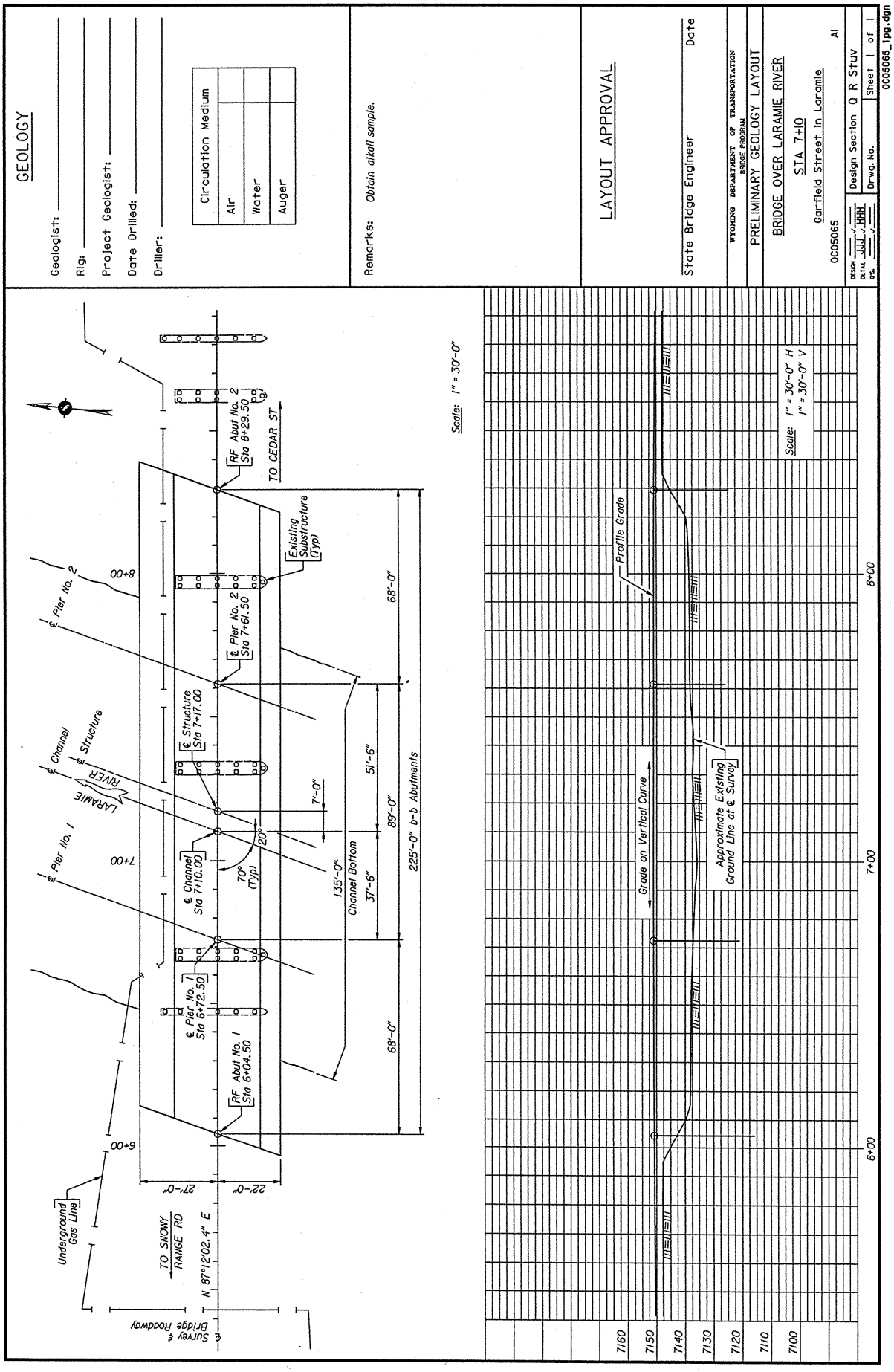

GEOLOGY
Geologist:
Rig:
Project Geologist:
Date Drilled:
Driller:
Circulation Medium
Air
Water
Auger
Remarks: Obtain alkali sample.
LAYOUT APPROVAL
State Bridge Engineer
Date
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
PRELIMINARY GEOLOGY LAYOUT
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street In Laramie
AI
0C05065
DESIGN JJJ
DETAIL HHH
QTY.
Design Section Q R Stuv
Drwg. No.
Sheet 1 of 1
0C05065_1pg.dgn
Scale: 1" = 30'-0"
TO CEDAR ST
RF Abut No. 2 Sta 8+29.50
Existing Substructure (Typ)
℄ Pier No. 2 Sta 7+61.50
℄ Structure Sta 7+17.00
℄ Channel Sta 7+10.00
℄ Pier No. 1 Sta 6+72.50
RF Abut No. 1 Sta 6+04.50
℄ Pier No. 2
℄ Structure
℄ Channel
LARAMIE RIVER
℄ Pier No. 1
8+00
7+00
6+00
70° (Typ)
20°
7'-0"
135'-0" Channel Bottom
37'-6"
51'-6"
89'-0"
68'-0"
68'-0"
225'-0" b-b Abutments
27'-0"
22'-0"
Underground Gas Line
TO SMOWY RANGE RD
N 87°12'02.4" E
Survey ℄ Bridge Roadway
Scale: 1" = 30'-0" H
1" = 30'-0" V
Profile Grade
Grade on Vertical Curve
Approximate Existing Ground Line at ℄ Survey
7160
7150
7140
7130
7120
7110
7100
8+00
7+00
6+00

Wyo. Proj. 0C05065		
Sheet	of	Sheets

BRIDGE OVER LARAMIE RIVER

STA 7+10

GARFIELD STREET IN LARAMIE

0C05065 **ALBANY COUNTY**

PRELIMINARY

DESIGN DATA

SPECIFICATIONS: AASHTO Standard Specifications for Highway Bridges, 17th Edition

ADT: 1124 (Year 2012)

LOADING: HS25. Future wearing surface 18 psf. Stay-in-place forms 15 psf.

REINFORCED CONCRETE: Load Factor Design –
Class A Concrete f'_c = 3750 psi
Class B Concrete f'_c = 3250 psi
Reinforcing Steel f_y = 60,000 psi (Grade 60)
f_y = 40,000 psi (Grade 40)

STRUCTURAL STEEL: Load Factor Design –
F_y = 50,000 psi (Grade 50W)

APPROACH ROADWAY WIDTH: 30'-0"

FOOTING PRESSURES: Allowable Stress –
Piers, X Tsf per footing

PILE LOADS: Allowable Stress –
Abutments, X T per pile

BEARING LOADS: Bents –
Service Dead Load = X kips
Service Live Load = X kips

INDEX OF DRAWINGS

ESTIMATED QUANTITIES – CODE 11-DZV

ITEM NO.	ITEM	UNIT	TOTAL QUANTITY	ESTIMATE
202.03210	REMOVAL OF STEEL BRIDGES	EA	XX	
212.02100	DRY EXCAVATION	CY	XX	
212.02200	WET EXCAVATION	CY	XX	
217.01010	GEOTEXTILE, EROSION CONTROL	SY	XX	
217.01030	GEOTEXTILE, EMB AND RETAINING WALL	SY	XX	
501.01000	STRUCTURAL STEEL	LS	LUMP SUM	XX LB
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	
507.01100	BRIDGE APPROACH BACKFILL	CY	XX	
511.02000	GABIONS	SY	XX	
512.01050	ELASTOMERIC COMP JOINT SEAL	FT	XX	
513.00005	CLASS A CONCRETE	LS	LUMP SUM	XX.X CY
513.00015	CLASS B CONCRETE	LS	LUMP SUM	XX.X CY
514.00015	REINFORCING STEEL	LS	LUMP SUM	XX LB
514.00025	REINFORCING STEEL (COATED)	LS	LUMP SUM	XX LB
605.10006	UNDERDRAIN PIPE (PERF) 6 in	FT	XX	
605.20006	UNDERDRAIN PIPE (NON-PERF) 6 in	FT	XX	

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

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS

APPROVED	DESIGN ___ ✓ ___	Design Section Q R Stuv
DATE	DETAIL HHH ✓ JJJ	Drwg. No. P-0002 Sheet 1 of 3
	QA'S. ___ ✓ ___	

0C05065_1p11.dgn

Wyo. Proj. 0C05065		
Sheet	of	Sheets

GENERAL NOTES

SPECIFICATIONS: WYDOT Standard Specifications for Road and Bridge Construction, 2003 Edition

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

CONCRETE: Use class A concrete in the deck. Use class B concrete at all other locations.

REINFORCING STEEL: 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; e.g. 508-3

Bent Bars: Size – Designation; e.g. 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, Category Major Steel Bridges (CBR).

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 completed, ensure components are prepared in accordance with Steel Structures Painting Council Surface Preparation Specification No. 6 Commercial Blast Cleaning (SSPC-SP 6).

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

ELASTOMERIC COMP JOINT SEAL: Provide one of the following products:
CV-4000 as manufactured by The D.S. Brown Co.
WJ-400 as manufactured by Watson Bowman Acme Corp.

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

BRIDGE BEARING ANCHOR BOLTS: Use one of the following anchorage systems for setting anchor bolts:
Epoxy Anchoring Systems as manufactured by Covert Operations
Epcon System as manufactured by ITW Ramset/Red Head
AC100 Plus/AC5.5 Plus as manufactured by Powers Fasteners, Inc.
Sure-Anchor I (J-51) as manufactured by Dayton Superior
HSE 2421 Epoxy Adhesive Anchor as manufactured by Hilti, Inc.
HIT HY 150 System as manufactured by Hilti, Inc.
Use anchor bolts compatible with the adhesive product. Prepare holes and set anchor bolts as recommended by the manufacturer. Anchor bolts may be swedge bolts or threaded rod. Ensure swedge bolts conform to ASTM A 709 (Grade 36). Ensure the swedges are produced by deforming the steel through application of pressure, and not by any method such as grinding or cutting that removes material. Ensure threaded rod conforms to ASTM A 307, grade C or ASTM F 1554, grade 36. Work necessary for the anchorage system is incidental to the contract pay item Structural Steel.

GABIONS: Use aggregate conforming to Subsection 803.15.6, Stone-Filled Gabions.

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

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

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.

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 the 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.

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
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 History	3250 cfs (Year 1957)

REFERENCES

Supplementary Specifications:

		Dated
SS-500B	Welder Qualification	Rev 7-9-04
SS-500E	Bridge Bearing Correction	Rev 7-9-04
SS-500F	Automatically End-Welded Studs	8-17-05

WYDOT Plans:

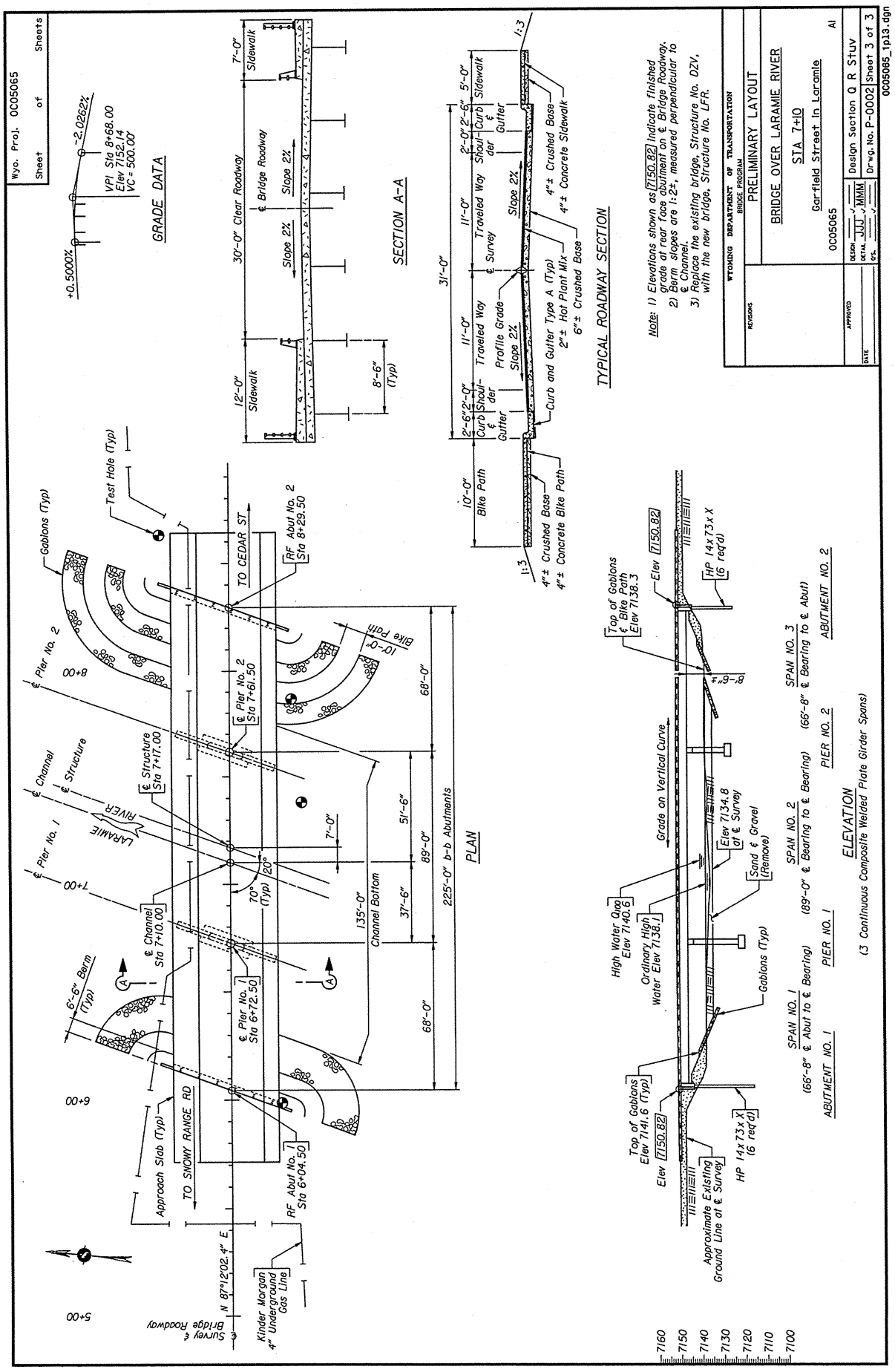
	Sheet No.
Bridge Drwg No. 402DG2	1 & 2 of 2

Standard Plans:

511-1	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 A1	
APPROVED DATE	DESIGN — DETAIL HHH QA'S. —	MMM Design Section Q R Stuv Drwg. No. P-0002 | Sheet 2 of 3

0C05065_1p12.dgn


Wyo. Proj. 0C05065
Sheet of Sheets
GRADE DATA
+0.5000%
-2.0262%
VPI Sta 8+68.00
Elev 7152.14
VC = 500.00'
SECTION A-A
30'-0" Clear Roadway
Bridge Roadway
Slope 2%
12'-0" Sidewalk
7'-0" Sidewalk
8'-6" (Typ)
TYPICAL ROADWAY SECTION
31'-0"
11'-0" Traveled Way
2'-6" Curb & Gutter
2'-0" Shoulder
5'-0" Sidewalk
Profile Grade
10'-0" Bike Path
1:3
4"± Crushed Base
4"± Concrete Bike Path
2"± Hot Plant Mix
6"± Crushed Base
Curb and Gutter Type A (Typ)
4"± Concrete Sidewalk
Note: 1) Elevations shown as [7150.82] indicate finished grade at rear face abutment on ℄ Bridge Roadway.
2) Berm slopes are 1:2±, measured perpendicular to ℄ Channel.
3) Replace the existing bridge, Structure No. D2V, with the new bridge, Structure No. LFR.
PLAN
Gabions (Typ)
Test Hole (Typ)
℄ Pier No. 2
℄ Channel
℄ Structure
℄ Pier No. 1
RIVER
LARAMIE
℄ Structure Sta 7+17.00
℄ Channel Sta 7+10.00
℄ Pier No. 2 Sta 7+61.50
℄ Pier No. 1 Sta 6+72.50
RF Abut No. 2 Sta 8+29.50
RF Abut No. 1 Sta 6+04.50
TO CEDAR ST
TO SNOWY RANGE RD
Approach Slab (Typ)
6'-6" Berm (Typ)
Survey ℄ Bridge Roadway
Kinder Morgan 4" Underground Gas Line
N 87°12'02.4" E
8+00
7+00
6+00
5+00
70° (Typ)
20°
7'-0"
51'-6"
89'-0"
37'-6"
135'-0" Channel Bottom
68'-0"
68'-0"
225'-0" b-b Abutments
10'-0" Bike Path
ELEVATION
Top of Gabions ℄ Bike Path Elev 7138.3
Elev [7150.82]
HP 14x73 x X (6 req'd)
Grade on Vertical Curve
8'-6"±
High Water Q100 Elev 7140.6
Ordinary High Water Elev 7138.1
Elev 7134.8 at ℄ Survey
Sand & Gravel (Remove)
Gabions (Typ)
Top of Gabions Elev 7141.6 (Typ)
Elev [7150.82]
HP 14x73 x X (6 req'd)
Approximate Existing Ground Line at ℄ Survey
SPAN NO. 1
(66'-8" ℄ Abut to ℄ Bearing)
ABUTMENT NO. 1
(89'-0" ℄ Bearing to ℄ Bearing)
PIER NO. 1
SPAN NO. 2
(66'-8" ℄ Bearing to ℄ Abut)
PIER NO. 2
SPAN NO. 3
ABUTMENT NO. 2
(3 Continuous Composite Welded Plate Girder Spans)
7160
7150
7140
7130
7120
7110
7100
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS
PRELIMINARY LAYOUT
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street in Laramie
0C05065
A1
APPROVED
DATE
DESIGN JJJ
DETAIL JJJ
QTY. MMM
CHK.
Design Section Q R Stuv
Drwg. No. P-0002 Sheet 3 of 3
0C05065_1p13.dgn

BRIDGE OVER LARAMIE RIVER

STA 7+10

GARFIELD STREET IN LARAMIE

0C05065 **ALBANY COUNTY**

DESIGN DATA

SPECIFICATIONS: AASHTO Standard Specifications for Highway Bridges, 17th Edition

ADT: 1124 (Year 2012)

LOADING: HS25. Future wearing surface 18 psf. Stay-in-place forms 15 psf.

