

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION



SPECIFICATIONS

Design: Load and Resistance Factor Design per AASHTO LRFD
Bridge Design Specifications 9th Edition 2020

DESIGN LOADING

Live Load: HL-93 Maine Modified for Strength 1

TRAFFIC DATA

Current (2019) AADT	1,160
Future (2039) AADT	1,420
DHV - % of AADT	10%
Design Hourly Volume	115
Heavy Trucks (% of AADT)	10%
Heavy Trucks (% of DHV)	6%
Directional Distribution (% of DHV)	53%
18 kip Equivalent P 2.0	55
18 kip Equivalent P 2.5	52
Design Speed (mph)	45

MATERIALS

Concrete:	
Structural Wearing Surface and Curbs	Class "LP"
All Other	Class "A"

Reinforcing Steel:	
Plain	ASTM A615 Grade 60 (unless otherwise noted)
Stainless	ASTM A955/A 955M, Grade 75
Glass Fiber Reinforced Polymer (GFRP)	ASTM D7957

Structural Steel:	
All Material (except as noted)	ASTM A709, Grade 50 (Thermal Spray)
High Strength Bolts	ASTM F3125, Grade A325, Type 1 (Galvanized)

BASIC DESIGN STRESSES

Concrete:	
Class "LP"	f 'c = 5,000 psi
Class "A"	f 'c = 4,000 psi
Plain Reinforcing Steel	f y = 60,000 psi
Stainless Reinforcing Steel	f y = 75,000 psi

Glass Fiber Reinforced Polymer	f fu = 100,000 psi
Minimum Elastic Modulus	E f = 6,500,000 psi
Minimum Nominal Design Tensile Strain	ε fu = 1.1%

Structural Steel:	
ASTM A 709, Grade 50	F y = 50,000 psi
ASTM F3125, Grade A325	F u = 120,000 psi

HYDROLOGIC DATA

Drainage Area	20.30 sq mi
Design Discharge (Q50)	1,149.1 cfs
Check Discharge (Q100)	1,317.5 cfs
Scour Check Discharge (Q500)	1,724.1 cfs
Headwater Elevation (Q1.1)	226.2 ft
Headwater Elevation (Q10)	228.7 ft
Headwater Elevation (Q25)	229.5 ft
Headwater Elevation (Q50)	230.0 ft
Headwater Elevation (Q100)	230.4 ft
Headwater Elevation (Q500)	231.5 ft

VELOCITIES

Headwater Velocity (Q1.1)	1.2 fps
Headwater Velocity (Q10)	2.3 fps
Headwater Velocity (Q25)	2.6 fps
Headwater Velocity (Q50)	2.7 fps
Headwater Velocity (Q100)	2.9 fps
Headwater Velocity (Q500)	3.3 fps



CANAAN
SOMERSET COUNTY
HALL BRIDGE
OVER
BLACK STREAM
ROUTE 23 (HARTLAND ROAD)
FEDERAL AID PROJECT NO. 2222600
PROJECT LENGTH 0.08 mi.
BRIDGE NO. 3159

LIST OF DRAWINGS

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UTILITIES

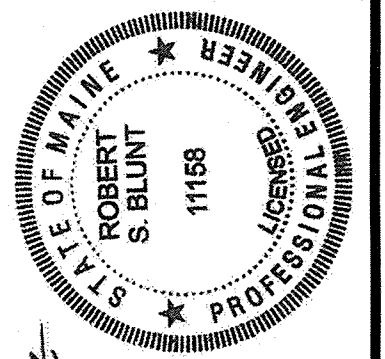
Central Maine Power
Charter Communications
Consolidated Communications

MAINTENANCE OF TRAFFIC

Temporary one-lane bridge with temporary signals to maintain alternating one-way traffic.

PROJECT LOCATION	Bridge is located 0.47 miles north of Browns Corner Road. Latitude 44°47'51"N Longitude 69°32'44" W
PROGRAM AREA	Bridge Program "Highway Bridges - Traditional"
OUTLINE OF WORK	Bridge Construction: Bridge replacement and related approach work.

STATE OF MAINE DEPARTMENT OF TRANSPORTATION	APPROVED	DATE
COMMISSIONER: <i>[Signature]</i>	CHIEF ENGINEER: <i>[Signature]</i>	4-7-21 4-6-2021



PROJECT INFORMATION	SIGNATURE	P.E. NUMBER	DATE
PROGRAM BRIDGE	ROBERT S. BLUNT	11158	3/15/2021
PROJECT MANAGER DESIGNER	MACKENZIE KERSBERGEN	ROBERT BLUNT	
CONSULTANT	VHB		
PROJECT RESIDENT CONTRACTOR			
PROJECT COMPLETION DATE			

2222600 WIN 22226.00

CANAAN HALL BRIDGE	TITLE SHEET
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SHEET NUMBER	1
OF 30	

Date:3/25/2021

Username: PDonovan

Division: BRIDGE

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ESTIMATED QUANTITIES			
ITEM NO.	DESCRIPTION	TOTAL QUANTITY	UNIT
201.23	Remove Single Tree Top Only	10	EA
201.24	Removing Stump	10	EA
202.19	Removing Existing Bridge	1	LS
202.202	Removing Pavement Surface	570	SY
203.20	Common Excavation	1165	CY
203.2318	Disposal of Special Waste	530	Ton
203.25	Granular Borrow	360	CY
206.082	Structural Earth Excavation - Major Structures, Plan Quality	710	CY
304.10	Aggregate Subbase Course-Gravel	820	CY
403.2081	12.5 mm Polymer Modified HMA	145	TON
403.2131	12.5 mm Polymer Modified HMA Base	190	TON
409.15	Bituminous Tack Coat, Applied	76	GAL
461.131	Temporary Pavement	100	TON
501.239	Dynamic Loading Test	2	EA
501.50	Steel H-Beam Piles 89 lbs/ft, delivered	350	LF
501.501	Steel H-Beam Piles 89 lbs/ft, in place	350	LF
501.90	Pile Tips	10	EA
501.91	Pile Splices	5	EA
501.92	Pile Driving Equipment Mobilization	1	LS
502.219	Structural Concrete, Abutments and Retaining Walls	1	LS
502.26	Structural Concrete Roadway and Sidewalk Slab on Steel Bridges	1	LS
502.291	Saw Cut Grooving (Longitudinal)	1	LS
502.31	Structural Concrete Approach Slab	1	LS
502.49	Structural Concrete Curbs and Sidewalks	1	LS
503.12	Reinforcing Steel, Fabricated and Delivered	18500	LB
503.13	Reinforcing Steel, Placing	18500	LB
503.26	Stainless Steel Reinforcement, Fabricated and Delivered	7750	LB
503.27	Stainless Steel Reinforcement, Placing	7750	LB
504.702	Structural steel fabricated and delivered, welded	1	LS
504.71	Structural steel erection	1	LS
505.08	Shear Connectors	1	LS
506.9104	Thermal Spray Coating (Shop Applied)	1	LS
507.0821	Steel Bridge Railing, 3 Bar	1	LS
507.0822	Steel Approach Railing, 3-Bar	4	EA
510.10	Special Detour, 18' Roadway Width Vehicular and Pedestrian Traffic Not Separated	1	LS
511.07	Cofferdam - Abutment 1	1	LS
511.07	Cofferdam - Abutment 2	1	LS
515.21	Protective Coating for Concrete Surfaces	1	LS
526.301	Temporary Concrete Barrier	1	LS
527.34	Work Zone Crash Cushions	4	Unit
530.30	Glass Fiber Reinforcing Polymer Fabricated and Delivered	47500	LF
530.31	Glass Fiber Reinforcing Polymer Placing	47500	LF
606.1301	31" W-Beam Guardrail - Mid-Way Splice - Single Faced	238	LF
606.1303	31" W-Beam Guardrail - Mid-Way Splice - 15' Radius or Less	38	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
610.08	Plain Riprap	130	CY
610.213	Void Filled Riprap	350	CY
613.319	Erosion Control Blanket	66	SY
615.07	Loam	68	CY
618.14	Seeding Method Number 2	11	Unit
619.12	Mulch	11	Unit
619.14	Erosion Control Mix	20	CY
620.58	Erosion Control Geotextile	300	SY
620.66	Drainage Geocomposite	120	SY
627.18	12-Inch Solid White Pavement Marking Line	24	LF
627.733	4" White or Yellow Painted Pavement Marking Line	3200	LF
627.77	Removing Existing Pavement Markings	500	SF
627.78	Temporary 4" Painted Pavement Marking Line, White or Yellow	600	LF
629.05	Hand Labor, Straight Time	40	HR
631.12	All Purpose Excavator (including operator)	30	HR
631.172	Truck - large (including operator)	30	HR
639.18	Field Office, Type A	0.5	EA
643.72	Temporary Traffic Signal; Hall Bridge	1	LS
652.30	Flashing Arrow	1	EA
652.312	Type III Barricade	4	EA
652.33	Drum	70	EA
652.34	Cone	25	EA
652.35	Construction Signs	388	SF
652.361	Maintenance of Traffic Control Devices	1	LS
652.38	Flaggers	150	HR
652.41	Portable Changeable Message Sign	2	EA
656.75	Temporary Soil Erosion and Water Pollution Control	1	LS
659.10	Mobilization	1	LS

STATE OF MAINE

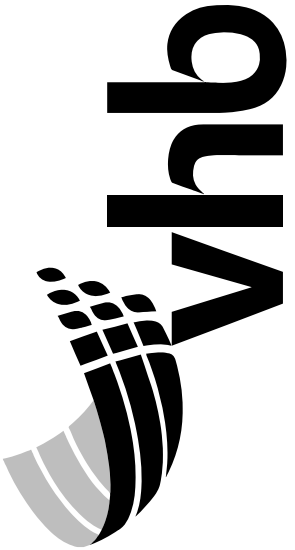
DEPARTMENT OF TRANSPORTATION

2222600

WIN22226.00

BRIDGE NO. 3159

BRIDGE PLANS



PROJ. MANAGER	M. KERSBERGEN	BY	DATE
DESIGN-DETAILED	BSP	DPD	11/10/20
CHECKED-REVIEWED	CTM/PRK	RSBLUNT	11/10/20
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

HALL BRIDGE ROUTE 23 (HARTLAND ROAD)
OVER BLACK STREAM

CANAAN

SOMERSET COUNTY

ESTIMATED QUANTITIES

SHEET NUMBER

2

OF 30

GENERAL CONSTRUCTION NOTES

1. For easements, construction limits and right of way lines, refer to the Right of Way Plan.
2. 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 related Contract Items.
3. All utility facilities shall be adjusted by the respective utilities unless otherwise noted.
4. Project information may be accessed at the following MaineDOT web address: <http://www.maine.gov/mdot/contractors/>
5. 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.
6. A copy of the hydrologic report of the bridge site may be accessed at the MaineDOT web address. The hydrologic report is based on the 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.
7. The project geotechnical report entitled "Geotechnical Design Report, Hall Bridge No. 3159 over the Black Stream, Canaan, ME., No. 09.0026000.00", 3/15/2021 may be accessed at the MaineDOT web address.
8. 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.
9. 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, and the timber piles contain creosote. The Contractor is responsible for the containment, proper management, and disposal of all lead-contaminated and creosote-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 storage, recycling, or disposal of the bridge components. The Contractor shall recycle or reuse the steel in accordance with Maine Department of Environmental Protection's "Maine Hazardous Waste Management Regulations," Chapter 850. A copy of this regulation is available at the 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.
10. All embankment material below Aggregate Subbase Coarse Gravel, except as otherwise shown, shall be Granular Borrow meeting the requirements of Subsection 703.19, Material for Underwater Backfill.
11. The Contractor shall plan and conduct work so that upon completion of the project there is no drop-off from the edge of the shoulder pavement.
12. Protective Coating for Concrete Surfaces shall be applied to the following areas:

- All exposed surfaces of the top of concrete deck.

- All exposed surfaces of concrete curbs.

- Deck fascias down to the drip notch.

- Tops of wingwalls and wingwall exposed faces down to 1' below grade.

- Back side of deck ends to 1' below grade.
13. 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.

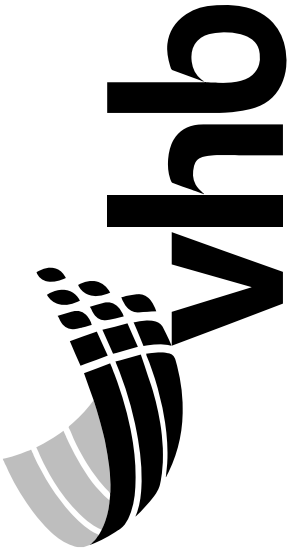
14. The Contractor shall submit a Bridge Demolition Plan to the Resident at least 10 business days prior to the start of demolition work. The plan shall outline the methods and equipment to be used to remove and dispose of all materials included in the existing bridge. No work related to the removal of the bridge shall be undertaken by the Contractor until MaineDOT has reviewed the Bridge Demolition Plan for appropriateness and completeness. Payment for all work necessary for developing, submitting, and finalizing the Demolition Plan will be considered incidental to the bridge removal pay item.
15. Gravel entrances shall be constructed with 14 inches of aggregate subbase course gravel unless otherwise noted in the Plans or directed by the Resident.
16. A 3-foot paved apron shall be placed at all unpaved entrances unless otherwise noted in the Plans or directed by the Resident.
17. No existing drainage shall be abandoned, removed or plugged without prior approval of the Resident.
18. Place a 24-inch wide strip of Temporary Erosion Control Blanket on the sideslopes along the top of the riprap and behind the wingwalls.
19. Loam shall be placed to a nominal depth of 2 inches in all disturbed areas unless otherwise noted or directed.
20. 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 Pay Item 619.14, Erosion Control Mix.
21. Do not excavate for Aggregate Subbase Course where existing material is suitable as determined by the Resident.
22. 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.
23. Existing signs within the Project limits shall be removed and reset as directed by the Resident. Payment for removal and reinstallation of existing signs will be considered incidental to the Contract. No separate payment will be made.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2222600

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22226.00

BRIDGE NO. 3159
BRIDGE PLANS



PROJ. MANAGER	M. KERSBERGEN	BY	DATE
DESIGN-DETAILED	BGP	DPD	11/10/20
CHECKED-REVIEWED	CTM/IRK	RSBLUNT	11/10/20
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

HALL BRIDGE ROUTE 23 (HARTLAND ROAD)
OVER BLACK STREAM
CANAAN

SOMERSET COUNTY

GENERAL
CONSTRUCTION NOTES

SHEET NUMBER

3

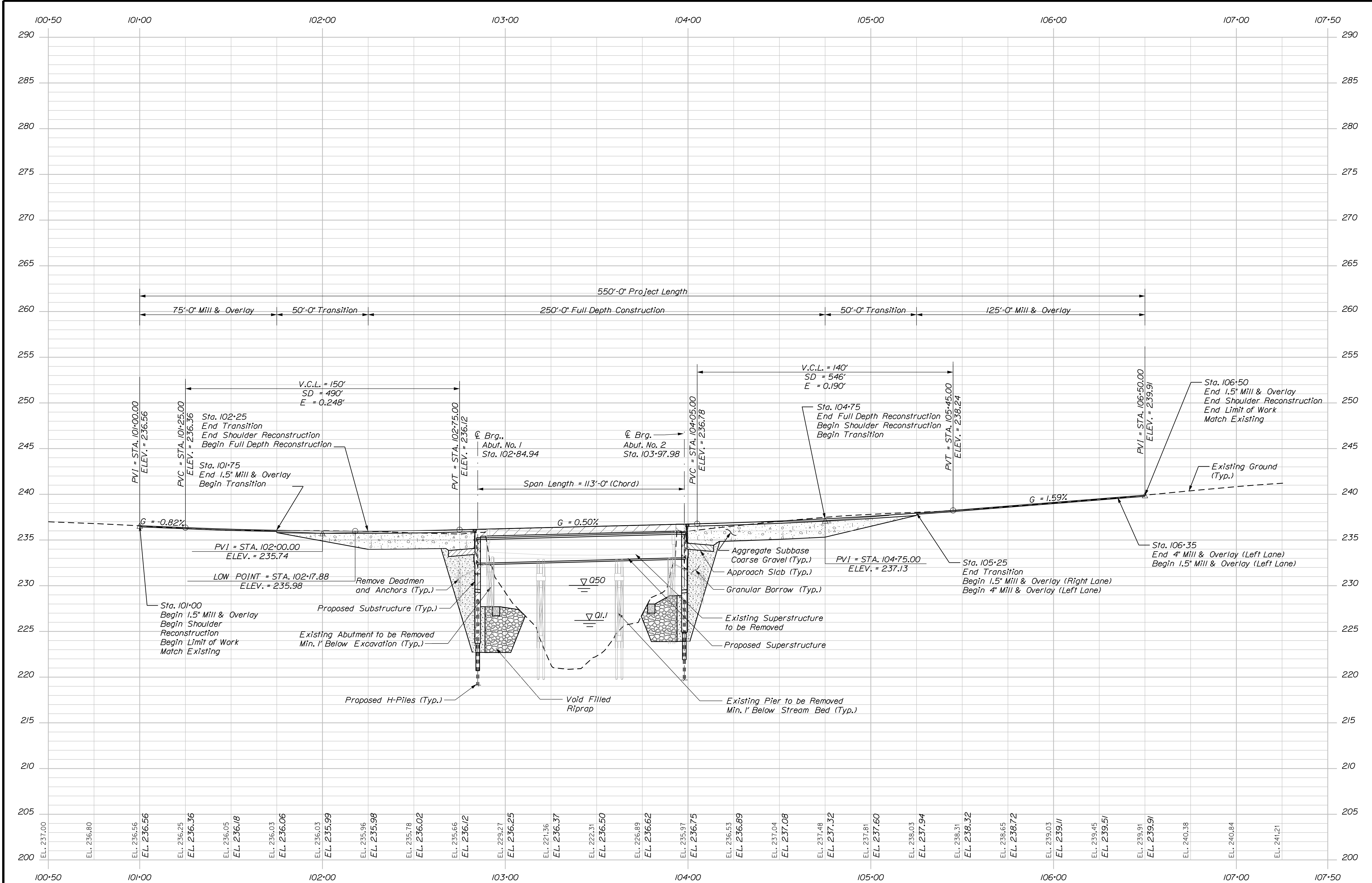
OF 30

Date: 3/25/2021

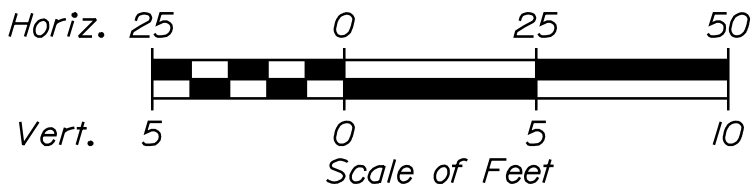
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Division: BRIDGE

