

STATE OF MAINE DEPARTMENT OF TRANSPORTATION



SPECIFICATIONS

Design: Load and Resistance Factor Design per AASHTO LRFD Bridge Design Specifications, Seventh Edition with 2016 interims.

DESIGN LOADING

Live Load HL - 93 Modified for Strength I

TRAFFIC DATA

Current (2018) AADT 510
 Future (2028) AADT 610
 DHV - % of AADT 10%
 Design Hour Volume 71
 Heavy Trucks (% of AADT) 10%
 Heavy Trucks (% of DHV) 8%
 Directional Distribution (% of DHV) 60%
 18 kip Equivalent P 2.0 27
 18 kip Equivalent P 2.5 26
 Design Speed (mph) 45

HYDROLOGIC DATA

Drainage Area 184.0 sq mi
 Discharge (Q25) 3,635 cfs
 Design Discharge (Q50) 4,028 cfs
 Check Discharge (Q100) 4,407 cfs
 Headwater Elevation (Q1.1) 137.1 ft
 Headwater Elevation (Q25) 138.7 ft
 Headwater Elevation (Q50) 138.8 ft
 Headwater Elevation (Q100) 139.0 ft
 Discharge Velocity (Q1.1) 0.8 fps
 Discharge Velocity (Q25) 2.5 fps
 Discharge Velocity (Q50) 2.8 fps
 Discharge Velocity (Q100) 3.0 fps

MATERIALS

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

Reinforcing Steel:
 Plain Reinforcing Steel ASTM A 615/A 615M, Grade 60
 Stainless Reinforcing Steel ASTM A 955, Grade 75
 Glass Fiber Reinforced Polymer (GFRP) CSA S807-10, ACI 440.1R-15

Structural Steel:
 All Material (except as noted) ASTM A 709, Grade 50 (metalized)
 High Strength Bolts ASTM F 3125, Grade A 325, Type 1 (galvanized)

BASIC DESIGN STRESSES

Concrete, Class "A" $f'c = 4,000$ psi
 Concrete, Class "LP" $f'c = 5,000$ psi
 Plain Reinforcing Steel $f_y = 60,000$ psi
 Stainless Reinforcing Steel $f_y = 75,000$ psi
 Glass Fiber Reinforced Polymer:
 #5 Bar $f_{fu} = 100,000$ psi
 #6 Bar $f_{fu} = 100,000$ psi
 #7 Bar $f_{fu} = 95,000$ psi
 Minimum Elastic Modulus 6,150,000 psi
 Structural Steel:
 ASTM A 709, Grade 50 $F_y = 50,000$ psi
 ASTM F 3125, Grade A 325, Type 1 $F_u = 120,000$ psi

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W. GARDINER-LITCHFIELD KENNEBEC BURNHAM BRIDGE OVER COBOSSEECONTEE STREAM POND ROAD\PLAINS ROAD PROJECT NO. WIN 018954.00 PROJECT LENGTH 0.199 mi. BRIDGE NO. 2112

UTILITIES

Central Maine Power Company
 Fairpoint Communications
 Time Warner Cable

MAINTENANCE OF TRAFFIC

Bridge closure with a temporary off-site detour.

PROJECT LOCATION:	On Pond Road and Plains Road, located 1,200 ft north of Lunts Hill Road Latitude 44°10'44" N, Longitude 69°51'38" W
PROGRAM AREA:	Bridge
OUTLINE OF WORK:	Bridge Replacement with 1,145 feet of approach work.



STATE OF MAINE DEPARTMENT OF TRANSPORTATION	APPROVED	DATE
COMMISSIONER: <i>[Signature]</i>	CHIEF ENGINEER: <i>[Signature]</i>	11/21/17

STATE OF MAINE DEPARTMENT OF TRANSPORTATION LICENSED PROFESSIONAL ENGINEER ROLAND A. LAVELLE No. 0182	SIGNATURE <i>[Signature]</i>	P.E. NUMBER 6452	DATE 11/21/17
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PROJECT INFORMATION	PROGRAM	PROJECT MANAGER	DESIGNER	CONSULTANT	PROJECT RESIDENT	CONTRACTOR	PROJECT COMPLETION DATE
Bridge	Leanne Timberlake, P.E.	Craig Morin, P.E.	HNTB Corp.				

W. GARDINER-LITCHFIELD BURNHAM BRIDGE	TITLE SHEET
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SHEET NUMBER 1	OF 34
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Date: 11/7/2017

Username:

Division:

Filename: 001_TITLE.dgn

WIN 018954.00

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
202.19	Removing Existing Bridge (Structural Steel = 34 Tons, Concrete = 65 CY, Timber = 86 CY)	1	LS
202.202	Removing Pavement Surface	240	SY
203.20	Common Excavation	1,100	CY
203.24	Common Borrow	1,450	CY
203.25	Granular Borrow	430	CY
206.082	Structural Earth Excavation - Major Structures, Plan Quantity	370	CY
304.10	Aggregate Subbase Course - Gravel	1,100	CY
403.208	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size	270	TON
403.209	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (sidewalks, drives, islands & incidentals)	24	TON
403.211	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Shimming)	7	TON
403.213	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course)	420	TON
409.15	Bituminous Tack Coat, Applied	110	GAL
411.09	Untreated Aggregate Surface Coarse	30	CY
501.231	Dynamic Loading Test	2	EA
501.251	Pile Casing	10	EA
501.52	Steel H-beam Piles 102 lb/ft, delivered	375	LF
501.521	Steel H-beam Piles 102 lb/ft, in place	375	LF
501.90	Pile Tips	10	EA
501.91	Pile Splices	15	EA
501.92	Pile Driving Equipment Mobilization	1	LS
502.219	Structural Concrete, Abutments and Retaining Walls (80 CY)	1	LS
502.26	Structural Concrete Roadway and Sidewalk Slab on Steel Bridges (88 CY)	1	LS
502.291	Saw Cut Grooving (3500 SF)	1	LS
502.31	Structural Concrete Approach Slab (56 CY)	1	LS
502.49	Structural Concrete Curbs and Sidewalks (10 CY)	1	LS
503.12	Reinforcing Steel, Fabricated and Delivered	14,800	LB
503.13	Reinforcing Steel, Placing	14,800	LB
503.26	Stainless Steel Reinforcement, Fabricated and Delivered	10,000	LB
503.27	Stainless Steel Reinforcement, Placing	10,000	LB
504.702	Structural Steel Fabricated and Delivered, Welded (139,600 lbs)	1	LS
504.71	Structural Steel Erection (139,600 lbs)	1	LS
505.08	Shear Connectors (2110 EA)	1	LS
506.9104	Thermal Spray Coating - Shop Applied (139,600 lbs)	1	LS
507.0811	Steel Bridge Rail, 2 Bar (195 LF)	1	LS
511.07	Cofferdam, Abutment #1	1	LS
511.07	Cofferdam, Abutment #2	1	LS
514.06	Curing Box for Concrete Cylinders	1	EA
515.21	Protective Coating for Concrete Surfaces (450 SY)	1	LS
520.232	Expansion Device - Asphaltic Plug Joint	46	LF
526.301	Temporary Concrete Barrier, Type 1 (40 LF)	1	LS
526.34	Permanent Concrete Transition Barrier	4	EA
530.30	GFRP, Reinforcement Bars, Fabricated and Delivered	20,400	LF
530.31	GFRP, Reinforcement Bars, Placing	20,400	LF
603.16	15 inch Culvert Pipe Option 1	130	LF
605.09	6 inch Underdrain Type B	180	LF
605.10	6 inch Underdrain Outlet	30	LF
606.1721	Bridge Transition - Type 1	4	EA
606.23	Guardrail Type 3c - Single Rail	525	LF
606.353	Reflectorized Flexible Guardrail Marker	8	EA
606.47	Single Wood Post	1	EA
606.50	Single Steel Pipe Post	1	EA
606.78	Low Volume Guardrail End - Type 3	4	EA
610.08	Plain Riprap	1,200	CY
613.319	Erosion Control Blanket	370	SY
615.07	Loam	300	CY
618.13	Seeding Method Number 1	10	UN
618.14	Seeding Method Number 2	8	UN
618.141	Seeding Method Number 3	13	UN
619.12	Mulch	31	UN
619.14	Erosion Control Mix	50	CY
620.58	Erosion Control Geotextile	1,450	SY
620.65	Reinforcement Geogrid	1,650	SY
620.661	Drainage Geocomposite	74	SY
627.733	4" White or Yellow Painted Pavement Marking Line	1,250	LF
629.05	Hand Labor, Straight Time	50	HR
631.12	All Purpose Excavator (including operator)	25	HR
631.14	Grader (including operator)	25	HR
631.15	Roller, Earth and Base Course (including operator)	25	HR
631.172	Truck-large (including operator)	25	HR
637.071	Dust Control	1	LS
639.18	Field Office, Type A	1	EA
652.312	Type III Barricades	8	EA
652.33	Drum	40	EA
652.34	Cone	40	EA
652.35	Construction Signs	350	SF
652.361	Maintenance of Traffic Control Devices (180 CD)	1	LS
656.75	Temporary Soil Erosion and Water Pollution Control	1	LS
659.10	Mobilization	1	LS

STATE OF MAINE DEPARTMENT OF TRANSPORTATION WIN 018954.00	BRIDGE NO. 2112 BRIDGE PLANS
BURNHAM BRIDGE COBOSSECONTEE STREAM W. GARDINER-LITCHFIELD KENNEBEC	ESTIMATED QUANTITIES
SHEET NUMBER 2	OF 34



GENERAL CONSTRUCTION NOTES:

1. The clearing limits as shown on the plans are approximate. The exact limits will be established in the field by the Resident. Single trees and stump removal shall be considered clearing. Payment for clearing will be considered incidental to Contract items.

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

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

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

5. Unless otherwise noted, all embankment material placed below EL 138.80 and beyond the abutment backfill limits shown on the "Abutment Details" sheet shall be Granular Borrow meeting the requirements of Standard Specifications Subsection 703.19, Material for Underwater Backfill.

6. Loam shall be placed to a nominal depth of 4 inches in lawn areas and 2 inches in all other areas unless otherwise noted or directed.

7. Erosion Control Mix may be substituted in those areas normally receiving loam and seed as directed by the Resident. Placement shall be in accordance with Standard Specifications Section 619, Mulch. Payment will be made under Item No. 619.14, Erosion Control Mix.

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

9. A Low Volume Guardrail End shall be installed concurrently with the placement of each section of beam guardrail.

10. Place a 4-ft wide strip of Erosion Control Blanket along the bottom of all ditches.

11. Two Reflectorized Flexible Guardrail Markers shall be installed at each guardrail end.

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

- All exposed surfaces of concrete curbs, Fascias down to the drip notch,
- All exposed surfaces of Concrete Transition Barriers,
- Top of abutment backwalls and to one foot below the top of backwalls on the back side,
- Wingwalls top face and roadway face to one foot below roadway grade.

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

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 the designers 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: Burnham Bridge Over Cobbosseecontee Stream, Soils Report dated October, 2017 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 Bidder's 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.

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

20. Unpaved entrances shall be constructed with 14" Aggregate Subbase Course Gravel or 11" Aggregate Subbase Course Gravel and 3" of Untreated Aggregate Surface Course unless otherwise noted in the plans or directed by the Resident.

21. Residential paved entrances shall be constructed with: 2" hot mix asphalt and 12" aggregate subbase course gravel.

22. A 3' paved lip shall be placed at all gravel entrances unless otherwise noted in the plans or directed by the Resident.

23. No existing drainage shall be abandoned, removed or plugged without prior approval of the Resident. Payment for existing drainage called to be abandoned, removed or plugged shall not be paid for directly, but shall be considered incidental to related Contract items.

24. Remove and reset of all regulatory, warning, confirmation, route marker assembly sign required for construction shall be performed in accordance with Section 645-Highway Signing. Payment will be incidental to related Contract items.

25. The shrubs at approximately station 13+30 RT shall be removed. Payment will be incidental to related Contract items.

26. A boulder is present on the Litchfield side of the bridge. The Contractor shall remove the boulder to EL 125.0 if located outside the riprap slope limits. Payment shall be under Item No. 202.30, Common Excavation.

27. The timber bridge seats, backwalls, and associated pilings shall be removed to the elevations shown on the profile. Timber components of the existing structure may contain creosote or other hazardous treatment. The Contractor is responsible for the containment, proper management and disposal of all hazardous waste generated by the removal process. The Contractor is responsible for implementing appropriate OSHA mandated personal protection standards related to this process. Once the timber components are removed, the Contractor is solely responsible for the care, custody and control of these components and any hazardous waste generated as a result of storage and/or disposal. Payment for all labor, materials, equipment and other costs required to remove and dispose of the timber components will be considered incidental to the bridge removal pay item.

28. Work required to remove and reset the existing wood posts at the driveway at Station 22+43 shall be considered incidental to the Contract items.

29. Reinforcing bars within the Permanent Concrete Transition Barriers shall be stainless steel.

Date: 11/10/2017

Username:

Division:

Filename: 003_GeneralNotes.dgn

STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		WIN 018954.00		BRIDGE NO. 2112		BRIDGE PLANS			
PROJ. MANAGER	L. Timberlake	BY	DATE	INIT	INIT	SIGNATURE	P.E. NUMBER	DATE			
DESIGN-DETAILED	B. Grenier	P. Bishop									
CHECKED-REVIEWED	A. Stephens	C. Morin									
DESIGN-DETAILED											
REVISIONS 1											
REVISIONS 2											
REVISIONS 3											
REVISIONS 4											
FIELD CHANGES											
BURNHAM BRIDGE			COBBOSSEECONTEE STREAM			KENNEBEC			GENERAL NOTES		
W. GARDINER-LITCHFIELD			SHEET NUMBER			3			OF 34		

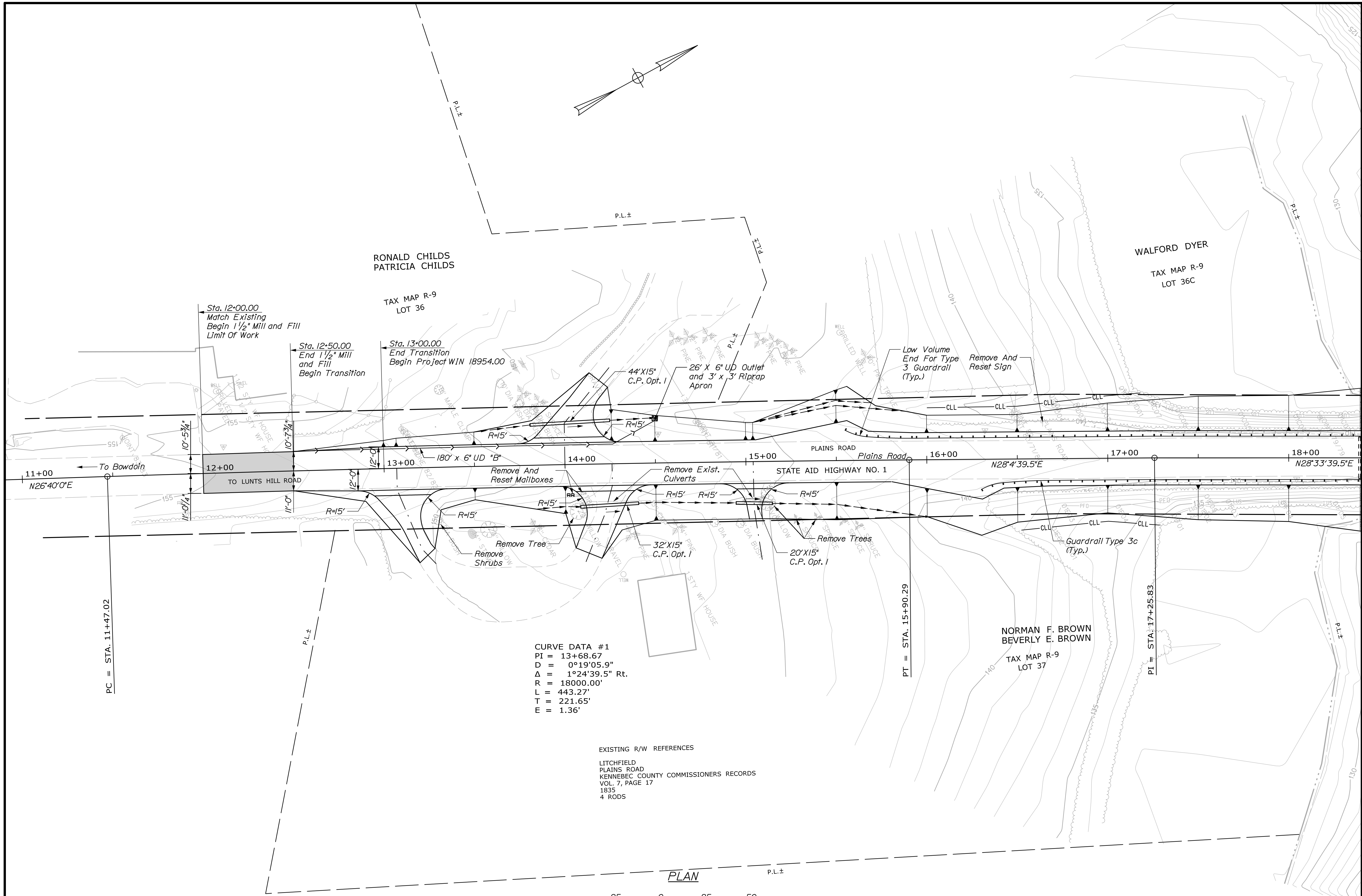


Date: 11/9/2017

Username:

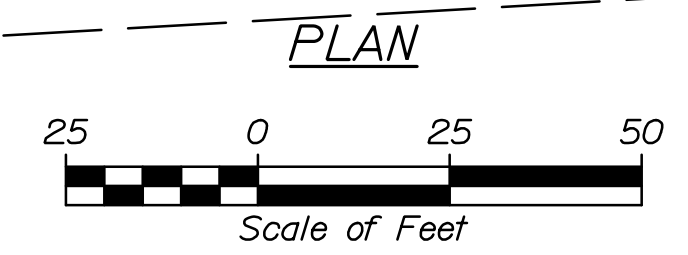
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CURVE DATA #1
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 Δ = 1°24'39.5" Rt.
 R = 18000.00'
 L = 443.27'
 T = 221.65'
 E = 1.36'

EXISTING R/W REFERENCES
 LITCHFIELD
 PLAINS ROAD
 KENNEBEC COUNTY COMMISSIONERS RECORDS
 VOL. 7, PAGE 17
 1835
 4 RODS



STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		WIN 18954.00		BRIDGE NO. 2112	
BURNHAM BRIDGE		COBOSSECONTEE STREAM		KENNEBEC		GENERAL PLAN	
W. GARDINER-LITCHFIELD		SHEET NUMBER		4		OF 34	
PROJ. MANAGER	L. Timbriore	BY	A. Sweet	DATE		SIGNATURE	
DESIGN-DETAILED	L. Driscoll	CHECKED-REVIEWED	R. Harf			P.E. NUMBER	
DESIGN-DETAILED		DESIGN-DETAILED				DATE	
REVISIONS 1		REVISIONS 2					
REVISIONS 3		REVISIONS 4					
FIELD CHANGES							

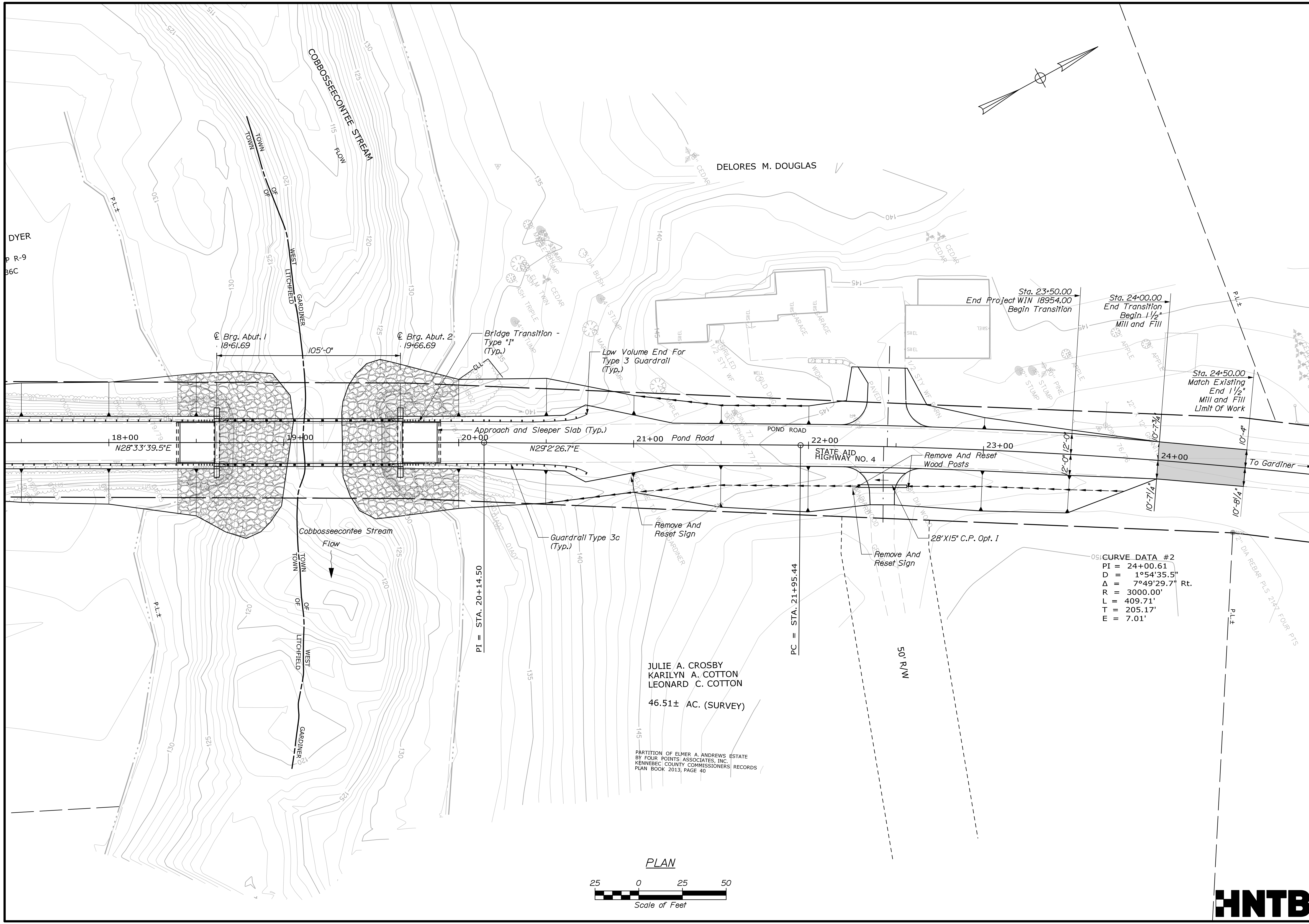


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Division:

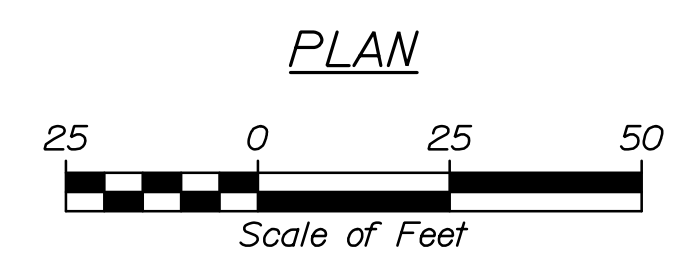
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JULIE A. CROSBY
 KARILYN A. COTTON
 LEONARD C. COTTON
 46.51± AC. (SURVEY)

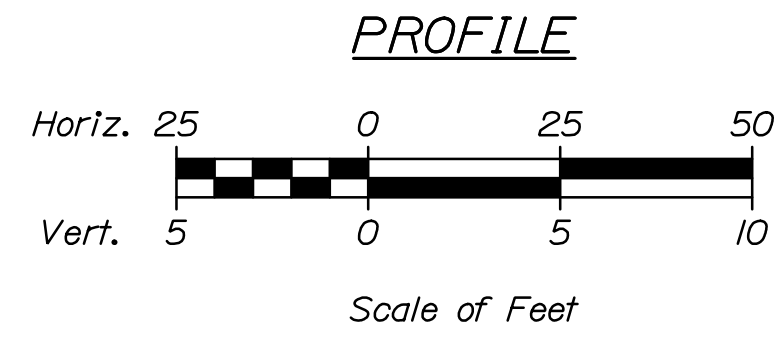
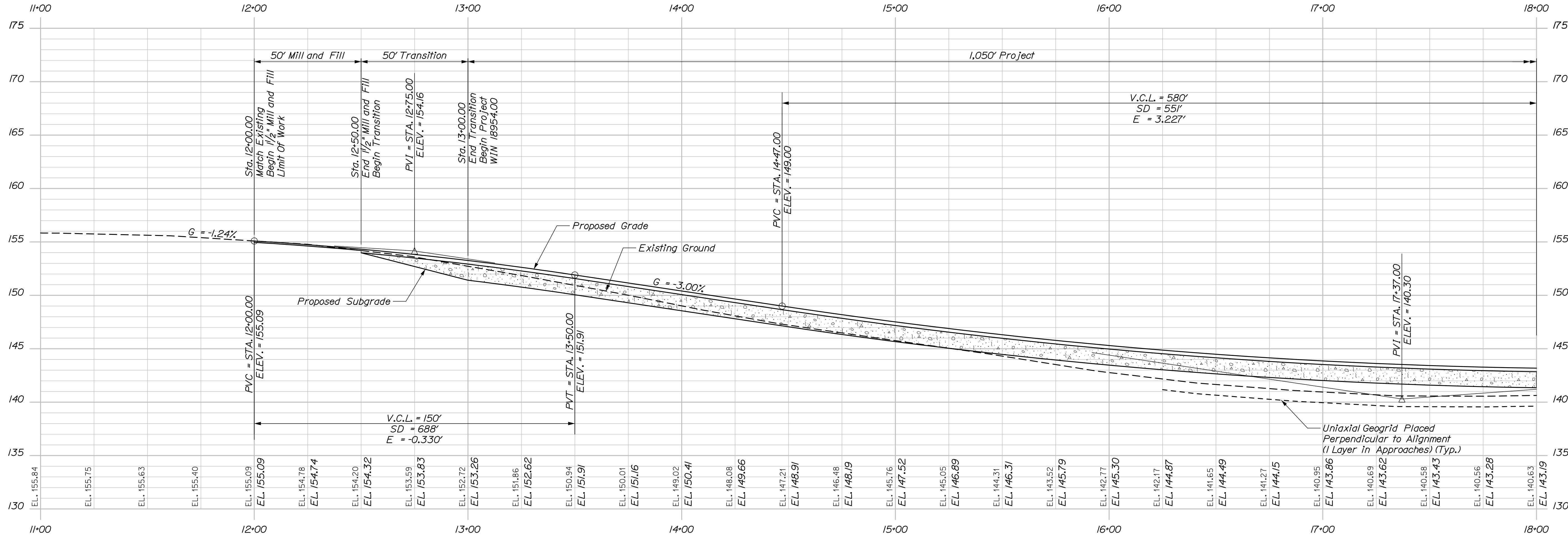
PARTITION OF ELMER A. ANDREWS ESTATE
 BY FOUR POINTS ASSOCIATES, INC.
 KENNEBEC COUNTY COMMISSIONERS' RECORDS
 PLAN BOOK 2013, PAGE 40

OSI CURVE DATA #2
 PI = 24+00.61
 D = 1°54'35.5" Rt.
 Δ = 7°49'29.7" Rt.
 R = 3000.00'
 L = 409.71'
 T = 205.17'
 E = 7.01'



STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		WIN 18954.00	
BURNHAM BRIDGE		COBBOSSÉECONTEE STREAM		Kennebec	
W. GARDNER-LITCHFIELD		GENERAL PLAN		SHEET NUMBER	
				5	
				OF 34	
PROJ. MANAGER	L. Timberlake	BY	A. Sweet	DATE	
DESIGN-DETAILED	L. Driscoll	CHECKED-REVIEWED	R. Harb	DATE	
DESIGN-DETAILED		DESIGN-DETAILED		DATE	
REVISIONS 1		REVISIONS 1		DATE	
REVISIONS 2		REVISIONS 2		DATE	
REVISIONS 3		REVISIONS 3		DATE	
REVISIONS 4		REVISIONS 4		DATE	
FIELD CHANGES					
BRIDGE NO. 2112					
BRIDGE PLANS					





PROJ. MANAGER	BY	DATE	INIT	SIGNATURE
L. Timmerlake	A. Sweet			
DESIGN-DETAILED	L. Driscoll			
CHECKED-REVIEWED	R. Harf			
DESIGN-DETAILED				
REVISIONS 1				P.E. NUMBER
REVISIONS 2				DATE
REVISIONS 3				
REVISIONS 4				
FIELD CHANGES				

PROJ. MANAGER	BY	DATE	INIT	SIGNATURE
L. Timmerlake	A. Sweet			
DESIGN-DETAILED	L. Driscoll			
CHECKED-REVIEWED	R. Harf			
DESIGN-DETAILED				
REVISIONS 1				P.E. NUMBER
REVISIONS 2				DATE
REVISIONS 3				
REVISIONS 4				
FIELD CHANGES				

BURNHAM BRIDGE
COBOSSECONTEE STREAM
KENNEBEC
W. GARDINER-LITCHFIELD

SHEET NUMBER
6
 OF 34

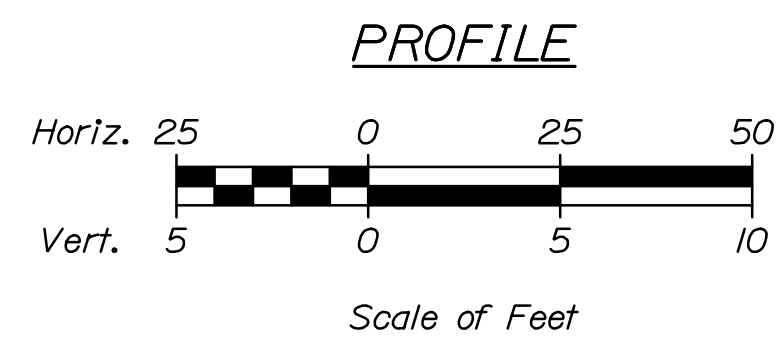
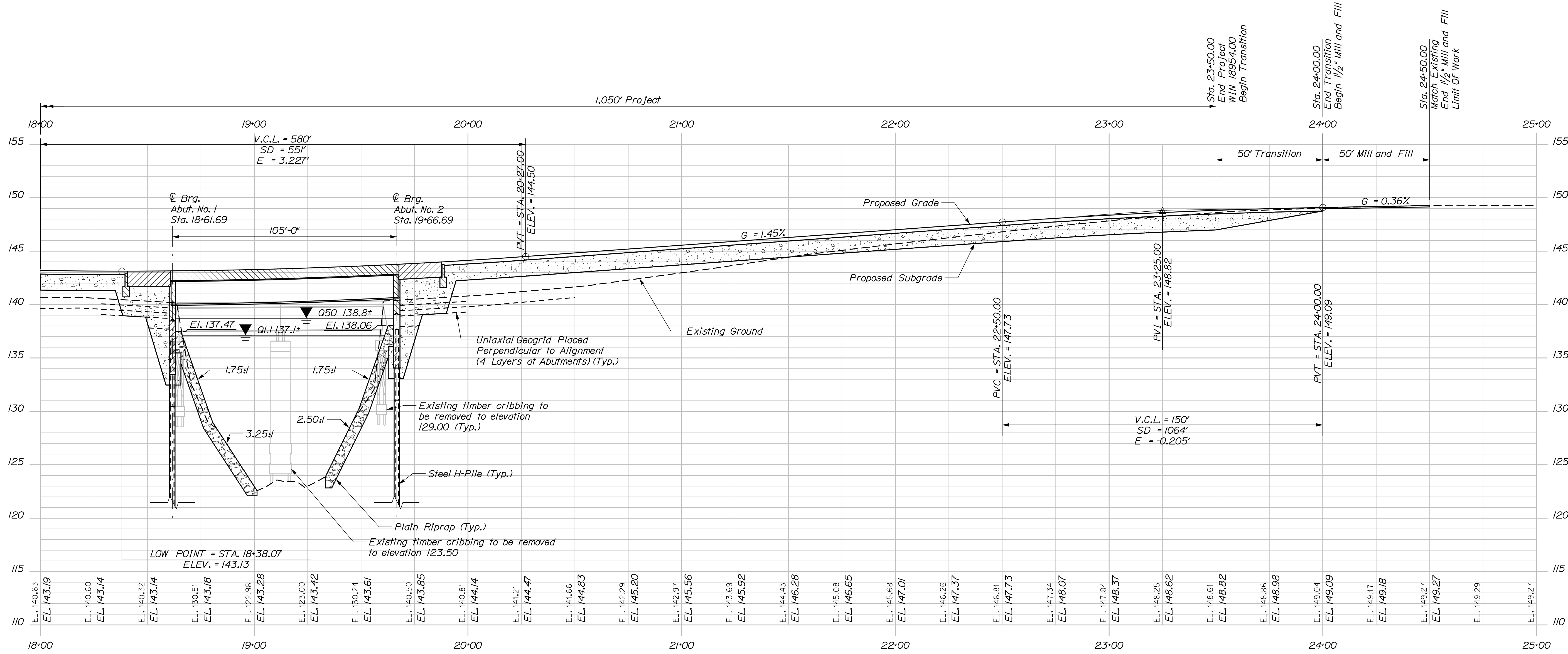


Date: 11/9/2017

Username:

Division:

Filename: 007_PROFILE.dgn



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
WIN 18954.00
BRIDGE NO. 2112
BRIDGE PLANS

DESIGN	DATE	BY	DATE
DESIGN-DETAILED	11/17	L. Driscoll	
CHECKED-REVIEWED	11/17	A. Sweet	
DESIGN-DETAILED		R. Harb	
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

PROJ. MANAGER	DATE	BY	DATE
L. Timberlake		A. Sweet	
		C. Marin	

BURNHAM BRIDGE
COBBOSECONTEE STREAM
KENNEBEC
W. GARDINER-LITCHFIELD
PROFILE

SHEET NUMBER
3
OF 34

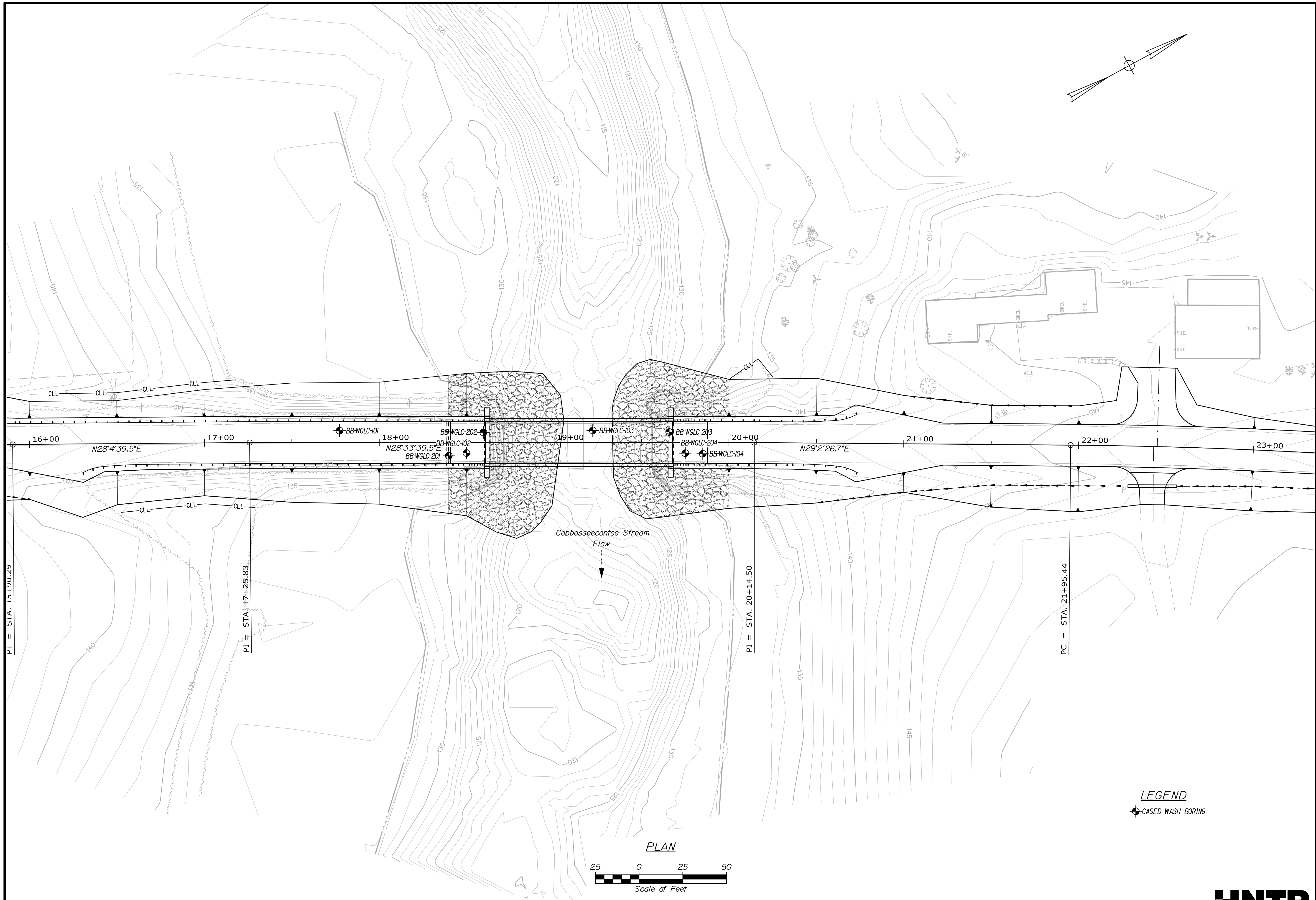


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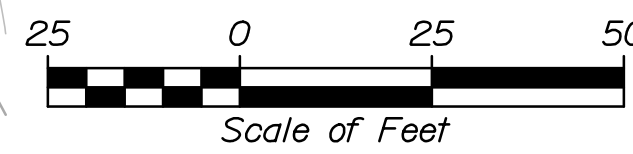
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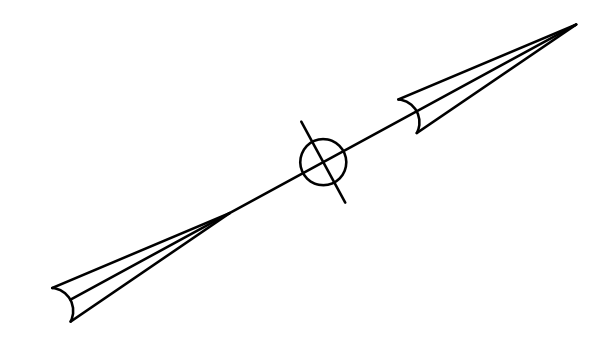
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PLAN



LEGEND
 ⊕ CASED WASH BORING



STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION
 WIN 018954.00
 BRIDGE NO. 2112
 BRIDGE PLANS

PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	11/7	P. Bishop	SIGNATURE
CHECKED-REVIEWED	11/7	C. Morin	P.E. NUMBER
DESIGN-DETAILED			DATE
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

PROJ. MANAGER	DATE	BY	DATE
DESIGN-DETAILED	11/7	P. Bishop	SIGNATURE
CHECKED-REVIEWED	11/7	C. Morin	P.E. NUMBER
DESIGN-DETAILED			DATE
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

BURNHAM BRIDGE
 COBBOSEECONTEE STREAM
 W. GARDINER-LITCHFIELD KENNEBEC
 BORING LOCATION PLAN

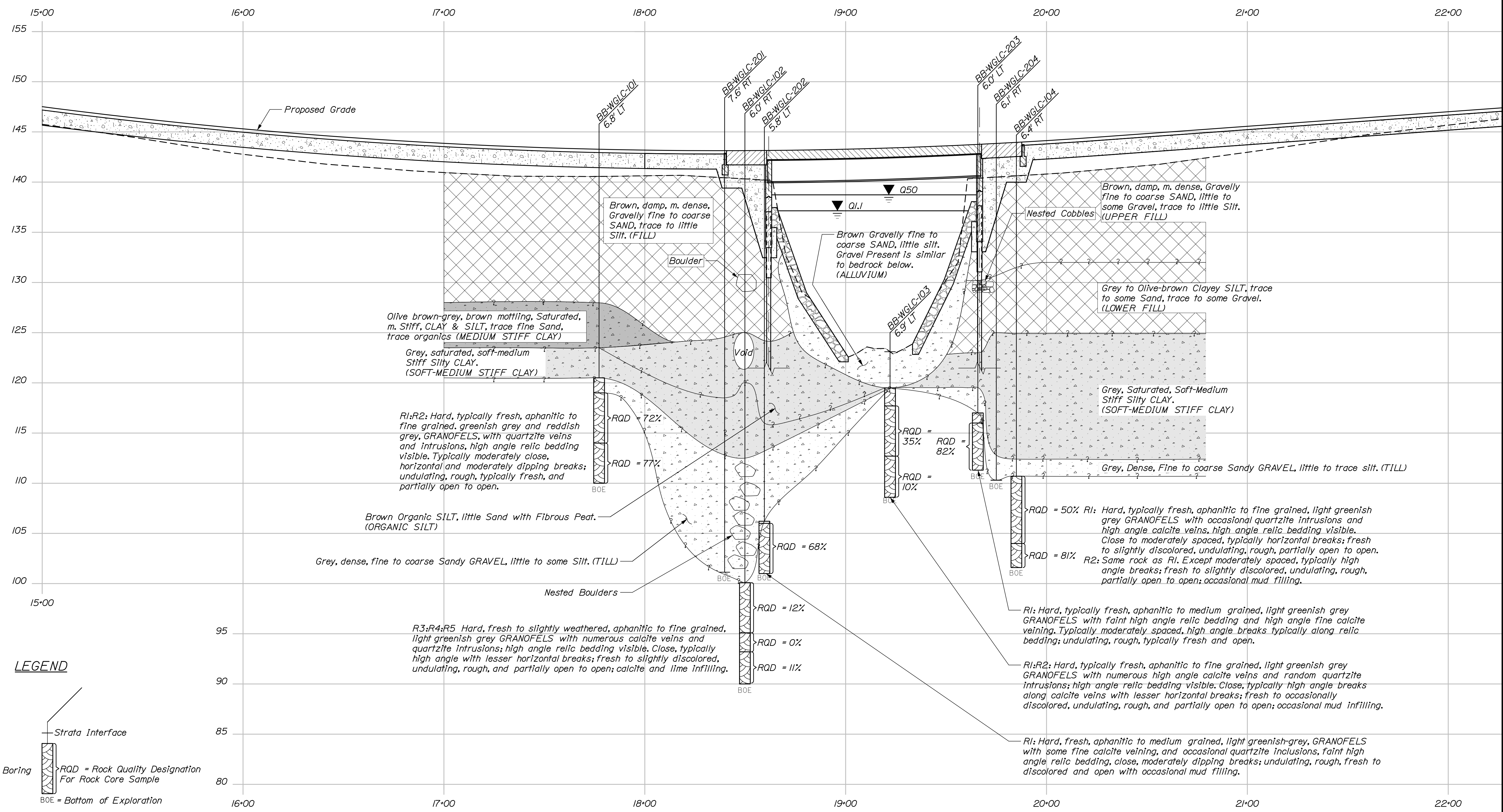
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 OF 34



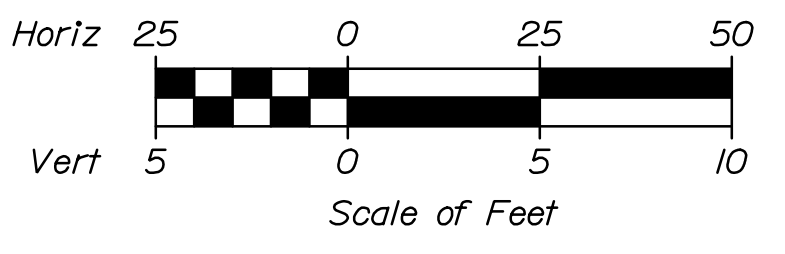
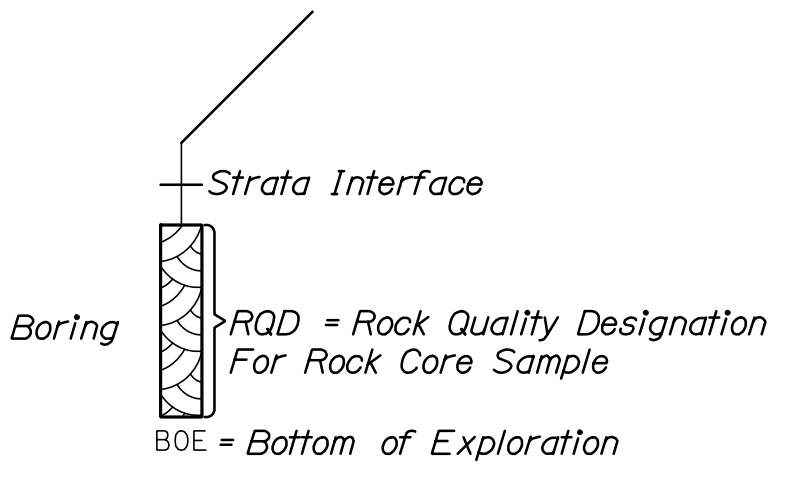
Date: 11/10/2017

Username:

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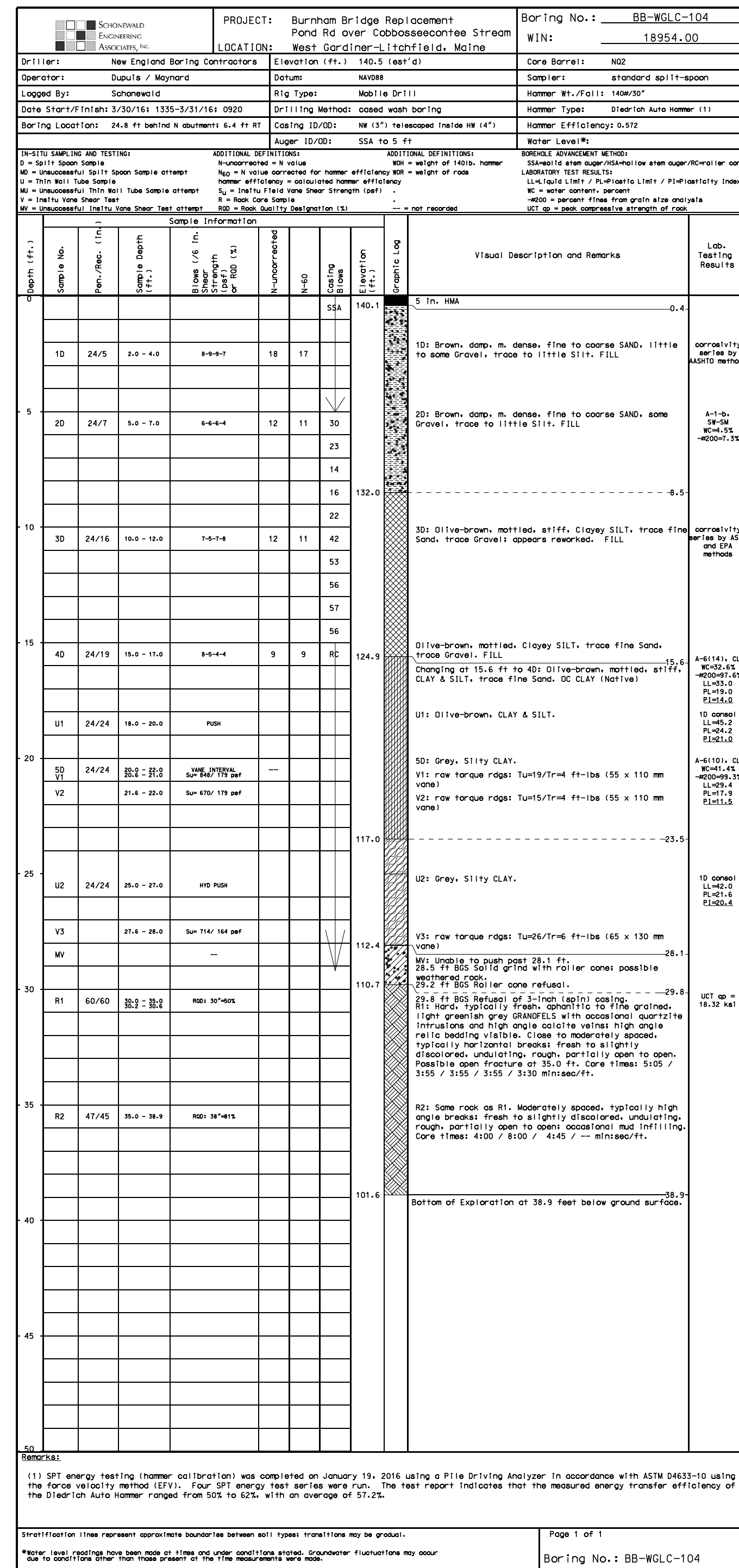
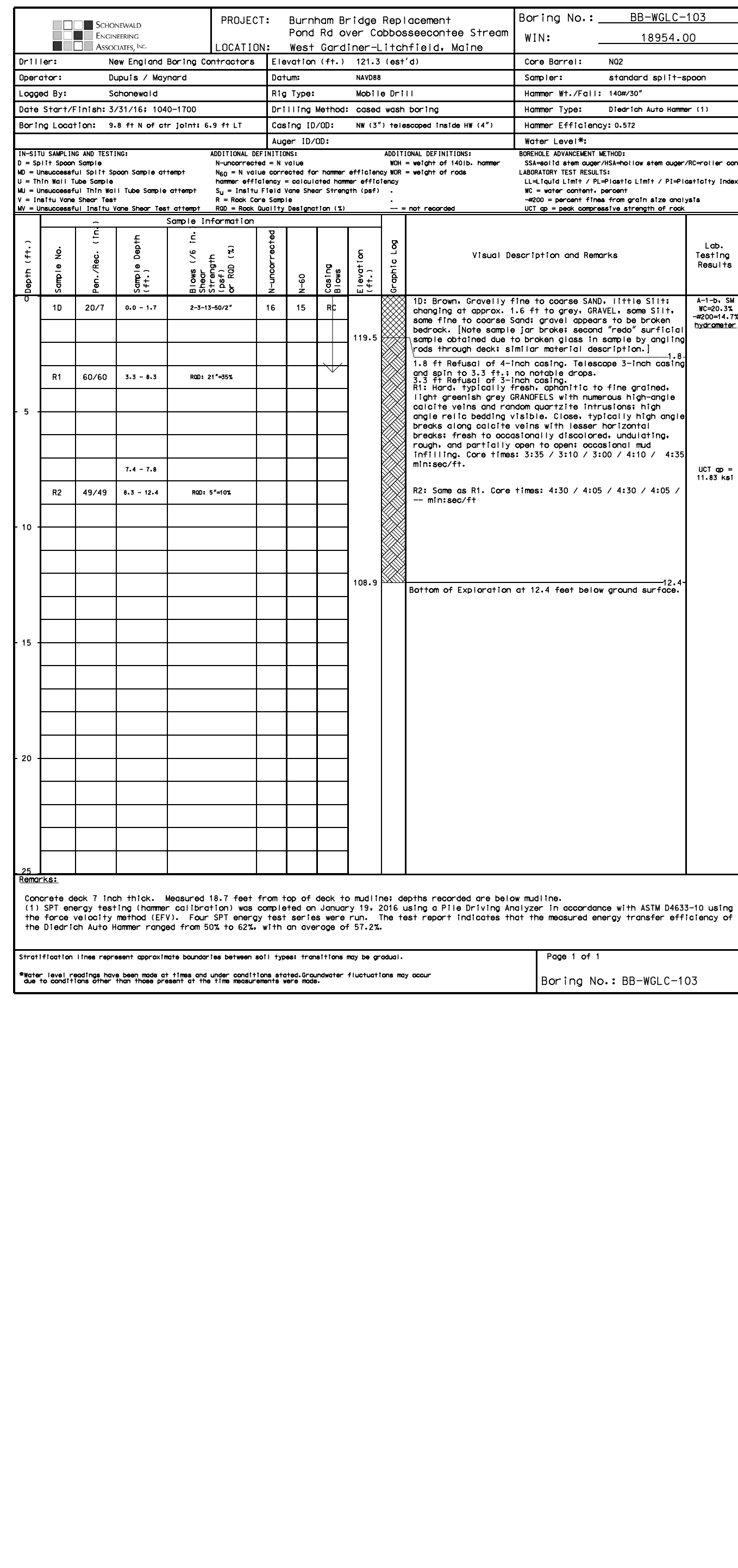
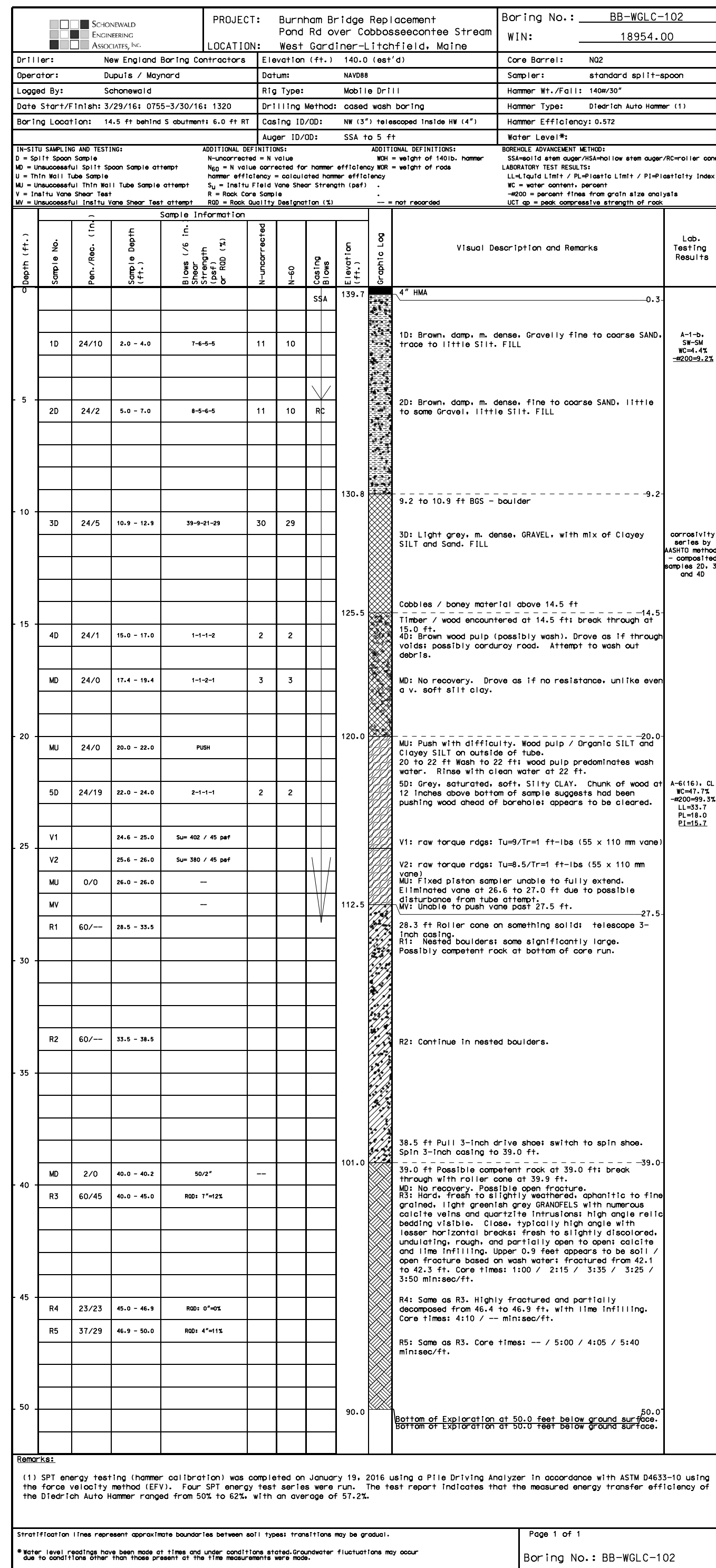
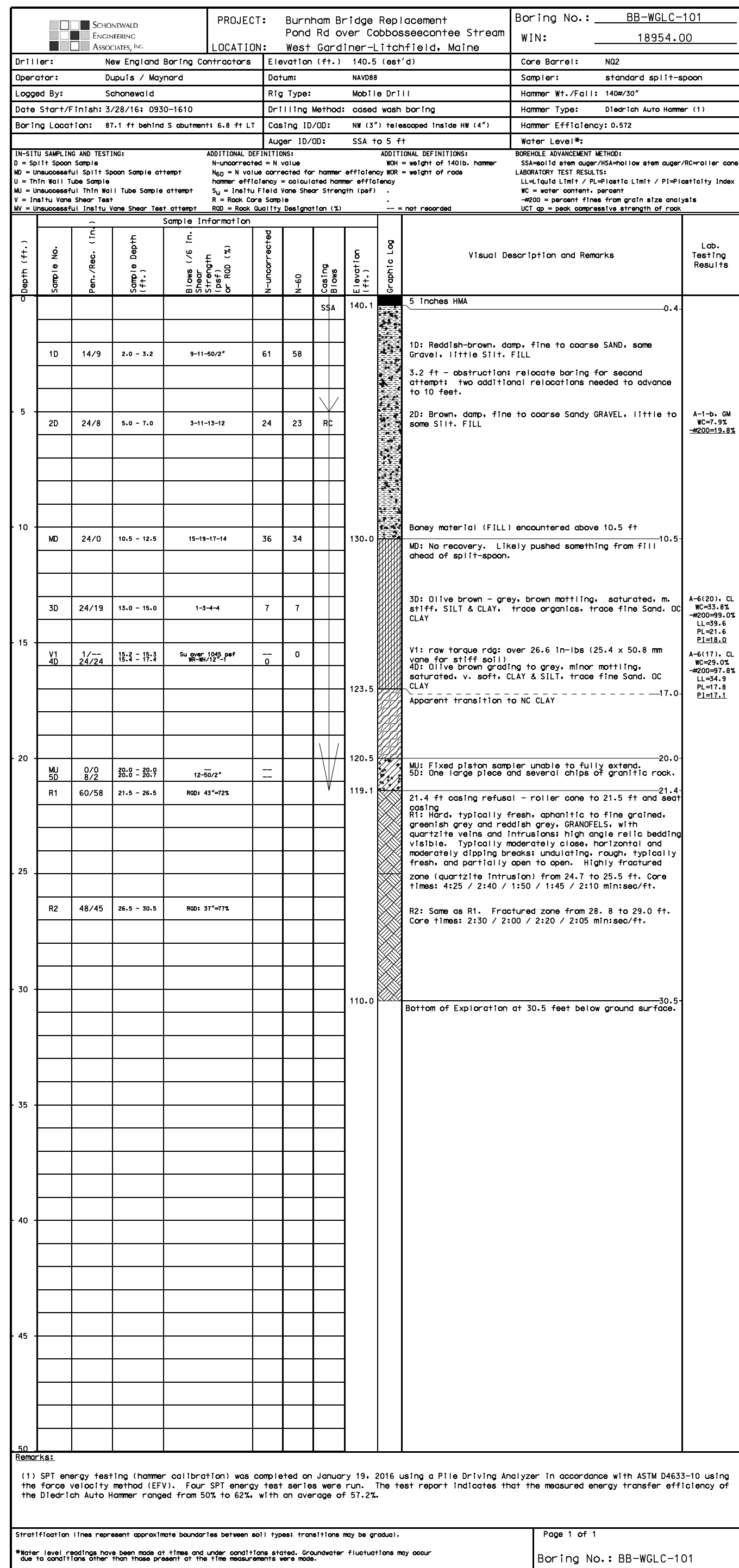
LEGEND



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.

PROFILE

STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		WIN 018954.00		BRIDGE NO. 2112		BRIDGE PLANS	
BURNHAM BRIDGE		COBOSSECONTEE STREAM		KENNEBEC		INTERPRETIVE		SUBSURFACE PROFILE	
W. GARDNER-LITCHFIELD		Kennebec		Kennebec		Kennebec		Kennebec	
PROJ. MANAGER	L. Timmerman	BY	P. Bishop	DATE	11/17	SIGNATURE		P.E. NUMBER	
DESIGN-DETAILED	K. Reidy	CHECKED-REVIEWED	B. Malerek	DATE		SIGNATURE		P.E. NUMBER	
DESIGN-DETAILED		DESIGN-DETAILED		DATE		SIGNATURE		P.E. NUMBER	
REVISIONS 1		REVISIONS 2		DATE		SIGNATURE		P.E. NUMBER	
REVISIONS 3		REVISIONS 4		DATE		SIGNATURE		P.E. NUMBER	
FIELD CHANGES		FIELD CHANGES		DATE		SIGNATURE		P.E. NUMBER	
SHEET NUMBER		9		OF 34		HNTB			



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BURNHAM BRIDGE
COBBESSECONTEE STREAM
W. GARDINER-LITCHFIELD

BORING LOGS 1

WIN 018954.00

BRIDGE NO. 2112

PROJ. MANAGER	DATE	BY	DATE	BY	DATE
L. Timmerman		P. Bishop		C. Martin	
SCHWANICK		SCHWANICK		SCHWANICK	

SHEET NUMBER
10
OF 34

PROJECT: Burnham Bridge Replacement Pond Rd over Cobbescontee Stream West Gardiner-Litchfield, Maine		Boring No.: BB-WGLC-201 WIN: 18954.00		
Operator: Schowald, Royce	Location: Elevation (ft.): 140.0 ft. East of	Core Bore(s): M2	Operator: Schowald, Royce	
Logged By: Schowald	Rig Type: Mobile Drill B-51	Home: Mt. Fall: 140 lbs. / 30 Inche	Date Start/Finish: 7/25/17 0805-1705	
Date Start/Finish: 7/25/17 1410-1727/1711 1225	Drilling Method: cased wash boring	Home: Type: rose and oarhead	Boring Location: 4.8' south of south abutment, 5.8' LT	
Boring Location: 24.8' south of south abutment, 1.8' RT	Coating ID/OD: 14" to 15.3" ft.	Home: Efficiency: 0.60	Water Level: 5.8' to 5.8' ft.	
Auger ID/OD: 5.8" to 5.8" ft.	Water Level: 5.8' to 5.8' ft.			
<p>IN-SITU SAMPLING AND TESTING: 2 - Split Spoon Sample, 1 - Thin Wall Tube Sample, 1 - In Situ Vane Shear Test</p> <p>ADDITIONAL DEFINITIONS: N/A</p> <p>LABORATORY TEST RESULTS: N/A</p> <p>REMARKS: N/A</p>				
Depth (ft.)	Sample No.	Sample Information	Visual Description and Remarks	Lab. Testing Results
0			5' Inches HMA	
10	1D	24/13 1.0 - 3.0 10-10-14 17 17	1D: Brown, comp. m. dense, gravelly fine to coarse SAND, trace to little SILT, FILL	
20	2D	24/6 3.0 - 1.0 3-4-4 8 8	2D: Brown, damp to moist, loose, gravelly fine to coarse SAND, trace to little SILT, FILL	A-1-b, SR-SM #2000-25
30	3D	24/4 10.0 - 12.0 10-0-0 8 8	3D: Black-brown, WOOD, Disturbed grey silt in tip of spoon.	
40	4D	24/22 15.0 - 11.0 2-1-2 3 3	4D: Grey, SILT, little v. fine Sand, with one piece rounded gravel at top of spoon. RECENT ALLUVIUM grading of 15.7 ft for	A-1-b, SR-SM #2000-25
50	5D	24/22 11.0 - 19.0 2-1-2 3 3	5D: Brown, fibrous PEAT and ORGANIC SILT, little fine SAND, with wood and roots.	A-1-b, SR-SM #2000-25
60	6D	24/24 20.0 - 22.0 1-1-1 1 1	6D: Brown, v. loose, fine SANDY ORGANIC SILT, with fibrous peat and wood, changing at 21.5 ft for	
70	7D	24/24 21.5 - 22.0 1-1-1 1 1	7D: Grey, SILTY CLAY.	
80	8D	24/24 21.5 - 22.0 1-1-1 1 1	8D: Grey, SILTY CLAY.	
90	9D	24/11 30.0 - 32.0 11-24-24 46 46	9D: Grey, dense, fine to coarse SANDY GRAVEL, little to some SILT, FILL	
100	10D	24/12 30.0 - 31.0 24-24-24 51 51	10D: Grey, v. dense, fine to coarse SANDY GRAVEL, some SILT, FILL	
110			39.3 ft Coating refusal.	
120			Bottom of Exploration at 39.3 feet below ground surface of coating refusal.	

PROJECT: Burnham Bridge Replacement Pond Rd over Cobbescontee Stream West Gardiner-Litchfield, Maine		Boring No.: BB-WGLC-202 WIN: 18954.00		
Operator: Schowald, Royce	Location: Elevation (ft.): 140.0 ft. East of	Core Bore(s): M2	Operator: Schowald, Royce	
Logged By: Schowald	Rig Type: Mobile Drill B-51	Home: Mt. Fall: 140 lbs. / 30 Inche	Date Start/Finish: 7/25/17 0805-1705	
Date Start/Finish: 7/25/17 1410-1727/1711 1225	Drilling Method: cased wash boring	Home: Type: rose and oarhead	Boring Location: 4.8' south of south abutment, 5.8' LT	
Boring Location: 24.8' south of south abutment, 1.8' RT	Coating ID/OD: 14" to 15.3" ft.	Home: Efficiency: 0.60	Water Level: 5.8' to 5.8' ft.	
Auger ID/OD: 5.8" to 5.8" ft.	Water Level: 5.8' to 5.8' ft.			
<p>IN-SITU SAMPLING AND TESTING: 2 - Split Spoon Sample, 1 - Thin Wall Tube Sample, 1 - In Situ Vane Shear Test</p> <p>ADDITIONAL DEFINITIONS: N/A</p> <p>LABORATORY TEST RESULTS: N/A</p> <p>REMARKS: N/A</p>				
Depth (ft.)	Sample No.	Sample Information	Visual Description and Remarks	Lab. Testing Results
0			5' Inches HMA	
10	1D	24/10 1.0 - 3.0 3-1-2-8 19 19	1D: Brown, damp, m. dense, fine to coarse SANDY GRAVEL, trace to little SILT, FILL	
20	2D	24/12 3.0 - 1.0 4-9-9 10 10	2D: Reddish brown, moist, loose, gravelly fine to coarse SAND, trace SILT, FILL	
30	3D	24/5 10.0 - 10.0 10-24-19 39 39	3D: Grey, dense, GRAVEL, some fine to coarse Sand, little SILT, FILL	A-1-b, SR-SM #2000-25
40	4D	24/6 15.0 - 11.0 6-1-14 15 15	4D: Grey, m. dense, GRAVEL, some SILT, little fine to coarse Sand.	
50	5D	24/7 20.0 - 20.0 4-9-9 10 10	5D: Dark brown, stiff, ORGANIC SILT, little fine Sand.	
60	6D	24/16 21.0 - 24.0 3-3-4 8 8	6D: Dark brown, m. stiff, ORGANIC SILT, some fine Sand, with pebbles of fibrous peat.	
70	7D	22/22 21.5 - 22.0 1-1-1 1 1	7D: Grey, SILTY CLAY.	
80	8D	24/4 24.0 - 24.0 1-1-1 1 1	8D: Grey, dense, GRAVEL, little to some fine to coarse Sand, trace to little SILT, FILL	
90	9D	24/3 30.0 - 32.0 11-24-24 36 36	9D: Grey, dense, GRAVEL, little to some fine to coarse Sand, trace to little SILT, FILL	
100	10D	24/12 30.0 - 31.0 24-24-24 51 51	10D: Grey, v. dense, fine to coarse SANDY GRAVEL, some SILT, FILL	
110			39.3 ft Coating refusal.	
120			Bottom of Exploration at 39.3 feet below ground surface of coating refusal.	

