PIER 3	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 4
STEEL DL	0.00	0.01	0.04	0.09	0.15	0.21	0.27	0.33	0.37	0.39	0.40	0.39	0.37	0.32	0.27	0.21	0.14	0.09	0.04	0.01	0.00
8.5" CONCRETE SLAB	0.00	0.04	0.13	0.27	0.46	0.66	0.86	1.03	1.16	1.25	1.28	1.25	1.17	1.03	0.86	0.67	0.46	0.26	0.13	0.04	0.00
SUPERIMPOSED DL	0.00	0.02	0.07	0.15	0.24	0.34	0.44	0.52	0.59	0.63	0.64	0.63	0.59	0.52	0.44	0.34	0.24	0.15	0.07	0.02	0.00
VERTICAL ORDINATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CAMBER	0.00	0.07	0.24	0.51	0.85	1.21	1.57	1.88	2.12	2.27	2.32	2.27	2.12	1.88	1.57	1.22	0.85	0.51	0.24	0.07	0.00

CAMBER TABLE - GIRDERS G5 TO G8 - SPAN 5 (INCHES)

	CL BRG. PIER 4	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 5
STEEL DL	0.00	0.01	0.04	0.09	0.15	0.21	0.28	0.33	0.37	0.40	0.41	0.40	0.38	0.33	0.28	0.22	0.15	0.09	0.04	0.01	0.00
8.5" CONCRETE SLAB	0.00	0.03	0.12	0.27	0.45	0.65	0.84	1.01	1.14	1.22	1.25	1.22	1.14	1.00	0.83	0.64	0.44	0.26	0.12	0.03	0.00
SUPERIMPOSED DL	0.00	0.02	0.07	0.14	0.24	0.34	0.43	0.52	0.58	0.62	0.64	0.62	0.58	0.52	0.43	0.34	0.24	0.14	0.07	0.02	0.00
VERTICAL ORDINATE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CAMBER	0.00	0.06	0.23	0.50	0.84	1.20	1.55	1.86	2.10	2.25	2.30	2.24	2.09	1.85	1.55	1.19	0.83	0.49	0.23	0.06	0.00

CAMBER TABLES FOR GIRDERS G5-G8 FOR SPANS 1 THROUGH 5

NOTES

1. SEE BRIDGE SHEET 62 FOR SPAN 6 CAMBER TABLES.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

CAMBER TABLES (1 OF 2)

BRIDGE SHEET 61 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED SIW	06/19	CHECKED JAL		06/19
	DRAWN SLM	06/19	CHECKED RLJ		06/19
	QUANTITIES DRW	06/19	CHECKED SFD		06/19
	ISSUE DATE		FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)	204	600

FILE NUMBER 133-1-1

CAMBER TABLE - GIRDERS G1 TO G4 - SPAN 6 (INCHES)

	CL BRG. PIER 5	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. ABUT. B
STEEL DL	0.00	0.01	0.02	0.05	0.09	0.14	0.18	0.23	0.28	0.31	0.34	0.36	0.36	0.36	0.34	0.30	0.26	0.21	0.14	0.07	0.00
8.5" CONCRETE SLAB	0.00	0.03	0.09	0.19	0.32	0.48	0.64	0.79	0.94	1.06	1.15	1.20	1.22	1.19	1.12	1.01	0.86	0.68	0.47	0.24	0.00
SUPERIMPOSED DL	0.00	0.01	0.02	0.04	0.07	0.10	0.13	0.16	0.19	0.21	0.23	0.24	0.24	0.24	0.22	0.20	0.17	0.13	0.09	0.05	0.00
VERTICAL ORDINATE	0.00	-0.02	-0.05	-0.07	-0.09	-0.12	-0.14	-0.16	-0.19	-0.21	-0.23	-0.26	-0.28	-0.30	-0.33	-0.33	-0.31	-0.27	-0.20	-0.11	0.00
TOTAL CAMBER	0.00	0.02	0.09	0.21	0.39	0.59	0.81	1.02	1.21	1.37	1.48	1.54	1.54	1.48	1.35	1.18	0.98	0.75	0.50	0.25	0.00

CAMBER TABLE - GIRDERS G5 TO G8 - SPAN 6 (INCHES)

	CL BRG. PIER 5	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. ABUT. B
STEEL DL	0.00	0.01	0.02	0.05	0.09	0.14	0.18	0.23	0.28	0.31	0.34	0.36	0.36	0.36	0.34	0.30	0.26	0.21	0.14	0.07	0.00
8.5" CONCRETE SLAB	0.00	0.03	0.10	0.20	0.33	0.48	0.65	0.81	0.95	1.07	1.16	1.22	1.23	1.21	1.14	1.02	0.87	0.69	0.48	0.24	0.00
SUPERIMPOSED DL	0.00	0.01	0.05	0.10	0.17	0.24	0.32	0.40	0.47	0.52	0.57	0.59	0.60	0.58	0.55	0.50	0.42	0.33	0.23	0.12	0.00
VERTICAL ORDINATE	0.00	-0.03	-0.06	-0.10	-0.13	-0.16	-0.19	-0.23	-0.26	-0.29	-0.32	-0.35	-0.39	-0.42	-0.43	-0.42	-0.38	-0.32	-0.24	-0.13	0.00
TOTAL CAMBER	0.00	0.02	0.10	0.25	0.46	0.70	0.96	1.21	1.43	1.62	1.75	1.81	1.8′	1.73	1.59	1.41	1.18	0.91	0.61	0.30	0.00

CAMBER TABLE - GIRDERS G9 TO G12 - SPAN 6 (INCHES)

	CL BRG. PIER 5	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. ABUT. B
STEEL DL	0.00	0.01	0.02	0.05	0.09	0.14	0.18	0.23	0.28	0.31	0.34	0.36	0.36	0.36	0.34	0.30	0.26	0.21	0.14	0.07	0.00
8.5" CONCRETE SLAB	0.00	0.03	0.09	0.19	0.32	0.48	0.64	0.79	0.94	1.06	1.15	1.20	1.22	1.19	1.12	1.01	0.86	0.68	0.47	0.24	0.00
SUPERIMPOSED DL	0.00	0.01	0.02	0.04	0.07	0.10	0.13	0.16	0.19	0.21	0.23	0.24	0.24	0.24	0.22	0.20	0.17	0.13	0.09	0.05	0.00
VERTICAL ORDINATE	0.00	-0.04	-0.08	-0.13	-0.17	-0.21	-0.25	-0.30	-0.34	-0.38	-0.42	-0.47	-0.51	-0.53	-0.52	-0.49	-0.44	-0.37	-0.27	-0.15	0.00
TOTAL CAMBER	0.00	0.00	0.05	0.16	0.31	0.50	0.70	0.89	1.06	1.20	1.29	1.33	1.3′	1.25	1.16	1.02	0.85	0.65	0.44	0.21	0.00

CAMBER TABLES FOR GIRDERS G1–G12
FOR SPAN 6

NOTES

1. SEE BRIDGE SHEET 61 FOR SPANS 1-5 CAMBER TABLES.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

CAMBER TABLES (2 OF 2)

BRIDGE SHEET 62 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED SIW	06/19	CHECKED	JAL	06/19
	DRAWN SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES DRW	06/19	CHECKED	SFD	06/19

FILE NUMBER 133-1-1

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	205	600

BOTTOM OF SLAB ELEVATIONS (FEET) – SPAN 1

GIRDER	CL BRG. ABUT. A	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 1
1	390.33	390.53	390.74	390.94	391.13	391.33	391.52	391.71	391.89	392.07	392.24	392.41	392.58	392.74	392.91	393.07	393.23	393.40	393.57	393.74	393.92
2	390.58	390.79	390.99	391.19	391.39	391.58	391.77	391.96	392.14	392.32	392.49	392.66	392.83	393.00	393.16	393.32	393.49	393.65	393.82	394.00	394.17
3	390.84	391.04	391.24	391.44	391.64	391.83	392.02	392.21	392.39	392.57	392.75	392.92	393.08	393.25	393.41	393.58	393.74	393.91	394.08	394.25	394.43
4	391.09	391.29	391.49	391.70	391.89	392.09	392.28	392.46	392.65	392.82	393.00	393.17	393.34	393.50	393.67	393.83	393.99	394.16	394.33	394.50	394.68
5	391.17	391.38	391.59	391.79	391.99	392.19	392.39	392.57	392.76	392.93	393.11	393.28	393.44	393.60	393.76	393.92	394.08	394.24	394.41	394.58	394.76
6	391.02	391.23	391.44	391.65	391.85	392.05	392.24	392.43	392.61	392.79	392.96	393.13	393.29	393.45	393.61	393.77	393.93	394.10	394.26	394.44	394.61

BOTTOM OF SLAB ELEVATIONS (FEET) – SPAN 2

GIRDER	CL BRG. PIER 1	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 2
1	393.92	394.15	394.38	394.62	394.86	395.10	395.35	395.59	395.83	396.06	396.29	396.51	396.72	396.94	397.14	397.35	397.55	397.76	397.97	398.19	398.41
2	394.17	394.40	394.63	394.87	395.11	395.36	395.60	395.84	396.08	396.31	396.54	396.76	396.98	397.19	397.40	397.60	397.81	398.01	398.22	398.44	398.66
3	394.43	394.65	394.89	395.12	395.37	395.61	395.85	396.09	396.33	396.56	396.79	397.01	397.23	397.44	397.65	397.85	398.06	398.27	398.48	398.69	398.91
4	394.68	394.91	395.14	395.38	395.62	395.86	396.11	396.35	396.59	396.82	397.04	397.27	397.48	397.69	397.90	398.11	398.31	398.52	398.73	398.94	399.16
5	394.76	394.99	395.22	395.46	395.71	395.96	396.21	396.46	396.70	396.93	397.16	397.38	397.59	397.80	398.01	398.21	398.40	398.61	398.81	399.02	399.24
6	394.61	394.84	395.07	395.32	395.56	395.81	396.06	396.31	396.55	396.78	397.01	397.23	397.45	397.65	397.86	398.06	398.26	398.46	398.66	398.88	399.10

BOTTOM OF SLAB ELEVATIONS (FEET) – SPAN 3

GIRDER	CL BRG. PIER 2	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 3
1	398.41	398.63	398.87	399.11	399.35	399.59	399.84	400.08	400.32	400.55	400.78	401.00	401.21	401.42	401.63	401.84	402.04	402.25	402.46	402.67	402.89
2	398.66	398.89	399.12	399.36	399.60	399.85	400.09	400.33	400.57	400.80	401.03	401.25	401.47	401.68	401.88	402.09	402.29	402.50	402.71	402.92	403.15
3	398.91	399.14	399.37	399.61	399.86	400.10	400.34	400.58	400.82	401.05	401.28	401.50	401.72	401.93	402.14	402.34	402.55	402.75	402.96	403.18	403.40
4	399.16	399.39	399.63	399.87	400.11	400.35	400.60	400.84	401.07	401.31	401.53	401.76	401.97	402.18	402.39	402.59	402.80	403.01	403.22	403.43	403.65
5	399.24	399.47	399.71	399.95	400.20	400.45	400.70	400.94	401.19	401.42	401.65	401.87	402.08	402.29	402.49	402.69	402.89	403.09	403.30	403.51	403.73
6	399.10	399.33	399.56	399.81	400.05	400.30	400.55	400.80	401.04	401.27	401.50	401.72	401.94	402.14	402.35	402.55	402.74	402.95	403.15	403.36	403.58

BOTTOM OF SLAB ELEVATIONS (FEET) – SPAN 4

GIRDER	CL BRG. PIER 3	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 4
1	402.89	403.12	403.35	403.59	403.84	404.08	404.32	404.56	404.80	405.03	405.26	405.48	405.70	405.91	406.12	406.33	406.53	406.73	406.94	407.15	407.38
2	403.15	403.37	403.61	403.85	404.09	404.33	404.58	404.82	405.06	405.29	405.51	405.74	405.95	406.16	406.37	406.58	406.78	406.99	407.20	407.41	407.63
3	403.40	403.63	403.86	404.10	404.34	404.59	404.83	405.07	405.31	405.54	405.77	405.99	406.21	406.42	406.62	406.83	407.03	407.24	407.45	407.66	407.88
4	403.65	403.88	404.11	404.35	404.59	404.84	405.08	405.32	405.56	405.79	406.02	406.24	406.46	406.67	406.88	407.08	407.29	407.49	407.70	407.92	408.14
5	403.73	403.96	404.20	404.44	404.69	404.94	405.19	405.43	405.67	405.91	406.13	406.36	406.57	406.78	406.98	407.18	407.38	407.58	407.79	408.00	408.22
6	403.58	403.81	404.05	404.29	404.54	404.79	405.04	405.28	405.52	405.76	405.99	406.21	406.42	406.63	406.83	407.03	407.23	407.43	407.64	407.85	408.07

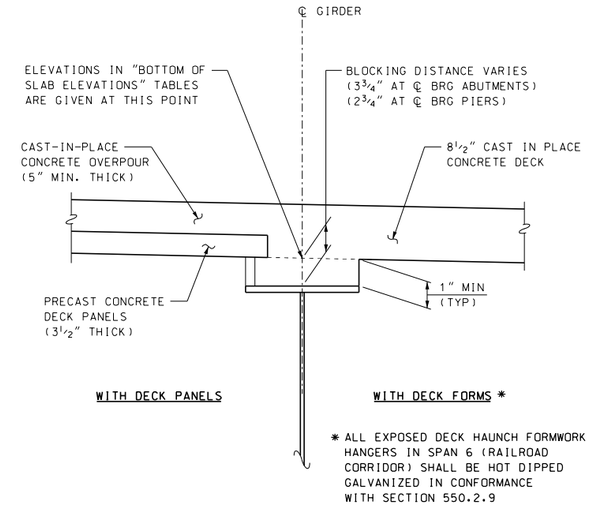
BOTTOM OF SLAB ELEVATIONS (FEET) – SPAN 5

GIRDER	CL BRG. PIER 4	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 5
1	407.38	407.61	407.84	408.08	408.32	408.57	408.81	409.05	409.29	409.52	409.75	409.97	410.18	410.39	410.60	410.81	411.01	411.22	411.43	411.64	411.87
2	407.63	407.86	408.09	408.33	408.57	408.82	409.06	409.30	409.54	409.77	410.00	410.22	410.44	410.65	410.86	411.06	411.26	411.47	411.68	411.90	412.12
3	407.88	408.11	408.35	408.58	408.83	409.07	409.31	409.56	409.79	410.02	410.25	410.47	410.69	410.90	411.11	411.31	411.52	411.72	411.93	412.15	412.37
4	408.14	408.37	408.60	408.84	409.08	409.32	409.57	409.81	410.04	410.28	410.50	410.73	410.94	411.15	411.36	411.57	411.77	411.98	412.19	412.40	412.62
5	408.22	408.45	408.68	408.92	409.17	409.42	409.67	409.92	410.16	410.39	410.62	410.84	411.05	411.26	411.46	411.66	411.86	412.06	412.27	412.48	412.70
6	408.07	408.30	408.54	408.78	409.03	409.27	409.52	409.77	410.01	410.24	410.47	410.69	410.91	411.11	411.32	411.52	411.72	411.92	412.12	412.34	412.56

BOTTOM OF SLAB ELEVATIONS (FEET) – SPAN 6

GIRDER	CL BRG. PIER 5	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. ABUT. B
1	411.87	412.05	412.23	412.42	412.62	412.81	413.01	413.20	413.40	413.59	413.77	413.96	414.14	414.32	414.49	414.66	414.83	415.00	415.16	415.33	415.49
2	412.12	412.30	412.49	412.68	412.87	413.06	413.26	413.45	413.65	413.84	414.03	414.21	414.39	414.57	414.74	414.91	415.08	415.25	415.42	415.58	415.75
3	412.37	412.55	412.74	412.93	413.12	413.32	413.51	413.71	413.90	414.09	414.28	414.47	414.65	414.82	415.00	415.17	415.34	415.50	415.67	415.84	416.01
4	412.62	412.81	412.99	413.18	413.37	413.57	413.76	413.96	414.15	414.34	414.53	414.72	414.90	415.08	415.25	415.42	415.59	415.76	415.93	416.10	416.26
5	412.70	412.89	413.08	413.27	413.46	413.66	413.86	414.06	414.26	414.45	414.64	414.83	415.01	415.19	415.36	415.53	415.69	415.86	416.02	416.18	416.35
6	412.56	412.74	412.93	413.12	413.32	413.51	413.71	413.91	414.11	414.30	414.50	414.68	414.86	415.04	415.21	415.38	415.55	415.71	415.88	416.04	416.20

BOTTOM OF SLAB ELEVATIONS
(GIRDERS 1–6)



HAUNCH DETAIL
SCALE: 1" = 1'-0"

BOTTOM OF SLAB BETWEEN GIRDERS 6 & 7
SCALE: 1" = 1'-0"

DECK SLAB ELEVATION NOTES

1. AFTER THE STRUCTURAL STEEL IS ERECTED, BUT BEFORE THE DECK FORMS ARE BUILT,OR DECK PANELS ARE INSTALLED, ELEVATIONS ON THE TOP FLANGE OF THE GIRDERS ARE TO BE OBTAINED AT THE POINTS INDICATED IN THE BOTTOM OF SLAB ELEVATION TABLES. THE DIFFERENCE BETWEEN THE ELEVATIONS OBTAINED AND THOSE SHOWN IN THE BOTTOM OF SLAB ELEVATION TABLE IS THE ACTUAL BLOCKING DISTANCE FROM THE TOP OF THE GIRDER TO THE BOTTOM OF THE DECK OR THE DECK PANEL AT THE CENTERLINE OF THE GIRDER.SEE BOTTOM OF SLAB ELEVATIONS TABLES AND HAUNCH DETAIL (THIS SHEET).
2. ELEVATIONS SHOWN IN THE BOTTOM OF SLAB ELEVATIONS TABLES ARE BOTTOM OF PRESTRESSED CONCRETE DECK PANEL ELEVATIONS ADJUSTED FOR TOTAL DEAD LOAD, LESS THE DEFLECTION DUE TO GIRDER WEIGHT.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

BOTTOM OF SLAB ELEVATION TABLES (1 OF 2)

BRIDGE SHEET 63 OF 94

FILE NUMBER 133-1-1

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		206	600

BOTTOM OF SLAB ELEVATIONS (FEET) – SPAN 1

GIRDER	CL BRG. ABUT. A	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 1
7	391.07	391.28	391.49	391.70	391.90	392.10	392.29	392.48	392.66	392.84	393.01	393.18	393.35	393.51	393.67	393.83	393.99	394.15	394.32	394.49	394.66
8	391.33	391.54	391.75	391.95	392.15	392.35	392.54	392.73	392.92	393.09	393.27	393.43	393.60	393.76	393.92	394.08	394.24	394.40	394.57	394.74	394.92
9	391.32	391.52	391.73	391.93	392.12	392.32	392.51	392.70	392.88	393.06	393.23	393.40	393.57	393.73	393.90	394.06	394.22	394.39	394.56	394.73	394.91
10	391.17	391.38	391.58	391.78	391.98	392.17	392.36	392.55	392.73	392.91	393.08	393.25	393.42	393.59	393.75	393.91	394.08	394.24	394.41	394.59	394.76
11	391.03	391.23	391.43	391.63	391.83	392.02	392.21	392.40	392.58	392.76	392.94	393.11	393.27	393.44	393.60	393.77	393.93	394.10	394.27	394.44	394.62
12	390.88	391.08	391.28	391.49	391.68	391.88	392.07	392.25	392.44	392.61	392.79	392.96	393.13	393.29	393.46	393.62	393.78	393.95	394.12	394.29	394.47

BOTTOM OF SLAB ELEVATIONS (FEET) – SPAN 2

GIRDER	CL BRG. PIER 1	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 2
7	394.66	394.89	395.13	395.37	395.62	395.87	396.12	396.36	396.60	396.84	397.06	397.29	397.50	397.71	397.91	398.11	398.31	398.51	398.72	398.93	399.15
8	394.92	395.14	395.38	395.62	395.87	396.12	396.37	396.61	396.85	397.09	397.32	397.54	397.75	397.96	398.16	398.36	398.56	398.76	398.97	399.18	399.40
9	394.91	395.14	395.37	395.61	395.85	396.10	396.34	396.58	396.82	397.05	397.28	397.50	397.71	397.93	398.13	398.34	398.54	398.75	398.96	399.18	399.40
10	394.76	394.99	395.22	395.46	395.70	395.95	396.19	396.43	396.67	396.90	397.13	397.35	397.57	397.78	397.99	398.19	398.40	398.60	398.81	399.03	399.25
11	394.62	394.84	395.08	395.31	395.56	395.80	396.04	396.29	396.52	396.76	396.98	397.20	397.42	397.63	397.84	398.04	398.25	398.46	398.67	398.88	399.10
12	394.47	394.70	394.93	395.17	395.41	395.65	395.90	396.14	396.38	396.61	396.84	397.06	397.27	397.48	397.69	397.90	398.10	398.31	398.52	398.73	398.95

BOTTOM OF SLAB ELEVATIONS (FEET) – SPAN 3

GIRDER	CL BRG. PIER 2	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 3
7	399.15	399.38	399.62	399.86	400.11	400.36	400.60	400.85	401.09	401.33	401.55	401.77	401.99	402.20	402.40	402.60	402.80	403.00	403.20	403.42	403.64
8	399.40	399.63	399.87	400.11	400.36	400.61	400.86	401.10	401.34	401.58	401.81	402.03	402.24	402.45	402.65	402.85	403.05	403.25	403.46	403.67	403.89
9	399.40	399.62	399.86	400.10	400.34	400.58	400.83	401.07	401.31	401.54	401.77	401.99	402.20	402.41	402.62	402.83	403.03	403.24	403.45	403.66	403.88
10	399.25	399.48	399.71	399.95	400.19	400.44	400.68	400.92	401.16	401.39	401.62	401.84	402.06	402.27	402.47	402.68	402.88	403.09	403.30	403.52	403.74
11	399.10	399.33	399.56	399.80	400.05	400.29	400.53	400.77	401.01	401.24	401.47	401.69	401.91	402.12	402.33	402.53	402.74	402.94	403.15	403.37	403.59
12	398.95	399.18	399.42	399.66	399.90	400.14	400.39	400.63	400.86	401.10	401.32	401.55	401.76	401.97	402.18	402.39	402.59	402.80	403.01	403.22	403.44

BOTTOM OF SLAB ELEVATIONS (FEET) – SPAN 4

GIRDER	CL BRG. PIER 3	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 4
7	403.64	403.87	404.10	404.34	404.59	404.84	405.09	405.34	405.58	405.81	406.04	406.26	406.47	406.68	406.89	407.09	407.28	407.49	407.69	407.90	408.12
8	403.89	404.12	404.35	404.60	404.85	405.09	405.34	405.59	405.83	406.06	406.29	406.51	406.73	406.94	407.14	407.34	407.54	407.74	407.94	408.16	408.38
9	403.88	404.11	404.34	404.58	404.83	405.07	405.31	405.56	405.79	406.03	406.25	406.47	406.69	406.90	407.11	407.31	407.52	407.72	407.93	408.15	408.37
10	403.74	403.96	404.20	404.44	404.68	404.92	405.17	405.41	405.65	405.88	406.11	406.33	406.54	406.75	406.96	407.17	407.37	407.58	407.79	408.00	408.22
11	403.59	403.82	404.05	404.29	404.53	404.78	405.02	405.26	405.50	405.73	405.96	406.18	406.40	406.61	406.81	407.02	407.22	407.43	407.64	407.85	408.08
12	403.44	403.67	403.90	404.14	404.38	404.63	404.87	405.11	405.35	405.58	405.81	406.03	406.25	406.46	406.67	406.87	407.08	407.28	407.49	407.71	407.93

BOTTOM OF SLAB ELEVATIONS (FEET) – SPAN 5

GIRDER	CL BRG. PIER 4	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. PIER 5
7	408.12	408.35	408.59	408.83	409.08	409.33	409.58	409.82	410.06	410.30	410.52	410.74	410.96	411.17	411.37	411.57	411.77	411.97	412.18	412.39	412.61
8	408.38	408.60	408.84	409.08	409.33	409.58	409.83	410.07	410.31	410.55	410.78	411.00	411.21	411.42	411.62	411.82	412.02	412.22	412.43	412.64	412.86
9	408.37	408.60	408.83	409.07	409.31	409.56	409.80	410.04	410.28	410.51	410.74	410.96	411.17	411.39	411.59	411.80	412.00	412.21	412.42	412.63	412.86
10	408.22	408.45	408.68	408.92	409.16	409.41	409.65	409.89	410.13	410.36	410.59	410.81	411.03	411.24	411.45	411.65	411.86	412.06	412.27	412.49	412.71
11	408.08	408.30	408.54	408.77	409.02	409.26	409.50	409.75	409.98	410.21	410.44	410.66	410.88	411.09	411.30	411.50	411.71	411.91	412.12	412.34	412.56
12	407.93	408.16	408.39	408.63	408.87	409.11	409.36	409.60	409.84	410.07	410.29	410.52	410.73	410.94	411.15	411.36	411.56	411.77	411.98	412.19	412.41

BOTTOM OF SLAB ELEVATIONS (FEET) – SPAN 6

GIRDER	CL BRG. PIER 5	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG. ABUT. B
7	412.61	412.79	412.98	413.17	413.37	413.57	413.77	413.97	414.16	414.36	414.55	414.73	414.92	415.09	415.27	415.44	415.60	415.77	415.93	416.10	416.26
8	412.86	413.05	413.23	413.43	413.62	413.82	414.02	414.22	414.42	414.61	414.80	414.99	415.17	415.35	415.52	415.69	415.86	416.03	416.19	416.35	416.52
9	412.86	413.04	413.22	413.41	413.61	413.80	414.00	414.19	414.39	414.58	414.77	414.95	415.13	415.31	415.49	415.66	415.83	416.00	416.17	416.34	416.52
10	412.71	412.89	413.08	413.27	413.46	413.65	413.85	414.04	414.24	414.43	414.62	414.80	414.98	415.16	415.34	415.52	415.69	415.86	416.03	416.20	416.37
11	412.56	412.74	412.93	413.12	413.31	413.51	413.70	413.90	414.09	414.28	414.47	414.66	414.84	415.02	415.19	415.37	415.54	415.72	415.89	416.06	416.23
12	412.41	412.60	412.78	412.97	413.16	413.36	413.55	413.75	413.94	414.14	414.32	414.51	414.69	414.87	415.05	415.23	415.40	415.57	415.74	415.92	416.09

NOTES:

1. FOR HAUNCH DETAIL, SEE BRIDGE SHEET 63.

BOTTOM OF SLAB ELEVATIONS
(GIRDERS 7-12)

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

BOTTOM OF SLAB ELEVATION TABLES (2 OF 2)

BRIDGE SHEET 64 OF 94

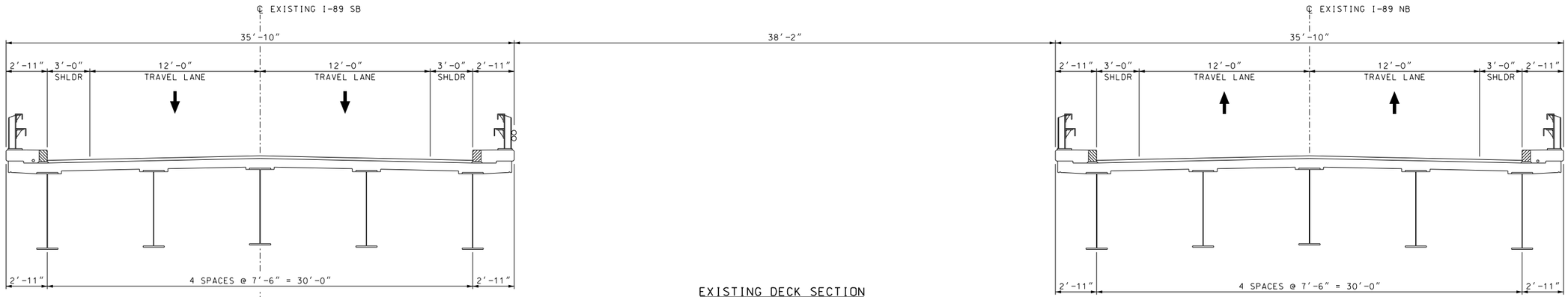
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

FEDERAL PROJECT NO. A001(154)

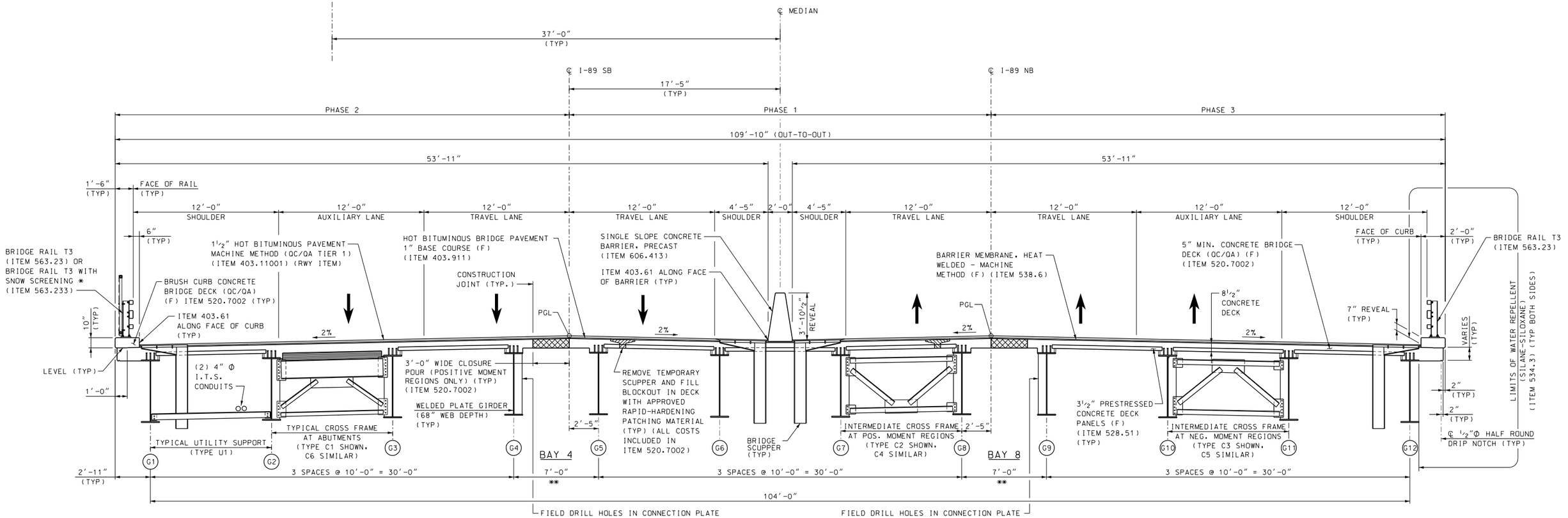
SHEET NO. 207

TOTAL SHEETS 600

FILE NUMBER 133-1-1



EXISTING DECK SECTION
SCALE: 1/4″ = 1′-0″



PROPOSED DECK SECTION
SCALE: 1/4″ = 1′-0″

* ITEM 563.233, BRIDGE RAIL T3 WITH SNOW SCREENING, TO BE PLACED OVER RAILROAD CORRIDOR ONLY (TYP) (SEE DECK PLANS FOR LOCATIONS)

** OMIT DECK PANELS THIS BAY

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TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

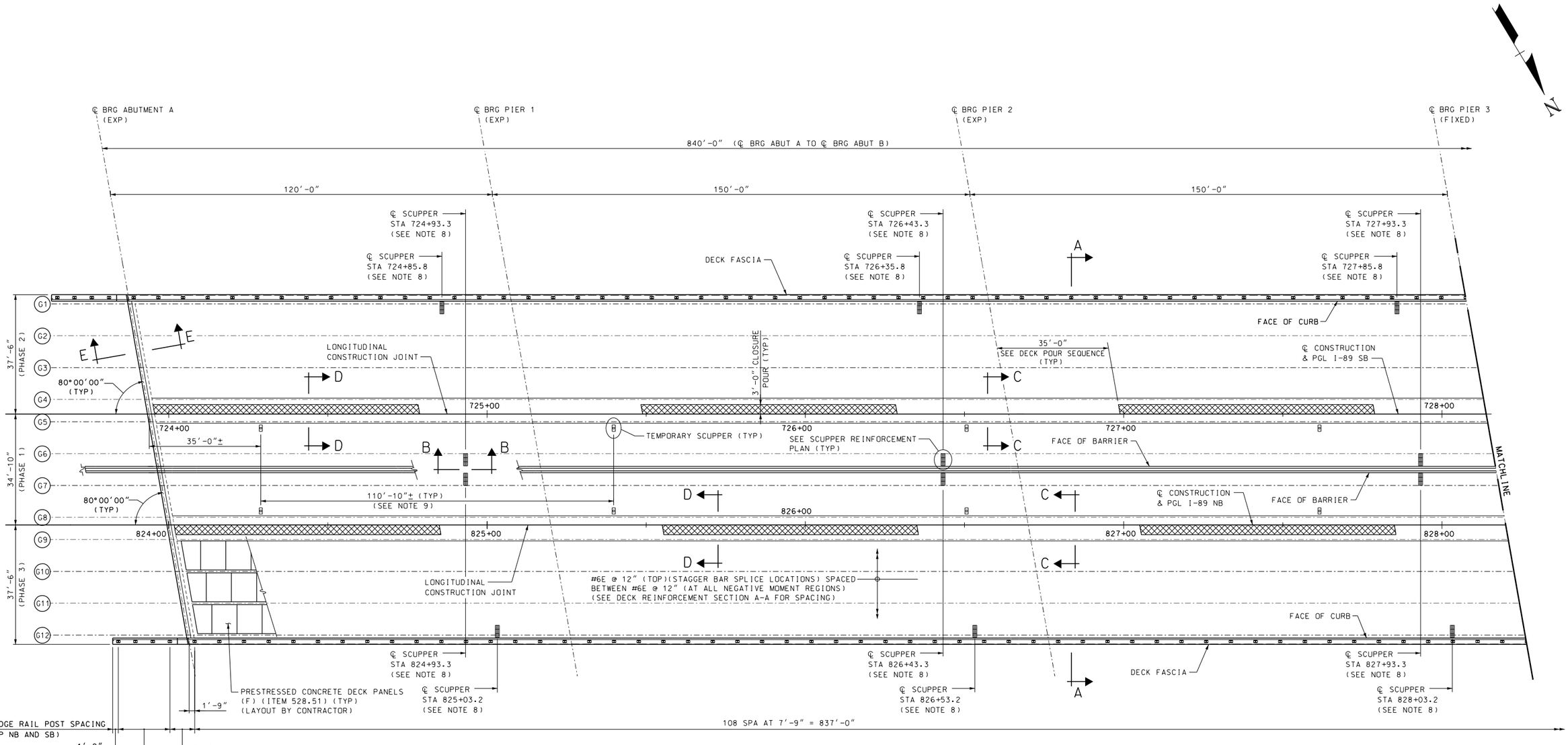
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

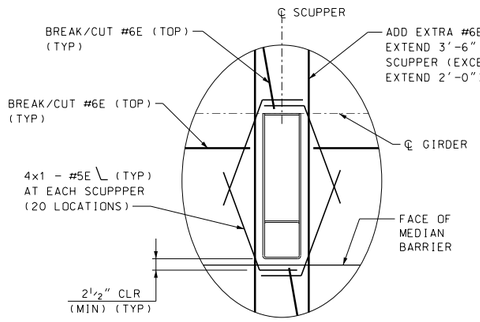
TYPICAL DECK SECTIONS

BRIDGE SHEET 65 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		208	600

FILE NUMBER 133-1-1





SCUPPER REINFORCEMENT PLAN
(MEDIAN SCUPPER SHOWN, CURB SCUPPER SIMILAR)
SCALE: ½" = 1'-0"

DECK PLAN
SCALE: 1/16" = 1'-0"

LEGEND

3'-0" WIDE CLOSURE POUR (POSITIVE MOMENT REGIONS ONLY)

NOTES

1. FOR TYPICAL DECK SECTION, SEE BRIDGE SHEET 65.
2. FOR TYPICAL DECK REINFORCEMENT SECTION, SEE BRIDGE SHEET 68.
3. FOR DECK END PANEL LAYOUT, SEE BRIDGE SHEET 69.
4. FOR SECTIONS B-B, C-C, D-D, AND E-E, SEE BRIDGE SHEET 69.
5. FOR TEMPORARY BRIDGE SCUPPER DETAILS, SEE BRIDGE SHEET 84.
6. FOR BRIDGE SCUPPER DETAILS, SEE BRIDGE SHEET 83.
7. FOR FINISHED BOTTOM OF SLAB ELEVATION TABLES, SEE BRIDGE SHEETS 63 AND 64.
8. SCUPPER LOCATION IS APPROXIMATE. SCUPPER LOCATION CAN BE MODIFIED SLIGHTLY TO ACCOMMODATE ATTACHMENT HARDWARE ON SKEWED DIAPHRAGMS AT APPROVAL OF ENGINEER.
9. A MINIMUM OF 8 TEMPORARY SCUPPERS PER SHOULDER SHALL BE PLACED. TEMPORARY SCUPPERS SHALL BE A MINIMUM OF 10' FROM THE FACE OF ALL SUBSTRUCTURE UNITS AND SPACED A MAXIMUM OF 110'-10"± .
10. TRANSVERSE DECK REINFORCING TO BE PLACED ALONG SKEW (PARALLEL TO ℄ BEARING).

