

# STATE OF MAINE DEPARTMENT OF TRANSPORTATION



## LIST OF DRAWINGS

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### SPECIFICATIONS

Design: Load and Resistance Factor Design per AASHTO LRFD Bridge Design Specifications, Fifth Edition 2010.

### TRAFFIC DATA

Current (2012) AADT .....	3500
Future (2032) AADT .....	4550
DHV - % of AADT .....	11
Design Hour Volume .....	501
Heavy Trucks (% of AADT) .....	21
Heavy Trucks (% of DHV) .....	18
Directional Distribution (% of DHV) .....	58
18 kip Equivalent P 2.0 .....	630
18 kip Equivalent P 2.5 .....	600
Design Speed (mph) .....	55

### HYDROLOGIC DATA

Drainage Area .....	13.69 sq mi
Ordinary High Water (Q1.1) .....	115.2 cfs
Design Discharge (Q50) .....	560.6 cfs
Check Discharge (Q100) .....	640.2 cfs

### MATERIALS

Concrete: .....	Class "A"
Reinforcing Steel .....	ASTM A 615/A 615M, Grade 60

### BASIC DESIGN STRESSES

Reinforcing Steel .....	f <sub>y</sub> = 60,000 psi
Concrete	
Class A .....	f'c = 4,350 psi
Shotcrete .....	f'c = 5,000 psi

Composite Invert Lining - See Special Provision 509.73

## T28 MD HANCOCK COUNTY STARVATION BROOK BRIDGE OVER STARVATION BROOK ROUTE 9 STATE PROJECT NO. 19307.00 PROJECT LENGTH 0.000 mi. BRIDGE NO. 1086

### UTILITIES

Union River Telephone

### MAINTENANCE OF TRAFFIC

The road will be open to two lanes of traffic during construction. When needed, single lane closures will be maintained by flaggers. See Special Provision Section 107 Limitation of Operations.

<b>PROJECT LOCATION:</b>	44° 50' 13.89" N, 68° 10' 35.96" W Approx. .24 miles east of the westerly intersection of "Back Road" and Route 9
<b>PROGRAM AREA:</b>	Bridge
<b>OUTLINE OF WORK:</b>	Bridge Culvert Rehabilitation using a concrete invert lining. A plain riprap apron will also be installed at the ends of each culvert.

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION

APPROVED

COMMISSIONER: *[Signature]*

DATE: 9/27/12

CHIEF ENGINEER: *[Signature]*

DATE: 9/27/12

STATE OF MAINE  
PROFESSIONAL ENGINEER

Michael Wright  
SIGNATURE

8089  
P.E. NUMBER

9/17/2012  
DATE

PROGRAM	BRIDGE
PROJECT MANAGER	STEVE BOGUE
DESIGNER	BRIAN NICHOLS
CONSULTANT	
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

