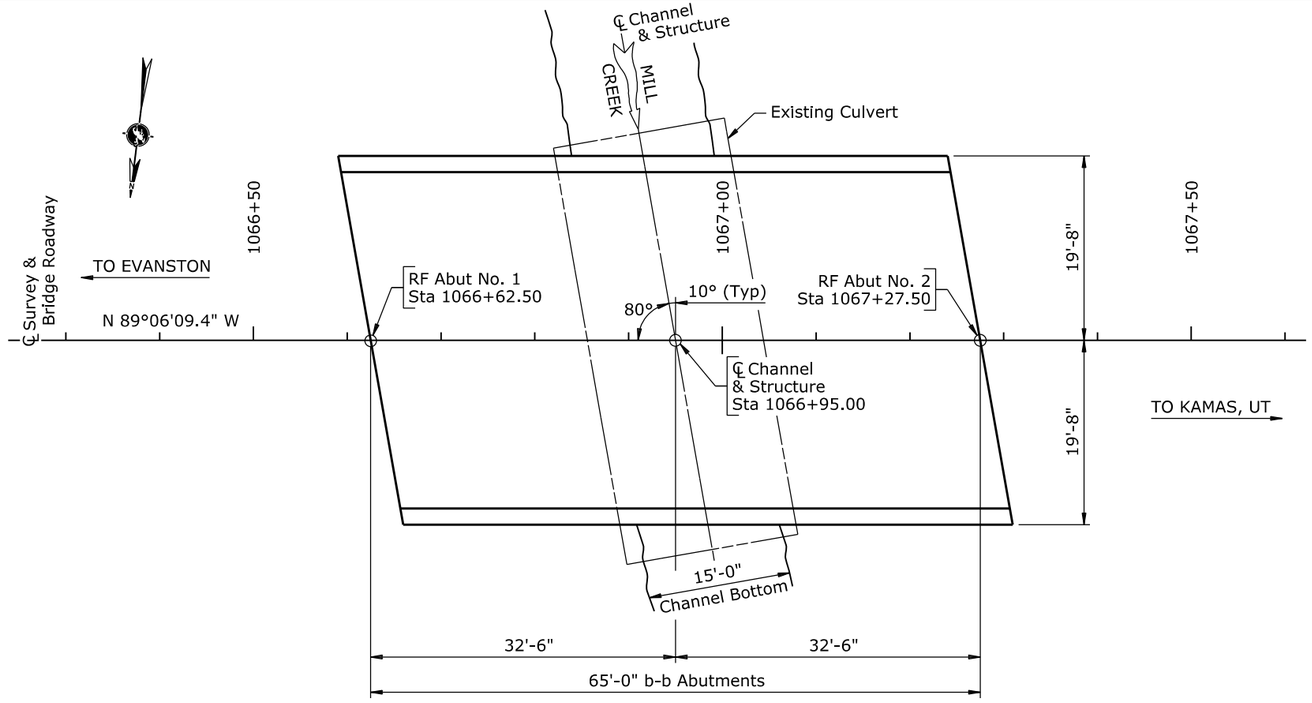
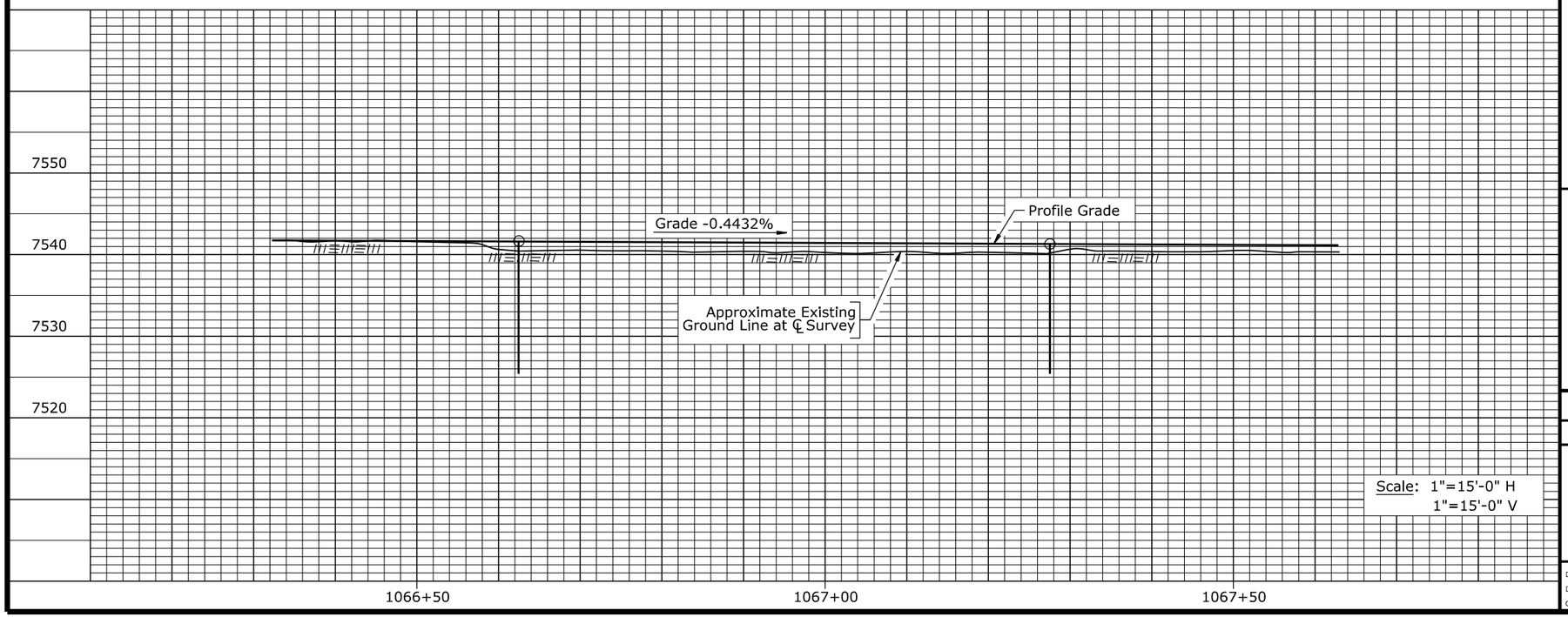



Scale: 1"=15'-0"




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

## GEOLOGY

Geologist: _____

Rig: _____

Project Geologist: _____

Date Drilled: _____

Driller: _____

| Circulation Medium | |
|---|---|
| Air | |
| Water | |
| Auger | |

Remarks: Obtain alkali sample.

Drill and provide recommendations for possible culvert.

## LAYOUT APPROVAL

State Bridge Engineer Date

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM

PRELIMINARY GEOLOGY LAYOUT

BRIDGE OVER MILL CREEK

STA 1066+95

Evanston South

State Line North Section

2100020 Ui

| | | | |
|---|---|---|---|
| DESIGN | ___ ✓ ___ | Design Section | Q R Stuv |
| DETAIL | LLL ✓ OOO | Drwg No. | Sheet 1 of 1 |
| QTY'S | ___ ✓ ___ | | |

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Wyo. Proj. 2100020

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# BRIDGE OVER MILL CREEK

# STA 1066+95

## EVANSTON SOUTH

## STATE LINE NORTH SECTION

2100020

PRELIMINARY

UINTA COUNTY

### DESIGN DATA

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

ADT: 750 (Year 2018)

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

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

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

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

APPROACH ROADWAY WIDTH: 36'-0"

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

SEISMIC CRITERIA: Seismic Design Category X
Effective Peak Ground Acceleration Coefficient, $A_s$ =X.XXX
Design Earthquake Response Spectral Acceleration Coefficient for 1.0 Second Period, $S_{D1}$ = X.XXX
Design Earthquake Response Spectral Acceleration Coefficient for 0.2 Second Period, $S_{DS}$ = X.XXX
Site Class X
5% Damping

ESTIMATED QUANTITIES - CODE 08

| ITEM NO. | ITEM | UNIT | TOTAL QUANTITY | ESTIMATE |
|---|---|---|---|---|
| 202.03100 | REMOVAL OF STRUCTURES AND OBSTRUCTIONS | LS | LUMP SUM | X EA |
| 209.01000 | WATER | MG | X | |
| 212.02100 | DRY EXCAVATION | CY | X | |
| 212.02200 | WET EXCAVATION | CY | X | |
| 217.01010 | GEOTEXTILE, EROSION CONTROL | SY | X | |
| 217.01043 | GEOTEXTILE, SUBGRADE REINFORCEMENT | SY | X | |
| 301.01085 | CRUSHED BASE | CY | X | |
| 501.01000 | STRUCTURAL STEEL | LS | LUMP SUM | X LB |
| 502.50044 | PRESTRESSED PRECAST CONC BULB T 44 in | FT | X | |
| 503.01000 | BRIDGE RAILING | FT | X | |
| 507.01000 | REINFORCED CONC APPROACH SLABS | SY | X | |
| 511.02000 | GABIONS | SY | X | |
| 512.01040 | COMPRESSED JOINT MATERIAL | FT | X | |
| 513.00005 | CLASS A CONCRETE | LS | LUMP SUM | X CY |
| 514.00015 | REINFORCING STEEL | LS | LUMP SUM | X LB |
| 514.00025 | REINFORCING STEEL (COATED) | LS | LUMP SUM | X LB |
| 605.10006 | UNDERDRAIN PIPE (PERF) 6 in | FT | X | |
| 605.20006 | UNDERDRAIN PIPE (NON-PERF) 6 in | FT | X | |
| 900.60000 | CONTRACTOR QUALITY CONTROL (CONCRETE) | LS | LUMP SUM | |

### INDEX OF DRAWINGS



STRUCTURE NO. LNB, ML2100B, RM 19.12

SEC 6, T12N, R119W

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS

REVIEW _____
APPROVAL _____

DESIGN ___ ✓ ___
DETAIL LLL ✓ OOO
QTY'S ___ ✓ ___

Design Section Q R Stuv

Drwg No. P-0004 Sheet 1 of 3

2100020_2pl1.dgn

Wyo. Proj. 2100020

Sheet of Sheets

## GENERAL NOTES

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

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

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

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

BAR MARKS

Straight Bars: Size — Length (508-3)

Bent Bars: Size — Designation (4A2)

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

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

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

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

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

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

BACKER ROD: Use a closed cell polyethylene backer rod with a diameter ⅛" larger than the gap width.

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

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

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

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

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

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

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

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

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

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

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

## STREAM DATA

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

## REFERENCES

Supplementary Specifications:

| | |
|---|---|
| SS-100K | Adjustment for Structural Steel |
| SS-500B | Welder Qualification |
| SS-500E | Bridge Bearing Correction |
| SS-500G | Structural Concrete with Quality Control and Quality Acceptance |

Standard Plans:

| | |
|---|---|
| 511-1A | Wire Enclosed Riprap and Gabions |

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM

REVISIONS

PRELIMINARY GENERAL NOTES

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

2100020 Ui

REVIEW _____
APPROVAL _____

DESIGN ____ ✓ ____
DETAIL LLL ✓ OOO
QTY'S ____ ✓ ____

Design Section Q R Stuv

Drwg No. P-0004 Sheet 2 of 3

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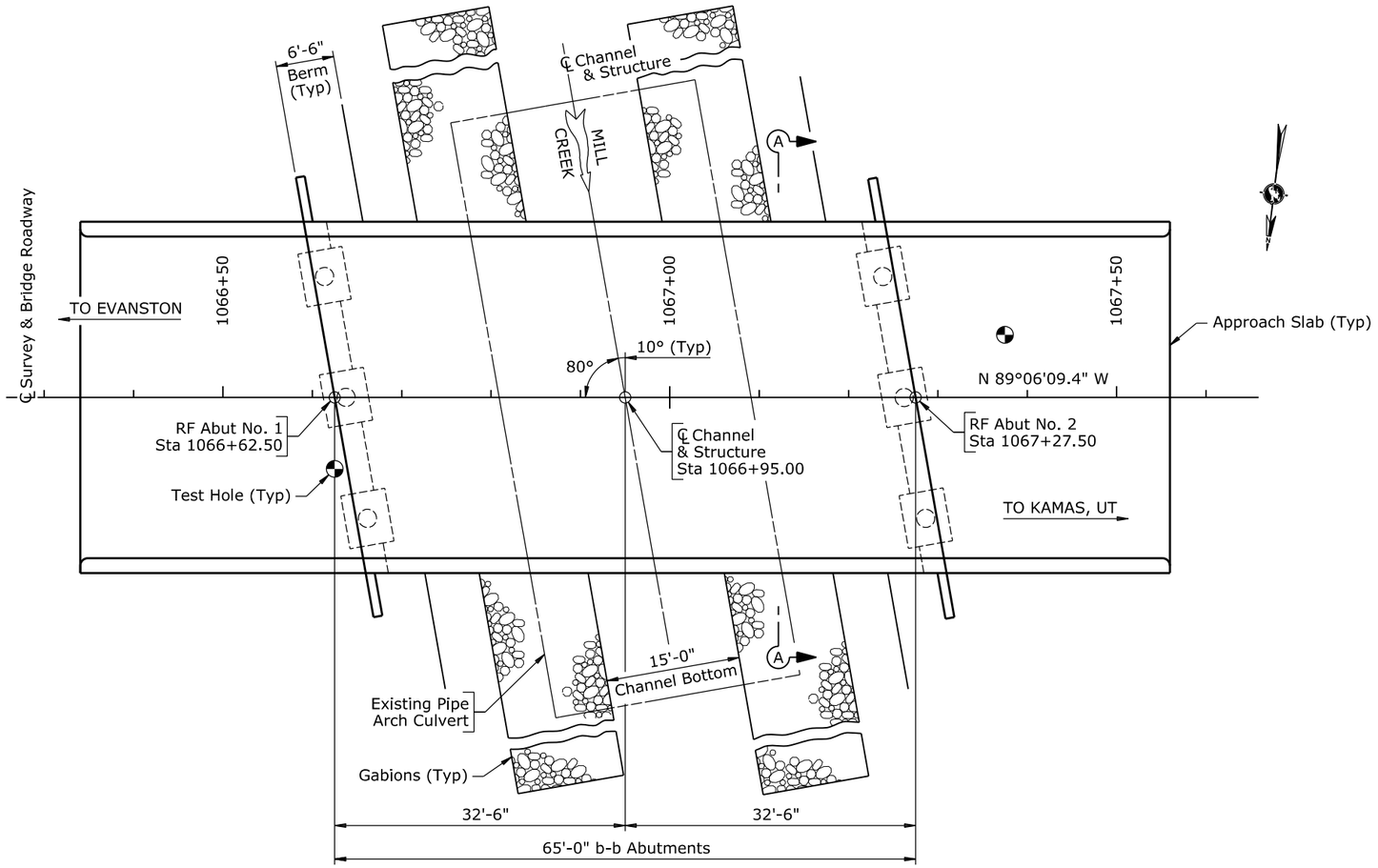
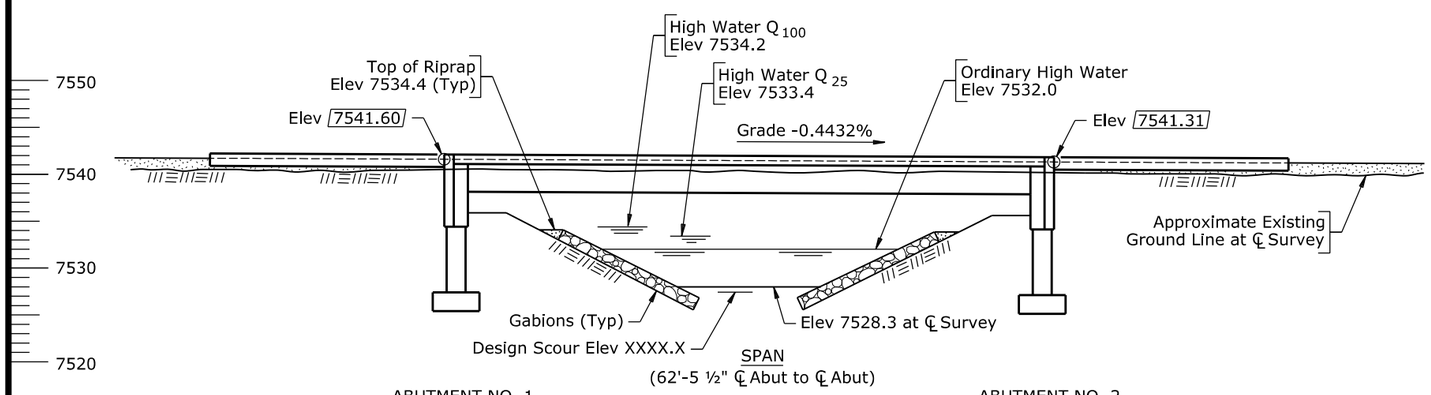
| Wyo. Proj. | 2100020 |
|---|---|
| Sheet | of Sheets |

