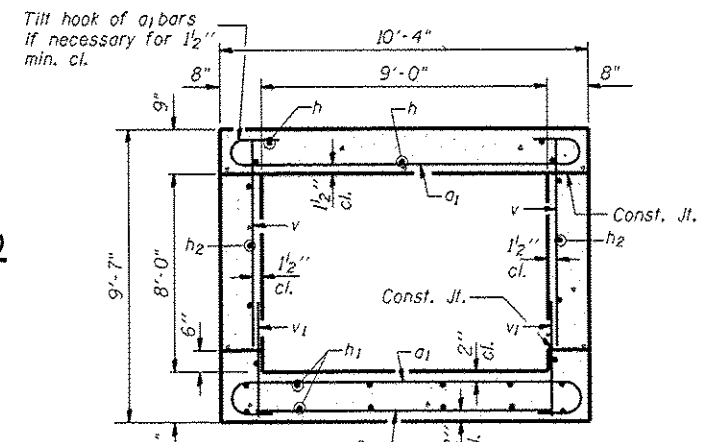
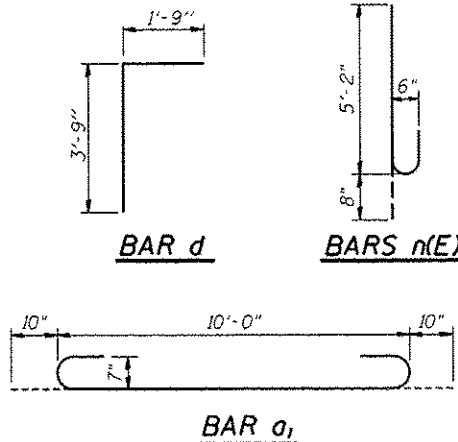
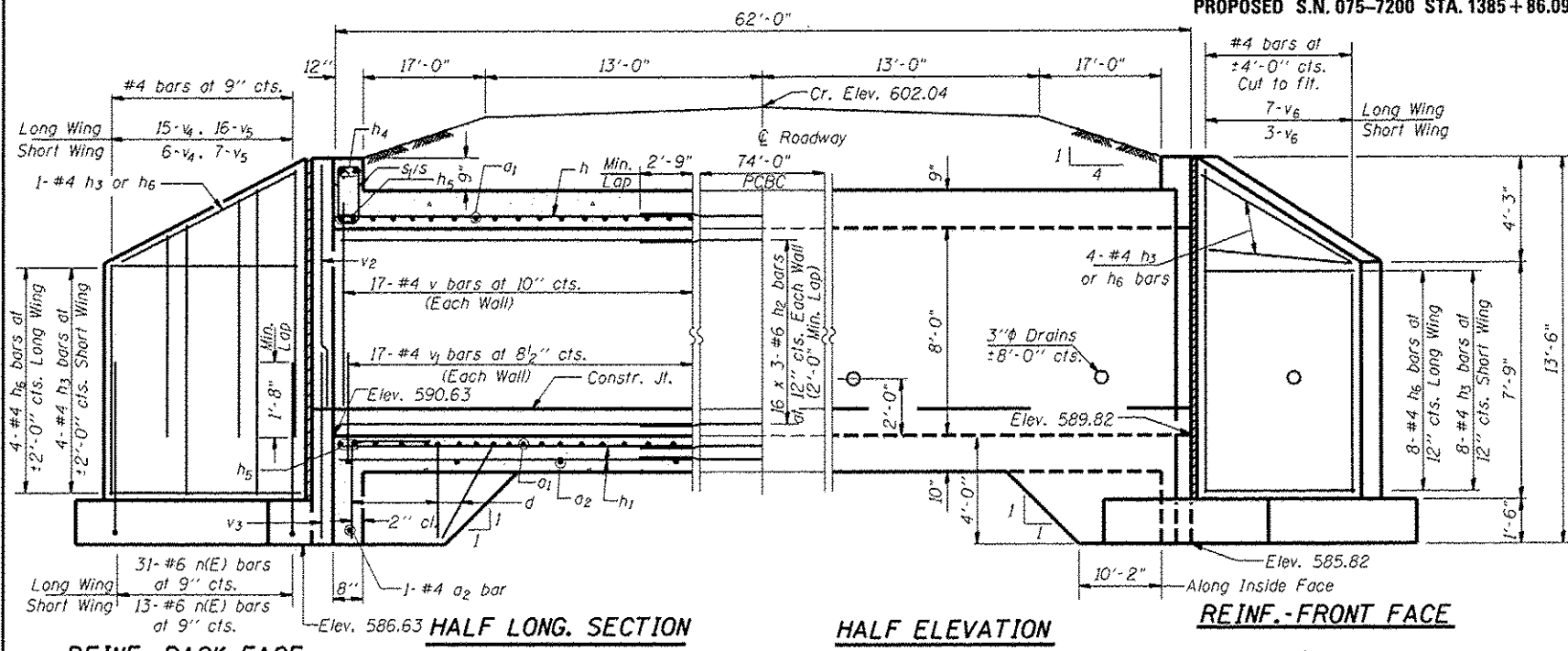
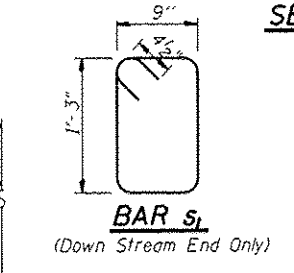
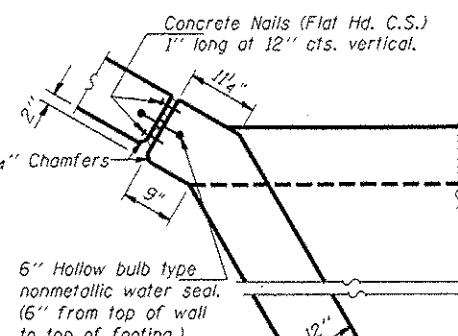


