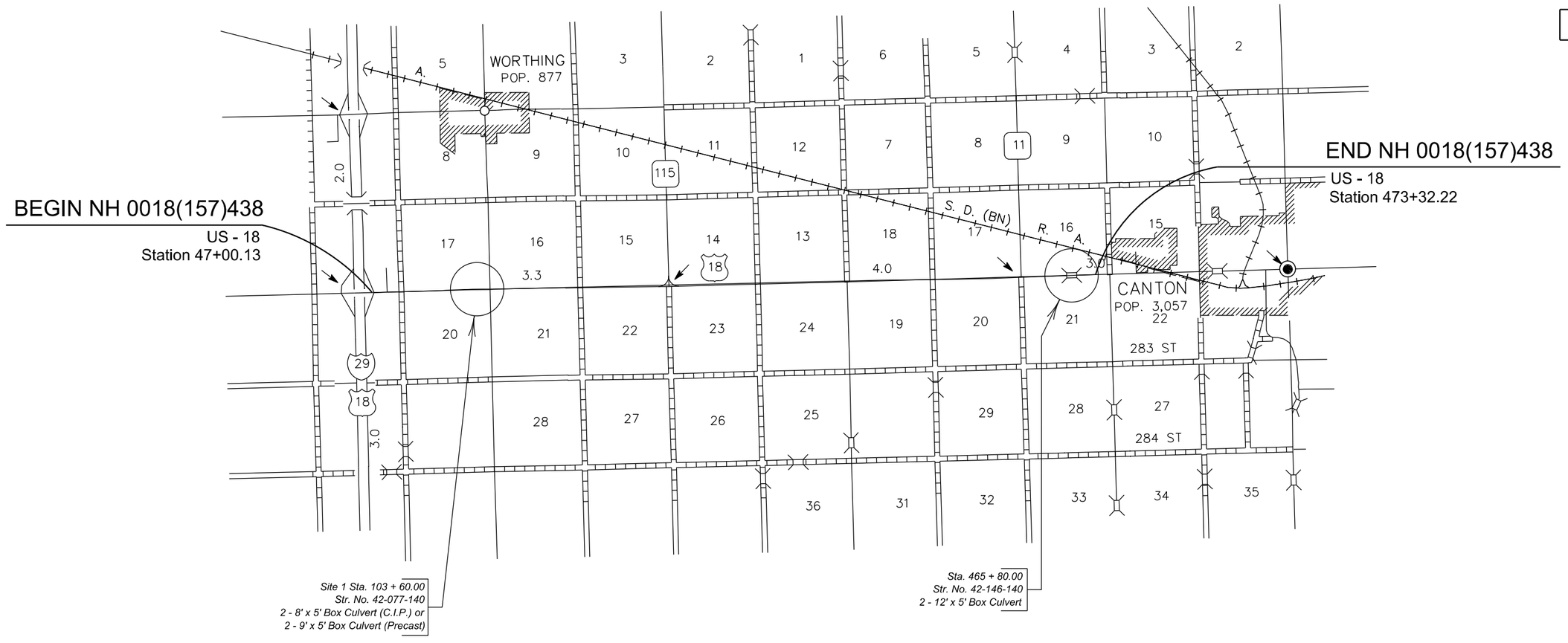
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(157)438	E1	E25

FOR BIDDING PURPOSES ONLY

Section E: Structure Plans

INDEX OF SHEETS -



FOR BIDDING PURPOSES ONLY

Revised March 1, 2023 SK

SECTION E – ESTIMATE OF STRUCTURE QUANTITIES

Site 1 – Alternate A
Str. No. 42-077-140

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
420E0200	Structure Excavation, Box Culvert	80	CuYd
421E0200	Box Culvert Undercut	292	CuYd
460E0120	Class A45 Concrete, Box Culvert	197.1	CuYd
480E0100	Reinforcing Steel	31,274	Lb
700E0210	Class B Riprap	39.0	Ton
831E0110	Type B Drainage Fabric	52	SqYd

Site 1 – Alternate B
Str. No. 42-077-140

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
420E0200	Structure Excavation, Box Culvert	86	CuYd
421E0200	Box Culvert Undercut	291	CuYd
560E2092	2-9'x5' Precast Concrete Box Culvert, Furnish	132.0	Ft
560E2093	2-9'x5' Precast Concrete Box Culvert, Install	132.0	Ft
560E3092	2-9'x5' Precast Concrete Box Culvert End Section, Furnish	2	Each
560E3093	2-9'x5' Precast Concrete Box Culvert End Section, Install	2	Each
700E0210	Class B Riprap	39.0	Ton
831E0110	Type B Drainage Fabric	52	SqYd

Str. No. 42-146-140

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
250E0030	Incidental Work, Structure	Lump Sum	LS
420E0200	Structure Excavation, Box Culvert	160	CuYd
421E0200	Box Culvert Undercut	419	CuYd
460E0120	Class A45 Concrete, Box Culvert	346.9	CuYd
480E0100	Reinforcing Steel	58,996	Lb
700E0210	Class B Riprap	271.9	Ton
831E0110	Type B Drainage Fabric	356	SqYd

INCIDENTAL WORK, STRUCTURE

1. Incidental Work, Structure will consist of the removal of the following structure:

   Str. No. 42-146-140. In-place centerline Sta. 465+72 is a 2 - 12' x 5' reinforced concrete box culvert.

2. Break down and remove the existing structure 1 foot below finished ground or as required to construct the new structure in accordance with Section 110 of the Specifications. All portions of the existing structure will be removed and disposed of by the Contractor on a site obtained by the Contractor and approved by the Engineer in accordance with the ENVIRONMENTAL COMMITMENTS found in SECTION A.

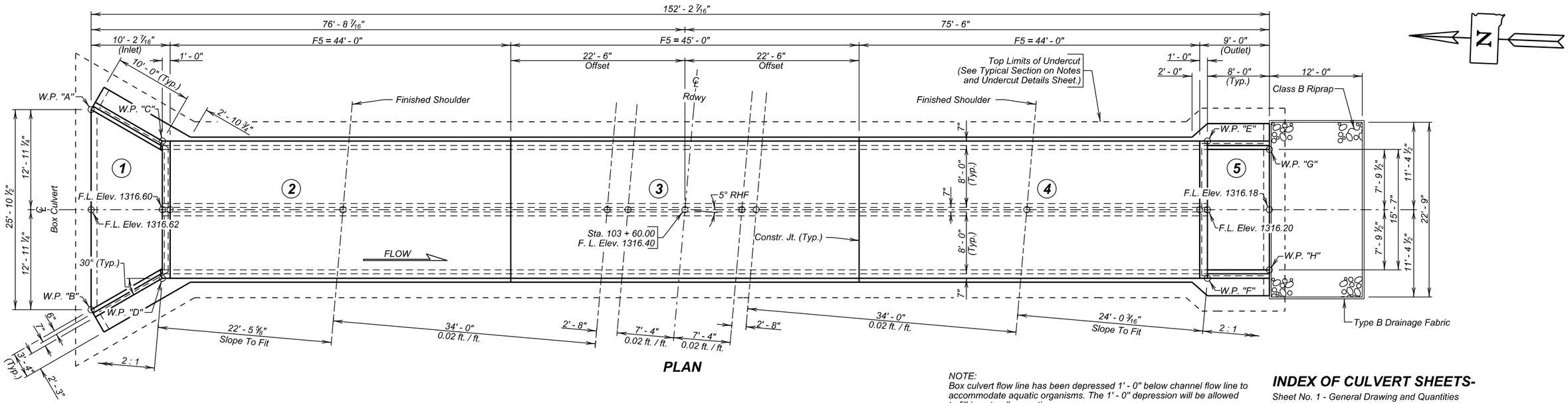
3. During demolition of structure, efforts will be taken to prevent material from falling into the creek. Under no circumstances is asphalt allowed to fall into the creek.

4. The foregoing is a general description of the in-place structure and should not be construed to be complete in all details. Before preparing the bid it will be the responsibility of the Contractor to make a visual inspection of the structure to verify the extent of the work and materials involved. If desired by the Contractor, a copy of the original construction plans may be obtained through the Office of Bridge Design.

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

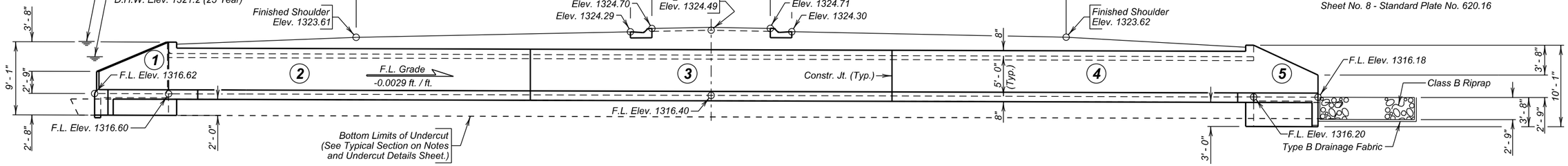
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(157)438	E3	E25



PLAN

NOTE:
Box culvert flow line has been depressed 1' - 0" below channel flow line to accommodate aquatic organisms. The 1' - 0" depression will be allowed to fill in naturally over time.

INDEX OF CULVERT SHEETS-



ELEVATION

HYDRAULIC DATA

Q_d	282 cfs
A_d	37 sq. ft.
V_d	7.6 fps
Q_F	282 cfs
Q_{100}	544 cfs
Q_{OT}	$>Q_{100}$ cfs
V_{max}	10.5 fps

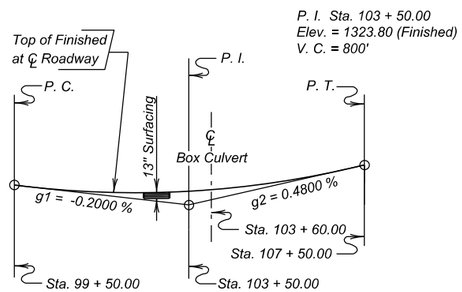
Q_d = Design discharge for the proposed culvert based on 25 year frequency. El. 1321.2.

Q_{OT} = Overtopping discharge and frequency $>Q_{100}$ year recurrence interval. El. 1324.8. Location Sta. 101 + 85.00.

Q_F = Designated peak discharge for the basin approaching proposed project based on 25 year frequency.

Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 1323.1.

V_{max} = Maximum computed outlet velocity for the proposed culvert based on a 100 year frequency.



VERTICAL CURVE DATA

TABLE OF WORKING POINTS

W. P.	STATION	OFFSET
"A"	103 + 66.20	77.54' Lt.
"B"	103 + 40.43	75.28' Lt.
"C"	103 + 62.96	68.02' Lt.
"D"	103 + 45.28	66.47' Lt.
"E"	103 + 74.72	66.47' Rt.
"F"	103 + 57.04	68.02' Rt.
"G"	103 + 74.34	74.53' Rt.
"H"	103 + 58.81	75.89' Rt.

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
	Class A45 Concrete, Box Culvert	Cu. Yd.	197.1
	Reinforcing Steel	Lb.	31274
	Structure Excavation, Box Culvert	Cu. Yd.	80.3
	Box Culvert Undercut	Cu. Yd.	292
	Type B Drainage Fabric	Sq. Yd.	51.6
✳	Class B Riprap	Ton	39

✳ For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert Cu. Yds. to Tons.

PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

SITE 1
ALTERNATE A

GENERAL DRAWING AND QUANTITIES

FOR

2 - 8' X 5' BOX CULVERT (C.I.P)

OVER SNAKE CREEK — 5° RHF SKEW
STA. 103 + 60.00 — SEC.17/20-T98N-R50W
STR. NO. 42-077-140 — NH 0018(157)438
PCN 6923 — HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2022

1 OF 8

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	CRW	Steve A Johnson BRIDGE ENGINEER
LINC6923	6923TA01		

FOR BIDDING PURPOSES ONLY

SPECIFICATIONS

1. *Design Specifications: AASHTO LRFD Bridge Design Specifications, 9th Edition.*
2. *Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.*

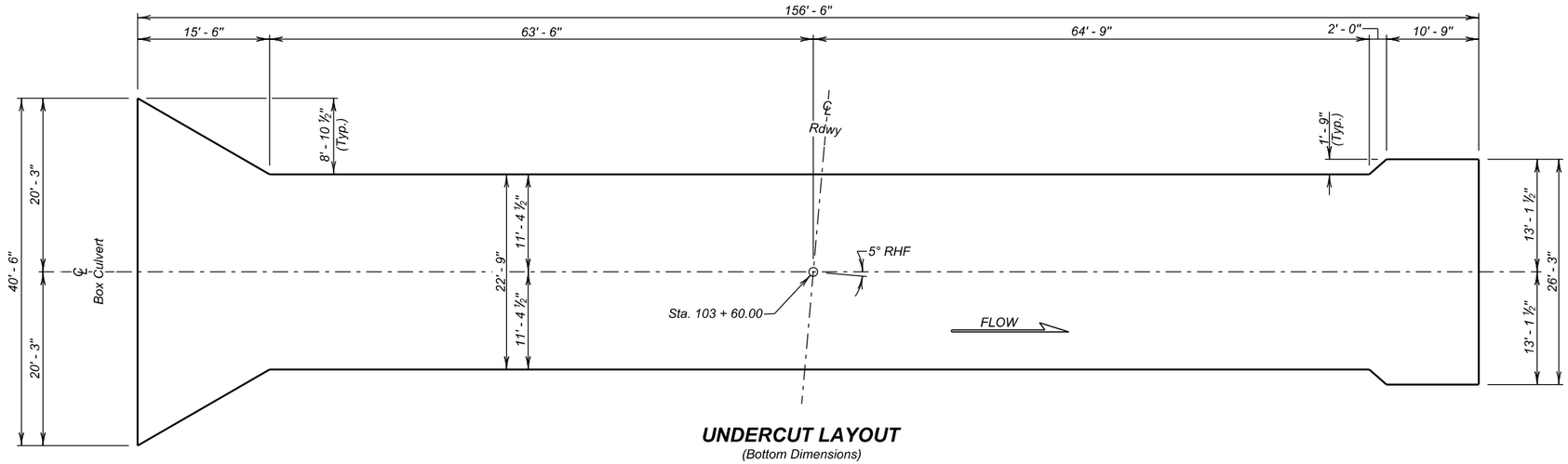
GENERAL NOTES

1. *Design Live Load: HL-93 and construction loading consisting of one 7' - 6" gage axle with gross axle weight = 95,850 lbs. The construction load will not be applied until a minimum of 4 ft. of fill has been placed over the box culvert. Other construction loads in excess of legal load must be submitted thru proper channels to the Office of Bridge Design for analysis.*
2. *The design of the barrel section is based on a minimum fill height of 1 ft. and includes all subsequent fill heights up to and including the maximum fill height of 5 ft. (F5).*
3. *Design Material Strengths: Concrete f'c = 4500 p.s.i.*
   Reinforcing Steel fy = 60000 p.s.i.
4. *All concrete will be Class A45, Box Culvert conforming to Section 460 of the Construction Specifications.*
5. *All reinforcing steel will conform to ASTM A615 Grade 60.*
6. *All lap splices shown are contact lap splices unless noted otherwise.*
7. *All exposed edges will be chamfered ¾ inch unless noted otherwise in the plans.*
8. *Use 1 inch clear cover on all reinforcing steel EXCEPT as shown.*
9. *The Contractor will imprint on the structure the date of construction as specified and detailed on Standard Plate No. 460.02.*
10. *Care will be taken to establish Working Points (W.P.) as shown on the wings.*
11. *Circled numbers in PLAN and ELEVATION views on the General Drawing are section I.D. Numbers (see SDDOT Materials Manual).*
12. *Cost of Preformed Expansion Joint Filler used in apron construction will be incidental to the other contract items.*
13. *Soils below the bottom of the proposed RCBC consist of dark brown silt clay. Groundwater was encountered in borings at an elevation of 1315.9 during the subsurface investigation conducted December 2020. Dewatering will be required for the construction of the RCBC. All costs incurred for dewatering will be incidental to other contract items.*

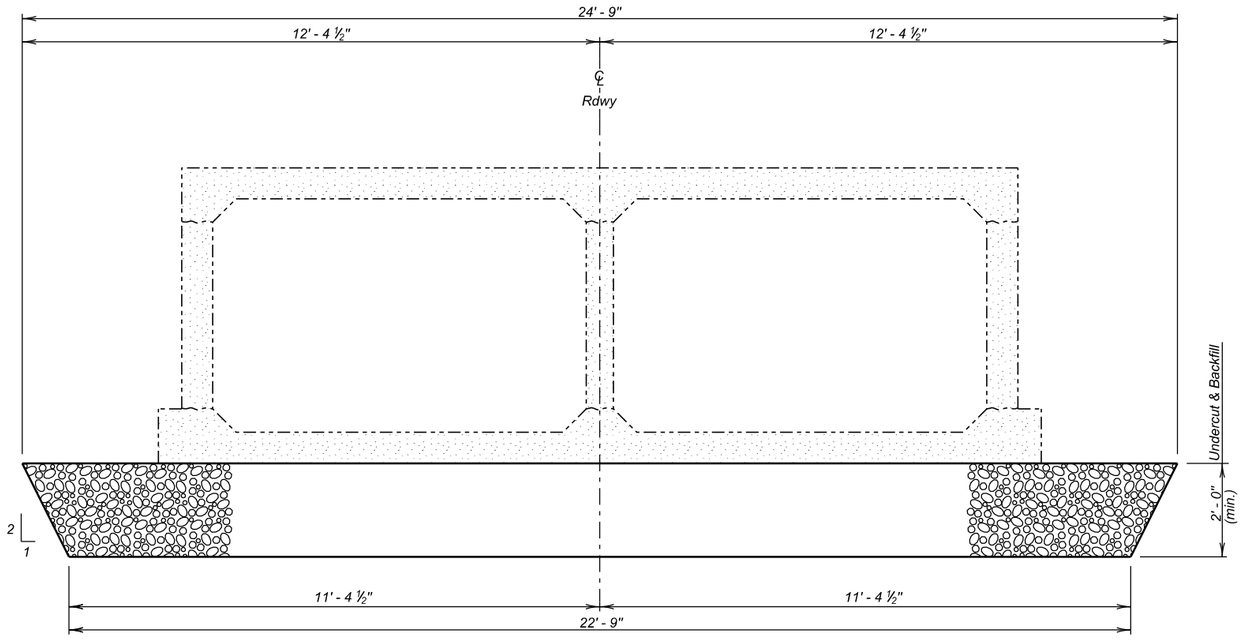
ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
⌀	Box Culvert Undercut	Cu. Yd.	292

⌀ *For payment, quantity is based on plan shown undercut dimensions and will not be measured unless the Engineer orders a change.*



UNDERCUT LAYOUT
(Bottom Dimensions)



TYPICAL SECTION
(For Limits of Undercut)

SITE 1
ALTERNATE A

NOTES AND UNDERCUT DETAILS

FOR

2 - 8' X 5' BOX CULVERT (C.I.P)

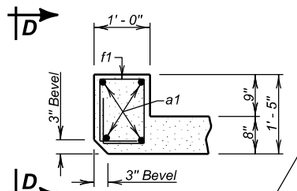
OVER SNAKE CREEK — 5° RHF SKEW
STA. 103 + 60.00 — SEC.17/20-T98N-R50W
STR. NO. 42-077-140 — NH 0018(157)438
HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2022

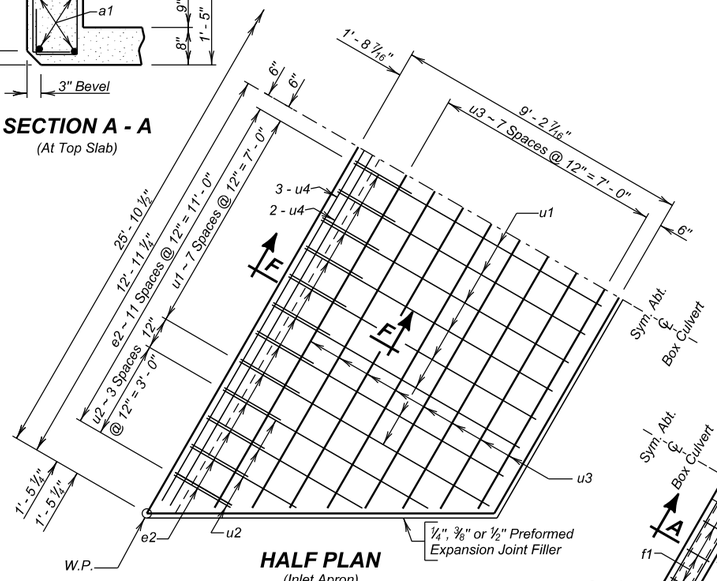
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	CRW	Steve A Johnson BRIDGE ENGINEER
LINC6923	6923TA02		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(157)438	E5	E25

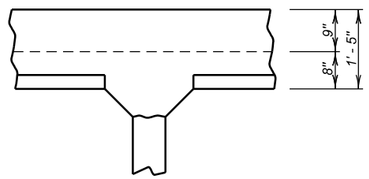
NOTE:
Apron will NOT be built monolithic with the Box Culvert.



