STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

SPECIFICATIONS

Design: Load and Resistance Factor Design per AASHTO LRFD Bridge Design Specifications, Fifth Edition 2010.

DESIGN LOADING

Live Load ..... HL - 93 Modified

TRAFFIC DATA

Current (2011) AADT	140
Future (2031) AADT	200
DHV - % of AADT	23%
Design Hour Volume	46
Heavy Trucks (% of AADT)	30%
Heavy Trucks (% of DHV)	25%
Directional Distribution (% of DHV)	60%
18 kip Equivalent P 2.0	60
18 kip Equivalent P 2.5	57
Design Speed (mph)	45

HYDROLOGIC DATA

Drainage Area	82.0 sq mi
Design Discharge (Q50)	3176 cfs
Check Discharge (Q100)	3590 cfs
Headwater Elevation (Q50)	617.92 ft
Headwater Elevation (Q100)	618.52 ft
Discharge Velocity (Q50)	6.85 fps
Discharge Velocity (Q100)	7.38 fps
Headwater Elevation (Q1.1)	611.53 ft
Discharge Velocity (Q1.1)	4.01 fps

MATERIALS

Concrete:

Barriers, Curbs & Transition Barriers	Class "LP"
All Other	Class "A"
Reinforcing Steel	ASTM A 615/A 615M, Grade 60
Structural Steel:	
All Material (except as noted)	ASTM A 709, Grade 50W (unpainted)
High Strength Bolts	ASTM A 325, Type 3

BASIC DESIGN STRESSES

Concrete	f 'c = 4,350 psi
Reinforcing Steel	f y = 60,000 psi

OXBOW PLT
AROOSTOOK COUNTY
UMCOLCUS STREAM BRIDGE
OVER
UMCOLCUS STREAM
OXBOW ROAD
FEDERAL AID PROJECT NO. BH-1788(000)X
PROJECT LENGTH 0.026 mi.
BRIDGE NO. 2877

LIST OF DRAWINGS

Title Sheet 1
Estimated Quantities & General Construction Notes 2
Plan & Profile 3
Boring Location Plan 4
Boring Logs 5
Cross Sections 6-10
Stage Construction 11
Superstructure Plan 12-14
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Reinforcing Steel Schedule 17
Right of way Map 18

UTILITIES

Maine Public Service Company
Northern New England Telephone Operations Llc

MAINTENANCE OF TRAFFIC

Maintain one lane of alternating two - way traffic using stop signs with proceed when clear sign.

PROJECT LOCATION:	Located 0.10 of a mile southerly of Pond Road. 46°25'12"N, 68°29'48"W
PROGRAM AREA:	BRIDGE
OUTLINE OF WORK:	Bridge Rehabilitation including deck replacement and placement of scour countermeasures.

WIN 17880.00

BH-1788(000)X

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
APPROVED
COMMISSIONER: DATE 3/30/16
CHIEF ENGINEER: 3-30-16

STATE OF MAINE Robert S. Bulger 4410 PROFESSIONAL ENGINEER

Robert S. Bulger
SIGNATURE 4410
P.E. NUMBER
March 23, 2016
DATE

PROJECT INFORMATION

PROGRAM	BRIDGE
PROJECT MANAGER	M. WIGHT
DESIGNER	R. S. BULGER
CONSULTANT	
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

OXBOW PLT
UMCOLCUS STREAM BRIDGE

TITLE SHEET

SHEET NUMBER
1
OF 18

Filename:\00\BRIDGE\MSTA\001_Title.dgn Division: BRIDGE Username: robert.bulger Date:3/23/2016

ESTIMATED QUANTITIES			
ITEM NO.	DESCRIPTION	QUANTITY	UNIT
201.23	REMOVING SINGLE TREE TOP ONLY	1	EA
201.24	REMOVING STUMP	1	EA
202.10	REMOVING EXISTING SUPERSTRUCTURE (PROPERTY OF CONTRACTOR) (50 CY)	1	LS
202.202	REMOVING PAVEMENT SURFACE	94	SY
203.20	COMMON EXCAVATION	130	CY
203.24	COMMON BORROW	56	CY
304.10	AGGREGATE SUBBASE COURSE - GRAVEL	110	CY
403.208	HOT MIX ASPHALT 12.5 MM HMA SURFACE	20	T
403.211	HOT MIX ASPHALT (SHIMMING)	3	T
403.213	HOT MIX ASPHALT 12.5 MM BASE	20	T
409.15	BITUMINOUS TACK COAT - APPLIED	10	G
502.21	STRUCTURAL CONCRETE, ABUTMENTS AND RETAINING WALLS	4	CY
502.25	STRUCTURAL CONCRETE SUPERSTRUCTURE SLABS (45 CY)	1	LS
502.49	STRUCTURAL CONCRETE CURBS AND SIDEWALKS (5 CY)	1	LS
502.83	PRECAST BLOCK MAT	2585	SF
503.12	REINFORCING STEEL, FABRICATED AND DELIVERED	12609	LB
503.13	REINFORCING STEEL, PLACING	12609	LB
503.17	MECHANICAL WELDED SPLICE	230	EA
505.08	SHEAR CONNECTORS (440 EA)	1	LS
507.13	TEMPORARY BRIDGE RAILING	88	LF
507.0811	STEEL BRIDGE RAILING, 2 BAR (88 LF)	1	LS
511.07	COFFERDAM: ABUTMENT NO. 1	1	LS
511.07	COFFERDAM: ABUTMENT NO. 2	1	LS
514.06	CURING BOX FOR CONCRETE CYLINDERS	1	EA
515.21	PROTECTIVE COATING FOR CONCRETE SURFACES (50 SY)	1	LS
526.301	TEMPORARY CONCRETE BARRIER TYPE 1 (200 LF)	1	LS
526.34	PERMANENT CONCRETE TRANSITION BARRIER	4	EA
527.34	WORK ZONE CRASH CUSHIONS	3	UN
606.1721	BRIDGE TRANSITION - TYPE 1	4	EA
606.23	GUARDRAIL TYPE 3C - SINGLE RAIL	100	LF
606.36	GUARDRAIL REMOVED AND RESET	25	LF
610.08	PLAIN RIPRAP	94	CY
613.319	EROSION CONTROL BLANKET	45	SY
615.07	LOAM	17	CY
618.14	SEEDING METHOD NUMBER 2	3	UN
619.12	MULCH	3	UN
619.1401	EROSION CONTROL MIX	34	CY
620.58	EROSION CONTROL GEOTEXTILE	187	SY
627.733	4" WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE	135	LF
627.76	TEMPORARY PAVEMENT MARKING LINE, WHITE OR YELLOW	1	LS
627.77	REMOVING PAVEMENT MARKINGS	335	SF
629.05	HAND LABOR, STRAIGHT TIME	10	HR
631.12	ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	10	HR
631.15	ROLLER, EARTH AND BASE COURSE (INCLUDING OPERATOR)	10	HR
631.172	TRUCK - LARGE (INCLUDING OPERATOR)	10	HR
639.19	FIELD OFFICE TYPE B	1	EA
652.312	TYPE III BARRICADE	2	EA
652.33	DRUM	25	EA
652.34	CONE	50	EA
652.35	CONSTRUCTION SIGNS	300	SF
652.361	MAINTENANCE OF TRAFFIC CONTROL DEVICES (120 CD)	1	LS
652.38	FLAGGER	100	HR
656.75	TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	1	LS
659.10	MOBILIZATION	1	LS

GENERAL CONSTRUCTION NOTES

1. For easements, construction limits and right of way lines, refer to Right of Way Map.

2. The clearing limits as shown on the plans are approximate. The exact limits will be established in the field by the Resident. Payment for clearing will be considered incidental to Contract items.

3. All utility facilities shall be adjusted by the respective utilities unless otherwise noted.

4. In areas where the Resident directs the Contractor not to excavate to the subgrade line shown on the plans, payment for removing existing pavement, grubbing, shaping, ditching, and compacting the existing subbase and layers of new subbase 6 inches or less thick will be made under appropriate equipment rental items.

5. Place loam 2 inches deep on all new or reconstructed sideslopes or as directed by the Resident.

6. Erosion Control Mix may be substituted in those areas normally receiving loam and seed as directed by the Resident. Placement shall be in accordance with Standard Specifications Section 619, Mulch. Payment will be made under Item No. 619.1401, Erosion Control Mix.

7. Place a 24-in. wide strip of Temporary Erosion Control Blanket on the sideslopes along the top of the riprap and behind the wingwalls.

8. Extended-use Erosion Control Blanket, seeded gutters, riprap downspouts, and other gutters lined with Stone Ditch Protection shall be constructed after paving and shoulder work is completed, where it is apparent that runoff will cause continual erosion. Payment will be made under the appropriate Contract items.

9. Protective Coating for Concrete Surfaces shall be applied to the following areas:

All exposed surfaces of concrete curbs and sidewalks.
Fascias down to the drip notch.
All exposed surfaces of Concrete Transition Barriers.
Concrete wearing surfaces.

10. Project information referred to below may be accessed at the following MaineDOT web address: http://www.maine.gov/mdot/contractors/.

11. The existing bridge plans may be accessed at the MaineDOT web address. The plans are reproductions of the original drawings as prepared for the construction of the bridge. It is very unlikely that the plans will show any construction field changes or any alterations which may have been made to the bridge during its life span.

12. The hydrologic report of the bridge site may be accessed at the MaineDOT web address. The hydrologic report is based on MaineDOT's interpretation of the information obtained for the subject site. No assurance is given that the information or the conclusions of the report will be representative of actual conditions at the time of construction.

13. The project geotechnical report titled Geotechnical Data Reoport for Umcolcus Stream Bridge, Oxbow road over Umcolcus Stream, Oxbow Plantation, Maine, September 2015, Soils Report 2015 - 28, may be accessed at the MaineDOT web address.

14. Geotechnical information furnished or referred to in this plan set is for the use of the Bidders and the Contractor. No assurance is given that the information or interpretations will be representative of actual subsurface conditions at the construction site. MaineDOT will not be responsible for the Bidders' or Contractor's interpretations of, or conclusions drawn from, the geotechnical information. The boring logs contained in the plan set present factual and interpretive subsurface information collected at discrete locations. Data provided may not be representative of the subsurface conditions between the boring locations.

15. Quantities included for pay items measured and paid for by Lump Sum are estimated quantities and are provided by MaineDOT for informational purposes only. Lump Sum pay items will be paid for at the Contract Bid amount, with no addition or reduction in payment to the Contractor if the actual final quantities are different from the MaineDOT provided estimated quantities, except as follows:

a. If a Lump Sum pay item is eliminated, the requirements of Standard Specifications Section 109.2, Elimination of Items, will take precedence.

b. If other Contract Documents specifically allow a change in payment for a Lump Sum pay item, those requirements will be followed.

c. If a design change results in changes to estimated quantities for Lump Sum pay items, price adjustments will be made in accordance with Standard Specifications Section 109.7, Equitable Adjustments to Compensation.

