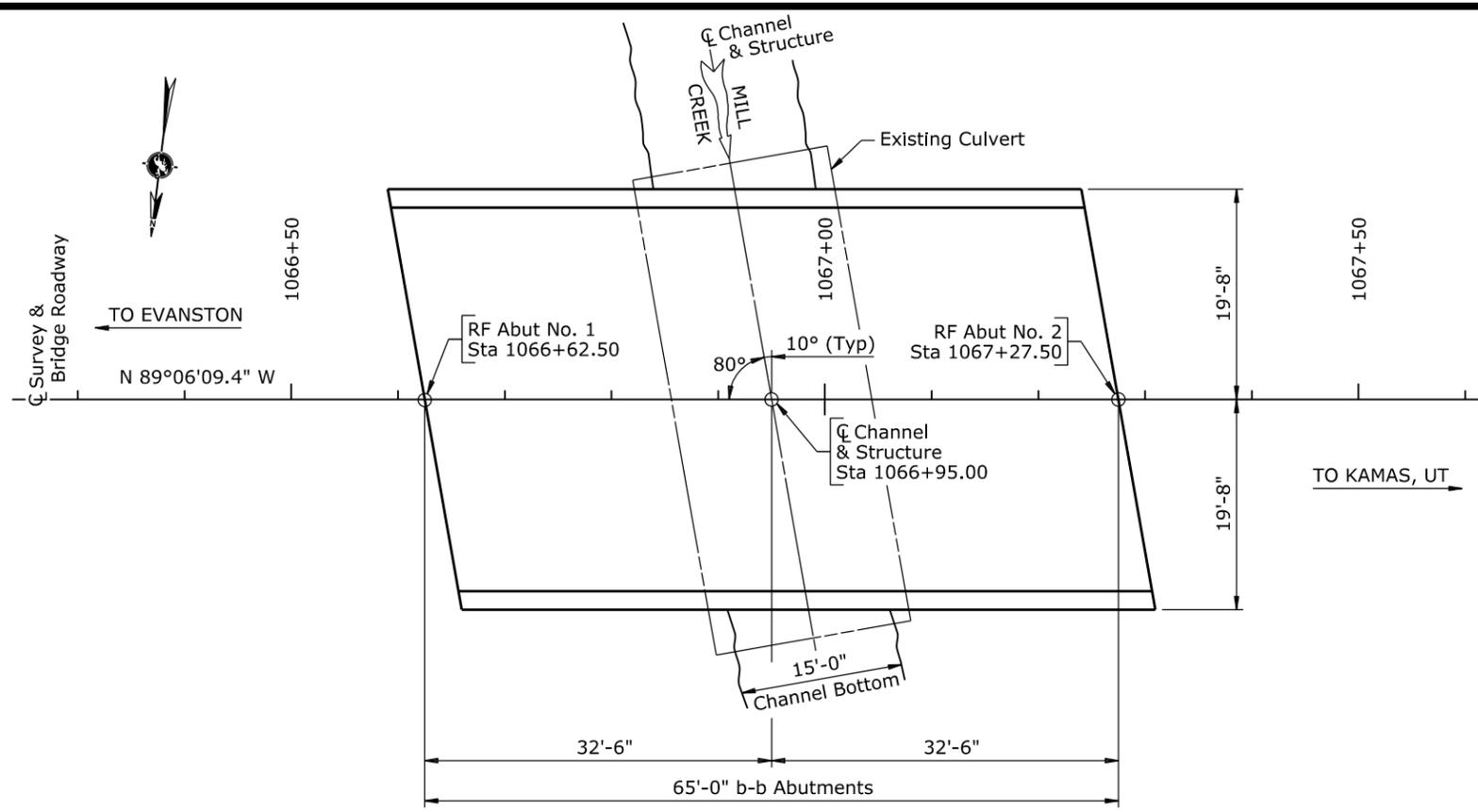
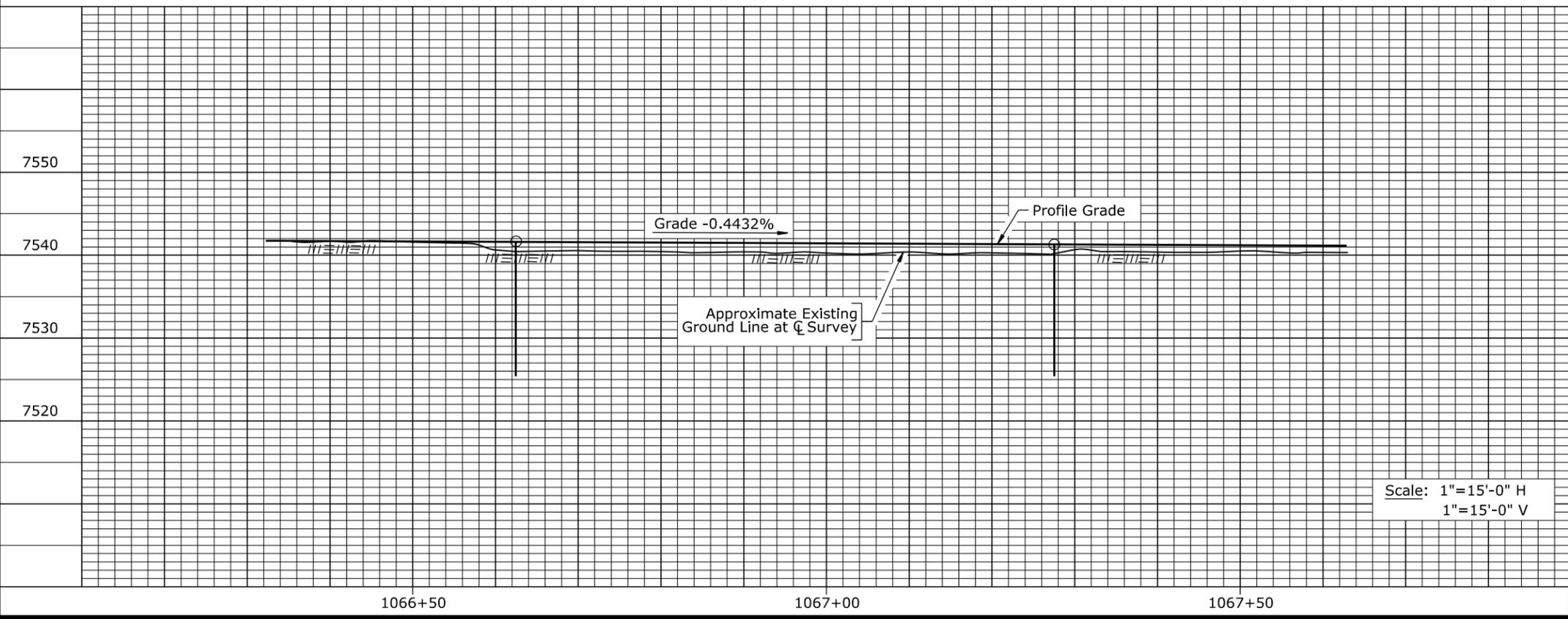


Nov 2018



Scale: 1"=15'-0"



Scale: 1"=15'-0" H
1"=15'-0" V

GEOLOGY

Geologist: _____
 Rig: _____
 Project Geologist: _____
 Date Drilled: _____
 Driller: _____

Circulation Medium	
Air	
Water	
Auger	

Remarks: Obtain alkali sample.

 Drill and provide recommendations for possible culvert.

LAYOUT APPROVAL

State Bridge Engineer _____ Date _____

WYOMING DEPARTMENT OF TRANSPORTATION
 BRIDGE PROGRAM
PRELIMINARY GEOLOGY LAYOUT
BRIDGE OVER MILL CREEK
 STA 1066+95
 Evanston South
 State Line North Section
 2100020 UI

DESIGN: _____
 DETAIL: LLL ✓ OOO ✓
 QTY'S: _____
 Design Section Q R Stuv
 Drwg No. _____ Sheet 1 of 1

4.01 - Example

Section 4.02 - Preliminary

BRIDGE OVER MILL CREEK

STA 1066+95

EVANSTON SOUTH

STATE LINE NORTH SECTION

2100020

PRELIMINARY

UINTA COUNTY

DESIGN DATA

SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, 8th Edition. AASHTO Guide Specifications for LRFD Seismic Bridge Design, 2nd Edition.

ADT: 750 (Year 2018)

LOADING: HL93. Asphalt overlay 30 psf. Future wearing surface 25 psf.

REINFORCED CONCRETE: Load and Resistance Factor Design -
Class A Concrete $f'_c = 4000$ psi
Reinforcing Steel $f_y = 60,000$ psi (Grade 60)

PRESTRESSED CONCRETE: Load and Resistance Factor Design -
Concrete $f'_c = 5000$ psi
 $f'_{ci} = 4000$ psi
Reinforcing Steel $f_y = 60,000$ psi (Grade 60)
Prestressing Steel $f'_s = 270,000$ psi (Grade 270)

STRUCTURAL STEEL: Load and Resistance Factor Design -
 $F_y = 36,000$ psi (Grade 36)

APPROACH ROADWAY WIDTH: 36'-0"

FOOTING PRESSURES: Load and Resistance Factor Design -
Abutments, 5.0 Tsf

SEISMIC CRITERIA: Seismic Design Category X
Effective Peak Ground Acceleration Coefficient, $A_s = X.XXX$
Design Earthquake Response Spectral Acceleration Coefficient for 1.0 Second Period, $S_{DI} = X.XXX$
Design Earthquake Response Spectral Acceleration Coefficient for 0.2 Second Period, $S_{DS} = X.XXX$
Site Class X
5% Damping

ESTIMATED QUANTITIES - CODE 08				
ITEM NO.	ITEM	UNIT	TOTAL QUANTITY	ESTIMATE
202.03100	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	LUMP SUM	X EA
209.01000	WATER	MG	X	
212.02100	DRY EXCAVATION	CY	X	
212.02200	WET EXCAVATION	CY	X	
217.01010	GEOTEXTILE, EROSION CONTROL	SY	X	
217.01030	GEOTEXTILE, EMB AND RETAINING WALL	SY	X	
301.01085	CRUSHED BASE	CY	X	
501.01000	STRUCTURAL STEEL	LS	LUMP SUM	X LB
502.50044	PRESTRESSED PRECAST CONC BULB T 44 in	FT	X	
503.01000	BRIDGE RAILING	FT	X	
507.01000	REINFORCED CONC APPROACH SLABS	SY	X	
511.02000	GABIONS	SY	X	
512.01040	COMPRESSED JOINT MATERIAL	FT	X	
513.00005	CLASS A CONCRETE	LS	LUMP SUM	X CY
514.00015	REINFORCING STEEL	LS	LUMP SUM	X LB
514.00025	REINFORCING STEEL (COATED)	LS	LUMP SUM	X LB
605.10006	UNDERDRAIN PIPE (PERF) 6 in	FT	X	
605.20006	UNDERDRAIN PIPE (NON-PERF) 6 in	FT	X	
900.60000	CONTRACTOR QUALITY CONTROL (CONCRETE)	LS	LUMP SUM	

INDEX OF DRAWINGS

Drawing:	Sheet No.
Title Sheet	1
General Notes	2
General Plan and Elevation	3
Substructure Layout	4
Gabion Details	5
Log Boring Sheet	6
Abutment Details	7-8
Superstructure Details	9-11
Bridge Railing Details	12-13
Approach Slab Details	14-15

STRUCTURE NO. LNB, ML2100B, RM 19.12
SEC 6, T12N, R119W

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM	
REVISIONS	
DESIGN	_____
DETAIL	LLL ✓ 000
QTY'S	_____
REVIEW	_____
APPROVAL	_____
Design Section Q R Stuv Drwg No. P-0004 Sheet 1 of 3	

GENERAL NOTES

SPECIFICATIONS: WYDOT Standard Specifications for Road and Bridge Construction, 2010 Edition.

DIMENSIONS: Longitudinal dimensions for the substructure are horizontal and include no correction for grade. Longitudinal dimensions for the superstructure are along grade unless noted. Slopes are vertical : horizontal.

CONCRETE: Use class A concrete at all locations except the prestressed precast bridge sections.

REINFORCING STEEL: Ensure reinforcing steel conforms to ASTM A 615 (Grade 60) for all bars, including ties and stirrups. Concrete cover to face of reinforcing steel is 2" unless noted. Dimensions for bent bars are out to out. Ensure bars marked with an asterisk (*) are coated.

BAR MARKS



STRUCTURAL STEEL: Ensure structural steel conforms to ASTM A 709 (Grade 36).

PRESTRESSED PRECAST BULB TEE SECTIONS: Ensure reinforcing steel in the deck portion of the bulb tee is coated.

Low-relaxation strands conforming to ASTM A 416 (Grade 270) may be used, provided that design computations are submitted along with data regarding the properties and effects of the low-relaxation strands used.

Ensure the title pages of the design computations and shop plans bear the seal and signature of a professional engineer.

ALTERNATE BULB TEE SECTIONS: Two alternate bulb tee sections for the bridge superstructure are included. Estimated quantities are based on Alternate 1 (44" depth bulb tee).

FABRICATION AND ERECTION: Work necessary for fabrication and erection of the bulb tee sections; including cast-in steel components, reinforcing steel, bearing pads field welding, backer rods, and nonshrink grout is incidental to the contract pay item Prestressed Precast Conc Bulb T 44 in.

BACKER ROD: Use a closed cell polyethylene backer rod with a diameter 1/8" larger than the gap width.

SPONGE RUBBER: Use sponge rubber conforming to AASHTO M 153, type I. Work necessary for the sponge rubber is incidental to the contract pay item Class A Concrete

EYEBOLTS: Use galvanized bar conforming to ASTM A 709 (Grade 36). Work necessary for the eyebolts is incidental to the contract pay item Class A Concrete.

COMPRESSED JOINT MATERIAL: Use one of the following products:
FS-xxx as manufactured by Watson Bowman Acme Corp.
BOR-xxxx as manufactured by Emseal Joint Systems, Ltd.

REMOVAL OF STRUCTURES AND OBSTRUCTIONS: Remove the existing 199" x 121" x 74'-0" structural plate pipe arch culvert.

DRY EXCAVATION: The estimated quantity of dry excavation is calculated below existing ground line to the limits shown at approach slabs and below existing ground line to elevation 7532.0 at abutments.

WET EXCAVATION: The estimated quantity of wet excavation is calculated below elevation 7532.0 at abutments. Wet excavation will be paid below actual ground water elevation.

FOUNDATIONS: Abutments are on columns on spread footings founded in dense to very dense sand and gravel with cobbles and some boulders. Anticipate shoring or flattened slopes for construction of the footings.

PAINT: Use a gray tan top coat color for structural steel.

CRUSHED BASE: Use crushed base conforming to grading L from a contractor furnished source. Compact the crushed base in accordance with Subsection 301.4.2.3, Placing.

WATER: The estimated quantity of water for compaction of crushed base is 0.040 MG per cubic yard.

BRIDGE OFFICE NOTIFICATION: The engineer will notify the State Bridge Engineer in writing within 14 calendar days after the new structure has been opened to traffic.