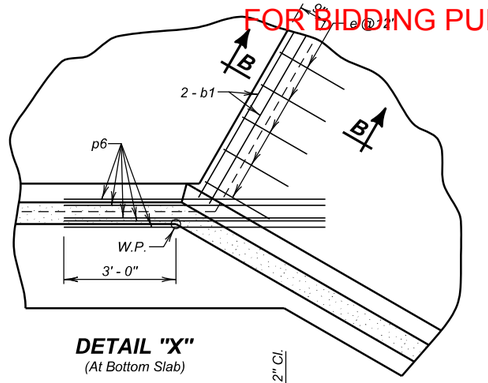
SECTION A - A
(At Top Slab)



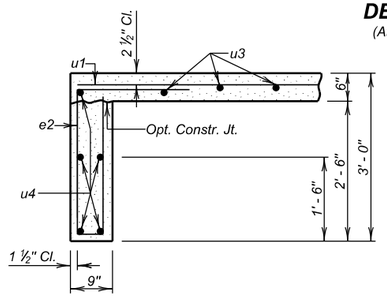
HALF PLAN
(Inlet Apron)



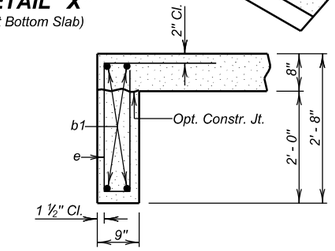
VIEW D - D
(At Interior Wall)



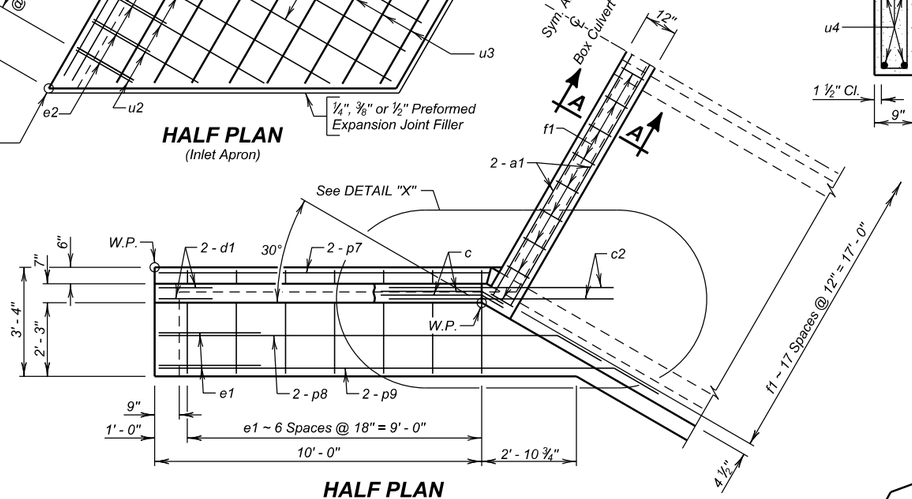
DETAIL "X"
(At Bottom Slab)



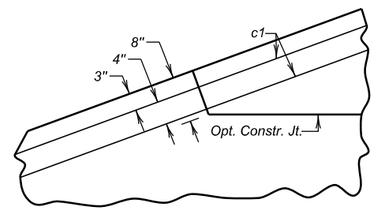
SECTION F - F



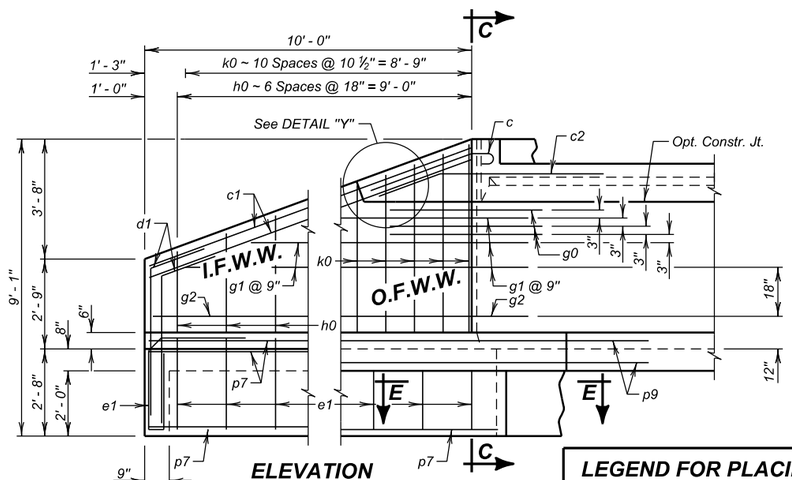
SECTION B - B



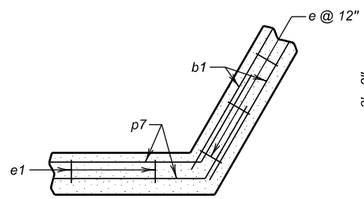
HALF PLAN



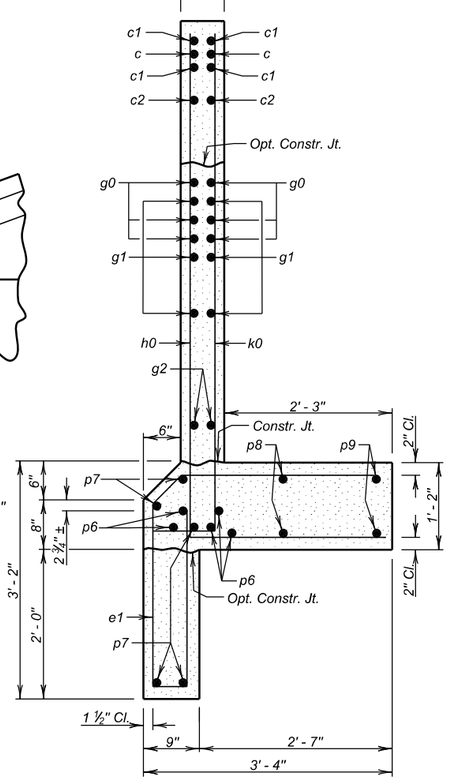
DETAIL "Y"
(Showing c1 bars only)



ELEVATION



SECTION E - E

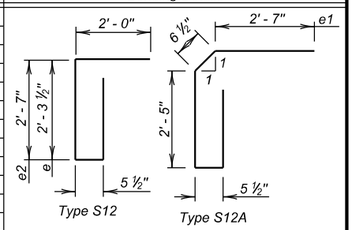


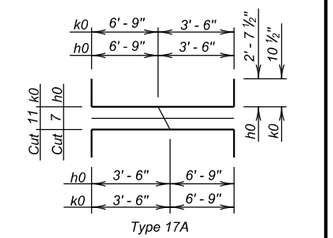
SECTION C - C

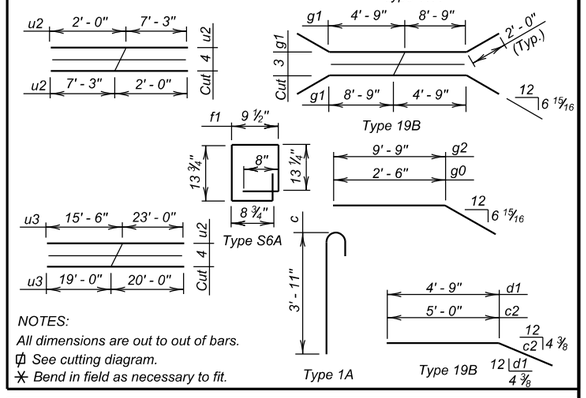
REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type
	a1	4	6	17' -6"	Str.
	b1	4	6	15' - 9"	Str.
*	c	4	5	4' - 6"	1A
	c1	8	5	10' - 6"	Str.
	c2	4	5	7' - 0"	19B
	d1	8	5	6' - 6"	19B
	e	16	4	6' - 9"	S12
	e1	18	4	8' - 6"	S12A
	f1	18	4	5' - 3"	S6A
	g0	12	5	5' - 0"	19B
℄	g1	6	4	17' - 6"	19B
	g2	4	4	11' - 9"	19B
℄	h0	7	4	15' - 6"	17A
℄	k0	11	4	12' - 0"	17A
	p6	10	6	7' - 0"	Str.
*	p7	10	4	12' - 6"	Str.
**	p8	4	4	13' - 9"	Str.
*	p9	4	4	15' - 6"	Str.
	INLET APRON				
	e2	24	4	7' - 6"	S12
	u1	16	4	8' - 9"	Str.
℄	u2	4	4	9' - 3"	Str.
℄	u3	4	4	39'	Str.
	u4	5	4	24' - 9"	Str.

Bending Details







NOTES:
All dimensions are out to out of bars.
℄ See cutting diagram.
* Bend in field as necessary to fit.

ESTIMATED QUANTITIES

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu. Yd.	Lb.	Cu. Yd.
Inlet	8.9	1219	4.6
Inlet Apron	5.3	425	5.3

LEGEND FOR PLACING RE-STEEL

O. F. W. W. - Outside Face of Wing Wall
I. F. W. W. - Inside Face of Wing Wall

SITE 1
ALTERNATE A

INLET DETAILS

FOR

2 - 8' X 5' BOX CULVERT (C.I.P)

OVER SNAKE CREEK
STA. 103 + 60.00
STR. NO. 42-077-140

5° RHF SKEW
SEC.17/20-T98N-R50W
NH 0018(157)438
HL-93

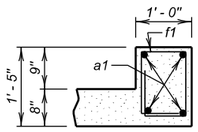
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2022

3 OF 8

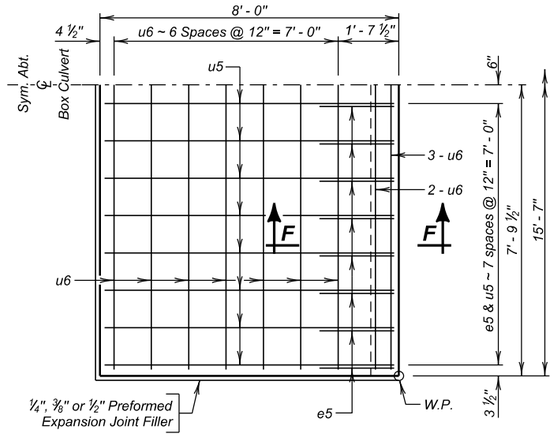
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	CRW	Steve A Johnson BRIDGE ENGINEER
LINC6923	6923TA03		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(157)438	E6	E25

FOR BIDDING PURPOSES ONLY

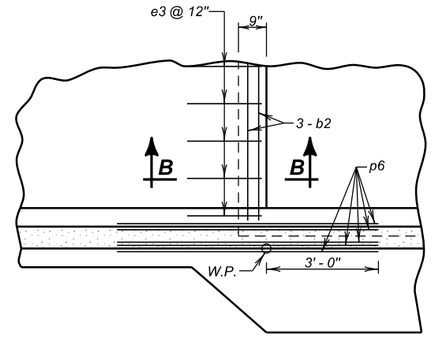


SECTION A - A
(At Top Slab)

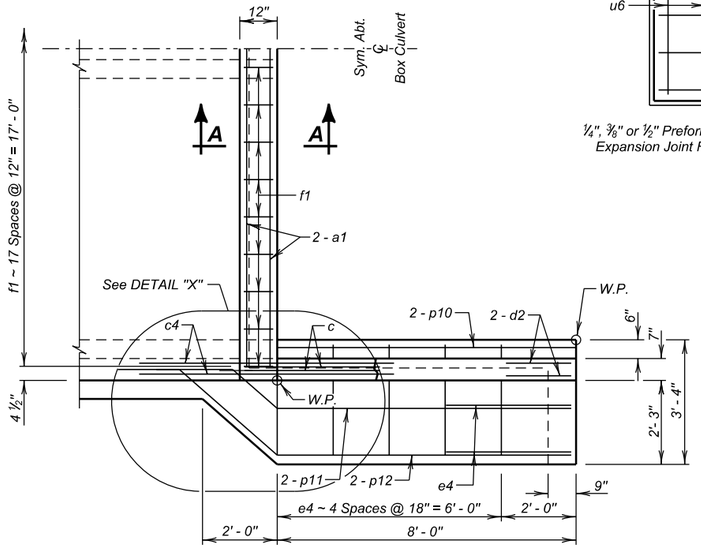


HALF PLAN
(Outlet Apron)

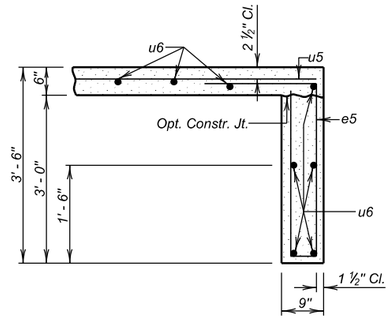
NOTE:
Apron will NOT be built monolithic with the Box Culvert.



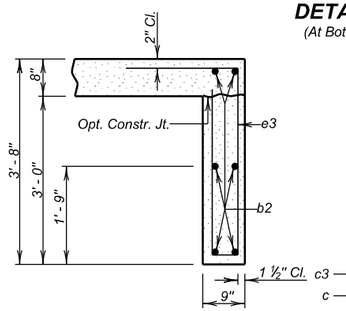
DETAIL "X"
(At Bottom Slab)



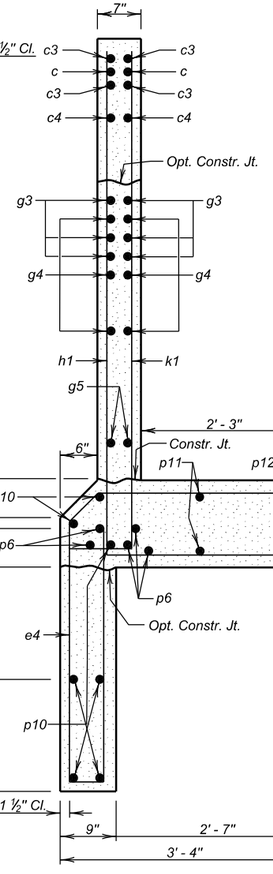
HALF PLAN



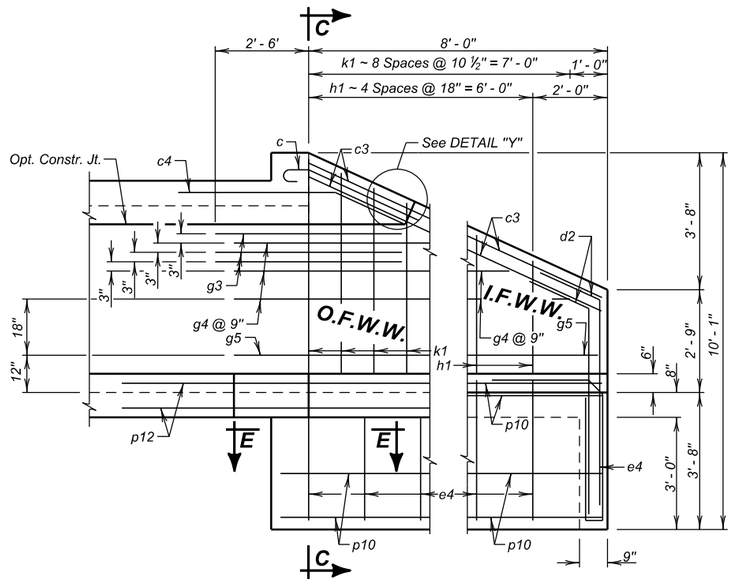
SECTION F - F



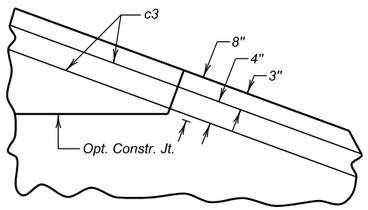
SECTION B - B



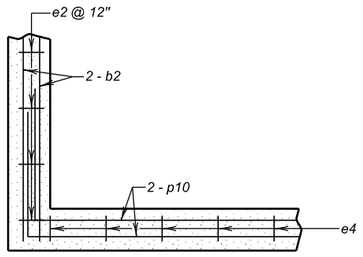
SECTION C - C



ELEVATION



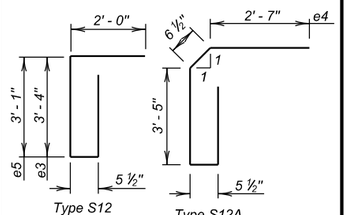
DETAIL "Y"
(Showing c3 bars only)

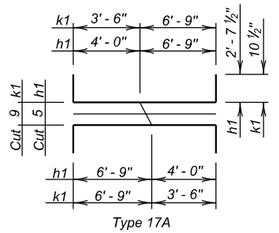


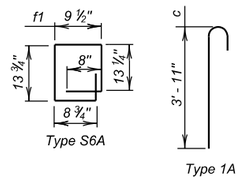
SECTION E - E

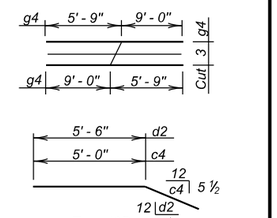
REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
a1	4	6	17' - 6"	Str.	
b2	6	6	16' - 9"	Str.	
c	4	5	4' - 6"	1A	
c3	8	5	8' - 9"	Str.	
c4	4	5	7' - 0"	19B	
d2	8	5	7' - 3"	19B	
e3	17	4	8' - 9"	S12	
e4	14	4	10' - 3"	S12A	
f1	18	4	5' - 3"	S6A	
g3	12	5	5' - 0"	Str.	
⌀ g4	6	4	14' - 9"	Str.	
g5	4	4	9' - 9"	Str.	
⌀ h1	6	4	16' - 0"	17A	
⌀ k1	9	4	12' - 0"	17A	
p6	10	6	7' - 0"	Str.	
✳ p10	10	4	10' - 6"	Str.	
✳ p11	4	4	11' - 6"	Str.	
✳ p12	4	4	13' - 0"	Str.	
OUTLET APRON					
e5	16	4	8' - 6"	S12	
u5	16	4	7' - 9"	Str.	
u6	12	4	15' - 3"	Str.	









NOTES:
All dimensions are out to out of bars.
⌀ *See cutting diagram.*
✳ *Bend in field as necessary to fit.*

ESTIMATED QUANTITIES

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu. Yd.	Lb.	Cu. Yd.
Outlet	8.7	1210	5
Outlet Apron	3.8	296	3.8

LEGEND FOR PLACING RE-STEEL

O. F. W. W. - Outside Face of Wing Wall
I. F. W. W. - Inside Face of Wing Wall

SITE 1
ALTERNATE A

OUTLET DETAILS

FOR

2 - 8' X 5' BOX CULVERT (C.I.P)

OVER SNAKE CREEK
STA. 103 + 60.00
STR. NO. 42-077-140

5° RHF SKEW
SEC.17/20-T98N-R50W
NH 0018(157)438
HL-93

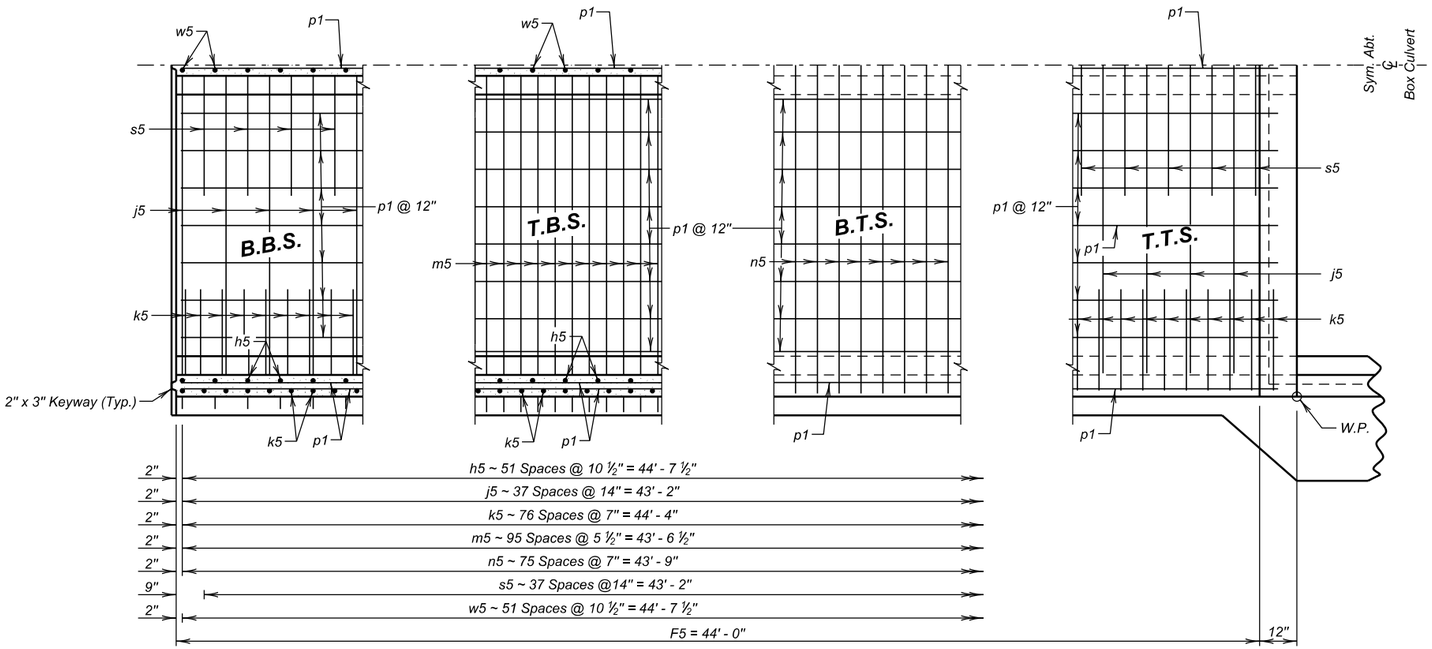
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2022

4 OF 8

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	CRW	Steve A Johnson BRIDGE ENGINEER
LINC6923	6923TA04		

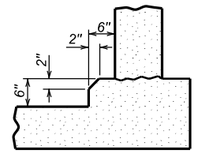
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(157)438	E7	E25

FOR BIDDING PURPOSES ONLY



HALF PLAN

(Outlet End shown, Inlet similar by rotation)



OPTIONAL FILLET DETAIL

(At Bottom Slab)

NOTE: Contractor may form the optional full fillet, with 2" Chamfer, as detailed. The cost of the additional concrete will be borne by the Contractor.

OPTIONAL POUR - BOTTOM SLAB

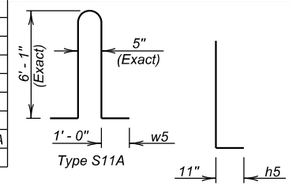
The Bottom Slab may be poured continuously, at the option of the Contractor, with the use of a Preformed Metal keyway conforming to the keyway dimensions and location as shown on the plans. The keyway length will be full width of the bottom slab. Care will be taken to maintain proper alignment of the keyway during the pour sequence. All additional costs of this option will be borne by the Contractor.

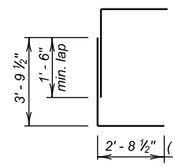
△ Place z1 bars thru construction joint between barrel sections as shown on Standard Plate No. 460.10. Quantity of z1 bars is for two construction joint.

REINFORCING SCHEDULE

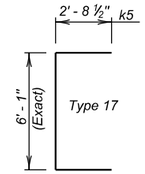
(For 2 - F5 Barrel End Sections)

Mk.	No.	Size	Length	Type	Bending Details
h5	208	4	6' - 9"	17A	
j5	152	5	16' - 6"	Str.	
k5	308	4	11' - 6"	17	
m5	192	4	18' - 6"	Str.	
n5	152	5	17' - 6"	Str.	
p1	178	4	44' - 6"	Str.	
s5	152	5	7' - 0"	Str.	
w5	104	4	14' - 3"	S11A	
△ z1	82	5	3' - 6"	Str.	





