



Notes:  
 All standard hooks and bends other than 180 degree are to be bent with same procedure as for 90 degree standard hooks.  
 Hooks and bends shall be in accordance with the procedures as shown on this sheet. Nominal lengths are based on out-to-out dimensions shown in bending diagrams and are listed for fabricators use. (Nearest inch)  
 Pay weights are based on actual lengths.  
 Unless otherwise noted, diameter "d" is the same for all bends and hooks on a bar.  
 E = Epoxy coated reinforcement.  
 S = Stirrup.  
 X = Bar is included in substructure quantities.  
 Actual lengths are measured along centerline bar to the nearest inch.  
 V = Bar dimensions vary in equal increments between dimensions shown on this line and the following line.  
 No. ea. = Number of bars of each length.  
 Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and weight of column spirals do not include splices or spacers.  
 Reinforcing steel (Grade 60)  $f_y = 60,000$  psi.

STIRRUP HOOK DIMENSIONS				
Bar Size	D (in)	All Grades		
		90° Hooks		135° Hooks
		Hook A or G (in)	Hook A or G (in)	Approx. H (in)
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

END HOOK DIMENSIONS				
Bar Size	D (in)	All Grades		
		180° Hooks		90° Hooks
		Hook A or G (in)	J (in)	Hook A or G (in)
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 3/8"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 3/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"
#18	2'-0"	3'-0"	2'-4 1/2"	3'-5"

BAR BENDING DIAGRAMS

Detailed JUL 2009  
 Checked JUL 2009

Note: This drawing is not to scale. Follow dimensions.

Sheet No. 141 of 152

CONTRACT NO. 76D61	
F.A. ROUTE	SECTION
999	82-1B-2
FED. AID PROJECT	ILLINOIS
COUNTY	ST. CLAIR
USER NAME = Jj011ff	
PLOT SCALE = #SCALE#	
PLOT DATE = 4/14/2010	
DESIGNED -	HNTB
CHECKED -	CMT
DRAWN -	CMT / HNTB
REVISED -	
REVISED -	
REVISED -	
REVISED -	

ILLINOIS APPROACH STRUCTURE  
 FOR NEW I-70 MISSISSIPPI RIVER BRIDGE

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

MISSOURI HIGHWAYS  
 AND TRANSPORTATION COMMISSION

**HNTB**  
 715 KIRK DRIVE  
 KANSAS CITY, MO 64105  
 TELEPHONE (816) 472-1201  
 CERTIFICATE OF AUTHORITY  
 NO. 001270

**CMT**  
 CRAWFORD, MURPHY & TILLY, INC.  
 2750 WEST WASHINGTON STREET  
 SPRINGFIELD, IL 62702  
 TELEPHONE (217) 787-8050  
 ENGINEERING CORPORATION - 000631