Matthew G. Bevin
Governor

COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET
Frankfort, Kentucky 40622
www.transportation.ky.gov/

Greg Thomas
Secretary

December 4, 2017

CALL NO. 304
CONTRACT ID NO. 171048
ADDENDUM # 1

Subject: Hopkins County, FD04 SPP 054 041A 000-002
Letting December 8, 2017

(1) Revised – Note -Page 22 of 201
(2) Revised – Special Note -Page 27 of 201
(3) Revised – Bid Items -Pages 197-201 of 201
(4) Added - Sheets -Pages 1-93 of 93
(5) Revised – Plans -Pages R2j, R2k, T9, T16A, T17A, T17, U92 and U93

Proposal revisions are available at http://transportation.ky.gov/Construction-Procurement/.

If you have any questions, please contact us at 502-564-3500.

Sincerely,

Rachel Mills, P.E.
Director
Division of Construction Procurement

RM:mw
Enclosures

Kentucky Transportation Cabinet
Phone (502) 564-3020
FAX (502) 564-7759

RECOMMENDATION FOR PICKUP OF ITEMS TO BE INSTALLED ON TRAFFIC SIGNALS/LIGHTING

Item Number: **2-137.20**
County: **HOPKINS**
Description: **US 41A @ US 41/ KY 281**

Cabinets	Master code	
1	T-01-0010	Pole Mounted 336 Cabinet
1	T-01-0100	170 Controller
2	T-01-0510	Isolator, Model 242 (for ped detector and railroad)
8	T-01-0600	Loop Detector, Model 222
12	T-01-0700	Load Switches

Signals		
30	T-02-0009	Siemen 3 section, 12 inch signal
15	T-02-0032	Siemen 3 section backplate
8	T-02-0090	Pedestrian signal housing
14	T-02-0300	LED Module 12" red arrow
14	T-02-0310	LED Module 12" yellow arrow
14	T-02-0320	LED Module 12" green arrow
16	T-02-0330	LED Module 12" red ball
16	T-02-0340	LED Module 12" yellow ball
16	T-02-0350	LED Module 12" green ball
8	T-02-0365	LED Countdown Pedestrian Module

Special items			
4	T-02-0400	Video Detection System Ca	# of left turns put here
1	T-02-0504	Router (this includes power supply/antenna/cabling)	
1	T-02-0650	Pedstl.top mntg.bkt One-way	
3	T-02-0660	Pedstl.top mntg.bkt Two-way	
4	T-02-0670	Pedestal	
8	T-06-0710	Ped Detector Pole Mount FSA Box	
8	T-06-0730	Ped Button w/o Plunger	
8	T-17-0015	9 X 15 Countdown Ped Sign DBL Sided	

Poles		
1	T-04-0020	Steel Strain Pole 30 foot
1	T-04-0030	Steel Strain Pole 32 foot
2	T-04-0040	Steel Strain Pole 34 foot

Project Engineer _____ Contact number for Project Engineer _____

Project Engineer attests that the mentioned contractor is the actual electrical contractor on this project

Signature of Project Engineer or Designee _____

SPECIAL NOTE

For Tree Removal

Hopkins County
WIDEN US-41A TO 5-LANES FROM US-41 WEST TO KINGDOM HALL ROAD IN MADISONVILLE.
Item No. 2-137

NO CLEARING OF TREES 5 INCHES OR GREATER (DIAMETER BREAST HEIGHT) FROM JUNE 1- JULY 31.

If there are any questions regarding this note, please contact David Waldner, Director, Division of Environmental Analysis, 200 Mero Street, Frankfort, KY 40601, Phone: (502) 564-7250.

171048

PROPOSAL BID ITEMS

Report Date 12/4/17

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00003		CRUSHED STONE BASE	17,351.00	TON		$	
0020	00020		TRAFFIC BOUND BASE	209.00	TON		$	
0030	00078		CRUSHED AGGREGATE SIZE NO 2	21,844.00	TON		$	
0040	00190		LEVELING & WEDGING PG64-22	1,478.00	TON		$	
0050	00205		CL3 ASPH BASE 1.50D PG64-22	9,062.00	TON		$	
0060	00214		CL3 ASPH BASE 1.00D PG64-22	17,842.00	TON		$	
0070	00324		CL3 ASPH SURF 0.50B PG64-22	6,815.00	TON		$	
0080	02101		CEM CONC ENT PAVEMENT-8 IN (REVISED: 12-4-17)	1,384.00	SQYD		$	
0090	02599		FABRIC-GEOTEXTILE TYPE IV	78,684.00	SQYD		$	
0100	02676		MOBILIZATION FOR MILL & TEXT	1.00	LS		$	
0110	02677		ASPHALT PAVE MILLING & TEXTURING	3,771.00	TON		$	
0120	06401		FLEXIBLE DELINEATOR POST-M/W	9.00	EACH		$	
0130	06510		PAVE STRIPING-TEMP PAINT-4 IN	76,887.00	LF		$	
0140	06514		PAVE STRIPING-PERM PAINT-4 IN	46,099.00	LF		$	
0150	06566		PAVE MARKING-THERMO X-WALK-12 IN	919.00	LF		$	
0160	06568		PAVE MARKING-THERMO STOP BAR-24IN	210.00	LF		$	
0170	06570		PAVE MARKING-PAINT CROSS-HATCH	6,608.00	SQFT		$	
0180	06572		PAVE MARKING-DOTTED LANE EXTEN	651.00	LF		$	
0190	06574		PAVE MARKING-THERMO CURV ARROW	42.00	EACH		$	
0200	06578		PAVE MARKING-THERMO MERGE ARROW	8.00	EACH		$	
0210	22520EN		PAVE MARKING-THERMO YIELD BAR-36 IN	58.00	LF		$	
0220	24489EC		INLAID PAVEMENT MARKER	815.00	EACH		$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0230	01310		REMOVE PIPE	1,558.00	LF		$	
0240	01314		PLUG PIPE	1.00	EACH		$	
0250	01585		REMOVE DROP BOX INLET	5.00	EACH		$	
0260	01718		REMOVE INLET	4.00	EACH		$	
0270	01810		STANDARD CURB AND GUTTER	18,525.00	LF		$	
0280	01811		STANDARD CURB AND GUTTER MOD	35.50	LF		$	
0290	01923		STANDARD BARRIER MEDIAN TYPE 5	255.00	SQYD		$	
0300	02091		REMOVE PAVEMENT	1,446.00	SQYD		$	
0310	02159		TEMP DITCH	3,817.00	LF		$	
0320	02160		CLEAN TEMP DITCH	1,909.00	LF		$	
0330	02200		ROADWAY EXCAVATION	60,571.00	CUYD		$	
0340	02203		STRUCTURE EXCAV-UNCLASSIFIED	274.00	CUYD		$	
0350	02223		GRANULAR EMBANKMENT	129.00	CUYD		$	
0360	02242		WATER FOR DUST CONTROL	200.00	MGAL		$	
0370	02262		FENCE-WOVEN WIRE TYPE 1	546.00	LF		$	
0380	02429		RIGHT-OF-WAY MONUMENT TYPE 1	141.00	EACH		$	
0390	02430		RIGHT-OF-WAY MONUMENT TYPE 1A	4.00	EACH		$	
0400	02432		WITNESS POST	3.00	EACH		$	

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PROPOSAL BID ITEMS

Report Date 12/4/17

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0410	02545		CLEARING AND GRUBBING APPROX 49 ACRES	1.00	LS		$	
0420	02555		CONCRETE-CLASS B	266.00	CUYD		$	
0430	02562		TEMPORARY SIGNS	320.00	SQFT		$	
0440	02585		EDGE KEY	445.00	LF		$	
0450	02611		HANDRAIL-TYPE A-1	160.00	LF		$	
0460	02625		REMOVE HEADWALL	7.00	EACH		$	
0470	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		$	
0480	02690		SAFELOADING	73.00	CUYD		$	
0490	02701		TEMP SILT FENCE	3,817.00	LF		$	
0500	02703		SILT TRAP TYPE A	27.00	EACH		$	
0510	02704		SILT TRAP TYPE B	27.00	EACH		$	
0520	02705		SILT TRAP TYPE C	27.00	EACH		$	
0530	02706		CLEAN SILT TRAP TYPE A	27.00	EACH		$	
0540	02707		CLEAN SILT TRAP TYPE B	27.00	EACH		$	
0550	02708		CLEAN SILT TRAP TYPE C	27.00	EACH		$	
0560	02720		SIDEWALK-4 IN CONCRETE	6,814.29	SQYD		$	
0570	02726		STAKING	1.00	LS		$	
0580	02998		MASONRY COATING	313.00	SQYD		$	
0590	05950		EROSION CONTROL BLANKET	9,978.00	SQYD		$	
0600	05952		TEMP MULCH	86,245.00	SQYD		$	
0610	05953		TEMP SEEDING AND PROTECTION	64,684.00	SQYD		$	
0620	05963		INITIAL FERTILIZER	9.00	TON		$	
0630	05964		20-10-10 FERTILIZER	4.50	TON		$	
0640	05985		SEEDING AND PROTECTION	86,587.00	SQYD		$	
0650	05990		SODDING	6,825.00	SQYD		$	
0660	05992		AGRICULTURAL LIMESTONE	54.00	TON		$	
0670	10020NS		FUEL ADJUSTMENT	41,961.00	DOLL	$1.00	$	$41,961.00
0680	10030NS		ASPHALT ADJUSTMENT	63,211.00	DOLL	$1.00	$	$63,211.00
0690	20418ED		REMOVE & RELOCATE SIGNS	8.00	EACH		$	
0700	20550ND		SAWCUT PAVEMENT	1,347.00	LF		$	
0710	21289ED		LONGITUDINAL EDGE KEY	17,351.00	LF		$	
0720	23158ES505		DETECTABLE WARNINGS	523.00	SQFT		$	
0730	23276EN11F		TURF REINFORCEMENT MAT 3	1,932.00	SQYD		$	
0740	23839EC		REMOVE CONCRETE MEDIAN	698.00	SQYD		$	
0750	24651ED		CONCRETE ISLAND	858.00	SQYD		$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0760	00440		ENTRANCE PIPE-15 IN	188.00	LF		$	
0770	00521		STORM SEWER PIPE-15 IN	3,710.00	LF		$	
0780	00522		STORM SEWER PIPE-18 IN	3,704.00	LF		$	
0790	00524		STORM SEWER PIPE-24 IN	2,375.00	LF		$	
0800	00525		STORM SEWER PIPE-27 IN	68.00	LF		$	
0810	00526		STORM SEWER PIPE-30 IN	600.00	LF		$	
0820	00528		STORM SEWER PIPE-36 IN	412.00	LF		$	
0830	00529		STORM SEWER PIPE-42 IN	260.00	LF		$	
0840	00980		SLOTTED DRAIN PIPE-12 IN	50.00	LF		$	

PROPOSAL BID ITEMS

Report Date 12/4/17

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0850	01000		PERFORATED PIPE-4 IN	1,952.00	LF		$	
0860	01005		PERFORATED PIPE EDGE DRAIN-4 IN	14,992.00	LF		$	
0870	01010		NON-PERFORATED PIPE-4 IN	451.00	LF		$	
0880	01015		INSPECT & CERTIFY EDGE DRAIN SYSTEM	1.00	LS		$	
0890	01020		PERF PIPE HEADWALL TY 1-4 IN	1.00	EACH		$	
0900	01024		PERF PIPE HEADWALL TY 2-4 IN	6.00	EACH		$	
0910	01028		PERF PIPE HEADWALL TY 3-4 IN	4.00	EACH		$	
0920	01202		PIPE CULVERT HEADWALL-15 IN	3.00	EACH		$	
0930	01204		PIPE CULVERT HEADWALL-18 IN	2.00	EACH		$	
0940	01208		PIPE CULVERT HEADWALL-24 IN	4.00	EACH		$	
0950	01210		PIPE CULVERT HEADWALL-30 IN	2.00	EACH		$	
0960	01212		PIPE CULVERT HEADWALL-36 IN	3.00	EACH		$	
0970	01214		PIPE CULVERT HEADWALL-42 IN	3.00	EACH		$	
0980	01432		SLOPED BOX OUTLET TYPE 1-15 IN	1.00	EACH		$	
0990	01450		S & F BOX INLET-OUTLET-18 IN	2.00	EACH		$	
1000	01451		S & F BOX INLET-OUTLET-24 IN	2.00	EACH		$	
1010	01452		S & F BOX INLET-OUTLET-30 IN	4.00	EACH		$	
1020	01453		S & F BOX INLET-OUTLET-36 IN	2.00	EACH		$	
1030	01456		CURB BOX INLET TYPE A	83.00	EACH		$	
1040	01490		DROP BOX INLET TYPE 1	9.00	EACH		$	
1050	01499		DROP BOX INLET TYPE 4	4.00	EACH		$	
1060	01538		DROP BOX INLET TYPE 7	2.00	EACH		$	
1070	01559		DROP BOX INLET TYPE 13G	7.00	EACH		$	
1080	01577		DROP BOX INLET TYPE 14	1.00	EACH		$	
1090	01580		DROP BOX INLET TYPE 15	1.00	EACH		$	
1100	01581		DROP BOX INLET TYPE 16G	5.00	EACH		$	
1110	01756		MANHOLE TYPE A	12.00	EACH		$	
1120	01761		MANHOLE TYPE B	2.00	EACH		$	
1130	01767		MANHOLE TYPE C	5.00	EACH		$	
1140	01770		MANHOLE TYPE C SPECIAL	2.00	EACH		$	
1150	02484		CHANNEL LINING CLASS III	151.00	TON		$	
1160	02600		FABRIC GEOTEXTILE TY IV FOR PIPE	22,472.00	SQYD	$2.00	$	$44,944.00
1170	03385		PVC PIPE-6 IN	11.00	LF		$	
1180	20904ED		RECONSTRUCT CURB BOX INLET	2.00	EACH		$	
1190	23952EC		DRAINAGE JUNCTION BOX TY B	2.00	EACH		$	
1200	24814EC		PIPELINE INSPECTION	10,885.00	LF		$	

Section: 0004 - BRIDGE-BOX CULVERT

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1210	02403		REMOVE CONCRETE MASONRY	4.00	CUYD		$	
1220	03000		PRECAST CONC BOX SECT 30 IN X 30 IN	14.00	LF		$	
1230	08103		CONCRETE-CLASS D MOD	1.00	CUYD		$	

Section: 0005 - UTILITY-ELECTRICAL

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1240	24725EC		UTILITY RELOCATION	1.00	LS		$	

Section: 0006 - SEWER

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1250	15011		S DIRECTIONAL BORE	80.00	LF		$	
1260	15017		S ENCASEMENT STEEL BORED RANGE 4	410.00	LF		$	
1270	15023		S ENCASEMENT STEEL OPEN CUT RANGE 4	50.00	LF		$	
1280	15059		S FORCE MAIN PVC 04 INCH	90.00	LF		$	
1290	15073		S FORCE MAIN TIE-IN 04 INCH	1.00	EACH		$	
1300	15092		S MANHOLE	10.00	EACH		$	
1310	15093		S MANHOLE ABANDON/REMOVE	4.00	EACH		$	
1320	15099		S MANHOLE TAP EXISTING	1.00	EACH		$	
1330	15101		S MANHOLE WITH DROP	1.00	EACH		$	
1340	15104		S PIPE DUCTILE IRON 08 INCH	254.00	LF		$	
1350	15112		S PIPE PVC 08 INCH	668.00	LF		$	
1360	15119		S PUMP STATION	1.00	EACH		$	
1370	15121		S STRUCTURE ABANDON	1.00	EACH		$	

Section: 0007 - SIGNALIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1380	04792		CONDUIT-1 IN	25.00	LF		$	
1390	04795		CONDUIT-2 IN	35.00	LF		$	
1400	04820		TRENCHING AND BACKFILLING	400.00	LF		$	
1410	04830		LOOP WIRE	4,650.00	LF		$	
1420	04844		CABLE-NO. 14/5C (REVISED: 12-4-17)	7,050.00	LF		$	
1430	04850		CABLE-NO. 14/1 PAIR	4,350.00	LF		$	
1439	04884		ANCHOR (ADDED: 12-4-17)	4.00	EACH		$	
1440	04885		MESSENGER-10800 LB (REVISED: 12-4-17)	815.00	LF		$	
1450	04895		LOOP SAW SLOT AND FILL	1,760.00	LF		$	
1460	04931		INSTALL CONTROLLER TYPE 170	1.00	EACH		$	
1461	04932		INSTALL STEEL STRAIN POLE (ADDED: 12-4-17)	4.00	EACH		$	
1470	20093NS835		INSTALL PEDESTRIAN HEAD-LED	8.00	EACH		$	
1480	20094ES835		TEMP RELOCATION OF SIGNAL HEAD (REVISED: 12-4-17)	75.00	EACH		$	
1490	20188NS835		INSTALL LED SIGNAL-3 SECTION (REVISED: 12-4-17)	30.00	EACH		$	
1495	20275EC		VIDEO DETECTION-INSTALL (ADDED: 12-4-17)	4.00	EACH		$	
1500	20390NS835		INSTALL COORDINATING UNIT	1.00	EACH		$	
1510	20391NS835		ELECTRICAL JUNCTION BOX TYPE A	4.00	EACH		$	
1520	21543EN		BORE AND JACK CONDUIT	35.00	LF		$	
1530	21743NN		INSTALL PEDESTRIAN DETECTOR	8.00	EACH		$	
1540	23157EN		TRAFFIC SIGNAL POLE BASE (REVISED: 12-4-17)	20.20	CUYD		$	

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PROPOSAL BID ITEMS

Report Date 12/4/17

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1550	23222EC		INSTALL SIGNAL PEDESTAL	3.00	EACH		$	
1560	24900EC		PVC CONDUIT-1 1/4 IN-SCHEDULE 80	20.00	LF		$	
1570	24901EC		PVC CONDUIT-2 IN-SCHEDULE 80	320.00	LF		$	
1580	24955ED		REMOVE SIGNAL EQUIPMENT (REVISED: 12-4-17)	2.00	EACH		$	

Section: 0008 - WATERLINE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1590	14001		W AIR RELEASE VALVE 3/4 INCH	6.00	EACH		$	
1600	14003		W CAP EXISTING MAIN	11.00	EACH		$	
1610	14004		W DIRECTIONAL BORE	125.00	LF		$	
1620	14008		W ENCASEMENT STEEL BORED RANGE 3	490.00	LF		$	
1630	14009		W ENCASEMENT STEEL BORED RANGE 4	650.00	LF		$	
1640	14011		W ENCASEMENT STEEL BORED RANGE 6	150.00	LF		$	
1650	14019		W FIRE HYDRANT ASSEMBLY	4.00	EACH		$	
1660	14021		W FIRE HYDRANT REMOVE	4.00	EACH		$	
1670	14028		W METER 3/4 INCH	7.00	EACH		$	
1680	14036		W PIPE DUCTILE IRON 06 INCH	1,456.00	LF		$	
1690	14037		W PIPE DUCTILE IRON 08 INCH	3,899.00	LF		$	
1700	14040		W PIPE DUCTILE IRON 16 INCH	230.00	LF		$	
1710	14059		W PIPE PVC 06 INCH	1,614.00	LF		$	
1720	14060		W PIPE PVC 08 INCH	2,317.00	LF		$	
1730	14063		W PIPE PVC 16 INCH	274.00	LF		$	
1740	14081		W SERVICE RELOCATE	3.00	EACH		$	
1750	14089		W TAPPING SLEEVE AND VALVE SIZE 1 6 INCH	8.00	EACH		$	
1760	14089		W TAPPING SLEEVE AND VALVE SIZE 1 8 INCH	3.00	EACH		$	
1770	14090		W TAPPING SLEEVE AND VALVE SIZE 2	2.00	EACH		$	
1780	14094		W TIE-IN 06 INCH	1.00	EACH		$	
1790	14105		W VALVE 06 INCH	10.00	EACH		$	
1800	14106		W VALVE 08 INCH	6.00	EACH		$	
1810	14109		W VALVE 16 INCH	2.00	EACH		$	
1820	14148		W SERV COPPER LONG SIDE 3/4 IN	1.00	EACH		$	
1830	14152		W SERV COPPER SHORT SIDE 3/4 IN	9.00	EACH		$	
1840	14156		W METER REMOVE	7.00	EACH		$	

Section: 0009 - DEMOBILIZATION &/OR MOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1850	02568		MOBILIZATION	1.00	LS		$	
1860	02569		DEMOBILIZATION	1.00	LS		$	

U.S. 41A – SECTION 1
UTILITY RELOCATION PROJECT

CONTRACT NO. 6531-C1

MADISONVILLE MUNICIPAL UTILITIES
Madisonville, Kentucky

November 2017

P. Anthony Hanson
KY PE License #17402

patterson & dewar ENGINEERS

U.S. 41A – Section 1 Utility Relocation	Contract No: 6531-C1
Madisonville Municipal Utilities	Date: Nov. 30, 2017
KY Transportation Cabinet	Rev.: 00

SECTION 00 01 07
SEALS PAGE

DESIGN PROFESSIONALS OF RECORD

Electrical Engineer:

1. P. Anthony Hanson
2. KY PE License #17402

END OF SECTION 00 01 07

patterson & dewar ENGINEERS

U.S. 41A – Section 1 Utility Relocation Contract No: 6531-C1
Madisonville Municipal Utilities Date: Nov. 30, 2017
KY Transportation Cabinet Rev.: 00

SECTION 00 01 10
TABLE OF CONTENTS

REVISION HISTORY

Revision No.	Date	Description
00	11/30/2017	Issued for review

END OF SECTION 00 01 10

SECTION 00 01 15
LIST OF EXHIBITS AND DRAWINGS

EXHIBIT	DESCRIPTION
EXHIBIT A	Install / Remove / Transfer Unit Quantities

CONTRACT DRAWINGS
Utility Plan Sheets (U72-U96)
Detailed Drawings (KYMMU41A203 to KYMMU41A225, plus KYMMU41A401)
Steel Pole Drawings (KYMMU41A101 to KYMMU41A116)

END OF SECTION 00 01 15

SECTION 00 41 13
BID FORM

1.01 LUMP SUM BID

BID ITEM A: INSTALLS New Construction	
BID ITEM B: REMOVALS Retire Construction	
BID ITEM C: TRANSFERS Transfer Construction	
TOTAL BID	

Note: Contractor must submit with this bid a bill of material with catalog numbers of all material provided.

SECTION 01 10 00
SUMMARY OF WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Project Description

B. Description of Work

C. General Work Requirements

D. Work Site Location

E. Owner and Contractor-furnished Materials

F. Work By Others

G. Site Visits

1.02 PROJECT DESCRIPTION

A. The Kentucky Transportation Cabinet (KTC) is improving Hwy 41A and Hwy 41 (Main Street) in Madisonville, KY. With the improvements for the highway project, sections of the existing overhead and underground 12kV electric facilities will have to be relocated outside road construction limits where possible. Construction will consist of installing, removing and transferring facilities, as well as installing overhead equipment, services, and street lighting.

1.03 DESCRIPTION OF WORK

The Work is divided into two sections. Contractor shall perform the tasks as outlined below.

A. The first section is along Hwy 41A to Main St. The length of this section is 6800'.

1. 12kV Removal: Remove 2000' of double circuit framing on steel poles, guying, gang-operated switch, riser, street lights, secondary, transformers and other equipment. Remove single circuit and single-phase wood poles, framing, conductor as indicated on construction drawings in various locations along the length of this route. Remove existing double circuit three-phase conductor 795ACSR and 397ACSR Neutral. Removals are indicated on Plan View drawings shown in green.

2. 12kV Install: Install 2050' of double circuit framing on steel poles framing, guying, anchors, gang-operated switch, single-phase riser, street lights, secondary, transformers, equipment and new conductor. New steel poles will be installed with rock backfill. Install single-phase riser, 2-2" ductbank 10' to existing pad-mounted transformer. Along this route, install single circuit and single-phase wood poles, framing, conductor and equipment. Installs are indicated on Plan View drawings shown in red.

3. 12kV Transfer: Transfer and splice existing taps were indicated on the Plan View drawings shown in orange.

B. The second section is along Hwy 41 (Main St) totaling 1700'.

1. 12kV Removal: Remove 1700' of single circuit framing on wood poles, guying, stubs, span guys, gang-operated switch, three-phase riser, street lights, secondary, transformers and other equipment. Remove existing three-phase conductor 795ACSR and 397ACSR Neutral. Removals are indicated on Plan View drawings shown in green.

2. 12kV Install: Install 1700' of single circuit 795ACSR primary and 397ACSR neutral conductor and framing on steel poles. Where indicated on drawings, install single phase taps, guying, span guys, steel stub poles, anchors, gang-operated switch, three-phase riser, street lights, secondary, transformers, equipment. New steel poles will be installed with rock backfill or concrete. Install three-phase riser, 1168' of 6-2" ductbank and termination elbows to existing pad-mounted transformer. One self-supporting structure with a pier drilled foundation will also be required. Installs are indicated on Plan View drawings shown in red.

3. 12kV Transfer: Transfer and splice existing single and three phase taps were indicated on the Plan View drawings shown in orange.

1.04 GENERAL WORK REQUIREMENTS

A. The scope of Work includes the installation of a complete and functional system for serving distribution customers. The general scope of tasks is described as follows:

1. Contractor shall furnish all material per contract drawings.

2. Contractor shall be responsible for layout and surveying of the proposed modifications. Engineer shall provide survey locations of structures and anchors.

3. Contractor shall submit a complete material list, with supplier, catalog information and catalog cut detail to Engineer for review and approval.

4. Contractor shall be responsible for providing supervisor(s) and personnel qualified to perform the Work as specified.

5. The methods of framing and construction practices must conform to the latest and best current practice for the type of construction required for the application. The system shall be complete with all necessary accessories for proper operation.

6. If any departure from the Contract or Contract Drawings is deemed necessary by Contractor, details of such departure and the reasons therefor shall be submitted as soon as practicable to Engineer and Owner for approval. No such departures shall be made without prior written approval of Owner.

7. Contractor is advised that existing distribution line outages shall be held to an absolute minimum, may be prohibited at times, and at all times shall not remove any substation from service. The duration of outages may be restricted to maintain a satisfactory operating condition. In general, Contractor shall maintain the system in such condition that, in the event of any emergency, service can be restored with minimum effort and lost time. All outages must be approved in advance by Owner and Engineer.

8. Contractor shall coordinate with other pole-mounted utilities.

9. Contractor shall be responsible for providing for proper handling, storing and protection of materials.

10. Contractor shall be responsible for demolition, removing and disposing of existing wood poles and equipment as specified.

11. Contractor shall disassemble, store, protect and return removed materials to Owner's warehouse.

12. Contractor shall be responsible for transferring existing facilities, removing old facilities, and installing new facilities, as identified on the Contract Drawings.

13. All pole top assembly units include installation, proper requirements for sagging of primary and neutral conductors.

14. All pole change-outs includes the transferring, dead-ending and reattachment of conductors.

15. Contractor shall be responsible for landscape and concrete repair (due to construction activities including restoring, planting, seeding new areas and areas disturbed during construction) per KTC specification.

16. Contractor shall be responsible for cleaning-up and disposing of debris and waste as project progresses.

17. Contractor is advised that construction will involve performing work adjacent to and on energized electrical power facilities owned by Owner and others.

18. Contractor shall be responsible for coordinating construction activities with Owner, other agencies and utilities as required by these specifications and associated permits.

19. Actual construction shall be based on the Contract Drawings. Any change to the Contract Drawings must be approved by Owner. Within 10 days after return of approved prints, copies shall be furnished to Owner for retention as a matter of record. Prior to completion of the Work, the originals, available from Owner, shall be revised to show all changes subsequent to original plans and submitted for retention as a matter of record.

20. Contractor shall attend progress and scheduling meetings in person or by teleconference as allowed by Owner.

21. Contractor shall be responsible for providing barricading and traffic control during construction activities. Contractor shall abide by all Federal, State, local and Transportation Cabinet regulations. Use Proper Transportation Cabinet traffic control procedures.

22. Contractor shall attend kickoff, progress and closeout meeting scheduled by Owner.

23. Owner will perform walkthrough inspection after completion; Contractor shall remedy identified issues before closeout.

24. Owner and Engineer reserves the right to make ground inspections. Contractor shall make any corrections required to bring project into compliance with original specifications at no cost to Owner.

25. Construction is not complete until Contractor has energized lines at operating voltage after Owner's inspection.

26. It is the responsibility of Contractor to verify the location of any and all underground utilities including water, gas, telephone, and sewage either privately or publicly owned. Contractor assumes sole responsibility for damages to facilities in or near work area if damage occurs. Contractor shall abide by state and utility notifications "One Call Law".

27. Temporary work necessary in the normal course of construction should be identified prior to bidding. No additional payment will be made.

1.05 WORK SITE LOCATION

A. Within and outside the service territory of the City of Madisonville, Kentucky on Hwy 41A and Hwy 41 (Main St).

1.06 CONTRACTOR-FURNISHED ITEMS

A. All materials are Contractor-furnished.

B. Contractor shall be responsible for inventorying all units, construction drawings, and construction documents for material quantity requirements. All units are to be complete, functional and meet applicable safety standards.

1.07 WORK BY OTHERS

A. Owner will coordinate necessary outages and notifications of affected customers.

B. Owner will provide a switch/hot line tag selection upon Contractor's request.

C. Owner will provide pole-mounted transformer.

1.08 SITE VISITS

A. The Work stated and specified herein involves construction adjacent to energized overhead electric lines. Engineer has attempted to depict construction conditions as accurately as possible; however, Contractor is strongly advised to undertake the following:

1. Review all construction documents and visit the proposed location of construction. Contractor should visit the location for types of soil and terrain construction might encounter.

2. Pay special attention to scheduling Work activities to permit expeditious accomplishment of the requirements.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 01 11 00

SECTION 02 41 00
DEMOLITION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Existing Conditions
B. Continuity of Electrical Service
C. Coordination
D. Preparation for Demolition
E. Execution of Demolition

1.02 EXISTING CONDITIONS

A. Conduct demolition to minimize interference with adjacent structures.

B. Provide, erect, and maintain temporary barriers and security devices.

1.03 CONTINUITY OF ELECTRICAL SERVICE

A. Maintain electrical service to customers during construction, wherever feasible.

B. Coordinate customer outages with designated utility personnel and customers.

1.04 COORDINATION

Arrange for required power outages with Owner, customers, and other utilities as appropriate.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 PREPARATION FOR DEMOLITION

A. Locate and protect existing utilities.

B. Prevent movement or settlement of adjacent structures. Provide bracing and shoring.

C. Protect existing landscaping, materials, appurtenances, and structures that are not to be demolished.

3.02 EXECUTION FOR DEMOLITION

A. Demolish indicated structures and appurtenances in an orderly and careful manner. Take all precautions necessary for working near exposed, energized electrical equipment.

B. Cease operations and notify Engineer immediately if adjacent structures appear to be endangered. Do not resume operations until corrective measures have been taken.

C. Remove demolished materials from site as Work progresses. Leave site in clean condition.

D. Demoed materials become the property of Contractor and are to be disposed of in accordance with applicable codes, with the exception of the following materials of which Owner will retain ownership: Transformers, switches, capacitors, lights and other materials specified by Owner.

E. Remove materials to be reinstalled or retained in manner to prevent damage.

F. Remove and promptly dispose of contaminated, vermin infested, special or dangerous materials encountered.

G. Do not burn or bury materials onsite.

H. Resurface areas disturbed by demolition activities with surfacing equal to the existing surfacing.

I. Rough grade and compact areas affected by demolition to maintain site grades and contours.

J. Backfill excavated areas, open pits, and holes caused as a result of demolition.

K. Do not use explosives.

L. Immediately notify Owner of damage to materials specified for reinstallation or return to stores.

M. Damaged materials shall not be reinstalled.

N. Materials returned to stores in damaged condition without notification to Owner will not be credited.

END OF SECTION 02 41 00

patterson & dewar ENGINEERS

U.S. 41A – Section 1 Utility Relocation Contract No: 6531-C1
Madisonville Municipal Utilities Date: Nov. 30, 2017
KY Transportation Cabinet Rev.: 00

SECTION 33 71 16.23
GALVANIZED STEEL POLE STRUCTURES

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Steel Structure Design
B. Materials
C. Steel Structure Fabrication

1.02 REFERENCES

A. The latest published edition of a reference shall be applicable to this Project unless identified by a specific edition date.

B. All reference amendments adopted prior to the effective date of this Contract shall be applicable to this Project.

C. All materials and workmanship shall comply with the applicable requirements and standards addressed within, but not limited to, the following references:

1. ASCE / SEI 48, Design of Steel Transmission Pole Structures

2. ASME Section 1X, Part QB, Brazing

3. ASTM A36, Standard Specification for Carbon Structural Steel

4. ASTM A123, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

5. ASTM A143, Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement

6. ASTM A153, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

7. ASTM A194, Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both

8. ASTM A304, Standard Specification for Carbon and Alloy Steel Bars Subject to End-Quench Hardenability Requirements

9. ASTM A325, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength

10. ASTM A354, Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners

11. ASTM A370, Standard Test Methods and Definitions for Mechanical Testing of Steel Products

12. ASTM A384, Standard Practice for Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing of Steel Assemblies

13. ASTM A572, Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel

14. ASTM A615, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

15. ASTM B773, Standard Guide for Ultrasonic C-Scan Bond Evaluation of Brazed or Welded Electrical Contact Assemblies

16. ASTM E23, Standard Test Methods for Notched Bar Impact Testing of Metallic Materials

17. AWS D1.1, Structural Welding Code – Steel

18. NACE No. 2 / SSPC-SP 10, Joint Surface Preparation Standard: Near-White Metal Blast Cleaning

19. NACE No. 3 / SSPC-SP 6, Commercial Blast Cleaning

1.03 SUBMITTALS

A. General: Submit in accordance with Division 0 – Bidding Requirements and Section 01 33 00 – Submittal Procedures.

B. Included with Bid – Final design calculations for self-supporting steel poles, sealed by a Professional Engineer registered in the State of Kentucky, including:

1. The total actual moments, moments of inertia, and stresses at 5-foot intervals along the structure as well as at points of load application for all load cases

2. Computation of stresses in connections, attachments, and baseplates

3. Maximum deflection at all load points and at top or ends of structure for all load cases

4. Calculated weight of members and attachments

5. Description of members, including thickness, length, diameter, cross-sectional geometry, and method of fastening each component

6. Foundation loads for pier foundation poles

C. Following Contract Award – Shop Drawings for each structure type, illustrating the following:

1. Steel structure, attachment, crossarm and bracing fabrication details

2. Details of proposed climbing assemblies

3. Erection details for each structure type including match markings to be used, actual calculated scale weights of members, and structure orientation with the Transverse (X) – Vertical (Y) – Longitudinal (Z) axis shown on the Drawings

4. Details of anchor bolt assemblies

5. Details of steel pole grounding provisions

6. When requested by Engineer, copies of each pre-qualified welding procedure, and each welder and welding operator's qualifications proposed for use on the Work

7. Plans and specifications for structure erection

8. Do not start fabrication until design computations and shop drawings have been approved by Engineer

9. Certified copies of Charpy test data and copies of mill test reports for all structural steel indicating compliance with the chemical and mechanical property requirements of the Contract Documents to Engineer before payment shall be made.

1.04 QUALITY ASSURANCE

A. Determine the chemical compositions and appropriate mechanical properties of structural steel used, either by obtaining manufacturer's certificates of compliance or by laboratory testing.

B. Upon request, furnish sample coupons of steel used for independent testing by a laboratory selected by Engineer.

C. Perform ultrasonic inspection on all full penetration welds and visual inspection on all welds in accordance with the requirements of AWS D1.1. Design ultrasonic examination methods to ensure weld quality conformance.

D. Ultrasonically test all plates over 1-1/2 inches thick to determine whether defects are present which could cause laminar tearing.

E. Maintain a "Traveler" on all major structure components. List on the Traveler material identification: welder identity, inspection results and inspector identity.

F. Upon request, make provisions for inspection of structure fabrication by Engineer. Engineer shall provide one week advance notice of any inspection. Owner shall be responsible for expenses of inspector or Owner's representatives. Inspection by Engineer at the point of manufacture shall not constitute acceptance of the Work as specified.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General

1. Segregate bolts, nuts and small pieces according to size and pack in separate waterproof wooden boxes or kegs marked by structure identification. Bundle other pieces.

2. Properly block all materials to prevent damage and distortion of members during transit.

B. Prepare and load equipment in such a manner as to provide protection from damage in transit. Use moisture proof packaging, packing or wrapping to preclude moisture damage in transit and during storage at the Project site before installation. Where necessary, mount heavy parts on skids or crate, and box or wire in bundle parts that might otherwise be lost. Plainly mark for identification. Load equipment so that it shall not shift or become damaged during transport. Prepare equipment exceeding 200 pounds in gross weight for shipment so that slings or handling by crane may readily be attached without damage to equipment.

C. Mark all parts for ease of field assembly.

D. Accompany each shipment with a packing list of articles included in the shipment.

E. Seller shall provide at least 48 hours' notice of delivery date.

F. Owner shall be responsible for unloading.

PART 2 - PRODUCTS

2.01 STEEL STRUCTURE DESIGN

A. Except as otherwise specified in the Contract Documents, design Steel Structures in accordance with the requirements of ASCE / SEI 48.

B. Steel Structure Design: Meet the load requirements shown on the Drawings. Do not exceed the specified yield strength of the steel used for the unit stress under full design load, including safety factors and secondary bending stresses.

C. Design all deadend structures such that the resultant horizontal loads for any and all load cases may be applied in any direction in the Transverse-Longitudinal (X-Z) plane.

D. Design the structures for maximum deflection limits based on the total pole height above the point of assumed fixity under design loads, as shown on the Contract Drawings.

E. Use a maximum value of 3,500 psi for the 28-day compressive strength of the concrete.

F. The maximum outside diameter of anchor bolt assemblies shall be as shown on the Contract Drawings.

G. Design mounting brackets and crossarms to the loading and dimensional requirements shown on the Drawings.

H. Taper poles continuously for their entire length.

I. Bolted flange-type joints in the pole shaft are not acceptable. Multiple section poles shall be designated with slip joints providing an accuracy of fit that will prevent misalignment of structures during erection. The length of overlap shall be not less than 1.5 times the largest axis dimension of the structure at the joint. Design slip joints to withstand torsion without slippage or rotation under design loads.

J. Design shall consider ease of assembly and erection. Design and furnish construction attachments including vangs, nuts, or bails as desired to facilitate steel pole erection, wire installation, and other construction activities. Design construction attachments so as not to impair the function of any other component, reduce electrical clearances, pose a safety risk, or impart overloads on the structure or its parts.

2.02 MATERIALS

A. General

1. Structural Steel: Made by the open hearth, basic oxygen, or electric furnace process and in accordance with the latest revision of ASTM under which the steel is produced. Alloying elements, if present, shall not be in quantities that produce steel that is not readily weldable by the arc welding processes used for plain carbon structural steels.

2. Structural Steel: Minimum impact property of 15 foot-pounds at –20°F in the longitudinal direction as measured by the Charpy “V” notch test in accordance with ASTM A370 and E23.

3. Identify steel as to yield strength.

4. Use 3/16 inch minimum thickness for steel, regardless of yield strength.

5. Weld Material: Compatible with the parent material, as defined by AWS D1.1.

B. Steel Poles, Arms, Arm Attachment Plates, Braces and Conductor Brackets

1. Galvanized Steel: Fabricate tubular steel poles, mounting brackets, pole caps, bearing plates, arm attachment plates, arms and braces and conductor brackets from material conforming to the requirements of ASTM A36 or A572 modified to limit silicon content to 0.06 percent. Select grade for A572 as required.

C. Anchor Bolts and Nuts

1. Fabricate anchor bolts from steel conforming to ASTM A615, Grade 60 or 75.

2. Normalize steel by holding at temperature for a sufficient time to ensure uniform heat distribution throughout its mass and uniformly cool in still air.

3. Nuts for Anchor Bolts: Conform to A563, Grade DH, galvanized. Tap nuts after galvanizing to produce a finger-free fit without shake on the galvanized bolts.

D. Structure Assembly Hardware

1. Use 5/8 inch minimum diameter bolts and nuts with locknuts or lockwashers for bolted connections.

2. Provide bolt lengths such that bolt will project at least 1/4 inch, but not more than 3/4 inch beyond the nut when assembled.

3. Furnish bolts, nuts and locking devices at 105 percent of the actual quantity required for field connections.

4. Connection Bolts for Galvanized Steel Structures: ASTM A325 or A354, Grade BC, hot-dip galvanized.

5. Connection Nuts: A563, Grade DH, galvanized. Tap nuts after galvanizing to provide finger-free fit without shake on the bolt.

E. Grounding Tabs: ASTM A304, stainless steel.

F. Climbing and Working Ladder Attachments for Galvanized Steel Structures: ASTM A325 or A572.

G. Removable Climbing Steps: ASTM A36, A572 or A325, galvanized.

H. Touch-up Paint for Damaged Galvanized Structures: Single package 95% zinc rich.

PART 3 – EXECUTION

3.01 STEEL STRUCTURE FABRICATION

A. General

1. Do not start fabrication until design computations and shop drawings have been accepted by Engineer.

2. Fabricate in accordance with ASCE / SEI 48 except as otherwise specified in the Contract Documents. Provide symmetrical pole cross-sections. Design and fabricate structures so that field welding is not required.

3. Fabrication tolerances:

Description	Tolerance
Length	–0 inch / +5 inches
Cross-section of poles:	
36 inches or less diameter	–1/8 inch / +1/4 inch
Greater than 36 inches diameter	–1/4 inch / +1/2 inch
Circumference of all poles	–0 inch
Spacing between vertical connections	±3/4 inch
Location of hardware with respect to top of pole	±2 inches
Straightness of pole	±1/2 inches from centerline
Location of a drilled hole in a piece	±1/8 inch
Spacing between holes of same connection	±1/16 inch (non-accumulative)
Angles shown	±2 degrees
Anchor Bolts:	
Length	–0 inch / +3 inches
Thread length	–0 inch / +2 inches
Length of galvanizing on anchor bolts	–0 inch / +12 inches
Distance between anchor bolts in cluster	±1/8 inch (non-accumulative)

B. Anchor Bolts

1. Furnish three heavy hex nuts with each anchor bolt, one of these provided as a “keeper”.

2. Do not perform any welding on the anchor bolts within the bolt stress development area.

3. Fabricate anchor bolts into a rigid pre-positioned assembly and ship from the factory as a unit ready to be placed in the foundation.

C. Welding / Brazing

1. Perform welding in accordance with the requirements of American Welding Society Structural Welding Code, AWS D1.1, as supplemented herein.

2. For primary joints, use welding electrodes with, as a minimum, an impact value of 15 foot-pounds at –20°F as measured by the standard Charpy-V-Notch test, and physical properties of the base metal being welded when tested with the applicable AWS D1.1 specification for welding electrodes.

3. Perform welding by the shielded metal-arc, gas shielded fluxcore, gas metal-arc, or submerged-arc processes. Perform shielded metal-arc welding with appropriate strength low hydrogen electrodes which have been conditioned in accordance with the requirements of AWS D1.1. Limit gas metal-arc process, using solid bare filler wire, to root bead or tack welding only.

4. Preheat in accordance with the steel producer’s minimum recommendation, or as verified by testing for suitability for structural application in accordance with AWS D1.1.

5. Make longitudinal welds with 80 percent minimum weld joint penetration. Make base plate and circumferential seam welds with complete penetration welds.

6. Brazing in accordance with applicable sections of ASME Section 1X, Part QB, Brazing. Test factory brazing in accordance with ASTM B773.

D. Grounding Provisions

1. Weld stainless steel plates or grounding nuts on each pole in accordance with the details shown on the Drawings.

E. Climbing Provisions

1. Furnish galvanized structures with welded clips designed to accept removable Winola industrial ladders. Ladders shall be furnished by others.

F. Finish and Protective Coatings

1. Fabrication shall be complete before galvanizing.

2. Preparation

a. Clean all foreign matter, slag and weld spatter from structural steel members after fabrication is complete.

b. Blast clean all steel after fabrication in accordance with:

1) SSPC-SP 6 commercial finish.