17. The existing bridge deck shall be removed by and become the property of the Contractor. The steel portions of the existing bridge are coated with a lead-based paint system. The Contractor is responsible for the containment, proper management and disposal of all lead-contaminated hazardous waste generated by the process of replacing the bridge deck. The Contractor is responsible for implementing appropriate OSHA mandated personal protection standards related to this process. Once the existing bridge deck is removed, the Contractor is solely responsible for the care, custody and control of the components of the existing bridge and any hazardous waste generated as a result of the storage, recycling or disposal of the bridge components, including lead-coated steel. The Contractor shall recycle or reuse the steel in accordance with the Maine Department of Environmental Protection's "Maine Hazardous Waste Management Regulations," Chapter 850. A copy of this regulation is available at MaineDOT's offices on Child Street in Augusta. Payment for all labor, materials, equipment and other costs required to remove and dispose of the existing bridge deck will be considered incidental to the bridge removal pay item.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BH-1788(000)X

WIN 17880.00

BRIDGE NO. 2877

BRIDGE PLANS

PROJ. MANAGER	M. WIGHT	BY	DATE
DESIGN-DETAILED	R.Bulger	M. Poulin	8-2013
CHECKED-REVIEWED	T. Hjelm	W. Rohman	MAR 2016
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

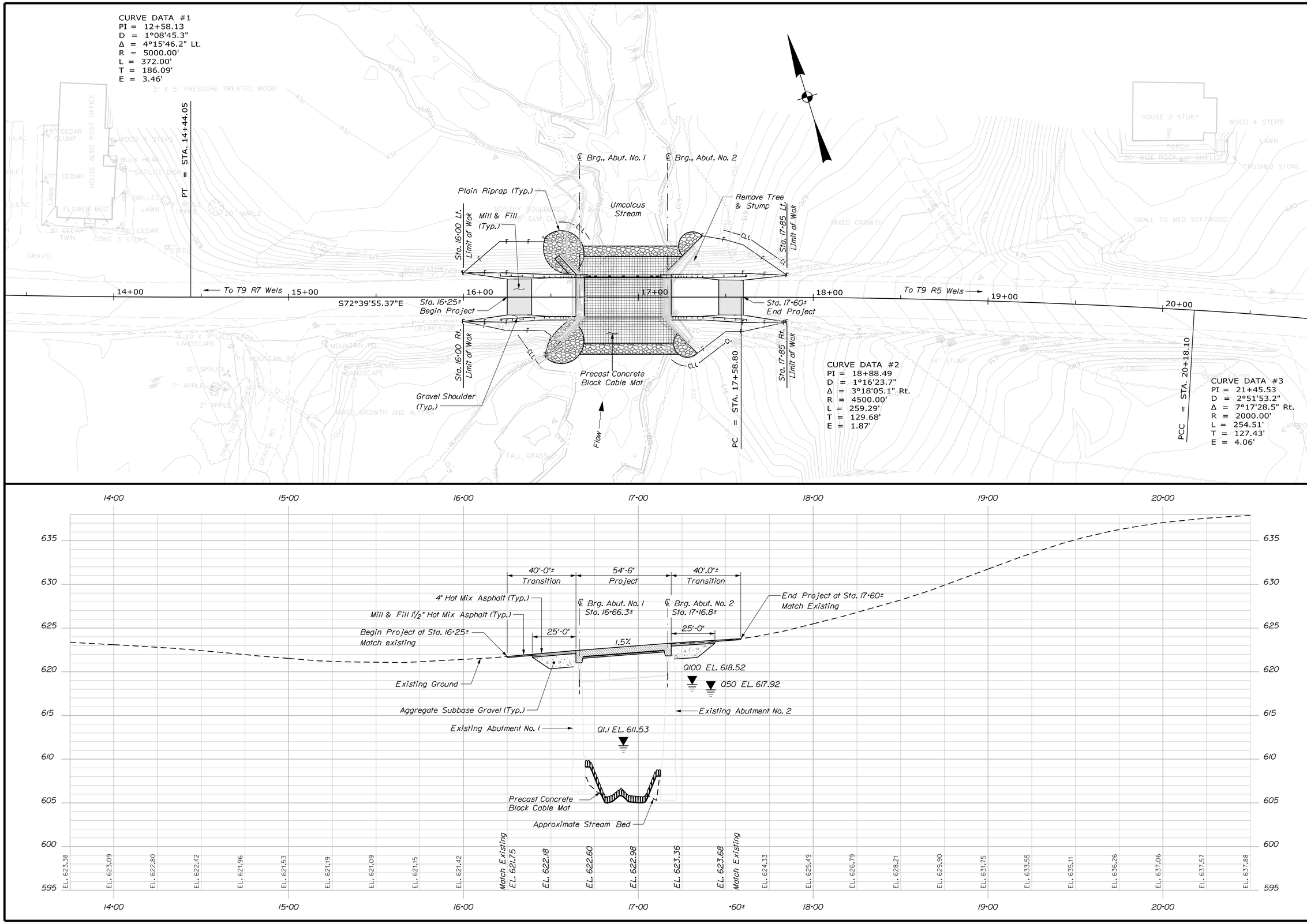
DATE

UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
OXBOW PLT AROOSTOOK COUNTY

ESTIMATED QUANTITIES
&
GENERAL CONCSTRUCTION NOTES

SHEET NUMBER
2
OF 18

Filename: ...\BRIDGE\MSTA\002_Estimate.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BH-1788(000)X

WIN 17880.00

BRIDGE NO. 2877

BRIDGE PLANS

SIGNATURE

P.E. NUMBER

DATE

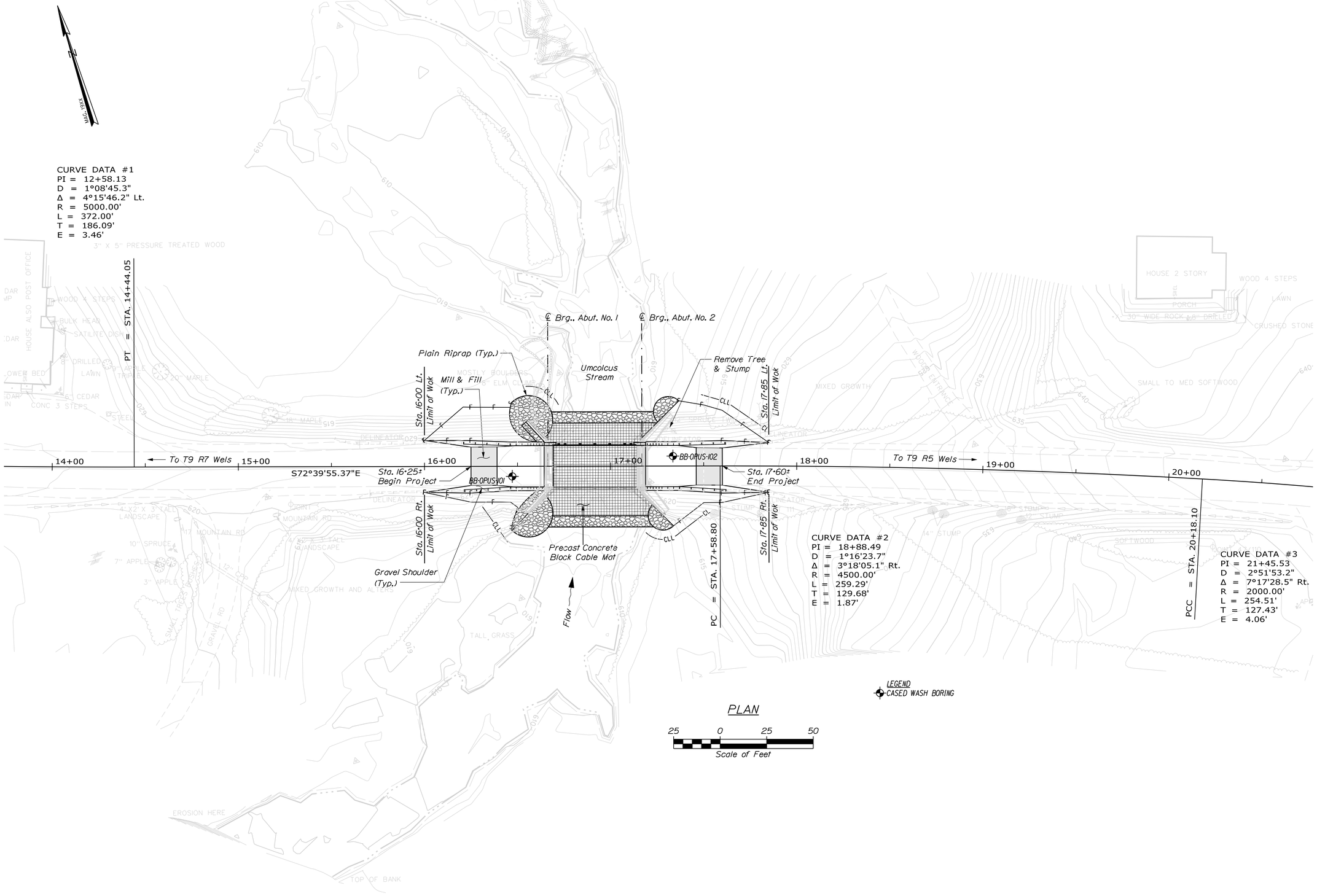
		BY	DATE
PROJ. MANAGER	M. WIGHT		
DESIGN-DETAILED	R.Bulger	M. Poulin	8-2013
CHECKED-REVIEWED	T. Hjelm	W. Rohman	MAR 2016
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
AROOSTOOK COUNTY
OXBOW PLT

PLAN AND PROFILE

SHEET NUMBER
3
OF 18

Filename: ...\MSTA\003_Plan&Profile.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BH-1788(000)X

PIN 17880.00

BRIDGE NO. 2877

BRIDGE PLANS

PROJ. MANAGER	M. WIGHT	BY	DATE
DESIGN-DETAILED	R.Bulger	MRP	8-2013
CHECKED-REVIEWED	------	------	------
DESIGN2-DETAILED2	B.SLAVEN	T.WHITE	AUG 2015
DESIGN3-DETAILED3	------	------	------
REVISIONS 1	------	------	------
REVISIONS 2	------	------	------
REVISIONS 3	------	------	------
REVISIONS 4	------	------	------
FIELD CHANGES	------	------	------

SIGNATURE

P.E. NUMBER

DATE

UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
OXBOW PLT AROOSTOOK COUNTY

BORING LOCATION PLAN

SHEET NUMBER

4

OF 18

Filename: ...\00\GEOTECH\MSTA\004_BLP1.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016

Filename: ...\MSTA\005_BORING LOGS1.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Umcolcus Stream Bridge #2877 carries Oxbow Rd. over Umcolcus
Location: Oxbow, Maine

Boring No.: BB-OPUS-101
WIN: 17880.00

Driller:	MaineDOT	Elevation (ft.)	621.9	Auger ID/OD:	5" Solid Stem
Operator:	Giguere/Giles/Doggett	Datum:	NAVD88	Sampler:	Standard Split Spoon
Logged By:	B. Wilder	Rig Type:	CME 45C	Hammer Wt./Fall:	140#/30"
Date Start/Finish:	5/17/11; 08:00-14:00	Drilling Method:	Cased Wash Boring	Core Barrel:	NQ-2"
Boring Location:	16+47.2, 5.4 Rt.	Casing ID/OD:	HW & NW	Water Level*:	10.5 ft bgs.
Hammer Efficiency Factor: 0.84		Hammer Type:	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Insitu Vane Shear Test attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = weight of 140lb. hammer
WOR/C = weight of rods or casing
WOP = Weight of one person
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw field SPT N-value
Hammer Efficiency Factor = Annual Calibration Value
N_{60} = SPT N-uncorrected corrected for hammer efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class
0							SSA	621.67	3.5" PAVEMENT. (0.29)	
	1D	24/18	1.00 - 3.00	9/12/13/20	25	35			Brown, damp, dense, Gravelly, fine to coarse SAND, trace silt. (Fill).	G#244990 A-1-a, SW-SM WC=4.8%
5	2D	24/19	5.00 - 7.00	10/12/12/8	24	34			Similar to above.	
								613.70	(8.20)	
	3D	24/14	9.00 - 11.00	15/25/8/21	33	46	70 / 83		Roller Coned ahead from 16.6-19.4 ft bgs. Cobbles from 8.2-8.8 ft bgs. Brown, wet, dense, Sandy GRAVEL, little silt.	G#244991 A-1-a, GM WC=12.0%
10							107			
							42			
							108			
							150			
							152			
15	R1	60/20	15.50 - 20.50				122 NQ-2	606.40	(15.50) R1: COBBLES and GRAVEL. R1:Core Times (minisec) 15.5-16.5 ft (3:35) 16.5-17.5 ft (1:40) 17.5-18.5 ft (1:25) 18.5-19.5 ft (2:05) 19.5-20.5 ft (1:00) No water return. Changed to NW Casing at 15.5 ft bgs.	
							30			
							25			
							36			
							48			
20	4D	24/19	20.50 - 22.50	16/18/24/25	42	59	39	601.90	(20.00) Grey, wet, very dense, Gravelly, fine to coarse SAND, some silt. (Glacial Till).	
							83			
							109			
	R2	60/42	23.80 - 28.80	RQD = 0%			9105 NQ-2	598.10	9105 blows for 0.8 ft. (23.80) R2:COBBLES at Elev. 598.1 ft. R2:Core Times (minisec) 23.8-24.8 ft (3:00) 24.8-25.8 ft (3:00) 25.8-26.8 ft (2:20)	
25								595.40	(26.50) Top of Bedrock at Elev. 595.4 ft. R2:Bedrock: Black, fine-grained, META-SANDSTONE, moderately hard, fresh to very slight weathering, joints are steep to vertical, very close to close, tight, minor iron staining and silt in-filling. Seboomook Formation. Rock Mass Quality = Very Poor. R2:Core Times (minisec) 26.8-27.8 ft (3:20) 27.8-28.8 ft (3:45) 70% Recovery	
30	R3	60/60	28.80 - 33.80	RQD = 40%					R3:Bedrock: Similar to above. Rock Mass Quality = Poor. R3:Core Times (minisec) 28.8-29.8 ft (3:00) 29.8-30.8 ft (2:10) 30.8-31.8 ft (4:45) 31.8-32.8 ft (4:00) 32.8-33.8 ft (4:05) 100% Recovery	
								588.10	(33.80) Bottom of Exploration at 33.80 feet below ground surface.	
35										
40										
45										
50										

