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Division: BRIDGE
Username: David.Sullivan
Date: 11/20/2013

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION



SPECIFICATIONS

Design: Load and Resistance Factor Design per AASHTO LRFD Bridge Design Specifications, Sixth Edition 2012, and 2013 Interim Specifications.

DESIGN LOADING

Live Load HL - 93 Modified

TRAFFIC DATA

Current (2012) AADT 610
Future (2032) AADT 730
DHV - % of AADT 10%
Design Hour Volume 73
Heavy Trucks (% of AADT) 23%
Heavy Trucks (% of DHV) 23%
Directional Distribution (% of DHV) 55%
18 kip Equivalent P 2.0 98
18 kip Equivalent P 2.5 93
Design Speed (mph) 45

HYDROLOGIC DATA

Drainage Area 13.0 sq mi
Design Discharge (Q50) 360.0 cfs
Check Discharge (Q100) 410.0 cfs
Headwater Elevation (Q50) 586.0 ft
Headwater Elevation (Q100) 586.2 ft
Discharge Velocity (Q50) 2.9 fps
Discharge Velocity (Q100) 3.3 fps
Headwater Elevation (Q1.1) 253.3 ft
Discharge Velocity (Q1.1) 0.70 fps
Headwater Elevation (Q25) 585.8 ft

MATERIALS

Concrete: Class "P"
Precast
Reinforcing Steel ASTM A 615/A 615M, Grade 60
Welded Wire Reinforcement ASTM A 185/A 185 M
or
ASTM A 497/A 497 M

BASIC DESIGN STRESSES

Concrete f 'c = 4,350 psi
Precast Concrete f 'c = 5000 psi
Reinforcing Steel f y = 60,000 psi
Welded Wire Reinforcement f y = 65,000 psi min.

LIST OF DRAWINGS

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TWP 17 R 04 WELS
AROOSTOOK COUNTY
McLEAN BROOK BRIDGE
OVER
McLEAN BROOK
ROUTE 162
STATE PROJECT NO. 19317.00
PROJECT LENGTH 0.038 mi.
BRIDGE NO. 3960

UTILITIES

Maine Public Service Company
Fairpoint Communications

Sinclair Sanitary District

MAINTENANCE OF TRAFFIC

Maintain one lane of traffic, as specified in the Specifications and Design Drawings, alternating directions via temporary traffic signals .

PROJECT LOCATION:	Located on Route 162; 0.4 Miles North of the intersection of Sinclair Road and Shore Road. Latitude 47°10'30"N, Longitude -68°16'04"W
PROGRAM AREA:	Bridge Program
OUTLINE OF WORK:	Bridge Culvert Replacement

19317.00 WIN 19317.00

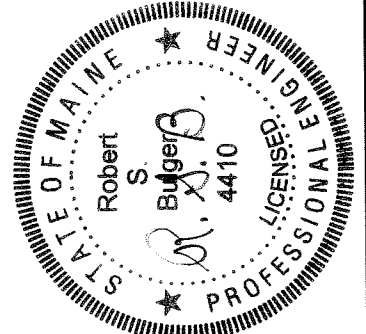
TWP 17 R 04 WELS
McLEAN BROOK BRIDGE

SHEET NUMBER

1

OF 12

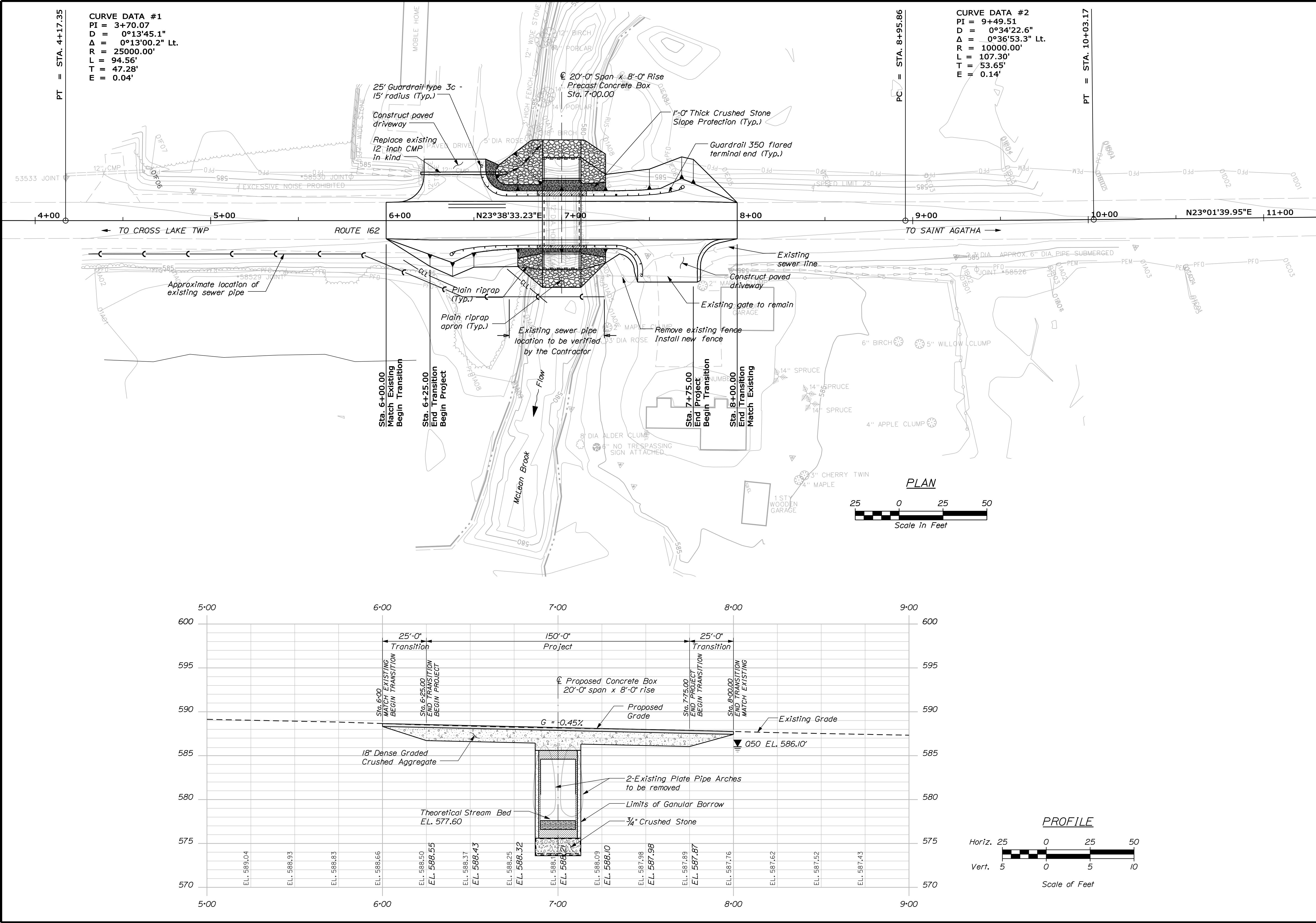
STATE OF MAINE DEPARTMENT OF TRANSPORTATION		DATE	11/20/13
APPROVED		COMMISSIONER:	<i>[Signature]</i>
CHIEF ENGINEER:		<i>[Signature]</i>	



