STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

SPECIFICATIONS

Design: Load and Resistance Factor Design per AASHTO LRFD Bridge Design Specifications, Ninth Edition 2020.

DESIGN LOADING

Live Load .... HL - 93 Modified for Strength I

TRAFFIC DATA

Current (2019) AADT	420
Future (2031) AADT	470
DHV - % of AADT	12
Design Hour Volume	56
Heavy Trucks (% of AADT)	21
Heavy Trucks (% of DHV)	21
Directional Distribution (% of DHV)	58
18 kip Equivalent P 2.0	121
18 kip Equivalent P 2.5	115
Design Speed (mph)	50

HYDROLOGIC DATA

Drainage Area	58.30 sq mi
Design Discharge (Q50)	2011.4 cfs
Check Discharge (Q100)	2273.2 cfs
Headwater Elevation (Q1.1)	307.06 ft
Headwater Elevation (Q25)	309.87 ft
Headwater Elevation (Q50)	310.25 ft
Headwater Elevation (Q100)	310.59 ft
Discharge Velocity (Q1.1)	1.97 fps
Discharge Velocity (Q50)	4.32 fps
Discharge Velocity (Q100)	4.63 fps

MATERIALS

Concrete:
- Curbs .... Class "LP"
- All Other .... Class "A"

Reinforcing Steel:
- Plain Reinforcing Steel .... ASTM A615, Grade 60
- Low-Carbon Chromium Reinforcing Steel .... ASTM A1035, Type CS, Grade 100
- Glass Fiber Reinforcing Polymer (GFRP) .... ASTM D7957

Structural Steel:
- All Material (except as noted) .... ASTM A709, Grade 50 (Galv. or Metallized)
- High Strength Bolts .... ASTM F3125, Grade A325, Type 1 (Galvanized)

BASIC DESIGN STRESSES

Concrete:
- Class "A" .... f 'c = 4,000 psi
- Class "LP" .... f 'c = 5,000 psi

Reinforcing:
- Plain Reinforcing Steel .... f y = 60,000 psi
- Low-Carbon Chromium Reinforcing Steel .... f y = 100,000 psi
- Glass Fiber Reinforced Polymer
  - #6 Bar .... f fu = 93,000 psi
  - #7 Bar .... f fu = 90,000 psi
  - Minimum Elastic Modulus .... E f = 6,500,000 psi
  - Minimum Nominal Design Tensile Strain .... e fu = 1.1%

Structural Steel:
- ASTM A709, Grade 50 .... F y = 50,000 psi
- ASTM F3125, Grade A325 .... Fμ = 120,000 psi

MACWAHOC PLT.
AROOSTOOK COUNTY
KINGMAN ROAD BRIDGE
OVER
MACWAHOC STREAM
KINGMAN ROAD / STATE ROUTE 170
FEDERAL AID PROJECT NO. 02225000
PROJECT LENGTH 0.095 mi.
BRIDGE NO. 5021

LIST OF DRAWINGS

UTILITIES

Eastern Maine Electric Coop
Fairpoint Communications - Northland Telephone

MAINTENANCE OF TRAFFIC

Maintain one lane of alternating traffic on a temporary bridge using temporary traffic signals located on the downstream side.

PROJECT LOCATION	Kingman Road Bridge (#5021) over Macwahoc Stream. Located 0.38 of a mile southeast of Route 2 Lat./Long. 45°37'27.4" N 68°15'31.6" W
PROGRAM AREA	Highway Bridges - Traditional
OUTLINE OF WORK	Bridge Replacement of Kingman Road Bridge #5021 in Macwahoc Plantation with associated approach work.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED	DATE
COMMISSIONER:	1-11-24
CHIEF ENGINEER:	1-11-2024

STATE OF MAINE
ASHLEY E. STEPHENS
No. 13888
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE
13888
P.E. NUMBER
12/21/23
DATE

PROJECT INFORMATION

PROGRAM	Bridge Program
PROJECT MANAGER	Mark Parlin
DESIGNER	Ashley Stephens, P.E.
CONSULTANT	HNTB
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

WIN 022250.00

02225000

MACWAHOC PLT.
KINGMAN ROAD BRIDGE

TITLE SHEET

SHEET NUMBER
1
OF 28

Filename: 001_Title.dgn
Division:
Username:
Date:12/21/2023

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
202.19	Removing Existing Bridge (300 CY)	1	LS
202.202	Removing Pavement Surface	70	SY
202.31	Profile Milling Concrete Wearing Surface	250	SY
203.20	Common Excavation	1,600	CY
203.25	Granular Borrow	380	CY
206.082	Structural Earth Excavation - Major Structures, Plan Quantity	470	CY
304.10	Aggregate Subbase Course - Gravel	640	CY
403.208	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size	130	TON
403.209	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (sidewalks, drives, islands & incidentals)	12	TON
403.213	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course)	200	TON
409.15	Bituminous Tack Coat - Applied	47	G
461.131	Temporary Pavement	110	TON
501.231	Dynamic Load Test	2	EA
501.50	Steel H-beam Piles 89 lb/ft, delivered	552	LF
501.501	Steel H-beam Piles 89 lb/ft, in place	502	LF
501.90	Pile Tips	8	EA
501.91	Pile Splices	12	EA
501.92	Pile Driving Equipment Mobilization	1	LS
502.219	Structural Concrete, Abutments and Retaining Walls (90 CY)	1	LS
502.26	Structural Concrete, Roadway and Sidewalk Slab on Steel Bridges (93 CY)	1	LS
502.31	Structural Concrete Approach Slab (21 CY)	1	LS
502.49	Structural Concrete Curbs and Sidewalks (8 CY)	1	LS
503.12	Reinforcing Steel, Fabricated and Delivered	11,700	LB
503.13	Reinforcing Steel, Placing	11,700	LB
503.19	Low-Carbon Chromium Reinforcement, Fabricated and Delivered	14,500	LB
503.20	Low-Carbon Chromium Reinforcement, Placing	14,500	LB
504.702	Structural steel fabricated and delivered, welded (95,200 LBS)	1	LS
504.71	Structural Steel erection (95,200 LBS)	1	LS
505.08	Shear Connectors (1,190 EA)	1	LS
506.9104	Thermal Spray Coating (Shop Applied) (95,200 LBS)	1	LS
507.0821	Steel Bridge Railing, 3 Bar (185 LF)	1	LS
507.0822	Steel Approach Railing, 3-Bar	4	EA
510.10	Special Detour, 16 Foot Roadway Width Vehicular and Pedestrian Traffic Not Separated	1	LS
511.07	Cofferdam: Abutment 1	1	LS
511.07	Cofferdam: Abutment 2	1	LS
513.22	Crushed Stone Slope Protection	58	SY
515.21	Protective Coating for Concrete Surfaces (470 SY)	1	LS
526.301	Portable Concrete Barrier, Type I (40 LF)	1	LS
527.34	Work Zone Crash Cushions	4	UN
530.30	GFRP, Reinforcement Bars, Fabricated and Delivered	20,200	LF
530.31	GFRP, Reinforcement Bars, Placing	20,200	LF
605.09	6 inch Underdrain Type B	120	LF
606.1301	31" W-Beam Guardrail - Mid-Way Splice - Single Faced	260	LF
606.1303	31" W-Beam Guardrail - Mid-Way Splice, 15' Radius or Less	25	LF
606.1304	31" W-Beam Guardrail - Mid-Way Splice, Over 15' Radius	25	LF
606.1305	31" W-Beam Guardrail - Mid-Way Splice Flared Terminal	2	EA
606.1721	Bridge Transition - Type I	4	EA
606.265	Terminal End- Single Rail - Galvanized Steel	2	EA
606.353	Reflectorized Flexible Guardrail Marker	6	EA
606.356	Underdrain Delineator Post	2	EA
609.31	Curb Type 3	83	LF
610.08	Plain Riprap	450	CY
610.213	Void-Filled Riprap	170	CY
613.319	Erosion Control Blanket	51	SY
619.14	Erosion Control Mix	81	CY
620.58	Erosion Control Geotextile	270	SY
620.66	Drainage Geocomposite	54	SY
627.733	4" White or Yellow Painted Pavement Marking Line	1,800	LF
627.77	Removing Existing Pavement Marking	300	SF
627.78	Temporary 4" Painted Pavement Marking Line, White or Yellow	1,050	LF
629.05	Hand Labor, Straight Time	10	HR
631.10	Air Compressor (including operator)	10	HR
631.11	Air Tool (including operator)	10	HR
631.12	All Purpose Excavator (including operator)	10	HR
631.14	Grader (including operator)	10	HR
631.15	Roller, earth and base (including Operator)	10	HR
631.172	Truck-large (including operator)	10	HR
639.19	Field Office, Type B	1	EA
643.72	Temporary Traffic Signal: Kingman Road/State Route 170	1	LS
652.312	Type III Barricades	4	EA
652.33	Drum	50	EA
652.34	Cone	50	EA
652.35	Construction Signs	410	SF
652.361	Maintenance of Traffic Control Devices	1	LS
652.38	Flaggers	450	HR
656.75	Temporary Soil Erosion and Water Pollution Control	1	LS
659.10	Mobilization	1	LS

GENERAL CONSTRUCTION NOTES

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

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. A MASH compliant guardrail end treatment shall be installed concurrently with the placement of each section of beam guardrail.

5. Where it is apparent that runoff will cause continual erosion, Erosion Control Blanket, seeded gutters, riprap downspouts, and other gutters lined with plain riprap shall be constructed after paving and shoulder work is completed. Payment will be made under the appropriate Contract items.

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

   All exposed surfaces of concrete curbs,
   Fascias down to the drip notch,
   Concrete Wearing Surfaces,
   Top of abutment backwalls and wingwalls, and
   To one foot below the ground on vertical walls against earth.

7. Erosion Control Mix shall be used 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 Number 619.14, Erosion Control Mix.

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

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

10. 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.

11. The project geotechnical report titled: Geotechnical Design Report for the Replacement of Kingman Road Bridge, Macwahoc Plantation, Maine, Soils Report 2023-24, dated December 15, 2023, may be accessed at the MaineDOT web address.

12. 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.

13. Reports on hydrology and/or hydraulics applicable to the bridge site may be accessed at the MaineDOT web address. The reports are 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.

14. 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 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 and Time.

15. All embankment material shall be Granular Borrow meeting the requirements of Standard Specifications Subsection 703.19, Granular Borrow, Material for Underwater Backfill.

16. No existing drainage shall be abandoned, removed or plugged without prior approval of the Resident.

17. Residential paved entrances shall be constructed with 2 inches of Hot Mix Asphalt and 12 inches of Aggregate Subbase Course Gravel.

18. Gravel entrances shall be constructed with 14 inches of Aggregate Subbase Course Gravel.

19. A 3 foot paved lip shall be placed at all unpaved entrances unless otherwise noted on the Plans or directed by the Resident.

20. The existing bridge shall be removed by and become the property of the Contractor. The steel portions of the existing bridge may be 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.

21. Existing signs within the Project limits shall be removed and reset or removed and disposed of, as directed by the Resident. Payment for this work will be considered incidental to the Contract. No separate payment will be made.

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

23. 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.

24. Stones which cannot be rolled or compacted into the surface of the shoulder shall be removed by hand raking. Payment for hand raking will be considered incidental to Pay Item 304.10, Aggregate Subbase Course - Gravel, Subsection 703.19, Material for Underwater Backfill.

25. Void-filled riprap shall be used at and below the Wildlife Path, EL. 305, see Special Provision 610.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0222500

BRIDGE PLANS
WIN 022250.00
BRIDGE NO. 5021

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	E. Raymond / C. Molloy	12/23
CHECKED-REVIEWED	A. Sweet / L. Driscoll	12/23
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

ESTIMATED QUANTITIES &
GENERAL CONSTRUCTION NOTES

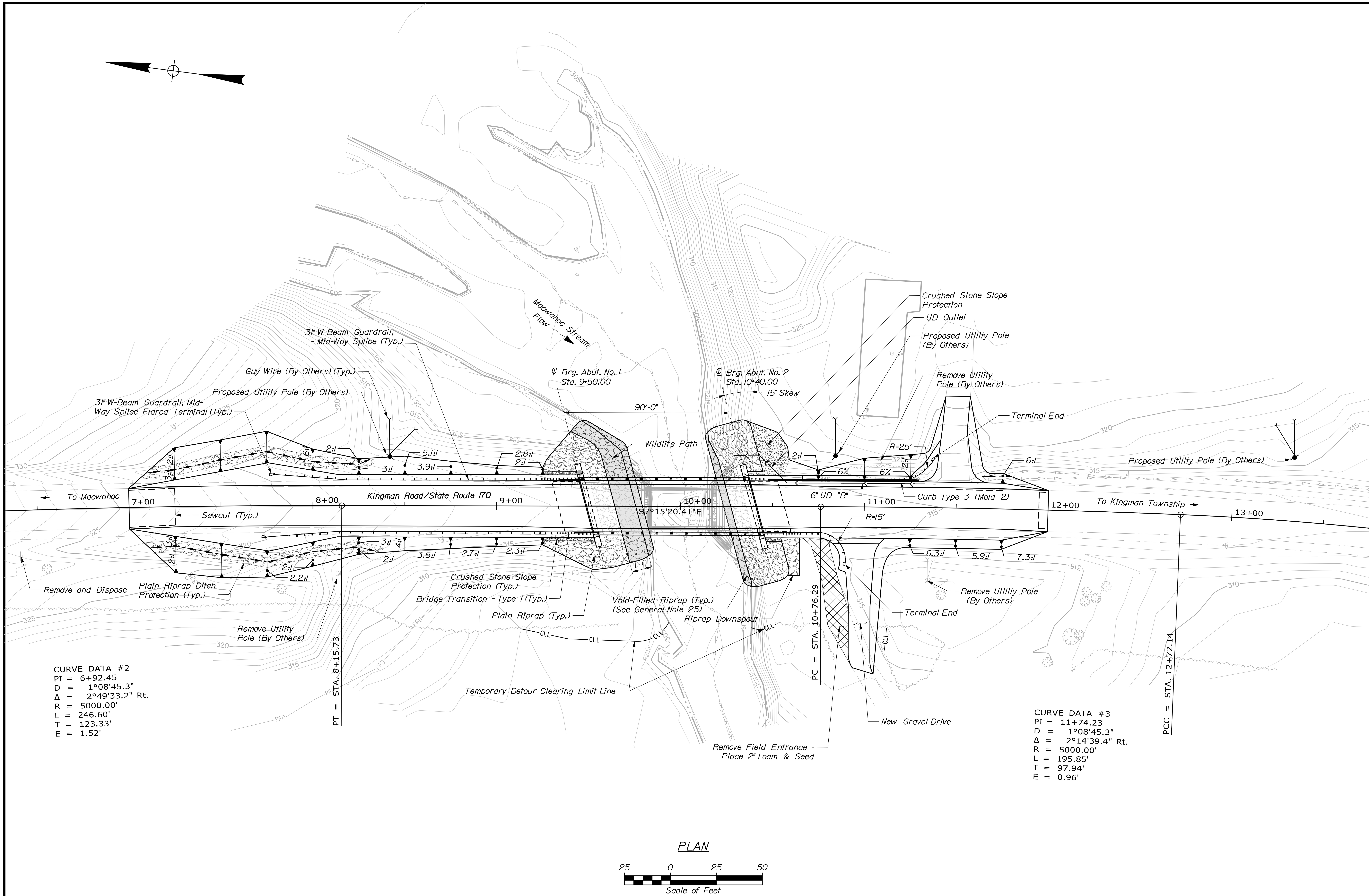
HNTB

Date:12/13/2023

Username:

Division:

Filename: 003_GeneralPlan.dgn



CURVE DATA #2
PI = 6+92.45
D = 1°08'45.3"
Δ = 2°49'33.2" Rt.
R = 5000.00'
L = 246.60'
T = 123.33'
E = 1.52'

CURVE DATA #3
PI = 11+74.23
D = 1°08'45.3"
Δ = 2°14'39.4" Rt.
R = 5000.00'
L = 195.85'
T = 97.94'
E = 0.96'

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0222500

WIN 022250.00

BRIDGE NO. 5021

BRIDGE PLANS

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	E. Raymond	C. Molloy 12/23
CHECKED-REVIEWED	A. Sweet	L. Driscoll 12/23
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

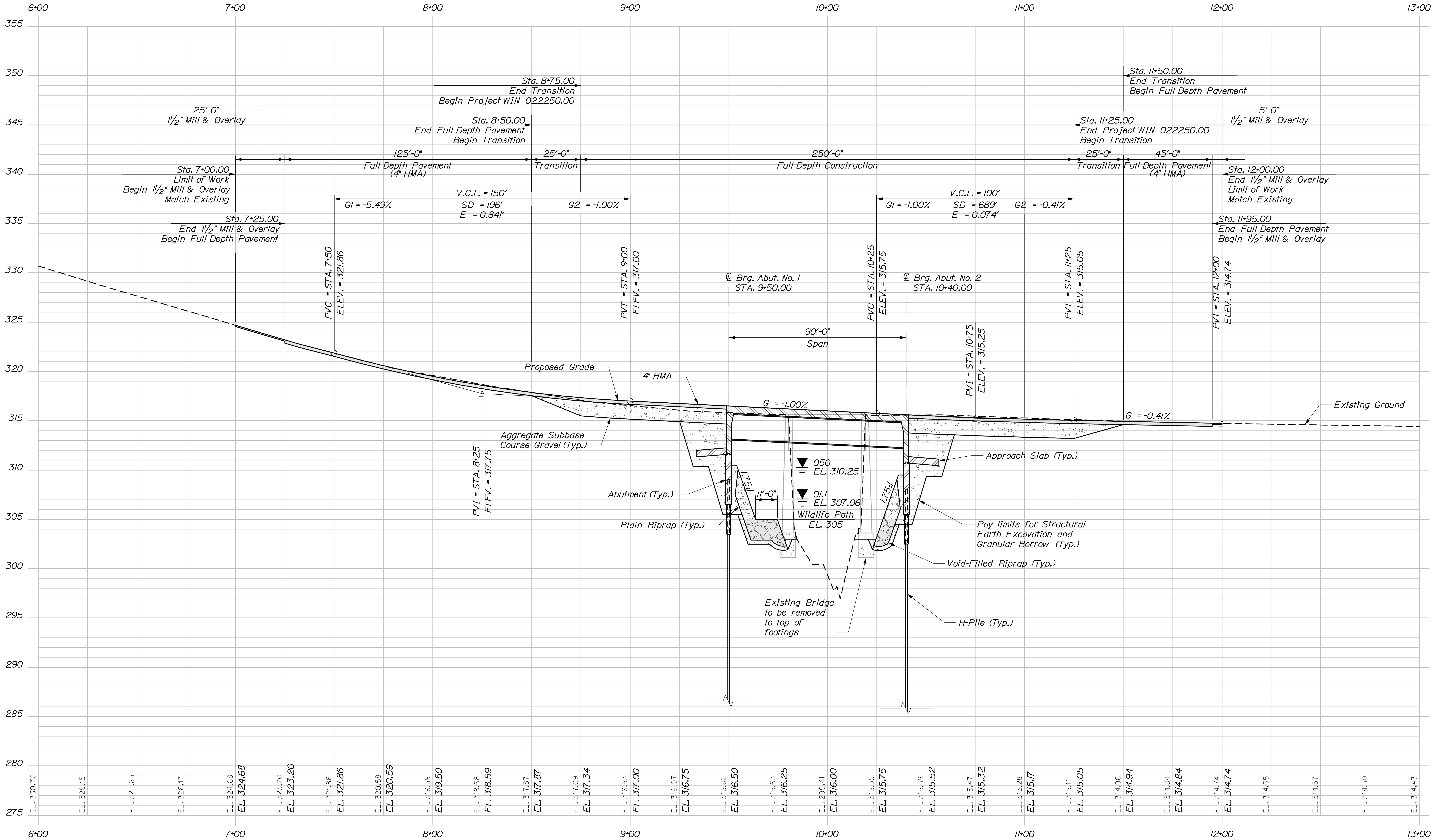
GENERAL PLAN

SHEET NUMBER

3

OF 28

Date:12/13/2023
Username:
Division:
Filename: 004_Profile.dgn



PROFILE

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0222500

WIN
022250.00

BRIDGE PLANS

BRIDGE NO. 5021

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	E. Raymond	C. Molloy	12/23
CHECKED-REVIEWED	A. Sweet	L. Driscoll	12/23
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

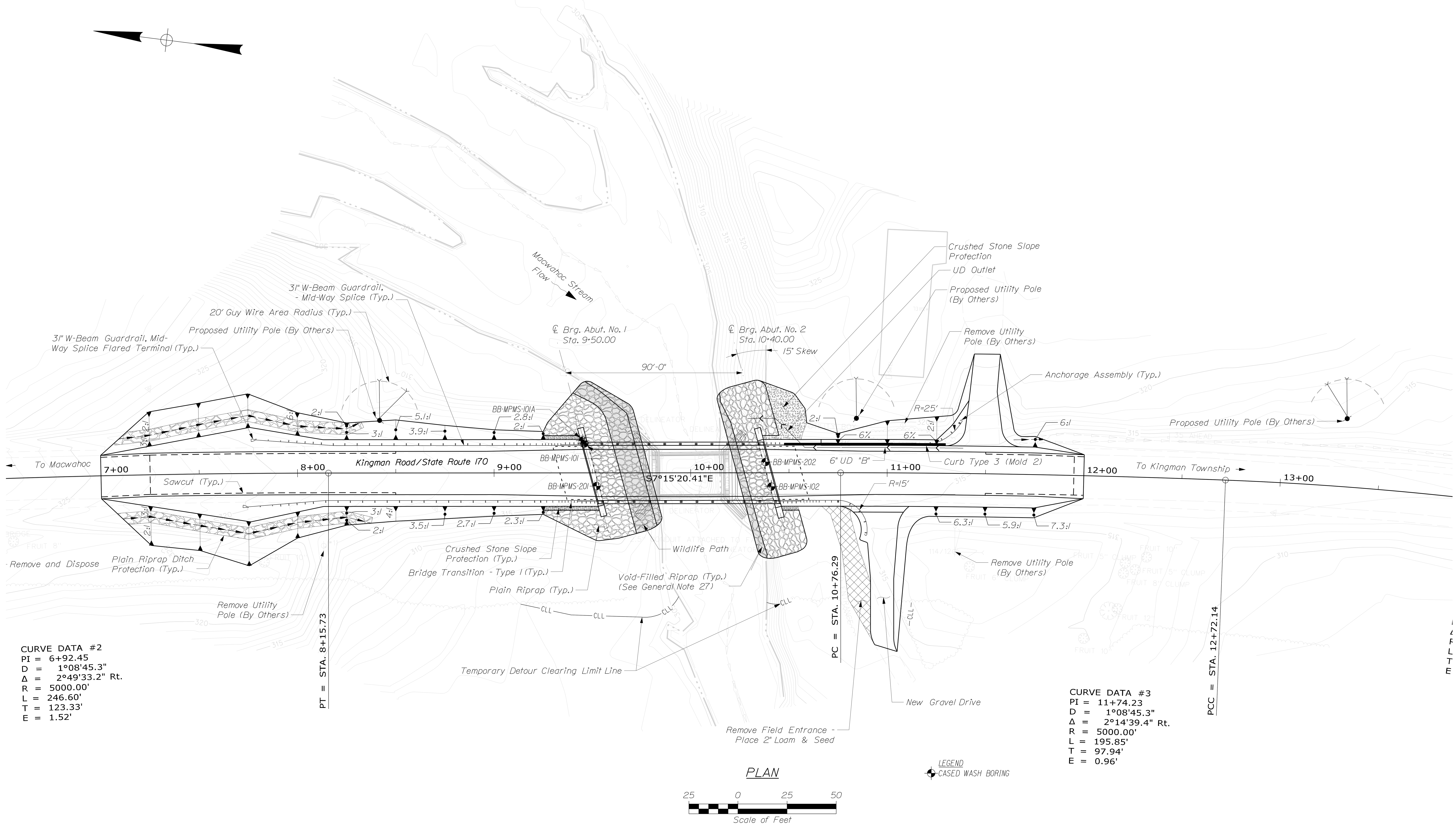
DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

PROFILE

SHEET NUMBER
4
OF 28

Filename: ...\OD\GEOTECH\MSTA\005_BLP1.dgn Division: GEOTECH Username: Nathan.P.Pukay Date:12/13/2023



CURVE DATA #2
PI = 6+92.45
D = 1°08'45.3"
Δ = 2°49'33.2" Rt.
R = 5000.00'
L = 246.60'
T = 123.33'
E = 1.52'

CURVE DATA #3
PI = 11+74.23
D = 1°08'45.3"
Δ = 2°14'39.4" Rt.
R = 5000.00'
L = 195.85'
T = 97.94'
E = 0.96'

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2225000

WIN 22250.00

BRIDGE NO. 5021

BRIDGE PLANS

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	N.PUKAY	DEC 2021
CHECKED-REVIEWED	T.WHITE	
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