Remarks:

Stratification lines represent approximate boundaries between soil typest transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Page 1 of 1
Boring No.: BB-OPUS-101

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Umcolcus Stream Bridge #2877 carries Oxbow Rd. over Umcolcus
Location: Oxbow, Maine

Boring No.: BB-OPUS-102
WIN: 17880.00

Driller:	MaineDOT	Elevation (ft.)	623.5	Auger ID/OD:	5" Solid Stem
Operator:	Giguere/Giles/Doggett	Datum:	NAVD88	Sampler:	Standard Split Spoon
Logged By:	B. Wilder	Rig Type:	CME 45C	Hammer Wt./Fall:	140#/30"
Date Start/Finish:	5/19/11; 08:00-14:30	Drilling Method:	Cased Wash Boring	Core Barrel:	NQ-2"
Boring Location:	17+33.5, 5.4 Lt.	Casing ID/OD:	NW	Water Level*:	11.0 ft bgs.
Hammer Efficiency Factor: 0.84		Hammer Type:	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Insitu Vane Shear Test attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = weight of 140lb. hammer
WOR/C = weight of rods or casing
WOP = Weight of one person
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
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$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class
0							SSA	623.13	4.5" PAVEMENT. (0.38)	
	1D	24/18	1.00 - 3.00	9/12/11/18	23	32			Brown, moist, dense, Gravelly, fine to coarse SAND, little silt. (Fill).	G#244992 A-1-a, SM WC=6.2%
5	2D	24/17	5.00 - 7.00	7/10/10/13	20	28			Similar to above except medium dense.	
10	MD	24/0	10.00 - 12.00	WOH/1/1/1	2	3	SPUN AHEAD		Failed sample attempt. 10.0-13.0 ft bgs, very loose. Loose Gravelly SAND in wash water.	
								609.00	(14.50) Wood layer from 13.5-14.5 ft bgs.	
15	3D	15.6/13	15.00 - 16.30	11/30/30(3.6")	---				Grey, wet, very dense, Sandy GRAVEL, trace silt, trace clay. (Glacial Till). Roller Coned ahead from 16.6-19.4 ft bgs., Based on drill rig attitude: Cobbles from 16.6-17.2 ft bgs.	G#244993 A-1-a, GW-GC WC=9.1%
20	MD	3.6/0	20.00 - 20.30	30(3.6")	---				Failed sample attempt.	
	R1	60/60	21.20 - 26.20	RQD = 25%			NQ-2	602.30	(21.20) R1:BOULDER ? R1:Core Times (minisec) 21.2-22.2 ft (5:40) 22.2-23.2 ft (3:10)	
								600.80	(22.70) Top of Bedrock at Elev. 600.8 ft. R1:Bedrock: Grey, fine grained, META-SANDSTONE, moderately hard, fresh to slightly weathered, joints are horizontal to vertical, very close to close, tight, very minor iron staining. Seboomook Formation. Rock Mass Quality = Very Poor R1:Core Times (minisec) Cont: 23.2-24.2 ft (2:40) 24.2-25.2 ft (3:00) 25.2-26.2 ft (4:25) 100% Recovery	
25	R2	60/60	26.20 - 31.20	RQD = 86%					R2:Bedrock: similar to above. Except Rock Mass Quality = Good. R2:Core Times (minisec) 26.2-27.2 ft (2:45) 27.2-28.2 ft (3:50) 28.2-29.2 ft (3:27) 29.2-30.2 ft (2:22) 30.2-31.2 ft (4:00) 100% Recovery	
30								592.30	(31.20) Bottom of Exploration at 31.20 feet below ground surface.	
35										
40										
45										
50										

Remarks:

Stratification lines represent approximate boundaries between soil typest transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Page 1 of 1
Boring No.: BB-OPUS-102

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BH-1788(000)X

PIN 17880.00

BRIDGE NO. 2877

BRIDGE PLANS

PROJ. MANAGER	M. WRIGHT	BY	DATE
DESIGN-DETAILED	R.Bulger	MRP	8-2013
CHECKED-REVIEWED	------	------	------
DESIGN2-DETAILED2	B.SLAVEN	T.WHITE	AUG 2015
DESIGN3-DETAILED3	------	------	------
REVISIONS 1	------	------	------
REVISIONS 2	------	------	------
REVISIONS 3	------	------	------
REVISIONS 4	------	------	------
FIELD CHANGES	------	------	------

SIGNATURE

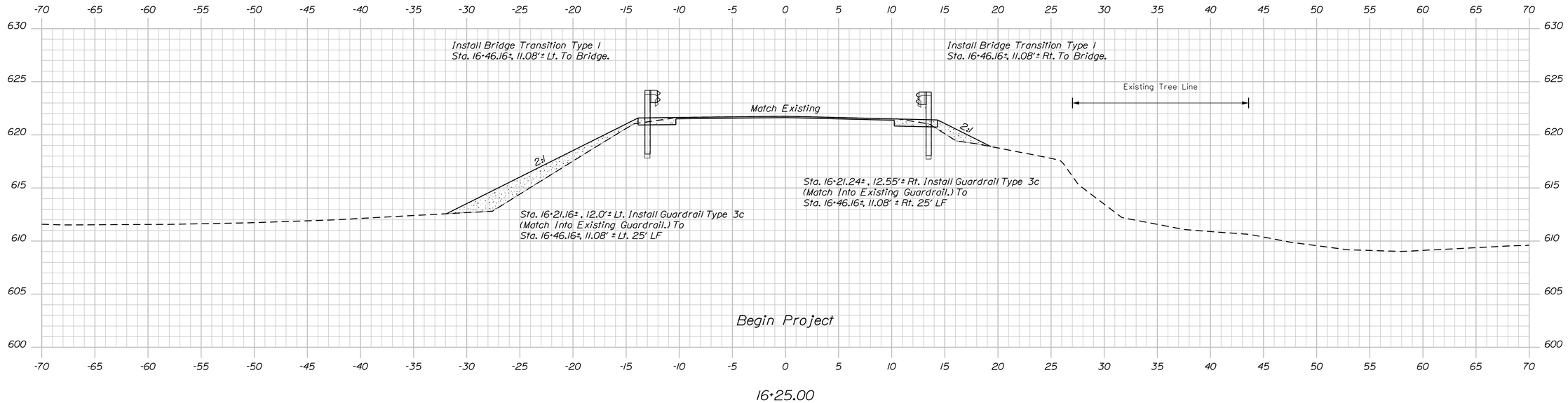
P.E. NUMBER

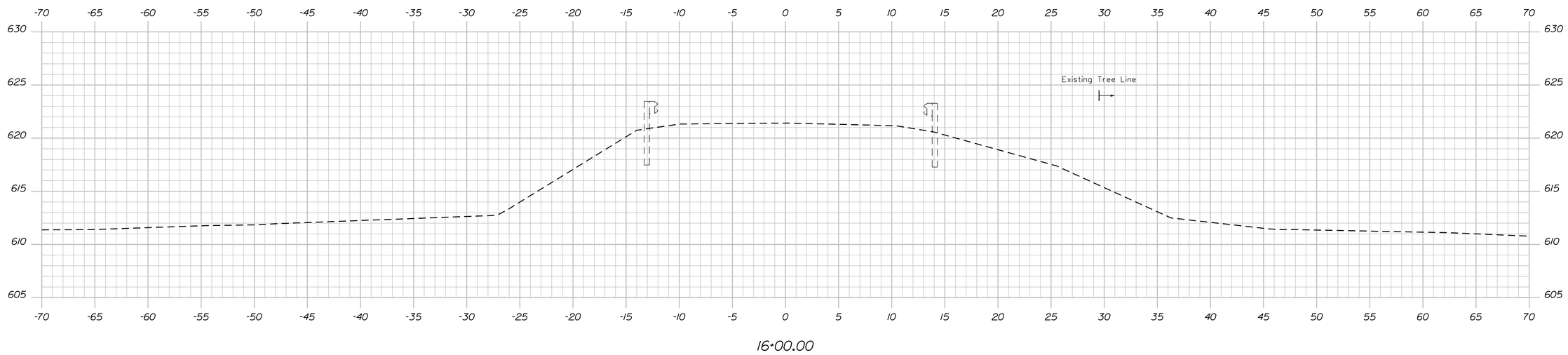
DATE

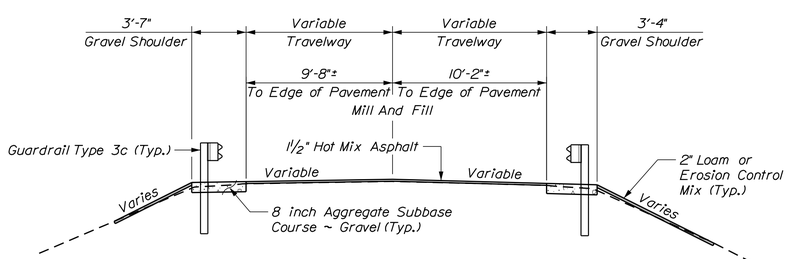
UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
OXBOW PLT AROOSTOOK COUNTY

BORING LOGS

SHEET NUMBER
5
OF 18

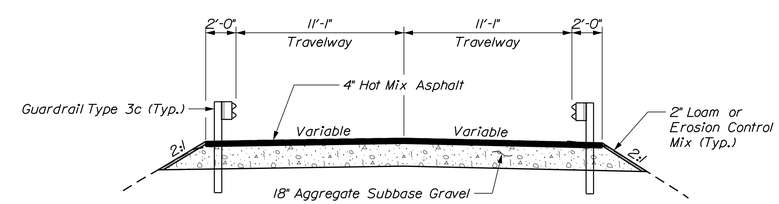






TYPICAL MILL & FILL SECTION

Sta. 16+25± to Sta. 16+39±
Sta. 17+44± to Sta. 17+60±



TYPICAL APPROACH SECTION

Sta. 16+39± to STa. 16+64±
Sta. 17+18± to Sta. 17+44±

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BH-1788(000)X

WIN 17880.00

BRIDGE PLANS

BRIDGE NO. 2877

PROJ. MANAGER	M. WIGHT	BY	DATE
DESIGN-DETAILED	R.Bulger	M. Poulin	8-2013
CHECKED-REVIEWED	T. Hjelm	W. Rahman	MAR 2016
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS: 1			
REVISIONS: 2			
REVISIONS: 3			
REVISIONS: 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
OXBOW PLT AROOSTOOK COUNTY

