

SINGLE BARREL 8'-0" X 8'-0"
CONCRETE BOX CULVERT
STA 960+50
ALBIN ROAD

0216001

LARAMIE COUNTY

PRELIMINARY

Wyo. Proj.	0216001
Sheet	of Sheets

GENERAL NOTES

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

DIMENSIONS: Longitudinal dimensions are along flow line. Slopes are vertical : horizontal.

CONCRETE AGGREGATE: Ensure all concrete mix designs employed in the project meet the following alkali-silica reactivity (ASR) screening.

Conduct the AASHTO T 303 (ASTM C 1260) test using a combined sample of fine aggregate and coarse aggregate, in the same proportions that will be used in the concrete mix design. If the test results indicate an expansion at 16 days from casting of 0.10 percent or less, the aggregate is considered non-reactive and mitigation measures are not required.

If the test results indicate an expansion at 16 days from casting of greater than 0.10 percent, mitigate the aggregate reactivity through the use of a class F fly ash as approved for ASR mitigation in accordance with the Materials Testing Manual, silica fume, and/or lithium nitrate additive. Demonstrate adequate mitigation by conducting the ASTM C 1567 test and ensuring the test results indicate an expansion at 16 days from casting of 0.10 percent or less. When conducting the ASTM C 1567 test, use a combined sample of fine aggregate and coarse aggregate, in the same proportions that will be used in the concrete mix design and use the cementitious material that is to be used in the mix design.

Ensure the AASHTO T 303 (ASTM C 1260), and ASTM C 1567 tests have been performed within 12 months of the submittal date.

Submit qualifying AASHTO T 303 (ASTM C 1260) and ASTM C 1567 test results to the engineer a minimum of 14 calendar days before concrete production. Submit test results to the Materials Program along with each mix design request.

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.



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.

WEEP HOLE ASSEMBLIES: Work necessary for the weep hole assemblies is incidental to the contract pay item Class A Concrete.

PREFORMED EXPANSION JOINT FILLER: Work necessary for the preformed expansion joint filler is incidental to the contract pay item Class A Concrete.

REMOVAL OF STRUCTURES AND OBSTRUCTIONS: Remove the existing 72"ø x 60'-0"± corrugated metal pipe.

CULVERT EXCAVATION: The estimated quantity of culvert excavation, including removal of the existing pipe and excavation for the new culvert, is 90 CY and is incidental to the contract pay item Removal of Structures and Obstructions.

OPTIONAL CONSTRUCTION JOINT BASE: If the optional construction joint in the bottom slab is used, work necessary for the base is incidental to the contract pay item Class A Concrete.

ESTIMATED QUANTITIES				
ITEM NO.	ITEM	UNIT	TOTAL QUANTITY	ESTIMATE
202.03100	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	LUMP SUM	X EA
212.03900	PERVIOUS BACKFILL MATERIAL	CY	X	
511.01000	GABIONS	CY	X	
513.00005	CLASS A CONCRETE	LS	LUMP SUM	X CY
514.00015	REINFORCING STEEL	LS	LUMP SUM	X LB

DESIGN DATA

SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, 8th Edition.

ADT: 185 (Year 2008)

LOADING:
Live Load: HL93
Lateral live load surcharge: 2 ft earth or 72 psf
Dead Load: Design fill: 0.6 ft±
Vertical earth pressure: 120 pcf
Lateral earth pressure: 72 pcf

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

APPROACH ROADWAY WIDTH: 36'-0"