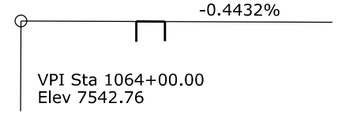



PLAN




ELEVATION

(Simple Prestressed Precast Concrete Bulb T Girder Span)

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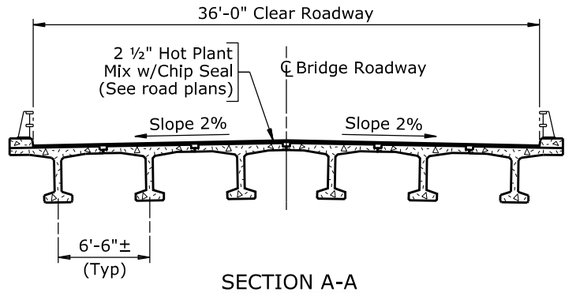
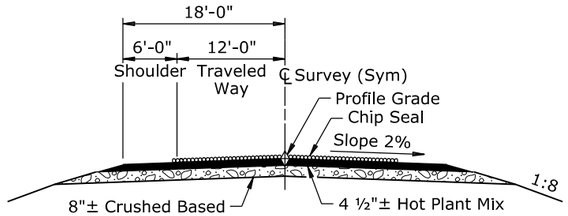



SECTION A-A




TYPICAL ROADWAY SECTION

Note: 1) Elevations shown as 7541.60 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

PRELIMINARY LAYOUT

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

2100020 Ui

| | | | |
|---|---|---|---|
| REVIEW | DESIGN ___ ✓ ___ | Design Section | Q R Stuv |
| APPROVAL | DETAIL LLL ✓ OOO | Drwg No. P-0004 | Sheet 3 of 3 |
| | QTY'S ___ ✓ ___ | | |

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Wyo. Proj. 2100020
Sheet B8 of B25 Sheets

# BRIDGE OVER MILL CREEK

# STA 1066+95

## EVANSTON SOUTH

## STATE LINE NORTH SECTION

2100020

UINTA COUNTY

### DESIGN DATA

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

ADT: 750 (Year 2018)

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

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

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

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

APPROACH ROADWAY WIDTH: 36'-0"

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

SEISMIC CRITERIA: Seismic Design Category X
Effective Peak Ground Acceleration Coefficient, $A_S$=X.XXX
Design Earthquake Response Spectral Acceleration Coefficient for 1.0 Second Period, $S_{D1}$ = X.XXX
Design Earthquake Response Spectral Acceleration Coefficient for 0.2 Second Period, $S_{DS}$ = X.XXX
Site Class X
5% Damping

ESTIMATED QUANTITIES - CODE 08

| ITEM NO. | ITEM | UNIT | TOTAL QUANTITY | ESTIMATE |
|---|---|---|---|---|
| 202.03100 | REMOVAL OF STRUCTURES AND OBSTRUCTIONS | LS | LUMP SUM | 1 EA |
| 209.01000 | WATER | MG | 20 | |
| 212.02100 | DRY EXCAVATION | CY | 570 | |
| 212.02200 | WET EXCAVATION | CY | 120 | |
| 217.01010 | GEOTEXTILE, EROSION CONTROL | SY | 450 | |
| 217.01043 | GEOTEXTILE, SUBGRADE REINFORCEMENT | SY | 1410 | |
| 301.01085 | CRUSHED BASE | CY | 480 | |
| 501.01000 | STRUCTURAL STEEL | LS | LUMP SUM | 800 LB |
| 502.50044 | PRESTRESSED PRECAST CONC BULB T 44 in | FT | 383 | |
| 503.01000 | BRIDGE RAILING | FT | 244 | |
| 507.01000 | REINFORCED CONC APPROACH SLABS | SY | 249 | |
| 511.02000 | GABIONS | SY | 450 | |
| 512.01040 | COMPRESSED JOINT MATERIAL | FT | 83 | |
| 513.00005 | CLASS A CONCRETE | LS | LUMP SUM | 84.5 CY |
| 514.00015 | REINFORCING STEEL | LS | LUMP SUM | 11,880 LB |
| 514.00025 | REINFORCING STEEL (COATED) | LS | LUMP SUM | 1150 LB |
| 605.10006 | UNDERDRAIN PIPE (PERF) 6 in | FT | 80 | |
| 605.20006 | UNDERDRAIN PIPE (NON-PERF) 6 in | FT | 40 | |
| 900.60000 | CONTRACTOR QUALITY CONTROL (CONCRETE) | LS | LUMP SUM | |

### INDEX OF DRAWINGS



STRUCTURE NO. LNB, ML2100B, RM 19.12

SEC 6, T12N, R119W

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS

REVIEW
APPROVAL
DESIGN
DETAIL LLL ✓ 000
QTY'S

Design Section Q R Stuv
Drwg No. 0004 Sheet 1 of 16

2100020_2ts.dgn

## GENERAL NOTES

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

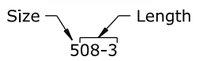
DIMENSIONS: Longitudinal dimensions for the substructure are horizontal and include no correction for grade. Longitudinal dimensions for the superstructure are along grade unless noted. Slopes are vertical : horizontal.

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

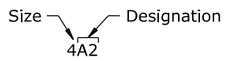
REINFORCING STEEL: Ensure reinforcing steel conforms to ASTM A 615 (Grade 60) for all bars, including ties and stirrups. Concrete cover to face of reinforcing steel is 2" unless noted. Dimensions for bent bars are out to out. Ensure bars marked with an asterisk (*) are coated.

BAR MARKS

Straight Bars




Bent Bars




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

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

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

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

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

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

BACKER ROD: Use a closed cell polyethylene backer rod with a diameter ⅛" larger than the gap width.

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

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

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

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

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

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

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

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

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

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

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

## STREAM DATA

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

## REFERENCES

Supplementary Specifications:

| | |
|---|---|
| SS-100K | Adjustment for Structural Steel |
| SS-500B | Welder Qualification |
| SS-500E | Bridge Bearing Correction |
| SS-500G | Structural Concrete with Quality Control and Quality Acceptance |

Standard Plans:

| | |
|---|---|
| 511-1A | Wire Enclosed Riprap and Gabions |

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM

REVISIONS

GENERAL NOTES

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

2100020 Ui

REVIEW _____
APPROVAL _____

DESIGN ____ ✓ ____
DETAIL LLL ✓ OOO
QTY'S ____ ✓ ____

Design Section Q R Stuv
Drwg No. 0004 Sheet 2 of 16

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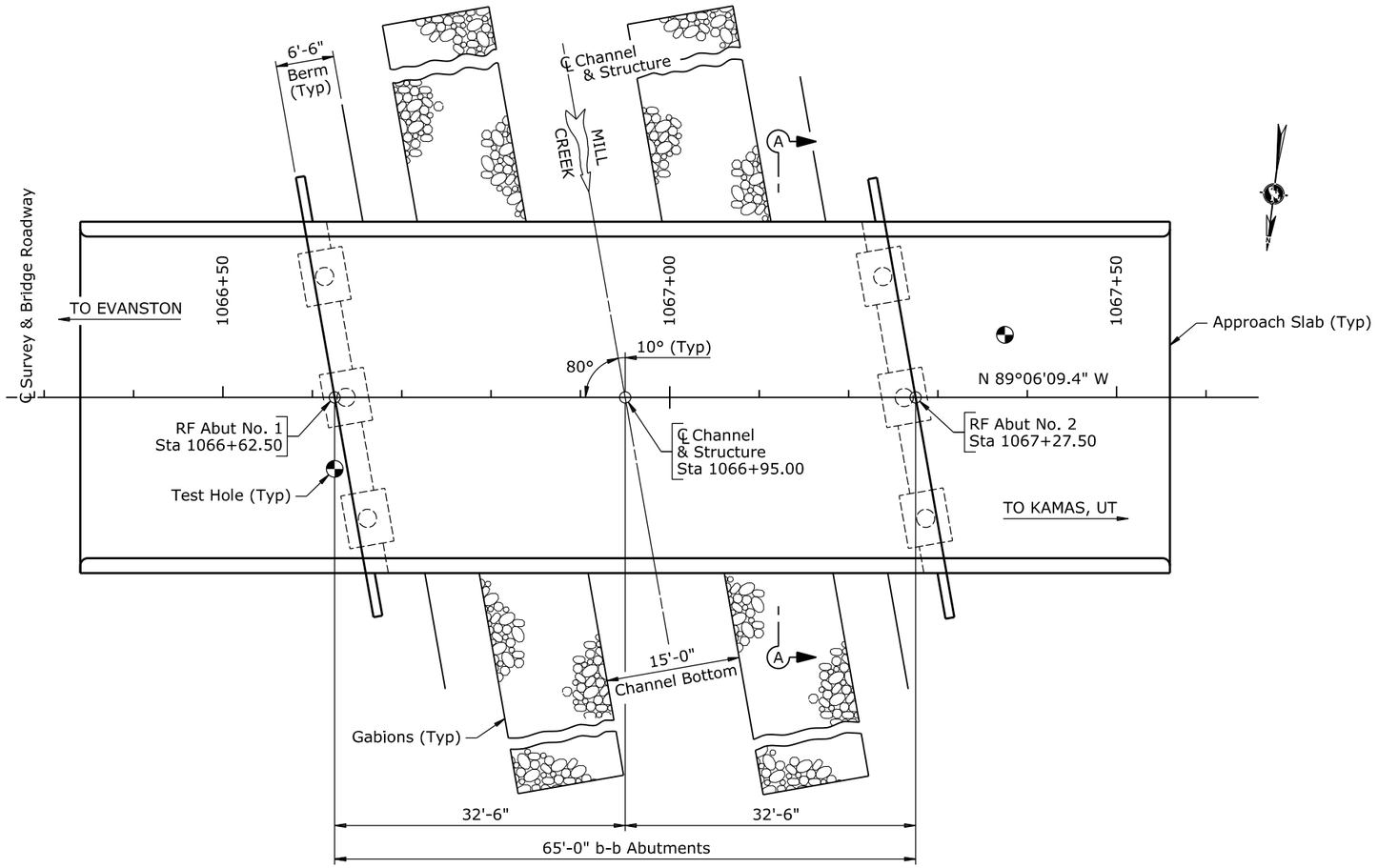
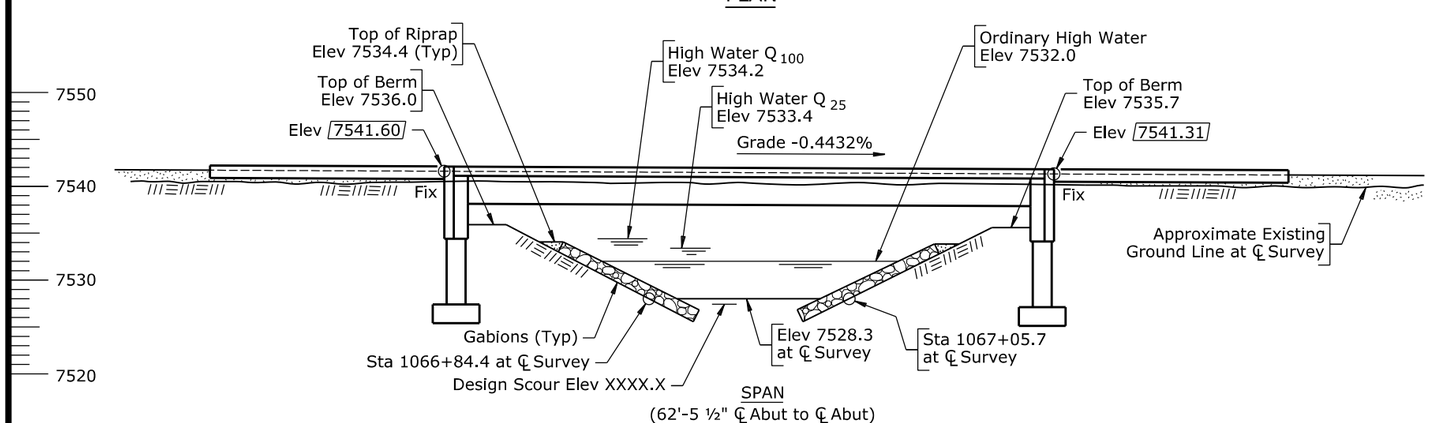
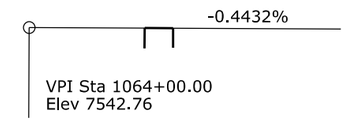