3. Galvanized Steel Structures

a. Structures shall be galvanized by the hot dip process in accordance with ASTM A123 with a minimum thickness of 2.5 mils.

b. Precautions shall be taken against embrittlement, warpage and distortion in accordance with ASTM A143 and ASTM A384.

c. Galvanized coating shall be continuous, adherent, smooth and evenly distributed. The coating shall be a matte finish.

4. Coatings for the Embedded Portion of the Pole A minimum 16 mil DFT of two component hydrocarbon extended polyurethane coating that is resistant to ultraviolet light shall be applied on the exposed surface of the embedded portion of the pole. The coating shall extend 16” inches above groundline or proposed future groundline. Other coatings shall be approved by Owner prior to their use. One-quart container of touch up shall be provided with each five poles.

5. Galvanize nuts, bearing plates and the threaded area plus 6 inches of anchor bolts in accordance with ASTM A123 or A153, as applicable.

6. Structures or structure components shall not be shipped until finish coats are completely dry.

7. Marking and Identification

   a. Mark each pole of each structure on one face 5 feet above the ground line and on the bottom of the bearing plate with the structure type, and pole length. Make markings ¼ inch weld to be easily readable at 5 feet. Place information on a face that will not be obstructed by equipment.

   b. Where slip joints are used, mark the top of the male section and the bottom of the female section with ¼ inch weld alignment marks which, when the joint is fully installed, shall be no more than 18 inch apart. Install additional marks on the male section to guide initial installation.

   c. Identify anchor bolt assemblies by structure type and pole length. Identify and mark baseplate and anchor bolt assemblies on the Transverse-Longitudinal (X-Z) axis as shown on the Drawings.

   d. Distinctly mark each separate part of a structure with structure type and position of the piece in the structure.

END OF SECTION 33 71 16.23

patterson & dewar ENGINEERS

U.S. 41A – Section 1 Utility Relocation Contract No: 6531-C1
Madisonville Municipal Utilities Date: Nov. 30, 2017
KY Transportation Cabinet Rev.: 00

SECTION 33 71 16.43
POLE CONSTRUCTION, INSTALLATION, AND REMOVAL

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Poles
B. Installation Notes
C. Pole Handling
D. Pole Structure Erection
E. Pole Installation
F. Pole Removal

1.02 QUALITY ASSURANCE

Installation and removal work shall be done in a thorough and workmanlike manner, in accordance with the Contract. Work shall comply with applicable ordinances and codes. The 2012 (or latest edition) of the National Electric Safety Code (ANSI-C2) shall be followed, except where local regulations or these Specifications are more stringent, in which case the most stringent qualifications shall be met.

PART 2 – PRODUCTS

2.01 POLES

A. Poles shall be Owner-furnished.

PART 3 - EXECUTION

3.01 INSTALLATION NOTES

A. Coordination shall be provided as follows:

1. Contractor and all Subcontractors for the various branches of work employed on the Project shall cooperate fully with each other to facilitate the progress of the work, and to avoid all interferences between the various parts of the work.

2. Contractor shall cooperate fully with any other contractor that is engaged in work on the Project for Owner or any other contractor working in the Project area.

B. Practices relative to right-of-way shall be observed by Contractor during construction as follows:

1. The right-of-way shall consist of an area as determined by Owner extending on both sides of the center line of the route of the Project lines.

2. All rights-of-way and easements across private or public property required for performance of the work herein will be obtained by Owner. Access to the Project area outside the rights-of-way limits specified shall be the responsibility of Contractor. Owner shall be informed of all arrangements made for such access. Promptly restore to at least the conditions which existed prior to the commencement of work any ruts or damage made by equipment whether on or off the right-of-way.

3.02 POLE HANDLING

Poles shall be handled with care so as not to damage the pole. Poles shall not be dragged along the ground. Poles stored after delivery shall be arranged with care and shall be placed so that no pole will come in contact with standing water or the ground.

3.03 POLE STRUCTURE ERECTION

A. The depth of setting shall be as follows unless otherwise specified on the construction drawings:

POLE HEIGHT (Per Ft.)	SETTING DEPTH In Earth (Ft.)	In Rock (Ft.)
35	5.5	3.5
40	6.0	4.0
45	6.5	4.5
50	7.0	5.0
55	7.5	5.5
60	8.0	6.0
70	9.0	7.0
75	9.5	7.5
80	10.0	8.0
85	10.5	8.5
90	11.0	9.0

B. Poles shall be set plumb and in alignment if not raked.

C. Poles shall be set no deeper than 3” than the values in the table above. No pole will be set less than “earth” depth without Engineer’s approval.

D. Poles set in holes partly in earth and partly in rock shall be set to the depths shown for “earth”. Holes may be shortened only upon Engineer’s approval.

E. Excavation is unclassified. No additional pay for rock excavation shall be provided.

F. All holes shall be dug in the correct locations and shall be large enough to provide space for use of power tamping bars all around poles to the full depth of the holes. The poles shall be carefully placed in the holes so that the structure grounding materials will not be damaged or displaced.

G. Holes will be hand dug where requested by Underground Protective Services markings or Engineer.

H. Structure Setting Tolerances

1. Owner will stake new pole locations.

2. Poles shall be set according to the Drawings and Construction Schedule. No pole will be moved without Engineer’s approval.

3. Each structure shall be set within 1.5" of the centerline specified.

4. Contractor will install a permanent identifiable mark 15' above pole butt as a check of setting depth. This mark may be a tack or other mark as approved by Engineer. Tolerance of ±1".

5. Angle poles will be raked at ½" for each 10' above ground.

I. Backfill of Pole Structures

1. Poles shall be properly aligned before backfilling. Tangent poles to be set plumb in both directions. Angle poles raked as required.

2. Backfill shall contain enough natural or added moisture to be approximately equal to density of surrounding soils. Backfill shall be material excavated from hole unless directed by Engineer. All backfill shall be placed in 6" layers and each layer power tamped to a density, after completion, equal to surrounding soils. Where rocks, gravel, sand, swampy or murky type soils are encountered in hole digging, this shall not be used as backfill. Do not use sod or grassy soil or place foreign objects in the backfill.

3. Holes excavated for aggregate backfill shall be a minimum 4" greater in diameter than the pole butt or bearing plate if used.

4. Holes, over excavated, shall be backfilled with crushed rock until hole depth is that of appropriate setting depth of specified pole at no cost to Owner. Holes with excessive moisture shall be over excavated by 1'-0 and backfilled with crushed rock in over excavation.

J. Excavation shall not be left open for more than two days.

3.04 POLE INSTALLATION

A. Consists of one pole in place. The first digits indicate length: the following shows classification. Thus, "70/H3" signifies a 70-foot class H3 wood-equivalent pole. Similar designations may be used for varying pole manufacturers.

B. Site restoration at pole and along access to pole is a part of unit requirements.

C. Pole Top Assemblies shall be installed as follows:

1. Transmission assemblies shall be framed in accordance with drawings.

3.05 POLE REMOVAL

A. Includes all poles of the same height, regardless of pole class, and designated by the same unit.

B. Includes pulling and salvage of all poles designated as removals.

C. Includes immediate backfill of holes with solidly tamped earth in 6" maximum thickness layers and refill to the ground line of any settlement that occurs during the contract period.

D. When backfilling holes at pole removal locations, do not dig holes in the landscape to obtain backfill. Obtain backfill dirt by scooping or scraping within the designated right-of-way or by fill dirt obtained locally. Do not dig seeded areas within highway or public rights-of-way. Do not place foreign objects in backfill.

E. Includes the replacement of the surrounding surface where concrete, asphalt, or other man-made surfaces are encountered.

F. Contractor must coordinate the removal of foreign utilities before removing pole. Contractor is responsible for pole removal after foreign utilities have been relocated.

END OF SECTION 33 71 16.43

SECTION 33 71 17
WOOD POLE AND CROSSARMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Wood Poles
B. Wood Pole Structure Erection
C. Wood Pole Handling

1.02 QUALITY ASSURANCE

Installation work shall be done in a thorough and workmanlike manner, in accordance with the Contract. Work shall comply with applicable ordinances and codes. All work shall conform to REA/RUS specifications, the 2017 (or latest edition) of the National Electric Safety Code (ANSI-C2) and National Electric Code shall be followed, except where local regulations or these Specifications are more stringent, in which case the most stringent qualifications shall be met.

PART 2 – PRODUCTS

2.01 WOOD POLES

A. Wood poles shall be Contractor-furnished Southern Pine.

B. Owner reserves the right to inspect materials at storage area.

C. Poles shall be warranted to this specification. Any pole found no in conformance, within 1 year of delivery date, shall be replaced as promptly as possible by manufacturer.

D. Southern Pine shall have a wood fiber strength of 8000 psi.

E. Wood poles shall be marked with manufactures information. Items on the marking should include:

1. Manufactures code or trademark.
2. QA mark.
3. Manufacture location and treatment year.
4. Code letters for species, preservative (SP for Southern Pine).
5. Length/class of pole.

PART 3 - EXECUTION

3.01 WOOD POLE STRUCTURE ERECTION

A. Contractor is responsible for compacting excavated areas to minimize settlement of roads and ground. If settlement occurs, Contractor is responsible for repair for a warranty period of one year.

B. The depth of setting wood poles shall be 10% plus 2’ in earth and 10% in rock or where depth is indicated on construction drawings.

C. Poles shall be set no deeper than 3” than the values in the table above. No pole will be set less than “earth” depth without Engineer’s approval.

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D. Poles set in holes partly in earth and partly in rock shall be set to the depths shown for "earth". Holes may be shortened only upon Engineer's approval.

E. Excavation is unclassified. No additional pay for rock excavation shall be provided.

F. Unless directed by Owner, it will not be permissible to cut off the top of any pole. It will not be permissible to cut off the bottom of any pole.

G. All holes shall be dug in the correct locations and shall be large enough to provide space for use of power tamping bars all around poles to the full depth of the holes. The poles shall be carefully placed in the holes so that the structure grounding materials will not be damaged or displaced.

H. Holes will be hand dug where requested by Underground Protective Services markings or Engineer.

I. Structure Setting Tolerances

1. Owner will inspect staked pole locations before construction setting activities. 48 hour notice shall be given for approval inspection.

2. Poles shall be set according to the Drawings and Construction Schedule. No pole will be moved without Engineer's approval.

3. Each structure shall be set within 2" of the centerline specified.

4. Contractor will install a permanent identifiable mark 15' above pole butt as a check of setting depth.

5. Angle poles will be raked not less than 1" for each 10' above ground.

6. Poles shall be set so that the crossarm gains face in opposite directions on every other pole. However at line deadends, the last two poles shall be set so that the pole gains face the deadend.

J. Backfill of Wood Pole Structures

1. Poles shall be properly aligned before backfilling. Tangent poles to be set plumb in both directions. Angle poles raked as required.

2. Loose dirt shall be removed from all holes and bottom tamped with hydraulic tamp. All backfill shall be done with a hydraulic tamp from bottom of hole to grade.

3. Backfill shall contain enough natural or added moisture to be approximately equal to density of surrounding soils. Backfill shall be material excavated from hole unless directed by Engineer. All backfill shall be placed in 6" layers and each layer power tamped to a density, after completion, equal to surrounding soils. Where rocks, gravel, sand, swampy or murky type soils are encountered in hole digging, this shall not be used as backfill. Do not use sod or grassy soil or place foreign objects in the backfill.

4. Holes excavated for aggregate backfill shall be a minimum 4" greater in diameter than the pole butt or bearing plate if used.

5. Holes, over excavated, shall be backfilled with crushed rock until hole depth is that of appropriate setting depth of specified wood pole at no cost to Owner. Holes with excessive moisture shall be over excavated by 1'-0 and backfilled with crushed rock in over excavation.

K. Excavation shall not be left open for more than two days.

L. Additional pole holes shall not be tolerated. Should unnecessary or improperly bored holes compromise the strength, the pole shall be replaced by Contractor at Contractor's expense.

3.02 WOOD POLE HANDLING

A. Poles shall be handled with care so as not to damage the wood or the preservative treatment. Pole tongs or Cant hooks shall be handled so as to avoid excessive tearing of the wood. Contractor shall not use tongs or cant hooks on any portion of the pole required to go underground. Poles shall not be dragged along the ground. Poles stored after delivery shall be arranged with care and shall be placed so that no pole will come in contact with standing water or the ground.

B. Poles shall be set plumb and in alignment if not raked.

END OF SECTION 33 71 17

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Madisonville Municipal Utilities Date: Nov. 30, 2017
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SECTION 33 71 19
ELECTRICAL UNDERGROUND DUCTBANK

PART 1 – GENERAL

1.01 SUMMARY

A. Ductbank
B. Conduit
C. Encasement Slurry
D. Spacing Blocks
E. Fittings
F. Ball Marker
G. Execution

1.02 REFERENCES

A. ASTM (American Society for Testing and Materials)

B. NFPA 70 (National Fire Protection Association) – National Electric Code

C. NEMA TC2 and TC3 (National Electrical Manufacturers Association)

1.03 SUBMITTALS

A. Record Documents

1. Show dimensioned locations of underground ductbank from nearest permanent structure or survey control points.

2. Show as built ductbank elevations and cover.

1.04 QUALITY ASSURANCE

A. Listing and Labeling: Provide products that are listed and labeled as defined in NFPA 70, article 100, and marked for intended use for the location and environment in which they are installed.

B. ANSI C2 “National Electric Safety Code” for components and installation.

C. Testing and Inspection for Contractor Quality Control: Contractor shall perform inspection and tests described below, and, based upon the results of those inspections and tests, shall take action required and submit specified reports to Owner.

1. Sampling and Testing Materials: Certificates of Compliance for encasement slurry.

1.05 FIELD CONDITIONS

If the field conditions warrant change in the routing or configuration of ductbanks and/or location, shape and size of manholes, obtain Engineer's approval for such field changes. Such changes shall be done at no additional cost to Owner and the Contract Price is deemed to be inclusive of such changes.

PART 2 – PRODUCTS

2.01 DUCTBANK

The duct system shall consist of conduits as shown on the Contract Drawings.

2.02 CONDUIT

A. Conduit for underground ductbanks shall be PVC Schedule 80 suitable for slurry encasement. The conduit size shall be as shown on the Contract Drawings.

B. All duct shall be tightly jointed and sealed with a PVC rating sealer to be approved by Engineer.

C. Conduit shall be straight and true and shall be furnished in lengths of 20 feet. A cross section taken at any point perpendicular to duct shall not vary more than 1/8 inch from a true circle.

D. Conduits shall be complete with all couplings, adaptors, bends and supports as required or shown on the Contract Drawings. All couplings and fittings shall be the products of conduit manufacturer and shall be secured to the conduit with an adhesive in strict accordance with the manufacturer's recommendations. End bells are required to provide smooth and rounded surfaces at the edge of the duct to prevent injury to the cable during normal movement.

E. Changes in directions in duct runs exceeding a total of 10 degrees, either vertical or horizontal, shall be accomplished by long sweep bends having a minimum radius of curvature of 2 feet. At the end of the conduit run, manufactured elbows having a minimum radius of 60 inches may be used. Standard radius bends, elbows or other fittings shall not be used.

F. All above grade conduit shall be rigid steel (RGS) for three cables per conduit. Single-phase cable in conduits shall be aluminum.

2.03 ENCASEMENT SLURRY

A. A maximum of 1,000 psi slurry shall be used for encasement under pavement; direct-embedded otherwise.

B. Permanent red dye shall be sprinkled on top of ductbank freshly poured to indicate “power.”

2.04 SPACING BLOCKS

Spacing blocks shall be made of PVC or other suitable non-metallic, non-decaying material, with spacing as indicated on Contract Drawings

2.05 FITTINGS

PVC conduit and tube fittings: NEMA TC2 and TC3

PART 3 – EXECUTION

3.01 DUCTBANK

A. A minimum of 3” of encasement slurry shall be installed below, above and on both sides of bank.

B. Duct shall be tied in place by means of tie wire or spacers around the outside of duct and fastened to the bottom spacer to prevent movement during placement of concrete. Ductbank shall also be anchored to ground to prevent floating of conduits. In no case shall complete wire loop be installed around ductbank.

3.02 CONDUIT

A. The conduits shall be a minimum of 48” deep, unless otherwise indicated.

B. The joints shall be staggered 6 - 8” with spacers approximately 5' apart.

C. Conduit shall be installed in not less than 20 foot lengths, except at the ends of runs or at bends. Conduit shall be free of cracks and chipped ends. Have available at the job site a sufficient quantity of conduit so that cracked pieces or those with chipped ends may be discarded.

D. All field cuts of PVC conduit shall be made with a hack saw. Cuts shall be smooth and square to conduit axis. The cut end of conduit shall be reamed smooth. Field-cut conduits shall be joined with double-ended couplings designed for the purpose.

E. Repairs to conduits shall not be permitted. All individual lengths of broken, cracked, chipped or impaired conduit shall be removed and replaced with new conduit.

F. When changes in the formation of a bank of conduits within a duct run are necessary, the transition shall be accomplished in as straight an alignment as possible, maintaining continuous earth support under the conduits.

G. After the conduits and reinforcements are in place with proper spacing and joints made tight, the entire assembly is raised from the bottom of the trench on concrete or plastic blocks placed at intervals, so that concrete bed of specified depth is formed below the conduit assembly. The entire conduit envelope assembly shall be firmly anchored in position to prevent "floating" when concrete is placed.

H. After the installation is complete, a flexible duct rodding device shall be passed through each completed conduit to check for continuity and cleanliness.

I. Following the duct rodding device, a mandrel not less than ¼-inch smaller than the inside diameter of the conduit preceded by a wire brush tied to the same string shall be pulled through the conduit once in each direction. When the conduit is partially or fully obstructed with mud, dirt, or gravel, the duct shall be flushed clean by use of water from a long flushing nozzle attached to a water hose which shall be pushed into the conduit and applied until the conduit is clear. After cleaning, the procedure outlined above for rodding and wire brushing shall be followed. Any damaged conduit shall be replaced with a new conduit.

J. After all obstructions have been removed and the conduits wire-brushed clean, a nylon cord of suitable strength shall be threaded in each conduit of ductbank and tied to the nearest pulling eye with a six foot length left at each end. Immediately upon completion of threading the conduit with a nylon cord, both ends of the conduit shall be plugged to prevent entry of foreign matter before the cables are pulled.

END OF SECTION 33 71 19

SECTION 33 71 23
INSULATORS, LINE HARDWARE, CROSSARMS AND ANCHORS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Materials
B. Insulators
C. Hardware
D. Crossarms
E. Guys
F. Anchors
G. Street Lights

1.02 QUALITY ASSURANCE

A. Installation work shall be done in a thorough and workmanlike manner, in accordance with the Contract. Work shall comply with applicable ordinances and codes. All work shall conform to REA/RUS specifications, the 2017 (or latest edition) of the National Electric Safety Code (ANSI-C2) and National Electric Code shall be followed, except where local regulations or these Specifications are more stringent, in which case the most stringent qualifications shall be met.

B. All materials supplied by Contractor must be REA/RUS approved and manufactured in the United States.

C. Contractor is responsible for inventorying all units, construction drawings, and construction documents for material quantity requirements. All units are to be complete, functional and meet applicable safety standards.

D. All insulator ties, connectors, and guy grips are considered part of the units and will be supplied by Contractor at no additional cost.

PART 2 – PRODUCTS

2.01 INSULATORS

A. Suspension Insulators

1. 12kV Application

a.	60 Hz, Dry Flashover	80 kV
b.	60 Hz, Wet Flashover	50 kV
c.	Critical Impulse, Positive	125 kV
d.	Leakage Distance	11 1/2” min inches
e.	Specified Mechanical Load (SML)	20,000 lbs.
f.	Routine Test Load (RTL)	10,000 lbs.
g.	ANSI Classification	ANSI class 52-4 or equivalent
h.	Insulation Test Standard	ANSI C29.2
i.	Approved Manufacturers:	Victor, Gamma Insulator, Locke

B. Vertical Post Insulators Application and Specifications

1. 12kV Application – Pin type

a.	60 Hz, Dry Flashover	65 kV
b.	60 Hz, Wet Flashover	35 kV
c.	Critical Impulse, Positive	105 kV
d.	Leakage Distance	9 inches
e.	Maximum Design Cantilever Load (MDCL) 3000 lbs.	
f.	Base End Fittings	1.0“ Stud
g.	ANSI Classification	ANSI class 55-4 or equivalent
h.	Insulation Test Standard	ANSI C29.1
i.	Approved Manufacturers	Victor, Gamma Insulators, PPC

2. 12kV Application – Porcelain post type

a.	60 Hz, Dry Flashover	80 kV
b.	60 Hz, Wet Flashover	60 kV
c.	Critical Impulse, Positive	130 kV
d.	Leakage Distance	14 inches
e.	Maximum Design Cantilever Load (MDCL) 2800 lbs.	
f.	Base End Fittings	3/4“ Stud
g.	ANSI Classification	ANSI class 57-11 or equivalent
h.	Insulation Test Standard	ANSI C29.1
	Approved Manufacturers	Victor, Gamma Insulators, PPC

C. Neutral Insulator and Clevis

1.	ANSI Class	53-2
2.	Cantilever Strength	3000lbs.
3.	Color	Gray/Skyline
4.	Glaze	Standard
5.	Approved Manufacturers	Joslyn, Hubbell, Hughes Brothers

D. Fiberglass Crossarms

1. Tangent

a. Length: 10 foot

b. Color: Gray

c. Mount: Center

d. Manufacturer: Pupi

e. Catalog Numbers

1) 10 foot: TB25001205X2 ¾" BOLT

2. Deadend

a. Length: 10 foot

b. Color: Gray

c. Mount: Center

d. Manufacturer: Pupi

e. Catalog Numbers

1) 10 foot: DA3000120E2B9X2

E. Fiberglass Guy Strain Insulators

1. Ultimate Strength: 16,000 lbs.
2. Length: 78 inch as specified by Contract Drawings
3. End fitting hardware shall meet all applicable ASTM standards
4. End fitting hardware types: Clevis-Clevis, with one roller as specified on Contract Drawings.
5. Color: Gray
6. Rod: Fiberglass with ultra-violet protective coating
7. Manufacturer: Chance or equivalent

F. Street Lights and Masts

1. American Electric Lighting

a. 400 WATT - 32540SCAMT1R3DG

b. Mast Arm- 14'

2.02 LINE HARDWARE

A. Materials for use with ACSR conductors shall be forged steel or ductile iron, hot- dip galvanized in accordance with ASTM A153, or aluminum in accordance with ASTM 4-356-76.

B. Dead-end Clamps: Quadrant strain for 12kV applications.

1. Approved Manufacturers: Anderson or equivalent

C. Cotter Pins: Stainless steel, Type 302 or 304

D. Bolts

1. Manufactured in accordance with ANSI C135.1
2. Galvanized in accordance with ASTM A153-73
3. Each bolt shall be furnished with one standard square nut.
4. Size and type shall be furnished as specified in the Contract Drawings.
5. Locknuts shall be used to back-up all threaded bolt nuts, unless a washer is included.

E. Washers

1. Galvanized in accordance with ASTM A153-73
2. Size and type shall be furnished as specified in the Contract Drawings.

F. Attachment hardware such as anchor shackles, links, and clevises shall be galvanized in accordance with ASTM A153 and supplied in sizes and types as specified in the Contract Drawings.

2.03 GUY RODS, ANCHORS AND ACCESSORIES

A. Contractor must have the capability to install all types of anchors in all types of soils.

B. Anchors shall be power-installed, screw type quad 8-inch, 10-inch Helix.

C. Anchor rods shall be 8 feet in length by 3/4 inch square shaft, with triple-eye adapter for double Helix anchors.

D. Rod extensions shall be 3-1/2 or 7 feet in length.

E. Anchors shall have a minimum 27,000lb holding power in Class 5 soil.

F. Guy grips for use with steel guy stranding:

1. 7/16-inch EHS 7 strand: Preformed Line Products GDE-1108

G. Guy guards:

1. Guy guards: yellow, plastic, full round, 8 feet with bolted connections, 75- mil thickness.

H. Guying attachments shall be ductile iron, hot-dip galvanized in accordance with ASTM A-536, ASTM A153, respectively, and compatible with the ultimate guy strand(s) strength as specified in the Contract Drawings.

PART 3 – EXECUTION

3.01 INSULATORS

A. Handle insulators with care. Protect fiberglass continuously with packaging until installed.

B. Insulators shall be thoroughly cleaned of all foreign material before installation. Cotter pins must be fully inserted in insulator caps. If suspension insulators are raised separately from the pole structure, they shall be lifted from one (1) end of the assembly only. Bending of insulator strings, resulting in deformation of fittings or hardware, including cotter pins, shall result in rejection of the string, in which case Contractor shall re-fabricate the string at no cost to Owner. The movements of insulator strings for construction purposes shall be accomplished by pulling the string from the

bottom. All movement of insulator string away from or back to vertical shall be controlled movement. All post insulators shall be handled in a manner to prevent damage. Damaged, chipped or cracked insulators shall be replaced by Contractor.

C. Do not transport insulators and fiberglass units in any manner that will scratch, mar, or deface coating.

3.02 HARDWARE

A. Before installation, inspect hardware for missing parts, visual defects, and damage to galvanizing. Clean hardware by removing dirt, corrosion, and foreign matter. Repair damage to galvanizing to Engineer's satisfaction.

B. Tighten all hardware firmly, using properly-installed lock washers, lock nuts and spring washers.

C. Provide a washer at each point where a bolt head or nut bears on the surface of a pole or crossarm. Provide a locknut with each nut, eye nut, or other fastener on all bolts or threaded hardware.

D. Bore or drill all bolt holes such that the attached hardware and bolt is on the same horizontal or vertical plane. If required, bore bolt holes so they are in a level plane and in-line with deadend pulls, or at right angles to the line in tangent construction.

E. Bolt exposure shall be restricted to 2" maximum exposure. Contractor shall use correct size and length. Do not cut bolts to achieve this tolerance.

F. Tighten nuts firmly with properly installed lock washers, lock nuts, spring washers, and cotter pins. Orient nuts and cotter pins toward pole or downward, as applicable Spread and bend back straight cotter pins in hardware bolts so as to be shielded by the outer face of the unit to prevent corona. Do not use wrenches. Do not flake or damage galvanizing.

G. Hardware and other attachments to the pole shall be tightened to the point where sufficient compression is obtained to offset the effects of future pole shrinkage. Each item of hardware shall be thoroughly tightened and shall be set with locknuts and where necessary or suitable to the application with spring-type lock washers. Suitable flat, curved or reinforced washers shall be used to provide adequate bearing on wood surfaces.

H. Anchor shackles shall be installed, as required by Contract Drawings.

3.03 GUYS

A. Guys shall be provided where and as required by the Contract Drawings, and at other locations where required by changes in proposed line routing. Guys shall be of the strength, size and types specified herein. Where necessary, additional extension lengths shall be provided to screw anchors to ensure its placement into firm soil and shall be included as Work of this Contract. Guys shall be installed sufficiently tight to snug hardware, to prevent radio noise, and to set the anchor. The ground line at the top anchor rod shall be marked prior to loading. Creepage in excess of 1.5" shall be considered excessive, requiring anchors to be re-set as Work of this Contract. All hardware fittings and connections shall be tight. All down guys shall be equipped with approved guy guards.

B. Install all guy strands prior to conductor stringing operations. Guys shall be evenly pre-tensioned such that structure loads remain balanced during stringing.

C. Place all guys before conductors are transferred or installed. Attach guys to poles as specified in the Drawings. Ensure proper adjustment of guys when transferring and tensioning conductors so that loading on structures is balanced.

D. All guys shall be installed prior to loading the structures. If, after loading the structures, Owner determines that final adjustments to the guys are necessary, Contractor shall make such adjustments to the satisfaction of Owner.

E. Guy insulators shall be installed as specified in the Contract Drawings.

F. Install guy anchors in-line with slope of guy strand. Install double-guy anchors on a slope equal to the average slope of guy strands.

G. Guys must be of size and types shown on the Contract Drawings. Test anchors at the time of installation for 100 percent of manufacturer- specified holding capacity using the sheer pin/torque method or other methods recommended by the anchor manufacturer and approved by Engineer. Contractor shall submit written documentation of anchor tests, before conductor installation, indicating pole number, type of anchor, and proof of holding capacity.

H. Field drill holes for guy attachments as indicated on construction drawings n wood and steel poles. Field drilling on steel poles will require a zinc-rich touchup paint to prevent exposure to bare steel.

3.04 ANCHORS

A. Anchors must be of size and types shown on the Drawings.

B. Install anchors according to the manufacturer's written instructions. Install anchors and verify the holding capacity of all new anchors before conductors are transferred or installed.

C. All anchors and rods shall be in line on the bi-sector of multiple strain anchors. Each anchor rod shall be aligned with its connected guys and shall extend not less than 3", not more than 9" above the ground surface after the connected structure has been loaded.

D. The backfill of all anchor holes must be thoroughly tamped the full depth.

E. Excavation shall not be left open for more than two days.

F. Contractor shall have all equipment required to install the screw anchors according to manufacturer's instructions. Torque capacity of the driving rig shall be at least 120 percent of the installation torque specified by the anchor manufacturer. The driving rig must be capable of applying an axial downward force on the anchor, as recommended by the manufacturer. This axial force shall be applied consistently throughout anchor installation to insure the anchor advances the proper depth for each revolution, as specified by the anchor manufacturer.

G. Drive all anchors, adding extension shafts and couplings, as required, until the manufacturer's recommended installation torque is achieved. The anchor must then be advanced for the distance specified by the manufacturer while maintaining torque. If the torque decreases, continue driving until the specified torque is reached again, and maintain torque for the specified distance.

H. Immediately notify Engineer if difficulties are experienced during installation. Engineer will instruct Contractor whether to proceed with installation or to remove the screw anchor and install an alternate anchor.

I. All anchor assemblies requiring abandonment in soil shall be cut off 18 inches below grade. All anchor assemblies requiring abandonment in rock shall be cut off at grade.

J. Unless an alternate location is specifically approved by Engineer, all anchors shall be installed within 6 inches of the location specified on the Contract Drawings.

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END OF SECTION 33 71 23

SECTION 33 71 25
CONDUCTOR, GUY WIRE AND GROUNDING WIRE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Conductor and Accessories
B. Wire Sagging and Clipping
C. Splices, Deadends, and Connections
D. Grounding
E. Inspection and Testing

1.02 SUBMITTALS

A. Provide stringing plans and setup locations.

B. Engineer will provide sag charts for installation.

C. Test results of ground resistance.

1.03 QUALITY ASSURANCE

Installation work shall be done in a thorough and workmanlike manner, in accordance with the Contract. Work shall comply with applicable ordinances and codes. The 2017 (or latest edition) of the National Electric Safety Code (ANSI-C2) shall be followed, except where local regulations or these Specifications are more stringent, in which case the most stringent qualifications shall be met.

PART 2 – PRODUCTS

2.01 CONDUCTOR AND ACCESSORIES

A. All materials are Contractor-furnished.

B. 12kV Primary conductor shall be:

1. 795 ACSR 26/7 “Drake”

2. 397 ACSR 18/1 “Chickadee”

C. Neutral conductor shall be:

1. 4/0 ACSR 6/1 “Penguin”

2. 397 ACSR 18/1 “Chickadee”

3.

2.02 GROUNDING MATERIALS

A. All grounding materials will be Contractor-furnished.

B. Ground rods for overhead distribution: Copper-clad or copper-bonded, 5/8-inch minimum diameter by 8 feet in length.

C. Grounds and Accessories: Ground clamps for 5/8-inch rod, safety set screw, Joslyn J8492.

D. Use #6 solid copper, soft-drawn for pole down leads.

E. Pole Ground Nut: Ground Vise, Anderson GC-207

PART 3 – EXECUTION

3.01 WIRE SAGGING AND CLIPPING

A. Follow practice recommended in the latest edition of IEEE No. 524 “IEEE Guide to the Installation of Overhead Transmission Line Conductors”.

B. Installation shall provide necessary clearances between conductors and ground, between conductors, or between conductors and other surfaces. All necessary precautions shall be taken to ensure that the conductors, poles, insulators, or other facilities are not damaged. Particular care must be taken to ensure that the conductors are not damaged in any manner. Conductors must not be drawn across the ground and shall not be drawn over crossarms without proper protection. Conductor installation shall be accomplished, using approved sheaves and other equipment. All sections of conductor damaged by application of gripping attachments shall be repaired or replaced prior to completion of Work

C. Initial or Final Sag tables, as applicable, shall be provided by Engineer. Sagging of the conductor by the controlled tension method is acceptable.

D. Tighten all guys before the conductors are transferred to new structures.

E. Contractor’s sagging procedure must be approved by Engineer. Regardless of the procedure used, the resulting final sags must be within a tolerance of ±3” of the specified sags.

F. Determine sag temperature by using an accurate thermometer placed in the open at a height approximately equal to the sagged height of the wire.

G. After sagging the wire, record, in a format approved by Engineer, all pertinent sagging information including but not limited to temperature, span length, time, and sag. Provide such information to Engineer in writing.

H. Make up jumper loops such that they present a smooth, uniformly curving appearance. Form the jumper such that the completed jumper meets clearance requirements from live parts to ground as given in the NESC current at the time of bid opening.

3.02 SPLICES, DEADENDS, AND CONNECTIONS

A. Make full-tension splices, if required, in the presence of Owner’s representative.

B. Thoroughly clean conductor surfaces of all foreign matter at the fitting location. Remove conductor sections damaged by the application of gripping attachments before the conductors are spliced with the permanent compression splices.

C. Remove all wrapping, binding, and excess grease and compound at the completion of pressing operations. The strands of the conductors or wire must be snugly seated when the splice is completed. Remove slight bends in the fitting using a method that protects the fitting from damage.

D. Remove all burrs and die marks from splices, deadend fittings, and jumper terminals.

E. Install the compression splices in accordance with manufacturer instructions. Use manufacturer-recommended filler compound. Select the correct die by matching the index numbers stamped on both the fitting and die set. Do not allow the weight of the conductor or wire to be applied to the dies.

F. Install compression deadend assemblies in accordance with manufacturer recommendations.

3.03 GROUND RODS - OVERHEAD LINES

A. Driven grounds shall consist of a system of 5/8 inch by 8 foot sectional ground rods, complete with coupling sleeves and driving studs, connected vertically and driven a minimum of 2 rods deep. Locate ground rods so that the top is at least 2 feet below grade. The ground rods shall be bonded to each other and to the pole down-leads with #6 C.W. bare conductor. If refusal is encountered before full depth is reached and relocation of rod is impractical, remove rod and drill a 2”-diameter vertical hole to full depth, place ground rod, and fill remaining space with bentonite clay. Used only as approved by Owner.

B. Install ground rods along center line of line.

C. Placing ground rods in “pole embedment hole” is not acceptable.

D. All guy wires shall be bonded to the pole ground and neutral in accordance with NESC and RUS requirements. Guy markers shall be installed on all guys.

3.04 GROUNDING CONNECTIONS

Clean electrical contact surfaces with solvent or abrasion, as recommended by connector manufacturer, to provide a clean contact. Apply a liberal coat of oxidation inhibiting compound to all buried and bimetallic connections. Remove excess compound after installation. Torque connection bolts as recommended by the manufacturer.

3.05 INSPECTION AND TESTING

Before energizing any circuit, inspect the complete section of line circuit that will be energized to verify that the circuit segment is complete and free from all extraneous connections and unsafe conditions. Test each section of line that will be energized for absence of shorts and grounds, as well as for conductor continuity and correct phasing. Notify Owner not less than 48 hours in advance of scheduled times for energizing line circuits.

END OF SECTION 33 71 25

SECTION 33 71 26.05
DISTRIBUTION LINE SWITCHES

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Distribution Switches

1.02 SUBMITTALS

A. Shop Drawings

1. Erection details including bill of material, for installation on steel pole(s).

B. Ratings

1. Electrical ratings including nominal and maximum continuous operating voltage, rated withstand voltage, continuous and momentary asymmetrical current and maximum load interrupting capability

2. Mechanical strength rating of frame for balanced and unbalanced conductor tension loading

1.03 DELIVERY, STORAGE, AND HANDLING

A. Distribution switches shall be shipped with all three switch poles and interphase operating mechanism preassembled to the switch mounting crossarm. Each three-pole switch assembly shall be crated in a manner suitable for stacking. Operating pipes shall be shipped unassembled and banded together, one set per switch, properly identified and protected against damage. All loose parts and operating mechanism hardware shall be shipped in a common container properly identified.

B. Shipping Requirements:

1. Switches shall be assembled, with insulators, and fully adjusted before shipment.

PART 2 – PRODUCTS

2.01 GENERAL

A. Test: Successfully passed ice tests on a prototype model as outlined on ANSI “Test Code for High Voltage Air Switches.”

B. After fabrication, hot-dip galvanize bases, operating mechanisms and other steel parts in accordance with ASTM A 123. Do not drill, cut or alter after galvanizing.

C. Switch terminal pads: NEMA 2-hole tinned.

2.02 DISTRIBUTION SWITCHES

A. Three-phase gang-operated switches supplied for distribution applications shall be horizontal side-break, upright mounting, with three switch assemblies rigidly attached to a common, steel, pole-mounted crossarm.

B. Approved manufacturer: S&C Omni-Rupter- No substitutions

C. Supplied switches shall meet the following electrical requirements:

1. Nominal Operating Voltage, kV: 14.4
2. Maximum Operating Voltage, kV: 17
3. Basic Impulse Level, kV: 110
4. Continuous Rating, Amps: 900
5. Momentary Asymmetrical Rating, kA 25
6. Minimum Load Interrupting Rating, Amps: 900

2.03 ACCESSORIES

A. Grounding strap and clamps for attachment to the vertical operating shaft. Strap to be braided copper wire, tinned, at least 24 inches long with two 9/16 inch holes at one end for attachment to the pole grounding.

B. Switch blade position indicator located near operator.

C. Provision for padlocking in either OPEN or CLOSED position.

D. Operator: As specified on Contract Drawings

PART 3 – EXECUTION

3.01 GENERAL

A. Follow manufacturer-provided instructions and recommendations for the following:

1. Receiving and storage
2. Assembly and adjustment of switch components
3. Inspection of complete switch assembly
4. Switches shall be made with compression type connectors. Drilling and hole boring and other miscellaneous items shall be considered part of unit or pole assembly and included in bid cost.

END OF SECTION 33 71 26.05

patterson & dewar ENGINEERS

U.S. 41A – Section 1 Utility Relocation Contract No: 6531-C1
Madisonville Municipal Utilities Date: Nov. 30, 2017
KY Transportation Cabinet Rev.: 00

SECTION 33 71 50
MEDIUM VOLTAGE POWER CABLE AND ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes

1. Installation of 15kV, 1/0 aluminum cable
2. Cable fittings and accessories

1.02 REFERENCES

A. Reference Standards

1. ANSI/IEEE C2, National Electrical Safety Code
2. ASTM B33, B189, B3, B8, B172, B173, B174, B230, B231, B496, Copper and Aluminum Conductor Specifications
3. AEIC CS8, Cross-linked Polyethylene (XLPE) Shielded Power Cables Rated 5 through 46kV
4. IEEE-48, Test Procedures and Requirements for High Voltage Alternating Current Cable Terminations
5. IEEE-404, Standard for Power Cable Joints
6. NEMA WC74, 5–46kV Shielded Power Cable for Use in the Transmission and Distribution of Electric Energy
7. ICEA/IEEE 400, Guide for Making High-Direct-Voltage Tests on Power Cable Systems in the Field.
8. UL 1072, Medium Voltage Power Cables
9. ICEA 5-66-524, Specification for Cross-Linked Thermosetting Polyethylene Insulated Wire and Cable for the Transmission and Distribution of Electric Power
10. NETA Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems, 2003

1.03 SUBMITTALS

A. Shop Drawings:

1. Pulling lubricants
2. Cable terminations

B. Cable test results

C. Cable Splices Qualifications: Provide proof of certification, training, names of personnel, years of experience performed with selected accessories.

1.04 QUALITY ASSURANCE

A. Installer: Specializing in installation of medium voltage cable and accessories with minimum of three years' experience.

PART 2 - PRODUCTS

2.01 MEDIUM VOLTAGE POWER CABLE

A. Conductor shall be rated as follows:

1. 15kV Power Cable – Phase Conductor, three single cross-linked polyethylene compacted copper conductors per Phase, 15kV, 1/0 Al, 133% insulation level, 220 Mil XLPE insulated, with 1/3 concentric neutral, and PVC outer jacket

2.02 POWER CABLE TERMINATORS

A. Riser pole terminators

1. Single conductor terminators capable of indoor/outdoor cable terminations as required.

2. 15kV, 1/3 concentric neutral power cables terminating in distribution vaults and power transformers.

a. Ratings and characteristics:

1) Rated voltage: 13.2kV line to line

2) Conductor:

i) 1/0 Al. per Contract Drawings

3) Skirts: Used on outdoor installations

4) Voltage withstand: ac, 1 min., 50kV; dc, 15 min., 75kV.

5) Impulse withstand 1.2 × 50 microseconds, crest: 110kV.

6) Two bolt termination.

3. Manufacturer: Raychem Corporation. (Catalog no. to be determined by cable specifications of selected manufacturer) Raychem HVT

4. Accessories: ground braids and clamps.

2.03 CABLE PULLING LUBRICANT

A. Lubricity: Coefficient of dynamic friction less than or equal to 0.15 on PVC-jacketed cable and PVC conduit with 200 lbs./ft. of normal pressure.

B. Temperature range: 20°F – 110°F

C. Compatible with PVC-jacketed cable

D. Non-toxic, non-flammable, water-based gel

E. Manufacturer: American Polywater, Stillwater, MN, Type Polywater® J. or Polywater® Plus Silicone™

F. Listing: UL

2.04 CABLE IDENTIFICATION TAGS

A. Type: Horizontal-reading, strapped to cables with mylar, self-locking tabs at each end of holder.

B. Tags: Polyethylene, with black 1-inch high characters on a yellow background, integrally molded with locking grid, injection molded.

C. Holders: Black polyethylene.

D. Marking as follows: Feeder or circuit number and phase, e.g. “201A.”

E. Furnish blank yellow characters to fully fill the holder, as required.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install cables in accordance with ANSI and IEEE C2.

1. Do not exceed cable pulling tensions and bending radius recommended by manufacturer.

2. Pull cable using specified lubricants and cable pulling equipment. Locate reels conveniently for feeding cable into the conduit without causing excessive bending or possible injury to cable by abrasion and place on reel stands.

3. Pull all cables together where several cables are to occupy one conduit.

4. Seal cable ends when pulling into conduit. Do not leave cable ends exposed to moisture unless splicing is to be done immediately.

5. Station sufficient personnel along the cable route at all conduit entrances and exits to direct the passage of cable as required.

6. Protect the cable from chafing on the ground, conduit edges or other sharp surfaces during pulling. Provide timbers and flexible cable pulling tubes to guide and protect the cable.

7. Apply identification tags to cables at terminal points, conduit entrances and manholes. Refer to Contract Drawings for the numbering sequence for the cables.

8. Permanently support cable ends prior to terminating. Support vertical cable runs having a total vertical drop in excess of 15 feet at the top and as specified in NEC Article 300-19 with cable grips or other approved devices, with provision for cable expansion and contraction.

9. Clamp or snub each cable and tie for proper support at each terminal connection and splice so that strain on the cable is not transmitted to the terminal connection or splice.

3.02 CABLE IDENTIFICATION

A. Mark all cables with cable circuit and phase identification tags specified in PART 2 above.

B. Securely fasten cable identification tags to cables at each end of tag holder with self-locking nylon ties, in visible locations at each termination and at intermediate pull boxes, manholes, trenches or other points of access.

3.03 CABLE TERMINATIONS

A. Perform cable phase identification and phasing tests before initiation of terminating activities.

B. Perform "megger" insulation resistance test on each cable to ground prior to terminating. Record temperature, humidity, duration of test and voltage for each test and submit to Engineer. Use 2500 volt motor-operated megger.

C. Minimum acceptable megger reading is 10 megohms.

D. Make further tests to isolate problem if specified test values are not met.

E. Replace cable installation with new cable if required insulation resistance cannot be obtained.

F. Complete termination in accordance with manufacturer's instructions.

G. Ground all cable shields to grounding conductor.

3.04 TESTING CABLES

A. New Cables

1. Test all sections of cables.

2. Conduct a high potential (HI POT) dc test at NETA specified values for 15 consecutive minutes. Record leakage current with time.