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STATE OF NEW HAMPSHIRE
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TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 — STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

DECK PLAN (1 OF 2)

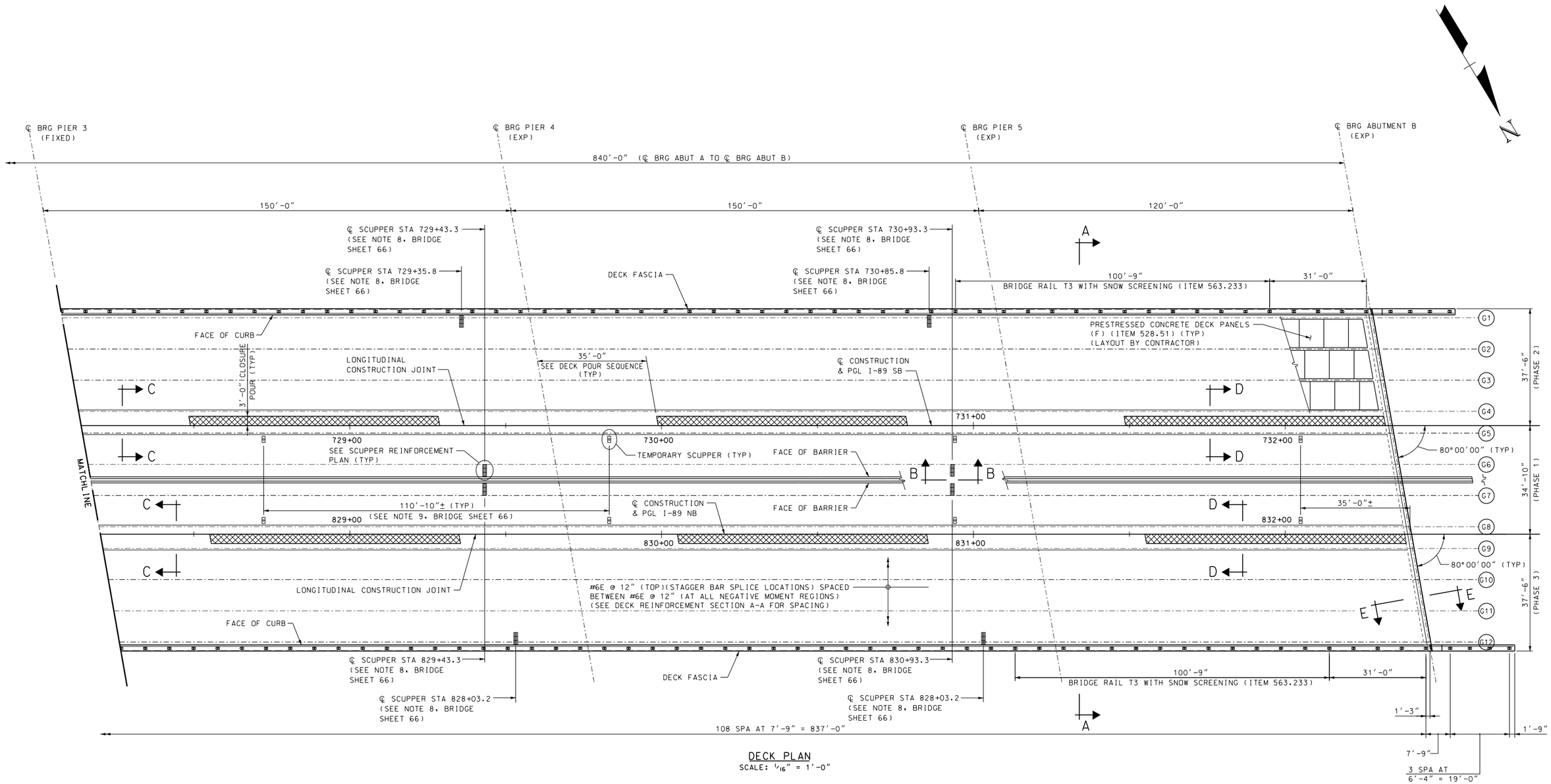
BRIDGE SHEET: 66 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE

	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	JAL	06/19
DRAWN	SLM	06/19	CHECKED	RLJ	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	209	600

FILE NUMBER: 133-1-1



DECK PLAN
SCALE: 1/16" = 1'-0"

LEGEND

3'-0" WIDE CLOSURE POUR (POSITIVE MOMENT REGIONS ONLY)

NOTES

1. FOR SECTIONS B-B, C-C, D-D, AND E-E, SEE BRIDGE SHEET 69.
2. SEE DECK PLAN NOTES, BRIDGE SHEET 66.

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TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

DECK PLAN (2 OF 2)

BRIDGE SHEET 67 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
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	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
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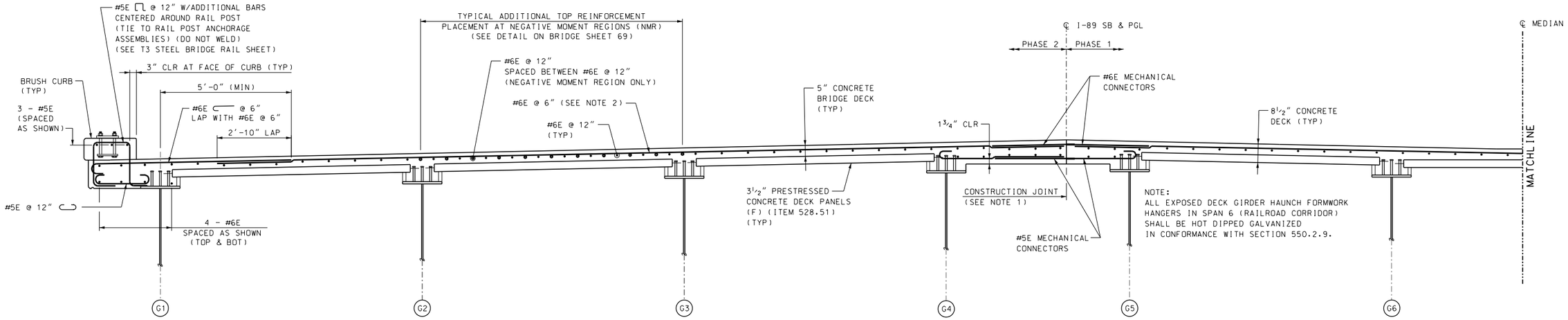
FILE NUMBER 133-1-1

FEDERAL PROJECT NO. A001(154)

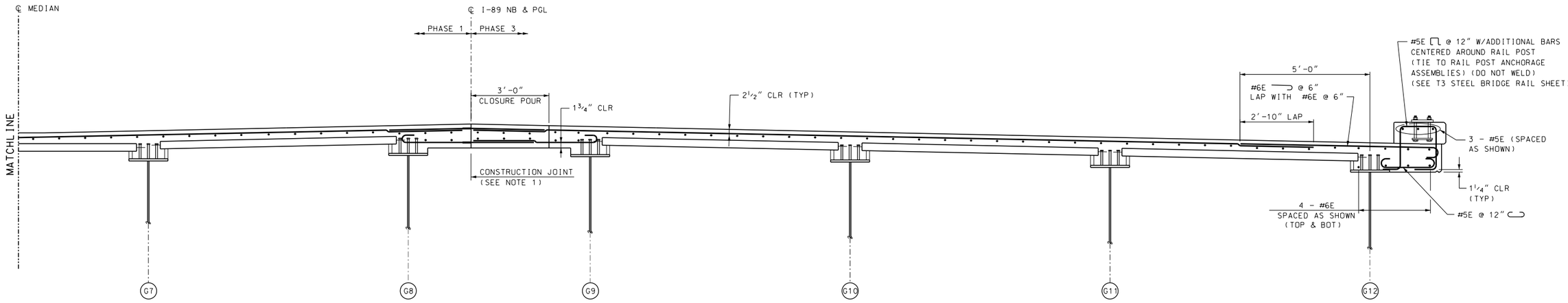
SHEET NO. 210

TOTAL SHEETS 600



SECTION A-A (NEGATIVE MOMENT REGION)

SCALE: 1/2" = 1'-0"



SECTION A-A (POSITIVE MOMENT REGION)

SCALE: 1/2" = 1'-0"

NOTES

1. FOR CLOSURE POUR AND CONSTRUCTION JOINT DETAILS, SEE BRIDGE SHEET 69.
2. TRANSVERSE DECK REINFORCING TO BE PLACED ALONG SKEW (PARALLEL TO ℄ OF BEARING).
3. ALL LONGITUDINAL REINFORCEMENT LAP LENGTHS SHALL BE 2'-10" (MIN).

STATE OF NEW HAMPSHIRE
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LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

DECK REINFORCEMENT SECTIONS (1 OF 2)

BRIDGE SHEET: 68 OF 94

FILE NUMBER: 133-1-1

REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
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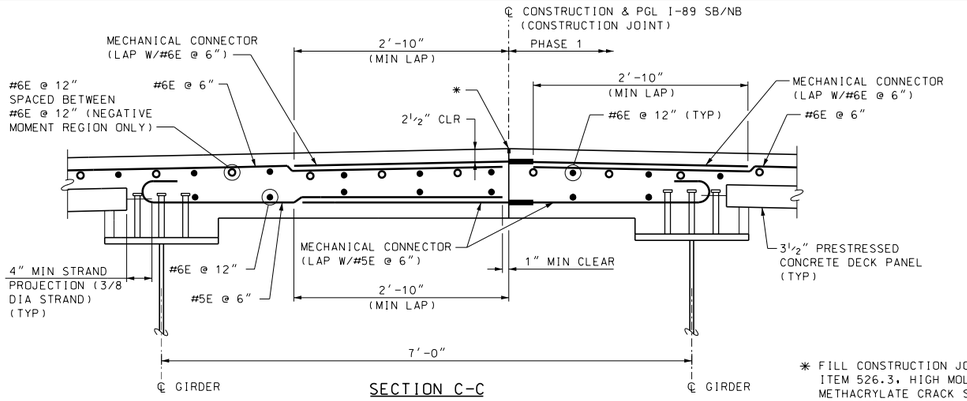
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	211	600

McFarland Johnson



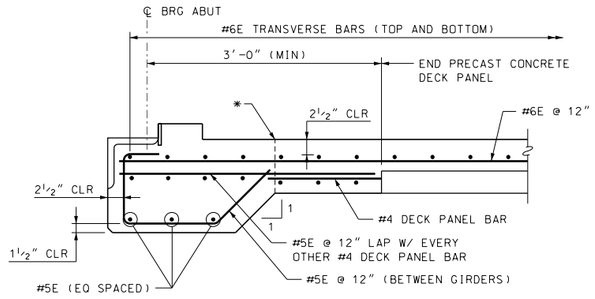
SECTION C-C

CONSTRUCTION JOINT DETAIL

(NEGATIVE MOMENT REGIONS)

SCALE: 1" = 1'-0"

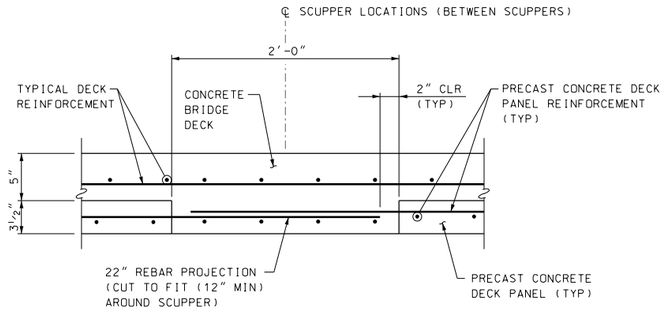
* FILL CONSTRUCTION JOINT WITH ITEM 526.3, HIGH MOLECULAR WEIGHT METHACRYLATE CRACK SEAL FOR CONCRETE BRIDGE DECKS. FOR FULL LENGTH OF DECK JOINT.



SECTION E-E

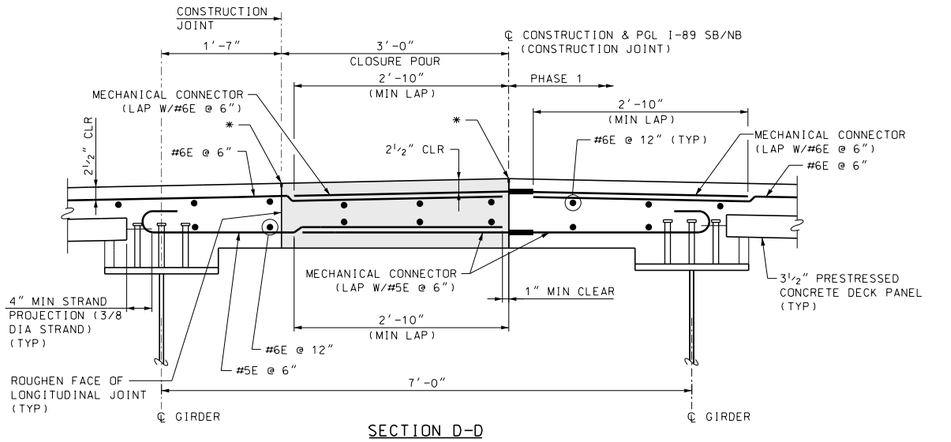
SCALE: 1" = 1'-0"

(SEE NOTE 4)



SECTION B-B

SCALE: 1½" = 1'-0"

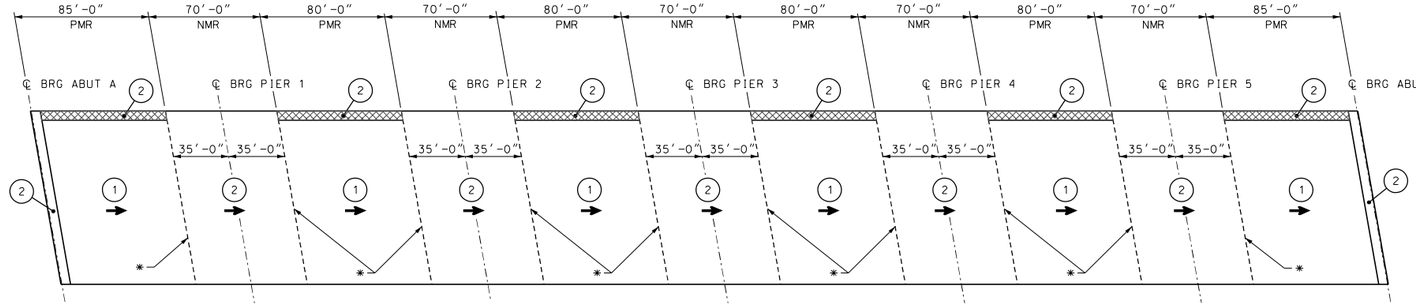


SECTION D-D

CONSTRUCTION JOINT / CLOSURE POUR DETAIL

(POSITIVE MOMENT REGIONS)

SCALE: 1" = 1'-0"



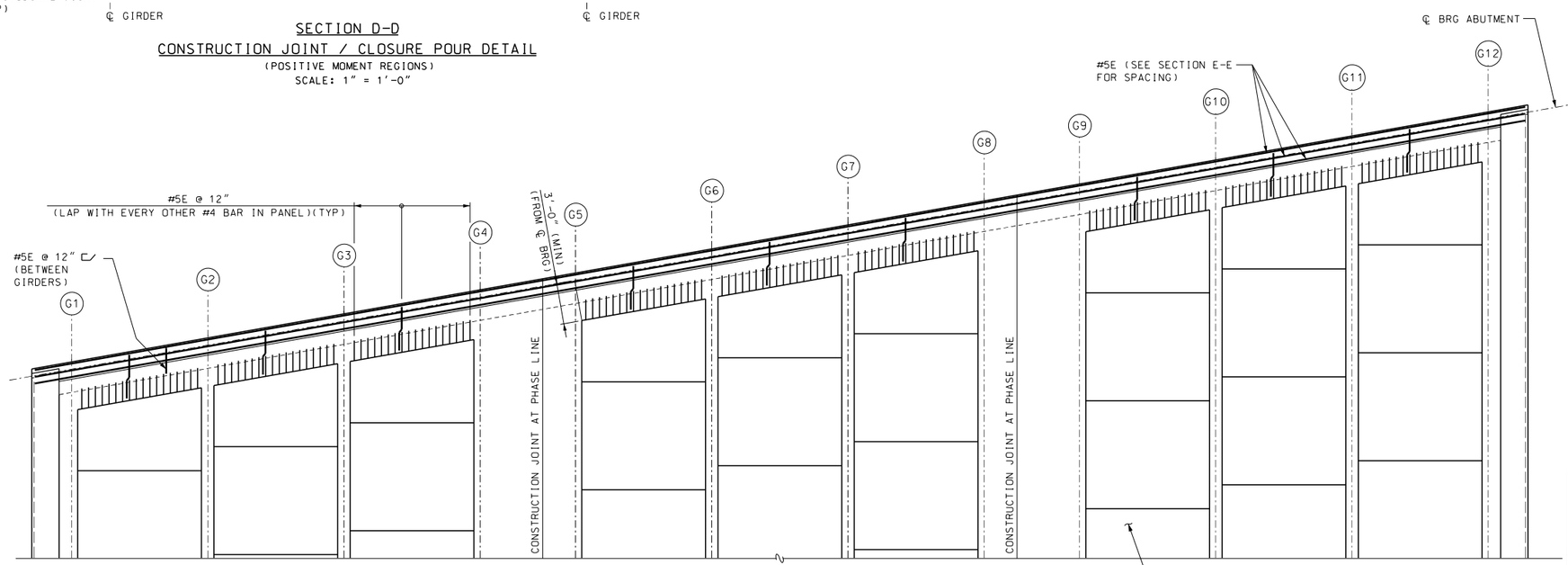
DECK POUR SEQUENCE PER PHASE

PHASE 3 SHOWN. PHASES 1 & 2 SIMILAR

NOT TO SCALE

LEGEND

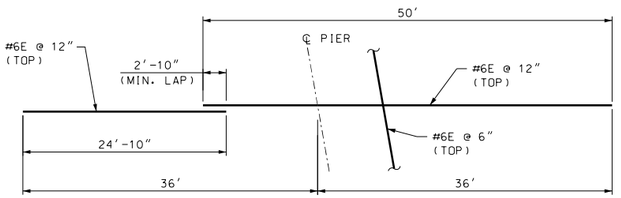
①	POUR NUMBER
➡	DIRECTION OF POUR
PMR	POSITIVE MOMENT REGION
NMR	NEGATIVE MOMENT REGION
▨	CLOSURE POUR AREAS



DECK END PLAN

(TYPICAL BOTH DECK ENDS, ABUTMENT B SHOWN)

SCALE: 1" = 5'-0"



ADDITIONAL DECK REINFORCEMENT

IN NEGATIVE MOMENT REGION

NOT TO SCALE

NOTES:

1. FOR PROJECT NOTES, SEE BRIDGE SHEETS 3 AND 4.
2. FOR LOCATION OF SECTIONS B-B, C-C, D-D AND E-E, SEE BRIDGE SHEETS 66 AND 67.
3. FOR REINFORCEMENT PLACEMENT AROUND SCUPPERS, SEE BRIDGE SHEET 66.
4. DECK END REINFORCEMENT IN BAYS CONSTRUCTED WITHOUT PRECAST DECK PANELS SHALL BE SIMILAR TO SECTION E-E WITH BOTTOM MAT REINFORCEMENT IN SECTION D-D REPLACING THE PRECAST DECK PANELS.

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

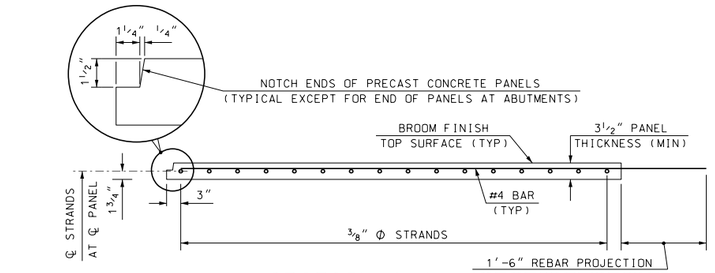
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

DECK REINFORCEMENT SECTIONS (2 OF 2)

BRIDGE SHEET: 69 OF 94

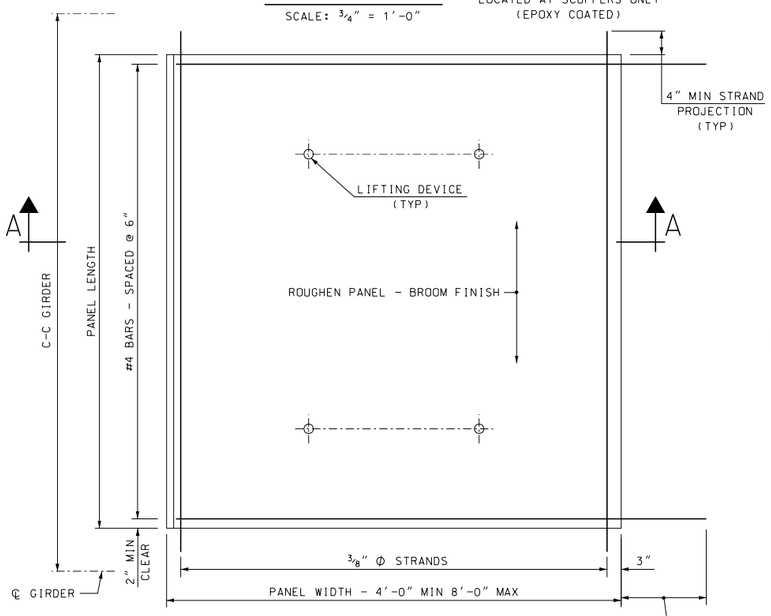
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		212	600

FILE NUMBER: 133-1-1



SECTION A-A

SCALE: ¾" = 1'-0"



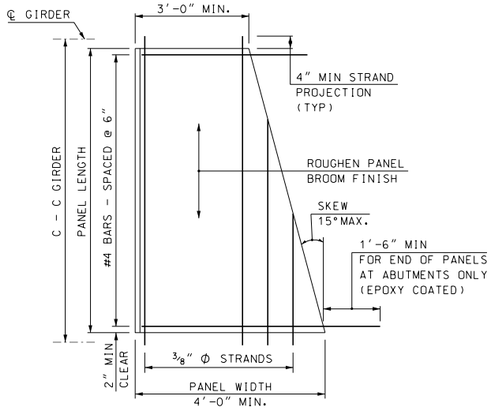
DECK PANEL DETAIL

SCALE: ¾" = 1'-0"

TABLE A - DECK PANEL DESIGN (STEEL-GIRDER)					
C-C GIRDER SPACING	PANEL THICKNESS	f'ci (PSI)	f'c (PSI)	STRAND SPACING	TOTAL STRANDS PER 8 FT. PANEL
≤ 8'-0"	3½"	4000	6000	8"	12
8'-6"	3½"	4800	6000	6"	16
9'-0"	3½"	4800	6000	6"	16
9'-6"	3½"	6000	8000	5"	19
10'-0"	3½"	6000	8000	5"	19

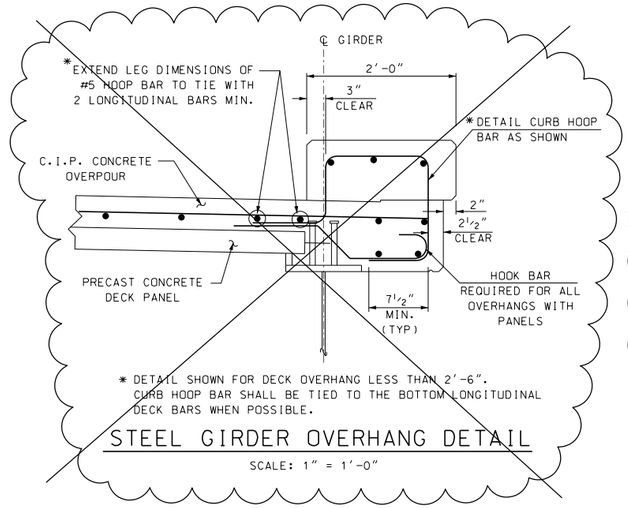
DESIGN CRITERIA USED TO DEVELOP TABLE A:

DESIGN CODE	=	AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 2014 W/ INTERIMS
LIVE LOAD	=	HL-93 OR HS25
ALLOWABLE TENSION IN CONCRETE	=	$0.19\sqrt{f'c}$
MAXIMUM INITIAL COMPRESSION	=	0.19f'ci
C-I-P DECK THICKNESS	=	5" (w/ asphalt overlay) or 6½" (bare deck)
PAVEMENT THICKNESS	=	2½" or 0" (bare deck)
STEEL FLANGE WIDTH	=	12"
GROUT DAM WIDTH	=	1½"
GROUT BED THICKNESS	=	2½"



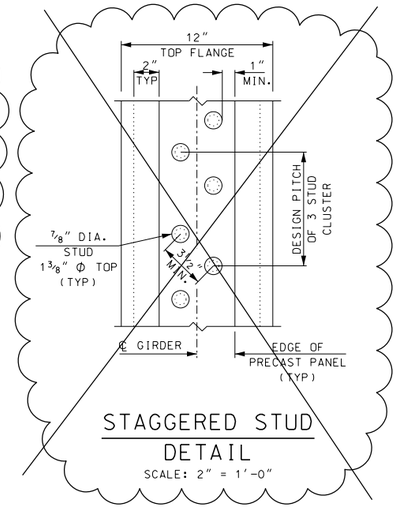
SKEWED DECK PANEL DETAIL

SCALE: 1/2" = 1'-0"



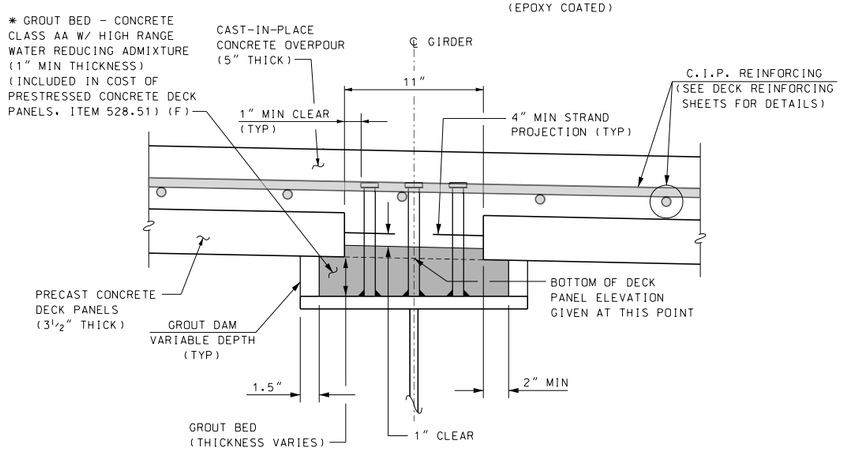
STEEL GIRDER OVERHANG DETAIL

SCALE: 1" = 1'-0"



STAGGERED STUD DETAIL

SCALE: 2" = 1'-0"



* ENSURE GROUT FLOWS UNDER PANEL FOR COMPLETE BEARING

STEEL GIRDER HAUNCH DETAIL

SCALE: 2" = 1'-0"

NOTES TO DESIGNER:

1) A HAUNCH THICKNESS SHALL BE PROVIDED THAT ACCOUNTS FOR GIRDER CAMBER TOLERANCE, ADDITIONAL DECK THICKNESS DUE TO DECK PANELS, FIELD SPLICE PLATES AND ANY OTHER DETAIL THAT MIGHT IMPACT THE 1" MINIMUM HAUNCH THICKNESS REQUIREMENT. THE INTENT IS TO HOLD FINISHED GRADE ELEVATIONS AND TAKE UP CHANGES IN DECK THICKNESS WITHIN THE HAUNCH PROVIDED.

2) THE DECK PANEL DESIGN INFORMATION FOR NOTE #11 SHALL BE OBTAINED FROM TABLE A USING THE PROJECT SPECIFIC C-C GIRDER SPACING. WHEN THE GIRDER SPACING DIFFERS FROM THOSE LISTED IN THE TABLE, THE PANEL DESIGN INFORMATION SHALL BE BASED ON THE NEXT LONGER TABULATED GIRDER SPACING. IF THE PROPOSED PROJECT HAS DESIGN CRITERIA EXCEEDING WHAT IS NOTED ON THIS SHEET, THEN THE DECK PANEL SHALL BE RE-DESIGNED AND A NEW SHEET DRAWN WITH THE DESIGNER NOTED IN THE TITLE BOX.

3) PROJECT SPECIFIC PANEL LENGTH SHALL BE CALCULATED BASED ON GIRDER FLANGE WIDTH AND TO PROVIDE A 2" MINIMUM GROUT BED WIDTH UNDER PANEL ENDS WHEN ACCOUNTING FOR THE NECESSARY GROUT DAM MATERIAL. PROJECT PANEL LENGTH MAY VARY IF GIRDER FLANGE WIDTH VARIES.

4) THE GIRDERS SHALL BE DESIGNED FOR THE ADDITIONAL DECK DEAD LOAD WHEN THE DECK PANEL OPTION RESULTS IN A GREATER OVERALL DECK THICKNESS THAN TO THE FULL DEPTH CAST-IN-PLACE OPTION. HOWEVER, THE BOTTOM OF DECK SLAB ELEVATIONS DETAILED IN THE PLANS SHALL BE BASED ON THE FULL DEPTH CAST IN PLACE DECK (THINNER DECK) AND A HAUNCH HEIGHT SHALL BE PROVIDED TO ACCOMMODATE THE PANEL OPTION AS DESCRIBED IN NOTE #1 ABOVE.

5) HORIZONTAL SHEAR CONNECTOR HEIGHTS AND SPACING MAY NEED ADJUSTMENT TO ACCOMMODATE THE PRECAST PANEL OPTION.

6) THE DESIGNER SHALL SHOW A REINFORCED DECK CURB DETAIL WITH DECK PANELS ON THE DECK REINFORCING SHEET. THIS DETAIL SHALL SHOW THE DECK OVERHANG REINFORCING REQUIRED IF A DECK PANEL OPTION IS USED.

PRESTRESSED CONCRETE DECK PANEL NOTES

(1) PRESTRESSING STRANDS SHALL BE ⅜ in. DIAMETER, GRADE 270 SEVEN WIRE LOW-RELAXATION TYPE, CONFORMING TO THE REQUIREMENTS OF ASTM A416. ALL STRANDS SHALL BE PULLED TO HAVE A NET TENSION OF 17.2 KIPS PER STRAND AFTER ALLOWING FOR CHUCK SLIPPAGE.

(2) THE MILD REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 (ASTM A615) GRADE 60. ALL MILD REINFORCEMENT THAT PROJECTS FROM PANELS SHALL BE EPOXY COATED AND CONFORM TO THE REQUIREMENTS OF ASTM A775 AND D3963.

(3) THE TOP SURFACE OF THE DECK PANELS SHALL BE BROOMED TO A SURFACE ROUGHNESS OF 0.06 in. BROOM THE SURFACE PARALLEL TO THE STRAND.

(4) THE GROUT DAM SHALL BE A RIGID MATERIAL THAT PROVIDES A VARIABLE DEPTH AND IS BONDED TO THE BEAM TO RETAIN THE GROUT DURING PLACEMENT. THE MATERIAL AND ADHESIVE SHALL BE APPROVED BY THE CONTRACT ADMINISTRATOR. SEE SECTION 528.

(5) PANEL LIFTING LOCATIONS SHOWN ARE ADVISORY ONLY. ACTUAL LIFTING LOCATIONS SHALL BE DETERMINED BY THE FABRICATOR AND INDICATED ON THE SHOP DRAWINGS.

(6) CORROSION INHIBITOR (CALCIUM NITRITE) ADMIXTURE SHALL BE USED.

(7) SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS FOR SECTIONS 520 AND 528 FOR ADDITIONAL INFORMATION.

(8) IF LEVELING SCREWS ARE USED, THEY SHALL BE COMPLETELY REMOVED AFTER THE GROUTING OPERATIONS AND PRIOR TO DECK PLACEMENT. HOLES LEFT BY LEVELING SCREWS SHALL BE FILLED WITH AN APPROVED GROUT PRIOR TO DECK PLACEMENT. THE LEVELING SCREW LOCATIONS SHALL NOT INTERFERE WITH THE LOCATION OF THE GROUT DAM.

(9) TEMPORARY BRACING BETWEEN ENDS OF PANELS SHALL BE INSTALLED AS REQUIRED TO PREVENT PANEL MOVEMENT TRANSVERSE TO THE GIRDERS.

(10) SHOP DRAWINGS SHOWING THE LAYOUT AND CONSTRUCTION DETAILS OF THE DECK PANELS SHALL BE SUBMITTED FOR APPROVAL IN ACCORDANCE WITH THE SPECIAL PROVISION.