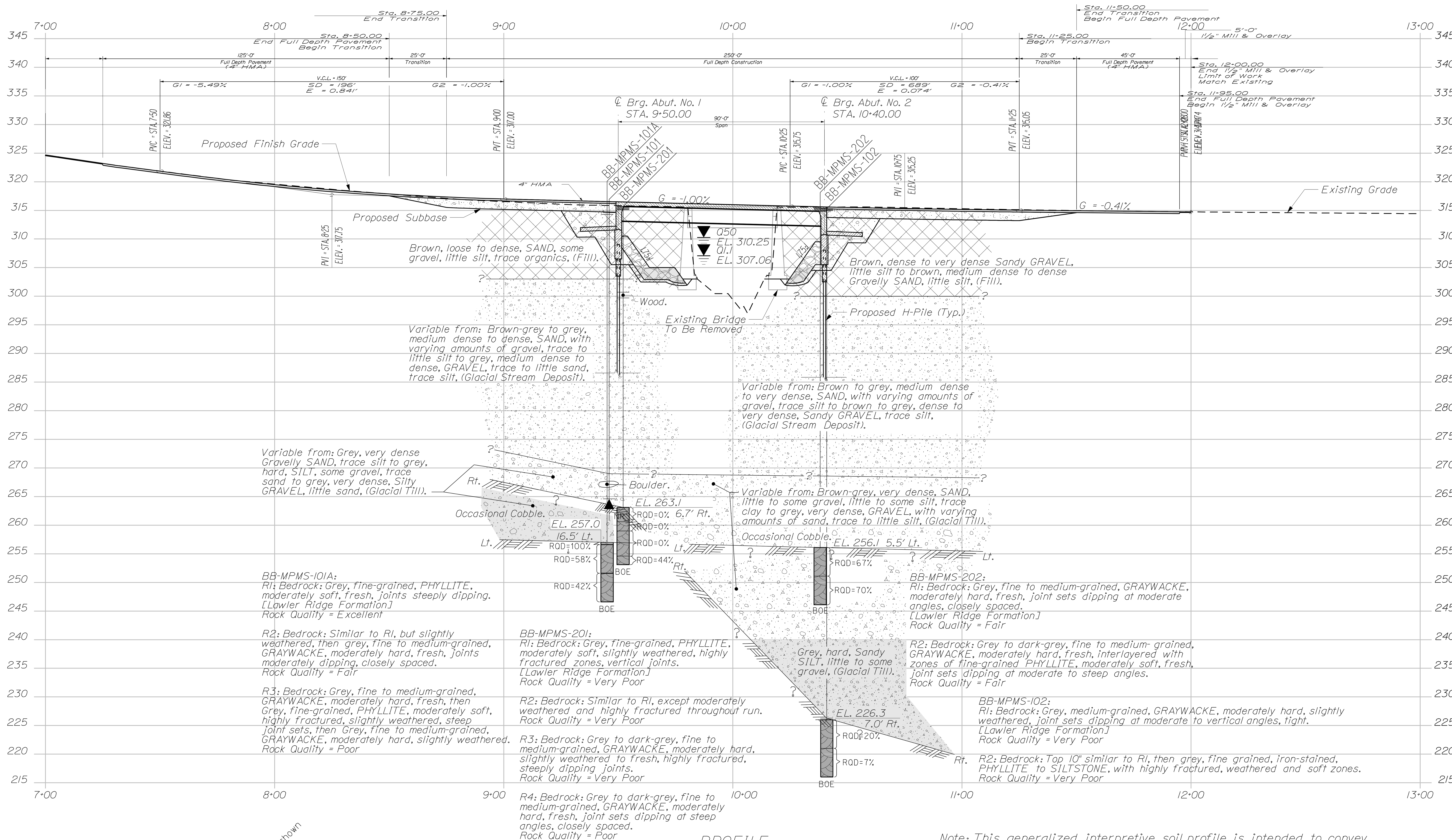
P.E. NUMBER

DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLT. AROOSTOOK COUNTY

BORING LOCATION PLAN

SHEET NUMBER
5
OF 28



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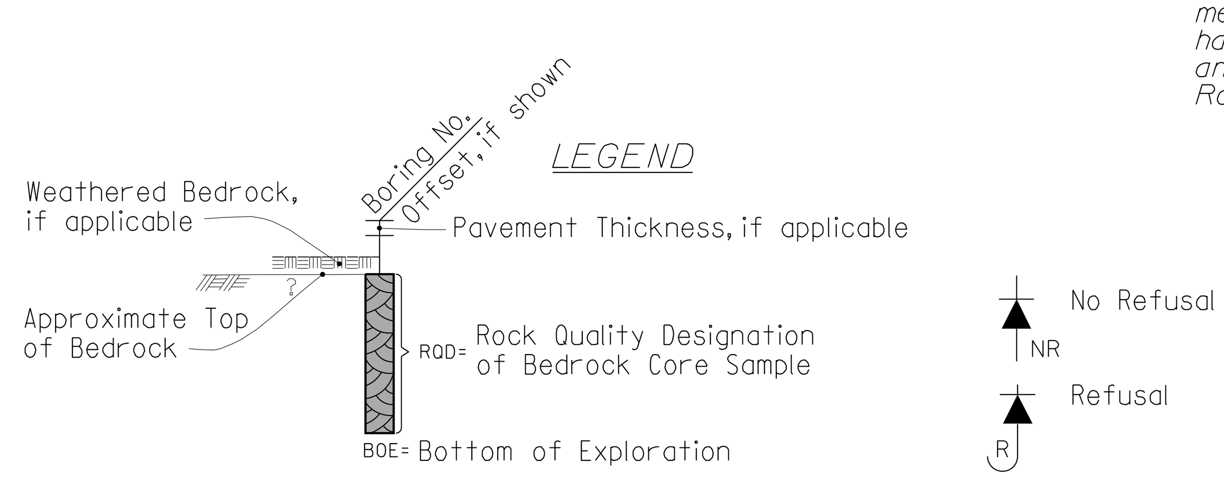
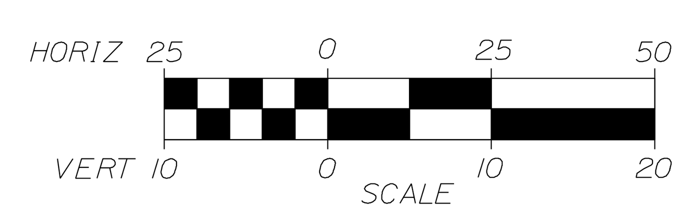


PROFILE



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 and bedrock transitions may vary and are probably more erratic. For more specific information refer to the exploration logs.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2225000

WIN 22250.00

BRIDGE PLANS

BRIDGE NO. 5021

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	N.PUKAY	
CHECKED-REVIEWED	T.WHITE	JAN 2022
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLT. AROOSTOOK COUNTY

INTERPRETIVE SUBSURFACE PROFILE

SHEET NUMBER

6

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

Project: Kingman Road Bridge #5021 carries Route 170 over Macwahoc Stream
Location: Macwahoc Plantation, Maine

Boring No.: BB-MPMS-101 WIN: 22250.00

Driller:	S.W. Cole	Elevation (ft.)	314.6	Auger ID/OD:	5" Solid Stem
Operator:	Kevin/Brian	Datum:	NAVD88	Sampler:	Standard Split Spoon
Logged By:	Nathan Pukay	Rig Type:	Diedrich D-50	Hammer Wt./Fall:	140#/30.0"
Date Start/Finish:	4/4/2022; 09:45-14:15	Drilling Method:	Cased Wash Boring	Core Barrel:	N/A
Boring Location:	9+46, 15.0 ft Lt.	Casing ID/OD:	HW(4.0"/4.5"), NW(3.0"/3.5")	Water Level*:	None Observed
Hammer Efficiency Factor: 0.91		Hammer Type:	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field 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 = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class
0							SSA			
5	1D	24/6	5.00 - 7.00	3/3/3/3	6	9			Brown, damp, loose, SAND, some gravel, little silt, trace organics, (Fill).	G#241510 A-1-b, SM WC=12.9%
10	2D	24/1	10.00 - 12.00	3/3/7/13	10	15	20		Similar to above, except medium dense.	
							40	303.6	11.0	
							71			
							107			
							124+			
15	3D	24/12	15.00 - 17.00	15/7/6/6	13	20	85		Brown-grey, wet, medium dense, SAND, little gravel, trace silt, (Glacial Stream Deposit).	G#241511 A-3, SP-SM WC=19.0%
							40			
							39			
							40			
							35			
20	4D	24/17	20.00 - 22.00	4/7/9/9	16	24	30		Grey, wet, medium dense, SAND, little silt, trace gravel, (Glacial Stream Deposit).	G#241512 A-2-4, SP-SM WC=19.7%
							54			
							64			
							70			
							50			
25	MD	24/0	25.00 - 27.00	6/6/6/6	12	18	32			
							54			
							56			
							88			
							84		Roller Coned ahead to 32.0 ft bgs.	
30	MD	24/0	30.00 - 32.00	14/9/8/5	17	26	56			
							63			
	5D	24/10	32.00 - 34.00	10/5/4/4	9	14	64		Grey, wet, medium dense, Gravelly SAND, trace silt, (Glacial Stream Deposit).	G#241513 A-1-a, SW-SM WC=11.0%
							85			
	MD	24/0	34.50 - 36.50	12/9/11/9	20	30	71			
35							60			
							97			
							101			
							95			
	MD	24/0	39.50 - 41.50	30/39/18/9	57	86	94		Very dense.	
40							96			
	6D	24/8	41.50 - 43.50	8/5/5/7	10	15	85		Grey, wet, medium dense, Gravelly SAND trace silt, (Glacial Stream Deposit).	
							75			
							73			
							81			
45	7D	18/8	45.00 - 46.50	8/28/50	78	118	81	269.1	45.5 Grey, wet, very dense, Gravelly SAND, trace silt, (Glacial Till). Casing advanced to 50.0 ft bgs. Hole abandoned, casing shoe broke off and left in hole.	
							90			
50								264.6	50.0 Bottom of Exploration at 50.0 feet below ground surface.	

Remarks:
Hammer #367
Note: This hole was abandoned due to a casing shoe (metal) breaking off at El. 264.6.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
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Page 1 of 1 Boring No.: BB-MPMS-101

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

Project: Kingman Road Bridge #5021 carries Route 170 over Macwahoc Stream
Location: Macwahoc Plantation, Maine

Boring No.: BB-MPMS-101A WIN: 22250.00

Driller:	S.W. Cole	Elevation (ft.)	314.3	Auger ID/OD:	5" Solid Stem
Operator:	Kevin/Brian	Datum:	NAVD88	Sampler:	Standard Split Spoon
Logged By:	Nathan Pukay	Rig Type:	Diedrich D-50	Hammer Wt./Fall:	140#/30.0"
Date Start/Finish:	4/4/2022-4/5/2022	Drilling Method:	Cased Wash Boring	Core Barrel:	NQ-2"
Boring Location:	9+45.1, 16.5 ft Lt.	Casing ID/OD:	HW(4.0"/4.5"), NW(3.0"/3.5")	Water Level*:	None Observed
Hammer Efficiency Factor: 0.91		Hammer Type:	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field 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 = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class
0							HW		Drove HW Casing to 45.0 ft bgs., see BB-MPMS-101 for material descriptions and casing blow counts up to 25.0 ft bgs.	
25	1D	24/9	25.00 - 27.00	6/5/5/5	10	15		289.3	25.0 Grey, wet, medium dense, GRAVEL, trace sand, trace silt, (Glacial Stream Deposit).	
35	2D	24/5	34.50 - 36.50	26/14/10/9	24	36			Grey-brown, wet, dense, SAND, some gravel, trace silt, (Glacial Stream Deposit).	G#241514 A-1-b, SW-SM WC=10.6%
40	3D	24/6	40.00 - 42.00	15/7/5/4	12	18			Grey, wet, medium dense, SAND, trace gravel, trace silt, (Glacial Stream Deposit).	G#241515 A-1-b, SP WC=22.4%
45							85			
							150	267.6	46.7 Boulder from 46.7-47.7 ft bgs. Roller Coned ahead to 50.0 ft bgs.	
							141			
							200			
							OPEN HOLE			
50	4D	6/6	50.00 - 50.50	100(6")	---				Grey, wet, hard, SILT, some gravel (Rock Chips), trace sand, (Glacial Till). Occasional cobble.	
55	MD	2/0	55.00 - 55.17	75(2")	---					
	R1 5D R2	4.8/4.8 1.5/1.5 60/53	57.30 - 57.70 57.40 - 57.53 57.70 - 62.70	RQD = 100% 105(1.5") RQD = 58%	---		NQ-2	257.0	57.3 Top of Bedrock at Elev. 257.0 ft. R1: Bedrock: Grey, fine-grained, PHYLLITE, moderately soft, fresh, joints steeply dipping, annealed with calcite. [Lawler Ridge Formation] Rock Quality = Excellent R1: Core Times (min:sec) 57.3-57.7 ft (5:11) Core Blocked, little wash return when coring, set in NW Casing. 100% Recovery (5D) Grey, wet, very dense, Rock Chips, trace silt. R2: Bedrock: Similar to R1, but slightly weathered and with iron staining on joint faces, then grey, fine to medium-grained, GRAYWACKE, moderately hard, fresh, joints moderately dipping, closely spaced. [Lawler Ridge Formation] Rock Quality = Fair R2: Core Times (min:sec) 57.7-58.7 ft (3:16) 58.7-59.7 ft (3:01) 59.7-60.7 ft (4:06) 60.7-61.7 ft (2:43) 61.7-62.7 ft (2:22) some dirty water 88% Recovery	
	R3	60/60	62.70 - 67.70	RQD = 42%				246.6	R3: Bedrock: Grey, fine to medium-grained, GRAYWACKE, moderately hard, fresh, then Grey, fine-grained, PHYLLITE, moderately soft, highly fractured, slightly weathered, iron staining on joint faces, steep joint sets, undulating, with significant quartz/calcite annealed joint, then Grey, fine to medium-grained, GRAYWACKE, moderately hard, slightly weathered. [Lawler Ridge Formation] Rock Quality = Poor R3: Core Times (min:sec) 62.7-63.7 ft (2:46) 63.7-64.7 ft (2:05) 64.7-65.7 ft (2:14) 65.7-66.7 ft (2:38) 66.7-67.7 ft (3:02) 100% Recovery 67.7 Bottom of Exploration at 67.7 feet below ground surface.	

Remarks:
Hammer #367

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-MPMS-101A

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

Project: Kingman Road Bridge #5021 carries Route 170 over Macwahoc Stream
Location: Macwahoc Plantation, Maine

Boring No.: BB-MPMS-102 WIN: 22250.00

Driller:	MaineDOT	Elevation (ft.)	315.3	Auger ID/OD:	5" Solid Stem
Operator:	Daggett/Brooks	Datum:	NAVD88	Sampler:	Standard Split Spoon
Logged By:	N.Pukay/B.Wilder	Rig Type:	CME 45C	Hammer Wt./Fall:	140#/30.0"
Date Start/Finish:	12/7,9-10,13/2021	Drilling Method:	Cased Wash Boring	Core Barrel:	NQ-2"
Boring Location:	10+41, 7.0 ft Rt.	Casing ID/OD:	NW(3.0"/3.5")	Water Level*:	10.5 ft bgs.
Hammer Efficiency Factor: 0.974		Hammer Type:	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class
0							SSA	315.0	4" HMA. 0.3	
5	1D	24/12	5.00 - 7.00	8/20/25/17	45	73			Brown, damp, very dense, Sandy GRAVEL, little silt, (Fill).	
10	2D	24/14	10.00 - 12.00	13/10/16/22	26	42	22		Brown, wet, dense, Sandy GRAVEL, little silt, (Fill).	G#337502 A-1-a, GM WC=12.9%
							51			
							71			
							46			
							51	300.3	15.0	
15	3D	24/13	15.00 - 17.00	8/10/12/9	22	36	24		Brown, wet, dense, Sandy GRAVEL, trace silt, (Glacial Stream Deposit).	G#337503 A-1-a, GW-GM WC=15.4%
							41			
							51			
							40			
							41			
20	4D	24/14	20.00 - 22.00	10/6/10/13	16	26	45		Similar to above, except medium dense.	
							53			
							70			
							44			
							39			
25	5D	24/9	25.00 - 27.00	15/20/12/26	32	52	42		Brown, wet, very dense, Sandy GRAVEL, trace silt (Glacial Stream Deposit).	
							74			
							86			
							77			
							66			
30	6D	24/15	30.00 - 32.00	7/7/6/7	13	21	22		Brown-grey, wet, medium dense, SAND, little gravel, trace silt, (Glacial Stream Deposit).	G#337504 A-1-b, SP-SM WC=16.1%
							38			
							65			
							82			
							61			
35	7D	24/12	35.00 - 37.00	8/7/8/8	15	24	48		Similar to above, except grey.	
							69			
							61			
							70			
							98			
40	8D	24/14	40.00 - 42.00	13/14/20/12	34	55	48		Grey, wet, very dense, Gravelly SAND, trace silt, (Glacial Stream Deposit).	
							73			
							71			
							54			
							55			
45	9D	24/14	45.00 - 47.00	4/1/5/5	12	19	55		Grey, wet, medium dense, SAND, trace gravel, trace silt, (Glacial Stream Deposit).	
							67	268.3	47.0	
							104			
							106			
							126			
50	10D	24/17	50.00 - 52.00	7/9/24/31	33	54	OPEN HOLE		Brown-grey, wet, very dense, SAND, some gravel, little silt, trace clay, (Glacial Till). Roller Coned ahead to 55.0 ft bgs. Cobble from 52.5-52.8 ft bgs.	G#337505 A-1-b, SC-SM WC=9.6%
55	11D	24/15	55.00 - 57.00	34/28/40/50	68	110			Brown-grey, wet, very dense, SAND, some gravel, some silt, (Glacial Till). Roller Coned ahead to 60.0 ft bgs. Cobble from 57.0-57.5 ft bgs.	
60	12D	8.4/8.4	60.00 - 60.70	41/60(2.4")	---				Similar to above. Roller Coned ahead to 65.0 ft bgs. Occasional cobble.	
65	13D	1.2/1.2	65.00 - 65.10	55(1.2")	---				Brown-grey, wet, very dense, SAND, some silt, little gravel, (Glacial Till). Roller Coned ahead to 70.0 ft bgs.	
70	MD	1.2/0	70.00 - 70.10	70(1.2")	---				Roller Coned ahead to 75.0 ft bgs.	

Remarks:

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Page 1 of 2 Boring No.: BB-MPMS-102

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

Project: Kingman Road Bridge #5021 carries Route 170 over Macwahoc Stream
Location: Macwahoc Plantation, Maine

Boring No.: BB-MPMS-102 WIN: 22250.00

Driller:	MaineDOT	Elevation (ft.)	315.3	Auger ID/OD:	5" Solid Stem
Operator:	Daggett/Brooks	Datum:	NAVD88	Sampler:	Standard Split Spoon
Logged By:	N.Pukay/B.Wilder	Rig Type:	CME 45C	Hammer Wt./Fall:	140#/30.0"
Date Start/Finish:	12/7,9-10,13/2021	Drilling Method:	Cased Wash Boring	Core Barrel:	NQ-2"
Boring Location:	10+41, 7.0 ft Rt.	Casing ID/OD:	NW(3.0"/3.5")	Water Level*:	10.5 ft bgs.
Hammer Efficiency Factor: 0.974		Hammer Type:	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
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MD = Unsuccessful Split Spoon Sample Attempt
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SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class
75	14D	1.2/1.2	75.00 - 75.10	100(1.2")	---				Grey, moist, hard, Sandy SILT, little gravel, (Glacial Till). Roller coned ahead to 80.0 ft bgs.	
80	15D	1.2/1.2	80.00 - 80.10	70(1.2")	---				Grey, wet, hard, Sandy SILT, some gravel, (Glacial Till). Roller Coned ahead to 89.3 ft bgs.	
90	R1	60/60	89.30 - 94.30	RQD = 20%			NQ-2	226.3	89.0 Top of Bedrock at Elev. 226.3 ft. R1: Bedrock: Grey, medium-grained, GRAYWACKE, with calcite veins, moderately hard, slightly weathered, joint sets dipping at moderate to vertical angles, tight. [Lawler Ridge Formation] Rock Quality = Very Poor R1: Core Times (min:sec) 89.3-90.3 ft (2:43) 90.3-91.3 ft (2:49) 91.3-92.3 ft (3:05) 92.3-93.3 ft (2:22) 93.3-94.3 ft (2:45) 100% Recovery	
95	R2	60/48	94.30 - 99.30	RQD = 7%				216.0	R2: Bedrock: Top 10" similar to R1, then grey, fine-grained, iron-stained, PHYLLITE to SILTSTONE, with highly fractured, weathered and soft zones. [Lawler Ridge Formation] Rock Quality = Very Poor R2: Core Times (min:sec) 94.3-95.3 ft (2:52) 95.3-96.3 ft (2:47) 96.3-97.3 ft (3:20) dirty brown water 97.3-98.3 ft (5:10) 98.3-99.3 ft (9:30) had to work the bit, added time. 80% Recovery 99.3 Bottom of Exploration at 99.3 feet below ground surface.	

Remarks:

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Page 2 of 2 Boring No.: BB-MPMS-102

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2225000

WIN 22250.00

BRIDGE PLANS

BRIDGE NO. 5021

SIGNATURE

P.E. NUMBER

DATE

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	N.PUKAY	
CHECKED-REVIEWED	T.WHITE	DEC 2023
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLT. AROOSTOOK COUNTY

BORING LOGS

SHEET NUMBER

7

OF 28

Filename: ...\MSTA\008_BORING LOGS2.dgn Division: GEOTECH Username: Nathan.P.Pukay Date:12/14/2023

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

Project: Kingman Road Bridge #5021 carries Route 170 over Macwahoc Stream
Location: Macwahoc Plantation, Maine

Boring No.: BB-MPMS-201
WIN: 22250.00

Driller:	S.W. Cole	Elevation (ft.)	315.7	Auger ID/OD:	5" Solid Stem
Operator:	Kevin/Brian	Datum:	NAVD88	Sampler:	Standard Split Spoon
Logged By:	N.Pukay	Rig Type:	Diedrich D-50	Hammer Wt./Fall:	140#/30.0"
Date Start/Finish:	3/24/2023; 08:15-14:00	Drilling Method:	Cased Wash Boring	Core Barrel:	NQ-2"
Boring Location:	9+52.1, 6.7 ft Rt.	Casing ID/OD:	HW(4.0"/4.5")	Water Level*:	9.0 ft bgs.

Hammer Efficiency Factor: 0.92 Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐

Definitions:
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WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class
0							SSA	315.1		7" HMA. (0.6)	
5	1D	24/4	5.00 - 7.00	2/6/18/8	24	37				Brown, damp, dense, SAND, some gravel, little silt, (Fill).	
							15				
							35				
							27				
							17				
10	MD	24/0	10.00 - 12.00	3/2/2/2	4	6	14			Loose.	
							12				
							15				
							72	302.7		(13.0) Dark brown organics and wood chips in wash water from 13.0-14.5 ft bgs.	
							80				
15	2D	24/1	15.00 - 17.00	19/12/8/5	20	31	37			Grey, wet, dense, SAND, little silt, little gravel, wood chips, (Glacial Stream Deposit). Wood chips in wash water from 15.0-16.0 ft bgs.	
							42				
							34				
							33				
							42				
20	3D	24/5	20.00 - 22.00	4/5/6/8	11	17	27			Grey, wet, medium dense, SAND, little silt, trace gravel, (Glacial Stream Deposit).	
							35				
							58				
							77				
							100				
25	4D	24/10	25.00 - 27.00	10/11/15/16	26	40	66			Grey, wet, dense, SAND, little silt, trace gravel, (Glacial Stream Deposit).	
							102				
							94			Occasional Cobble	
							71				
							70				
30	5D	24/4	30.00 - 32.00	12/7/7/16	14	21	60			Grey, wet, medium dense, SAND, some gravel, trace silt, (Glacial Stream Deposit).	
							69				
							88				
							81				
							76				
35	6D	24/2	35.00 - 37.00	11/13/7/8	20	31	66			Grey, wet, dense, GRAVEL, little sand, trace silt, (Glacial Stream Deposit).	
							88				
							71				
							88				
							72				
40	7D	24/1	40.00 - 42.00	7/6/7/10	13	20	69			Similar to 6D, except medium dense.	
							80				
							86				
							81				
							84				
45	8D	24/2	45.00 - 47.00	8/6/5/4	11	17	90			Grey, wet, medium dense, SAND, trace gravel, trace silt, (Glacial Stream Deposit).	
							100				
							103	268.7		(47.0)	
							97				
							181				
50	9D	24/12	50.00 - 52.00	16/14/29/42	43	66	69			Grey, wet, very dense, Silty GRAVEL (bedrock chips), little sand, (Glacial Till) .	
							90			a101 blows for 0.6 ft.	
	R1	30/30	52.60 - 55.10	RQD = 0%			a101 NQ-2	263.1		(52.6) Top of Bedrock at Elev. 263.1 ft. R1: Bedrock: Grey, fine-grained, PHYLLITE, moderately soft, slightly weathered, highly fractured zones, joints are vertical with iron staining and rock flour. [Lawler Ridge Formation] Rock Quality = Very Poor R1: Core Times (min:sec) 52.6-53.6 ft (2:10) 53.6-54.6 ft (2:43) 54.6-55.1 ft (1:51) Core Blocked 100% Recovery	
55	R2	19.2/15	55.10 - 56.70	RQD = 0%						R2: Bedrock: Similar to R1, except moderately weathered and highly fractured throughout run. [Lawler Ridge Formation] Rock Quality = Very Poor R2: Core Times (min:sec) 55.1-55.6 ft (0:59) 55.6-56.6 ft (3:03) 56.6-56.7 ft (0:35) Core Blocked 79% Recovery	
	R3	52.8/25	56.70 - 61.10	RQD = 0%						R3: Bedrock: Grey, fine-grained, GRAYWACKE, moderately hard, slightly weathered, highly fractured, joints are steeply dipping with iron staining, then dark-grey, fine to medium-grained, GRAYWACKE, moderately hard, fresh, highly fractured, joints steeply dipping, with several thin, low angle joints annealed with quartz or calcite. [Lawler Ridge Formation] Rock Quality = Very Poor R3: Core Times (min:sec) 56.7-57.6 ft (2:35) 57.6-58.6 ft (2:34) 58.6-59.6 ft (5:20) 59.6-60.6 ft (6:22) 60.6-61.1 ft (3:40) Core Blocked 47% Recovery	
	R4	18/18	61.10 - 62.60	RQD = 44%				253.1		R4: Bedrock: Grey to dark-grey, fine to medium-grained, GRAYWACKE, moderately hard, fresh, joint sets dipping at steep angles, closely spaced, undulating. [Lawler Ridge Formation] Rock Quality = Poor. R4: Core Times (min:sec) 61.1-61.6 ft (2:14) 61.6-62.6 ft (4:04) 100% Recovery (62.6) Bottom of Exploration at 62.6 feet below ground surface.	
65											
70											
75											

Remarks:

Auto Hammer #367

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-MPMS-201

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

Project: Kingman Road Bridge #5021 carries Route 170 over Macwahoc Stream
Location: Macwahoc Plantation, Maine

Boring No.: BB-MPMS-202
WIN: 22250.00

Driller:	S.W. Cole	Elevation (ft.)	315.4	Auger ID/OD:	5" Solid Stem
Operator:	Kevin/Brian	Datum:	NAVD88	Sampler:	Standard Split Spoon
Logged By:	N.Pukay	Rig Type:	Diedrich D-50	Hammer Wt./Fall:	140#/30.0"
Date Start/Finish:	3/27/2023-3/28/2023	Drilling Method:	Cased Wash Boring	Core Barrel:	NQ-2"
Boring Location:	10+38.1, 5.5 ft Lt.	Casing ID/OD:	HW(4.0"/4.5"), NW(3.0"/3.5")	Water Level*:	9.0 ft bgs.

