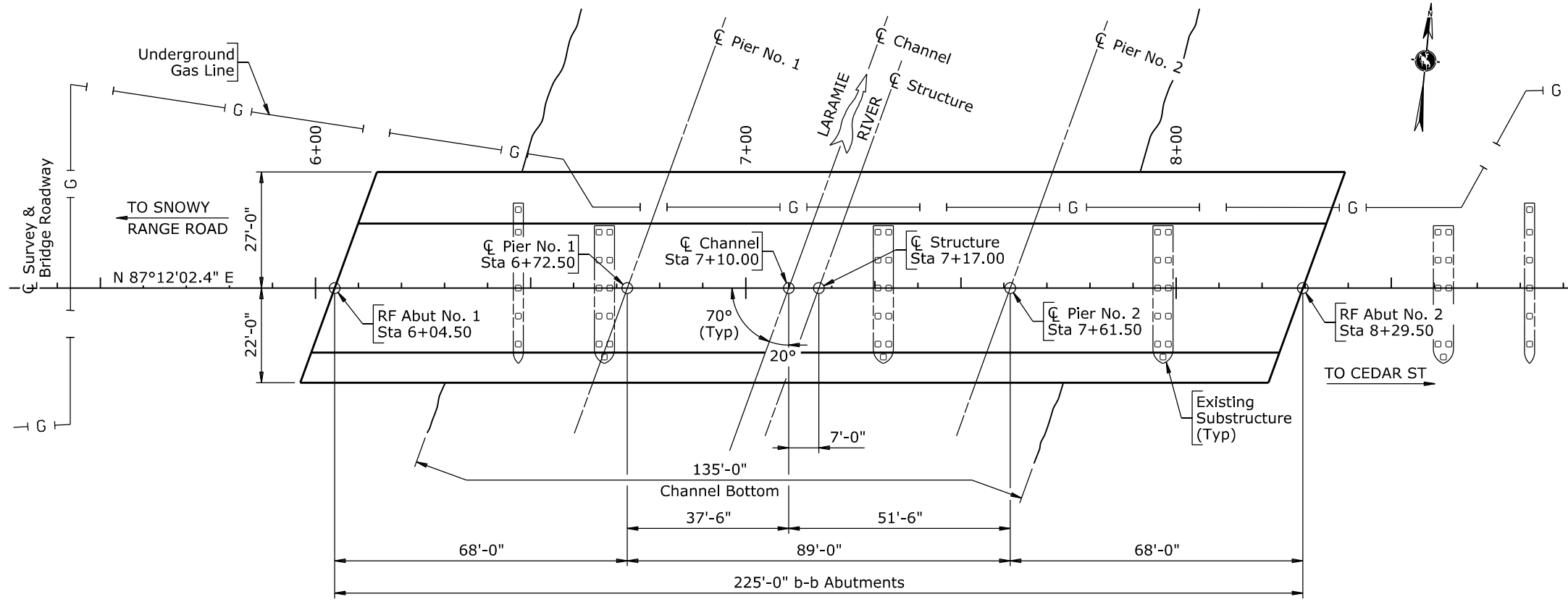


Nov 2018



Scale: 1"=30'-0"

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

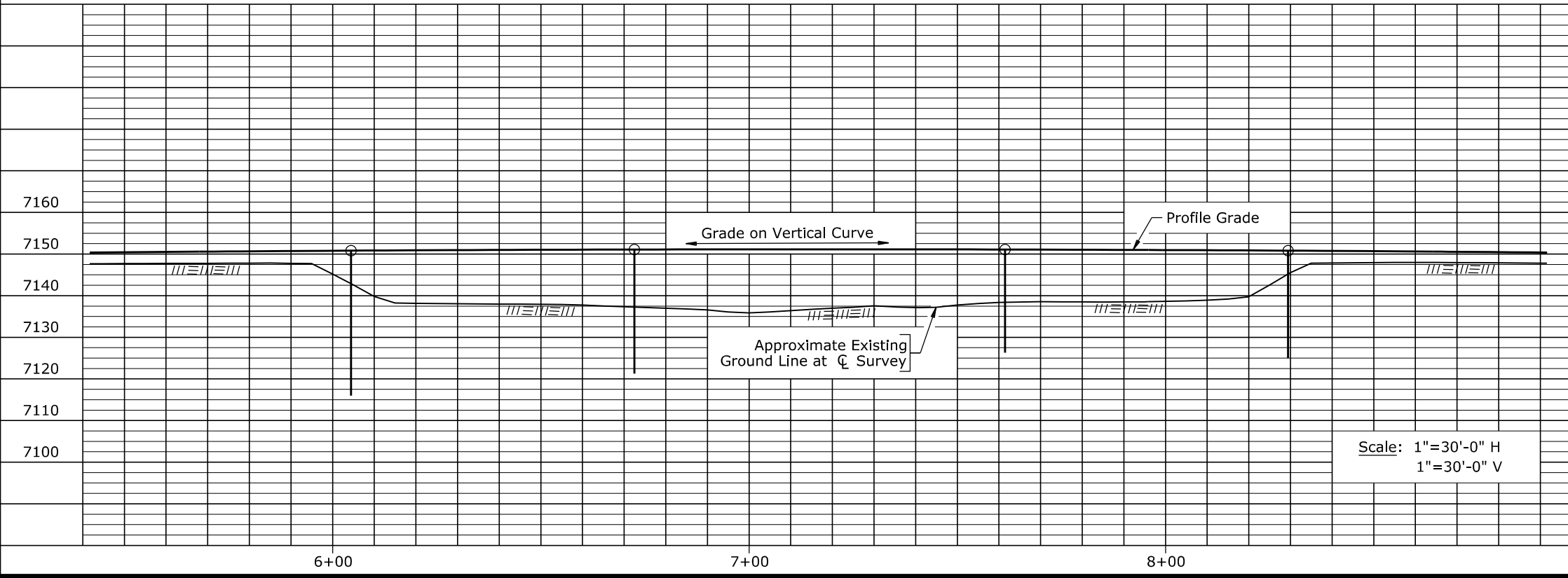
BRIDGE OVER LARAMIE RIVER

STA 7+10
 Garfield Street in Laramie

0C05065 AI

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

0C05065_1pg.dgn



Scale: 1"=30'-0" H
 1"=30'-0" V

4.01 - Example

Section 4.01 - Preliminary

BRIDGE OVER LARAMIE RIVER

STA 7+10

GARFIELD STREET IN LARAMIE

0C05065

ALBANY COUNTY

PRELIMINARY

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	
217.01030	GEOTEXTILE, EMB AND RETAINING WALL	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	XX
605.20006	UNDERDRAIN PIPE (NON-PERF) 6 in	FT	XX	
900.60000	CONTRACTOR QUALITY CONTROL (CONCRETE)	LS	LUMP SUM	

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Gabion Details -----	5
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Abutment Details -----	8-10
Pier Details -----	11-12
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 -----	BX-BX

STRUCTURE NO. LFR
ML4217B, RM 0.41 SEC 32, T16N, R73W

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

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



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

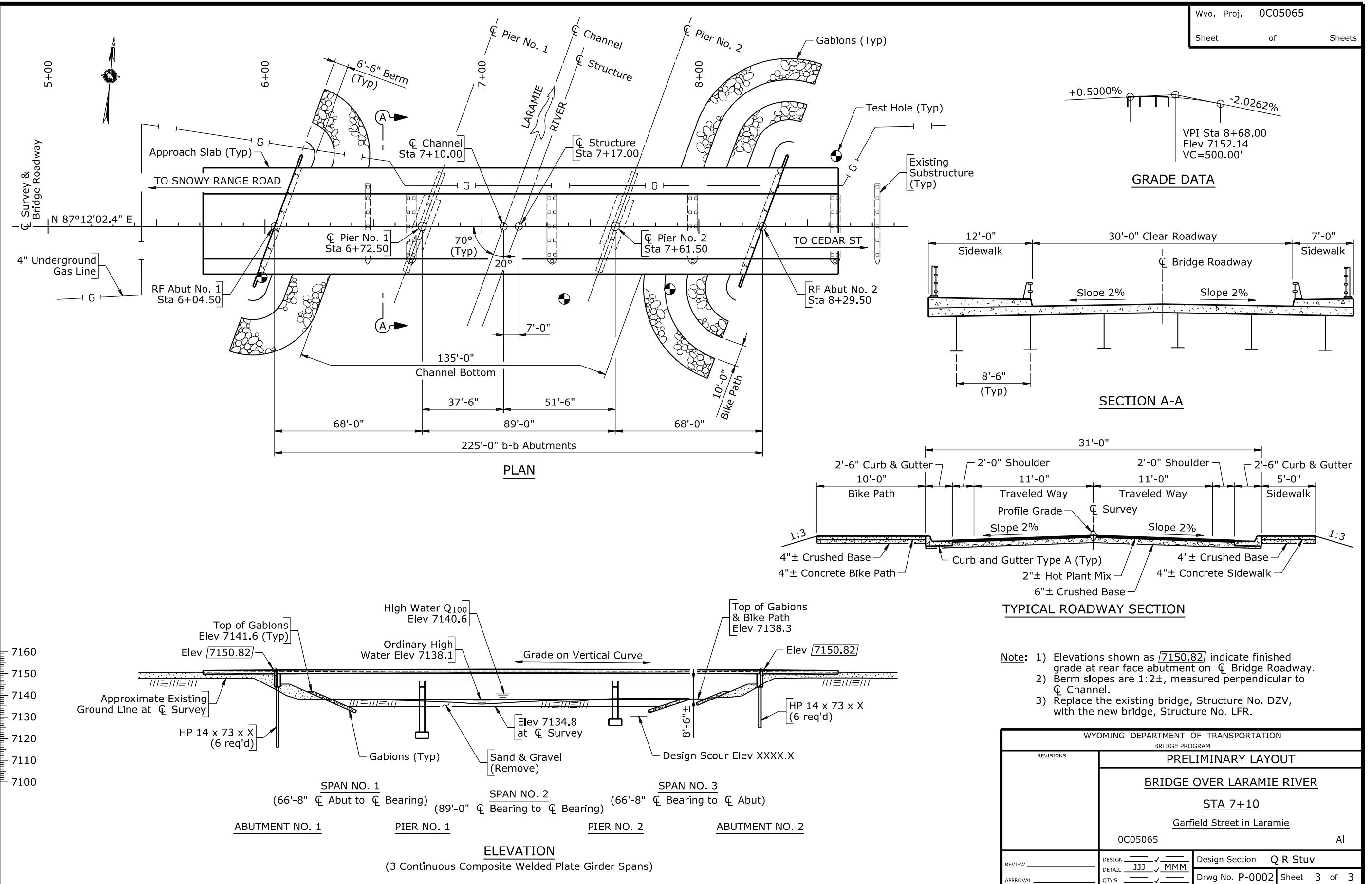
WYDOT Plans:	Sheet No.
Bridge Drwg No. 402DG2	----- 1 & 2 of 2
Supplementary Specifications:	
SS-100K	Adjustment for Structural Steel
SS-500B	Welder Qualification
SS-500E	Bridge Bearing Correction
SS-500F	Automatically End-Welded Studs
SS-500G	Structural Concrete with Quality Control and Quality Acceptance
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 _____	Design Section Q R Stuv	
APPROVAL _____	DETAIL HHH ✓ MMM	Drwg No. P-0002 Sheet 2 of 3	
	QTY'S _____		

Nov 2019

4.01 - Example

Wyo. Proj. 0C05065
 Sheet of Sheets



- Note: 1) Elevations shown as 7150.82 indicate finished grade at rear face abutment on ϕ Bridge Roadway.
 2) Berm slopes are 1:2±, measured perpendicular to ϕ Channel.
 3) Replace the existing bridge, Structure No. DZV, with the new bridge, Structure No. LFR.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM	
PRELIMINARY LAYOUT	
BRIDGE OVER LARAMIE RIVER	
STA 7+10	
Garfield Street in Laramie	
0C05065 AI	
DESIGN	Design Section Q R Stuv
DETAIL	JJJ MMM
QTY'S	Drwg No. P-0002 Sheet 3 of 3

Section 4.01 - Preliminary

BRIDGE OVER LARAMIE RIVER

STA 7+10

GARFIELD STREET IN LARAMIE

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	
217.01030	GEOTEXTILE, EMB AND RETAINING WALL	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	
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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Gabion Details -----	5
Log Boring Sheet -----	6-7
Abutment Details -----	8-10
Pier Details -----	11-12
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			
DESIGN _____	DETAIL HHH ✓ MMM	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



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

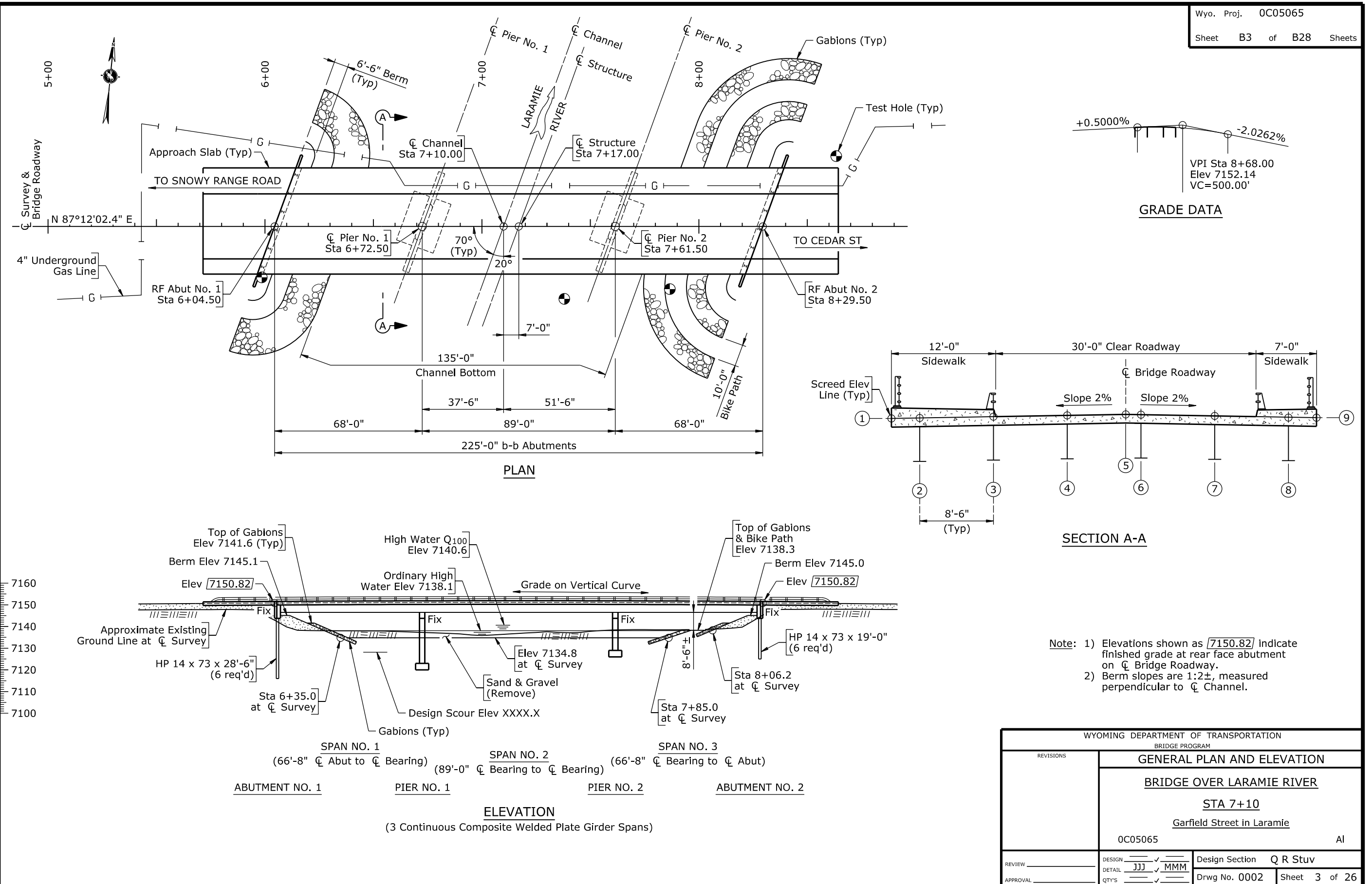
- WYDOT Plans: Sheet No.
 Bridge Drwg No. 402DG2 ----- 1 & 2 of 2
- Supplementary Specifications:
- SS-100K Adjustment for Structural Steel
 - SS-500B Welder Qualification
 - SS-500E Bridge Bearing Correction
 - SS-500F Automatically End-Welded Studs
 - SS-500G Structural Concrete with Quality Control 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> QTY'S _____	Design Section	Q R Stuv
APPROVAL _____		Drwg No. 0002	Sheet 2 of 26

Nov 2019

4.03 - Example

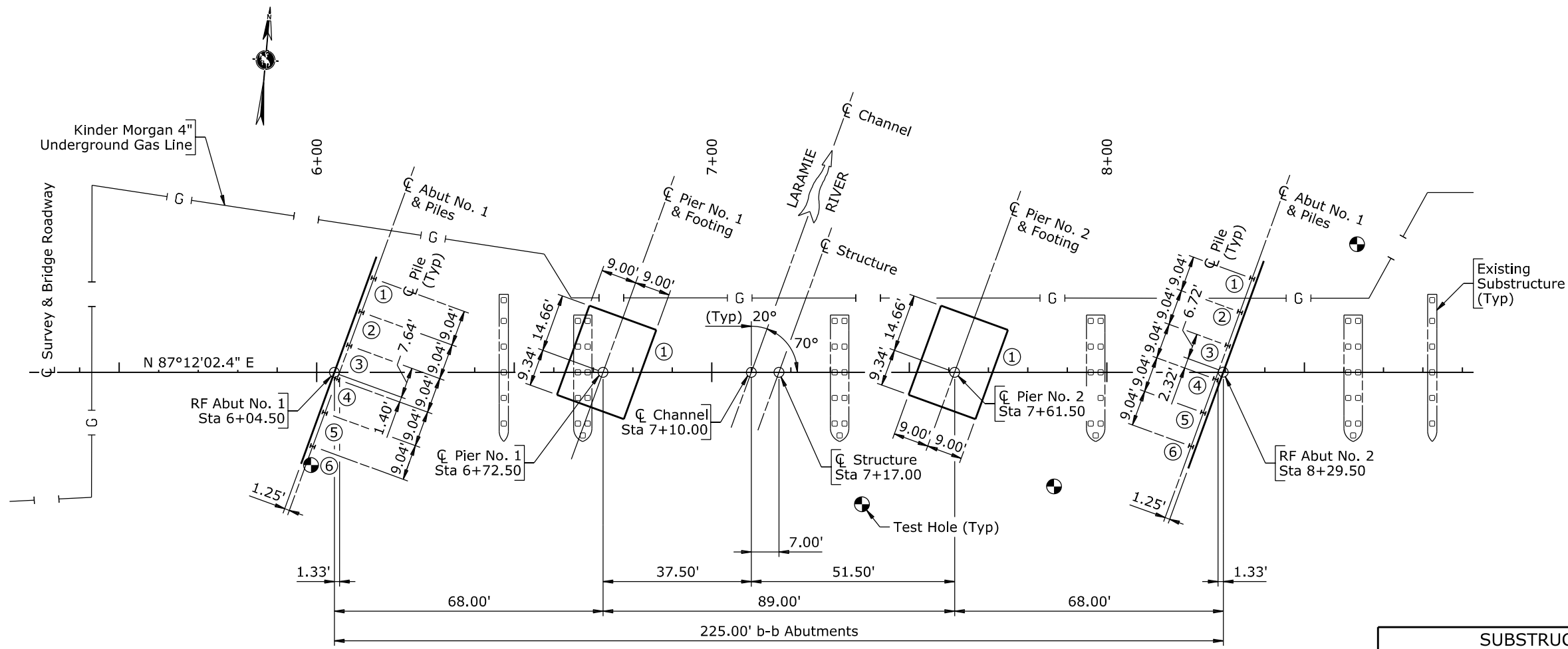
Wyo. Proj. 0C05065
Sheet B3 of B28 Sheets



WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
GENERAL PLAN AND ELEVATION			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065		AI	
REVISIONS	DESIGN	Design Section Q R Stuv	
	DETAIL	JJJ	MMM
APPROVAL	QTY'S	Drwg No. 0002	Sheet 3 of 26

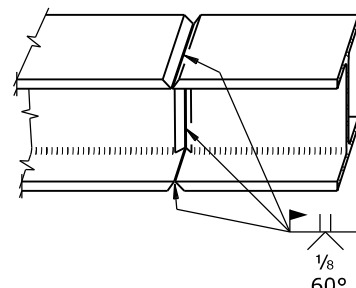
Section 4.03 - General Plan and Elevation

Nov 2018

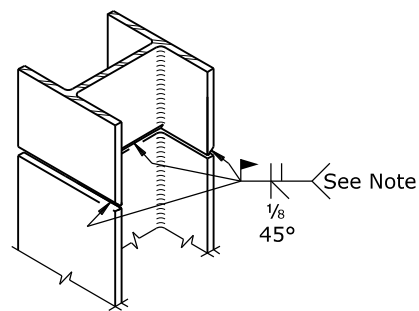


SUBSTRUCTURE LAYOUT

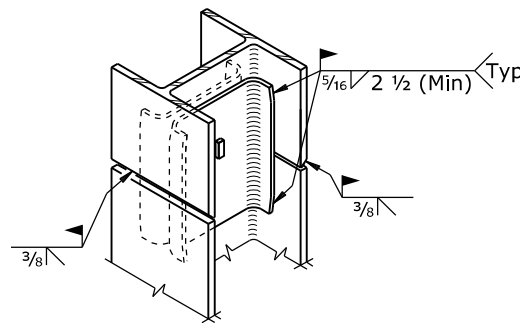
SUBSTRUCTURE DATA			
Location	HP 14 x 73 Pile Elevations		Bottom of Footing Elevations
	Piles No. ① - ⑥ Top	Piles No. ① - ⑥ Bottom	Footing No. ①
Abut No. 1	7144.61	7116.11	—
Pier No. 1	—	—	7121.53
Pier No. 2	—	—	7126.49
Abut No. 2	7144.51	7125.51	—



WELDED SPLICE DETAIL
(Piles welded horizontal)



WELDED SPLICE DETAIL
(Piles welded vertical)



PILE SPLICER DETAIL
(Piles vertical or horizontal)

PILE SPLICE DETAILS

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

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
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	_____