WIN 19307.00

T28 MD  
STARVATION BROOK BRIDGE

TITLE SHEET

SHEET NUMBER

1

OF 6

Date: 9/26/2012

User: mark.poulin

Division: BRIDGE

Filename: \\00\BRIDGE\MSTA\001\_Title.dgn

Date: 10/10/2012

Username: mark.poulin

Division: BRIDGE

Filename: ... \BRIDGE\MAIN\T28\_02\_Estimate.dgn

ESTIMATED QUANTITIES			
ITEM NO.	DESCRIPTION	QUANTITY	UNIT
203.20	COMMON EXCAVATION	10	CY
203.24	COMMON BORROW	10	CY
502.325	STRUCTURAL CONCRETE CULVERT INVERT LINING (70 CY)	1	LS
502.326	STRUCTURAL CONCRETE - FISH WEIRS (5 CY)	1	LS
503.12	REINFORCING STEEL, FABRICATED AND DELIVERED	8,235	LB
503.13	REINFORCING STEEL, PLACING	8,235	LB
511.07	COFFERDAM: UPSTREAM WESTERLY PRIMARY PIPE	1	LS
511.07	COFFERDAM: UPSTREAM EASTERLY PRIMARY PIPE	1	LS
511.07	COFFERDAM: UPSTREAM OVERFLOW PIPE	1	LS
511.07	COFFERDAM: DOWNSTREAM WESTERLY PRIMARY PIPE	1	LS
511.07	COFFERDAM: DOWNSTREAM EASTERLY PRIMARY PIPE	1	LS
511.07	COFFERDAM: DOWNSTREAM OVERFLOW PIPE	1	LS
514.06	CURING BOX FOR CONCRETE CYLINDERS	1	EA
606.36	GUARDRAIL - REMOVE AND RESET	50	LF
610.08	PLAIN RIPRAP	100	CY
613.319	EROSION CONTROL BLANKET	100	SY
615.07	LOAM	20	CY
618.1401	SEEDING METHOD NUMBER 2 - PLAN QUANTITY	3	UN
619.1201	MULCH - PLAN QUANTITY	3	UN
619.1401	EROSION CONTROL MIX	30	CY
620.58	EROSION CONTROL GEOTEXTILE	200	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	400	SF
652.361	MAINTENANCE OF TRAFFIC CONTROL DEVICES (90 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.
- 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.
- Place loam 2 inches deep on all new or reconstructed sideslopes or as directed by the Resident.
- Erosion Control Mix may be substituted in those areas normally receiving loam and seed as directed by the Resident. Placement shall be in accordance with Standard Specifications Section 619, Mulch. Payment will be made under Item No. 619.1401, Erosion Control Mix.
- Place a 24-in. wide strip of Temporary Erosion Control Blanket on the sideslopes along the top of the riprap and behind the wingwalls.
- 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.

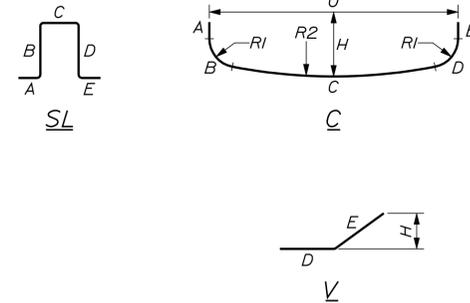
**GENERAL CONSTRUCTION NOTES**

- 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.
- The Contractor shall minimize, to the maximum extent possible, the void spaces in the riprap aprons at both ends of the culverts. 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. 610.08, Plain Riprap.

**REINFORCING STEEL SCHEDULE**

WESTERLY CULVERT																	
STRAIGHT BARS								BENT BARS									
MARK	QTY.	LENGTH	LOCATION	MARK	QTY.	LENGTH	TYPE	A	B	C	D	E	H	O	R1	R2	LOCATION
A500	34	40'-0"	Invert Lining	A550	103	15'-3"	C	9/2"	1'-10 3/4"	9'-10 1/2"	1'-10 3/4"	9/2"	2'-7 1/2"	12'-1/2"	1'-4 1/2"	25'-11 1/2"	Invert Lining
A501	17	25'-4"	Invert Lining														
EASTERLY CULVERT																	
STRAIGHT BARS								BENT BARS									
MARK	QTY.	LENGTH	LOCATION	MARK	QTY.	LENGTH	TYPE	A	B	C	D	E	H	O	R1	R2	LOCATION
A500	34	40'-0"	Invert Lining	A550	97	15'-3"	C	9/2"	1'-10 3/4"	9'-10 1/2"	1'-10 3/4"	9/2"	2'-7 1/2"	12'-1/2"	1'-4 1/2"	25'-11 1/2"	Invert Lining
A502	17	19'-4"	Invert Lining														
OVER FLOW PIPE																	
STRAIGHT BARS								BENT BARS									
MARK	QTY.	LENGTH	LOCATION	MARK	QTY.	LENGTH	TYPE	A	B	C	D	E	H	O	R1	R2	LOCATION
A501	9	25'-4"	Invert Lining	A551	83	7'-2"	C		2'-1/2"	3'-1 1/4"	2'-1/2"		1'-8"	5'-6"	1'-8"	6'-2"	Invert Lining
A503	18	30'-0"	Invert Lining														
INTERNAL FISH WEIRS																	
STRAIGHT BARS								BENT BARS									
MARK	QTY.	LENGTH	LOCATION	MARK	QTY.	LENGTH	TYPE	A	B	C	D	E	H	O	R1	R2	LOCATION
				FW550	14	3'-8"	SL	10"	10"	8"	10"	10"					Internal Fish Weirs
				FW551	56	3'-10"	SL	10"	11"	8"	11"	10"					Internal Fish Weirs
				FW552	14	3'-11"	SL	10"	11 1/2"	8"	11 1/2"	10"					Internal Fish Weirs
				FW553	14	3'-9"	SL	10"	10 1/2"	8"	10 1/2"	10"					Internal Fish Weirs
				FW554	14	3'-7"	SL	10"	9 1/2"	8"	9 1/2"	10"					Internal Fish Weirs
				FW555	14	3'-5"	SL	10"	8 1/2"	8"	8 1/2"	10"					Internal Fish Weirs
				FW556	28	9'-0 1/2"	V				8'-6 1/2"	4"	3/4"				Internal Fish Weirs
				FW557	28	9'-3 1/2"	C		1'-1 1/2"	8'-2"			1'-1 3/4"	8'-11 1/4"	1'-1"	25'-8"	Internal Fish Weirs