Hammer Efficiency Factor: 0.92 Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field 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 = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class
0							SSA	314.8		7" HMA. (0.6)	
5	1D	24/3	5.00 - 7.00	6/10/12/17	22	34				Brown, damp, dense, Gravelly SAND, little silt, (Fill).	
							30				
							40				
10	2D	24/16	10.00 - 12.00	11/11/8/9	19	29	47			Brown, damp, medium dense, Gravelly SAND, little silt, trace organics, (Fill).	
							60				
							59				
							73				
							93	300.4		(15.0)	
15	3D	18/4	15.00 - 16.50	12/22/83	105	161	38			Brown, wet, very dense, Sandy GRAVEL, trace silt, (Glacial Stream Deposit). Cobble from 15.9-16.5 ft bgs. Roller Coned ahead to 17.0 ft bgs.	
							102				
							169				
							111				
							84				
20	MD	24/0	20.00 - 22.00	14/9/11/14	20	31	37			Dense.	
							53				
							69				
							51				
							50				
25	4D	24/2	25.00 - 27.00	9/10/14/15	24	37	49			Grey-brown, wet, dense, Sandy GRAVEL, trace silt, (Glacial Stream Deposit).	
							51				
							89				
							88				
							91			Similar to 4D, except medium dense.	
30	5D	24/5	30.00 - 32.00	18/9/8/7	17	26	55				
							32				
							59				
							74				
							53				
35	6D	24/1	35.00 - 37.00	6/11/28/13	39	60	20			Grey, wet, very dense, Sandy GRAVEL, trace silt, (Glacial Stream Deposit).	
							77				
							134				
							148				
							160				
40	7D	24/4	40.00 - 42.00	43/17/8/7	25	38	79			Grey-brown, wet, dense, Sandy GRAVEL, trace silt, (Glacial Stream Deposit).	
							61				
							97				
							104	272.4		(43.0)	
							102				
45	8D	24/7	45.00 - 47.00	20/30/36/36	66	101	84			Grey, wet, very dense, Sandy GRAVEL, little silt, (Glacial Till). Roller Coned ahead to 48.0 ft bgs.	
							168				
							190				
							266				
							95				
50	9D	24/2	50.00 - 52.00	26/36/43/57	79	121	139			Grey, wet, very dense, GRAVEL, little sand, trace silt, (Glacial Till). Roller Coned ahead to 55.0 ft bgs.	
							103				
							166				
							176				
							102				
55	10D	16.8/10	55.00 - 56.40	46/47/52(4.8")	---		a79 Spun NW			Grey, wet, very dense, Sandy GRAVEL, little silt, (Glacial Till). a79 blows for 0.5 ft. Roller Coned ahead to 59.3 ft bgs. Rock chips in wash water. Set in NW Casing.	
	R1	60/50	59.30 - 64.30	RQD = 67%			NQ-2	256.1		(59.3) Top of Bedrock at Elev. 256.1 ft. R1: Bedrock: Grey to dark-grey, fine to medium-grained, GRAYWACKE, moderately hard, fresh, joint sets dipping at moderate angles, closely spaced, iron stained. [Lawler Ridge Formation] Rock Quality = Fair R1: Core Times (min:sec) 59.3-60.3 ft (3:32) 60.3-61.3 ft (2:56) 61.3-62.3 ft (3:40) 62.3-63.3 ft (3:18) 63.3-64.3 ft (4:47) 83% Recovery	
65	R2	60/60	64.30 - 69.30	RQD = 70%				246.1		R2: Bedrock: Grey to dark-grey, fine to medium-grained, GRAYWACKE, moderately hard, fresh, interlayered with zones of fine-grained PHYLLITE, moderately soft, fresh, joint sets dipping at moderate to steep angles, significant quartz/calcite along joint faces. [Lawler Ridge Formation] Rock Quality = Fair R2: Core Times (min:sec) 64.3-65.3 ft (3:05) 65.3-66.3 ft (2:58) 66.3-67.3 ft (2:17) 67.3-68.3 ft (2:31) 69.3-69.3 ft (2:25) 100% Recovery (69.3) Bottom of Exploration at 69.3 feet below ground surface.	
70											
75											

Remarks:

Auto Hammer #367

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-MPMS-202

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2225000

WIN 22250.00

BRIDGE PLANS

BRIDGE NO. 5021

SIGNATURE

P.E. NUMBER

DATE

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	N.PUKAY	
CHECKED-REVIEWED	T.WHITE	DEC 2023
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLT. AROOSTOOK COUNTY

BORING LOGS

SHEET NUMBER

8

OF 28

NOTES:

1. The pavement, base and subbase depths as shown on the plans are intended to be nominal.

2. When superelevation exceeds the slope of the low side shoulder, the low side shoulder's pavement shall have the same cross slope as the travelway.

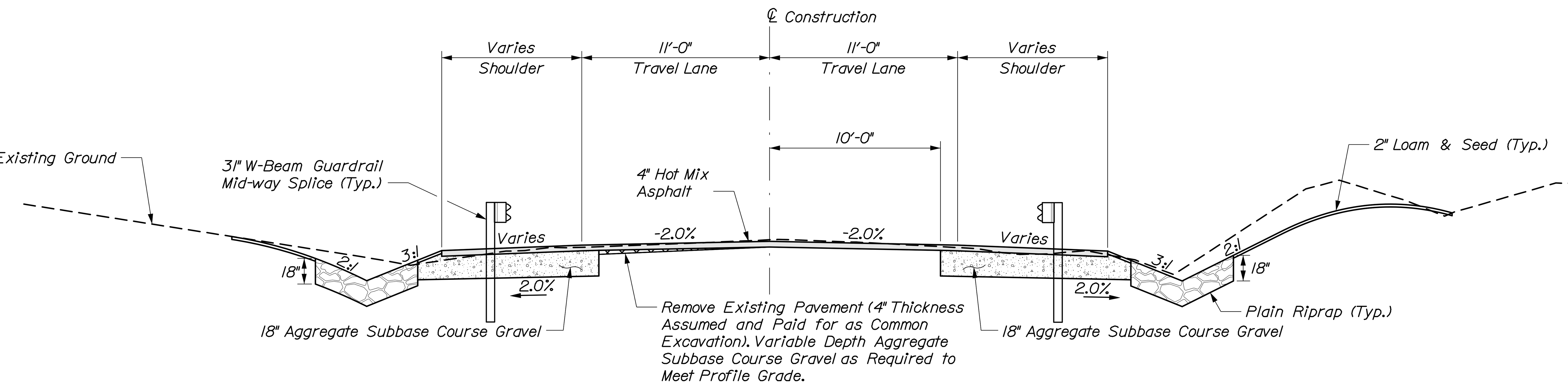
3. Crowns for the normal and superelevation sections for all courses of subbase and pavement shall be straight, unless otherwise noted on the plans.

4. The algebraic difference between shoulder and travel lane cross slopes "rollover" shall not exceed 8%.

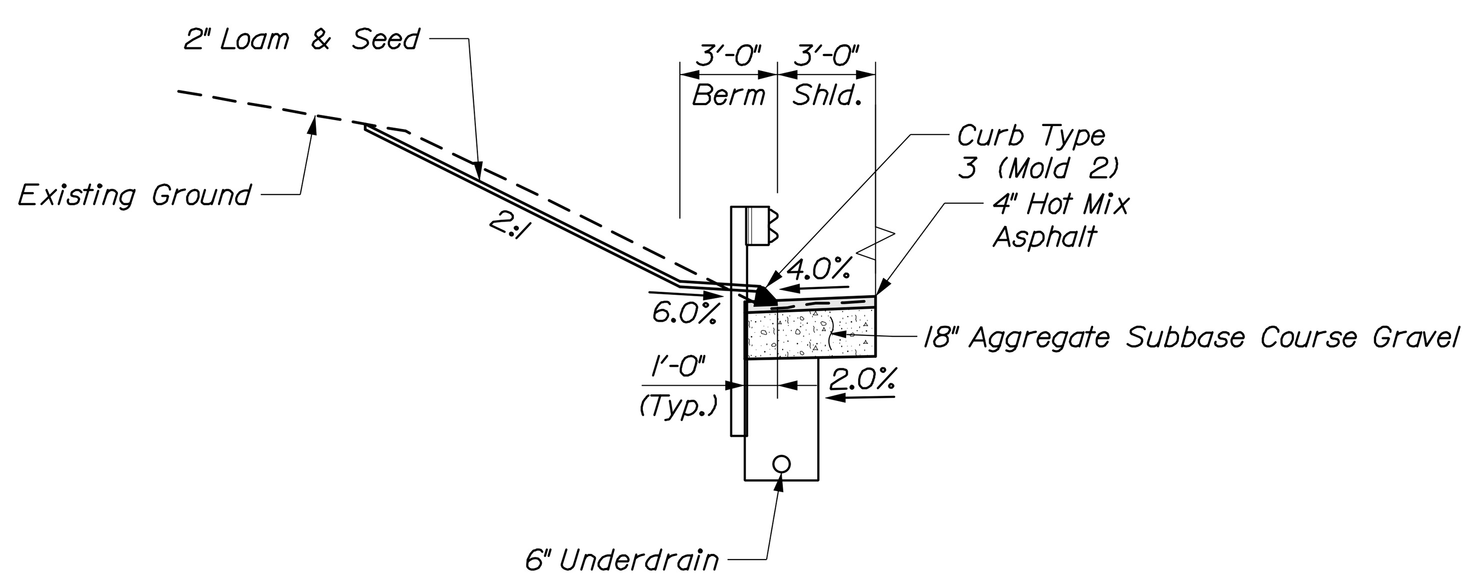
Kingman Road Cross Slope Table

Left Shoulder	Left Travel Lane	Station	Right Travel Lane	Right Shoulder
Match Existing		7+00	Match Existing	
-4.0%	-3.7%	7+25	-4.9%	-4.9%
-4.0%	-3.2%	7+50	-3.9%	-4.0%
-4.0%	-2.6%	7+75	-3.0%	-4.0%
-4.0%	-2.0%	8+00	-2.0%	-4.0%
		-		
-4.0%	-2.0%	9+00	-2.0%	-4.0%
-3.0%	-2.0%	9+25	-2.0%	-3.0%
-3.0%	-2.0%	9+50	-2.0%	-3.0%
		BRIDGE		
-3.0%	-2.0%	10+40	-2.0%	-3.0%
-3.0%	-2.0%	10+50	-2.0%	-3.0%
-4.0%	-2.0%	10+75	-2.0%	-4.0%
		-		
-4.0%	-2.0%	11+25	-2.0%	-4.0%
-4.0%	-3.0%	11+50	-2.0%	-4.0%
-4.1%	-4.1%	11+75	-2.0%	-6.1%
Match Existing		12+00	Match Existing	

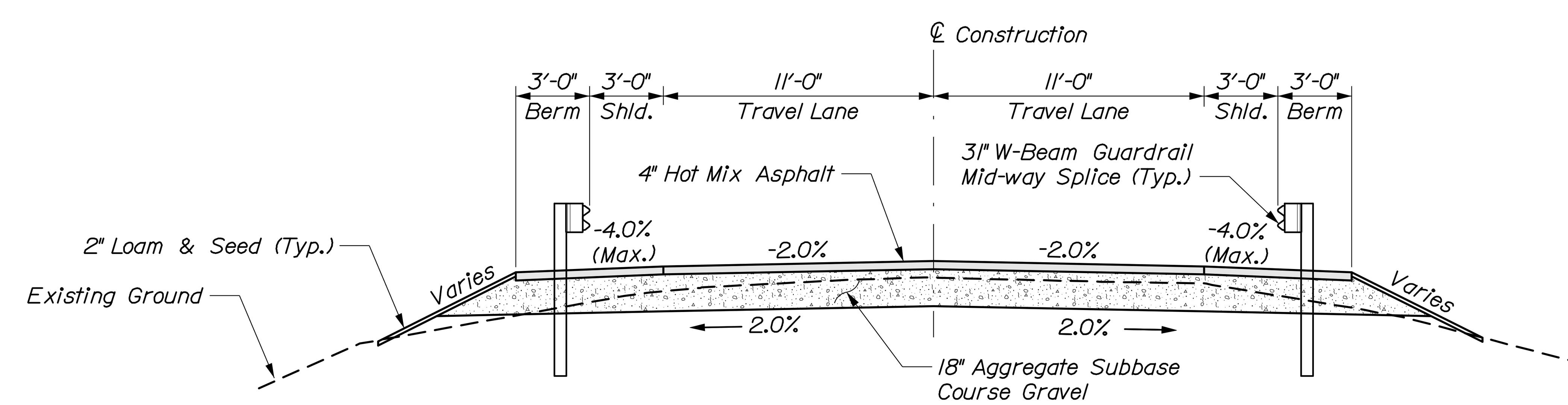
*Across the bridge, the shoulder slope break is at the 12' offset. See bridge typical section for more information.



TYPICAL FULL DEPTH PAVEMENT SECTION



CURB SECTION



TYPICAL APPROACH SECTION

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0222500

WIN
022250.00

BRIDGE PLANS

BRIDGE NO. 5021

	BY	DATE
PROJ. MANAGER	E. Raymond	
DESIGN-DETAILED	A. Sweet	C. Malloy 12/23
CHECKED-REVIEWED		L. Driscoll 12/23
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

TYPICAL SECTIONS

SHEET NUMBER

9

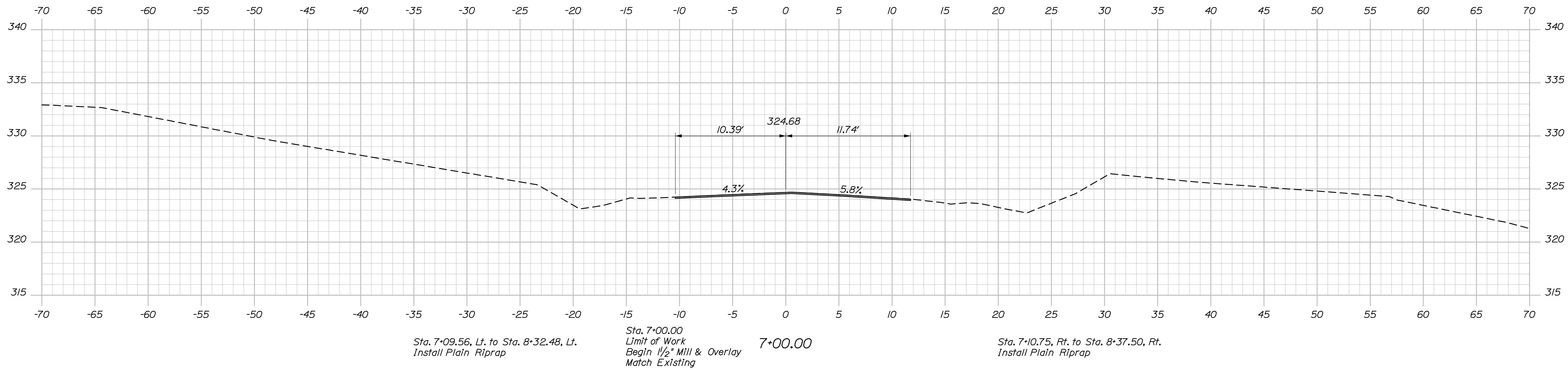
OF 28

Filename: 009_TypicalSections.dgn

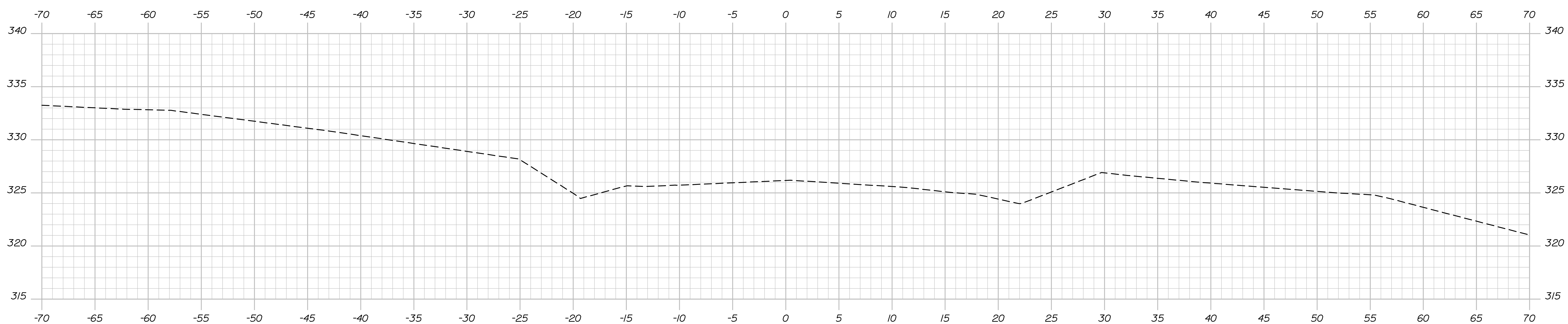
Division:

Username:

Date:12/13/2023



7+00.00



6+75.00

Date:12/13/2023
Username:
Division:
Filename: z_Xsect.dgn

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0222500

WIN
022250.00

BRIDGE PLANS

BRIDGE NO. 5021

	BY	DATE
PROJ. MANAGER	E. Raymond	
DESIGN-DETAILED	C. Molloy	12/23
CHECKED-REVIEWED	A. Sweet	
DESIGN2-DETAILED2	L. Driscoll	12/23
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

CROSS SECTIONS

HNTB

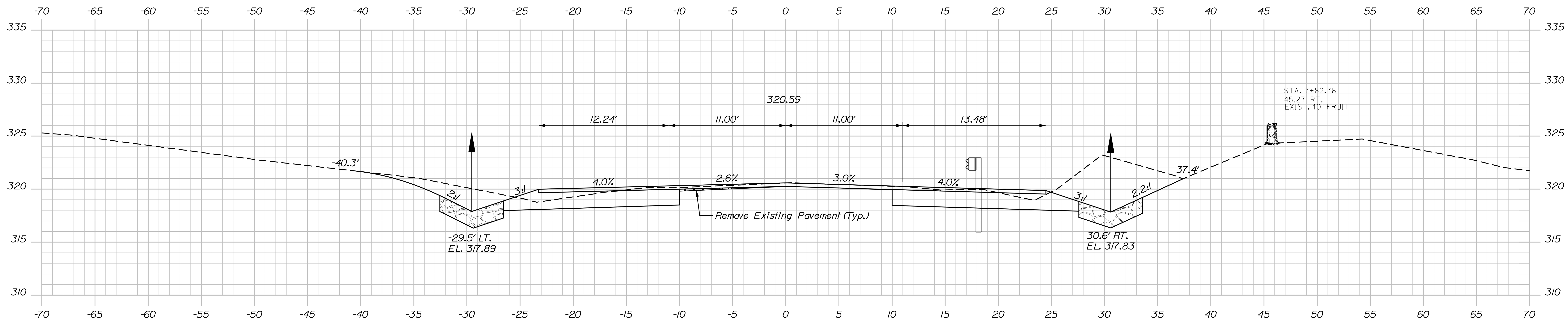
SHEET NUMBER
10
OF 28

Date:12/13/2023

Username:

Division:

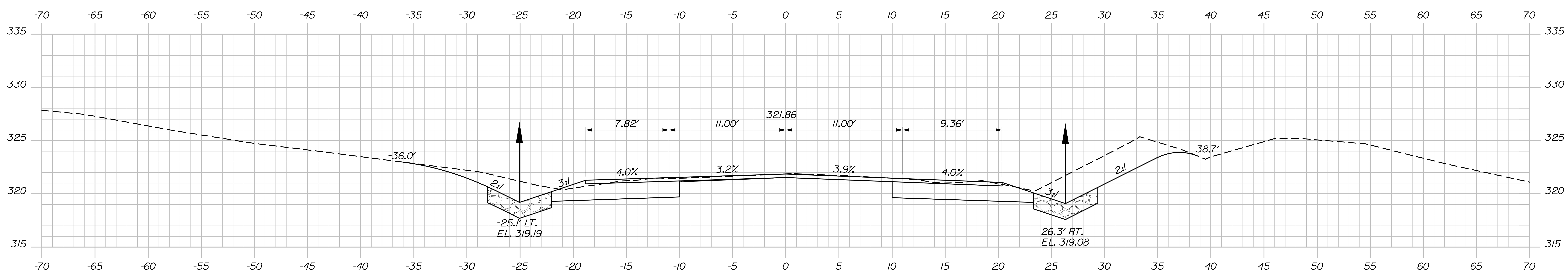
Filename: z_Xsect.dgn



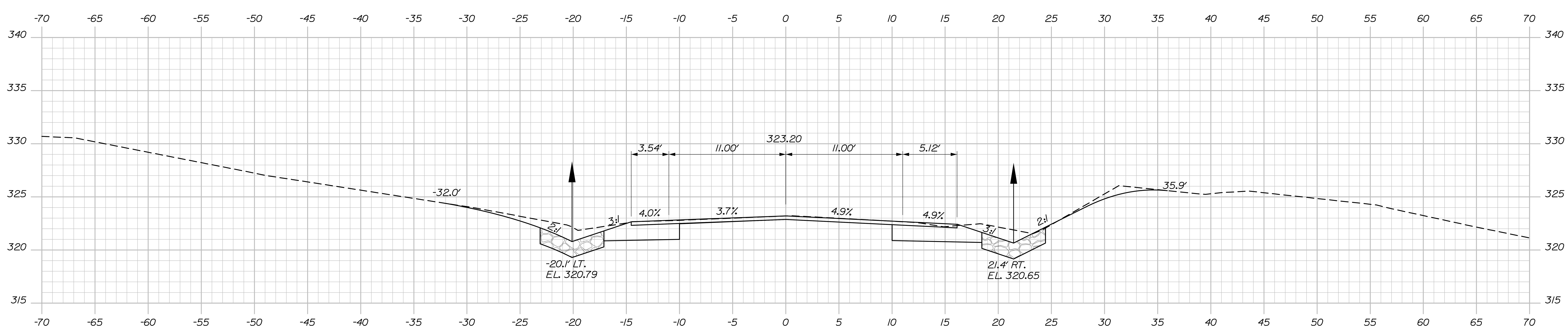
Sta. 7+78.99, 17.00' Lt. to Sta. 8+18.34, 14.00' Lt.
Install 31" W-Beam Guardrail Mid-Way Splice Flared Terminal

7+75.00

Sta. 7+74.64, 17.00' Rt. to Sta. 8+14.24, 14.00' Rt.
Install 31" W-Beam Guardrail Mid-Way Splice Flared Terminal



7+50.00



7+25.00

Sta. 7+25.00
End 1½" Mill & Overlay
Begin Full Depth Pavement (4" HMA)

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0222500

WIN
022250.00

BRIDGE PLANS

BRIDGE NO. 5021

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	E. Raymond	C. Molloy	12/23
CHECKED-REVIEWED	A. Sweet	L. Driscoll	12/23
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

CROSS SECTIONS

SHEET NUMBER
11
OF 28

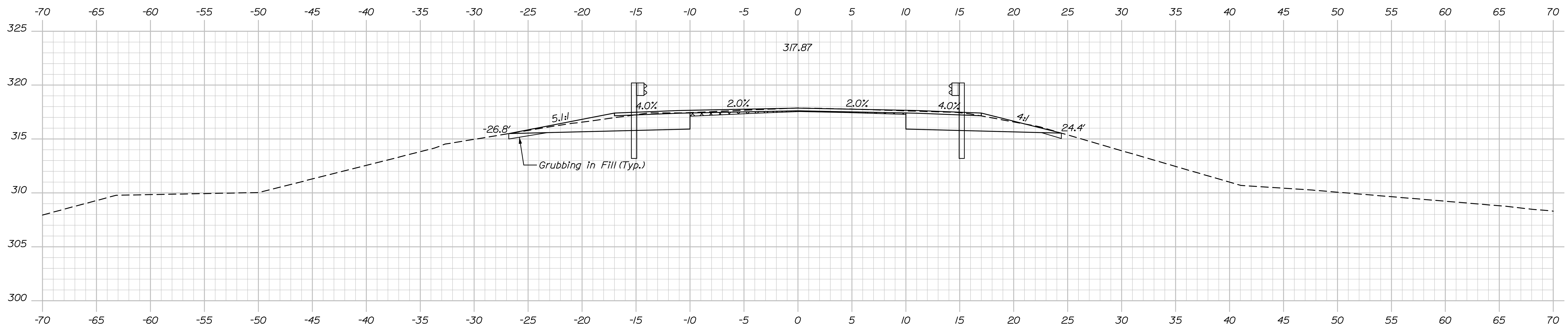
Sta. 7+25.00 to Sta. 7+75.00

Date:12/13/2023

Username:

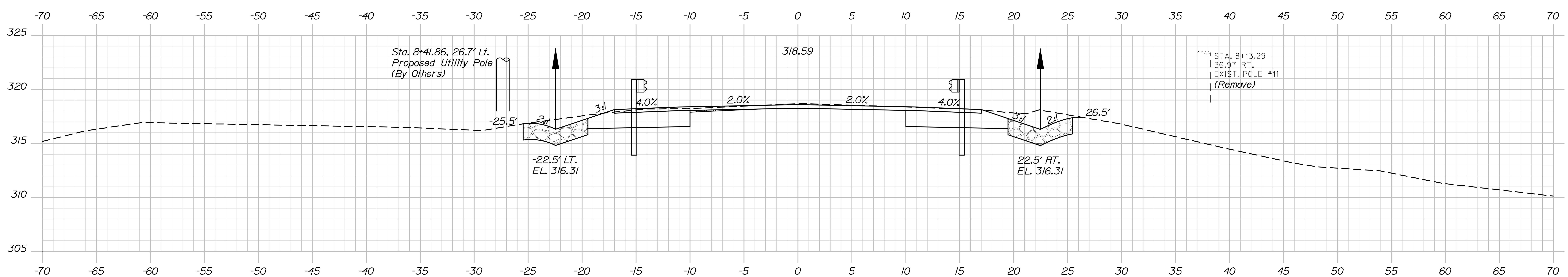
Division:

Filename: z_Xsect.dgn



8+50.00

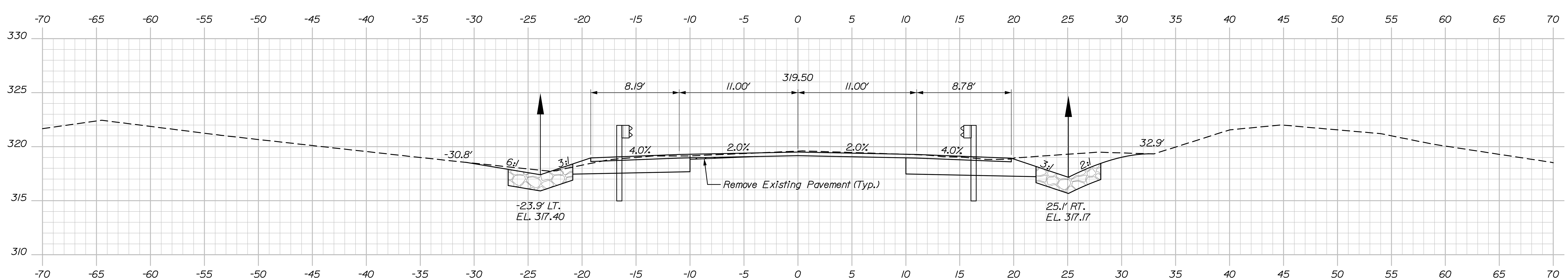
Sta. 8+50.00
End Full Depth Pavement (4" HMA)
Begin Transition



Sta. 8+18.34, 14.00' Lt. to Sta. 9+15.22, 14.00' Lt.
Install 31" W-Beam Guardrail Mid-Way Splice (Length = 96.875 LF)

8+25.00

Sta. 8+14.24, 14.00' Rt. to Sta. 9+23.61, 14.00' Rt.
Install 31" W-Beam Guardrail Mid-Way Splice (Length = 109.375 LF)



8+00.00

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0225000

WIN
022250.00

BRIDGE PLANS

BRIDGE NO. 5021

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	E. Raymond	C. Molloy	12/23
CHECKED-REVIEWED	A. Sweet	L. Driscoll	12/23
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

CROSS SECTIONS

SHEET NUMBER

12

OF 28

HNTB

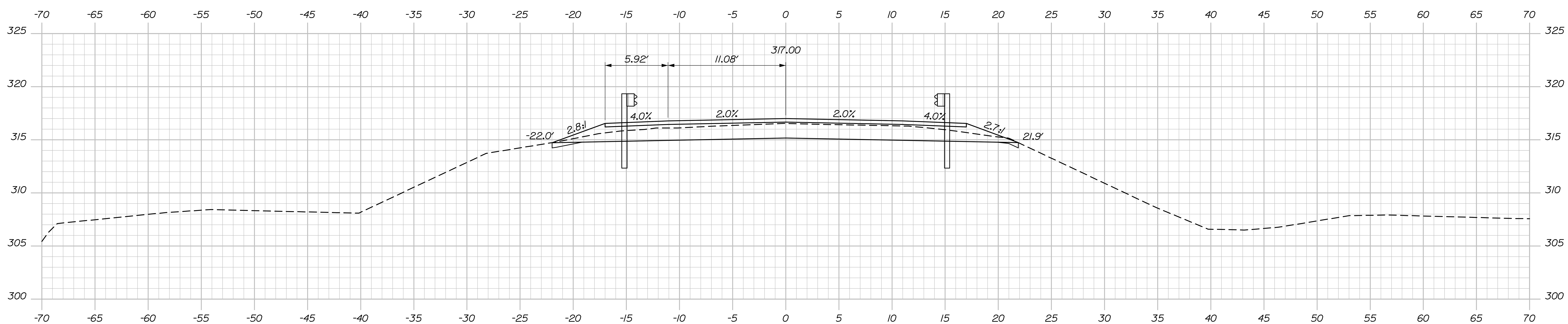
Sta. 8+00.00 to Sta. 8+50.00

Date:12/13/2023

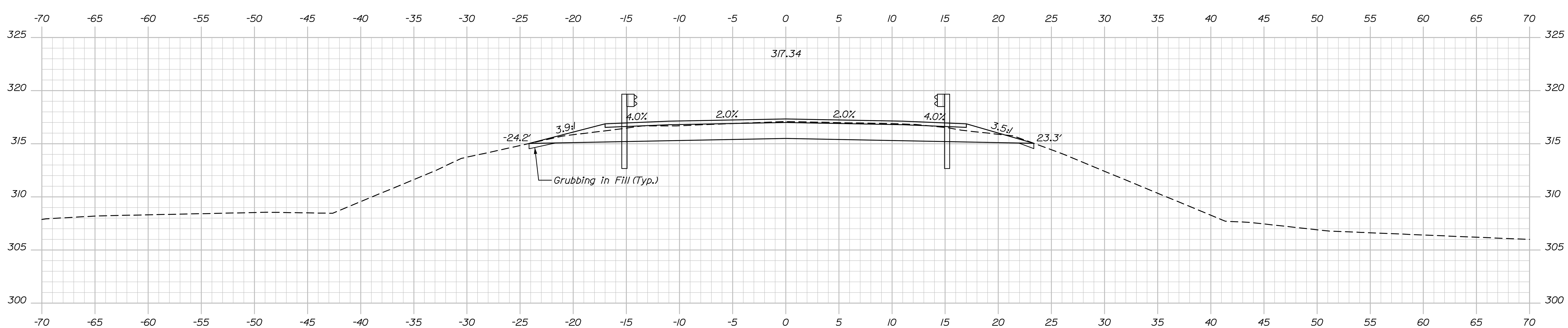
Username:

Division:

Filename: z_Xsect.dgn



9+00.00



8+75.00

Sta. 8+75.00
End Transition
Begin Project WIN 022250.00

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0222500

BRIDGE NO. 5021

WIN
022250.00

BRIDGE PLANS

		BY	DATE
PROJ. MANAGER	E. Raymond		
DESIGN-DETAILED		C. Molloy	12\23
CHECKED-REVIEWED	A. Sweet	L. Driscoll	12\23
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

CROSS SECTIONS

SHEET NUMBER

13

OF 28

Sta. 8+75.00 to Sta. 9+00.00

Date:12/13/2023
Username:
Division:
Filename: z_Xsect.dgn

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
0222500
WIN 022250.00
BRIDGE NO. 5021
BRIDGE PLANS

	DATE	BY	SIGNATURE
PROJ. MANAGER			
DESIGN-DETAILED	12/23	E. Raymond / C. Molloy	
CHECKED-REVIEWED	12/23	A. Sweet / L. Driscoll	
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

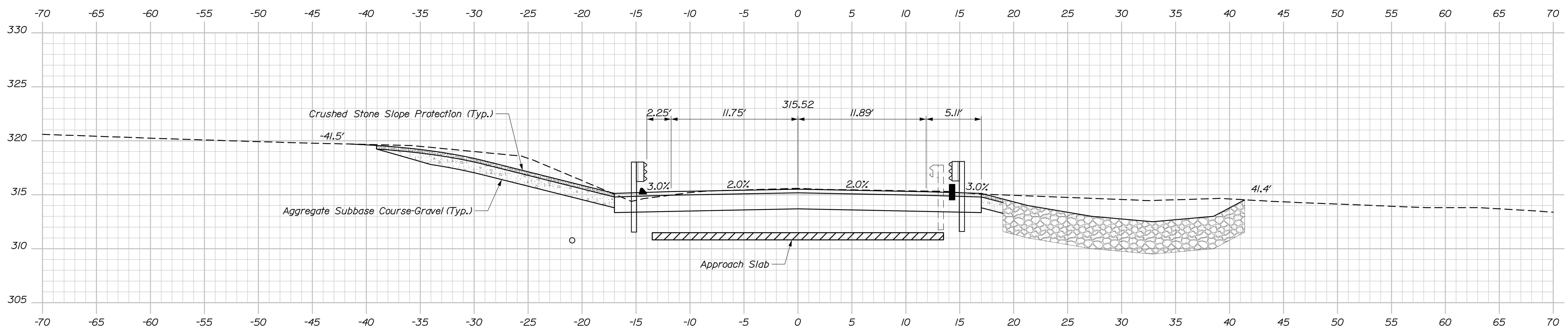
P.E. NUMBER
DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

CROSS SECTIONS

SHEET NUMBER
14
OF 28

Sta. 10+54.30, 14.00' Rt. to Sta. 10+74.78, 14.00' Rt.
Install Bridge Transition Type I



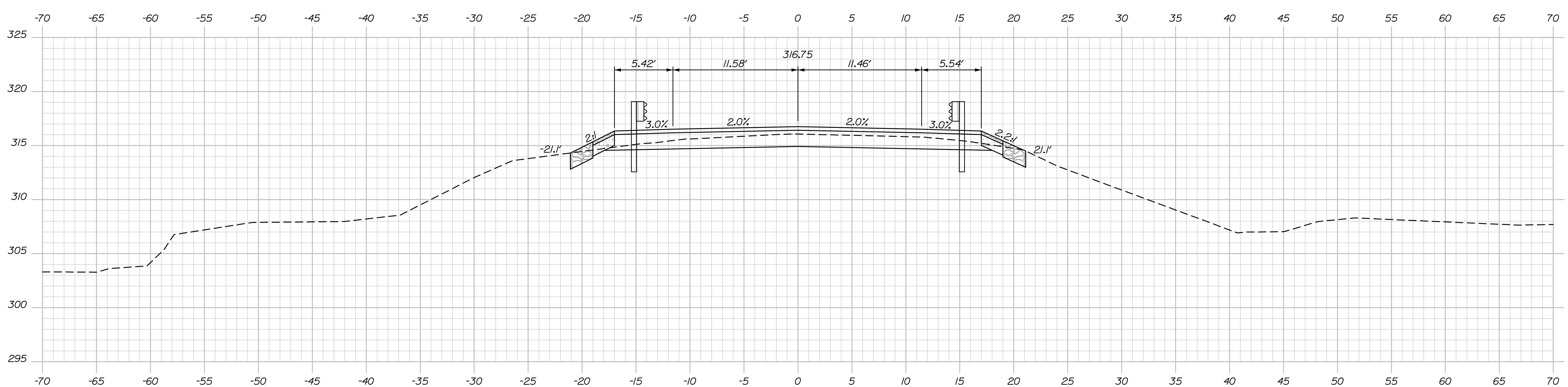
10+50.00

Sta. 10+58.09, 12.88' Lt. to Sta. 11+38.52, 12.88' Lt.
Install 81' x 6" Underdrain Type B

Sta. 10+29.00, 27.70' Lt. to Sta. 10+58.09, 12.88' Lt.
Install 36' x 6" Underdrain Type B with 45° Elbow
Outlet Elev. = 310.00'

Sta. 10+47.64, 14.00' Lt. to Sta. 11+29.65, 14.00' Lt.
Install 83' Curb Type 3 (Mold 2)

Sta. 10+45.91, 14.00' Lt. to Sta. 10+66.30, 14.00' Lt.
Install Bridge Transition Type I



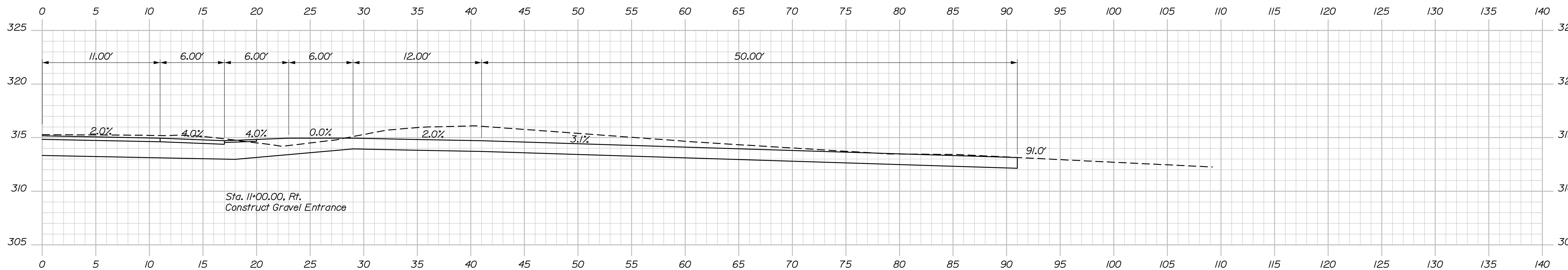
Sta. 9+15.22, 14.00' Lt. to Sta. 9+35.70, 14.00' Lt.
Install Bridge Transition Type I

9+25.00

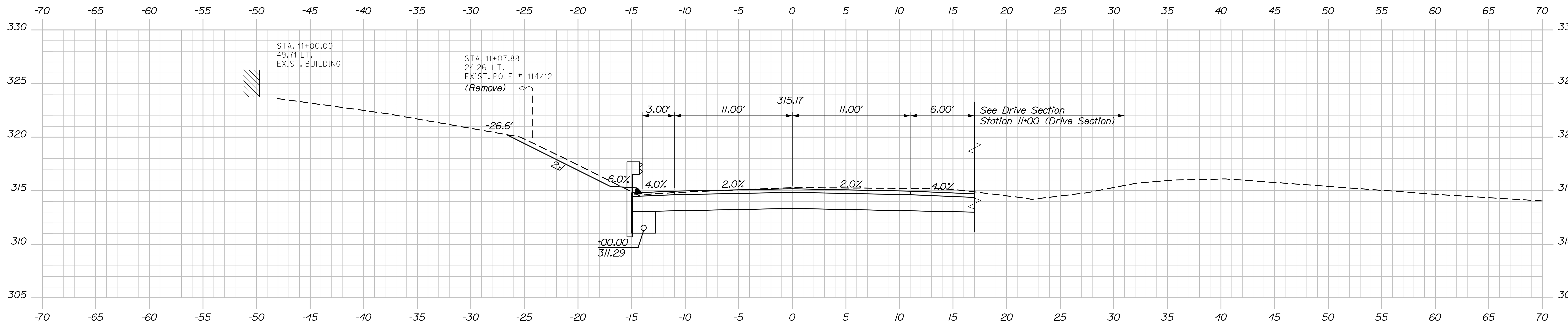
Sta. 9+23.61, 14.00' Rt. to Sta. 9+44.09, 14.00' Rt.
Install Bridge Transition Type I

HNTB

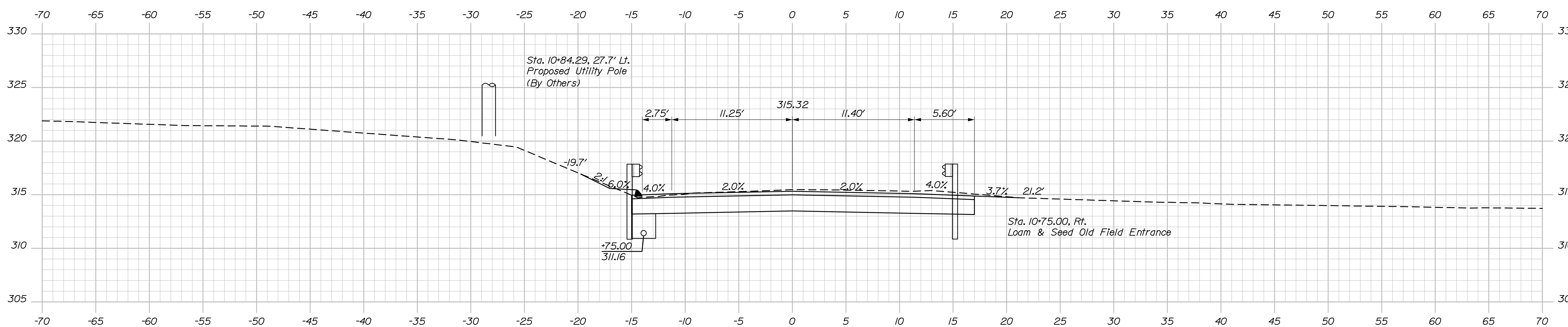
Sta. 9+25.00 to Sta. 10+50.00



11+00.00
(Drive Section)



11+00.00



Sta. 10+66.30, 14.00' Lt. to Sta. 11+16.27, 14.00' Lt.
Install 31" W-Beam Guardrail Mid-Way Splice (Length = 50.0 LF)

10+75.00

Sta. 10+74.78, 14.00' Rt. to Sta. 10+89.79, 30.43' Rt.
Install 31" W-Beam Guardrail Mid-Way Splice, 15' Radius (Length = 25.0 LF) w/ Terminal End

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0222500

WIN
022250.00

BRIDGE PLANS

BRIDGE NO. 5021

	BY	DATE
PROJ. MANAGER	E. Raymond	
DESIGN-DETAILED	A. Sweet	
CHECKED-REVIEWED	C. Molloy	12/23
DESIGN2-DETAILED2	L. Driscoll	12/23
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

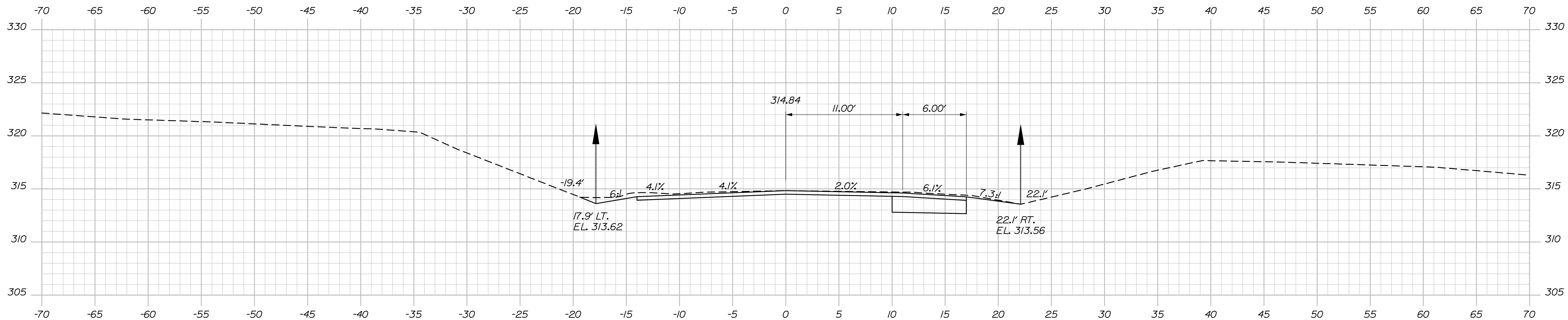
KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

CROSS SECTIONS

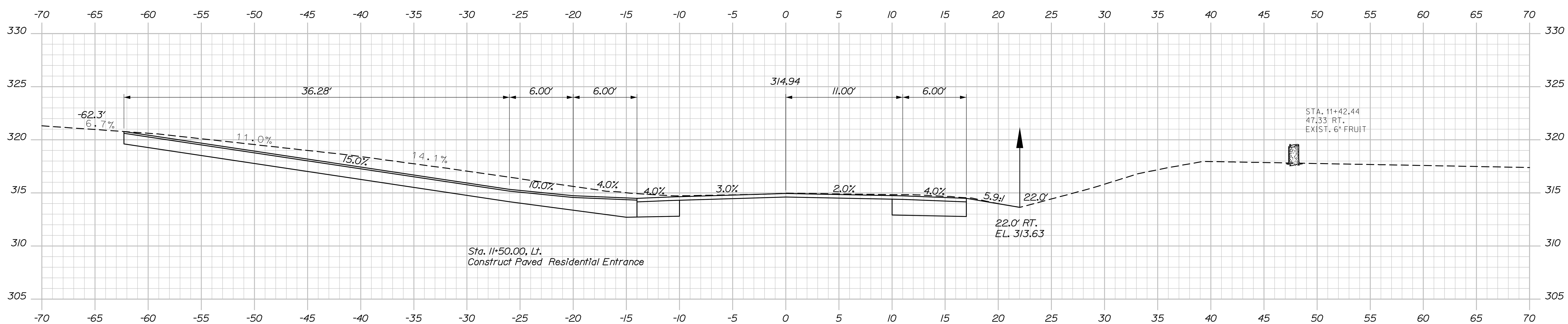
SHEET NUMBER
15
OF 28

Sta. 10+75.00 to Sta. 11+00.00

Date:12/13/2023
Username:
Division:
Filename: z_Xsect.dgn

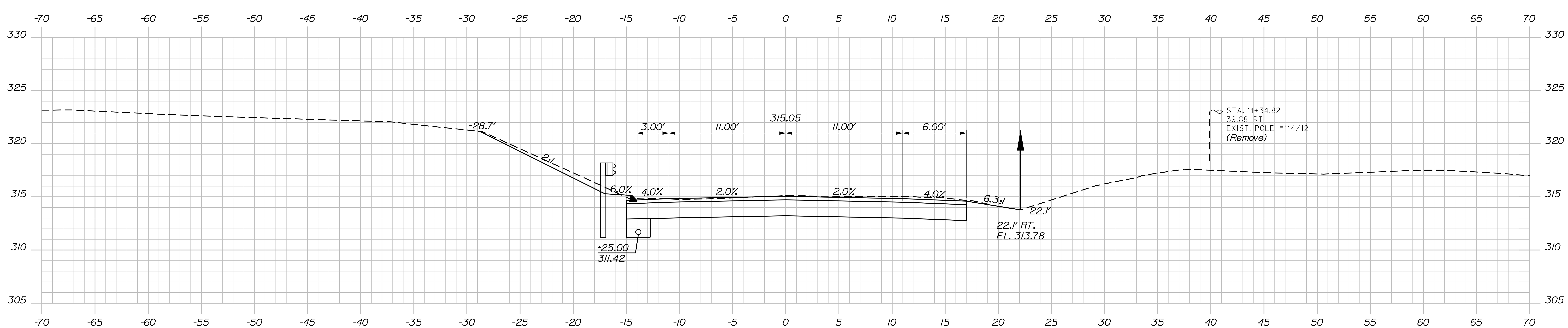


11+75.00



11+50.00

Sta. 11+50.00
End Transition
Begin Full Depth Pavement (4" HMA)



Sta. 11+16.27, 14.00' Lt. to Sta. 11+37.20, 25.54' Lt.
Install 31" W-Beam Guardrail Mid-Way Splice, 25' Radius (Length = 25.0 LF) w/ Terminal End

11+25.00

Sta. 11+25.00
End Project WIN 022250.00
Begin Transition

Date:12/13/2023
Username:
Division:
Filename: z_Xsect.dgn

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
0222500
BRIDGE NO. 5021
WIN 022250.00
BRIDGE PLANS

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	E. Raymond	
CHECKED-REVIEWED	A. Sweet	
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

C. Molloy 12/23
L. Driscoll 12/23

SIGNATURE
P.E. NUMBER
DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

CROSS SECTIONS

HNTB

SHEET NUMBER
16
OF 28

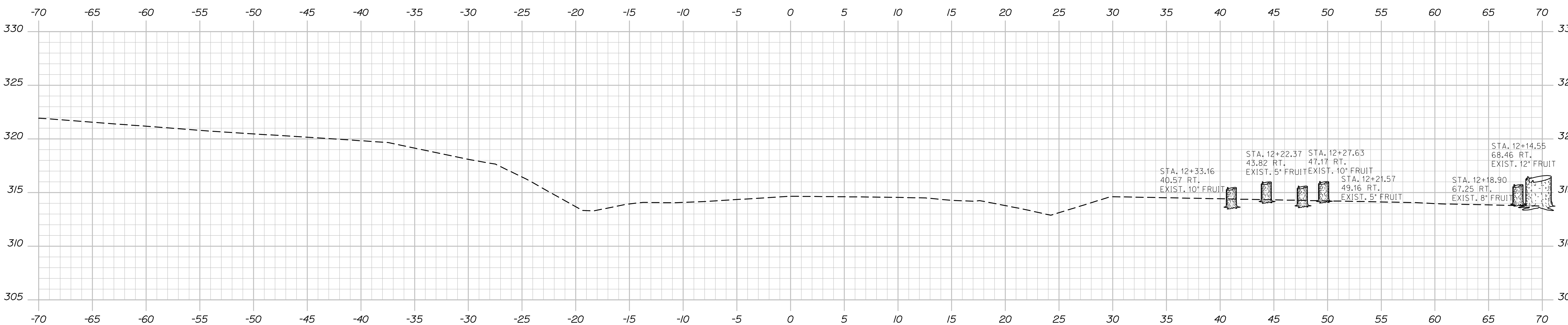
Sta. 11+25.00 to Sta. 11+75.00

Date:12/13/2023

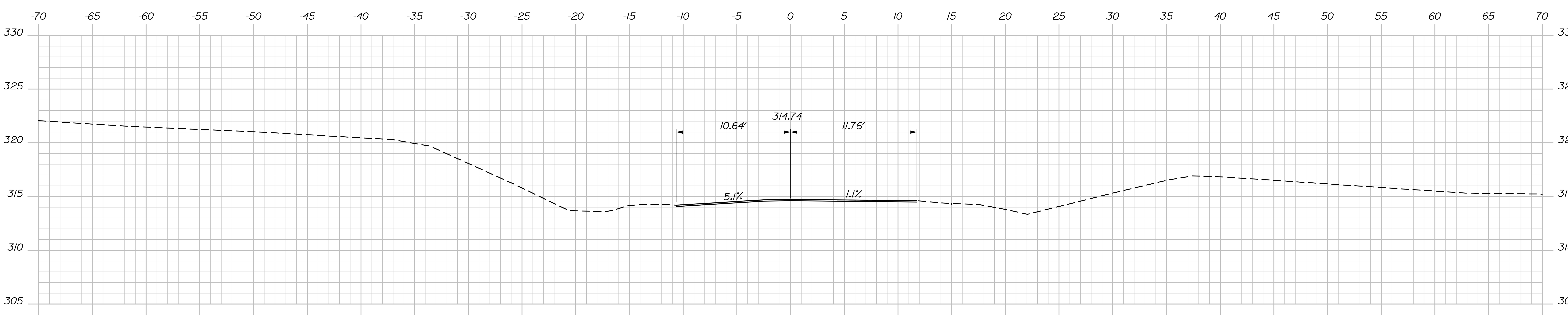
Username:

Division:

Filename: z_Xsect.dgn



12+25.00



12+00.00

Sta. 11+95.00
End Full Depth Pavement (4" HMA)
Begin 1½" Mill & Overlay

Sta. 12+00.00
End 1½" Mill & Overlay
Limit of Work
Match Existing

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0222500

WIN
022250.00

BRIDGE NO. 5021

BRIDGE PLANS

	BY	DATE
PROJ. MANAGER	E. Raymond	
DESIGN-DETAILED	A. Sweet	
CHECKED-REVIEWED	C. Malloy	12/23
DESIGN2-DETAILED2	L. Driscoll	12/23
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

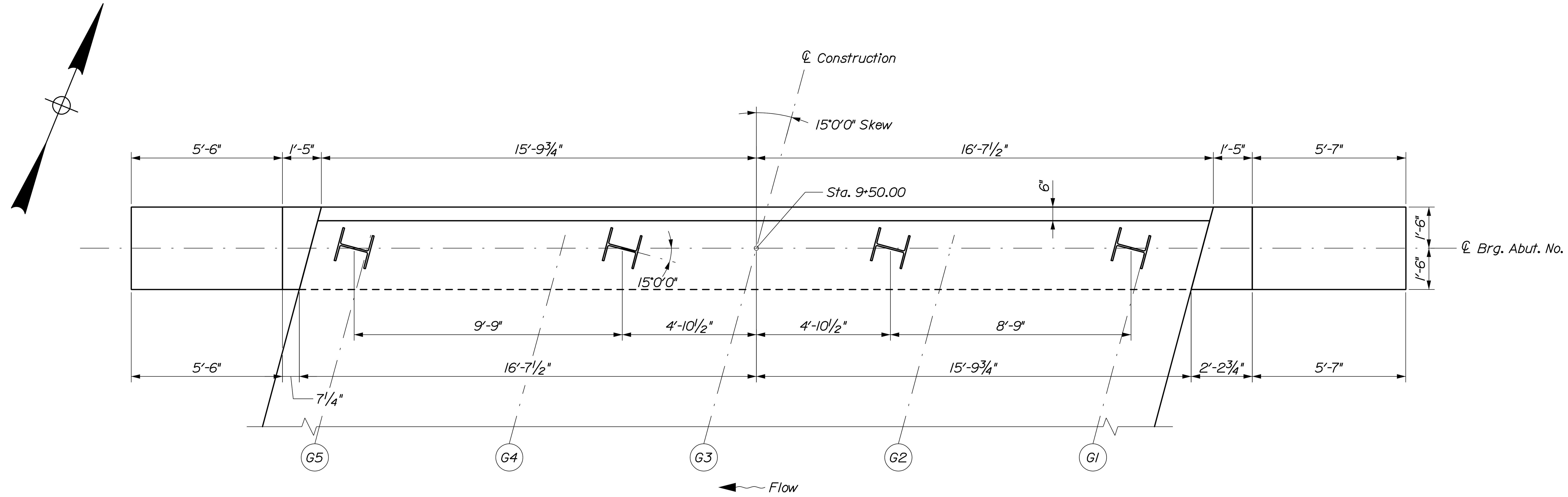
DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

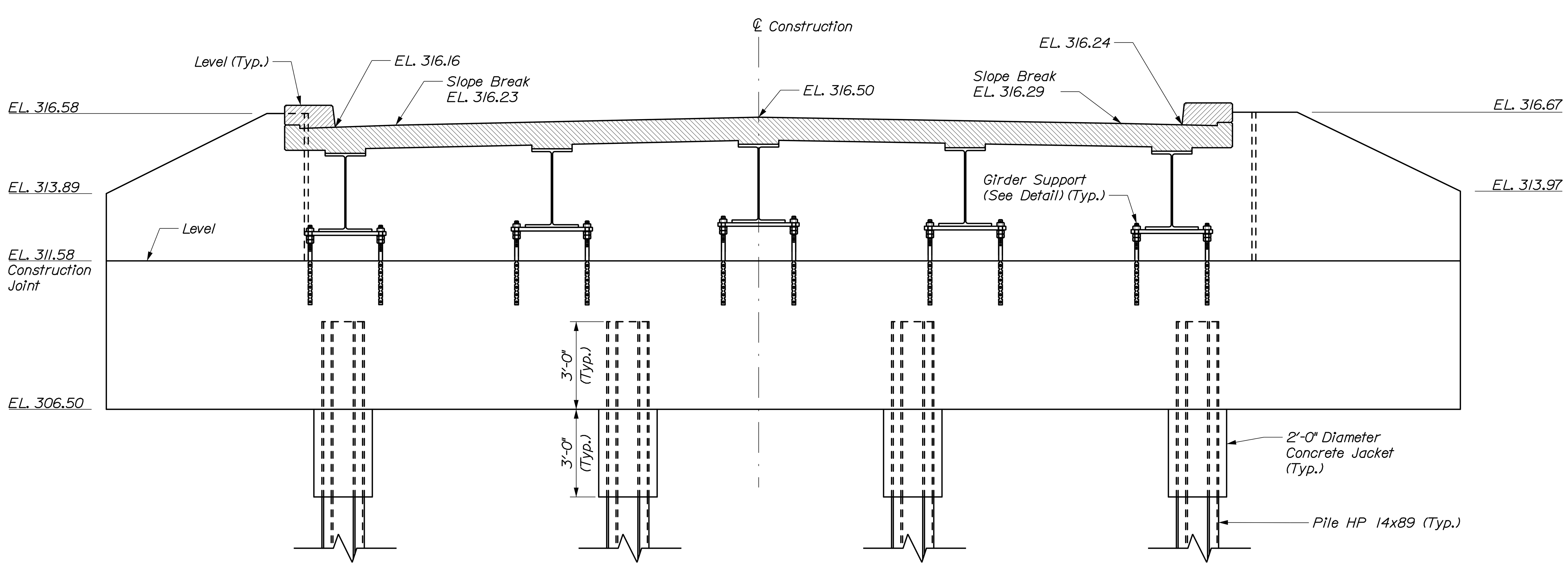
CROSS SECTIONS

SHEET NUMBER
17
OF 28

Sta. 12+00.00 to Sta. 12+25.00



ABUTMENT NO. 1 PLAN



ABUTMENT NO. 1 ELEVATION

ABUTMENT NO. 1 BOTTOM OF GIRDER ELEVATIONS	
Girder	Elevation
G1	312.65
G2	312.77
G3	312.89
G4	312.73
G5	312.58

ABUTMENT NOTES

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

2. All elevations are provided at centerline of bearing unless otherwise noted.

3. Cover joints where waterstops are not required in accordance with Standard Details Section 502.

4. Place drains with a 4-inch diameter in the breastwall and wingwalls at 10 feet maximum spacing. The exact location will be determined by the Resident.

5. Abutments and wingwalls shall be backfilled with Granular Borrow for Underwater Backfill. Pay limits will be the structural excavation limits as shown on the "Abutment Details" sheet.

6. Payment for concrete jacket around the tops of the H-piles will not be paid for directly. Payment shall be incidental to Item 502.219, Structural Concrete, Abutments and Retaining Walls. Fill concrete may be used for the concrete jackets.

7. Install Drainage Geocomposite behind the abutments and wingwalls up to the approach slab seat elevation in accordance with Special Provision Section 620, Drainage Geocomposite.

8. The temporary girder supports, including studs and fasteners, leveling plates, and any associated hardware and labor required for installation shall not be paid for directly. Payment will be made under Item, No. 502.219. Structural Concrete, Abutments and Retaining Walls.

9. Integral concrete wearing surface shall have a milled finish (See Superstructure Notes). All deck geometry shown is for the final condition, after the wearing surface has been milled.

PILE NOTES

1. The maximum factored pile load is 330 kips for the Strength I Limit State.

2. Piles shall be driven to the required nominal resistance on or within bedrock in accordance with Standard Specification Section 501.

3. Estimate of in-place piles required:

Abutment No. 1: 4 - HP 14 x 89 @ 53 ft
Abutment No. 2: 2 - HP 14 x 89 @ 53 ft
1 - HP 14 x 89 @ 83 ft
1 - HP 14 x 89 @ 101 ft

The order lengths of the piles shall include an additional 5 feet of length for each test pile to accommodate dynamic pile testing equipment and any additional pile length needed to accommodate leads, template, and driving system.

4. H-pile material shall be ASTM A572, Grade 50.

5. H-Pile splices shall be in accordance with Standard Detail 501(03).

6. All piles shall be equipped with a pile tip in accordance with Standard Specification Subsections 501.048, Prefabricated Pile Tips and 711.10 H-Beam Piles, Spliced and Tips.

7. Piles shall not be out of position shown by more than 2 inches in any direction.

8. 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.

9. The Contractor shall perform 2 dynamic load tests with 24-hour (minimum) restrike tests to confirm the nominal resistance 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. Each dynamic test shall be performed on the first production pile driven at each abutment.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0225000

WIN
022250.00

BRIDGE PLANS

BRIDGE NO. 5021

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	N. Boert / K. Belisle	12/23
CHECKED-REVIEWED	H. Walton / A. Stephens	12/23
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

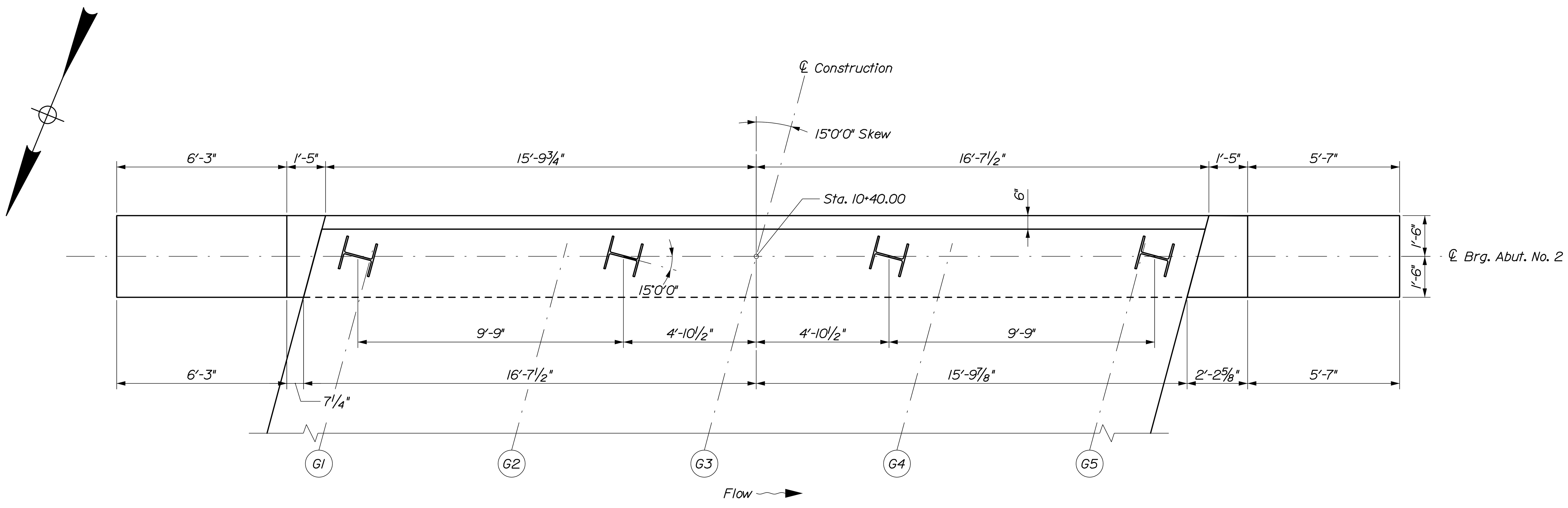
SIGNATURE
P.E. NUMBER
DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

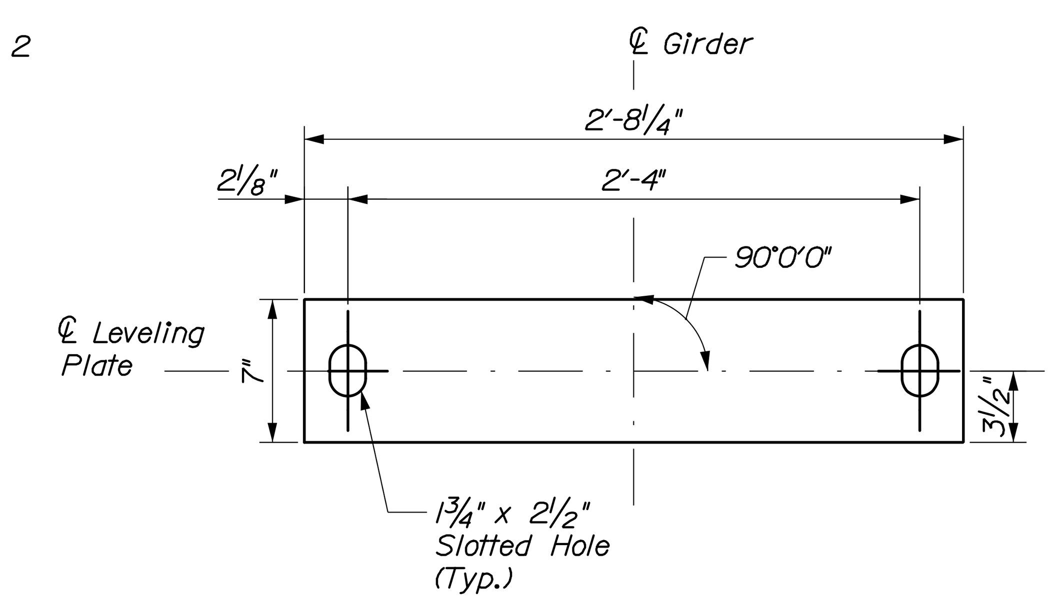
ABUTMENT NO. 1

SHEET NUMBER
18
OF 28

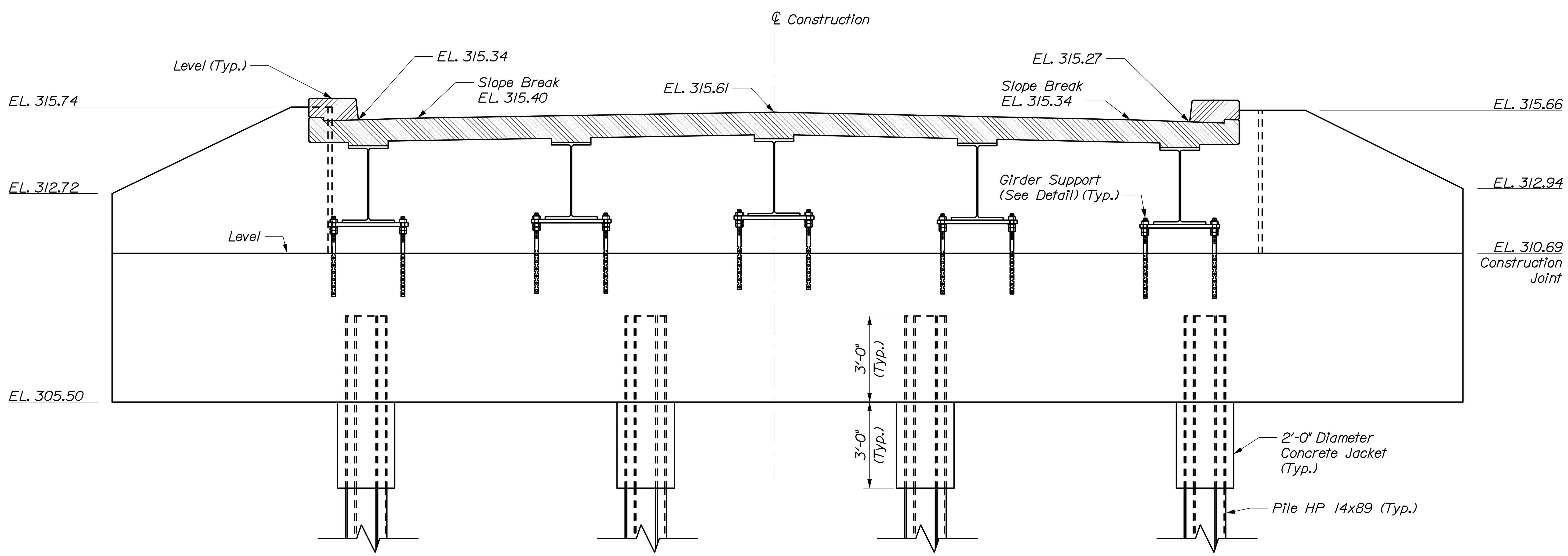
Filename: 018_Abutment 1.dgn
Division:
Username:
Date:12/13/2023



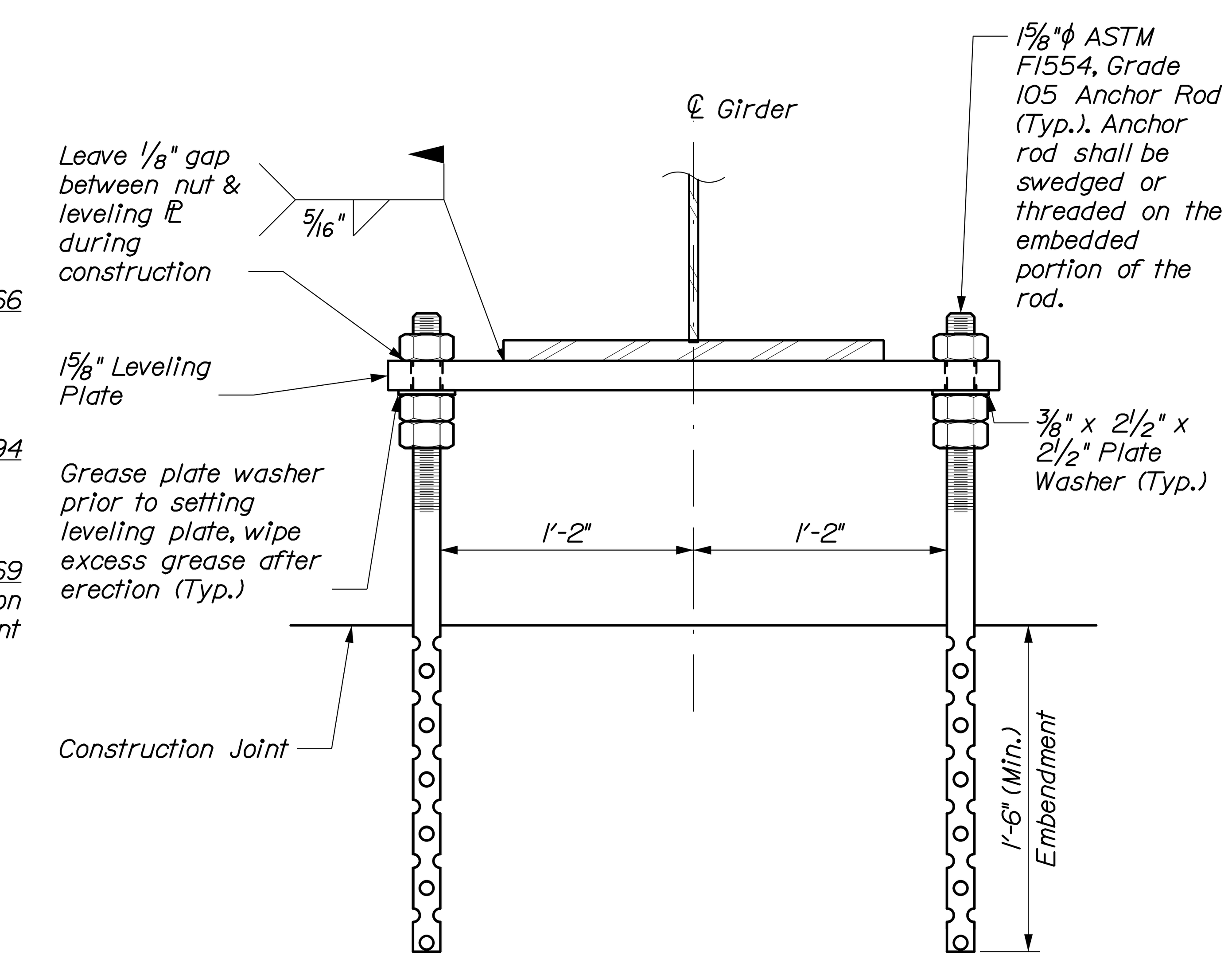
ABUTMENT NO. 2 PLAN



LEVELING PLATE



ABUTMENT NO. 2 ELEVATION



GIRDER SUPPORT DETAIL

ABUTMENT NO. 2
BOTTOM OF GIRDER
ELEVATIONS

Girder	Elevation
G1	311.75
G2	311.87
G3	311.99
G4	311.84
G5	311.69

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

02225000

WIN
022250.00

BRIDGE NO. 5021
BRIDGE PLANS

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	N. Baert	
CHECKED-REVIEWED	T. Poulin	
DESIGN2-DETAILED2	K. Belisle	12\23
DESIGN3-DETAILED3	A. Stephens	12\23
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

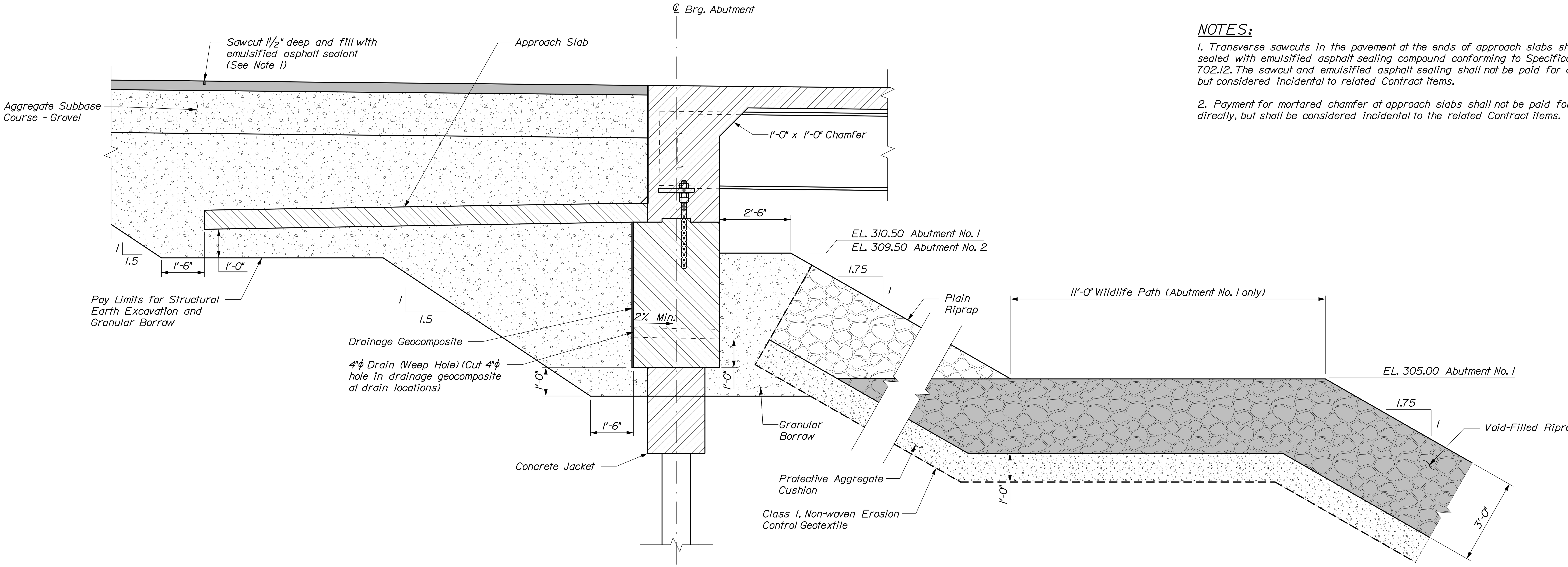
SIGNATURE
P.E. NUMBER
DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

ABUTMENT NO. 2

SHEET NUMBER
19
OF 28

Filename: 019_Abutment 2.dgn
Division:
Username:
Date:12/13/2023

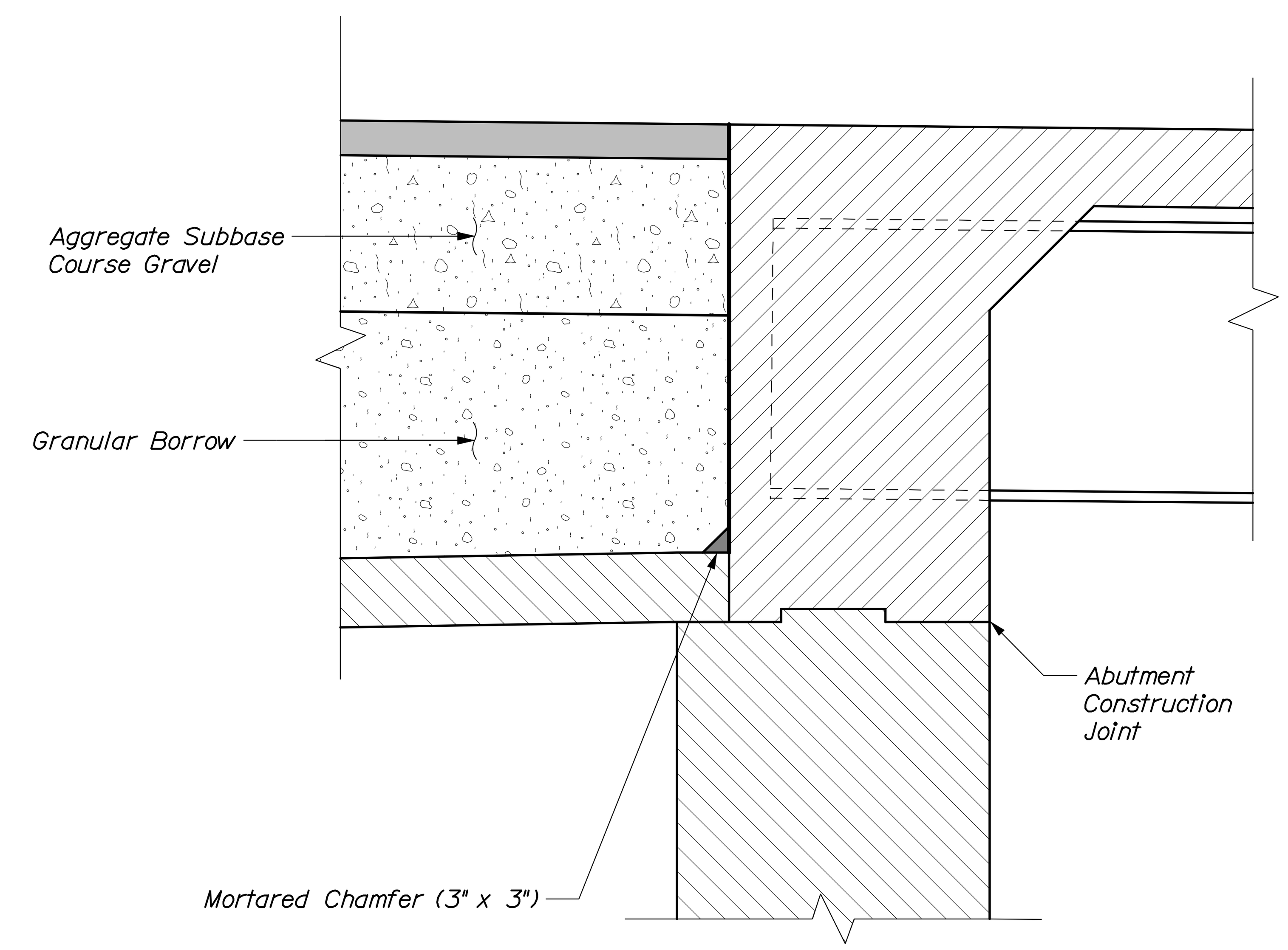


ABUTMENT BACKFILL DETAIL

NOTES:

1. Transverse sawcuts in the pavement at the ends of approach slabs shall be sealed with emulsified asphalt sealing compound conforming to Specification 702.12. The sawcut and emulsified asphalt sealing shall not be paid for directly, but considered incidental to related Contract items.