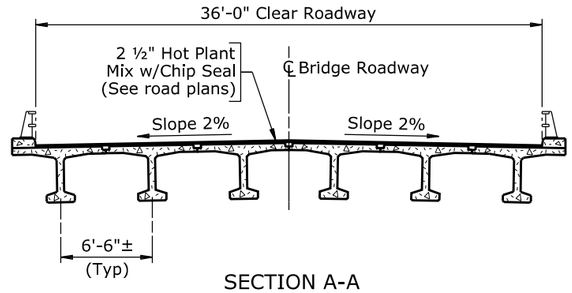

PLAN




ELEVATION
(Simple Prestressed Precast Concrete Bulb T Girder Span)




GRADE DATA




SECTION A-A

Note: 1) Elevations shown as 7541.60 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 MILL CREEK
STA 1066+95
Evanston South
State Line North Section

2100020 Ui

| | | | |
|---|---|---|---|
| REVIEW | DESIGN ____ ✓ ____ | Design Section | Q R Stuv |
| APPROVAL | DETAIL LLL ✓ OOO | Drwg No. 0004 | Sheet 3 of 16 |
| | QTY'S ____ ✓ ____ | | |

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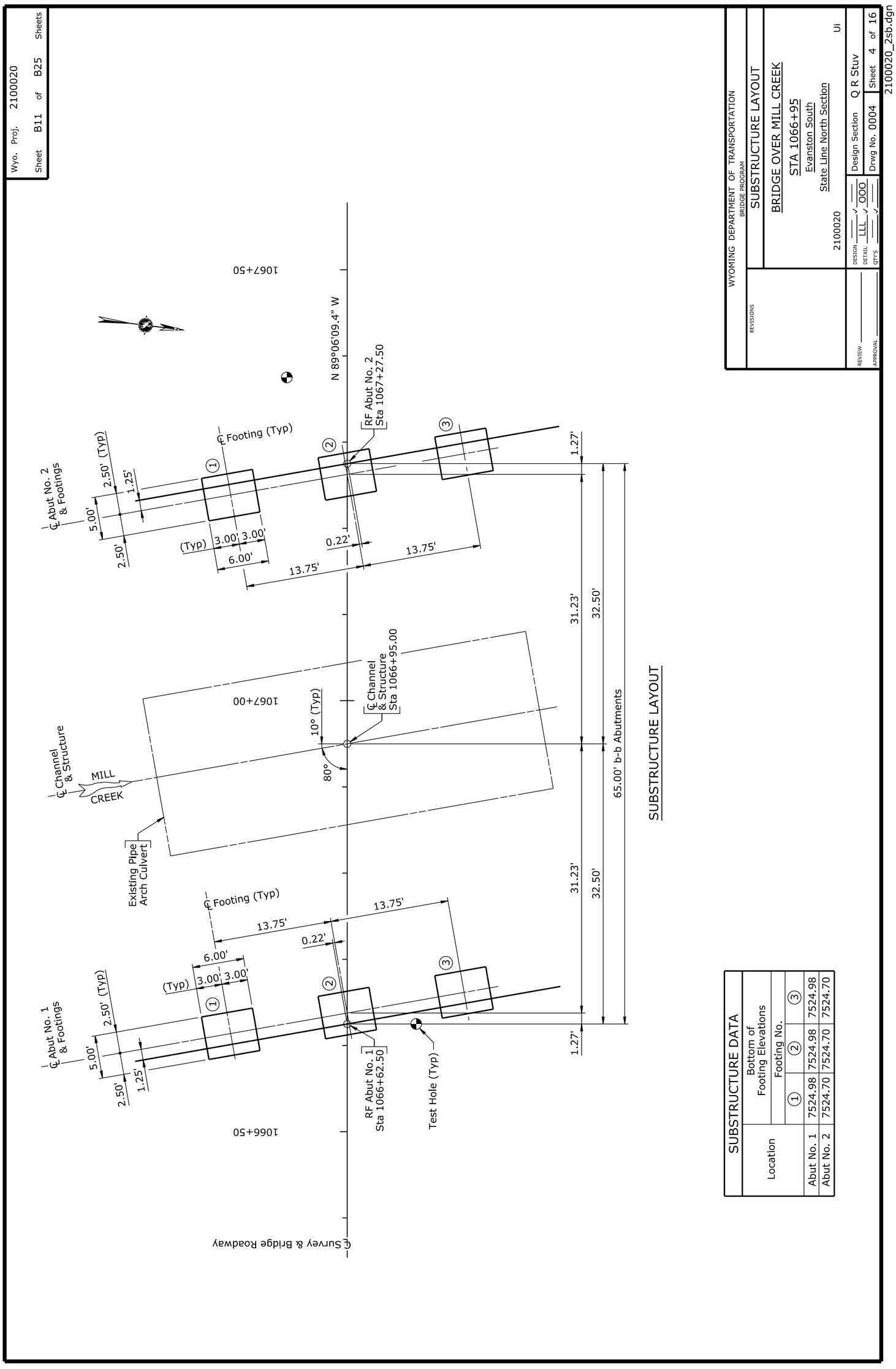
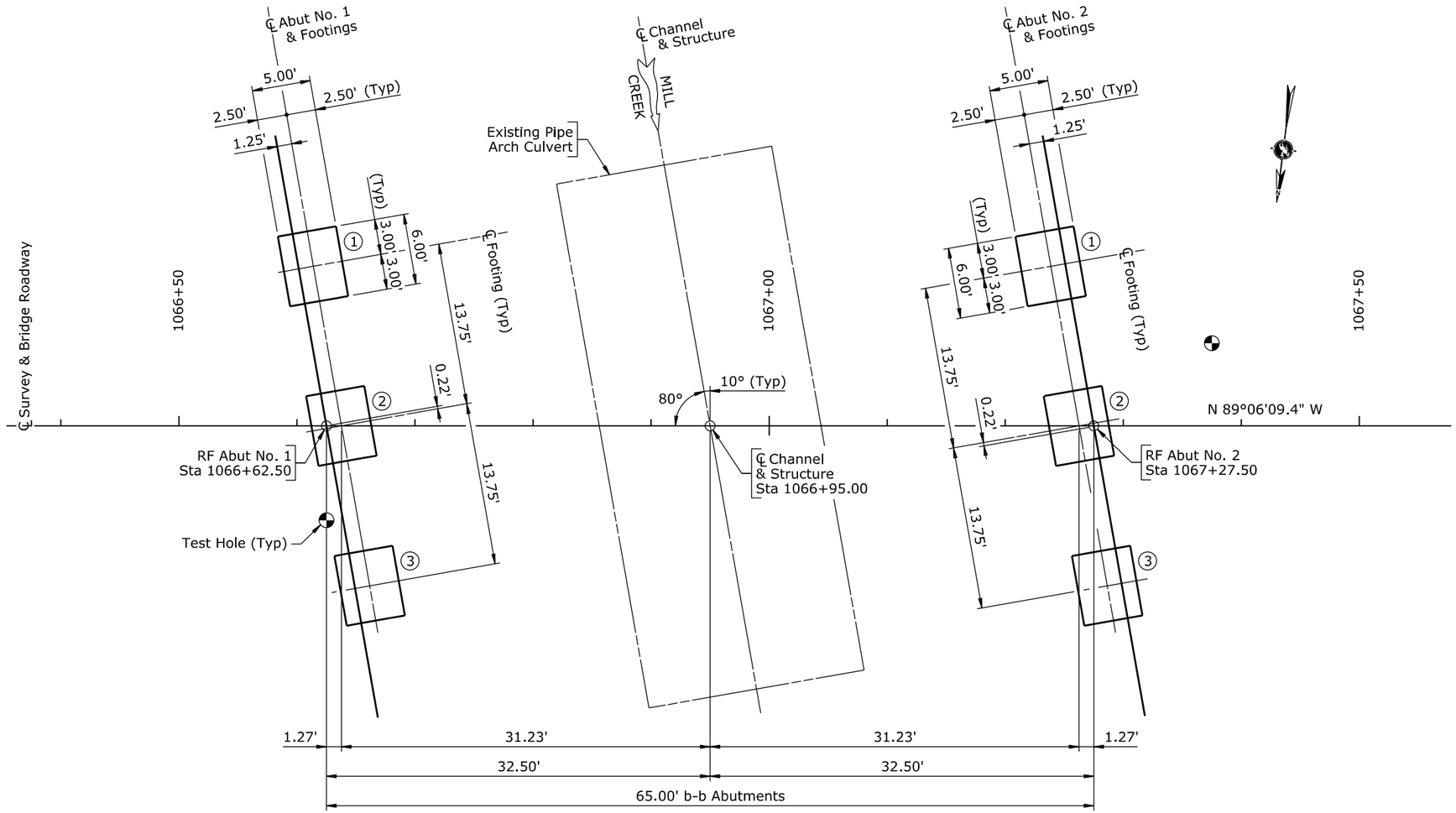

Wyo. Proj. 2100020
Sheet B11 of B25 Sheets
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
REVISIONS
SUBSTRUCTURE LAYOUT
BRIDGE OVER MILL CREEK
STA 1066+95
Evanston South
State Line North Section
2100020
REVIEW
APPROVAL
DESIGN
DETAIL LLL ✓ 000
QTYS
Design Section Q R Stuv
Drwg No. 0004 Sheet 4 of 16
2100020_2sb.dgn
SUBSTRUCTURE LAYOUT
1067+50
1067+00
1066+50
N 89°06'09.4" W
℄ Survey & Bridge Roadway
℄ Abut No. 2 & Footings
℄ Abut No. 1 & Footings
℄ Channel & Structure
℄ Footing (Typ)
RF Abut No. 2 Sta 1067+27.50
RF Abut No. 1 Sta 1066+62.50
℄ Channel & Structure Sta 1066+95.00
Test Hole (Typ)
Existing Pipe Arch Culvert
MILL CREEK
10° (Typ)
80°
2.50' (Typ)
1.25'
2.50'
5.00'
(Typ) 3.00' 3.00'
6.00'
13.75'
0.22'
1.27'
31.23'
32.50'
65.00' b-b Abutments
SUBSTRUCTURE DATA
Location
Bottom of Footing Elevations
Footing No.
① ② ③
Abut No. 1 7524.98 7524.98 7524.98
Abut No. 2 7524.70 7524.70 7524.70

Wyo. Proj. 2100020

Sheet of Sheets




SUBSTRUCTURE LAYOUT

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

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM

REVISIONS

FINAL GEOLOGY

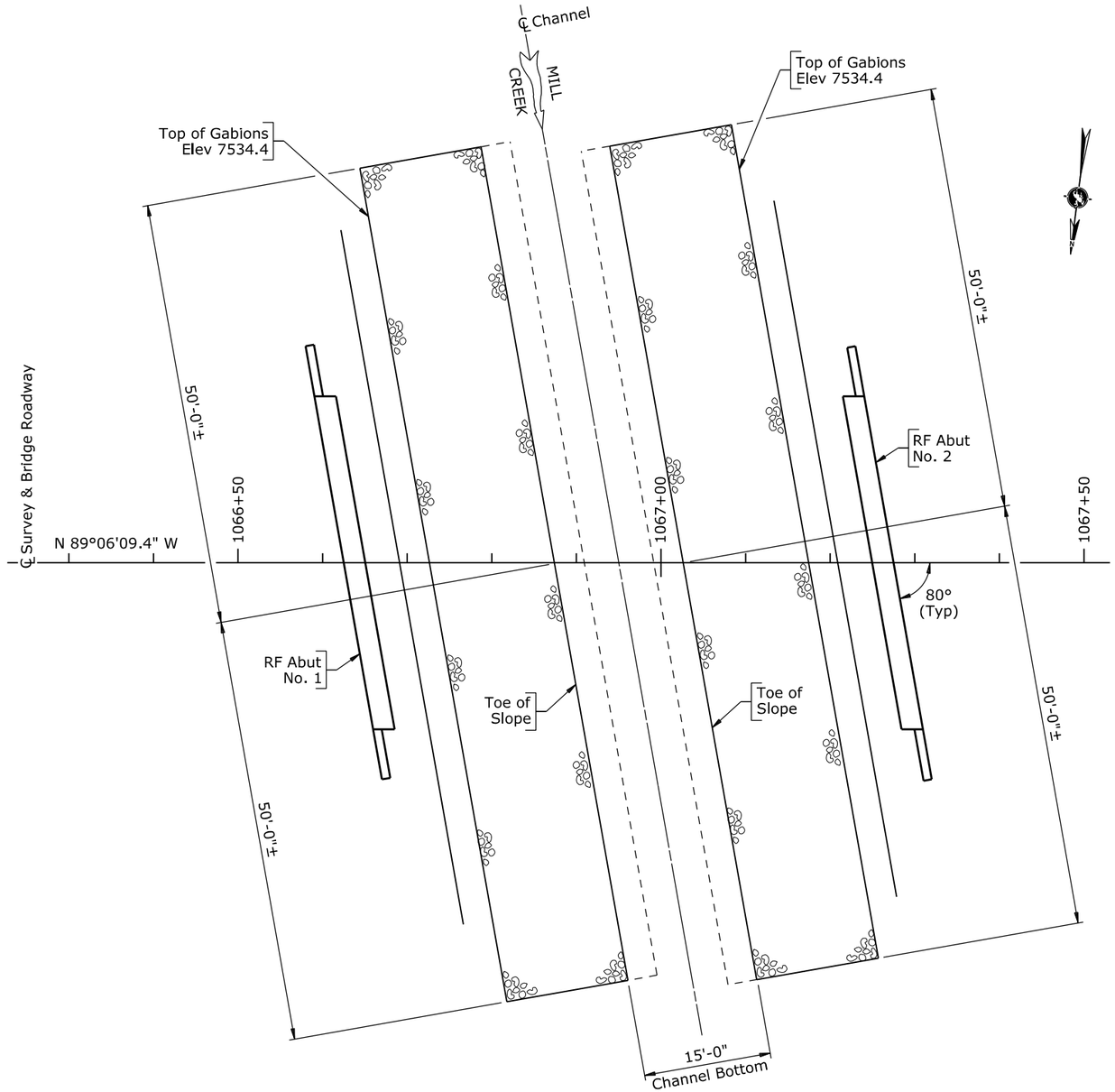
BRIDGE OVER MILL CREEK
STA 1066+95
Evanston South
State Line North Section
2100020 Ui

REVIEW
APPROVAL

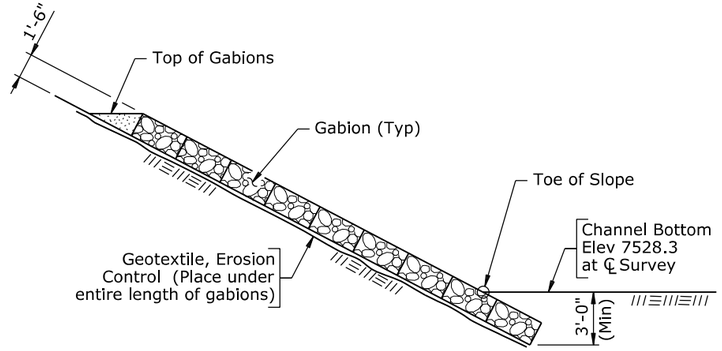
DESIGN ____ ✓ ____
DETAIL LLL ✓ OOO
QTY'S ____ ✓ ____

