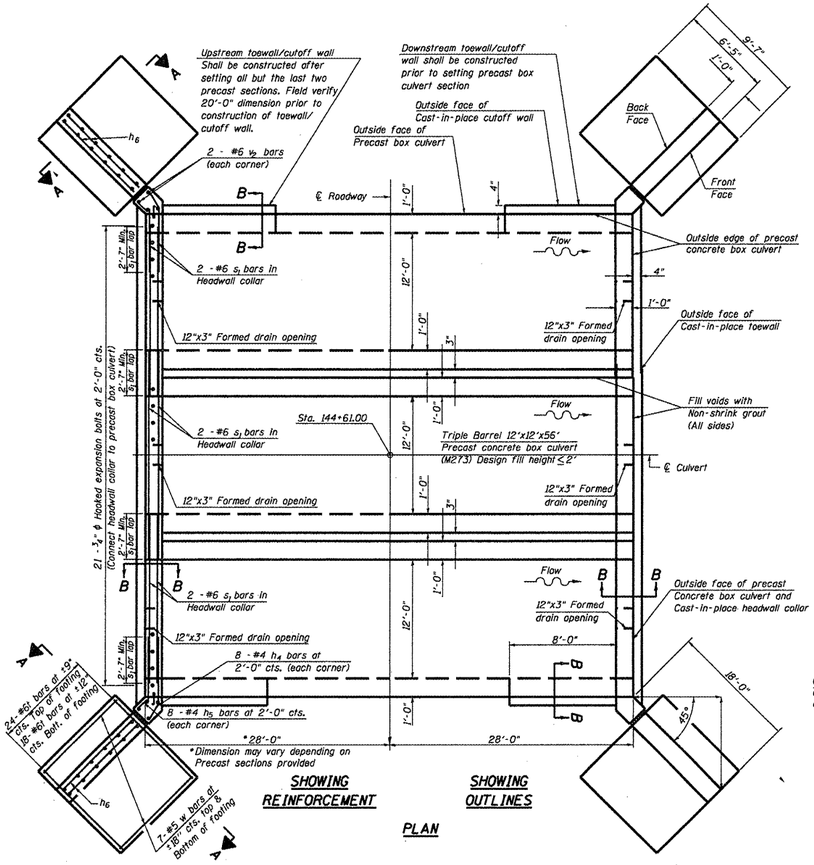
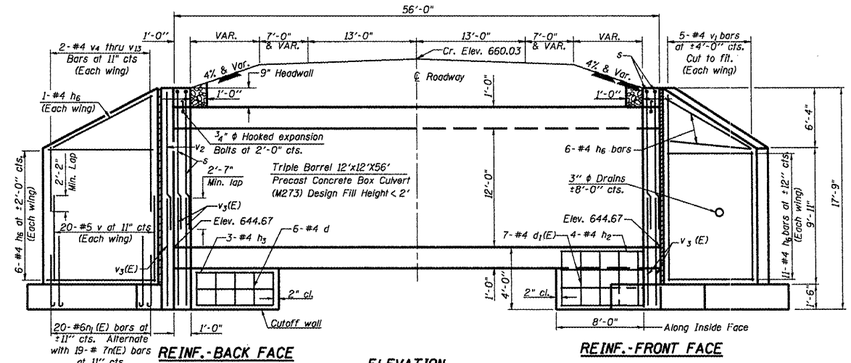
CONTRACT NO. 90711

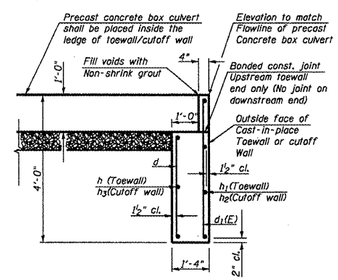
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
816	6RS-1&16BR)BR	DOUGLAS	176	76
STA.	TO STA.			
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

Existing structure 021-0033 was built by the State of Illinois in 1919 as FAS Route 659, Section 6BR as a single span reinforced concrete thru girder bridge. In 1970, the substructure was widened and the superstructure was replaced with precast, prestressed concrete deck beams, waterproofing membrane, and $1\frac{1}{2}''$ of hot-mix asphalt. In 1995, $1\frac{1}{4}''$ of hot-mix asphalt was added to the deck. To be removed. No salvage.