**TYPE - BENDING DIAGRAMS**



**NOTES**

- 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  
19307.00  
BRIDGE NO. 1086  
WIN  
19307.00  
BRIDGE PLANS

DATE: 5/2/2012  
BY: BUN, MRP  
S. BOOGE  
PROJ. MANAGER  
DESIGN: DETAILED  
CHECKED: REVIEWED  
DESIGN: DETAILED  
DESIGN: DETAILED  
REVISIONS: 1  
REVISIONS: 2  
REVISIONS: 3  
REVISIONS: 4  
FIELD CHANGES

STARVATION BROOK BRIDGE  
STARVATION BROOK  
HANCOCK COUNTY  
T28 MD  
ESTIMATED QUANTITIES  
GENERAL CONSTRUCTION NOTES  
REINFORCING STEEL SCHEDULE

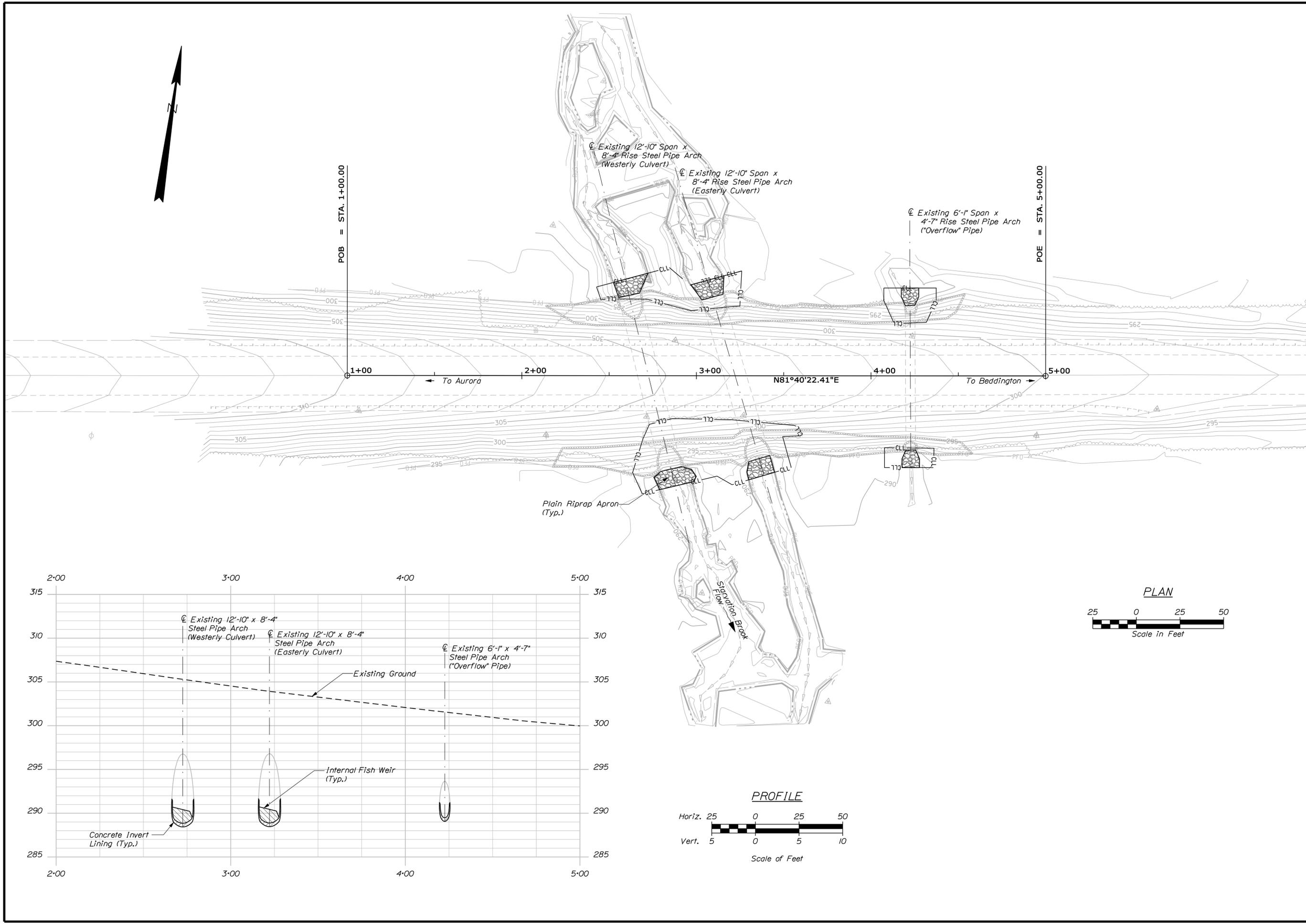
SHEET NUMBER  
2  
OF 6

Date: 10/11/2012

Username: mark.poulin

Division: BRIDGE

Filename: ... \bridge\msta\003\_BDPlan\_1.dgn



STATE OF MAINE DEPARTMENT OF TRANSPORTATION		19307.00	
STARVATION BROOK BRIDGE STARVATION BROOK HANCOCK COUNTY		BRIDGE NO. 1086	
T28 MD		PIN 19307.00	
SHEET NUMBER		BRIDGE PLANS	
3		OF 6	

PROJ. MANAGER	S. BOODE	BY	DATE
DESIGN DETAILED	BIN		5/2/2012
CHECKED/REVIEWED	BPR		
DESIGNS DETAILED	MHW		
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE	P.E. NUMBER	DATE

PROJ. MANAGER	S. BOODE	BY	DATE
DESIGN DETAILED	BIN		5/2/2012
CHECKED/REVIEWED	BPR		
DESIGNS DETAILED	MHW		
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