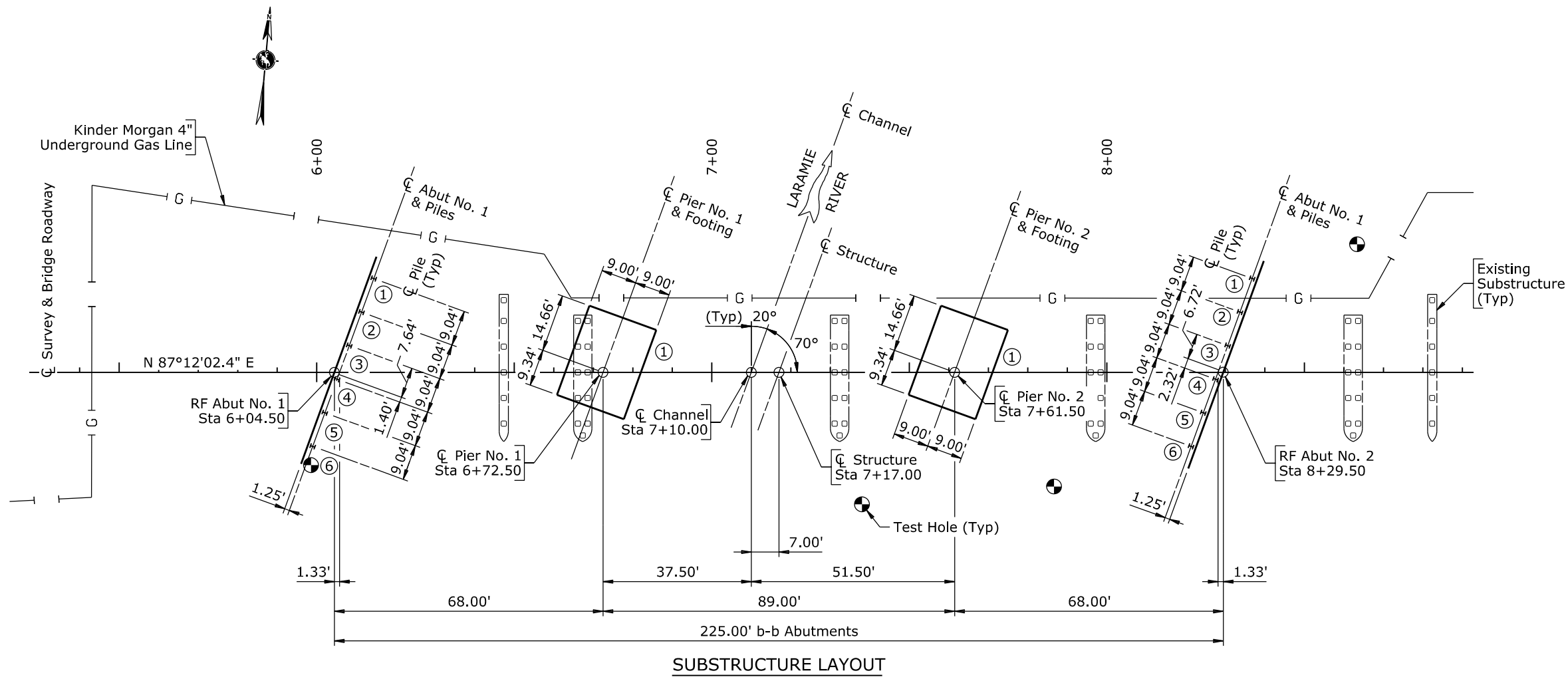
4.04 - Example

Section 4.04 - Substructure Layout

Nov 2018

4.06 - Example

Wyo. Proj. 0C05065
 Sheet of Sheets



SUBSTRUCTURE DATA			
Location	HP 14 x 73 (Grade 36) 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	—

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
REVISIONS	FINAL GEOLOGY LAYOUT		
	BRIDGE OVER LARAMIE RIVER STA 7+10 Garfield Street in Laramie		
	0C05065	AI	
DESIGN	_____	Design Section Q R Stuv	
DETAIL	LLL ✓ HHH	Drwg No. Sheet 1 of 1	
APPROVAL	_____	QTY'S _____	

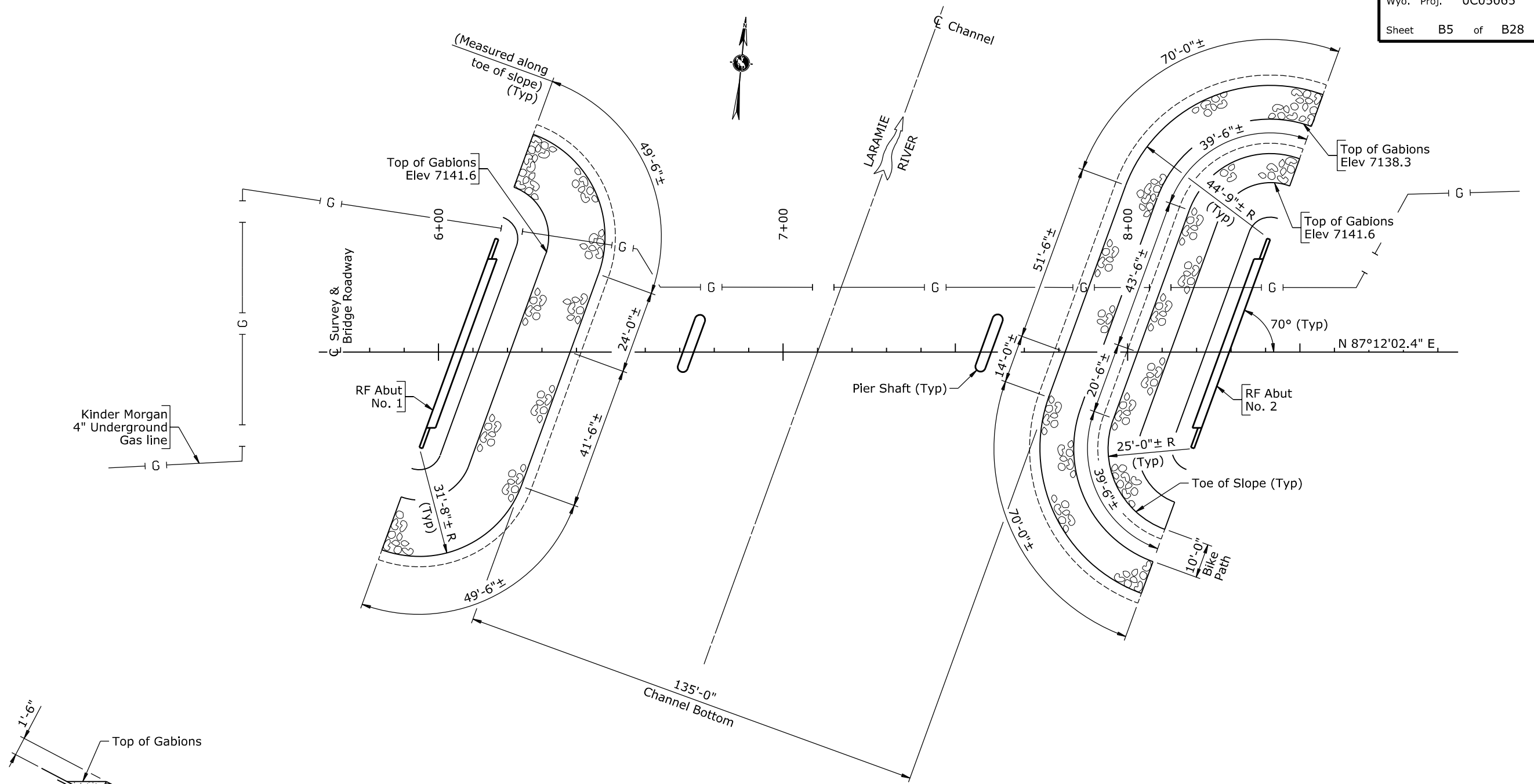
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Section 4.06 - Geology

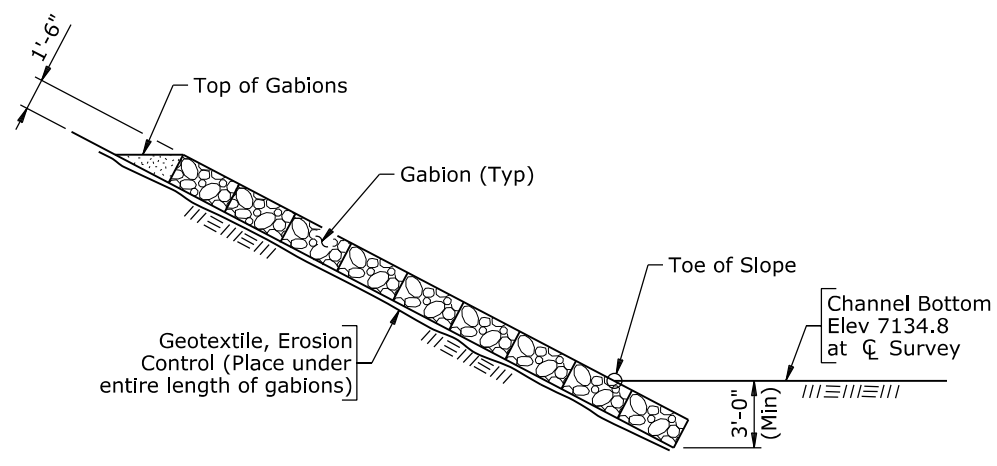
Nov 2018

4.05 - Example

Wyo. Proj. 0C05065
 Sheet B5 of B28 Sheets



PLAN



TYPICAL SECTION

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

Section 4.05 - Riprap and Gabions

SUMMARY OF LABORATORY TEST DATA

TEST NO.	LOCATION (station)	ELEVATION	BLOWS Per Ft.	SIEVE ANALYSIS - % PASSING			LIQUID LIMIT	PLASTIC INDEX	DENSITY NET PCF	MOIST. % DRY WT.	SPECIFIC GRAVITY	SHEAR STRENGTH - PEAK - ID./ft. ²	UNIFIED & AASHTO CLASSIFICATION	UNIT COHESION ID./ft. ²	φ MAXIMUM	% SATURATION	REMARKS
				#10	#40	#200											
G1	7+85.4, 28.9' Rt.	7129.2 - 7128.3	100/11"														Sandstone
G2	7+85.4, 28.9' Rt.	7124.2 - 7123.7	100/6"														Sandstone
G3	7+38.0, 33.4' Rt.	7133.1 - 7132.1	7	99	89	39	33	5			20.5		SM, A-4(0)				
G4	7+38.0, 33.4' Rt.	7123.1 - 7122.8	100/4"														Sandstone
G5	8+63.1, 32.4' Lt.	7135.2 - 7134.2	10	56	16	2	NV	NP			9.8		SW, A-1-b(0)				
G6	8+63.1, 32.4' Lt.	7125.2 - 7124.6	100/7"														Sandstone
G7	5+96.9, 23.5' Rt.	7132.4 - 7131.4	15	39	15	4	NV	NP			7.5		SW, A-1-a(0)				
G8	5+96.9, 23.5' Rt.	7127.4 - 7126.4	50	100	100	35	NV	NP	135.5	11.8			SM, A-4(0)				Sandstone
G9	5+96.9, 23.5' Rt.	7117.4 - 7117.1	100/4"														

Borings shown made with:

Auger Rig 4001 Air Not Encountered
 Rotary Rig circulation medium Water As Shown, measured - Date (s) 3/18-3/19, 2002
 Mud

UNIFIED SOIL CLASSIFICATION

GW - Well graded gravel
 GP - Poorly graded gravel
 GM - Silty sandy gravel
 GC - Clayey gravel

SAND

SW - Well graded sand
 SP - Poorly graded sand
 SM - Silty sand
 SC - Clayey sand

SILT & CLAY

ML - Inorganic silt, slight plasticity
 CL - Inorganic clay, medium plasticity
 OL - Organic silt and silty clay, low plasticity

SILT & CLAY L.L. greater than 50% highly Organic soils

MH - Inorganic elastic silt
 CH - Inorganic clay, high plasticity
 OH - Organic clay, medium to high plasticity
 PT - Peat and other highly organic soils

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.

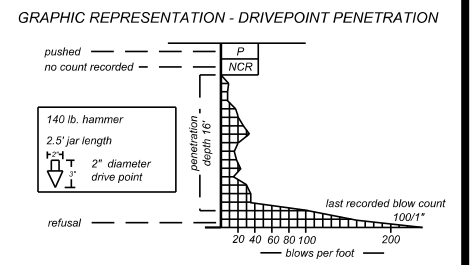
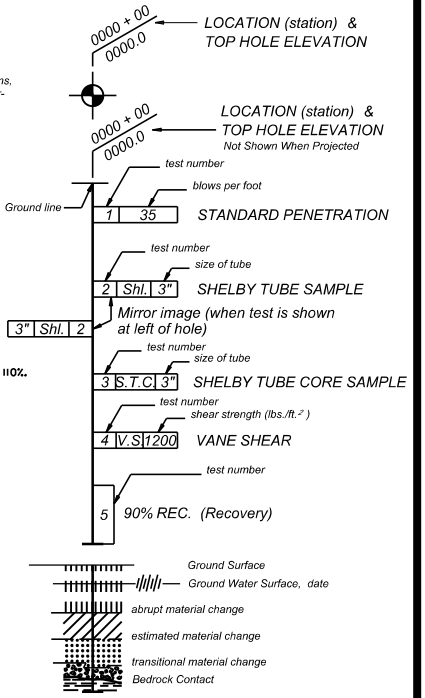
Data contained on this sheet is based on information from the Geology Program of the Wyoming Transportation Department and is beyond the scope of responsibility of other entities approving or sealing these plans.

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

CONSISTENCY	BLOWS PER FT.	CONSISTENCY	BLOWS PER FT.
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 - 15
Very Dense	>51	Very Stiff	16 - 30
		Hard	31 - 60
		Very Hard	>61

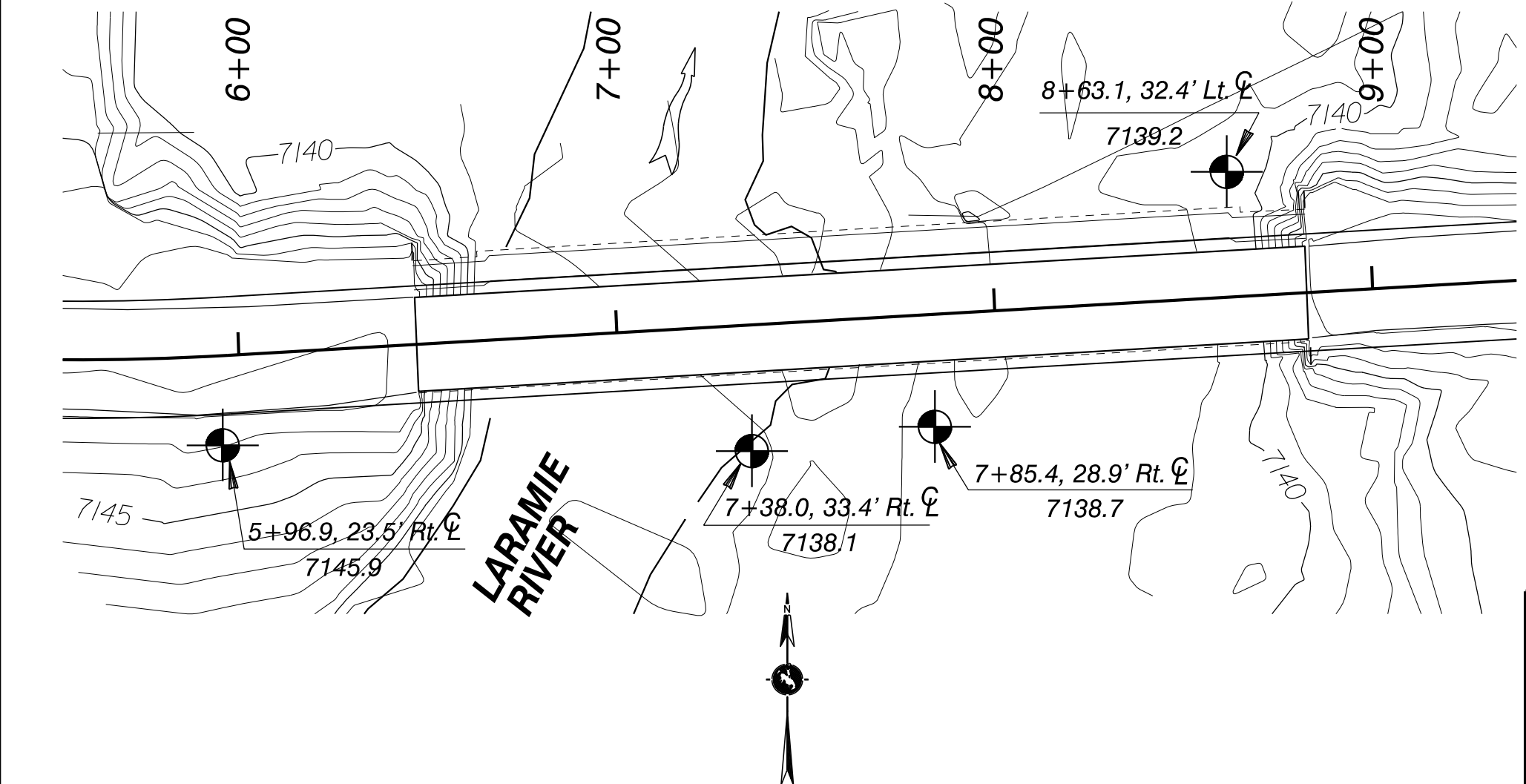
NOTES: 1) CME automatic SPT hammer used for soil testing--efficiency rating 110%.
 2) Test holes projected to center line, of actual elevations and some stations as drilled.

Wyo. Proj. 0C05065
 Sheet B6 of B28 Sheets



LEGEND OF EARTH MATERIALS

soils	bedrock
LOESS	LIMESTONE
CLAY	SHALE
SILT	CLAYSTONE
SAND	SILTSTONE
GRAVEL	COAL & LIGNITE
fill	SANDSTONE
	CONGLOMERATE
	all Igneous and Metamorphic rocks



WYOMING DEPARTMENT OF TRANSPORTATION
 BRIDGE PROGRAM

LOG BORING SHEET

BRIDGE OVER LARAMIE RIVER

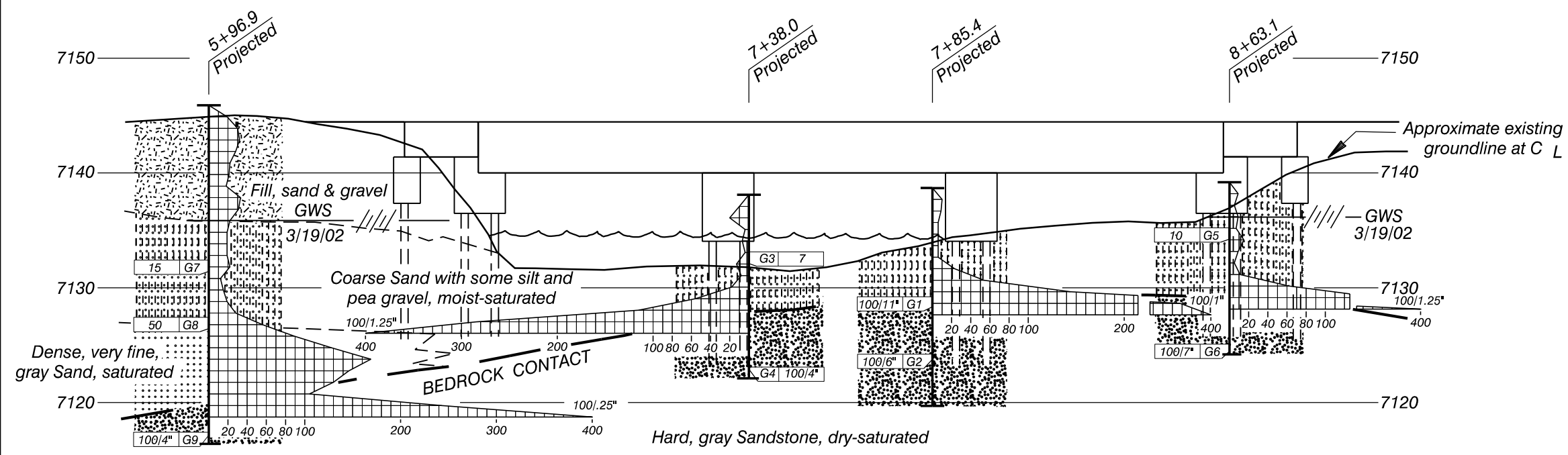
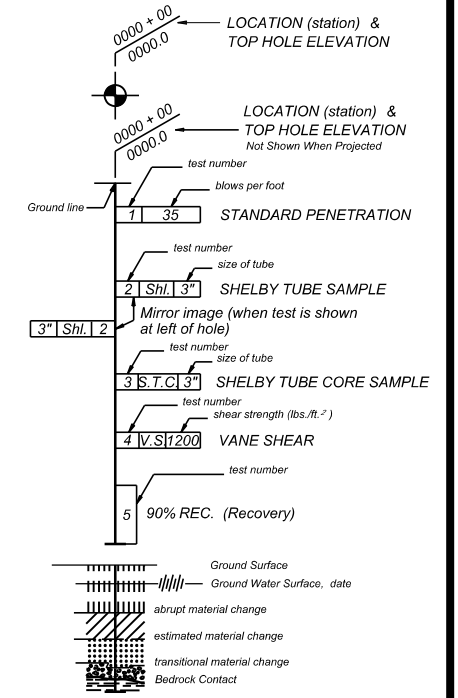
STA 7+10

Garfield Street in Laramie

0C05065 AI

GEOLOGIST: R. SIETMANN, A63D, RDK
 Design Section: Q R Stuv
 Drwg No. 0002 Sheet 6 of 26

Wyo. Proj. 0C05065
 Sheet B7 of B28 Sheets



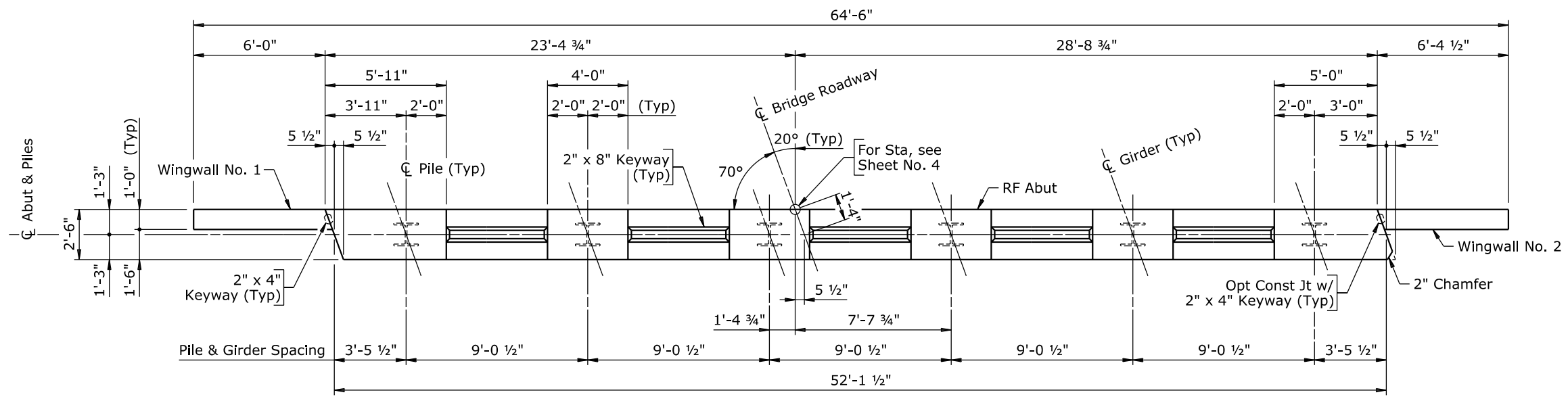
Cross Section Horizontal Scale = 30, Vertical Scale = 10

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
LOG BORING SHEET			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065		AI	
GEOLOGIST R. SIETMANN A63D RDK		Design Section Q R Stuv	
APPROVAL _____		Drwg No. 0002	Sheet 7 of 26

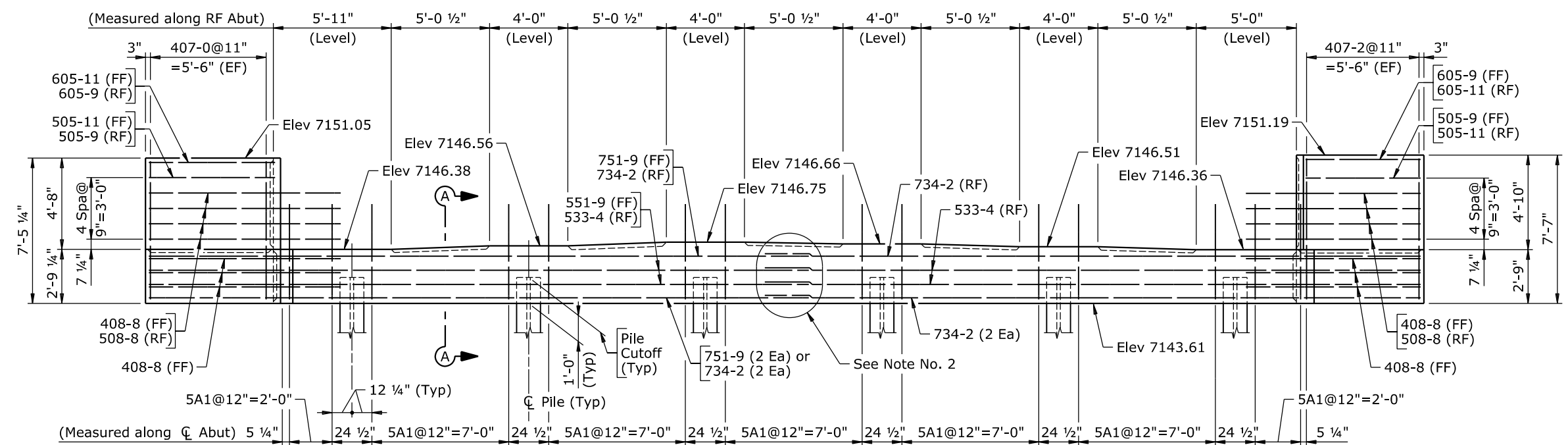
Nov 2018

4.07 - Example

Wyo. Proj. 0C05065
Sheet B8 of B28 Sheets



PLAN



ELEVATION
(Looking back station)

- Note: 1) Place 5A1 bars parallel with \bar{C} Girders.
 2) Lap required for 533-4 and 734-2 bars only.
 3) For pile cutoff elevations, see Sheet No. 4.
 4) For Section A-A, see Sheet No. 10.

