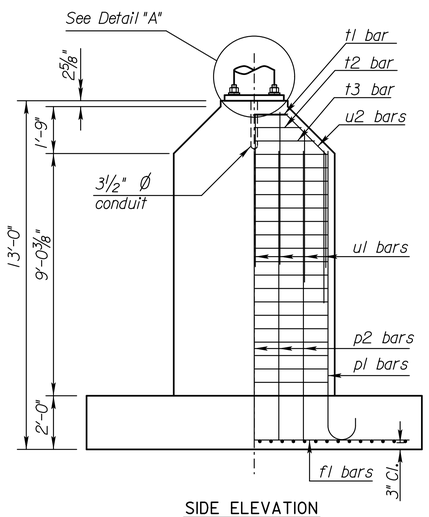
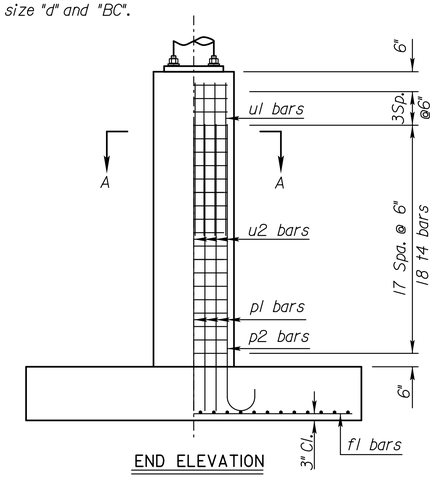
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	472-85066	2014	239	388

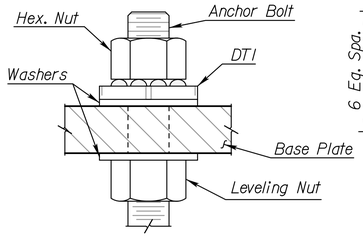
Note: See "Construction Layout" for footing design. See "Butterfly and/or Cantilever Type Overhead Steel Support Detail" sheets for anchor bolt size "d" and "BC".



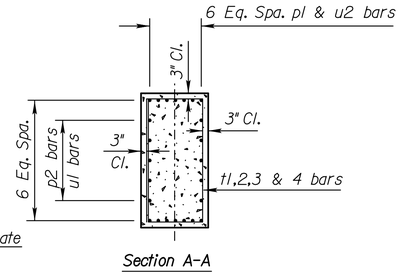
SIDE ELEVATION



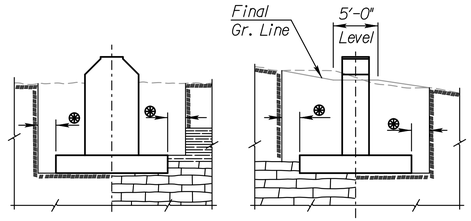
END ELEVATION



TYPICAL ANCHOR BOLT AND DIRECT TENSION INDICATOR (DTI)



Section A-A



TYPICAL EXCAVATION DETAILS

GENERAL NOTES

LOADING: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 2009 Edition with current interims.

CONCRETE: Use Grade 4.0 Concrete throughout. Bevel all exposed edges with a ¾" triangular molding.

STRENGTH: The curing time shall be a minimum of 15 days or until a test cylinder achieves a compressive strength of 4.0 ksi or greater.

UNIT STRESSES: fy = 60,000 psi; f'c = 4,000 psi

REINFORCING: All dimensions relative to reinforcing steel are to center line of bar unless otherwise noted.

EXCAVATION: When rock or shale is encountered, all excavation below the top of this material or the top of the footing, whichever is lower, shall be to neat lines. See excavation details.

BACKFILL: Backfill material shall be placed in one foot lifts and each lift shall be thoroughly compacted before the next lift is placed.

ANCHOR BOLTS: Anchor bolts will adhere to KDOT Standard Specification Section 1600 (Grade 55) with the following exception: cut threads are not permitted. Welding shall conform to the "Standard Specifications for State Road and Bridge Construction and the latest edition of the American Welding Society.

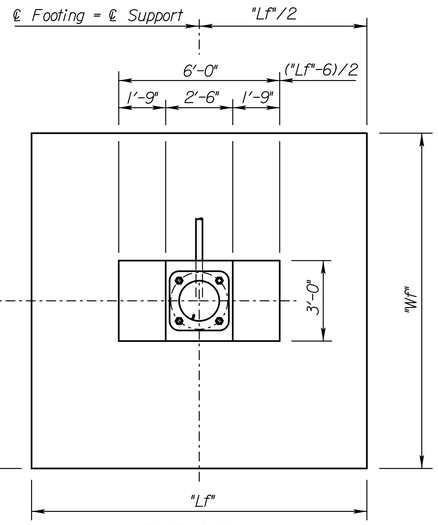
DIRECT TENSION INDICATORS: DTIs are to comply with the requirements of the latest edition of ASTM F2437 and provide proof load shown in the table. Installation will adhere to the KDOT Standard Specifications.

EXISTING FACILITIES: Any existing facilities (i.e., curb and gutter, guard fence, pavement, shoulders, etc.) that require removal in order to construct the footing, shall be restored to their original condition at the Contractor's expense. Concrete shall only be removed using sawed joints.

PAYMENT: The cost of all material and labor needed to construct its footing shall be included in the unit price bid for each Butterfly or Cantilever Type Overhead Sign Support.