OPTIONAL k5 SPLICE DETAIL
Contractor may use optional reinforcing steel splice, as shown. The cost of the additional reinforcing steel will be borne by the Contractor.



NOTES:

All dimensions are out to out of bars.

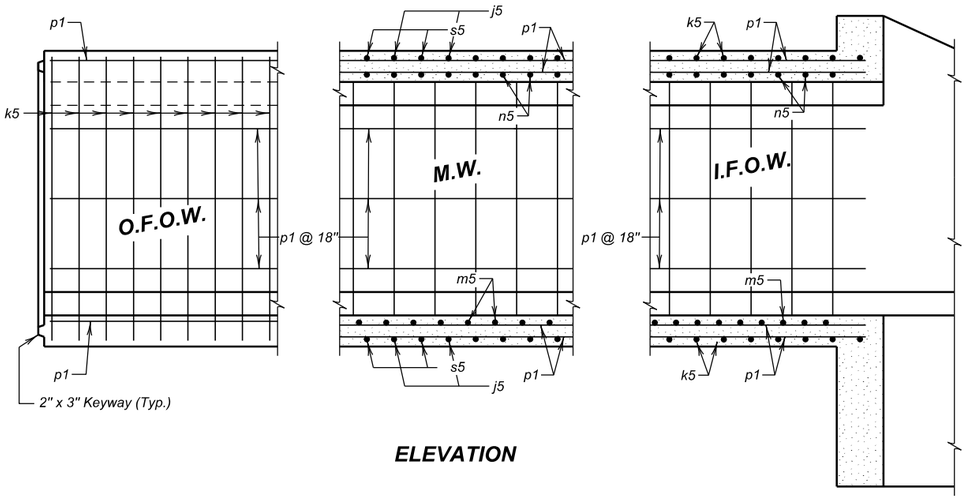
Request for additional reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.

ESTIMATED QUANTITIES

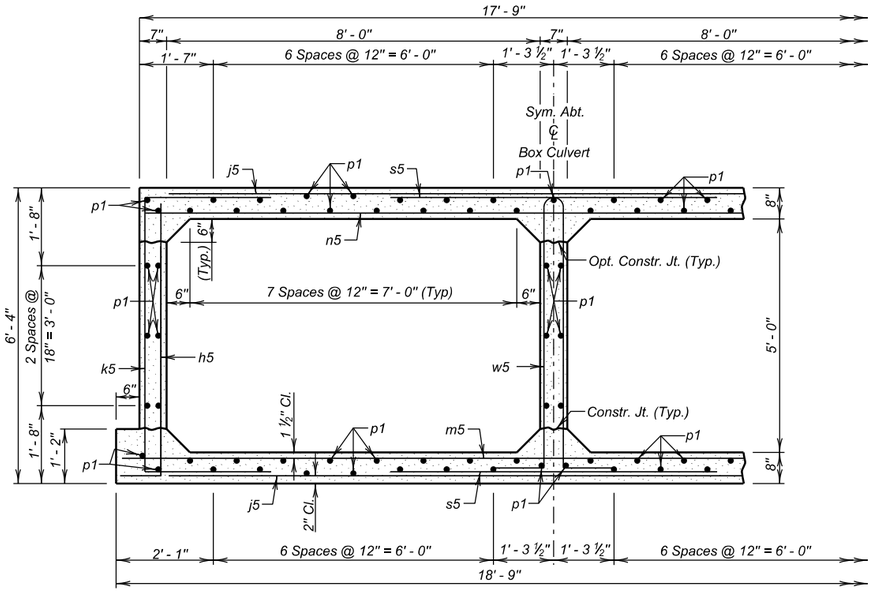
ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu.Yd.	Lb.	Cu.Yd.
2 - F5 Barrel End Sections @ 44' - 0"	112.8	18757	40.8

LEGEND FOR PLACING RE-STEEL

T.T.S.	- Top of Top Slab
B.T.S.	- Bottom of Top Slab
T.B.S.	- Top of Bottom Slab
B.B.S.	- Bottom of Bottom Slab
O.F.O.W.	- Outside Face of Outside Wall
I.F.O.W.	- Inside Face of Outside Wall
M.W.	- Middle Wall



ELEVATION



F5 BARREL HALF SECTION

(5' - 0" Maximum Fill)

SITE 1
ALTERNATE A

F5 BARREL END SECTION DETAILS (44' - 0")

FOR

2 - 8' X 5' BOX CULVERT (C.I.P)

OVER SNAKE CREEK — 5° SKEW
STA. 103 + 60.00 — SEC. 17/20-T98N-R50W
STR. NO. 42-077-140 — NH 0018(157)438
HL-93

LINCOLN COUNTY

S. D. DEPT. OF TRANSPORTATION

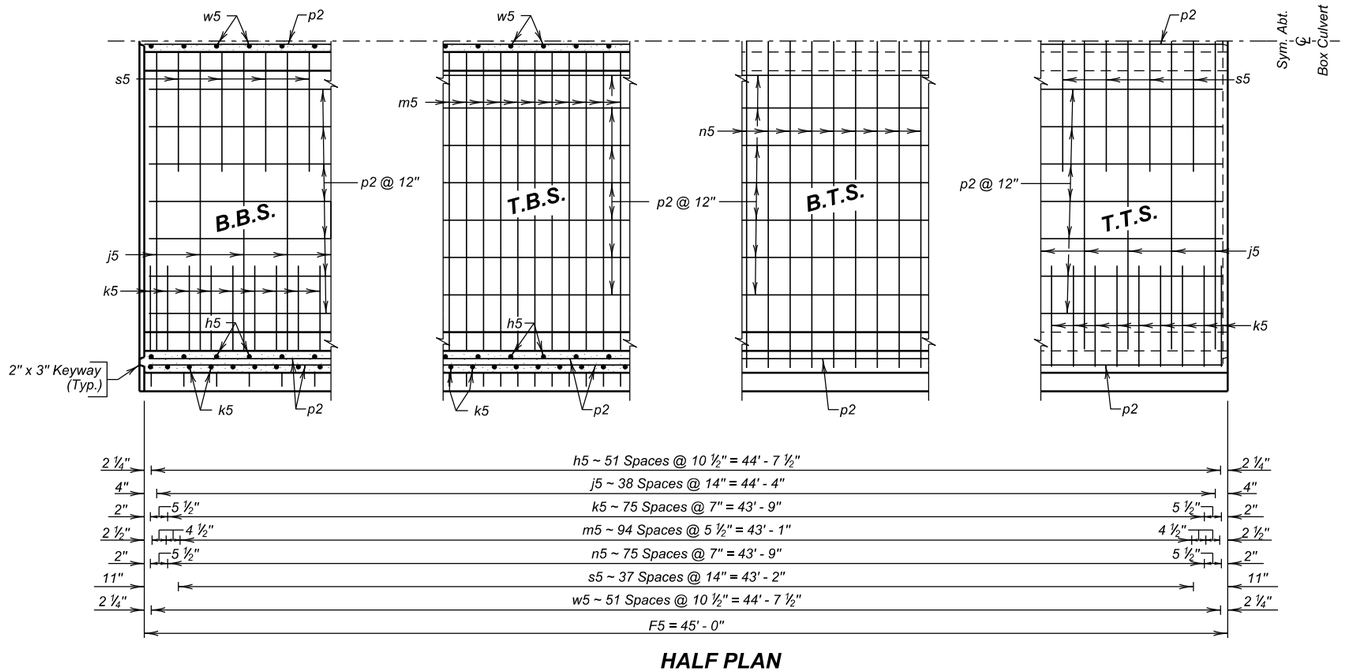
APRIL 2022

5 OF 8

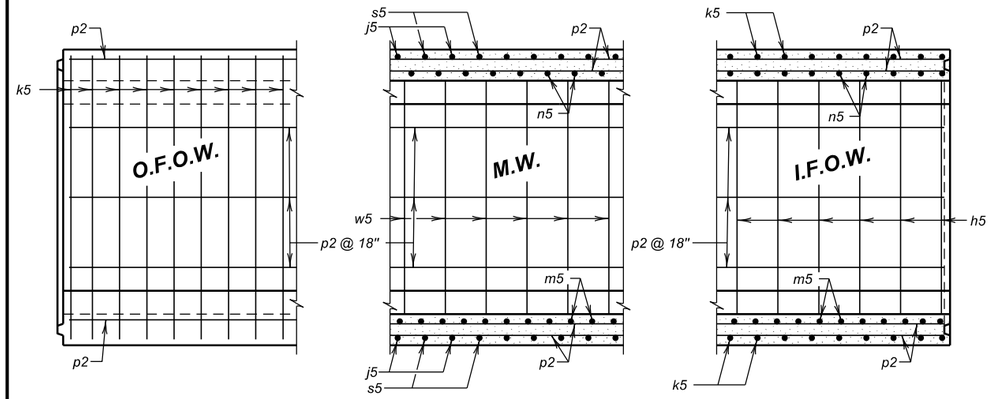
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	CRW	Steve A Johnson BRIDGE ENGINEER
LINC6923	6923TA05		

FOR BIDDING PURPOSES ONLY

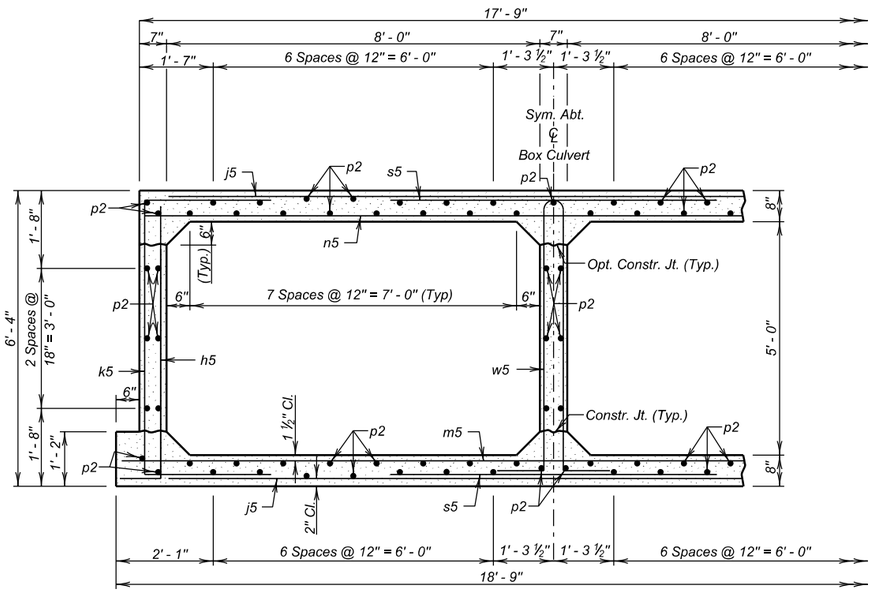
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(157)438	E8	E25



HALF PLAN

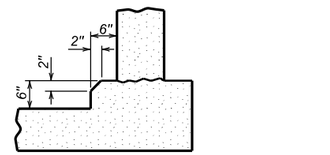


ELEVATION



F5 BARREL HALF SECTION

(5' - 0" Maximum Fill)



OPTIONAL FILLET DETAIL

(At Bottom Slab)

NOTE: Contractor may form the optional full fillet, with 2" Chamfer, as detailed. The cost of the additional concrete will be borne by the Contractor.

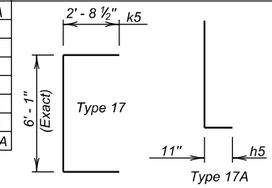
OPTIONAL POUR - BOTTOM SLAB

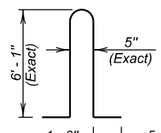
The Bottom Slab may be poured continuously, at the option of the Contractor, with the use of a Preformed Metal keyway conforming to the keyway dimensions and location as shown on the plans. The keyway length will be full width of the bottom slab. Care will be taken to maintain proper alignment of the keyway during the pour sequence. All additional costs of this option will be borne by the Contractor.

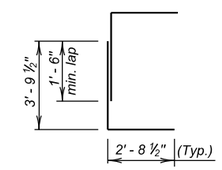
REINFORCING SCHEDULE

(For One F5 Barrel Interior Section)

Mk.	No.	Size	Length	Type	Bending Details
h5	104	4	6' - 9"	17A	
j5	78	5	16' - 6"	Str.	
k5	156	4	11' - 6"	17	
m5	99	4	18' - 6"	Str.	
n5	78	5	17' - 6"	Str.	
p2	89	4	44' - 9"	Str.	
s5	76	5	7' - 0"	Str.	
w5	52	4	14' - 3"	S11A	







OPTIONAL k5 SPLICE DETAIL
Contractor may use optional reinforcing steel splice, as shown. The cost of the additional reinforcing steel will be borne by the Contractor.

NOTES:

All dimensions are out to out of bars.

Request for additional reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.

ESTIMATED QUANTITIES

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu.Yd.	Lb.	Cu.Yd.
F5 Barrel Interior Section @ 45' - 0"	57.6	9367	20.8

LEGEND FOR PLACING RE-STEEL

T.T.S.	Top of Top Slab
B.T.S.	Bottom of Top Slab
T.B.S.	Top of Bottom Slab
B.B.S.	Bottom of Bottom Slab
O.F.O.W.	Outside Face of Outside Wall
I.F.O.W.	Inside Face of Outside Wall
M.W.	Middle Wall

SITE 1
ALTERNATE A

F5 BARREL INTERIOR SECTION DETAILS (45' - 0")

FOR

2 - 8' X 5' BOX CULVERT (C.I.P)

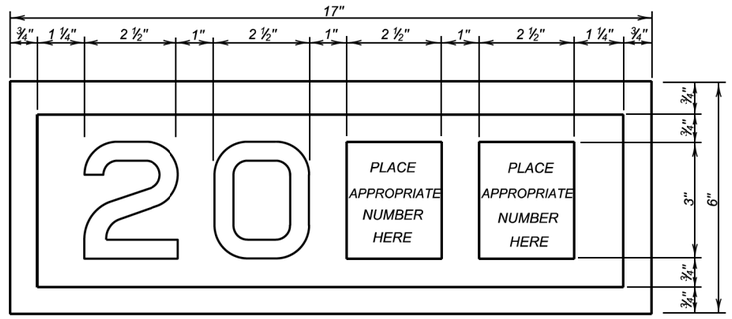
OVER SNAKE CREEK
STA. 103 + 60.00
STR. NO. 42-077-140

5° RHF SKEW
SEC. 17/20-T98N-R50W
NH 0018(157)438
HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2022

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	CRW	Steve A Johnson BRIDGE ENGINEER
LINC6923	6923TA06		

FOR BIDDING PURPOSES ONLY



YEAR PLATE DETAILS

GENERAL NOTES:

1. Year plates of the general dimensions shown will be constructed on all box culverts and bridges. The year plates will be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.

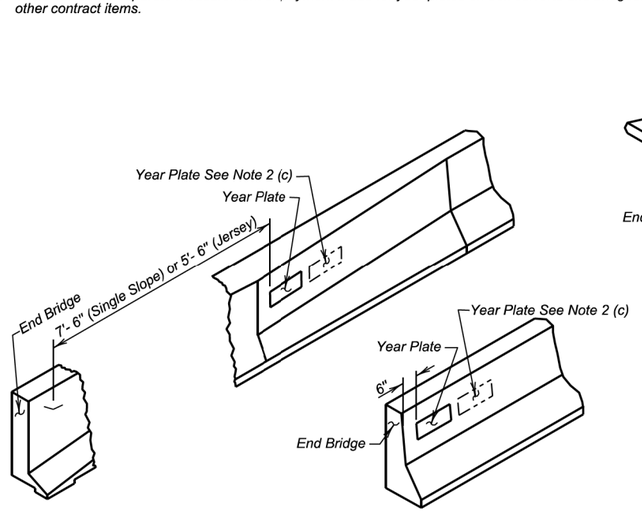
2. Year plates will be located on structure(s) as follows:

   a. On cast-in-place box culverts the year plates will be four and one - half (4 ½) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate will be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate will be centered in an adjacent barrel.

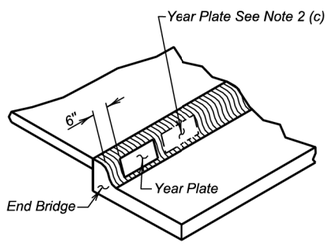
   b. On bridges with six (6) inch curbs, "Jersey" shaped barriers with no endblocks, or "Single Slope" shaped barriers with no endblocks, the year plate will be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with barrier endblocks, the year plate will be centered on the upper sloped portion of the barrier approximately 5'- 6" for "Jersey" shaped barriers from the end of the bridge and 7'-6" for "Single Slope" shaped barriers from the end of bridge, or as designated by the Engineer. There will be one year plate at each end of the bridge on opposite sides.

   c. When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date will be placed as listed above and the other located adjacent to it. Both year plates will be shown at each end of the bridge on opposite sides.

3. There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work will be incidental to other contract items.

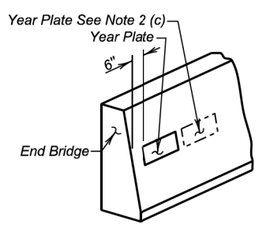


BARRIER
(With Endblock)



TYPE B CURB

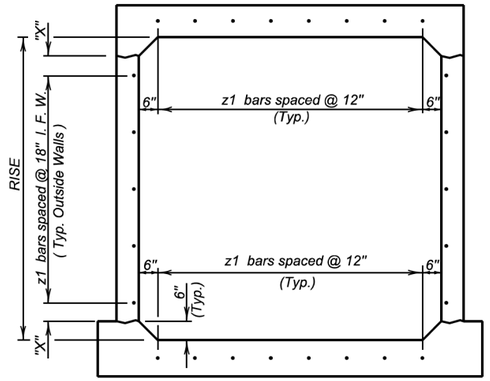
JERSEY BARRIER



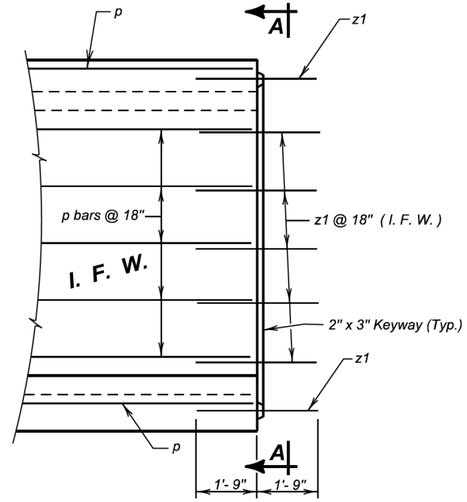
SINGLE SLOPE BARRIER

January 22, 2021

Published Date: 1st Qtr. 2023	SDDOT	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 Of 1



TYPICAL SINGLE BARREL VIEW A - A

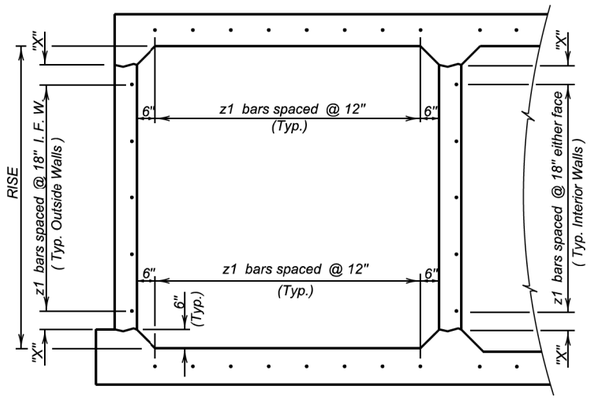


ELEVATION

LEGEND FOR PLACING RE-STEEL

I. F. W.	- Inside Face Wall

RISE	"X"
3'- 0"	3"
4'- 0"	9"
5'- 0"	6"
6'- 0"	3"
7'- 0"	9"
8'- 0"	6"
9'- 0"	3"
10'- 0"	9"
11'- 0"	6"
12'- 0"	3"
13'- 0"	9"
14'- 0"	6"



TYPICAL MULTIPLE BARREL VIEW A - A

GENERAL NOTES:

1. z1 bars will be placed in the middle of the 2" X 3" keyway in the top and bottom slabs. z1 bars will be lapped with the longitudinal p bars in the inside face of the wall for outside walls and in either face for interior walls. z1 bars are listed and included elsewhere in plans.