REINFORCED CONCRETE: Load Factor Design -
Class A Concrete f'_c = 3750 psi
Class B Concrete f'_c = 3250 psi
Reinforcing Steel f_y = 60,000 psi (Grade 60)
f_y = 40,000 psi (Grade 40)

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

APPROACH ROADWAY WIDTH: 30'-0"

FOOTING PRESSURES: Allowable Stress -
Piers, 2.9 Tsf per footing

PILE LOADS: Allowable Stress -
Abutments, 85 T per pile

BEARING LOADS: Bents -
Service Dead Load = 95.27 kips
Service Live Load = 77.34 kips

INDEX OF DRAWINGS

ESTIMATED QUANTITIES - CODE 11-DZV

ITEM NO.	ITEM	UNIT	TOTAL QUANTITY	ESTIMATE
202.03210	REMOVAL OF STEEL BRIDGES	EA	1	
212.02100	DRY EXCAVATION	CY	840	
212.02200	WET EXCAVATION	CY	1190	
217.01010	GEOTEXTILE, EROSION CONTROL	SY	770	
217.01030	GEOTEXTILE, EMB AND RETAINING WALL	SY	2670	
501.01000	STRUCTURAL STEEL	LS	LUMP SUM	238,200 LB
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	
507.01100	BRIDGE APPROACH BACKFILL	CY	700	
511.02000	GABIONS	SY	770	
512.01050	ELASTOMERIC COMP JOINT SEAL	FT	105	
513.00005	CLASS A CONCRETE	LS	LUMP SUM	272.3 CY
513.00015	CLASS B CONCRETE	LS	LUMP SUM	386.6 CY
514.00015	REINFORCING STEEL	LS	LUMP SUM	34,500 LB
514.00025	REINFORCING STEEL (COATED)	LS	LUMP SUM	85,300 LB
605.10006	UNDERDRAIN PIPE (PERF) 6 In	FT	104	
605.20006	UNDERDRAIN PIPE (NON-PERF) 6 In	FT	32	

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

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS

APPROVED	DESIGN ___ ✓ ___	Design Section Q R Stuv
DATE	DETAIL HHH ✓ MMM	Drwg. No. 0002 Sheet 1 of 25
	O'S. ___ ✓ ___	

0C05065_1ts.dgn

GENERAL NOTES

SPECIFICATIONS: WYDOT Standard Specifications for Road and Bridge Construction, 2003 Edition

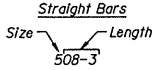
DIMENSIONS: Longitudinal dimensions for the substructure are horizontal and include no correction for grade. Longitudinal dimensions for the superstructure are along grade unless noted. Slopes are vertical : horizontal.

CONCRETE: Use class A concrete in the deck. Use class B concrete at all other locations.

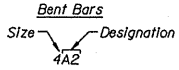
REINFORCING STEEL: Concrete cover to face of reinforcing steel is 2" unless noted. Dimensions for bent bars are out to out. Ensure bars marked with an asterisk (*) are coated.

BAR MARKS

Straight Bars



Bent Bars



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, Category Major Steel Bridges (CBR).

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 completed, ensure components are prepared in accordance with Steel Structures Painting Council Surface Preparation Specification No. 6 Commercial Blast Cleaning (SSPC-SP 6).

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

ELASTOMERIC COMP JOINT SEAL: Provide one of the following products:
CV-4000 as manufactured by The D.S. Brown Co.
WJ-400 as manufactured by Watson Bowman Acme Corp.

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

BRIDGE BEARING ANCHOR BOLTS: Use one of the following anchorage systems for setting anchor bolts:
Epoxy Anchoring Systems as manufactured by Covert Operations
Epcon System as manufactured by ITW Ramset/Red Head
AC100 Plus/AC5.5 Plus as manufactured by Powers Fasteners, Inc.
Sure-Anchor I (J-51) as manufactured by Dayton Superior
HSE 2421 Epoxy Adhesive Anchor as manufactured by Hilti, Inc.
HIT HY 150 System as manufactured by Hilti, Inc.
Use anchor bolts compatible with the adhesive product. Prepare holes and set anchor bolts as recommended by the manufacturer. Anchor bolts may be swedge bolts or threaded rod. Ensure swedge bolts conform to ASTM A 709 (Grade 36). Ensure the swedges are produced by deforming the steel through application of pressure, and not by any method such as grinding or cutting that removes material. Ensure threaded rod conforms to ASTM A 307, grade C or ASTM F 1554, grade 36. Work necessary for the anchorage system is incidental to the contract pay item Structural Steel.

GABIONS: Use aggregate conforming to Subsection 803.15.6, Stone-Filled Gabions.

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

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

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. 0ZV.

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 the 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.

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
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 History	3250 cfs (Year 1957)

REFERENCES

Supplementary Specifications:		Dated
SS-500B	Welder Qualification	Rev 7-9-04
SS-500E	Bridge Bearing Correction	Rev 7-9-04
SS-500F	Automatically End-Welded Studs	8-17-05

WYDOT Plans:	Sheet No.
Bridge Drwg No. 402DG2	1 & 2 of 2

Standard Plans:
511-1 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 A1

APPROVED

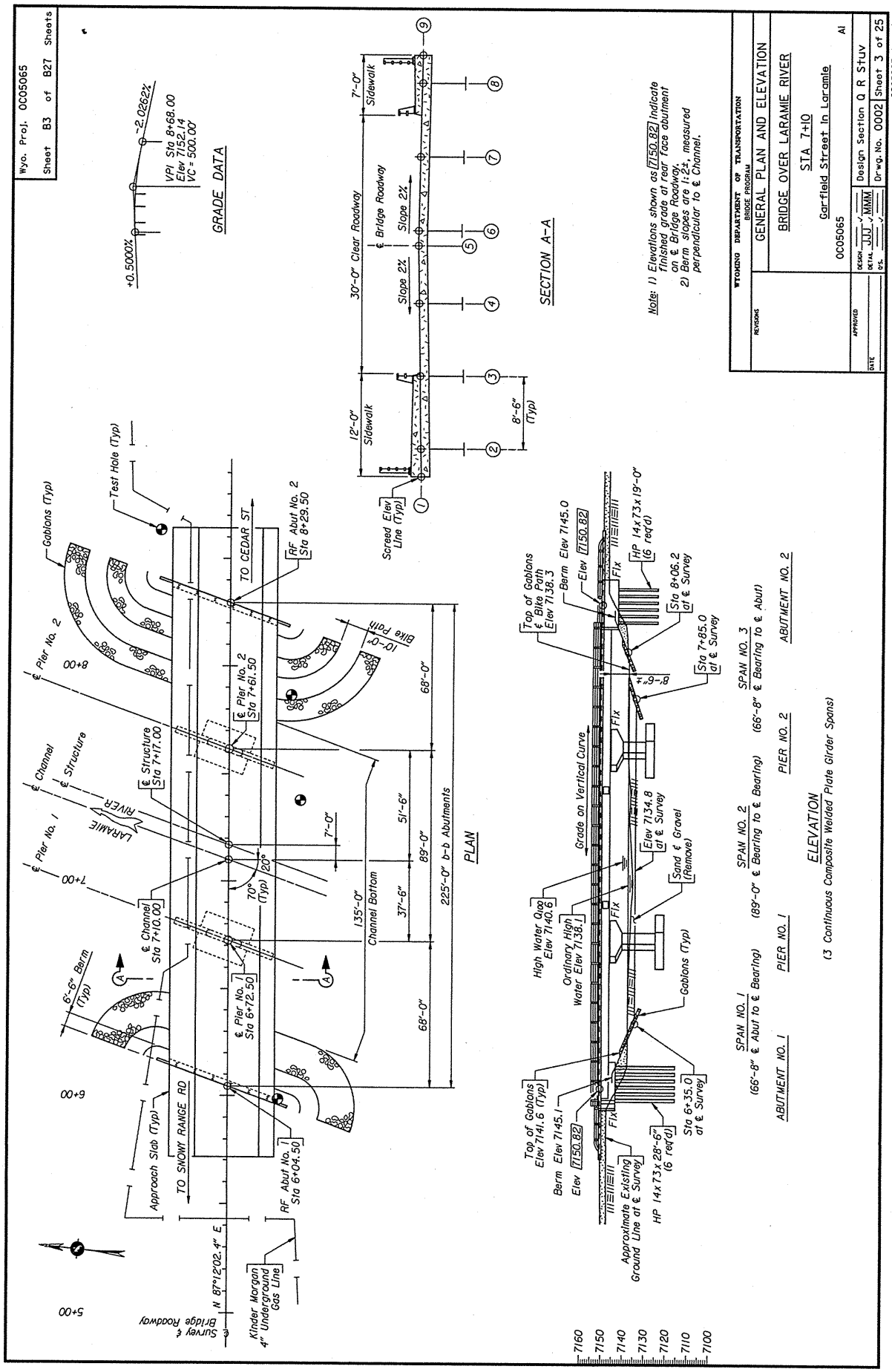
DATE

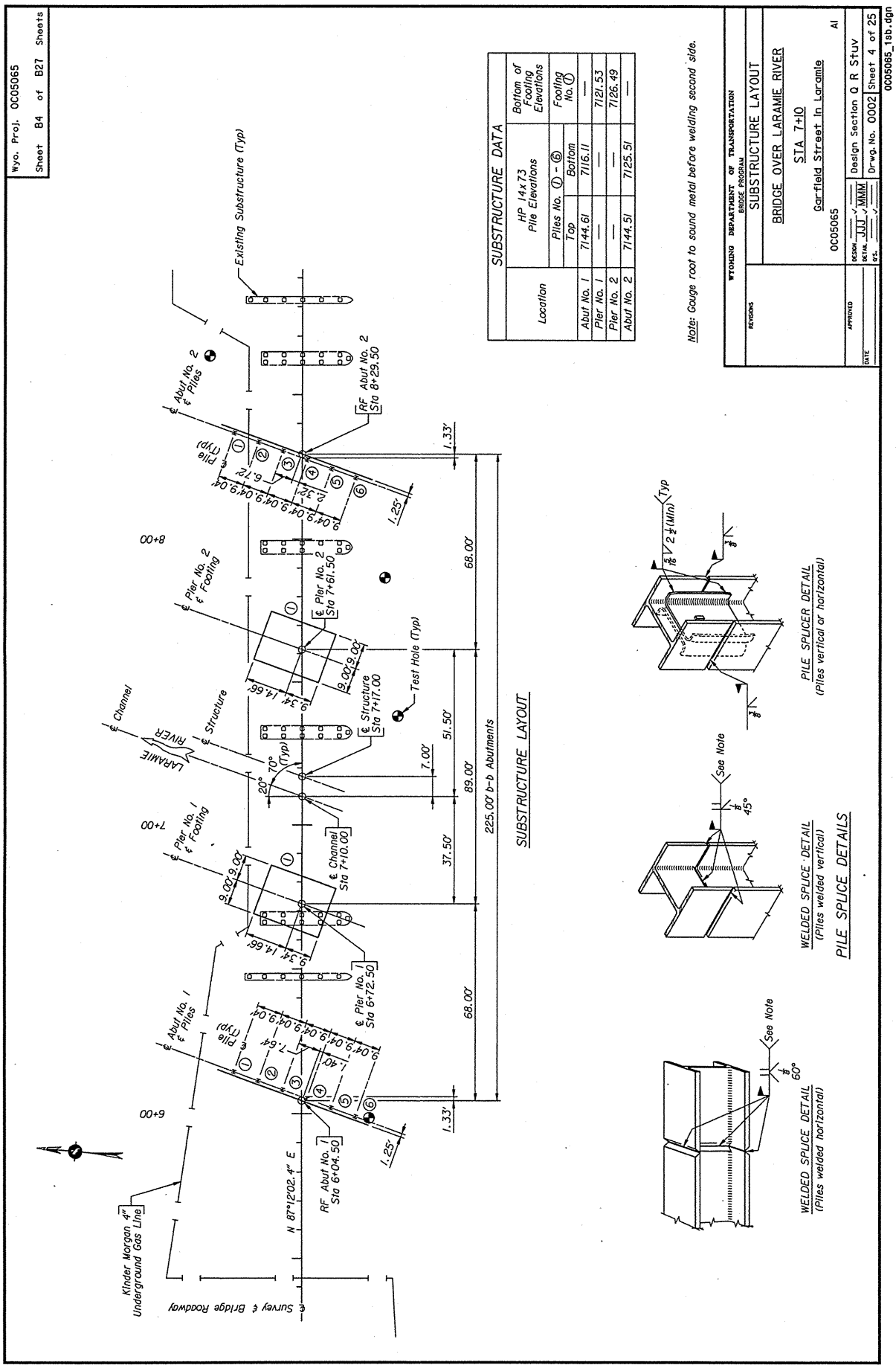
DESIGN ____ ✓ ____
DETAIL HHH ✓ MMM
QS. ____ ✓ ____