REFERENCES

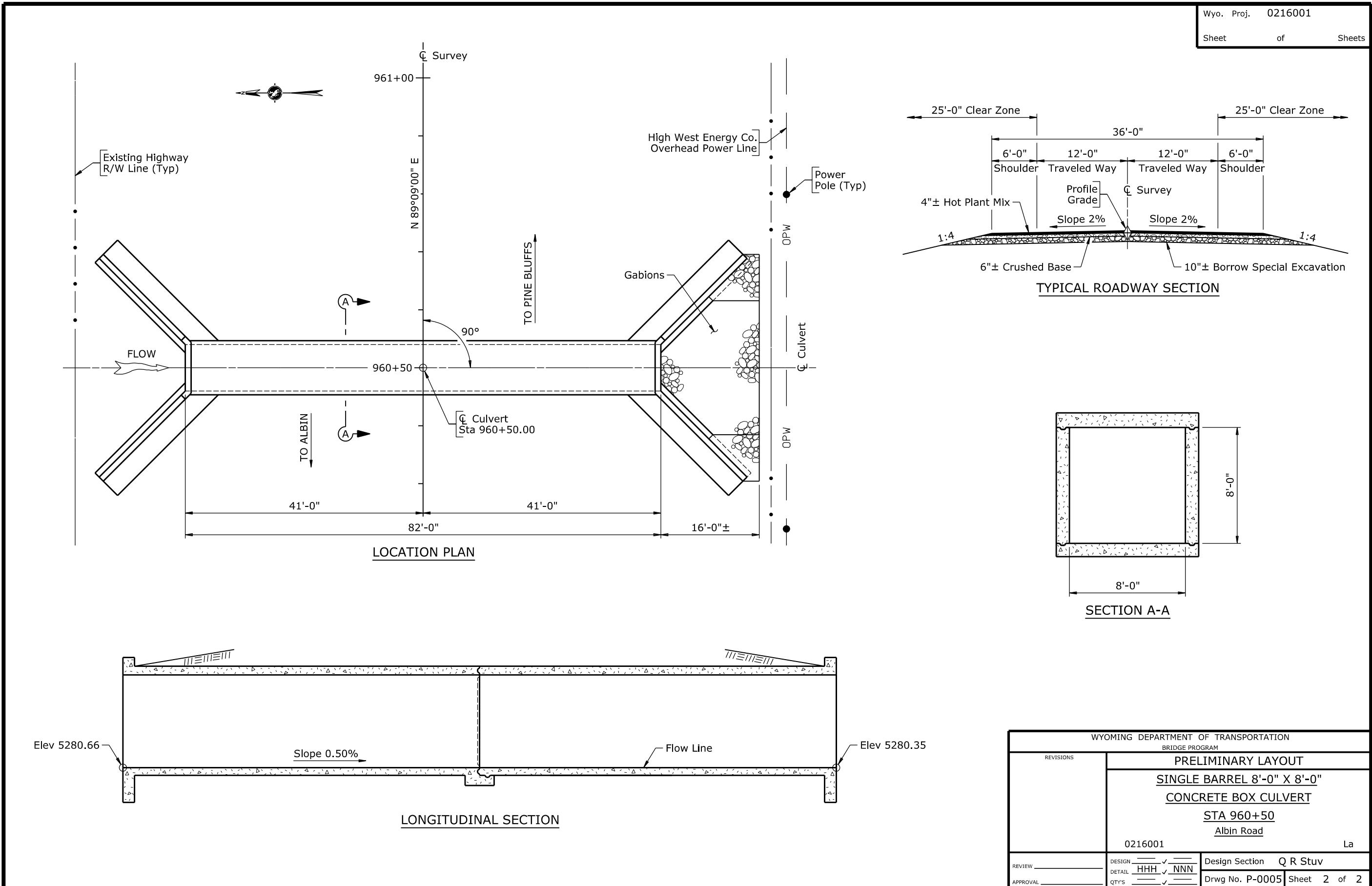
Supplementary Specifications:
SS-100K Adjustment for Structural Steel
Standard Plans:
206-1A Culvert and Trench Excavation
511-1A Wire Enclosed Riprap and Gabions

STRUCTURE NO. M-IJG-C
ML1105B, RM 0.05
SEC 20, T17N, R60W

WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
REVISIONS			
REVIEW	DESIGN	Design Section Q R Stuv	
DETAIL	HHH	NNN	
APPROVAL	QTY'S	Drwg No. P-0005	Sheet 1 of 2

Nov 2018

4.01 - Example



Section 4.01 - Preliminary

SINGLE BARREL 8'-0" X 8'-0"
CONCRETE BOX CULVERT
STA 960+50
ALBIN ROAD

0216001

LARAMIE COUNTY

Wyo. Proj.	0216001
Sheet	B1 of B4 Sheets

GENERAL NOTES

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

DIMENSIONS: Longitudinal dimensions are along flow line. Slopes are vertical : horizontal.

CONCRETE AGGREGATE: Ensure all concrete mix designs employed in the project meet the following alkali-silica reactivity (ASR) screening.

