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 (2010) AADT	4290
Future (2030) AADT	5150
DHV - % of AADT	10
Design Hour Volume	515
Heavy Trucks (% of AADT)	6
Heavy Trucks (% of DHV)	2
Directional Distribution (% of DHV)	55
18 kip Equivalent P 2.0	395
18 kip Equivalent P 2.5	376
Design Speed (mph)	45

HYDROLOGIC DATA

Drainage Area	18.4 sq mi
Design Discharge (Q50)	1040 cfs
Check Discharge (Q100)	1195 cfs
Headwater Elevation (Q50)	178.8 ft
Headwater Elevation (Q100)	180.8 ft
Discharge Velocity (Q50)	3.3 fps
Discharge Velocity (Q100)	2.2 fps
Headwater Elevation (Q1.1)	173.4 ft
Discharge Velocity (Q1.1)	7.8 fps
Headwater Elevation (Q25)	178.4 ft

MATERIALS

Concrete:

Curbs & Fill	Class "LP"
Precast	Class "P"
All Other	Class "A"

BASIC DESIGN STRESSES

Concrete	f 'c = 4,350 psi
Precast Concrete	f 'c = 5,000 psi
Reinforcing Steel	f 'c = 60,000 psi

UTILITIES

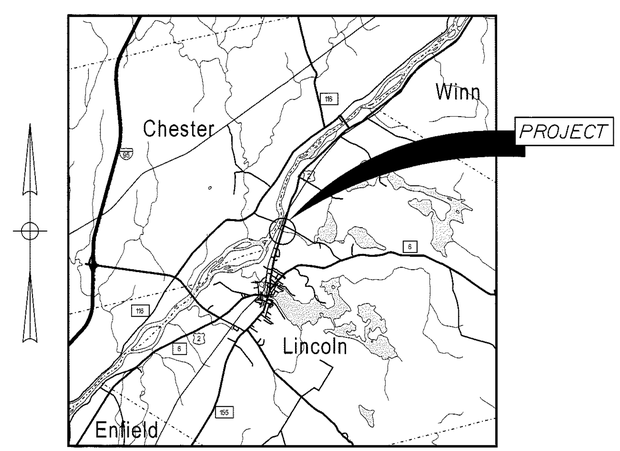
Bangor Hydro-Electric Company
Fairpoint Communications
Time Warner Cable

Lincoln Water District
Lincoln Sanitary District

MAINTENANCE OF TRAFFIC

Maintain one lane of traffic, 10'-6" wide minimum alternating directions via temporary traffic signals.

LINCOLN
PENOBSCOT COUNTY
CAMBOLASSE BRIDGE
OVER
CAMBOLASSE STREAM
U.S. Rt. 2
PROJECT No. 16712.00
PROJECT LENGTH 0.038 mi.
BRIDGE REPLACEMENT
BRIDGE NO. 2170



LOCATION MAP

2 0 2 4
Scale of Miles

LIST OF DRAWINGS

Title Sheet 1
Estimate and General Notes 2
Plan & Profile 3
Boring Locations 4
Boring Logs 5
Cross Sections 6-7
Concrete Box Plans 8
Staged Construction 9
Right Of Way Map 10

SCOPE OF WORK

Replace existing bridge with Concrete Box Culvert

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
APPROVED
COMMISSIONER: DATE 2/4/11
CHIEF ENGINEER: DATE 2/4/11

STATE OF MAINE
Robert S. Budger
4410
LICENSED PROFESSIONAL ENGINEER

Robert S. Budger
SIGNATURE
4410
P.E. NUMBER
Jan. 28, 2011
DATE

PROJECT INFORMATION

PROGRAM	BRIDGE PROGRAM
PROJECT MANAGER	STEPHEN BODGE
DESIGNER	BOB BUDGER
CONSULTANT	
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

PIN 16712.00

LINCOLN
CAMBOLASSE BRIDGE

TITLE SHEET

SHEET NUMBER
1
OF 10

16712.00

Filename: \00\BRIDGE\MSTA\001_Title.dgn Division: BRIDGE Username: david.sullivan Date: 1/28/2011

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
202.15	REMOVING MANHOLE OR CATCH BASIN	1	EA
202.19	REMOVING EXISTING BRIDGE (190 CY)	1	LS
203.20	COMMON EXCAVATION	433	CY
203.2318	DISPOSAL OF SPECIAL WASTE	130	T
203.24	COMMON BORROW	12	CY
203.25	GRANULAR BORROW	194	CY
203.33	SPECIAL FILL	58	CY
304.10	AGGREGATE SUBBASE COURSE - GRAVEL	338	CY
403.207	HOT MIX ASPHALT 19.0 MM HMA	109	T
403.208	HOT MIX ASPHALT 12.5 MM HMA SURFACE	72	T
403.209	HOT MIX ASPHALT 9.5 MM HMA (SIDEWALKS, DRIVES, INCIDENTALS)	17	T
403.211	HOT MIX ASPHALT (SHIMMING)	11	T
403.213	HOT MIX ASPHALT 12.5 MM BASE	72	T
409.15	BITUMINOUS TACK COAT - APPLIED	42	G
502.49	STRUCTURAL CONCRETE CURBS AND SIDEWALK (7 CY)	1	LS
508.14	HIGH PERFORMANCE WATERPROOFING MEMBRANE (70 SY)	1	LS
511.07	COFFERDAM: UPSTREAM	1	LS
511.07	COFFERDAM: DOWNSTREAM	1	LS
514.06	CURING BOX FOR CONCRETE CYLINDERS	1	EA
515.21	PROTECTIVE COATING FOR CONCRETE SURFACES (35 SY)	1	LS
526.301	TEMPORARY CONCRETE BARRIER - TYPE 1 (170 LF)	1	LS
527.34	WORK ZONE CRASH CUSHIONS	3	UN
534.71	PRECAST CONCRETE BOX CULVERT (115 CY)	1	LS
606.231	GUARDRAIL TYPE 3C - 15 FOOT RADIUS AND LESS	94	LF
606.275	TERMINAL END - DOUBLE RAIL - GALVANIZED STEEL	4	EA
606.353	REFLECTORIZED FLEXIBLE GUARDRAIL MARKER	8	EA
606.59	GUARDRAIL TYPE 3 - 15 FOOT RADIUS AND LESS	94	LF
606.741	GUARDRAIL TYPE 3 - DOUBLE RAIL BRIDGE MOUNTED	57	LF
609.244	TERMINAL CURB TYPE 2 - 4 FOOT	2	EA
609.247	TERMINAL CURB TYPE 2 - 7 FOOT	2	EA
609.31	CURB TYPE 3	31	LF
610.08	PLAIN RIPRAP	137	CY
615.07	LOAM	8	CY
618.1411	SEEDING METHOD NUMBER 3 - PLAN QUANTITY	1	UN
619.1201	MULCH - PLAN QUANTITY	1	UN
619.1401	EROSION CONTROL MIX	8	CY
620.58	EROSION CONTROL GEOTEXTILE	126	SY
627.733	4 INCH WHITE OR YELLOW PAINTED PAVE MRK LINE	525	LF
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
631.171	TRUCK - SMALL (INCLUDING OPERATOR)	10	HR
639.19	FIELD OFFICE TYPE B	1	EA
643.72	TEMPORARY TRAFFIC SIGNAL	1	LS
645.113	REINSTALL GUIDE SIGN	1	EA
652.31	TYPE 1 BARRICADE	8	EA
652.312	TYPE III BARRICADE	6	EA
652.33	DRUM	10	EA
652.34	CONE	20	EA
652.35	CONSTRUCTION SIGNS	425	SF
652.361	MAINTENANCE OF TRAFFIC CONTROL DEVICES (60 CD)	1	LS
652.38	FLAGGER	20	HR
656.75	TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	1	LS
659.10	MOBILIZATION	1	LS

GENERAL CONSTRUCTION NOTES

1. Maintain one lane of traffic at all times by use of temporary traffic signals and alternating traffic.

2. The installation of the high performance waterproofing membrane shall be completed in two placements. The first placement shall be after all stage 1 precast box segments are installed, backfilled to within 18 inches of the top of the units and accepted. The second placement shall be after the remainder of the precast box segments are installed, backfilled and accepted.