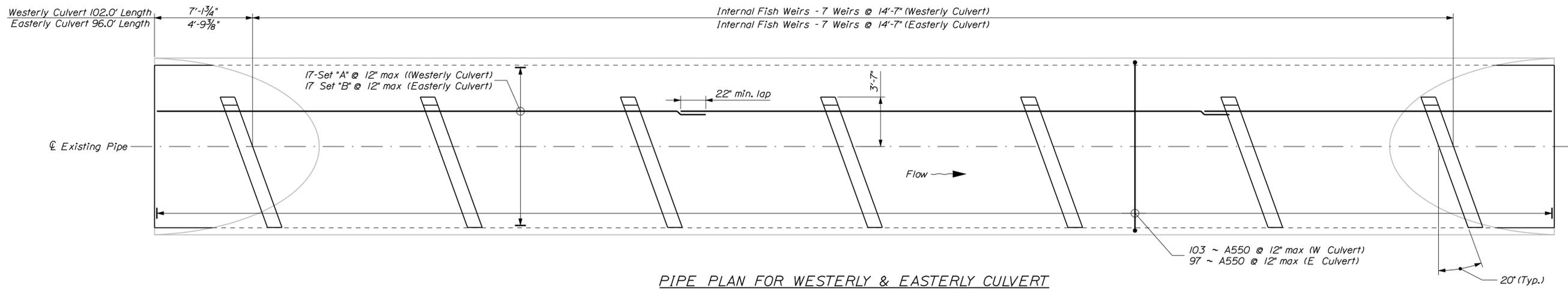
SIGNATURE	P.E. NUMBER	DATE

Date: 10/11/2012

Username: mark.poulin

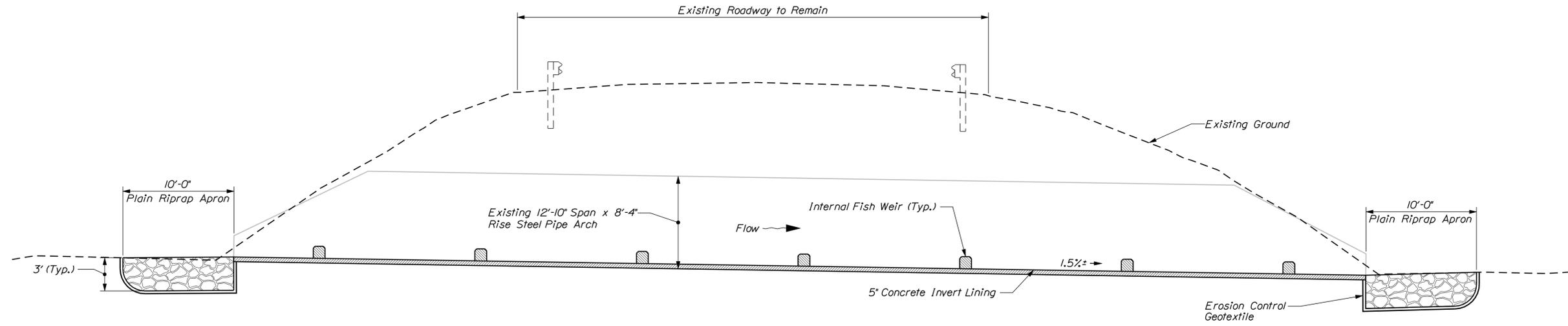
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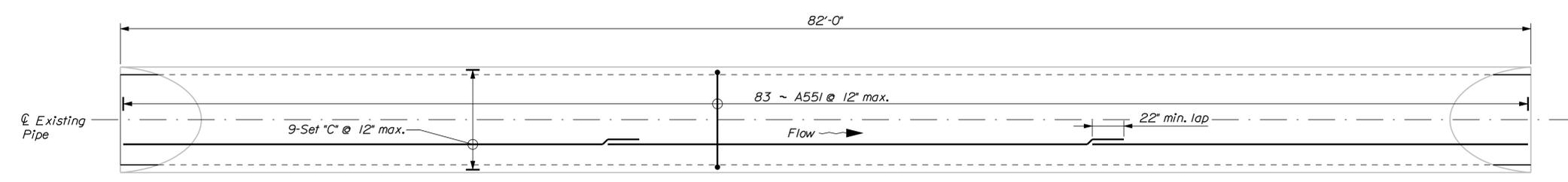
PIPE PLAN FOR WESTERLY & EASTERLY CULVERT

Westerly Culvert Shown  
 Set "A" = 2 ~ A500 & 1 ~ A501 (Westerly Culvert)  
 Set "B" = 2 ~ A500 & 1 ~ A502 (Easterly Culvert)



TYPICAL LONGITUDINAL SECTION

Westerly Culvert Shown - Easterly Culvert Similar



OVERFLOW PIPE PLAN

(No Fish Weirs)  