Conduct the AASHTO T 303 (ASTM C 1260) test using a combined sample of fine aggregate and coarse aggregate, in the same proportions that will be used in the concrete mix design. If the test results indicate an expansion at 16 days from casting of 0.10 percent or less, the aggregate is considered non-reactive and mitigation measures are not required.

If the test results indicate an expansion at 16 days from casting of greater than 0.10 percent, mitigate the aggregate reactivity through the use of a class F fly ash as approved for ASR mitigation in accordance with the Materials Testing Manual, silica fume, and/or lithium nitrate additive. Demonstrate adequate mitigation by conducting the ASTM C 1567 test and ensuring the test results indicate an expansion at 16 days from casting of 0.10 percent or less. When conducting the ASTM C 1567 test, use a combined sample of fine aggregate and coarse aggregate, in the same proportions that will be used in the concrete mix design and use the cementitious material that is to be used in the mix design.

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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



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.

WEEP HOLE ASSEMBLIES: Work necessary for the weep hole assemblies is incidental to the contract pay item Class A Concrete.

PREFORMED EXPANSION JOINT FILLER: Work necessary for the preformed expansion joint filler is incidental to the contract pay item Class A Concrete.

REMOVAL OF STRUCTURES AND OBSTRUCTIONS: Remove the existing 72"Ø x 60'-0"± corrugated metal pipe.

CULVERT EXCAVATION: The estimated quantity of culvert excavation, including removal of the existing pipe and excavation for the new culvert, is 90 CY and is incidental to the contract pay item Removal of Structures and Obstructions.

OPTIONAL CONSTRUCTION JOINT BASE: If the optional construction joint in the bottom slab is used, work necessary for the base is incidental to the contract pay item Class A Concrete.

DESIGN DATA

SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, 8th Edition.

ADT: 185 (Year 2008)

LOADING:

Live Load: HL93
Lateral live load surcharge: 2 ft earth or 72 psf
Dead Load: Design fill: 0.6 ft±
Vertical earth pressure: 120 pcf
Lateral earth pressure: 72 pcf

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

APPROACH ROADWAY WIDTH: 36'-0"

REFERENCES

Supplementary Specifications:
SS-100K Adjustment for Structural Steel
Standard Plans:
206-1A Culvert and Trench Excavation
511-1A Wire Enclosed Riprap and Gabions

