

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION



**SPECIFICATIONS**

Design: Load and Resistance Factor Design per AASHTO LRFD Bridge Design Specifications, Eighth Edition, 2017.

**DESIGN LOADING**

Live Load ..... HL - 93 Modified for Strength I  
CL-625-ONT

**TRAFFIC DATA**

Current (2019) AADT ..... 2220  
 Future (2039) AADT ..... 4080  
 DHV - % of AADT ..... 10  
 Design Hour Volume ..... 408  
 Heavy Trucks (% of AADT) ..... 5  
 Heavy Trucks (% of DHV) ..... 5  
 Directional Distribution (% of DHV) ..... 55  
 18 kip Equivalent P 2.0 ..... 144  
 18 kip Equivalent P 2.5 ..... 137  
 Design Speed (mph) ..... 25

**HYDROLOGIC DATA**

Drainage Area ..... 5,985 sq mi  
 Design Discharge (Q50) ..... 163,120 cfs  
 Check Discharge (Q100) ..... 176,980 cfs  
 Headwater Elevation (Q1.1) ..... 455.3 ft  
 Headwater Elevation (Q10) ..... 465.0 ft  
 Headwater Elevation (Q25) ..... 466.2 ft  
 Headwater Elevation (Q50) ..... 467.3 ft  
 Headwater Elevation (Q100) ..... 468.3 ft  
 Discharge Velocity (Q1.1) ..... 7.4 fps  
 Discharge Velocity (Q10) ..... 8.0 fps  
 Discharge Velocity (Q25) ..... 8.3 fps  
 Discharge Velocity (Q50) ..... 8.5 fps  
 Discharge Velocity (Q100) ..... 9.5 fps

**MATERIALS**

Concrete:  
 Curbs & Transition Barriers ..... Class "LP"  
 All Other ..... Class "A"

Reinforcing Steel:  
 Plain Reinforcing Steel ..... ASTM A 615, Grade 60  
 Stainless Reinforcing Steel ..... ASTM A 955, Grade 75

Prestressing Strands ..... AASHTO M203 (ASTM A416)  
 Grade 270, Low Relaxation

Structural Steel:  
 All Material (except as noted) ..... ASTM A 709, Grade 50W (unpainted)  
 High Strength Bolts ..... ASTM F 3125, Grade A325, Type 3

**BASIC DESIGN STRESSES**

Concrete, Class "A" (Segmental Superstructure) .....  $f'c = 8,000$  psi  
 $f'ci = 6,000$  psi  
 Concrete, Class "A" (All Other) .....  $f'c = 4,000$  psi  
 Concrete, Class "LP" .....  $f'c = 5,000$  psi  
 Plain Reinforcing Steel .....  $f_y = 60,000$  psi  
 Stainless Reinforcing Steel .....  $f_y = 75,000$  psi  
 Prestressing Strand .....  $F_y = 270,000$  psi  
 Structural Steel:  
 ASTM A 709, Grade 50W .....  $F_y = 50,000$  psi  
 ASTM F 3125, Grade A325, Type 3 .....  $F_y = 120,000$  psi

**MADAWASKA - EDMUNDSTON  
 AROOSTOOK COUNTY -  
 NEW BRUNSWICK  
  
 INTERNATIONAL BRIDGE  
 OVER  
 SAINT JOHN RIVER  
  
 BRIDGE AVE.  
 PROJECT LENGTH 0.36 mi.  
 BRIDGE NO. 2399  
  
 SEGMENTAL ALTERNATIVE**

**LIST OF DRAWINGS**

Title Sheet .....	1
Typical Sections .....	2
Project Site Plan .....	3
General Plans .....	4-7
Profiles .....	8-11

**REVIEWER NOTES**

Information depicted on these plans are for the purpose of relative comparisons between two structure-type alternatives; the designs are based on an approximate 15% level of design completion and with incomplete coordination efforts.

The bridge-end flare width, landing location, and alignment orientation at the U.S. LPOE are subject to change based upon further coordination needs surrounding LPOE operations and land use.

The bridge landing location and orientation at the Canadian POE are subject to minor adjustments based upon further coordination needs surrounding POE operations and construction phasing.

The overall bridge width and distribution of shoulder widths are subject to change.

**UTILITIES**

Twin Rivers Paper Company  
 Maine Northern Railroad  
 Canadian National Railroad  
 Town of Madawaska (Water and Sewer)  
 City of Edmundston (Water and Sewer)  
 Bell Aliant  
 Consolidated Communications

**MAINTENANCE OF TRAFFIC**

Maintain two lanes of traffic on the existing bridge.

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3/1/2019



<b>PROJECT LOCATION:</b>	International Bridge #2399 between Madawaska, Maine and Edmundston, New Brunswick carrying Bridge Avenue over the Saint John River. Latitude: 47°21'35"N Longitude: 68°19'57"W
<b>PROGRAM AREA:</b>	Bridge
<b>OUTLINE OF WORK:</b>	Replacement of the International Bridge with minor approach work.

WIN 021736.00

STATE OF MAINE DEPARTMENT OF TRANSPORTATION	APPROVED	DATE			
	COMMISSIONER	CHIEF ENGINEER			
PROJECT INFORMATION PROGRAM: BRIDGE PROJECT MANAGER: JOEL KITTEDGE DESIGNER: HNTB CONSULTANT: HNTB PROJECT RESIDENT: HNTB CONTRACTOR: HNTB PROJECT COMPLETION DATE:			SIGNATURE	P. E. NUMBER	DATE
			MADAWASKA - EDMUNDSTON INTERNATIONAL BRIDGE SEGMENTAL ALT. TITLE SHEET		
SHEET NUMBER			<b>1</b>	OF 11	

