

# STATE OF MAINE DEPARTMENT OF TRANSPORTATION



### SPECIFICATIONS

Design: Load and Resistance Factor Design per AASHTO LRFD Bridge Design Specifications, Eight Edition 2017 with Interim Revisions through 2018.

### LIST OF DRAWINGS

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### TRAFFIC DATA

Current (2017) AADT .....	2270
Future (2037) AADT .....	2720
DHV - % of AADT .....	11
Design Hour Volume .....	299
Heavy Trucks (% of AADT) .....	5
Heavy Trucks (% of DHV) .....	1
Directional Distribution (% of DHV) .....	67
18 kip Equivalent P 2.0 .....	30
18 kip Equivalent P 2.5 .....	28
Posted Speed (mph) .....	55

### HYDROLOGIC DATA

Drainage Area .....	4.90 sq mi
Design Discharge (Q50) .....	494.3 cfs
Check Discharge (Q100) .....	579.0 cfs
Headwater Elevation (Q1.1) .....	6.10 ft
Headwater Elevation (Q25) .....	17.50 ft
Headwater Elevation (Q50) .....	19.50 ft
Headwater Elevation (Q100) .....	22.00 ft
Discharge Velocity (Q1.1) .....	9.10 fps *
Discharge Velocity (Q50) .....	14.00 fps *
Discharge Velocity (Q100) .....	14.50 fps **
Mean Lower Low Water (MLLW) .....	-1.89 ft
Mean Low Water (MLW) .....	-1.68 ft
Mean Tide Level (MTL) .....	1.30 ft
Mean High Water (MHW) .....	4.28 ft
Mean Higher High Water (MHHW) .....	4.63 ft
2017 Predicted High Tide .....	6.05 ft

\* MLW Tailwater Condition  
\*\* Q1.1 Tailwater Condition

### MATERIALS

Concrete: Invert Lining .....	Class "A" or Shotcrete
Reinforcing Steel .....	ASTM A 615/A 615M, Grade 60

### BASIC DESIGN STRESSES

Concrete .....	f 'c = 4000 psi
Shotcrete .....	f 'c = 5000 psi
Reinforcing Steel .....	f y = 60,000 psi

## GARDINER KENNEBEC COUNTY ROLLING DAM NO. 2 BRIDGE OVER ROLLING DAM BROOK STATE ROUTE 24 STATE PROJECT NO. 18964.00 BRIDGE NO. 6023

### UTILITIES

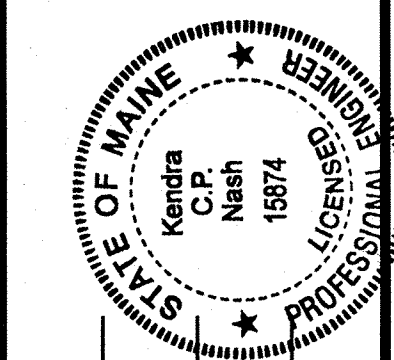
Consolidated Communications	Gardiner Water District
Central Maine Power	Gardiner Wastewater
Comcast	

### MAINTENANCE OF TRAFFIC

Maintain two-way traffic with occasional periods of alternating one-way traffic.

<b>PROJECT LOCATION</b>	Route 24 in Gardiner, approx 0.54 miles northerly of Capen Rd. intersection. Lat./Long. 44°11'49.7" N, 69°45'39.6" W
<b>PROGRAM AREA</b>	Highway Bridges - Traditional
<b>OUTLINE OF WORK</b>	Bridge Culvert Rehabilitation using a concrete invert lining. Internal fish weirs will be constructed. Heavy riprap will be used for aprons.

STATE OF MAINE DEPARTMENT OF TRANSPORTATION	
APPROVED	DATE
COMMISSIONER: <i>[Signature]</i>	7-15-19
CHIEF ENGINEER: <i>[Signature]</i>	7-18-19



<i>[Signature]</i>	SIGNATURE
15874	P.E. NUMBER
7/11/2019	DATE

PROGRAM	PROJECT MANAGER	DESIGNER	CONSULTANT	PROJECT RESIDENT	CONTRACTOR	PROJECT COMPLETION DATE
BRIDGE	JOEL KITREDE	KENDRA NASH				

18964.00  
GARDINER  
ROLLING DAM NO. 2 BRIDGE  
TITLE SHEET

SHEET NUMBER  
**1**  
OF 7

Date: 7/8/2019  
Username: Mark.Poulin  
Division: BRIDGE  
Filename: \\00\BRIDGE\MSTA\001\_Title.dgn

WIN 018964.00

ESTIMATED QUANTITIES			
ITEM NO.	DESCRIPTION	QUANTITY	UNIT
203.2318	DISPOSAL OF SPECIAL WASTE	131	T
502.325	STRUCTURAL CONCRETE CULVERT INVERT LINING (48 CY)	1	LS
502.326	STRUCTURAL CONCRETE FISH WEIRS (2 CY)	1	LS
503.12	REINFORCING STEEL, FABRICATED AND DELIVERED	7,830	LB
503.13	REINFORCING STEEL, PLACING	7,830	LB
511.07	COFFERDAM: DOWNSTREAM	1	LS
511.07	COFFERDAM: UPSTREAM	1	LS
514.06	CURING BOX FOR CONCRETE CYLINDERS	1	EA
606.366	GUARDRAIL, REMOVE & RESET TYPE 3C	50	LF
606.367	REPLACE UNUSABLE EXISTING GUARDRAIL POSTS	5	EA
610.16	HEAVY RIPRAP	120	CY
615.07	LOAM	2	CY
618.14	SEEDING METHOD NUMBER 2	1	UN
619.12	MULCH	1	UN
619.14	EROSION CONTROL MIX	20	CY
620.58	EROSION CONTROL GEOTEXTILE	160	SY
629.05	HAND LABOR, STRAIGHT TIME	40	HR
631.12	ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	20	HR
631.172	TRUCK - LARGE (INCLUDING OPERATOR)	20	HR
639.19	FIELD OFFICE TYPE B	1	EA
652.33	DRUM	10	EA
652.34	CONE	20	EA
652.35	CONSTRUCTION SIGNS	300	SF
652.361	MAINTENANCE OF TRAFFIC CONTROL DEVICES (60 CD)	1	LS
652.38	FLAGGER	40	HR
656.75	TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	1	LS
659.10	MOBILIZATION	1	LS

**GENERAL CONSTRUCTION NOTES**

- For easements, construction limits and right of way lines, refer to Right of Way Map.
- Project information referred to below may be accessed at the following MaineDOT web address: [http://www.maine.gov/mdot/contractors/\\*projecttbl](http://www.maine.gov/mdot/contractors/*projecttbl).
- 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.
- The hydrologic report of the bridge site may be accessed at the MaineDOT web address. The hydrologic report is based on MaineDOT's interpretation of the information obtained for the subject site. No assurance is given that the information or the conclusions of the report will be representative of actual conditions at the time of construction.
- 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:
  - If a Lump Sum pay item is eliminated, the requirements of Standard Specifications Section 109.2, Elimination of Items, will take precedence.
  - If other Contract Documents specifically allow a change in payment for a Lump Sum pay item, those requirements will be followed.
  - 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.
- Any excavated dredge material that can be reused on site, as directed by the Resident, shall be reused to fill into nearby slopes. This work will be considered incidental to related contract items.
- The Contractor shall minimize, to the maximum extent possible, the void spaces in the riprap aprons at both ends of the pipe. Granular Borrow meeting the material requirements for underwater backfill shall be spread between the layers of individual stones. Granular Borrow used to fill the void spaces shall not be paid for directly but shall be considered incidental to Item No. 610.16, Heavy Riprap.
- 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.
- 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 619.14, Erosion Control Mix.
- Payment for equipment, labor, and materials required to access the work, as well as re-establish original ground, will be considered incidental to related contract items.
- The Contractor should be aware that there are sheet piles located beneath the streambed surface upstream and downstream of the culvert. These sheet piles shall remain in place.

