

# SUMMARY OF QUANTITIES

	CODE NUMBER	ITEM	UNIT	80% FED 20% STATE 0040 TOTAL QUANTITY
	20100110	TREE REMOVAL (6 TO 15 UNITS DIAMETER)	UNIT	276
	20100210	TREE REMOVAL (OVER 15 UNITS DIAMETER)	UNIT	92
	20200100	EARTH EXCAVATION	CU YD	1,465
*	25000100	SEEDING, CLASS 1	ACRE	0.25
*	25000210	SEEDING, CLASS 2A	ACRE	0.75
*	25000310	SEEDING, CLASS 4	ACRE	0.50
Δ	25000750	MOWING	ACRE	0.95
*	25100630	EROSION CONTROL BLANKET	SQ YD	7,260
*	25100900	TURF REINFORCEMENT MAT	SQ YD	36
	28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	1050
	28000305	TEMPORARY DITCH CHECKS	FOOT	450
	28000400	PERIMETER EROSION BARRIER	FOOT	261
	28000500	INLET & PIPE PROTECTION	EACH	5
	28100107	STONE RIPRAP, CLASS A4	SQ YD	102.6
	28200200	FILTER FABRIC	SQ YD	102.6
	35102000	AGGREGATE BASE COURSE, TYPE B, 8"	SQ YD	479
	40603310	HOT-MIX ASPHALT SURFACE COURSE, MIX "C", N50	TON	57
	40800050	INCIDENTAL HOT-MIX ASPHALT SURFACING	TON	16
	44201383	CLASS C PATCHES, TYPE IV, 12 INCH	SQ YD	495
	48101200	AGGREGATE SHOULDERS, TYPE B	TON	288
	50100300	REMOVAL OF EXISTING STRUCTURES NO. 1	EACH	1
	50100400	REMOVAL OF EXISTING STRUCTURES NO. 2	EACH	1
	50200450	REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL FOR STRUCTURES	CU YD	642
	50800105	REINFORCEMENT BARS	POUND	42,640 Δ
	50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	2,630
	51500100	NAME PLATES	EACH	2
	54003000	CONCRETE BOX CULVERTS	CU YD	300.1 Δ

\* SPECIALTY ITEMS  
Δ 100% STATE

Rev. 4-8-15

Rev.

FILE NAME =	USER NAME = bates1	DESIGNED -	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>SUMMARY OF QUANTITIES</b>	F.A.S. RTE. 196	SECTION (0-2MFT)	COUNTY WHITESIDE	TOTAL SHEETS 61	SHEET NO. 2
c:\pwork\puidot\bates1\00309241\02-*	-SDD.dgn	DRAWN -	REVISED -							
	PLOT SCALE = 1/8" = 1' / in.	CHECKED -	REVISED -							
	PLOT DATE = Thu Jan 22 10:01:00 2010	DATE -	REVISED -							
						SCALE: _____ SHEET NO. _____ OF _____ SHEETS STA. _____ TO STA. _____		ILLINOIS FED. AID PROJECT CONTRACT NO. 64H60		

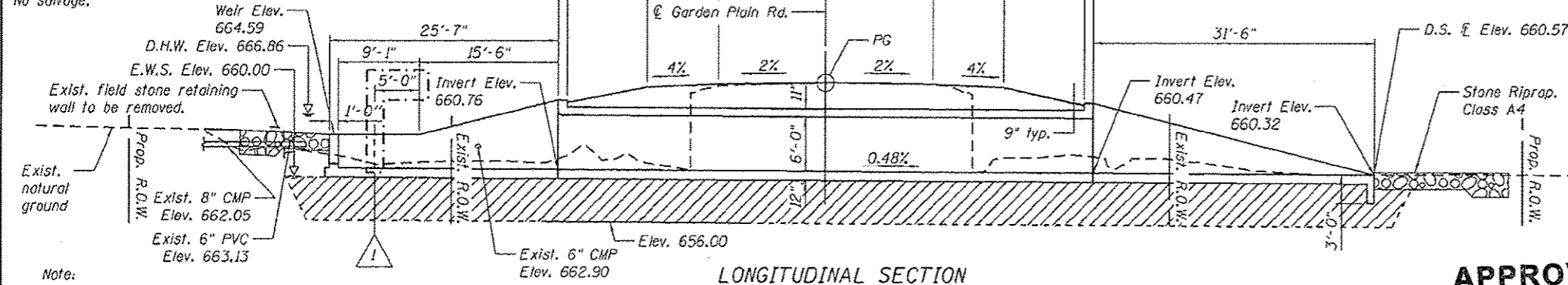
# SUMMARY OF QUANTITIES

CODE NUMBER	ITEM	UNIT	80% FED 20% STATE 0040 TOTAL QUANTITY
542D0220	PIPE CULVERTS, CLASS D, TYPE 1 15"	FOOT	47
542D0223	PIPE CULVERTS, CLASS D, TYPE 1 18"	FOOT	48
542D0235	PIPE CULVERTS, CLASS D, TYPE 1 30"	FOOT	40
54213450	END SECTIONS 15"	EACH	2
54213453	END SECTIONS 18"	EACH	2
54260311	TRAVERSABLE PIPE GRATE	FOOT	803 <span style="font-size: small;">▲</span>
60100060	CONCRETE HEADWALLS FOR PIPE DRAIN	EACH	6
60100925	PIPE DRAINS 8"	FOOT	61
60100935	PIPE DRAINS 10"	FOOT	17
60107600	PIPE UNDERDRAINS 4"	FOOT	173
61133200	FIELD TILE JUNCTION VAULTS, 3' DIA.	EACH	3
63500105	DELINEATORS	EACH	4
66600105	FURNISHING AND ERECTING RIGHT OF WAY MARKERS	EACH	20
66700305	PERMANENT SURVEY MARKERS, TYPE II	EACH	2
67000400	ENGINEER'S FIELD OFFICE, TYPE A	CAL MO	3
67100100	MOBILIZATION	L SUM	1
* 78001110	PAINT PAVEMENT MARKING - LINE 4"	FOOT	1,115
* 78100100	RAISED REFLECTIVE PAVEMENT MARKER	EACH	3
* A2000114	TREE, ACER X FREEMANII AUTUMN BLAZE (AUTUMN BLAZE FREEMAN MAPLE), 1-3/4" CALIPER, BALLED AND BURLAPPED	EACH	7
* A2002914	TREE, CELTIS OCCIDENTALIS (COMMON HACKBERRY), 1-3/4" CALIPER, BALLED AND BURLAPPED	EACH	7
* A2005814	TREE, PLATANUS OCCIDENTALIS (SYCAMORE), 1-3/4" CALIPER, BALLED AND BURLAPPED	EACH	7
* A2006514	TREE, QUERCUS BICOLOR (SWAMP WHITE OAK), 1-3/4" CALIPER, BALLED AND BURLAPPED	EACH	7
X0325358	SLOPED METAL END SECTION WITH GRATE, 30 INCH	EACH	2
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1
Z0013798	CONSTRUCTION LAYOUT	L SUM	1
Z0025505	PROPERTY MARKERS	EACH	1
* Z0054500	ROCK FILL	TON	1306