3. Method of Installation of high performance waterproofing membrane and pavement shall minimize longitudinal seams and joints as much as practicable. The precast concrete surface shall be shot blasted, and prepared for the membrane waterproofing placement in accordance with Standard Specifications Section 508.04.

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

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

6. Do not excavate for Aggregate Subbase Course where existing material is suitable as determined by the Resident.

7. All embankment material, unless otherwise shown, shall be Granular Borrow meeting the requirements of Subsection 703.19, Material for Underwater Backfill, with the additional requirement that the maximum particle size be limited to 4 inches.

8 Locate riprap as shown on the plans.

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

   All exposed surfaces of concrete curbs, headwalls, top of cast in place concrete fill and exposed box walls

10 Project information referred to below may be accessed at the following MaineDOT web address: http://www.maine.gov/mdot/comprehensive-list-projects/project-information.php.

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 Design Report for the Replacement of Cambolasse Bridge over Cambolasse Stream, Lincoln, ME, Soils Report No. 2010-23, August 12, 2010 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.

16. To identify weak zones and densify the box culvert subgrade, the Contractor shall compact the excavated subgrade with a minimum of 4 passes with a vibratory compactor that has a minimum static weight of 500 lbs. The Contractor shall remove and replace weak or unsuitable soils found at the subgrade level with compacted Granular Borrow.

17. Riprap adjacent to the box culvert shall be placed so as not to damage the box culvert. Any damage to the box culvert during construction shall be repaired or replaced as determined by the Resident at the Contractor's expense.

18. The Contractor shall construct and install the culvert in the dry.

19. The temporary concrete barriers positioned on the existing bridge deck shall be positively attached to the concrete deck. The method of attachment shall be designed and stamped by a Proffesional Engineer licensed in the State of Maine and approved by the Resident. This work will not be paid for directly. Payment shall be considered incidental to related contract items.

20. The existing bridge shall be removed by and become the property of the Contractor. Payment for all labor, materials, equipment and other costs required to remove and dispose of the existing bridge will be considered incidental to the bridge removal pay item.

21. The precast box manufacturer must install inserts in the top of the precast units at the locations shown that will develop the full tensile strength of the No. 6 reinforcing for the curb stirrups. The matching No. 6 reinforcement, with any modifications needed to satisfy the development system and the plans, such as bends and threading, shall be furnished by the precast box manufacturer with the precast box sections. The payment for the inserts, and modified curb stirrup reinforcement shall be considered incidental to Pay Item No. 534.71, Precast Concrete Box Culvert. Payment for the longitudinal reinforcement of the curbs shall be considered incidental to Pay Item No. 502.49, Structural Concrete Curbs and Sidewalks.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

16712.00

PIN 16712.00

BRIDGE NO. 2170

BRIDGE PLANS

PROJ. MANAGER	S. BODGE	BY	DATE
DESIGN-DETAILED	R. BULGER	D. SULLIVAN	DEC. 10
CHECKED-REVIEWED	R.N	------	DEC. 10
DESIGN2-DETAILED2	------	------	------
DESIGN3-DETAILED3	------	------	------
REVISIONS 1	------	------	------
REVISIONS 2	------	------	------
REVISIONS 3	------	------	------
REVISIONS 4	------	------	------
FIELD CHANGES	------	------	------

SIGNATURE

P.E. NUMBER

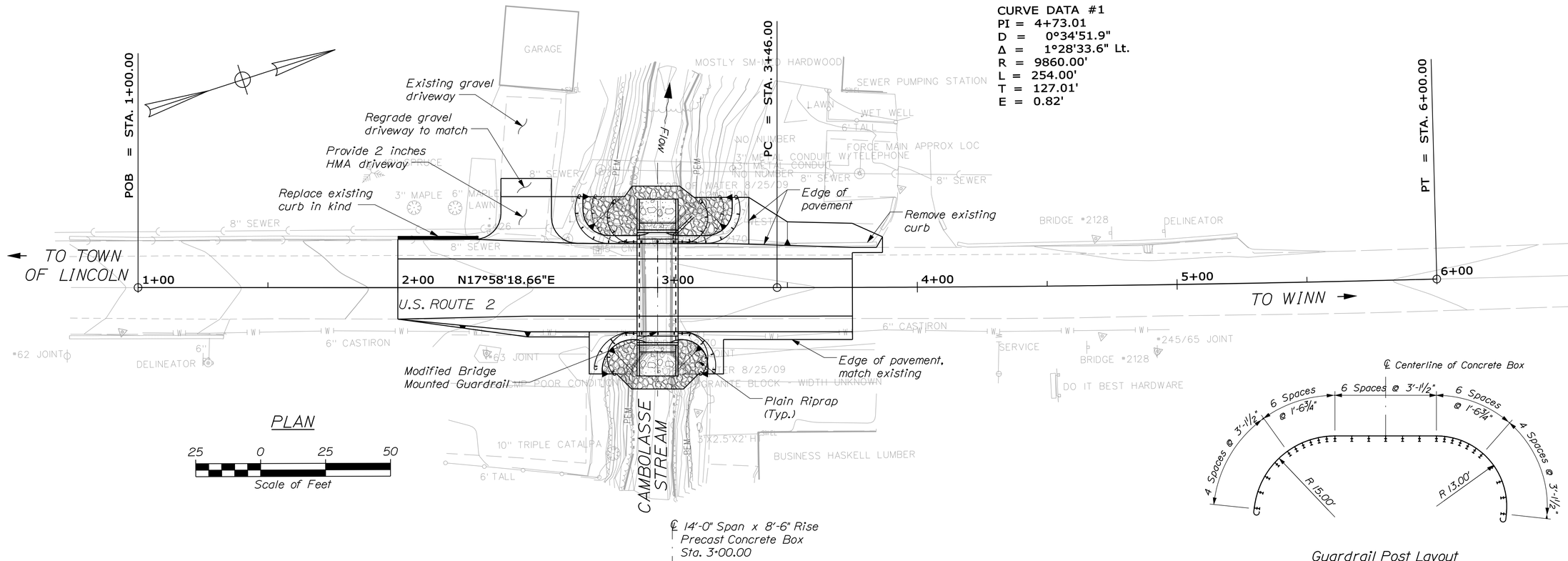
DATE

CAMBOLASSE BRIDGE
CAMBOLASSE STREAM
LINCOLN PENOBSCOT COUNTY

ESTIMATED QUANTITIES

SHEET NUMBER
2
OF 10

Filename: ...\BRIDGE\MSTA\002_Estimate.dgn Division: BRIDGE Username: david.sullivan Date:2/1/2011



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

16712.00

PIN 16712.00

BRIDGE NO. 2170

BRIDGE PLANS

		BY	DATE
PROJ. MANAGER	S. BIDGE		
DESIGN-DETAILED	R. BULGER	D. SULLIVAN	DEC. 10
CHECKED-REVIEWED	R.N.		DEC. 10
DESIGN2-DETAILED2	------	------	------
DESIGN3-DETAILED3	------	------	------
REVISIONS 1	------	------	------
REVISIONS 2	------	------	------
REVISIONS 3	------	------	------
REVISIONS 4	------	------	------
FIELD CHANGES	------	------	------