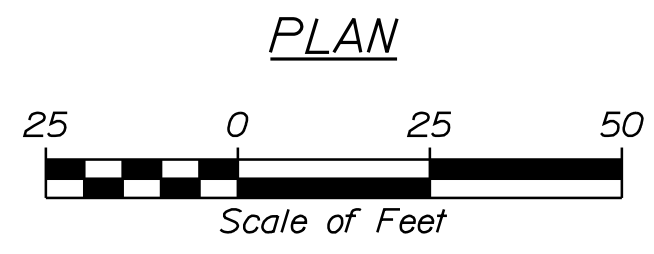
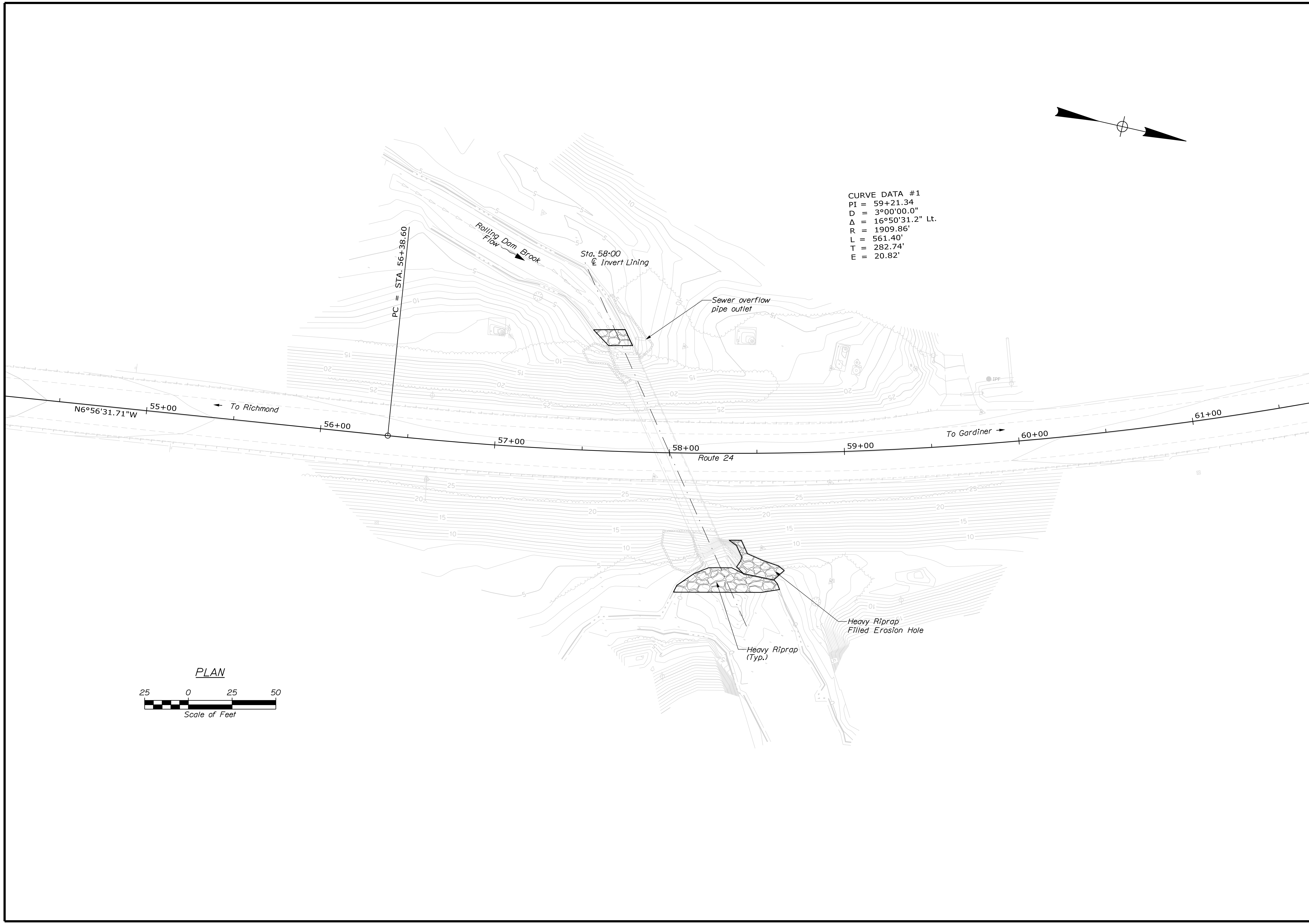
STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		18964.00		WIN		018964.00		BRIDGE NO. 6023		BRIDGE PLANS	
ROLLING DAM NO. 2 BRIDGE		ROLLING DAM BROOK		KENNEBEC COUNTY		ESTIMATED QUANTITIES &		GENERAL CONSTRUCTION NOTES		SHEET NUMBER		2	
PROJ. MANAGER	DESIGN-DETAILED	CHKD-REVIEWED	DESIGN-DETAILED	REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES	JCK	BY	DATE	SIGNATURE	P.E. NUMBER
									MAC	MRP	05/23/19		
											07/08/19		

Date: 7/11/2019

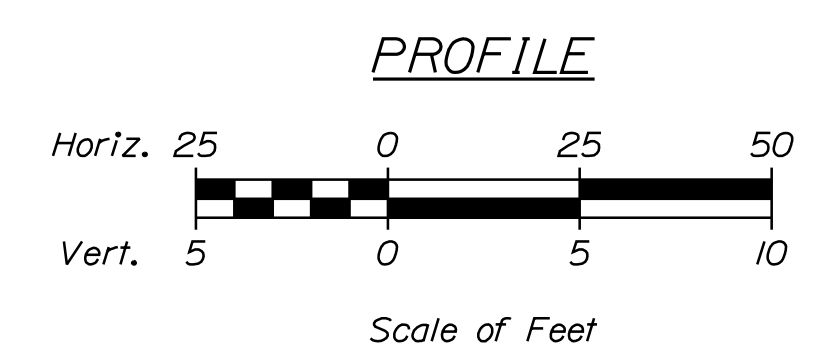
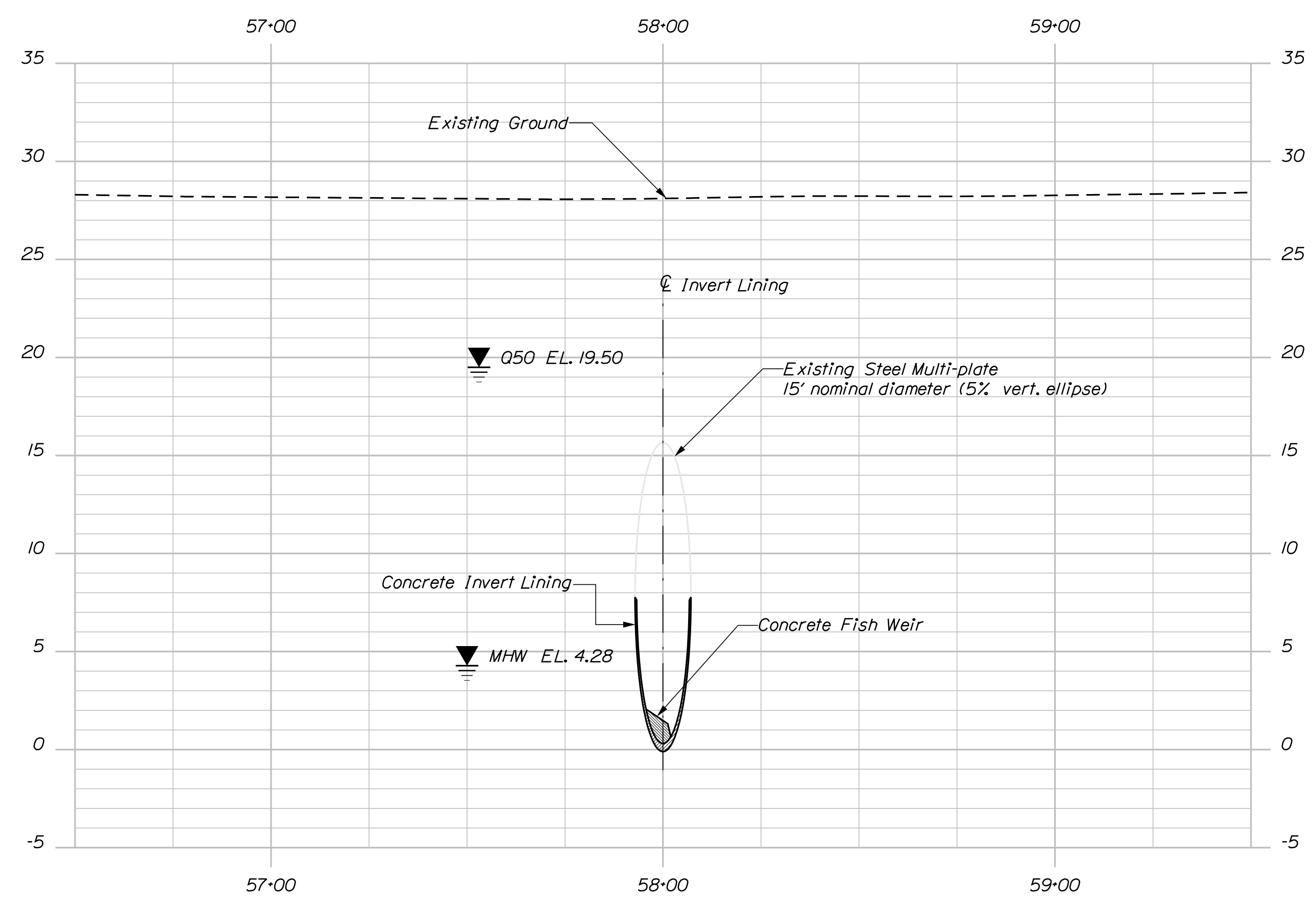
Username: Mark.Poulin