<i>Robert S. Bulger</i>	SIGNATURE
4410	P.E. NUMBER
November 20, 2013	DATE

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

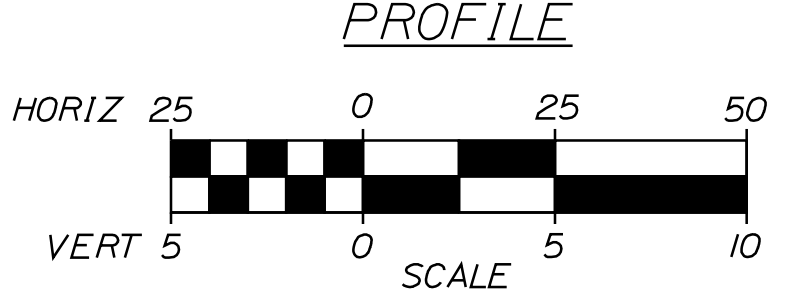
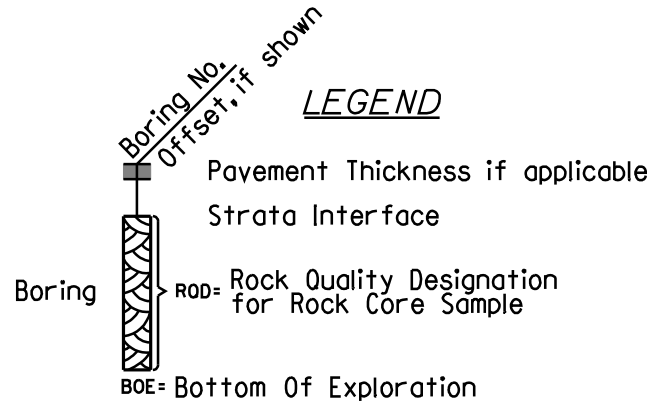
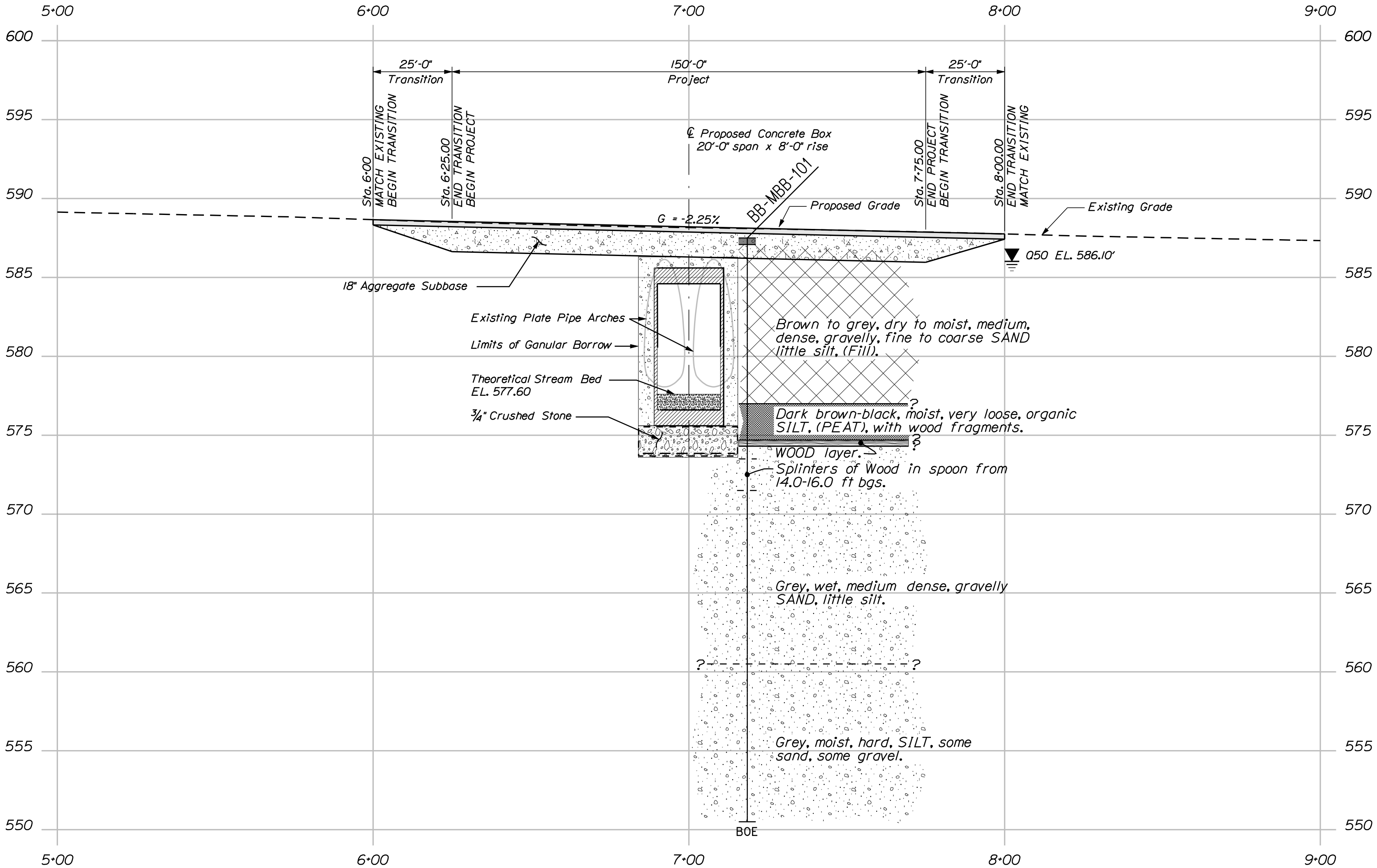
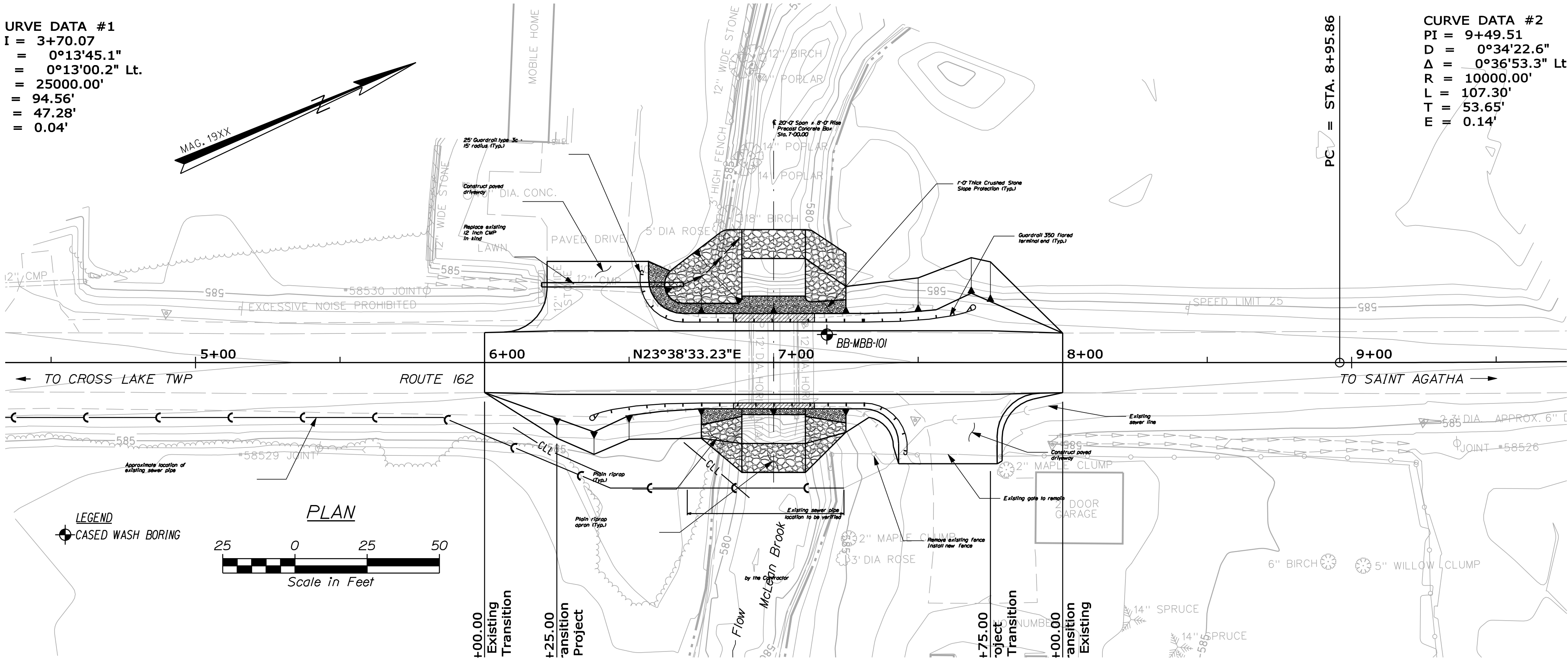
TITLE SHEET



