

09.00 DETERMINING LINE CLEARANCES

MINIMUM LINE HEIGHTS USING CONDUCTOR SAG TABLES 09.00-01
 EQUIPMENT AND CIRCUITS NEAR NATURAL GAS OR GASOLINE FACILITIES
 AND COMMUNITY WELL CLEARANCES 09.00-02

09.01 SAG CLEARANCES TO STRUCTURES

MINIMUM FINAL SAG CLEARANCES TO BUILDINGS, ETC. 09.01-01A
 MINIMUM FINAL SAG CLEARANCES TO BUILDINGS, ETC. 09.01-01B
 MINIMUM FINAL SAG BUILDING CLEARANCE 09.01-02
 FINAL SAG CLEARANCE DIAGRAM FOR OTHER STRUCTURES 09.01-03
 MINIMUM FINAL SAG CLEARANCES FROM BRIDGES 09.01-04
 FINAL SAG CLEARANCE OF ENERGIZED CONDUCTORS NEAR SWIMMING POOL
 AREAS. 09.01-05

09.02 SAG CLEARANCES ABOVE GROUND AND OTHER STRUCTURES

STANDARD FINAL SAG CLEARANCES 09.02-01
 MINIMUM FINAL SAG CLEARANCES RAILROAD AND SIGNAL CROSSINGS 09.02-02A
 RAILROAD RIGHTS-OF-WAY CONSTRUCTION 09.02-02B
 MINIMUM FINAL SAG CLEARANCES FOR CONDUCTOR 09.02-03
 SERVICE DROP MINIMUM FINAL SAG CLEARANCES ABOVE GROUND 09.02-04
 DETAILS OF SERVICE FINAL SAG CLEARANCES 09.02-05
 MINIMUM FINAL SAG CLEARANCES OVER WATERWAYS 09.02-06
 MINIMUM GUY CLEARANCE 09.02-07
 LINE CLEARANCES FOR MOVING STRUCTURE/HOUSE 09.02-08

09.03 CROSSING CLEARANCES

MINIMUM FINAL SAG WIRE CROSSING CLEARANCES, VERTICAL 09.03-01
 SEPARATION AT POLE UNDERGROUND RISERS 09.03-02

09.04 JOINT USE CLEARANCES

CATV JOINT USE CONSTRUCTION 09.04-00
 FOREIGN ATTACHMENTS & CLEARANCES 09.04-01
 JOINT USE CONSTRUCTION 09.04-02
 JOINT USE CONSTRUCTION TRAFFIC SIGNAL SUPPORT AND
 POWER OPERATING CIRCUIT CLEARANCES 09.04-03
 LOCATION OF VERTICAL RUNS & FOREIGN SERVICE DROPS 09.04-04
 FOREIGN POLE CLEARANCE AT FINAL SAG 09.04-05
 STRAND MOUNTED POWER SUPPLY & FOREIGN COMMUNICATION CABLE
 EXTENSION BRACKET 09.04-06
 CLEARANCES - LIGHTING UNITS TO POWER CIRCUITS OR EQUIPMENT 09.04-07
 COMMUNICATION CABLE INSTALLED AND MAINTAINED BY ELECTRIC COMPANY 09.04-09
 CATV INSTALLATION - 120V OVERHEAD SERVICE 09.04-10
 POWER GUARD OR SIMILAR CATV PEDESTAL 09.04-11
 UNDERGROUND SERVICE-CATV (PAD-MOUNTED TRANSFORMER OR
 SECONDARY PEDESTAL) 09.04-12
 ▶ JOINT USE COMPANY INSTALLATION 120 VOLT UNDERGROUND SERVICE
 (PREFERRED INSTALLATION) 09.04-13
 JOINT USE CLEARANCE REQUIREMENTS 09.04-14
 JOINT USE CLEARANCE REQUIREMENTS 09.04-15
 SERVICE DROP CLEARANCE TO COMMUNICATION CABLES 09.04-16
 ANGLE POLE ATTACHMENTS 09.04-20
 BANNER INSTALLATION ON DISTRIBUTION POLES 09.04-25
 CAPACITOR BANK ANTENNA INSTALLATION - UTILITY OWNED FOR THE
 OPERATION OF THE SUPPLY SYSTEM 09.04-26
 REGULATOR PLATFORM ANTENNA INSTALLATION - UTILITY OWNED FOR
 THE OPERATION OF THE SUPPLY SYSTEM 09.04-27

3				
2				
1	1/3/11	CECCONI	BURLISON	ELKINS
0	7/26/10	CECCONI	GUINN	ELKINS
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SECTION 9 - CLEARANCES AND JOINT USE
 TABLE OF CONTENTS



CAR DWG.
 09.00-00A

09.04 JOINT USE CLEARANCES (CONT.)

UTILITY OWNED ANTENNA INSTALLATION ABOVE PRIMARY CONDUCTORS
 FOR THE OPERATION OF THE SUPPLY SYSTEM 09.04-28
 PRIVATE RADIO AND CELLULAR COMMUNICATIONS - UTILITY OWNED FOR
 THE OPERATION OF THE SUPPLY SYSTEM 09.04-29
 JOINT USE CONSTRUCTION (DAS) DISTRIBUTED ANTENNA SYSTEMS 09.04-30
 JOINT USE CONSTRUCTION WI-FI ANTENNA INSTALLATION ON SERVICE POLE 09.04-32
 ▶ TYPICAL NGDR AMI TELECOM NAN ATTACHMENT 09.04-33A
 ▶ TYPICAL NGDR AMI TELECOM NAN ATTACHMENT 09.04-33B
 JOINT USE CONSTRUCTION WI-FI ANTENNA INSTALLATION 09.04-35
 JOINT USE CONSTRUCTION WI-FI ANTENNA INSTALLATION 09.04-36
 JOINT USE CONSTRUCTION DAS ANTENNA INSTALLATION 09.04-37
 JOINT USE CONSTRUCTION TRAFFIC SIGNAL ANTENNA 09.04-40
 PROGRESS ENERGY FIBER OPTIC CABLE INSTALLED IN SUPPLY SPACE -
 INSTALLATION DETAILS 09.04-42
 PROGRESS ENERGY FIBER OPTIC CABLE INSTALLED IN SUPPLY SPACE -
 INSTALLATION DETAILS 09.04-46
 PROGRESS ENERGY FIBER OPTIC CABLE INSTALLED IN SUPPLY SPACE -
 INSTALLATION DETAILS 09.04-52
 PE - STUDY SOLAR PANEL INSTALLATION ABOVE THE NEUTRAL 09.04-53
 PE - STUDY SOLAR PANEL INSTALLATION BELOW THE NEUTRAL 09.04-54