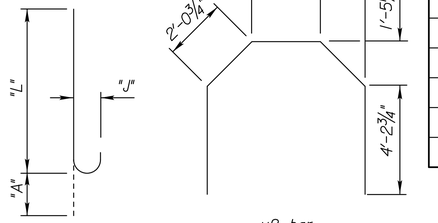
DTI Proof Load (Kips)	Anchor Bolt Size
114	2" Ø x4'-8"
114	2" Ø x4'-8"
114	2" Ø x4'-8"
114	2" Ø x4'-8"
103	2¼" Ø x5'-3"
103	2¼" Ø x5'-3"
103	2¼" Ø x5'-3"

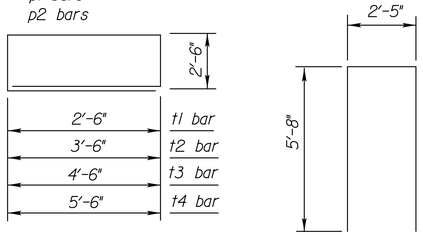
TABLE FOR P1 or P2 BARS			
Size	A	J	L
#8	11"	8"	10'-9"
#9	1'-3"	11¾"	10'-9"
#10	1'-5"	1'-1¼"	10'-9"
#11	1'-7"	1'-2¾"	10'-9"



FOOTING PLAN

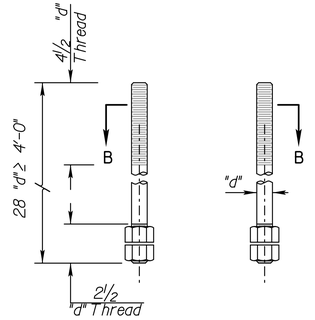
FOOTING PLAN
(Showing reinforcing steel)



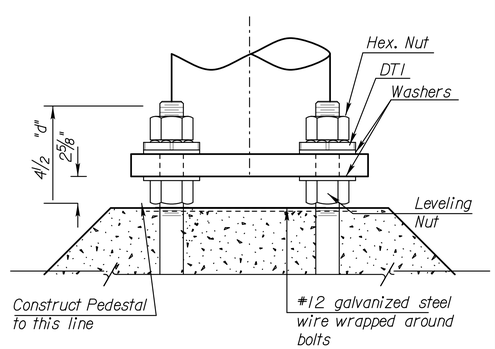


BENDING DIAGRAMS

All dimensions are out to out of bars.

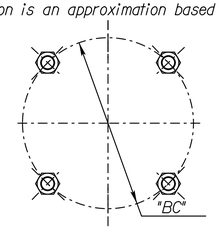


ANCHOR BOLT DETAIL



DETAIL A

Note: Quantities shown are for estimating purposes only. The excavation is an approximation based on loose material.



SECTION B-B

Footing	DIMENSION		BILL OF REINFORCING																		Grade 4.0 Concrete	Reinforcing Steel	Class III Excavation
	Lf	Wf	14 p1 bars		10 p2 bars		7 u1 bars		7 u2 bars		f1 bars				1 t1 bar		1 t2 bar		1 t3 bar		18 t4 bars				
			Size	L'gth	Size	L'gth	Size	L'gth	Size	L'gth	"S"	No.	Size	L'gth	Size	L'gth	Size	L'gth	Size	L'gth	Size	L'gth			
A	5'-0"	5'-0"	#8	11'-8"	#8	11'-8"	#8	13'-9"	#8	15'-1"	8	18	#4	4'-6"	#4	12'-6"	#4	15'-6"	#4	18'-6"	#4	21'-6"	Cu.Yds. 8.8	Lbs. 1630	Cu. Yds 33
B	7'-0"	7'-0"									12	26	#4	6'-6"									10.5	1690	49
C	8'-0"	8'-0"									14	30	#4	7'-6"									11.6	1725	59
D	9'-0"	9'-0"									16	34	#4	8'-6"									12.9	1770	69
E	9'-9"	9'-9"									17	36	#4	9'-3"									13.9	1800	77
F	10'-6"	10'-6"	#10	12'-2"	#9	12'-0"	#10	13'-9"	#10	15'-1"	19	40	#5	10'-0"	#4	12'-6"	#4	15'-6"	#4	18'-6"	#4	21'-6"	15.1	2715	86
G	11'-0"	11'-0"									20	42	#5	10'-6"									15.9	2760	92
H	11'-6"	11'-6"									21	44	#5	11'-0"									16.7	2805	98
I	12'-0"	12'-0"	#11	12'-4"	#10	12'-2"	#11	13'-9"	#11	15'-1"	22	46	#5	11'-6"	#5	12'-6"	#5	15'-6"	#5	18'-6"	#5	21'-6"	17.6	3515	104
J	12'-6"	12'-6"									23	48	#6	12'-0"									18.5	3830	111

Std. Base File:
Plot Location:
Plotted By: qp
File: I:\2009\09521\Overhead Signing - KDOT\EN357001POS22.dgn
Plot Date: 30-DEC-2013 16:22

NO.	DATE	REVISIONS	BY	APP'D
1	5/11/11	Updated notes and add DTI info proof load	KMP	TLF

KANSAS DEPARTMENT OF TRANSPORTATION

STANDARD STRUCTURAL SIGN SUPPORTS
CANTILEVER & BUTTERFLY TYPE OVERHEAD
OPTIONAL SPREAD FOOTING DETAILS

SL152A-02

FHWA APPROVAL		6-9-2011	APP'D	Terry L. Fleck	
DESIGNED	LES	DETAILED	LES	QUANTITIES	CADD DJE
DESIGN CK.	LRR	DETAIL CK.	LRR	QUAN.CK.	CADD CK. LES