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PROFILE



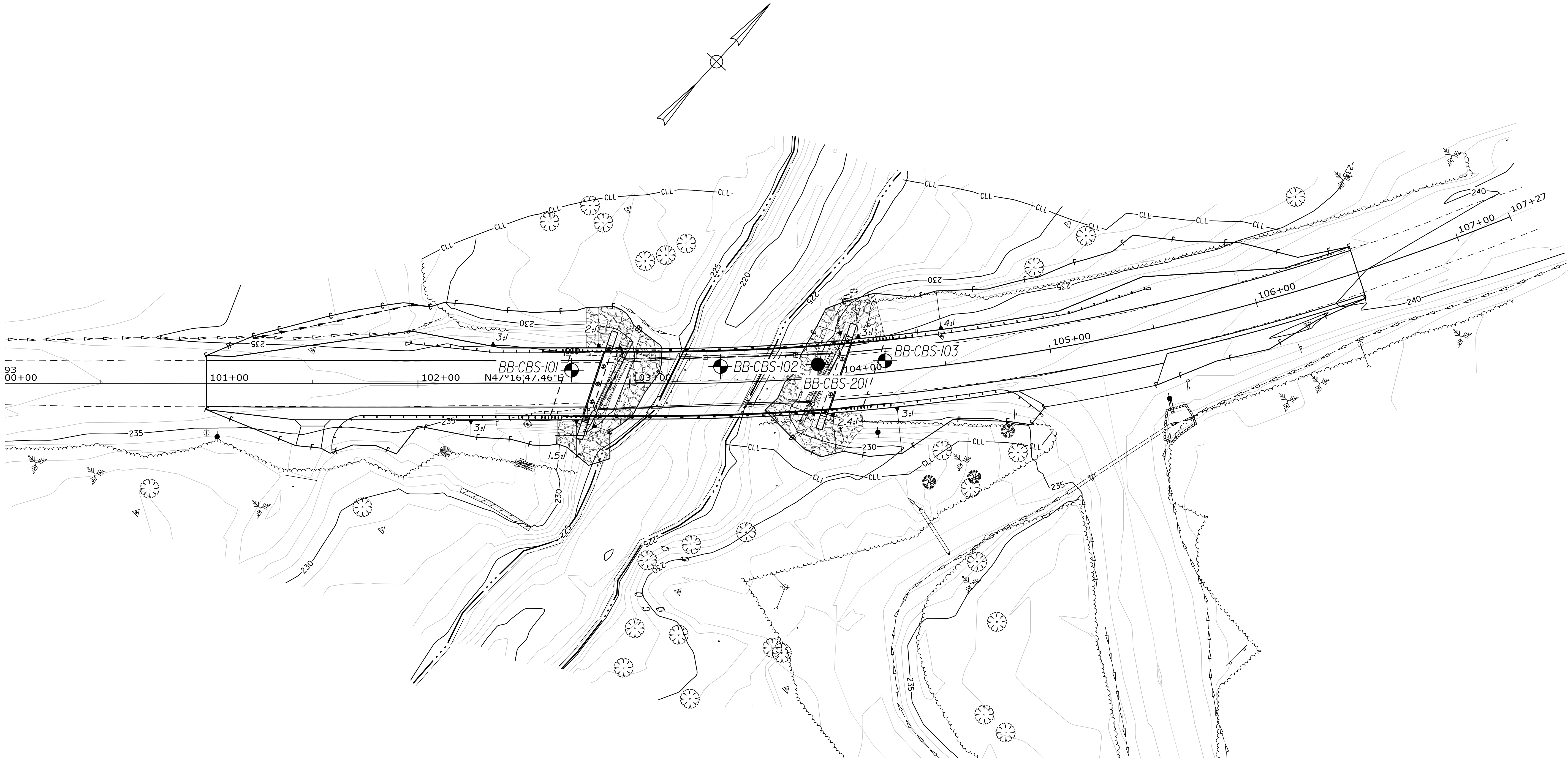
PROJ. MANAGER	DATE	BY
M. KERSBERGEN	11/10/20	DPD
CHECKED/REVIEWED	11/10/20	RSBLUNT
DESIGN/2-DET/TAILED		
DESIGN/3-DET/TAILED		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

Date: 3/15/2021

Username: common

Division: HIGHWAY

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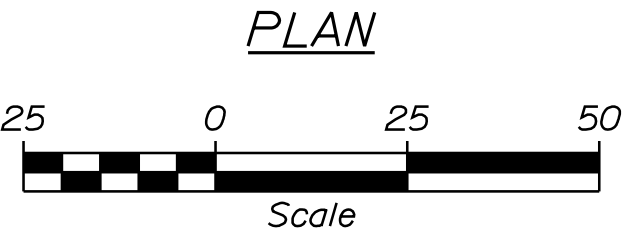


NOTES

- 1) Base map developed from electronic files (Alignments.dgn, Bridge.dgn, Contours.dgn, RWPlan.dgn, Text.dgn, Topo.dgn, highway.dgn, and Highway_TempBridge.dgn) provided by VHB on February 9, 2021.
- 2) The as-drilled locations of the test borings were surveyed by MaineDOT and developed from an electronic file (2226 Canaan Clearance Report.xlsx) provided by MaineDOT on January 17, 2019.
- 3) BB-CBS-100 series bridge borings were performed by New England Boring Contractors and observed by GZA personnel between October 19 and November 1, 2019. BB-CBS-200 series bridge boring was performed by New England Boring Contractors and observed by GZA personnel on July 29, 2020.

BORING LOCATION PLAN LEGEND

- BB-CBS-103 Location and designation of 100-Series cased wash boring
- BB-CBS-201 Location and designation of 200-Series cased wash boring



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

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22226.00

BRIDGE NO. 3159

BRIDGE PLANS



SIGNATURE
7275

P.E. NUMBER
MARCH 14, 2021
DATE

PROJ. MANAGER	M. KERSBERGEN	BY	DATE
DESIGN-DETAILED	INW	INW	3/12/2021
CHECKED-REVIEWED	C/S	ARB	3/12/2021
DESIGN-DETAILED2			
DESIGN-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

HALL BRIDGE ROUTE 23 (HARTLAND ROAD)
OVER BLACK STREAM

CANAAN
SOMERSET COUNTY

BORING LOCATION PLAN

SHEET NUMBER

6

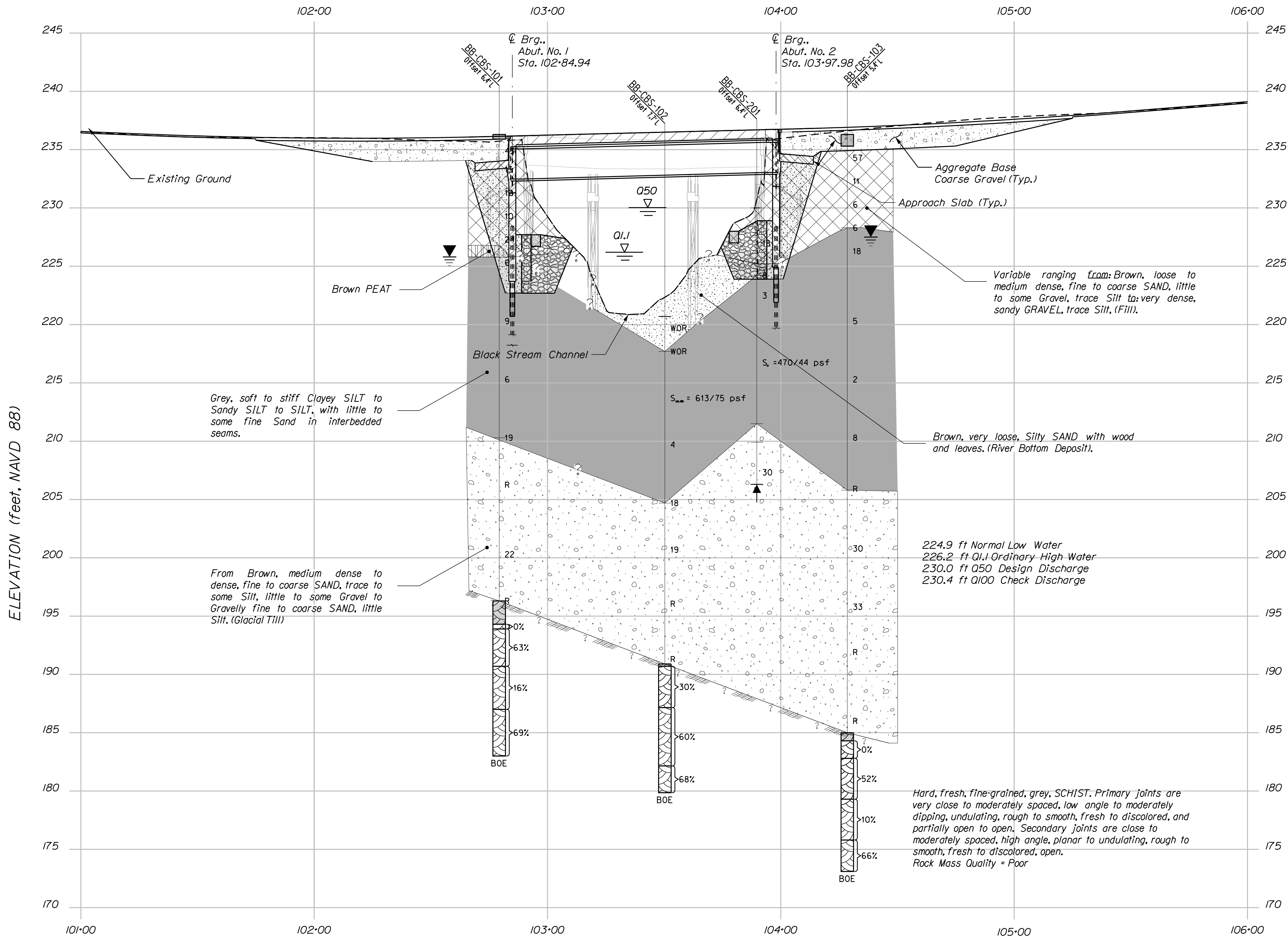
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Date: 3/15/2021

Username: common

Division: HIGHWAY

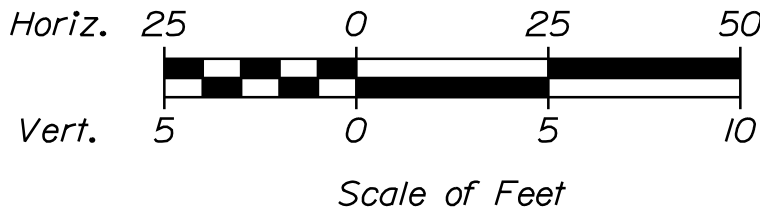
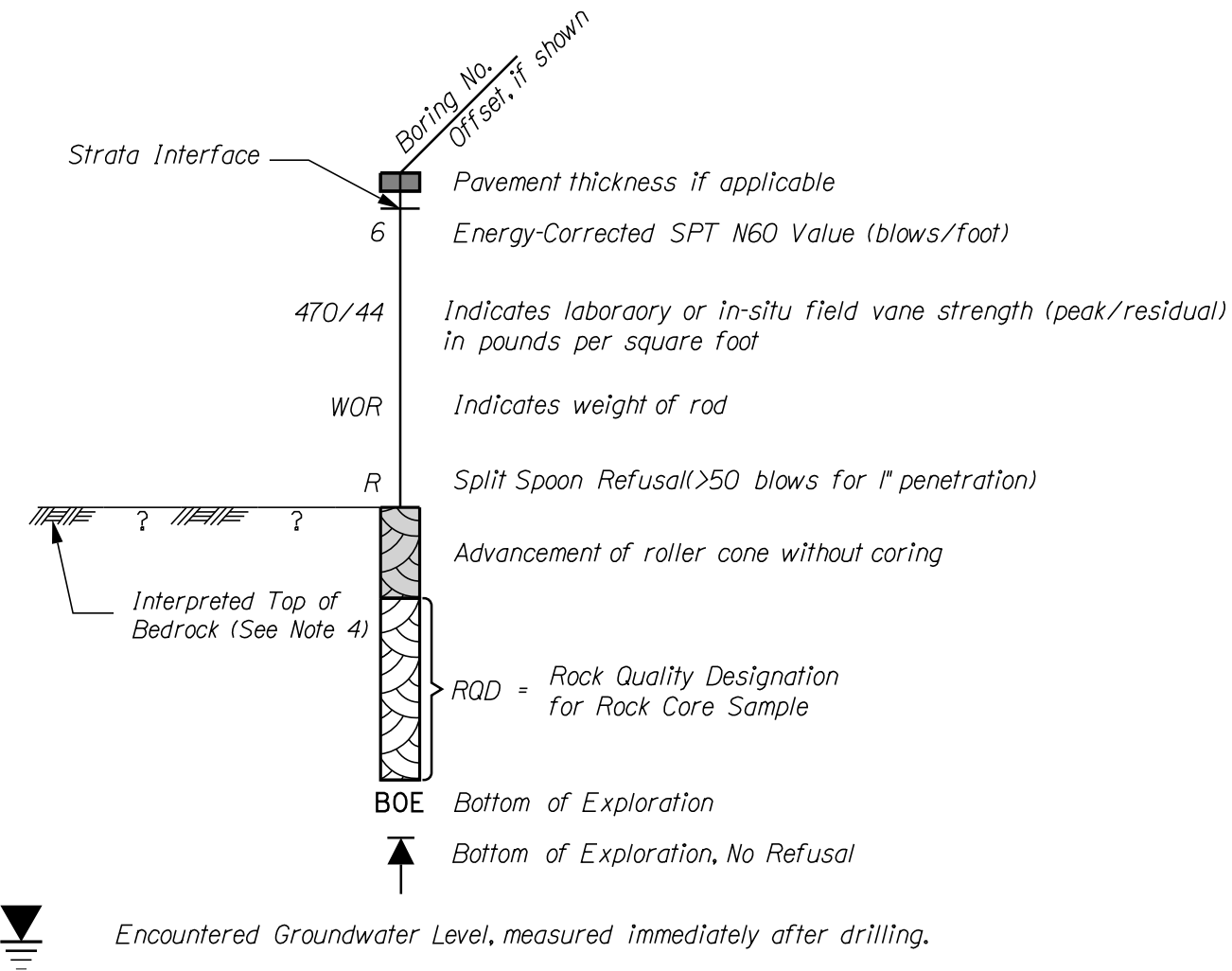
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HALL BRIDGE OVER BLACK STREAM PROFILE

- NOTES**
- 1) Base map developed from electronic files provided by VHB dated February 9, 2021. Files included Profile_HWY.dgn, z_Profile.dgn, and z_Ex-Profile.dgn)
- 2) The as drilled locations and elevations of the test borings were surveyed by a MaineDOT survey crew and supplied to GZA.
- 3) BB-CBS-100 series bridge borings were performed by New England Boring Contractors and observed by GZA personnel between October 19 and November 1, 2018. BB-CBS-200 series bridge boring was performed by New England Boring Contractors and observed by GZA personnel on July 29, 2020.
- 4) 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 rock transitions may vary and are probably more erratic. For more specific information refer to the exploration logs.