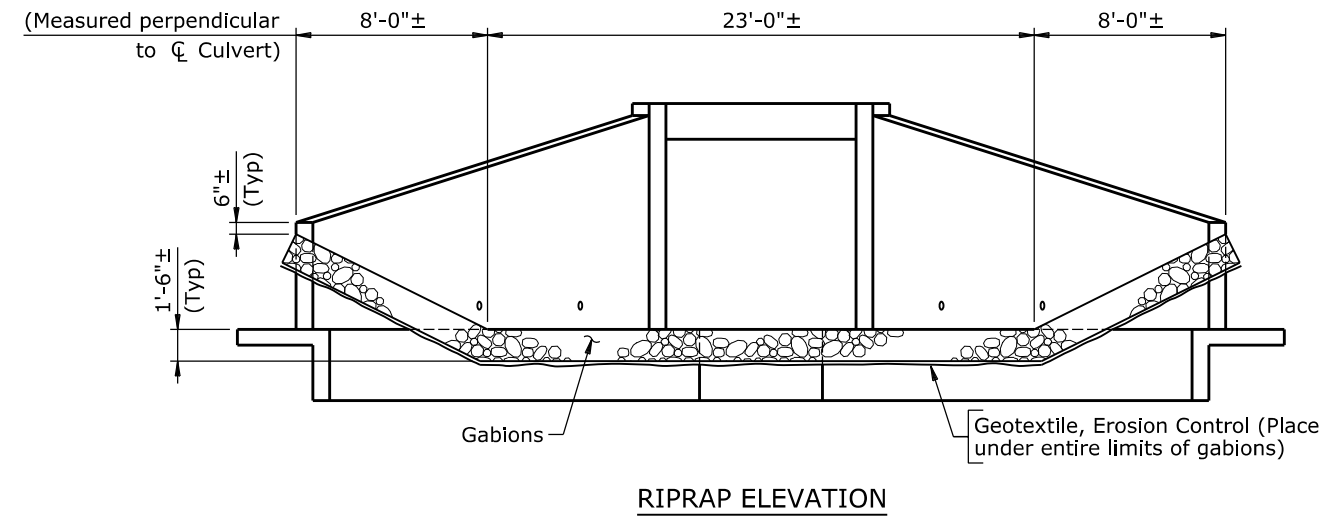
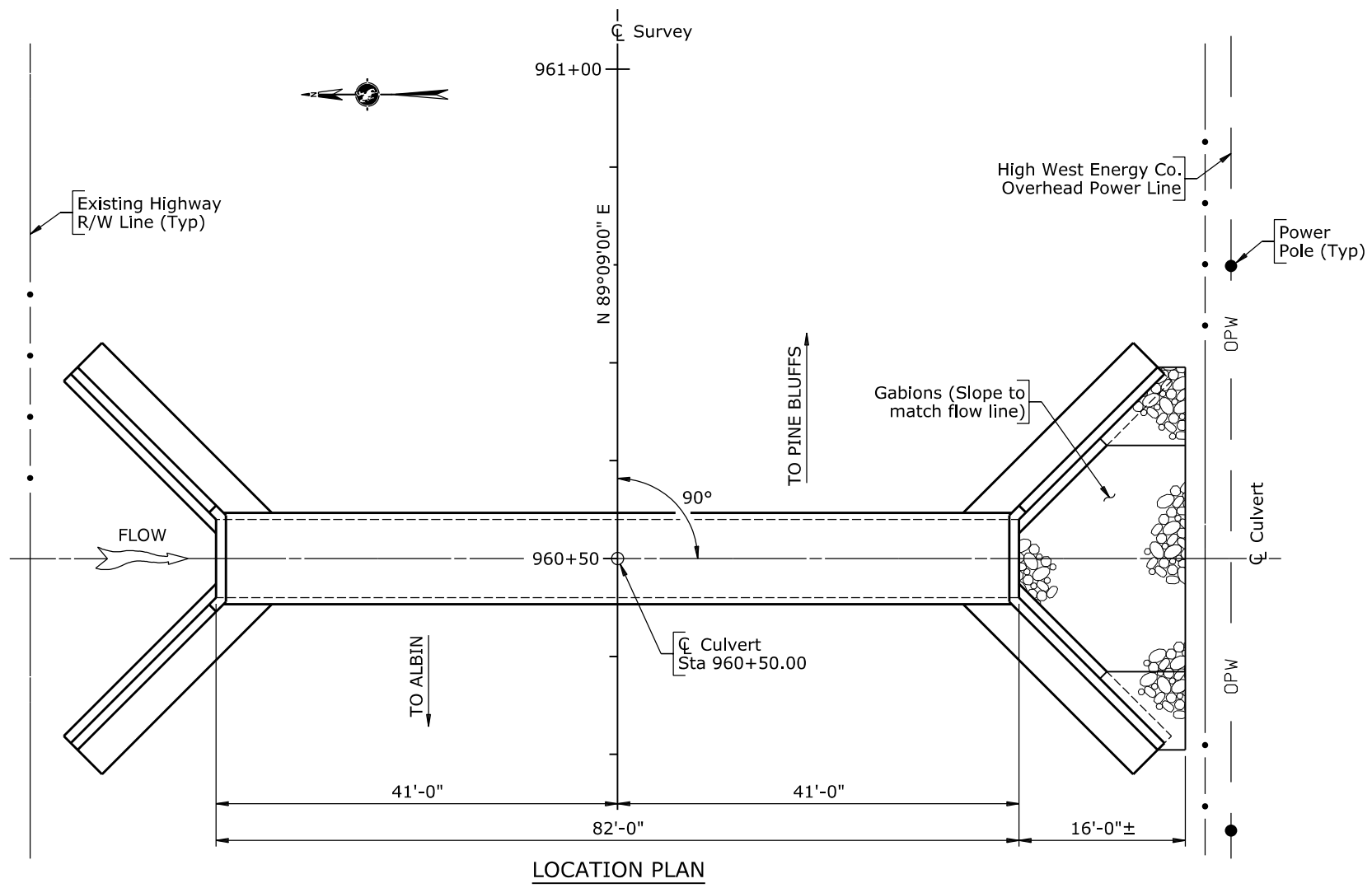
STRUCTURE NO. M-IJG-C
ML1105B, RM 0.05
SEC 20, T17N, R60W