STREAM DATA

Drainage Area	58.6 Sq Mi
Channel Slope	0.02%
Description of Channel Material	Sandy gravel
Drift Potential	Trees and logs
Ordinary High Water Elevation	7532.0 ft
Headwater Elevation Q ₂₅	7534.8 ft
Q ₁₀₀	7536.0 ft
High Water Elevation Q ₂₅	7533.4 ft
Q ₁₀₀	7534.2 ft
Design Scour Elevation	XXXX.X ft
Constricted Velocity Q ₂₅	9.51 fps
Q ₁₀₀	12.23 fps
Design Frequency	25 Year
Design Discharge Q ₂₅	890 cfs
Review Discharge Q ₁₀₀	1290 cfs
Source of Discharge	Floodflow Characteristics of Wyoming Streams
Method of Analysis	HEC-RAS and WSP
Flood of Record	Unknown

REFERENCES

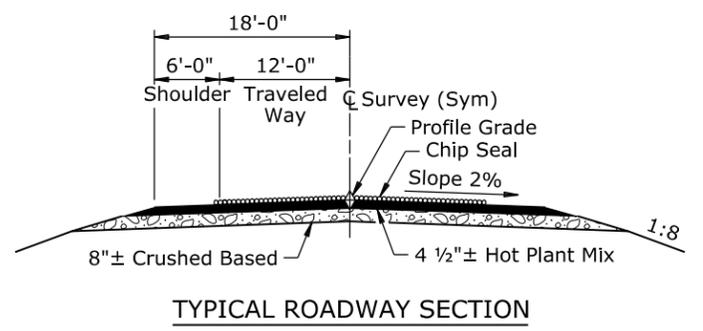
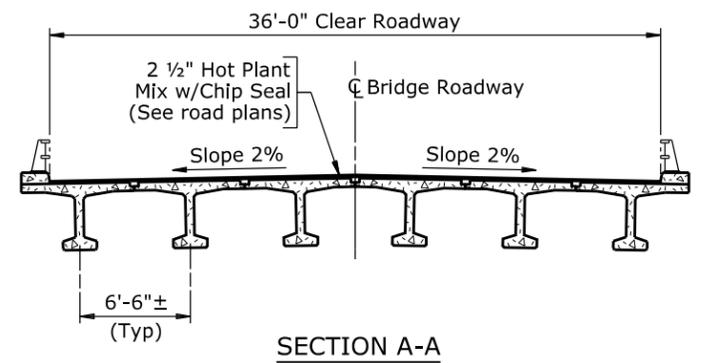
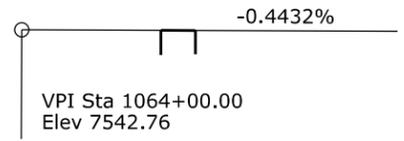
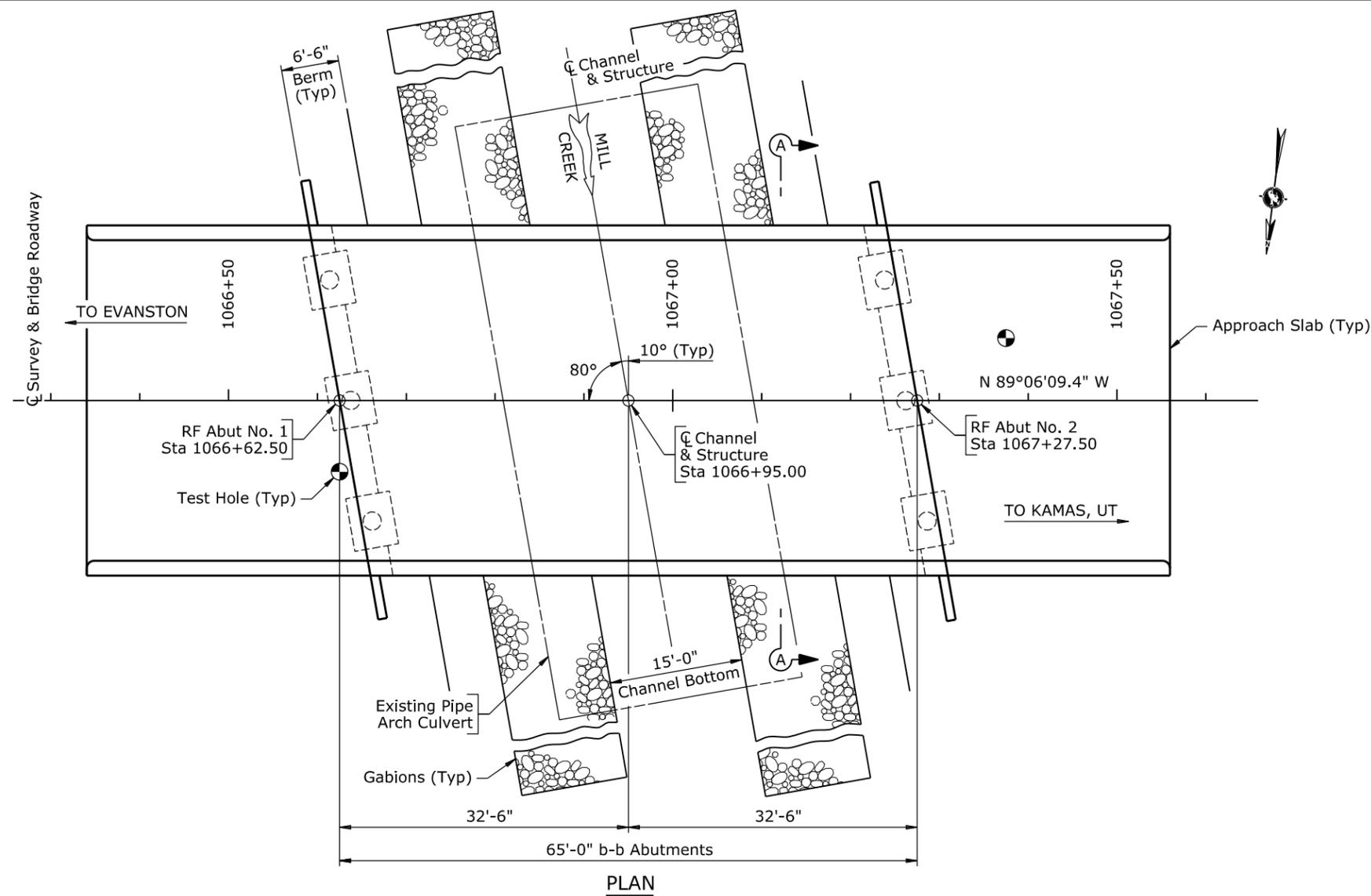
- Supplementary Specifications:
 SS-100K Adjustment for Structural Steel
 SS-500B Welder Qualification
 SS-500E Bridge Bearing Correction
 SS-500G Structural Concrete with Quality Control and Quality Acceptance
- Standard Plans:
 511-1A Wire Enclosed Riprap and Gabions

WYOMING DEPARTMENT OF TRANSPORTATION	
BRIDGE PROGRAM	
REVISIONS	PRELIMINARY GENERAL NOTES
	BRIDGE OVER MILL CREEK STA 1066+95 Evanston South State Line North Section 2100020 Ui
DESIGN	Design Section Q R Stuv
REVIEW	DETAIL LLL ✓ OOO
APPROVAL	QTY'S ✓
Drwg No. P-0004 Sheet 2 of 3	

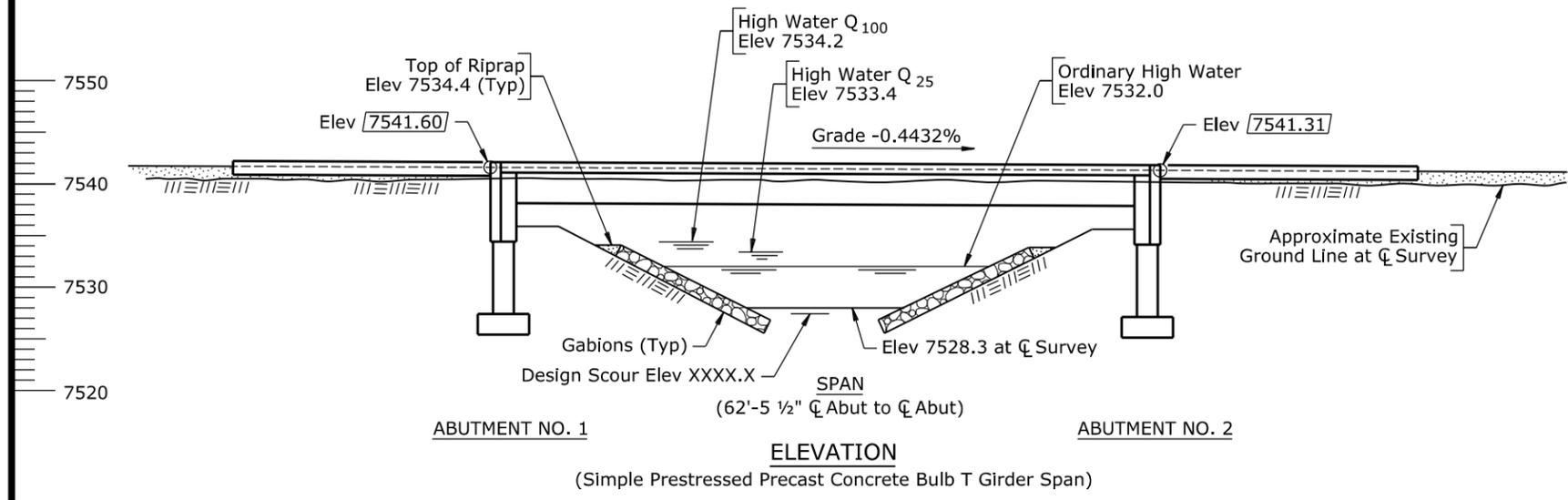
Nov 2018

4.01 - Example

Wyo. Proj. 2100020
 Sheet of Sheets



Note: 1) Elevations shown as 7541.60 indicate finished grade at rear face abutment on ϕ Bridge Roadway.
 2) Berm slopes are 1:2±, measured perpendicular to ϕ Channel.



WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
PRELIMINARY LAYOUT			
BRIDGE OVER MILL CREEK			
STA 1066+95			
Evanston South			
State Line North Section			
2100020		Ui	
REVISIONS	DESIGN <input checked="" type="checkbox"/>	Design Section Q R Stuv	
	DETAIL <u>LLL</u> <input checked="" type="checkbox"/> <u>OOO</u>	Drwg No. P-0004 Sheet 3 of 3	
APPROVAL	QTY'S <input checked="" type="checkbox"/>		

2100020_2pl3.dgn

Section 4.02 - Preliminary

BRIDGE OVER MILL CREEK

STA 1066+95

EVANSTON SOUTH

STATE LINE NORTH SECTION

2100020

UINTA COUNTY

DESIGN DATA

SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, 8th Edition. AASHTO Guide Specifications for LRFD Seismic Bridge Design, 2nd Edition.

ADT: 750 (Year 2018)

LOADING: HL93. Asphalt overlay 30 psf. Future wearing surface 25 psf.

REINFORCED CONCRETE: Load and Resistance Factor Design -
Class A Concrete $f'_c = 4000$ psi
Reinforcing Steel $f_y = 60,000$ psi (Grade 60)

PRESTRESSED CONCRETE: Load and Resistance Factor Design -
Concrete $f'_c = 5000$ psi
 $f'_{ci} = 4000$ psi
Reinforcing Steel $f_y = 60,000$ psi (Grade 60)
Prestressing Steel $f'_s = 270,000$ psi (Grade 270)

STRUCTURAL STEEL: Load and Resistance Factor Design -
 $F_y = 36,000$ psi (Grade 36)

APPROACH ROADWAY WIDTH: 36'-0"

FOOTING PRESSURES: Load and Resistance Factor Design -
Abutments, 5.0 Tsf

SEISMIC CRITERIA: Seismic Design Category X
Effective Peak Ground Acceleration Coefficient, $A_s = X.XXX$
Design Earthquake Response Spectral Acceleration
Coefficient for 1.0 Second Period, $S_{DI} = X.XXX$
Design Earthquake Response Spectral Acceleration
Coefficient for 0.2 Second Period, $S_{DS} = X.XXX$
Site Class X
5% Damping

ESTIMATED QUANTITIES - CODE 08				
ITEM NO.	ITEM	UNIT	TOTAL QUANTITY	ESTIMATE
202.03100	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	LUMP SUM	1 EA
209.01000	WATER	MG	20	
212.02100	DRY EXCAVATION	CY	570	800 LB
212.02200	WET EXCAVATION	CY	120	
217.01010	GEOTEXTILE, EROSION CONTROL	SY	450	
217.01030	GEOTEXTILE, EMB AND RETAINING WALL	SY	1410	
301.01085	CRUSHED BASE	CY	480	
501.01000	STRUCTURAL STEEL	LS	LUMP SUM	
502.50044	PRESTRESSED PRECAST CONC BULB T 44 in	FT	383	
503.01000	BRIDGE RAILING	FT	244	
507.01000	REINFORCED CONC APPROACH SLABS	SY	249	
511.02000	GABIONS	SY	450	
512.01040	COMPRESSED JOINT MATERIAL	FT	83	84.5 CY
513.00005	CLASS A CONCRETE	LS	LUMP SUM	
514.00015	REINFORCING STEEL	LS	LUMP SUM	
514.00025	REINFORCING STEEL (COATED)	LS	LUMP SUM	11,880 LB
605.10006	UNDERDRAIN PIPE (PERF) 6 in	FT	80	1150 LB
605.20006	UNDERDRAIN PIPE (NON-PERF) 6 in	FT	40	
900.60000	CONTRACTOR QUALITY CONTROL (CONCRETE)	LS	LUMP SUM	

INDEX OF DRAWINGS

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Substructure Layout -----	4
Gabion Details -----	5
Log Boring Sheet -----	6
Abutment Details -----	7-8
Superstructure Details -----	9-12
Bridge Railing Details -----	13-14
Approach Slab Details -----	15-16

STRUCTURE NO. LNB, ML2100B, RM 19.12
SEC 6, T12N, R119W

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
REVISIONS			
DESIGN	_____/____/____	Design Section	Q R Stuv
DETAIL	LLL ✓ 000	Drwg No. 0004	Sheet 1 of 16
APPROVAL	_____/____/____		

GENERAL NOTES

SPECIFICATIONS: WYDOT Standard Specifications for Road and Bridge Construction, 2010 Edition.

DIMENSIONS: Longitudinal dimensions for the substructure are horizontal and include no correction for grade. Longitudinal dimensions for the superstructure are along grade unless noted. Slopes are vertical : horizontal.

CONCRETE: Use class A concrete at all locations except the prestressed precast bridge sections.

REINFORCING STEEL: Ensure reinforcing steel conforms to ASTM A 615 (Grade 60) for all bars, including ties and stirrups. Concrete cover to face of reinforcing steel is 2" unless noted. Dimensions for bent bars are out to out. Ensure bars marked with an asterisk (*) are coated.

BAR MARKS



STRUCTURAL STEEL: Ensure structural steel conforms to ASTM A 709 (Grade 36).

PRESTRESSED PRECAST BULB TEE SECTIONS: Ensure reinforcing steel in the deck portion of the bulb tee is coated.

Low-relaxation strands conforming to ASTM A 416 (Grade 270) may be used, provided that design computations are submitted along with data regarding the properties and effects of the low-relaxation strands used.

Ensure the title pages of the design computations and shop plans bear the seal and signature of a professional engineer.

ALTERNATE BULB TEE SECTIONS: Two alternate bulb tee sections for the bridge superstructure are included. Estimated quantities are based on Alternate 1 (44" depth bulb tee).

FABRICATION AND ERECTION: Work necessary for fabrication and erection of the bulb tee sections; including cast-in steel components, reinforcing steel, bearing pads field welding, backer rods, and nonshrink grout is incidental to the contract pay item Prestressed Precast Conc Bulb T 44 in.

BACKER ROD: Use a closed cell polyethylene backer rod with a diameter 1/8" larger than the gap width.

SPONGE RUBBER: Use sponge rubber conforming to AASHTO M 153, type I. Work necessary for the sponge rubber is incidental to the contract pay item Class A Concrete

EYEBOLTS: Use galvanized bar conforming to ASTM A 709 (Grade 36). Work necessary for the eyebolts is incidental to the contract pay item Class A Concrete.

COMPRESSED JOINT MATERIAL: Use one of the following products:
FS-xxx as manufactured by Watson Bowman Acme Corp.
BOR-xxxx as manufactured by Emseal Joint Systems, Ltd.

REMOVAL OF STRUCTURES AND OBSTRUCTIONS: Remove the existing 199" x 121" x 74'-0" structural plate pipe arch culvert.

DRY EXCAVATION: The estimated quantity of dry excavation is calculated below existing ground line to the limits shown at approach slabs and below existing ground line to elevation 7532.0 at abutments.

WET EXCAVATION: The estimated quantity of wet excavation is calculated below elevation 7532.0 at abutments. Wet excavation will be paid below actual ground water elevation.

FOUNDATIONS: Abutments are on columns on spread footings founded in dense to very dense sand and gravel with cobbles and some boulders. Anticipate shoring or flattened slopes for construction of the footings.

PAINT: Use a gray tan top coat color for structural steel.

CRUSHED BASE: Use crushed base conforming to grading L from a contractor furnished source. Compact the crushed base in accordance with Subsection 301.4.2.3, Placing.

WATER: The estimated quantity of water for compaction of crushed base is 0.040 MG per cubic yard.

BRIDGE OFFICE NOTIFICATION: The engineer will notify the State Bridge Engineer in writing within 14 calendar days after the new structure has been opened to traffic.