09.05 TREE CLEARANCES

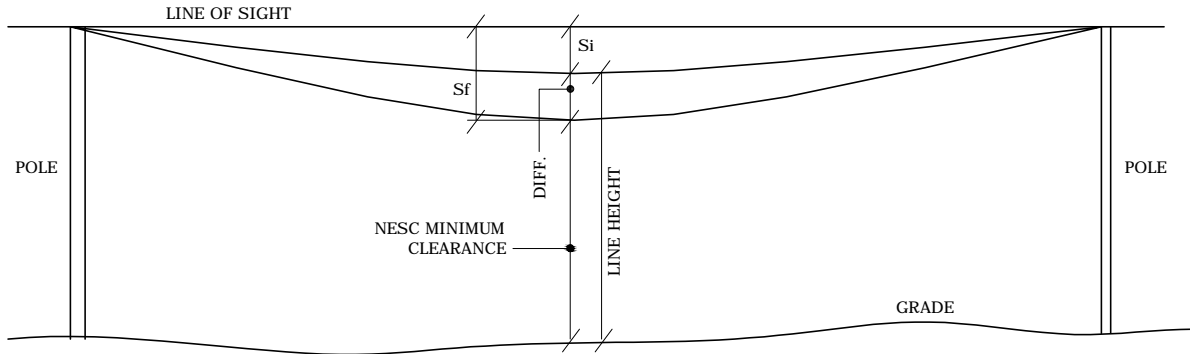
TREE CLEARANCE AND PRUNING SPECIFICATIONS (NEW CONSTRUCTION) 09.05-01
 TREE CLEARANCE AND PRUNING SPECIFICATIONS (MAINTENANCE) 09.05-02
 TREE CLEARANCE AND PRUNING SPECIFICATIONS 09.05-03
 USING CHAIN SAWS 09.05-04
 TREE CLEARANCE AND PRUNING SPECIFICATIONS FOR PRIMARY AND
 OPEN WIRE SECONDARY LINES 09.05-05
 TREE CLEARANCE AND PRUNING SPECIFICATIONS 09.05-06

3	5/2/13	KATIGBAR	GUINN	ADCOCK
2	2/13/12	BURLISON	BURLISON	ELKINS
1	6/16/11	CECCONI	BURLISON	ELKINS
0	7/13/10	CECCONI	GUINN	ELKINS
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SECTION 9 - CLEARANCES AND JOINT USE
 TABLE OF CONTENTS



CAR DWG. 09.00-00B



KEY	Si	INITIAL SAG @ 60°F, NO WIND (FROM SAG TABLES)
	Sf	THE GREATER OF FINAL SAG @ 120°F (180° FOR FLORIDA), NO WIND, OR 32°F W/ 1/4" ICE (CAROLINAS ONLY)
	DIFF.	Sf - Si

NOTES:

1. USE THIS METHOD WITH THE TABLE ON DWG. 09.02-01 WHEN DETERMINING MINIMUM LINE HEIGHTS ABOVE GROUND, RAILS, ETC.
2. LINE HEIGHT (AT MID SPAN) = REQUIRED MINIMUM CLEARANCE (SEE DWG. 09.02-01) PLUS (Sf - Si).
3. ROUND UP "DIFF." (Sf-Si) VALUES TO NEAREST 1/2 FT. (E.G., 32" WOULD BECOME 3'-0".)

EXAMPLE OF USE OF INITIAL AND FINAL SAG:

1. 3-0/77 SAC PRIMARY WITH 1/0 ACSR NEUTRAL LINE CROSSING ROAD, 300 FT. SPAN -

REQUIRED NESC MINIMUM NEUTRAL CLEARANCE ABOVE ROAD: 15.5 FT. (DWG. 09.02-01)
 (120°F, NO WIND)
 DIFFERENCE BETWEEN INITIAL AND FINAL SAGS,
 FOR 1/0 ACSR, 300 FT. SPAN: + 3.0 FT.
 REQUIRED NESC HEIGHT OF NEUTRAL ABOVE ROAD SURFACE,
 AT INSTALLATION (INITIAL SAG, 60°F): 18.5 FT.

** (CHECK MINIMUM DOT ROAD CLEARANCES FOR LOCAL CONDITIONS)

2. 3-Ø 477 SAC PRIMARY WITH 1/0 ACSR NEUTRAL LINE CROSSING ROAD, 150 FT. SPAN -

REQUIRED NESC MINIMUM NEUTRAL CLEARANCE ABOVE ROAD: 15.5 FT. (DWG. 09.02-01)
 (120°F, NO WIND)
 DIFFERENCE BETWEEN INITIAL AND FINAL SAGS, + 1.5 FT.
 FOR 1/0 ACSR, 150 FT. SPAN: 17.0 FT.
 REQUIRED NESC HEIGHT OF NEUTRAL ABOVE ROAD SURFACE,
 AT INSTALLATION (INITIAL SAG, 60°F):

** (CHECK MINIMUM DOT ROAD CLEARANCES FOR LOCAL CONDITIONS)

3				
2				
1				
0	11/8/10	GUINN	GUINN	ELKINS
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MINIMUM LINE HEIGHTS USING
 CONDUCTOR SAG TABLES



PGN

DWG.
 09.00-01

EQUIPMENT AND CIRCUITS NEAR NATURAL GAS

OR GASOLINE FACILITIES

THE FOLLOWING PROCEDURE SHALL BE FOLLOWED WHEN LOCATING OVERHEAD OR UNDERGROUND ELECTRICAL FACILITIES NEAR GASOLINE PUMPS AND RELATED FACILITIES.

DO NOT INSTALL TRANSFORMERS, CAPACITORS, CUTOUTS, SWITCHES, FUSES, RELAYS, OR ANY EQUIPMENT THAT MAY PRODUCE ARCS UNDER NORMAL OPERATING CONDITIONS WITHIN OR ABOVE THE FOLLOWING LOCATIONS:

- (1) ANY AREA WITHIN 20 FEET HORIZONTALLY FROM A GASOLINE DISPENSING PUMP.
- (2) ANY AREA WITHIN 10 FEET HORIZONTALLY FROM A GASOLINE TANK FILL-PIPE.
- (3) ANY POINT WITHIN A 5 FOOT RADIUS FROM THE POINT OF DISCHARGE OF A GASOLINE VENT-PIPE.
- (4) ANY POINT WITHIN 15 FEET IN ALL DIRECTIONS OF ABOVE GROUND NATURAL GAS CONNECTIONS, VALVES, OR GAUGES.

DO NOT LOCATE ELECTRIC METERS WITHIN 3 FEET OF NATURAL GAS METERS, LIQUID PETROLEUM GAS TANKS, OR LIQUID PETROLEUM GAS FILL POINTS.

AVOID LOCATING ANY PORTION OF AN ELECTRICAL CIRCUIT OVER THE LOCATIONS SPECIFIED ABOVE. GREATER CLEARANCES MAY BE REQUIRED FOR SPECIAL CONDITIONS OR DURING CONSTRUCTION OR REPAIR NEAR EXISTING LINES. DETERMINATION OF SUFFICIENT CLEARANCES OR OTHER ACTION FOR THE SAFETY OF CONSTRUCTION PERSONNEL MUST BE MADE ON AN INDIVIDUAL BASIS.

