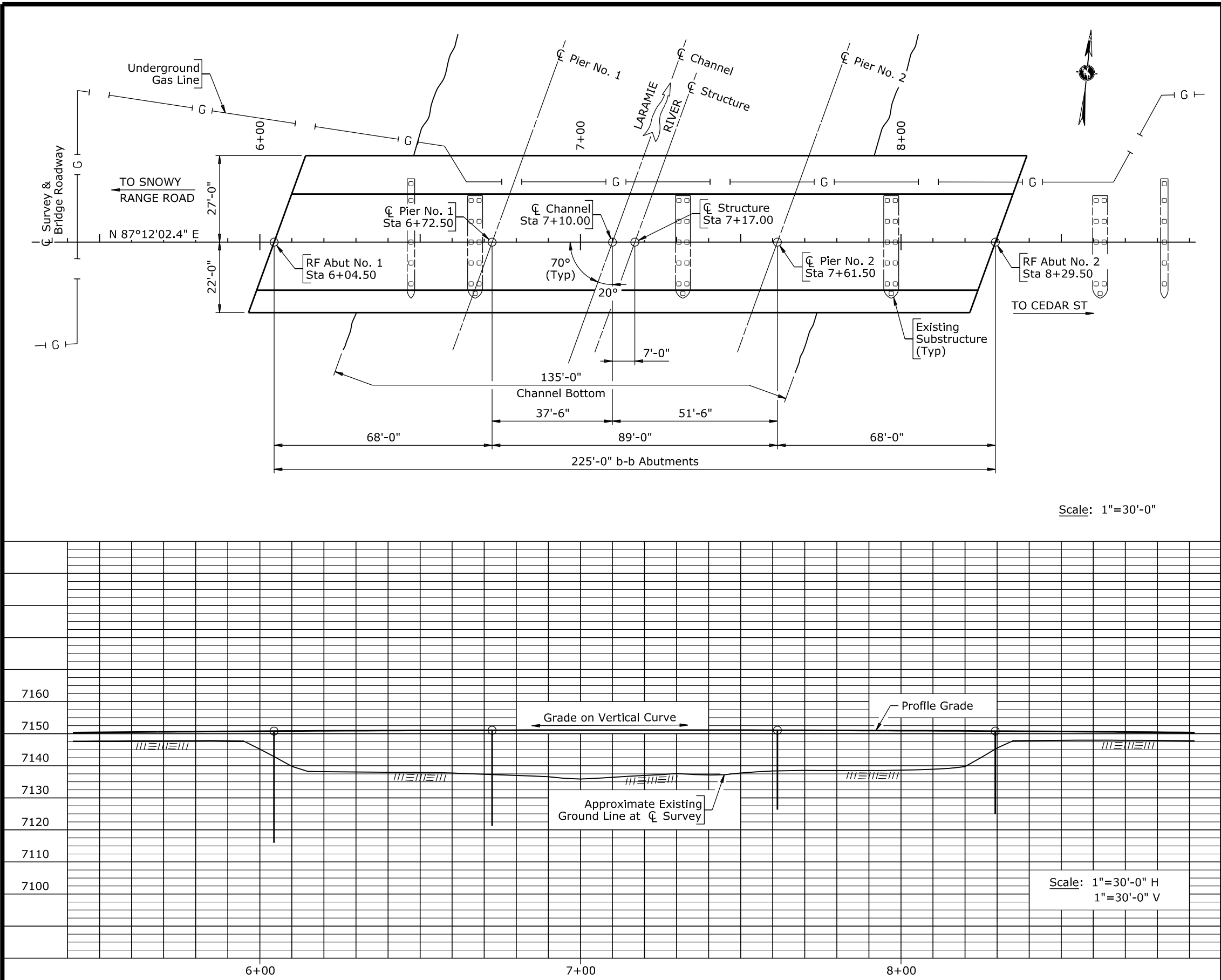


Nov 2018

4.01 - Example



GEOLOGY

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

Circulation Medium	
Air	
Water	
Auger	

Remarks: Obtain alkali sample.

Obtain necessary foundation information to complete LRFD design.

LAYOUT APPROVAL

State Bridge Engineer _____ Date _____

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM

PRELIMINARY GEOLOGY LAYOUT

BRIDGE OVER LARAMIE RIVER

STA 7+10

Garfield Street in Laramie

0C05065 AI

DESIGN: ✓
DETAIL: ✓ ✓ ✓
QTY'S: ✓

Design Section Q R Stuv
Drwg No. _____ Sheet 1 of 1

BRIDGE OVER LARAMIE RIVER

STA 7+10

GARFIELD STREET IN LARAMIE

0C05065

ALBANY COUNTY

PRELIMINARY

Wyo. Proj.	0C05065
Sheet	of Sheets

DESIGN DATA

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

ADT: 1124 (Year 2012)

LOADING: HL93. Future wearing surface 25 psf. Stay-in-place forms 15 psf.

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

STRUCTURAL STEEL: Load and Resistance Factor Design -
 $F_y = 50,000$ psi (Grade 50W)

APPROACH ROADWAY WIDTH: 30'-0"

FOOTING PRESSURES: Load and Resistance Factor Design -
Piers, X TsF

PILE LOADS: Load and Resistance Factor Design -
Abutments, X T per pile

ELASTOMERIC BEARING LOADS: Load and Resistance Factor Design -
Piers: Service Dead Load = X kips
Service Live Load = X kips

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, $S_{D1} = X.XXX$
Design Earthquake Response Spectral Acceleration
Coefficient for 0.2 Second Period, $S_{D5} = X.XXX$
Site Class X
5% Damping

ESTIMATED QUANTITIES - CODE 11-DZV

ITEM NO.	ITEM	UNIT	TOTAL QUANTITY	ESTIMATE
202.03210	REMOVAL OF STEEL BRIDGES	EA	XX	XX LB
209.01000	WATER	MG	XX	
212.02100	DRY EXCAVATION	CY	XX	
212.02200	WET EXCAVATION	CY	XX	
217.01010	GEOTEXTILE, EROSION CONROL	SY	XX	
217.01043	GEOTEXTILE, SUBGRADE REINFORCEMENT	SY	XX	
301.01085	CRUSHED BASE	CY	XX	
501.01000	STRUCTURAL STEEL	LS	LUMP SUM	
503.01000	BRIDGE RAILING	FT	XX	
503.01400	PEDESTRIAN RAILING	FT	XX	
504.04010	PILE SPLICES	EA	XX	
504.11473	STEEL PILING HP 14 X 73	FT	XX	
507.01000	REINFORCED CONC APPROACH SLABS	SY	XX	
511.02000	GABIONS	SY	XX	
512.01050	ELASTOMERIC COMP JOINT SEAL	FT	XX	XX CY XX LB XX LB
513.00005	CLASS A CONCRETE	LS	LUMP SUM	
514.00015	REINFORCING STEEL	LS	LUMP SUM	
514.00025	REINFORCING STEEL (COATED)	LS	LUMP SUM	
605.10006	UNDERDRAIN PIPE (PERF) 6 in	FT	XX	
605.20006	UNDERDRAIN PIPE (NON-PERF) 6 in	FT	XX	
900.60000	CONTRACTOR QUALITY CONTROL (CONCRETE)	LS	LUMP SUM	

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Superstructure Details -----	13-15
Bridge Railing Details -----	16-17
Pedestrian Railing Details -----	18-19
Deck Drain Details -----	20
Slab Details -----	21-22
Approach Slab Details -----	23-26
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STRUCTURE NO. LFR
ML4217B, RM 0.41 SEC 32, T16N, R73W

WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
REVISIONS			
DESIGN	_____✓_____	Design Section	Q R Stuv
DETAIL	HHH✓JJJ	Drwg No. P-0002	Sheet 1 of 3
APPROVAL	_____✓_____	QTY'S	

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.

ENVIRONMENTAL RESTRICTIONS: In-Stream construction activity is prohibited during the months of September, October, and November.

CONCRETE: Use class A concrete at all locations, including approach slabs.

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

Straight Bars

Size Length

508-3

Bent Bars

Size Designation

4A2

STRUCTURAL STEEL: Ensure structural steel conforms to ASTM A 709 (Grade 50W) unless noted. Ensure steel fabricators supplying structural components are certified under the AISC Quality Certification Program for Steel Bridge Fabricators - 2011, Category Intermediate Bridges (IBR).

Ensure steel components of the deck drain system conform to ASTM A 709 (Grade 50W) minimum and ASTM A 53 (Grade A or B). After fabrication operations are complete, ensure components are prepared in accordance with Steel Structures Painting Council Surface Preparation Specification No. 6 Commercial Blast Cleaning (SSPC-SP 6).

BRIDGE BEARING ANCHOR BOLTS: Anchor bolts may be swedge bolts or threaded rods. Ensure swedge bolts conform to ASTM A 709 (Grade 36) and swedges are produced by deforming the steel through application of pressure and not by any method that removes material, such as grinding or cutting. Ensure threaded rods conform to ASTM F 1554 (Grade 36) minimum. Ensure anchor bolts, or threaded rods, and nuts are galvanized in accordance with Subsection 815.14, Galvanized Coating. Use anchor bolts compatible with the adhesive anchorage system.

Use one of the following adhesive anchorage systems to set anchor bolts in drilled holes:

- CIA-GEL 6000-GP as manufactured by MiTek USA, Inc.
- Red Head C6+ as manufactured by ITW Commercial Construction
- Sure Anchor I J-51 as manufactured by Dayton Superior
- HIT-RE 500 V3 as manufactured by Hilti, Inc.

Drill and prepare holes and install the anchor bolts in accordance with the adhesive system manufacturer's recommendations. Work necessary for the adhesive anchorage system is incidental to the contract pay item Structural Steel.

STEEL PILING: Use steel piles conforming to ASTM A 709 (Grade 36).

ELASTOMERIC COMP JOINT SEAL: Provide one of the following products:

- WJ-400 as manufactured by Watson Bowman Acme Corp.
- CV-4000 as manufactured by D.S. Brown.

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.

REMOVAL OF STEEL BRIDGES: Remove the existing three span 195'-0" x 31'-7" steel thru-girder bridge, with two 20'-0" x 31'-7" concrete girder approach spans, Structure No. DZV.

HAZARDOUS MATERIALS: The paint system on the steel components of the existing structure may contain materials including lead and chromium which are hazardous if ingested, inhaled, or otherwise absorbed.

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 at Abutment No. 2.

WET EXCAVATION: The estimated quantity of wet excavation is calculated below existing ground line at piers. Flattened slopes or shoring may be required to prevent caving in the excavated areas. Dewatering of excavation below the groundwater surface will be necessary.

FOUNDATIONS: Abutments are on steel piles driven to refusal in hard, gray sandstone.

Piers are on footings founded in hard, gray sandstone. Key footings at least 1'-6" into the bedrock excavation by placing concrete directly against vertical sides of the footing excavation. Maintain footing dimensions as closely as practical with consideration given to the ease or difficulty of excavation.

STAY-IN-PLACE FORMS: Stay-in-place slab forms may be used for construction of the deck. Do not exceed 15 psf for the weight of the forms and additional concrete, including form deflection. Do not extend the vertical legs of support angles past the bottom of the bottom reinforcing steel mat or use these legs to support the reinforcing 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 existing structure has been removed and again within 14 calendar days after the new structure has been opened to traffic.

STREAM DATA

Drainage Area	-----	1071.0 Sq Mi
Channel Slope	-----	0.18%
Description of Channel Material	-----	Sand, gravel, and cobbles
Drift Potential	-----	Trees and logs
Ordinary High Water Elevation	-----	7138.1 ft
Headwater Elevation	Q ₁₀₀ -----	7141.3 ft
	Q ₅₀₀ -----	Unknown
High Water Elevation	Q ₁₀₀ -----	7140.6 ft
	Q ₅₀₀ -----	Unknown
Design Scour Elevation	-----	XXXX.X ft
Constricted Velocity	Q ₁₀₀ -----	7.30 fps
	Q ₅₀₀ -----	Unknown
Design Frequency	-----	100 Year
Design Discharge	Q ₁₀₀ -----	3758 cfs
Review Discharge	Q ₅₀₀ -----	5090 cfs
Source of Discharge	-----	Log Pearson Type III
Method of Analysis	-----	HEC-RAS and WSP
Flood of Record	-----	3250 cfs (Year 1957)

REFERENCES

WYDOT Plans: Sheet No.

Bridge Drwg No. 402DG2 ----- 1 & 2 of 2

Supplementary Specifications:

SS-100K	Adjustment for Structural Steel
SS-500B	Welder Qualification
SS-500E	Bridge Bearing Correction
SS-500F	Automatically End-Welded Studs
SS-500G	Structural Concrete with Quality Control and Quality Acceptance

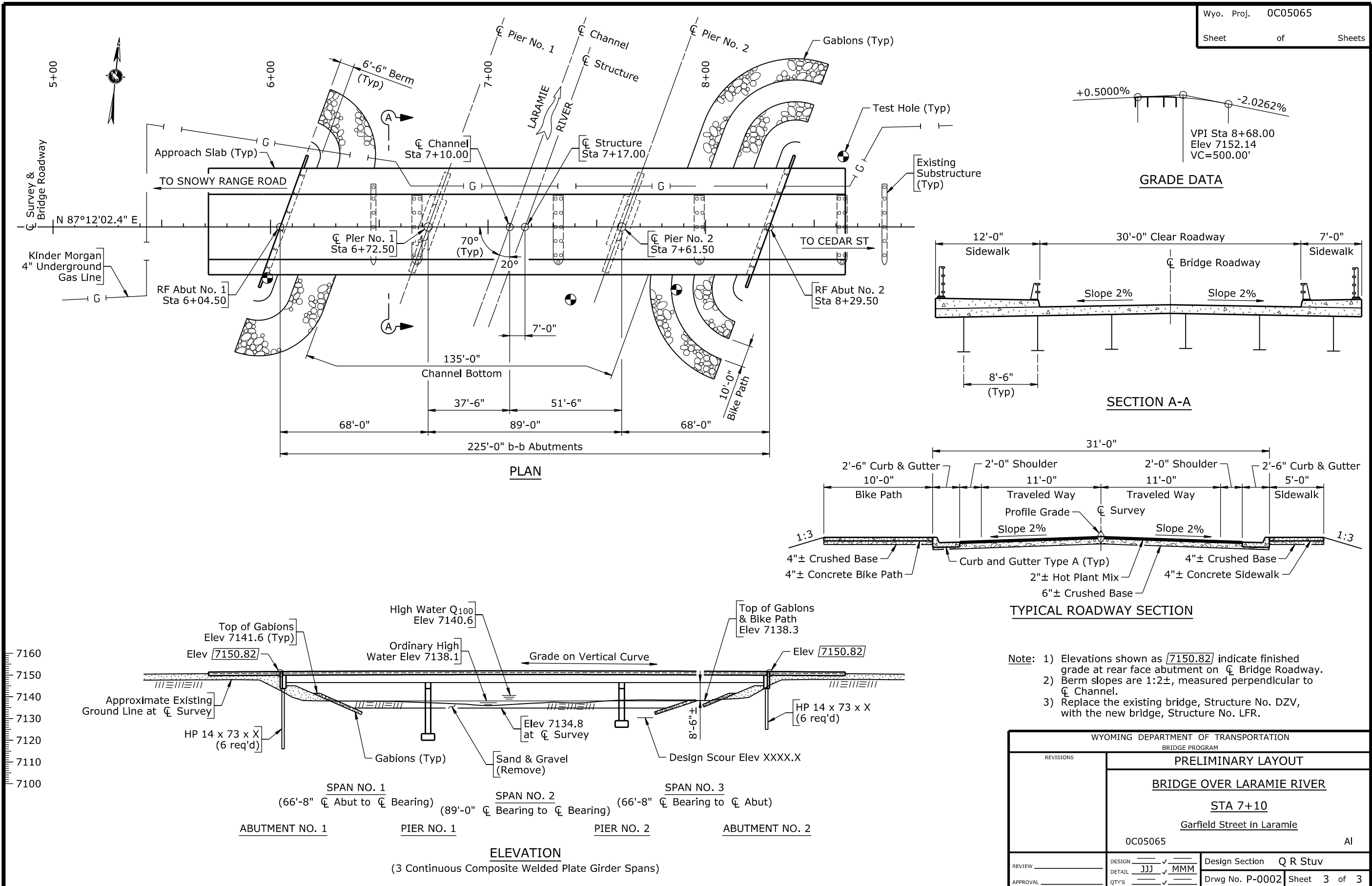
Standard Plans:

511-1A Wire Enclosed Riprap and Gabions

WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
REVISIONS	PRELIMINARY GENERAL NOTES		
	BRIDGE OVER LARAMIE RIVER		
	STA 7+10		
	Garfield Street in Laramie		
	0C05065 AI		
REVIEW _____	DESIGN _____✓_____ DETAIL <u>HHH</u> ✓ <u>MMM</u>	Design Section Q R Stuv	
APPROVAL _____	QTY'S _____✓_____ _____✓_____	Drwg No. P-0002	Sheet 2 of 3

Nov 2018

4.01 - Example



Section 4.01 - Preliminary

0C05065_1pl3.dgn

BRIDGE OVER LARAMIE RIVER

STA 7+10

GARFIELD STREET IN LARAMIE

Wyo. Proj. 0C05065

Sheet B1 of B28 Sheets

0C05065

ALBANY COUNTY

DESIGN DATA

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

ADT: 1124 (Year 2012)

LOADING: HL93. Future wearing surface 25 psf. Stay-in-place forms 15 psf.