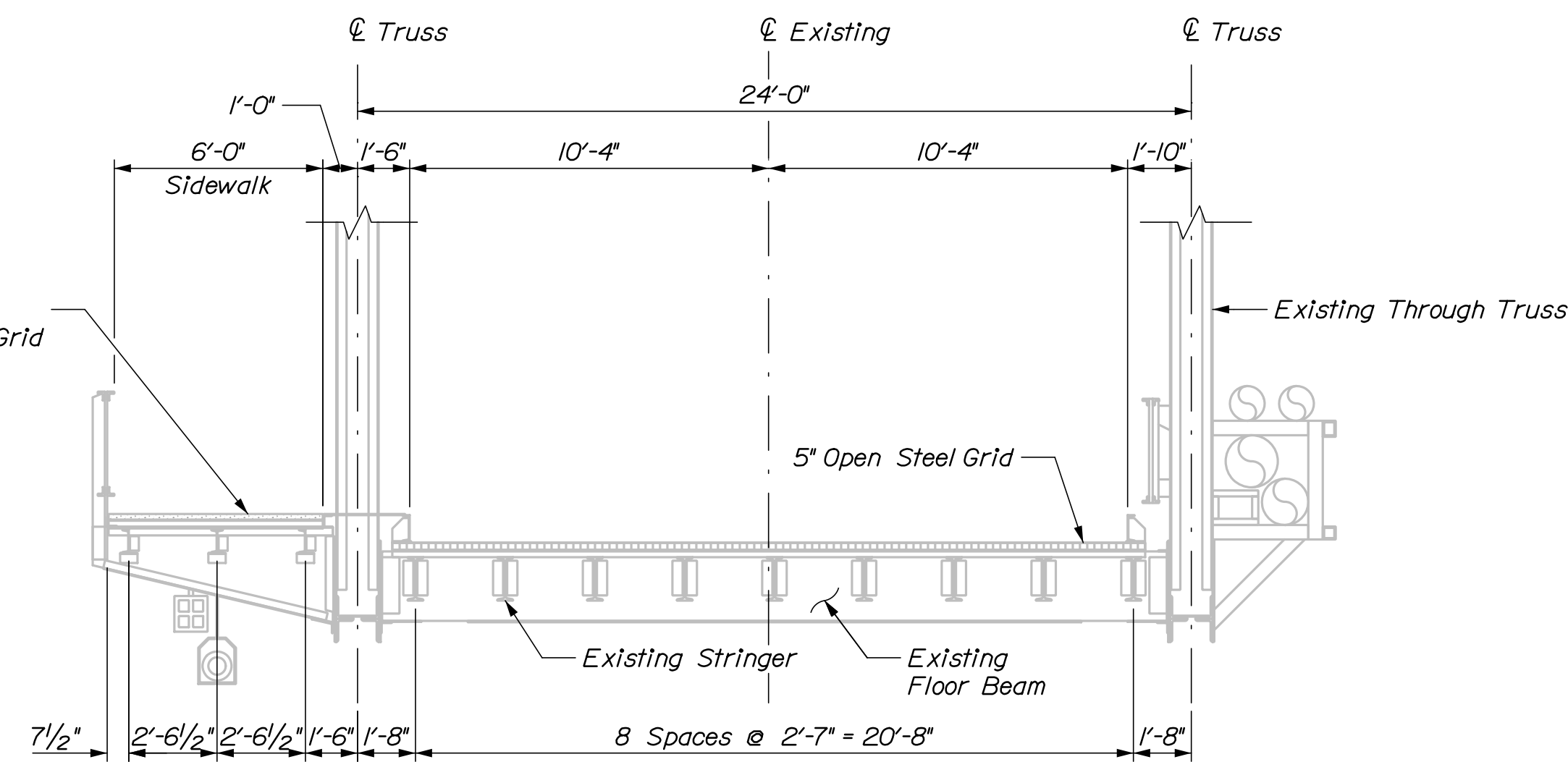
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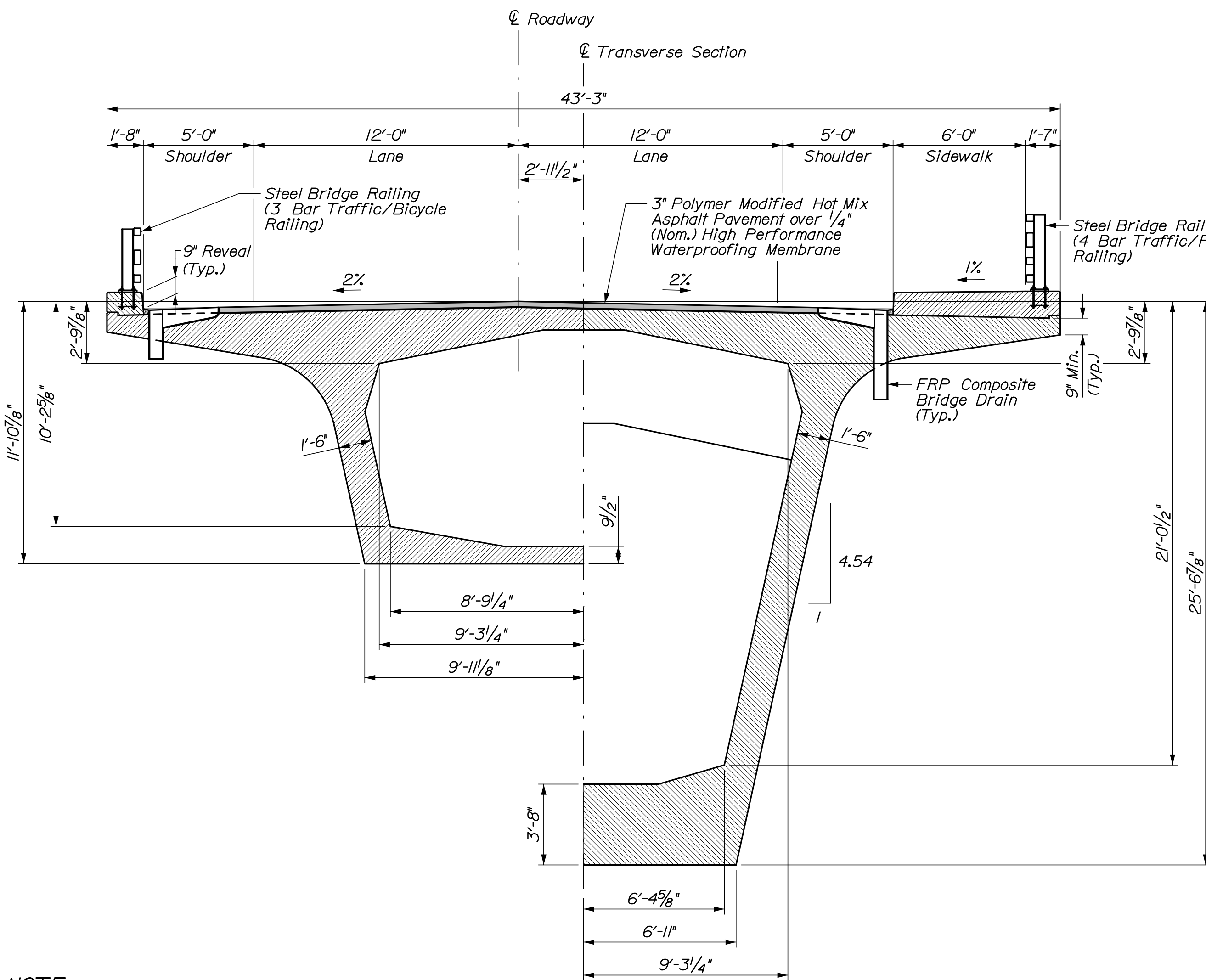
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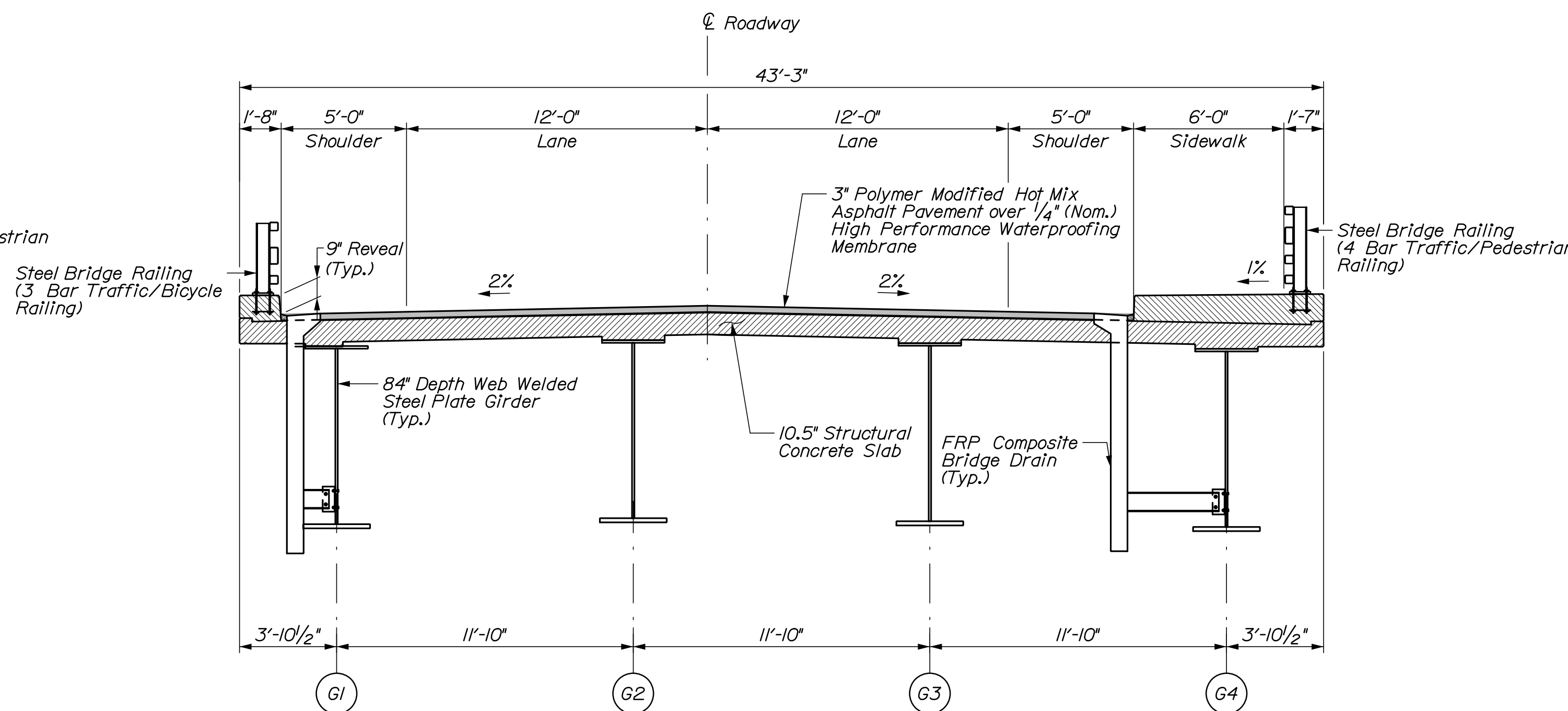
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EXISTING BRIDGE SECTION



