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3	10/31/14	KATIGBAK	DANNA	ADCOCK
2	11/8/12	KATIGBAK	DANNA	ADCOCK
0	11/19/10	CECCONI	GUINN	ELKINS
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5	8/26/15	KATIGBAK	BURLISON	ADCOCK
4	12/23/14	KATIGBAK	GUINN	ADCOCK
3	6/13/13	KATIGBAK	DANNA	ADCOCK
0	11/19/10	CECCONI	GUINN	ELKINS
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6	11/17/15	KATIGBAK	BURLISON	ADCOCK
5	10/31/14	KATIGBAK	GUINN	ADCOCK
4	1/11/13	KATIGBAK	DANNA	ADCOCK
0	12/1/10	CECCONI	GUINN	ELKINS
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3				
2				
1				
0	7/14/14	KATIGBAK	GUINN	ADCOCK
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STANDARD PRIMARY CONSTRUCTION:

SPECIFICATIONS AS OUTLINED IN THIS SECTION ARE CONSIDERED TO BE THE PREFERRED CONSTRUCTION. THE LOCATION OF HARDWARE IS POSITIONED TO BE THE BEST FOR OVERALL APPLICATION. ALTERNATE CONSTRUCTION SHOULD BE CONSIDERED ONLY WHEN ABSOLUTELY NECESSARY. FRAME POLES WITH HARDWARE BEFORE ERECTING WHENEVER POSSIBLE.

VERTICAL PHASE OVER PHASE IS THE STANDARD CONSTRUCTION WITH HORIZONTAL AVAILABLE WHERE ROW IS NOT A FACTOR.

VERTICAL PHASE OVER PHASE SPACING IN THE SPAN:

THE STANDARD PHASE OVER PHASE SPACING AT THE POLE SHALL BE 42" FOR 25KV AND 36" FOR 12KV. THESE VALUES ARE INCREASED ON SOME SPECIFICATIONS AS NOTED TO ACCOMMODATE EQUIPMENT.

NEUTRALS:

- 1. NEUTRALS SHALL BE MULTI-GROUNDED AND IN A POSITION ON THE POLE COMMON TO BOTH THE PRIMARY AND SECONDARY SYSTEMS, EXCEPT FOR OVERHEAD GROUND WIRE CONSTRUCTION.

CONDUCTORS:

- 1. OVERHEAD PRIMARY CONDUCTORS WILL BE BARE ON ALL CIRCUITS UNLESS SPECIFIED BY ENGINEERING FOR SPECIAL PURPOSES.
- 2. PLACE CONDUCTORS ON THE INSULATORS SO THAT THE WIRE TENSION HOLDS IT AGAINST THE INSULATOR (EXCEPT FOR CLAMP TYPE). FACTORY TIES SHALL BE USED WITH THE CONDUCTORS COMPLETELY FREE FROM CONDUCTOR INSULATION UNDER THE TIE.
- 3. CONDUCTORS MUST BE ACCURATELY SAGGED ACCORDING TO THE CORRECT SPAN LENGTH TABLE TAKING INTO CONSIDERATION THE PREVAILING TEMPERATURE OF THE CONDUCTOR.
- 4. WHEN SPLICING OR CONNECTING CONDUCTORS, BE SURE TO USE THE PROPER CONNECTOR FOR THE JOB AND ADEQUATELY PREPARE THE WIRE AND CONNECTOR TO ENSURE A SOLID CONNECTION.
- 5. WHEN COVERED RISER WIRE IS SUPPORTED BY A PORCELAIN INSULATOR, THE INSULATION SHOULD BE REMOVED AT THE INSULATOR AND TIED WITH BARE TIE WIRE.

CUTOUTS:

ARRANGE CUTOUTS SO THAT THE DISCHARGE FROM THE BLOWN FUSE WILL NOT BE DIRECTED TOWARD THE OPERATOR. ENSURE THAT THE FUSE HOLDER IS CLEAR OF ANY ENERGIZED EQUIPMENT WHEN IN THE OPEN POSITION AND REMOVABLE WITHOUT CONTACT TO ANY ENERGIZED CIRCUIT.

GUYING:

GUYING ATTACHMENTS SHOWN ON DRAWINGS ARE TO INDICATE NORMAL POSITIONS WHEN GUYING IS NECESSARY. WHEN THERE IS A DOUBT AS TO THE EXACT LOCATION OF A GUY IT SHOULD BE SPECIFIED BY THE ENGINEER.

ALL GUYS ABOVE THE NEUTRAL MUST HAVE GUY INSULATOR(S) (LINK) OF SUFFICIENT LENGTH TO EXTEND BEYOND THE LOWEST ENERGIZED COMPONENT BY 24".

PRIMARY TO NEUTRAL STATEMENT

72" NEUTRAL SPACING IS PREFERRED TO ACCOMMODATE MAINTENANCE AND SHOULD BE OBTAINED ON NEW CONSTRUCTION OR UPGRADE INVOLVING POLE REPLACEMENT. ON EXISTING POLES WITH 60" NEUTRAL SPACING, THE SPACING NEED NOT BE INCREASED TO 72" WHEN ADDING A TAP LINE IF 72" SPACING CANNOT BE OBTAINED WITHOUT REPLACING THE POLE OR CAUSING CONFLICT WITH COMMUNICATION CABLES.

3				
2				
1	2/14/11	BURLISON	BURLISON	ELKINS
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

PRIMARY CONSTRUCTION



FLA

DWG.
03.00-02

GRADE OF CONSTRUCTION:

THE NORMAL CONSTRUCTION GRADE FOR PROGRESS ENERGY DISTRIBUTION LINE DESIGN IS NESC GRADE C. HOWEVER, SUPPORTS AND STRUCTURES FOR PORTION OF LINES CROSSING OVER RAILROAD TRACKS AND LIMITED-ACCESS HIGHWAYS MUST BE BUILT TO NESC GRADE B. UNLESS OTHERWISE NOTED, THE DRAWINGS GIVE DETAILS FOR GRADE C CONSTRUCTION. FOR SPECIFIC RAILROAD CROSSING DETAILS, SEE DWG. 03.12-17.

CONSTRUCTION REQUIREMENTS FOR GRADE B:

GENERALLY, STANDARD SPECIFICATIONS FOR LINE SUPPORTS MAY BE USED FOR GRADE B APPLICATIONS PROVIDED THE FOLLOWING MODIFICATIONS ARE MADE:

1. THE STRUCTURES AND SUPPORTS ON EACH END OF THE SECTION REQUIRED TO MEET GRADE B MUST BE ABLE TO WITHSTAND BREAKAGE OF A CONDUCTOR ON THE GRADE C SIDE WHEN THERE ARE 8 OR LESS CONDUCTORS. THE CONDUCTOR SELECTED SHOULD BE THE ONE THAT CAUSES THE MAXIMUM STRESS IN THE POLE. GENERALLY, THIS REQUIREMENT CAN BE MET BY DOUBLE DEADENDING THE CONDUCTOR AT THESE STRUCTURES AND GUYING THE TOP MOST PRIMARY CONDUCTOR.
2. CROSSARM CONSTRUCTION - USE DOUBLE WOOD ARMS AND PINS.
3. ON VERTICAL TANGENT CONSTRUCTION, USE 35KV HORIZONTAL POST INSULATORS.
4. REFER TO ENGINEERING MANUAL FOR PROPER POLE SIZING AND SECTION 02 OF THE CONSTRUCTION SPECIFICATIONS FOR PROPER GUYING. SIDE GUYING MAY BE USED TO PROVIDE REQUIRED STRENGTH OF STRUCTURES.

WHERE POSSIBLE, UTILIZE POLEFOREMAN TO EVALUATE STRUCTURES IN THE GRADE B SECTION OF LINE. IF THERE ARE ANY QUESTIONS, CONTACT DISTRIBUTION STANDARDS.

THERE ARE ANY QUESTIONS, CONTACT DISTRIBUTION STANDARDS.

TRANSMISSION ENCROACHMENTS

DISTRIBUTION UNDERBUILT ON TRANSMISSION LINES MUST BE APPROVED BY TRANSMISSION THROUGH THE DOCUMENTED PROCESS DESCRIBED IN THE DISTRIBUTION ENGINEERING MANUAL. THIS PROCESS APPLIES ANY TIME NEW DISTRIBUTION LINES ARE TO BE BUILT ON TRANSMISSION RIGHT OF WAY, AS WELL AS IF ANY CHANGES OR UPGRADES ARE TO BE MADE TO EXISTING ENCROACHMENTS. PLEASE REFER TO THE DISTRIBUTION ENGINEERING MANUAL - TRANSMISSION ENCROACHMENT PROCESS SECTION FOR FURTHER DETAILS.

THE PRIMARY CONCERN OF UNDERBUILT DISTRIBUTION IS SUFFICIENT BIL. TO OBTAIN PROPER BIL, UTILIZE THE FOLLOWING:

1. FOR HORIZONTAL CONSTRUCTION, USE 10' WOOD CROSSARMS.
2. FOR VERTICAL CONSTRUCTION ON CONCRETE, STEEL OR WOOD POLES, USE ONE OF THE FOLLOWING:
 - a. 35 KV INSULATORS ON 21" FIBERGLASS STANDOFF BRACKET. USE CLAMP TOP INSULATORS FOR ANGLES 5 - 30 DEGREES.
 - b. 35 KV INSULATORS ON 31" FIBERGLASS STANDOFF BRACKET
 - c. DEADENDS SHOULD BE TWO POLY DEADENDS CONNECTED IN SERIES ON STEEL AND CONCRETE POLES. ON WOOD POLES, ONE POLY DEADEND IS SUFFICIENT.
3. REFER TO DWG. 02.02-07 FOR BONDING AND GROUNDING ON STEEL AND CONCRETE POLES.
4. THE PREFERRED METHOD FOR ATTACHING HARDWARE AND INSULATORS TO UNDERBUILT STRUCTURES IS WITH THROUGH BOLTS IN PREDRILLED HOLES. WHEN HOLES ARE NOT PROVIDED, FIELD DRILLING IS STILL PREFERRED FOR AT LEAST THE TOP HOLE OF A TWO-HOLE BRACKET. THE BOTTOM HOLE MAY BE BANDED WITH A SINGLE STAINLESS STEEL BAND TO HOLD THE BRACKET IN PLACE. FIELD DRILLING REQUIRES PERMISSION FROM TRANSMISSION. IF FIELD DRILLING IS NOT ALLOWED OR IS NOT PRACTICAL, CHAIN BANDS AND BRACKETS MAY BE USED AS SHOWN ON DWG. 03.06-35 FOR CONDUCTOR SUPPORTS. WHEN STAINLESS STEEL FLAT BANDS ARE USED TO MOUNT CONDUCTOR SUPPORTS, THE BAND SHOULD BE DOUBLE WRAPPED ON BOTH THE TOP AND BOTTOM OF THE SUPPORT.
5. FOR A LISTING OF THE CATALOG NUMBERS OF THE VARIOUS BOLT SIZES, SEE BOLT CHART ON DWG. 03.14-22.

LOCKWASHERS:

BOLTS UNDER TENSION, SUCH AS DEADENDS AND GUYS, REQUIRE NO LOCKWASHERS.

WHEN BOLTS ARE NOT UNDER TENSION, SUCH AS INSULATORS, BRACKETS, TRANSFORMERS, AREA LIGHTS, ETC., USE LOCKWASHERS AS FOLLOWS:


1. DOUBLE LOCKWASHERS ON WOOD POLES.
2. SINGLE LOCKWASHERS ON STEEL AND CONCRETE POLES.

COASTAL CONSTRUCTION:

USED IN AREAS OF HIGH AIRBORNE CONTAMINATION (i.e. BEACHES, PAPER PLANTS, PHOSPHATE PROCESSING PLANTS, ETC.) AS IDENTIFIED BY ENGINEERING. SEE SECTION 12 FOR CONSTRUCTION SPECIFICATIONS AND AVAILABLE MATERIAL.

3				
2	8/9/12	BURLISON	BURLISON	ELKINS
1	4/23/12	WOJNAROWSKI	BURLISON	ELKINS
0	11/8/10	CECCONI	GUINN	ELKINS
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PRIMARY CONSTRUCTION



FLA DWG. 03.00-04

TRANSITION FROM HORIZONTAL TO VERTICAL CONSTRUCTION IS NORMALLY MADE MID-SPAN.

▶ FOR CONSTRUCTION REQUIRING ANGLES OF 6° TO 59°, ARMOUR RODS ARE REQUIRED FOR ACSR, AAC AND AAAC TYPE CONDUCTORS. ONCE USED, THESE ARMOUR RODS SHOULD NOT BE RETURNED TO STORES.

POLE GAINS ARE REQUIRED FOR POST INSULATOR INSTALLATION ON WOOD POLES WHEN THE POLE DOES NOT HAVE SLAB GAINS OR WHEN THE CONDUCTOR IS 336.4 KCM OR LARGER. GAINS ARE NOT REQUIRED FOR INSULATORS USED FOR JUMPERS (THIS INCLUDES SLACK SPANS).

FOR POST INSULATOR INSTALLATION ON WOOD POLES, USE A SPRING WASHER AND A 3" CURVED WASHER.


WHEN INSTALLING STAND-OFF BRACKETS ON WOOD POLES, USE A 3" CURVED WASHER FOR WIRE SIZES ABOVE 1/0 AAAC AND 2-1/4" FLAT WASHERS FOR WIRE SIZES 1/0 AAAC AND SMALLER.

CONCRETE POLE CONSTRUCTION:

1. USE 20 OR 30 INCH FIBERGLASS OFFSET BRACKETS.
2. USE 35KV POST INSULATORS.
3. USE FLAT WASHERS IN PLACE OF CURVED WASHERS.
4. USE SINGLE COIL LOCK WASHERS.
5. WHEN INSTALLING STAND-OFF BRACKETS ON CONCRETE POLES, USE 2-1/4" FLAT WASHERS.

3				
2				
1	9/28/11	GUINN	BURLISON	ELKINS
0	11/18/10	GUINN	GUINN	ELKINS
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PRIMARY CONSTRUCTION -
PROGRESS ENERGY FLORIDA SPECIAL NOTES



FLA DWG.
03.00-06

PIN INSULATORS AND PIN INSULATOR SUPPORTS

SUPPORTS FOR PIN INSULATORS (E.G., SHOULDER PINS, POLE-TOP PINS, PIERCE PINS, FIBERGLASS BRACKETS) MAY HAVE LEAD THREADS OR THE STANDARD COMPOSITE NYLON.

PINS WITH NYLON AND LEAD THREADS

THE PROPER WAY TO INSTALL AN INSULATOR ON A POLE-TOP PIN WITH COMPOSITE NYLON THREADS IS AS FOLLOWS:

CAREFULLY THREAD THE INSULATOR INTO THE PIN, KEEPING THE PROPER VERTICAL ALIGNMENT, ENSURING THAT THE INSULATOR SPINS AS FREELY AS POSSIBLE ON THE PIN. SPIN THE INSULATOR CLOCKWISE ONTO THE PIN TO 'SNUG' (THAT POINT WHERE THE INSULATOR WILL NO LONGER SPIN FREELY). FROM THE SNUG POSITION, FURTHER TIGHTEN THE INSULATOR (NOT MORE THAN 1/2 A TURN) TO THE CONDUCTOR ALIGNMENT.

LEAD THREAD NOTES (O&M)

1. INSULATOR INSTALLATION

LEAD IS A SOFTER MATERIAL THAN THE PORCELAIN OF THE PIN INSULATORS. THE PORCELAIN THREADS WILL CUT THE LEAD THREADS TO THE PORCELAIN THREAD'S FORM. TAKE CARE NOT TO CROSS-THREAD THE INSULATOR ONTO THE PIN; OTHERWISE, SUFFICIENT INSULATOR-PIN ENGAGEMENT NECESSARY FOR PROPER SUPPORT WILL NOT BE OBTAINED.

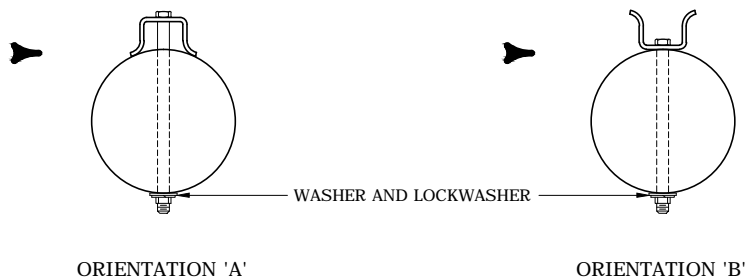
IF TOO MUCH FORCE IS EXERTED IN TURNING THE INSULATOR ON THE PIN, THE INSIDE OF THE LEAD THREAD CAP CAN SHEAR FROM ITS STEEL BASE, ALLOWING THE INSULATOR AND LEAD THREAD CAP TO SPIN FREELY ON THE PIN. THE INSULATOR WILL THEN HAVE TO BE BROKEN TO BE REMOVED. IF THIS OCCURS, NEITHER THE PIN, BRACKET, OR INSULATOR WILL BE RE-USABLE.

2. HANDLING

LEAD IS RELATIVELY SOFT, SO CARE MUST BE TAKEN TO INSURE THAT THE THREADS ARE NOT DEFORMED PRIOR TO INSTALLATION. REMOVE THE THREAD'S PROTECTIVE CARDBOARD COVERING AND INSPECT THREAD CONDITION PRIOR TO THE INSTALLATION ON THE POLE, AND THEN REPLACE THE CARDBOARD COVERING AGAIN UNTIL AFTER THE PIN OR BRACKET IS INSTALLED ON THE POLE OR ARM IS READY TO ACCEPT THE INSULATOR.


➤ POLE TOP PIN ORIENTATION

POLE TOP PINS CAN BE INSTALLED ON POLES WITH EITHER ORIENTATION SHOWN BELOW. ORIENTATION 'A' IS PREFERRED.

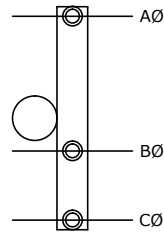
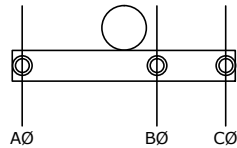
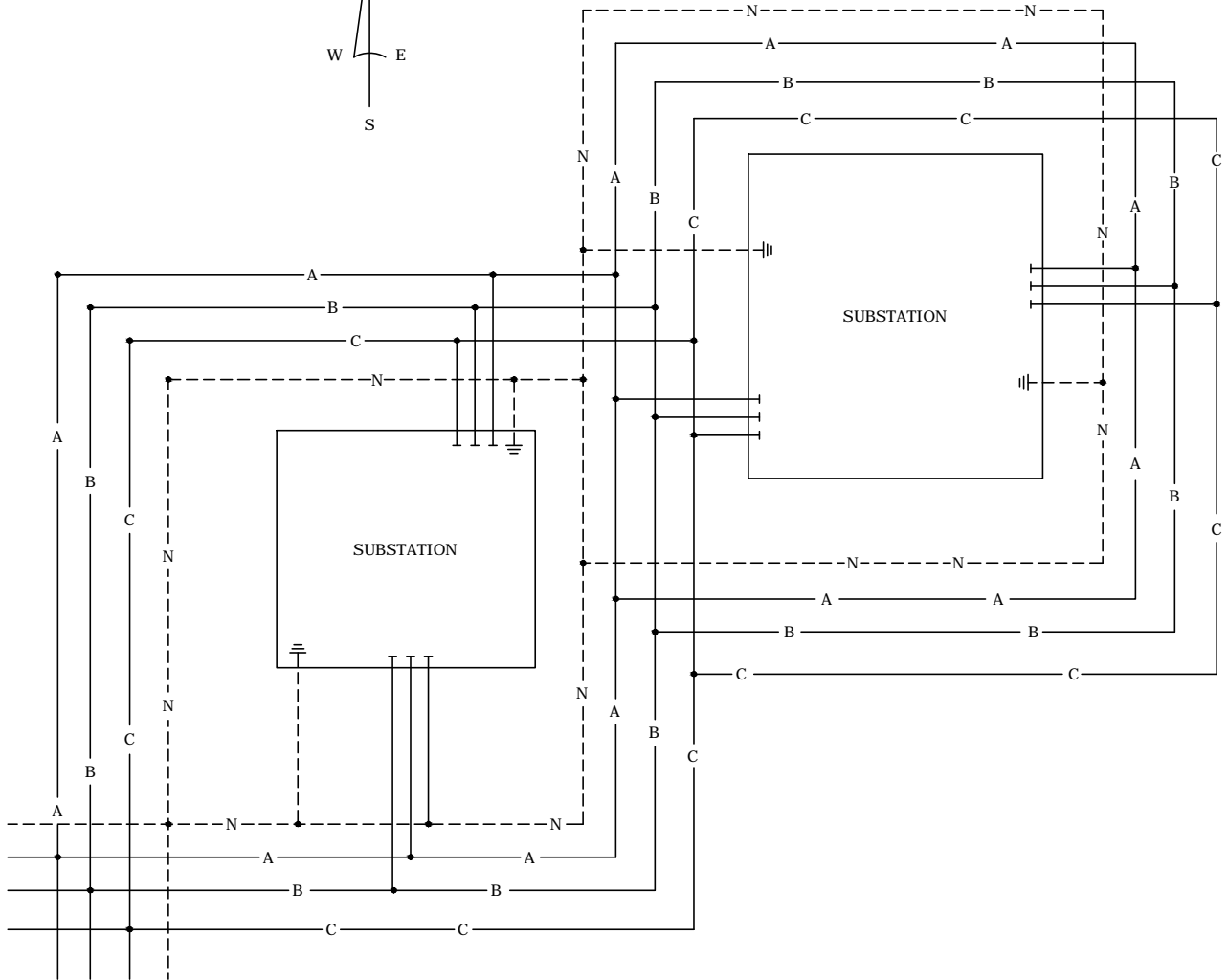
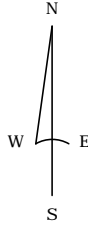


3				
2				
1	8/15/11	BURLISON	BURLISON	ELKINS
0	6/1/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

PIN INSULATOR INSTALLATION



PGN DWG. 03.00-20



FACING NORTH

FACING WEST

HORIZONTAL CONSTRUCTION

TOP VIEWS

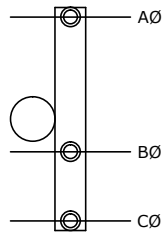
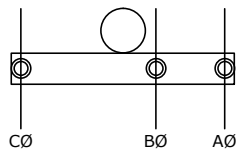
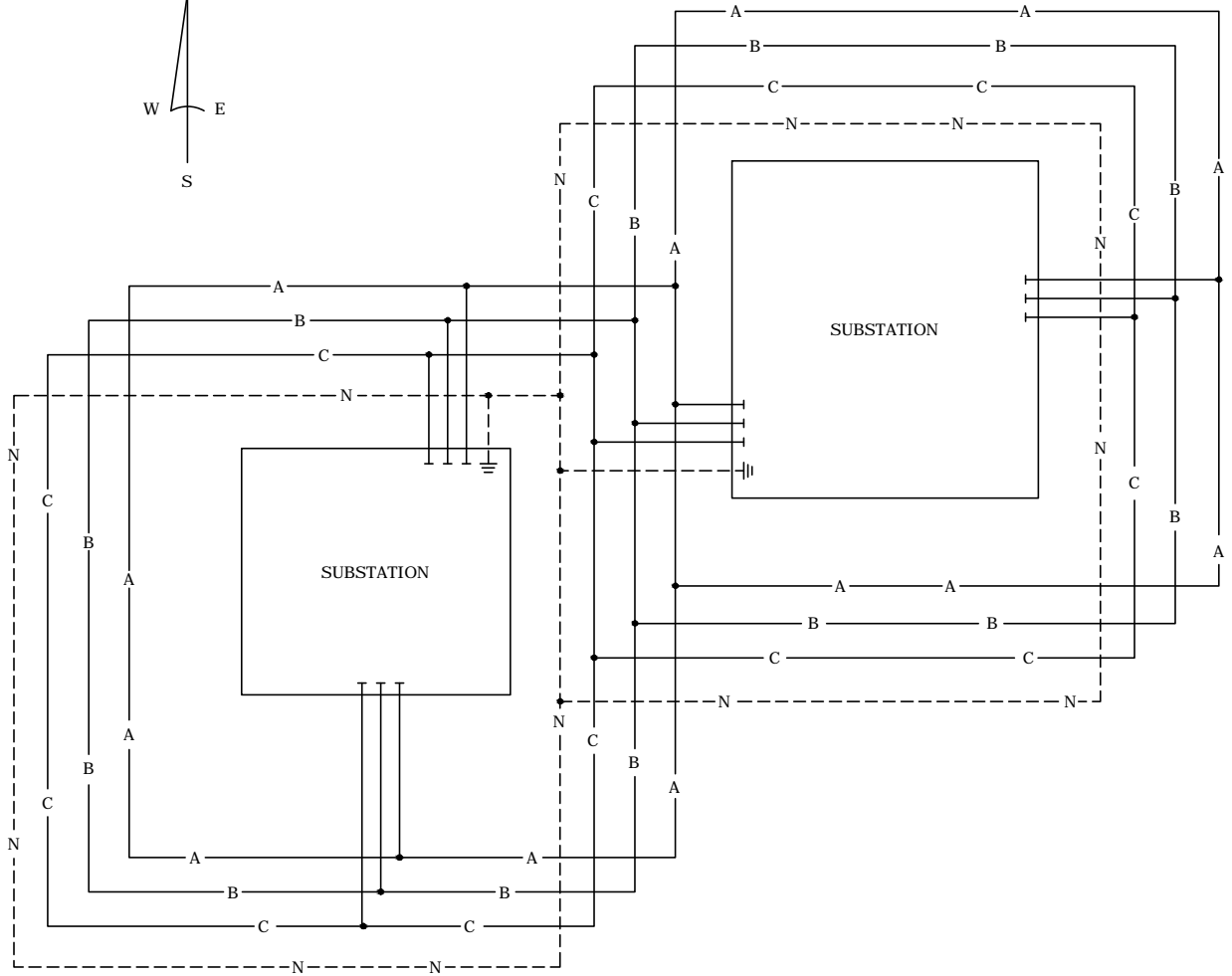
3				
2				
1				
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

STANDARD DISTRIBUTION PHASING
FOR ALL AREAS EXCEPT ST. PETERSBURG



FLA DWG. 03.01-04A

ST. PETERSBURG AREA



FACING NORTH

FACING EAST

HORIZONTAL CONSTRUCTION
TOP VIEWS

3				
2				
1				
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

STANDARD DISTRIBUTION PHASING
FOR ST. PETERSBURG AREA ONLY



FLA DWG. 03.01-04B

GENERAL

1. THE NEUTRAL SHALL BE COMMON TO BOTH PRIMARY AND SECONDARY CIRCUITS ON WYE SYSTEMS. THE NEUTRAL SHALL BE MULTI-GROUNDED.
2. THE NEUTRAL CONDUCTOR SHALL ALWAYS BE IN THE TOP POSITION ON AN OPEN-WIRE SECONDARY CIRCUIT. SIZING OF SECONDARY CONDUCTORS WILL DEPEND ON THE AMOUNT OF LOAD, THE TYPE OF LOAD (SUCH AS MOTORS, ETC.), AND THE VOLTAGE DROP.
3. ALL SERVICE CONDUCTORS WILL BE OF COVERED ALUMINUM. THE REQUIRED SIZE, SHALL BE SPECIFIED BY THE ENGINEER.
4. THE SERVICE ENTRANCE LOCATION WILL BE DETERMINED BY THE COMPANY AND MUST BE AGREED TO BY THE CUSTOMER. CUSTOMER'S REQUESTS FOR NON-STANDARD LOCATIONS FREQUENTLY REQUIRE AN ADDITIONAL CHARGE.
5. FOR THREE-PHASE FOUR WIRE DELTA SECONDARY CABLE AND SERVICES, THE PHASE CONDUCTOR WITH THE MOST NUMBER OF RAISED RIBS WILL BE THE HIGH (208 VOLT) PHASE.
6. USE INSULINKS OR INSTALL COVERS OVER SECONDARY CABLE OR SERVICE CABLE PHASE CONNECTORS.
7. STREETLIGHT CIRCUITS ARE TO BE CONSIDERED AS SECONDARY.
8. BEFORE CUTTING THE LACING WIRE ON AERIAL SECONDARY CABLE, BIND THE LACING WITH SEVERAL TURNS OF SCRAP LACING WIRE.
9. TO DEADEND THE PHASE CONDUCTORS OF AERIAL SECONDARY CABLE WHILE ALLOWING NEUTRAL TO CONTINUE ON, FIRST TAPE THE ENDS OF THE PHASE CONDUCTOR THEN BEND THEM BACK AND SECURE WITH SEVERAL WRAPS OF THE BINDING WIRE. COVER ENDS IF NOT IN USE.
10. IF THERE IS NO PRIMARY ON THE POLE, RUN SECONDARY TO THE TOP OF THE POLE WITH THE STANDARD 5" CLEARANCE.

LIMIT FOR ALUMINUM CABLES NOT REQUIRING GUYING		
WIRE SIZE	CODE NAME	** SPAN LENGTH
#6 DUPLEX SERVICE	VISZLA	195'
#4 DUPLEX SECONDARY	WHIPPET	150'
#2 TRIPLEX SERVICE	SOLASTER	150'
#1/0 DUPLEX SECONDARY	NO CODE NAME	110'
#1/0 TRIPLEX SERVICE/SECONDARY	SANDCRAB	110'
#4/0 TRIPLEX SERVICE	NO CODE NAME	70'
350/500 TRIPLEX SERVICE	*NO CODE NAME	50'
#1/0 QUADRUPLEX SECONDARY	GALLEY	90'
#4/0 QUADRUPLEX SECONDARY	NO CODE NAME	60'
336.4/350 QUADRUPLEX SERVICE	*NO CODE NAME	40'
500 QUADRUPLEX SERVICE	*NO CODE NAME	40'

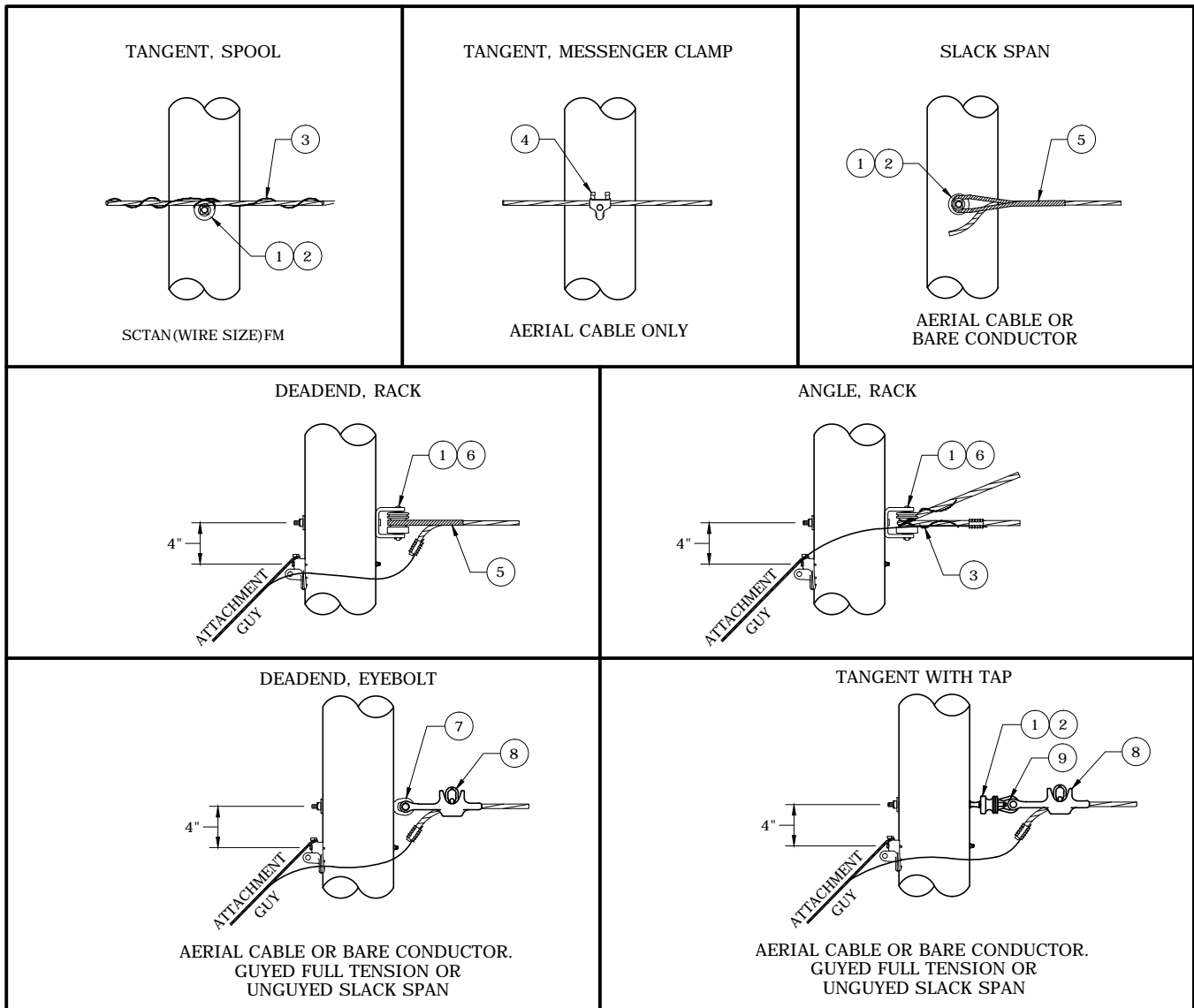
* WIRE SIZE CUSTOM MADE IN FIELD
 ** BASED ON 200 LB. CUSTOMER MAST TENSION LIMIT AS INDICATED IN THE REQUIREMENTS FOR ELECTRIC SERVICE AND METER INSTALLATIONS MANUAL.



3				
2				
1				
0	3/31/16	BRUINS	BURLISON	ADCOCK
REVISED	BY	CK'D	APPR.	

SECONDARIES & SERVICES

DEC	DEM	DEP	DEF
			X
03.02-02			



BILL OF MATERIALS				
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	DESCRIPTION
SCTAN_FM (VARIES WITH WIRE SIZE)	1	ISPLF	1	INSULATOR SPOOL
	2	NSSB12F	1	NEUTRAL AND SECONDARY SPOOL BOLT 12 INCH
	3	NEUSPTIE_F	1	FORMED SPOOL TIE (VARIES WITH WIRE SIZE)
	4	NEUMESCLMP_F	1	MESSENGER CLAMP (VARIES WITH SIZE)
SCSLKSP_FM (VARIES WITH WIRE SIZE)	1	ISPLF	1	INSULATOR SPOOL
	2	NSSB12F	1	NEUTRAL AND SECONDARY SPOOL BOLT 12 INCH
	5	NEUDEGRIP_F	1	DEADEND GRIP (VARIES WITH WIRE SIZE)
SCDERACK_FM (VARIES WITH WIRE SIZE)	1	ISPLF	1	INSULATOR SPOOL
	5	NEUDEGRIP_F	1	DEADEND GRIP (VARIES WITH WIRE SIZE)
	6	NSSCF	1	NEUTRAL AND SECONDARY SPOOL CLEVIS
SCANG_FM (VARIES WITH WIRE SIZE)	1	ISPLF	1	INSULATOR SPOOL
	3	NEUSPTIE_F	1	FORMED SPOOL TIE (VARIES WITH WIRE SIZE)
	6	NSSCF	1	NEUTRAL AND SECONDARY SPOOL CLEVIS
-	7	ISEYEBOLT58_F	1	INSULATOR SUPPORT EYEBOLT, 5/8" X REQ'D LENGTH (VARIES W/ WIRE SIZE)
	8	DECLMP_F	1	DEADEND CLAMP (VARIES WITH WIRE SIZE)
-	9	ISEYENUT58F	1	NUT, EYE, 5/8", GALVANIZED STEEL

NOTES:

1. FOR FACTORY FORMED TIE INFORMATION, SEE DWG. 04.12-10.

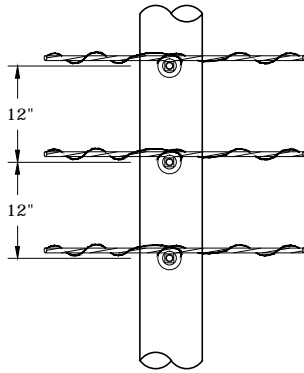


3				
2				
1				
0	3/31/16	BRUINS	BURLISON	ADCOCK
REVISED	BY	CK'D	APPR.	

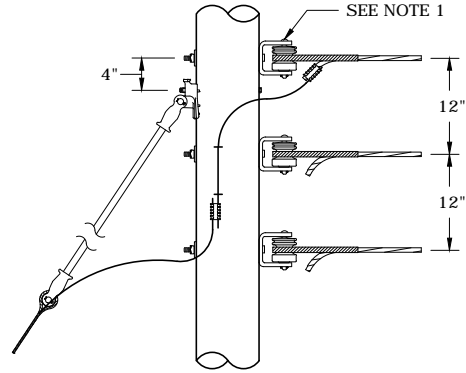
NEUTRAL POLE ATTACHMENTS

DEC	DEM	DEP	DEF
			X
03.02-04			

OPEN WIRE, TANGENT, SPOOL



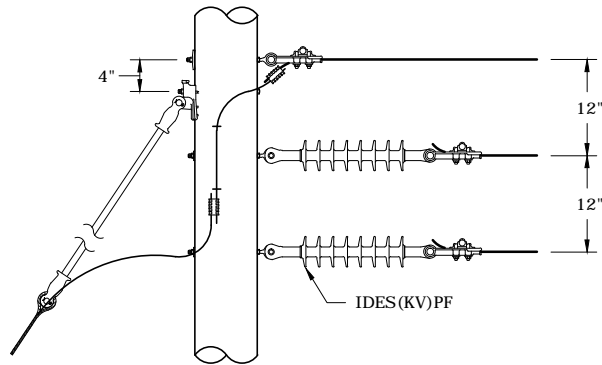
OPEN WIRE, DEADEND, RACK



NOTES:

1. DEADEND CLAMP FOR NEUTRAL MAY BE USED IN LIEU OF THE CLEVIS, SPOOL AND PRE-FORMED GRIP. SEE SECTION 04 FOR DEADEND CLAMP ASSEMBLIES.
2. SEE SECTION 04 FOR INSULATOR DETAILS.
3. FOR OPEN WIRE COPPER, ALTERNATE DEADEND BELOW MUST BE USED.

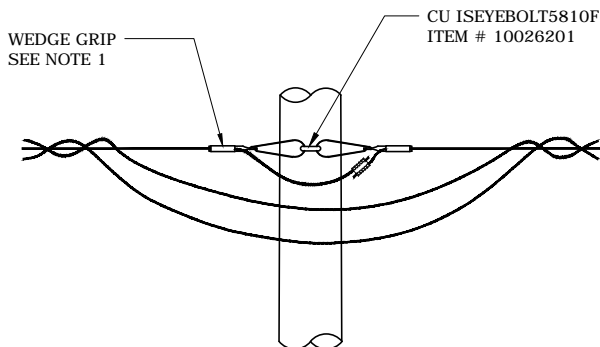
ALTERNATE SECONDARY DEADEND



NOTES:

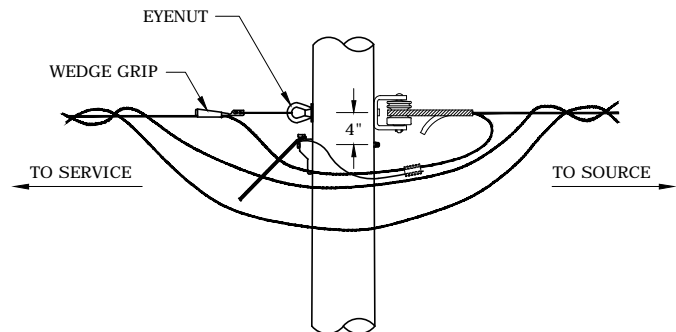
1. SALVAGED 4" STRAIN INSULATORS (BELLS) ARE ACCEPTABLE.

CONNECTIONS TO SECONDARIES



LIFT POLE

USE MINIMUM 5/16" GUYSTRAND AND 8" SCREW ANCHOR FOR ANGLE POLES AS NEEDED



GUYED LIFT POLE

DETAIL SHOWN FOR 1/0 AND SMALLER TPX & QPX ALSO REQUIRES 1-LOOP DEADEND AND 1-EYENUT



3				
2				
1				
0	3/31/16	BRUINS	BURLISON	ADCOCK
REVISED	BY	CK'D	APPR.	

SECONDARY POLE ATTACHMENTS

DEC	DEM	DEP	DEF
			X
03.02-08			

ALUMINUM TO ALUMINUM

1. PREPARE ALUMINUM CONTACT AREAS AND APPLY INHIBITOR COMPOUND. USE GENERAL PURPOSE INHIBITOR (CN 403108).
2. MAKE CONNECTION USING ALUMINUM BOLTS AND TWO FLAT ALUMINUM WASHERS FOR FLAT CONNECTIONS. SINCE ALL METALS USED IN THIS CONNECTION ARE OF THE SAME MATERIAL, NO SPRING OR LOCK WASHERS ARE TO BE USED; HOWEVER, THE BOLT MUST BE TORQUED TO RECOMMENDED VALUES. ALTERNATELY TIGHTEN AND TORQUE THE BOLTS TO RECOMMENDED TORQUE VALUE FOR THE GIVEN BOLT SIZE.

CAUTION: DO NOT OVERTIGHTEN LUBRICATED BOLTS.

3. DO NOT REMOVE EXCESS COMPOUND THAT SQUEEZES OUT OF THE CONNECTION. IT HELPS KEEP OUT DIRT AND MOISTURE.
4. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR CONNECTORS PREFILLED WITH INHIBITOR COMPOUND.
5. CAUTION: DO NOT REUSE ALUMINUM BOLTS. A BOLT THAT HAS BEEN TORQUED CANNOT BE DEPENDED UPON TO GIVE UNIFORM JOINT PRESSURE BECAUSE IT COULD HAVE BEEN DEFORMED (STRETCHED) AND WILL NOT HAVE THE SAME MECHANICAL PROPERTIES AS A NEW ONE.

RECOMMENDED TORQUE FOR ALUMINUM BOLTS		
BOLT SIZE	NON-LUBRICATED	LUBRICATED
5/16"	15 FT.-LBS.	10 FT.-LBS.
3/8"	20 FT.-LBS.	14 FT.-LBS.
1/2"	40 FT.-LBS.	25 FT.-LBS.
5/8"	55 FT.-LBS.	40 FT.-LBS.
3/4"	70 FT.-LBS.	60 FT.-LBS.

NOTE: USE VALUES LISTED IN THIS TABLE ONLY WHEN BOLT TORQUE IS NOT SPECIFIED BY CONNECTOR MANUFACTURER.

3				
2				
1				
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

ALUMINUM TO ALUMINUM FLAT CONNECTIONS

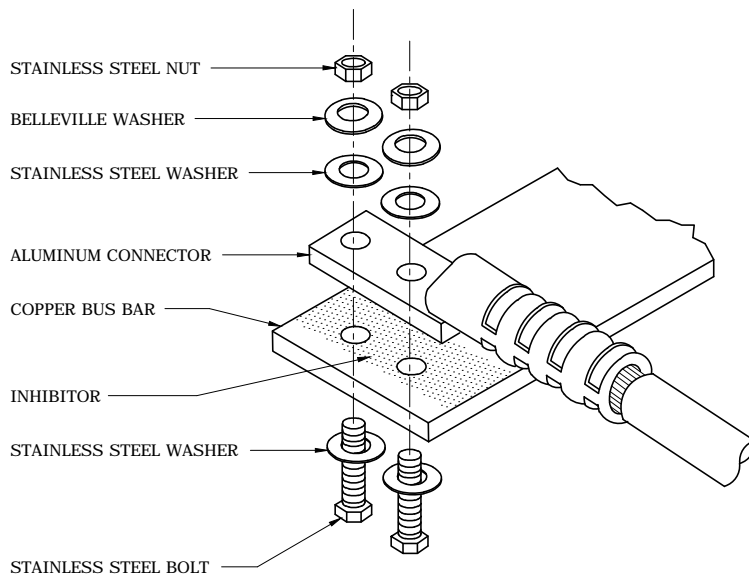


FLA DWG. 03.02-09A

ALUMINUM CONNECTIONS TO COPPER BUS ARE MADE WITH STAINLESS STEEL BOLTS, FLAT WASHERS AND BELLEVILLE WASHERS. BELLEVILLE WASHERS ARE NECESSARY TO COMPENSATE FOR THE DIFFERENCE IN EXPANSION AND CONTRACTION OF THE DISSIMILAR METALS. ALWAYS USE A FLAT STAINLESS STEEL WASHER UNDER A BELLEVILLE WASHER TO PREVENT DAMAGE TO THE UNDERLYING METAL.


INHIBITOR IS REQUIRED WHERE AN ALUMINUM TO COPPER JOINT IS MADE. USE GENERAL PURPOSE INHIBITOR (CN 403108).

▶ TORQUE TO 40 FT LBS.



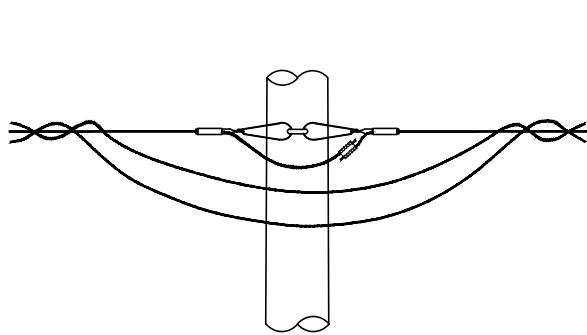
3				
2				
1	5/7/12	DANNA	BURLISON	ELKINS
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

ALUMINUM TO COPPER FLAT CONNECTIONS

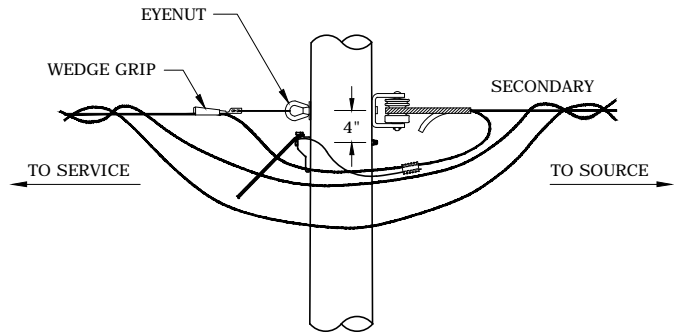


FLA DWG. 03.02-09B

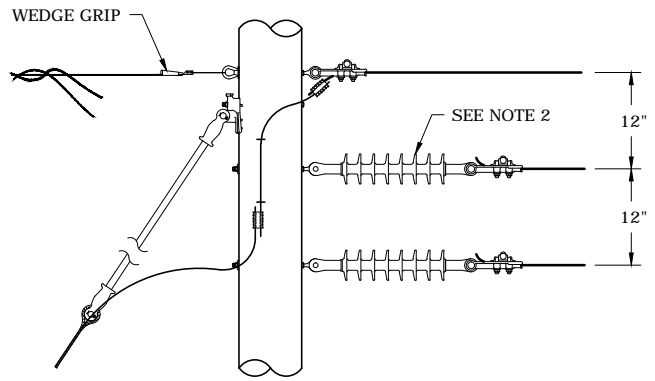
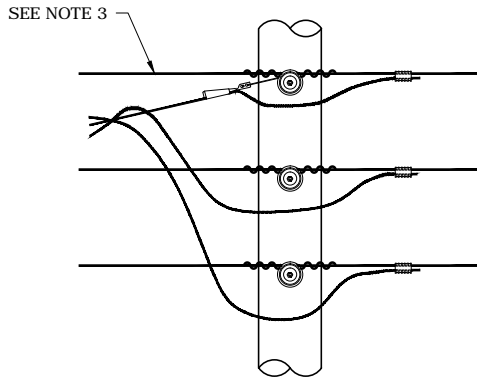
NEW CONSTRUCTION



SERVICE LIFT POLE



SECONDARY TO SERVICE



SECONDARY CABLE CLAMP TABLE		
COMPATIBLE UNIT	ITEM NUMBER	DESCRIPTION
SERCLMP336ALF	102156	SERVICE CABLE CLAMP 336 KCM ALUMINUM
SERCLMP40ALF	184361	SERVICE CABLE CLAMP 4/0 ALUMINUM
SERCLMP10ALF	184359	SERVICE CABLE CLAMP 1/0 ALUMINUM
SERCLMPN2ALF	184357	SERVICE CABLE CLAMP #2 ALUMINUM
SERCLMPN4ALF	184357	SERVICE CABLE CLAMP #4 ALUMINUM
SERCLMPN6ALF	184357	SERVICE CABLE CLAMP #6 ALUMINUM

NOTES:

1. FOR MAINTENANCE ONLY - OPEN WIRE SECONDARY IS A NON-PREFERRED CONSTRUCTION METHOD AND SHOULD NOT BE USED FOR NEW CONSTRUCTION.
2. SALVAGED 4" STRAIN INSULATORS (BELLS) ARE ACCEPTABLE OR USE CLEVIS.
3. USE EYE NUT IF SERVICE MUST COME OFF BACK SIDE OF POLE.

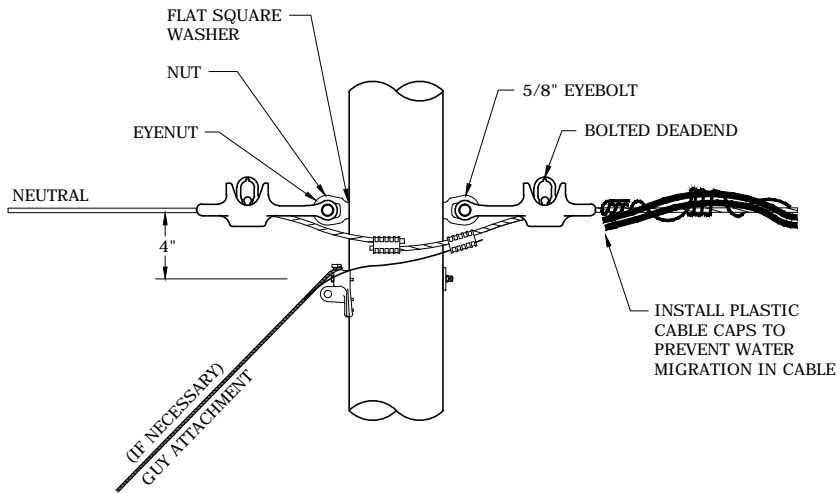


3				
2				
1				
0	3/31/16	BRUINS	BURLISON	ADCOCK
REVISED	BY	CK'D	APPR.	

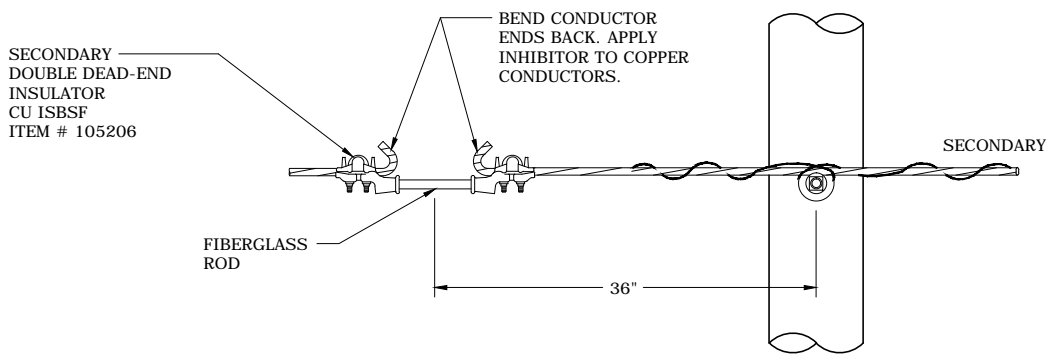
SERVICE ATTACHMENTS

DEC	DEM	DEP	DEF
			X
03.02-10			

SECONDARY CABLE DOUBLE DEAD-END



OPEN WIRE DOUBLE DEADEND
FOR WIRE SIZES #4 THROUGH 1/0



3				
2				
1				
0	3/31/16	BRUINS	BURLISON	ADCOCK
REVISED	BY	CK'D	APPR.	

SECONDARY ATTACHMENTS

DEC	DEM	DEP	DEF
			X
03.02-12			

SECURING SECONDARY CABLE TO NEUTRAL



MAKE 3-4 SHORT WRAPS WITH BINDING WIRE OVER SECONDARY CONDUCTORS, THEN MAKE 3-4 SHORT WRAPS OVER THE BARE NEUTRAL ONLY. FOLD BACK END OF BINDING WIRE TIGHTLY AGAINST WRAPS OVER NEUTRAL.



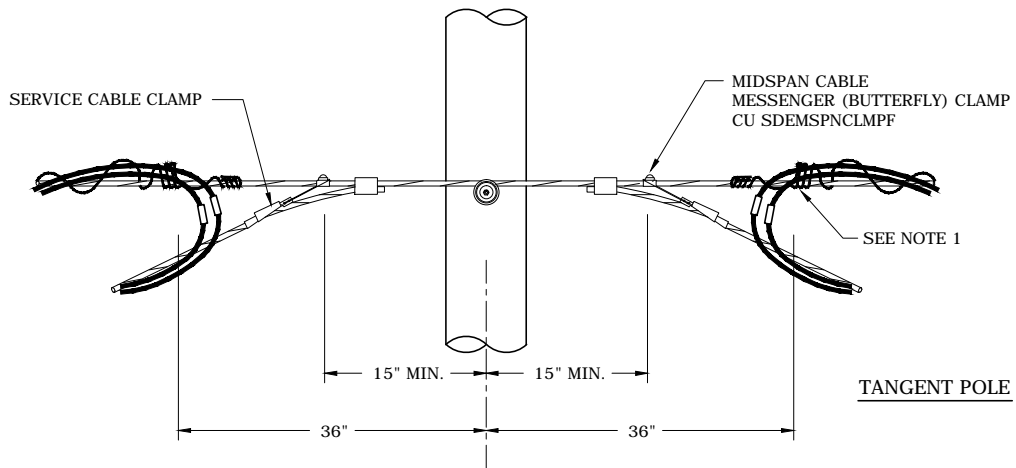
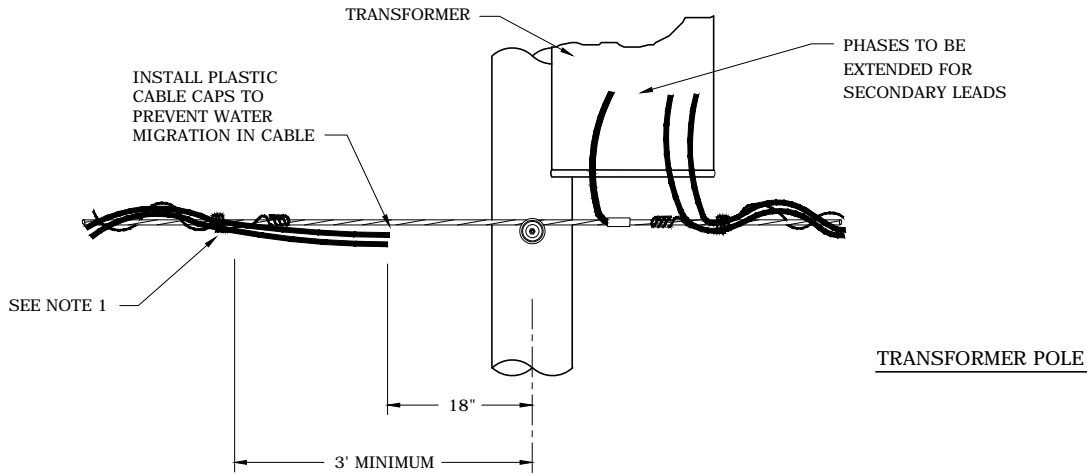
3				
2				
1				
0	3/31/16	BRUINS	BURLISON	ADCOCK
REVISED	BY	CK'D	APPR.	

SECONDARY ATTACHMENTS

DEC	DEM	DEP	DEF
			X
03.02-14			

SECONDARY CABLE CLAMP TABLE		
COMPATIBLE UNIT	ITEM NUMBER	DESCRIPTION
SERCLMP336ALF	102156	SERVICE CABLE CLAMP 336 KCM ALUMINUM
SERCLMP40ALF	184361	SERVICE CABLE CLAMP 4/0 ALUMINUM
SERCLMP10ALF	184359	SERVICE CABLE CLAMP 1/0 ALUMINUM
SERCLMPN2ALF	184357	SERVICE CABLE CLAMP #2 ALUMINUM
SERCLMPN4ALF	184357	SERVICE CABLE CLAMP #4 ALUMINUM
SERCLMPN6ALF	184357	SERVICE CABLE CLAMP #6 ALUMINUM

SECONDARY CABLE TANGENT



NOTES:

1. SEE DWG. 03.02-14 FOR DETAILS ON SECURING CABLE TO NEUTRAL.



DEC	DEM	DEP	DEF
			X

SECONDARY ATTACHMENTS

3				
2				
1				
0	3/31/16	BRUINS	BURLISON	ADCOCK
REVISED	BY	CK'D	APPR.	

03.02-16



ITEM NUMBER DEC/DEM	ITEM NUMBER DEP	ITEM NUMBER DEF	DIE	HEIGHT	LENGTH	WIDTH
69391	156103	156103	O	2-1/4	4-1/2	1-5/8
69392	156109	156109	D	2-3/8	5-5/8	1-1/4
69393	9220270602	X	N	2-15/16	6-7/8	2-1/2

NOTES:

1. FAST, POSITIVE MEANS FOR PROTECTING TAP CONNECTIONS. THE COVER MUST COMPLETELY COVER THE INSULATION ON CONDUCTORS, NO BARE CONDUCTORS.
2. PROVIDES A CLOSE FITTING TOP AND BOTTOM SEAL- SECURE DOUBLE LOCKING LATCHES ON BOTH THE HINGE AND LOCKING SIDE OF THE COVER.
3. HIGHLY RELIABLE END ENCLOSURE - THIN STRIPS OF THE "GRASS SKIRT" MOLD AROUND THE CONDUCTORS.
4. TAPERED DRAINS IN BOTH COVER HALVES PREVENT ACCUMULATION OF WATER WITHIN THE COVER, REGARDLESS OF WHICH HALF OF THE COVER IS DOWN.
5. FABRICATED FROM BLACK POLYPROPYLENE, COVERS ARE HIGHLY RESISTANT TO WEATHER, COMMON CONTAMINATING ELEMENTS, AND THE ULTRA-VIOLET RAYS OF THE SUN.

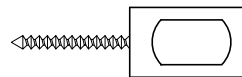
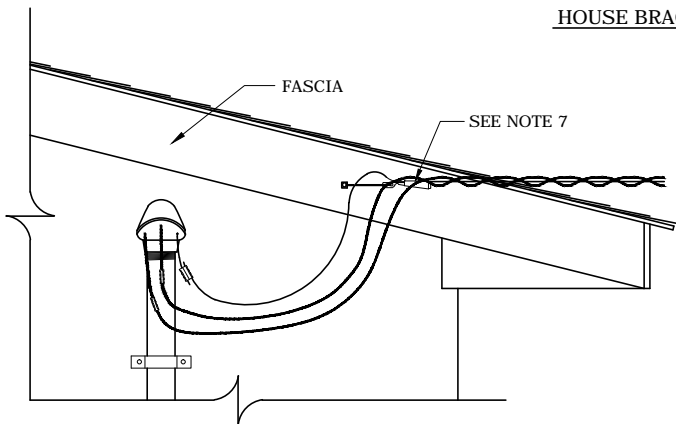


3				
2				
1				
0	12/31/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

SQUEEZON CONNECTOR COVERS
FOR INSULATED CONDUCTORS

DEC	DEM	DEP	DEF
X	X	X	X
03.02-16C			

HOUSE BRACKETS

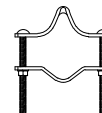
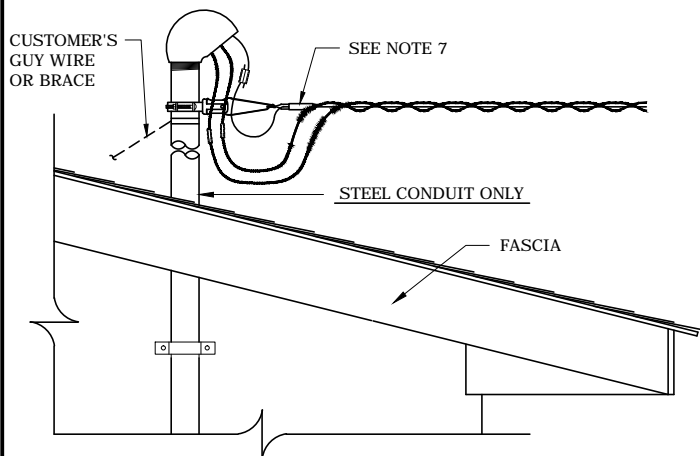


HOUSE BRACKET
CU SDESCRWBOLTF
ITEM # 184552

NOTES:

1. HOUSE BRACKETS MUST BE INSTALLED IN STUDS (2" X 4") OR EQUIVALENT SUPPORT.

SERVICE MAST



MAST BRACKET
1 1/4" - 2 1/2"
CU SDEMASTCLMPSMF
ITEM # 184107

3" - 4"
CU SDEMASTCLMPLGF
ITEM # 184116

NOTES:

1. SERVICE MAST SHALL BE OF ADEQUATE STRENGTH OR BE SUPPORTED BY A GUY OR BRACE TO WITHSTAND A MAXIMUM TENSION FORCE OF 200 LBS. IMPOSED BY SERVICE DROP.
2. 2" RIGID STEEL CONDUIT IS REQUIRED FOR MASTS UP TO 4'. LONGER MAST HEIGHTS REQUIRE GUYING, BRACING, LARGER MAST SIZE OR SPECIAL SAG.

NOTES:

1. DRIP LOOPS SHALL BE FORMED ON SERVICE DROP SERVICE ENTRANCE CONDUCTORS.
2. THE CONNECTIONS OF THE SERVICE DROP CONDUCTORS TO THE SERVICE ENTRANCE CONDUCTORS SHALL BE MADE BELOW THE LEVEL OF THE SERVICE WEATHERHEAD.
3. SEE DWGS. 10.02-01 AND 10.02-03 FOR SERVICE GROUND CLEARANCES AND DWGS. 10.04-09A AND 10.04-09B FOR SERVICE CLEARANCES AT BUILDINGS.
4. SERVICE ENTRANCE CONNECTORS SHALL BE COVERED PER NEC RULE 230-22.
5. THE SERVICE POINT OF ATTACHMENT SHOULD BE LOCATED BELOW THE LEVEL OF THE WEATHERHEAD OR GOOSENECK. IF THIS IS IMPRACTICAL, THE POINT OF ATTACHMENT MUST BE LOCATED WITHIN 24" OF THE WEATHERHEAD OR GOOSENECK (REF. NEC 230-54C).
6. CUSTOMER IS RESPONSIBLE FOR PROVIDING AN ATTACHMENT POINT FOR MASONRY AND STEEL BUILDINGS.
7. SEE DWG. 03.02-16 FOR SERVICE CLAMP COMPATIBLE UNITS.

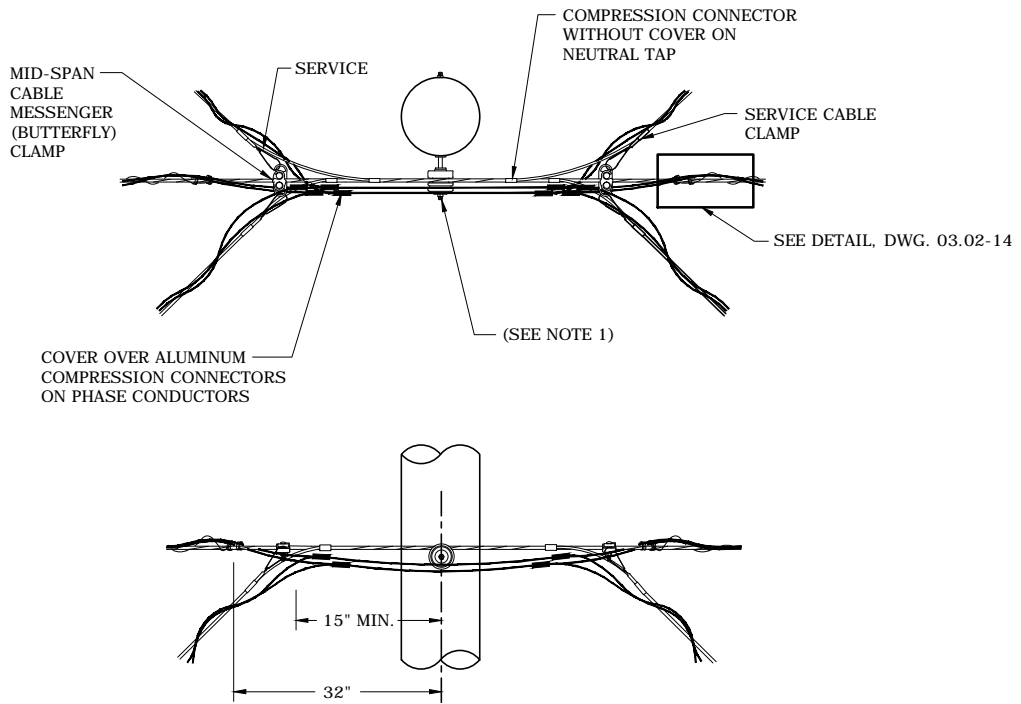


3				
2				
1				
0	3/31/16	BRUINS	BURLISON	ADCOCK
REVISED	BY	CK'D	APPR.	

SERVICE ATTACHMENT METHODS

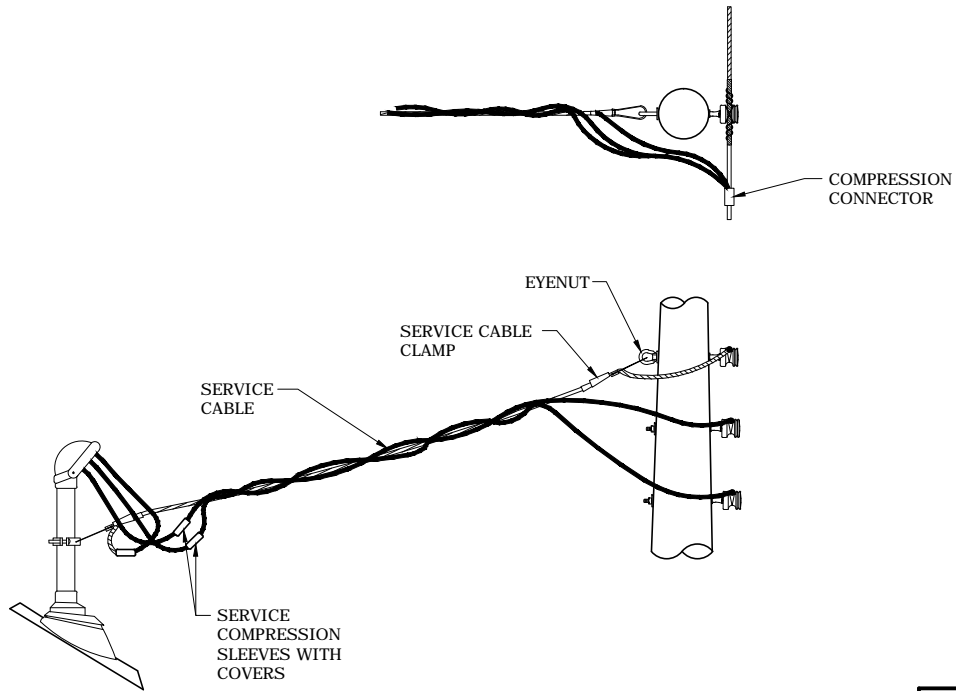
DEC	DEM	DEP	DEF
			X

03.02-20



NOTES:

1. USE CLEVIS AND SPOOL FOR ANGLE APPLICATIONS AS SHOWN ON DWG. 03.06-01.

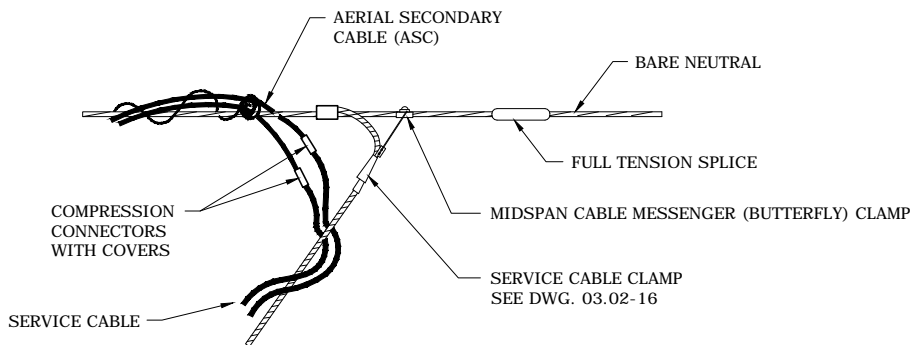
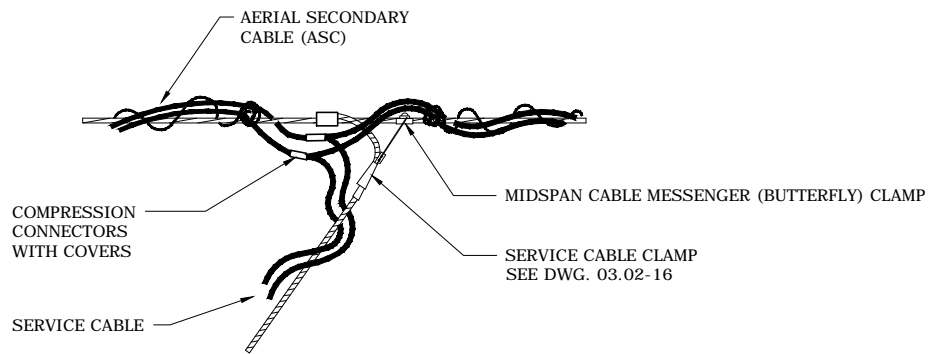
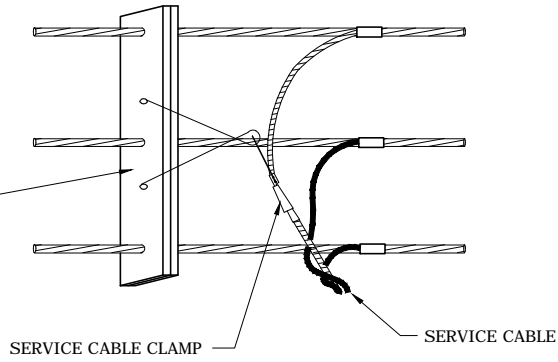


3				
2				
1				
0	3/31/16	BRUINS	BURLISON	ADCOCK
REVISED	BY	CK'D	APPR.	