(11) THE FOLLOWING DECK PANEL DESIGN INFORMATION SHALL BE USED FOR THIS PROJECT:

C-C GIRDER SPACING = 10'-0"
GIRDER FLANGE WIDTH = 18"
ASSUMED GROUT DAM WIDTH = 1.5"
PANEL LENGTH = 9'-1" (NOTE: IF THE CONTRACTOR PROPOSES A GROUT DAM WIDTH THAT EXCEEDS THE ASSUMED WIDTH, PANEL LENGTH SHALL BE INCREASED AS REQURIED TO PROVIDE A 2" MIN. GROUT BED WIDTH.)

PANEL THICKNESS = 3.5"
CONCRETE STRENGTH f'c = 8,000 PSI AT 28 DAYS
f'ci = 6,000 PSI AT RELEASE
STRAND SPACING = 5"
TOTAL NUMBER OF STRANDS REQUIRED PER 8' PANEL WIDTH = 19

(12) SEE DECK PLANS, BRIDGE SHEETS 66 AND 67 FOR LOCATIONS OF TEMPORARY AND PERMANENT SCUPPERS.

CAST-IN-PLACE CONCRETE NOTES

(1) CAST-IN-PLACE CONCRETE STRENGTH f'c = 4,000 PSI AT 28 DAYS

(2) CAST-IN-PLACE REINFORCING SHALL CONFORM TO AND FOLLOW THE LAYOUT OF THE REINFORCING SHOWN ON THE DECK PLANS AND SECTIONS.

DECK SLAB ELEVATION NOTES

(1) AFTER THE GIRDERS ARE ERECTED AND BEFORE PRECAST DECK PANELS ARE SET, ELEVATIONS ON THE TOP FLANGE OF GIRDERS SHALL BE OBTAINED AT THE POINTS INDICATED IN "BOTTOM OF SLAB ELEVATIONS TABLE" DETAILED IN THE PLANS AND GIRDER HAUNCH DETAIL THIS SHEET.

(2) THE BOTTOM OF SLAB ELEVATIONS SHALL BE ADJUSTED (REDUCED) BY THE DIFFERENCE BETWEEN THE CAST-IN-PLACE DECK THICKNESS AND TOTAL COMPOSITE DECK THICKNESS.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR

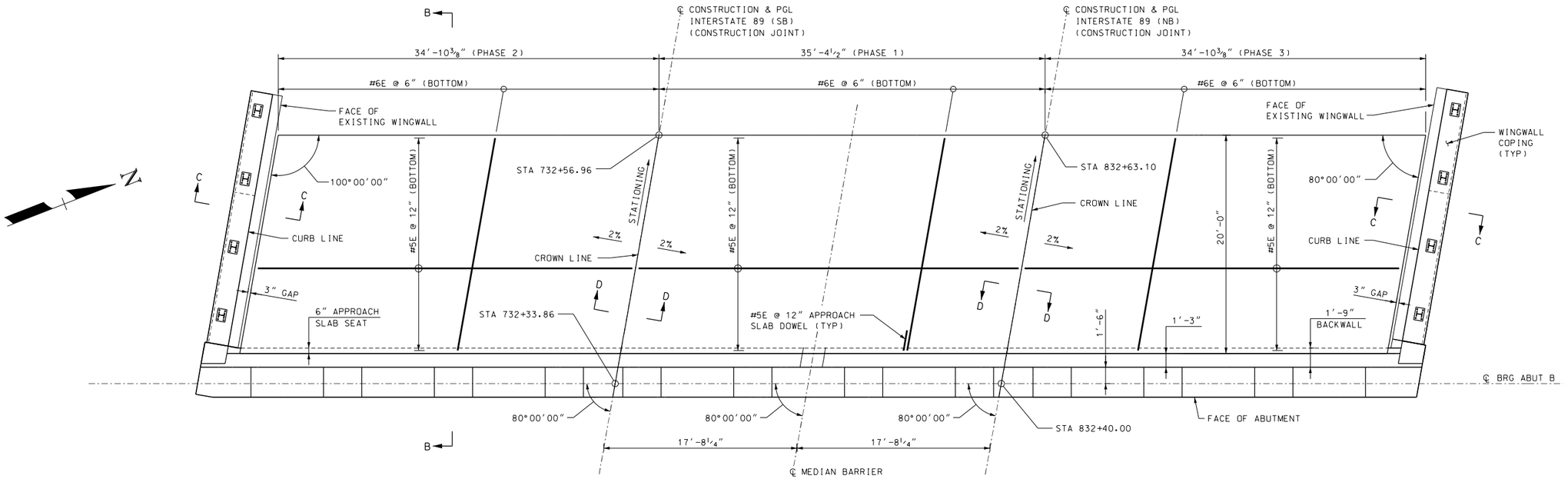
PRECAST CONCRETE DECK PANEL - STEEL GIRDER

BRIDGE SHEET 70 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	NHDOT	4/02	CHECKED	NHDOT	12/17
	DRAWN	NHDOT	12/10	CHECKED	NHDOT	12/17
	QUANTITIES			CHECKED		
	ISSUE DATE	4/02	FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE	5/18	A001(154)		213	600

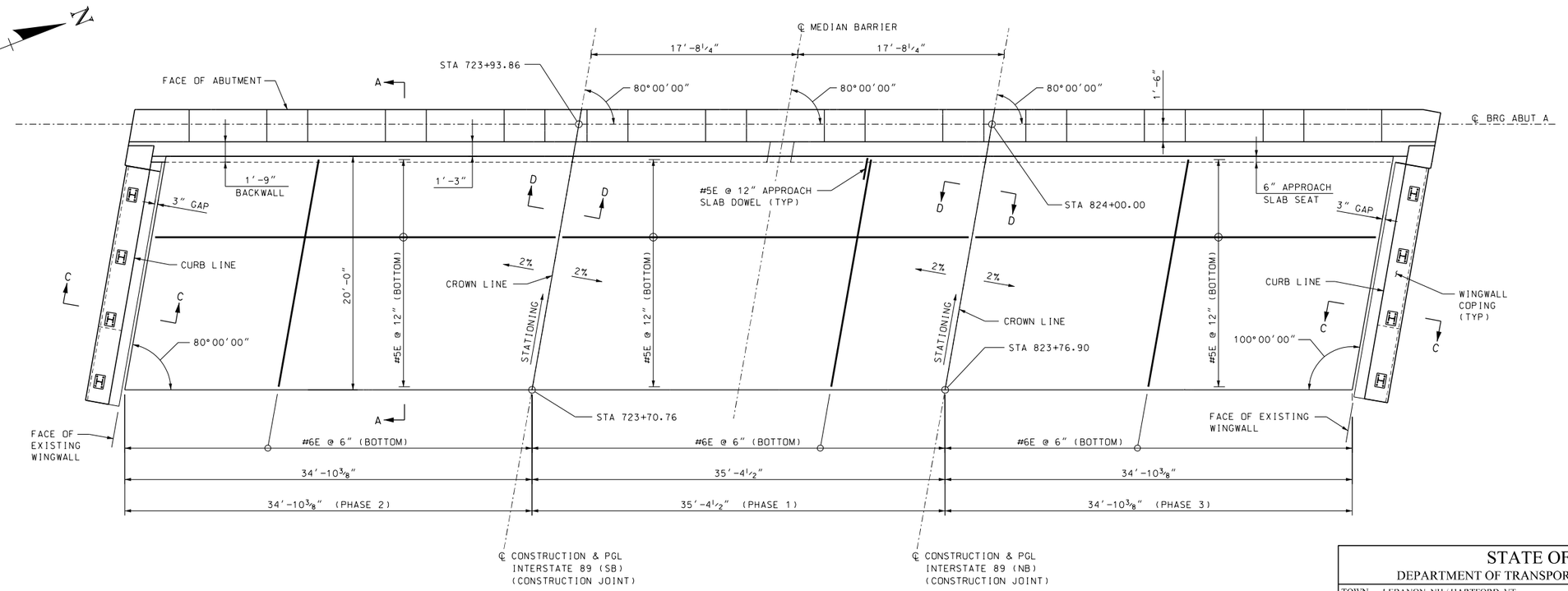
FILE NUMBER 133-1-1

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
English/DECKPANLS	4STEELGIRDERDECK	AS NOTED



ABUTMENT B APPROACH SLAB PLAN

SCALE: 3/16″ = 1′-0″



ABUTMENT A APPROACH SLAB PLAN

SCALE: 3/16″ = 1′-0″

NOTES

1. FOR PROJECT NOTES, SEE BRIDGE SHEETS 3 AND 4.
2. ALL APPROACH SLAB CONCRETE TO BE PAID UNDER CONCRETE AA, APPROACH SLABS (QC/QA) (F) (ITEM 520.0302).
3. ALL REINFORCEMENT SHALL HAVE 2 1/2″ MINIMUM CLEAR COVER, UNLESS OTHERWISE NOTED.
4. FOR SECTIONS A-A, B-B, C-C AND D-D, SEE BRIDGE SHEET 72.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

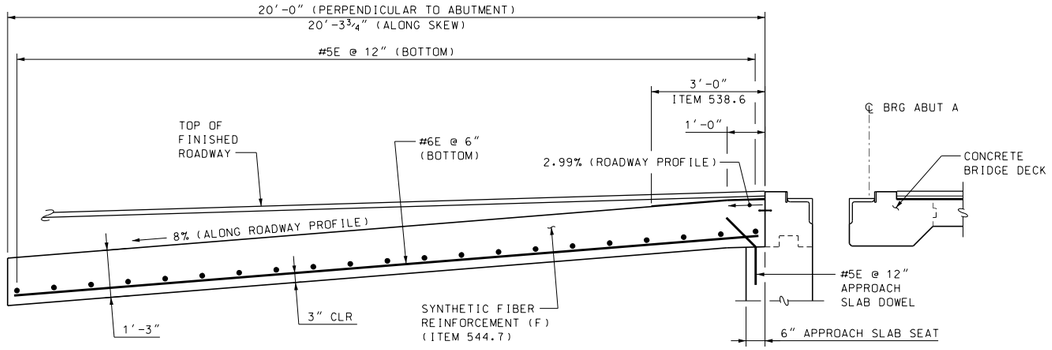
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

APPROACH SLAB DETAILS (1 OF 2)

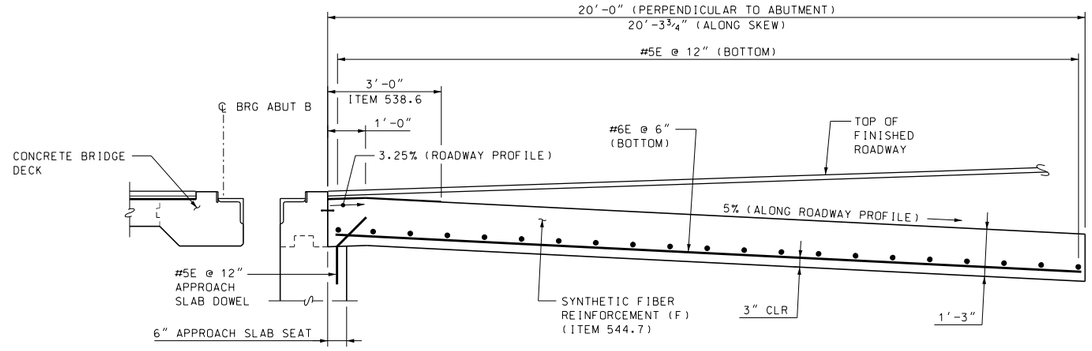
BRIDGE SHEET: 71 OF 94

FILE NUMBER: 133-1-1

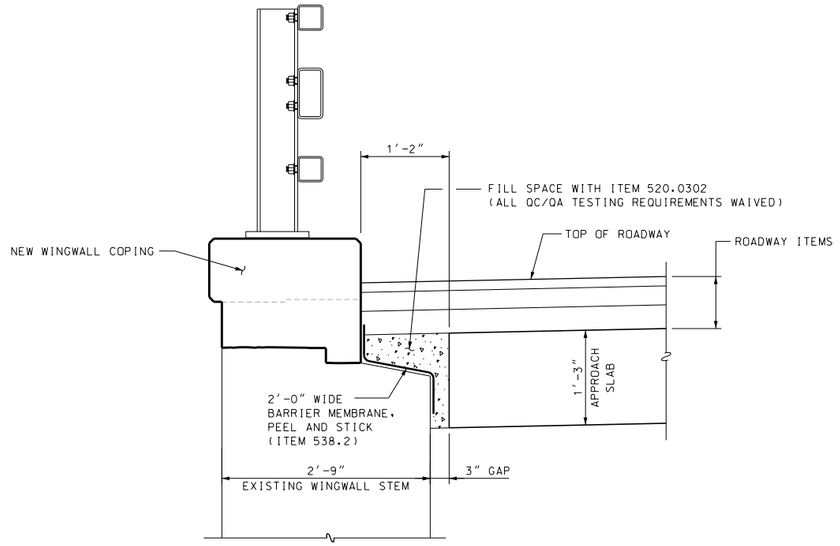
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		214	600



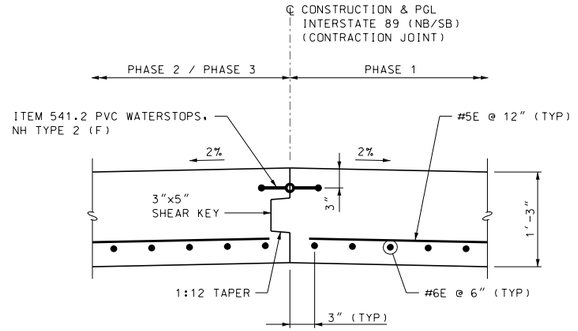
SECTION A-A
SCALE: ½" = 1'-0"



SECTION B-B
SCALE: ½" = 1'-0"



SECTION C-C
SCALE: 1" = 1'-0"



SECTION D-D
SCALE: 1" = 1'-0"

NOTES

1. FOR PROJECT NOTES, SEE BRIDGE SHEETS 3 AND 4.
2. ALL APPROACH SLAB CONCRETE TO BE PAID UNDER CONCRETE AA, APPROACH SLABS (QC/QA) (F) (ITEM 520.0302).
3. FOR LOCATION OF SECTIONS A-A, B-B, C-C, AND D-D, SEE BRIDGE SHEET 71.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

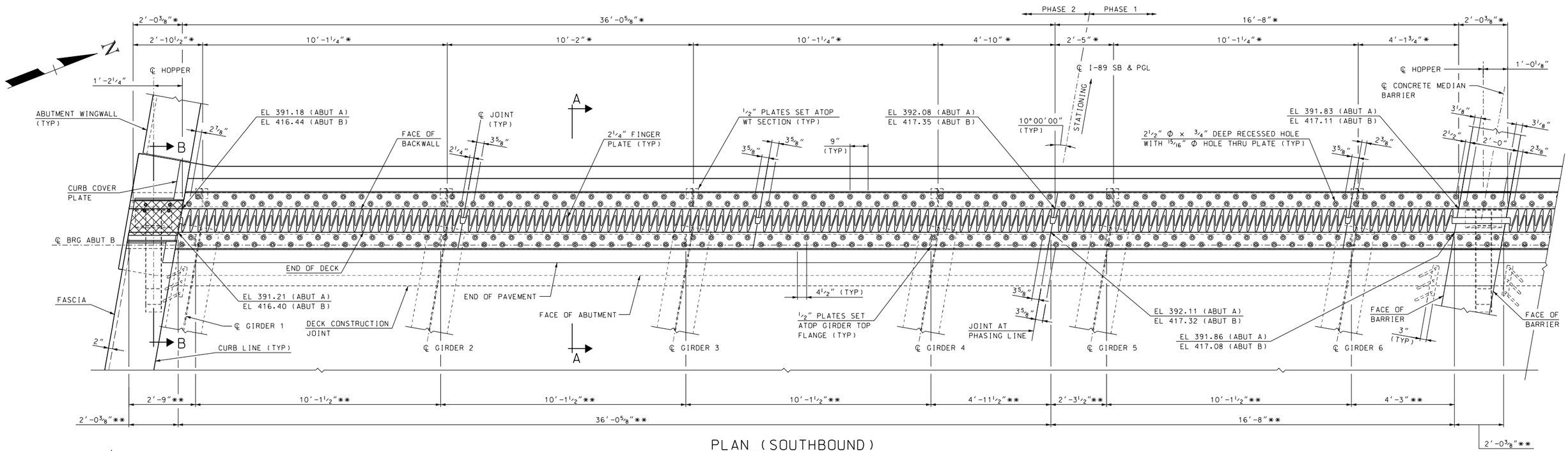
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

APPROACH SLAB DETAILS (2 OF 2)

BRIDGE SHEET 72 OF 94

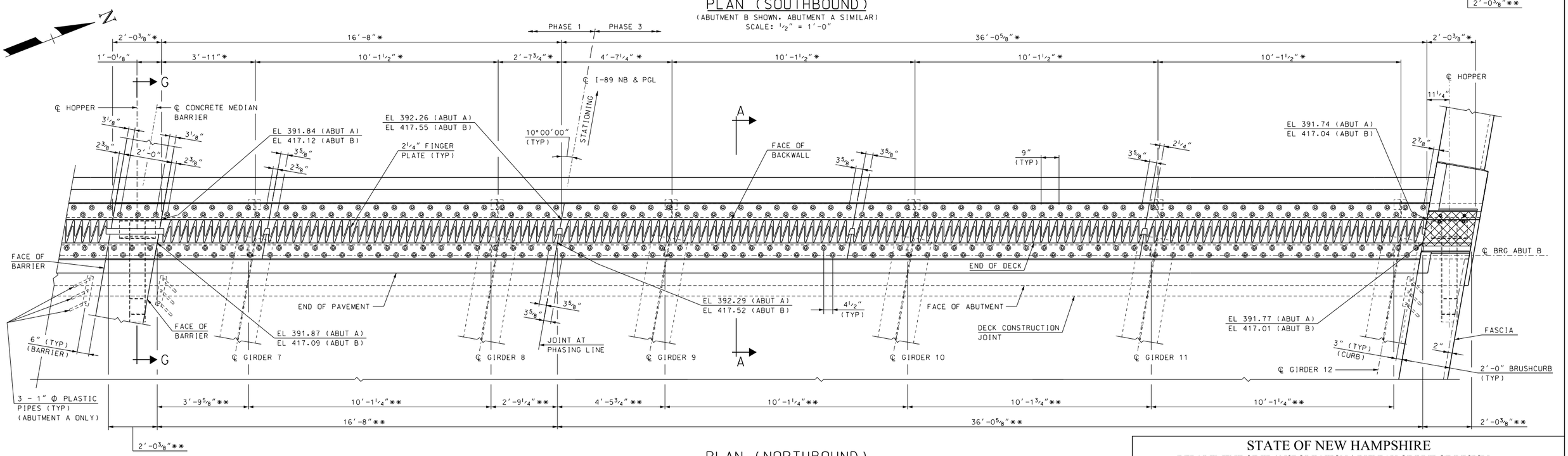
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		215	600

FILE NUMBER 133-1-1



PLAN (SOUTHBOUND)

(ABUTMENT B SHOWN, ABUTMENT A SIMILAR)
SCALE: 1/2" = 1'-0"



PLAN (NORTHBOUND)

(ABUTMENT B SHOWN, ABUTMENT A SIMILAR)
SCALE: 1/2" = 1'-0"

NOTES

1. MEDIAN BARRIER OVER EXPANSION JOINT NOT SHOWN FOR CLARITY. SEE BRIDGE SHEET 91 FOR BARRIER DETAILS.
2. FOR SECTION A-A. SEE BRIDGE SHEET 74.
3. FOR SECTION B-B. SEE BRIDGE SHEET 77.
4. FOR SECTION G-G. SEE BRIDGE SHEET 77.

* = HORIZONTAL DIMENSIONS MEASURED ALONG NEAR FACE OF BACKWALL
** = HORIZONTAL DIMENSIONS MEASURED ALONG END OF DECK

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 — STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

EXPANSION JOINT DETAILS (1 OF 5)

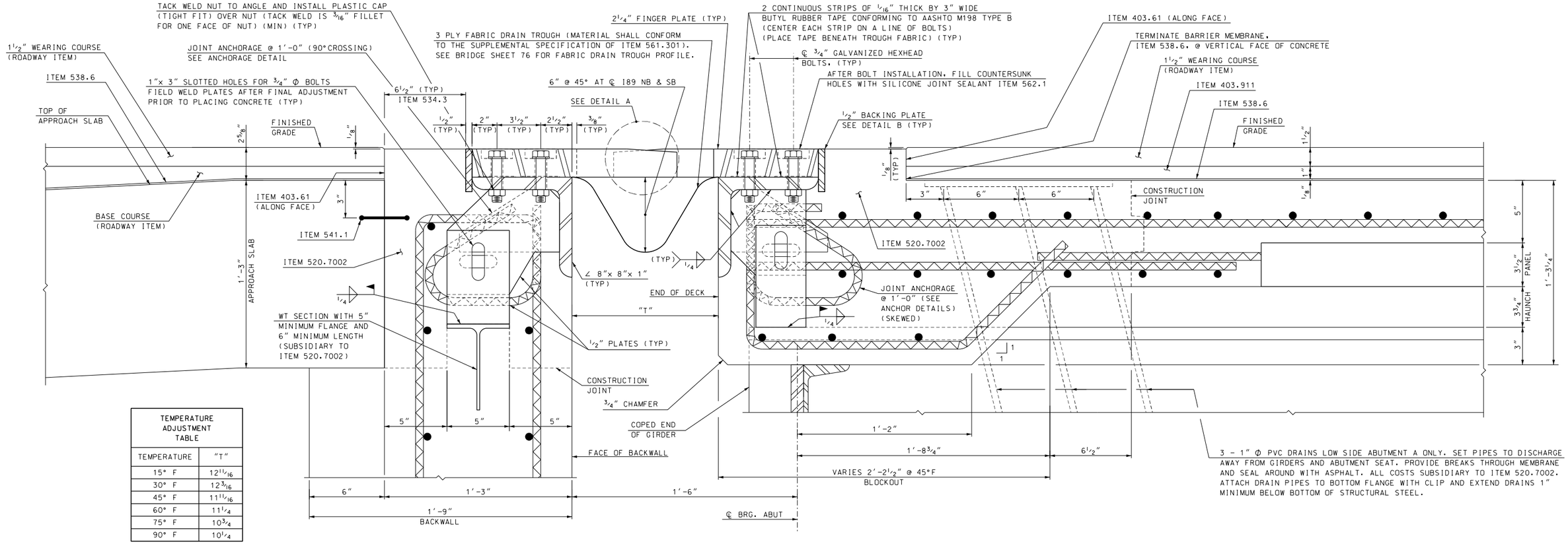
BRIDGE SHEET: 73 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE

	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	JAL	06/19
DRAWN	SLM	06/19	CHECKED	RLJ	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	216	600

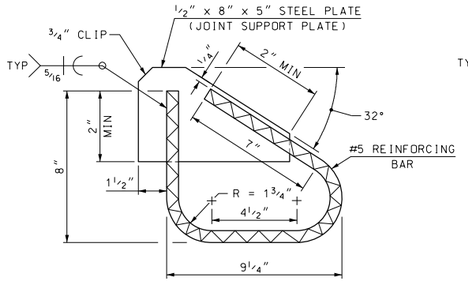
FILE NUMBER: 133-1-1



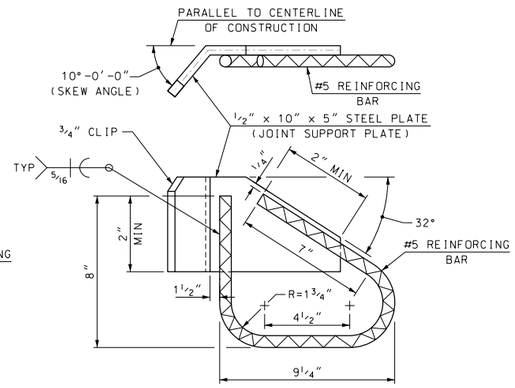
TEMPERATURE ADJUSTMENT TABLE	
TEMPERATURE	"T"
15° F	12 11/16
30° F	12 3/16
45° F	11 11/16
60° F	11 1/4
75° F	10 3/4
90° F	10 1/4

"T" DIMENSIONS ARE PERPENDICULAR TO FACE OF BACKWALL

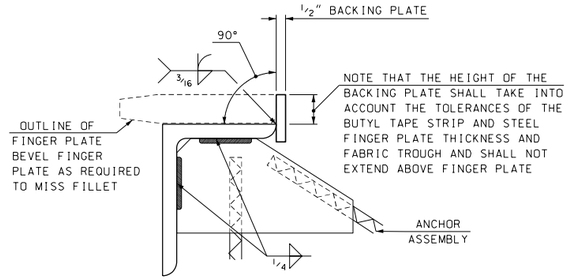
SECTION A-A
SCALE: 3" = 1'-0"



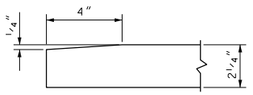
ANCHOR DETAIL (90° CROSSING)
SCALE: 3" = 1'-0"
(90 DEGREE ANCHORS REQUIRED IN BACKWALL)



ANCHOR DETAIL (SKEWED)
SCALE: 3" = 1'-0"
(SKEWED ANCHORS REQUIRED AT DECK END)



BACKING PLATE - DETAIL B
SCALE: 3" = 1'-0"



DETAIL A
SCALE: 3" = 1'-0"

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

EXPANSION JOINT DETAILS (2 OF 5)

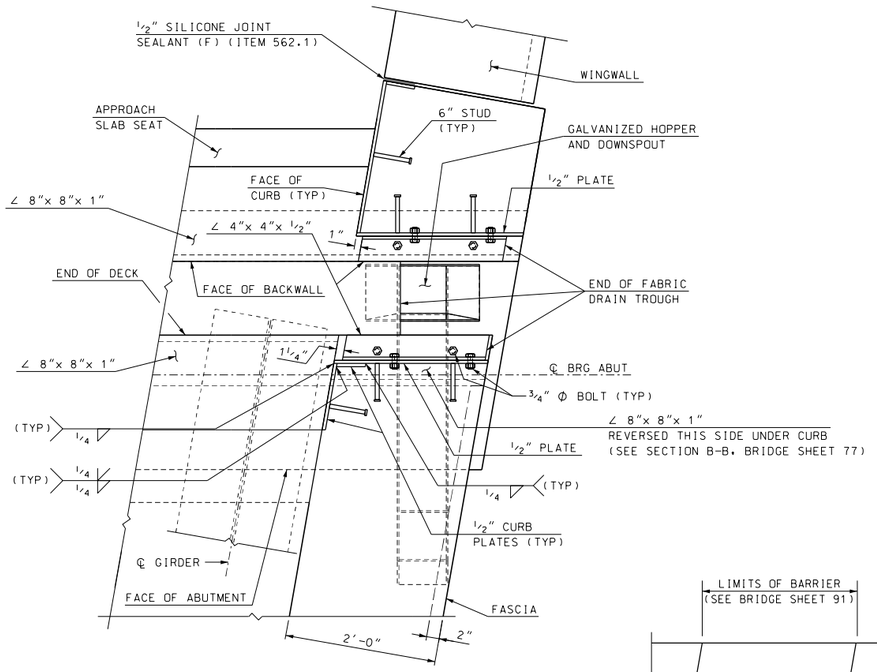
BRIDGE SHEET 74 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL 06/19
	DRAWN	SLM	06/19	CHECKED	RLJ 06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD 06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.
	REV. DATE		A001(154)		217

FILE NUMBER 133-1-1

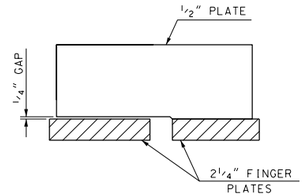
TOTAL SHEETS 600

McFarland Johnson



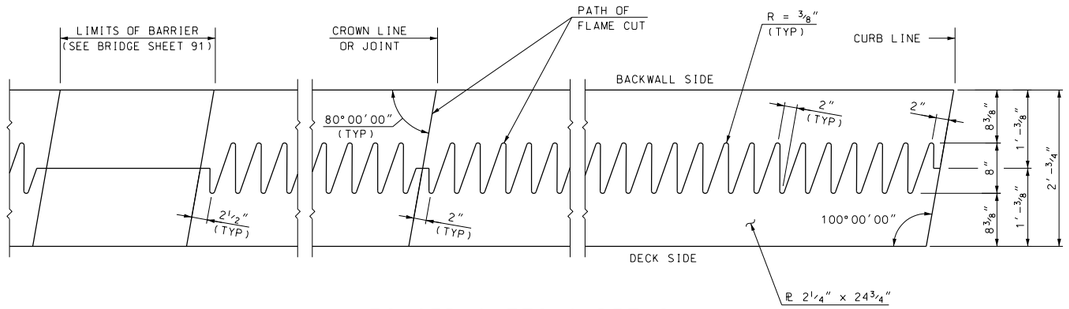
BRUSH CURB LOWER ASSEMBLY

(SIDE VERTICAL PLATES NOT SHOWN FOR CLARITY)
SCALE: 1" = 1'-0"



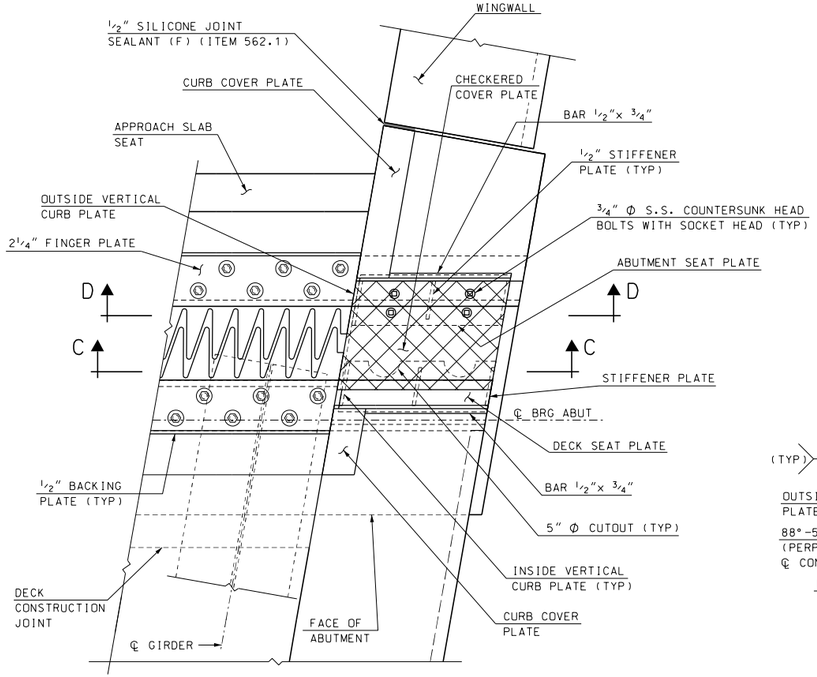
OUTSIDE VERTICAL CURB PLATE DETAIL

SCALE: 1 1/2" = 1'-0"



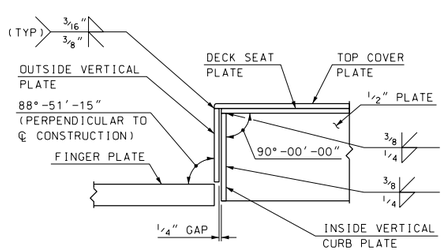
FINGER CUTTING DETAIL

SCALE: 1" = 1'-0"



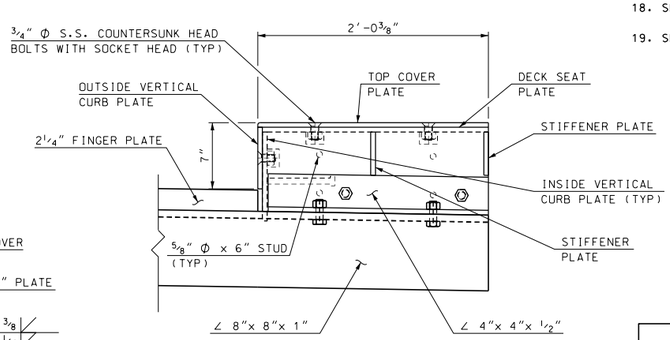
BRUSH CURB UPPER ASSEMBLY

(STUDS NOT SHOWN)
SCALE: 1" = 1'-0"



SECTION C-C

SCALE: 1 1/2" = 1'-0"



SECTION D-D

SCALE: 1 1/2" = 1'-0"

EXPANSION JOINT NOTES

1. THE ENTIRE FINGER JOINT ASSEMBLY SHALL BE PAID AS ITEM 561.3001, PREFABRICATED FINGER EXPANSION JOINT (F).
2. EXPANSION JOINT STEEL, INCLUDING MEDIAN BARRIER EXPANSION JOINT, SHALL BE GALVANIZED AASHTO (ASTM A572) M223 GRADE 50. MINOR STEEL PLATES MAY CONFORM TO AASHTO M183 (ASTM A36). ALL STEEL SHALL BE GALVANIZED.
3. BOLTS IN THE CURB AND MEDIAN BARRIER PLATES SHALL BE STAINLESS STEEL COUNTERSUNK HEAD BOLTS WITH SOCKET HEAD AND SHALL CONFORM TO ASTM A276, TYPE 304. BOLTS IN THE ROADWAY PLATES SHALL BE GALVANIZED HIGH-STRENGTH BOLTS AND SHALL CONFORM TO ASTM A325. DOWNSPOUT ANCHOR BOLTS SHALL BE GALVANIZED AND CONFORM TO ASTM A307.
4. SPLICES FOR EXPANSION JOINT STEEL SHALL DEVELOP FULL STRENGTH.
5. THE EXPANSION JOINT SHALL BE PRESET TO THE TEMPERATURE ANTICIPATED AT THE TIME OF INSTALLATION. FINAL SETTING IN THE FIELD SHALL BE DETERMINED BY THE CONTRACT ADMINISTRATOR (SEE TEMPERATURE TABLE ON BRIDGE SHEET 74). THE JOINT HAS BEEN DESIGNED FOR A FACTORED MOVEMENT OF 4 7/8".
6. PROTECT TOP OF EXPANSION JOINT DURING PLACEMENT OF CONCRETE AND BITUMINOUS PAVEMENT.
7. JOINT SUPPORT AND CURB PLATES SHALL BE SHOP WELDED TO THE EXPANSION JOINT STEEL AND SHALL BE VERTICAL AFTER THE JOINT ASSEMBLY HAS BEEN ADJUSTED FOR ROADWAY CROSS-SLOPE AND PROFILE GRADE.
8. IMMEDIATELY AFTER THE JOINT HAS BEEN SECURED TO THE STRUCTURAL STEEL AND BACKWALL, REMOVE SHIPPING DEVICES. WELDING OF SHIPPING DEVICES TO FINGER PLATE SHALL NOT BE ALLOWED.
9. THE FINGER PLATES SHALL BE CUT FROM ONE CONTINUOUS 2'-3/4" WIDE X 2-1/4" THICK PLATE AS SHOWN ON THE FINGER CUTTING DETAIL.
10. THE HOPPERS AND DOWNSPOUTS SHALL BE A-36 GALVANIZED IN ACCORDANCE WITH SECTION 550. PAYMENT FOR HOPPERS, DOWNSPOUT BLOCKING PADS AND ALL ATTACHMENTS WILL BE SUBSIDIARY TO ITEM 561.3001.
11. ELEVATIONS SHOWN AT THE TOP OF THE FINGER PLATES ARE 1/8 INCH LOWER THAN THE PROPOSED FINISHED ROADWAY GRADE.
12. THE DRAIN TROUGH SHALL BE 3-PLY PREFORMED FABRIC MATERIAL, SUPPLIED IN ONE CONTINUOUS LENGTH AND SHALL BE CUT AS REQUIRED TO CONFORM TO THE ROADWAY CROSS SLOPE AND GRADE DURING SHOP PRE-ASSEMBLY. PLACEMENT OF THE TROUGH SHALL BE DONE AFTER COMPLETE INSTALLATION OF THE FINGER JOINT ASSEMBLY. EXCESS FABRIC BEHIND CURB PLATES SHALL BE TRIMMED TO BACK OF PLATES.
13. DRAIN TROUGH MAY BE CUT INTO 4 LENGTHS WITH 1'-0" OVERLAP AT ROADWAY CROWN LINE. SEE FABRIC TROUGH SPLICE DETAIL, BRIDGE SHEET 76.
14. THE EXPANSION JOINT ASSEMBLY SHALL BE INSTALLED ONLY AFTER THE APPROACH FILLS HAVE BEEN CONSTRUCTED TO THE BOTTOM OF THE APPROACH SLAB.
15. RUBBER BLOCKS USED BETWEEN ABUTMENT CONCRETE AND DOWNSPOUTS SHALL BE MOLDED TO A THICKNESS OF 1/2" AND CUT BY THE FABRICATOR TO LENGTHS AND WIDTHS SPECIFIED IN THE PLANS. RUBBER BLOCKS SHALL BE OZONE, WATER, AND TEMPERATURE RESISTANT AND BONDED TO THE FACE OF ABUTMENT CONCRETE WITH A COMPATIBLE ADHESIVE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
16. AFTER BOLT INSTALLATION, FILL COUNTERSUNK HOLES WITH SILICONE JOINT SEALANT, ITEM 562.1 (APPROX 1.0 IN/HOLE).
17. CONTRACTOR SHALL VERIFY DOWNSPOUT DIMENSION TABLE, BRIDGE SHEET 77, BASED ON ACTUAL BEARING HEIGHTS AND ABUTMENT PEDESTAL DIMENSIONS.
18. SEE BRIDGE SHEET 77 FOR HOPPER DETAILS.
19. SEE BRIDGE SHEET 91 FOR MEDIAN BARRIER EXPANSION JOINT DETAILS.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