ESTIMATED QUANTITIES				
ITEM NO.	ITEM	UNIT	TOTAL QUANTITY	ESTIMATE
202.03100	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	LUMP SUM	1 EA
212.03900	PERVIOUS BACKFILL MATERIAL	CY	12	
511.01000	GABIONS	CY	30	
513.00005	CLASS A CONCRETE	LS	LUMP SUM	106.2 CY
514.00015	REINFORCING STEEL	LS	LUMP SUM	10,330 LB

WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
REVISIONS			
REVIEW _____	DESIGN _____✓_____	Design Section Q R Stuv	
DETAIL _____	HHH ✓ NNN	Drwg No. 0005	
APPROVAL _____	QTY'S _____✓_____	Sheet 1 of 4	

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4.17 - Example



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BILL OF REINFORCEMENT		
Location (Weight)	Mark	Number Required
Bottom Slab & Footings (81 LB) (4408 LB)	4C2	10
	409-0	6
	425-3	24
	440-10	10
	442-3	10
	5C3	164
	5C4	84
	505-2	196
Walls (2361 LB)	509-0	164
	440-10	16
	442-9	16
Top Slab & Parapets (3561 LB)	508-7	164
	4C1	18
	540-10	10
	542-7	10
	608-8	2
	609-0	80
	609-10	4
Wingwalls (1166 LB)	709-0	80
	405-5	4
	409-10	4
	414-4	4
	418-9	4
	419-8	16
	509-4	4
	Set Bars	4
	620-2	8
Bending Diagrams		
Set Diagram		
Set Bars (No. 5 Bars) (Avg length=6'-6 1/2")		

