DOUBLE BARREL 9'-0" X 9'-0"
CONCRETE BOX CULVERT EXTENSION
STA 112+54
LANDER - HUDSON ROAD
P-20 (WY 789)

FREMONT COUNTY

PRELIMINARY

**DESIGN DATA**

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

**ADT:** 3500 (Year 2005)

**LOADING:**
- Live Load: HL93
- Lateral live load surcharge: 2 ft earth or 72 psf
- Dead Load: Design Fill: 7.0 ft
- Vertical earth pressure: 120 psf
- Lateral earth pressure: 72 psf

**REINFORCED CONCRETE:**
- Load and Resistance Factor Design -
  - Class A Concrete $f_{c} = 4000$ psi
  - Reinforcing Steel $f_y = 60,000$ psi (Grade 60)

**APPROACH ROADWAY WIDTH:** 72'-0"

**ESTIMATED QUANTITIES - CODE 13**

<table>
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<th>ITEM DESCRIPTION</th>
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**STRUCTURE NO. M-OTT-C**

ML20B, RM 83.22

**WYOMING DEPARTMENT OF TRANSPORTATION**

**DESIGN PROGRAM**

**REVISED**

**No.**

**Q R Stats**

**Drawing No.** P-0038

**Sheet 1 of 3**

N202050_1p1.dgn
GENERAL NOTES

CULVERT EXCAVATION: The bottom limits of culvert subexcavation is 3'-0" below the bottom of the culvert. Line the bottom of the culvert subexcavation with geotextile material separation. Backfill with crusher run subbase conforming to grading 1. The estimated quantity of culvert subexcavation is calculated in accordance with Standard Plan 206-1, Culvert and Trench Excavation.

ADHESIVE ANCHORAGE SYSTEM: Use one of the following products:
- CIA-GEL 6000-GP as manufactured by McFlex USA, Inc.
- Red Head C6+ as manufactured by ITW Commercial Construction
- Sure Anchor I J-51 as manufactured by Dayton Superior
- HIT-RE 500 V3 as manufactured by HIT, Inc.

Drill and prepare holes and install the reinforcing steel in accordance with the adhesive system manufacturer's recommendations to provide a pullout strength of equal or greater capacity to the reinforcing steel. Work necessary for the adhesive anchorage system is incidental to the contract pay item Reinforcing Steel.

EPOXY RESIN BONDING COMPOUND: Clean the roughened surfaces of the existing concrete and coat with epoxy resin bonding compound. If the bonding compound gels before concrete placement, remove by sandblasting and reapply. Use bonding compound conforming to Subsection 810.6, Epoxy Resin. Mix and apply in accordance with the manufacturer's recommendations. Work necessary for the epoxy resin bonding compound is incidental to the contract pay item Class A Concrete.

CULVERT CLEANING: Clean the east barrel of the existing culvert in accordance with the road plans.

CULVERT BOTTOM BACKFILL: Backfill the bottom of the west barrel, along with the inlet and outlet areas behind the gabions, with 1'-0" of excavated material from the adjacent highway embankment. Work necessary for backfilling is incidental to the contract pay item Class A Concrete.

REFERENCES

WYDOT Plans:
Bridge Drwg No. 2579

Supplementary Specifications:
SS-100K Adjustment for Structural Steel
SS-500G Structural Concrete with Quality Control and Quality Acceptance

Standard Plans:
206-3A Culvert and Trench Excavation
511-3A Wire Enclosed Riprap and Gabions


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

LINE STYLE DESIGNATION: Phantom lines indicate existing structure, solid lines indicate new construction, hatched areas indicate removal.

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.

REFERENCES:
STA 112+54
N202050
Lander - Hudson Road
P-20 (WY 789)

WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM

4.01 - Preliminary

Section 4.01 - Preliminary

PRELIMINARY GENERAL NOTES

DOUBLE BARREL 9'-0" X 9'-0"
CONCRETE BOX CULVERT EXTENSION
STA 112+54
Lander - Hudson Road
P-20 (WY 789)

N202050

Wy. Proj. N202050
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM

Q R Stuv
Wyo. Proj.

Sheet N202050

Section 4.01 - Preliminary

N202050_1pl3.dgn
DOUBLE BARREL 9'-0" X 9'-0"
CONCRETE BOX CULVERT EXTENSION
STA 112+54
LANDER - HUDSON ROAD
P-20 (WY 789)
FREMONT COUNTY

ESTIMATED QUANTITIES - CODE 13

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</table>

DESIGN DATA

SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications,

ADT: 3500 (Year 2005)

LOADING:
Live Load: HL-93
Lateral live load surcharge: 2 ft earth or 72 psf
Dead Load: Design Fill: 7.0 ft
Vertical earth pressure: 120 psf
Lateral earth pressure: 72 psf

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

APPROACH ROADWAY WIDTH: 72'-0"

STRUCTURE NO. M-OTT-C
ML20B, RM 83.22

WYOMING DEPARTMENT OF TRANSPORTATION
DESIGN PROGRAM
REV 01/SF008

No Date
Design Section Q R State

4.02 - Example
REFERENCES

WYDOT Plans: Bridge Drwg No. 2579 - Supplementary Specifications:
- SS-100K - Adjustment for Structural Steel
- SS-500G - Structural Concrete with Quality Control and Quality Acceptance

Standard Plans:
- 209-3A - Culvert and Trench Excavation
- 511-3A - Wire Enclosed Riprap and Gabions

GENERAL NOTES

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

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

**LINE STYLE DESIGNATION:** Phantom lines indicate existing structure, solid lines indicate new construction, hatched areas indicate removal.