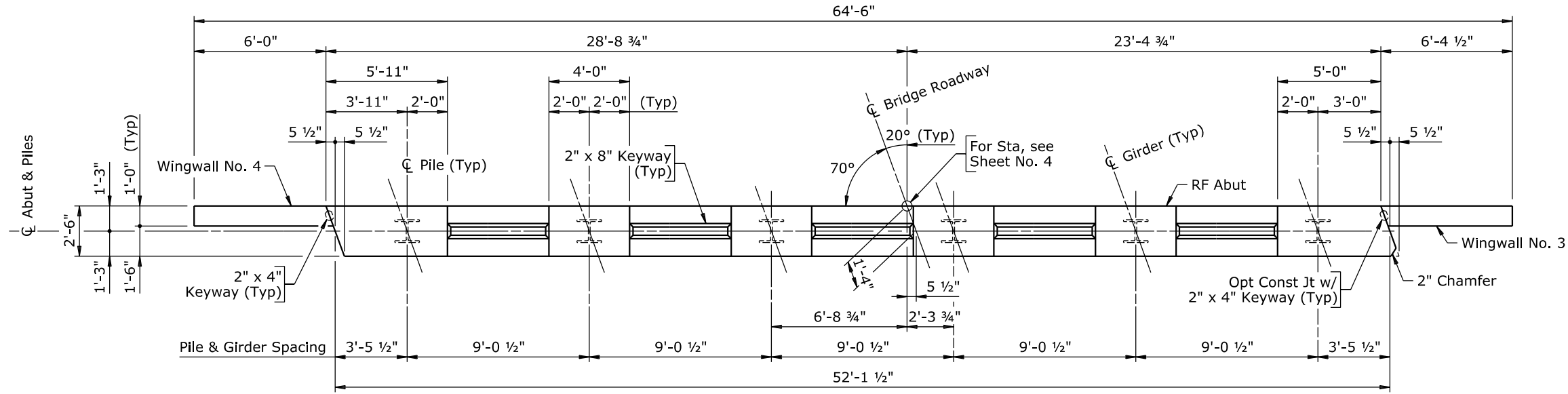
WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
ABUTMENT NO. 1 DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065		AI	
DESIGN	MMM ✓	PPP	Design Section Q R Stuv
DETAIL	LLL ✓	MMM	Drwg No. 0002 Sheet 8 of 26
APPROVAL	JJJ ✓	LLL	

Section 4.07 - Abutments

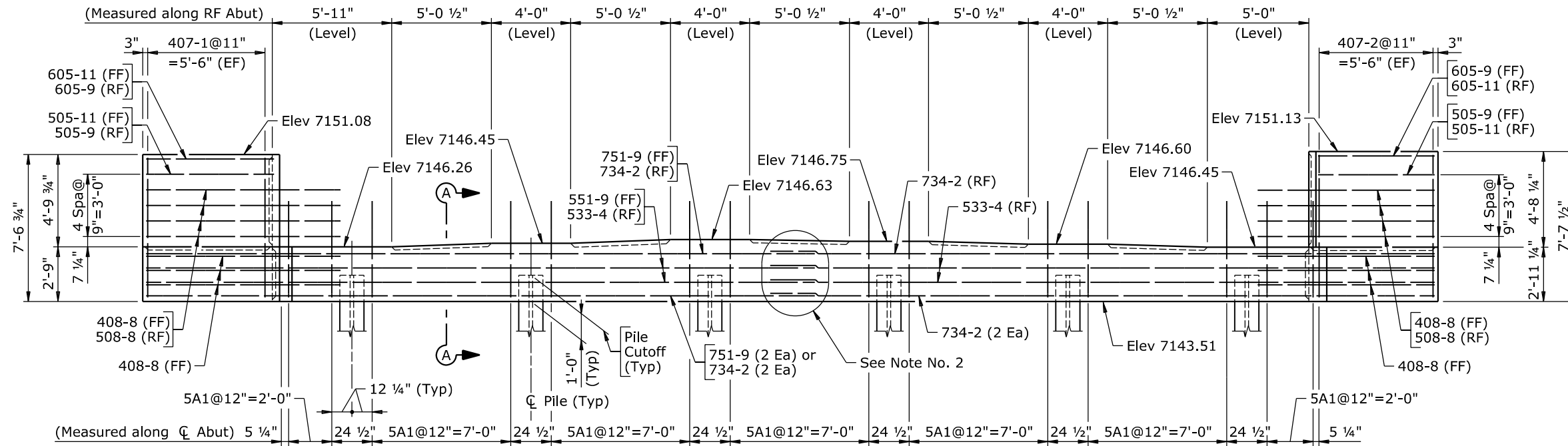
Nov 2019

4.07 - Example

Wyo. Proj. 0C05065
Sheet B9 of B28 Sheets



PLAN

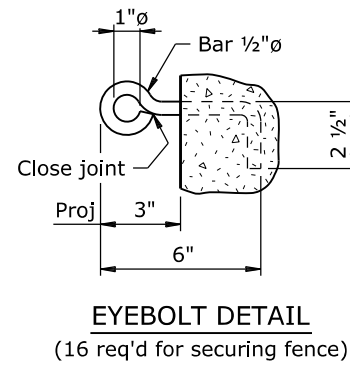
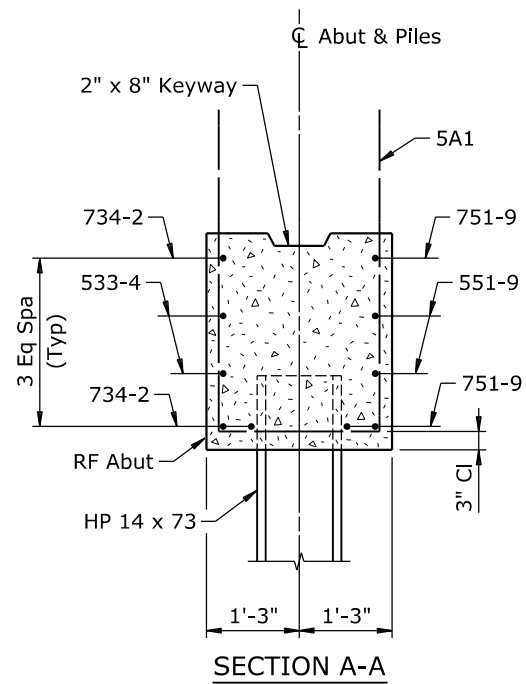


ELEVATION
(Looking ahead station)

- Note:
- 1) Place 5A1 bars parallel with CL Girders.
 - 2) Lap required for 533-4 and 734-2 bars only.
 - 3) For pile cutoff elevations, see Sheet No. 4.
 - 4) For Section A-A, see Sheet No. 10.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
REVISIONS		ABUTMENT NO. 2 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
APPROVAL	JJJ ✓	LLL	Sheet 9 of 26

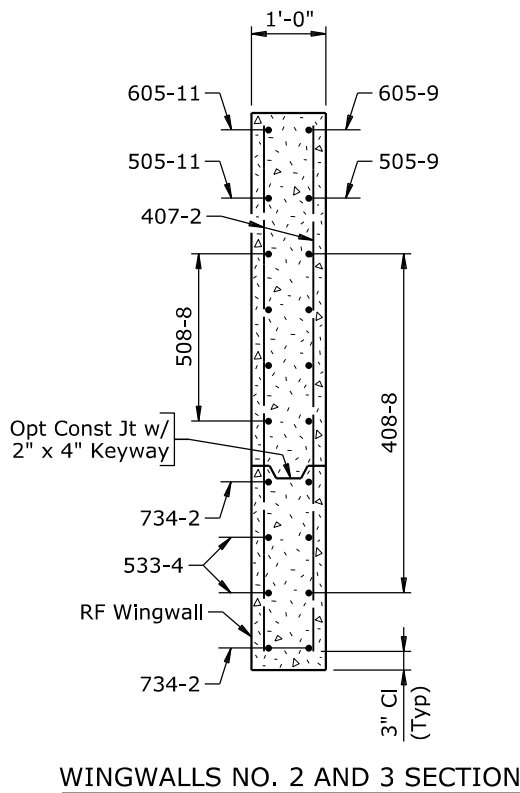
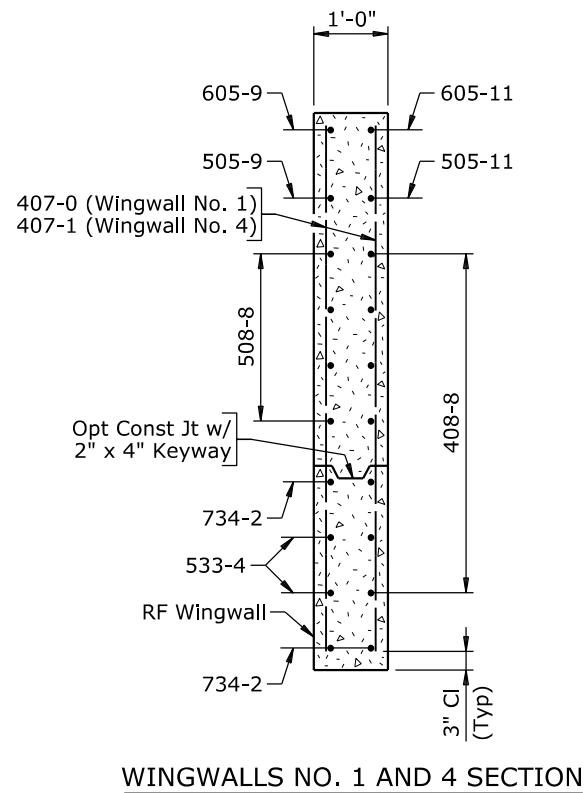
Section 4.07 - Abutments



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

5A1 (Stirrup)
(12'-10")



- 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	MMM ✓ PPP	Design Section Q R Stuv	
DETAIL	LLL ✓ MMM	Drwg No. 0002 Sheet 10 of 26	
APPROVAL	JJJ ✓ LLL	QTY'S	

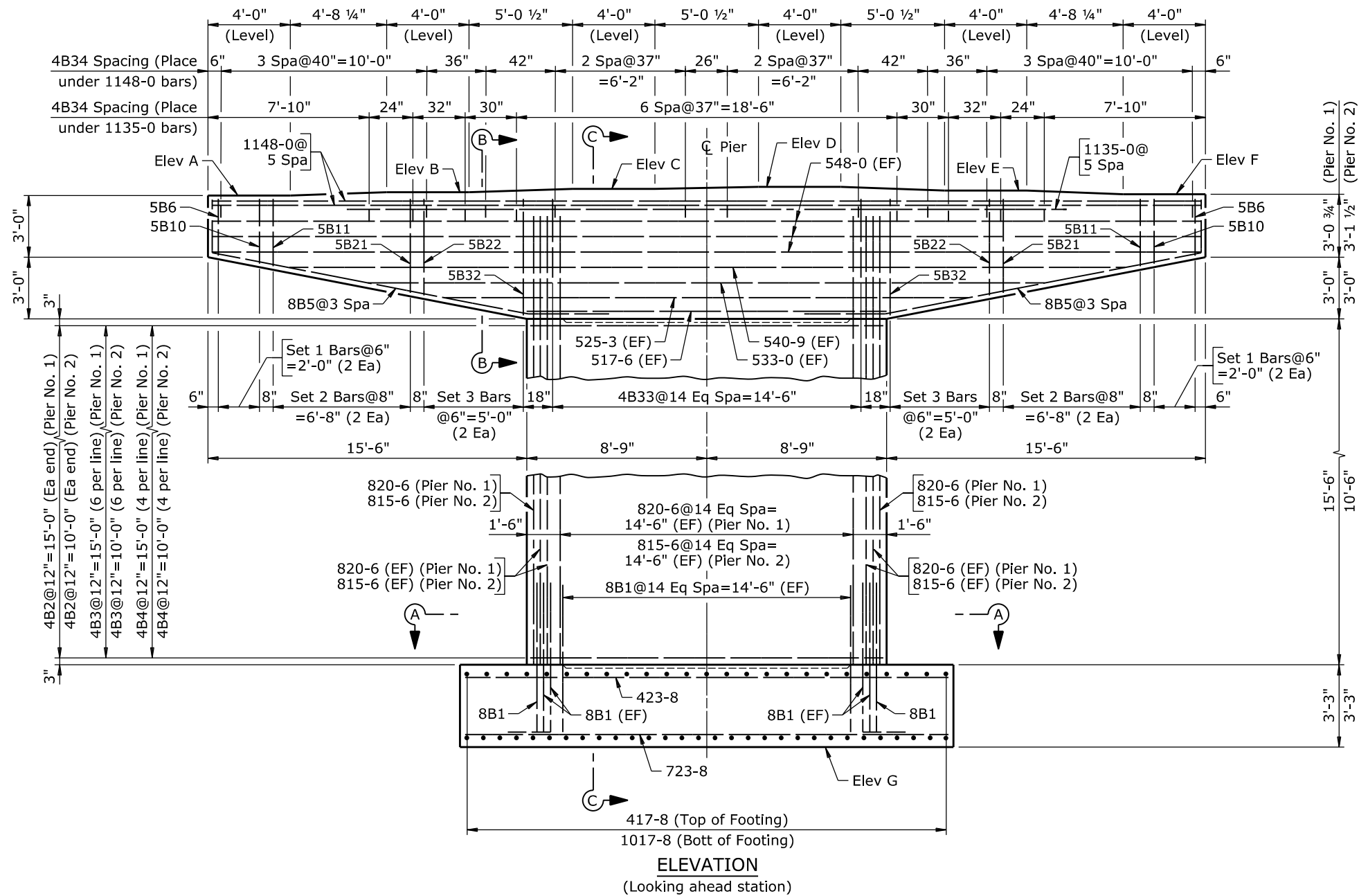
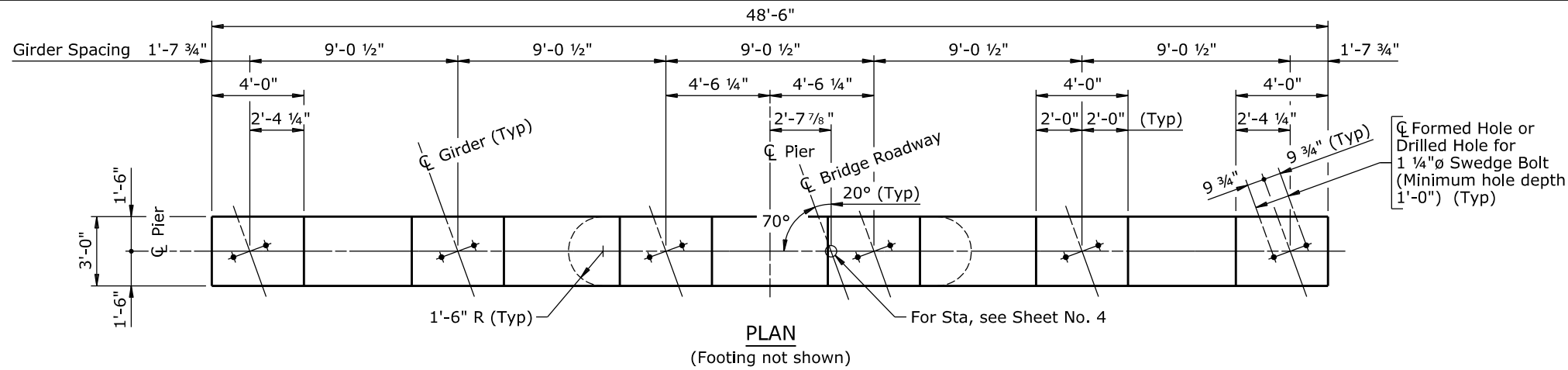
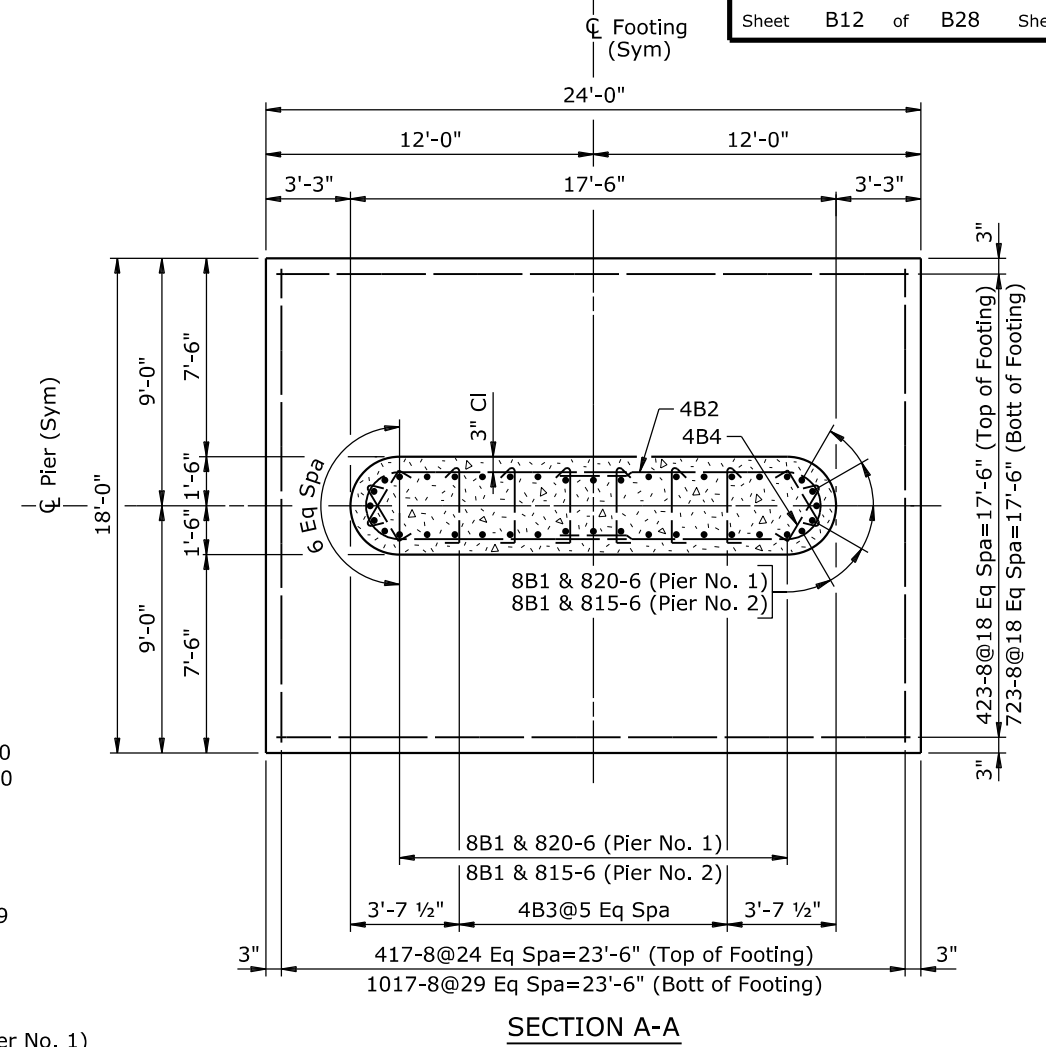
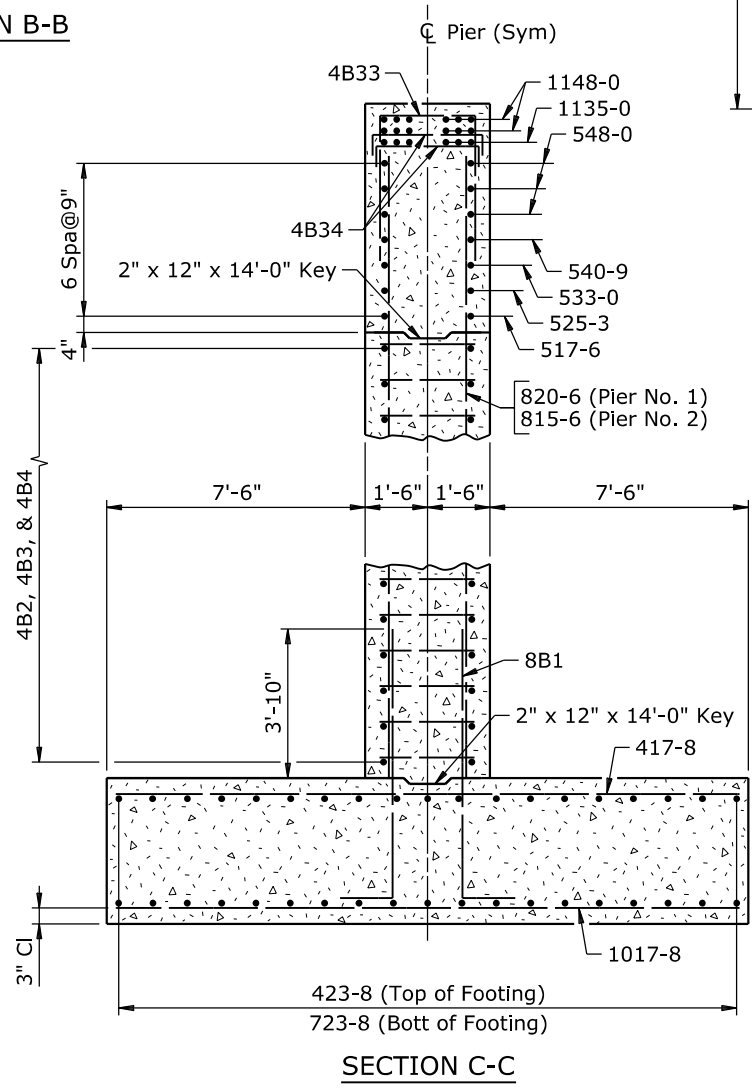
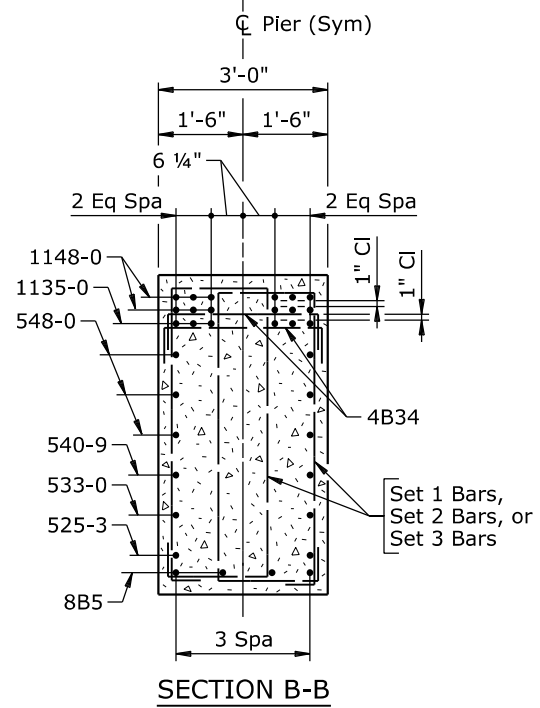
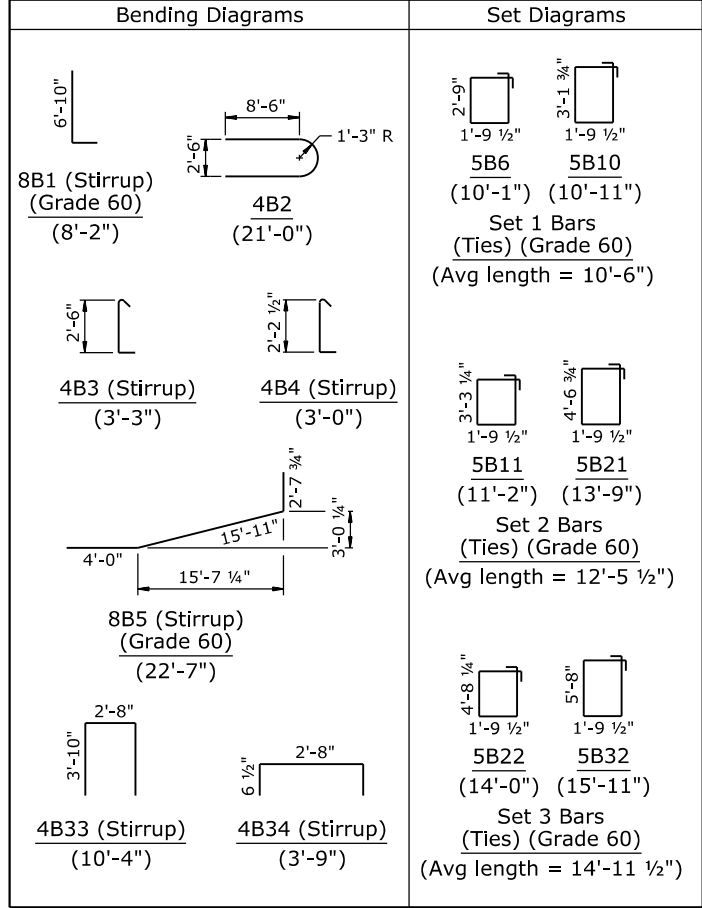