3.05 FIELD QUALITY CONTROL

A. Coordinate installation and final testing with Engineer. Notify Engineer at least 48 hours in advance of testing. Provide Engineer the opportunity to witness any and all tests. Submit all test results to Engineer within 36 hours of the test.

B. Except where noted otherwise, the following tests may be performed by Contractor or by an independent testing firm regularly employed in the testing of medium-voltage cables.

1. DC high-potential (Hi-Pot) testing shall be performed by an independent testing firm.

C. Tests shall be performed for all medium-voltage cable installed by this project.

D. Tests shall be performed after making up splices and terminations, but before landing cable run at either source or load, and before electrical circuitry has been energized except as noted below:

1. If desired, cables may be tested prior to making up splices and termination. However, such tests shall not replace the need to fully test the cable assembly after termination. Test voltages used prior to termination shall not exceed the cable manufacturer's recommended limits.

E. Perform inspections and tests in accordance with NETA ATS 2003 7.3.3.

F. Perform Visual and Mechanical Inspection per NETA ATS 7.3.3.1 and the following:

1. Perform Visual and Mechanical Inspection at each end of cable and at any exposed transitional area.

END OF SECTION 33 71 50

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U.S. 41A – Section 1 Utility Relocation Contract No: 6531-C1
Madisonville Municipal Utilities Date: Nov. 30, 2017
KY Transportation Cabinet Rev.: 00

SECTION 33 71 75
OVERHEAD ELECTRICAL SYSTEM CONSTRUCTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Description of Units
B. Construction

1.02 QUALITY ASSURANCE

A. Installation work shall be done in a thorough and workmanlike manner, in accordance with the Contract. Work shall comply with applicable ordinances and codes. The 2017 (or latest edition) of the National Electric Safety Code (ANSI-C2) shall be followed, except where local regulations or these Specifications are more stringent, in which case the most stringent qualifications shall be met.

B. If any materials, equipment or workmanship shall be deemed defective after delivery or installation before final acceptance of project. The replacement or remedy of shall be at the expense of Contractor.

C. In the event Owner determines the construction contains numerous defects, it shall be the duty of Contractor to have inspection, if any, made by an engineer approved by Owner.

PART 2 - PRODUCTS

2.01 DESCRIPTION OF UNITS

A. Special units and descriptions are included in Contract. Remainder of unit descriptions will be found in REA/RUS Bulletin 50-3 Standard D-804: Specifications and Drawings for 7.2/12.5 kV Line Construction.

B. Fiberglass braceless crossarms and manufacturer provided material will be used in place of wood crossarms and braces on steel poles. Crossarms to be installed as shown on construction drawings provided in this contract. It is Contractor's responsibility to verify what material is supplied from manufacturer.

C. Maintain careful and accurate records of all materials removed or reused as specified.

D. The construction assemblies are on a unit basis so that Owner may authorize any combination, addition or deletion, of construction units desired. The descriptions apply to those assemblies on the Contract Drawings on the Assembly Guide Drawings and includes all necessary labor and Owner-furnished material required to make the assemblies complete, including testing and submitting report forms where required, as follows:

1. Installation (Add) Units

   a. Specified by designation of the assembly unit to be installed, e.g. "ADD: C1.1" signifies the installation of a C1.1 assembly unit as identified on the Assembly drawings.

   b. Maintain careful and accurate records of all materials removed or reused as specified.

2. Pole Installation

   a. Consists of one pole in place. The first digits indicate length: the following shows classification. Thus, "45-3" signifies a 45-foot class 3 wood or steel wood-equivalent

poles. Similar designations may be used for varying pole manufacturers. If "S" is indicated steel pole is to be installed.

b. Site restoration at pole and along access to pole is a part of unit requirements.

c. Includes the "covering" up of existing conductors and/or the transfer of conductors to "Hot Arms" for work clearance/code requirements.

3. Overhead Conductor Installation

a. Conducrtor is measured horizontal distance between conductor supports. The unit includes tie wires, clamping, sleeves for splicing, connectors, and armor rods; jumpers and connections at deadends, junctions and taps. Includes report form submittal.

b. Unit will include the spreading of existing conductors onto hot arms as required.

4. Pole Top Assembly Installation

a. Consists of the hardware, crossarms and their appurtenances, insulators, connectors, hot-line clamps, and stirrups, etc., except tie wire required to support the conductors. Unit does not include the pole ground downlead wire.

b. Includes the "covering" up of existing conductors and/or the transfer of conductors to "Hot Arms" for work clearance/code requirements.

5. Gang-Operated Switch

a. Specified by the term "GOAB". Consists of insulators, switch, crossarms, terminal pads, switch base, controls. Refer to manufacturer specifications for installation instructions.

6. Ground Installation

a. Consists of the ground wire, staples, ground molding where required, ground rod, all connectors, clamps and associated hardware as indicated on the various guide drawings. Includes testing and report form submittal.

7. Guy Installation

a. Consists of the necessary length, both overhead and down guys, of guy wire, all bolts and fasteners, lag screws, guy bonding bolt, deadend hardware, grounding jumpers and connectors. Guy markers are part of this assembly.

8. Anchor Installation

a. Consists of the anchor with rod complete with applicable bonding clamp and ready for attaching the guy wire, including testing, and report form submittal. Anchor rod extensions required to meet the holding capacity will be additional units.

9. Transfer Assembly

a. Specified by the prefix "TR" and followed by the designation of existing assembly unit to be transferred.

b. Transfer unit will be used when a unit may be removed and installed from one set up of truck as determined by Owner.

c. Consists of furnishing of all labor for removing and reinstalling the unit specified from one location to another on the same or new pole, as required. Material in the transfer unit such as brackets, braces and etc. may be reused if in satisfactory condition and only

when approved by Owner.

d. Includes the removal and reattachment of any or all conductors associated with the unit, any sagging or re-sagging, tying, untying and re-tying, armor rodding or re-armor rodding, all splices, connectors, etc., and any other labor required to make a complete assembly.

e. Transfer of guy wire requires installation of new preformed deadend grips.

f. Splicing of guy wire is not acceptable.

10. Removal Units

a. All assembly units specified by the "REMOVE" shown as green and followed by the assembly unit designation of existing assembly unit to be removed.

b. Includes the furnishing of all labor for removal of existing units of construction from existing lines, disassembling into material items, and all labor and transportation for the returning of all materials in groups of like items to the warehouse of the Owner in an orderly manner, or transporting elsewhere to the site of the Project or for reuse in the prosecution of this Contract as specified.

c. Do not place removed materials or equipment where it will be damaged by or cause damage to vehicular traffic, livestock, persons and property. Immediately remove from the job site.

d. Includes, in addition to the removal of the assembly itself, any necessary transferring, holding and handling, re-sagging, splicing, re-armor rodding, and retying and all connectors and reconnecting of all conductors, jumpers and leads in those cases where an existing assembly will be removed and replaced by a new assembly and where any existing conductor is to be reused.

11. Pole Removal

a. Includes all poles of the same height, regardless of pole class, and designated by the same unit.

b. Includes pulling and salvage of all poles designated as removals. Poles are not to be cut off unless specified.

c. Includes immediate backfill of holes with solidly tamped earth in 6” maximum thickness layers and refill to the ground line of any settlement that occurs during the contract period.

d. When backfilling holes at pole removal locations, do not dig holes in the landscape to obtain backfill. Obtain backfill dirt by scooping or scraping within the designated right-of-way or by fill dirt obtained locally. Do not dig seeded areas within highway or public rights-of-way. Do not place foreign objects in backfill.

e. Includes the replacement of the surrounding surface where concrete, asphalt, or other man-made surfaces are encountered.

f. Poles that are designated to be “removed” shall not have the tops cut off unless the existing pole conflicts with the safe operation and construction of the new facilities.

g. Joint Use Poles designated for “removal” shall not be topped without providing prior notification to Owner. Before topping any Joint Use pole designated for “removal”, Contractor shall be responsible for contacting the occupying Joint Use Utility and request that said Utility vacate the subject pole. Contractor shall provide Owner verification of contact if requested. If the Joint Use Utility cannot or will not vacate the pole, Contractor

may top the pole, if such pole conflicts with the safe operation and construction of the new facilities. This function is considered “means and methods”, and no additional compensation will be made for topping poles designated for removal or for coordinating work with the Joint

h. Use Utility unless prior approval has been received from Owner. Contractor, for the duration of the construction contract, shall be responsible for the removal of all “topped” poles previously designated for “removal” and upon removal will be compensated the “removal” unit bid price.

12. Pole-Top Assembly Removal

a. Includes, in addition to the removal of the assembly itself, any necessary holding and handling, resagging, splicing, re-armor rodding, and retying and all connectors and reconnecting of all conductors, jumpers and leads in those cases where an existing assembly will be removed and replaced by a new assembly and where any existing conductor is to be reused.

b. Includes any holding or handling of mainline or tap conductors at tap lines, angles, and deadends where such is involved, and reinstalling of any conductor as required by the assembly. The new unit of construction will be specified separately.

13. Conductor Removal

a. Includes the removal unit for each size of conductor or cable shown by the "Remove" followed by the conductor or cable type.

b. Includes removal in the longest practical length, preferably between deadends, without unnecessary kinking or nicking. It also includes coiling or reeling of all conductors, and removing and retaining possession of all tie wire, armor rods, jumpers, and miscellaneous connectors.

14. Guy Removal

a. Includes all guys, attachments, hardware, grounds, and insulation regardless of length, type of attachment, size of guy strand or accessories. Thus, REMOVE: "E" signifies removal of any down guy or span guy assembly including attachment, hardware, grounds, and insulation.

b. Includes removal and coiling of guy strand in the longest practical length and the dismantling of all three-bolt clamps, guy attachments, bonding bolts and guy guards.

15. Anchor Removal

a. Includes only anchor rod removal in the anchor removal units. The anchors will be left in the ground. Rods unable to be removed will be cut off 18” below grade.

PART 3 - EXECUTION

3.01 CONSTRUCTION

A. Removing and Replacing Fences, Sod, etc. shall be completed as follows:

B. Contractor shall carefully remove and store all interfering fences, mailboxes, culverts, shrubs, flowers, other planting, etc. After installation of work and backfilling, reinstalling these items and restoring to at least the conditions which existed prior to commencement of work using materials and workmanship to match those of original construction and installation.

C. Coordination shall be provided as follows:

1. Contractor and all Subcontractors for the various branches of work employed on the Project shall cooperate fully with each other to facilitate the progress of the work, and to avoid all interferences between the various parts of the work.

2. Contractor shall cooperate fully with any other contractor that is engaged in work on the Project for Owner or any other contractor working in the Project area.

D. Poles shall be installed per Section 33 71 16.43 - Pole Construction, Installation, and Removal.

E. Pole Top Assemblies shall be installed as follows:

1. Pole top assemblies shall be framed in accordance with drawings.

2. Switches shall be installed in accordance with manufacture specifications.

F. Insulators shall be installed per Section 33 71 23 – Insulators, Hardware and Anchors.

G. Practices relative to right-of-way shall be observed by Contractor during construction as follows:

1. The ROW shall consist of an area as determined by the state highway markers on both sides of the center line of the route of the Project lines.

2. Limit the movement of crews and equipment so as to cause as little damage as possible to cultivated land, pastures, bridges, crops, orchards, or other property, and endeavor to avoid marring the lands. Replace all fences which are necessarily opened or moved during the construction of the Project, in as good condition as they were found and take precautions to prevent the escape of livestock. Contractor shall be responsible for all damage and loss, outside right-of-way, as specified herein, caused by the construction of the Project.

3. All rights-of-way and easements across private or public property required for performance of the work herein will be obtained by Owner. Access to the Project area outside the rights-of-way limits specified shall be the responsibility of Contractor. Owner shall be informed of all arrangements made for such access. Promptly restore to at least the conditions which existed prior to the commencement of work any ruts or damage made by equipment whether on or off the right-of-way.

END OF SECTION 33 71 75

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U.S. 41A – Section 1 Utility Relocation
Madisonville Municipal Utilities
KY Transportation Cabinet

Contract No: 6531-C1
Date: Nov. 30, 2017
Rev.: 00

Exhibit A

Install / Remove / Transfer Unit Quantities

SECTION 1
INSTALL QUANTITIES

DESC.	QTY
1/0 ACSR	1,220
1/0 DPX	153
1/0 TPX	329
15KV ELBOW	4
2 ACSR	3,482
2/0 QPX	318
2C2-2CL	6
2C8C	1
2C7C2-BA	-
2C7C-BA	4
35-4	4
397.5 18/1 ACSR	3,882
4 DPX	1,319
1/0 15KV URD	820
400W STREETLIGHT & MAST	5
40-3	2
45 STEEL POLE	2
45-3	3
50 STEEL POLE	1
50-1S	1
50-2	1
50-3	1
50-H2	-
50-H3S	1
55-H1S	1
55-H2S	3
55-H3S	5
60-H2S	1
60-H3S	3
60-H4S	1
60-H5S	1
60-LD12S	1
65-H4S	4
70-H5S	1
795 26/7 ACSR	17,526
A1.011	2
A4.2	2
A5-2	6

SECTION 1
INSTALL QUANTITIES

DESC.	QTY
A6.1	2
ADD DEPTH	12
ANCHOR BOLT FDN	1
C2.24	1
C2.52	2
C2-2CL	8
C7C	4
C8C	9
CONCRETE BACKFILL	5
CRUSHED ROCK BACKFILL	3
E1-3	13
E1-3F	40
E1-3FD	11
E2-3T	10
FP-2	55
G1.4	3
G1.6	1
G2.1	1
G3.3	1
H1.1	3
H4.1	1
J2.1	6
J2.2	8
J2.2V	24
J3.1	1
JUMPER	5
K11	1
L2.3	1
M2-11RO	24
M26-5	4
M5-10	2
M5-10C	7
M5-9	3
P1.3	4
S2.32	2
TRENCH	168
UA1	1
UC	1

SECTION 1
REMOVAL QUANTITIES

DESC.	QTY
35	2
40	7
45	11
50	3
1/0 ACSR	1,396
1/0 TPX	64
15KV UG CABLE	770
2 ACSR	3,200
2/0 QPX	20
2C2-2CLX	6
2C8C-BA	4
397.5 18/1 ACSR	7,104
50 SP	2
55 SP	5
60 SP	3
65S	1
A1	2
A2.3	1
A4	2
A5	2
A5-2	5
C1.3	5
C2.52	5
C2-1	1
C2-2	1
C2-2CL	1
C5.21	3
C6.21	3
C7C	1
C9-1X	1
DUPLEX	1,126
E	49
E2	4
E3-10	29
F	38
F2	1
G1	1
G2	1
G3	1

SECTION 1
REMOVAL QUANTITIES

DESC.	QTY
H1.1	16
J2.1	1
J2.2	1
K11	4
M2-11RO	7
M26-5	12
M3-15	1
M5-10	1
M5-6	3
M5-9	4
NEUTRAL	2,838
PRIMARY	12,237
S1.01	6
S2.01	3
S2.32	1
TRIPLEX	329
UA1	1
UC	1

SECTION 1
TRANSFER QUANTITIES

DESC.	QTY
397.5 18/1 ACSR	180
795 26/7 ACSR	1,080
A5	1
C7	1
UM5	1
G3.1	1
2 ACSR	568

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U.S. 41A – Section 1 Utility Relocation
Madisonville Municipal Utilities
KY Transportation Cabinet

Contract No: 6531-C1
Date: Nov. 30, 2017
Rev.: 00

Contract Drawings

BY	REVISION	DATE	No.
	ISSUED FOR BIDS.	11-30-17	0

Designed By:
Drawn By:
Checked By:

MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
STEEL POLE FRAMING
WOOD POLE EQUIVALENT
2C2-2CL

patterson & dewar ENGINEERS
850 CENTER WAY, NORCROSS, GEORGIA 30071
(770) 453-1410 | pdeng@pdeers.com
ENGINEERS - SURVEYORS

DATE
SCALE
DRAWING NO. KYMMU41A101-0
REV.

FOR BIDDING ONLY

GROUNDING NUT WELDED
OVER 5/8" DIA.
HOLE FOR USE WITH 1/2"-13
THREAD BRONZE
GROUND CLAMP

STAINLESS STEEL
GROUNDING NUT
1 — N.T.S.

PHASE 2 CONSTRUCTION	
STR NO.	HEIGHT/CLASS
N87	55-H3
N89	60-H3
N131	55-H3
N133A	60-H2

SAVED: 11/30/2017 1:28 AM BY LBROOKS
PLOTTED: 11/30/2017 4:25 PM BY LBROOKS
FILE LOCATION: N:\MMU\41A RELOCATION\WP\CAD\DWGS\FINAL DESIGN\STEEL POLE DRAWINGS\SEC 2

MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY

STEEL POLE FRAMING
WOOD POLE EQUIVALENT
2C2-2CL-7' SPACING

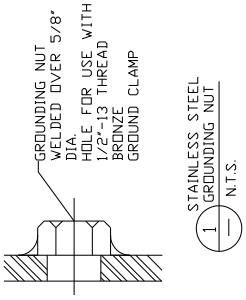
No.	DATE	REVISION	BY
0	11-30-17	ISSUED FOR BIDS.	PAH

Designed By:
Drawn By:
Checked By:

patterson & dewar ENGINEERS
850 CENTER WAY, NORCROSS, GEORGIA 30071
(770) 453-1410 | pdengineers.com
ENGINEERS - SURVEYORS

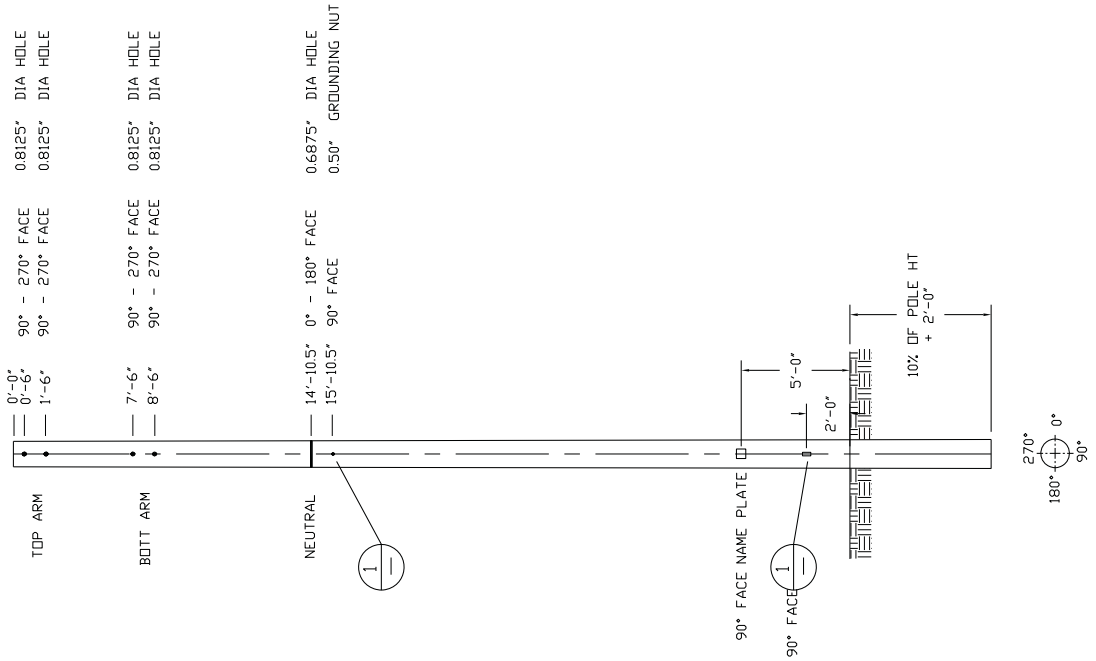
DATE
SCALE
DRAWING NO. KYMMU41A102-0
REV.

FOR BIDDING ONLY



PHASE 2 CONSTRUCTION

STR NO.	HEIGHT/CLASS
N130	65-H4



FOR BIDDING ONLY

KY/MU41A103-0	DRAWING NO.
	SCALE
	DATE

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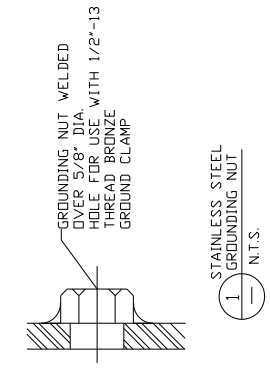
MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY

STEEL POLE FRAMING
WOOD POLE EQUIVALENT
C2-2CL/ C8C/GANG OPERATED SWITCH

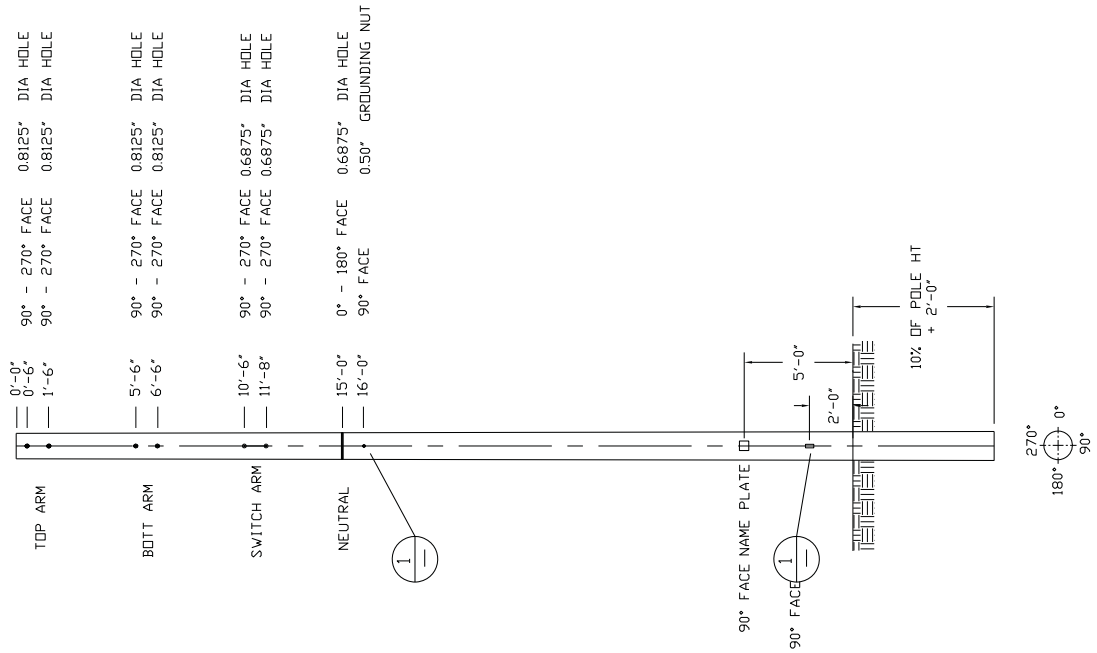
No.	DATE	REVISION	BY
0	11-30-17	ISSUED FOR BIDS.	PAH

Designed By:
Drawn By:
Checked By:



PHASE 2 CONSTRUCTION

STR NO.	HEIGHT/CLASS
N84	55-H3



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MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY

STEEL POLE PROJECT
WOOD POLE EQUIVALENT
2C2-2CL / C7C

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GROUNDING NUT WELDED OVER 5/8" DIA. HOLE FOR USE WITH 1/2"-13 THREAD BRONZE GROUND CLAMP

1 STAINLESS STEEL GROUNDING NUT N.T.S.

PHASE 2 CONSTRUCTION

STR NO.	HEIGHT/CLASS	BUCKARM HOLE ALIGNMENT
N85	55-H2	118° - 298° FACE
N88	55-H3	8° - 188° FACE

MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
STEEL POLE PROJECT
WOOD POLE EQUIVALENT
2C7C-BA

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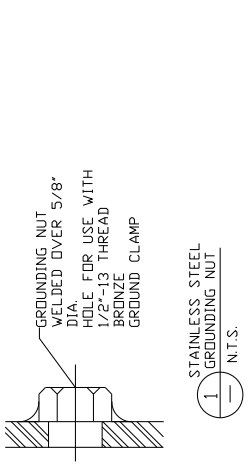
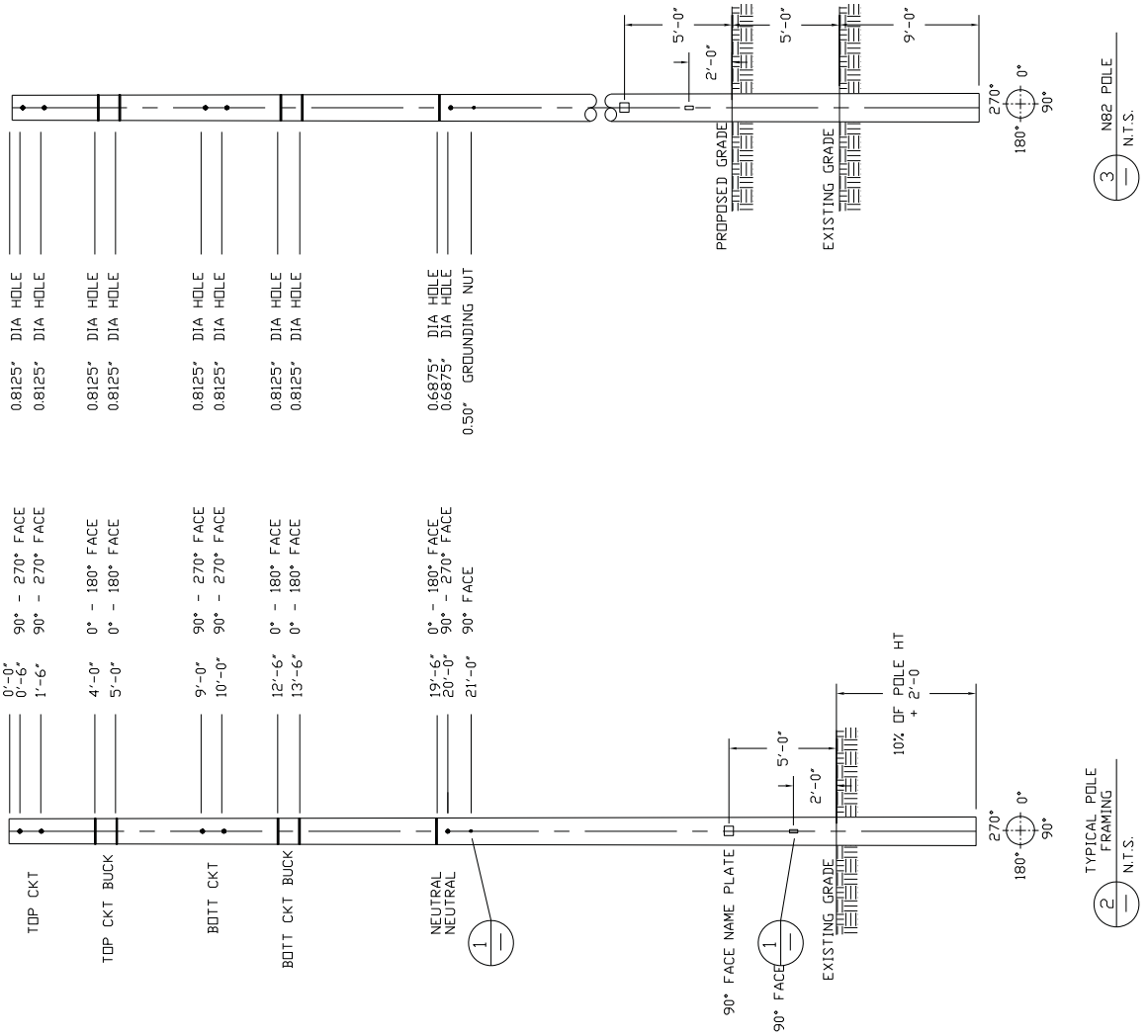
PHASE 2 CONSTRUCTION

STR NO.	HEIGHT/CLASS	EMBEDMENT
N82	70-H5	SEE DETAIL 3
N83	65-H4	8.5'
N91	65-H4	8.5'
N92	65-H4	8.5'



1 — STAINLESS STEEL GROUNDING NUT N.T.S.



1 — TYPICAL POLE FRAMING N.T.S.

3 — N82 POLE N.T.S.

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STEEL POLE PROJECT
WOOD POLE EQUIVALENT
2C8C

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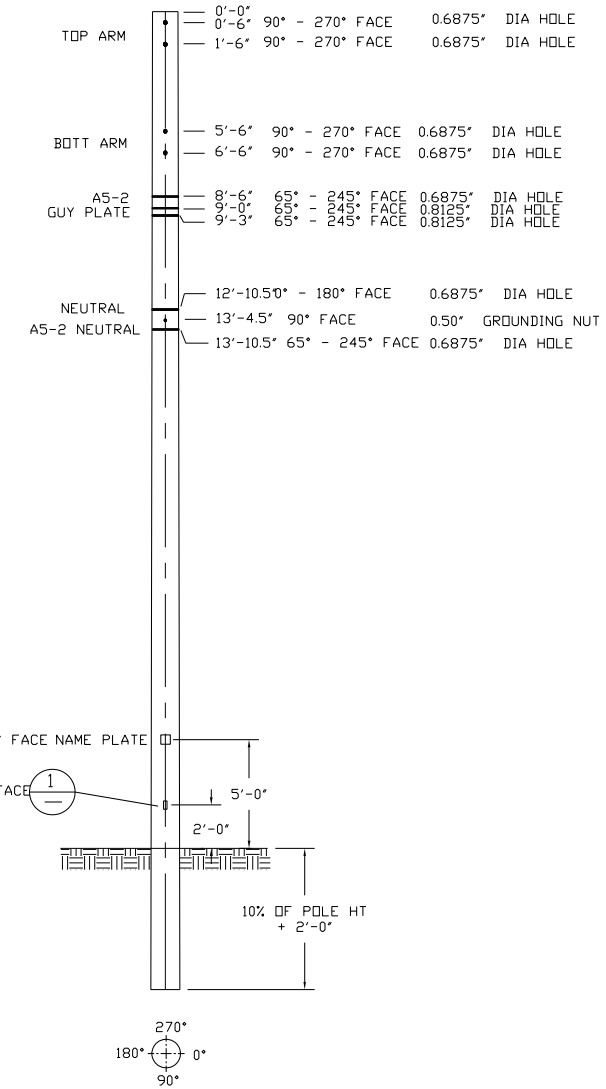

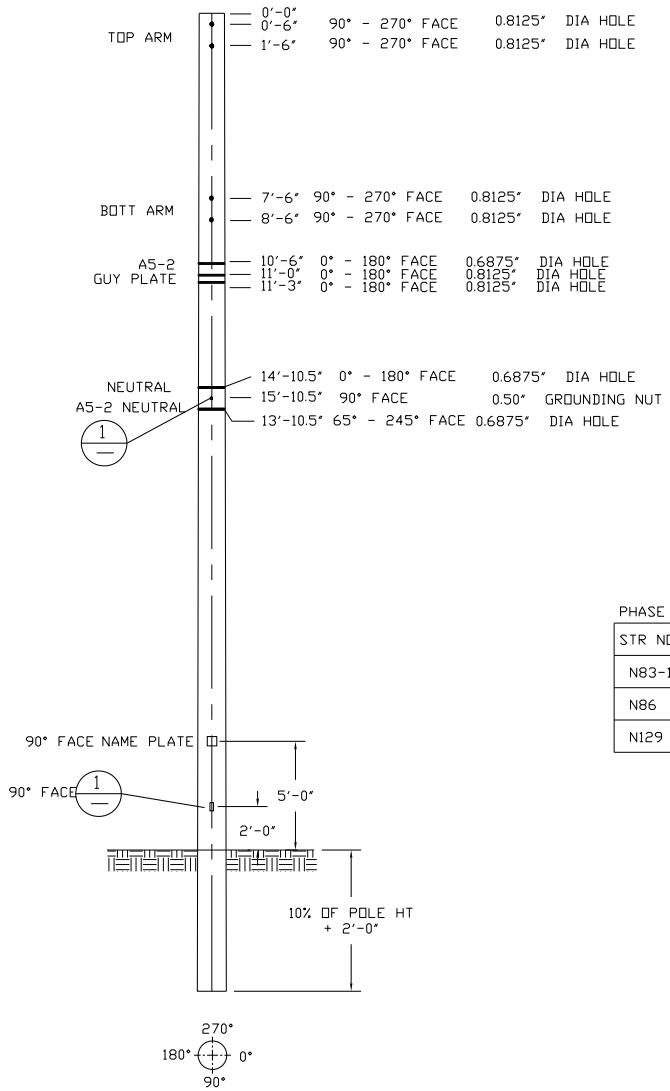

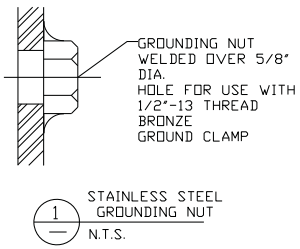

PHASE 2 CONSTRUCTION

STR NO.	HEIGHT/CLASS
N83-1	55-H2
N86	55-H2
N129	60-H3

*7' ARM SPACING

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MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY

STEEL POLE PROJECT
WOOD POLE EAUIVALENT
2C2-2CL / A5-2

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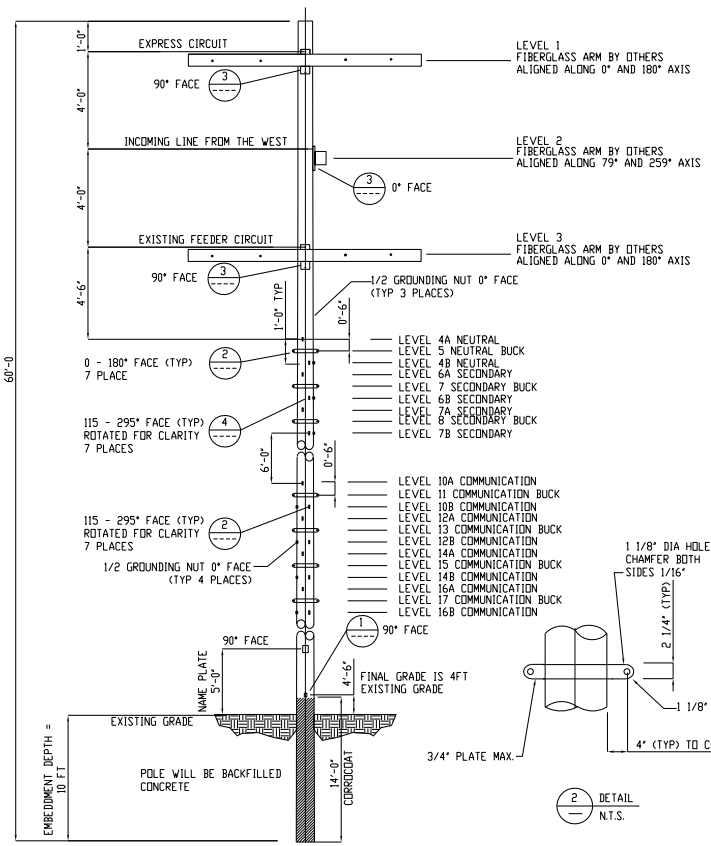
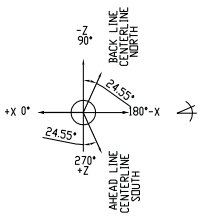
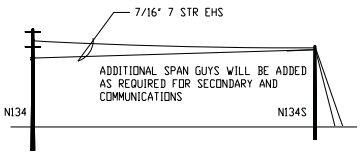
*CROSSARMS ARE ROTATED FOR CLAIRITY





JUNCTION STRUCTURE:

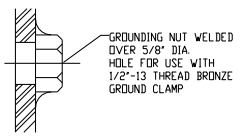
NOTE: PRIMARY SPAN GUY ATTACHES TO BRACKET ON THE FIBERGALSS CROSSARM. NEUTRAL SPAN GUY GUY ATTACHES TO VANG ON POLE.



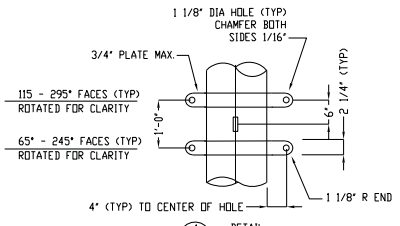
NOTE: SPAN GUY BACKS UP DEADEND FROM WEST. DOES NOT SUPPORT LINE ANGLE.

NOTE:

1. POLE CAP, GROUND SLEEVE AND BEARING PLATE REQUIRED
2. GALVANIZED STEEL
3. CORROSION PROTECTION REQUIRED



1 STAINLESS STEEL GROUNDING NUT N.T.S.



4 DETAIL
SCALE: NTS
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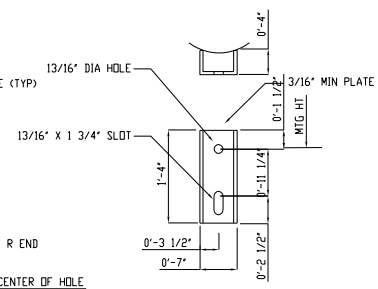
2 DETAIL
N.T.S.



3 CROSSARM MOUNTING BRACKET
N.T.S.

12.5 kV STRUCTURE TYPE N134		
LEVEL	APPLICATION	
LEVEL 1	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 2	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 3	DISTRIBUTION CONDUCTOR,3-PHASE	397.5 18/1 ACSR
LEVEL 4A-B	DISTRIBUTION CONDUCTOR, NEUTRAL CONDUCTOR	4/0 6/1 ACSR
LEVEL 5	DISTRIBUTION CONDUCTOR, NEUTRAL CONDUCTOR	4/0 6/1 ACSR
LEVEL 6A-B	DISTRIBUTION SECONDARY	1/0 TRIPLEX
LEVEL 7	DISTRIBUTION SECONDARY	1/0 TRIPLEX
LEVEL 8A-B	DISTRIBUTION SECONDARY	1/0 TRIPLEX
LEVEL 9	DISTRIBUTION SECONDARY	1/0 TRIPLEX
LEVEL 10A-B	COMMUNICATIONS	----------
LEVEL 11	COMMUNICATIONS	----------
LEVEL 12A-B	COMMUNICATIONS	----------
LEVEL 13	COMMUNICATIONS	----------
LEVEL 14A-B	COMMUNICATIONS	----------
LEVEL 15	COMMUNICATIONS	----------
LEVEL 16A-B	COMMUNICATIONS	----------
LEVEL 17	COMMUNICATIONS	----------

12.5 kV STRUCTURE TYPE SCHEDULE		
STR NO.	MIN STRUCTURE HT & WOOD CLASS EQUIV.	MIN ACCEPTABLE GLM** AT 10% OF POLE HT PLUS 2 FT SET DEPTH
N134	65' LD12 OR EQUAL	652 FT-KIPS

** NOTE: WOOD POLE EQUIVALENCIES AS REQUIRED BY ANSI 5.01 APPLICATIONS

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MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY

STEEL POLE PROJECT
N134
60 FT LD12 EQUIVILENT

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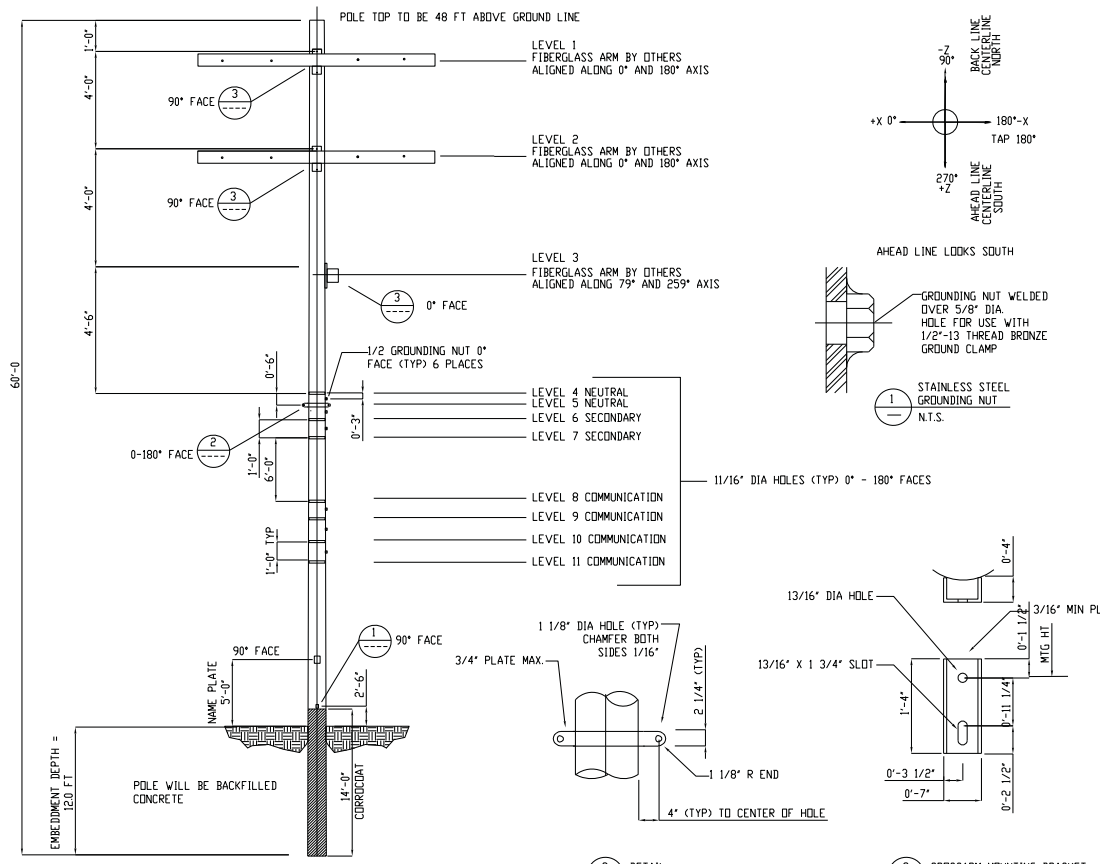
NOTE:

1. POLE CAP, GROUND SLEEVE AND BEARING PLATE REQUIRED.
2. GALVANIZED STEEL
3. CORROCOAT REQUIRED



AHEAD LINE LOOKS SOUTH

1 STAINLESS STEEL GROUNDING NUT
N.T.S.

2 DETAIL
N.T.S.

3 CROSSARM MOUNTING BRACKET
N.T.S.

12.5 kV STRUCTURE TYPE N137		
LEVEL	APPLICATION	CONDUCTOR
LEVEL 1	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 2	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 3	DISTRIBUTION CONDUCTOR, 3-PHASE	2 7/1 ACSR
LEVEL 4	DISTRIBUTION CONDUCTOR, NEUTRAL CONDUCTOR	4/0 6/1 ACSR
LEVEL 5	DISTRIBUTION CONDUCTOR, NEUTRAL CONDUCTOR	2 7/1 ACSR
LEVEL 6	DISTRIBUTION CONDUCTOR, SECONDARY	1/0 TRIPLEX
LEVEL 7	DISTRIBUTION CONDUCTOR, SECONDARY	1/0 TRIPLEX
LEVEL 8	COMMUNICATION	-------
LEVEL 9	COMMUNICATION	-------
LEVEL 10	COMMUNICATION	-------
LEVEL 11	COMMUNICATION	-------

12.5 kV STRUCTURE TYPE SCHEDULE		
STR NO.	MIN STRUCTURE HT & WOOD CLASS EQUIV.	MIN ACCEPTABLE GLM** AT 10% OF POLE HT PLUS 2 FT SET DEPTH
N137	60' LD12 OR EQUAL	598 FT-KIPS

** NOTE: WOOD POLE EQUIVALENCIES AS REQUIRED BY ANSI 5.01 APPLICATIONS

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MADISONVILLE, KENTUCKY

STEEL POLE
N137
60 LD12 OR EQUIVALENT

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ADDED ADDENDUM #1: 12-4-17

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MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY

STEEL POLE
N136-1
60' LD5 OR EQUIVALENT

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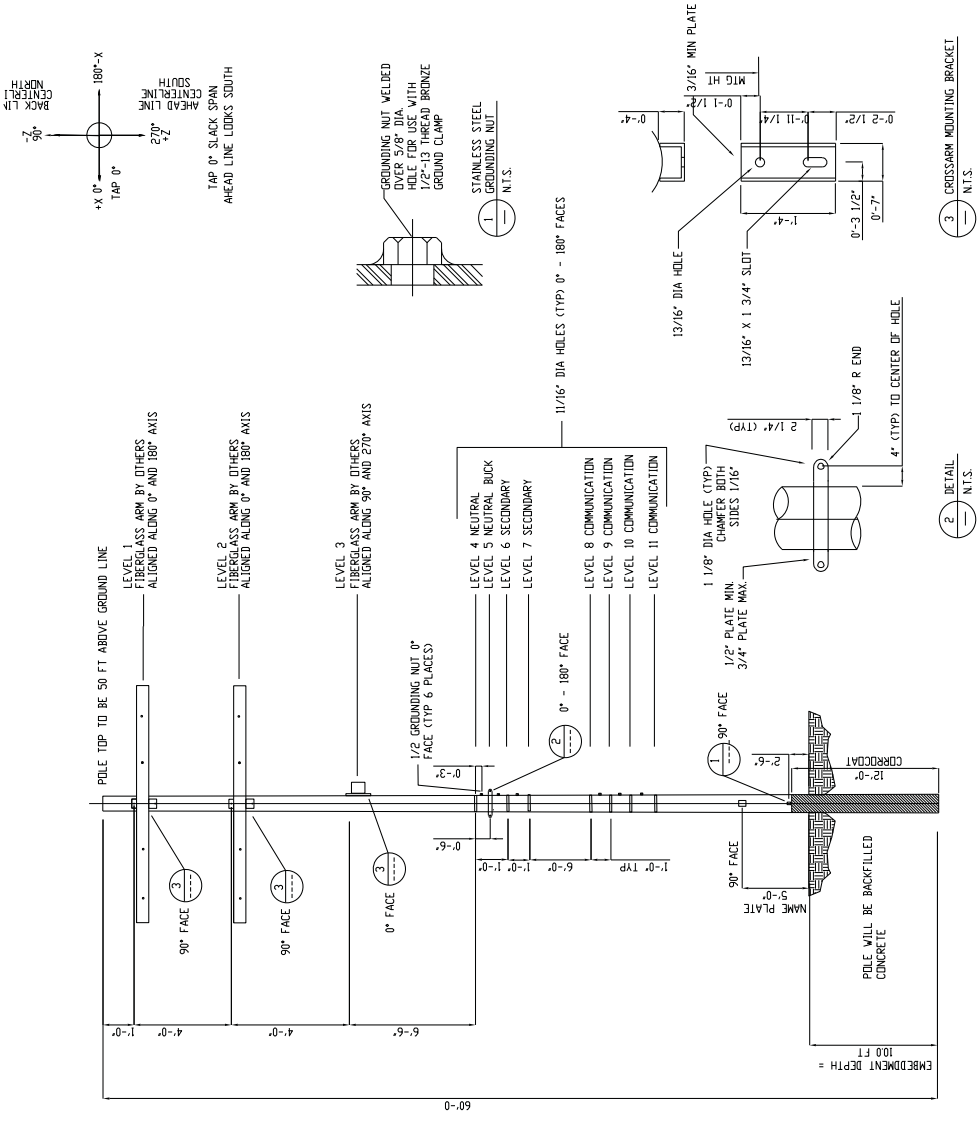
NOTE:
1. POLE CAP, GROUND SLEEVE AND BEARING PLATE REQUIRED
2. GALVANIZED STEEL
3. CORROCOAT REQUIRED

12.5 kV STRUCTURE TYPE N136-1		
LEVEL	APPLICATION	CONDUCTOR
LEVEL 1	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 2	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 3	DISTRIBUTION CONDUCTOR, 3-PHASE	2 7/1 ACSR SLACK SPAN
LEVEL 4	DISTRIBUTION CONDUCTOR, NEUTRAL CONDUCTOR	4/0 6/1 ACSR
LEVEL 5	DISTRIBUTION CONDUCTOR, NEUTRAL CONDUCTOR	2 7/1 ACSR SLACK SPAN
LEVEL 6	DISTRIBUTION CONDUCTOR, SECONDARY	1/0 TRIPLEX
LEVEL 7	DISTRIBUTION CONDUCTOR, SECONDARY	1/0 TRIPLEX
LEVEL 8	COMMUNICATION	----------
LEVEL 9	COMMUNICATION	----------
LEVEL 10	COMMUNICATION	----------
LEVEL 11	COMMUNICATION	----------

12.5 kV STRUCTURE TYPE SCHEDULE		
STR NO.	MIN STRUCTURE HT & WOOD CLASS EQUIV.	MIN ACCEPTABLE GLM** AT 10% OF POLE HT. PLUS 2 FT SET DEPTH
N136-1	60' LD5 OR EQUAL	281 FT-KIPS

** NOTE: WOOD POLE EQUIVALENCIES AS REQUIRED BY ANSI 5.01 APPLICATIONS



MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY

STEEL POLE
N136 WITH OMNI-RUPTER SWITCH
60' LD6 OR EQUIVALENT

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NOTE:

1. POLE CAP, GROUND SLEEVE AND BEARING PLATE REQUIRED.
2. GALVANIZED STEEL
3. CORROCOAT REQUIRED
4. HOLES FOR SWITCH ARM BRACKETS SHALL BE FIELD DRILLED. VERIFY LOCATIONS WITH SWITCH MANUFACTURE.