SERVICE TAPS

DEC	DEM	DEP	DEF
			X
03.02-32			

OPEN WIRE SECONDARY
SPACER
CU SDEOPENSACERF
ITEM # 184602

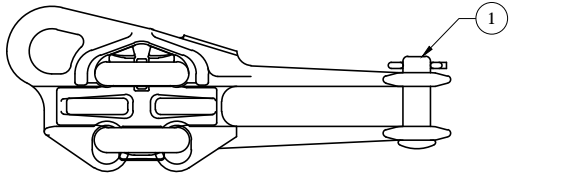


DEC	DEM	DEP	DEF
			X

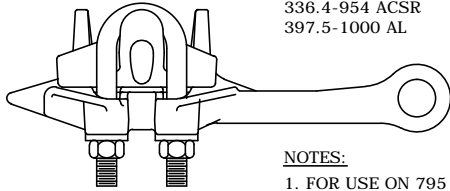
MIDSPAN SERVICE TAPS

03.02-38

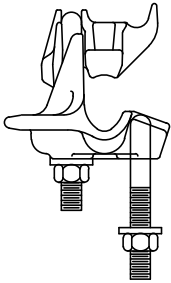
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2				
1				
0	3/31/16	BRUINS	BURLISON	ADCOCK
REVISED	BY	CK'D	APPR.	



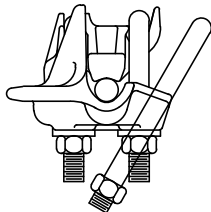
CONDUCTOR RANGE (0.680-1.16)
336.4-954 ACSR
397.5-1000 AL



NOTES:
1. FOR USE ON 795 CONDUCTOR.
2. TORQUE TO 45 FT. LBS.

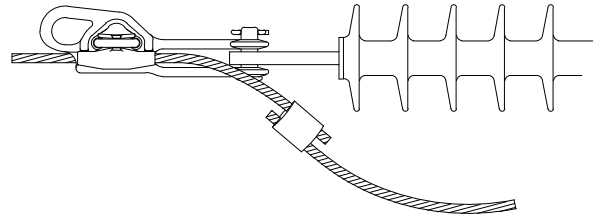


OPEN POSITION



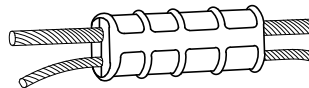
CLOSED POSITION

PREFERRED LOCATION FOR JUMPER CONNECTIONS

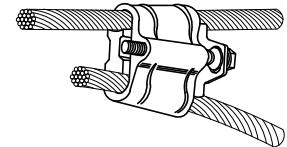


CONNECT JUMPER TO TAIL OF PRIMARY ON BACK SIDE OF DEADEND CLAMP

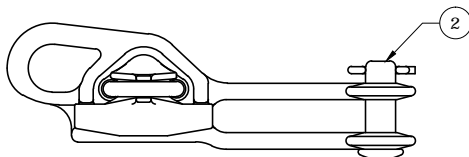
CONNECTOR DETAILS



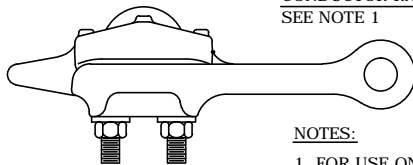
SEE DWG. 03.02-14



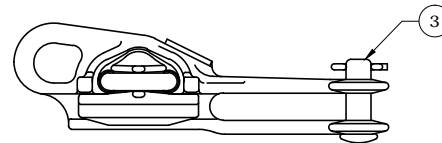
SEE DWG. 03.02-21



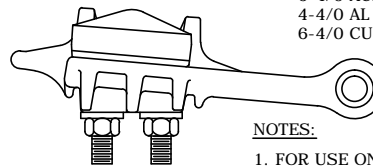
CONDUCTOR RANGE (0.410-0.880)
SEE NOTE 1



NOTES:
1. FOR USE ON 336.4.
2. TORQUE TO 45 FT. LBS.



CONDUCTOR RANGE (0.160-0.570)
6-4/0 ACSR
4-4/0 AL
6-4/0 CU



NOTES:
1. FOR USE ON CONDUCTORS #6 TO 4/0.
2. TORQUE TO 45 FT. LBS.

BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	1	DECLMP740AAACF	1	101125	1	CLAMP, DE, SO, 336.4-954 ACSR, 397.5-1000 AL
		DECLMP795AACF	1	101125	1	CLAMP, DE, SO, 336.4-954 ACSR, 397.5-1000 AL
	2	DECLMP336AACF	1	101119	1	CLAMP, DE, SO, 2/0-556.5 ACSR, 2/0-556.5AL
		DECLMP394AAACF	1	101119	1	CLAMP, DE, SO, 2/0-556.5 ACSR, 2/0-556.5AL
	3	DECLMPN4AAACF	1	100708	1	CLAMP, DE, SO, 6-4/0 ACSR, 6-4/0 CU, 4-4/0 AL
		DECLMPN2AAACF	1	100708	1	CLAMP, DE, SO, 6-4/0 ACSR, 6-4/0 CU, 4-4/0 AL
		DECLMP10AAACF	1	100708	1	CLAMP, DE, SO, 6-4/0 ACSR, 6-4/0 CU, 4-4/0 AL
		DECLMPN6CHDF	1	100708	1	CLAMP, DE, SO, 6-4/0 ACSR, 6-4/0 CU, 4-4/0 AL
		DECLMPN4CHDF	1	100708	1	CLAMP, DE, SO, 6-4/0 ACSR, 6-4/0 CU, 4-4/0 AL
		DECLMPN2CHDF	1	100708	1	CLAMP, DE, SO, 6-4/0 ACSR, 6-4/0 CU, 4-4/0 AL
		DECLMP10CHDF	1	100708	1	CLAMP, DE, SO, 6-4/0 ACSR, 6-4/0 CU, 4-4/0 AL
		DECLMP20CHDF	1	100708	1	CLAMP, DE, SO, 6-4/0 ACSR, 6-4/0 CU, 4-4/0 AL
		DECLMP40CHDF	1	100708	1	CLAMP, DE, SO, 6-4/0 ACSR, 6-4/0 CU, 4-4/0 AL
		4	SLCLMPN2AAACF	1	101392	1
	SLCLMP10AAACF		1	101392	1	CLAMP, STRAIN, SLACK, SPAN, 1/0, ALUMINUM, 0.30" - 0.62"
	SLCLMP40AAACF		1	101392	1	CLAMP, STRAIN, SLACK, SPAN, 1/0, ALUMINUM, 0.30" - 0.62"
	SLCLMP336AACF		1	101397	1	CLAMP, STRAIN, SLACK, SPAN, 795, ALUMINUM, 0.62" - 1.25"
	SLCLMP795AACF		1	101397	1	CLAMP, STRAIN, SLACK, SPAN, 795, ALUMINUM, 0.62" - 1.25"

3				
2				
1	3/28/11	CROWDER	BURLISON	ELKINS
0	11/8/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

PRIMARY AND NEUTRAL
DEAD END ASSEMBLIES



FLA

DWG.
03.03-04

BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	1	TRCLAMPN4AAACF	1	112459	1	CLAMP, ANGLE, LINE, POST, ANGLE, ALUMINUM, RANGE, 0.50-1.06"
	2	TRCLAMPN2AAACF	1	112459	1	CLAMP, ANGLE, LINE, POST, ANGLE, ALUMINUM, RANGE, 0.50-1.06"
	3	TRCLAMPN2CHDF	1	112543	1	CLAMP, LINE, POST, STRAIGHT, STEEL, RANGE, 0.25-0.56"
	4	TRCLAMP10AAACF	1	9220177156	1	CLAMP, GRIP, CUSHION, POST, LINE, 1/0-4/0, 0.375"-0.563"
	5	TRCLAMP10CHDF	1	112543	1	CLAMP, LINE, POST, STRAIGHT, STEEL, RANGE, 0.25-0.56"
	6	TRCLAMP20CHDF	1	112543	1	CLAMP, LINE, POST, STRAIGHT, STEEL, RANGE, 0.25-0.56"
	7	TRCLAMP40CHDF	1	112543	1	CLAMP, LINE, POST, STRAIGHT, STEEL, RANGE, 0.25-0.56"
	8	TRCLAMP336AACF	1	9220177098	1	CLAMP, GRIP, GRIP, CUSHION, POST, LINE, 266-477, 0.564"-0.883"
	9	TRCLAMP394AAACF	1	9220177098	1	CLAMP, GRIP, GRIP, CUSHION, POST, LINE, 266-477, 0.564"-0.883"
	10	TRCLAMP740AAACF	1	112462	1	CLAMP, ANGLE, CUSHION GRIP, LINE POST, ANGLE, ALUM, .887-1.1
	11	TRCLAMP795AACF	1	112462	1	CLAMP, ANGLE, CUSHION GRIP, LINE POST, ANGLE, ALUM, .887-1.1
	12	SCLMPN6CHDF	1	090802	1	CLAMP, ANGLE, SUSPENSION, ANGLE, STEEL, 0.16-0.60
	13	SCLMPN4AAACF	1	090306	1	CLAMP, ANGLE, SUSPENSION, ANGLE, ALUMINUM, 0.25-0.75"
	14	SCLMPN4CHDF	1	090802	1	CLAMP, ANGLE, SUSPENSION, ANGLE, STEEL, 0.16-0.60
	15	SCLMPN2AAACF	1	090306	1	CLAMP, ANGLE, SUSPENSION, ANGLE, ALUMINUM, 0.25-0.75"
	16	SCLMPN2CHDF	1	090802	1	CLAMP, ANGLE, SUSPENSION, ANGLE, STEEL, 0.16-0.60
	17	SCLMP10AAACF	1	090306	1	CLAMP, ANGLE, SUSPENSION, ANGLE, ALUMINUM, 0.25-0.75"
	18	SCLMP10CHDF	1	090802	1	CLAMP, ANGLE, SUSPENSION, ANGLE, STEEL, 0.16-0.60
	19	SCLMP20CHDF	1	090802	1	CLAMP, ANGLE, SUSPENSION, ANGLE, STEEL, 0.16-0.60
	20	SCLMP40CHDF	1	090802	1	CLAMP, ANGLE, SUSPENSION, ANGLE, STEEL, 0.16-0.60
	21	SCLMP336AACF	1	9220183513	1	CLAMP, SUSP, GRIP, CUSH, 0.661"-0.709"
	22	SCLMP394AACF	1	9220183511	1	CLAMP, SUSP, GRIP, CUSH, 0.710"-0.755"
	23	SCLMP740AACF	1	9220067202	1	CLAMP, SUSPENSION-CUSHION GRIP- RANGE 0.981" TO 1.027"
	24	SCLMP795AACF	1	9220067202	1	CLAMP, SUSPENSION-CUSHION GRIP- RANGE 0.981" TO 1.027"

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0	11/8/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

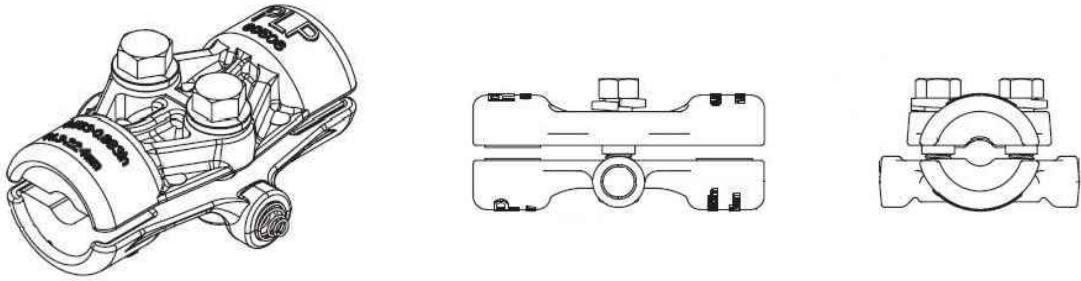
SUSPENSION ANGLE, LINE POST ANGLE
AND STRAIGHT LINE CLAMPS



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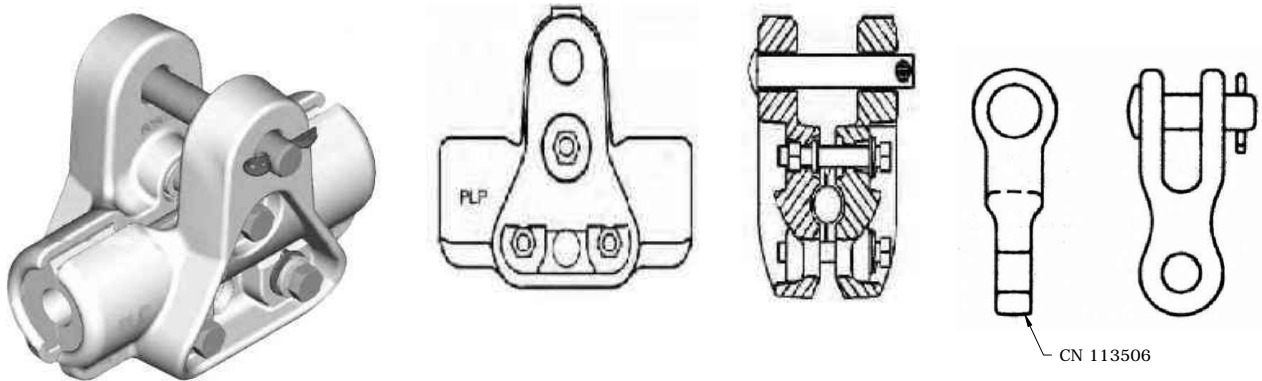
DWG.
03.03-06

CUSHION GRIP TRUNNION CLAMP



BILL OF MATERIALS					
CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
1	TCGCLMP40ALF	1	9220177156	1	CLAMP, GRIP, CUSHION, TRUNNION, #2-4/0
1	TCGCLMP477ALF	1	9220177098	1	CLAMP, GRIP, CUSHION, TRUNNION, 266-477
1	TCGCLMP954ALF	1	9220242115	1	CLAMP, GRIP, CUSHION, TRUNNION, 556-954

CUSHION GRIP SUSPENSION CLAMP



BILL OF MATERIALS					
CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
1	SCGCLMP40ALF	1	9220242394	1	CLAMP, GRIP, CUSHION, SUSP, #2-4/0
			113506	1	CLEVIS, EYE, 90 DEGREES
1	SCGCLMP477ALF	1	9220242181	1	CLAMP, GRIP, CUSHION, SUSP, 266-477
			113506	1	CLEVIS, EYE, 90 DEGREES
1	SCGCLMP954ALF	1	9220183508	1	CLAMP, GRIP, CUSHION, SUSP, 556-954
			113506	1	CLEVIS, EYE, 90 DEGREES

NOTES:

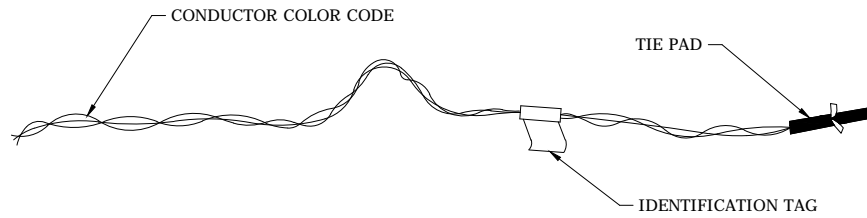
1. CUSHION GRIPS DO NOT REQUIRE ARMOR RODS.
2. ANGLES ARE LIMITED TO 30 DEGREES WITH CUSHION GRIPS. FOR ANGLES LARGER THAN 30 DEGREES, DOUBLE DEAD END CONDUCTORS AND USE JUMPERS.
3. CUSHION GRIPS ARE FOR USE WITH ALUMINUM CONDUCTORS ONLY.
4. 90 DEGREE CLEVIS EYE IS REQUIRED FOR USE WITH CUSHION GRIPS ON POLYMER SUSPENSION.



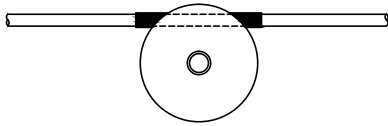
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REVISED	BY	CK'D	APPR.	

CUSHION GRIPS

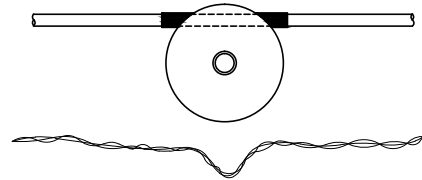
DEC	DEM	DEP	DEF
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03.03-08			



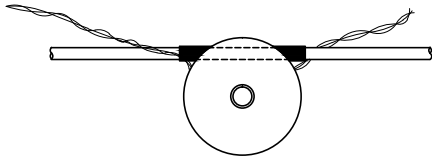
EZ-WRAP SPOOL TIE AS RECEIVED IN THE FIELD



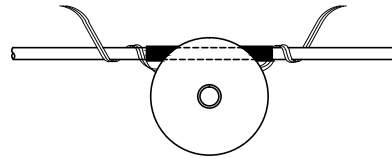
STEP 1: APPLY TIE PAD ON THE CONDUCTOR AND POSITION IT BETWEEN THE CONDUCTOR AND INSULATOR, MAKING SURE THE SLIT DOES NOT FACE THE INSULATOR.



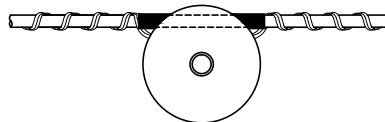
STEP 2: POSITION THE TIE LOOP UNDER THE INSULATOR SO THE LEGS ARE PARALLEL TO THE CONDUCTOR AS SHOWN.



STEP 3: PLACE THE LOOP TIGHTLY UP AGAINST THE INSULATOR'S GROOVE AND POSITION THE TIE LEGS, AS SHOWN, SO THEY CAN BE APPLIED TO THE CONDUCTOR.



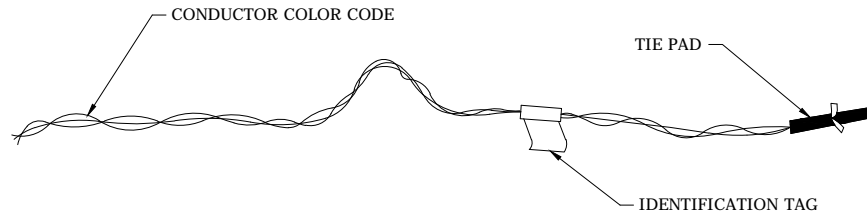
STEP 4: APPLY THE LEGS BY WRAPPING THEM AROUND THE CONDUCTOR. MAKE SURE TO SNAP THE LEG ENDS INTO PLACE TO COMPLETE THE APPLICATION. MAKE SURE THE TIE LOOP IS TIGHT ON THE INSULATOR NECK.



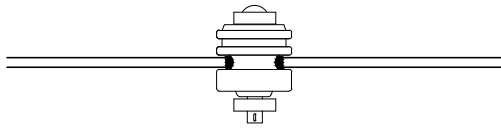
STEP 5: COMPLETED APPLICATION OF EZ-WRAP SPOOL TIE

3				
2				
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0	5/21/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

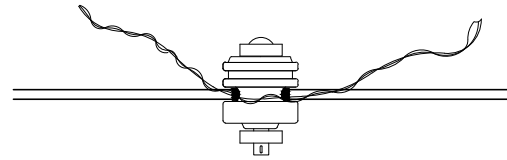
INSTALLATION GUIDE -
EZ-WRAP SPOOL TIE
HORIZONTAL POSITION



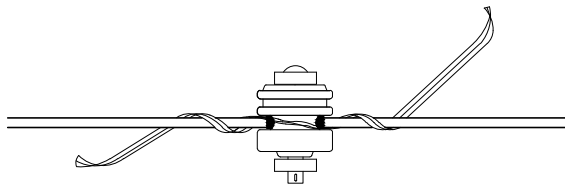
EZ-WRAP SPOOL TIE AS RECEIVED IN THE FIELD



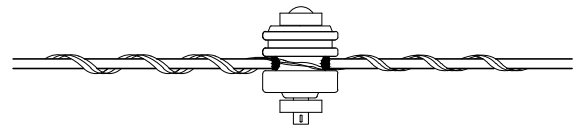
STEP 1: IN MOST CASES THE CONDUCTOR SHOULD BE PLACED BETWEEN THE INSULATOR AND THE STRUCTURE SO IT IS INSIDE THE CLEVIS, AS SHOWN. APPLY THE TIE PAD ON THE CONDUCTOR AND POSITION IT BETWEEN THE CONDUCTOR AND INSULATOR, MAKING SURE THE SLIT DOES NOT FACE THE INSULATOR.



STEP 2: POSITION THE TIE LOOP TIGHTLY AGAINST THE INSULATOR'S GROOVE, ON THE OPPOSITE SIDE FROM THE CONDUCTOR, AS SHOWN.



STEP 3: APPLY THE LEGS BY WRAPPING THEM AROUND THE CONDUCTOR. MAKE SURE TO SNAP THE LEG ENDS INTO PLACE TO COMPLETE THE APPLICATION. MAKE SURE THE TIE LOOP IS TIGHT ON THE INSULATOR NECK.



STEP 4: COMPLETED APPLICATION OF EZ-WRAP SPOOL TIE

NOTES:

1. IF IT IS NECESSARY TO POSITION THE CONDUCTOR ON THE OUTSIDE OF THE CLEVIS AND INSULATOR, SUCH SUCH AS WHEN LINE ANGLES TURN INTO THE POLE, POSITION THE TIE ON THE INSIDE OF THE CLEVIS PRIOR TO APPLICATION. OTHERWISE FOLLOW THE SAME STEPS AS BEFORE.

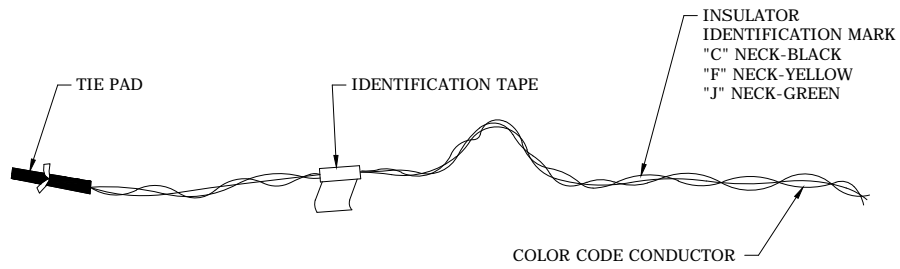
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0	5/21/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

INSTALLATION GUIDE
EZ-WRAP SPOOL TIE
VERTICALLY MOUNTED INSULATORS

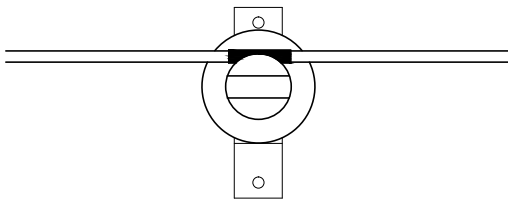


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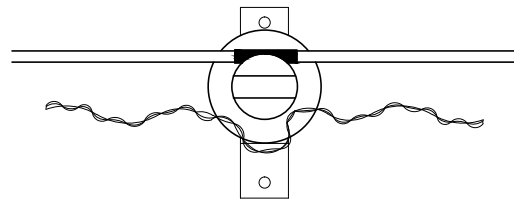
DWG.
03.04-03



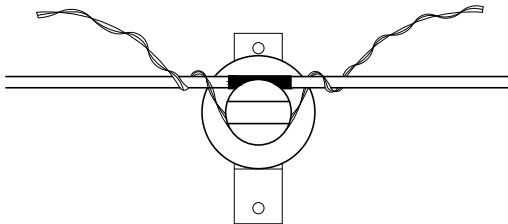
EZ-WRAP SIDE TIE AS RECEIVED IN THE FIELD



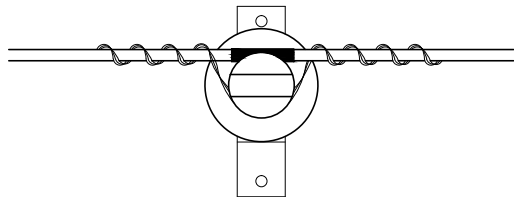
STEP 1: APPLY TIE PAD ON TO CONDUCTOR, SLIT FACING UP SO THAT CONDUCTOR DOES NOT COME INTO DIRECT CONTACT WITH THE INSULATOR.



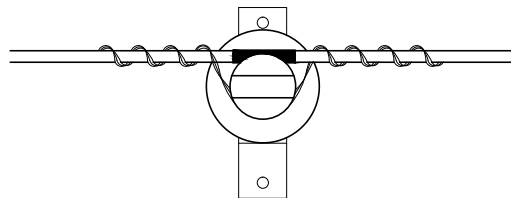
STEP 2: ALIGN THE EZ-WRAP SIDE TIE WITH THE CONDUCTOR. MAKE SURE THE TIE LOOP OF THE EZ-WRAP SIDE TIE IS FACING AWAY FROM THE CONDUCTOR AS SHOWN.



STEP 3: PLACE THE EZ-WRAP SIDE TIE IN POSITION AND START WRAPPING THE LEGS. NOTICE ONE LEG GOES OVER THE CONDUCTOR WHILE THE OTHER GOES UNDER THE CONDUCTOR.



STEP 4: WRAP BOTH LEGS COMPLETELY, SNAPPING THE ENDS IN PLACE WITH THUMB PRESSURE. MAKE SURE THE TIE LOOP IS TIGHT ON INSULATOR NECK AND UNDER INSULATOR HEAD.

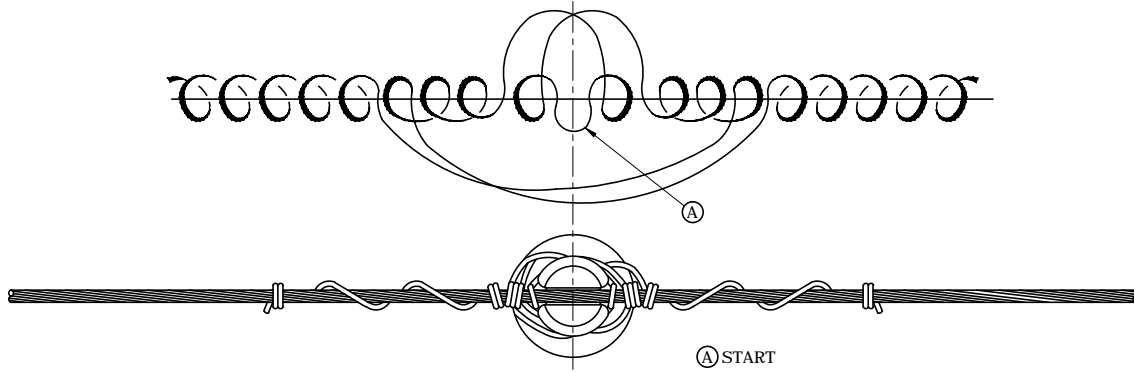


STEP 5: COMPLETED APPLICATION OF EZ-WRAP SIDE TIE

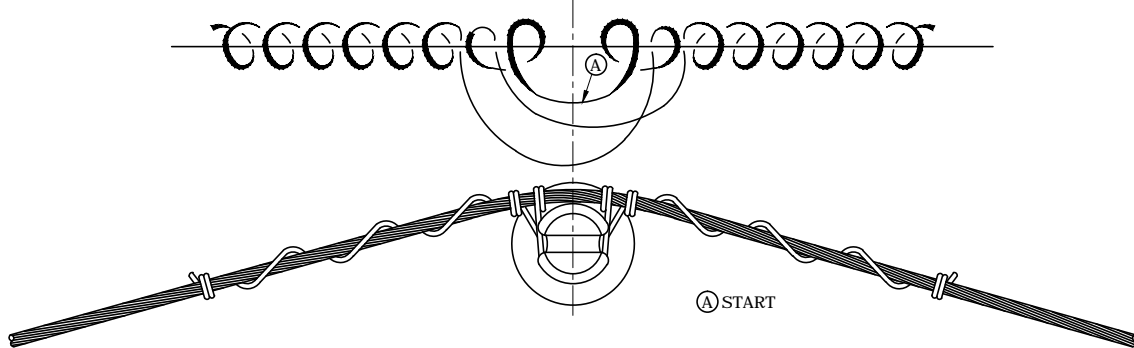
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2				
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0	5/21/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

INSTALLATION GUIDE -
PRIMARY EZ-WRAP SIDE TIES

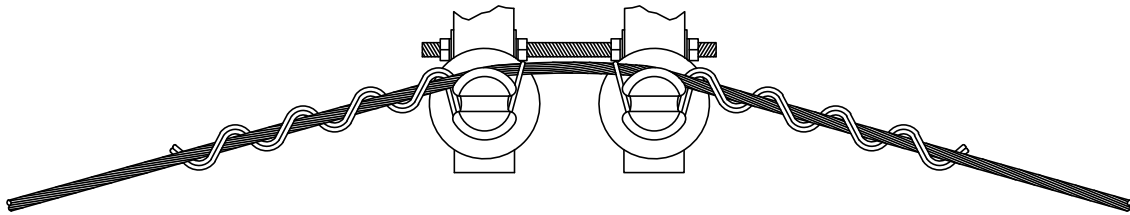
TOP GROOVE TIE



SIDE GROOVE TIE

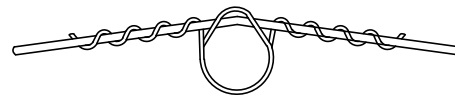
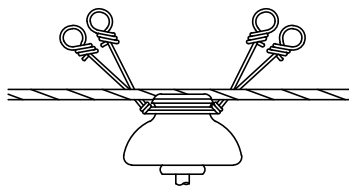
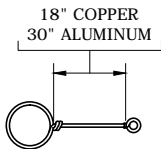


SIDE OR TOP GROOVE - TWO INSULATORS



SIDE OR TOP HOT TIE

SPOOL TIE



NOTES:

1. FACTORY FORMED TIES ARE THE PREFERRED METHOD FOR ATTACHING PRIMARY CONDUCTORS WHEN ACCESSIBLE BY TRUCK.
2. ON ALL HAND/HOT TIES MAKE FIRST WRAP AS CLOSE TO INSULATOR AS POSSIBLE, AND MAKE A MINIMUM OF 4 WRAPS ON EACH SIDE OF THE INSULATOR.
3. TIE WIRE: CU - #6 SD CU.
AL - #4 SD AL.

HAND TIES

COMPATIBLE UNIT	CATALOG NUMBER	DESCRIPTION
HTIEN4AACF	11060100	WIRE, AL, SLD, BR, SDW, #4, TIEWIRE
HTIEN6CSDF	11061009	WIRE, CU, BR, SDW, SLD, #6

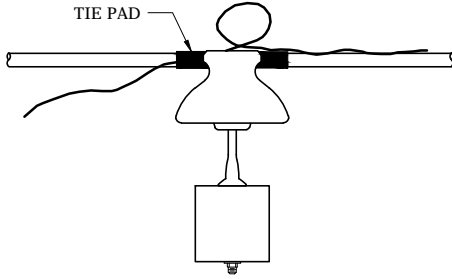
3				
2				
1	3/24/14	GUINN	GUINN	ADCOCK
0	11/8/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

CONDUCTOR HAND TIES

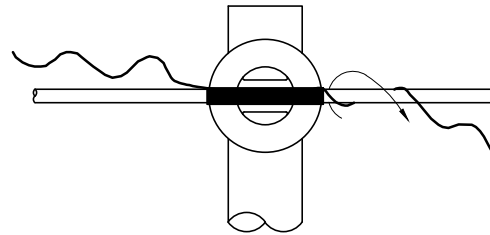


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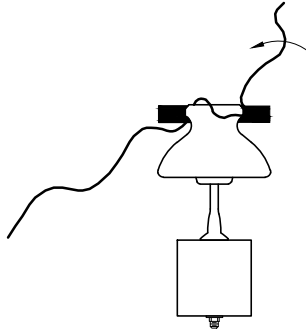
DWG.
03.04-07



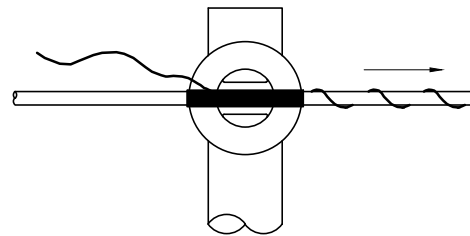
1. POSITION DISTRIBUTION TIE ON INSULATOR AS SHOWN, WITH BOTH LEGS PARALLEL TO THE CONDUCTOR.



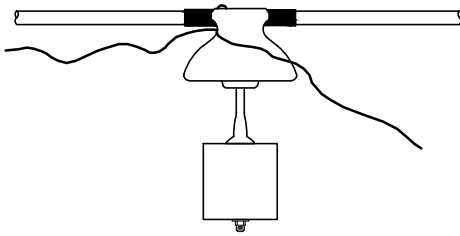
4. START TO WRAP ON ONE LEG OF THE DISTRIBUTION TIE AS SHOWN.



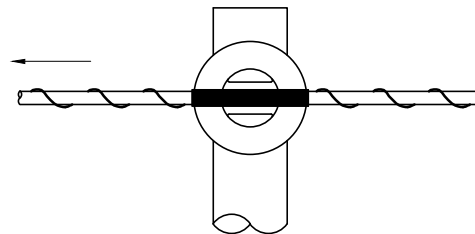
2. ROTATE THE DISTRIBUTION TIE IN A COUNTER-CLOCKWISE DIRECTION, MAKING CERTAIN THAT BOTH LEGS GO UNDER THE CONDUCTOR AS SHOWN.



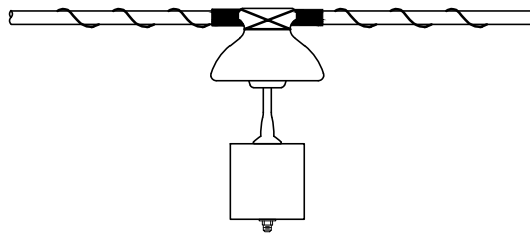
5. CONTINUE TO APPLY THE FIRST LEG TO COMPLETION. BE SURE TO SNAP THE END OF THE LEG INTO PLACE WITH SLIGHT THUMB PRESSURE.



3. CONTINUE TO ROTATE THE LEGS AND THE DISTRIBUTION TIE WILL SEAT ITSELF AS SHOWN.



6. WRAP ON THE OTHER LEG OF THE DISTRIBUTION TIE AS SHOWN AND SNAP THE LEG INTO POSITION IN THE SAME MANNER.



7. COMPLETED APPLICATION OF THE DISTRIBUTION TIE.

3				
2				
1				
0	7/7/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TOP TIE

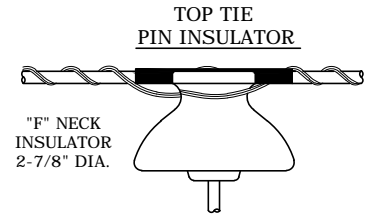
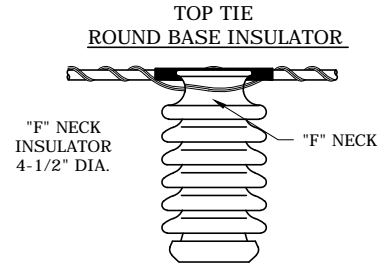


PGN

DWG.
03.04-08

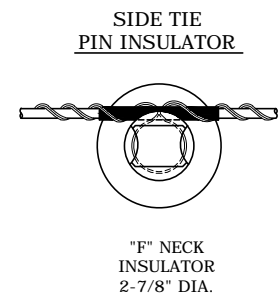
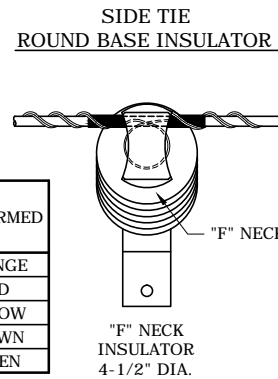
COMPATIBLE UNIT	CATALOG NUMBER	DESCRIPTION	CHANCE	PREFORMED
TTIEF10ALF	121415	TIE, TOP F NECK 1/0 AL	YELLOW	YELLOW
TTIEF336ALF	121417	TIE, TOP F NECK 336 AL	BROWN	BROWN
TTIEF394ALF	121417	TIE, TOP F NECK 336 AL	BROWN	BROWN
TTIEF740ALF	121418	TIE, TOP F NECK 795 AL	GREEN	GREEN
TTIEF795ALF	121418	TIE, TOP F NECK 795 AL	GREEN	GREEN
TTIEFN2ALF	11148400	TIE, TOP, F NECK, #2 AL	-	RED
TTIEFN4ALF	121411	TIE, TOP F NECK 4 AL	ORANGE	ORANGE
TTIEF500COVALPF	9220068094	TIE, PLASTIC, 2-7/8", F-NECK, INS	-	RED

NOTE: COLOR CODE DESIGNATES WIRE SIZE



COMPATIBLE UNIT	CATALOG NUMBER	DESCRIPTION	CHANCE	PREFORMED
STIEFN4ALF	121423	SIDE TIE, F NECK, #4 ALUMINUM	ORANGE	ORANGE
STIEFN2ALF	11158102	SIDE TIE, F NECK, #2 ALUMINUM	-	RED
STIEF10ALF	121426	SIDE TIE, F NECK, 1/0 ALUMINUM	YELLOW	YELLOW
STIEF336ALF	121429	SIDE TIE, F NECK, 336 KCM ALUMINUM	-	BROWN
STIEF795ALF	121434	SIDE TIE, F NECK, 795 KCM ALUMINUM	-	GREEN

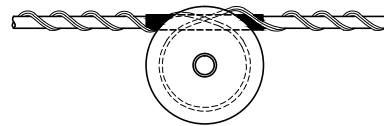
NOTE: COLOR CODE DESIGNATES WIRE SIZE



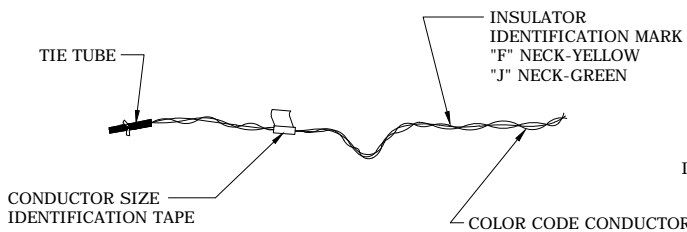
NOTE: 795 WILL NOT FIT IN THE SIDE GROOVE OF THIS PIN INSULATOR

COMPATIBLE UNIT	CATALOG NUMBER	DESCRIPTION	CHANCE	PREFORMED
NEUSPTIEN4ALF	121463	FORMED SPOOL TIE, #4 ALUMINUM	ORANGE	ORANGE
NEUSPTIEN2ALF	9220109798	FORMED SPOOL TIE, #2 ALUMINUM	RED	RED
NEUSPTIE10ALF	121466	FORMED SPOOL TIE, 1/0 ALUMINUM	YELLOW	YELLOW

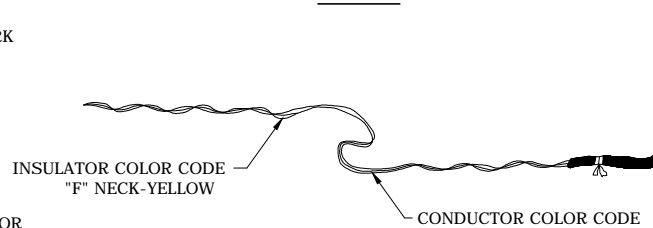
NOTE: COLOR CODE DESIGNATES WIRE SIZE



EZ-WRAP
PRIMARY SIDE AND SPOOL TIE



TOP TIE



NOTES:

1. FACTORY FORMED TIES ARE SUITABLE FOR USE ON ALL SPAN LENGTHS.
2. ALL TIES SHOULD FIT TIGHTLY AROUND THE INSULATOR.
3. POSITION SPLIT IN PAD AWAY FROM PORCELAIN ON FACTORY TIES.
4. USE HAND TIES ON NEUTRAL, SECONDARY, AND PRIMARY CONDUCTORS OTHER THAN ALUMINUM.
5. ATTACHMENT OF ALUMINUM CONDUCTORS TO DISTRIBUTION POST AND PIN INSULATORS WILL BE MADE USING A FACTORY-FORMED GRIP WITH A PROTECTIVE PAD. THIS PREFERRED METHOD OF CONDUCTOR ATTACHMENT PROVIDES BOTH MAXIMUM HOLDING STRENGTH AND CONDUCTOR PROTECTION, WHICH ENSURES LONG-LASTING CONSTRUCTION. IF A FACTORY-FORMED GRIP IS NOT AVAILABLE, THEN A HAND TIE WITH AN ARMOR ROD MUST BE USED. ARMOR RODS SHALL ALSO BE USED WHEN INSTALLING ALUMINUM PRIMARY CONDUCTORS IN CLAMP-TYPE INSULATORS (EXCEPT FOR SLACK SPANS).



DEC	DEM	DEP	DEF
			X

FACTORY FORMED CONDUCTOR TIES

03.04-09

3				
2	10/29/14	LOOSIER	DANNA	ADCOCK
1	10/18/12	WONARG/WSK	BURLISON	ADCOCK
0	11/8/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	1	ARN2AAACF	1	11150208	1	ROD, ARMOR, #2AAAC, ARMOR ROD SET, 0.136 INCH DIAMETER
	2	AR10AAACF	1	121117	1	ROD, ARMOR, #1/0AAAC, ARMOR ROD SET, 0.167 INCH DIAMETER
	3	AR336AAACF	1	121157	1	ROD, ARMOR, 336.4AAC, ARMOR ROD SET, 0.666 INCH DIAMETER
	4	AR795AAACF	1	121167	1	ROD, ARMOR, 795AAC, ARMOR ROD SET, 1.026 INCH DIAMETER

NOTES:

1. CONDUCTOR DIAMETER WITH ARMOR RODS WILL BE CONDUCTOR DIAMETER PLUS TWO TIMES ARMOR ROD DIAMETER.
2. DO NOT RE-USE ARMOR RODS AFTER INITIAL INSTALLATION.

3				
2				
1				
0	11/8/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

ARMOR RODS



FLA

DWG.
03.04-11



INDICATOR TRIP (AMPS)	COMPATIBLE UNIT	CATALOG NUMBER	PHASE	RESET CURRENT (AMPS)
*300 DI/DT	FCIORDLE8AFF	323469	A	8
*300 DI/DT	FCIORDLE8BFF	323470	B	8
*300 DI/DT	FCIORDLE8CFF	323471	C	8

*SEE NOTE 4

DESCRIPTION AND OPERATION

1. FAULT INDICATOR - INDICATOR LED WILL LIGHT UP WHEN FAULTED. MAY ALSO BE LOCATED WITH RADIO RECEIVER UNIT (CN 323473), WHICH RECEIVES SIGNALS FROM TRANSMITTER IN FAULT INDICATOR THAT IS PRE-PROGRAMMED FOR EACH PHASE.
2. RESET - INDICATOR RESETS IF 8A OR MORE OF CURRENT IS RESTORED, AFTER 4 HOURS IF POWER IS NOT RESTORED, OR IF RESET MANUALLY (MANUAL TRIP AND RESET TOOL IS HOOKSTICK OPERATED).
3. MOUNTING - HOTSTICK MOUNTED WITH AUTOMATIC TORQUE LIMITER.
4. ADAPTIVE TRIP - INDICATOR USES AN ADAPTIVE TRIP, WHICH TRIPS WHEN A CHANGE IN CURRENT OF 300A OR GREATER IS INDICATED IN A 150 MSEC. TIME FRAME FOLLOWED BY A LOSS OF CURRENT.
5. OPERATING POWER - BATTERY REPLACEMENT REQUIRED EVERY 5 YEARS.

APPLICATION

6. OVERHEAD FEEDERS ON VOLTAGES UP TO 38 KV - AS DIRECTED BY ENGINEERING.
7. INDICATOR IS CALIBRATED FOR USE ON #6 THROUGH 795 ALUMINUM CONDUCTORS AND #6 THROUGH 750 COPPER CONDUCTORS (.14 THROUGH 1.2 DIAMETER CONDUCTORS).

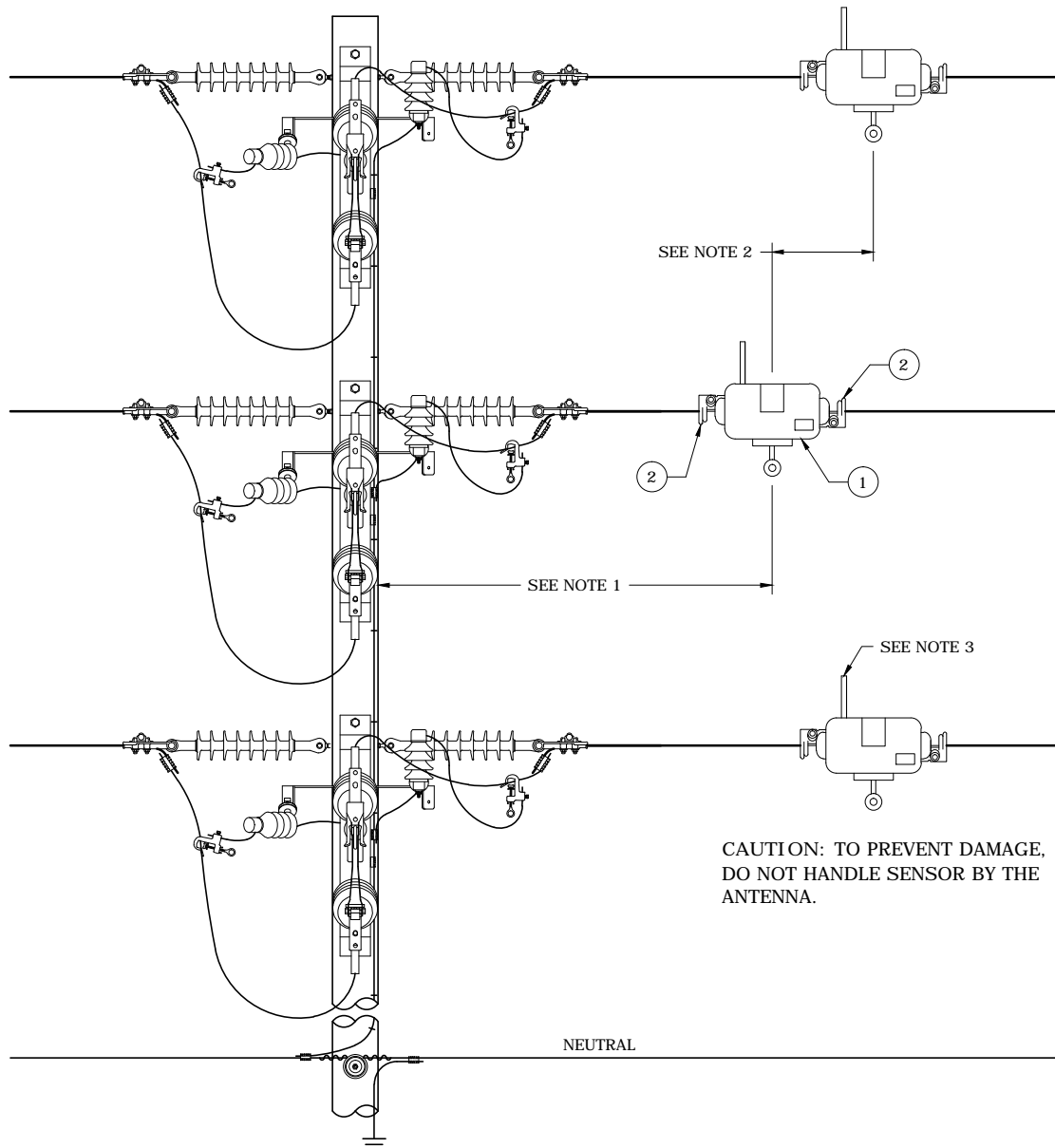
3				
2				
1				
0	10/5/12	WONAROWSKI	BURLISON	ADCOCK
REVISED	BY	CK'D	APPR.	

FAULT INDICATOR, SINGLE-PHASE,
OVERHEAD, AUTO-RESET



FLA

DWG.
03.05-01



BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
-	1	MVSTGLINEVZ3GF	3	9220267166	1	SENSOR, CURRENT, MV, TOLLGRADE LIGHTHOUSE CELLULAR
-	2	KHLC40N6F	6	9220184790	1	CLAMP, HOT LINE, ALUM SMALL, #6 - 4/0
-	2	KHLC7933F	6	9220184794	1	CLAMP, HOT LINE, ALUM SMALL, 336-795

NOTES:

1. INSTALL ALL LINE SENSORS APPROXIMATELY 10-12' FROM POLE TO ALLOW FOR EASE OF COVERUP.
2. STAGGER SENSORS SO THEY ARE NOT DIRECTLY UNDER THE ONE ABOVE.
3. INSTALL SO THAT ANTENNA IS AS CLOSE TO VERTICAL AS POSSIBLE.
4. SENSOR CAN BE INSTALLED IN ANY SPAN; HOWEVER THEY WILL USUALLY BE INSTALLED ADJACENT TO SWITCHES OR SINGLE-PHASE RECLOSERS. DO NOT CHANGE LOCATION WITHOUT CONSULTING ENGINEERING
5. INSTALL IN LOCATIONS THAT ARE BUCKET TRUCK ACCESSIBLE.
6. INSTALL ALUMINUM HOT LINE CLAMPS ON BOTH SIDES OF SENSOR. INSTALL THEM UP AGAINST THE SENSOR.
7. TOLLGRADE SENSORS WILL FIT ON ALL CONDUCTORS UP TO AND INCLUDING 795KCM AL. THEY TIGHTEN IN TWO STAGES. STAGE 1 BRINGS THE TWO HALVES OF THE BODIES TOGETHER. STAGE 2 CLAMPS DOWN ON THE WIRE. BE CAREFUL NOT TO OVERTIGHTEN.

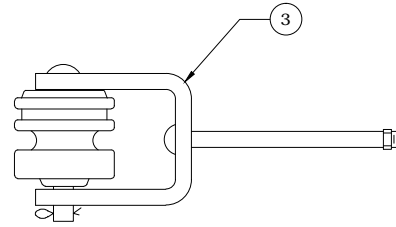
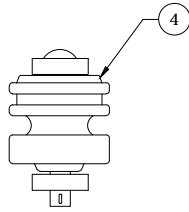
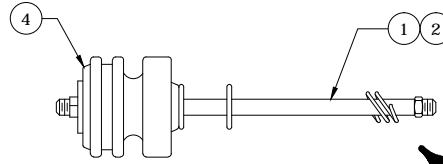
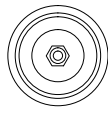


3				
2				
1				
0	9/12/14	BURLISON	DANNA	ADCOCK
REVISED	BY	CK'D	APPR.	

TOLLGRADE SENSORS

DEC	DEM	DEP	DEF
			X

03.05-02



BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	ITEM NUMBER	QTY PER CU	DESCRIPTION
	1	NSSB10F	1	011280	1	BOLT, SPOOL, 5/8" X 10", GALV, DUI WASHERS, W/ALL HARDWARE
			1	013264	1	WASHER, SPRING, COIL, STEEL, FOR 5/8" BOLT, GALV.
			1	013308	1	WASHER, SQUARE, 2-1/4", SQUARE, FLAT, 13/16", HOLE, GALV.
	2	NSSB12F	1	011282	1	BOLT, SPOOL, 5/8" X 12", GALV, DUI WASHERS, W/ALL HARDWARE
			1	013264	1	WASHER, SPRING, COIL, STEEL, FOR 5/8" BOLT, GALV.
			1	013308	1	WASHER, SQUARE, 2-1/4", SQUARE, FLAT, 13/16", HOLE, GALV.
	3	NSSCF	1	013308	1	WASHER, SQUARE, 2-1/4", SQUARE, FLAT, 13/16", HOLE, GALV.
			1	070402	1	BRACKET, ONE WIRE, NO, INSULATOR, GALVANIZED
			1	152107	1	BOLT, MACHINE, SQ. NUT, 5/8" X 12"
4	ISPLF	1	080403	1	INSULATOR, SPOOL, 3"	

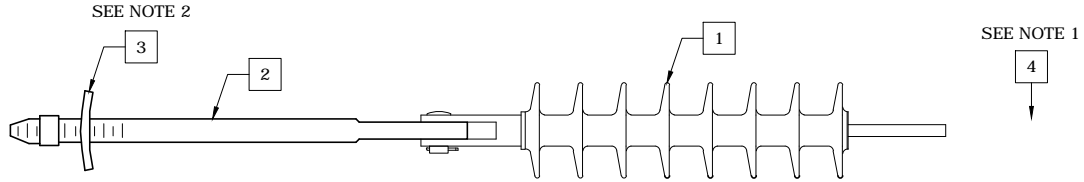


3				
2	11/17/15	LOOSIER	BURLISON	ADCOCK
1	9/14/12	GUINN	BURLISON	ADCOCK
0	11/8/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

NEUTRAL SPOOL

DEC	DEM	DEP	DEF
			X
03.06-01			

27 KV POLYMER



COMPATIBLE UNIT	COMPATIBLE UNIT DESCRIPTION	ITEM NO	CATALOG NUMBER	DESCRIPTION	QTY
ISEYEBOLT5810F	INSULATOR SUPPORT EYEBOLT 5/8" X 10"	2	011708	BOLT, OVAL EYE, 5/8" X 10"	1
		3	013346	WASHER, 3" SQ., CURVED, 13/16" HOLE	1
ISEYEBOLT5812F	INSULATOR SUPPORT EYEBOLT 5/8" X 12"	2	011709	BOLT, OVAL EYE, 5/8" X 12"	1
		3	013346	WASHER, 3" SQ., CURVED, 13/16" HOLE	1
ISEYEBOLT5814F	INSULATOR SUPPORT EYEBOLT 5/8" X 14"	2	011710	BOLT, OVAL EYE, 5/8" X 14"	1
		3	013346	WASHER, 3" SQ., CURVED, 13/16" HOLE	1
ISEYEBOLT5816F	INSULATOR SUPPORT EYEBOLT 5/8" X 16"	2	011711	BOLT, OVAL EYE, 5/8" X 16"	1
		3	013346	WASHER, 3" SQ., CURVED, 13/16" HOLE	1
ISEYENUT58F	INSULATOR SUPPORT, EYENUT, 5/8"	2	012210	NUT, OVAL EYE, GALV, 5/8", 1-1/2X1-3/4	1

COMPATIBLE UNIT	COMPATIBLE UNIT DESCRIPTION	ITEM NO	CATALOG NUMBER	DESCRIPTION	QTY
IDES25PF	INSULATOR DEADEND/SUSPENSION 25 KV POLY	1	080577	INSULATOR, POLYMER, 25KV, DE, SI, RATED 15K	1

COMPATIBLE UNIT	COMPATIBLE UNIT DESCRIPTION	ITEM NO	CATALOG NUMBER	DESCRIPTION	QTY
DECLMPN6CHDF	DEADEND CLAMP #6 CU HARD DRAWN	4	100708	CLAMP, DE, SO, 6-4/0 CU, 4-4/0 AL	1
DECLMPN4CHDF	DEADEND CLAMP #4 CU HARD DRAWN	4	100708	CLAMP, DE, SO, 6-4/0 CU, 4-4/0 AL	1
DECLMPN2CHDF	DEADEND CLAMP #2 CU HARD DRAWN	4	100708	CLAMP, DE, SO, 6-4/0 CU, 4-4/0 AL	1
DECLMP10CHDF	DEADEND CLAMP 1/0 CU HARD DRAWN	4	100708	CLAMP, DE, SO, 6-4/0 CU, 4-4/0 AL	1
DECLMP20CHDF	DEADEND CLAMP 2/0 CU HARD DRAWN	4	100708	CLAMP, DE, SO, 6-4/0 CU, 4-4/0 AL	1
DECLMP40CHDF	DEADEND CLAMP 4/0 CU HARD DRAWN	4	100708	CLAMP, DE, SO, 6-4/0 CU, 4-4/0 AL	1
DECLMPN4AAACF	DEADEND CLAMP #4 AAAC	4	100708	CLAMP, DE, SO, 6-4/0 CU, 4-4/0 AL	1
DECLMPN2AAACF	DEADEND CLAMP #2 AAAC	4	100708	CLAMP, DE, SO, 6-4/0 CU, 4-4/0 AL	1
DECLMP10AAACF	DEADEND CLAMP 1/0 AAAC	4	100708	CLAMP, DE, SO, 6-4/0 CU, 4-4/0 AL	1
DECLMP336AAACF	DEADEND CLAMP 336 KCM AAC	4	101119	CLAMP, DE, SO, 2/0-556.5 ACSR, 2/0-556.5 AL	1
DECLMP394AAACF	DEADEND CLAMP 394 KCM AAAC	4	101119	CLAMP, DE, SO, 2/0-556.5 ACSR, 2/0-556.5 AL	1
DECLMP740AAACF	DEADEND CLAMP 740 KCM AAAC	4	101125	CLAMP, DE, SO, 336.4-954 ACSR, 397.5-1000AL	1
DECLMP795AAACF	DEADEND CLAMP 795 KCM AAC	4	101125	CLAMP, DE, SO, 336.4-954 ACSR, 397.5-1000AL	1

COMPATIBLE UNIT	COMPATIBLE UNIT DESCRIPTION	ITEM NO	CATALOG NUMBER	DESCRIPTION	QTY
SCLMPN6CHDF	SUSPENSION CLAMP #6 CU HARD DRAWN	4	090802	CLAMP, SUSPENSION, ANGLE, 0.16-0.60	1
SCLMPN4CHDF	SUSPENSION CLAMP #4 CU HARD DRAWN	4	090802	CLAMP, SUSPENSION, ANGLE, 0.16-0.60	1
SCLMPN2CHDF	SUSPENSION CLAMP #2 CU HARD DRAWN	4	090802	CLAMP, SUSPENSION, ANGLE, 0.16-0.60	1
SCLMP10CHDF	SUSPENSION CLAMP 1/0 CU HARD DRAWN	4	090802	CLAMP, SUSPENSION, ANGLE, 0.16-0.60	1
SCLMP20CHDF	SUSPENSION CLAMP 2/0 CU HARD DRAWN	4	090802	CLAMP, SUSPENSION, ANGLE, 0.16-0.60	1
SCLMP40CHDF	SUSPENSION CLAMP 4/0 CU HARD DRAWN	4	090802	CLAMP, SUSPENSION, ANGLE, 0.16-0.60	1
SCLMPN4AAACF	SUSPENSION CLAMP #4 AAAC	4	090306	CLAMP, SUSP, ANGLE, ALUMINUM, 0.25-0.75"	1
SCLMPN2AAACF	SUSPENSION CLAMP #2 AAAC	4	090306	CLAMP, SUSP, ANGLE, ALUMINUM, 0.25-0.75"	1
SCLMP10AAACF	SUSPENSION CLAMP 1/0 AAAC	4	090306	CLAMP, SUSP, ANGLE, ALUMINUM, 0.25-0.75"	1
SCLMP336AAACF	SUSPENSION CLAMP 336 KCM AAC	4	9220183513	CLAMP, SUSP, GRIP, CUSH, 0.661"-0.709"	1
SCLMP394AAACF	SUSPENSION CLAMP 394 KCM AAAC	4	9220183511	CLAMP, SUSP, GRIP, CUSH, 0.710"-0.755"	1
SCLMP740AAACF	SUSPENSION CLAMP 740 KCM AAAC	4	9220067202	CLAMP, SUSP, GRIP, CUSH, 0.981"-1.027"	1
SCLMP795AAACF	SUSPENSION CLAMP 795 KCM AAC	4	9220067202	CLAMP, SUSP, GRIP, CUSH, 0.981"-1.027"	1

NOTES:

- DEADEND AND SUSPENSION CLAMP NOT SHOWN.
- USE 2-1/4" SQUARE WASHER ON 1/0 AAAC CONDUCTOR AND SMALLER AND 3" CURVE WASHER FOR CONDUCTORS LARGER THAN 1/0 AAAC.

3				
2				
1				
0	11/4/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

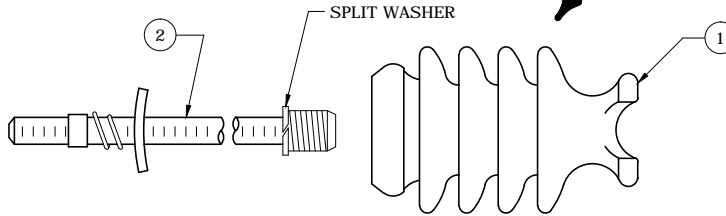
POLYMER DEADEND COMPATIBLE UNIT



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03.06-02

INSULATOR, POST 15/25 KV

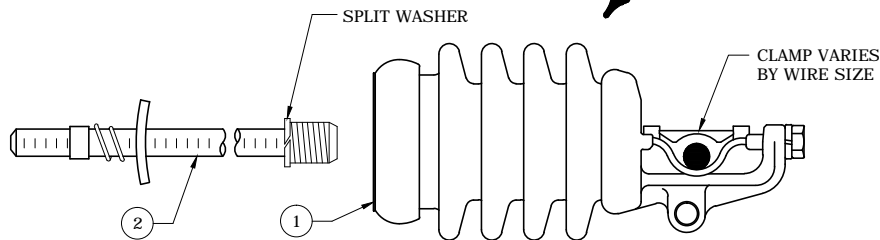


BILL OF MATERIALS						
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	1	IHPTT15F	1	080212	1	INSULATOR, POST TIE 3/4 15/25KV
	2	ISSTUDBOLT5810F	1	072366	1	STUD, 5/8" X 10", 3/4" HEAD
				013264	1	WASHER, SPRING COIL, 5/8"

NOTES:

1. POLE GAINS (ISGAINGRIDF FOR 15/25KV INSULATORS OR ISGAINGRID55F FOR 35KV INSULATORS) ARE REQUIRED FOR POST INSULATOR INSTALLATIONS ON WOOD POLES WHEN THE POLE DOES NOT HAVE A SLAB GAIN FOR ALL CONDUCTOR SIZES. WHEN THE CONDUCTOR IS 336.4 KCMIL OR LARGER, USE POLE GAIN EVEN IF SLAB GAIN EXISTS. POLE GAINS ARE NOT REQUIRED FOR INSULATORS USED FOR JUMPERS. SLACK SPANS WITH 336 AND 795 CONDUCTORS REQUIRE A POLE GAIN.

INSULATOR, CLAMP TOP, 15 /25KV



BILL OF MATERIALS						
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	1	IHPCLT15F	1	080232	1	INSULATOR, POST CLAMP, HORIZONTAL, 15/25KV
	2	ISSTUDBOLT5810F	1	072366	1	STUD, 5/8" X 10", 3/4" HEAD
				013264	1	WASHER, SPRING COIL, 5/8"

NOTES:

1. POLE GAINS (ISGAINGRIDF FOR 15/25KV INSULATORS OR ISGAINGRID55F FOR 35KV INSULATORS) ARE REQUIRED FOR POST INSULATOR INSTALLATIONS ON WOOD POLES WHEN THE POLE DOES NOT HAVE A SLAB GAIN FOR ALL CONDUCTOR SIZES. WHEN THE CONDUCTOR IS 336.4 KCMIL OR LARGER, USE POLE GAIN EVEN IF SLAB GAIN EXISTS. POLE GAINS ARE NOT REQUIRED FOR INSULATORS USED FOR JUMPERS. SLACK SPANS WITH 336 AND 795 CONDUCTORS REQUIRE A POLE GAIN.

3				
2				
1	4/12/13	McCONNELL	DANNA	ADCOCK
0	11/8/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

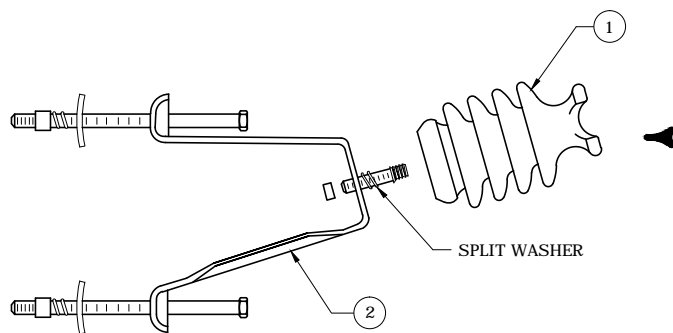
INSULATORS




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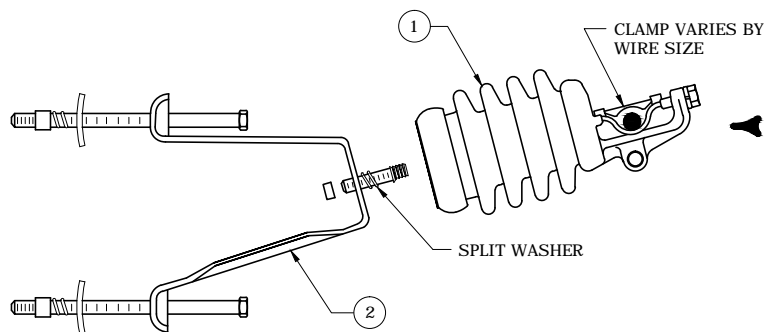
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03.06-04


INSULATOR, POST 15/25 KV WITH STANDOFF BRACKET 



BILL OF MATERIALS						
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	1	IHPIT15F	1	080212	1	INSULATOR, POST, TIE-TOP, 15/25KV, WITHOUT STUD 
	2	BKTSPISF	1	013264	2	WASHER, SPRING, COIL, STEEL, FOR 5/8" BOLT, GALV.
				013346	2	WASHER, 3", SQUARE, CURVED, 13/16", HOLE
				070424	1	BRACKET, POST, INSULATOR, MOUNTING (CHICKEN WING)
				072361	1	STUD, LINE POST, 5/8" X 1-3/4"
				152107	2	BOLT, MACH, SQ, NUT, 5/8" X 12"

CLAMP TOP, 15/25 KV WITH STANDOFF BRACKET 



BILL OF MATERIALS						
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	1	IHPCLT15F	1	080232	1	INSULATOR, POST, CLAMP, HORIZONTAL, 15/25KV 
	2	BKTSPISF	1	013264	2	WASHER, SPRING, COIL, STEEL, FOR 5/8" BOLT, GALV.
				013346	2	WASHER, 3", SQUARE, CURVED, 13/16", HOLE
				070424	1	BRACKET, POST, INSULATOR, MOUNTING (CHICKEN WING)
				072361	1	STUD, LINE POST, 5/8" X 1-3/4"
				152107	2	BOLT, MACH, SQ, NUT, 5/8" X 12"

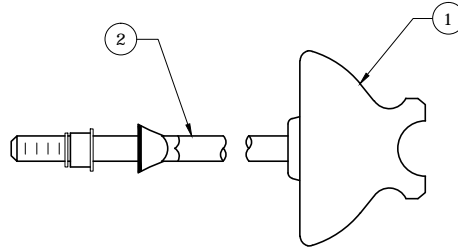
3				
2				
1	4/12/13	McCONNELL	DANNA	ADCOCK
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

INSULATORS



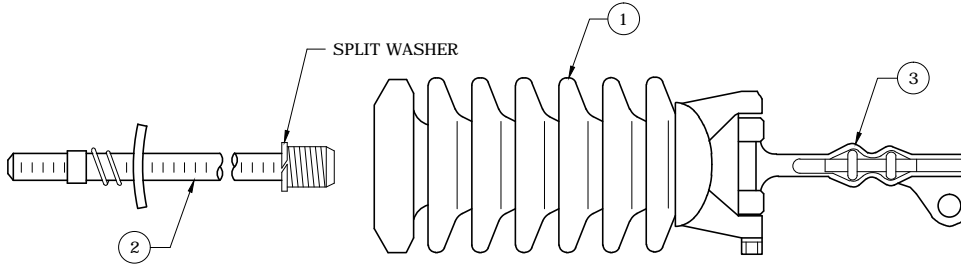
FLA DWG. 03.06-06

INSULATOR, PIN TYPE, CLASS B



BILL OF MATERIALS						
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	1	IPIN23F	1	080304	1	INSULATOR, PIN, 23KV, CLASS-55-5
	2	PINCARMS586F	1	072306	1	PIN, SHOULDER, 6" X 5/8" X 6-1/2. STEEL

INSULATOR, SLACK SPAN, 35 KV, 1/0, 795 OR 336 CONDUCTOR



BILL OF MATERIALS						
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	1	IVPCLT35F	1	080375	1	INSULATOR, POST, LINE, VERTICAL, 35 KV, CLAMP TOP
	2	ISSTUDBOLT5812F	1	013264	1	WASHER, SPRING COIL, STEEL, FOR 5/8" BOLT, GALV.
				072367	1	STUD, LINE POST, 5/8" X 12"
	3	SLCLMP336AACF	1	101397	1	CLAMP, STRAIN, SLACK SPAN, 795 AL, 0.62" - 1.25"
		SLCLMP10AAACF	1	101392	1	CLAMP, STRAIN, SLACK SPAN, 1/0 AL, 0.30" - 0.62"

NOTES:

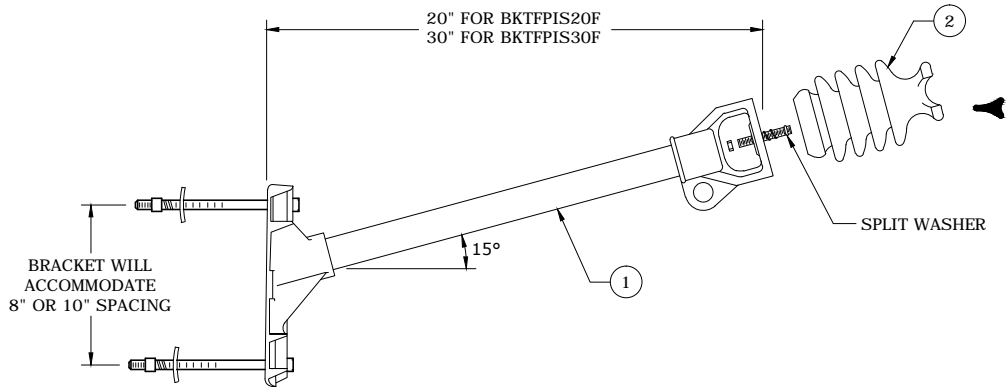
1. 1/0 DEADEND CLAMP TO BE USED ON CONCRETE POLE CONSTRUCTION.