2. Drainage Fabric Protection will be placed in accordance with Section 422, or Section 560, whichever is applicable.

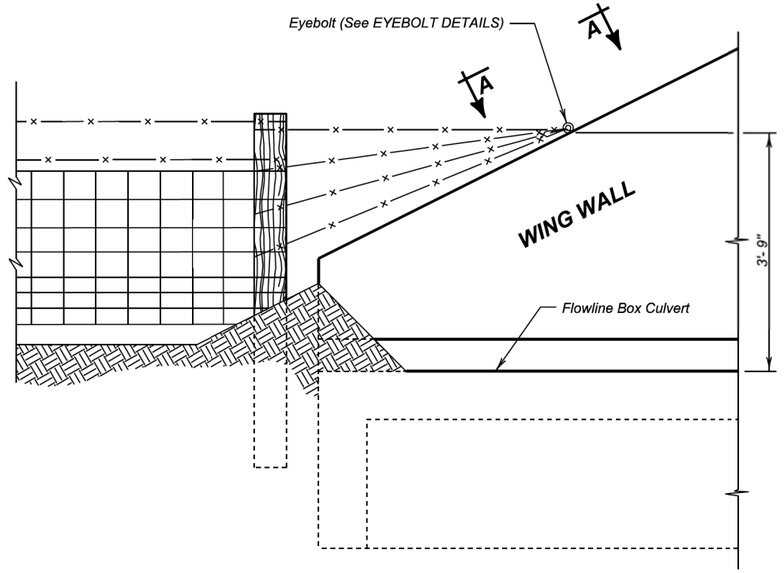
June 1, 2022

Published Date: 1st Qtr. 2023	SDDOT	BOX CULVERT BARREL TIE REINFORCEMENT	PLATE NUMBER 460.10
			Sheet 1 of 1

SITE 1
ALTERNATE A

2 - 8' X 5' BOX CULVERT (C.I.P.)
STR. NO. 42-077-140
MAY 2022

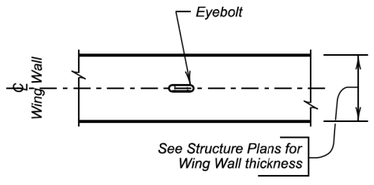
FOR BIDDING PURPOSES ONLY



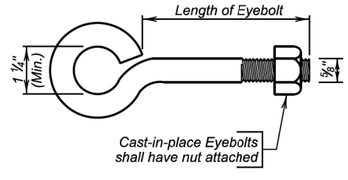
DETAIL FOR FENCE ANCHORS

GENERAL NOTES:

1. The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
2. Eyebolts shall be placed on all of the box culvert wing walls.
3. Eyebolts shall be ⅝ inch diameter and shall conform to ASTM A307.
4. Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
5. Cast-in-place eyebolts shall have a nut attached, be 4 ½ inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the ⅝ inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
6. The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



VIEW A - A



EYEBOLT DETAILS

December 23,2012

Published Date: 1st Qtr. 2023	SDDOT	FENCE ANCHORS FOR BOX CULVERT WING WALLS	PLATE NUMBER 620.16 Sheet 1 of 1

SITE 1
ALTERNATE A

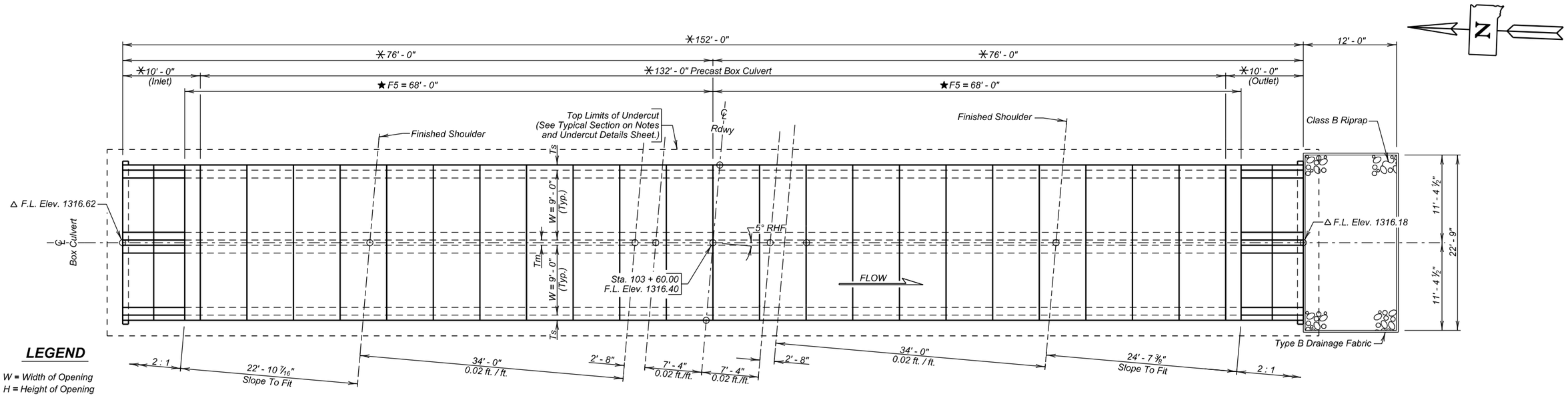
2 - 8' X 5' BOX CULVERT (C.I.P.)
STR. NO. 42-077-140
MAY 2022

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

⚹ Dimension may vary with fabricator and/or installation. See Shop Plans for actual installation length.
★ Minimum distance to satisfy Clear Zone.
△ Based on dimensions shown.
⌀ Based on 8" exterior walls and 8" middle wall.

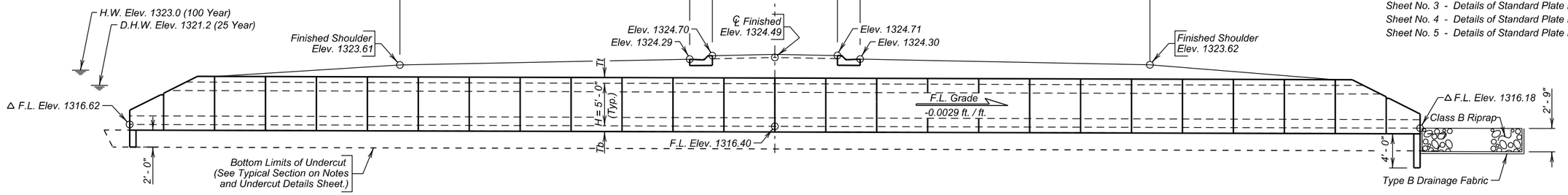
FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(157)438	E11	E25



LEGEND

W = Width of Opening
H = Height of Opening
Tt = Thickness of Top Slab
Tb = Thickness of Bottom Slab
Ts = Thickness of Side Wall
Tm = Thickness of Middle Wall



ELEVATION

INDEX OF CULVERT SHEETS-

NOTE:
Box culvert flow line has been depressed 1' - 0" below channel flow line to accommodate aquatic organisms. The 1' - 0" depression will be allowed to fill in naturally over time.

HYDRAULIC DATA

Q_d	282 cfs
A_d	40 sq. ft.
V_d	7.0 fps
Q_F	282 cfs
Q_{100}	544 cfs
Q_{OT}	$>Q_{100}$ cfs
V_{max}	9.8 fps

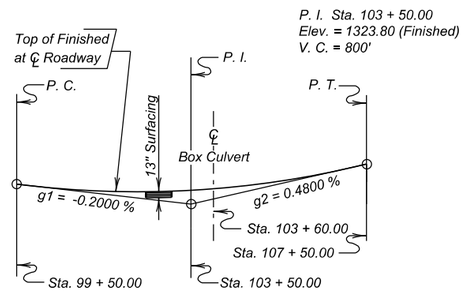
Q_d = Design discharge for the proposed culvert based on 25 year frequency. El. 1321.2.

Q_{OT} = Overtopping discharge and frequency $>Q_{100}$ year recurrence interval. El. 1324.80. Location Sta. 101 + 85.00.

Q_F = Designated peak discharge for the basin approaching proposed project based on 25 year frequency.

Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 1323.0.

V_{max} = Maximum computed outlet velocity for the proposed culvert based on a 100 year frequency.



VERTICAL CURVE DATA

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
⌀	Structure Excavation, Box Culvert	Cu. Yd.	86
	Box Culvert Undercut	Cu. Yd.	291
≠	Class B Riprap	Ton	39
	Type B Drainage Fabric	Sq. Yd.	51.6
	2 - 9' X 5' Precast Concrete Culvert, Furnish	Ft.	132
	2 - 9' X 5' Precast Concrete Culvert, Install	Ft.	132
	2 - 9' X 5' Precast Concrete Culvert End Section, Furnish	Each	2
	2 - 9' X 5' Precast Concrete Culvert End Section, Install	Each	2

⌀ Quantity is based on 8" bottom slab, 8" top slab, 8" outside walls.
≠ For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert Cu. Yd. to Tons.

SITE 1
ALTERNATE B

GENERAL DRAWING AND QUANTITIES

FOR

2 - 9' X 5' BOX CULVERT (PRECAST)

OVER SNAKE CREEK — 5° RHF SKEW
STA. 103 + 60.00 — SEC.17/20-T98N-R50W
STR. NO. 42-077-140 — NH 0018(157)438
PCN 6923 — HL-93

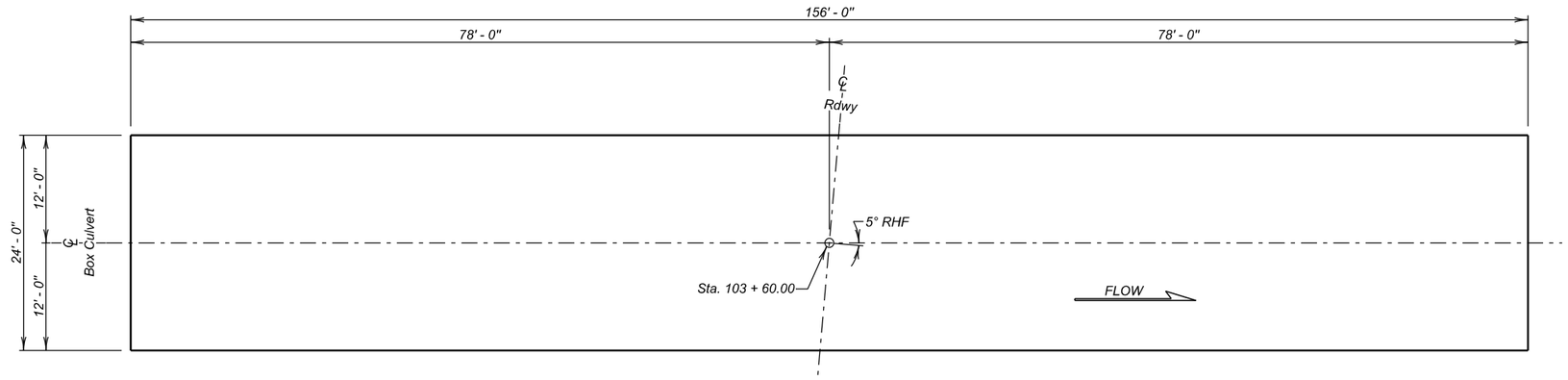
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2022

1 OF 5

PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

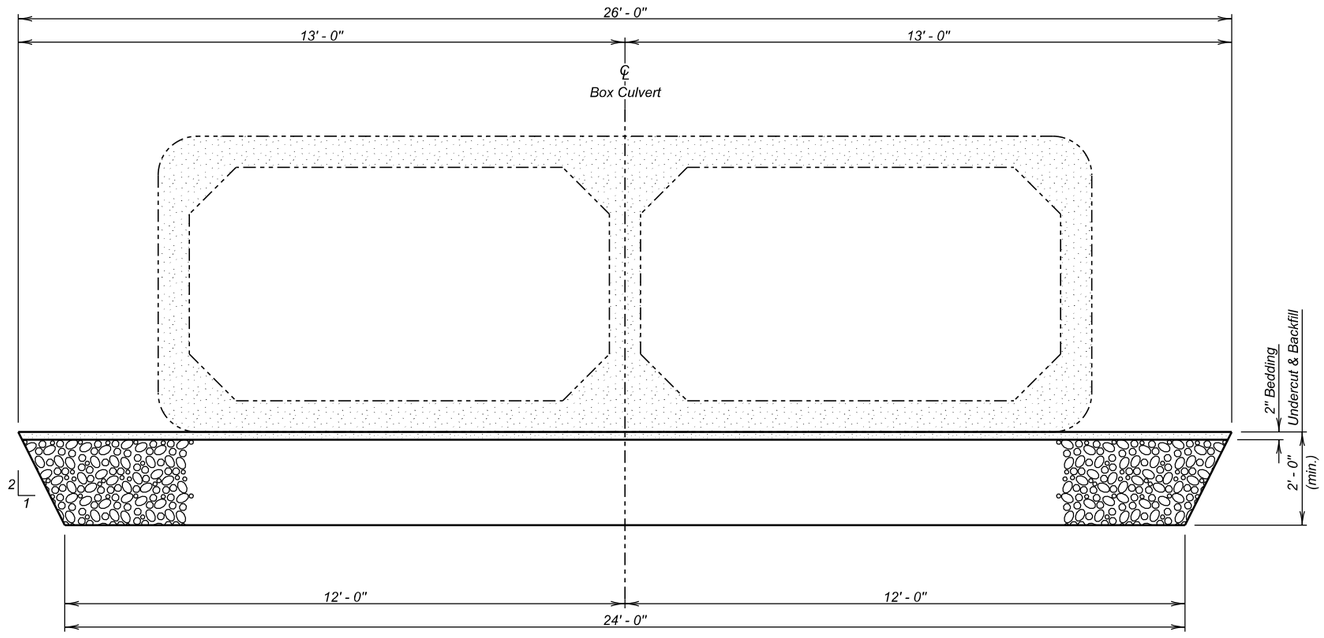
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	CRW	Steve A Johnson BRIDGE ENGINEER
LINC6923	6923TA09		

FOR BIDDING PURPOSES ONLY



UNDERCUT LAYOUT

(Bottom Dimensions)



TYPICAL SECTION

(For Limits of Undercut)

SPECIFICATIONS

Use South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

GENERAL NOTES

Design will be in accordance with Section 560 of the Specifications with the following criteria:

1. *Box culvert and box culvert end section design will conform to the AASHTO LRFD Bridge Design Specifications, 9th Edition.*
2. *Design Live Load: HL-93 and construction loading consisting of one 7' - 6" gage axle with gross weight = 95,850 lbs. The construction load will not be applied until a minimum of 4 feet of fill has been placed over the box culvert. If other construction loads in excess of legal load are anticipated by the Contractor, the Contractor will submit a design analysis for the anticipated construction loading, through the proper channels, to the Office of Bridge Design for approval.*
3. *The box culvert will be load rated in accordance with the AASHTO Manual for Bridge Evaluation, 2018 Edition with latest Interim Revisions using the LRFR method. The rating will include evaluation of the Design HL-93 truck at both Inventory and Operating levels and a Legal Load rating for the three SD legal trucks (Type 3, 3S2, and 3-2) as well as the notional rating load and four specialized hauling vehicles. The structure will also be evaluated for the emergency vehicles, EV2 and EV3, at the legal load rating level. All sections of the box culvert will rate at HL-93 or better (Inventory Level). The three SD Legal Loads, the notional rating load, the four specialized hauling vehicles, and two emergency vehicles will rate greater than 1.0 at legal load rating level. AASHTOWare Bridge Rating (BrR) is required to be used to rate the box culvert. Include the BrR rating model and a load rating summary sheet with load rating calculations. Submit load rating calculations with the design and independent check design calculations or shop plans, as appropriate.*
4. *The design of the barrel sections will be based on a minimum fill height of 1 ft. and include all subsequent fill heights up to and including the maximum fill height of 5 ft. over the box culvert.*
5. *Minimum inside corner fillet will be 6 in.*
6. *Minimum precast barrel section length will be 6-foot sections; however, no more than two 4-foot sections are allowed in any one length of precast barrel.*
7. *Lift holes will be plugged with an approved nonshrinkable grout.*
8. *The fabricator will imprint on the structure the date of construction as specified and detailed on Standard Plate 460.02.*
9. *Alternate end section details will be allowed, subject to the approval of the Bridge Construction Engineer. No additional payment will be made for any change in the barrel/end section configuration.*
10. *Installation of the precast sections will be in accordance with the final approved shop plans.*
11. *Care will be taken when placing sections. Sections will be only moved using the lifting holes by approved equipment.*
12. *Soils below the bottom of the proposed RCBC consist of brown silt clay. Groundwater was encountered in borings at an elevation of 1315.90 during the subsurface investigation conducted December 2020. Dewatering will be required for the construction of the RCBC. All costs incurred for dewatering will be incidental to other contract items.*

DESIGN MIX OF CONCRETE

1. *Mix will be as per fabricator's design, however minimum compressive strength will not be less than 4500 p.s.i. at 28 days.*
2. *Type II cement is required.*

SHOP PLANS

The fabricator will submit shop plans in accordance with the Construction Specifications. Include design and independent check design, if applicable, with initial submittal.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
℄ Box Culvert Undercut	Cu. Yd.	291

℄ *For payment, quantity is based on plan shown undercut dimensions and will not be measured unless the Engineer orders a change.*

SITE 1
ALTERNATE B

NOTES AND UNDERCUT DETAILS

FOR

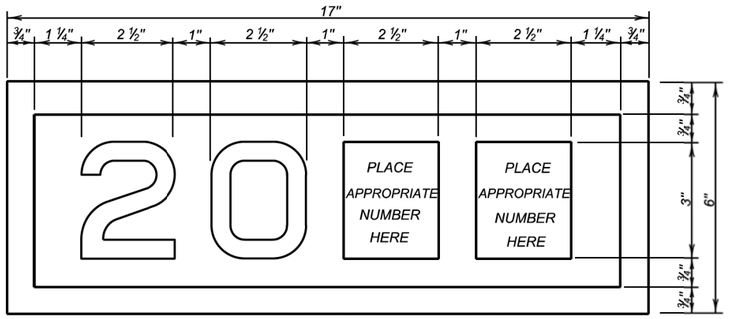
2 - 9' X 5' BOX CULVERT (PRECAST)

OVER SNAKE CREEK — 5° RHF SKEW
STA. 103 + 60.00 — SEC. 17/20-T98N-R50W
STR. NO. 42-077-140 — NH 0018(157)438
HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2022

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	CRW	Steve A. Johnson BRIDGE ENGINEER
LINC6923	6923TA10		

FOR BIDDING PURPOSES ONLY



YEAR PLATE DETAILS

GENERAL NOTES:

1. Year plates of the general dimensions shown will be constructed on all box culverts and bridges. The year plates will be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.

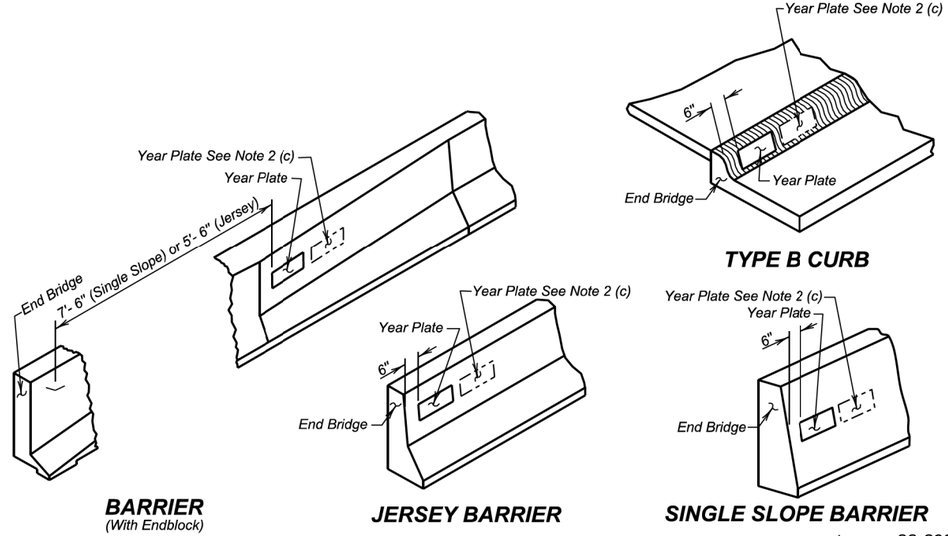
2. Year plates will be located on structure(s) as follows:

   a. On cast-in-place box culverts the year plates will be four and one - half (4 ½) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate will be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate will be centered in an adjacent barrel.

   b. On bridges with six (6) inch curbs, "Jersey" shaped barriers with no endblocks, or "Single Slope" shaped barriers with no endblocks, the year plate will be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with barrier endblocks, the year plate will be centered on the upper sloped portion of the barrier approximately 5'- 6" for "Jersey" shaped barriers from the end of the bridge and 7'-6" for "Single Slope" shaped barriers from the end of bridge, or as designated by the Engineer. There will be one year plate at each end of the bridge on opposite sides.

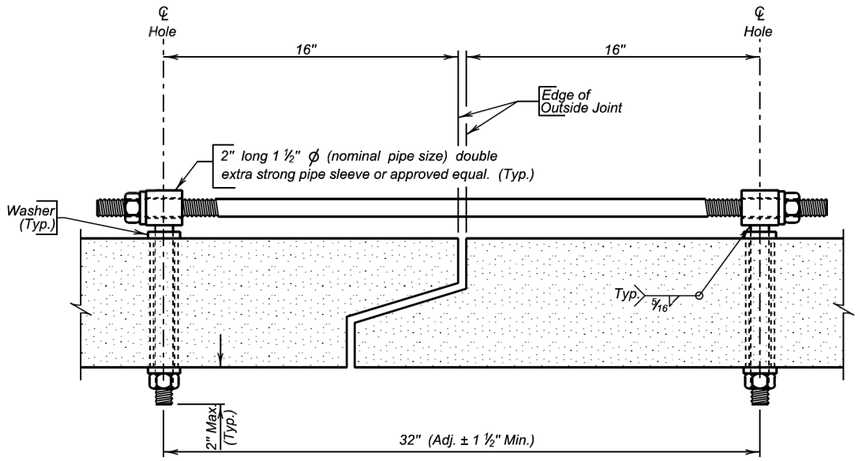
   c. When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date will be placed as listed above and the other located adjacent to it. Both year plates will be shown at each end of the bridge on opposite sides.

3. There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work will be incidental to other contract items.



January 22, 2021

Published Date: 1st Qtr. 2023	SDDOT	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 Of 1



TIE BOLT ASSEMBLY

GENERAL NOTES:

1. All holes for tie bolts shall be cast-in-place, 16 inches from outside edge of joint. Cast in inserts or sleeves, if used, shall be made of a corrosion resistant material.

2. Ties shall be 1 inch ∅ and conform to the requirements of ASTM A36, ASTM A307, or ASTM F1554, Gr. 36. Nuts shall be heavy hex in conformance with ASTM A563. Washers shall conform to ASTM F436, Type 1. The welded pipe sleeve shall conform to ASTM A53, Grade B.

3. Welding and weld inspection shall be in conformance with AWS/ANSI D1.1 - (Current Year) Structural Welding Code - Steel.

4. Tie Bolt Assembly shall be galvanized in accordance with ASTM A153 or ASTM F2329 as applicable.

5. Tie Bolt Assembly details may vary from that shown, but alternate tie bolt assemblies are subject to testing to demonstrate equal strength. Submit details, through proper channels, to the Office of Bridge Design for approval.

6. All costs for furnishing and installing the precast box culvert tie bolt assembly shall be incidental to the contract unit price per Foot for "Precast Concrete Box Culvert, Furnish".

