STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

SPECIFICATIONS

Design: Load and Resistance Factor Design per AASHTO LRFD Bridge Design Specifications, Fourth Edition 2007 and Interim Specifications through 2009.

DESIGN LOADING

Live Load ..... HL93 Modified

TRAFFIC DATA

Current (2010) AADT	160
Future (2030) AADT	210
DHV - % of AADT	14
Design Hour Volume	29
Heavy Trucks (% of AADT)	12
Heavy Trucks (% of DHV)	9
Directional Distribution (% of DHV)	53
18 kip Equivalent P 2.0	21
18 kip Equivalent P 2.5	20
Design Speed (mph)	45

HYDROLOGIC DATA

Drainage Area	4.11 sq mi
Design Discharge (Q50)	689.0 cfs
Check Discharge (Q100)	812.6 cfs
Headwater Elevation (Q50)	345.04 ft
Headwater Elevation (Q100)	345.67 ft
Discharge Velocity (Q50)	8.99 fps
Discharge Velocity (Q100)	10.24 fps
Headwater Elevation (Q1.1)	341.64 ft
Discharge Velocity (Q1.1)	1.84 fps
Headwater Elevation (Q25)	344.39 ft

MATERIALS

Concrete:	
Precast	Class "P"
All Other	Class "A"
Reinforcing Steel	ASTM A 615/A 615M, Grade 60

BASIC DESIGN STRESSES

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

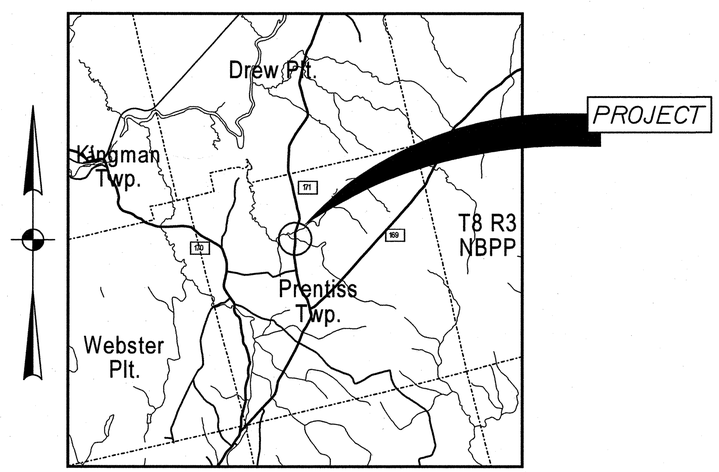
UTILITIES

Eastern Maine Electric Co-Op Inc.

MAINTENANCE OF TRAFFIC

Close bridge to traffic for 21 days during August and detour traffic onto Route 2A and State Route 170. Total length of detour is 47.3 miles.

PRENTISS TWP
PENOBSCOT COUNTY
LITTLE MUD BROOK BRIDGE
OVER
LITTLE MUD BROOK
ROUTE 171
PROJECT No. 16742.00
PROJECT LENGTH 0.019 mi.
BRIDGE REPLACEMENT
BRIDGE NO. 5707



LOCATION MAP

2 0 2 4
Scale of Miles

LIST OF DRAWINGS

Title Sheet 1
Estimated Quantities & Notes 2
Plan & Profile 3
Boring Locations 4
Boring Logs 5
Cross Sections 6-9
Precast Box Details 10
Traffic Control Plan 11
Right Of Way Map 12

SCOPE OF WORK

Install State supplied concrete box culvert and construct 200 feet of approach work.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED

	DATE
COMMISSIONER:	3/8/10
CHIEF ENGINEER:	3/5/10

STATE OF MAINE ★ Robert B. Ellena ★ 11421 ★ LICENSED PROFESSIONAL ENGINEER

SIGNATURE 11421	
P.E. NUMBER 5-04-10	DATE

PROJECT INFORMATION

PROGRAM	BRIDGE
PROJECT MANAGER	STEVE BODGE
DESIGNER	ROBERT ELLENA
CONSULTANT	
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

PIN 16742.00

PRENTISS TWP
LITTLE MUD BROOK BRIDGE

TITLE SHEET

16742.00

SHEET NUMBER
1
OF 12

Filename:\00\BRIDGE\MSTA\001_Title.dgn Division: BRIDGE Username: david.sullivan Date:5/4/2010

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
202.19	REMOVING EXISTING BRIDGE	1	LS
203.20	COMMON EXCAVATION	456	CY
203.21	ROCK EXCAVATION	100	CY
203.25	GRANULAR BORROW	272	CY
203.35	CRUSHED STONE FILL	60	CY
304.10	AGGREGATE SUBBASE COURSE - GRAVEL	500	CY
403.208	HOT MIX ASPHALT 12.5 MM HMA SURFACE	109	T
403.213	HOT MIX ASPHALT 12.5 MM BASE	109	T
409.15	BITUMINOUS TACK COAT - APPLIED	25	G
508.13	MEMBRANE WATERPROOFING	136	SY
511.07	COFFERDAM: DOWNSTREAM	1	LS
511.07	COFFERDAM: UPSTREAM	1	LS
526.30	TEMPORARY CONCRETE BARRIER - TYPE 1	120	LF
527.303	ENERGY ABSORBING SYSTEM (ET-PLUS)	4	EA
534.7101	PRECAST CONCRETE BOX CULVERT - STATE SUPPLIED	1	LS
606.23	GUARDRAIL TYPE 3C - SINGLE RAIL	388	LF
606.353	REFLECTORIZED FLEXIBLE GUARDRAIL MARKER	4	EA
610.08	PLAIN RIPRAP	194	CY
618.1411	SEEDING METHOD NUMBER 3 - PLAN QUANTITY	5	UN
619.1401	EROSION CONTROL MIX	55	CY
620.54	STABILIZATION GEOTEXTILE	422	SY
620.58	EROSION CONTROL GEOTEXTILE	193	SY
627.733	4 INCH WHITE OR YELLOW PAINTED PAVE MRK LINE	200	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
652.312	TYPE III BARRICADE	6	EA
652.33	DRUM	10	EA
652.34	CONE	20	EA
652.35	CONSTRUCTION SIGNS	332	SF
652.36	MAINTENANCE OF TRAFFIC CONTROL DEVICES	21	CD
652.38	FLAGGER	20	HR
659.10	MOBILIZATION	1	LS

GENERAL CONSTRUCTION NOTES

1. During construction, the road will be closed to traffic for a time period specified in the Special Provisions.

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

3. 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.

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

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

6. 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.

7. All embankment material, except as otherwise shown, placed below EL. 347.0 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. Place riprap on sideslopes up to EL. 345.0.

9. Erosion Control Mix shall 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.

10. Guardrail posts as shown in the Standard Details shall be modified from the indicated length of 6 feet to a length of 7 feet with an embedment of 4.5 feet. Payment will be considered incidental to the guardrail pay items.

11. A Tangental End Treatment shall be installed concurrently with the placement of each section of beam guardrail. (*ET-PLUS)

12. 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.

13. 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.

14. 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.

15. 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.

16. The project Geotechnical Report titled: Geotechnical Design Report for the Replacement of Little Mud Brook Bridge over Little Mud Brook, Prentiss TWP, ME, Soils Report No. 2010-11, March 30, 2010 may be accessed at the MaineDOT web address.

17. 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.

GENERAL CONSTRUCTION NOTES Cont...

18. 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.

19 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.

20. Bench existing fill slope soils in accordance with MaineDOT Standard Specification 203.09, Preparation of Embankment Area, where new fill slope extensions are constructed over existing slopes with grades greater than 2:1 (H:V).

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

22. The riprap slope protection shall be constructed as shown on the Standard Detail 610 (03), Stone Scour Protection, except that the aggregate cushion layer shall be 12 inches thick and the geotextile shall be non-woven and meet the requirements of 722.03, Erosion Control Geotextile, Class 1.

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

24. Immediately prior to breeching cofferdams, the newly installed streambed material within the concrete box culvert must be washed, to the satisfaction of the Resident, to facilitate removal of fine silt and clay particles from the streambed surface. The wash water must then be pumped to a temporary sedimentation basin and not allowed to discharge directly into the stream. Streambed material washing will be incidental to Item No. 534.7101 Precast Concrete Box Culvert - State Supplied.