CROSS SECTIONS

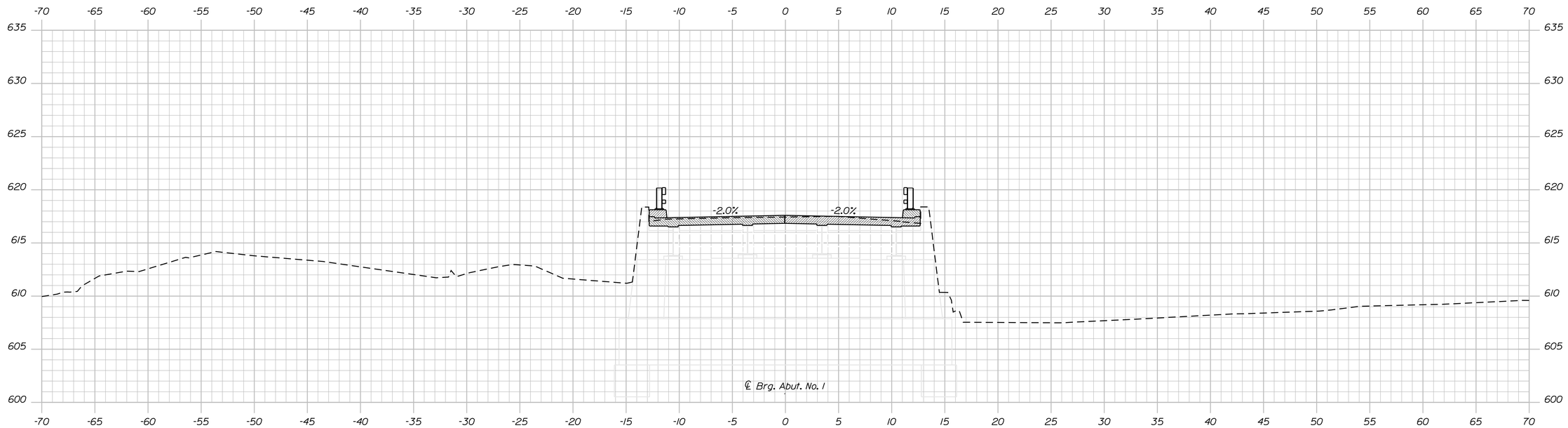
SHEET NUMBER

6

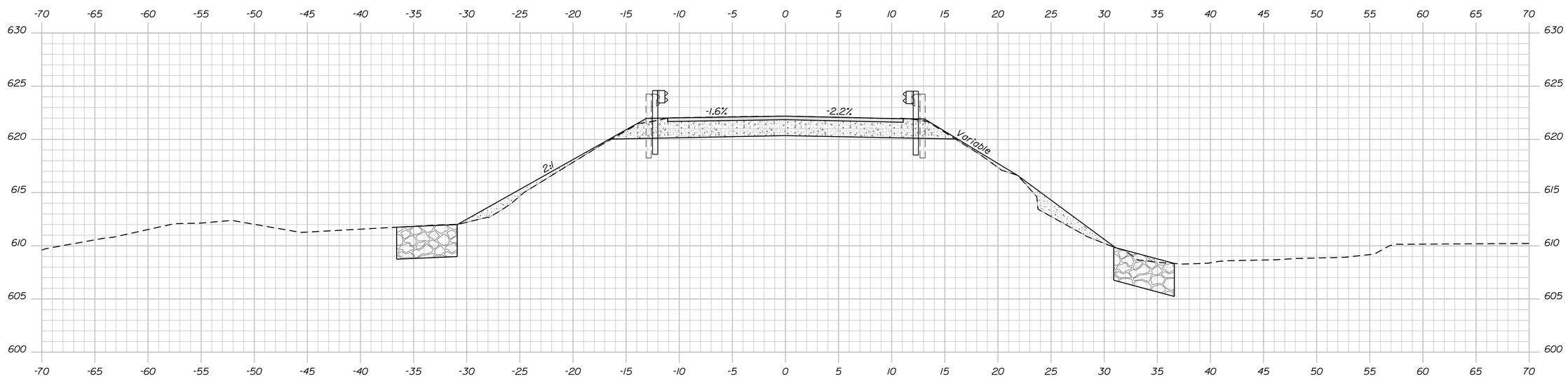
OF 18

Sta. 16+50.00 to Sta. 16+25.00

Filename: ...\MSTA\006_XSECT_16-00_001.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016



16+66.30



16+50.00

Sta. 16+50.00 to Sta. 16+66.30

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BH-1788(000)X

WIN 17880.00

BRIDGE NO. 2877

BRIDGE PLANS

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P.E. NUMBER

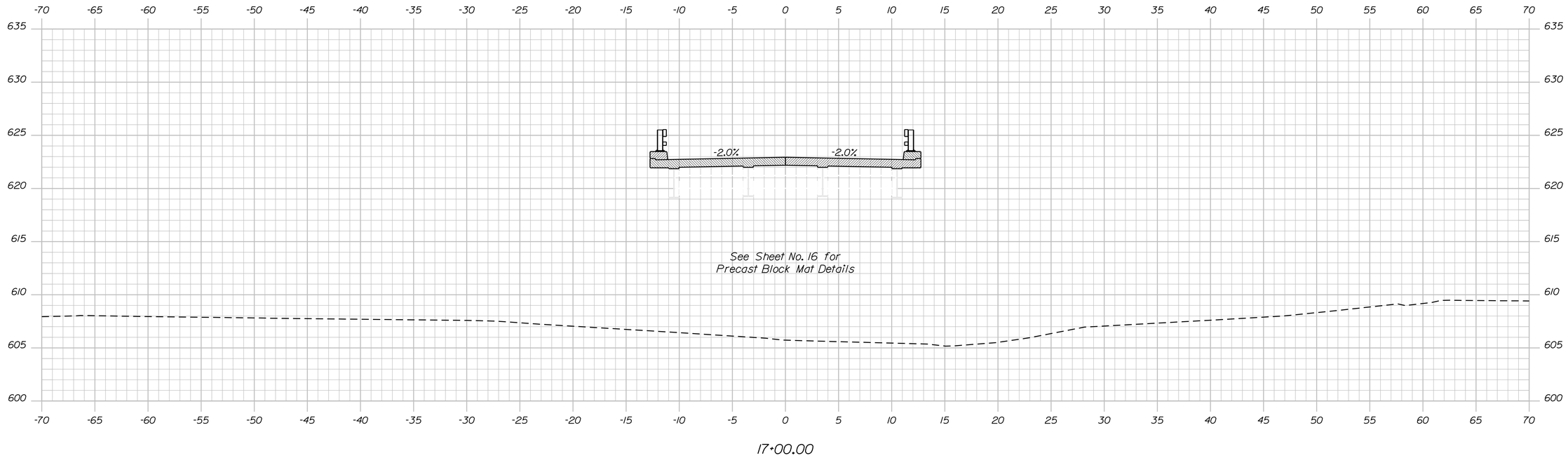
DATE

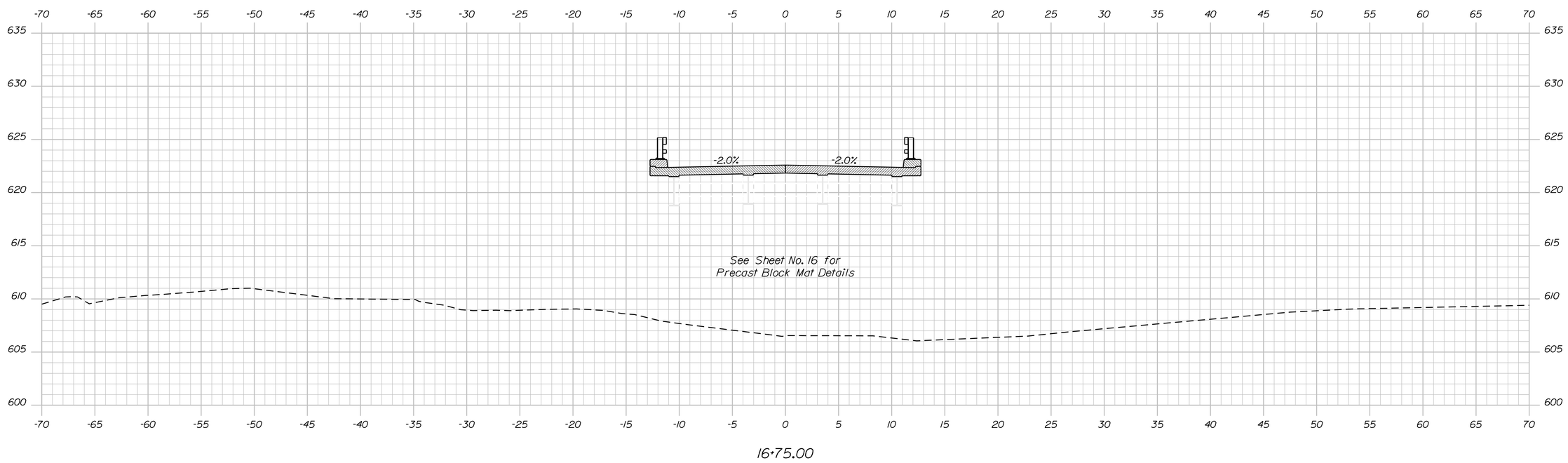
UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
OXBOW PLT AROOSTOOK COUNTY

CROSS SECTIONS

SHEET NUMBER
7
OF 18

Filename: ...\MSTA\007_XSECT_16+50_002.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016





STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BH-1788(000)X

WIN 17880.00

BRIDGE NO. 2877

BRIDGE PLANS

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UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
OXBOW PLT AROOSTOOK COUNTY