TABLE OF ELEVATIONS		
Elevation	Location	
	Pier No. 1	Pier No. 2
A	7146.28	7146.24
B	7146.44	7146.41
C	7146.60	7146.59
D	7146.70	7146.70
E	7146.52	7146.54
F	7146.34	7146.37
G	7121.53	7126.49

- 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 \bar{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	
DESIGN	MMM ✓ PPP	Design Section Q R Stuv	
DETAIL	LLL ✓ MMM	Drwg No. 0002	Sheet 11 of 26
APPROVAL	QTY'S JJJ ✓ LLL		

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
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



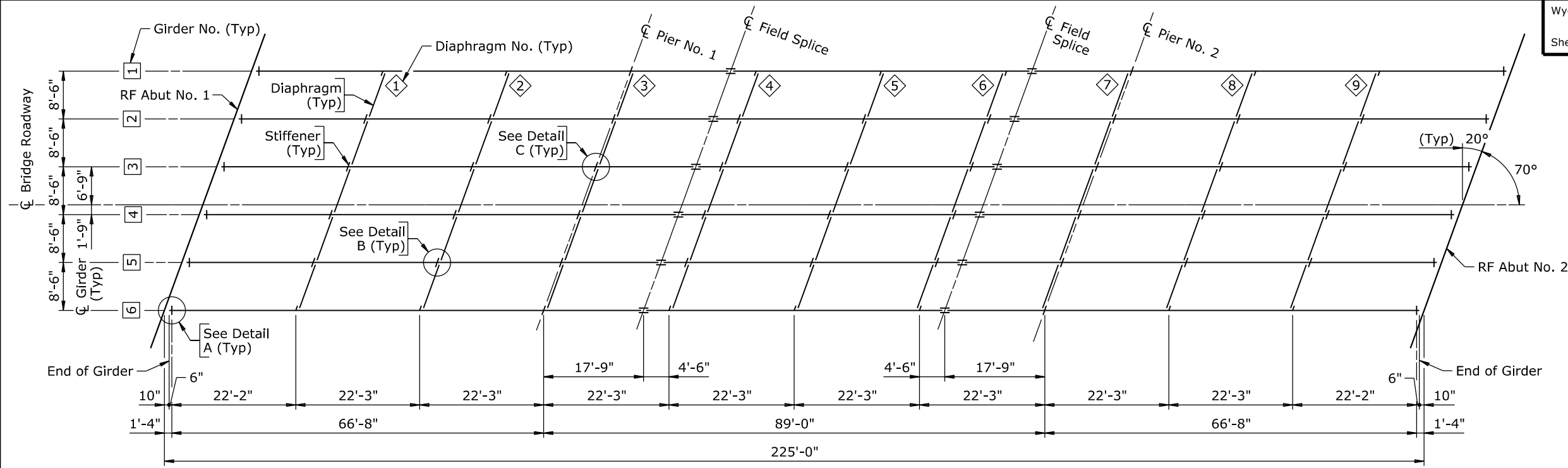
Note: 1) Ensure the reinforcing steel fabricator prefixes pier bar marks with numeral 3 for Pier No. 1 and numeral 4 for Pier No. 2.
2) The estimated quantity of class A concrete is 109.4 CY for Pier No. 1 and 100.2 CY for Pier No. 2.
3) For location of Sections A-A, B-B, and C-C, see Sheet No. 11.

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

Nov 2019

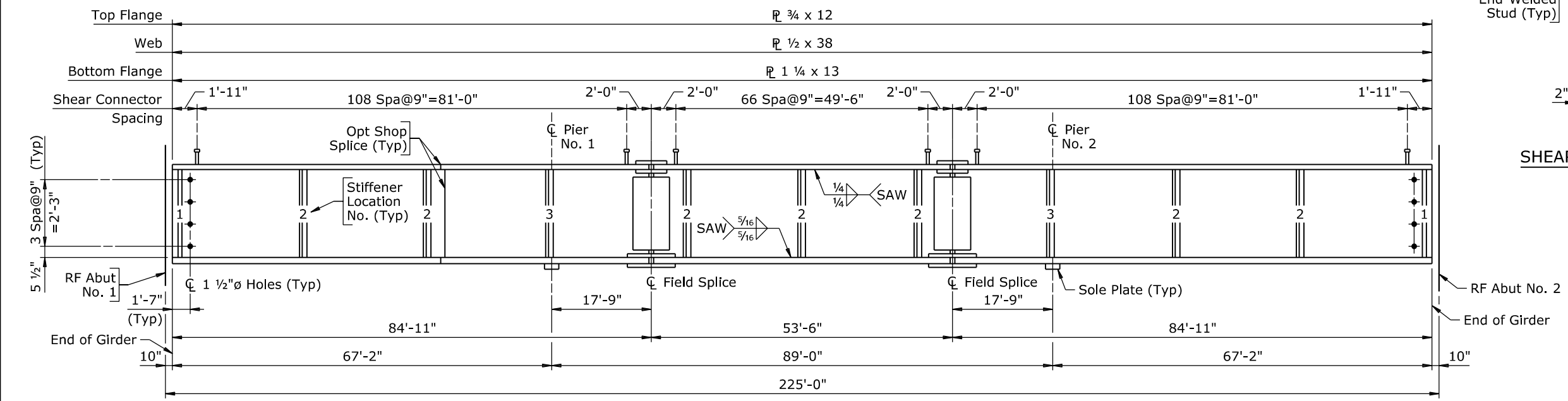
4.09 - Example

Wyo. Proj. 0C05065
 Sheet B13 of B28 Sheets



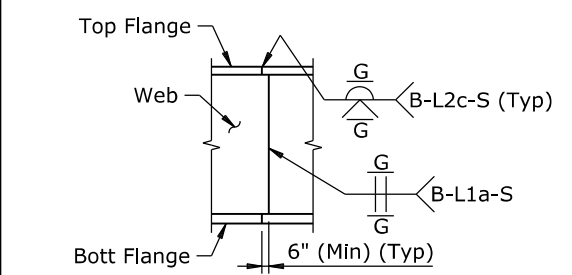
FRAMING PLAN

(Longitudinal dimensions are along bottom of bottom flange and are typical each girder)

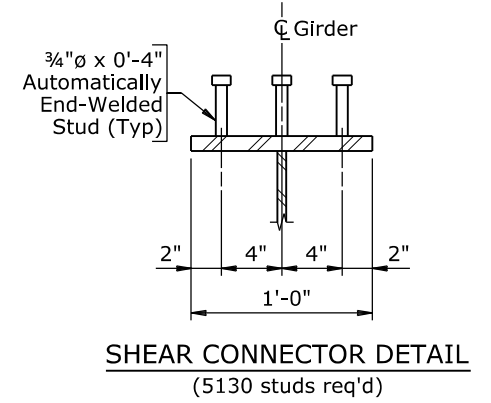


GIRDER ELEVATION

(Longitudinal dimensions are parallel with finished grade)



OPTIONAL SHOP SPLICE DETAIL

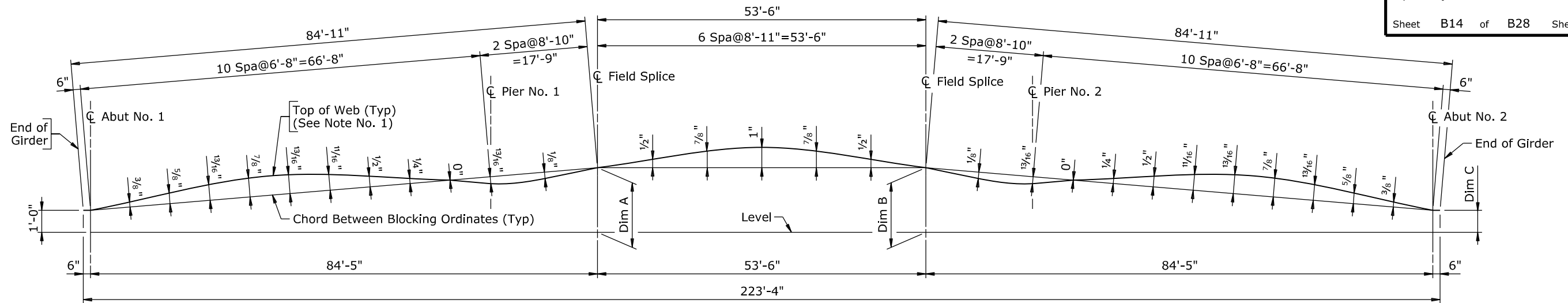


SHEAR CONNECTOR DETAIL
(5130 studs req'd)

- Note:**
- 1) If optional shop splice is used, ensure flange and web splice welds are inspected by ultrasonic testing after being ground flush.
 - 2) Shear connectors are intended to be field installed in accordance with Supplementary Specification SS-500F, Automatically End-Welded Studs. If shear connectors are shop applied, ensure compliance with OSHA Regulations.
 - 3) For Detail A, Detail B, and Detail C, see Sheet No. 14.

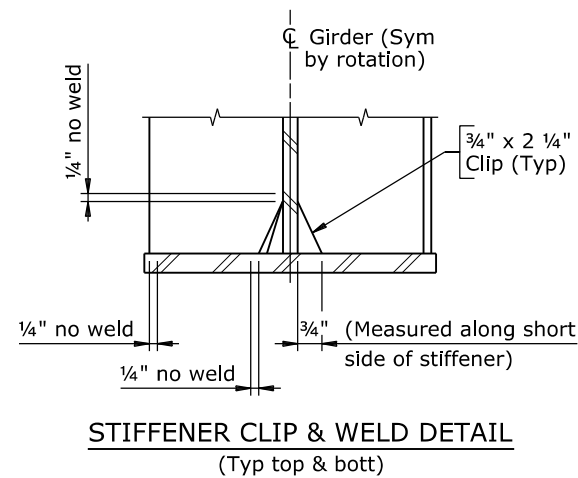
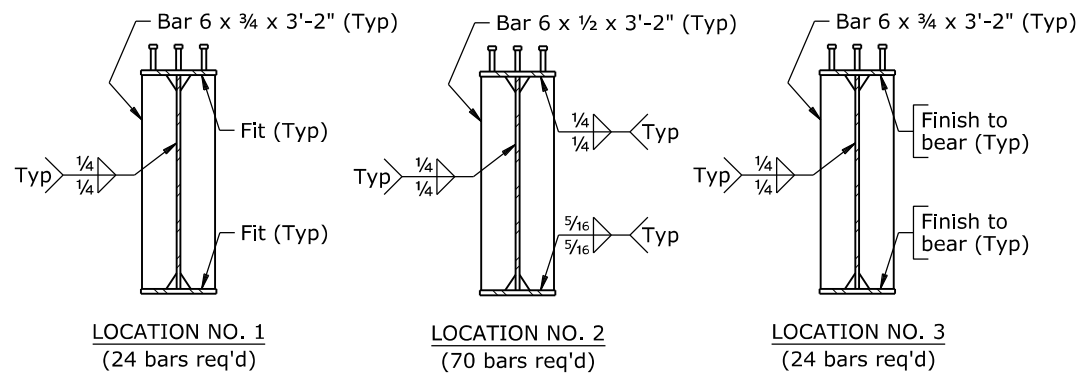
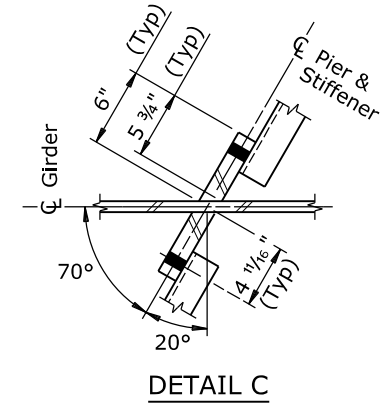
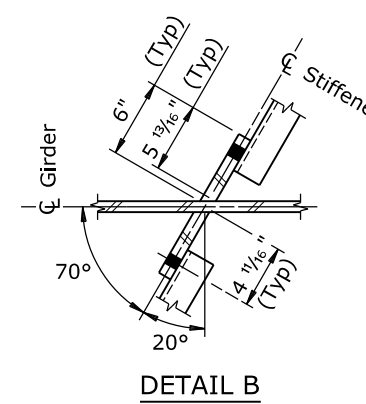
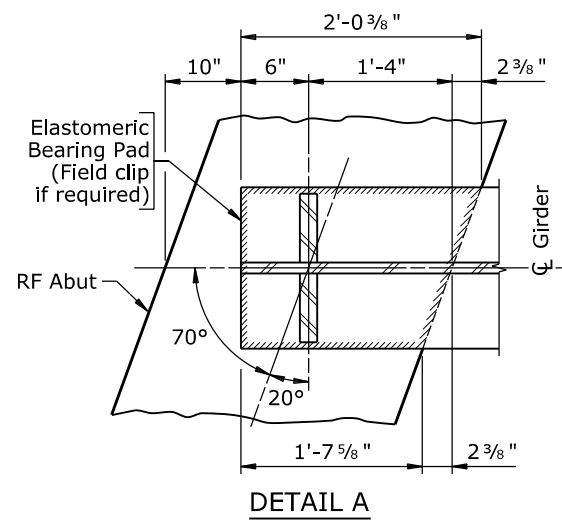
WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
SUPERSTRUCTURE DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065		AI	
DESIGN: MMM ✓ PPP	Design Section	Q R Stuv	
DETAIL: LLL ✓ MMM	Drwg No. 0002	Sheet 13 of 26	
APPROVAL: JJJ ✓ LLL	QTY'S		

Section 4.09 - Superstructure



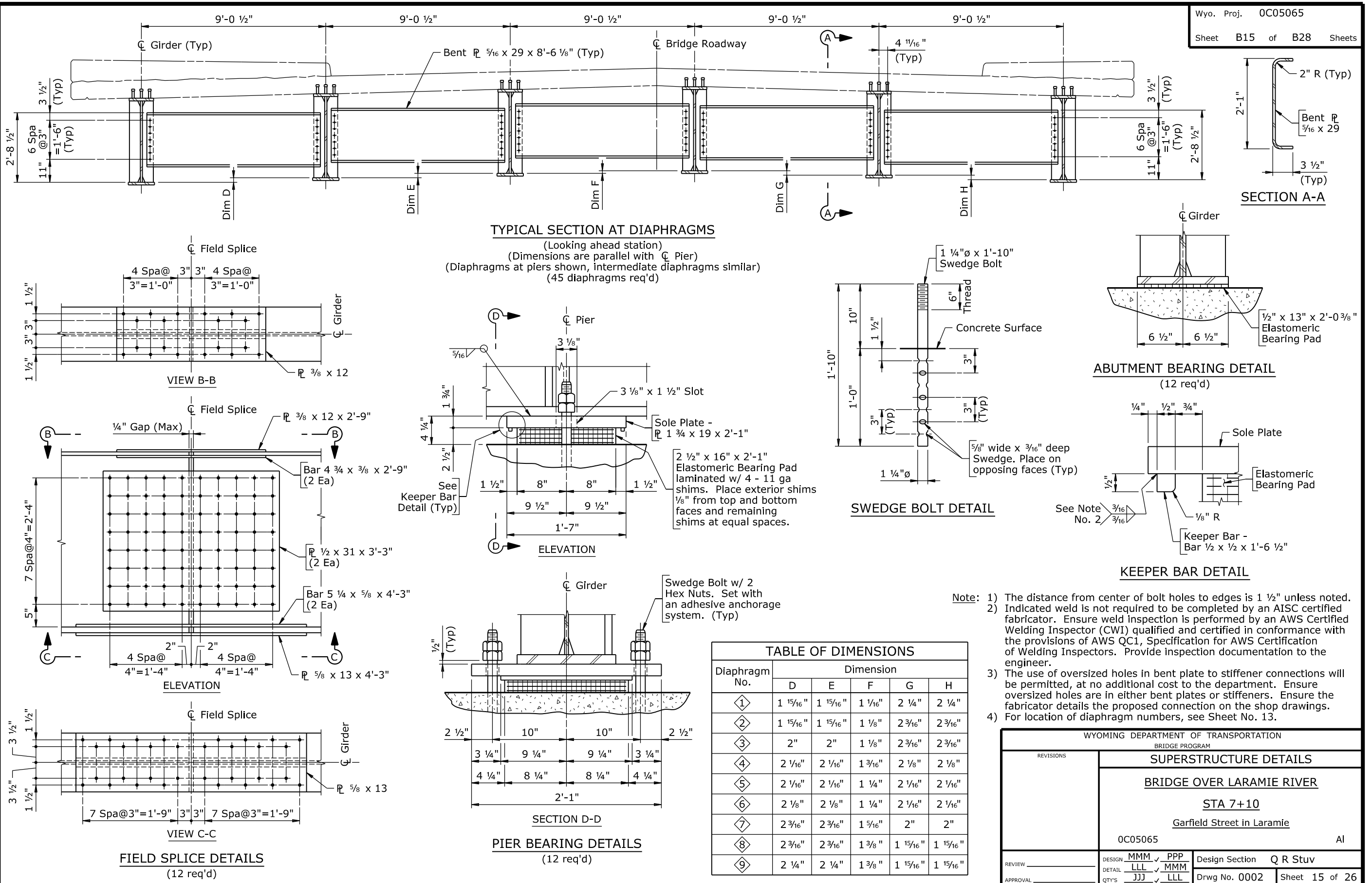
WEB CUTTING DIAGRAM
(Includes dead load deflection and grade)

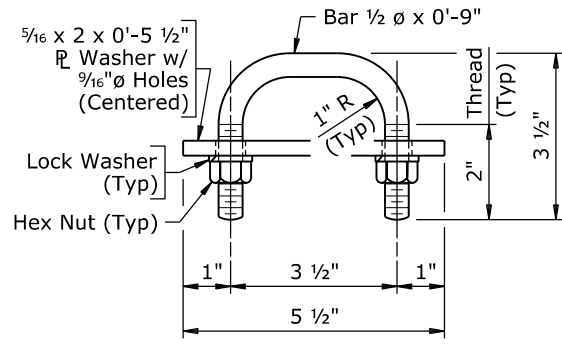
Girder No.	Dimension		
	A	B	C
1	1'-3 3/4"	1'-3 7/16"	10 19/16"
2	1'-3 7/8"	1'-3 11/16"	11 1/4"
3	1'-4 1/16"	1'-4"	11 11/16"
4	1'-4 3/16"	1'-4 1/4"	1'-0 1/16"
5	1'-4 3/8"	1'-4 1/2"	1'-0 1/2"
6	1'-4 1/2"	1'-4 3/4"	1'-0 15/16"