SIGNATURE

P.E. NUMBER

DATE

CAMBOLASSE BRIDGE
CAMBOLASSE STREAM
LINCOLN PENOBSCOT COUNTY

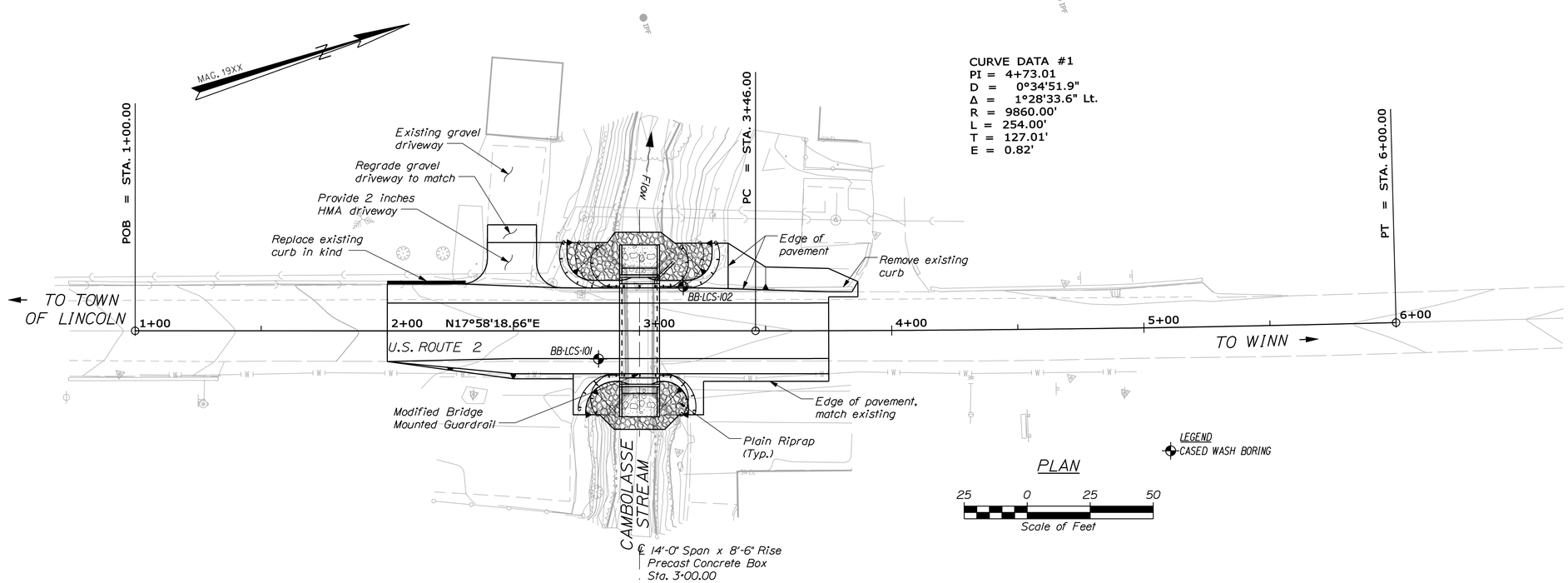
PLANS & PROFILE

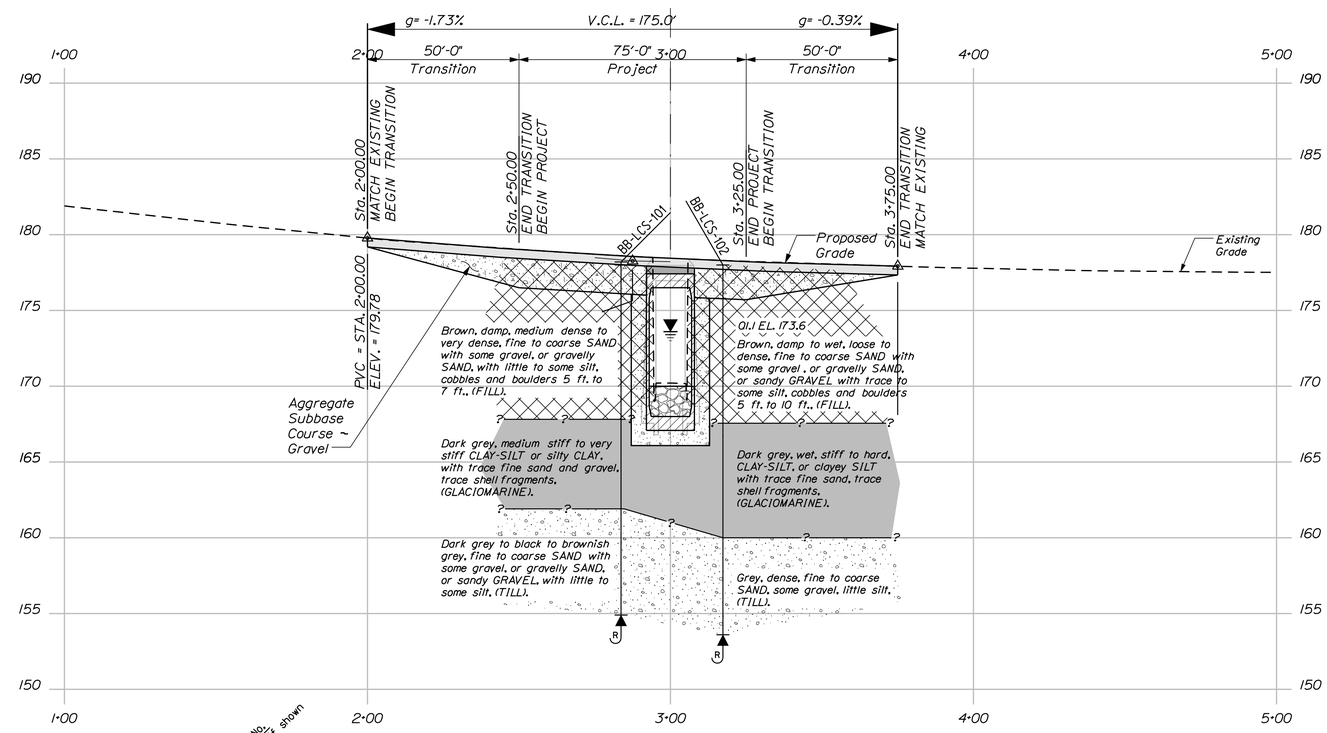
SHEET NUMBER

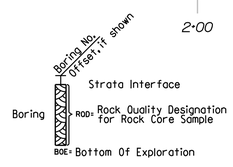
3

OF 10

Filename: ...\msta\003_Plan_Profile.dgn Division: BRIDGE Username: david.sullivan Date:2/1/2011







Note: This generalized interpretive soil profile is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and have been developed by interpretations of widely spaced explorations and samples. Actual soil transitions may vary and are probably more erratic. For more specific information refer to the exploration logs.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PIN 16712.00

BRIDGE PLANS

BRIDGE NO. 2170

		BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	M.MOREAU	T.WHITE	MAY 2010
CHECKED-REVIEWED			
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

CAMBOLASSE BRIDGE
CAMBOLASSE STREAM
LINCOLN PENOBSCOT COUNTY

BORING LOCATION PLAN &
INTERPRETIVE SUBSURFACE PROFILE

SHEET NUMBER
4
OF 10

Filename: ...\GEOTECH\MSTA\004_BLP&ISP1.dgn Division: BRIDGE Username: david.sullivan Date:2/2/2011

Maine Department of Transportation

Soil/Rock Exploration Log

US CUSTOMARY UNITS

Project: Cambolasse Bridge #2170 carring US Route 2 over Cambolasse Stream
Location: Lincoln, Maine