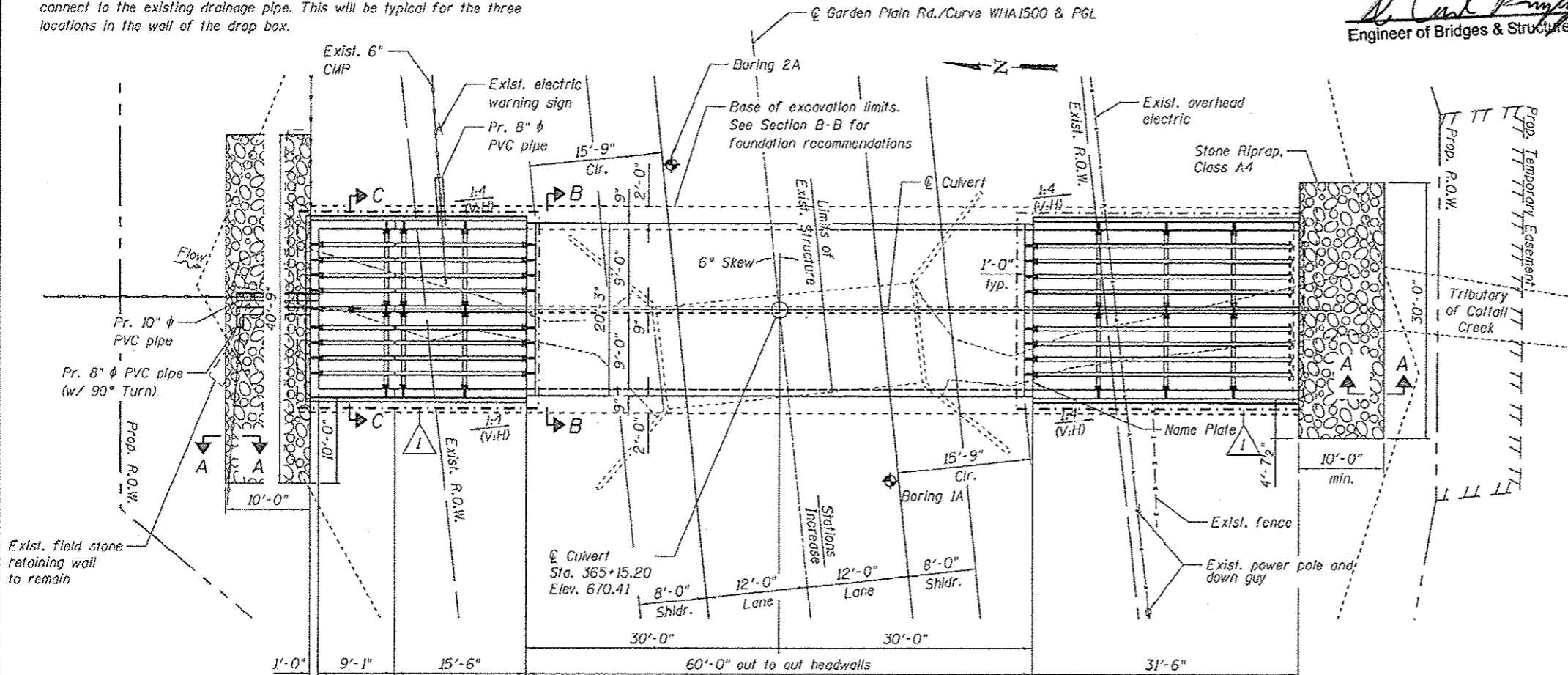
2# \* SPECIALTY ITEMS  
▲ 100% STATE

Bench Mark: #404 - Northwest corner of upstream headwall, Northing 1873495.00, Easting 232900.78, Elevation 669.30.

Existing Structure: SN 098-1058 is a 12'x8' R.C. box culvert, 24'-2" edge-to-edge pavement with a culvert length of 31'-4". Built in 1938. Traffic will be detoured during construction. No salvage.



Note:  
A PVC coupler and a schedule 80 PVC pipe shall be formed in the concrete wall. The PVC coupler shall daylight to the soil side of the wall. A PVC pipe shall then connect to the coupler and then extend away from the wall and connect to the existing drainage pipe. This will be typical for the three locations in the wall of the drop box.



PLAN

WATERWAY INFORMATION

Drainage Area = 304 acres    Exist. & Prop. Low Grade Elev. 670.38 @ Sta. 365+63

Flood	Freq. Yr.	Q C.F.S.	Opening	Sq. Ft.	Nat. H.W.E.	Head - Ft.	Headwater El.	
			Exist.	Prop.	Exist.	Prop.	Exist.	Prop.
Ten-Year	10	203	--	--	--	--	664.22    666.08	
Design	50	427	--	--	--	--	666.68    666.86	
Base	100	561	--	--	--	--	667.42    667.37	
Overtopping	295	892	--	--	--	--	670.38    --	
Max. Calc.	500	1101	--	--	--	--	669.71    --	

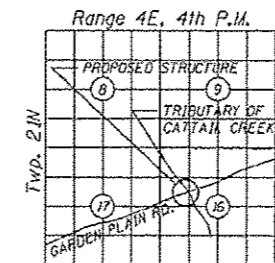
10-Year Velocity through Existing Culvert = 4.3 FPS  
10-Year Velocity through Proposed Culvert = 2.8 FPS

DESIGN SCOUR ELEVATION TABLE

Design Scour Elevation (ft.)	D.S.	U.S.
	657.32	659.84

STATION 365+15.20  
BUILT 20... BY  
STATE OF ILLINOIS  
F.A.S. RTE. 196 SEC. (0-2MFT)  
LOADING HL-93  
STRUCTURE NO. 098-1075

NAME PLATE  
See Sta. 515001



LOCATION SKETCH

EXISTING/PROPOSED HORIZONTAL CURVE WHA1500 DATA

PI STA. = 362+53.36  
Δ = 0° 40' 26" (RT)  
D = 0° 06' 30"  
R = 52,881.88'  
T = 310.95'  
L = 621.88'  
E = 0.91'  
P.C. STA. = 359+42.42  
P.T. STA. = 365+64.30

Sta.	Elev.	Grade	Sta.	Elev.	Grade
364+00	670.92	-0.66%	364+50	670.59	-0.34%
			365+00	670.42	-0.08%
			365+50	670.38	+0.10%
			366+00	670.43	

EXISTING/PROPOSED PROFILE GRADE  
(along Garden Plain Rd.)

LOADING HL-93

Allow 50#/sq. ft. for Future Wearing Surface.

DESIGN SPECIFICATIONS  
2012 Interim Revisions to AASHTO LRFD Bridge Design Specifications, Customary U.S. Units, 6th Edition

DESIGN STRESSES

FIELD UNITS  
f<sub>c</sub> = 3,500 psi  
f<sub>y</sub> = 60,000 psi (Reinforcement)  
f<sub>y</sub> = 35,000 psi (Steel Pipes)



Kevin J. Brehm  
Kevin J. Brehm, S.E.    Reg. No. 081-007103

Date: 4-3-2015  
My registration expires November 30, 2016

GENERAL PLAN AND ELEVATION  
GARDEN PLAIN ROAD OVER  
TRIBUTARY TO CATTAIL CREEK  
FAS ROUTE 196 - SEC. (0-2MFT)  
WHITESIDE COUNTY  
STATION 365+15.20  
STRUCTURE NO. 098-1075

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.

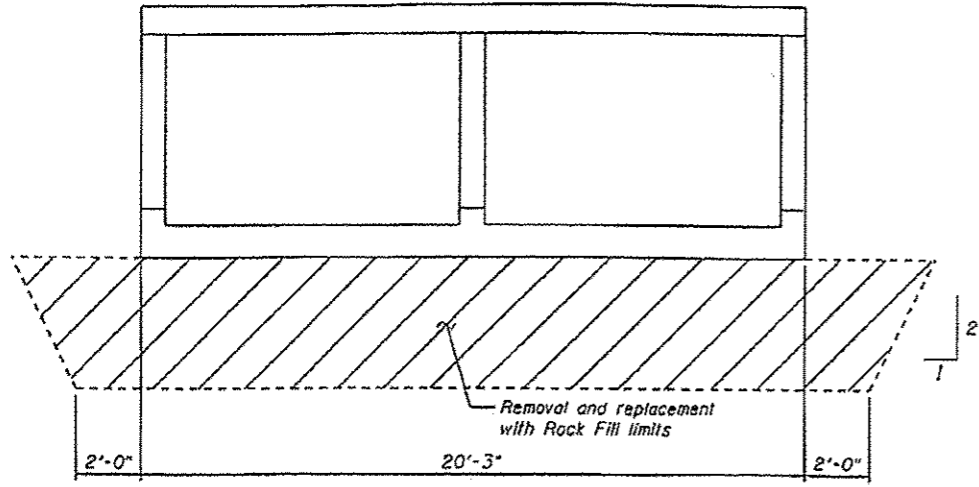
CONTRACT NO. 64H60  
[ILLINOIS] FED. AID PROJECT