PROPOSED BRIDGE SECTION  
(Spans 1 Through 4)



PROPOSED BRIDGE SECTION  
(Span 5)

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3/1/2019

**NOTE:**  
Typical segment length is approximately 15'-8".  
Total number of segments is approximately  
3 pier segments, 78 balanced cantilever  
construction segments, 4 closure pour  
segments, and 175' of end span construction.

DATE	BY	J. Kirtledge	PROJ. MANAGER	DESIGN-DETAILED	CHECKED-REVIEWED	DESIGN-DETAILED	DESIGN-DETAILED	REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES

SIGNATURE	P.E. NUMBER	DATE

INTERNATIONAL BRIDGE  
SAINT JOHN RIVER  
MADAWASKA, ME  
EDMUNDSTON, NB

SEGMENTAL ALT.  
TYPICAL SECTION



Date: 3/1/2019

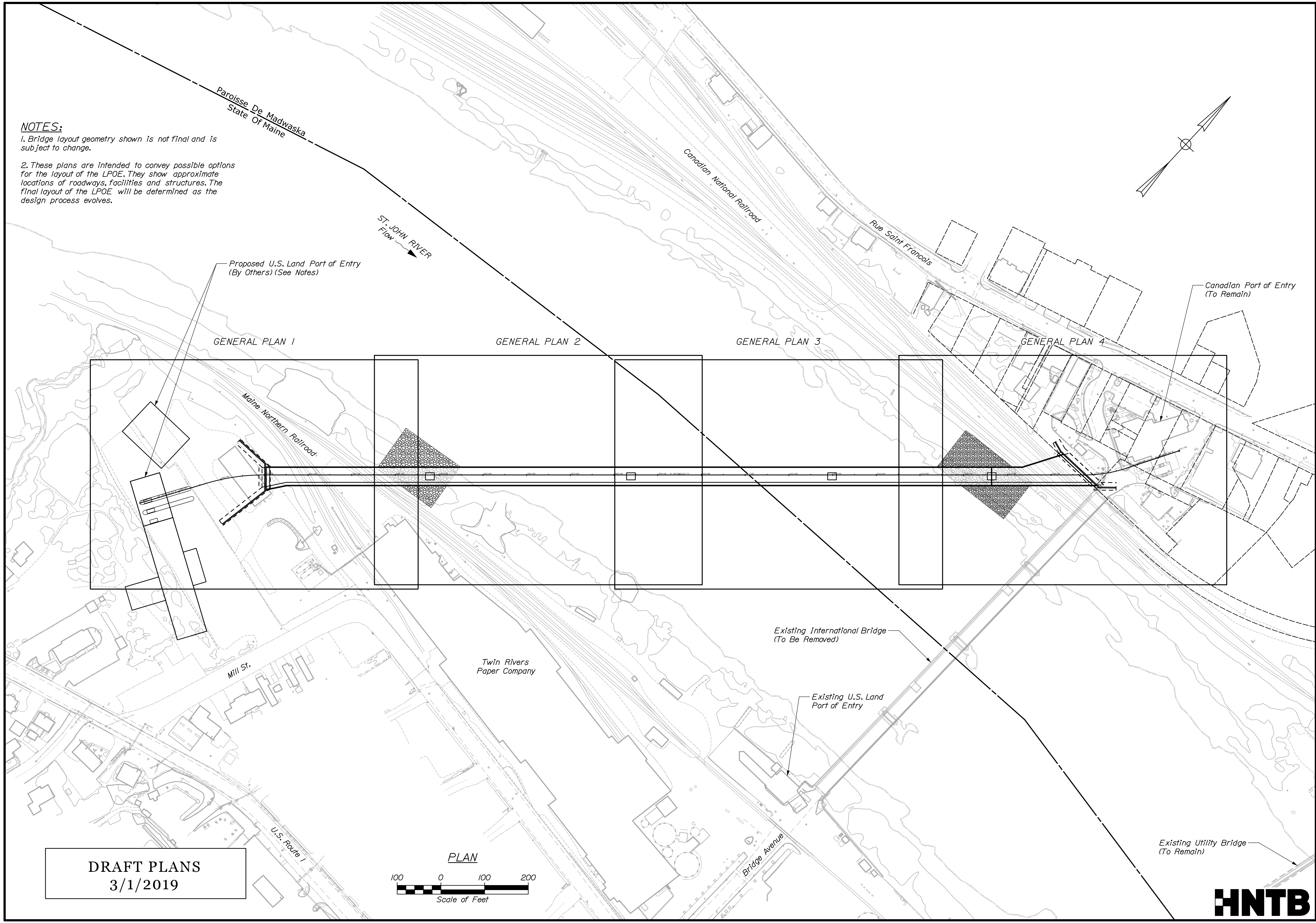
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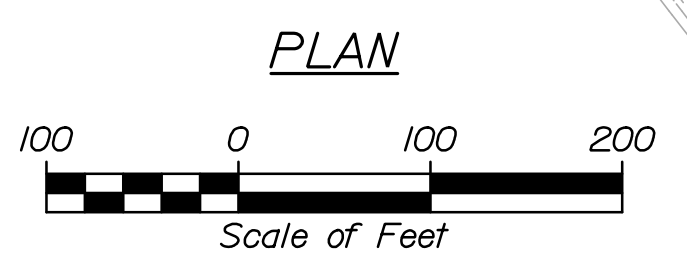
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**NOTES:**

1. Bridge layout geometry shown is not final and is subject to change.
2. These plans are intended to convey possible options for the layout of the LPOE. They show approximate locations of roadways, facilities and structures. The final layout of the LPOE will be determined as the design process evolves.