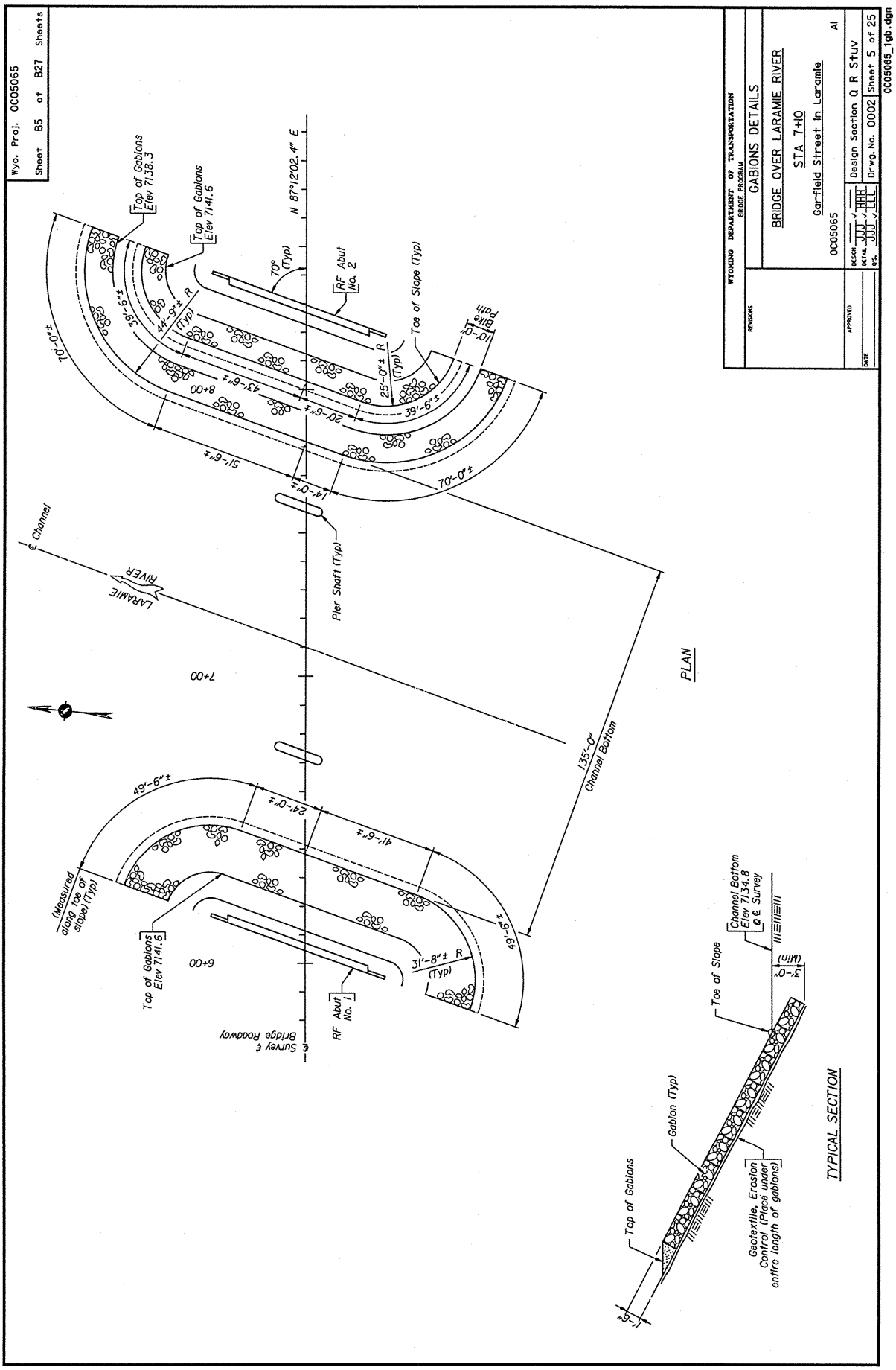
Design Section Q R Stuv

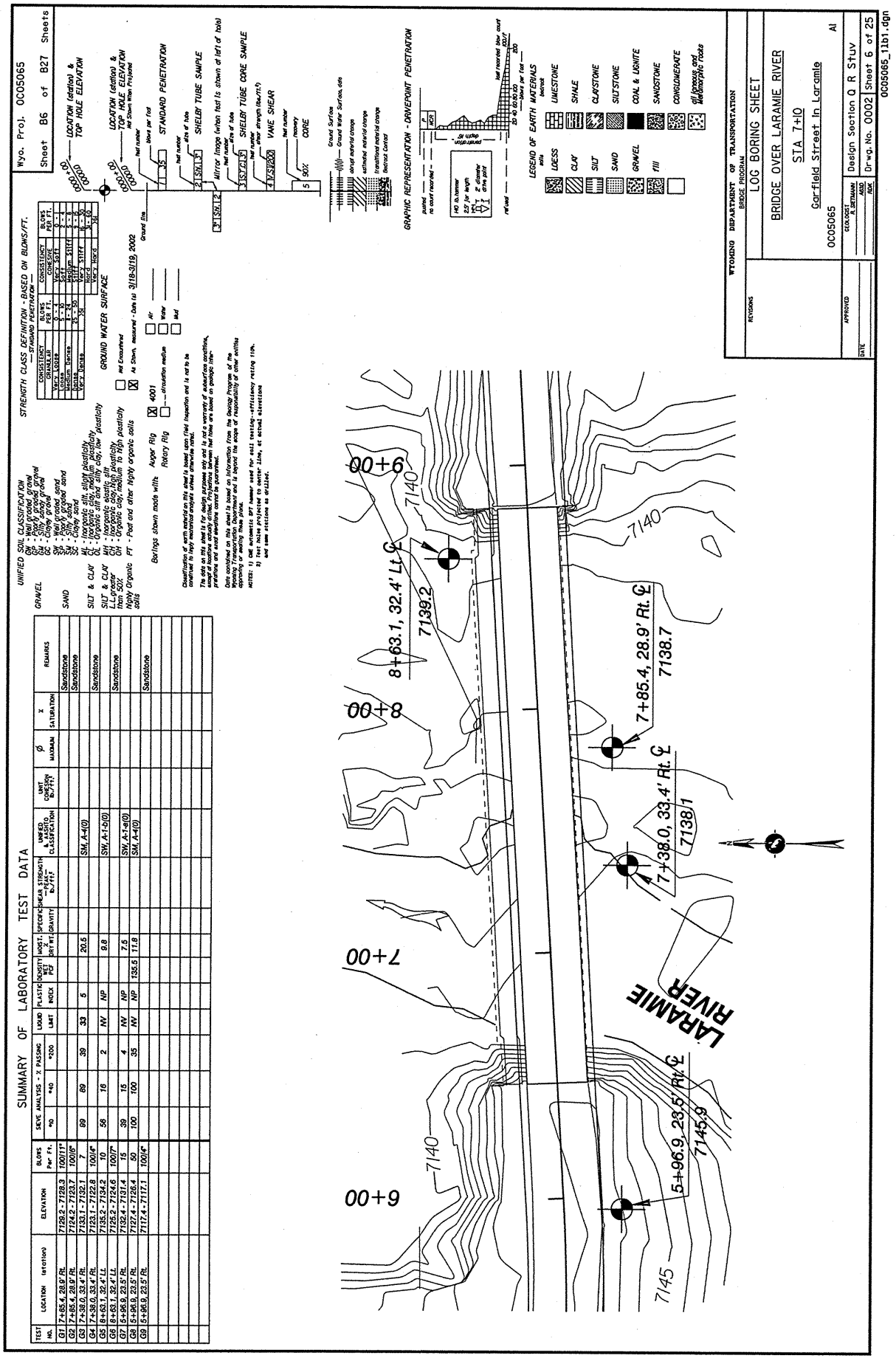
Drwg. No. 0002 | Sheet 2 of 25

0C05065_1gn.dgn

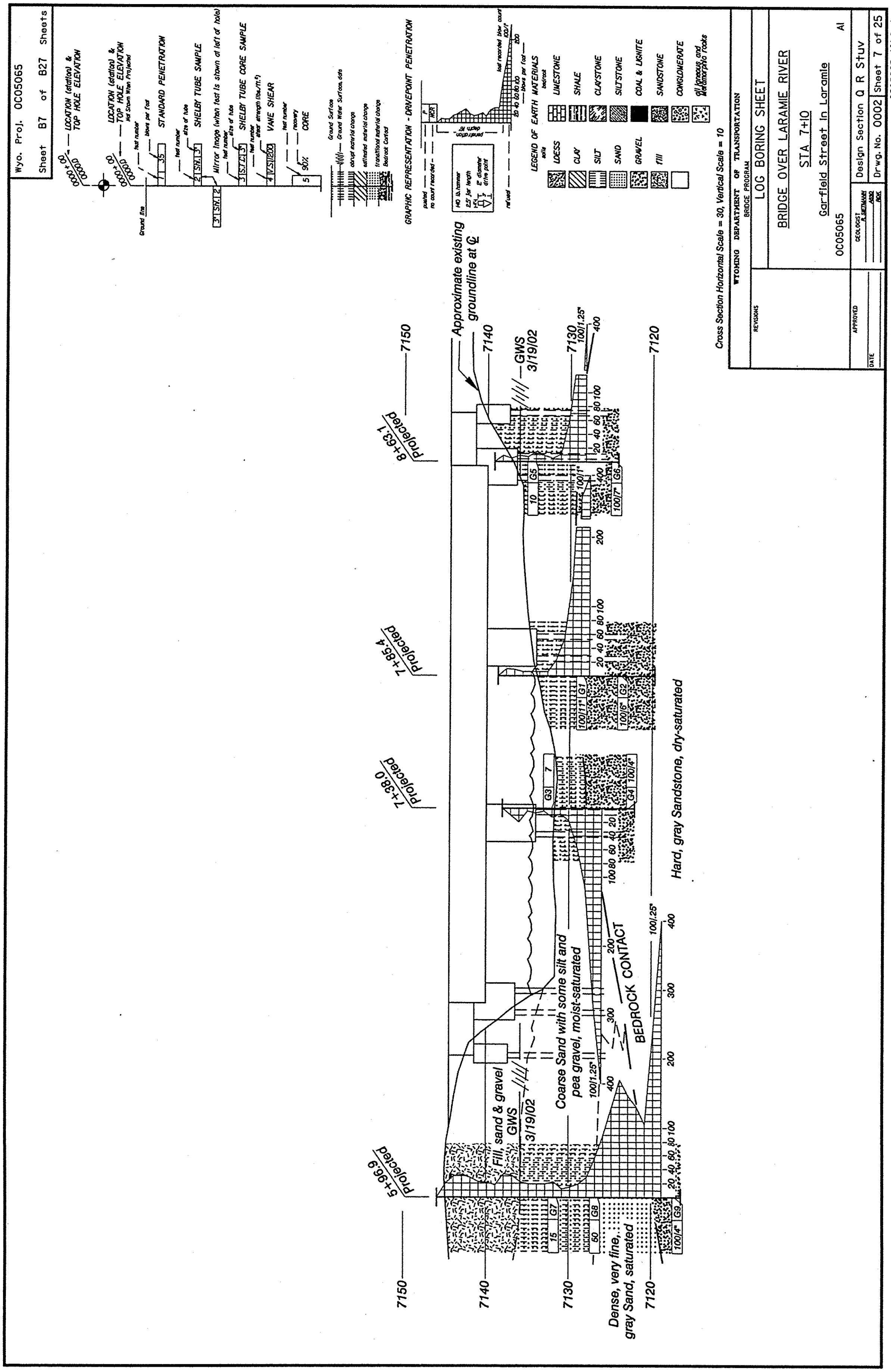

Wyo. Proj. 0C05065
Sheet B3 of B27 Sheets
GRADE DATA
+0.5000%
-2.0262%
VPI Sta 8+68.00
Elev 7152.14
VC = 500.00'
SECTION A-A
30'-0" Clear Roadway
℄ Bridge Roadway
Slope 2%
Slope 2%
Slope 2%
7'-0" Sidewalk
12'-0" Sidewalk
8'-6" (Typ)
Screed Elev Line (Typ)
Note: 1) Elevations shown as 7150.82 indicate finished grade at rear face abutment on ℄ Bridge Roadway.
2) Berm slopes are 1:2±, measured perpendicular to ℄ Channel.
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS
GENERAL PLAN AND ELEVATION
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street In Laramie
0C05065
APPROVED
DATE
DESIGN
DETAIL JJJ MMM
QC
Design Section Q R Stuv
Drwg. No. 0002 Sheet 3 of 25
0C05065_1gp.dgn
PLAN
Test Hole (Typ)
Gabions (Typ)
RF Abut No. 2 Sta 8+29.50
TO CEDAR ST
℄ Pier No. 2
8+00
℄ Pier No. 2 Sta 7+61.50
10'-0" Bike Path
℄ Channel
℄ Structure
℄ Pier No. 1
7+00
℄ Structure Sta 7+17.00
LARAMIE RIVER
℄ Channel Sta 7+10.00
6'-6" Berm (Typ)
℄ Pier No. 1 Sta 6+72.50
6+00
TO SNOWY RANGE RD
Approach Slab (Typ)
RF Abut No. 1 Sta 6+04.50
5+00
℄ Survey & Bridge Roadway
N 87°12'02.4" E
Kinder Morgan 4" Underground Gas Line
7'-0"
20°
70° (Typ)
135'-0" Channel Bottom
37'-6"
51'-6"
89'-0"
68'-0"
68'-0"
225'-0" b-b Abutments
ELEVATION
(3 Continuous Composite Welded Plate Girder Spans)
Top of Gabions & Bike Path Elev 7138.3
Berm Elev 7145.0
Elev 7150.82
HP 14x73 x 19'-0" (6 req'd)
Fix
Sta 8+06.2 of ℄ Survey
Sta 7+85.0 of ℄ Survey
±9'-8"
Grade on Vertical Curve
Elev 7134.8 of ℄ Survey
Sand & Gravel (Remove)
High Water Qaa Elev 7140.6
Ordinary High Water Elev 7138.1
Gabions (Typ)
Top of Gabions Elev 7141.6 (Typ)
Berm Elev 7145.1
Elev 7150.82
HP 14x73 x 28'-6" (6 req'd)
Approximate Existing Ground Line at ℄ Survey
Sta 6+35.0 of ℄ Survey
SPAN NO. 1
(66'-8" ℄ Abut to ℄ Bearing)
ABUTMENT NO. 1
SPAN NO. 2
(89'-0" ℄ Bearing to ℄ Bearing)
PIER NO. 1
SPAN NO. 3
(66'-8" ℄ Bearing to ℄ Abut)
PIER NO. 2
ABUTMENT NO. 2
7160
7150
7140
7130
7120
7110
7100

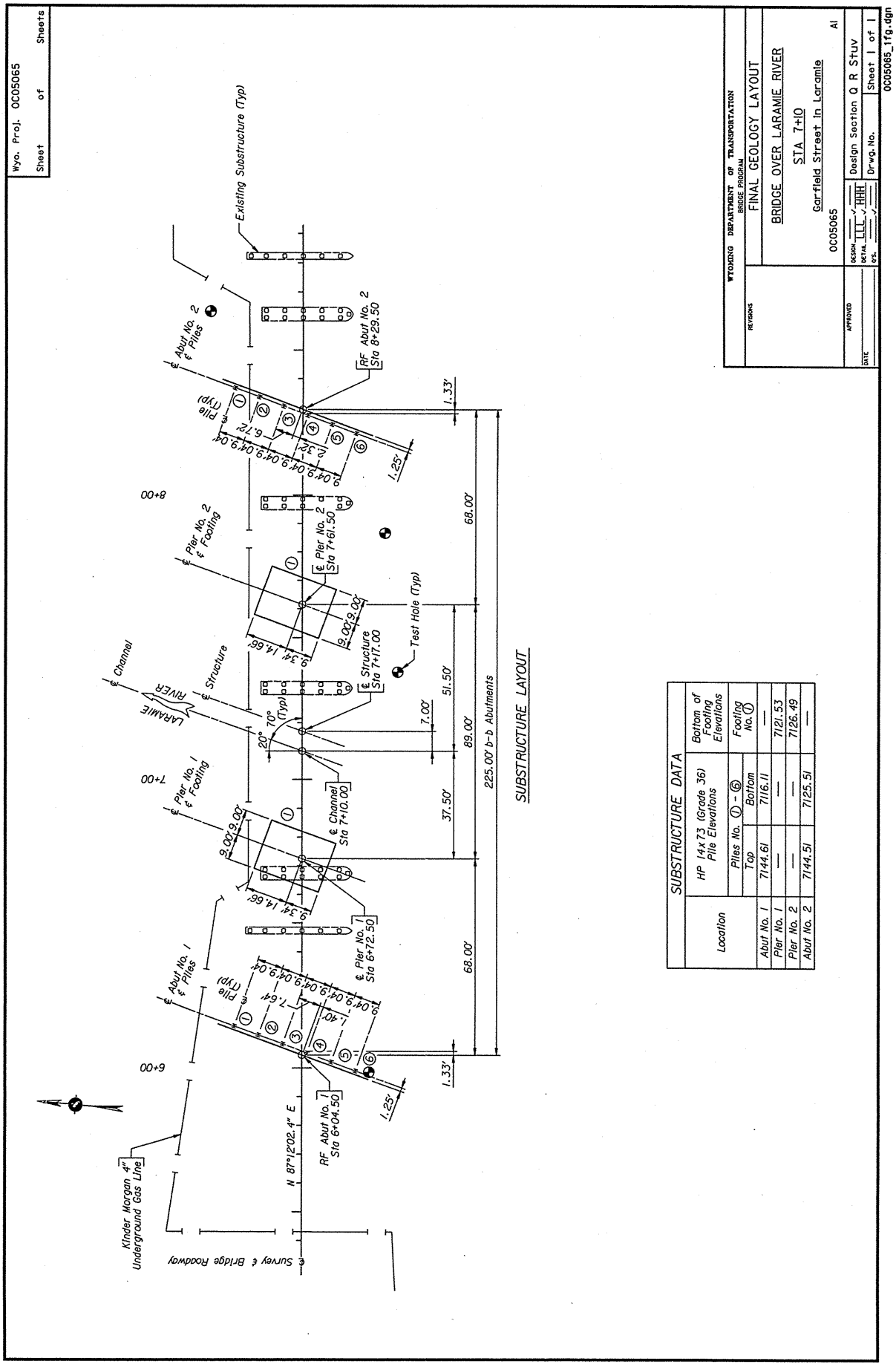

Wyo. Proj. OC05065
Sheet B4 of B27 Sheets
Existing Substructure (Typ)
℄ Abut No. 2 ℄ Piles
RF Abut No. 2 Sta 8+29.50
Pile (Typ)
1.33'
1.25'
68.00'
8+00
℄ Pier No. 2 ℄ Footing
℄ Pier No. 2 Sta 7+61.50
9.00'
9.00'
14.66'
℄ Channel
RIVER
LARAMIE
℄ Structure
℄ Structure Sta 7+17.00
Test Hole (Typ)
20°
70° (Typ)
7.00'
51.50'
89.00'
225.00' b-b Abutments
SUBSTRUCTURE LAYOUT
7+00
℄ Pier No. 1 ℄ Footing
℄ Channel Sta 7+10.00
37.50'
℄ Pier No. 1 Sta 6+72.50
℄ Abut No. 1 ℄ Piles
6+00
RF Abut No. 1 Sta 6+04.50
N 87°12'02.4" E
Survey ℄ Bridge Roadway
Kinder Morgan 4" Underground Gas Line
SUBSTRUCTURE DATA
Location
HP 14x73 Pile Elevations
Piles No. ① - ⑥
Top
Bottom
Footing No. ①
Bottom of Footing Elevations
Abut No. 1 | 7144.61 | 7116.11 | — | 7121.53
Pier No. 1 | — | — | — | —
Pier No. 2 | — | — | — | 7126.49
Abut No. 2 | 7144.51 | 7125.51 | — | —
Note: Gauge 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
OC05065
APPROVED
DESIGN
DETAIL JJJ MMM
QTY.
DATE
Design Section Q R Stuv
Drwg. No. 0002 Sheet 4 of 25
OC05065_1sb.dgn
2 ℄ (Min) Typ
PILE SPLICER DETAIL
(Piles vertical or horizontal)
See Note
45°
WELDED SPLICE DETAIL
(Piles welded vertical)
See Note
60°
WELDED SPLICE DETAIL
(Piles welded horizontal)
PILE SPLICE DETAILS


Wyo. Proj. 0C05065
Sheet 85 of 827 Sheets
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS
APPROVED
DATE
GABIONS DETAILS
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street in Laramie
0C05065
DESGN
DETAIL JJJ
QCS. JJJ
Design Section Q R Stuv
Drwg. No. 0002
Sheet 5 of 25
0005085_1gb.dgn
Top of Gabions Elev 7138.3
Top of Gabions Elev 7141.6
N 87°12'02.4" E
70° (Typ)
RF Abut No. 2
Toe of Slope (Typ)
Bike Path
10'-0"±
25'-0"± R (Typ)
44'-9"± R (Typ)
70'-0"±
43'-6"±
20'-6"±
39'-6"±
51'-6"±
14'-0"±
℄ Channel
LARAMIE RIVER
Pier Shaft (Typ)
7+00
8+00
6+00
PLAN
135'-0" Channel Bottom
49'-9"±
41'-6"±
24'-0"±
31'-8"± R (Typ)
(Measured along toe of slope) (Typ)
Top of Gabions Elev 7141.6
RF Abut No. 1
℄ Survey ℄ Bridge Roadway
Channel Bottom Elev 7134.8 ℄ Survey
Toe of Slope
3'-0" (MIN)
Gabion (Typ)
Top of Gabions
Geotextile, Erosion Control (Place under entire length of gabions)
1'-6"±
TYPICAL SECTION



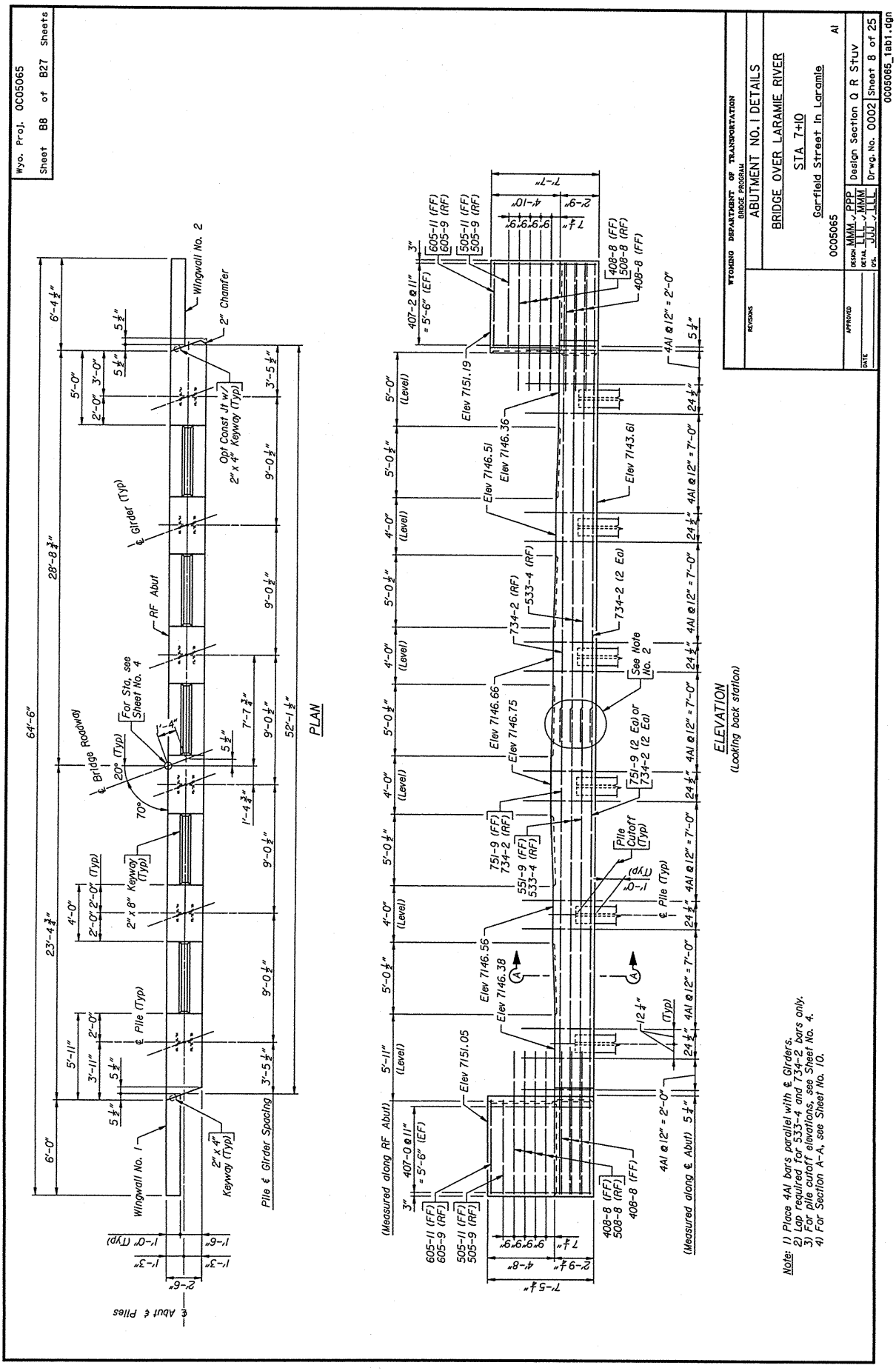
TEST NO.	LOCATION (station)	ELEVATION	BLOWS Per Ft.	SIEVE ANALYSIS - % PASSING #10	#40	#200	LIQUID LIMIT	PLASTIC INDEX	DENSITY PCF	MOIST. CONT. %	SPECIFIC GRAVITY	SHEAR STRENGTH PSF	UNIFIED CLASSIFICATION	UNIT DRY WEIGHT	ϕ MAXIMUM	% SATURATION	REMARKS
G1	7+85.4, 28.9' Rt.	7128.2 - 7128.3	100/11"														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	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.	7126.2 - 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)				
G9	5+96.9, 23.5' Rt.	7117.4 - 7117.1	100/4"														Sandstone