HRGreen.com  
Illinois Professional Design Firm  
#184-001322  
HRGreen

USER NAME	DESIGNED	REVISION	DATE
JRM	JRM	4/03/2015	JRM
KJB	KJB		
JRM	JRM		
KJB	KJB		

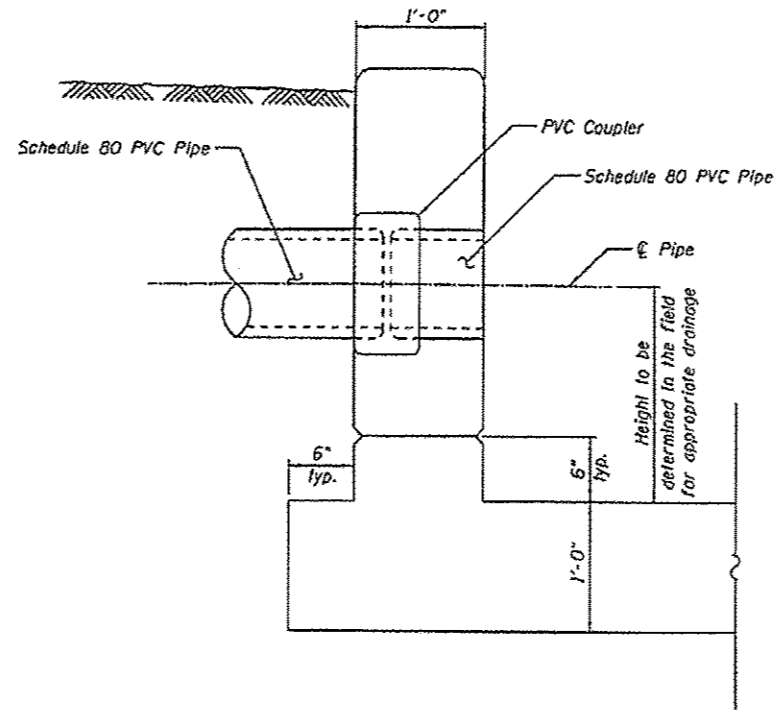
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN AND ELEVATION  
STRUCTURE NO. 098-1075  
SHEET NO. 5-1 OF 5-7 SHEETS



**SECTION B-B**

The limits and quantities of Removal and Disposal of Unsuitable Material for Structures and replacement with Rock Fill shown are based on the boring data and may be modified by the District Geotechnical and Field Engineers for variable subsurface conditions encountered in the field.



**SECTION THROUGH WALL OF DROP BOX**

**TOTAL BILL OF MATERIAL**

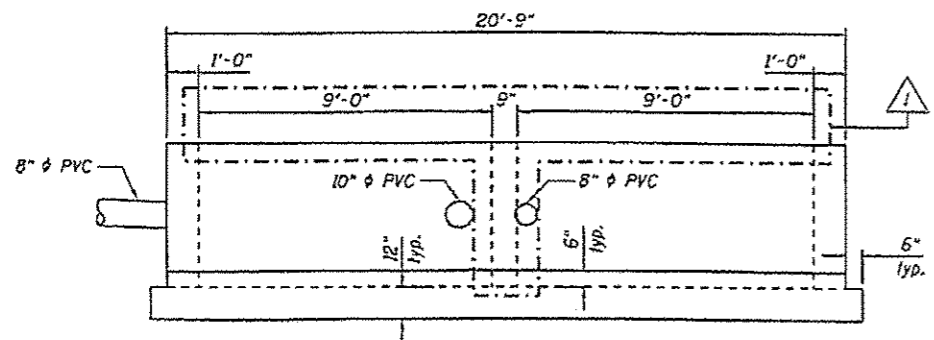
Item	Unit	Total
Stone Riprap, Class A4	Sq. Yd.	78.6
Filter Fabric	Sq. Yd.	78.6
Removal of Existing Structures N2, 2	Each	1
Removal and Disposal of Unsuitable Material for Structures	Cu. Yd.	470
Reinforcement Bars	Pound	28,240
Reinforcement Bars, Epoxy Coated	Pound	1,210
Name Plates	Each	1
Concrete Box Culverts	Cu. Yd.	191.1
Traversable Pipe Grates	Foot	569
Rock Fill	Ton	1048

**INDEX OF SHEETS**

- S-1 General Plan and Elevation
- S-2 General Data
- S-3 Culvert Barrel Details
- S-4 Drop Box Details
- S-5 End Section Details
- S-6 Traversable Pipe Details
- S-7 Soil Boring Logs

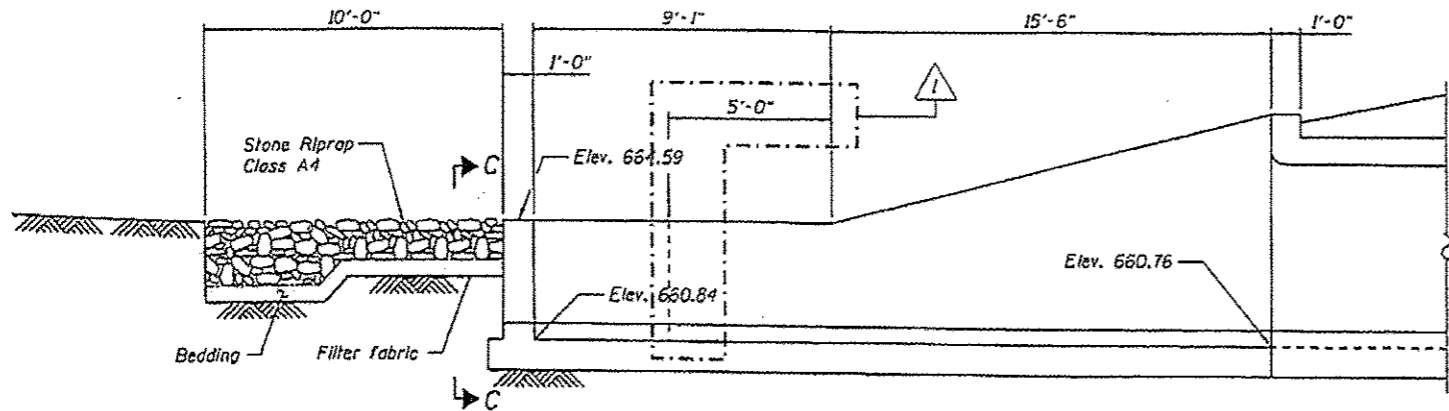
**GENERAL NOTES:**

- All exposed concrete edges shall be chamfered 3/4" unless otherwise noted.
- Reinforcement bars designated (E) shall be epoxy coated.
- Precast culvert alternate is not allowed.



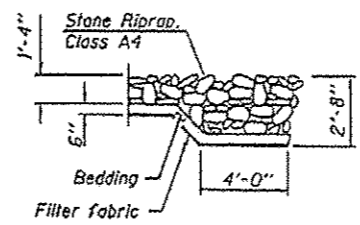
**VIEW C-C**

(North grated drop box)

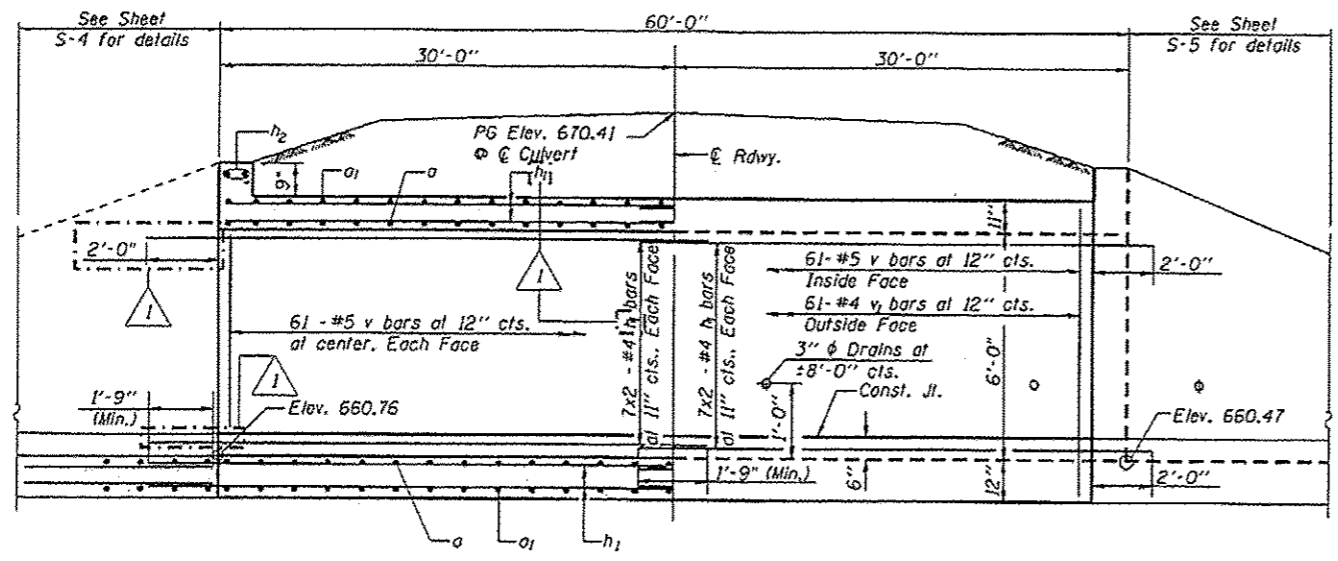


**ELEVATION**

(North grated drop box)