STREAM DATA

Drainage Area	-----	58.6 Sq Mi
Channel Slope	-----	0.02%
Description of Channel Material	-----	Sandy gravel
Drift Potential	-----	Trees and logs
Ordinary High Water Elevation	-----	7532.0 ft
Headwater Elevation Q ₂₅	-----	7534.8 ft
High Water Elevation Q ₂₅	-----	7536.0 ft
High Water Elevation Q ₁₀₀	-----	7533.4 ft
High Water Elevation Q ₁₀₀	-----	7534.2 ft
Design Scour Elevation	-----	XXXX.X ft
Constricted Velocity Q ₂₅	-----	9.51 fps
Constricted Velocity Q ₁₀₀	-----	12.23 fps
Design Frequency	-----	25 Year
Design Discharge Q ₂₅	-----	890 cfs
Review Discharge Q ₁₀₀	-----	1290 cfs
Source of Discharge	----	Floodflow Characteristics of Wyoming Streams
Method of Analysis	-----	HEC-RAS and WSP
Flood of Record	-----	Unknown

REFERENCES

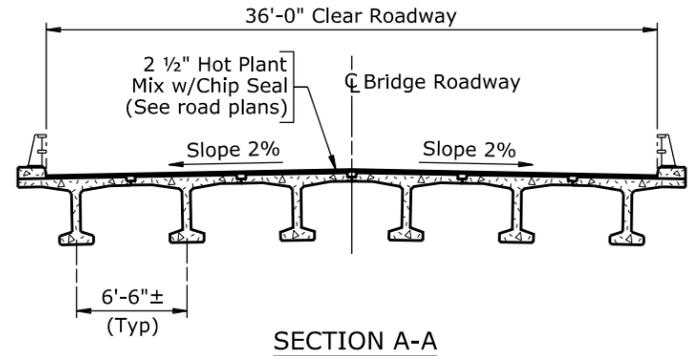
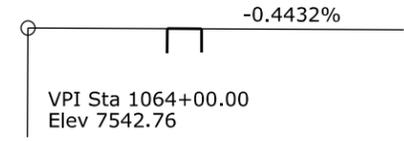
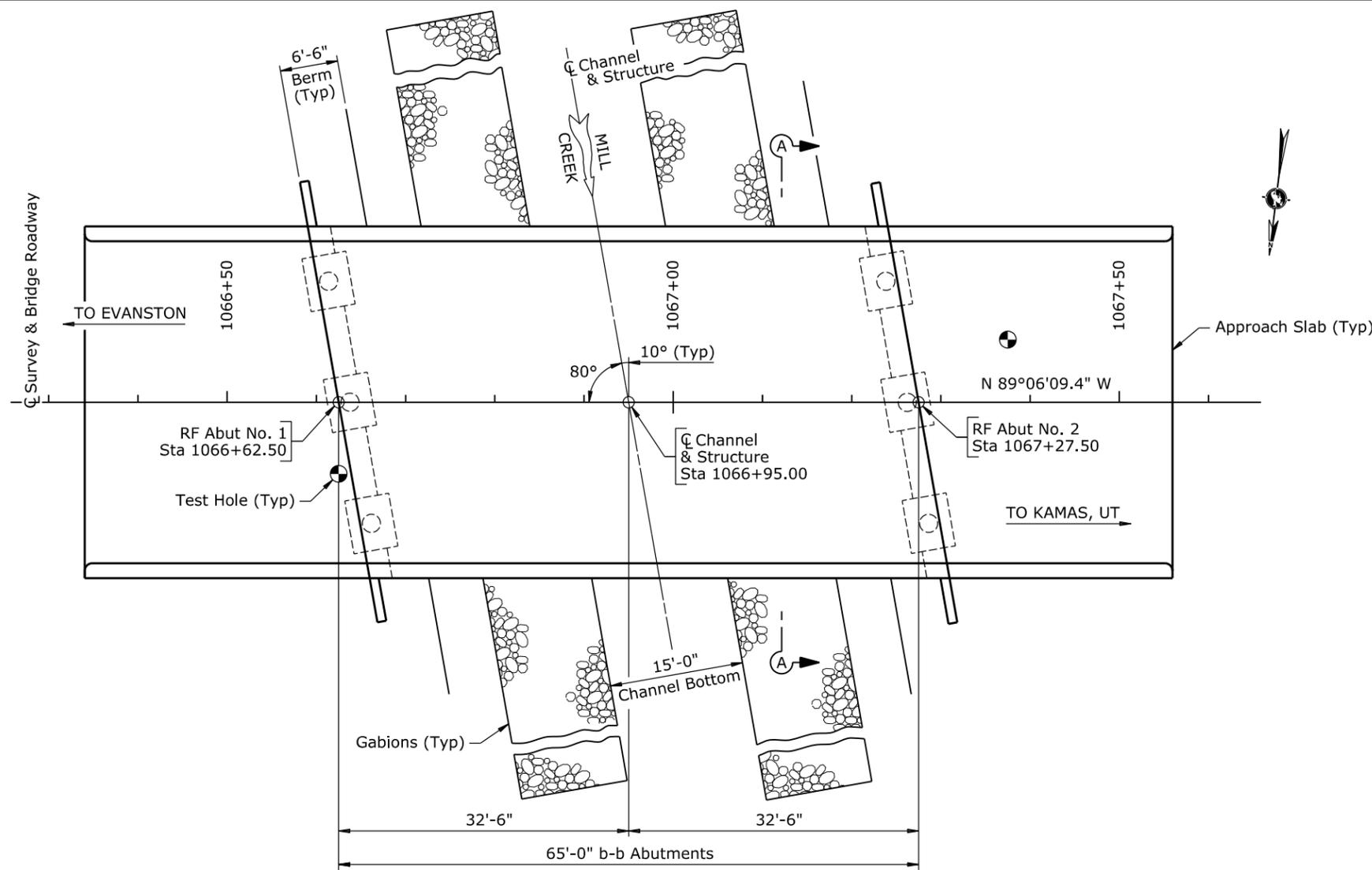
- Supplementary Specifications:
 SS-100K Adjustment for Structural Steel
 SS-500B Welder Qualification
 SS-500E Bridge Bearing Correction
 SS-500G Structural Concrete with Quality Control and Quality Acceptance
- Standard Plans:
 511-1A Wire Enclosed Riprap and Gabions

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
REVISIONS	GENERAL NOTES		
	BRIDGE OVER MILL CREEK STA 1066+95 Evanston South State Line North Section		
	2100020		Ui
DESIGN	____/____/____	Design Section	Q R Stuv
DETAIL	LLL/____/____	Drwg No. 0004	Sheet 2 of 16
APPROVAL	____/____/____		

Nov 2018

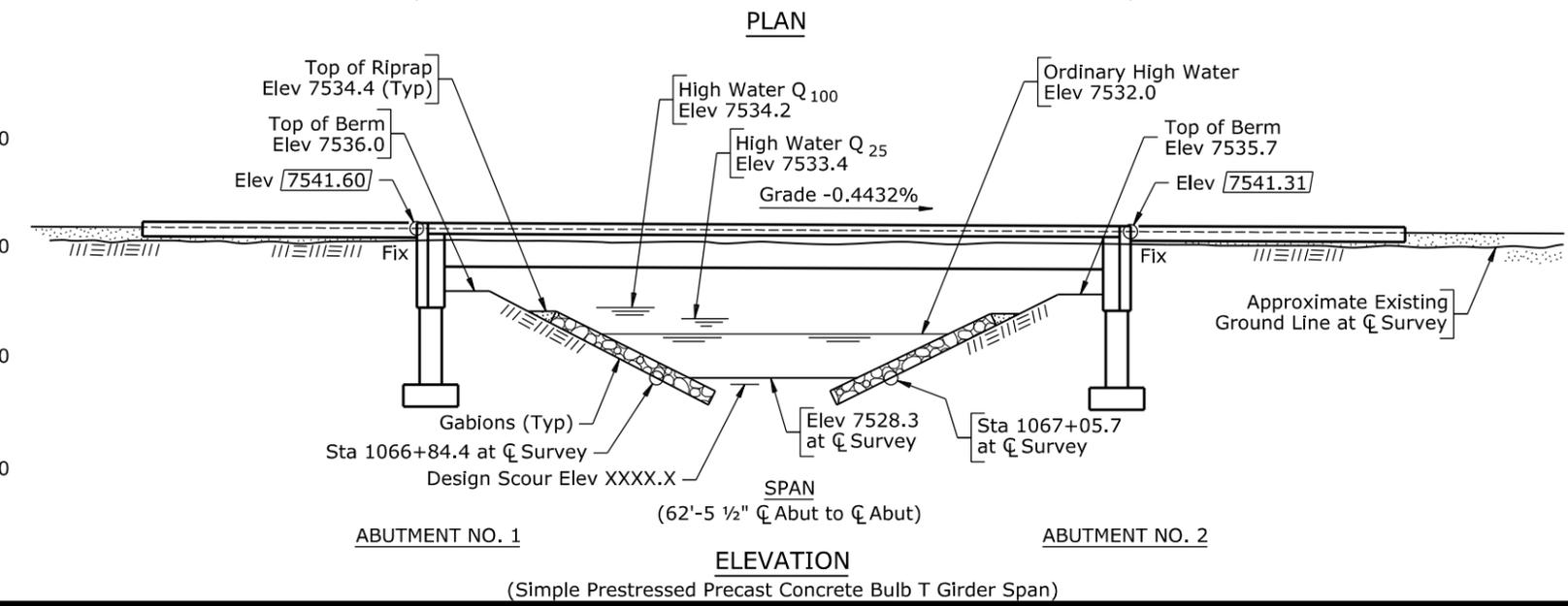
4.03 - Example

Wyo. Proj. 2100020
 Sheet B10 of B25 Sheets

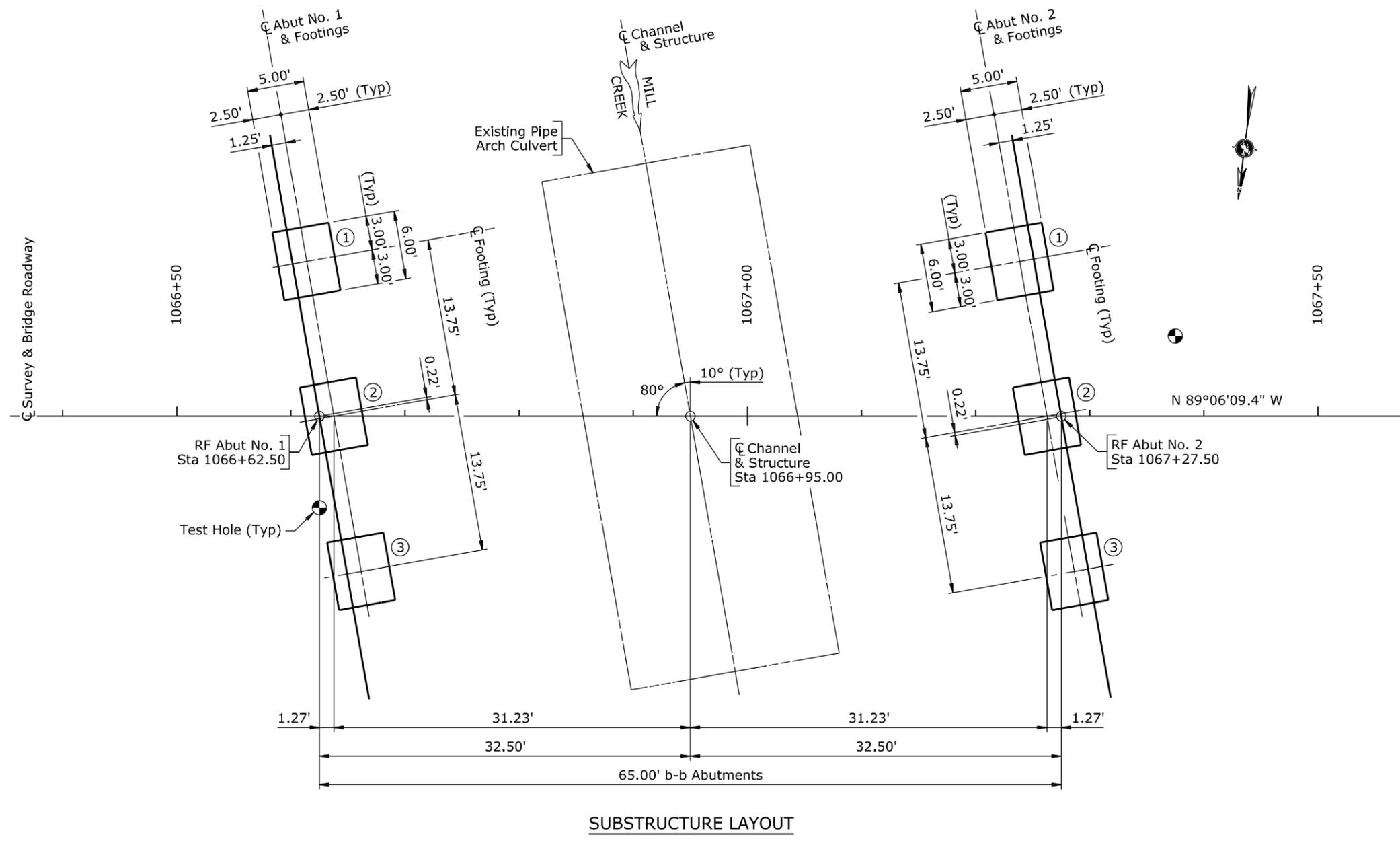


Note: 1) Elevations shown as 7541.60 indicate finished grade at rear face abutment on \bar{C} Bridge Roadway.
 2) Berm slopes are 1:2±, measured perpendicular to \bar{C} Channel.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
GENERAL PLAN AND ELEVATION			
BRIDGE OVER MILL CREEK			
STA 1066+95			
Evanston South			
State Line North Section			
2100020		Ui	
REVISIONS	DESIGN <u>LL</u> ✓ <u>OO</u>	Design Section Q R Stuv	
REVIEW	DETAIL <u>LL</u> ✓ <u>OO</u>	Drwg No. 0004 Sheet 3 of 16	
APPROVAL	QTY'S	2100020_2gp.dgn	



