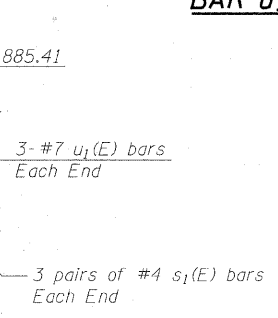
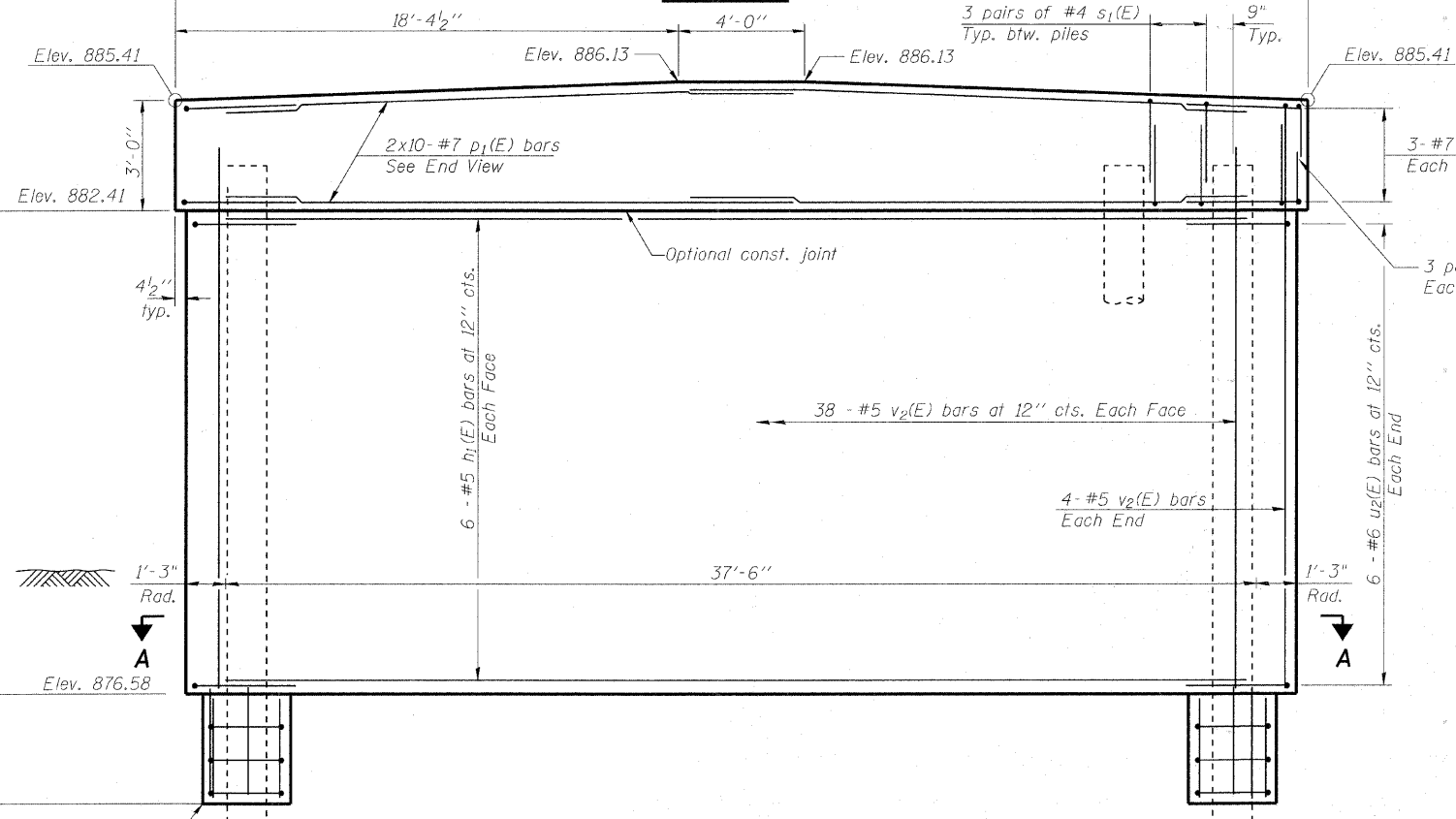
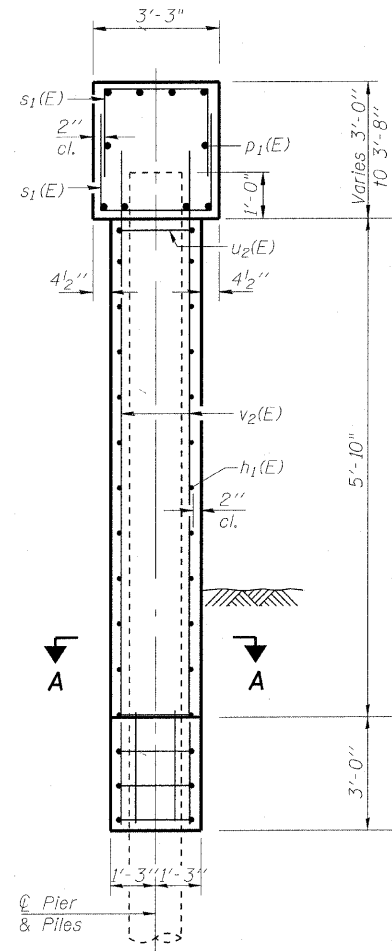
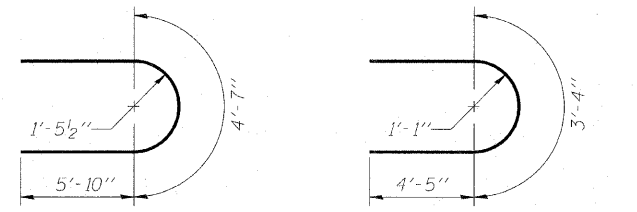
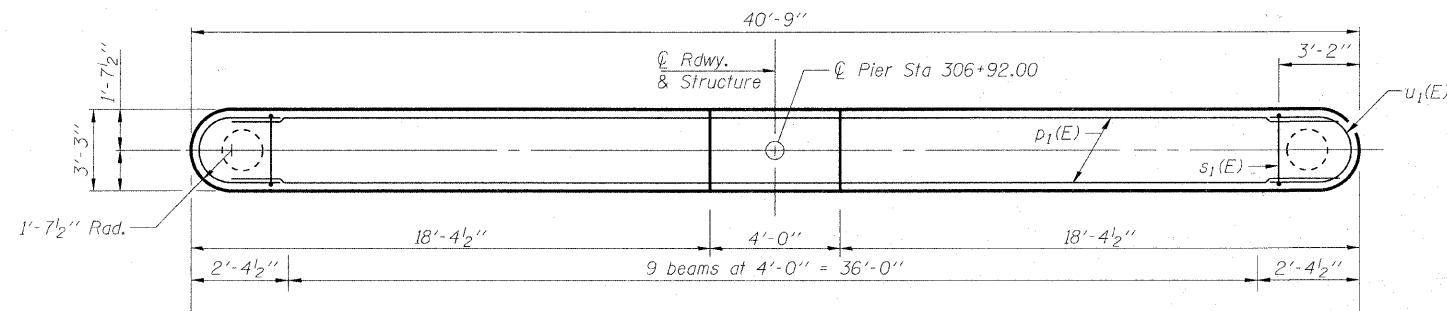