INTERPRETIVE SUBSURFACE PROFILE LEGEND



STATE OF MAINE
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BRIDGE NO. 3159
BRIDGE PLANS



SIGNATURE
DATE

DATE	BY	INW	ARB	CLS	DESIGN-DETAILED	CHECKED-REVIEWED	DESIGN-DETAILED2	DESIGN-DETAILED3	REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES
3/12/2021	INW	ARB	CLS										

HALL BRIDGE ROUTE 23 (HARTLAND ROAD)
OVER BLACK STREAM

CANAAN
SOMERSET COUNTY

INTEPRETIVE SUBSURFACE PROFILE

SHEET NUMBER

PREPARED BY:

7

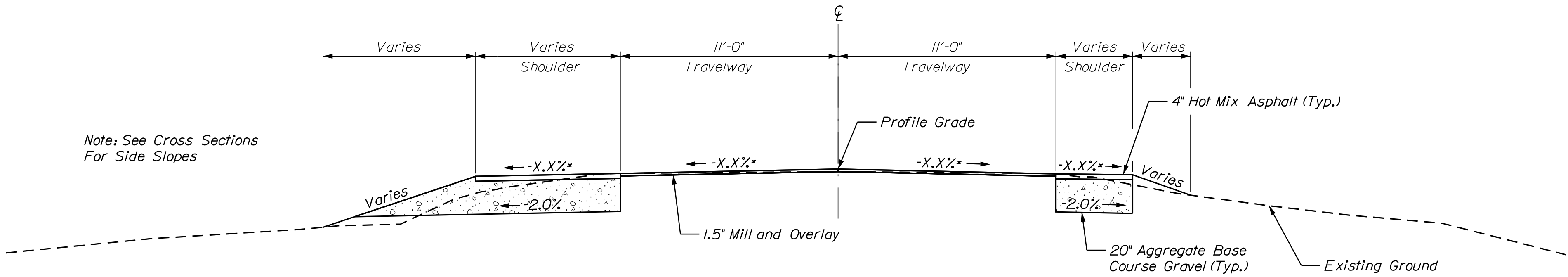
OF 30

Date: 3/25/2021

Username: PDonovan

Division: BRIDGE

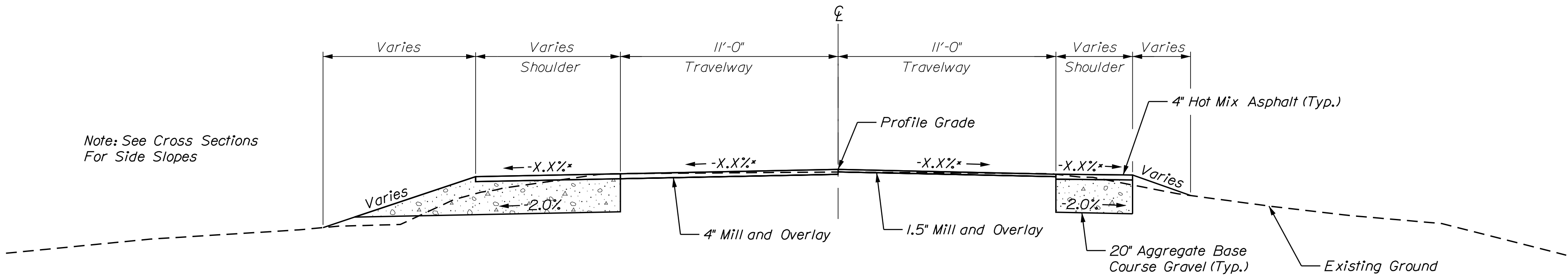
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ROUTE 23
1.5" MILL AND OVERLAY TYPICAL SECTION

Sta. 101+00 to 101+75
Sta. 106+35 to 106+50

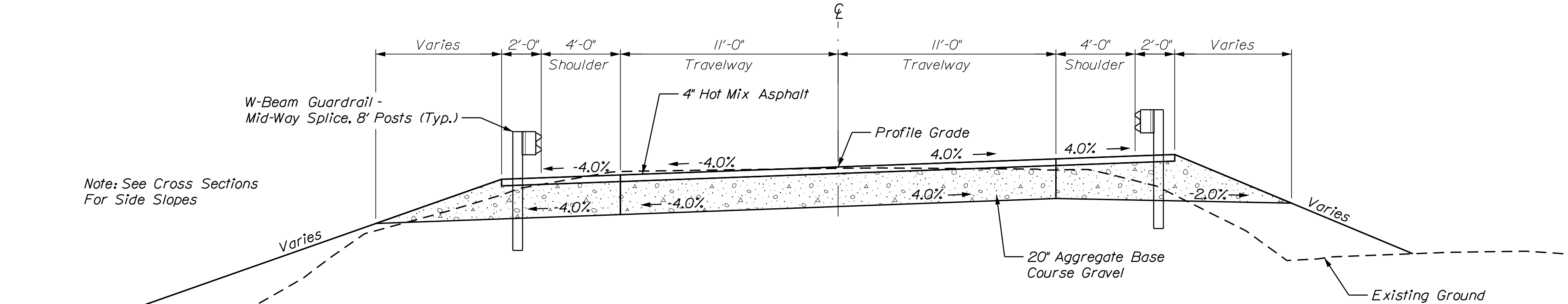
*Note: See Superelevation Table



ROUTE 23
MILL AND OVERLAY TYPICAL SECTION

Sta. 105+25 to 106+35

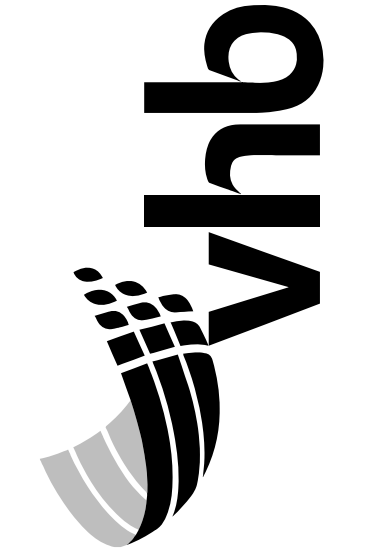
*Note: See Superelevation Table



ROUTE 23
FULL DEPTH RECONSTRUCTION TYPICAL SECTION

Sta. 102+75 to 102+84
Sta. 103+98 to 104+75

ROUTE 23				
SUPERELEVATION TABLE				
LT SHLDR %	LT TW %	STATION	RT TW %	RT SHLDR %
MATCH	MATCH	START	MATCH	MATCH
		101+00		
-2.0%	-2.0%	101+50	-0.9%	-0.9%
-2.0%	-2.0%	102+00	1.1%	1.1%
-2.0%	-2.0%	102+24	2.0%	2.0%
-3.0%	-3.0%	102+50	3.0%	3.0%
-4.0%	-4.0%	102+75	4.0%	4.0%
		TO		
-4.0%	-4.0%	105+50	4.0%	4.0%
-5.9%	-5.9%	106+00	3.3%	3.3%
		106+50		
MATCH	MATCH	END	MATCH	MATCH



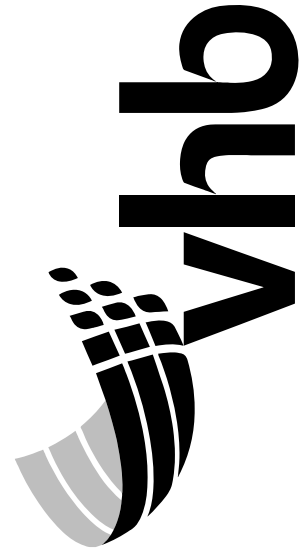
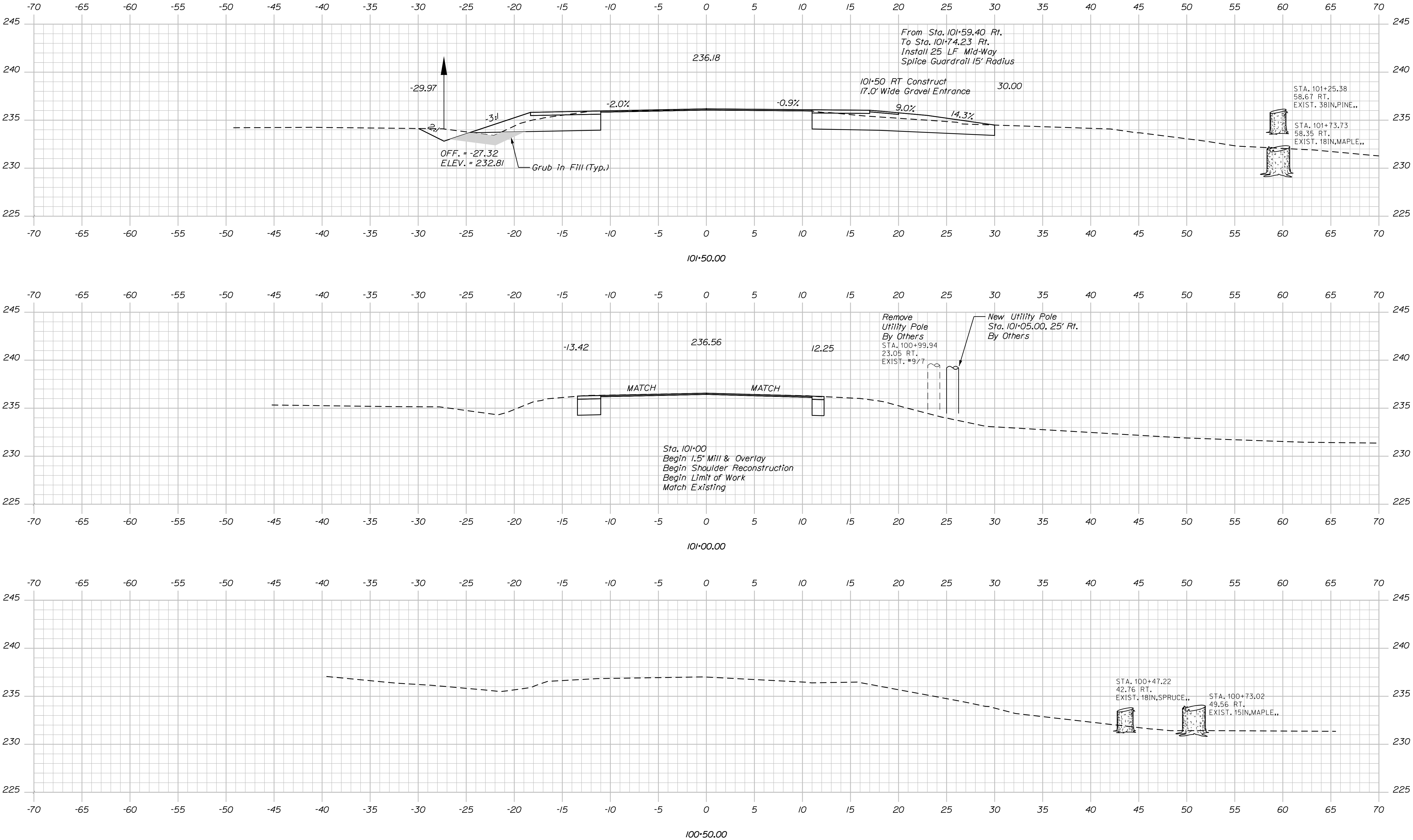
PROJ. MANAGER	M. KERSBERGEN	BY	DATE
DESIGN-DETAILED	BMD	DPD	11/10/20
CHECKED-REVIEWED	ECF	RSBLUNT	11/10/20
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

Date: 3/25/2021

Username: PDonovan

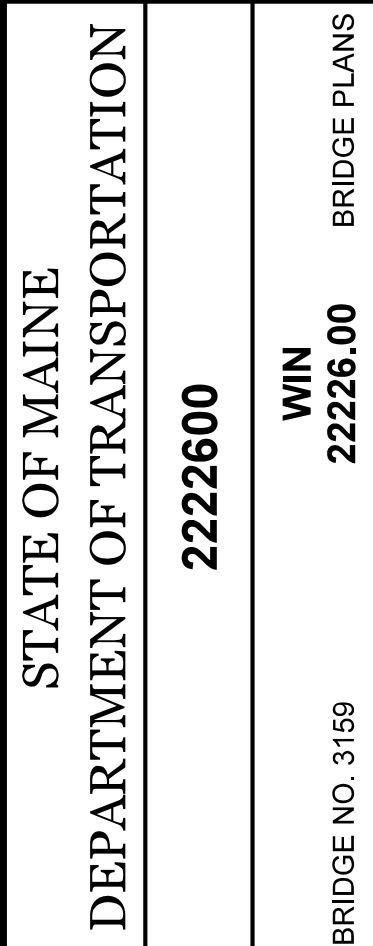
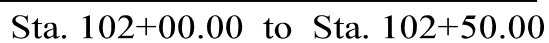
Division: BRIDGE

Filename: ... \BRIDGE \MSTA\010_Xsect1.dgn



DATE	11/10/20	11/10/20							
BY	DPD	RSBLUNT							
PROJ. MANAGER	M. KERSBERGEN								
DESIGN-DETAILED	BMD								
CHECKED-REVIEWED	ECF								
DESIGN2-DETAILED2									
DESIGN3-DETAILED3									
REVISIONS	1								
REVISIONS	2								
REVISIONS	3								
REVISIONS	4								
FIELD CHANGES									

Filename: ... \BRIDGE\MSTA\011_Xsect2.dgn



PROJ. MANAGER	M. KERSBERGEN	BY	DATE
DESIGN-DETAILED	BMD	DPD	11/10/20
CHECKED-REVIEWED	ECF	RSBLINT	11/10/20
DESIGN-DETAILED2			
DESIGN-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

CROSS SECTIONS

SHEET NUMBER

11

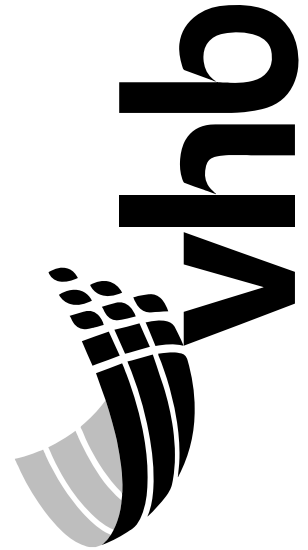
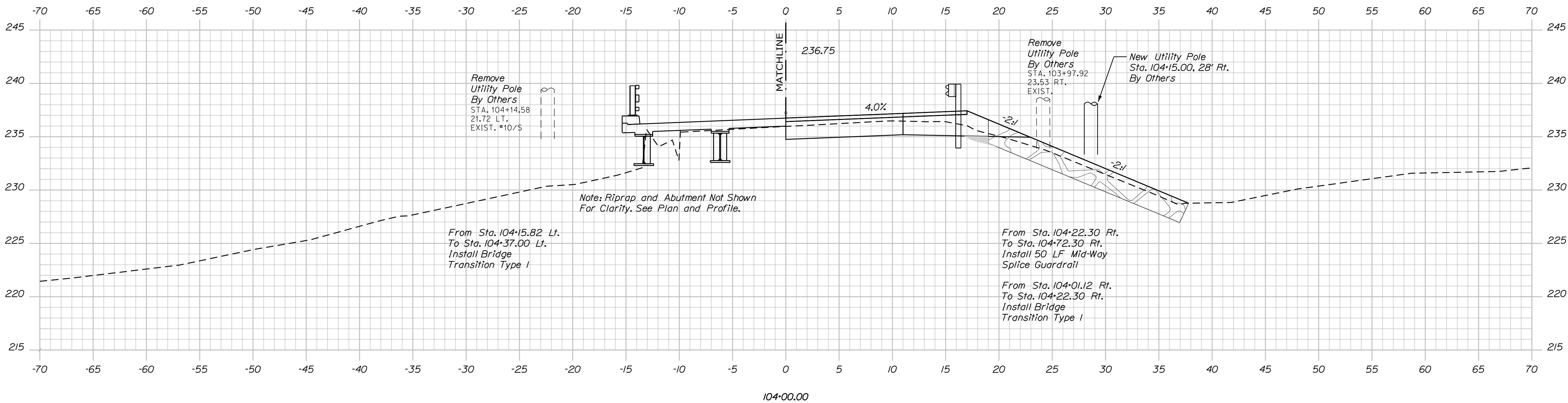
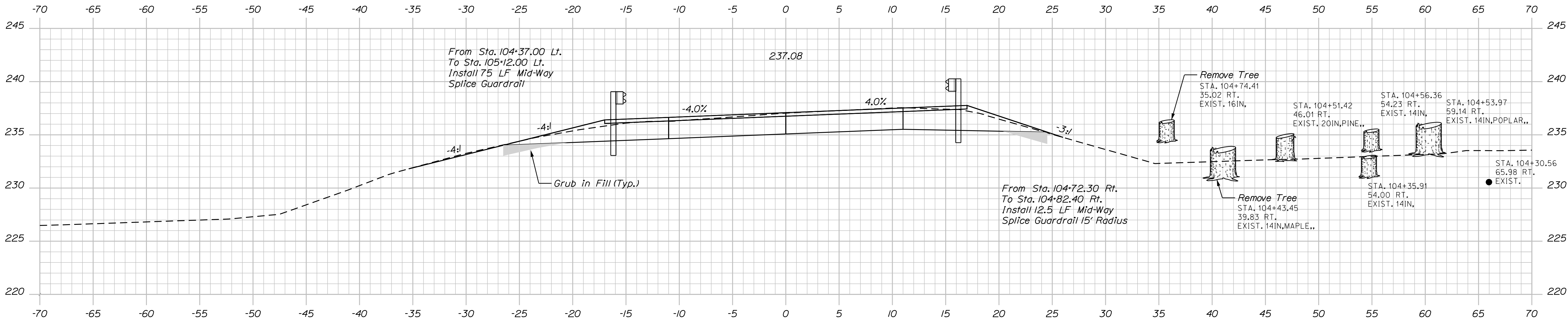
OF 30