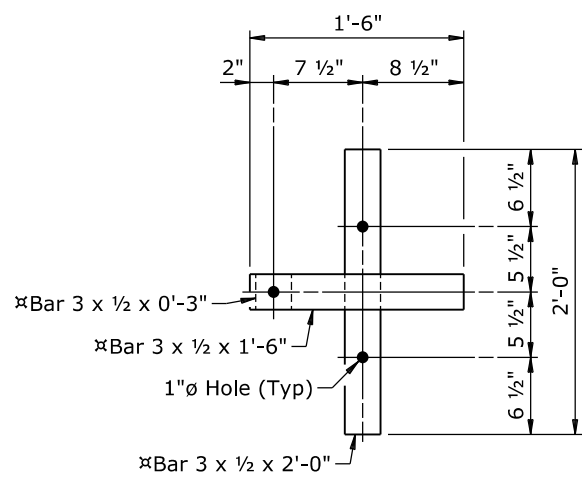
Note: 1) Top and bottom of web plates are parallel.
2) For locations of Detail A, Detail B, Detail C, girder numbers, and stiffener locations, see Sheet No. 13.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
SUPERSTRUCTURE 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 14 of 26	
APPROVAL	QTY'S JJJ ✓ LLL		



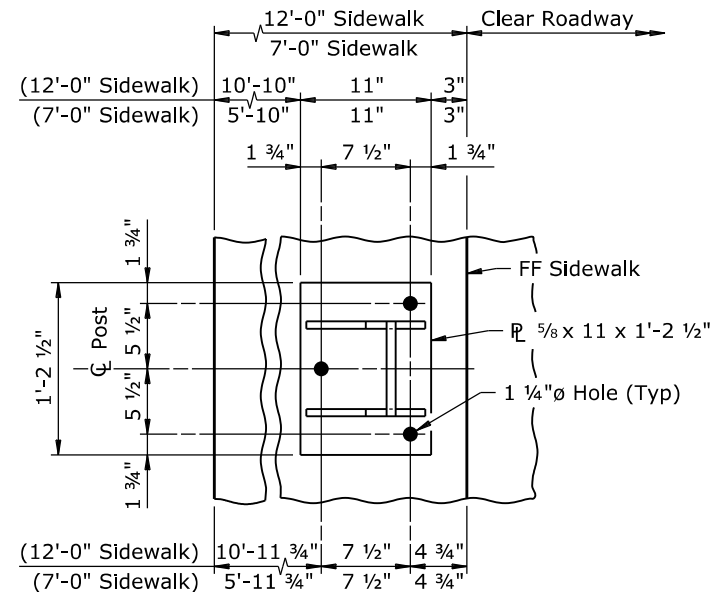


RAIL BOLT DETAIL



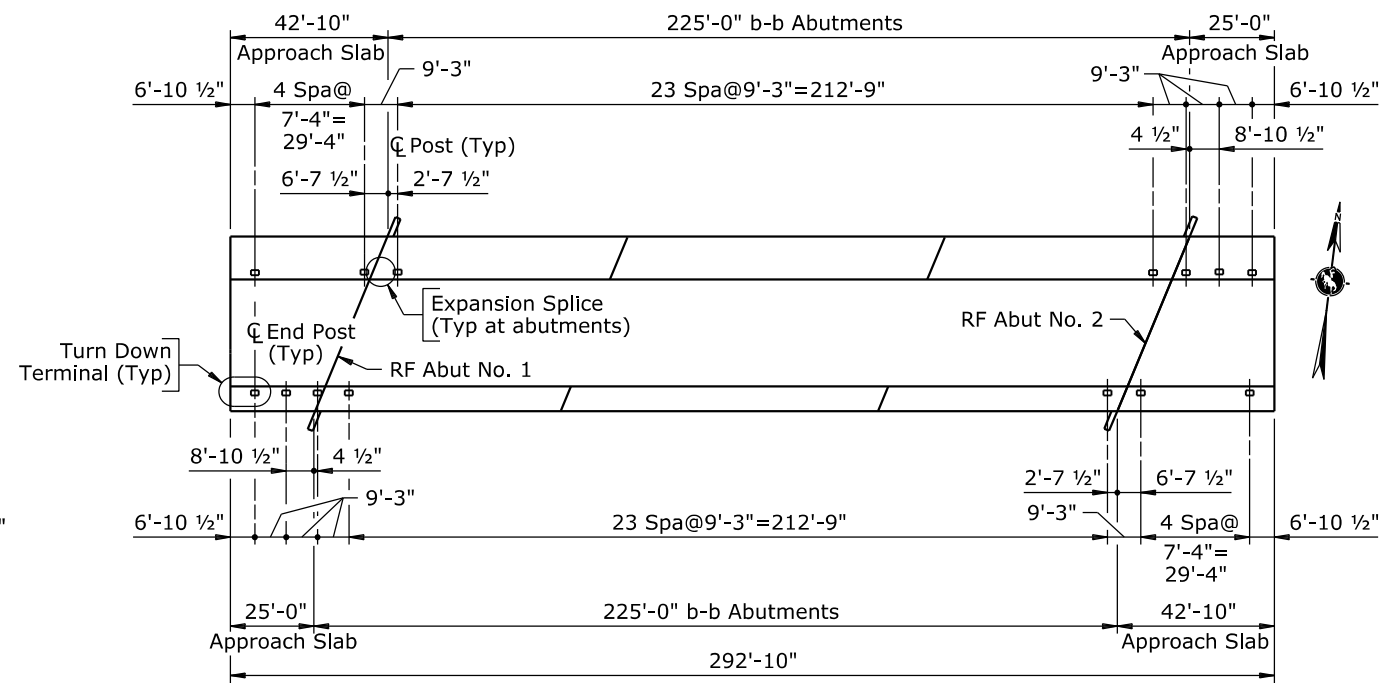
SECTION B-B

(Not galvanized)
(Anchor bolts and slab not shown)



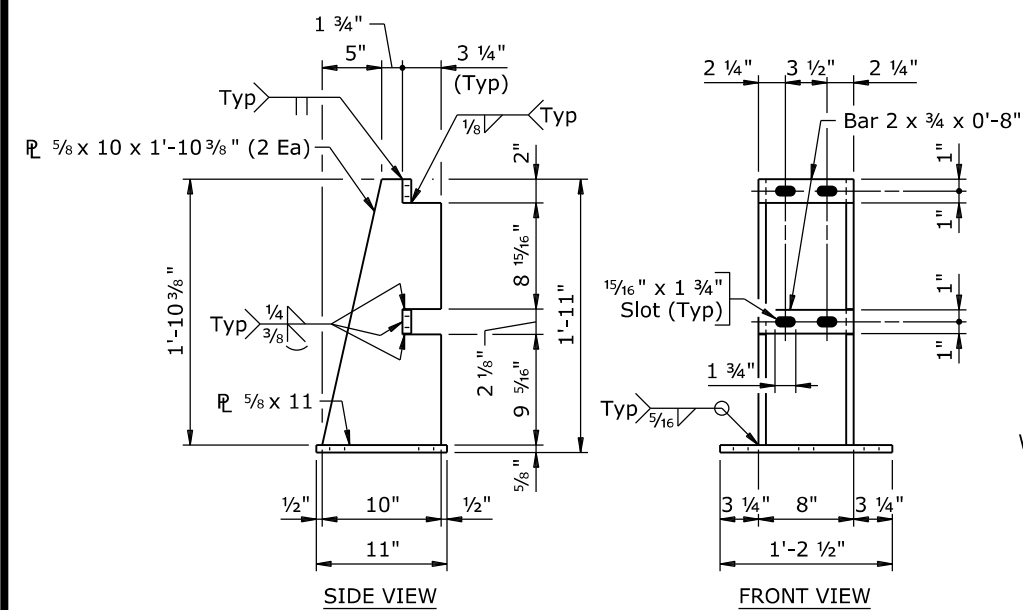
VIEW A-A

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



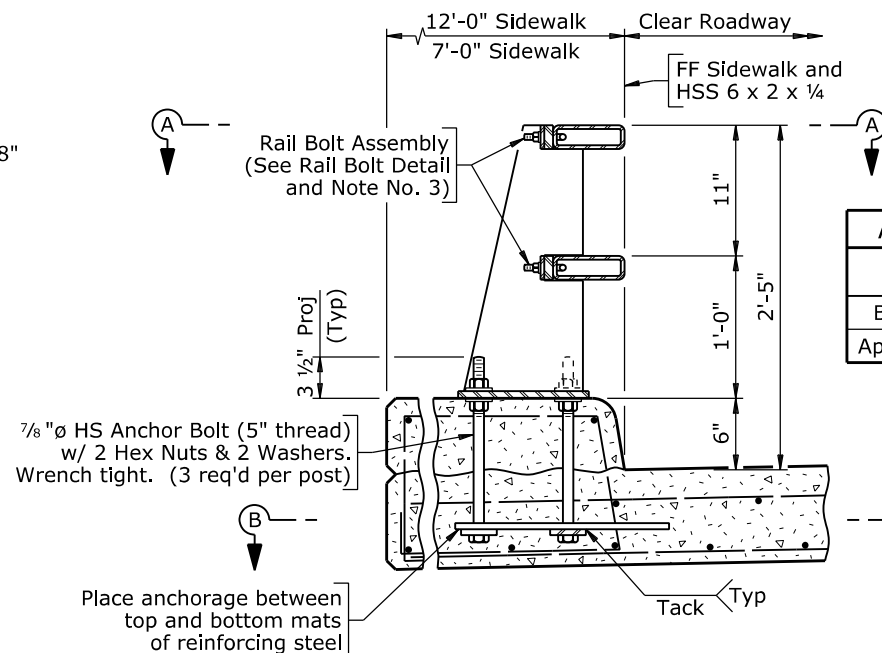
PLAN

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



POST DETAILS

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



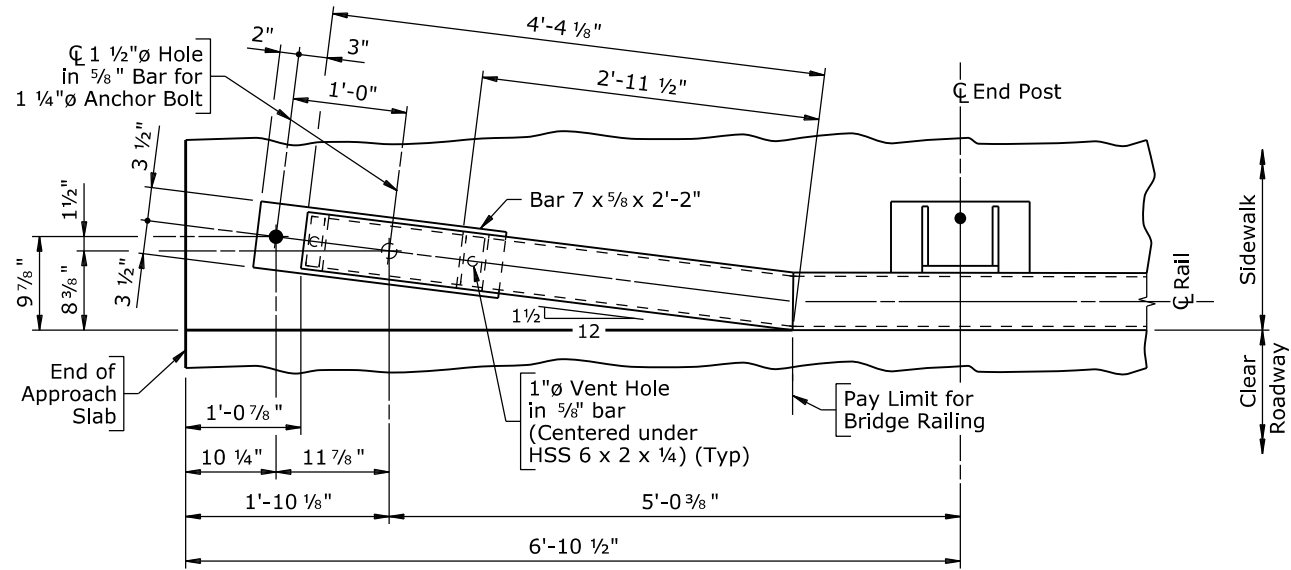
ASSEMBLY DETAIL

(Shown near ϕ Post)
(Bridge slab shown, approach slab similar)

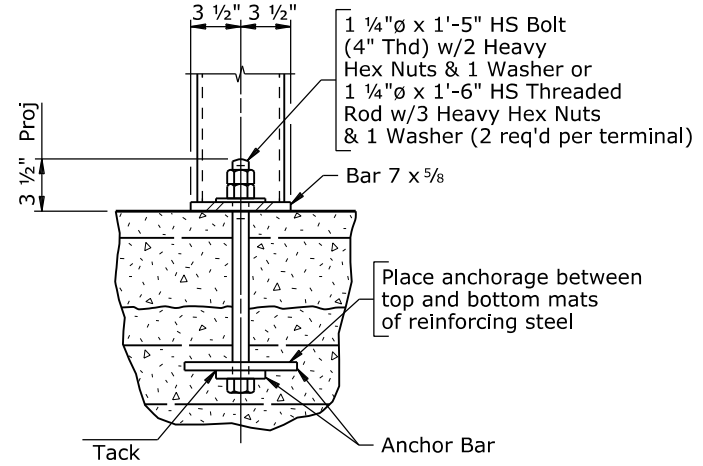
ANCHOR BOLT TABLE	
Location	Anchor Bolt
Bridge Slab	7/8" ϕ x 1'-3"
Approach Slab	7/8" ϕ x 1'-5"

- 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 1/16 inch diameter 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.

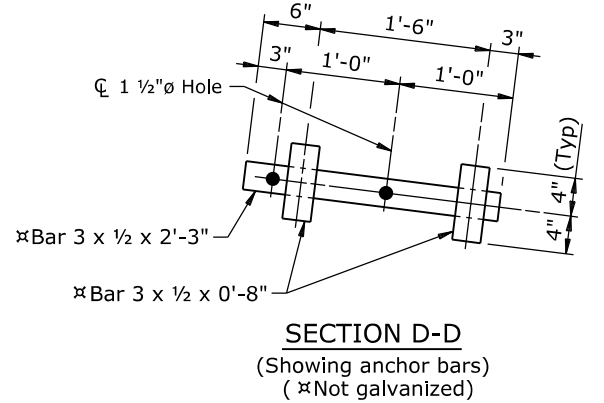
WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
BRIDGE RAILING DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065		AI	
DESIGN	JJJ	Design Section	Q R Stuv
DETAIL	JJJ HHH	Drwg No. 0002	Sheet 16 of 26
APPROVAL	JJJ LLL		



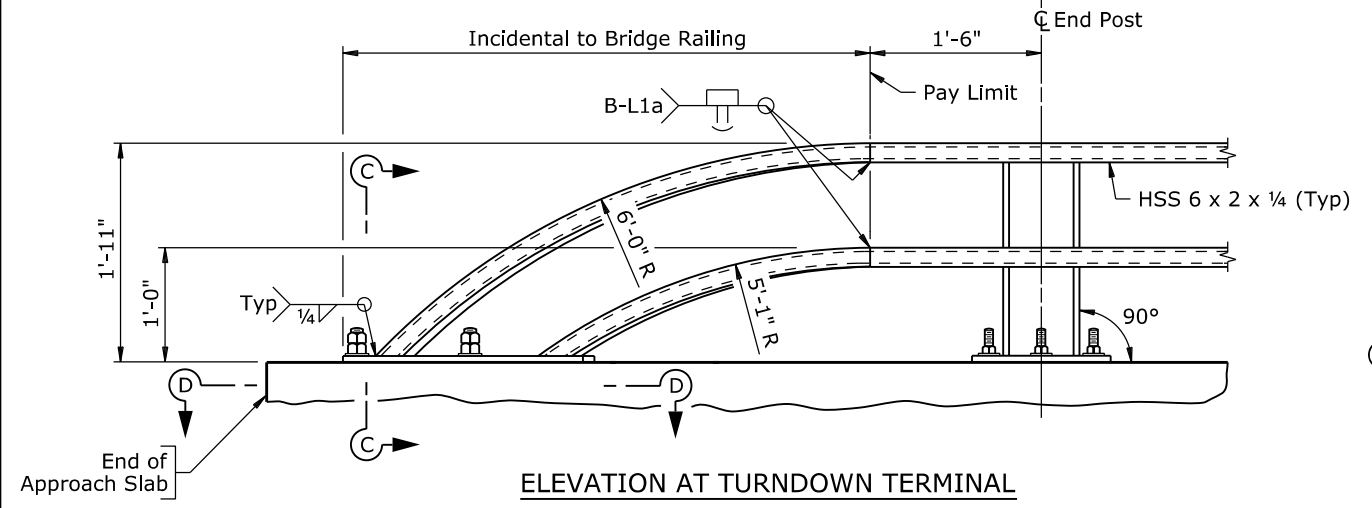
PLAN AT TURNDOWN TERMINAL
(Bolts not shown)



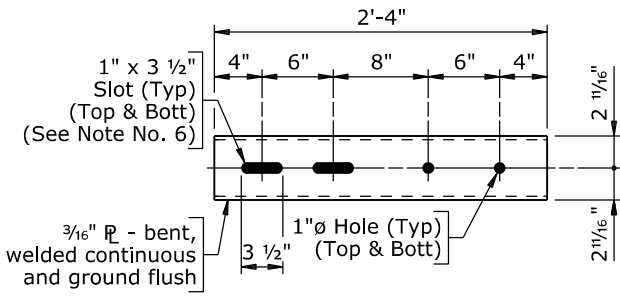
SECTION C-C



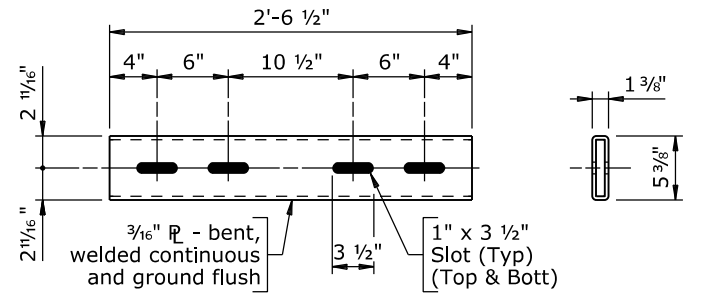
SECTION D-D
(Showing anchor bars)
(Not galvanized)



ELEVATION AT TURNDOWN TERMINAL



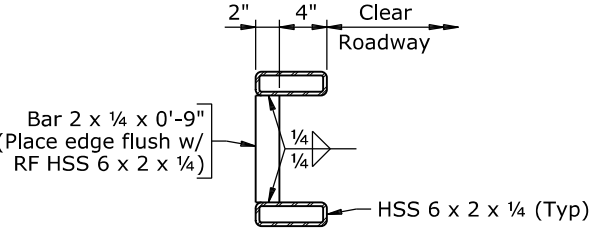
STANDARD SLEEVE



EXPANSION SLEEVE

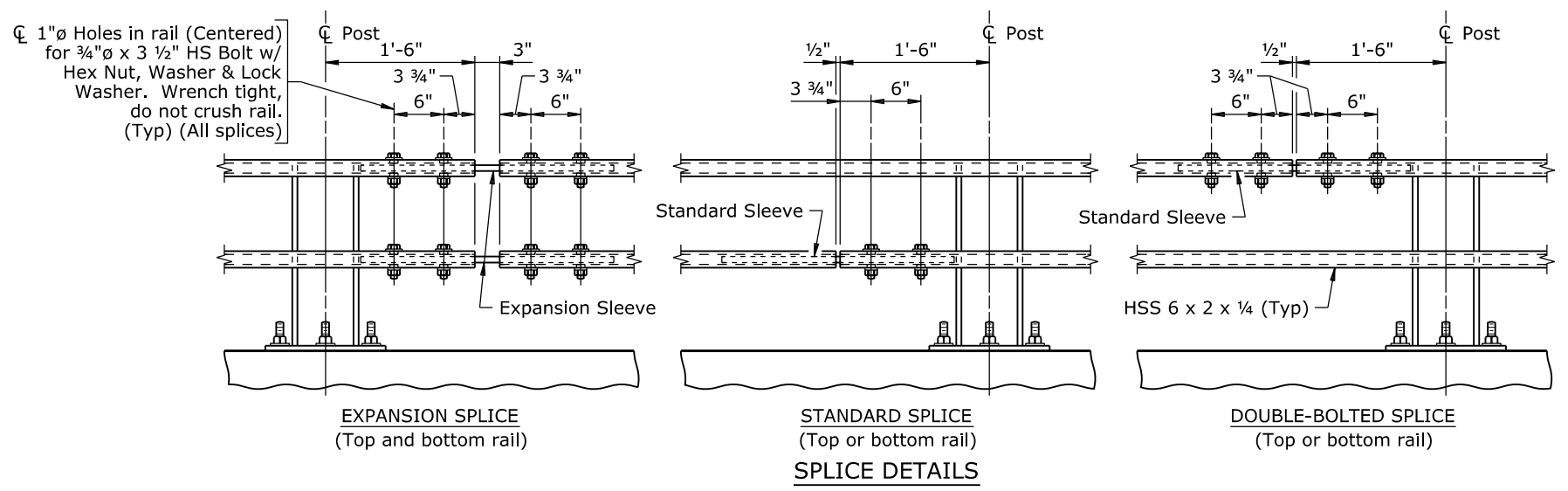
END VIEW

SLEEVE DETAILS



BRACE BAR DETAIL
(See Note No. 8)

- Note:**
- 1) Either top or bottom rail in terminal section may be the longer rail.
 - 2) Ensure each rail length is continuous over a minimum of two posts. Railing that is part of a turndown terminal is continuous if either the top or bottom rail in the terminal is continuous over a minimum of two posts.
 - 3) In rehabilitation work, ensure railing that cannot feasibly be made continuous over a minimum of two posts has a double-bolted splice.
 - 4) Splices may be located on either side of post.
 - 5) Not more than one splice is permitted per side of post, except at expansion splices.
 - 6) Slots may be omitted in standard sleeves where bolts are required on one side of splice only.
 - 7) Do not shop splice rails.
 - 8) Ensure a brace bar is placed 2'-0" from the splice end of the shorter tube at turndown terminals.