25. The centerline of utility poles is approximately 8' inside of the concrete box culvert outlet. No utility pole relocations will occur; so the Contractor shall conduct box culvert placements accordingly.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

16742.00

PIN 16742.00

BRIDGE NO. 5707

BRIDGE PLANS

		BY	DATE
PROJ. MANAGER	S. Bodge		
DESIGN-DETAILED	R. Elena	DMS	
CHECKED-REVIEWED			
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

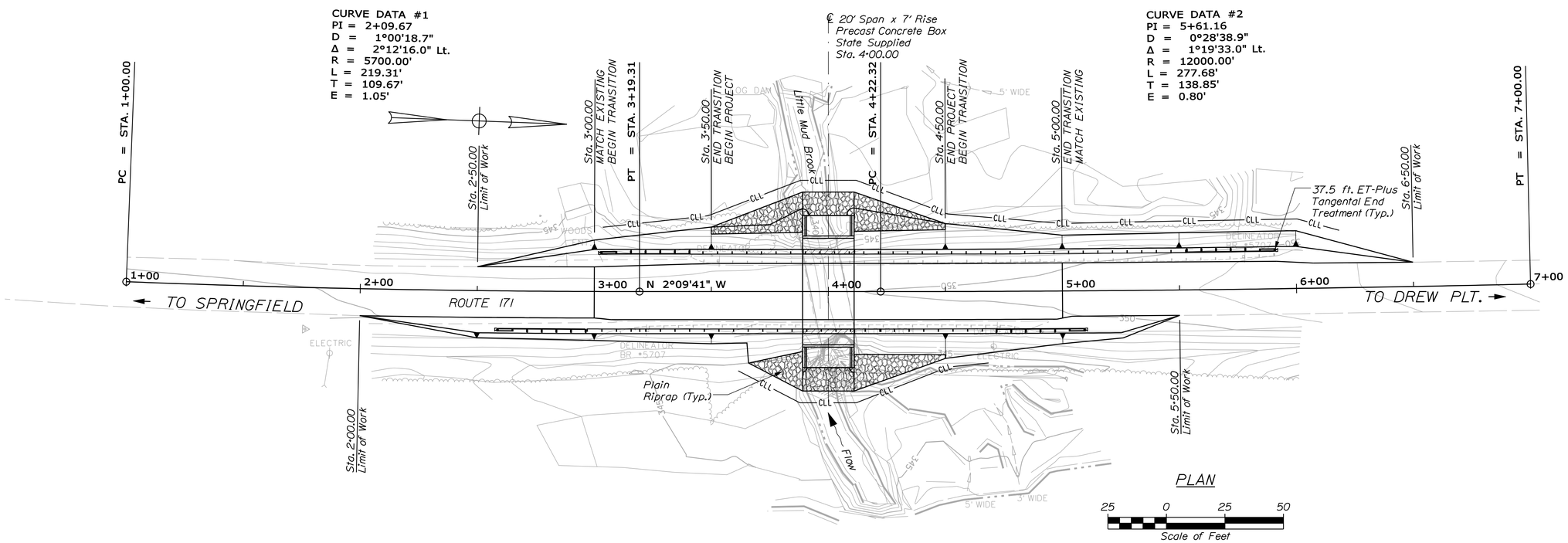
DATE

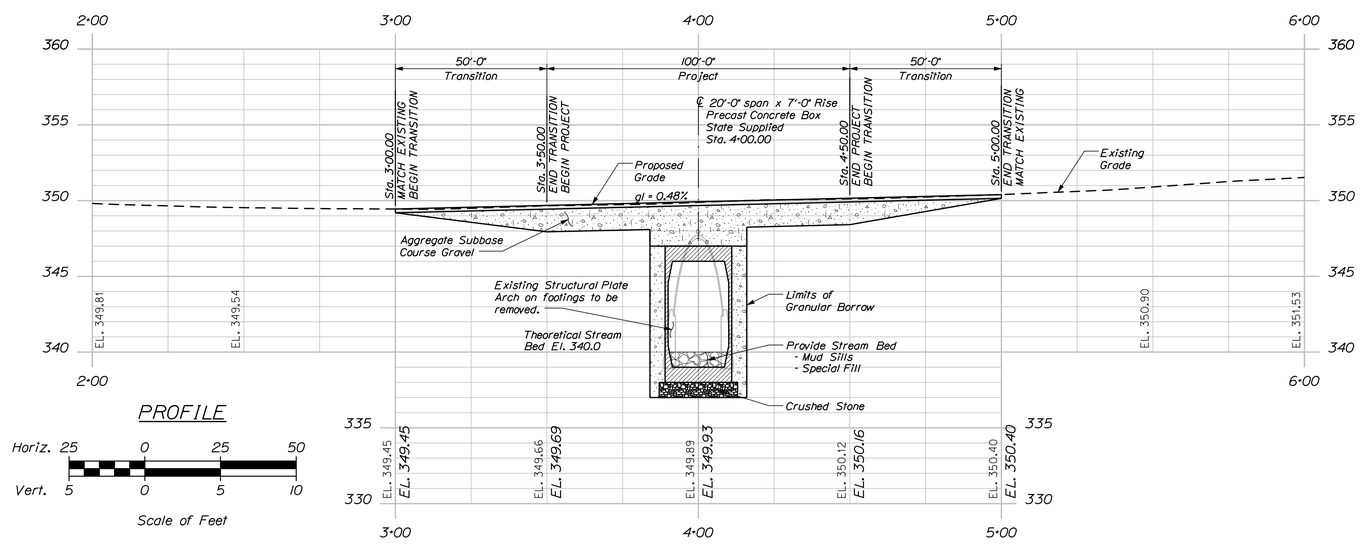
LITTLE MUD BROOK BRIDGE
LITTLE MUD BROOK
PRENTISS TWP PENOBSCOT COUNTY

ESTIMATED QUANTITIES & NOTES

SHEET NUMBER
2
OF 12

Filename: ...\bridge\vmsto\002_Estimate.dgn Division: BRIDGE Username: david.sullivan Date:5/6/2010





STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

16742.00

PIN 16742.00

BRIDGE NO. 5707

BRIDGE PLANS

PROJ. MANAGER	S. Bodge	BY	DATE
DESIGN-DETAILED	R. Ellena	DMS	-
CHECKED-REVIEWED	------	------	------
DESIGN2-DETAILED2	------	------	------
DESIGN3-DETAILED3	------	------	------
REVISIONS 1	------	------	------
REVISIONS 2	------	------	------
REVISIONS 3	------	------	------
REVISIONS 4	------	------	------
FIELD CHANGES	------	------	------