CROSS SECTIONS

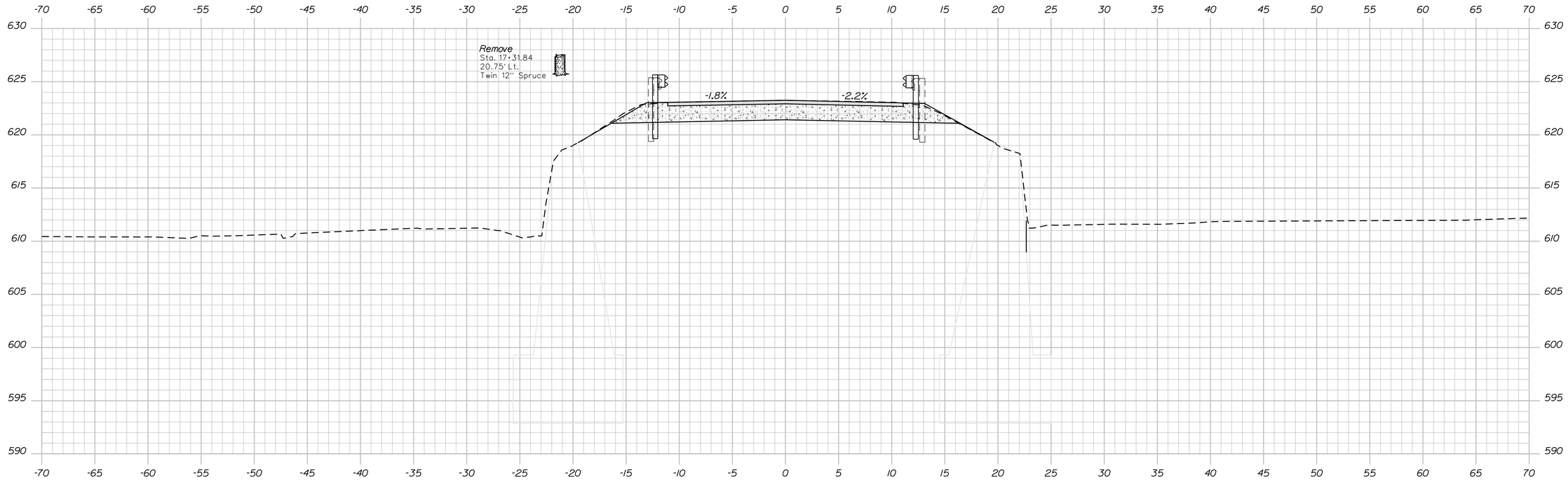
SHEET NUMBER

8

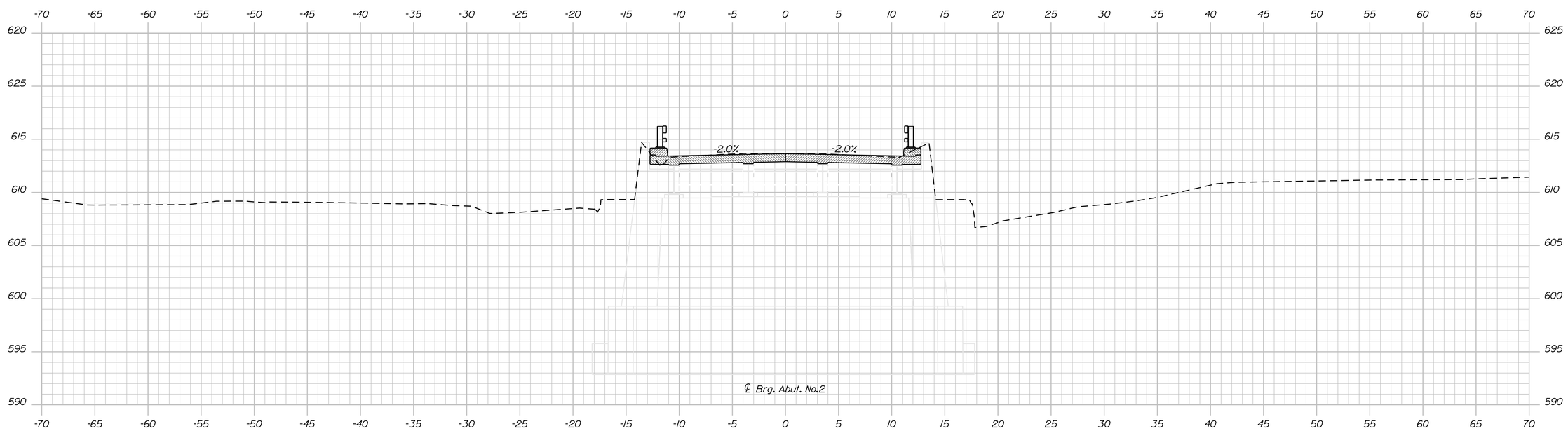
OF 18

Sta. 16+75.00 to Sta. 17+00.00

Filename: ...\MSTA\008_XSECT_16+75_003.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016



17+25.00



17+16.80

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BH-1788(000)X

WIN 17880.00

BRIDGE NO. 2877

BRIDGE PLANS

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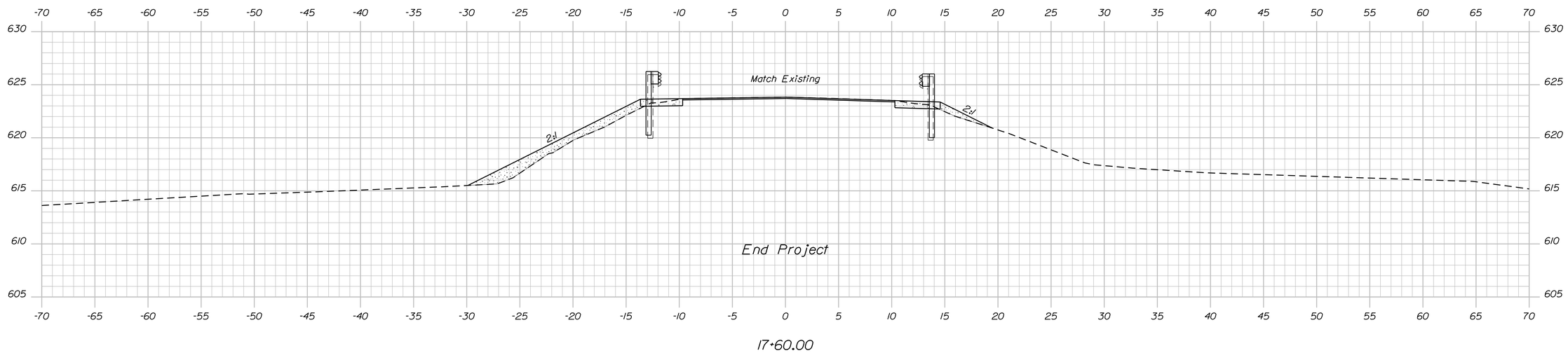
UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
OXBOW PLT AROOSTOOK COUNTY

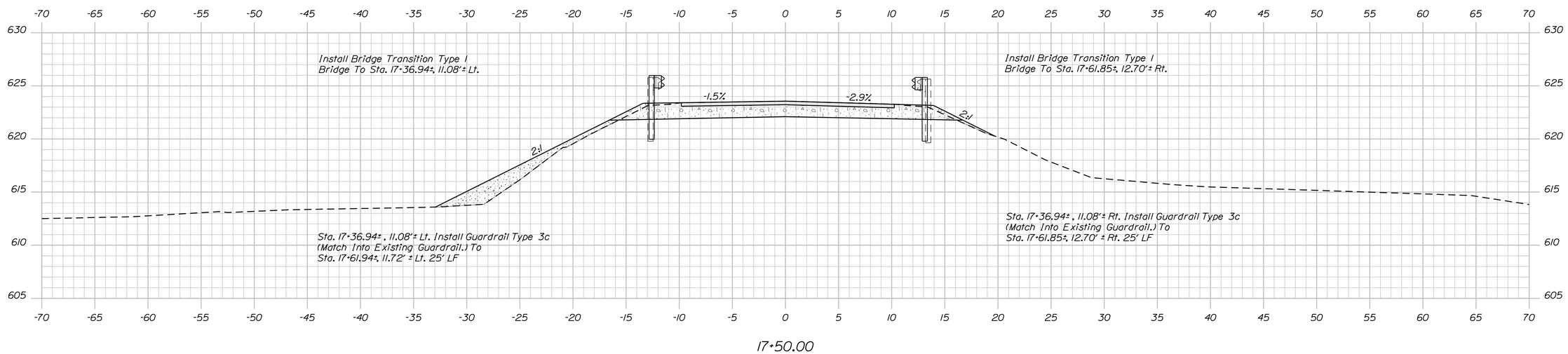
CROSS SECTIONS

SHEET NUMBER
9
OF 18

Sta. 17+16.80 to Sta. 17+25.00

Filename: ...\MSTA\009_XSECT_17+16_004.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016





STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BH-1788(000)X

WIN 17880.00

BRIDGE NO. 2877

BRIDGE PLANS

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FIELD CHANGES			

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UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
OXBOW PLT AROOSTOOK COUNTY

CROSS SECTIONS

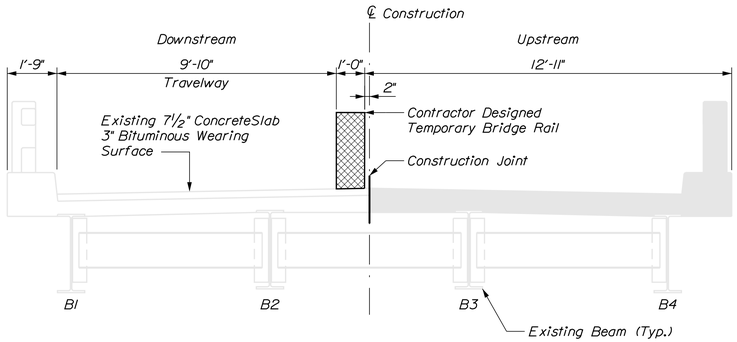
SHEET NUMBER

10

OF 18

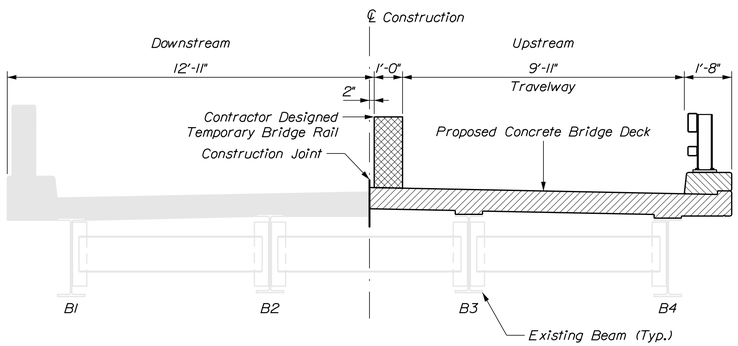
Sta. 17+50.00 to Sta. 17+60.00

Filename: ...\MSTA\010_XSECT_17+50_005.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016



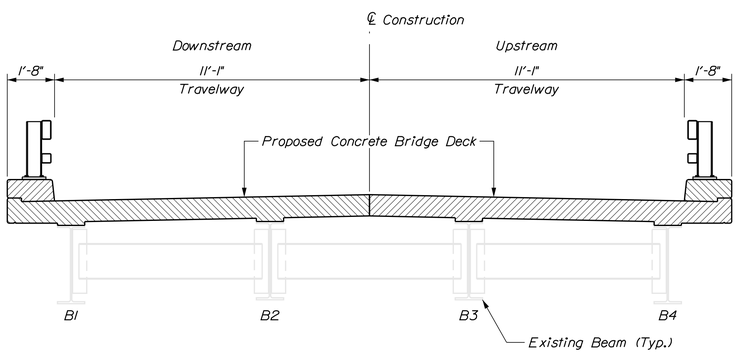
STAGE 1

Construct Temporary Bridge Rail
Maintain One 9'-10" Lane For Traffic On Downstream Side
Remove the Upstream Side Of Existing Bridge Deck



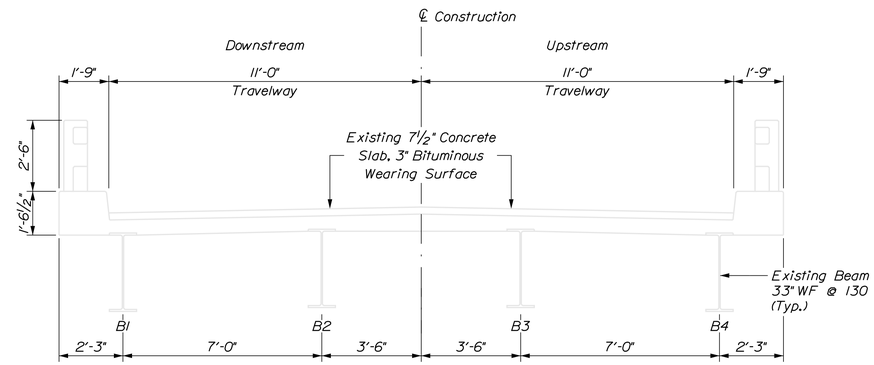
STAGE 2

Construct New Bridge Deck On Upstream Side
Move Temporary Bridge Rail Onto New Deck
Maintain One 9'-10" Lane For Traffic On Upstream Side
Remove The Downstream Side Of Existing Bridge Deck

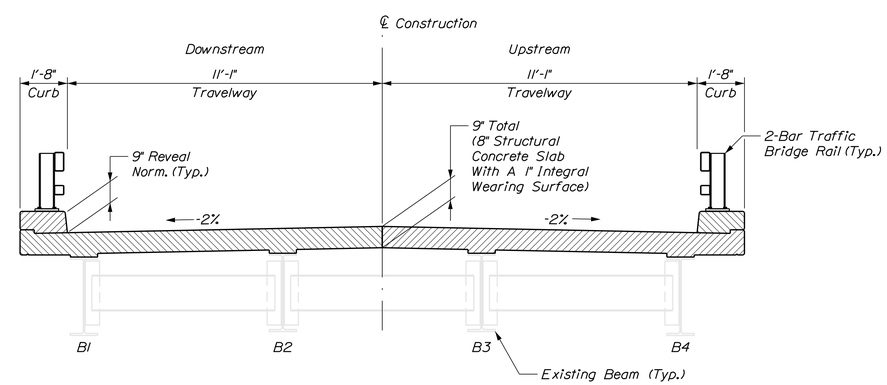


STAGE 3

Construct New Bridge Deck On Downstream Side
Remove Temporary Bridge Rail
Bridge Complete Open To All Traffic