125 kV STRUCTURE TYPE N136		
LEVEL	APPLICATION	CONDUCTOR
LEVEL 1	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 2	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 3	DISTRIBUTION CONDUCTOR, NEUTRAL	4/0 6/1 ACSR
LEVEL 4	DISTRIBUTION CONDUCTOR, SECONDARY	1/0 TRIPLEX
LEVEL 5	DISTRIBUTION CONDUCTOR, SECONDARY	1/0 TRIPLEX
LEVEL 6	COMMUNICATION	----------
LEVEL 7	COMMUNICATION	----------
LEVEL 8	COMMUNICATION	----------
LEVEL 9	COMMUNICATION	----------

125 kV STRUCTURE TYPE SCHEDULE		
STR NO.	MIN STRUCTURE HT & WOOD CLASS EQUIV.	MIN ACCEPTABLE GLM** AT 10% OF POLE HT PLUS 2 FT SET DEPTH
N136	60' LD6 OR EQUAL	323 FT-KIPS

** NOTE: WOOD POLE EQUIVALENCIES AS REQUIRED BY ANSI 5.01 APPLICATIONS

MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY

STEEL POLE
N132
55' LD4 OR EQUIVALENT

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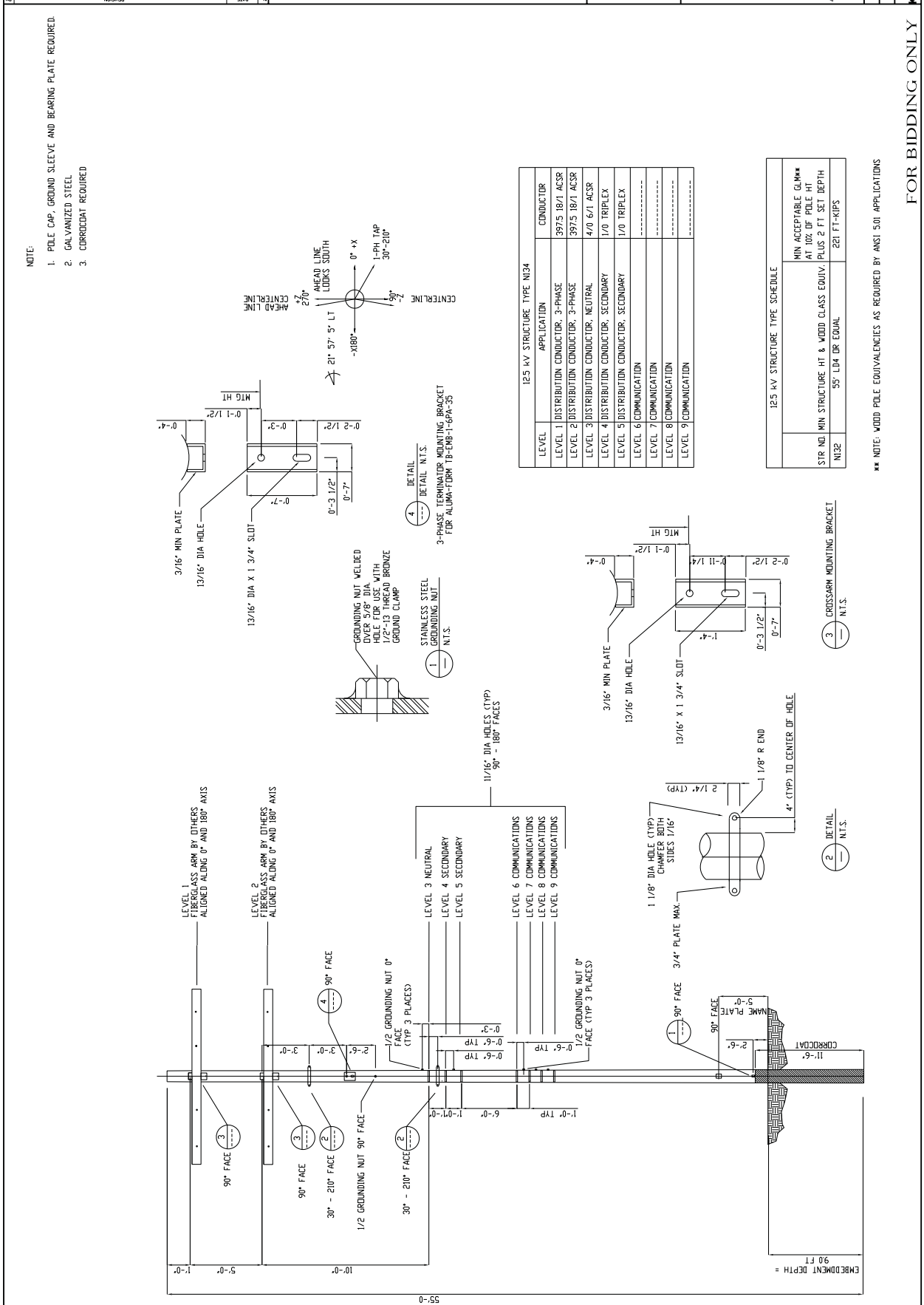
NOTE:
1. POLE CAP, GROUND SLEEVE AND BEARING PLATE REQUIRED.
2. GALVANIZED STEEL
3. CORROCOAT REQUIRED

125 kV STRUCTURE TYPE N134		
LEVEL	APPLICATION	CONDUCTOR
LEVEL 1	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 2	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 3	DISTRIBUTION CONDUCTOR, NEUTRAL	4/0 6/1 ACSR
LEVEL 4	DISTRIBUTION CONDUCTOR, SECONDARY	1/0 TRIPLEX
LEVEL 5	DISTRIBUTION CONDUCTOR, SECONDARY	1/0 TRIPLEX
LEVEL 6	COMMUNICATION	----------
LEVEL 7	COMMUNICATION	----------
LEVEL 8	COMMUNICATION	----------
LEVEL 9	COMMUNICATION	----------

125 kV STRUCTURE TYPE SCHEDULE		
STR NO.	MIN STRUCTURE HT & WOOD CLASS EQUIV.	MIN ACCEPTABLE GL** AT 10% OF POLE HT PLUS 2 FT SET DEPTH
N132	55' LD4 OR EQUAL	221 FT-KIPS

** NOTE: WOOD POLE EQUIVALENCIES AS REQUIRED BY ANSI 5.01 APPLICATIONS



MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY

STEEL POL
N133
60' LD12 OR EQUIVALENT

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NOTE:
1. POLE CAP, GROUND SLEEVE AND BEARING PLATE REQUIRED.
2. GALVANIZED STEEL
3. CORROCOAT REQUIRED

AHEAD LINE LOOKS SOUTH
AHEAD LINE CENTERLINE +Z 270°
BACK LINE CENTERLINE -Z 90°
-X 180°
0° +X

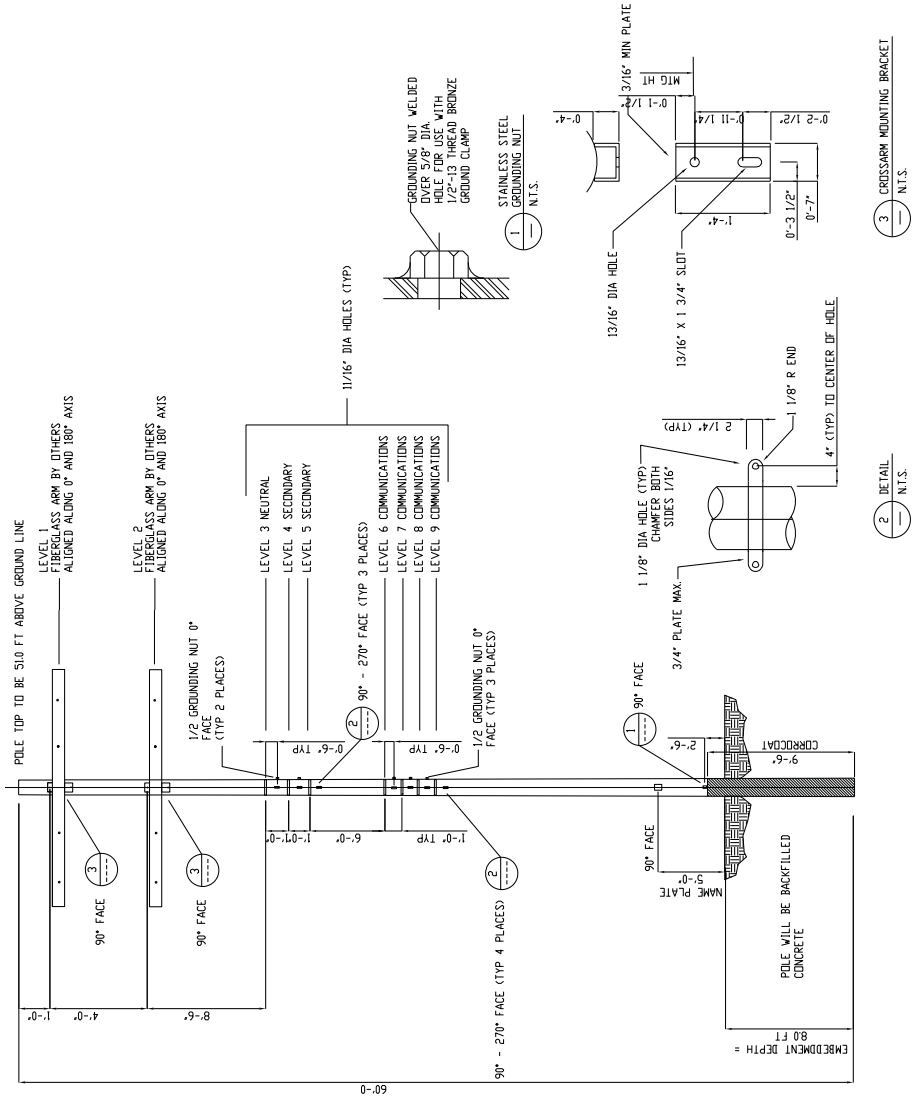
125 kV STRUCTURE TYPE N133

LEVEL	APPLICATION	CONDUCTOR
LEVEL 1	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 2	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 3	DISTRIBUTION CONDUCTOR, NEUTRAL	4/0 6/1 ACSR
LEVEL 4	DISTRIBUTION CONDUCTOR, SECONDARY	1/0 TRIPLEX
LEVEL 5	DISTRIBUTION CONDUCTOR, SECONDARY	1/0 TRIPLEX
LEVEL 6	COMMUNICATION	----------
LEVEL 7	COMMUNICATION	----------
LEVEL 8	COMMUNICATION	----------
LEVEL 9	COMMUNICATION	----------

125 kV STRUCTURE TYPE SCHEDULE

STR NO.	MIN STRUCTURE HT & WOOD CLASS EQUIV.	MIN ACCEPTABLE GLMxx AT 10% OF POLE HT PLUS 2 FT SET DEPTH
N133	60' LD4 OR EQUAL	242 FT-KIPS

** NOTE: WOOD POLE EQUIVALENCIES AS REQUIRED BY ANSI 5.01 APPLICATIONS



BY	REVISION	DATE	No.
PAH	ISSUED FOR BIDS.	11-30-17	0

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Drawn By:
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MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
ANCHOR BOLT STEEL POLE
N135
50 FT POLE

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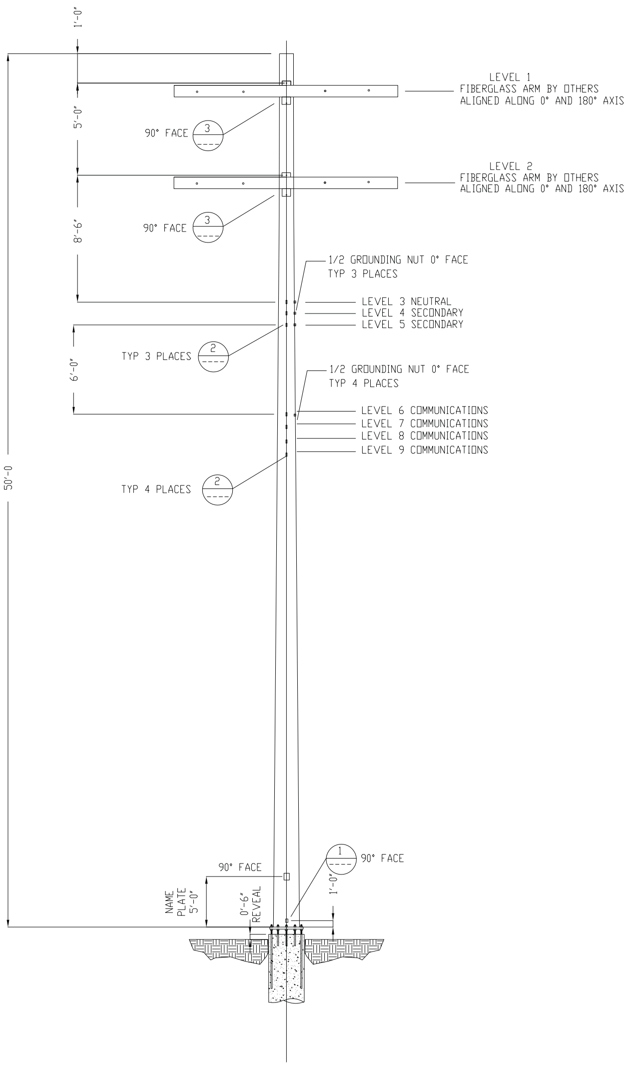
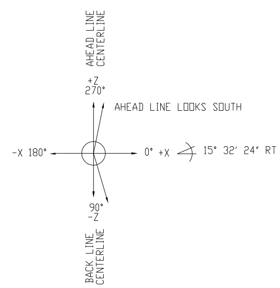
NOTES:
1. LOADS SHOWN ARE IN KIPS AT THE POINT OF WIRE OR HARDWARE ATTACHMENT AND INCLUDE INSULATOR AND HARDWARE WEIGHTS.
2. DESIGN STEEL POLE FOR A MAXIMUM DEFLECTION EQUAL TO 5% OF THE TOTAL POLE HEIGHT ABOVE POINT OF FIXITY, LOAD CASES 1, 2, 3 AND 4.
7. DESIGN STEEL POLE FOR A MAXIMUM DEFLECTION EQUAL TO 1% OF THE TOTAL POLE HEIGHT ABOVE POINT OF FIXITY, LOAD CASE 5.
8. STEEL POLE DESIGN TO INCLUDE POLE CAP AND BASE PLATE. CLIP CORNERS OF BASE PLATE.
9. MAXIMUM ANCHOR BOLT CIRCLE DIAMETER IS 44 INCHES.
10. MAXIMUM POLE TOP DIAMETER IS 10 INCHES.
11. POLE IS TO BE DESIGNED AS ONE-PIECE POLE SHAFT.

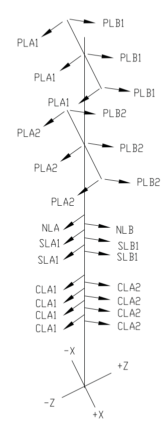
12.5 kV STRUCTURE TYPE N132 STUB		
LEVEL	APPLICATION	CONDUCTOR
LEVEL 1	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 2	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 3	DISTRIBUTION CONDUCTOR, NEUTRAL	4/0 6/1 ACSR
LEVEL 4	DISTRIBUTION CONDUCTOR, SECONDARY	1/0 TRIPLEX
LEVEL 5	DISTRIBUTION CONDUCTOR, SECONDARY	1/0 TRIPLEX
LEVEL 6	COMMUNICATION	----------
LEVEL 7	COMMUNICATION	----------
LEVEL 8	COMMUNICATION	----------
LEVEL 9	COMMUNICATION	----------





12.5 kV STRUCTURE TYPE N132 STUB		
LEVEL	APPLICATION	CONDUCTOR
LEVEL 1	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 2	DISTRIBUTION CONDUCTOR, 3-PHASE	397.5 18/1 ACSR
LEVEL 3	DISTRIBUTION CONDUCTOR, NEUTRAL	4/0 6/1 ACSR
LEVEL 4	DISTRIBUTION CONDUCTOR, SECONDARY	1/0 TRIPLEX
LEVEL 5	DISTRIBUTION CONDUCTOR, SECONDARY	1/0 TRIPLEX
LEVEL 6	COMMUNICATION	------------
LEVEL 7	COMMUNICATION	------------
LEVEL 8	COMMUNICATION	------------
LEVEL 9	COMMUNICATION	------------

Load Case			1	2	3	4	5
Description			250B (Medium)	250C (90mph)	250D (3/4" & 30mph)	Extreme Ice 1"	Everyday 60F
Wind Direction	(Degrees)	-	0.00	0.00	0.00	0.00	0.00
13kV Future Circuit Loads	(kips)	PV1	0.212	0.099	0.297	0.402	0.097
		PT1	1.460	0.728	0.958	0.928	0.411
		PLA1	4.905	2.189	3.412	3.573	1.486
		PLB1	-4.905	-2.016	-3.247	-3.246	-1.533
13kV Bottom Circuit Loads	(kips)	PV2	0.212	0.099	0.297	0.402	0.097
		PT2	1.452	0.702	0.938	0.891	0.411
		PLA2	4.905	2.167	3.409	3.575	1.486
		PLB2	-4.846	-1.850	-3.105	-2.975	-1.532
Neutral	(kips)	NV	0.164	0.073	0.250	0.348	0.072
		NT	0.885	0.468	0.624	0.636	0.219
		NLA	2.861	1.338	2.188	2.462	0.776
		NLB	-2.858	-1.240	-2.049	-2.209	-0.836
Temperature		F	15	60	15	30	60
Radial Ice		in.	0.25	0.00	0.75	1.00	0.00
Wind with OLF		psf.	10.00	20.74	2.30	0.00	0.00
Design Line Angle		deg.	15.5	15.5	15.5	15.5	15.5
13kv 1 Tension A		lbs	3000	2209	3443	3606	1500
13kv 1 Tension B		lbs	3000	2035	3277	3276	1547
13kv 2 Tension A		lbs	3000	2187	3440	3608	1500
13kv 2 Tension B		lbs	2964	1867	3134	3002	1546
Neutral Tension A		lbs	1750	1350	2208	2485	783
Neutral. Tension B		lbs	1748	1251	2068	2229	844
Wind Span (Phase)		ft.	122	122	122	123	122
Weight Span (Phase)		lbs	164	182	152	147	178
Wind Overload Factor		WOF	2.50	1.00	1.00	1.00	1.00
Tension Overload Factor		TOF	1.65	1.00	1.00	1.00	1.00
Vertical Overload Factor		VOF	1.50	1.00	1.00	1.00	1.00



Load Case			1	2	3	4	5
Description			250B (Medium)	250C (90mph)	250D (3/4" & 30mph)	Extreme Ice	Everyday
Wind Direction	(Degrees)	-	0.00	0.00	0.00	0.00	0.00
Secondary	(kips)	SV1	0.215	0.088	0.321	0.435	0.182
		ST1	0.832	0.609	0.570	0.574	0.262
		SLA1	2.609	1.578	1.992	2.254	0.982
		SLB1	-2.412	-1.391	-1.773	-1.966	-0.941
Communication	(kips)	CV2	0.215	0.088	0.321	0.435	0.182
		CT2	0.928	0.681	0.595	0.584	0.421
		CLA2	2.861	1.749	1.966	2.130	1.551
		CLB2	-2.861	-1.751	-1.982	-2.159	-1.541
Temperature		F	15	60	15	30	60
Radial Ice		in.	0.25	0.00	0.75	1.00	0.00
Wind with OLF		psf.	10.00	20.74	2.30	0.00	0.00
Design Line Angle		deg.	15.5	15.5	15.5	15.5	15.5
Secondary 1 Tension A		lbs	1596	1593	2010	2275	991
Secondary Tension B		lbs	1342	1404	1789	1984	950
Communication Tension A		lbs	1750	1765	1984	2150	1565
Communication Tension B		lbs	1750	1767	2000	2179	1555
Wind Span (Phase)		ft.	122	122	122	123	122
Weight Span (Phase)		lbs	164	182	152	147	178
Wind Overload Factor		WOF	2.50	1.00	1.00	1.00	1.00
Tension Overload Factor		TOF	1.65	1.00	1.00	1.00	1.00
Vertical Overload Factor		VOF	1.50	1.00	1.00	1.00	1.00

NOTES:

1. LOADS SHOWN ARE IN KIPS AT THE POINT OF WIRE OR HARDWARE ATTACHMENT AND INCLUDE INSULATOR AND HARDWARE WEIGHTS.
2. DESIGN STEEL POLE FOR A MAXIMUM DEFLECTION EQUAL TO 5% OF THE TOTAL POLE HEIGHT ABOVE POINT OF FIXITY, LOAD CASES 1, 2, 3 AND 4.
7. DESIGN STEEL POLE FOR A MAXIMUM DEFLECTION EQUAL TO 1% OF THE TOTAL POLE HEIGHT ABOVE POINT OF FIXITY, LOAD CASE 5.
8. STEEL POLE DESIGN TO INCLUDE POLE CAP AND BASE PLATE. CLIP CORNERS OF BASE PLATE.
9. MAXIMUM ANCHOR BOLT CIRCLE DIAMETER IS 44 INCHES.
10. MAXIMUM POLE TOP DIAMETER IS 10 INCHES.
11. POLE IS TO BE DESIGNED AS ONE-PIECE POLE SHAFT.

No.	DATE	REVISION	BY
0	11-30-17	ISSUED FOR BIDS.	PAH

Designed By: Drawn By: Checked By:

MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY

ANCHOR BOLT STEEL POLE
N135
50 FT POLE

patterson & dewar
ENGINEERS
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(770) 453-1410 | pdengineers.com
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MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
STEEL STUB POLES
STEEL POLE

No.	DATE	REVISION	BY
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Drawn By:
Checked By:

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850 CENTER WAY, NORCROSS, GEORGIA 30071
(770) 453-1410 | pdeng@mindspring.com
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NOTE:
1. POLE CAP, GROUND SLEEVE AND BEARING PLATE REQUIRED.
2. GALVANIZED STEEL
3. CORROCOAT REQUIRED

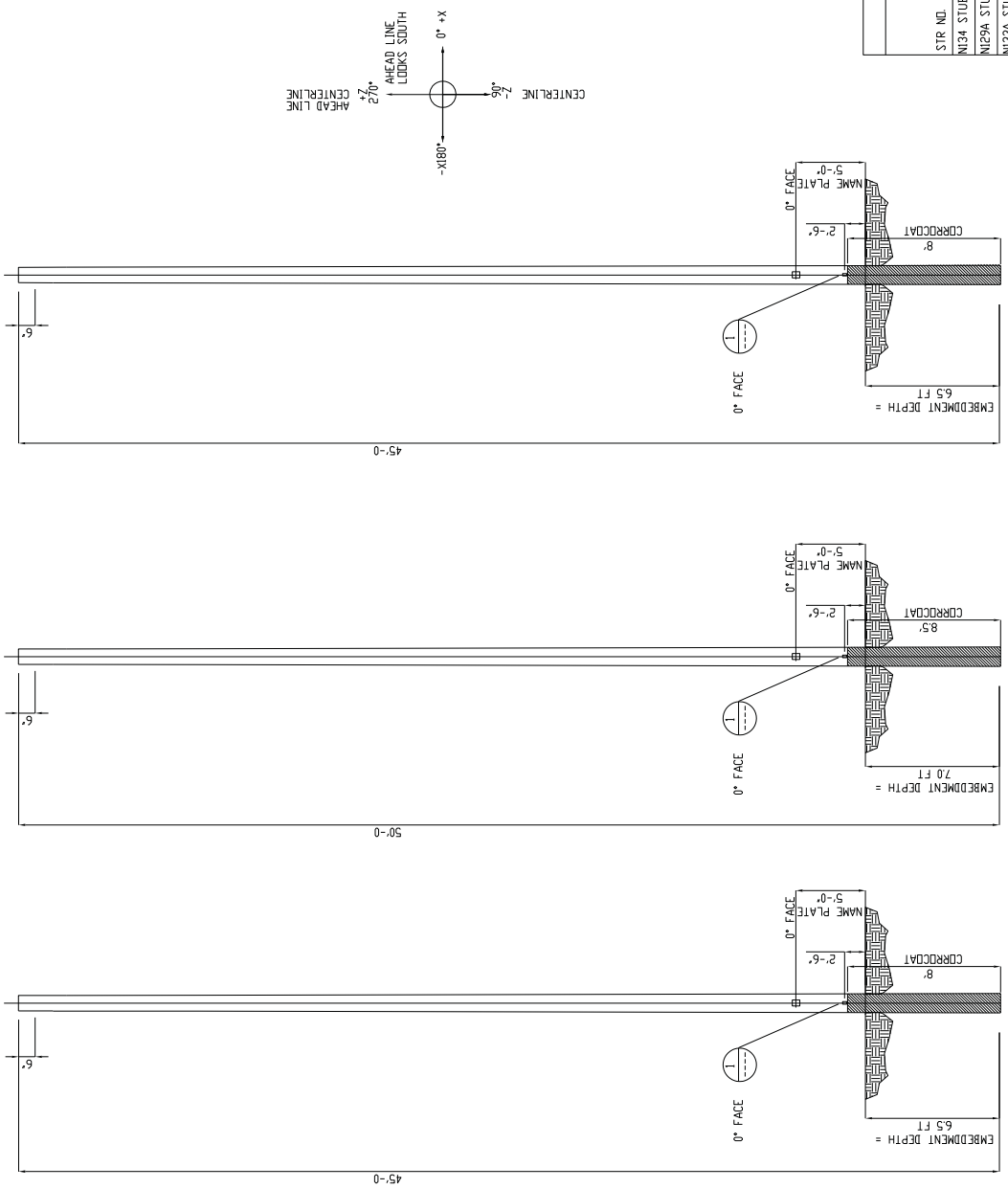
GROUNDING NUT WELDED OVER 5/8" DIA. HOLE FOR USE WITH 1/2"-13 THREAD BRONZE GROUND CLAMP

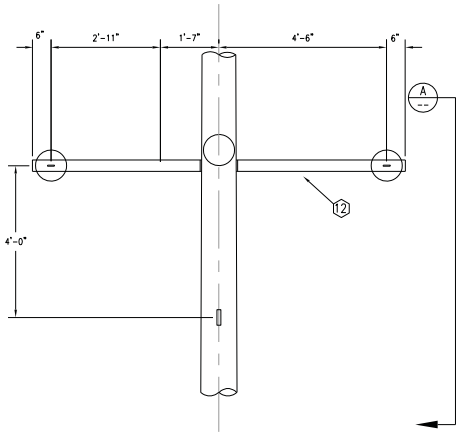
STAINLESS STEEL GROUNDING NUT
1 — N.T.S.

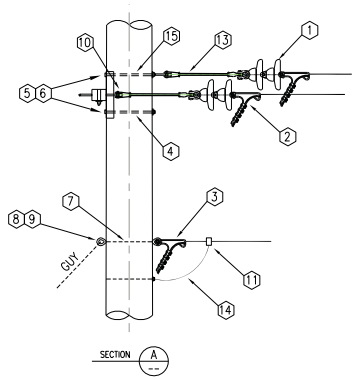
12.5 kV STUB STRUCTURE TYPE SCHEDULE

STR NO.	MIN STRUCTURE HT & WOOD CLASS EQUIV.	MIN ACCEPTABLE GL/** AT 10% OF POLE HT PLUS 2 FT SET DEPTH
N134 STUB	45' L02 OR EQUAL	127 FT-KIPS
N129A STUB	50' L01 OR EQUAL	119 FT-KIPS
N133A STUB	45' L01 OR EQUAL	106 FT-KIPS

** NOTE: WOOD POLE EQUIVALENCIES AS REQUIRED BY ANSI 5.01 APPLICATIONS







MATERIAL LIST FOR STRUCTURE TYPE C7C					
ITEM NO.	DWG. REF.	QUANTITY	DESCRIPTION	STOCK NO.	MANUFACTURER CATALOG NO. OR EQUIV.
	1	6	INSULATOR, SUSPENSION 10" X 5 3/4"		GAMMA 8265
	2	6	DEAD END, QUADRANT STRAIN ALUMINUM FOR "DRAKE" 795 ACSR		ANDERSON, SD-112-N
	3	2	DEAD END, QUADRANT STRAIN ALUMINUM FOR "CHICKADEE" 397.5 ACSR		ANDERSON, SD-86-N
	4	1	BOLT, MACHINE 3/4" X REQ'D LENGTH		JOSLYN, J89--
	5	2	NUT, MF-TYPE 3/4"		JOSLYN, J8584
	6	2	WASHER, 2" ROUND FOR 3/4" BOLT		JOSLYN, J1089
	7	1	BOLT, OVAL EYE 5/8" X REQ'D LENGTH		JOSLYN, J94--
	8	1	NUT, OVAL EYE 5/8"		JOSLYN, J1092
	9	1	WASHER, 2 1/4" X 2 1/4" X 3/16" FOR 5/8" BOLT		JOSLYN, J1075
	10	3	SHACKLE, STEEL ANCHOR		ANDERSON, AS-25-BNK
	11	1	CONNECTOR, GENERAL USE PARALLEL GROOVE		ANDERSON, LC-83-A-XB
	12	1	CROSSARM, 10' X 3 5/8" X 4 5/8" FIBERGLASS- 2 POSITION		PUPI, DA3000-120 FOR 3/4" BOLT
	13	1	LINK, EXTENSION 14" FIBERGLASS		JOSLYN, J6658
	14	3 FT.	WIRE, CU #6 SOLID		MACLEAN ACTS-150-SL1
	15	1	BOLT, OVAL EYE 3/4" X REQ'D LENGTH		JOSLYN, J95--

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MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
SR 41A PROJECT
STRUCTURE DETAILS
C7C

patterson & dewar ENGINEERS
850 CENTER WAY, NORCROSS, GEORGIA 30071
(770) 662-5460 FAX (770) 662-5464 www.pdengineers.com
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ADDED ADDENDUM #1: 12-4-17

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MADISONVILLE, KENTUCKY
SR 41A PROJECT
STRUCTURE DETAIL
2C2-2CL

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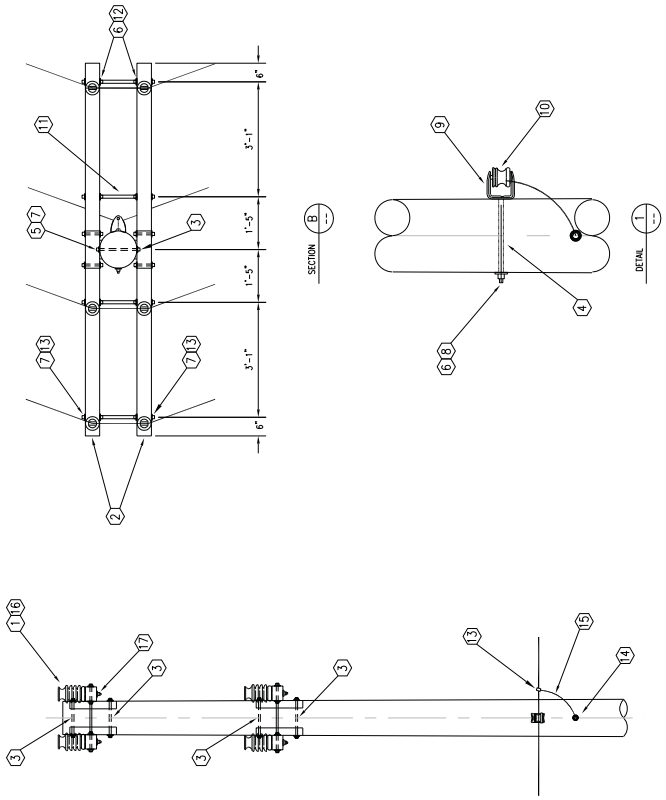
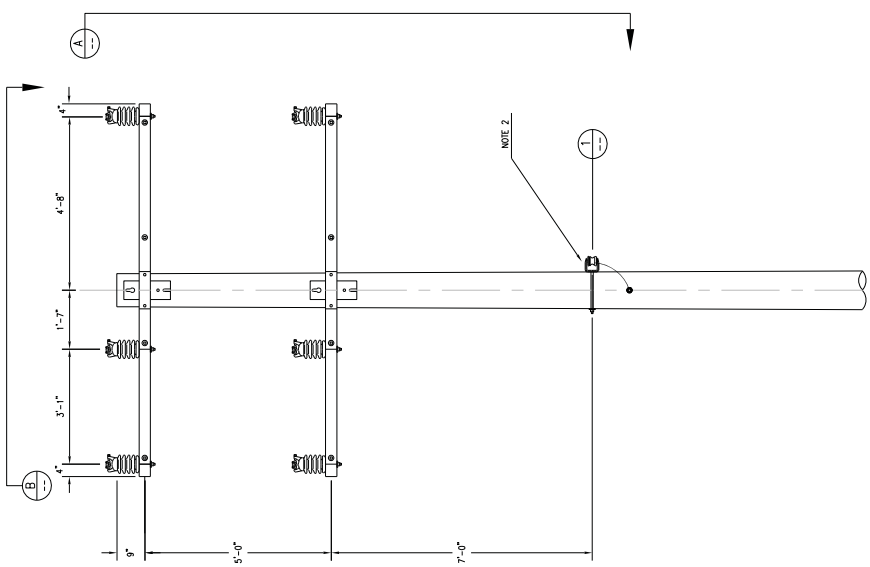


MATERIAL LIST FOR STRUCTURE TYPE 2C2-2CL

ITEM NO.	DWG. REF.	QUANTITY	DESCRIPTION	STOCK NO.	MANUFACTURER CATALOG NO. OR EQUIV.
	1	12	INSULATOR, POST TYPE, CLAMP TOP		GAMMA 4225-70
	2	4	CROSSARM, 10" X 3 5/8" X 4 5/8" FIBERGLASS		PUPI, TB2500120O5X2, 3/4" BOLT
	3	4	BOLT, MACHINE 3/4" X REQ'D LENGTH		JOSLYN, J8914
	4	1	BOLT, MACHINE 5/8" X REQ'D LENGTH		JOSLYN, J8814
	5	4	NUT, MF-TYPE 3/4"		JOSLYN, J8584
	6	33	NUT, MF-TYPE 5/8"		JOSLYN, J8583
	7	4	WASHER, 2" ROUND FOR 3/4" BOLT		JOSLYN, J1089
	8	1	WASHER, 2 1/4" X 2 1/4" X 3/16" FOR 5/8" BOLT		JOSLYN, J1075
	9	1	CLEVIS, SPOOL INSULATOR		JOSLYN, J1300
	10	1	INSULATOR, SPOOL		JOSLYN, J101
	11	8	BOLTS, DOUBLE ARMING 5/8" X REQ'D LENGTH		JOSLYN, J88--
	12	32	WASHER, 1 3/4" ROUND FOR 5/8" BOLT		JOSLYN, J1088
	13	1	CONNECTOR, GENERAL USE PARALLEL GROOVE		ANDERSON, LC-B3-A-XB
	14	1	CONNECTOR, GROUNDING VISE TYPE BRONZE		ANDERSON, GC-207
	15	3 FT.	WIRE, CU #6 SOLID		
	16	12	CLAMP TOP CLAMP		MACLEAN ACTS-150-SL1
	17	12	MOUNTING STUD		GAMMA 11612A



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MADISONVILLE, KENTUCKY
SR 41A PROJECT
STRUCTURE DETAIL
2C8C

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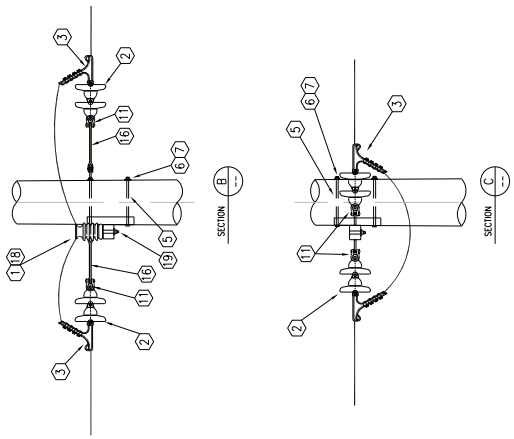
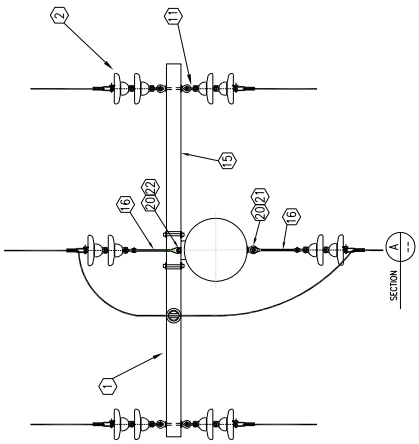
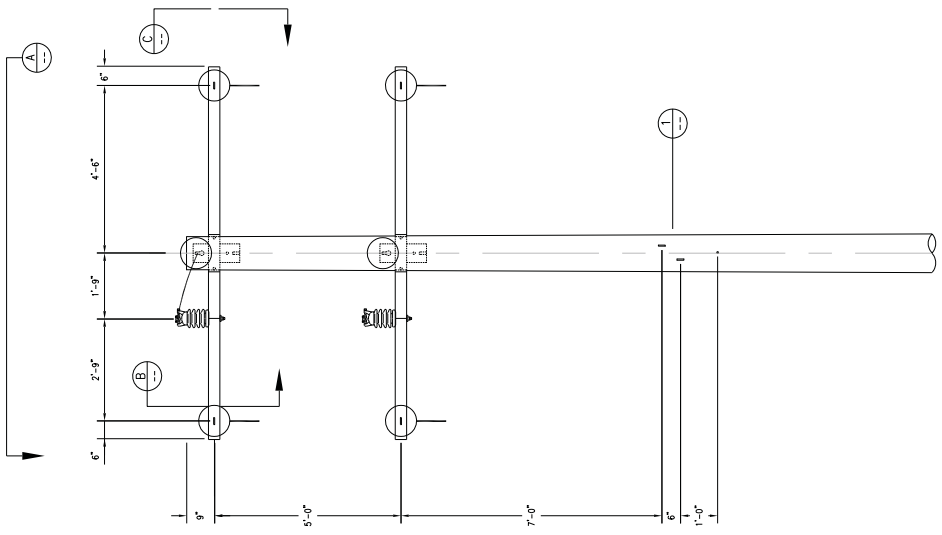