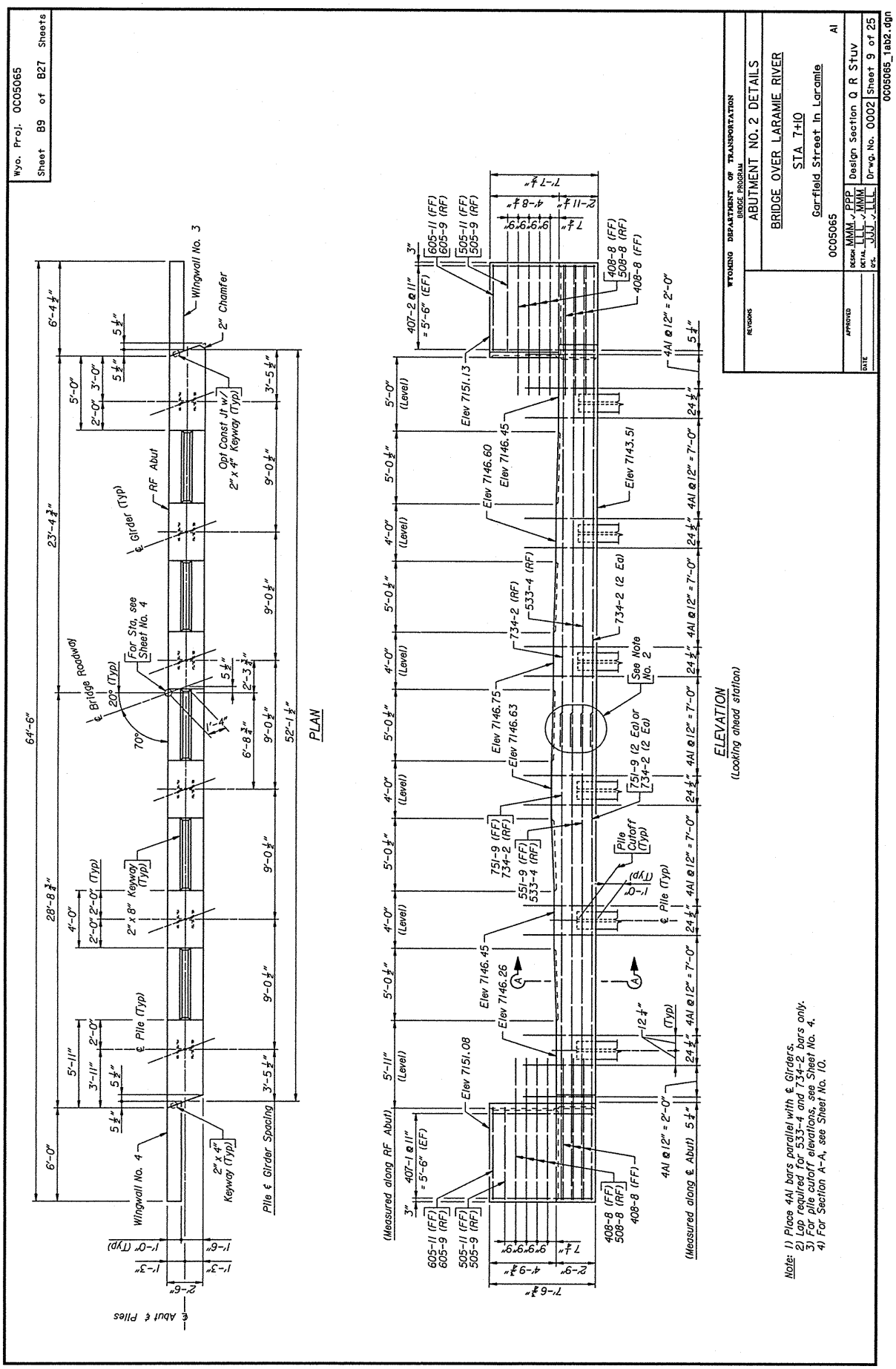

LOG BORING SHEET
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street in Laramie
0C05065
WYOMING DEPARTMENT OF TRANSPORTATION
Cross Section Horizontal Scale = 30, Vertical Scale = 10
Approximate existing groundline at ℄
GWS 3/19/02
Fill, sand & gravel
Coarse Sand with some silt and pea gravel, moist-saturated
BEDROCK CONTACT
Hard, gray Sandstone, dry-saturated
Dense, very fine, gray Sand, saturated
LEGEND OF EARTH MATERIALS
GRAPHIC REPRESENTATION - DRIVEPOINT PENETRATION
Wyo. Proj. 0C05065
Sheet B7 of B27 Sheets
Drwg. No. 0002
Sheet 7 of 25
0C05065_11b2.dgn

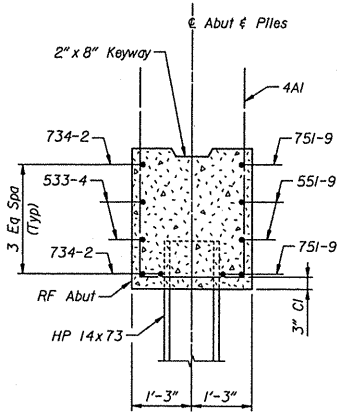


SUBSTRUCTURE DATA

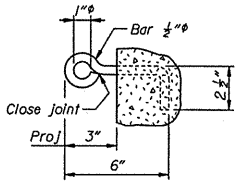
Location	HP 14x73 (Grade 36) Pile Elevations		Bottom of Footing Elevations
	Piles No. ① - ⑥		Footing No. ①
	Top	Bottom	
Abut No. 1	7144.61	7116.11	—
Pier No. 1	—	—	7121.53
Pier No. 2	—	—	7126.49
Abut No. 2	7144.51	7125.51	—


Wyo. Proj. 0C05065
Sheet 88 of 827 Sheets
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS
ABUTMENT NO. 1 DETAILS
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street in Laramie
0C05065
APPROVED
DATE
DESIGN MWM PPP
DETAIL LLL MWM
QTY. JJJ LLL
Design Section Q R Stuv
Drwg. No. 0002
Sheet 8 of 25
0005065_1ab1.dgn
PLAN
ELEVATION
(Looking back station)
Wingwall No. 1
Wingwall No. 2
RF Abut
Bridge Roadway
Girder (Typ)
Pile (Typ)
Pile Cutoff (Typ)
Pile & Girder Spacing
2" Chamfer
Opt Const Jt w/ 2" x 4" Keyway (Typ)
2" x 8" Keyway (Typ)
2" x 4" Keyway (Typ)
For Sta, see Sheet No. 4
See Note No. 2
Elev 7146.66
Elev 7146.75
Elev 7146.56
Elev 7146.38
Elev 7151.05
Elev 7151.19
Elev 7146.51
Elev 7146.36
Elev 7143.61
751-9 (FF)
734-2 (RF)
551-9 (FF)
533-4 (RF)
751-9 (2 Ea) or
734-2 (2 Ea)
734-2 (2 Ea)
407-0 @ 11" = 5'-6" (EF)
605-11 (FF)
605-9 (RF)
505-11 (FF)
505-9 (RF)
408-8 (FF)
508-8 (RF)
4Al @ 12" = 2'-0"
4Al @ 12" = 7'-0"
Note: 1) Place 4Al bars parallel with ℄ 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.


Wyo. Proj. OC05065
Sheet 89 of 827 Sheets
PLAN
ELEVATION
(Looking ahead station)
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS
APPROVED
DATE
ABUTMENT NO. 2 DETAILS
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street In Laramie
OC05065
DESN MMM PPP
DETR LLL MMM
CPL JJJ LLL
Design Section Q R Stuv
Drwg. No. 0002 Sheet 9 of 25
OC05065_1ab2.dgn
Note: 1) Place 4Al bars parallel with ℄ 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.



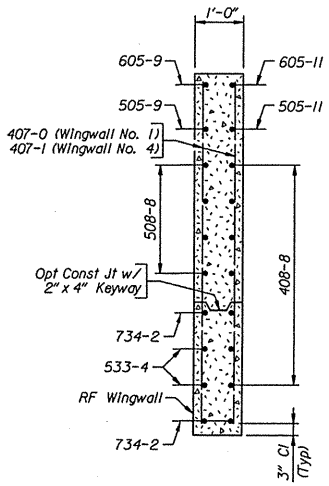
SECTION A-A



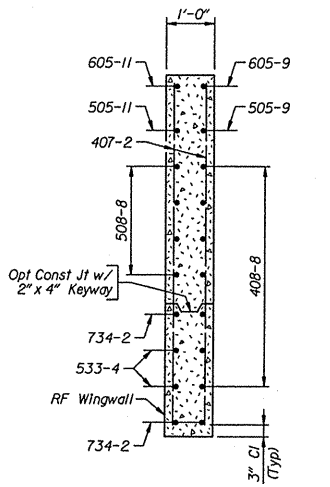
EYEBOLT DETAIL
(16 req'd for securing fence)

BILL OF REINFORCEMENT			
Location	Mark	Number Required	
		Abut No. 1	Abut No. 2
Cap	4A1	46	46
	408-8	14	14
	533-4	4	4
	551-9	2	2
	734-2	6	6
	751-9	3	3
	Weight	1433 LB	1433 LB
Wingwalls	407-0	14	———
	407-1	———	14
	407-2	14	14
	505-9	2	2
	505-11	2	2
	508-8	8	8
	605-9	2	2
	605-11	2	2
	Weight	264 LB	265 LB
Bending Diagram			

4A1 (Stirrup)
(12'-0")



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 B 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 A1

APPROVED

DATE

DESIGN MMM ✓ PPP
DETAIL LLL ✓ MMM
QA'S. JJJ ✓ LLL

Design Section Q R Stuv

Drwg. No. 0002 | Sheet 10 of 25

0C05065_1ab3.dgn

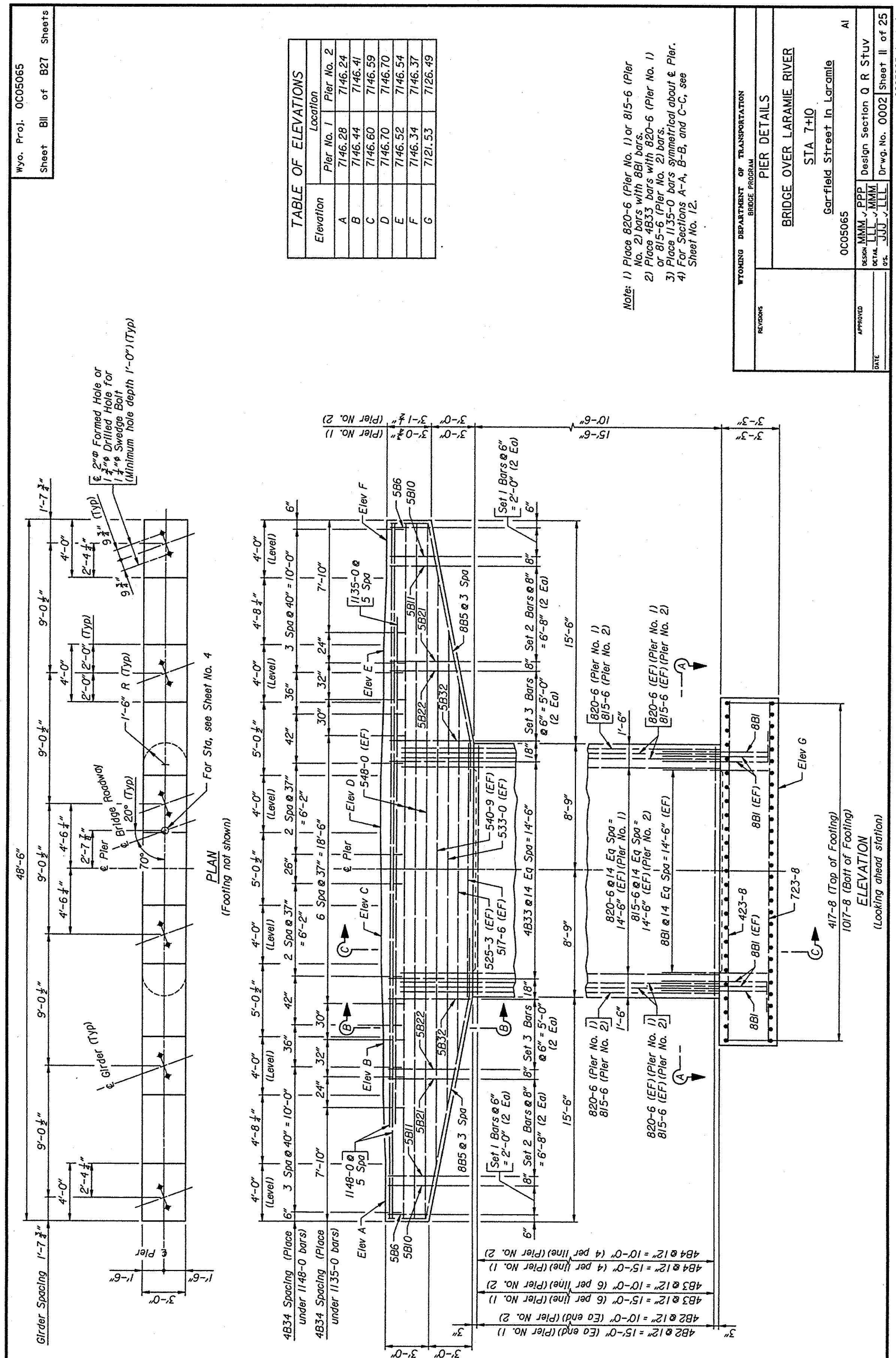


TABLE OF ELEVATIONS

Elevation	Location: Pier No. 1	Location: 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 ℄ Pier.
4) For Sections A-A, B-B, and C-C, see Sheet No. 12.