OF 12		SHEET NUMBER		3	
McLEAN BROOK BRIDGE McLEAN BROOK TWP 17 R 04 WELS AROOSTOOK COUNTY				PLAN and PROFILE	
PROJ. MANAGER		S. BOODE		BY	
DESIGN-DETAILED		R. BULGER		D. SULLIVAN	
CHECKED-REVIEWED		B. NICHOLS		NOV. 2013	
DESIGN2-DETAILED2				SIGNATURE	
DESIGN3-DETAILED3		L. KRUSINSKI		P.E. NUMBER	
REVISIONS 1					
REVISIONS 2					
REVISIONS 3					
REVISIONS 4				DATE	
FIELD CHANGES					
STATE OF MAINE				19317.00	
DEPARTMENT OF TRANSPORTATION				WIN	
BRIDGE NO. 3960				19317.00	
BRIDGE PLANS					

URVE DATA #1
I = 3+70.07
= 0°13'45.1"
= 0°13'00.2" Lt.
= 25000.00'
= 94.56'
= 47.28'
= 0.04'

CURVE DATA #2
PI = 9+49.51
D = 0°34'22.6"
Δ = 0°36'53.3" Lt
R = 10000.00'
L = 107.30'
T = 53.65'
E = 0.14'



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		19317.00		WIN		BRIDGE NO. 3990		BRIDGE PLANS	
McLEAN BROOK BRIDGE		McLEAN BROOK		TWP 17, R 04 WELS AROOSTOOK COUNTY		BORING LOCATION PLAN &		INTERPRETIVE SUBSURFACE PROFILE		SHEET NUMBER	
DESIGN-DETAILED		CHECKED-REVIEWED		DESIGN-DETAILED		REVISIONS 1		REVISIONS 2		REVISIONS 3	
S. BOODE		R. BULLER		D. BOUSSON		T. WHITE		T. WHITE		T. WHITE	
BY		DATE		SIGNATURE		P.E. NUMBER		DATE		DATE	
D. SHAW		FEB 2013		T. WHITE		T. WHITE		T. WHITE		T. WHITE	
FIELD CHANGES		FIELD CHANGES		FIELD CHANGES		FIELD CHANGES		FIELD CHANGES		FIELD CHANGES	
4		OF 12									

Maine Department of Transportation

Soil/Rock Exploration Log

US CUSTOMARY UNITS

Project: McLean Brook Bridge #3960 carries Route 162 over McLean Brook

Location: T17 R4 Wels, Sinclair, Maine

Boring No. : BB-MBB-101

WIN: 19317.00

Driller: MaineDOT

Elevation (ft.): 587.5

Auger ID/OD: 5" Solid Stem

Operator: Enos/Giles

Date: NAV088

Sampler: Standard Split Spoon

Logged By: B. Wilder

Rig Type: CME 45C

Hammer Wt./Fall: 140#/30"

Date Start/Finish: 1/29/2013: 08:30-13:00

Drilling Method: Cased Wash Boring

Core Barrel: N/A

Boring Location: 7+18.5, 10.1 ft Lt.

Casing ID/OD: NW

Water Level*: None Observed

Hammer Efficiency Factor: 0.756

Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐

Definitions:
D = Split Spoon Sample
U = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = In situ Vane Shear Test
MV = Unsuccessful In situ Vane Shear Test attempt

R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WDH = weight of 140lb hammer
Nq = SPT uncorrected
N60 = weight of rods or casing
WDP = Weight of one person

S_u = In situ Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_u = Unconfined Compressive Strength (ksf)
N_{uncorrected} = Raw field SPT N-value
Hammer Efficiency Factor = Annual Calibration Value
N₆₀ = SPT uncorrected corrected for hammer efficiency
N_{eq} = (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 Information										Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (1/6 in. Sample Length (ft.) or ROD (%))	N-uncorrected	N60	Casing Blows	Elevation (ft.)					
5								SSA	587.08	0" PAVEMENT. 0.42 Brown, dry, gravelly, fine to coarse SAND, little silt. (Fill). Frost to a depth of 3.5 ft bgs. Similar to above, except moist, medium dense. (Fill). -----9.00 30 (10.0-10.5 ft bgs) Grey, wet, very loose, silty, fine to coarse SAND, some gravel. (Fill). 30/A (10.5-12.0 ft bgs) Dark brown to black, moist, very loose, organic SILT, with wood fragments. (PEAT). WOOD layer from 12.8-13.2 ft bgs. 40 (14.0-16.0 ft bgs) Splinters of wood in spoon. Grey, wet, medium dense, gravelly, fine to coarse SAND, little silt. Similar to above. -----27.00 Grey, moist, hard, SILT, some fine to coarse SAND, some gravel, blocky. Similar to above. Bottom of Exploration at 37.00 feet below ground surface. NO REFUSAL	G#261924 A-1-b, SM WC=8.7% #261925 Ignition Loss Loss=42.6% H2O=199.4% G#266755 A-1-b, SM WC=8.9% G#266756 A-4, SM WC=8.7%		
	10	24/20	2.00 - 4.00	51/57/31/25	88	111							
	20	24/19	5.00 - 7.00	8/6/6/6	12	15							
	30/A	24/16	10.00 - 12.00	3/1/1/2	2	3	13						
	40	24/2	14.00 - 16.00	6/5/5/5	10	13	17						
15									578.50	-----12.80 -----13.20			
									574.70				
									574.30				
20													
25													
30													
35													
40													
45													
50													

Remarks:

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-MBB-101

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

19317.00

WIN
19317.00

BRIDGE NO. 3960

BRIDGE PLANS

McLEAN BROOK BRIDGE
McLEAN BROOK
TWP 17, R 04 WELS AROOSTOOK COUNTY

BORING LOGS

SHEET NUMBER

5

OF 12

PROJ. MANAGER
DESIGN-DETAILED
CHECKED-REVIEWED
DESIGNS-DETAILED
DESIGNS-DETAILED
REVISIONS 1
REVISIONS 2
REVISIONS 3
REVISIONS 4
FIELD CHANGES