COMMUNITY WELL CLEARANCES

NO POTENTIAL SOURCE OF CONTAMINATION CAN BE LOCATED WITHIN 100 FEET OF A COMMUNITY WELL. TRANSFORMERS (POLE MOUNTED, PAD-MOUNTED OR GROUND LEVEL), CAPACITOR BANKS, D-D SUBS AND ANY OIL FILLED EQUIPMENT ARE CLASSIFIED AS POTENTIAL SOURCES OF CONTAMINANTS AND MAY NOT BE LOCATED WITHIN 100 FEET OF A COMMUNITY WELL. COMMUNITY WELLS ARE DEFINED AS WELLS WHICH SERVE 25 OR MORE PERSONS. A SINGLE FAMILY RESIDENTIAL WELL IS NOT CLASSIFIED AS A COMMUNITY WELL. THIS REGULATION IS FOR NEW NEW INSTALLATIONS ONLY. EXISTING COMMUNITY WELLS WHICH HAVE OIL FILLED EQUIPMENT LOCATED WITHIN 100 FEET ARE GRANDFATHERED.

3				
2				
1				
0	9/27/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

EQUIPMENT AND CIRCUITS NEAR
NATURAL GAS OR GASOLINE FACILITIES
AND COMMUNITY WELL CLEARANCES



PGN

DWG.
09.00-02

MINIMUM CLEARANCES (IN FEET) OF UNGUARDED WIRES
FROM INSTALLATIONS TO WHICH THEY ARE NOT ATTACHED

CONDUCTOR TYPE CLEARANCE OF:	EFFECTIVELY GROUNDED NEUTRALS; SPAN & LIGHTNING PROTECTION WIRES; GUYS & MESSENGERS CABLED PRIMARY	INSULATED SUPPLY CABLES 0 - 750V (TRIPLEX & QUADRUPLIX)	0 - 750 V OPEN WIRE SECONDARY & SERVICES:	OPEN WIRE PRIMARY
				750 V - 22 kV (PHASE TO GROUND)
1. LIGHTING AND TRAFFIC SIGNAL SUPPORTS; POLES & SUPPORTS OF ANOTHER LINE:				
A. HORIZONTAL	3'	3'	5' (3.5') **	5' (4.5') **
B. VERTICAL	2'	2'	4.5'	4.5'
2. BUILDINGS:				
A. HORIZONTAL				
1. TO WALLS, PROJECTIONS & GUARDED WINDOWS	4.5'	5'	5.5' (3.5')	7.5' (4.5')
2. TO UNGUARDED WINDOWS	4.5'	5'	5.5' (3.5')	7.5' (4.5')
3. TO BALCONIES AND AREAS ACCESSIBLE TO PEDESTRIANS	4.5'	5'	5.5' (3.5')	7.5' (4.5')
B. VERTICAL				
1. OVER & UNDER ROOFS OR PROJECTIONS NOT ACCESSIBLE TO PEDESTRIANS	3'	3.5'	10.5'	12.5'
2. OVER & UNDER ROOFS OR PROJECTIONS ACCESSIBLE TO PEDESTRIANS	10.5'	11'	11.5'	13.5'
3. OVER ROOFS ACCESSIBLE TO VEHICLES BUT NOT SUBJECT TO TRUCK TRAFFIC	10.5'	11'	11.5'	13.5'
4. OVER ROOFS ACCESSIBLE TO TRUCK TRAFFIC	15.5'	16'	16.5'	18.5'
3. SIGNS, CHIMNEYS, BILLBOARDS, RADIO & TV ANTENNAS, AND OTHER INSTALLATIONS NOT CLASSIFIED AS BRIDGES:				
A. HORIZONTAL				
1. TO PORTIONS THAT ARE READILY ACCESSIBLE TO PEDESTRIANS	4.5'	5.0'	5.5' (3.5')	7.5' (4.5')
2. TO PORTIONS THAT ARE NOT READILY ACCESSIBLE TO PEDESTRIANS	3.0'	3.5'	5.5' (3.5')	7.5' (4.5')
B. VERTICAL				
1. OVER OR UNDER CATWALKS AND OTHER SURFACES UPON WHICH PERSONNEL WALK	10.5'	11.0'	11.5'	13.5'
2. OVER OR UNDER OTHER PORTIONS OF SUCH INSTALLATIONS	3.0'	3.5'	6.0'	8.0'
4. BRIDGES: *				
A. CLEARANCES OVER BRIDGES				
1. ATTACHED	N/A	3'	3.5'	5.5'
2. NOT ATTACHED	N/A	10'	10.5'	12.5'
B. BESIDE, UNDER, OR WITHIN STRUCTURE				
1. READILY ACCESSIBLE PARTS				
(A) ATTACHED	N/A	3'	3.5'	5.5' (4.5')
(B) NOT ATTACHED	N/A	5'	5.5' (3.5')	7.5' (4.5')
2. INACCESSIBLE PARTS				
(A) ATTACHED	N/A	3'	3.5'	5.5' (4.5')
(B) NOT ATTACHED	N/A	4'	4.5' (3.5')	6.5' (4.5')
5. SWIMMING POOLS (INCLUDING SWIMMING BEACHES WHERE RESCUE POLES ARE USED):	SEE DWG. 09.01-05			

* BRIDGES WITH SUPPORTING STRUCTURES ABOVE THE ROADWAY MAY SERVE AS SUPPORTING STRUCTURES FOR ELECTRICAL LINES. THE CLEARANCES SHOWN FOR ATTACHED AND NOT ATTACHED IS THE CLEARANCE ABOVE THE BRIDGE SUPPORTING STRUCTURES. SEE DWG. 09.01-04 FOR CLEARANCE TO BRIDGES WITHOUT SUPPORTING STRUCTURES ABOVE THE ROADWAY.

** CLEARANCES SHOWN ARE FOR CONDUCTORS AT REST. THE CLEARANCE IN PARENTHESES IS THE CLEARANCE REQUIRED WITH WIND DISPLACEMENT. THE WIND DISPLACEMENT FOR VARIOUS CONDUCTORS AND SPAN LENGTHS CAN BE FOUND IN THE SAG TABLES IN SECTION 05. SUBTRACT THE WIND DISPLACEMENT FROM THE REQUIRED CLEARANCE AT REST. THE REMAINING CLEARANCE MUST BE REMAINING CLEARANCE MUST BE EQUAL TO OR MORE THAN THE CLEARANCES SHOWN IN PARENTHESES.

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1				
0	7/12/10	GUINN	GUINN	ELKINS
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MINIMUM FINAL SAG CLEARANCES
TO BUILDINGS, ETC.