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

2100020_2fg.dgn




PLAN




TYPICAL SECTION

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM

REVISIONS

GABION DETAILS

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

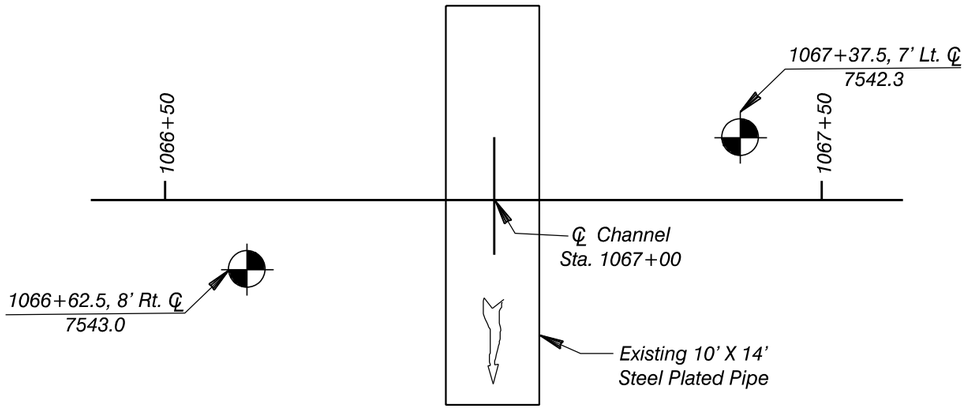
2100020 Ui

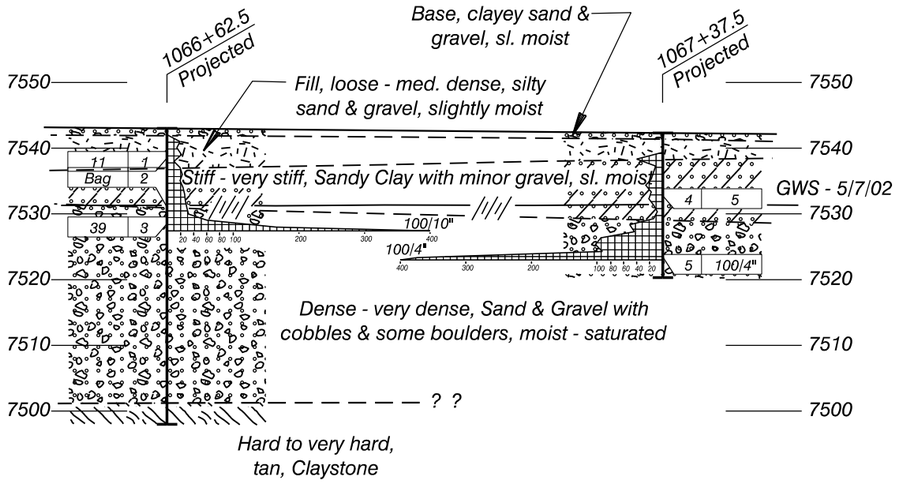
| | | | |
|---|---|---|---|
| REVIEW | DESIGN ___ ✓ ___ | Design Section | Q R Stuv |
| APPROVAL | DETAIL LLL ✓ OOO | | |
| | QTY'S LLL ✓ HHH | Drwg No. 0004 | Sheet 5 of 16 |

2100020_2gb.dgn

## SUMMARY OF LABORATORY TEST DATA

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




### UNIFIED SOIL CLASSIFICATION

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

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

| CONSISTENCY GRANULAR | BLOWS PER FT. | CONSISTENCY COHESIVE | 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 |

GROUND WATER SURFACE

☐ Not Encountered

☒ As Shown, measured - Date (s) 5/7/02

Borings shown made with: Auger Rig ☒ 4001 ☐ Air ____

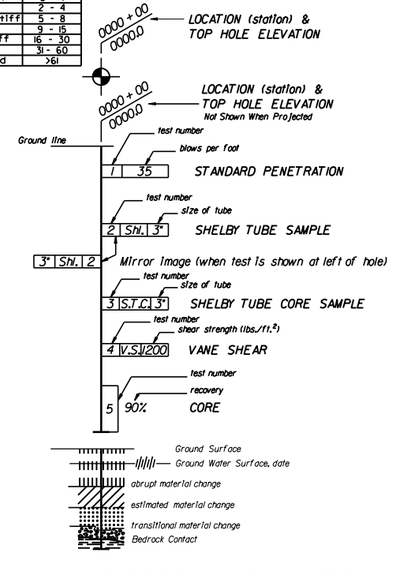
Rotary Rig ☐ — circulation medium ☐ Water ____ ☐ Mud ____

Classification of earth material on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis unless otherwise noted.

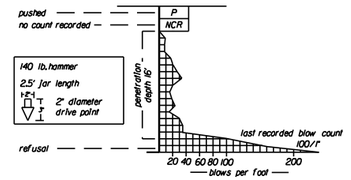
The data on this sheet is for design purposes only and is not a warranty of subsurface conditions, except at locations actually drilled. Projections between test holes are based on geologic interpretations and exact elevations cannot be guaranteed.

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

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




GRAPHIC REPRESENTATION - DRIVEPOINT PENETRATION




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 |

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Sheet B13 of B25 Sheets

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM

REVISIONS

LOG BORING SHEET

BRIDGE OVER MILL CREEK
STA 1066+95
Evanston South
State Line North Section
2100020 Ui

GEOLOGIST T. SULLIVAN Y6K8 RDK

Design Section Q R Stuv

Drwg No. 0004 Sheet 6 of 16

APPROVAL ____

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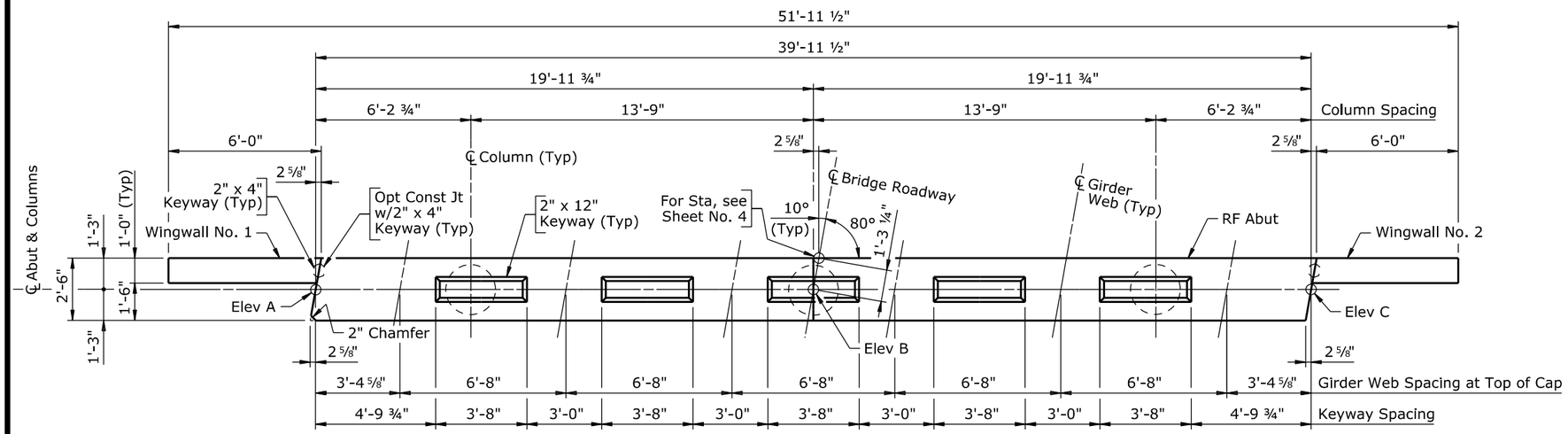
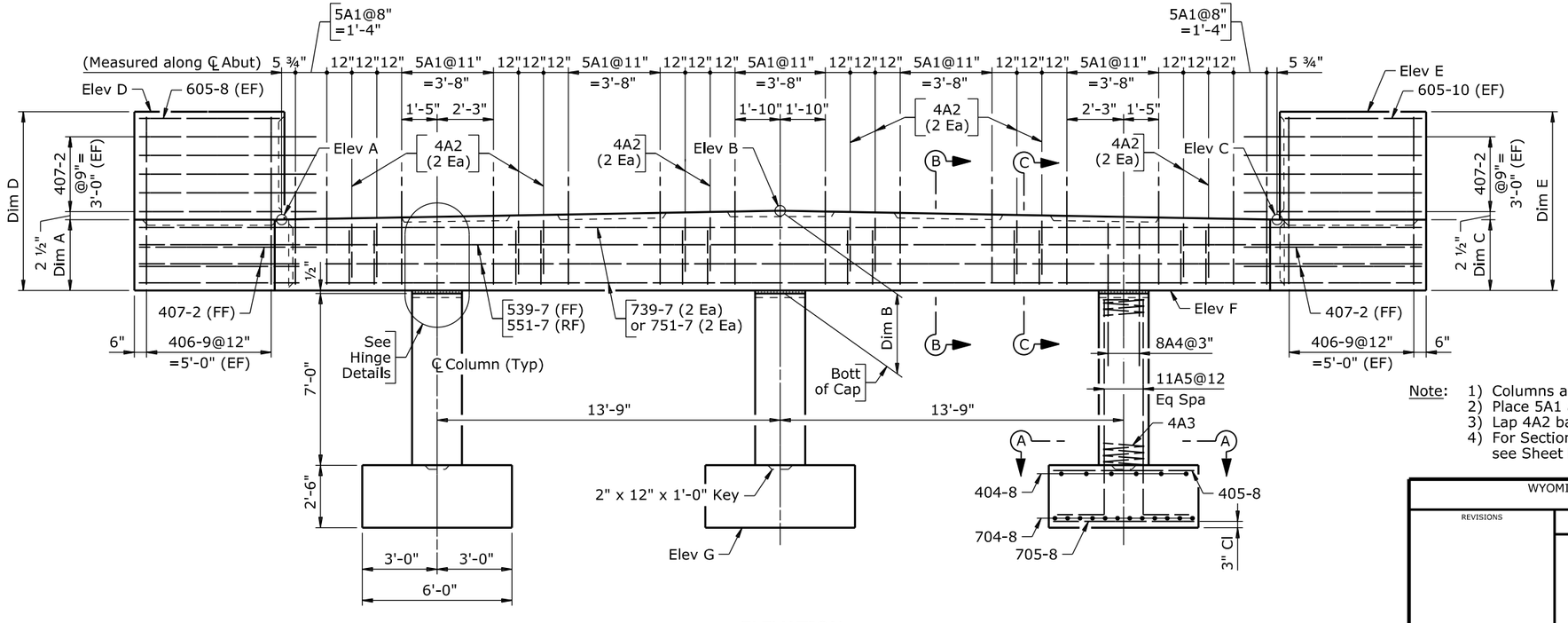



PLAN




ELEVATION
(Looking back station - Abut No. 1, looking ahead station - Abut No. 2)

| TABLE OF ELEVATIONS AND DIMENSIONS FOR ALTERNATE 1 (44" BULB T) | | |
|---|---|---|
| Location | Abut No. 1 | Abut No. 2 |
| Elev A | 7537.27 | 7537.02 |
| Elev B | 7537.68 | 7537.40 |
| Elev C | 7537.30 | 7536.99 |
| Elev D | 7541.72 | 7541.47 |
| Elev E | 7541.75 | 7541.44 |
| Elev F | 7534.52 | 7534.24 |
| Elev G | 7524.98 | 7524.70 |
| Dim A | 2'-9" | 2'-9 3/8" |
| Dim B | 3'-1 7/8" | 3'-1 7/8" |
| Dim C | 2'-9 3/8" | 2'-9" |
| Dim D | 7'-2 3/8" | 7'-2 ¾" |
| Dim E | 7'-2 ¾" | 7'-2 3/8" |

| TABLE OF ELEVATIONS AND DIMENSIONS FOR ALTERNATE 2 (42" BULB T) | | |
|---|---|---|
| Location | Abut No. 1 | Abut No. 2 |
| Elev A | 7537.44 | 7537.19 |
| Elev B | 7537.84 | 7537.56 |
| Elev C | 7537.47 | 7537.16 |
| Elev D | 7541.72 | 7541.47 |
| Elev E | 7541.75 | 7541.44 |
| Elev F | 7534.52 | 7534.24 |
| Elev G | 7524.98 | 7524.70 |
| Dim A | 2'-11" | 2'-11 3/8" |
| Dim B | 3'-3 7/8" | 3'-3 7/8" |
| Dim C | 2'-11 3/8" | 2'-11" |
| Dim D | 7'-2 3/8" | 7'-2 ¾" |
| Dim E | 7'-2 ¾" | 7'-2 3/8" |

Note:
1) Columns and footings on each abutment are identical.
2) Place 5A1 and 4A2 bars parallel with | Girders.
3) Lap 4A2 bars 1'-5" minimum.
4) For Sections A-A, B-B, and C-C, and Hinge Details, see Sheet No. 8.