**DRAFT PLANS**  
3/1/2019



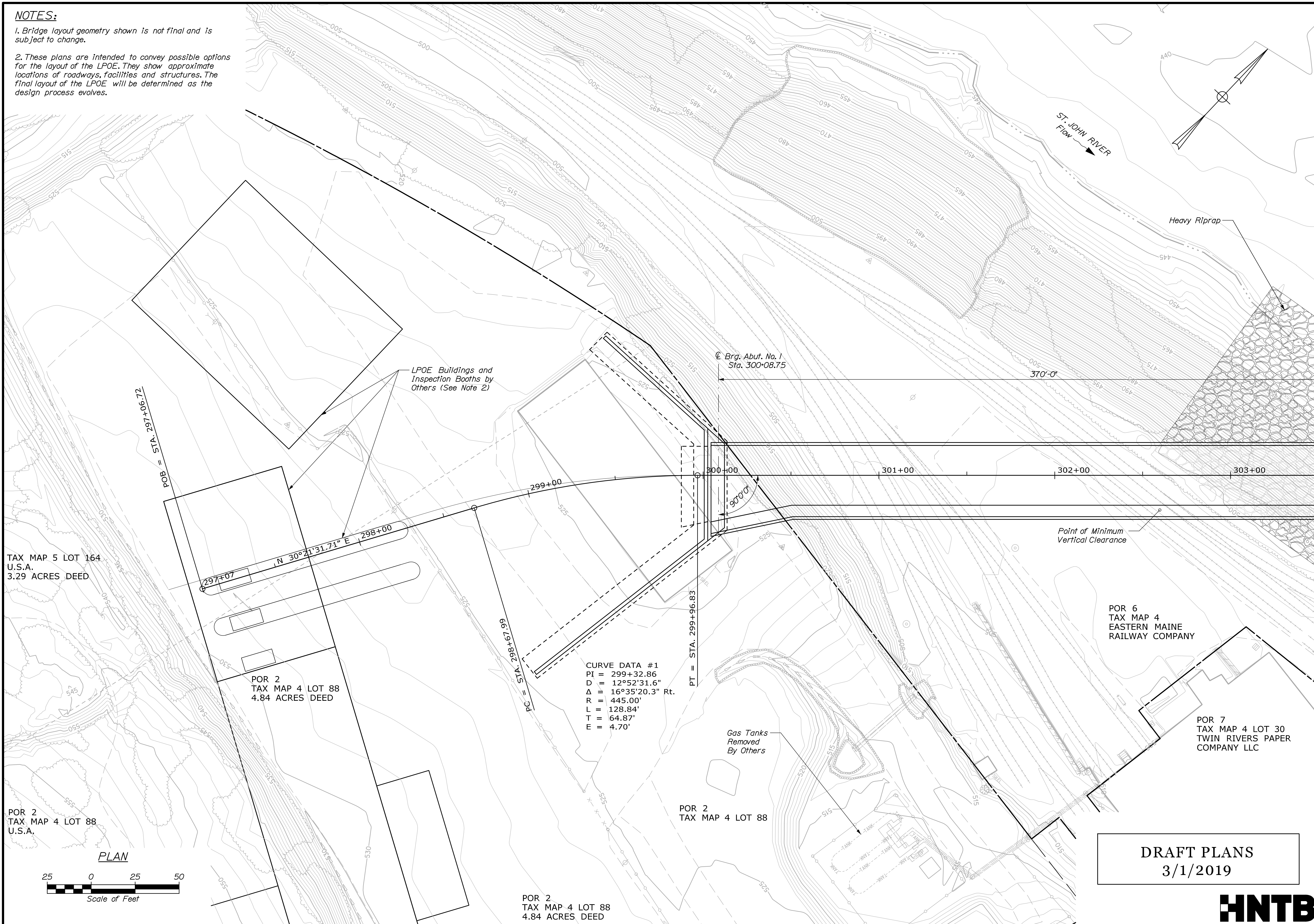
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PROJ. MANAGER J. Kirtledge		BY		DATE		SIGNATURE	
DESIGN-DETAILED		CHECKED-REVIEWED		DESIGN-DETAILED		DESIGN-DETAILED	
REVISIONS 1		REVISIONS 2		REVISIONS 3		REVISIONS 4	
FIELD CHANGES		P.E. NUMBER		DATE			
						3	
						OF 11	



**NOTES:**

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2. These plans are intended to convey possible options for the layout of the LPOE. They show approximate locations of roadways, facilities and structures. The final layout of the LPOE will be determined as the design process evolves.

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 3/1/2019



STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		BRIDGE NO. 2399		WIN		021736.00		BRIDGE PLANS	
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CHECKED-REVIEWED		DESIGNS-DETAILED		REVISIONS 1		REVISIONS 2		REVISIONS 3		REVISIONS 4	
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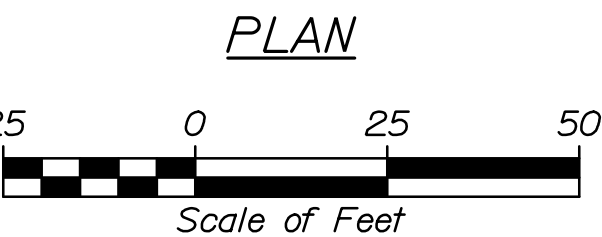
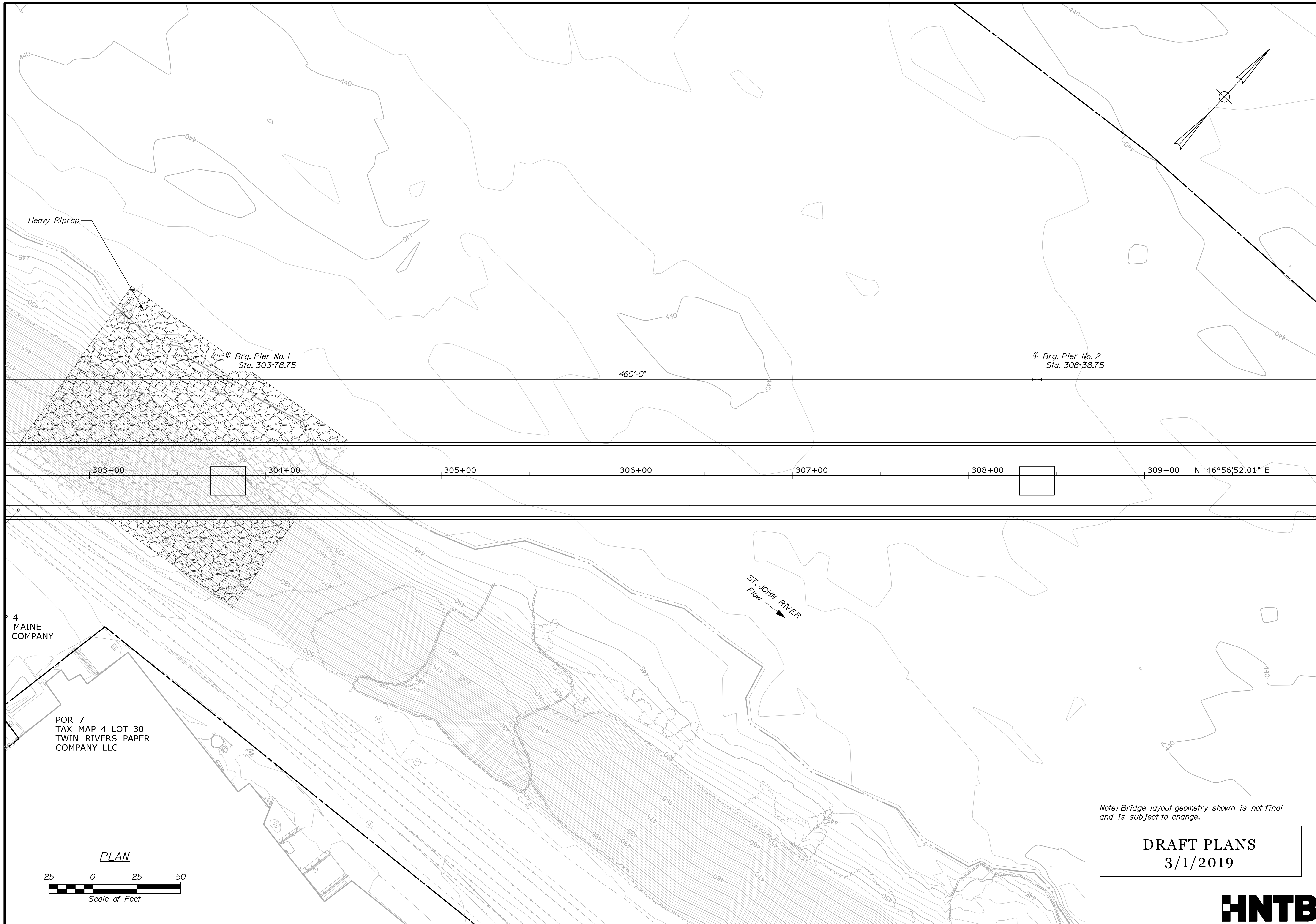


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Note: Bridge layout geometry shown is not final and is subject to change.