 Set "C" = 2 ~ A503 & 1 ~ A501

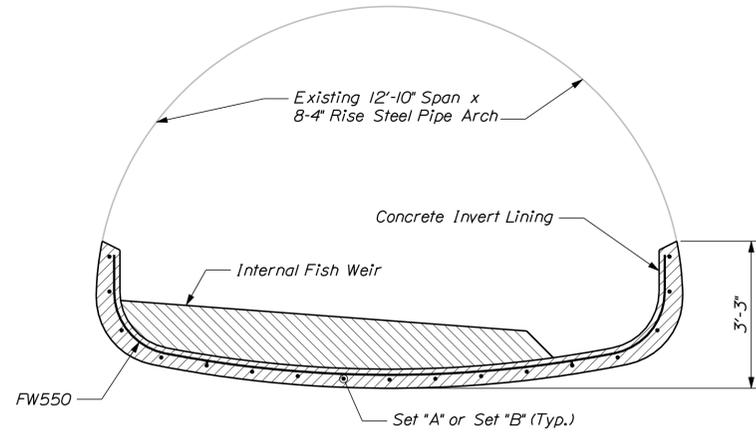
STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		BRIDGE PLANS	
		19307.00		PIN 19307.00	
		BRIDGE NO. 1086			
PROJ. MANAGER	DATE	BY	DATE	SIGNATURE	P.E. NUMBER
DESIGN-DETAILED	5/2/2012	BIN			
CHECKED-REVIEWED		BPR			
DESIGN-DETAILED		MHW			
REVISIONS 1					
REVISIONS 2					
REVISIONS 3					
REVISIONS 4					
FIELD CHANGES					
STARVATION BROOK BRIDGE			HANCOCK COUNTY		
STARVATION BROOK			T28 MD		
INVERT LINING DETAILS					
SHEET NUMBER					
4					
OF 6					