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM

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ABUTMENT DETAILS

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

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REVIEW
APPROVAL

DESIGN OOO ✓ NNN
DETAIL LLL ✓ OOO
QTY'S LLL ✓ HHH

Design Section Q R Stuv
Drwg No. 0004 Sheet 7 of 16

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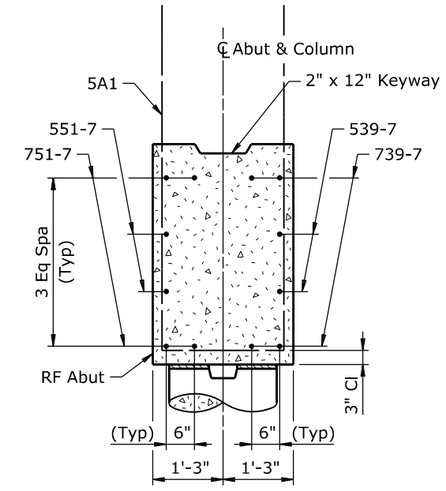
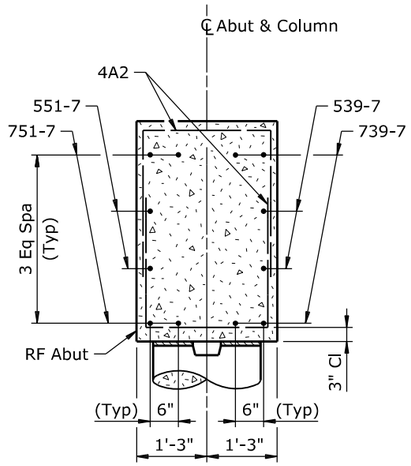
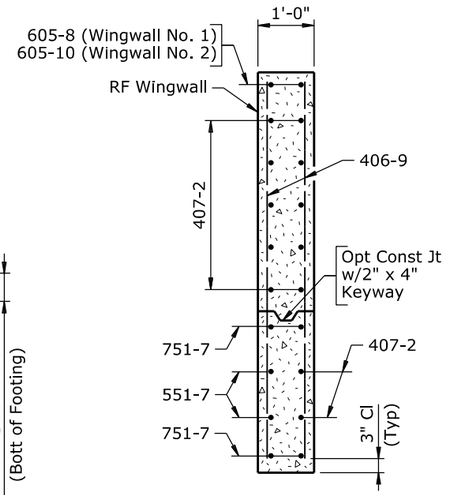


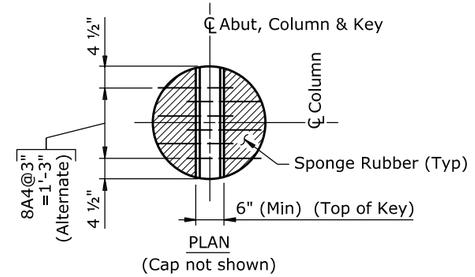

SECTION B-B



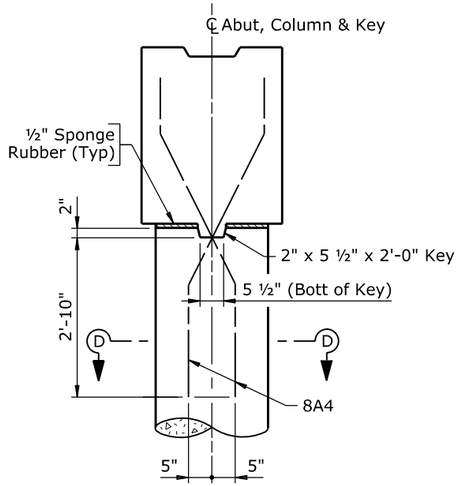

SECTION C-C



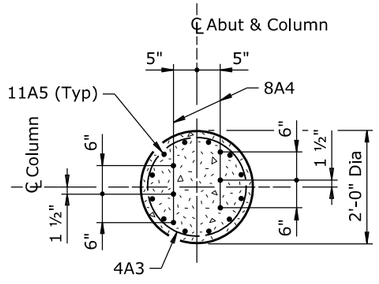

TYPICAL WINGWALL SECTION




PLAN
(Cap not shown)

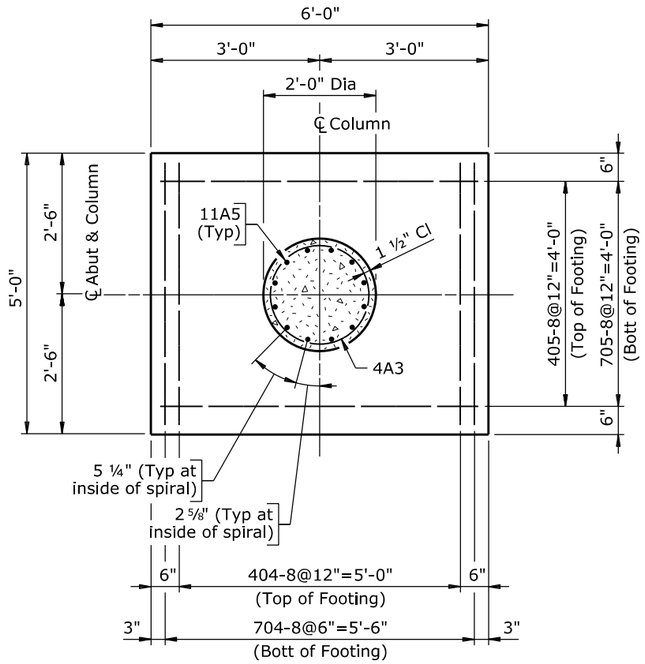



ELEVATION

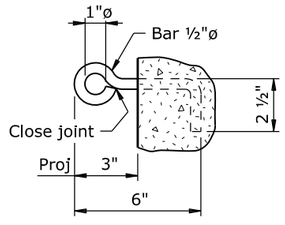



SECTION D-D

HINGE DETAILS




SECTION A-A




EYEBOLT DETAIL
(16 req'd for securing fence)

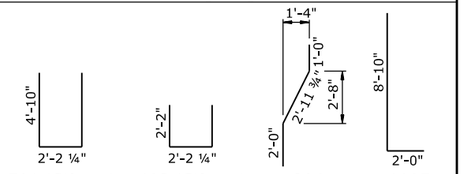
Wyo. Proj. 2100020

Sheet B15 of B25 Sheets

## BILL OF REINFORCEMENT

| Location | Mark | Number Required Per Abutment |
|---|---|---|
| Cap | 4A2 | 24 |
| | 407-2 | 4 |
| | 5A1 | 31 |
| | 539-7 | 2 |
| | 551-7 | 2 |
| | 739-7 | 4 |
| | 751-7 | 4 |
| | Weight | 1447 LB |
| Wingwalls | 406-9 | 24 |
| | 407-2 | 20 |
| | 605-8 | 2 |
| | 605-10 | 2 |
| | Weight | 219 LB |
| Footings & Columns | 4A3 | 3 |
| | 404-8 | 18 |
| | 405-8 | 15 |
| | 704-8 | 36 |
| | 705-8 | 15 |
| | 8A4 | 18 |
| | 11A5 | 36 |
| | Weight | 3321 LB |

Bending Diagrams




5A1 (Stirrup) (11'-11") | 4A2 (Stirrup) (6'-7") | 8A4 (6'-0") | 11A5 (10'-10")

Spiral

| Mark | Core | Pitch | Turns |
|---|---|---|---|
| 4A3 | 21" | 3" | ‡30 |

Note:
1) Ensure the reinforcing steel fabricator prefixes bar marks at Abutment No. 1 with numeral 1 and at Abutment No. 2 with numeral 2.
‡2) The number of turns includes 1 ½ turns at the top and bottom.
3) Place 11A5 bars in columns as shown to not interfere with placement of 8A4 bars.
4) The estimated quantity of class A concrete per abutment is 24.9 CY for Alternate 1 and 25.5 CY for Alternate 2.
5) For locations of Sections A-A, B-B, and C-C, see Sheet No. 7.

WYOMING DEPARTMENT OF TRANSPORTATION
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BRIDGE OVER MILL CREEK
STA 1066+95
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REVIEW
APPROVAL

DESIGN OOO ✓ NNN
DETAIL LLL ✓ OOO
QTY'S LLL ✓ HHH

Design Section Q R Stuv

Drwg No. 0004 Sheet 8 of 16

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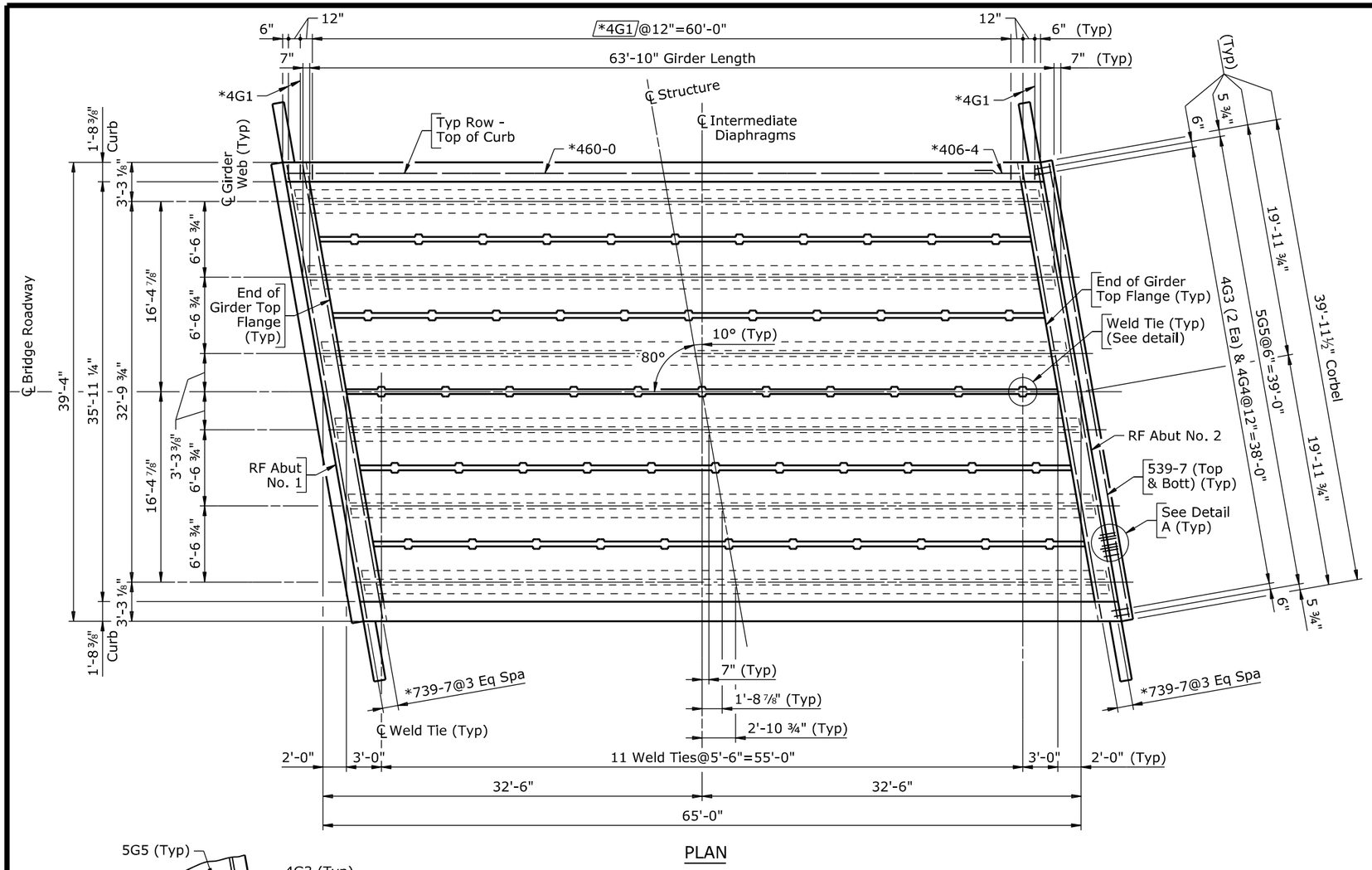
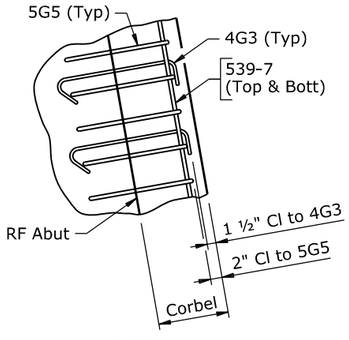
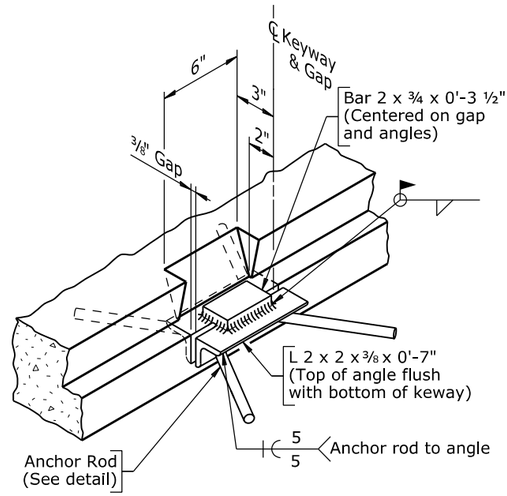


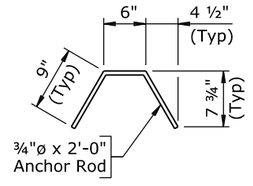

PLAN




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




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




ANCHOR ROD DETAIL

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

WYOMING DEPARTMENT OF TRANSPORTATION
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BRIDGE OVER MILL CREEK
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| | | | |
|---|---|---|---|
| REVIEW | DESIGN OOO ✓ NNN | Design Section | Q R Stuv |
| APPROVAL | DETAIL LLL ✓ OOO | | |
| | QTY'S LLL ✓ HHH | Drwg No. 0004 | Sheet 9 of 16 |

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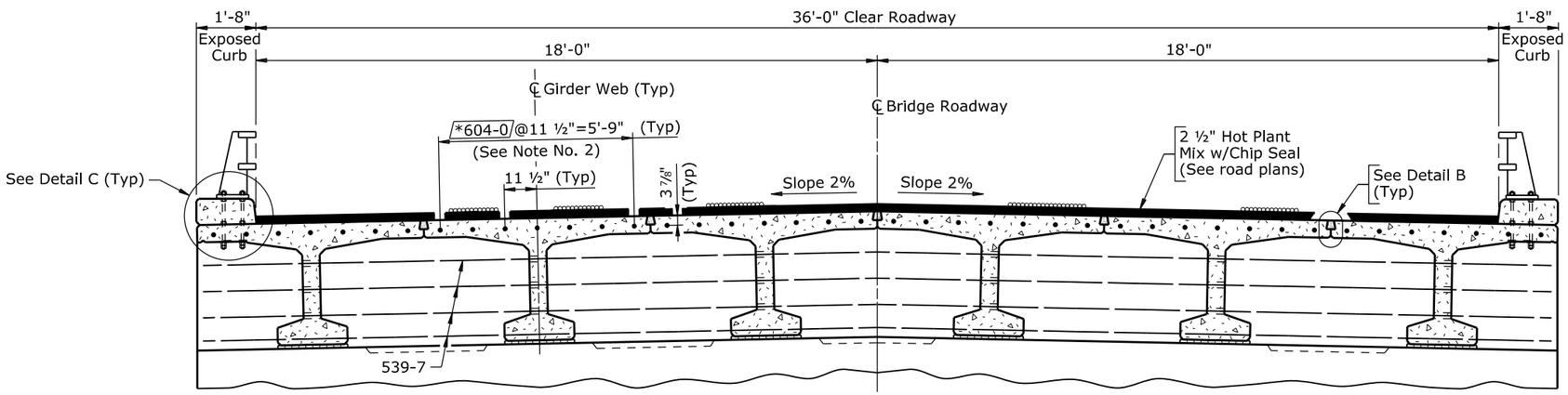
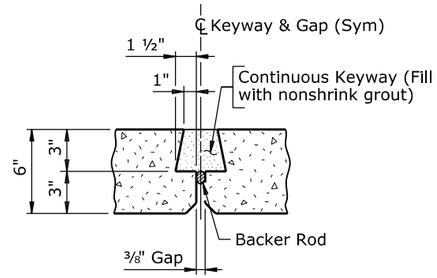
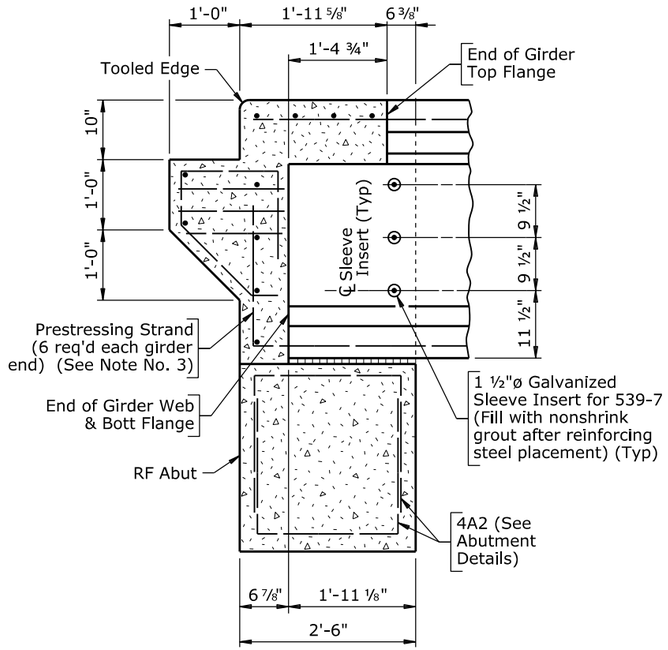