MATERIAL LIST FOR STRUCTURE TYPE 2C8C

ITEM NO.	DWG. REF.	QUANTITY	DESCRIPTION	STOCK NO.	MANUFACTURER CATALOG NO. OR EQUIV.
	1	2	INSULATOR, POST TYPE, CLAMP TOP		GAMMA 4225-70
	2	24	INSULATOR, SUSPENSION 10" X 5 3/4"		GAMMA 8265
	3	12	DEAD END, QUANDRAINT STRAIN ALUMINUM FOR "DRAKE" 795 ACSR		ANDERSON, SD-112-N
	4	2	DEAD END, QUANDRAINT STRAIN ALUMINUM FOR "CHICKADEE" 397.5 ACSR		ANDERSON, SD-86-N
	5	4	BOLT, MACHINE 3/4" X REQ'D LENGTH		JOSLYN, J89--
	6	4	NUT, MF-TYPE 3/4"		JOSLYN, J8584
	7	4	WASHER, 2" ROUND FOR 3/4" BOLT		JOSLYN, J1089
	8	2	BOLT, OVAL EYE 5/8" X REQ'D LENGTH		JOSLYN, J94--
	9	2	NUT, OVAL EYE 5/8		JOSLYN, J1092
	10	2	WASHER, 2 1/4" X 2 1/4" X 3/16" FOR 5/8" BOLT		JOSLYN, J1075
	11	12	SHACKLE, STEEL ANCHOR 25k		ANDERSON, AS-25-BNK
	12	1	CLAMP, ALUMINUM CRIMPIT		BURNDY, YHR-750
	13	1	CONNECTOR, GENERAL USE PARALLEL GROOVE		ANDERSON, LC-83-A-XB
	14	1	CONNECTOR, GROUNDING VISE TYPE, BRONZE		ANDERSON, GC-207
	15	2	CROSSARM, 10" X 3 5/8 X 4 5/8" FIBERGLASS-2 POSITION		PUPI, DA3000-120 FOR 3/4" BOLT
	16	4	LINK, EXTENSION 14" ALUMINUM		JOSLYN, J6659
	17	3 FT.	WIRE, CU #6 SOLID		
	18	2	CLAMP TOP CLAMP		MACLEAN ACTS-150-SL1
	19	2	MOUNTING STUD		GAMMA, 11612A
	20	2	WASHER, 2 1/4" X 2 1/4" X 3/16" FOR 3/4" BOLT		JOSLYN, J1080
	21	1	NUT, OVAL EYE 3/4"		JOSLYN, J1093
	22	1	BOLT, OVAL EYE 3/4" X REQ'D LENGTH		JOSLYN, J95--



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MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
SR 41A PROJECT
STRUCTURE DETAILS
2C7C-BA

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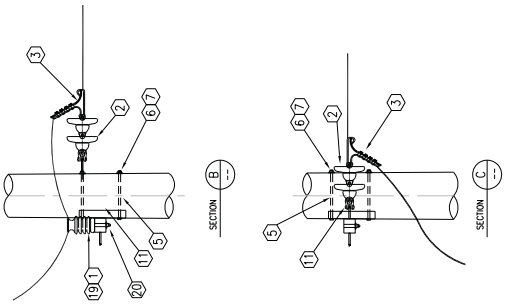
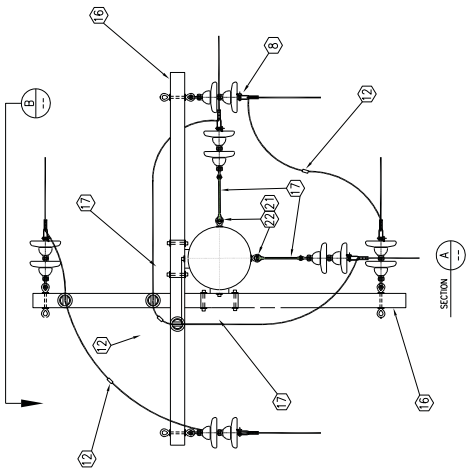
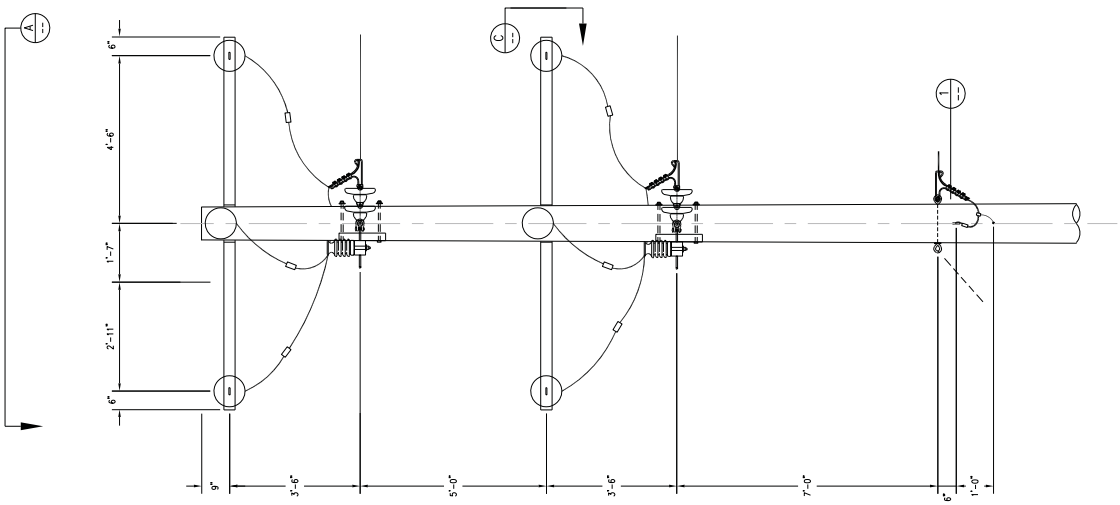




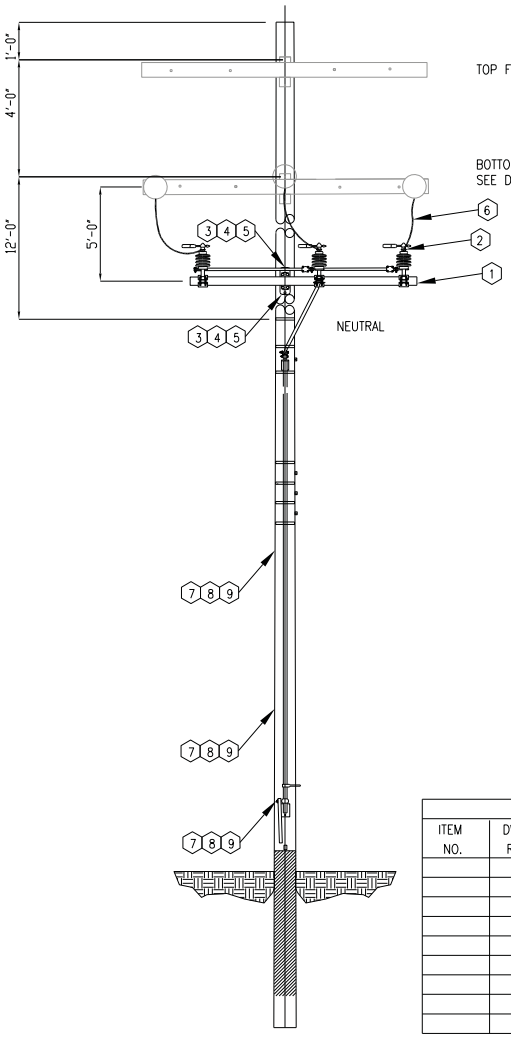
MATERIAL LIST FOR STRUCTURE TYPE 2C7C-BA

ITEM NO.	DWG. REF.	QUANTITY	DESCRIPTION	STOCK NO.	MANUFACTURER CATALOG NO. OR EQUIV.
1	2	2	INSULATOR, POST TYPE, CLAMP TOP		GAMMA 4225-70
2	24		INSULATOR, SUSPENSION 10" X 5 3/4"		GAMMA 8265
3	12		DEAD END, QUADRANT STRAIN ALUMINUM FOR "DRAKE" 795 ACSR		ANDERSON, SD-112-N
4	2		DEAD END, QUADRANT STRAIN ALUMINUM FOR "CHICKADEE" 397.5 ACSR		ANDERSON, SD-86-N
5	8		BOLT, MACHINE 3/4" X REQ'D LENGTH		JOSLYN, J89--
6	8		NUT, MF-TYPE 3/4"		JOSLYN, J8584
7	8		WASHER, 2" ROUND FOR 3/4" BOLT		JOSLYN, J1089
8	2		BOLT, OVAL EYE 5/8" X REQ'D LENGTH		JOSLYN, J94--
9	2		NUT, OVAL EYE 5/8"		JOSLYN, J1092
10	2		WASHER, 2 1/4" X 2 1/4" X 3/16" FOR 5/8" BOLT		JOSLYN, J1075
11	12		SHACKLE, STEEL ANCHOR		ANDERSON, AS-25-BNK
12	6		CLAMP, UNIVERSAL LINE TAP		BURNDY, YPC40A40
13	1		CLAMP, ALUMINUM CRIMPIT		BURNDY, YHR-750
14	1		CONNECTOR, GENERAL USE PARALLEL GROOVE		ANDERSON, LC-83-A-XB
15	1		CONNECTOR, GROUNDING VISE TYPE BRONZE		ANDERSON, GC-207
16	4		CROSSARM, 10' X 3 5/8" X 4 5/8" FIBERGLASS-2 POSITION		PUPI, DA3000-120 FOR 3/4" BOLT
17	4		LINK, EXTENSION STEEL		JOSLYN, J6658
18	3 FT.		WIRE, CU #6 SOLID		MACLEAN ACTS-150-SL1
19	2		CLAMP TOP CLAMP		GAMMA, 11612A
20	2		MOUNTING STUD		JOSLYN, J1080
21	2		WASHER, 2 1/4" X 2 1/4" X 3/16" FOR 3/4" BOLT		JOSLYN, J95--
22	1		BOLT, OVAL EYE 3/4" X REQ'D LENGTH		JOSLYN, J95--



NOTES:

1. INSTALL AND TEST SWITCH TO MANUFACTURE SPECIFICATIONS.



MATERIAL LIST FOR OMNI-RUPTER SWITCH					
ITEM NO.	DWG. REF.	QUANTITY	DESCRIPTION	STOCK NO.	MANUFACTURER CATALOG NO. OR EQUIV.
	1	1	SWITCH, 14.4kV OMNI-RUPTER 900A GROUP OPERATED		ED-701R4
	2	6	CONNECTOR, 2-HOLE		S&C 4567R1-B
	3	2	BOLT, MACHINE 3/4" X REQ'D LENGTH		JOSLYN, J89--
	4	2	NUT, MF-TYPE 3/4"		JOSLYN, J8584
	5	2	WASHER, 2" ROUND FOR 3/4" BOLT		JOSLYN, J1089
	6	6	JUMPER, 397.5 ACSR 18/1		
	7	AS REQD	BOLT, MACHINE 5/8" X REQ'D LENGTH		JOSLYN, J8814
	8	AS REQD	NUT, MF-TYPE 5/8"		JOSLYN, J8583
	9	AS REQD	WASHER, 1 3/4" ROUND FOR 5/8" BOLT		JOSLYN, J1088

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MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
SR 41A PROJECT
STRUCTURE DETAIL
C8C

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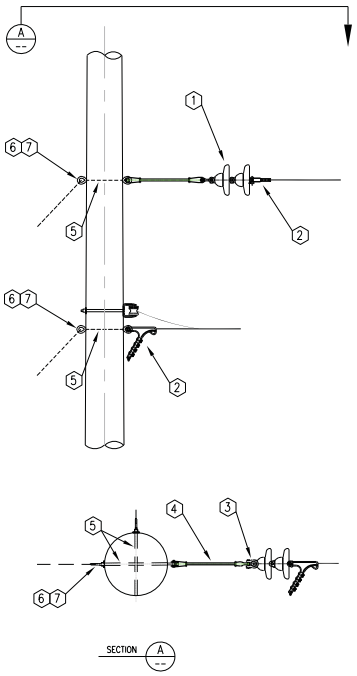
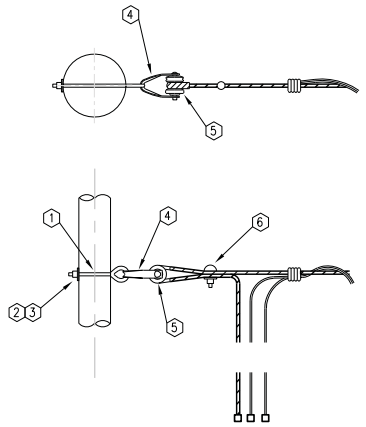


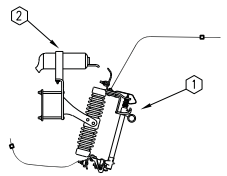
TYPE A5-2

MATERIAL LIST FOR STRUCTURE TYPE A5-2					
ITEM NO.	DWG. REF.	QUANTITY	DESCRIPTION	STOCK NO.	MANUFACTURER CATALOG NO. OR EQUIV.
	1	2	INSULATOR, SUSPENSION 10" X 5 3/4"		GAMMA 8265
	2	2	DEAD END, QUADRANT STRAIN ALUMINUM, #6-3/0-8k		ANDERSON, DE-46-N
	3	1	SHACKLE, STEEL ANCHOR, 25k		ANDERSON, AS-25-BNK
	4	1	LINE, EXTENSION 14" ALUMINUM		JOSLYN, J6658
	5	2	BOLT, OVAL EYE 5/8" BY REQ'D LENGTH		JOSLYN, J94--
	6	2	NUT, OVAL EYE 5/8"		JOSLYN, J1092
	7	2	WASHER, 2 1/4" X 2 1/4" X 3/16" FOR 5/8" BOLT		JOSLYN, J1075



SERVICE DROP K6

MATERIAL LIST FOR SERVICE DROP K6					
ITEM NO.	DWG. REF.	QUANTITY	DESCRIPTION	STOCK NO.	MANUFACTURER CATALOG NO. OR EQUIV.
	1	1	BOLT, OVAL EYE 5/8" X REQ'D LENGTH		JOSLYN, J94--
	2	1	NUT, OVAL EYE 5/8"		JOSLYN, J1092
	3	1	WASHER, 2 1/4" X 2 1/4" X 3/16" FOR 5/8" BOLT		JOSLYN, J1075
	4	1	CLEVIS, SWINGING INSULATOR		JOSLYN, J1300
	5	1	INSULATOR, SPOOL		JOSLYN, J101
	6	1	CLAMP, LOOP, DEADEND		BURNDY, UW25R



CUTOUT ARRESTOR COMBINATION M5-10C

MATERIAL LIST FOR CUTOUT ARRESTOR COMBINATION M5-10C					
ITEM NO.	DWG. REF.	QUANTITY	DESCRIPTION	STOCK NO.	MANUFACTURER CATALOG NO. OR EQUIV.
	1	1	CUTOUT 100A		CHANCE, C710-114PX
	2	1	ARRESTOR 10kV		JOSLYN, ZHP010-0C00100

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MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
SR 41A PROJECT
DETAILS
A5-2, K6, M5-10C

No.	DATE	REVISION	BY

0 11-30-17 ISSUED FOR BIDS Designed By: Drawn By: Checked By: DWW

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DRAWING NO. KYMMU41A208 REV. 0

ADDED ADDENDUM #1: 12-4-17

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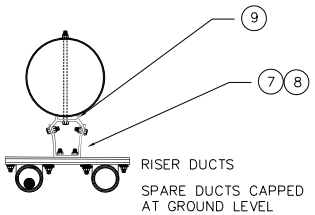
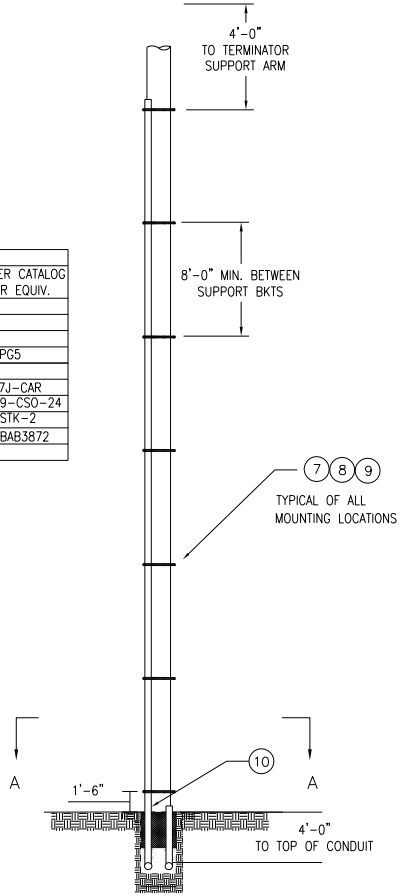
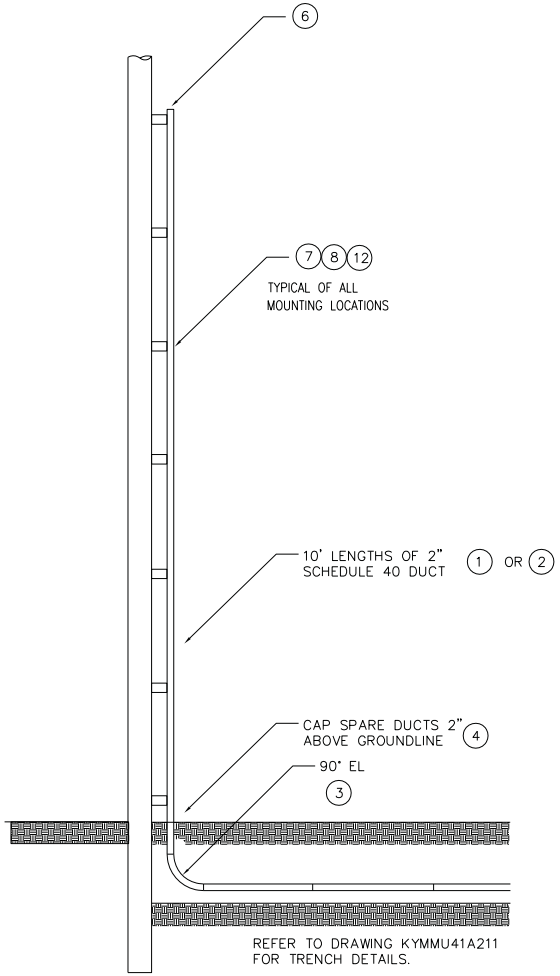


SECTION A–A

MATERIAL LIST FOR 3-PHASE RISER DUCT ASSEMBLY D1				
ITEM NO.	DWG. REF.	QUANTITY	DESCRIPTION	MANUFACTURER CATALOG NO. OR EQUIV.
	1	AS REQ'D	2" SCHEDULE 40 GALVANIZED DUCT. 10 FOOT LENGTHS	ALLIED
	2	AS REQ'D	2" SCHEDULE 40 GALVANIZED DUCT. 20 FOOT LENGTHS	ALLIED
	3	AS REQ'D	2" SCHEDULE 40 GALVANIZED DUCT. 90° EL, 36" RAD	ALLIED
	4	1	2" PLUG WITH PULL TAB	CARLON MAEPG5
	5	AS REQ'D	2" COUPLINGS	ALLIED
	6	1	2" BELL END	CARLON E997J-CAR
	7	AS REQ'D	CONDUIT STANDOFF BRACKET, 9 INCH	ALUMAFORM 9-CSO-24
	8	AS REQ'D	CONDUIT STANDOFF BRACKET, STRAP KIT	ALUMAFORM STK-2
	9	AS REQ'D	BANDING ASSEMBLY	ALUMAFORM BAB3872
	10	AS REQ'D	2" CONDUIT GROUND CLAMP	

POLE NO.
N83-1





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No.	DATE	REVISION	BY
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Designed By: Drawn By: Checked By:

MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
SR 41A PROJECT
1 PHASE RISER CONDUIT DETAIL

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ADDED ADDENDUM #1: 12-4-17

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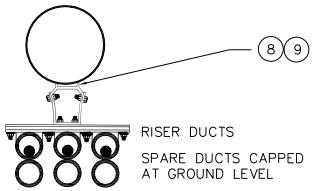
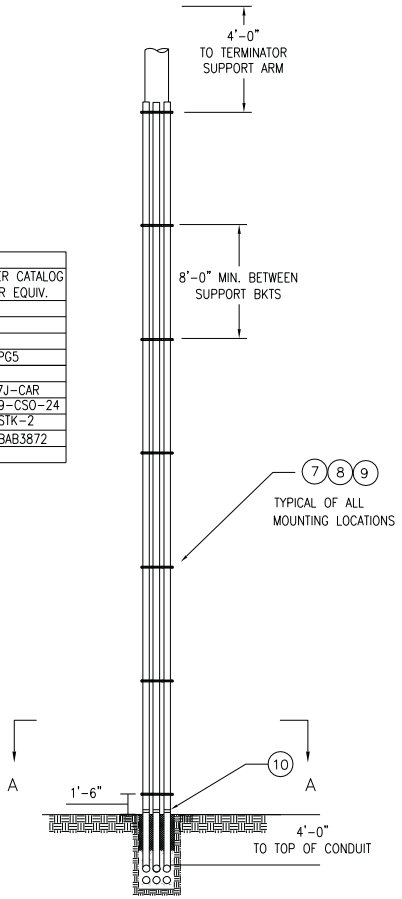


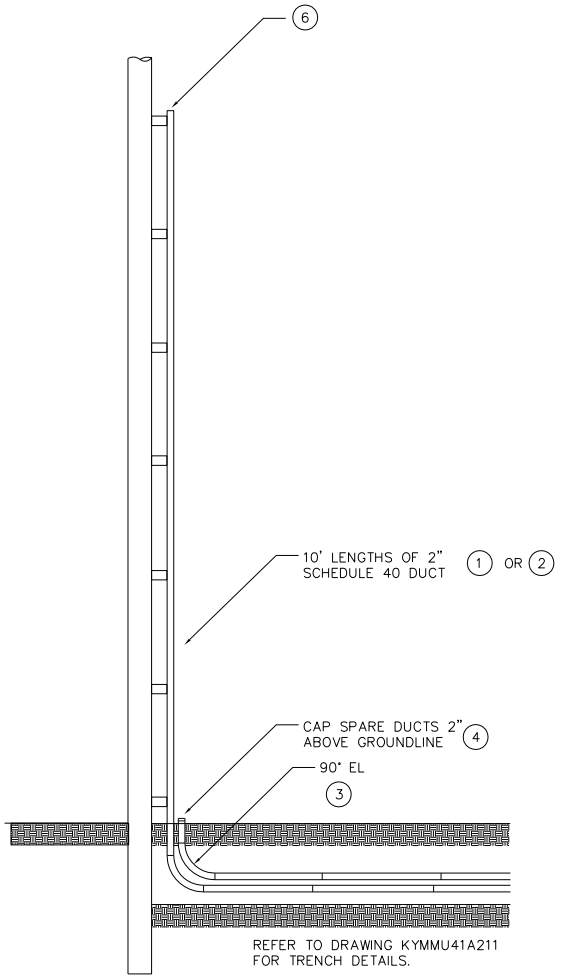
SECTION A–A

MATERIAL LIST FOR 3-PHASE RISER DUCT ASSEMBLY D3				
ITEM NO.	DWG. REF.	QUANTITY	DESCRIPTION	MANUFACTURER CATALOG NO. OR EQUIV.
	1	AS REQ'D	2" SCHEDULE 40 GALVANIZED DUCT. 10 FOOT LENGTHS	ALLIED
	2	AS REQ'D	2" SCHEDULE 40 GALVANIZED DUCT. 20 FOOT LENGTHS	ALLIED
	3	AS REQ'D	2" SCHEDULE 40 GALVANIZED DUCT. 90° EL, 36" RAD	ALLIED
	4	3	2" PLUG WITH PULL TAB	CARLON MAEPG5
	5	AS REQ'D	2" COUPLINGS	ALLIED
	6	3	2" BELL END	CARLON E997J-CAR
	7	AS REQ'D	CONDUIT STANDOFF BRACKET, 9 INCH	ALUMAFORM 9-CSO-24
	8	AS REQ'D	CONDUIT STANDOFF BRACKET, STRAP KIT	ALUMAFORM STK-2
	9	AS REQ'D	BANDING ASSEMBLY	ALUMAFORM BAB3872
	10	AS REQ'D	2" CONDUIT GROUND CLAMP	

SECTION 2

POLE NO.
N134





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MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
SR 41A PROJECT
3-PHASE RISER CONDUIT DETAIL

No.	DATE	REVISION	BY
0	11-30-17	ISSUED FOR BIDS	DWM

Designed By: Drawn By: Checked By:

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850 CENTER WAY, NORCROSS, GEORGIA 30071
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DRAWING NO. KYMMU41A210 REV. 0

ADDED ADDENDUM #1: 12-4-17

SAVED: 12/1/2017 1:20 AM BY BDORRIS
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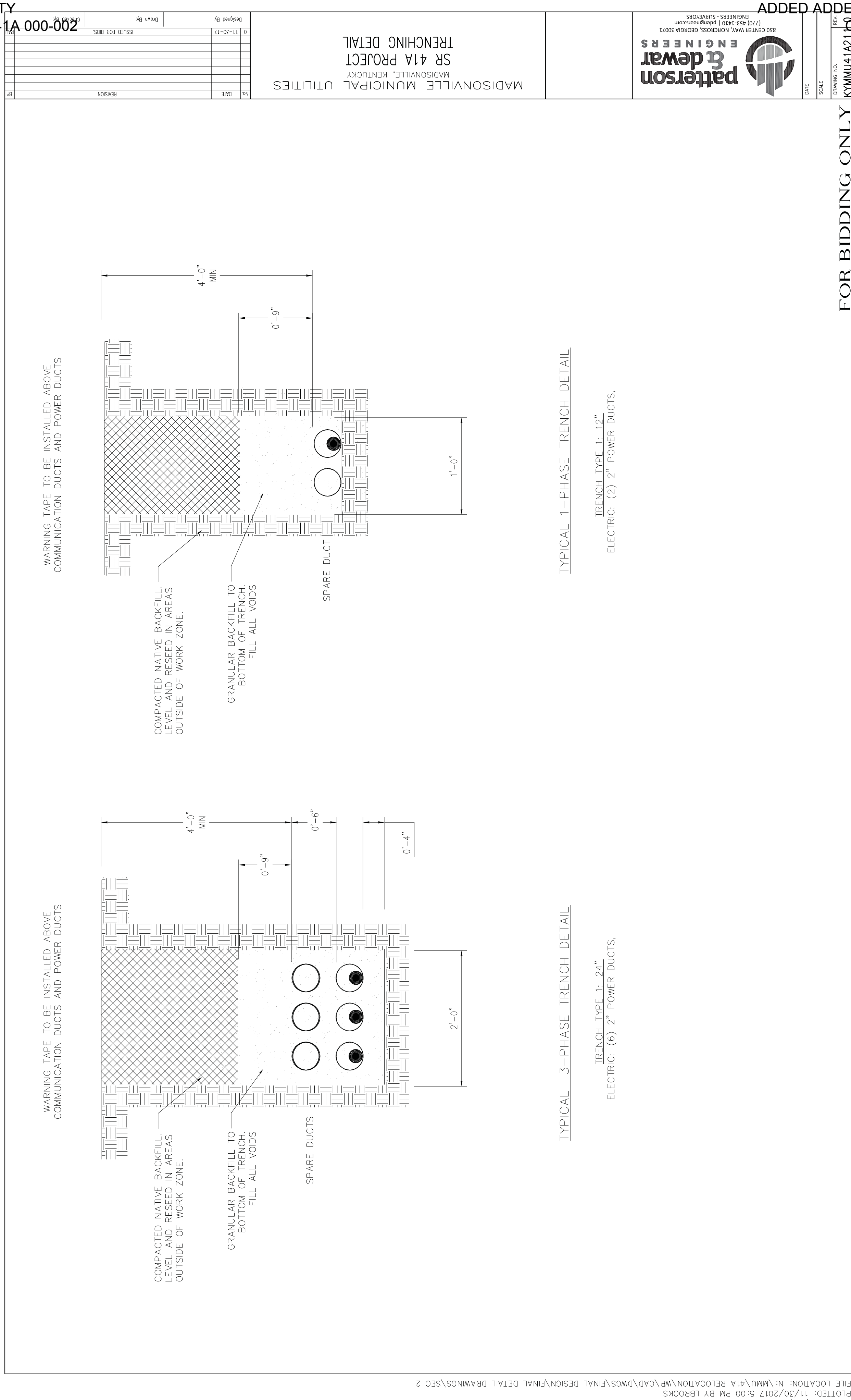

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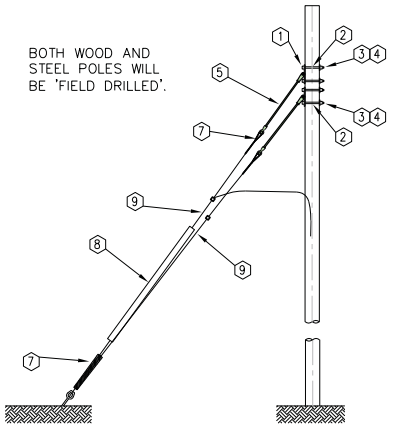
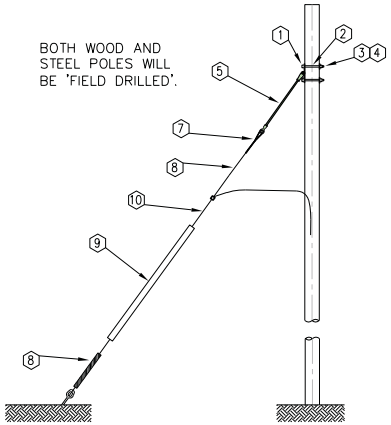
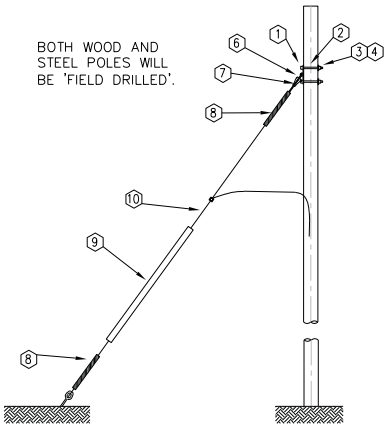
NOTE:
1. ALL GUYS ARE TO 'PRE-TENSIONED' BEFORE CONDUCTOR INSTALLATION.
2. INSTALL GUYING ON CROSSARM PLATES FOR IN LINE DEADENDING.
3. WHEN INSTALLING GUY ATTACHMENTS FIELD DRILL HOLES STARTING 6" BELOW THE CROSSARMS LOWEST HOLES.



DOUBLE DOWN GUY E1-3FD



SINGLE DOWN GUY E1-3F



SINGLE DOWN GUY E1-3

MATERIAL LIST FOR DOUBLE DOWN GUY E1-3FD

ITEM NO.	DWG. REF.	QUANTITY	DESCRIPTION	STOCK NO.	MANUFACTURER CATALOG NO. OR EQUIV.
	1	2	GUY ATTACHMENT, UNIVERSAL, 15k 7/16" MAX		MACLEAN, UGA-65-3
	2	4	BOLT, MACHINE 5/8" X REQ'D LENGTH		JOSLYN, J88--
	3	4	WASHER, 2 1/4" X 2 1/4" X 3/16" FOR 5/8" BOLT		JOSLYN, J1075
	4	4	NUT, MF-TYPE 5/8"		JOSLYN, J8583
	5	2	LINK, INSULATED EXTENSION, 78"		CHANCE, GS16078CC1
	6	1	SHACKLE, ANCHOR, 25k		ANDERSON, AS-25-BNK
	7	4	GUY GRIP, DEADEND GALVANIZED STEEL		PREFORMED, GDE-1108
	8	1	GUY MARKER, ECONOMY FULL ROUND		CHANCE, 96-FRPE
	9	AS REQ'D	GUY WIRE, 7/16" EXTRA HIGH STRENGTH STEEL		OPEN MARKET

MATERIAL LIST FOR SINGLE DOWN GUY E1-3F

ITEM NO.	DWG. REF.	QUANTITY	DESCRIPTION	STOCK NO.	MANUFACTURER CATALOG NO. OR EQUIV.
	1	1	GUY ATTACHMENT, UNIVERSAL		MACLEAN, UGA-65-3
	2	2	BOLT, MACHINE 5/8" X REQ'D LENGTH		JOSLYN, J88--
	3	2	WASHER, 2 1/4" X 2 1/4" X 3/16" FOR 5/8" BOLT		JOSLYN, J1075
	4	2	NUT, MF-TYPE 5/8"		JOSLYN, J8583
**	5	1	LINK, INSULATED EXTENSION, 78"		CHANCE, GS16078CC1
	6	1	SHACKLE, ANCHOR,		ANDERSON, AS-25-BNK
	7	1	CLEVIS, THIMBLE		CHANCE, TC1
	8	2	GUY GRIP, DEADEND GALVANIZED STEEL		PREFORMED, GDE-1108
	9	1	GUY MARKER, ECONOMY FULL ROUND		CHANCE, 96-FRPE
	10	AS REQ'D	GUY WIRE, 7/16" EXTRA HIGH STRENGTH STEEL		OPEN MARKET

**SINGLE DOWN GUY E1-3 ELIMINATES FIBERGLASS STRAIN INSULATOR

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Checked By:

MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
SR 41A PROJECT
GUY, ANCHOR AND GROUNDING UNITS

patterson & dewar ENGINEERS
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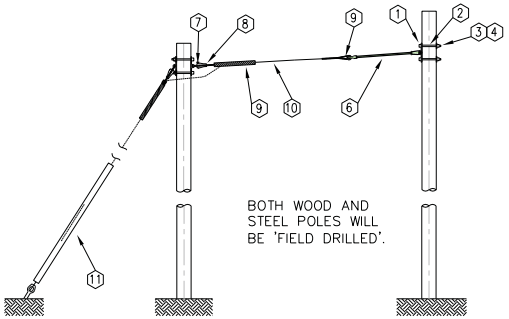


SEE DWG
KYMU41A212 FOR
DOWN GUY MATERIAL

OVERHEAD SPAN GUY E2-3T

MATERIAL LIST FOR OVERHEAD SPAN GUY E2-3T					
ITEM NO.	DWG. REF.	QUANTITY	DESCRIPTION	STOCK NO.	MANUFACTURER CATALOG NO. OR EQUIV.
	1	1	GUY ATTACHMENT, UNIVERSAL		MACLEAN, UGA-65-3
	2	2	BOLT, MACHINE 5/8" X REQ'D LENGTH		JOSLYN, J88--
	3	3	WASHER, 2 1/4" X 2 1/4" X 3/16" FOR 5/8" BOLT		JOSLYN, J1075
	4	3	NUT, MF-TYPE 5/8"		JOSLYN, J8583
	5	1	BOLT, OVAL EYE 5/8" X REQ'D LENGTH		JOSLYN, J94--
	6	1	LINK, INSULATED EXTENSION, 78"		CHANCE, GS16078CC1
	7	1	SHACKLE, ANCHOR,		ANDERSON, AS-25-BNK
	8	1	CLEVIS, THIMBLE		CHANCE, TC1
	9	2	GUY GRIP, DEADEND GALVANIZED STEEL		PREFORMED, GDE-1108
	10	FT.	GUY WIRE, 7/16" EXTRA HIGH STRENGTH STEEL		OPEN MARKET
	11	1	GUY MARKER, ECONOMY FULL ROUND		CHANCE, 96-FRPE

NOTE:

1. ANCHORS ARE SPECIFIED FOR CLASS 5 SOIL CONDITIONS AS DESCRIBED BELOW:

   "MEDIUM DENSE COURSE SANDS AND SANDY GRAVELS; STIFF TO VERY STIFF SILTS AND CLAY. TYPICAL BLOW COUNT WOULD BE 14 TO 25.

   PER CHANCE ANCHOR CATALOG THE HOLDING CAPACITY OF THE SPECIFIED ANCHOR IS 27,000# IS CLASS 5 CATEGORY SOILS.

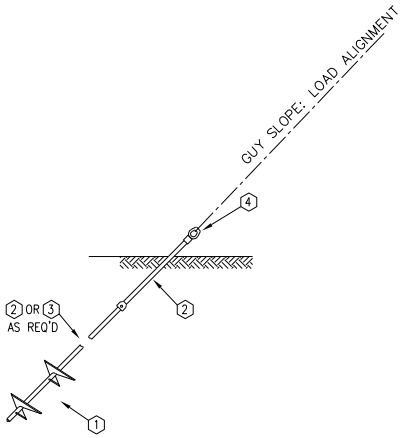
   WHEN SOILS ARE ENCOUNTERED THAT DO NOT FIT THE DESCRIPTIONS ABOVE, CONTACT THE ENGINEER FOR INSTRUCTIONS.

2. GROUND RESISTANCE MAY BE MEASURED THROUGH THE 3-POINT METHOD OR RESISTANCE METER. RESULTS MUST BE RECORDED.

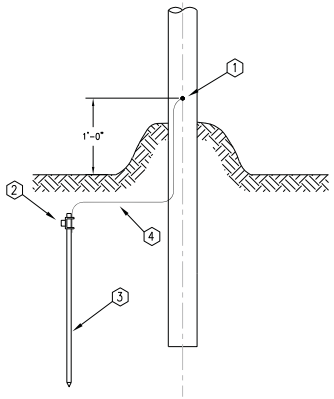
3. WHEN INSTALLING GUY ATTACHMENTS FIELD DRILL HOLES STARTING 12" BELOW THE CROSSARMS LOWEST HOLES.

NOTE: ANCHORS TO BE INSTALLED TO FULL HOLDING CAPACITY OF SPECIFIED ANCHOR REGARDLESS OF ACTUAL ANCHOR LOAD. EXTENSION RODS SHALL BE ADDED UNTIL FULL CAPACITY IS MET. FULL CAPACITY IS 27,000#.

NOTE: PER MANUFACTURE'S INSTRUCTIONS ANCHORS MUST BE INSTALL TO WITH 5% OF LOAD ALIGNMENT OF GUY TO MEET SPECIFIED CAPACITIES.



SCREW ANCHOR FP-2



STEEL POLE GROUNDING UNIT M2-11RO

NOTE: SEE DRAWING KYMMU41A214 FOR FURTHER GROUNDING DETAILS.

NOTE: TEST AND RECORD GROUND RESISTANCE AFTER EACH GROUNDING SYSTEM MODIFICATION AT A STRUCTURE. BASED ON GROUND RESISTANCE MEASUREMENTS, THE ENGINEER OR OWNER MAY SPECIFY ADDITIONAL GROUNDING. THE TARGET GROUND RESISTANCE FOR DISTRIBUTION IS 25 OHMS; INSTALL ADDITIONAL GROUNDING WHERE MEASURED RESISTANCE IS GREATER THAN 25 OHMS.

GROUND ROD MUST BE INSTALLED OUTSIDE THE DISTURBED AREA AS SHOWN ON DRAWING KYMMU41A214.

GROUND ROD MUST BE INSTALLED MIN 2' MINIMUM FROM POLE FACE AND 1' DEEP IN UNDISTURBED SOIL.

MATERIAL LIST FOR SCREW ANCHOR FP-2					
ITEM NO.	DWG. REF.	QUANTITY	DESCRIPTION	STOCK NO.	MANUFACTURER CATALOG NO. OR EQUIV.
	1	1	DOUBLE HELIX, 8"/10", 3 FT LENGTH		HUBBELL, 126542AE
	2	AS REQ'D	SHAFT EXTENSION, 42"		HUBBELL, 12655
	3	AS REQ'D	SHAFT EXTENSION, 84"		HUBBELL, 12657
	4	1	TRIPLE EYE ADAPTOR, 18" W/PULLING EYE		HUBBELL, C102-0025

MATERIAL LIST FOR GROUNDING UNIT M2-11RO					
ITEM NO.	DWG. REF.	QUANTITY	DESCRIPTION	STOCK NO.	MANUFACTURER CATALOG NO. OR EQUIV.
	1	1	CONNECTOR, GROUNDING VISE TYPE BRONZE		ANDERSON, GC-207
	2	1	CLAMP, GROUND ROD		JOSLYN, J8392
	3	1	ROD, GROUND, 5/8" X 8' COPPERCLAD		
	4	REQ'D FT.	WIRE, CU #6 SOLID		

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No.	DATE	REVISION	BY
0	11-30-17	ISSUED FOR BIDS.	DWW

Designed By:
Drawn By:
Checked By:

MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
SR 41A PROJECT
GUY, ANCHOR AND GROUNDING UNITS

patterson & dewar ENGINEERS
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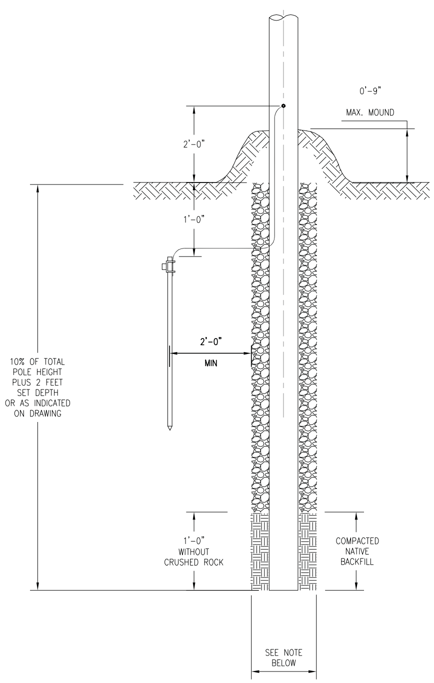
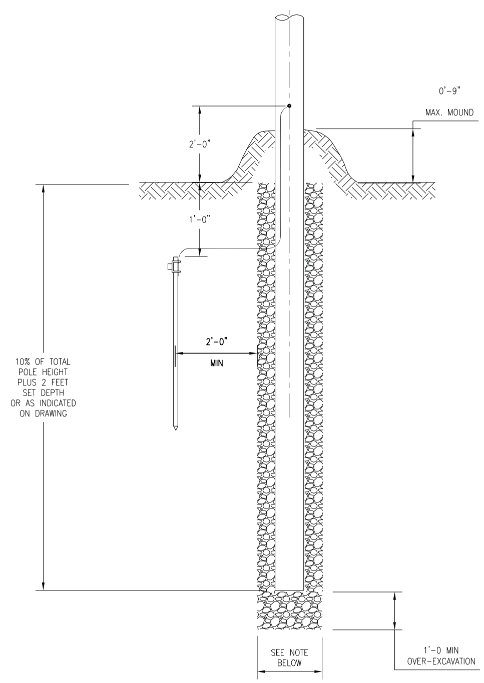
NOTE: ALL POLES TO BE BACKFILLED WITH CRUSHED ROCK. CRUSHED ROCK IS TO BE HYDRAULICALLY TAMPED IN 6 INCH LIFTS THOROUGHLY AROUND ENTIRE POLE. POLE HOLES SHOULD BE 6 INCH LARGER THAN POLE BUTT AROUND ENTIRE POLE.



STANDARD POLE SETTING

OVER-EXCAVATION OF POLE HOLE MUST BE BACKFILLED AND COMPACTED TO DENSITY OF SURROUNDING SOILS.

NOTE: ALL POLES TO BE BACKFILLED WITH CRUSHED ROCK. CRUSHED ROCK IS TO BE HYDRAULICALLY TAMPED IN 6 INCH LIFTS THOROUGHLY AROUND ENTIRE POLE. POLE HOLES SHOULD BE 6 INCH LARGER THAN POLE BUTT AROUND ENTIRE POLE.



NON-STANDARD POLE SETTING

NOTE: THE NON-STANDARD POLE SETTING SHALL BE USED ONLY WHEN SUBSURFACE CONDITIONS WARRANT SECURING ADDITIONAL POLE COMPACTION RESISTANCE. CONTACT ENGINEER OR OWNER BEFORE PROCEEDING.

NOTE: WHEN NON-STANDARD POLE SETTING IS APPROVED THE HOLE SHALL BE OVER-EXCAVATED A MINIMUM OF 1'-0 OR TO A DEPTH THAT ADEQUATE SOIL IS FOUND. IF POLE HOLE OVER-EXCAVATION EXCEEDS 3'-0 IN DEPTH THE CONTRACTOR SHOULD NOT PROCEED WITHOUT CONTACTING THE ENGINEER OR OWNER.