EXPANSION JOINT DETAILS (3 OF 5)

BRIDGE SHEET 75 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	JAL	06/19
DRAWN	SLM	06/19	CHECKED	RLJ	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	218	600

FILE NUMBER 133-1-1

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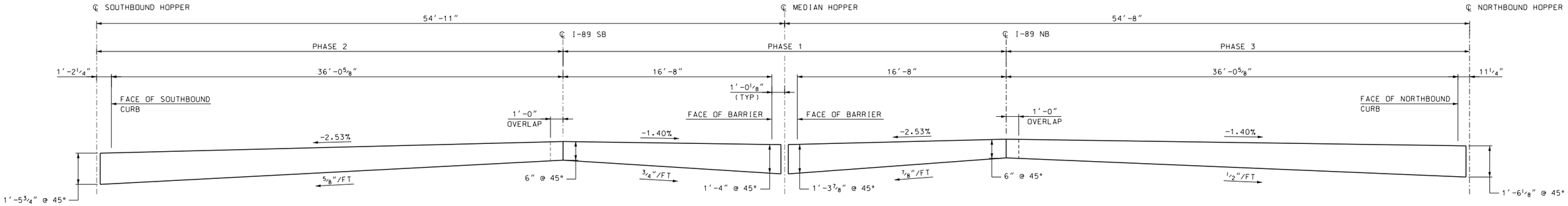
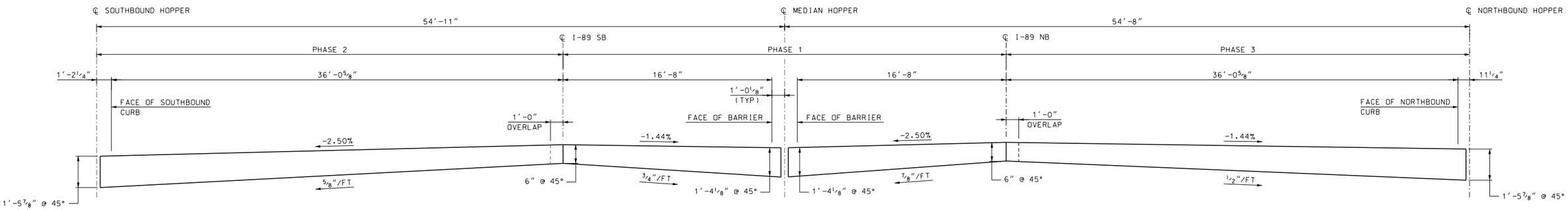


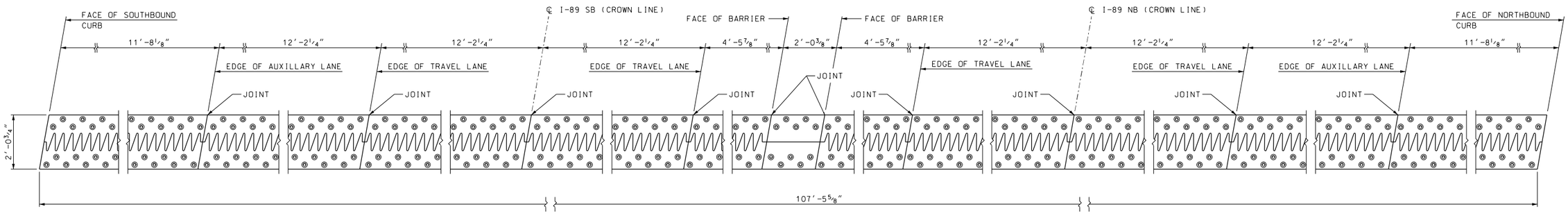
FABRIC DRAIN TROUGH PROFILE (ABUTMENT B)

(DIMENSIONS TAKEN AT FRONT FACE OF BACKWALL)
NOT TO SCALE



FABRIC DRAIN TROUGH PROFILE (ABUTMENT A)

(DIMENSIONS TAKEN AT FRONT FACE OF BACKWALL)
NOT TO SCALE



FINGER PLATE PLAN

(LOOKING UPSTATION)
SCALE: ½″ = 1′-0″

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

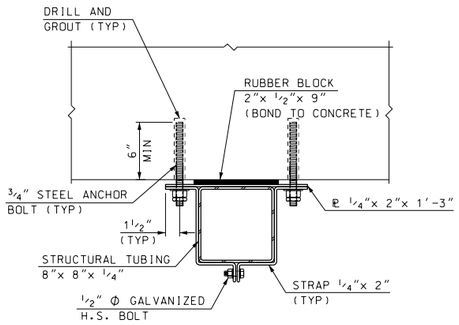
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

EXPANSION JOINT DETAILS (4 OF 5)

BRIDGE SHEET: 76 OF 94

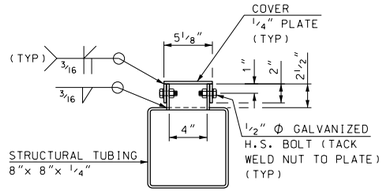
FILE NUMBER: 133-1-1

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		219	600



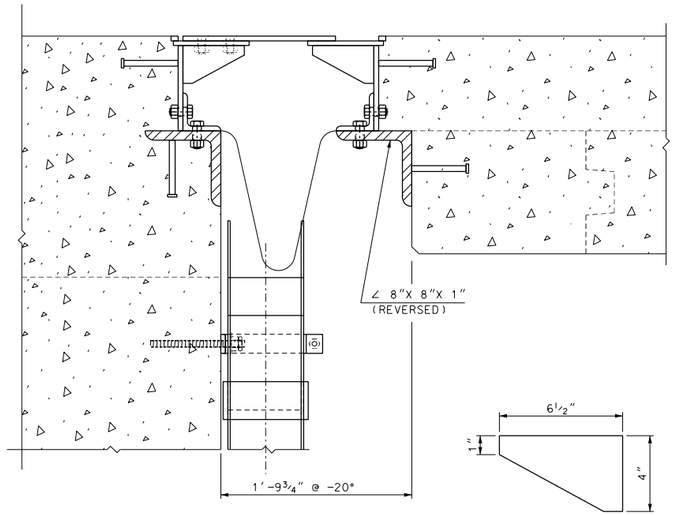
SECTION E-E

SCALE: 1 1/2" = 1'-0"



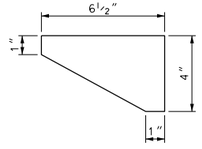
SECTION F-F

SCALE: 1 1/2" = 1'-0"



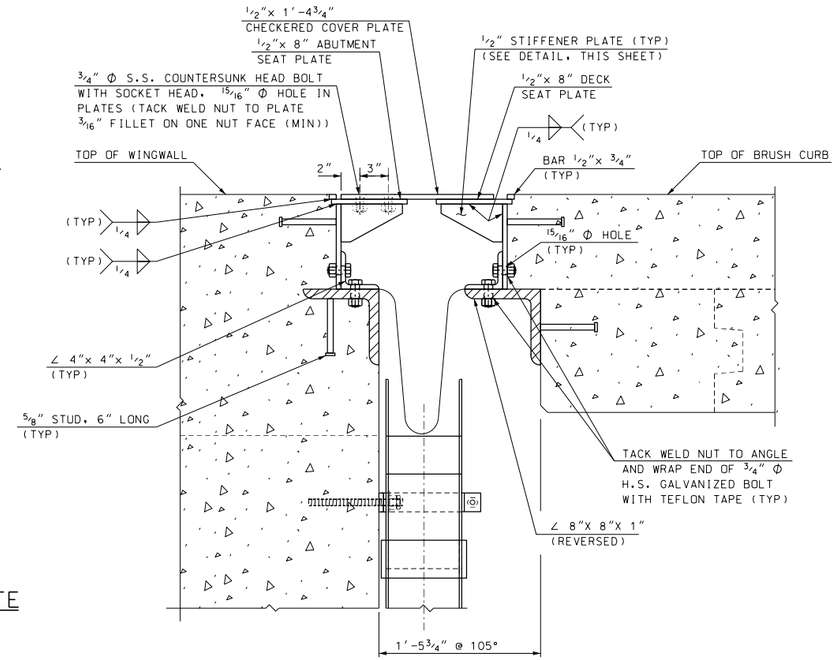
SECTION B-B

SCALE: 1 1/2" = 1'-0"
(MAX. OPENING)



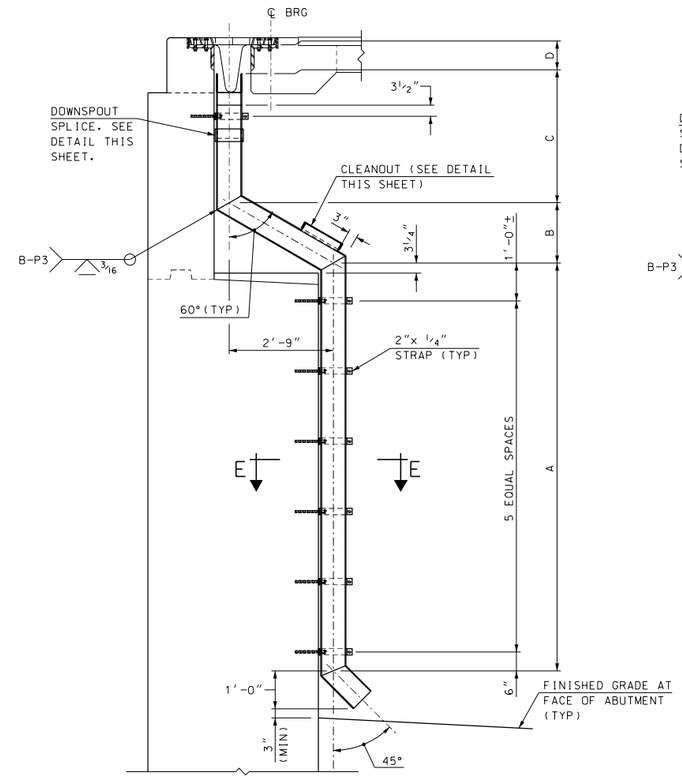
STIFFENER PLATE

SCALE: 3" = 1'-0"



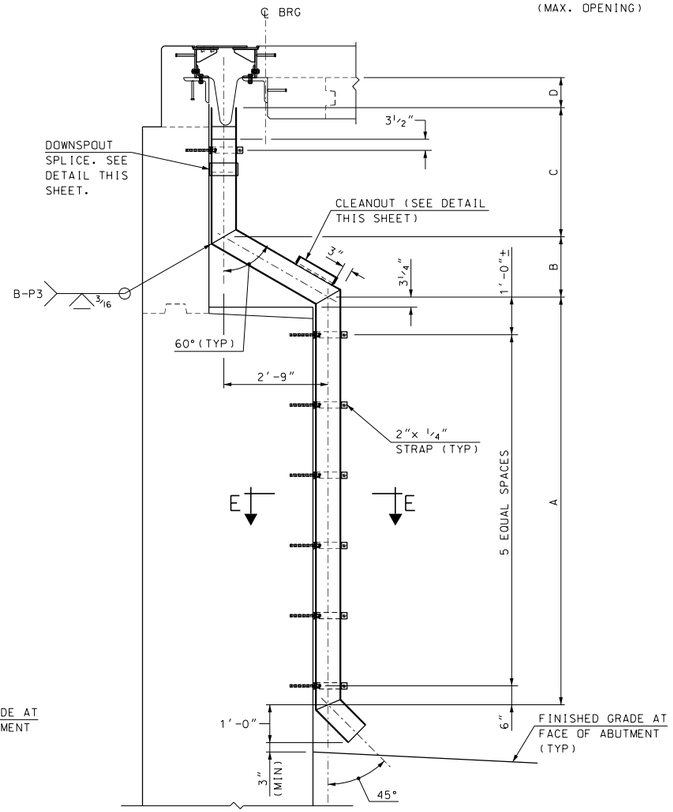
SECTION B-B

SCALE: 1 1/2" = 1'-0"
(MIN. OPENING)



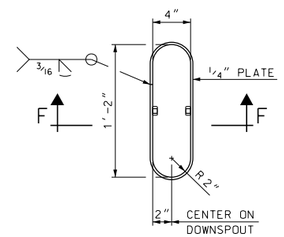
SECTION G-G THRU ℄ OF HOPPER AT MEDIAN BARRIER

SCALE: 1/2" = 1'-0"



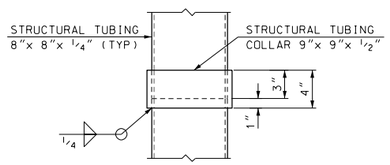
SECTION B-B THRU ℄ OF HOPPER AT BRUSH CURB

SCALE: 1/2" = 1'-0"



CLEANOUT DETAIL PLAN

SCALE: 1 1/2" = 1'-0"
(COVER NOT SHOWN)

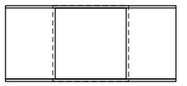


DOWNSPOUT SPLICE DETAIL

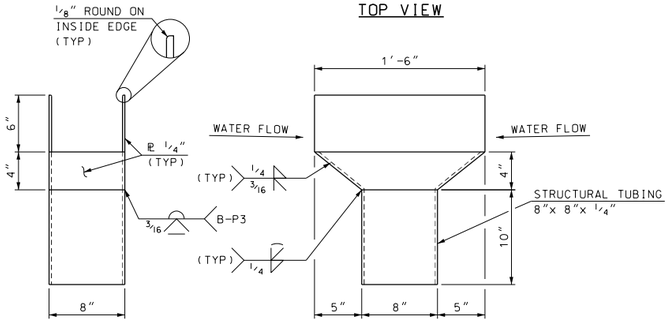
SCALE: 1 1/2" = 1'-0"

DOWNSPOUT DIMENSIONS *				
LOCATION	A	B	C	D
S.B. CURB - ABUTMENT A	14'-8 1/2"	1'-7"	3'-11"	1'-3"
MEDIAN - ABUTMENT A	11'-10"	1'-7"	4'-1"	1'-1"
N.B. CURB - ABUTMENT A	15'-3"	1'-7"	3'-11"	1'-3"
S.B. CURB - ABUTMENT B	12'-10 1/2"	1'-7"	3'-11 1/2"	1'-3"
MEDIAN - ABUTMENT B	12'-6"	1'-7"	4'-2"	1'-1"
N.B. CURB - ABUTMENT B	11-5 1/2"	1'-7"	3'-11 1/2"	1'-3"

* SEE EXPANSION JOINT NOTE 16 ON BRIDGE SHEET 75.



TOP VIEW



SIDE VIEW — FRONT VIEW

HOPPER DETAILS

SCALE: 1 1/2" = 1'-0"

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

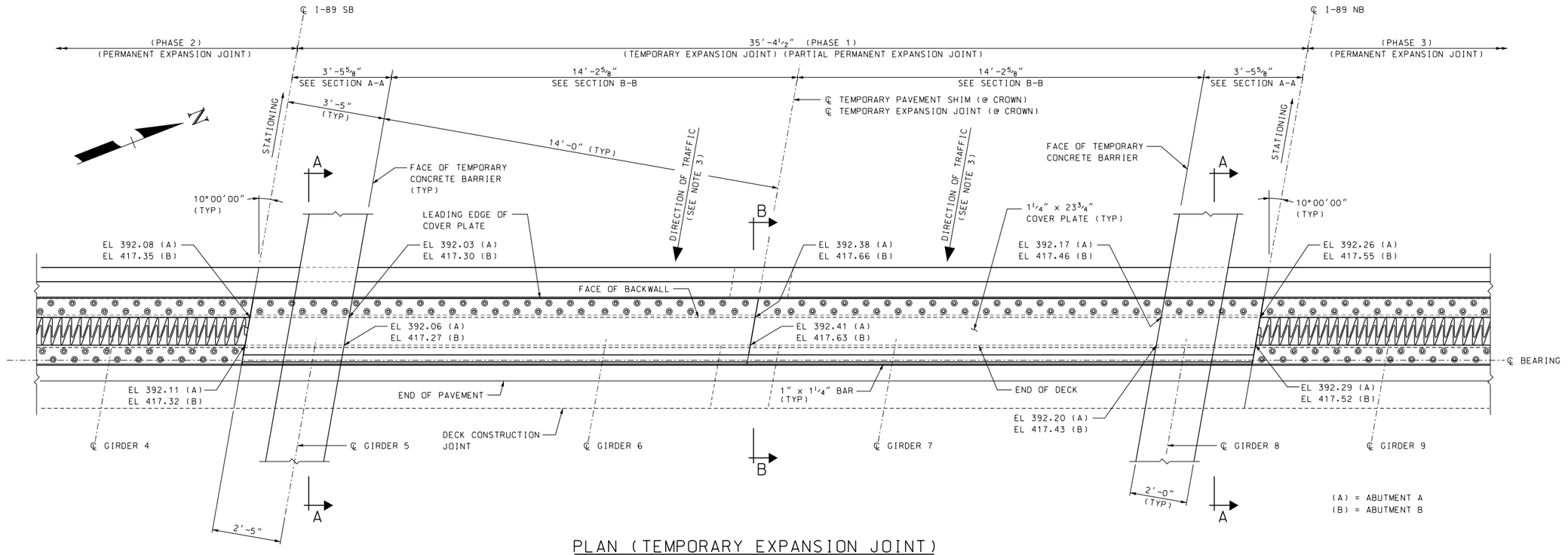
EXPANSION JOINT DETAILS (5 OF 5)

BRIDGE SHEET 77 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE	CHECKED	BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

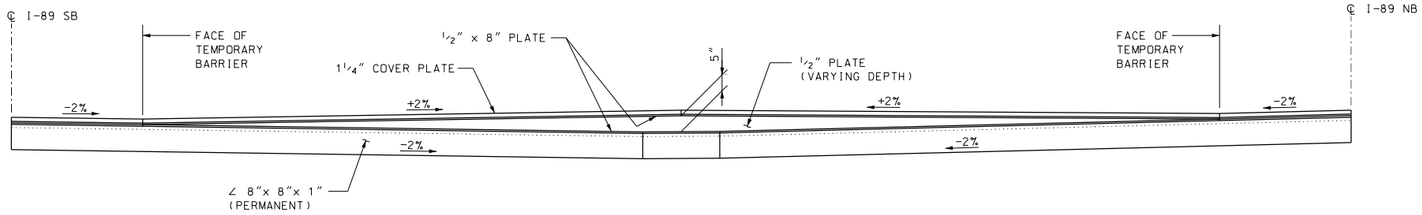
ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	220	600

FILE NUMBER 133-1-1



PLAN (TEMPORARY EXPANSION JOINT)

(ABUTMENT B SHOWN, ABUTMENT A SIMILAR)
SCALE: ½" = 1'-0"



ELEVATION (TEMPORARY EXPANSION JOINT)

(PHASE 1 - LOOKING UPSTATION)
SCALE: ½" = 1'-0"

NOTES

1. FOR ADDITIONAL INFORMATION ON EXPANSION JOINT, SEE "EXPANSION JOINT DETAILS (1 OF 5)", BRIDGE SHEET 73.

2. TEMPORARY JOINT CONCEPT SHOWN, CONTRACTOR TO SUBMIT SHOP FABRICATION DRAWINGS FOR APPROVAL. SHOP DRAWINGS SHALL INCLUDE ALL WELD TYPES AND SIZES REQUIRED FOR FABRICATION (SEE DETAILS FOR COMPONENTS TO BE WELDED). ALL COSTS FOR TEMPORARY EXPANSION JOINT SHALL BE SUBSIDIARY TO ITEM 561.3001.

3. THE LEADING EDGE OF THE COVER PLATE, RELATIVE TO THE DIRECTION OF TRAVEL, SHALL BE THE BOLTED EDGE. THE CONTRACTOR SHALL REMOVE AND RESET TEMPORARY JOINT COMPONENTS, AND/OR PROVIDE ADDITIONAL COMPONENTS SUCH THAT THIS CONDITION IS SATISFIED WHEN THE DIRECTION OF TRAVEL CHANGES BETWEEN CONSTRUCTION PHASES. NOTE THAT THE LAYOUT OF THE COVER PLATE BOLT HOLES ALLOW THE COVER PLATES TO BE ROTATED TO THE OPPOSITE SIDE OF THE JOINT WHEN THE TRAFFIC DIRECTION OF TRAVEL CHANGES. ALL COMPONENTS AND/OR MODIFICATIONS REQUIRED TO SATISFY THIS CONDITION SHALL BE DETAILED IN THE SHOP DRAWINGS AND ARE SUBJECT TO THE APPROVAL OF THE ENGINEER.

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STATE OF NEW HAMPSHIRE
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LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

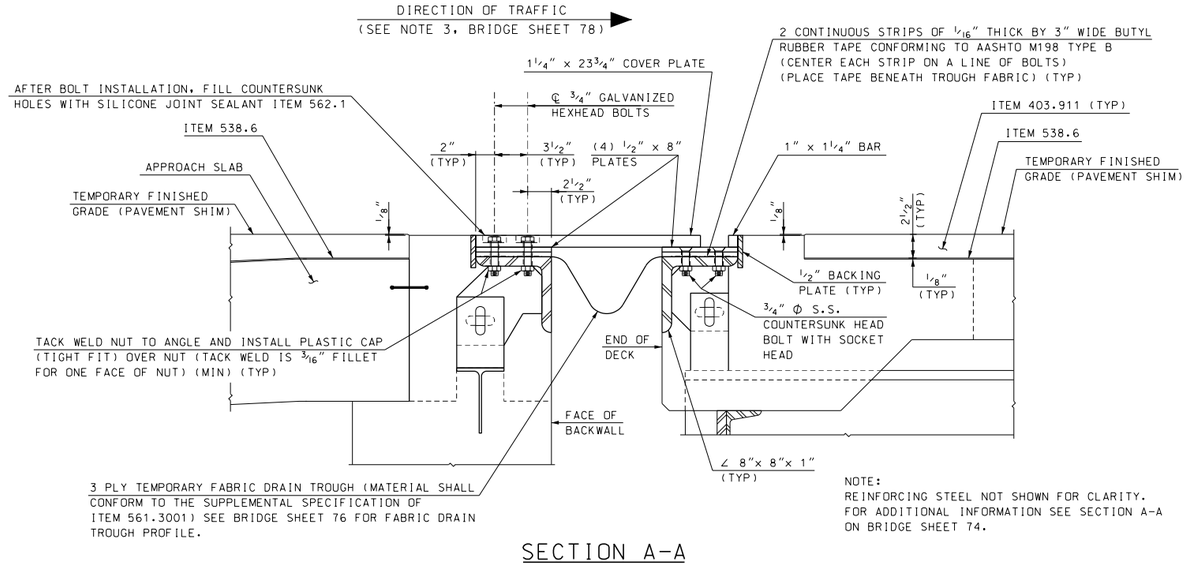
TEMPORARY EXPANSION JOINT DETAILS (1 OF 2)

BRIDGE SHEET: 78 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

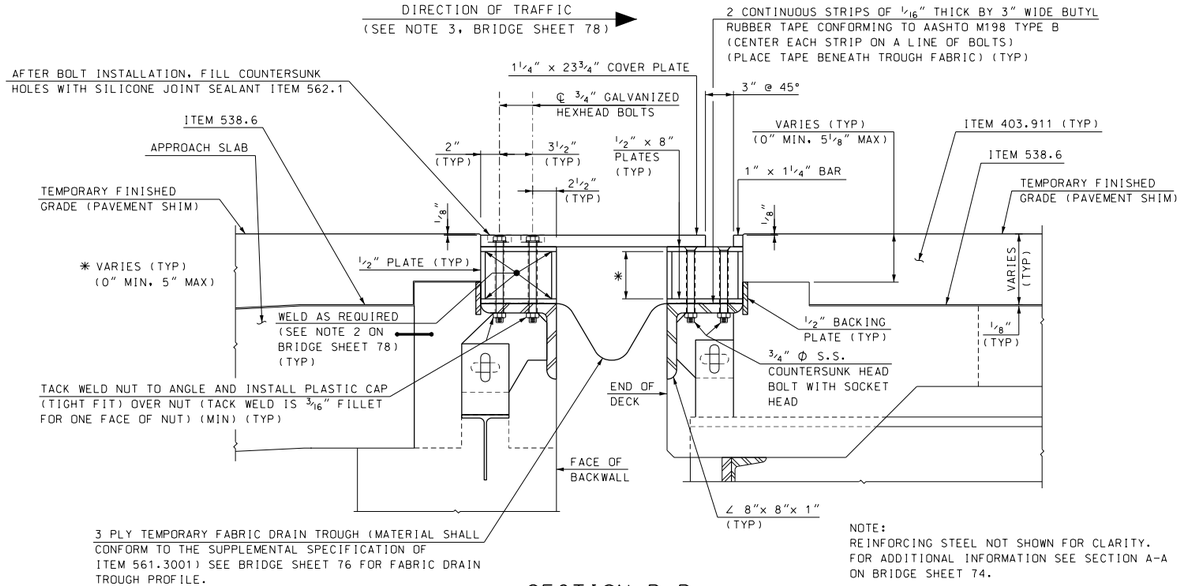
FILE NUMBER: 133-1-1

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	221	600



SECTION A-A

(CROWN AT ℄ I-89 NB/SB TO INSIDE FACE TEMPORARY BARRIER)
(MINIMUM DEPTH SECTION)
SCALE: 1 1/2" = 1'-0"



SECTION B-B

(AT CROWN OF TEMPORARY PAVEMENT SHIM)
(MAXIMUM DEPTH SECTION)
SCALE: 1 1/2" = 1'-0"

NOTES

1. FABRIC DRAIN TROUGH USED IN PHASE 1 CONSTRUCTION SHALL BE TEMPORARY AND REPLACED FOR FINAL CONDITION AFTER REMOVAL OF TEMPORARY EXPANSION JOINT. ALL COSTS SUBSIDIARY TO ITEM 561.3001.

STATE OF NEW HAMPSHIRE
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LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

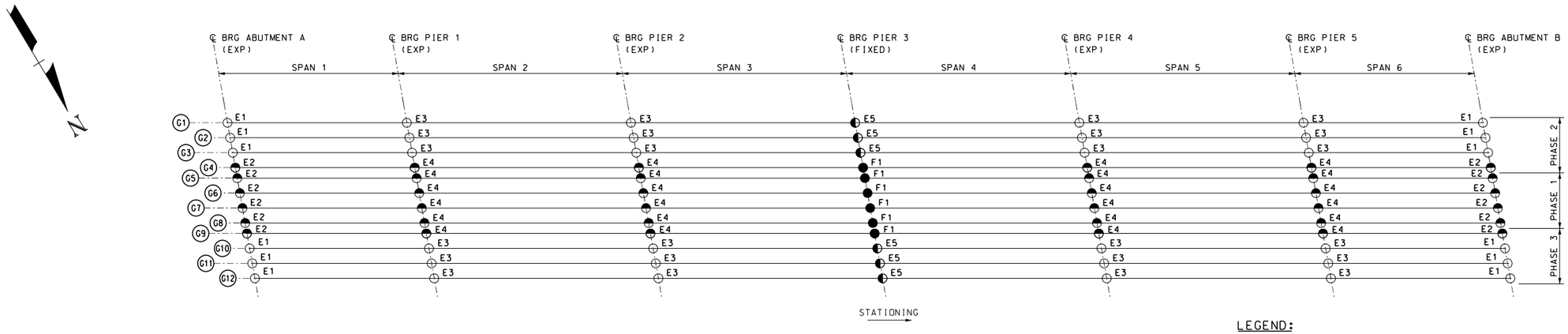
TEMPORARY EXPANSION JOINT DETAILS (2 OF 2)

BRIDGE SHEET: 79 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED SIW	06/19	CHECKED JAL		06/19
	DRAWN SLM	06/19	CHECKED RLJ		06/19
	QUANTITIES DRW	06/19	CHECKED SFD		06/19
	ISSUE DATE		FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)	222	600

FILE NUMBER: 133-1-1

McFarland Johnson



BEARING LOCATION PLAN
SCALE : 1" = 40'

LEGEND:

- ◓ - UNI-DIRECTIONAL EXPANSION BEARING WITH GUIDE BARS PARALLEL TO ℄ GIRDER
- ○ - MULTI-DIRECTIONAL EXPANSION BEARING
- ● - FIXED BEARING
- ◐ - UNI-DIRECTIONAL EXPANSION BEARING WITH GUIDE BARS PERPENDICULAR TO ℄ GIRDER

DISC BEARING NOTES:

1. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.
2. THE ACTUAL BEARING HEIGHT (H) SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR (THE HEIGHTS SHOWN IN THE DISC BEARING DESIGN TABLE ARE APPROXIMATE). THE SHOP DRAWINGS, PREPARED BY THE MANUFACTURER, SHALL PROVIDE ALL PERTINENT BEARING INFORMATION. THE FINAL BRIDGE SEAT ELEVATIONS SHALL BE DETERMINED BY THE CONTRACTOR AND SUBMITTED WITH THE SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION OF THE CONCRETE BEARING PEDESTALS.
3. FIXED, UNI-DIRECTIONAL, AND MULTI-DIRECTIONAL HIGH LOAD MULTI-ROTATIONAL BEARINGS, INCLUDING MASONRY PLATE, SOLE PLATE, ANCHOR BOLTS, NUTS AND WASHERS, SEALANT, PREFORMED FABRIC BEARING PAD, AND FIELD WELDING SHALL BE PAID AS ITEM 550.2101, BRIDGE SHOES - HLMR.
4. MASONRY PLATES SHALL BE PLACED ON $^{1}/_{8}$" THICK PREFORMED FABRIC PADS.
5. ANCHOR BOLT LOCATIONS SHALL BE DETERMINED BY THE BEARING MANUFACTURER AND INCLUDED IN THE FABRICATION DRAWINGS. ALL ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE FABRICATED IN ACCORDANCE WITH SECTION 550.2.5 OF THE NHDOT STANDARD SPECIFICATIONS AND GALVANIZED CONFORMING TO AASHTO M232 (ASTM A153). ALL ANCHOR BOLTS AT PIERS SHALL BE SET BY A TEMPLATE BEFORE CONCRETE IS PLACED. DRILLING IS NOT ALLOWED.
6. BEARING SURFACES IN CONTACT TO BE WELDED SHALL BE FINISHED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS SECTION 11.4.6.
7. ALL PLATES SHALL BE FLAT AND TRUE AFTER WELDING.
8. RECESS AND BOND THE PTFE TO THE TOP OF THE DISC BEARING WITH AN APPROVED ADHESIVE. THE SURFACE PREPARATION AND APPLICATION OF THE PTFE TO THE MATING STEEL SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
9. BEARING GEOMETRY MUST ALLOW SUFFICIENT VERTICAL AND HORIZONTAL CLEARANCE AT EACH BEARING FOR JACKS TO FACILITATE FUTURE BEARING REPLACEMENT AFTER GIRDERS ARE WELDED TO THE SOLE PLATES.
10. BEARING DEVICES SHALL NOT BE DISASSEMBLED DURING INSTALLATION. INSTALLATION PROCEDURES SHALL BE IN CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND AS APPROVED BY THE ENGINEER.
11. THE SLIDING SURFACES IN THE EXPANSION DISC BEARINGS SHALL BE DESIGNED SUCH THAT NO MORE THAN 7% OF THE VERTICAL SERVICE DEAD LOAD IS TRANSFERRED TO THE SUBSTRUCTURE THROUGH FRICTION ACROSS THE SLIDING SURFACE.
12. ALL BEARINGS SHALL BE MARKED PRIOR TO SHIPPING. THE MARKS SHALL INCLUDE THE BEARING LOCATIONS ON THE BRIDGE, AND A DIRECTION ARROW THAT POINTS UPSTATION. ALL MARKS SHALL BE PERMANENT AND SHALL BE VISIBLE AFTER THE BEARING IS INSTALLED.
13. THE DESIGN TEMPERATURE RANGE SHALL BE 125°F (-20°F TO 105°F).
14. DESIGN OF THE SOLE PLATES, MASONRY PLATES, BEARING DISC, AND ANCHOR BOLTS IS THE RESPONSIBILITY OF THE BEARING MANUFACTURER AND SHALL BE INCLUDED IN THE FABRICATION DRAWINGS AND DESIGN CALCULATIONS.
15. ROTATIONS SHOWN IN THE BEARING TABLE INCLUDE AN ALLOWANCE OF 0.01 RAD COMPOSED OF CONSTRUCTION TOLERANCE (0.005 RAD) AND UNCERTAINTIES (0.005 RAD). THE DESIGN ROTATIONS ARE FOR LIVE LOAD ONLY.
16. THE SOLE PLATES SHALL BE BEVELED TO MATCH THE PROFILE GRADE (AS INDICATED IN THE BEARING SOLE PLATE BEVEL TABLE). BEARING SOLE PLATE BEVEL % IS POSITIVE UPSTATION.
17. ALL WELDS SHOWN ON THE BEARING DETAILS ON SHEETS 81-82 ARE TO BE DESIGNED BY THE BEARING MANUFACTURER.
18. THE NUMBER OF ANCHOR BOLTS PROVIDED IN THE DISC BEARING DESIGN TABLE ARE BASED ON THE SIZE AND STRENGTH OF BOLTS NOTED AND REPRESENT THE MINIMUM NUMBER OF BOLTS REQUIRED. THE BEARING MANUFACTURER SHALL DETERMINE THE FINAL NUMBER OF BOLTS REQUIRED BASED ON THE DESIGN OF THE BEARING. THE LATERAL CAPACITY PROVIDED BY THE ANCHOR BOLTS SHALL NOT BE LESS THAN THE LATERAL CAPACITY OF THE BEARING IN ANY DIRECTION.
19. PIER NO. 3 BEARINGS SHALL BE WELDED TO THE GIRDER PRIOR TO WELDING ANY OTHER BEARINGS. BEARING STIFFENERS AT PIER NO. 3 SHALL BE IN LINE WITH THE CENTERLINE OF BEARING AT THE TIME OF WELDING.