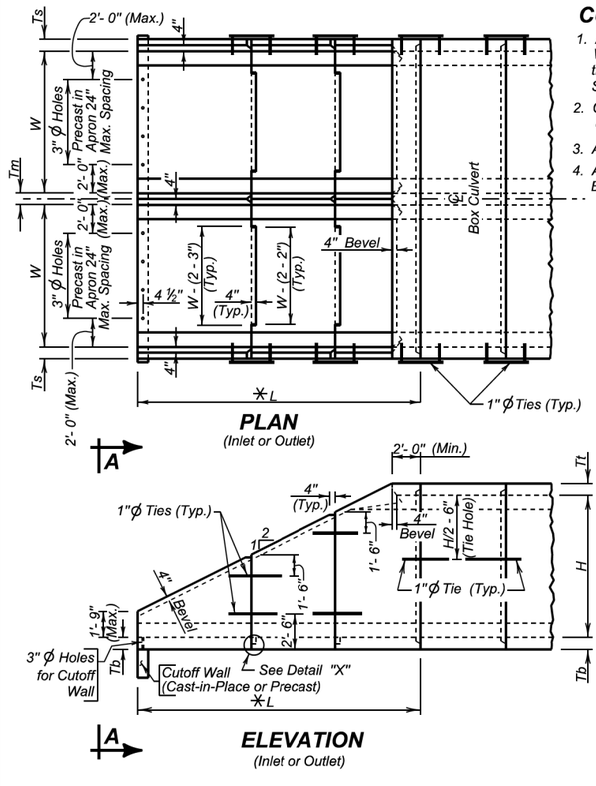
March 21, 2016

Published Date: 1st Qtr. 2023	SDDOT	PRECAST BOX CULVERT TIE BOLT ASSEMBLY DETAILS	PLATE NUMBER 560.01
			Sheet 1 of 1

SITE 1
ALTERNATE B

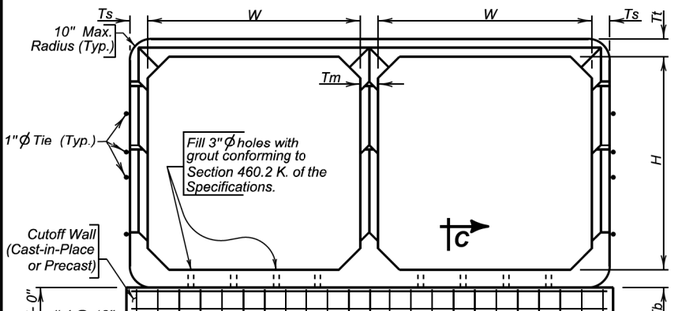
2 - 9' X 5' BOX CULVERT (PRECAST)
STR. NO. 42-077-140
MAY 2022

FOR BIDDING PURPOSES ONLY

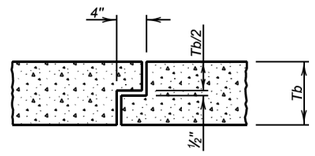


PLAN
(Inlet or Outlet)

ELEVATION
(Inlet or Outlet)

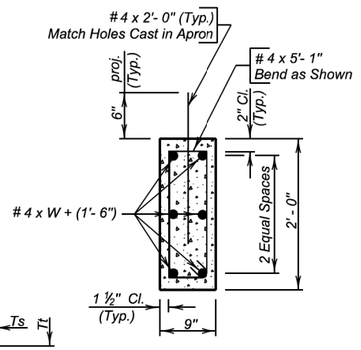


VIEW A - A



DETAIL " X "

NOTE: Joint details may vary from that shown, according to the manufacturer's design. Submit details with shop plans for approval.



SEC. C - C

LEGEND

W = Width of Opening
H = Height of Opening
Tt = Thickness of Top Slab
Tb = Thickness of Bottom Slab
Ts = Thickness of Side Wall
Tm = Thickness of Middle Wall
L = Length of End Section

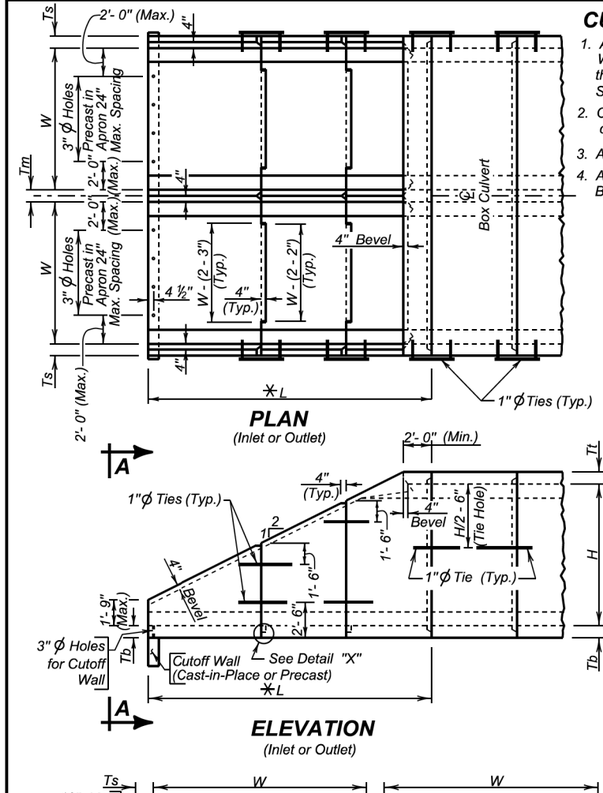
NOTES:
See GENERAL DRAWING for W and H dimensions.
Tt, Tb, Tm, L, and Ts dimensions shall be furnished by the Contractor.
✳ Length and number of units may vary from that shown.

June 26, 2015

CUTOFF WALL

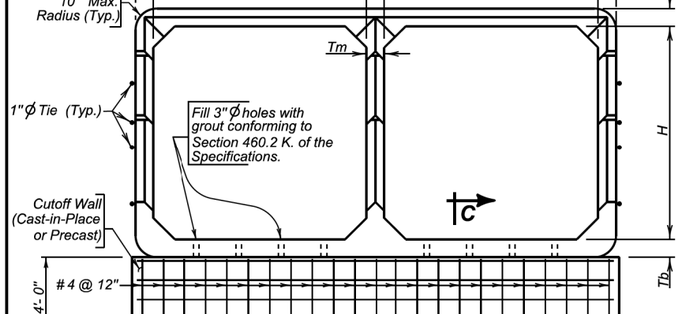
1. All costs associated with furnishing and installing the Cutoff Wall, whether precast or cast-in-place, shall be incidental to the contract unit price per each for "Precast Box Culvert End Section, Furnish".
2. Concrete for cast-in-place cutoff wall shall be Class M6 concrete in accordance with Section 462 of the Specifications.
3. All reinforcing steel shall conform to ASTM A615 Grade 60.
4. Alternate details will be allowed, subject to the approval of the Bridge Construction Engineer.

Published Date: 1st Qtr. 2023	SDDOT	PRECAST DOUBLE BOX CULVERT SLOPED END SECTION DETAILS WITH 2'–0" CUTOFF WALL	PLATE NUMBER 560.20
			Sheet 1 of 1

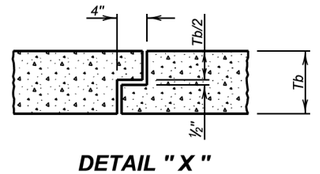


PLAN
(Inlet or Outlet)

ELEVATION
(Inlet or Outlet)

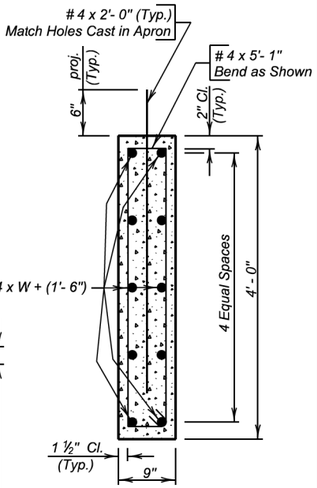


VIEW A - A



DETAIL " X "

NOTE: Joint details may vary from that shown, according to the manufacturer's design. Submit details with shop plans for approval.



SEC. C - C

LEGEND

W = Width of Opening
H = Height of Opening
Tt = Thickness of Top Slab
Tb = Thickness of Bottom Slab
Ts = Thickness of Side Wall
Tm = Thickness of Middle Wall
L = Length of End Section

NOTES:
See GENERAL DRAWING for W and H dimensions.
Tt, Tb, Tm, L, and Ts dimensions shall be furnished by the Contractor.
✳ Length and number of units may vary from that shown.

June 26, 2015

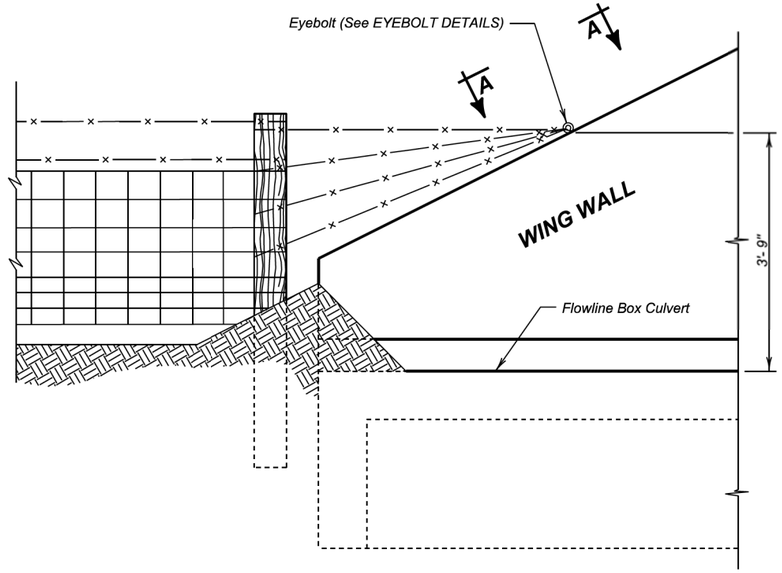
CUTOFF WALL

1. All costs associated with furnishing and installing the Cutoff Wall, whether precast or cast-in-place, shall be incidental to the contract unit price per each for "Precast Box Culvert End Section, Furnish".
2. Concrete for cast-in-place cutoff wall shall be Class M6 concrete in accordance with Section 462 of the Specifications.
3. All reinforcing steel shall conform to ASTM A615 Grade 60.
4. Alternate details will be allowed, subject to the approval of the Bridge Construction Engineer.

Published Date: 1st Qtr. 2023	SDDOT	PRECAST DOUBLE BOX CULVERT SLOPED END SECTION DETAILS WITH 4'–0" CUTOFF WALL	PLATE NUMBER 560.21
			Sheet 1 of 1

SITE 1
ALTERNATE B

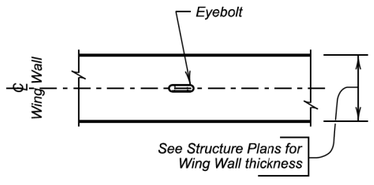
2 - 9' X 5' BOX CULVERT (PRECAST)
STR. NO. 42-077-140
MAY 2022



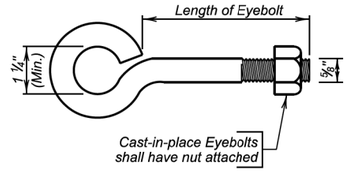
DETAIL FOR FENCE ANCHORS

GENERAL NOTES:

1. The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
2. Eyebolts shall be placed on all of the box culvert wing walls.
3. Eyebolts shall be ⅝ inch diameter and shall conform to ASTM A307.
4. Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
5. Cast-in-place eyebolts shall have a nut attached, be 4 ½ inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the ⅝ inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
6. The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



VIEW A - A



EYEBOLT DETAILS

December 23,2012

Published Date: 1st Qtr. 2023	SDDOT	FENCE ANCHORS FOR BOX CULVERT WING WALLS	PLATE NUMBER 620.16 Sheet 1 of 1

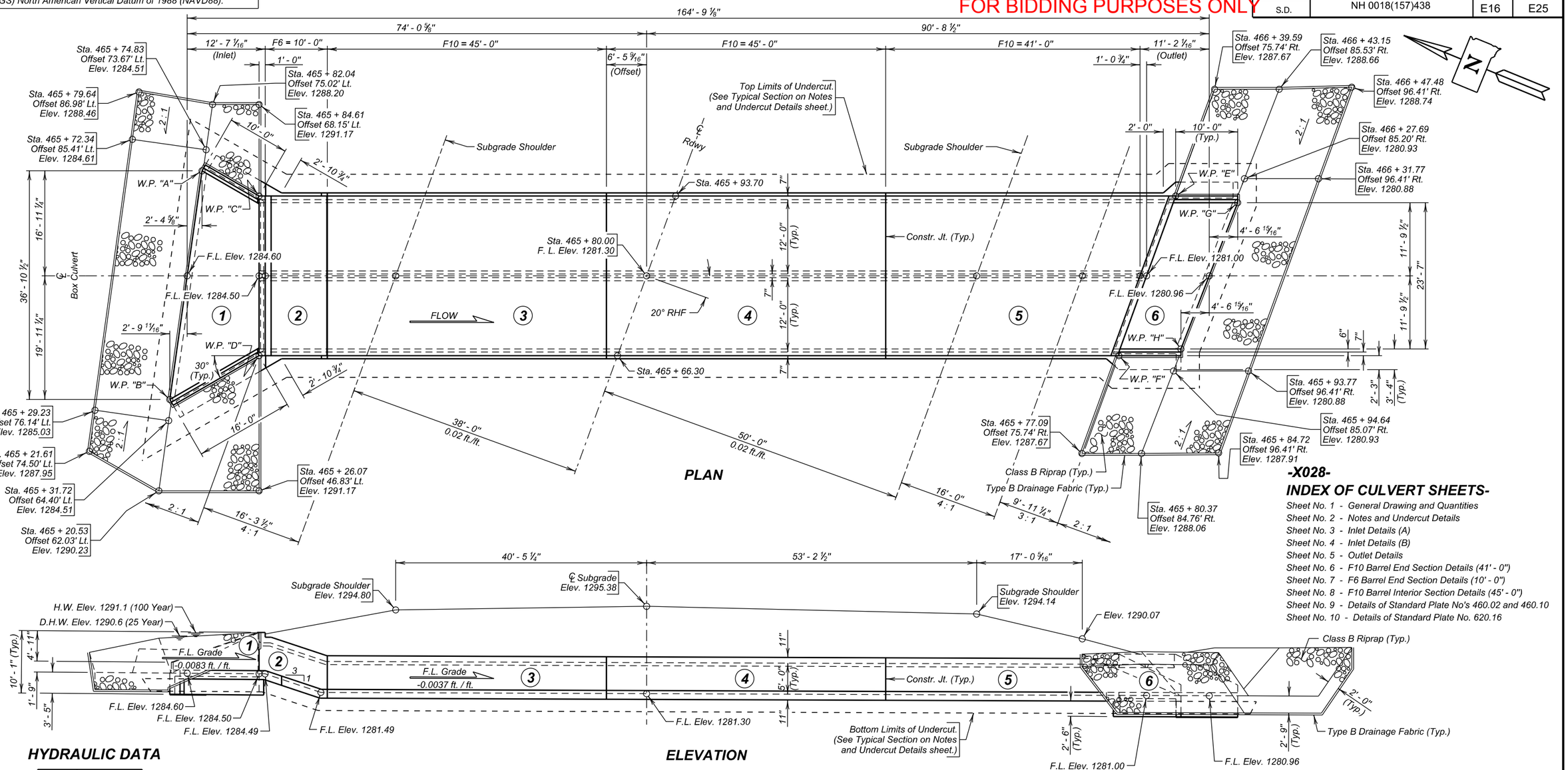
SITE 1
ALTERNATE B

2 - 9' X 5' BOX CULVERT (PRECAST)
STR. NO. 42-077-140
MAY 2022

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(157)438	E16	E25



-X028-
INDEX OF CULVERT SHEETS-

HYDRAULIC DATA

Q_d	439 cfs
A_d	110 sq ft
V_d	4.0 fps
QF	439 cfs
Q_{100}	874 cfs
Q_{OT}	> Q_{100}cfs
V_{max}	7.7 fps

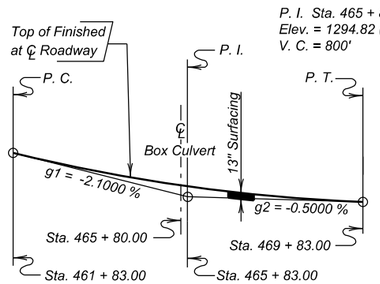
Q_d = Design discharge for the proposed culvert based on 25 year frequency. El. 1290.6.

Q_{OT} = Overtopping discharge and frequency > Q_{100} year recurrence interval. El. 1294.7 @ Sta. 467 + 38.00.

Q_F = Designated peak discharge for the basin approaching proposed project based on 25 year frequency.

Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 1291.1.

V_{max} = Maximum computed outlet velocity for the proposed culvert, based on 100 year frequency.



VERTICAL CURVE DATA

TABLE OF WORKING POINTS

W. P.	STATION	OFFSET
"A"	465 + 71.40	73.14' Lt.
"B"	465 + 34.98	65.41' Lt.
"C"	465 + 70.73	63.10' Lt.
"D"	465 + 46.54	54.29' Lt.
"E"	466 + 21.27	75.74' Rt.
"F"	465 + 93.94	75.94' Rt.
"G"	466 + 23.67	85.51' Rt.
"H"	465 + 98.38	84.97' Rt.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Box Culvert	Cu. Yd.	346.9
Reinforcing Steel	Lb.	58996
Structure Excavation, Box Culvert	Cu. Yd.	160
Box Culvert Undercut	Cu. Yd.	419
Type B Drainage Fabric	Sq. Yd.	356
⚹ Class B Riprap	Ton	271.9

⚹ For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert Cu. Yds. to Tons.

PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

GENERAL DRAWING AND QUANTITIES

FOR

2 - 12' X 5' BOX CULVERT

OVER TRIB. TO BEAVER CREEK — 20° RHF SKEW
STA. 465 + 80.00 — SEC.16/21-T98N-R50W
STR. NO. 42-146-140 — NH 0018(157)438
PCN 6923 — HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2022

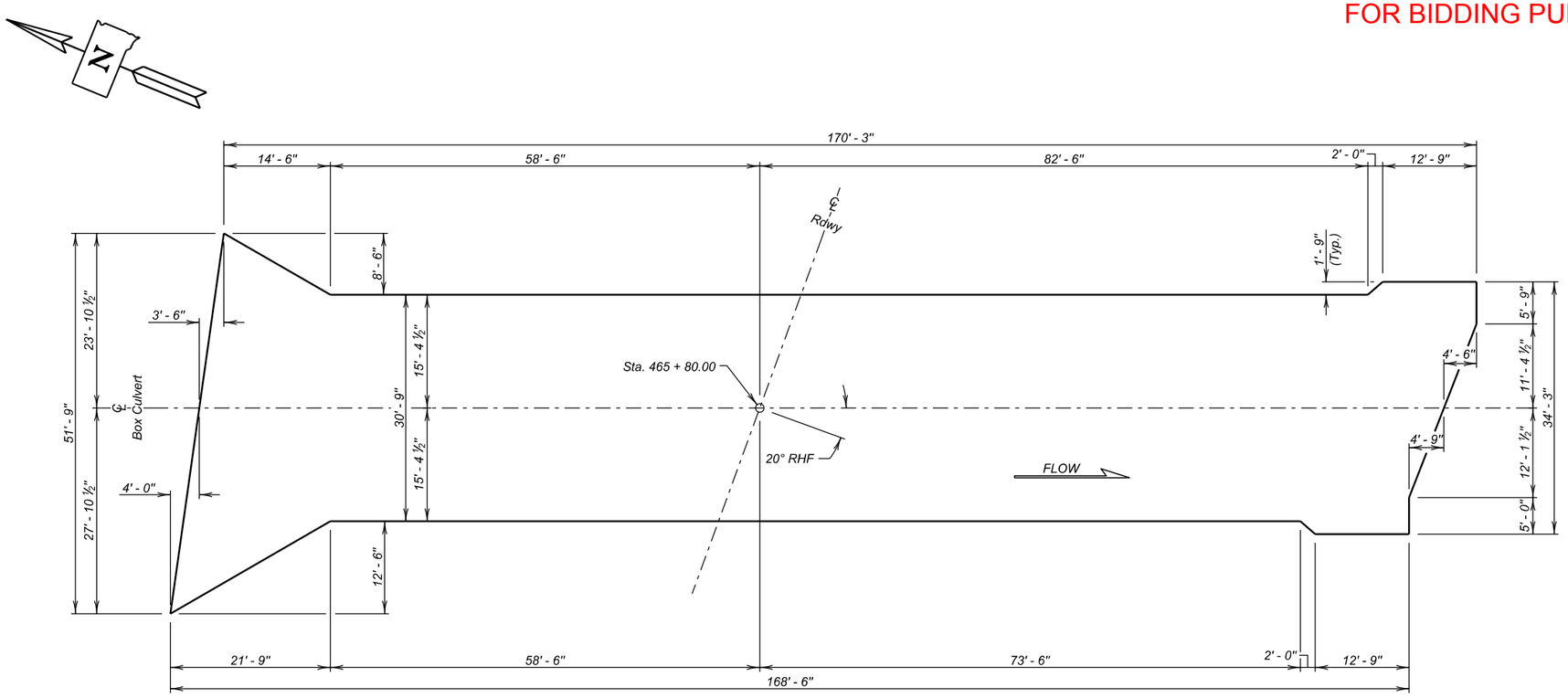
1 OF 10

-X028-

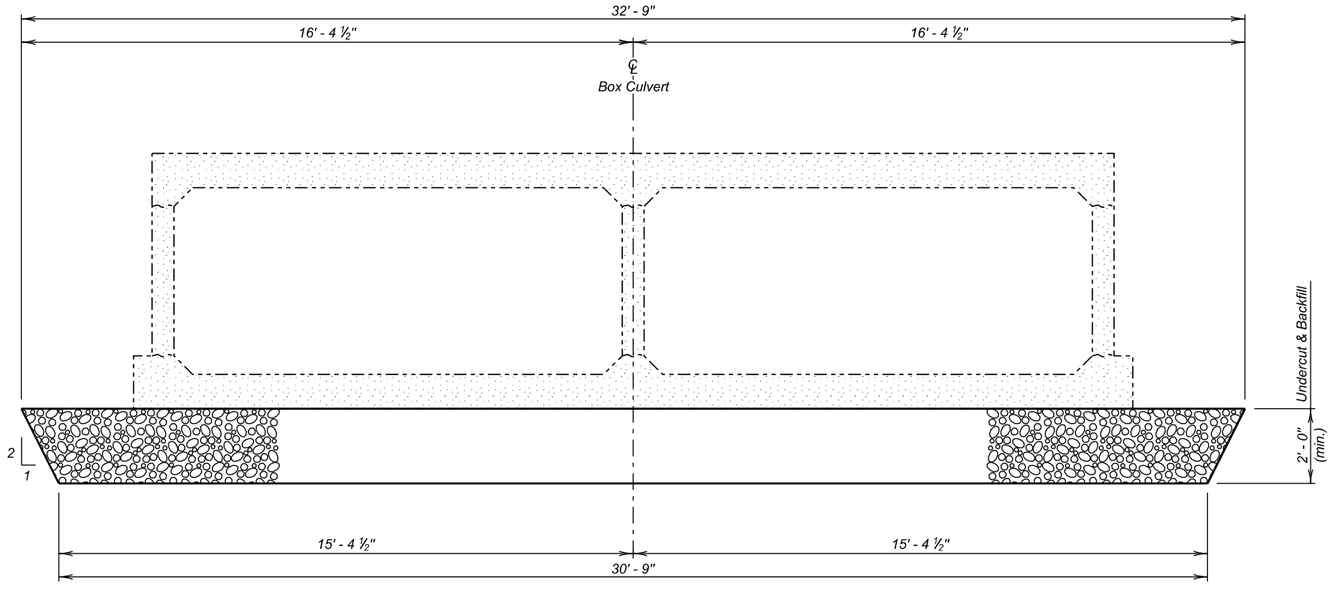
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	MG	BRIDGE ENGINEER
LINC6923	6923TA01		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(157)438	E17	E25