PGN DWG.
09.01-01A

MINIMUM CLEARANCES (IN FEET) OF UNGUARDED WIRES
FROM INSTALLATIONS TO WHICH THEY ARE NOT ATTACHED

CLEARANCE OF:	CONDUCTOR TYPE	EFFECTIVELY GROUNDED NEUTRALS; SPAN & LIGHTNING PROTECTION WIRES; GUYS & MESSENGERS CABLED PRIMARY	INSULATED SUPPLY CABLES 0 - 750 V (TRIPLEX & QUADRUPLIX)	0 - 750 V OPEN WIRE SECONDARY & SERVICES; CABLED PRIMARY	OPEN WIRE PRIMARY
					750 V - 22 kV (PHASE TO GROUND)
6. RAILROADS (WHERE WIRES RUN ALONG TRACKS): A HORIZONTAL (FROM NEAREST RAIL)		8.5'	9'	9.5'	11.5'
	B. VERTICAL (FROM TOP OF RAILS)	23.5'	24'	24.5'	26.5'
7. GRAIN BINS:					SEE NESC RULE 234.F.

NOTES:

1. THESE CLEARANCES APPLY UNDER WHICHEVER OF THE FOLLOWING CONDUCTOR TEMPERATURE AND LOADING CONDITIONS PRODUCES THE CLOSEST APPROACH:

FOR COLUMN ONE IN THE TABLE:

NEUTRALS AT 120°F OR 32°F WITH 1/4" ICE

ALL OTHER COLUMNS FOR ENERGIZED CONDUCTORS IN THE TABLE:

- MAXIMUM CONDUCTOR OPERATING TEMPERATURE 120°F
- 32°F WITH 1/4" ICE
- THE MINIMUM CONDUCTOR TEMPERATURE FOR WHICH THE LINE IS DESIGNED, NO WIND DISPLACEMENT, INITIAL SAG. (THIS COMES INTO PLAY WHEN A LINE IS RUN UNDER SOMETHING SUCH AS A CATWALK.)

2. WIND DISPLACEMENT CONSIDERATIONS (HORIZONTAL):

- A. FIGURES SHOWN IN PARENTHESIS ARE MINIMUM CLEARANCES WHERE CONSIDERATION OF HORIZONTAL DISPLACEMENT UNDER WIND CONDITIONS IS REQUIRED. IN APPLYING THESE CLEARANCES, THE CONDUCTOR IS DISPLACED FROM REST TOWARDS THE INSTALLATION BY A 6 PSF WIND AT FINAL SAG AT 60°F.
- B. PERPENDICULAR HORIZONTAL DISTANCE REQUIRED BETWEEN THE LINE AND THE STRUCTURE (BUILDING, ETC.) IS THE GREATER OF THE HORIZONTAL CLEARANCE OR THE SUM OF WIND CLEARANCE PLUS WIND SWING.
- C. SEE SECTION 05.01 FOR CONDUCTOR WIND SWINGS.

3. THIS TABLE DOES NOT APPLY TO BUILDINGS OR INSTALLATIONS IN TRANSIT.

4. THIS TABLE DOES NOT APPLY TO CLEARANCE BETWEEN A SERVICE AND THE BUILDING TO WHICH IT ATTACHES (REFER TO DWG. 09.02-05), BUT DOES APPLY TO CLEARANCE BETWEEN SERVICES AND ADJACENT BUILDINGS.


5. FOR BUILDINGS UNDER CONSTRUCTION, THESE CLEARANCES MUST BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.

6. REFER TO NATIONAL ELECTRICAL SAFETY CODE RULE 234 FOR EXCEPTIONS AND REFINEMENTS.

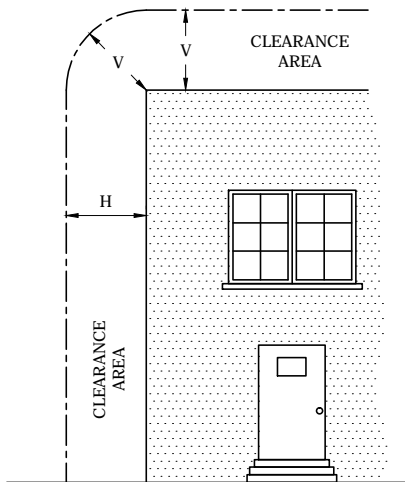
7. CLEARANCE TO RAILROAD IS FOR NESC REFERENCE ONLY. BEFORE DESIGNING A RAILROAD CROSSING OR FACILITY NEXT TO A RAILROAD, CHECK WITH COMPANY PERMIT COORDINATOR FOR SPECIFIC RAILROAD COMPANY CLEARANCE REQUIREMENTS. THEY MAY REQUIRE MORE CLEARANCE THAN THE NESC.

3				
2				
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0	11/5/10	ROBESON	GUINN	ELKINS
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MINIMUM FINAL SAG CLEARANCES TO BUILDINGS, ETC.

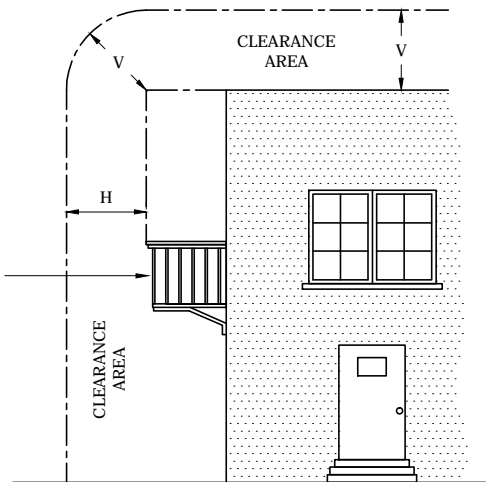


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09.01-01B

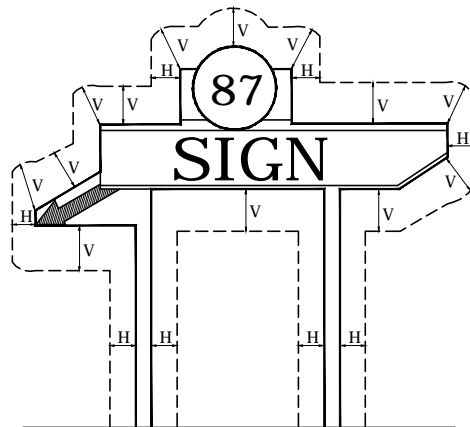


BUILDING ELEVATION

H = HORIZONTAL CLEARANCE
V = VERTICAL CLEARANCE



BUILDING ELEVATION



* VERTICAL
10.5' (0 TO 750V Ø-N)
12.5' (750 TO 22,000V Ø-N)

HORIZONTAL
5.5' (0 TO 750V Ø-N)
7.5' (750 TO 22,000V Ø-N)

NOTES:

1. CONDUCTORS SHALL BE PROPERLY GUARDED WHERE SUCH SUPPLY CONDUCTORS ARE PLACED NEAR ENOUGH TO WINDOWS, FIRE ESCAPES, ETC. TO BE EXPOSED TO CONTACT BY PERSONS.
2. WHERE BUILDINGS EXCEED THREE STORIES (OR 50 FEET) IN HEIGHT, A ZONE AT LEAST 6 FT. WIDE SHOULD EXIST EITHER ADJACENT TO THE BUILDING OR BEGINNING NOT OVER 8 FT. FROM THE BUILDING TO FACILITATE THE RAISING OF LADDERS WHERE NECESSARY FOR FIRE FIGHTING.