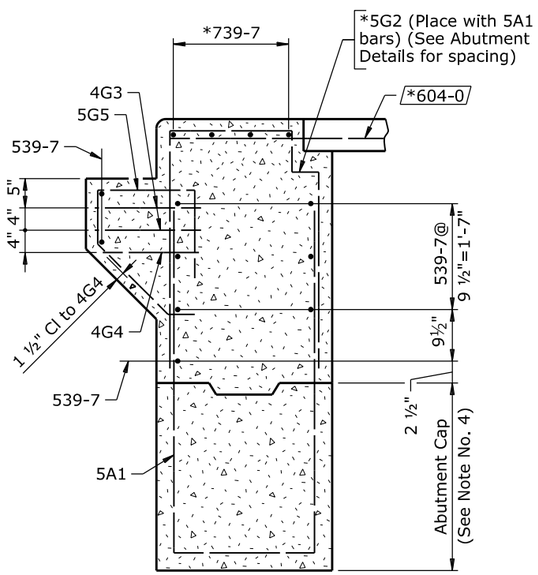

SECTION AT END DIAPHRAGM




DETAIL B
(Hot plant mix not shown)




SECTION AT GIRDER WEB
(Showing typical dimensions)




SECTION BETWEEN GIRDER WEBS
(Showing typical reinforcing steel)

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

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

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| | | | |
|---|---|---|---|
| REVIEW | DESIGN OOO ✓ NNN | Design Section | Q R Stuv |
| APPROVAL | DETAIL LLL ✓ OOO | | |
| | QTY'S LLL ✓ HHH | Drwg No. 0004 | Sheet 10 of 16 |

2100020_2ss2.dgn

| | |
|---|---|
| Wyo. Proj. | 2100020 |
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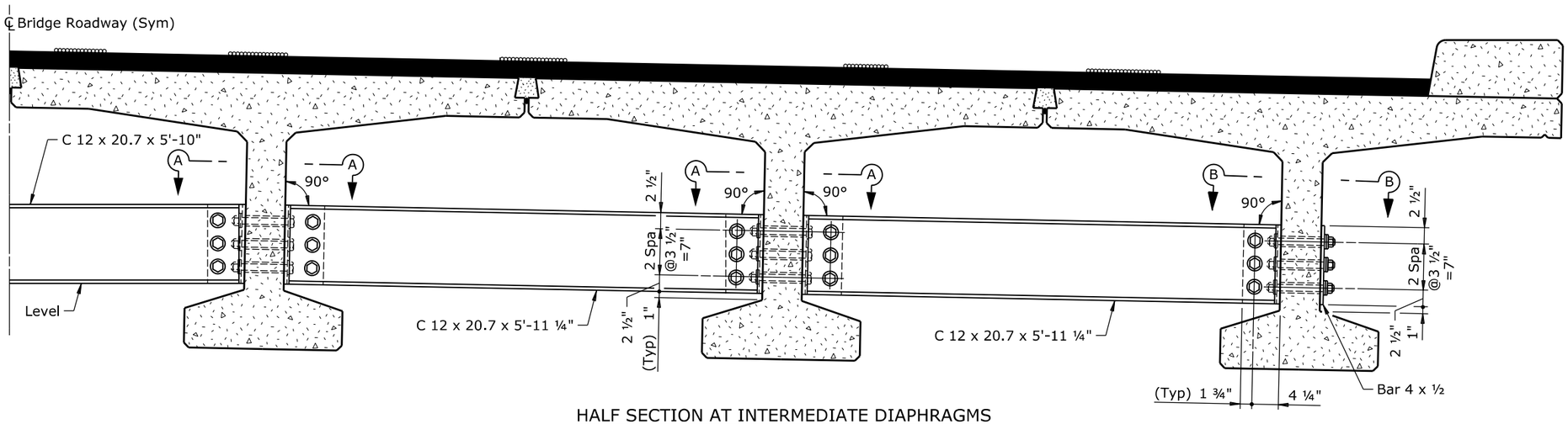
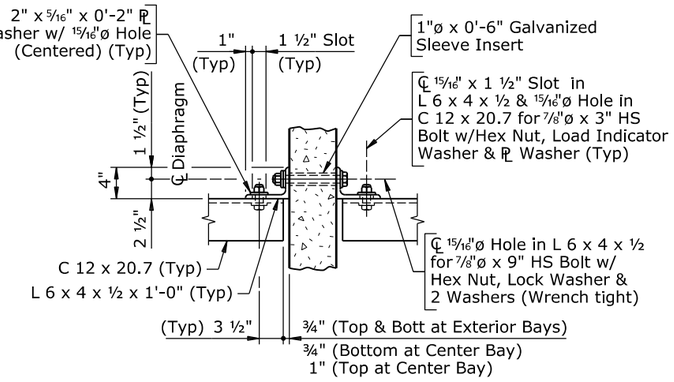
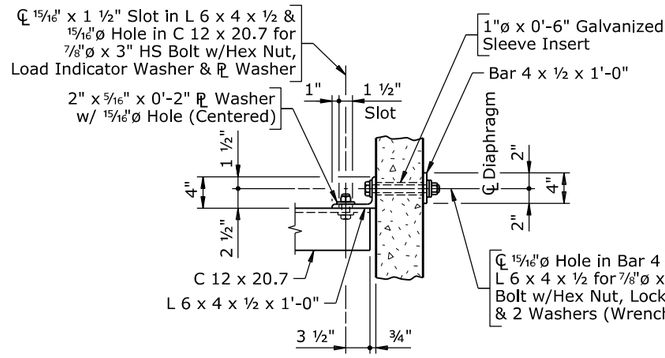


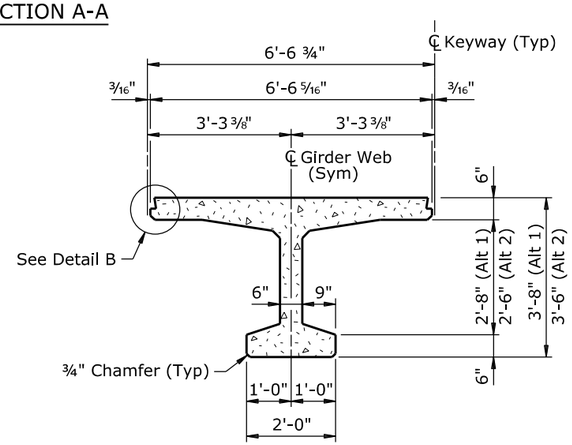

HALF SECTION AT INTERMEDIATE DIAPHRAGMS



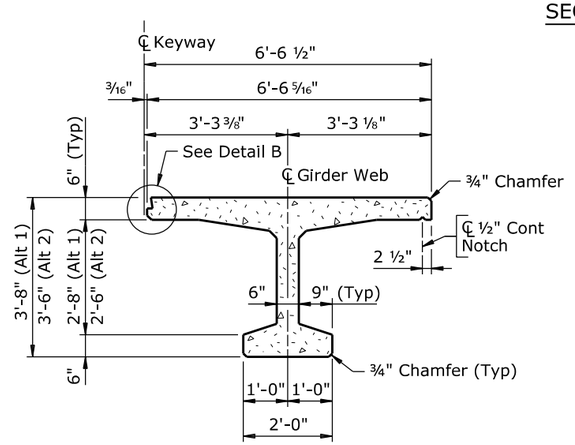

SECTION A-A




SECTION B-B




PRESTRESSED PRECAST INTERIOR GIRDER SECTION




PRESTRESSED PRECAST EXTERIOR GIRDER SECTION

Note: For Detail B, see Sheet No. 10.

WYOMING DEPARTMENT OF TRANSPORTATION
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BRIDGE OVER MILL CREEK
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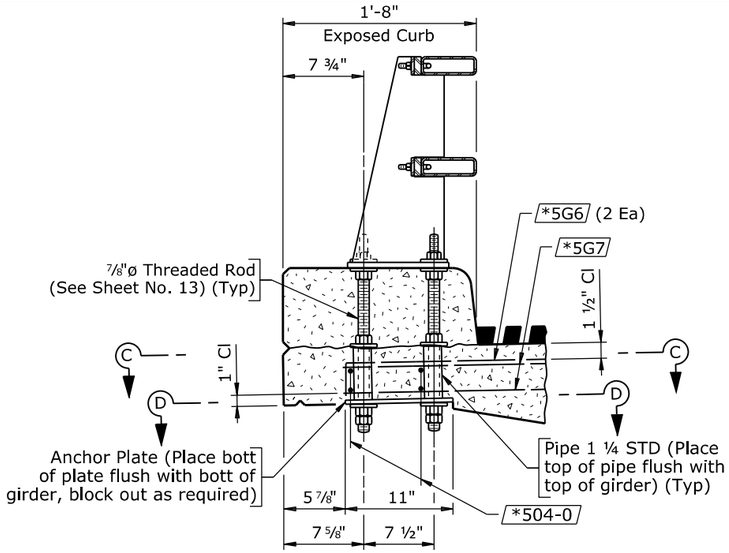
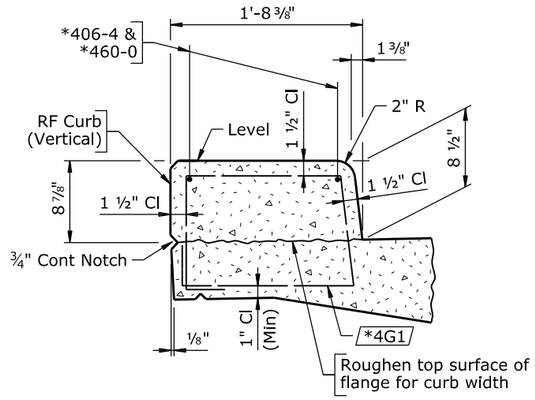
| | | | |
|---|---|---|---|
| REVIEW | DESIGN OOO ✓ NNN | Design Section | Q R Stuv |
| APPROVAL | DETAIL LLL ✓ OOO | | |
| | QTY'S LLL ✓ HHH | Drwg No. 0004 | Sheet 11 of 16 |

2100020_2ss3.dgn

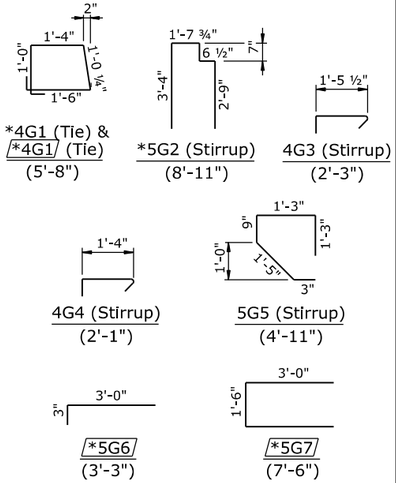


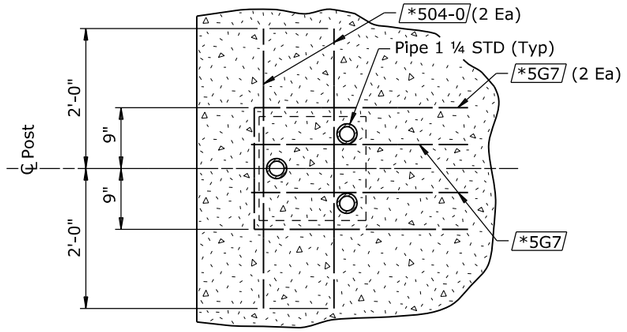

DETAIL C



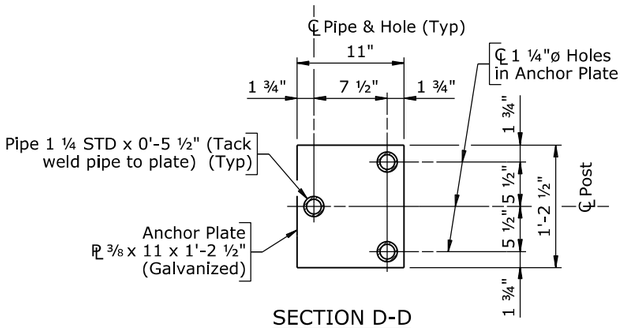

TYPICAL CURB SECTION
(Girder shown, end diaphragm similar)

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

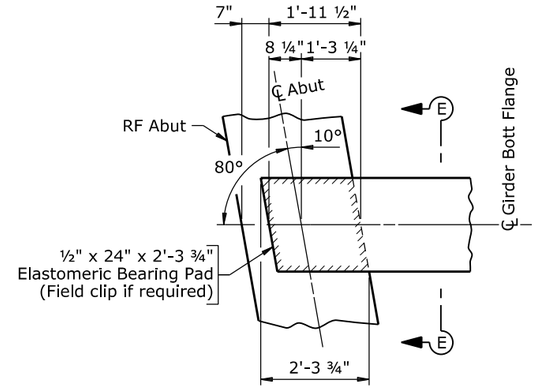


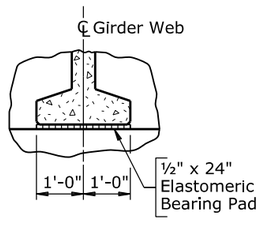

SECTION C-C
(Bolts not shown)




SECTION D-D
(Bolts and deck not shown)




PLAN




SECTION E-E

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

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

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SUPERSTRUCTURE DETAILS

BRIDGE OVER MILL CREEK
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REVIEW
APPROVAL