PROJECT: Burnham Bridge Replacement Pond Rd over Cobbescontee Stream West Gardiner-Litchfield, Maine		Boring No.: BB-WGLC-203 WIN: 18954.00		
Operator: Schowald, Royce	Location: Elevation (ft.): 140.0 ft. East of	Core Bore(s): M2	Operator: Schowald, Royce	
Logged By: Schowald	Rig Type: Mobile Drill B-51	Home: Mt. Fall: 140 lbs. / 30 Inche	Date Start/Finish: 7/26/17 0800-1350	
Date Start/Finish: 7/26/17 1410-1727/1711 1225	Drilling Method: cased wash boring	Home: Type: rose and oarhead	Boring Location: 5.6' north of north abutment, 6.0' LT	
Boring Location: 24.8' south of south abutment, 1.8' RT	Coating ID/OD: 14" to 15.3" ft.	Home: Efficiency: 0.60	Water Level: 5.8' to 5.8' ft.	
Auger ID/OD: 5.8" to 5.8" ft.	Water Level: 5.8' to 5.8' ft.			
<p>IN-SITU SAMPLING AND TESTING: 2 - Split Spoon Sample, 1 - Thin Wall Tube Sample, 1 - In Situ Vane Shear Test</p> <p>ADDITIONAL DEFINITIONS: N/A</p> <p>LABORATORY TEST RESULTS: N/A</p> <p>REMARKS: N/A</p>				
Depth (ft.)	Sample No.	Sample Information	Visual Description and Remarks	Lab. Testing Results
0			5' Inches HMA	
10	1D	24/13 1.0 - 3.0 3-1-2-8 18 18	1D: Brown, damp, m. dense, fine to medium SAND, some gravel, little SILT, trace coarse Sand, FILL	
20	2D	24/12 3.0 - 1.0 3-3-3 8 8	2D: Brown, moist, loose, gravelly fine to coarse SAND, trace to little SILT, FILL	A-1-b, SR-SM #2000-25
30	3D	24/5 11.0 - 13.0 3-3-3 16 16	3D: 9.8 ft: Nestled cobble no water return. Drop through void at 10.7 ft fetch up at 11.0 ft. 3D: Dark grey, m. dense, coarse SANDY GRAVEL, trace SILT, trace fine to medium Sand, with one 2-inch layer grey SILT & CLAY mixture of granular fill and disturbed marine silt/clay, MISC FILL void 11.5 to 11.8 ft	
40	4D	24/7 15.0 - 11.0 1-1-1-10 15 15	4D: Dark grey, m. dense, mixture of granular fill and disturbed marine silt/clay, MISC FILL	
50	5D	24/12 20.0 - 20.0 1-1-1 1 1	5D: Dark grey, v. soft, SILTY CLAY appears undisturbed. Possible sand on sample in tip of spoon.	
60	6D	24/16 21.0 - 24.0 3-3-4 8 8	6D: Dark brown, m. stiff, ORGANIC SILT, some fine Sand, with pebbles of fibrous peat.	
70	7D	22/22 21.5 - 22.0 1-1-1 1 1	7D: Grey, SILTY CLAY.	
80	8D	24/3 30.0 - 32.0 11-24-24 36 36	8D: Grey, dense, GRAVEL, little to some fine to coarse Sand, trace to little SILT, FILL	
90	9D	24/12 30.0 - 31.0 24-24-24 51 51	9D: Grey, v. dense, fine to coarse SANDY GRAVEL, some SILT, FILL	
100			39.3 ft Coating refusal.	
110			Bottom of Exploration at 39.3 feet below ground surface of coating refusal.	

PROJECT: Burnham Bridge Replacement Pond Rd over Cobbescontee Stream West Gardiner-Litchfield, Maine		Boring No.: BB-WGLC-204 WIN: 18954.00		
Operator: Schowald, Royce	Location: Elevation (ft.): 140.0 ft. East of	Core Bore(s): M2	Operator: Schowald, Royce	
Logged By: Schowald	Rig Type: Mobile Drill B-51	Home: Mt. Fall: 140 lbs. / 30 Inche	Date Start/Finish: 7/27/17 1250-1710	
Date Start/Finish: 7/27/17 1410-1727/1711 1225	Drilling Method: cased wash boring	Home: Type: rose and oarhead	Boring Location: 14.8' north of north abutment, 8.1' RT	
Boring Location: 24.8' south of south abutment, 1.8' RT	Coating ID/OD: 14" to 15.3" ft.	Home: Efficiency: 0.60	Water Level: 5.8' to 5.8' ft.	
Auger ID/OD: 5.8" to 5.8" ft.	Water Level: 5.8' to 5.8' ft.			
<p>IN-SITU SAMPLING AND TESTING: 2 - Split Spoon Sample, 1 - Thin Wall Tube Sample, 1 - In Situ Vane Shear Test</p> <p>ADDITIONAL DEFINITIONS: N/A</p> <p>LABORATORY TEST RESULTS: N/A</p> <p>REMARKS: N/A</p>				
Depth (ft.)	Sample No.	Sample Information	Visual Description and Remarks	Lab. Testing Results
0			5' Inches HMA	
10	1D	24/7 1.0 - 3.0 3-1-2-14 24 24	1D: Light brown, damp, m. dense, fine to medium SAND, some gravel, trace to little SILT, trace coarse Sand, FILL	
20	2D	24/12 3.0 - 1.0 3-3-3 6 6	2D: Brown, moist, loose, fine to coarse SAND, some gravel, trace SILT, FILL	A-1-b, SR-SM #2000-25
30	3D	24/15 10.0 - 10.0 3-3-3 6 6	3D: Dark brown, WOOD, with some sand and gravel; changing at 11.4 ft for	A-1-b, SR-SM #2000-25
40	4D	24/0 15.0 - 11.0 3-3-4 7 7	4D: Blue-grey to grey, SILT, some fine Sand, trace coarse Sand, RECENT ALLUVIUM	
50	5D	24/24 20.0 - 20.0 1-1-1 1 1	5D: Grey, CLAY & SILT.	
60	6D	24/24 21.5 - 22.0 1-1-1 1 1	6D: Grey, SILTY CLAY; concrete on noted at 24.2 ft.	
70	7D	24/15 25.0 - 21.0 1-1-1-15 9 9	7D: Grey, SILTY CLAY. Piece of gravel in tip of spoon.	
80			26.7 ft: Dense sand and gravel based on drilling behavior.	
90			Bottom of Exploration at 30.2 feet below ground surface of roller cone refusal!	

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
WIN 018954.00
BRIDGE NO. 2112

BURNHAM BRIDGE
COBBESSECONTEE STREAM
W. GARDINER-LITCHFIELD
BORING LOGS 2

SHEET NUMBER
11
OF 34

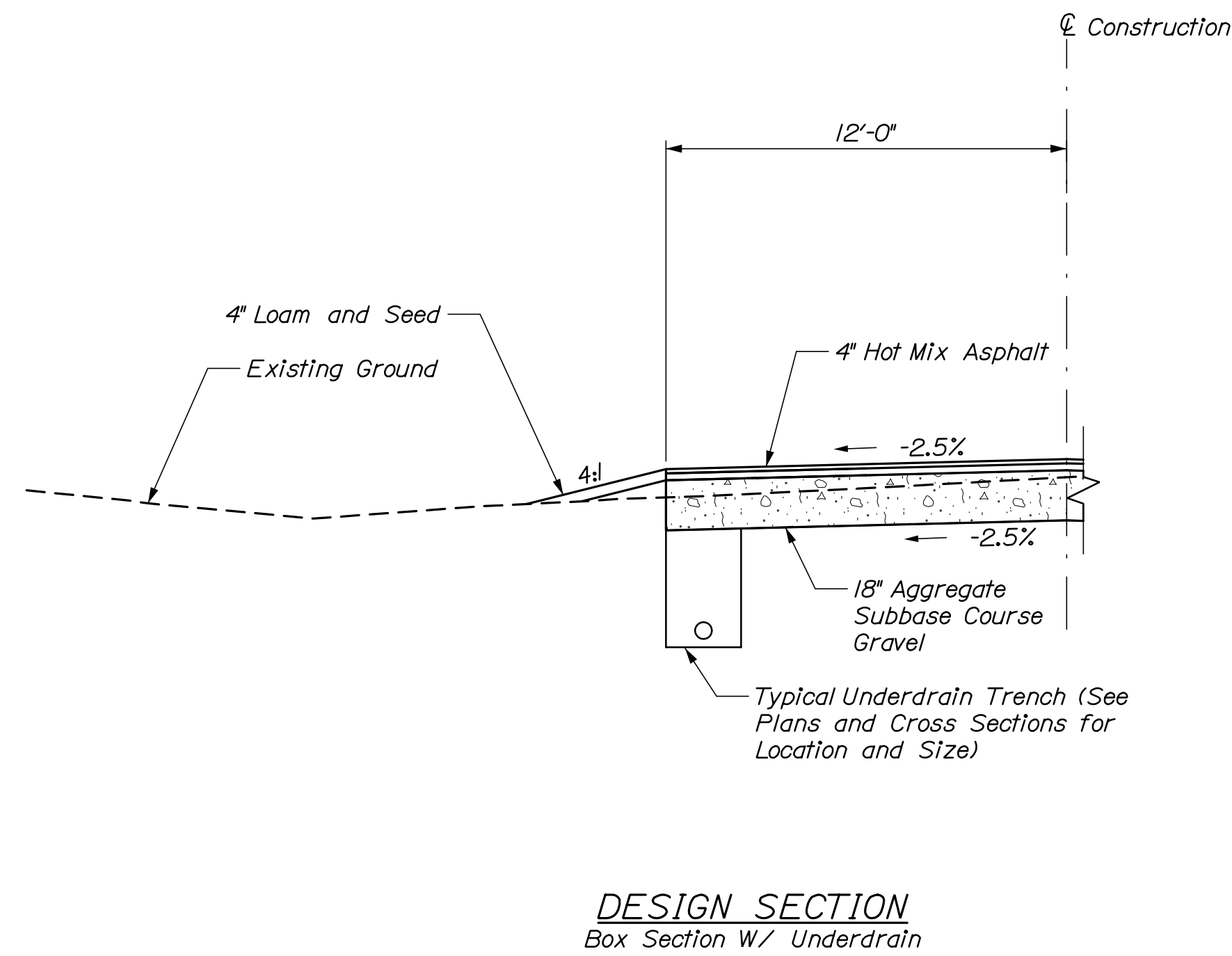
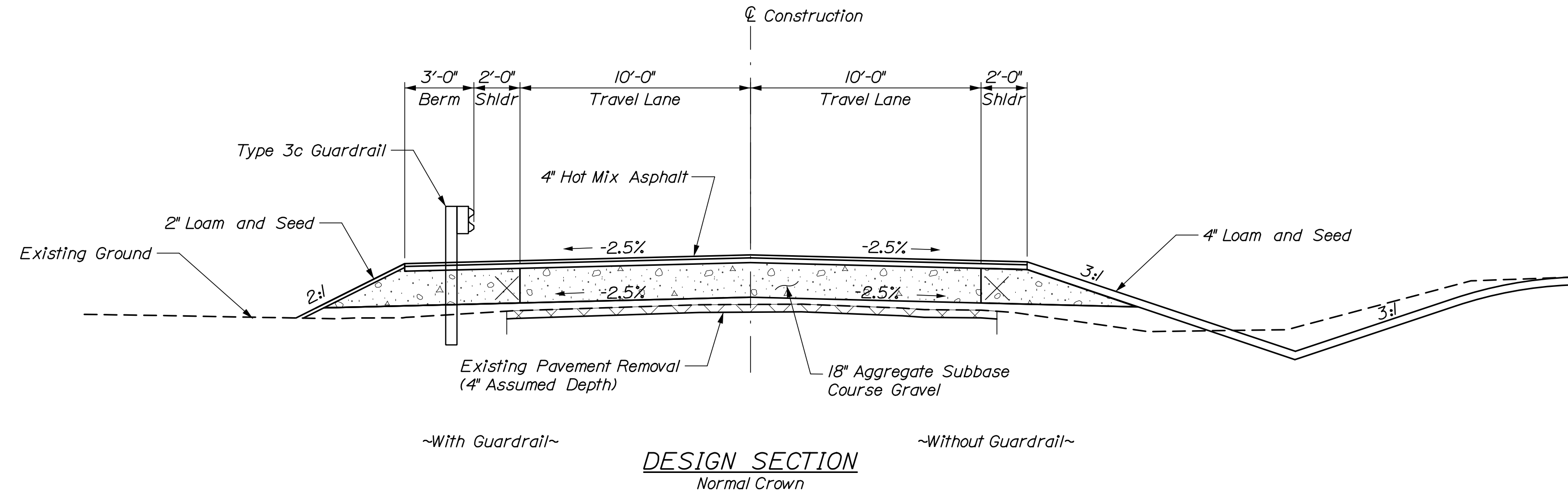
PROJ. MANAGER	DATE	BY	DATE
L. Timmerman		P. Bishop	
DESIGN-DETAILED		B. Matlock	
CHECKED-REVIEWED		C. Martin	
DESIGN-DETAILED			
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

Date: 11/9/2017

Username:

Division:

Filename: 012_Typ.dgn



Notes:

1. The pavement, base, and subbase depths as shown on the plans are intended to be nominal.
2. Crowns for all courses of subbase and pavement shall be straight.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 18954.00

BRIDGE NO. 2112

BRIDGE PLANS

PROJ. MANAGER	L. Timmerlake	BY	DATE
DESIGN-DETAILED	L. Driscoll	A. Sweet	11/7
CHECKED-REVIEWED	R. Harb	C. Merin	11/7
DESIGN-DETAILED 2			
DESIGN-DETAILED 3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE	
P.E. NUMBER	
DATE	

BURNHAM BRIDGE
COBOSSECONTEE STREAM
KENNEBEC
W. GARDINER-LITCHFIELD

TYPICAL SECTIONS

SHEET NUMBER

12

OF 34

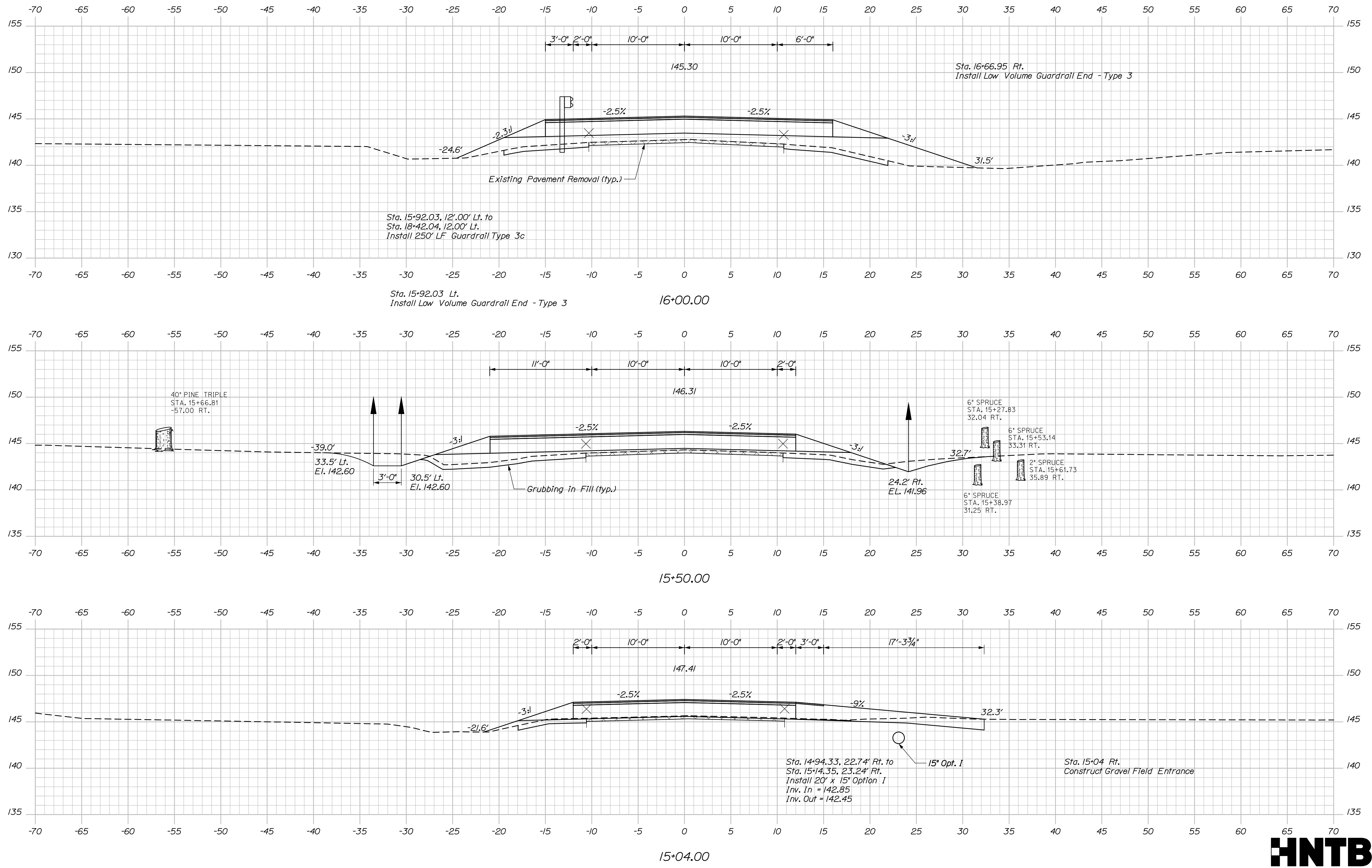


Date: 11/9/2017

Username:

Division:

Filename: xsect.dgn



STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		WIN 018954.00	
BURNHAM BRIDGE		COBOSSECONTEE STREAM		KENNEBEC	
W. GARDINER-LITCHFIELD		CROSS SECTIONS		BRIDGE NO. 2112	
SHEET NUMBER		16		OF 34	
DATE	BY	PROJ. MANAGER	CHECKED	DESIGNED	REVISIONS
11/17	A. Sweet	L. Timberlake	A. Sweet	A. Sweet	1
11/17	C. Merrin	L. Driscoll	L. Driscoll	L. Driscoll	2
					3
					4
					FIELD CHANGES
SIGNATURE		P.E. NUMBER		DATE	



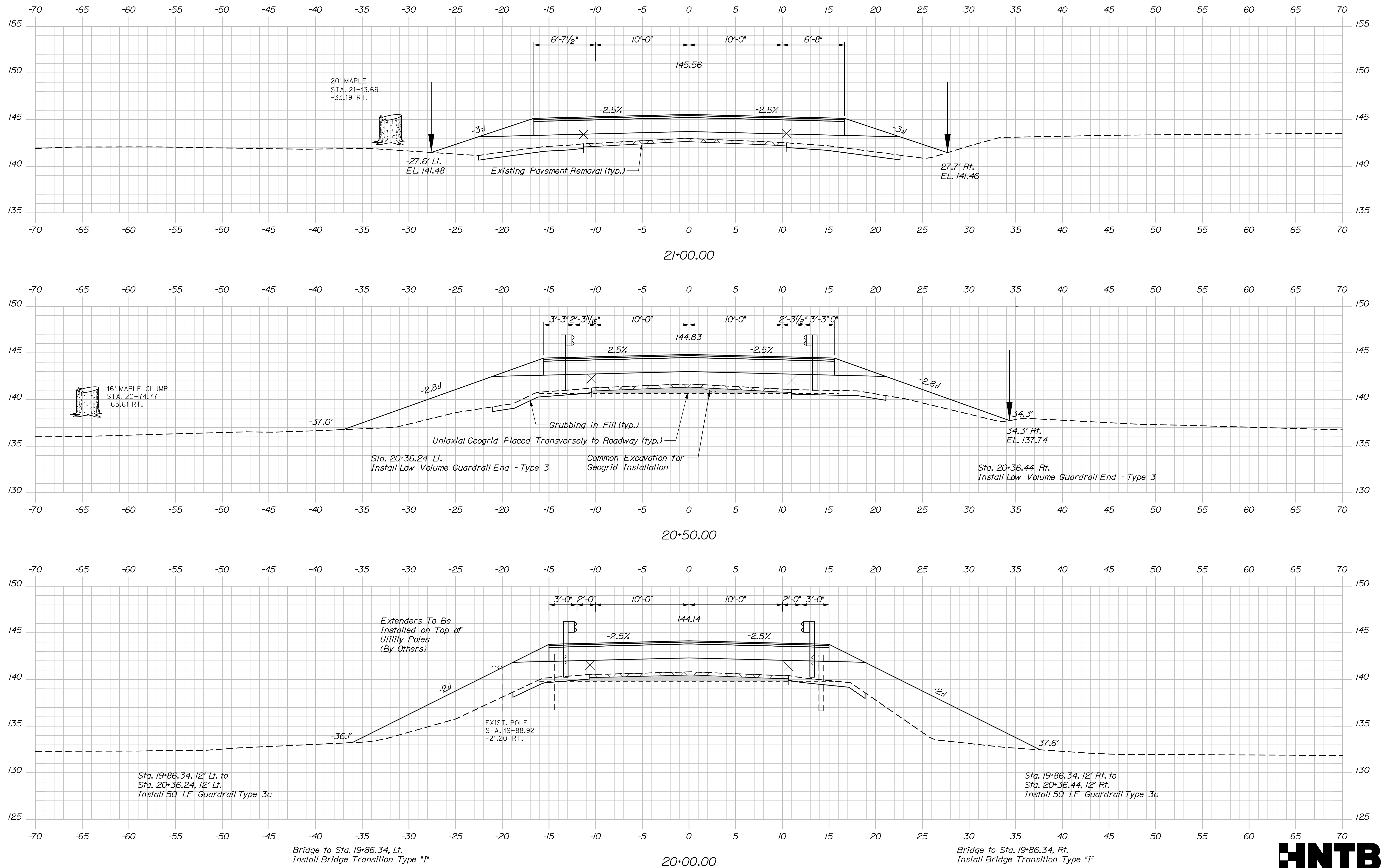
Sta. 15+04.00 to Sta. 16+00.00

Date: 11/9/2017

Username:

Division:

Filename: xsect.dgn



PROJ. MANAGER	DATE	BY	DATE
L. Timberlake		A. Sweet	
CHECKED-REVIEWED		C. Merrin	
DESIGN-DETAILED			
DESIGN-REVIEWED			
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