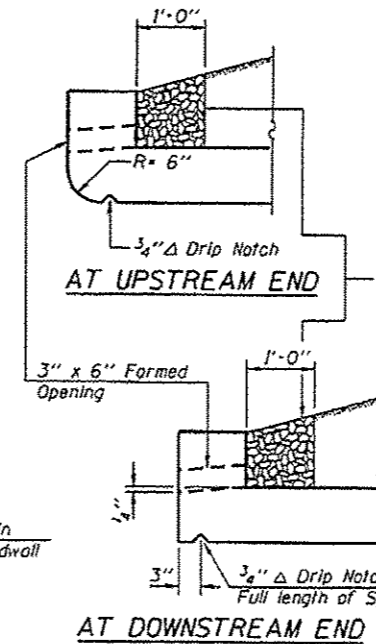


**SECTION A-A**

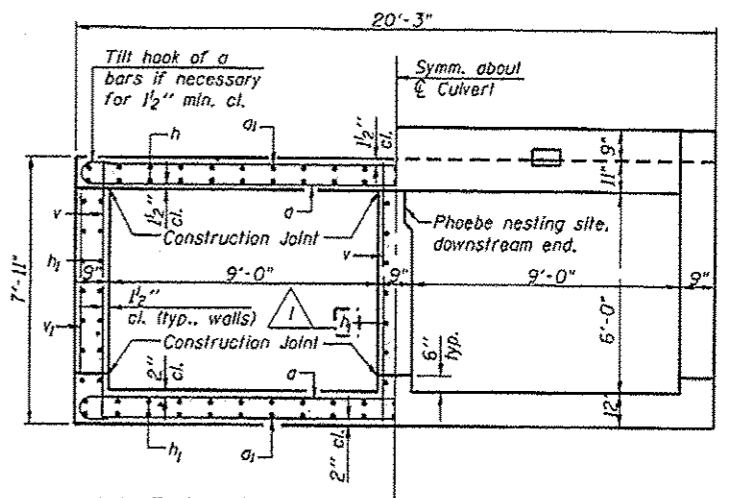


**HALF LONG SECTION**  
Showing bars in Center Wall

**HALF ELEVATION**  
Showing bars in Outside Wall

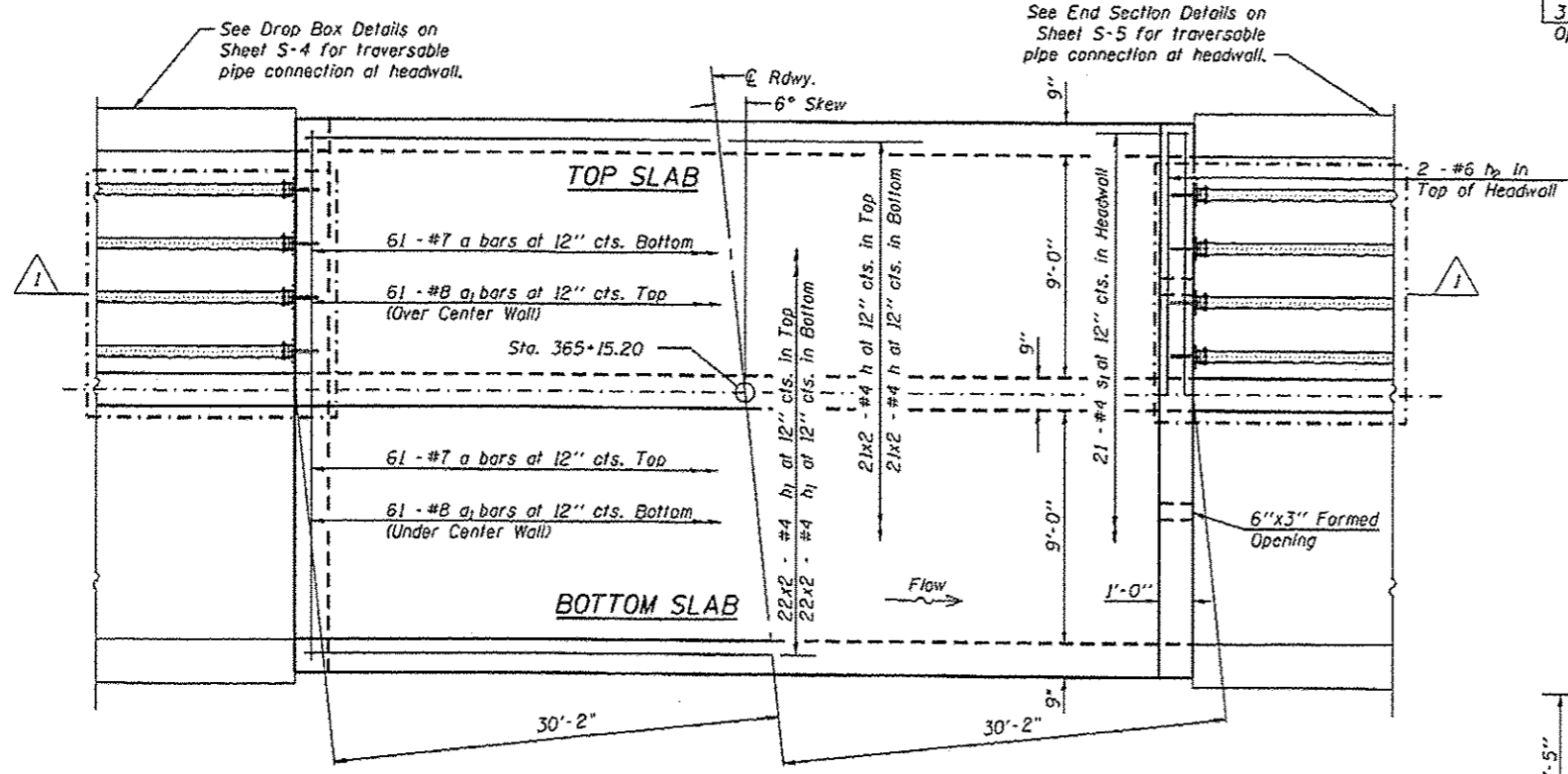


**DRAIN DETAIL**



**HALF SECTION THRU BARREL**

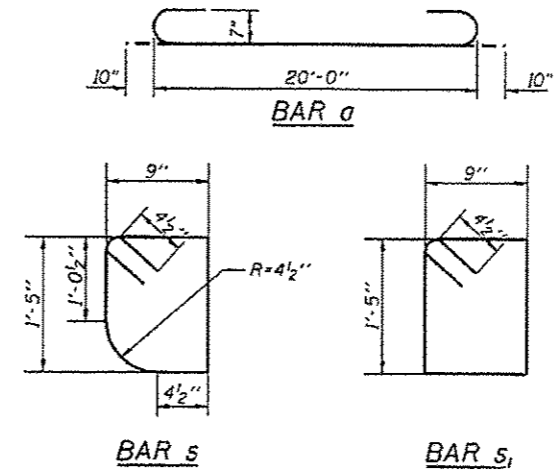
**HALF END ELEVATION**



**SHOWING REINFORCEMENT**

**SHOWING OUTLINES**

**PLAN**



**BAR s**

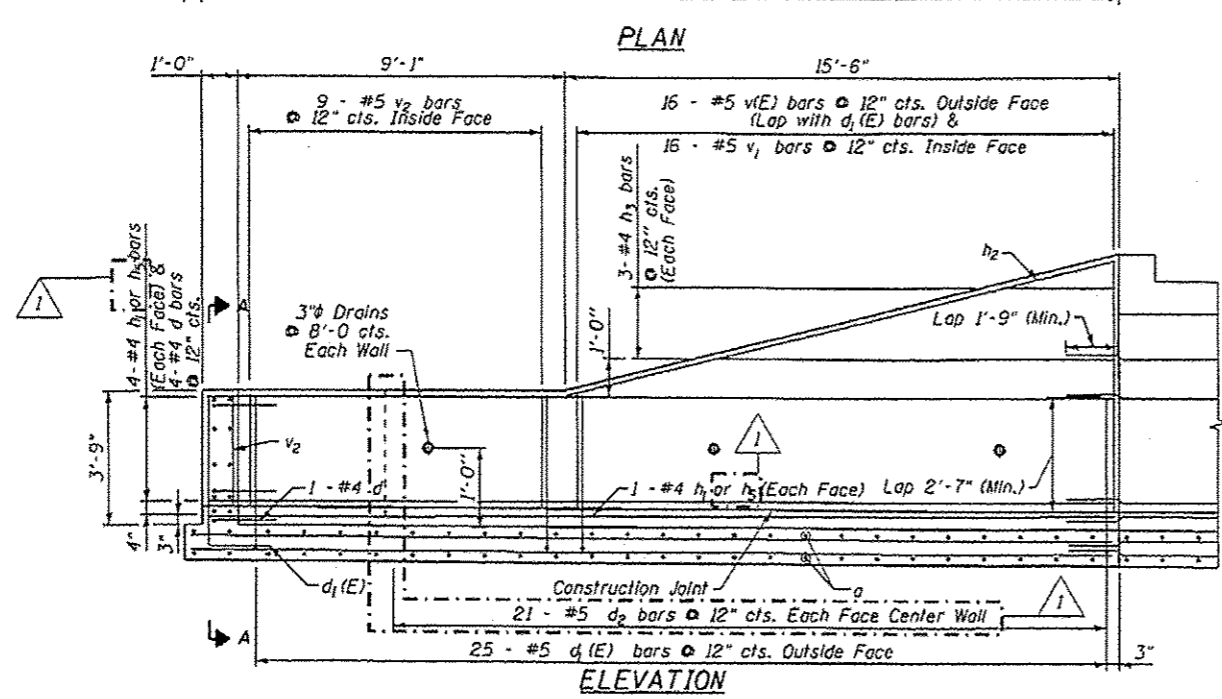
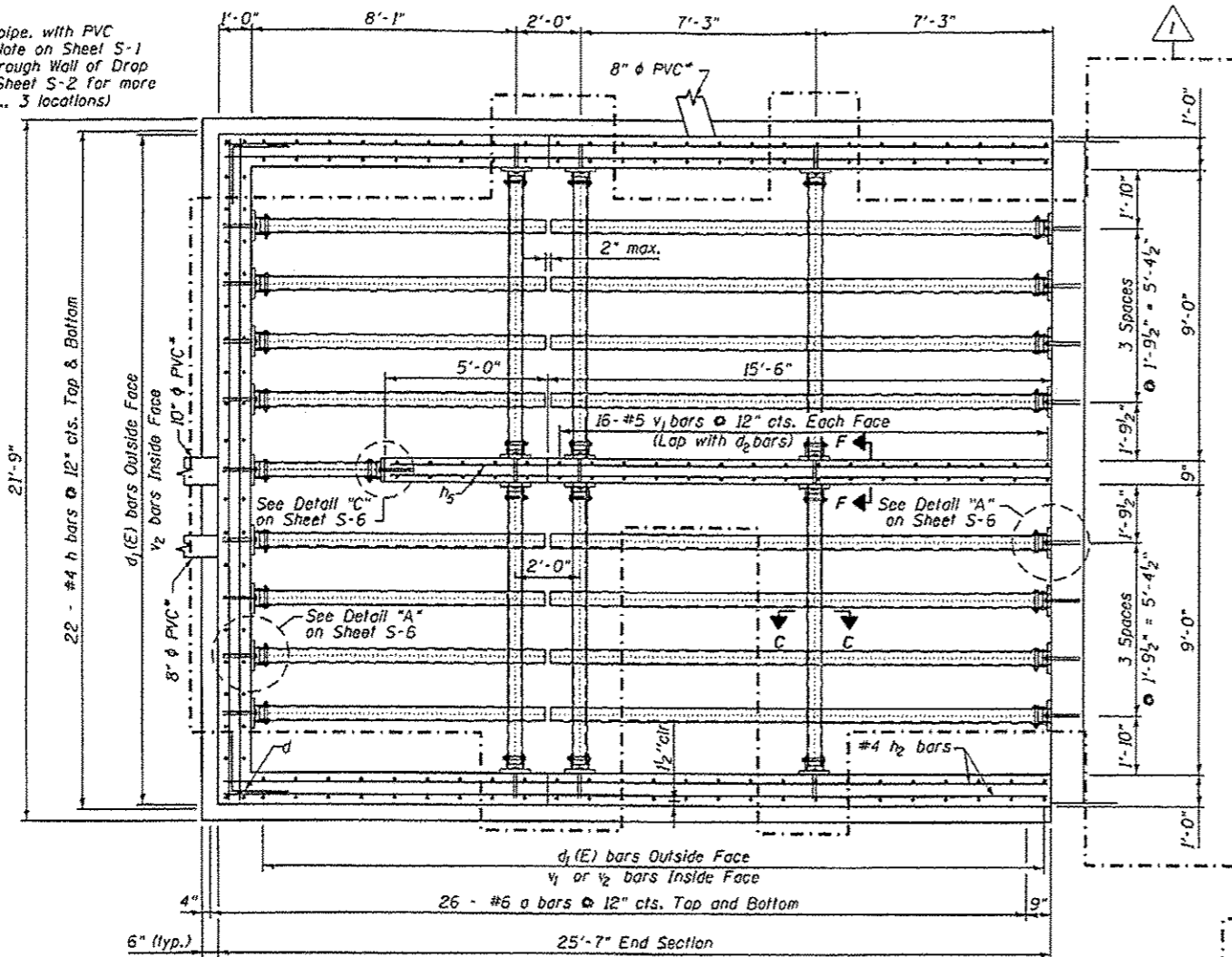
**BAR s1**

Notes:  
Bars indicated thus 12x4-#5 etc. Indicates 12 lines of bars with 4 lengths per line.

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a	122	#7	21'-8"	—
a1	122	#8	19'-0"	—
h	84	#4	30'-9"	—
h1	172	#4	32'-10 1/2"	—
h2	4	#6	20'-0"	—
v	244	#5	7'-7 1/2"	—
v1	122	#4	5'-4 1/2"	—
s	21	#4	5'-1"	U
s1	21	#4	4'-11"	U
Concrete Box Culverts			Cu. Yd.	117.4
Reinforcement Bars			Pound	19,730

Proposed PVC pipe, with PVC coupler. See Note on Sheet S-1 and Section Through Wall of Drop Box Detail on Sheet S-2 for more information (typ. 3 locations)



**BILL OF MATERIALS**  
(For Information Only)