Division: BRIDGE

Filename: ... \00\BRIDGE\MSTA\003\_BDPlan1.dgn



STATE OF MAINE DEPARTMENT OF TRANSPORTATION		18964.00	
BRIDGE NO. 6023		WIN 018964.00	
BRIDGE PLANS			
PROJ. MANAGER	JCK	BY	DATE
DESIGN-DETAILED	KCN	MAC	05/23/19
CHECKED-REVIEWED		MAP	07/08/19
DESIGN-DETAILED			SIGNATURE
REVISIONS 1			P.E. NUMBER
REVISIONS 2			DATE
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			
ROLLING DAM NO. 2 BRIDGE ROLLING DAM BROOK KENNEBEC COUNTY GARDINER		GENERAL PLAN	
SHEET NUMBER		3	
		OF 7	



ROLLING DAM NO. 2 BRIDGE  
ROLLING DAM BROOK  
KENNEBEC COUNTY  
GARDINER

**PROFILE**

SHEET NUMBER

4

OF 7

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
**18964.00**

BRIDGE NO. 6023    WIN    018964.00    BRIDGE PLANS

PROJ. MANAGER	JCK	BY	DATE
DESIGN DETAILED	KCN	MAC	05/23/19
CHECKED-REVIEWED		MAP	07/08/19
DESIGN DETAILED			
DESIGN DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

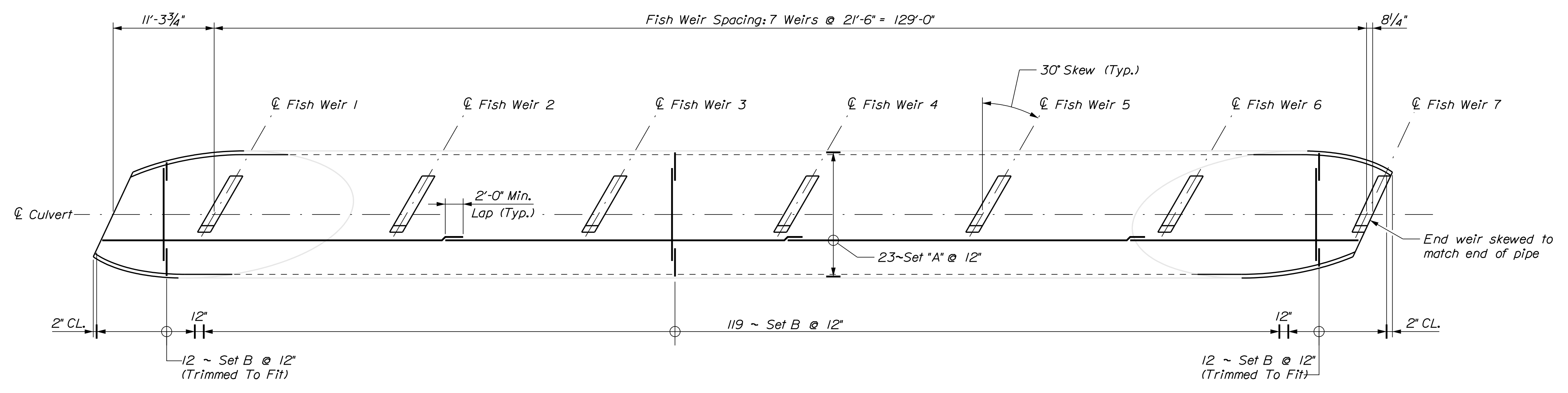
SIGNATURE	P.E. NUMBER
DATE	DATE

Date: 7/11/2019

Username: Mark.Poulin

Division: BRIDGE

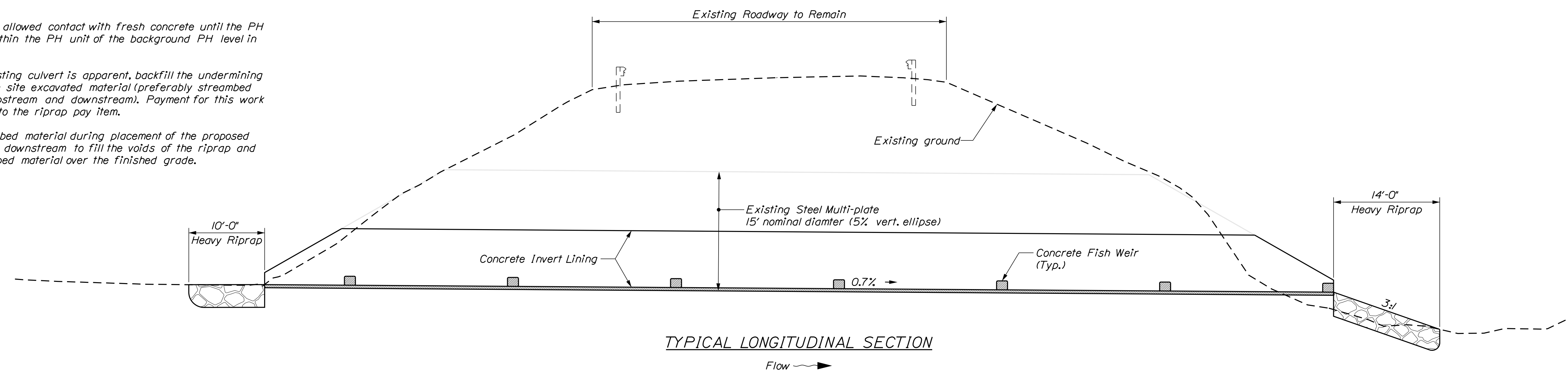
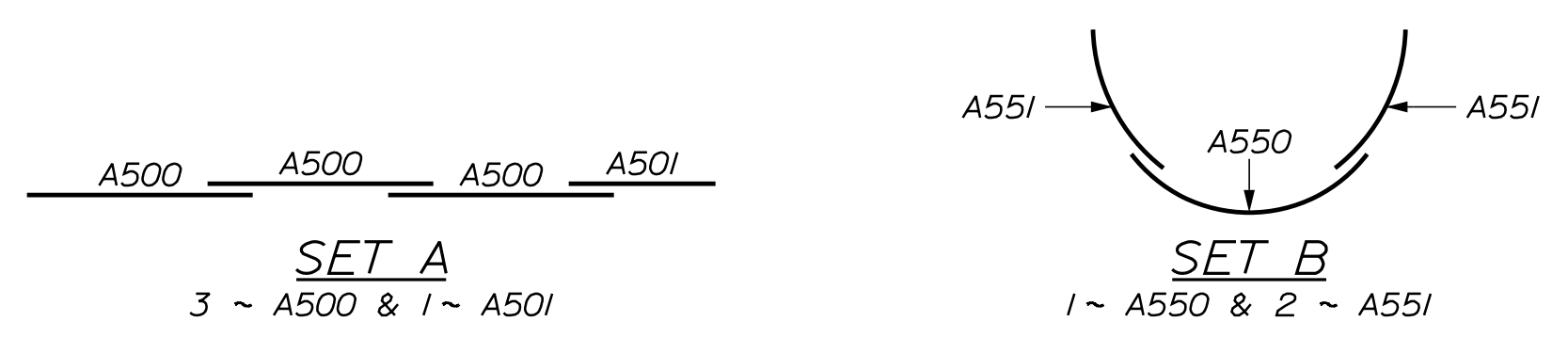
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INVERT LINING PLAN