3				
2				
1				
0	11/10/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

INSULATORS



FLA DWG. 03.06-08



BILL OF MATERIALS						
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	1	BKTFFIS20F	1	013264	2	WASHER, SPRING, COIL, STEEL, FOR 5/8" BOLT, GALV
				013346	2	WASHER, 3", SQUARE, CURVED, 13/16"
				070430	1	BRACKET, FIBERGLASS, STAND-OFF, 20" (BALL BAT)
				072361	1	STUD, LINE POST, 5/8" X 1-3/4"
				152107	2	BOLT, MACH, SQ, NUT, 5/8" X 12"
	1	BKTFFIS30F	1	013264	2	WASHER, SPRING, COIL, STEEL, FOR 5/8" BOLT, GALV
				013346	2	WASHER, 3", SQUARE, CURVED, 13/16"
				070431	1	BRACKET, FIBERGLASS, STAND-OFF, 30" (BALL BAT)
				072361	1	STUD, LINE POST, 5/8" X 1-3/4"
	2	IHPTT15F	1	152107	2	BOLT, MACH, SQ, NUT, 5/8" X 12"
				080212	1	INSULATOR, POST, TIE TOP, 15/25KV, WITHOUT STUD

STANDOFF HORIZONTAL POST INSULATOR BRACKETS ARE AVAILABLE IN 20" AND 30" LENGTHS. THEY MAY BE USED ON TANGENT FLAT CONSTRUCTION WHERE RIGHT-OF-WAY IS AN ISSUE AND THE POLE MUST BE SET OUT OF LINE OR FOR SMALL ANGLES (15° OR LESS) USING A CLAMP TOP INSULATOR THE 20" OR 30" BRACKET MAY BE USED FOR DISTRIBUTION UNDERBUILD ON STEEL, CONCRETE AND WOOD TRANSMISSION POLES. DO NOT INSTALL WHERE A DIFFERENCE IN ELEVATION BETWEEN STRUCTURES WILL CREATE AN EXCESSIVE DOWNWARD FORCE ON THE BRACKET. IF THERE ARE ANY QUESTIONS, CONTACT DISTRIBUTION STANDARDS.

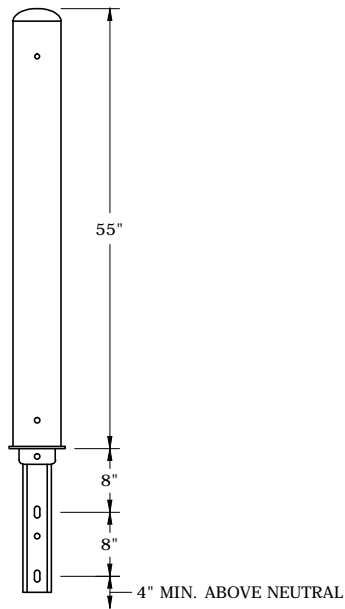
3	4/11/13	McCONNELL	DANNA	ADCOCK
2	12/12/11	GUINN	BURLISON	ELKINS
1	11/10/11	BURLISON	BURLISON	ELKINS
0	11/4/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

STANDOFF HORIZONTAL POST INSULATOR BRACKETS



FLA

DWG.
03.06-10



FRONT VIEW



SIDE VIEW

BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
-	1	BKTPTE54FBGF	1	9220139630	1	EXTENSION, POLE TOP, FIBERGLASS, 54"
				152107	2	BOLT, MACH, SQ, 5/8"
				013308	2	WASHER, SQUARE, FLAT
				013264	2	WASHER, SPRING COIL, STEEL, 5/8", GALV.

NOTES:

1. POLE TOP EXTENSION IS FOR POLE TOP EMERGENCY REPAIR. AN ENGINEERING EVALUATION IS REQUIRED IF EXTENSION IS TO REMAIN PERMANENTLY INSTALLED.
2. FOR USE ON SINGLE-PHASE LINES ONLY.
3. BRACKET WILL ACCOMMODATE A 7"-11" POLE TOP.
4. EXTENSION CAN BE DRILLED TO MOUNT HARDWARE.
5. DO NOT TIGHTEN BOLTS WITH IMPACT DRILL - THIS WILL CAUSE CRACKING.
6. USE A MINIMUM OF A 2" FLAT WASHER TO MOUNT EQUIPMENT.

3				
2				
1				
0	11/8/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

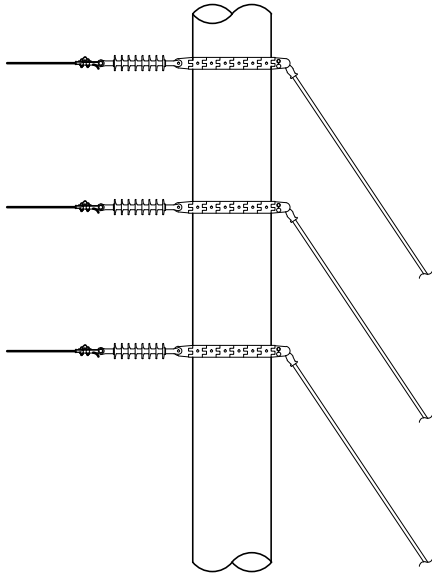
FIBERGLASS POLE TOP EXTENSION



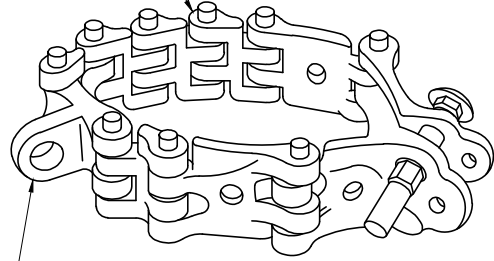
FLA

DWG.
03.06-34

CHAIN FOR 30" DIA. POLE WITH 2 EYES
 RATED 15,000 LBS.



CHAIN LINK
 CN 9220068334
 CU OHCHAINBANDF



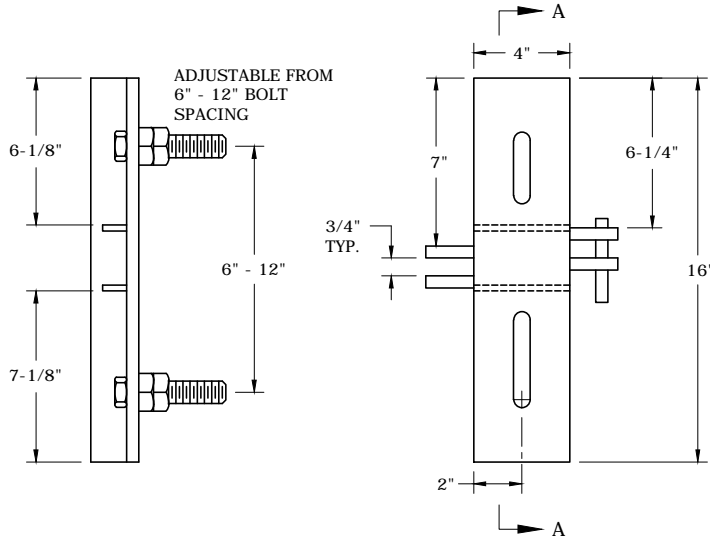
EYE LINK
 CN 9220068335

NOTE: CHAIN LINK COMES WITH TWO EYE LINKS. FOR ADDITIONAL EYE LINKS, CALL FOR CU OHCHAINEYEF

▶ IF BINDING OF THE INSULATOR AT THE EYE LINK IS AN ISSUE, UTILIZE A CLEVIS-CLEVIS 90 - CN 113145 AND A TWISTED CHAIN LINK - CN 115428.

**NEW MACLEAN BRACKET FOR CHAIN
 FOR EQUIPMENT AND INSULATOR BRACKETS**

CN 922022876
 CU OHCHAINBKTF

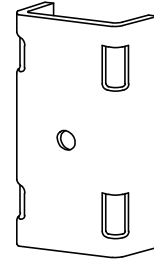


SECTION 'A-A'

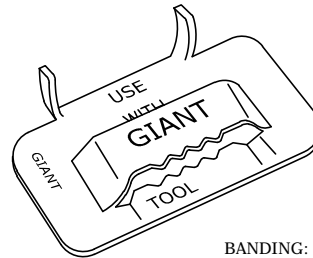
FRONT VIEW

FOR MOUNTING LIGHTNING ARRESTER

CN 070423
 CU BKTSPIBANDF



BUCKLE AND BANDING



BANDING: 3/4" - CN 434122
 1-1/4" - CN 434124

BUCKLE: 3/4" - CN 434142
 1-1/4" - CN 434145

NOTES:

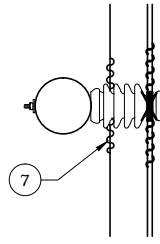
1. THE PREFERRED METHOD FOR ATTACHING TO TRANSMISSION POLES IS TO BOLT ALL DISTRIBUTION HARDWARE TO THE POLE. BOLT HOLES CAN BE MADE AVAILABLE BY THE POLE MANUFACTURER WITH PROPER PLANNING.
2. IF HOLES ARE NOT AVAILABLE, THE DISTRIBUTION PLANNER SHOULD EXPLORE DRILLING OPTIONS WITH TRANSMISSION ENGINEERING PRIOR TO RELEASING THE WORK REQUESTS.
3. WHEN HOLES ARE NOT AVAILABLE AND DRILLING IS NOT AN OPTION, BANDING MAY BE USED.

3				
2				
1	1/27/12	BURLISON	BURLISON	ELKINS
0	6/10/11	BURLISON	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

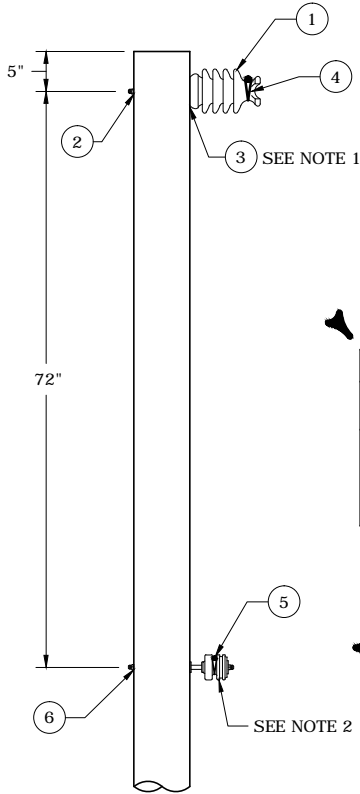
BANDING FOR DEADENDS, BRACKETS, GUYS
 AND EQUIPMENT ON TRANSMISSION POLES



FLA DWG.
 03.06-35



PLAN VIEW



FRONT VIEW

POLE SIZING CHART						
WIRE SIZE	MAX. SPAN (FT)	POLE CLASS BY HEIGHT				JOINT USE (TOTAL DIAMETER)
		35	40	45	50	
1/0 & SMALLER	400	6	5	4	3	≤ 1"
1/0 & SMALLER	340	4	4	4	3	1" - 2.5"
1/0 & SMALLER	400	3	3	3	3	1" - 2.5"
1/0 & SMALLER	400	2	1	1	1	2.5" - 4"

NOTES: THIS TABLE SPECIFIES POLE CLASS ONLY. POLE HEIGHT DETERMINED BY CLEARANCE. SEE DWG. 02.02-03A FOR STANDARD STOCKED POLES. POLEFOREMAN REQUIRED FOR DESIGNS OUTSIDE OF TABLE GUIDELINES. FOR POLES WITH EQUIPMENT, MINIMUM CLASS IN DWG. 02.02-03B MUST ALSO BE MET.

CHART PARAMETERS UTILIZED A TANGENT DESIGN. FOR ANGLES GREATER THAN 2°, POLEFOREMAN MUST BE UTILIZED.

BILL OF MATERIALS				
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	DESCRIPTION
PF(VOLTAGE) 1TA(WIRE)FM	1	IHPPT15F	1	INSULATOR POST, HORIZONTAL, TIE TOP, STUD BASE 15/25KV
	2	ISSTUDBOLT58_F	1	INSULATOR SUPPORT STUD 5/8 X (VARIES BY LENGTH)
	3	ISGAINGRIDF	1	INSULATOR SUPPORT GAINGRID 4X4 INCH ALUMINUM NO TEETH
	3	ISGAINGRID55F	1	INSULATOR SUPPORT GAINGRID 5-1/2 INCH
SCTAN(WIRE)FM	4	STIE_F	1	SIDE TIE F NECK (VARIES WITH WIRE SIZE)
	5	ISPLF	1	INSULATOR SPOOL
	6	NSSB_F	1	NEUTRAL AND SECONDARY SPOOL BOLT (10 OR 12) INCH
	7	NEUSPTIE_F	1	FORMED SPOOL TIE (VARIES WITH WIRE SIZE)

NOTES:

1. POLE GAINS (ISGAINGRIDF FOR 15/25KV INSULATORS OR ISGAINGRID55F FOR 35KV INSULATORS) ARE REQUIRED FOR POST INSULATOR INSTALLATIONS ON WOOD POLES WHEN THE POLE DOES NOT HAVE A SLAB GAIN FOR ALL CONDUCTOR SIZES. WHEN THE CONDUCTOR IS 336.4 KCMIL OR LARGER, USE POLE GAIN EVEN IF SLAB GAIN EXISTS. POLE GAINS ARE NOT REQUIRED FOR INSULATORS USED FOR JUMPERS. SLACK SPANS WITH 336 AND 795 CONDUCTORS REQUIRE A POLE GAIN.
2. TYPICAL INSTALLATION - REFER TO SECTION 04 FOR NEUTRAL/SECONDARY DETAILS.

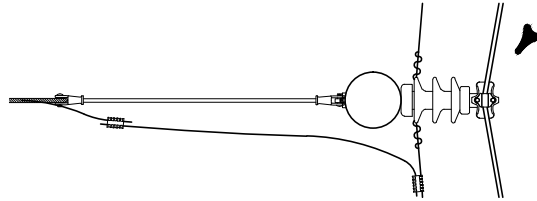
5	2/7/14	McCONNELL	DANNA	ADCOCK
4	4/11/13	McCONNELL	DANNA	ADCOCK
3	3/21/13	McCONNELL	DANNA	ADCOCK
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

SINGLE-PHASE CONSTRUCTION - TANGENT

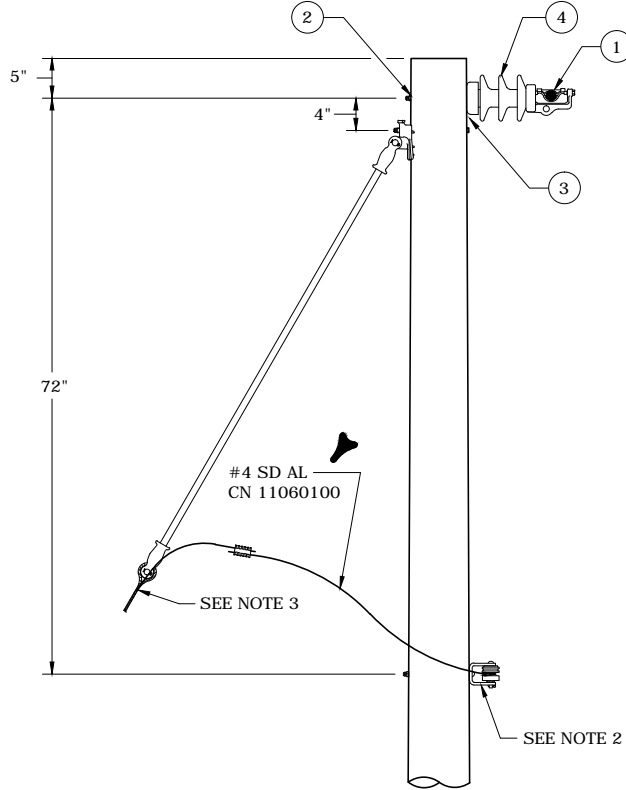


FLA

DWG.
03.08-01



PLAN VIEW



FRONT VIEW
6° - 15° ANGLE

BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	DESCRIPTION
PF(KV)V1SA(WIRE)FM	1	TCGCLMP(WIRE)ALF	1	TRUNION CUSHION GRIP (WIRE)
	2	ISSTUDBOLT5812F	1	INSULATOR SUPPORT STUDBOLT 5/8 X 12"
	3	ISGAINGRIDF	1	INSULATOR SUPPORT GAINGRID 4 X 4 INCH ALUMINUM NO TEETH
	3	ISGAINGRID55F	1	INSULATOR SUPPORT GAINGRID 5-1/2 INCH
	4	IHPCLT(KV)F	1	INSULATOR POST, HORIZ. CLAMP TOP, STUD BASE (KV)

NOTES:

1. POLE GAINS (ISGAINGRIDF FOR 15/25KV INSULATORS OR ISGAINGRID55F FOR 35KV INSULATORS) ARE REQUIRED FOR POST INSULATOR INSTALLATIONS ON WOOD POLES WHEN THE POLE DOES NOT HAVE A SLAB GAIN FOR ALL CONDUCTOR SIZES. WHEN THE CONDUCTOR IS 336.4 KCMIL OR LARGER, USE POLE GAIN EVEN IF SLAB GAIN EXISTS. POLE GAINS ARE NOT REQUIRED FOR INSULATORS USED FOR JUMPERS. SLACK SPANS WITH 336 AND 795 CONDUCTORS REQUIRE A POLE GAIN.
2. TYPICAL INSTALLATION - REFER TO SECTION 04 FOR NEUTRAL/SECONDARY DETAILS.
3. TYPICAL INSTALLATION - REFER TO SECTION 02 FOR GUYING DETAILS.
4. PRIMARY AND NEUTRAL MAY BE FRAMED ON GUY SIDE OF POLE AS AN ALTERNATE METHOD TO FACILITATE TRUCK ACCESSIBILITY.
5. SEE DWG. 03.03-06 FOR LINE CLAMPS.

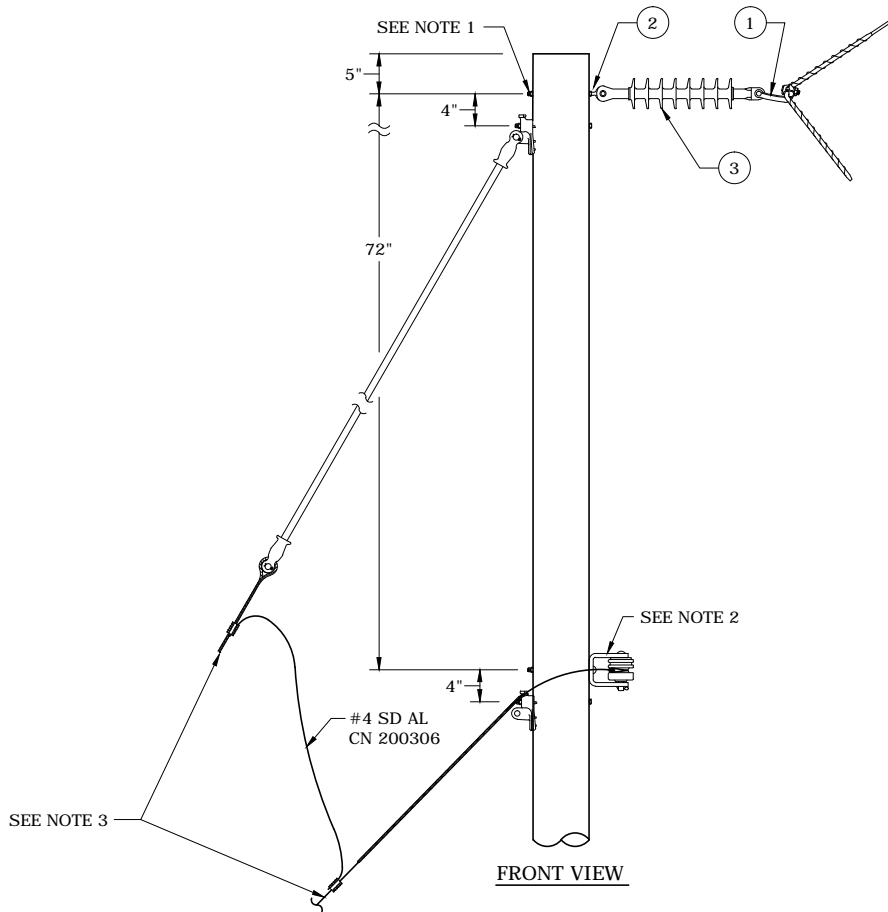
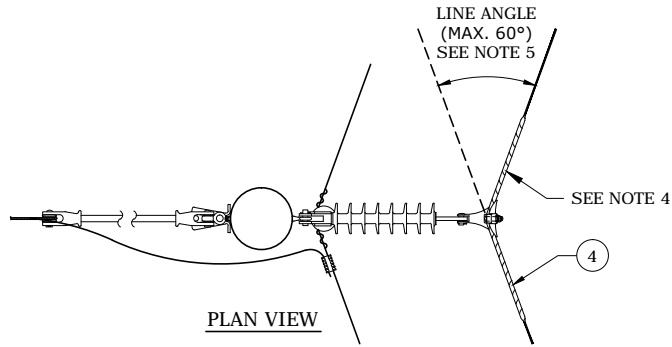


3	8/20/14	LOOSIER	DANNA	ADCOCK
2	3/21/13	McCONNELL	DANNA	ADCOCK
1	5/22/12	BROWN	BURLISON	ELKINS
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

SINGLE-PHASE CONSTRUCTION -
SMALL ANGLE POLES

DEC	DEM	SEP	DEF
			X

03.08-02



BILL OF MATERIALS				
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	DESCRIPTION
PF(KV)V1MA(WIRE)FM	1	SCLMP(WIRE)F	1	SUSPENSION CLAMP (WIRE)
	2	ISEYEBOLT5812F	1	INSULATOR SUPPORT EYEBOLT 5/8 X 12"
	3	IDES(KV)PF	1	INSULATOR DEADEND/ SUSPENSION (KV) POLYMER
	4	AR(WIRE)F	1	ARMOR ROD (WIRE)

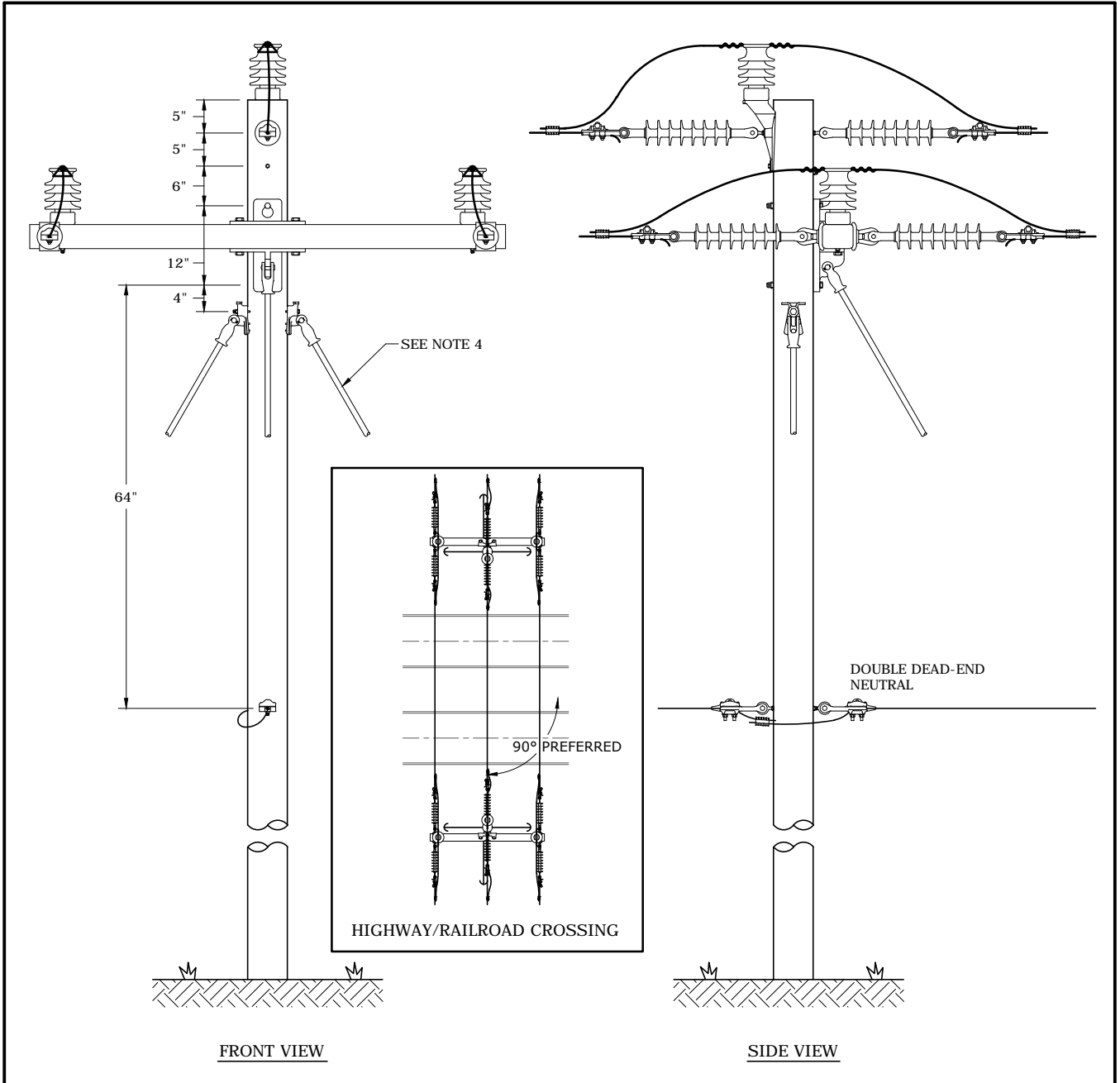
NOTES:

1. USE 2-1/4" SQUARE WASHER ON 1/0 AAAC AND SMALLER CONDUCTOR AND 3" CURVE WASHER FOR CONDUCTORS LARGER THAN 1/0 AAAC.
2. TYPICAL INSTALLATION - SEE SECTION 04 FOR NEUTRAL/SECONDARY DETAILS.
3. TYPICAL INSTALLATION - SEE SECTION 02 FOR GUYING DETAILS.
4. ARMOR ROD REQUIRED FOR ANGLE ASSEMBLY FOR ACSR, AAC AND AAAC CONDUCTORS.
5. FOR 15° - 60° ANGLES.
6. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.

3				
2				
1	5/22/12	BROWN	BURLISON	ELKINS
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

SINGLE-PHASE - DEADENDS AND
MEDIUM ANGLES

FLA DWG.
03.08-04



FRONT VIEW

SIDE VIEW

NOTES:

1. CROSSING SHOULD BE AT 90 DEGREES TO RAILS OR CONTROLLED ACCESS HIGHWAY. A CONTROLLED ACCESS HIGHWAY IS TYPICALLY A MULTI-LANE HIGHWAY PROVIDING FREE FLOW OF TRAFFIC, WITH NO TRAFFIC SIGNALS OR PROPERTY ACCESS.
2. CROSSINGS SHOULD NOT CONTAIN SPLICES.
3. PROVIDE GUYING FOR THE SPAN(S) CROSSING THE CONTROLLED ACCESS HIGHWAY TO SUPPORT THE SPAN AS A STANDALONE SPAN.
4. PROVIDE TWO SINGLE SIDE GUYS 90 DEGREES TO THE BACK GUY.
5. IF INTERMEDIATE POLES ARE REQUIRED TO REDUCE THE SPAN LENGTHS, THIS CONSTRUCTION SHALL BE USED ON EACH POLE WITH THE GUYS BACKING UP THE CROSSING SPAN(S) ALWAYS AWAY FROM THE MAIN HIGHWAY.

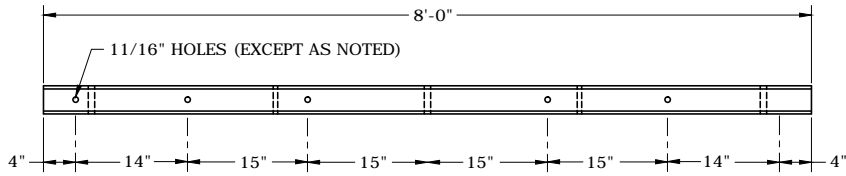


3				
2				
1				
0	4/25/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

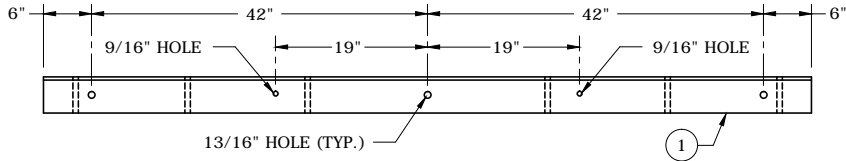
CONTROLLED ACCESS HIGHWAY
OR RAILROAD CROSSING

DEC	DEM	DEP	DEF
X	X	X	X
03.10-14			

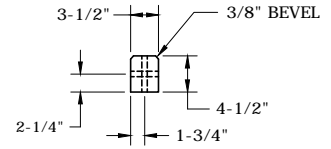
8' ARM



PLAN VIEW

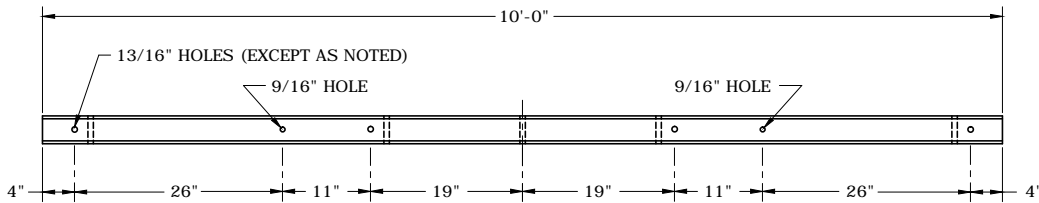


FRONT VIEW

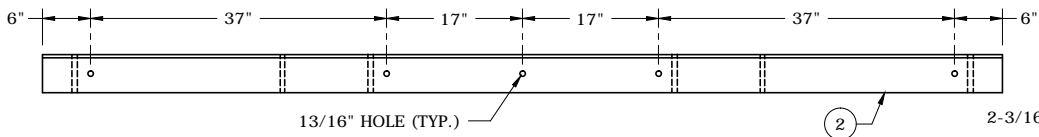


SIDE VIEW

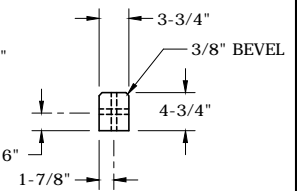
10' ARM



PLAN VIEW



FRONT VIEW



SIDE VIEW

NOTES:

1. SEE DWG. 03.11-01C FOR NOTES AND BILL OF MATERIALS.



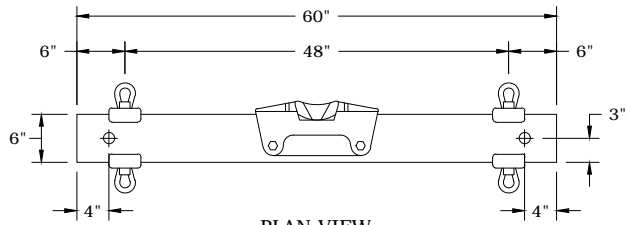
DEC	DEM	DEP	DEF
			X

➤ WOOD CROSSARMS

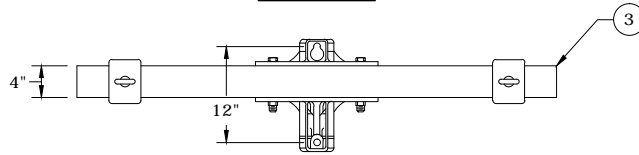
03.11-01A

3				
2				
1	12/23/14	LOOSIER	GUINN	ADCOCK
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

5 FT. ARM

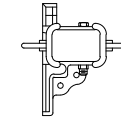


PLAN VIEW



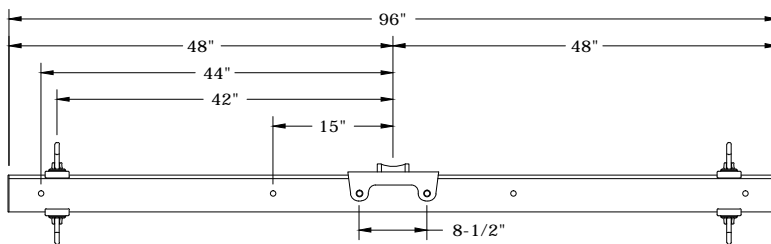
FRONT VIEW

MAXIMUM LOAD PER SIDE (LBS)	DEFLECTION PER 1000 LBS (IN)	WEIGHT (LBS)
12,500	0.08	59

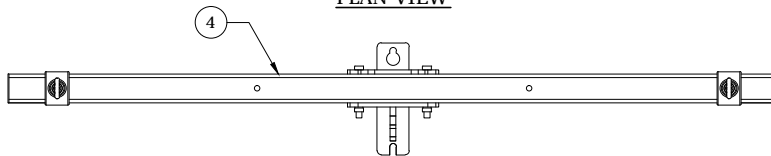


SIDE VIEW

8 FT. ARM

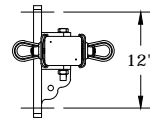


PLAN VIEW



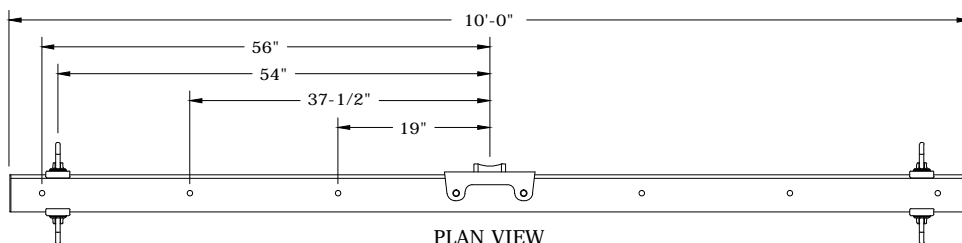
FRONT VIEW

MAXIMUM LOAD PER SIDE (LBS)	DEFLECTION PER 1000 LBS (IN)	WEIGHT (LBS)
10,200	0.35	46

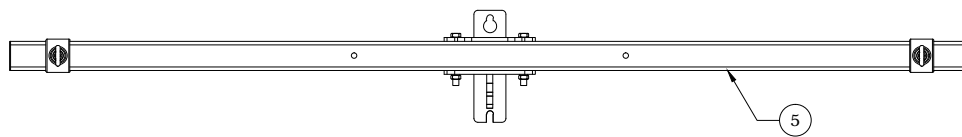


SIDE VIEW

10 FT. ARM

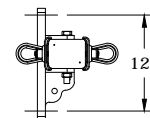


PLAN VIEW



FRONT VIEW

MAXIMUM LOAD PER SIDE (LBS)	DEFLECTION PER 1000 LBS (IN)	WEIGHT (LBS)
11,000	0.42	81



SIDE VIEW

NOTES:

1. SEE DWG. 03.11-01C FOR NOTES AND BILL OF MATERIALS.



3				
2				
1	12/23/14	LOOSIER	GUINN	ADCOCK
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

FIBERGLASS CROSSARMS

DEC	DEM	DEP	DEF
			X

03.11-01B

BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION	
-	1	ARMS8LW30WF	1	011209	2	BOLT, CARRIAGE, 3/8 IN, 4 1/2 IN, STEEL, GLV	
				013264	1	WASHER, LOCK, 5/8 IN, STEEL, GLV, SPRING,DOUBLE COIL	
				013308	2	WASHER, SQUARE, 2-1/4", SQUARE, FLAT, 13/16", HOLE, GALV	
				014114	1	SCREW, LAG, 1/2 IN X 4 IN, STEEL, GLV, SCREW, LAG, 1/2" X4"	
				031113	1	CROSSARM, WOOD, WD 8' MS-121-F LIGHT	
				152108	1	BOLT, MACHINE, 5/8 IN, 16 IN, STEEL	
					9220274516	1	BRACE, POLE, CROSS ARM, 1-3/4" X 1-3/4" X 48" SPAN X 18"
	2	ARMS10LW35WF	1	010439	1	BOLT, CARRIAGE, 3/8 IN, 4 1/2 IN, STEEL, GLV	
				013264	1	WASHER, LOCK, 5/8 IN, STEEL, GLV, SPRING,DOUBLE COIL	
				013308	3	WASHER, SQUARE, 2-1/4", SQUARE, FLAT, 13/16", HOLE, GALV	
				014114	1	SCREW, LAG, 1/2 IN X 4 IN, STEEL, GLV, SCREW, LAG, 1/2" X4"	
				031114	1	CROSSARM, WOOD, WD 10' MS-121-F LIGHT	
				152098	2	BOLT, MACHINE, 1/2 IN, 7 IN, SQ NUT	
				152107	1	BOLT, MACHINE, 5/8 IN, 1/2 IN, STEEL	
	3	ARMSDE60FF	1	10041804	1	BRACE, POLE, CROSSARM, 60" SPAN, 18" DROP	
				013265	2	WASHER, SPRING, COIL, STEEL, FOR 3/4" BOLT	
				013308	2	WASHER, SQUARE, 2-1/4", FLAT, 13/16" HOLE, GALV.	
				113891	2	CLEVIS, EYE, TYPE Y, PARALLEL, 30M, 5/8, 3/4", PIN	
				152122	2	BOLT, SQUAREHEAD, 3/4 IN, 12 IN, S, A307, GLV, 10, UNC	
					9220237218	1	CROSSARM, DEADEND, FIBERGLASS, 60 INCH, DE
	4	ARMSDE96FF	1	013265	2	WASHER, SPRING, COIL, STEEL, FOR 3/4" BOLT	
				013346	2	WASHER, 3", SQUARE, CURVED, 13/16", HOLE	
				152122	2	BOLT, SQUAREHEAD, 3/4 IN, 12 IN, GLV	
					9220272392	1	CROSSARM, DEADEND, 8' LG, FBG, ALUM MOUNTING BRACKET
	5	ARMSDE120HFF	1	013265	2	WASHER, SPRING, COIL, STEEL, FOR 3/4" BOLT	
013346				2	WASHER, 3", SQUARE, CURVED, 13/16", HOLE		
152122				2	BOLT, SQUAREHEAD, 3/4 IN, 12 IN, GLV		
9220272389				1	CROSSARM, DEADEND, HEAVY DUTY, 10', FBG, BRACELESS		

FOR REMOVAL ONLY

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
-	-	ARMD8LW36FSF	1	031113	2	CROSSARM, WD 8' MS-121-F LIGHT
-	-	ARMD10LW36FF	1	031114	2	CROSSARM, WOOD, WD 10' MS-121-F LIGHT
-	-	ARMS8LW36FSF	1	031113	1	CROSSARM, WD 8' MS-121-F LIGHT
-	-	ARMS10LW60VSF	1	031114	1	CROSSARM, WD 10' MS-121-F LIGHT
-	-	ARMS8LW60VSF	1	031113	1	CROSSARM, WD 8' MS-121-F LIGHT
-	-	ARMS8HW60VSF	1	031124	1	CROSSARM, WD, 8' MS-121-F HEAVY
-	-	ARMD8HW60VSF	1	031124	2	CROSSARM, WD, 8' MS-121-F HEAVY
-	-	ARMS10LW36FSF	1	031114	1	CROSSARM, WOOD, WD 10' MS-121-F LIGHT
-	-	ARMS10HW60VSF	1	031125	1	CROSSARM, WD 10' MS-121-F HEAVY
-	-	ARMD10HW60VSF	1	031125	2	CROSSARM, WD 10' MS-121-F HEAVY

NOTES:

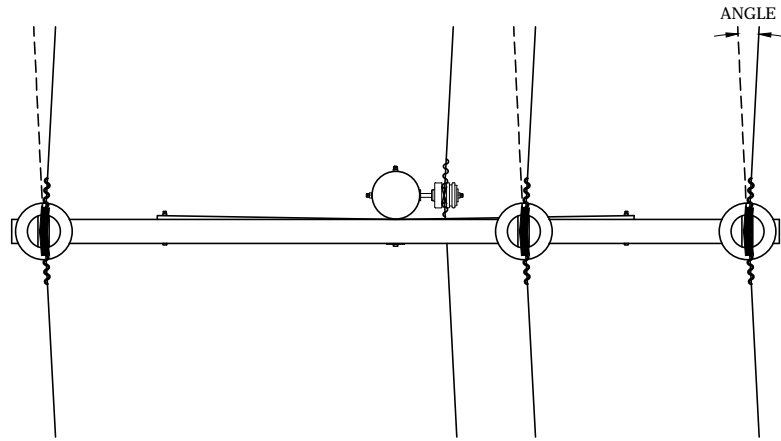
- FOR DEAD-END CONSTRUCTION, USE FIBERGLASS ARMS.
- SEE DWG. 03.11-01A AND 03.11-01B FOR CROSSARM DETAILS.



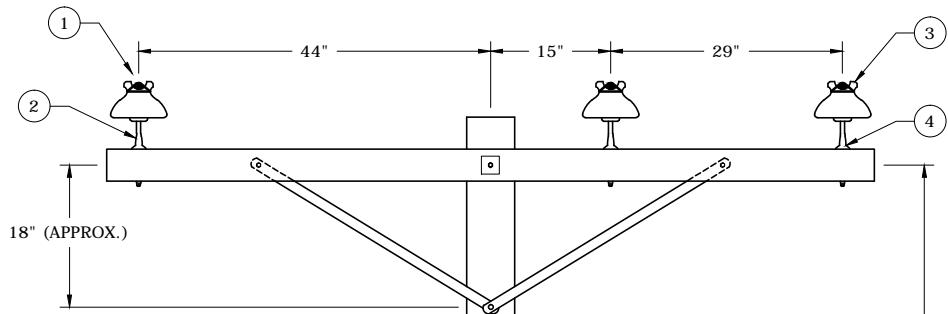
3				
2				
1	4/10/15	LOOSIER	BURLISON	ADCOCK
0	12/23/14	LOOSIER	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

CROSSARMS

DEC	DEM	DEP	DEF
			X
03.11-01C			



PLAN VIEW



FRONT VIEW

POLE SIZING CHART

WIRE SIZE	MAX. SPAN (FT)	POLE CLASS BY HEIGHT				JOINT USE (TOTAL DIAMETER)
		40	45	50	55	
795	250	4	4	3	3	≤ 1"
795	180	4	4	3	3	1" - 2.5"
795	250	3	2	2	2	1" - 2.5"
795	250	1	1	1	H1	2.5" - 5"
336	250	5	4	3	3	≤ 1"
336	225	4	4	3	3	1" - 2.5"
336	250	3	3	3	3	1" - 2.5"
336	250	2	1	1	1	2.5" - 5"
1/0 & SMALLER	400	4	3	3	3	≤ 1"
1/0 & SMALLER	300	4	4	3	3	1" - 2"
1/0 & SMALLER	400	3	2	2	2	1" - 2"
1/0 & SMALLER	400	2	1	1	1	2 - 3"

NOTES: THIS TABLE SPECIFIES POLE CLASS ONLY. POLE HEIGHT DETERMINED BY CLEARANCE. SEE DWG. 02.02-03A FOR STANDARD STOCKED POLES. POLEFOREMAN REQUIRED FOR DESIGNS OUTSIDE OF TABLE GUIDELINES. FOR POLES WITH EQUIPMENT, MINIMUM CLASS IN DWG. 02.02-03B MUST ALSO BE MET.

BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	DESCRIPTION
PF12H3TA(WIRE)FM	1	TTIE(WIRE)F	3	TOP TIE F NECK (WIRE)
	2	PINCARMS586F	3	INSULATION PIN CROSSARM SHOULDER 5/8 X 6" X 1" HEAD
	3	IPIN23F	3	INSULATOR PIN 23KV
	4	ARMS8LW36FSF	1	CROSSARM SINGLE 8' X 3.5" X 4.5" WD 36" LONG FLT BRACE STL

NOTES:

1. PLACE CONDUCTOR IN TOP GROOVE.
2. ARMS SUPPORTING CONDUCTOR LARGER THAN 1/0 AL. OR #2 CU. WILL REQUIRE THE USE OF 60" BOW BRACES.
3. SEE DWG 03.06-08 FOR PIN TYPE INSULATORS.

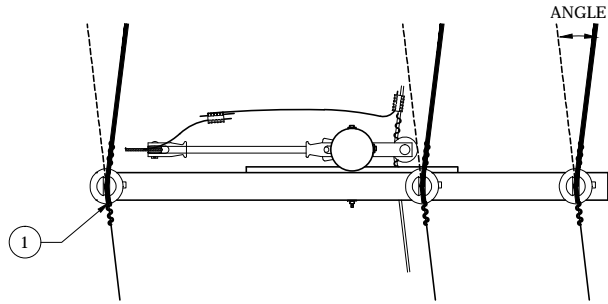
3				
2	10/18/12	WONAROWSKI	BURLISON	ADCOCK
1	5/22/12	BROWN	BURLISON	ELKINS
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

HORIZONTAL CONSTRUCTION -
0 DEGREES TO 5 DEGREES

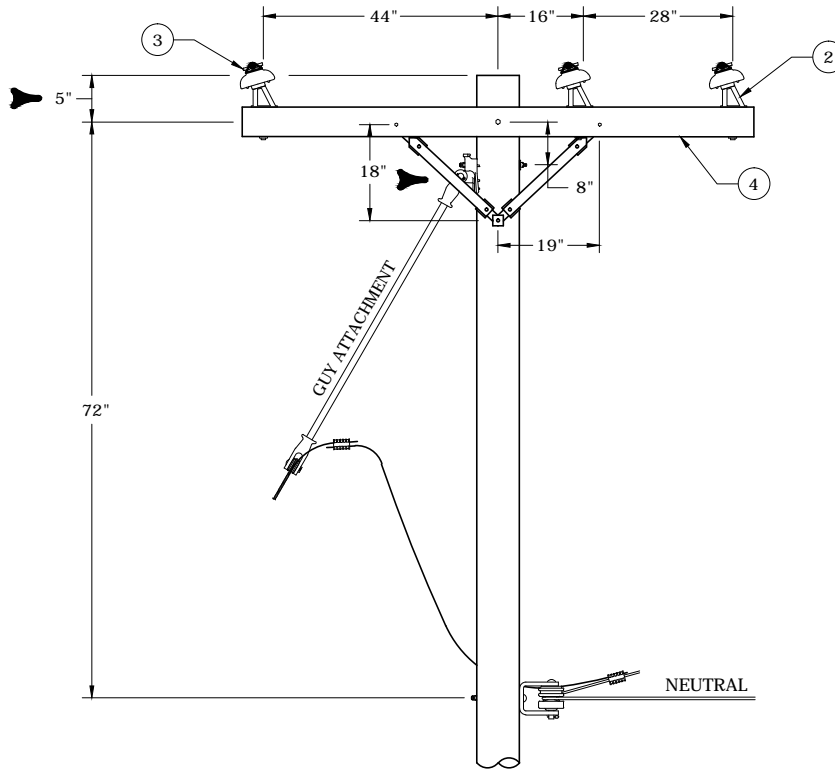


FLA

DWG.
03.11-02



PLAN VIEW



FRONT VIEW

BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	DESCRIPTION
PF12H3SA(WIRE)FM	1	STIEF(WIRE)F	3	SIDE TIP F NECK (WIRE)
	2	PINCARMA586F	3	INSULATOR PIN CROSSARM ANGLE 5/8X6" X 1" HEAD
	3	IPIN23F	3	INSULATOR PIN 23 KV
	4	ARMS8LW30WF	1	CROSSARM SINGLE, 8'X3.5"X4.5" WD

NOTES:

1. PLACE CONDUCTOR IN SIDE GROOVE.
2. SEE DWG 03.06-08 FOR PIN TYPE INSULATORS.
3. SEE DWG. 03.11-01A AND 03.11-01B FOR CROSSARM COMPATIBLE UNITS.

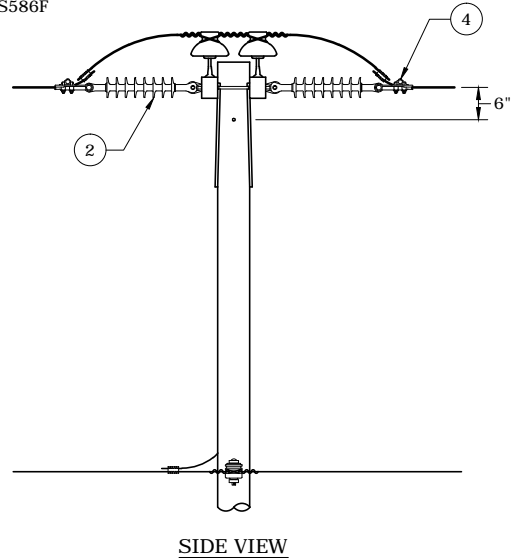
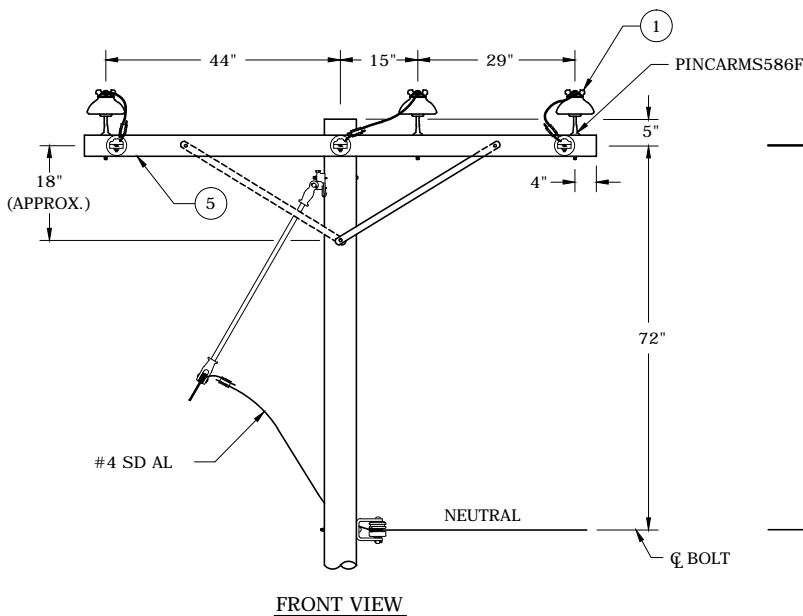
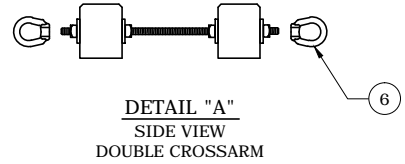
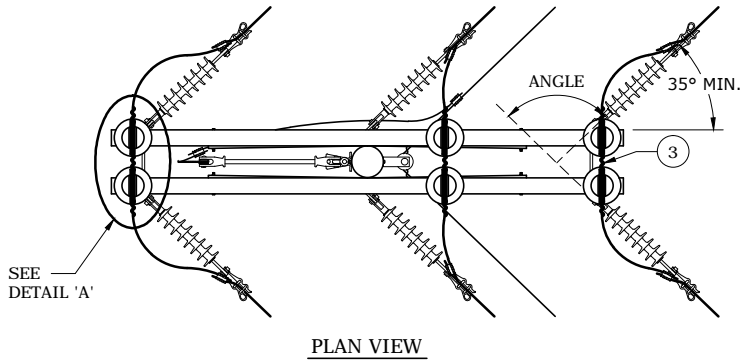


HORIZONTAL CONSTRUCTION -
6 DEGREES TO 15 DEGREES

DEC	DEM	DEP	DEF
			X

03.11-04

3				
2	6/16/15	LOOSIER	BURLISON	ADCOCK
1	5/22/12	BROWN	BURLISON	ELKINS
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	



BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	DESCRIPTION
PF12H3MA(WIRE)FM	1	IPIN23F	6	INSULATOR PIN 23 KV
	2	IDES25PF	6	INSULATOR DEADEND/SUSPENSION 23 KV POLYMER
	3	HTIEN(WIRE)F	24	HAND TIE (WIRE)
	4	DECLMP(WIRE)F	6	DEADEND CLAMP (WIRE)
	5	ARMS8LW36FSF	1	CROSSARM DOUBLE, 8'X3.5"X4.5" WD 36" LONG FLT BRACE STL
	6	ISEYENUT58F	6	INSULATOR SUPPORT EYENUT 5/8

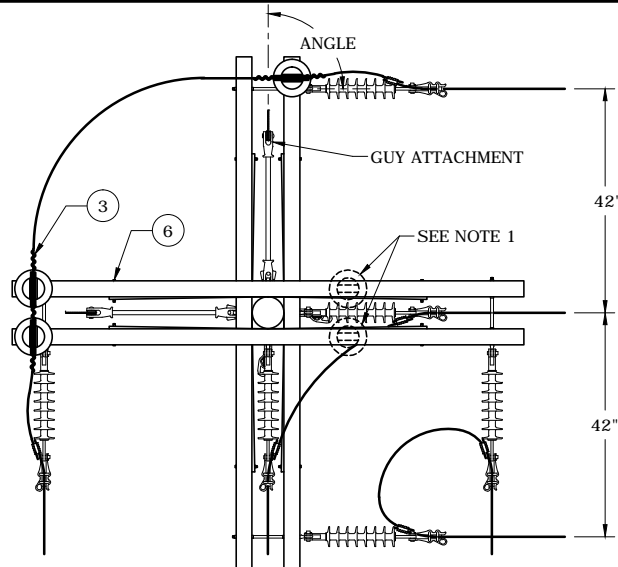
NOTES:

1. SEE DWG. 03.06-02 FOR 15KV AND 27KV DEADEND AND SUSPENSION INSULATORS, BOLTS AND LINE CLAMPS.
2. SEE DWG. 03.06-08 FOR PIN TYPE INSULATORS.
3. SEE DWGS. 03.11-01A AND 03.11-01B FOR CROSSARM COMPATIBLE UNITS.

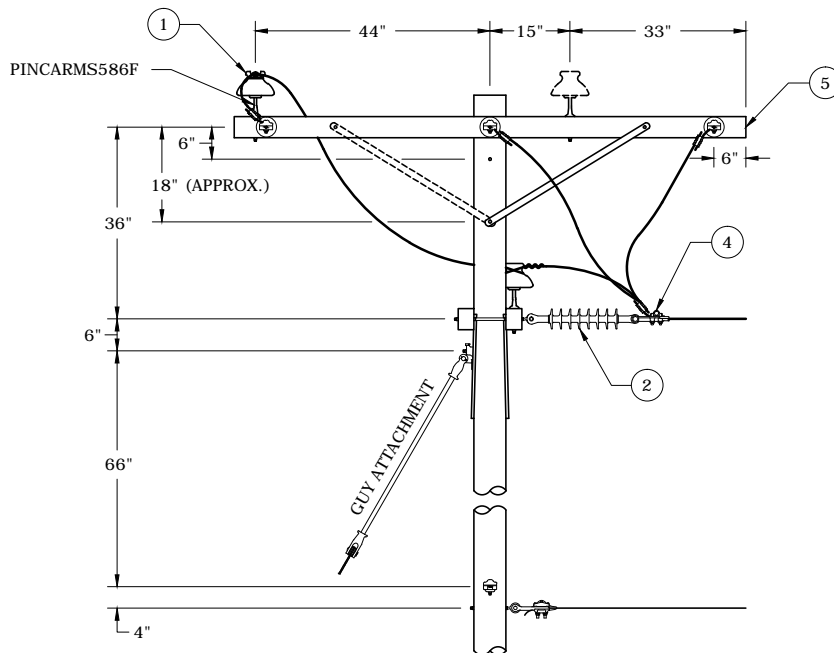
3				
2				
1	5/22/12	BROWN	BURLISON	ELKINS
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

HORIZONTAL CONSTRUCTION -
16 DEGREES TO 59 DEGREES

FLA DWG.
03.11-06



PLAN VIEW



FRONT VIEW

BILL OF MATERIALS


MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	DESCRIPTION
PF12H3RA(WIRE)FM	1	IPIN23F	5	INSULATOR PIN 23 KV
	2	IDES25PF	6	INSULATOR DEADEND/SUSPENSION 23 KV POLYMER
	3	HTIEN(WIRE)F	40	HAND TIE (WIRE)
	4	DECLMP(WIRE)F	6	DEADEND CLAMP (WIRE)
	5	ARMS8LW36FSF	1	CROSSARM DOUBLE, 8'X3.5"X4.5" WD 36" LONG FLT BRACE STL
	6	ISEYENUT58F	6	INSULATOR SUPPORT EYENUT 5/8

NOTES:

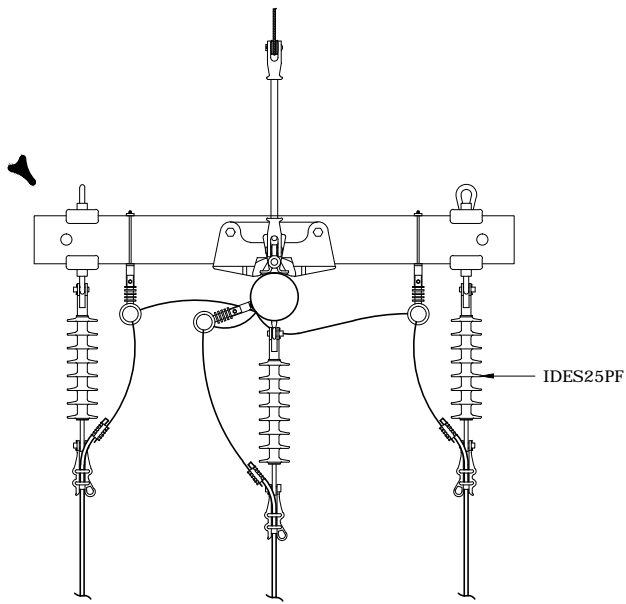
1. USE JUMPER INSULATOR WHEN NECESSARY TO PROVIDE CLEARANCE.
2. SEE DWG. 03.06-08 FOR PIN TYPE INSULATORS.
3. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.

3				
2				
1	5/22/12	BROWN	BURLISON	ELKINS
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

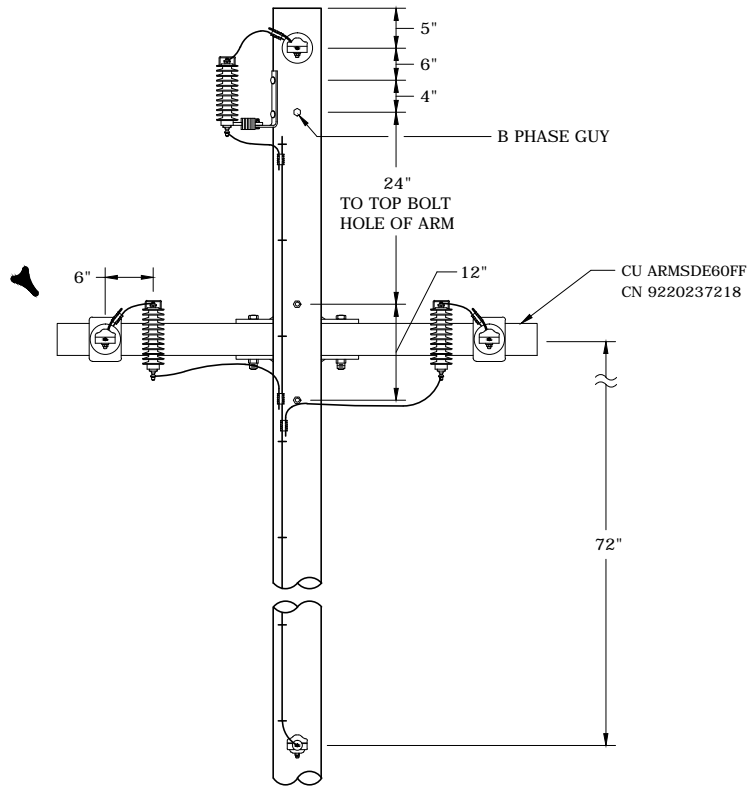
HORIZONTAL CONSTRUCTION -
60 DEGREES TO 90 DEGREES



FLA DWG.
03.11-10



PLAN VIEW



FRONT VIEW

NOTES:

1. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.



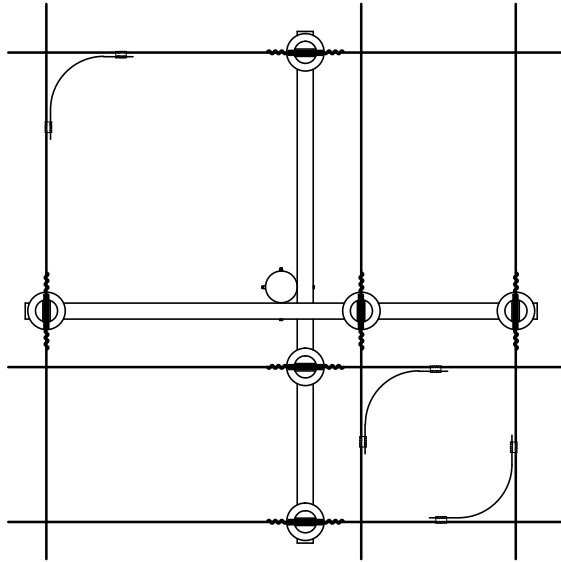
HORIZONTAL CONSTRUCTION -
DEADEND

DEC	DEM	DEP	DEF
			X

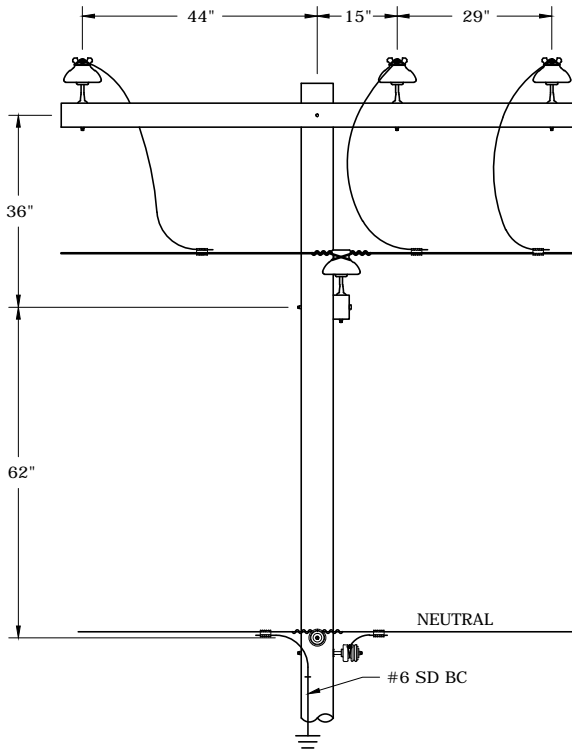
03.11-12

3				
2				
1	8/1/13	GUINN	GUINN	ADCOCK
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TANGENT CONSTRUCTION

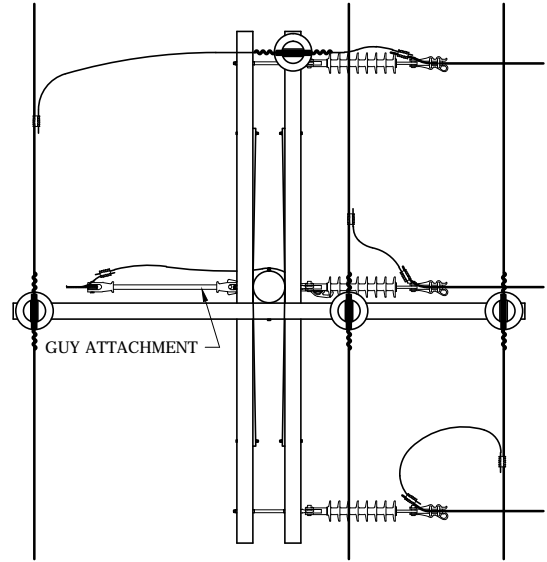


PLAN VIEW

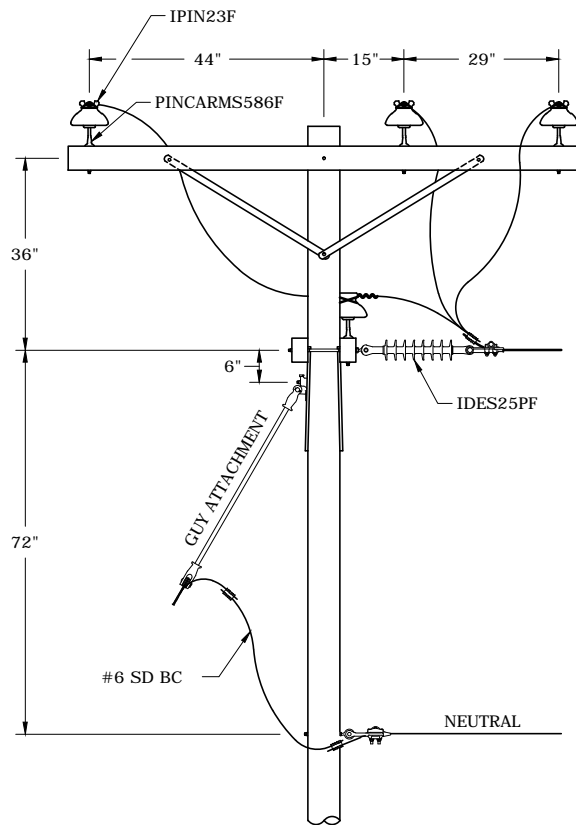


FRONT VIEW

DEADEND CONSTRUCTION



PLAN VIEW



FRONT VIEW

NOTES:

1. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.

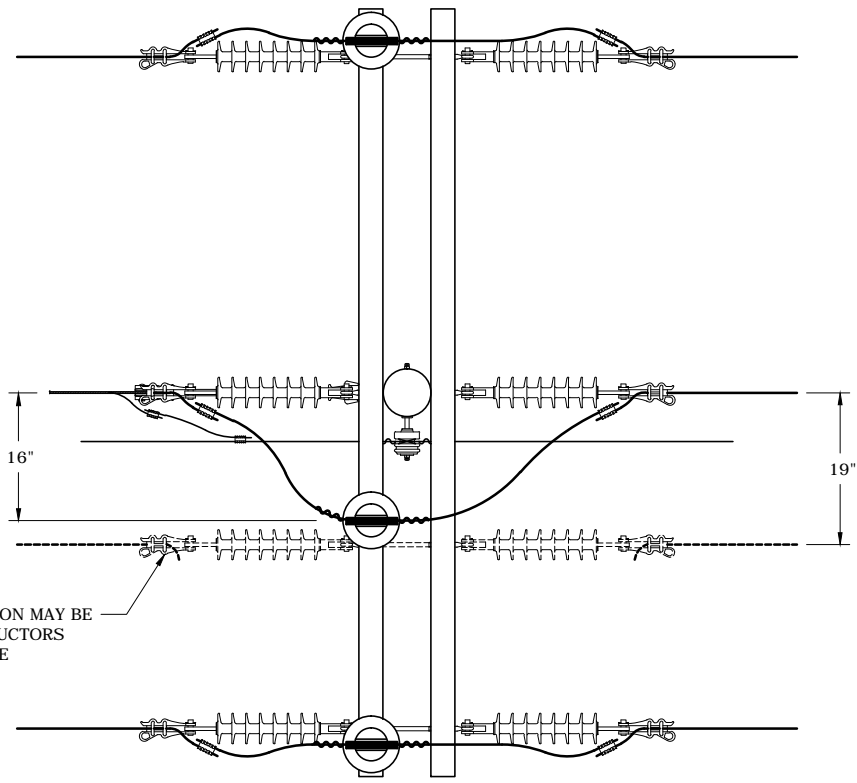
3				
2				
1				
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

HORIZONTAL TANGENT
WITH HORIZONTAL CONSTRUCTION



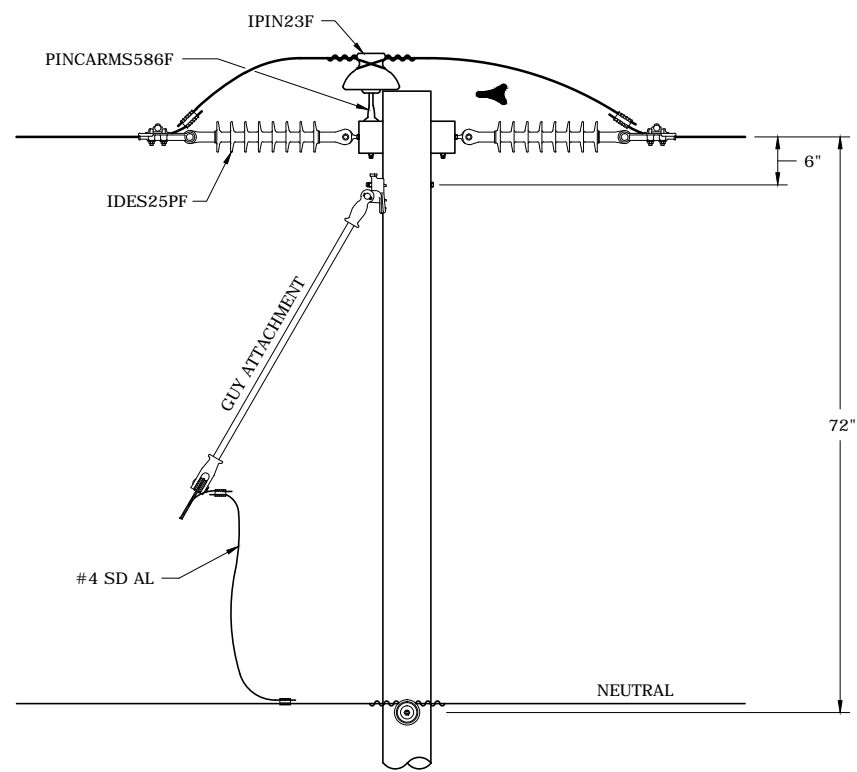
FLA

DWG.
03.11-14



ALTERNATE POSITION MAY BE USED WHEN CONDUCTORS ARE THE SAME SIZE

PLAN VIEW



FRONT VIEW

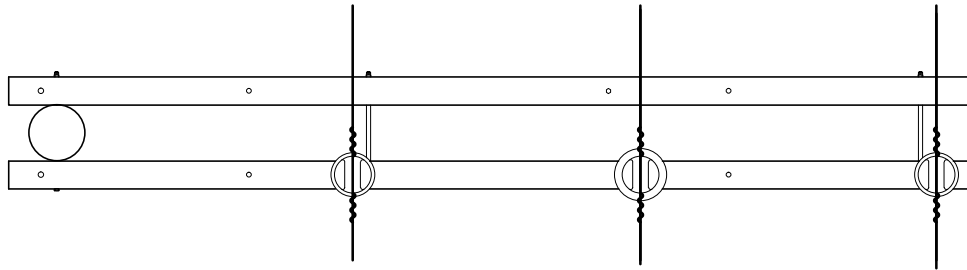
NOTES:

- 1. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.