Date: 3/25/2021

Username: PDonovan

Division: BRIDGE

Filename: ... \BRIDGE\WSTA\012_Xsect4.dgn



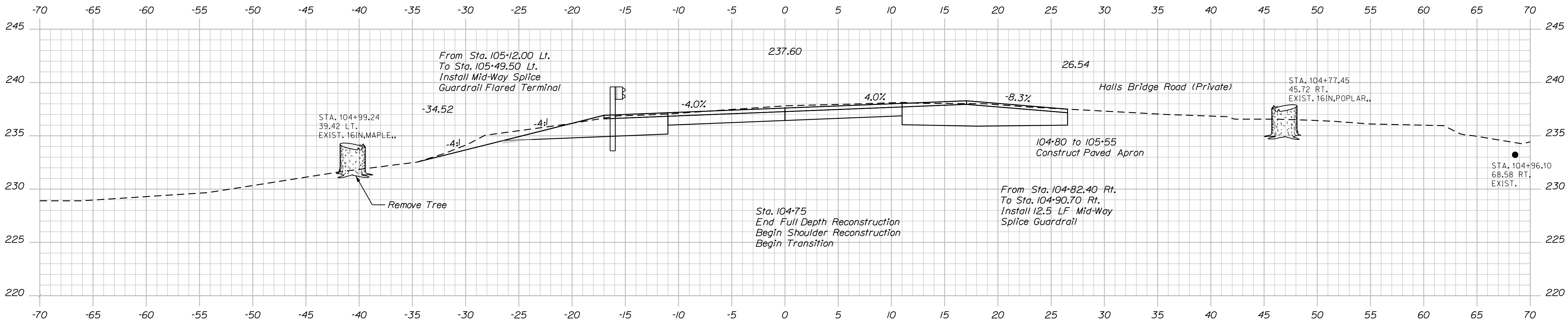
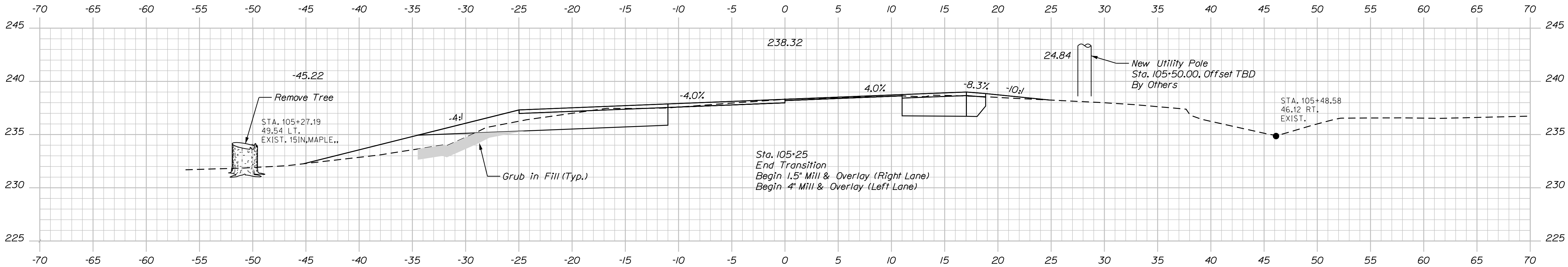
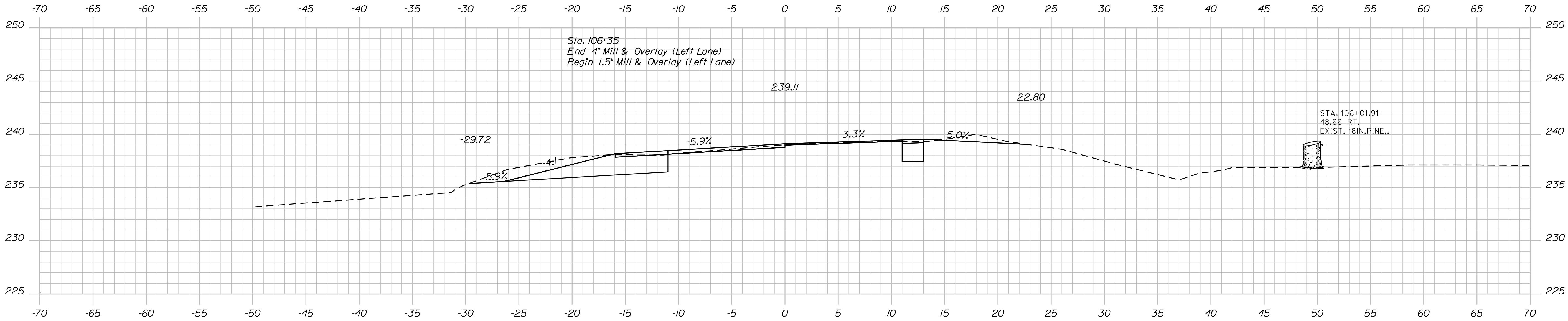
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M. KERSBERGEN	11/10/20	DPD	11/10/20
DESIGN-DETAILED		RSBLUNT	
CHECKED-REVIEWED			
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

Date: 3/25/2021

Username: PDonovan

Division: BRIDGE

Filename: ... \BRIDGE\WSTA\013_Xsect5.dgn



STATE OF MAINE

DEPARTMENT OF TRANSPORTATION

2222600

WIN

22226.00

BRIDGE NO. 3159

BRIDGE PLANS



DATE	11/10/20	11/10/20							
BY	DPD	RSB/LMT							
PROJ. MANAGER	M. KERSBERGEN	BMD							
DESIGN-DETAILED		CHECKED-REVIEWED	ECF						
DESIGN2-DETAILED		DESIGN3-DETAILED							
REVISIONS	1	2	3	4					
REVISIONS									
REVISIONS									
FIELD CHANGES									

HALL BRIDGE ROUTE 23 (HARTLAND ROAD)

OVER BLACK STREAM

SOMERSET COUNTY

CANAAN

CROSS SECTIONS

SHEET NUMBER

13

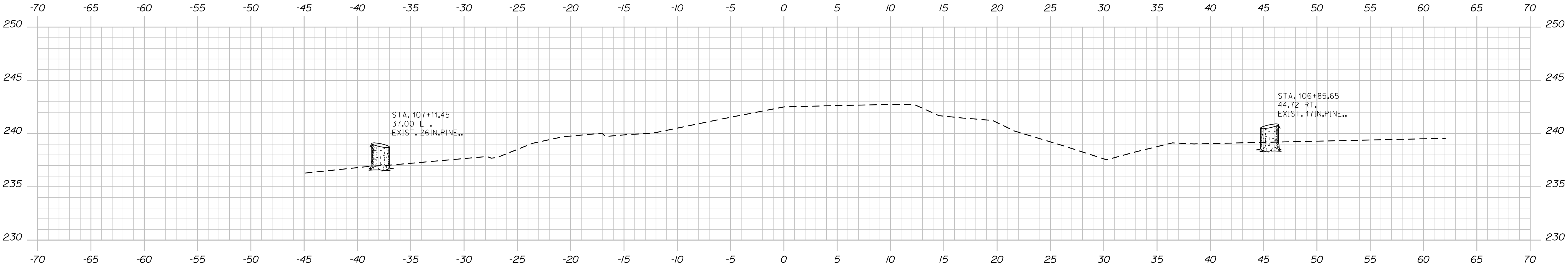
OF 30

Date: 3/25/2021

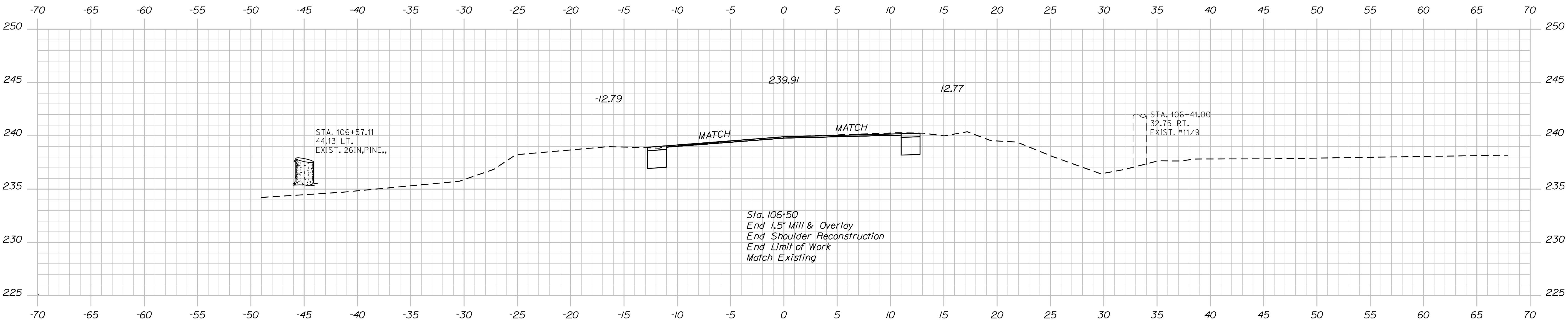
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Division: BRIDGE

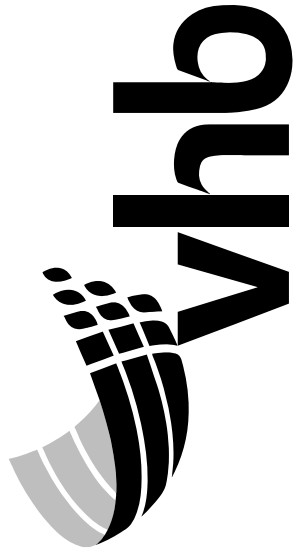
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107+00.00



106+50.00



PROJ. MANAGER	M. KERSBERGEN	DATE	11/10/20
DESIGN-DETAILED	BMD	BY	DPD
CHECKED-REVIEWED	ECF		RSBLUNT
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

HALL BRIDGE ROUTE 23 (HARTLAND ROAD)
OVER BLACK STREAM

SOMERSET COUNTY

CANAAN

CROSS SECTIONS

SHEET NUMBER

14

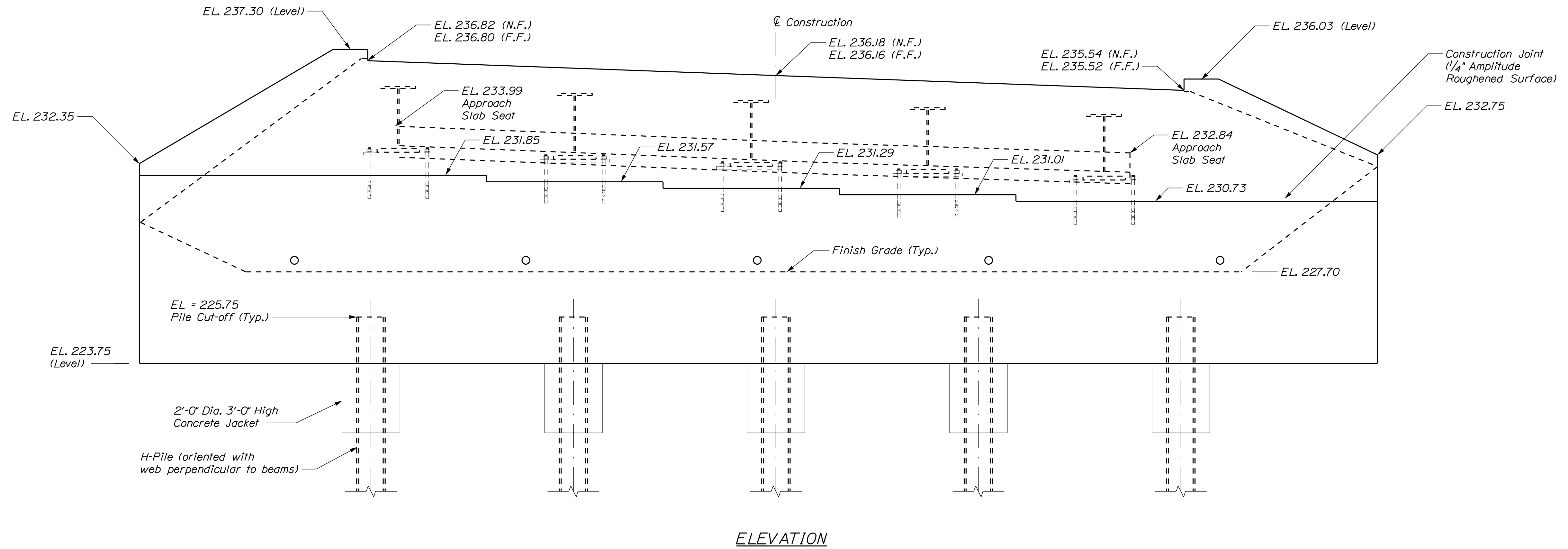
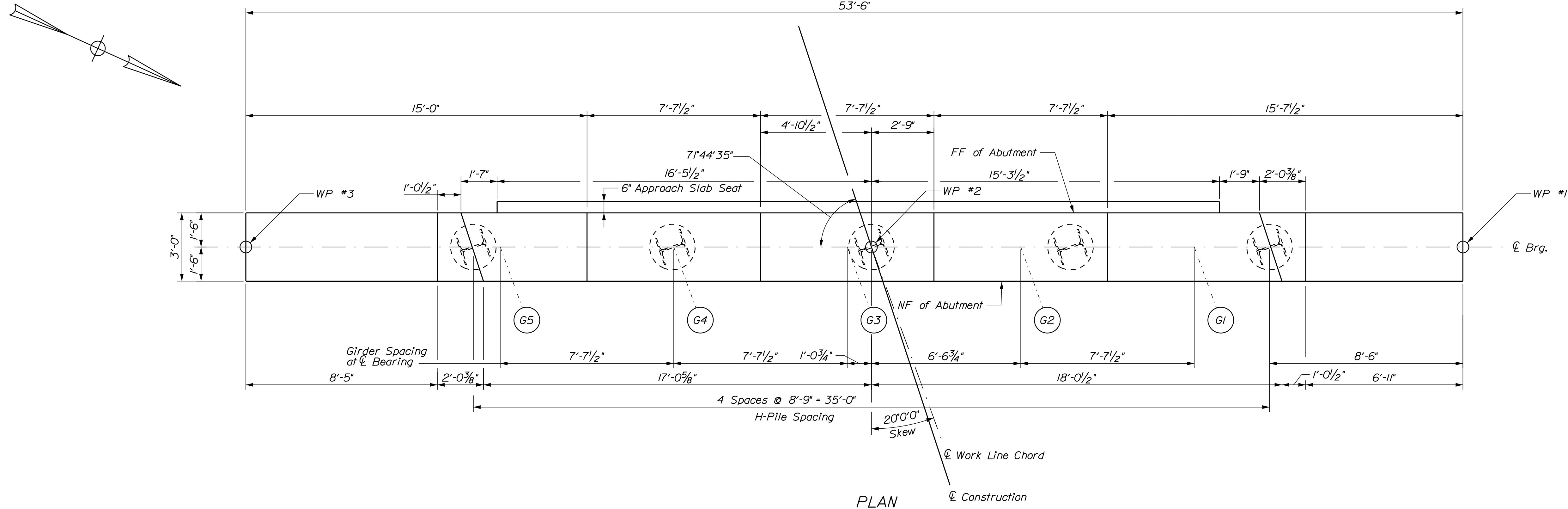
OF 30



1. Reinforcing steel shall have a minimum concrete cover of 3 inches unless otherwise noted.
2. Place 4-in. diameter weep drains in the breastwall and wingwalls at 10 ft maximum spacing. The exact location will be determined by the Resident.
3. Cover joints where waterstops are not required in accordance with Standard Details Section 502.
4. Payment for concrete jacket around the tops of the H-Piles will not be paid for directly, but shall be incidental to Item 502.219, Structural Concrete, Abutment and Retaining walls. Fill Concrete may be used for the concrete jackets.
5. Omit V-groove at exposed face of horizontal construction joint at bridge seat.
6. Install Drainage Geocomposite behind the abutments and wingwalls up to the approach slab seat elevation in accordance with Special Provision Section 620, Drainage Geocomposite.
7. Concrete above the construction joint shall be paid as Structural Concrete Roadway and Sidewalk Slab on Steel Bridges. Concrete below the construction joint shall be paid as Structural Concrete, Abutments and Retaining Walls unless otherwise noted.
8. Payment for Polyethylene Sheeting shall be incidental to related contract items.