SIGNATURE

P.E. NUMBER

DATE

LITTLE MUD BROOK BRIDGE
LITTLE MUD BROOK
PRENTISS TWP PENOBSCOT COUNTY

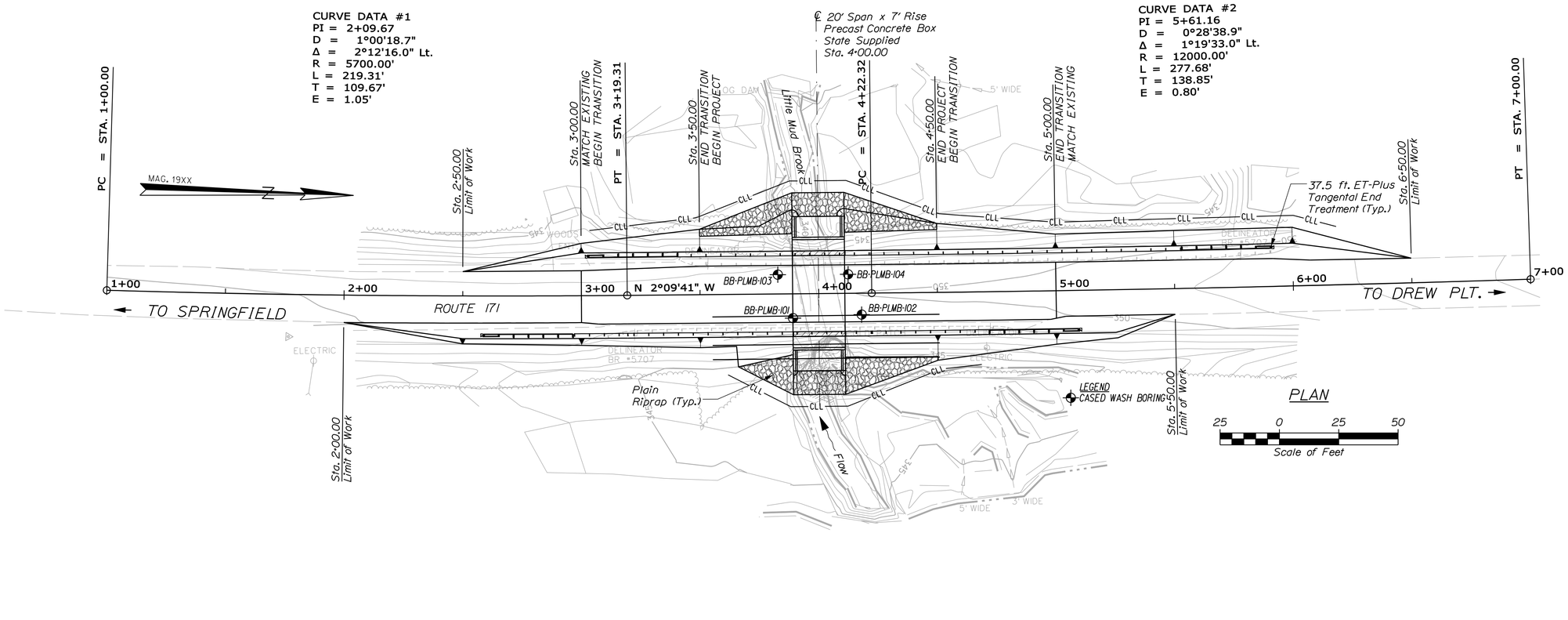
PLAN & PROFILE

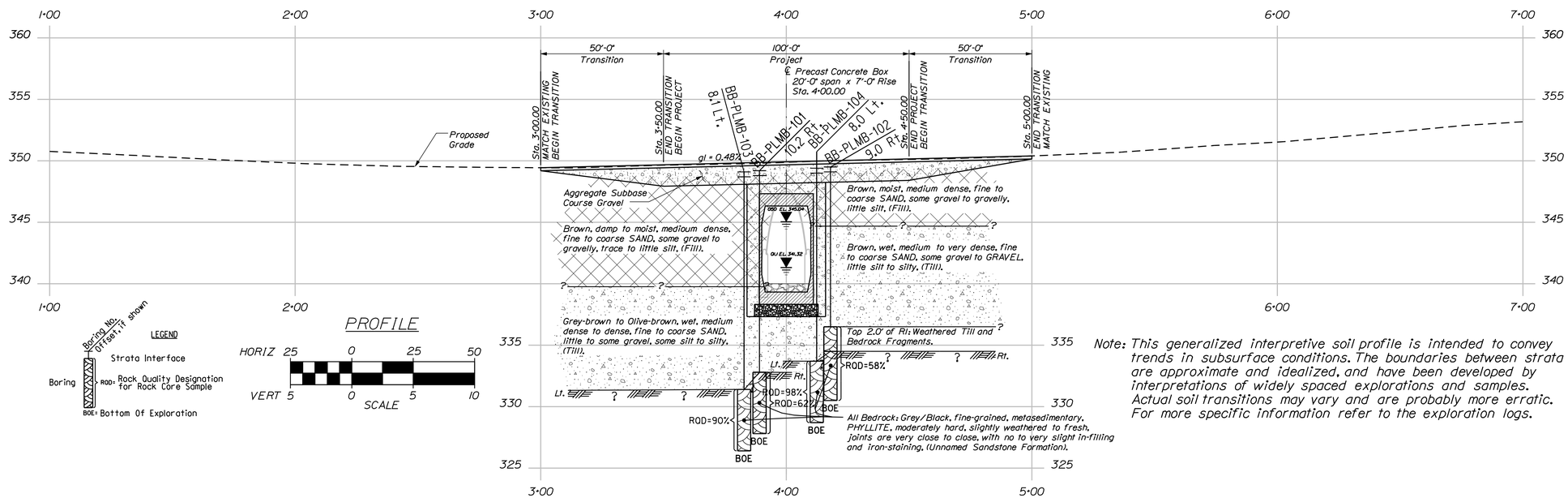
SHEET NUMBER

3

OF 12

Filename: ...\00\bridge\msta\003_Plan.dgn Division: BRIDGE Username: david.sullivan Date:5/6/2010





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

16742.00

PIN 16742.00

BRIDGE PLANS

BRIDGE NO. 5707

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

SIGNATURE

P.E. NUMBER

DATE

LITTLE MUD BROOK BRIDGE
LITTLE MUD BROOK
PRENTISS TWP PENOBSCOT COUNTY

BORING LOCATION PLAN & INTERPRETIVE SUBSURFACE PROFILE

SHEET NUMBER

4

OF 12

Filename: ...\GEOTECH\MSTA\004_BLP&ISP1.dgn Division: BRIDGE Username: david.sullivan Date:5/6/2010

Filename: ...\MSTA\005_BORING LOGS1.dgn Division: BRIDGE Username: david.sullivan Date:5/6/2010

Maine Department of Transportation — Soil/Rock Exploration Log — US CUSTOMARY UNITS

Project: Little Mud Brook Bridge #5707 carrying Route 171 over Little
Location: Prentiss Township

Boring No.: BB-PLMB-103
PIN: 16742.00

Driller:	MaineDOT	Elevation (ft.)	349.1
Operator:	Giguere/Giles/Wright	Datum:	NAVD 88
Logged By:	B. Wilder	Rig Type:	CME 45C
Date Start/Finish:	11/17/09; 08:00-10:30	Drilling Method:	Cased Wash Boring
Boring Location:	3+82.8, 8.1 Lt.	Casing ID/OD:	NW
Hammer Efficiency Factor:	0.84	Hammer Type:	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐
Auger ID/OD:	5" Solid Stem	Sampler:	Standard Split Spoon
Hammer Wt./Fall:	140#/30"	Core Barrel:	NQ-2"
Water Level*:	4.0' bgs.		

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
MR = 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

Sample Information

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.)
0							SSA	348.70
5	10	24/10	1.00 - 3.00	8/9/11/11	20	28		
5	20	24/12	5.00 - 7.00	5/8/11/12	19	27		
10	30	24/18	10.00 - 12.00	11/13/11/10	24	34		340.10
15	40	24/16	15.00 - 17.00	11/13/13/15	26	36		335.10
15	R1	60/54	17.70 - 22.70	RQD = 90%			NQ-2	331.40
20								326.40
25								

Visual Description and Remarks

PAVEMENT. — 0.40

Brown, damp, medium dense, gravelly, fine to coarse SAND, trace to little silt.

Cobble from 3.5-4.0' bgs.

Similar to above.

9.00

Olive-brown, wet, dense, silty, fine to coarse SAND, little gravel. (Till).

14.00

Grey, wet, dense, silty, fine to coarse SAND, little gravel. (Till).

0125 blows for 0.7'.

17.70

Top of Bedrock at Elev. 331.4'.
R1 Bedrock:
Grey/black, fine-grained, metasedimentary, PHYLLITE, moderately hard with numerous large pyrite crystals, rock is fresh, joints are close, tight, no significant in-filling, and generally follow bedding planes [Unnamed Sandstone Formation].

R1:Core Times (min:sec)
17.7-18.7' (3:01)
18.7-19.7' (2:37)
19.7-20.7' (2:38)
20.7-21.7' (2:12)
21.7-22.7' (2:26) 90% Recovery

22.70

Bottom of Exploration at 22.70 feet below ground surface.

Laboratory Testing Results/ AASHTO and Unified Class

Remarks:
500# down pressure on Core Barrel.

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-PLMB-103

Maine Department of Transportation — Soil/Rock Exploration Log — US CUSTOMARY UNITS

Project: Little Mud Brook Bridge #5707 carrying Route 171 over Little
Location: Prentiss Township

Boring No.: BB-PLMB-101
PIN: 16742.00

Driller:	MaineDOT	Elevation (ft.)	349.2
Operator:	Giguere/Giles/Wright	Datum:	NAVD 88
Logged By:	B. Wilder	Rig Type:	CME 45C
Date Start/Finish:	11/16/09; 09:00-12:00	Drilling Method:	Cased Wash Boring
Boring Location:	3+89.1, 10.2 Rt.	Casing ID/OD:	NW
Hammer Efficiency Factor:	0.84	Hammer Type:	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐
Auger ID/OD:	5" Solid Stem	Sampler:	Standard Split Spoon
Hammer Wt./Fall:	140#/30"	Core Barrel:	NQ-2"
Water Level*:	3.4' bgs.		

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
MR = 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

Sample Information

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.)
0							SSA	348.80
5	10	24/13	1.00 - 3.00	10/12/8/8	20	28		
5	20	24/8	5.00 - 7.00	10/12/5/6	17	24		344.20
10	30	24/16	10.00 - 12.00	2/5/8/7	13	18		339.70
15	40	16.8/16	15.00 - 16.40	14/13/50(4.8")	---			
15	R1		16.40 - 21.40	RQD = 62%			NQ-2	332.80
20								327.80
25								

Visual Description and Remarks

PAVEMENT. — 0.40

Brown, damp, medium dense, fine to coarse SAND, some gravel, little silt. (Fill).

5.00

Brown, moist, medium dense, gravelly fine to coarse SAND, little silt. (Till).

9.50

Grey-brown, wet, medium dense, fine to coarse SAND, some gravel and silt. (Till).

Similar to above, except rock fragments in spoon tip.

16.40

Top of Bedrock at Elev. 332.8'.
R1 Bedrock:
Grey/black, fine-grained, metasedimentary, PHYLLITE, moderately hard with numerous large pyrite crystals, slightly weathered with iron staining from 16.4 to 18.0 ft, remainder is fresh, joints are very close to close and range from horizontal to vertical, open with silt in-filling, joints are wide and tight from 18.0 to 21.4 ft and generally follow bedding planes [Unnamed Sandstone Formation].

R1:Core Times (min:sec)
16.4-17.4' (2:48)
17.4-18.4' (2:44)
18.4-19.4' (2:46)
19.4-20.4' (2:37)
20.4-21.4' (2:38)

21.40

Bottom of Exploration at 21.40 feet below ground surface.

Laboratory Testing Results/ AASHTO and Unified Class

GM236872 A-1-b, SM WC=3.8%

GM236873 A-1-b, SM WC=6.1%

GM236874 A-1-b, SM WC=14.3%

Remarks:
500# down pressure on Core Barrel.

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-PLMB-101

Maine Department of Transportation — Soil/Rock Exploration Log — US CUSTOMARY UNITS

Project: Little Mud Brook Bridge #5707 carrying Route 171 over Little
Location: Prentiss Township

Boring No.: BB-PLMB-104
PIN: 16742.00

Driller:	MaineDOT	Elevation (ft.)	349.4
Operator:	Giguere/Giles/Wright	Datum:	NAVD 88
Logged By:	B. Wilder	Rig Type:	CME 45C
Date Start/Finish:	11/17/09; 10:30-13:30	Drilling Method:	Cased Wash Boring
Boring Location:	4+12.4, 8.0 Lt.	Casing ID/OD:	NW
Hammer Efficiency Factor:	0.84	Hammer Type:	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐
Auger ID/OD:	5" Solid Stem	Sampler:	Standard Split Spoon
Hammer Wt./Fall:	140#/30"	Core Barrel:	NQ-2"
Water Level*:	6.2' bgs.		