2. Payment for mortared chamfer at approach slabs shall not be paid for directly, but shall be considered incidental to the related Contract items.



ABUTMENT SLAB SEAT DETAIL

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0222500

BRIDGE PLANS
WIN
022250.00
BRIDGE NO. 5021

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	N. Boert	K. Belisle	12/23
CHECKED-REVIEWED	T. Poulin	A. Stephens	12/23
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE
P.E. NUMBER
DATE

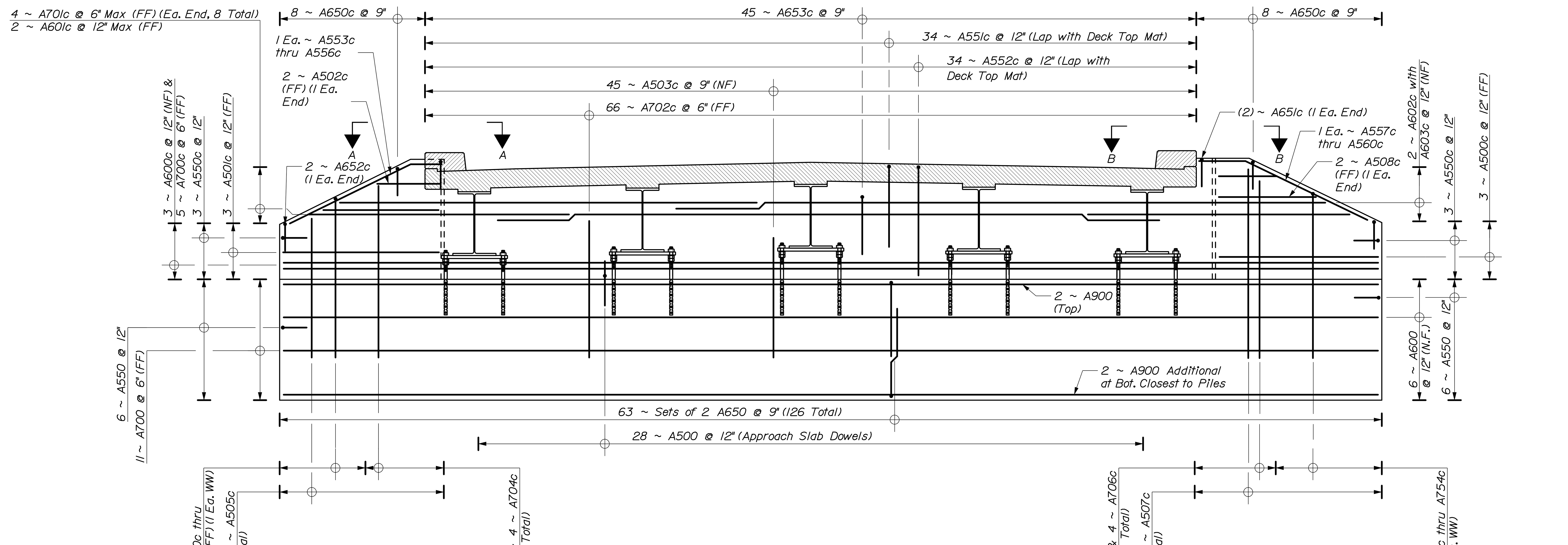
KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

ABUTMENT DETAILS

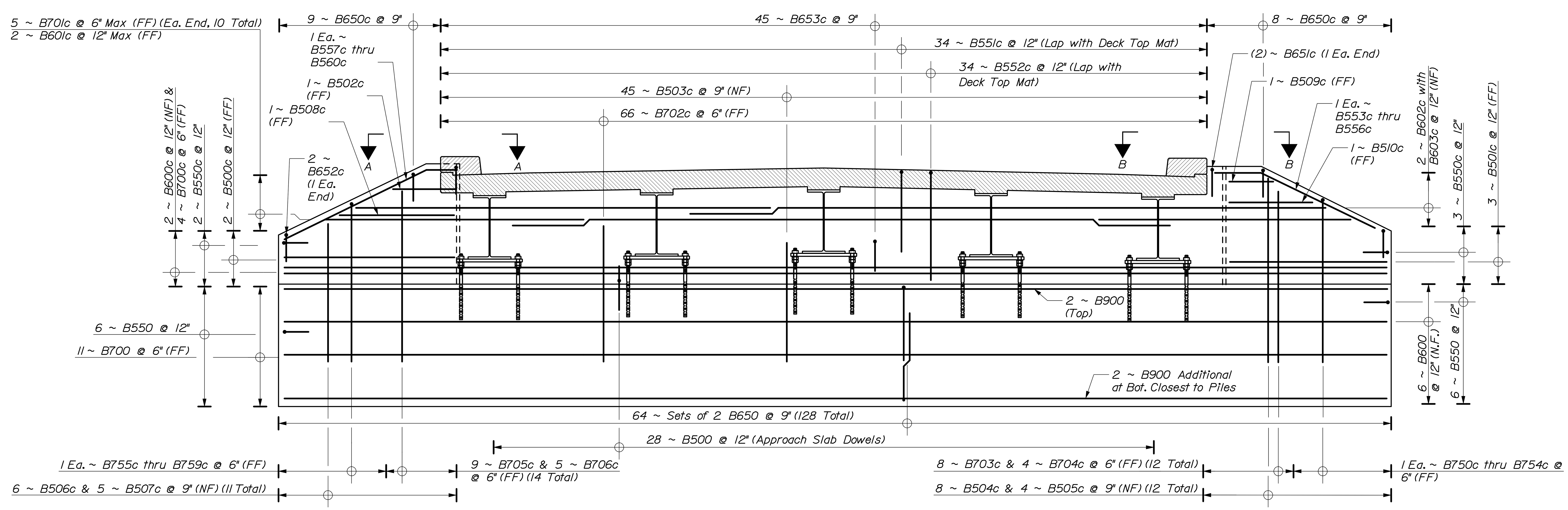
SHEET NUMBER
20
OF 28

Filename: 020_Abutment Details.dgn
Division:
Username:
Date:12/13/2023

Date:12/13/2023
Username:
Division:
Filename: 021_Abutment Reinforcing.dgn



ABUTMENT NO. 1 REINFORCING



ABUTMENT NO. 2 REINFORCING

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0222500

WIN
022250.00

BRIDGE PLANS

BRIDGE NO. 5021

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	N. Boert	K. Belisle 12/23
CHECKED-REVIEWED	H. Walton	A. Stephens 12/23
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

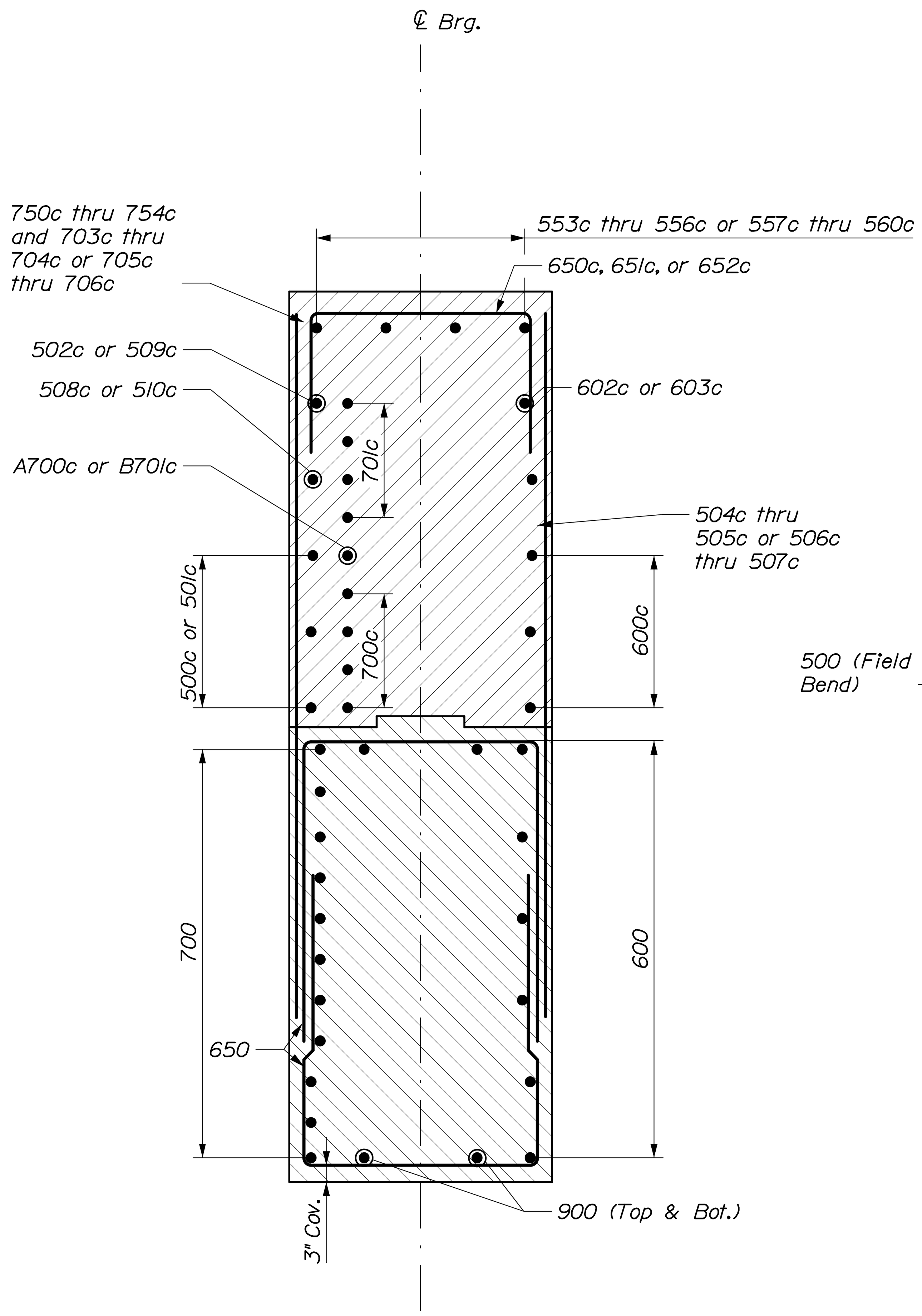
P.E. NUMBER

DATE

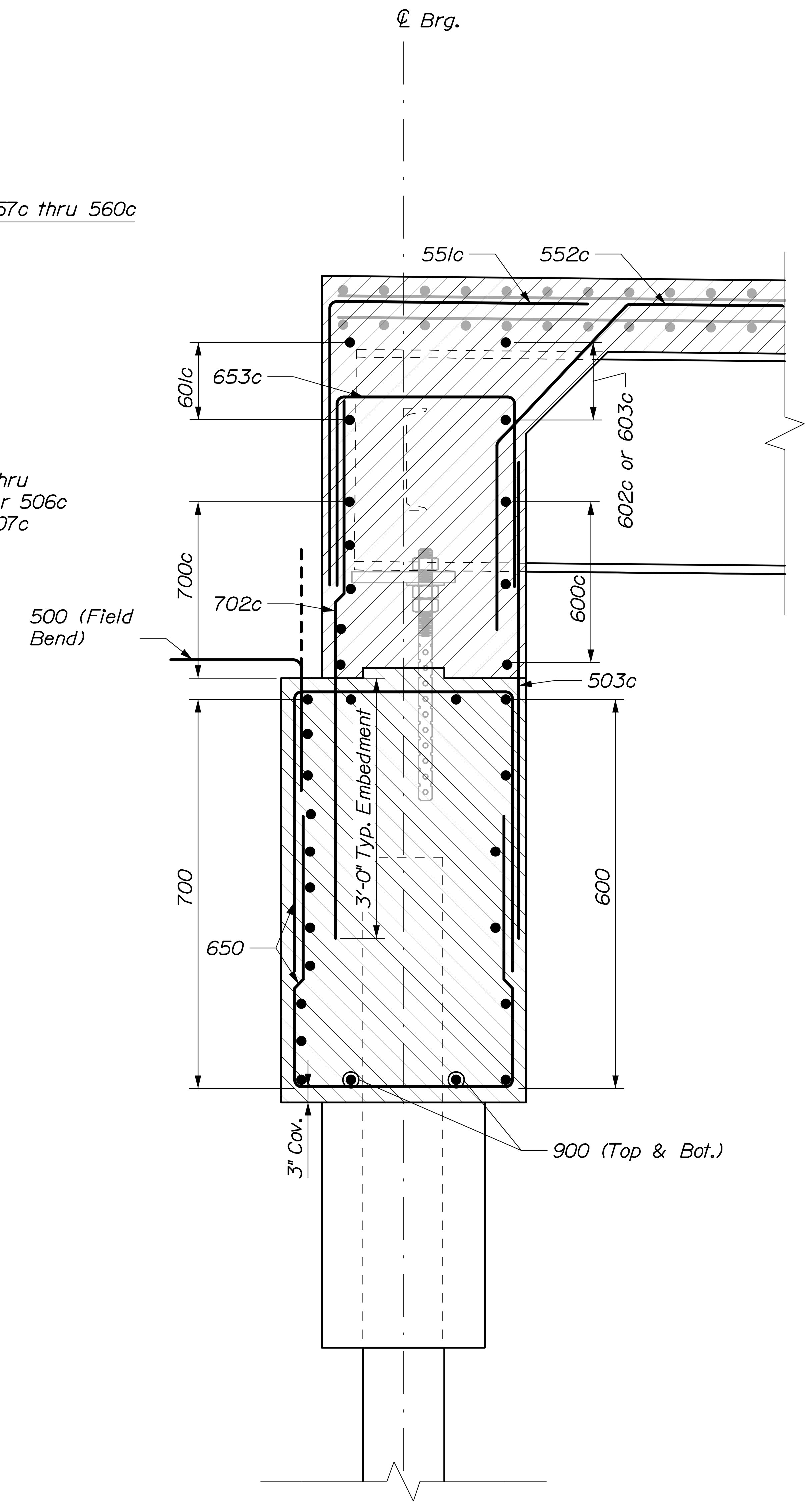
KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

ABUTMENT REINFORCING

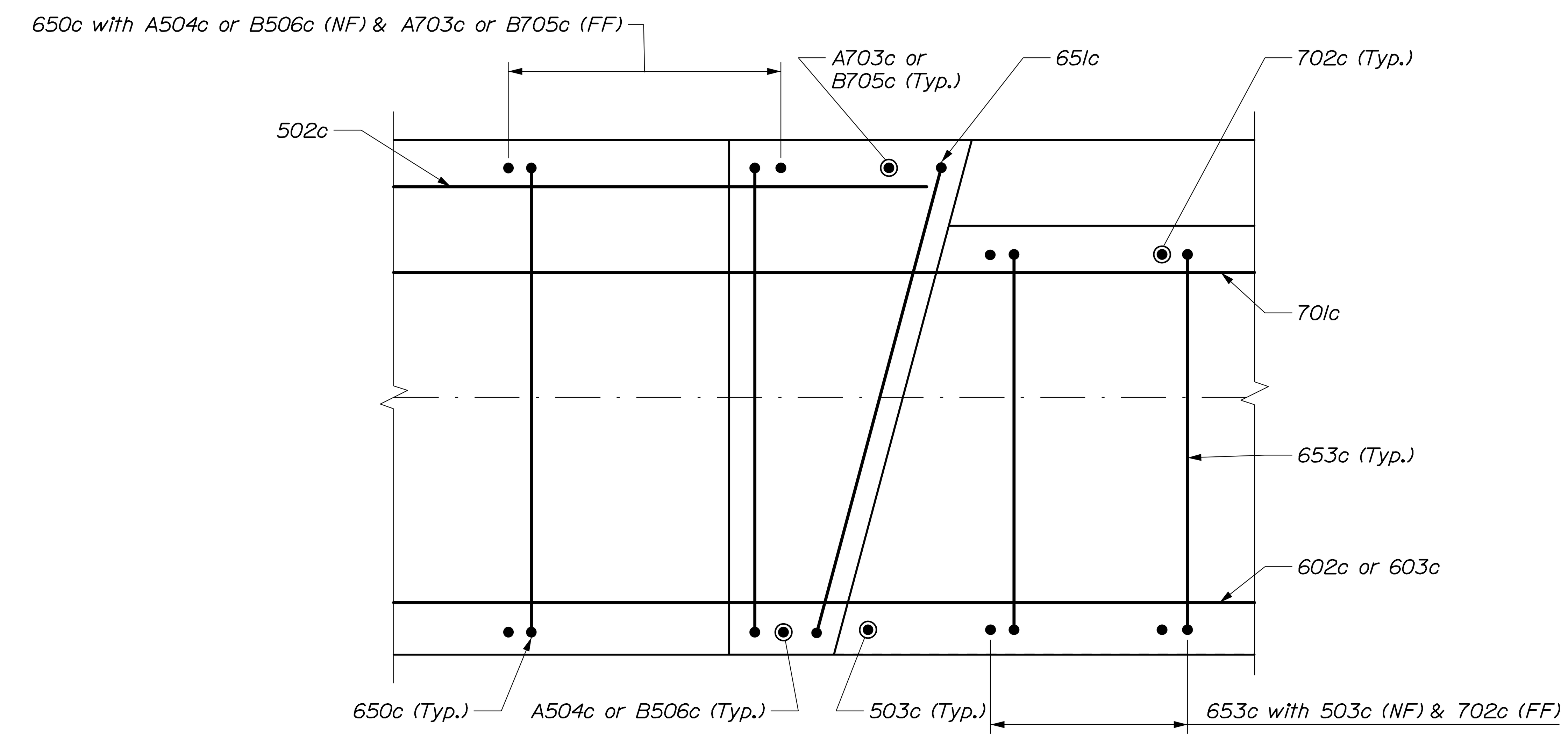
SHEET NUMBER
21
OF 28



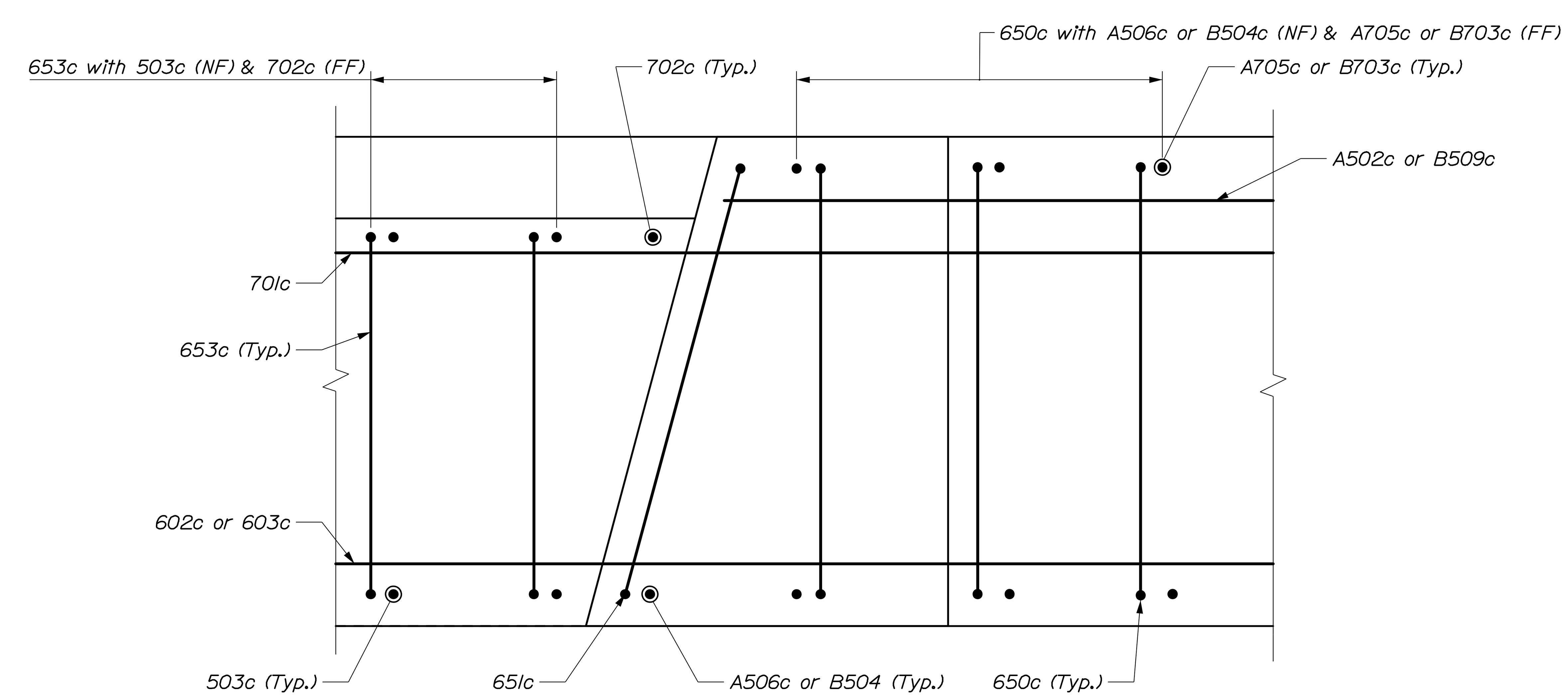
WINGWALL SECTION



ABUTMENT SECTION



SECTION A-A
OBTUSE CORNER DETAIL



SECTION B-B
ACUTE CORNER DETAIL

NOTES:

1. Deck reinforcing shown screened for clarity.

2. Letter "A" or "B" omitted from bars in Sections or Details when the bar has the same numerical designation in each abutment.