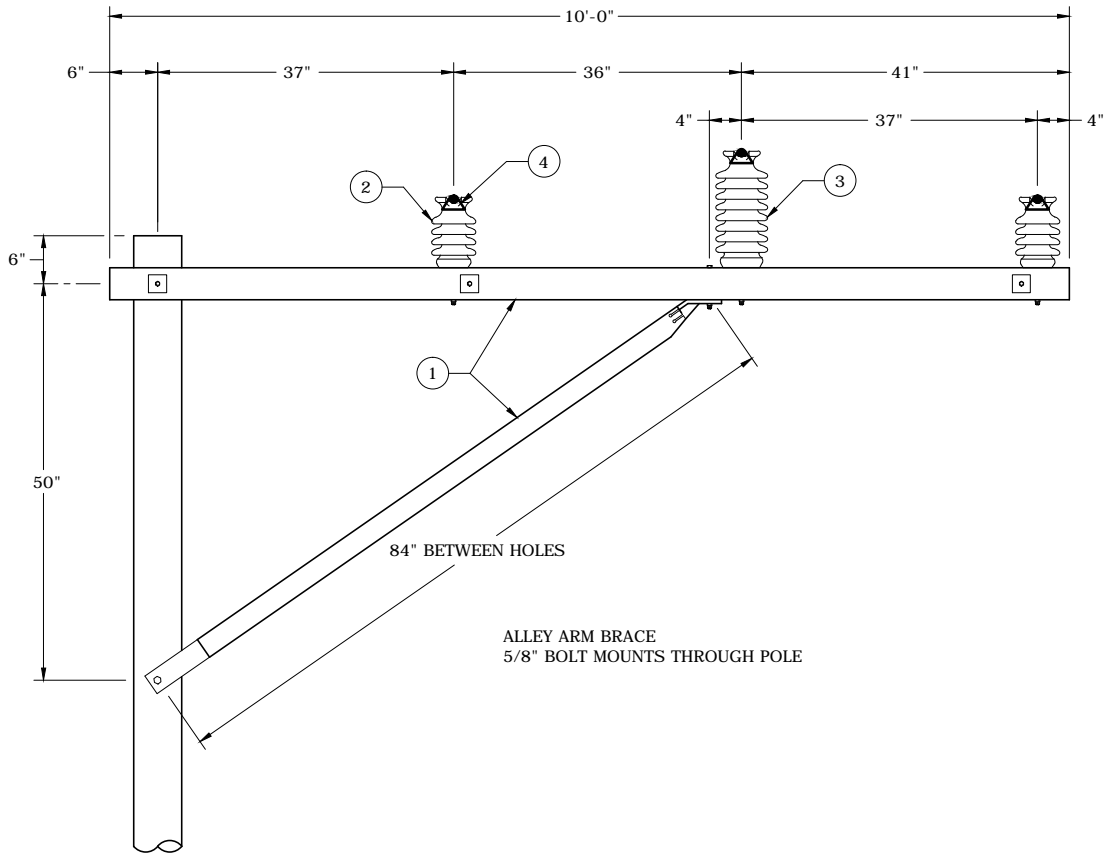
3				
2				
1	9/7/12	BURLISON	BURLISON	ELKINS
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

HORIZONTAL DEADEND
WITH HORIZONTAL DEADEND

FLA DWG. 03.11-16



PLAN VIEW



SIDE VIEW

NOTES:

1. THIS CONSTRUCTION TO BE USED ONLY IN EXCEPTIONAL CASES IN ORDER TO MAINTAIN THE PROPER CLEARANCE BETWEEN CONDUCTORS AND BUILDINGS, OR OTHER OBSTACLES. IT IS NOT INTENDED FOR TREE CLEARANCE.
2. THIS CONSTRUCTION IS TO BE USED WHEN CENTER LINE OF POLE IS LOCATED A MINIMUM OF 5 FEET FROM OBJECT.
3. MAXIMUM SPAN FOR ALLEY ARM CONSTRUCTION IS 200'.
4. CLASS 3 POLE IS REQUIRED WITH LARGE CONDUCTORS (> 4/0).
5. TANGENT POLES ONLY - POLES WITH AN ANGLE WILL REQUIRE GUYING.
6. SEE DWG. 03.11-32B FOR THE BILL OF MATERIALS.



3				
2				
1				
0	7/30/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

10' ALLEY ARM CONSTRUCTION
 CENTER LINE OF POLE
 MINIMUM 5 FEET FROM OBJECT

DEC	DEM	DEP	DEF
X	X	X	X

03.11-32A

BILL OF MATERIALS

MACRO UNIT	BUBBLE NUMBER	COMPATIBLE UNIT	CU QTY	ITEM NUMBER	ITEM QTY/ CU	DESCRIPTION
	1	ARMDAL10W84WF	1	11313	3	BOLT, DOUBLE ARMING, 5/8 IN, 20 IN, STEEL, WITH 4 NUTS
				13229	1	WASHER, FLAT, 1/2 IN, GALVANIZED, ROUND, FLAT, 1/2", BOLT
				13264	1	WASHER, LOCK, 5/8 IN, STEEL, GLV, SPRING, DOUBLE COIL
				13308	10	WASHER, SQUARE, 2-1/4", SQUARE, FLAT, 3/16", HOLE, GALV.
				14114	4	SCREW, LAG, 1/2 IN X 4 IN, STEEL, GLV, SCREW, LAG, 1/2"X4"
				31114	2	CROSSARM, WOOD, WD 10'
				9220266564	2	BRACE, ARM, ALLEY ARM, 7', APITONG WOOD
	152097	2	BOLT, MACH 1/2 X 6			
	2	IHPIT25F	2	80212	2	INSULATOR, POST, TIE, TOP, 25KV, WITHOUT STUD
	3	IHPIT45F	1	9220273037	1	INSULATOR, POST, LINE, 45KV, ROUND BASE TIE TOP
4	-	3	-	1	APPROPRIATE TIE SIZED PER CONDUCTOR	
-	-	ISSTUDBOLT588F	3	13264	1	WASHER, LOCK, 5/8 IN, STEEL, GLV, SPRING, DOUBLE COIL
				72364	1	STUD, LINE POST, 3/4 IN STUD WITH 5/8 X 7.5 IN STEEL PIN

NOTES:

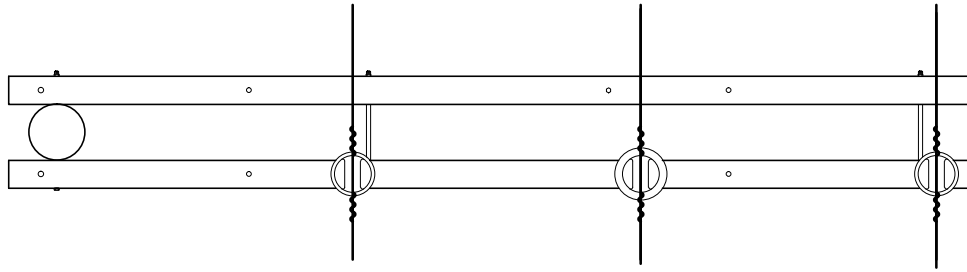
- SEE DWG. 03.11-32A FOR DESIGN SPECIFICATIONS AND NOTES.



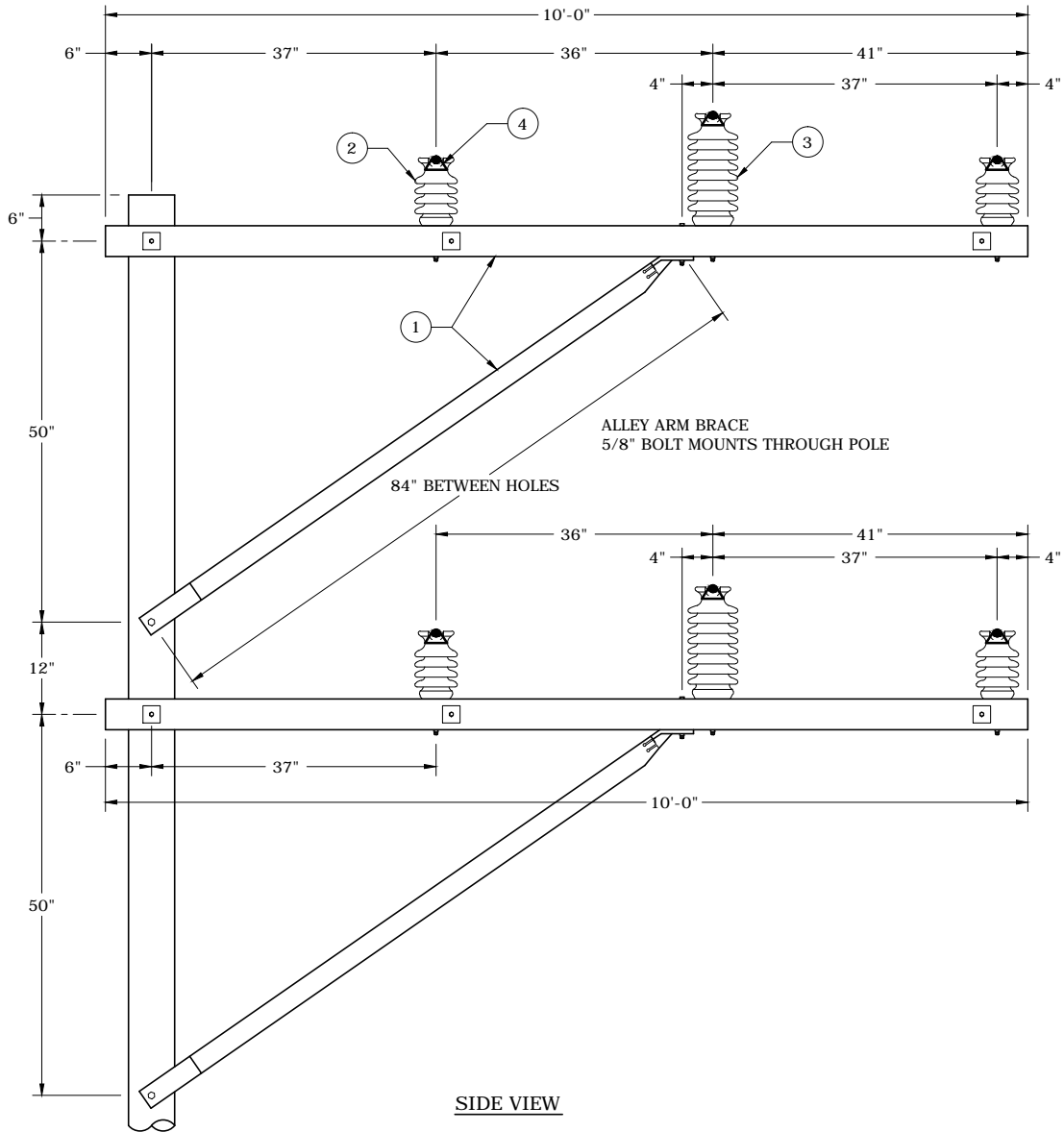
3				
2				
1				
0	10/10/14	LOOSIER	LOOSIER	ADCOCK
REVISED	BY	CK'D	APPR.	

10' ALLEY ARM CONSTRUCTION
 CENTER LINE OF POLE
 MINIMUM 5 FEET FROM OBJECT

DEC	DEM	DEP	DEF
			X
03.11-32B			



PLAN VIEW



SIDE VIEW

NOTES:

1. THIS CONSTRUCTION TO BE USED ONLY IN EXCEPTIONAL CASES IN ORDER TO MAINTAIN THE PROPER CLEARANCE BETWEEN CONDUCTORS AND BUILDINGS, OR OTHER OBSTACLES. IT IS NOT INTENDED FOR TREE CLEARANCE.
2. THIS CONSTRUCTION IS TO BE USED WHEN CENTER LINE OF POLE IS LOCATED BETWEEN A MINIMUM 5 FEET FROM OBJECT.
3. MAXIMUM SPAN FOR ALLEY ARM CONSTRUCTION IS 200'.
4. MINIMUM CLASS 2 POLE IS REQUIRED IN MEDIUM LOADING DISTRICT. CLASS 1 IS REQUIRED IN HEAVY LOADING DISTRICT (INDIANA).
5. TANGENT POLES ONLY - POLES WITH AN ANGLE WILL REQUIRE GUYING.
6. SEE DWG. 03.11-34B FOR THE BILL OF MATERIALS.



3				
2				
1				
0	7/30/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

10' DOUBLE CIRCUIT ALLEY ARM CONSTRUCTION
 CENTER LINE OF POLE
 MINIMUM 5 FEET FROM OBJECT

DEC	DEM	DEP	DEF
X	X	X	X
03.11-34A			

BILL OF MATERIALS

MACRO UNIT	BUBBLE NUMBER	COMPATIBLE UNIT	CU QTY	ITEM NUMBER	ITEM QTY/ CU	DESCRIPTION
	1	ARMDAL10W84WF	1	11313	3	BOLT, DOUBLE ARMING, 5/8 IN, 20 IN, STEEL, WITH 4 NUTS
				13229	1	WASHER, FLAT, 1/2 IN, GALVANIZED, ROUND, FLAT, 1/2", BOLT
				13264	1	WASHER, LOCK, 5/8 IN, STEEL, GLV, SPRING, DOUBLE COIL
				13308	10	WASHER, SQUARE, 2-1/4", SQUARE, FLAT, 3/16", HOLE, GALV.
				14114	4	SCREW, LAG, 1/2 IN X 4 IN, STEEL, GLV, SCREW, LAG, 1/2"X4"
				31114	2	CROSSARM, WOOD, WD 10'
				9220266564	2	BRACE, ARM, ALLEY ARM, 7', APITONG WOOD
	152097	2	BOLT, MACH 1/2 X 6			
	2	IHPIT25F	4	80212	2	INSULATOR, POST, TIE, TOP, 25KV, WITHOUT STUD
	3	IHPIT45F	2	9220273037	1	INSULATOR, POST, LINE, 45KV, ROUND BASE TIE TOP
4	-	6	-	1	APPROPRIATE TIE SIZED PER CONDUCTOR	
	-	ISSTUDBOLT588F	6	13264	1	WASHER, LOCK, 5/8 IN, STEEL, GLV, SPRING, DOUBLE COIL
				72364	1	STUD, LINE POST, 3/4 IN STUD WITH 5/8 X 7.5 IN STEEL PIN

NOTES:

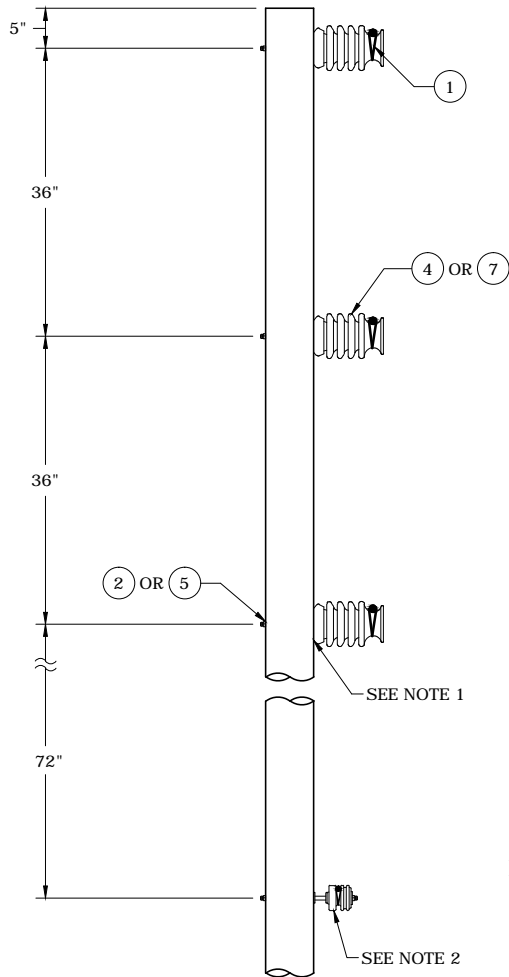
- SEE DWG. 03.11-34A FOR DESIGN SPECIFICATIONS AND NOTES.



3				
2				
1				
0	10/10/14	LOOSIER	LOOSIER	ADCOCK
REVISED	BY	CK'D	APPR.	

10' DOUBLE CIRCUIT ALLEY ARM CONSTRUCTION
 CENTER LINE OF POLE
 MINIMUM 5 FEET FROM OBJECT

DEC	DEM	DEP	DEF
			X
03.11-34B			



FRONT VIEW
12 KV

POLE SIZING CHART					
WIRE SIZE	MAX. SPAN (FT)	POLE CLASS BY HEIGHT			JOINT USE (TOTAL DIAMETER)
		45	50	55	
795	250	4	3	3	≤ 1"
795	225	4	3	3	1" - 2.5"
795	250	3	2	2	1" - 2.5"
795	250	1	1	1	2.5" - 5"
336	250	4	3	3	< 2.5"
336	175	4	3	3	2.5" - 5"
336	250	2	2	1	2.5" - 5"
1/0 & SMALLER	400	4	3	3	≤ 1"
1/0 & SMALLER	325	3	3	3	1" - 2.5"
1/0 & SMALLER	400	3	2	2	1" - 2.5"
1/0 & SMALLER	400	1	1	H1	2.5" - 5"

NOTES: THIS TABLE SPECIFIES POLE CLASS ONLY. POLE HEIGHT DETERMINED BY CLEARANCE. SEE DWG. 02.02-03A FOR STANDARD STOCKED POLES. POLEFOREMAN REQUIRED FOR DESIGNS OUTSIDE OF TABLE GUIDELINES. FOR POLES WITH EQUIPMENT, MINIMUM CLASS IN DWG. 02.02-03B MUST ALSO BE MET. SEE NOTE 3.

BILL OF MATERIALS				
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	DESCRIPTION
PF(KV)V3TA(WIRE)FM	1	STIEF(WIRE)ALF	3	SIDE TIE F NECK (WIRE) ALUMINUM
	2	ISSTUDBOLT5812F	3	INSULATOR SUPPORT STUDBOLT 5/8X12"
	3	ISGAINGRIDF	3	INSULATOR SUPPORT GAINGRID 4X4 INCH ALUMINUM NO TEETH
	3	ISGAINGRID55F	3	INSULATOR SUPPORT GAINGRID 5-1/2 INCH
PF(KV)V3TA(WIRE)CUFM	4	IHPTT(KV)F	3	INSULATOR POST, HORIZONTAL, TIE TOP, STUD BASE (KV)
	5	ISSTUDBOLT5812F	3	INSULATOR SUPPORT STUDBOLT 5/8X12"
	6	ISGAINGRIDF	3	INSULATOR SUPPORT GAINGRID 4X4 INCH ALUMINUM NO TEETH
	7	IHPTT(KV)F	3	INSULATOR POST, HORIZONTAL, TIE TOP, STUD BASE (KV)
	8	HTIEN6CSDF	3	HAND TIE #6 SOFT DRAWN

NOTES:

1. POLE GAINS (ISGAINGRIDF FOR 15/25KV INSULATORS OR ISGAINGRID55F FOR 35KV INSULATORS) ARE REQUIRED FOR POST INSULATOR INSTALLATIONS ON WOOD POLES WHEN THE POLE DOES NOT HAVE A SLAB GAIN FOR ALL CONDUCTOR SIZES. WHEN THE CONDUCTOR IS 336.4 KCMIL OR LARGER, USE POLE GAIN EVEN IF SLAB GAIN EXISTS. POLE GAINS ARE NOT REQUIRED FOR INSULATORS USED FOR JUMPERS. SLACK SPANS WITH 336 AND 795 CONDUCTORS REQUIRE A POLE GAIN.

2. TYPICAL INSTALLATION - REFER TO SECTION 04 FOR NEUTRAL/SECONDARY DETAILS.

3. WHEN DESIGNING WITH LARGER CLASS SIZES (1, H1, H2, H3), POLE SHOULD BE FRAMED USING BRACKETS. SEE DWGS. 03.14-01, 03.14-02 AND 03.14-05.

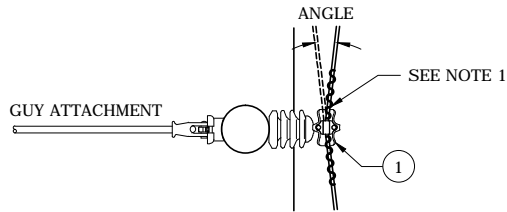
4	5/23/13	McCONNELL	DANNA	ADCOCK
3	3/21/13	McCONNELL	DANNA	ADCOCK
2	10/18/12	WOJNAROWSKI	BURLISON	ADCOCK
0	11/18/10	BURLISON	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

VERTICAL CONSTRUCTION - TANGENT
795 AAC - 0 DEGREES TO 3 DEGREES,
SMALLER CONDUCTORS - 0 DEGREES TO 5 DEGREES

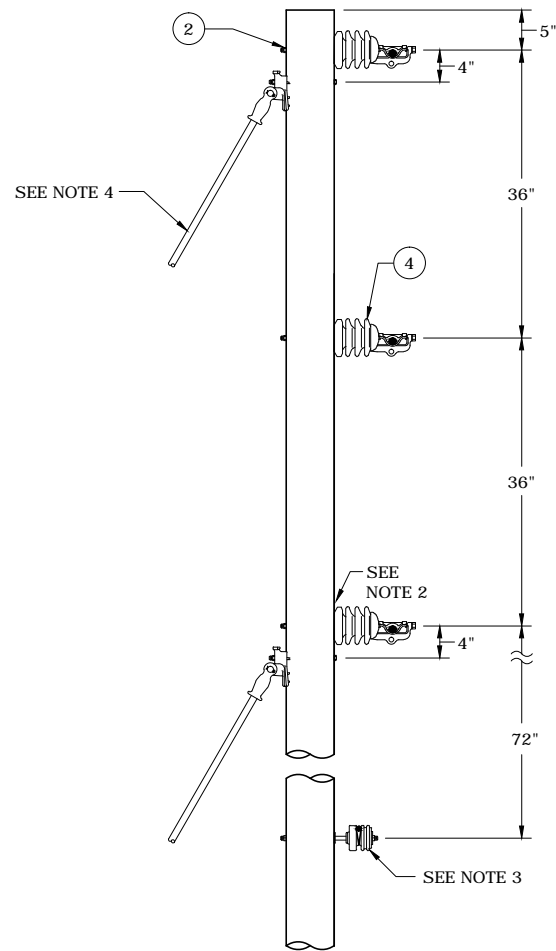


FLA

DWG.
03.12-02



PLAN VIEW



FRONT VIEW
6 - 15 DEGREES 12KV

BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	DESCRIPTION
PF(KV)V3SA(WIRE)FM	1	TCGCLMP(WIRE)ALF	3	TRUNION CUSHION GRIP CLAMP (WIRE)
	2	ISSTUDBOLT5812F	3	INSULATOR SUPPORT STUDBOLT 5/8X12"
	3	ISGAINGRIDF	3	INSULATOR SUPPORT GAINGRID 4X4 INCH ALUMINUM NO TEETH
	3	ISGAINGRID55F	3	INSULATOR SUPPORT GAINGRID 5-1/2 INCH
	4	IHPCLT(KV)F	3	INSULATOR POST, HORIZ, CLAMP TOP, STUD BASE (KV)

NOTES:

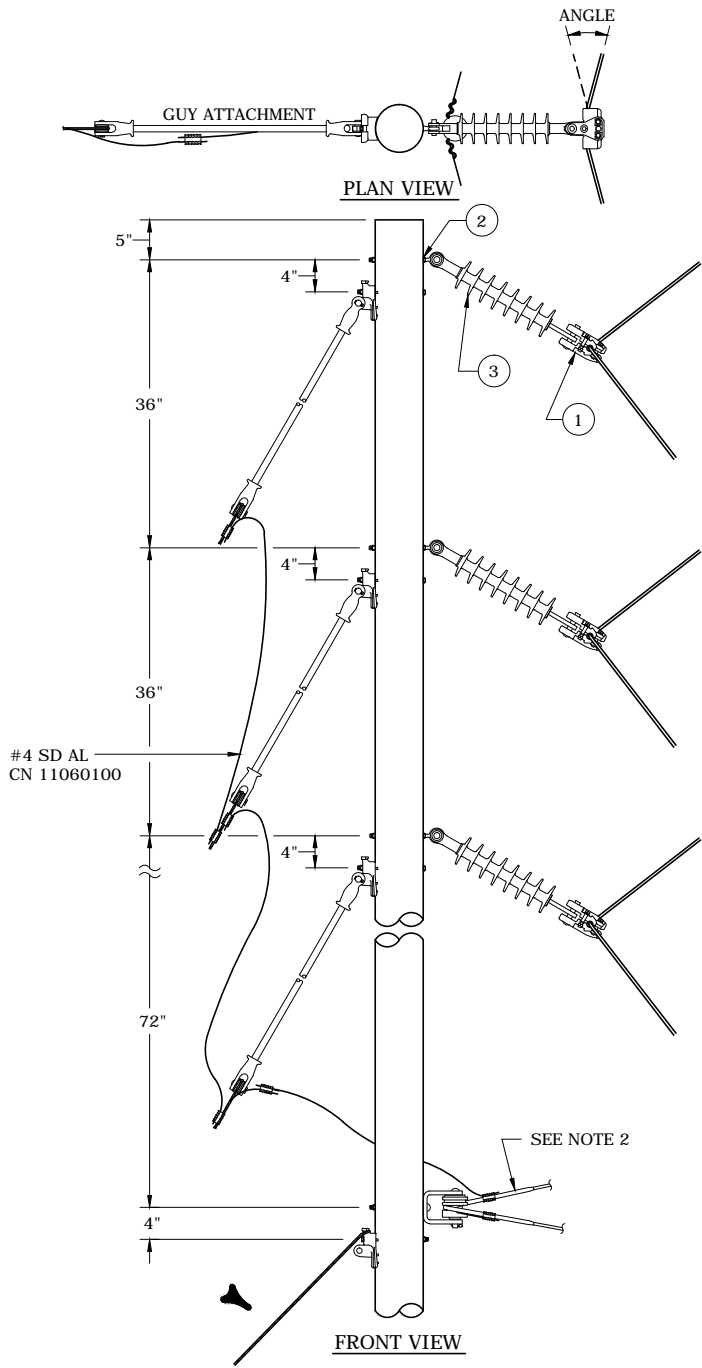
- ARMOR ROD NOT REQUIRED WHEN USING CUSHION GRIP.
- POLE GAINS (ISGAINGRIDF FOR 15/25KV INSULATORS OR ISGAINGRID55F FOR 35KV INSULATORS) ARE REQUIRED FOR POST INSULATOR INSTALLATIONS ON WOOD POLES WHEN THE POLE DOES NOT HAVE A SLAB GAIN FOR ALL CONDUCTOR SIZES. WHEN THE CONDUCTOR IS 336.4 KCMIL OR LARGER, USE POLE GAIN EVEN IF SLAB GAIN EXISTS. POLE GAINS ARE NOT REQUIRED FOR INSULATORS USED FOR JUMPERS. SLACK SPANS WITH 336 AND 795 CONDUCTORS REQUIRE A POLE GAIN.
- TYPICAL INSTALLATION - REFER TO SECTION 04 FOR NEUTRAL/SECONDARY DETAILS.
- TYPICAL INSTALLATION - REFER TO SECTION 02 FOR GUYING DETAILS.
- SEE DWG. 03.03-06 FOR LINE CLAMPS.
- WHEN DESIGNING WITH LARGER CLASS SIZES (1, H1, H2, H3), POLE SHOULD BE FRAMED USING BRACKETS. SEE DWGS. 03.14-01, 03.14-02 AND 03.14-05.



VERTICAL CONSTRUCTION -
SMALL ANGLES

DEC	DEM	DEP	DEF
			X
03.12-04			

6	6/16/15	LOOSIER	BURLISON	ADCOCK
5	12/23/13	GUINN	GUINN	ADCOCK
4	5/23/13	McCONNELL	DANNA	ADCOCK
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	



BILL OF MATERIALS				
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	DESCRIPTION
PF(KV)V3MA(WIRE)FM	1	SCGCLMP(WIRE)ALF	3	SUSPENSION CUSHION GRIP CLAMP (WIRE)
	2	ISEYEBOLT5812F	3	INSULATOR SUPPORT EYEBOLT 5/8X12"
	3	IDES(KV)PF	3	INSULATOR DEADEND/SUSPENSION (KV) POLYMER

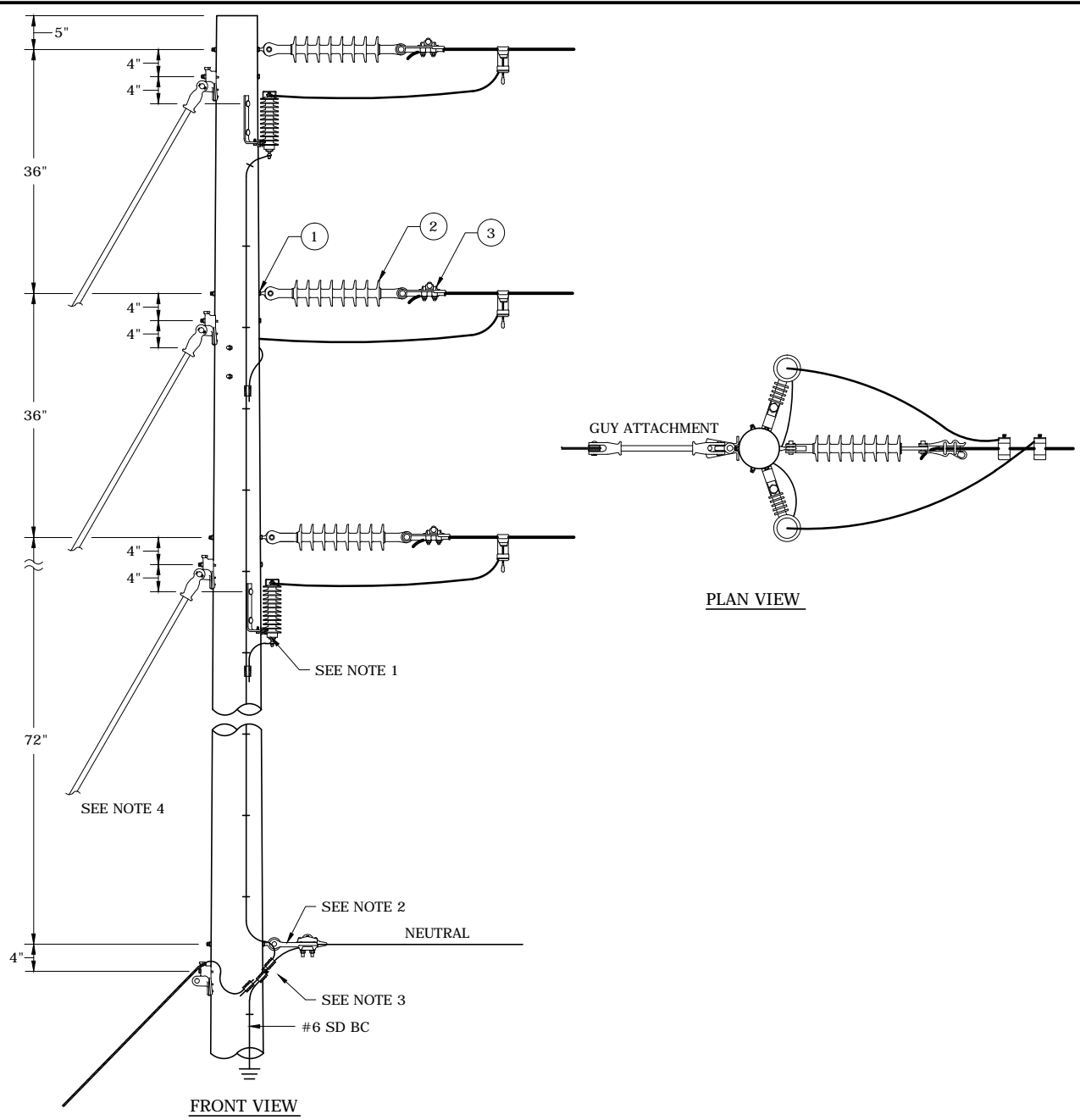
- NOTES:
1. USE 3 OR 4 PRIMARY GUYS AS SPECIFIED ON WORK ORDER.
 2. CUSHION GRIP MAXIMUM ANGLE IS 30 DEGREES. CUSHION GRIPS ARE AVAILABLE FOR ALL ALUMINUM WIRE SIZES.
 3. DOUBLE DEADEND FOR ANGLES LARGER THAN 30 DEGREES WHEN CUSHION GRIPS ARE USED.
 4. SEE DWG. 02.04-18 FOR THE APPROPRIATE APPLICATION OF GUY INSULATORS.

DUKE ENERGY.

DEC	DEM	DEP	DEF
			X
03.12-06			

3	8/18/14	LOOSIER	DANNA	ADCOCK
2	8/1/14	LOOSIER	GUINN	ADCOCK
1	5/22/12	BROWN	BURLISON	ELKINS
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

VERTICAL CONSTRUCTION - ANGLE ASSEMBLIES
ANGLES TO 60 DEGREES



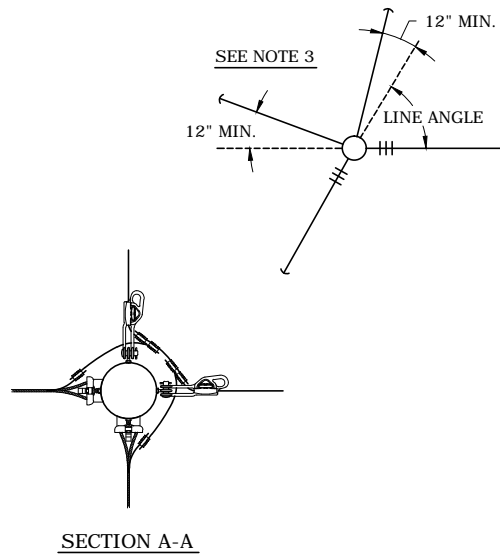
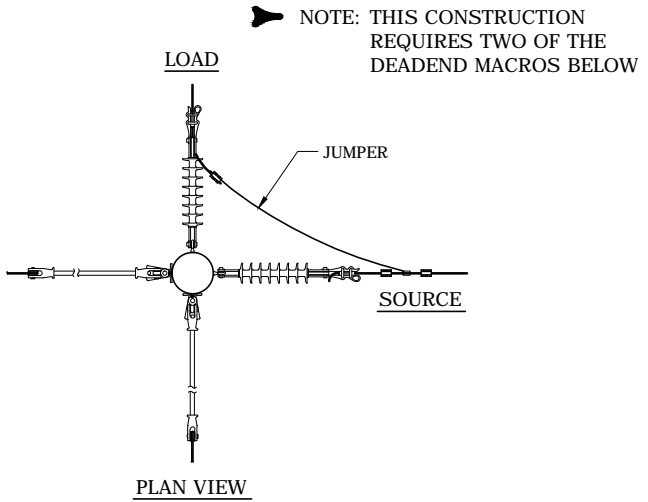
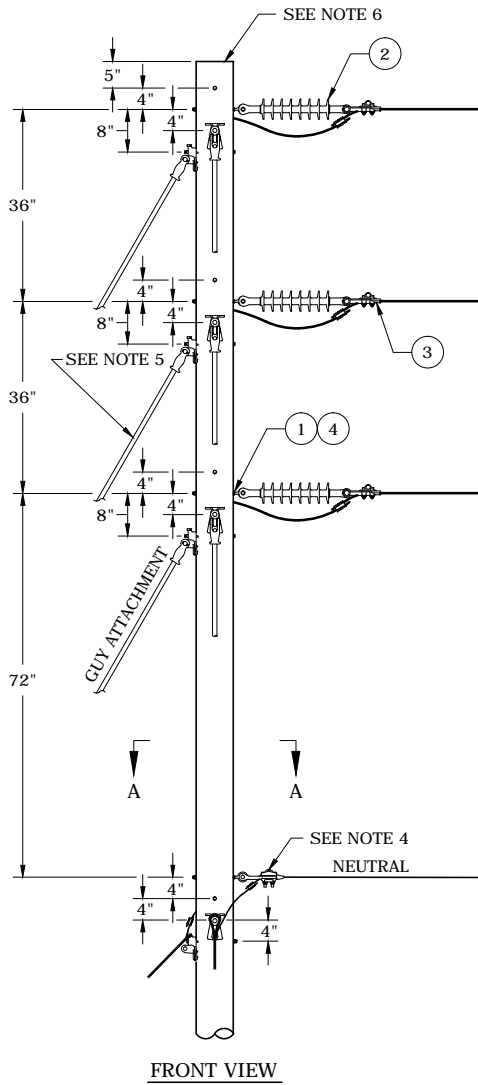
BILL OF MATERIALS				
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	DESCRIPTION
PF(KV)V3DE(WIRE)FM	1	ISEYEBOLT5812F	3	INSULATOR SUPPORT EYEBOLT 5/8X12"
	2	IDES(KV)PF	3	INSULATOR DEADEND/SUSPENSION (KV) POLYMER
	3	DECLMP(WIRE)F	3	DEADEND CLAMP (WIRE)

- NOTES:**
1. ARRESTERS ISSUED SEPARATELY - SEE SECTION 08 FOR DETAILS.
 2. TYPICAL INSTALLATION - SEE SECTION 04 FOR NEUTRAL/SECONDARY DETAILS.
 3. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.
 4. TYPICAL INSTALLATION - SEE SECTION 02 FOR GUYING DETAILS.
 5. USE 2-1/4" SQUARE WASHER ON 1/0 AAAC AND SMALLER CONDUCTOR. USE 3" CURVE WASHER FOR CONDUCTORS LARGER THAN 1/0 AAAC.
 6. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.

3				
2				
1	5/22/12	BROWN	BURLISON	ELKINS
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

VERTICAL CONSTRUCTION - DEADEND

FLA DWG. 03.12-10



BILL OF MATERIALS				
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	DESCRIPTION
PF (KV) V3DE(WIRE) FM	1	ISEYEBOLT5812F	3	INSULATOR SUPPORT EYEBOLT 5/8 X 12"
	2	IDES(KV)PF	3	INSULATOR DEADEND/SUSPENSION (KV) POLYMER
	3	DECLMP(WIRE)F	3	DEADEND CLAMP (WIRE)

NOTES:

1. USE 2-1/4" SQUARE WASHER ON 1/0 AAAC AND SMALLER CONDUCTOR AND 3" CURVE WASHER FOR CONDUCTORS LARGER THAN 1/0 AAAC.
2. HOTLINE CLAMP AND STIRRUP MAY BE USED FOR SMALL CONDUCTORS. USE SOLID JUMPER FOR LARGE CONDUCTOR (ABOVE 1/0).
3. IF USED FOR LINE ANGLES LESS THAN 60°, OFFSET EACH ANCHOR 12" (SEE ABOVE) OR ADD A BISECTIONAL GUY. CONSIDER BISECTIONAL GUYS WHERE ANGLE PERMITS.
4. TYPICAL INSTALLATION - REFER TO SECTION 04 FOR NEUTRAL/SECONDARY DETAILS.
5. TYPICAL INSTALLATION - REFER SECTION 02 FOR GUYING DETAILS.
6. USE A 45' CLASS 2 POLE FOR 795 AAC CONDUCTOR.
7. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.

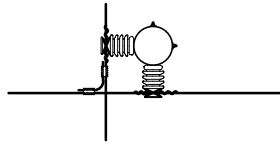
3				
2	4/4/13	McCONNELL	DANNA	ADCOCK
1	5/22/12	BROWN	BURLISON	ELKINS
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

▶ VERTICAL RIGHT ANGLE POLE CONSTRUCTION
THREE-PHASE

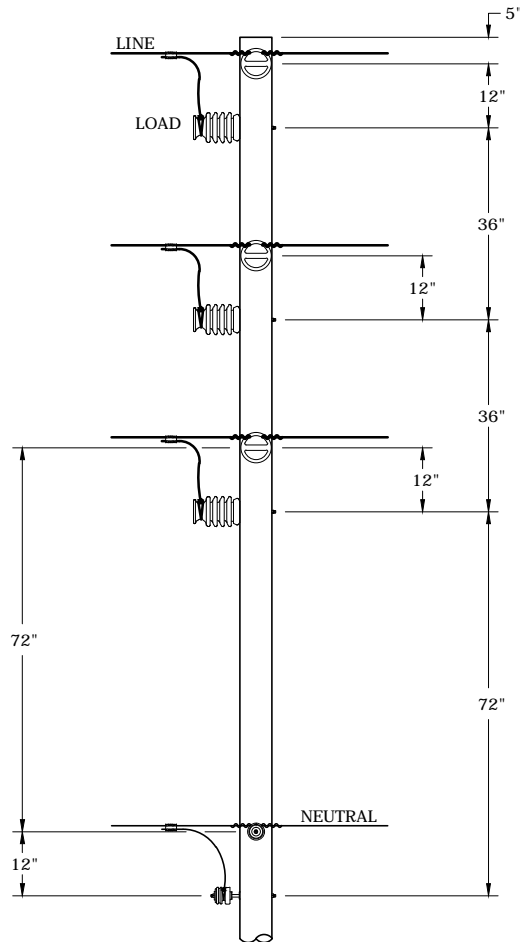


FLA

DWG.
03.12-11



PLAN VIEW
TANGENT CONSTRUCTION



FRONT VIEW

NOTES:

1. THE INTENT OF THIS DRAWING IS TO SHOW PHASE SPACING AND CIRCUIT ARRANGEMENT. PRIMARY SUPPORT CONFIGURATION MAY VARY.
2. POLE GAINS (ISGAINGRIDF FOR 15/25KV INSULATORS OR ISGAINGRID55F FOR 35KV INSULATORS) ARE REQUIRED FOR POST INSULATOR INSTALLATIONS ON WOOD POLES WHEN THE POLE DOES NOT HAVE A SLAB GAIN FOR ALL CONDUCTOR SIZES. WHEN THE CONDUCTOR IS 336.4 KCMIL OR LARGER, USE POLE GAIN EVEN IF SLAB GAIN EXISTS. POLE GAINS ARE NOT REQUIRED FOR INSULATORS USED FOR JUMPERS. SLACK SPANS WITH 336 AND 795 CONDUCTORS REQUIRE A POLE GAIN.
3. SEE SPECIFIC CONFIGURATION DRAWINGS FOR ADDITIONAL DETAILS.
- ▶ 4. WHEN DESIGNING WITH LARGER CLASS SIZES (1, H1, H2, H3), POLE SHOULD BE FRAMED USING BRACKETS. SEE DWGS. 03.14-01, 03.14-02 AND 03.14-05.

3				
2	5/23/13	McCONNELL	DANNA	ADCOCK
1	3/21/13	McCONNELL	DANNA	ADCOCK
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

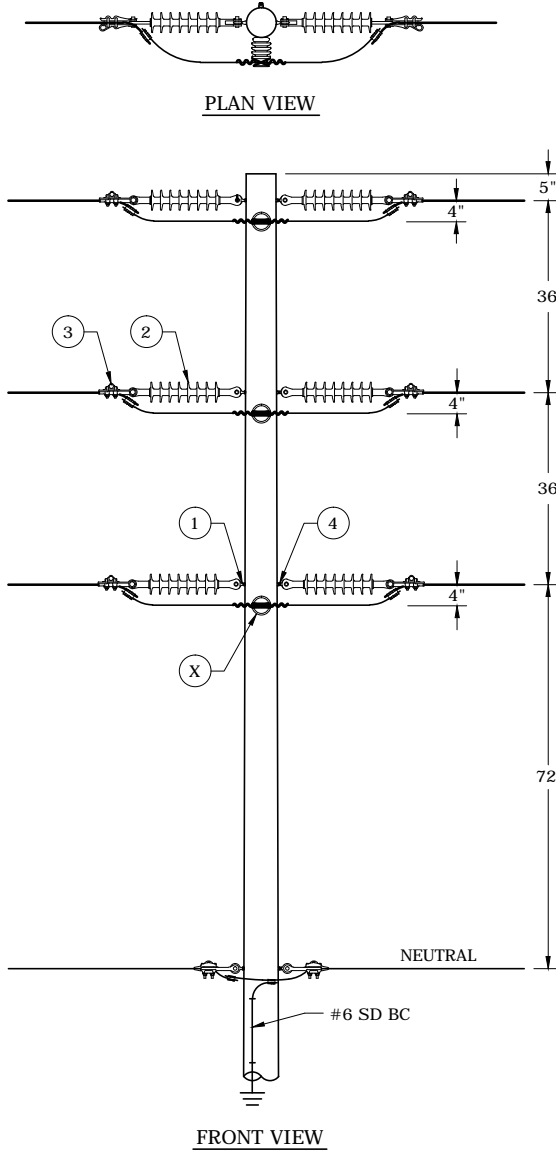
VERTICAL TANGENT CROSSING



FLA

DWG.
03.12-12

VERTICAL DEADEND WITH VERTICAL DEADEND



FRONT VIEW

BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	DESCRIPTION
PF(KV)V3DD(WIRE)FM	1	ISEYEBOLT5812F	3	INSULATOR SUPPORT EYEBOLT 5/8 X 12"
	2	IDES (KV)PF	6	INSULATOR DEADEND/ SUSPENSION (KV) POLYMER
	3	DECLMP(WIRE)F	6	DEADEND CLAMP (WIRE)
	4	ISEYENUT58F	3	INSULATOR SUPPORT EYENUT 5/8

NOTES:

1. DEADEND SMALLER CONDUCTORS ON THE STEEL CROSSARM.
2. ATTACH ARM TO POLE WITH (2) 3/4" MACHINE BOLTS.
3. LOAD LIMITS FOR STEEL CROSSARM:
 - A. MAXIMUM LOAD PER PHASE = 5,100 LBS.
 - B. TOTAL MAXIMUM LOAD = 10,200 LBS.
4. USE 35KV POST INSULATOR ON STEEL ARM TO IMPROVE BIL.
5. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.
6. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.
7. SEE DWG. 03.12-14B FOR ALTERNATE CONSTRUCTION SPECIFICATIONS.

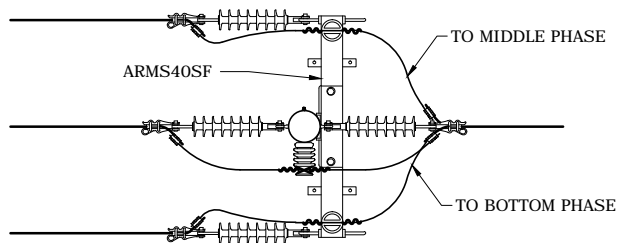
3				
2				
1	4/4/13	McCONNELL	DANNA	ADCOCK
0	8/7/12	ROBESON	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

VERTICAL DOUBLE DEADEND CONSTRUCTION
 THREE-PHASE

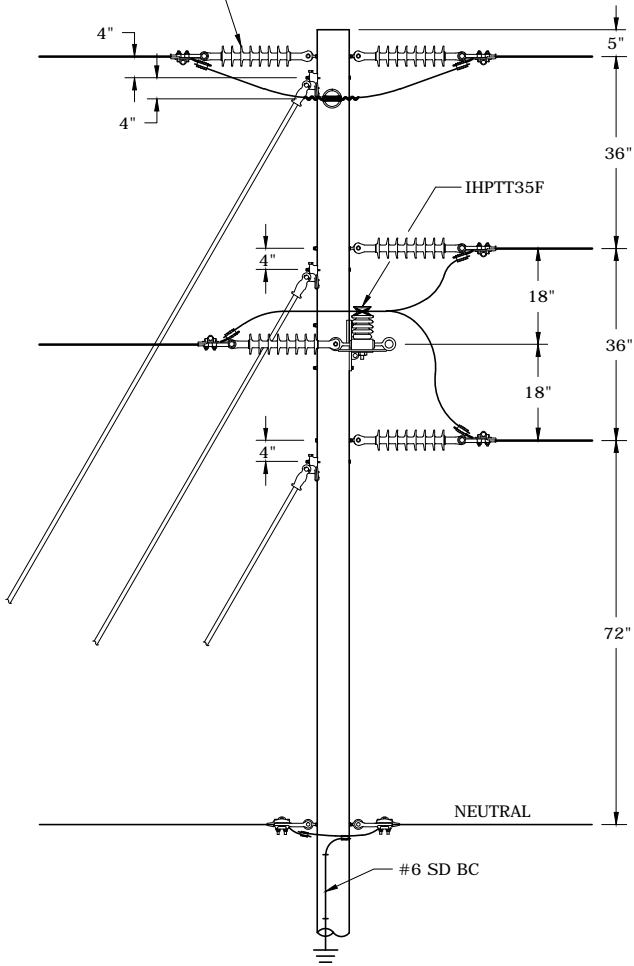


FLA DWG.
 03.12-14A

**VERTICAL CONSTRUCTION DEADEND
(TRANSITION TO SMALLER CONDUCTOR
WITHOUT FUSE PROTECTION)**

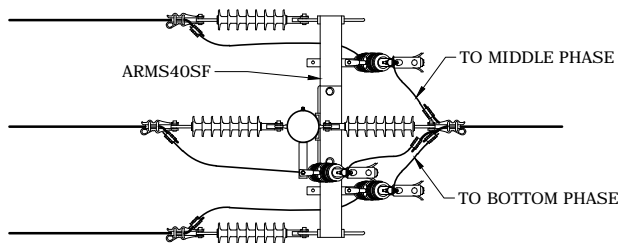


PLAN VIEW

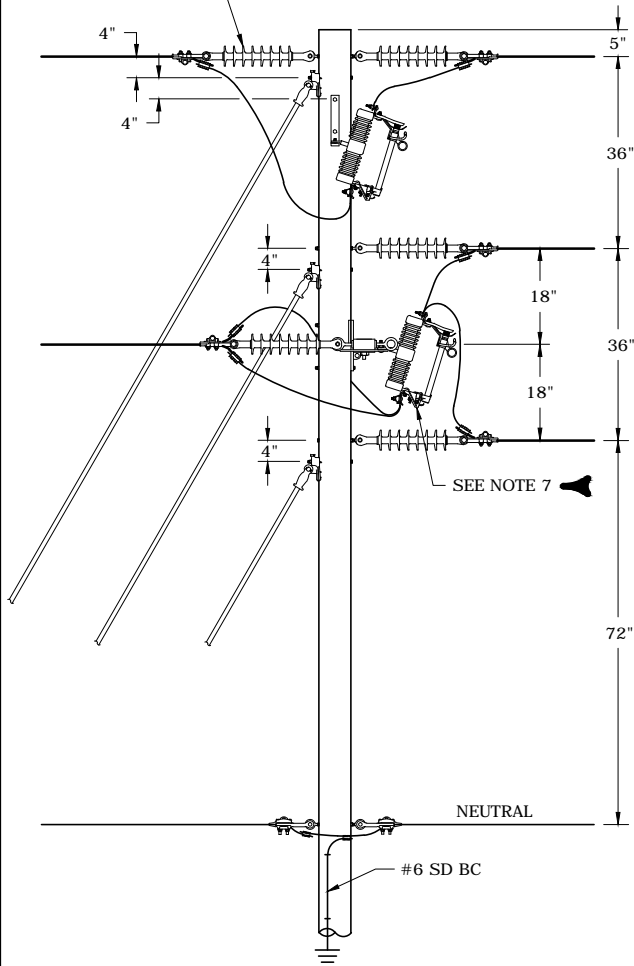


FRONT VIEW

**VERTICAL CONSTRUCTION DEADEND
(TRANSITION TO SMALLER CONDUCTOR
WITH FUSE PROTECTION)**



PLAN VIEW



FRONT VIEW

NOTES:

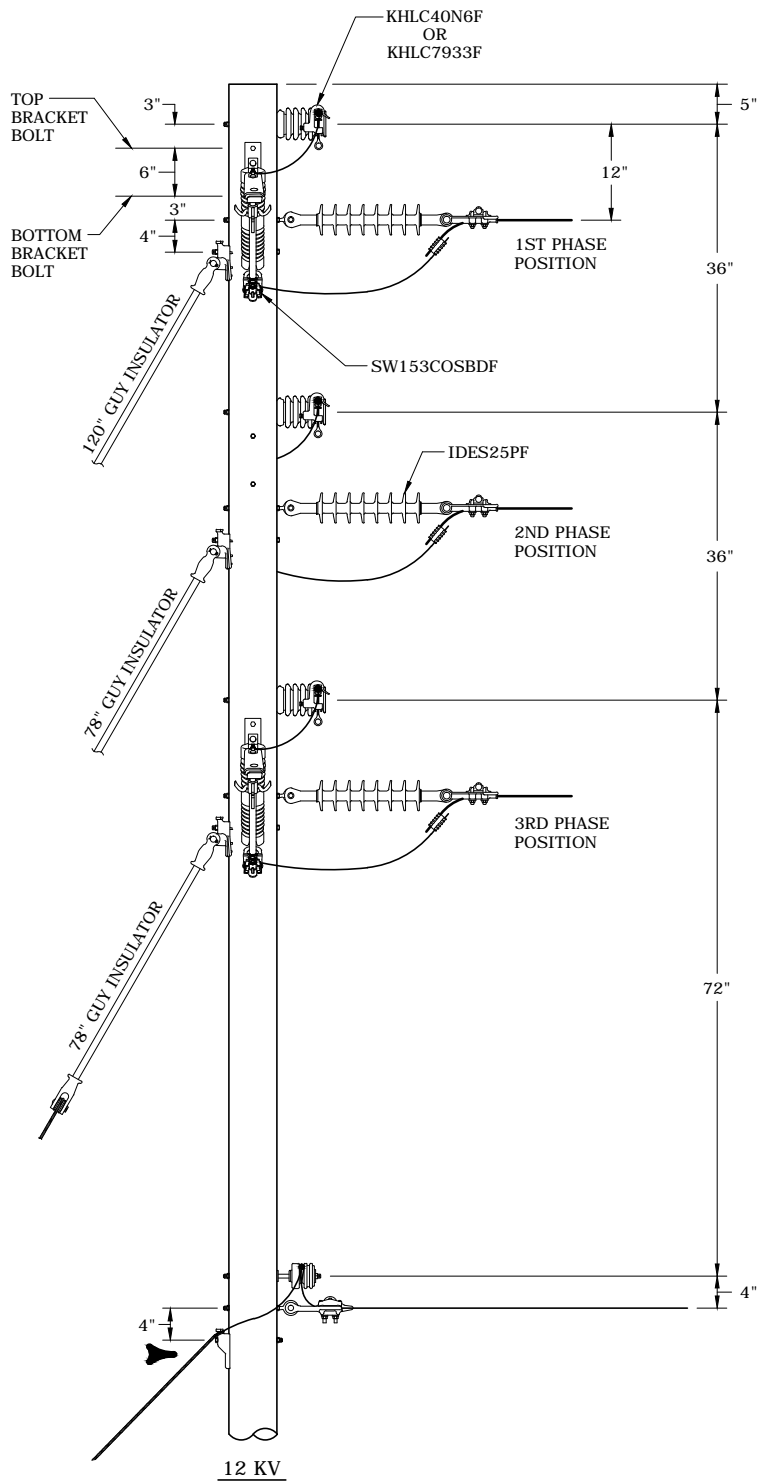
1. DEADEND SMALLER CONDUCTORS ON THE STEEL CROSSARM.
2. ATTACH ARM TO POLE WITH (2) 3/4" MACHINE BOLTS.
3. LOAD LIMITS FOR STEEL CROSSARM:
 - A. MAXIMUM LOAD PER PHASE = 5,100 LBS.
 - B. TOTAL MAXIMUM LOAD = 10,200 LBS.
4. USE 35KV POST INSULATOR ON STEEL ARM TO IMPROVE BIL.
5. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.
6. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.
7. MOUNT CUTOUTS ON FIBERGLASS CROSSARM WITH NEMA BRACKET (CU BKT COSTLXARMF).



3				
2				
1	4/10/15	LOOSIER	BURLISON	ADCOCK
0	8/7/12	ROBESON	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

**TRANSITION TO SMALLER CONDUCTOR
WITH OR WITHOUT
FUSE PROTECTION FOR SMALLER CONDUCTOR**

DEC	DEM	DEP	DEF
			X
03.12-14B			



NOTES:

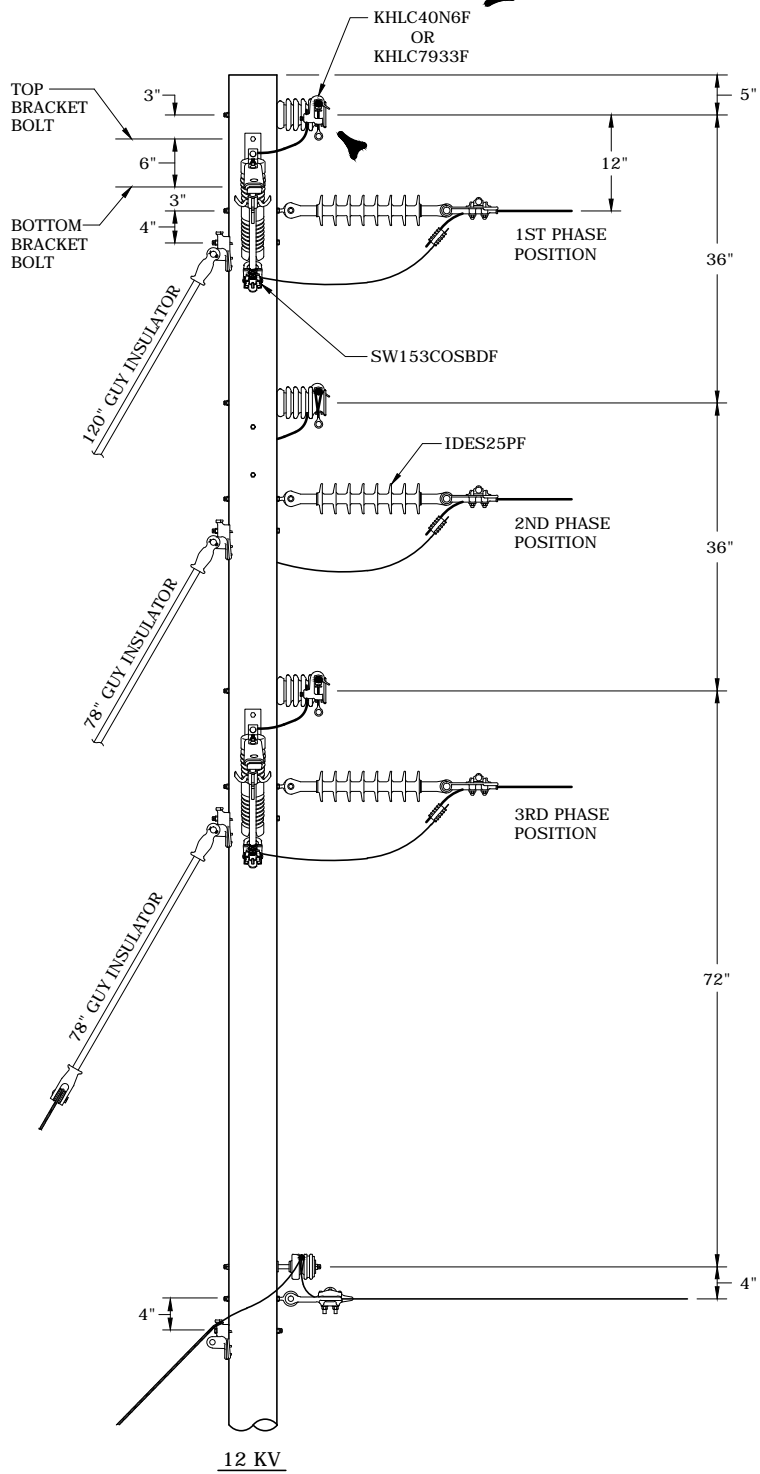
1. MIDDLE CUTOUT CAN BE PLACED ON SAME SIDE OF POLE AS OTHER CUTOUTS.
2. FOR FEEDER TAPS, THE CUTOUTS ARE OMITTED, BUT THE SPACING FOR THE TAP IS THE SAME.
3. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.



3				
2	8/26/15	LOOSIER	BURLISON	ADCOCK
1	8/31/11	BURLISON	BURLISON	ELKINS
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

**VERTICAL CONSTRUCTION - TANGENT
FUSED TAP CONSTRUCTION**

DEC	DEM	DEP	DEF
			X
03.12-20			




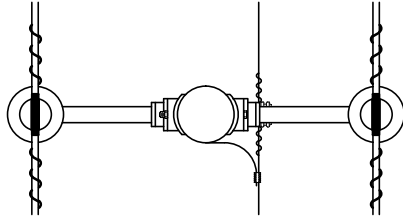
NOTES:

1. MIDDLE CUTOUT CAN BE PLACED ON SAME SIDE OF POLE AS OTHER CUTOUTS.
2. FOR FEEDER TAPS, THE CUTOUTS ARE OMITTED, BUT THE SPACING FOR THE TAP IS THE SAME.
3. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.
4. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.

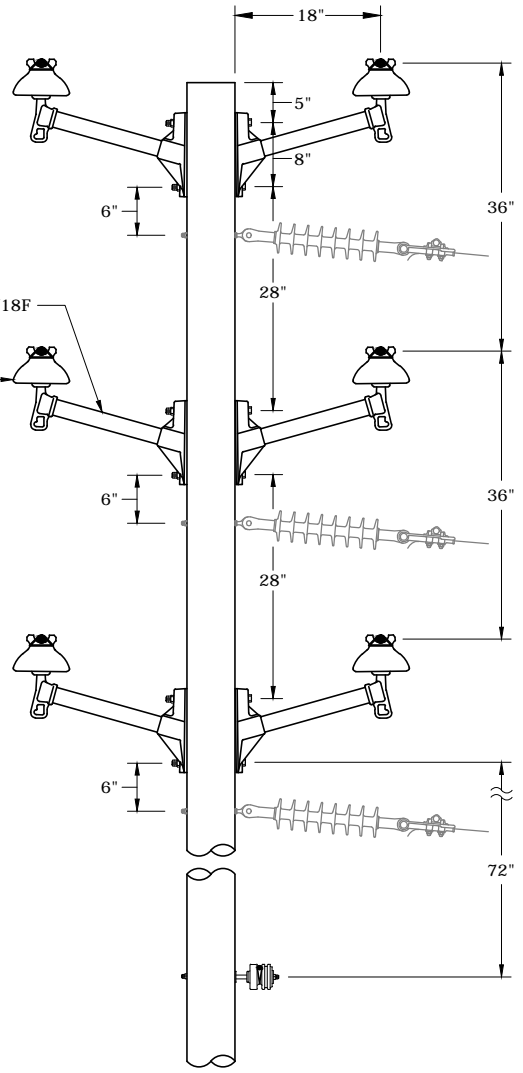
3				
2				
1	8/31/11	BURLISON	BURLISON	ELKINS
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

**VERTICAL CONSTRUCTION - TANGENT
FUSED TAP CONSTRUCTION**


FLA DWG. 03.12-20



PLAN VIEW



FRONT VIEW

POLE SIZING CHART					
WIRE SIZE	MAX. SPAN (FT)	POLE CLASS BY HEIGHT			JOINT USE (TOTAL DIAMETER)
		45	50	55	
795	200	4	3	3	NO JU
795	250	3	3	2	NO JU
795	175	4	3	3	≤ 1"
795	250	2	2	2	≤ 1"
795	250	2	1	1	1" - 2"
795	250	1	1	1	2 - 3"
336	250	4	3	3	≤ 1"
336	200	4	3	3	1" - 2.5"
336	250	3	2	2	1" - 2.5"
336	250	2	1	1	2.5" - 5"
1/0 & SMALLER	400	4	3	3	NO JU
1/0 & SMALLER	350	4	3	3	≤ 1"
1/0 & SMALLER	400	3	3	3	≤ 1"
1/0 & SMALLER	280	2	2	2	1" - 2"
1/0 & SMALLER	400	2	2	2	1" - 2"
1/0 & SMALLER	400	1	1	1	2 - 3"

NOTES: THIS TABLE SPECIFIES POLE CLASS ONLY. POLE HEIGHT DETERMINED BY CLEARANCE. SEE DWG. 02.02-03A FOR STANDARD STOCKED POLES. POLEFOREMAN REQUIRED FOR DESIGNS OUTSIDE OF TABLE GUIDELINES. FOR POLES WITH EQUIPMENT, MINIMUM CLASS IN DWG. 02.02-03B MUST ALSO BE MET.

NOTES:

1. LIMIT SPANS TO 250' MAXIMUM.
2. SPAN CLEARANCES/LIMITS BASED ON 795 AAC PRIMARY AND #1/0 AAAC NEUTRAL.
3. PREFERRED CONSTRUCTION IS TO HAVE THE SAME PHASE CONDUCTORS ON THE SAME LEVEL. THIS IMPROVES THE STRUCTURE BIL.

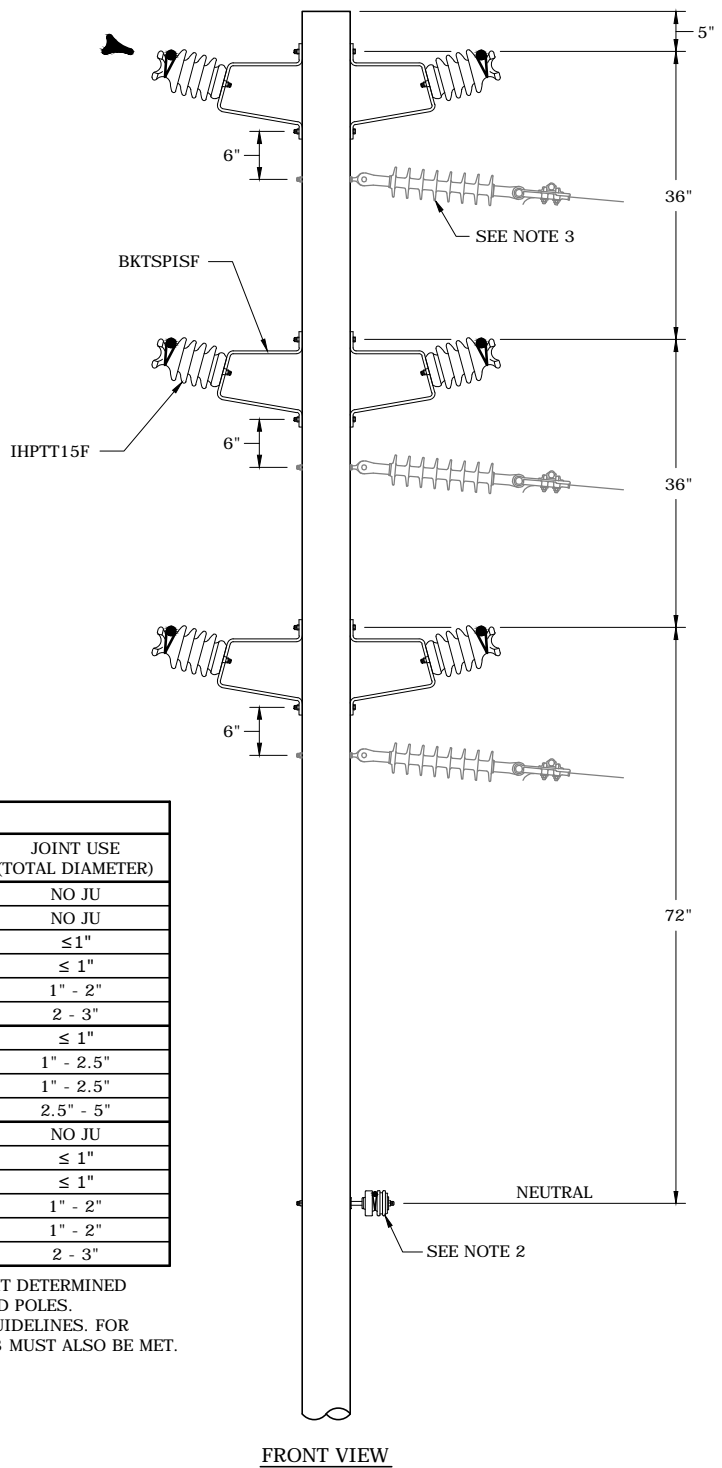
3				
2				
1	6/13/13	McCONNELL	DANNA	ADCOCK
0	10/18/12	WONAROWSKI	BURLISON	ADCOCK
REVISED	BY	CK'D	APPR.	