FOR BIDDING PURPOSES ONLY



UNDERCUT LAYOUT
(Bottom Dimensions)



TYPICAL SECTION
(For Limits of Undercut)

SPECIFICATIONS

1. *Design Specifications: AASHTO LRFD Bridge Design Specifications, 9th Edition.*
2. *Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.*

GENERAL NOTES

1. *Design Live Load: HL-93 and construction loading consisting of one 7' - 6" gage axle with gross axle weight = 95,850 lbs. The construction load will not be applied until a minimum of 4 ft. of fill has been placed over the box culvert. Other construction loads in excess of legal load must be submitted thru proper channels to the Office of Bridge Design for analysis.*
2. *The design of the barrel section is based on a minimum fill height of 2 feet and includes all subsequent fill heights up to and including the maximum fill height of 6 ft. (F6) and 10 ft. (F10).*
3. *Design Material Strengths: Concrete $f'c$ = 4500 p.s.i.*
   Reinforcing Steel fy = 60000 p.s.i.
4. *All concrete will be Class A45, Box Culvert conforming to Section 460 of the Construction Specifications.*
5. *All reinforcing steel will conform to ASTM A615 Grade 60.*
6. *All lap splices shown are contact lap splices unless noted otherwise.*
7. *All exposed edges will be chamfered ¾ inch unless noted otherwise in the plans.*
8. *Use 1 inch clear cover on all reinforcing steel EXCEPT as shown.*
9. *The Contractor will imprint on the structure the date of construction as specified and detailed on Standard Plate No. 460.02.*
10. *Care will be taken to establish Working Points (W.P.) as shown on the wings.*
11. *Circled numbers in PLAN and ELEVATION views on the General Drawing are section I.D. Numbers (see SDDOT Materials Manual).*
12. *Cost of Preformed Expansion Joint Filler used in apron construction will be incidental to the other contract items.*
13. *Soils below the bottom of the proposed RCBC consist of 3' of buff clay sand with gravel overlying grey silt clay at the inlet and brown silt clay at the outlet. Groundwater was encountered in the borings at an elevation of 1285.1 at the inlet and 1283.5 at the outlet during the subsurface investigation conducted in December 2020. Dewatering wil be required for the construction of the RCBC. All costs incurred for dewatering will be incidental to other contract items.*

ESTIMATED QUANTITIES

	ITEM	*UNIT*	*QUANTITY*
₵	*Box Culvert Undercut*	*Cu. Yd.*	*419*

₵ *For payment, quantity is based on plan shown undercut dimensions and will not be measured unless the Engineer orders a change.*

NOTES AND UNDERCUT DETAILS

FOR

2 - 12' X 5' BOX CULVERT

OVER TRIB. TO BEAVER CREEK — 20° RHF SKEW
STA. 465 + 80.00 — SEC.16/21-T98N-R50W
STR. NO. 42-146-140 — NH 0018(157)438
HL-93

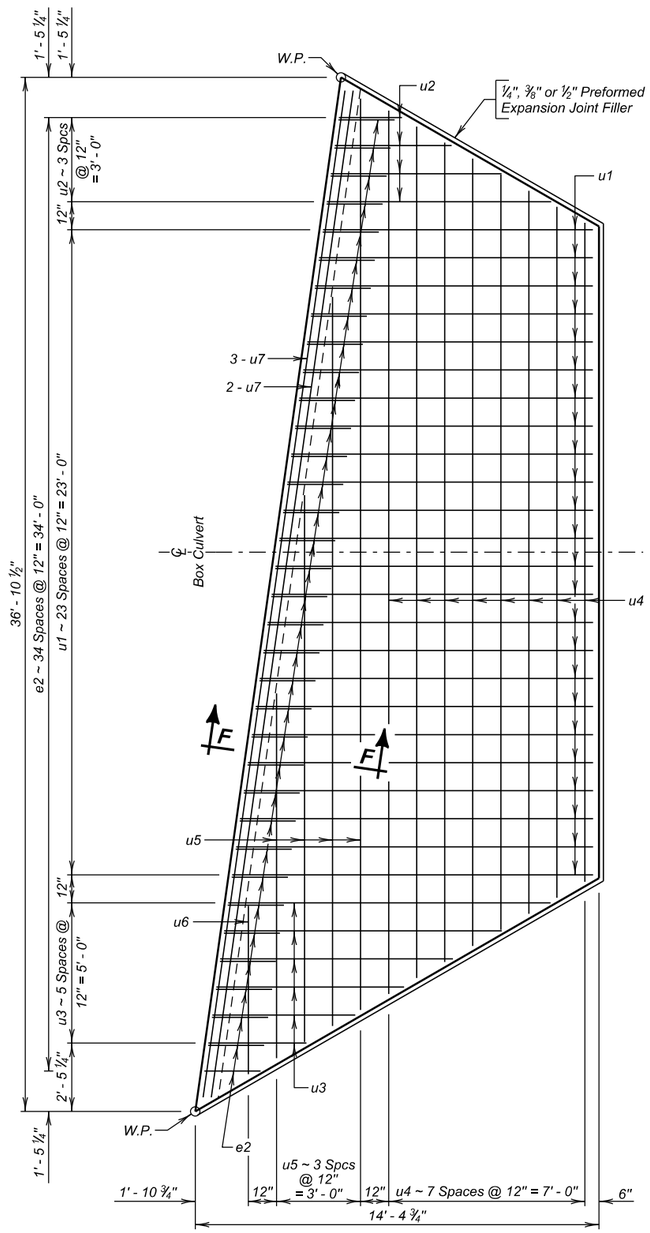
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2022

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	MG	Steve A Johnson BRIDGE ENGINEER
LINC6923	6923TA02		

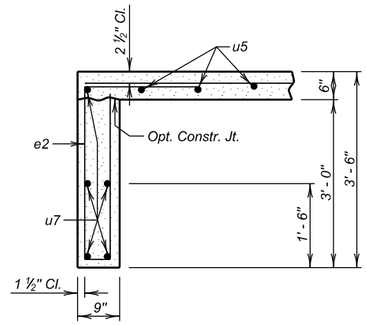
NOTE:
Apron will NOT be built monolithic with the Box Culvert.

FOR BIDDING PURPOSES ONLY

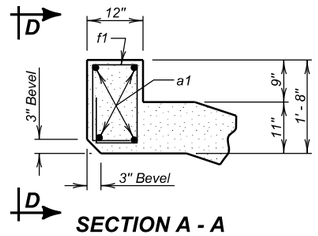
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(157)438	E18	E25



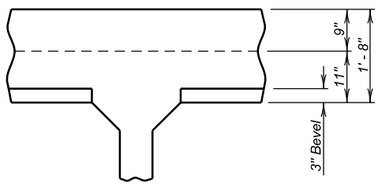
PLAN
(Inlet Apron)



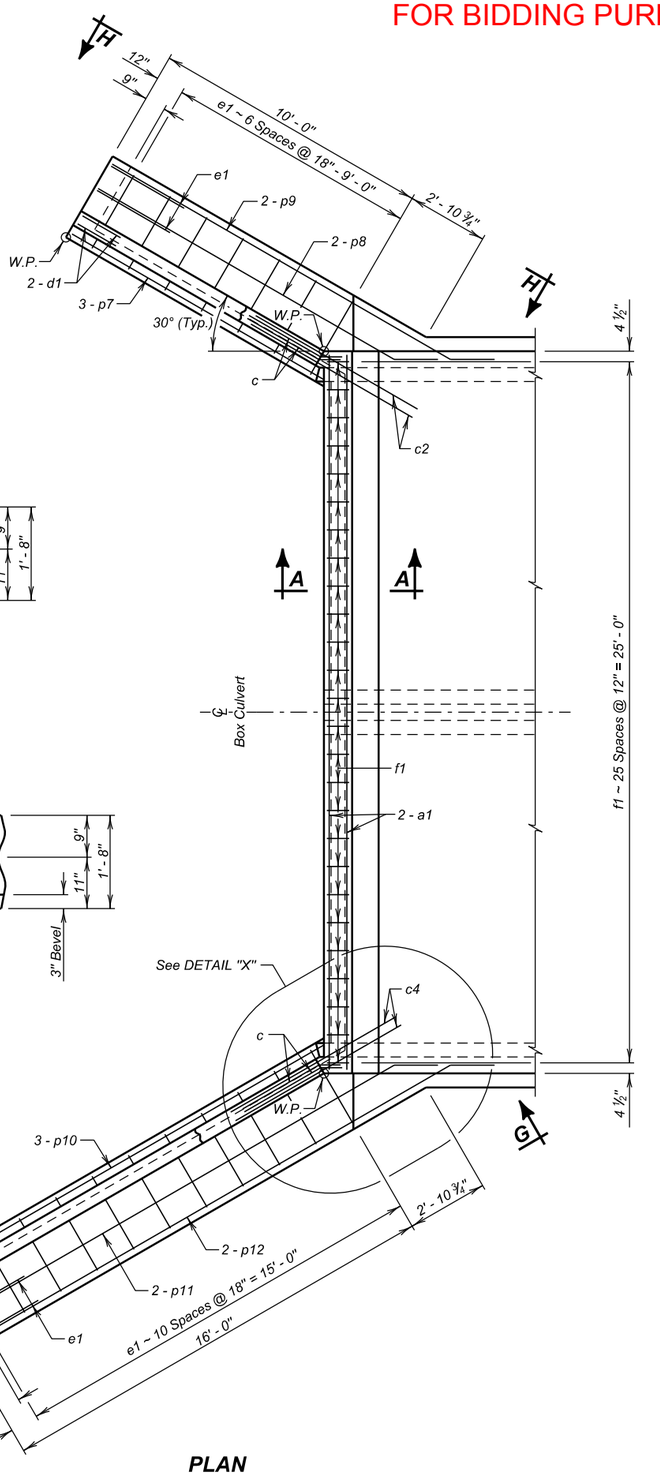
SECTION F - F



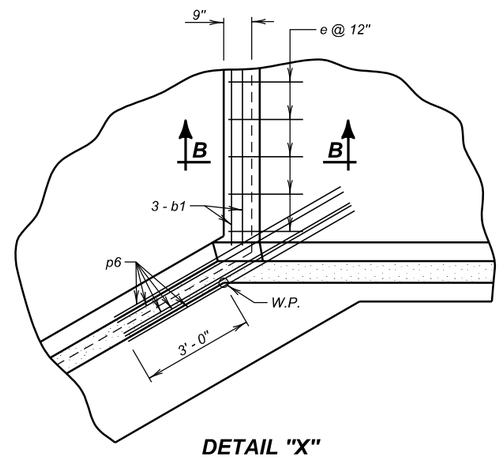
SECTION A - A
(At Top Slab)



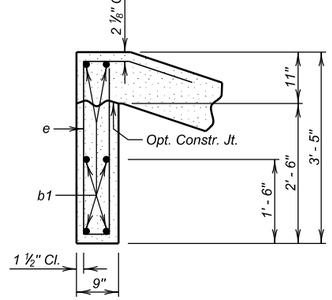
VIEW D - D
(At Interior Wall)



PLAN



DETAIL "X"
(At Bottom Slab)



SECTION B - B

INLET DETAILS (A)

FOR

2 - 12' X 5' BOX CULVERT

OVER TRIB. TO BEAVER CREEK — 20° RHF SKEW
STA. 465 + 80.00 — SEC.16/21-T98N-R50W
STR. NO. 42-146-140 — NH 0018(157)438
HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2022

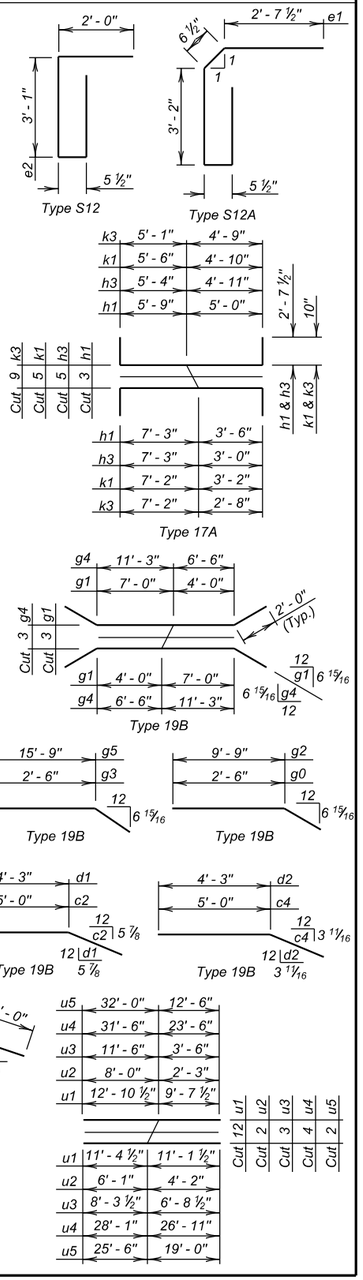
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	MG	Steve A Johnson BRIDGE ENGINEER
LINC6923	6923TA03		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(157)438	E19	E25

FOR BIDDING PURPOSES ONLY

REINFORCING SCHEDULE

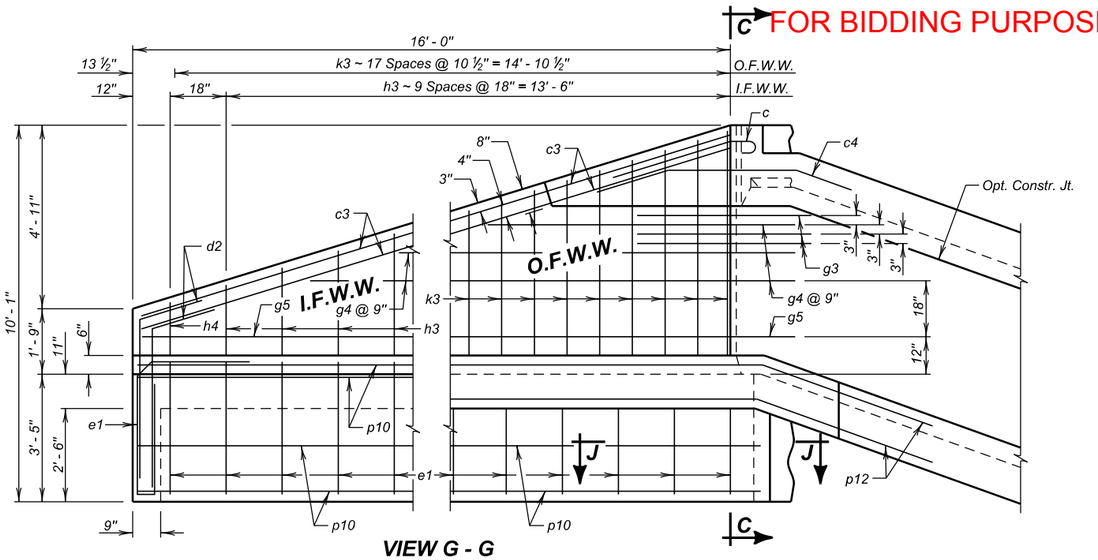
	Mk.	No.	Size	Length	Type
	a1	4	6	25' - 6"	Str.
	b1	6	6	23' - 9"	Str.
✳	c	4	5	4' - 6"	1A
	c1	4	5	11' - 0"	Str.
✳	c2	2	5	7' - 0"	19B
	c3	4	5	16' - 6"	Str.
✳	c4	2	5	7' - 0"	19B
	d1	4	5	6' - 0"	19B
	d2	4	5	6' - 0"	19B
	e	24	4	8' - 3"	12
	e1	22	4	9' - 9"	S12A
	f1	26	4	5' - 9"	S6A
	g0	6	5	5' - 0"	19B
⌀	g1	3	4	15' - 0"	19B
	g2	2	4	11' - 9"	19B
	g3	6	5	5' - 0"	19B
⌀	g4	3	4	21' - 9"	19B
	g5	2	4	17' - 9"	19B
⌀	h1	3	4	16' - 0"	17A
	h2	1	4	5' - 3"	17A
⌀	h3	5	4	15' - 6"	17A
	h4	1	4	5' - 3"	17A
⌀	k1	5	4	12' - 0"	17A
	k2	1	4	3' - 9"	17A
⌀	k3	9	4	11' - 6"	17A
	p6	10	6	7' - 0"	Str.
✳	p7	7	4	12' - 6"	Str.
✳	p8	2	4	13' - 9"	Str.
✳	p9	2	4	15' - 6"	Str.
✳	p10	7	4	18' - 6"	Str.
✳	p11	2	4	19' - 9"	Str.
✳	p12	2	4	21' - 6"	Str.
	INLET APRON				
	e2	35	4	8' - 6"	S12
⌀	u1	12	4	22' - 6"	Str.
⌀	u2	2	4	10' - 3"	Str.
⌀	u3	3	4	15' - 0"	Str.
⌀	u4	4	4	55' - 0"	Str.
⌀	u5	2	4	44' - 6"	Str.
⌀	u6	1	4	6' - 0"	Str.
⌀	u7	5	4	36' - 3"	Str.

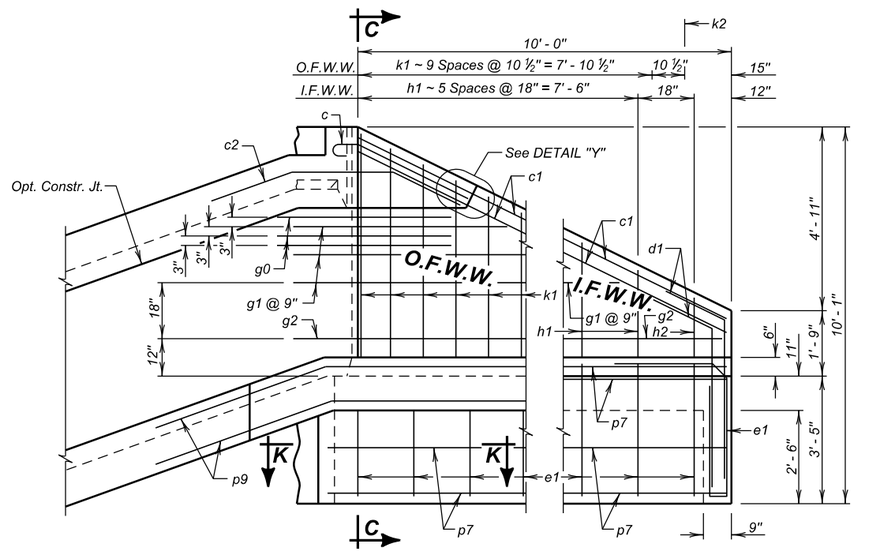


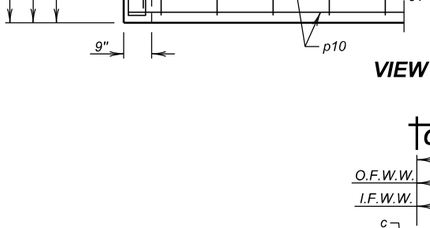
NOTES:
All dimensions are out to out of bars.
⌀ See cutting diagram.
✳ Bend in field as necessary to fit.

ESTIMATED QUANTITIES

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu. Yd.	Lb.	Cu. Yd.
Inlet	13.9	1678	8.1
Inlet Apron	9.8	754	9.8

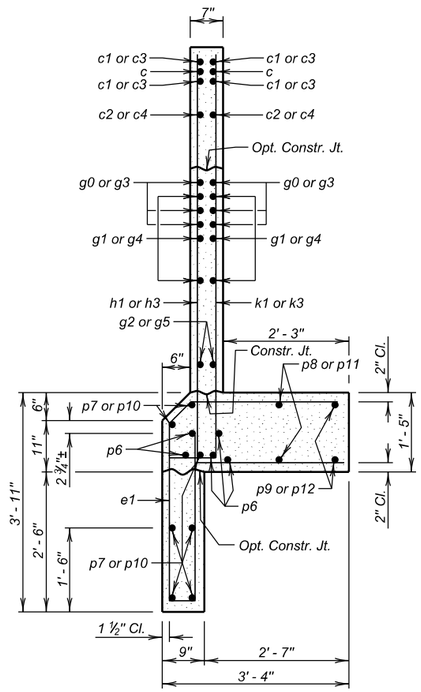


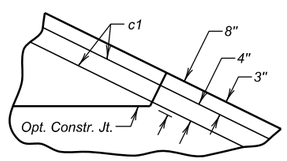




LEGEND FOR PLACING RE-STEEL

O. F. W. W. - Outside Face of Wing Wall
I. F. W. W. - Inside Face of Wing Wall





INLET DETAILS (B)

FOR

2 - 12' X 5' BOX CULVERT

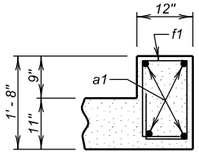
OVER TRIB. TO BEAVER CREEK — 20° RHF SKEW
STA. 465 + 80.00 — SEC.16/21-T98N-R50W
STR. NO. 42-146-140 — NH 0018(157)438
HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2022

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	MG	Steve A. Johnson BRIDGE ENGINEER
LINC6923	6923TA04		

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(157)438	E20	E25

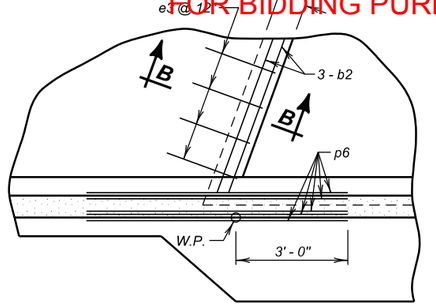


SECTION A - A
(At Top Slab)

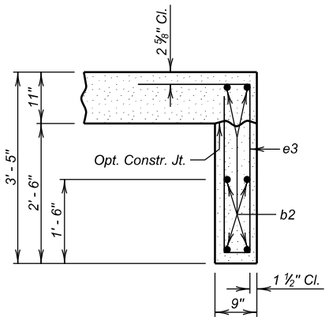
NOTE:
Apron will NOT be built monolithic with the Box Culvert.