**INVERT LINING NOTES**

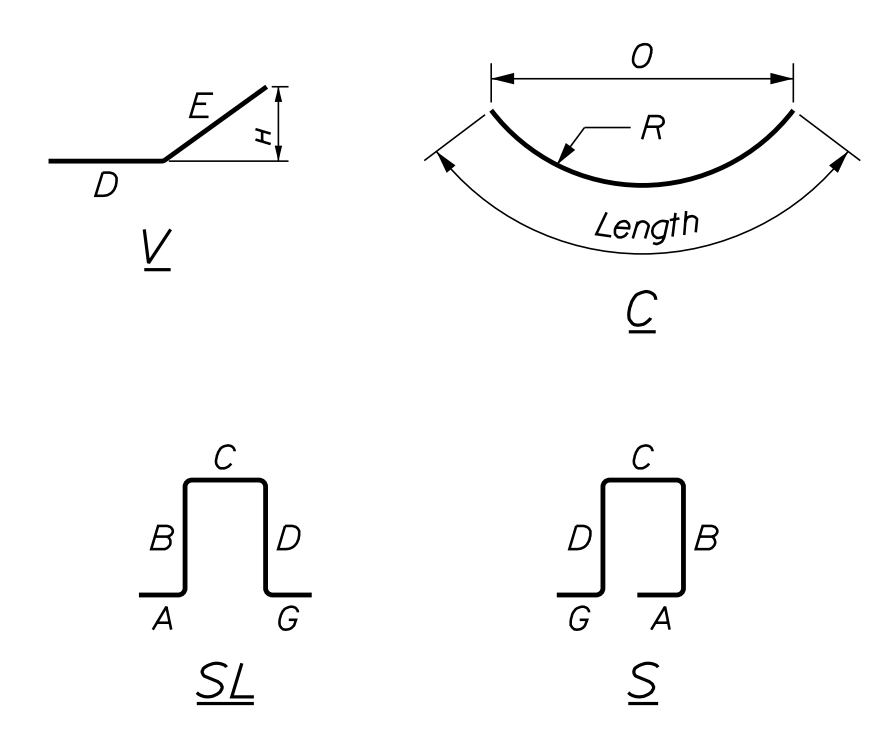
- All debris in the existing pipe shall be removed and disposed of properly. Surfaces of the pipe against which concrete is to be placed shall be thoroughly cleaned so as to remove all loose corrosion. In areas where the metal is nonexistent, a preliminary concrete placement shall be made, using forms where required, to fill voids and to establish the original lines of the pipe. Payment for this work will be considered incidental to Item No. 502.325, Structural Concrete Invert Lining. The final concrete placement shall then be made as shown.
- The existing pipe may have a slight deformation requiring field bending and/or cutting of the reinforcing steel. Payment for any necessary adjustments will be considered incidental to related Contract items.
- Reinforcing steel shall have a minimum concrete cover of 2 inches unless otherwise noted.
- Payment for the asphalt emulsion will be considered incidental to related Contract items.
- Stream water shall not be allowed contact with fresh concrete until the PH factor is 8.5 or less and within the PH unit of the background PH level in the stream.
- If undermining of the existing culvert is apparent, backfill the undermining to the end of the culvert with site excavated material (preferably streambed material if available, typical upstream and downstream). Payment for this work will be considered incidental to the riprap pay item.
- Wash in excavated streambed material during placement of the proposed riprap aprons upstream and downstream to fill the voids of the riprap and to provide a cover of streambed material over the finished grade.



TYPICAL LONGITUDINAL SECTION

STRAIGHT BARS				BENT BARS														
MARK	QTY.	LENGTH	LOCATION	MARK	QTY.	LENGTH	TYPE	A	B	C	D	E	F	G	H	O	R	LOCATION
A500	69	40'-0"	Invert Lining	A550	143	12'-0"	C									10'-5 1/2"	6'-6"	Invert Lining
A501	23	26'-8"	Invert Lining	A551	286	7'-0"	C									6'-10 1/2"	8'-0"	Invert Lining
				A552	14	7'-10"	V				6'-7 3/4"	1'-2 1/2"			0'-9"			Fish Weir
				A553	14	6'-4 1/2"	C									6'-2 3/4"	8'-0"	Fish Weir
				A554	6	4'-9 1/2"	SL	0'-10"	1'-0 1/2"	1'-0 1/2"	1'-0 1/2"				0'-10"			Fish Weir
				A555	6	5'-3"	SL	0'-10"	1'-3 1/4"	1'-0 1/2"	1'-3 1/4"				0'-10"			Fish Weir
				A556	6	5'-4 1/2"	SL	0'-10"	1'-4"	1'-0 1/2"	1'-4"				0'-10"			Fish Weir
				A557	6	5'-2"	SL	0'-10"	1'-2 3/4"	1'-0 1/2"	1'-2 3/4"				0'-10"			Fish Weir
				A558	6	4'-8"	SL	0'-10"	0'-11 3/4"	1'-0 1/2"	0'-11 3/4"				0'-10"			Fish Weir
				A559	6	3'-10 1/2"	SL	0'-10"	0'-7"	1'-0 1/2"	0'-7"				0'-10"			Fish Weir
				A560	1	4'-9 1/2"	S	0'-10"	1'-0 1/2"	1'-0 1/2"	1'-0 1/2"				0'-10"			Fish Weir
				A561	1	5'-3"	S	0'-10"	1'-3 1/4"	1'-0 1/2"	1'-3 1/4"				0'-10"			Fish Weir
				A562	1	5'-4 1/2"	S	0'-10"	1'-4"	1'-0 1/2"	1'-4"				0'-10"			Fish Weir
				A563	1	5'-2"	S	0'-10"	1'-2 3/4"	1'-0 1/2"	1'-2 3/4"				0'-10"			Fish Weir
				A564	1	4'-8"	S	0'-10"	0'-11 3/4"	1'-0 1/2"	0'-11 3/4"				0'-10"			Fish Weir
				A565	1	3'-10 1/2"	S	0'-10"	0'-7"	1'-0 1/2"	0'-7"				0'-10"			Fish Weir
MARK	QTY.	LENGTH	LOCATION	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 A 615/A 615M, Grade 60

GENERAL NOTES

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

STATE OF MAINE  
 DEPARTMENT OF TRANSPORTATION  
 18964.00  
 WIN  
 018964.00  
 BRIDGE NO. 6023  
 BRIDGE PLANS

ROLLING DAM NO. 2 BRIDGE  
 ROLLING DAM BROOK  
 KENNEBEC COUNTY  
 GARDNER

INVERT LINING PLAN &  
 REINFORCING STEEL SCHEDULE

PROJ. MANAGER: [ ]  
 CHECKED/REVIEWED: [ ]  
 DESIGNED/DETAILED: [ ]  
 REVISIONS: 1 [ ]  
 REVISIONS: 2 [ ]  
 REVISIONS: 3 [ ]  
 REVISIONS: 4 [ ]  
 FIELD CHANGES: [ ]