BAR	NO.	SIZE	LENGTH	SHAPE
a	52	#6	21'-5"	
d	10	#4	3'-6"	
d1(E)	71	#5	6'-5"	
d2	42	#5	5'-2"	
h	44	#4	25'-9"	
h1	20	#4	25'-4"	
h2	6	#4	15'-10"	
h3	9	#4	14'-5"	
h4	10	#4	20'-6"	
h5	10	#4	20'-2"	
v1(E)	16	#5	10'-3"	
v1	32	#5	10'-3"	
v2	39	#5	3'-1"	

DESCRIPTION	UNIT	QUANTITY
Concrete Box Culverts	Cu. Yd.	36.0
Reinforcement Bars	Pound	3,910
Reinforcement Bars, Epoxy Coated	Pound	650
Traversable Pipe Grates	Foot	256

**NOTES**

This work shall be done in accordance with the applicable portions of sections 503, 505, 508, and 540 of the Standard Specifications.

Contractor shall field verify pipe lengths.

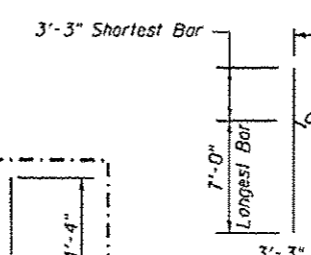
The contract unit price for Concrete Box Culverts shall include the 10" PVC Pipes and Couplers.

The cost of earth excavation, where required, and necessary grading to fit the inlet as shown in the cross sections or to the slope is included in the cost of Concrete Box Culverts.

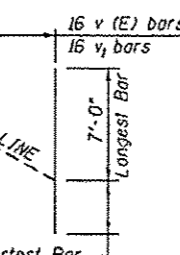
Reinforcement bars designated (E) shall be epoxy coated.

See Sheet S-6 for View C-C, Section F-F, and other Traversable Pipe Details.