**CAST IN PLACE BOX CULVERT END SECTION DETAIL**  
**PROPOSED S.N. 075-7200 STA. 1385+86.09**



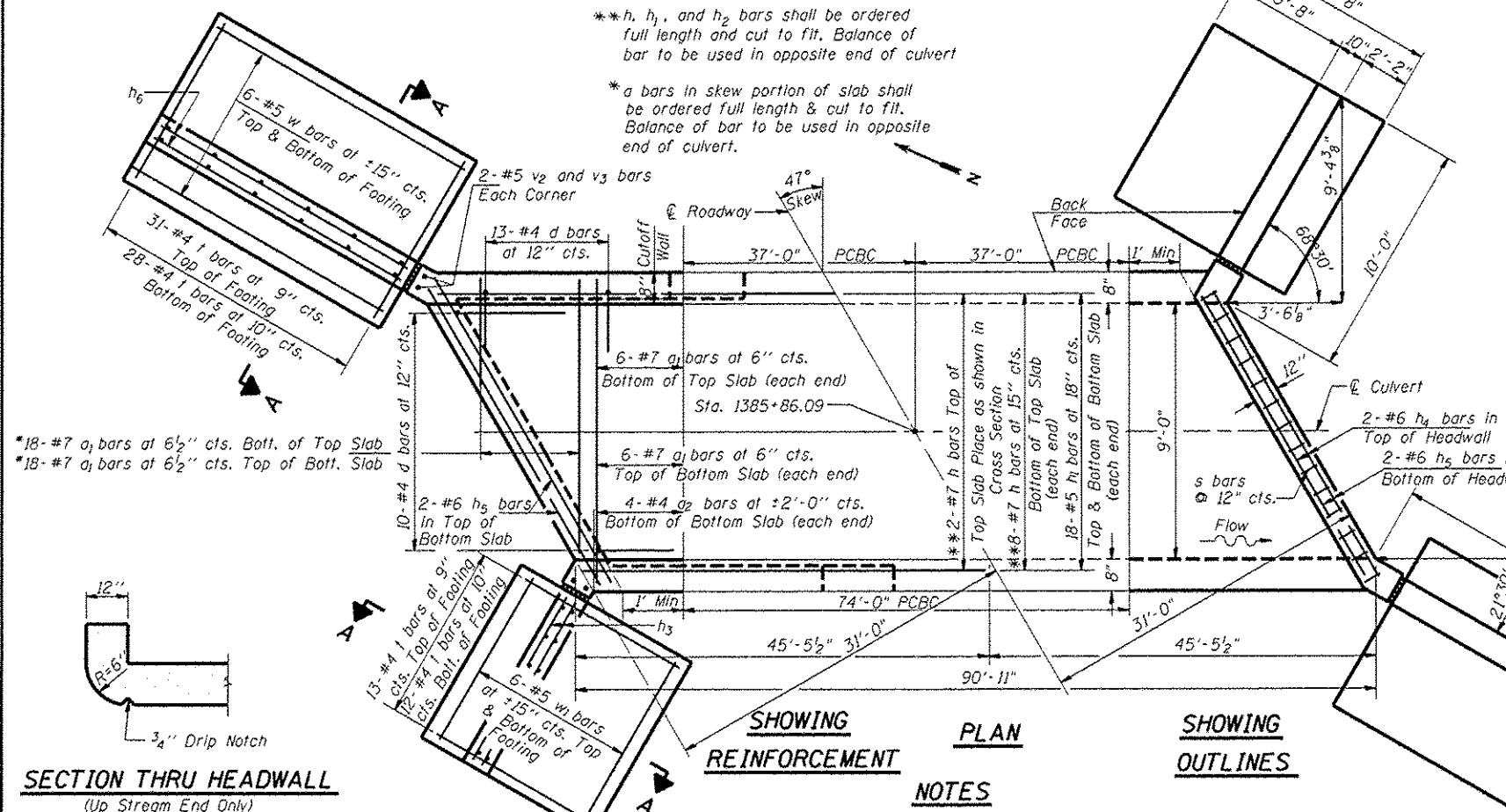
**REINF.-BACK FACE**      **HALF LONG SECTION**      **HALF ELEVATION**      **REINF.-FRONT FACE**