Boring No.: BB-LCS-101

PIN: 16712.00

Driller:	MaineDOT	Elevation (ft.)	178.2	Auger ID/OD:	5" Solid Stem
Operator:	Giguere/Giles	Datum:	NAVD88	Sampler:	Standard Split Spoon
Logged By:	Be Schonewald (IVS)	Rig Type:	CME 45C	Hammer Wt./Fall:	140#/30"
Date Start/Finish:	4/14/10; 10:20-14:45	Drilling Method:	Cased Wash Boring	Core Barrel:	NX
Boring Location:	2+83.7, 11.1 Rt.	Casing ID/OD:	NW	Water Level*:	>7.0' 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
WO1P = 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	N60	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class
0								178.00	PAVEMENT. 0.20	
	1D	24/15	1.00 - 3.00	24/30/19/22	49	69			Brown, damp medium dense to very dense, gravelly fine to coarse SAND, little silt, (Fill).	G#237481 A-1-a, SW-SM WC=2.8%
	2D/A	24/11	3.00 - 5.00	12/6/9/9	15	21			(2D) 3.0-4.8' bgs. Drill attitude indicates cobbles and boulders to approximately 7 ft. 4.80	G#237482 A-1-a, SW-SM WC=3.4%
5	3D	21.2/8	5.00 - 6.77	13/6/17/23(2.75)	23	32		173.40 173.20	(2D/A) 4.8-5.0' bgs. Brown, damp, medium dense, fine SAND, some gravel, little silt, trace medium to coarse sand, (Reworked FILL). 5.00 (3D) Brown, damp, dense, fine to coarse SAND, some gravel and silt, (Reworked Fill).	(3D) G#237483 A-2-4, SM WC=15.1%
10	4D	24/8	10.00 - 12.00	11/7/6/7	13	18		168.20	Dark grey, wet, very stiff, SILT and CLAY, low to moderate plasticity, behaves highly over consolidated. 10.00	
	5D	24/20	12.50 - 14.50	4/3/3/2	6	8		165.70	Dark grey, wet, medium stiff, silty CLAY, trace fine sand and gravel, moderate plasticity with occasional shell fragments and black organic staining, behaves highly over consolidated. 12.50	G#237484 A-7-6, CL WC=34.0% LL=41 PL=22 PI=19
15	MV/6D	24/12	15.00 - 17.00	12/13/10/12	23	32		163.20	Failed vane attempt, unable to push vane. Dark grey, wet, dense, fine to coarse SAND, some gravel and silt, gravel is angular, (Till). 15.00	G#237485 A-1-b, SM WC=9.8%
	7D	24/10	17.50 - 19.50	10/13/13/13	26	36			Black-dark grey, wet, dense, fine to coarse sandy GRAVEL, little silt, gravel appears to be crushed rock, (Till).	
20	8D	24/11	20.00 - 22.00	11/9/10/7	19	27	24		Brownish-grey, wet, medium dense, gravelly fine to coarse SAND, little silt, gravel is subrounded to angular, (Till).	
							36			
							32			
								154.90	Bottom of Exploration at 23.30 feet below ground surface. CASING AND ROLLER CONE REFUSAL, presumably on bedrock 23.30	
25										

Remarks:

Strong odor of petroleum hydrocarbons in upper 5 ft of material.
Drilling behavior suggests boney material to approximately 7 ft. Three attempts with auger refusal between 5 and 7 ft. In third hole, drove HW casing to 5 ft, roller cone to 5 ft, NX core at 5 ft, dropped through boulder at 7 ft, N roller cone to 10 ft, telescope NW casing to 10 ft, washed out N roller cone to 10 ft.
Streambed approximately 10 ft below top of boring elevation on highway.

Stratification lines represent approximate boundaries between soil types; 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-LCS-101

Maine Department of Transportation

Soil/Rock Exploration Log

US CUSTOMARY UNITS

Project: Cambolasse Bridge #2170 carring US Route 2 over Cambolasse Stream
Location: Lincoln, Maine

Boring No.: BB-LCS-102

PIN: 16712.00

Driller:	MaineDOT	Elevation (ft.)	178.0	Auger ID/OD:	5" Solid Stem
Operator:	Giguere/Giles	Datum:	NAVD88	Sampler:	Standard Split Spoon
Logged By:	Be Schonewald (IVS)	Rig Type:	CME 45C	Hammer Wt./Fall:	140#/30"
Date Start/Finish:	4/15/10; 07:50-10:20	Drilling Method:	Cased Wash Boring	Core Barrel:	N/A
Boring Location:	3+17.3, 17.5 Lt.	Casing ID/OD:	NW	Water Level*:	7.0' 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
WO1P = 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
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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	N60	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class
	1D	24/17	1.00 - 3.00	18/17/13/10	30	42			Brown, damp, dense, gravelly fine to coarse SAND, trace silt, (Fill).	G#237486 A-1-a, SW-SM WC=3.2%
								175.00	3.00	
	2D	24/15	3.00 - 5.00	5/4/4/7	8	11			Brown, damp, medium dense to loose, fine to coarse SAND, some gravel, little to some silt, (Fill).	
5	3D	24/6	5.00 - 7.00	4/3/2/6	5	7			Drill attitude indicates cobbles and boulders between approximately 5 ft and 10 ft.	
	4D	24/12	7.70 - 9.70	9/13/19/27	32	45		170.30	7.70 Brown, wet, dense, fine to coarse sandy GRAVEL, little to some silt, (Fill). Drill attitude indicates cobbles and boulders between approximeately 5 ft and 10 ft.	
10	5D	24/15	10.50 - 12.50	8/10/17/16	27	38		167.50	10.50 Dark grey, wet, hard, SILT and CLAY, low to moderate plasticity, behaves highly overconsolidated.	
	6D	24/17	12.50 - 14.50	5/5/4/6	9	13	39		Dark grey, wet, stiff, SILT and CLAY, low to moderate plasticity, behaves highly overconsolidated.	
							39			
15	MV/7D	24/24	15.00 - 17.00	WOH/4/3/4	7	10	41	163.00	15.00 Failed vane attempt, could not push. Dark grey, wet, stiff, clayey SILT, trace fine sand with few shell fragments, moderate plasticity, behaves slightly overconsolidated.	G#237487 A-7-6, CL WC=37.6% LL=41 PL=22 PI=19
							47			
	MV/8D	24/6	17.50 - 19.50	9/10/10/11	20	28	47		Failed vane attempt, could not push.	
							61	160.00	Dark grey, wet, very stiff CLAY and SILT, moderate plasticity with fine to coarse sand on tip of sample. 18.00	
							72			
20	9D	24/7	20.00 - 22.00	11/11/16/12	27	38	58		Grey, wet, dense, fine to coarse SAND, some gravel, little silt, (Till).	G#237488 A-1-b, SM WC=9.2%
							70			
							62			
							102			
								153.60	Bottom of Exploration at 24.40 feet below ground surface. CASING AND ROLLER CONE REFUSAL, presumably on bedrock. 24.40	
25										

Remarks:

Strong odor of petroleum hydrocarbons in upper 3 ft of material.
Drilling behavior suggests boney material to approximately 5 to 10 ft., cobbles and boulders.

Stratification lines represent approximate boundaries between soil types; 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-LCS-102

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BRIDGE PLANS

PIN 16712.00

BRIDGE NO. 2170

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	M.MOREAU	MAY 2010
CHECKED-REVIEWED		
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

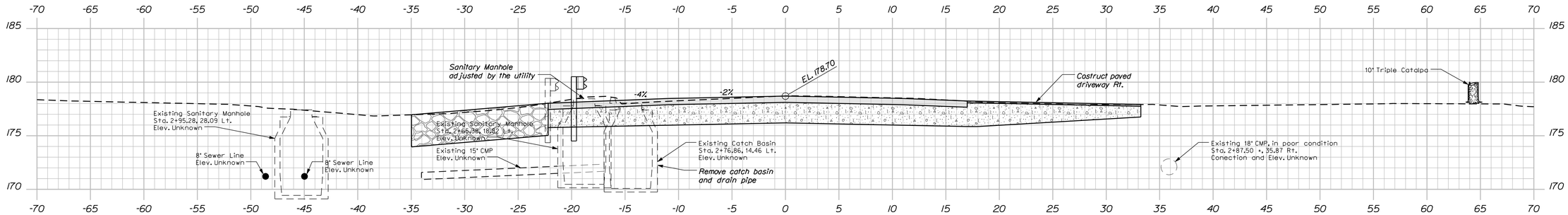
DATE

CAMBOLASSE BRIDGE
CAMBOLASSE STREAM
LINCOLN PENOBSCOT COUNTY

BORING LOGS

SHEET NUMBER
5
OF 10

Filename: ...\MSTA\005_BORING LOGS1.dgn Division: BRIDGE Username: david.sullivan Date:2/1/2011



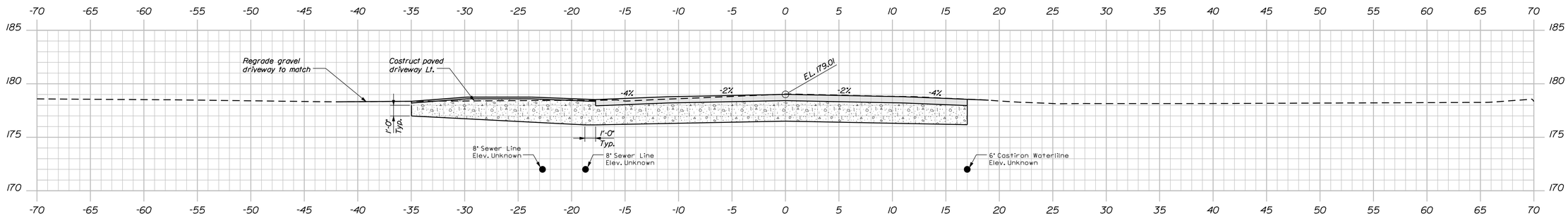
Sta. 2+85.08
Install 7 ft. Precast Transition Curb, Lt

Sta. 2+81.3± to 3+18.8±
Install 37.5 ft. Guardrail Type 3c, Lt.