DESIGN OOO ✓ NNN
DETAIL LLL ✓ OOO
QTY'S LLL ✓ HHH

Design Section Q R Stuv
Drwg No. 0004 Sheet 12 of 16

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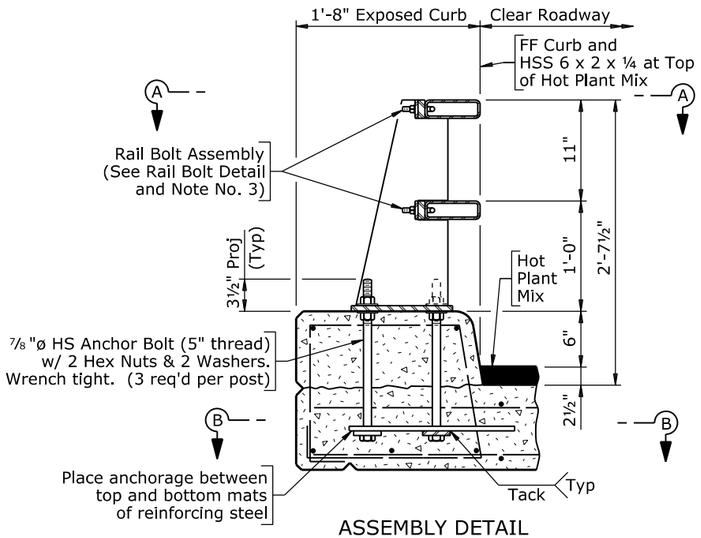
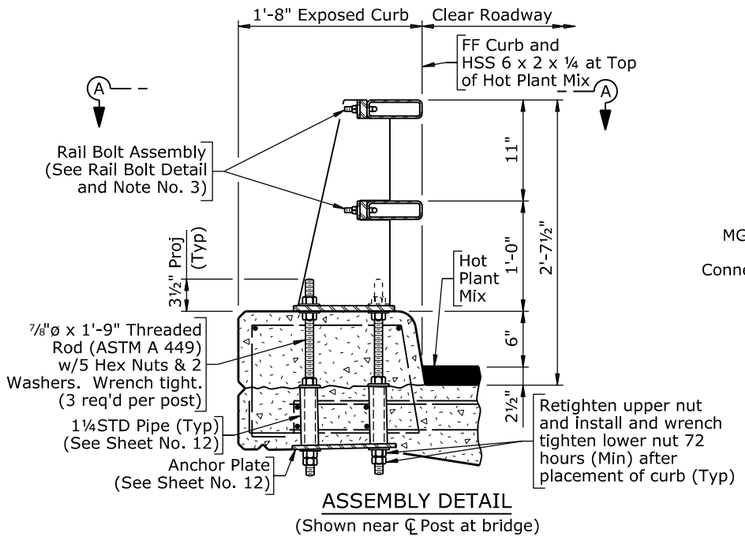


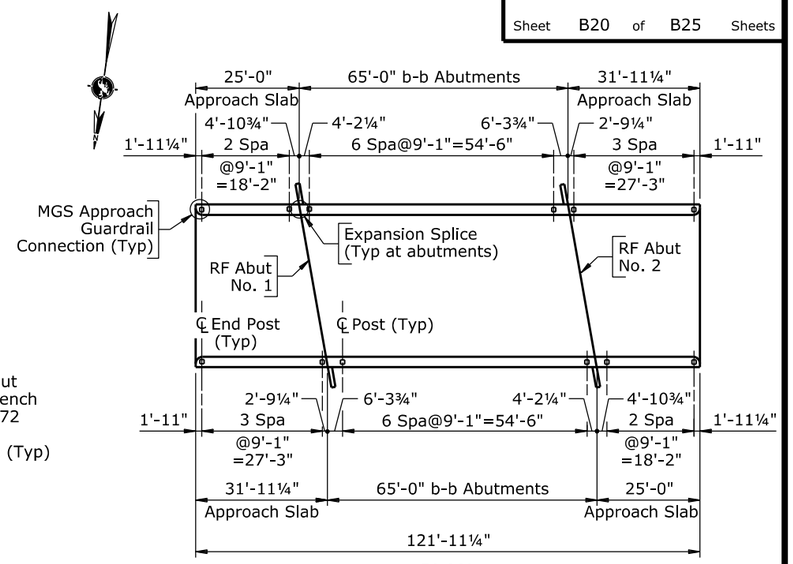

ASSEMBLY DETAIL

(Shown near ℄ Post at approach slab)



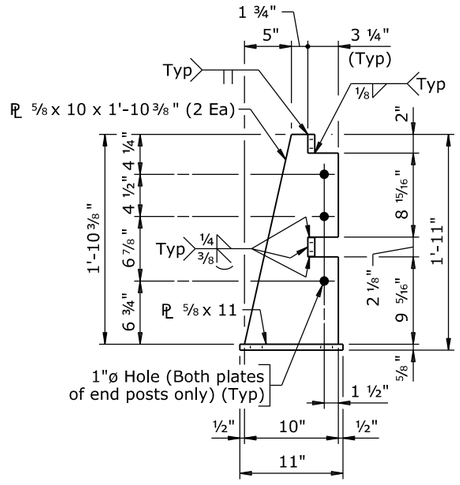

ASSEMBLY DETAIL

(Shown near ℄ Post at bridge)

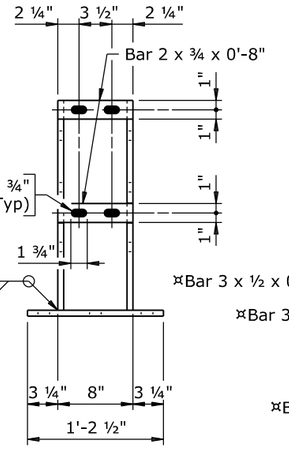



PLAN

(14 posts req'd on bridge)
(14 posts req'd on approach slabs)




SIDE VIEW

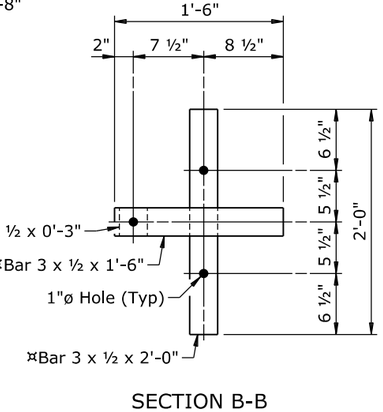



FRONT VIEW

POST DETAILS

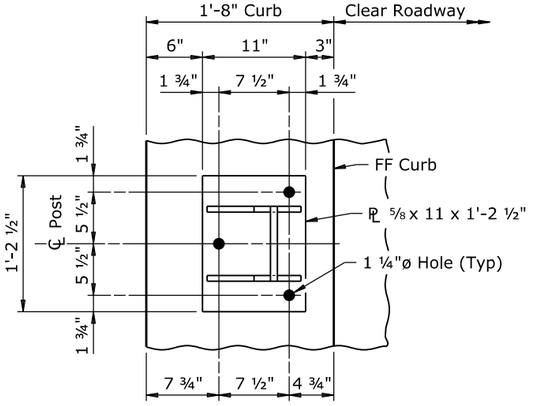
(See View A-A for anchor bolt hole spacing)

| ANCHOR BOLT TABLE | |
|---|---|
| Location | Anchor Bolt |
| Bridge Slab | ——— |
| Approach Slab | ⅞"ø x 1'-5" |



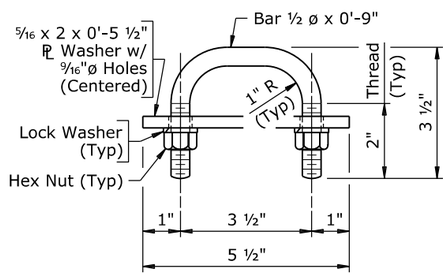

SECTION B-B

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




VIEW A-A

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




RAIL BOLT DETAIL

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 ⁱ⁄₁₆"ø holes in each rail to receive rail bolts (Shop or field). See Post Details for hole spacing.
4) Paint surfaces of the railing components that have been cut, drilled, or otherwise damaged with two coats of zinc-rich paint conforming to ASTM A 780.
5) After installing rails, paint exposed bolt threads with two coats of zinc-rich paint conforming to ASTM A 780.

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REVISIONS

BRIDGE RAILING DETAILS

BRIDGE OVER MILL RIVER

STA 1066+95

Evanston South

State Line North Section

2100020 Ui

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DATE

DESIGN ——— ✓ ———
DETAIL LLL ✓ OOO
QTY'S LLL ✓ HHH

Design Section Q R Stuv

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Standard Sheet Dated 9-3-13

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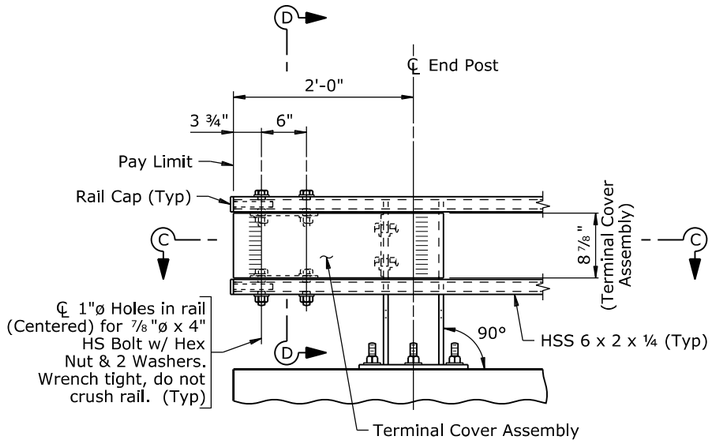
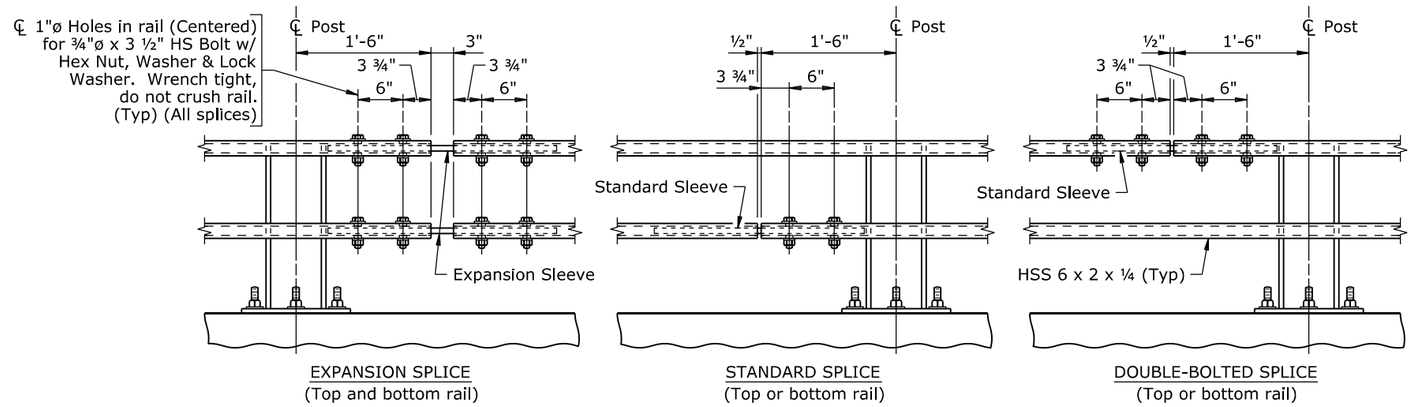
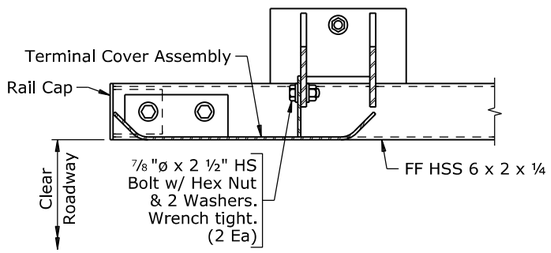



ELEVATION AT TERMINAL

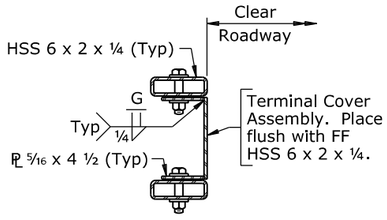
| TERMINAL COMPONENT REQUIREMENTS | | |
|---|---|---|
| Approach Guardrail Connection | Rail Caps Required | Terminal Cover Assembly Required |
| MGS Approach Guardrail | Yes (Without bolts) | ‡No |
| Box Beam w/ Rubrail Approach Guardrail | No | No |
| No Approach Guardrail | Yes (With bolts) | Yes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



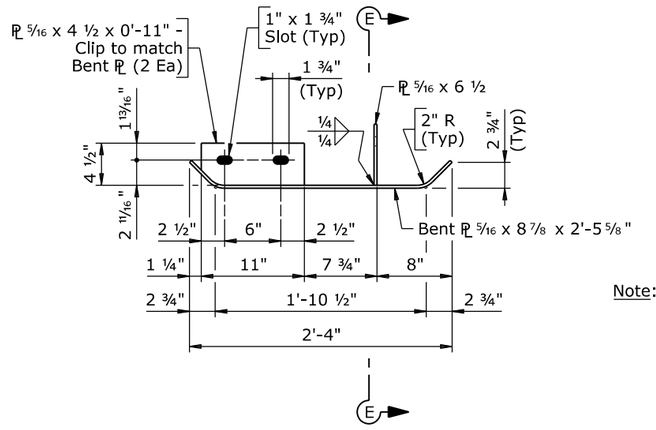

SPLICE DETAILS



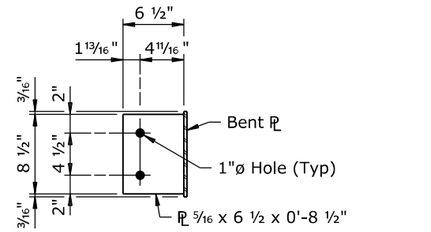

SECTION C-C




SECTION D-D

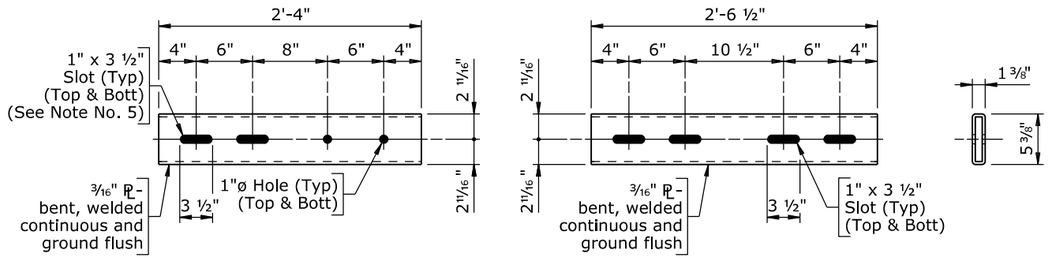



TERMINAL COVER ASSEMBLY DETAIL

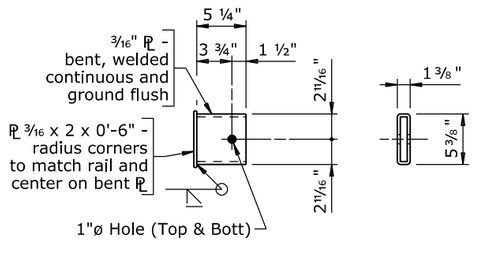



SECTION E-E

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




SLEEVE DETAILS




RAIL CAP DETAILS

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM

REVISIONS

BRIDGE RAILING DETAILS

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STA 1066+95
Evanston South
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DESIGN ___ ✓ ___
DETAIL LLL ✓ OOO
QTY'S LLL ✓ HHH