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

STRUCTURAL STEEL: Load and Resistance Factor Design -
 $F_y = 50,000$ psi (Grade 50W)

APPROACH ROADWAY WIDTH: 30'-0"

FOOTING PRESSURES: Load and Resistance Factor Design -
Piers, 2.9 TsF

PILE LOADS: Load and Resistance Factor Design -
Abutments, 85 T per pile

ELASTOMERIC BEARING LOADS: Load and Resistance Factor Design -
Piers: Service Dead Load = 95.27 kips
Service Live Load = 77.34 kips

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, $S_{D1} = X.XXX$
Design Earthquake Response Spectral Acceleration Coefficient for 0.2 Second Period, $S_{D5} = X.XXX$
Site Class X
5% Damping

ESTIMATED QUANTITIES - CODE 11-DZV				
ITEM NO.	ITEM	UNIT	TOTAL QUANTITY	ESTIMATE
202.03210	REMOVAL OF STEEL BRIDGES	EA	1	238,200 LB
209.01000	WATER	MG	28	
212.02100	DRY EXCAVATION	CY	840	
212.02200	WET EXCAVATION	CY	1190	
217.01010	GEOTEXTILE, EROSION CONROL	SY	770	
217.01043	GEOTEXTILE, SUBGRADE REINFORCEMENT	SY	2670	
301.01085	CRUSHED BASE	CY	700	
501.01000	STRUCTURAL STEEL	LS	LUMP SUM	
503.01000	BRIDGE RAILING	FT	565	
503.01400	PEDESTRIAN RAILING	FT	450	
504.04010	PILE SPLICES	EA	1	
504.11473	STEEL PILING HP 14 X 73	FT	285	
507.01000	REINFORCED CONC APPROACH SLABS	SY	368	
511.02000	GABIONS	SY	770	
512.01050	ELASTOMERIC COMP JOINT SEAL	FT	105	658.9 CY 34,500 LB 85,900 LB
513.00005	CLASS A CONCRETE	LS	LUMP SUM	
514.00015	REINFORCING STEEL	LS	LUMP SUM	
514.00025	REINFORCING STEEL (COATED)	LS	LUMP SUM	
605.10006	UNDERDRAIN PIPE (PERF) 6 in	FT	104	
605.20006	UNDERDRAIN PIPE (NON-PERF) 6 in	FT	32	
900.60000	CONTRACTOR QUALITY CONTROL (CONCRETE)	LS	LUMP SUM	

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Superstructure Details -----	13-15
Bridge Railing Details -----	16-17
Pedestrian Railing Details -----	18-19
Deck Drain Details -----	20
Slab Details -----	21-22
Approach Slab Details -----	23-26
Reference Sheets -----	B27-B28

STRUCTURE NO. LFR

ML4217B, RM 0.41 SEC 32, T16N, R73W

WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
REVISIONS			
REVIEW _____	DESIGN _____✓_____ DETAIL <u>HHH</u> ✓ <u>MMM</u>	Design Section Q R Stuv	
APPROVAL _____	QTY'S _____✓_____ _____✓_____	Drwg No. 0002	Sheet 1 of 26

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.

ENVIRONMENTAL RESTRICTIONS: In-Stream construction activity is prohibited during the months of September, October, and November.

CONCRETE: Use class A concrete at all locations, including approach slabs.

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

Straight Bars

Size Length

508-3

Bent Bars

Size Designation

4A2

STRUCTURAL STEEL: Ensure structural steel conforms to ASTM A 709 (Grade 50W) unless noted. Ensure steel fabricators supplying structural components are certified under the AISC Quality Certification Program for Steel Bridge Fabricators - 2011, Category Intermediate Bridges (IBR).

Ensure steel components of the deck drain system conform to ASTM A 709 (Grade 50W) minimum and ASTM A 53 (Grade A or B). After fabrication operations are complete, ensure components are prepared in accordance with Steel Structures Painting Council Surface Preparation Specification No. 6 Commercial Blast Cleaning (SSPC-SP 6).

BRIDGE BEARING ANCHOR BOLTS: Anchor bolts may be swedge bolts or threaded rods. Ensure swedge bolts conform to ASTM A 709 (Grade 36) and swedges are produced by deforming the steel through application of pressure and not by any method that removes material, such as grinding or cutting. Ensure threaded rods conform to ASTM F 1554 (Grade 36) minimum. Ensure anchor bolts, or threaded rods, and nuts are galvanized in accordance with Subsection 815.14, Galvanized Coating. Use anchor bolts compatible with the adhesive anchorage system.

Use one of the following adhesive anchorage systems to set anchor bolts in drilled holes:

- CIA-GEL 6000-GP as manufactured by MiTek USA, Inc.
- Red Head C6+ as manufactured by ITW Commercial Construction
- Sure Anchor I J-51 as manufactured by Dayton Superior
- HIT-RE 500 V3 as manufactured by Hilti, Inc.

Drill and prepare holes and install the anchor bolts in accordance with the adhesive system manufacturer's recommendations. Work necessary for the adhesive anchorage system is incidental to the contract pay item Structural Steel.

STEEL PILING: Use steel piles conforming to ASTM A 709 (Grade 36).

ELASTOMERIC COMP JOINT SEAL: Provide one of the following products:

- WJ-400 as manufactured by Watson Bowman Acme Corp.
- CV-4000 as manufactured by D.S. Brown.

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.

REMOVAL OF STEEL BRIDGES: Remove the existing three span 195'-0" x 31'-7" steel thru-girder bridge, with two 20'-0" x 31'-7" concrete girder approach spans, Structure No. DZV.

HAZARDOUS MATERIALS: The paint system on the steel components of the existing structure may contain materials including lead and chromium which are hazardous if ingested, inhaled, or otherwise absorbed.

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 at Abutment No. 2.

WET EXCAVATION: The estimated quantity of wet excavation is calculated below existing ground line at piers. Flattened slopes or shoring may be required to prevent caving in the excavated areas. Dewatering of excavation below the groundwater surface will be necessary.

FOUNDATIONS: Abutments are on steel piles driven to refusal in hard, gray sandstone.

Piers are on footings founded in hard, gray sandstone. Key footings at least 1'-6" into the bedrock excavation by placing concrete directly against vertical sides of the footing excavation. Maintain footing dimensions as closely as practical with consideration given to the ease or difficulty of excavation.

STAY-IN-PLACE FORMS: Stay-in-place slab forms may be used for construction of the deck. Do not exceed 15 psf for the weight of the forms and additional concrete, including form deflection. Do not extend the vertical legs of support angles past the bottom of the bottom reinforcing steel mat or use these legs to support the reinforcing 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 existing structure has been removed and again within 14 calendar days after the new structure has been opened to traffic.

STREAM DATA

Drainage Area	-----	1071.0 Sq Mi
Channel Slope	-----	0.18%
Description of Channel Material	-----	Sand, gravel, and cobbles
Drift Potential	-----	Trees and logs
Ordinary High Water Elevation	-----	7138.1 ft
Headwater Elevation	Q ₁₀₀ -----	7141.3 ft
	Q ₅₀₀ -----	Unknown
High Water Elevation	Q ₁₀₀ -----	7140.6 ft
	Q ₅₀₀ -----	Unknown
Design Scour Elevation	-----	XXXX.X ft
Constricted Velocity	Q ₁₀₀ -----	7.30 fps
	Q ₅₀₀ -----	Unknown
Design Frequency	-----	100 Year
Design Discharge	Q ₁₀₀ -----	3758 cfs
Review Discharge	Q ₅₀₀ -----	5090 cfs
Source of Discharge	-----	Log Pearson Type III
Method of Analysis	-----	HEC-RAS and WSP
Flood of Record	-----	3250 cfs (Year 1957)

REFERENCES

WYDOT Plans: Sheet No.

Bridge Drwg No. 402DG2 ----- 1 & 2 of 2

Supplementary Specifications:

SS-100K	Adjustment for Structural Steel
SS-500B	Welder Qualification
SS-500E	Bridge Bearing Correction
SS-500F	Automatically End-Welded Studs
SS-500G	Structural Concrete with Quality Control and Quality Acceptance

Standard Plans:

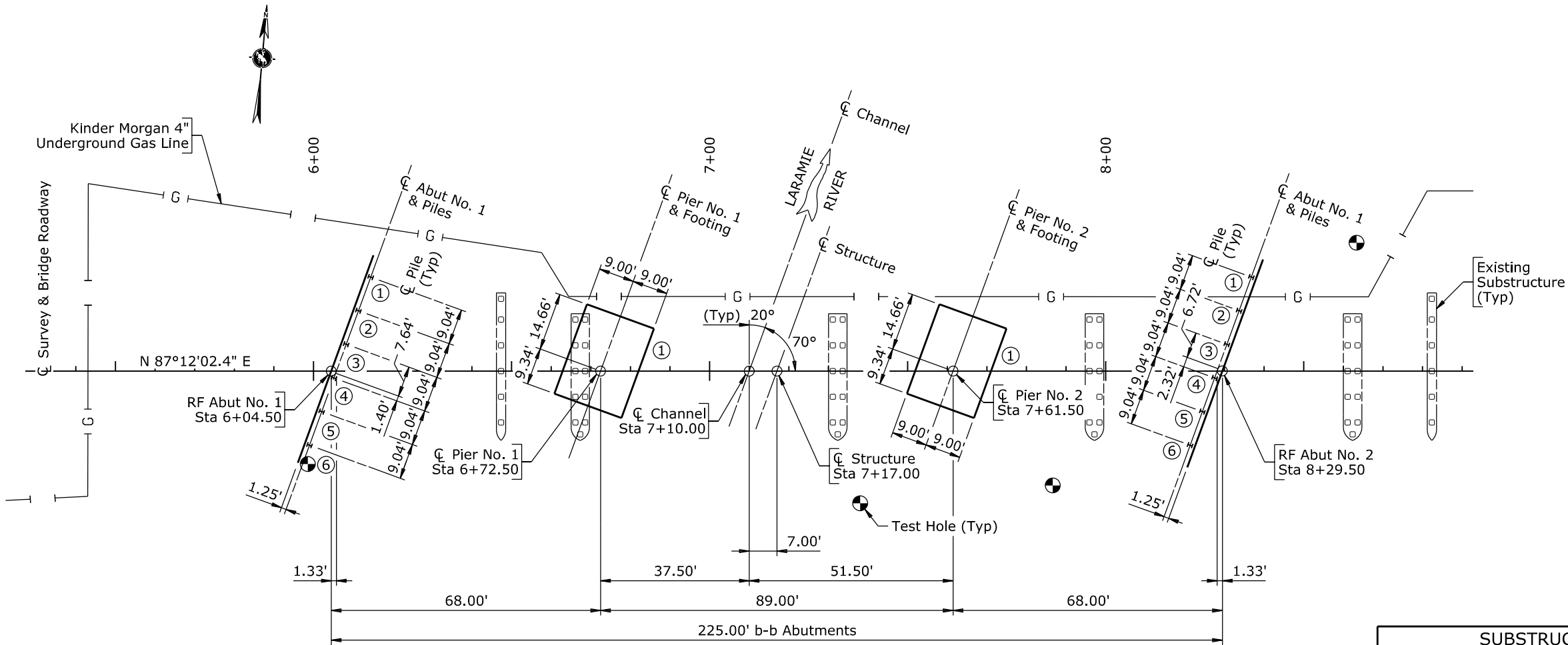
511-1A Wire Enclosed Riprap and Gabions

WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
REVISIONS	GENERAL NOTES		
	BRIDGE OVER LARAMIE RIVER		
	STA 7+10		
	Garfield Street in Laramie		
	0C05065	AI	
REVIEW _____	DESIGN _____✓_____ DETAIL <u>HHH</u> ✓ <u>MMM</u>	Design Section	Q R Stuv
APPROVAL _____	QTY'S _____✓_____ _____✓_____	Drwg No. 0002	Sheet 2 of 26



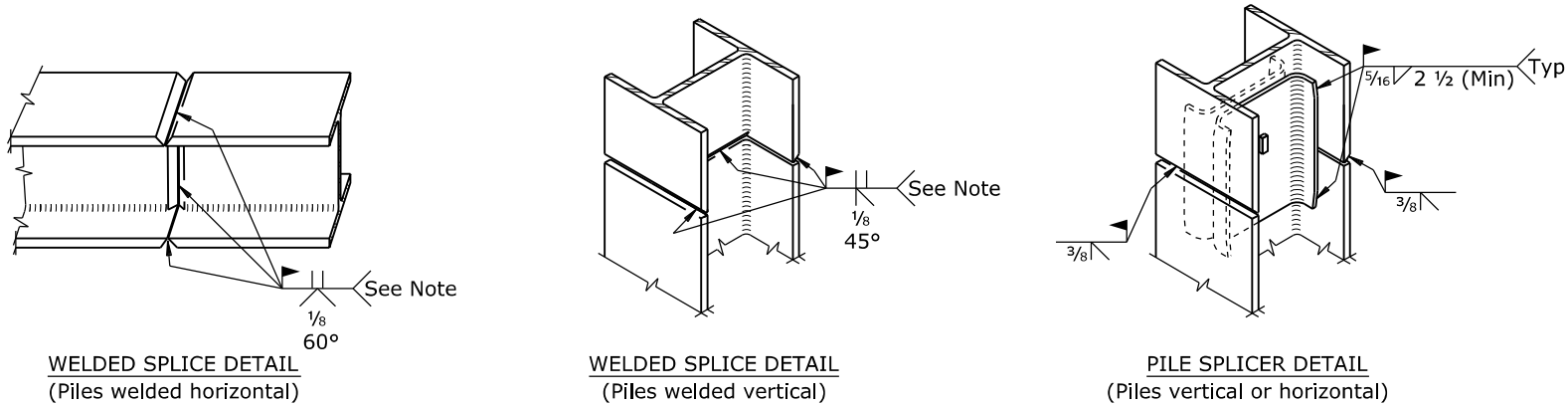
Nov 2018

4.04 - Example



SUBSTRUCTURE LAYOUT

SUBSTRUCTURE DATA			
Location	HP 14 x 73 Pile Elevations		Bottom of Footing Elevations
	Piles No. ① - ⑥		Footing No. ①
	Top	Bottom	
Abut No. 1	7144.61	7116.11	—
Pier No. 1	—	—	7121.53
Pier No. 2	—	—	7126.49
Abut No. 2	7144.51	7125.51	—