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
MR = 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

Sample Information

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.)
0							SSA	349.00
5	10	24/17	1.00 - 3.00	8/8/10/10	18	25		
5	20	18/11	5.00 - 6.50	4/21/50	71	99		344.90
10	30	24/15	10.00 - 12.00	5/8/6/8	14	20	10	
15	40	8.4/5	15.00 - 15.70	6/40(2.4")	---	090	NQ-2	335.40
15	R1	60/59	15.70 - 20.70	RQD = 98%				333.70
20								328.70
25								

Visual Description and Remarks

PAVEMENT. — 0.40

Brown, moist, medium dense, fine to coarse SAND, some gravel, little silt. (Fill).

4.50

Brown, wet, very dense, GRAVEL, some fine to coarse sand, little silt, occasional cobbles. (Till).

Cobble from 6.4-6.9' bgs.

9.50

Olive-brown, wet, medium dense, gravelly fine to coarse SAND, little silt. (Till).

14.00

090 blows for 0.7'.
Grey, wet, very dense, silty, fine to coarse SAND, some gravel. (Till).

15.70

Top of Bedrock at Elev. 333.7'.
R1:Bedrock:
Grey/black, fine-grained, metasedimentary, PHYLLITE, moderately hard with numerous large pyrite crystals, rock is fresh, joints are close, tight, no significant in-filling, and generally follow bedding planes [Unnamed Sandstone Formation].

R1:Core Times (min:sec)
15.7-16.7' (3:13)
16.7-17.7' (2:41)
17.7-18.7' (2:49)
18.7-19.7' (2:32)
19.7-20.7' (2:26) 98% Recovery

20.70

Bottom of Exploration at 20.70 feet below ground surface.

Laboratory Testing Results/ AASHTO and Unified Class

GM236875 A-1-b, SM WC=6.6%

GM236876 A-1-b, GM WC=6.2%

GM236877 A-1-b, SM WC=17.9%

Remarks:
500# down pressure on Core Barrel.

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-PLMB-104

Maine Department of Transportation — Soil/Rock Exploration Log — US CUSTOMARY UNITS

Project: Little Mud Brook Bridge #5707 carrying Route 171 over Little
Location: Prentiss Township

Boring No.: BB-PLMB-102
PIN: 16742.00

Driller:	MaineDOT	Elevation (ft.)	349.5
Operator:	Giguere/Giles/Wright	Datum:	NAVD 88
Logged By:	B. Wilder	Rig Type:	CME 45C
Date Start/Finish:	11/16/09; 12:30-14:30	Drilling Method:	Cased Wash Boring
Boring Location:	4+18, 9.0 Rt.	Casing ID/OD:	NW
Hammer Efficiency Factor:	0.84	Hammer Type:	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐
Auger ID/OD:	5" Solid Stem	Sampler:	Standard Split Spoon
Hammer Wt./Fall:	140#/30"	Core Barrel:	NQ-2"
Water Level*:	4.0' bgs.		

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
MR = 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

Sample Information

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.)
0							SSA	349.10
5	10	24/16	1.00 - 3.00	6/8/9/9	17	24		
5	20	24/14	5.00 - 7.00	5/6/6/7	12	17		344.50
10	30	24/17	10.00 - 12.00	5/5/8/11	13	18		340.00
15	R1	72/60	13.00 - 19.00	RQD = 58%			NQ-2	336.50
20								334.50
20								330.50
25								

Visual Description and Remarks

PAVEMENT. — 0.40

Brown, moist, medium dense, gravelly, fine to coarse SAND, little silt. (Fill).

5.00

Brown, wet, medium dense, silty fine to coarse SAND, little to some gravel. (Till).

9.50

Weathered till and bedrock fragments.

13.00

Core Barrel droped from 14.2-15.0' bgs.

Top of Bedrock at Elev. 334.5'.
R1:Bedrock:

Grey/black, fine-grained, metasedimentary, PHYLLITE, moderately hard with numerous large pyrite crystals, slightly weathered with iron staining from 14.0 to 15.3 ft, remainder is fresh, joints are very close to close and range from horizontal to vertical, open with silt in-filling, joints are wide and tight after 15.3 ft and generally follow bedding planes [Unnamed Sandstone Formation].

R1:Core Times (min:sec)
13.0-14.0' (2:20)
14.0-15.0' (1:36)
R1:Com.:Core Times (min:sec)
15.0-16.0' (2:24)
16.0-17.0' (2:02)
17.0-18.0' (2:32)
18.0-19.0' (2:15) 83% Recovery

19.00

Bottom of Exploration at 19.00 feet below ground surface.

Laboratory Testing Results/ AASHTO and Unified Class

Remarks:
500# down pressure on Core Barrel.

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-PLMB-102

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

16742.00

PIN
16742.00

BRIDGE NO. 5707 — BRIDGE PLANS

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

SIGNATURE

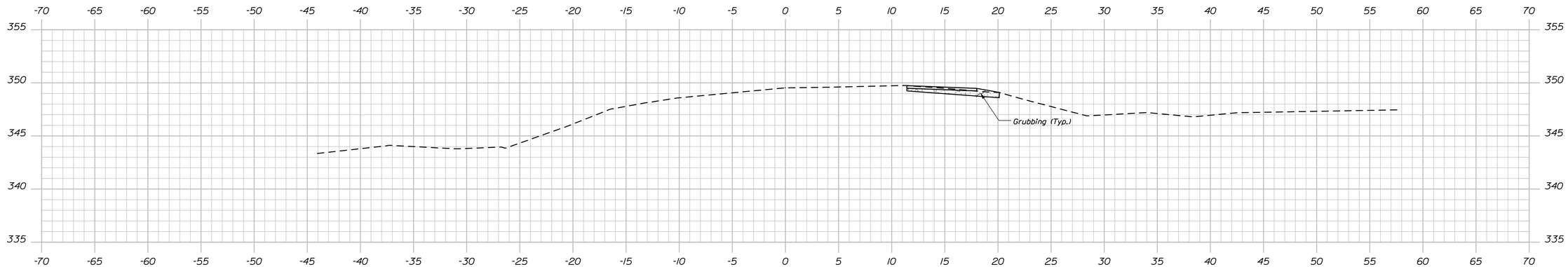
P.E. NUMBER

DATE

LITTLE MUD BROOK BRIDGE
LITTLE MUD BROOK
PRENTISS TWP PENOBSCOT COUNTY

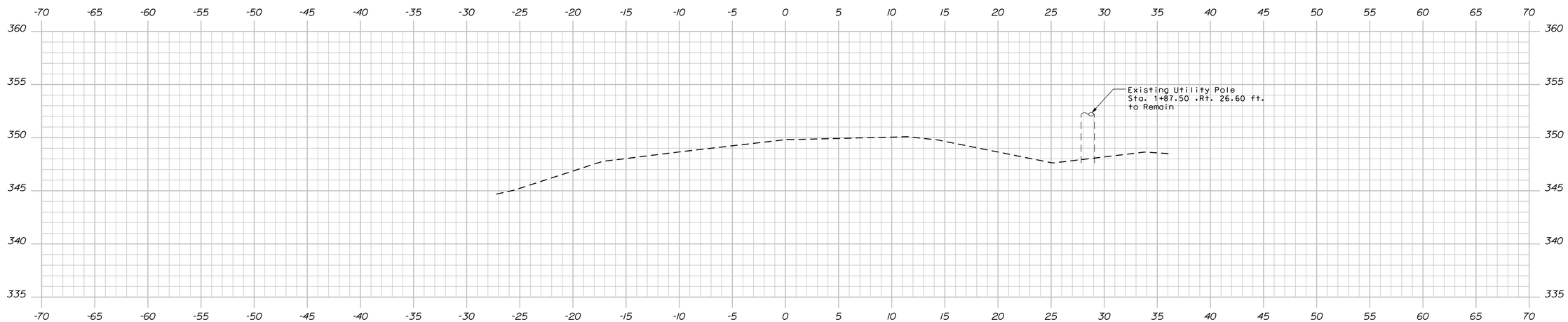
BORING LOGS

SHEET NUMBER
5
OF 12



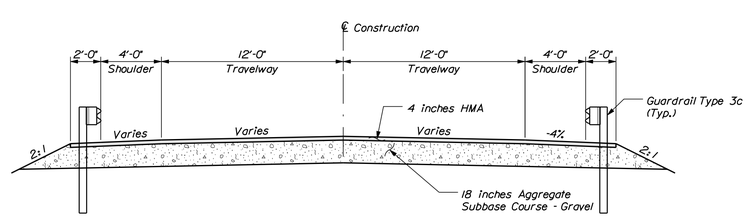
2+50.00

Sta. 2+96.30 to Sta. 4+71.80
Install 175 ft. Type 3c Guardrail. Right
Sta. 2+59.00, Rt. 16 ft. to Sta. 2+96.30, Rt. 16 ft.
Install ET-Plus Terminal End



2+00.00

STA. 2+00.00
LIMIT OF WORK, RT.