PLAN

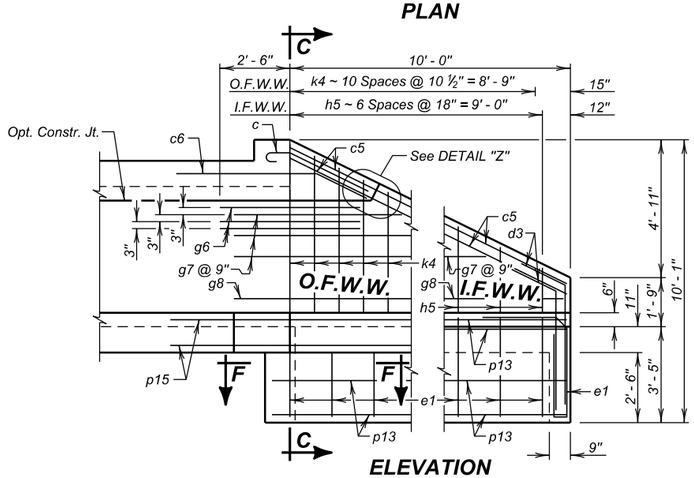
PLAN
(Outlet Apron)



DETAIL "X"
(At Bottom Slab)

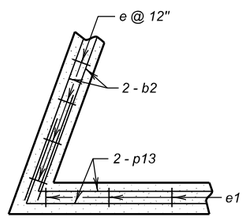


SECTION B - B

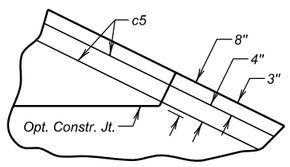


ELEVATION

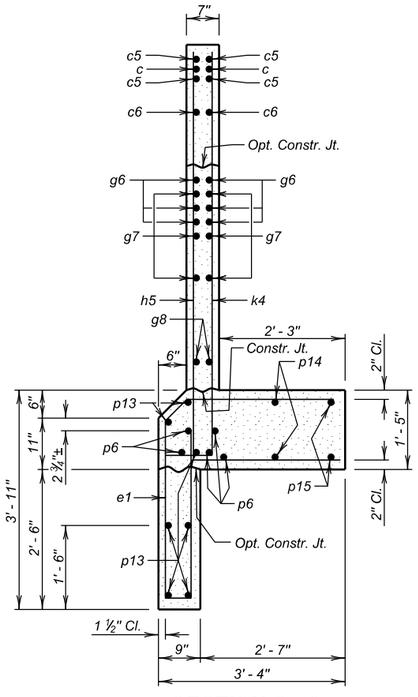
SECTION E - E



SECTION F - F



DETAIL "Z"
(showing c5 bars only)

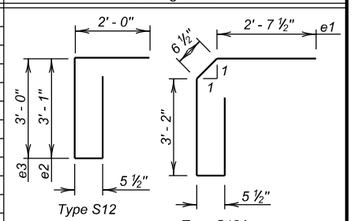


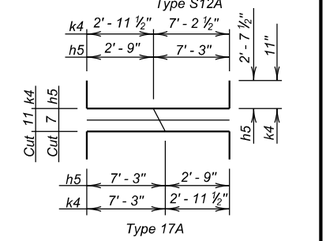
SECTION C - C

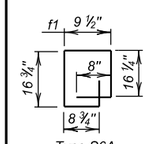
REINFORCING SCHEDULE

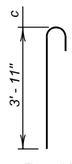
	Mk.	No.	Size	Length	Type
	a2	4	6	27' - 0"	Str.
	b2	6	6	26' - 0"	Str.
✳	c	4	5	4' - 6"	1A
	c5	8	5	11' - 0"	Str.
	c6	4	5	7' - 0"	19B
	d3	8	5	6' - 0"	19B
	e1	18	4	9' - 9"	S12A
	e3	26	4	8' - 3"	S12
	f1	27	4	5' - 9"	S6A
	g6	12	5	5' - 0"	Str.
✠	g7	6	4	15' - 0"	Str.
	g8	4	4	11' - 9"	Str.
✠	h5	7	4	15' - 3"	17A
✠	k4	11	4	12' - 0"	17A
	p6	10	6	7' - 0"	Str.
✳	p13	10	4	12' - 6"	Str.
✳	p14	4	4	13' - 6"	Str.
✳	p15	4	4	15' - 0"	Str.
	OUTLET APRON				
	e2	24	4	8' - 6"	S12
✠	u8	12	4	19' - 6"	Str.
	u9	8	4	24' - 9"	Str.
	u10	1	4	23' - 0"	Str.
	u11	5	4	25' - 0"	Str.

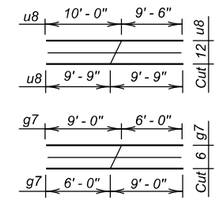
Bending Details

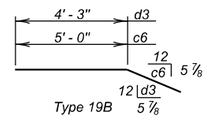












NOTES:
All dimensions are out to out of bars.
✠ See cutting diagram.
✳ Bend in field as necessary to fit.

ESTIMATED QUANTITIES

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu. Yd.	Lb.	Cu. Yd.
Outlet	11.9	1529	7.0
Outlet Apron	6.5	524	6.5

LEGEND FOR PLACING RE-STEEL

O. F. W. W. - Outside Face of Wing Wall
I. F. W. W. - Inside Face of Wing Wall

OUTLET DETAILS
FOR
2 - 12' X 5' BOX CULVERT

OVER TRIB. TO BEAVER CREEK
STA. 465 + 80.00
STR. NO. 42-146-140

20° RHF SKEW
SEC.16/21-T98N-R50W
NH 0018(157)438
HL-93

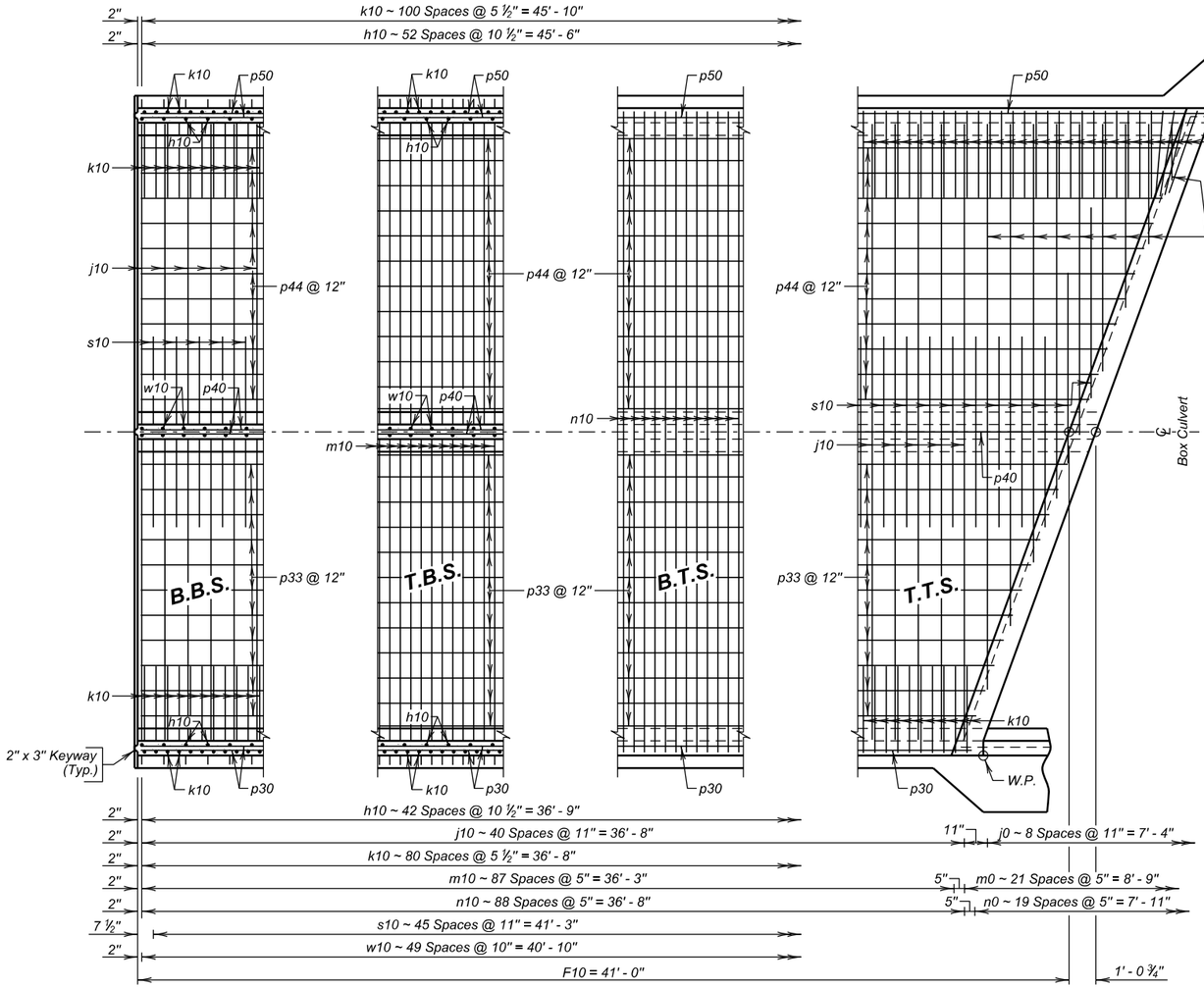
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2022

5 OF 10

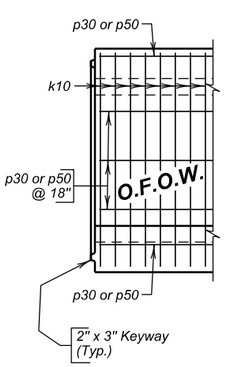
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	MG	Steve A Johnson BRIDGE ENGINEER
LINC6923	6923TA05		

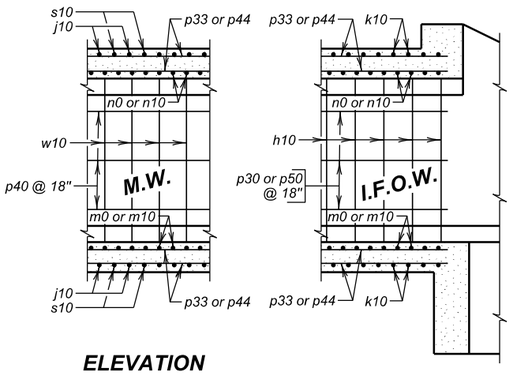
FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(157)438	E21	E25

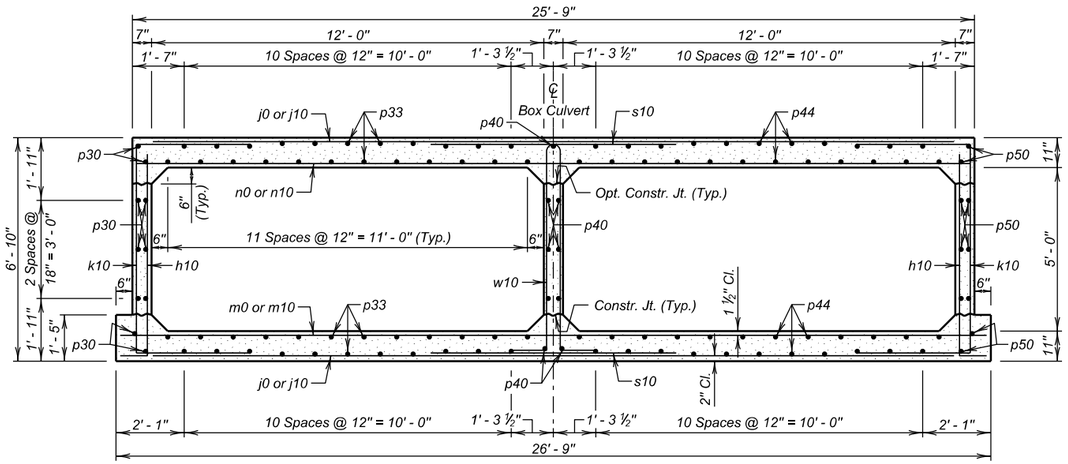


PLAN
(Outlet end)

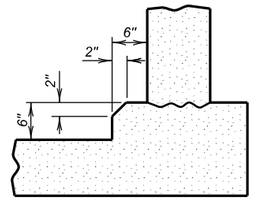




ELEVATION



F10 BARREL SECTION
(10' - 0" Maximum Fill)



OPTIONAL FILLET DETAIL
(At Bottom Slab)

Note: Contractor may form the optional full fillet, with 2" Chamfer, as detailed. The cost of the additional concrete will be borne by the Contractor.

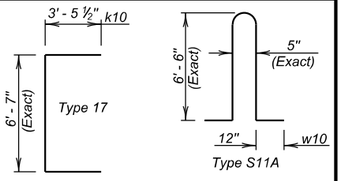
OPTIONAL POUR - BOTTOM SLAB

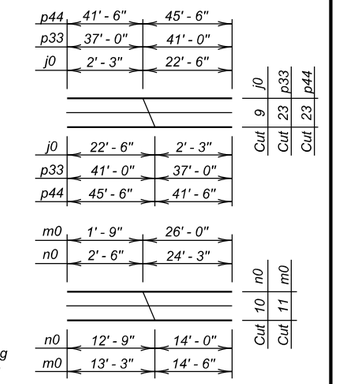
The Bottom Slab may be poured continuously, at the option of the Contractor, with the use of a Preformed Metal keyway conforming to the keyway dimensions and location as shown on the plans. The keyway length will be full width of the bottom slab. Care will be taken to maintain proper alignment of the keyway during the pour sequence. All additional costs of this option will be borne by the Contractor.

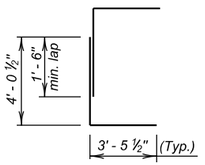
△ *Place z1 bars thru construction joint between barrel sections as shown on Standard Plate No. 460.10. Quantity of z1 bars is for one construction joint.*

REINFORCING SCHEDULE
(For One F10 Barrel End Section)

	Mk.	No.	Size	Length	Type	Bending Details
	h10	96	4	7' - 0"	17A	
⌀	j0	9	6	24' - 9"	Str.	
	j10	82	6	24' - 6"	Str.	
	k10	182	4	13' - 6"	17	
⌀	m0	11	5	27' - 9"	Str.	
	m10	88	5	26' - 6"	Str.	
⌀	n0	10	5	26' - 9"	Str.	
	n10	89	5	25' - 6"	Str.	
	p30	10	4	37' - 3"	Str.	
	p40	9	4	41' - 3"	Str.	
	p50	10	4	46' - 3"	Str.	
⌀	p33	23	4	78' - 0"	Str.	
⌀	p44	23	4	87' - 0"	Str.	
	s10	92	6	7' - 7"	Str.	
	w10	50	4	15' - 3"	S11A	
△	z1	57	5	3' - 6"	Str.	







OPTIONAL k10 SPLICE DETAIL
Contractor may use optional reinforcing steel splice, as shown. The cost of the additional reinforcing steel will be borne by the Contractor.

NOTES:
⌀ *See cutting diagram.*
All dimensions are out to out of bars.
Request for additional reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.

Type 17A

ESTIMATED QUANTITIES

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu.Yd.	Lb.	Cu.Yd.
1 - F10 Barrel End Section @ 41' - 0"	88.6	15934	37.2

LEGEND FOR PLACING RE-STEEL

T.T.S.	Top of Top Slab
B.T.S.	Bottom of Top Slab
T.B.S.	Top of Bottom Slab
B.B.S.	Bottom of Bottom Slab
O.F.O.W.	Outside Face of Outside Wall
I.F.O.W.	Inside Face of Outside Wall
M.W.	Middle Wall

F10 BARREL END SECTION DETAILS (41' - 0")

FOR

2 - 12' X 5' BOX CULVERT

OVER TRIB. TO BEAVER CREEK
STA. 465 + 80.00
STR. NO. 42-146-140

20° RHF SKEW
SEC.16/21-T98N-R50W
NH 0018(157)438
HL-93

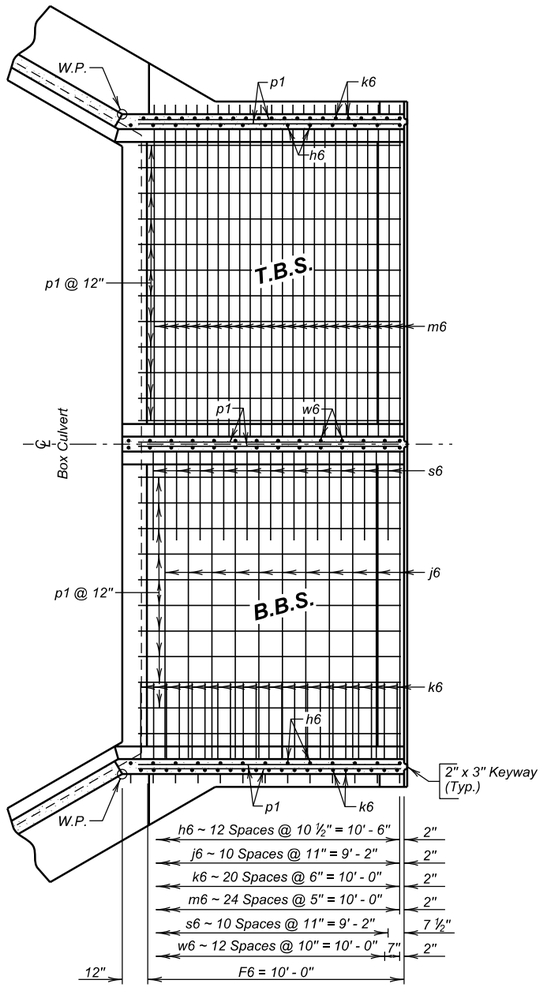
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2022

6 OF 10

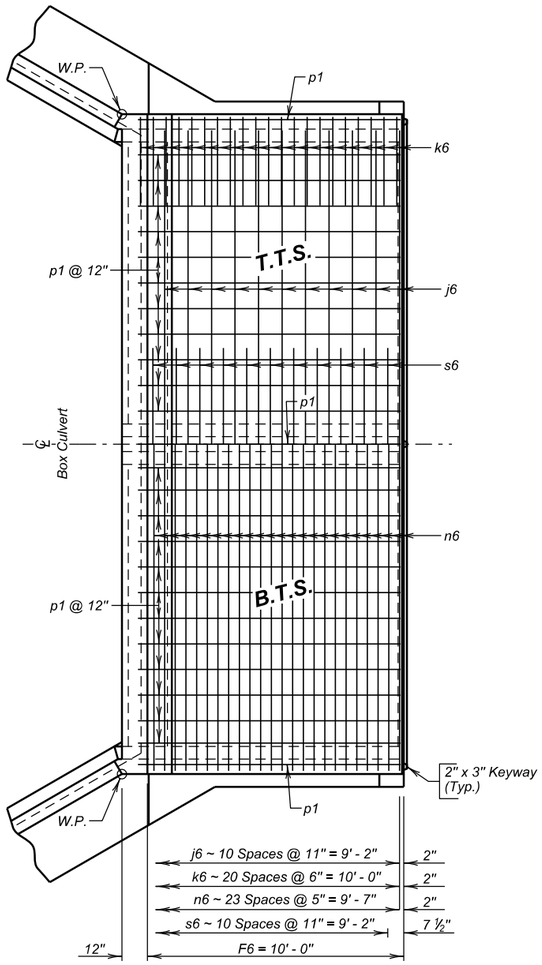
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	MG	Steve A Johnson BRIDGE ENGINEER
LINC6923	6923TA06		

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(157)438	E22	E25



PLAN
(Bottom Slab)



PLAN
(Top Slab)

OPTIONAL FILLET DETAIL
(At Bottom Slab)

Note: Contractor may form the optional full fillet, with 2" Chamfer, as detailed. The cost of the additional concrete will be borne by the Contractor.

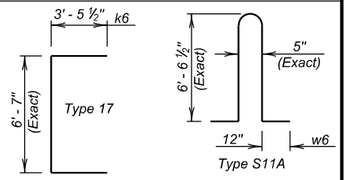
OPTIONAL POUR - BOTTOM SLAB

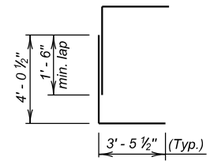
The Bottom Slab may be poured continuously, at the option of the Contractor, with the use of a Preformed Metal keyway conforming to the keyway dimensions and location as shown on the plans. The keyway length will be full width of the bottom slab. Care will be taken to maintain proper alignment of the keyway during the pour sequence. All additional costs of this option will be borne by the Contractor.

△ *Place z1 bars thru construction joint between barrel sections as shown on Standard Plate No. 460.10. Quantity of z1 bars is for two construction joints.*

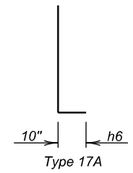
REINFORCING SCHEDULE
(For One F6 Barrel End Section)

	Mk.	No.	Size	Length	Type	Bending Details
	h6	26	4	7' - 0"	17A	
	j6	22	6	24' - 6"	Str.	
	k6	42	4	13' - 6"	17	
	m6	25	5	26' - 6"	Str.	
	n6	24	5	25' - 6"	Str.	
⚹	p1	121	4	10' - 6"	Str.	
	s6	22	6	7' - 6"	Str.	
	w6	14	4	15' - 3"	S11A	
△	z1	57	5	3' - 6"	Str.	