DISC BEARING DESIGN TABLE

BEARING TYPE	DESIGN LOADS PER BEARING (KIPS)										ASSUMED BEARING HEIGHT (H) (IN.) **	DESIGN ROTATION (RADIANS)	TOTAL LONG. MOVEMENT (IN.) ***	TOTAL TRANS. MOVEMENT (IN.)	REQUIRED ANCHOR BOLTS (MINIMUM)
	VERTICAL DESIGN LOADS				HORIZONTAL DESIGN LOADS										
	SERVICE		STRENGTH	EXT. EVENT	SERVICE		STRENGTH		EXTREME EVENT						
	DEAD LOAD	TOTAL LOAD	TOTAL LOAD	TOTAL LOAD	LONGITUDINAL	TRANSVERSE	LONGITUDINAL	TRANSVERSE	LONGITUDINAL	TRANSVERSE					
○ E1	88	212	348	177	7*	7*	7*	7*	7*	7*	8.00	0.012	4.10	0.30	4 - 1 $^{1}/_{2}$" Ø
◓ E2	88	212	348	177	7*	4	7*	12	7*	70	9.00	0.012	4.10	---	4 - 1 $^{1}/_{2}$" Ø
○ E3	311	569	898	533	22*	22*	22*	22*	22*	22*	9.25	0.012	2.93	0.30	4 - 1 $^{1}/_{2}$" Ø
◓ E4	311	569	898	533	22*	9	22*	25	22*	163	11.375	0.012	2.93	---	4 - 1 $^{1}/_{2}$" Ø
◐ E5	309	568	898	530	36	22*	59	22*	406	22*	14.50	0.012	---	0.30	8 - 1 $^{1}/_{2}$" Ø
● F1	309	568	898	530	36	10	59	28	406	163	9.50	0.012	---	---	8 - 1 $^{1}/_{2}$" Ø

* HORIZONTAL LOADS REPRESENT THE MAXIMUM ALLOWABLE HORIZONTAL LOAD TRANSFERRED VIA FRICTION OF THE SLIDING SURFACE IN THE UNRESTRAINED DIRECTION (VALUES SHOWN ARE ESTIMATED BASED ON A COEFFICIENT OF FRICTION OF 0.07 TIMES THE DEAD LOAD AT THE SERVICE LIMIT STATE).

** ASSUMED HEIGHT IS TAKEN AT ℄ BRG. BEARING. HEIGHT INCLUDES 1/8" PREFORMED PAD AND BEVELED SOLE PLATE.

*** LONGITUDINAL MOVEMENTS SHOWN IN TABLE ARE UNFACTORED AND REPRESENT THE MOVEMENT OVER THE ENTIRE THERMAL RANGE LISTED IN NOTE 13.

BEARING SOLE PLATE BEVEL (%)	
ABUTMENT A	2.99
PIER 1	2.99
PIER 2	2.99
PIER3	2.99
PIER4	2.99
PIER 5	2.99
ABUTMENT B	3.25

DISC BEARING MATERIALS:

1. STRUCTURAL STEEL: AASHTO M 270 GRADE 50W (ASTM A709 GRADE 50W) PAINTED AT ABUTMENTS.
2. ANCHOR BOLTS: ASTM F1554, GRADE 105
3. PREFORMED FABRIC PADS: TYPE 1 AND CONFORM TO SECTION 550.2.6 OF THE NHDOT STANDARD SPECIFICATIONS.
4. STAINLESS STEEL: SHALL CONFORM TO SECTION 550.2.7 OF THE NHDOT STANDARD SPECIFICATIONS.
5. BEARING DISC: POLYETHER URETHANE CONFORMING TO SECTION 18.3.2.8 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

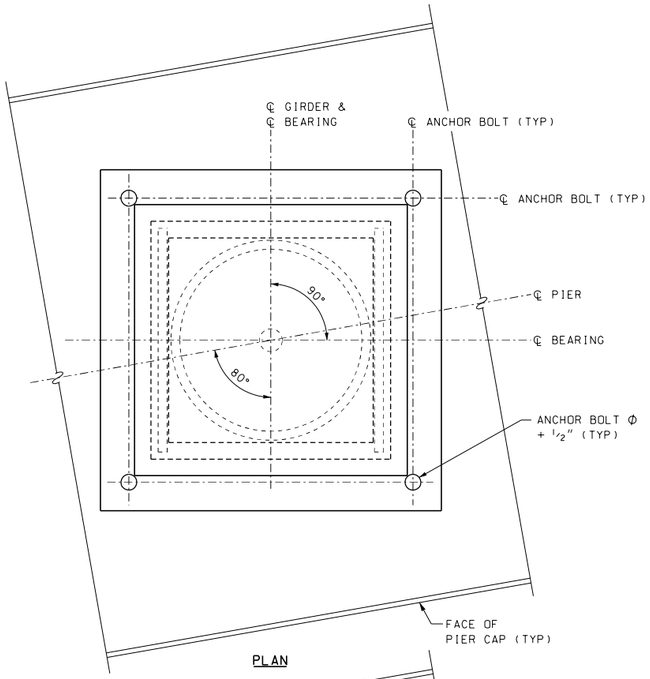
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

BEARING LOCATION PLAN

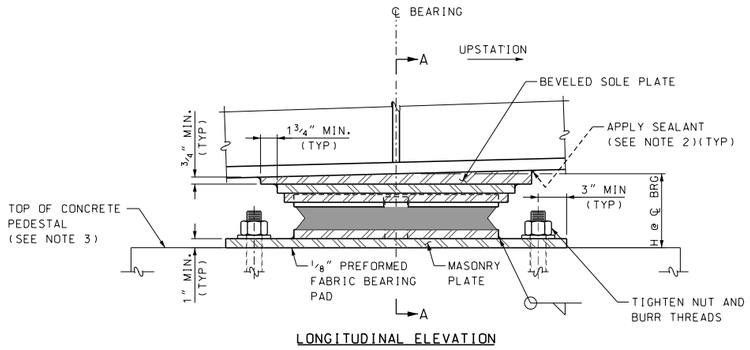
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	DMK	06/19
	DRAWN	DJD	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

FEDERAL PROJECT NO. A001(154) | SHEET NO. 223

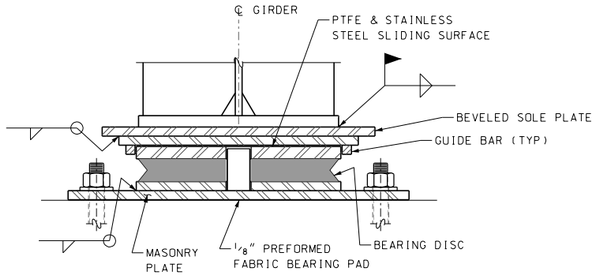
BRIDGE SHEET 80 OF 94 | FILE NUMBER 133-1-1 | TOTAL SHEETS 600



PLAN



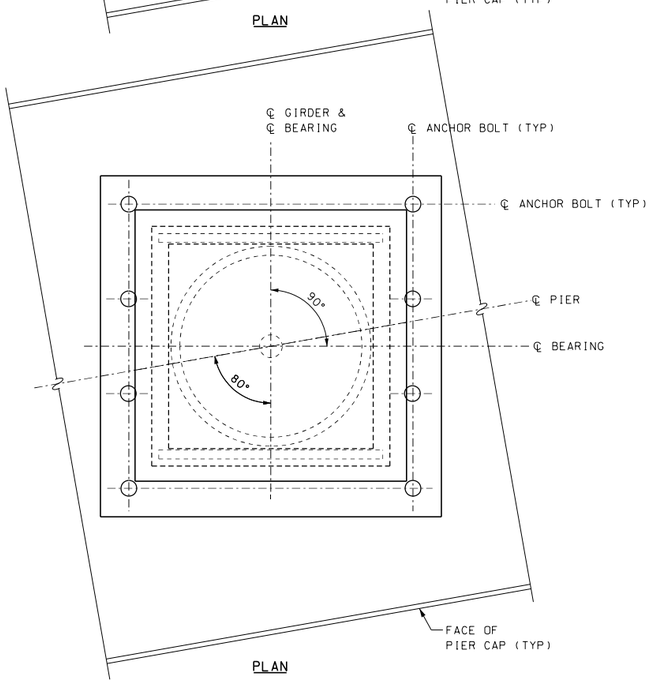
LONGITUDINAL ELEVATION



SECTION A-A

UNI-DIRECTIONAL EXPANSION BEARINGS E2, E4

N.T.S.



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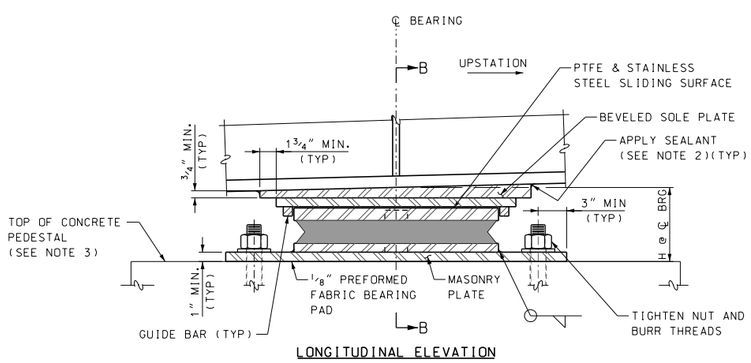
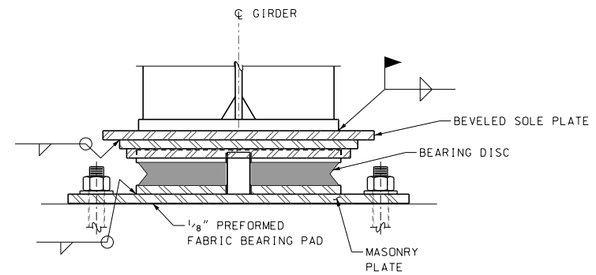


LONGITUDINAL ELEVATION



SECTION B-B

UNI-DIRECTIONAL EXPANSION BEARINGS E5

N.T.S.

NOTES:

1. SEE DISC BEARING DESIGN TABLE ON BRIDGE SHEET 80 FOR MINIMUM NUMBER OF ANCHOR BOLTS REQUIRED, DESIGN HEIGHT, AND ADDITIONAL NOTES.
2. APPLY APPROVED SEALANT ALONG TRANSVERSE EDGE UP AND AROUND TO THE FILLET WELD TERMINATION. COST SHALL BE INCLUDED IN ITEM 550.2101.
3. THE PEDESTALS SHALL BE LEVEL & CLEAN OF DEBRIS PRIOR TO INSTALLATION OF THE BEARINGS.
4. TEMPERATURES SHOWN IN THE TEMPERATURE ADJUSTMENT TABLE ARE THOSE OF THE STEEL GIRDERS AND NOT NECESSARILY THE AMBIENT AIR TEMPERATURE.

TEMPERATURE ADJUSTMENT TABLE (INCH)

	0° F	15° F	30° F	45° F	60° F	75° F	90° F
ABUTMENT A	1.5	1	0.5	0	-0.5	-1	-1.5
PIER 1	1	0.75	0.375	0	-0.375	-0.75	-1
PIER 2	0.5	0.375	0.125	0	-0.125	-0.375	-0.5
PIER 3	0	0	0	0	0	0	0
PIER 4	-0.5	-0.375	-0.125	0	0.125	0.375	0.5
PIER 5	-1	-0.75	-0.375	0	0.375	0.75	1
ABUTMENT B	-1.5	-1	-0.5	0	0.5	1	1.5

POSITIVE VALUES ARE ADJUSTMENT UPSTATION AND NEGATIVE VALUES ARE ADJUSTMENT DOWNSTATION

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

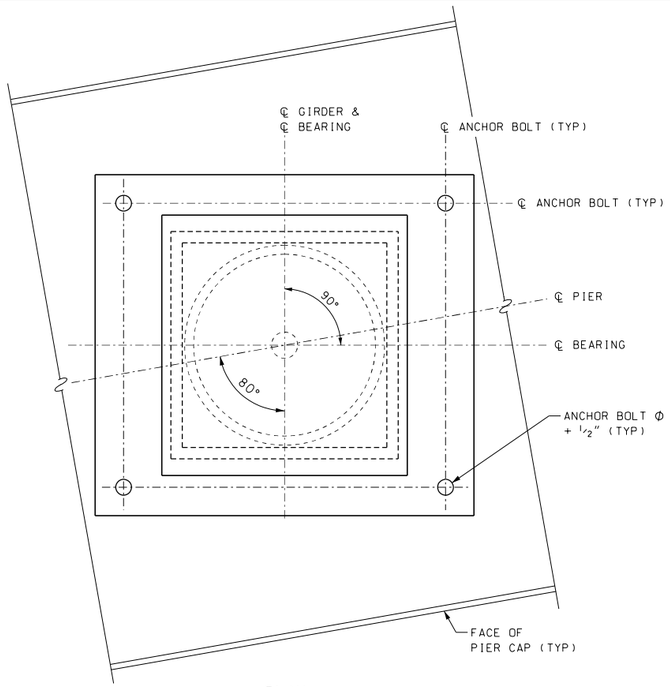
BEARING DETAILS (1 OF 2)

BRIDGE SHEET 81 OF 94

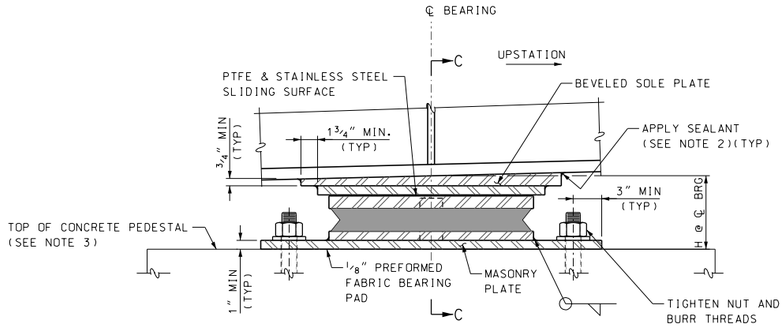
FILE NUMBER 133-1-1

TOTAL SHEETS 600

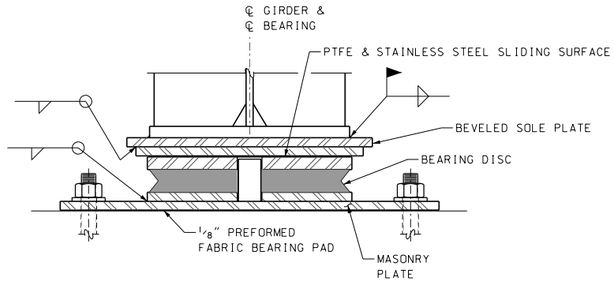
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	DJD	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	
	REV. DATE		A001(154)		224	



PLAN



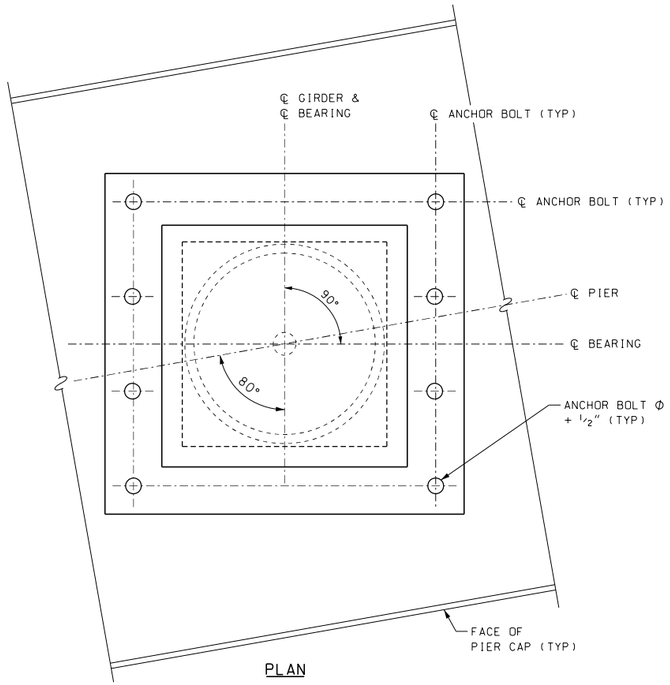
LONGITUDINAL ELEVATION



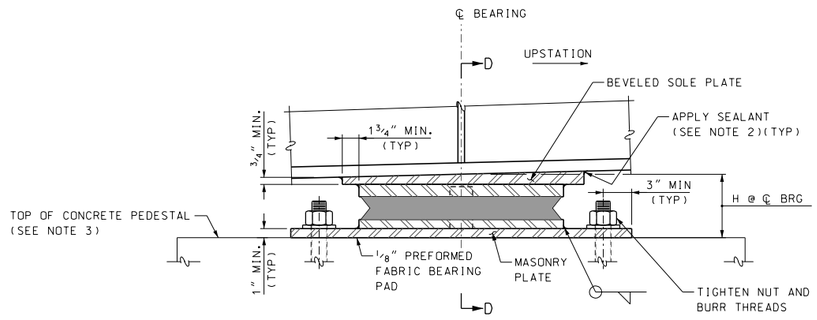
SECTION C-C

MULTI-DIRECTIONAL EXPANSION BEARINGS E1, E3

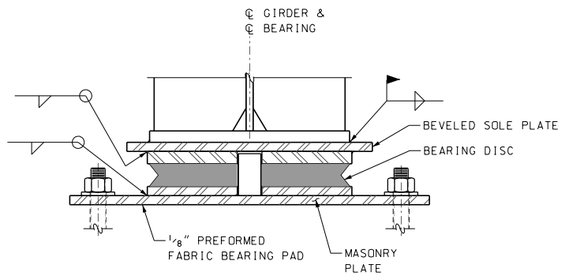
N.T.S.



PLAN



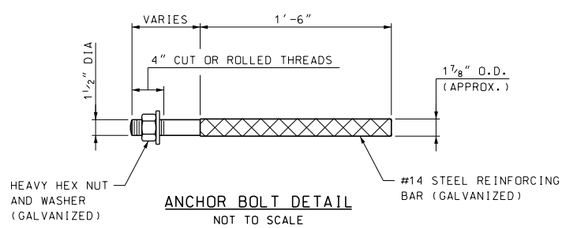
LONGITUDINAL ELEVATION



SECTION D-D

FIXED BEARING F1

N.T.S.



ANCHOR BOLT DETAIL

NOT TO SCALE

NOTES:

1. SEE DISC BEARING DESIGN TABLE ON BRIDGE SHEET 80 FOR MINIMUM NUMBER OF ANCHOR BOLTS REQUIRED, DESIGN HEIGHT, AND ADDITIONAL NOTES.
2. APPLY APPROVED SEALANT ALONG TRANSVERSE EDGE UP AND AROUND TO THE FILLET WELD TERMINATION. COST SHALL BE INCLUDED IN ITEM 550.2101.
3. THE PEDESTALS SHALL BE LEVEL & CLEAN OF DEBRIS PRIOR TO INSTALLATION OF THE BEARINGS.
4. FOR TEMPERATURE ADJUSTMENT TABLE SEE BRIDGE SHEET 81.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

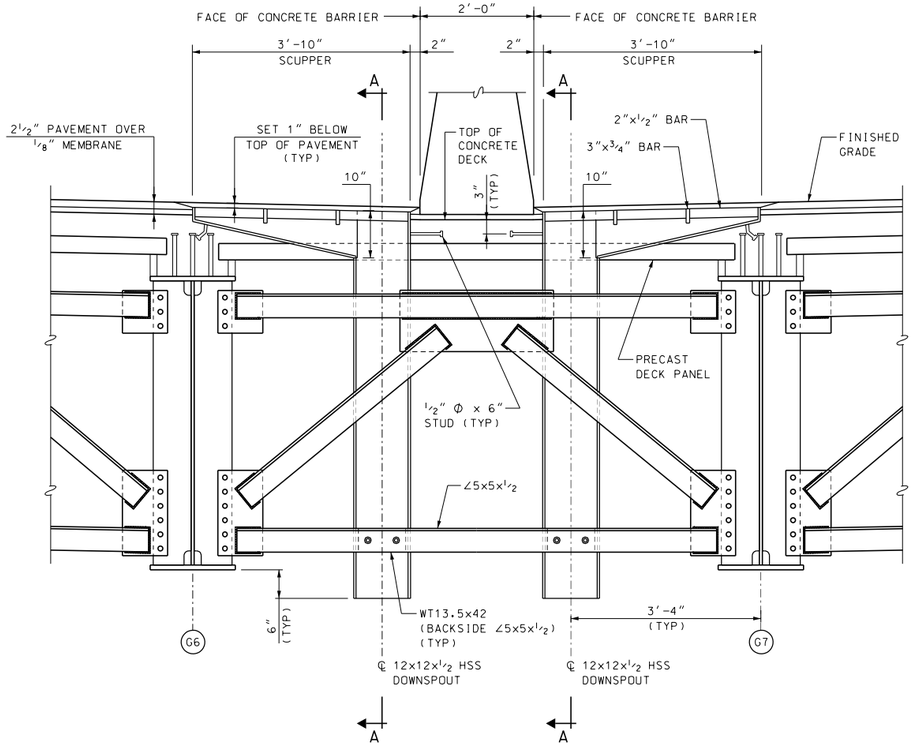
BEARING DETAILS (2 OF 2)

BRIDGE SHEET: 82 OF 94

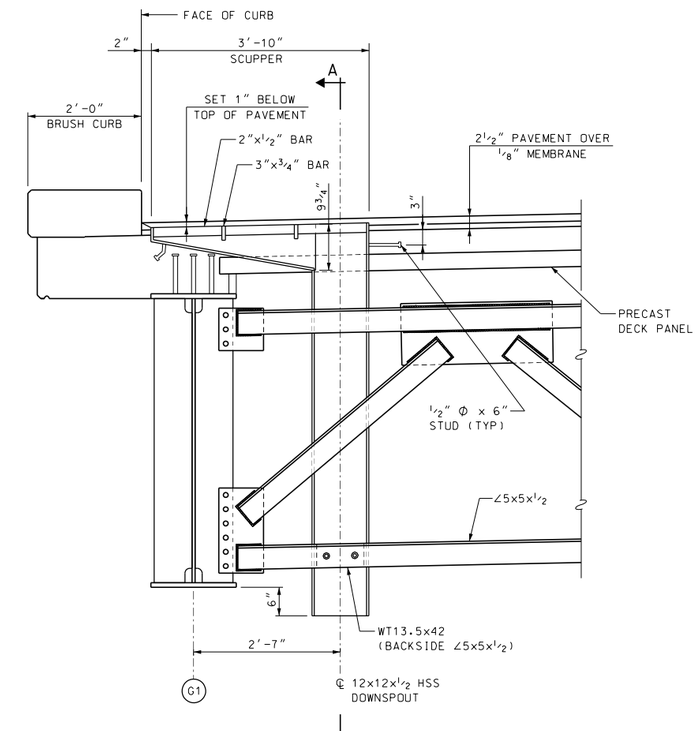
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	DJD	06/19	CHECKED	WRB	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE					
	REV. DATE					

FILE NUMBER: 133-1-1

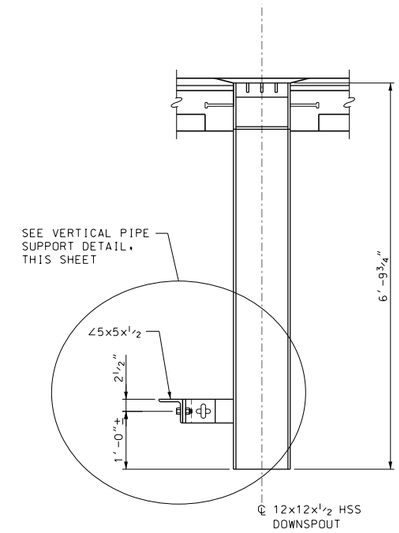
FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
A001(154)	225	600



SCUPPER SECTION (AT MEDIAN)
(LOOKING UPSTATION)
SCALE: ¾" = 1'-0"

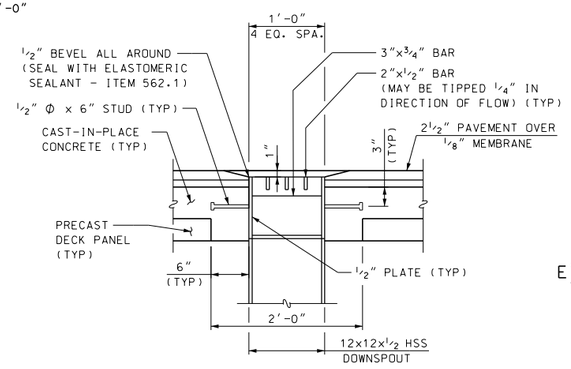


SCUPPER SECTION (AT CURB)
(LOOKING UPSTATION, SOUTHBOUND SCUPPER SHOWN)
(NORTHBOUND SCUPPER SIMILAR)
SCALE: ¾" = 1'-0"

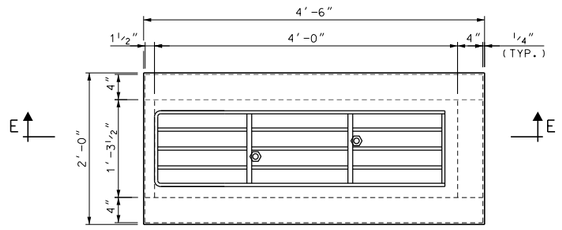


SECTION A-A
SCALE: ¾" = 1'-0"

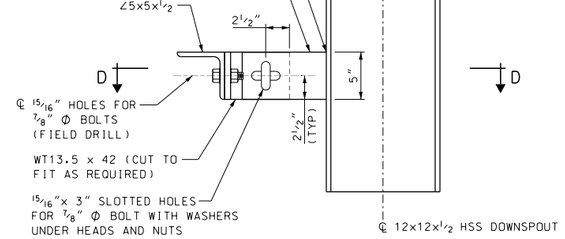
SCUPPER PLAN (AT MEDIAN)
(CURB SCUPPER SIMILAR)
SCALE: 1" = 1'-0"



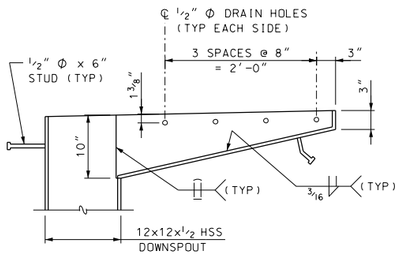
SECTION C-C
SCALE: 1" = 1'-0"



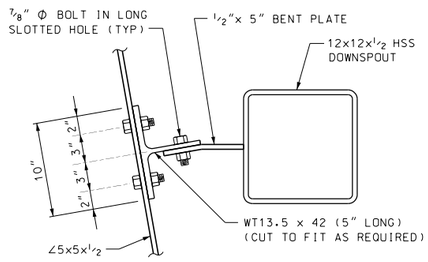
TEMPORARY COVER PLATE
(FOR SCUPPERS AT MEDIAN - 10 REQUIRED))
SCALE: 1" = 1'-0"



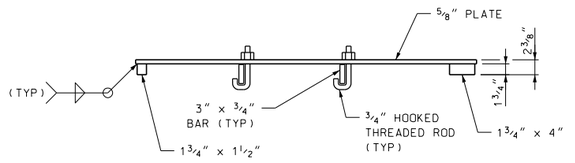
VERTICAL PIPE SUPPORT DETAIL
SCALE: 1½" = 1'-0"



SECTION B-B
(CURB SCUPPER SIMILAR)
SCALE: 1" = 1'-0"



SECTION D-D
SCALE: 1½" = 1'-0"



SECTION E-E
SCALE: 1" = 1'-0"

NOTES

1. FOR PROJECT NOTES, SEE BRIDGE SHEETS 3 AND 4.
2. FOR LOCATION OF SCUPPERS, SEE BRIDGE SHEETS 66 AND 67.
3. THE TOTAL COST OF SCUPPERS, COMPLETE IN PLACE, INCLUDING GRATE, HOPPER, DOWNSPOUT, TEMPORARY COVER PLATE, FIELD DRILLING, AND ALL ATTACHMENT HARDWARE SHALL BE INCLUDED IN ITEM 550.33, BRIDGE SCUPPER.
4. STEEL FOR SCUPPERS AND PIPE SUPPORTS SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH NHDOT STANDARD SPECIFICATIONS.
5. STEEL PIPE SHALL BE HSS ASTM A500, GRADE B, AND SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH NHDOT STANDARD SPECIFICATIONS.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

BRIDGE SCUPPER DETAILS

BRIDGE SHEET 83 OF 94

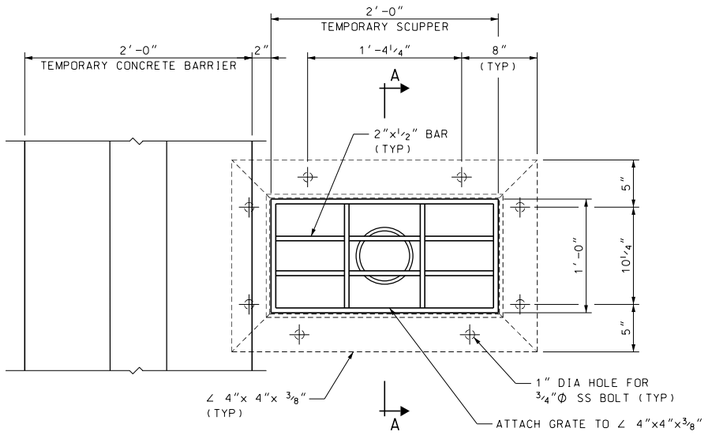
REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	JAL	06/19
DRAWN	SLM	06/19	CHECKED	RLJ	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

ISSUE DATE
REV. DATE

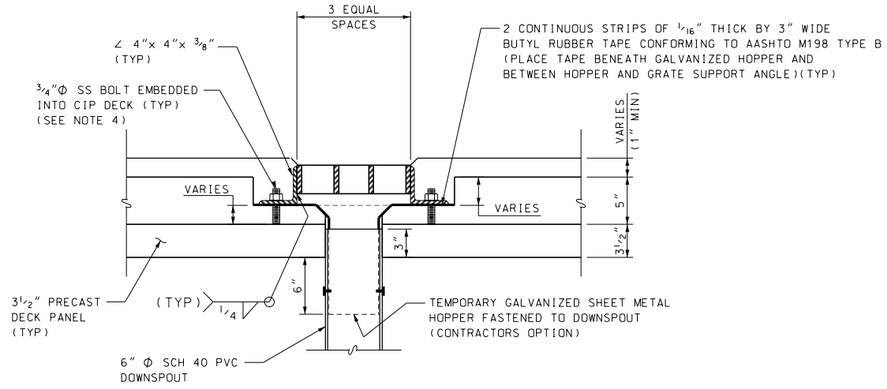
FEDERAL PROJECT NO. A001(154)
SHEET NO. 226
FILE NUMBER 133-1-1
TOTAL SHEETS 600

McFarland Johnson



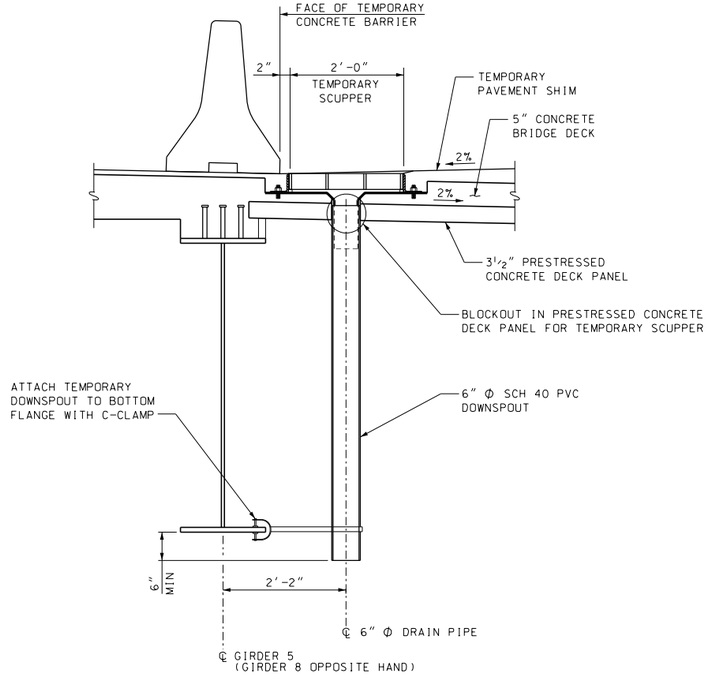
PLAN OF TEMPORARY SCUPPER

SCALE: 1½″ = 1′-0″



SECTION A-A

SCALE: 1½″ = 1′-0″



TEMPORARY SCUPPER SECTION (AT TEMPORARY BARRIER)

(LOOKING UPSTATION)

SCALE: ¾″ = 1′-0″

NOTES

1. FOR PROJECT NOTES, SEE BRIDGE SHEETS 2 AND 3.
2. FOR APPROXIMATE LOCATION OF SCUPPERS, SEE BRIDGE SHEETS 66 AND 67.
3. STEEL FOR TEMPORARY SCUPPERS SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED PER NHDOT STANDARD SPECIFICATIONS. ALL COSTS ASSOCIATED WITH TEMPORARY SCUPPERS INCLUDING GRATE, ANGLES, HOPPERS, DOWNSPOUTS, FASTNERS, AND INSTALLATION SHALL BE SUBSIDIARY TO ITEM 550.1, STRUCTURAL STEEL (F). REMOVING AND FILLING TEMPORARY SCUPPER BLOCKOUTS WITH APPROVED RAPID-HARDENING PATCHING MATERIAL (SEE NHDOT OPL SECTION 520) SHALL BE SUBSIDIARY TO ITEM 520.7002, CONCRETE BRIDGE DECK (QC/QA)(F).
4. DO NOT EMBED STAINLESS STEEL BOLT INTO THE 3½″ PRECAST DECK PANEL. MINIMUM EMBEDMENT INTO CONCRETE DECK SHALL BE 2″.
5. THE GENERAL INTENT OF THE TEMPORARY SCUPPER IS SHOWN. THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS FOR REVIEW AND APPROVAL.