EXISTING BRIDGE SECTION



PROPOSED BRIDGE SECTION

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BH-1788(000)X

WIN 17880.00

BRIDGE NO. 2877

BRIDGE PLANS

SIGNATURE

P.E. NUMBER

DATE

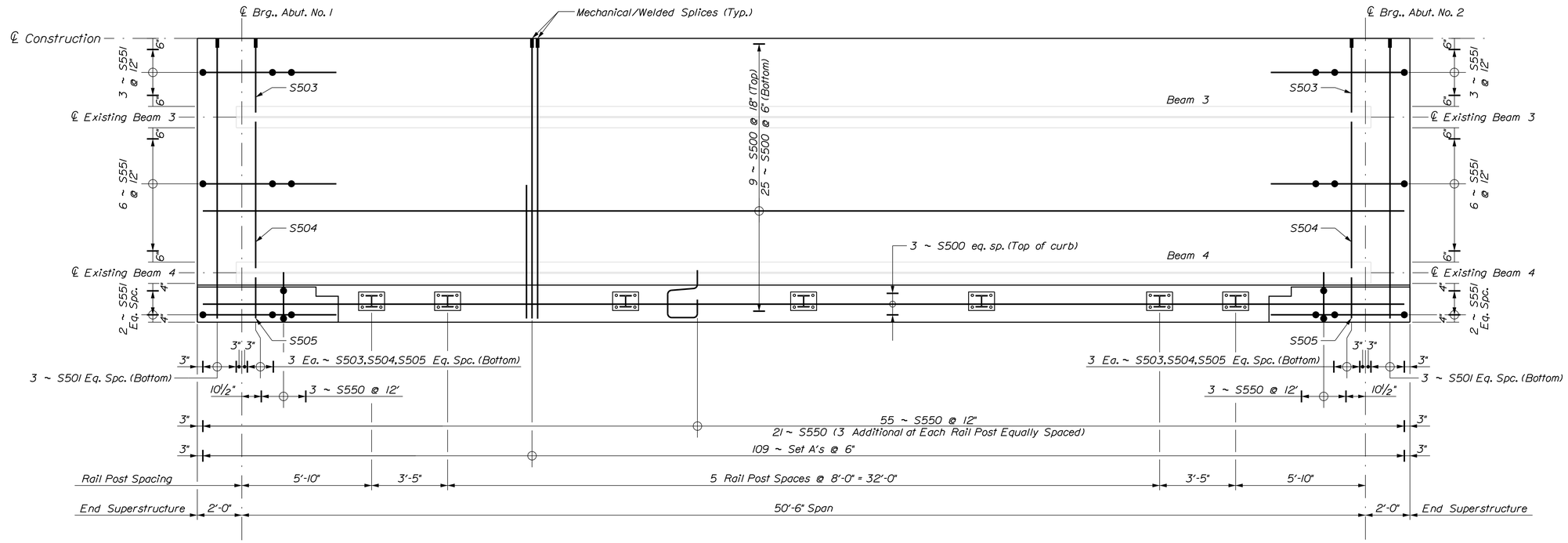
		BY	DATE
PROJ. MANAGER	M. WIGHT		
DESIGN-DETAILED	R.Bulger	M. Poulin	8-2013
CHECKED-REVIEWED	T. Hjelm	W. Rotman	MAR 2016
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
AROOSTOOK COUNTY
OXBOW PLT

STAGE CONSTRUCTION

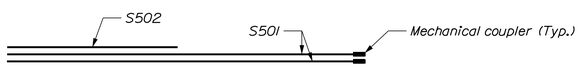
SHEET NUMBER
11
OF 18

Filename: ...\MSTA\011_StageConstr.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016



SUPERSTRUCTURE PLAN

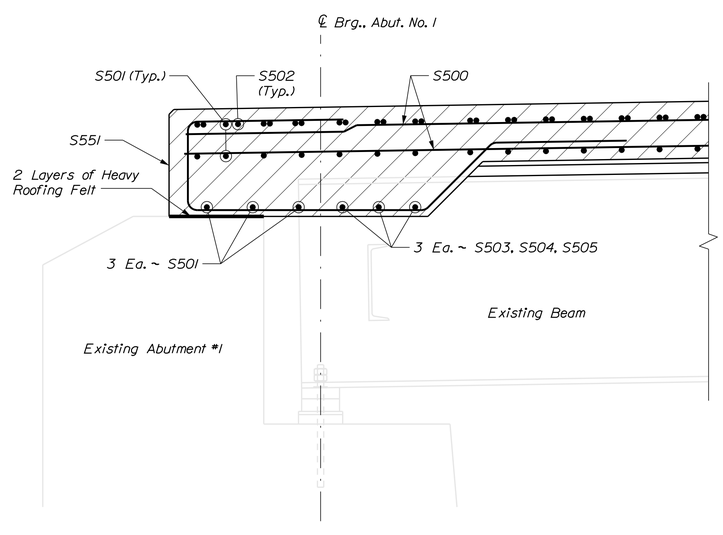
STAGE 2 (UPSTREAM SIDE)



SET "A"

2 ~ 501 & 1 ~ 502
With 2 Mechanical Coupler

NOTE:
Rebar S501 (224) & S503 (6) On The Upstream Side Of The Superstructure With The Mechanical Coupler Will Have To Be Field Cut To Length.



END SECTION

SUPERSTRUCTURE NOTES

1. Reinforcing steel shall have a minimum concrete cover of 2 inches unless otherwise noted.

2. Form a one inch V-groove on the fascias at the horizontal joint between the curb and slab.

3. The superstructure slab concrete for each span shall be placed continuously and shall be kept plastic until the entire placement has been made.

4. The Contractor shall install Transition Barrier vertical closed stirrups, as shown in Standard Details Section 526, prior to the placement of the curb or sidewalk concrete.

5. Heavy roofing felt shall meet the requirements of subsection 701.08. Heavy roofing felt shall not be paid for directly, but shall be considered incidental to related contract items.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BH-1788(000)X

WIN 17880.00

BRIDGE NO. 2877

BRIDGE PLANS

SIGNATURE

P.E. NUMBER

DATE

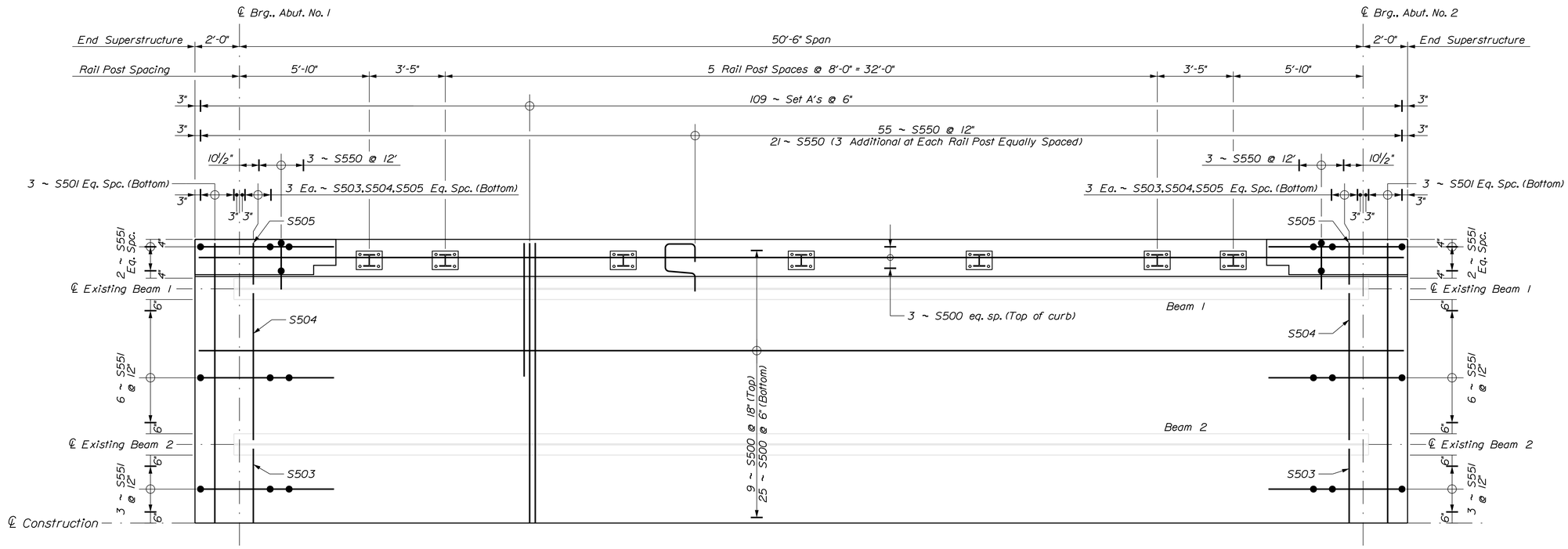
		BY	DATE
PROJ. MANAGER	M. WIGHT	M. Poulin	8-2013
DESIGN-DETAILED	R.Bulger	W. Rotman	MAR 2016
CHECKED-REVIEWED	T. Hjelm		
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
AROOSTOOK COUNTY
OXBOW PLT

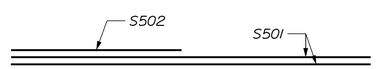
SUPERSTRUCTURE PLANS

SHEET NUMBER
12
OF 18

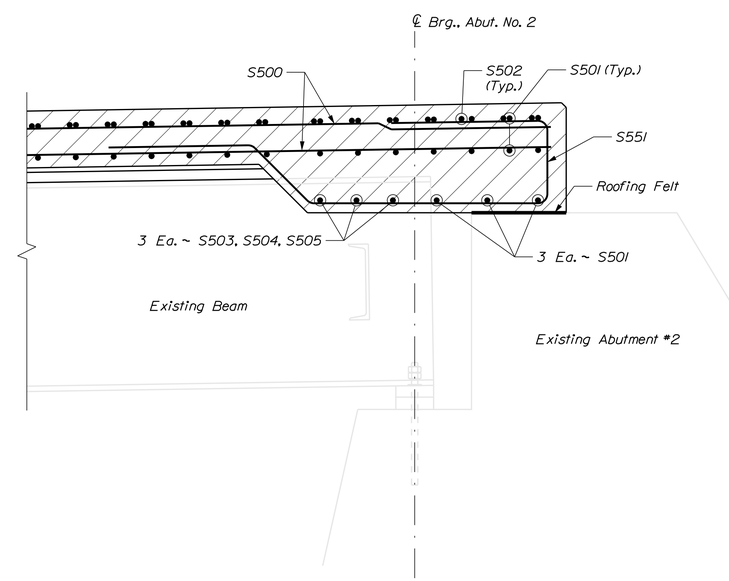
Filename: ...\MSTA\012_Superstructure.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016



SUPERSTRUCTURE PLAN
STAGE 3 (DOWNSTREAM SIDE)