**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:**

<table>
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<th>Size</th>
<th>Length</th>
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<tr>
<td>508-3</td>
<td>4A2</td>
<td>B25</td>
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**EYEBOLTS:** Use galvanized bar conforming to ASTM A 799 (Grade 36). Work necessary for the eyebolts is incidental to the contract pay item Class A Concrete.

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

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

**REMOVAL OF CONCRETE:** Thoroughly clean concrete from reinforcing steel to remain in place and straighten as required. Remove and replace damaged reinforcing steel with the same size bar and weld-splice or mechanically splice where necessary at no additional cost to the department. Work necessary for removal of concrete is incidental to the contract pay item Class A Concrete.

**CULVERT EXCAVATION:** The estimated quantity of culvert excavation is 40 CY and is incidental to the contract pay item, Class A Concrete.

**ADHESIVE ANCHORAGE SYSTEM:** Use one of the following products:
- CIA-GEL 8000-GP as manufactured by Miflex USA, Inc.
- Red Head CE+ as manufactured by 17W Commercial Construction
- Sure Anchor I J-51 as manufactured by Dayton Superior
- HIT-RE 500 V3 as manufactured by HITI, Inc.

**ADHESIVE RESIN BONDING COMPOUND:** Clean the roughened surfaces of the existing concrete and coat with epoxy resin bonding compound. If the bonding compound gels before concrete placement, remove by sandblasting and reapply. Use bonding compound conforming to Subsection 810.6, Epoxy Resin. Mix and apply in accordance with the manufacturer's recommendations. Work necessary for the epoxy resin bonding compound is incidental to the contract pay item Class A Concrete.

**CULVERT CLEANING:** Clean the east barrel of the existing culvert in accordance with the road plans.

**CULVERT BOTTOM BACKFILL:** Backfill the bottom of the west barrel, along with the inlet and outlet areas behind the gabions, with 1'-0" of excavated material from the adjacent highway embankment. Work necessary for backfilling is incidental to the contract pay item Class A Concrete.
CULVERT DETAILS
DOUBLE BARREL 9'-0" X 9'-0"
CONCRETE BOX CULVERT EXTENSION
STA 112+54
Landar-Hudson Road

LOCATION PLAN

HORIZONTAL CURVE DATA

TYPICAL SECTION THRU RIPRAP
CULVERT DETAILS

LONGITUDINAL SECTION

(Showing reinforcing steel in walls)

For Sections A-A and B-B, see Sheet No. 5.

1) Place cut line as close as possible to parapet and saw cut 1'-6" deep minimum top and bottom.
2) Center 603-0 dowel bars in existing slabs and walls, embed 1'-6" into existing culvert, and set with an adhesive anchorage system.
3) For Sections A-A and B-B, see Sheet No. 5.

Note:

PLAN

PARAPET DETAIL

(Showing new construction)

PARAPET REMOVAL DETAIL

See Parapet Removal Detail

See Parapet Detail (Typ)

1'-0" (Typ)

603-0 Dowel Bars
20 req'd per wall

603-0 Dowel Bars
20 req'd per wall

Flow Line

Existing Longitudinal Reinforcing Steel - to remain in place

Existing Vertical Reinforcing Steel - to be removed (Typ)

Cut Line

Transverse Reinforcing Steel - to be removed (Typ)

Transverse Reinforcing Steel - to remain in place

See Parapet Removal Detail

Note:

Section 4.17 - Culverts

LONGITUDINAL SECTION
(Showing reinforcing steel in walls)

For Sections A-A and B-B, see Sheet No. 5.

1) Place cut line as close as possible to parapet and saw cut 1'-6" deep minimum top and bottom.
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Note:

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(Showing new construction)

PARAPET REMOVAL DETAIL

See Parapet Removal Detail

See Parapet Detail (Typ)

1'-0" (Typ)

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Cut Line

Transverse Reinforcing Steel - to be removed (Typ)

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See Parapet Removal Detail

Note:

Section 4.17 - Culverts

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PLAN

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(Showing new construction)

PARAPET REMOVAL DETAIL

See Parapet Removal Detail

See Parapet Detail (Typ)

1'-0" (Typ)

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Note:

Section 4.17 - Culverts

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Note:

PLAN

PARAPET DETAIL

(Showing new construction)

PARAPET REMOVAL DETAIL

See Parapet Removal Detail

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1'-0" (Typ)

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20 req'd per wall

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Existing Vertical Reinforcing Steel - to be removed (Typ)

Cut Line

Transverse Reinforcing Steel - to be removed (Typ)

Transverse Reinforcing Steel - to remain in place

See Parapet Removal Detail

Note:
WYOMING DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
HHH PPP 0008 Q R Stuv
PPP 000 LLL JJJ MMM

CULVERT DETAILS
DOUBLE BARREL 9'-0" X 9'-0"
CONCRETE BOX CULVERT EXTENSION
STA 112 K4 Lander-Hudson Road
P-20 (WY 789)
N202050

Note:
1) Place short leg of SC2 bars in footing.
2) Place Set Bars and 511-1 bars with SC2 bars.
3) Each weep hole assembly consists of a pipe 4 STD through the wingwall, one 6" x 6" piece of aluminum or galvanized steel wire 4 mesh hardware cloth (Minimum wire diameter 0.03") centered over pipe end and firmly anchored to rear face of wingwall, and one cubic foot of coarse aggregate in a securely tied burlap sack.

TYPICAL WINGWALL ELEVATION

WINGWALL PLAN
(Outlet shown, inlet similar)

WEPP HOLE ASSEMBLY DETAIL

EYEBOLT DETAIL
(16 req'd for securing fence)