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

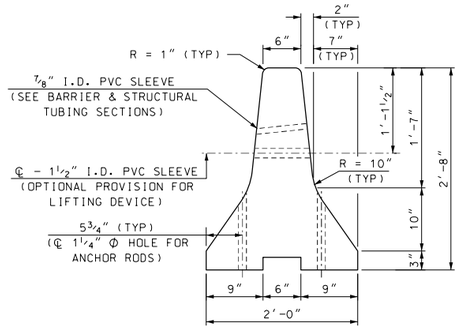
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

TEMPORARY BRIDGE SCUPPER DETAILS

BRIDGE SHEET: 84 OF 94

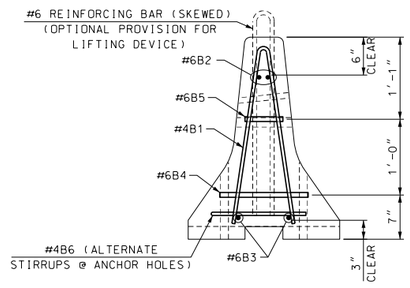
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	SIW	06/19	CHECKED	JAL	06/19
	DRAWN	SLM	06/19	CHECKED	RLJ	06/19
	QUANTITIES	DRW	06/19	CHECKED	SFD	06/19
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		A001(154)		227	600

FILE NUMBER: 133-1-1



TYPICAL SECTION

SCALE: 1" = 1'-0"



TYPICAL SECTION

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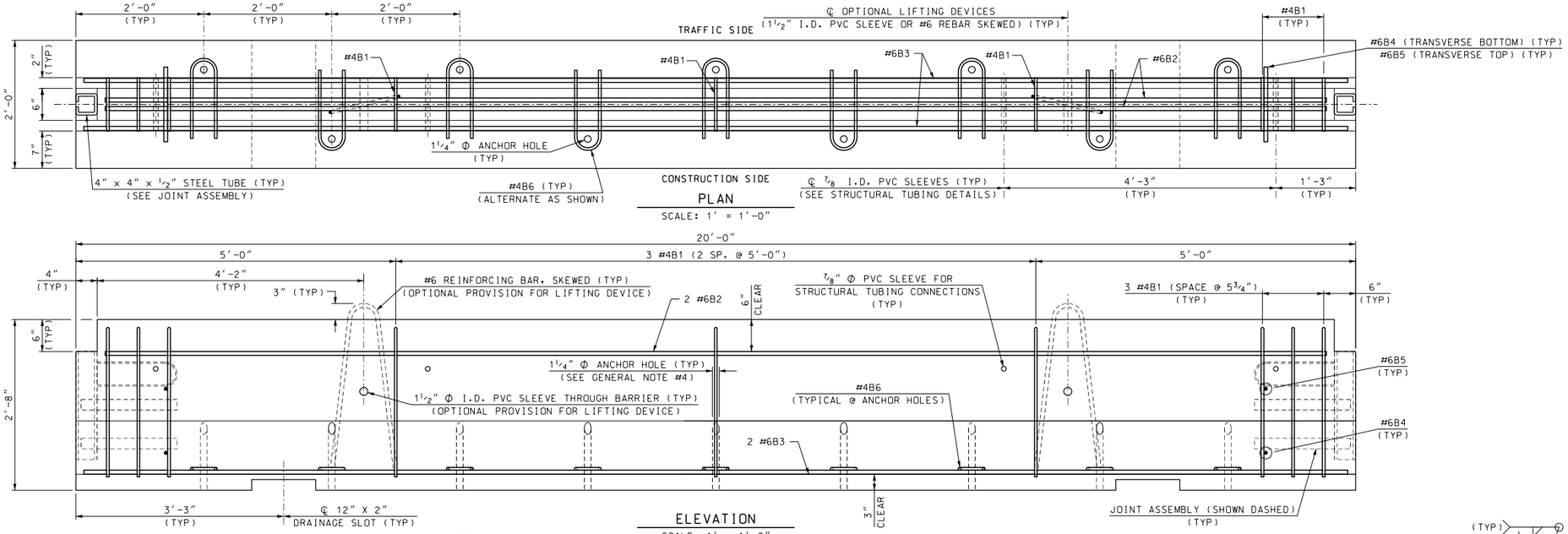
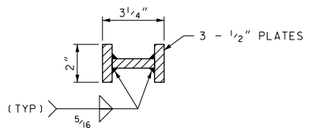


PLAN

SCALE: 1' = 1'-0"

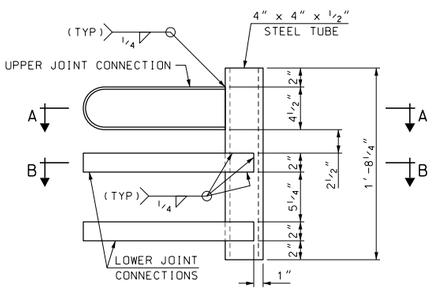
ELEVATION

SCALE: 1' = 1'-0"



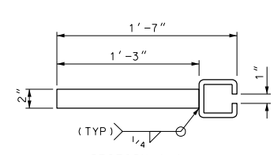
SECTION D-D (CONNECTION KEY)

SCALE: 3" = 1'-0"

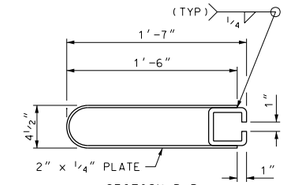


JOINT ASSEMBLY

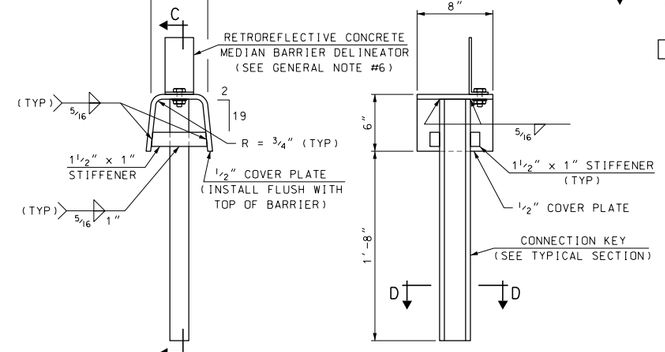
SCALE: 1 1/2" = 1'-0"



SECTION A-A (UPPER CONNECTION)



SECTION B-B (LOWER CONNECTION)

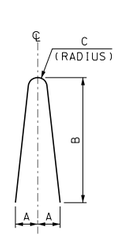


END VIEW

SECTION C-C

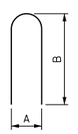
CONNECTION KEY ASSEMBLY DETAILS

SCALE: 1 1/2" = 1'-0"



TYPE "I" REBAR

NOT TO SCALE



TYPE "II" REBAR

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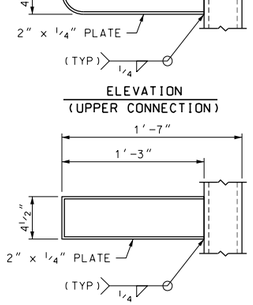
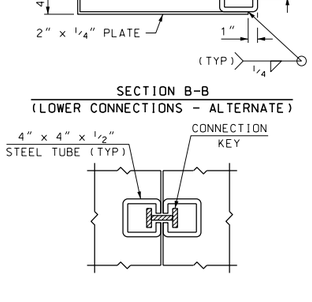


ELEVATION (UPPER CONNECTION)



SECTION B-B (LOWER CONNECTIONS - ALTERNATE)

ELEVATION (UPPER CONNECTION - ALTERNATE)

CONNECTION JOINT DETAIL

NOT TO SCALE

JOINT CONNECTION DETAILS

SCALE: 1 1/2" = 1'-0" (EXCEPT AS NOTED)

GENERAL NOTES

(1) PORTABLE CONCRETE BARRIER SHALL BE FURNISHED BY THE CONTRACTOR AND PAID FOR AS ITEM 606.41741 PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL (BRIDGE). CONCRETE BARRIER AND ALL ATTACHMENTS SHALL BE FABRICATED IN ACCORDANCE WITH SPECIAL PROVISIONS. ALL BARRIER UNITS FOR BRACED SYSTEMS SHALL BE 20' LONG.

(2) PORTABLE CONCRETE BARRIER DETAILS, AS SHOWN IN THESE PLANS, ARE IN COMPLIANCE WITH REQUIREMENTS PER UPDATED NCHRP REPORT 350 FOR TEST NO. 3-11 (MASH TEST LEVEL 3). CRASH TESTED BY MIDWEST ROADSIDE SAFETY: NY BOX BEAM STIFFENING OF UNANCHORED TCB, MARCH 2008, AND ACCEPTED PER FHWA LETTER B-239 (11/1/2012). THE BARRIER SYSTEM HAS BEEN CRASH TESTED WITH A 27.6" DYNAMIC DEFLECTION WHICH WILL ALLOW BRACED BARRIER TO BE PLACED A MINIMUM 12" FROM THE EDGE OF BRIDGE DECK.

(3) A MINIMUM OF TWO BARRIER UNITS, WITH BRACED JOINTS ARE REQUIRED TO BE PLACED BEYOND BOTH ENDS OF THE BRIDGE WORK AREA, FOR SPEEDS GREATER THAN 45 MPH. FOR SPEEDS ≤ 45 MPH, A MINIMUM OF ONE BRACED BARRIER IS REQUIRED TO BE FULLY SET BEYOND EACH END OF BRIDGE WORK AREA.

(4) THE LAST CONCRETE BARRIER UNIT, AT EACH END OF BRACED BARRIER LAYOUT, SHALL BE ANCHORED A MINIMUM 18" BELOW THE ROADWAY SURFACE. REQUIRED 1" Φ ANCHOR RODS (A36 STEEL) SHALL BE INSTALLED WITH 5 ANCHORS ON THE TRAFFIC SIDE OF BARRIER AND 4 ON THE CONSTRUCTION SIDE. IF THE END(S) OF THE BRACED CONCRETE BARRIER SYSTEM EXTENDS 50' OR MORE BEYOND LIMITS OF BRIDGE WORK THE LAST BARRIER UNIT DOES NOT REQUIRE ANCHORAGE.

(5) PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL (BRIDGE), ITEM 606.41741, MAY BE INSTALLED WITH A 230' MINIMUM RADIUS. GAPS CREATED BETWEEN STRUCTURAL TUBES AND CONCRETE BARRIER, DURING A RADIAL LAYOUT, SHALL BE SHIMMED WITH 8" x 8" x 1/2" PLATES & FENDER WASHERS TO FIRMLY ATTACH STRUCTURAL TUBING TO BARRIER.

(6) THE CONTRACTOR SHALL FURNISH AND INSTALL APPROVED RETROREFLECTIVE DELINEATORS AT 25-FOOT INTERVALS ALONG TOP AND/OR ONE FOOT DOWN THE SIDE OF PORTABLE CONCRETE BARRIER. SUBSIDIARY TO ITEM 606.41741 (SEE STANDARD NO. DL-1 OF NHDOT STANDARD PLANS FOR ROAD CONSTRUCTION). THE COLOR OF DELINEATORS SHALL, IN ALL INSTANCES, CONFORM TO THE COLOR OF EDGE LINE MARKINGS. DELINEATORS SUPPLEMENT, BUT DO NOT REPLACE, THE NEED FOR RETROREFLECTIVE SOLID EDGE LINE MARKINGS.

MATERIAL NOTES

(1) BARRIERS SHALL BE LIGHT COLORED CLASS AA CONCRETE, WITH MINIMUM COMPRESSIVE STRENGTH OF 4000 psi, AND SHALL HAVE A SMOOTH UNIFORM SURFACE FREE OF DEFECTS AND IRREGULARTIES. CASTING DATE SHALL BE SHOWN ON BARRIER. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4", UNLESS OTHERWISE NOTED.

(2) ALL REINFORCING STEEL SHALL BE AASHTO M31 (ASTM A615) GRADE 60. ALL REINFORCEMENT SHALL HAVE 1 1/2" MINIMUM CLEAR COVER, UNLESS OTHERWISE NOTED.

(3) STRUCTURAL STEEL, EXCEPT THE STEEL TUBES, SHALL BE ASTM A36 OR A572. ALL STEEL SHALL BE FABRICATED IN ACCORDANCE WITH SECTION 550.

(4) STEEL TUBES, 6" x 6" x 3/16" & 4" x 4" x 1/2", SHALL BE ASTM A 500 GRADE B OR C. ALL TUBES SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 550.

(5) ALL STEEL FOR CONNECTION KEY AND TRANSITION KEY ASSEMBLIES SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 550.

(6) A MINIMUM OF 2 LIFTING DEVICES, EACH WITH THE CAPACITY TO LIFT A MASS OF 6 TONS (MINIMUM), SHALL BE INSTALLED TO EACH BARRIER UNIT. TWENTY FOOT LONG CONCRETE BARRIER UNITS ARE APPROXIMATELY 400 LBS./FT.

(7) DELINEATORS SHALL BE ATTACHED TO BARRIER USING AN APPROVED ADHESIVE MATERIAL OR AS SHOWN ON THIS SHEET.

REINFORCING SCHEDULE (PER 20' BARRIER UNIT)

MARK	SIZE	LENGTH	# PIECES	TYPE	A	B	C	LOCATION
B1	#4	4'-10"	9	I	5"	2'-4"	1"	STIRRUPS
B2	#6	19'-1"	2	—				LONGITUDINAL (TOP)
B3	#6	19'-9"	2	—				LONGITUDINAL (BOTTOM)
B4	#6	1'-2"	2	—				TRANSVERSE (BOTTOM)
B5	#6	6"	2	—				TRANSVERSE (TOP)
B6	#4	2'-9"	9	II	5"	1'-3"		STIRRUPS

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
English/BARRIER	16148PCB-BRACED	AS NOTED

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

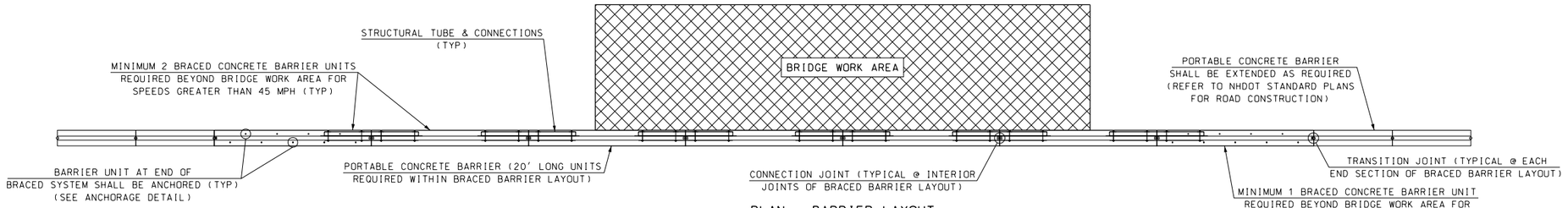
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR

PORTABLE CONCRETE BARRIER - BRACED (1 OF 2)

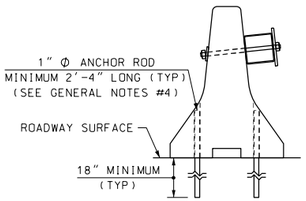
BRIDGE SHEET 85 OF 94

FILE NUMBER

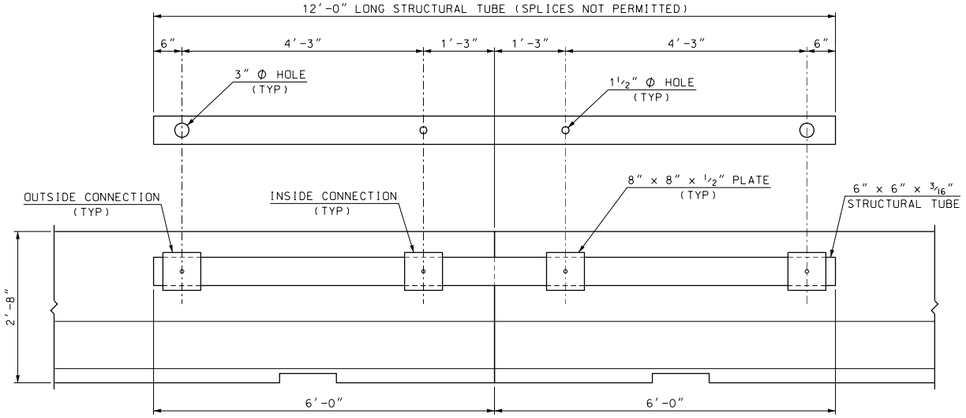
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	NHDOT	7/12	CHECKED	ABH	8/12
	DRAWN	PJP	8/12	CHECKED	ABH	8/12
	QUANTITIES			CHECKED		
	ISSUE DATE	8/15/12	FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE	5/15/18	X-A001(154)		228	600



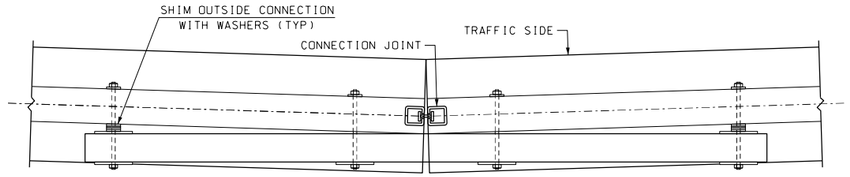
PLAN - BARRIER LAYOUT
NOT TO SCALE



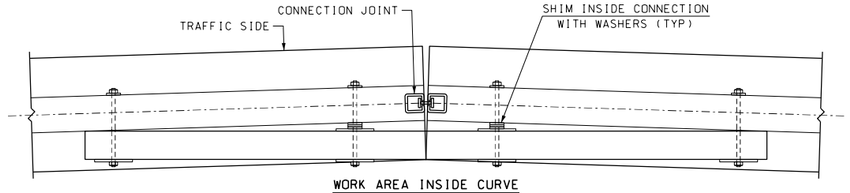
ANCHORAGE DETAIL
SCALE: 3/4" = 1'-0"



STRUCTURAL TUBING DETAILS
SCALE: 3/4" = 1'-0"



WORK AREA OUTSIDE CURVE

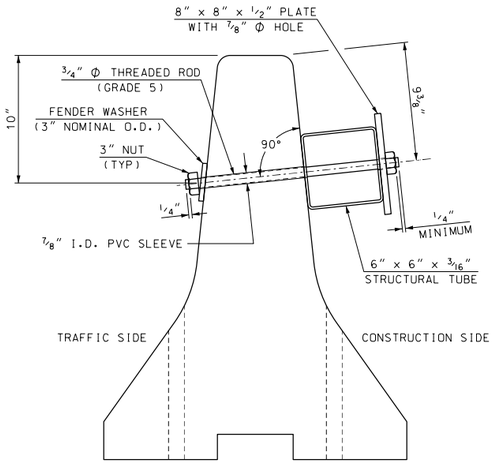


WORK AREA INSIDE CURVE

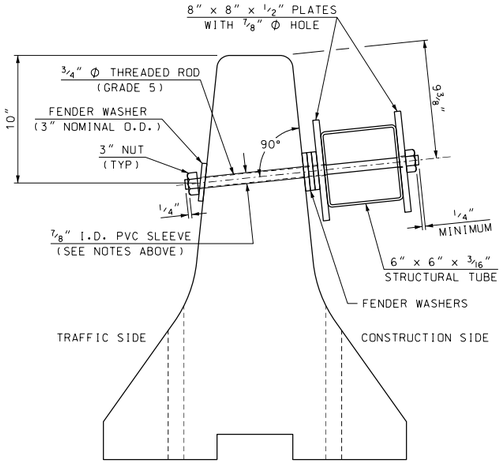
TUBE CONNECTIONS (CURVED ALIGNMENT)
SCALE: 3/4" = 1'-0"

PVC SLEEVE OPENINGS SHALL BE MODIFIED/DRILLED AS REQUIRED TO PROPERLY ALIGN STRUCTURAL TUBE BRACING UNITS FOR CURVED ALIGNMENTS

THE PRESENCE OF NORMAL HOLES WHICH HAVE BEEN MODIFIED/DRILLED WILL NOT AFFECT THE REUSE OF CONCRETE BARRIER UNITS

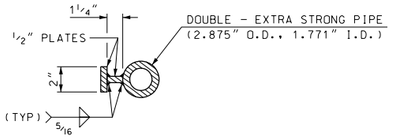


SECTION WITHOUT SHIMS

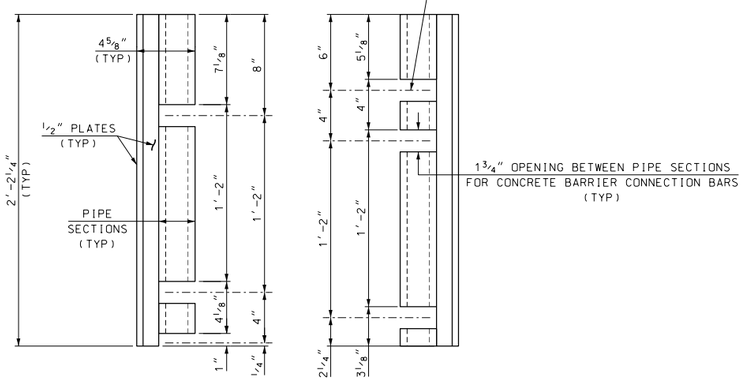


SECTION WITH SHIMS

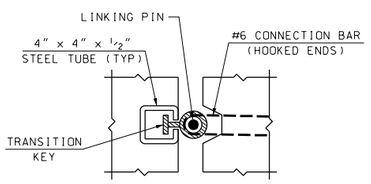
BARRIER & STRUCTURAL TUBING SECTIONS
SCALE: 2" = 1'-0"



TYPICAL SECTION
(TRANSITION KEY)
SCALE: 2" = 1'-0"



TRANSITION KEY ELEVATIONS
SCALE: 2" = 1'-0"



TRANSITION JOINT DETAILS
NOT TO SCALE

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 — STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR

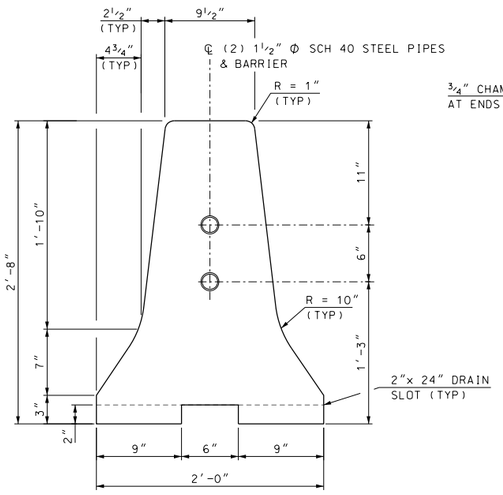
PORTABLE CONCRETE BARRIER - BRACED (2 OF 2)

BRIDGE SHEET: 86 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	NHDOT	7/12	CHECKED	ABH	8/12
DRAWN	PJP	8/12	CHECKED	ABH	8/12
QUANTITIES			CHECKED		
ISSUE DATE	8/15/12				
REV. DATE	5/15/18				

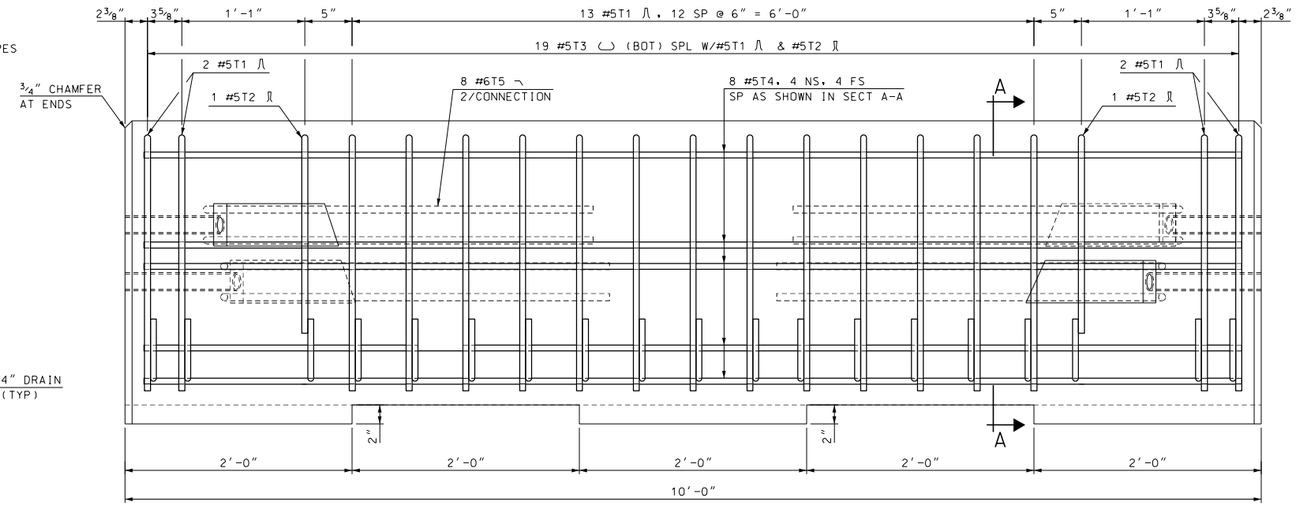
FILE NUMBER: 133-1-1

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
English/BARRIER	16148PCB-BRACED	AS NOTED	X-A001(154)	229	600



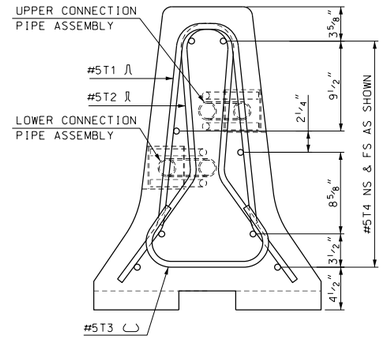
END VIEW

SCALE: 1 1/2" = 1'-0"



ELEVATION

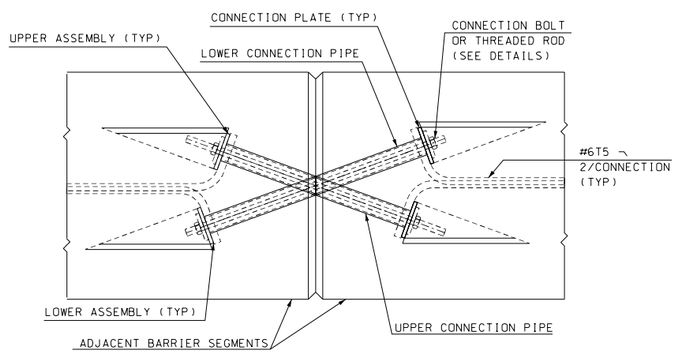
SCALE: 1 1/2" = 1'-0"



SECTION A-A

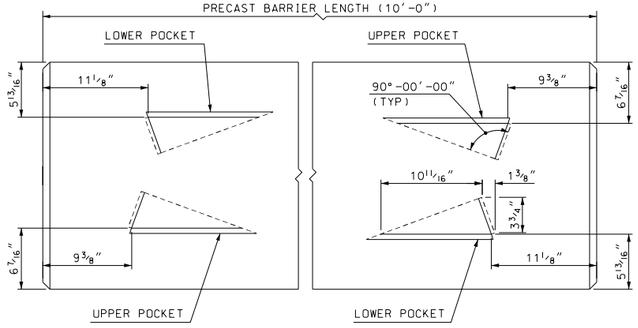
SCALE: 1 1/2" = 1'-0"

NOTE: CONNECTION HARDWARE SHALL NOT EXTEND BEYOND THE CONCRETE FACE OF BARRIER



TYPE X JOINT CONNECTION DETAILS

SCALE: 1 1/2" = 1'-0"



TOP VIEW CONNECTION POCKETS

SCALE: 1 1/2" = 1'-0"

GENERAL NOTES:

1. PORTABLE CONCRETE BARRIER SHALL BE FURNISHED BY THE CONTRACTOR AND PAID FOR AS ITEM 606.41741, PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL (BRIDGE). CONCRETE BARRIER AND ALL ATTACHMENTS SHALL BE FABRICATED IN ACCORDANCE WITH SPECIAL PROVISIONS. ALL BARRIER UNITS SHALL BE 10' LONG.
2. PORTABLE CONCRETE BARRIER DETAILS, AS SHOWN ON THESE PLANS, ARE IN COMPLIANCE WITH REQUIREMENTS PER UPDATED NCHRP REPORT 350 FOR TEST NO 3-11 (MASH TEST LEVEL 3), CRASH TESTED BY TEXAS A&M UNIVERSITY SYSTEM, MAY 2005, AND ACCEPTED PER REPORT FHWA/TX-05/0-4692-1.
3. THE BARRIER HAS BEEN CRASH TESTED WITH A 27" DYNAMIC DEFLECTION WHICH WILL ALLOW THE BARRIER TO BE PLACED A MINIMUM 12" FROM THE EDGE OF THE DECK.
4. USAGE OF THE TEXAS X-BOLT BARRIER REQUIRES A MINIMUM OF 100 LINEAR FEET (10 - 10' UNITS). THE X-BOLT BARRIER SHALL EXTEND A MINIMUM OF 50' BEYOND THE BRIDGE AT EACH END, PARALLEL TO THE ROADWAY CENTERLINE. THE ENDS OF THE BARRIER SHALL CONNECT TO THE TRANSITION UNIT AND THEN TO NHDOT PCB FLARED OUT THE REQUIRED CLEAR ZONE AS SHOWN ON SHEET 2 OF 3.
5. THE CONNECTION BOLTS AT THE BARRIER JOINTS SHALL BE TIGHTENED TO THE "TURN OF THE NUT" METHOD IN ACCORDANCE WITH SECTION 550.3.11.6.4 OF NHDOT STANDARD SPECIFICATIONS. AFTER INSTALLATION, ALL X-BOLT JOINTS SHALL BE CHECKED BY THE CONTRACT ADMINISTRATOR CONFIRMING THEY MEET THE TIGHTENED REQUIREMENT.
6. THE TEXAS X-BOLT BARRIER MAY BE INSTALLED WITH A 125' MINIMUM RADIUS OF CURVATURE AND A RELATIVE ANGLE OF 4 DEGREES BETWEEN THE 10' UNITS.
7. THE CONTRACTOR SHALL FURNISH AND INSTALL APPROVED RETROREFLECTIVE DELINEATORS AT 25-FOOT INTERVALS ALONG TOP AND/OR ONE FOOT DOWN THE SIDE OF PORTABLE CONCRETE BARRIER. SUBSIDIARY TO ITEM 606.41741 (SEE STANDARD NO. DL-1 OF NHDOT STANDARD PLANS FOR ROAD CONSTRUCTION). THE COLOR OF THE DELINEATORS SHALL, IN ALL INSTANCES, CONFORM TO THE COLOR OF THE EDGE LINE MARKINGS. DELINEATOR SUPPLEMENT, BUT DO NOT REPLACE, THE NEED FOR RETROREFLECTIVE SOLID EDGE LINE MARKINGS.

MATERIAL NOTES:

1. BARRIERS SHALL BE LIGHT COLORED CLASS AA CONCRETE, WITH COMPRESSIVE STRENGTH OF 4000 psi, AND SHALL HAVE A SMOOTH UNIFORM SURFACE FREE OF DEFECTS AND IRREGULARITIES. CASTING DATE SHALL BE SHOWN ON BARRIER. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4". UNLESS OTHERWISE NOTED.
2. ALL REINFORCING STEEL SHALL BE AASHTO M31 (ASTM A615) GRADE 60. ALL REINFORCEMENT SHALL HAVE 1 3/4" MINIMUM CLEAR COVER, UNLESS OTHERWISE NOTED.
3. CONNECTION BOLTS SHALL BE 7/8" Φ GALVANIZED HIGH STRENGTH THREADED RODS CONFORMING TO ASTM A325. STEEL PIPES, PLATE WASHERS, AND CONNECTION PLATES SHALL BE GALVANIZED ASTM A36 STEEL.
4. ALL STEEL FOR CONNECTIONS SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 550.

BARRIER WEIGHT APPROX. 2.38 TONS

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
standard\english\barrier	16148X-BoltBarrier	AS NOTED

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

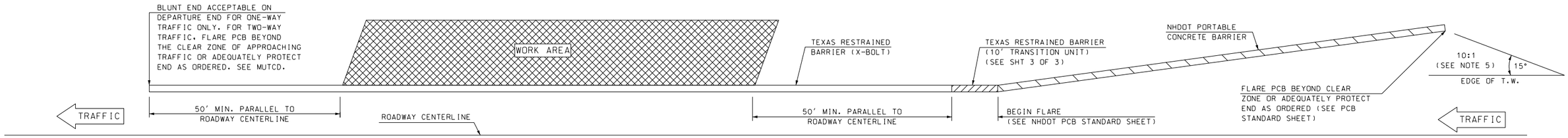
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR

TEXAS RESTRAINED BARRIER (X-BOLT) (1 OF 3)

BRIDGE SHEET 87 OF 94

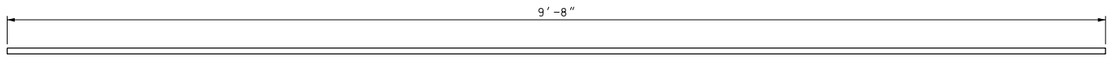
FILE NUMBER 133-1-1

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	TXDOT	12/10	CHECKED	NHDOT	4/18
	DRAWN	GMC	1/18	CHECKED	NHDOT	4/18
	QUANTITIES	XXX	XX/XX	CHECKED	XXX	XX/XX
	ISSUE DATE	5/15/18	FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		X-A001(154)		230	600



PLAN - BARRIER LAYOUT

(NTS)



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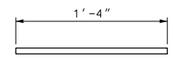

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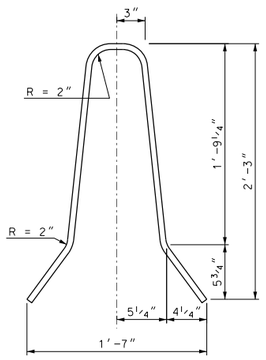

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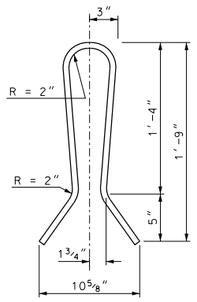

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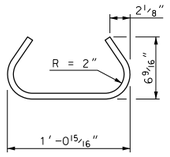

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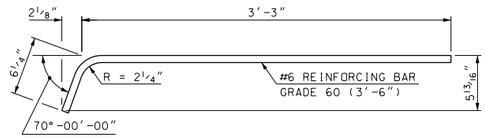
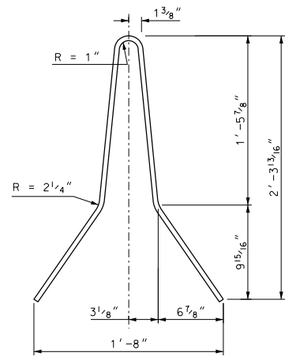


#6T5 ⌐



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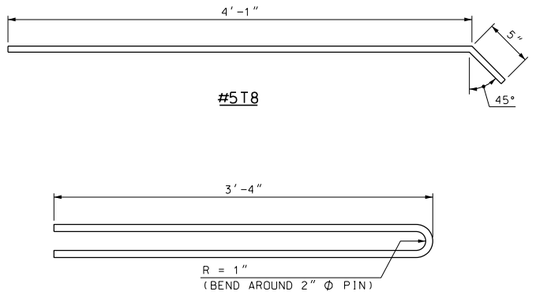
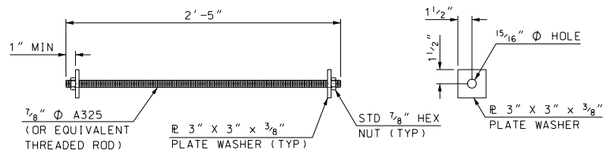


#5T8

#6T9

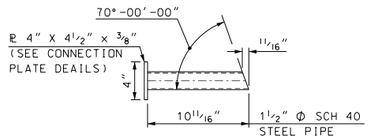
BENDING SCHEDULE

SCALE: 1½" = 1'-0"



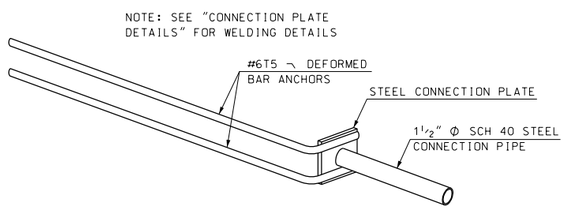
CONNECTION BOLT OR THREADED ROD DETAILS

SCALE: 1½" = 1'-0"



UPPER CONNECTION PIPE DETAIL

SCALE: 1½" = 1'-0"



ISOMETRIC VIEW OF TYPICAL WELD ASSEMBLY

SCALE: N.T.S.