DATE: 05/23/19  
 07/08/19

BY: MAC  
 MAP

SIGNATURE: [ ]  
 P.E. NUMBER: [ ]  
 DATE: [ ]

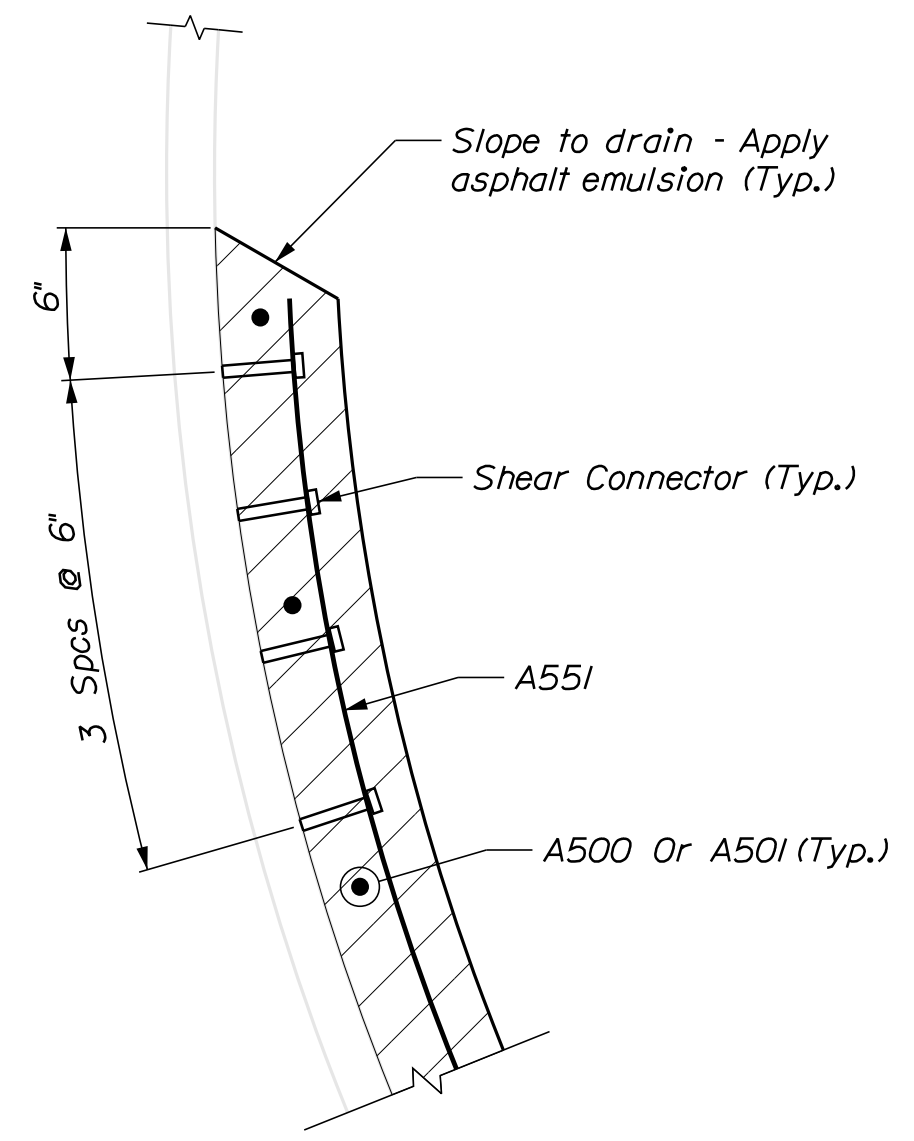
SHEET NUMBER  
**5**  
 OF 7

Date: 7/11/2019

Username: Mark.Poulin

Division: BRIDGE

Filename: ... \BRIDGE\MSTA\006\_Pipe\_det.dgn



CONNECTION DETAIL

Note: Four rows of shear connectors shall be spaced longitudinally at 12" spacing along each side of the culvert. Shear connectors shall be 1/2" diameter x 3" studs or machine bolts welded to the crests of the corrugations. Approximately 1096 shear connectors are required. Shear connections shall not be paid for directly. Payment will be considered incidental to item 502.325 Structural Concrete Culvert Invert Lining.