BY
S. BOOGE
R. BULGER
D. SHAW
D. BOUSSON
T. WHITE
L. KRUSINSKI

DATE
APR 2013

SIGNATURE

P.E. NUMBER

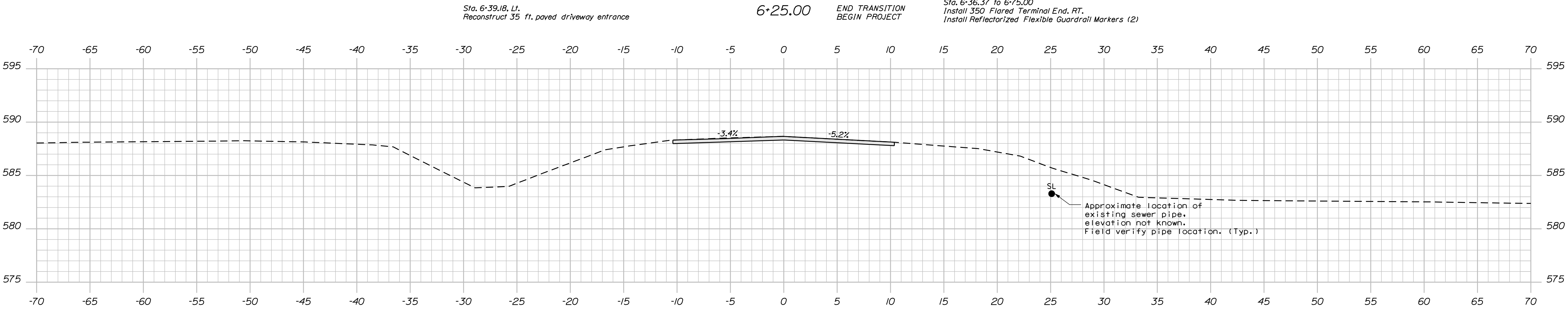
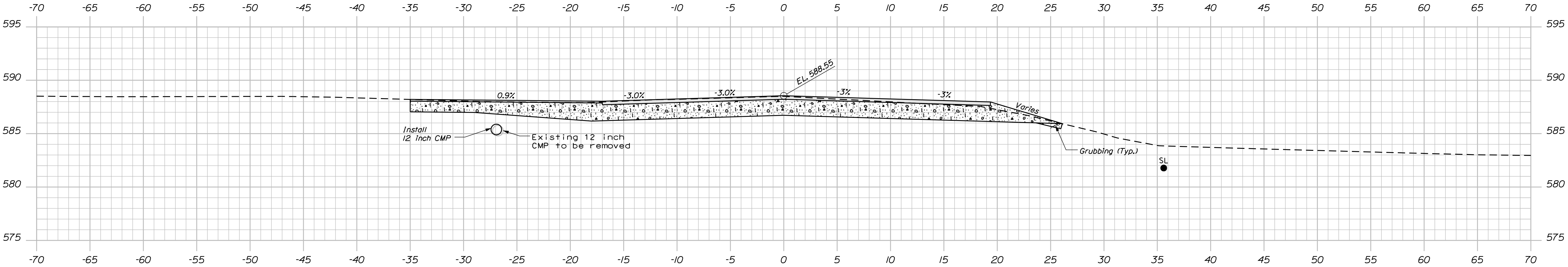
DATE

Date:11/26/2013

Username: David.Sullivan

Division: BRIDGE

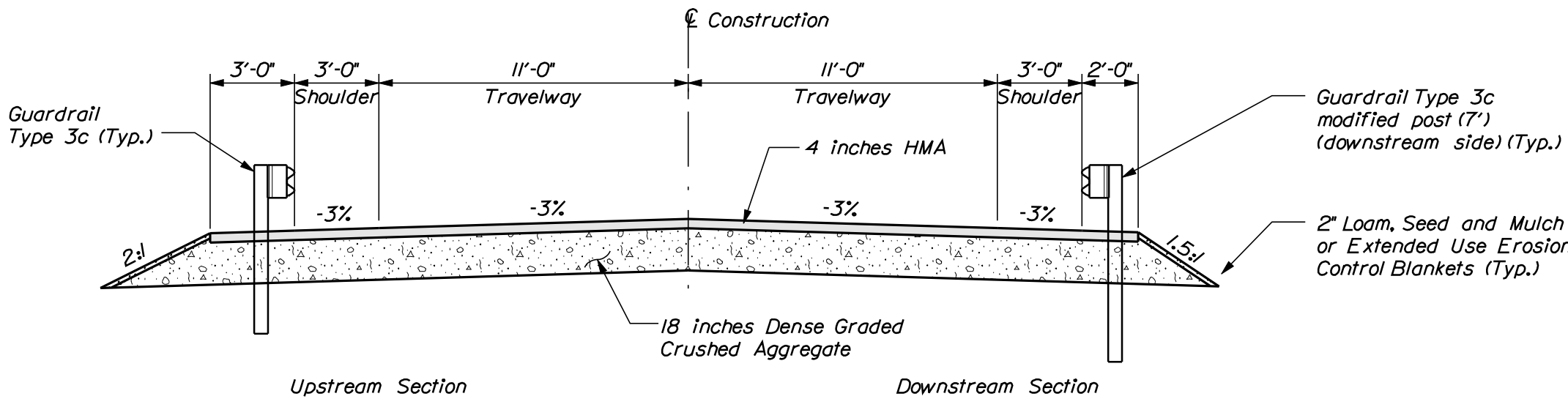
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Install 49.0 ft., 12 inch CMP, beginning at Sta. 6+19.79, 26.92 ft. Lt., EL. 585.00' ending at Sta. 6+65.87, 24.93 ft. Lt., EL. 584.00'