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3/1/2019



STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 2399  
WIN  
021736.00  
BRIDGE PLANS

PROJ. MANAGER	J. Kirtledge	BY	DATE
DESIGN-DETAILED	-	-	-
CHECKED-REVIEWED	-	-	-
DESIGN-DETAILED	-	-	-
REVISIONS 1	-	-	-
REVISIONS 2	-	-	-
REVISIONS 3	-	-	-
REVISIONS 4	-	-	-
FIELD CHANGES	-	-	-

INTERNATIONAL BRIDGE  
SAINT JOHN RIVER  
MADAWASKA, ME  
EDMUNDSTON, NB

SEGMENTAL ALT.  
GENERAL PLAN 2

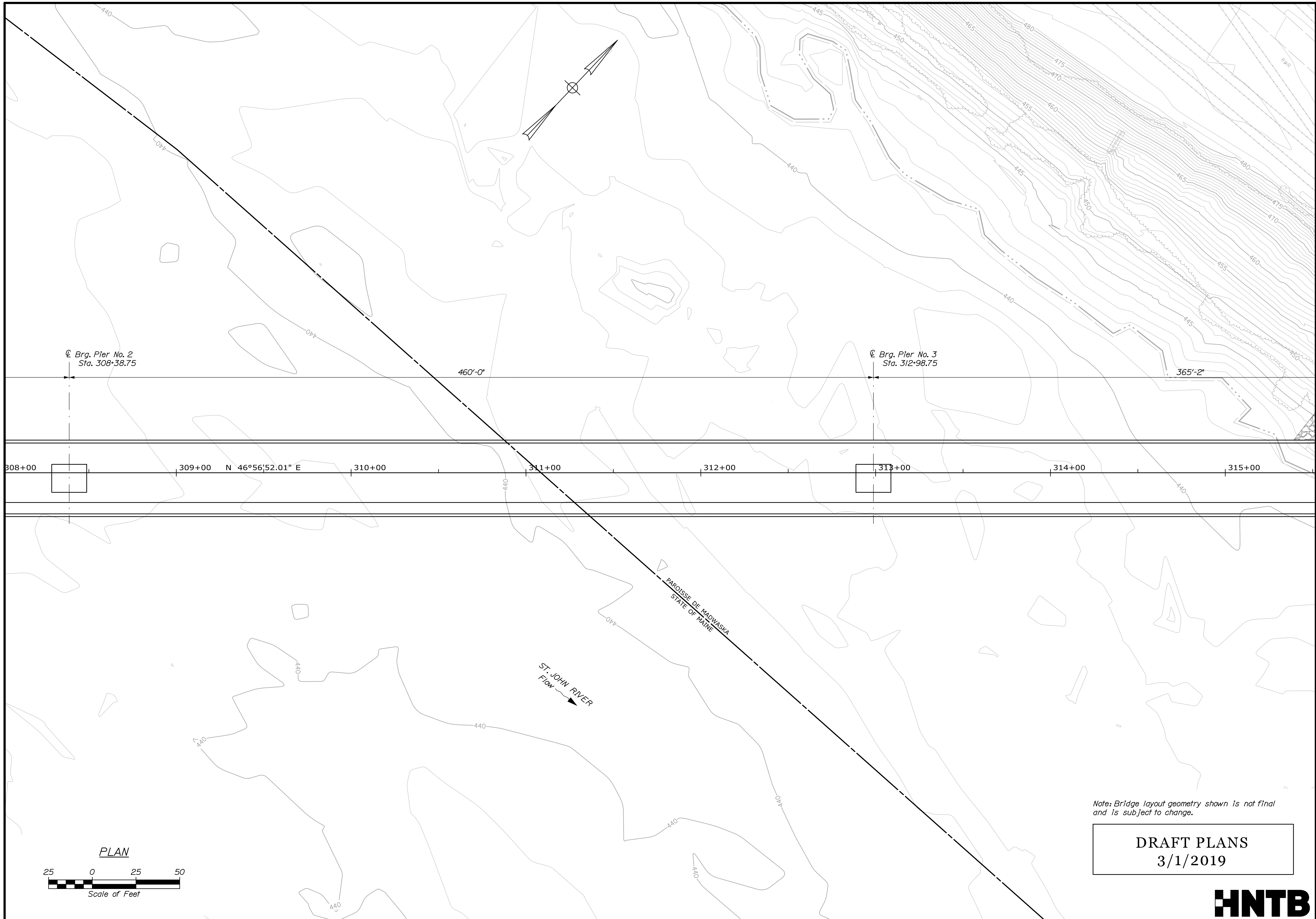
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Date: 3/1/2019

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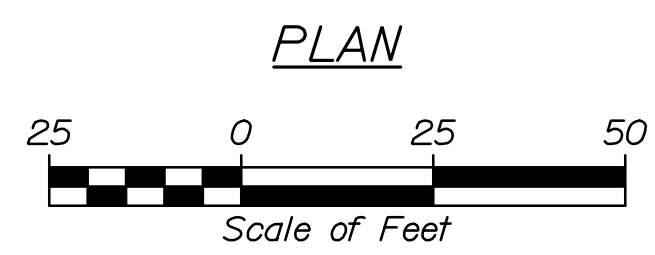
⊙ Brg. Pier No. 2  
Sta. 308+38.75

460'-0"

⊙ Brg. Pier No. 3  
Sta. 312+98.75

365'-2"

308+00 309+00 N 46°56'52.01" E 310+00 311+00 312+00 313+00 314+00 315+00



Note: Bridge layout geometry shown is not final and is subject to change.