**SECTION THRU BARREL**

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
* a1	60	#7	11'-8"	U
* a2	10	#4	9'-3"	U
d	72	#4	5'-6"	L
** h	10	#7	16'-5"	—
** h1	18	#5	16'-5"	—
** h2	16	#6	16'-5"	—
** h3	34	#4	9'-0"	—
** h4	4	#6	14'-4"	—
** h5	8	#6	14'-11"	—
** h6	34	#4	23'-0"	—
n(E)	88	#6	5'-10"	U
s	15	#4	4'-7"	U
s1	15	#4	4'-9"	U
l	168	#4	6'-5"	—
v	34	#4	8'-1"	—
v1	34	#4	2'-4"	—
v2	8	#5	8'-6"	—
v3	8	#5	6'-2"	—
v4	42	#4	9'-8"	—
v5	46	#4	7'-4"	—
v6	20	#4	11'-9"	—
w	24	#5	23'-0"	—
w1	24	#5	9'-0"	—
Concrete Box Culverts	Cu. Yd.		68.1	
Reinforcement Bars, Epoxy Coated	Pound		780	
Reinforcement Bars	Pound		6430	
Name Plate	Each		1	

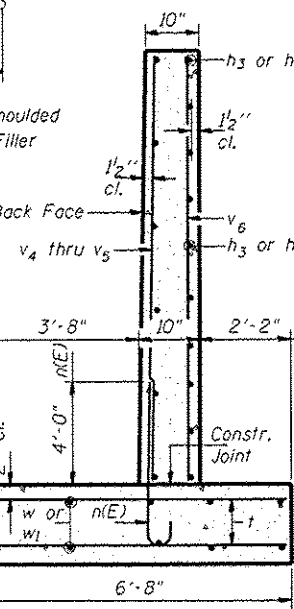
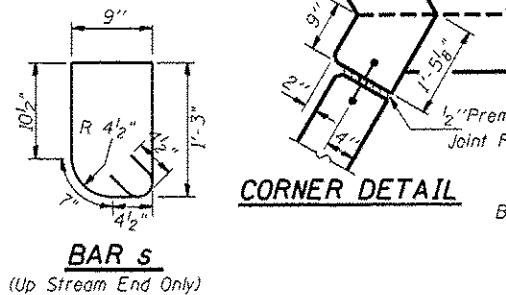


**DESIGN STRESSES**  
 Field Units  
 fy = 60,000 psi  
 f'c = 3,500 psi

**LOADING HL-93**  
 Max. Soil Pressure under footing = 2739 psf  
 Allow 50" / sq.ft. for future wearing surface.

**NOTES**

1. Reinforcement Bars shall conform to the requirements of AASHTO M-31, M-42 or M-53, Grade 60.
2. Bars indicated thus 12 x 4-#5 etc. indicates 12 lines of bars with 4 lengths per line.
3. Reinforcement bars designated (E) shall be epoxy coated. All construction joints shall be bonded.
4. Extend longitudinal reinforcement 2'-9" from precast box culvert ends to be placed in CIP end sections.



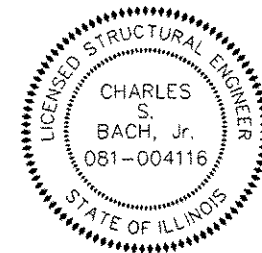
**SECTION THRU HEADWALL**  
(Up Stream End Only)

**SECTION A-A**

**DESIGN SPECIFICATIONS**

2012 AASHTO LRFD  
 BRIDGE DESIGN SPECIFICATIONS 6th EDITION

TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THIS CULVERT DESIGN IS STRUCTURALLY ADEQUATE FOR THE DESIGN LOADING SHOW ON THE PLANS. THE DESIGN IS AN ECONOMICAL ONE FOR THE STYLE OF STRUCTURE AND COMPLIES WITH THE REQUIREMENTS OF THE CURRENT "AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES."



*Charles S. Bach, Jr.*  
 STRUCTURAL ENGINEER  
 PSBA  
 8/14/2013  
 EXPIRES: 11/30/2014