Section 4.03 - General Plan and Elevation



SUBSTRUCTURE LAYOUT

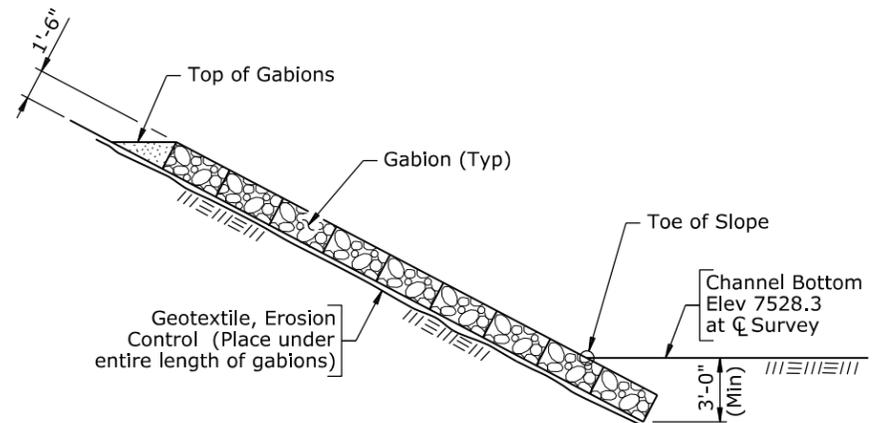
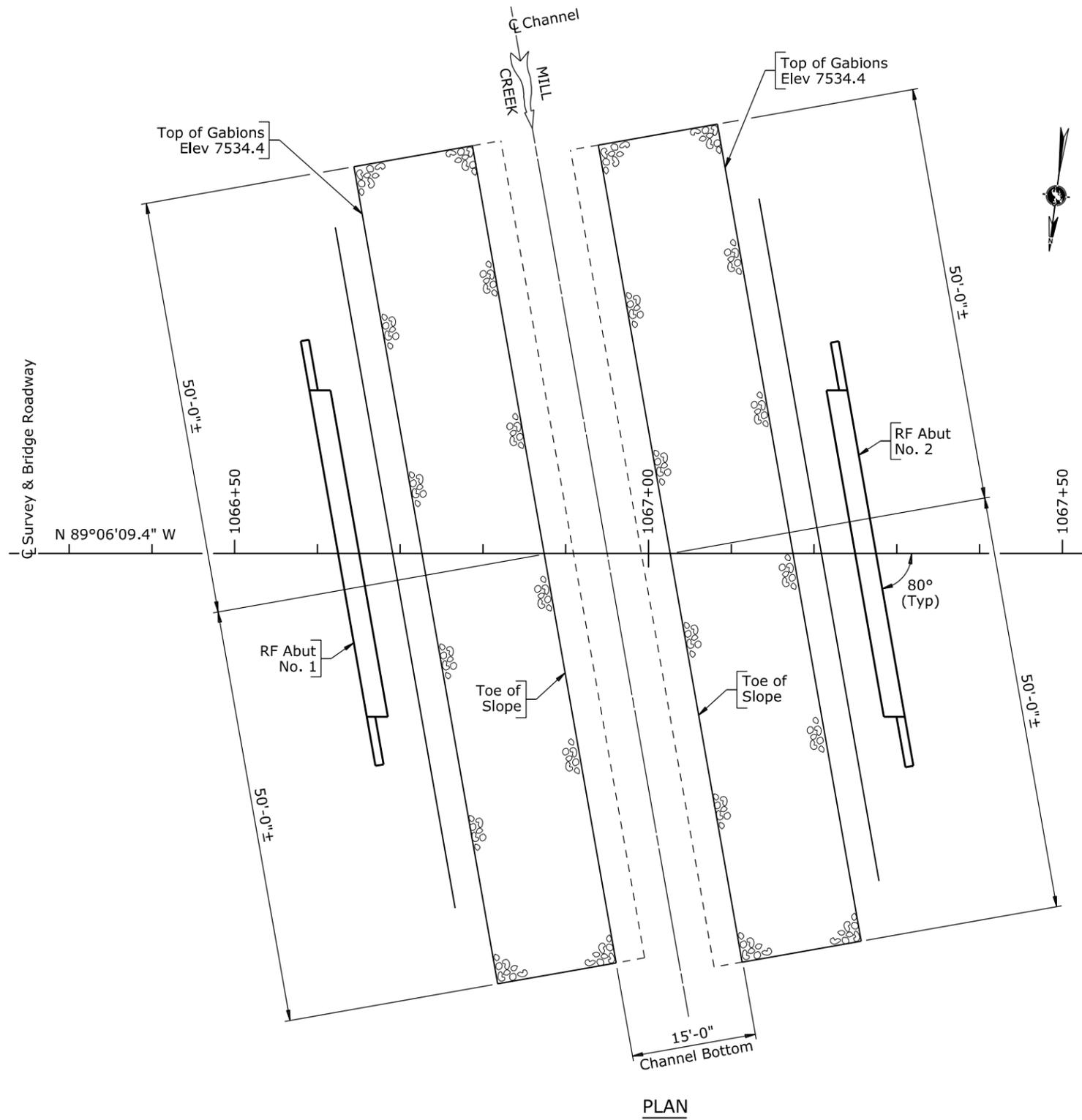
SUBSTRUCTURE DATA			
Location	Bottom of Footing Elevations		
	Footing No.		
	①	②	③
Abut No. 1	7524.98	7524.98	7524.98
Abut No. 2	7524.70	7524.70	7524.70

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
FINAL GEOLOGY			
BRIDGE OVER MILL CREEK			
STA 1066+95			
Evanston South			
State Line North Section			
2100020			Ui
REVISIONS	DESIGN	DETAIL	QTY'S
	____/____/____	LLL / 000	____/____/____
Design Section Q R Stuv		Drwg No. Sheet 1 of 1	

Nov 2018

4.05 - Example

Wyo. Proj. 2100020
 Sheet B12 of B25 Sheets



TYPICAL SECTION

Section 4.05 - Riprap and Gabions

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
GABION DETAILS			
BRIDGE OVER MILL CREEK STA 1066+95 Evanston South State Line North Section			
		2100020	Ui
REVISIONS	DESIGN	Design Section Q R Stuv	
	DETAIL	LLL ✓ OOO	Drwg No. 0004 Sheet 5 of 16
	QTY'S	LLL ✓ HHH	

SUMMARY OF LABORATORY TEST DATA

TEST NO.	LOCATION (station)	ELEVATION	BLOWS Per Ft.	SIEVE ANALYSIS - % PASSING			LIQUID LIMIT	PLASTIC INDEX	DENSITY WET PCF	MOIST. % DRY WT.	SPECIFIC GRAVITY	SHEAR STRENGTH - PEAK - lb./ft. ²	UNIFIED & AASHTO CLASSIFICATION	UNIT COHESION lb./ft. ²	φ MAXIMUM	% SATURATION	REMARKS
				#10	#40	#200											
1	1066+62.5, 8' Rt. Q	7539.5 - 7538.5	11	88	78	49.2	NV	NP	14.5				SM,A-4(0)				
2	1066+62.5, 8' Rt. Q	7537.0 - 7531.0	Bag	92	85	57.5	29.1	13.7	16.7				CL,A-6(5)				
3	1066+62.5, 8' Rt. Q	7529.5 - 7528.5	39														Poor Recovery
4	1067+37.5, 7' Lt. Q	7533.8 - 7532.8	5	84	76	42.4	24.1	8.4	14.4				SC,A-4(0)				No Recovery
5	1067+37.5, 7' Lt. Q	7523.8 - 7523.5	100/4"														

UNIFIED SOIL CLASSIFICATION
 GW - Well graded gravel
 GP - Poorly graded gravel
 GM - Silty sandy gravel
 GC - Clayey gravel
 SW - Well graded sand
 SP - Poorly graded sand
 SM - Silty sand
 SC - Clayey sand
 ML - Inorganic silt, slight plasticity
 CL - Inorganic clay, medium plasticity
 OL - Organic silt and silty clay, low plasticity
 MH - Inorganic elastic silt
 CH - Inorganic clay, high plasticity
 L.L. greater than 50%
 OH - Organic clay, medium to high plasticity
 PT - Peat and other highly organic soils

STRENGTH CLASS DEFINITION - BASED ON BLOWS/FT. - STANDARD PENETRATION

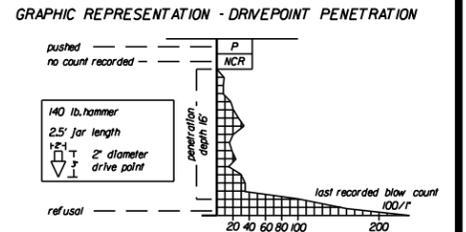
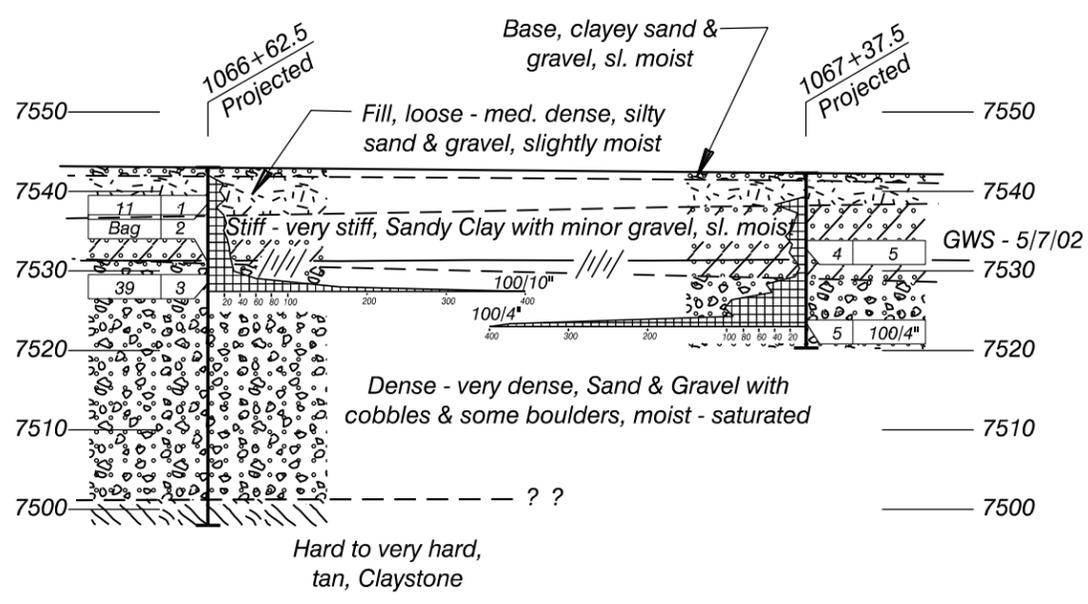
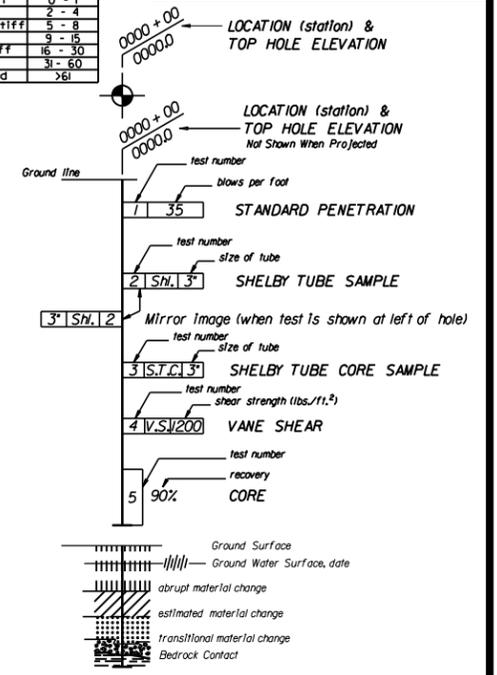
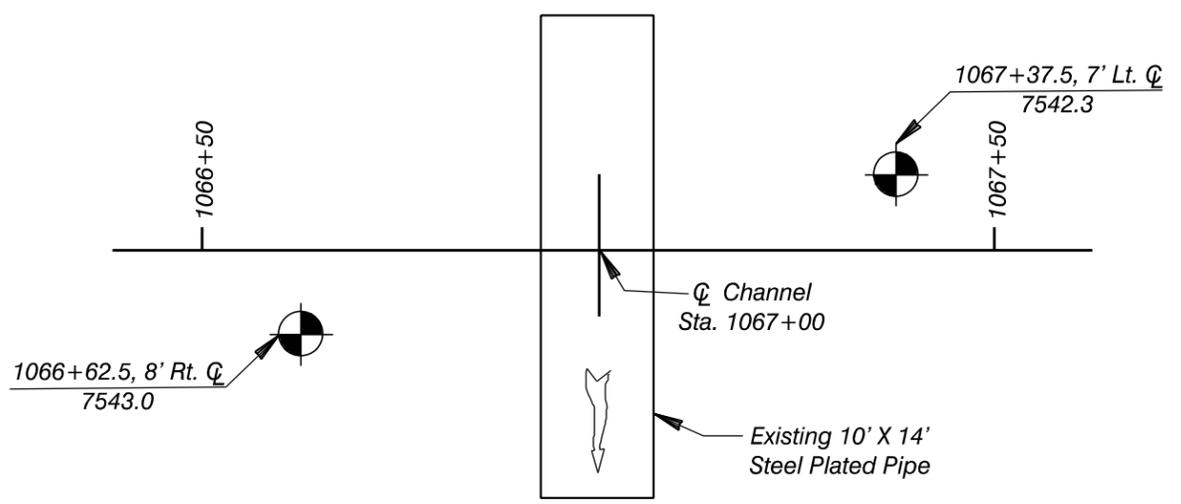
CONSISTENCY	BLOWS PER FT.	CONSISTENCY	BLOWS PER FT.
GRANULAR		COHESIVE	
Very Loose	0 - 4	Very Soft	0 - 1
Loose	5 - 10	Soft	2 - 4
Medium Dense	11 - 24	Medium Stiff	5 - 8
Dense	25 - 50	Stiff	9 - 16
Very Dense	>51	Very Stiff	16 - 30
		Hard	31 - 60
		Very Hard	>61

Wyo. Proj. 2100020
 Sheet B13 of B25 Sheets

GROUND WATER SURFACE
 Not Encountered
 As Shown, measured - Date (s) 5/7/02

Barings shown made with: Auger Rig 4001 Air
 Rotary Rig circulation medium Water Mud

Classification of earth material on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis unless otherwise noted.
 The data on this sheet is for design purposes only and is not a warranty of subsurface conditions, except at locations actually drilled. Projections between test holes are based on geologic interpretations and exact elevations cannot be guaranteed.
 Data contained on this sheet is based on information from the Geology Program of the Wyoming Transportation Department and is beyond the scope of responsibility of other entities approving or sealing these plans.
 NOTES: 1) CME automatic SPT hammer used for soil testing--efficiency rating 110%.
 2) Test holes projected to center line, at actual elevations and same stations as drilled.