TYPICAL APPROACH SECTION

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

16742.00

PIN
16742.00

BRIDGE NO. 5707

BRIDGE PLANS

		BY	DATE
PROJ. MANAGER	S. Bodge		
DESIGN-DETAILED	R. Elleno	DMS	
CHECKED-REVIEWED			
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

LITTLE MUD BROOK BRIDGE
LITTLE MUD BROOK
PRENTISS TWP PENOBSCOT COUNTY

CROSS SECTIONS

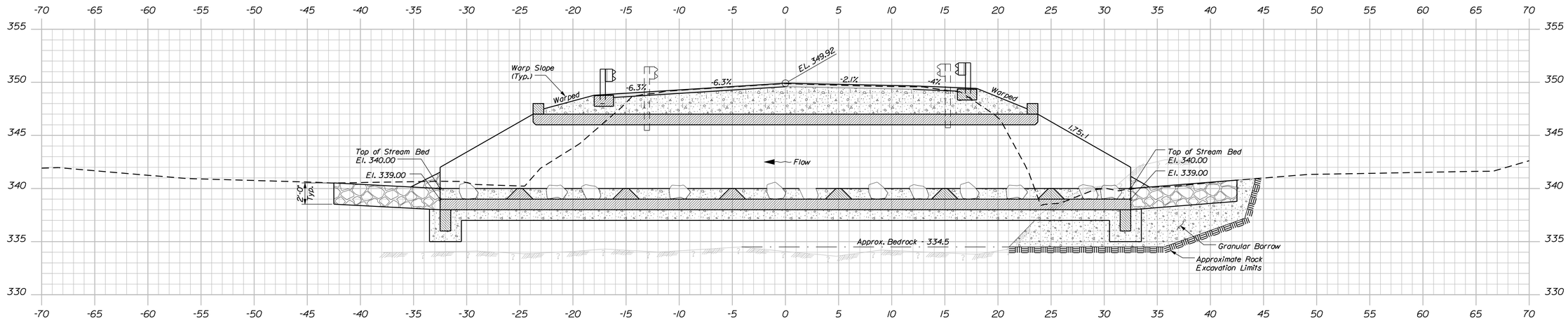
SHEET NUMBER

6

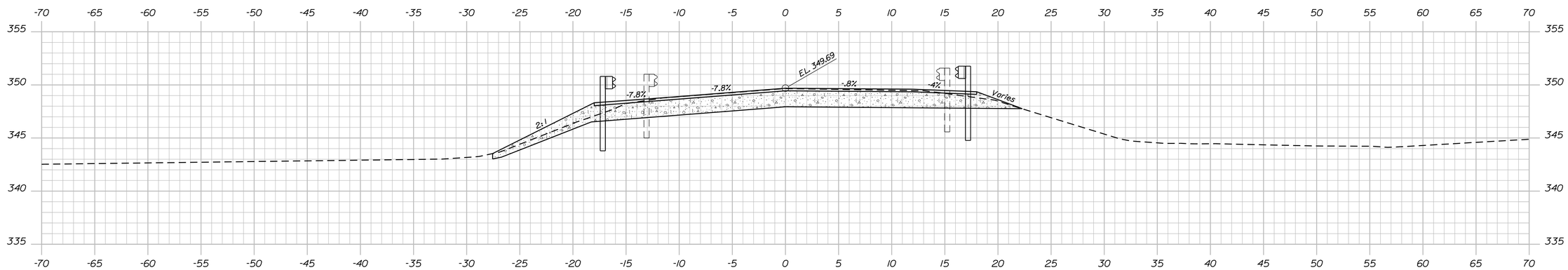
OF 12

Sta. 1+50.00 to Sta. 2+50.00

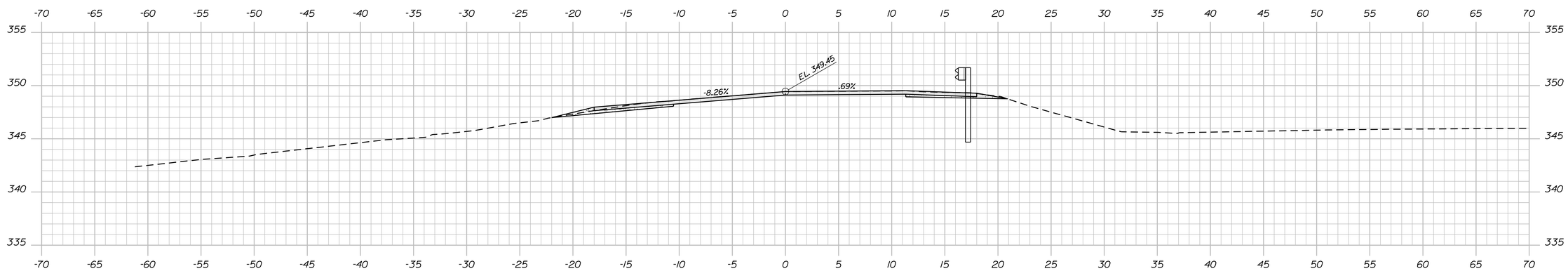
Filename: ...\MSTA\006_XSECT_1+50_001.dgn Division: BRIDGE Username: david.sullivan Date:5/6/2010



4+00.00



3+50.00 END TRANSITION
BEGIN PROJECT



Sta. 3+03.09, Lt. 16 ft. to Sta. 3+40.64, Lt. 16 ft.
Install ET-Plus Terminal End
Sta. 3+40.64 to Sta. 5+53.31
Install 212.5 ft. Type 3c Guardrail, Right

3+00.00 MATCH EXISTING
BEGIN TRANSITION

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

16742.00

PIN
16742.00

BRIDGE PLANS

BRIDGE NO. 5707

		BY	DATE
PROJ. MANAGER	S. Bodge		
DESIGN-DETAILED	R. Elleno	DMS	-
CHECKED-REVIEWED	-----	-----	-----
DESIGN2-DETAILED2	-----	-----	-----
DESIGN3-DETAILED3	-----	-----	-----
REVISIONS 1	-----	-----	-----
REVISIONS 2	-----	-----	-----
REVISIONS 3	-----	-----	-----
REVISIONS 4	-----	-----	-----
FIELD CHANGES	-----	-----	-----

SIGNATURE

P.E. NUMBER

DATE

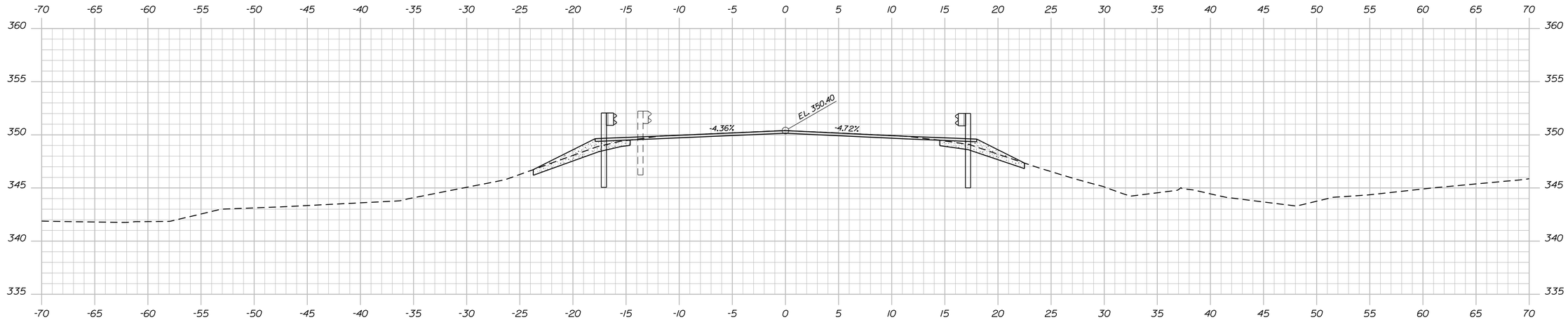
LITTLE MUD BROOK BRIDGE
LITTLE MUD BROOK
PRENTISS TWP PENOBSCOT COUNTY

CROSS SECTIONS

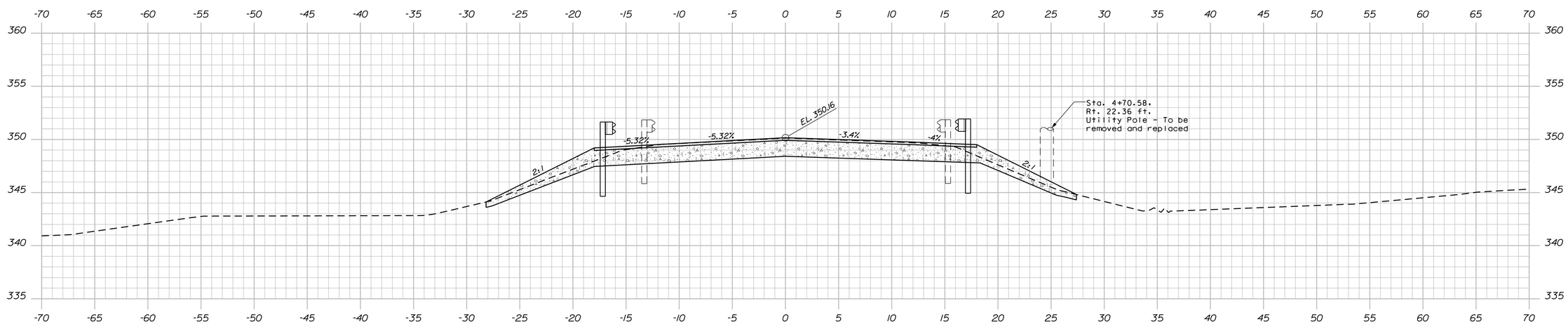
SHEET NUMBER
7
OF 12

Filename: ...\MSTA\007_XSECT_3+00_002.dgn Division: BRIDGE Username: david.sullivan Date:5/6/2010