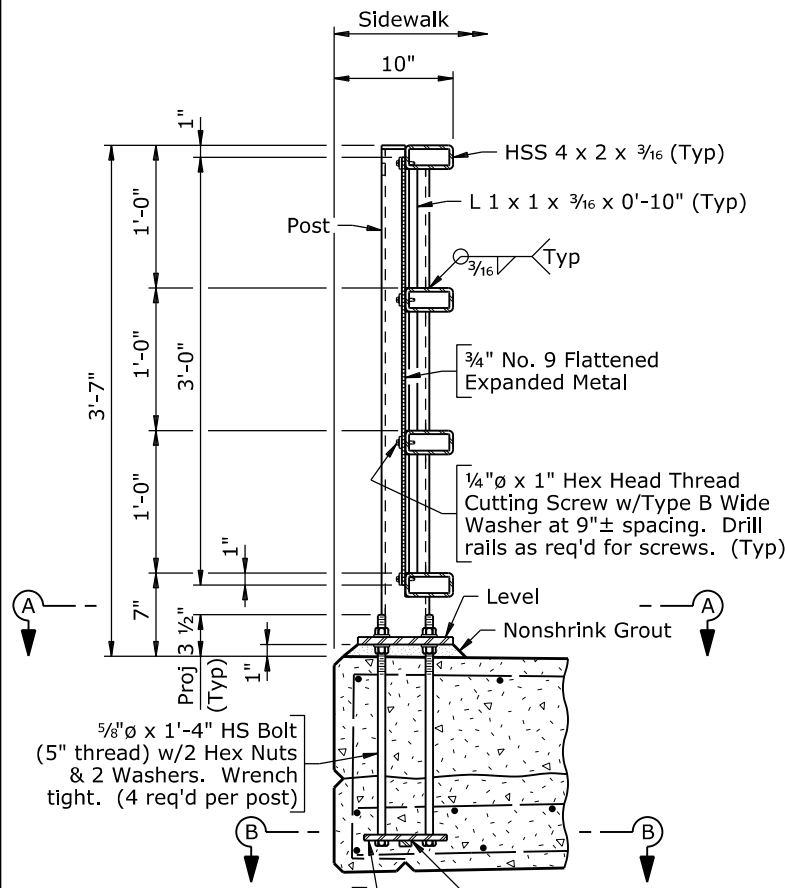


SPLICE DETAILS

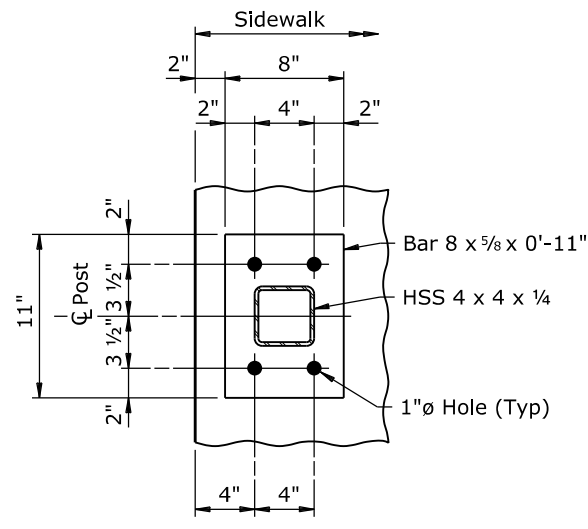
WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
BRIDGE RAILING DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065		AI	
REVISIONS	DESIGN	Design Section Q R Stuv	
	DETAIL	JJJ	HHH
	QTY'S	JJJ	LLL
APPROVAL	Drwg No. 0002	Sheet 17 of 26	

Nov 2018

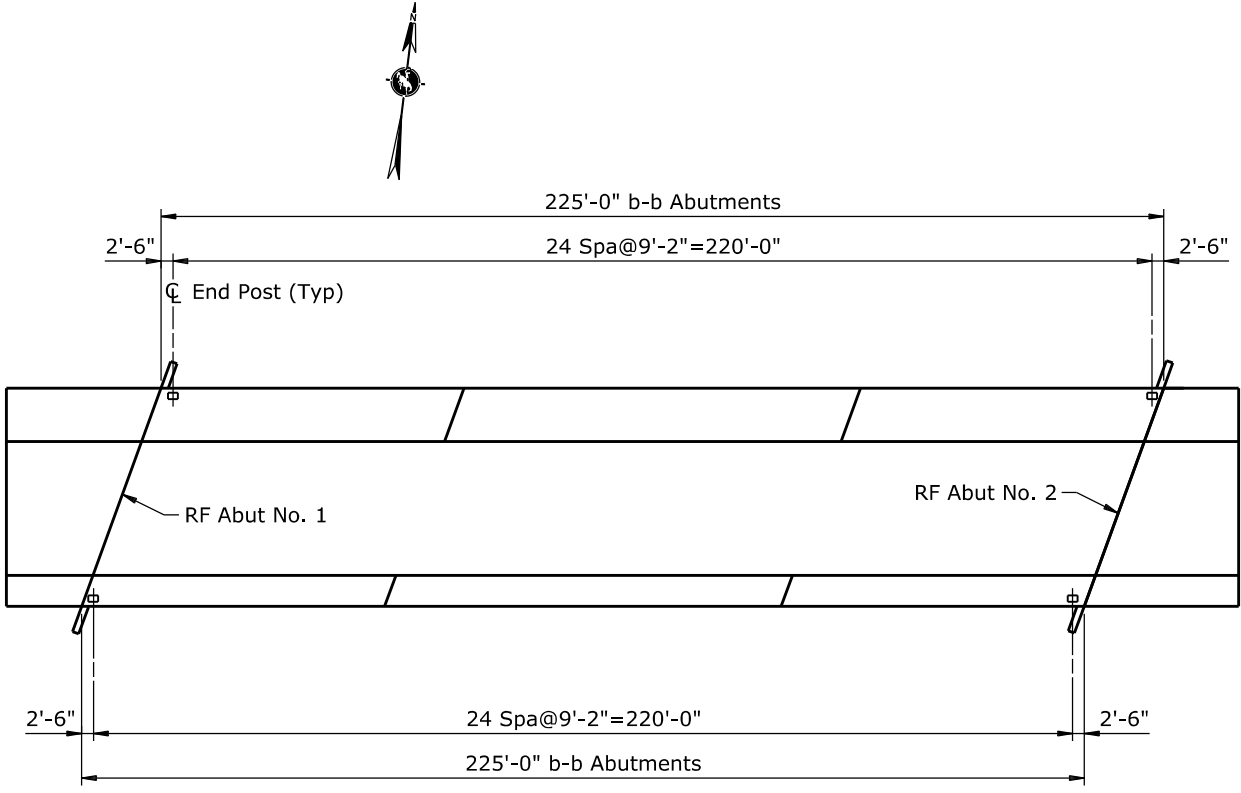
4.11 - Example



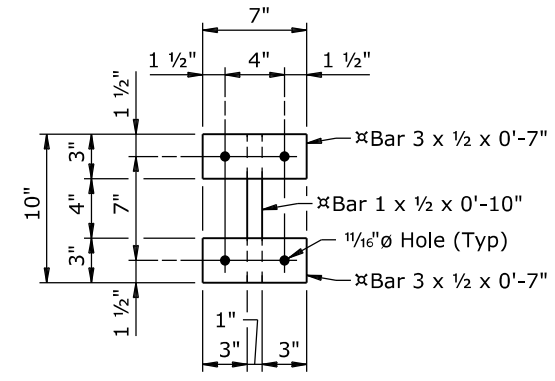
ASSEMBLY DETAIL
 (Shown at post)
 (Bridge slab shown, approach slab similar)



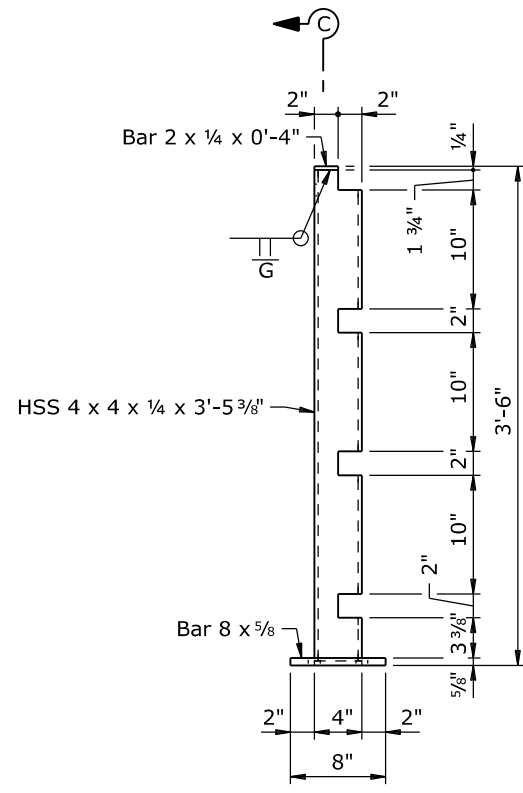
SECTION A-A
 (Anchor bolts not shown)



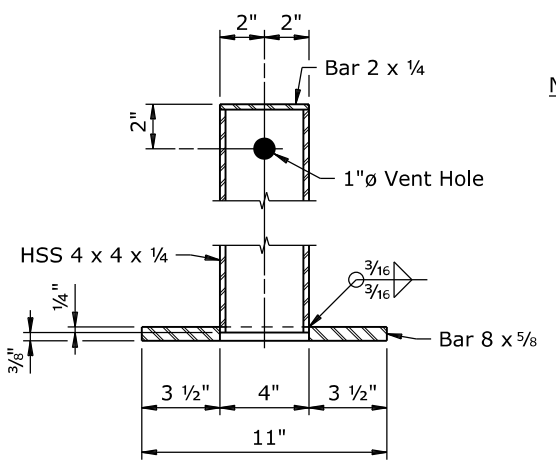
PLAN
 (50 posts req'd on bridge)



SECTION B-B
 (Not galvanized)
 (Anchor bolts and slab not shown)



SIDE VIEW



POST DETAILS
 (See Section A-A for anchor bolt hole spacing)

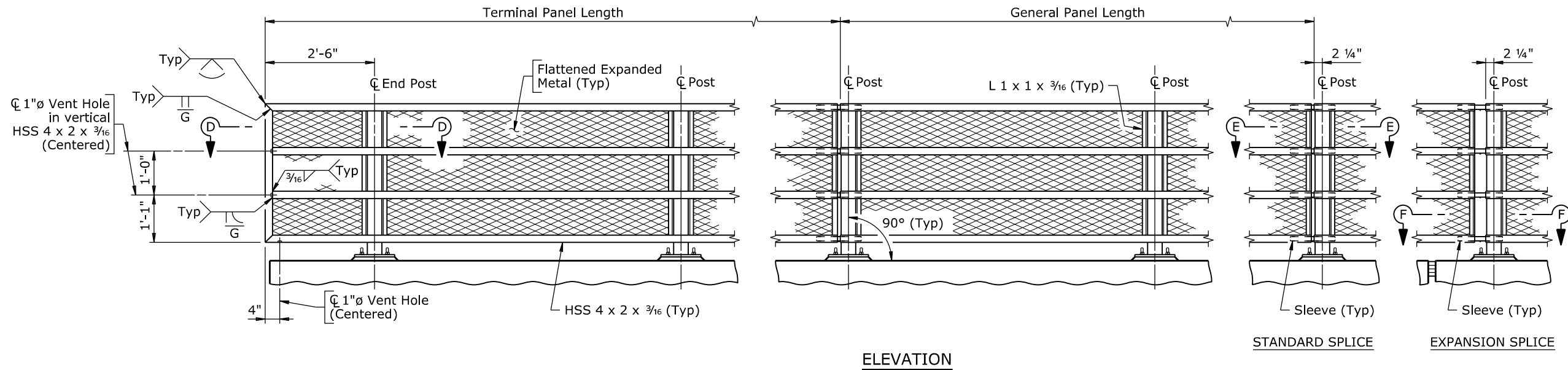
- Note:**
- 1) Ensure the expansion splice is located in the railing panel which passes over the bridge expansion joint as indicated on the plan.
 - 2) Ensure flattened expanded metal is shop attached after galvanizing.
 - 3) Anchor bolts may be tack welded to anchorage (Shop or field).
 - 4) After installing rail panels, paint exposed bolt threads and cut, drilled, or otherwise damaged surface areas of the railing components with two coats of zinc rich paint conforming to the requirements of ASTM A 780.

WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
PEDESTRIAN RAILING DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065		AI	
REVISIONS	DESIGN	Design Section Q R Stuv	
	DETAIL	JJJ ✓ HHH	Drwg No. 0002 Sheet 18 of 26
	QTY'S	JJJ ✓ LLL	

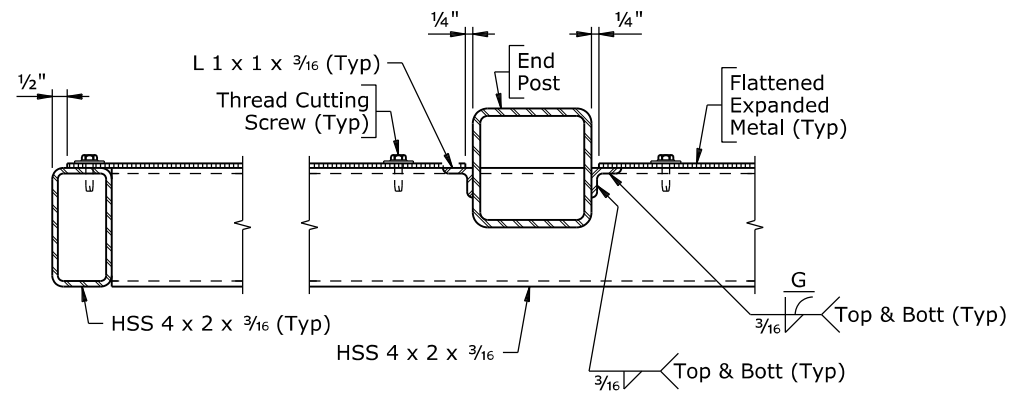
Section 4.11 - Pedestrian Railing

Nov 2018

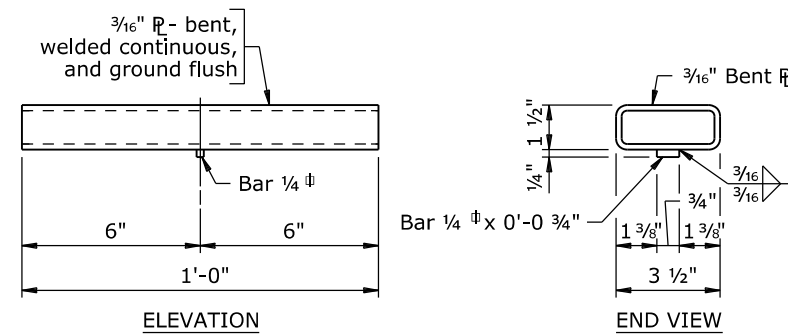
4.11 - Example



ELEVATION



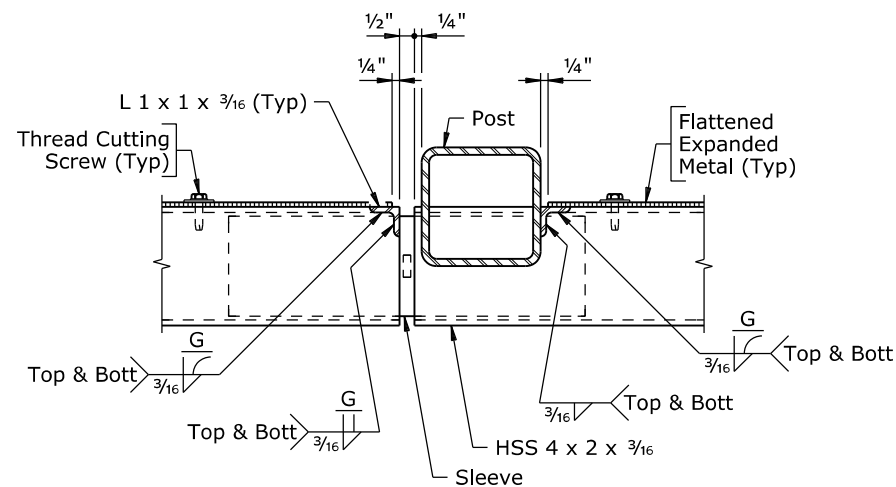
SECTION D-D



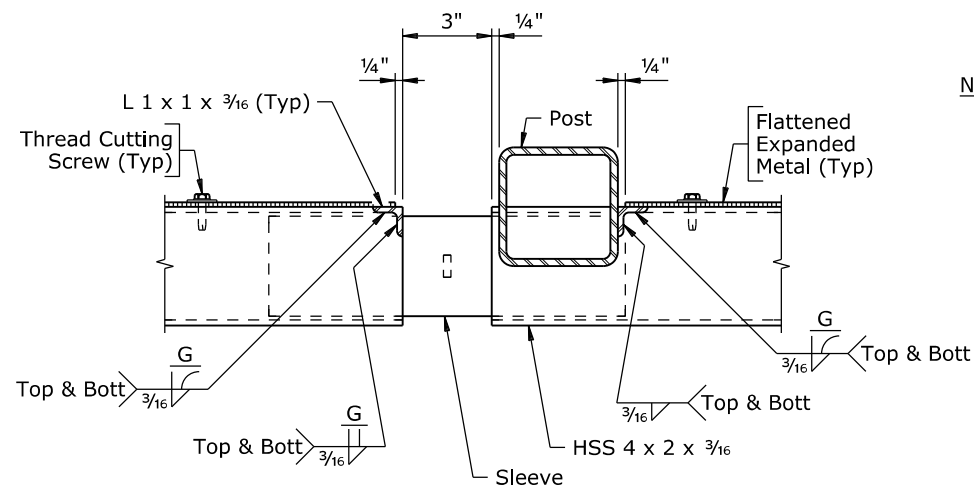
ELEVATION

END VIEW

SLEEVE DETAILS



SECTION E-E

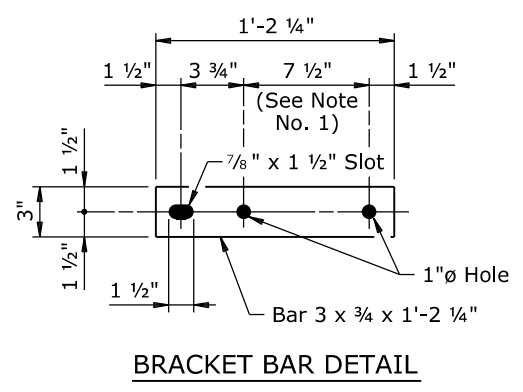
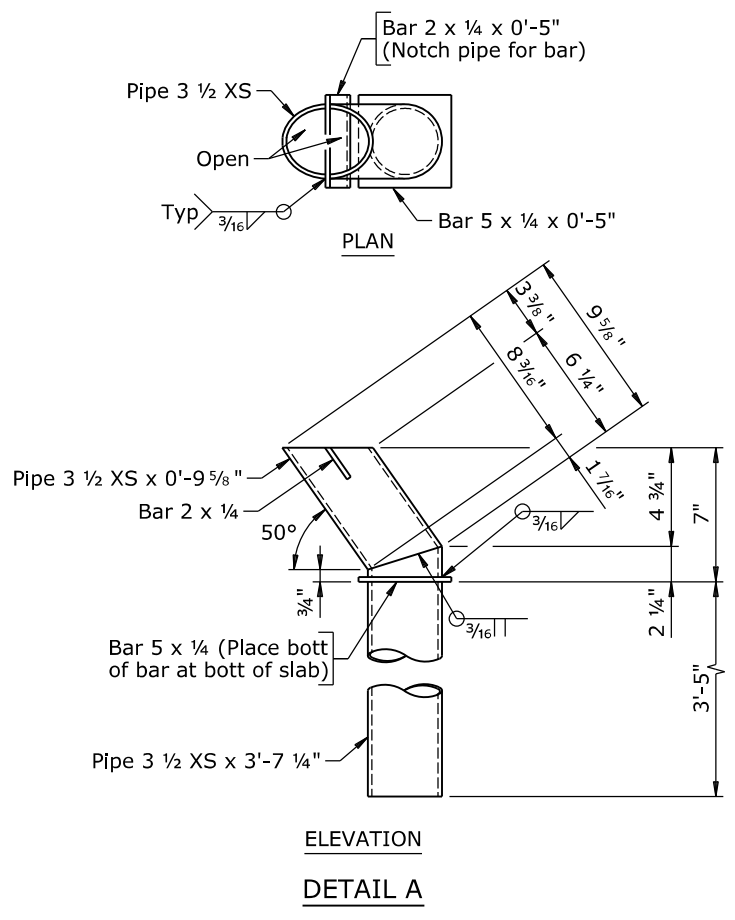
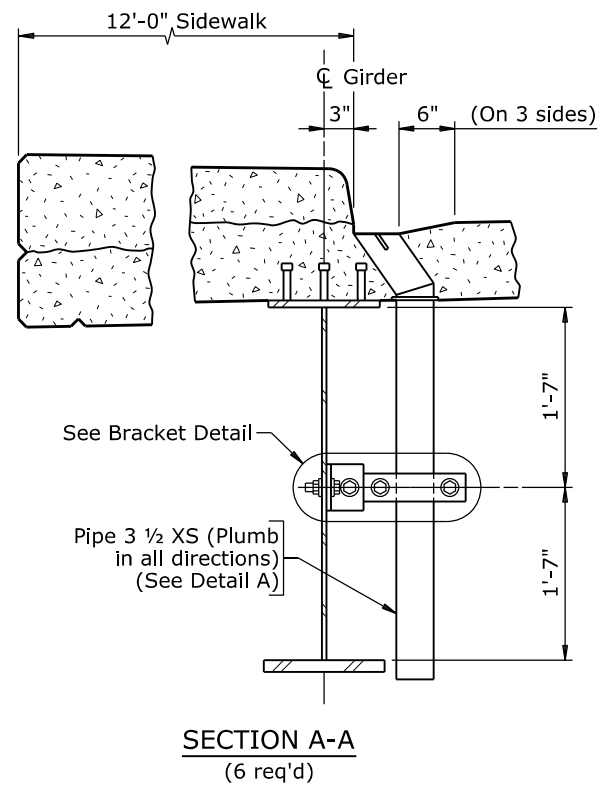
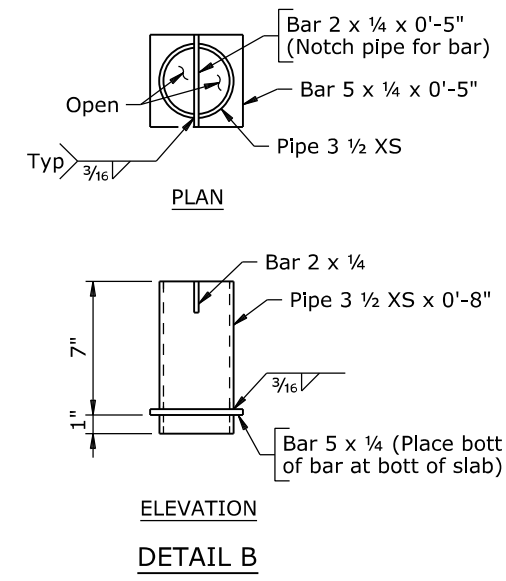
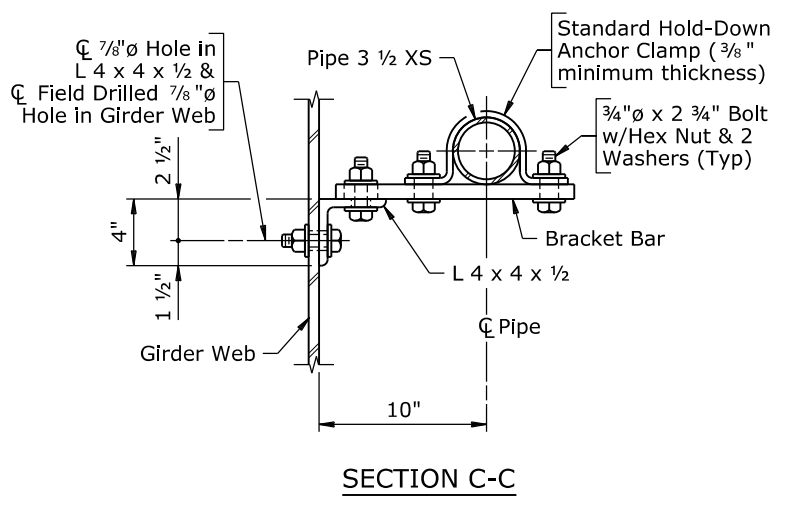
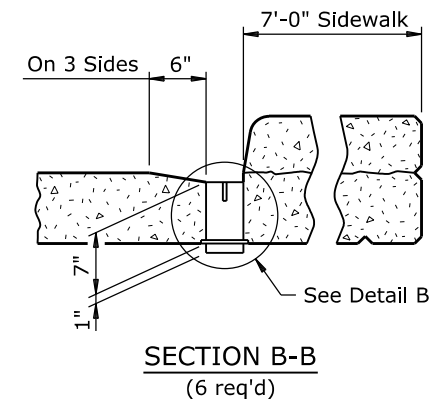
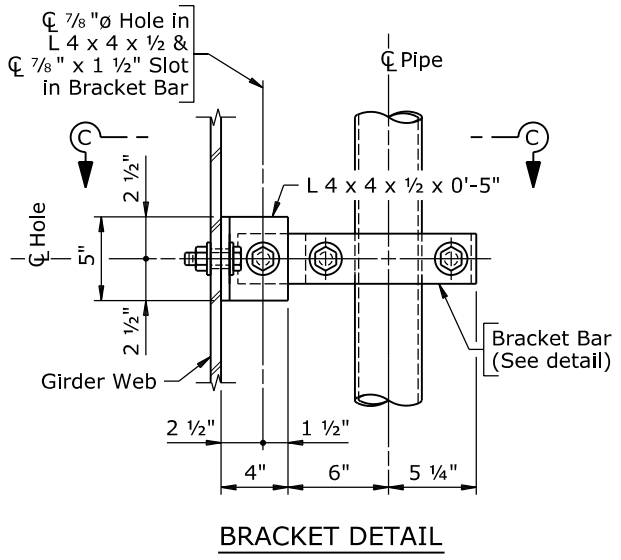
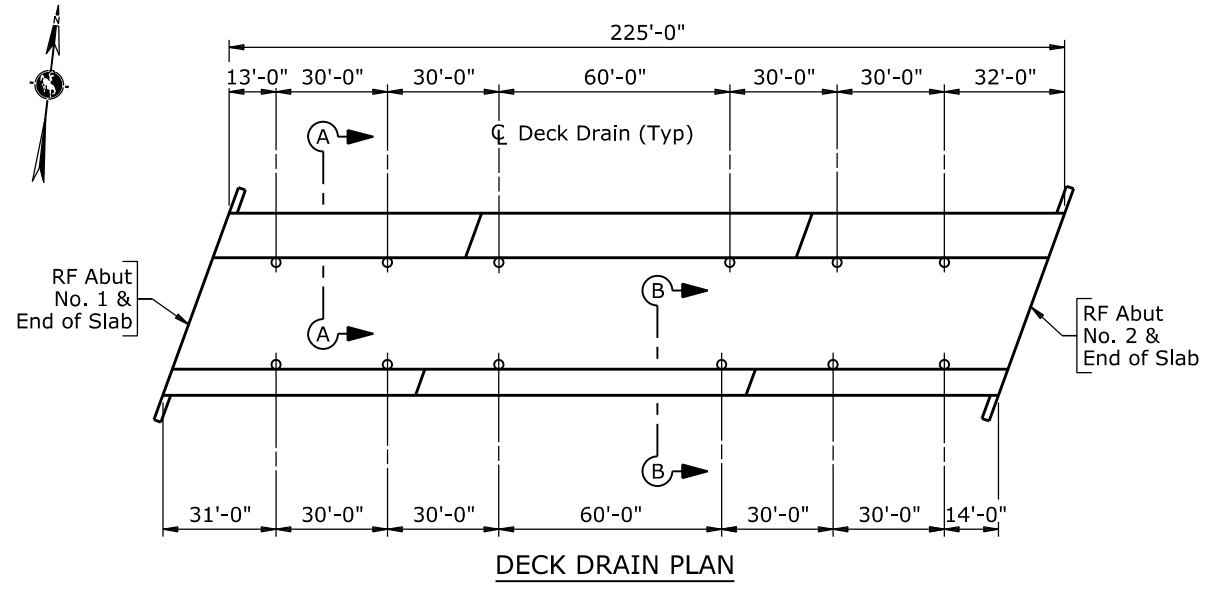