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MADISONVILLE MUNIVIPAL UTILITY
MADISONVILLE, KENTUCKY
SR 41A PROJECT
STRUCTURE SETTING

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MADISONVILLE, KENTUCKY
SR 41A PROJECT
SECTION 2
UNDERGROUND DETAILS

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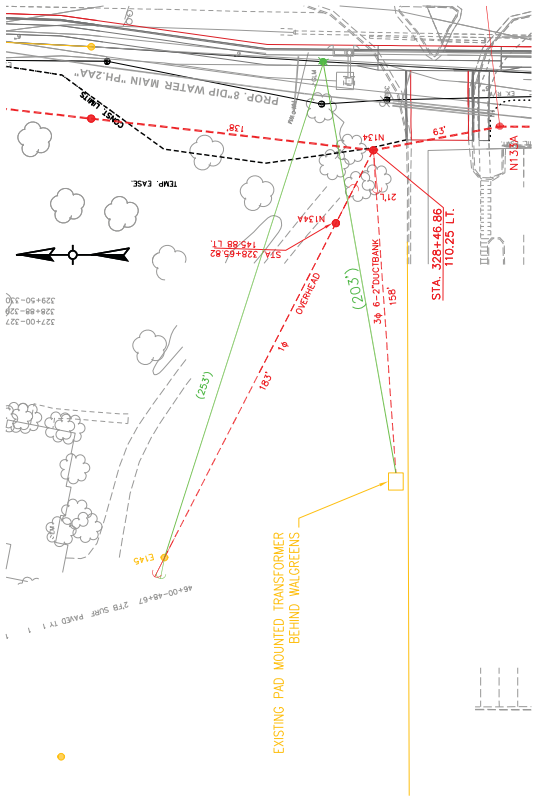

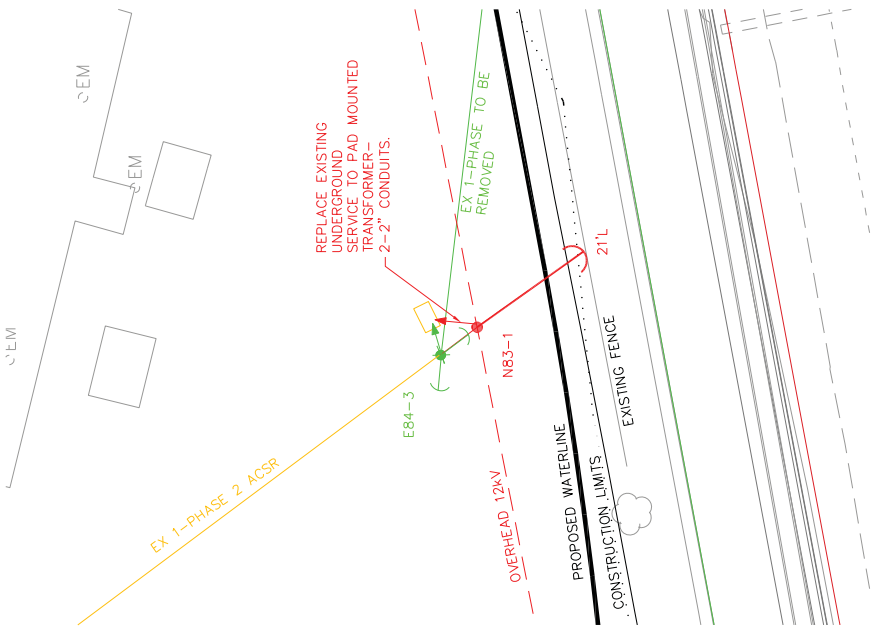

MADISONVILLE MUNICIPAL UTILITIES
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SR 41A PROJECT
SECTION 2
GUY DETAILS
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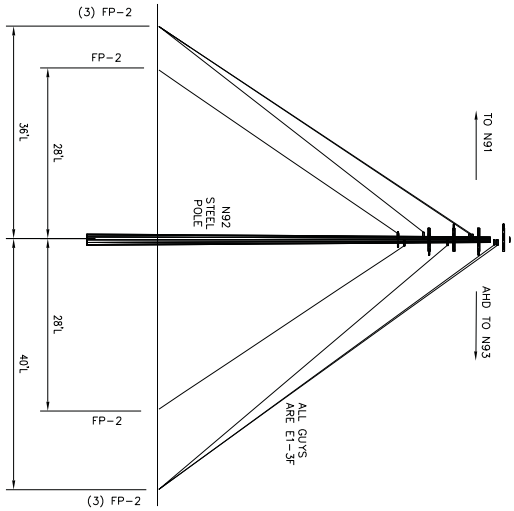
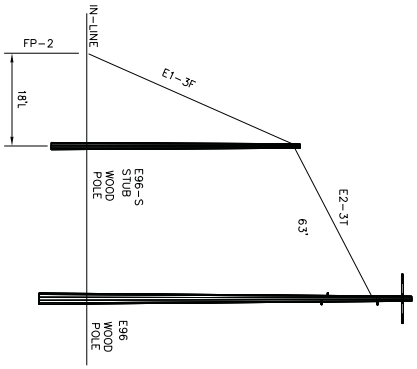
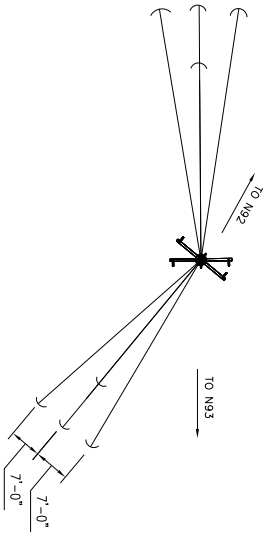
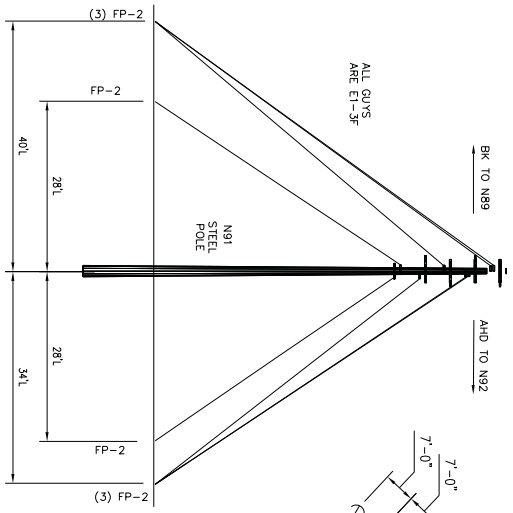
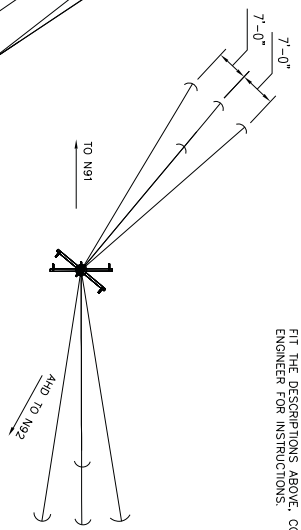
NOTE:
1. ANCHORS ARE SPECIFIED FOR CLASS 5 SOIL CONDITIONS AS DESCRIBED BELOW:
"MEDIUM DENSE COURSE SANDS AND SANDY GRAVELS; STIFF TO VERY STIFF SILTS AND CLAY. TYPICAL BLOW COUNT WOULD BE 14 TO 25.
PER CHANCE ANCHOR CATALOG THE HOLDING CAPACITY OF THE SPECIFIED ANCHOR IS 27,000# IS CLASS 5 CATEGORY SOILS.
WHEN SOILS ARE ENCOUNTERED THAT DO NOT FIT THE DESCRIPTIONS ABOVE, CONTACT THE ENGINEER FOR INSTRUCTIONS.
LOOKING AHD
TO E90 3-PHASE
TO E84-1R 1-PHASE
N85 STEEL POLE
E1-3
E1-3FD
FP-2
15'L
21'L
IN-LINE
E95-1 WOOD POLE
E2-3T
32'
N95-1S STUB WOOD POLE
E1-3F
18'L
TO E88 1-PHASE
E90 WOOD POLE
TO E85-1
N83-1 STEEL POLE
BI-SECTOR
N88 STEEL POLE
AHD TO N83-1
BACK TO N82
N83 STEEL POLE
24'L
30'L
28'L
34'L
40'L
E86-1 WOOD POLE
TO EXX 1-PHASE
TO N86 1-PHASE
N86-1 WOOD POLE
BACK TO N83
AHD TO E81
N82 STEEL POLE
26'L
32'L
38'L
N86 STEEL POLE
TO N86-1 1-PHASE

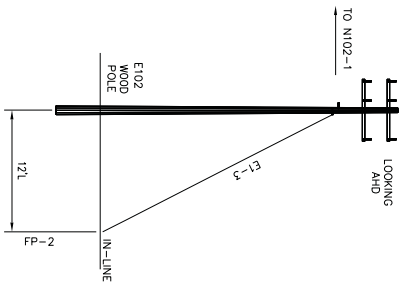












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MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
SR 41A PROJECT
SECTION 2
GUY DETAILS

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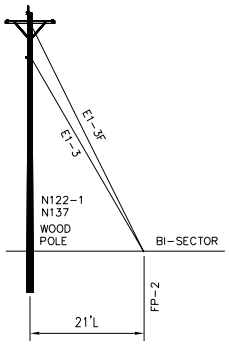

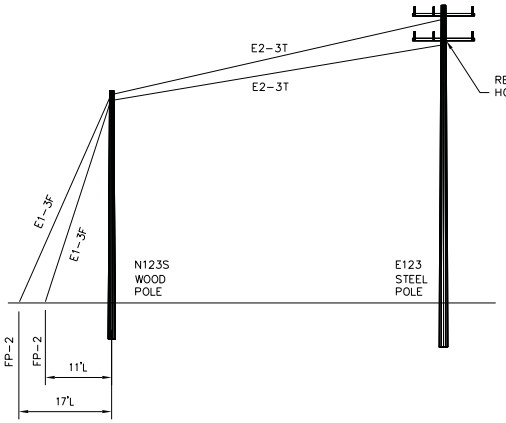

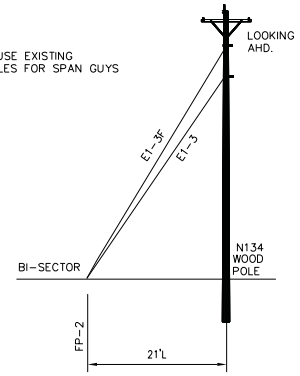

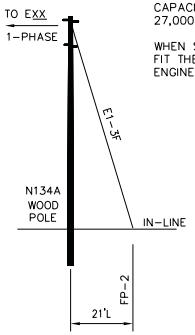

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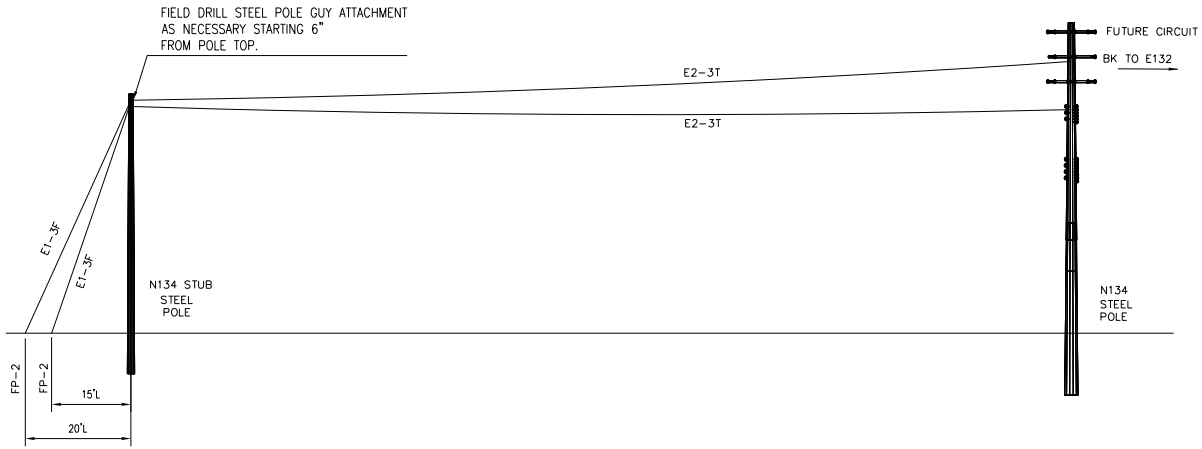

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MADISONVILLE, KENTUCKY
SR 41A PROJECT
SECTION 2
GUY DETAILS

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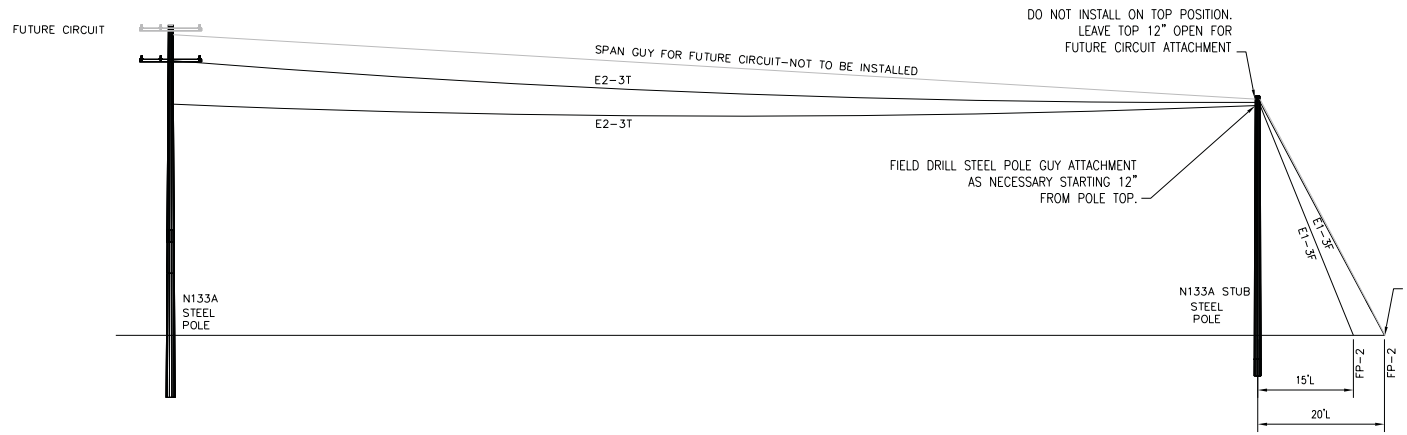

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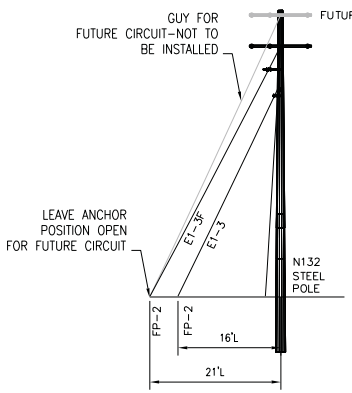

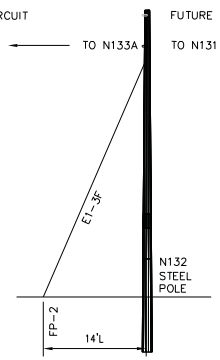

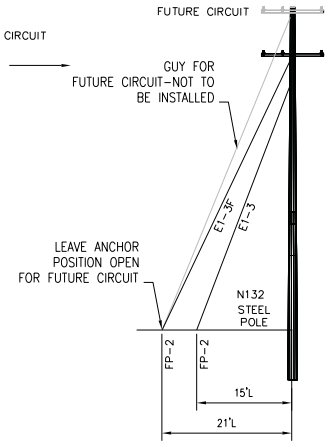

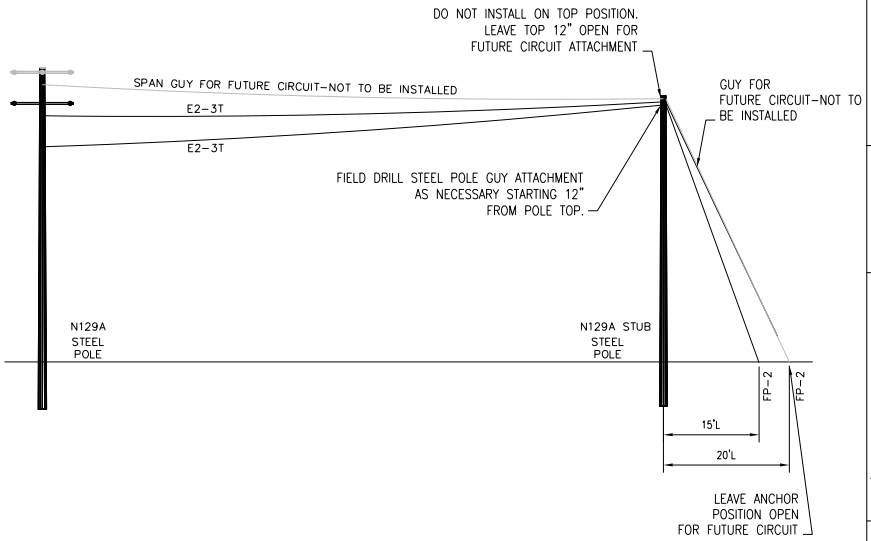

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MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
SR 41A PROJECT
SECTION 2
GUY DETAILS

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MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
SR 41A PROJECT
SECTION 2
STEEL POLE FRAMING

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SECTION 2

STRUCTURE NO.	POLE HT/CL	FRAMING	COMMENTS
N82	70-H5	2C7C-BA	
N83	65-H5	2C7C-BA	
N83-1	55-H2	2C2-2CL	A5-2
N84	55-H3	C2-2CL/C8C	GOAB
N85	55-H2	2C2-2CL	C7C/A5-2
N86	55-H2	2C2-2CL	A5-2
N87	55-H3	2C2-2CL	
N88	55-H3	2C2-2CL	C2-2CL FOR CROSSING LINE
N89	60-H3	2C2-2CL	
N90	NOT USED	NOT USED	
N91	65-H4	2C7C-BA	
N92	65-H4	2C7C-BA	
N93	50-H2	2C8C	
N129A	55-H1	C8C	BOTTOM CIRCUIT, SPAN GUY
N129AS	50-1	STUB	BOTTOM CIRCUIT, STUB POLE
N129	60-H3	C2-2CL	BOTTOM CIRCUIT, 7' SPACING, (2)A5-2
N130	65-H4	C2-2CL	BOTTOM CIRCUIT, 7' SPACING
N131	55-H3	C2-2CL	BOTTOM CIRCUIT
N132	55-H3	C8C	BOTTOM CIRCUIT, A5-2, RISER
N133A	60-H2	C2-2CL	BOTTOM CIRCUIT, SPAN GUYS
N133A-S	45-H1		BOTTOM CIRCUIT, STUB POLE
N133	60-H3	C2-2CL	BOTTOM CIRCUIT
N134	60-H11	C8C	BOTTOM CIRCUIT, C7C, SPAN GUY
N135	50AB	C8C	BOTTOM CIRCUIT, ANCHOR BOLT FOUNDATION
N136	60-H5	C8C	BOTTOM CIRCUIT, GOAB
N136-1	60-H4	C2-2CL	BOTTOM CIRCUIT, C7C
N137	60-H11	C8C	BOTTOM CIRCUIT, C7C

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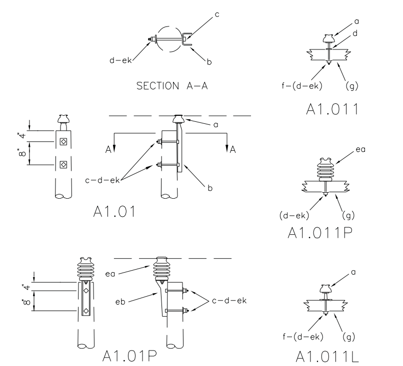


ASSEMBLY: A1.

ITEM	MATERIAL	01 QTY	01P QTY	011 QTY	011P QTY	011L QTY
a	Insulator, pin type (12.47/7.2 kV)	1		1		1
b	Pin, pole top, 20"	1				
c	Bolt, machine, 5/8" x req'd length	2	2			
d	Washer, square, 2 1/4"	2	2	1		
f	Pin, crossarm steel, 5/8" x 10 3/4"			1		
f	Pin, crossarm steel, clamp type					1
ea	Insulator, post type (12.47/7.2 kV)		1		1	
eb	Bracket, pole top		1			
ek	Locknuts	2	2			

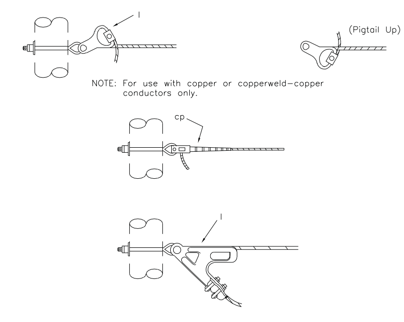
ASSEMBLY NUMBERS

NEW	(OLD)
A1.01	(M5-2)
A1.01P	(M5-18)
A1.011	(M5-5)
A1.011P	(M5-7)
A1.011L	

DESIGN PARAMETERS:

A1.01: See TABLE I
A1.01P: See TABLE II
A1.011: See TABLE II
A1.011P: See TABLE II
A1.011L: See TABLE III

SINGLE SUPPORT–PRIMARY
APRIL 2005 | RUS | 1 – PHASE PRIMARY 12.47/7.2 kV | A1.01,A1.01P A1.011,A1.011P A1.011L

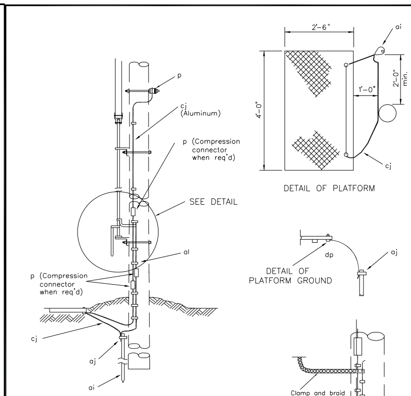


NOTES:
1. Item "by" may be substituted for item "cp" shown.
2. Specify "ej" clamp instead of "l" clamp for conductors larger than #4/0 ACSR.
3. Armor tape required for conductors in galvanized fittings not having aluminum liners.
4. Bend pigtails away from line conductors to avoid chafing.

ASSEMBLY: L2

ITEM	MATERIAL	.3 QTY	.4 QTY	.5 QTY
l	Clamp, deadend (distribution)	1		1
by	Deadend, automatic or formed type (Not Shown)			
cp	Deadend, compression type		1	

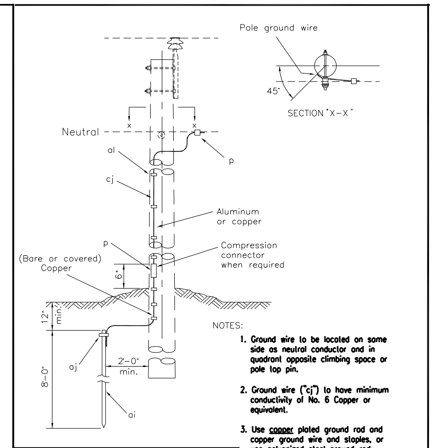
NEUTRAL DEADEND TYING ASSEMBLIES
APRIL 2005 | RUS | L2.3,L2.4,L2.5 (M42-13)



ITEM	QTY	MATERIAL
p		Connector, compression, as req'd
ai	1	Rod, ground, 5/8 min. dia., (galv.)
aj	1	Clamp, ground rod, (galvanized steel)
al		Staple, ground wire, (galv.), as req'd
cj		Wire pole ground, as req'd Soft annealed iron, 5/16" with class C galvanizing
dp	2	Clamp, ground wire, with lock washer
	1	Platform, grounding plate, galv. iron

NOTE: Wear rubber gloves when operating switch.

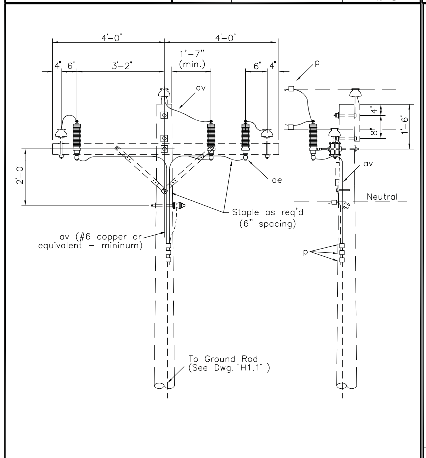
GROUNDING ASSEMBLY – PLATFORM TYPE (FOR SECTIONALIZING AIRBREAK SWITCH)
APRIL 2005 | RUS | H4.1 (M2-15A)



NOTES:
1. Ground wire to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
2. Ground wire ("cj") to have minimum conductivity of No. 6 Copper or equivalent.
3. Use copper plated ground rod and copper ground wire and staples, or use galvanized steel ground rod, staples and soft annealed iron, 3-strand, 5/16" ground wire with class C galvanizing.

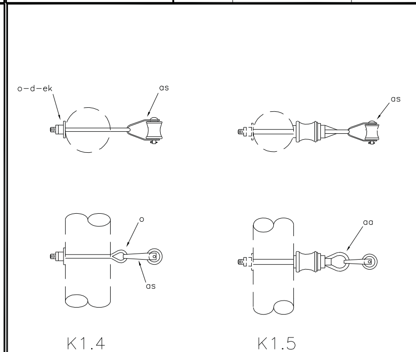
ITEM	QTY	MATERIAL
p		Connector, compression, as req'd
ai	1	Rod, ground, 5/8" min. diameter
aj	1	Clamp, ground rod
al		Staple, ground wire, as req'd
cj		Wire, pole ground, as req'd

GROUNDING ASSEMBLY – GROUND ROD TYPE
APRIL 2005 | RUS | H1.1 (M2-11)



ITEM	QTY	MATERIAL
p		Connectors, as req'd
ae	3	Arrester, surge, (9 kV)
av		Jumpers, as req'd

SURGE ARRESTERS – 3 SINGLE PHASE
APRIL 2005 | RUS | 3 – PHASE PRIMARY 12.47/7.2 kV | P1.3



ASSEMBLY: K1

ITEM	MATERIAL	.4 QTY	.5 QTY
d	Washer, 2 1/4" square	1	
o	Bolt, eye, 5/8" X req'd length	1	
aa	Nut, eye		1
as	Clevis, service, swinging, insulated	1	1
ek	Locknuts	1	

DESIGN PARAMETERS:

PERMITTED LONGITUDINAL LOAD:
1,500 lbs. (ANSI Class 53-2 Insulator)
2,250 lbs. (ANSI Class 53-4 Insulator)

SERVICE ASSEMBLIES (POLE MOUNTED)
APRIL 2005 | RUS | K1.4,K1.5 (K11,K11L),(K15C)

MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
SR 41A PROJECT
SINGLE PHASE AND EQUIPMENT
WOOD POLE AND MISC ASSEMBLIES

No.	DATE	REVISION	BY
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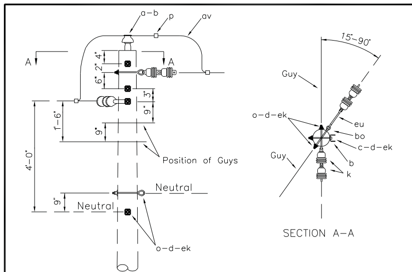
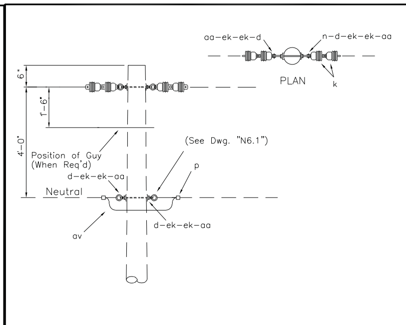


NOTES:
1. Use 3" curved washers, "d", on eyebolts, "o".
2. Other combinations of deadend assemblies (A5.1 through A5.9) may be used, (e.g., one A1.01 plus two A5.3's; or one A1.01 plus one A5.1 plus one A5.7). Record alternative assemblies separately on staking sheets. CAUTION: Use the appropriate permitted longitudinal loads.

ITEM	QTY	MATERIAL
a	1	Insulator, pin type (12.47/7.2 kV)
b	1	Pin, pole top, 20"
c	2	Bolt, machine, 5/8 x req'd length
d	2	Washer, square, 2 1/4"
d	4	Washer, square, 3, curved
k	4	Insulator, suspension, 4 1/4
o	4	Bolt, eye, 5/8 x req'd length
p		Connectors, as req'd
av		Jumpers, as req'd
bo	1	Shackle, anchor
ek	6	Locknuts
eu (du)	1 (1)	Link, extension, insulated (Link, Extension)(Optional)

DESIGN PARAMETERS:
PERMITTED LONGITUDINAL LOAD = 5000 lbs./Conductor

DEADEND ANGLE (15°–90°)
APRIL 2005 | RUS | 1 – PHASE PRIMARY 12.47/7.2 kV | A4.2



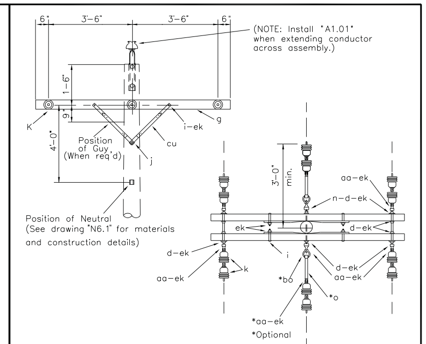
NOTES:
1. Single deadend assemblies A5.02 or A5.03 may optionally be installed
2. Maximum line angle may be increased to 15° by installing anchor shakles, item "bo", to (horizontal) eyenuts and installing side guy as req'd.

ITEM	QTY	MATERIAL
o	*	Bolt, eye, 5/8" x req'd length
bo	*	Shackle, anchor
eu	*	Link, extension, insulated
d	4	Washer, square, 3", curved
k	4	Insulator, suspension, 4 1/4"
n	2	Bolt,double arming,5/8" x req'd length
p		Connectors, as req'd
aa	4	Nut, eye, 5/8" (or as req'd)
av		Jumpers, as req'd
ek	8	Locknuts (or as req'd)

* Optional – Quantity as req'd

DESIGN PARAMETERS:
PERMITTED LONGITUDINAL LOAD= 5000 lbs./Conductor
MAXIMUM LINE ANGLE = 5° (See Note)

DOUBLE DEADEND (STRAIGHT)
APRIL 2005 | RUS | 1 – PHASE PRIMARY 12.47/7.2 kV | A6.1 (A6)



ITEM	QTY	MATERIAL
d	2	Washer, square, 3", curved
d	10	Washer, square, 2 1/4"
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"
i	4	Bolt, carriage, 3/8" x 4 1/2"
j	2	Screw, lag, 1/2" x 4"
k	12	Insulator, suspension, 4 1/4"
n	4	Bolt,double arming,5/8" x req'd length
o	2	Bolt, eye, 5/8" x req'd length
p		Connectors, as req'd
aa	8	Nut, eye, 5/8"
av		Jumpers, as req'd
bo	2	Shackle, anchor
cu	4	Brace, 28"
ek	26	Locknuts

NOTES:
1. Double arming bolt, item "n," and eye nut, item "aa," may be replaced with double arming eye bolt, item "dy."
2. Maximum line angle may be increased to 15° by installing anchor shackles, item "bo," to (horizontal) eye nuts and installing side guys as req'd.
3. Designate as C6.31 for assembly with three crossarms.

DESIGN PARAMETERS:
PERMITTED UNBALANCED CONDUCTOR TENSION:
See Table A (Exhibit 2)
MAXIMUM LINE ANGLE = 5° (See Note 2)

DOUBLE DEADEND ON CROSSARMS
APRIL 2005 | RUS | 3 – PHASE PRIMARY 12.47/7.2 kV | C6.21 (C8) C6.31

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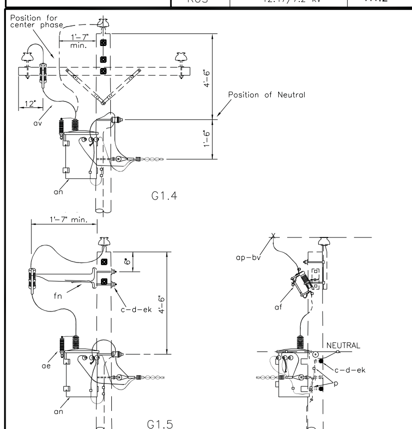


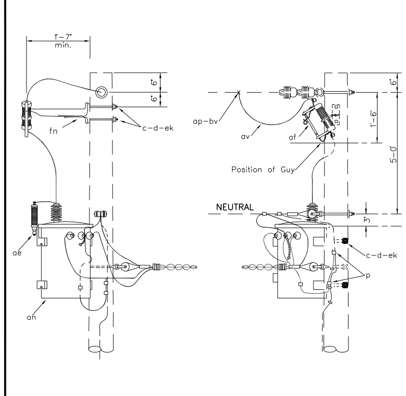
NOTE: Rotate cutout so the blade faces climbing face of pole.

ITEM	MATERIAL	ASSEMBLY: G1 .4 QTY	.5 QTY
c	Bolt, machine, 5/8" x req'd length	2	4
d	Washer, square, 2 1/4"	2	4
p	Connectors, as req'd		
ae	Arrester, surge (9 kV)	1	1
af	Cutout, dist., open (15 kV)	1	1
an	Transformer, 12.47 kV, conventional	1	1

ITEM	MATERIAL	ASSEMBLY: G1 .4 QTY	.5 QTY
ap	Clamp, hot line	1	1
av	Jumpers, stranded, as req'd		
bv	Rod, armor, as req'd		
ek	Locknuts,	2	4
fn	Bracket, extension		1

DESIGN PARAMETERS:
See Guide Drawing "G1.1G"

SINGLE-PHASE, CONVENTIONAL TRANSFORMER (TANGENT POLE)
APRIL 2005 | RUS | 12.47/7.2 kV | G1.4 G1.5



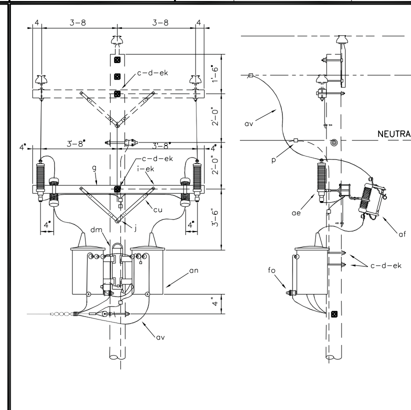
NOTE: Rotate cutout so that the blade faces climbing face of pole.

ITEM	QTY	MATERIAL
c	4	Bolt, machine, 5/8" x req'd length
d	4	Washer, square, 2 1/4"
p		Connectors, as req'd
ae	1	Arrester, surge (9 kV)
af	1	Cutout, dist. open (15 kV)
an	1	Transformer, 12.47 kV, conventional

ITEM	QTY	MATERIAL
ap	1	Clamp, hot line
av		Jumpers, stranded, as req'd
bv	1	Rod, armor as req'd
ek	4	Locknuts
fn	1	Bracket, extension

DESIGN PARAMETERS:
See Guide Drawing "G1.1G"

SINGLE-PHASE, CONVENTIONAL TRANSFORMER (DEADEND POLE)
APRIL 2005 | RUS | 12.47/7.2 kV | G1.6

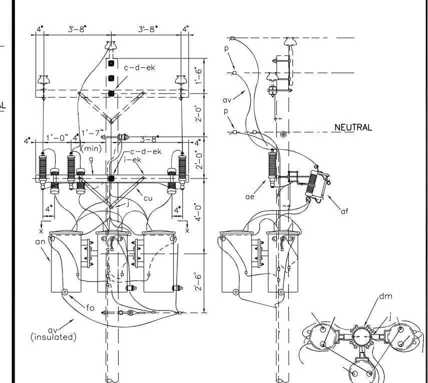


ITEM	QTY	MATERIAL
c	3	Bolt, machine, 5/8" x req'd length
d	4	Washer, square, 2 1/4"
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'-0"
i	2	Bolt, carriage, 3/8" x 4 1/2"
j	1	Screw, lag, 1/2" x 4"
p		Connectors, as req'd
p		Connectors, compression, as req'd
ae	2	Arrester, surge, (9 kV)

ITEM	QTY	MATERIAL
af	2	Cutout, dist. open (15 kV)
an	2	Transformer, 12.47 kV, conv.
av		Jumpers, bare, stranded, as req'd
av		Jumpers, service, as req'd
cu	2	Brace, 28"
dm	1	Bracket, transformer
ek	5	Locknuts
fo	2	Bracket, transformer, insul.

DESIGN PARAMETERS:
See Guide Drawing "G2.1G"

TWO-PHASE TRANSFORMER BANK
OPEN-WYE PRIMARY
OPEN-DELTA, 4 WIRE SECONDARY
APRIL 2005 | RUS | 12.47/7.2 kV | G2.1 (G210–)



NOTES:
1. See Drawing "Q3.3" for additional connection and metering details.

ITEM	QTY	MATERIAL
d	2	Washer, square, 2 1/4"
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'-0"
i	2	Bolt, carriage, 3/8" x 4 1/2"
j		Screw, lag, 1/2" x 4", as req'd
n	1	Bolt, dble arm, 5/8" x req'd length
p		Connectors, as req'd
p		Connectors, compression, as req'd
ae	3	Arrester, surge, (9 kV)

ITEM	QTY	MATERIAL
af	3	Cutout, dist. open (15 kV)
an	3	Transformer, 12.47 kV, conventional
av		Jumpers, bare, stranded
av		Jumpers, service, as req'd
cu	2	Brace, 28"
dm	1	Bracket, transformer, cluster with adapter plates as req'd
ek	5	Locknuts
fo	3	Bracket, transformer, insulated

DESIGN PARAMETERS:
See Guide Drawing "G3.3G"

THREE-PHASE TRANSFORMER BANK
GROUNDED-WYE PRIMARY
GROUNDED WYE, 4 WIRE SECONDARY
APRIL 2005 | RUS | 3 – PHASE PRIMARY 12.47/7.2 kV | G3.3 (G312–)

FOR BIDDING ONLY

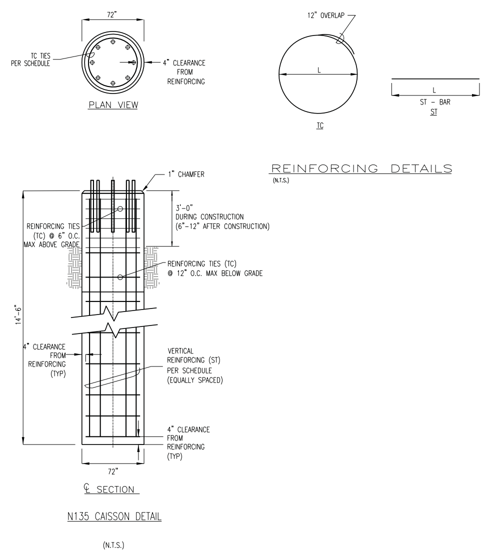
MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
SR 41A PROJECT
SINGLE PHASE AND EQUIPMENT
WOOD POLE AND MISC ASSEMBLIES

No.	DATE	REVISION	BY
0	11-30-17	ISSUED FOR BIDS.	

Designed By: | Drawn By: | Checked By:

patterson & dewar ENGINEERS
850 CENTER WAY, NORCROSS, GEORGIA 30071
(770) 453-1410 | pdengineers.com
ENGINEERS - SURVEYORS

DATE | SCALE | DRAWING NO. KYMMU41A225 | REV. 0



CAISSON SCHEDULE NOTES:

1. SEE POLE MANUFACTURER DWGS FOR ALL ANCHOR BOLT DETAILS. CONTRACTOR SHALL VERIFY SIZE OF STEEL BEARING PLATES AND ANCHOR BOLT LOCATIONS WITH POLE SHOP DRAWINGS BEFORE ANY FABRICATION OR OTHER WORK IS STARTED. PIER SIZE SHALL PROVIDE A MINIMUM OF 2" BETWEEN EDGE OF BASE PLATE AND EDGE OF PIER. IMMEDIATELY NOTIFY ENGINEER IN WRITING OF ANY DISCREPANCIES.
2. CT-CAISSON TYPE IS CYLINDRICAL TOP.
SQ-CAISSON TYPE IS SQUARE TOP.
REC-CAISSON TYPE IS RECTANGULAR TOP (SEE DETAIL).

STRUCTURAL NOTES:

3. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS BEFORE ANY WORK IS STARTED.
4. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
5. ALL REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A615-GRADE 60 (FY=60,000 PSI) EXCEPT #3 BARS MAY HAVE FY=40,000 PSI.
6. ALL EXPOSED CONCRETE SURFACES SHALL HAVE A RUBBED FINISH.
7. CONTRACTOR SHALL BE PREPARED TO UNDERCUT AND/OR COMPACT BOTTOM OF ALL PAD FOUNDATIONS. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE IF ANY UNSUITABLE SOIL IS ENCOUNTERED.
8. COLD JOINTS ARE PROHIBITED IN DRILLED CAISSON FOUNDATIONS. CONCRETE IN DRILLED CAISSON FOUNDATION IS TO BE PLACED MONOLITHICALLY.
9. MAXIMUM SIZE OF AGGREGATE SHALL NOT EXCEED 1 INCH.

CAISSON SCHEDULE

FOUNDATION DESIGNATION	ITEM	CAISSON DIAMETER (In Inches)	CAISSON LENGTH Feet	CAISSON LENGTH Inches	CAISSON TYPE (SEE NOTE 3)	REINFORCING VERTICAL MARK	REINFORCING VERTICAL # /CAISSON	REINFORCING TIES MARK	REINFORCING TIES # /CAISSON	CONCRETE PER CAISSON	# OF CAISSONS
A	N135 SELF SUPPORTING POLE	72	14	6	CT	RA	26	TC72	19	15.18	1

REINFORCING SCHEDULE

MARK	SIZE	# REQ'D.	TYPE	A LENGTH FT.	A LENGTH IN.	L LENGTH FT.	L LENGTH IN.	B LENGTH FT.	B LENGTH IN.	TOTAL LENGTH FT.	TOTAL LENGTH IN.
RA	#8	26	ST	---	---	13	11	---	---	13	11
TC72	#4	19	TC	---	---	5	4	---	---	17	10

FOR BIDDING ONLY

No.	DATE	REVISION	BY
0	11-30-17	ISSUED FOR BIDS.	