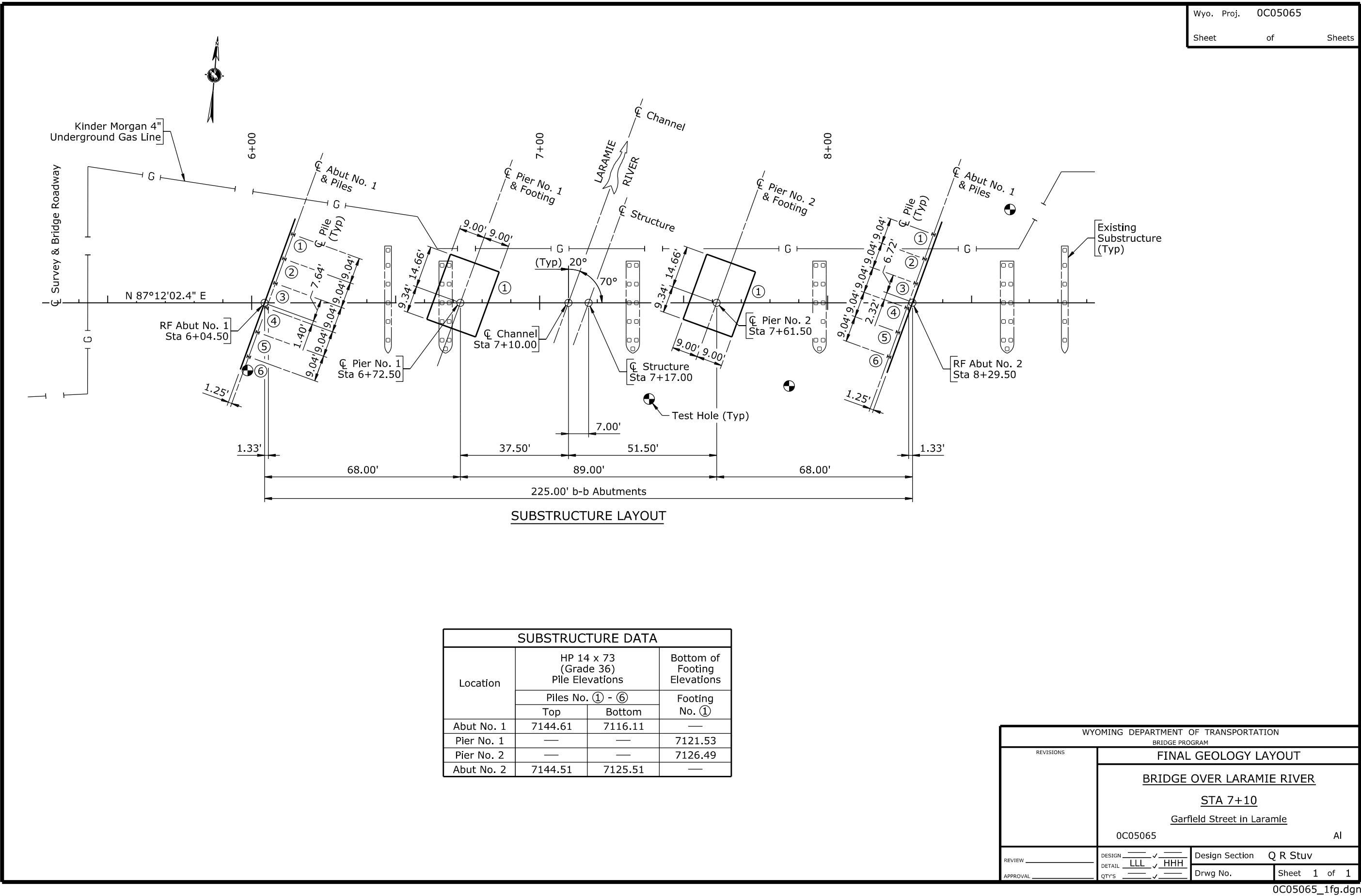
PILE SPLICE DETAILS

Note: Gouge root to sound metal before welding second side.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
REVISIONS	SUBSTRUCTURE LAYOUT		
	BRIDGE OVER LARAMIE RIVER		
	STA 7+10 Garfield Street in Laramie		
0C05065		AI	
DESIGN	_____✓_____	Design Section	Q R Stuv
DETAIL	JJJ✓MMM	Drwg No. 0002	Sheet 4 of 26
APPROVAL	QTY'S _____✓_____		

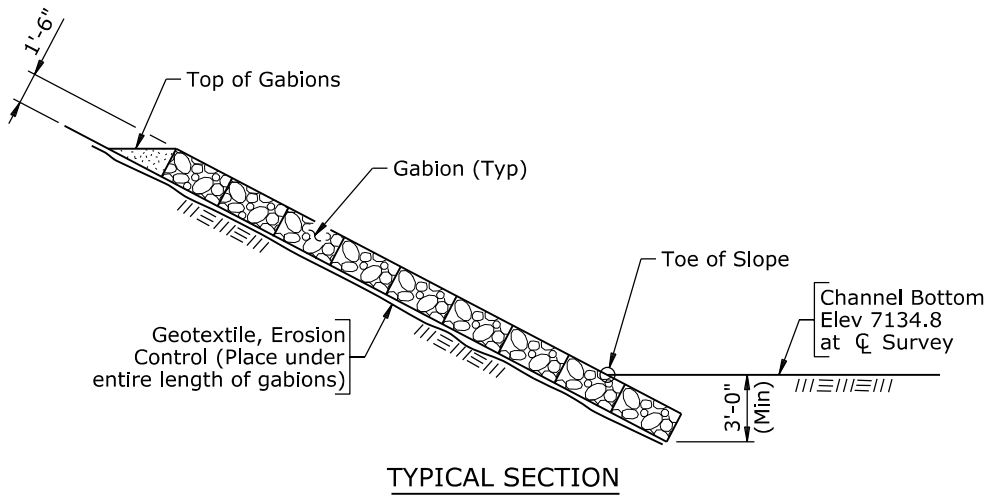
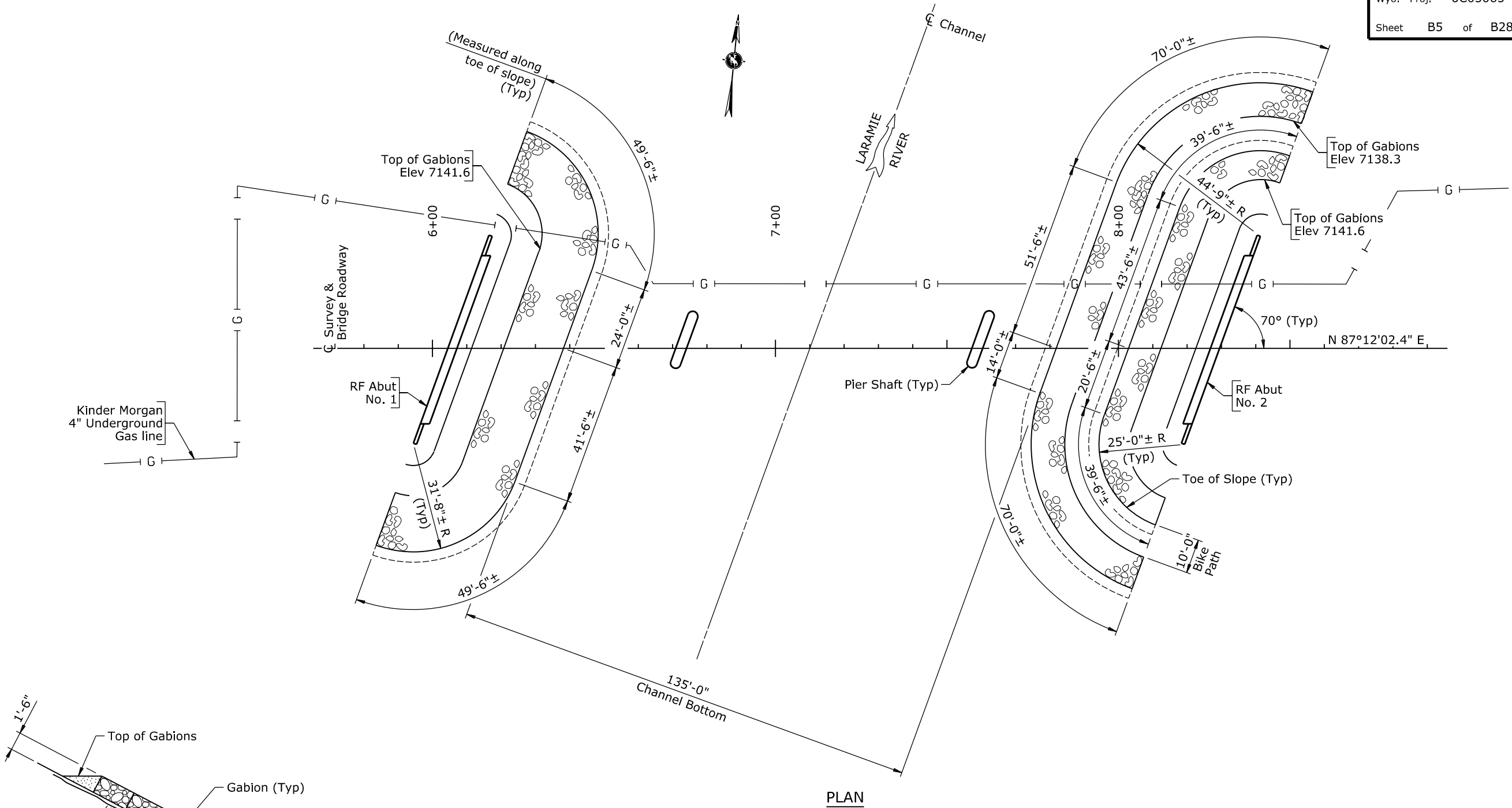
Nov 2018

4.06 - Example



Section 4.06 - Geology

Wyo. Proj. 0C05065
Sheet B5 of B28 Sheets



WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
GABION DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065 AI			
REVISIONS	DESIGN	Design Section Q R Stuv	
	JJJ ✓ HHH	Drwg No. 0002 Sheet 5 of 26	
	DETAIL JJJ ✓ LLL		
	APPROVAL		

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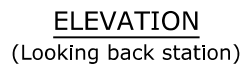
4.06 - Example

Section 4.06 - Geology

0C05065_1lb1.dgn

4.06 - Example





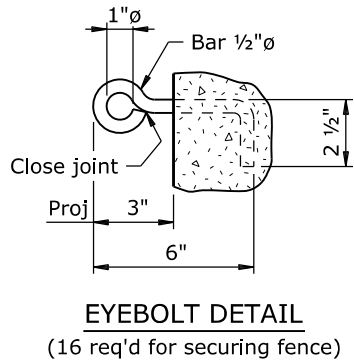
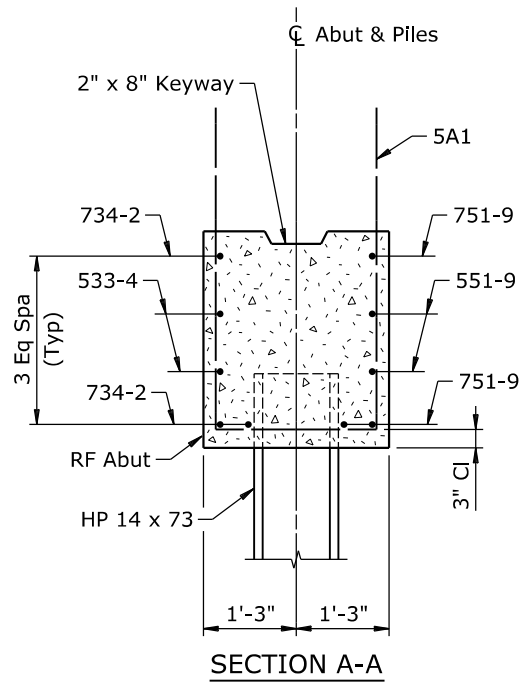
WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
REVISIONS		ABUTMENT NO. 1 DETAILS	
		<u>BRIDGE OVER LARAMIE RIVER</u>	
		<u>STA 7+10</u>	
		<u>Garfield Street in Laramie</u>	
		0C05065	AI
REVIEW _____	DESIGN <u>MMM</u> ✓ <u>PPP</u> DETAIL <u>LLL</u> ✓ <u>MMM</u>	Design Section Q R Stuv	
APPROVAL _____	QTY'S <u>JJJ</u> ✓ <u>LLL</u>	Drwg No. 0002	Sheet 8 of 26



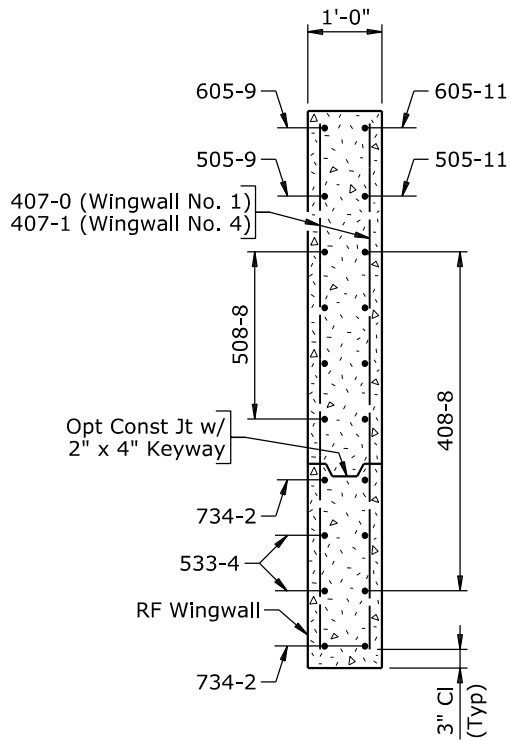
WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
REVISIONS		ABUTMENT NO. 2 DETAILS	
		<u>BRIDGE OVER LARAMIE RIVER</u> <u>STA 7+10</u> <u>Garfield Street in Laramie</u>	
		0C05065 AI	
REVIEW _____	DESIGN <u>MMM</u> ✓ <u>PPP</u> DETAIL <u>LLL</u> ✓ <u>MMM</u>	Design Section Q R Stuv	
APPROVAL _____	QTY'S <u>JJJ</u> ✓ <u>LLL</u>	Drwg No. 0002	Sheet 9 of 26

Nov 2018

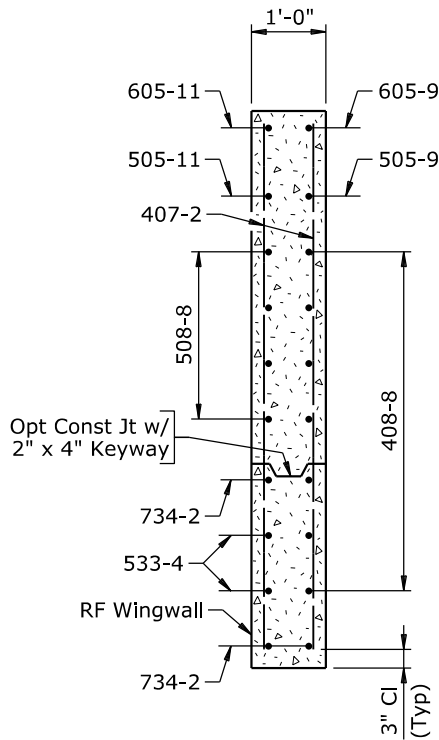
4.07 - Example



BILL OF REINFORCEMENT			
Location	Mark	Number Required	
		Abut No. 1	Abut No. 2
Cap	408-8	6	6
	5A1	46	46
	533-4	4	4
	551-9	2	2
	734-2	6	6
	751-9	3	3
	Weight	1634 LB	1634 LB
Wingwalls	407-0	14	
	407-1		14
	407-2	14	14
	408-8	8	8
	505-9	2	2
	505-11	2	2
	508-8	8	8
	605-9	2	2
	605-11	2	2
	Weight	311 LB	312 LB
Bending Diagram			