HNTB

Date:12/13/2023

Username:

Division:

Filename: 022_Abutment Sections.dgn

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

02225000

WIN
022250.00

BRIDGE NO. 5021

BRIDGE PLANS

		BY	DATE
PROJ. MANAGER	N. Boert		
DESIGN-DETAILED	H. Walton	K. Belisle	12/23
CHECKED-REVIEWED		A. Stephens	12/23
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

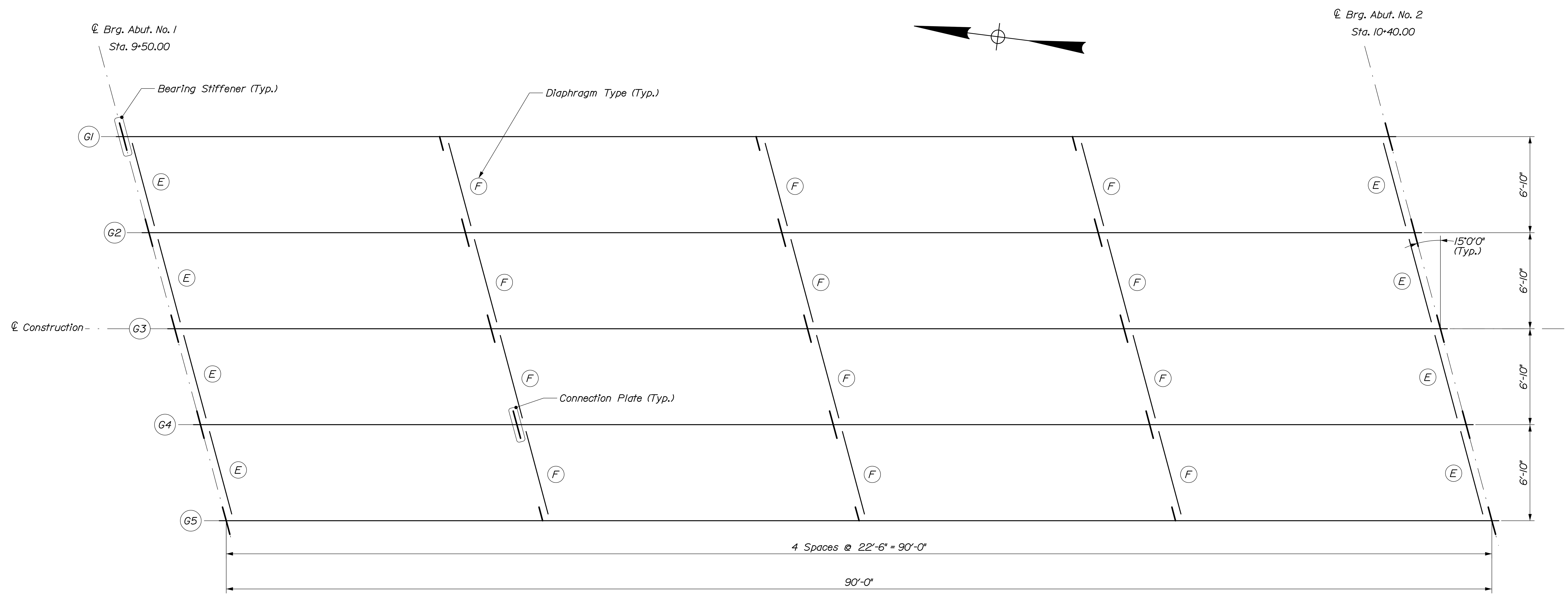
P.E. NUMBER

DATE

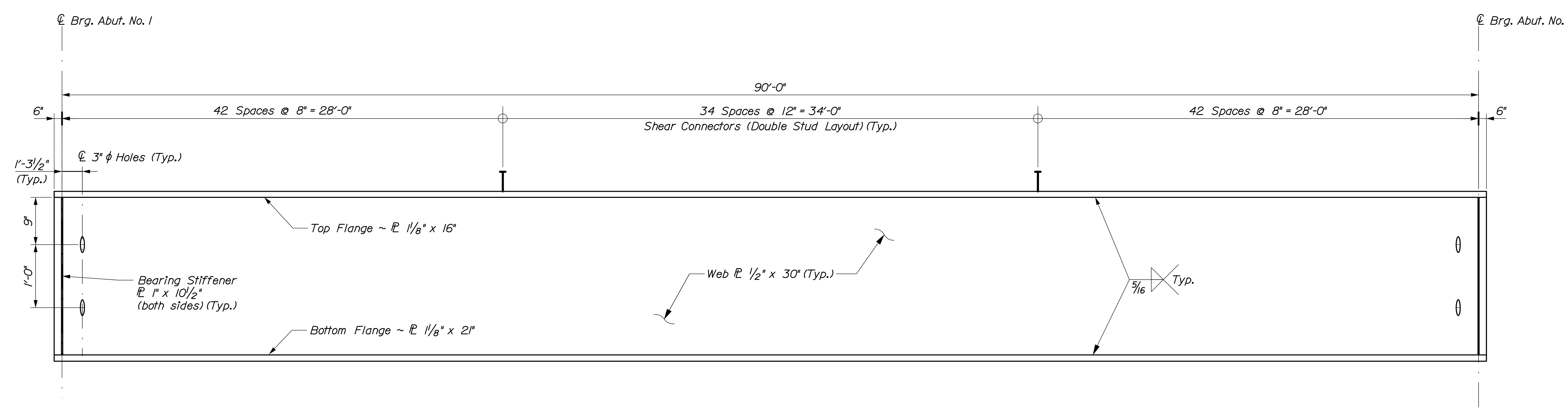
KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

ABUTMENT SECTIONS

SHEET NUMBER
22
OF 28



FRAMING PLAN



GIRDER ELEVATION

238 Shear Connectors per Girder, (1190 studs total)

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0222500

WIN
022250.00

BRIDGE NO. 5021

BRIDGE PLANS

	BY	DATE
PROJ. MANAGER	N. Boert	
DESIGN-DETAILED	K. Belisle	12\23
CHECKED-REVIEWED	T. Poulin / A. Stephens	12\23
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

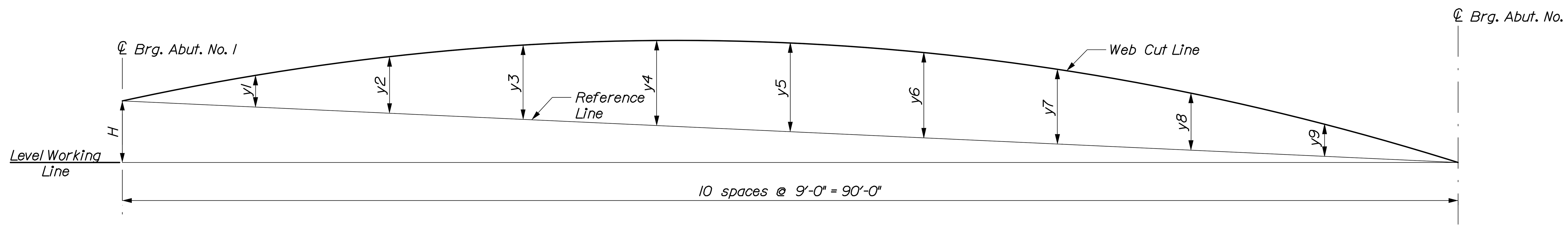
DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

FRAMING PLAN

SHEET NUMBER
23
OF 28

Date:12/13/2023
Username:
Division:
Filename: 023_Framing Plan.dgn



CAMBER DIAGRAM

GIRDER	DEAD LOAD COMPONENT	DEAD LOAD DEFLECTIONS (INCHES)										
		℄ Brg. Abut. No. 1	y1	y2	y3	y4	y5	y6	y7	y8	y9	℄ Brg. Abut. No. 2
All	Steel Dead Load	0.00	0.31	0.59	0.81	0.95	1.00	0.95	0.81	0.59	0.31	0.00
	Deck Concrete Load	0.00	1.10	2.08	2.85	3.34	3.51	3.34	2.85	2.08	1.10	0.00
	Superimposed Dead Load	0.00	0.08	0.15	0.21	0.24	0.26	0.24	0.21	0.15	0.08	0.00

GIRDER	TABLE OF CAMBER ORDINATES (INCHES)											
	H	℄ Brg. Abut. No. 1	y1	y2	y3	y4	y5	y6	y7	y8	y9	℄ Brg. Abut. No. 2
All	10.72	0.00	1.49	2.81	3.85	4.50	4.72	4.49	3.82	2.76	1.44	0.00

GIRDER	BOTTOM OF SLAB ELEVATIONS										
	℄ Brg. Abut. No. 1	0.1 x L	0.2 x L	0.3 x L	0.4 x L	0.5 x L	0.6 x L	0.7 x L	0.8 x L	0.9 x L	℄ Brg. Abut. No. 2
G1	315.48	315.48	315.47	315.44	315.39	315.31	315.21	315.08	314.93	314.76	314.59
G2	315.60	315.62	315.62	315.61	315.56	315.49	315.38	315.25	315.08	314.90	314.71
G3	315.72	315.73	315.74	315.72	315.68	315.61	315.50	315.36	315.20	315.02	314.82
G4	315.56	315.58	315.58	315.57	315.53	315.45	315.35	315.21	315.04	314.86	314.67
G5	315.41	315.41	315.39	315.36	315.31	315.24	315.13	315.00	314.85	314.69	314.52

STRUCTURAL STEEL NOTES

1. Camber ordinates, as shown, are computed to compensate for all dead load deflections and for the curvature of 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 1 foot from transverse butt-welds in the web plates and no transverse web or flange butt-welds shall be located within 1 foot 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. Intermediate crossframe or diaphragm connection plates may be either plumb or normal to the top flange.

6. Structural steel was designed with a vertical construction load of 50 lb/sf and a lateral wind velocity during construction of 115 mph.

7. At the Contractor's option, all Structural Steel may be Hot-Dipped Galvanized in accordance with Standard Specifications Section 506, Shop Applied Protective Coating, as approved by the Resident. Double Hot-Dipped galvanizing shall be approved by the Resident. Payment will be considered incidental to Item 506.9104, Thermal Spray Coating (Shop Applied), no separate payment will be made.

8. All bolts, nuts, and washers shall be hot dip galvanzied in accordance with ASTM A153.

9. Ends of girder webs shall be vertical under full dead load.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
0222500
WIN 022250.00
BRIDGE PLANS
BRIDGE NO. 5021

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	N. Baert	K. Belisle	12\23
CHECKED-REVIEWED	T. Poulin	A. Stephens	12\23
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

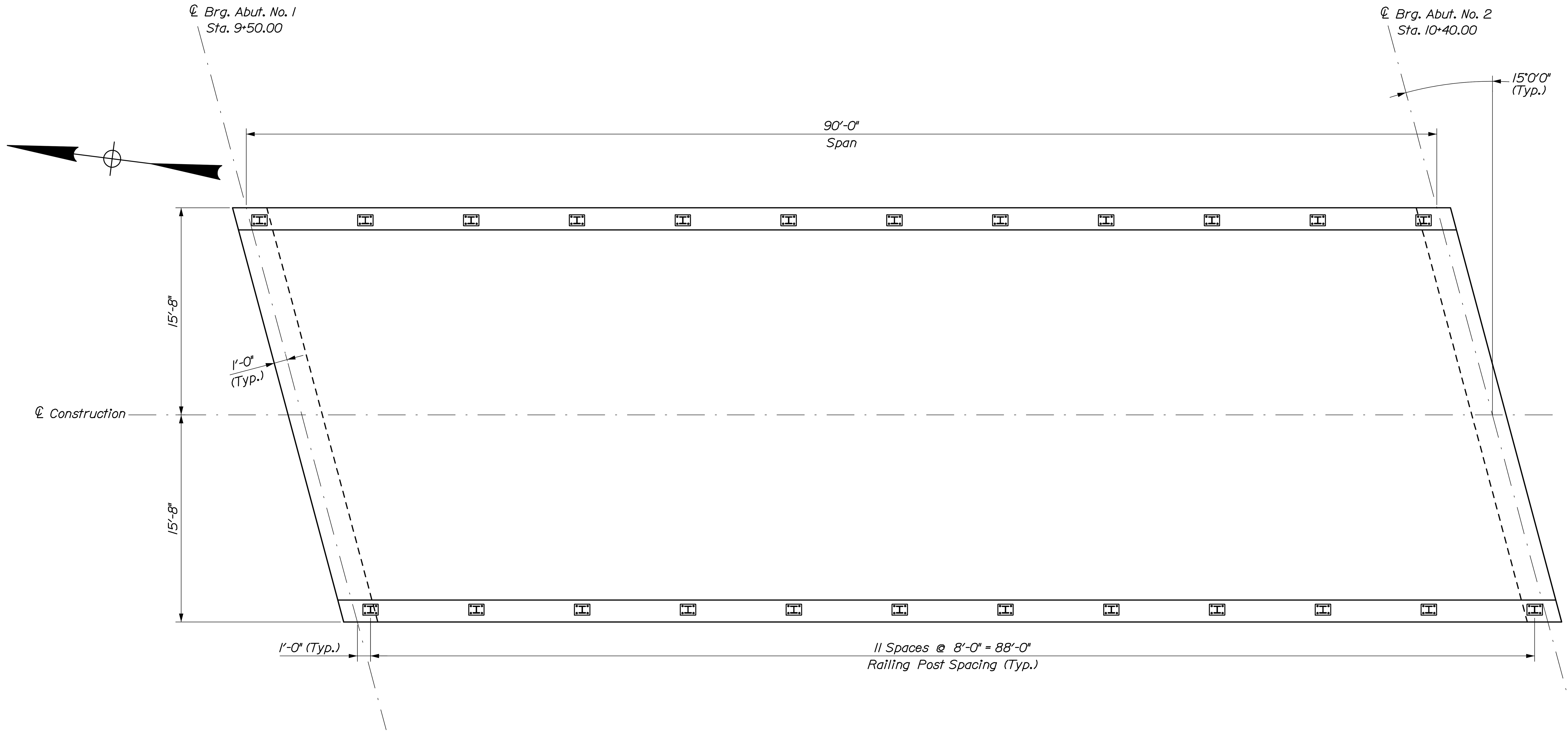
SIGNATURE
P.E. NUMBER
DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

STRUCTURAL STEEL DETAILS

SHEET NUMBER
24
OF 28

Filename: 024_StructuralSteelDetails.dgn
Division:
Username:
Date:12/13/2023



SUPERSTRUCTURE PLAN

SUPERSTRUCTURE NOTES

1. The theoretical blocking used for design of the structure is $2\frac{7}{8}$ inches at the centerline of bearing of the abutments. Refer to Standard Detail 502(03) for blocking details.

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

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

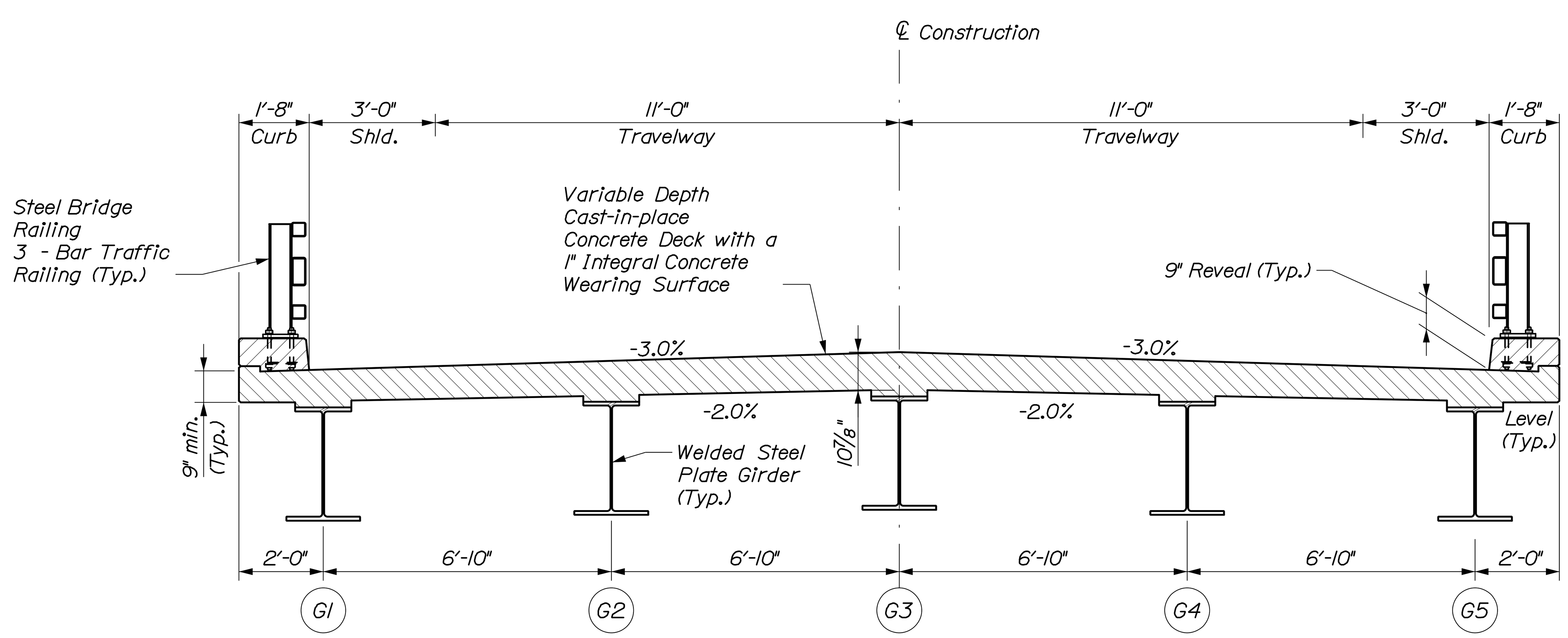
4. The superstructure slab and upper portions of the abutments shall be placed in one continuous operation and shall be kept plastic until the entire placement has been made.

5. Bar supports for GFRP reinforcement shall be plastic, dielectric material, or other approved material. See Special Provision Subsection 530.06 for additional requirements.

6. Precast Concrete Deck Panels are not allowed on this project.

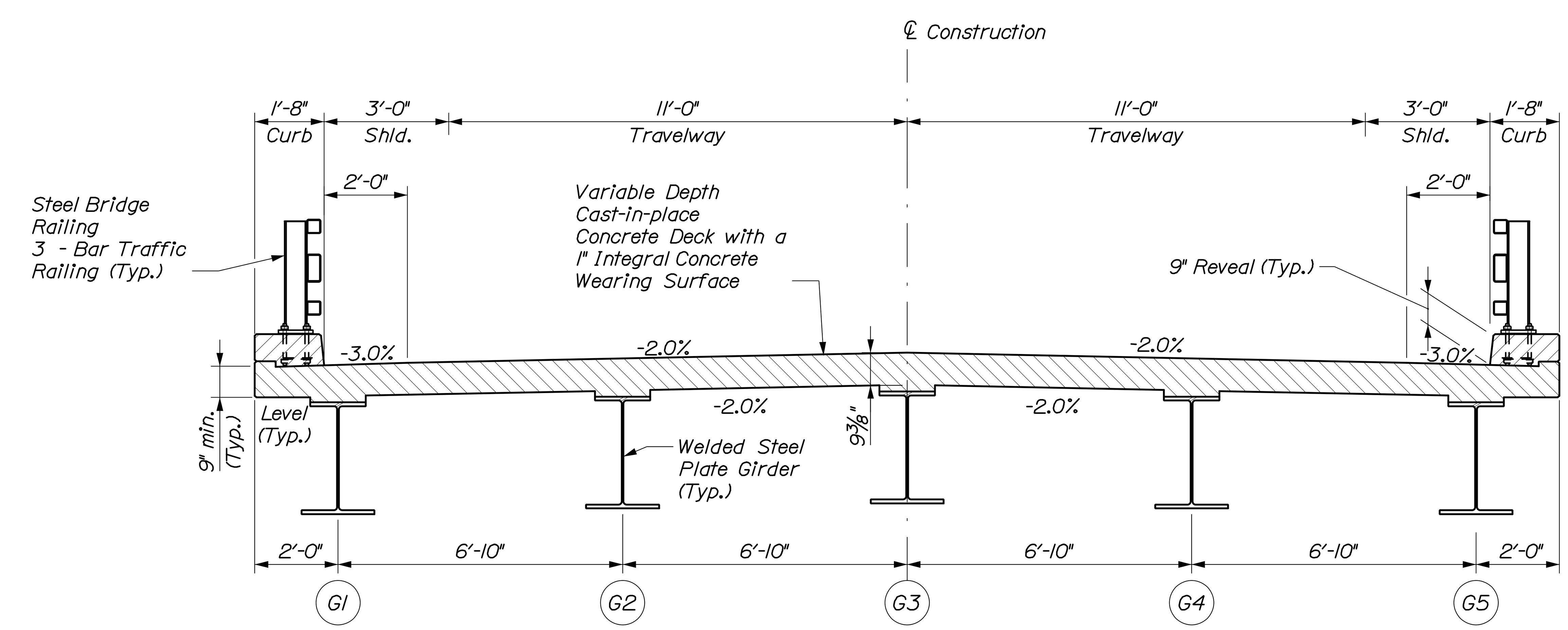
7. Anchor rods for the steel bridge rail posts shall be shortened by 1 inch to provide additional clearance between the top of the deck and the bottom of the anchor rod.

8. Integral concrete wearing surface shall have a milled finish. Milling shall be paid for under Item 202.31 - Profile Milling Concrete Wearing Surface.



DECK PLACEMENT TRANSVERSE SECTION

Prior to milling procedure



TRANSVERSE SECTION

Final deck section after milling procedure

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0222500

WIN 022250.00

BRIDGE PLANS

BRIDGE NO. 5021

		BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	N. Baert	K. Belisle	12\23
CHECKED-REVIEWED	T. Poulin	A. Stephens	12\23
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

SUPERSTRUCTURE PLAN

SHEET NUMBER
25
OF 28

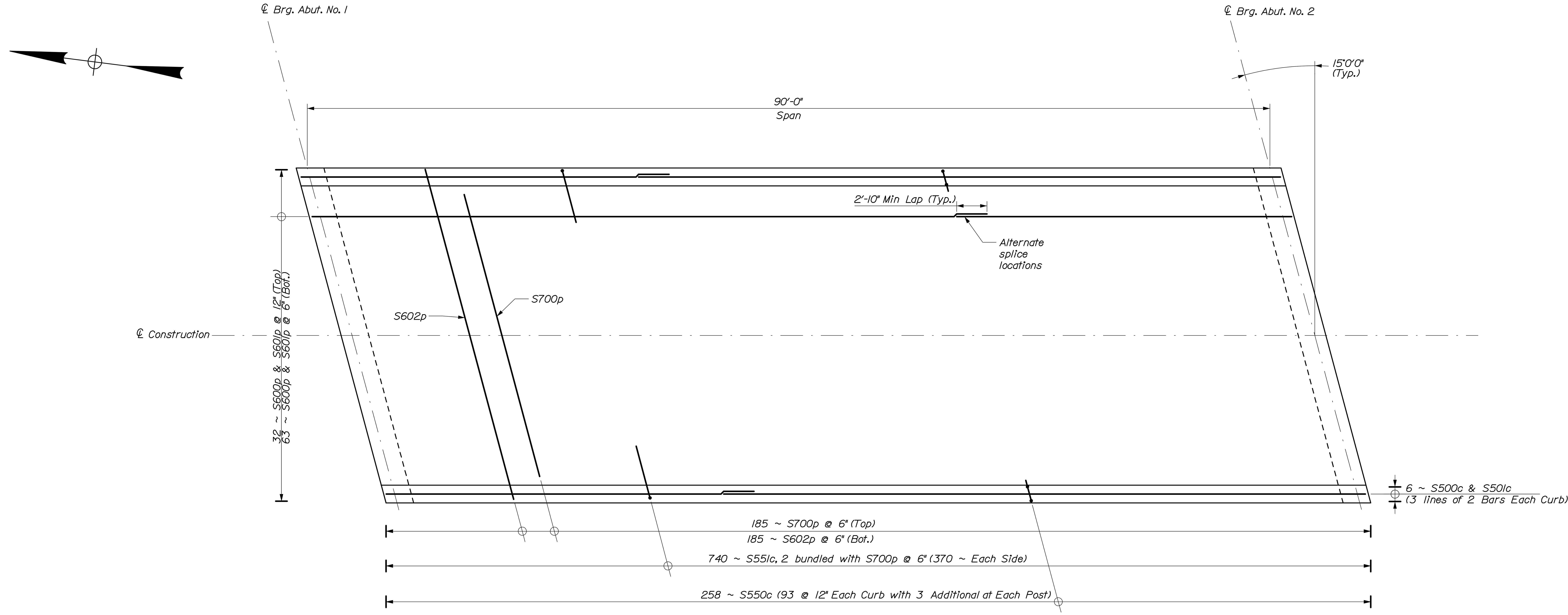
Date:12/13/2023

Username:

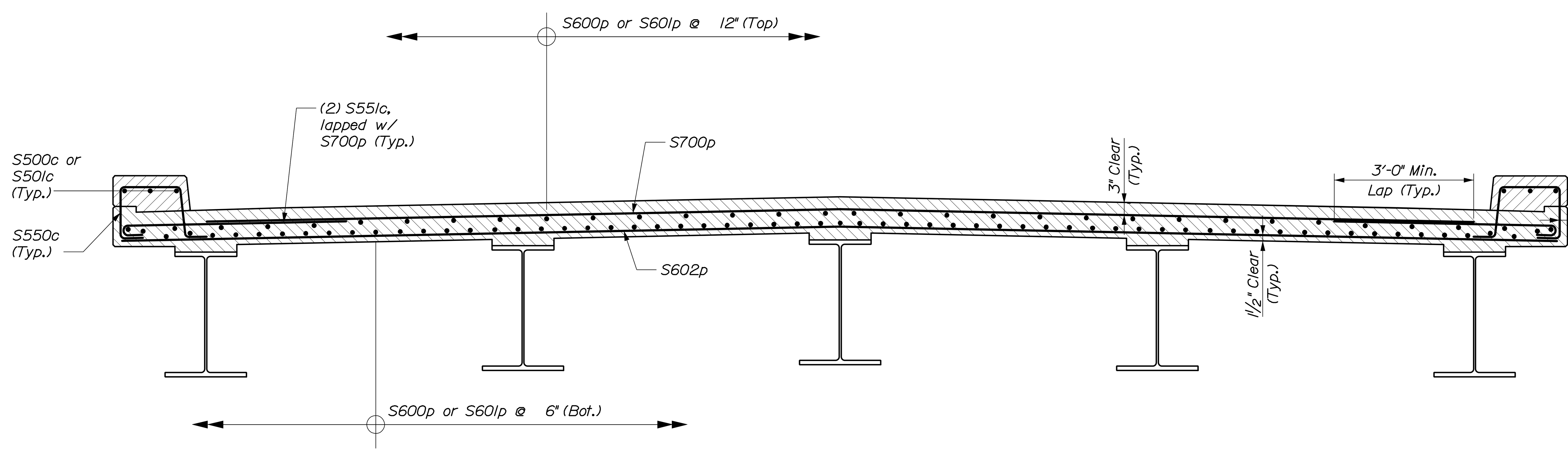
Division:

Filename: 025_Superstructure Plan.dgn

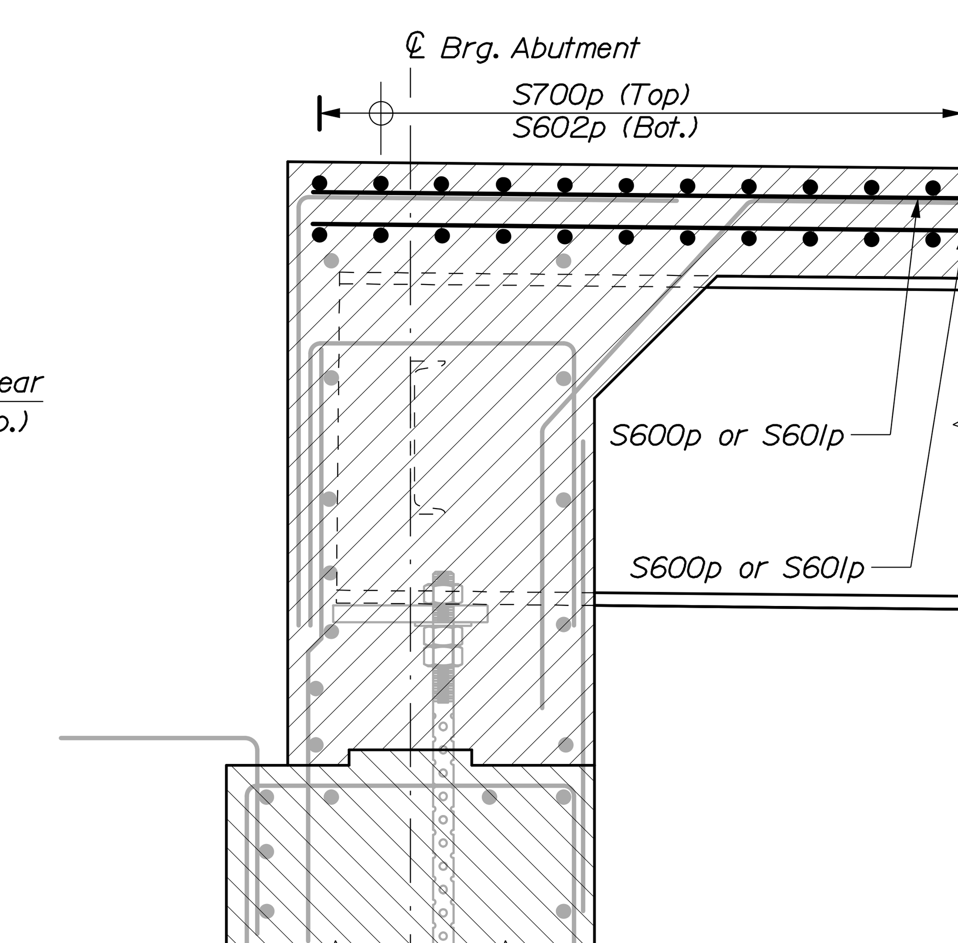
Filename: 026_Superstructure Reinforcing.dgn
Division:
Username:
Date:12/13/2023



SUPERSTRUCTURE REINFORCING PLAN



TRANSVERSE SECTION



PARTIAL LONGITUDINAL SECTION
(Abutment reinforcing shown screened for clarity)

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0222500

BRIDGE NO. 5021

WIN
022250.00

BRIDGE PLANS

		BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	G. Thompson	K. Belisle	12/23
CHECKED-REVIEWED	D. Guzzi	A. Stephens	12/23
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

SUPERSTRUCTURE
REINFORCING

SHEET NUMBER

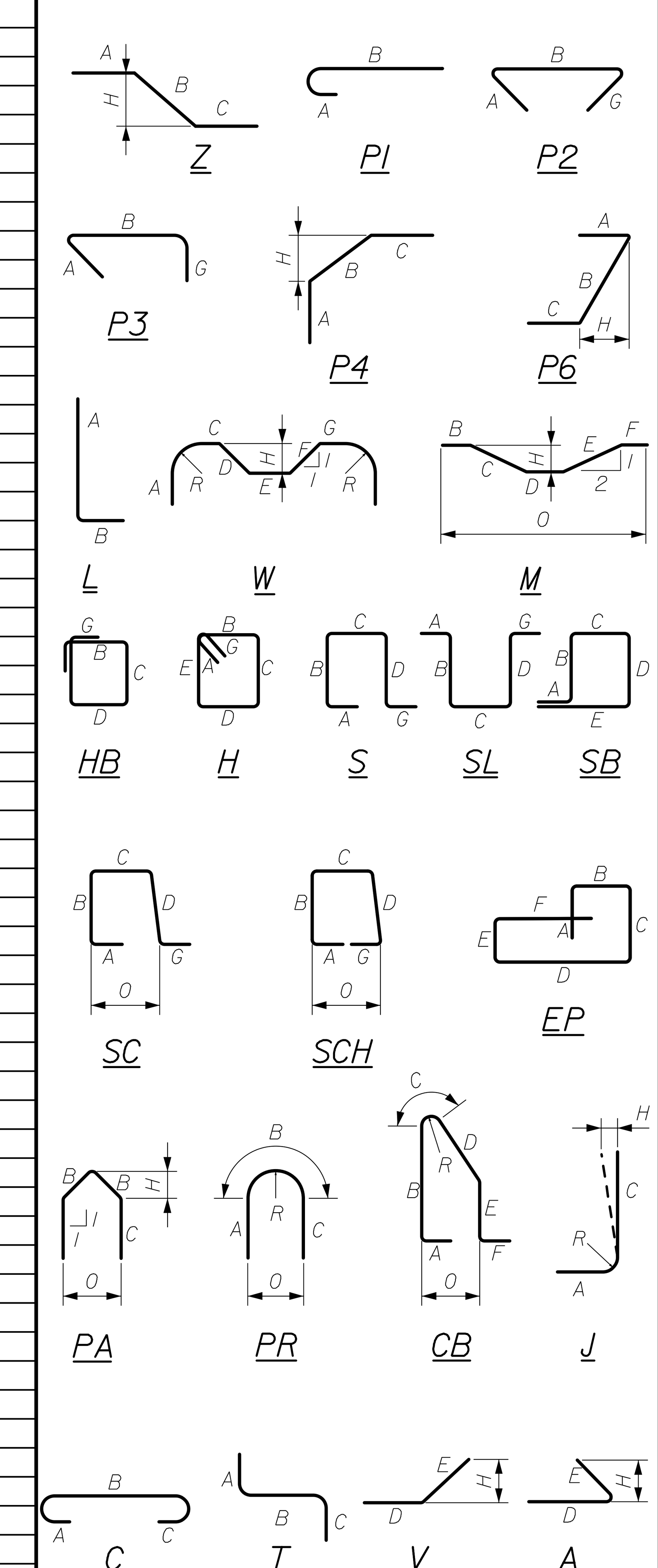
26

OF 28

STRAIGHT BARS			
MARK	QTY.	LENGTH	LOCATION
			Abutment No. 1 (Low-Carbon Chromium)
A500c	3	6'-8"	Horizontal Bars in East WW, above CJ, below WW Tip, FF
A501c	3	6'-7"	Horizontal Bars in West WW, above CJ, below WW Tip, FF
A502c	2	3'-1"	Horizontal Bar, above WW Tip, FF
A503c	45	6'-0"	Vertical Bar through CJ, in Abutment, NF
A504c	6	8'-1"	Vertical Bars, West WW, through CJ, NF
A505c	4	6'-8"	Vertical Bars, West WW, through CJ, NF
A506c	8	8'-2"	Vertical Bars, East WW, through CJ, NF
A507c	4	6'-9"	Vertical Bars, East WW, through CJ, NF
A508c	2	4'-10"	Horizontal Bar, above WW Tip, FF
A600c	3	46'-0"	Horizontal Bars above CJ, below WW Tip, NF
A601c	2	21'-3"	Horizontal Bars, above WW Tip, in Abutment, below Deck, FF
A602c	2	21'-11"	Horizontal Bar, above WW Tip, Short Bar, NF
A603c	2	27'-3"	Horizontal Bar, above WW Tip, Long Bar, NF
A700c	5	46'-0"	Horizontal Bars above CJ, below WW Tip, FF
A701c	8	15'-7"	Horizontal Bars, above WW Tip, in WW, below Deck, FF
A702c	66	6'-8"	Vertical Bar through CJ, in Abutment, FF
A703c	8	8'-1"	Vertical Bars, West WW, through CJ, FF
A704c	4	7'-2"	Vertical Bars, West WW, through CJ, FF
A705c	8	8'-2"	Vertical Bars, East WW, through CJ, FF
A706c	4	7'-3"	Vertical Bars, East WW, through CJ, FF
			Abutment No. 1 (Plain Rebar)
A500	28	4'-0"	Approach Slab Dowel
A600	6	46'-0"	Horizontal Bars below CJ, NF
A700	11	46'-0"	Horizontal Bars below CJ, FF
A900	4	46'-0"	Additional Longitudinal Bars, Top & Bottom below CJ
			Abutment No. 2 (Low-Carbon Chromium)
B500c	2	7'-4"	Horizontal Bars in East WW, above CJ, below WW Tip, FF
B501c	3	6'-8"	Horizontal Bars in West WW, above CJ, below WW Tip, FF
B502c	1	3'-4"	Horizontal Bar, above East WW Tip, FF
B503c	45	6'-0"	Vertical Bar through CJ, in Abutment, NF
B504c	8	7'-11"	Vertical Bars, West WW, through CJ, NF
B505c	4	6'-7"	Vertical Bars, West WW, through CJ, NF
B506c	6	8'-0"	Vertical Bars, East WW, through CJ, NF
B507c	5	6'-6"	Vertical Bars, East WW, through CJ, NF
B508c	1	5'-4"	Horizontal Bar, above East WW Tip, FF
B509c	1	3'-2"	Horizontal Bar, above West WW Tip, FF
B510c	1	4'-11"	Horizontal Bar, above West WW Tip, FF
B600c	2	46'-9"	Horizontal Bars above CJ, below WW Tip, NF
B601c	2	21'-3"	Horizontal Bars, above WW Tip, in Abutment, below Deck, FF
B602c	2	21'-11"	Horizontal Bar, above WW Tip, Short Bar, NF
B603c	2	28'-0"	Horizontal Bar, above WW Tip, Long Bar, NF
B700c	4	46'-9"	Horizontal Bars above CJ, below WW Tip, FF
B701c	10	16'-3"	Horizontal Bars, above WW Tip, in WW, below Deck, FF
B702c	66	6'-8"	Vertical Bar through CJ, in Abutment, FF
B703c	8	8'-0"	Vertical Bars, West WW, through CJ, FF
B704c	4	7'-2"	Vertical Bars, West WW, through CJ, FF
B705c	9	8'-1"	Vertical Bars, East WW, through CJ, FF
B706c	5	7'-0"	Vertical Bars, East WW, through CJ, FF
			Abutment No. 2 (Plain Rebar)
B500	28	4'-0"	Approach Slab Dowel
B600	6	46'-9"	Horizontal Bars below CJ, NF
B700	11	46'-9"	Horizontal Bars below CJ, FF
B900	4	46'-9"	Additional Longitudinal Bars, Top & Bottom below CJ
			Approach Slab (Plain Rebar)
AS501	32	27'-7"	Approach Slab Transverse Bars
AS601	108	15'-2"	Approach Slab Longitudinal Bars
			Superstructure (Low-Carbon Chromium)
S500c	6	34'-7"	Longitudinal Curb Bars, Short
S501c	6	60'-0"	Longitudinal Curb Bars, Long
			Superstructure (GFRP)
S600p	95	34'-7"	Longitudinal Deck Bars, Short
S601p	95	60'-0"	Longitudinal Deck Bars, Long
S602p	185	32'-1"	Transverse Deck Bars, Bottom
S700p	185	28'-4"	Transverse Deck Bars, Top
MARK	QTY.	LENGTH	LOCATION

BENT BARS														
MARK	QTY.	LENGTH	TYPE	A	B	C	D	E	F	G	H	O	R	LOCATION
														Abutment No. 1 (Low-Carbon Chromium)
A550c	6	4'-3"	S	0'-0"	0'-10"	2'-7"	0'-10"			0'-0"				WW End U-bars, above CJ
A551c	34	6'-2"	L	4'-2"	2'-0"									Abutment FF to Deck Top Mat
A552c	34	6'-4"	P4	2'-0"	2'-4"	2'-0"					1'-8"			Abutment NF to Deck Top Mat
A553c	1	7'-4 1/2"	V				1'-5"	5'-11 1/2"			2'-8 1/2"			West WW Top Sloped Bar
A554c	1	7'-1"	V				1'-1 1/2"	5'-11 1/2"			2'-8 1/2"			West WW Top Sloped Bar
A555c	1	6'-10"	V				0'-10 1/2"	5'-11 1/2"			2'-8 1/2"			West WW Top Sloped Bar
A556c	1	6'-6 1/2"	V				0'-7"	5'-11 1/2"			2'-8 1/2"			West WW Top Sloped Bar
A557c	1	7'-5 1/2"	V				1'-5"	6'-0 1/2"			2'-8 1/2"			East WW Top Sloped Bar
A558c	1	7'-8 1/2"	V				1'-8"	6'-0 1/2"			2'-8 1/2"			East WW Top Sloped Bar
A559c	1	8'-0"	V				1'-11 1/2"	6'-0 1/2"			2'-8 1/2"			East WW Top Sloped Bar
A560c	1	8'-3"	V				2'-2 1/2"	6'-0 1/2"			2'-8 1/2"			East WW Top Sloped Bar
A650c	16	7'-6"	S	0'-0"	2'-5"	2'-8"	2'-5"			0'-0"				WW Top U-bars, Excluding WW Tips and Corners
A651c	2	7'-7"	S	0'-0"	2'-5"	2'-9"	2'-5"			0'-0"				WW Top U-bars, Skewed Corners
A652c	2	6'-6"	S	0'-0"	1'-11"	2'-8"	1'-11"			0'-0"				WW Top U-bars, WW Tips
A653c	45	7'-0"	S	0'-0"	2'-5"	2'-2"	2'-5"			0'-0"				Abutment Top Stirrup
A750c	2	6'-6"	L	5'-4"	1'-2"									Vertical Bar, in WW Ends, through CJ, FF
A751c	2	6'-9"	L	5'-7"	1'-2"									Vertical Bar, in WW Ends, through CJ, FF
A752c	2	7'-0"	L	5'-10"	1'-2"									Vertical Bar, in WW Ends, through CJ, FF
A753c	2	7'-3"	L	6'-1"	1'-2"									Vertical Bar, in WW Ends, through CJ, FF
A754c	2	7'-6"	L	6'-4"	1'-2"									Vertical Bar, in WW Ends, through CJ, FF
														Abutment No. 1 (Plain Rebar)
A550	12	4'-3"	S	0'-0"	0'-10"	2'-7"	0'-10"			0'-0"				WW End U-bars, below CJ
A650	126	9'-10"	S	0'-0"	3'-7"	2'-8"	3'-7"			0'-0"				Stirrups, below CJ
														Abutment No. 2 (Low-Carbon Chromium)
B550c	5	4'-3"	S	0'-0"	0'-10"	2'-7"	0'-10"			0'-0"				WW End U-bars, above CJ
B551c	34	6'-2"	L	4'-2"	2'-0"									Abutment FF to Deck Top Mat
B552c	34	6'-4"	P4	2'-0"	2'-4"	2'-0"					1'-8"			Abutment NF to Deck Top Mat
B553c	1	7'-5 1/2"	V				1'-5"	6'-0 1/2"			2'-8 1/2"			West WW Top Sloped Bar
B554c	1	7'-8 1/2"	V				1'-8"	6'-0 1/2"			2'-8 1/2"			West WW Top Sloped Bar
B555c	1	8'-0"	V				1'-11 1/2"	6'-0 1/2"			2'-8 1/2"			West WW Top Sloped Bar
B556c	1	8'-3"	V				2'-2 1/2"	6'-0 1/2"			2'-8 1/2"			West WW Top Sloped Bar
B557c	1	8'-2 1/2"	V				1'-5"	6'-9 1/2"			3'-0"			East WW Top Sloped Bar
B558c	1	7'-11"	V				1'-1 1/2"	6'-9 1/2"			3'-0"			East WW Top Sloped Bar
B559c	1	7'-8"	V				0'-10 1/2"	6'-9 1/2"			3'-0"			East WW Top Sloped Bar
B560c	1	7'-4 1/2"	V				0'-7"	6'-9 1/2"			3'-0"			East WW Top Sloped Bar
B650c	17	7'-6"	S	0'-0"	2'-5"	2'-8"	2'-5"			0'-0"				WW Top U-bars, Excluding WW Tips and Corners
B651c	2	7'-7"	S	0'-0"	2'-5"	2'-9"	2'-5"			0'-0"				WW Top U-bars, Skewed Corners
B652c	2	6'-0"	S	0'-0"	1'-8"	2'-8"	1'-8"			0'-0"				WW Top U-bars, WW Tips
B653c	45	7'-0"	S	0'-0"	2'-5"	2'-2"	2'-5"			0'-0"				Abutment Top Stirrup
B750c	1	6'-5"	L	5'-3"	1'-2"									Vertical Bar, in West WW End, through CJ, FF
B751c	1	6'-8"	L	5'-6"	1'-2"									Vertical Bar, in West WW End, through CJ, FF
B752c	1	6'-11"	L	5'-9"	1'-2"									Vertical Bar, in West WW End, through CJ, FF
B753c	1	7'-2"	L	6'-0"	1'-2"									Vertical Bar, in West WW End, through CJ, FF
B754c	1	7'-5"	L	6'-3"	1'-2"									Vertical Bar, in West WW End, through CJ, FF
B755c	1	6'-2"	L	5'-0"	1'-2"									Vertical Bar, in East WW End, through CJ, FF
B756c	1	6'-5"	L	5'-3"	1'-2"									Vertical Bar, in East WW End, through CJ, FF
B757c	1	6'-8"	L	5'-6"	1'-2"									Vertical Bar, in East WW End, through CJ, FF
B758c	1	6'-11"	L	5'-9"	1'-2"									Vertical Bar, in East WW End, through CJ, FF
B759c	1	7'-2"	L	6'-0"	1'-2"									Vertical Bar, in East WW End, through CJ, FF
														Abutment No. 2 (Plain Rebar)
B550	12	4'-3"	S	0'-0"	0'-10"	2'-7"	0'-10"			0'-0"				WW End U-bars, below CJ
B650	128	10'-0"	S	0'-0"	3'-8"	2'-8"	3'-8"			0'-0"				Stirrups, below CJ
														Superstructure (Low-Carbon Chromium)
S550c	258	5'-4"	SC	0'-10"	1'-2 1/2"	1'-3"	1'-2 1/2"			0'-10"		1'-4"		Curb Stirrups
S551c	740	5'-7"	P1	0'-7"	5'-0"									Deck Overhang Bars
MARK	QTY.	LENGTH	TYPE	A	B	C	D	E	F	G	H	O	R	LOCATION

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 A1035, Type CS, Grade 100
CSA S807-10, ACI 440.1r-15

GENERAL NOTES

1. 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 "P1404" = bar size #14

2. All bars shall be Plain Reinforcing Steel unless the bar number is followed by a lower case letter. The lower case letter following the bar number indicates the material of the bar.

   "S500p", p = Glass Fiber Reinforced Polymer
   "P150c", c = Low-Carbon Chromium Steel

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

0222500

WIN 022250.00

BRIDGE PLANS

BRIDGE NO. 5021

	BY	DATE
PROJ. MANAGER	N. Boert	
DESIGN-DETAILED	K. Belisle	12\23
CHECKED-REVIEWED	G. Thompson	
DESIGN2-DETAILED2	A. Stephens	12\23
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE
P.E. NUMBER
DATE

KINGMAN ROAD BRIDGE
MACWAHOC STREAM
MACWAHOC PLANTATION AROOSTOOK

REINFORCING STEEL SCHEDULE

SHEET NUMBER
27

Date:12/13/2023
Username:
Division:
Filename: 027_Reinforcing Steel Schedule.dgn

PLAN LEGEND

Town, County, State — P.L. Approx. Property Lines — Existing Right of Way — Limits of Wrought Portion L.O.W.P. — Control Of Access C.O.A. — New Right of Way — New Easement — New Temporary Rights — New R/W Within Existing R/W

New R/W Along Existing R/W — Building — Clearing Limit Line — Trees Conifer Deciduous — Tree Line — Bush Line — Water Edge — Ledge — Rock/Boulder — Flag Pole — Fence CHAIN LINK BARB WIRE STOCKADE — Sign — Well — Mailbox

Existing / Proposed: Sanitary Sewer — Telephone Line — Electric Line — Water Line — Underdrain Line — Gas Line — Guardrail — Culvert

Existing / Proposed: Traveled Way — Ditch — Catch Basin — Manhole — Sewer Manhole — Utlity Pole — Fire Hydrant — Curbing

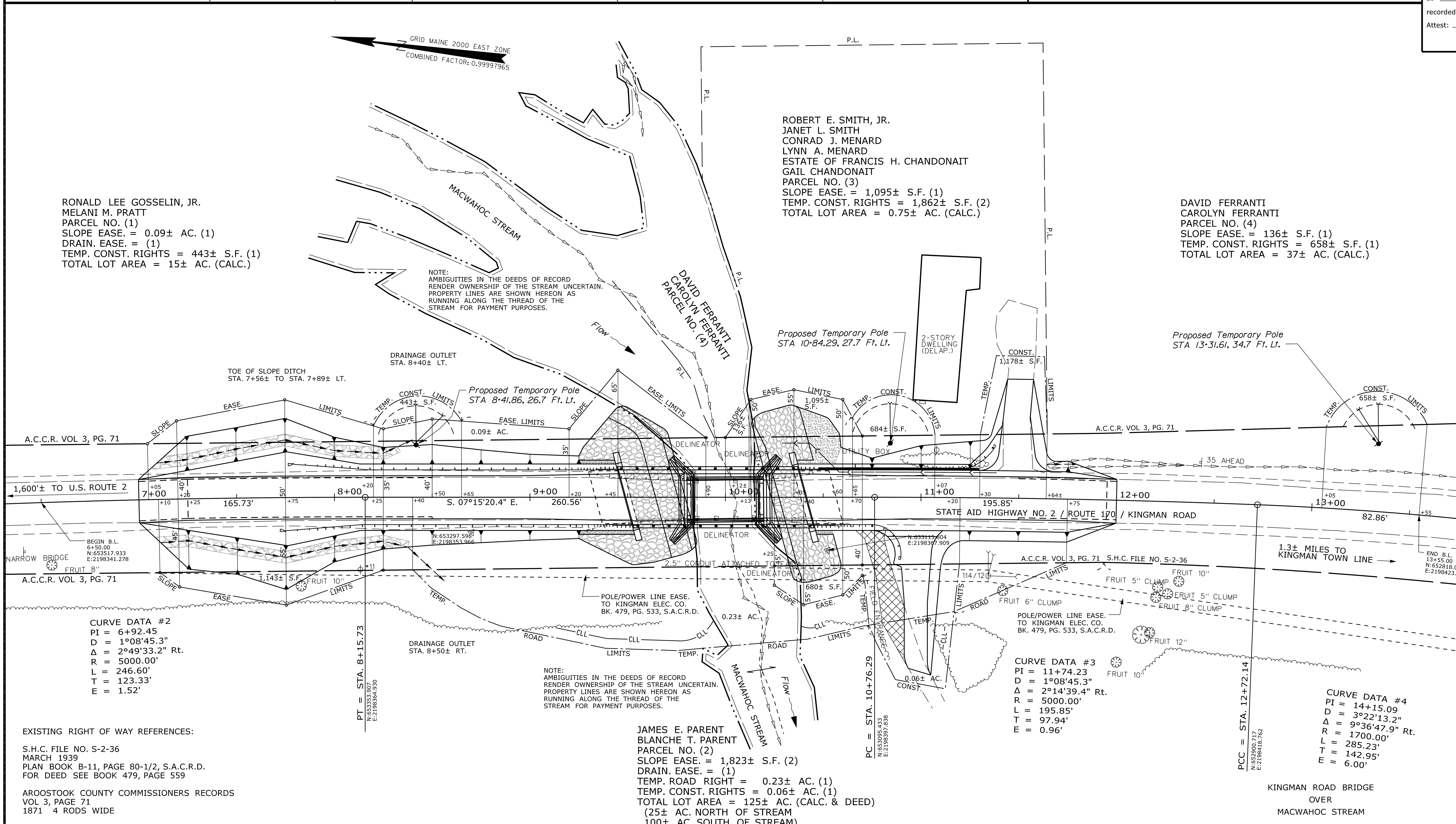
Cut Line — Fill Line — Stonewall — Retaining Wall — Baseline 10+00 11+00 12+00 — Monument — Traverse Point — Iron Rod Found IRF — Pipe Found IPF — Replacement Pin Set

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

25 0 25 50 75 100
Scale of Feet

STATE OF MAINE
REGISTRY OF DEEDS

COUNTY ______
RECEIVED ______, ______
at ____h ____m ____M and
recorded in Plan Bk ____, Pg.____
Attest: ______
REGISTER



ITEM	TECH	CHECKED
EXISTING CONDITION PLAN	B.S.	G.L.L.
FINAL RIGHT OF WAY	B.S.	S.A.N.
AREAS	B.S.	S.A.N.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION - AUGUSTA, ME 04333-0016 - 207-624-3460

MACWAHOC
RIGHT OF WAY MAP

REVISIONS

NO.	DATE	DESCRIPTION	BY

PLAN FILED IN PLAN BOOK ____ PAGE ____ COUNTY RECORD

NO.	GRANTOR	INSTRUMENT	DATE	BOOK	PAGE

BRUCE A. VAN NOTE
COMMISSIONER
JOYCE NOEL TAYLOR
CHIEF ENGINEER
DATE

STATE AID HIGHWAY NO. 2
ROUTE 170 / KINGMAN ROAD
MACWAHOC PLT. AROOSTOOK COUNTY
STATE PROJECT NO. 22250.00

SEPTEMBER 2023 | SCALE 1" = 25' | RIGHT-OF-WAY MAP SHEET 1 OF 1 | D.O.T. FILE NO. 2-649

SHEET NUMBER
28
OF 28