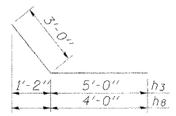
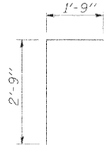
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ELEVATION

Dimensions at Rt. L's to ℄ Roadway



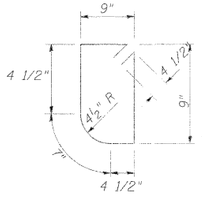
BARS h_3 & h_8



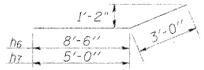
BAR d

BAR a_1

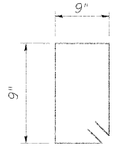
DESIGN STRESSES
fy = 60,000 psi
f'c = 3,500 psi
LOADING HS 20-44 & ALT.



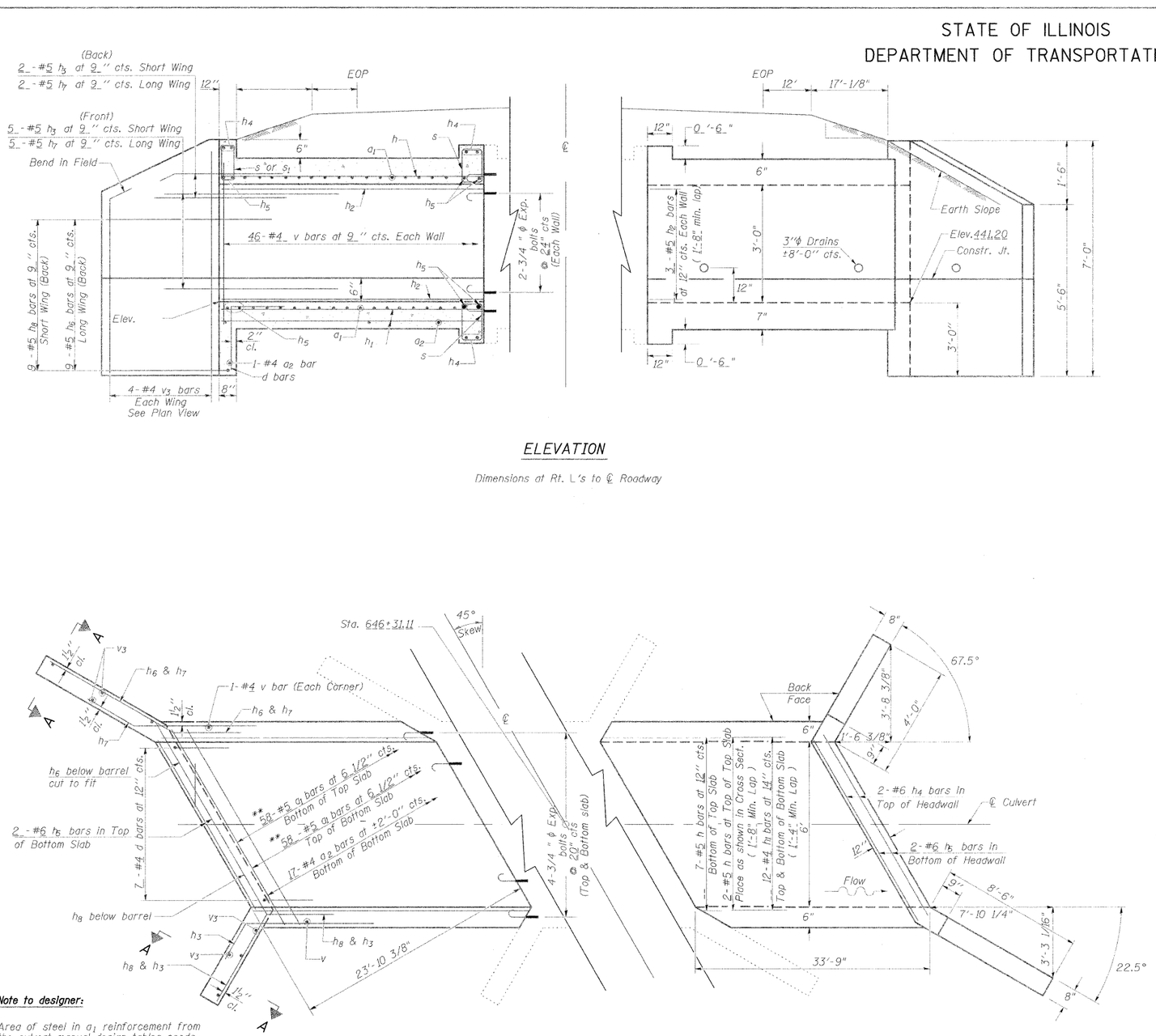
Bar s_1
(Upstream)