6+00.00

MATCH EXISTING
BEGIN TRANSITION



TYPICAL APPROACH SECTION

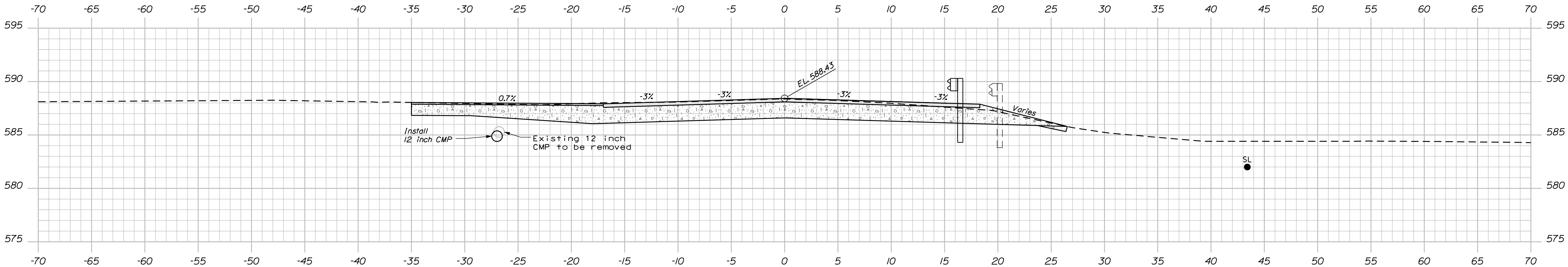
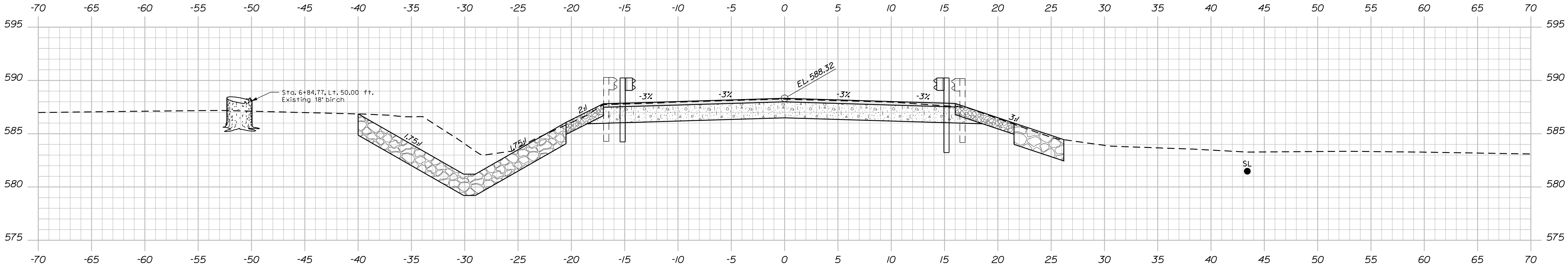
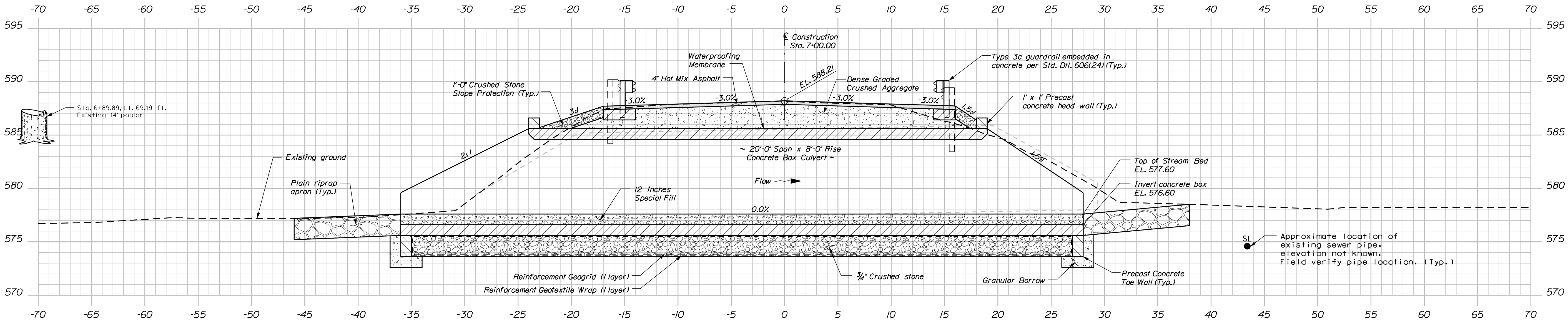
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McLEAN BROOK BRIDGE		19317.00	
McLEAN BROOK		WIN	
TWP 17 R 04 WELS AROOSTOOK COUNTY		BRIDGE NO. 3990	
CROSS SECTIONS		19317.00	
SHEET NUMBER		6	
		OF 12	
DATE		NOV 2013	
BY		D. SULLIVAN	
PROJ. MANAGER		S. BOOGE	
DESIGN-DETAILED		R. BULLER	
CHECKED-REVIEWED		B. NICHOLS	
DESIGN-DETAILED		L. KRUSINSKI	
REVISIONS 1		T. WHITE	
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			
SIGNATURE		P.E. NUMBER	
DATE		DATE	

Date:11/26/2013

Username: David Sullivan

Division: BRIDGE

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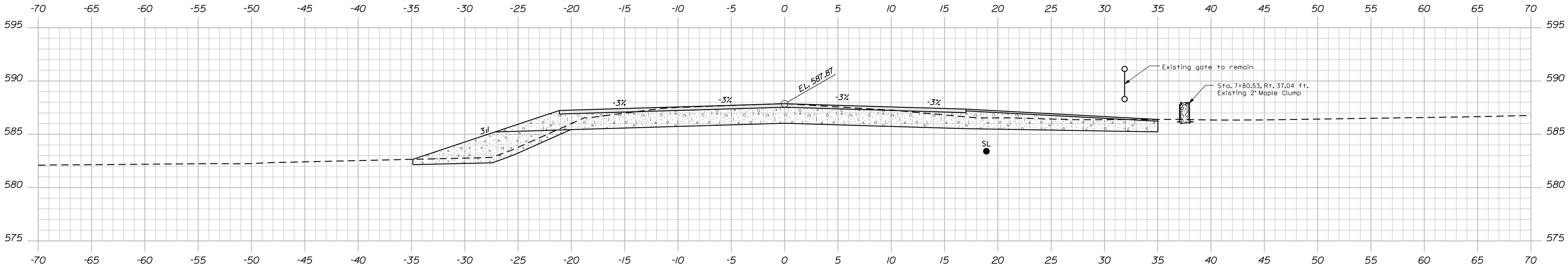
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McLEAN BROOK BRIDGE				McLEAN BROOK				TWP 17 R 04 WELS AROOSTOOK COUNTY				CROSS SECTIONS				SHEET NUMBER				7			
PROJ. MANAGER				DESIGN-DETAILED				CHECKED-REVIEWED				DESIGN-DETAILED				REVISIONS 1				REVISIONS 2			
S. BOOGE				R. BULLER				B. NICHOLS				L. KRUSINSKI				T. WHITE				P.E. NUMBER			
BY				DATE				SIGNATURE				DATE				P.E. NUMBER				DATE			
D. SULLIVAN				NOV 2013																			
FIELD CHANGES				REVISIONS 3				REVISIONS 4				REVISIONS 5				REVISIONS 6				REVISIONS 7			
OF 12				Sta. 6+50.00 to Sta. 7+00.00																			