WINGWALLS NO. 1 AND 4 SECTION



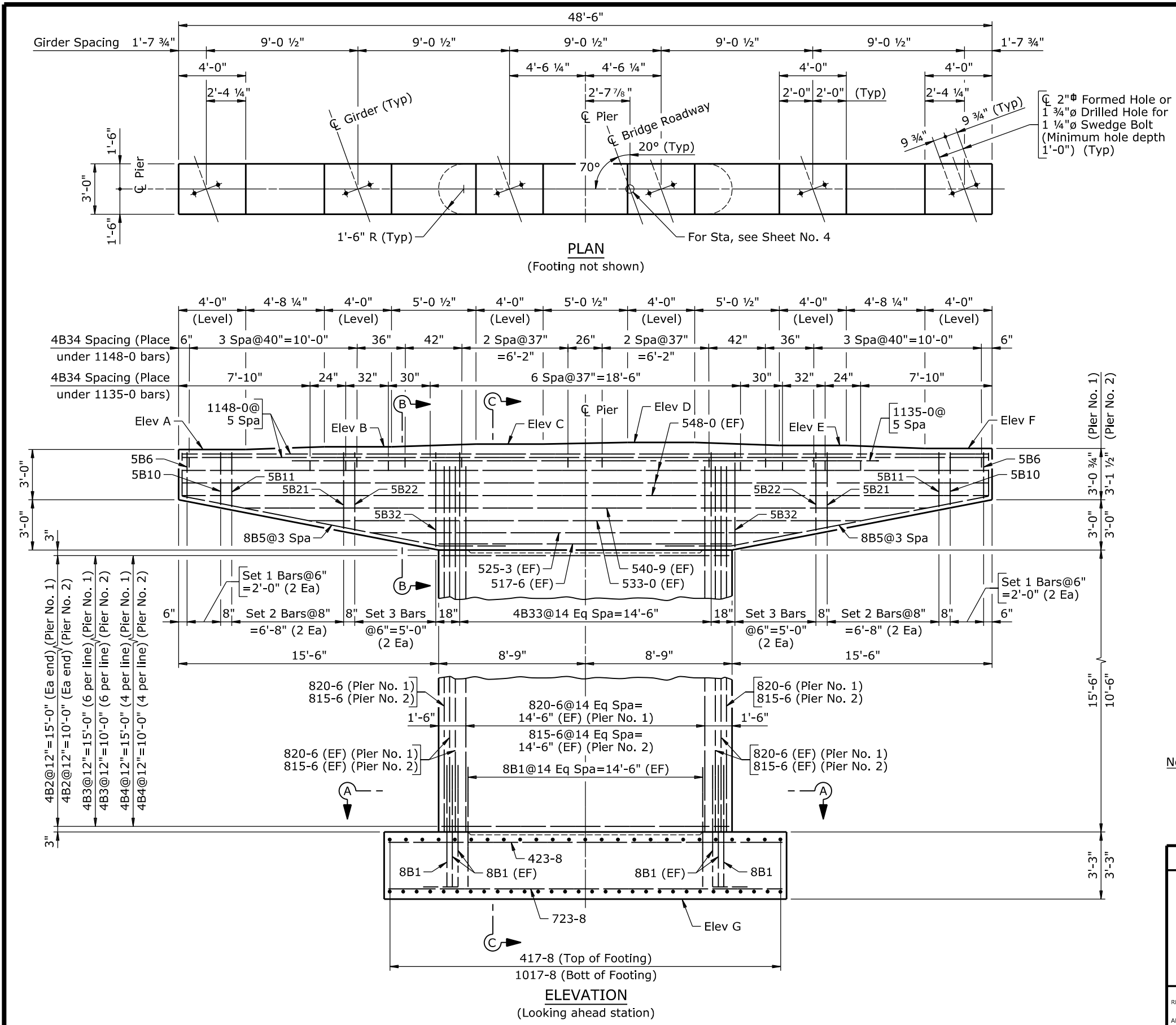
WINGWALLS NO. 2 AND 3 SECTION

- Note:** 1) Ensure the reinforcing steel fabricator prefixes abutment bar marks with numeral 1 for Abutment No. 1 and numeral 2 for Abutment No. 2.
2) The estimated quantity of class A concrete is 17.6 CY for Abutment No. 1 and 18.1 CY for Abutment No. 2.
3) For location of Section A-A, see Sheets No. 8 and 9.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
REVISIONS	ABUTMENT DETAILS		
	BRIDGE OVER LARAMIE RIVER STA 7+10 Garfield Street in Laramie 0C05065 AI		
DESIGN <u>MMM</u> ✓ <u>PPP</u>	Design Section		Q R Stuv
DETAIL <u>LLL</u> ✓ <u>MMM</u>	Drwg No. 0002		Sheet 10 of 26
APPROVAL <u>JJJ</u> ✓ <u>LLL</u>	QTY'S		

Nov 2018

4.08 - Example



Wyo. Proj.	0C05065
Sheet	B11 of B28 Sheets

TABLE OF ELEVATIONS		
Elevation	Location	
	Pier No. 1	Pier No. 2
A	7146.28	7146.24
B	7146.44	7146.41
C	7146.60	7146.59
D	7146.70	7146.70
E	7146.52	7146.54
F	7146.34	7146.37
G	7121.53	7126.49

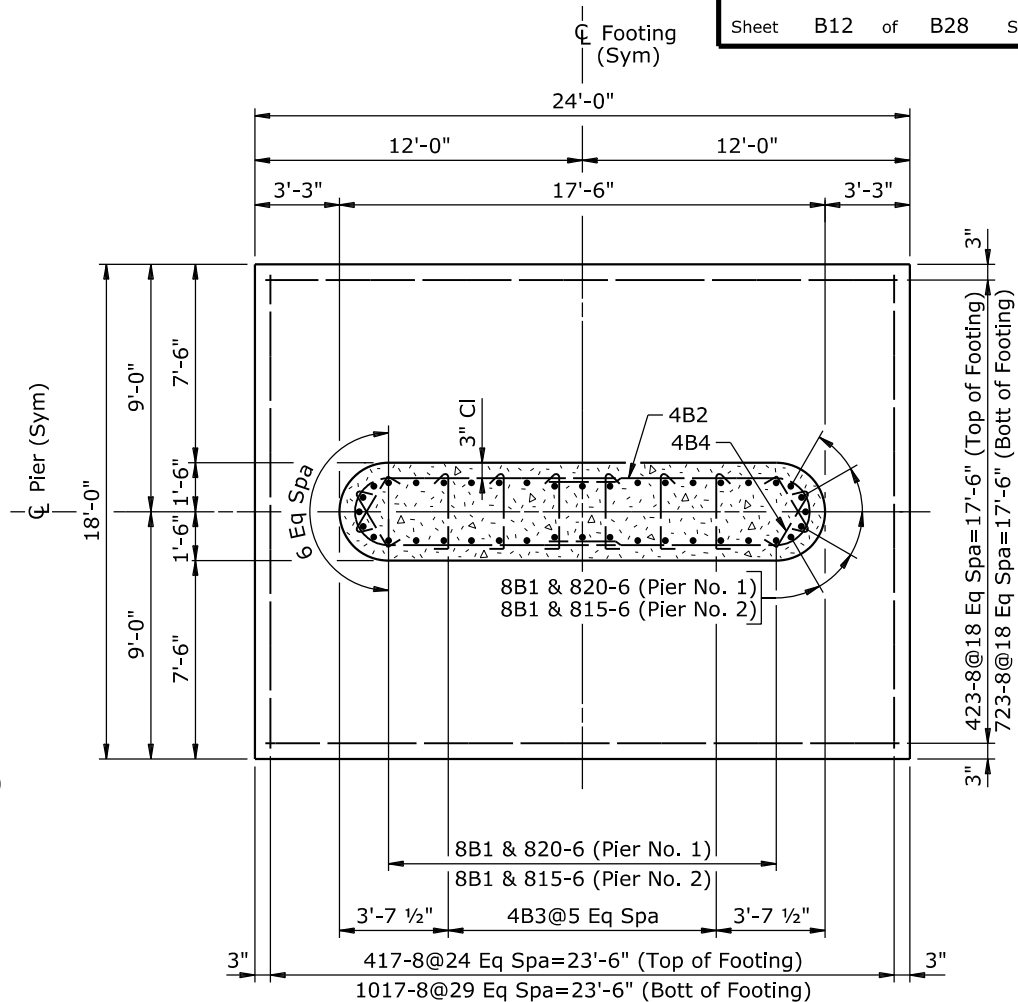
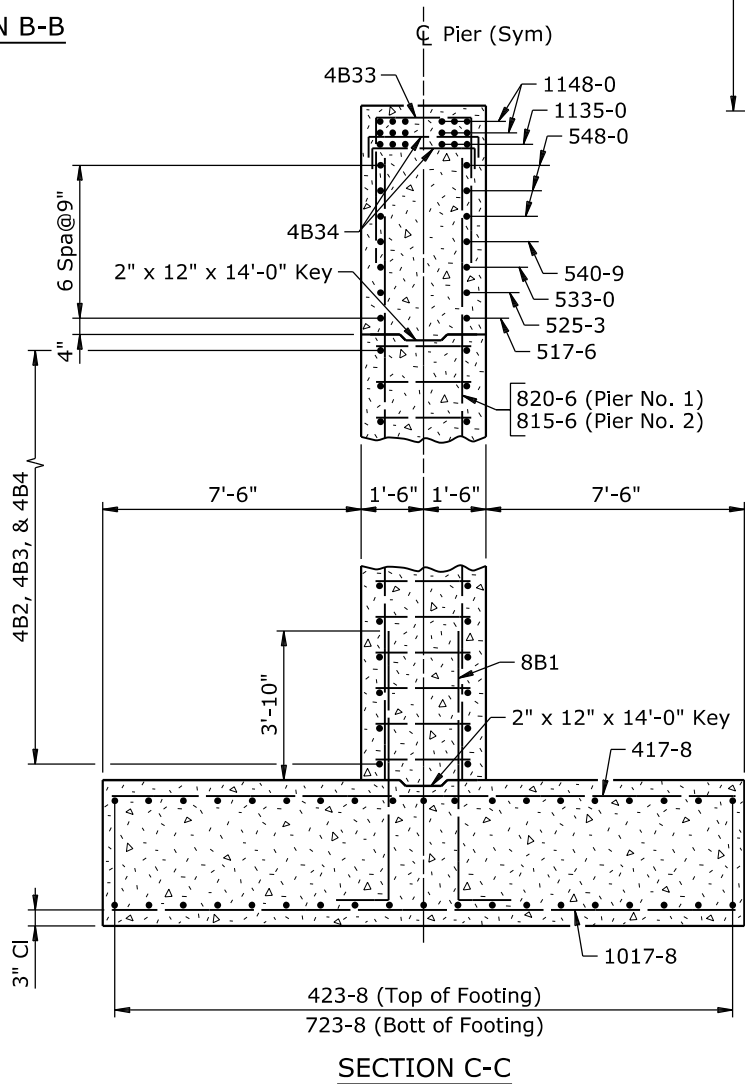
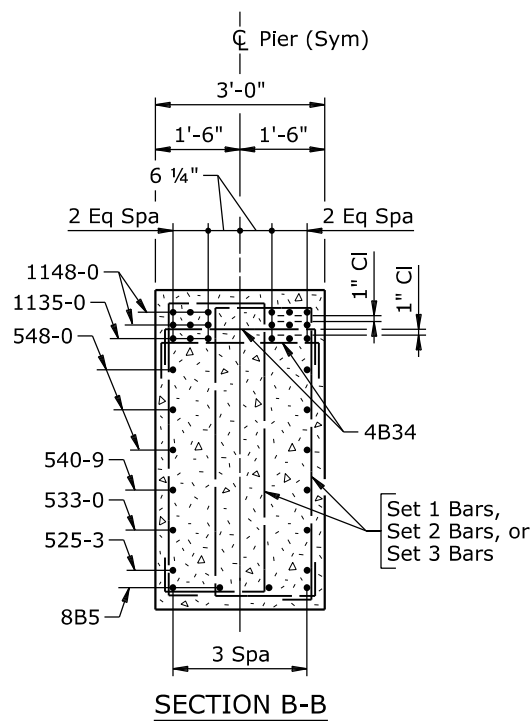
- Note: 1) Place 820-6 (Pier No. 1) or 815-6 (Pier No. 2) bars with 8B1 bars.
2) Place 4B33 bars with 820-6 (Pier No. 1) or 815-6 (Pier No. 2) bars.
3) Place 1135-0 bars symmetrical about C Pier.
4) For Sections A-A, B-B, and C-C, see Sheet No. 12.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
PIER DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065 AI			
REVIEW	DESIGN	MMML	PPPP
DETAIL	LLL	MMM	MM
QTY'S	JJJ	LLL	LL
Drwg No. 0002		Sheet 11 of 26	

Nov 2018

4.08 - Example

BILL OF REINFORCEMENT			
Location	Mark	Number Required	
		Pier No. 1	Pier No. 2
Cap	4B33	15	15
	4B34	29	29
	517-6	2	2
	525-3	2	2
	533-0	2	2
	540-9	2	2
	548-0	6	6
	Set 1 Bars	4	4
	Set 2 Bars	4	4
	Set 3 Bars	4	4
	8B5	8	8
	1135-0	6	6
	1148-0	12	12
	Weight	6855 LB	6855 LB
Shaft	4B2	32	22
	4B3	96	66
	4B4	64	44
	815-6		40
	820-6	40	
	Weight	2975 LB	2195 LB
Footing	417-8	25	25
	423-8	19	19
	723-8	19	19
	8B1	40	40
	1017-8	30	30
	Weight	4739 LB	4739 LB
Bending Diagrams		Set Diagrams	

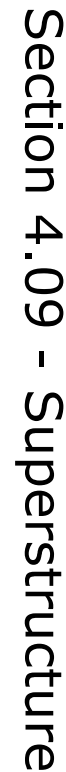


- Note: 1) Ensure the reinforcing steel fabricator prefixes pier bar marks with numeral 3 for Pier No. 1 and numeral 4 for Pier No. 2.
- 2) The estimated quantity of class A concrete is 109.4 CY for Pier No. 1 and 100.2 CY for Pier No. 2.
- 3) For location of Sections A-A, B-B, and C-C, see Sheet No. 11.

WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
PIER DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065			
AI			
DESIGN		Design Section	
MMM	PPP	Q	R Stuv
DETAIL		Drwg No. 0002	
LLL	MMM	Sheet 12 of 26	
QTY'S			
JJJ	LLL		

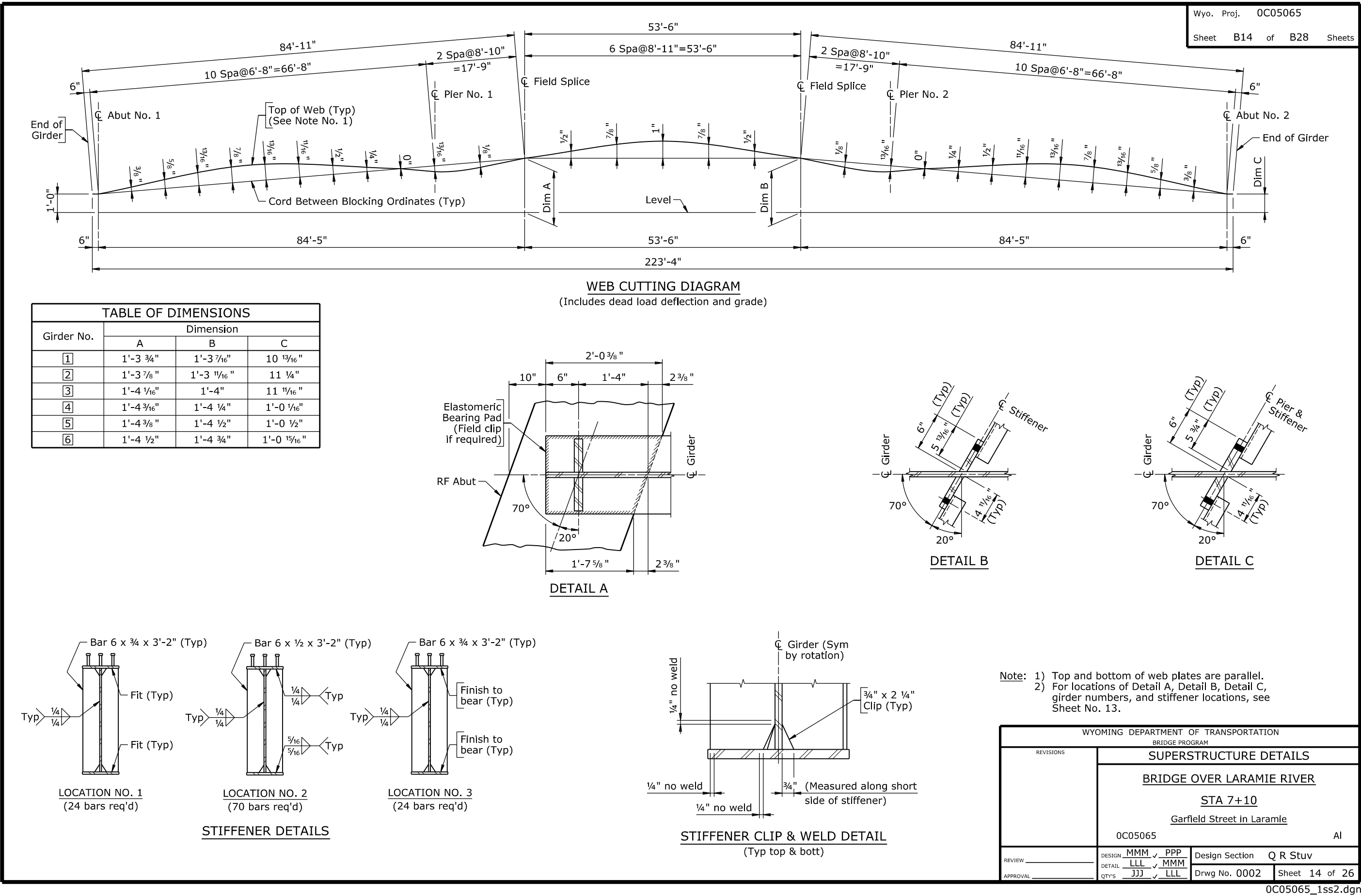
0C05065_1pr2.dgn

Section 4.08 - Bent / Pier

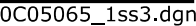


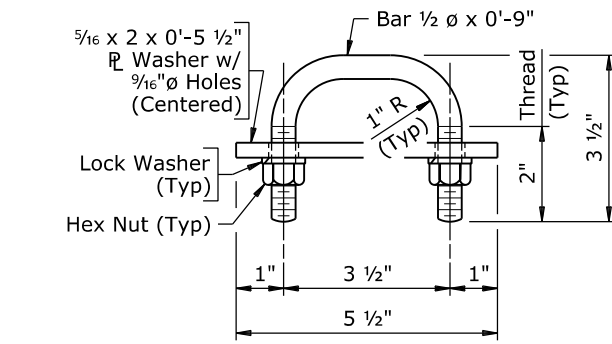
Nov 2018

4.09 - Example

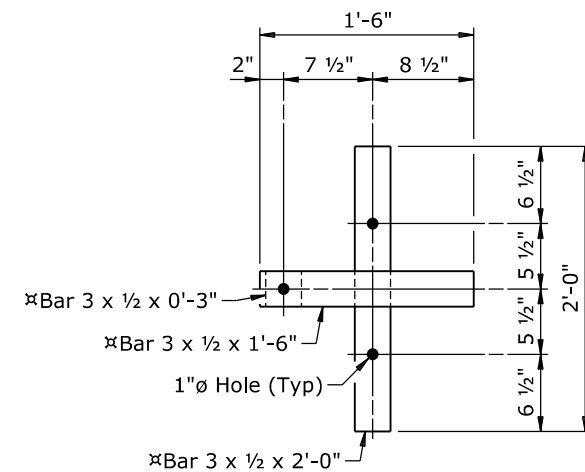


Section 4.09 - Superstructure





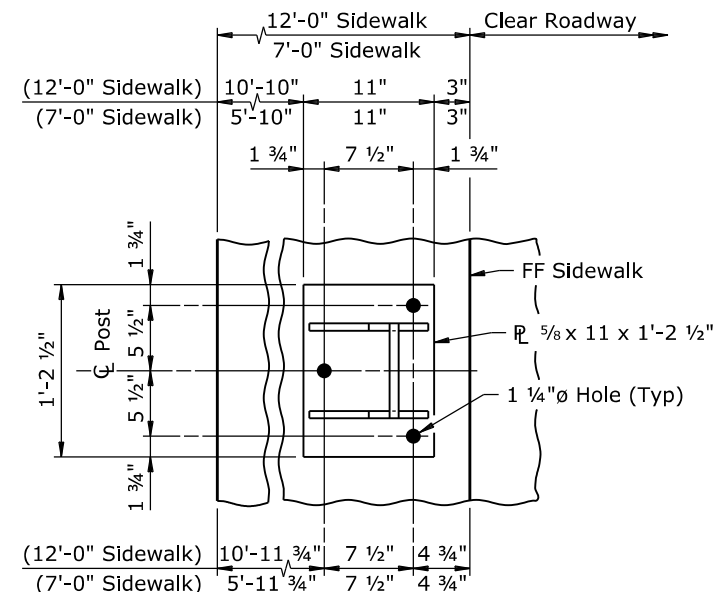
RAIL BOLT DETAIL



SECTION B-B

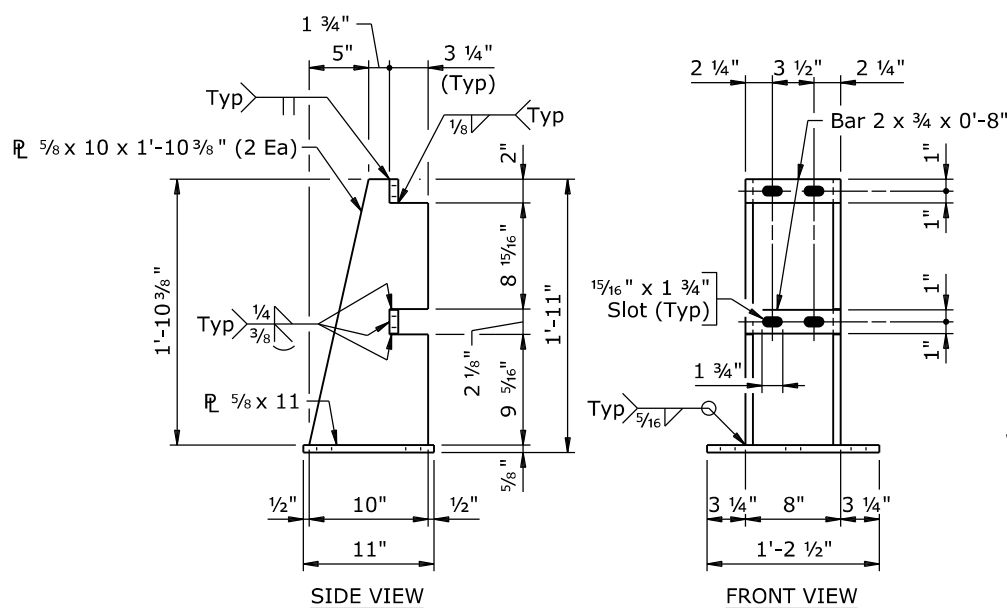
(✕Not galvanized)

(Anchor bolts and slab not shown)



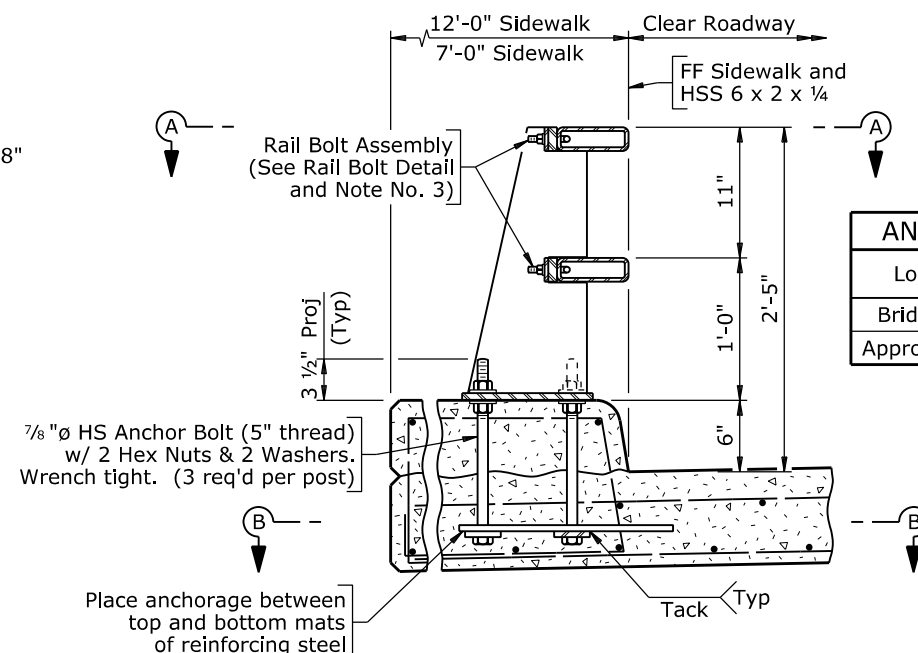
VIEW A-A

(Anchor bolts, rails, and
rail bolts not shown)



POST DETAILS

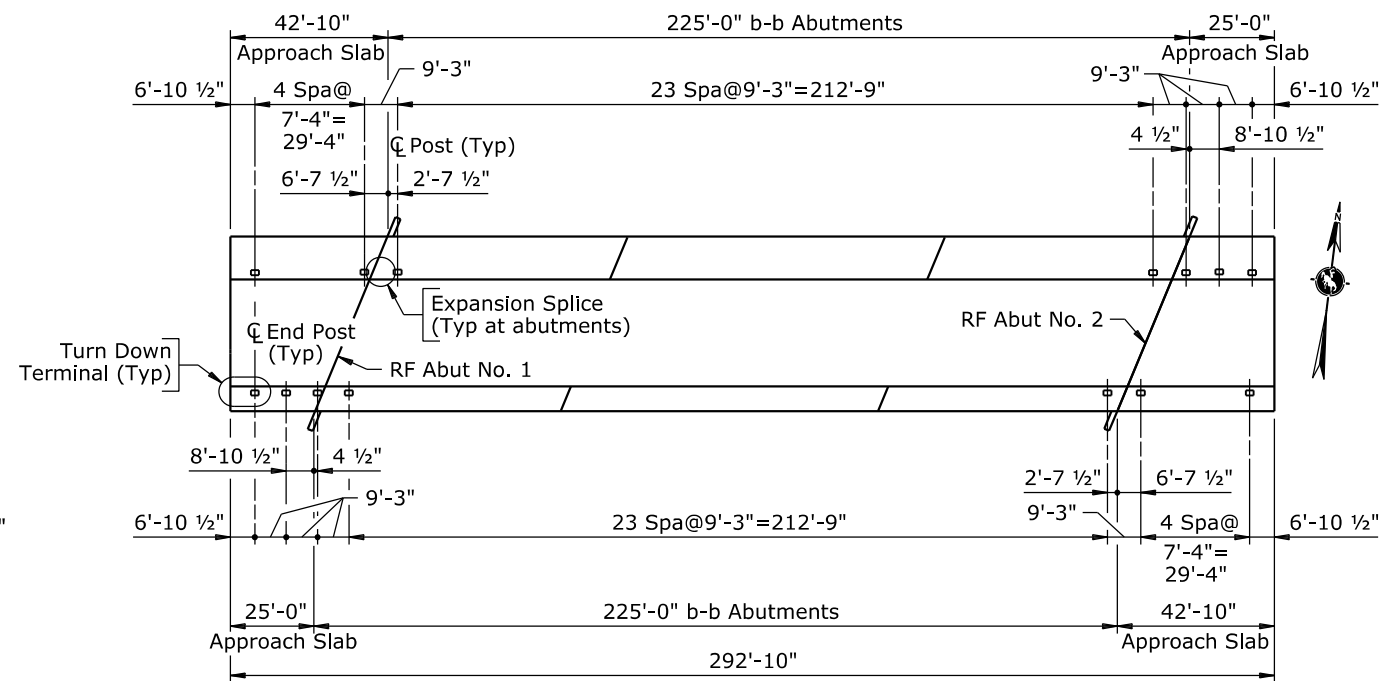
(See View A-A for anchor bolt hole spacing)



ASSEMBLY DETAIL

(Bridge slab shown, approach slab similar)

(Bridge slab shown, approach slab similar)



PLAN

(48 posts req'd on bridge)
(16 posts req'd on approach slabs)

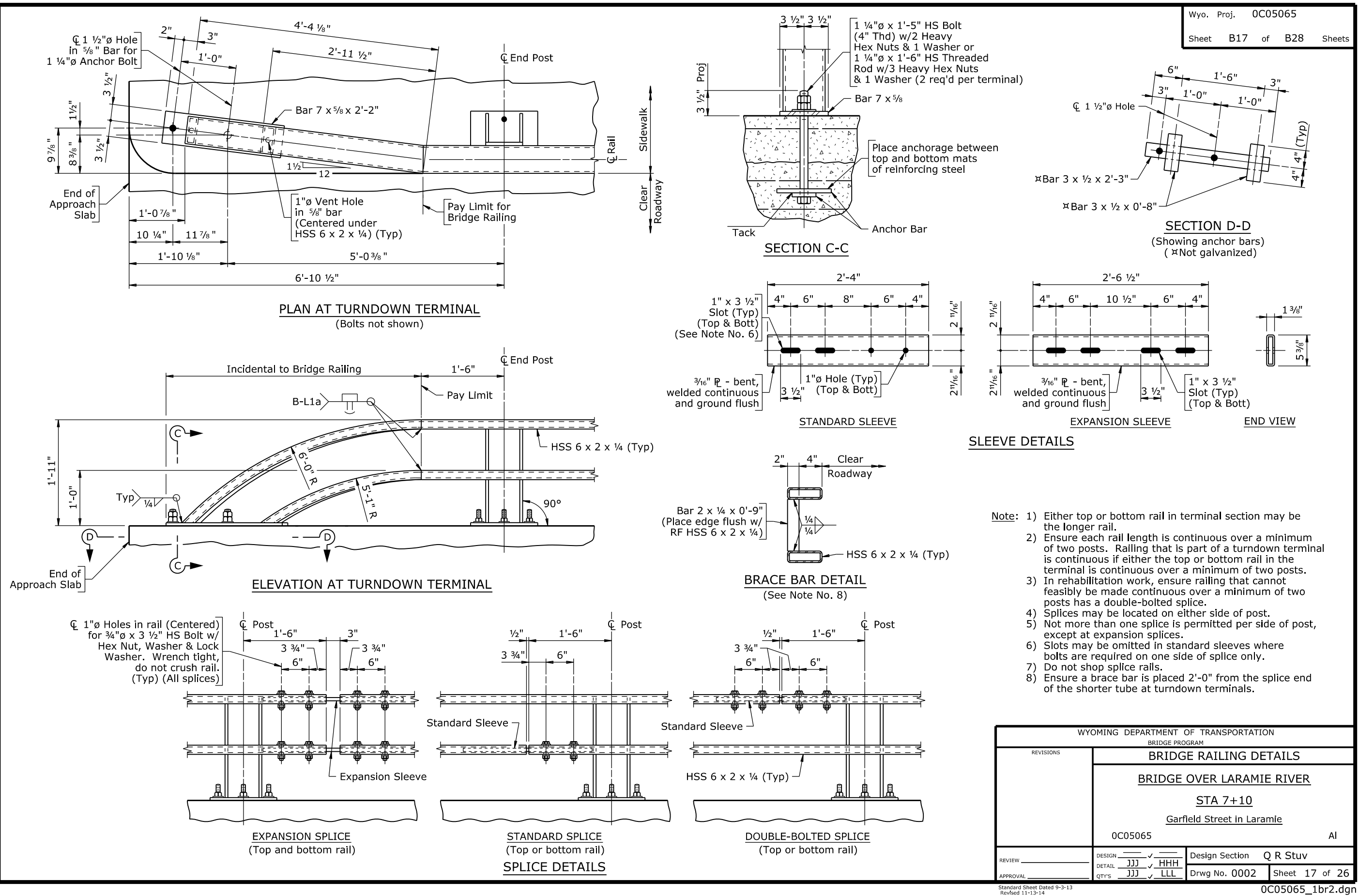
(16 posts req'd on approach slabs)