1. The maximum factored pile load is 329 kips (including 52 kips allowed for downdrag) at the Strength Limit State.
2. H-pile material shall be ASTM A572, Grade 50.
3. Estimate of piles required:

 Abutment No. 1: 5 ~ HP 14x89 @ 30 feet
 Abutment No. 2: 5 ~ HP 14x89 @ 40 feet
4. The order lengths of the piles shall include an additional 5 feet of length for each test pile to accommodate dynamic pile testing equipment.
5. All piles shall be equipped with a pile tip in accordance with Standard Specifications Section 501.10, Prefabricated Pile Tips.
6. Piles shall not be out of position shown by more than 2 inches in any direction.
7. The Contractor shall submit to the Department, for review and acceptance, their proposed pile driving equipment with a completed (Pile and Driving Equipment Form), Figure 1, of Standard Specifications Section 501 Foundation Piles. Approval of the proposed pile driving equipment by the Department will be based on Department-conducted wave equation analyses and the criteria specified in Section 501 and Subsection 501.042, Equipment for Driving Piles. If the Department-conducted wave equation analyses show that the proposed pile driving equipment system(s) is not acceptable, the Contractor shall modify or replace the proposed driving equipment in an amendment to QCP, at their own expense, until subsequent wave equation analyses by the Department indicate the pile can be driven to the required resistance, without damage or excessive blows.
8. The Contractor shall provide access for the Department to perform 2 dynamic load tests with 24 hour (min.) restrike tests to confirm the nominal 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. The Contractor may drive production piles to the preliminary driving criteria, however pile cut-off will not be permitted until completion of restrike testing and establishment of final driving criteria.

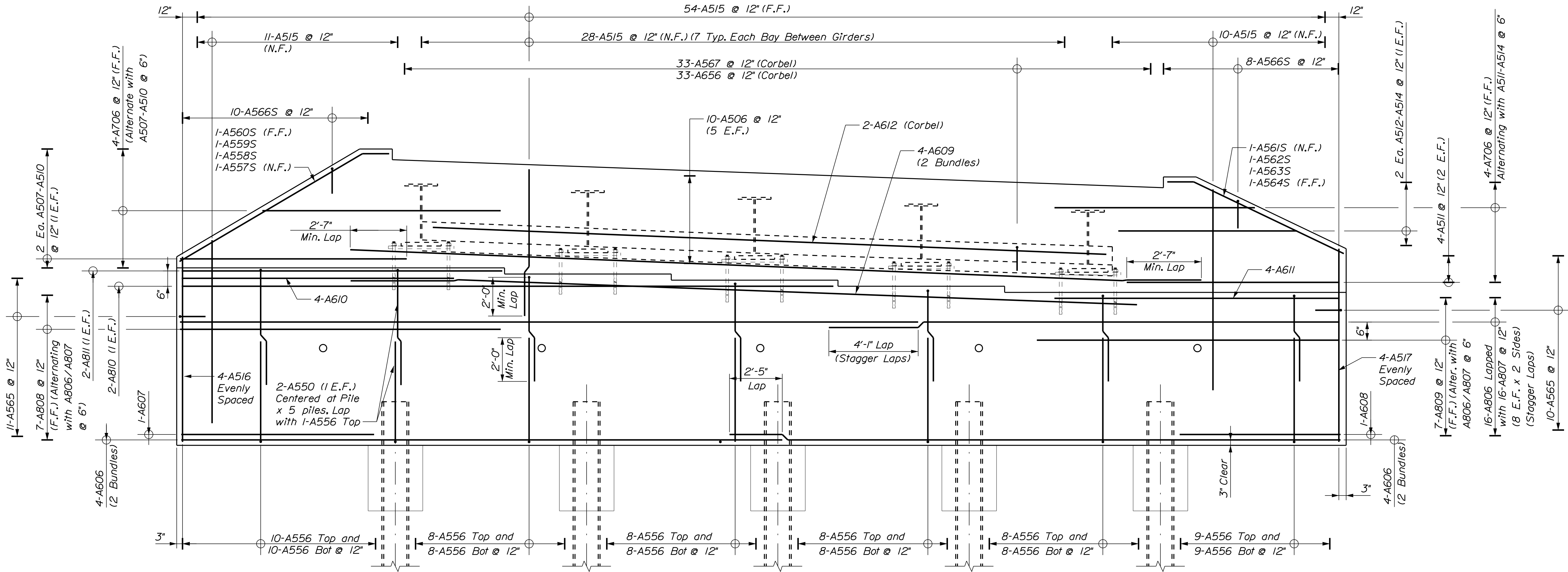


STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
2222600
BRIDGE NO. 3159
WIN
22226.00
BRIDGE PLANS

PROJ. MANAGER	M. KERSBERGEN	BY	DATE
DESIGN-DETAILED	BDP	DPD	11/10/20
CHECKED-REVIEWED	CTV/IRK	RSBLUNT	11/10/20
DESIGN-DETAILED2			
DESIGN-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

HALL BRIDGE ROUTE 23 (HARTLAND ROAD)
OVER BLACK STREAM
CANAAN
SOMERSET COUNTY
ABUTMENT NO. 1
PLAN & ELEVATION DETAILS

SHEET NUMBER
16
OF 30



ELEVATION

REINFORCING KEY

N.F. = Near Face
F.F. = Far Face
E.F. = Each Face
▲ = Cut in Field



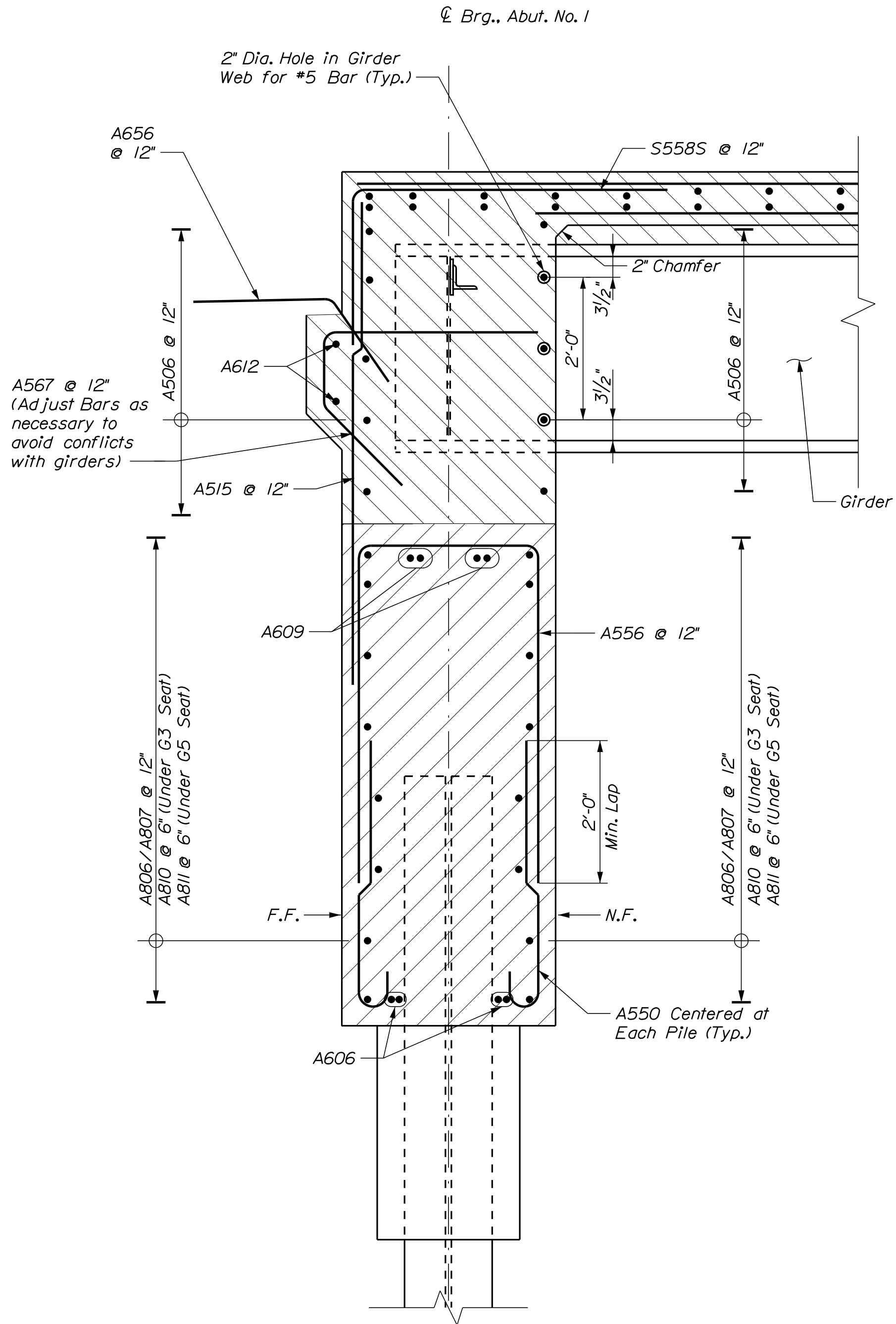
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DESIGN-DETAILED	BSP	DPD	11/10/20
CHECKED-REVIEWED	CTM/PJK	RSBLUNT	11/10/20
DESIGN-2-DETAILED			
DESIGN-3-DETAILED			
REVISIONS	1		
REVISIONS	2		
REVISIONS	3		
REVISIONS	4		
FIELD CHANGES			

HALL BRIDGE ROUTE 23 (HARTLAND ROAD)
OVER BLACK STREAM
CANAAN
SOMERSET COUNTY
ABUTMENT NO. 1
REINFORCING

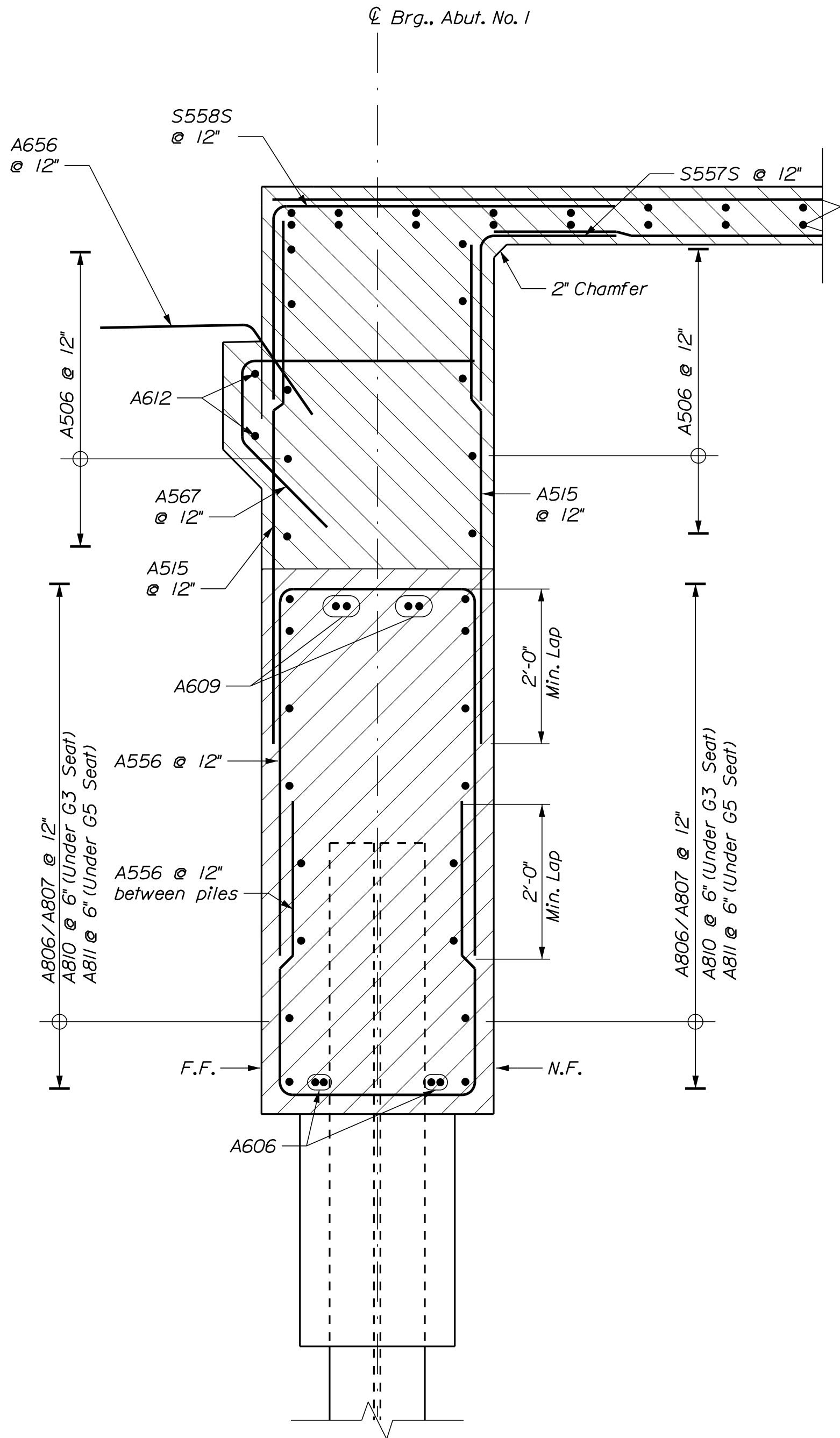
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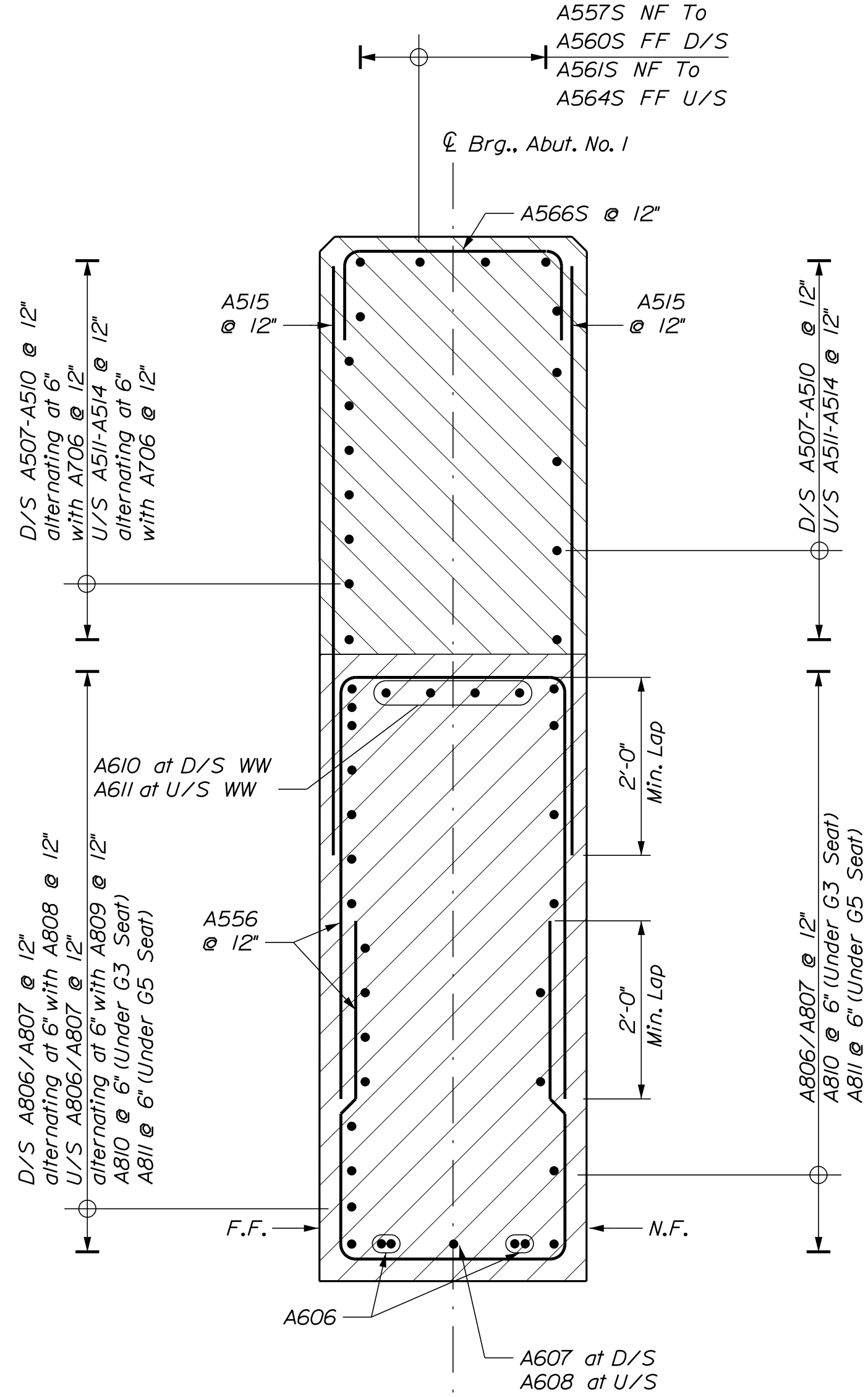
OF 30