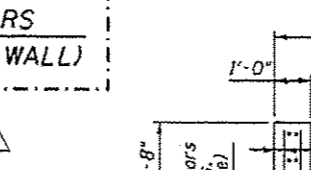
**d BARS**  
**(DROP BOX CORNERS)**



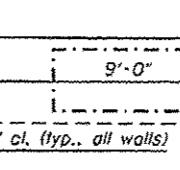
**d1(E) BARS**  
**(WALLS)**



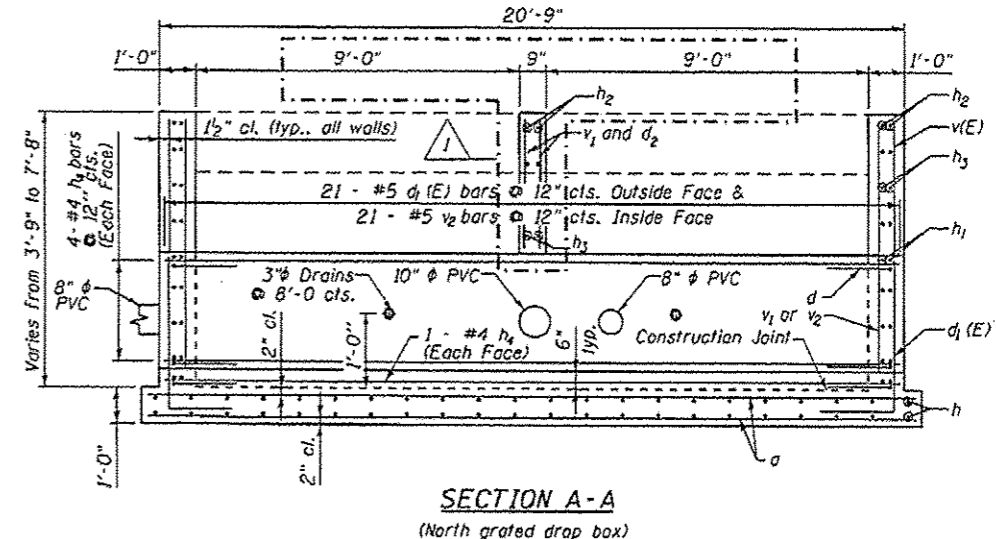
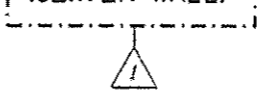
**BAR v (E) & v1**  
**CUT DIAGRAM**



**BAR h3**  
**CUT DIAGRAM**



**d2 BARS**  
**(CENTER WALL)**



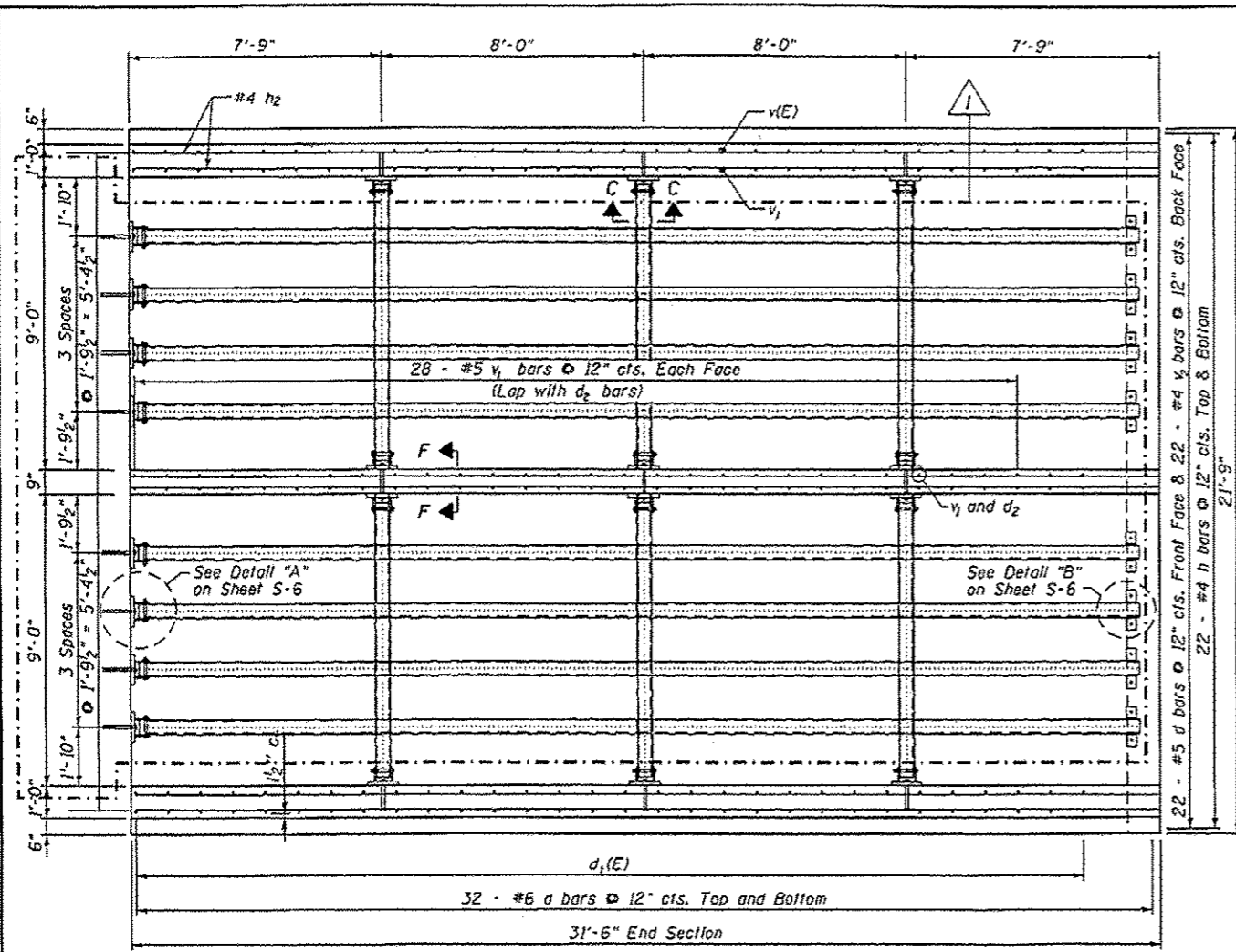
USER NAME	DESIGNED	REVISION
	JRM	4/03/2015 JRM
	KJB	
	JRM	
	KJB	

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

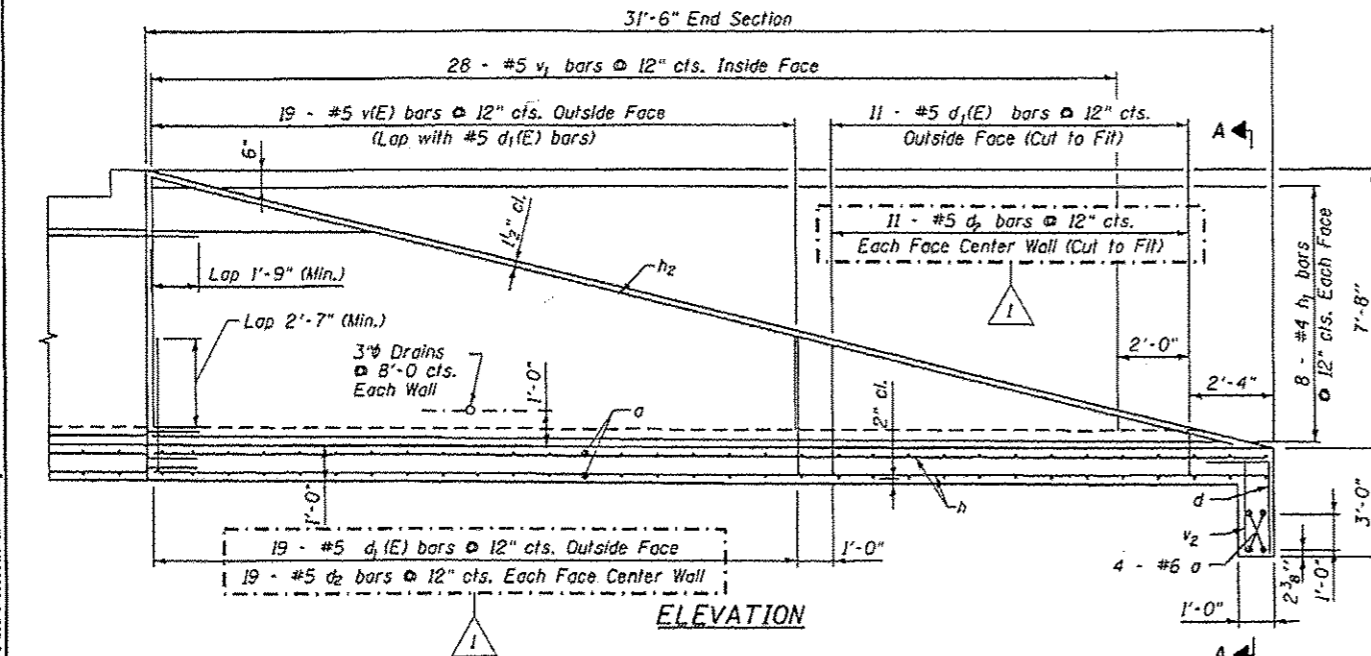
**DROP BOX DETAILS**  
**STRUCTURE NO. 098-1075**  
SHEET NO. 5-4 OF 5-7 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
196	(O-2M)1T	WHITESIDE	61	27
			CONTRACT NO. 64H60	
ILLINOIS FED. AID PROJECT				