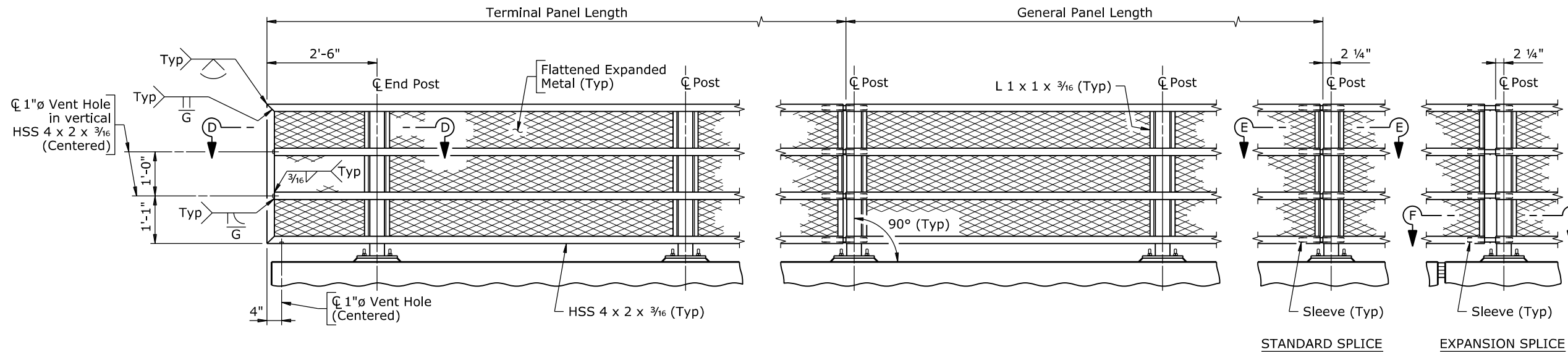
ANCHOR BOLT TABLE	
Location	Anchor Bolt
Bridge Slab	7/8"Ø x 1'-3"
Approach Slab	7/8"Ø x 1'-5"

- 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 1/8"Ø 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.

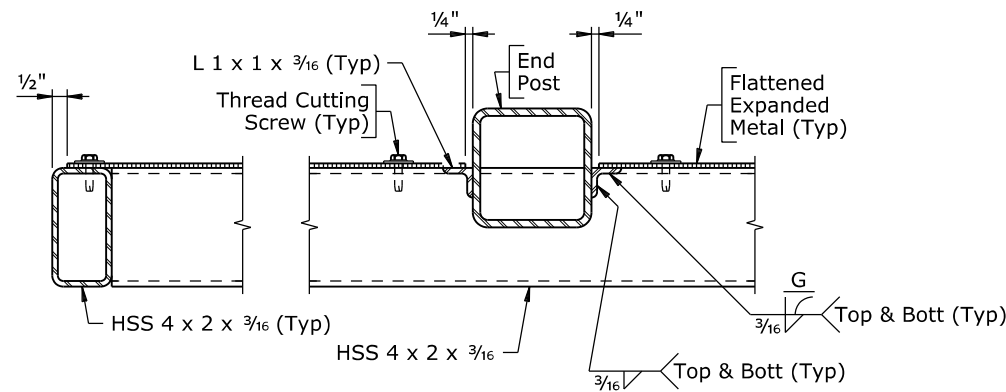
WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
REVISIONS	BRIDGE RAILING DETAILS		
	<u>BRIDGE OVER LARAMIE RIVER</u>		
	<u>STA 7+10</u>		
	<u>Garfield Street in Laramie</u>		
	0C05065	AI	
REVIEW _____	DESIGN _____ ✓ _____	Design Section Q R Stuv	
	DETAIL JJJ ✓ HHH		
APPROVAL _____	OTY'S JJJ ✓ LLL	Drwg No. 0002	Sheet 16 of 26

4.10 - Example

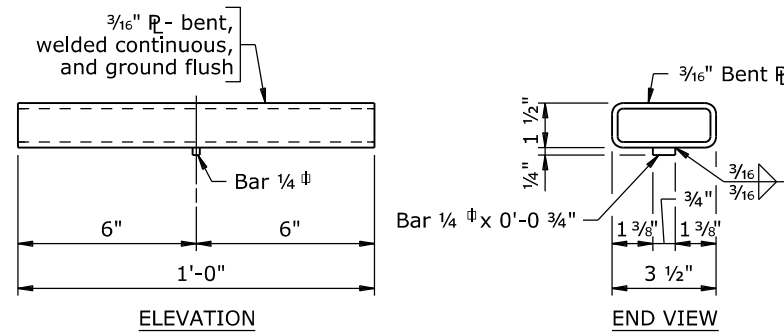




ELEVATION

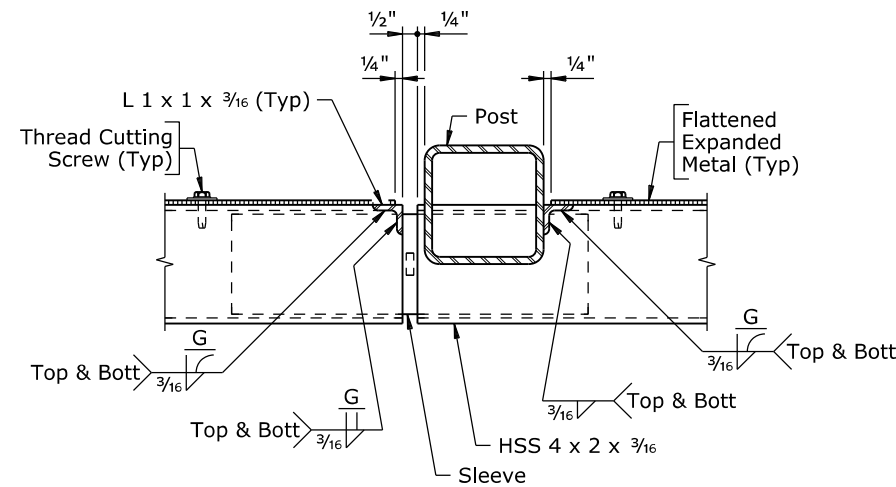


SECTION D-D

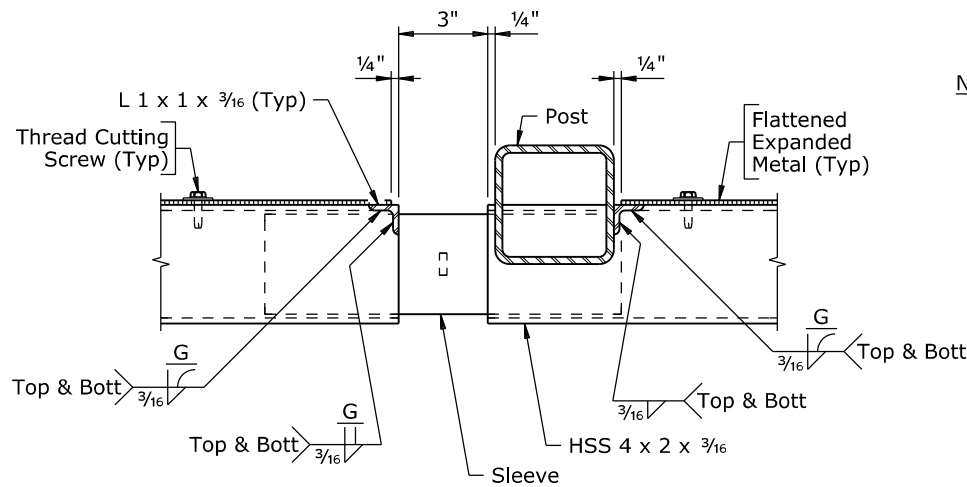


ELEVATION

SLEEVE DETAILS



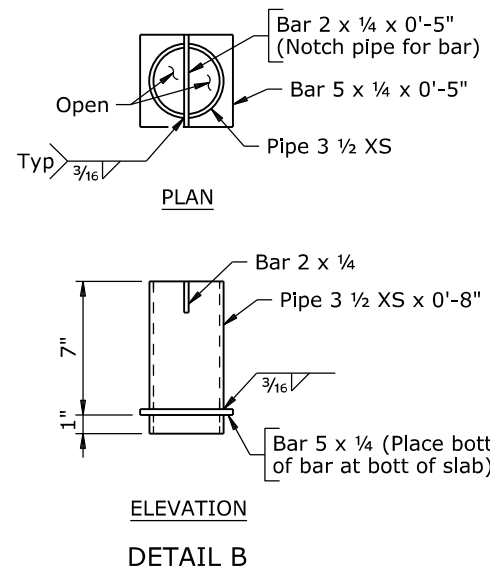
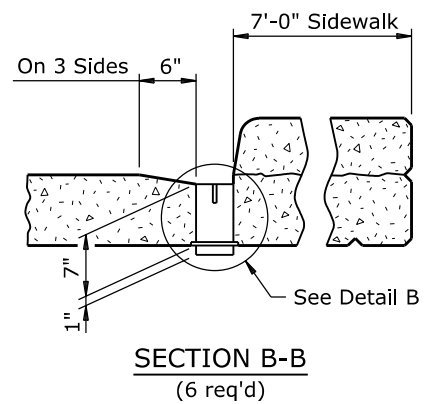
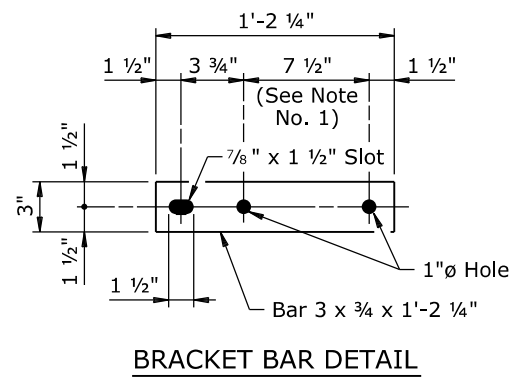
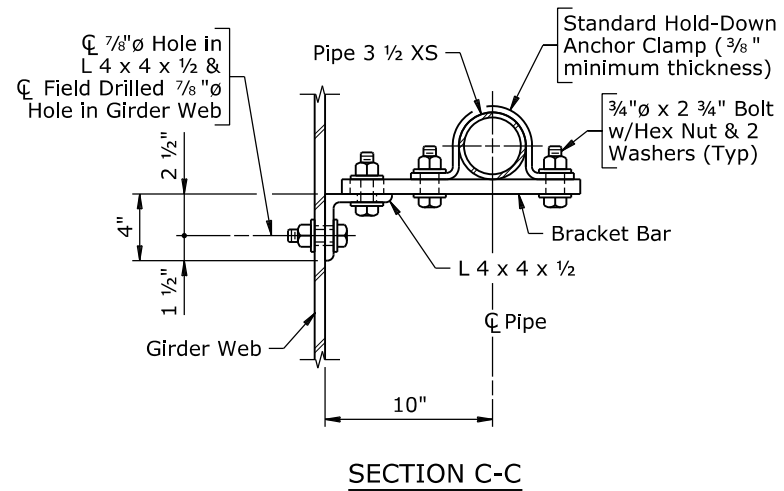
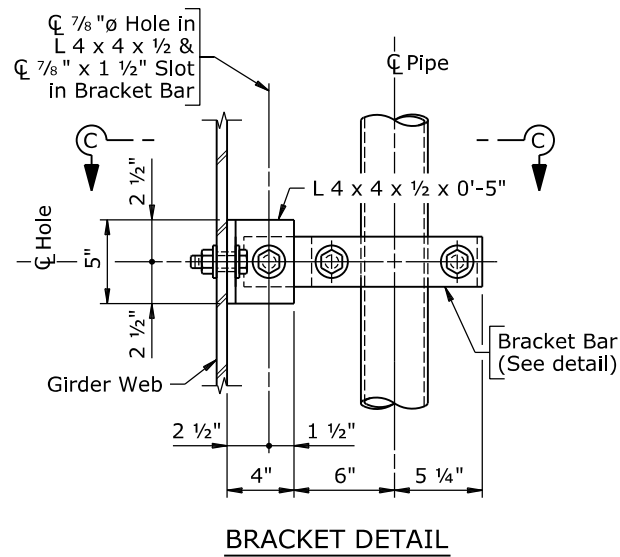
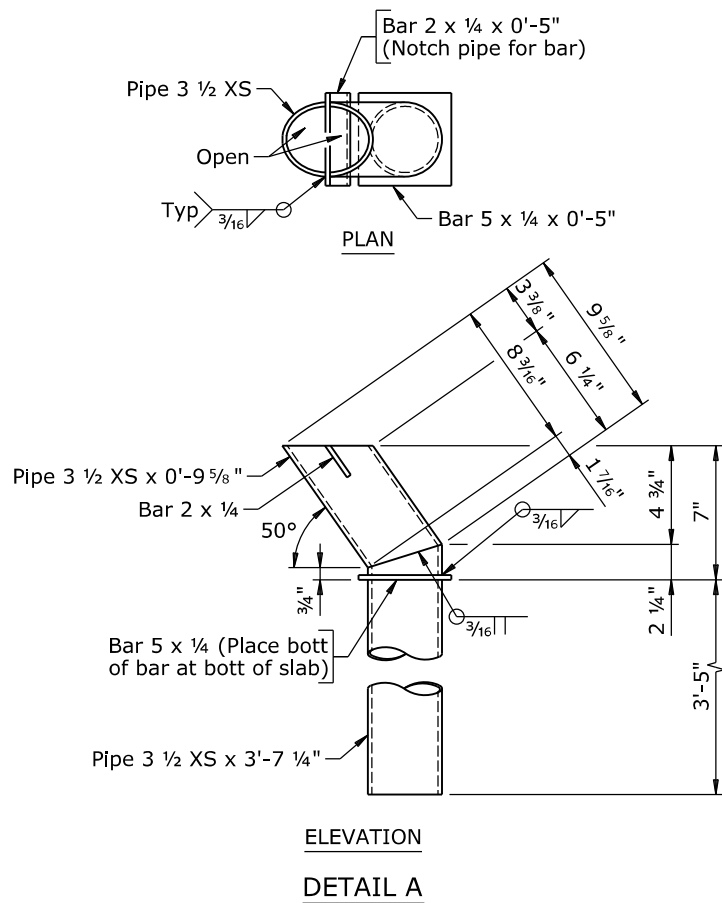
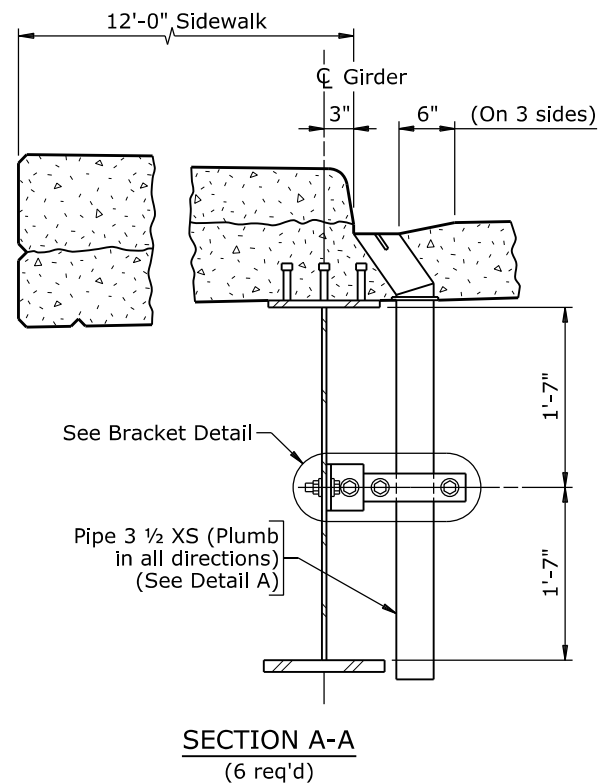
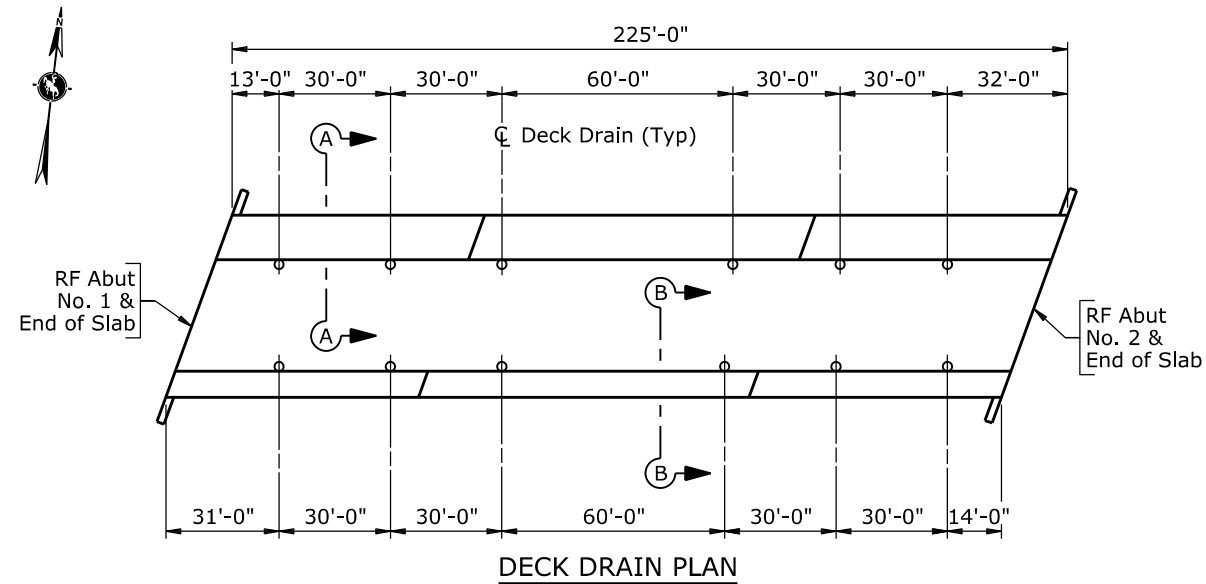
SECTION E-E