Sta. 3+00.00 to Sta. 4+00.00



5+00.00 END TRANSITION
MATCH EXISTING



4+50.00 END PROJECT
BEGIN TRANSITION

Sta. 4+71.79, Rt. 16 ft. to Sta. 5+09.24, Rt. 16 ft.
Install ET-Plus Terminal End

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

16742.00

PIN
16742.00

BRIDGE NO. 5707

BRIDGE PLANS

PROJ. MANAGER	S. Bodge	BY	DATE
DESIGN-DETAILED	R. Elena	DMS	-
CHECKED-REVIEWED	------	------	------
DESIGN2-DETAILED2	------	------	------
DESIGN3-DETAILED3	------	------	------
REVISIONS 1	------	------	------
REVISIONS 2	------	------	------
REVISIONS 3	------	------	------
REVISIONS 4	------	------	------
FIELD CHANGES	------	------	------

SIGNATURE

P.E. NUMBER

DATE

LITTLE MUD BROOK BRIDGE
LITTLE MUD BROOK
PRENTISS TWP PENOBSCOT COUNTY

CROSS SECTIONS

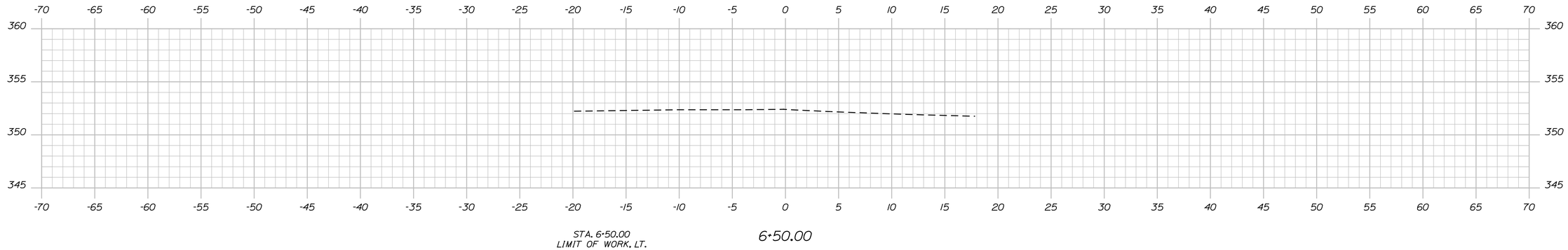
SHEET NUMBER

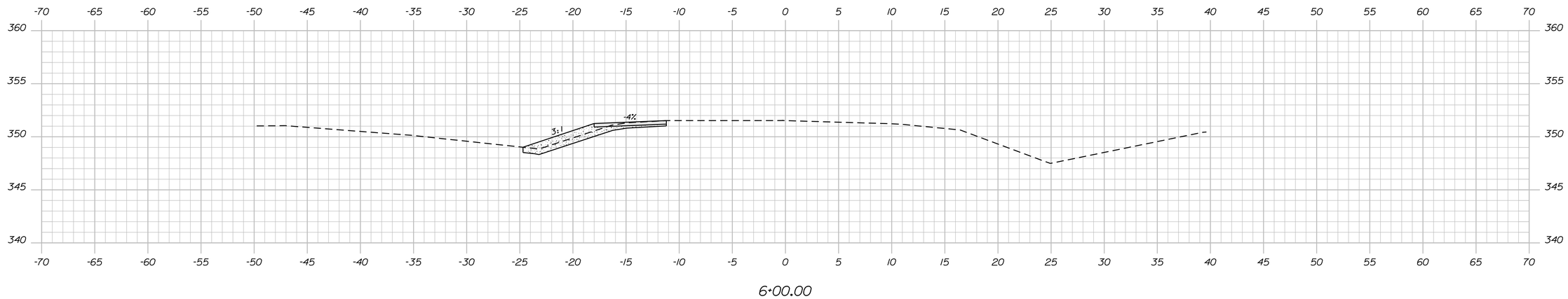
8

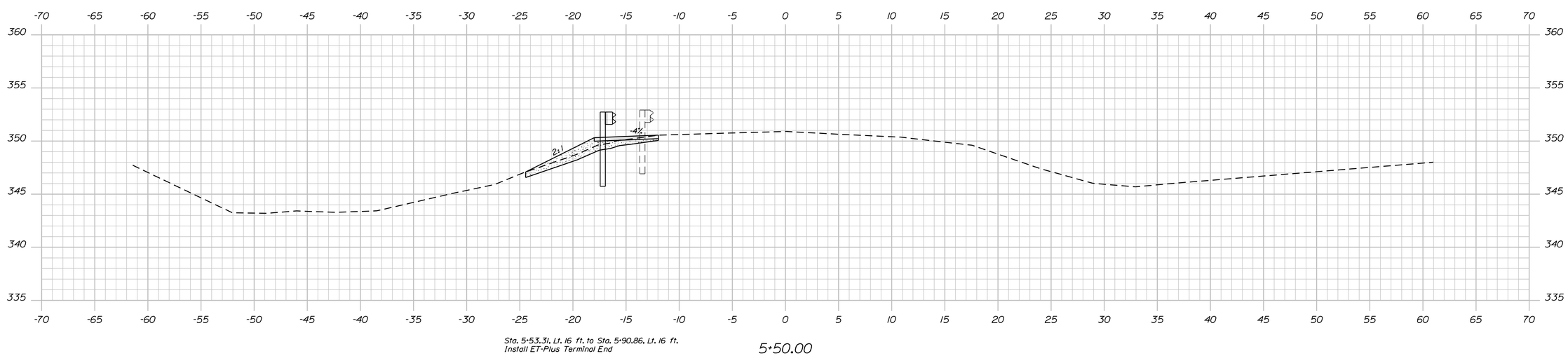
OF 12

Sta. 4+00.10 to Sta. 5+00.00

Filename: ...\MSTA\008_XSECT_4+00_003.dgn Division: BRIDGE Username: david.sullivan Date:5/6/2010







STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

16742.00

PIN
16742.00

BRIDGE NO. 5707

BRIDGE PLANS

	BY	DATE
PROJ. MANAGER	S. Bodge	
DESIGN-DETAILED	R. Elena	
CHECKED-REVIEWED	DMS	
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

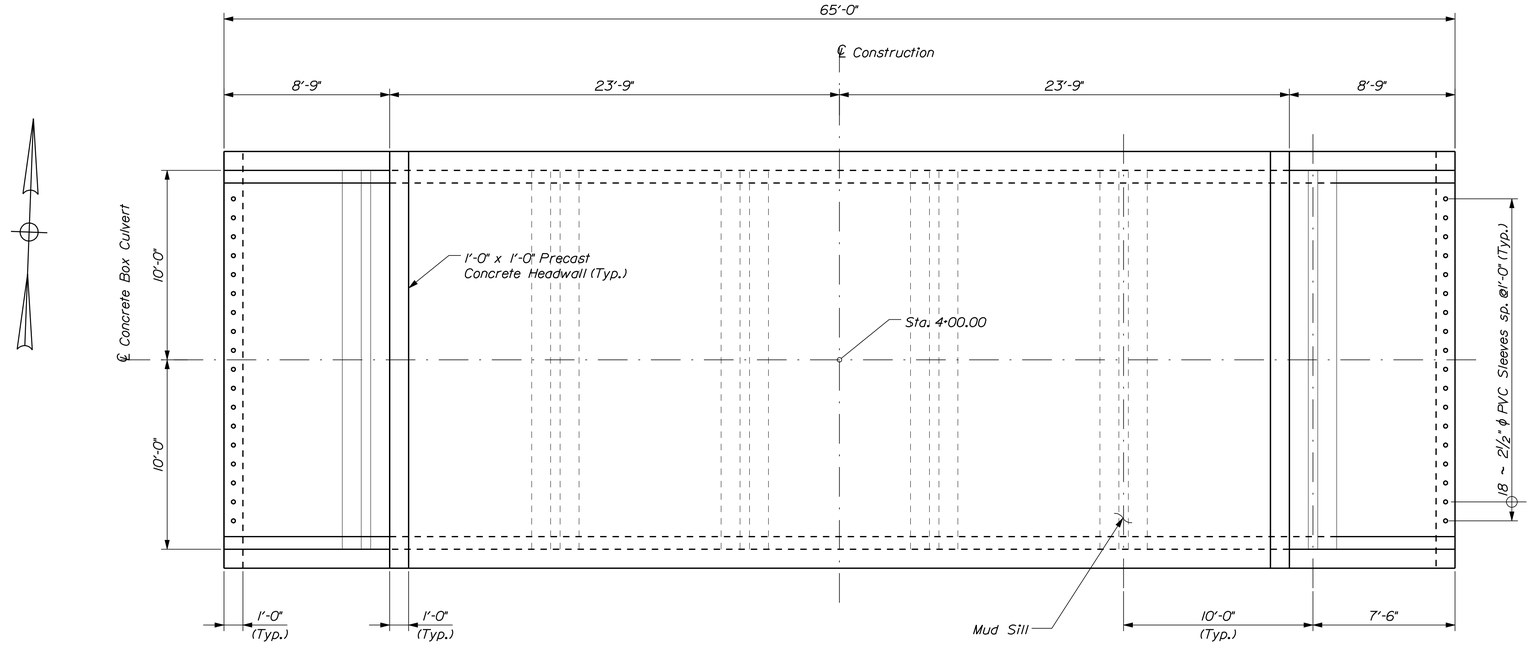
LITTLE MUD BROOK BRIDGE
LITTLE MUD BROOK
PRENTISS TWP PENOBSCOT COUNTY

CROSS SECTIONS

SHEET NUMBER
9
OF 12

Sta. 5+50.00 to Sta. 6+50.00

Filename: ...\MSTA\009_XSECT_5+50_004.dgn Division: BRIDGE Username: dovid.sullivan Date:5/6/2010