➤ PREFERRED THREE-PHASE
DOUBLE CIRCUIT TANGENT CONSTRUCTION



FLA

DWG.
03.14-01



POLE SIZING CHART					
WIRE SIZE	MAX. SPAN (FT)	POLE CLASS BY HEIGHT			JOINT USE (TOTAL DIAMETER)
		45	50	55	
795	200	4	3	3	NO JU
795	250	3	3	2	NO JU
795	175	4	3	3	≤ 1"
795	250	2	2	2	≤ 1"
795	250	2	1	1	1" - 2"
795	250	1	1	1	2 - 3"
336	250	4	3	3	≤ 1"
336	200	4	3	3	1" - 2.5"
336	250	3	2	2	1" - 2.5"
336	250	2	1	1	2.5" - 5"
1/0 & SMALLER	400	4	3	3	NO JU
1/0 & SMALLER	350	4	3	3	≤ 1"
1/0 & SMALLER	400	3	3	3	≤ 1"
1/0 & SMALLER	280	2	2	2	1" - 2"
1/0 & SMALLER	400	2	2	2	1" - 2"
1/0 & SMALLER	400	1	1	1	2 - 3"

NOTES: THIS TABLE SPECIFIES POLE CLASS ONLY. POLE HEIGHT DETERMINED BY CLEARANCE. SEE DWG. 02.02-03A FOR STANDARD STOCKED POLES. POLEFOREMAN REQUIRED FOR DESIGNS OUTSIDE OF TABLE GUIDELINES. FOR POLES WITH EQUIPMENT, MINIMUM CLASS IN DWG. 02.02-03B MUST ALSO BE MET.

NOTES:

1. SEE DWG. 03.14-04 WHEN INSTALLING 795 KCMIL AAC AT 4° TO 5°.
2. TYPICAL INSTALLATION - REFER TO SECTION 04 FOR NEUTRAL/SECONDARY DETAILS.
3. SLACK SPAN TAP INSTALLED AS SHOWN AS NEEDED.

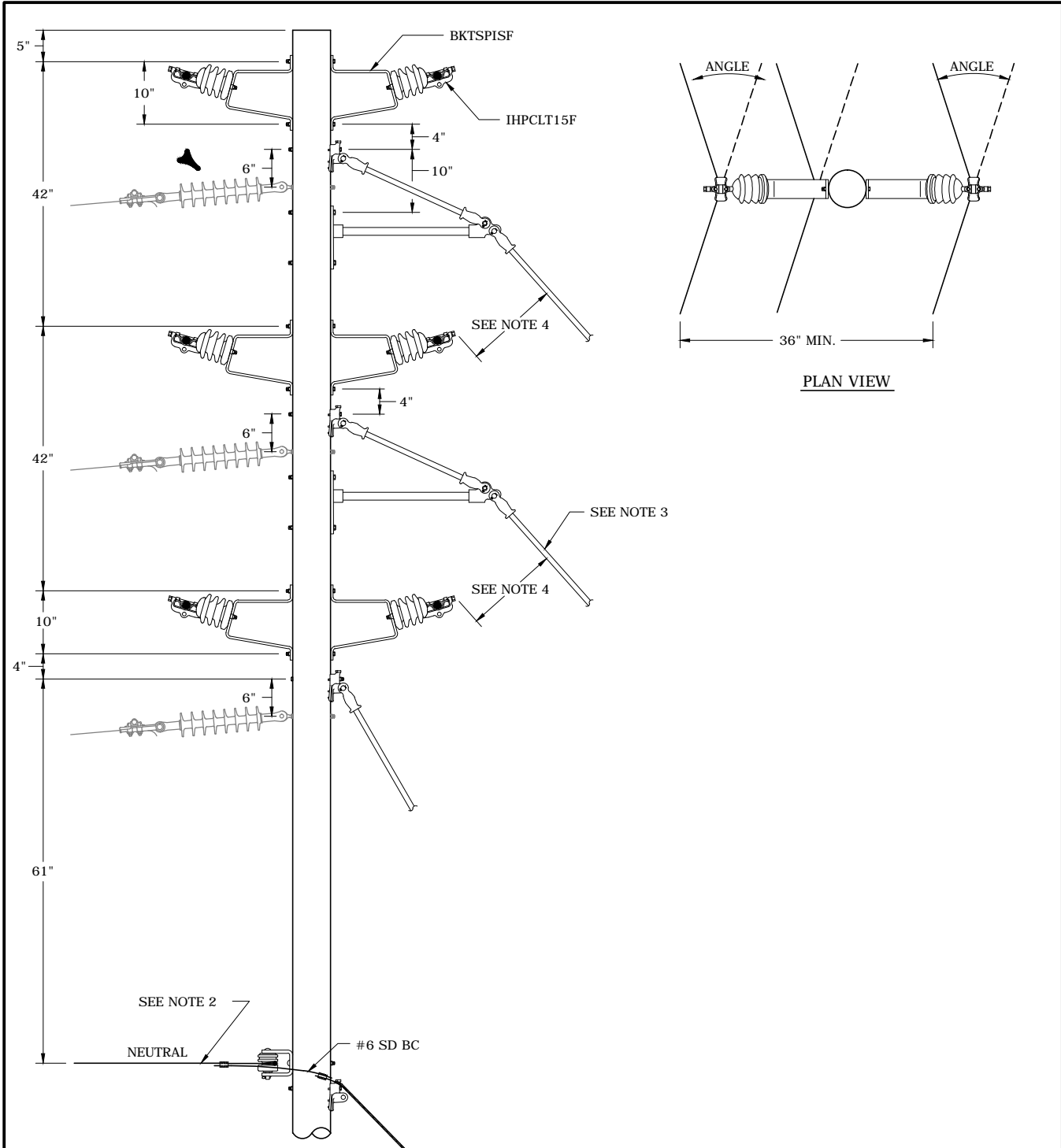
3	4/11/13	MC-CONNELL	DANNA	ADCOCK
2	10/18/12	WOLNAROWSKI	BURLISON	ADCOCK
1	5/22/12	BURLISON	BURLISON	ELKINS
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

VERTICAL CONSTRUCTION DOUBLE CIRCUIT,
THREE-PHASE, 0 DEGREES TO 5 DEGREES



FLA

DWG.
03.14-02




NOTES:

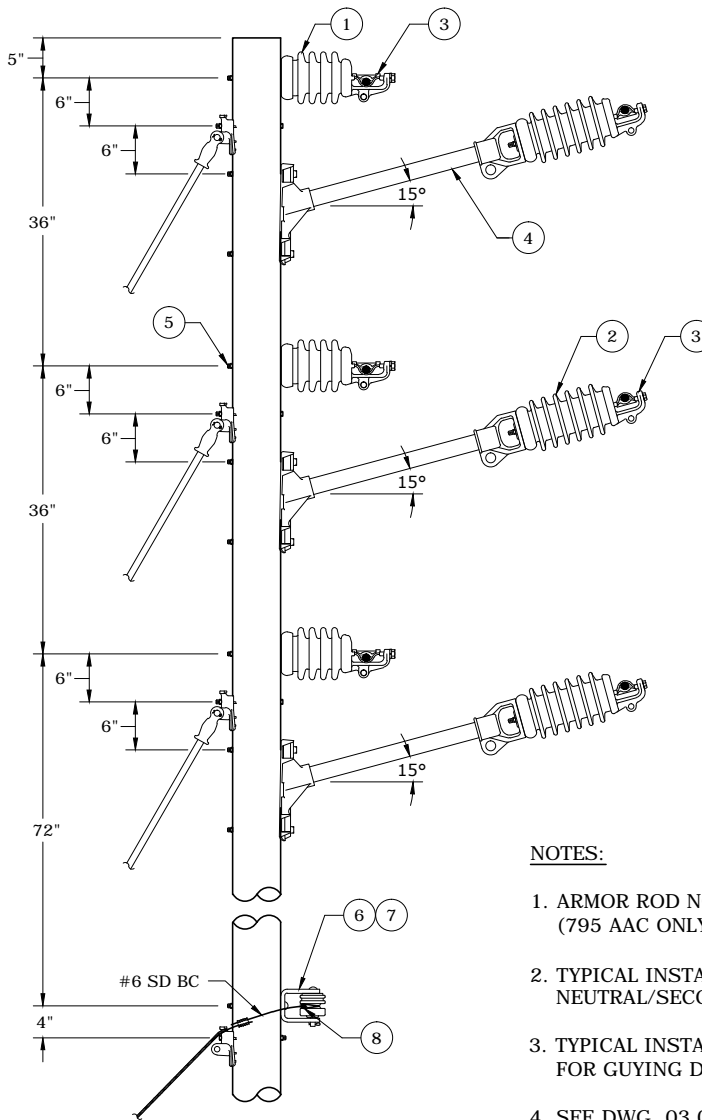
1. ARMOR ROD NOT REQUIRED WHEN USING CUSHION GRIP (795 AAC ONLY).
2. TYPICAL INSTALLATION - REFER TO SECTION 04 FOR NEUTRAL/SECONDARY DETAILS.
3. TYPICAL INSTALLATION - REFER TO SECTION 02 FOR GUYING DETAILS.
4. MINIMUM SPACING:
 12KV = 8"
 25KV = 12"
5. SEE DWG. 03.03-06 FOR CLAMPS.
6. SLACK SPAN TAP INSTALLED AS SHOWN AS NEEDED.

3				
2				
1	5/22/12	BURLISON	BURLISON	ELKINS
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

**VERTICAL CONSTRUCTION DOUBLE CIRCUIT,
 THREE-PHASE, 6 DEGREES TO 15 DEGREES**



FLA DWG. 03.14-04



FRONT VIEW
1 - 15 DEGREES 12KV

NOTES:

1. ARMOR ROD NOT REQUIRED WHEN USING CUSHION GRIP (795 AAC ONLY).
2. TYPICAL INSTALLATION - REFER TO SECTION 04 FOR NEUTRAL/SECONDARY DETAILS.
3. TYPICAL INSTALLATION - REFER TO SECTION 02 FOR GUYING DETAILS.
4. SEE DWG. 03.03-06 FOR CLAMPS.

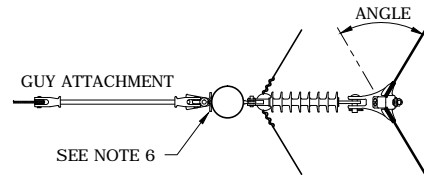
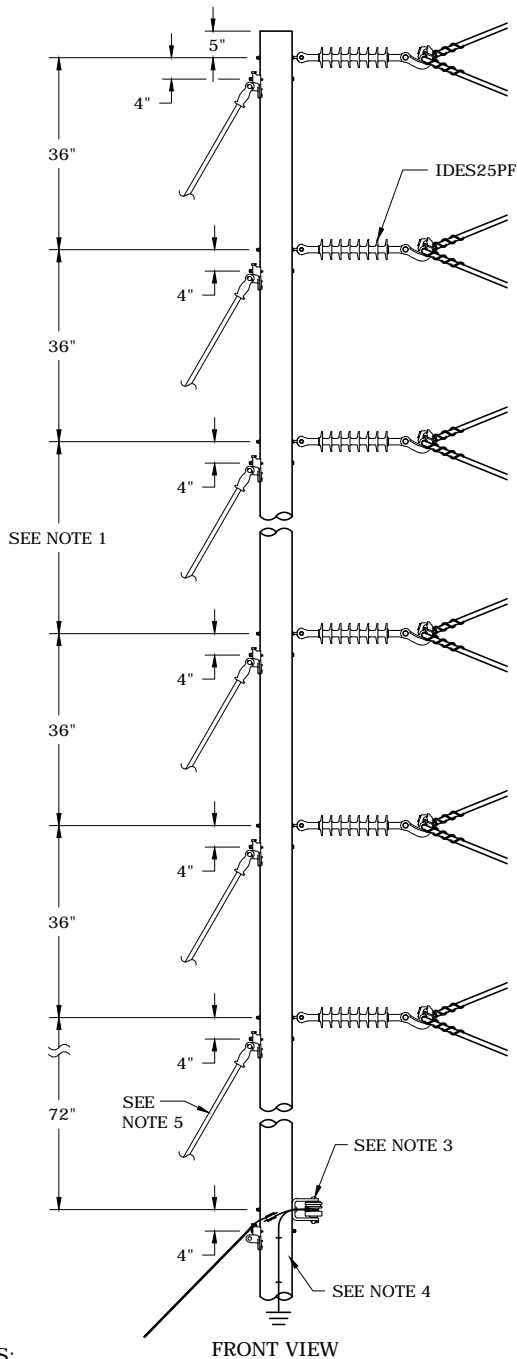
BILL OF MATERIALS						
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
-	1	IHPCLT15F	3	080232	1	INSULATOR, POST, CLAMP HOR, 15/25 KV
-	2	IHPCLT35F	3	080238	1	INSULATOR, POST, LINE, POST, 35KV, CLAMP, TRUNION
-	3	TRCLAMP_F	6	-	1	TRUNION CLAMP (VARIES WITH SIZE)
-	4	BKTFPIS30F	3	013264	2	WASHER, LOCK, 5/8 IN, STEEL, GLV, SPRING, DOUBLE COIL
				013346	2	WASHER, 3", SQUARE, CURVED, 13/16"
				070431	1	BRACKET, FIBERGLASS, STAND-OFF, 30" (BALL BAT)
				072361	1	STUD, LINE POST, 5/8" X 1-3/4"
				152107	2	BOLT, MACH, SQ, NUT, 5/8" X 12"
-	5	ISSTUDBOLT5812F	3	013264	1	WASHER, LOCK, 5/8 IN, STEEL, GLV, SPRING, DOUBLE COIL
				072367	1	STUD, LINE POST, LP 5/8" X 12"
SCANG_FM (VARIES WITH WIRE SIZE)	6	ISPLF	1	080403	1	INSULATOR, SPOOL, 3 INCH SPOOL INSULATOR, GRAY
				152107	1	BOLT, MACH, SQ, NUT, 5/8" X 12"
	7	NSSCF	1	013308	1	WASHER, SQUARE, 2-1/4", FLAT, 13/16", HOLE, GALV.
				070402	1	BRACKET, BRACKET ONE, WIRE, NO, INSULATOR, GALV.
	8	NEUSPTIE_F	1	-	1	FORMED SPOOL TIE (VARIES WITH WIRE SIZE)



3				
2	5/2/14	LOOSIER	DANNA	ADCOCK
1	5/24/13	McCONNELL	DANNA	ADCOCK
0	5/22/12	BURLISON	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

VERTICAL CONSTRUCTION DOUBLE CIRCUIT,
THREE-PHASE, 1 DEGREE TO 15 DEGREES -
12KV ONLY

DEC	DEM	DEP	DEF
			X
03.14-05			



PLAN VIEW

NOTES:

1. USE 6'-0" MINIMUM CIRCUIT SPACING IF SPANS 200 FT. OR LESS WITHIN A 150 FT. RULING SPAN OR 230 FT. OR LESS WITHIN A 200 FT. RULING SPAN. CONTACT DISTRIBUTION STANDARDS FOR OTHER SPANS.
2. 16-30 DEGREES FOR 795 AAC. 16-59 DEGREES FOR ALL OTHER CONDUCTORS. DOUBLE DEADEND 795 AAC FOR ANGLES GREATER THAN 30 DEGREES.
3. TYPICAL INSTALLATION- SEE SECTION 04 FOR NEUTRAL/SECONDARY DETAILS.
4. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.
5. TYPICAL INSTALLATION - SEE SECTION 02 FOR GUYING DETAILS.
6. USE 2-1/4" SQUARE WASHER ON 1/0 AAAC AND SMALLER CONDUCTOR AND 3" CURVE WASHER FOR CONDUCTORS LARGER THAN 1/0 AAAC.
7. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS,

FRONT VIEW

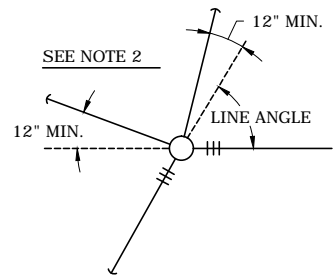
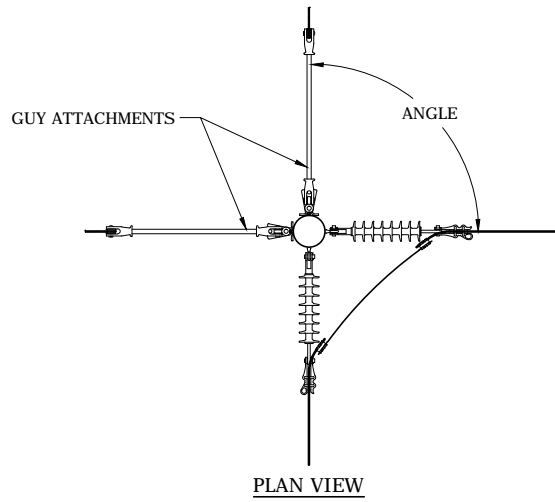
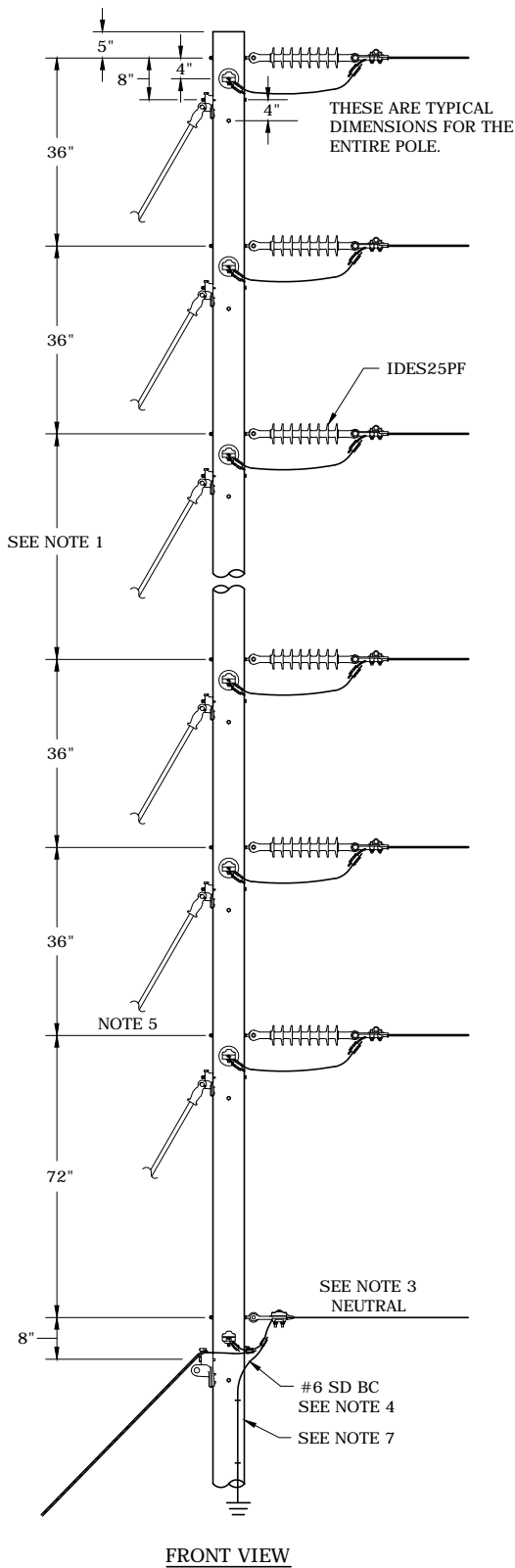
3				
2				
1				
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

VERTICAL CONSTRUCTION DOUBLE CIRCUIT,
THREE-PHASE, 16 DEGREES TO 59 DEGREES



FLA

DWG.
03.14-06



NOTES:

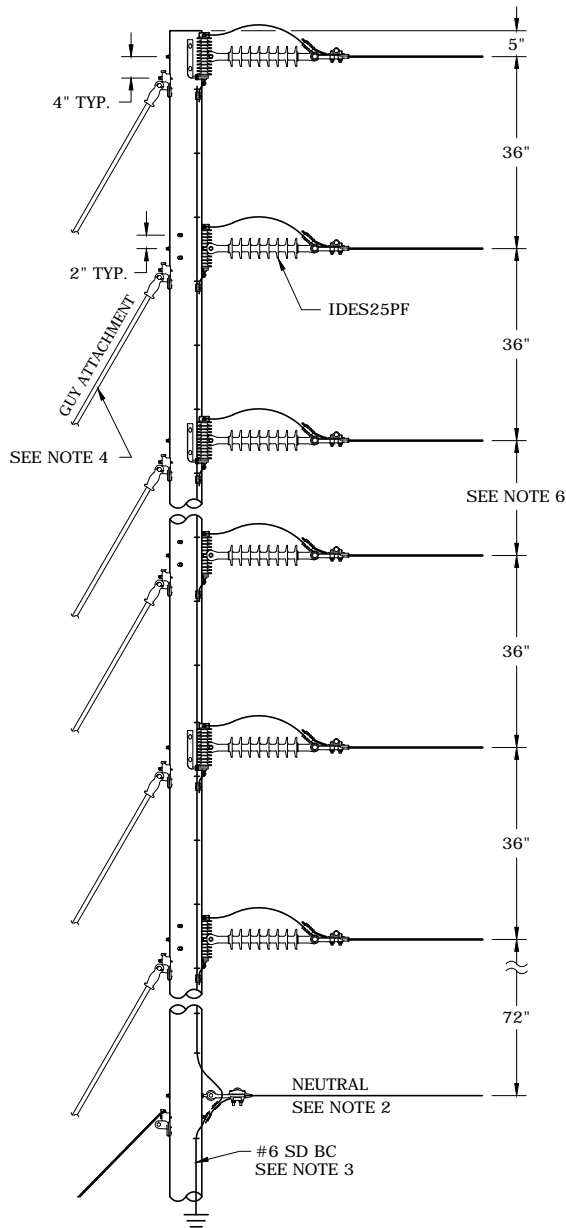
1. USE 6'-0" MINIMUM CIRCUIT SPACING IF SPANS 200 FT. OR LESS WITHIN A 150 FT. RULING SPAN OR 230 FT. OR LESS WITHIN A 200 FT. RULING SPAN. CONTACT DISTRIBUTION STANDARDS FOR OTHER SPANS.
2. IF USED FOR LINE ANGLES LESS THAN 60°, OFFSET EACH ANCHOR 12". (SEE ABOVE) OR ADD A BISECTIONAL GUY. CONSIDER BISECTIONAL GUYS WHERE ANGLE PERMITS.
3. TYPICAL INSTALLATION - SEE SECTION 04 FOR NEUTRAL/ SECONDARY DETAILS.
4. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.
5. TYPICAL INSTALLATION - SEE SECTION 02 FOR GUYING DETAILS.
6. USE 2-1/4" SQUARE WASHER ON 1/0 AAAC AND SMALLER CONDUCTOR AND 3" CURVE WASHER FOR CONDUCTORS LARGER THAN 1/0 AAAC.
7. THE CHARTS BELOW SHOW THE MINIMUM CLASS POLES REQUIRED FOR GRADES B AND C CONSTRUCTION WITH LEAD TO HEIGHT RATIOS 1/1 AND 2/3 BASED ON A 200 FOOT RULING SPAN.
8. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.

REQUIRED POLE SIZES							
L/H	GRADE B			L/H	GRADE C		
1/1	P502F	P551F	P60H1F	1/1	P503F	P552F	P601F
2/3	P501F	P55H1F	P60H2F	2/3	P502F	P551F	P60H1F

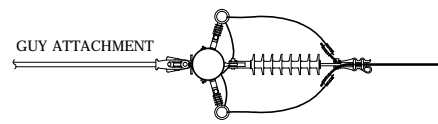
3				
2				
1				
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

**VERTICAL CONSTRUCTION DOUBLE CIRCUIT,
THREE-PHASE, 60 DEGREES TO 90 DEGREES**

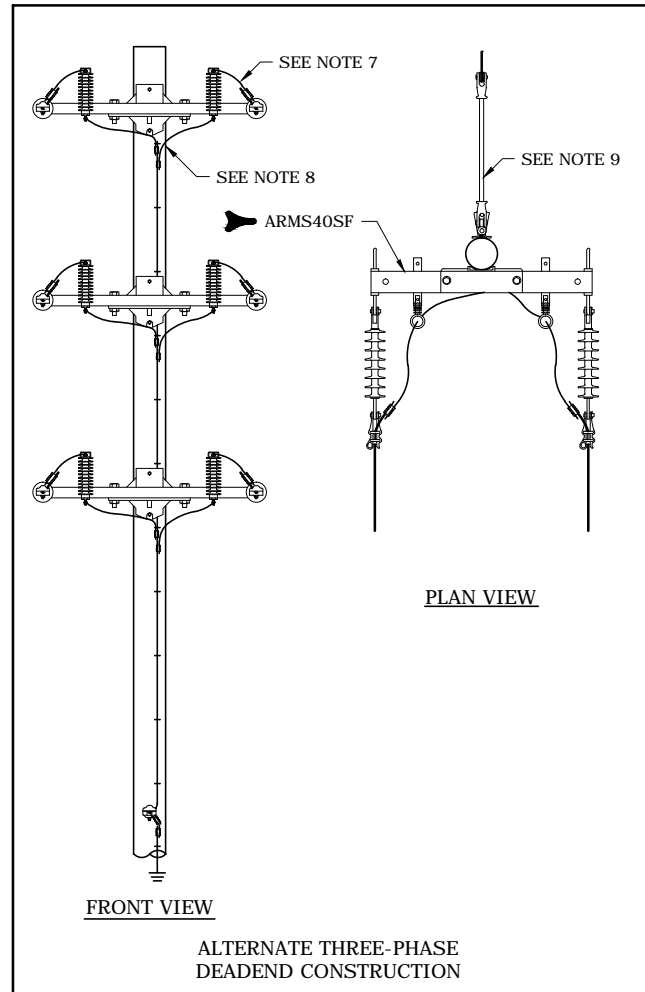
FLA DWG. 03.14-08



FRONT VIEW



PLAN VIEW



FRONT VIEW

PLAN VIEW

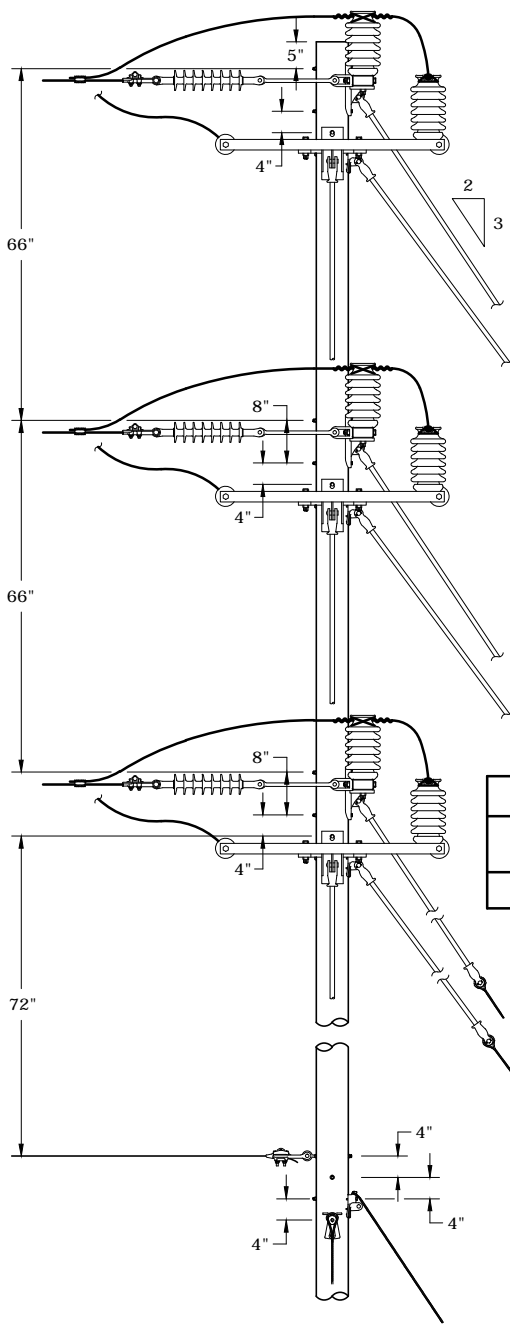
NOTES:

1. ARRESTERS ISSUED SEPARATELY. SEE SECTION 08 FOR DETAILS.
2. TYPICAL INSTALLATION: SEE SECTION 04 FOR NEUTRAL/SECONDARY DETAILS.
3. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.
4. TYPICAL INSTALLATION: SEE SECTION 02 FOR GUYING DETAILS.
5. USE 2-1/4" SQUARE WASHER ON 1/0 AAAC AND SMALLER CONDUCTOR AND 3" CURVE WASHER FOR CONDUCTORS LARGER THAN 1/0 AAAC.
6. USE 6'-0" MINIMUM CIRCUIT SPACING IF SPANS 200 FT. OR LESS WITHIN A 150 FT. RULING SPAN OR 230 FT. OR LESS WITHIN A 200 FT. RULING SPAN. CONTACT DISTRIBUTION STANDARDS OR OTHER SPANS.
7. ALL CONDUCTORS MUST BE THE SAME SIZE.
8. ATTACH ARE TO POLE WITH TWO 3/4" MACHINE BOLTS.
9. WHEN TWO GUYS PER PHASE ARE REQUIRED, ATTACH THE FIRST GUY TO THE ARM AND THE SECOND GUY TO THE POLE. A) MAXIMUM LOAD PER PHASE = 5,100 LBS. B) TOTAL MAXIMUM LOAD PER ARM = 10,200 LBS.
10. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.

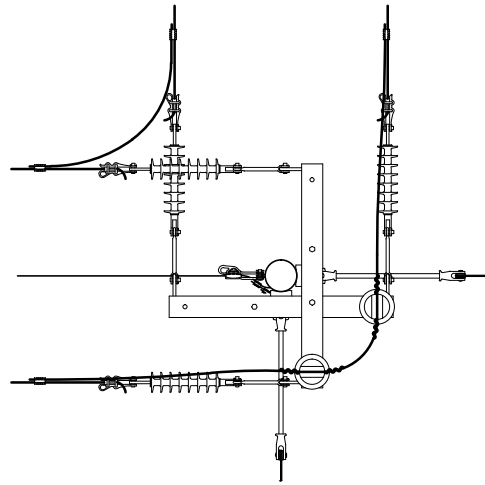
3				
2				
1	3/22/12	GUINN	BURLISON	ELKINS
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

**VERTICAL CONSTRUCTION DOUBLE CIRCUIT,
DEADEND**

FLA DWG.
03.14-10



FRONT VIEW



PLAN VIEW

POLE SELECTION TABLE (GRADE C CONSTRUCTION)				
FOR A 2 TO 3 GUY LEAD/HEIGHT RATIO	POLE LENGTH			
	45'	50'	55'	60'
REQUIRED MINIMUM POLE CLASS	3	2	1	H1

NOTES:

1. POLE SIZES BASED ON 250' MAXIMUM SPANS WITH 6- 795 SAC PRIMARY AND 1-#1/0 ACSR NEUTRAL.
2. GUYS REQUIRED ARE 2-7/16 PER PRIMARY POSITION AND 1-5/16 FOR NEUTRAL. LEAD TO HEIGHT RATIO MUST BE 2:3 FOR THIS CONSTRUCTION.
3. SELECT ANCHORS BASED ON SOIL CONDITIONS AT THE SITE.
4. TWO GUY STRAIN INSULATORS (120" & 78") MUST BE LINKED TOGETHER TO OBTAIN THE REQUIRED CLEARANCE FOR THE TOP PRIMARY GUY POSITIONS, 120" FOR THE MIDDLE AND 78" ON THE BOTTOM.

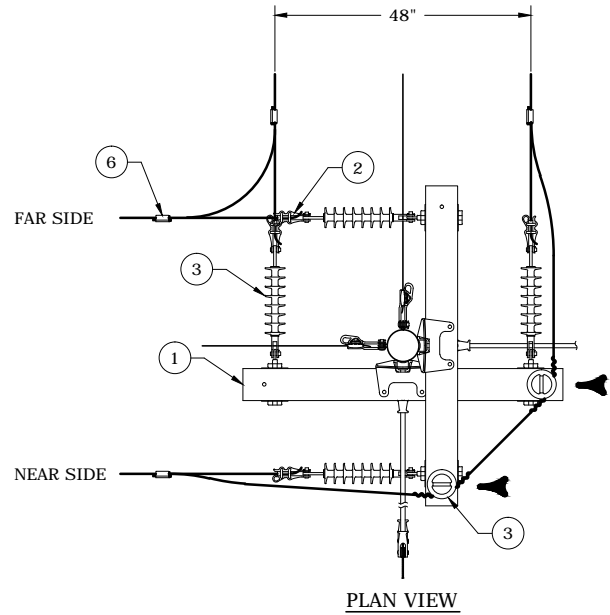
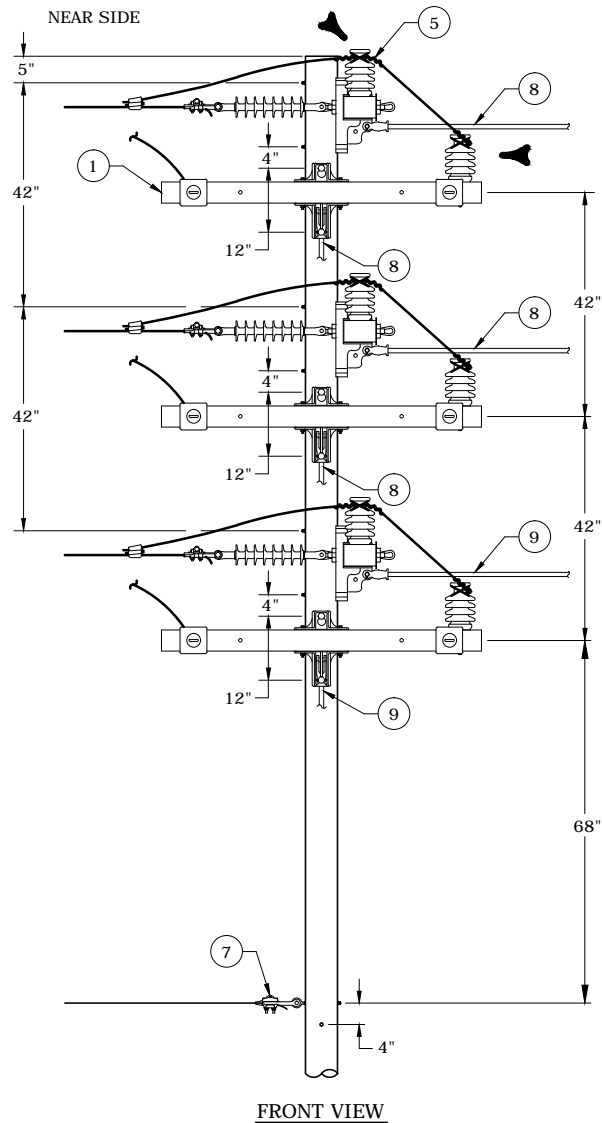
3				
2				
1	1/13/12	GUINN	BURLISON	ELKINS
0	12/2/11	GUINN	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

THREE-PHASE DOUBLE CIRCUIT DEADEND
FOR LINE ANGLES GREATER THAN 30 DEGREES



FLA

DWG.
03.14-12



BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	1	ARMSDE60FF	6	9220237218	1	CROSSARM SINGLE DEADEND 60" FIBERGLASS
	2	DECLMP795AACF	12	101125	1	DEADEND CLAMP 795 KCM AAC
	3	IDES25PF	12	80577	1	INSULATOR DEADEND / SUSPENSION 25 KV POLYMER
	4	IHPTT15F	6	080212	1	INSULATOR POST, TIE 3/4", 15/25KV
	5	TTIEF795ALF	6	121418	1	TOP TIE F NECK 795 MCM TO 795 MCM
	6	KW7979F	6	165277	1	CONNECTOR WEDGE 795 MCM TO 795 MCM
	7	DECLMP10AAACF	2	100708	1	DEADEND CLAMP 1/0 AAAC
	8	FBGL120F	4	115761	1	FIBERGLASS GUY LINK 15 M 120"
	9	FBG78F	2	115737	1	FIBERGLASS GUY LINK 15 M 78"

NOTES:

1. GUYS ARE SPAN GUYS.
2. PREFERRED CONSTRUCTION IS TO HAVE THE SAME PHASE CONDUCTORS ON THE SAME LEVEL. THIS IMPROVES THE STRUCTURE BIL.
3. ALL PRIMARY GUYS SHOULD BE 5/16.

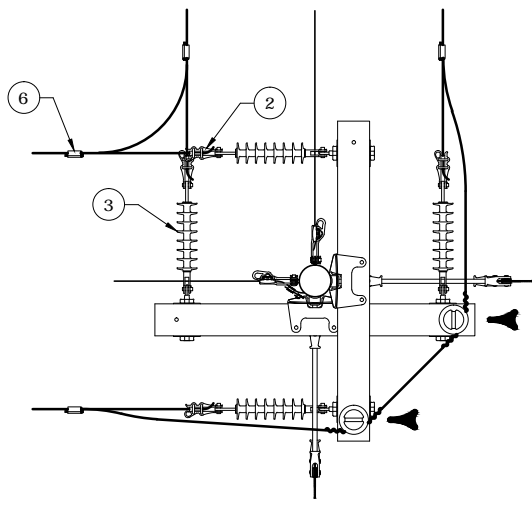
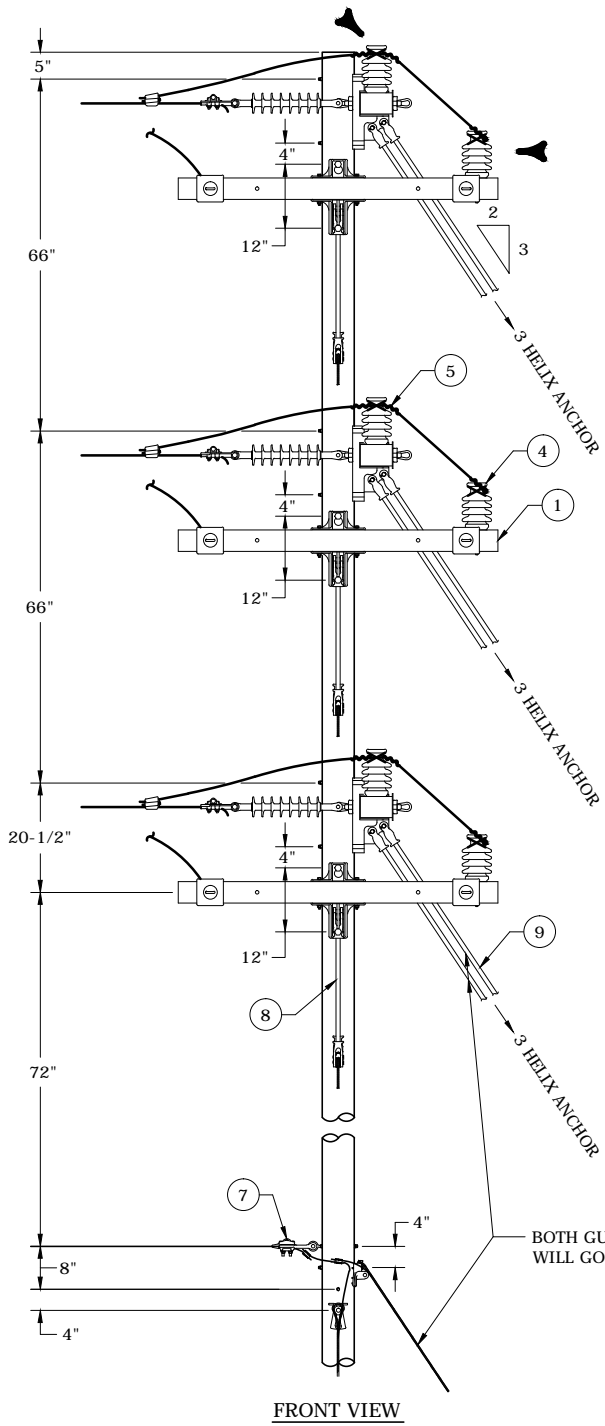
3				
2				
1	4/11/13	McCONNELL	DANNA	ADCOCK
0	5/22/12	GUINN	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

**THREE-PHASE DOUBLE CIRCUIT DEADEND
FOR LINE ANGLES 30 TO 90 DEGREES -
SPAN GUYED**

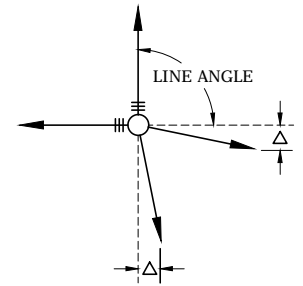


FLA

DWG.
03.14-17



PLAN VIEW



DETAIL 'A' - MAXIMUM GUY OFFSET
NOT TO SCALE
Δ MAX = 12" FOR 2 TO 3 GUY LEAD

POLE SELECTION TABLE (GRADE C CONSTRUCTION)				
FOR A 2 TO 3 GUY LEAD/HEIGHT RATIO	POLE LENGTH			
	45'	50'	55'	60'
REQUIRED MINIMUM POLE CLASS	3	2	1	H1

NOTES:
1. SEE DWG. 03.14-18B FOR BILL OF MATERIAL AND NOTES.

3				
2				
1	4/11/13	McCONNELL	DANNA	ADCOCK
0	5/22/12	GUINN	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

THREE-PHASE DOUBLE CIRCUIT DEADEND
FOR LINE ANGLES 30-90 DEGREES

FLA DWG. 03.14-18A

BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
-	1	ARMSDE60FF	6	9220237218	1	CROSSARM SINGLE DEADEND 60" FIBERGLASS
	2	DECLMP795AACF	13	101125	1	DEADEND CLAMP 795 KCM AAC
	3	IDES25PF	12	80577	1	INSULATOR DEADEND / SUSPENSION 25 KV POLYMER
	4	IHPTT15F	6	080212	1	INSULATOR POST, TIE 3/4 15/25KV
	5	TTIEF795ALF	6	121418	1	TOP TIE F NECK 795 MCM TO 795 MCM
	6	KW7979F	6	165277	1	CONNECTOR WEDGE 795 MCM TO 795 MCM
	7	DECLMP10AAACF	2	100708	1	DEADEND CLAMP 1/0 AAAC
	8	FBGL120F	6	115761	1	FIBERGLASS GUY LINK 15 M 120"
	9	FBG78F	6	115737	1	FIBERGLASS GUY LINK 15 M 78"

NOTES:

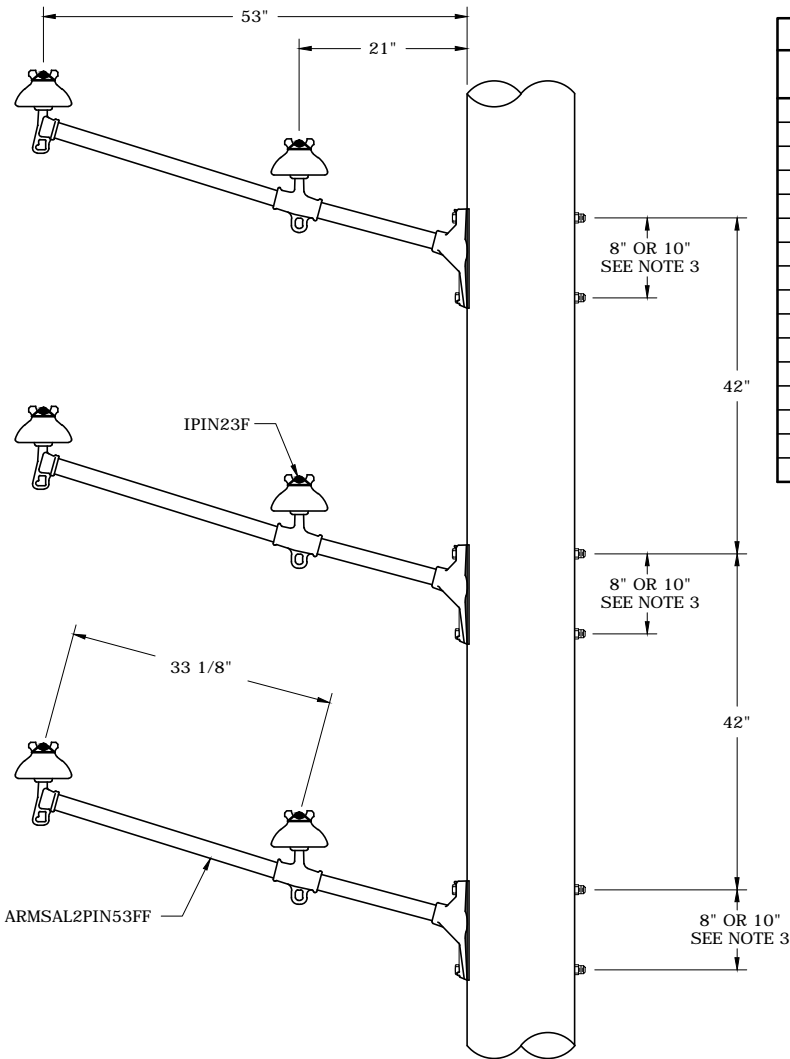
- GUY LEAD TO HEIGHT RATIO MUST BE 2:3 FOR THIS CONSTRUCTION.
- PREFERRED CONSTRUCTION IS TO HAVE THE SAME PHASE CONDUCTORS ON THE SAME LEVEL. THIS IMPROVES THE STRUCTURE BIL.
- TWO GUY STRAIN INSULATORS (120" & 78") MUST BE LINKED TOGETHER TO OBTAIN THE REQUIRED CLEARANCE FOR THE TOP PRIMARY GUY POSITIONS, 120" FOR THE MIDDLE AND 78" ON THE BOTTOM.
- GRADE B CONSTRUCTION REQUIRES POLEFOREMAN EVALUATION.
- ALL PRIMARY GUYS SHOULD BE 7/16 AND NEUTRAL GUYS SHOULD BE 5/16.
- SEE DWG. 03.14-18A FOR CONSTRUCTION

3				
2				
1	4/11/13	McCONNELL	DANNA	ADCOCK
0	5/22/12	GUINN	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

**THREE-PHASE DOUBLE CIRCUIT DEADEND
FOR LINE ANGLES 30-90 DEGREES**



FLA DWG. 03.14-18B



BOLT TABLE	
CATALOG NUMBER	DESCRIPTION
152103	BOLT, MACH. SQ. NUT, 5/8" X 1-1/2"
152106	BOLT, MACH. SQ. NUT, 5/8" X 10"
152107	BOLT, MACH. SQ. NUT, 5/8" X 12"
010439	BOLT, MACH. SQ. NUT, 5/8" X 14"
152108	BOLT, MACH. SQ. NUT, 5/8" X 16"
152109	BOLT, MACH. SQ. NUT, 5/8" X 18"
152110	BOLT, MACH. SQ. NUT, 5/8" X 20"
152111	BOLT, MACH. SQ. NUT, 5/8" X 22"
010451	BOLT, MACH. SQ. NUT, 5/8" X 26"
152112	BOLT, MACH. SQ. NUT, 5/8" X 28"
152113	BOLT, MACH. SQ. NUT, 5/8" X 30"
152114	BOLT, MACH. SQ. NUT, 5/8" X 32"
152115	BOLT, MACH. SQ. NUT, 5/8" X 34"
152116	BOLT, MACH. SQ. NUT, 5/8" X 36"
010460	BOLT, MACH. SQ. NUT, 5/8" X 38"
152117	BOLT, MACH. SQ. NUT, 5/8" X 40"

NOTES:

1. THIS IS A NON-STOCK ITEM. REQUIRES SPECIAL ORDER. CHECK WITH PURCHASING FOR LEAD TIME.
2. TANGENT CONSTRUCTION ONLY WITH 795, NO ANGLES.
3. BRACKET HAS 8" AND 10" SPACING.
4. MAXIMUM SPAN ON EITHER SIDE IS 200 FEET.

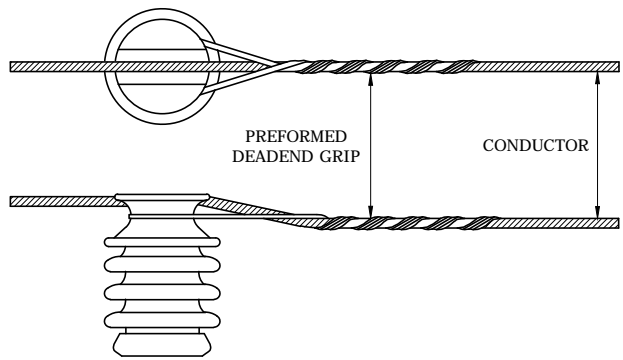
3				
2				
1				
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

DOUBLE CIRCUIT FIBERGLASS ALLEY ARM

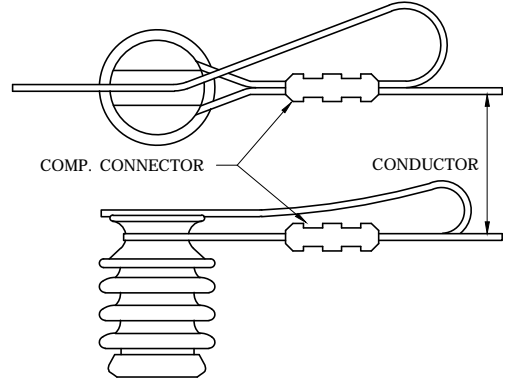


FLA

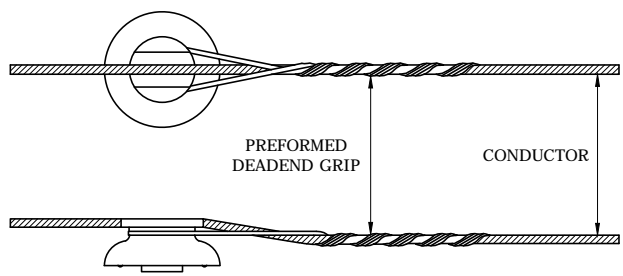
DWG.
03.14-22



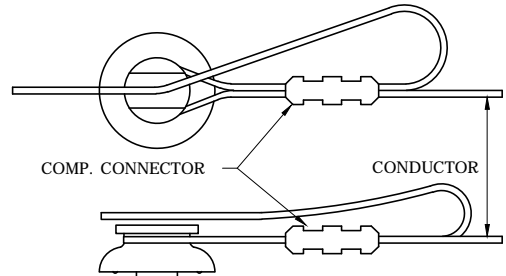
4-1/0 AL. DEADEND ON
POST INSULATOR



6 CU DEADEND ON
POST INSULATOR



4-1/0 AL. DEADEND ON
PIN TYPE INSULATOR



6 CU-2 CU DEADEND ON
PIN TYPE INSULATOR


BILL OF MATERIALS						
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
-	1	SLGRIP10AAACF	1	9220118700	1	GRIP, SLACK SPAN, #1/0 AAC & AAAC, FACTORY FORMED
-	1	SLGRIP2AAACF	1	9220118699	1	GRIP, SLACK SPAN, #2 AAC & AAAC, FACTORY FORMED

NOTES:

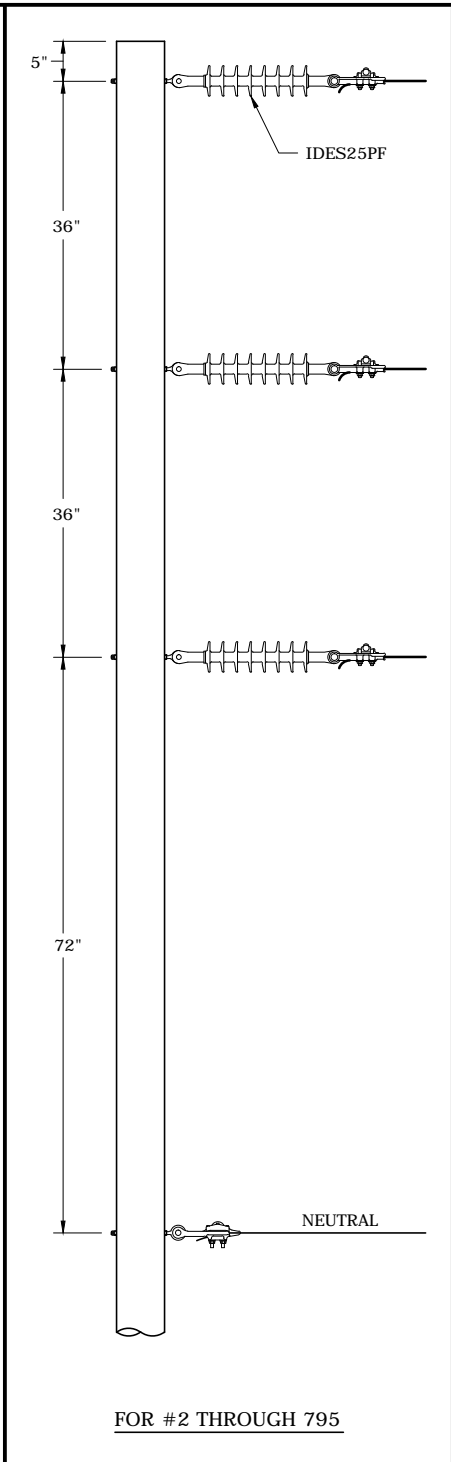
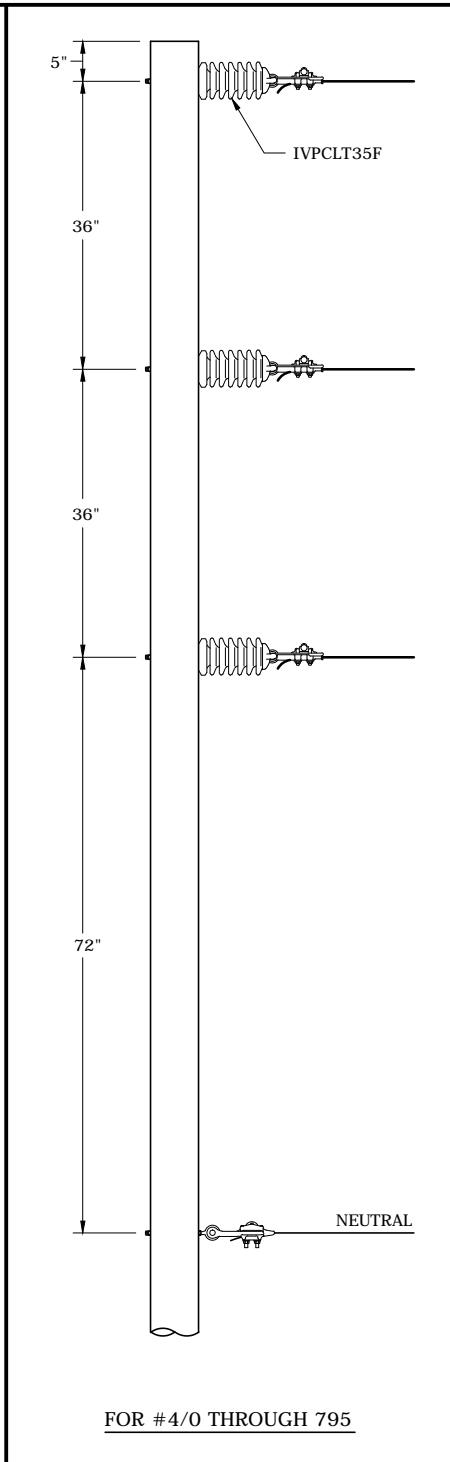
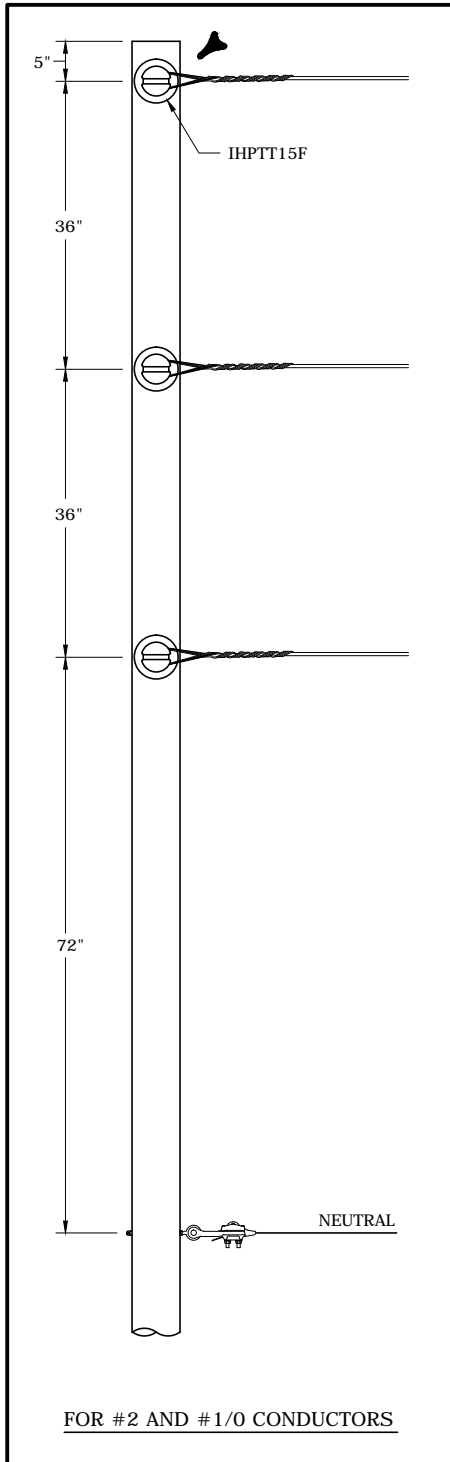
1. A SLACK SPAN MAY BE ATTACHED TO THE POLE UTILIZING A DEAD-END POLYMER INSULATOR PROVIDED THE CONSTRUCTION IS CONFIGURED AS IF IT WERE GUYED AND MEETS ALL REQUIRED CLEARANCES AND SPACING.

3				
2				
1				
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

SLACK SPAN,
DETAILS FOR ATTACHMENT TO INSULATOR



FLA DWG.
03.16-00



NOTES:

1. SEE DWG. 03.06-04 FOR POST TYPE INSULATORS.
2. SEE DWG. 03.06-08 FOR PIN TYPE INSULATORS.
3. SEE DWG. 03.03-04 FOR SLACK SPAN CLAMPS.
4. SEE DWG. 03.16-00 FOR SLACK SPAN GRIPS.

3				
2				
1	4/11/13	McCONNELL	DANNA	ADCOCK
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

VERTICAL CONSTRUCTION - SLACK SPAN

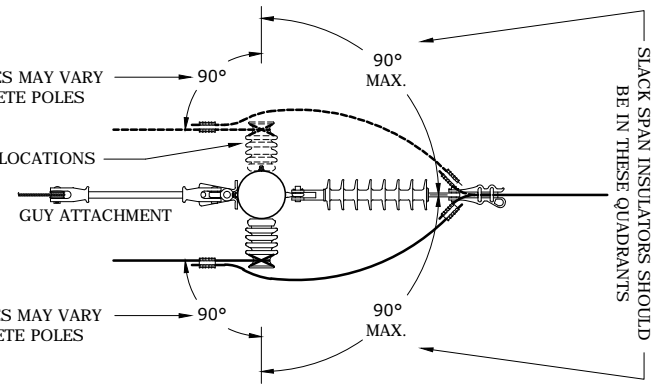
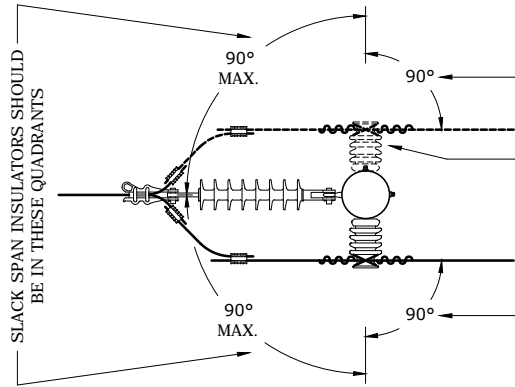


FLA

DWG.
03.16-02

TANGENT CONSTRUCTION

DEADEND CONSTRUCTION

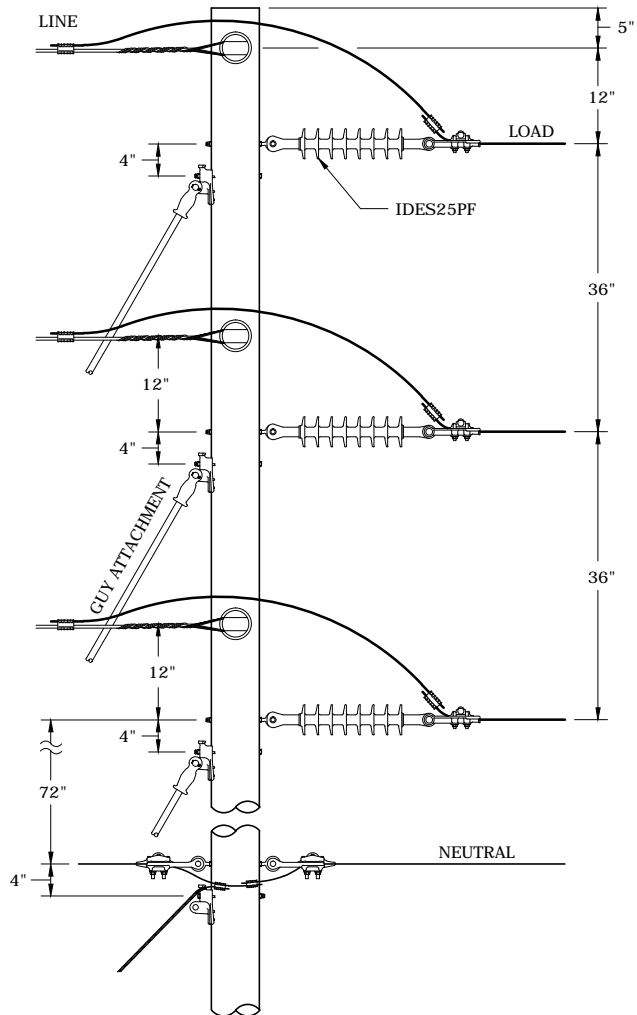
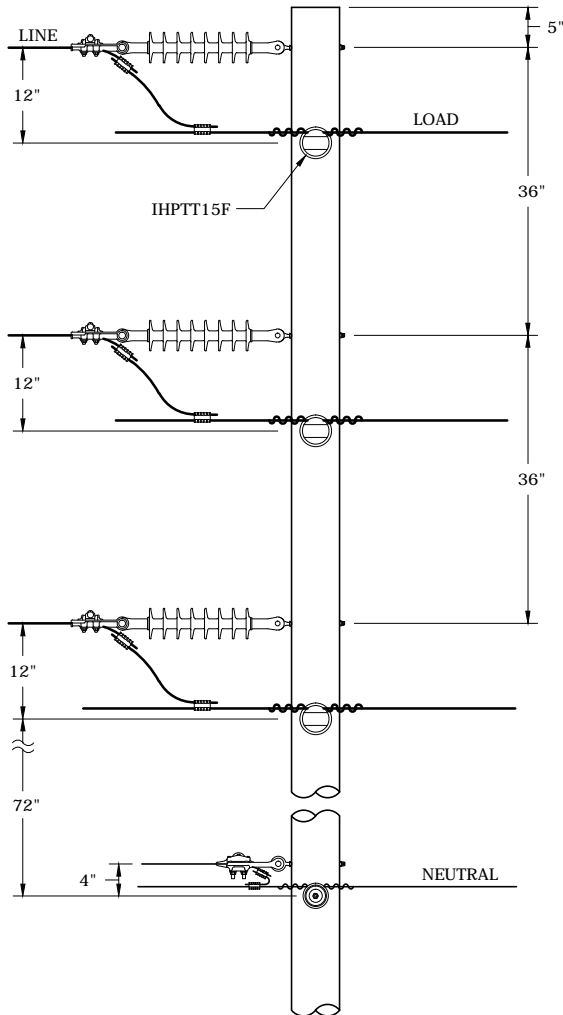


SLACK SPAN INSULATORS SHOULD BE IN THESE QUADRANTS

SLACK SPAN INSULATORS SHOULD BE IN THESE QUADRANTS

PLAN VIEW

PLAN VIEW



FRONT VIEW

FRONT VIEW

NOTES:

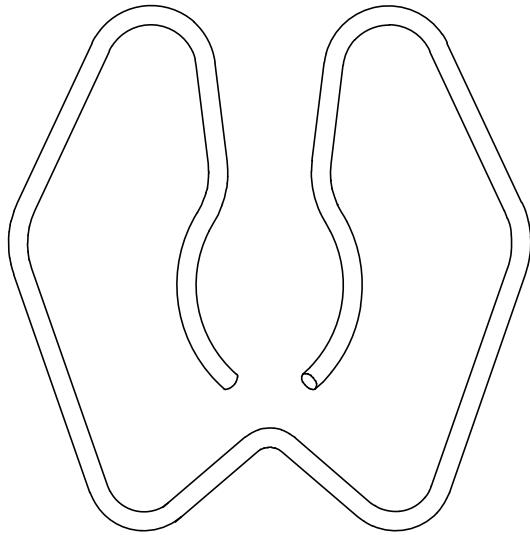
1. POLE GAINS (ISGAINGRIDF FOR 15/25KV INSULATORS OR ISGAINGRID55F FOR 35KV INSULATORS) ARE REQUIRED FOR POST INSULATOR INSTALLATIONS ON WOOD POLES WHEN THE POLE DOES NOT HAVE A SLAB GAIN FOR ALL CONDUCTOR SIZES. WHEN THE CONDUCTOR IS 336.4 KCMIL OR LARGER, USE POLE GAIN EVEN IF SLAB GAIN EXISTS. POLE GAINS ARE NOT REQUIRED FOR INSULATORS USED FOR JUMPERS. SLACK SPANS WITH 336 AND 795 CONDUCTORS REQUIRE A POLE GAIN.
2. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.
3. SEE DWG. 03.16-00 FOR SLACK SPAN GRIPS.

3				
2				
1	3/21/13	McCONNELL	DANNA	ADCOCK
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

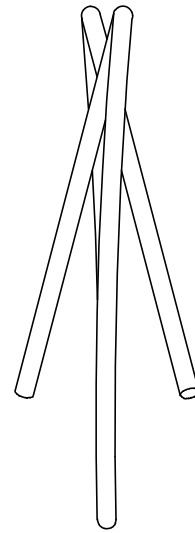
VERTICAL SLACK SPAN
WITH VERTICAL CONSTRUCTION



FLA DWG. 03.16-04



FRONT VIEW

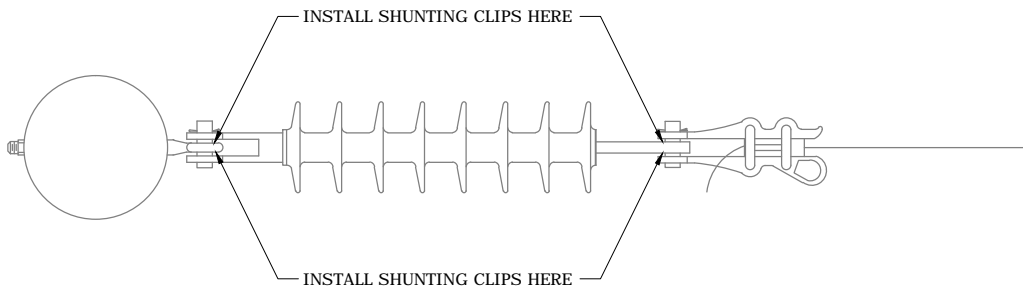


SIDE VIEW

NOTES:

1. TO BE USED ON ALL DEADEND SLACK SPAN APPLICATIONS.
2. TO INSTALL THE SHUNTING CLIPS, SIMPLY PUSH THEM OVER THE CLEVIS PIN IN THE GAP BETWEEN THE INSIDE SURFACE OF THE CLEVIS AND THE EYE FITTING WHICH IS HELD BY THE CLEVIS. TWO CLIPS ARE TO BE INSTALLED, ONE ON EACH SIDE OF THE CLEVIS.