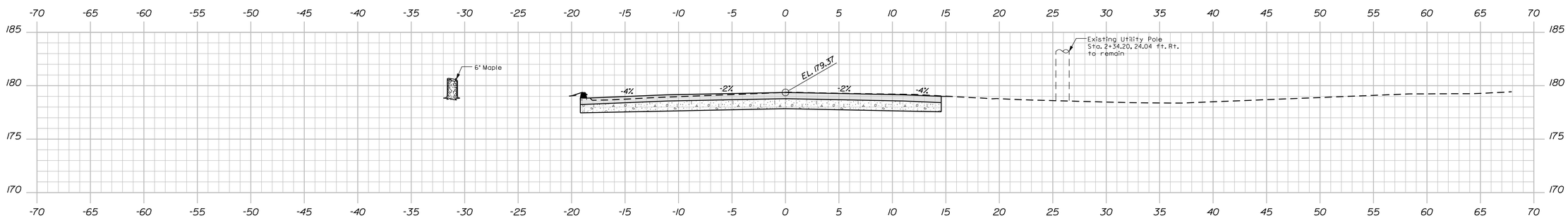
Sta. 2+68.3± to Sta. 2+81.3±
Install 13 ft. radius Guardrail Type 3c, Lt.

2+75.00

Sta. 2+75.7± to 2+90.6±
Install 15 ft. radius Guardrail Type 3c, Rt.

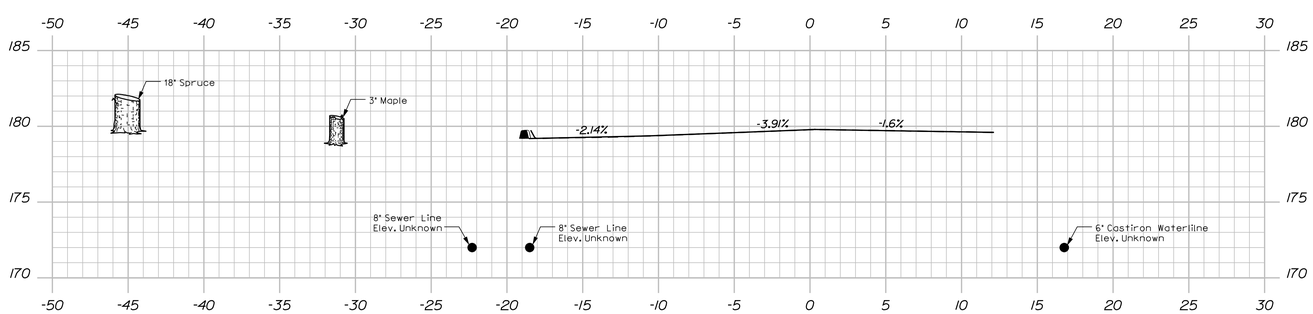


2+50.00 BEGIN PROJECT
END TRANSITION

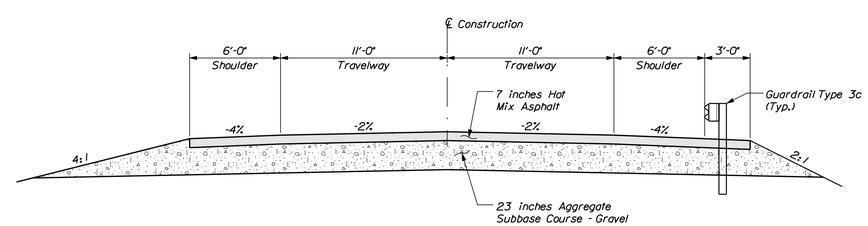


Sta. 2+00.00, 18.6± Lt. to Sta. 2+31.00, 18.6± Lt.
Install Curb Type 3 - mold 1, 31.0 ft.

2+25.00



2+00.00 BEGIN TRANSITION
MATCH EXISTING



NO GUARDRAIL SECTION

TYPICAL APPROACH SECTION

GUARDRAIL SECTION

Sta. 2+00.00 to Sta. 2+75.00

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

16712.00

PIN 16712.00

BRIDGE PLANS

BRIDGE NO. 2170

		BY	DATE
PROJ. MANAGER	S. BODGE		
DESIGN-DETAILED	R. BULGER	D. SULLIVAN	DEC. 10
CHECKED-REVIEWED	R.N	------	DEC. 10
DESIGN2-DETAILED2	------	------	------
DESIGN3-DETAILED3	------	------	------
REVISIONS 1	------	------	------
REVISIONS 2	------	------	------
REVISIONS 3	------	------	------
REVISIONS 4	------	------	------
FIELD CHANGES	------	------	------

SIGNATURE

P.E. NUMBER

DATE

CAMBOLASSE BRIDGE
CAMBOLASSE STREAM
LINCOLN PENOBSCOT COUNTY

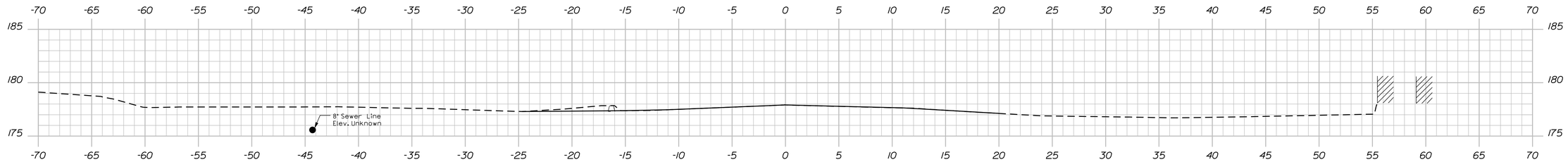
CROSS SECTIONS

SHEET NUMBER

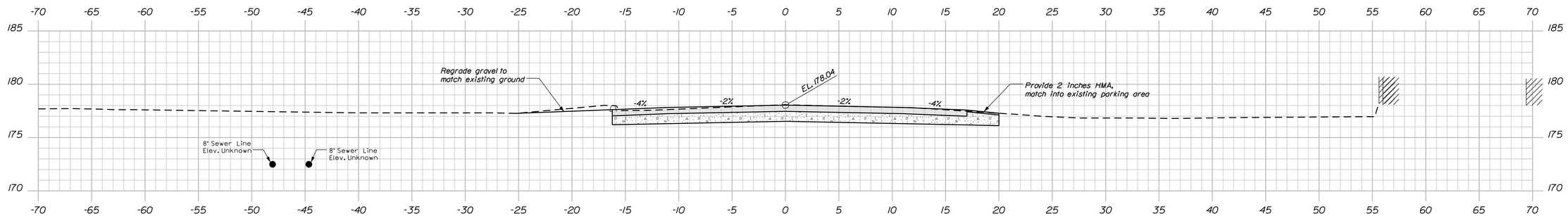
6

OF 10

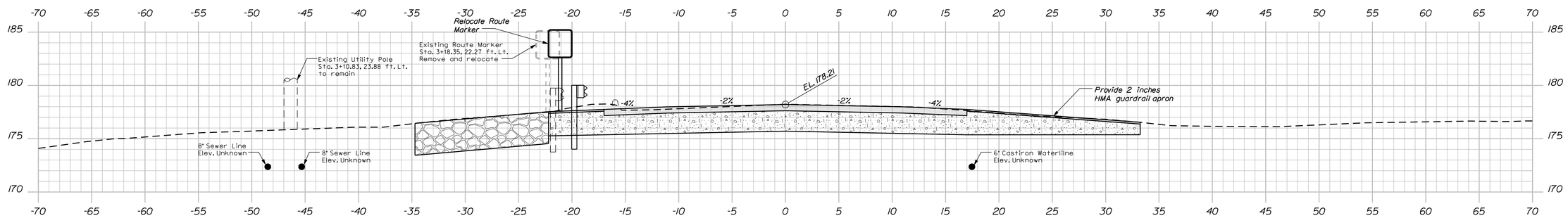
Filename: ...\MSTA\006_Xsect_2+00_001.dgn Division: BRIDGE Username: david.sullivan Date:2/1/2011