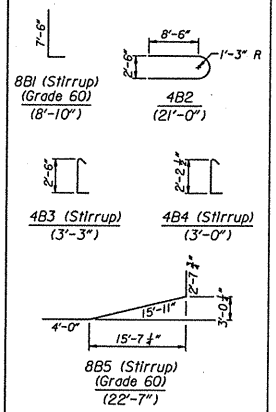
Wyo. Proj. 0C05065

Sheet B12 of B27 Sheets

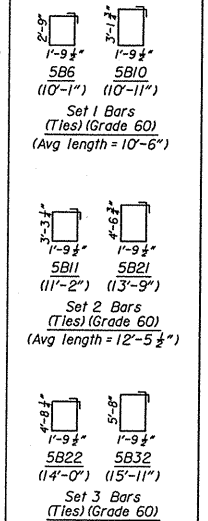
BILL OF REINFORCEMENT

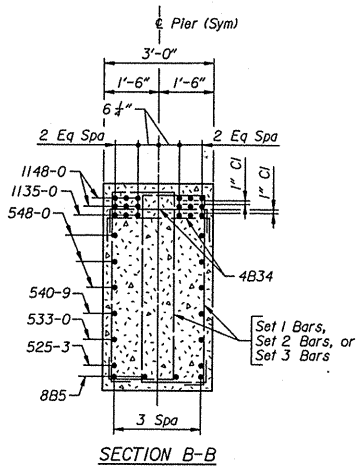
Location	Mark	Number Required	
		Pier No. 1	Pier No. 2
Cap	4B33	15	15
	4B34	29	29
	517-6	2	2
	525-3	2	2
	533-0	2	2
	540-9	2	2
	548-0	6	6
	Set 1 Bars	4	4
	Set 2 Bars	4	4
	Set 3 Bars	4	4
	8B5	8	8
	1135-0	6	6
	1148-0	12	12
	Weight	6855 LB	6855 LB
Shaft	4B2	32	22
	4B3	96	66
	4B4	64	44
	815-6	—	40
	820-6	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

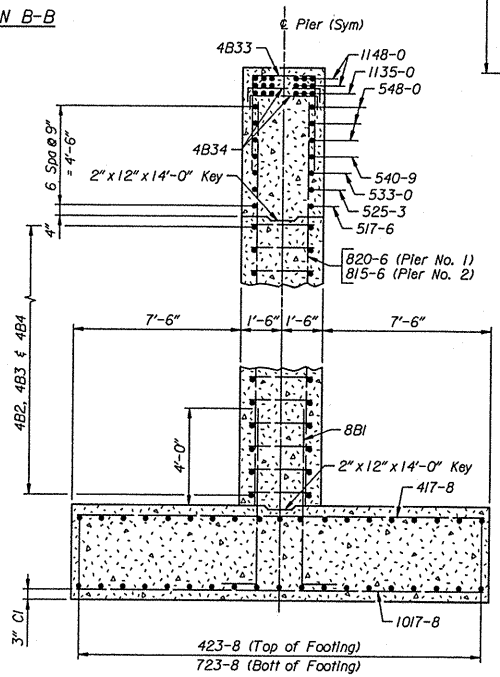


Set Diagrams

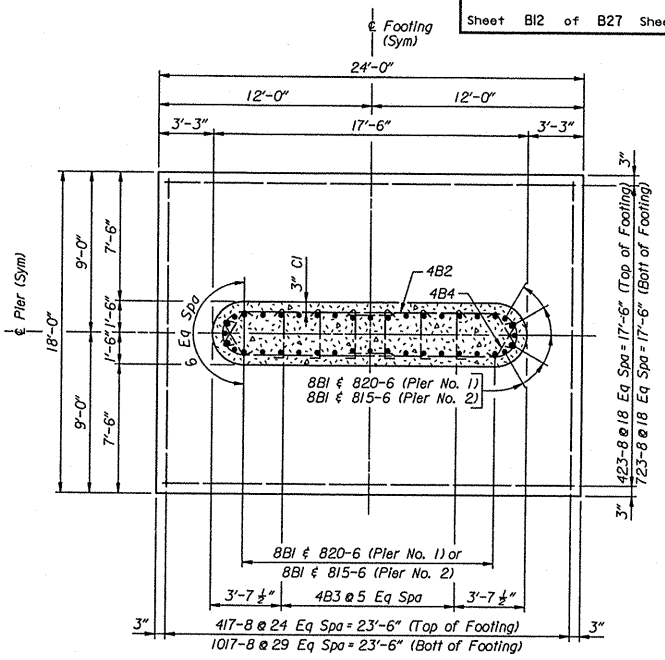




SECTION B-B



SECTION C-C



SECTION A-A

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 B 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

REVISIONS

PIER DETAILS

BRIDGE OVER LARAMIE RIVER

STA 7+10

Garfield Street In Laramie

0C05065 A1

APPROVED

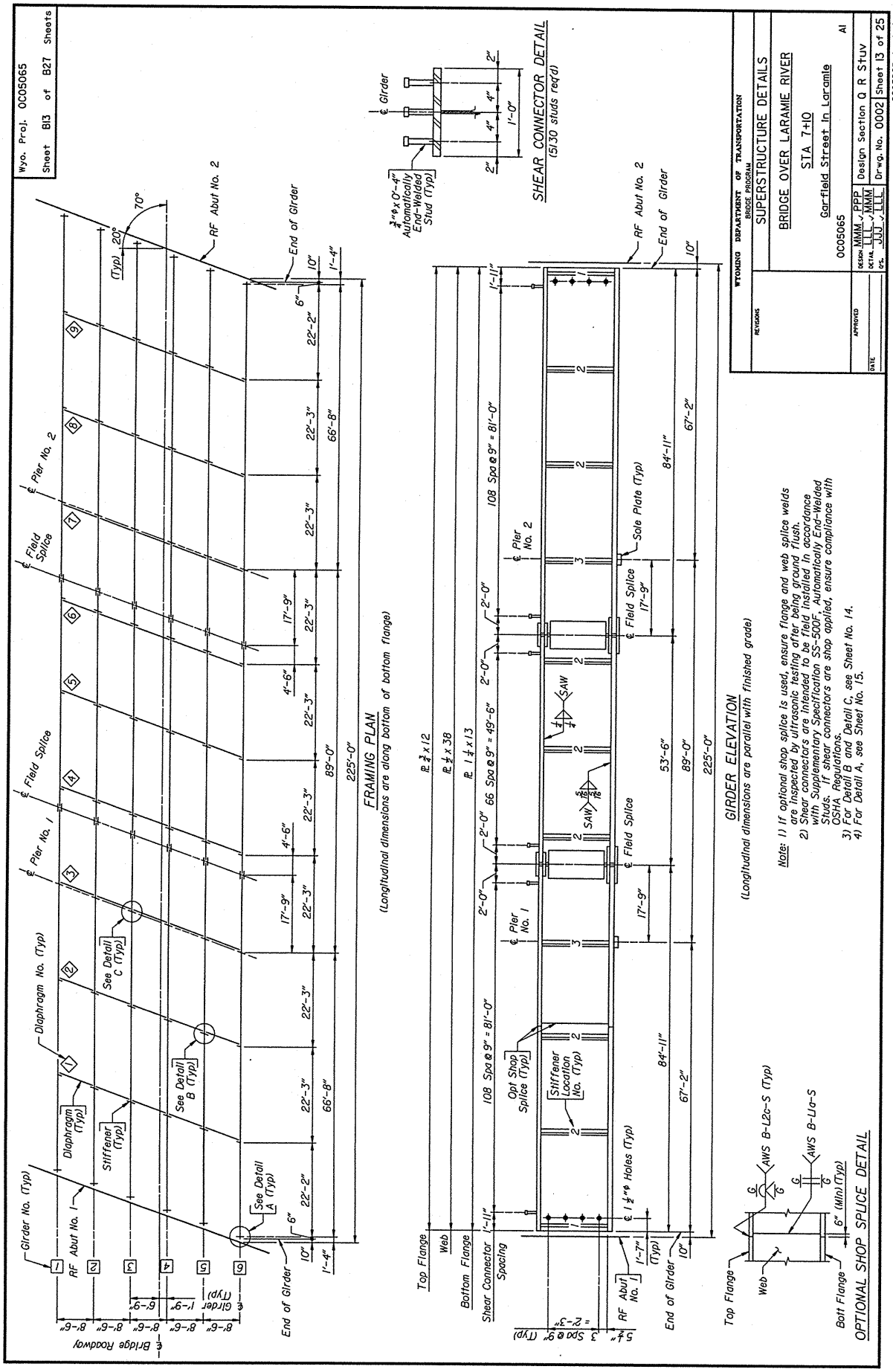
DATE

DESIGN MMM ✓ PPP
DETAIL LLL ✓ MMM
Q'S. JJJ ✓ LLL

Design Section Q R Stuv

Drwg. No. 0002 | Sheet 12 of 25

0C05065_1pr2.dgn


Wyo. Proj. 0C05065
Sheet 813 of 827 Sheets
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS
APPROVED
DATE
SUPERSTRUCTURE DETAILS
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street in Laramie
0C05065
DESIGN MMM PPP
DETAIL LLL MMM
CK. JJJ LLL
Design Section Q R Stuv
Drwg. No. 0002 Sheet 13 of 25
0C05065_1s81.dgn
FRAMING PLAN
(Longitudinal dimensions are along bottom of bottom flange)
GIRDER ELEVATION
(Longitudinal dimensions are parallel with finished grade)
SHEAR CONNECTOR DETAIL
(5130 studs req'd)
OPTIONAL SHOP SPLICE DETAIL
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 B and Detail C, see Sheet No. 14.
4) For Detail A, see Sheet No. 15.
Girder No. (Typ)
RF Abut No. 1
Diaphragm No. (Typ)
Diaphragm (Typ)
Stiffener (Typ)
See Detail A (Typ)
See Detail B (Typ)
See Detail C (Typ)
Pier No. 1
Pier No. 2
Field Splice
RF Abut No. 2
End of Girder
70°
20° (Typ)
℄ Bridge Roadway
℄ Girder (Typ)
8'-6" 8'-6" 8'-6" 8'-6" 8'-6" 8'-6"
6'-9" 6'-9" 6'-9"
22'-2" 22'-3" 22'-3" 22'-3" 22'-3" 22'-2"
66'-8" 89'-0" 225'-0"
4'-6" 17'-9" 17'-9" 4'-6"
6" 10" 1'-4"
Top Flange
Web
Bottom Flange
Shear Connector Spacing
PL 3/4 x 12
PL 3/4 x 38
PL 1 1/4 x 13
108 Spa @ 9" = 81'-0"
66 Spa @ 9" = 49'-6"
2'-0"
1'-11"
Opt Shop Splice (Typ)
Stiffener Location No. (Typ)
1 1/4" Holes (Typ)
5 1/4" 3 Spa @ 9" = 2'-3" (Typ)
1'-7" (Typ)
Sole Plate (Typ)
SAW
53'-6"
84'-11"
67'-2"
AWS B-L2c-S (Typ)
AWS B-U4-S
6" (Min) (Typ)
Batt Flange
3/4"ø x 0'-4" Automatically End-Welded Stud (Typ)
2" 4" 4" 1'-0" 2"

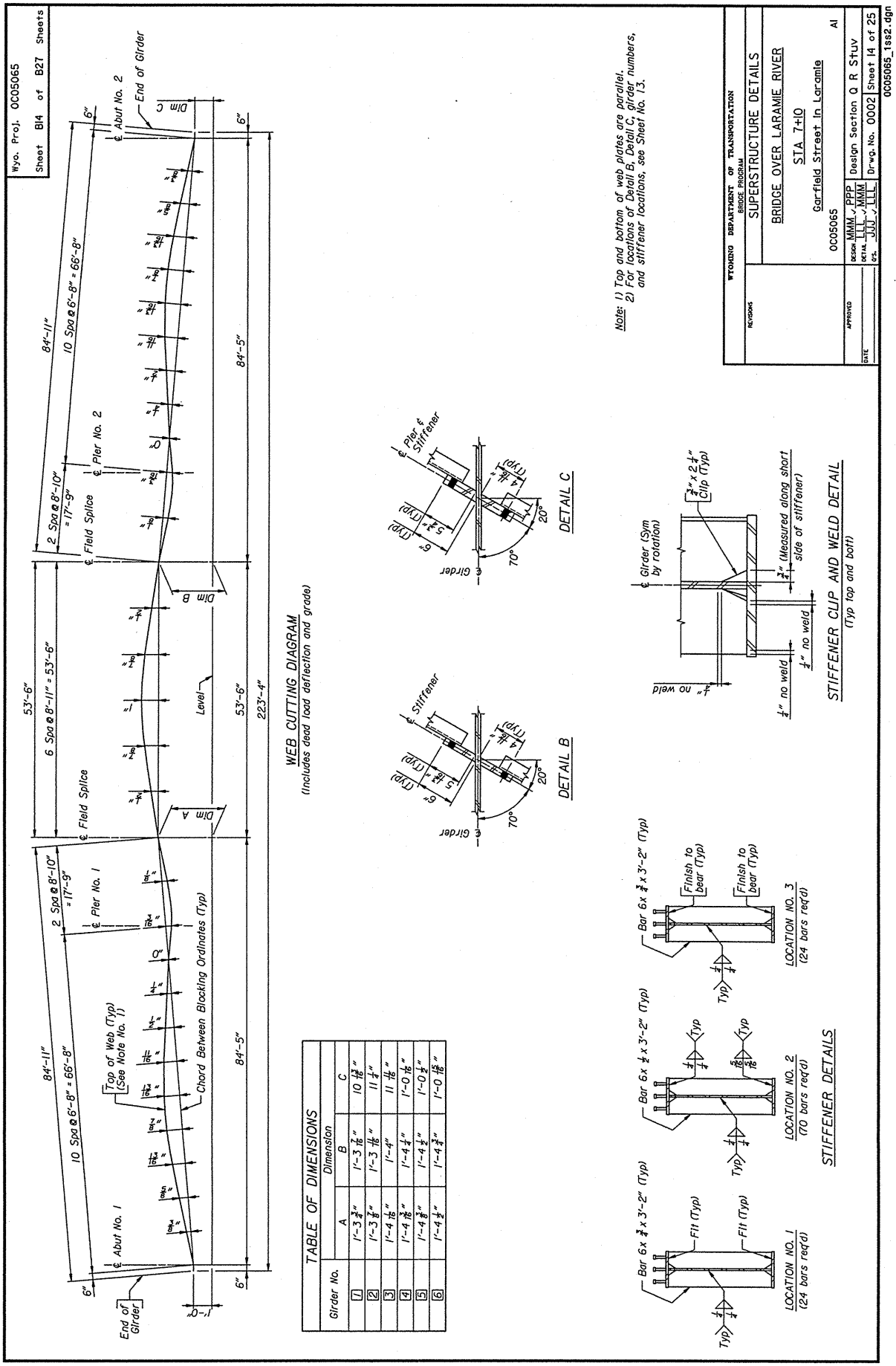
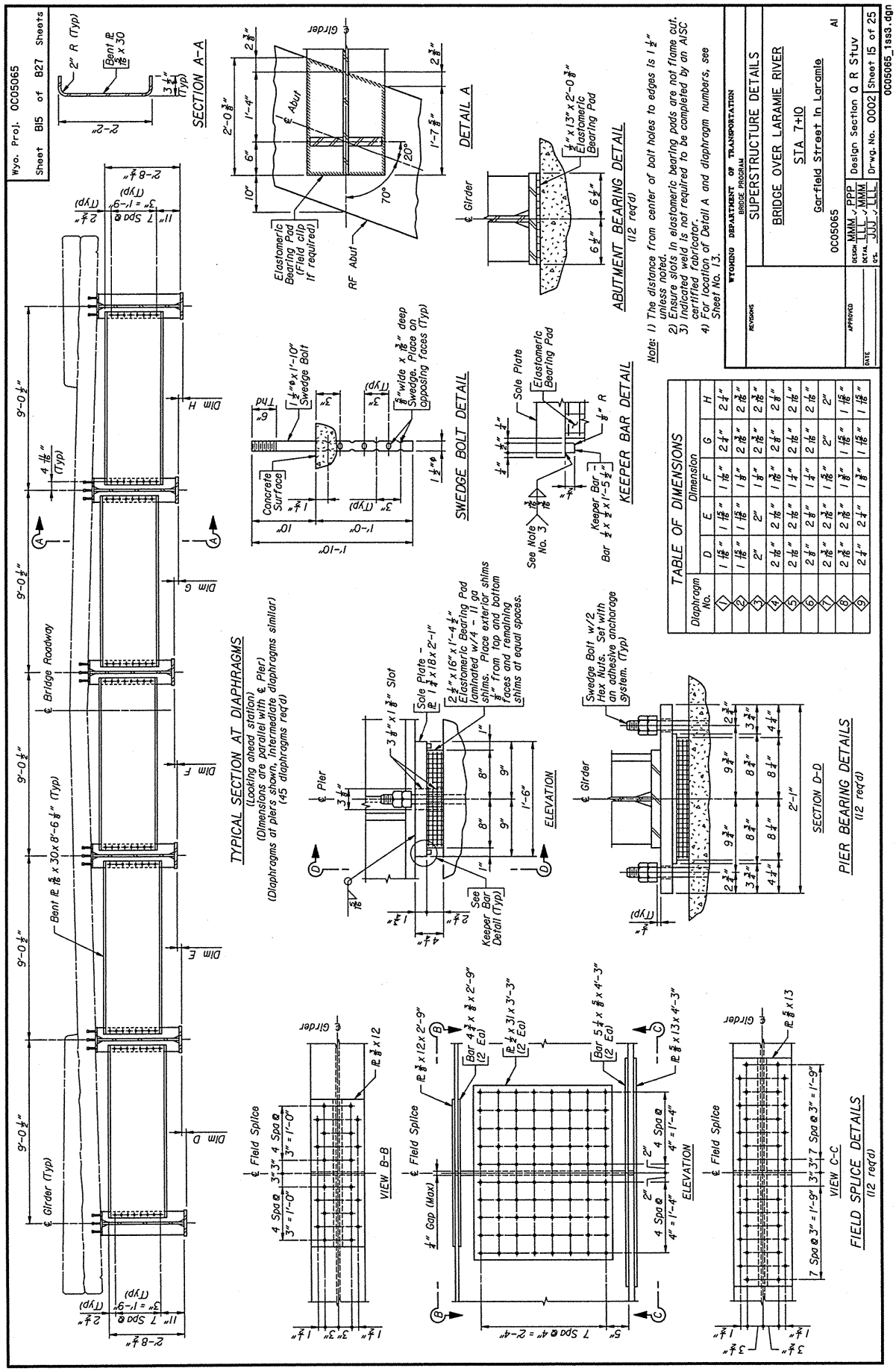
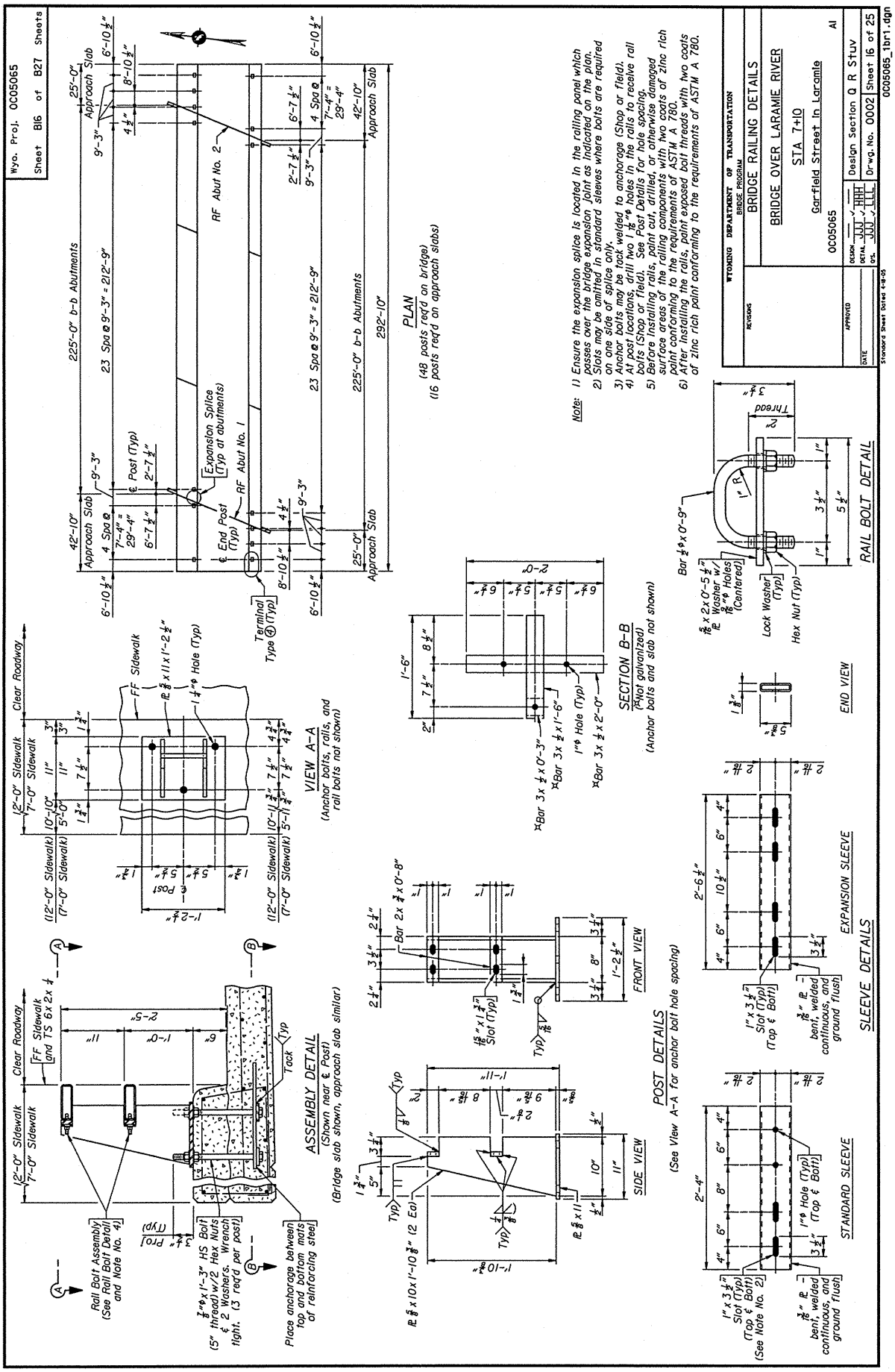
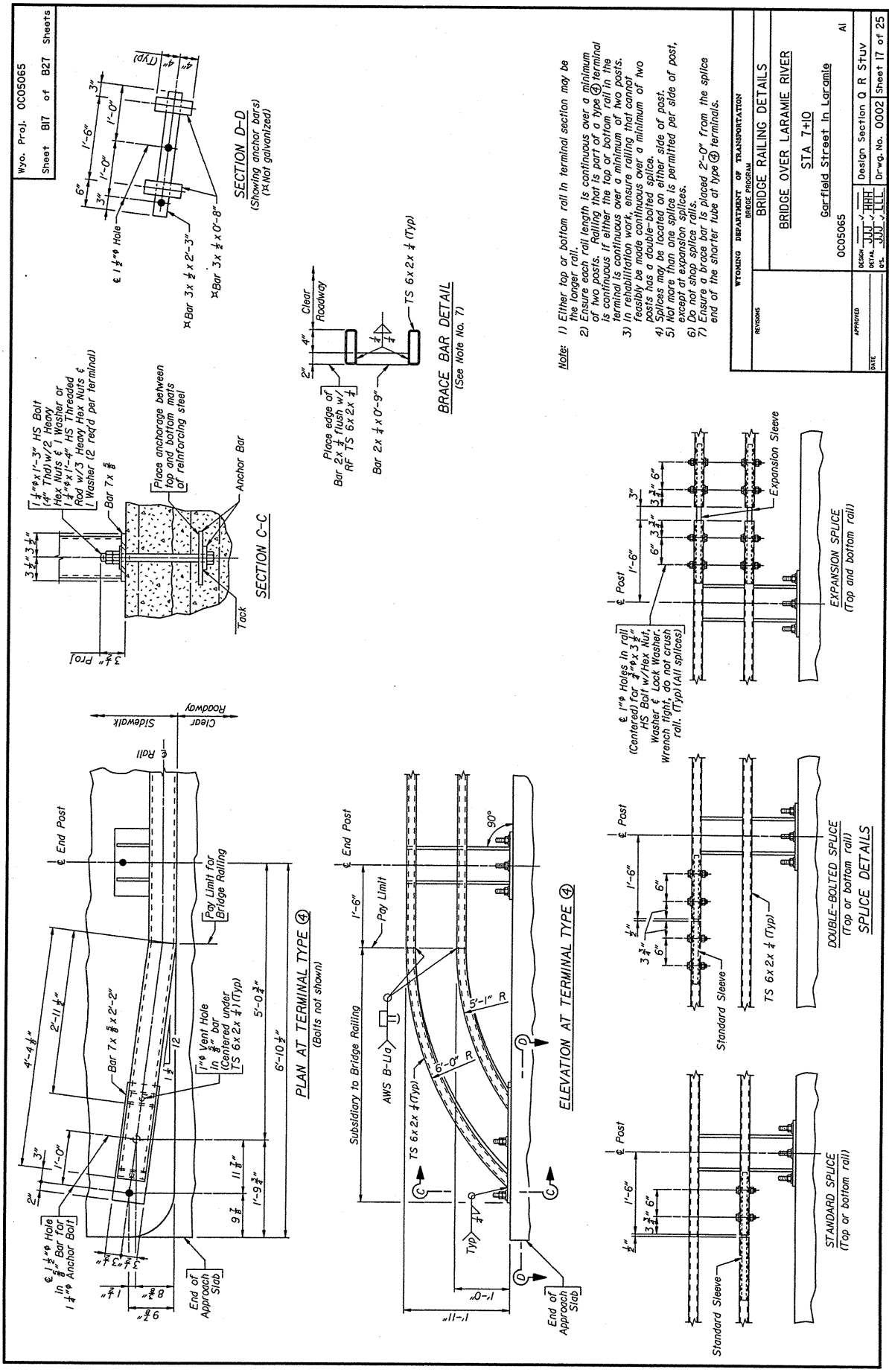