BURNHAM BRIDGE
COBOSSECONTEE STREAM
KENNEBEC
W. GARDINER-LITCHFIELD
CROSS SECTIONS

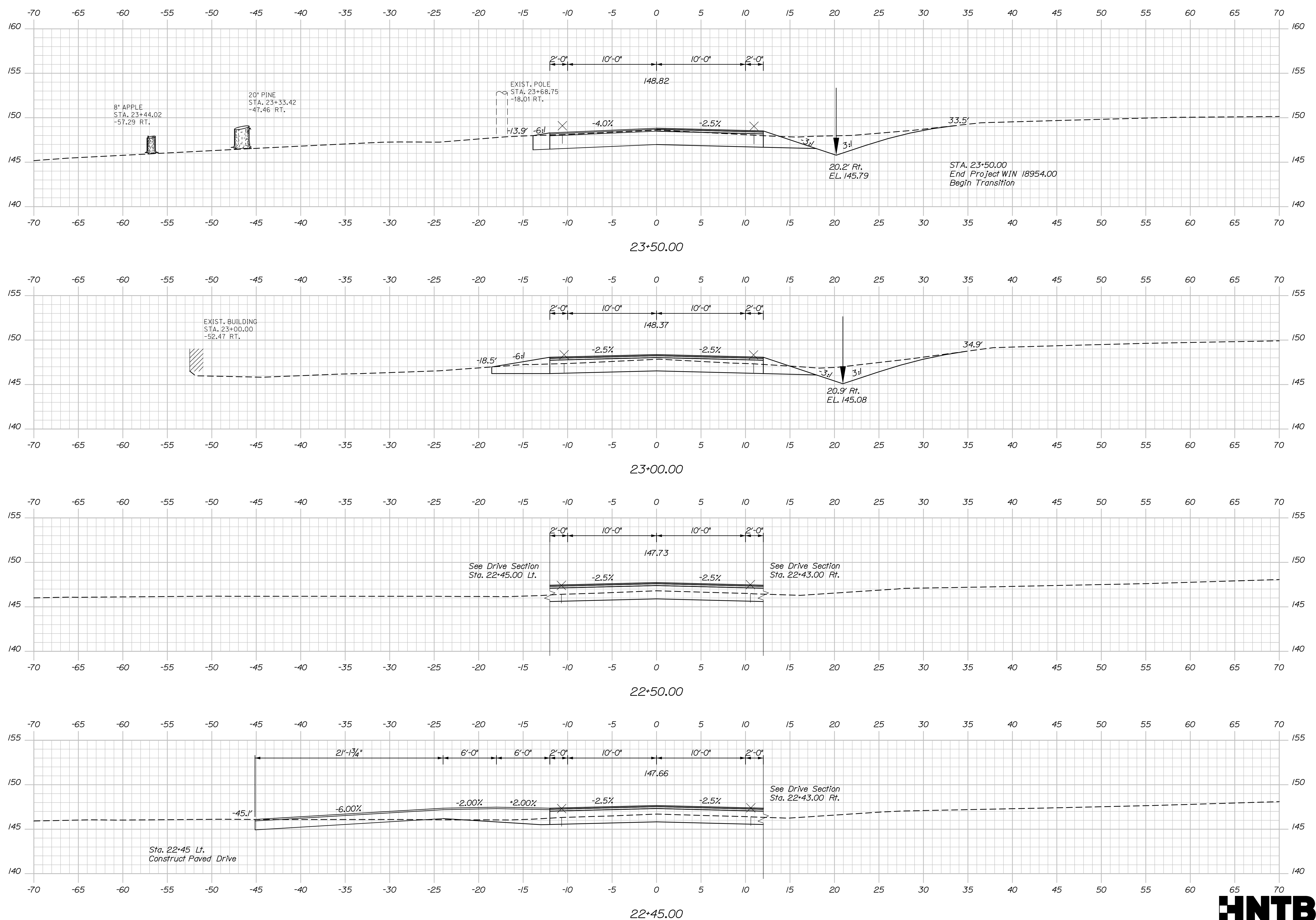


Date: 11/9/2017

Username:

Division:

Filename: xssect.dgn



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
WIN 018954.00
BRIDGE NO. 2112
BRIDGE PLANS

DATE	BY	DATE	BY
11/17	A. Sweet	11/17	A. Sweet
	C. Merrin		L. Driscoll

PROJ. MANAGER	DESIGN-DETAILED	CHECKED-REVIEWED	DESIGN-DETAILED	REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES
L. Timmerlake	A. Sweet	L. Driscoll						

BURNHAM BRIDGE
COBOSSECONTEE STREAM
W. GARDINER-LITCHFIELD
KENNEBEC
CROSS SECTIONS

SHEET NUMBER
21
OF 34



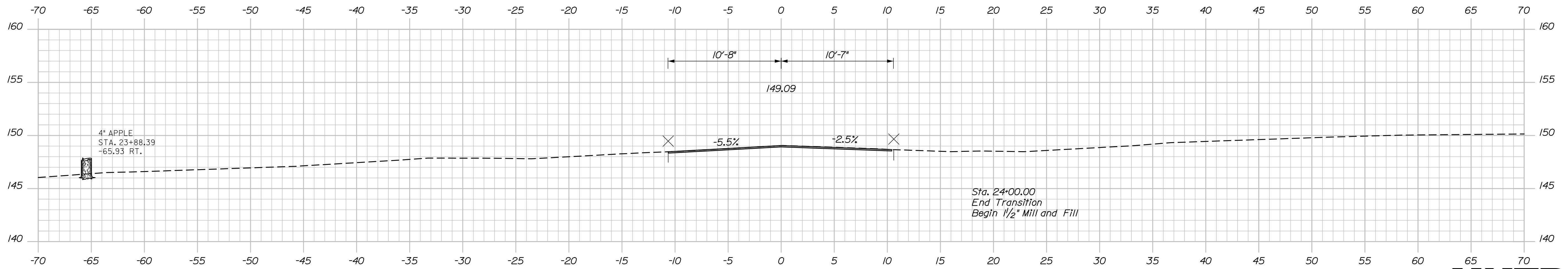
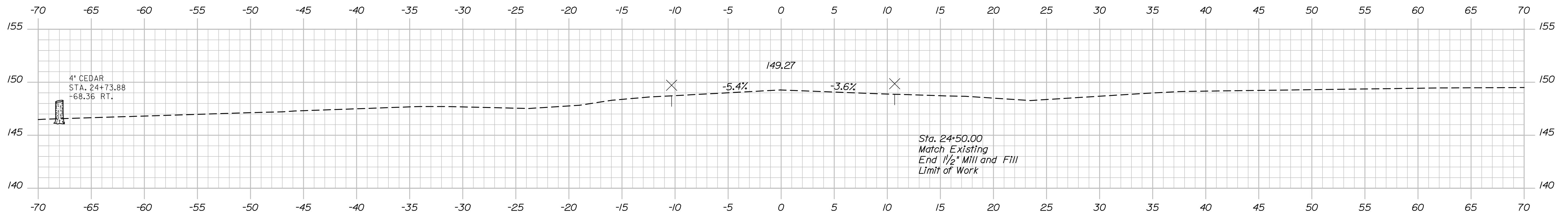
Sta. 22+45.00 to Sta. 23+50.00

Date: 11/9/2017

Username:

Division:

Filename: xsect.dgn



Sta. 24+00.00 to Sta. 24+50.00

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
WIN 018954.00
BRIDGE NO. 2112
BRIDGE PLANS

PROJ. MANAGER	DATE	BY	DATE
L. Timmerlake	11/17	A. Sweet	11/17
DESIGN-DETAILED		C. Merin	
CHECKED-REVIEWED			
DESIGN-DETAILED			
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

BURNHAM BRIDGE
COBBOSECONTEE STREAM
W. GARDINER-LITCHFIELD
KENNEBEC
CROSS SECTIONS

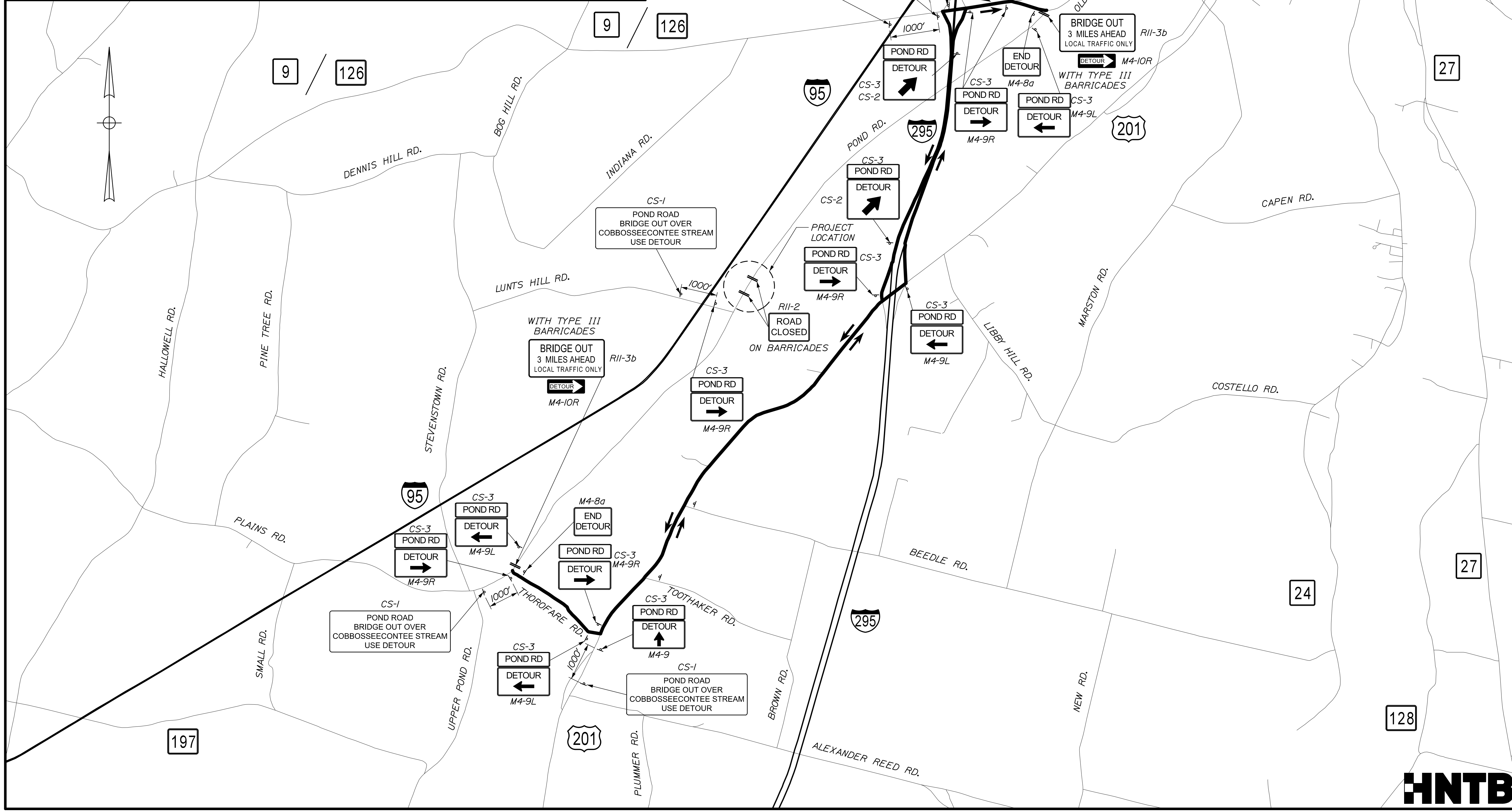
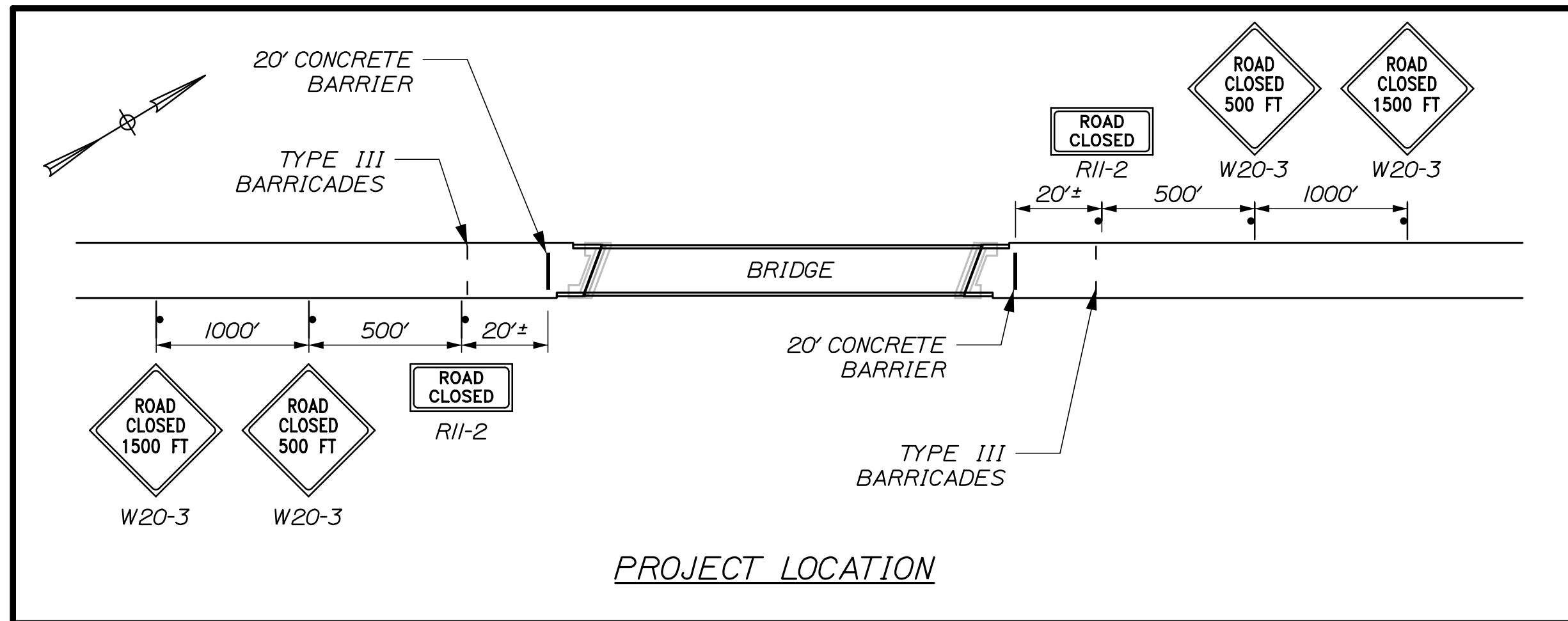
SHEET NUMBER
22
OF 34

Date: 11/15/2017

Username:


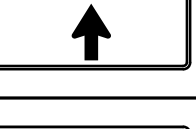
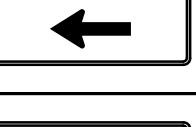
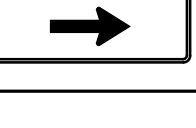


Division:

Filename: 023_DetourMap.dgn



STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		BRIDGE NO. 2112	
W. GARDINER-LITCHFIELD		KENNEBEC		WIN 18954.00	
BURNHAM BRIDGE		COBBOSSECONTEE STREAM		DETOUR PLAN	
SHEET NUMBER		23		OF 34	
PROJ. MANAGER	L. Timberlake	BY	E. Davidson	DATE	
DESIGN-DETAILED	E. Davidson	CHECKED-REVIEWED	L. Driscoll	DATE	
DESIGN-DETAILED		DESIGN-DETAILED		SIGNATURE	
REVISIONS 1		REVISIONS 1		P.E. NUMBER	
REVISIONS 2		REVISIONS 2		DATE	
REVISIONS 3		REVISIONS 3			
REVISIONS 4		REVISIONS 4			
FIELD CHANGES					



IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR		BORDER RADIUS	AREA IN SQUARE FEET	NOTES
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND BORDER			
CS-1	72"	36"	POND ROAD BRIDGE OUT OVER COBBOSECONTEE STREAM USE DETOUR	4"D 4"D 4"D 4"D	3" 3" 3" 3"		5	ORANGE	BLACK	1.5"	18.00 (90)	
CS-2	48"	36"	DETOUR 	TEXT DIMENSIONS SHALL CONFORM TO "STANDARD HIGHWAY SIGNS" - 2000			2	SHALL CONFORM TO "STANDARD HIGHWAY SIGNS" - 2000			12.00 (24)	
CS-3	30"	12"	POND RD				15				2.5 (37.5)	
M4-8a	24"	18"	END DETOUR				2				3.00 (6)	
M4-9	30"	24"	DETOUR 				1				5.00 (5)	
M4-9L	30"	24"	DETOUR 				5				5.00 (25)	
M4-9R	30"	24"	DETOUR 				7				5.00 (35)	
M4-10R	48"	18"	DETOUR 				2				6.00 (12)	
R11-2	48"	30"	ROAD CLOSED				2				10.00 (20)	
R11-3b (3)	60"	30"	BRIDGE OUT XX MILES AHEAD LOCAL TRAFFIC ONLY				2				12.50 (25)	
W20-3 (500 FT) (1500 FT)	48"	48"	ROAD CLOSED XXXX 				2 2				16.00 (32) (32)	

Note:

1. Sign summary included above is for the detour.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
WIN 018954.00
BRIDGE NO. 2112
BRIDGE PLANS

SIGNATURE
P.E. NUMBER
DATE

PROJ. MANAGER	DATE	BY	DATE
L. Timmerlake	11/17	E. Davidson	11/17
E. Davidson		L. Driscoll	
C. Morrill			

BURNHAM BRIDGE
COBBOSECONTEE STREAM
KENNEBEC
W. GARDINER-LITCHFIELD
SIGN SUMMARY

SHEET NUMBER
24
OF 34

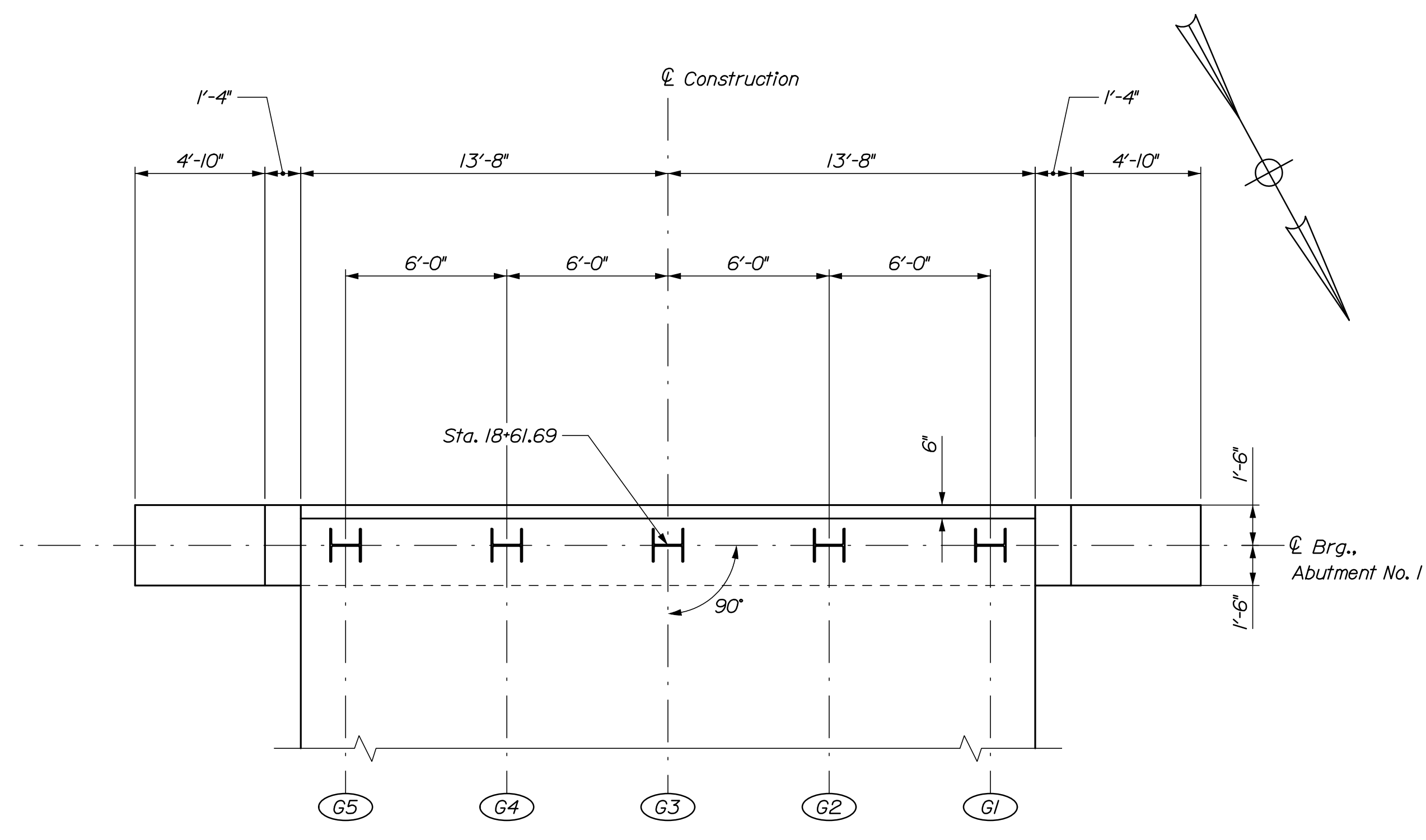


Date: 11/9/2017

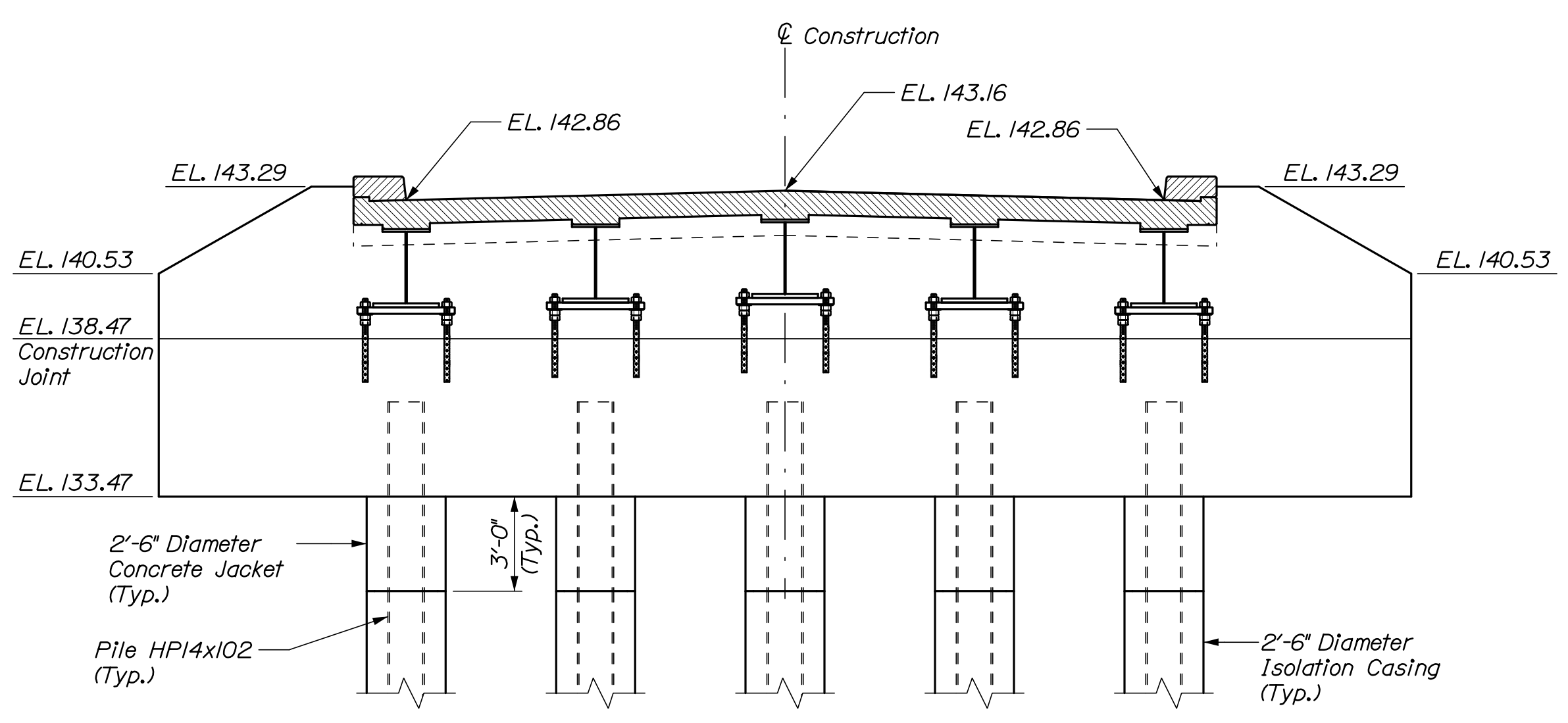
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Division:

Filename: 025_Abument Number 1.dgn



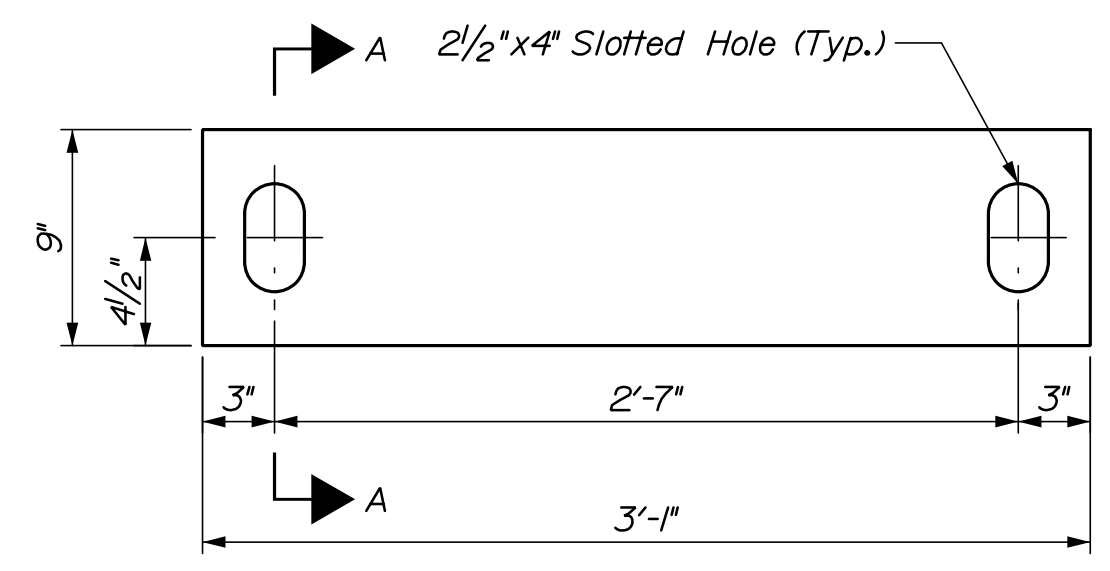
ABUTMENT NO. 1 PLAN



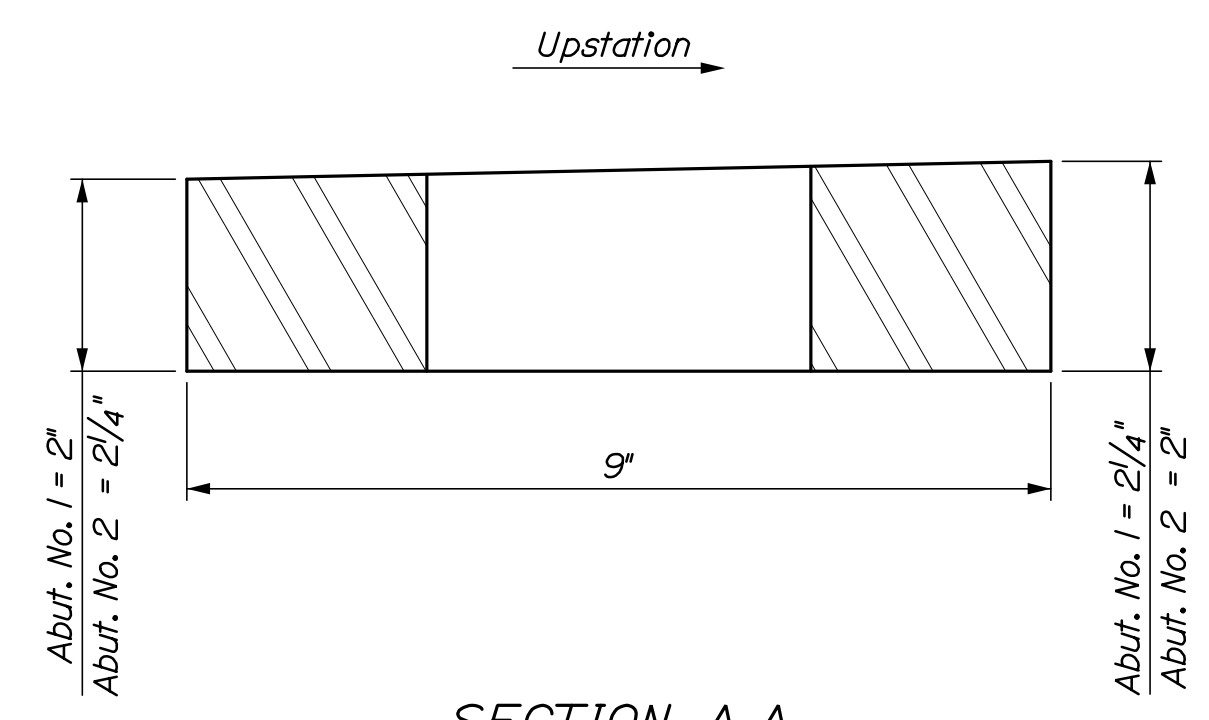
ABUTMENT NO. 1 ELEVATION

ABUTMENT NO. 1 PILE CUT-OFF ELEVATIONS	
Pile	Elevation
All Piles	136.47

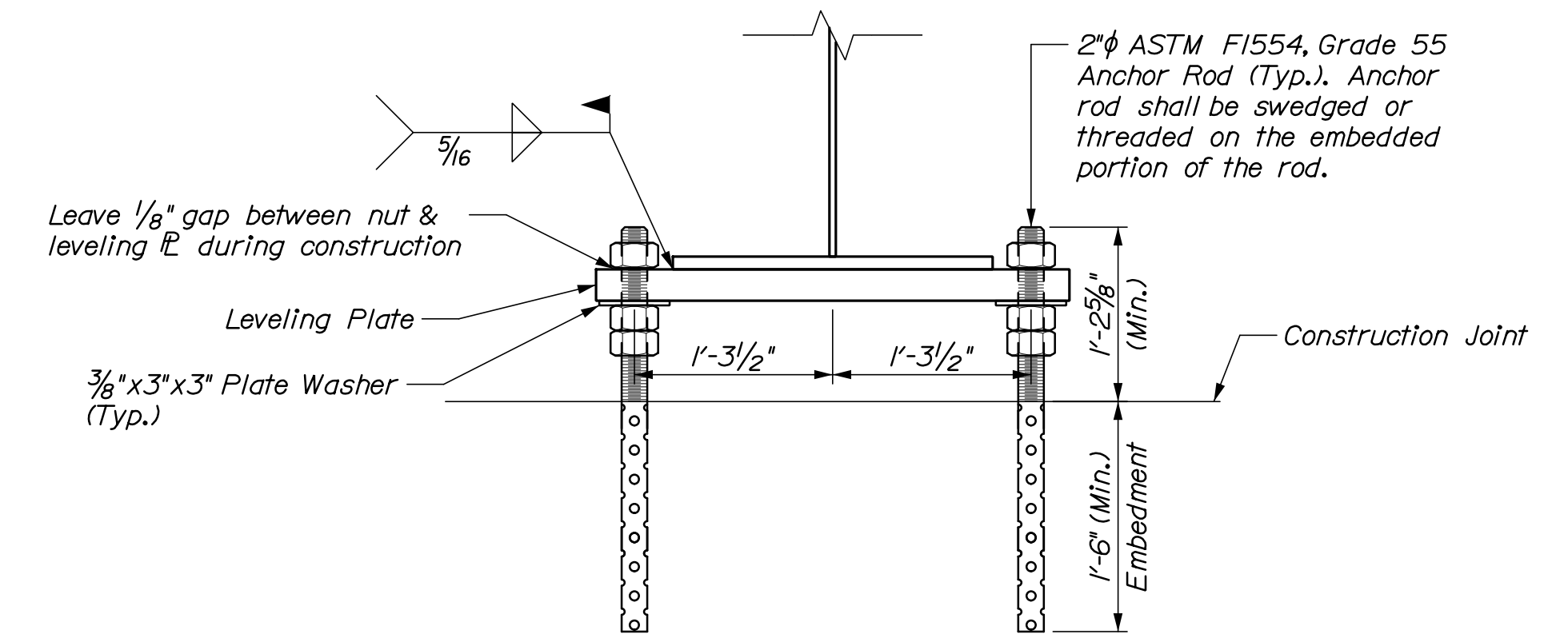
ABUTMENT NO. 1 BOTTOM OF GIRDER ELEVATIONS	
Girder	Elevation
G1	139.46
G2	139.61
G3	139.76
G4	139.61
G5	139.46



LEVELING PLATE



SECTION A-A



GIRDER SUPPORT DETAIL

ABUTMENT NOTES:

- Reinforcing steel shall have a minimum concrete cover of 2 inches unless otherwise noted.
- All elevations are provided at centerline of bearing unless otherwise noted.
- Cover joints where waterstops are not required in accordance with Standard Detail 502(01).
- Place 4 inch diameter drains in breastwall and wingwalls at 8 feet maximum spacing. The exact location will be determined by the Resident.
- Construct Drainage Geocomposite behind the abutments and wingwalls in accordance with Special Provision Section 620, Geotextiles - Drainage Geocomposite.
- Abutments, wingwalls, and their footings shall be backfilled with Granular Borrow for Underwater Backfill. Pay limits will be the structural excavation limits in cut areas and a vertical plane located 10 feet behind the walls in fill areas.
- The Contractor shall install Transition Barrier vertical closed stirrups as shown in Standard Details Section 526, prior to the placement of the curb concrete.
- Payment for concrete jacket around the tops of the H-piles will not be paid for directly. Payment shall be incidental to Pay Item 502.219 Structural Concrete, Abutment and Retaining Walls. Fill concrete shall be used for the concrete jackets.

PILE NOTES:

- The maximum factored pile load is 360 kips.
- H-pile material shall be ASTM A572, Grade 50.
- Estimate of piles required (includes extra 5 feet per pile as contingency):
Abutment No. 1: 5 ~ HP 14 x 102 @ 42 feet
Abutment No. 2: 5 ~ HP 14 x 102 @ 33 feet
- All piles shall be equipped with a pile tip in accordance with Standard Specification Section 501.90, Pile Tips.
- Piles shall be driven to a minimum pile tip elevation of 110.0 at Abutment 1 and 116.0 at Abutment 2.
- Install pile to achieve a nominal geotechnical resistance of 550 kips at Abutment 1 and 535 kips at Abutment 2.
- The proposed abutment piles will be driven behind the existing timber cribbing abutments. The historical bridge plans indicate the timber pile anchors and tie rods are present behind each existing abutment. It is the responsibility of the Contractor to remove any portions of the existing timber abutment, timber footings, timber pile anchors and tie rods so that they do not obstruct or conflict with pile driving operations. Removal of the buried obstructions shall be made incidental to related Contract items.
- Cobbles and boulders may be encountered at either of the proposed abutment locations and impede pile driving operations. If obstructions are encountered prior to reaching the minimum required tip elevation, they may be cleared by preaugering, predrilling, down-hole hammers or by conventional excavation methods for near surface obstructions. Alternative methods to clear obstructions may be used as approved by the Resident. Removal of obstructions, cobbles and boulder shall be made incidental to related Contract items.
- Existing corduroy roadway surface may be encountered at either end of the proposed abutment locations. It is the responsibility of the Contractor to remove any portions of a corduroy road encountered and work will be incidental to related Contract items.
- The Contractor shall perform and submit a wave equation analysis for review and acceptance by the Resident. The maximum allowable driving stress is 0.90 times Fy. The submittal analyses shall include the proposed stopping criteria based on the wave equation analysis and the proposed driving system. The stopping criteria shall include the blows per inch and the number of 1-in. intervals at which pile installation may be terminated. The cost of performing the wave equation analysis will be considered incidental to Item No. 501.92, Pile Driving Equipment Mobilization.
- The Contractor shall perform 2 dynamic load test(s), one at each abutment, to confirm the ultimate capacity of the piles. The required nominal resistance for the pile is the factored axial pile load divided by a resistance factor of 0.65 per LRFD Specifications. The dynamic test shall be performed on the first production pile driven at each abutment. Minimum 24 hour restrikes shall be conducted on all test piles in order to ensure the required nominal resistance has been achieved and verify pile relaxation has not occurred. The Contractor may drive production piles to the preliminary driving criteria, however pile cut-off will not be permitted until completion of restrrike testing and establishment of final driving criteria.
- Piles shall be driven in an isolation casing. Isolation casing shall be 30" diameter high density polyethylene pipe meeting the requirements of AASHTO M294, Type C, D or S. Payment for the isolation casing shall be made under Pay Item No. 501.251, Pile Casing.
- The annular space within the isolation casing shall be filled with cushion sand following final pile driving. Payment shall be incidental to the related Contract items.
- The isolation casing shall be placed immediately following the completion of preaugering at each pile location.
- Pile driving shall not be performed within 25 feet of a preaugered hole without an isolation casing installed.
- The temporary bearing pedestals, including studs and fasteners, leveling plates, and any associated hardware and labor required for installation shall not be paid for directly. Payment shall be incidental to Pay Item No. 502.219, Structural Concrete, Abutments and Retaining Walls.
- Cushion sand within the isolation casing shall be incidental to Pay Item No. 501.251, Pile Casing.

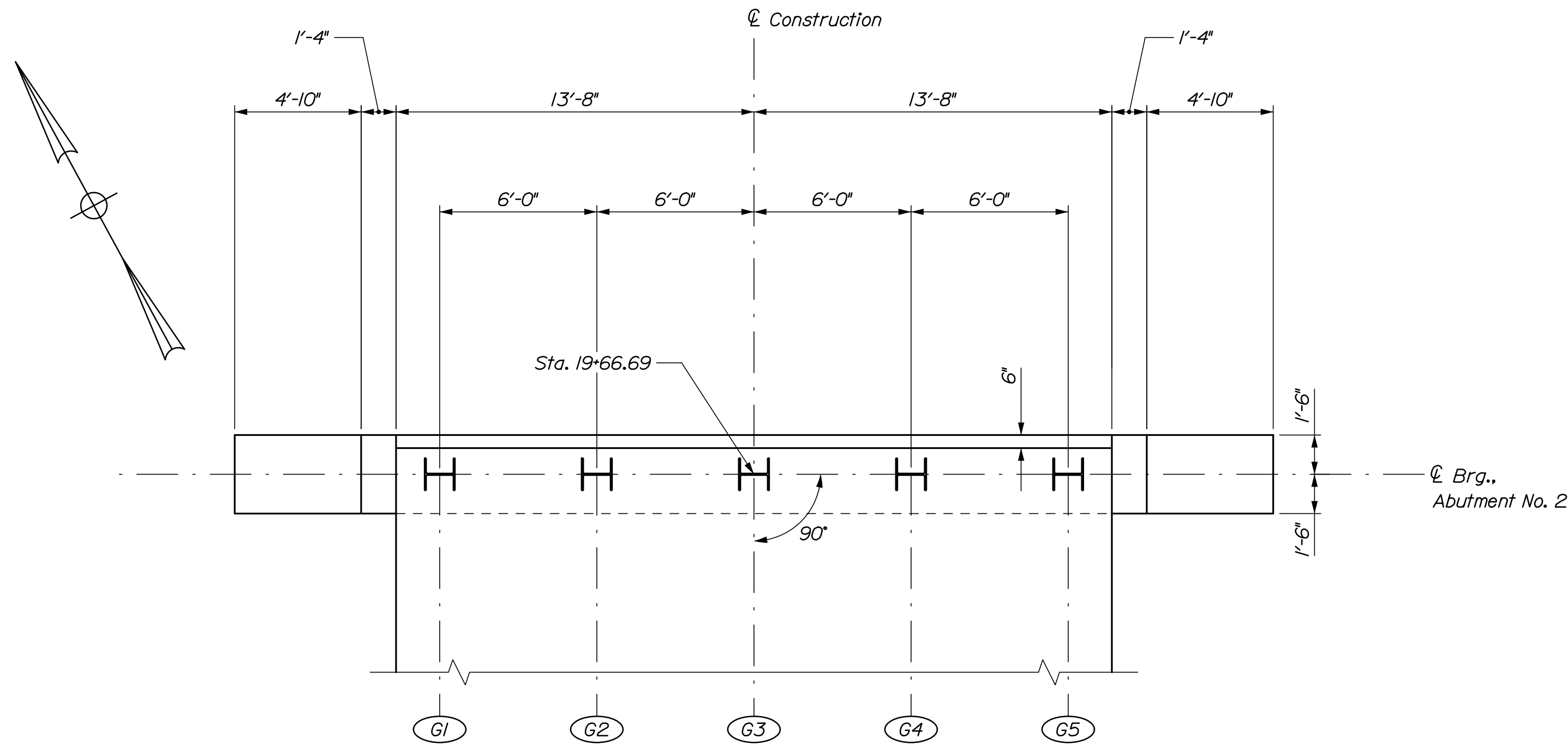
STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		WIN 018954.00		BRIDGE NO. 2112		BRIDGE PLANS	
BURNHAM BRIDGE		COBOSSECONTEE STREAM		KENNEBEC		W. GARDINER-LITCHFIELD		ABUTMENT NO. 1	
SHEET NUMBER		25		OF 34		HNTB			

Date: 11/9/2017

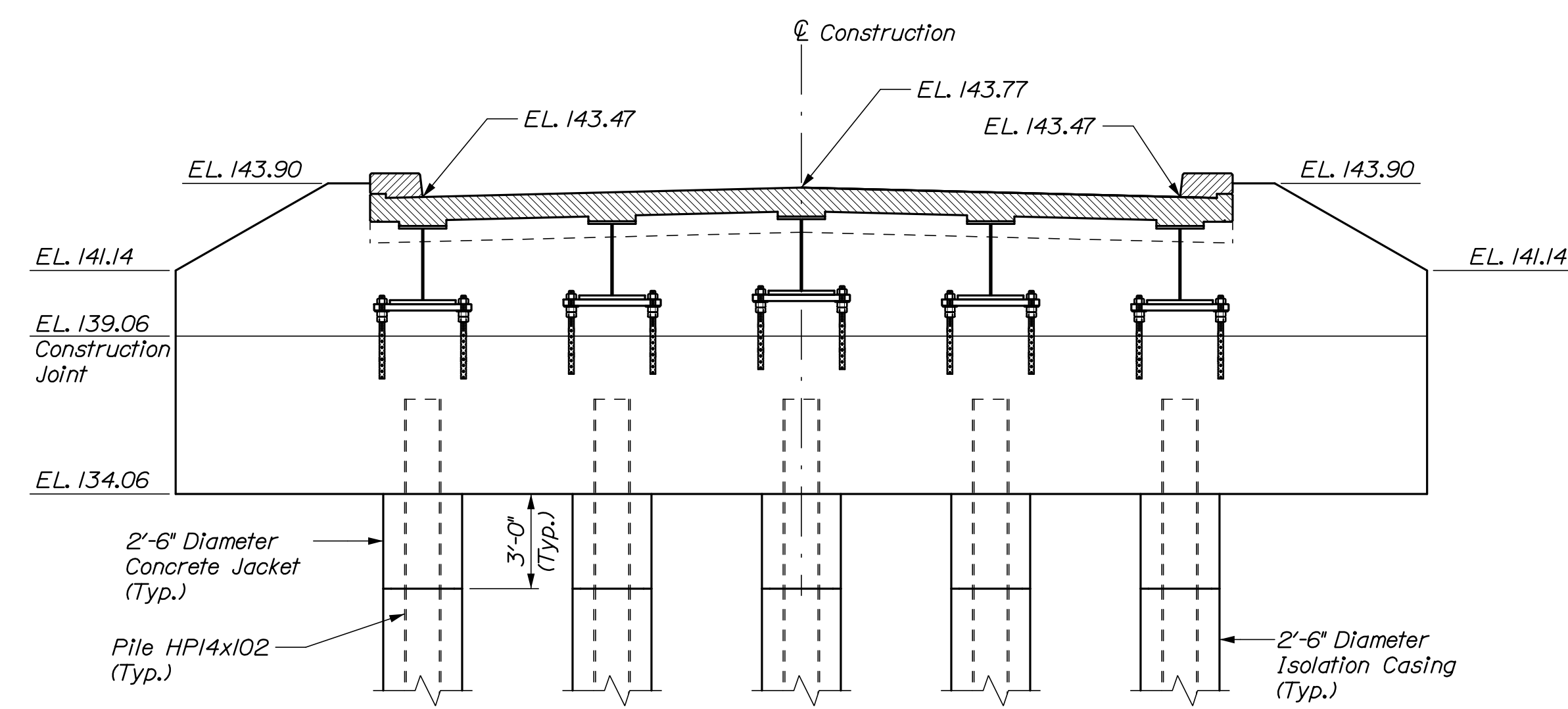
Username:

Division:

Filename: 026_Abutment Number 2.dgn



ABUTMENT NO. 2 PLAN



ABUTMENT NO. 2 ELEVATION

ABUTMENT NO. 2 PILE CUT-OFF ELEVATIONS	
Pile	Elevation
All Piles	137.06

ABUTMENT NO. 2 BOTTOM OF GIRDER ELEVATIONS	
Girder	Elevation
G1	140.07
G2	140.22
G3	140.37
G4	140.22
G5	140.07

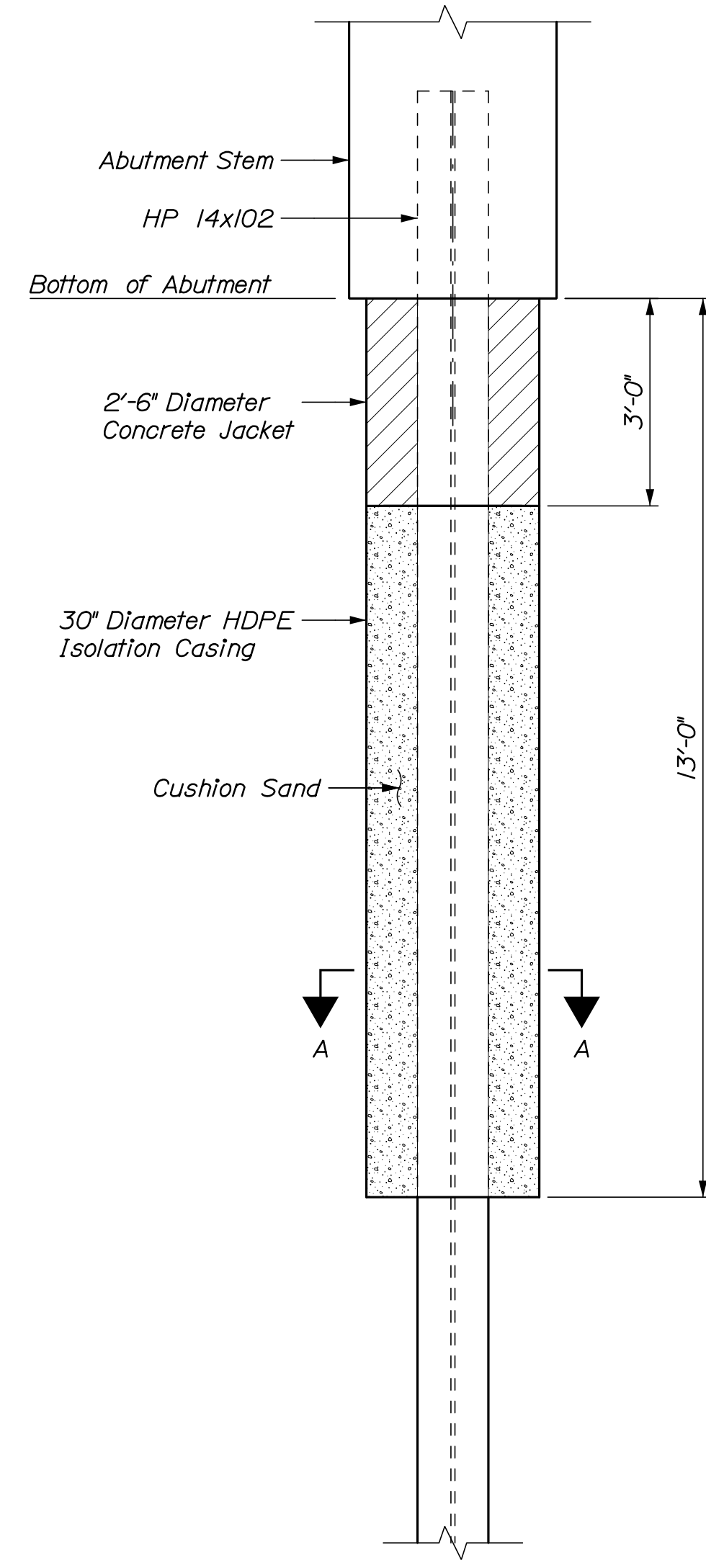
PILE INSTALLATION SEQUENCE:

1. Preauger to minimum isolation casing elevation.
2. Place isolation casing.
3. Set pile in casing. At the Contractor's option pile may be lightly driven prior to final pile driving.
4. Conduct final pile driving to achieve design capacity.
5. Backfill isolation casing with cushion sand.