Date: 10/11/2012

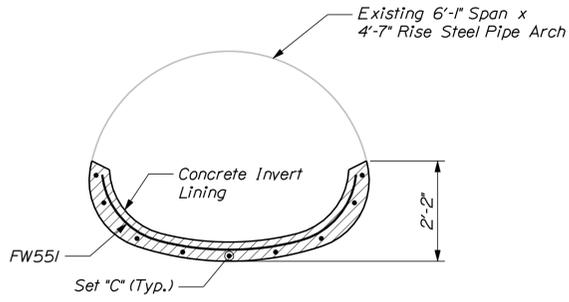
Username: mark.poulin

Division: BRIDGE

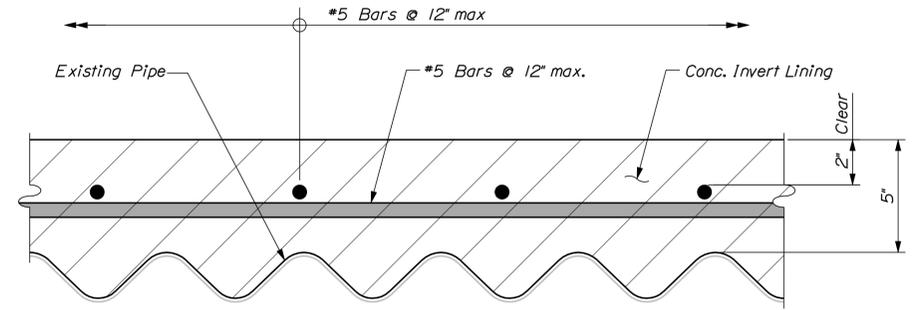
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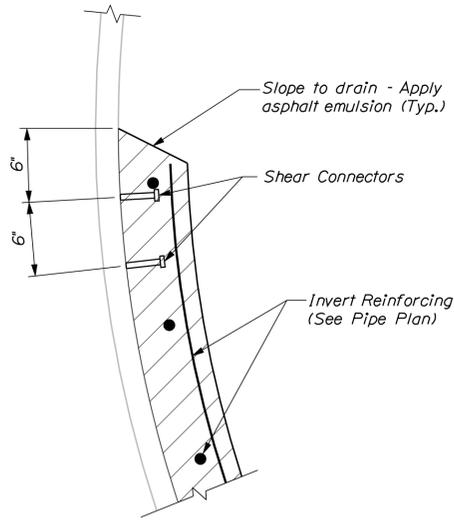
PIPE ARCH SECTION



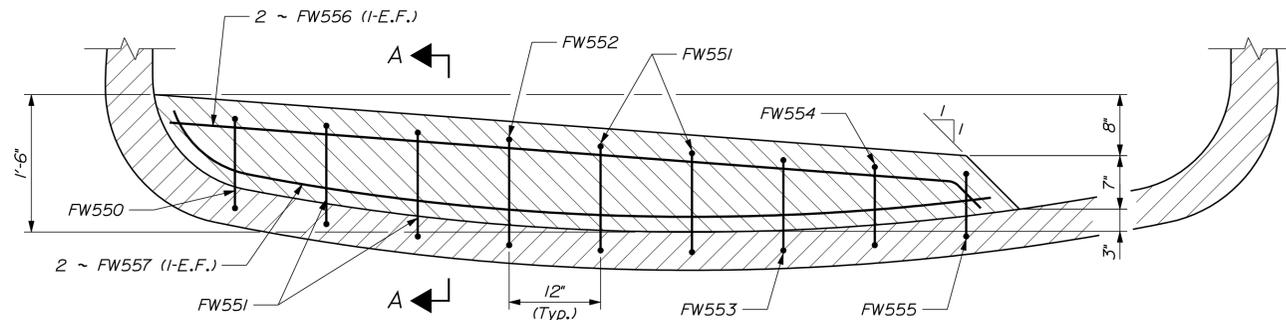
OVERFLOW PIPE SECTION



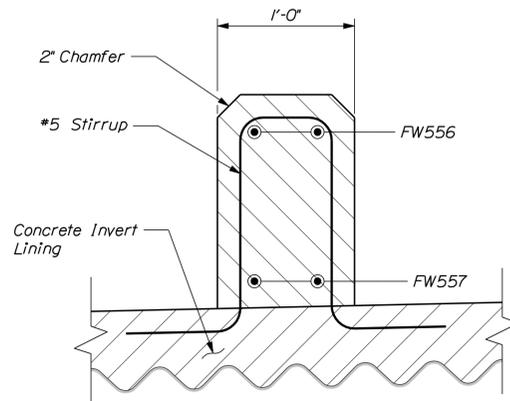
INVERT LINING SECTION



CONNECTION DETAIL



FISH WEIR ELEVATION



SECTION A-A  
Reinforcing Steel in Invert Lining  
Omitted for Clarity.