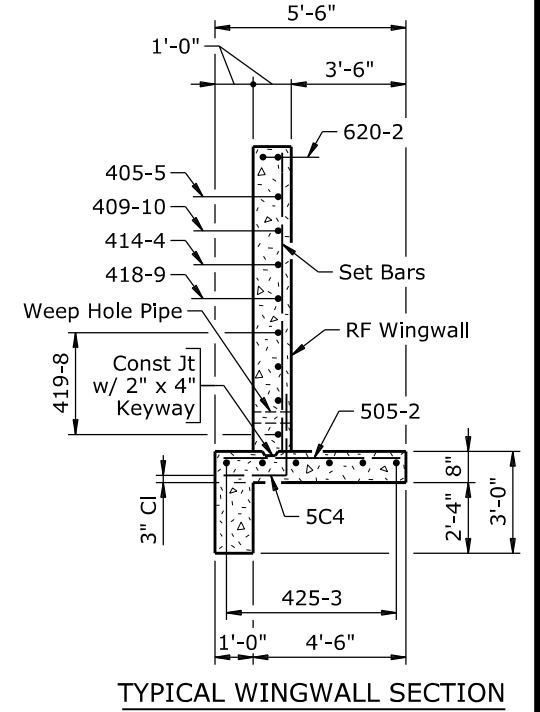
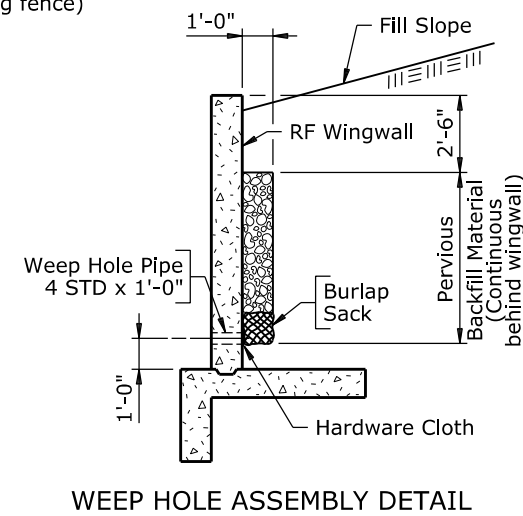
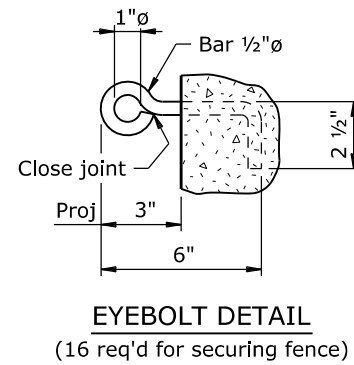
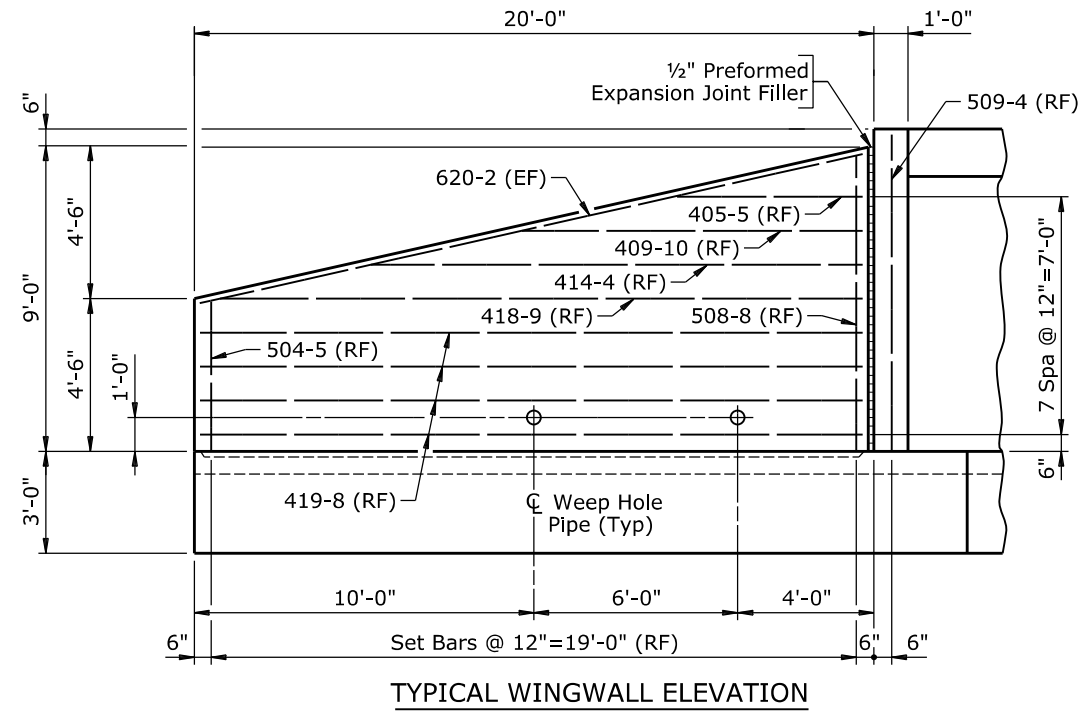
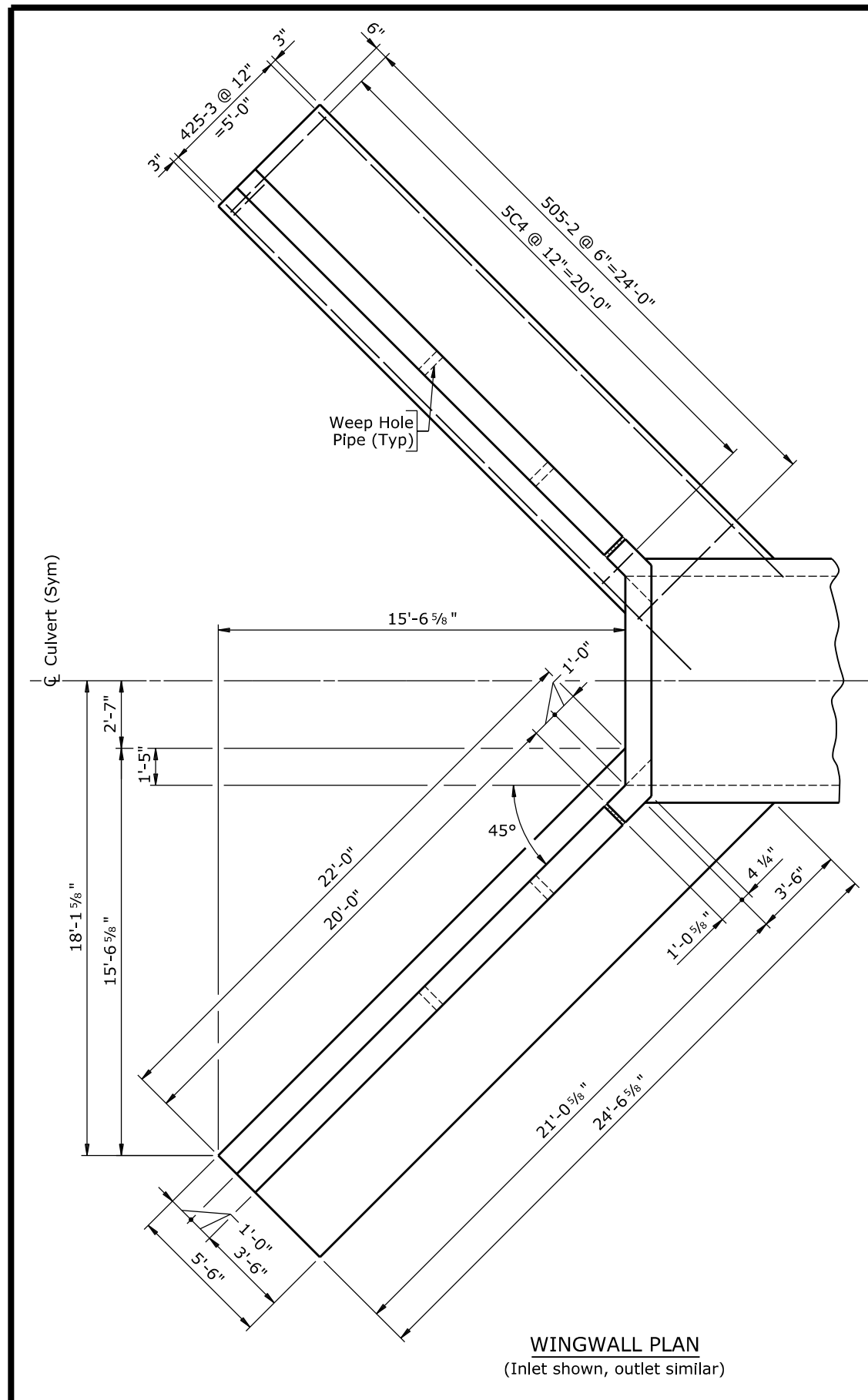
Note: Reinforcing steel shown as 4C2 is not included in the quantity of reinforcing steel.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
CULVERT DETAILS			
SINGLE BARREL 8'-0" X 8'-0"			
CONCRETE BOX CULVERT			
STA 960+50			
Albin Road			
0216001 La			
DESIGN	NNN ✓ MMM	Design Section	Q R Stuv
DETAIL	HHH ✓ NNN	Drwg No. 0005	Sheet 2 of 4
APPROVAL	HHH ✓ NNN		

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Section 4.17 - Culverts





- Note:**
- 1) Place short leg of 5C4 bars in footing.
 - 2) Place Set Bars and 509-4 bars with 5C4 bars.
 - 3) Each weep hole assembly consists of a pipe 4 STD through the wingwall, one 6" x 6" piece of aluminum or galvanized steel wire 4 mesh hardware cloth (Minimum wire diameter 0.03") centered over pipe end and firmly anchored to rear face of wingwall, and one cubic foot of coarse aggregate in a securely tied burlap sack.

WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
REVISIONS	CULVERT DETAILS		
	<u>SINGLE BARREL 8'-0" X 8'-0"</u>		
	<u>CONCRETE BOX CULVERT</u>		
	<u>STA 960+50</u>		
	<u>Albin Road</u>		La
	0216001		
REVIEW _____	DESIGN <u>NNN</u> ✓ <u>MMM</u>	Design Section Q R Stuv	
APPROVAL _____	DETAIL <u>HHH</u> ✓ <u>NNN</u>	Drwg No. 0005	Sheet 4 of 4
	QTY'S <u>HHH</u> ✓ <u>NNN</u>		