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3/1/2019



STATE OF MAINE DEPARTMENT OF TRANSPORTATION		BRIDGE NO. 2399		WIN		021736.00		BRIDGE PLANS	
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DESIGN DETAILED		DESIGN DETAILED		REVISIONS 3		REVISIONS 4		FIELD CHANGES	
INTERNATIONAL BRIDGE SAINT JOHN RIVER MADAWASKA, ME					EDMUNDSTON, NB SEGMENTAL ALT. GENERAL PLAN 3				
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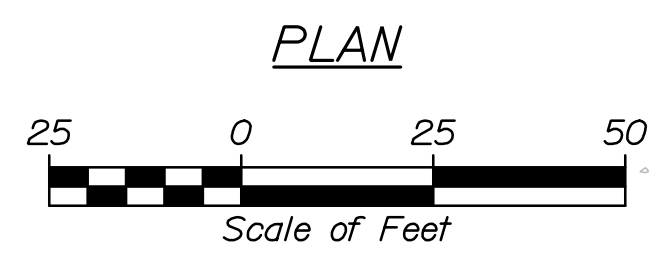
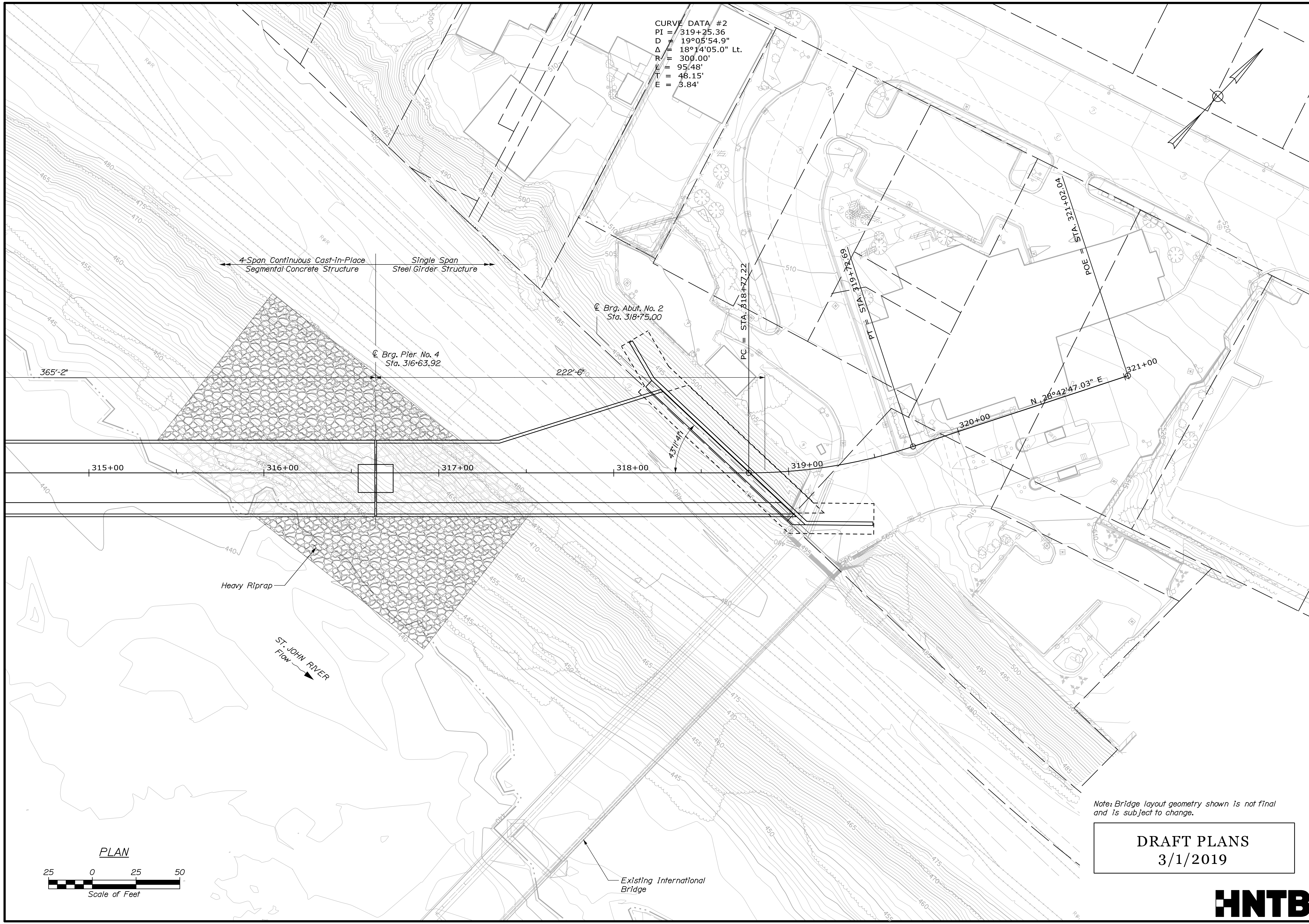
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Division:

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CURVE DATA #2  
 PI = 319+25.36  
 D = 19°05'54.9"  
 Δ = 18°14'05.0" Lt.  
 R = 300.00'  
 L = 95.48'  
 T = 48.15'  
 E = 3.84'



Note: Bridge layout geometry shown is not final and is subject to change.

**DRAFT PLANS**  
 3/1/2019



STATE OF MAINE DEPARTMENT OF TRANSPORTATION		BRIDGE NO. 2399		WIN 021736.00		BRIDGE PLANS	
INTERNATIONAL BRIDGE SAINT JOHN RIVER MADAWASKA, ME		EDMUNDSTON, NB		SEGMENTAL ALT. GENERAL PLAN 4		SHEET NUMBER	
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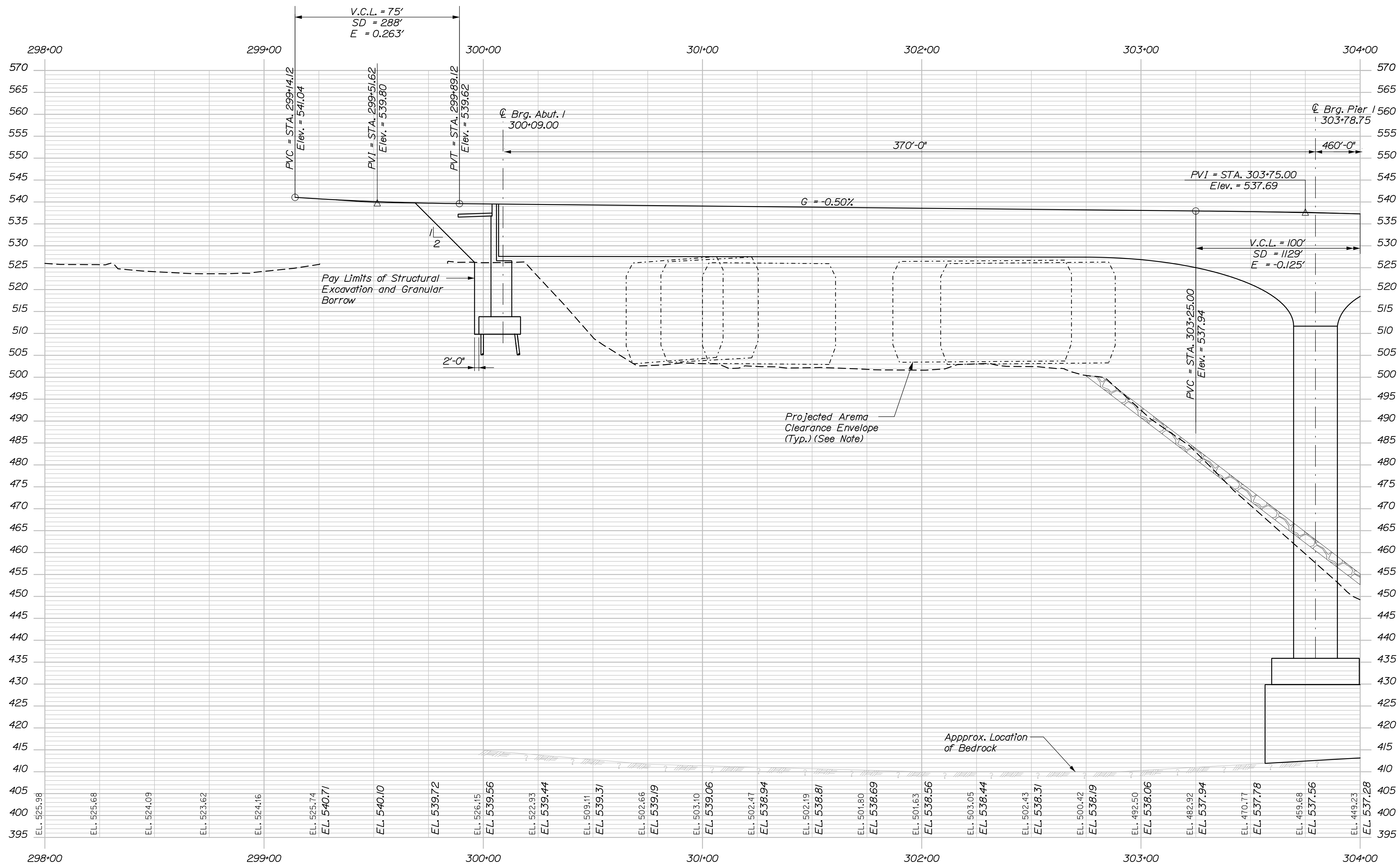


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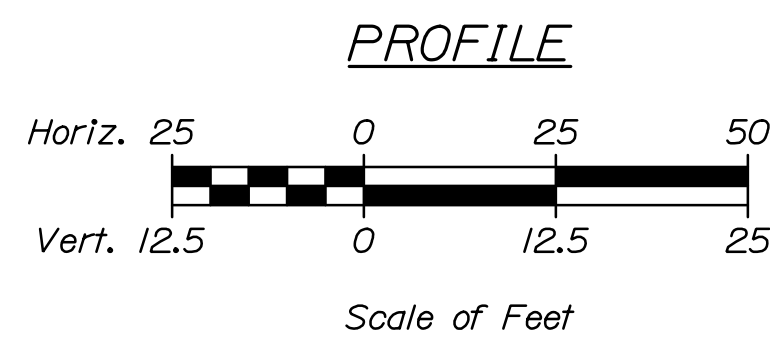
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**NOTE:**  
 Minimum vertical clearance, measured from top of track, shall be 18'-0" during construction and 23'-0" in the final conditions.