PIPE NOTES

- 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 non-existent, a preliminary concrete placement shall be made, using forms where required, to fill voids and to establish the original lines of the pipe. The final placement shall then be made as shown. Payment for this work will be considered incidental to Item No. 502.325, Structural Concrete Invert Lining.
- Note: Two rows of shear connectors shall be staggered 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 1,132 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.
- Reinforcing steel shall have a minimum concrete cover of 2" unless otherwise shown.
- The existing structural plate pipe may have a slight deformation requiring field bending and/or cutting of the reinforcing steel. Any cutting and bending to field fit reinforcing steel shall be considered incidental to Item No. 503.13, Reinforcing Steel-Placing
- The concrete shall have a rough broom or gun finish along the entire length of the pipe invert.
- Asphalt Emulsion will be considered incidental to Item No. 502.325 Structural Concrete Invert Lining.

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
19307.00  
PIN 19307.00  
BRIDGE NO. 1086  
BRIDGE PLANS

PROJ. MANAGER	DATE	BY	DATE	SIGNATURE
DESIGN-DETAILED	BIN	5/2/2012		
CHECKED-REVIEWED	BPR			
DESIGN-DETAILED	MHW			
REVISIONS 1				
REVISIONS 2				
REVISIONS 3				
REVISIONS 4				
FIELD CHANGES				

STARVATION BROOK BRIDGE  
STARVATION BROOK  
HANCOCK COUNTY  
T28 MD  
INVERT LINING DETAILS

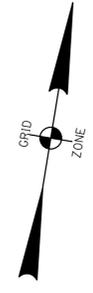
SHEET NUMBER  
5  
OF 6

Date: 10/11/2012

Username: mark.poulin

Division: BRIDGE

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



URSA MAJOR, LLC  
ITEM NO. (1)  
TEMP. CONST. RIGHTS = 0.24± AC. (1)  
TOTAL AREA = UNKNOWN (VAST HOLDINGS)