SET "A"
2 ~ 501 & 1 ~ 502



END SECTION

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BH-1788(000)X

WIN 17880.00

BRIDGE NO. 2877

BRIDGE PLANS

PROJ. MANAGER	M. WIGHT	BY	DATE
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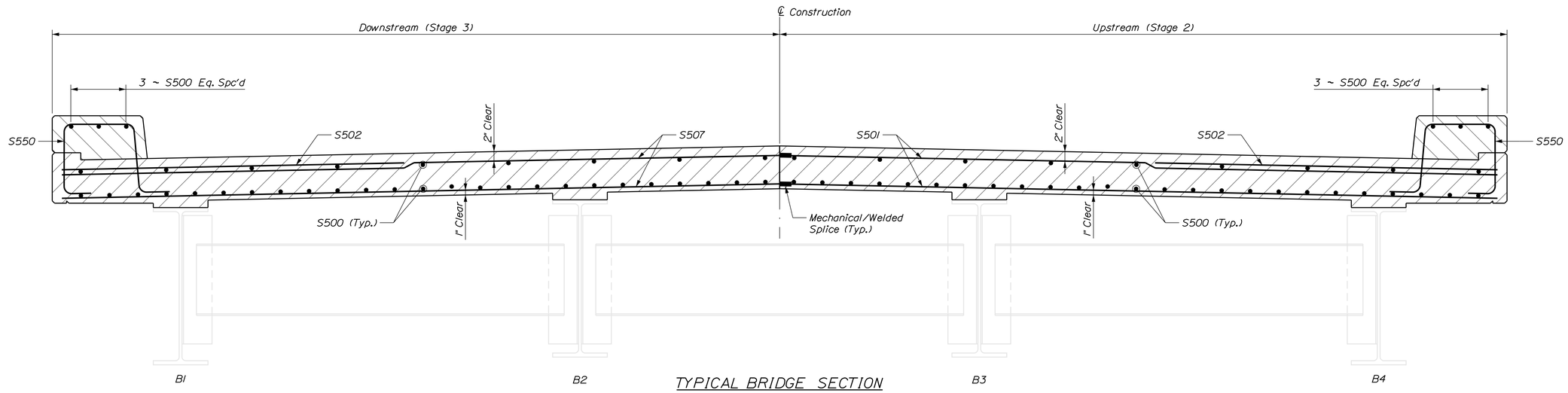
UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
OXBOW PLT AROOSTOOK COUNTY

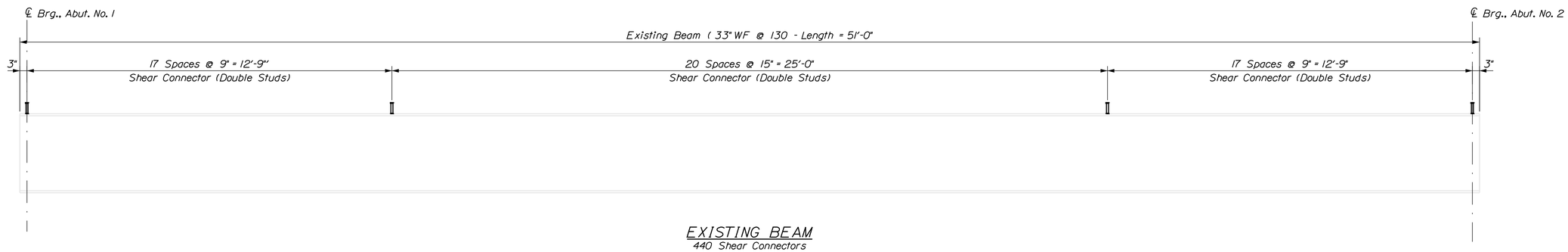
SUPERSTRUCTURE PLANS

SHEET NUMBER
13
OF 18

Filename: ...\MSTA\013_Superstructure.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016

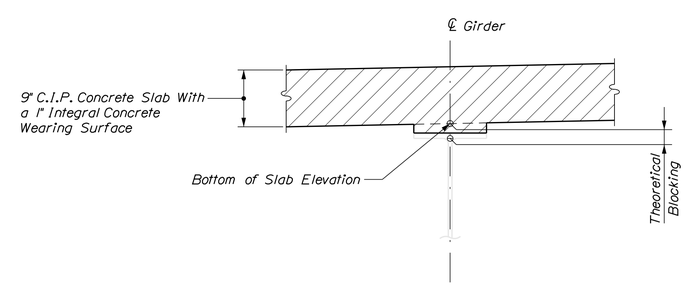


TYPICAL BRIDGE SECTION



EXISTING BEAM

440 Shear Connectors



BLOCKING DETAIL

Theoretical blocking is 1½" at ℄ Brg., Abutments
(Do not use theoretical blocking to set forms)

Bottom of Slab Elevations in Feet											
Girder	Abut. No. 1	1st Tenth	2nd Tenth	3rd Tenth	4th Tenth	5th Tenth	6th Tenth	7th Tenth	8th Tenth	9th Tenth	Abut. No. 2
1	621.60	621.69	621.79	621.88	621.96	622.04	622.12	622.19	622.26	622.32	622.38
2	621.74	621.83	621.93	622.02	622.10	622.18	622.26	622.33	622.40	622.46	622.52
3	621.74	621.83	621.93	622.02	622.10	622.18	622.26	622.33	622.40	622.46	622.52
4	621.60	621.69	621.79	621.88	621.96	622.04	622.12	622.19	622.26	622.32	622.38

Table of Deflections (Interior and exterior girders similiar) in Feet											
	Abut. No. 1	1st Tenth	2nd Tenth	3rd Tenth	4th Tenth	5th Tenth	6th Tenth	7th Tenth	8th Tenth	9th Tenth	Abut. No. 2
Fluid Concrete	0.00	0.18	0.35	0.47	0.55	0.58	0.55	0.47	0.35	0.18	0.00
Superimp. D/L	0.00	0.02	0.03	0.04	0.05	0.05	0.05	0.04	0.03	0.02	0.00
Total D/L	0.00	0.20	0.38	0.51	0.60	0.63	0.60	0.51	0.38	0.20	0.00

STATE OF MAINE
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BH-1788(000)X

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UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
AROOSTOOK COUNTY
OXBOW PLT

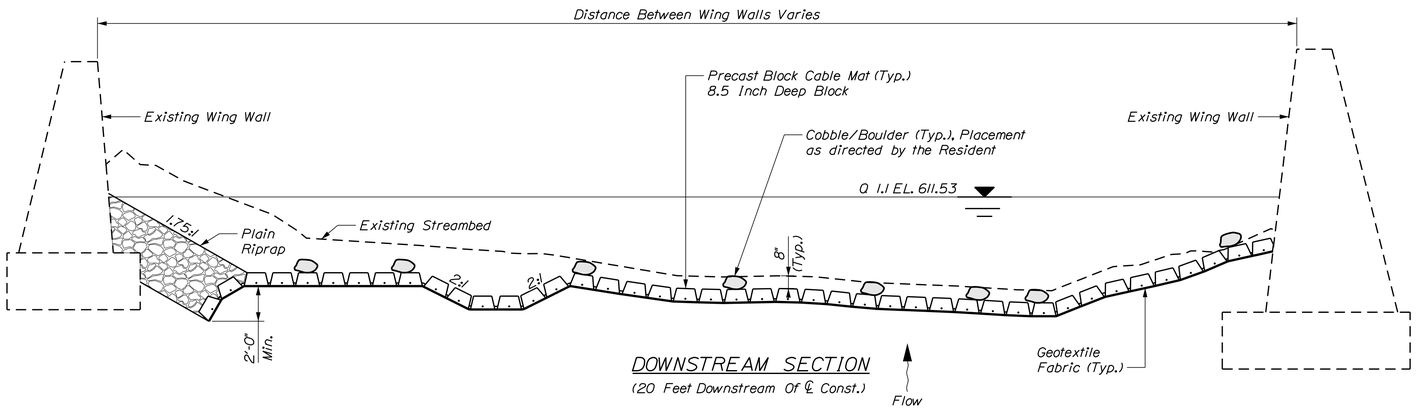
SUPERSTRUCTURE PLANS

SHEET NUMBER

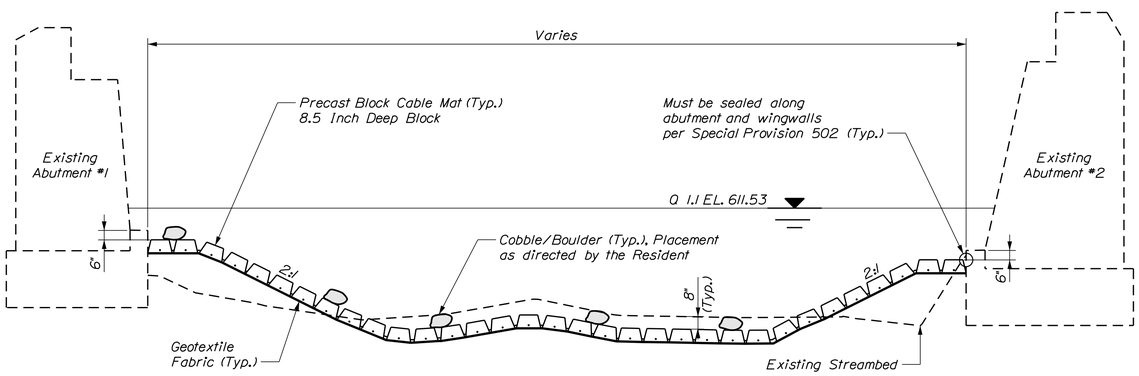
14

OF 18

Filename: ...\MSTA\014_Superstructure.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016

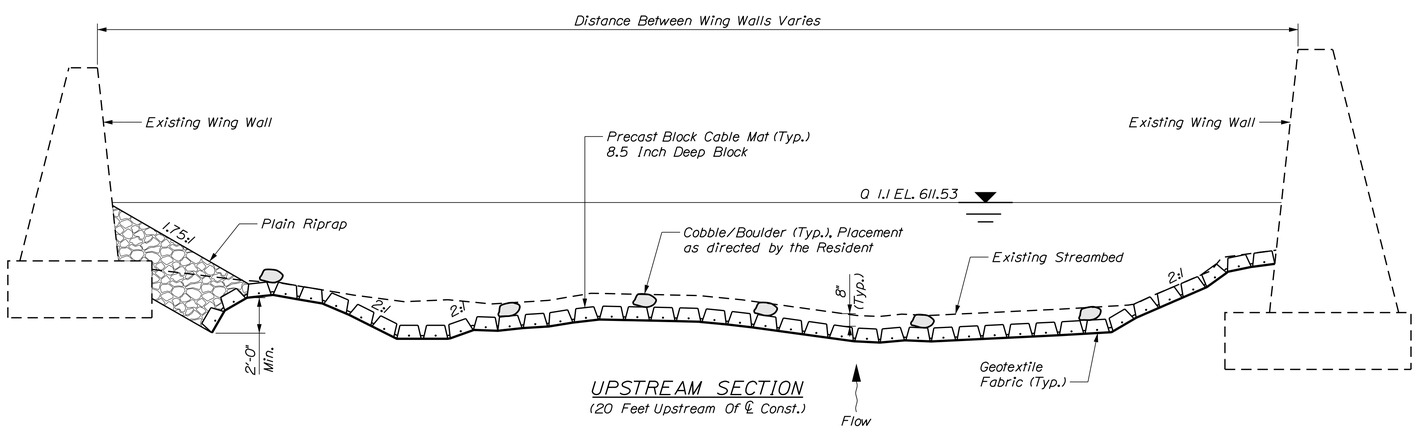


DOWNSTREAM SECTION
(20 Feet Downstream Of ℄ Const.)



℄ OF CONSTRUCTION
Precast Concrete Block Cable Mat

Flow



UPSTREAM SECTION
(20 Feet Upstream Of ℄ Const.)

NOTES:

1. Areas shown for the countermeasure installation are aproximate and represent the minimum dimension desired. The Resident may direct modifications to fit the site conditions.

2. Sections shown on the design plans depict "Typical" conditions and the intent of the installation may need to be altered to fit actual site conditions as directed by the Resident.

3. Contractor shall verify stream bed elevations along the upstream bridge fascia, downstream bridge fascia and along the centerline of the bridge. Streambed elevations shall be taken every five (5) feet along all three lines and provided to the Resident. The Resident will determine the final streambed elevation(s) based on this information. This work shall not be paid for directly and will be considered incidental to related contract items.

4. The thickness of the precast block mat shall be 8½ inches.

5. The Contractor's work shall not undermine or threatened the stability of the bridge foundation or retaining wall foundations.