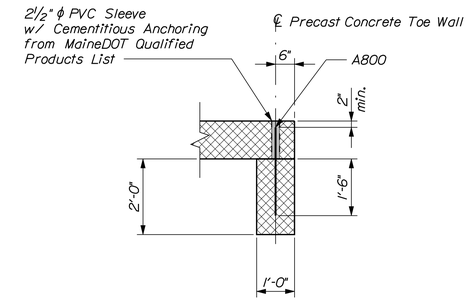
CONCRETE BOX PLAN

PRECAST CONCRETE BOXES NOTES:

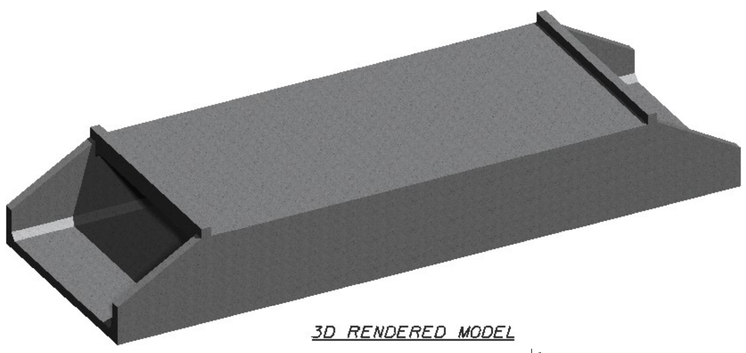
1. The precast units shall be designed to carry construction loadings with a minimum fill cover of 18 inches over the top of the units.

2. 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.

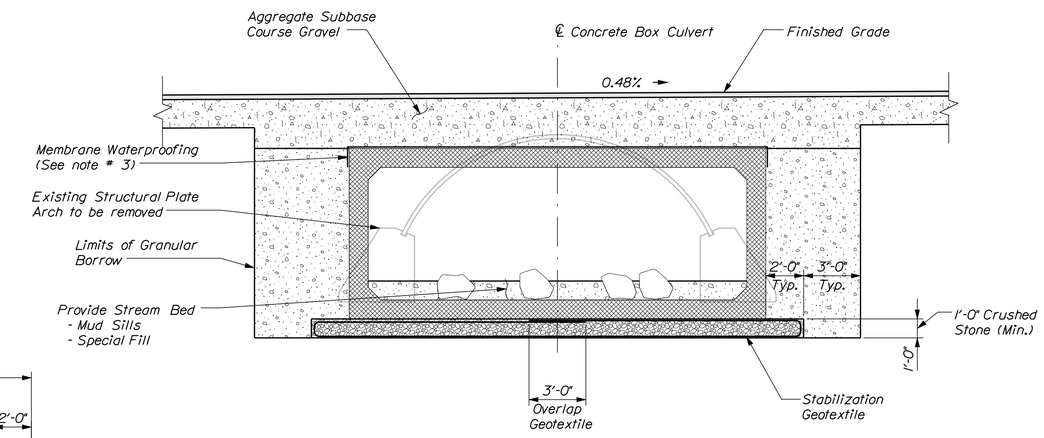
3. Install standard membrane waterproofing over the top and to 12 inches down the exterior sides of the precast units.



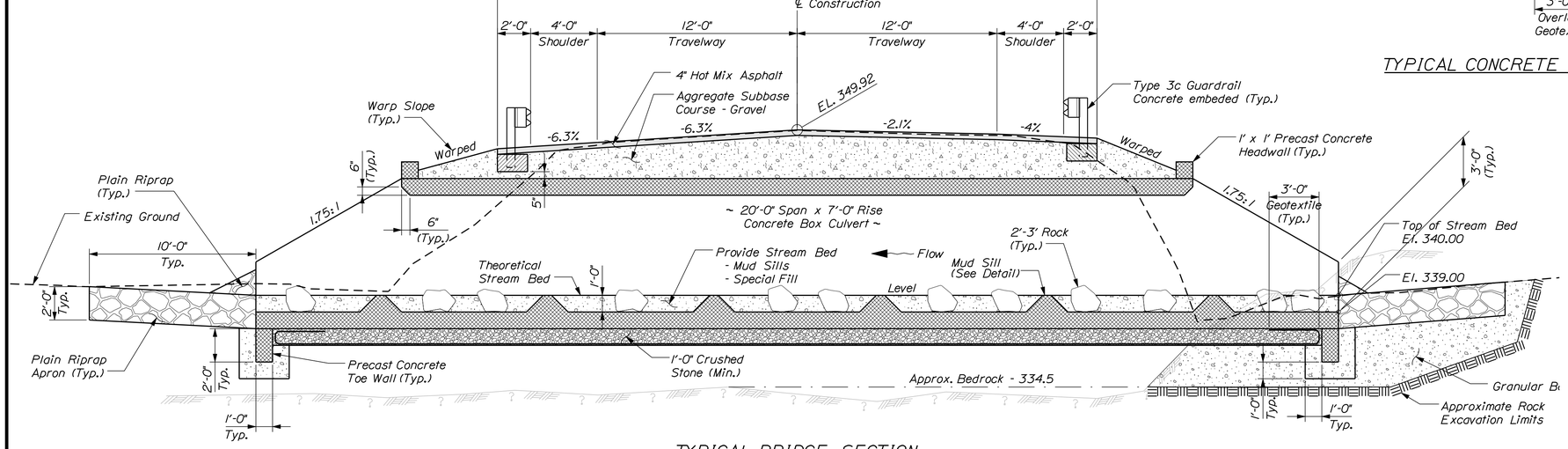
PRECAST CONCRETE TOE WALL DETAIL



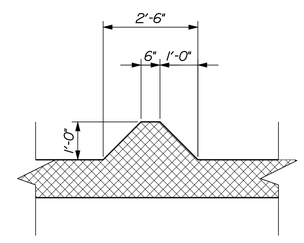
3D RENDERED MODEL



TYPICAL CONCRETE BOX SECTION



TYPICAL BRIDGE SECTION



MUD SILL DETAIL

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

16742.00

PIN 16742.00

BRIDGE PLANS

BRIDGE NO. 5707

PROJ. MANAGER	S. Bridge	BY	DATE
DESIGN-DETAILED	R. Ellena	DMS	-
CHECKED-REVIEWED	-----	-----	-----
DESIGN2-DETAILED2	-----	-----	-----
DESIGN3-DETAILED3	-----	-----	-----
REVISIONS 1	-----	-----	-----
REVISIONS 2	-----	-----	-----
REVISIONS 3	-----	-----	-----
REVISIONS 4	-----	-----	-----
FIELD CHANGES	-----	-----	-----