Date:11/26/2013

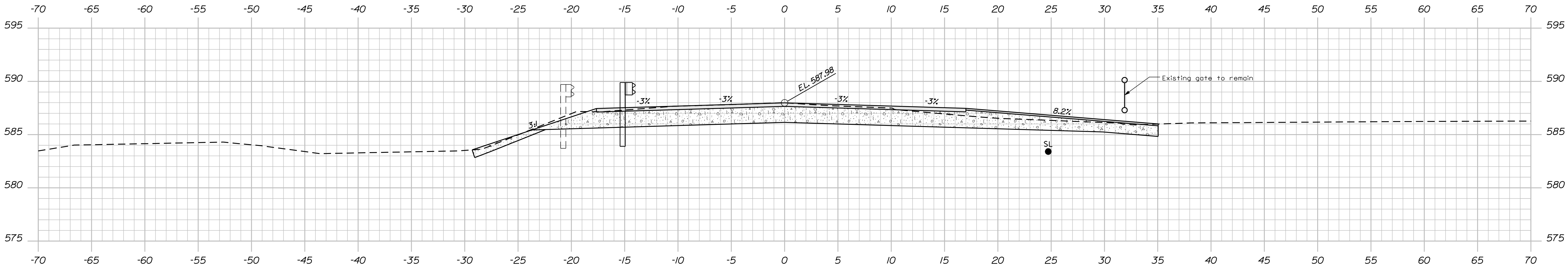
Username: David.Sullivan

Division: BRIDGE

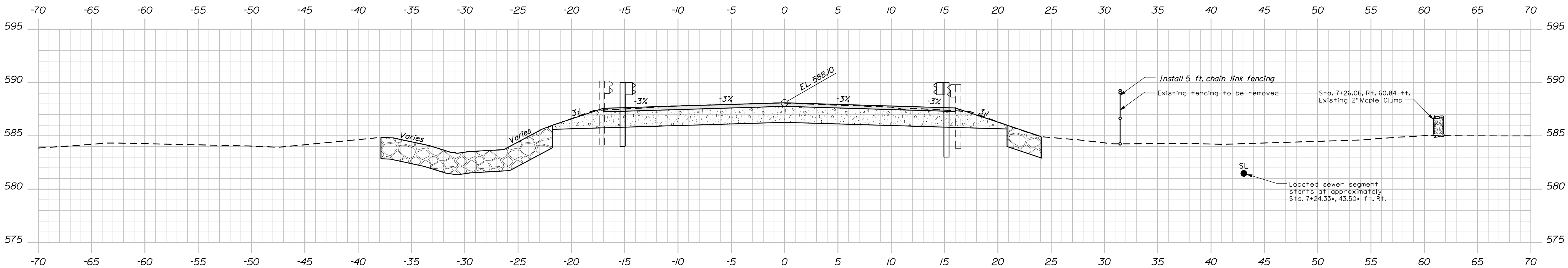
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7+75.00
END PROJECT
BEGIN TRANSITION



7+50.00
Sta. 7+63.00, Rt.
Construct 34 ft. paved driveway entrance



Sta. 7+31.25 to 6+79.88
Install 350 Flared Terminal End, Lt.
Install Reflectorized Flexible Guardrail Markers (2)

7+25.00

Sta. 7+31.25, 14.00 ft. Rt. to 7+46.25, 29.00± ft. Rt.
Install 15 ft radius Guardrail Type 3c, Rt.

Sta. 7+46.25, 29.00± ft. Rt.
Install Terminal End - Single Rail - Galvanized Steel

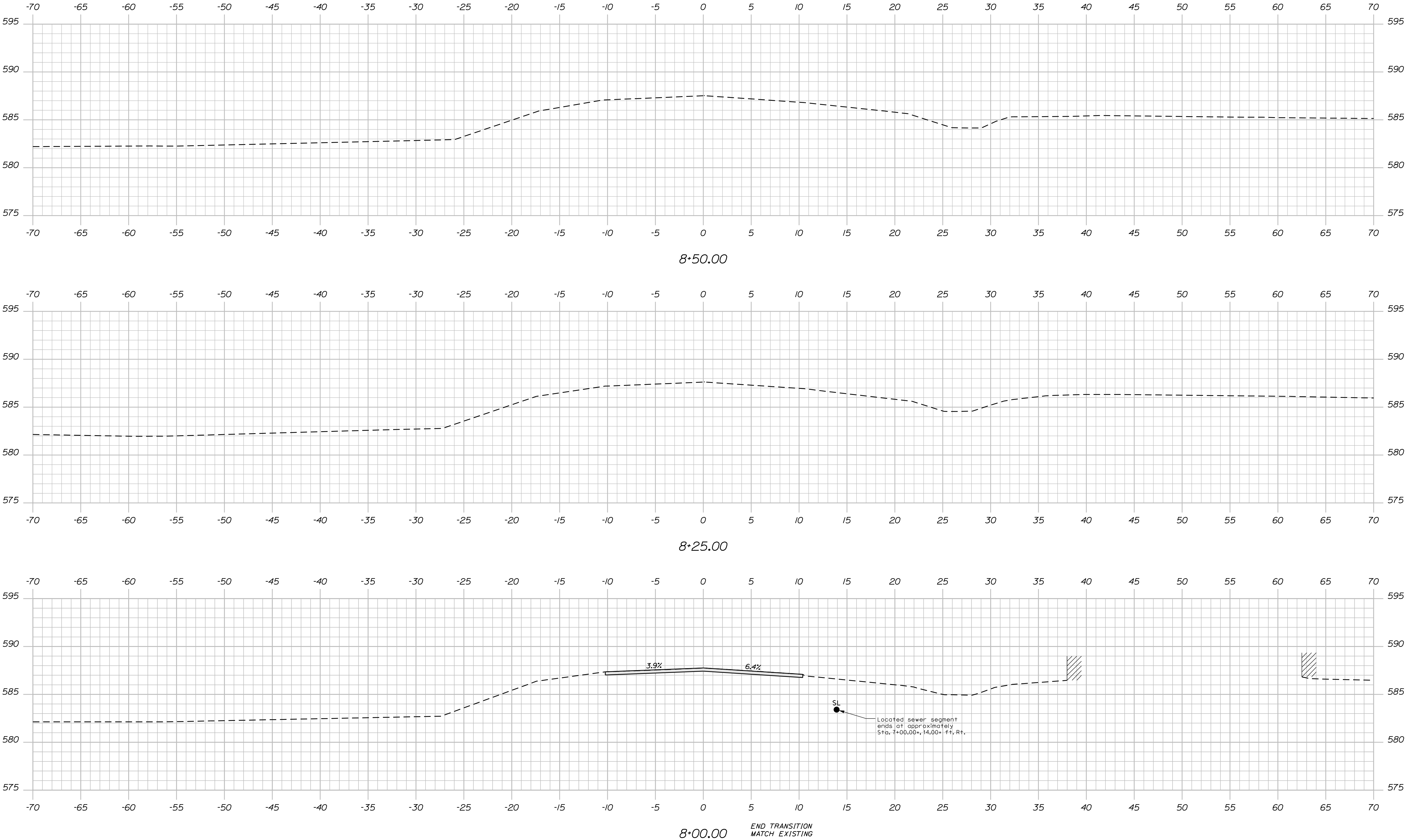
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PROJ. MANAGER		BY		DATE		SIGNATURE		P.E. NUMBER		DATE	
DESIGN-DETAILED		S. BOOGE		NOV 2013		D. SULLIVAN		T. KRUSINSKI			
CHECKED-REVIEWED		R. BULLER				B. NICHOIS					
DESIGN-DETAILED		L. KRUSINSKI				T. WHITE					
REVISIONS 1											
REVISIONS 2											
REVISIONS 3											
REVISIONS 4											
FIELD CHANGES											

Date:11/26/2013

Username: David.Sullivan

Division: BRIDGE

Filename: ... \MSTAD09_XSECT_8+00_004.dgn



STATE OF MAINE		DATE	
DEPARTMENT OF TRANSPORTATION		NOV 2013	
19317.00		SIGNATURE	
WIN		P.E. NUMBER	
BRIDGE NO. 3990		DATE	
BRIDGE PLANS			

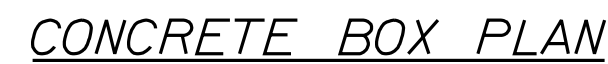
McLEAN BROOK BRIDGE
McLEAN BROOK
TWP 17 R 04 WELS AROOSTOOK COUNTY