OPTIONAL k6 SPLICE DETAIL
Contractor may use optional reinforcing steel splice, as shown. The cost of the additional reinforcing steel will be borne by the Contractor.



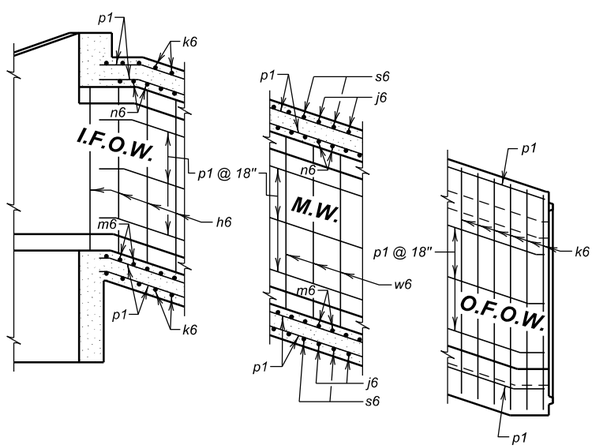
NOTES:
℄ *See cutting diagram.*
⚹ *Bend in field as necessary to fit.*
All dimensions are out to out of bars.
Request for additional reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.

ESTIMATED QUANTITIES

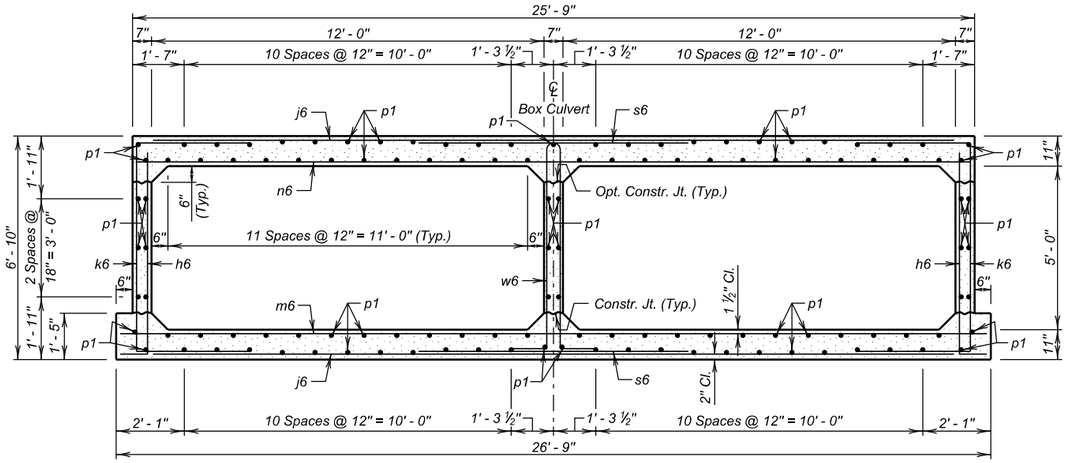
ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu.Yd.	Lb.	Cu.Yd.
1 - F6 Barrel End Section @ 10' - 0"	21.6	4086	9.1

LEGEND FOR PLACING RE-STEEL

T.T.S.	Top of Top Slab
B.T.S.	Bottom of Top Slab
T.B.S.	Top of Bottom Slab
B.B.S.	Bottom of Bottom Slab
O.F.O.W.	Outside Face of Outside Wall
I.F.O.W.	Inside Face of Outside Wall
M.W.	Middle Wall



ELEVATION



F6 BARREL SECTION
(6' - 0" Maximum Fill)

F6 BARREL END SECTION DETAILS (10' - 0")
FOR
2 - 12' X 5' BOX CULVERT

OVER TRIB. TO BEAVER CREEK — 20° RHF SKEW
STA. 465 + 80.00 — SEC.16/21-T98N-R50W
STR. NO. 42-146-140 — NH 0018(157)438
HL-93

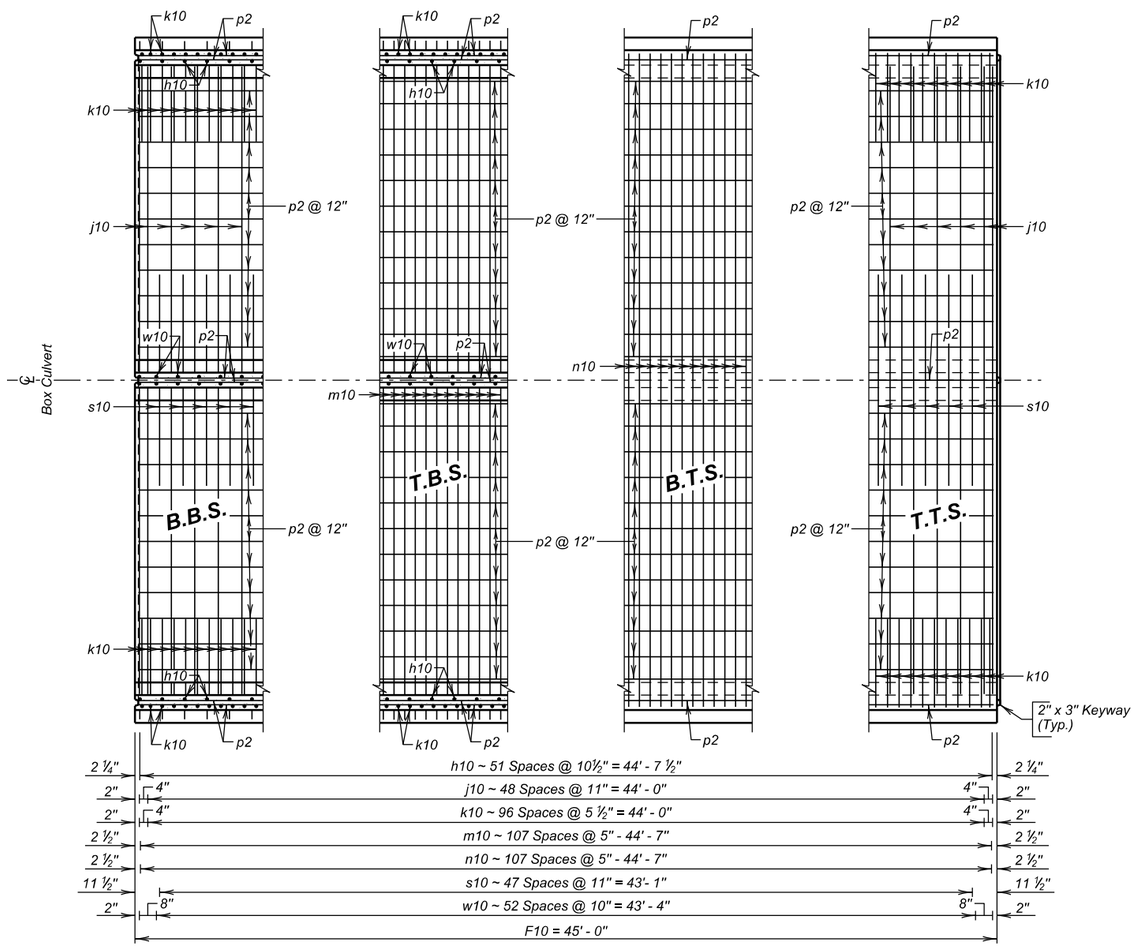
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2022

7 OF 10

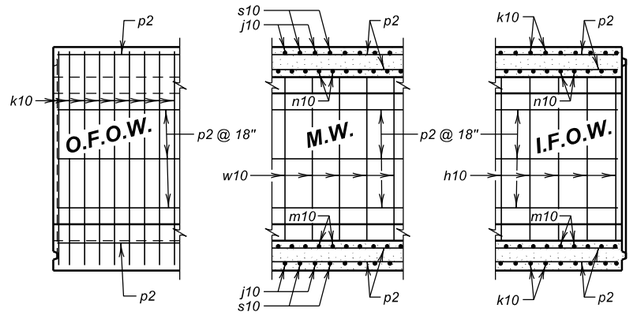
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	MG	Steve A Johnson BRIDGE ENGINEER
LINC6923	6923TA07		

FOR BIDDING PURPOSES ONLY

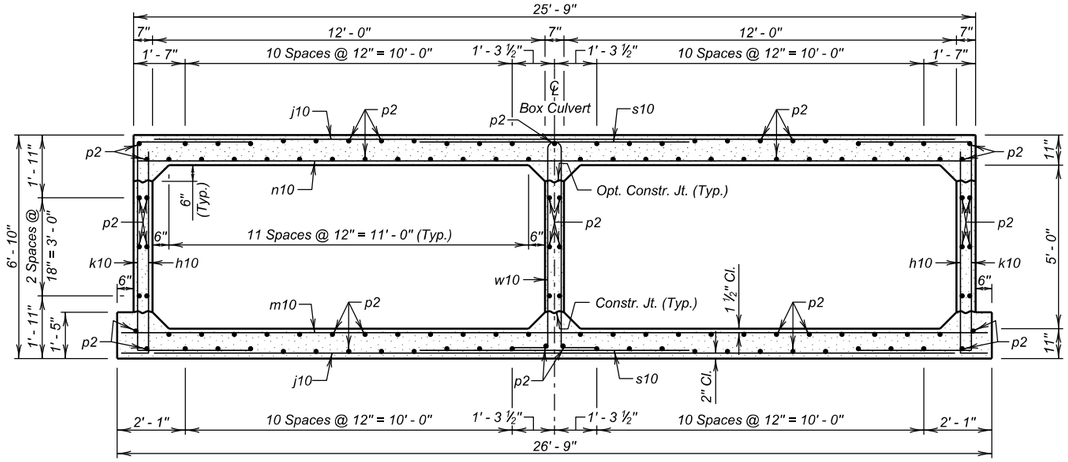
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(157)438	E23	E25



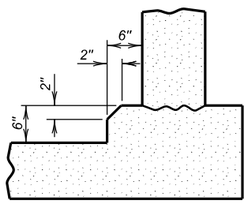
PLAN



ELEVATION



F10 BARREL SECTION
(10' - 0" Maximum Fill)



OPTIONAL FILLET DETAIL
(At Bottom Slab)

Note: Contractor may form the optional full fillet, with 2" Chamfer, as detailed. The cost of the additional concrete will be borne by the Contractor.

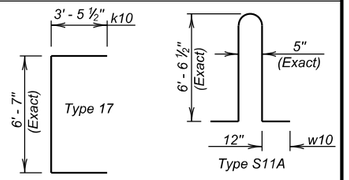
OPTIONAL POUR - BOTTOM SLAB

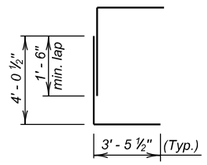
The Bottom Slab may be poured continuously, at the option of the Contractor, with the use of a Preformed Metal keyway conforming to the keyway dimensions and location as shown on the plans. The keyway length will be full width of the bottom slab. Care will be taken to maintain proper alignment of the keyway during the pour sequence. All additional costs of this option will be borne by the Contractor.

△ *Place z1 bars thru construction joint between barrel sections as shown on Standard Plate No. 460.10. Quantity of z1 bars is for one construction joint.*

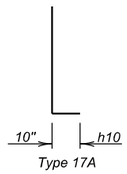
REINFORCING SCHEDULE
(For Two F10 Barrel Interior Sections)

Mk.	No.	Size	Length	Type	Bending Details
h10	208	4	7' - 0"	17A	
j10	204	6	24' - 6"	Str.	
k10	396	4	13' - 6"	17	
m10	216	5	26' - 6"	Str.	
n10	216	5	25' - 6"	Str.	
p2	242	4	44' - 9"	Str.	
s10	192	6	7' - 6"	Str.	
w10	110	4	15' - 3"	S11A	
△ z1	57	5	3' - 6"	Str.	





OPTIONAL k10 SPLICE DETAIL
Contractor may use optional reinforcing steel splice, as shown. The cost of the additional reinforcing steel will be borne by the Contractor.



NOTES:

℄ *See cutting diagram.*

All dimensions are out to out of bars.

Request for additional reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.

ESTIMATED QUANTITIES

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu.Yd.	Lb.	Cu.Yd.
2 - F10 Barrel Interior Sections @ 45' - 0"	194.6	34491	81.8

LEGEND FOR PLACING RE-STEEL

T.T.S. - Top of Top Slab
B.T.S. - Bottom of Top Slab
T.B.S. - Top of Bottom Slab
B.B.S. - Bottom of Bottom Slab
O.F.O.W. - Outside Face of Outside Wall
I.F.O.W. - Inside Face of Outside Wall
M.W. - Middle Wall

F10 BARREL INTERIOR SECTION DETAILS (45' - 0")

FOR

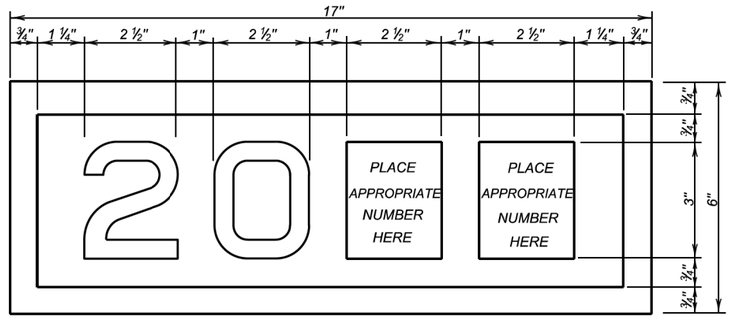
2 - 12' X 5' BOX CULVERT

OVER TRIB. TO BEAVER CREEK — 20° RHF SKEW
STA. 465 + 80.00 — SEC.16/21-T98N-R50W
STR. NO. 42-146-140 — NH 0018(157)438
HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2022

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	BR	MG	Steve A Johnson BRIDGE ENGINEER
LINC6923	6923TA08		

FOR BIDDING PURPOSES ONLY



YEAR PLATE DETAILS

GENERAL NOTES:

1. Year plates of the general dimensions shown will be constructed on all box culverts and bridges. The year plates will be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.

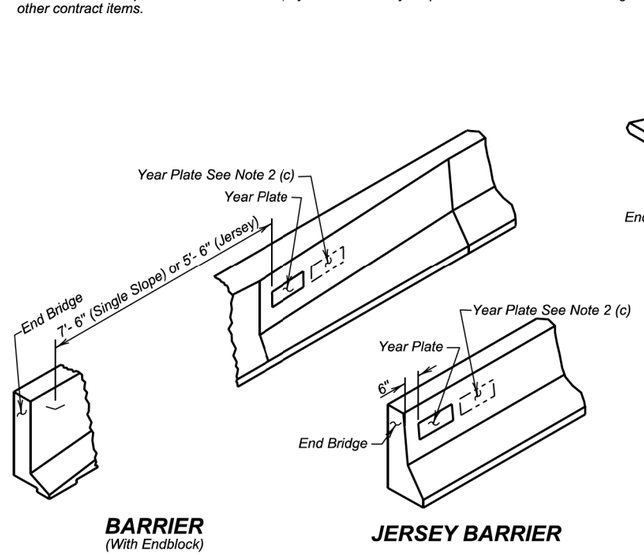
2. Year plates will be located on structure(s) as follows:

   a. On cast-in-place box culverts the year plates will be four and one - half (4 ½) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate will be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate will be centered in an adjacent barrel.

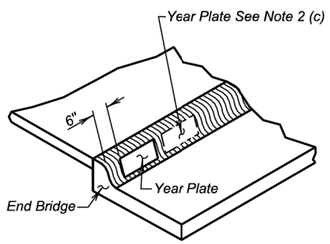
   b. On bridges with six (6) inch curbs, "Jersey" shaped barriers with no endblocks, or "Single Slope" shaped barriers with no endblocks, the year plate will be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with barrier endblocks, the year plate will be centered on the upper sloped portion of the barrier approximately 5'- 6" for "Jersey" shaped barriers from the end of the bridge and 7'-6" for "Single Slope" shaped barriers from the end of bridge, or as designated by the Engineer. There will be one year plate at each end of the bridge on opposite sides.

   c. When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date will be placed as listed above and the other located adjacent to it. Both year plates will be shown at each end of the bridge on opposite sides.

3. There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work will be incidental to other contract items.

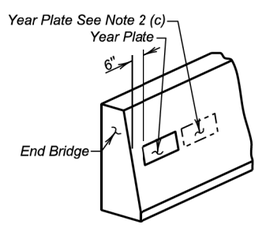


BARRIER
(With Endblock)



TYPE B CURB

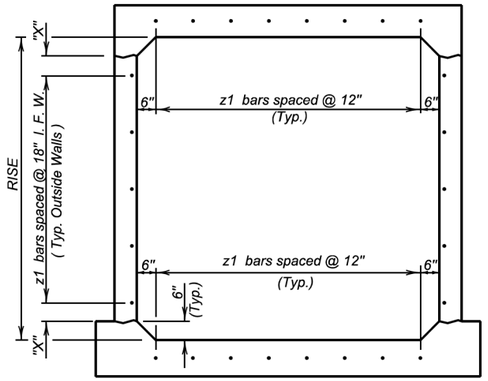
JERSEY BARRIER



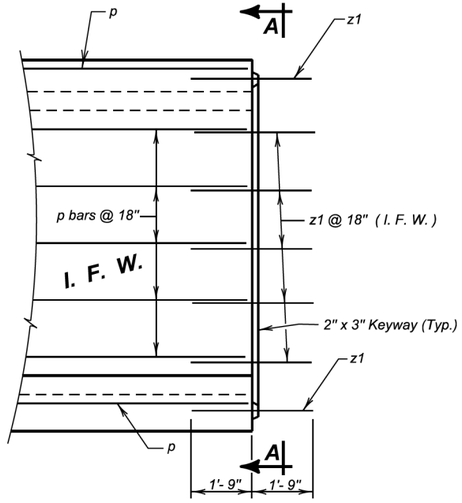
SINGLE SLOPE BARRIER

January 22, 2021

Published Date: 1st Qtr. 2023	SDDOT	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 Of 1



TYPICAL SINGLE BARREL VIEW A - A

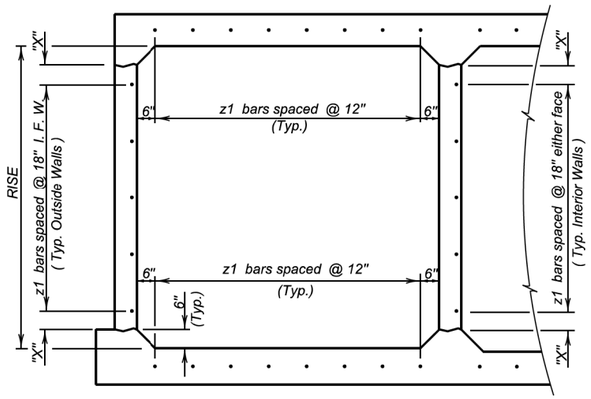


ELEVATION

LEGEND FOR PLACING RE-STEEL

I. F. W.	-	Inside Face Wall

RISE	"X"
3'- 0"	3"
4'- 0"	9"
5'- 0"	6"
6'- 0"	3"
7'- 0"	9"
8'- 0"	6"
9'- 0"	3"
10'- 0"	9"
11'- 0"	6"
12'- 0"	3"
13'- 0"	9"
14'- 0"	6"



TYPICAL MULTIPLE BARREL VIEW A - A

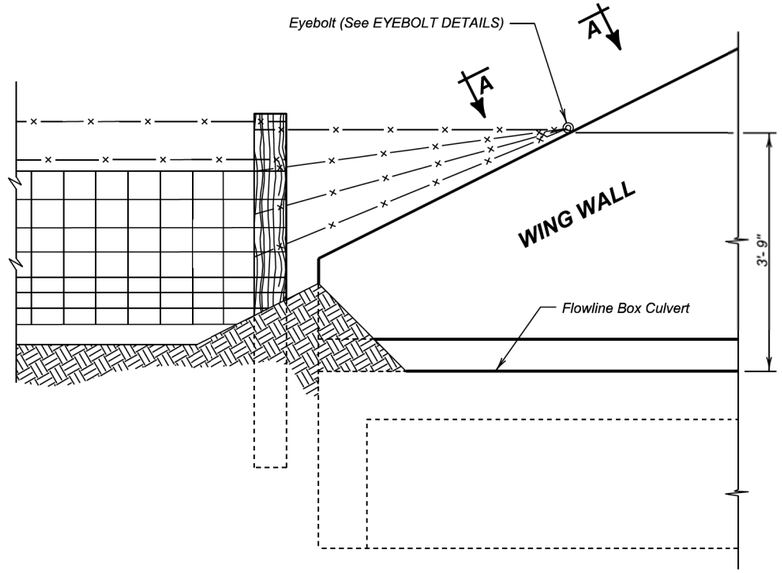
GENERAL NOTES:

1. z1 bars will be placed in the middle of the 2" X 3" keyway in the top and bottom slabs. z1 bars will be lapped with the longitudinal p bars in the inside face of the wall for outside walls and in either face for interior walls. z1 bars are listed and included elsewhere in plans.

2. Drainage Fabric Protection will be placed in accordance with Section 422, or Section 560, whichever is applicable.

June 1, 2022

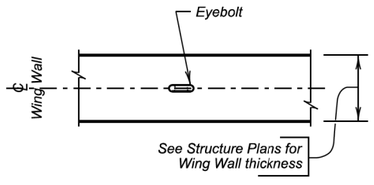
Published Date: 1st Qtr. 2023	SDDOT	BOX CULVERT BARREL TIE REINFORCEMENT	PLATE NUMBER 460.10
			Sheet 1 of 1



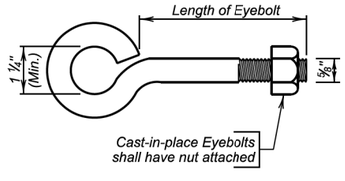
DETAIL FOR FENCE ANCHORS

GENERAL NOTES:

1. The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
2. Eyebolts shall be placed on all of the box culvert wing walls.
3. Eyebolts shall be ⅝ inch diameter and shall conform to ASTM A307.
4. Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
5. Cast-in-place eyebolts shall have a nut attached, be 4 ½ inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the ⅝ inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
6. The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



VIEW A - A



EYEBOLT DETAILS

December 23,2012

Published Date: 1st Qtr. 2023	SDDOT	FENCE ANCHORS FOR BOX CULVERT WING WALLS	PLATE NUMBER 620.16
			Sheet 1 of 1