ELEVATION

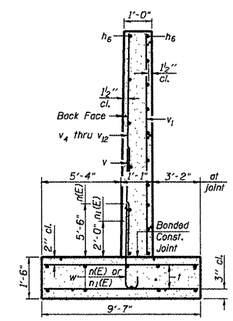


SECTION B-B

TOEWALL/CUTOFF WALL DETAIL ONLY

(SIDE WALL OF PRECAST BOX CULVERT NOT SHOWN)

Porous Granular Material - CA 7 (6") (Included in pay item for precast box culvert)



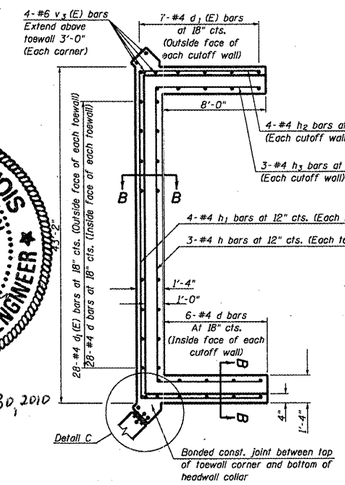
SECTION A-A

STATION 144+61.00
BUILT 2009 BY
STATE OF ILLINOIS
F.A.P. RTE. 816 SEC. (6BR)BR
LOADING HS 20-44
STR. NO. 021-2025

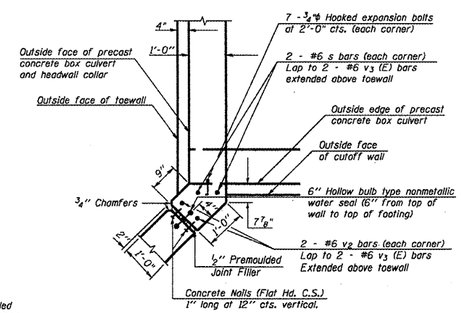
NAME PLATE

* See Highway Standard 515001-02 for dimensions and placement.

* Name Plate will be paid for at the contract unit price per "EACH" for "NAME PLATES".



TOEWALL / CUTOFF WALL DETAIL WITH CORNER DIMENSIONS



CAST-IN-PLACE CORNER DETAIL FOR HEADWALL COLLAR

DETAIL C

STATE OF ILLINOIS
RALPH E. ANDERSON
081-004625
SPRINGFIELD
LICENSED STRUCTURAL ENGINEER

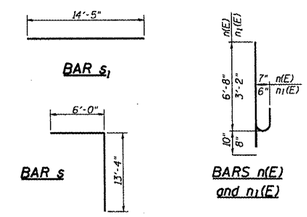
Expires Nov. 30, 2010

DESIGN STRESSES

"Cast in Place"	"Precast"
fy = 60,000 psi	fy = 60,000 psi
f'c = 3,500 psi	f'c = 5,000 psi

Max. Soil Pressure under footing = 3,522 psf

LOADING HS 20-44



BILL OF MATERIAL (ONE END SECTION) FOR INFORMATION ONLY

Bar	No.	Size	Length	Shape
d	40	#4	2'-8"	
d_1(E)	42	#4	3'-8"	
h	3	#4	41'-6"	
h_1	4	#4	42'-10"	
h_2	8	#4	8'-9"	
h_3	6	#4	8'-0"	
h_4	16	#4	1'-2"	
h_5	16	#4	9"	
h_6	48	#4	16'-11"	
n(E)	38	#7	7'-6"	
n_1(E)	40	#6	3'-10"	
s	4	#6	19'-4"	
s_1	6	#6	14'-5"	
t	84	#6	9'-4"	
v	36	#5	7'-9"	
v_1	10	#4	15'-11"	
v_2	4	#6	13'-2"	
v_3(E)	8	#6	6'-10"	
v_4	4	#4	4'-8"	
v_5	4	#4	5'-4"	
v_6	4	#4	6'-0"	
v_7	4	#4	6'-8"	
v_8	4	#4	7'-4"	
v_9	4	#4	8'-0"	
v_{10}	4	#4	8'-8"	
v_{11}	4	#4	9'-4"	
v_{12}	4	#4	10'-0"	
v_{13}	4	#4	10'-8"	
w	28	#5	16'-11"	
Concrete Box Culverts			Cu. Yd.	46.8
Reinforcement Bars, Epoxy Coated			Pound	990
Reinforcement Bars			Pound	3700
Expansion Bolt $\frac{3}{4}$" ϕ			Each	35