* VERTICAL CLEARANCE ABOVE OR BELOW ROOF ACCESSIBLE TO PEDESTRIANS ADD 1 FT. TO ABOVE VALUES. VERTICAL CLEARANCE ABOVE OR BELOW ROOF ACCESSIBLE TO VEHICLES INCLUDING TRUCKS ADD 6 FT. TO ABOVE VALUES.

SEE NESC RULE 234.

3. WIND DISPLACEMENT MUST BE CONSIDERED WHEN CHECKING HORIZONTAL CLEARANCES. SEE DWG. 09.01-01B.

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2				
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0	7/12/10	GUINN	GUINN	ELKINS
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MINIMUM FINAL SAG BUILDING CLEARANCE

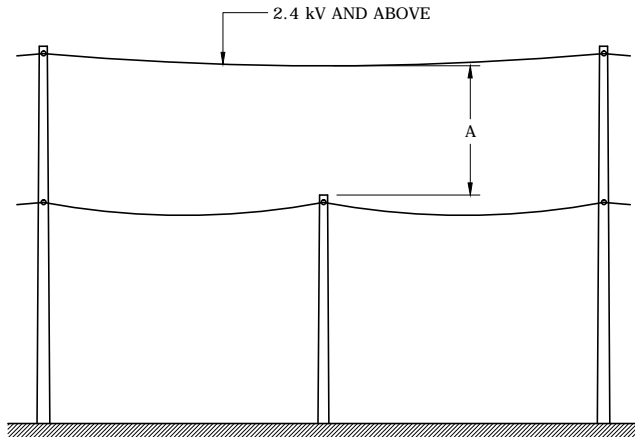


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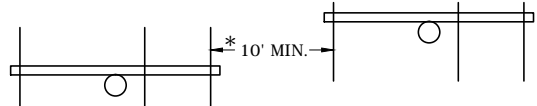
DWG.
09.01-02



MINIMUM CLEARANCE BETWEEN OVERHEAD
PRIMARY CIRCUITS AND UNDERBUILT POLES



HORIZONTAL CLEARANCE FOR
PARALLEL LINES UP TO 25kV
* PREFERRED DISTANCE



- "A" = 4.5 FEET FOR VOLTAGES 0 TO 22 kV Ø-G
- = 5.5 FEET FOR VOLTAGES 22 TO 50 kV Ø-G (69 kV)
- = 7 FEET FOR VOLTAGES 70 kV Ø-G (115 kV)
- = 9 FEET FOR 140 kV Ø-G (230 kV)

A MINIMUM VERTICAL CLEARANCE "A" SHALL BE MAINTAINED BETWEEN UNINSULATED PRIMARY CONDUCTORS OF ONE LINE AND ANY PART OF CLIMBABLE SUPPORTING STRUCTURES OF ANOTHER LINE INSTALLED BELOW THE PRIMARY. THIS MINIMUM CLEARANCE SHALL BE MAINTAINED FOR CONDUCTOR SAG AT MAXIMUM OPERATING TEMPERATURE, NO WIND.

YOU MAY SUBTRACT 2 FT. FROM DIMENSION "A" IF THE FOLLOWING 2 CONDITIONS ARE MET:

1. BOTH TOP AND BOTTOM CIRCUITS ARE OPERATED AND MAINTAINED BY THE SAME COMPANY.
2. EMPLOYEES WILL NOT BE WORKING ABOVE THE INTERMEDIATE POLE WHILE THE UPPER LINE IS ENERGIZED.

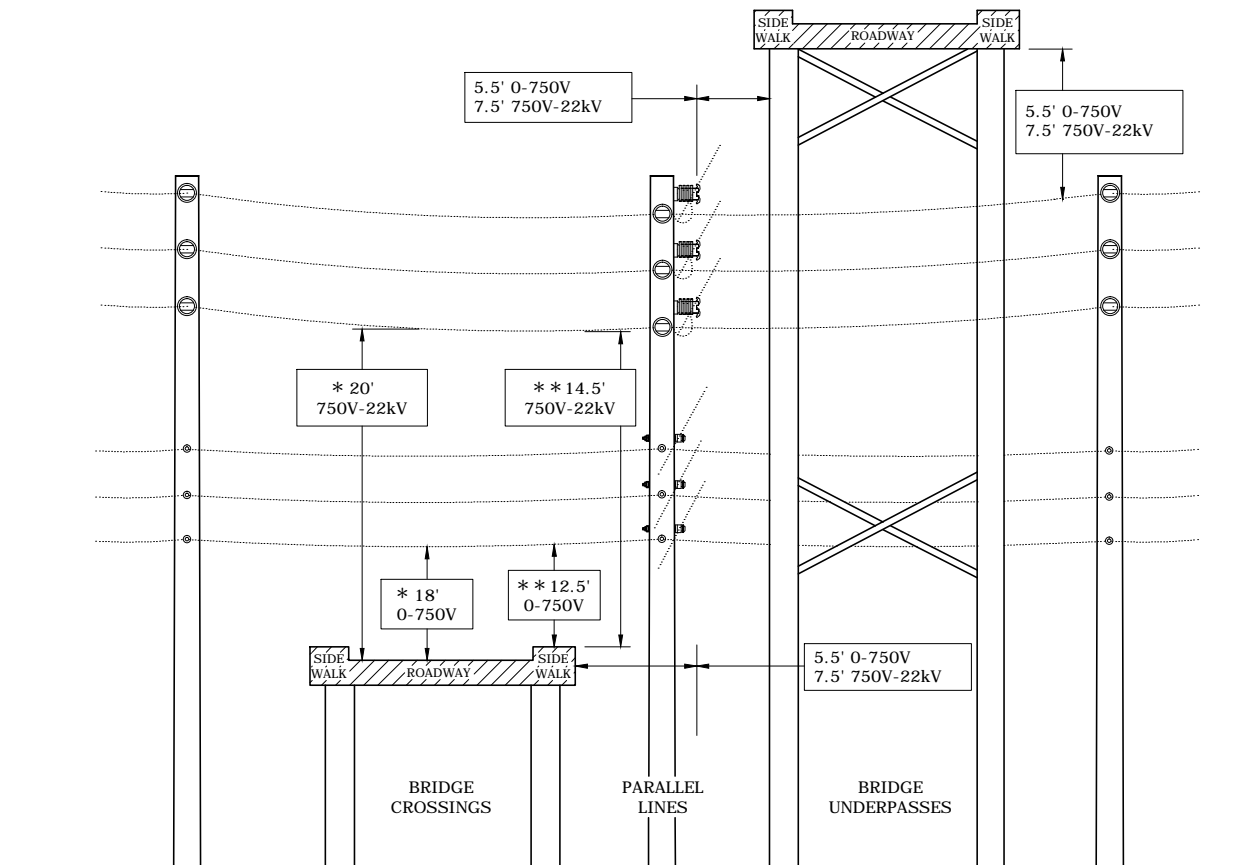
3				
2				
1	2/25/11	ROBESON	BURLISON	ELKINS
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

FINAL SAG CLEARANCE DIAGRAM
FOR OTHER STRUCTURES



PGN

DWG.
09.01-03



NOTE: ALL VOLTAGES ARE Ø-G.