TEMP. CONST. RIGHTS  
URSA MAJOR, LLC  
TO  
STATE OF MAINE  
DATED 5/22/12

0.24± AC.  
EXISTING DRAINAGE EASE.  
D.O.T. FILE NO. 5-131, 1974

SEE D.O.T. FILE NO. 5-131  
SHEET NO. 6, 1974

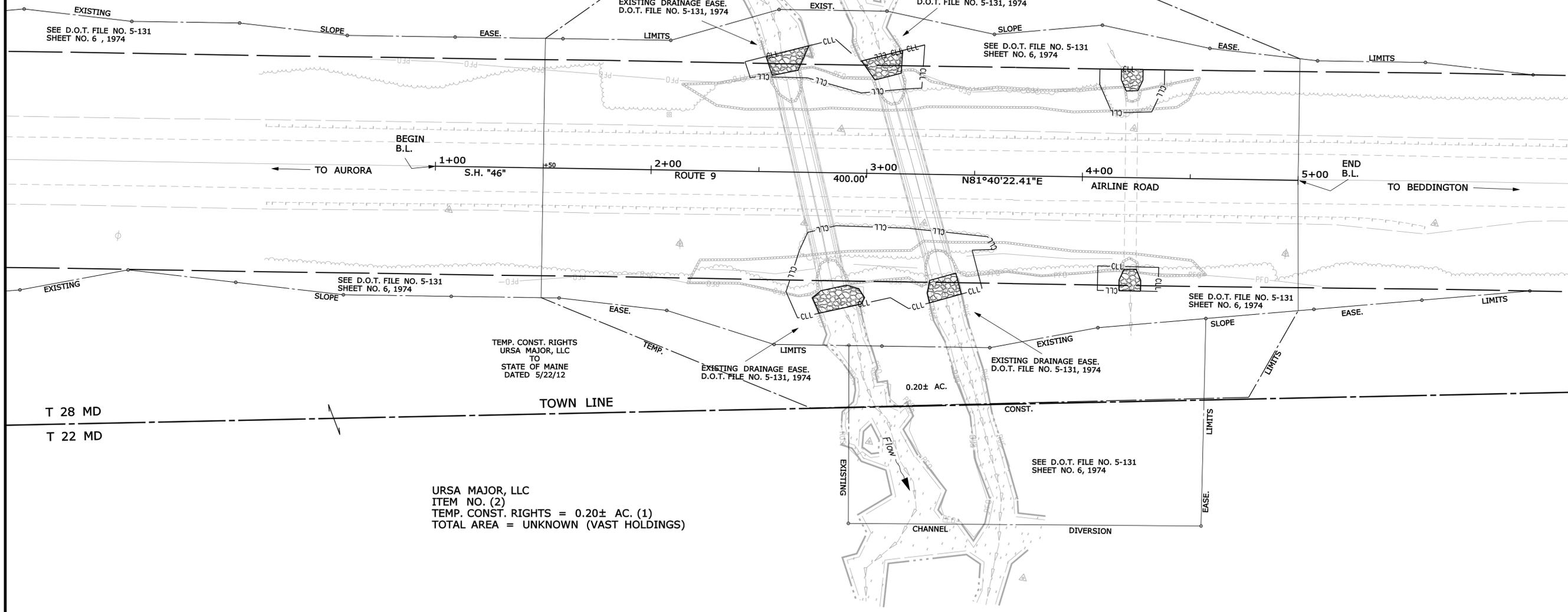
TEMP. CONST. RIGHTS  
URSA MAJOR, LLC  
TO  
STATE OF MAINE  
DATED 5/22/12

EXISTING DRAINAGE EASE.  
D.O.T. FILE NO. 5-131, 1974

EXISTING DRAINAGE EASE.  
D.O.T. FILE NO. 5-131, 1974

URSA MAJOR, LLC  
ITEM NO. (2)  
TEMP. CONST. RIGHTS = 0.20± AC. (1)  
TOTAL AREA = UNKNOWN (VAST HOLDINGS)

SEE D.O.T. FILE NO. 5-131  
SHEET NO. 6, 1974



R/W REFERENCES:  
SEE D.O.T. FILE NO. 5-131  
SHEET 6 OF 11, 1974

STARVATION BROOK BRIDGE  
OVER  
STARVATION BROOK  
BRIDGE NO. 1086 WIN 19307.00

**SYMBOLS**

○	WELL
—	GRADING LIMIT LINE
—	CONSTRUCTION LIMIT LINE
—	PROPERTY LINE
—	LIMITS OF TROUGHT PORTION (LOW.P.)
—	EXISTING RIGHT OF WAY
—	NEW RIGHT OF WAY
—	NEW ROW WITHIN EXIST. ROW
—	CONTROL OF ACCESS
●	P. or PIP. (IRON PIPE or PIN FOUND)
□	S.T. (SEPTIC TANK)
△	TRAVESSE POINT
—	WATER LINE
—	GAS LINE
—	ELECTRIC LINE
—	TELEPHONE LINE
—	SEWER LINE

ITEM	TECH	CHECKED
BASE MAP		
EXIST. R/W		
PROP. LINES	BDM	
AREAS	BDM	

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
16 STATE HOUSE STATION - AUGUSTA, ME 04333-0016  
TWP. 28 M.D.  
RIGHT OF WAY MAP

REVISIONS			PLAN FILED IN PLAN BOOK				PAGE				COUNTY RECORD			
NO.	DATE	DESCRIPTION	BY	NO.	GRANTOR	INSTRUMENT	DATE	BOOK	PAGE	NO.	DATE	BOOK	PAGE	

DAVID BERNHARDT  
COMMISSIONER  
KENNETH L. SWEENEY  
CHIEF ENGINEER  
DATE

PLAN NOT TO BE RECORDED

STATE HIGHWAY "46"  
ROUTE 9 AIRLINE ROAD  
TWP. 28 M.D. HANCOCK COUNTY  
STATE PROJECT NO. 19307.00  
MARCH 2012 RIGHT-OF-WAY MAP  
SCALE 1" = 25' SHEET 1 OF 1  
D.O.T. FILE NO. 5-290

SHEET NUMBER  
**6**  
OF 6