TYPICAL ABUTMENT SECTION
AT GIRDER



TYPICAL ABUTMENT SECTION
BETWEEN GIRDERS



TYPICAL WINGWALL SECTION

NOTES:

1. D/S indicates downstream wingwalls, U/S indicates upstream wingwalls.

HALL BRIDGE ROUTE 23 (HARTLAND ROAD)
OVER BLACK STREAM

CANAAN SOMERSET COUNTY

ABUTMENT NO. 1
REINFORCING SECTIONS

SHEET NUMBER

18

OF 30

STATE OF MAINE

DEPARTMENT OF TRANSPORTATION

2222600

WIN

22226.00

BRIDGE NO. 3159

BRIDGE PLANS



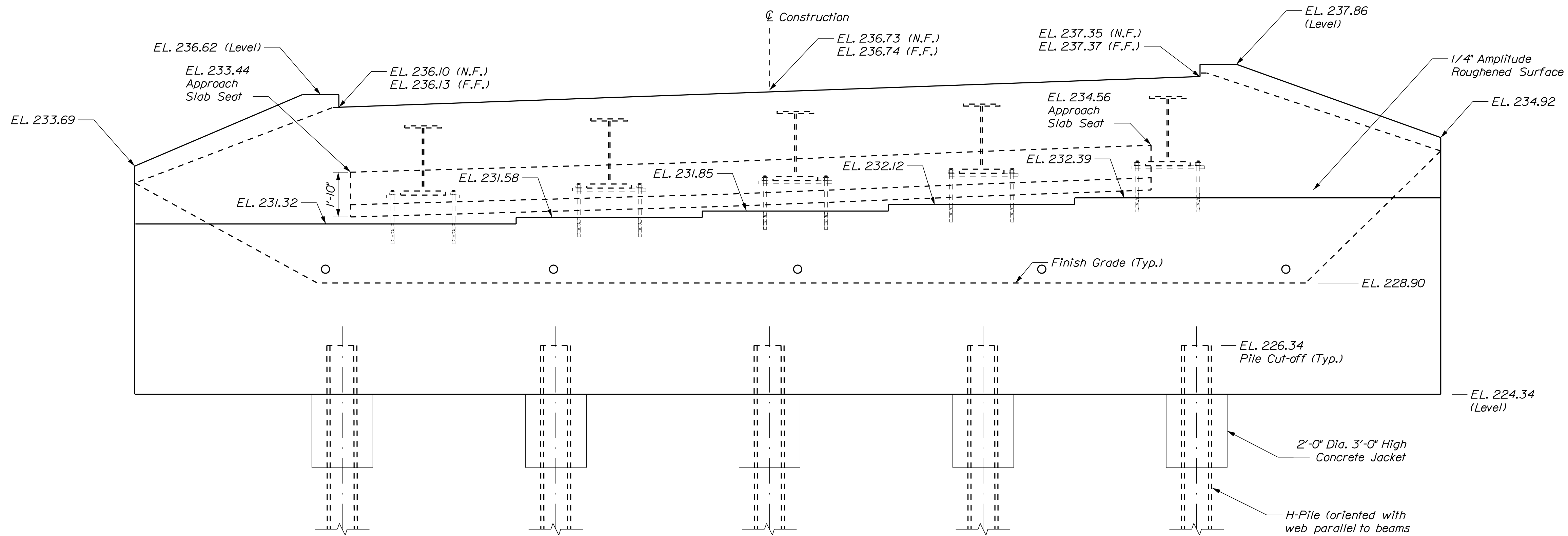
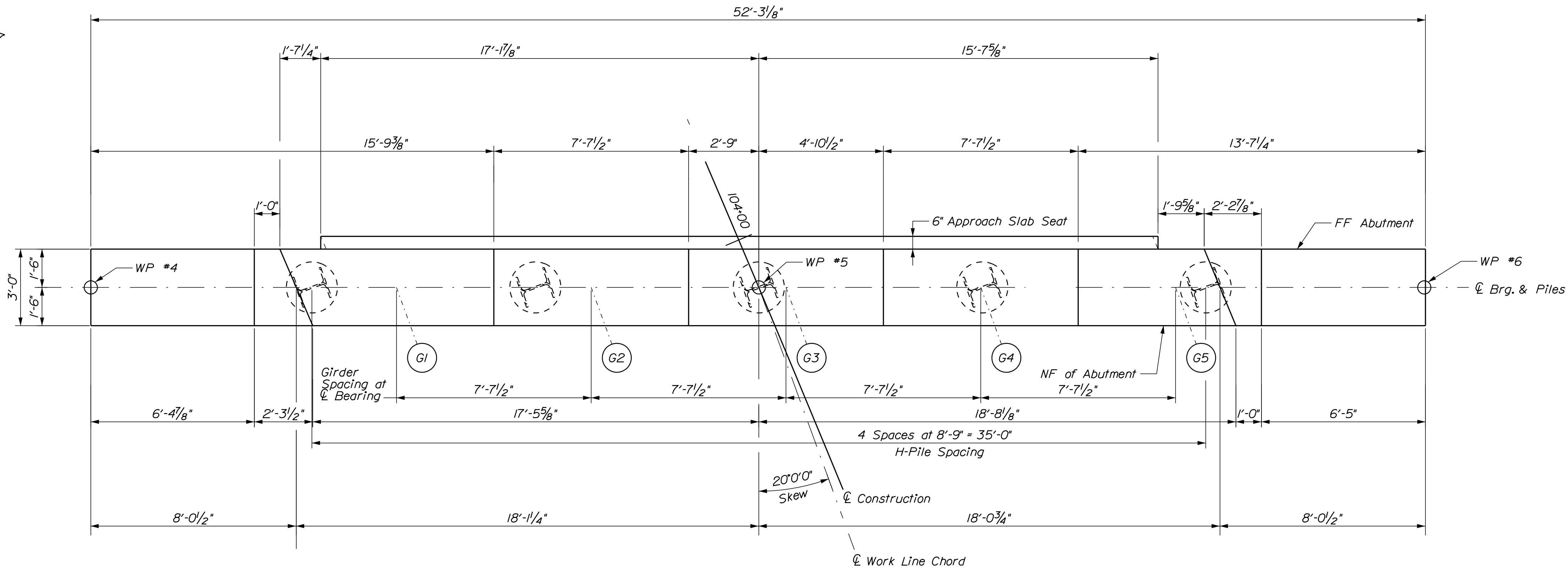
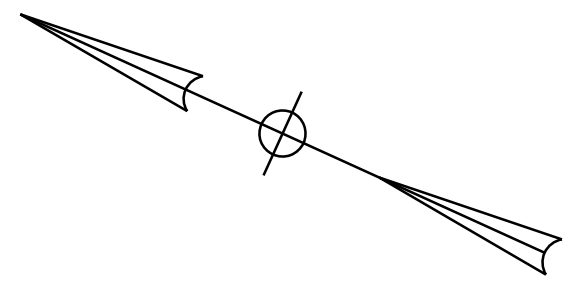
PROJ. MANAGER	DESIGN-DETAILED	CHECKED-REVIEWED	DATE	BY
M. KERSBERGEN	BSP	CTM/PRK	11/10/20	DPD
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	DESIGN3-DETAILED3			
	REVISIONS 1			
	REVISIONS 2			
	REVISIONS 3			
	REVISIONS 4			
	FIELD CHANGES			

Date: 3/25/2021

Username: PDonovan

Division: BRIDGE

Filename: ... \BRIDGE\WSTA\019_Abut_ 2.dgn



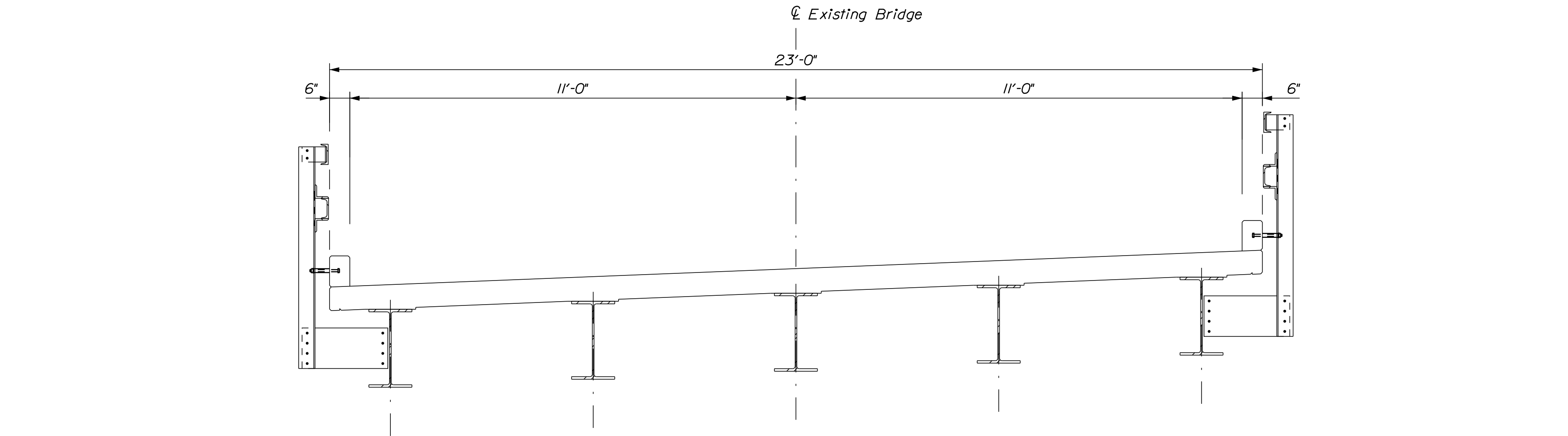
PROJ. MANAGER	M. KERSBERGEN	BY	DATE
DESIGN-DETAILED	BDP	DPD	11/10/20
CHECKED-REVIEWED	CTM/RK	RSBLUNT	11/10/20
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			



N.F. = Near Face
F.F. = Far Face
E.F. = Each Face
▲ = Cut in Field



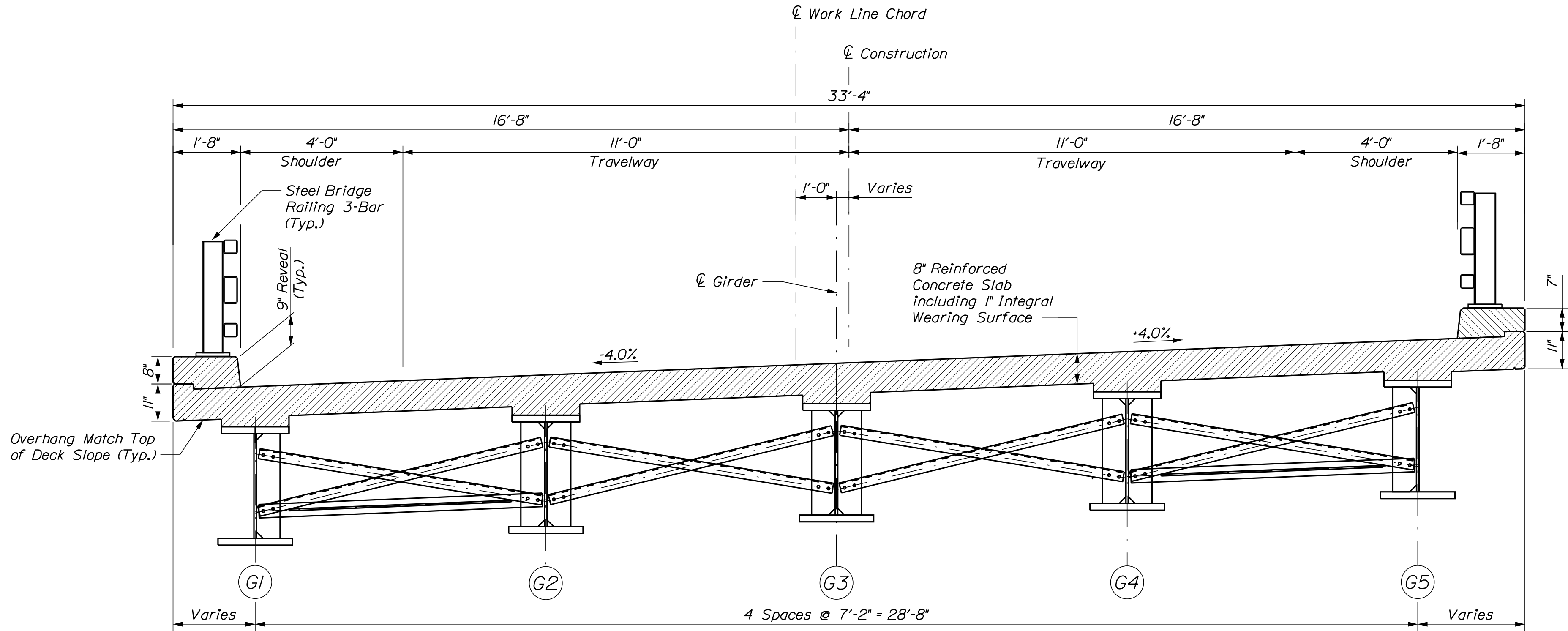
1. D/S indicates downstream wingwalls, U/S indicates upstream wingwalls.



EXISTING TRANSVERSE SECTION

SUPERSTRUCTURE NOTES

1. The theoretical blocking used for design of the structure is $\frac{5}{8}$ inches at the centerline of bearing of the abutments. Refer to Standard Detail 502 for blocking details.
2. Reinforcing shall have a minimum concrete cover of 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. 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. Precast Deck Panels shall not be used.