IF WIRE CROSSINGS ARE INVOLVED, SEE "MINIMUM WIRE CROSSING CLEARANCES" IN THIS SECTION. DIMENSIONS GIVEN ARE MINIMUMS. ADDITIONAL CLEARANCE SHOULD BE PROVIDED IF POSSIBLE. BRIDGE CROSSINGS HERE ARE NOT OVER NAVIGABLE WATERWAYS.

DOT OR HIGHWAY PERMITS MAY DICTATE CLEARANCE HEIGHTS.

SEE DWG. 09.01-01A FOR LINE CLEARANCES ABOVE BRIDGES WITH A SUPER STRUCTURE ABOVE THE ROADWAY.

* THESE CLEARANCES ARE TO THE ROADWAY SURFACE OF THE BRIDGE.

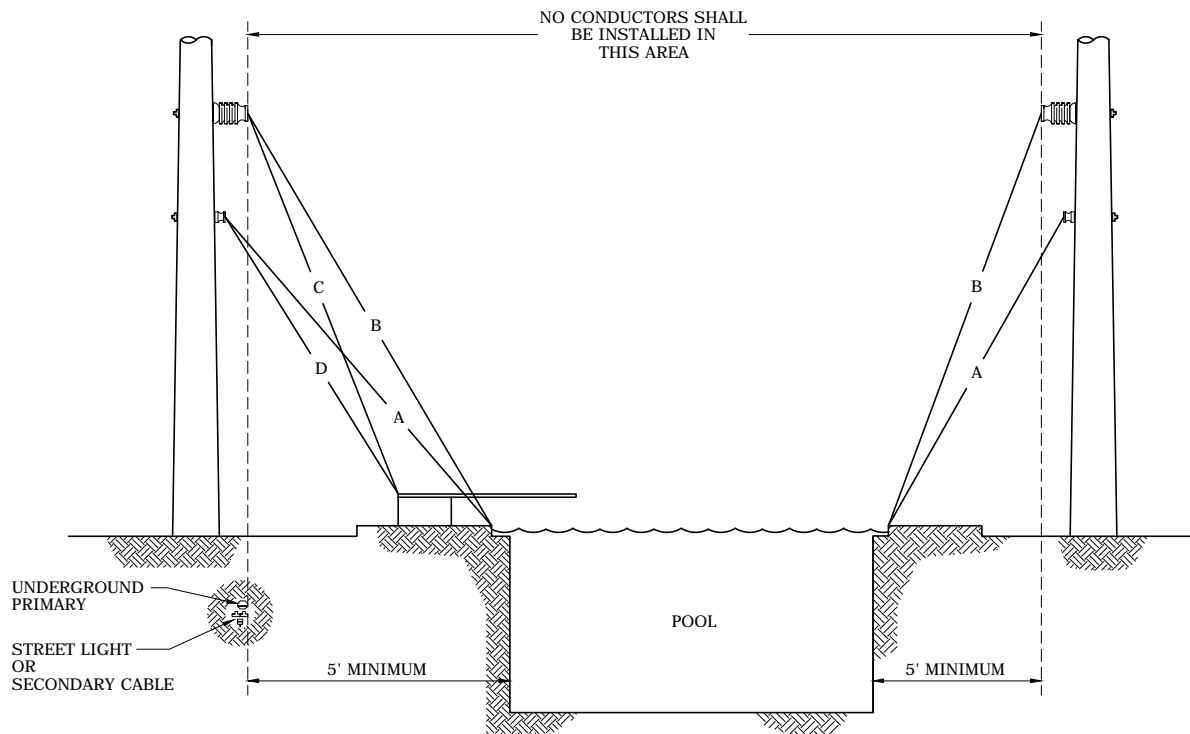
** THESE CLEARANCES ARE TO THE SIDEWALK WHERE ONLY RESTRICTED TRAFFIC IS NORMALLY EXPECTED. NO HORSEBACK RIDERS OR VEHICLES GREATER THAN 8 FOOT IN HEIGHT.

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

MINIMUM FINAL SAG CLEARANCES FROM BRIDGES



PGN DWG. 09.01-04



A N G L E	CABLE SECONDARY AND NEUTRAL CONDUCTORS 0-750 VOLTS TO GROUND	ALL OTHER CONDUCTORS 0-22 KV TO GROUND
A	22.5 FT.	25 FT.
B		25 FT.
C		17 FT.
D	14.5 FT.	17 FT.

POOL CONTRACTORS MUST MEET THE GREATER OF THE FOLLOWING CODES:


- ▶ 1. DUKE ENERGY POOL CLEARANCE POLICY.
- 2. CITY AND/OR COUNTY ELECTRICAL CODES.
- 3. STATE ELECTRICAL CODES.

NOTES:

- ▶ 1. FIVE (5) FEET MINIMUM MUST ALSO BE MAINTAINED FOR UNDERGROUND PRIMARY AND SECONDARY CABLES. IF FIVE (5) FEET IS NOT ATTAINABLE, SUPPLEMENTAL PROTECTION (CONDUIT) SHALL BE REQUIRED.
- 2. SEE DWG. 09.01-01A, "MINIMUM FINAL SAG CLEARANCE TO BUILDINGS, ETC." IN THIS SECTION FOR POOLS FULLY ENCLOSED BY A SOLID OR SCREENED STRUCTURE.
- 3. SECONDARY AND SERVICE CABLES LOCATED 10' OR MORE HORIZONTALLY FROM THE POOL EDGE, DIVING PLATFORM OR TOWER ARE EXEMPT FROM SWIMMING POOL CLEARANCE REQUIREMENTS. SEE DWG. 09.01-01A, "MINIMUM FINAL SAG CLEARANCES TO BUILDINGS, ETC." FOR ACTUAL CLEARANCE REQUIREMENTS.