Design Section Q R Stuv
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Revised 6-16-14

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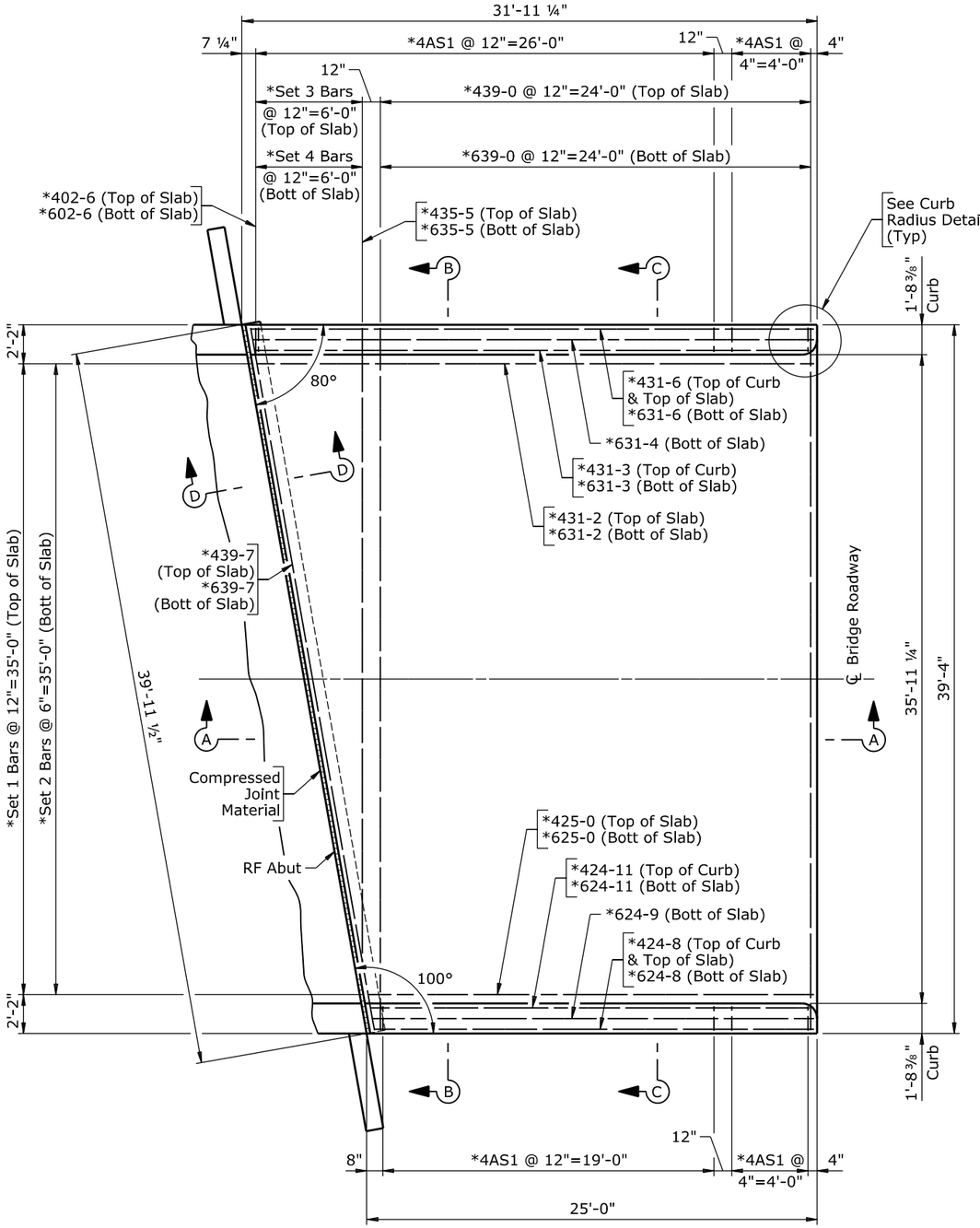
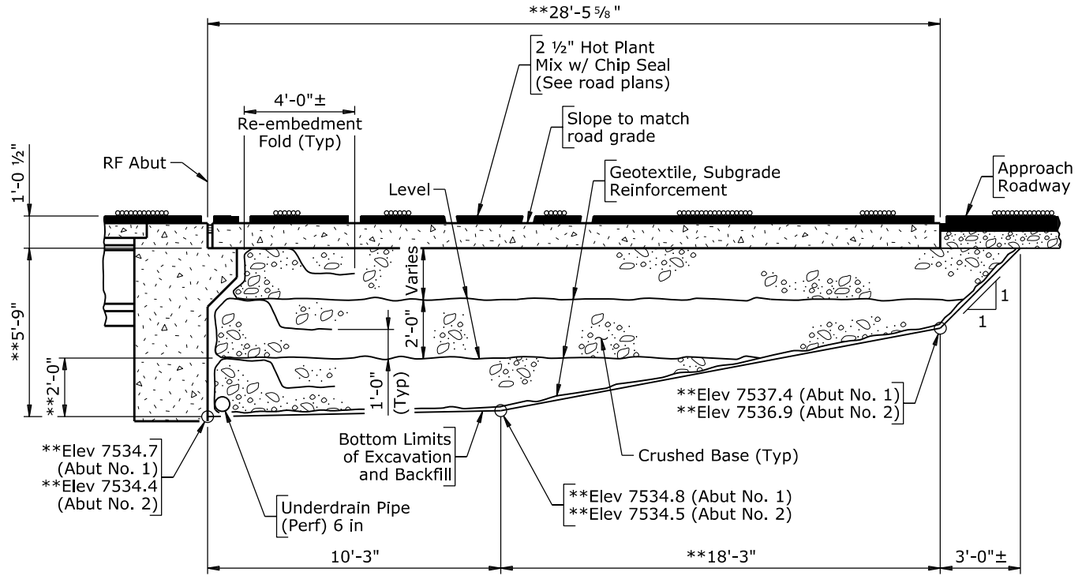
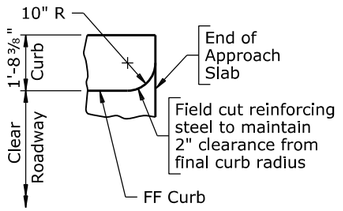



PLAN

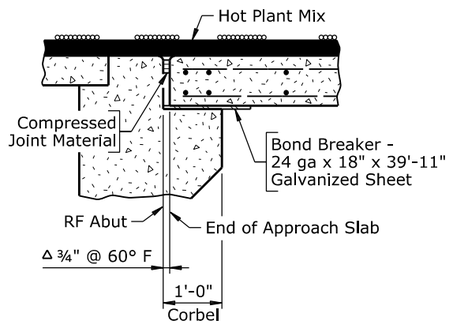
(Abut No. 2 shown, Abut No. 1 similar)




SECTION A-A




CURB RADIUS DETAIL




SECTION D-D

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 compressed joint material up front face and across top of curbs.
4) For Bridge Railing Details, see Sheets No. 13 and 14.
5) For Sections B-B and C-C, see Sheet No. 16.

| | |
|---|---|
| Wyo. Proj. | 2100020 |
| Sheet | B22 of B25 Sheets |

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM

REVISIONS

APPROACH SLAB DETAILS

BRIDGE OVER MILL CREEK

STA 1066+95

Evanston South

State Line North Section

2100020 Ui

| | | | |
|---|---|---|---|
| REVIEW | | Design Section | Q R Stuv |
| APPROVAL | | Drwg No. 0004 | Sheet 15 of 16 |

DESIGN ____ ✓ ____
DETAIL LLL ✓ OOO
QTY'S LLL ✓ HHH

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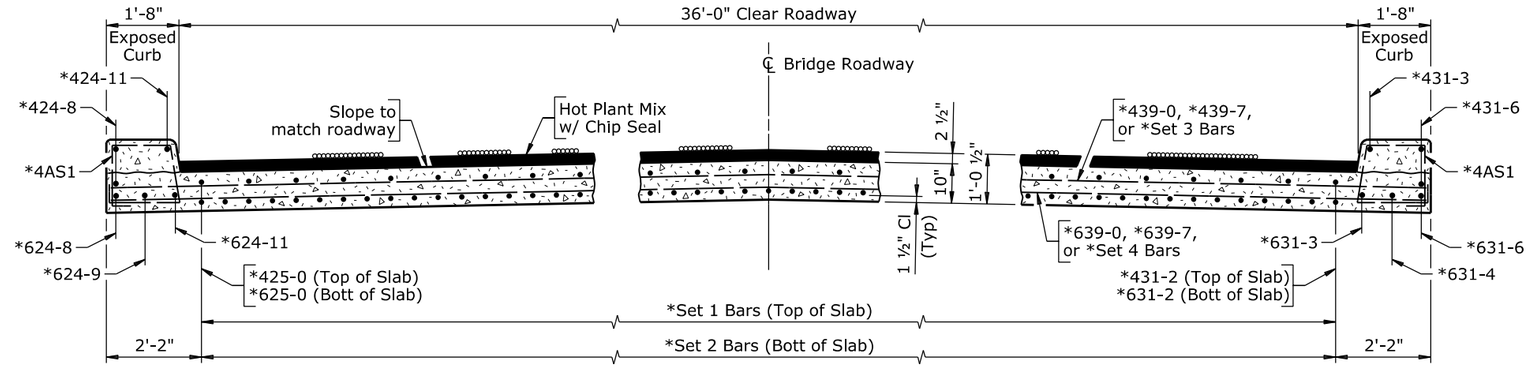
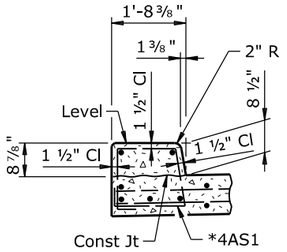
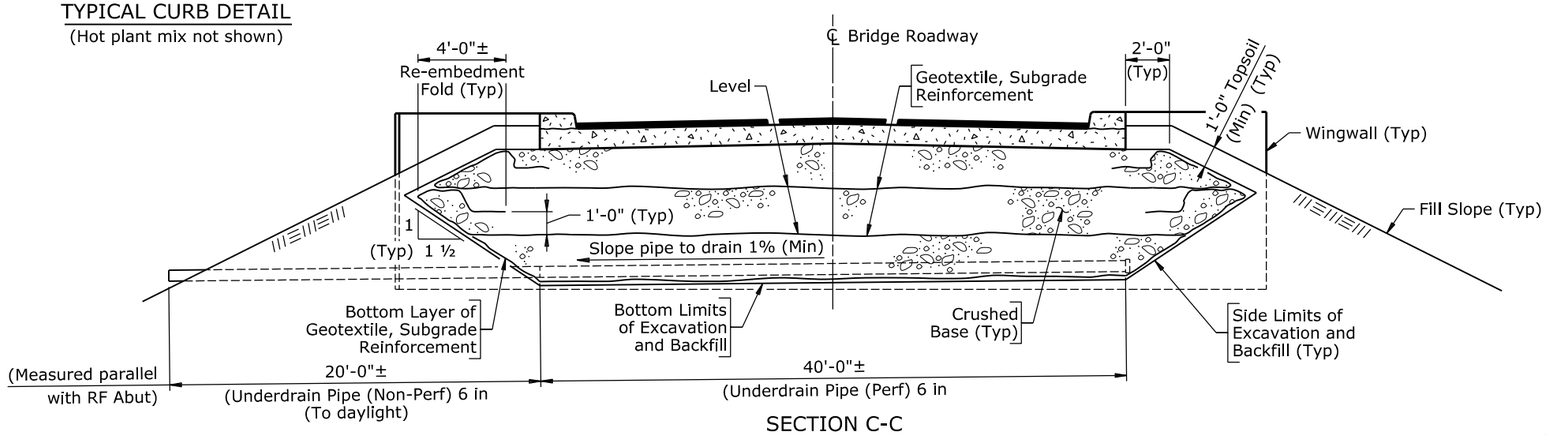



SECTION B-B




TYPICAL CURB DETAIL
(Hot plant mix not shown)




SECTION C-C

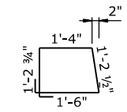
Note: 1) Ensure the reinforcing steel fabricator prefixes approach slab bar marks at Abutment No. 1 with numeral 4 and at Abutment No. 2 with numeral 5.
‡2) Approach slab reinforcing steel is not included in the quantity of reinforcing steel.
3) Extend bottom layer of geotextile up side limits of excavation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

Wyo. Proj. 2100020

Sheet B23 of B25 Sheets

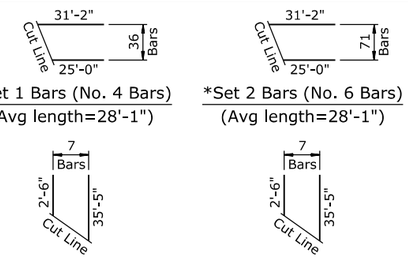
| BILL OF REINFORCEMENT | | |
|---|---|---|
| Location | Mark | Number Required Per Approach Slab |
| Approach Slab and Curbs | *4AS1 | 77 |
| | *424-8 | 2 |
| | *424-11 | 1 |
| | *431-3 | 1 |
| | *431-6 | 2 |
| | *439-0 | 25 |
| | *439-7 | 1 |
| | *Set 1 Bars | 1 |
| | *Set 3 Bars | 1 |
| | *624-8 |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

Bending Diagram




*4AS1 (Tie)
(6'-1")

Set Diagrams




WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM

REVISIONS

APPROACH SLAB DETAILS

BRIDGE OVER MILL CREEK
STA 1066+95
Evanston South
State Line North Section
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| | | | |
|---|---|---|---|
| REVIEW | DESIGN — ✓ — | Design Section | Q R Stuv |
| APPROVAL | DETAIL LLL ✓ OOO | Drwg No. 0004 | Sheet 16 of 16 |
| | QTY'S LLL ✓ HHH | | |

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