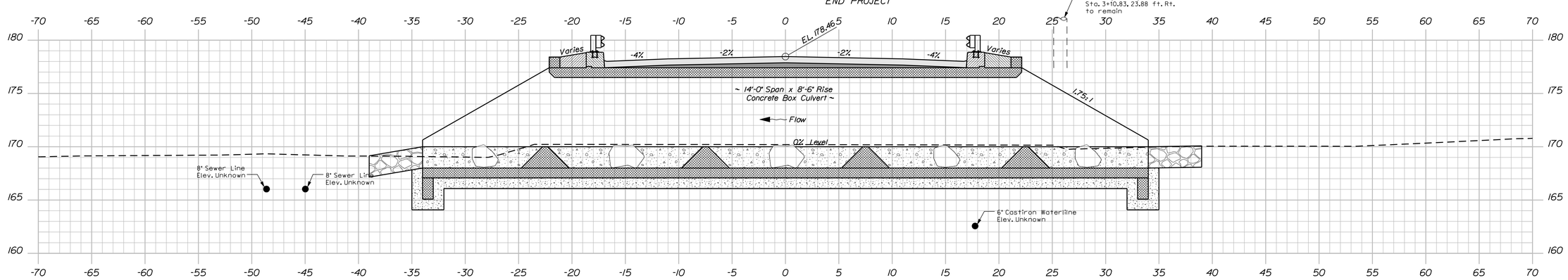
3+75.00 MATCH EXISTING END TRANSITION



3+50.00



3+25.00 BEGIN TRANSITION END PROJECT



3+00.00

Sta. 3+07.9±
Install 7 ft. Precast Transition Curb, Lt

Sta. 2+92.1± to 3+07.9±, 17 ft. Lt.
Install Bridge Curb

Sta. 3+07.9±
Install 4 ft. Precast Transition Curb, Rt.

Sta. 3+09.4± to 3+22.4±
Install 13 ft. radius Guardrail Type 3c, Rt.

Sta. 2+92.1± to 3+07.9±, 17 ft. Rt.
Install Bridge Curb

Sta. 2+90.6± to 3+09.4±
Install 18.75 ft. Guardrail Type 3c, Rt.

Sta. 2+88.1±
Install 4 ft. Precast Transition Curb, Rt

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

16712.00

PIN 16712.00

BRIDGE PLANS

BRIDGE NO. 2170

	BY	DATE
PROJ. MANAGER	S. BODGE	
DESIGN-DETAILED	D. SULLIVAN	DEC. 10
CHECKED-REVIEWED	R. BULGER	DEC. 10
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS: 1		
REVISIONS: 2		
REVISIONS: 3		
REVISIONS: 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

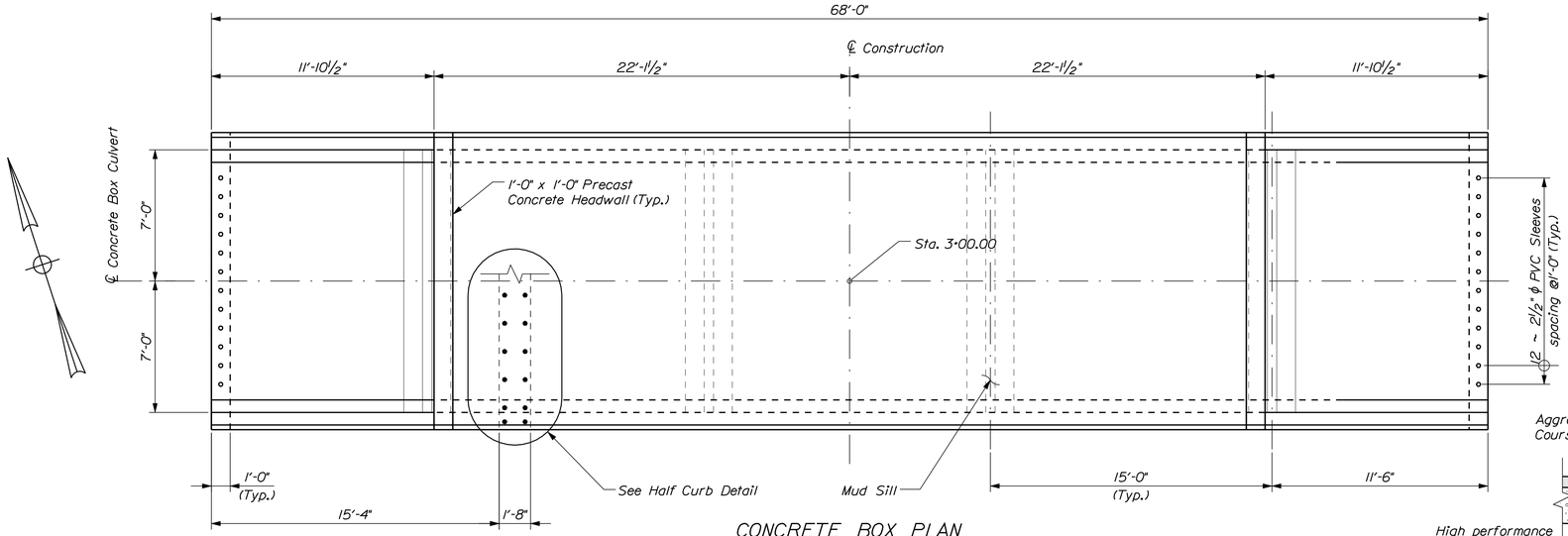
CAMBOLASSE BRIDGE
CAMBOLASSE STREAM
LINCOLN PENOBSCOT COUNTY

CROSS SECTIONS

SHEET NUMBER
7
OF 10

Filename: ...\MSTA\007_Xsect_3+00_002.dgn Division: BRIDGE Username: david.sullivan Date:2/1/2011

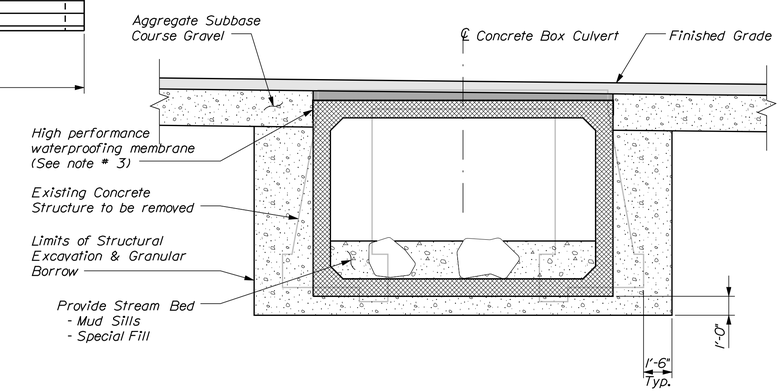
Sta. 3+00.00 to Sta. 3+75.00



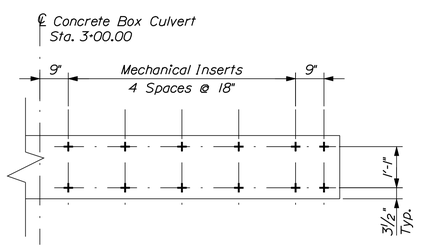
CONCRETE BOX PLAN

PRECAST CONCRETE BOX NOTES

1. The construction, handling, and assembly of the precast units shall be in accordance with Special Provisions Section 534, Precast Structural Concrete, and with the manufacturer's specifications as applicable.
2. Install high performance waterproofing membrane over the top and to 12 inches down the exterior sides of the precast units.
3. The Granular Borrow used for the bedding of the precast concrete box shall be Granular Borrow meeting the requirements of Subsection 703.19, Material for Underwater Backfill with the additional requirement that the maximum particle size be limited to 4 inches.
4. Payment for cast in place concrete fill between curb and headwall will be considered incidental to Item No. 502.49 Structural Concrete Curbs and Sidewalks.