TRANSVERSE SECTION
(Looking Upstation)
(Reinforcing Not Shown for Clarity)

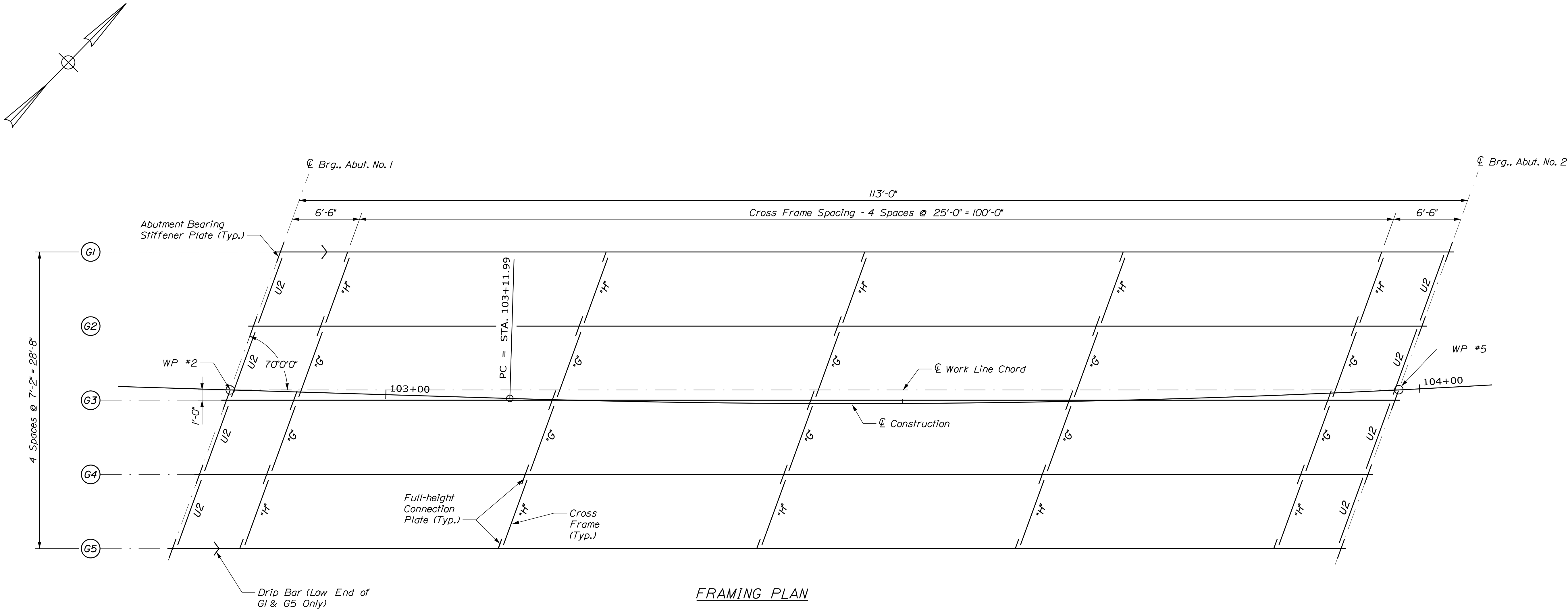
STATE OF MAINE	
DEPARTMENT OF TRANSPORTATION	
2222600	
WIN	22226.00
BRIDGE NO. 3159	BRIDGE PLANS



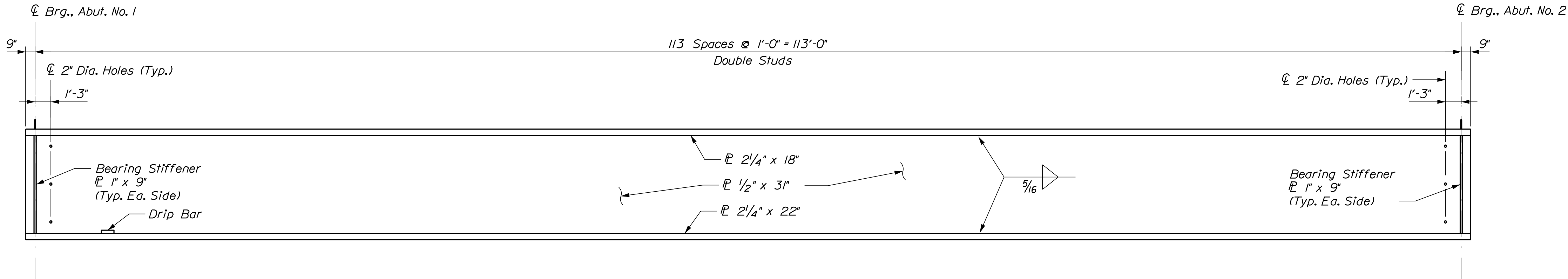
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CHECKED-REVIEWED	CTW/RK	RSL/UNT	11/10/20
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

HALL BRIDGE ROUTE 23 (HARTLAND ROAD)	SOMERSET COUNTY
OVER BLACK STREAM	
CANAAN	
SUPERSTRUCTURE	
SECTION & NOTES	

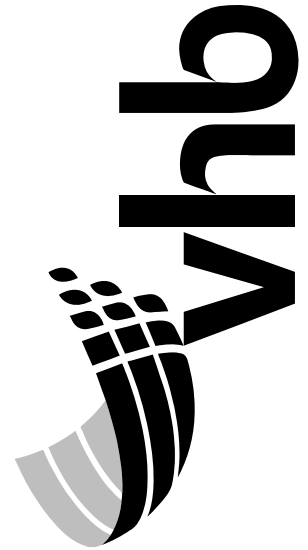
SHEET NUMBER
22
OF 30



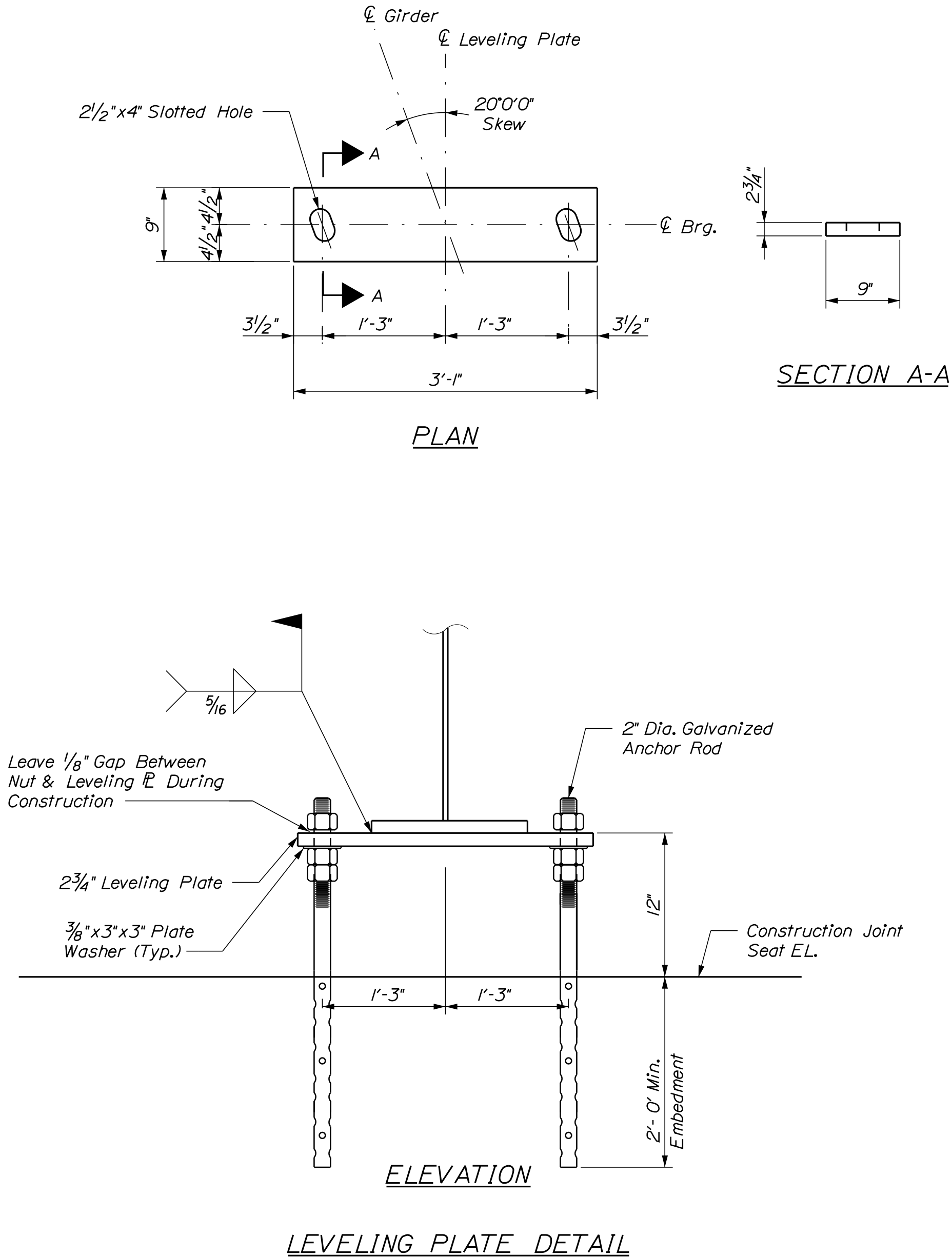
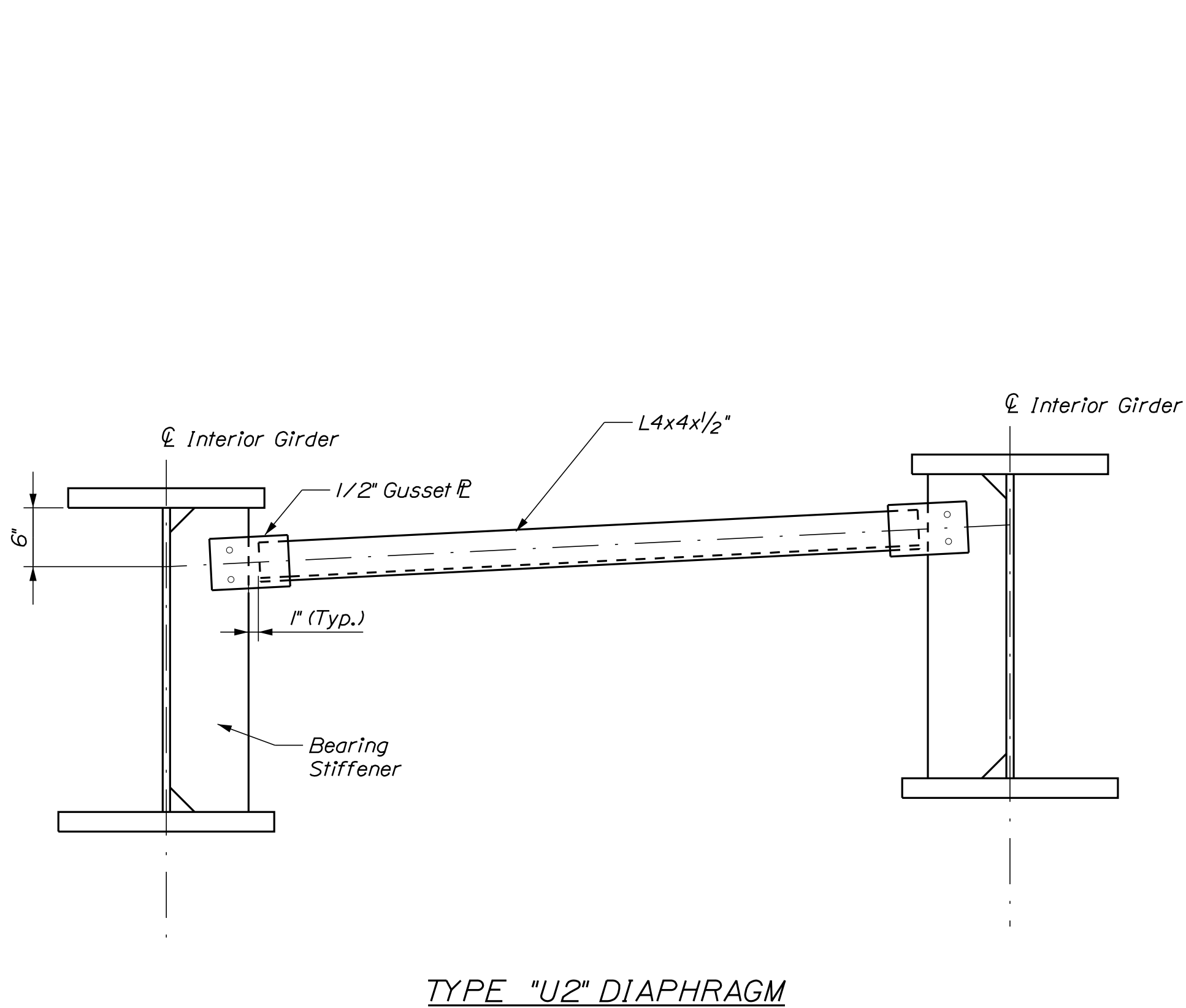
FRAMING PLAN

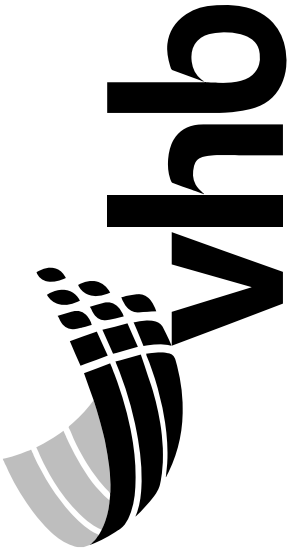


WELDED PLATE GIRDER ELEVATION
(Connection Plates Shown in Plan View)
228 Studs per Girder x 5 Girders = 1140 Studs

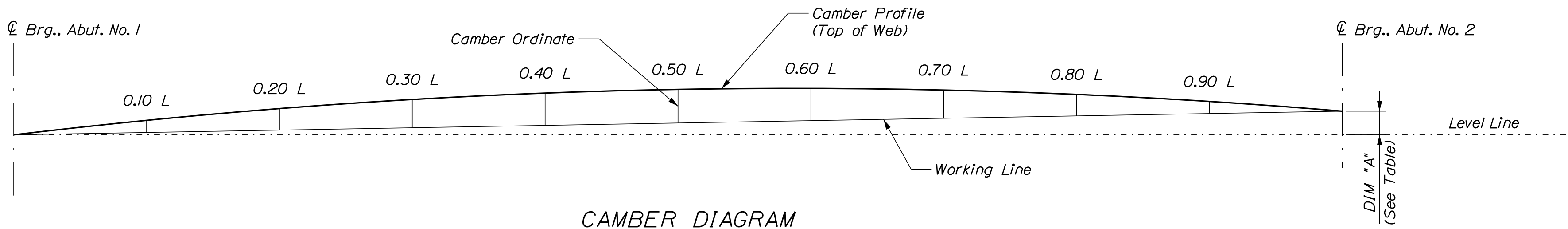


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CHECKED-REVIEWED	CTW/IRK	RSBLUNT	11/10/20
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			



STATE OF MAINE DEPARTMENT OF TRANSPORTATION			DATE		
			11/10/20	11/10/20	
			DPD	RSBLUNT	
2222600					
BRIDGE NO. 3159		WIN		22226.00	
BRIDGE PLANS					

HALL BRIDGE ROUTE 23 (HARTLAND ROAD) OVER BLACK STREAM CANAAN	SOMERSET COUNTY	SUPERSTRUCTURE STEEL DETAILS	SHEET NUMBER	
			24	
			OF 30	



CAMBER DIAGRAM

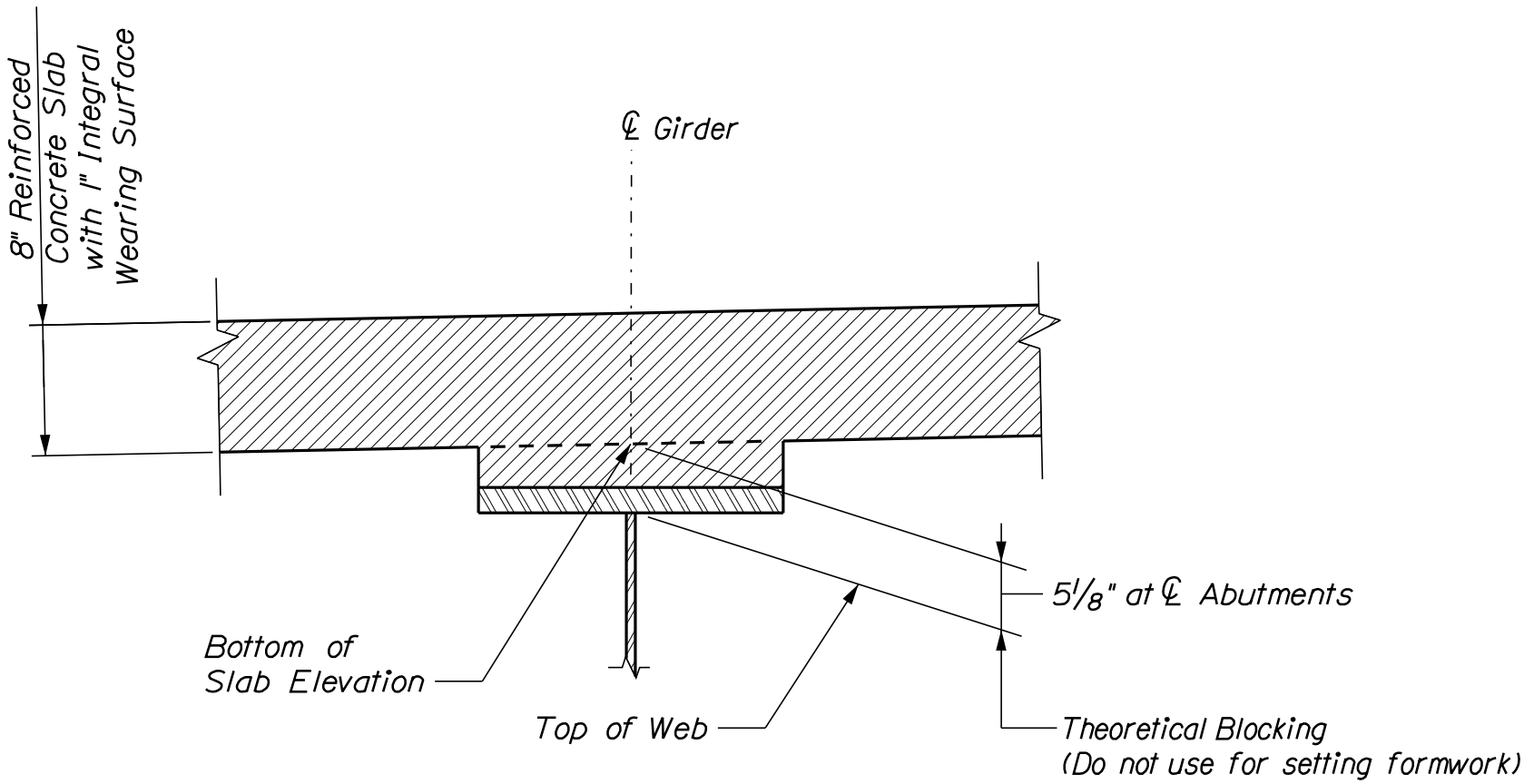
TABLE OF DEFLECTIONS (IN)												
GIRDER	LOAD	0.0 L	0.10 L	0.20 L	0.30 L	0.40 L	0.50 L	0.60 L	0.70 L	0.80 L	0.90 L	1.0 L
1	Steel Dead Load	0.00	0.61	1.15	1.58	1.85	1.94	1.85	1.58	1.15	0.61	0.00
	Fluid Dead Load	0.00	1.16	2.19	3.00	3.51	3.69	3.51	3	2.19	1.16	0.00
	Superimposed Dead Load	0.00	0.14	0.27	0.37	0.43	0.45	0.43	0.37	0.27	0.14	0.00
	Total	0.00	1.91	3.61	4.95	5.79	6.08	5.79	4.95	3.61	1.91	0.00
2,3,4	Steel Dead Load	0.00	0.61	1.15	1.58	1.85	1.94	1.85	1.58	1.15	0.61	0.00
	Fluid Dead Load	0.00	1.23	2.32	3.18	3.72	3.91	3.72	3.18	2.32	1.23	0.00
	Superimposed Dead Load	0.00	0.14	0.26	0.36	0.42	0.44	0.42	0.36	0.26	0.14	0.00
	Total	0.00	1.98	3.73	5.12	5.99	6.29	5.99	5.12	3.73	1.98	0.00
5	Steel Dead Load	0.00	0.61	1.15	1.58	1.85	1.94	1.85	1.58	1.15	0.61	0.00
	Fluid Dead Load	0.00	1.07	2.03	2.78	3.26	3.42	3.26	2.78	2.03	1.07	0.00
	Superimposed Dead Load	0.00	0.15	0.27	0.38	0.44	0.46	0.44	0.38	0.27	0.15	0.00
	Total	0.00	1.83	3.45	4.74	5.55	5.82	5.55	4.74	3.45	1.83	0.00