BARS h_6 & h_7



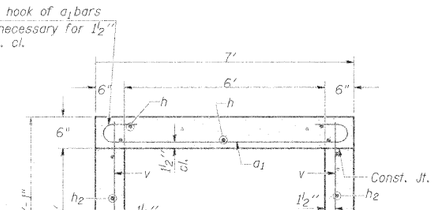
Bar s
(Downstream)



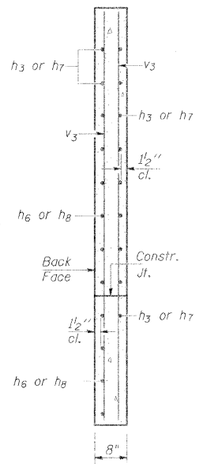
PLAN

**Note to designer:

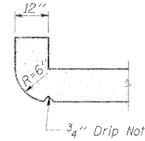
Area of steel in a_1 reinforcement from the culvert manual design tables needs to be multiplied by $\sec^2\theta$ to incorporate the skew.



SECTION THRU BARREL



SECTION A-A



SECTION THRU HEADWALL
(Up Stream End Only)

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a_1	116	#5	7'-10"	
a_2	18	#4	6'-6"	
d	7	#4	4'-6"	
h	9	#5	33'-6"	
h_1	12	#4	33'-6"	
h_2	6	#5	33'-6"	
h_3	7	#5	8'-0"	
h_4	6	#6	9'-3"	
h_5	8	#6	9'-10"	
h_6	9	#5	11'-6"	
h_7	7	#5	8'-0"	
h_8	9	#5	7'-0"	
s	20	#4	3'-9"	
s_1	10	#4	3'-7"	
v	94	#4	3'-10"	
v_3	8	#4	6'-0"	
Concrete Box Culverts			Cu. Yd.	16.6
Reinforcement Bars			Pound	2680
¾" Expansion bolts			Each	12

REVISIONS

DRAWN	2-04
REVISED	5-09 SHT CELL
REVISED	
REVISED	

BASED ON: SSB-H-L R-1-2006

NOTES

Reinforcement Bars shall conform to the requirements of AASHTO M-31, M-42 or M-53, Grade 60.

Bars indicated thus 12 x 4 - #5 etc. indicates 12 lines of bars with 4 lengths per line.

A distance of half the length of the wingwall but not less then six feet of the barrel shall be poured monolithically with the wingwalls.

All construction joints shall be bonded.

Expansion bolts shall be ¾" ϕ x 12" hooked bolts. Hooked bolts shall extend a minimum of 9" into new concrete and have a minimum certified proof load of 4,080 lbs.

s, s_1 bars @ 12" centers

FILE NAME = o:\pw_work\PWIDOT\SHEPARDGD\dm47330\Projstuml3-sht-culext.dgn	USER NAME = sheparddgd	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BOX CULVERT EXTENSION STATION 646+31.11 LT 6' X 3', 45° SKEW LT. AH. EXTEND 33'- 9"
	PLOT SCALE = 50.0000 ' / IN.	CHECKED -	REVISED -		SCALE: SHEET NO. OF SHEETS STA. TO STA.
	PLOT DATE = 10/14/2009	DATE -	REVISED -		

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
331	(1-2IN-2,R:IX-1IN-3,R-2	WILLIAMSON	202	109
		CONTRACT NO. 98857		
	ILLINOIS FED. AID PROJECT			