64H60-098-1075-Drop Box Plan, Detail, Elevation



PLAN



ELEVATION

**BILL OF MATERIALS**  
(For Information Only)

BAR	NO.	SIZE	LENGTH	SHAPE
a	68	#6	21'-5"	—
d	22	#5	4'-4"	┌
d <sub>1</sub> (E)	60	#5	5'-11"	┌
d <sub>2</sub>	60	#5	4'-8"	┌
h	44	#4	31'-2"	—
h <sub>1</sub>	24	#4	31'-4"	—
h <sub>2</sub>	6	#4	32'-0"	—
v(E)	19	#5	9'-7½"	—
v <sub>1</sub>	56	#5	7'-5"	—
v <sub>2</sub>	22	#4	2'-7"	—

DESCRIPTION	UNIT	QUANTITY
Concrete Box Culverts	Cu. Yd.	37.7
Reinforcement Bars	Pound	4,600
Reinforcement Bars, Epoxy Coated	Pound	560
Traversable Pipe Grates	Fool	313

**NOTES**

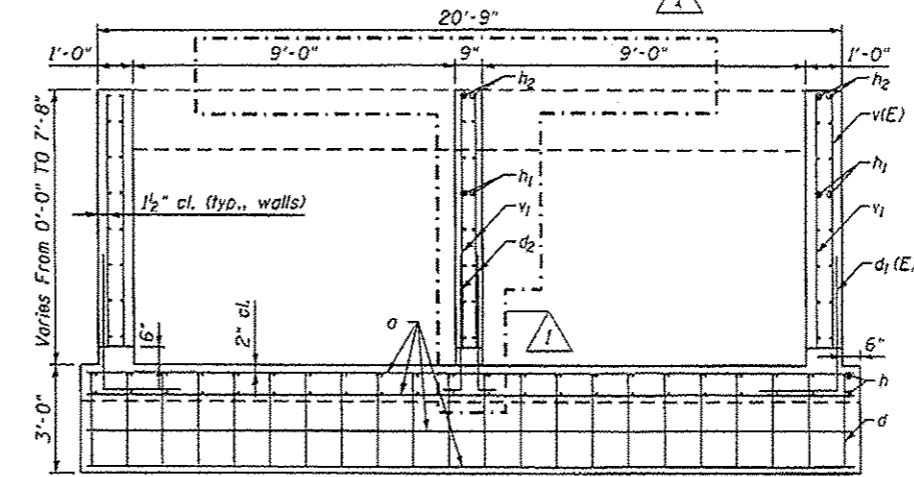
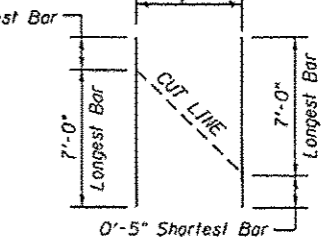
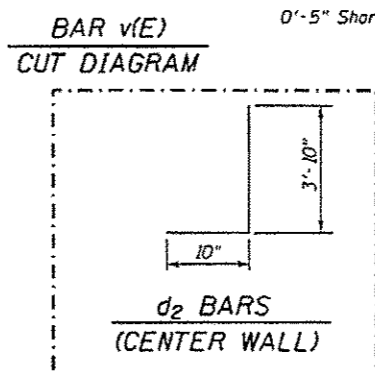
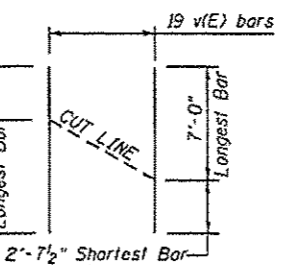
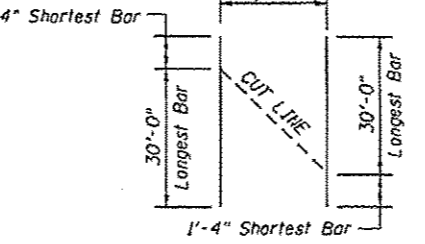
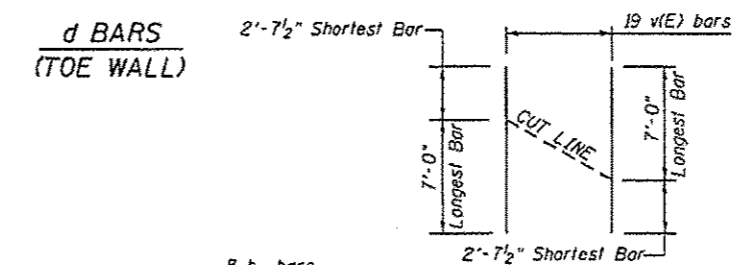
This work shall be done in accordance with the applicable portions of sections 503, 505, 508, and 540 of the Standard Specifications.

Contractor shall field verify pipe lengths.

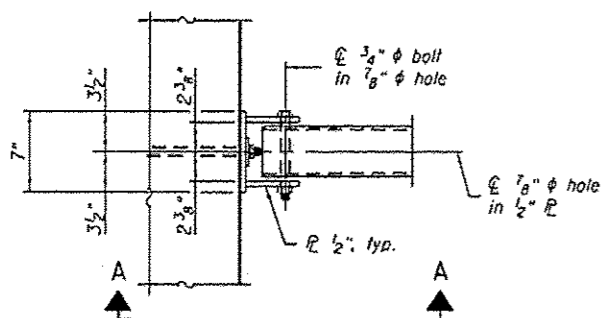
The cost of earth excavation, where required, and necessary grading to fit the outlet as shown in the cross sections or to the slope is included in the cost of Concrete Box Culverts.

Reinforcement bars designated (E) shall be epoxy coated.

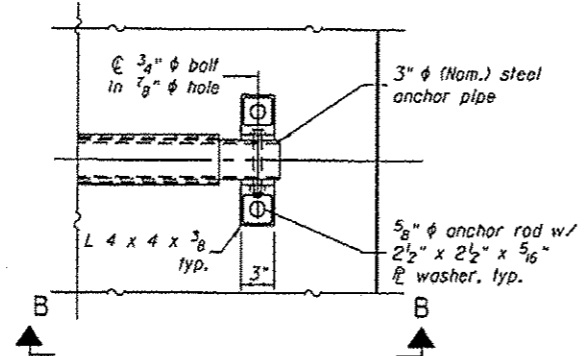
See Sheet S-6 for View C-C, Section F-F and other Traversable Pipe Details.