WYOMING DEPARTMENT OF TRANSPORTATION
 BRIDGE PROGRAM

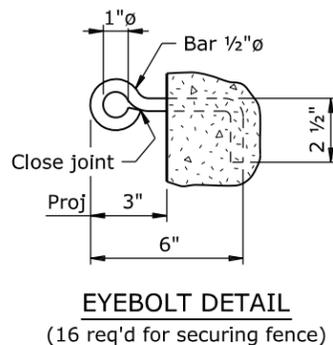
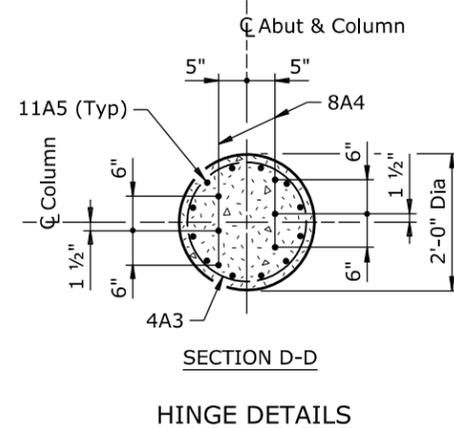
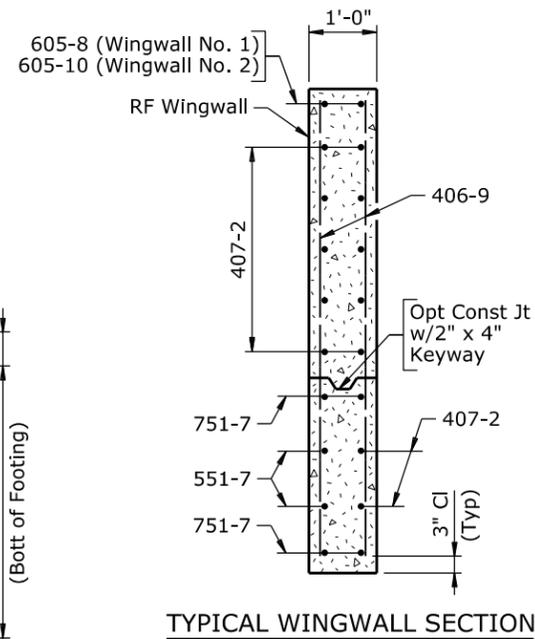
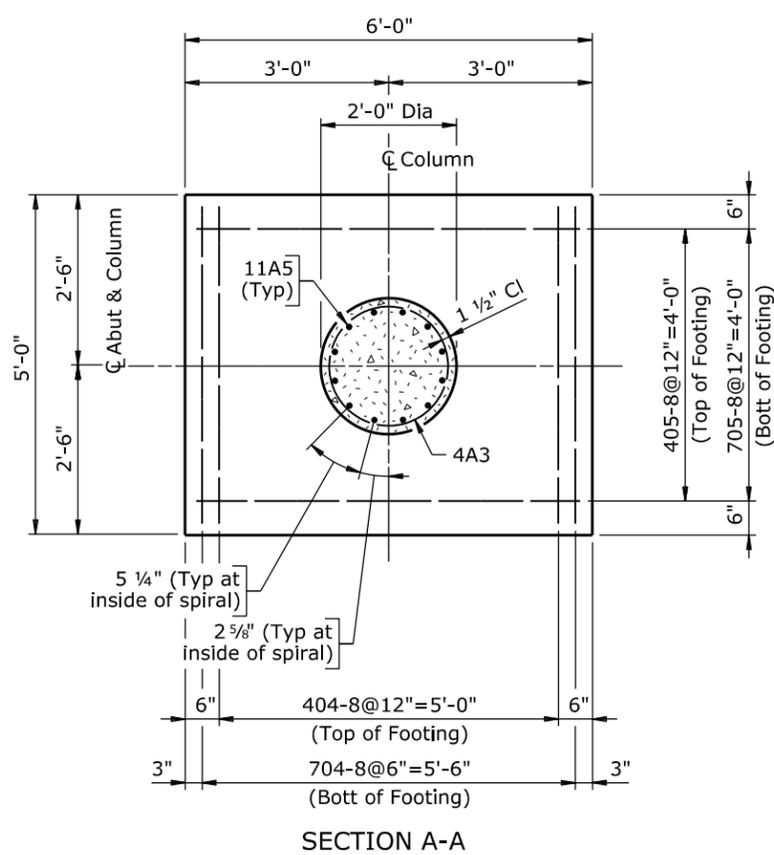
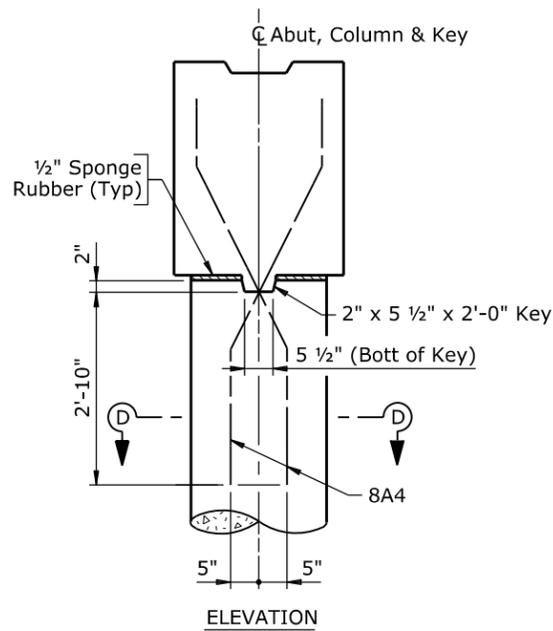
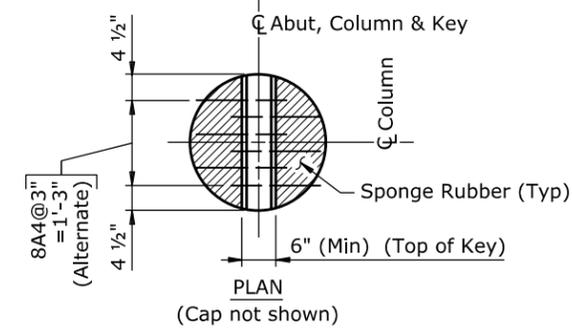
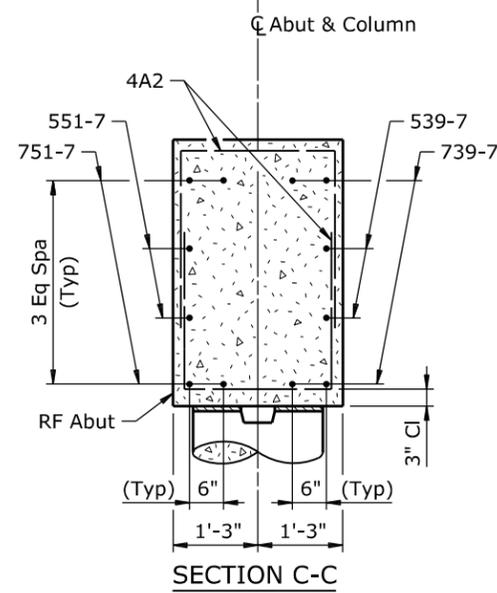
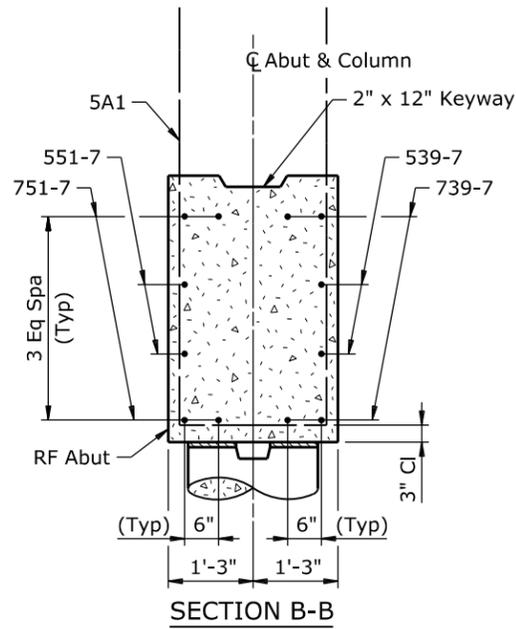
LOG BORING SHEET

BRIDGE OVER MILL CREEK
 STA 1066+95
 Evanston South
 State Line North Section

2100020 Ui

DESIGNER: T. SULLIVAN
 Y6KB
 RDK

Design Section Q R Stuv
 Drwg No. 0004 Sheet 6 of 16



BILL OF REINFORCEMENT		
Location	Mark	Number Required Per Abutment
Cap	4A2	24
	407-2	4
	5A1	31
	539-7	2
	551-7	2
	739-7	4
	751-7	4
	Weight	1447 LB
Wingwalls	406-9	24
	407-2	20
	605-8	2
	605-10	2
	Weight	219 LB
Footings & Columns	4A3	3
	404-8	18
	405-8	15
	704-8	36
	705-8	15
	8A4	18
	11A5	36
	Weight	3321 LB
Bending Diagrams		
5A1 (Stirrup) (11'-11")	4A2 (Stirrup) (6'-7")	8A4 (6'-0")
Spiral		
Mark	Core	Pitch
4A3	21"	3"
		Turns
		#30

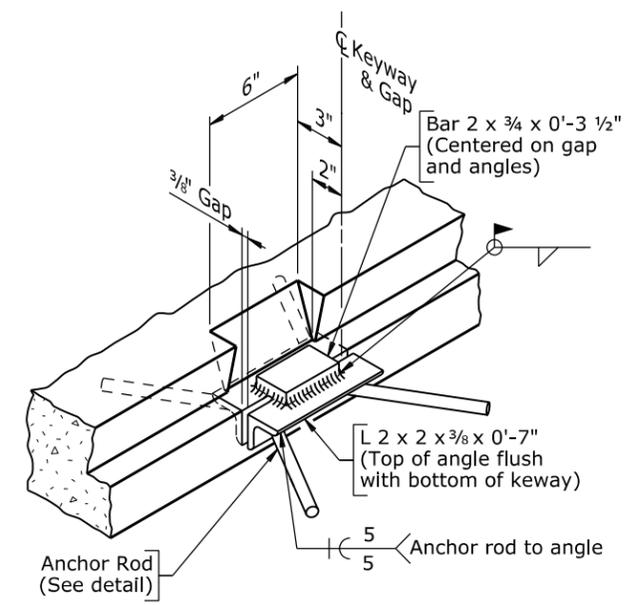
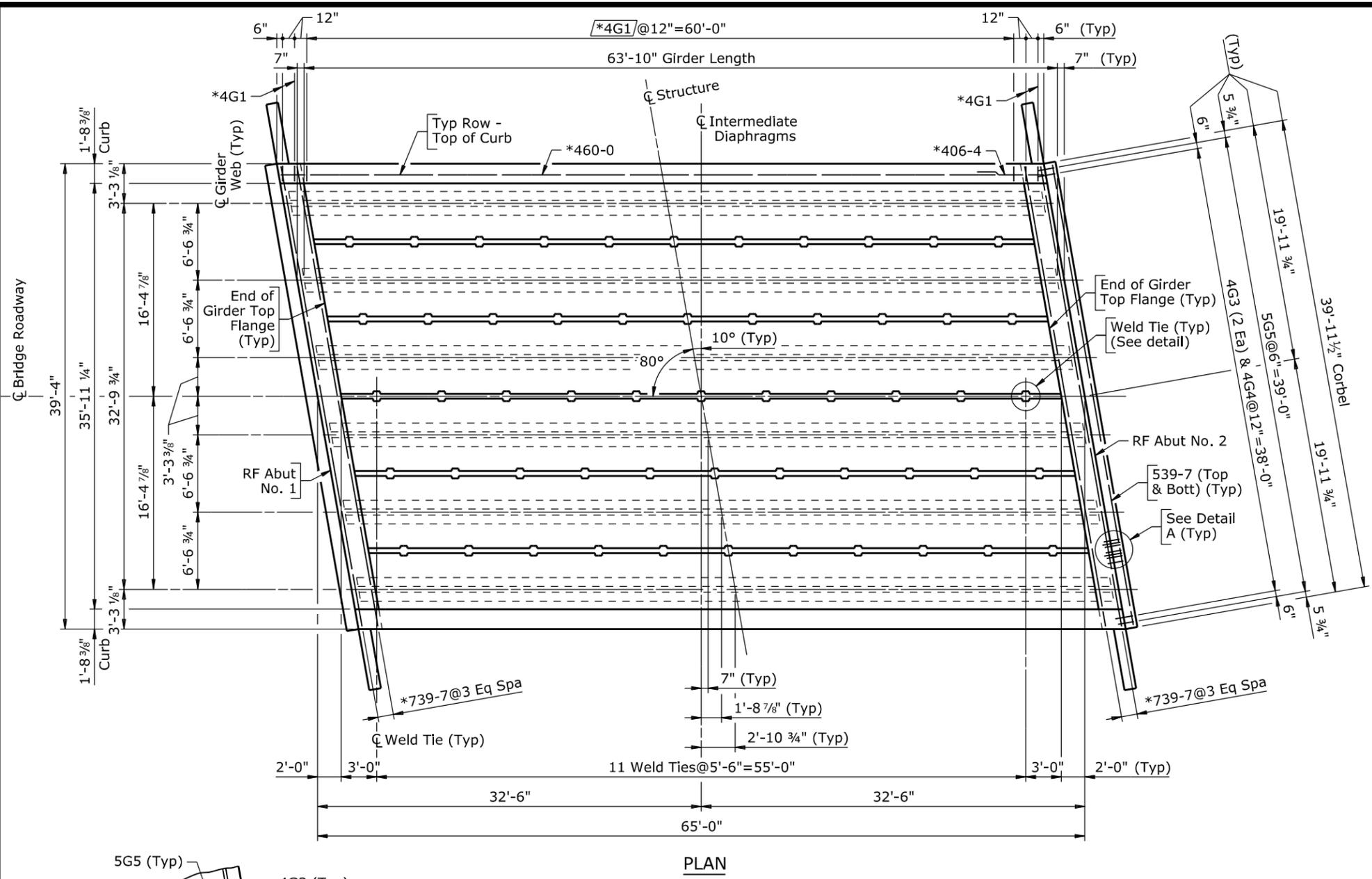
- Note:
- 1) Ensure the reinforcing steel fabricator prefixes bar marks at Abutment No. 1 with numeral 1 and at Abutment No. 2 with numeral 2.
 - 2) The number of turns includes 1 1/2 turns at the top and bottom.
 - 3) Place 11A5 bars in columns as shown to not interfere with placement of 8A4 bars.
 - 4) The estimated quantity of class A concrete per abutment is 24.9 CY for Alternate 1 and 25.5 CY for Alternate 2.
 - 5) For locations of Sections A-A, B-B, and C-C, see Sheet No. 7.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
ABUTMENT DETAILS			
BRIDGE OVER MILL CREEK			
STA 1066+95			
Evanston South			
State Line North Section			
2100020		Ui	
REVIEW	DESIGN	Design Section	
	LLL ✓	Q R Stuv	
APPROVAL	DETAIL	Drwg No. 0004	Sheet 8 of 16
	LLL ✓		

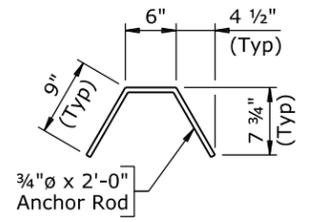
Nov 2018

4.09 - Example

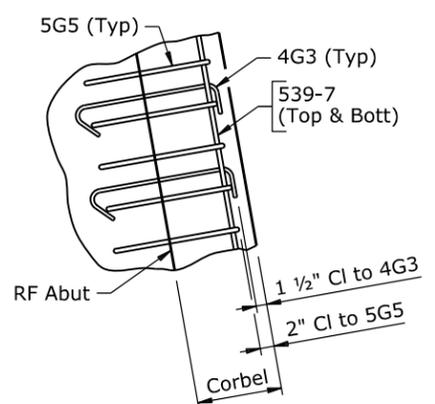
Wyo. Proj. 2100020
 Sheet B16 of B25 Sheets



WELD TIE DETAIL
 (Backer rod, nonshrink grout, and near girder flange not shown)
 (Weld tie assembly and flange blockout is symmetrical)



ANCHOR ROD DETAIL

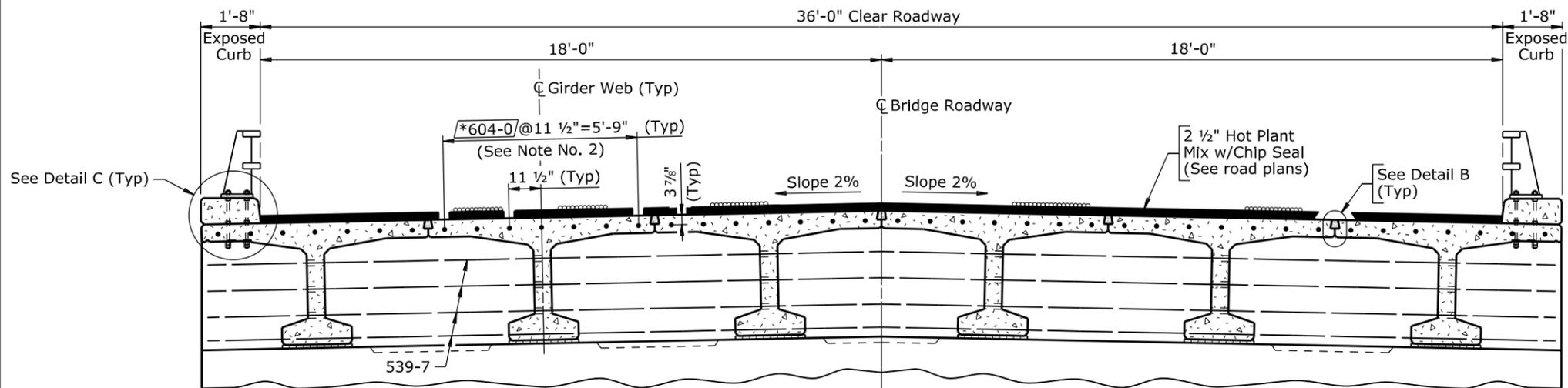


DETAIL A
 (Showing corbel reinforcing steel placement)
 (4G3 shown, 4G4 similar)

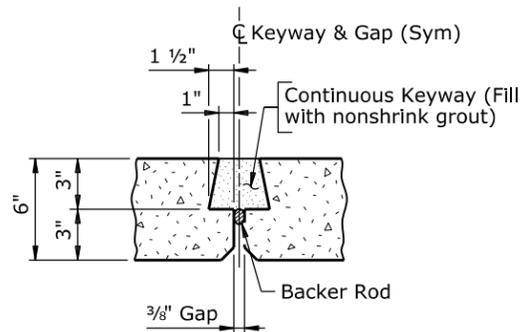
Note: For Bridge Railing Details, see Sheets No. 13 and 14.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
SUPERSTRUCTURE DETAILS			
BRIDGE OVER MILL CREEK			
STA 1066+95			
Evanston South			
State Line North Section			
2100020		Ui	
DESIGN	OOO ✓ NNN	Design Section	Q R Stuv
DETAIL	LLL ✓ OOO	Drwg No. 0004	Sheet 9 of 16
APPROVAL	LLL ✓ HHH		