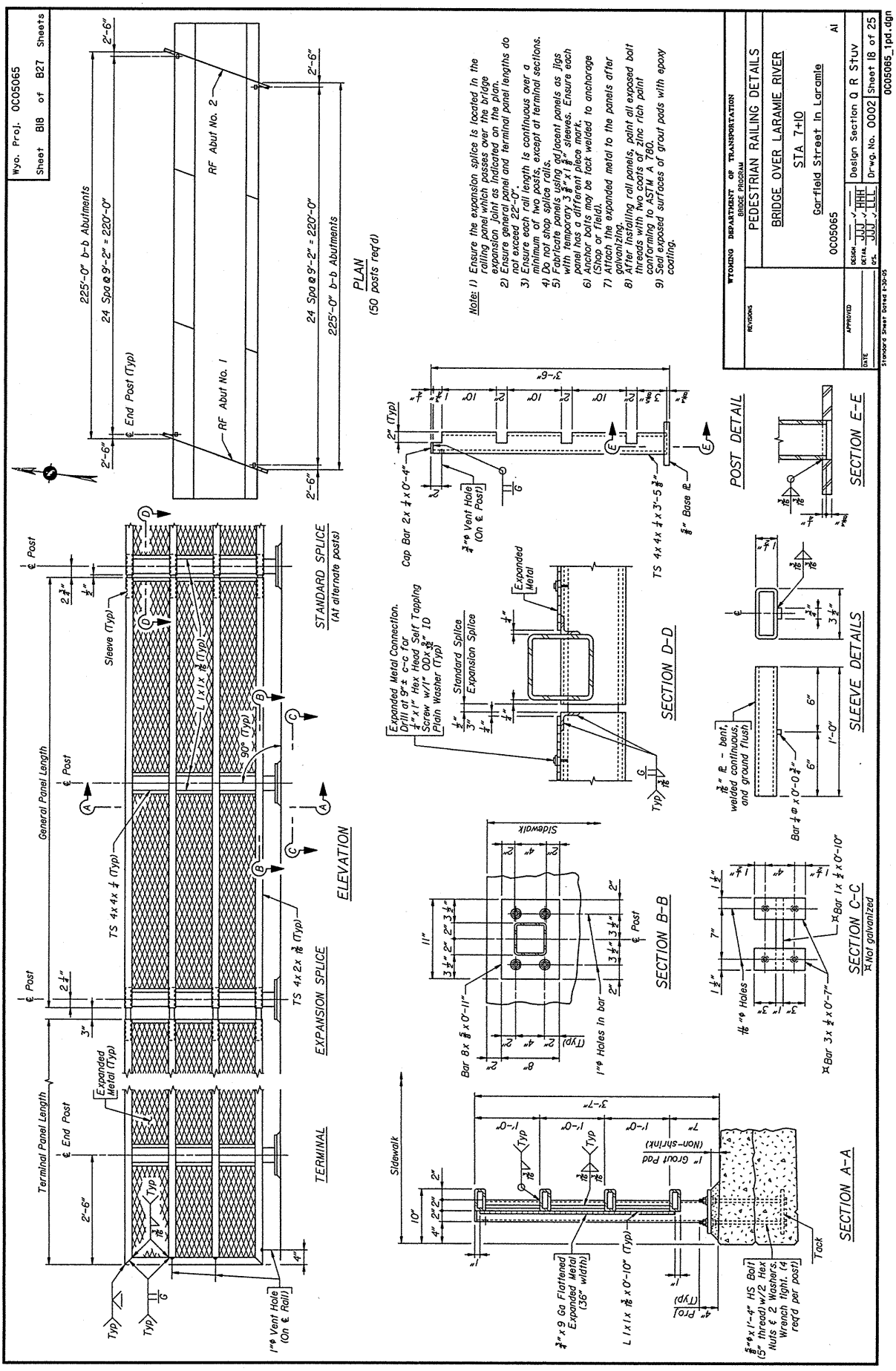
TABLE OF DIMENSIONS

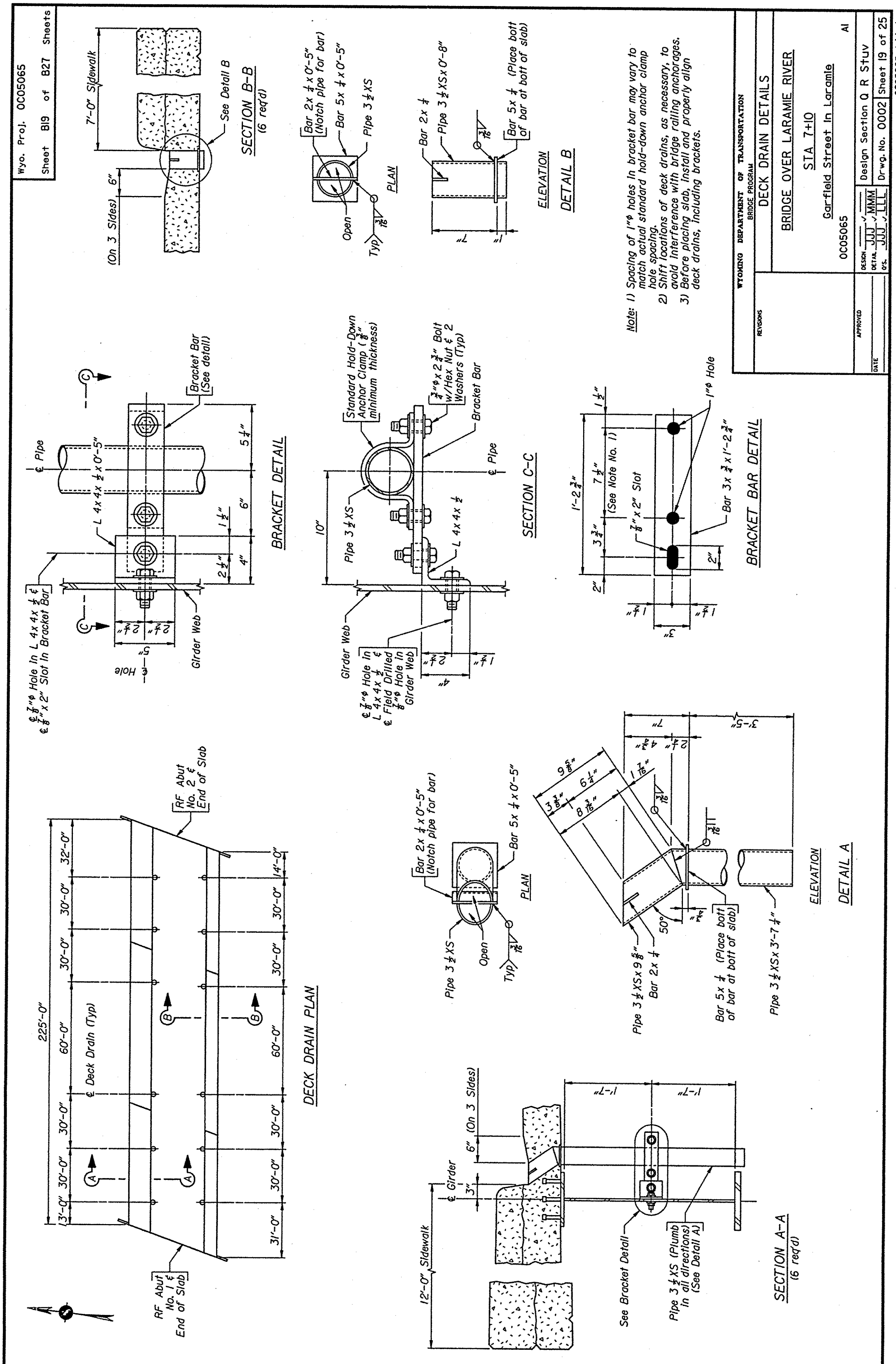
Girder No.	Dimension A	Dimension B	Dimension C
1	1'-3 3/8"	1'-3 1/2"	10 13/16"
2	1'-3 3/8"	1'-3 11/16"	11 1/4"
3	1'-4 1/16"	1'-4"	11 1/16"
4	1'-4 7/16"	1'-4 1/4"	1'-0 1/16"
5	1'-4 3/8"	1'-4 1/2"	1'-0 1/4"
6	1'-4 1/2"	1'-4 3/4"	1'-0 1/8"

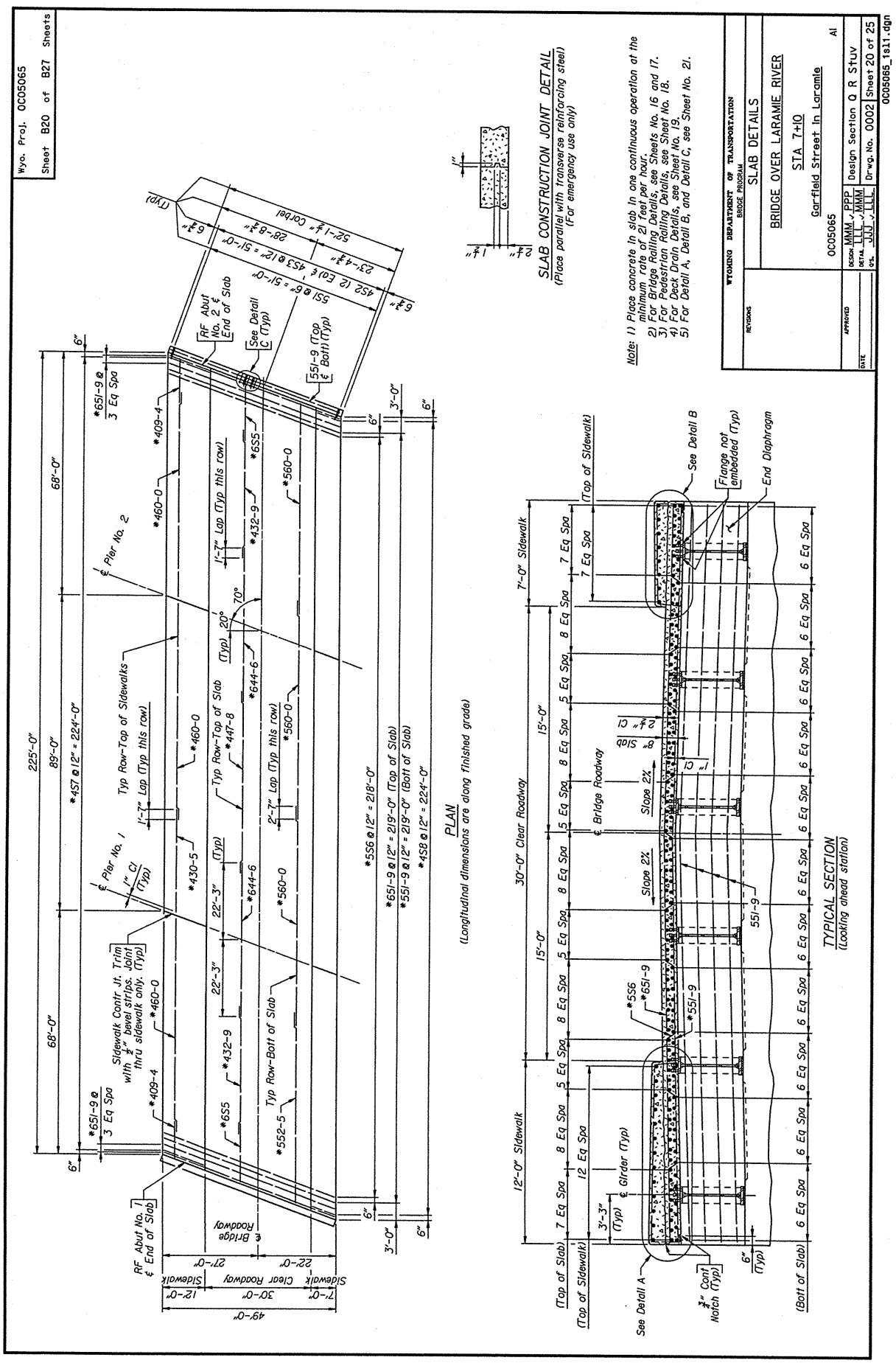

Wyo. Proj. 0C05065
Sheet 815 of 827 Sheets
SECTION A-A
DETAIL A
ABUTMENT BEARING DETAIL
(12 req'd)
SWEDGE BOLT DETAIL
KEEPER BAR DETAIL
TABLE OF DIMENSIONS
Diaphragm No.
Dimension
D
E
F
G
H
Note: 1) The distance from center of bolt holes to edges is 1½" unless noted.
2) Ensure slots in elastomeric bearing pads are not flame cut.
3) Indicated weld is not required to be completed by an AISC certified fabricator.
4) For location of Detail A and diaphragm numbers, see Sheet No. 13.
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS
APPROVED
DATE
SUPERSTRUCTURE DETAILS
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street In Laramie
0C05065
DESIGN MMM ✓ PPP
DETAIL LLL ✓ MMM
CK. JJJ ✓ LLL
Design Section Q R Stuv
Drwg. No. 0002
Sheet 15 of 25
0C05065_1ss3.dgn
TYPICAL SECTION AT DIAPHRAGMS
(Looking ahead station)
(Dimensions are parallel with ℄ Pier)
(Diaphragms at piers shown, intermediate diaphragms similar)
(45 diaphragms req'd)
Bent ℄ 1⅛ x 30x 8'-6½" (Typ)
Bridge Roadway
Girder (Typ)
ELEVATION
SECTION D-D
PIER BEARING DETAILS
(12 req'd)
VIEW B-B
ELEVATION
VIEW C-C
FIELD SPLICE DETAILS
(12 req'd)