REBAR SCHEDULE TEXAS X-BOLT (10' BARRIER)			
MK		QTY	LENGTH
T1	#5	17	5'-2"
T2	#5	2	4'-0"
T3	#5	19	2'-1"
T4	#5	8	9'-8"
T5	#6	8	3'-9"

REBAR SCHEDULE TRANSITION (10' BARRIER)			
MK		QTY	LENGTH
T1	#5	9	5'-2"
T2	#5	1	4'-0"
T3	#5	10	2'-1"
T4	#5	8	9'-8"
T5	#6	4	3'-9"
T6	#4	4	5'-2"
T7	#5	4	1'-4"
T8	#5	2	4'-6"
T9	#6	3	6'-10"

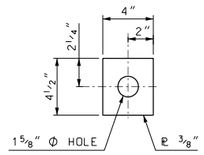
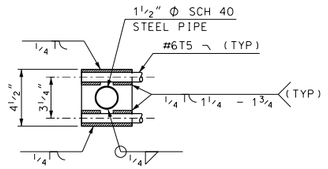


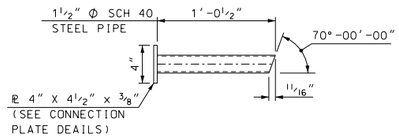
PLATE DIMENSIONS



WELDING DETAILS

CONNECTION PLATE DETAILS

SCALE: 2" = 1'-0"

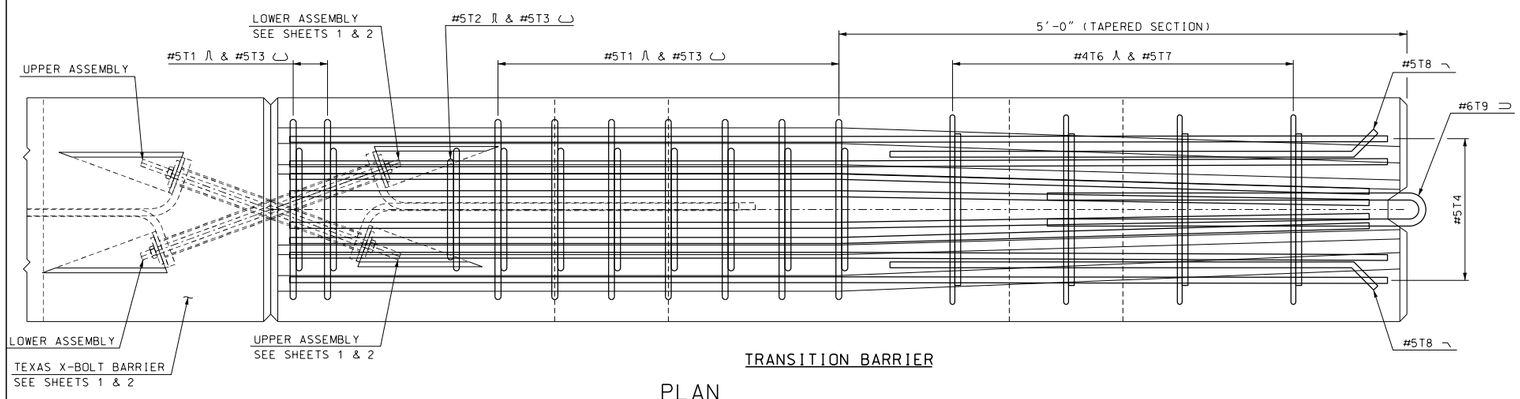


LOWER CONNECTION PIPE DETAIL

SCALE: 1½" = 1'-0"

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN							
TOWN LEBANON, NH / HARTFORD, VT			BRIDGE NO. 044/103 & 044/104		STATE PROJECT 16148		
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR							
TEXAS RESTRAINED BARRIER (X-BOLT) (2 OF 3)							BRIDGE SHEET 88 OF 94
REVISIONS AFTER PROPOSAL			BY	DATE		BY	DATE	FILE NUMBER 133-1-1
		DESIGNED	TXDOT	12/10	CHECKED	NHDOT	4/18	
		DRAWN	GMC	1/18	CHECKED	NHDOT	4/18	
		QUANTITIES	XXX	XX/XX	CHECKED	XXX	XX/XX	
		ISSUE DATE	5/15/18		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
		REV. DATE			X-A001(154)		231	600

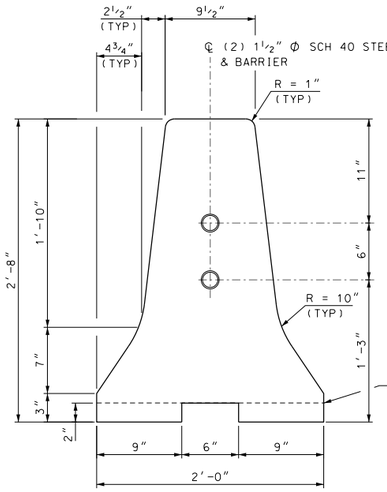
SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
standard\english\barrier	16148X-BoltBarrier	AS NOTED



TRANSITION BARRIER

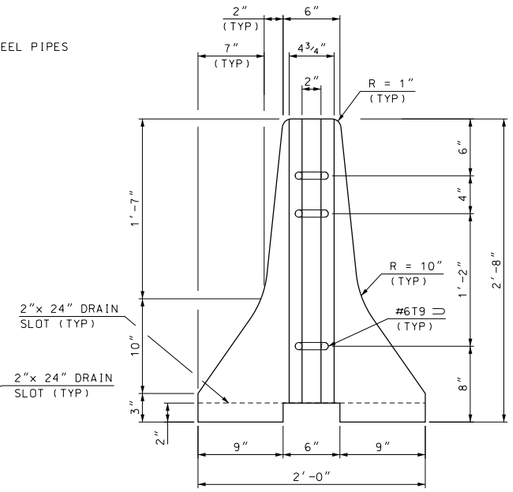
PLAN

SCALE: 1½" = 1'-0"



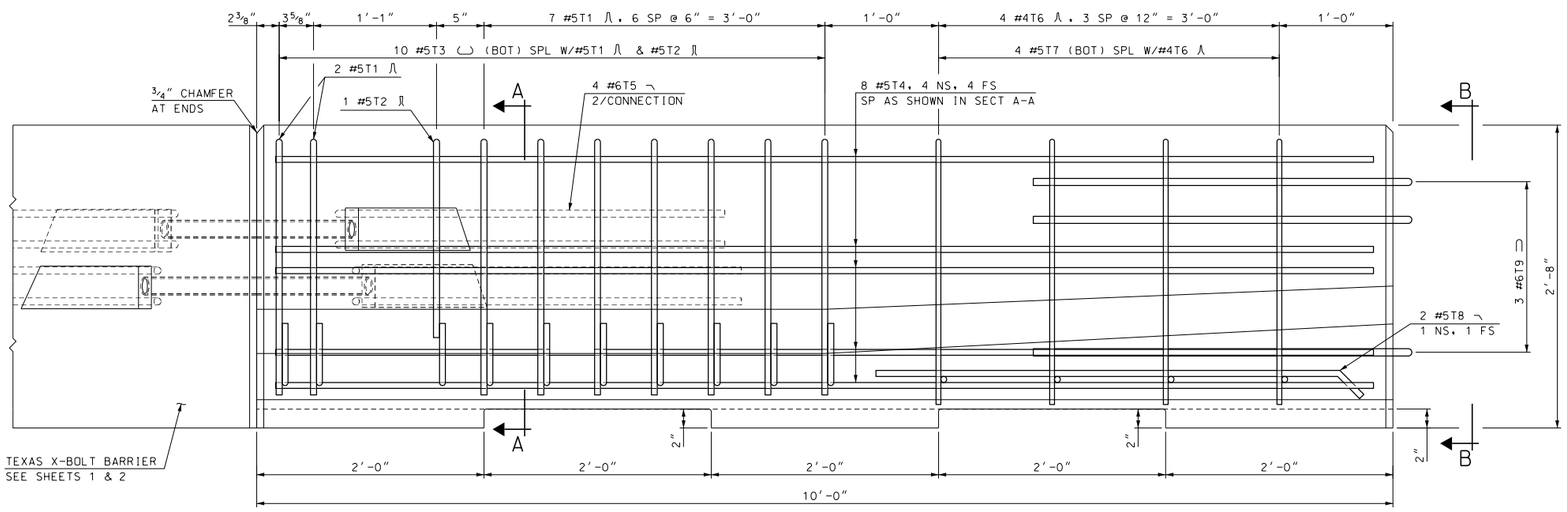
END VIEW SECTION A-A

SCALE: 1½" = 1'-0"



VIEW B-B

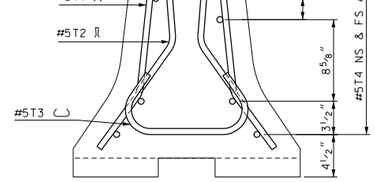
SCALE: 1½" = 1'-0"



TRANSITION BARRIER

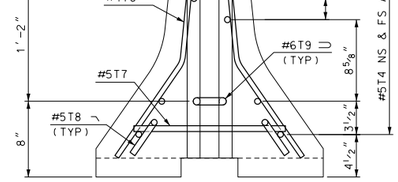
ELEVATION

SCALE: 1½" = 1'-0"



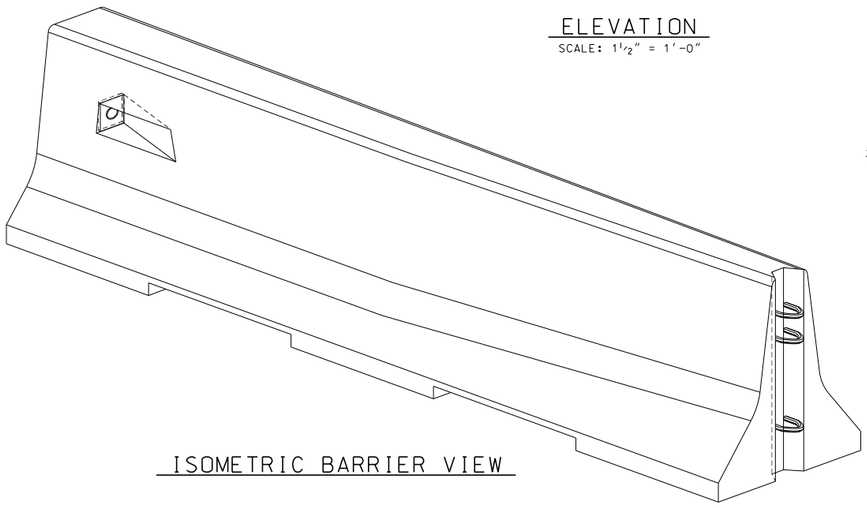
SECTION A-A

SCALE: 1½" = 1'-0"

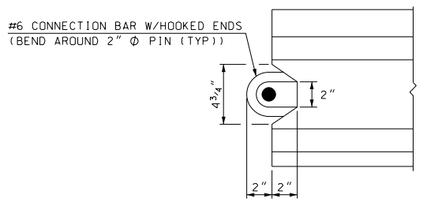


VIEW B-B

SCALE: 1½" = 1'-0"

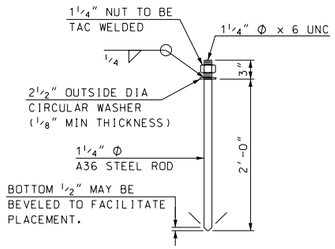


ISOMETRIC BARRIER VIEW



END NOTCH DETAIL (AT VIEW B-B

SCALE: 2" = 1'-0"



CONNECTOR PIN ASSEMBLY

SCALE: 1" = 1'-0"

NOTES

1. TEXAS RESTRAINED BARRIER (TRANSISTION UNIT) SHALL BE PAID FOR UNDER ITEM 606.41741, PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL (BRIDGE).
2. SEE SHEET 1 OF 3 FOR NOTES AND SHEET 2 OF 3 FOR REBAR SCHEDULE.

BARRIER WEIGHT APPROX. 2.28 TONS

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
standard\english\barrier	16148X-BoltBarrier	AS NOTED

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

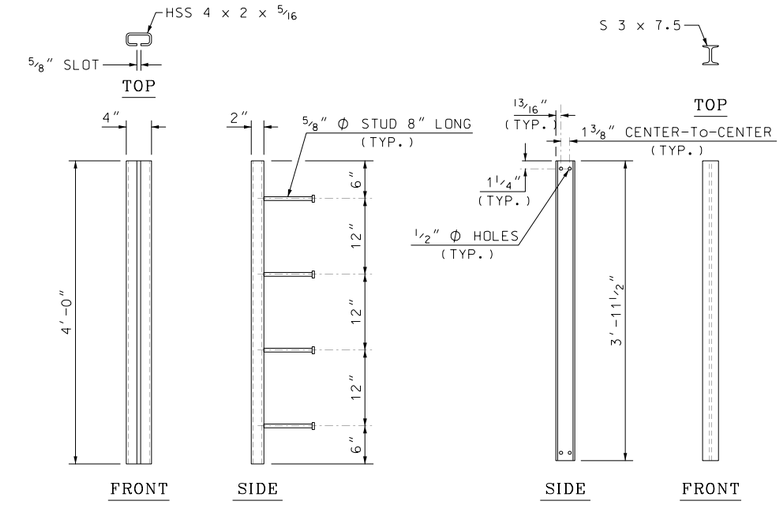
LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR

TEXAS RESTRAINED BARRIER (X-BOLT) (3 OF 3)

BRIDGE SHEET 89 OF 94

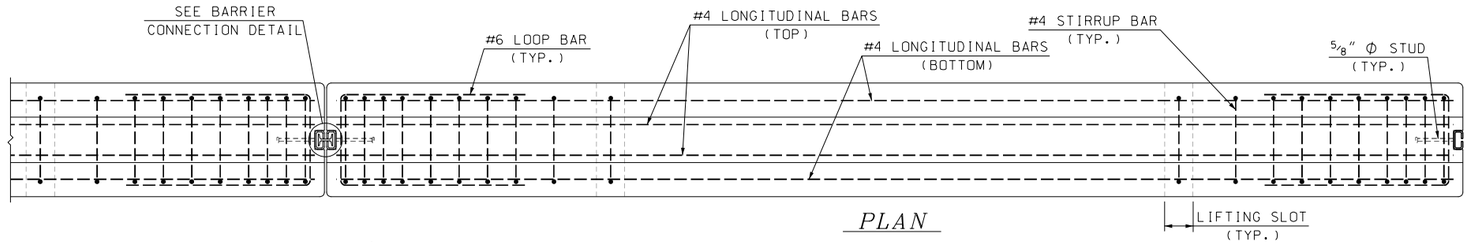
REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	TXDOT	12/10	CHECKED	NHDOT	4/18
	DRAWN	GMC	1/18	CHECKED	NHDOT	4/18
	QUANTITIES	XXX	XX/XX	CHECKED	XXX	XX/XX
	ISSUE DATE	5/15/18	FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE		X-A001(154)		232	600

FILE NUMBER 133-1-1

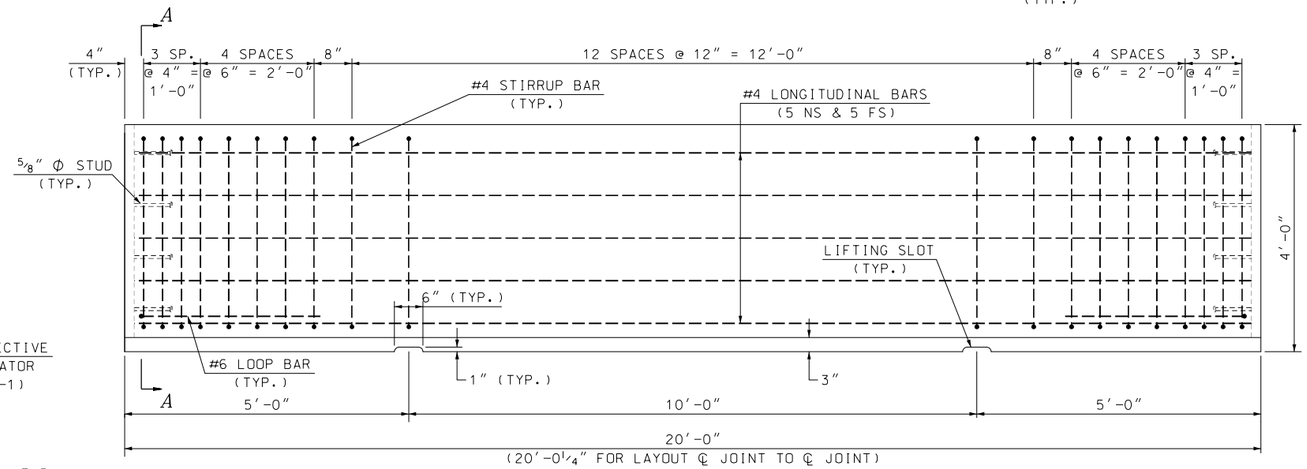


STRUCTURAL TUBE DETAILS

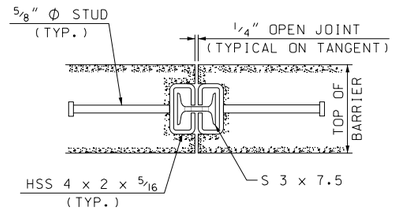
I-BEAM DETAILS



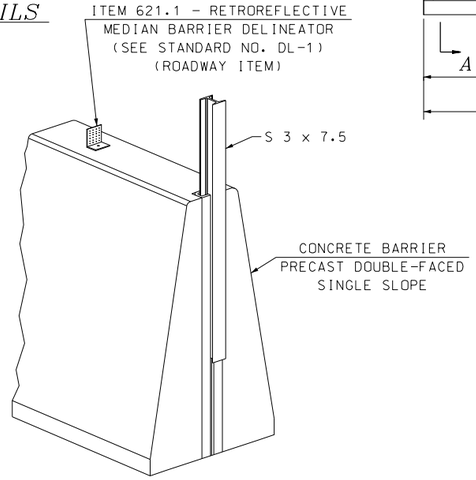
PLAN



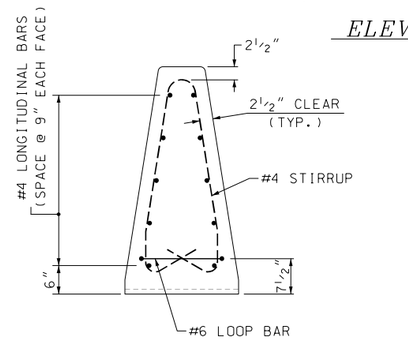
ELEVATION



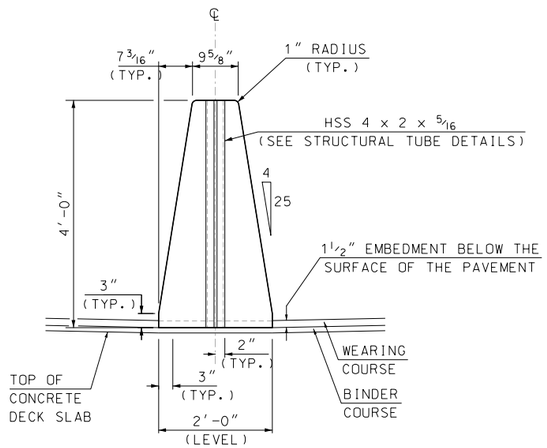
BARRIER CONNECTION DETAIL



PERSPECTIVE VIEW



SECTION A-A (REINFORCEMENT)



END VIEW (MASONRY)

GENERAL NOTES

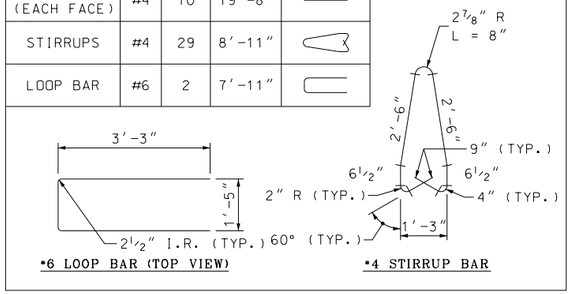
1. THE CONCRETE BARRIER DETAILS, AS SHOWN ON THIS SHEET, ARE IN COMPLIANCE WITH THE REQUIREMENTS OF NCHRP REPORT 350, TL 4.
2. I-BEAMS AND STRUCTURAL TUBES SHALL BE GALVANIZED AFTER FABRICATION.
3. STUD WELDING SHALL BE IN ACCORDANCE WITH ITEM 547.
4. SLOTS IN STRUCTURAL TUBES SHALL BE CUT WITH MECHANICALLY GUIDED MEANS TO A SMOOTH, UNIFORM SURFACE MEETING A SURFACE ROUGHNESS OF 1000 MICROINCHES OR BETTER (ANSI B46.1).
5. PAID FOR UNDER APPROPRIATE 606 ITEMS, OR AS SHOWN ON PLANS.

MATERIAL NOTES

1. THE BARRIERS SHALL BE LIGHT COLORED CLASS "AA" CONCRETE HAVING A MINIMUM 28 DAY COMPRESSION STRENGTH OF 4,000 PSI. BARRIERS SHALL HAVE A SMOOTH UNIFORM SURFACE FREE OF DEFECTS AND IRREGULARITIES. CASTING DATE SHALL BE SHOWN ON BARRIER. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4", UNLESS NOTED OTHERWISE.
2. ALL REINFORCING STEEL SHALL BE AASHTO M31 (ASTM-A615) GRADE 60, EPOXY COATED. REINFORCEMENT SHOWN IS THE MINIMUM REQUIRED.
3. EACH BARRIER UNIT SHALL INCLUDE ONE S 3 x 7.5 AS SHOWN ON THIS PLAN SHEET.
4. SHOP DRAWINGS, SHALL INCLUDE REINFORCING SCHEDULE.
5. LEVELING PADS OR SHIMMING MATERIAL SHALL BE SUBSIDIARY TO THE BARRIER ITEM.

CONCRETE BARRIER REINFORCING SCHEDULE

DESCRIPTION	SIZE	NO.	UNBENT LENGTH	TYPE
LONGITUDINAL (EACH FACE)	#4	10	19'-8"	
STIRRUPS	#4	29	8'-11"	
LOOP BAR	#6	2	7'-11"	



McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR/WCR

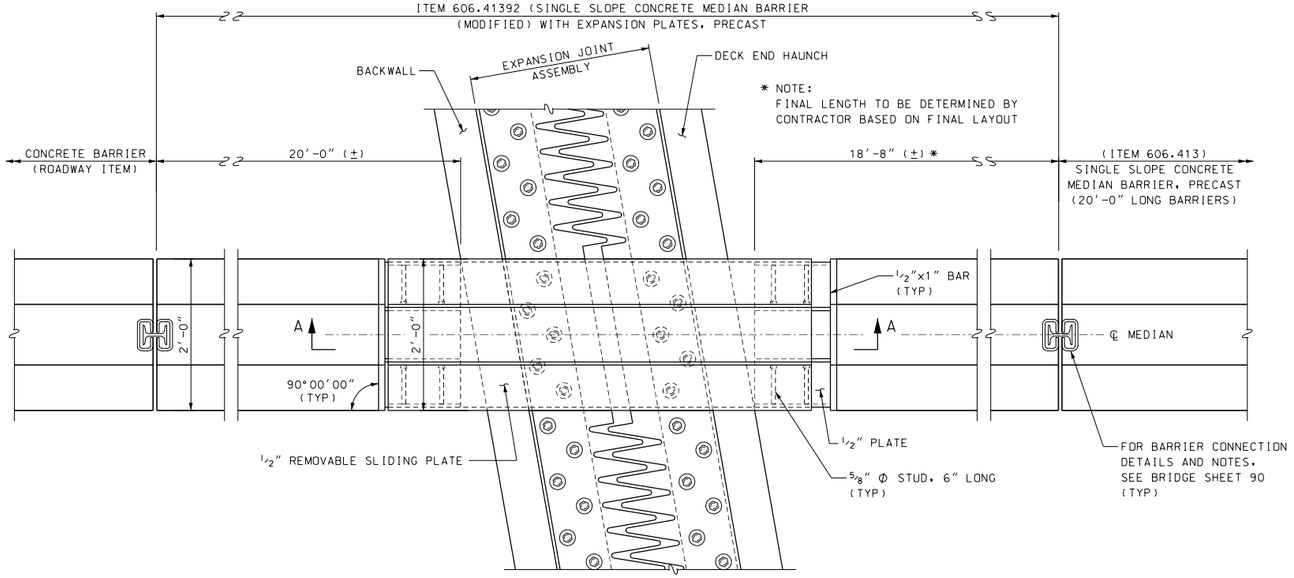
CONCRETE MEDIAN BARRIER DETAILS

BRIDGE SHEET 90 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	NHDOT	06/19	CHECKED	NHDOT	06/19
	DRAWN	NHDOT	06/19	CHECKED	NHDOT	06/19
	QUANTITIES			CHECKED		

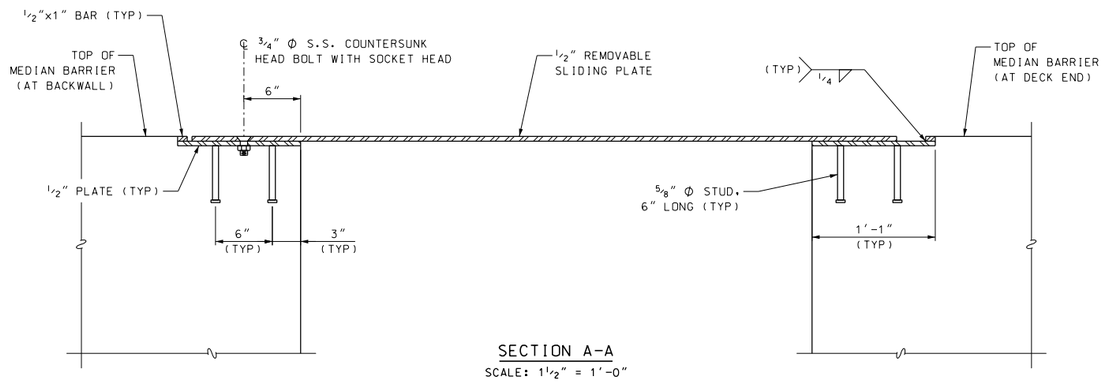
FILE NUMBER 133-1-1

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	233	600



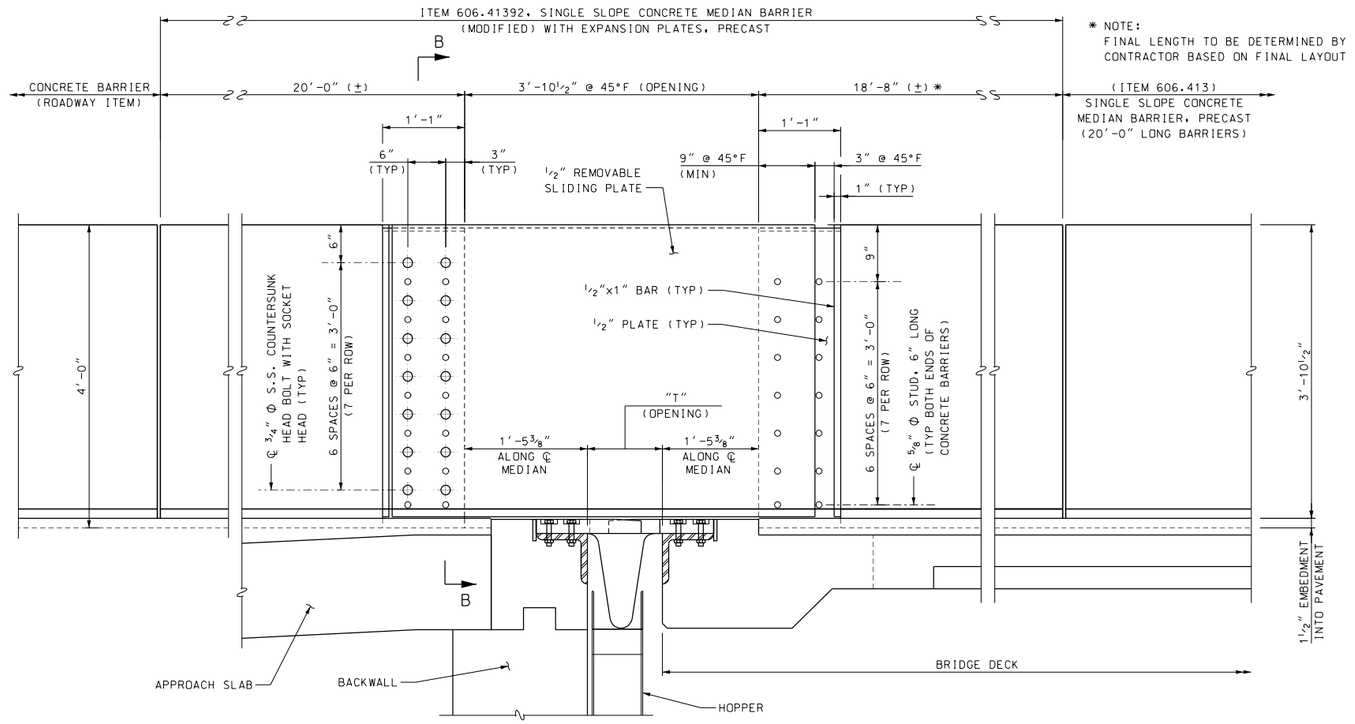
MEDIAN BARRIER AT EXPANSION JOINT – PLAN

SCALE: 1" = 1'-0"



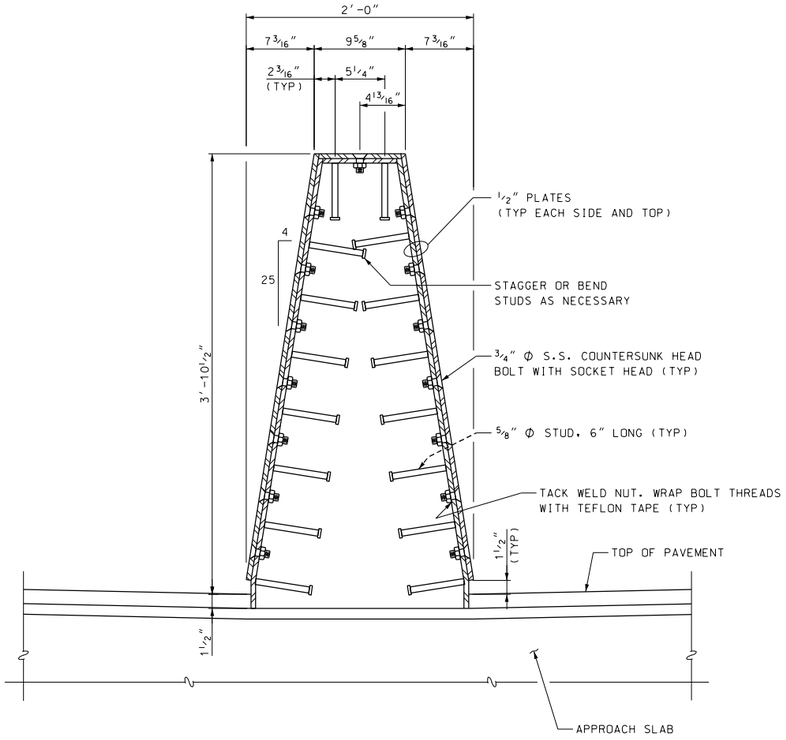
SECTION A-A

SCALE: 1 1/2" = 1'-0"



MEDIAN BARRIER AT EXPANSION JOINT – ELEVATION

SCALE: 1" = 1'-0"



SECTION B-B

SCALE: 1 1/2" = 1'-0"

NOTES

1. "T" DIMENSION IS PERPENDICULAR TO FACE OF BACKWALL. SEE BRIDGE SHEET 74 FOR TEMPERATURE ADJUSTMENT TABLE.
2. FOR EXPANSION ASSEMBLY MATERIAL NOTES, SEE EXPANSION JOINT NOTES, BRIDGE SHEET 75.
3. ALL COSTS FOR THE MEDIAN BARRIER EXPANSION JOINT SHALL BE INCLUDED IN ITEM 606.41392.
4. REINFORCING FOR ITEM 606.41392 SIMILAR TO THAT DETAILED ON BRIDGE SHEET 90.