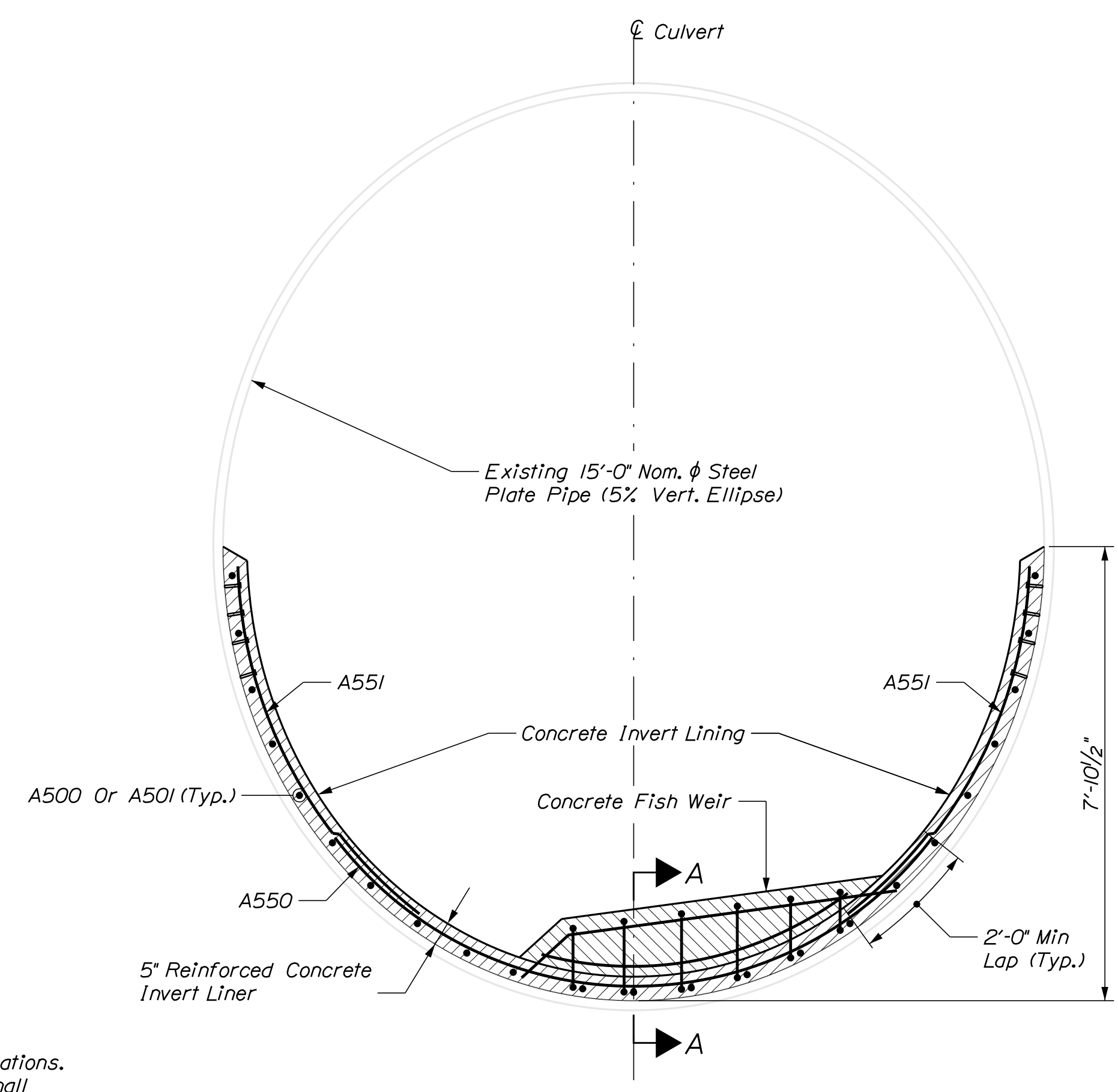
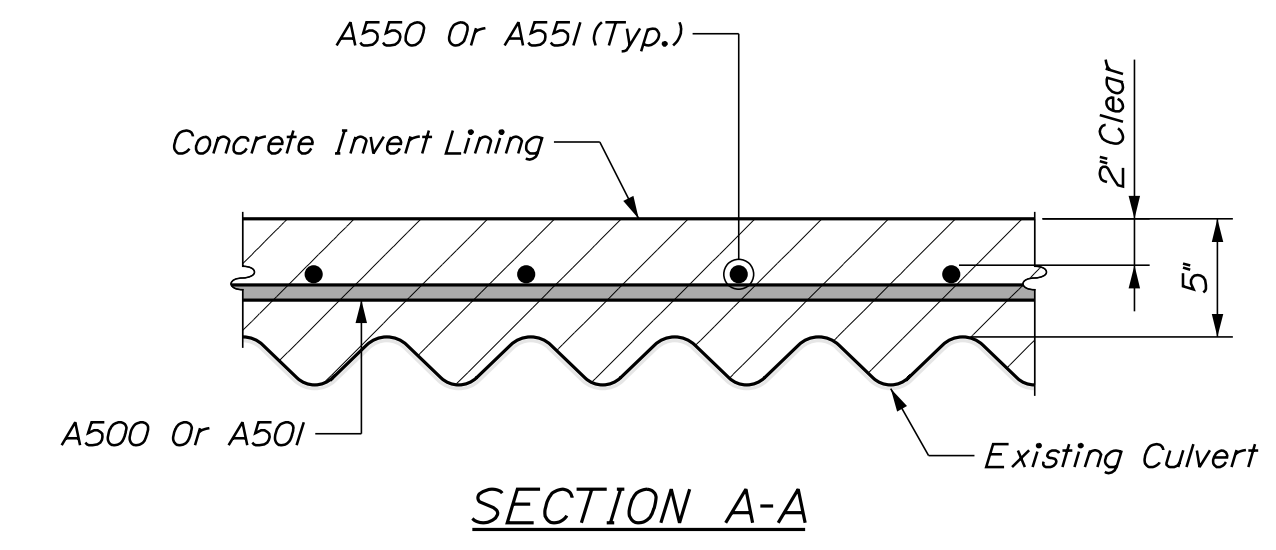
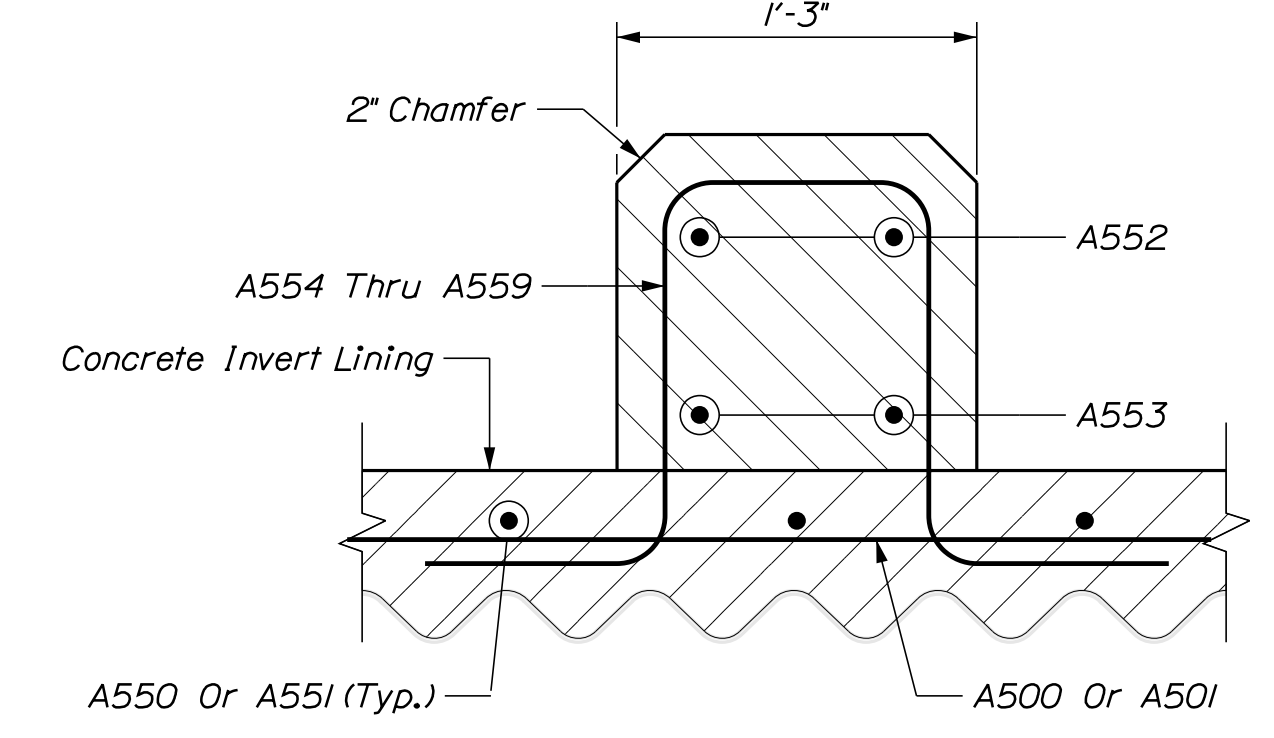