Wyo. Proj. 0C05065
Sheet B16 of B27 Sheets
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS
APPROVED
DATE
BRIDGE RAILING DETAILS
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street in Laramie
0C05065
DESIGN
DETAIL
CK.
Design Section Q R Stuv
Drwg. No. 0002
Sheet 16 of 25
0C05065_1br1.dgn
PLAN
(48 posts req'd on bridge)
(16 posts req'd on approach slabs)
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) Slots may be omitted in standard sleeves where bolts are required on one side of splice only.
3) Anchor bolts may be tack welded to anchorage (Shop or field).
4) At post locations, drill two 1 1/16"ø holes in the rails to receive rail bolts (Shop or field). See Post Details for hole spacing.
5) Before Installing rails, paint 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.
6) After Installing the rails, paint exposed bolt threads with two coats of zinc rich paint conforming to the requirements of ASTM A 780.
ASSEMBLY DETAIL
(Bridge slab shown, approach slab similar)
VIEW A-A
(Anchor bolts, rails, and rail bolts not shown)
SECTION B-B
(Not galvanized)
(Anchor bolts and slab not shown)
RAIL BOLT DETAIL
POST DETAILS
(See View A-A for anchor bolt hole spacing)
FRONT VIEW
SIDE VIEW
END VIEW
SLEEVE DETAILS
STANDARD SLEEVE
EXPANSION SLEEVE


Wyo. Proj. 0C05065
Sheet 8IT of 827 Sheets
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS
BRIDGE RAILING DETAILS
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street In Laramie
0C05065
APPROVED
DATE
DESIGN JJJ HHH
DETAIL JJJ LLL
CHK JJJ LLL
Design Section Q R Stuv
Drwg. No. 0002 Sheet 17 of 25
Standard Sheet Dated 1-22-05
0C05065_1br2.dgn
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 type ④ 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) Do not shop splice rails.
7) Ensure a brace bar is placed 2'-0" from the splice end of the shorter tube at type ④ terminals.
SECTION C-C
SECTION D-D
(Showing anchor bars)
(*Not galvanized)
BRACE BAR DETAIL
(See Note No. 7)
PLAN AT TERMINAL TYPE ④
(Bolts not shown)
ELEVATION AT TERMINAL TYPE ④
EXPANSION SPLICE
(Top and bottom rail)
DOUBLE-BOLTED SPLICE
(Top or bottom rail)
STANDARD SPLICE
(Top or bottom rail)
SPLICE DETAILS


Wyo. Proj. 0C05065
Sheet 818 of 827 Sheets
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
PEDESTRIAN RAILING DETAILS
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street In Laramie
0C05065
APPROVED
DATE
REVISIONS
DESIGN JJJ
DETAIL JJJ
CHK. JJJ
Design Section Q R Stuv
Drwg. No. 0002 Sheet 18 of 25
0C05065_1pd.dgn
Standard Sheet Dated 1-30-05
PLAN
(50 posts req'd)
225'-0" b-b Abutments
24 Spa @ 9'-2" = 220'-0"
RF Abut No. 1
RF Abut No. 2
End Post (Typ)
2'-6"
ELEVATION
STANDARD SPLICE
(At alternate posts)
EXPANSION SPLICE
TERMINAL
Post
Sleeve (Typ)
General Panel Length
Terminal Panel Length
End Post
Expanded Metal (Typ)
TS 4x4x¼ (Typ)
TS 4x2x⅜ (Typ)
L 1x1x⅛ (Typ)
90° (Typ)
1"ø Vent Hole (On ℄ Rail)
Typ
Note: 1) Ensure the expansion splice is located in the railing panel which passes over the bridge expansion joint as indicated on the plans.
2) Ensure general panel and terminal panel lengths do not exceed 22'-0".
3) Ensure each rail length is continuous over a minimum of two posts, except at terminal sections.
4) Do not shop splice rails.
5) Fabricate panels using adjacent panels as jigs with temporary 3⅜"x1⅜" sleeves. Ensure each panel has a different piece mark.
6) Anchor bolts may be tack welded to anchorage (Shop or field).
7) Attach the expanded metal to the panels after galvanizing.
8) After installing rail panels, paint all exposed bolt threads with two coats of zinc rich paint conforming to ASTM A 780.
9) Seal exposed surfaces of grout pads with epoxy coating.
SECTION D-D
Expanded Metal Connection. Drill at 9"± c-c for ¼"x1" Hex Head Self Tapping Screw w/1" OD x ⅜" ID Plain Washer (Typ)
Standard Splice
Expansion Splice
Expanded Metal
Cap Bar 2x¼x0'-4"
¾"ø Vent Hole (On ℄ Post)
TS 4x4x¼x3'-5⅜"
⅜" Base PL
SECTION E-E
POST DETAIL
SLEEVE DETAILS
⅜" PL - bent, welded continuous and ground flush
Bar ¼ø x 0'-0¾"
SECTION B-B
Sidewalk
Bar 8x⅜x0'-11"
1"ø Holes in bar
SECTION C-C
*Not galvanized
*Bar 1x¼x0'-10"
*Bar 3x¼x0'-7"
⅞"ø Holes
SECTION A-A
1" Grout Pad (Non-shrink)
¾"x9 Ga Flattened Expanded Metal (36" width)
L 1x1x⅛x0'-10" (Typ)
⅝"øx1'-4" HS Bolt (5" thread) w/2 Hex Nuts & 2 Washers. Wrench tight. (4 req'd per post)
Tack


Wyo. Proj. 0C05065
Sheet B19 of B27 Sheets
SECTION B-B
(6 req'd)
7'-0" Sidewalk
(On 3 Sides) 6"
See Detail B
Bar 2x ¼ x 0'-5" (Notch pipe for bar)
Bar 5x ¼ x 0'-5"
Pipe 3 ½ XS
Open
Typ
PLAN
Bar 2x ¼
Pipe 3 ½ XS x 0'-8"
Bar 5x ¼ (Place bott of bar at bott of slab)
ELEVATION
DETAIL B
Note: 1) Spacing of 1"φ 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
REVISIONS
DECK DRAIN DETAILS
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street in Laramie
0C05065
A1
Design Section Q R Stuv
Drwg. No. 0002
Sheet 19 of 25
0C05065_1dd.dgn
APPROVED
DATE
DESIGN JJJ MMM
DETAIL JJJ
CK. LLL
¢ Pipe
Bracket Bar (See detail)
L 4x4x ½ x 0'-5"
BRACKET DETAIL
¢ ⅞"φ Hole in L 4x4x ½ ¢ ⅞" x 2" Slot in Bracket Bar
¢ Hole
Girder Web
Standard Hold-Down Anchor Clamp (⅜" minimum thickness)
¾"φ x 2 ¾" Bolt w/Hex Nut ¢ 2 Washers (Typ)
Bracket Bar
Pipe 3 ½ XS
L 4x4x ½
SECTION C-C
¢ ⅞"φ Hole in L 4x4x ½ ¢ Field Drilled ⅞"φ Hole in Girder Web
1"φ Hole
(See Note No. 1)
⅞" x 2" Slot
Bar 3x ¾ x 1'-2 ¾"
BRACKET BAR DETAIL
RF Abut No. 2 ¢ End of Slab
RF Abut No. 1 ¢ End of Slab
225'-0"
¢ Deck Drain (Typ)
DECK DRAIN PLAN
Pipe 3 ½ XS x 9 ⅝"
Bar 2x ¼
Bar 5x ¼ (Place bott of bar at bott of slab)
Pipe 3 ½ XS x 3'-7 ¼"
ELEVATION
DETAIL A
12'-0" Sidewalk
¢ Girder
6" (On 3 Sides)
See Bracket Detail
Pipe 3 ½ XS (Plumb in all directions) (See Detail A)
SECTION A-A
(6 req'd)


Wyo. Proj. 0C05065
Sheet B20 of B27 Sheets
PLAN
(Longitudinal dimensions are along finished grade)
SLAB CONSTRUCTION JOINT DETAIL
(Place parallel with transverse reinforcing steel)
(For emergency use only)
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 Sheet No. 18.
4) For Deck Drain Details, see Sheet No. 19.
5) For Detail A, Detail B, and Detail C, see Sheet No. 21.
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS
SLAB DETAILS
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street In Laramie
0C05065
APPROVED
DATE
DESIGN MMM - PPP
DETAIL LLL - MMM
CK. JJJ - LLL
Design Section Q R Stuv
Dr'wg. No. 0002
Sheet 20 of 25
0C05065_1811.dgn

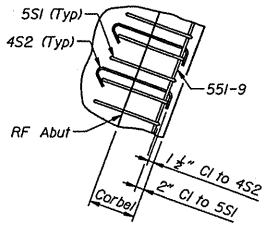
Wyo. Proj. 0C05065

Sheet B21 of B27 Sheets

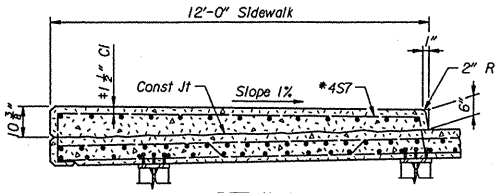
TABLE OF SCREED ELEVATIONS

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.

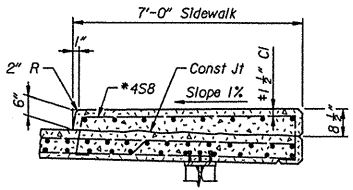
Screed Line No.	Tenth Point of Spans																														
	1.0 ℄ Abut No. 1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0 ℄ Pier No. 1	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0 ℄ Pier No. 2	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0 ℄ Abut No. 2
①	50.33	50.38	50.43	50.47	50.50	50.52	50.53	50.54	50.55	50.55	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	50.86	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



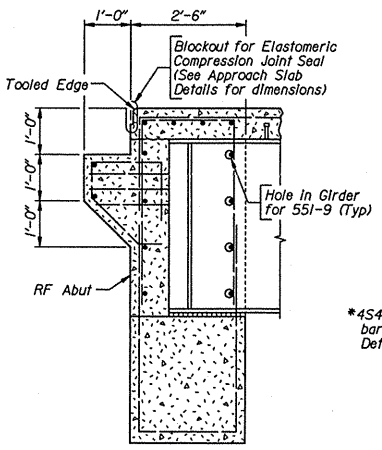
DETAIL C
(Showing corbel reinforcing steel placement)
(4S2 shown, 4S3 similar)



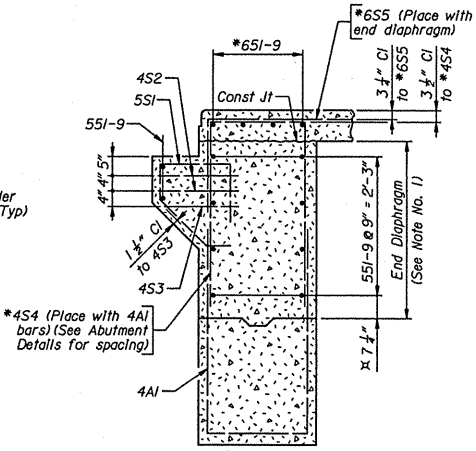
DETAIL A



DETAIL B



SECTION AT GIRDERS
(Showing typical dimensions)



SECTION BETWEEN GIRDERS
(Showing typical reinforcing steel)

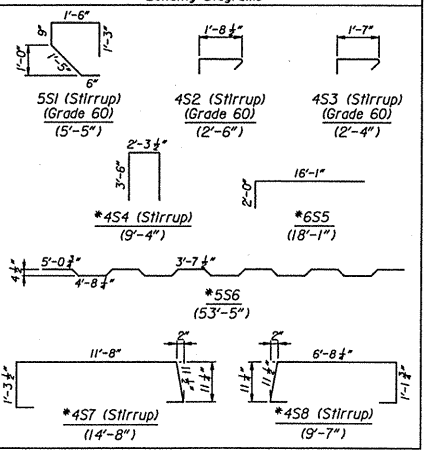
TYPICAL SECTIONS THRU END DIAPHRAGM

(Dimensions are perpendicular to RF Abut)

BILL OF REINFORCEMENT

Location	Mark	Number Required
Slab and Sidewalks	*4S7	225
	*4S8	225
	*409-4	42
	*430-5	21
	*432-9	150
	*447-8	75
	*460-0	63
	*5S6	219
	*5S1-9	220
	*552-5	67
	*560-0	201
	*644-6	150
	*6S1-9	228
	*Weight	*80,594 LB
End Diaphragms	4S2	208
	4S3	104
	*4S4	92
	5SI	206
	5S1-9	20
	*6S5	152
	Weight	2741 LB
	*Weight	*4702 LB

Bending Diagrams



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) 1½" 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. 20.
8) For Abutment Details, see Sheets No. 8 thru 10.

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM

REVISIONS

SLAB DETAILS

BRIDGE OVER LARAMIE RIVER

STA 7+10

Garfield Street In Laramie

0C05065 A1

APPROVED

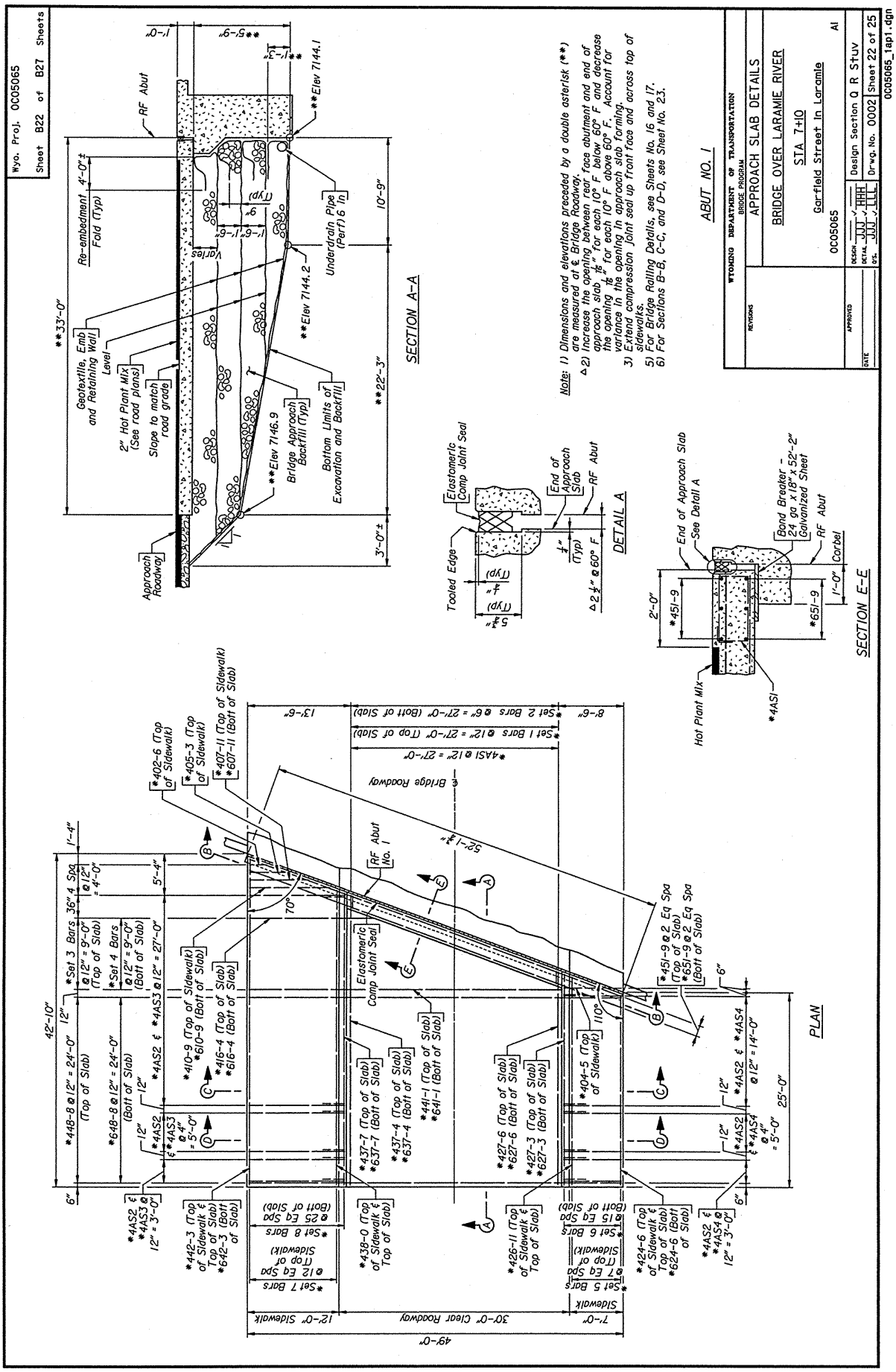
DATE

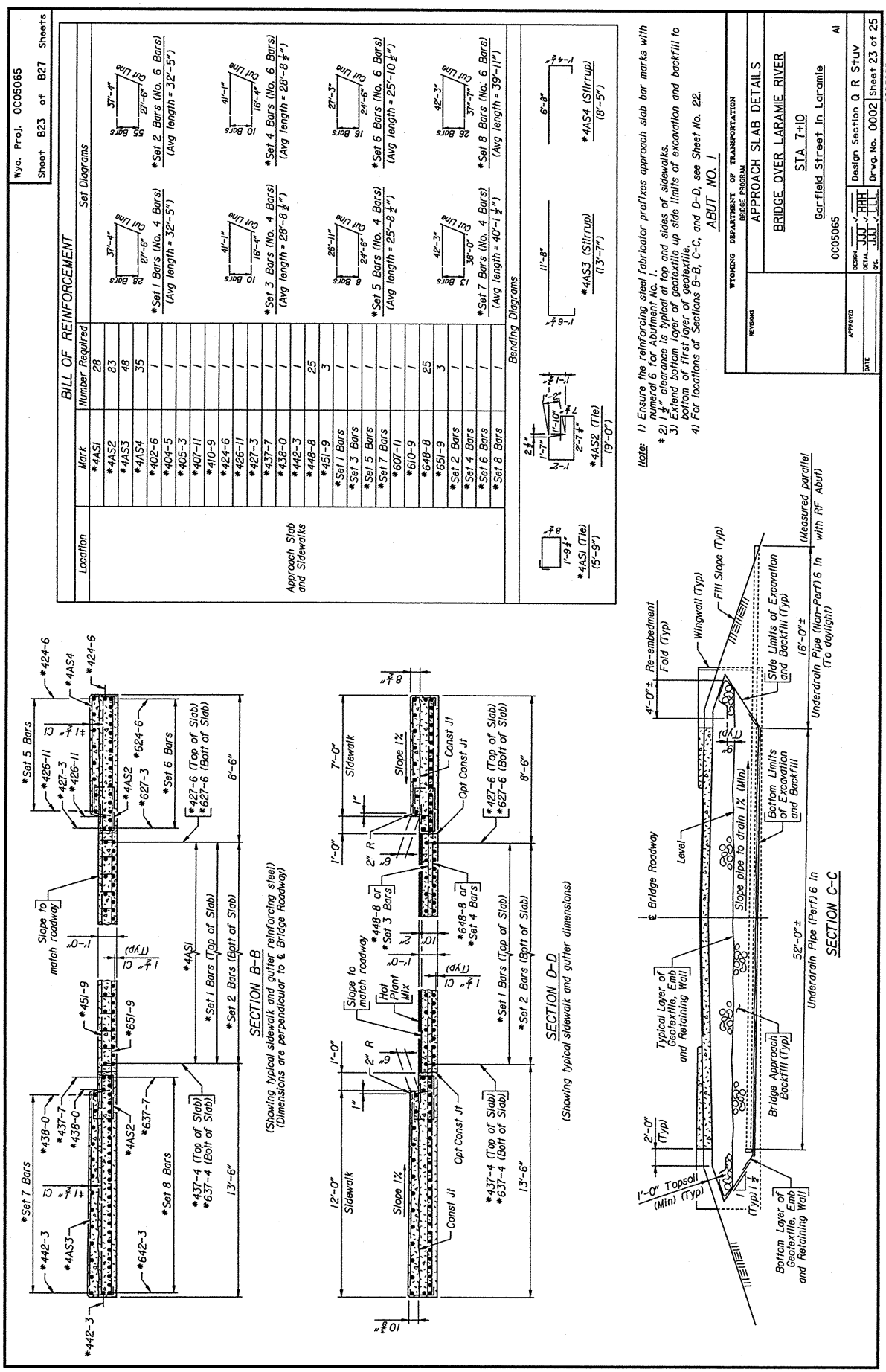
DESIGN MMM ✓ PPP | DETAIL LLL ✓ MMM | O'S. JJJ ✓ LLL