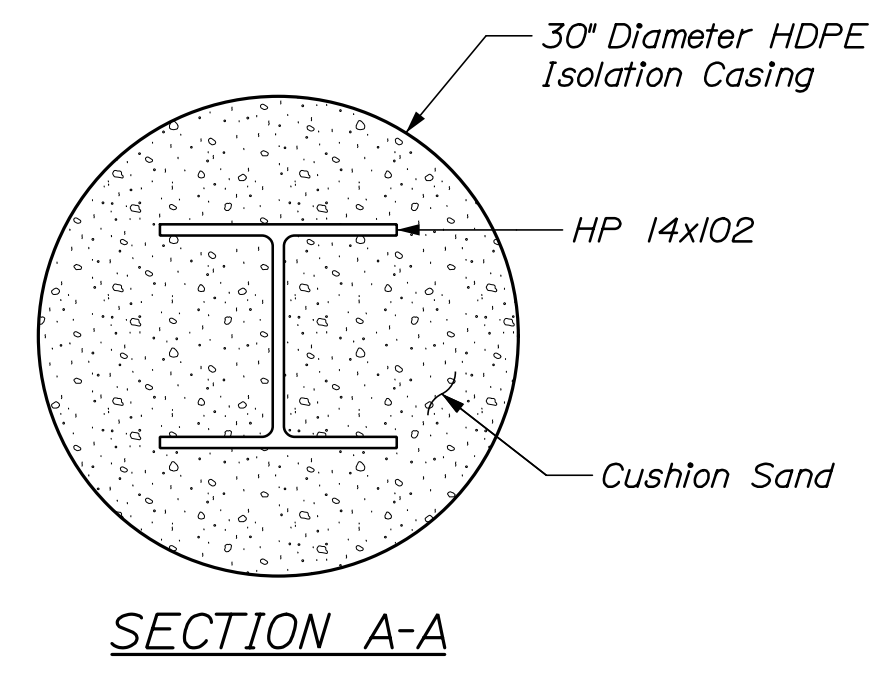
CUSHION SAND NOTES:

1. Cushion sand shall consist of clean, hard, durable, uncoated particles, free from lumps of clay and all deleterious substances.
2. When dry, the cushion sand shall meet the following gradation requirements:

Gradation Requirements	
Sieve Size (in)	Percent Passing by Weight
1/4	100
No. 50	0-35
No. 100	0-10



PILE AND CASING DETAIL



SECTION A-A

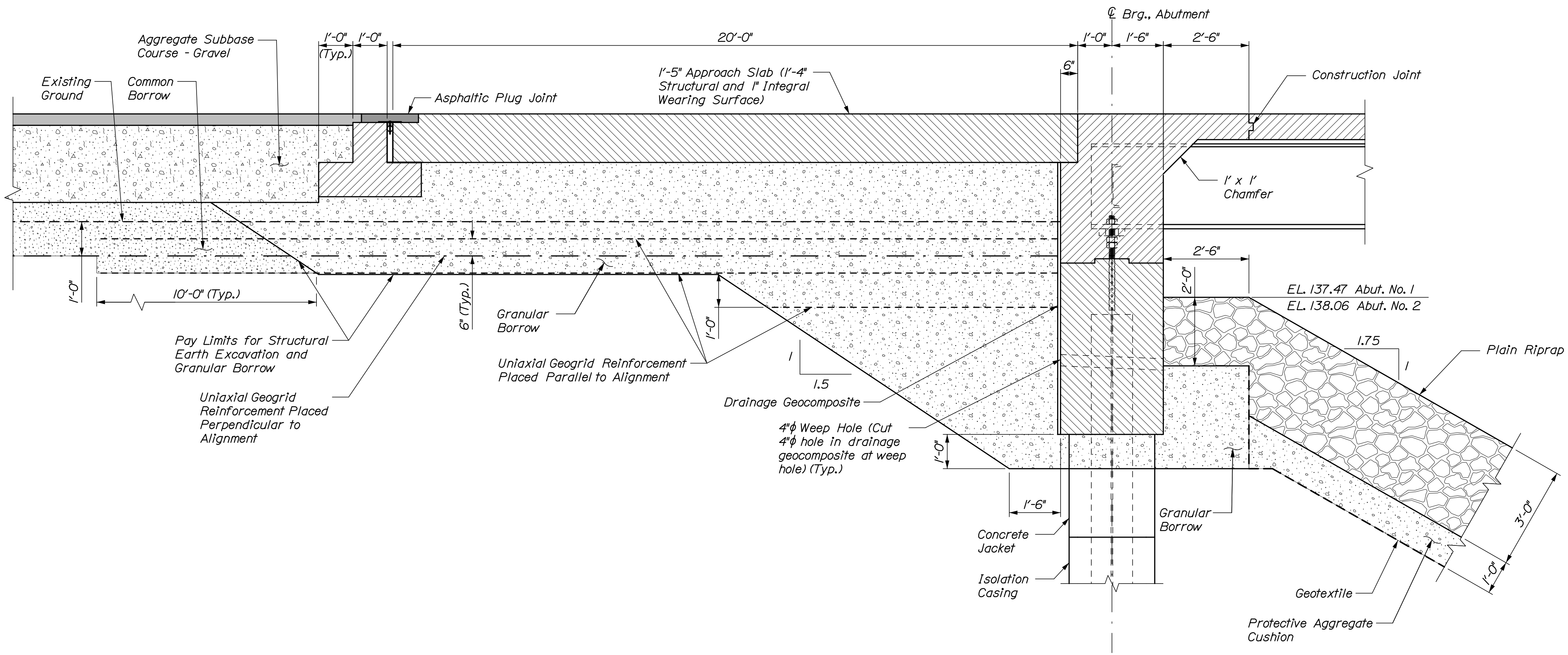
STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		WIN 018954.00		BRIDGE NO. 2112		BRIDGE PLANS	
BURNHAM BRIDGE		COBOSSECONTEE STREAM		KENNEBEC		ABUTMENT NO. 2		SHEET NUMBER	
L. Timmerlake		P. Bishop		C. Marin		SIGNATURE		P.E. NUMBER	
DATE		DATE		DATE		DATE		DATE	
BY		BY		BY		BY		BY	
DESIGN-DETAILED		CHECKED-REVIEWED		DESIGN-DETAILED		DESIGN-DETAILED		DESIGN-DETAILED	
REVISIONS 1		REVISIONS 2		REVISIONS 3		REVISIONS 4		FIELD CHANGES	
26		OF 34		HNTB					

Date: 11/9/2017

Username:

Division:

Filename: 027_Abument Details.dgn



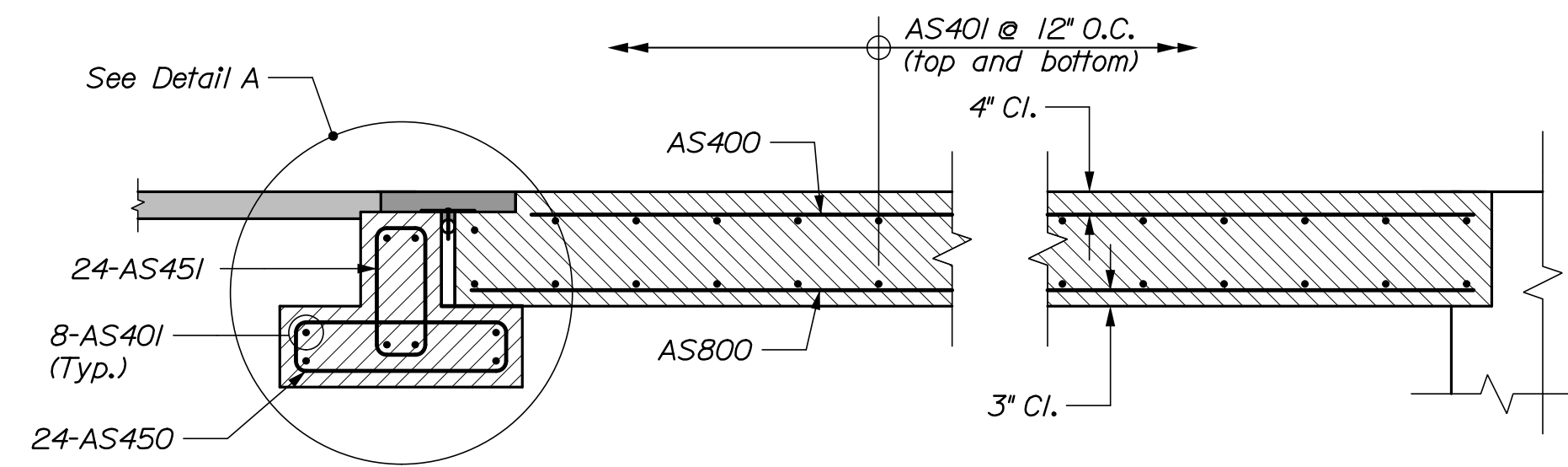
NOTES:

- Asphaltic plug joint materials shall meet the requirements of the project specifications and shall be installed in accordance with the manufacturer's recommendations.
- The heat resistant backer rod shall be placed in the movement gap allowing for 1/2" ± of binder above the rod.
- Centering nails shall be placed 2" from joints in the bearing plate.
- Payment for all work associated with constructing the sleeper slabs shall be paid under Item No. 502.31, Structural Concrete, Approach Slabs.

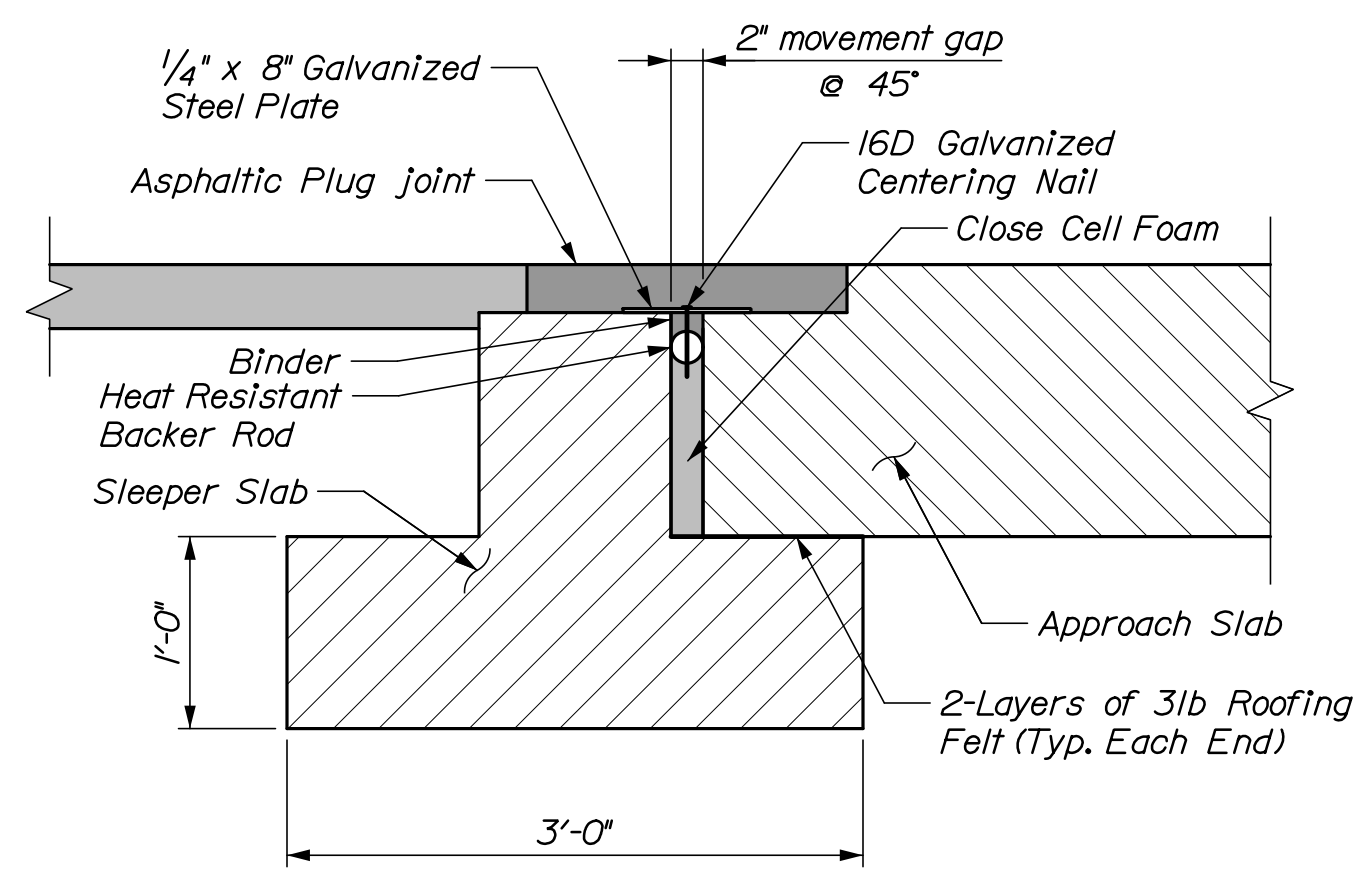
GEOGRID REINFORCEMENT NOTES:

- Geogrid layers shall be placed according to Special Provision 620, Reinforcement Geogrid.
- Layers between the geogrid reinforcement shall be compacted per manufacturers recommendation and in accordance with Special Provision 620.

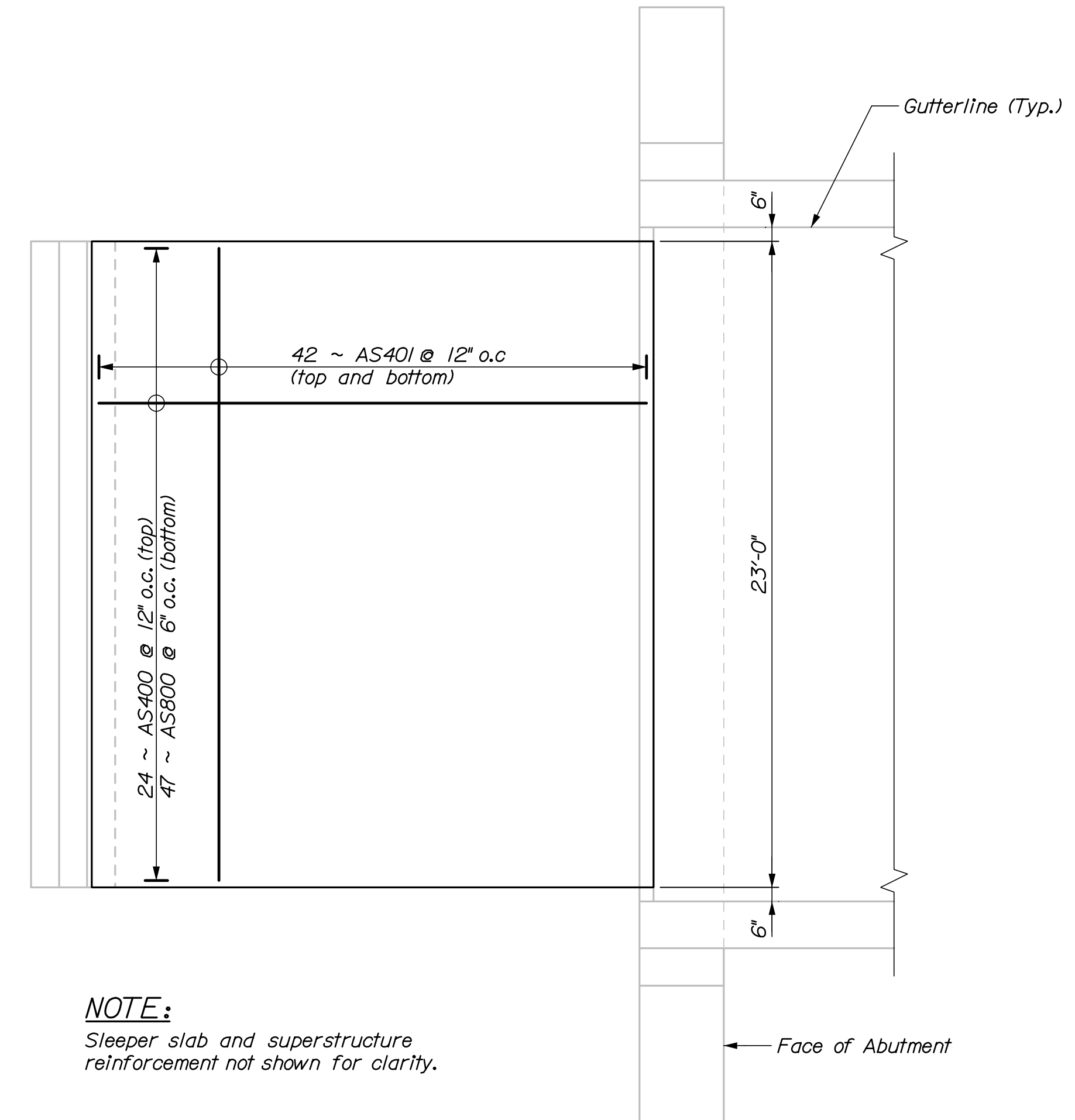
ABUTMENT BACKFILL DETAIL



APPROACH SLAB SECTION



DETAIL A



NOTE:

Sleeper slab and superstructure reinforcement not shown for clarity.

APPROACH SLAB PLAN

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WIN 018954.00

BRIDGE NO. 2112
BRIDGE PLANS

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BURNHAM BRIDGE
COBOSSECONTEE STREAM
W. GARDNER-LITCHFIELD KENNEBEC

SHEET NUMBER

27

OF 34

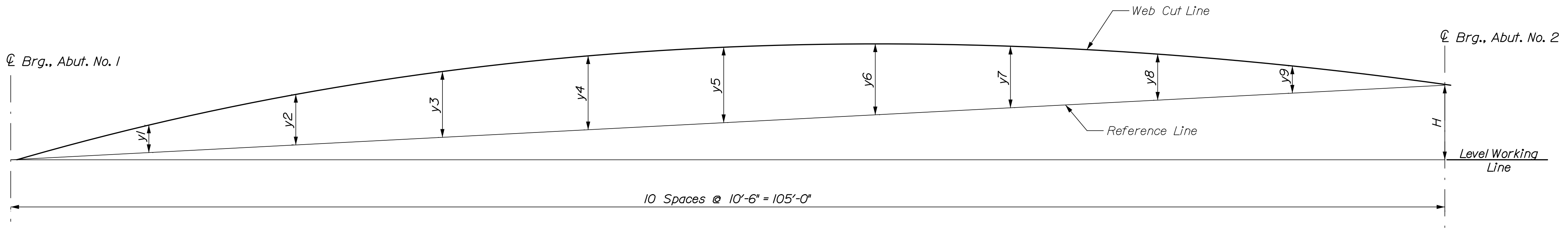


Date: 11/9/2017

Username:

Division:

Filename: 031_Structural Steel Details.dgn



CAMBER DIAGRAM

GIRDER	CAMBER ORDINATES (INCHES)											
	H	C Brg., Abut. No. 1	y1	y2	y3	y4	y5	y6	y7	y8	y9	C Brg., Abut. No. 2
G1	7 3/8	0	2	3 3/4	5 3/16	6 1/8	6 7/16	6 1/8	5 3/16	3 3/4	2	0
G2	7 3/8	0	2 3/8	4 9/16	6 1/4	7 3/8	7 3/4	7 3/8	6 1/4	4 9/16	2 3/8	0
G3	7 3/8	0	2 3/8	4 9/16	6 1/4	7 3/8	7 3/4	7 3/8	6 1/4	4 9/16	2 3/8	0
G4	7 3/8	0	2 3/8	4 9/16	6 1/4	7 3/8	7 3/4	7 3/8	6 1/4	4 9/16	2 3/8	0
G5	7 3/8	0	2	3 3/4	5 3/16	6 1/8	6 7/16	6 1/8	5 3/16	3 3/4	2	0

GIRDER	DEAD LOAD COMPONENT	DEAD LOAD DEFLECTIONS (INCHES)										
		C Brg., Abut. No. 1	y1	y2	y3	y4	y5	y6	y7	y8	y9	C Brg., Abut. No. 2
G1	Steel Dead Load	0.00	-0.70	-1.31	-1.79	-2.10	-2.20	-2.10	-1.79	-1.31	-0.70	0.00
	Deck Concrete Load	0.00	-1.58	-2.99	-4.09	-4.80	-5.03	-4.80	-4.09	-2.99	-1.58	0.00
	Superimposed Dead Load	0.00	-0.14	-0.26	-0.37	-0.43	-0.46	-0.43	-0.37	-0.26	-0.14	0.00
G2	Steel Dead Load	0.00	-0.71	-1.34	-1.85	-2.16	-2.27	-2.16	-1.85	-1.34	-0.71	0.00
	Deck Concrete Load	0.00	-1.98	-3.76	-5.14	-6.01	-6.31	-6.01	-5.14	-3.76	-1.98	0.00
	Superimposed Dead Load	0.00	-0.13	-0.25	-0.34	-0.40	-0.42	-0.40	-0.34	-0.25	-0.13	0.00
G3	Steel Dead Load	0.00	-0.71	-1.34	-1.85	-2.16	-2.27	-2.16	-1.85	-1.34	-0.71	0.00
	Deck Concrete Load	0.00	-1.98	-3.76	-5.14	-6.01	-6.31	-6.01	-5.14	-3.76	-1.98	0.00
	Superimposed Dead Load	0.00	-0.13	-0.25	-0.34	-0.40	-0.42	-0.40	-0.34	-0.25	-0.13	0.00
G4	Steel Dead Load	0.00	-0.71	-1.34	-1.85	-2.16	-2.27	-2.16	-1.85	-1.34	-0.71	0.00
	Deck Concrete Load	0.00	-1.98	-3.76	-5.14	-6.01	-6.31	-6.01	-5.14	-3.76	-1.98	0.00
	Superimposed Dead Load	0.00	-0.13	-0.25	-0.34	-0.40	-0.42	-0.40	-0.34	-0.25	-0.13	0.00
G5	Steel Dead Load	0.00	-0.70	-1.31	-1.79	-2.10	-2.20	-2.10	-1.79	-1.31	-0.70	0.00
	Deck Concrete Load	0.00	-1.58	-2.99	-4.09	-4.80	-5.03	-4.80	-4.09	-2.99	-1.58	0.00
	Superimposed Dead Load	0.00	-0.14	-0.26	-0.37	-0.43	-0.46	-0.43	-0.37	-0.26	-0.14	0.00

STRUCTURAL STEEL NOTES:

1. Camber ordinates, as shown, are computed to compensate for all dead load deflections and for the finished grade profile.
2. No transverse butt-weld splices will be allowed in the flange plates or web plates within 10 feet or 10% of the span length (whichever is greater) from the points of maximum negative moment or maximum positive moment. Butt-weld splices in flanges shall be not less than 3 feet from transverse butt-welds in the web plates and no transverse web or flange butt-welds shall be located within 3 feet of other transverse welds (e.g. connection plates to web welds) on either flange or web. No transverse butt-weld splices will be allowed in areas of stress reversal.
3. Sections of flange plates or web plates between transverse shop splices or between a transverse shop splice and a field splice shall be not less than 20 feet in length unless otherwise shown on the plans.
4. Bearing stiffeners shall be plumb after erection and dead loading of the structure. Intermediate web stiffeners may be either plumb or normal to the top flange.
5. Crossframe or diaphragm connection plates may be either plumb or normal to the top flange.