SECTION F-F

- 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.

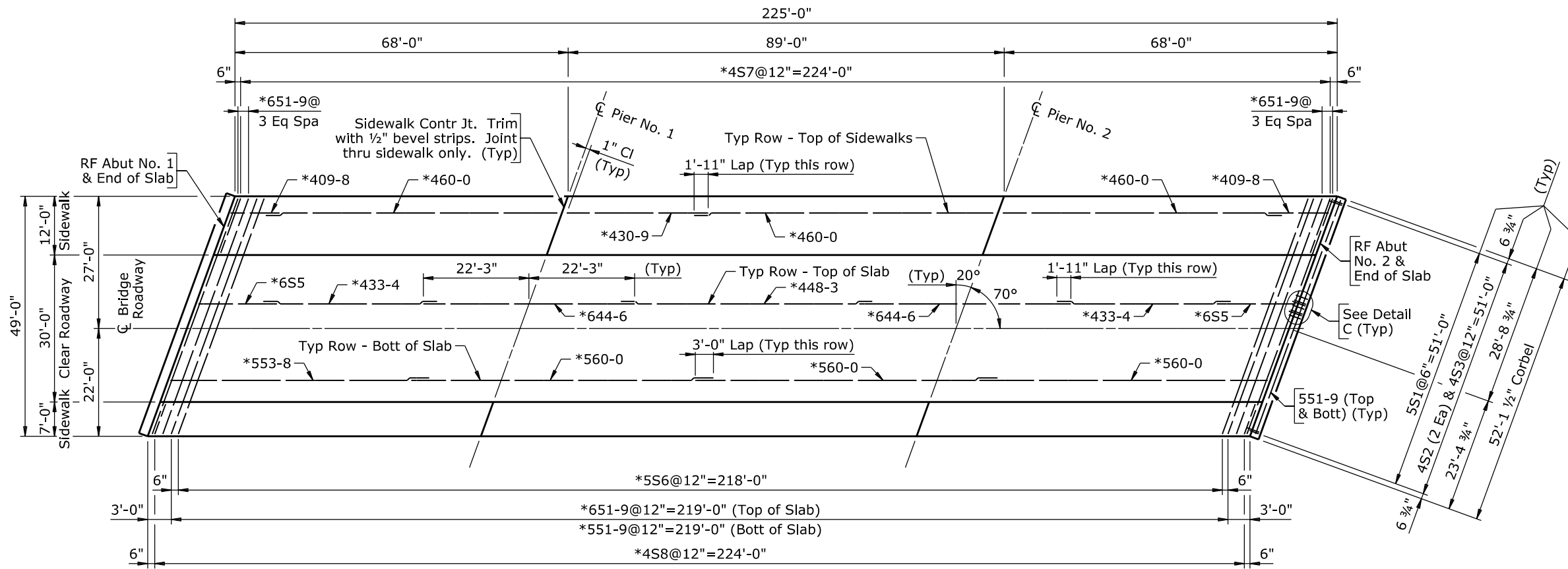
WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
PEDESTRIAN RAILING DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065		AI	
REVISIONS	DESIGN	Design Section Q R Stuv	
	DETAIL	JJJ ✓ HHH	
	APPROVAL	QTT'S ✓ LLL	Drwg No. 0002 Sheet 19 of 26

Section 4.11 - Pedestrian Railing

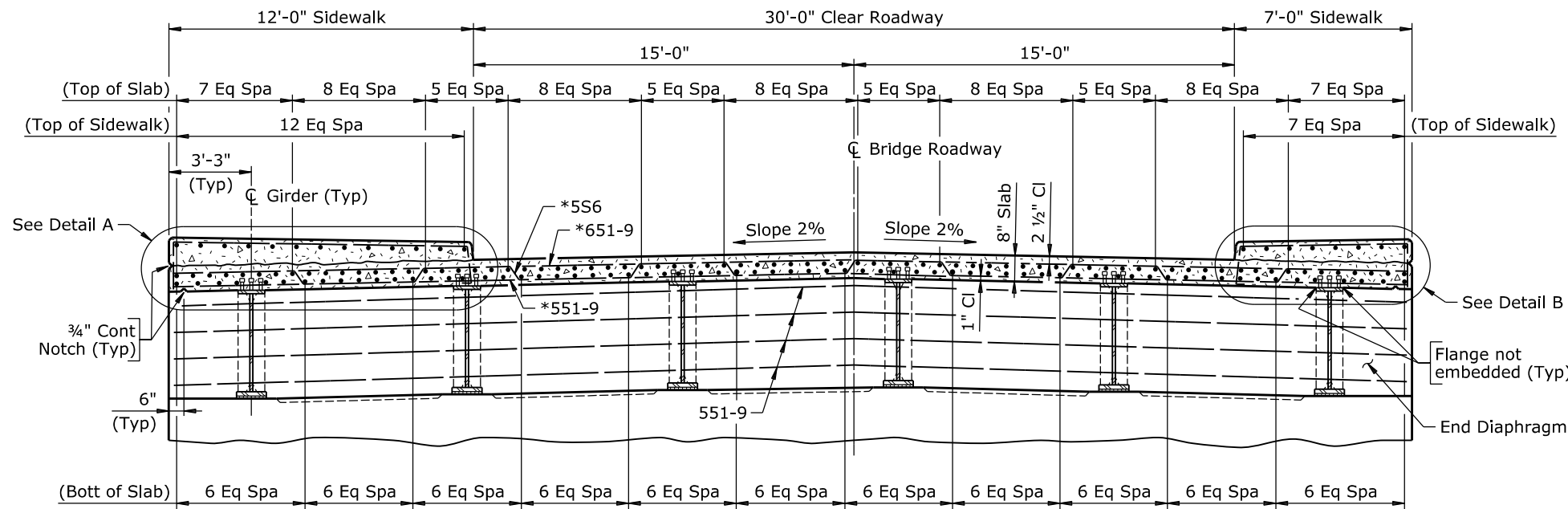
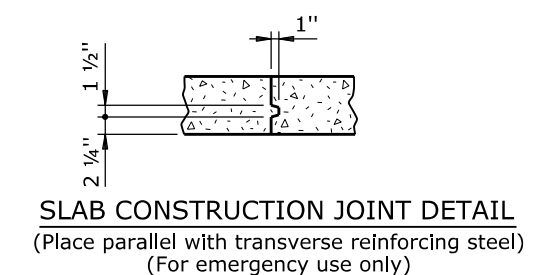
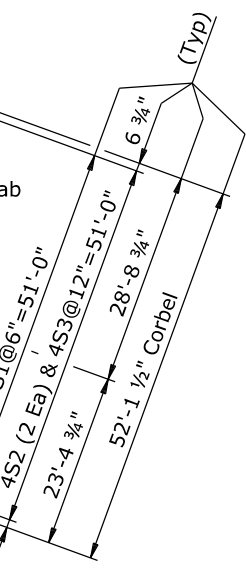


- Note:**
- 1) Spacing of 1" holes in bracket bar may vary to match actual standard hold-down anchor clamp hole spacing.
 - 2) Shift locations of deck drains as necessary to avoid interference with bridge railing anchorages.
 - 3) Before placing slab, install and properly align deck drains, including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

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



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.

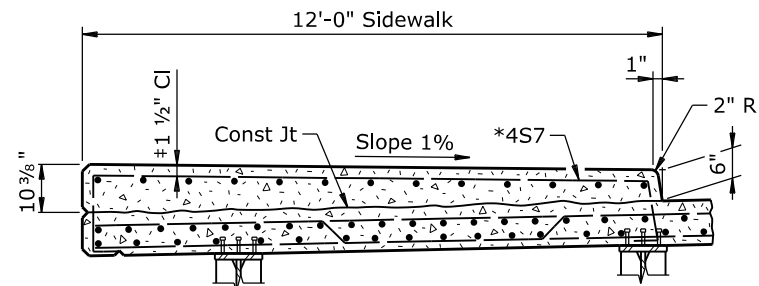
WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
SLAB DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065		AI	
DESIGN	MMM ✓ PPP	Design Section	Q R Stuv
DETAIL	LLL ✓ MMM	Drwg No. 0002	Sheet 21 of 26
REVIEW	JJJ ✓ LLL		
APPROVAL	QTY'S		

TABLE OF SCREED ELEVATIONS

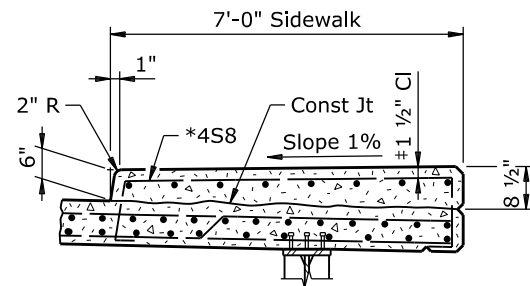
Add base elevation 7100.00 to all elevations listed in table. Elevations include grade, slope, and correction for dead load deflection. For screed line locations, see Sheet No. 3.

Wyo. Proj. 0C05065
Sheet B22 of B28 Sheets

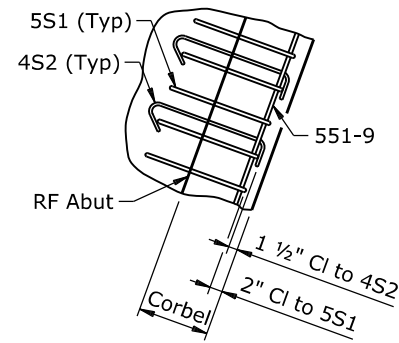
Screed Line No.	Tenth Point of Spans																																							
	1.0 C Abut No. 1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0 C Pier No. 1	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0 C Pier No. 2	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0 C Abut No. 2									
①	50.33	50.38	50.43	50.47	50.50	50.52	50.53	50.54	50.55	50.55	50.57	50.60	50.64	50.67	50.70	50.70	50.69	50.66	50.61	50.57	50.53	50.51	50.50	50.49	50.47	50.45	50.42	50.39	50.34	50.29	50.24									
②	50.40	50.45	50.50	50.53	50.56	50.58	50.60	50.61	50.61	50.62	50.63	50.66	50.70	50.74	50.76	50.77	50.75	50.72	50.68	50.63	50.59	50.57	50.56	50.55	50.54	50.52	50.49	50.45	50.41	50.36	50.30									
③	50.55	50.60	50.65	50.69	50.72	50.74	50.76	50.77	50.77	50.78	50.79	50.83	50.87	50.91	50.93	50.94	50.93	50.90	50.85	50.81	50.77	50.75	50.74	50.73	50.72	50.70	50.67	50.64	50.60	50.54	50.49									
④	50.70	50.76	50.81	50.85	50.88	50.90	50.92	50.93	50.94	50.94	50.96	50.99	51.04	51.07	51.10	51.11	51.10	51.07	51.03	50.98	50.95	50.93	50.92	50.91	50.90	50.88	50.86	50.82	50.78	50.73	50.68									
⑤	50.84	50.89	50.94	50.98	51.01	51.04	51.05	51.06	51.07	51.08	51.09	51.13	51.17	51.21	51.23	51.24	51.23	51.20	51.16	51.12	51.08	51.07	51.06	51.05	51.04	51.02	50.99	50.96	50.92	50.87	50.81									
⑥	50.79	50.84	50.89	50.93	50.97	50.99	51.01	51.02	51.03	51.04	51.05	51.09	51.13	51.17	51.20	51.21	51.20	51.17	51.13	51.09	51.05	51.04	51.03	51.02	51.01	51.00	50.97	50.94	50.90	50.85	50.79									
⑦	50.60	50.66	50.71	50.75	50.78	50.81	50.83	50.84	50.85	50.86	50.87	50.91	50.96	51.00	51.03	51.04	51.03	51.00	50.97	50.93	50.89	50.88	50.87	50.86	50.85	50.84	50.81	50.78	50.74	50.69	50.64									
⑧	50.41	50.47	50.52	50.56	50.60	50.63	50.64	50.66	50.67	50.68	50.70	50.74	50.78	50.82	50.85	50.87	50.86	50.84	50.80	50.76	50.73	50.71	50.71	50.70	50.69	50.68	50.66	50.63	50.59	50.54	50.49									
⑨	50.35	50.40	50.45	50.50	50.53	50.56	50.58	50.59	50.60	50.61	50.63	50.67	50.72	50.76	50.79	50.80	50.80	50.77	50.74	50.70	50.66	50.65	50.64	50.64	50.63	50.61	50.59	50.56	50.52	50.47	50.42									



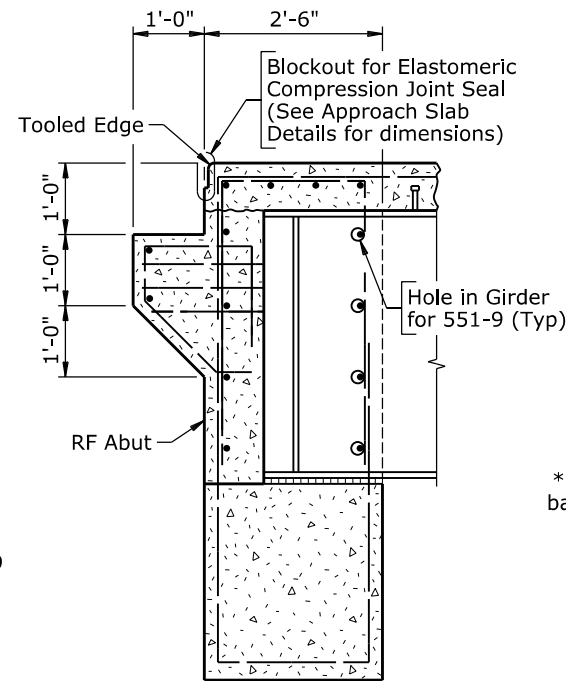
DETAIL A



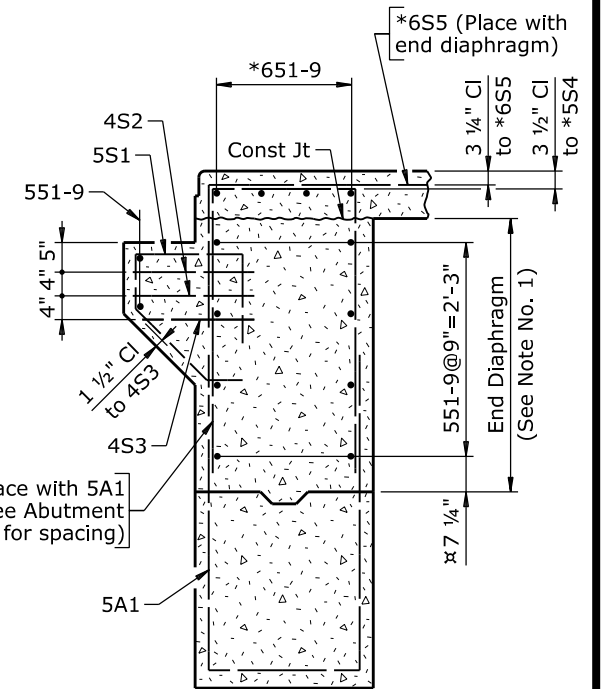
DETAIL B



DETAIL C
(Showing corbel reinforcing steel placement)
(4S2 shown, 4S3 similar)



SECTION AT GIRDERS
(Showing typical dimensions)