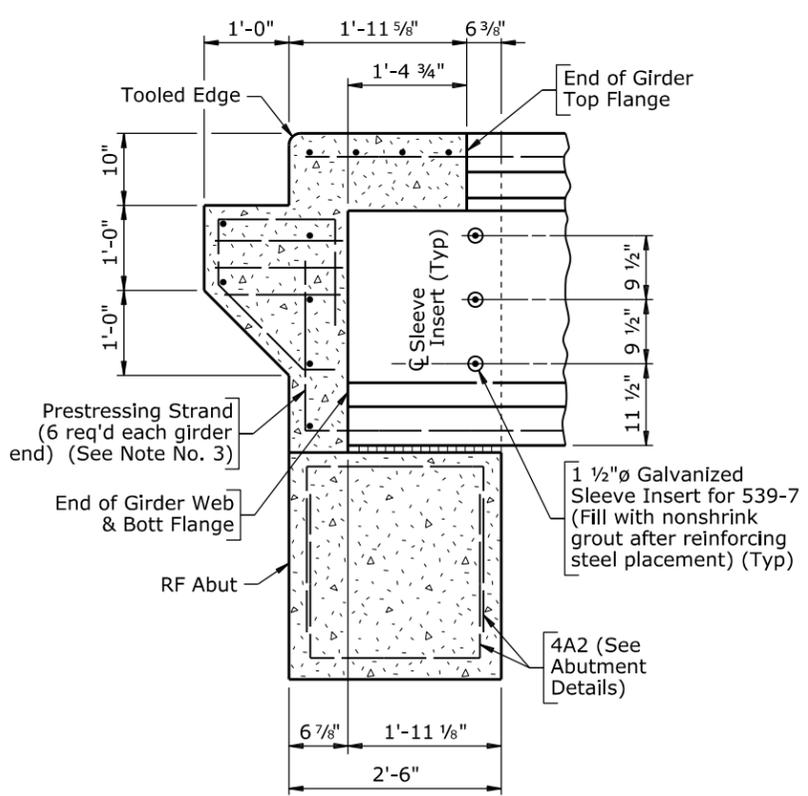
Section 4.09 - Superstructure



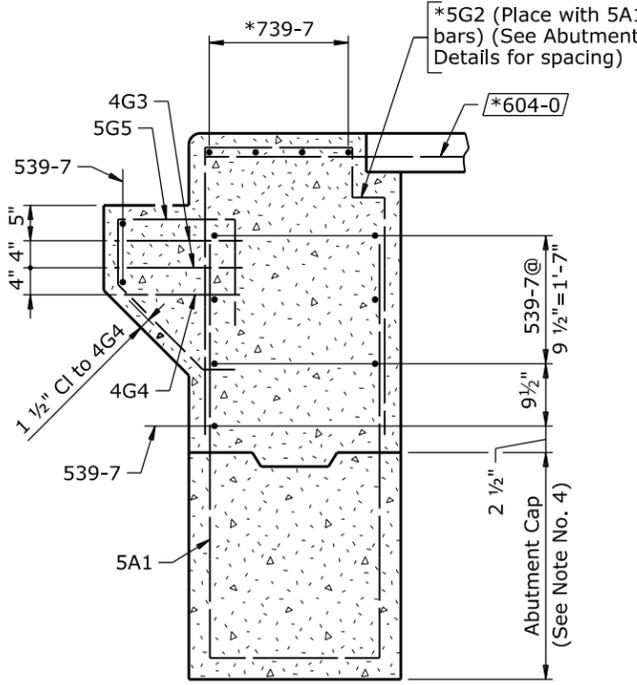
SECTION AT END DIAPHRAGM



DETAIL B
(Hot plant mix not shown)



SECTION AT GIRDER WEB
(Showing typical dimensions)

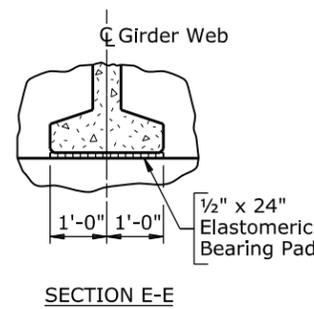
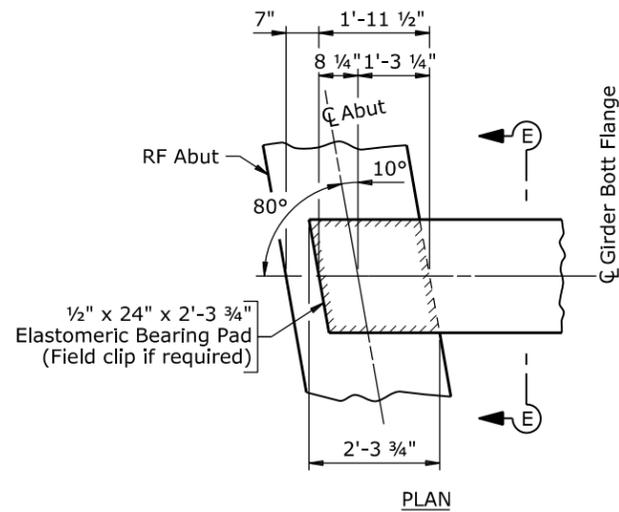
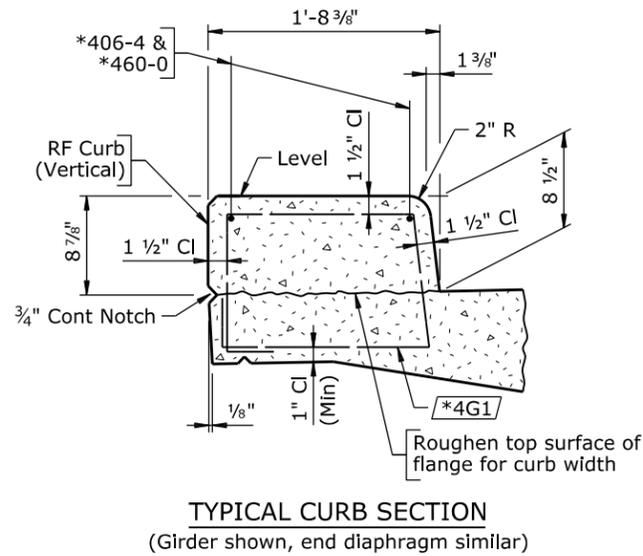
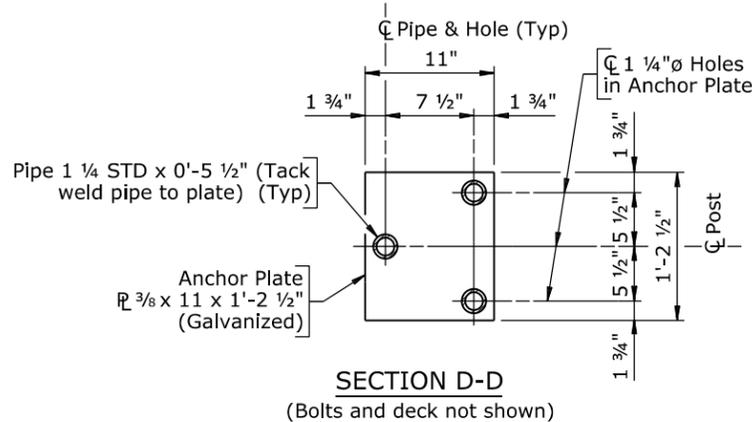
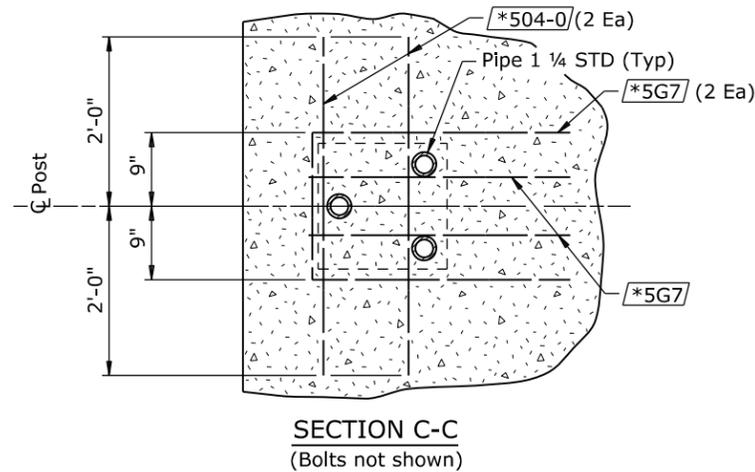
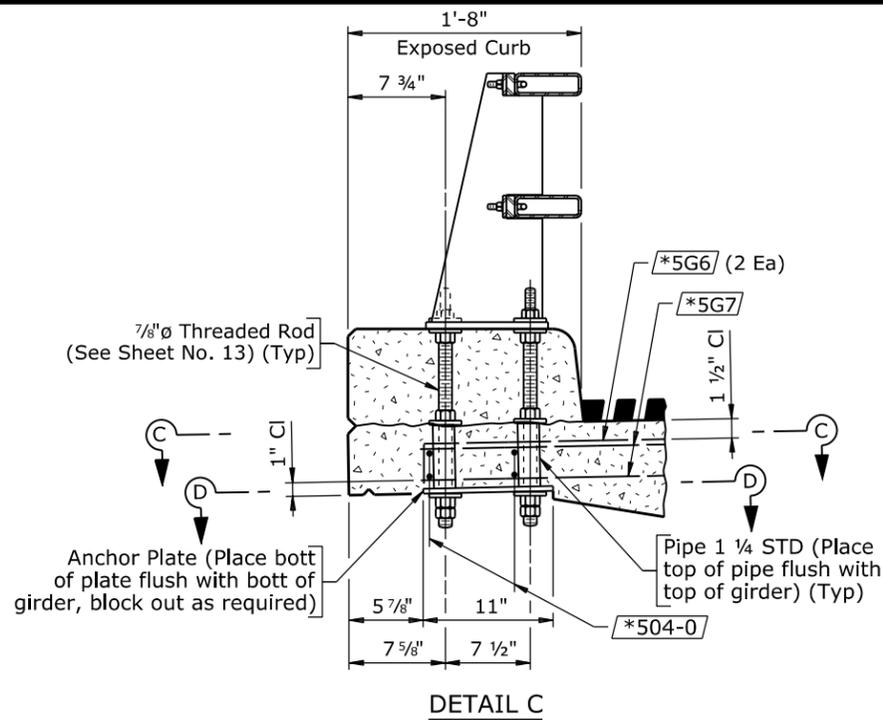


SECTION BETWEEN GIRDER WEBS
(Showing typical reinforcing steel)

TYPICAL SECTIONS THRU END DIAPHRAGM
(Dimensions are perpendicular to RF Abut)
(Hot plant mix not shown)

- Note:
- 1) Ensure reinforcing steel in girder top flange is coated.
 - 2) Ensure *604-0 bars extend 1'-9" from end of girder top flange.
 - 3) Ensure prestressing strands are evenly spaced in bottom layer and extend 2'-0" from each end of girder. Field bend as shown.
 - 4) Ensure abutment cap concrete attains 100% of ultimate design strength by cylinder tests before placing girders.
 - 5) Install backer rod continuous between abutments.
 - 6) For Detail C, see Sheet No. 12.
 - 7) For Abutment Details, see Sheets No. 7 and 8.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
SUPERSTRUCTURE DETAILS			
BRIDGE OVER MILL CREEK			
STA 1066+95			
Evanston South			
State Line North Section			
2100020		Ui	
DESIGN	OOO ✓ NNN	Design Section	Q R Stuv
DETAIL	LLL ✓ OOO	Drwg No. 0004	Sheet 10 of 16
APPROVAL	LLL ✓ HHH		



BEARING DETAILS
(12 req'd)
(Abut No. 1 shown, Abut No. 2 similar)

BILL OF REINFORCEMENT			
Location	Mark	Number Required	Bending Diagrams
Curbs	*406-4	4	
	*460-0	4	
	*Weight	*178 LB	
Girders	*4G1	122	
	*5G6	28	
	*5G7	28	
	*504-0	56	
	*604-0	84	
End Diaphragms	*4G1	8	
	4G3	156	
	4G4	78	
	*5G2	31	
	5G5	158	
	539-7	18	
	*739-7	8	
	*Weight	*966 LB	
	Weight	1897 LB	

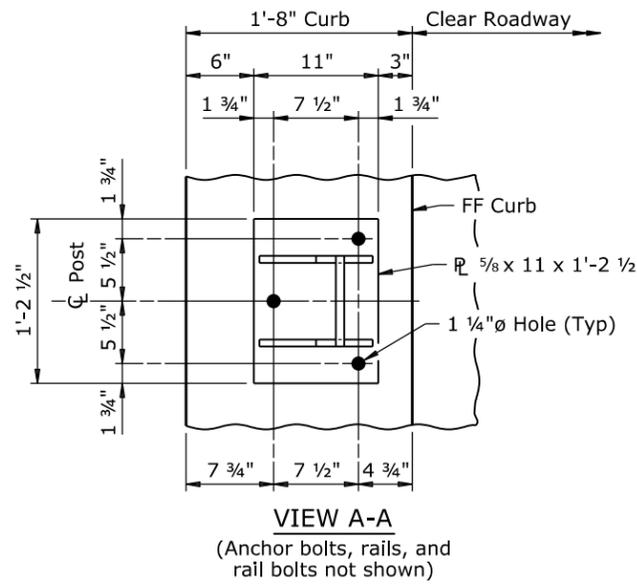
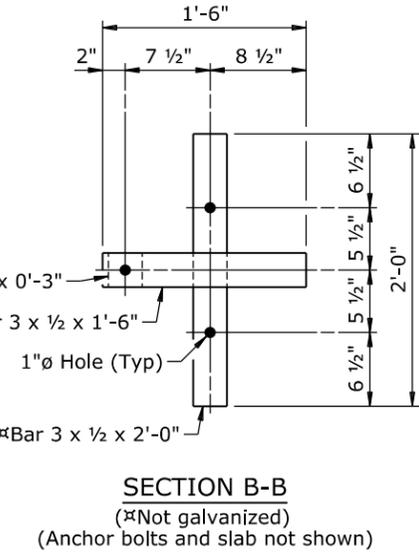
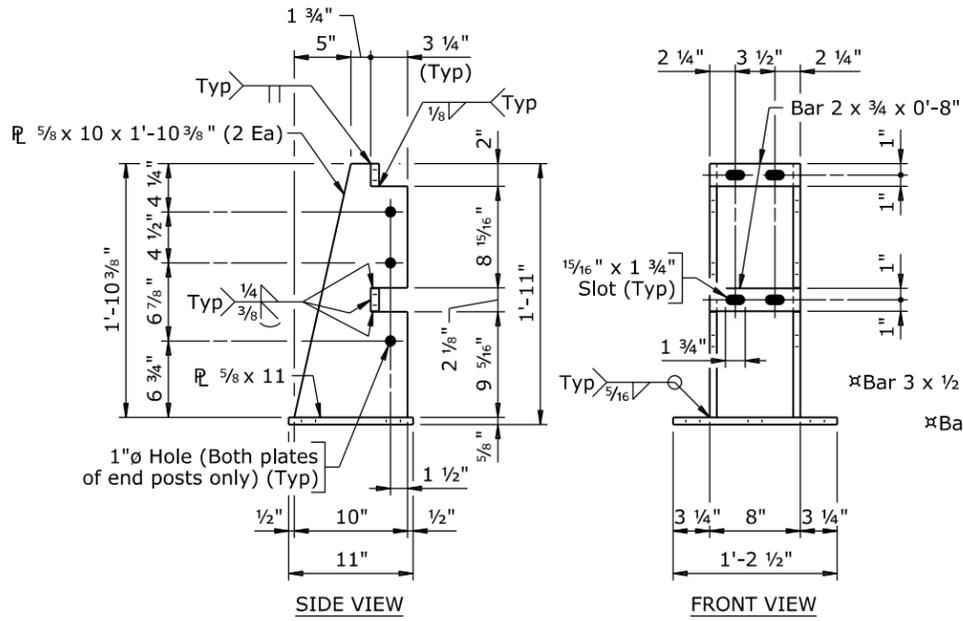
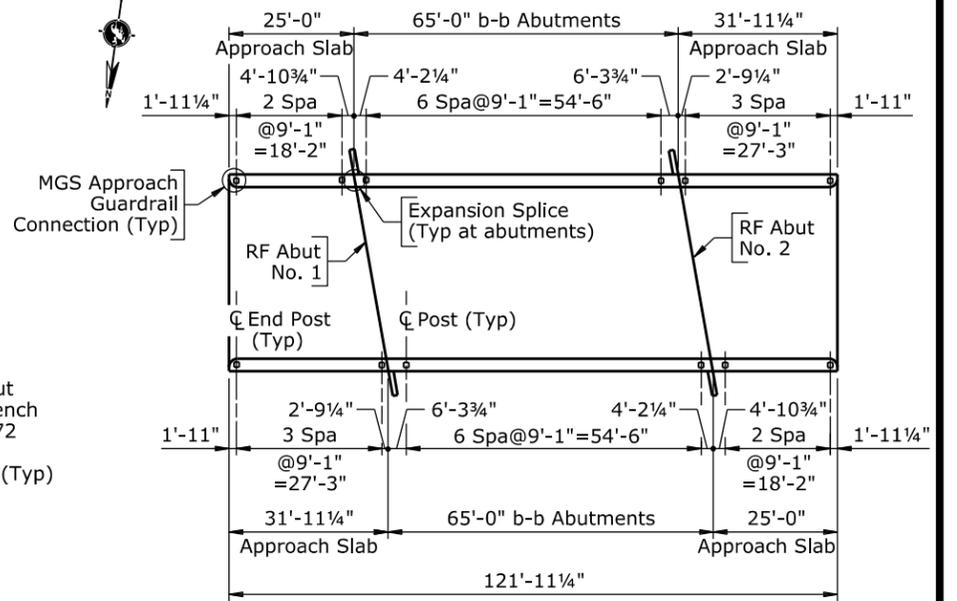
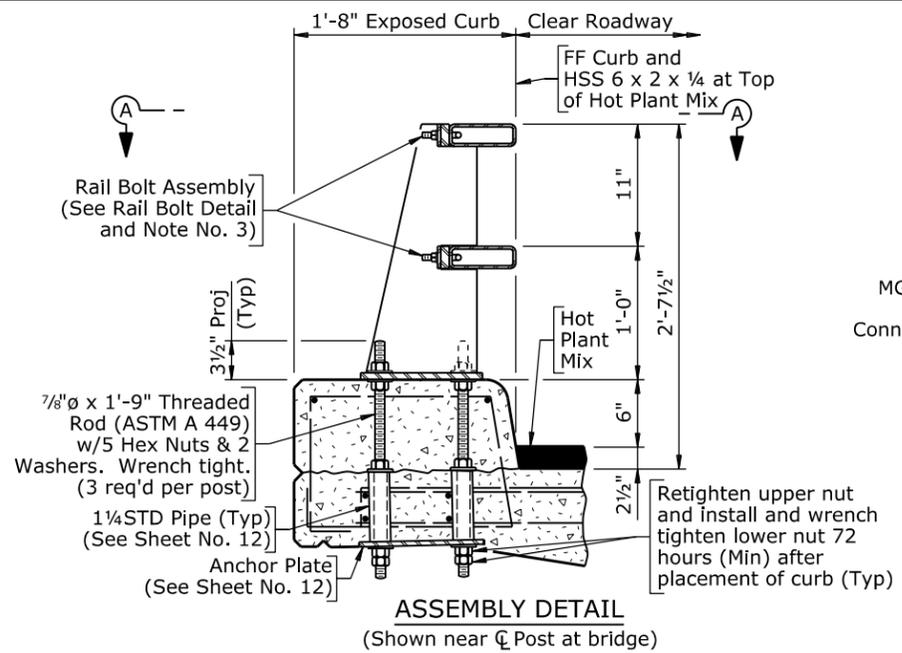
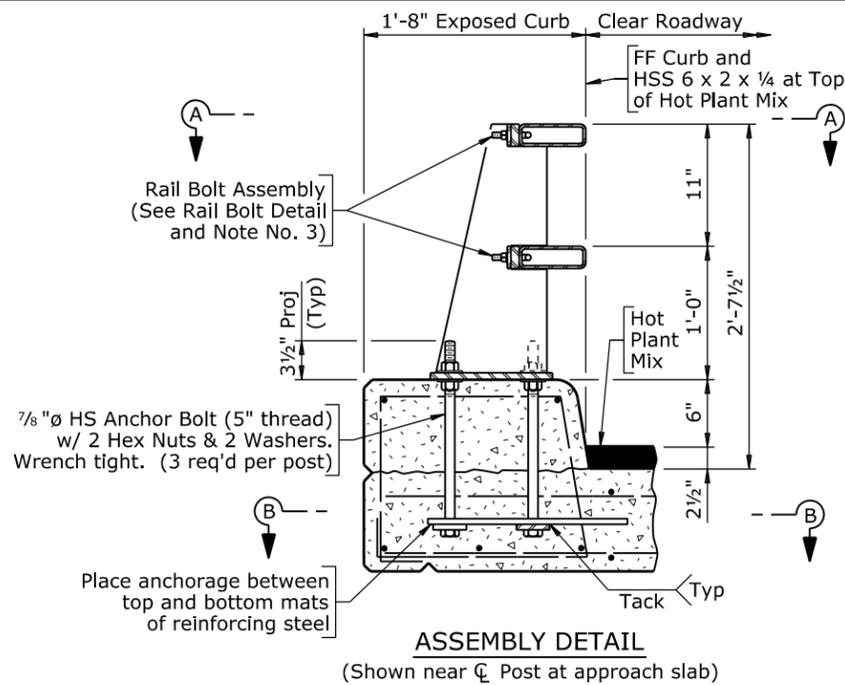
- Note:
- 1) Reinforcing steel shown as #4G1 is not included in the quantity of reinforcing steel and will be provided by the prestressed girder manufacturer.
 - 2) Ensure the reinforcing steel fabricator prefixes superstructure bar marks with numeral 3.
 - 3) The estimated quantity of class A concrete for each end diaphragm is 14.5 CY for Alternate 1 and 13.9 CY for Alternate 2. The estimated quantity of class A concrete for curbs is 5.7 CY.
 - 4) For location of Detail C, see Sheet No. 10.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
SUPERSTRUCTURE DETAILS			
BRIDGE OVER MILL CREEK			
STA 1066+95			
Evanston South			
State Line North Section			
2100020		Ui	
DESIGN	OOO ✓ NNN	Design Section	Q R Stuv
DETAIL	LLL ✓ OOO	Drwg No. 0004	Sheet 12 of 16
APPROVAL	LLL ✓ HHH		