PLATE PIPE SECTION

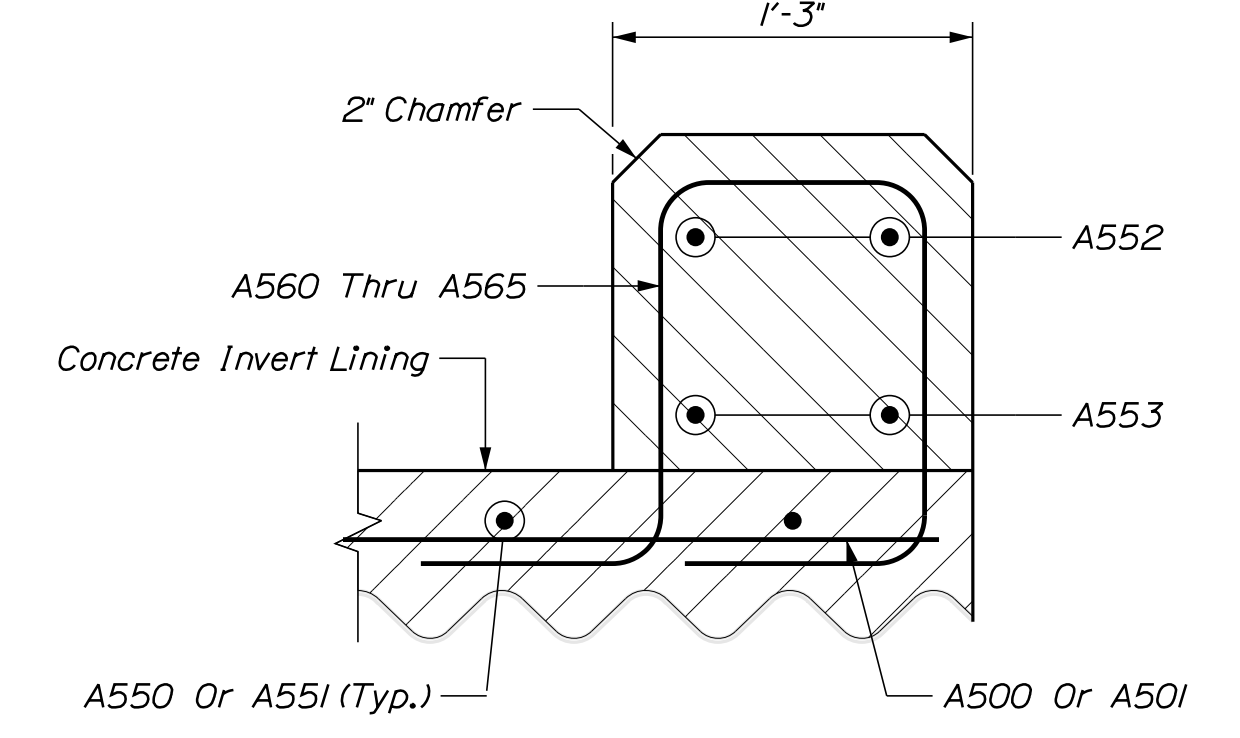


SECTION A-A



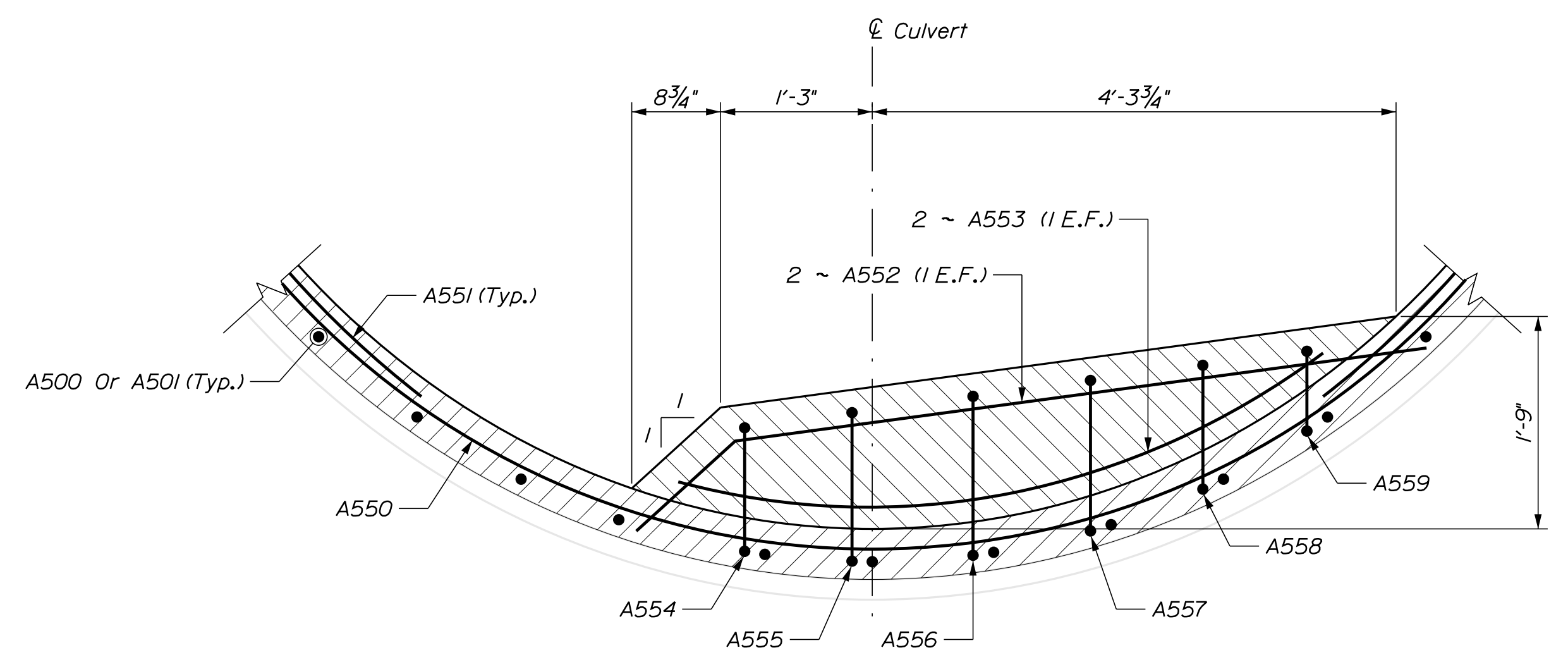
FISH WEIR SECTION

Fish Weir No. 1 To 6



FISH WEIR SECTION

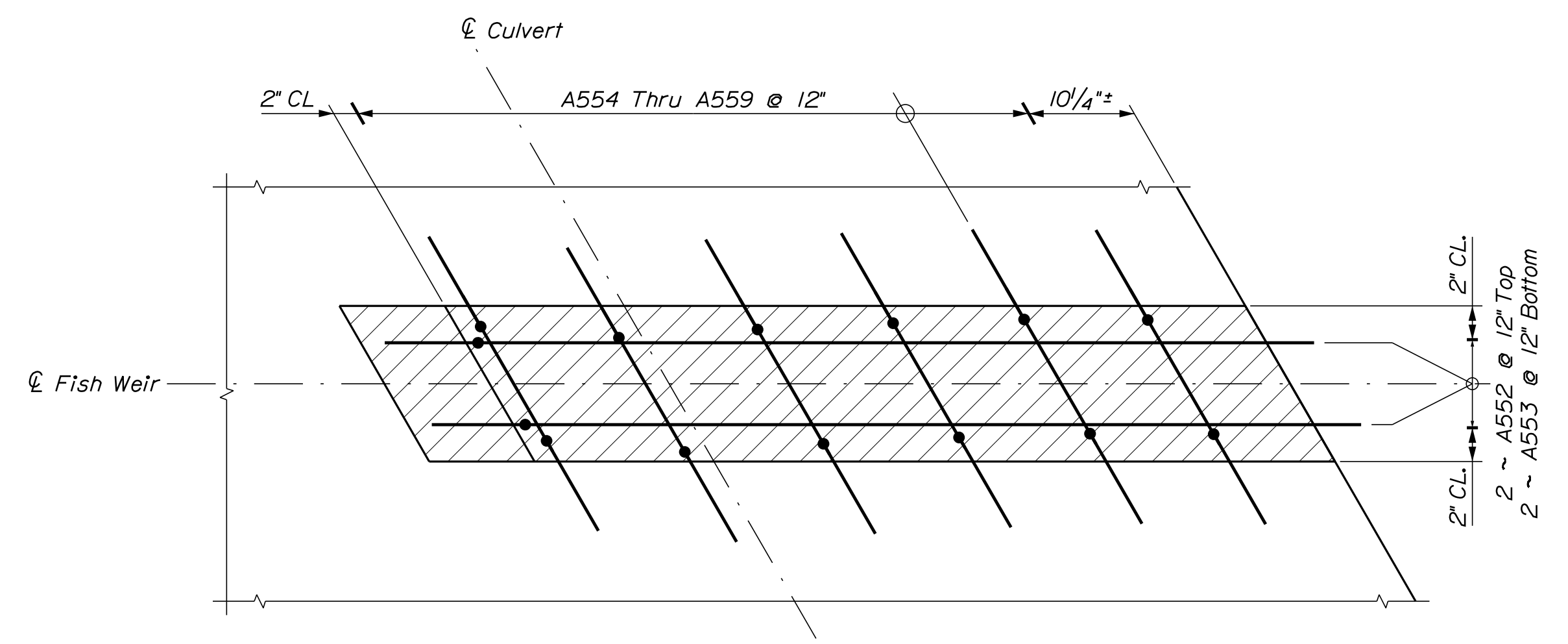
Fish Weir No. 7



FISH WEIR ELEVATION

~Section cut perpendicular to pipe~  
Fish Weir No. 1 To 6 Shown

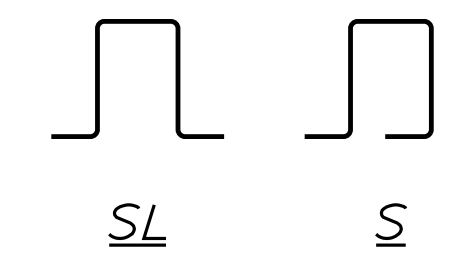
Should conditions such as deformation of the existing pipe and irregularities in the invert lining thickness result in conflict between the vertical and the horizontal dimensions shown in this detail, the vertical dimensions shall control.



FISH WEIR TOP VIEW

~Section Cut Perpendicular To Fish Weir~  
Fish Weir No. 1 To 6 Shown

Fish Weir No. 1 Thru 6 Use Rebar Type SL  
Fish Weir No. 7 Use Rebar Type S.