Designed By: | Drawn By: | Checked By:

MADISONVILLE MUNICIPAL UTILITIES
MADISONVILLE, KENTUCKY
SR 41A PROJECT
FOUNDATION DETAIL

patterson & dewar ENGINEERS
850 CENTER WAY, NORCROSS, GEORGIA 30071
(770) 453-1410 | pdengineers.com
ENGINEERS - SURVEYORS

DATE
SCALE
DRAWING NO. KYMMU41A401 REV. 0

SAVED: 11/30/2017 3:58 PM BY LBROOKS
PLOTTED: 11/30/2017 5:03 PM BY LBROOKS
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COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.20	R2j

PAVING AREAS

ITEM	US 41A	640+34 LT & RT	643+34 LT DODSON	646+34 RT	656+66 LT	656+66 RT	664+22 LT		671+95 LT	671+95 RT	679+15 LT & RT	686+09 LT & RT PRIDE	693+09 RT	699+09 LT	699+09 RT BRIARWOOD	QUINTEN	WALGREENS 699+15	US 41 NORTH MAIN	ENTRANCES	ISLAND			TOTALS
	SQUARE YARDS																						
1.5" CL3 ASPH SURF 0.50B PG64-22	53685	1019	807	322	100	399	73	0	29	0	123	1462	762	1564	443	280	378	15783	5384	0			82611
3.0" CL 3 ASPH BASE 1.00D PG64-22	53685	1019	816	0	102	403	74	0	30	0	126	253	770	1564	447	284	378	3610	4301	0			67862
3.5" CL 3 ASPH BASE 1.00D PG64-22	24295	1019	835	0	105	413	77	0	33	0	132	270	788	1564	455	0	378	3610	0	544			34517
4.5" CL3 ASPH BASE 1.50D PG 64-22	30683	0	0	0	109	0	81	0	36	0	139	0	0	0	0	0	0	5024	0	544			36615
LEVELING & WEDGING PG64-22 (1" AVG)	4860	0	0	3816	0	0	0	0	0	0	0	439	0	0	0	0	0	6116		11644			26875
4.0" CRUSHED STONE BASE	0	0	86	0	0	0	0	0	0	0	0	68	0	84	0	0	0	792	1409	0			2440
6.0" CRUSHED STONE BASE	31351	300	857	0	114	424	85	0	39	0	148	469	808	1871	465	0	474	5193	3462	0			46062
6.5" CRUSHED STONE BASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
8.0" CRUSHED STONE BASE	0	948	0	0	0	0	0	0	0	0	0	0	0	0	0	292	0	0		356			1598
CEMENT CONCRETE ENTRANCE PAVEMENT-8 IN			0									0		0				0	1384				1384
12.0" CRUSHED AGGREGATE SIZE NO. 2	32242	0	0	0	122	0	91	0	45	0	161	0	0	0	0	0	0	5644		0			38304
FABRIC-GEOTEXTILE TYPE IV	66158	0	0	0	252	0	188	0	91	0	330	0	0	0	0	0	0	11665		0			78684
ASPHALT SEAL COAT (2.4 LB/SY)																							0
ASPHALT SEAL AGGREGATE (20 LB/SY SIZE No.8 OR 9M)																							0
TRAFFIC BOUND BASE	0	540	0	0	0	0	0	0	0	474	0	0	0	0	0	0	0	0	256	0			1270
ASPHALT PAVE MILLING & TEXTURING	65052	0	0	216	0	0	0	0	0	0	0	23	0	0	0	0	0	3275		0			68566

U.S. 41A
PAVEMENT SUMMARY SHEET

COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.20	R2j

PAVING AREAS

ITEM	US 41A	640+34 LT & RT	643+34 LT DODSON	646+34 RT	656+66 LT	656+66 RT	664+22 LT		671+95 LT	671+95 RT	679+15 LT & RT	686+09 LT & RT PRIDE	693+09 RT	699+09 LT	699+09 RT BRIARWOOD	QUINTEN	WALGREENS 699+15	US 41 NORTH MAIN	ENTRANCES	ISLAND			TOTALS
	SQUARE YARDS																						
1.5" CL3 ASPH SURF 0.50B PG64-22	53685	1019	807	322	100	399	73	0	29	0	123	1462	762	1564	443	280	378	15783	5384	0			82611
3.0" CL 3 ASPH BASE 1.00D PG64-22	53685	1019	816	0	102	403	74	0	30	0	126	253	770	1564	447	284	378	3610	4301	0			67862
3.5" CL 3 ASPH BASE 1.00D PG64-22	24295	1019	835	0	105	413	77	0	33	0	132	270	788	1564	455	0	378	3610	0	544			34517
4.5" CL3 ASPH BASE 1.50D PG 64-22	30683	0	0	0	109	0	81	0	36	0	139	0	0	0	0	0	0	5024	0	544			36615
LEVELING & WEDGING PG64-22 (1" AVG)	4860	0	0	3816	0	0	0	0	0	0	0	439	0	0	0	0	0	6116		11644			26875
4.0" CRUSHED STONE BASE	0	0	86	0	0	0	0	0	0	0	0	68	0	84	0	0	0	792	1409	0			2440
6.0" CRUSHED STONE BASE	31351	300	857	0	114	424	85	0	39	0	148	469	808	1871	465	0	474	5193	3462	0			46062
6.5" CRUSHED STONE BASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
8.0" CRUSHED STONE BASE	0	948	0	0	0	0	0	0	0	0	0	0	0	0	0	292	0	0		356			1598
CEMENT CONCRETE ENTRANCE PAVEMENT-8 IN			0									0		0				0	1384				1384
12.0" CRUSHED AGGREGATE SIZE NO. 2	32242	0	0	0	122	0	91	0	45	0	161	0	0	0	0	0	0	5644		0			38304
FABRIC-GEOTEXTILE TYPE IV	66158	0	0	0	252	0	188	0	91	0	330	0	0	0	0	0	0	11665		0			78684
ASPHALT SEAL COAT (2.4 LB/SY)																							0
ASPHALT SEAL AGGREGATE (20 LB/SY SIZE No.8 OR 9M)																							0
TRAFFIC BOUND BASE	0	540	0	0	0	0	0	0	0	474	0	0	0	0	0	0	0	0	256	0			1270
ASPHALT PAVE MILLING & TEXTURING	65052	0	0	216	0	0	0	0	0	0	0	23	0	0	0	0	0	3275		0			68566

U.S. 41A
PAVEMENT SUMMARY SHEET

PAVING SUMMARY

ITEM CODE	ITEM	UNIT	US 41A WIDENING	APPROACHES	US 41A NORTH MAIN	ENTRANCES & ISLANDS	TOTAL PROJECT
00324	CL3 ASPH SURF 0.50B PG64-22	TON	4429	640	1302	444	6815
00214	CL3 ASPH BASE 1.00D PG64-22	TON	13535	2202	1291	814	17842
00205	CL3 ASPH BASE 1.50D PG64-22	TON	7594	90	1243	135	9062
00003	CRUSHED STONE BASE (1)	TON	10816	2715	1974	1682	17351
00078	CRUSHED AGGREGATE SIZE NO. 2 (3)	TON	18378	238	3217	0	21844(4)
02599	FABRIC-GEOTEXTILE TYPE IV	SY	66158	861	11665	0	78684
00020	TRAFFIC BOUND BASE (3.3" AVG) (2)	TON	0	167	0	42	209
00190	LEVELING & WEDGING PG64-22	TON	267	234	336	640	1478
02676	MOBILIZATION FOR MILL & TEXT	LS					1
02677	ASPHALT PAVE MILLING & TEXTURING	TON	3578	13	180	0	3771
2101	CEM. CONC. ENT. PAVEMENT 8 IN.	SY	0	0	0	1384	1384

NOTES

ALL ASHALT MIXTURES SHALL BE ESTIMATED AT 110 LBS. PER SQ. YD. PER INCH OF DEPTH, UNLESS NOTED OTHERWISE.

(1) ESTIMATED AT 115 LBS. PER SQ. YD. PER INCH OF DEPTH.

(2) ESTIMATED AT 100 LBS. PER SQ. YD. PER INCH OF DEPTH.

(3) ESTIMATED AT 95 LBS. PER SQ. YD. PER INCH OF DEPTH.

(4) 11 TONS ADDED FROM THE GENERAL SUMMARY SHEET

U.S. 41A PAVING SUMMARY SHEET

COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.20	R2k

PAVING SUMMARY

ITEM CODE	ITEM	UNIT	US 41A WIDENING	APPROACHES	US 41A NORTH MAIN	ENTRANCES & ISLANDS	TOTAL PROJECT
00324	CL3 ASPH SURF 0.50B PG64-22	TON	4429	640	1302	444	6815
00214	CL3 ASPH BASE 1.00D PG64-22	TON	13535	2202	1291	814	17842
00205	CL3 ASPH BASE 1.50D PG64-22	TON	7594	90	1243	135	9062
00003	CRUSHED STONE BASE (1)	TON	10816	2715	1974	1682	17351
00078	CRUSHED AGGREGATE SIZE NO. 2 (3)	TON	18378	238	3217	0	21844(4)
02599	FABRIC-GEOTEXTILE TYPE IV	SY	66158	861	11665	0	78684
00020	TRAFFIC BOUND BASE (3.3" AVG) (2)	TON	0	167	0	42	209
00190	LEVELING & WEDGING PG64-22	TON	267	234	336	640	1478
02676	MOBILIZATION FOR MILL & TEXT	LS					1
02677	ASPHALT PAVE MILLING & TEXTURING	TON	3578	13	180	0	3771
2101	CEM. CONC. ENT. PAVEMENT 8 IN.	SY	0	0	0	1384	1384

NOTES

ALL ASHALT MIXTURES SHALL BE ESTIMATED AT 110 LBS. PER SQ. YD. PER INCH OF DEPTH, UNLESS NOTED OTHERWISE.

(1) ESTIMATED AT 115 LBS. PER SQ. YD. PER INCH OF DEPTH.

(2) ESTIMATED AT 100 LBS. PER SQ. YD. PER INCH OF DEPTH.

(3) ESTIMATED AT 95 LBS. PER SQ. YD. PER INCH OF DEPTH.

(4) 11 TONS ADDED FROM THE GENERAL SUMMARY SHEET

U.S. 41A
PAVING SUMMARY SHEET

COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.20	R2k

COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.20	T9

REVISED 11-30-2017

TRAFFIC SIGNAL ESTIMATE OF QUANTITIES

TEMPORARY	FINAL	TOTAL	UNITS	CODE	ITEM DESCRIPTION
0	25	25	LIN FT	4792	CONDUIT 1 INCH
0	35	35	LIN FT	4795	CONDUIT 2 INCH
0	400	400	LIN FT	4820	TRENCHING AND BACKFILLING
0	4650	4,650	LIN FT	4830	LOOP WIRE
3500	3550	7,050	LIN FT	4844	CABLE-NO. 14/5C
0	4350	4,350	LIN FT	4850	CABLE-NO. 14/1 PAIR
0	1	1	EACH	20390NS835	INSTALL COORDINATING UNIT
2	2	4	EACH	4932	INSTALL STEEL STRAIN POLE
195	620	815	LIN FT	4885	MESSENGER-10800 LB
0	1760	1,760	LIN FT	4895	LOOP SAW SLOT AND FILL
1	0	1	EACH	4931	INSTALL SIG CONTROLLER-TYPE 170
0	3	3	EACH	23222EC	INSTALL SIGNAL PEDESTAL
1	1	2	EACH	24955ED	REMOVE SIGNAL EQUIPMENT
0	8	8	EACH	20093NS835	INSTALL PEDESTRIAN HEAD LED
75	0	75	EACH	20094ES835	TEMPORARY RELOCATION OF SIGNAL HEAD
15	15	30	EACH	20188NS835	INSTALL SIGNAL-3 SECTION LED
0	4	4	EACH	20391NS835	ELECTRICAL JUNCTION BOX TYPE A
0	35	35	LIN FT	21543EN	BORE AND JACK CONDUIT
0	8	8	EACH	21743NN	INSTALL PEDESTRIAN DETECTOR
10.1	10.1	20.2	CU YD	23157EN	TRAFFIC SIGNAL POLE BASE
0	20	20	LIN FT	24900EC	PVC CONDUIT - 1 1/4 INCH - SCHEDULE 80
4	0	4	EACH	4884	ANCHOR
4	0	4	EACH	20275EC	VIDEO DETECTION-INSTALL

THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, CURRENT EDITION, AND OTHER SPECIAL NOTES AND SPECIFICATIONS WILL APPLY ON THIS PROJECT. SEE SECTION 706, 723, AND 112 FOR MEASUREMENT AND OTHER DETAILS. SEE SECTION 602 FOR SPRIAL REINFORCEMENT SPLICING.

THE CONTRACTOR SHALL MAKE AN INSPECTION OF THE PROJECT SITE PRIOR TO SUBMITTING A BID AND SHALL BE THOROUGHLY FAMILIARIZED WITH EXISTING CONDITIONS. SUBMISSIONS OF A BID WILL BE CONSIDERED AN AFFIRMATION OF THIS INSPECTION HAVING BEEN COMPLETED.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PICKING UP INSTALL ITEMS FROM THE FRANKFORT POLE YARD AND DELIVERING THESE ITEMS TO THE SITE. THE CONTRACTOR SHALL CONTACT FRANKFORT POLE YARD PERSONNEL (502-782-8994/ 502-330-8153 OR EMAIL KIM.STAMPER@KY.GOV) AND ARRANGE TO PICK UP INSTALL ITEMS A MINIMUM OF TWO (2) WORKING DAYS PRIOR TO ARRIVAL. THE CONTRACTOR SHALL ALSO CONTACT THE SIGNAL SYSTEM BRANCH (502-782-5543/502-782-5547 OR EMAIL JOE.THOMPSON@KY.GOV/ LARRY.IRISH@KY.GOV) TO ARRANGE PROGRAMMING OF THE ROUTER USED FOR COMMUNCATION IN THE TRAFFIC SIGNAL A MINIMUM OF TWO (2) WORKING DAYS PRIOR TO ARRIVAL. FAILURE TO PROVIDE POLE YARD PERSONNEL/ SIGNAL SYSTEM BRANCH THIS ADVANCE NOTICE COULD RESULT IN LONG DELAYS OR REFUSAL TO DISTRIBUTE EQUIPMENT UPON ARRIVAL.

ADD SENTENCE TO SECTION 835.15: ALL WIRE SHALL HAVE WORDING ADDED TO THE OUTER JACKET THAT STATES : "PROPERTY OF KENTUCKY TRANSPORTATION CABINET 502 564 0501".

MEASUREMENT NOTES THAT ARE IN ADDITION TO SECTION 723

INSTALL SIGNAL CONTROLLER TYPE ATC. THE DEPARTMENT WILL MEASURE THE QUANTITY AS EACH INDIVIDUAL UNIT INSTALLED. THE DEPARTMENT WILL NOT MEASURE THE CONCRETE BASE, MOUNTING THE CABINET, CONNECTING THE SIGNAL AND DETECTORS, EXCAVATION, BACKFILLING, RESTORATION, ANY NECESSARY POLE MOUNTING HARDWARE, ELECTRIC SERVICE, ELECTRICAL INSPECTION FEES, AND REQUIRED BUILDING FEES INVOLVING UTILITY SECONDARY/PRIMARY SERVICE FOR PAYMENT AND WILL CONSIDER THEM INCIDENTAL TO THIS ITEM OF WORK. THE DEPARTMENT WILL ALSO NOT MEASURE CONNECTING THE INDUCTION LOOP AMPLIFIERS, PEDESTRIAN ISOLATORS, LOAD SWITCHES, MODEL 400 MODEM CARD FOR PAYMENT AND WILL CONSIDER THEM INCIDENTAL TO THIS ITEM OF WORK. THE DEPARTMENT WILL ALSO NOT MEASURE FURNISHING AND INSTALLING ELECTRICAL SERVICE CONDUCTORS, CONDUITS, ANCHORS, METER BASE, FUSED CUTOUT, FUSES, GROUND RODS, GROUND LUGS, AND GROUND WIRES FOR PAYMENT AND WILL CONSIDER THEM INCIDENTAL TO THIS ITEM OF WORK.

INSTALL VIDEO CAMERA - DEPARTMENT WILL MEASURE THE QUANTITY AS EACH INDIVIDUAL UNIT INSTALLED. THE DEPARTMENT WILL NOT MEASURE INSTALLATION OF SPECIFIED VIDEO CAMERA, VIDEO MODULES, OR MOUNTING BRACKET AS SHOWN ON THE DETAIL SHEET AND WILL CONSIDER THESE INCIDENTAL TO THIS ITEM OF WORK. THE DEPARTMENT WILL NOT MEASURE FURNISHING AND INSTALLING TRUSS TYPE ARM (IF NECESSARY), POWER CABLE, COAXIAL CABLE, OR ANY HARDWARE NECESSARY FOR PROPER INSTALLATION AND WILL CONSIDER THESE INCIDENTAL TO THIS ITEM OF WORK. CONTRACTOR SHALL NOTIFY THE RESIDENT ENGINEER WHEN INSTALLATION IS COMPLETE FOR PLACEMENT OF LOOPS.

CONSTRUCTION AND MEASUREMENT NOTES THAT ARE CONTRARY TO SECTION 723

SUBSECTION: 04.22 REMOVE SIGNAL EQUIPMENT. (CONSTRUCTION ONLY)
REVISION: REPLACE THE PARAGRAPH WITH THE FOLLOWING:
THE DEPARTMENT WILL MEASURE THE QUANTITY BY EACH. THE DEPARTMENT WILL NOT MEASURE BACKFILLING AND THE DISPOSAL OR TRANSPORTATION OF EQUIPMENT AND MATERIALS ASSOCIATED WITH ANY STRUCTURAL OR ELECTRICAL COMPONENT OF THE SIGNAL SYSTEM INCLUDING, BUT NOT LIMITED TO POLE BASES, POLES, JUNCTION BOXES, CABINETS, AND WOOD POLES FOR PAYMENT AND WILL CONSIDER THEM INCIDENTAL TO THIS ITEM OF WORK.

DESIGNED BY: ADAM PROCTOR
DATE SUBMITTED: 11/3/2017

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS
COUNTY OF

HOPKINS

PROJECT NUMBERS: FD04 SPP 054 041A 000-002

TRAFFIC SIGNAL
ESTIMATE OF QUANTITIES
MEASUREMENT, CONST, AND MISC NOTES

6-5-2017

COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.20	T9

REVISED 11-30-2017

TRAFFIC SIGNAL ESTIMATE OF QUANTITIES

TEMPORARY	FINAL	TOTAL	UNITS	CODE	ITEM DESCRIPTION
0	25	25	LIN FT	4792	CONDUIT 1 INCH
0	35	35	LIN FT	4795	CONDUIT 2 INCH
0	400	400	LIN FT	4820	TRENCHING AND BACKFILLING
0	4650	4,650	LIN FT	4830	LOOP WIRE
3500	3550	7,050	LIN FT	4844	CABLE-NO. 14/5C
0	4350	4,350	LIN FT	4850	CABLE-NO. 14/1 PAIR
0	1	1	EACH	20390NS835	INSTALL COORDINATING UNIT
2	2	4	EACH	4932	INSTALL STEEL STRAIN POLE
195	620	815	LIN FT	4885	MESSENGER-10800 LB
0	1760	1,760	LIN FT	4895	LOOP SAW SLOT AND FILL
1	0	1	EACH	4931	INSTALL SIG CONTROLLER-TYPE 170
0	3	3	EACH	23222EC	INSTALL SIGNAL PEDESTAL
1	1	2	EACH	24955ED	REMOVE SIGNAL EQUIPMENT
0	8	8	EACH	20093NS835	INSTALL PEDESTRIAN HEAD LED
75	0	75	EACH	20094ES835	TEMPORARY RELOCATION OF SIGNAL HEAD
15	15	30	EACH	20188NS835	INSTALL SIGNAL-3 SECTION LED
0	4	4	EACH	20391NS835	ELECTRICAL JUNCTION BOX TYPE A
0	35	35	LIN FT	21543EN	BORE AND JACK CONDUIT
0	8	8	EACH	21743NN	INSTALL PEDESTRIAN DETECTOR
10.1	10.1	20.2	CU YD	23157EN	TRAFFIC SIGNAL POLE BASE
0	20	20	LIN FT	24900EC	PVC CONDUIT - 11/4 INCH - SCHEDULE 80
4	0	4	EACH	4884	ANCHOR
4	0	4	EACH	20275EC	VIDEO DETECTION-INSTALL

THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, CURRENT EDITION, AND OTHER SPECIAL NOTES AND SPECIFICATIONS WILL APPLY ON THIS PROJECT. SEE SECTION 706, 723, AND 112 FOR MEASUREMENT AND OTHER DETAILS. SEE SECTION 602 FOR SPRIAL REINFORCEMENT SPLICING.

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MEASUREMENT NOTES THAT ARE IN ADDITION TO SECTION 723

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INSTALL VIDEO CAMERA - DEPARTMENT WILL MEASURE THE QUANTITY AS EACH INDIVIDUAL UNIT INSTALLED. THE DEPARTMENT WILL NOT MEASURE INSTALLATION OF SPECIFIED VIDEO CAMERA, VIDEO MODULES, OR MOUNTING BRACKET AS SHOWN ON THE DETAIL SHEET AND WILL CONSIDER THESE INCIDENTAL TO THIS ITEM OF WORK. THE DEPARTMENT WILL NOT MEASURE FURNISHING AND INSTALLING TRUSS TYPE ARM (IF NECESSARY), POWER CABLE, COAXIAL CABLE, OR ANY HARDWARE NECESSARY FOR PROPER INSTALLATION AND WILL CONSIDER THESE INCIDENTAL TO THIS ITEM OF WORK. CONTRACTOR SHALL NOTIFY THE RESIDENT ENGINEER WHEN INSTALLATION IS COMPLETE FOR PLACEMENT OF LOOPS.

CONSTRUCTION AND MEASUREMENT NOTES THAT ARE CONTRARY TO SECTION 723

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DESIGNED BY: ADAM PROCTOR
DATE SUBMITTED: 11/3/2017

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS
COUNTY OF

HOPKINS

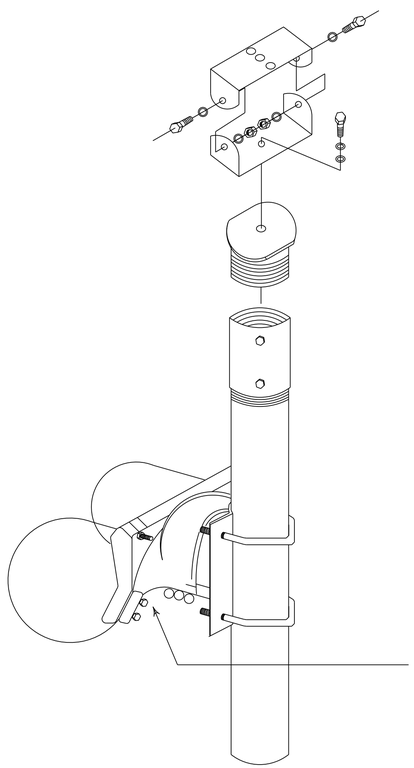
PROJECT NUMBERS: FD04 SPP 054 041A 000-002

TRAFFIC SIGNAL
ESTIMATE OF QUANTITIES
MEASUREMENT, CONST, AND MISC NOTES

6-5-2017

COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.20	T16A

REVISED 11-30-2017



BRACKET, FEMALE, BURLE CAMERA MOUNT

3/8" HEX HEAD BOLT, 16 X 1"

3/8 " FLAT WASHER

3/8" HEX NUT, 16 X 1"

3/8" HEX HEAD BOLT, 16 X 1"

3/8 " SPLIT LOCK WASHER, STAINLESS

3/8 " FLAT WASHER

EXTENDED BRACKET, MALE

ADAPTER, 1 1/2"-11NPS X 3/8"-16NC

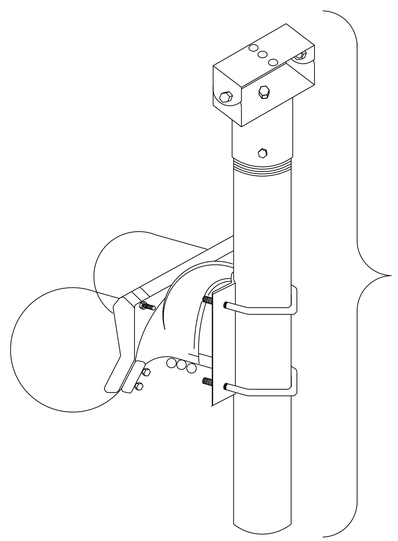
ALUMINUM NOTCHED COUPLING

CLAMP CABLE-84"

GUSSETED TUBE WITH VINYL INSERT. 11/2 " X 74"

CLAMP KIT - CABLE MOUNT
PELCO ASTRO - BRAC AB-3009-84
OR APPROVED EQUAL. CLAMP KIT
MUST BE CAPABLE OF ROTATING
90 DEGREES FOR MOUNTING
DIRECTLY TO STEEL STRAIN POLES
OR WOOD POLES.

CAMERA MOUNT AND BRACKET PARTS



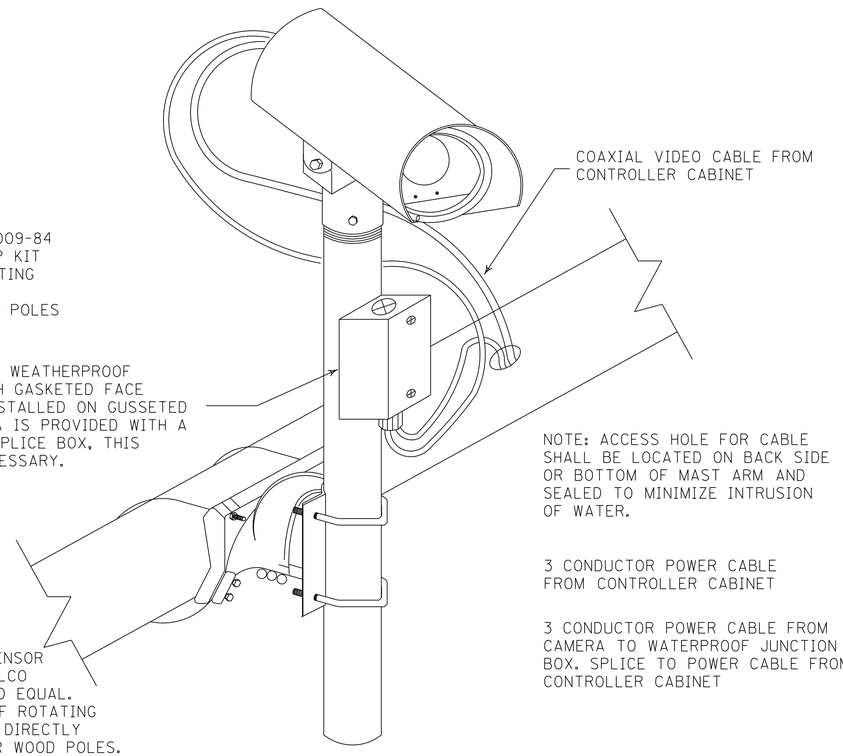
TILT AND PAN EXTENDED SENSOR
BRACKET, CABLE MOUNT. PELCO
AB-0164-74-84 OR APPROVED EQUAL.
CLAMP MUST BE CAPABLE OF ROTATING
90 DEGREES FOR MOUNTING DIRECTLY
TO STEEL STRAIN POLES OR WOOD POLES.

2/2002 CAMERA MOUNT AND BRACKET ASSEMBLY

POWER CABLE SHALL BE AT LEAST A 5 CONDUCTOR WITH A MINIMUM OF 18 GAUGE CONDUCTORS. CONDUCTORS SHALL BE STRANDED COPPER WITH THE FOLLOWING COLOR CODE:

BLACK - HOT
WHITE - NEUTRAL
GREEN - GROUND (IF POSSIBLE)
RED - ZOOM
BLUE - FOCUS

COAXIAL CABLE SHALL BE BELDEN 8281, RG-59/U TYPE OR APPROVED EQUAL.



MAST ARM CAMERA INSTALLATION

NOTE: ALL CABLE MOUNT CLAMP KITS MUST BE CAPABLE OF ROTATING 90 DEGREES TO ADAPT TO STEEL STRAIN POLE AND WOOD POLE APPLICATIONS.

VIDEO DETECTOR SHALL BE DESIGNED TO REPLACE A MODEL 222 LOOP AMPLIFIER IN THE INPUT FILE OF A TYPE 170 MODEL 332 OR 336 TRAFFIC SIGNAL CONTROLLER CABINET. IT SHALL HAVE 24 DETECTOR ZONES PER CAMERA CONFIGURATION. EACH ZONE SHALL HAVE THE ABILITY TO BE SET UP FOR ENTRY, EXIT, DELAYED, AND EXTEND DETECTION. DETECTION ZONES SHALL HAVE THE ABILITY TO BE ADDED AND ORDERED TOGETHER TO PROVIDE PHASE INPUTS. VIDEO DETECTOR SHALL INCLUDE A TWO INPUT/OUTPUT EXPANSION MODULE THROUGH EITHER A DB9 MALE OR RJ-45 INTERCONNECTION. PROCESSOR AND EXPANSION MODULE SHALL OPERATE AT 24 VDC NOMINAL. IT SHALL HAVE A DB9 MALE FOR RS 232 INTERFACE WHICH WILL BE USED FOR SOFTWARE UPGRADES AND/OR REMOTE OPERATION. IT SHALL HAVE AT LEAST 4 OUTPUTS AND THE ABILITY TO REASSIGN FOR THE USE OF EXPANSION BOARDS. CONTRACTOR SHALL PROVIDE ONE MOUSE OR KEYPAD AND ONE VIDEO MONITOR FOR EACH INDIVIDUAL INTERSECTION FOR SETUP AND CALIBRATION OF DETECTION ZONES ON A VIDEO MONITOR.

VIDEO DETECTOR ENVIRONMENTAL REQUIREMENTS:

TEMPERATURE	-34 TO +74 DEGREES C
HUMIDITY	0% TO 95% NON-CONDENSING

VIDEO CAMERA

CAMERA SHALL BE MONOCHROME CCD IMAGER WHICH OPERATES ON 115 VAC, 60 HZ AND PROVIDES NTSC VIDEO SIGNALS. THERE SHALL BE SEPARATE CONNECTORS FOR THE VIDEO (BNC) AND THE POWER SUPPLY TO THE CAMERA. CAMERA SHALL HAVE A MINIMUM RESOLUTION OF 350(V) X 500(H). CAMERA SHALL HAVE AN AUTO IRIS LENS. AUTO IRIS SHALL BE TIME DAMPED ANC CONTROLLED BY SCENE LUMINANCE. THE CAMERA SHALL PROVIDE USABLE VIDEO WITH A LIGHT RANGE OF 0.5 LUX TO 10,000 LUX. THE CAMERA'S SENSITIVITY SHALL BE AT LEAST 0.4 LUX. THE CAMERA SHALL BE PROVIDED WITH A SUITABLE ENCLOSURE THAT MAY BE NON PRESSURIZED OR PRESSURIZED. IT SHALL INCLUDE AN INTERNAL, THERMOSTATICALLY CONTROLLED HEATER. THE CAMERA SHALL INCLUDE A SUNSHIELD AND MOUNTING BRACKET. THE MOUNTING BRACKET SHALL BE PELCO OR APPROVED EQUAL (SEE DETAILS THIS SHEET) ADAPTABLE AND SHALL BE ABLE TO BE MOUNTED TO A STEEL STRAIN POLE OR A MAST ARM POLE. CAMERA LENS SHALL BE ADJUSTABLE WITH THE ABILITY TO FOCUS AND ZOOM. A MOTORIZED LENS SHALL DO THIS FUNCTION. CAMERA LENS SHALL INCLUDE A LENS ADJUSTMENT MODULE THAT WILL BE ABLE TO FASTEN TO THE BACK OF THE CAMERA HOUSING. THIS MODULE SHALL HAVE THE CAPABILITY TO BE USED WITH A VIDEO MONITOR. CONTRACTOR SHALL PROVIDE ONE ADJUSTMENT MODULE PER INTERSECTION FOR ZOOMING AND FOCUSING CAMERAS.

VIDEO CAMERA ENVIRONMENTAL REQUIREMENTS:

TEMPERATURE	-35 TO +60 DEGREES C
HUMIDITY	0% TO 100%
VIBRATION	AT LEAST 0.5G, 3 AXES, 5-30 HZ

SURGE PROTECTOR REQUIREMENTS:

PEAK SURGE CURRENT 8X20 US	5KA
TECHNOLOGY	HYBRID SOLID STATE
ATTENUATION	0.1DB @ 10 MHZ
RESPONSE TIME	LESS THAN 1 NANOSECOND
PROTECTION	LINE TO GROUND
SHIELD TO GROUND - (ISOLATED SHIELD MODELS)	
CLAMP VOLTAGE	SELECTABLE
CONNECTORS	BNC
IMPEDANCE	50 TO 75 OHMS
TEMPERATURE	-40 TO +85 DEGREES C
HUMIDITY	0% TO 95% NON-CONDENSING

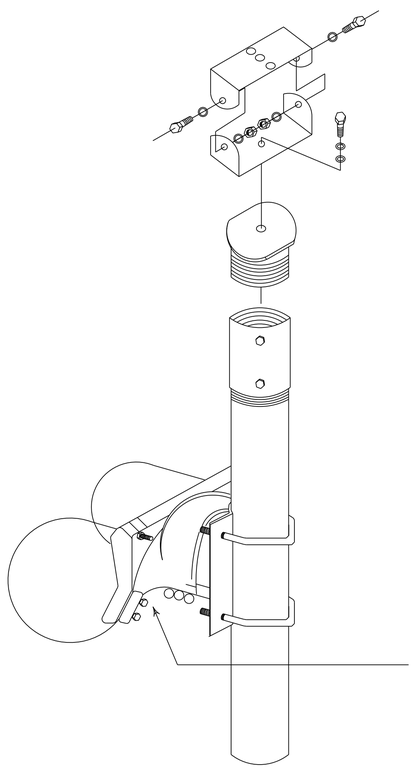
THE VIDEO DETECTION SYSTEM SHALL BE ODETICS VANTAGE EDGE OR TRAFICON VIP 3.1 OR APPROVED EQUAL.

THE MONITOR SHALL HAVE A MINIMUM SIZE OF 9" AND SHALL INCLUDE A CABLE (6') FOR CONNECTION TO THE PROCESSOR UNIT. CABLE SHALL HAVE PROPER CONNECTIONS (BNC OR RCA) FOR CONNECTION FROM MONITOR TO MODULE. MONITOR SHALL OPERATE ON 115 VAC, 60 HZ.

VIDEO DETECTION DETAIL

COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.20	T16A

REVISED 11-30-2017



BRACKET, FEMALE, BURLE CAMERA MOUNT

3/8" HEX HEAD BOLT, 16 X 1"

3/8 " FLAT WASHER

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3/8 " SPLIT LOCK WASHER, STAINLESS

3/8 " FLAT WASHER

EXTENDED BRACKET, MALE

ADAPTER, 1 1/2"-11NPS X 3/8"-16NC

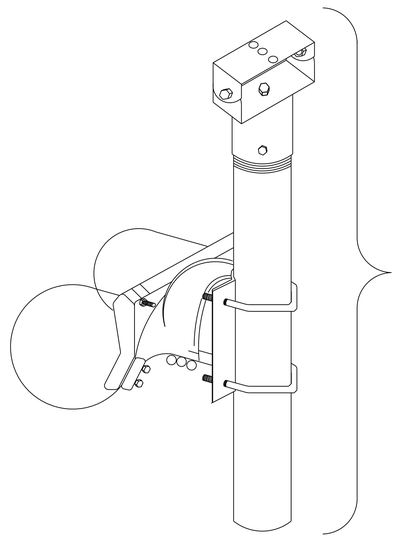
ALUMINUM NOTCHED COUPLING

CLAMP CABLE-84"

GUSSETED TUBE WITH VINYL INSERT. 11/2 " X 74"

CLAMP KIT - CABLE MOUNT
PELCO ASTRO - BRAC AB-3009-84
OR APPROVED EQUAL. CLAMP KIT
MUST BE CAPABLE OF ROTATING
90 DEGREES FOR MOUNTING
DIRECTLY TO STEEL STRAIN POLES
OR WOOD POLES.

CAMERA MOUNT AND BRACKET PARTS



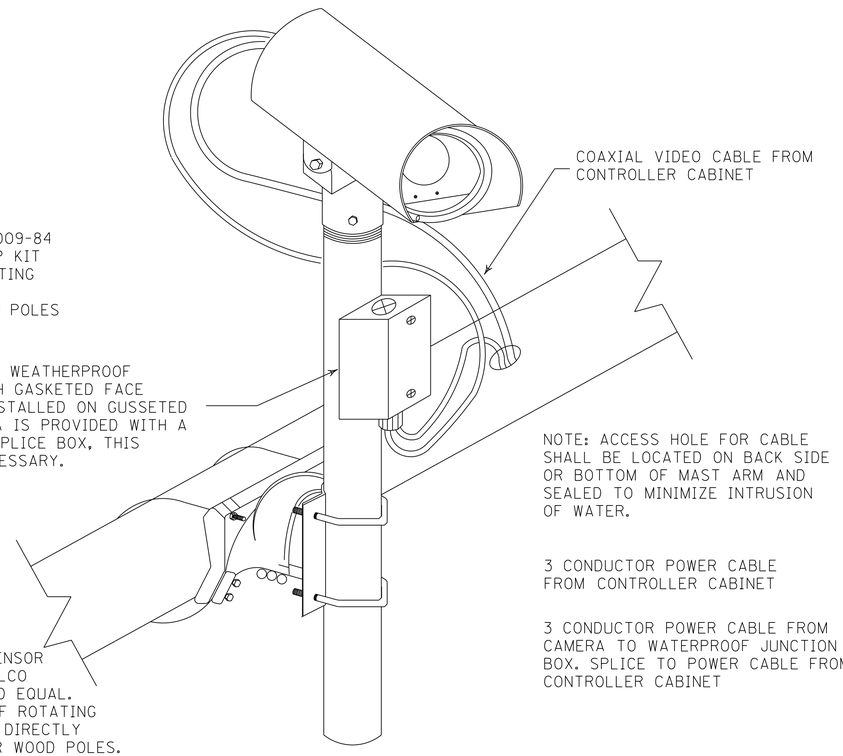
TILT AND PAN EXTENDED SENSOR
BRACKET, CABLE MOUNT. PELCO
AB-0164-74-84 OR APPROVED EQUAL.
CLAMP MUST BE CAPABLE OF ROTATING
90 DEGREES FOR MOUNTING DIRECTLY
TO STEEL STRAIN POLES OR WOOD POLES.

CAMERA MOUNT AND BRACKET ASSEMBLY

POWER CABLE SHALL BE AT LEAST A 5 CONDUCTOR WITH A MINIMUM OF 18 GAUGE CONDUCTORS. CONDUCTORS SHALL BE STRANDED COPPER WITH THE FOLLOWING COLOR CODE:

BLACK - HOT
WHITE - NEUTRAL
GREEN - GROUND (IF POSSIBLE)
RED - ZOOM
BLUE - FOCUS

COAXIAL CABLE SHALL BE BELDEN 8281, RG-59/U TYPE OR APPROVED EQUAL.



COAXIAL VIDEO CABLE FROM CONTROLLER CABINET

4" X 2" X 2" DEEP WEATHERPROOF SPLICE BOX WITH GASKETED FACE PLATE TO BE INSTALLED ON GUSSETED TUBE. IF CAMERA IS PROVIDED WITH A WEATHERPROOF SPLICE BOX, THIS BOX IS NOT NECESSARY.

NOTE: ACCESS HOLE FOR CABLE SHALL BE LOCATED ON BACK SIDE OR BOTTOM OF MAST ARM AND SEALED TO MINIMIZE INTRUSION OF WATER.

3 CONDUCTOR POWER CABLE FROM CONTROLLER CABINET

3 CONDUCTOR POWER CABLE FROM CAMERA TO WATERPROOF JUNCTION BOX. SPLICE TO POWER CABLE FROM CONTROLLER CABINET

MAST ARM CAMERA INSTALLATION

NOTE: ALL CABLE MOUNT CLAMP KITS MUST BE CAPABLE OF ROTATING 90 DEGREES TO ADAPT TO STEEL STRAIN POLE AND WOOD POLE APPLICATIONS.

VIDEO DETECTOR SHALL BE DESIGNED TO REPLACE A MODEL 222 LOOP AMPLIFIER IN THE INPUT FILE OF A TYPE 170 MODEL 332 OR 336 TRAFFIC SIGNAL CONTROLLER CABINET. IT SHALL HAVE 24 DETECTOR ZONES PER CAMERA CONFIGURATION. EACH ZONE SHALL HAVE THE ABILITY TO BE SET UP FOR ENTRY, EXIT, DELAYED, AND EXTEND DETECTION. DETECTION ZONES SHALL HAVE THE ABILITY TO BE ADDED AND ORDERED TOGETHER TO PROVIDE PHASE INPUTS. VIDEO DETECTOR SHALL INCLUDE A TWO INPUT/OUTPUT EXPANSION MODULE THROUGH EITHER A DB9 MALE OR RJ-45 INTERCONNECTION. PROCESSOR AND EXPANSION MODULE SHALL OPERATE AT 24 VDC NOMINAL. IT SHALL HAVE A DB9 MALE FOR RS 232 INTERFACE WHICH WILL BE USED FOR SOFTWARE UPGRADES AND/OR REMOTE OPERATION. IT SHALL HAVE AT LEAST 4 OUTPUTS AND THE ABILITY TO REASSIGN FOR THE USE OF EXPANSION BOARDS. CONTRACTOR SHALL PROVIDE ONE MOUSE OR KEYPAD AND ONE VIDEO MONITOR FOR EACH INDIVIDUAL INTERSECTION FOR SETUP AND CALIBRATION OF DETECTION ZONES ON A VIDEO MONITOR.

VIDEO DETECTOR ENVIRONMENTAL REQUIREMENTS:

TEMPERATURE	-34 TO +74 DEGREES C
HUMIDITY	0% TO 95% NON-CONDENSING

VIDEO CAMERA

CAMERA SHALL BE MONOCHROME CCD IMAGER WHICH OPERATES ON 115 VAC, 60 HZ AND PROVIDES NTSC VIDEO SIGNALS. THERE SHALL BE SEPARATE CONNECTORS FOR THE VIDEO (BNC) AND THE POWER SUPPLY TO THE CAMERA. CAMERA SHALL HAVE A MINIMUM RESOLUTION OF 350(V) X 500(H). CAMERA SHALL HAVE AN AUTO IRIS LENS. AUTO IRIS SHALL BE TIME DAMPED ANC CONTROLLED BY SCENE LUMINANCE. THE CAMERA SHALL PROVIDE USABLE VIDEO WITH A LIGHT RANGE OF 0.5 LUX TO 10,000 LUX. THE CAMERA'S SENSITIVITY SHALL BE AT LEAST 0.4 LUX. THE CAMERA SHALL BE PROVIDED WITH A SUITABLE ENCLOSURE THAT MAY BE NON PRESSURIZED OR PRESSURIZED. IT SHALL INCLUDE AN INTERNAL, THERMOSTATICALLY CONTROLLED HEATER. THE CAMERA SHALL INCLUDE A SUNSHIELD AND MOUNTING BRACKET. THE MOUNTING BRACKET SHALL BE PELCO OR APPROVED EQUAL (SEE DETAILS THIS SHEET) ADAPTABLE AND SHALL BE ABLE TO BE MOUNTED TO A STEEL STRAIN POLE OR A MAST ARM POLE. CAMERA LENS SHALL BE ADJUSTABLE WITH THE ABILITY TO FOCUS AND ZOOM. A MOTORIZED LENS SHALL DO THIS FUNCTION. CAMERA LENS SHALL INCLUDE A LENS ADJUSTMENT MODULE THAT WILL BE ABLE TO FASTEN TO THE BACK OF THE CAMERA HOUSING. THIS MODULE SHALL HAVE THE CAPABILITY TO BE USED WITH A VIDEO MONITOR. CONTRACTOR SHALL PROVIDE ONE ADJUSTMENT MODULE PER INTERSECTION FOR ZOOMING AND FOCUSING CAMERAS.

VIDEO CAMERA ENVIRONMENTAL REQUIREMENTS:

TEMPERATURE	-35 TO +60 DEGREES C
HUMIDITY	0% TO 100%
VIBRATION	AT LEAST 0.5G, 3 AXES, 5-30 HZ

SURGE PROTECTOR REQUIREMENTS:

PEAK SURGE CURRENT 8X20 US	5KA
TECHNOLOGY	HYBRID SOLID STATE
ATTENUATION	0.1DB @ 10 MHZ
RESPONSE TIME	LESS THAN 1 NANOSECOND
PROTECTION	LINE TO GROUND
SHIELD TO GROUND - (ISOLATED SHIELD MODELS)	
CLAMP VOLTAGE	SELECTABLE
CONNECTORS	BNC
IMPEDANCE	50 TO 75 OHMS
TEMPERATURE	-40 TO +85 DEGREES C
HUMIDITY	0% TO 95% NON-CONDENSING

THE VIDEO DETECTION SYSTEM SHALL BE ODETICS VANTAGE EDGE OR TRAFICON VIP 3.1 OR APPROVED EQUAL.

THE MONITOR SHALL HAVE A MINIMUM SIZE OF 9" AND SHALL INCLUDE A CABLE (6') FOR CONNECTION TO THE PROCESSOR UNIT. CABLE SHALL HAVE PROPER CONNECTIONS (BNC OR RCA) FOR CONNECTION FROM MONITOR TO MODULE. MONITOR SHALL OPERATE ON 115 VAC, 60 HZ.