TOTAL BILL OF MATERIALS

Item	Unit	Qty.
Removal of Existing Structures	Each	1
Box Culvert End Section	Each	2
Precast Concrete Box Culvert 12'x12' (M273)	Feet	168
Name Plate	Each	1

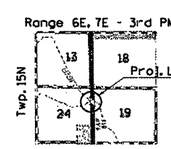
NOTES

- Excavation behind existing abutment walls shall be performed to balance front and back soil pressure before removing the existing superstructure.
- The Precast Concrete Box Culvert Sections shall conform to the requirements of AASHTO M273.
- Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60. See Special Provisions.
- Reinforcement bars designated (E) shall be epoxy coated.
- Expansion bolts shall be $\frac{3}{4}$" ϕ hooked bolts. The cost of the bolts shall be included in the cost of Box Culvert End Section.
- The Contractor may substitute cast in place inserts and threaded hooked reinforcement bars for the expansion bolts.
- Areas of the precast box in contact with cast in place concrete shall be sandblasted, cleaned and wetted prior to placing concrete in the field according to Article 503.09(b) of the Standard Specifications.
- The joints between precast segments shall be sealed and all voids filled with a mastic joint sealer. In addition, the sides and top shall be sealed with a 12" wide external sealing band meeting the requirements of ASTM C877 Type III. The joint areas to be sealed shall be cleaned and primed according to the manufacturer's directions prior to placing the seal. The seal shall be protected during backfilling to prevent damage.
- End Sections will be paid for at the contract unit price each for BOX CULVERT END SECTION, as outlined in Art. 540.08, which prices shall include all concrete, rebar, and all other items necessary to complete the proposed work. Precast option is not allowed.
- Drain holes shall be provided in accordance with Art. 503.11.
- Voids between the Precast Concrete Box Culvert and the cast-in-place toewall / cutoff wall shall be filled with Non-shrink grout.
- Drawings not to scale.

WATERWAY INFORMATION TABLE

DRAINAGE AREA = 13.2 mi.^{2} PROP. LOW GRADE ELEV. = 659.5 FT. @ STA. 141+60

	FREQ. YR.	Q C.F.S.	OPENING SQ. FT.		NAT. H.W.E.	HEAD - FT.		HEADWATER EL.	
			EXIST.	PROP.		EXIST.	PROP.	EXIST.	PROP.
	10	1034	265	414	656.2	0.2	0.1	656.4	656.3
DESIGN	50	1625	286	432	656.9	0.8	0.6	657.7	657.5
BASE	100	1882	292	432	657.1	1.1	0.8	658.2	657.9
MAX. CALC.	500	2500	301	432	657.4	1.6	1.3	659.0	658.7



LOCATION SKETCH

REVISIONS	
NAME	DATE
	10/27/08

ILLINOIS DEPARTMENT OF TRANSPORTATION
TRIPLE 12'x12' BOX CULVERT

FAP ROUTE 816
ATWOOD-ARTHUR RD
SECTION (6BR)BR
DOUGLAS COUNTY
021-0033 (EX)
021-2025 (PR)
STATION 144+61.00

PLOT DATE = $DATE$
FILE NAME = $FILEL$
PLOT SCALE = $SCALE$
USER NAME = $USER$

...\julie sheets DLG Modifed.dgn 10/27/2008 9:30:20 AM