CROSS SECTIONS

SHEET NUMBER

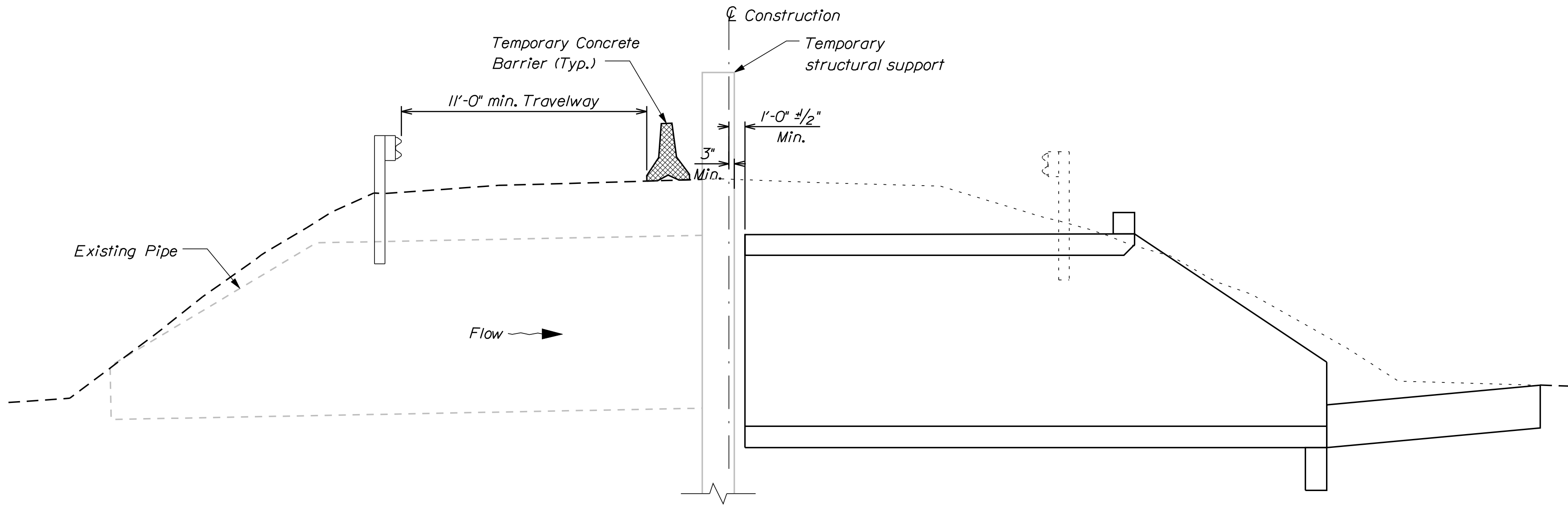
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OF 12

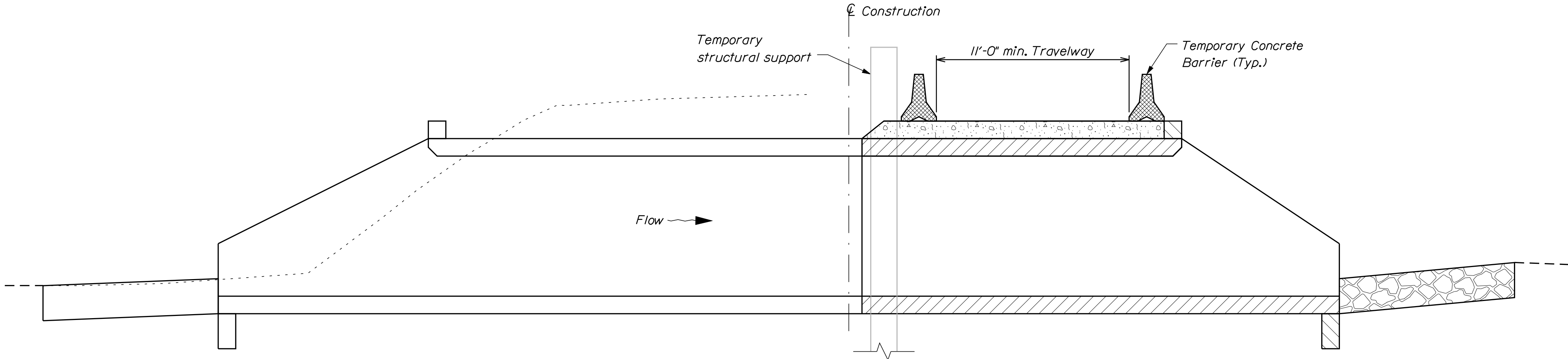


4. The soils boring shows that peat, wood and other organic soils are present in the subgrade. The Contractor shall suspend work in the excavation hole after the level base of the bedding is exposed at Elevation 574.6 feet for both Stage 1 and Stage 2 until the Resident has evaluated the substrate for such organic materials. If there is any evidence of organic materials in the next 12 inches of substrate, down to Elevation 573.6 feet, the Contractor shall remove the organics-containing soils and replace that volume with $\frac{3}{4}$ " inch crushed stone, as directed by the Resident. Any such excavation of the substrate shall be paid for under Pay Item No. 206.061 Structural Earth Excavation - Drainage and Minor Structures, Below Grade. The volume of crushed stone placed in accordance with this note shall be paid for under Pay Item No. 203.35 Crushed Stone Fill. Such adjustments to these pay items shall be considered complete compensation for all work necessary to meet the requirements of this note.

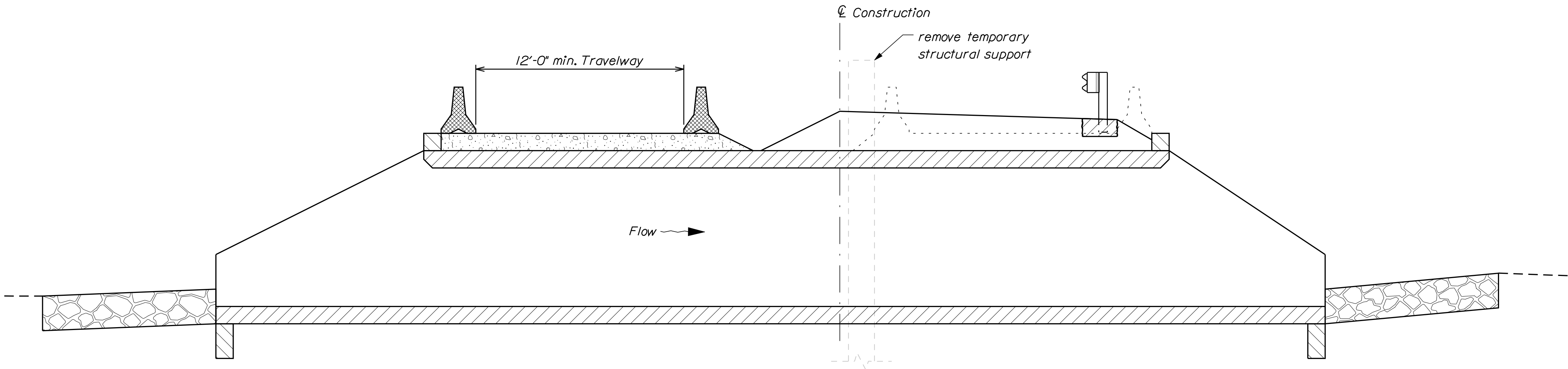




STAGE No. 1



STAGE No. 2



STAGE No. 3

STAGE CONSTRUCTION NOTES:

- Stage 1 - Maintain one 11'-0" min. wide lane of alternating traffic on upstream side using temporary concrete barriers and traffic signals. Install temporary structural support. Remove the downstream section of the two existing pipe arches. Construct downstream section of concrete box culvert, riprap apron and adjacent riprap slopes.
- Stage 2 - Place 12 inches minimum of temporary roadway gravel, provide one 11'-0" min. wide lane of alternating traffic on downstream side using temporary concrete barriers and traffic signals. Remove the upstream section of the existing pipe arches. Construct upstream portion of concrete box culvert.
- Stage 3 - Place 12 inches minimum of temporary roadway gravel, provide one 12'-0" min. wide lane of alternating traffic using temporary concrete barriers and temporary traffic signals over the newly installed concrete box culvert on upstream end. Remove temporary roadway gravel and temporary structural support. Place dense graded crushed aggregate subbase, and concrete embedded guardrail type 3c.
- Stage 4 - Provide one 12'-0" min. wide lane of alternating traffic using temporary concrete barriers and traffic signals over the newly installed dense graded crushed aggregate subbase on downstream end. Remove temporary roadway gravel. Place aggregate subbase, concrete embedded guardrail type 3c. Place base pavement in one operation.
- Stage 5 - Complete surface pavement in one operation. Upon completion of surface pavement open to traffic.