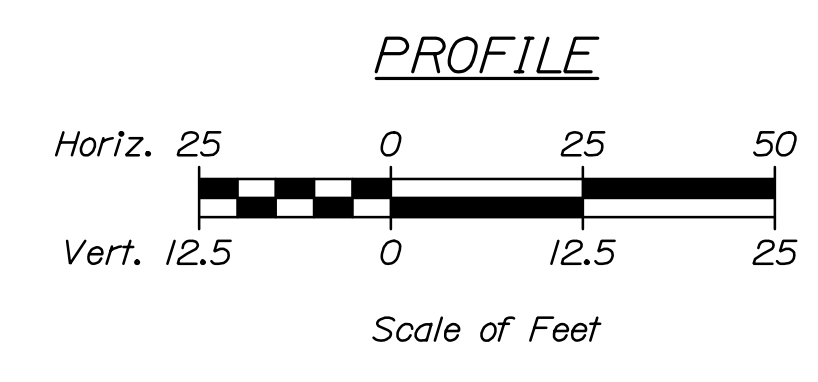
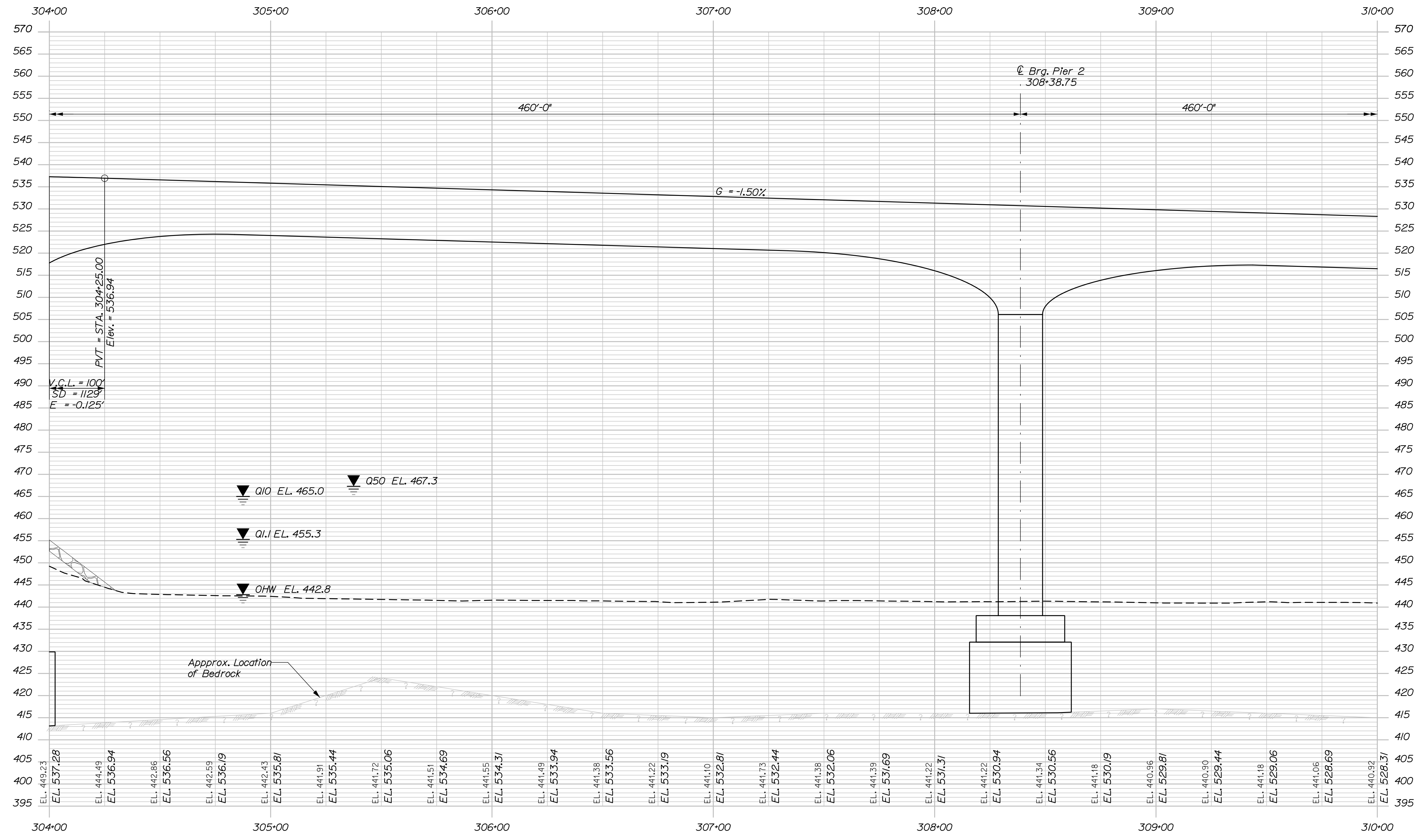


**DRAFT PLANS**  
 3/1/2019

STATE OF MAINE DEPARTMENT OF TRANSPORTATION		BRIDGE NO. 2399		WIN 021736.00		BRIDGE PLANS	
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DATE		BY		DATE		DATE	
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CHECKED-REVIEWED		CHECKED-REVIEWED		CHECKED-REVIEWED		CHECKED-REVIEWED	
DESIGN-DETAILED		DESIGN-DETAILED		DESIGN-DETAILED		DESIGN-DETAILED	
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REVISIONS 4		REVISIONS 4		REVISIONS 4		REVISIONS 4	
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DRAFT PLANS  
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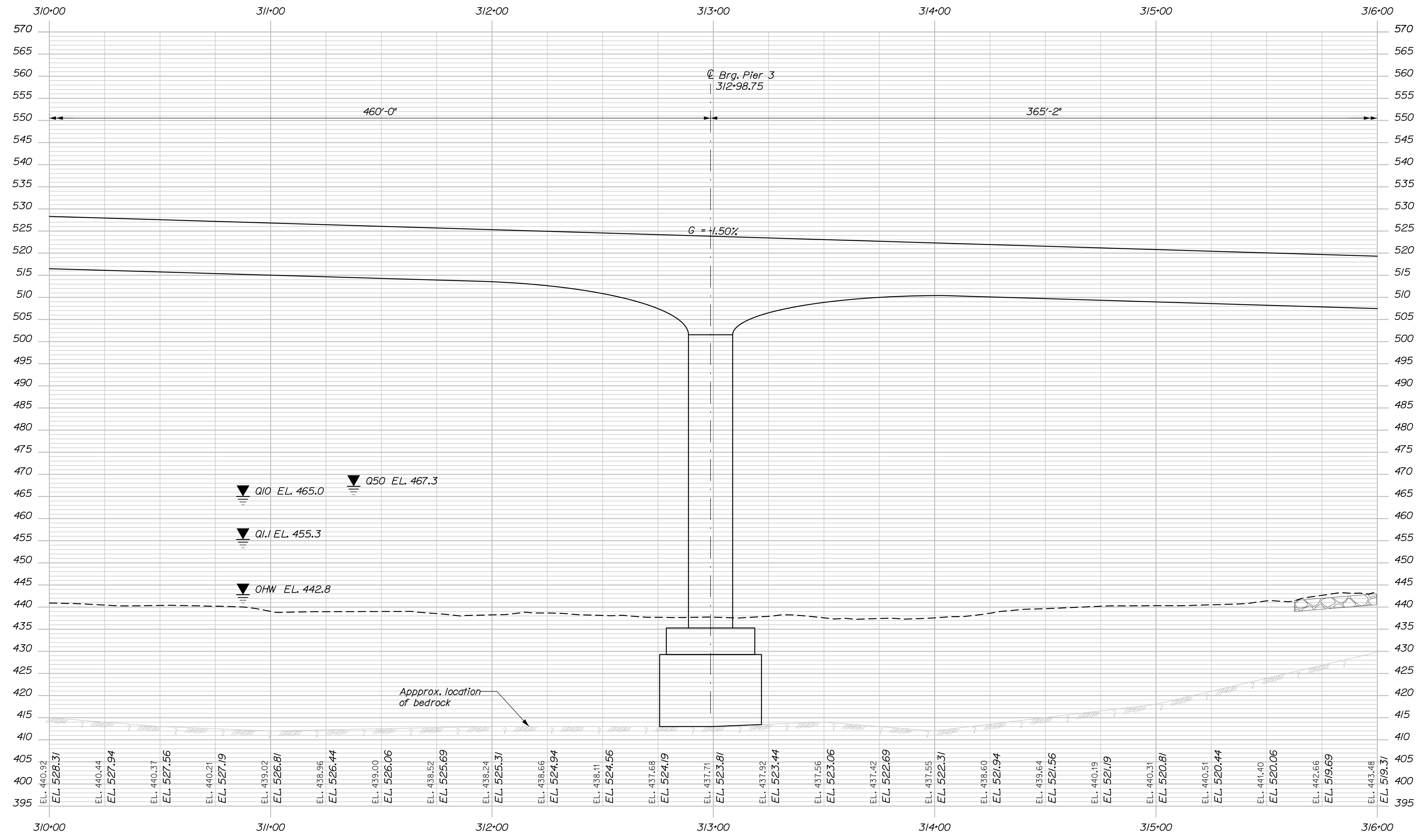
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FIELD CHANGES							