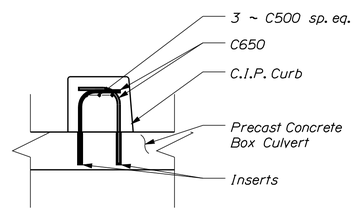


TYPICAL CONCRETE BOX SECTION

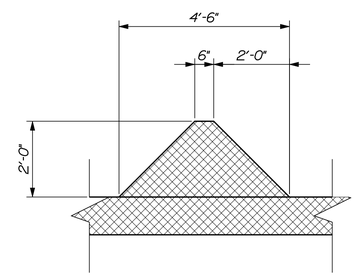


HALF CURB DETAIL

Typical all four corners
Symetrical about ℄ Concrete Box Culvert
and ℄ Construction

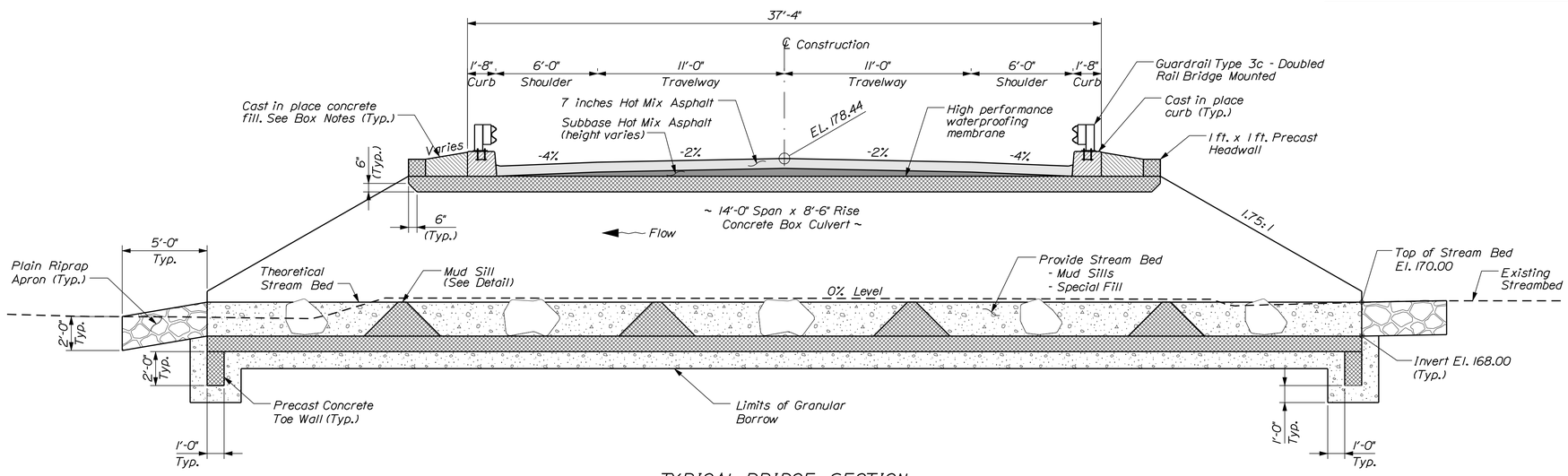


CURB REINFORCING STEEL

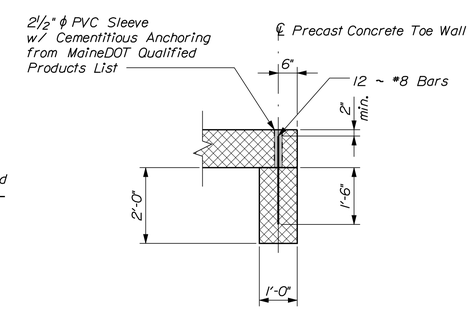


MUD SILL DETAIL

SUPERSTRUCTURE STRAIGHT & BENT BARS						
MARK	QTY.	LENGTH	TYPE	A	B	LOCATION
C500	6	15'-4"	Straight			Curb Bar - Longitudinal
C650	48	3'-1"	L	2'-0"	1'-1"	Transverse Curb



TYPICAL BRIDGE SECTION



PRECAST CONCRETE TOE WALL DETAIL

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

16712.00

PIN 16712.00

BRIDGE NO. 2170

BRIDGE PLANS

	BY	DATE
PROJ. MANAGER	S. BODGE	
DESIGN-DETAILED	R. BULGER	DEC. 10
CHECKED-REVIEWED	D. SULLIVAN	DEC. 10
DESIGN2-DETAILED2	REM	
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