Nov 2018

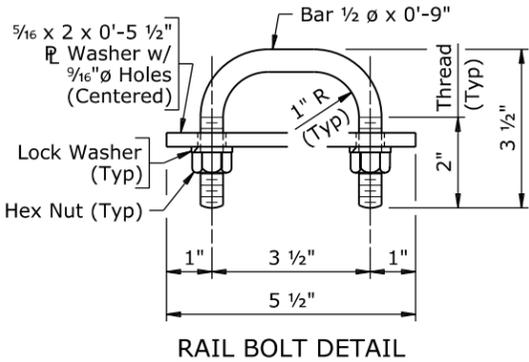
4.10 - Example

Wyo. Proj. 2100020
Sheet B20 of B25 Sheets



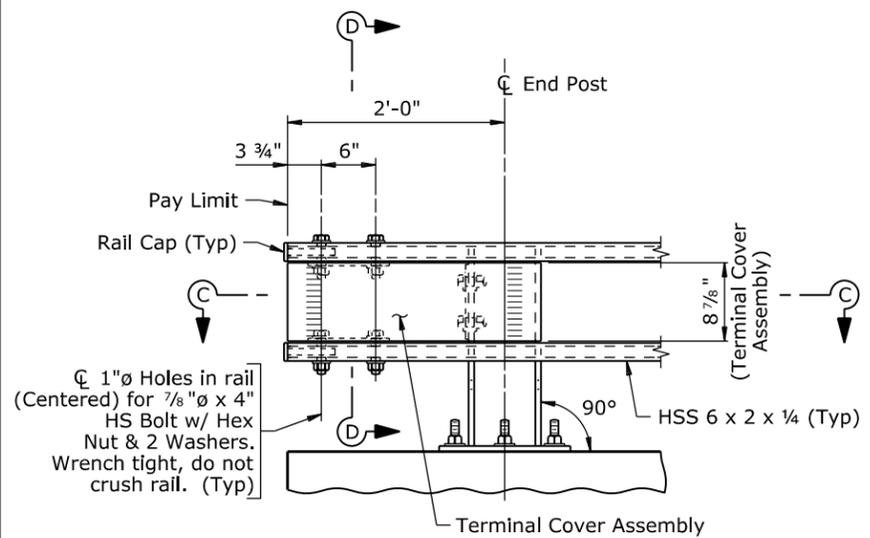
- Note:
- 1) Ensure the expansion splice is located in the railing panel which passes over the bridge expansion joint as indicated on the plan.
 - 2) Anchor bolts may be tack welded to anchorage (Shop or field).
 - 3) At post locations, drill two 1 1/16" holes in each rail to receive rail bolts (Shop or field). See Post Details for hole spacing.
 - 4) Paint surfaces of the railing components that have been cut, drilled, or otherwise damaged with two coats of zinc-rich paint conforming to ASTM A 780.
 - 5) After installing rails, paint exposed bolt threads with two coats of zinc-rich paint conforming to ASTM A 780.

ANCHOR BOLT TABLE	
Location	Anchor Bolt
Bridge Slab	
Approach Slab	7/8" ϕ x 1'-5"



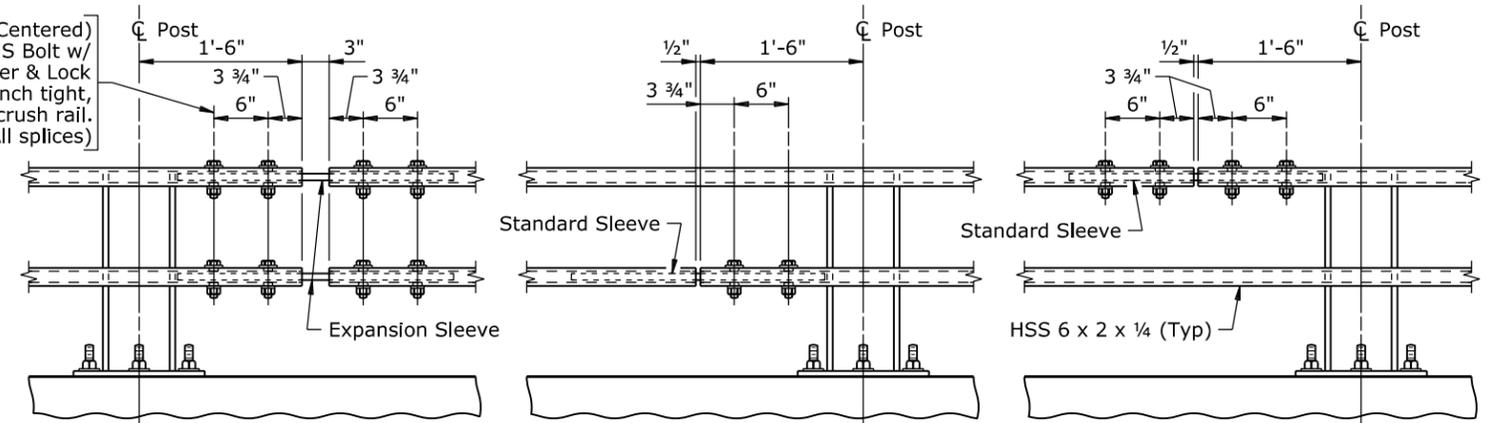
WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
REVISIONS		BRIDGE RAILING DETAILS	
		BRIDGE OVER MILL RIVER	
		STA 1066+95	
		Evanston South	
		State Line North Section	
		2100020	Ui
APPROVED	DESIGN	Design Section Q R Stuv	
DATE	DETAIL	Drwg No. 0004	Sheet 13 of 16
	QTY'S		

Section 4.10 - Bridge Railing



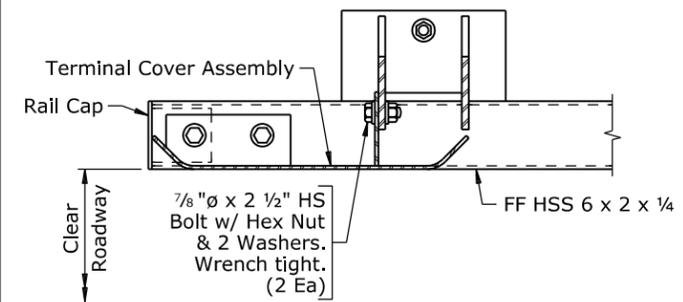
ELEVATION AT TERMINAL

1"Ø Holes in rail (Centered) for 3/4"Ø x 3 1/2" HS Bolt w/ Hex Nut, Washer & Lock Washer. Wrench tight, do not crush rail. (Typ) (All splices)

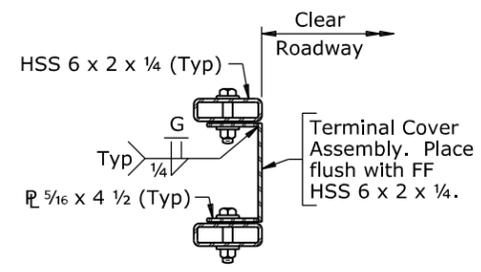


EXPANSION SPLICE (Top and bottom rail)
STANDARD SPLICE (Top or bottom rail)
DOUBLE-BOLTED SPLICE (Top or bottom rail)
SPLICE DETAILS

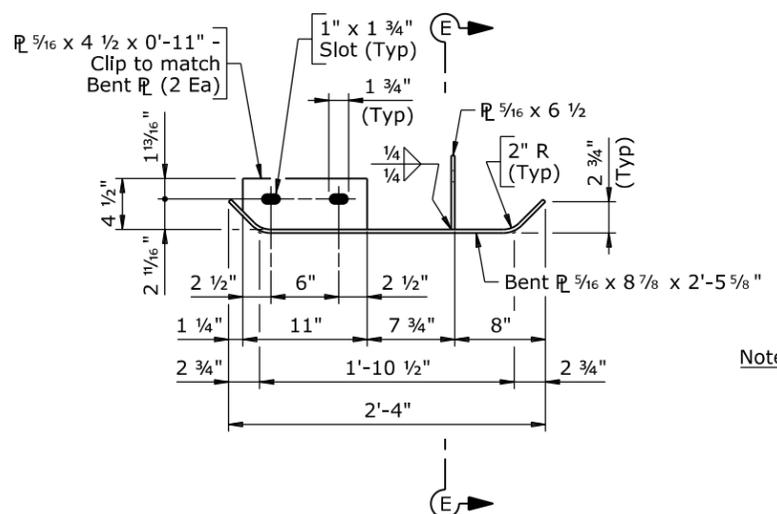
TERMINAL COMPONENT REQUIREMENTS		
Approach Guardrail Connection	Rail Caps Required	Terminal Cover Assembly Required
MGS Approach Guardrail	Yes (Without bolts)	±No
Box Beam w/ Rubrail Approach Guardrail	No	No
No Approach Guardrail	Yes (With bolts)	Yes



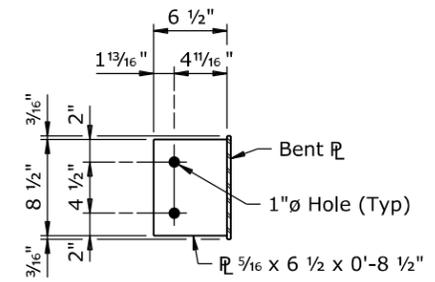
SECTION C-C



SECTION D-D

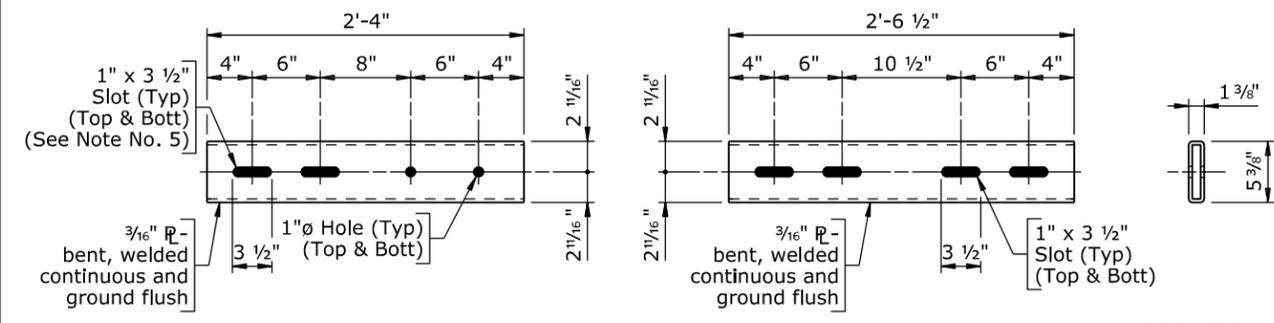


TERMINAL COVER ASSEMBLY DETAIL

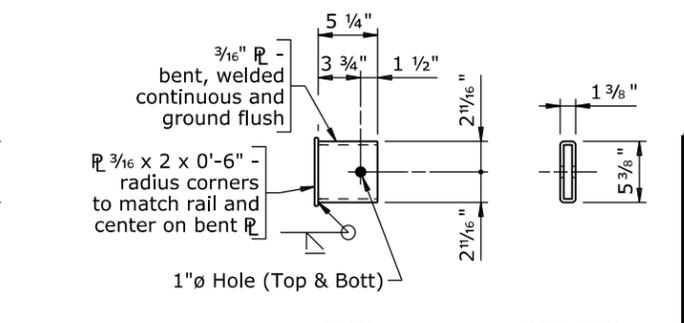


SECTION E-E

- Note:
- 1) Ensure each rail length is continuous over a minimum of two posts.
 - 2) In rehabilitation work, ensure railing that cannot feasibly be made continuous over a minimum of two posts has a double-bolted splice.
 - 3) Splices may be located on either side of post.
 - 4) Not more than one splice is permitted per side of post, except at expansion splices.
 - 5) Slots may be omitted in standard sleeves where bolts are required on one side of splice only.
 - 6) Do not shop splice rails.
 - 7) Terminal components removed during rehabilitation work will remain the property of the department.
 - ±8) Installation of MGS approach guardrail will require other fabricated assemblies to be connected to end post. See road plans for details and pay item.