SHUNTING CLIP
ITEM # 9220270219



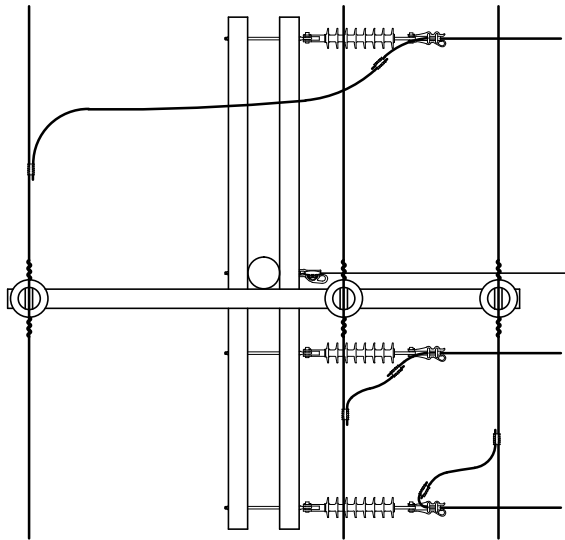
3				
2				
1	11/17/15	LOOSIER	BURLISON	ADCOCK
0	8/5/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

➤ SHUNTING CLIPS

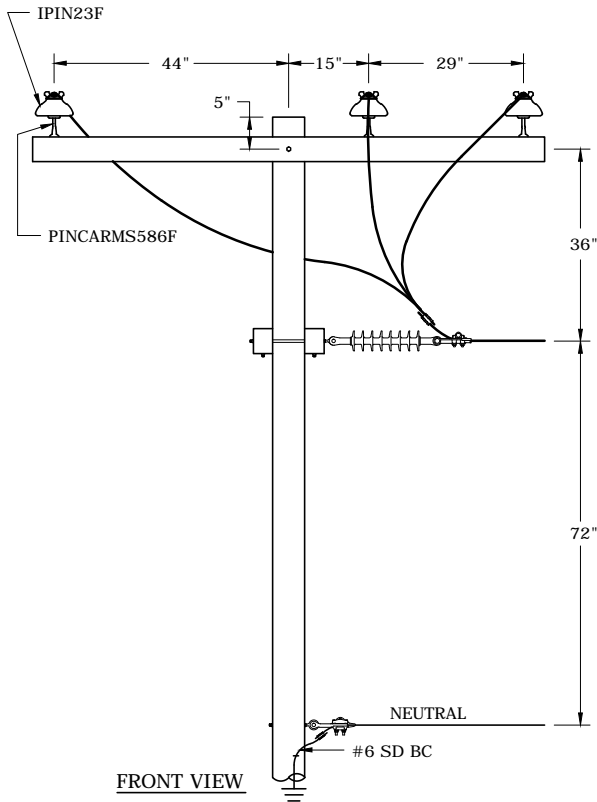
DEC	DEM	DEP	DEF
		X	X

03.16-05

DEADEND CONSTRUCTION

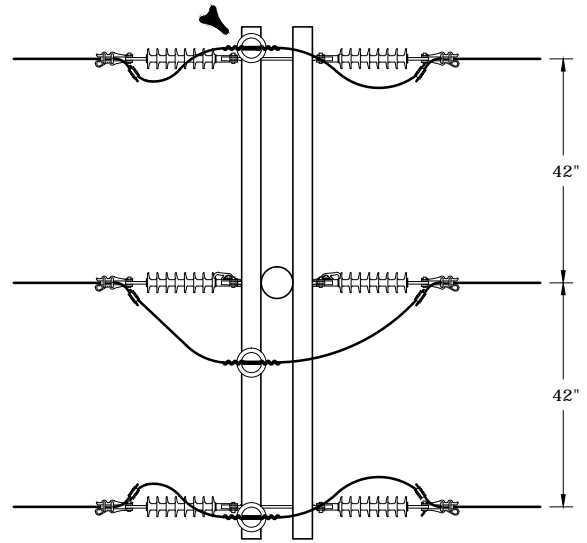


PLAN VIEW

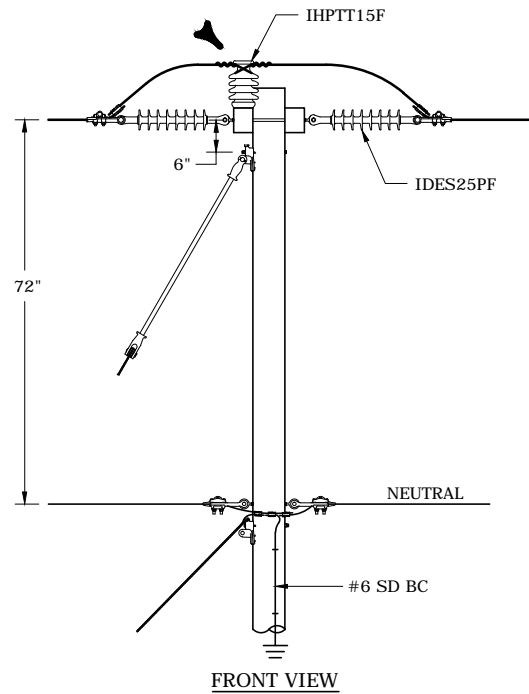


FRONT VIEW

TANGENT CONSTRUCTION



PLAN VIEW



FRONT VIEW

HORIZONTAL SLACK SPAN WITH HORIZONTAL CONSTRUCTION

NOTES:

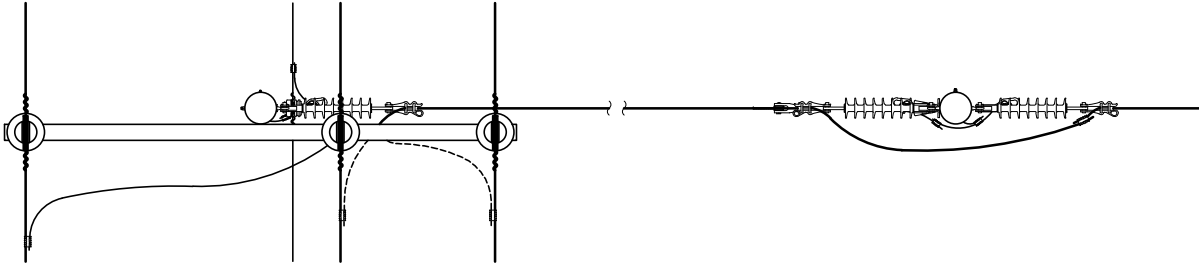
1. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.
2. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.
3. SEE DWG. 03.16-00 FOR SLACK SPAN GRIPS.

3				
2				
1	4/18/13	McCONNELL	DANNA	ADCOCK
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

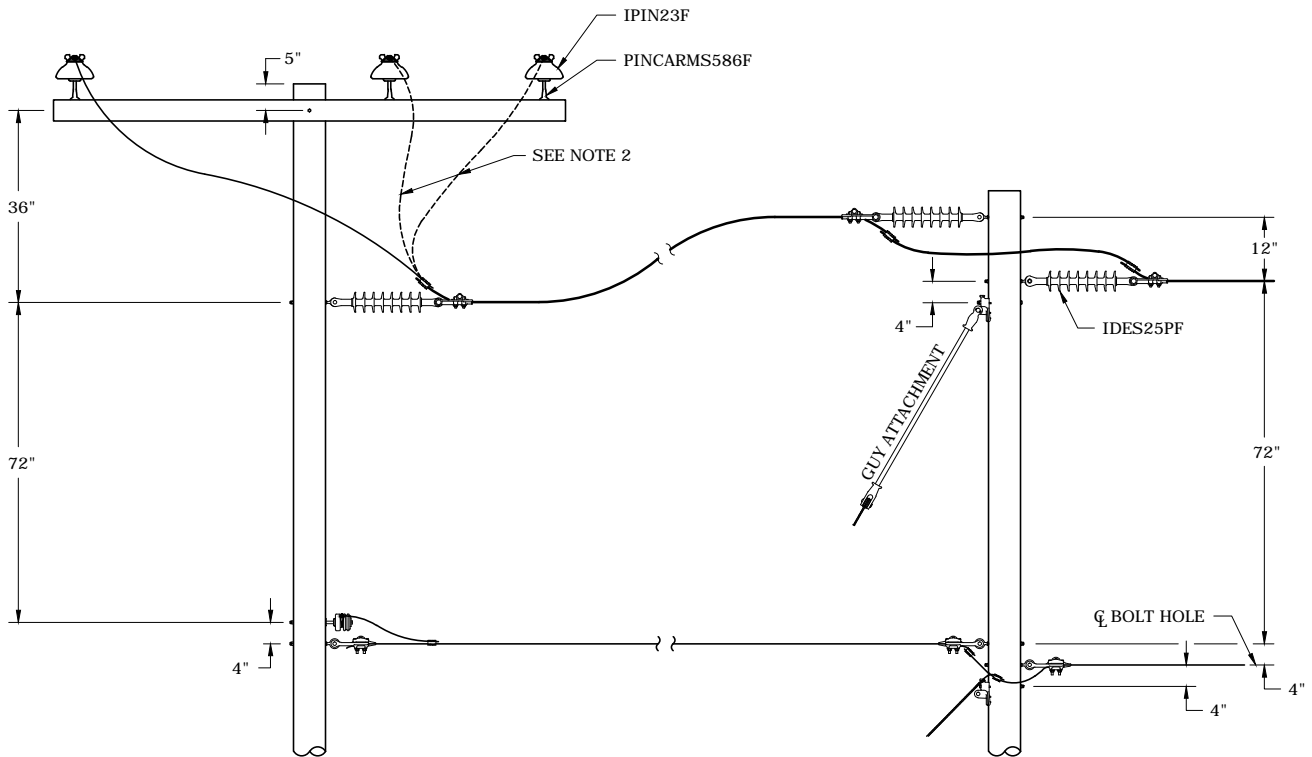
SLACK SPAN



FLA DWG. 03.16-30A



PLAN VIEW



FRONT VIEW

1Ø SLACK SPAN TAP FROM 3Ø HORIZONTAL LINE

NOTES:

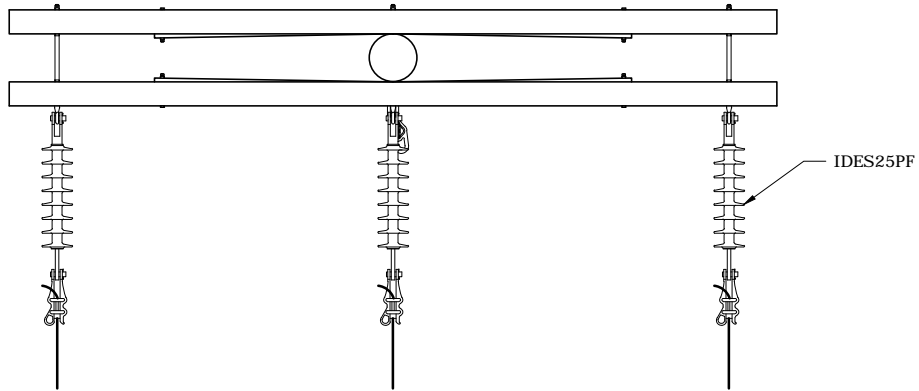
1. SLACK SPAN TAP CAN BE CONNECTED TO ANY PHASE AS DESIGNATED BY THE ENGINEER.
2. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.
3. SEE DWG. 03.16-00 FOR SLACK SPAN GRIPS.

3				
2				
1				
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

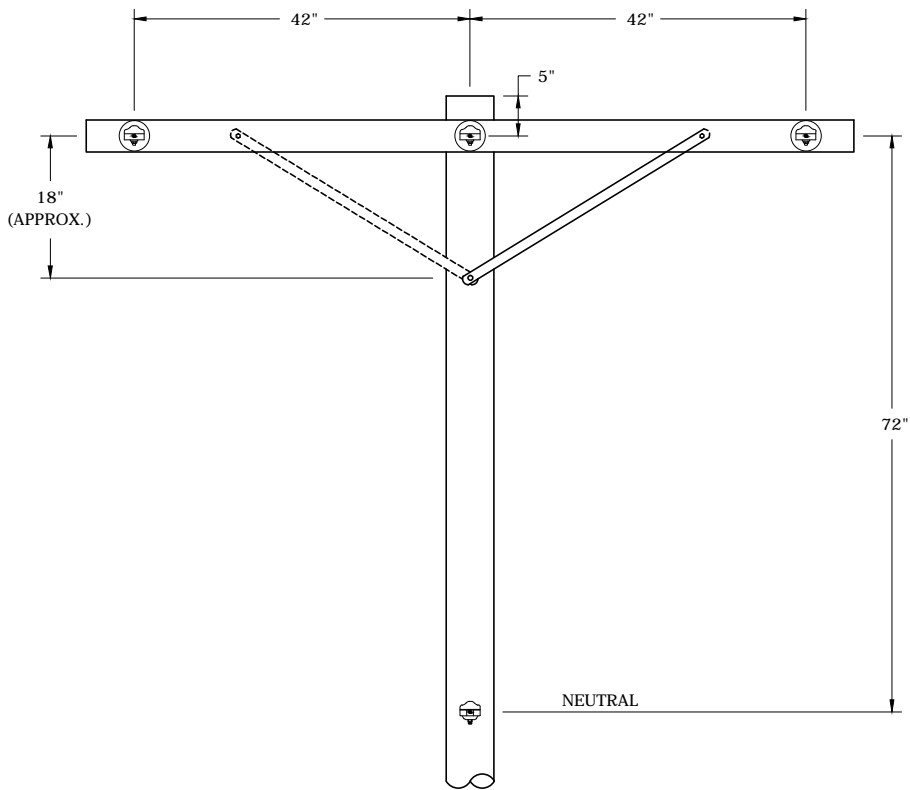
SLACK SPAN



FLA DWG. 03.16-30B



PLAN VIEW



FRONT VIEW

NOTES:

1. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.

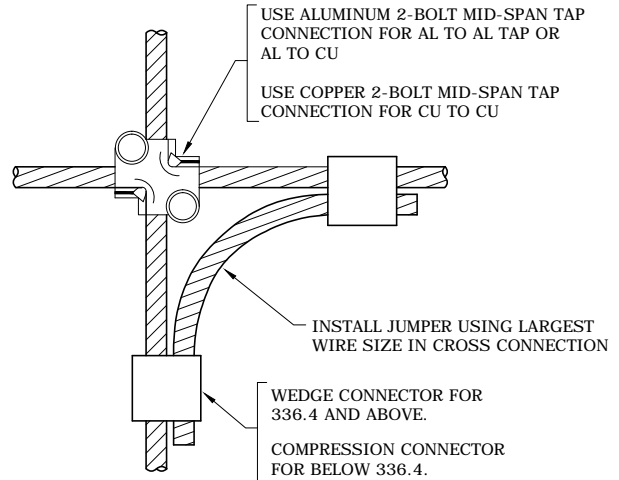
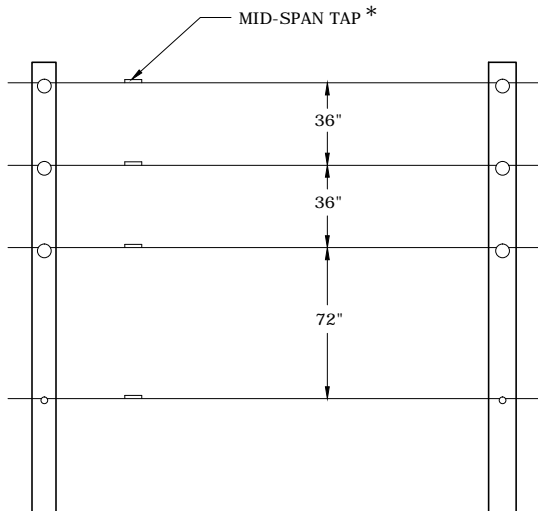
3				
2				
1				
0	11/18/10	CECCONI	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

HORIZONTAL CONSTRUCTION -
SLACK SPAN



FLA DWG.
03.16-32

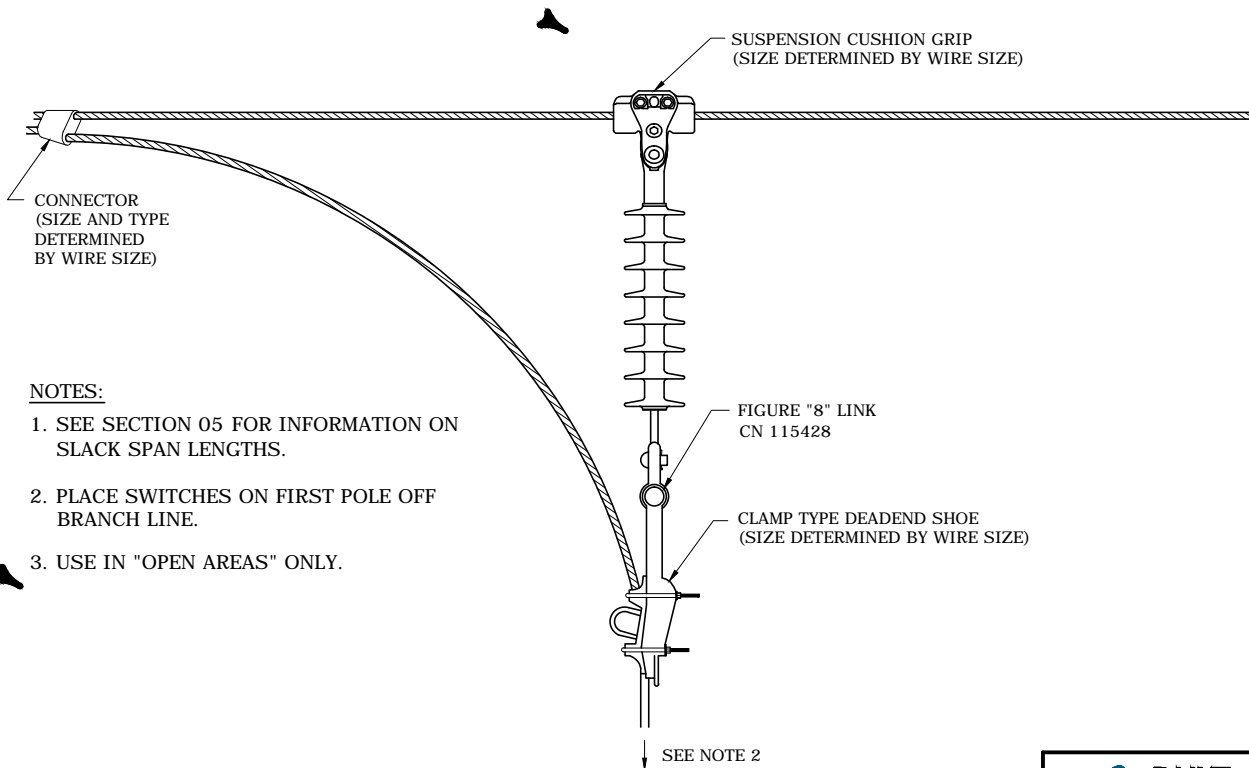
MIDSPAN TAP CONNECTION



NOTES:

- * 1. CROSSING SPANS SHOULD BE OF APPROXIMATELY THE SAME LENGTH.
- 2. CONNECTED CONDUCTORS SHOULD BE OF THE SAME SIZE AND TYPE, OR SHOULD BE AS CLOSE AS POSSIBLE TO TWO NEAREST CROSSING POLES IF NOT OF SAME SIZE AND TYPE.
- 3. CONNECTING CONDUCTORS MUST ESSENTIALLY BE TOUCHING EACH OTHER. ONE CONDUCTOR IS NOT TO SUPPORT THE OTHER.

PRIMARY "T" TAP
(ALTERNATE SLACK SPAN CONSTRUCTION)



NOTES:

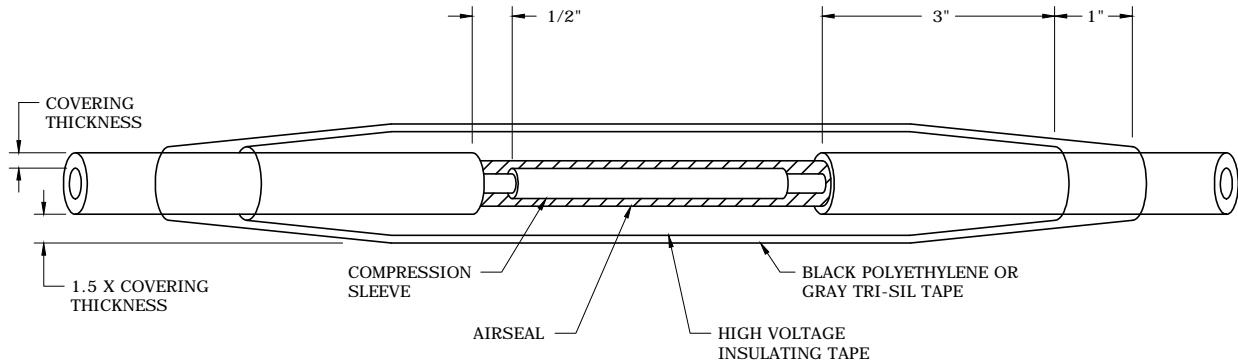
- 1. SEE SECTION 05 FOR INFORMATION ON SLACK SPAN LENGTHS.
- 2. PLACE SWITCHES ON FIRST POLE OFF BRANCH LINE.
- 3. USE IN "OPEN AREAS" ONLY.



3				
2				
1	8/8/14	LOOSIER	DANNA	ADCOCK
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

MIDSPAN TAP CONNECTION &
PRIMARY "T" TAP
(ALTERNATE SLACK SPAN CONSTRUCTION)

DEC	DEM	DEP	DEF
			X
03.18-03			



NOTES:

1. REMOVE COVERING FROM EACH CONDUCTOR END. THE LENGTH OF COVERING TO BE REMOVED IS EQUAL TO THE DEPTH OF THE COMPRESSION SLEEVE PLUS APPROXIMATELY ONE-HALF INCH AS SHOWN ON THE FIGURE ABOVE.
2. CLEAN BARE CONDUCTOR USING WIRE BRUSH AND INSERT CONDUCTOR INTO THE COMPRESSION SLEEVE.
3. COMPRESS THE SLEEVE, FOLLOWING THE RECOMMENDATIONS OF THE SLEEVE AND COMPRESSION TOOL MANUFACTURER(S).
4. WIPE AWAY AND EXUDE OXIDE INHIBITING COMPOUND AND FILE OFF ALL SHARP EDGES RESULTING FROM THE CRIMPING ACTION.
5. APPLY DIELECTRIC COMPOUND (KEARNEY AIR-SEAL CN 402179 OR EQUIVALENT) ON THE EXPOSED CONDUCTOR AND OVER THE COMPRESSION SLEEVE. THE THICKNESS OF THIS LAYER SHOULD BE EQUAL TO ONE HALF THE CABLE COVERING THICKNESS.
6. USING HIGH VOLTAGE INSULATING TAPE (CN 390302 OR EQUIVALENT) APPLIED HALF LAP, BUILD UP SUCCESSIVE LAYERS UNTIL A THICKNESS OF 1.5 TIMES THE CABLE COVERING IS ACHIEVED.
7. TAPER THE TAPE LAYERS AT EACH END OF THE SPLICE SO THAT AT LEAST THREE INCHES OF THE CABLE COVERING IS OVERLAPPED.
8. TO COMPLETE THE SPLICE, WRAP THE ENTIRE SPLICE WITH TWO HALF-LAPPED LAYERS OF BLACK, POLYETHYLENE (NOT VINYL) PRESSURE SENSITIVE TAPE OR PLYMOUTH PLY-SIL GRAY TAPE (CN390138).

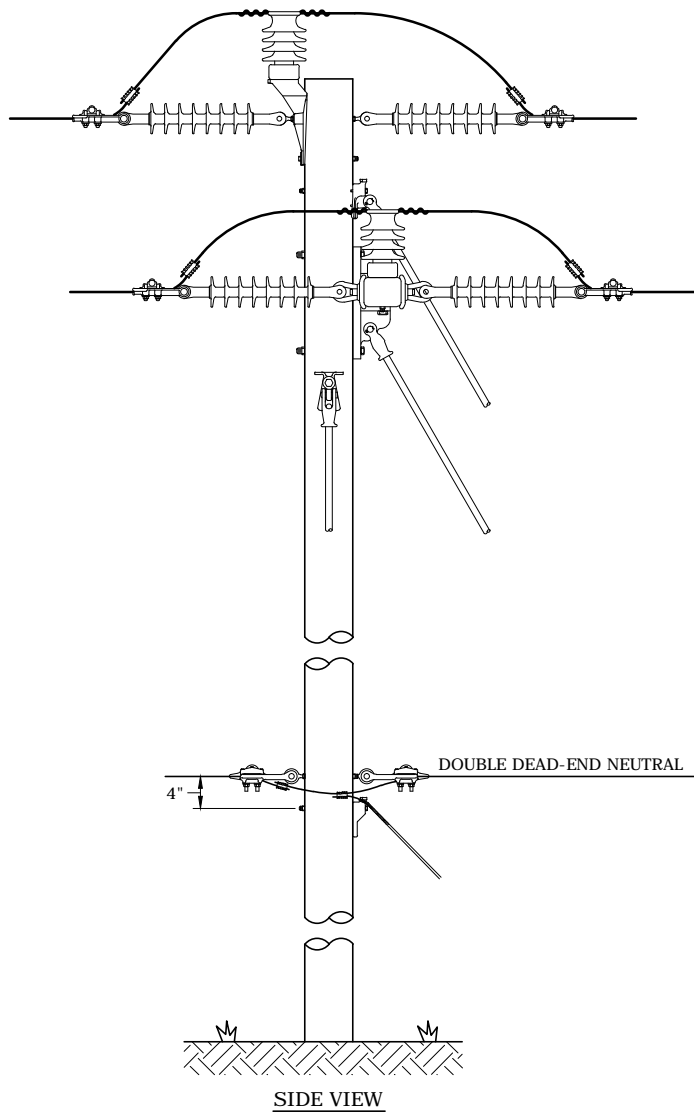
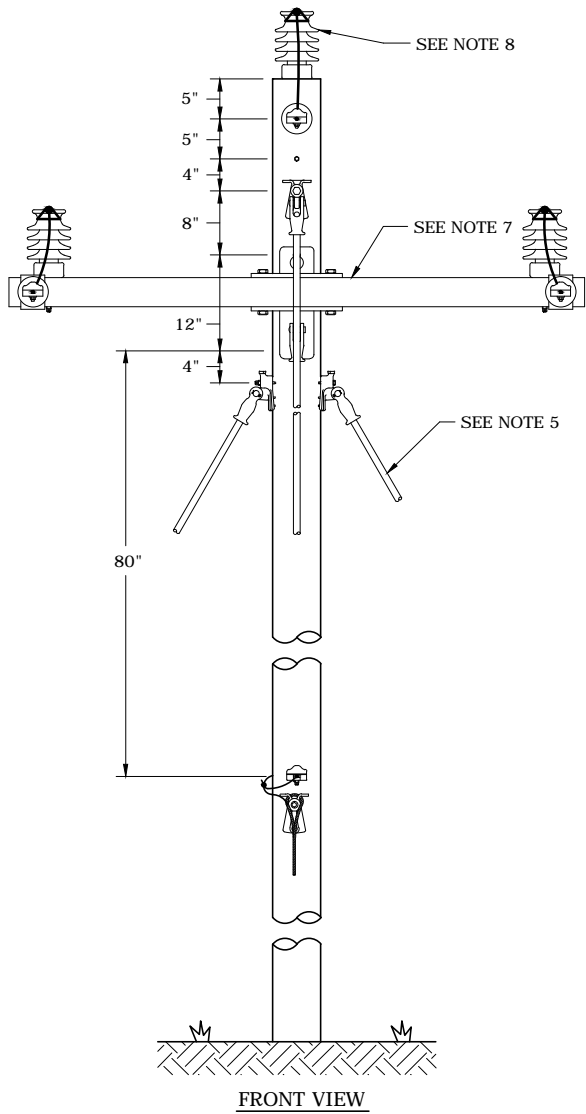
3				
2				
1				
0	3/2/11	ROBESON	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

SPACER CABLE SPLICE



FLA

DWG.
03.19-01



FRONT VIEW

SIDE VIEW

NOTES:

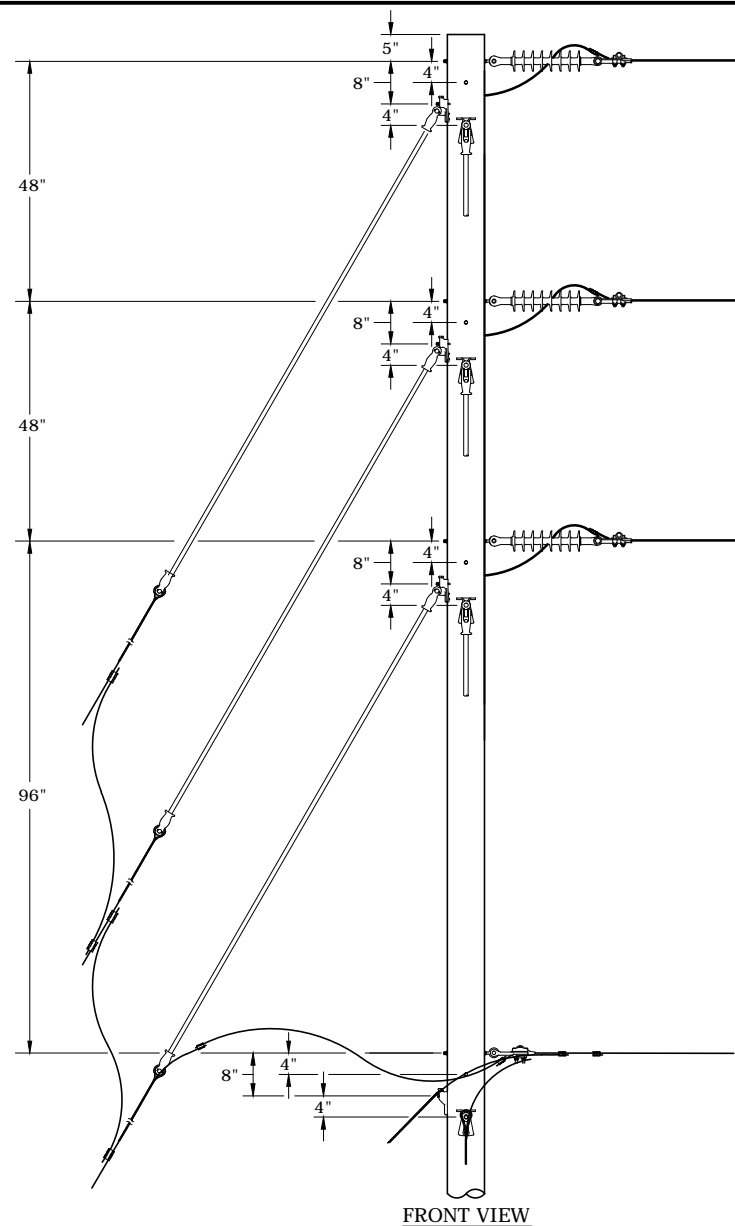
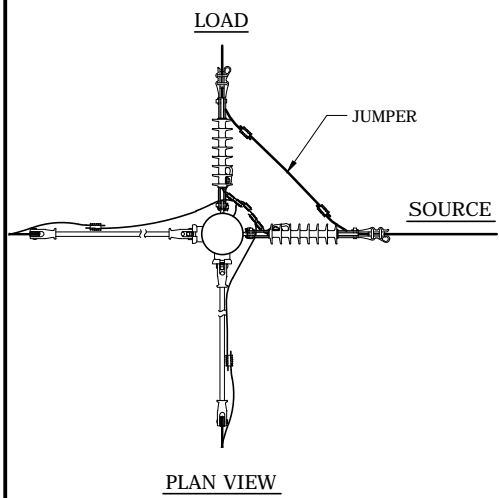
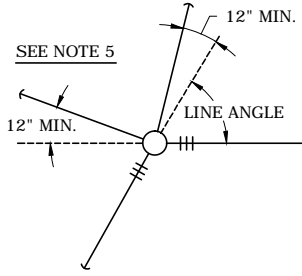
1. CROSSING SHOULD BE AT 90 DEGREES TO RAILS OR CONTROLLED ACCESS HIGHWAY. A CONTROLLED ACCESS HIGHWAY IS TYPICALLY A MULTI-LANE HIGHWAY PROVIDING FREE FLOW OF TRAFFIC, WITH NO TRAFFIC SIGNALS OR PROPERTY ACCESS.
2. CROSSINGS MUST BE DESIGNED USING POLEFOREMAN TO DETERMINE STRENGTH OF POLES AND GUY/ANCHOR REQUIREMENTS. NEUTRAL SPACING MAY NEED TO BE INCREASED FOR VERY LONG SPANS.
3. CROSSINGS SHOULD NOT CONTAIN SPLICES.
4. PROVIDE GUYING FOR THE SPAN(S) CROSSING THE CONTROLLED ACCESS HIGHWAY TO SUPPORT THE SPAN AS A STAND ALONE SPAN.
5. PROVIDE TWO SINGLE SIDE GUYS 90 DEGREES TO THE BACK GUY.
6. IF INTERMEDIATE POLES ARE REQUIRED TO REDUCE SPAN LENGTHS, THE LONG SPAN CONSTRUCTION STANDARD SHOULD BE CONSIDERED IN LIEU OF INTERMEDIATE POLES. IF INTERMEDIATE POLES ARE STILL REQUIRED, THE INTERMEDIATE POLES MUST HAVE SIDE GUYS INSTALLED OR MUST BE CLASSED HIGH ENOUGH TO MEET GRADE B CONSTRUCTION. BACK GUYS ARE NOT REQUIRED ON INTERMEDIATE TANGENT POLES.
7. FOR SINGLE-PHASE, OMIT THE CROSSARM.
8. FOR TWO PHASES, OMIT THE CENTER PHASE.



3				
2				
1				
0	10/31/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

CONTROLLED ACCESS HIGHWAY
OR RAILROAD CROSSING
TANGENT

DEC	DEM	DEP	DEF
X	X	X	X
03.20-02			



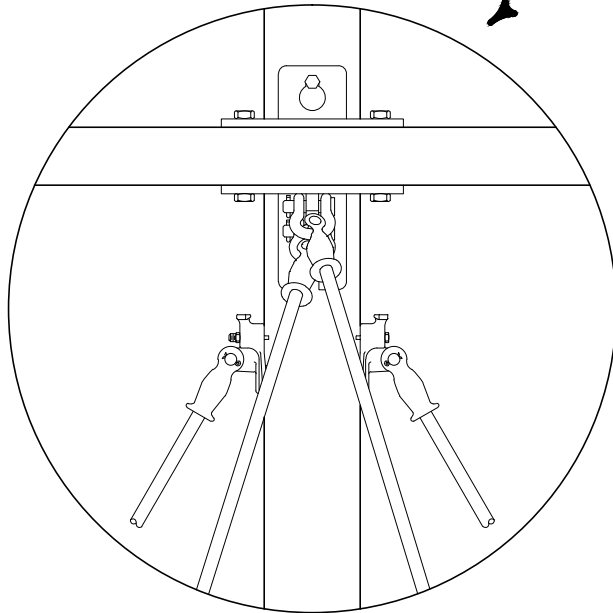
NOTES:

1. CROSSING SHOULD BE AT 90 DEGREES TO RAILS OR CONTROLLED ACCESS HIGHWAY. A CONTROLLED ACCESS HIGHWAY IS TYPICALLY A MULTI-LANE HIGHWAY PROVIDING FREE FLOW OF TRAFFIC, WITH NO TRAFFIC SIGNALS OR PROPERTY ACCESS.
2. CROSSINGS MUST BE DESIGNED USING POLEFOREMAN TO DETERMINE STRENGTH OF POLES AND GUY/ANCHOR REQUIREMENTS. NEUTRAL SPACING MAY NEED TO BE INCREASED FOR VERY LONG SPANS.
3. CROSSINGS SHOULD NOT CONTAIN SPLICES.
4. PROVIDE GUYING FOR THE SPAN(S) CROSSING THE CONTROLLED ACCESS HIGHWAY TO SUPPORT THE SPAN AS A STAND ALONE SPAN.
5. IF USED FOR LINE ANGLES LESS THAN 60°, OFFSET EACH ANCHOR 12" (SEE ABOVE) OR ADD A BISECTIONAL GUY. CONSIDER BISECTIONAL GUYS WHERE ANGLE PERMITS.
6. IF INTERMEDIATE POLES ARE REQUIRED TO REDUCE SPAN LENGTHS, THE LONG SPAN CONSTRUCTION STANDARD SHOULD BE CONSIDERED IN LIEU OF INTERMEDIATE POLES. IF INTERMEDIATE POLES ARE STILL REQUIRED, THE INTERMEDIATE POLES MUST HAVE SIDE GUYS INSTALLED OR MUST BE CLASSED HIGH ENOUGH TO MEET GRADE B CONSTRUCTION. BACK GUYS ARE NOT REQUIRED ON INTERMEDIATE TANGENT POLES.
7. FOR SINGLE-PHASE, OMIT TWO DEADENDS AND FOUR PRIMARY DOWN GUYS.
8. FOR TWO PHASES, OMIT ONE DEADEND AND TWO PRIMARY DOWN GUYS.

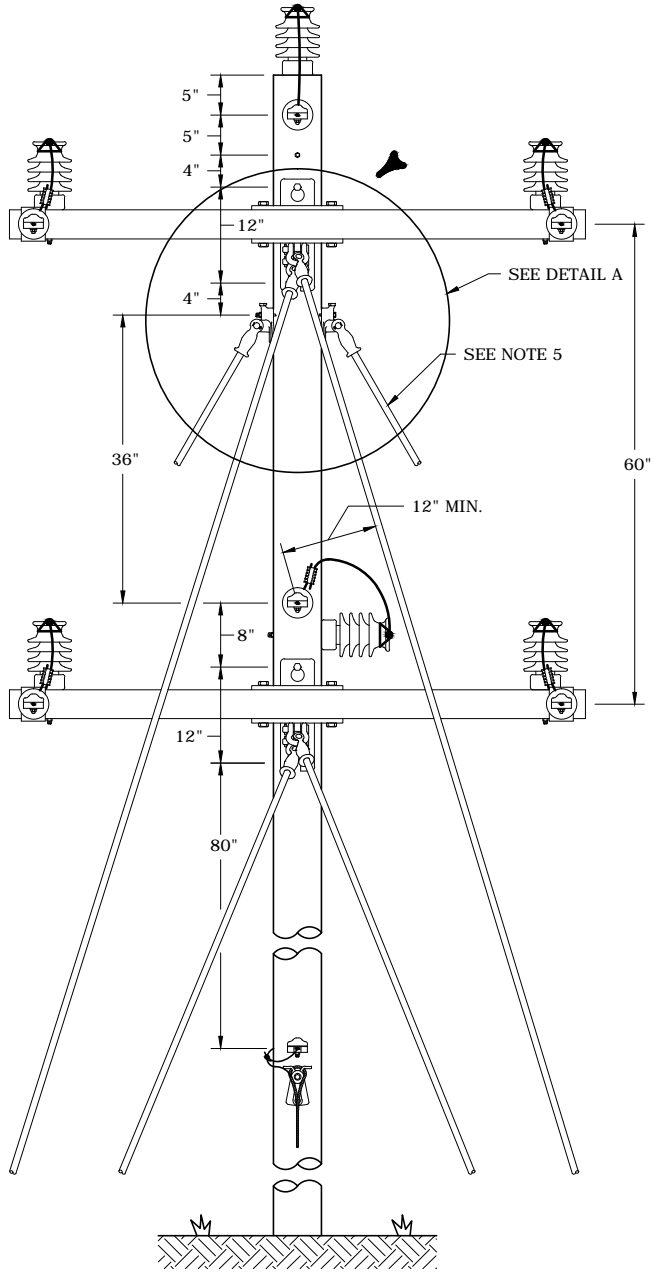
DEC	DEM	DEP	DEF
X	X	X	X
03.20-04			

3				
2				
1				
0	10/31/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

**CONTROLLED ACCESS HIGHWAY
OR RAILROAD CROSSING
VERTICAL DEADEND**



DETAIL A
(SEE NOTE 6)



FRONT VIEW

NOTES:

1. CROSSINGS MUST BE DESIGNED USING POLEFOREMAN TO DETERMINE STRENGTH OF POLES AND GUY/ANCHOR REQUIREMENTS. NEUTRAL SPACING MAY NEED TO BE INCREASED FOR VERY LONG SPANS.
2. CROSSING SHOULD BE AT 90 DEGREES TO RAILS OR CONTROLLED ACCESS HIGHWAY. A CONTROLLED ACCESS HIGHWAY IS TYPICALLY A MULTI-LANE HIGHWAY PROVIDING FREE FLOW OF TRAFFIC, WITH NO TRAFFIC SIGNALS OR PROPERTY ACCESS.
3. CROSSINGS SHOULD NOT CONTAIN SPLICES.
4. PROVIDE GUYING FOR THE SPAN(S) CROSSING THE CONTROLLED ACCESS HIGHWAY TO SUPPORT THE SPAN AS A STAND ALONE SPAN.
5. PROVIDE TWO SINGLE SIDE GUYS 90 DEGREES TO THE BACK GUY.
- ▶ 6. USE A SHACKLE ON EACH GUY INSULATOR MOUNTED TO THE DEADEND ARM TO PREVENT THE GUY INSULATOR CLEVIS FROM BINDING ON THE CROSSARM MOUNTING BRACKET.
7. SEE DWG. 03.20-08B FOR SIDE VIEW AND PRIMARY WIRING INSERT.

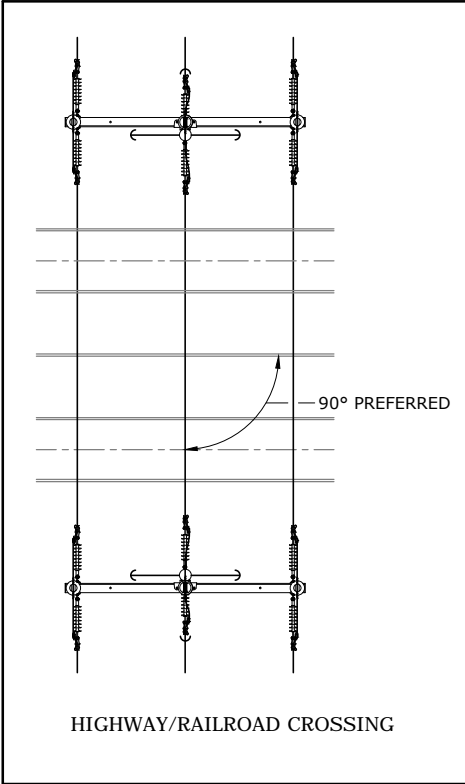
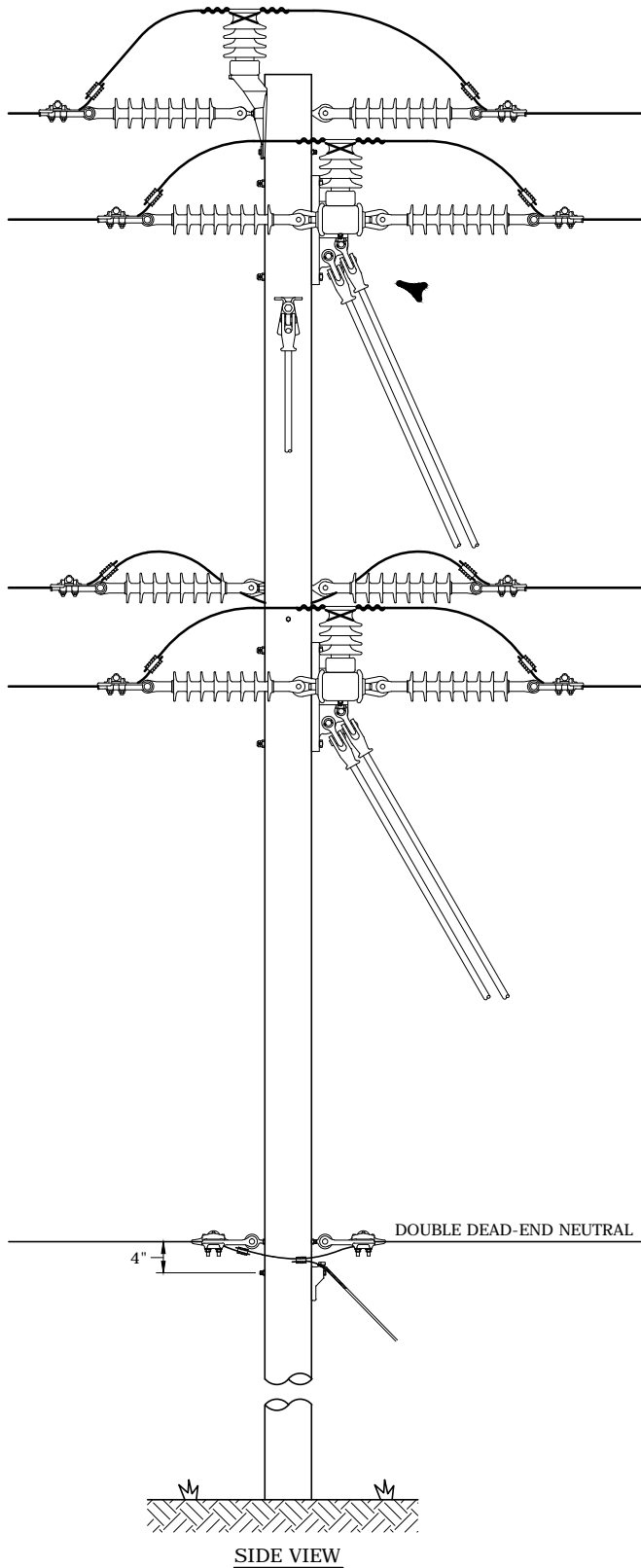


3				
2				
1	12/31/14	GUINN	GUINN	ADCOCK
0	10/31/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

**CONTROLLED ACCESS HIGHWAY
OR RAILROAD CROSSING**

DEC	DEM	DEP	DEF
X	X	X	X

03.20-08A



SIDE VIEW

NOTES:

1. SEE DWG. 03.20-08A FOR FRONT VIEW AND NOTES.

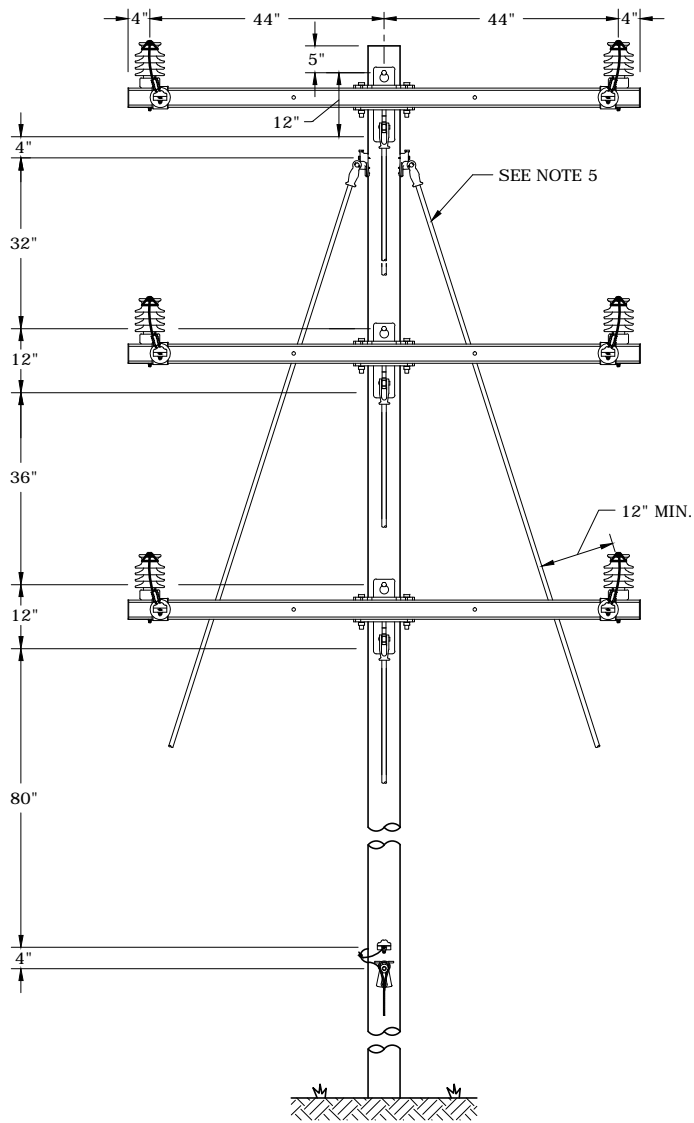


3				
2				
1	12/23/14	GUINN	GUINN	ADCOCK
0	10/31/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

CONTROLLED ACCESS HIGHWAY
OR RAILROAD CROSSING

DEC	DEM	DEP	DEF
X	X	X	X

03.20-08B



FRONT VIEW

NOTES:

1. CROSSING SHOULD BE AT 90 DEGREES TO RAILS OR CONTROLLED ACCESS HIGHWAY. A CONTROLLED ACCESS HIGHWAY IS TYPICALLY A MULTI-LANE HIGHWAY PROVIDING FREE FLOW OF TRAFFIC, WITH NO TRAFFIC SIGNALS OR PROPERTY ACCESS.
2. CROSSINGS MUST BE DESIGNED USING POLEFOREMAN TO DETERMINE STRENGTH OF POLES AND GUY/ANCHOR REQUIREMENTS. NEUTRAL SPACING MAY NEED TO BE INCREASED FOR VERY LONG SPANS.
3. CROSSINGS SHOULD NOT CONTAIN SPLICES.
4. PROVIDE GUYING FOR THE SPAN(S) CROSSING THE CONTROLLED ACCESS HIGHWAY TO SUPPORT THE SPAN AS A STANDALONE SPAN.
5. PROVIDE TWO SINGLE SIDE GUYS 90 DEGREES TO THE BACK GUY.
6. IF INTERMEDIATE POLES ARE REQUIRED TO REDUCE SPAN LENGTHS, THE LONG SPAN CONSTRUCTION STANDARD SHOULD BE CONSIDERED IN LIEU OF INTERMEDIATE POLES. IF INTERMEDIATE POLES ARE STILL REQUIRED, THE INTERMEDIATE POLES MUST HAVE SIDE GUYS INSTALLED OR MUST BE CLASSED HIGH ENOUGH TO MEET GRADE B CONSTRUCTION. BACK GUYS ARE NOT REQUIRED ON INTERMEDIATE TANGENT POLES.
7. PHASES MUST BE COMMON.
8. SEE DWG. 03.20-10B FOR SIDE VIEW.

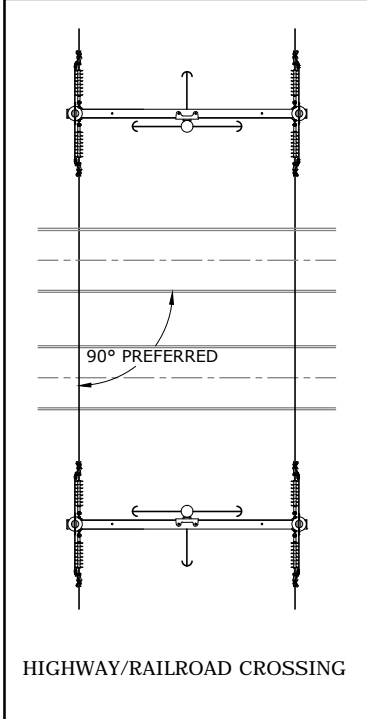
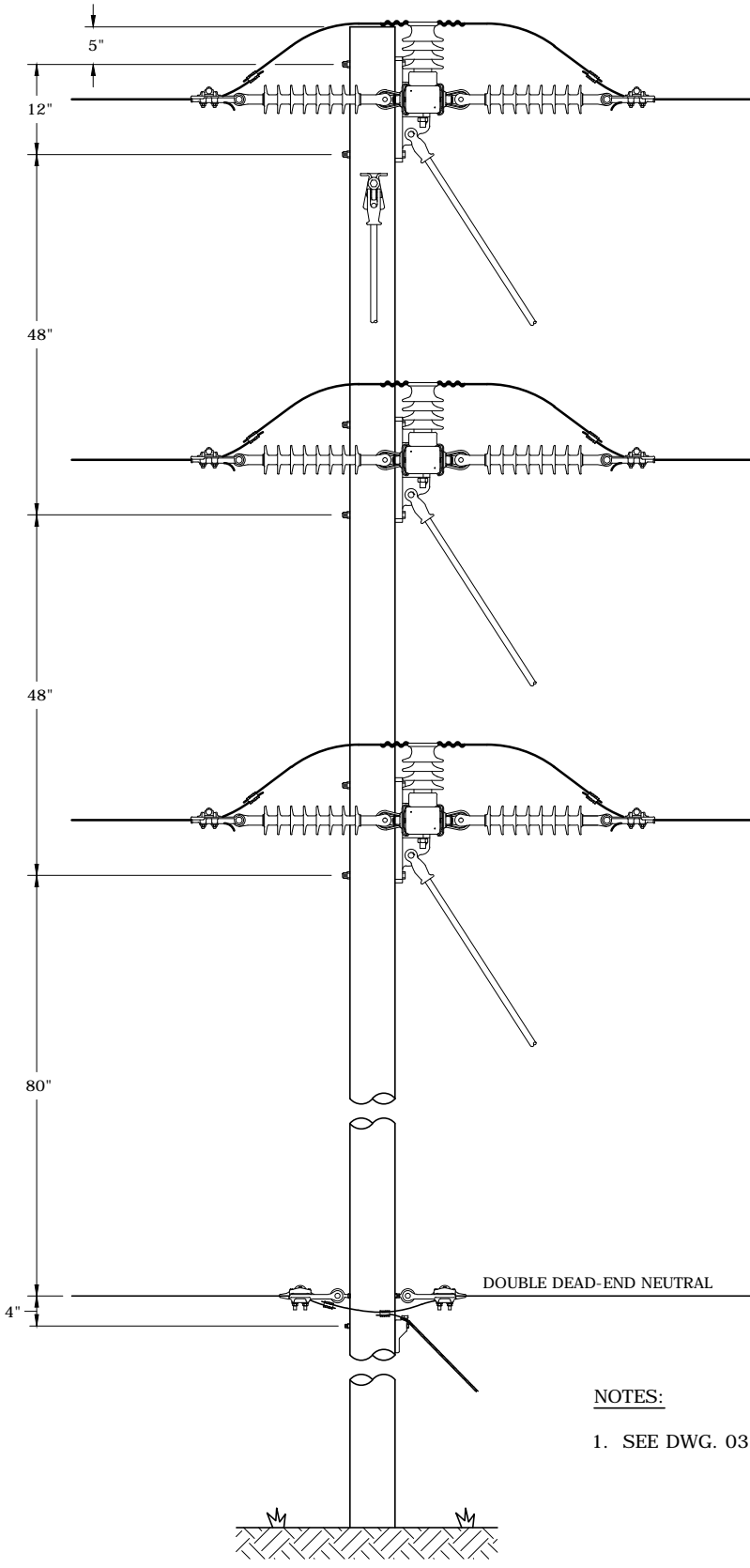


3				
2				
1				
0	10/31/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

CONTROLLED ACCESS HIGHWAY
OR RAILROAD CROSSING - DOUBLE CIRCUIT

DEC	DEM	DEP	DEF
X	X	X	X

03.20-10A



NOTES:
 1. SEE DWG. 03.20-10A FOR FRONT VIEW AND NOTES.

SIDE VIEW

DUKE ENERGY.

DEC	DEM	DEP	DEF
X	X	X	X

03.20-10B

3				
2				
1				
0	10/31/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

CONTROLLED ACCESS HIGHWAY
 OR RAILROAD CROSSING - DOUBLE CIRCUIT

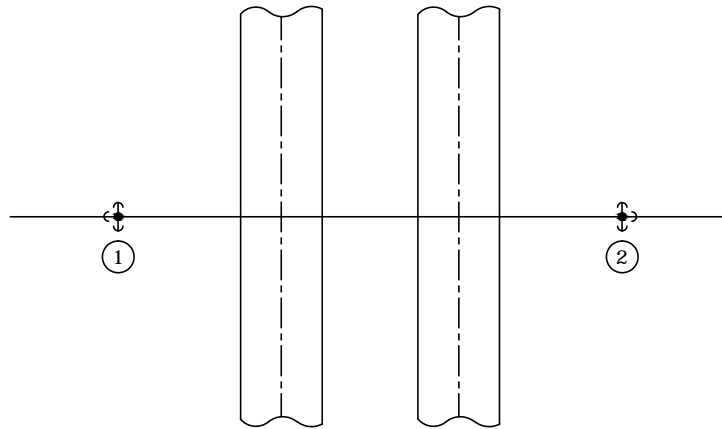


FIGURE 1

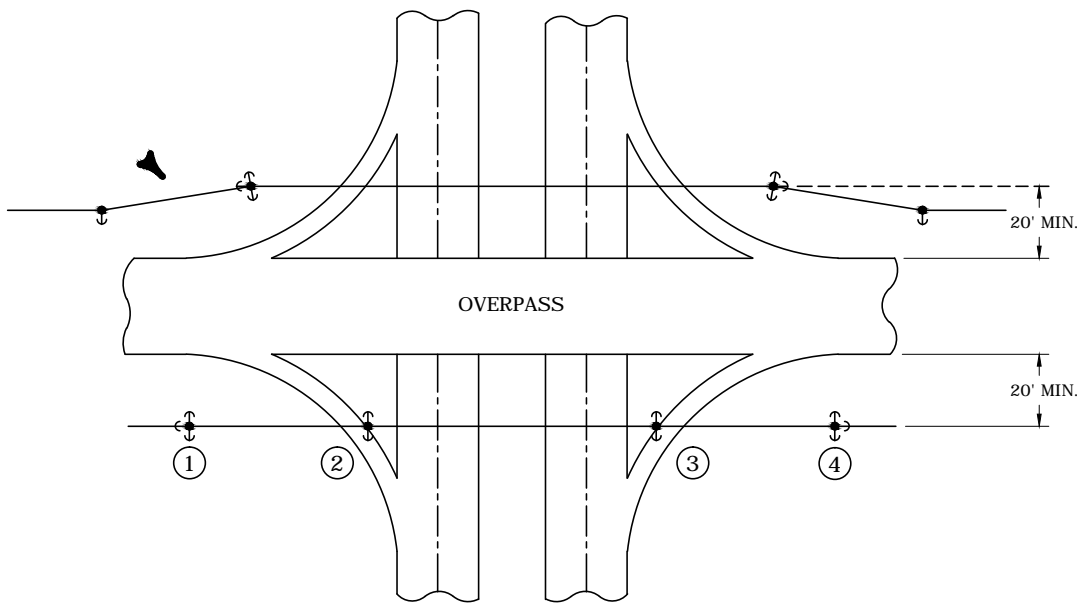


FIGURE 2

NOTES:

1. IF INTERMEDIATE POLES ARE REQUIRED TO REDUCE SPAN LENGTHS, THE LONG SPAN CONSTRUCTION STANDARD SHOULD BE CONSIDERED IN LIEU OF INTERMEDIATE POLES. IF INTERMEDIATE POLES ARE STILL REQUIRED, THE INTERMEDIATE POLES MUST HAVE SIDE GUYS INSTALLED OR MUST BE CLASSED HIGH ENOUGH TO MEET GRADE B CONSTRUCTION. BACK GUYS ARE NOT REQUIRED ON INTERMEDIATE TANGENT POLES.
- 2. DISTRIBUTION CONDUCTORS MUST BE 20' MINIMUM FROM BRIDGE OVERPASS. POLES THAT ARE ANGLED TO ACCOMPLISH THE CLEARANCE MUST BE GUYED IN 3 DIRECTIONS, WITH ONE OF THOSE GUYS BACKING UP THE CROSSING SPAN. DOT REQUIREMENTS BESIDE A BRIDGE VARY FROM STATE TO STATE. CONSULT WITH LOCAL DOT PERSONNEL BEFORE DESIGNING A NEW CROSSING NEXT TO A BRIDGE.



3				
2				
1	12/1/14	GUINN	GUINN	ADCOCK
0	10/31/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

CONTROLLED ACCESS HIGHWAY

DEC	DEM	DEP	DEF
X	X	X	X
03.20-12			

AVIAN PROTECTION

PROGRESS ENERGY CONSTRUCTS AND OPERATES DISTRIBUTION FACILITIES TO SERVE CUSTOMERS. SOME OF THESE FACILITIES ARE CONSTRUCTED ALONG RIVERS, LAKES, COASTLINES, LANDFILLS, AND OTHER ENVIRONMENTS WITH INCREASED EXPOSURE TO AVIAN INTERACTIONS WITH OUR SYSTEM. AVIAN SPECIES WILL UTILIZE DISTRIBUTION POLES AND EQUIPMENT FOR NESTING AND AS A PERCH WHEN HUNTING PREY, ESPECIALLY LARGE RAPTORS. THESE LARGE RAPTORS, WADING BIRDS AND OTHER AVIAN SPECIES CAN INADVERTENTLY CONTACT ENERGIZED EQUIPMENT WITH THEIR LARGE WINGSPAN WHEN PERCHING OR NESTING ON PEF EQUIPMENT, RESULTING IN ELECTROCUTION OF THE BIRD AND POTENTIAL OUTAGES FOR OUR CUSTOMERS.

SPECIFICATIONS CONTAINED IN THIS SECTION HAVE BEEN DEVELOPED FOR CONSTRUCTING AND MAINTAINING PRIMARY DISTRIBUTION FACILITIES IN AREAS WITH ENVIRONMENTS CONDUCIVE FOR LARGE RAPTORS, WADING BIRDS, AND OTHER AVIAN POPULATIONS WITH THE OBJECTIVE OF MINIMIZING AVIAN ELECTROCUTIONS AND OUTAGES. SOME OF THE MORE COMMON CONSTRUCTION TYPES HAVE BEEN ADDRESSED. CONTACT THE DISTRIBUTION STANDARDS UNIT FOR UNIQUE SITUATIONS. AVIAN CONSTRUCTION IS TO BE USED IN AREAS DESIGNATED AVIAN AREAS OF CONCERN BY THE ENVIRONMENTAL SERVICES UNIT'S AVIAN RISK ASSESSMENT. THE HIGH RISK AREAS REQUIRE AVIAN CONSTRUCTION STANDARDS TO BE FOLLOWED AND ARE DENOTED IN GIS BY A GREEN OVERLAY. THESE CONSTRUCTION AND MAINTENANCE OF PRIMARY STANDARDS WILL BE FOLLOWED IN SUPPORT OF PEF'S AVIAN PROTECTION PLAN, ENSURING THE COMPANY REMAINS GOOD ENVIRONMENTAL STEWARDS OF THE NATURAL RESOURCES ENTRUSTED TO OUR CARE. AVIAN PROTECTION IS NOT REQUIRED IF THERE IS NO PRIMARY ON THE POLE. THESE SPECIFICATIONS MAY BE USED OUTSIDE OF DESIGNATED AVIAN AREAS AS NEEDED.

TOTAL CONSTRUCTION COSTS WOULD BE APPLIED AGAINST REVENUE CREDIT TO SERVE A NEW CUSTOMER TO DETERMINE ANY CUSTOMER COST.

IN AREAS DESIGNATED AS AVIAN AREAS OF CONCERN BY ENVIRONMENTAL SERVICE'S AVIAN RISK ASSESSMENT THE FOLLOWING GUIDELINES SHALL BE FOLLOWED:

NEW CONSTRUCTION:

1. VERTICAL CONSTRUCTION IS PREFERRED AND SHOULD BE AT LEAST 36" PRIMARY SPACING.
 - IF 36" SPACING CANNOT BE PROVIDED, AVIAN CONDUCTOR/INSULATOR COVERS MUST BE USED ON AT LEAST THE MIDDLE (B PHASE)
2. HORIZONTAL CONSTRUCTION SHOULD HAVE 60" SPACING BETWEEN PHASES.
 - IF 60" SPACING CANNOT BE PROVIDED, PERCH DETERRENENTS SUCH AS TRIANGLES, ZENA X-ARM CONES, OR CONDUCTOR/INSULATOR COVERS SHALL BE USED BETWEEN PHASES.
3. ALL DOUBLE CROSSARM POLES SHALL HAVE PERCH/NEST DETERRENENTS ON THEM; OPTIONS INCLUDE THE NEST DEFLECTOR CROSS ARM COVER, MULTIPLE TRIANGLE PERCH DETERRENENTS, ZENA X-ARM CONES, OR OTHER APPROVED PERCH DETERRENENTS SHOWN IN THIS SPEC.
4. ALL PRIMARY POLES SHALL HAVE POLE TOP CAPS ON THEM TO PREVENT PERCHING.
5. ALL CUTOOUT SWITCHES SHALL HAVE AVIAN COVERS INSTALLED.
6. ALL PRIMARY TRANSFORMER, RECLOSER, SECTIONALIZER, ARRESTER, CAPACITOR, LINE FUSE, 200A TERMINAL POLE FUSE AND REGULATOR RISERS SHALL BE 600 VOLT POLY COVERED OR COVERED WITH TUBING. JUMPERS ON RIGHT ANGLE POLES SHALL MAINTAIN 36" PHASE SPACING OR SHALL BE COVERED. ALL JUMPERS ON CONCRETE POLES SHALL BE COVERED. 600 AMP TERMINAL POLE RISERS AND RISERS/ JUMPERS ON 600 AMP SINGLE BLADED SWITCHES NEED NOT BE COVERED.
7. JUMPERS AROUND THE POLE SHALL BE INSULATED OR COVERED WITH INSULATED TUBING.
8. ALL ARRESTORS SHALL HAVE CAPS PROPERLY INSTALLED.
9. PRIMARY (H1) BUSHINGS ON OH TRANSFORMERS SHALL HAVE SQUIRREL GUARDS INSTALLED.
10. PRIMARY GUYS SHALL HAVE AN INSULATED GUY STICK PER CONSTRUCTION STANDARDS.
11. THE SWITCH BRACKET ON TOP MOST 600 AMP SINGLE BLADE OR BYPASS SWITCH SHALL HAVE DETERRENT INSTALLED TO ELIMINATE PERCH OR NEST AREA ON THE BRACKET. USE EITHER THE TRIANGLE BIRD PERCH DETERRENT OR THE XENA BIRD DISCOURAGER. SEE DWG. 03.26-02A OR 03.26-02C).

4	6/13/13	McCONNELL	DANNA	ADCOCK
3	1/11/13	BURLISON	DANNA	ADCOCK
2	1/18/12	BURLISON	BURLISON	ELKINS
0	6/10/11	BURLISON	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

AVIAN PROTECTION - OVERVIEW



FLA DWG. 03.26-01A

AVIAN PROTECTION (CONT.)

MAINTENANCE

1. WHEN PERFORMING MAINTENANCE CONSTRUCTION OF PRIMARY LINES, BRING STRUCTURE TO AVIAN STANDARD PER NEW CONSTRUCTION GUIDELINES IN AREAS DESIGNATED BY ENVIRONMENTAL AS AVIAN AREAS OF CONCERN AS DESIGNATED IN GIS BY A GREEN OVERLAY.
2. INSTALL NEST PLATFORMS ON STRUCTURES THAT HAVE INACTIVE NEST. (ALTERNATE POLE MAY NEED TO BE SET.) WHEN USING AN ALTERNATIVE POLE, NEST DETERRENTS SHOULD BE PLACE ON ORIGINAL STRUCTURE WHERE THE NEST OCCURRED.
 - a. ACTIVE NEST SHOULD NOT BE MOVED UNTIL EGGS HATCH AND YOUNG FLEDGE, UNLESS ENVIRONMENT SPECIALIST PROVIDES APPROVAL DUE TO SIGNIFICANT SAFETY HAZARD FOR BIRDS OR PUBLIC.
 - b. CONSIDER USING BIRD FLIGHT DIVERTERS (BFD'S) IN CLOSE PROXIMITY OF THE NEST.
3. REMOVE STICKS AND STARTER NEST FROM STRUCTURES AND ADD DIVERTERS TO STOP NEST BUILDING AT LOCATION.
 - a. EVALUATE NEED FOR SIMILAR STRUCTURES 3 SPANS IN BOTH DIRECTIONS OF EXISTING STRUCTURE.

AREAS SUBJECT TO POTENTIAL BIRD STRIKES:

BIRD FLIGHT DIVERTERS (BFD'S) CAN BE USED TO REDUCE AVIAN COLLISIONS WITH POWER LINES IN HIGH RISK AREAS.

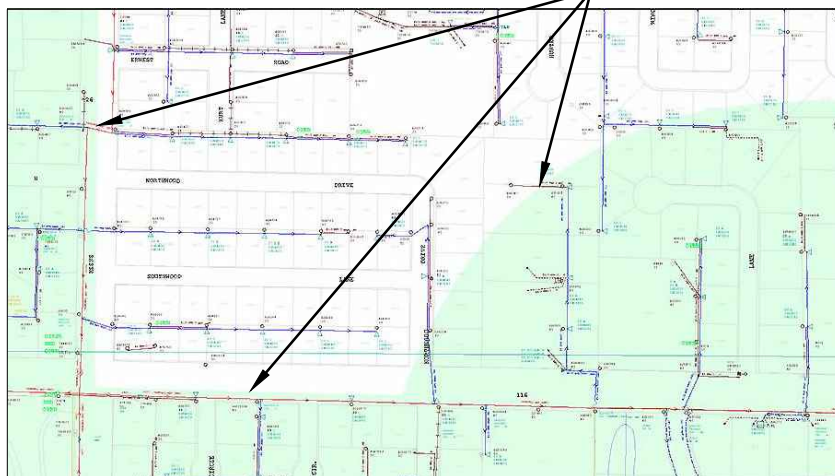
FLIGHT DIVERTERS (BFD'S) SHOULD BE INSTALLED AT INTERVALS OF 50 TO 100 FEET ON TOP CONDUCTOR (A PHASE OR STATIC IF PRESENT) FOR ALL AERIAL PRIMARY WATER CROSSINGS.

ASSESS AREAS FOR RISK OF POTENTIAL BIRD STRIKES AS YOU DESIGN WORK IN HIGH AVIAN RISK AREAS AS DESIGNATED BY PEF'S AVIAN RISK ASSESSMENT. IF A SIGNIFICANT HAZARD FOR BIRD STRIKES EXISTS, BFD'S SHOULD BE UTILIZED. EXAMPLES OF A SIGNIFICANT HAZARD MAY INCLUDE NEW LINE CONSTRUCTION WITHIN 1000 FEET OF A KNOWN EAGLE NEST, IF THE LINE INTERSECTS THE BIRD'S FOOD SOURCE (LAKE) AND ROOSTING HABITAT, AND LINES ADJACENT TO SHORELINE THAT ARE HIGHER THAN SURROUNDING TREES. IN THESE AND SIMILAR SITUATIONS, BFD'S SHOULD BE EVALUATED FOR USE BY THE ENGINEER. IF NEEDED, CONSULT ENVIRONMENTAL FOR MORE GUIDANCE.

IT IS NOT PEF'S INTENT TO REQUIRE BFD'S ON EVERY PRIMARY LINE IN HIGH RISK AREAS, BUT TO EVALUATE THEIR USE AND EFFECTIVENESS FOR REDUCING POTENTIAL BIRD STRIKES BASED ON THE LINE CONSTRUCTION, OBSERVED FIELD CONDITIONS AND PARAMETERS LISTED IN THIS SECTION.

SMALL ALUMINUM PRIMARY CONDUCTORS (1/0 AND SMALLER) AND COPPER PRIMARY CONDUCTORS PRESENT INCREASED RISK FOR POTENTIAL BIRD STRIKES IN THESE SITUATIONS.