STATE OF MAINE
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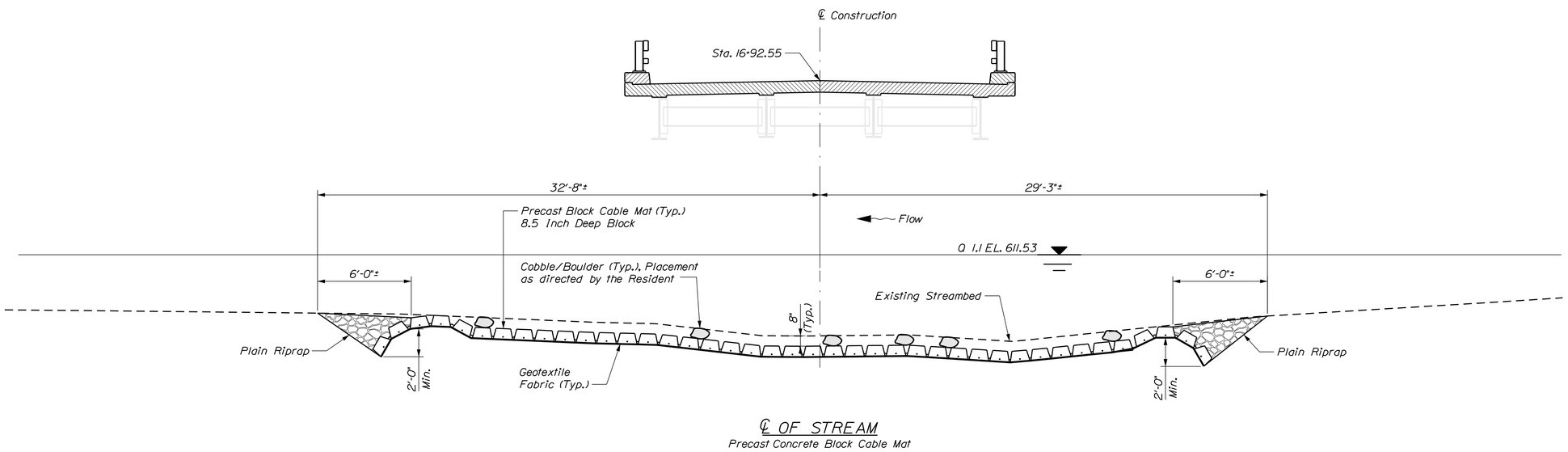
UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
OXBOW PLT AROOSTOOK COUNTY

PRECAST BLOCK MAT

SHEET NUMBER
15
OF 18

Filename: ...\MSTA\015_Cable-mat_1.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BH-1788(000)X

WIN 17880.00

BRIDGE NO. 2877

BRIDGE PLANS

SIGNATURE

P.E. NUMBER

DATE

		BY	DATE
PROJ. MANAGER	M. WIGHT		
DESIGN-DETAILED	R.Bulger	M. Poulin	8-2013
CHECKED-REVIEWED	T. Hjelm	W. Rolman	MAR 2016
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS: 1			
REVISIONS: 2			
REVISIONS: 3			
REVISIONS: 4			
FIELD CHANGES			

UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
OXBOW PLT AROOSTOOK COUNTY

PRECAST BLOCK MAT

SHEET NUMBER

16

OF 18

Filename: ...\MSTA\016_Cable-mat_2.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016

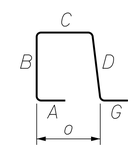
STRAIGHT BARS

MARK	QTY.	LENGTH	LOCATION
S500	74	54'-0"	Superstructure Slab
S501	448	12'-7"	Superstructure Slab
S502	218	6'-0"	Superstructure Slab
S503	12	3'-4"	Superstructure Slab
S504	12	6'-7"	Superstructure Slab
S505	12	1'-10"	Superstructure Slab

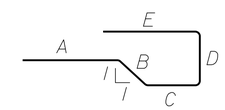
BENT BARS

MARK	QTY.	LENGTH	TYPE	A	B	C	D	E	F	G	H	O	R	LOCATION
S550	170	4'-9"	SC	0'-6"	1'-3 3/8"	1'-3 1/4"	1'2 3/8"			0'-6"		1'-4 3/8"		Superstructure (Curb)
S551	22	9'-0 5/8"	SJ	2'-0"	0'-10 3/4"	3'-1 1/8"	1'-0 3/4"	2'-0"						End Superstructure

TYPE - BENDING DIAGRAMS



SC



SJ

GENERAL NOTES

1. The first two digits following the letter(s) of the mark indicate the size ofthe bar:

   Mark "A502" = bar size #5
   Mark "P805" = bar size #8
   Mark "S650" = bar size #6

2. Each crank bar, Type B, may be replaced by two (2 straight bars (one top and one bottom) of the same bar size as the crank bar. Payment in either case shall be based on crank bars as schedule on the plans.

3. All dimensions are out-to-out of bar.

4. Bending details and hooks shall conform to the recommendations of the current revision of ACI Standard 315 and ACI Standard 318.

5. Reinforcing Bar: ASTM A615/A615M, Grade 60

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BH-1788(000)X

WIN 17880.00

BRIDGE NO. 2877

BRIDGE PLANS

PROJ. MANAGER	M. WIGHT	BY	DATE
DESIGN-DETAILED	R.Bulger	M. Poulin	8-2013
CHECKED-REVIEWED	T. Hjelm	W. Rohman	MAR 2016
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

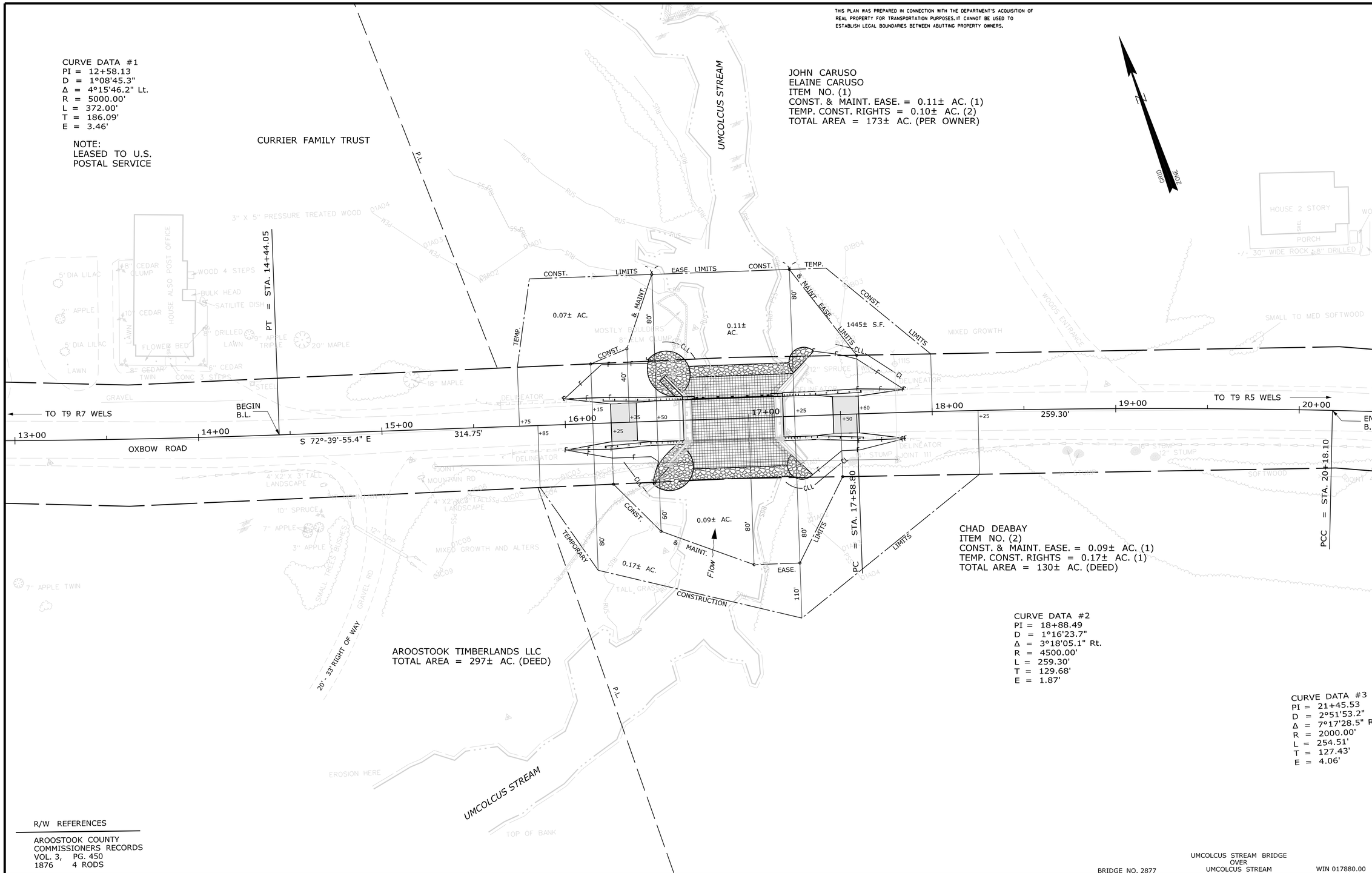
UMCOLCUS STREAM BRIDGE
UMCOLCUS STREAM
OXBOW PLT AROOSTOOK COUNTY

REINFORCING
STEEL SCHEDULE

SHEET NUMBER
17
OF 18

Filename: ...\00\BRIDGE\MSTA\017_Rebar.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016

THIS PLAN WAS PREPARED IN CONNECTION WITH THE DEPARTMENT'S ACQUISITION OF REAL PROPERTY FOR TRANSPORTATION PURPOSES. IT CANNOT BE USED TO ESTABLISH LEGAL BOUNDARIES BETWEEN ABUTTING PROPERTY OWNERS.



R/W REFERENCES

AROOSTOOK COUNTY
COMMISSIONERS RECORDS
VOL. 3, PG. 450
1876 4 RODS

UMCOLCUS STREAM BRIDGE
OVER
UMCOLCUS STREAM

BRIDGE NO. 2877

WIN 017880.00

SYMBOLS

- IP or IPF (IRON PIPE or PIN FOUND)
- S.T. (SEPTIC TANK)
- (ROW MONUMENT)
- (TRAVERSE POINT)
- WATER LINE
- GAS LINE
- ELECTRIC LINE
- TELEPHONE LINE
- SEWER LINE
- WELL (WELL)
- GRADING LIMIT LINE
- CONSTRUCTION LIMIT LINE
- PROPERTY LINE
- LIMITS OF WROUGHT PORTION (L.O.W.P.)
- EXISTING RIGHT OF WAY
- NEW RIGHT OF WAY
- NEW ROW WITHIN EXIST. ROW
- CONTROL OF ACCESS

ITEM	TECH	CHECKED
BASE MAP		
EXIST. R/W		
PROP. LINES	D.S.G.	
AREAS	D.S.G.	D.W.B.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION - AUGUSTA, ME 04333-0016

OXBOW PLT.
RIGHT OF WAY MAP

REVISIONS			
NO.	DATE	DESCRIPTION	BY

PLAN FILED IN PLAN BOOK PAGE COUNTY RECORD (SOUTHERN)

NO.	GRANTOR	INSTRUMENT	DATE	BOOK	PAGE
		COND.	12/14/15	5499	281

DAVID BERNHARDT
COMMISSIONER
JOYCE NOEL TAYLOR
CHIEF ENGINEER
DATE

TOWN WAY
OXBOW ROAD
OXBOW PLANTATION AROOSTOOK COUNTY
FEDERAL AID PROJECT NO. BH-1788(000)X

JUNE 2015
SCALE 1" = 25'
RIGHT-OF-WAY MAP
SHEET 1 OF 1
D.O.T. FILE NO. 2-572

SHEET NUMBER
18
OF 18

Filename: ...\00\ROW\MSTA\001_RWPLAN1.dgn Division: BRIDGE Username: david.sullivan Date:3/28/2016