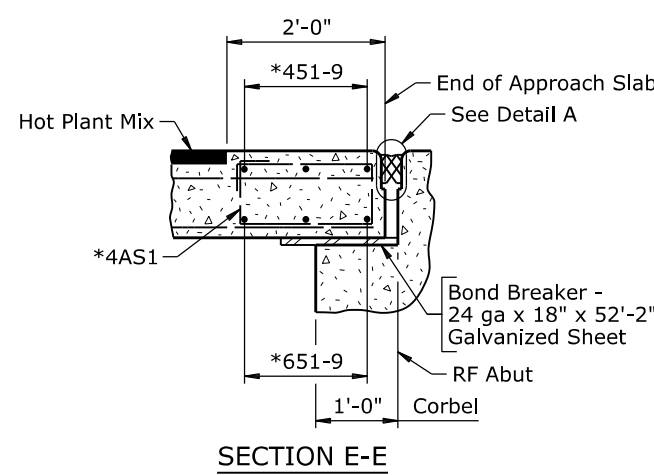
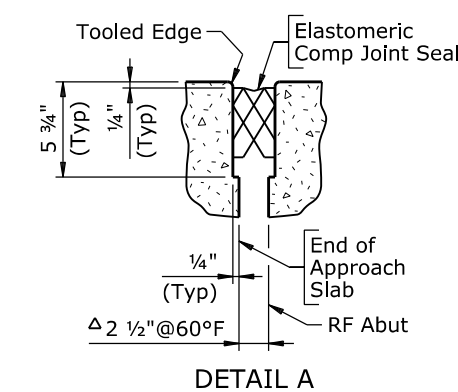
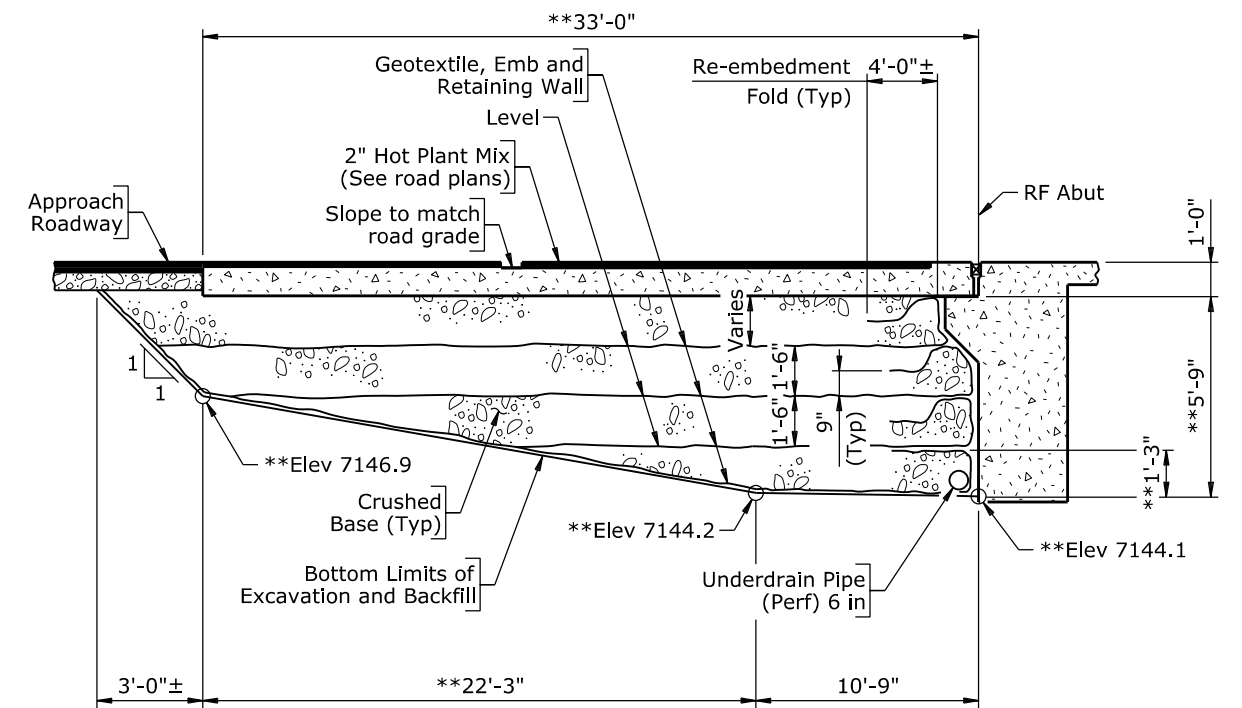
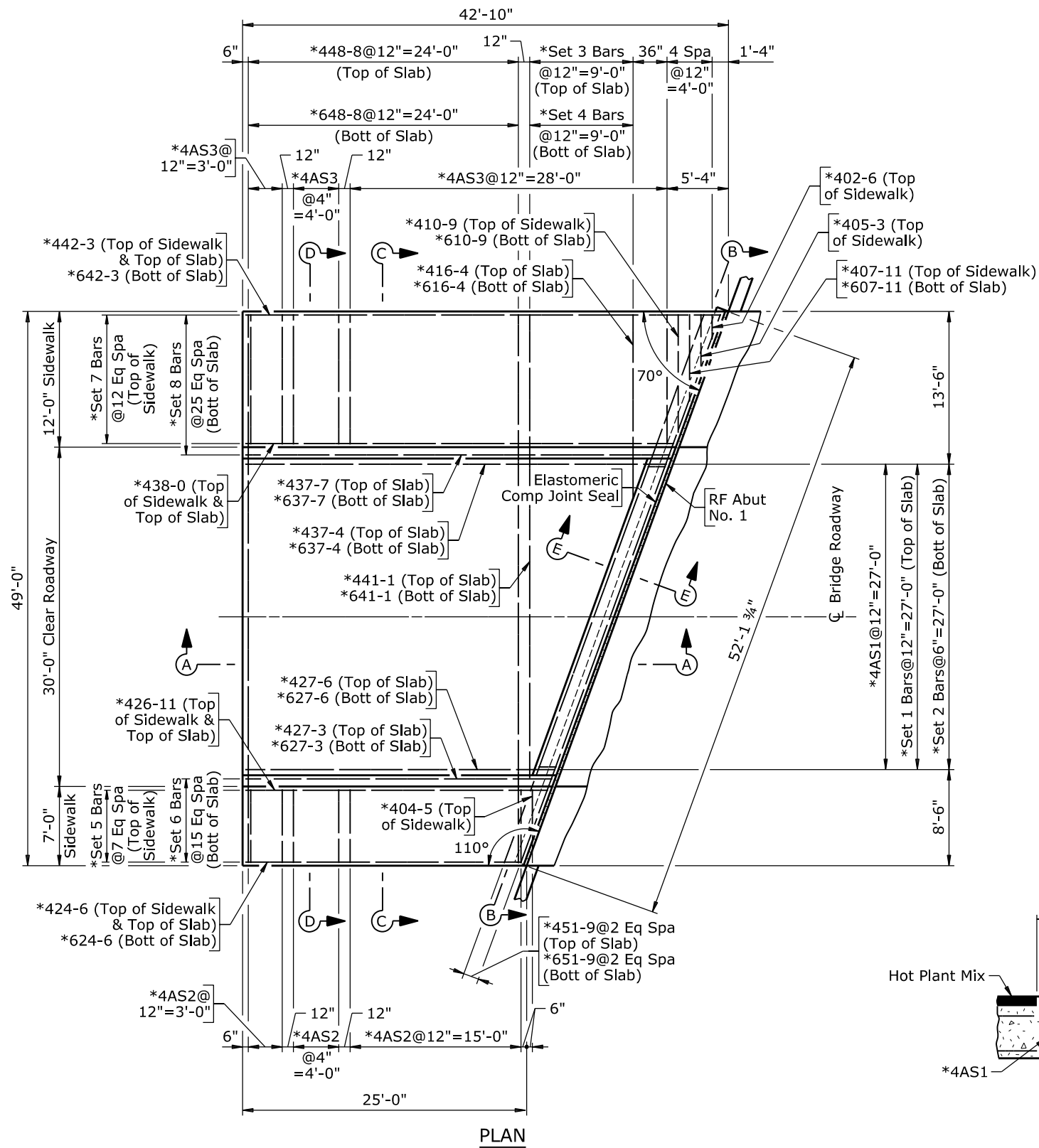
SECTION BETWEEN GIRDERS
(Showing typical reinforcing steel)

TYPICAL SECTIONS THRU END DIAPHRAGM
(Dimensions are perpendicular to RF Abut)

BILL OF REINFORCEMENT			Bending Diagrams			
Location	Mark	Number Required				
Slab and Sidewalks	*4S7	225				
	*4S8	225				
	*409-8	42				
	*430-9	21				
	*433-4	150				
	*448-3	75				
	*460-0	63				
	*5S6	219				
	*5S1-9	220				
	*5S3-8	67				
	*560-0	201				
	*644-6	150				
End Diaphragms	*651-9	228				
	*Weight	*80,783 LB				
	4S2	208				
	4S3	104				
	5S1	206				
	*5S4	92				
	5S1-9	20				
*6S5	152					
Weight	2741 LB					
*Weight	*5025 LB					

- Note:
- 1) Ensure end diaphragms attain 80% of ultimate design strength (f'c) by cylinder tests before placing slab.
 - 2) Ensure the reinforcing steel fabricator prefixes superstructure bar marks with numeral 5.
 - 3) 1 1/2" clearance is typical at top and sides of sidewalks.
 - 4) Dimension is at edge of diaphragm.
 - 5) The estimated quantity of class A concrete for slab is 272.3 CY.
 - 6) The estimated quantity of class B concrete for end diaphragms is 62.1 CY. The estimated quantity of class B concrete for sidewalks is 79.2 CY.
 - 7) For locations of Detail A, Detail B, and Detail C, see Sheet No. 21.
 - 8) For Abutment Details, see Sheets No. 8 thru 10.
 - 9) For Approach Slab Details, see Sheets No. 23 thru 26.

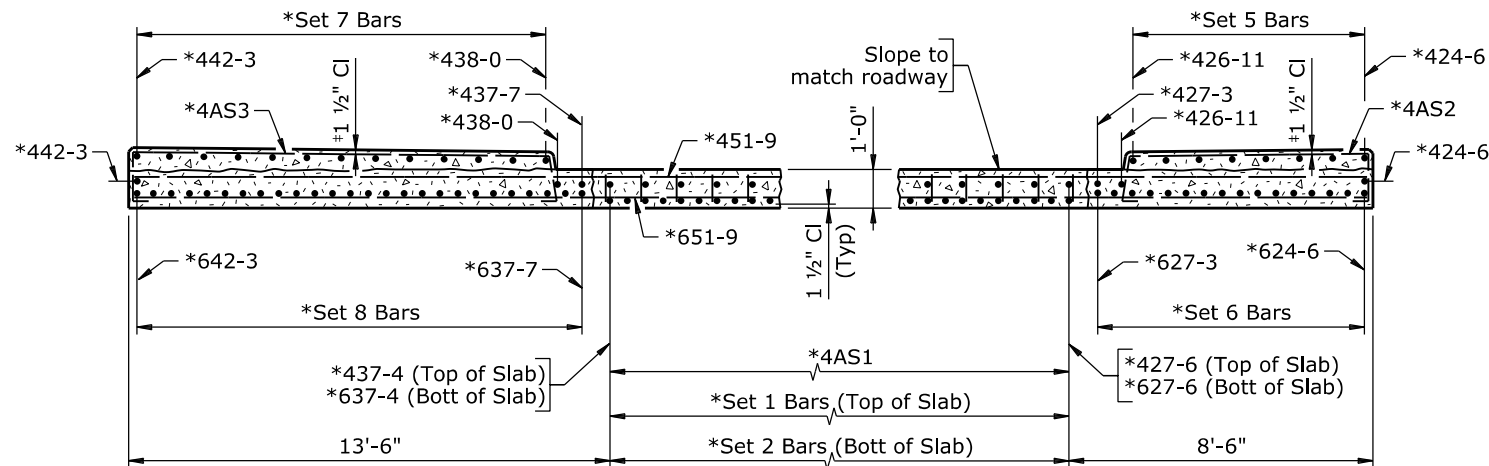
WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
SLAB DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065		AI	
DESIGN	MMM ✓ PPP	Design Section	Q R Stuv
DETAIL	LLL ✓ MMM	Drwg No. 0002	Sheet 22 of 26
APPROVAL	JJJ ✓ LLL		



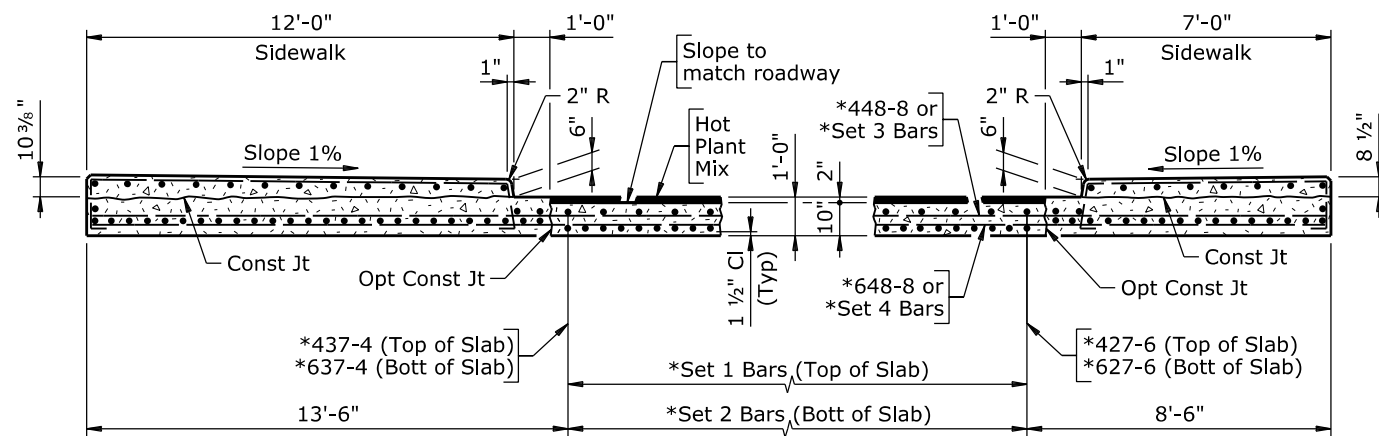
- Note:**
- 1) Dimensions and elevations preceded by a double asterisk (**) are measured at \bar{C} Bridge Roadway.
 - 2) Increase the opening between rear face abutment and end of approach slab 1/16" for each 10° F below 60° F and decrease the opening 1/16" for each 10° F above 60° F. Account for variance 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

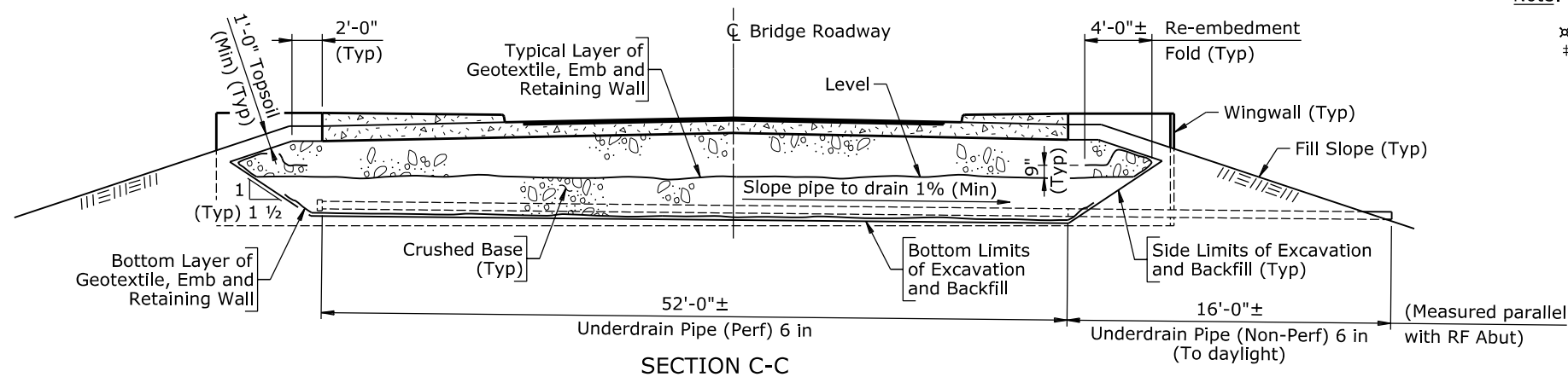
WYOMING DEPARTMENT OF TRANSPORTATION BRIDGE PROGRAM			
APPROACH SLAB DETAILS			
BRIDGE OVER LARAMIE RIVER			
STA 7+10			
Garfield Street in Laramie			
0C05065		AI	
REVISIONS	DESIGN	Design Section Q R Stuv	
	DETAIL	JJJ	HHH
	QTY'S	JJJ	LLL
APPROVAL	Drwg No. 0002	Sheet 23 of 26	



SECTION B-B
(Showing typical sidewalk and gutter reinforcing steel)
(Dimensions are perpendicular to \bar{C} Bridge Roadway)



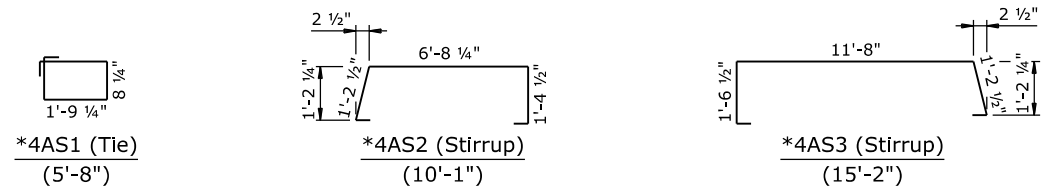
SECTION D-D
(Showing typical sidewalk and gutter dimensions)



SECTION C-C

BILL OF REINFORCEMENT				
Location	Mark	Number Required	Set Diagrams	
Approach Slab and Sidewalks	*4AS1	28		
	*4AS2	35		
	*4AS3	48		
	*402-6	1		
	*404-5	1		
	*405-3	1		
	*407-11	1		
	*410-9	1		
	*424-6	1		
	*426-11	1		
	*427-3	1		
	*437-7	1		
	*438-0	1		
	*442-3	1		
	*448-8	25		
	*451-9	3		
	*Set 1 Bars	1		
	*Set 3 Bars	1		
	*Set 5 Bars	1		
	*Set 7 Bars	1		
	*607-11	1		
	*610-9	1		
	*648-8	25		
	*651-9	3		
	*Set 2 Bars	1		
	*Set 4 Bars	1		
	*Set 6 Bars	1		
	*Set 8 Bars	1		
	*Weight		*10,561 LB	

Bending Diagrams

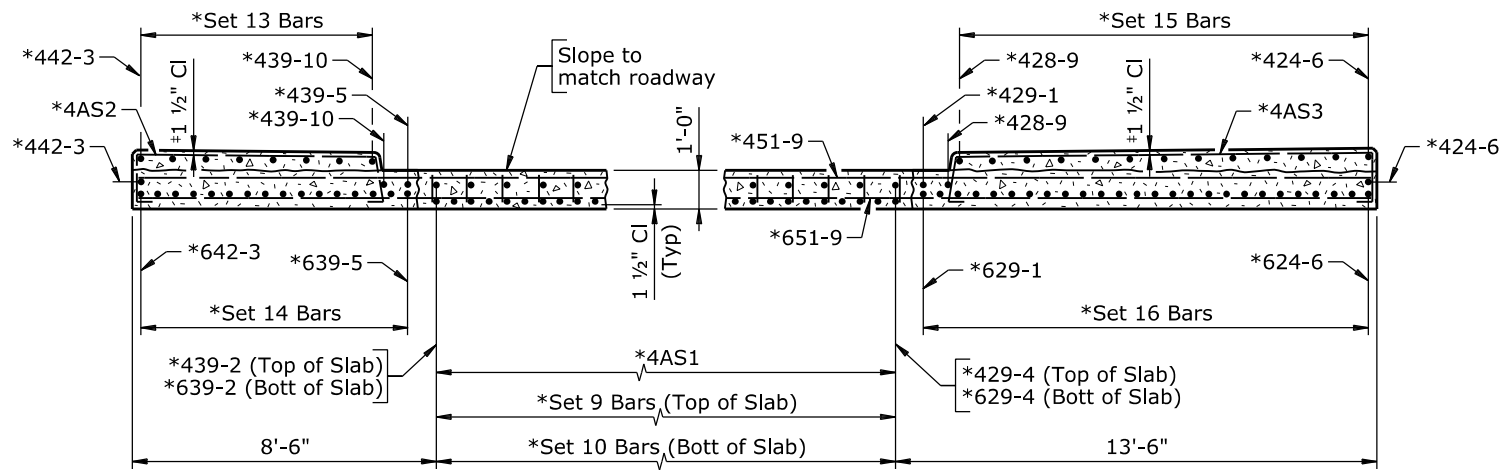


- Note: 1) Ensure the reinforcing steel fabricator prefixes approach slab bar marks with numeral 6 for Abutment No. 1.
 #2) Approach slab reinforcing steel is not included in the quantity of reinforcing steel.
 #3) 1 1/2" clearance is typical at top and sides of sidewalks.
 4) Extend bottom layer of 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.

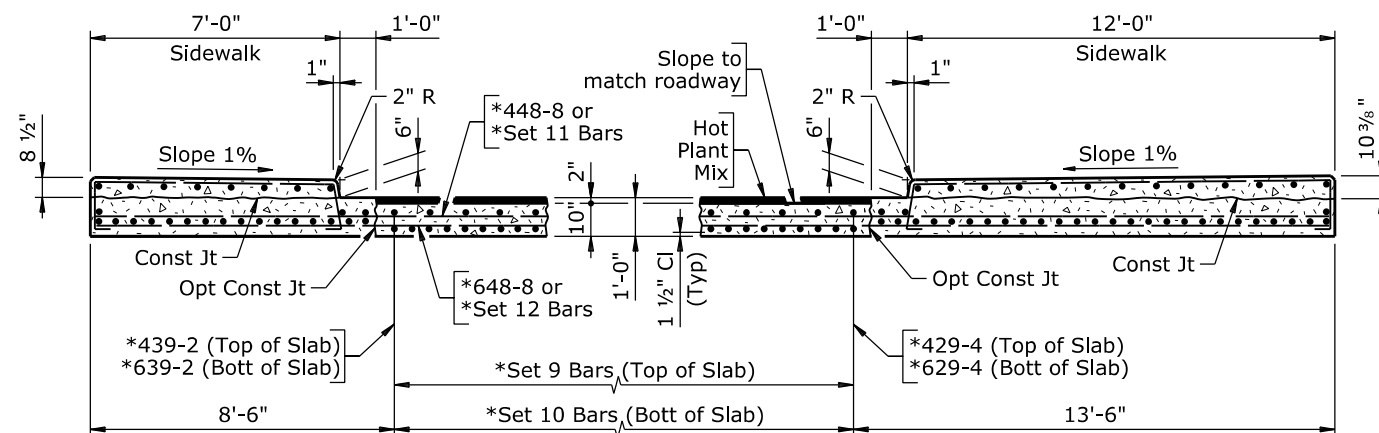
ABUT NO. 1

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	Q R Stuv
DETAIL	JJJ ✓ HHH	Drwg No. 0002	Sheet 24 of 26
APPROVAL	QTY'S JJJ ✓ LLL		

Nov 2019

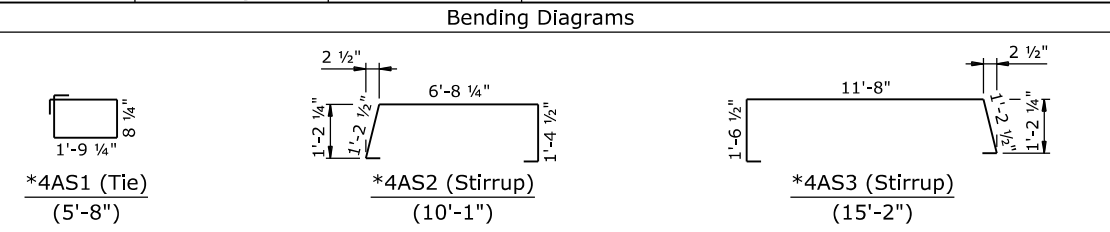


SECTION G-G
(Showing typical sidewalk and gutter reinforcing steel)
(Dimensions are perpendicular to ϕ Bridge Roadway)



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

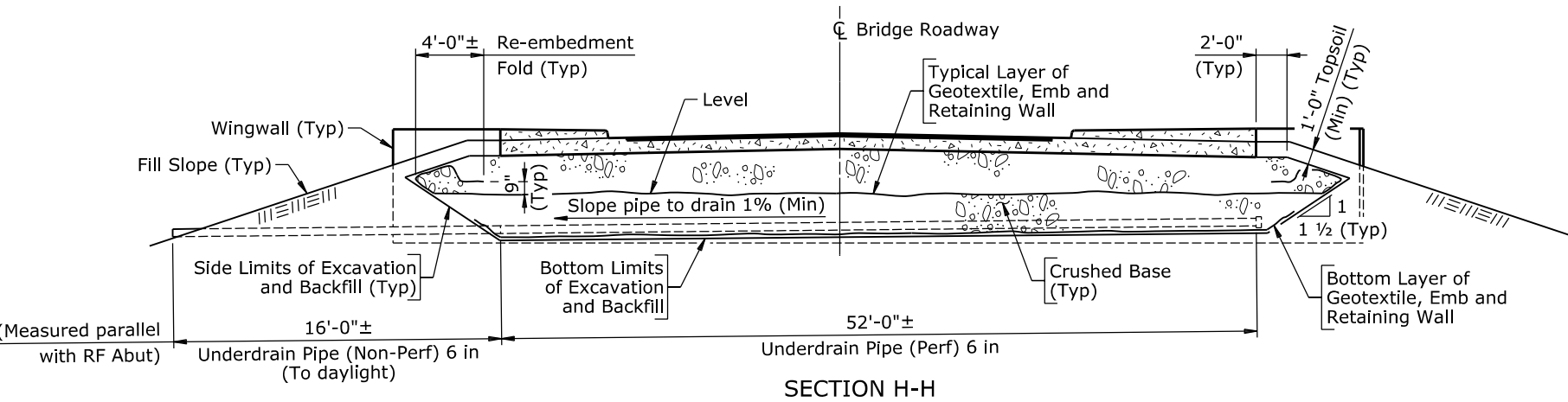
BILL OF REINFORCEMENT				
Location	Mark	Number Required	Set Diagrams	
Approach Slab and Sidewalks	*4AS1	28		
	*4AS2	50		
	*4AS3	35		
	*402-6	1		
	*403-11	1		
	*405-3	1		
	*406-8	1		
	*409-5	1		
	*410-11	1		
	*413-7	1		
	*424-6	1		
	*428-9	1		
	*429-1	1		
	*439-5	1		
	*439-10	1		
	*442-3	1		
	*448-8	25		
	*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	



- 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	JJJ	Design Section	Q R Stuv
DETAIL	JJJ	Drwg No. 0002	Sheet 26 of 26
APPROVAL	LLL		



SECTION H-H

4.14 - Example

Section 4.14 - Approach Slabs