SIGNATURE

P.E. NUMBER

DATE

LITTLE MUD BROOK BRIDGE
LITTLE MUD BROOK
PRENTISS TWP PENOBSCOT COUNTY

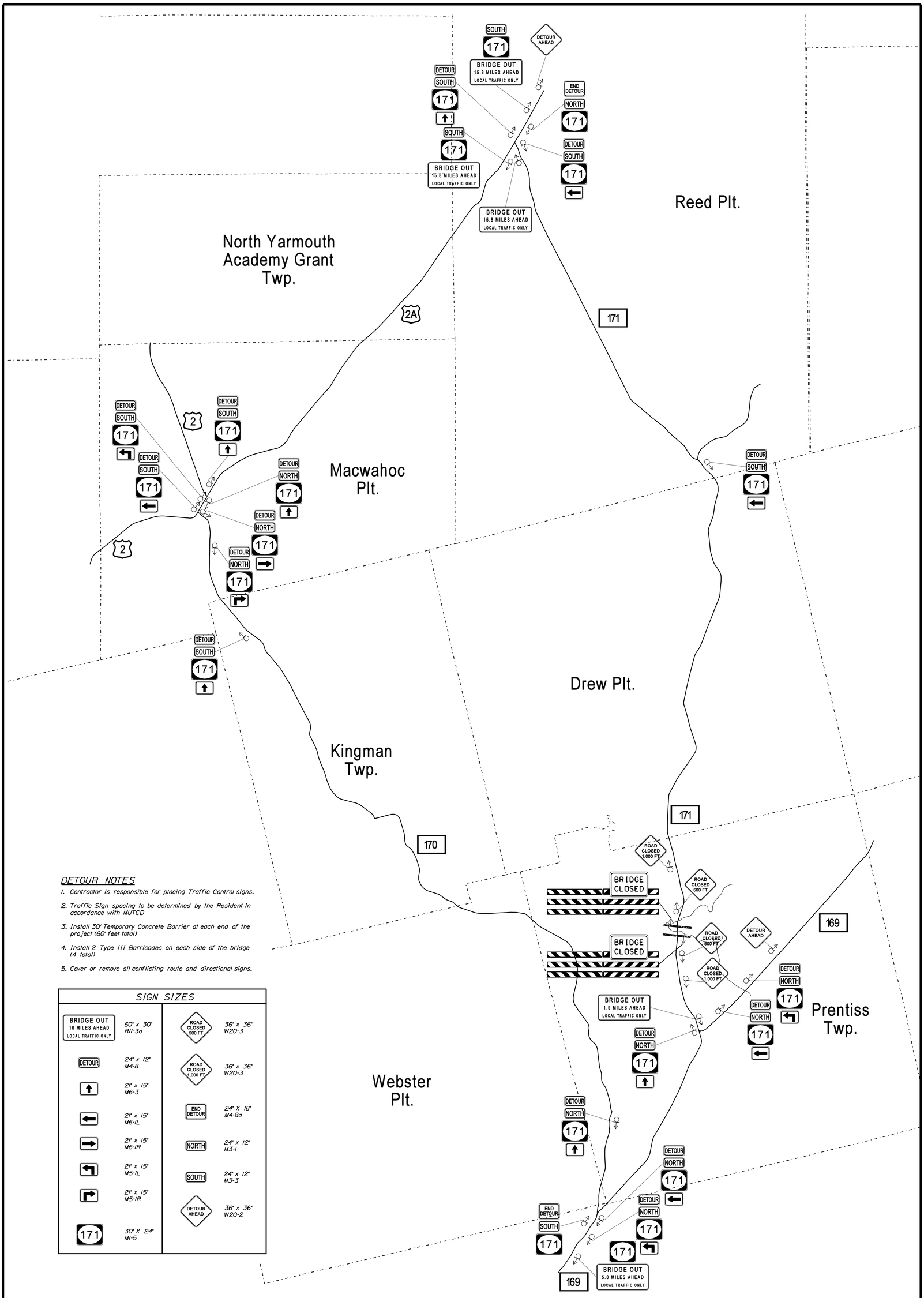
PRECAST CONCRETE BOX DETAILS

SHEET NUMBER

10

OF 12

Filename: ...\MSTA\010_Box_Details.dgn Division: BRIDGE Username: david.sullivan Date:5/6/2010



DETOUR NOTES

1. Contractor is responsible for placing Traffic Control signs.
2. Traffic Sign spacing to be determined by the Resident in accordance with MUTCD
3. Install 30' Temporary Concrete Barrier at each end of the project (60' feet total)
4. Install 2 Type III Barricades on each side of the bridge (4 total)
5. Cover or remove all conflicting route and directional signs.

SIGN SIZES

BRIDGE OUT 10 MILES AHEAD LOCAL TRAFFIC ONLY	60" x 30" R11-3a	ROAD CLOSED 500 FT	36" x 36" W20-3
DETOUR	24" x 12" M4-8	ROAD CLOSED 1,000 FT	36" x 36" W20-3
↑	21" x 15" M6-3	END DETOUR	24" X 18" M4-8a
←	21" x 15" M6-1L	NORTH	24" x 12" M3-1
→	21" x 15" M6-1R	SOUTH	24" x 12" M3-3
↰	21" x 15" M5-1L	DETOUR AHEAD	36" x 36" W20-2
↱	21" x 15" M5-1R		
171	30" x 24" M1-5		

SHEET NUMBER 11 OF 12

LITTLE MUD BROOK BRIDGE
LITTLE MUD BROOK
PRENTISS TWP PENOBSCOT COUNTY

TRAFFIC CONTROL PLAN

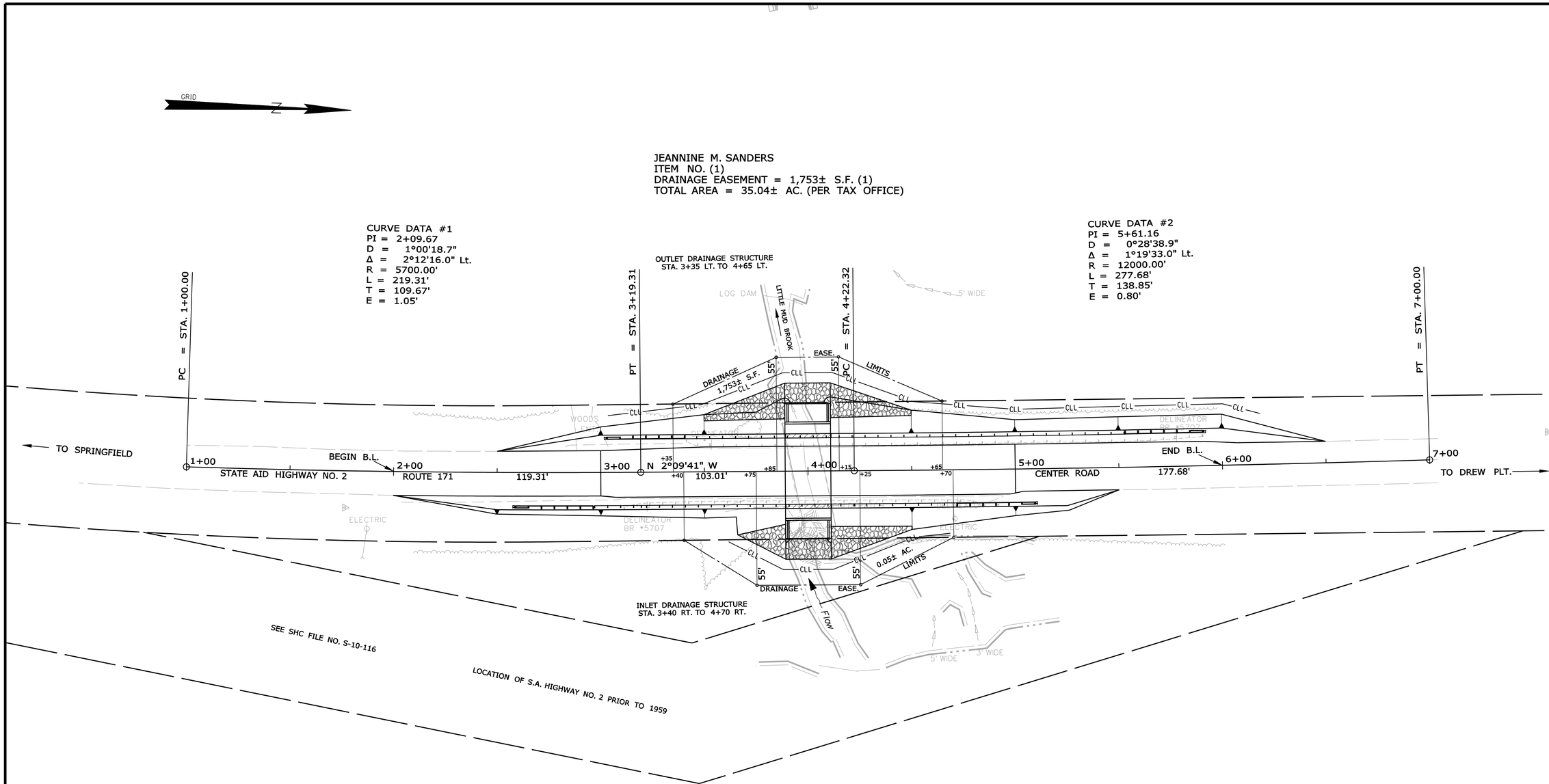
PROJ. MANAGER	S. Bodge	BY	DATE
DESIGN-DETAILED	R. Ellena	DMS	_
CHECKED-REVIEWED	_____	_____	_____
DESIGN2-DETAILED2	_____	_____	_____
DESIGN3-DETAILED3	_____	_____	_____
REVISIONS 1	_____		_____
REVISIONS 2	_____		_____
REVISIONS 3	_____		_____
REVISIONS 4	_____		_____
FIELD CHANGES	_____		_____

SIGNATURE
P.E. NUMBER
DATE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

16742.00

BRIDGE NO. 5707 PIN 16742.00 BRIDGE PLANS



R/W REFERENCES

PENOBSCOT COUNTY
VOL. 6 PG. 458
1858 (4 RODS)

SHC FILE NO. S-10-116
1957

BRIDGE NO. 5707

LITTLE MUD BROOK BRIDGE
OVER
LITTLE MUD BROOK

PIN 16742.00

SYMBOLS

- IP or IPF (IRON PIPE or PIN FOUND)
- S.T. (SEPTIC TANK)
- (ROW MONUMENT)
- BM (TRAVERSE POINT)
- WATER LINE
- GAS LINE
- ELECTRIC LINE
- TELEPHONE LINE
- SEWER LINE
- 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

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

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

REVISIONS			
NO.	DATE	DESCRIPTION	BY

PLAN FILED IN PLAN BOOK PAGE COUNTY RECORD

NO.	GRANTOR	INSTRUMENT	DATE	BOOK	PAGE
		COND.	5/3/10	12118	96

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

STATE OF MAINE
PETER A. BELANGER
1341
PROFESSIONAL LAND SURVEYOR

STATE AID HIGHWAY NO. 2
ROUTE 171 CENTER ROAD
PRENTISS TOWNSHIP PENOBSCOT COUNTY
STATE PROJECT NO. 16742.00

MARCH 2010 | RIGHT-OF-WAY MAP | D.O.T. FILE NO. 10-460
SCALE 1" = 25' | SHEET 1 OF 1

SHEET NUMBER
12
OF 12

Filename: ...\00\ROW\MSTA\001_RWPLAN1.dgn Division: BRIDGE Username: david.sullivan Date:5/6/2010