6. All connection plates and stiffeners shall be welded to the top and bottom flanges using 5/16" fillet welds.
7. Structural steel including the girders, stiffeners, and connection plates shall be coated in accordance with Standard Specification Section 506, Shop Applied Protective Coating - Steel (Thermal Spray Coating). At the Contractor's option, crossframes shall be coated in accordance with either Standard Specification Section 506, Shop Applied Protective Coating - Steel (Thermal Spray Coating) or Standard Specification Section 506, Shop Applied Protective Coating - Steel (Hot-Dip Galvanizing). Payment for structural steel coatings will be made under Item No. 506.9104, Thermal Spray Coating - Shop Applied.
8. Shear connectors shall be installed per Standard Detail 505(01).
9. All bolts, nuts, and washers shall be hot dip galvanized in accordance with ASTM A153.

STATE OF MAINE DEPARTMENT OF TRANSPORTATION		WIN 018954.00	
BURNHAM BRIDGE COBOSSECONTEE STREAM KENNEBEC		STRUCTURAL STEEL DETAILS	
SHEET NUMBER		BRIDGE NO. 2112 BRIDGE PLANS	
31		OF 34	
PROJ. MANAGER L. Timmerlake	BY P. Bishop C. Morin	DATE 11/17	SIGNATURE P.E. NUMBER DATE
DESIGN-DETAILED B. Grenier	CHECKED-REVIEWED A. Stephens	DESIGNS-DETAILED REVISIONS 1	REVISIONS 2 REVISIONS 3 REVISIONS 4 FIELD CHANGES

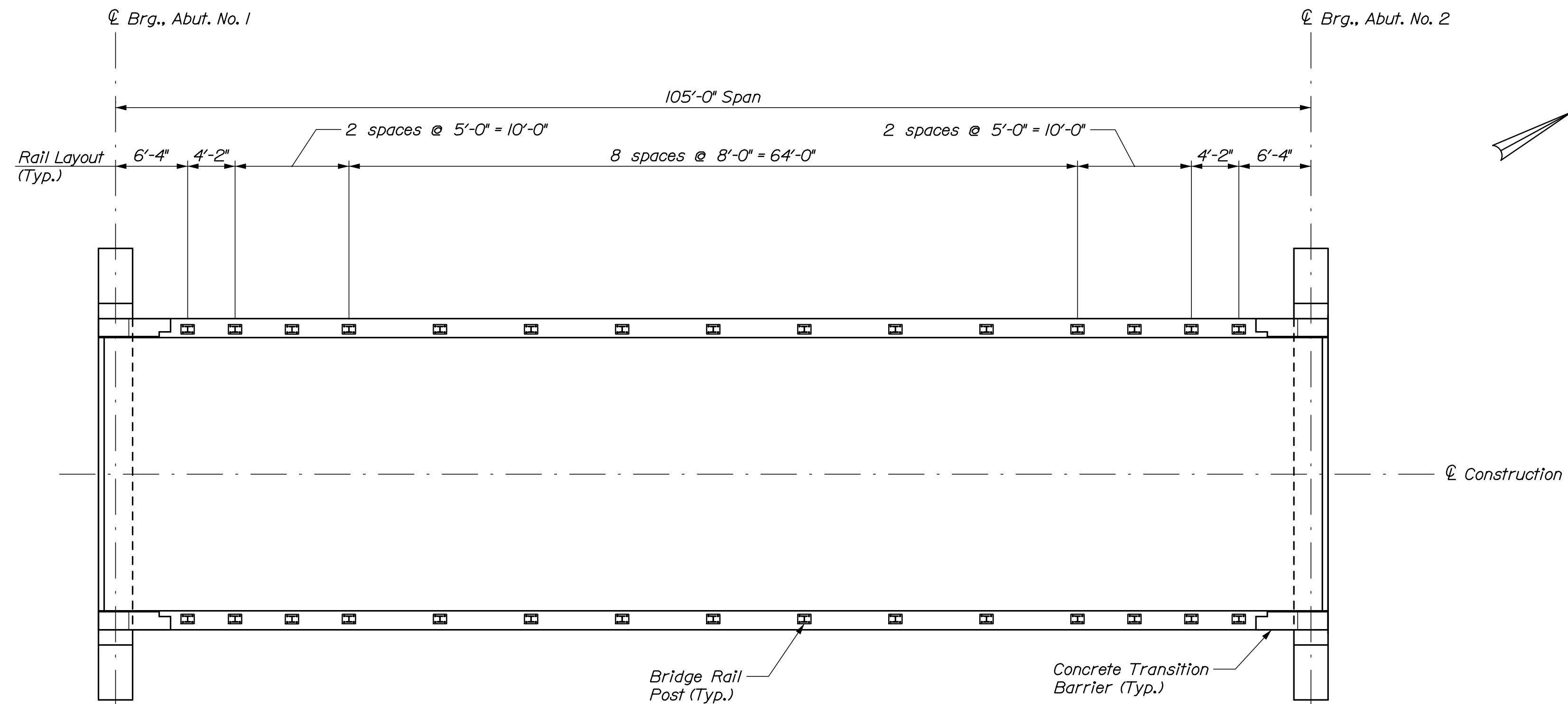


Date: 11/9/2017

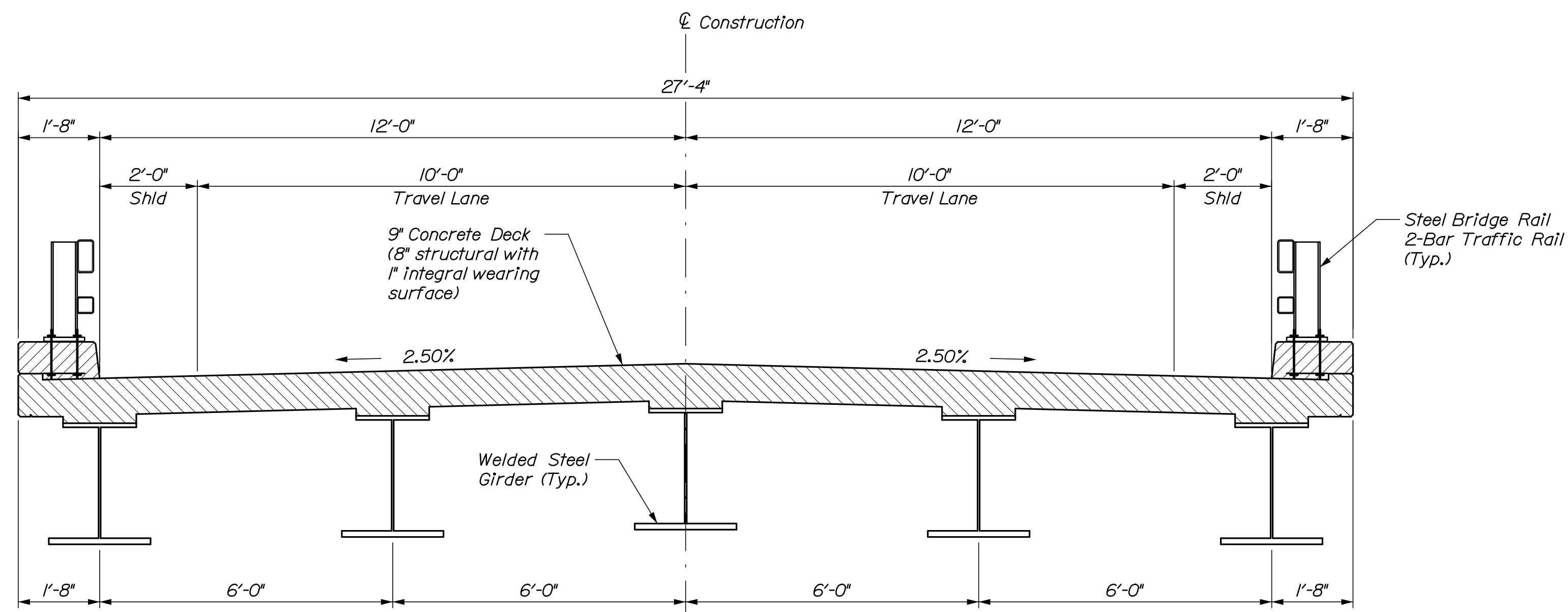
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Division:

Filename: 032_Superstructure Plan.dgn



SUPERSTRUCTURE PLAN



TRANSVERSE SECTION

SUPERSTRUCTURE NOTES:

1. The theoretical blocking used for design of the structure is 3" (2" clear) at the centerline of bearing of the abutments. Refer to Standard Detail 502(03) for blocking details.
2. Reinforcing steel shall have a minimum concrete cover of 2" unless otherwise noted.
3. Form a one inch V-groove on the fascias at the horizontal joint between the curb and slab.
4. The superstructure slab, between optional construction joints, shall be placed in one continuous operation and shall be kept plastic until the entire placement has been made. The superstructure slab shall be completed and cured a minimum of 5 days prior to placement of the upper portions of the abutments at each end of the slab. If the Contractor chooses to omit the transverse construction joints, the superstructure and upper portions of the abutments shall be placed in one continuous operation and shall be kept plastic until the entire placement has been made.
5. Bar supports for GFRP reinforcement shall be plastic, dielectric material, or other approved material. See Special Provision Subsection 530.6 for additional requirements.
6. The use of Precast Concrete Deck Panels will not be allowed on this project.
7. Bars TB651 and TB652 detailed in Standard Detail 526(37) shall be reduced in height by 3-inches to account for the difference in height between a bare deck and an HMA overlay. The corrected dimensions are provided in the reinforcing schedule sheet.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
WIN 018954.00
BRIDGE NO. 2112
BRIDGE PLANS

PROJ. MANAGER	L. Timmerlake	BY	DATE
DESIGN-DETAILED	B. Grenier	BY	DATE
CHECKED-REVIEWED	P. Bishop	BY	DATE
DESIGN-DETAILED	A. Stephens	BY	DATE
DESIGN-DETAILED		BY	DATE
REVISIONS 1		BY	DATE
REVISIONS 2		BY	DATE
REVISIONS 3		BY	DATE
REVISIONS 4		BY	DATE
FIELD CHANGES		BY	DATE

SIGNATURE	
P.E. NUMBER	
DATE	

BURNHAM BRIDGE
COBOSSECONTEE STREAM
KENNEBEC
W. GARDINER-LITCHFIELD
SUPERSTRUCTURE PLAN

SHEET NUMBER

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OF 34



Date: 11/10/2017

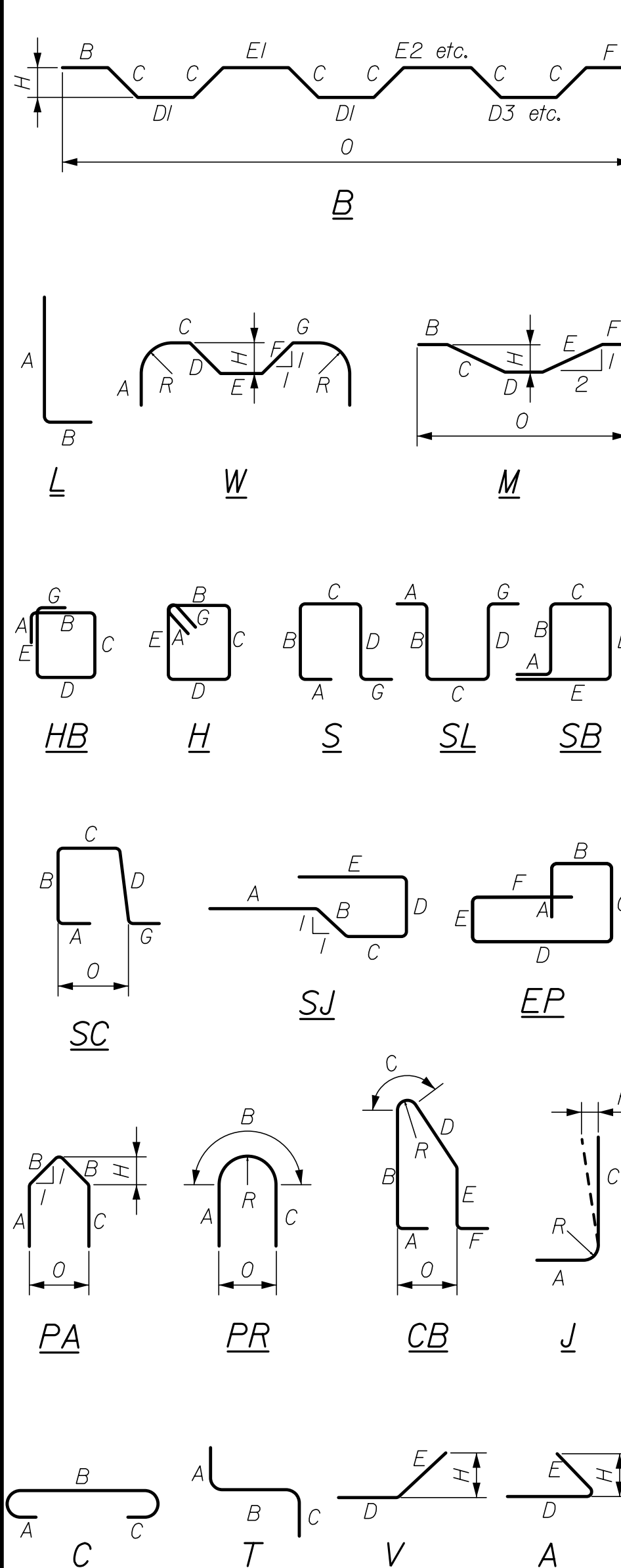
Username:

Division:

Filename: 034_Steel Reinforcing Schedule.dgn

STRAIGHT BARS				BENT BARS														
MARK	QTY.	LENGTH	LOCATION	MARK	QTY.	LENGTH	TYPE	A	B	C	D	E	F	G	H	O	R	LOCATION
Abutment 1 (Plain Bars)				Abutment 1 (Plain Bars)														
A600	7	39'-2"	Front Wall Longitudinal	A500	41	16'-0"	S	0"	6'-9"	2'-6"	6'-9"							Bottom Backwall Stirrup
A601	1	37'-11"	Top Front Wall Longitudinal	A501	27	7'-9"	S	0"	2'-7 1/2"	2'-6"	2'-7 1/2"							Top Backwall Stirrup
A602	1	34'-5"	Top Front Wall Longitudinal	A502	123	3'-10"	C	7"	2'-8"	7"								Shear Tie
A800	11	39'-2"	Back Wall Longitudinal	A505	24	4'-6"	V				2'-6"	2'-0"			1'-5"			Approach Slab Pin
A801	1	36'-9"	Top Back Wall Longitudinal	A506	14	8'-0"	S	0"	2'-8"	2'-8"	2'-8"							Wingwall Horizontal End Stirrup
A802	1	34'-5"	Top Back Wall Longitudinal	A507-A	4	11'-6"	S	0"	4'-6"	2'-6"	4'-6"							Top Wingwall Stirrup
Abutment 2 (Plain Bars)				Abutment 2 (Plain Bars)														
B600	7	39'-2"	Front Wall Longitudinal	A507-B	2	10'-6"	S	0"	4'-0"	2'-6"	4'-0"							Top Wingwall Stirrup
B601	1	37'-11"	Top Front Wall Longitudinal	A507-C	2	9'-2"	S	0"	3'-4"	2'-6"	3'-4"							Top Wingwall Stirrup
B602	1	34'-5"	Top Front Wall Longitudinal	A507-D	2	8'-2"	S	0"	2'-10"	2'-6"	2'-10"							Top Wingwall Stirrup
B800	11	39'-2"	Back Wall Longitudinal	A507-E	2	7'-0"	S	0"	2'-3"	2'-6"	2'-3"							Top Wingwall Stirrup
B801	1	36'-9"	Top Back Wall Longitudinal	A507-F	2	5'-10"	S	0"	1'-8"	2'-6"	1'-8"							Top Wingwall Stirrup
B802	1	34'-5"	Top Back Wall Longitudinal	A508	6	5'-9"	V				1'-0"	4'-9"			2'-4 1/4"			Wingwall Tapered Top
Approach & Sleeper Slabs (Plain Bars)				Abutment 1 (Stainless Steel)														
AS400	48	19'-8"	Top Longitudinal	A503SS	28	4'-4"	V				1'-0"	3'-4"						Haunch Bar
AS401	100	22'-8"	Transverse	A504SS	28	5'-4"	L	3'-0"	2'-4"									Deck Pin
AS800	94	19'-8"	Bottom Longitudinal	Abutment 2 (Plain Bars)														
Superstructure (Stainless Steel)				Abutment 2 (Plain Bars)														
S502SS	12	54'-8"	Curb Longitudinal	B500	41	16'-0"	S	0"	6'-9"	2'-6"	6'-9"							Bottom Backwall Stirrup
Superstructure (Glass Fiber Reinforced Polymer)				Abutment 2 (Stainless Steel)														
S500G	74	40'-0"	Top Longitudinal (Long)	B501	27	7'-9"	S	0"	2'-7 1/2"	2'-6"	2'-7 1/2"							Top Backwall Stirrup
S501G	37	31'-6"	Top Longitudinal (Short)	B502	123	3'-10"	C	7"	2'-8"	7"								Shear Tie
S600G	110	40'-0"	Bottom Longitudinal (Long)	B505	24	4'-6"	V				2'-6"	2'-0"			1'-5"			Approach Slab Pin
S601G	55	31'-6"	Bottom Longitudinal (Short)	B506	14	8'-0"	S	0"	2'-8"	2'-8"	2'-8"							Wingwall Horizontal End Stirrup
S700G	215	27'-0"	Bottom Transverse	B507-A	4	11'-6"	S	0"	4'-6"	2'-6"	4'-6"							Top Wingwall Stirrup
S701G	215	20'-0"	Top Transverse	B507-B	2	10'-6"	S	0"	4'-0"	2'-6"	4'-0"							Top Wingwall Stirrup
Approach & Sleeper Slabs (Plain Bars)				Superstructure (Stainless Steel)														
AS450	48	7'-2"	H	3"	2'-8"	8"	2'-8"	8"										Horizontal Stirrups
AS451	48	5'-6"	H	3"	1'-10"	8"	1'-10"	8"										Vertical Stirrups
Superstructure (Stainless Steel)				Transition Barriers (Stainless Steel)														
S550SS	324	5'-4"	SC	10"	1'-2 1/2"	1'-3"	1'-2 1/2"								10"		1'-4"	Curb Stirrup
S650SS	430	4'-2"	C	8"	3'-6"	0"												Overhang Hook
S651SS	430	6'-6"	C	8"	5'-10"	0"												Overhang Hook
Transition Barriers (Stainless Steel)				* Bar is incidental to Item 526.34, Permanent Concrete Transition Barrier.														
TB651*	8	7'-5"	H	6"	8 1/2"	2'-6"	8 1/2"	2'-6"										Barrier Stirrups
TB652*	20	8'-3"	H	6"	1'-1 1/2"	2'-6"	1'-1 1/2"	2'-6"										Barrier Stirrups

TYPE - BENDING DIAGRAMS



All dimensions are out-to-out of bar.
 Bending details and hooks shall conform to the recommendations of the current revision of ACI Standard 315 and ACI Standard 318.
 Reinforcing Bar: ASTM A615/A615M, Grade 60
 ASTM A955, GRADE 60
 CSA S807-10, ACI 440.1r-15

GENERAL NOTES

- The first two digits following the letter(s) of the mark indicate the size of the bar:
 Mark 'A502' = bar size #5
 Mark 'P805' = bar size #8
 Mark 'S650' = bar size #6
 Mark 'S650SS' = bar size #6 Stainless Steel
 Mark 'S600G' = bar size #6 GFRP
- Each crank bar, Type B, may be replaced by two (2) straight bars (one top and one bottom) of the same bar size as the crank bar. Payment in either case shall be based on crank bars as schedule on the plans.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
WIN 018954.00

BURNHAM BRIDGE
COBOSSECONTEE STREAM
W. GARDINER-LITCHFIELD KENNEBEC
REINFORCING
STEEL SCHEDULE

PROJ. MANAGER	DATE	BY	DATE	DESIGN-DETAILED	DATE	CHECKED-REVIEWED	DATE	DESIGN-DETAILED	DATE	DESIGN-DETAILED	DATE	REVISIONS 1	DATE	REVISIONS 2	DATE	REVISIONS 3	DATE	REVISIONS 4	DATE	FIELD CHANGES
L. Timmerlake		P. Bishop		B. Grenier		A. Stephens		C. Morin												

SHEET NUMBER
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HNTB