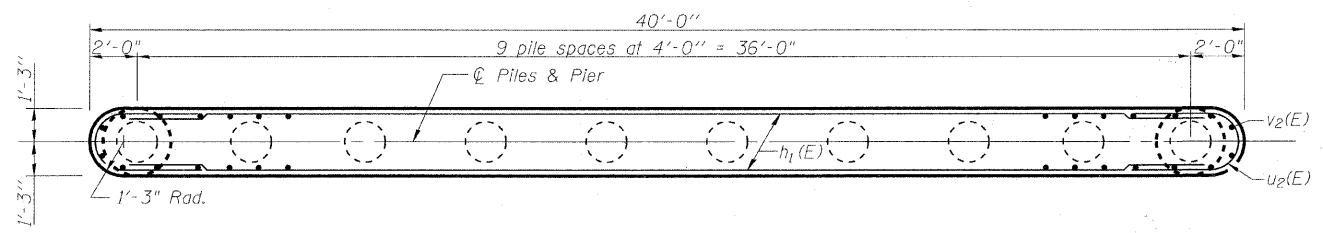
**Notes:**

Space reinforcement in cap to miss anchor bolts.  
 For details of piles, see sheet 15 of 19.  
 If a portion of the pier wall or concrete encasement is under water, reinforcement may be placed underwater into forms. Concrete shall be tremied according to Article 503.08 of the Standard Specifications to an elevation of 1'-0" above the water line at the time of construction.  
 Lap Length for #7 bars = 5'-10"



**PILE DATA**

Type: 14"  $\phi$  Metal Shell w/ 0.312" walls with Pile Shoes  
 Nominal Required Bearing: 360 Kips  
 Factored Resistance Available: 180 Kips  
 Est. Length: 31'  
 No. Production Piles: 10  
 No. Test Piles: 0



**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
$h_1(E)$	12	#5	37'-6"	—
$p_1(E)$	20	#7	21'-8"	—
$s_1(E)$	66	#4	8'-1"	┌
$u_1(E)$	6	#7	16'-3"	U
$u_2(E)$	12	#6	12'-2"	U
$v_2(E)$	84	#5	7'-2"	—
Structure Excavation		Cu. Yd.	18	
Concrete Structures		Cu. Yd.	36.8	
Reinforcement Bars, Epoxy Coated		Pound	2760	
Furnishing Metal Shell Piles 14" x 0.312"		Foot	310	
Driving Piles		Foot	310	
Underwater Structure Excavation Protection, Location 1		Each	1	
Concrete Encasement		Cu. Yd.	5.5	
Pile Shoes		Each	10	

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 No. 44-45-100-2224-04  
 LICENSE NO. 184-00121-EXPRES 4/30/2011  
 488509 EV  
 2/27/2011  
 MCHENRY COUNTY DIVISION OF TRANSPORTATION  
 GRAF ROAD BRIDGE OVER LAWRENCE CREEK  
 STRUCTURE NO. 056-3182  
 SHEET NO. 14 OF 19 SHEETS

FILE NAME =	USER NAME =	DESIGNED - BLB	REVISED - PER MCDOT 12/31/10	<b>MCHENRY COUNTY DIVISION OF TRANSPORTATION GRAF ROAD BRIDGE OVER LAWRENCE CREEK</b>	<b>PIER STRUCTURE NO. 056-3182</b>	TR	SECTION	COUNTY	TOTAL	SHEET
		CHECKED - BAB	REVISED -			0037	06-00322-00-BR	MCHENRY	54	37
		DRAWN - BCD	REVISED -			C-91-358-06		CONTRACT NO. 63569		
		CHECKED - BLB	REVISED -			SHEET NO. 14 OF 19 SHEETS		FED. ROAD DIST. NO. 1 [ILLINOIS] FED. AID PROJECT		BROS-0001(683)