McLEAN BROOK BRIDGE				PROJ. MANAGER		S. BOOGE		BY		DATE		STATE OF MAINE	
McLEAN BROOK				DESIGN-DETAILED		R. BILGER		D. SULLIVAN		NOV 2013		DEPARTMENT OF TRANSPORTATION	
TWP 17 R 04 WELS AROOSTOOK COUNTY				CHECKED-REVIEWED		B. NICHOLS							
				DESIGN2-DETAILED2									
				DESIGN3-DETAILED3		L. KRUSINSKI		T. WHITE				19317.00	
				REVISIONS 1									
				REVISIONS 2									
				REVISIONS 3									
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				FIELD CHANGES								19317.00	
										DATE		BRIDGE NO. 3960	
												BRIDGE PLANS	

11

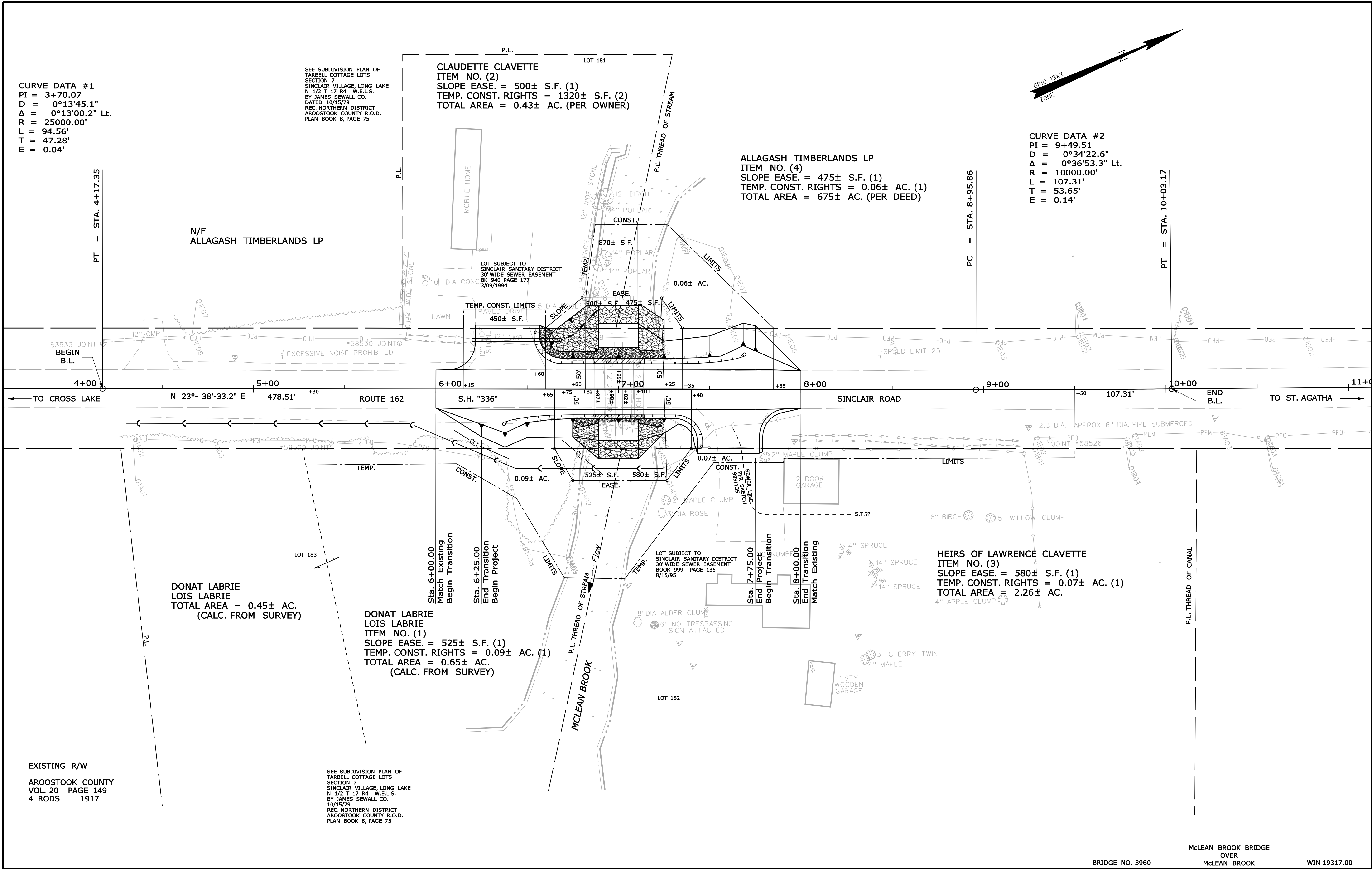
OF 12

Date:11/26/2013

Username: David.Sullivan

Division: BRIDGE

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SYMBOLS	
• IP or • PIP (IRON PIPE or PIN FOUND)	○ WELL (WELL)
□ S.T. (SEPTIC TANK)	--- GRADING LIMIT LINE
▭ S.T. (SEPTIC TANK)	--- CONSTRUCTION LIMIT LINE
▭ S.T. (SEPTIC TANK)	--- PROPERTY LINE
▭ S.T. (SEPTIC TANK)	--- PL
▭ S.T. (SEPTIC TANK)	--- LIMITS OF WRIGHT PORTION (LOW.P.)
▭ S.T. (SEPTIC TANK)	--- EXISTING RIGHT OF WAY
▭ S.T. (SEPTIC TANK)	--- NEW RIGHT OF WAY
▭ S.T. (SEPTIC TANK)	--- NEW ROW WITHIN EXIST. ROW
▭ S.T. (SEPTIC TANK)	--- CONTROL OF ACCESS

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

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION - AUGUSTA, ME 04333-0016
TWP 17 R 4 WELS
RIGHT OF WAY MAP

REVISIONS				PLAN FILED IN PLAN BOOK						COUNTY RECORD				DAVID BERNHARDT	
NO.	DATE	DESCRIPTION	BY	NO.	GRANTOR	INSTRUMENT	DATE	BOOK	PAGE	NO.	DATE	BOOK	PAGE	COMMISSIONER	
						COND.	11/12/13	1835	261					JOYCE NOEL TAYLOR	
														CHIEF ENGINEER	
														DATE	

STATE HIGHWAY "336"		
ROUTE 162 \ SINCLAIR ROAD		
TOWNSHIP 17 RANGE 4 W.E.L.S. AROOSTOOK COUNTY		
STATE PROJECT NO. 19317.00		
SEPTEMBER 2013	RIGHT-OF-WAY MAP	D.O.T. FILE NO. 2-558
SCALE 1" = 25'	SHEET 1 OF 1	

SHEET NUMBER	
12	
OF 12	