PROJ. MANAGER	DESIGN DETAILED	CHECKED/REVIEWED	DESIGN DETAILED	REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES
JCK	KCN	MAC	MRP					
DATE	05/23/19	07/08/19						
BY	MAC	MRP						
SIGNATURE								
P.E. NUMBER								
DATE								

ROLLING DAM NO. 2 BRIDGE  
ROLLING DAM BROOK  
KENNEBEC COUNTY  
GARDINER  
INVERT LINING DETAILS

SHEET NUMBER

6

OF 7

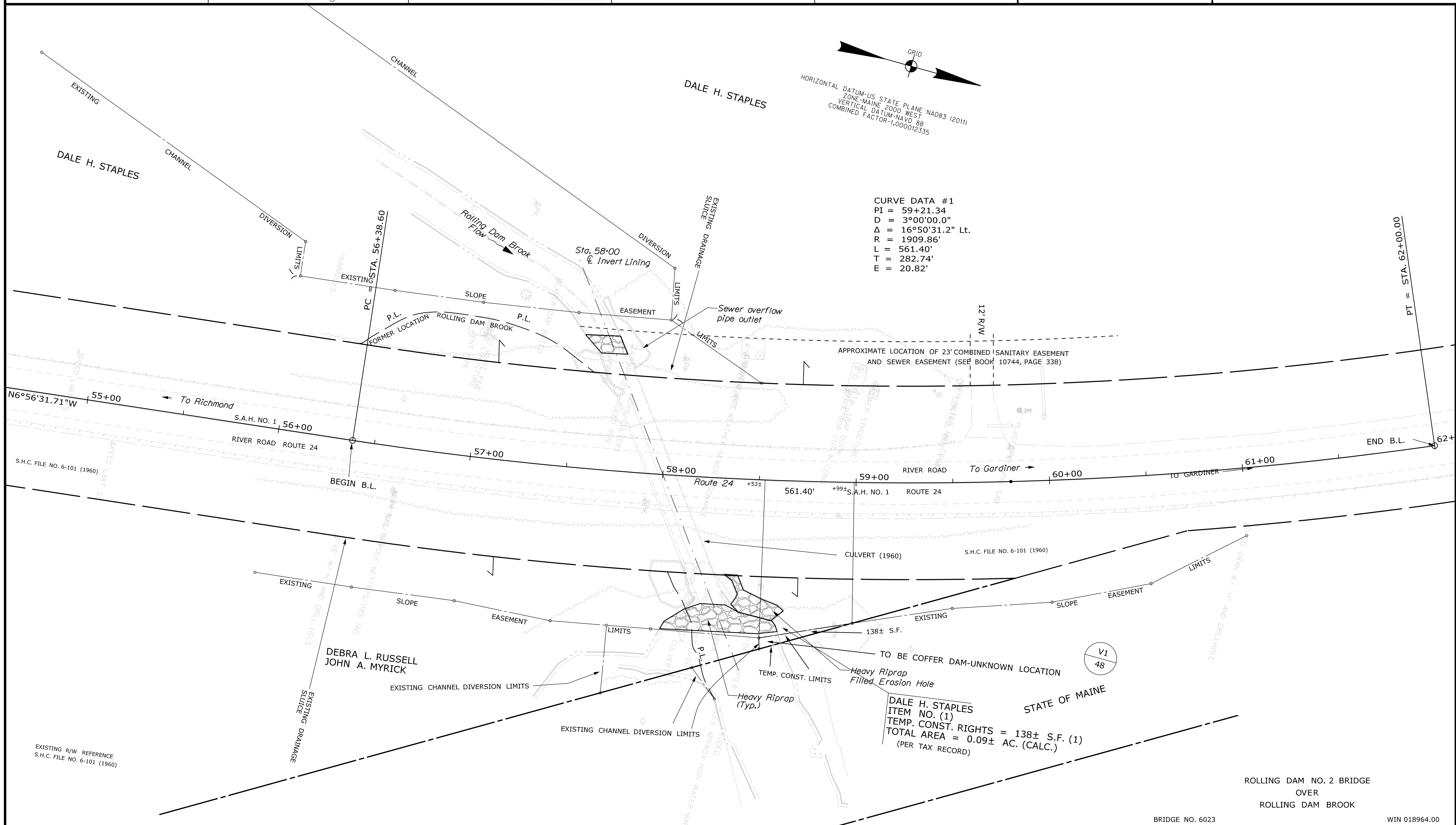
Date: 7/11/2019

Username: Mark Poulin

Division: BRIDGE

Filename: ... \00\ROW\MSTA001\_RWPLAN1.dgn

<p>P.L.</p> <p>L.O.W.P.</p> <p>C.O.A.</p>		<p><b>PLAN LEGEND</b></p> <table border="0"> <tr><td>Existing</td><td>Proposed</td></tr> <tr><td>---</td><td>---</td></tr> <tr><td>---</td><td>---</td></tr> <tr><td>---</td><td>---</td></tr> <tr><td>---</td><td>---</td></tr> <tr><td>---</td><td>---</td></tr> <tr><td>---</td><td>---</td></tr> </table>	Existing	Proposed	---	---	---	---	---	---	---	---	---	---	---	---	<table border="0"> <tr><td>Existing</td><td>Proposed</td></tr> <tr><td>---</td><td>---</td></tr> <tr><td>---</td><td>---</td></tr> <tr><td>---</td><td>---</td></tr> <tr><td>---</td><td>---</td></tr> <tr><td>---</td><td>---</td></tr> <tr><td>---</td><td>---</td></tr> </table>	Existing	Proposed	---	---	---	---	---	---	---	---	---	---	---	---	<p style="text-align: center;">Scale of Feet</p>	<p style="text-align: center;">STATE OF MAINE REGISTRY OF DEEDS</p> <p>COUNTY _____</p> <p>RECEIVED _____</p> <p>at _____ h _____ m _____ M and recorded in Plan Book _____, Page _____</p> <p>Attest: _____ REGISTER</p>	<p>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 ADJACENT PROPERTY OWNERS.</p>
Existing	Proposed																																	
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**CURVE DATA #1**  
 PI = 59+21.34  
 D = 3°00'00.0"  
 Δ = 16°50'31.2" Lt.  
 R = 1909.86'  
 L = 561.40'  
 T = 282.74'  
 E = 20.82'

APPROXIMATE LOCATION OF 23' COMBINED SANITARY EASEMENT AND SEWER EASEMENT (SEE BOOK 10744, PAGE 338)

DALE H. STAPLES  
 ITEM NO. (1)  
 TEMP. CONST. RIGHTS = 138± S.F. (1)  
 TOTAL AREA = 0.09± AC. (CALC.)  
 (PER TAX RECORD)

ITEM	TECH	CHECKED
EXISTING CONDITION PLAN	D.W.B.	
FINAL RIGHT OF WAY	D.W.B.	
AREAS	D.W.B.	P.N.S.

**STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION**

16 STATE HOUSE STATION - AUGUSTA, ME 04333-0016 - 207-624-3460

**GARDINER  
RIGHT OF WAY MAP**

REVISIONS			PLAN FILED IN PLAN BOOK				PAGE COUNTY RECORD			
NO.	DATE	DESCRIPTION	BY	NO.	GRANTOR	PAGE	INSTRUMENT	DATE	BOOK	PAGE
					DALE H. STAPLES		T.C.R.	10/10/17		

DAVID BERNHARDT  
 COMMISSIONER  
 JOYCE NOEL TAYLOR  
 CHIEF ENGINEER

DATE \_\_\_\_\_

STATE AID HIGHWAY NO. 1  
 ROUTE 24 / RIVER ROAD  
 GARDINER KENNEBEC COUNTY  
 STATE PROJECT NO. 18964.00

BRIDGE NO. 6023 WIN 018964.00

AUGUST 2017  
SCALE 1" = 25'

RIGHT-OF-WAY MAP  
SHEET 1 OF 1

D.O.T. FILE NO. 6-X

SHEET NUMBER

7

OF 7