GIS SHADED (GREEN) AREA REPRESENTS LEVEL4, (HIGH RISK) AND LEVEL 5 (VERY HIGH RISK) AREAS FOR AVIAN INTERACTION. THESE WILL REQUIRE AVIAN STANDARDS TO BE FOLLOWED PER THIS SECTION.

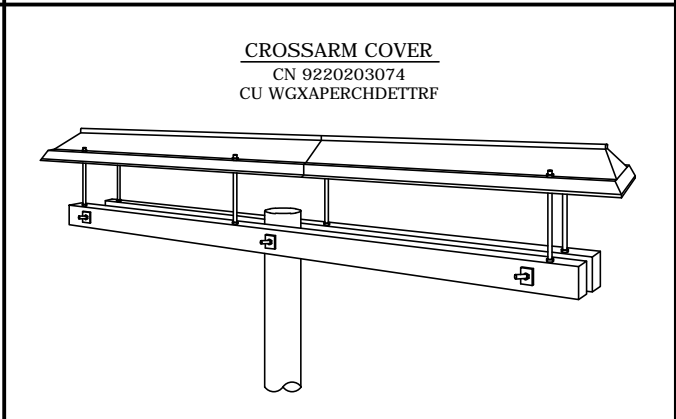
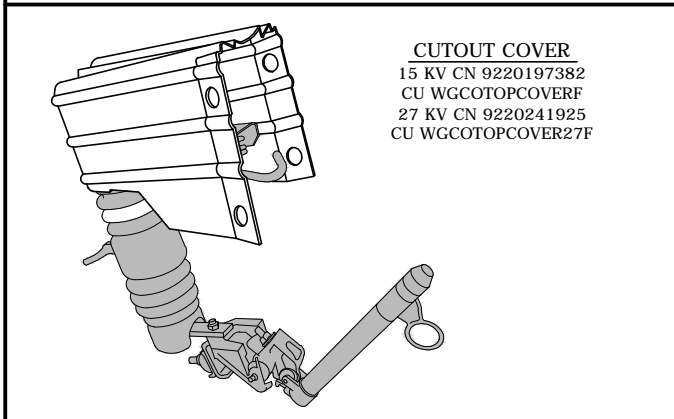
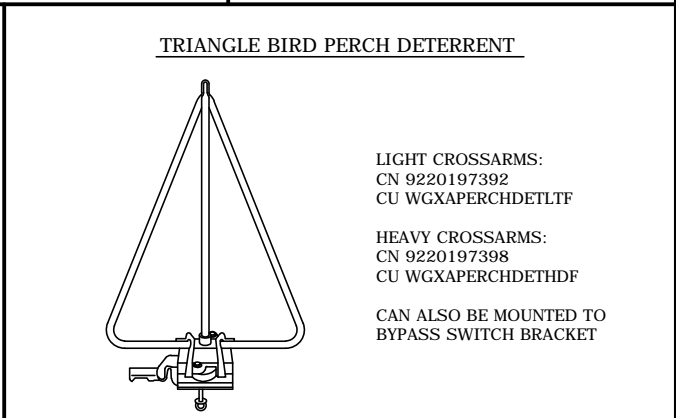
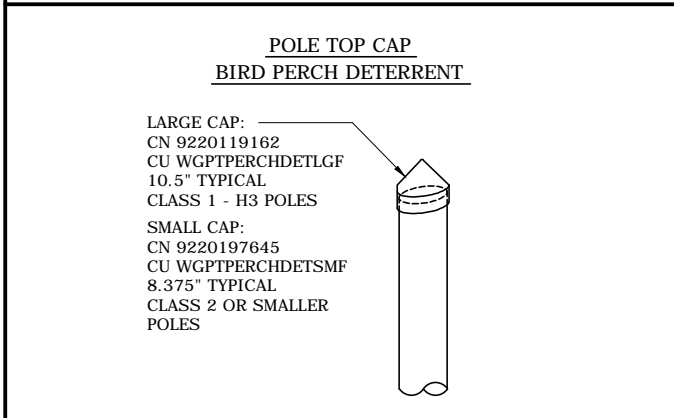
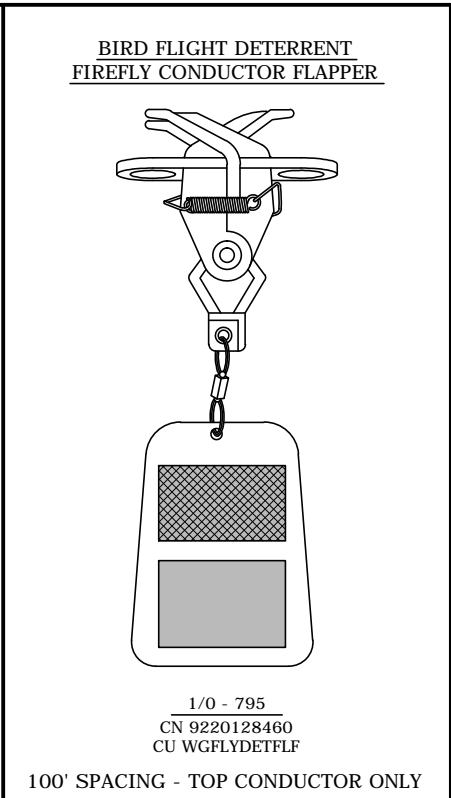
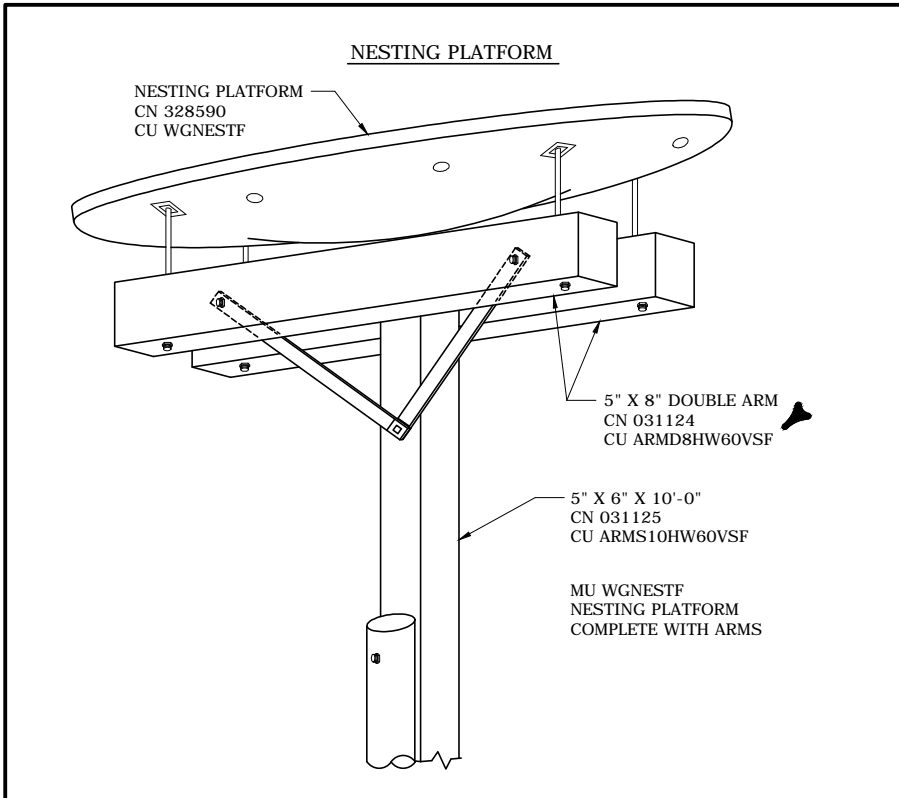


4	1/30/13	BURLISON	DANNA	ADCOCK
3	1/18/12	BURLISON	BURLISON	ELKINS
2	12/20/11	BURLISON	BURLISON	ELKINS
0	6/10/11	BURLISON	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

AVIAN PROTECTION - OVERVIEW



FLA DWG. 03.26-01B



NOTES:

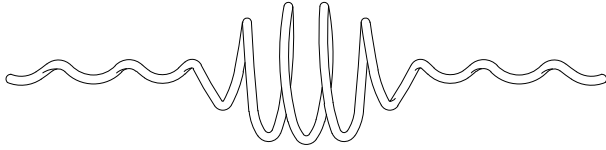
1. COORDINATE RAPTOR NEST RELOCATIONS WITH LOCAL ENVIRONMENTAL SPECIALIST.
2. SEE DWG. 03.26-01A AND DWG. 03.26-01B FOR GENERAL NOTES.

7	4/21/14	GUINN	GUINN	ADCOCK
6	8/7/12	BURLISON	BURLISON	ELKINS
5	12/20/11	BURLISON	BURLISON	ELKINS
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

AVIAN PROTECTION
DETERRENT ITEMS FOR DISTRIBUTION

DEC	DEM	DEP	DEF
			X
03.26-02A			

**BIRD FLIGHT DETERRENT
CONDUCTOR PRE-FORM DIVERTERS**



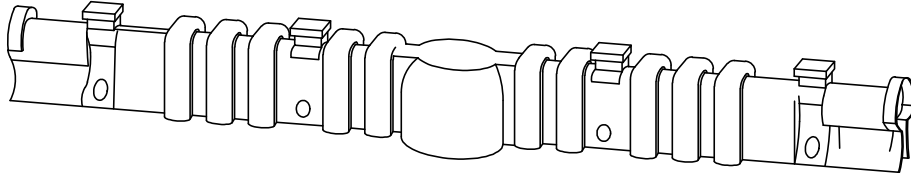
100' SPACING - TOP CONDUCTOR ONLY

CONDUCTOR SIZE	CATALOG NUMBER	COMPATIBLE UNIT
1/0	442011	WGFLYDETSP10F
4/0	442012	WGFLYDETSP40F
336	9220110988	WGFLYDETSP336F
795	9220197883	WGFLYDETSP795F

55-2 THRU 55-5 INSULATOR COVER

WIRE SIZE: #2 - 556

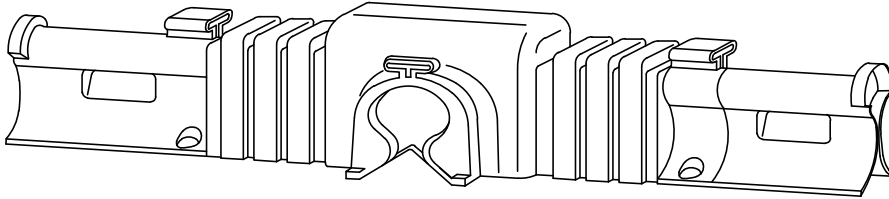
CN 9220204211
CU WGPININSF



LINE POST INSULATOR COVER

WIRE SIZE: #6 - 795

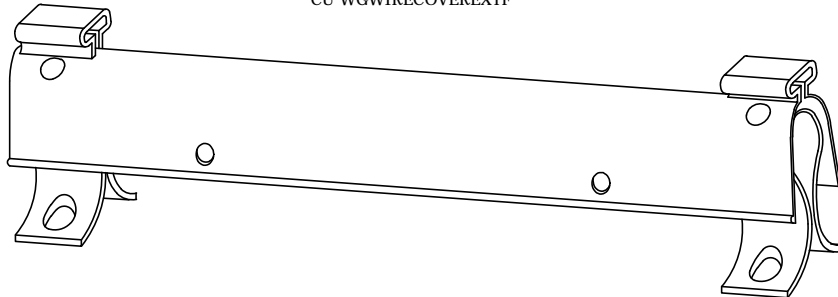
CN 9220204212
CU WGPOSTINSF



COVER EXTENSION

WIRE SIZE: #2 - 795

CN 9220204210
CU WGWIRECOVEREXTF



USE WITH CN 9220204211 AND CN 9220204212 AS NEEDED

NOTES:

- COORDINATE RAPTOR NEST RELOCATIONS WITH LOCAL ENVIRONMENTAL SPECIALIST.
- SEE DWG. 03.26-01A AND DWG. 03.26-01B FOR GENERAL NOTES.

3				
2	11/15/11	BURLISON	BURLISON	ELKINS
1	6/30/11	CECCONI	BURLISON	ELKINS
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

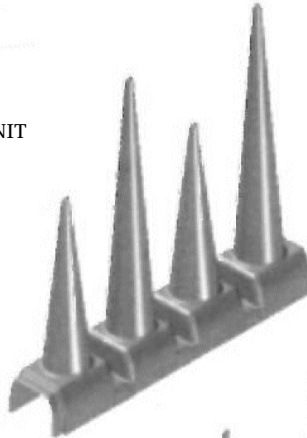
AVIAN PROTECTION
DETERRENT ITEMS FOR DISTRIBUTION



FLA DWG.
03.26-02B

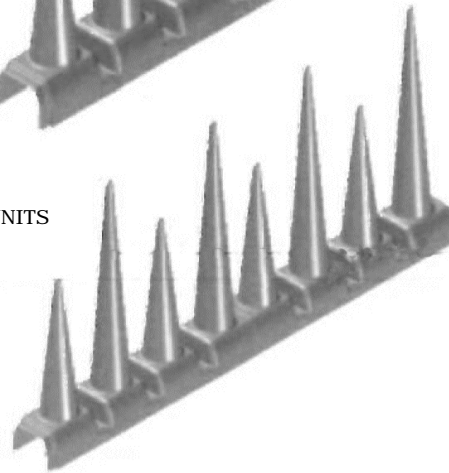
BIRD PERCH DETERRENT

SINGLE UNIT



CN 9220151747

MULTIPLE UNITS



NOTES:

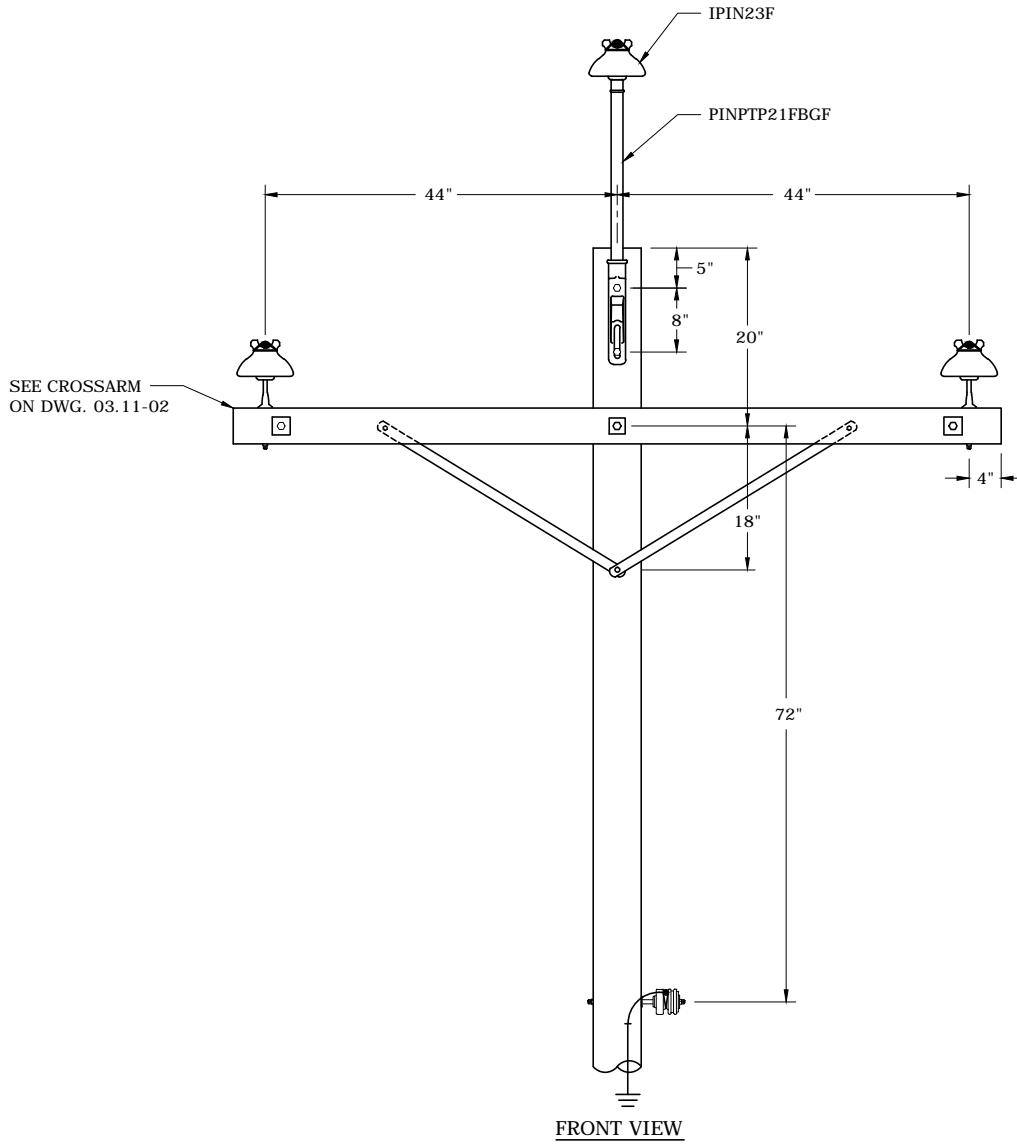
1. THE XENA BIRD DISCOURAGER MAY BE USED AS AN ALTERNATE TO THE DETERRENTS ON DWG. 03.26-02A. IT CAN BE SECURED TO CROSSARMS WITH NAILS. IT MAY BE CUT TO SIZE FOR SWITCH BRACKETS AND SECURED USING ZIP TIES (CN 9220230121).

3				
2				
1				
0	1/14/13	BURLISON	DANNA	ADCOCK
REVISED	BY	CK'D	APPR.	

AVIAN PROTECTION
DETERRENT ITEMS FOR DISTRIBUTION



FLA DWG. 03.26-02C



NOTES:

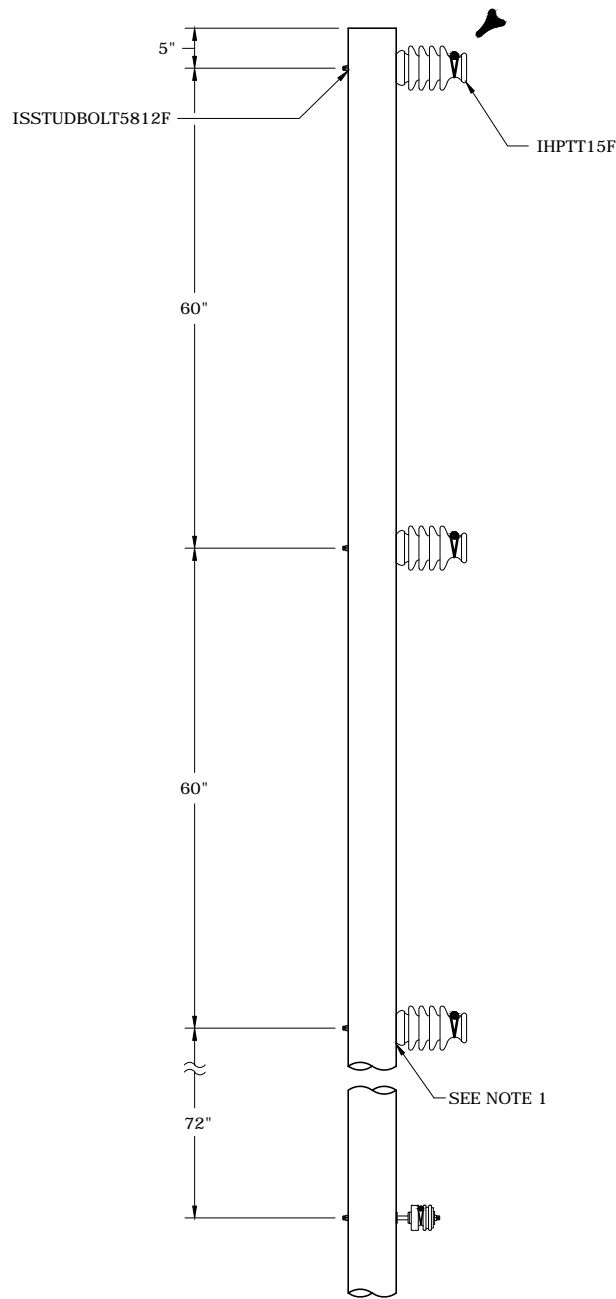
- 1. SEE DWG. 03.26-01A AND DWG. 03.26-01B FOR GENERAL NOTES.

3				
2				
1	6/30/11	CECONI	BURLISON	ELKINS
0	3/2/11	BURLISON	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

AVIAN PROTECTION
TANGENT LINE
(EXISTING POLE WITH CROSSARMS)



FLA DWG. 03.26-03



FRONT VIEW

NOTES:

1. POLE GAINS (ISGAINGRIDF FOR 15/25KV INSULATORS OR ISGAINGRID55F FOR 35KV INSULATORS) ARE REQUIRED FOR POST INSULATOR INSTALLATIONS ON WOOD POLES WHEN THE POLE DOES NOT HAVE A SLAB GAIN FOR ALL CONDUCTOR SIZES. WHEN THE CONDUCTOR IS 336.4 KCMIL OR LARGER, USE POLE GAIN EVEN IF SLAB GAIN EXISTS. POLE GAINS ARE NOT REQUIRED FOR INSULATORS USED FOR JUMPERS. SLACK SPANS WITH 336 AND 795 CONDUCTORS REQUIRE A POLE GAIN.
2. TYPICAL INSTALLATION - REFER TO SECTION 04 FOR NEUTRAL/SECONDARY DETAILS.
3. USE THESE SPECIFICATIONS FOR CONSTRUCTING NEW LINES IN THE VICINITY OF AQUACULTURE FARMS OR AS DIRECTED BY ENVIRONMENTAL SERVICES ONLY. MAXIMUM SPAN 400' FOR #1/0 AL AND SMALLER CONDUCTORS.
4. EXISTING LINES CAN BE RETROFITTED WITH THIS CONSTRUCTION WHERE ADEQUATE GROUND CLEARANCE CAN BE OBTAINED TO LOWER THE NEUTRAL.

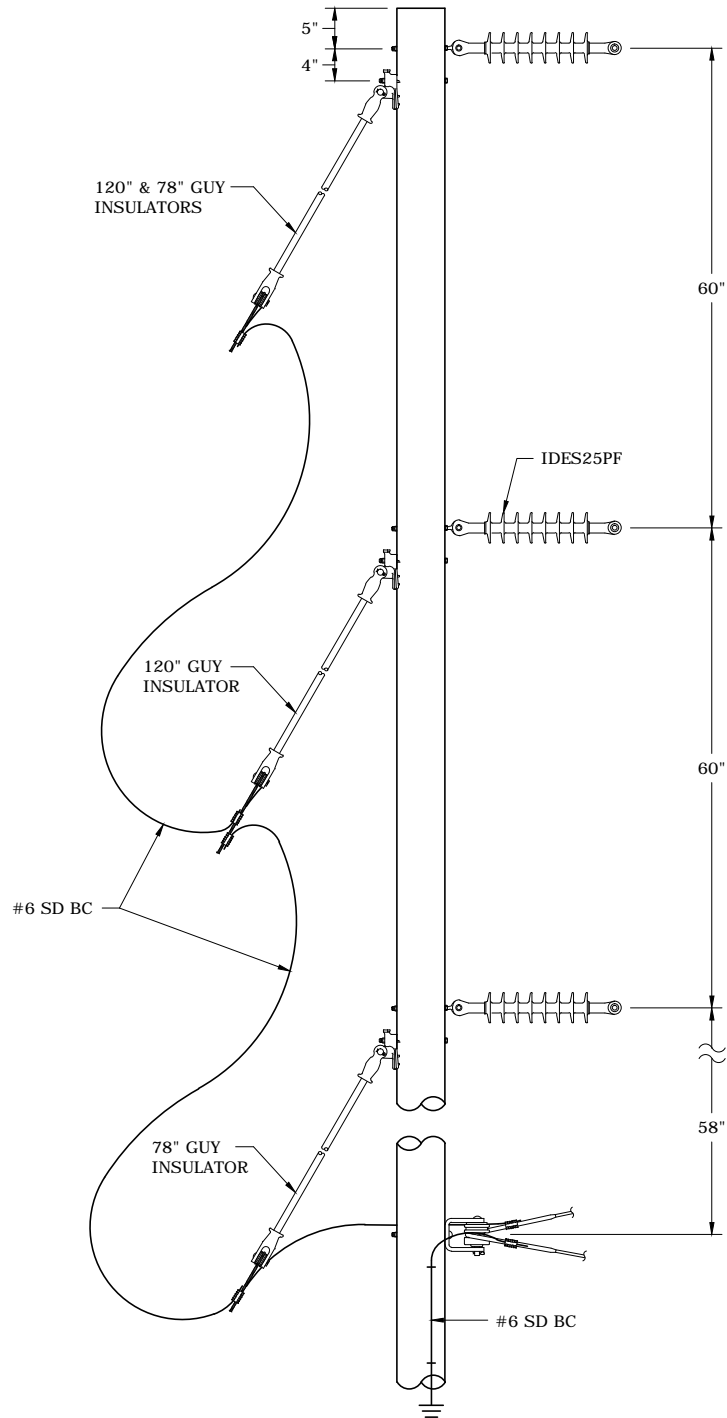
3	4/18/13	McCONNELL	DANNA	ADCOCK
2	3/21/13	McCONNELL	DANNA	ADCOCK
1	12/12/11	BURLISON	BURLISON	ELKINS
0	11/8/10	BURLISON	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

AVIAN PROTECTION - AQUACULTURE FARMS
TANGENT CONSTRUCTION



FLA

DWG.
03.26-06




NOTES:

- 1. USE THESE SPECIFICATIONS FOR CONSTRUCTING NEW 12, 23 OR 34KV LINES IN THE VICINITY OF AQUACULTURE FARMS OR AS DIRECTED BY ENVIRONMENTAL SERVICES ONLY. MAXIMUM SPAN 400' FOR #1/0 AL AND SMALLER CONDUCTORS.
2. EXISTING LINES CAN BE RETROFITTED WITH THIS CONSTRUCTION WHERE ADEQUATE GROUND CLEARANCE CAN BE OBTAINED.
3. SEE DWG. 03.26-01A AND DWG. 03.26-01B FOR GENERAL NOTES.
4. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.
5. SEE DWG. 03.06-02 FOR BOLTS AND LINE CLAMPS.

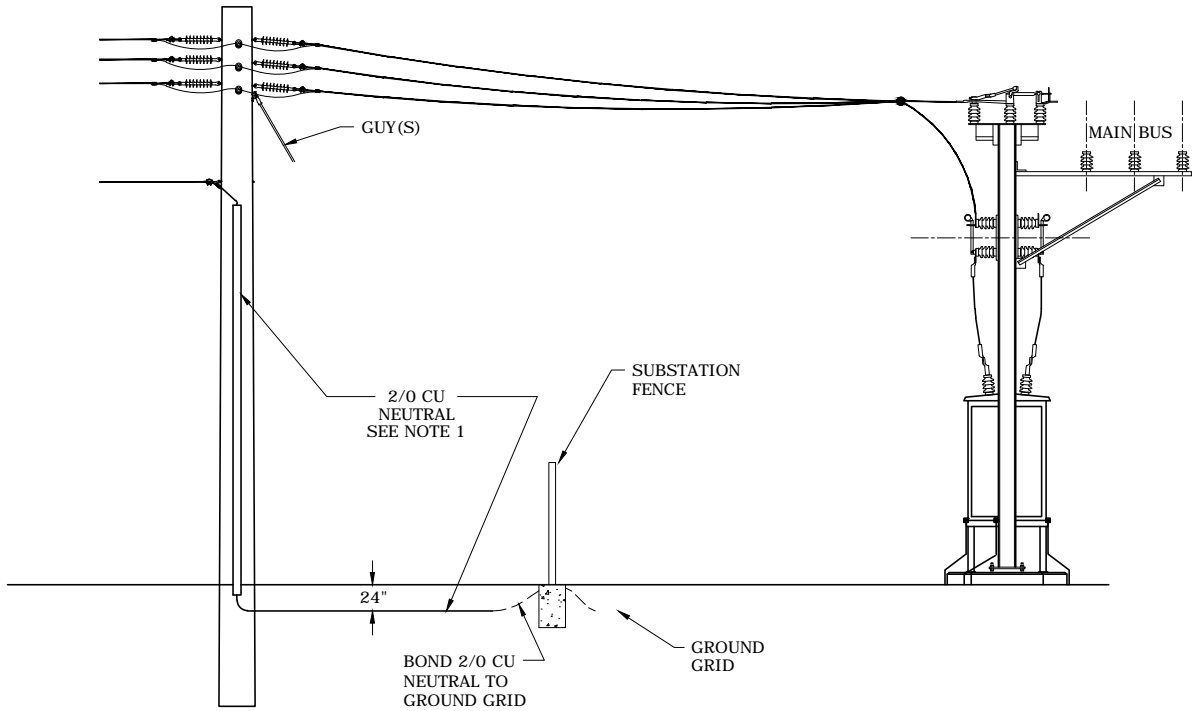
3				
2	12/12/11	BURLISON	BURLISON	ELKINS
1	6/30/11	CECCONI	BURLISON	ELKINS
0	11/18/10	BURLISON	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

➤ **AVIAN PROTECTION - AQUACULTURE FARMS
ANGLE ASSEMBLY (UP TO 60 DEGREES)
AND DEAD END**

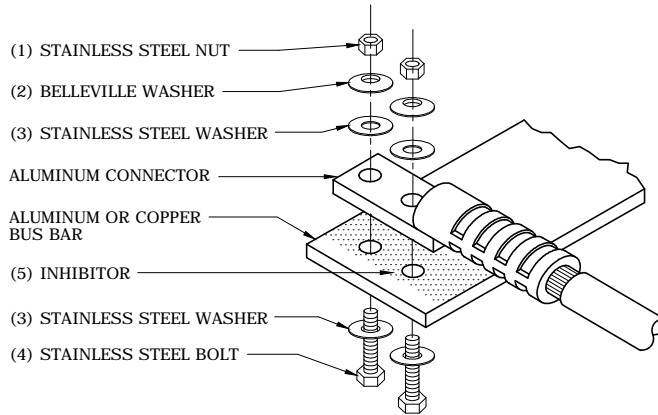
 **Progress Energy**

FLA DWG. 03.26-08

GROUNDING TO SUBSTATION



TERMINATION IN SUBSTATION



SWITCH CONNECTION DETAIL TORQUE TO 40 FT. LBS.

ITEM	DESCRIPTION	
	FOR AL TO AL OR AL TO CU PADS	FOR CU TO CU PADS
1	STAINLESS STEEL NUT	SILICONE BRONZE NUT
2	BELLEVILLE WASHER	SILICONE BRONZE LOCK WASHER
3	STAINLESS STEEL WASHER	SILICONE BRONZE WASHER
4	STAINLESS STEEL BOLT	SILICONE BRONZE BOLT
5	INHIBITOR	INHIBITOR

NOTES:

1. BURY 2/0 CU NEUTRAL FROM STATION GROUND GRID TO BASE OF FIRST FEEDER POLE ON EACH OVERHEAD FEEDER. CONTINUE 2/0 CU UP POLE TO OVERHEAD NEUTRAL CONNECTION. THEN INSTALL 1" U-GUARD OVER 2/0 CU NEUTRAL.
2. DISTRIBUTION PERSONNEL WILL INSTALL CONDUCTORS AND MAKE CONNECTIONS TO L.D. & B.P. SWITCHES.

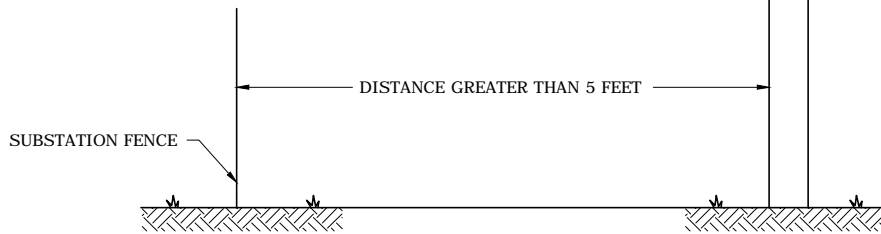
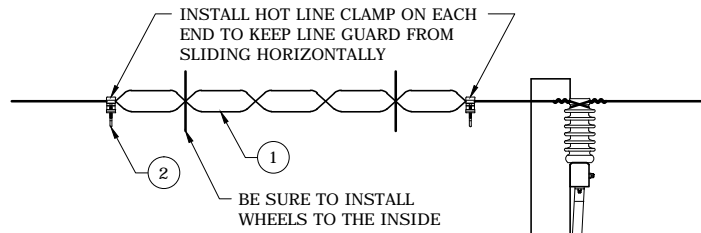
3				
2				
1				
0	11/18/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

OVERHEAD FEEDER TERMINATION IN SUBSTATION
WITH METAL BUS STRUCTURE



FLA

DWG.
03.28-02



NOTES:

1. SEE DWG. 03.28-08B OR NOTES AND BILL OF MATERIALS.



3				
2				
1				
0	7/14/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

OVERHEAD FEEDER EXIT LINE GUARD -
FIRST POLE OUTSIDE OF SUBSTATION
IS GREATER THAN 5 FEET AWAY

DEC	DEM	DEP	DEF
		X	X

03.28-08A

BILL OF MATERIALS					
CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
1	WGEXCGSUBF	1	9220269896	1	CRITTER LINE GUARD
2	KHLC7933F	2	9220184792	2	CLAMP, HOT LINE, ALUM, EXTRA LARGE, 795

NOTES:

1. SEE DWG. 03.28-08A FOR DESIGN SPECIFICATIONS.
2. INSTALL THE LINE GUARD ON ALL PHASES, NEUTRAL AND ANY CABLES THAT ALLOW AERIAL ACCESS TO THE SUBSTATION (SQUIRRELS).
3. THE KIT COMES WITH PLASTIC L BRACKETS AND SS HARDWARE. DO NOT USE. INSTEAD, INSTALL AN ALUMINUM HOT LINE CLAMP AT EACH END OF THE LINE GUARD TO PREVENT THE GUARD FROM SLIDING ALONG THE CONDUCTOR.
4. IF THE FIRST POLE OUT OF THE SUBSTATION IS 5' OR MORE FROM THE FENCE INSTALL THE LINE GUARD IN THAT SPAN.
5. IF THE FIRST POLE OUT OF THE SUBSTATION IS LESS THAN 5' FROM THE FENCE, INSTALL A POLE GUARD ON THAT POLE AND INSTALL THE LINE GUARD BEYOND THE FIRST POLE. SEE DWG. 03.28-10A.



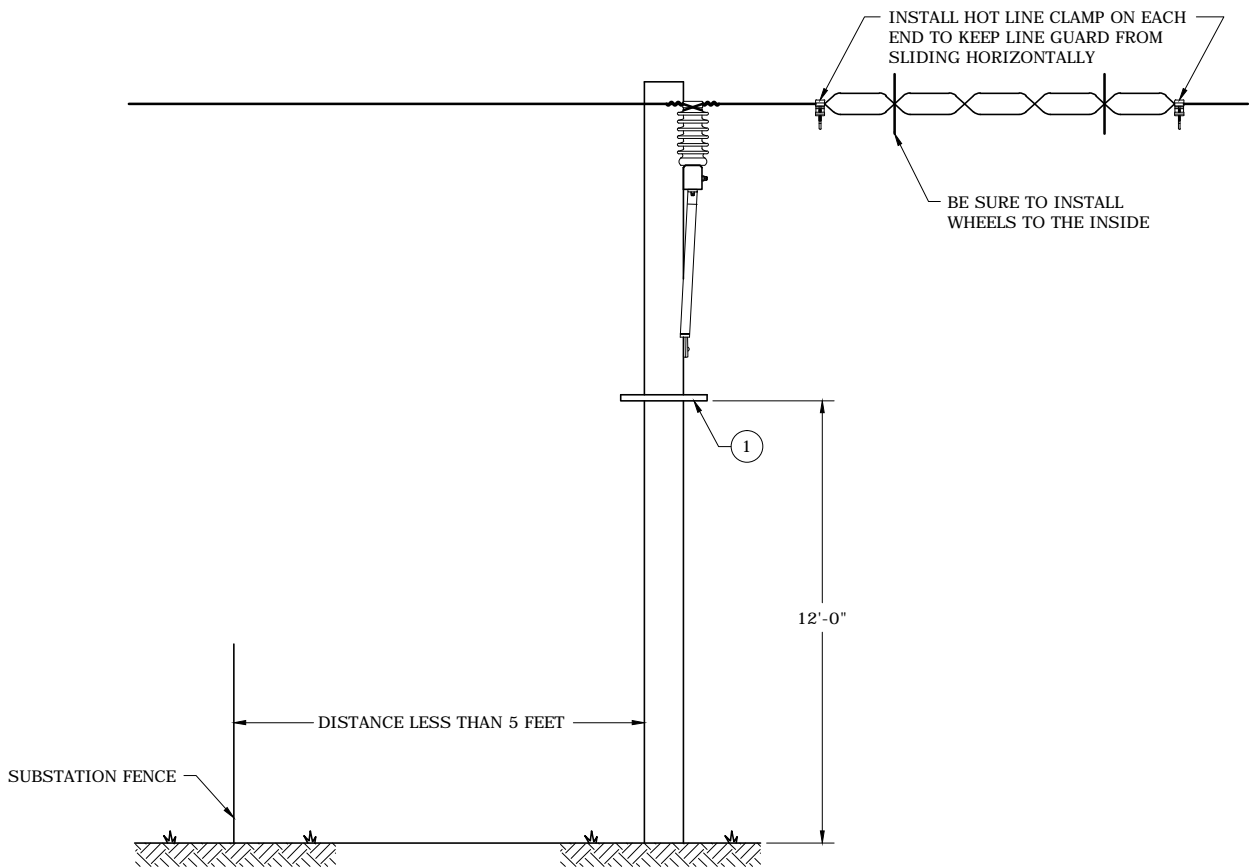
3				
2				
1				
0	8/1/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

OVERHEAD FEEDER EXIT LINE GUARD -
FIRST POLE OUTSIDE OF SUBSTATION
IS GREATER THAN 5 FEET AWAY

DEC	DEM	DEP	DEF
			X
03.28-08B			



POLE GUARD



NOTES:

1. SEE DWG. 03.28-10B FOR NOTES AND BILL OF MATERIALS.



3				
2				
1				
0	7/17/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

**OVERHEAD FEEDER EXIT LINE GUARD -
FIRST POLE OUTSIDE OF SUBSTATION
IS LESS THAN 5 FEET AWAY**

DEC	DEM	DEP	DEF
		X	X

03.28-10A

BILL OF MATERIALS					
CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
1	WGEXPCGSUBF	1	9220269906	1	CRITTER POLE GUARD

NOTES:

1. SEE DWG. 03.28-10A FOR DESIGN SPECIFICATIONS.
2. INSTALL POLE GUARD ON THE FIRST POLE OUTSIDE THE SUBSTATION IF THAT POLE IS WITHIN 5' OF THE FENCE. INSTALL 12' ABOVE GROUND.
3. INSTALL LINE GUARD BEYOND THE FIRST POLE. SEE DWG. 03.28-08A.



3				
2				
1				
0	8/1/14	GUINN	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

OVERHEAD FEEDER EXIT LINE GUARD -
FIRST POLE OUTSIDE OF SUBSTATION
IS LESS THAN 5 FEET AWAY

DEC	DEM	DEP	DEF
			X

03.28-10B

FOR SPECIAL APPLICATIONS ONLY REQUIRING MODIFICATION TO EXISTING SYSTEM. OBTAIN APPROVAL FROM MANAGER - DISTRIBUTION ASSET PERFORMANCE AND MANAGER - DISTRIBUTION ASSET ENGINEERING.

GROUNDING:

1. EACH POLE TO HAVE A DEEP-DRIVEN GROUND. MINIMUM DESIRED RESISTANCE TO BE ≤ 25 OHMS.
2. ALL GUYS TO BE BONDED TO THE SYSTEM NEUTRAL AND MESSENGER. (SINCE THE SPACER CABLE SYSTEM IS SUPPORTED BY A GROUNDED MESSENGER, THERE IS NO BENEFIT TO PLACING INSULATORS IN DOWN AND/OR SPAN GUYS.)

ARRESTERS:

1. ARRESTERS ARE GENERALLY INSTALLED ONLY AT EACH LOCATION THE SPACER CABLE INSULATION IS REMOVED FOR TAP AND TRANSFORMER CONNECTIONS. WHERE EXTENDED RUNS GREATER THAN 2000' ARE INSTALLED WITHOUT TAPS OR TRANSFORMER CONNECTIONS, THE CABLE MAY BE TAPPED FOR ARRESTER STATIONS.

CABLE TAPS:

1. WHERE THE CABLE INSULATION IS REMOVED TO TAP THE CABLE, THE MESSENGER IS TO BE COVERED WITH "LINE-DUC" TO PROTECT AGAINST SHORT CIRCUITS TO GROUND. THE COVER IS TO EXTEND 18" EACH SIDE OF THE TAP POINT AND SECURED WITH TIE WIRE.

CONSTRUCTION DRAWINGS:

1. THE DRAWINGS SHOWN ARE FOR 1/0 CONSTRUCTION. USE THE PROPER BOLTED HARDWARE FOR 795 WIRE SIZES.
2. THE CLEARANCES WILL BE THE SAME FOR 1/0 OR 795.
3. PULLING TENSIONS TO BE PROVIDED BY ENGINEERING.
4. 2 \emptyset AND 3 \emptyset CONSTRUCTION METHODS ARE IDENTICAL.

FOR MAINTENANCE ONLY

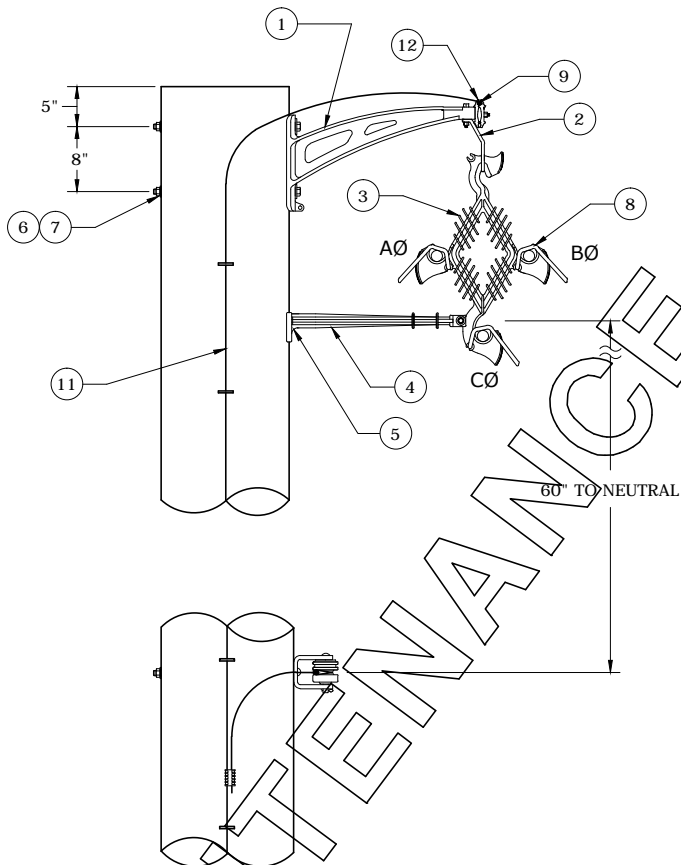
3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

15KV SPACER CABLE SYSTEM (FMO)



FLA

DWG.
03.19-00



NOTES:

1. SEE DWG. 03.19-02B FOR BILL OF MATERIALS.

FOR MAINTENANCE ONLY

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TYPICAL TANGENT CONSTRUCTION (FMO)



FLA DWG. 03.19-02A

BILL OF MATERIALS				
ITEM NO.	COMPATIBLE UNIT	CATALOG NUMBER	QUANTITY	DESCRIPTION
1	SC301	9220100581	1	MESSENGER BRACKET
2		9220100590	1	STIRRUP, SUPPLIED WITH 1/2" BOLT, FLAT WASHER AND SELF-LOCKING NUT
3		9220100591	1	3 PHASE SPACER
4		9220100580	1	ANTI-SWAY BAR, SUPPLIED WITH PLASTIC BOLT
5		14114	1	LAG SCREW, FETTER DRIVE, 1/2" X 4"
6		10432	2	MACHINE BOLTS, 5/8" X REQUIRED LENGTH
7		13346	2	SQUARE WASHER, 4" X 4" SQUARE CURVED
8*	SC1	-	AS REQ.	HENDRIX AERIAL CABLE, 15KV, 1/0
9*	SC1M	-	AS REQ.	MESSENGER, 1/0
10	-	-	AS REQ.	GROUND WIRE, SOFT DRAWN COPPER, SOLID, #6 AWG MIN.
11	-	-	1	CONNECTOR (SIZE AND TYPE AS REQUIRED, NOT SHOWN)

* SEE DWG. 03.19-00 FOR 795 CONSTRUCTION

NOTES:

1. TANGENTS ARE DEFINED AS LINE ANGLES UP TO AND INCLUDING 6° FOR SPACER CABLE.
2. ANY HORIZONTAL LOAD CREATED BY A MINOR ANGLE SHOULD BE GUYED FOR PROPER CONSTRUCTION.
3. THE STIRRUP (ITEM 2) SHOULD BE BOLTED THROUGH THE HOLE CLOSEST TO THE END OF THE TANGENT BRACKET, NEAR THE MESSENGER CLAMP.
4. SEE DWG. 03.19-02A FOR DESIGN SPECIFICATIONS.

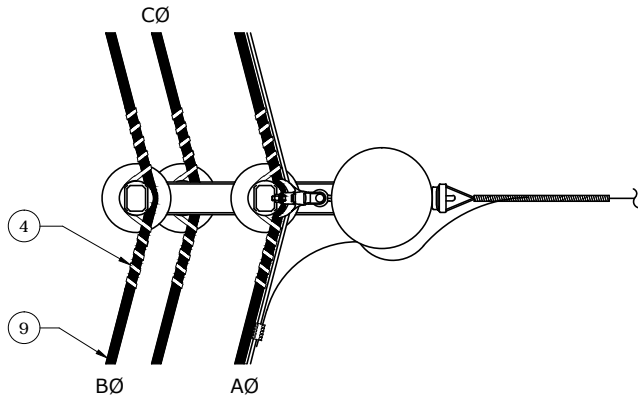
FOR MAINTENANCE

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

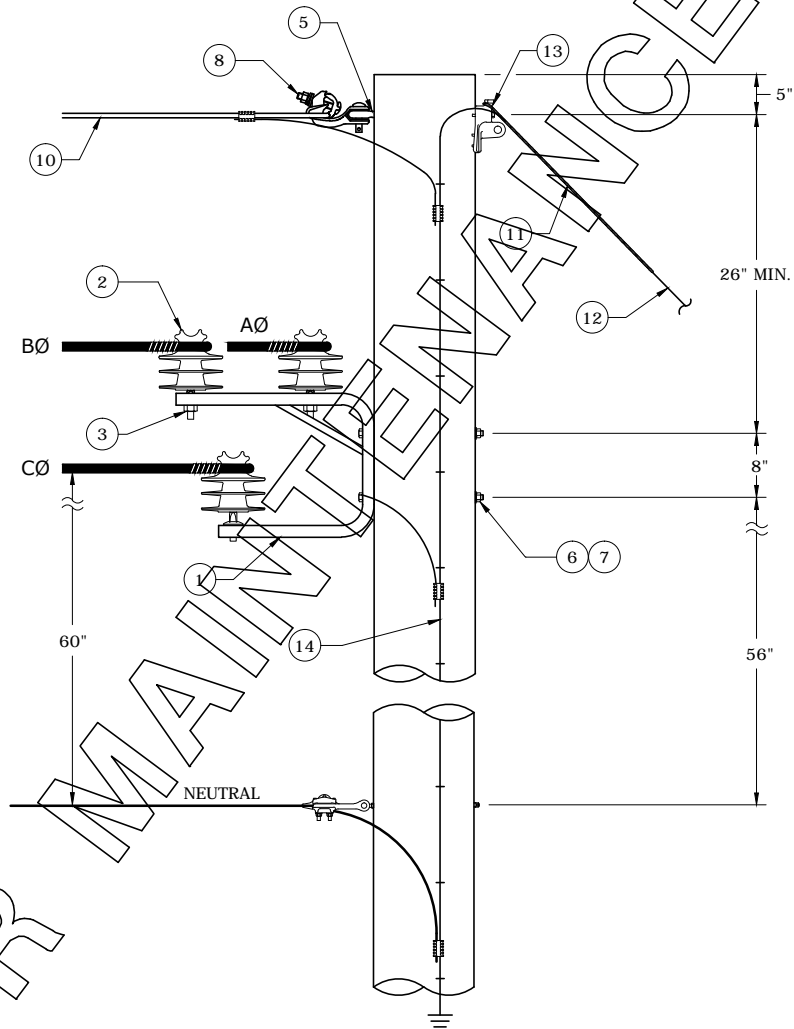
TYPICAL TANGENT CONSTRUCTION (FMO)



FLA DWG. 03.19-02B



PLAN VIEW



FRONT VIEW

NOTES:

1. SEE DWG. 03.19-04B FOR BILL OF MATERIALS.

FOR MAINTENANCE ONLY

ONLY

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

7 DEGREE-60 DEGREE OUTSIDE
ANGLE CONSTRUCTION (FMO)



FLA DWG.
03.19-04A

BILL OF MATERIALS					
ITEM NO.	COMPATIBLE UNIT	CATALOG NUMBER	QUANTITY	DESCRIPTION	
1	SC311	9220100579	1	ANGLE BRACKET	
2		9220100578	3	INSULATOR, PIN TYPE	
3		9220100594	3	INSULATOR PIN	
4		9220100589	1	COVERED TIE WIRE, #4 AWG SOLID SOFT DRAWN ALUMINUM WITH .045" THERMOPLASTIC RUBBER, 6 TO 8 FT. LENGTH	
5		11708	1	EYE BOLT, 5/8" X REQUIRED LENGTH FOR STANDARD DUTY CONSTRUCTION 3/4" X REQUIRED LENGTH FOR HEAVY DUTY CONSTRUCTION	
6		10432	2	MACHINE BOLT, 5/8" AS REQUIRED LENGTH	
7		13343	3	SQUARE WASHER, 2-1/4" X 2-1/4" X 3/16" MINIMUM	
8		9220100584	1	ANGLE CLAMP	
9		SC1	9220100898	AS REQ.	HENDRIX AERIAL CABLE, 15KV, 1/0
10		SC1M	9220100596	AS REQ.	MESSENGER, 1/0
11	-	-	AS REQ.	PRESHAPED GUY GRP. (SIZE AND TYPE AS REQUIRED)	
12	-	-	AS REQ.	GUY STRAND, (SIZE AND TYPE AS REQUIRED)	
13	-	-	AS REQ.	GUY HOOK	
14	-	-	AS REQ.	GROUND WIRE, SOFT DRAWN COPPER, SOLID, #6 AWG MIN.	

NOTES:

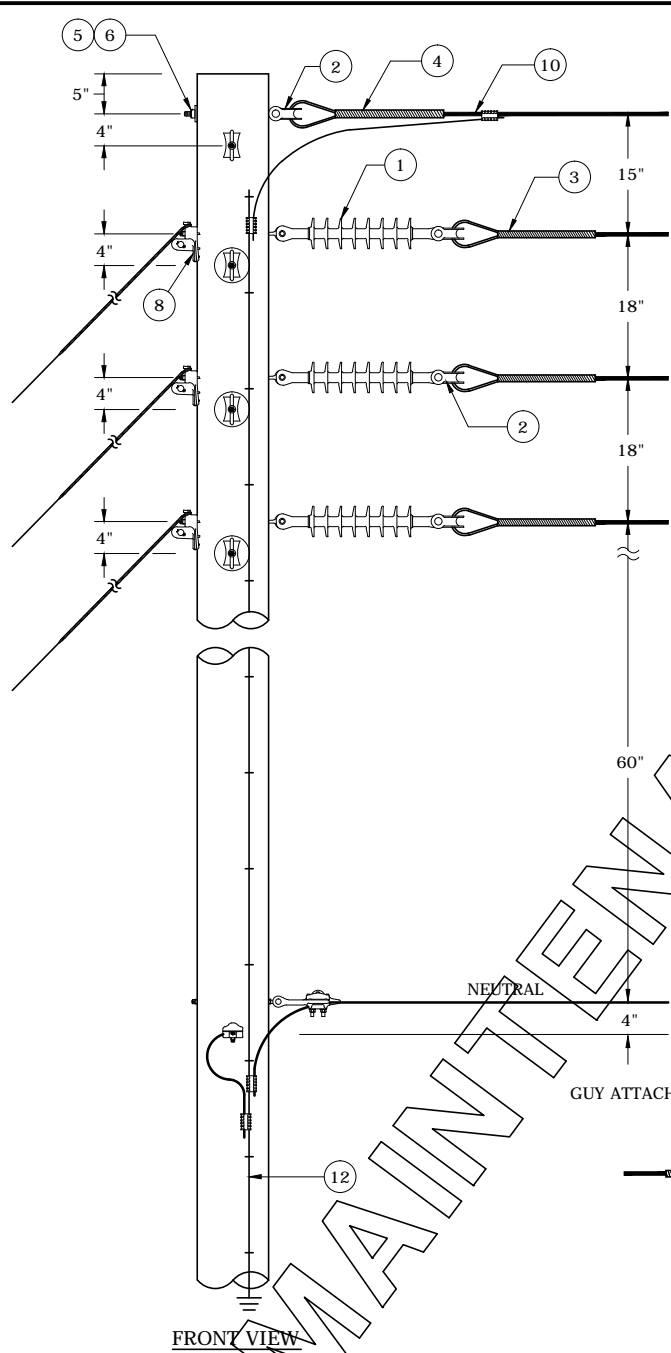
- STANDARD DUTY CONSTRUCTION - 8000 LB MAXIMUM EXPECTED MESSENGER TENSION. FOR MESSENGER TENSIONS GREATER THAN 8000 LB, THE MESSENGER MUST BE DOUBLE DEAD-ENDED.
- SEE DWG. 03.19-04A FOR DESIGN SPECIFICATIONS.
- SEE DWG. 03.19-00 FOR 795 CONSTRUCTION OF SC1 AND SC1M.

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

7 DEGREE - 60 DEGREE OUTSIDE
ANGLE CONSTRUCTION (FMO)



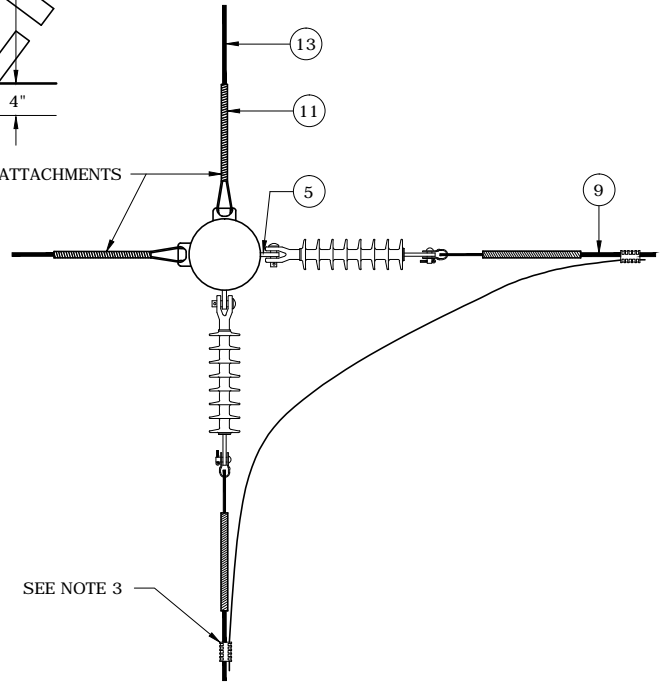
FLA DWG.
03.19-04B



FRONT VIEW

NOTES:

1. PLACE LINE-DUC ABOVE JUMPER CONNECTION ON MESSENGER.
2. SEE DWG. 03.19-06B FOR BILL OF MATERIALS.
3. USE WEDGE CONNECTOR FOR 795 CONSTRUCTION.




PLAN VIEW
MESSENGER NOT SHOWN IN THIS VIEW

FOR MAINTENANCE ONLY

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

DOUBLE DEAD-END
ANGLE CONSTRUCTION
61 - 90 DEGREES (FMO)



FLA DWG. 03.19-06A

BILL OF MATERIALS				
ITEM NO.	COMPATIBLE UNIT	CATALOG NUMBER	QUANTITY	DESCRIPTION
1	SC321	80575	6	INSULATOR, POLYMER DEAD-END TYPE
2		9220100585	8	THIMBLE CLEVIS
3		9220100897	6	PRESHAPED TYPE CONDUCTOR GUY GRIP, COATED
4		9220100587	2	PRESHAPED TYPE MESSENGER GRIP
5		11708	8	EYE BOLT, 5/8" X REQUIRED LENGTH
6		13343	8	SQUARE WASHER, 2-1/4" X 2-1/4" X 3/16" MIN.
7		9220100586	2	LINE-DUC (NOT SHOWN)
8	-	-	6	GUY HOOK
9	SC1	-	AS REQ.	HENDRIX AERIAL CABLE, 15KV 1/0
10	SC1M	-	AS REQ.	MESSENGER, 1/0
11	-	-	6	PRESHAPED TYPE GUY GRIP
12	-	-	AS REQ.	GROUND WIRE, SOFT DRAWN COPPER, SOLID, #6 AWG MIN.
13	-	-	AS REQ.	GUY STRAND (SIZE AND TYPE AS REQUIRED)

NOTES:

- STANDARD DUTY CONSTRUCTION - 8000 LB MAXIMUM EXPECTED MESSENGER TENSION. HEAVY DUTY CONSTRUCTION - 8000 LB TO 12,000 LB MAXIMUM MESSENGER TENSION.
- FOR HEAVY DUTY CONSTRUCTION, THE MESSENGER SHOULD BE DEAD-ENDED USING A 3/4" EYEBOLT AND HDTC THIMBLE CLEVIS.
- SEE DWG. 03.19-06A FOR DESIGN SPECIFICATIONS.
- SEE DWG. 03.19-00 FOR 795 CONSTRUCTION OF SC1 AND SC1M.

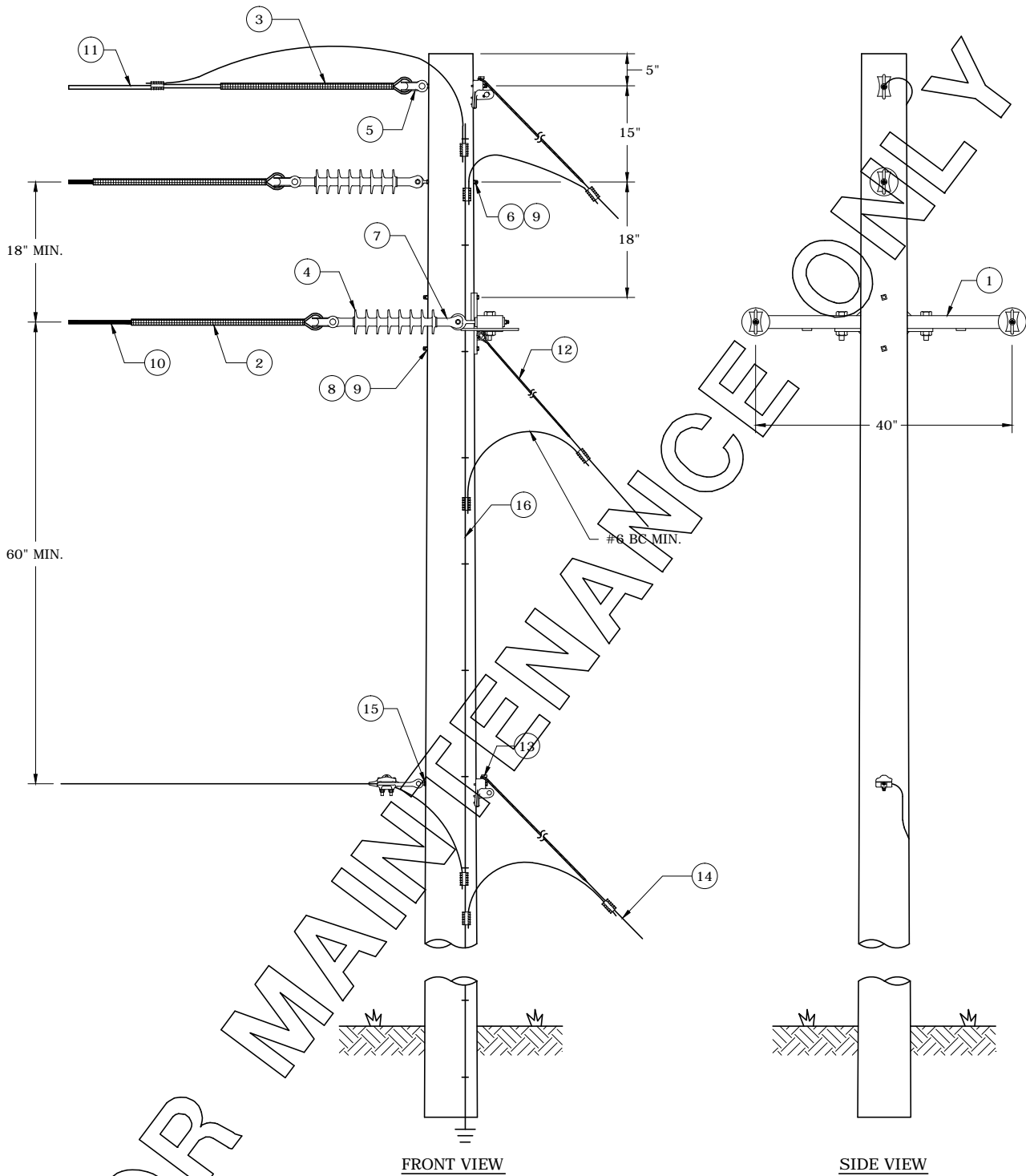
FOR MAINTENANCE ONLY

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

DOUBLE DEAD-END ANGLE CONSTRUCTION (FMO)



FLA DWG. 03.19-06B



NOTES:

1. SEE DWG. 03.19-08B FOR BILL OF MATERIALS.

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TYPICAL THREE-PHASE
DEAD-END CONSTRUCTION (FMO)



FLA DWG.
03.19-08A

BILL OF MATERIALS				
ITEM NO.	COMPATIBLE UNIT	CATALOG NUMBER	QUANTITY	DESCRIPTION
1	SC331	70164	1	40" DOUBLE DEADEND STEEL CROSSARM
2		9220100897	3	PRESHAPED CONDUCTOR GRIP, COATED, 1/0
3		9220100587	1	PRESHAPED MESSENGER GRIP, 1/0
4		80575	3	INSULATOR, POLYMER DEAD-END 25KV
5		9220100585	4	THIMBLE CLEVIS
6		11707	2	EYE BOLT, 5/8" X 12"
7		11708	2	EYE BOLT, 5/8" X 10"
8		10436	2	MACHINE BOLT, 5/8" X 12"
9		13343	6	SQUARE WASHER, 2-1/4" X 2-1/4" X 3/16", MIN.
10	SC1	9220100898	AS REQ.	HENDRIX AERIAL CABLE, 16KV, 1/0
11	SC1M	9220100596	AS REQ.	MESSENGER, 1/0
12	-	-	AS REQ.	PRESHAPED GUY GRIP
13	-	-	AS REQ.	GUY HOOK
14	-	-	AS REQ.	GUY STRAND (SIZE AND TYPE AS REQUIRED)
15	-	-	1	MACHINE BOLT, 5/8" X REQUIRED LENGTH
16	-	-	AS REQ.	GROUND WIRE, SOFT DRAWN COPPER, SOLID, #6 AWG

NOTES:

- STANDARD DUTY CONSTRUCTION - 8000 LB MAXIMUM EXPECTED MESSENGER TENSION. HEAVY DUTY CONSTRUCTION - 8000 LB TO 12,000 LB MAXIMUM MESSENGER TENSION.
- SEE DWG. 03.19-08A FOR DESIGN SPECIFICATIONS.
- SEE DWG. 03.19-00 FOR CONSTRUCTION OF SC1 AND SC1M.

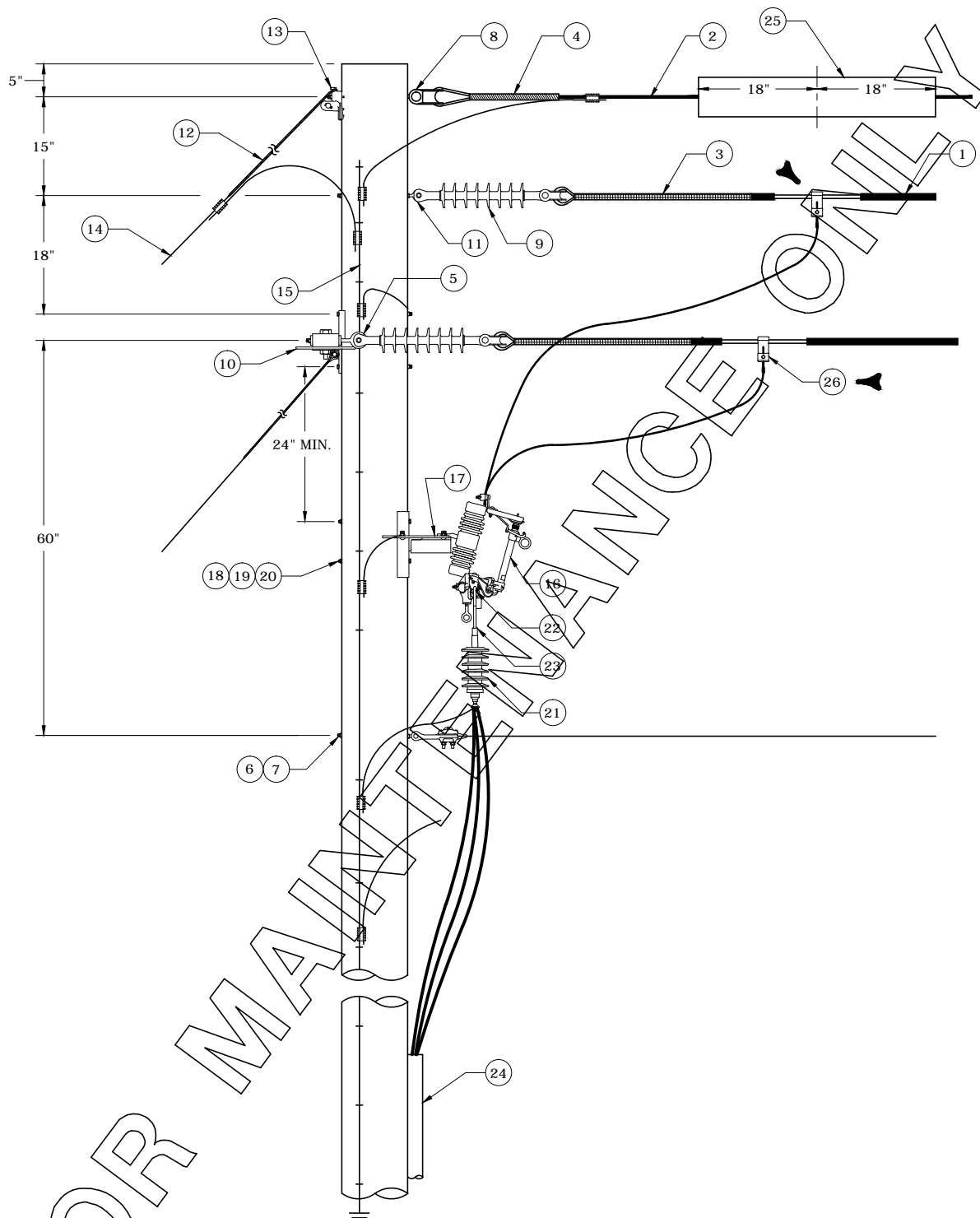
FOR MAINTENANCE

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TYPICAL THREE-PHASE
DEAD-END CONSTRUCTION (FMO)




FLA DWG. 03.19-08B



NOTES:
 1. SEE DWG. 03.19-10B FOR BILL OF MATERIALS AND NOTES.

3				
2				
1	8/31/11	BURLISON	BURLISON	ELKINS
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

THREE-PHASE DEAD-END CONSTRUCTION
 WITH UNDERGROUND RISER (FMO)



FLA DWG. 03.19-10A

BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION		
	1	SC1	1	9220100898	AS REQ.	HENDRIX AERIAL CABLE (SIZE AND VOLTAGE RATING AS REQUIRED)		
	2	SC1M	1	9220100596	AS REQ.	MESSENGER (SIZE AND TYPE AS REQUIRED)		
	3	SC331	1	9220100897	3	PRESHAPED CONDUCTOR GRIP, COATED		
	4			9220100587	1	PRESHAPED MESSENGER GRIP		
	5			11707	2	EYEBOLT, 5/8" X 8"		
	6			10436	2	BOLT, MACHINE, 5/8" X 12"		
	7			13343	6	WASHER, SQUARE, CURVED		
	8			9220100585	4	THIMBLE CLEVIS		
	9			80575	3	15KV POLYMER DEADEND		
	10			70164	1	40" DOUBLE DEADEND STEEL CROSSARM		
	11			11708	2	EYEBOLT, 5/8" X 10"		
	12			-	1	-	AS REQ.	PRESHAPED GUY GRIP
	13			-	1	-	AS REQ.	GUY HOOK
	14	-	1	-	AS REQ.	GUY STRAND (SIZE AND TYPE AS REQUIRED)		
	15	-	1	-	AS REQ.	GROUND WIRE, SOFT DRAWN COPPER, SOLID, #6 AWG		
	16	CA3T	1	221112	3	CUTOUT, 15 KV 100A, 16KA ASYMMETRICAL		
	17			70104	1	BRACKET, TRIPLE MOUNTING		
	18			10436	2	BOLT, MACHINE, 5/8" X 12"		
	19			13308	2	WASHER, SQUARE, 2-1/4"		
	20			13264	2	WASHER, SPRING COIL, 5/8"		
	21			220208	3	ARRESTER, POLYMER (MOV TERMINAL POLE TYPE)		
	22			153534	3	CONNECTOR, STEM FOR UNDERGROUND ARRESTER		
	23			130102	3	CLAMP, HOT LINE		
	24			-	1	-	AS REQ.	CONDUIT
	25			SCLD	1	9220100586	2 FT.	HENDRIX LINE-DUC WITH METALLIC TIE
	26	KHLC40N6F	1	9220184790	3	CLAMP, HOT LINE, ALUM, SMALL, 4/0		
		KHLC7933F	1	9220184794	3	CLAMP, HOT LINE, ALUM, LARGE, 336-795		


NOTES:

1. TYPES, QUANTITIES AND VOLTAGE RATINGS OF MATERIALS AS WELL AS CLEARANCES FOR VARIOUS VOLTAGE CLASSIFICATIONS ARE TO BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC SAFETY CODE (NEC) AND THE USER'S STANDARD CONSTRUCTION PRACTICES.
2. SEE DWG. 03.19-10A FOR DESIGN SPECIFICATIONS.
3. SEE DWG. 03.19-00 FOR 795 CONSTRUCTION OF SC1 AND SC1M.