SECTION F-F

Note: 1) Ensure general panel and terminal panels are continuous over a minimum of two posts and do not exceed 22'-0" in length.
2) Ensure adjacent rail panels are shop assembled to ensure proper fit and movement of splices. Match mark rail panels prior to disassembly and shipment.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
PEDESTRIAN RAILING DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065 AI			
REVIEW	DESIGN	Design Section	Q R Stuv
APPROVAL	DETAIL	Drwg No. 0002	Sheet 19 of 26
	QTY'S		

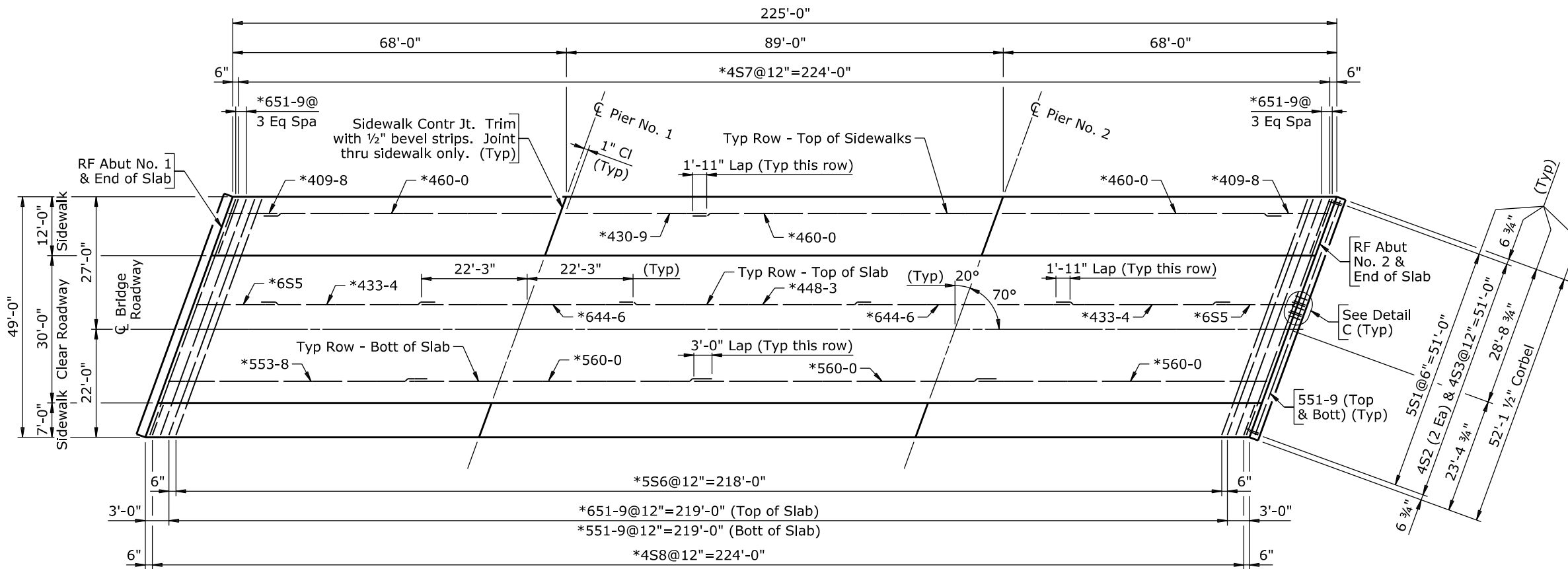


- Note:
- 1) Spacing of 1" holes in bracket bar may vary to match actual standard hold-down anchor clamp hole spacing.
 - 2) Shift locations of deck drains as necessary to avoid interference with bridge railing anchorages.
 - 3) Before placing slab, install and properly align deck drains, including brackets.

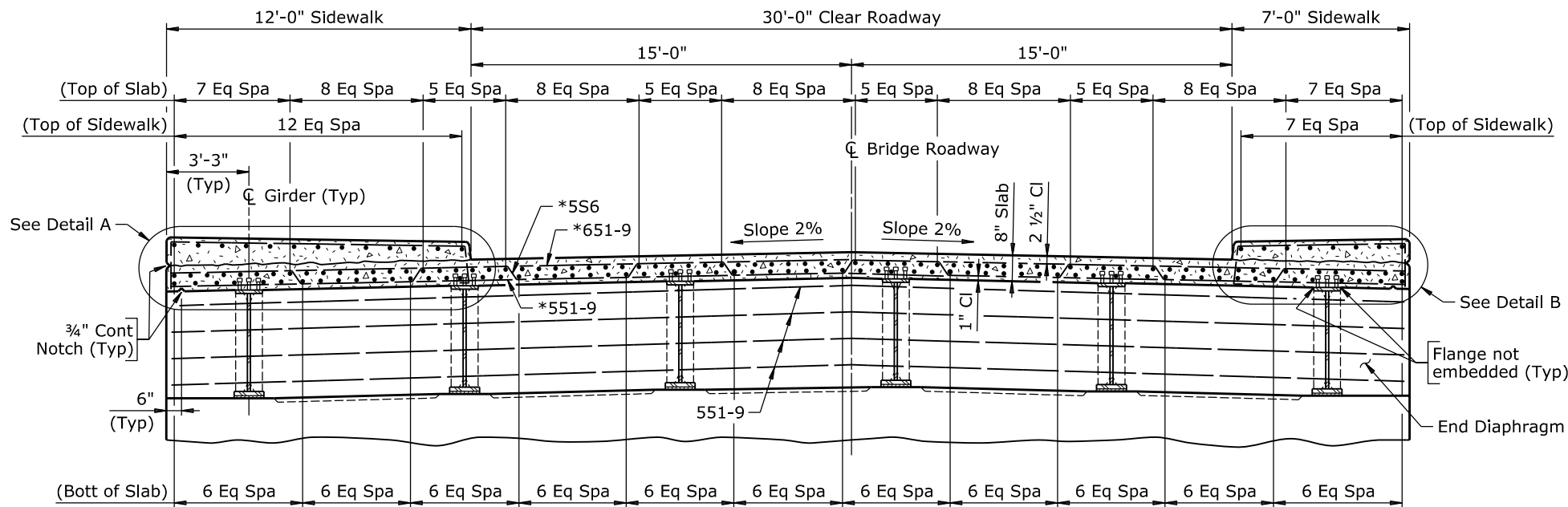
WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
DECK DRAIN DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065 AI			
REVIEW	DESIGN	Design Section Q R Stuv	
DETAIL	MMM	Drwg No. 0002	
APPROVAL	QTY'S	Sheet 20 of 26	

Nov 2018

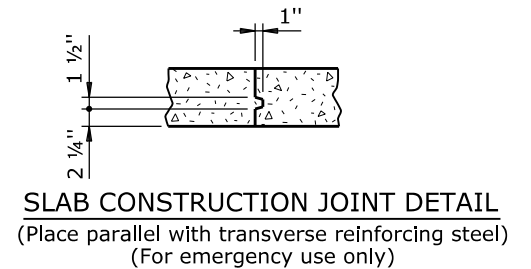
4.13 - Example



PLAN
(Longitudinal dimensions are along finished grade)



TYPICAL SECTION
(Looking ahead station)

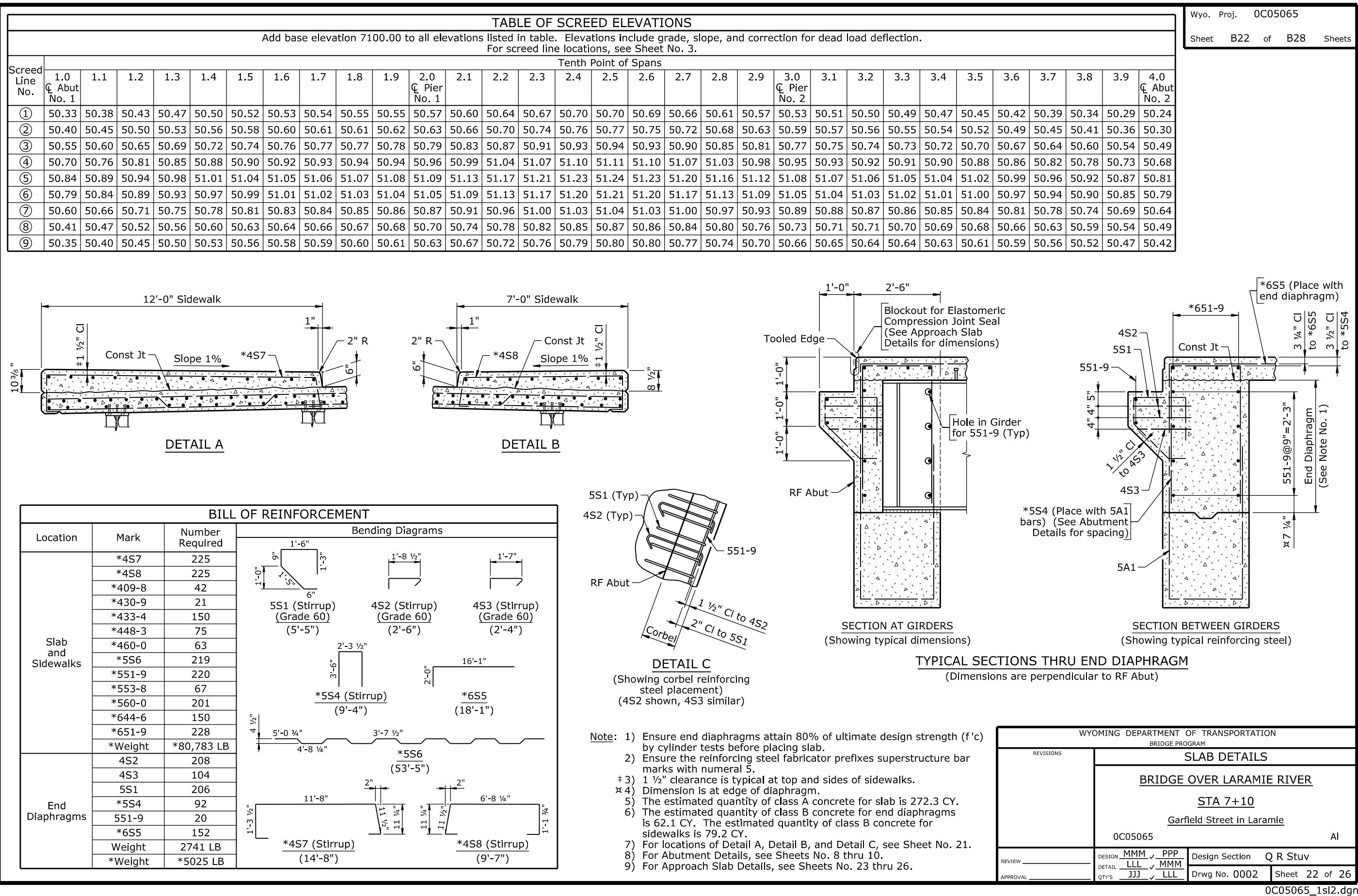


- Note: 1) Place concrete in slab in one continuous operation at the minimum rate of 21 feet per hour.
2) For Bridge Railing Details, see Sheets No. 16 and 17.
3) For Pedestrian Railing Details, see Sheets No. 18 and 19.
4) For Deck Drain Details, see Sheet No. 20.
5) For Detail A, Detail B, and Detail C, see Sheet No. 22.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
SLAB DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065 AI			
DESIGN	MMM ✓ PPP	Design Section	Q R Stuv
DETAIL	LLL ✓ MMM	Drwg No. 0002	Sheet 21 of 26
APPROVAL	QTY'S JJJ ✓ LLL		