CAMBOLASSE BRIDGE
CAMBOLASSE STREAM
LINCOLN PENOBSCOT COUNTY

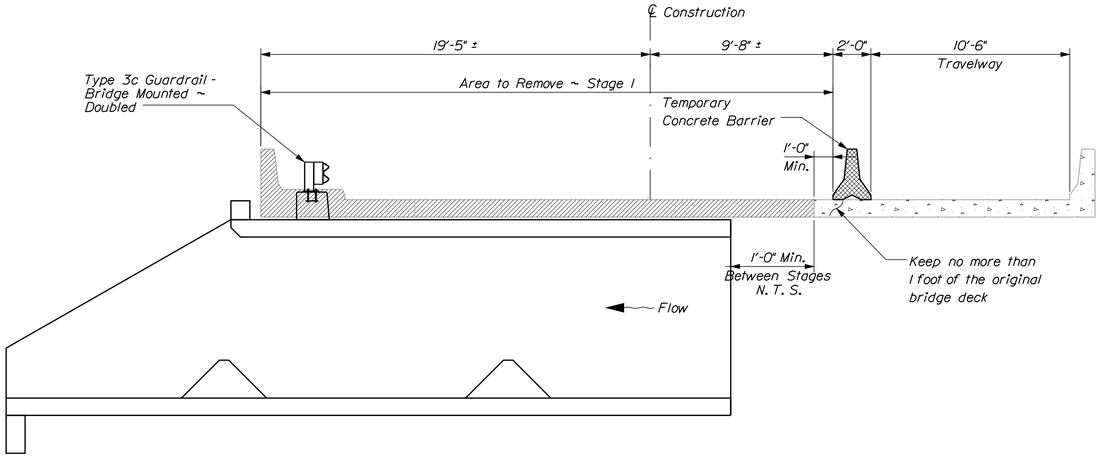
CONCRETE BOX PLANS

SHEET NUMBER

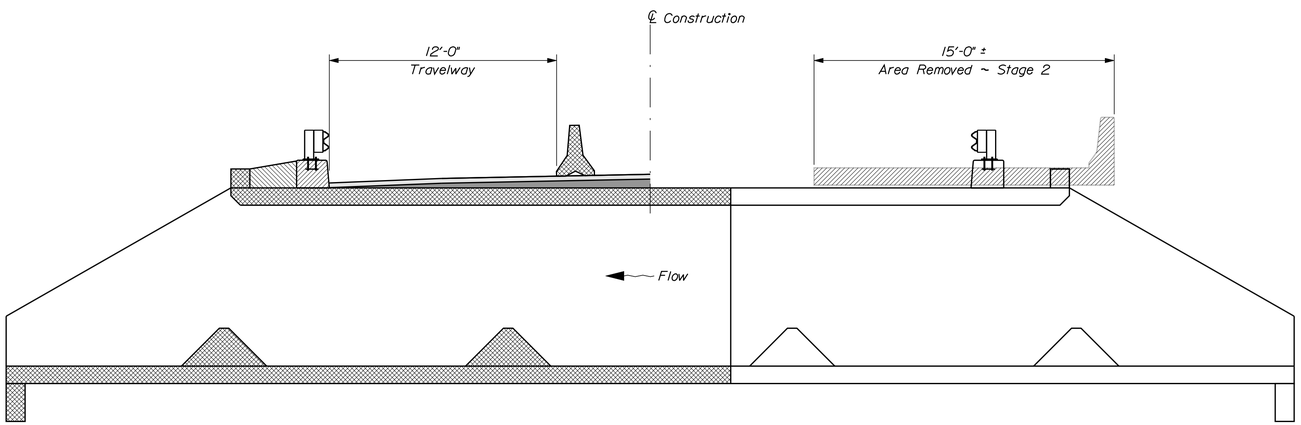
8

OF 10

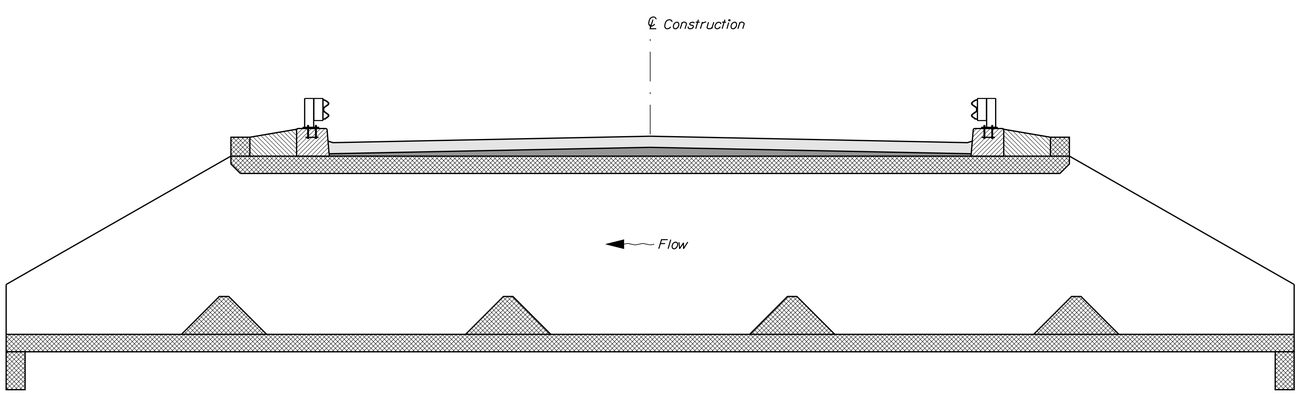
Filename: ...\00\BRIDGE\MSTA\008_Box.dgn Division: BRIDGE Username: david.sullivan Date:2/3/2011



STAGE 1



STAGE 2



STAGE 3

STAGE CONSTRUCTION NOTES:

Stage 1 -
Maintain one 10'-6" wide lane of alternating traffic using traffic signals on upstream side. Remove the existing bridge as shown on the plans. Construct downstream portion of concrete box culvert. Place cast in place curb and double rail guardrail. Apply membrane to the newly installed concrete box culvert on downstream end. Place HMA - shim layer and the HMA base layer

Stage 2 -
Provide one 12'-0" wide lane of alternating traffic using traffic signals over the newly installed concrete box culvert on downstream end. Remove remaining existing bridge. Construct upstream portion of concrete box culvert. Place cast in place curb and double rail guardrail. Apply membrane and place HMA - shim layer and the HMA base layer on upstream side. Set up one lane of alternating traffic on the upstream side.

Stage 3 -
Maintain one lane of traffic at all times with flaggers. Remove temporary concrete barrier. Place wearing surface of HMA. Upon completion of placement of HMA open to traffic.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

16712.00

PIN 16712.00

BRIDGE NO. 2170

BRIDGE PLANS

PROJ. MANAGER	S. BOOGE	BY	DATE
DESIGN-DETAILED	R. BULGER	D. SULLIVAN	DEC. 10
CHECKED-REVIEWED	R.JN	------	DEC. 10
DESIGN2-DETAILED2	------	------	------
DESIGN3-DETAILED3	------	------	------
REVISIONS 1	------	------	------
REVISIONS 2	------	------	------
REVISIONS 3	------	------	------
REVISIONS 4	------	------	------
FIELD CHANGES	------	------	------

SIGNATURE

P.E. NUMBER

DATE

CAMBOLASSE BRIDGE
CAMBOLASSE STREAM
LINCOLN PENOBSCOT COUNTY

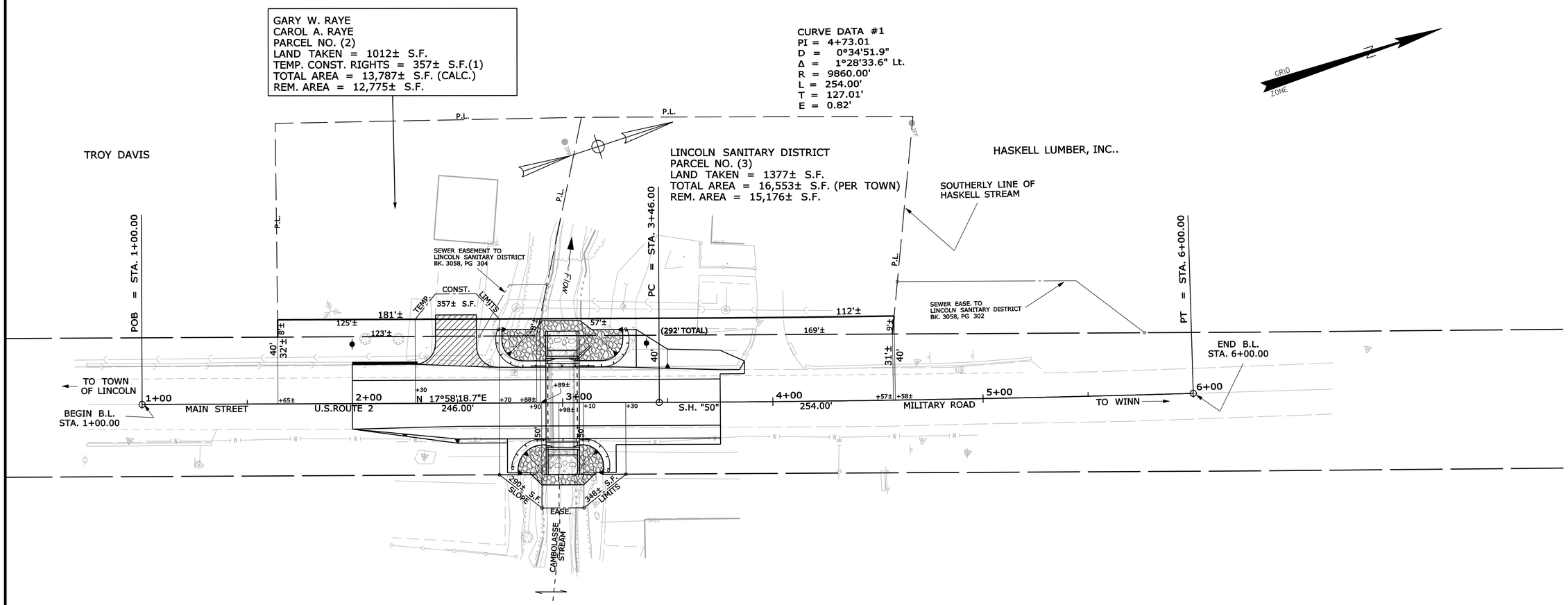
STAGE CONSTRUCTION

SHEET NUMBER

9

OF 10

Filename: ...\MSTA\009_StageConstr.dgn Division: BRIDGE Username: david.sullivan Date:2/1/2011



EXISTING R/W

SEE S.H.C. FILE NO. 10-65
SH. 3 OF 12

BRIDGE NO. 2170 — CAMBOLASSE BRIDGE OVER CAMBOLASSE STREAM — PIN 16712.00

SYMBOLS

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

ITEM	TECH	CHECKED
BASE MAP	BDM	
EXIST. R/W	BDM	
PROP. LINES	BDM	
AREAS	BDM	

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION - AUGUSTA, ME 04333-0016
LINCOLN
RIGHT OF WAY MAP

REVISIONS			
NO.	DATE	DESCRIPTION	BY

PLAN FILED IN PLAN BOOK PAGE COUNTY RECORD

NO.	GRANTOR	INSTRUMENT	DATE	BOOK	PAGE
		COND.	2/1/11	12392	205

DAVID A. COLE
COMMISSIONER
KENNETH L. SWEENEY
CHIEF ENGINEER
DATE

STATE HIGHWAY "50"
U.S. ROUTE 2 MILITARY ROAD MAIN STREET
LINCOLN PENOBSCOT COUNTY
STATE PROJECT NO. 16712.00

NOVEMBER 2010 | RIGHT-OF-WAY MAP | D.O.T. FILE NO. 10-468
SCALE 1" = 25' | SHEET 1 OF 1

SHEET NUMBER
10
OF 10

Filename: ...\00\ROW\MSTA\001_RWPLAN1.dgn Division: BRIDGE Username: david.sullivan Date:2/1/2011