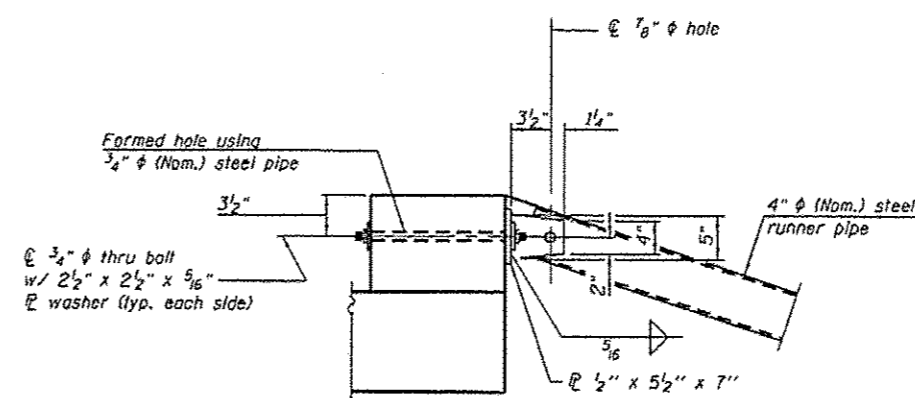
SECTION A-A



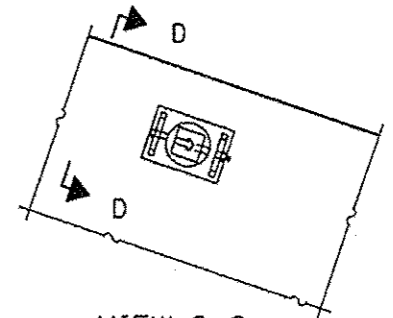
DETAIL A



DETAIL B

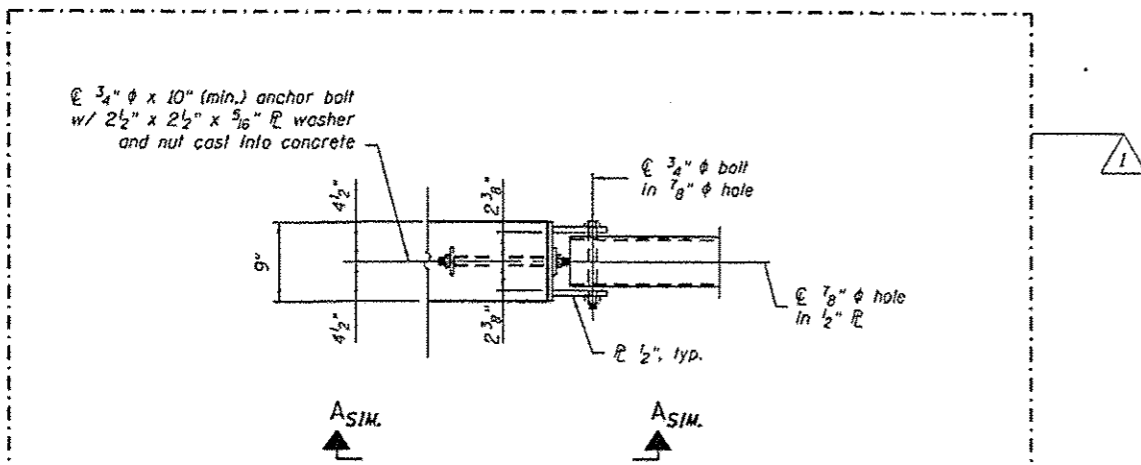


VIEW A-A

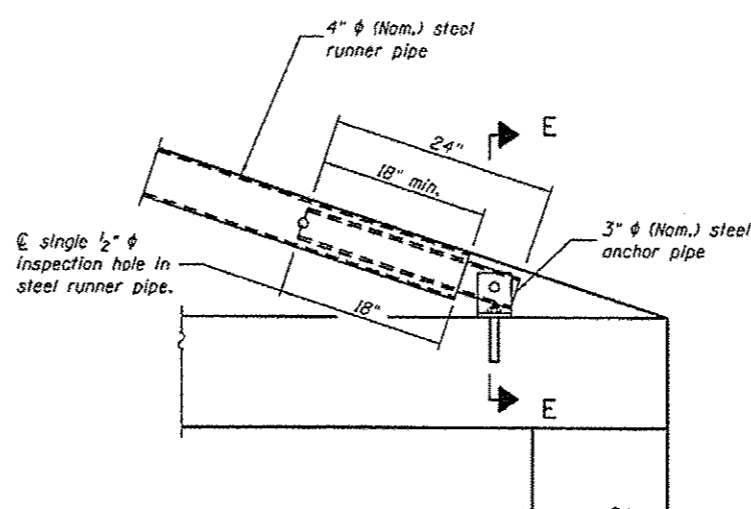


VIEW C-C

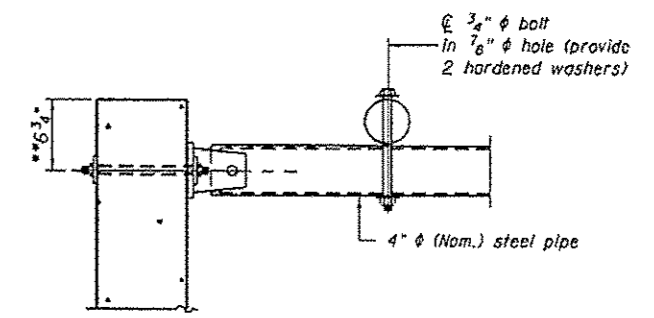
(See Detail A for dimensions and details not shown.)



DETAIL C

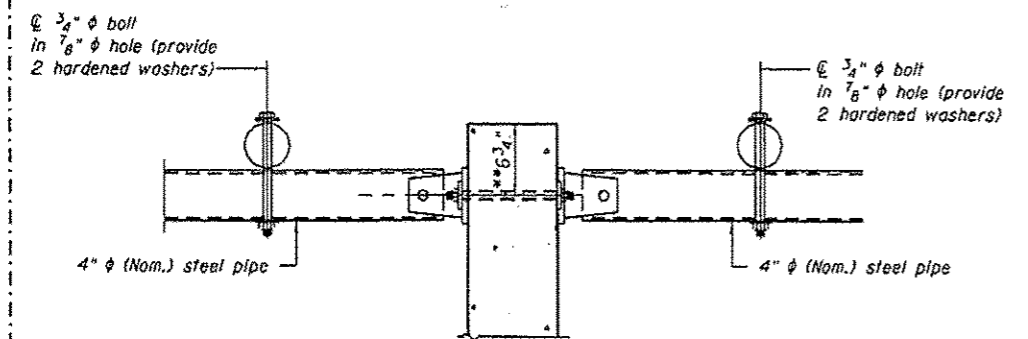


VIEW B-B



SECTION D-D

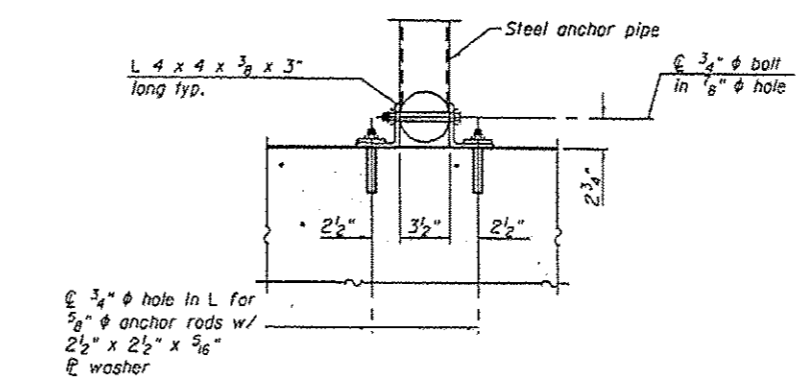
\*\* Measured perpendicular to top of culvert wall. In addition, formed hole shall be located a minimum of 6" measured horizontally from any vertical joints necessary for construction of the culvert end section.



SECTION F-F

(Reinforcing not shown for clarity.)

\*\* Measured perpendicular to top of culvert wall. In addition, formed hole shall be located a minimum of 6" measured horizontally from any vertical joints necessary for construction of the culvert end section.

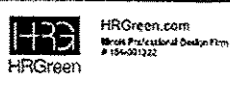


SECTION E-E

NOTES

- The minimum distance from the center of a hole to the free edge of a structural shape or plate shall be 1 1/2" unless noted otherwise.
- Steel pipes shall conform to ASTM A-53 (Type E or S) Grade B, Schedule 40, and shall be galvanized conforming to ASTM M-III.
- Steel plates shall conform to AASHTO M-270 and shall be galvanized conforming to AASHTO M-III.
- Bolts, nuts, washers, and anchor rods shall be according to ASTM A-307 and shall be galvanized conforming to AASHTO M-232.
- The contract unit price for Traversable Pipe Grates shall include the galvanized pipe, bolts, nuts, washers, anchor rods, and plates.

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USER NAME :	DESIGNED - JRM	REVISED 4/03/2015 JRM
PLDT SCALE :	CHECKED - KJB	REVISED
PLDT DATE :	DRAWN - JRM	REVISED
	CHECKED - KJB	REVISED

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

TRAVERSABLE PIPE DETAILS  
STRUCTURE NO. 098-1075  
SHEET NO. 5-6 OF 5-7 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
196	(0-2NFT)T	WHITESIDE	67	57
CONTRACT NO. 64H60			ILLINOIS FED. AID PROJECT	