VIDEO DETECTION DETAIL

2/2002

COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.20	T17A

REVISED 11-30-2017

STEEL STRAIN POLES

POLE	HEIGHT	SPAN	ATT. HT.	CALC. SERV. MOMENT	SAG
A	34'	A-C	32'	185 K-FT	3%
C	34'	C-A	32'	150 K-FT	3%

CALCULATED SERVICE MOMENTS
ARE BASED ON FINAL CONSTRUCTION

WIRING SCHEDULE

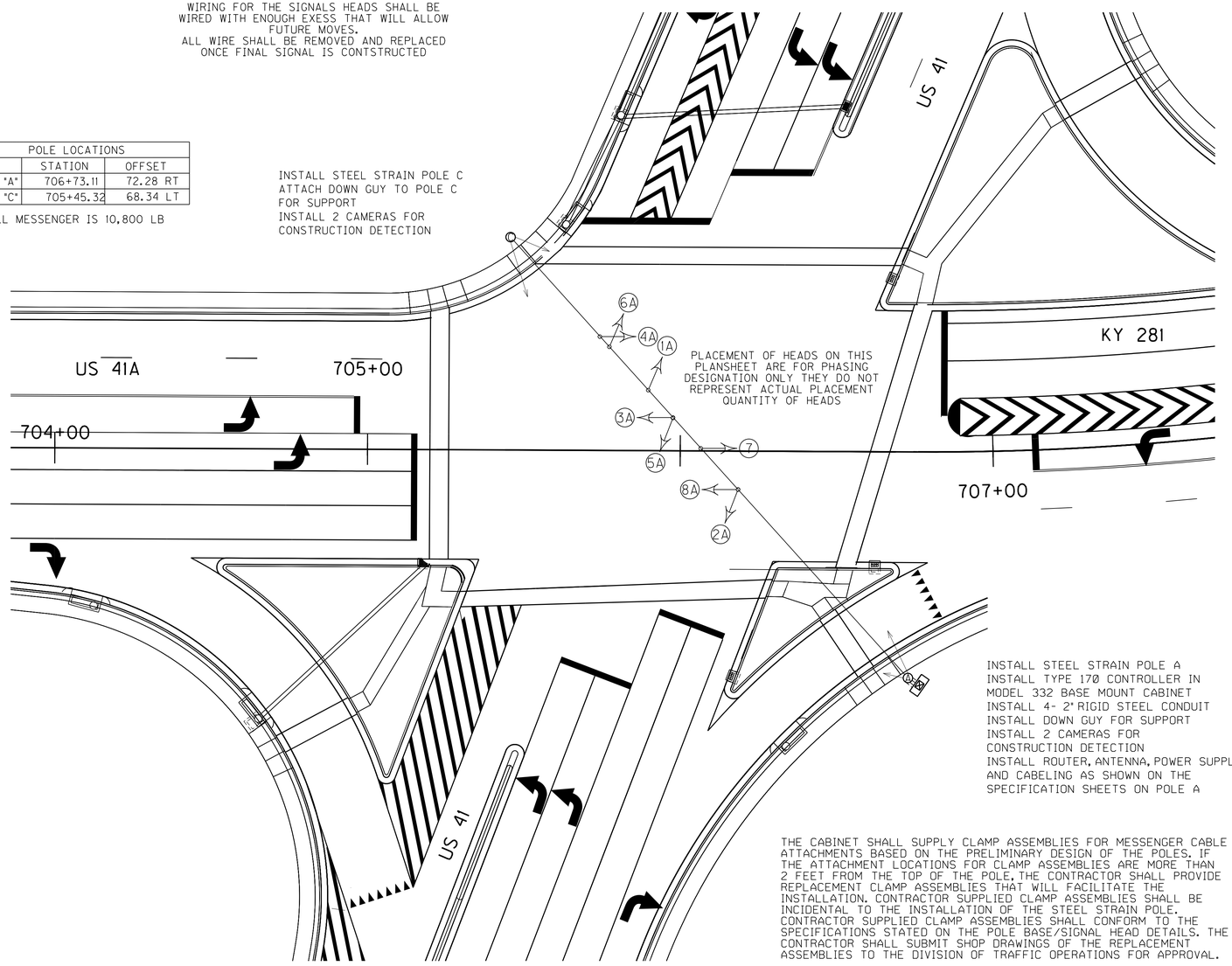
CABLE	ORIGIN	ENDING	CONNECTING
1-#14/5C	CONTROLLER	N/A	PHASE 1 HEADS
1-#14/5C	CONTROLLER	N/A	PHASE 2 HEADS
1-#14/5C	CONTROLLER	N/A	PHASE 3 HEADS
1-#14/5C	CONTROLLER	N/A	PHASE 4 HEADS
1-#14/5C	CONTROLLER	N/A	PHASE 5 HEADS
1-#14/5C	CONTROLLER	N/A	PHASE 6 HEADS
1-#14/5C	CONTROLLER	N/A	PHASE 7 HEADS
1-#14/5C	CONTROLLER	N/A	PHASE 8 HEADS

SIGNAL HEADS FOR ALL APPROACHES AND SHALL BE PLACED ACCORDING TO THE LANES OPEN DURING CONSTRUCTION.
SIGNAL HEADS SHALL BE MOVED ACCORDINGLY THROUGH THE CONSTRUCTION PHASES.
WIRING FOR THE SIGNALS HEADS SHALL BE WIRED WITH ENOUGH EXESS THAT WILL ALLOW FUTURE MOVES.
ALL WIRE SHALL BE REMOVED AND REPLACED ONCE FINAL SIGNAL IS CONTSTRUCTED

POLE LOCATIONS		
	STATION	OFFSET
POLE "A"	706+73.11	72.28 RT
POLE "C"	705+45.32	68.34 LT

ALL MESSENGER IS 10,800 LB

INSTALL STEEL STRAIN POLE C
ATTACH DOWN GUY TO POLE C
FOR SUPPORT
INSTALL 2 CAMERAS FOR
CONSTRUCTION DETECTION



PLACEMENT OF HEADS ON THIS PLANSHEET ARE FOR PHASING DESIGNATION ONLY THEY DO NOT REPRESENT ACTUAL PLACEMENT QUANTITY OF HEADS

INSTALL STEEL STRAIN POLE A
INSTALL TYPE 170 CONTROLLER IN
MODEL 332 BASE MOUNT CABINET
INSTALL 4- 2" RIGID STEEL CONDUIT
INSTALL DOWN GUY FOR SUPPORT
INSTALL 2 CAMERAS FOR
CONSTRUCTION DETECTION
INSTALL ROUTER, ANTENNA, POWER SUPPLY
AND CABELING AS SHOWN ON THE
SPECIFICATION SHEETS ON POLE A

THE CABINET SHALL SUPPLY CLAMP ASSEMBLIES FOR MESSENGER CABLE ATTACHMENTS BASED ON THE PRELIMINARY DESIGN OF THE POLES. IF THE ATTACHMENT LOCATIONS FOR CLAMP ASSEMBLIES ARE MORE THAN 2 FEET FROM THE TOP OF THE POLE, THE CONTRACTOR SHALL PROVIDE REPLACEMENT CLAMP ASSEMBLIES THAT WILL FACILITATE THE INSTALLATION. CONTRACTOR SUPPLIED CLAMP ASSEMBLIES SHALL BE INCIDENTAL TO THE INSTALLATION OF THE STEEL STRAIN POLE. CONTRACTOR SUPPLIED CLAMP ASSEMBLIES SHALL CONFORM TO THE SPECIFICATIONS STATED ON THE POLE BASE/SIGNAL HEAD DETAILS. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE REPLACEMENT ASSEMBLIES TO THE DIVISION OF TRAFFIC OPERATIONS FOR APPROVAL.

SCALE 1" - 20'

LEGEND

- BASE MOUNTED CONTROLLER
- STEEL STRAIN POLE
- SIGNAL HEAD
- DETECTION CAMERA

TEMPORARY TRAFFIC SIGNAL PLAN
US41A @ US 41/KY 281

COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.20	T17A

REVISED 11-30-2017

STEEL STRAIN POLES

POLE	HEIGHT	SPAN	ATT. HT.	CALC. SERV. MOMENT	SAG
A	34'	A-C	32'	185 K-FT	3%
C	34'	C-A	32'	150 K-FT	3%

CALCULATED SERVICE MOMENTS
ARE BASED ON FINAL CONSTRUCTION

WIRING SCHEDULE

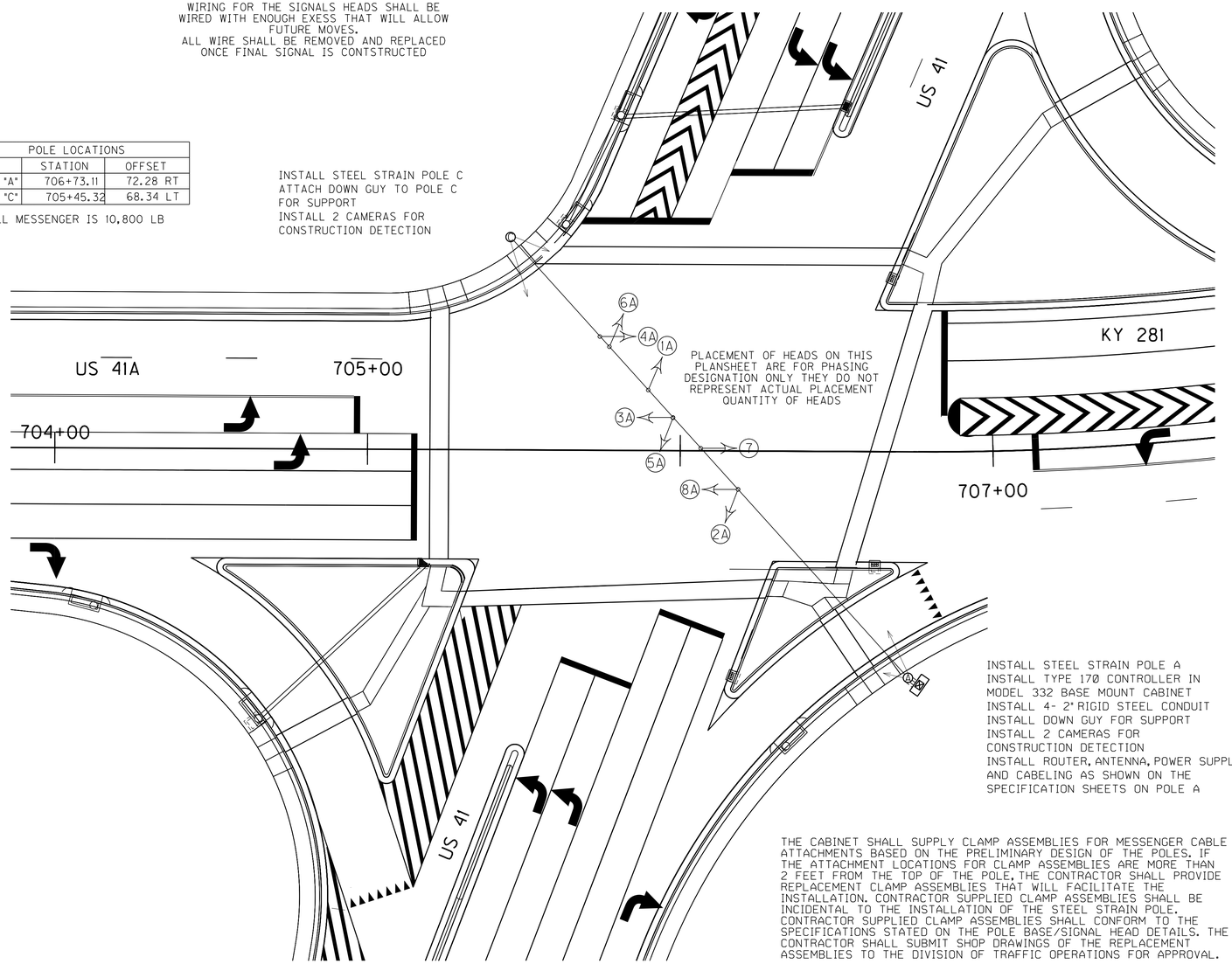
CABLE	ORIGIN	ENDING	CONNECTING
1-#14/5C	CONTROLLER	N/A	PHASE 1 HEADS
1-#14/5C	CONTROLLER	N/A	PHASE 2 HEADS
1-#14/5C	CONTROLLER	N/A	PHASE 3 HEADS
1-#14/5C	CONTROLLER	N/A	PHASE 4 HEADS
1-#14/5C	CONTROLLER	N/A	PHASE 5 HEADS
1-#14/5C	CONTROLLER	N/A	PHASE 6 HEADS
1-#14/5C	CONTROLLER	N/A	PHASE 7 HEADS
1-#14/5C	CONTROLLER	N/A	PHASE 8 HEADS

SIGNAL HEADS FOR ALL APPROACHES AND SHALL BE PLACED ACCORDING TO THE LANES OPEN DURING CONSTRUCTION.
SIGNAL HEADS SHALL BE MOVED ACCORDINGLY THROUGH THE CONSTRUCTION PHASES.
WIRING FOR THE SIGNALS HEADS SHALL BE WIRED WITH ENOUGH EXESS THAT WILL ALLOW FUTURE MOVES.
ALL WIRE SHALL BE REMOVED AND REPLACED ONCE FINAL SIGNAL IS CONTSTRUCTED

POLE LOCATIONS		
	STATION	OFFSET
POLE "A"	706+73.11	72.28 RT
POLE "C"	705+45.32	68.34 LT

ALL MESSENGER IS 10,800 LB

INSTALL STEEL STRAIN POLE C
ATTACH DOWN GUY TO POLE C
FOR SUPPORT
INSTALL 2 CAMERAS FOR
CONSTRUCTION DETECTION



PLACEMENT OF HEADS ON THIS PLANSHEET ARE FOR PHASING DESIGNATION ONLY THEY DO NOT REPRESENT ACTUAL PLACEMENT QUANTITY OF HEADS

INSTALL STEEL STRAIN POLE A
INSTALL TYPE 170 CONTROLLER IN
MODEL 332 BASE MOUNT CABINET
INSTALL 4- 2" RIGID STEEL CONDUIT
INSTALL DOWN GUY FOR SUPPORT
INSTALL 2 CAMERAS FOR
CONSTRUCTION DETECTION
INSTALL ROUTER, ANTENNA, POWER SUPPLY
AND CABELING AS SHOWN ON THE
SPECIFICATION SHEETS ON POLE A

THE CABINET SHALL SUPPLY CLAMP ASSEMBLIES FOR MESSENGER CABLE ATTACHMENTS BASED ON THE PRELIMINARY DESIGN OF THE POLES. IF THE ATTACHMENT LOCATIONS FOR CLAMP ASSEMBLIES ARE MORE THAN 2 FEET FROM THE TOP OF THE POLE, THE CONTRACTOR SHALL PROVIDE REPLACEMENT CLAMP ASSEMBLIES THAT WILL FACILITATE THE INSTALLATION. CONTRACTOR SUPPLIED CLAMP ASSEMBLIES SHALL BE INCIDENTAL TO THE INSTALLATION OF THE STEEL STRAIN POLE. CONTRACTOR SUPPLIED CLAMP ASSEMBLIES SHALL CONFORM TO THE SPECIFICATIONS STATED ON THE POLE BASE/SIGNAL HEAD DETAILS. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE REPLACEMENT ASSEMBLIES TO THE DIVISION OF TRAFFIC OPERATIONS FOR APPROVAL.

SCALE 1" - 20'

LEGEND

- BASE MOUNTED CONTROLLER
- STEEL STRAIN POLE
- SIGNAL HEAD
- DETECTION CAMERA

TEMPORARY TRAFFIC SIGNAL PLAN
US41A @ US 41/KY 281

COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.20	T17

REVISED 11-30-2017

LOOP SCHEDULE

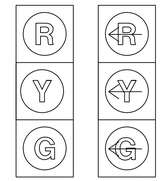
LOOP	PHASE	SLOT	CHANNEL	SIZE	# OF TURNS	DIST. FROM STOP BAR
1	1	I1	1	6X30	2	0′
1A	1	I1	2	6X30	2	0′
2A	2	I2	1	6X30	2	0′
2B	2	I2	2	6X30	2	0′
3A	3	I5	1	6X30	2	0′
3B	3	I5	2	6X30	2	0′
4A	4	I6	1	6X30	2	0′
4B	4	I6	2	6X30	2	0′
5A	5	J1	1	6X30	2	0′
5B	5	J1	2	6X30	2	0′
6A	6	J2	1	6X30	2	0′
6B	6	J2	2	6X30	2	0′
7	7	J5	1	6X30	2	0′
8A	8	J6	1	6X30	2	0′
8B	8	J6	2	6X30	2	0′

STEEL STRAIN POLES

POLE	HEIGHT	SPAN	ATT. HT.	CALC. SERV. MOMENT	SAG
A	34′	A-B	28′	185 K-FT	3%
		A-D	29′		
B	30′	B-A	26.5′	169 K-FT	3%
		B-C	27.5′		
C	34′	C-B	28.5′	150 K-FT	3%
		C-D	32.5′		
D	32′	D-A	28′	215 K-FT	3%
		D-C	30.5′		

ALL MESSENGER IS 10,800 LB
ALL 6 X 30 FOOT LOOPS SHALL BE QUADRA-POLE

SIGNAL HEADS



HEAD # 2A, 2B, 4A 4B, 6A, 6B 8A, 8B

HEAD # 1A, 1B, 3A 3B, 5A, 5B 7

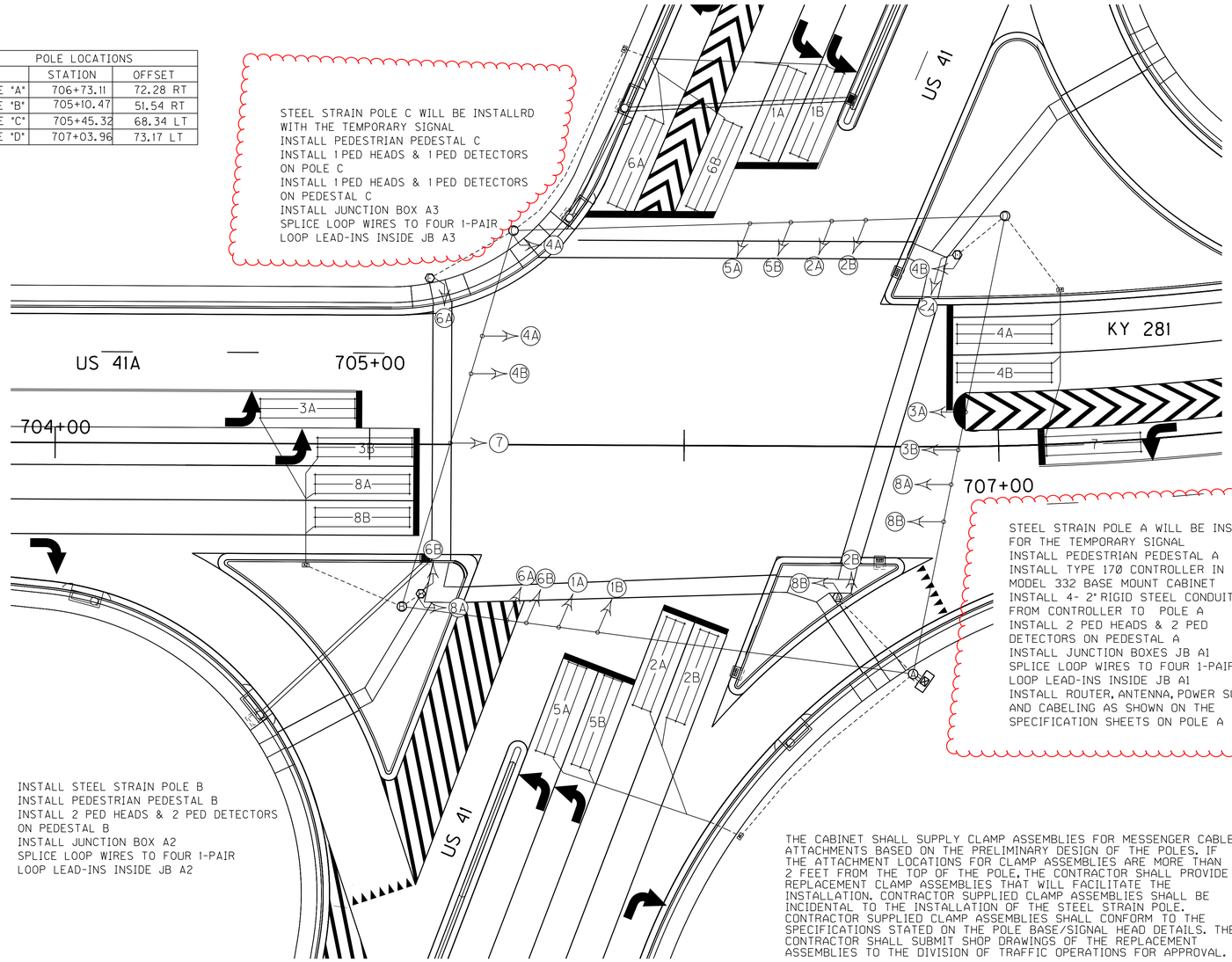
ALL COUNTDOWN PEDESTRIAN SIGNALS

ALL INDICATIONS SHALL HAVE REFLECTIVE BACKPLATES

WIRING SCHEDULE

CABLE	ORIGIN	ENDING	CONNECTING
1-#14/5C	CONTROLLER	PEDISTAL A	PH 2B & 1 PED DETECTOR
1-#14/5C	CONTROLLER	PEDISTAL A	PH 8B & 1 PED DETECTOR
1-#14/5C	CONTROLLER	SH 1A	SH 1A & SH 1B
1-#14/5C	CONTROLLER	SH 6A	SH 6A & SH 6B
1-#14/5C	CONTROLLER	PEDISTAL B	PH 6B & 1 PED DETECTOR
1-#14/5C	CONTROLLER	PEDISTAL B	PH 8A 1 PED DETECTOR
1-#14/5C	CONTROLLER	SH 7	SH 7
1-#14/5C	CONTROLLER	SH 4A	SH 4A & 4B
1-#14/5C	CONTROLLER	POLE C	PH 4A & 1 PED DETECTOR
1-#14/5C	CONTROLLER	PEDISTAL C	PH 6A & 1 PED DETECTOR
1-#14/5C	CONTROLLER	SH 5A	SH 5A & SH 5B
1-#14/5C	CONTROLLER	SH 2A	SH 2A & SH 2B
1-#14/5C	CONTROLLER	PEDISTAL D	PH 2A & 1 PED DETECTOR
1-#14/5C	CONTROLLER	PEDISTAL D	PH 4B & 1 PED DETECTOR
1-#14/5C	CONTROLLER	SH 3A	SH 3A & SH 3B
1-#14/5C	CONTROLLER	SH 8A	SH 8A & SH 8B
4-#14/1 PAIR	CONTROLLER	JB A1	LOOPS 2A, 2B, 5A, & 5B
4-#14/1 PAIR	CONTROLLER	JB A2	LOOPS 3A, 3B, 8A, & 8B
4-#14/1 PAIR	CONTROLLER	JB A3	LOOPS 1A, 1B, 6A, & 6B
4-#14/1 PAIR	CONTROLLER	JB A4	LOOPS 4A, 4B, & 7

POLE LOCATIONS		
	STATION	OFFSET
POLE "A"	706+73.11	72.28 RT
POLE "B"	705+10.47	51.54 RT
POLE "C"	705+45.32	68.34 LT
POLE "D"	707+03.96	73.17 LT



STEEL STRAIN POLE C WILL BE INSTALLRD
WITH THE TEMPORARY SIGNAL
INSTALL PEDESTRIAN PEDESTAL C
INSTALL 1 PED HEADS & 1 PED DETECTORS
ON POLE C
INSTALL 1 PED HEADS & 1 PED DETECTORS
ON PEDESTAL C
INSTALL JUNCTION BOX A3
SPLICE LOOP WIRES TO FOUR 1-PAIR
LOOP LEAD-INS INSIDE JB A3

INSTALL STEEL STRAIN POLE D.
INSTALL PEDESTRIAN PEDESTAL D
INSTALL 2 PED HEADS & 2 PED DETECTORS
ON PEDESTAL D
INSTALL JUNCTION BOX A4
SPLICE LOOP WIRES TO THREE 1-PAIR
LOOP LEAD-INS INSIDE JB A4

STEEL STRAIN POLE A WILL BE INSTALLED
FOR THE TEMPORARY SIGNAL
INSTALL PEDESTRIAN PEDESTAL A
INSTALL TYPE 170 CONTROLLER IN
MODEL 332 BASE MOUNT CABINET
INSTALL 4- 2" RIGID STEEL CONDUIT
FROM CONTROLLER TO POLE A
INSTALL 2 PED HEADS & 2 PED
DETECTORS ON PEDESTAL A
INSTALL JUNCTION BOXES JB A1
SPLICE LOOP WIRES TO FOUR 1-PAIR
LOOP LEAD-INS INSIDE JB A1
INSTALL ROUTER, ANTENNA, POWER SUPPLY
AND CABELING AS SHOWN ON THE
SPECIFICATION SHEETS ON POLE A

INSTALL STEEL STRAIN POLE B
INSTALL PEDESTRIAN PEDESTAL B
INSTALL 2 PED HEADS & 2 PED DETECTORS
ON PEDESTAL B
INSTALL JUNCTION BOX A2
SPLICE LOOP WIRES TO FOUR 1-PAIR
LOOP LEAD-INS INSIDE JB A2

THE CABINET SHALL SUPPLY CLAMP ASSEMBLIES FOR MESSENGER CABLE ATTACHMENTS BASED ON THE PRELIMINARY DESIGN OF THE POLES. IF THE ATTACHMENT LOCATIONS FOR CLAMP ASSEMBLIES ARE MORE THAN 2 FEET FROM THE TOP OF THE POLE, THE CONTRACTOR SHALL PROVIDE REPLACEMENT CLAMP ASSEMBLIES THAT WILL FACILITATE THE INSTALLATION. CONTRACTOR SUPPLIED CLAMP ASSEMBLIES SHALL BE INCIDENTAL TO THE INSTALLATION OF THE STEEL STRAIN POLE. CONTRACTOR SUPPLIED CLAMP ASSEMBLIES SHALL CONFORM TO THE SPECIFICATIONS STATED ON THE POLE BASE/SIGNAL HEAD DETAILS. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE REPLACEMENT ASSEMBLIES TO THE DIVISION OF TRAFFIC OPERATIONS FOR APPROVAL.

SCALE 1" - 20′

LEGEND

- BASE MOUNTED CONTROLLER
- STEEL STRAIN POLE
- PEDESTAL POLE
- JUNCTION BOXES TYPE A (A1)
- PEDESTRIAN DETECTOR
- SIGNAL HEAD
- PEDESTRIAN HEAD
- LOOP DETECTOR
- 2" SCH. 80 PVC (UNLESS OTHERWISE NOTED)

TRAFFIC SIGNAL PLAN SHEET
US41A @ US 41/KY 281

COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.20	T17

REVISED 11-30-2017

LOOP SCHEDULE

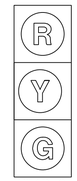
LOOP	PHASE	SLOT	CHANNEL	SIZE	# OF TURNS	DIST. FROM STOP BAR
1	1	I1	1	6X30	2	0′
1A	1	I1	2	6X30	2	0′
2A	2	I2	1	6X30	2	0′
2B	2	I2	2	6X30	2	0′
3A	3	I5	1	6X30	2	0′
3B	3	I5	2	6X30	2	0′
4A	4	I6	1	6X30	2	0′
4B	4	I6	2	6X30	2	0′
5A	5	J1	1	6X30	2	0′
5B	5	J1	2	6X30	2	0′
6A	6	J2	1	6X30	2	0′
6B	6	J2	2	6X30	2	0′
7	7	J5	1	6X30	2	0′
8A	8	J6	1	6X30	2	0′
8B	8	J6	2	6X30	2	0′

STEEL STRAIN POLES

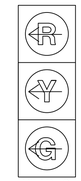
POLE	HEIGHT	SPAN	ATT. HT.	CALC. SERV. MOMENT	SAG
A	34′	A-B	28′	185 K-FT	3′
		A-D	29′		
B	30′	B-A	26.5′	169 K-FT	3′
		B-C	27.5′		
C	34′	C-B	28.5′	150 K-FT	3′
		C-D	32.5′		
D	32′	D-A	28′	215 K-FT	3′
		D-C	30.5′		

ALL MESSENGER IS 10,800 LB
ALL 6 X 30 FOOT LOOPS SHALL BE QUADRA-POLE

SIGNAL HEADS



HEAD # 2A, 2B, 4A 4B, 6A, 6B 8A, 8B



HEAD # 1A, 1B, 3A 3B, 5A, 5B 7

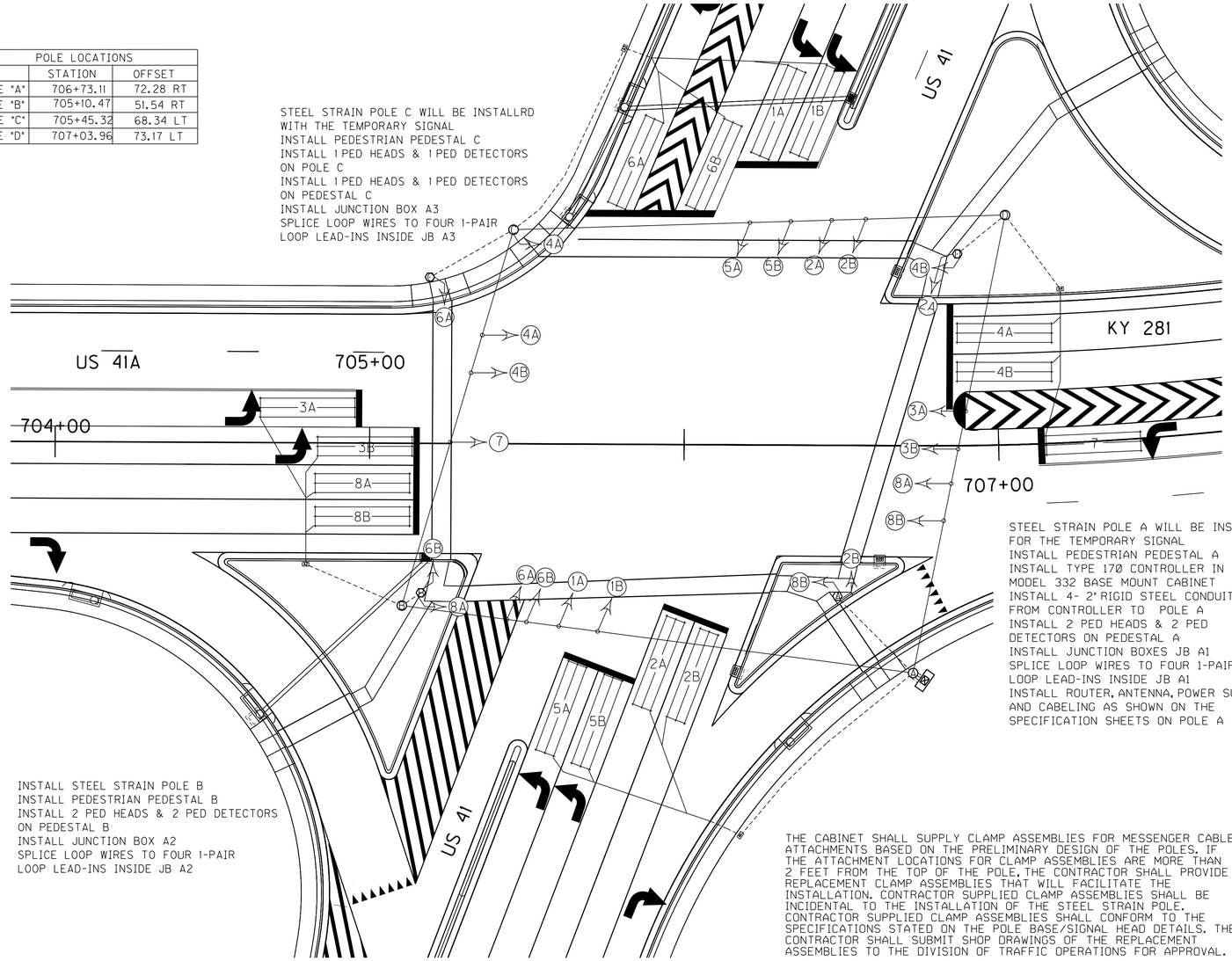
ALL COUNTDOWN PEDESTRIAN SIGNALS

ALL INDICATIONS SHALL HAVE REFLECTIVE BACKPLATES

WIRING SCHEDULE

CABLE	ORIGIN	ENDING	CONNECTING
1-#14/5C	CONTROLLER	PEDISTAL A	PH 2B & 1 PED DETECTOR
1-#14/5C	CONTROLLER	PEDISTAL A	PH 8B & 1 PED DETECTOR
1-#14/5C	CONTROLLER	SH 1A	SH 1A & SH 1B
1-#14/5C	CONTROLLER	SH 6A	SH 6A & SH 6B
1-#14/5C	CONTROLLER	PEDISTAL B	PH 6B & 1 PED DETECTOR
1-#14/5C	CONTROLLER	PEDISTAL B	PH 8A 1 PED DETECTOR
1-#14/5C	CONTROLLER	SH 7	SH 7
1-#14/5C	CONTROLLER	SH 4A	SH 4A & 4B
1-#14/5C	CONTROLLER	POLE C	PH 4A & 1 PED DETECTOR
1-#14/5C	CONTROLLER	PEDISTAL C	PH 6A & 1 PED DETECTOR
1-#14/5C	CONTROLLER	SH 5A	SH 5A & SH 5B
1-#14/5C	CONTROLLER	SH 2A	SH 2A & SH 2B
1-#14/5C	CONTROLLER	PEDISTAL D	PH 2A & 1 PED DETECTOR
1-#14/5C	CONTROLLER	PEDISTAL D	PH 4B & 1 PED DETECTOR
1-#14/5C	CONTROLLER	SH 3A	SH 3A & SH 3B
1-#14/5C	CONTROLLER	SH 8A	SH 8A & SH 8B
4-#14/1 PAIR	CONTROLLER	JB A1	LOOPS 2A, 2B, 5A, & 5B
4-#14/1 PAIR	CONTROLLER	JB A2	LOOPS 3A, 3B, 8A, & 8B
4-#14/1 PAIR	CONTROLLER	JB A3	LOOPS 1A, 1B, 6A, & 6B
4-#14/1 PAIR	CONTROLLER	JB A4	LOOPS 4A, 4B, & 7

POLE LOCATIONS		
	STATION	OFFSET
POLE "A"	706+73.11	72.28 RT
POLE "B"	705+10.47	51.54 RT
POLE "C"	705+45.32	68.34 LT
POLE "D"	707+03.96	73.17 LT



STEEL STRAIN POLE C WILL BE INSTALLRD
WITH THE TEMPORARY SIGNAL
INSTALL PEDESTRIAN PEDESTAL C
INSTALL 1 PED HEADS & 1 PED DETECTORS
ON POLE C
INSTALL 1 PED HEADS & 1 PED DETECTORS
ON PEDESTAL C
INSTALL JUNCTION BOX A3
SPLICE LOOP WIRES TO FOUR 1-PAIR
LOOP LEAD-INS INSIDE JB A3

INSTALL STEEL STRAIN POLE D.
INSTALL PEDESTRIAN PEDESTAL D
INSTALL 2 PED HEADS & 2 PED DETECTORS
ON PEDESTAL D
INSTALL JUNCTION BOX A4
SPLICE LOOP WIRES TO THREE 1-PAIR
LOOP LEAD-INS INSIDE JB A4

STEEL STRAIN POLE A WILL BE INSTALLED
FOR THE TEMPORARY SIGNAL
INSTALL PEDESTRIAN PEDESTAL A
INSTALL TYPE 170 CONTROLLER IN
MODEL 332 BASE MOUNT CABINET
INSTALL 4- 2" RIGID STEEL CONDUIT
FROM CONTROLLER TO POLE A
INSTALL 2 PED HEADS & 2 PED
DETECTORS ON PEDESTAL A
INSTALL JUNCTION BOXES JB A1
SPLICE LOOP WIRES TO FOUR 1-PAIR
LOOP LEAD-INS INSIDE JB A1
INSTALL ROUTER, ANTENNA, POWER SUPPLY
AND CABELING AS SHOWN ON THE
SPECIFICATION SHEETS ON POLE A

INSTALL STEEL STRAIN POLE B
INSTALL PEDESTRIAN PEDESTAL B
INSTALL 2 PED HEADS & 2 PED DETECTORS
ON PEDESTAL B
INSTALL JUNCTION BOX A2
SPLICE LOOP WIRES TO FOUR 1-PAIR
LOOP LEAD-INS INSIDE JB A2

THE CABINET SHALL SUPPLY CLAMP ASSEMBLIES FOR MESSENGER CABLE ATTACHMENTS BASED ON THE PRELIMINARY DESIGN OF THE POLES. IF THE ATTACHMENT LOCATIONS FOR CLAMP ASSEMBLIES ARE MORE THAN 2 FEET FROM THE TOP OF THE POLE, THE CONTRACTOR SHALL PROVIDE REPLACEMENT CLAMP ASSEMBLIES THAT WILL FACILITATE THE INSTALLATION. CONTRACTOR SUPPLIED CLAMP ASSEMBLIES SHALL BE INCIDENTAL TO THE INSTALLATION OF THE STEEL STRAIN POLE. CONTRACTOR SUPPLIED CLAMP ASSEMBLIES SHALL CONFORM TO THE SPECIFICATIONS STATED ON THE POLE BASE/SIGNAL HEAD DETAILS. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE REPLACEMENT ASSEMBLIES TO THE DIVISION OF TRAFFIC OPERATIONS FOR APPROVAL.

SCALE 1" - 20′

LEGEND

- BASE MOUNTED CONTROLLER
- STEEL STRAIN POLE
- PEDESTAL POLE
- A1 — JUNCTION BOXES TYPE A
- PEDESTRIAN DETECTOR
- SIGNAL HEAD
- PEDESTRIAN HEAD
- LOOP DETECTOR
- 2" SCH. 80 PVC (UNLESS OTHERWISE NOTED)

TRAFFIC SIGNAL PLAN SHEET
US41A @ US 41/KY 281

FILE NAME: C:\PWWORK\ADAM.PROCTOR\D13782081\ALL SIGNAL STANDARDS.DGN
USER: adam.proctor
DATE PLOTTED: December 1, 2017
E-SHEET NAME: T01700SG
MicroStation v8.11.9.832

COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.01	U92

COLOR LEGEND
INSTALL–
REMOVE–
EXISTING TO REMAIN–

POWER RELOCATION

BEGIN CONSTRUCTION
N. MAIN ST.
STA. 42+00

STA. 43+81.15
55.31 LT.

STA. 44+96.14
59.98 LT.

STA. 44+51.51
46.638 RT.

N137
N136-1
N136-A
E139
E138
E137

214'
115'
8'
(212')
(113')
200'
116'
(93')

P.No. 94
Palmer Operations, LLC
DB693/PG315

P.No.
Jerry Lewis & Sherri Lewis
DB657/PG236
DB647/PG035

Jerry Lewis Auto Sales

P.No. 98
Ideal Properties
DB583/PG356

Bluegrass Pharmacy

P.No.
Gary S. Russell
& Julie A. Russell (wf)
DB511/PG530

MAP 1 of 1 P
2-20-87

447'-4"
C.O.-3012
8-53

41+00
42+00
43+00
44+00

MATCHLINE STA.M 45+00

EX. & PROP. R/W & C/A
EXIST. TO REMAIN
TEMP. EASE.
CONST. LIMITS
ASPHALT
CONC.
EDGE KEY
6 S CASING
O.W.V.
SIGN
P.O.E.
3ϕ
6"

WARNING – CONTRACTORS SHOULD EXERCISE CAUTION WHEN WORKING IN THE VICINITY OF A GAS LINE

0' 20' 40' 80'

SCALE: 1"=20'

U.S. 41 – NORTH MAIN STREET PLAN SHEET
STA. 42+00 TO STA. 45+00

FILE NAME= Z:\CLIENTS\MMU\41A RELOCATION\WP\CAD\SECTION 2\U92-R04500PL.DWG
USER: bdorris
DATE PLOTTED: June 6, 2017
E-SHEET NAME:R04500PL
MicroStation v8.11.7.443

COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.01	U92

POWER RELOCATION

COLOR LEGEND
INSTALL–
REMOVE–
EXISTING TO REMAIN–

WARNING – CONTRACTORS SHOULD EXERCISE CAUTION WHEN WORKING IN THE VICINITY OF A GAS LINE

SCALE: 1"=20'

U.S. 41 – NORTH MAIN STREET PLAN SHEET
STA. 42+00 TO STA. 45+00

FILE NAME: Z:\CLIENTS\MMU\41A RELOCATION\WP\CAD\SECTION 2\U92-R04500PL.DWG
USER: bdorris
DATE PLOTTED: June 6, 2017
E-SHEET NAME:R04500PL
MicroStation v8.11.7.443

COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.01	U93

POWER RELOCATION

COLOR LEGEND
INSTALL–
REMOVE–
EXISTING TO REMAIN–

STA. 704+45.71
82.60 RT.

N134

E134

E135

N135

E136

N136

E141

E142

N134S

STA. 49+23.39
76.01 RT.

Jerry Lewis & Sherri Lewis (wf) DB659/PG056

Spirit SPE Portfolio 2004-6, DB640/PG581

Jui-Tao Huang & Mi Hua Huang (husband and wife) DB601/PG402

Gary S. Russell & Julie A. Russell (wf) DB511/PG530

Suzanne L. Winstead DB524/PG022

McDonald's Corporation DB367/PG410

US 41 STA. 47+67.13= CHELSEA DRIVE STA. 50+00

US 41 STA. 46+62= APPR. 46+62 OFF NORTH MAIN STA. 50+00

MAINLINE STA. 706+03.45= US 41 STA. 325+74.07

MAINLINE STA. 706+07.25= US 41 STA. 326+00

MATCHLINE STA. 45+00

MATCHLINE STA. 50+00 = STA. 325+75.41

END CONSTRUCTION CHELSEA DR. STA. 51+52.23

STA. 46+29.96
65.07 LT.

STA. 47+47.47
70.11 LT.

PC Sta. 50+72.19

PI Sta. 50+80.15

PT Sta. 50+88.07

FOR DETAILS, SEE SHEET 27.

FOR DETAILS, SEE SHEET 49.

FOR DETAILS, SEE SHEET 29.

FOR CHELSEA DR. PROFILE, SEE SHEETS 48.

SCALE: 1"=20'

U.S. 41 – NORTH MAIN STREET PLAN SHEET
STA. 45+00 TO STA. 50+00

FILE NAME: Z:\CLIENTS\MMU\41A RELOCATION\WP\CAD\SECTION 2\U93-R04700PL_MOD2.DWG
USER: bdorris
DATE PLOTTED: June 6, 2017
E-SHEET NAME: R04700PL
MicroStation v8.11.7.443

COUNTY OF	ITEM NO.	SHEET NO.
HOPKINS	2-137.01	U93

POWER RELOCATION

COLOR LEGEND
INSTALL–
REMOVE–
EXISTING TO REMAIN–

STA. 704+45.71
82.60 RT.

N134

E134

E135

E136

E141

E142

N135

N136

N134S

STA. 47+47.47
70.11 LT.

STA. 46+29.96
65.07 LT.

STA. 49+23.39
76.01 RT.

PC Sta. 50+72.19
PI Sta. 50+80.15
PT Sta. 50+88.07

US 41 STA.47+67.13=
CHELSEA DRIVE STA. 50+00

US 41 STA. 46+62=
APPR. 46+62 OFF
NORTH MAIN STA. 50+00

MAINLINE STA.706+03.45=
US 41 STA.325+74.07

MAINLINE STA.706+07.25=
US 41 STA.50+00

MATCHLINE STA. 45+00

MATCHLINE STA. 50+00 = STA. 325+75.41

END CONSTRUCTION
CHELSEA DR.
STA. 51+52.23

Jerry Lewis &
Sherri Lewis (wf)
DB659/PG056

Spirit SPE Portfolio 2004-6, LLC
DB640/PG581

Jui-Tao Huang
& Mi Hua Huang (husband and wife)
DB601/PG402

Gary S. Russell
& Julie A. Russell (wf)
DB511/PG530

Suzanne L. Winstead
DB524/PG022

McDonald's Corporation
DB367/PG410

FOR DETAILS, SEE SHEET 27.

FOR DETAILS, SEE SHEET 49.

FOR DETAILS, SEE SHEET 29.

FOR CHELSEA DR. PROFILE, SEE SHEETS 48.

SCALE: 1"=20'

0' 20' 40' 80'

U.S. 41 – NORTH MAIN STREET PLAN SHEET
STA. 45+00 TO STA. 50+00

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