Date: 3/1/2019

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Filename: 010\_Hybrid\_Profile\_3.dgn



DRAFT PLANS  
3/1/2019



STATE OF MAINE DEPARTMENT OF TRANSPORTATION													
INTERNATIONAL BRIDGE SAINT JOHN RIVER MADAWASKA, ME	EDMUNDSTON, NB SEGMENTAL ALT. PROFILE 3												
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PROJ. MANAGER	BY	DATE											
J. Kirtledge	-	-											
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BRIDGE NO. 2399      WIN      021736.00      BRIDGE PLANS													

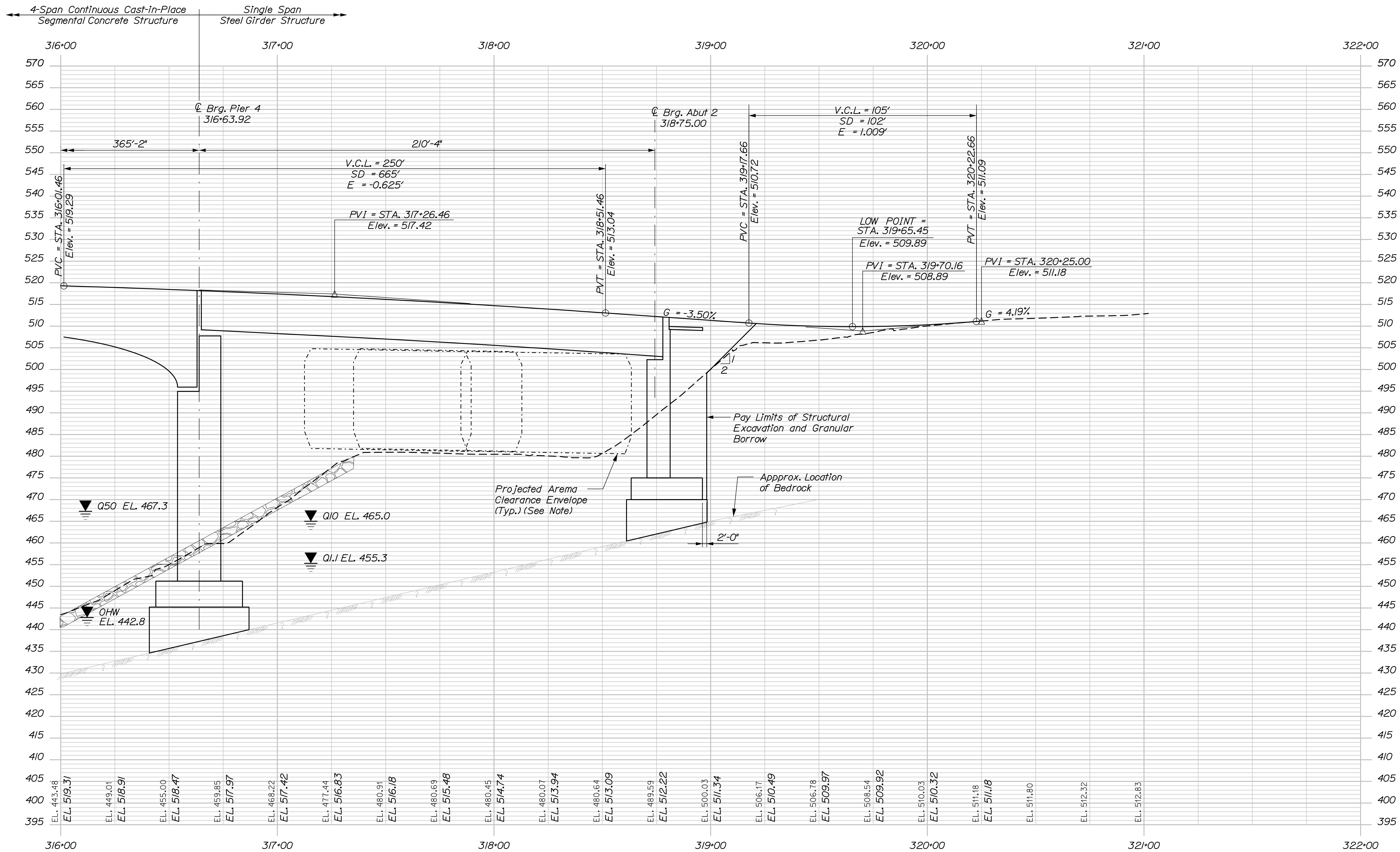


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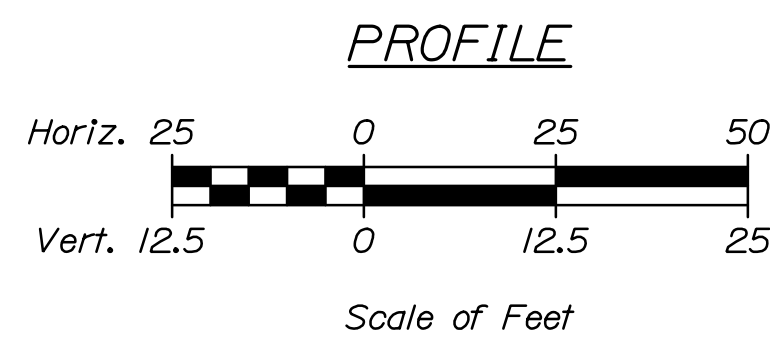
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**NOTE:**  
 Minimum vertical clearance, measured from top of track, shall be 22'-0" during construction and 23'-0" in the final conditions.



**DRAFT PLANS**  
 3/1/2019



STATE OF MAINE DEPARTMENT OF TRANSPORTATION		BRIDGE NO. 2399		WIN 021736.00		BRIDGE PLANS	
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