TABLE OF CAMBER ORDINATES PER SPAN ("COS") (in)												
Girder	℄ Brg., Abut.No. 1	0.10 L	0.20 L	0.30 L	0.40 L	0.50 L	0.60 L	0.70 L	0.80 L	0.90 L	℄ Brg., Abut. No. 2	DIM "A" (ft)
1	0.00	1.91	3.61	4.95	5.79	6.08	5.79	4.95	3.61	1.91	0.00	0.59
2	0.00	1.98	3.73	5.12	5.99	6.29	5.99	5.12	3.73	1.98	0.00	0.58
3	0.00	1.98	3.73	5.12	5.99	6.29	5.99	5.12	3.73	1.98	0.00	0.56
4	0.00	1.98	3.73	5.12	5.99	6.29	5.99	5.12	3.73	1.98	0.00	0.55
5	0.00	1.83	3.45	4.74	5.55	5.82	5.55	4.74	3.45	1.83	0.00	0.54

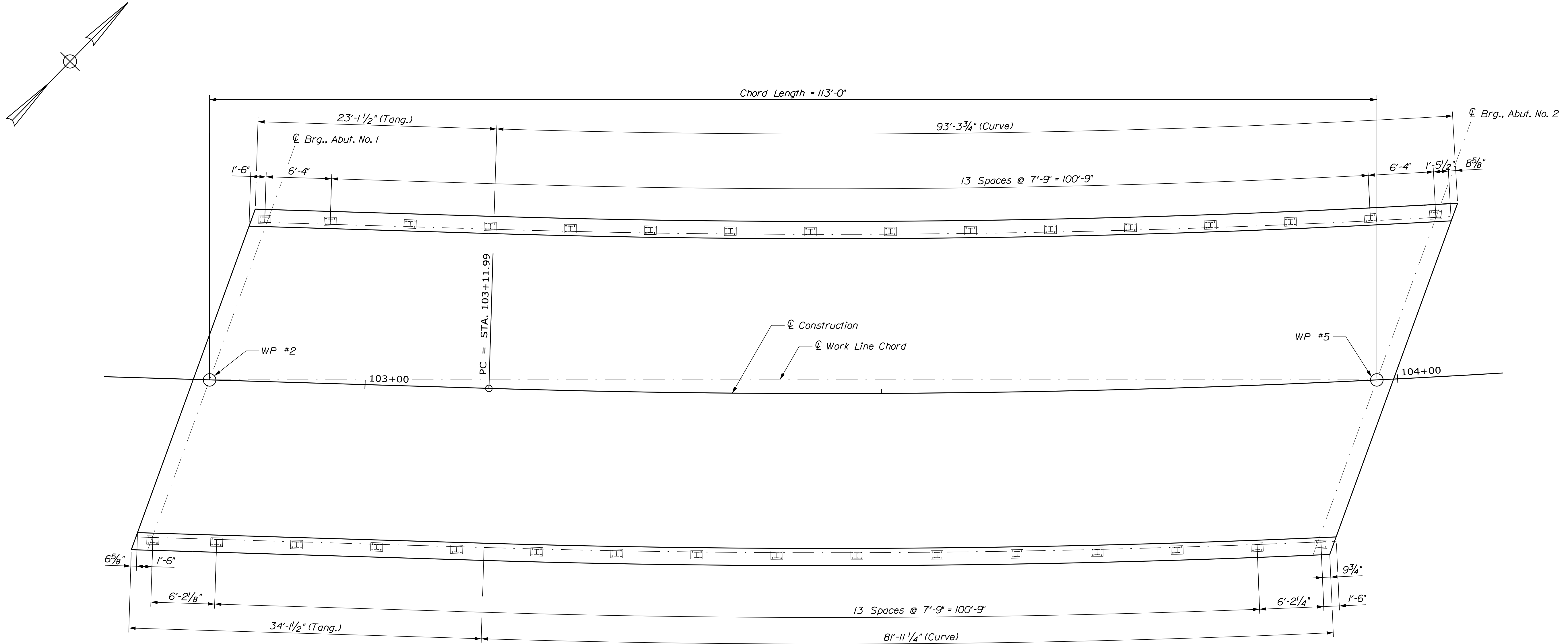
BOTTOM OF SLAB ELEVATIONS												
Girder	℄ Brg., Abut.No. 1	0.10 L	0.20 L	0.30 L	0.40 L	0.50 L	0.60 L	0.70 L	0.80 L	0.90 L	℄ Brg., Abut. No. 2	
1	234.99	235.14	235.28	235.40	235.50	235.57	235.61	235.63	235.62	235.60	235.57	
2	235.26	235.42	235.56	235.69	235.79	235.86	235.90	235.91	235.90	235.88	235.84	
3	235.54	235.70	235.84	235.97	236.06	236.13	236.17	236.19	236.17	236.14	236.11	
4	235.82	235.98	236.12	236.24	236.34	236.41	236.45	236.46	236.44	236.41	236.37	
5	236.10	236.24	236.37	236.49	236.58	236.64	236.68	236.70	236.69	236.67	236.64	

STRUCTURAL STEEL NOTES

- Camber ordinates, as shown, are computed to compensate for all dead load deflections and curvature of the finished grade profile.
- No transverse butt weld splices will be allowed in the flange plates or web plates within 10 percent of the span length from the point of 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.
- Sections of flange plates or web plates between transverse shop splices or between a transverse shop splice and a field splice shall not be less than 10 feet in length unless otherwise shown on the plans.
- Bearing stiffeners shall be plumb after erection and dead loading of the structure.
- Crossframe or diaphragm connection plates may be either plumb or normal to the top flange.
- All Diaphragm & Crossframe notes in Standard Detail 504(07) shall apply.
- All web and bottom flange plates shall conform to Zone 2 Charpy V-Notch impact test requirements of AASHTO M270.
- Install all crossframes with horizontal angle legs oriented upstation.
- All bolts, nuts, and washers shall be hot dip galvanized in accordance with ASTM A153.
- Structural steel, including the girders, stiffeners, and connection plates shall be coated in accordance with Standard Specification 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.

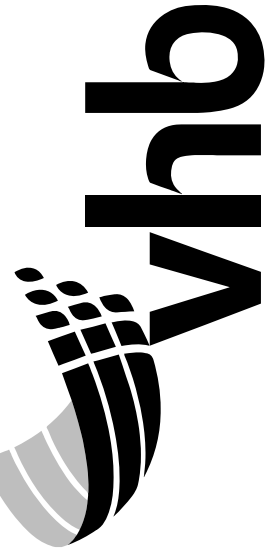


BLOCKING DETAIL



PLAN

Deck Fascia Offset from CL Beam											
	Distance Along Beam										
Beam	0.0L	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	1.0L
G1	3'-2 1/4"	2'-10 1/4"	2'-6"	2'-2 3/4"	2'-0 3/4"	2'-0 1/4"	2'-1"	2'-3 1/2"	2'-7 1/4"	3'-0 1/2"	3'-7 1/4"
G5	1'-2"	1'-6 1/4"	1'-10 1/4"	2'-2 1/2"	2'-5 1/2"	2'-7 1/2"	2'-7 3/4"	2'-6 3/4"	2'-4 1/2"	2'-0 1/2"	1'-7 1/4"

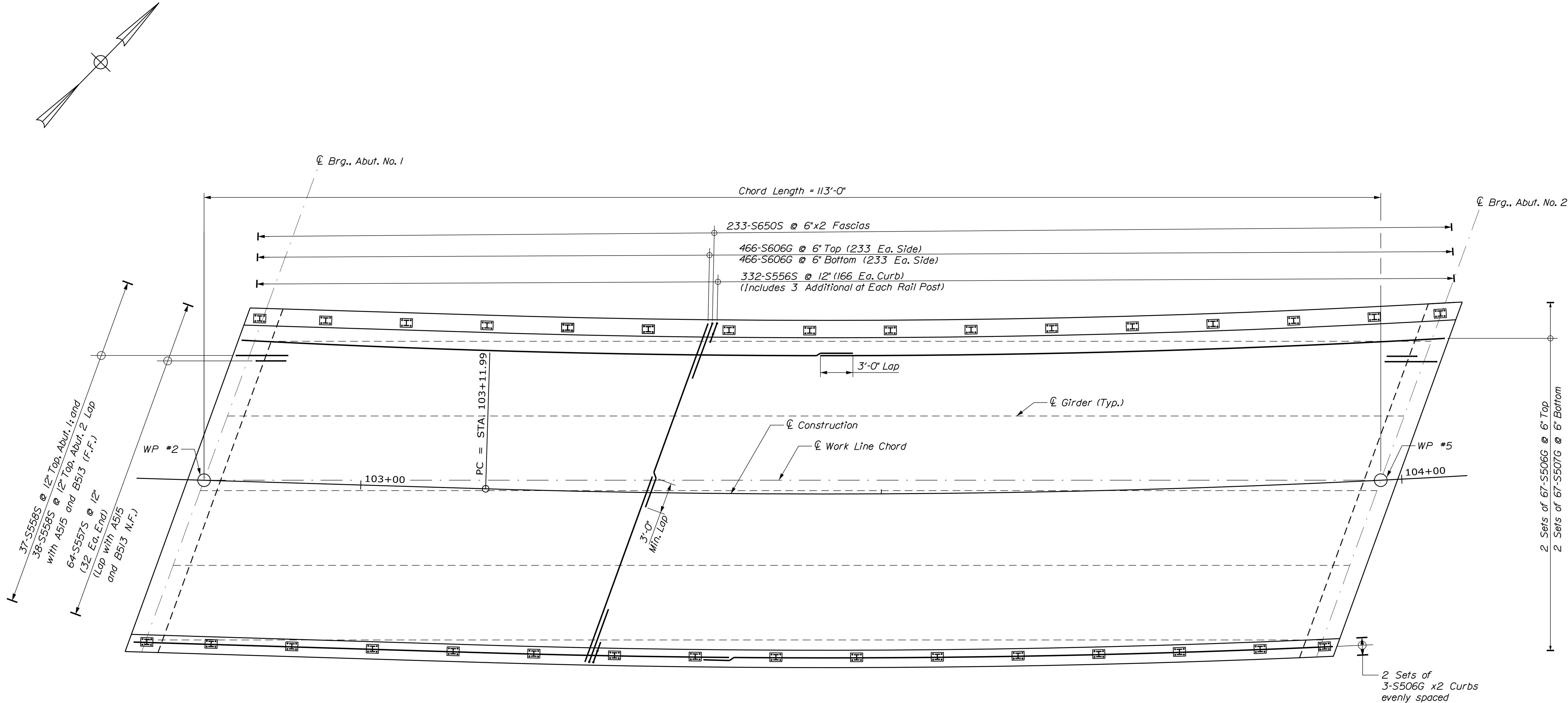


DATE	BY	DPD	BOF	PROJ. MANAGER	M. KERSBERGEN
11/10/20	RSBLUNT		CTA/IRK	CHECKED-REVIEWED	
				DESIGN2-DTAILED02	
				DESIGN3-DTAILED03	
				REVISIONS 1	
				REVISIONS 2	
				REVISIONS 3	
				REVISIONS 4	
				FIELD CHANGES	

HALL BRIDGE ROUTE 23 (HARTLAND ROAD)
OVER BLACK STREAM

CANAAN SOMERSET COUNT

BRIDGE DECK & RAILING LAYOUT

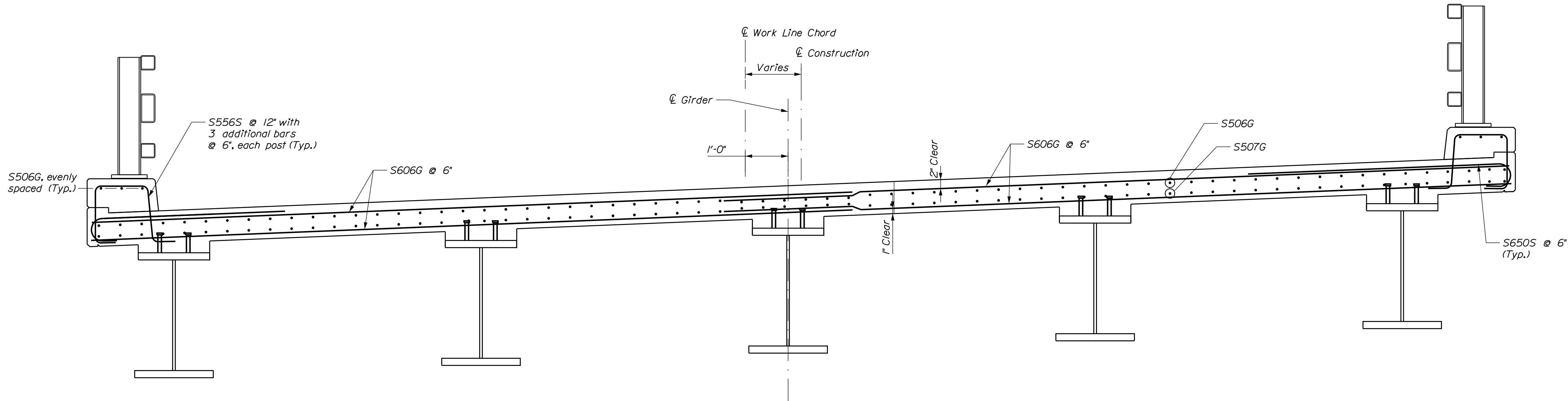


SUPERSTRUCTURE PLAN



PROJ. MANAGER	M. KERSBERGEN	BY	DATE
DESIGN-DETAILED	BGP	DPD	11/10/20
CHECKED-REVIEWED	CTM/PK	RSBLUNT	11/10/20
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

HALL BRIDGE ROUTE 23 (HARTLAND ROAD)
OVER BLACK STREAM
CANAAN
SOMERSET COUNTY
DECK REINFORCING PLAN



TRANSVERSE REINFORCING SECTION

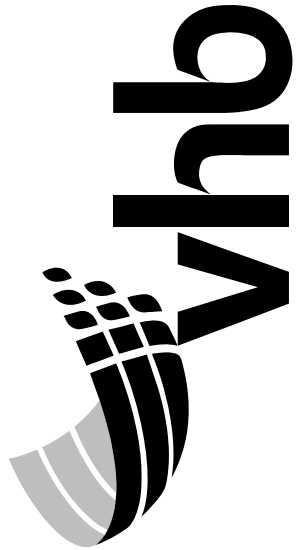
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2222600

BRIDGE NO. 3159

WIN
22226.00

BRIDGE PLANS



PROJ. MANAGER	M. KERSBERGEN	BY	DATE
DESIGN-DETAILED	BGP	DPD	11/10/20
CHECKED-REVIEWED	CTM/IRK	RSBLUNT	11/10/20
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

HALL BRIDGE ROUTE 23 (HARTLAND ROAD)
OVER BLACK STREAM

CANAAN

SOMERSET COUNTY

DECK REINFORCING SECTION

SHEET NUMBER

28

OF 30