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECR/WCR

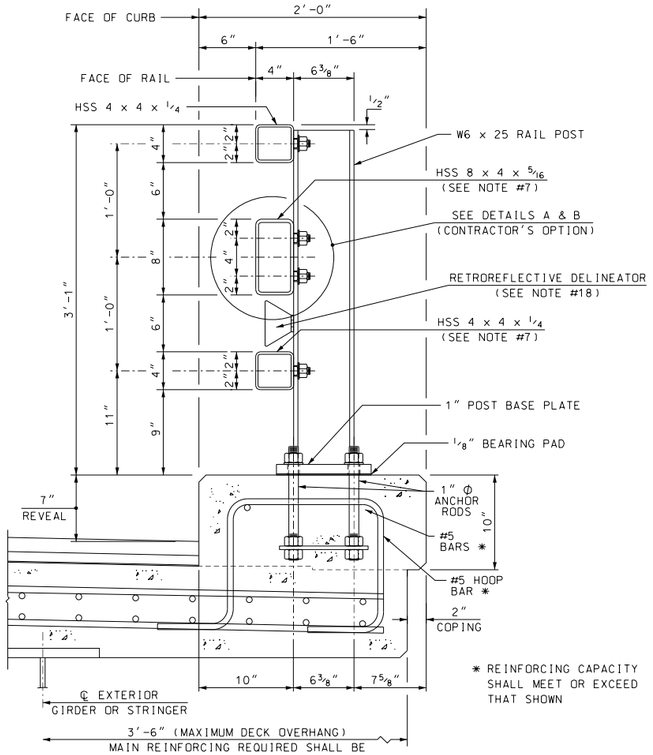
MEDIAN BARRIER DETAILS (AT EXPANSION JOINT)

BRIDGE SHEET: 91 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED	SIW	06/19	CHECKED	JAL	06/19
DRAWN	SLM	06/19	CHECKED	RLJ	06/19
QUANTITIES	DRW	06/19	CHECKED	SFD	06/19

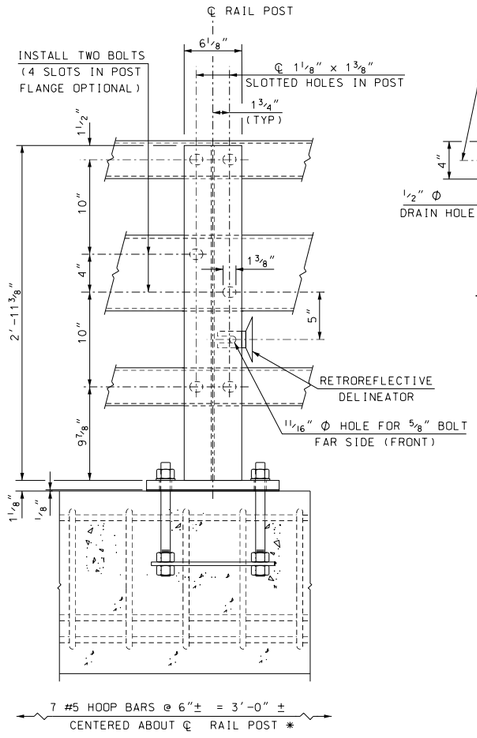
FILE NUMBER: 133-1-1

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	A001(154)	234	600

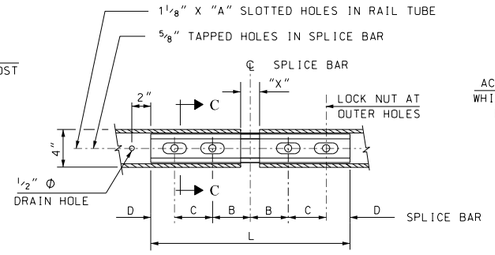


* REINFORCING CAPACITY SHALL MEET OR EXCEED THAT SHOWN

SECTION VIEW

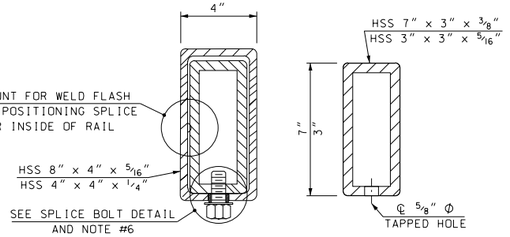


BACK ELEVATION VIEW



RAIL SPLICE (BOTTOM VIEW)

SCALE: 1 1/2" = 1'-0"

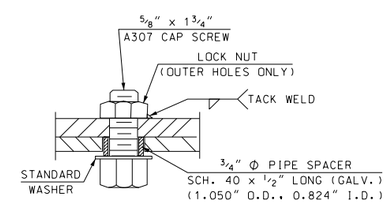


SECTION C-C

SPLICE BAR SECTION

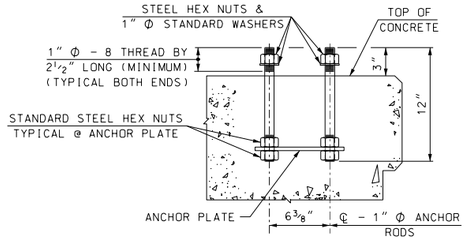
RAIL SPLICE DETAILS

SCALE: 3" = 1'-0"



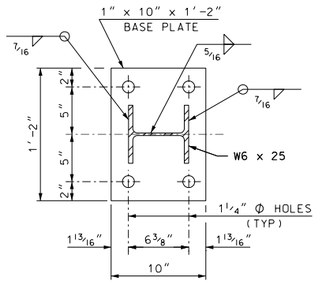
SPLICE BOLT DETAIL

SCALE: 6" = 1'-0"



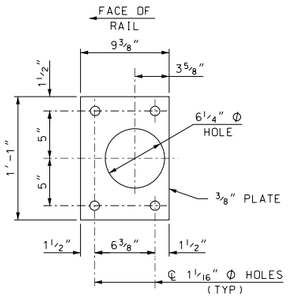
POST ANCHOR ASSEMBLY

SCALE: 1 1/2" = 1'-0"



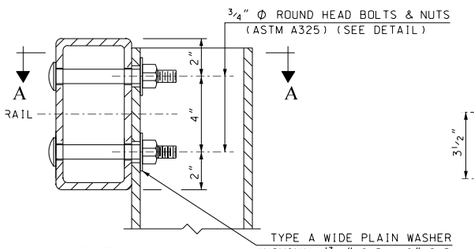
POST BASE PLATE

SCALE: 1 1/2" = 1'-0"



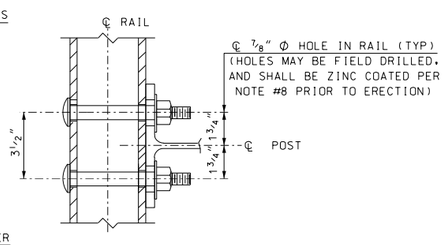
ANCHOR PLATE

SCALE: 1 1/2" = 1'-0"



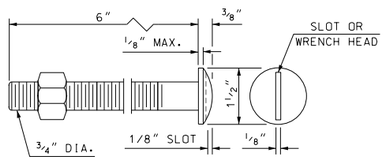
DETAIL A

SCALE: 3" = 1'-0"



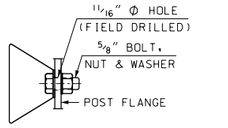
SECTION A-A

SCALE: 3" = 1'-0"



A325 ROUND HEAD BOLT DETAIL

SCALE: 6" = 1'-0"

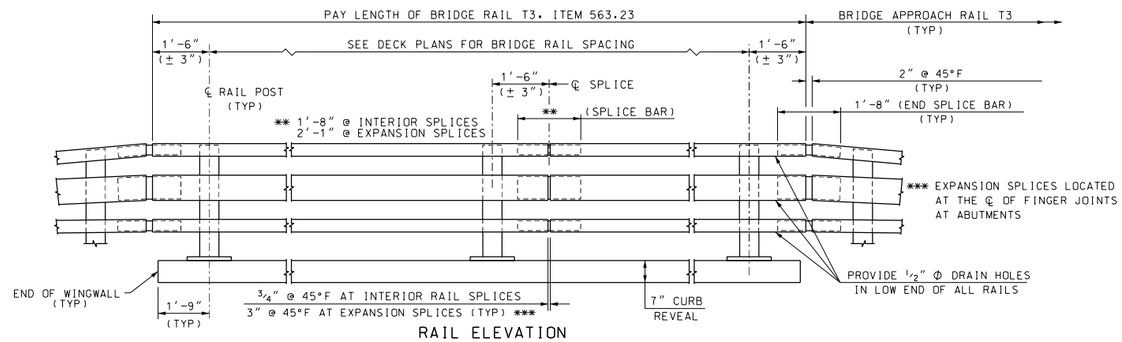


DELINEATOR MOUNTING

NOT TO SCALE

SPLICE BAR DIMENSION TABLE							
	T	A	B	C	D	X	L
	INTERIOR	2 1/2"	4"	4"	2"	3/4"	1'-8"
**	≤ 3 1/4"	2 1/2"	4"	4"	2"	2"	1'-8"
**	3 1/4" < T ≤ 5 1/4"	3 1/2"	5"	5"	2 1/2"	3"	2'-1"

T = TOTAL MOVEMENT OF BRIDGE
** = END SPLICE BAR



RAIL ELEVATION

SCALE: 1/2" = 1'-0"

RAIL NOTES

(1) ITEM 563.23, BRIDGE RAIL T3, SHALL INCLUDE POSTS, BASE PLATES, ANCHOR PLATES, ANCHOR RODS, PREFORMED PADS, RAIL ASSEMBLY BOLTS, NUTS, WASHERS, STUDS, STRUCTURAL TUBING, SPLICE BARS, PIPE SPACERS, ALL APPURTENANCES, AND GALVANIZING.

(2) BRIDGE RAIL POSTS SHALL BE SET NORMAL (90 DEGREES) TO THE PROFILE GRADE, EXCEPT ON GRADES OVER 5% WHERE POSTS SHALL BE SET VERTICAL.

(3) ENDS OF RAIL TUBE SECTIONS SHALL BE SAWED OR MILLED AND SHALL BE TRUE AND SMOOTH. ALL CUT EDGES OF ALL MATERIAL SHALL BE GROUND SMOOTH.

(4) EACH PIECE OF RAIL TUBING SHALL BE ATTACHED TO A MINIMUM OF THREE (3) POSTS.

(5) BOLT HOLES SHALL BE DRILLED OR PUNCHED. FLAME CUTTING MAY BE USED TO FINISH SLOTTED HOLES IF MECHANICALLY GUIDED.

(6) AT INTERIOR SPLICES, PIPE SPACERS SHALL BE USED ON ONLY ONE SIDE OF THE SPLICE TO ALLOW MOVEMENT ON THAT SIDE. ALL RAILS IN A SPLICE SHALL RECEIVE THE SAME TREATMENT. AT END SPLICES PIPE SPACERS SHALL BE USED ON BOTH SIDES OF THE SPLICE TO ALLOW MOVEMENT ON EACH SIDE.

(7) MILL OR SHOP TRANSVERSE WELDS SHALL NOT BE PERMITTED ON ANY RAIL ELEMENT. RAIL ELEMENTS USED ON CURVES SHALL USE 3/8" WALL TUBES AND SHALL BE SHOP FORMED TO THE REQUIRED CURVATURE (SEE SECTION 563.3.2.1).

(8) NO PUNCHING, DRILLING, CUTTING OR WELDING SHALL BE PERMITTED AFTER GALVANIZING, EXCEPT AS ALLOWED IN DETAIL A, AND FOR INSTALLATION OF DELINEATORS. DAMAGED AREAS OF GALVANIZING SHALL BE THOROUGHLY CLEANED, PRETREATED, AND PAINTED WITH TWO COATS OF ORGANIC ZINC-RICH GALVANIZING REPAIR PAINT, HAVING A MINIMUM 92% ZINC BY WEIGHT, TO A THICKNESS EQUAL TO THE ORIGINAL COATING, ACCORDING TO SECTION 550.2.9.1 AND ASTM A780.

(9) NUTS FOR 1" Ø THREADED ANCHOR RODS CONNECTING THE BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN.

(10) THREADS FOR ANCHOR RODS MAY BE ROLLED OR CUT. IF CUT THREADS ARE USED, BOLT DIAMETER SHALL NOT BE LESS THAN NOMINAL DIAMETER. IF ROLLED THREADS ARE USED, ROD DIAMETER SHALL NOT BE LESS THAN ROOT DIAMETER OF THREADS.

(11) THIS BRIDGE RAIL SYSTEM IS IN COMPLIANCE WITH T2 STEEL BRIDGE RAIL WHICH WAS SUCCESSFULLY CRASH TESTED FOR AASHTO PL2 IN 1994 BY THE NEW ENGLAND TRANSPORTATION CONSORTIUM AND ACCEPTED AS NCHRP 350 TL-4 PER FHWA LETTER HMHS-B50, MARCH 11, 1999.

MATERIAL NOTES

(12) STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500, GRADE B, STRUCTURAL STEEL TUBING. RAIL TUBING SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH REQUIREMENTS OF 15 FT. LBS. AT 0°F. FOR ASTM A500, GRADE B, THE TEST SAMPLES SHALL BE TAKEN AFTER FORMING THE TUBES. CHARPY V-NOTCH IS NOT REQUIRED FOR SPLICE TUBES.

(13) RAIL POSTS AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A572 GR 50, EXCEPT ANCHOR PLATES MAY BE ASTM A36.

(14) DETAIL A BOLTS SHALL BE ASTM A325 OR A449. ALL OTHER BOLTS AND NUTS SHALL CONFORM TO ASTM A307 AND ASTM 563 GRADE A RESPECTIVELY OR BETTER, EXCEPT THAT ASTM A307 NUTS MAY BE USED ON THE BOTTOM OF ANCHOR ASSEMBLY. WASHERS SHALL BE HARDENED STEEL COMMERCIAL TYPE A PLAIN WIDE WASHERS AND SHALL MEET THE DIMENSIONAL REQUIREMENTS OF A.N.S.I. B18.22. ANCHOR RODS SHALL CONFORM TO ASTM A449.

(15) ALL STEEL COMPONENTS (EXCEPT STAINLESS) SHALL BE GALVANIZED AFTER FABRICATION IN COMPLIANCE WITH AASHTO M232 (ASTM A153) AND AASHTO M111 (ASTM A123). THE GALVANIZING KETTLE SHALL HAVE 0.05 TO 0.09 PERCENT NICKEL. GALVANIZED SURFACES SHALL HAVE A UNIFORM APPEARANCE AND GALVANIZED MATERIAL SHALL BE PROPERLY STORED. IF PAINTING IS REQUIRED SEE SPECIAL PROVISIONS FOR 708.

(16) PREFORMED BEARING PADS (1/8" THICK) SHALL CONFORM TO AASHTO M251.

(17) RETROREFLECTIVE DELINEATORS, BOLTS, NUTS, WASHERS AND FIELD DRILLING OF POSTS, INCLUDING GALVANIZING TOUCH-UP, SHALL BE SUBSIDIARY TO ITEM 563.22. SEE STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION (DL-1) FOR ADDITIONAL DETAILS AND SPACING.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN | BRIDGE NO. | STATE PROJECT

LOCATION

T3 STEEL BRIDGE RAIL

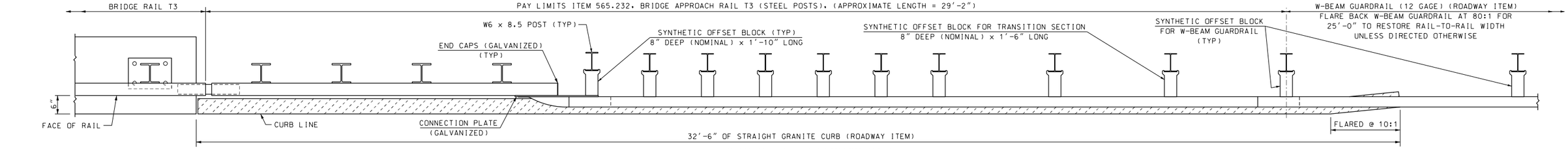
BRIDGE SHEET: 92 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
		DESIGNED	NETC/JSZ	3/02	CHECKED	NHDOT	
		DRAWN	PJP	10/05	CHECKED	JSZ	10/05
		QUANTITIES			CHECKED		

FILE NUMBER: 133-1-1

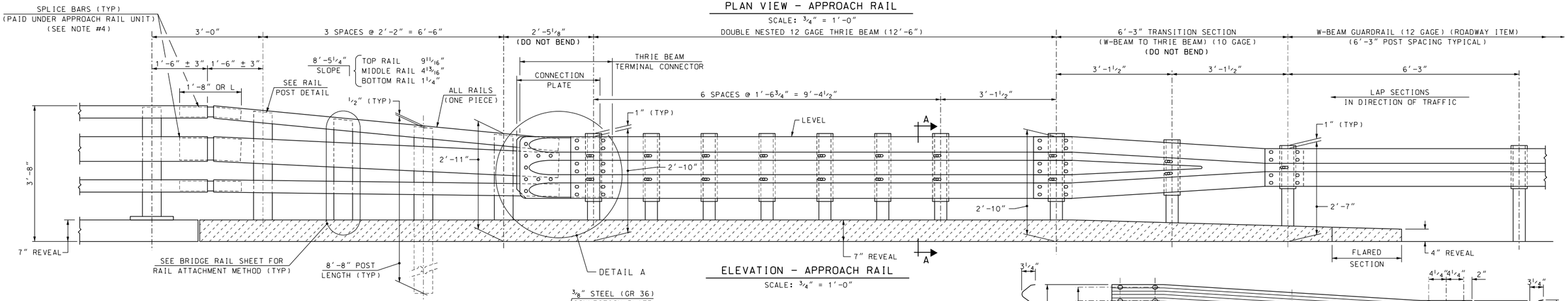
ISSUE DATE	11/15/05	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	6/25/19	A001(154)	235	600

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
Bridge Railing\Steel Railing	16148_T3_BR-RAIL	AS NOTED



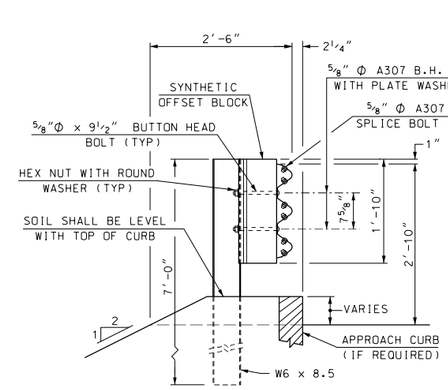
PLAN VIEW - APPROACH RAIL

SCALE: 3/4" = 1'-0"



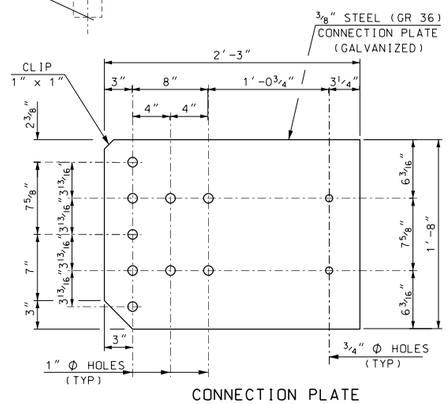
ELEVATION - APPROACH RAIL

SCALE: 3/4" = 1'-0"



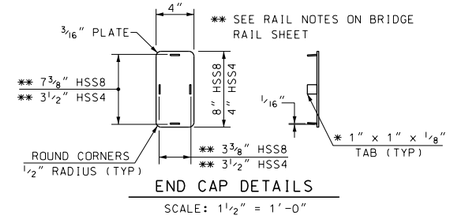
SECTION A-A (POST RAIL ASSEMBLY)

SCALE: 3/4" = 1'-0"



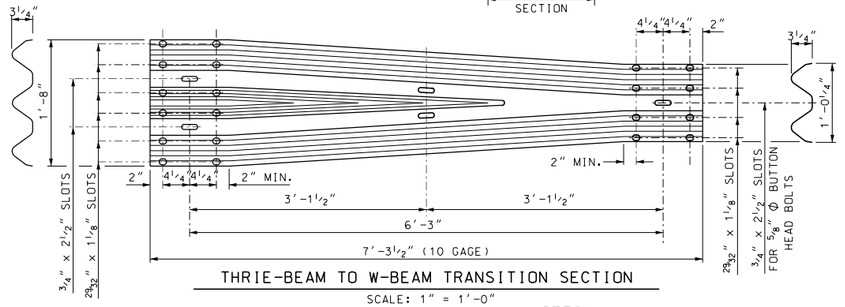
CONNECTION PLATE

SCALE: 1 1/2" = 1'-0"



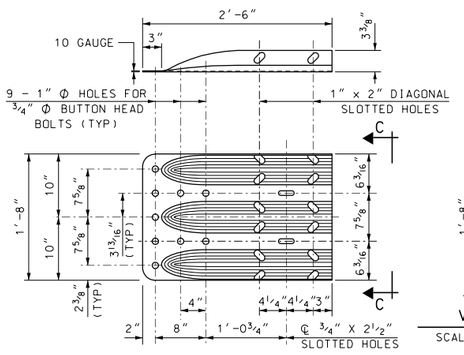
END CAP DETAILS

SCALE: 1 1/2" = 1'-0"



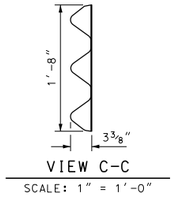
THRIE-BEAM TO W-BEAM TRANSITION SECTION

SCALE: 1" = 1'-0"



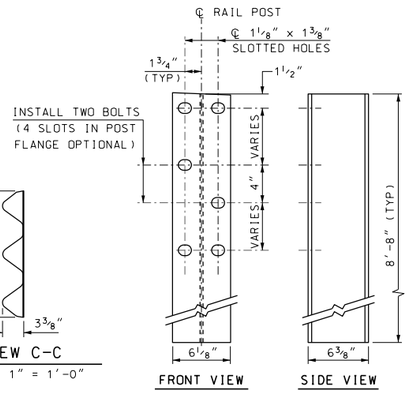
THRIE-BEAM TERMINAL CONNECTOR

SCALE: 1" = 1'-0"



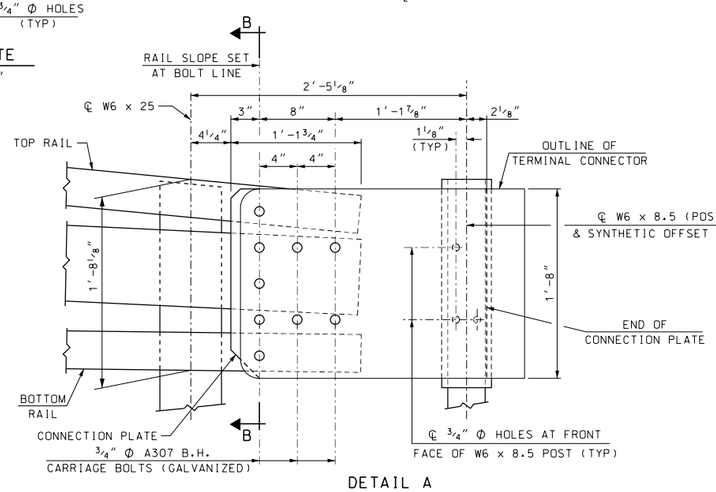
VIEW C-C

SCALE: 1" = 1'-0"



RAIL POST (W6 x 25)

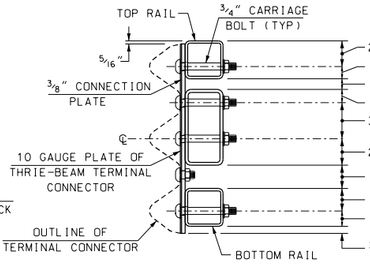
SCALE: 1 1/2" = 1'-0"



DETAIL A

OVERLAPPING OF DOUBLE NESTED THRIE-BEAM NOT SHOWN FOR CLARITY

SCALE: 1 1/2" = 1'-0"



SECTION B-B (CONNECTION PLATE)

SCALE: 1 1/2" = 1'-0"

NOTES:

(1) ALL BRIDGE APPROACH RAIL MATERIALS, DIMENSIONS, SIZES, AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGE RAIL, UNLESS OTHERWISE NOTED. SEE BRIDGE RAIL SHEET FOR NOTES AND ADDITIONAL INFORMATION.

(2) W6 x 25 POSTS SHALL BE THE SAME MATERIAL AS THE BRIDGE RAIL POSTS. W6 x 8.5 POSTS SHALL BE THE SAME AS W-BEAM GUARDRAIL POSTS.

(3) CARRIAGE BOLTS SHALL BE ASTM A307, AND NUTS SHALL BE ASTM A563 GRADE A OR BETTER (GALVANIZED).

(4) WELD BARS ADJUSTED FOR SLOPE & BEND. USE COMPLETE JOINT PENETRATION BUTT WELD (B-U2).

(5) THIS BRIDGE RAIL TRANSITION SYSTEM WAS SUCCESSFULLY CRASH TESTED IN APRIL 2005 BY THE NEW ENGLAND TRANSPORTATION CONSORTIUM AND ACCEPTED AS NCHRP 350 TL-3 PER FHWA LETTER HSSD/B-146.

(6) ALL COMPONENTS, EXCEPT TUBULAR RAIL, SHALL CONFORM TO SECTION 606 OF NHDOT SPECIFICATIONS.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN | BRIDGE NO. | STATE PROJECT

LOCATION

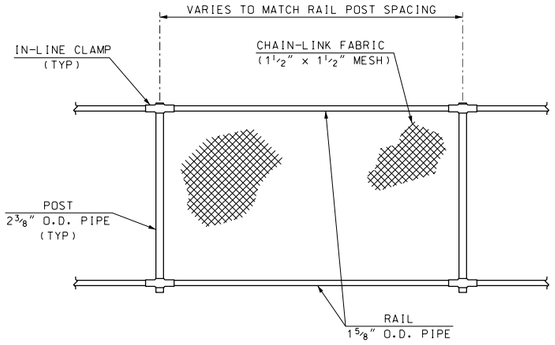
T3 STEEL BRIDGE APPROACH RAIL (STEEL POSTS)

BRIDGE SHEET 93 OF 94

REVISIONS AFTER PROPOSAL		BY	DATE:		BY	DATE
	DESIGNED	NETC/JSZ	3/02	CHECKED	NHDOT	
	DRAWN	PJP	10/05	CHECKED	JSZ	10/05
	QUANTITIES			CHECKED		
	ISSUE DATE	11/15/05	FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
	REV. DATE	6/25/19	A001(154)		236	600

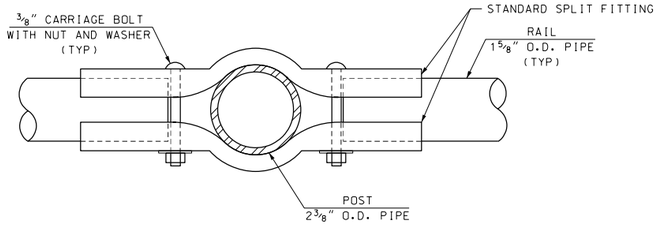
FILE NUMBER 133-1-1

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
Bridge Railing/Steel Railing	16148T3SP_APPRAIL	AS NOTED



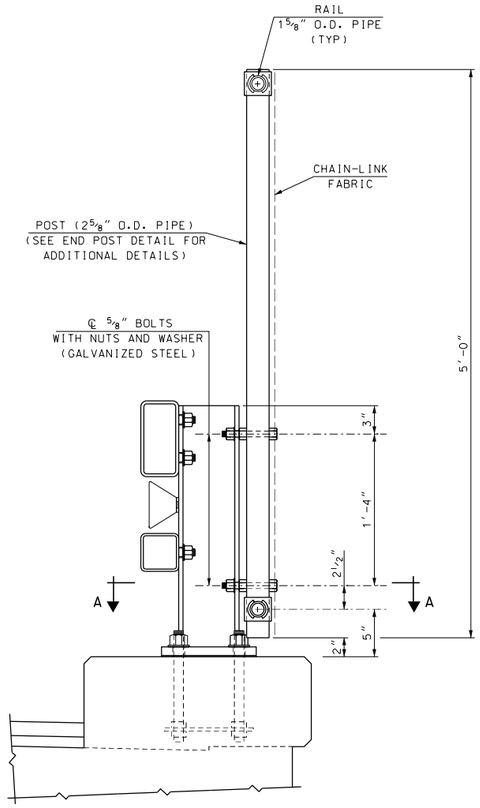
ELEVATION - SNOW SCREENING

SCALE: 1/2" = 1'-0"



IN-LINE CLAMP DETAIL

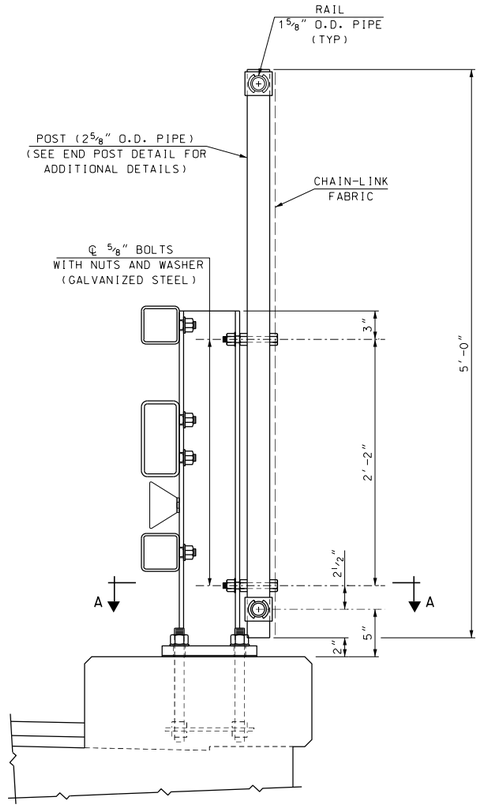
SCALE: 6" = 1'-0"



TYPICAL SECTION

(T2 BRIDGE RAIL)

SCALE: 1 1/2" = 1'-0"



TYPICAL SECTION

(T3 BRIDGE RAIL)

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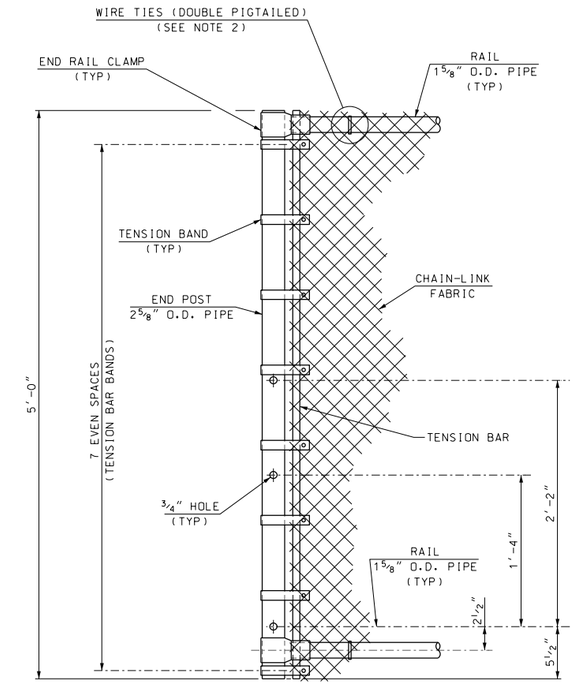
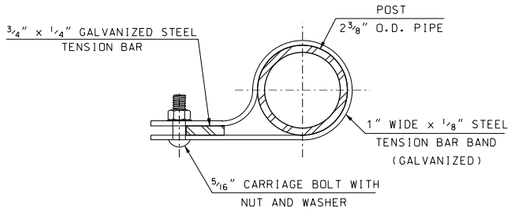


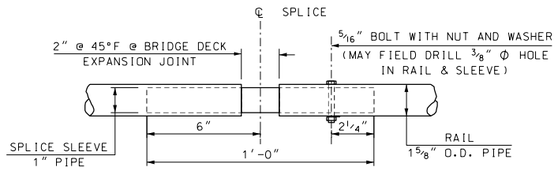
END POST DETAIL

SCALE: 1 1/2" = 1'-0"



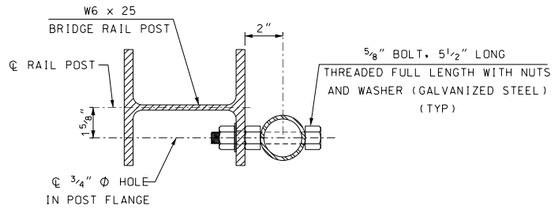
TENSION BAND DETAIL

SCALE: 6" = 1'-0"



RAIL SPLICE DETAIL

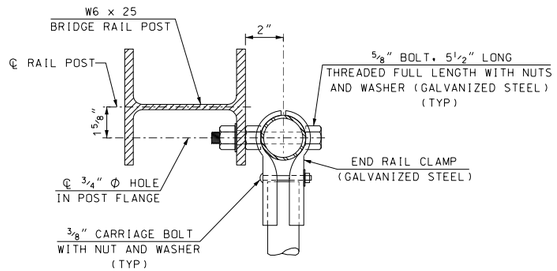
SCALE: 3" = 1'-0"



SECTION A-A

(AT INTERIOR POST)

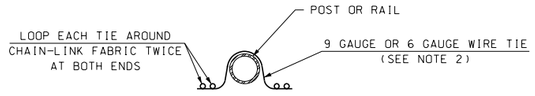
SCALE: 3" = 1'-0"



SECTION A-A

(AT END POST)

SCALE: 3" = 1'-0"



DOUBLE PIGTAILED TIE

NOT TO SCALE

GENERAL NOTES

(1) CHAIN-LINK FABRIC SHALL BE 9 GAUGE STEEL, ALUMINUM-COATED CONFORMING TO ASHTO M 181, TYPE II (ASTM A 491). CHAIN-LINK FABRIC SHALL BE KNUCKLED ON TOP AND BOTTOM. THE SIZE OF WIRE MESH (FABRIC) SHALL BE 1 1/2".

(2) WIRE TIES SHALL BE STANDARD ROUND 9 GAUGE ALUMINUM-COATED STEEL OR 6 GAUGE ALUMINUM ALLOY CONFORMING TO ASTM F 626. ALL TIES SHALL BE WRAPPED AROUND CHAIN-LINK FABRIC TWICE (DOUBLE PIGTAILED) AT BOTH ENDS. SPACE TIES @ 6" O.C. TO BOTTOM RAIL AND @ 12" O.C. TO ALL POSTS AND OTHER RAILS.

(3) POSTS AND RAIL PIPES SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO AASHTO M 181, GRADE 1 (ASTM F 1083). ALL PIPES SHALL BE SCHEDULE 40, STANDARD WEIGHT.

(4) TENSION BARS, BAR BANDS, IN-LINE CLAMPS AND END RAIL CLAMPS SHALL BE STEEL. STEEL COMPONENTS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 111 (ASTM A 123) OR AASHTO M 232 (ASTM A 153) AS APPLICABLE. ALL BAR BANDS SHALL HAVE A BEVELED EDGE.

(5) ALL BOLTS AND NUTS SHALL BE STEEL CONFORMING TO ASTM A 307 AND ASTM A 563 GRADE A RESPECTIVELY. WASHERS SHALL BE HARDENED STEEL COMMERCIAL TYPE A PLAIN AND SHALL MEET THE DIMENSIONAL REQUIREMENTS OF ANSI B18.22. ALL BOLTS, NUTS AND WASHERS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 111 (ASTM A 123) OR AASHTO M 232 (ASTM A 153) AS APPLICABLE.

(6) RAIL SPLICES SHALL BE PROVIDED AT BRIDGE DECK EXPANSION JOINT(S) AND BRIDGE RAIL SPLICES AS DIRECTED BY THE CONTRACT ADMINISTRATOR.

(7) RAIL MAY BE FIELD CUT (SAWN) TO FIT POST SPACING. GALVANIZED RAIL, CUT OR DRILLED AS ALLOWED, SHALL BE TOUCHED-UP IN ACCORDANCE WITH 563.3.2.2.3.

(8) ALL COSTS FOR CHAIN-LINK FABRIC, POSTS, RAILS AND APPURTENANCES SHALL BE INCLUDED IN ITEM 563.223, BRIDGE RAIL T2 WITH SNOW SCREENING, OR ITEM 563.233, BRIDGE RAIL T3 WITH SNOW SCREENING, AS APPLICABLE.

(9) SEE BRIDGE RAIL SHEET FOR ADDITIONAL DETAILS.

(10) FOR LIMITS OF SNOW SCREENING, SEE DECK PLANS.

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LEBANON, NH / HARTFORD, VT — BRIDGE NO. 044/103 & 044/104 STATE PROJECT 16148

LOCATION I-89 NB & SB OVER CONNECTICUT RIVER AND NECRR

SNOW SCREEN WITH STEEL BRIDGE RAIL

BRIDGE SHEET 94 OF 94

REVISIONS AFTER PROPOSAL	BY	DATE	BY	DATE
	DESIGNED NHDOT	8/10	CHECKED NHDOT	8/10
	DRAWN PJP	8/10	CHECKED MGL	8/10
	QUANTITIES		CHECKED	

FILE NUMBER 133-1-1

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE	ISSUE DATE	2/98	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
English/BR-RAIL	BR-SNOWSCREEN	AS NOTED	REV. DATE	11/1/16	A001(154)	237	600