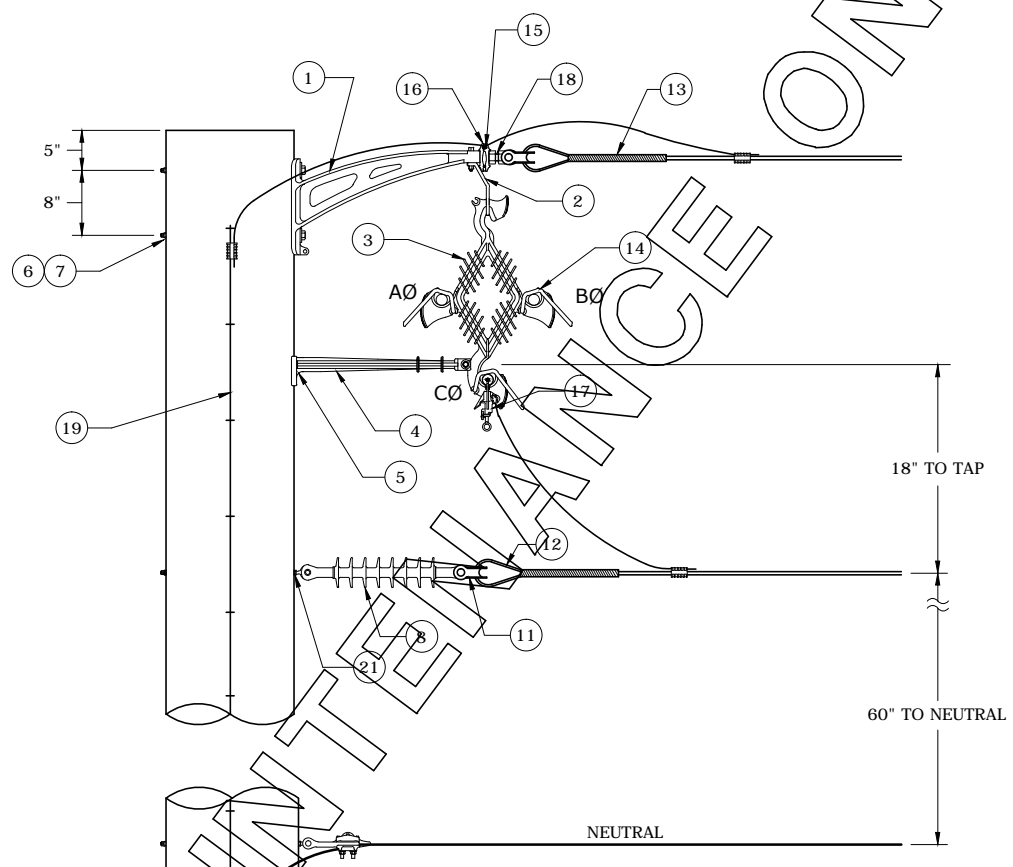
FOR MAINTENANCE

3				
2				
1	8/31/11	BURLISON	BURLISON	ELKINS
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

**THREE-PHASE DEAD-END CONSTRUCTION
WITH UNDERGROUND RISER (FMO)**



FLA DWG. 03.19-10B



NOTES:

1. SEE DWG. 03.19-12B FOR BILL OF MATERIALS.

FOR MAINTENANCE ONLY

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

SINGLE-PHASE LATERAL TAP
TANGENT CONSTRUCTION (FMO)



FLA DWG.
03.19-12A

Y

BILL OF MATERIALS				
ITEM NO.	COMPATIBLE UNIT	CATALOG NUMBER	QUANTITY	DESCRIPTION
1	SC301	9220100581	1	MESSENGER BRACKET
2		9220100590	1	STIRRUP, SUPPLIED WITH 1/2" BOLT, FLAT WASHER AND SELF-LOCKING NUT
3		9220100591	1	HENDRIX SPACER
4		9220100580	1	ANTI-SWAY BAR, SUPPLIED WITH PLASTIC BOLT
5		14114	1	LAG SCREW, FETTER DRIVE, 1/2" X 4"
6		10432	2	MACHINE BOLTS, 5/8" X REQUIRED LENGTH
7		13346	2	SQUARE WASHER, 4" X 4" SQUARE CURVED
8	SC131	80575	1	INSULATOR, POLYMER 15KV
9		13343	2	SQUARE WASHER, 4" X 4" SQUARE CURVED
10		11708	2	BOLT, OVAL EYE, 5/8" X 10"
11		9220100585	2	THIMBLE CLEVIS
12		9220100897	1	PRESHAPED CONDUCTOR GRIP, COATED TYPE
13		9220100587	1	PRESHAPED MESSENGER GRIP
14	SC1	-	AS REQ.	HENDRIX AERIAL CABLE
15	SC1M	-	AS REQ.	MESSENGER
16	-	-	1	CONNECTOR (SIZE AND TYPE AS REQUIRED, NOT SHOWN)
17	-	-	1	STIRRUP
18	-	-	1	EYE NUT, STANDARD 5/8"
19	-	-	AS REQ.	GROUND WIRE, SOFT DRAWN COPPER, SOLID, #6 AWG MIN.
20	-	-	1	BOLT, OVAL EYE, 5/8" X 10"
21	SCLD	9220100586	2	LINE DUC (NOT SHOWN)

NOTES:

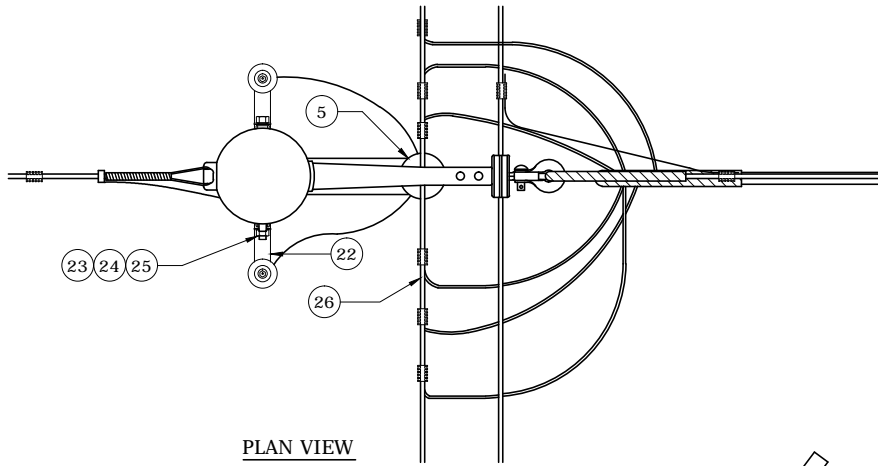
1. TANGENTS ARE DEFINED AS LINE ANGLES UP TO AND INCLUDING 6° FOR SPACER CABLE.
2. ANY HORIZONTAL LOAD CREATED BY A MINOR ANGLE SHOULD BE GUYED FOR PROPER CONSTRUCTION.
3. THE STIRRUP (ITEM 2) SHOULD BE BOLTED THROUGH THE HOLE CLOSEST TO THE END OF THE TANGENT BRACKET, NEAR THE MESSENGER CLAMP.
4. SEE DWG. 03.19-12A FOR DESIGN SPECIFICATIONS.

3				
2				
1				
O	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

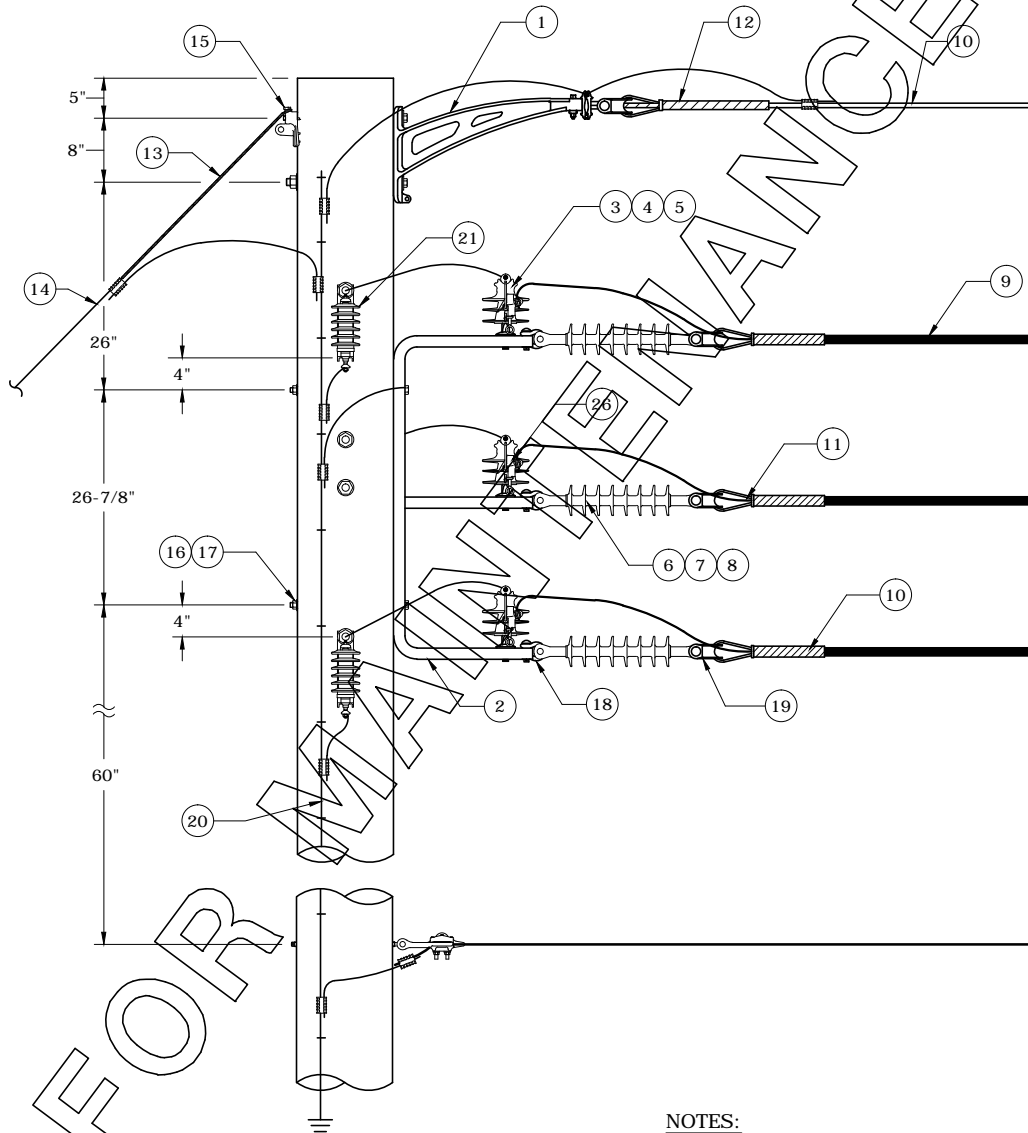
SINGLE-PHASE LATERAL TAP
TANGENT CONSTRUCTION (FMO)



FLA DWG. 03.19-12B



PLAN VIEW



FRONT VIEW

NOTES:

1. SEE DWG. 03.19-14B FOR BILL OF MATERIALS.
2. CONNECT ARRESTER TO TAP STIRRUP.

FOR

ONLY

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

THREE-PHASE, LATERAL TAP CONSTRUCTION (FMO)



FLA DWG. 03.19-14A

Y

BILL OF MATERIALS				
ITEM NO.	COMPATIBLE UNIT	CATALOG NUMBER	QUANTITY	DESCRIPTION
1	SCMB	9220100581	1	MESSENGER BRACKET
2	SCTB	9220100582	1	VERTICAL TAP BRACKET
3	SCIP	9220100578	1	INSULATOR, PIN TYPE, 15KV
4		9220100594	1	INSULATOR PIN
5		9220100589	1	HENDRIX COVERED TIE WIRE, #4 AWG SOLID SOFT DRAWN ALUMINUM WITH .045" THERMOPLASTIC RUBBER, 6 TO 8 FT. LENGTH
6	IP	11708	1	BOLT, OVAL EYE, 5/8" X 10"
7		13308	1	WASHER, SQ. FLAT, 2-1/4"
8		80575	1	INSULATOR, POLYMER DEAD-END 15KV
9	SC1	-	AS REQ.	HENDRIX AERIAL CABLE, 1/0
10	SC1M	-	AS REQ.	MESSENGER, 1/0
11	-	9220100897	3	PRESHAPED CONDUCTOR GRIP, COATED
12	-	9220100587	1	PRESHAPED MESSENGER GRIP
13	-	-	AS REQ.	PRESHAPED GUY GRIP
14	-	-	AS REQ.	GUY STRAND (SIZE AND TYPE AS REQUIRED)
15	-	-	1	GUY HOOK
16	-	-	4	MACHINE BOLT, 5/8" X REQUIRED LENGTH
17	-	-	3	SQUARE WASHER, 2-1/4" X 2-1/4" X 3/16", MIN.
18	-	-	3	SHACKLE CLEVIS
19	-	9220100585	4	THIMBLE CLEVIS
20	-	-	AS REQ.	GROUND WIRE, SOFT DRAWN COPPER, SOLID, #6 AWG MIN.
21	API	220202	1	LIGHTNING ARRESTER, DISTRIBUTION, 10 KV
22		311263	1	BRACKET, SINGLE MOUNT
23		152106	2	BOLT, MACHINE, 5/8" X 10"
24		013264	2	WASHER, SPRING COIL, 5/8"
25		013308	2	WASHER, SQ. FLAT, 2-1/4"
26		130102	1	CLAMP, HOTLINE

NOTES:

- STANDARD DUTY CONSTRUCTION - 8000 LB MAXIMUM EXPECTED MESSENGER TENSION. HEAVY DUTY CONSTRUCTION - 8000 LB TO 12,000 LB MAXIMUM MESSENGER TENSION.
- FOR HEAVY DUTY CONSTRUCTION, THE MESSENGER SHOULD BE DEAD-ENDED ON THE POLE, ABOVE THE TANGENT BRACKET, USING A 3/4" EYEBOLT AND HDTC THIMBLE CLEVIS.
- SEE DWG. 03.19-14A FOR DESIGN SPECIFICATIONS.

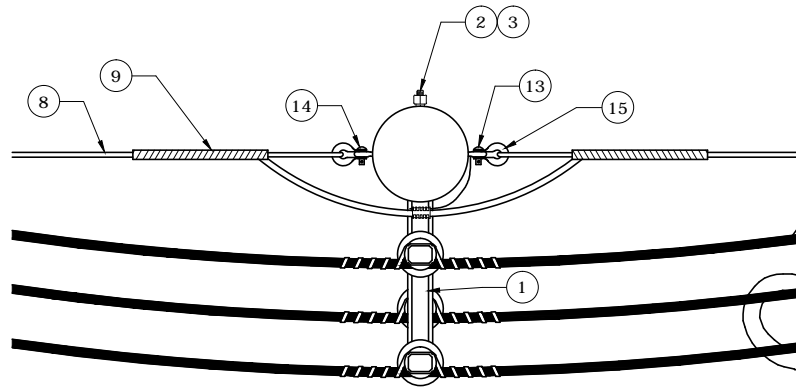
FOR MAINTENANCE

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

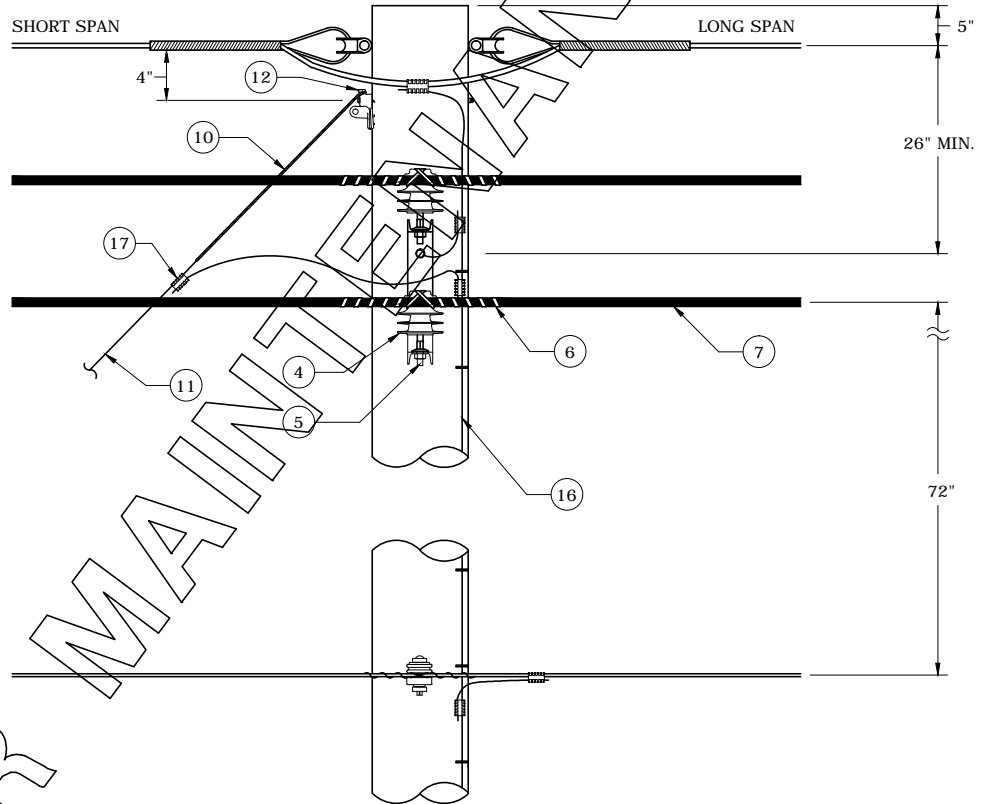
THREE-PHASE, LATERAL TAP CONSTRUCTION (FMO)



FLA DWG. 03.19-14B



PLAN VIEW



FRONT VIEW

NOTES:

1. SEE DWG. 03.19-16B FOR BILL OF MATERIALS.

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TANGENT CONSTRUCTION,
MESSENGER DEAD-END FOR LONG SPANS (FMO)



FLA DWG.
03.19-16A

BILL OF MATERIALS				
ITEM NO.	COMPATIBLE UNIT	CATALOG NUMBER	QUANTITY	DESCRIPTION
1	SCAB	9220100579	1	ANGLE BRACKET
2		10432	2	MACHINE BOLT, 5/8" X REQUIRED LENGTH
3		13343	2	SQUARE WASHER, 2-1/4" X 2-1/4" X 3/16" MIN.
4	SCIP	9220100578	1	INSULATOR, PIN TYPE
5		9220100594	1	INSULATOR PIN
6		9220100589	1	COVERED TIE WIRE, #4 AWG SOLID SOFT DRAWN ALUMINUM WITH .045" THERMOPLASTIC RUBBER, 6 TO 8 FT. LENGTH
7*	SC1	9220100898	AS REQ.	HENDRIX AERIAL CABLE, 1/0
8*	SC1M	9220100596	AS REQ.	MESSENGER, 1/0
9	-	9220100587	2	PRESHAPED MESSENGER GRIP
10	-	-	AS REQ.	PRESHAPED GUY GRIP
11	-	-	AS REQ.	GUY STRAND (SIZE AND TYPE AS REQUIRED)
12	-	-	AS REQ.	GUY HOOK
13	-	-	1	EYE BOLT, 3/4" X REQUIRED LENGTH
14	-	-	1	EYE NUT, 3/4" STANDARD
15	-	9220100585	2	THIMBLE CLEVIS
16	-	-	AS REQ.	GROUND WIRE, SOFT DRAWN COPPER, SOLID, #6 AWG MIN.
17	-	-	AS REQ.	CONNECTORS (SIZE AND TYPE AS REQUIRED)

* SEE DWG. 03.19-00 FOR 795 CONSTRUCTION

NOTES:

- STANDARD DUTY CONSTRUCTION - 8000 LB MAXIMUM EXPECTED MESSENGER TENSION. HEAVY DUTY CONSTRUCTION - 8000 LB TO 12,000 LB MAXIMUM MESSENGER TENSION.
- FOR STANDARD DUTY CONSTRUCTION, A 5/8" EYE BOLT AND 5/8" EYE NUT CAN BE USED.
- SEE DWG. 03.19-16A FOR DESIGN SPECIFICATIONS.

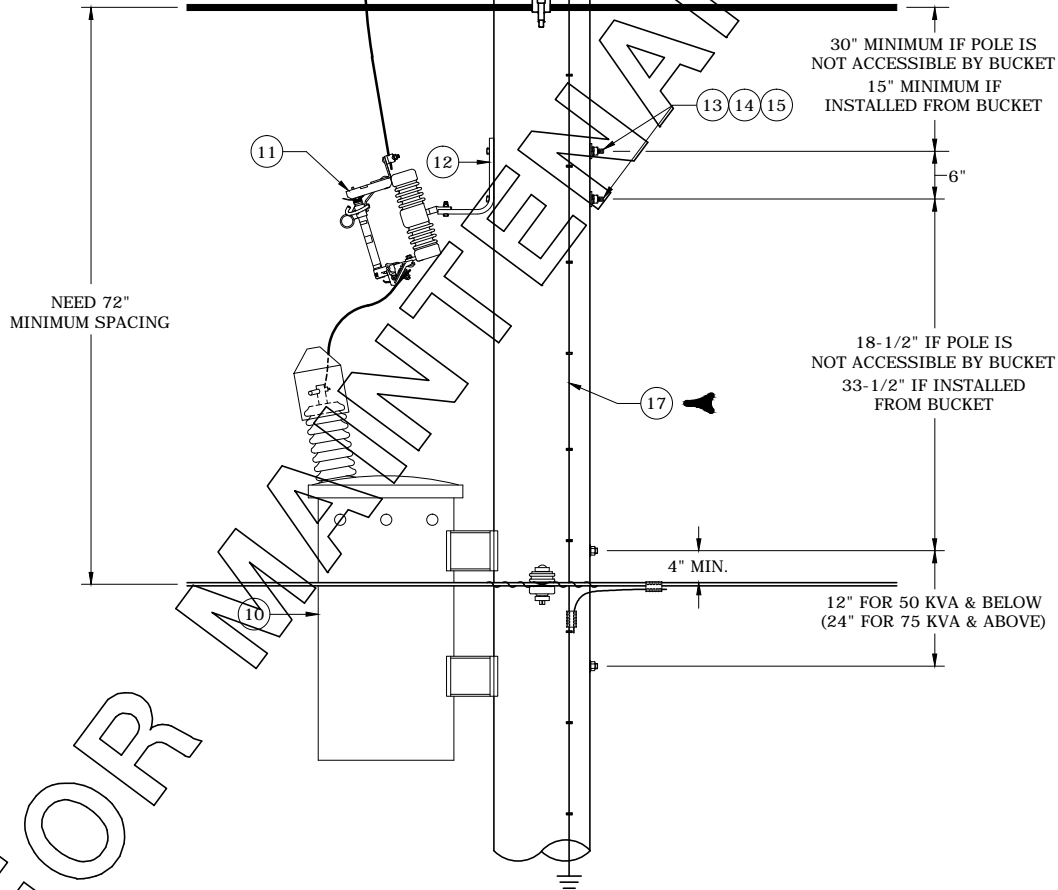
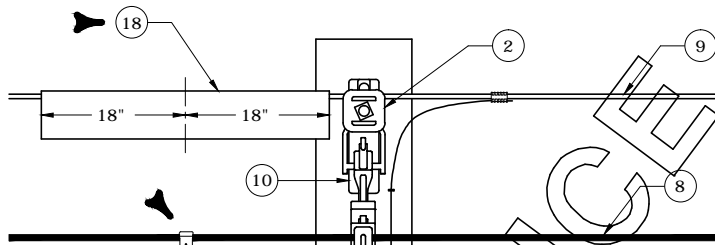
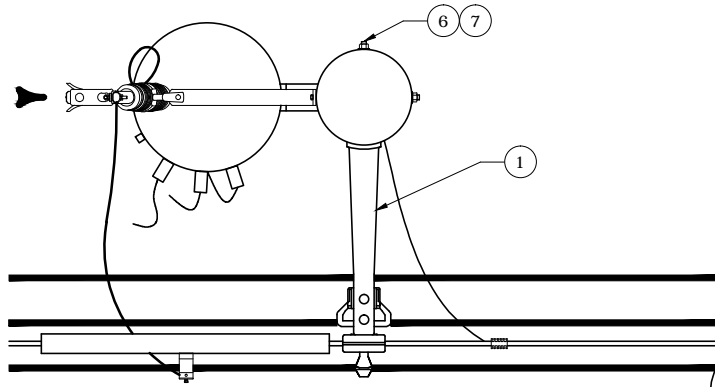
FOR MAINTENANCE

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TANGENT CONSTRUCTION,
MESSENGER DEAD-END FOR LONG SPANS (FMO)



FLA DWG.
03.19-16B




NOTES:

1. SEE DWG. 03.19-18B FOR BILL OF MATERIALS AND NOTES.
2. PLACE LINE-PVC DIRECTLY OVER TAP.

FOR MAINTENANCE ONLY

3				
2				
1	8/31/11	BURLISON	BURLISON	ELKINS
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TRANSFORMER TAP POLE CONSTRUCTION (FMO)

 **Progress Energy**

FLA DWG. 03.19-18A

BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	1	SC301	1	9220100581	1	MESSENGER BRACKET
	2			9220100590	1	STIRRUP, SUPPLIED WITH 1/2" BOLT, FLAT WASHER AND SELF-LOCKING NUT
	3			9220100580	1	ANTI-SWAY BAR (NOT SHOWN)
	4			9220100591	1	3 PHASE SPACER
	5			14114	1	LAG, FETTER DRIVE, 1/2" X 4" (NOT SHOWN)
	6			152106	2	BOLT, MACHINE, 5/8" X 10"
	7			13346	2	WASHER, 3"
	8*	SC1	1	9220100898	AS REQ.	HENDRIX AERIAL CABLE, 1/0
	9*	SC1M	1	9220100596	AS REQ.	MESSENGER, 1/0
	10	-	-	-	1	TRANSFORMER, SINGLE PHASE, TYPE SP (KVA AND VOLTAGE RATING AS REQUIRED)
	11	CP	1	221112	1	CUTOUT, 15 KV 100A, 10KA ASYMMETRICAL
	12			311263	1	BRACKET, SINGLE MOUNT
	13			152106	2	BOLT, MACHINE, 5/8" X 10"
	14			013264	2	WASHER, SPRING COIL, 5/8"
	15			013308	2	WASHER, 2 1/4" SQUARE
	16	-	-	-	AS REQ.	GROUND WIRE, SOFT DRAWN COPPER, SOLID, #6 AWG MIN.
	17	SCLD	1	9220100586	2 FT.	HENDRIX LINE-DEC WITH METALLIC TIE
	18	KHLC40N6F	1	9220184790	1	CLAMP, HOT LINE, ALUM, SMALL, 4/0
		KHLC7933F	1	9220184794	1	CLAMP, HOT LINE, ALUM, LARGE, 336-795

* SEE DWG. 03.19-00 FOR 795 CONSTRUCTION


NOTES:

1. TYPES, QUANTITIES AND VOLTAGE RATINGS OF MATERIALS AS WELL AS CLEARANCES FOR VARIOUS VOLTAGE CLASSIFICATIONS ARE TO BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC SAFETY CODE (NEC) AND THE USER'S STANDARD CONSTRUCTION PRACTICES.
2. REFER TO DWGS. 03.19-01A AND 03.19-02A FOR TYPICAL TANGENT CONSTRUCTION DETAILS.
3. SEE DWG. 03.19-18A FOR DESIGN SPECIFICATIONS.

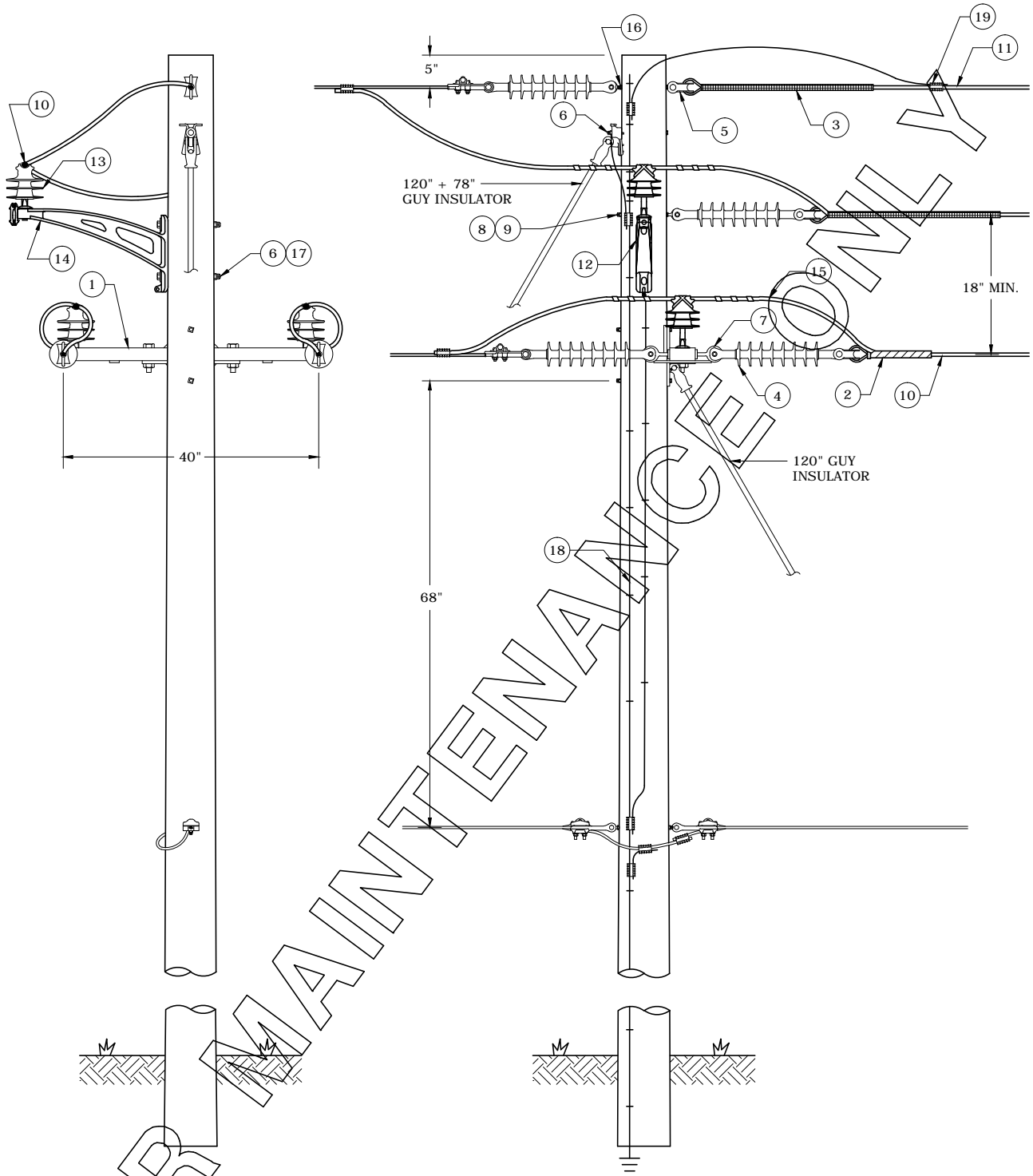
FOR MAINTENANCE

3				
2				
1	8/31/11	BURLISON	BURLISON	ELKINS
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TRANSFORMER TAP POLE CONSTRUCTION (FMO)



FLA DWG. 03.19-18B



FRONT VIEW


SIDE VIEW

NOTES:

1. SEE DWG. 03.19-20B FOR BILL OF MATERIALS.

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TANGENT DOUBLE DEAD-END CONSTRUCTION
BARE TO COVERED WIRE CONVERSION (FMO)



FLA DWG. 03.19-20A

BILL OF MATERIALS				
ITEM NO.	COMPATIBLE UNIT	CATALOG NUMBER	QUANTITY	DESCRIPTION
1	SC331	070164	1	40" DOUBLE DEADEND STEEL CROSSARM
2		9220100897	3	PRESHAPED CONDUCTOR GRIP, COATED
3		9220100587	1	PRESHAPED MESSENGER GRIP
4		80575	3	INSULATOR, POLYMER DEAD-END 15KV
5		9220100585	4	THIMBLE CLEVIS
6		10436	2	MACHINE BOLT, 5/8" X 12"
7		11707	2	BOLT, OVAL EYE, 5/8" X 8"
8		11708	2	BOLT, OVAL EYE, 5/8" X 10"
9		13343	6	WASHER, SQUARE, CURVED
10	SC1	9220100898	AS REQ.	HENDRIX AERIAL CABLE, 1/0
11	SC1M	9220100596	AS REQ.	MESSENGER, 1/0
12	SCMB	9220100581	1	MESSENGER BRACKET
13	SCIP	9220100578	1	INSULATOR PIN TYPE
14		9220100594	1	PIN, INSULATOR, POLYMER, 15KV
15		9220100589	1	WIRE, COVERED, TIE, #4 SOLID AL.
16	-	12210	1	EYENUT, 5/8"
17	-	-	2	SQUARE WASHER, 2-1/4" X 2-1/4" X 3/16", MIN.
18	-	-	AS REQ.	GROUND WIRE, SOFT DRAWN COPPER, SOLID, #6 AWG
19	-	-	AS REQ.	CONNECTORS (SIZE AND TYPE AS REQUIRED)

NOTES:

- STANDARD DUTY CONSTRUCTION - 8000 LB MAXIMUM EXPECTED MESSENGER TENSION. HEAVY DUTY CONSTRUCTION - 8000 LB TO 12,000 LB MAXIMUM MESSENGER TENSION.
- SEE DWG. 03.19-20A FOR DESIGN SPECIFICATIONS.

FOR MAINTENANCE

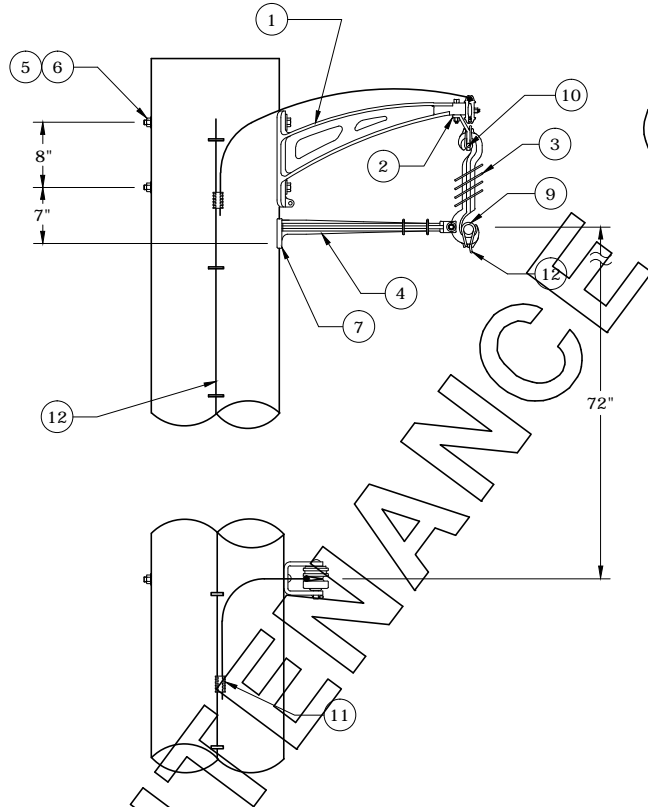
3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TYPICAL DEAD-END CONSTRUCTION,
25KV-46KV (FMO)



FLA DWG. 03.19-20B

FOR MAINTENANCE ONLY



NOTES:

1. SEE DWG. 03.19-24B FOR BILL OF MATERIALS.

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TYPICAL SINGLE-PHASE
TANGENT CONSTRUCTION (FMO)



FLA DWG.
03.19-24A

Y

BILL OF MATERIALS				
ITEM NO.	COMPATIBLE UNIT	CATALOG NUMBER	QUANTITY	DESCRIPTION
1	SC101	9220100581	1	MESSENGER BRACKET
2		9220100590	1	STIRRUP, SUPPLIED WITH 1/2" BOLT FLAT WASHER AND SELF-LOCKING NUT
3		9220100592	1	3 PHASE SPACER
4		9220100580	1	ANTI-SWAY BAR, SUPPLIED WITH PLASTIC BOLT
5		10432	2	MACHINE BOLT, 5/8" X REQUIRED LENGTH
6		13346	2	SQUARE WASHER, 2-1/4" X 2-1/4" X 3/16" MIN.
7		14114	1	LAG SCREW, 1/2" X 4"
8		92200100593	1	TIE, RING, EPDM RUBBER
9	SC1	9220100898	AS REQ.	HENDRIX AERIAL CABLE, 1/0
10	SC1M	9220100596	AS REQ.	MESSENGER, 1/0
11	-	-	1	CONNECTOR (SIZE AND TYPE AS REQUIRED)
12	-	-	AS REQ.	GROUND WIRE, SOFT DRAWN COPPER, SOLID, #6 AWG MIN.

NOTES:

1. TANGENTS ARE DEFINED AS LINE ANGLES UP TO AND INCLUDING 6° FOR HENDRIX SPACER CABLE.
2. ANY HORIZONTAL LOAD CREATED BY A MINOR ANGLE SHOULD BE GUYED FOR PROPER CONSTRUCTION.
3. THE TS-1 STIRRUP SHOULD BE BOLTED THROUGH THE HOLE CLOSEST TO THE END OF THE TANGENT BRACKET, NEAR THE MESSENGER CLAMP.
4. THE USE OF A BAS-14F ANTI-SWAY BRACKET IS RECOMMENDED AT TRANSFORMER TAPS TO MINIMIZE THE STRESS ON CONNECTIONS CAUSED BY MOVEMENT OF THE CIRCUIT.
5. DO NOT INSTALL THE TS-1 STIRRUP OR MAKE GROUND CONNECTIONS UNTIL THE CONDUCTORS ARE INSTALLED.
6. SEE DWG. 03.T9-24A FOR DESIGN SPECIFICATIONS.

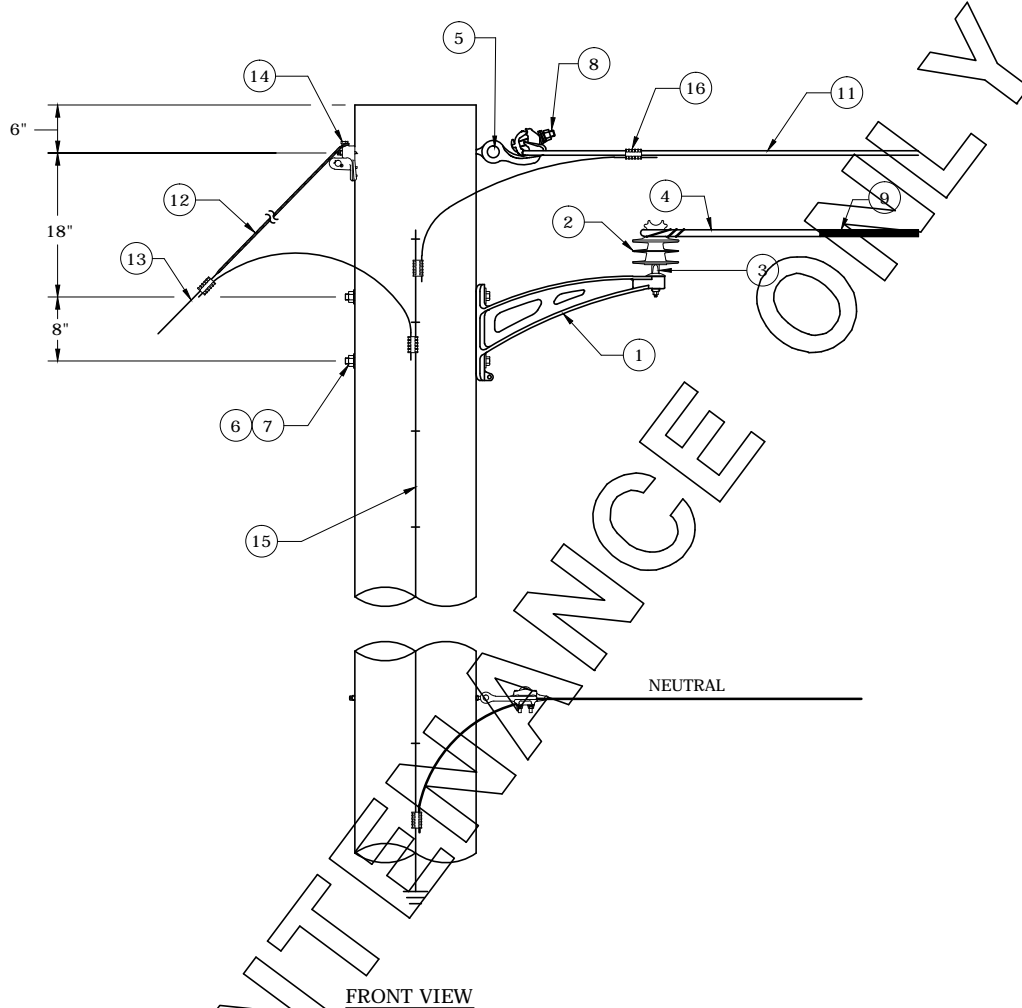
FOR MAINTENANCE

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TYPICAL SINGLE-PHASE
TANGENT CONSTRUCTION (FMO)



FLA DWG. 03.19-24B



NOTES:

1. SEE DWG. 03.19-26B FOR BILL OF MATERIALS.

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

SINGLE-PHASE, 7 DEGREE - 60 DEGREE
ANGLE CONSTRUCTION (FMO)



FLA DWG.
03.19-26A

Y

BILL OF MATERIALS				
ITEM NO.	COMPATIBLE UNIT	CATALOG NUMBER	QUANTITY	DESCRIPTION
1	SC111	9220100581	1	MESSENGER BRACKET
2		9220100578	1	INSULATOR, PIN TYPE
3		9220100594	1	INSULATOR PIN
4		9220100589	1	HENDRIX COVERED TIE WIRE, #4 AWG SOLID SOFT DRAWN ALUMINUM WITH .045" THERMOPLASTIC RUBBER, 6 TO 8 FT. LENGTH
5		11708	1	EYEBOLT, 5/8" X REQUIRED LENGTH FOR STANDARD DUTY CONSTRUCTION; 3/4" X REQUIRED LENGTH FOR HEAVY DUTY CONSTRUCTION
6		10432	2	MACHINE BOLT, 5/8" X REQUIRED LENGTH
7		13343	3	SQUARE WASHER, 2-1/4" X 2-1/4" X 3/16" MIN.
8		9220100584	1	ANGLE CLAMP
9	SC1	9220100898	AS REQ.	HENDRIX AERIAL CABLE, 15KV, 1/0
11	SC1M	9220100596	AS REQ.	MESSENGER, 1/0
12	-	-	AS REQ.	PRESHAPED GUY GRIP
13	-	-	AS REQ.	GUY STRAND
14	-	-	AS REQ.	GUY HOOK
15	-	-	AS REQ.	GROUND WIRE, SOFT DRAWN COPPER, SOLID, #6 AWG MIN.
16	-	-	AS REQ.	CONNECTOR (SIZE AND TYPE AS REQUIRED)


NOTES:

1. STRUCTURE DESIGN FOR ANGLES 7° THROUGH 60°. FOR LINE ANGLES GREATER THAN 60°, SEE DWG. 03.19-28A.
2. STANDARD DUTY CONSTRUCTION - 8000 LB MAXIMUM EXPECTED MESSENGER TENSION. HEAVY DUTY CONSTRUCTION - 8000 LB TO 12,000 LB MAXIMUM MESSENGER TENSION. FOR HEAVY DUTY CONSTRUCTION, THE MESSENGER SHOULD BE DEAD-ENDED ON THE POLE ABOVE THE TANGENT BRACKET USING A 3/4" EYEBOLT AND HDTC THIMBLE CLEVIS.
3. THE BM-5L BRACKET MAY BE USED IN LIGHT LOADING APPLICATIONS WHERE A BRACKET WITH LOWER ULTIMATE VERTICAL STRENGTH WOULD BE MORE COMPATIBLE WITH THE STRENGTH OF LOWER STRENGTH POLES.
4. SEE DWG. 03.19-26A FOR DESIGN SPECIFICATIONS.

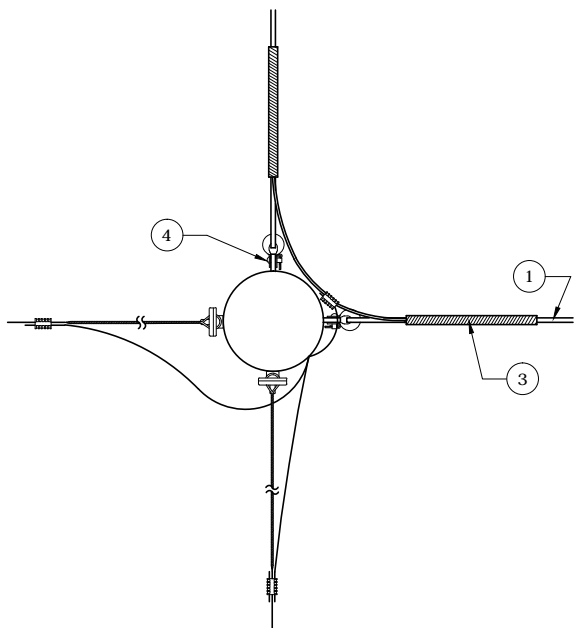
FOR MAINTENANCE

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

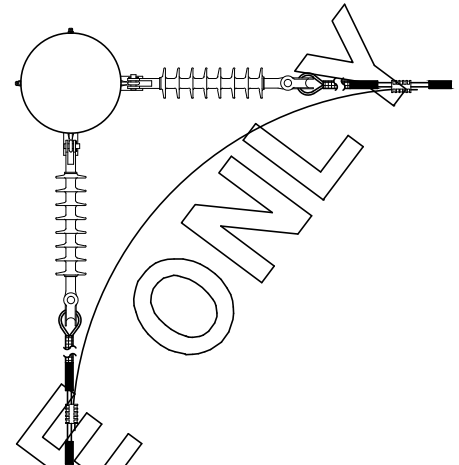
SINGLE-PHASE, 7 DEGREE - 60 DEGREE
ANGLE CONSTRUCTION (FMO)



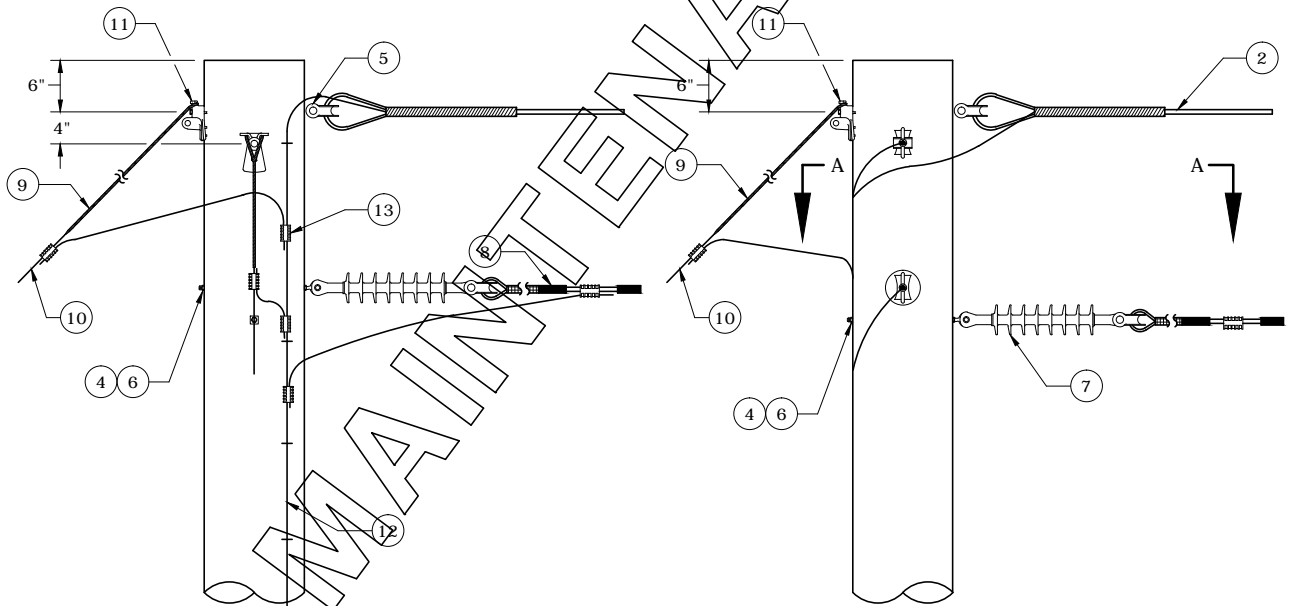
FLA DWG.
03.19-26B



PLAN VIEW



SECTION "A-A"



FRONT VIEW

SIDE VIEW

NOTES:

1. SEE DWG. 03.19-12B FOR BILL OF MATERIALS.

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

SINGLE-PHASE, 61 DEGREE - 90 DEGREE
ANGLE CONSTRUCTION (FMO)



FLA DWG.
03.19-28A

Y

BILL OF MATERIALS				
ITEM NO.	COMPATIBLE UNIT	CATALOG NUMBER	QUANTITY	DESCRIPTION
1	SC1M	9220100596	AS REQ.	MESSENGER (SIZE AND TYPE AS REQUIRED)
2	SC1	9220100898	AS REQ.	HENDRIX AREA CABLE
3	SC121	9220100587	2	PRESHAPED MESSENGER GRIP
4		11708	4	EYE BOLT, 5/8" X REQUIRED LENGTH FOR STANDARD CONSTRUCTION; 3/4" X REQUIRED LENGTH FOR HEAVY DUTY CONSTRUCTION
5		922010585	2	THIMBLE CLEVIS
6		13343	4	SQUARE WASHER, 2-1/4" X 2-1/4" X 3/16" MIN.
7		80575	2	INSULATOR, POLYMER, 15KV
8		9220100897	2	COND., 1/0 GRIP
9	-	-	AS REQ.	PRESHAPED GUY GRIP
10	-	-	AS REQ.	GUY STRAND (SIZE AND TYPE AS REQUIRED)
11	-	-	AS REQ.	GUY HOOK
12	-	-	AS REQ.	GROUND WIRE, SOFT DRAWN COPPER, SOLID, #6 AWG MIN.
13	-	-	AS REQ.	CONNECTOR (SIZE AND TYPE AS REQUIRED)

NOTES:

- STANDARD DUTY CONSTRUCTION - 8000 LB MAXIMUM EXPECTED MESSENGER TENSION. HEAVY DUTY CONSTRUCTION - 8000 LB TO 12,000 LB MAXIMUM MESSENGER TENSION.
- THE BM-5L BRACKET MAY BE USED IN LIGHT LOADING APPLICATIONS WHERE A BRACKET WITH LOWER ULTIMATE VERTICAL STRENGTH WOULD BE MORE COMPATIBLE WITH THE STRENGTH OF LOWER STRENGTH POLES.
- SEE DWG. 03.19/28A FOR DESIGN SPECIFICATIONS.

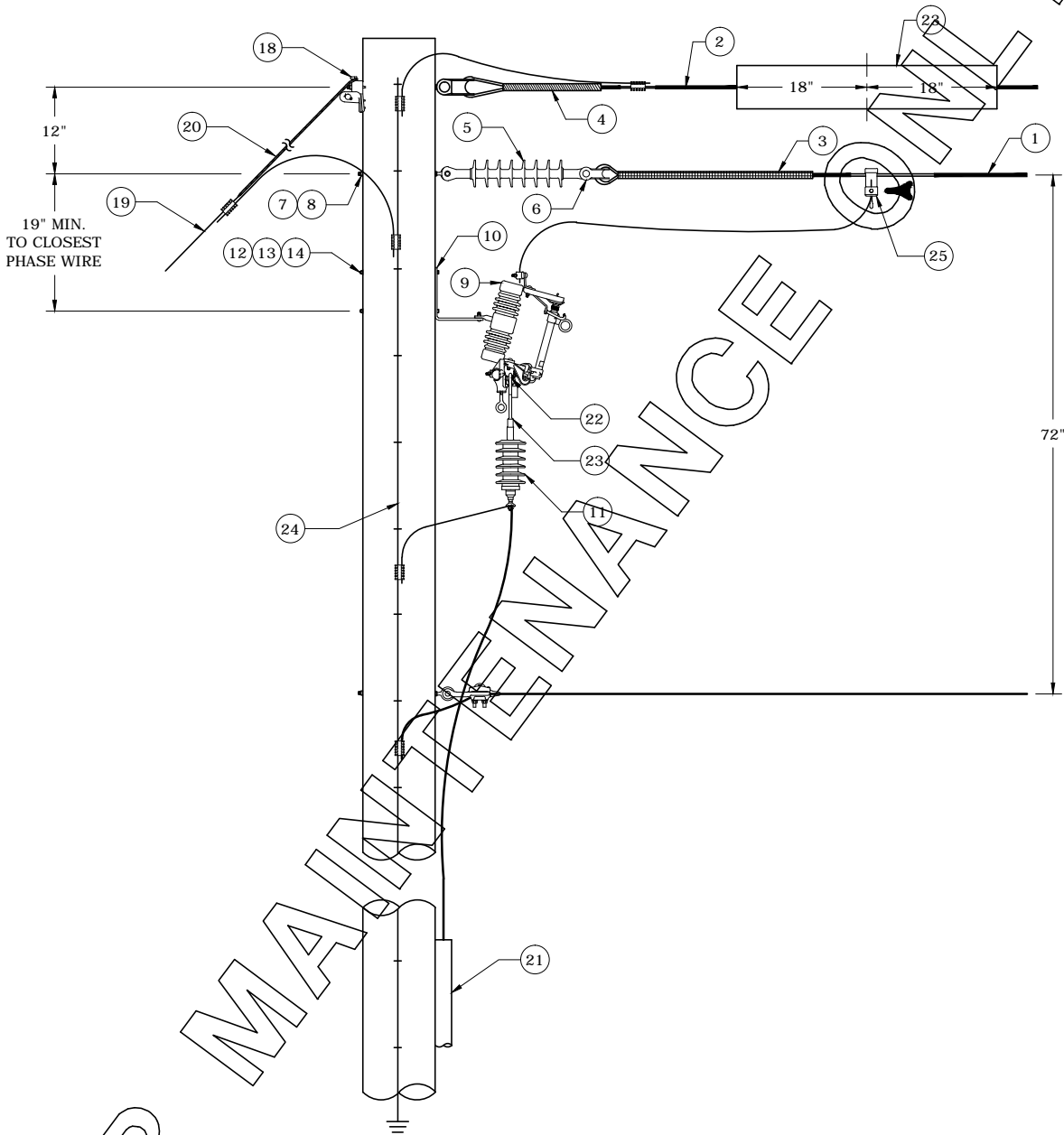
FOR MAINTENANCE

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

SINGLE-PHASE,
61 DEGREE - 90 DEGREE CONSTRUCTION (FMO)



FLA DWG. 03.19-28B




NOTES:

1. SEE DWG. 03.19-30B FOR BILL OF MATERIALS AND NOTES.

3				
2				
1	8/31/11	BURLISON	BURLISON	ELKINS
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

SINGLE-PHASE,
DEAD-END WITH UNDERGROUND RISER (FMO)



FLA DWG.
03.19-30A

BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	1	SC1	1	9220100898	AS REQ.	HENDRIX AERIAL CABLE (SIZE AND VOLTAGE RATING AS REQUIRED)
	2	SC1M	1	9220100596	1	MESSENGER (SIZE AND TYPE AS REQUIRED)
	3			9220100897	1	PRESHAPED CONDUCTOR GRIP, COATED
	4			9220100587	1	MESSENGER GRIP
	5			80575	1	INSULATOR, POLYMER DEAD-END TYPE, 15KV
	6	SC131	1	9220100585	2	THIMBLE CLEVIS
	7			11078	2	BOLT, OVAL EYE
	8			13343	2	SQUARE WASHER, 2-1/4" X 2-1/4" X 3/16" MIN.
	9			221112	1	CUTOUT, 15 KV 100A 16KA ASYMMETRICAL
	10			311263	1	BRACKET, SINGLE MOUNT
	11			220208	1	ARRESTER, POLYMER (MOV TERMINAL POLE TYPE)
	12	CA1T	1	152107	2	BOLT, MACHINE, 5/8" X 1/2"
	13			13264	2	WASHER, SPRING COIL, 5/8"
	14			13308	2	WASHER, SQUARE, 2-1/4"
	15			153532	1	CONNECTOR, STEM COMP 200 AMP (NOT SHOWN)
	16			153534	1	CONNECTOR, STEM ARRESTER (NOT SHOWN)
	17	SCLD	1	-	2 FT.	HENDRIX LINE-DUC WITH METALLIC TIE (NOT SHOWN)
	18	-	-	-	AS REQ.	GUY HOOK
	19	-	-	-	AS REQ.	GUY STRAND (SIZED AND TYPE AS REQUIRED)
	20	-	-	-	AS REQ.	PRESHAPED GRIP
	21	-	-	-	AS REQ.	CONDUIT
	22	-	-	-	1	CLAMP, HOT LINE
	23	-	-	-	1	CONNECTOR, STEM FOR UNDERGROUND ARRESTER
	24	-	-	-	AS REQ.	GROUND WIRE, SOFT DRAWN COPPER, SOLID, #6 AWG MIN.
	25	KHLC40N6F	1	9220184790	1	CLAMP, HOT LINE, ALUM, SMALL, 4/0
		KHLC7933F	1	9220184794	1	CLAMP, HOT LINE, ALUM, LARGE, 336-795

NOTES:

- STANDARD DUTY CONSTRUCTION - 8000 LB MAXIMUM EXPECTED MESSENGER TENSION. HEAVY DUTY CONSTRUCTION - 8000 LB TO 12,000 LB MAXIMUM MESSENGER TENSION.
- TYPES, QUANTITIES AND VOLTAGE RATINGS OF MATERIALS, AS WELL AS CLEARANCES FOR VARIOUS VOLTAGE CLASSIFICATIONS ARE TO BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC SAFETY CODE (NEC) AND THE USER'S STANDARD CONSTRUCTION PRACTICES.
- SEE DWG. 03.19.30A FOR DESIGN SPECIFICATIONS.

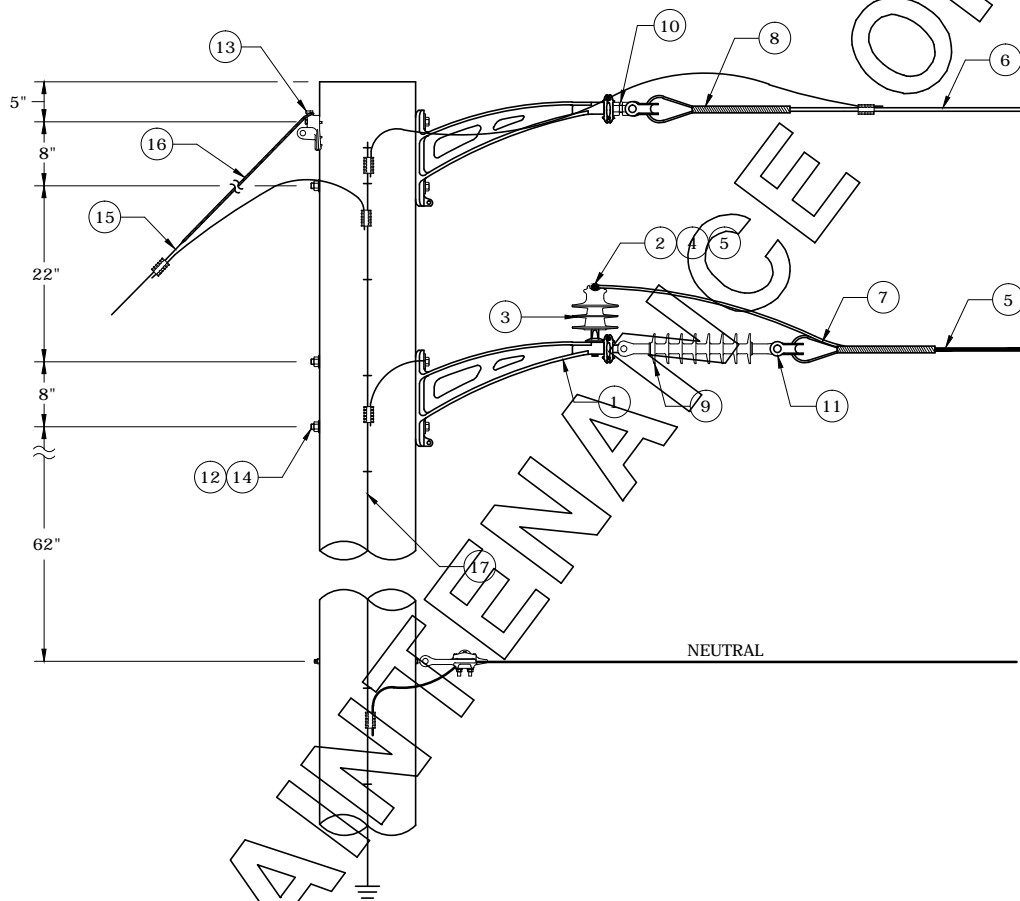
FOR MOUNTING

3				
2				
1	8/31/11	BURLISON	BURLISON	ELKINS
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

SINGLE-PHASE,
DEAD-END WITH UNDERGROUND RISER (FMO)



FLA DWG.
03.19-30B



NOTES:

1. SEE DWG. 03.19-32B FOR BILL OF MATERIALS.

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

SINGLE-PHASE,
LATERAL TAP USING TANGENT BRACKETS (FMO)



FLA DWG.
03.19-32A

BILL OF MATERIALS				
ITEM NO.	COMPATIBLE UNIT	CATALOG NUMBER	QUANTITY	DESCRIPTION
1	SCMB	9220100581	1	MESSENGER BRACKET
2	SCIP	9220100578	1	INSULATOR, PIN TYPE
3		9220100594	1	INSULATOR PIN
4		9220100589	1	HENDRIX COVERED TIE WIRE, #4 AWG SOLID SOFT DRAWN ALUMINUM WITH .045" THERMOPLASTIC RUBBER, 6 TO 8 FT. LENGTH
5	SC1	9220100898	AS REQ.	HENDRIX AERIAL CABLE, 1/0
6	SC1M	9220100596	AS REQ.	MESSENGER, 1/0
7	SC131	9220100897	1	PRESHAPED CONDUCTOR GRIP, COATED TYPE
8		9220100587	1	PRESHAPED MESSENGER GRIP
9		80575	1	INSULATOR, POLYMER DEAD END TYPE, 15KV
10		11708	2	BOLT, OVAL EYE, 5/8" X 10"
11		9220100585	2	THIMBLE CLEVIS
12		13343	2	WASHER, SQUARE, CURVED
13	-	-	2	GUY HOOK
14	-	-	4	MACHINE BOLT, 5/8" X REQUIRED LENGTH
15	-	-	AS REQ.	GUY STRAND (SIZE AND TYPE AS REQUIRED)
16	-	-	AS REQ.	PRESHAPED GUY GRIP
17	-	-	AS REQ.	GROUND WIRE, SOFT DRAWN COPPER, SOLID, #6 AWG MIN.

NOTES:

- STANDARD DUTY CONSTRUCTION - 8000 LB MAXIMUM EXPECTED MESSENGER TENSION. HEAVY DUTY CONSTRUCTION - 8000 LB TO 12,000 LB MAXIMUM MESSENGER TENSION. FOR HEAVY DUTY CONSTRUCTION, THE MESSENGER SHOULD BE DEAD-ENDED ON THE POLE ABOVE THE TANGENT BRACKET USING A 3/4" EYEBOLT AND HDTC THIMBLE CLEVIS.
- TYPES, QUANTITIES AND VOLTAGE RATINGS OF MATERIALS, AS WELL AS CLEARANCES FOR VARIOUS VOLTAGE CLASSIFICATIONS ARE TO BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC SAFETY CODE (NEC) AND THE USER'S STANDARD CONSTRUCTION PRACTICES.
- SEE DWG. 03.19-32A FOR DESIGN SPECIFICATIONS.

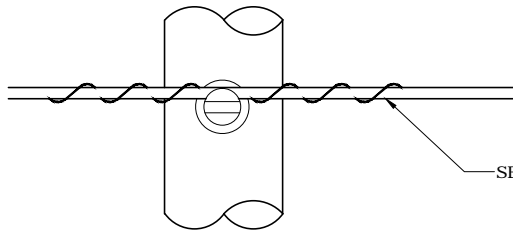
FOR MAINTENANCE

3				
2				
1				
0	12/1/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

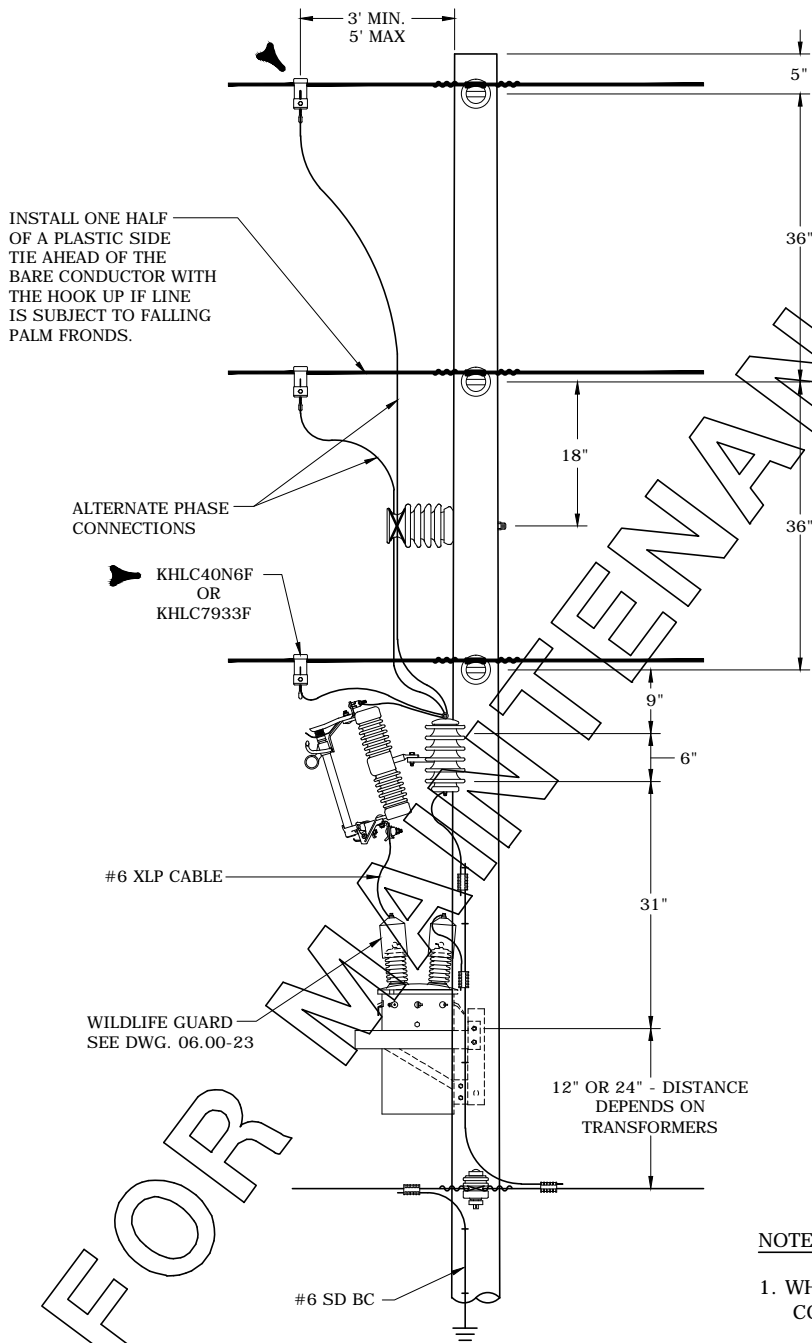
SINGLE-PHASE,
LATERAL TAP USING TANGENT BRACKETS (FMO)



FLA DWG. 03.19-32B



SEE NOTE 2



FRONT VIEW

NOTES:

1. WHEN USING CLAMP TYPE INSULATOR CONDUCTOR MUST BE SKINNED.
2. DO NOT SKIN TREE WIRE WHEN INSTALLING PLASTIC TIE.

FOR MAINTENANCE ONLY

3				
2				
1	8/31/11	BURLISON	BURLISON	ELKINS
0	4/22/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TREE WIRE INSTALLATION DETAILS (FMO)

Progress Energy
FLA DWG. 03.30-02