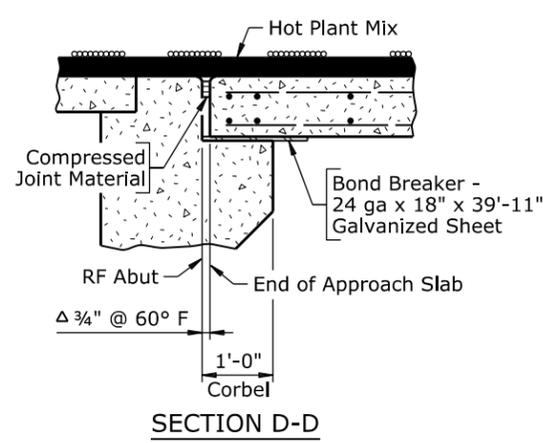
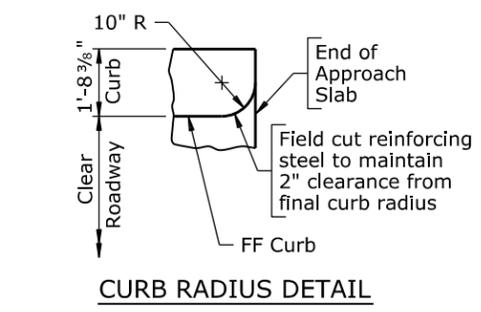
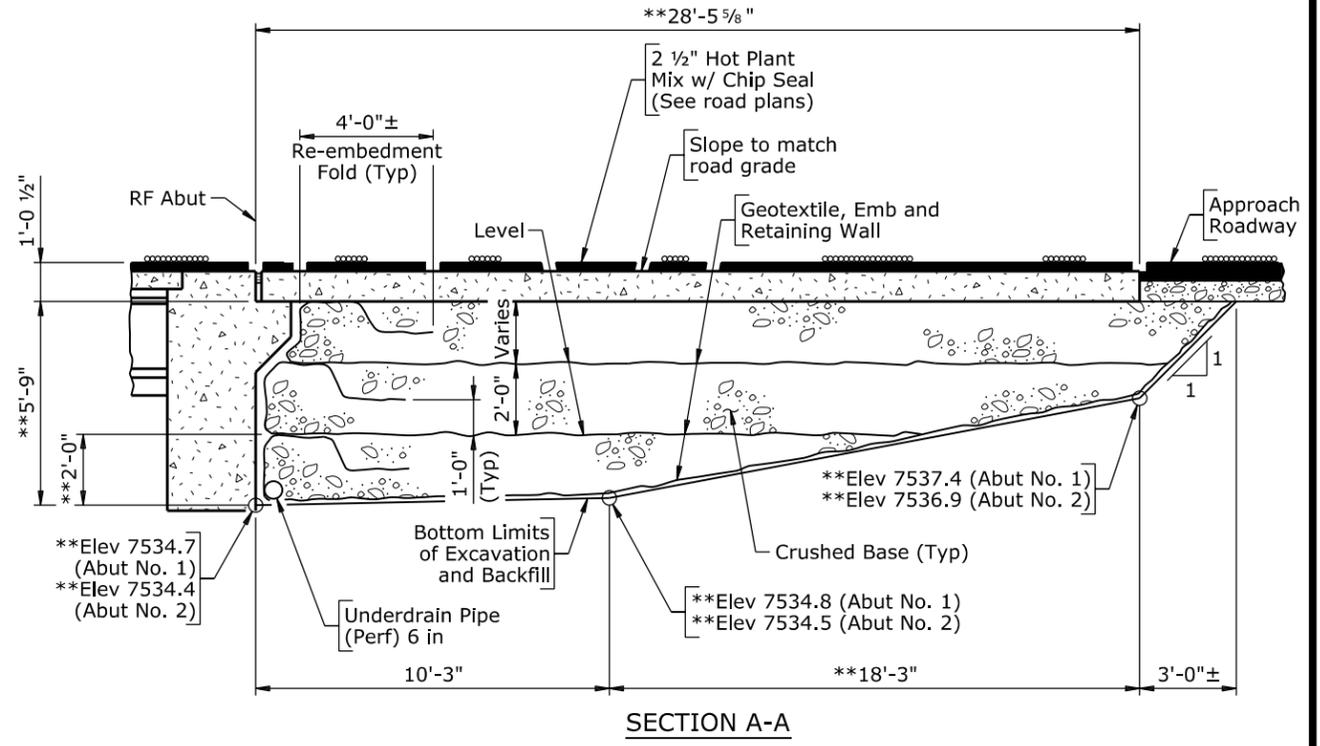
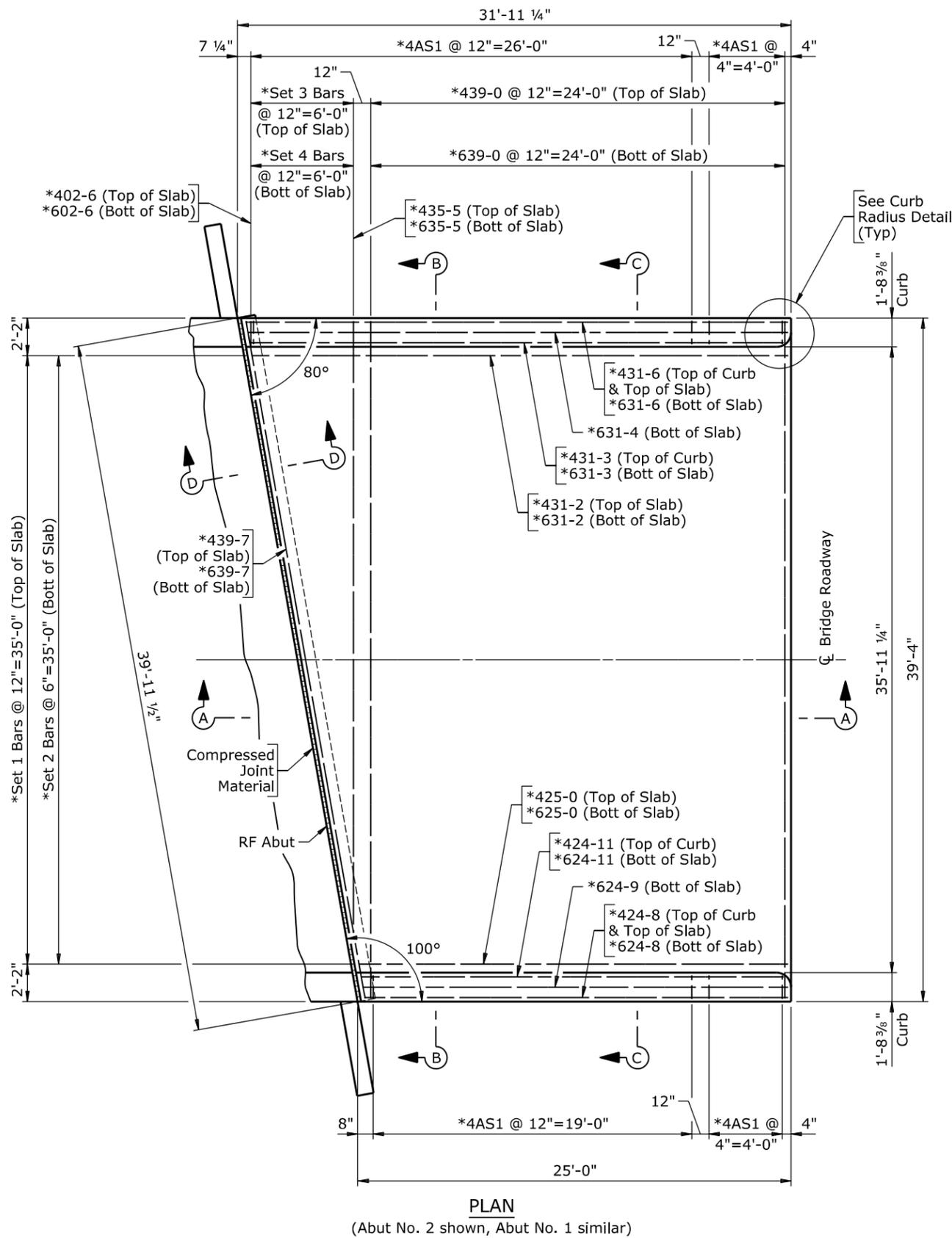


SLEEVE DETAILS



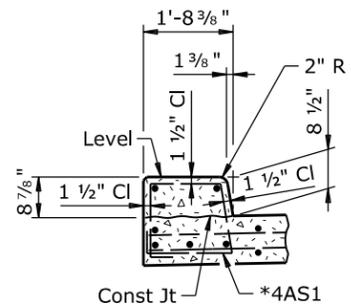
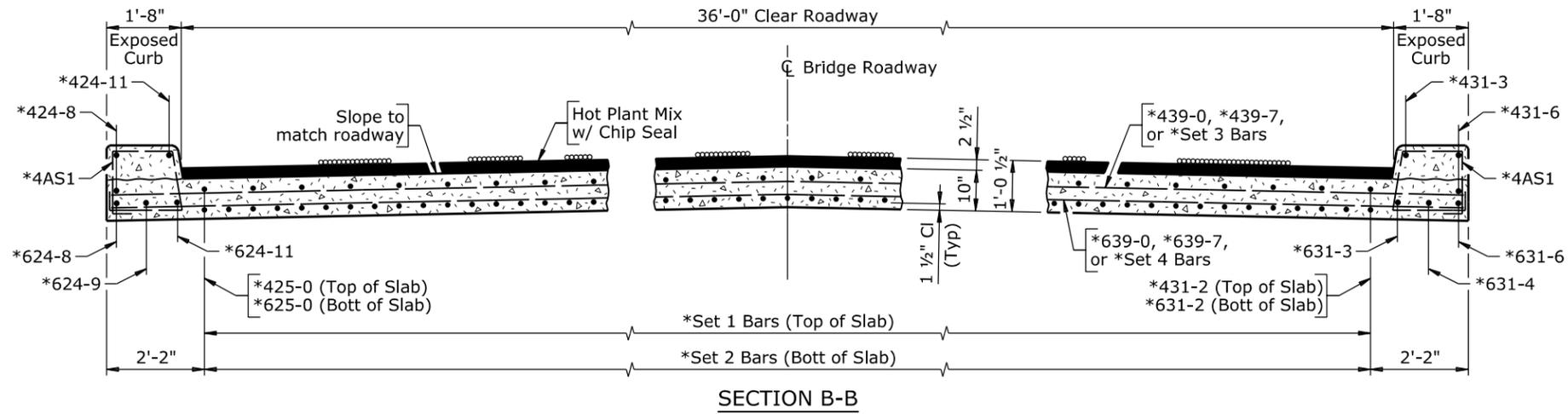
RAIL CAP DETAILS

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
BRIDGE RAILING DETAILS			
BRIDGE OVER MILL RIVER			
STA 1066+95			
Evanston South			
State Line North Section			
2100020		Ui	
APPROVED	DESIGN	Design Section Q R Stuv	
DATE	DETAIL	Drwg No. 0004	Sheet 14 of 16
	QTY'S		

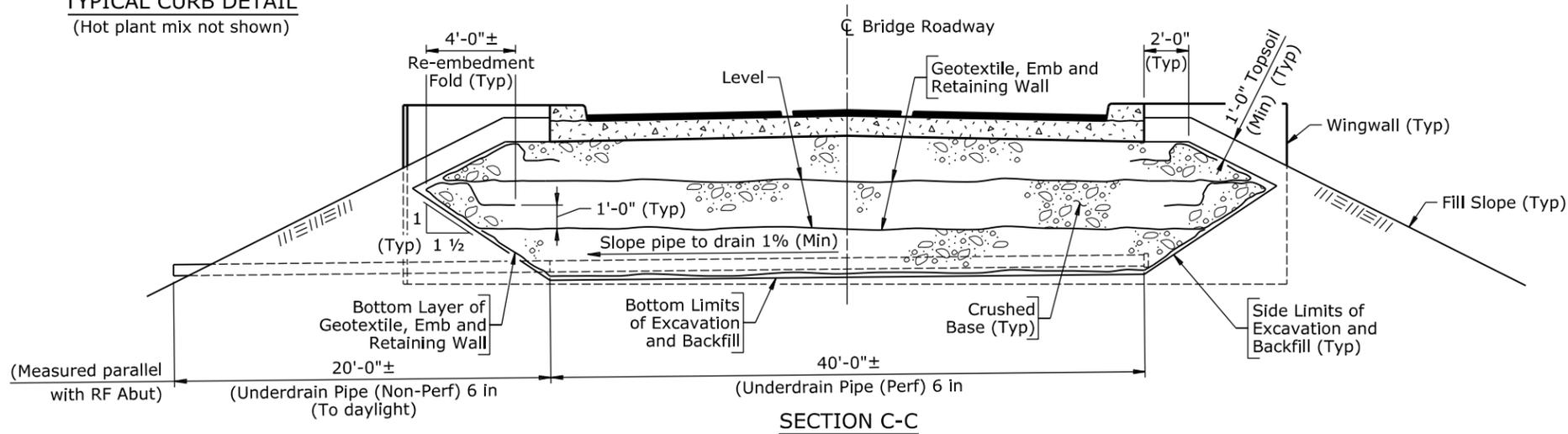


- Note:**
- 1) Dimensions and elevations preceded by a double asterisk (**) are measured at \bar{C} Bridge Roadway.
 - 2) Increase the opening between rear face abutment and end of approach slab $\frac{1}{16}$ " for each 10° F below 60° F and decrease the opening $\frac{1}{16}$ " for each 10° F above 60° F. Account for variance in the opening in approach slab forming.
 - 3) Extend compressed joint material up front face and across top of curbs.
 - 4) For Bridge Railing Details, see Sheets No. 13 and 14.
 - 5) For Sections B-B and C-C, see Sheet No. 16.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
APPROACH SLAB DETAILS			
BRIDGE OVER MILL CREEK			
STA 1066+95			
Evanston South			
State Line North Section			
2100020		Ui	
DESIGN	LLI ✓	OOO ✓	Design Section Q R Stuv
DETAIL	LLL ✓	HHH ✓	Drwg No. 0004
APPROVAL	QTY'S		Sheet 15 of 16



TYPICAL CURB DETAIL
(Hot plant mix not shown)



SECTION C-C

- Note:**
- 1) Ensure the reinforcing steel fabricator prefixes approach slab bar marks at Abutment No. 1 with numeral 4 and at Abutment No. 2 with numeral 5.
 - 2) Approach slab reinforcing steel is not included in the quantity of reinforcing steel.
 - 3) Extend bottom layer of geotextile up side limits of excavation and backfill to bottom of first layer of geotextile.
 - 4) For locations of Sections B-B and C-C, see Sheet No. 15.

BILL OF REINFORCEMENT		
Location	Mark	Number Required Per Approach Slab
Approach Slab and Curbs	*4AS1	77
	*424-8	2
	*424-11	1
	*431-3	1
	*431-6	2
	*439-0	25
	*439-7	1
	*Set 1 Bars	1
	*Set 3 Bars	1
	*624-8	1
	*624-9	1
	*624-11	1
	*631-3	1
	*631-4	1
	*631-6	1
	*639-0	25
	*639-7	1
	*Set 2 Bars	1
	*Set 4 Bars	1
	**Weight	*6839 LB
Bending Diagram		
Set Diagrams		

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
APPROACH SLAB DETAILS			
BRIDGE OVER MILL CREEK			
STA 1066+95			
Evanston South			
State Line North Section			
2100020		Ui	
DESIGN	LL	OO	Design Section Q R Stuv
DETAIL	LLL	OOO	
QTY'S	LLL	HHH	Drwg No. 0004 Sheet 16 of 16