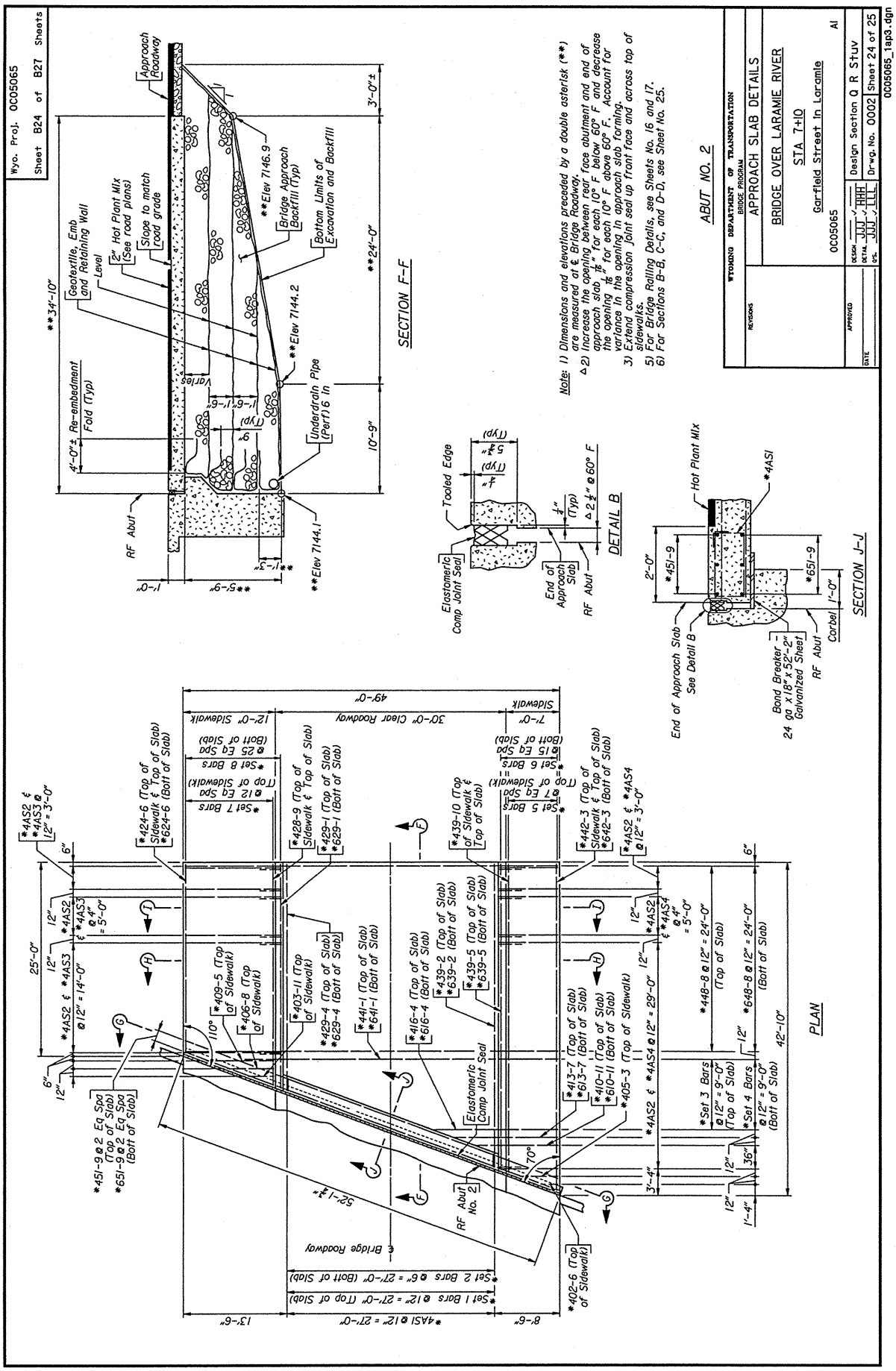
Design Section Q R Stuv

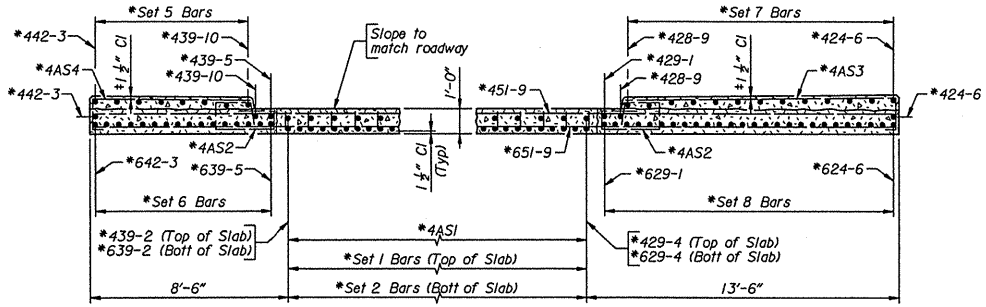
Drwg. No. 0002 | Sheet 21 of 25

0C05065_1s12.dgn


Wyo. Proj. 0C05065
Sheet B22 of B27 Sheets
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS
APPROVED
DATE
APPROACH SLAB DETAILS
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street In Laramie
0C05065
Al
DESIGN JJJ
DETAIL JJJ
QTS. JJJ
Design Section Q R Stuv
Drwg. No. 0002 Sheet 22 of 25
0C05065_1ap1.dgn
ABUT NO. 1
SECTION A-A
DETAIL A
SECTION E-E
PLAN
Note: 1) Dimensions and elevations preceded by a double asterisk (**) are measured at ℄ Bridge Roadway.
Δ 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.
5) For Bridge Railing Details, see Sheets No. 16 and 17.
6) For Sections B-B, C-C, and D-D, see Sheet No. 23.
Re-embedment Fold (Typ)
Geotextile, Emb and Retaining Wall Level
2" Hot Plant Mix (See road plans)
Slope to match road grade
Approach Roadway
RF Abut
Varies
Underdrain Pipe (Perf) 6 in
Bottom Limits of Excavation and Backfill
Bridge Approach Backfill (Typ)
Elastomeric Comp Joint Seal
End of Approach Slab
Tooled Edge
Bond Breaker - 24 ga x 18" x 52'-2" Galvanized Sheet
Hot Plant Mix
Corbel
Bridge Roadway
RF Abut No. 1
Elastomeric Comp Joint Seal
Sidewalk
Clear Roadway
Set 1 Bars @ 12" = 27'-0" (Top of Slab)
Set 2 Bars @ 6" = 27'-0" (Bott of Slab)
Set 3 Bars 36" 4 Spa @ 12" = 4'-0" (Top of Slab)
Set 4 Bars @ 12" = 9'-0" (Bott of Slab)
Set 5 Bars @ 7 Eq Spa (Top of Sidewalk)
Set 6 Bars @ 15 Eq Spa (Bott of Slab)
Set 7 Bars @ 12 Eq Spa (Top of Sidewalk)
Set 8 Bars @ 25 Eq Spa (Bott of Slab)
*4AS1 @ 12" = 27'-0"
*4AS2 & *4AS3 @ 12" = 27'-0"
*4AS2 & *4AS4 @ 12" = 14'-0"
70°
110°

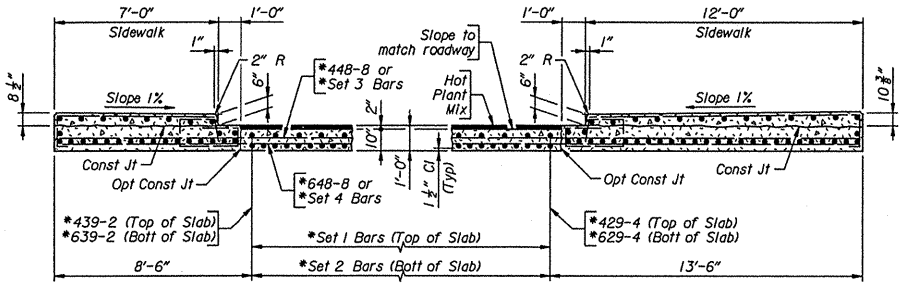

Wyo. Proj. 0C05065
Sheet B23 of B27 Sheets
BILL OF REINFORCEMENT
Location
Mark
Number Required
Set Diagrams
Approach Slab and Sidewalks
*4AS1
*4AS2
*4AS3
*4AS4
*402-6
*404-5
*405-3
*407-11
*410-9
*424-6
*426-11
*427-3
*437-7
*438-0
*442-3
*448-8
*451-9
*Set 1 Bars
*Set 3 Bars
*Set 5 Bars
*Set 7 Bars
*607-11
*610-9
*648-8
*651-9
*Set 2 Bars
*Set 4 Bars
*Set 6 Bars
*Set 8 Bars
Bending Diagrams
*Set 1 Bars (No. 4 Bars) (Avg length = 32'-5")
*Set 2 Bars (No. 6 Bars) (Avg length = 32'-5")
*Set 3 Bars (No. 4 Bars) (Avg length = 28'-8 1/2")
*Set 4 Bars (No. 6 Bars) (Avg length = 28'-8 1/2")
*Set 5 Bars (No. 4 Bars) (Avg length = 25'-8 1/2")
*Set 6 Bars (No. 6 Bars) (Avg length = 25'-10 1/2")
*Set 7 Bars (No. 4 Bars) (Avg length = 40'-1 1/2")
*Set 8 Bars (No. 6 Bars) (Avg length = 39'-11")
*4AS1 (Tie) (5'-9")
*4AS2 (Tie) (9'-0")
*4AS3 (Stirrup) (13'-7")
*4AS4 (Stirrup) (8'-5")
Note: 1) Ensure the reinforcing steel fabricator prefixes approach slab bar marks with numeral 6 for Abutment No. 1.
2) 1 1/2" clearance is typical at top and sides of sidewalks.
3) Extend bottom layer of geotextile up side limits of excavation and backfill to bottom of first layer of geotextile.
4) For locations of Sections B-B, C-C, and D-D, see Sheet No. 22.
ABUT NO. 1
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS
APPROVED
DATE
APPROACH SLAB DETAILS
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street In Laramie
0C05065
DESGN JJJ
DETA JJJ
QTS. JJJ
Design Section Q R Stuv
Drwg. No. 0002 Sheet 23 of 25
0C05065_1ap2.dgn
SECTION B-B
(Showing typical sidewalk and gutter reinforcing steel)
(Dimensions are perpendicular to ℄ Bridge Roadway)
SECTION D-D
(Showing typical sidewalk and gutter dimensions)
SECTION C-C
Re-embedment Fold (Typ)
Wingwall (Typ)
Fill Slope (Typ)
Side Limits of Excavation and Backfill (Typ)
Underdrain Pipe (Non-Perf) 6 In (To daylight)
(Measured parallel with RF Abut)
℄ Bridge Roadway
Level
Slope pipe to drain 1% (Min)
Bottom Limits of Excavation and Backfill
Typical Layer of Geotextile, Emb and Retaining Wall
Bridge Approach Backfill (Typ)
Underdrain Pipe (Perf) 6 In
Topsoil (Min) (Typ)
Bottom Layer of Geotextile, Emb and Retaining Wall


Wyo. Proj. 0C05065
Sheet B24 of B27 Sheets
SECTION F-F
DETAIL B
SECTION J-J
PLAN
ABUT NO. 2
APPROACH SLAB DETAILS
BRIDGE OVER LARAMIE RIVER
STA 7+10
Garfield Street In Laramie
0C05065
Design Section Q R Stuv
Dr'wg. No. 0002 Sheet 24 of 25
0C05065_1ap3.dgn



SECTION G-G

(Showing typical sidewalk and gutter reinforcing steel)
(Dimensions are perpendicular to ℄ Bridge Roadway)



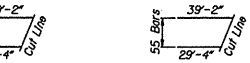
SECTION I-I

(Showing typical sidewalk and gutter dimensions)

BILL OF REINFORCEMENT

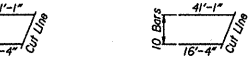
Location	Mark	Number Required
Approach Slab and Sidewalks	*4AS1	28
	*4AS2	85
	*4AS3	35
	*4AS4	50
	*402-6	1
	*403-11	1
	*405-3	1
	*406-8	1
	*409-5	1
	*410-11	1
	*413-7	1
	*424-6	1
	*428-9	1
	*429-1	1
	*439-5	1
	*439-10	1
	*442-3	1
	*448-8	25
	*451-9	3
	*Set 1 Bars	1
	*Set 3 Bars	1
	*Set 5 Bars	1
	*Set 7 Bars	1
	*610-11	1
	*613-7	1
	*648-8	25
	*651-9	3
	*Set 2 Bars	1
	*Set 4 Bars	1
	*Set 6 Bars	1
	*Set 8 Bars	1

Set Diagrams



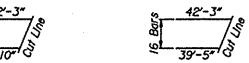
*Set 1 Bars (No. 4 Bars)
(Avg length = 34'-3")

*Set 2 Bars (No. 6 Bars)
(Avg length = 34'-3")



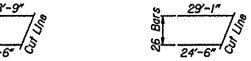
*Set 3 Bars (No. 4 Bars)
(Avg length = 28'-8 ½")

*Set 4 Bars (No. 6 Bars)
(Avg length = 28'-8 ½")



*Set 5 Bars (No. 4 Bars)
(Avg length = 41'-0 ½")

*Set 6 Bars (No. 6 Bars)
(Avg length = 40'-10")

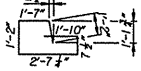


*Set 7 Bars (No. 4 Bars)
(Avg length = 26'-7 ½")

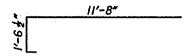
*Set 8 Bars (No. 6 Bars)
(Avg length = 26'-9 ½")

Bending Diagrams

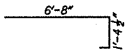
*4AS1 (Tie)
(5'-9")



*4AS2 (Tie)
(9'-0")



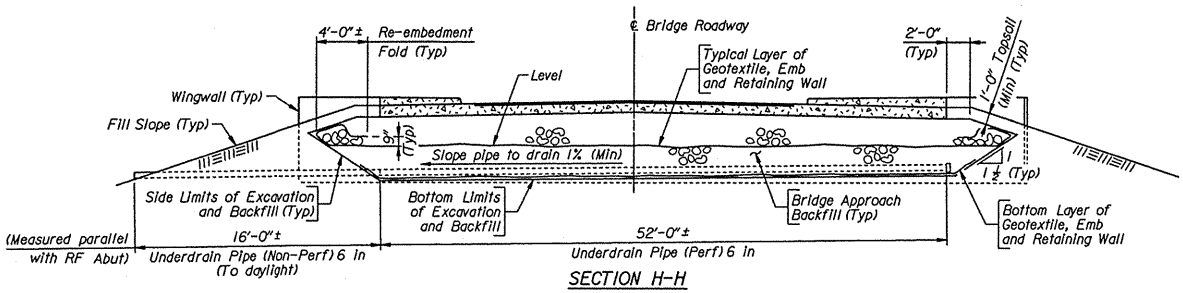
*4AS3 (Stirrup)
(13'-7")



*4AS4 (Stirrup)
(8'-5")

Note: 1) Ensure the reinforcing steel fabricator prefixes approach slab bar marks with numeral 7 for Abutment No. 2.
‡ 2) 1 ½" clearance is typical at the top and sides of sidewalks.
3) Extend bottom layer of geotextile up side limits of excavation and backfill to bottom of first layer of geotextile.
4) For locations of Sections B-B, C-C, and D-D, see Sheet No. 24.

ABUT NO. 2



SECTION H-H

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM

REVISIONS

APPROACH SLAB DETAILS

BRIDGE OVER LARAMIE RIVER

STA 7+10

Garfield Street in Laramie

0C05065 AI

APPROVED

DATE

DESIGN ✓ DETAIL JJJ ✓ AAA QTY. JJJ ✓ LLL

Design Section Q R Stuv

Drwg. No. 0002 | Sheet 25 of 25

0C05065_1ap4.dgn