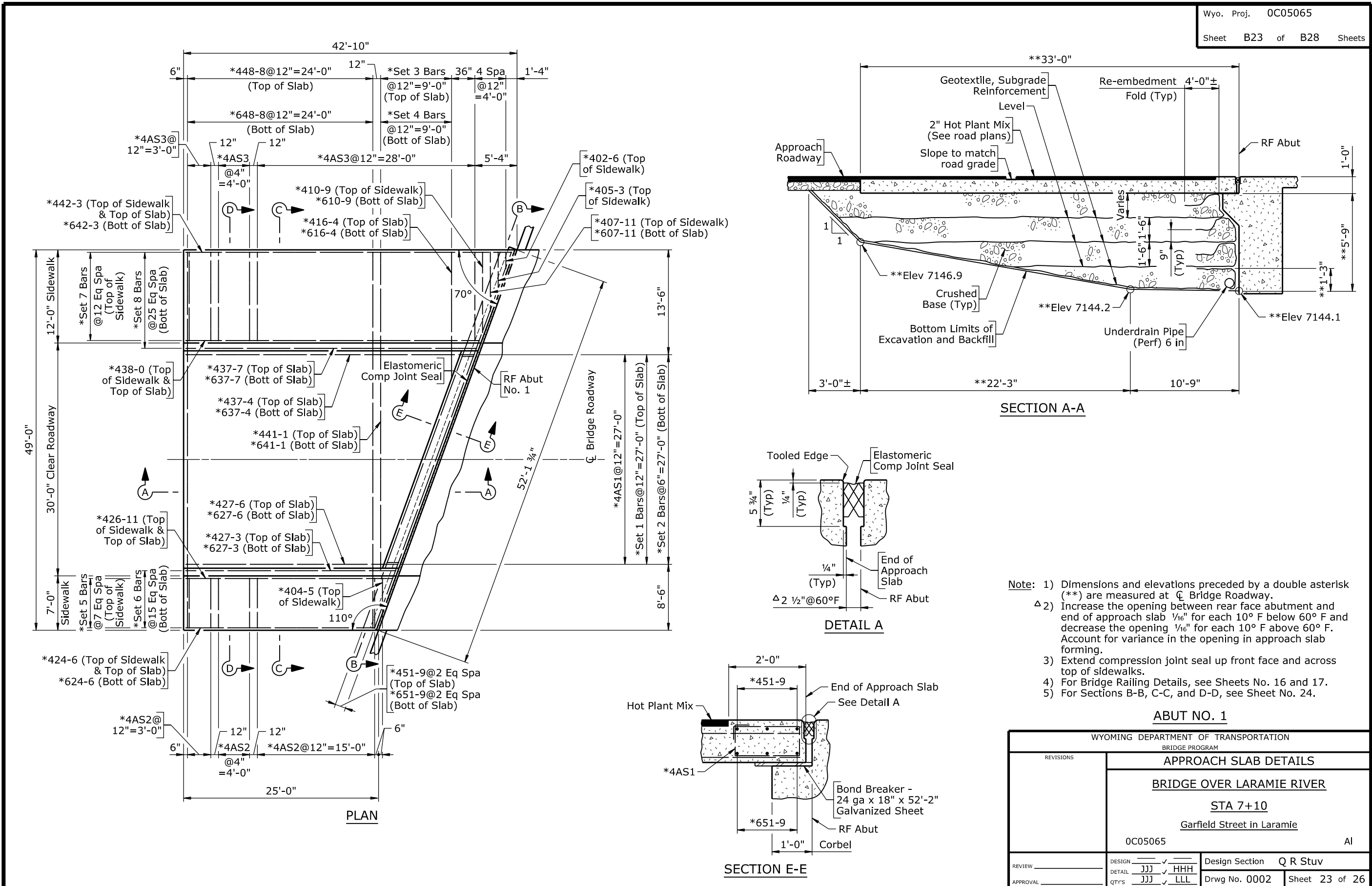
0C05065_1sl1.dgn

Section 4.13 - Slab



Nov 2018

4.14 - Example

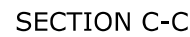


- Note: 1) Dimensions and elevations preceded by a double asterisk (**) are measured at $\bar{C}$ Bridge Roadway.
- Δ 2) Increase the opening between rear face abutment and end of approach slab $\frac{1}{16}$ " for each 10° F below 60° F and decrease the opening $\frac{1}{16}$ " for each 10° F above 60° F. Account for variance in the opening in approach slab forming.
- 3) Extend compression joint seal up front face and across top of sidewalks.
- 4) For Bridge Railing Details, see Sheets No. 16 and 17.
- 5) For Sections B-B, C-C, and D-D, see Sheet No. 24.

ABUT NO. 1

WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
APPROACH SLAB DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065			
AI			
DESIGN		Design Section	
REVIEW	JJJ	Q R Stuv	
DETAIL	JJJ	HHH	
APPROVAL	QTY'S	LLL	
Drwg No. 0002		Sheet 23 of 26	

Section 4.14 - Approach Slabs



Note: 1) Ensure the reinforcing steel fabricator prefixes approach slab bar marks with numeral 6 for Abutment No. 1.

2) Approach slab reinforcing steel is not included in the quantity of reinforcing steel.

3) 1 1/2" clearance is typical at top and sides of sidewalks.

4) Extend bottom layer of geotextile up side limits of excavation and backfill to bottom of first layer of geotextile.

5) For locations of Sections B-B, C-C, and D-D, see Sheet No. 23.

0C05065_1ap2.dgn



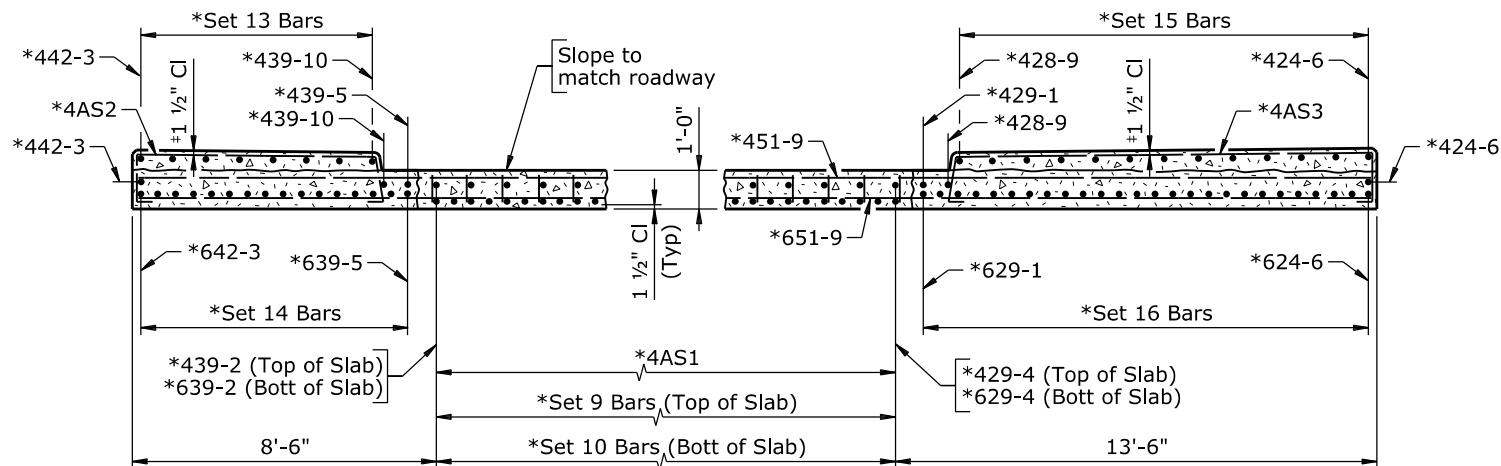
- Note: 1) Dimensions and elevations preceded by a double asterisk (**) are measured at CL Bridge Roadway.
- Δ 2) Increase the opening between rear face abutment and end of approach slab $\frac{1}{16}$ " for each 10° F below 60° F and decrease the opening $\frac{1}{16}$ " for each 10° F above 60° F. Account for variance in the opening in approach slab forming.
- 3) Extend compression joint seal up front face and across top of sidewalks.
- 4) For Bridge Railing Details, see Sheets No. 16 and 17.
- 5) For Sections B-B, C-C, and D-D, see Sheet No. 26.

ABUT NO. 2

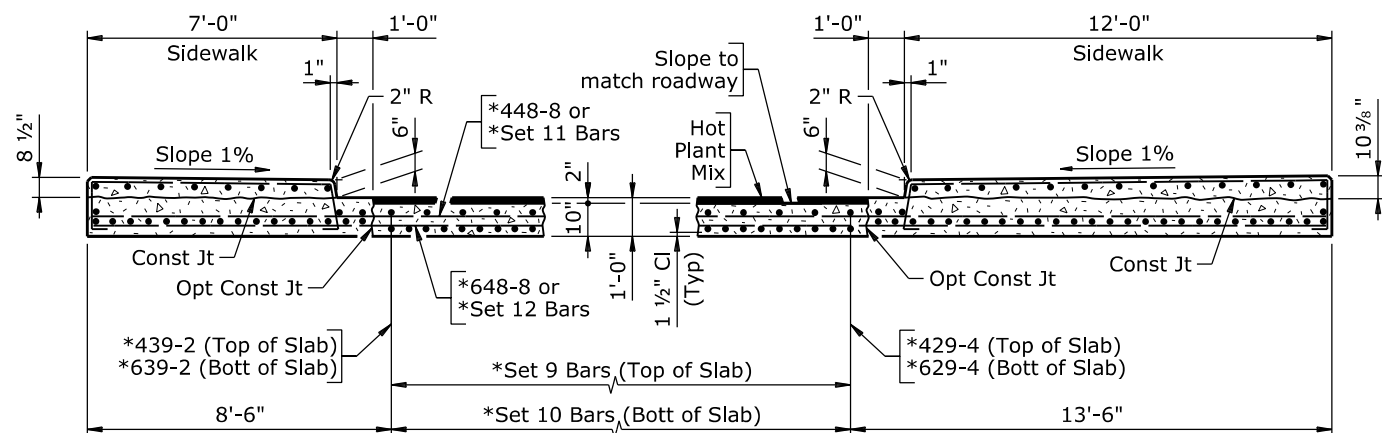
WYOMING DEPARTMENT OF TRANSPORTATION			
BRIDGE PROGRAM			
REVISIONS		APPROACH SLAB DETAILS	
		<u>BRIDGE OVER LARAMIE RIVER</u>	
		<u>STA 7+10</u>	
		<u>Garfield Street In Laramie</u>	
		0C05065	AI
REVIEW _____	DESIGN <u> </u> ✓ <u> </u> DETAIL <u>JJJ</u> ✓ <u>HHH</u> QTY'S <u>JJJ</u> ✓ <u>LLL</u>	Design Section Q R Stuv	
APPROVAL _____		Dwg No. 0002	Sheet 25 of 26

Nov 2018

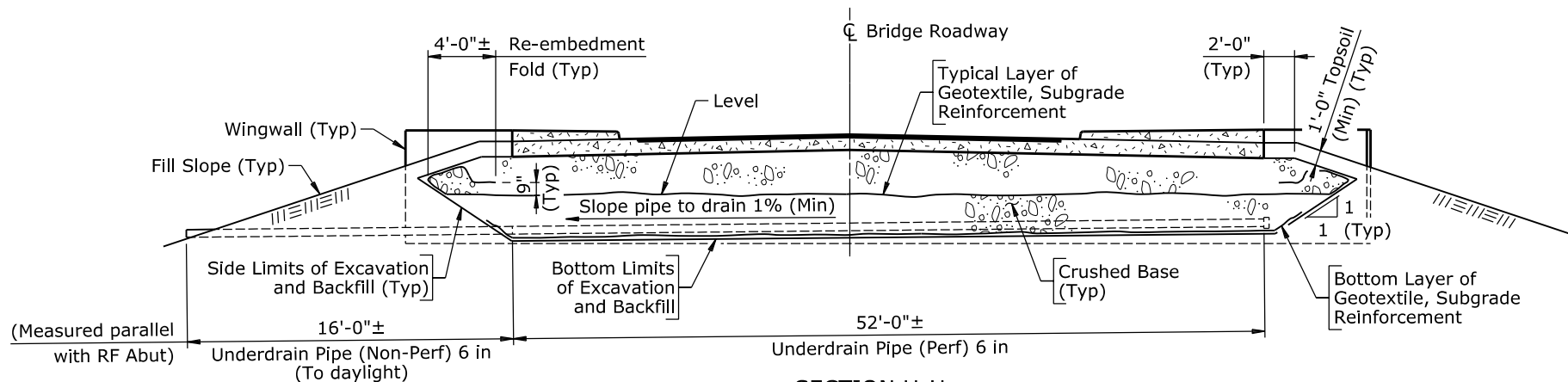
4.14 - Example



SECTION G-G
(Showing typical sidewalk and gutter reinforcing steel)
(Dimensions are perpendicular to $\perp$ Bridge Roadway)

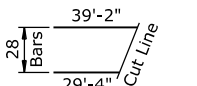
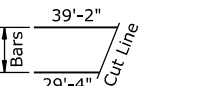
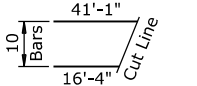
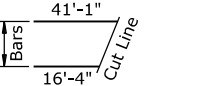
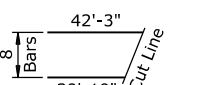
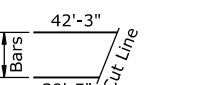
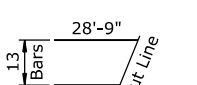
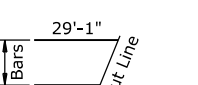


SECTION I-I
(Showing typical sidewalk and gutter dimensions)

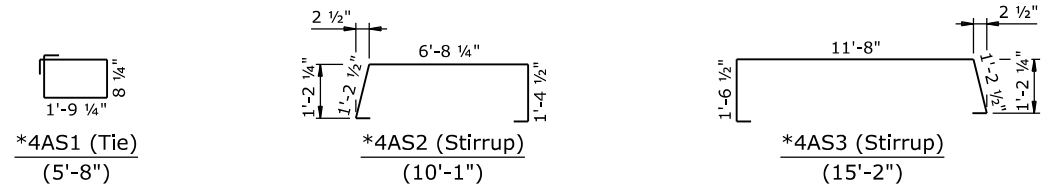


SECTION H-H

BILL OF REINFORCEMENT

Location	Mark	Number Required	Set Diagrams	
Approach Slab and Sidewalks	*4AS1	28		
	*4AS2	50		
	*4AS3	35		
	*402-6	1		
	*403-11	1		
	*405-3	1		
	*406-8	1		
	*409-5	1		
	*410-11	1		
	*413-7	1		
	*424-6	1		
	*428-9	1		
	*429-1	1		
	*439-5	1		
	*439-10	1		
	*442-3	1		
	*448-8	25		
	*451-9	3		
	*Set 9 Bars	1		
	*Set 11 Bars	1		
	*Set 13 Bars	1		
	*Set 15 Bars	1		
	*610-11	1		
	*613-7	1		
	*648-8	25		
	*651-9	3		
	*Set 10 Bars	1		
	*Set 12 Bars	1		
	*Set 14 Bars	1		
	*Set 16 Bars	1		
	⌘ *Weight	*10,555 LB		

Bending Diagrams



- Note: 1) Ensure the reinforcing steel fabricator prefixes approach slab bar marks with numeral 7 for Abutment No. 2.
2) Approach slab reinforcing steel is not included in the quantity of reinforcing steel.
3) 1 1/2" clearance is typical at top and sides of sidewalks.
4) Extend bottom layer of geotextile up side limits of excavation and backfill to bottom of first layer of geotextile.
5) For locations of Sections G-G, H-H, and I-I, see Sheet No. 25.

ABUT NO. 2

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
APPROACH SLAB DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065			
AI			
DESIGN		Design Section	
DETAIL		Q R Stuv	
QTY'S		Drwg No. 0002	
APPROVAL		Sheet 26 of 26	