3				
2				
1	7/19/13	GUINN	GUINN	ADCOCK
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

**FINAL SAG CLEARANCE OF ENERGIZED CONDUCTORS
NEAR SWIMMING POOL AREAS**



PGN DWG.
09.01-05

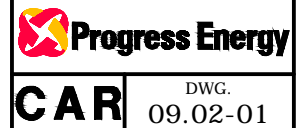
	INSULATED COMMUNICATION CONDUCTORS AND CABLES; MESSENGERS; GROUNDED GUYS; NEUTRAL CONDUCTORS, (FT.)	SERVICE & SECONDARY CABLE, NON-INSULATED COMMUNICATION CONDUCTORS, 0 TO 750 V (FT.)	OPEN WIRE SERVICE / SECONDARY CONDUCTORS, 0 TO 750 V (FT.)	OVERHEAD PRIMARY CONDUCTORS, OVER 750V TO 22kV (FT.)
NATURE OF SURFACE UNDERNEATH WIRES, CONDUCTORS OR CABLES.	NESC MINIMUM REQUIRED	NESC MINIMUM REQUIRED	NESC MINIMUM REQUIRED	NESC MINIMUM REQUIRED
1. ROADS, STREETS, AND OTHER AREAS SUBJECT TO TRUCK TRAFFIC. (NOTE: SEE DWG. 09.02-04 FOR INCREASED HEIGHT REQUIREMENTS IN COMMERCIAL AREAS)	15.5 (SEE NOTE 5)	16 (SEE NOTE 5)	16.5 (SEE NOTE 5)	18.5
2. DRIVEWAYS, PARKING LOTS, AND ALLEYS (NOTE: SEE DWG. 09.02-04 FOR INCREASED HEIGHT REQUIREMENTS IN COMMERCIAL AREAS)	15.5	16	16.5	18.5
3. OTHER LAND TRAVERSED BY VEHICLES, SUCH AS CULTIVATED, GRAZING, FOREST, ORCHARD, ETC. (NOTE: SEE DWG. 09.02-04 FOR INCREASED HEIGHT REQUIREMENTS FOR THESE AREAS)	15.5	16	16.5	18.5
4. SPACES AND WAYS SUBJECT TO PEDESTRIANS OR RESTRICTED TRAFFIC ONLY	9.5	12.0	12.5	14.5
5. WATER AREAS NOT SUITABLE FOR SAILBOATING OR WHERE SAILBOATING IS PROHIBITED	14.0	14.5	15.0	17.0
6. WATER AREAS SUITABLE FOR SAILBOATING INCLUDING LAKES, PONDS, RESERVOIRS, TIDAL WATERS, RIVERS, STREAMS, AND CANALS WITH AN UNOBSTRUCTED SURFACE AREA OF:				
A. LESS THAN 20 ACRES	17.5	18.0	18.5	20.5
B. OVER 20 TO 200 ACRES	25.5	26.0	26.5	28.5
C. OVER 200 TO 2000 ACRES	31.5	32.0	32.5	34.5
D. OVER 2000 ACRES	37.5	38.0	38.5	40.5
7. PUBLIC OR PRIVATE LAND AND WATER AREAS POSTED FOR RIGGING OR LAUNCHING SAILBOATS	CLEARANCE ABOVE GROUND SHALL BE 5 FT. GREATER THAN IN 6 ABOVE, FOR THE TYPE OF WATER AREAS SERVED BY THE LAUNCHING SITE.			
WHERE WIRES, CONDUCTORS, OR CABLES RUN ALONG AND WITHIN THE LIMITS OF HIGHWAYS OR OTHER ROAD RIGHT-OF-WAY BUT DO NOT OVERHANG THE ROADWAY				
8. ROADS, STREETS, OR ALLEYS	15.5	16.0	16.5	18.5
9. ROADS IN RURAL DISTRICTS WHERE IT IS UNLIKELY THAT VEHICLES WILL BE CROSSING UNDER THE LINE	13.5	14.0	14.5	16.5

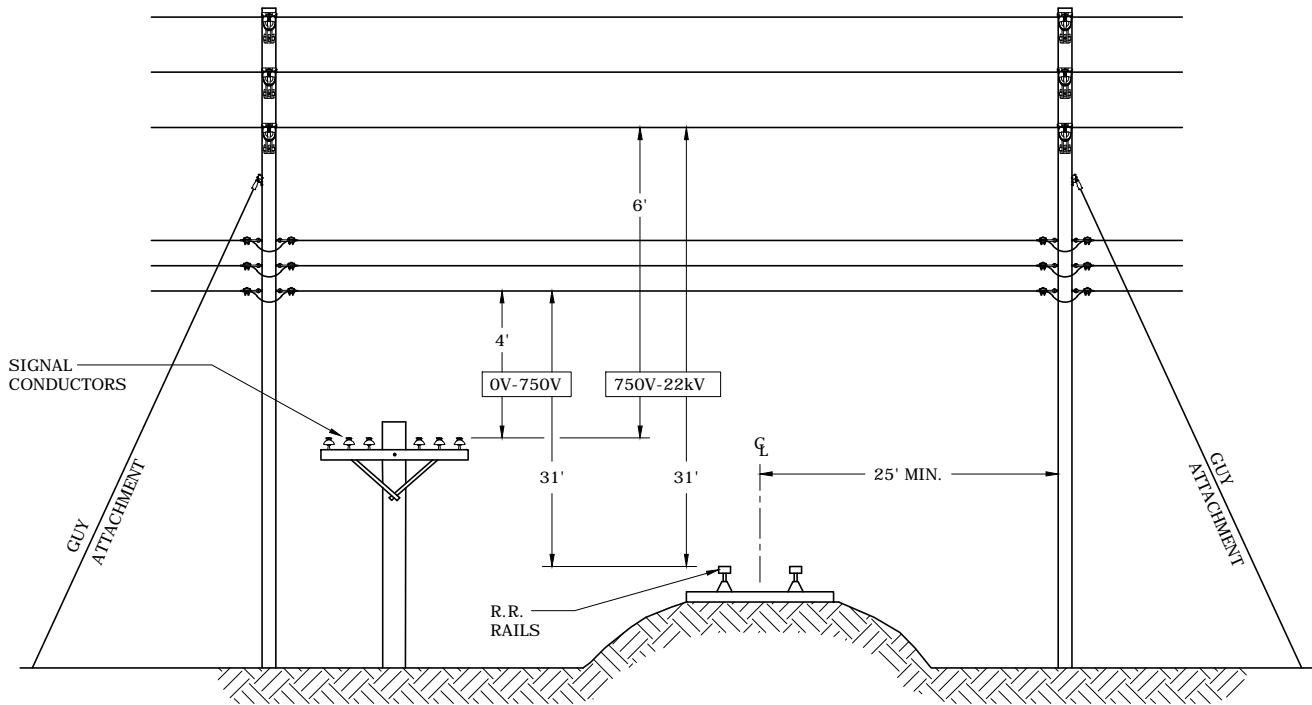
NOTES:

- THE ABOVE MINIMUM CLEARANCES IN THE TABLE MUST BE MET USING THE FOLLOWING ICE AND WIND CONDUCTOR LOADING. THE VALUES CAN BE FOUND IN THE SAG AND TENSION TABLES. USE THE FOLLOWING LOADING CONDITION THAT PRODUCES THE GREATEST SAG:
 - CONDUCTOR TEMPERATURE 120°F AND NO WIND DISPLACEMENT, OR
 - 32°F WITH 1/4" RADIAL ICE THICKNESS, NO WIND DISPLACEMENT.
- SEE NESC RULE 234.I WHERE CONDUCTORS RUN ALONG OR ARE CLOSER THAN 20 FT. HORIZONTALLY TO TRACK RAILS. CONSIDER SWING DUE TO WIND (NESC RULE 234.A.2). ALSO, RAILROADS REQUIRE 50 FT. MINIMUM VERTICAL CLEARANCE WHEN LINE CROSSES RAILS WITHIN 1000 FT. OF RAILROAD, BRIDGE OR TRESTLE.
- REFER TO NATIONAL ELECTRICAL SAFETY CODE (NESC) RULE 232 FOR MINOR EXCEPTIONS AND REFINEMENTS. ALSO REFER TO SERVICE CLEARANCE DWGS. 09.02-04 AND 09.02-05 FOR MORE DETAILS ON SERVICE CLEARANCES.
- WHERE HEIGHT OF ATTACHMENT TO BUILDING DOES NOT PERMIT TRIPLEX SERVICE DROPS TO MEET THIS VALUE, THE CLEARANCE MAY BE REDUCED TO 12 FT.
- THE MINIMUM VERTICAL CLEARANCE OF ALL CONDUCTORS, CABLES, GUYS, ETC. MUST BE MAINTAINED AT 18 FEET FOR DOT MAINTAINED HIGHWAYS.
- FOR BRIDGES, THE MINIMUM VERTICAL CLEARANCE (ABOVE BRIDGE CLEARANCE AS ESTABLISHED BY THE U.S. COAST GUARD) FOR CABLES WITH A NOMINAL SYSTEM VOLTAGE OF 115 KV AND BELOW IS 20 FEET.

3				
2				
1	9/29/11	ROBESON	BURLISON	ELKINS
0	7/11/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

STANDARD FINAL SAG CLEARANCES





NOTES:

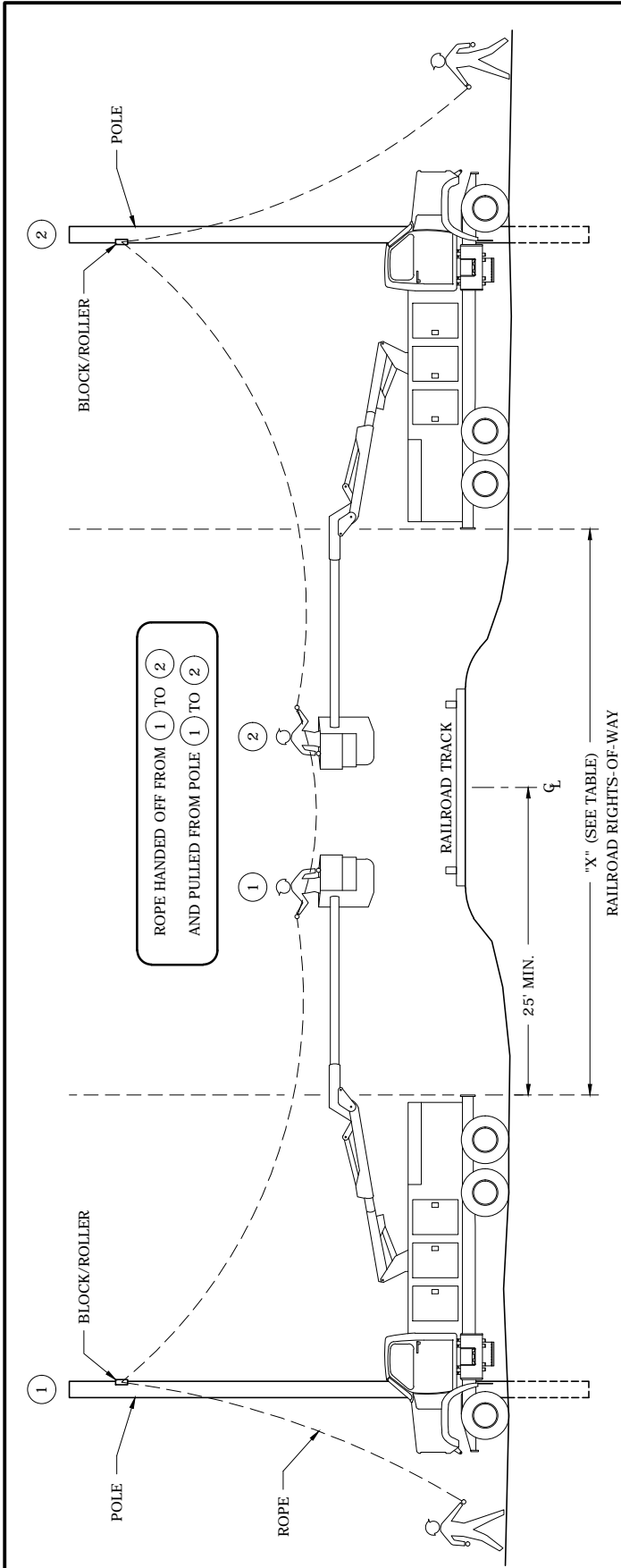
1. ABOVE 22,000 VOLTS, CLEARANCE SHALL BE INCREASED BY 0.4 INCH FOR EACH 1,000 VOLTS IN EXCESS.
2. SEE DWG. 09.02-02B FOR RIGHTS-OF-WAY CONSTRUCTION.
3. BEFORE DESIGNING A RAILROAD CROSSING OR FACILITIES NEXT TO A RAILROAD, CHECK WITH COMPANY PERMIT COORDINATOR FOR SPECIFIC RAILROAD COMPANY CLEARANCE REQUIREMENTS.

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

MINIMUM FINAL SAG CLEARANCES
RAILROAD AND SIGNAL CROSSINGS



PGN DWG. 09.02-02A



WORKING "OVER" RAILROAD RIGHT-OF-WAY WITHOUT BEING "IN" RAILROAD ROW

PLACE ONE MAN WITH RADIO APPROXIMATELY 7 MILES UP-TRACK AND DOWN-TRACK (TWO MEN TOTAL) TO WATCH FOR TRAIN COMING - SIGNALS WORKERS TO CLEAR TRACK AREA (15 MINUTES TO CLEAR)

TWO TRUCKS (BUCKET) SET UP ON OPPOSITE SIDE OF ROW

ROLLERS/BLOCK INSTALLED ON EACH SIDE POLE

WORKER (1) HANDS ROPE OFF TO WORKER (2)

ROPE PULLED IN AIR TO CLEAR TRACKS

WIRE PULLED OVER TRACKS VIA ROPE

NOTES:

1. SEE DWG. 09.02-02A FOR CLEARANCES.
2. PLAN WORK TO MINIMIZE TIME OVER RIGHTS-OF-WAY.
3. **DO NOT** PERFORM WORK OVER A MOVING TRAIN.

TRUCK	APPROX. BUCKET REACH	"X"
55' MH	40'	80'
85' MH *	48'	~ 100'
100' MH *	50'	~ 100'

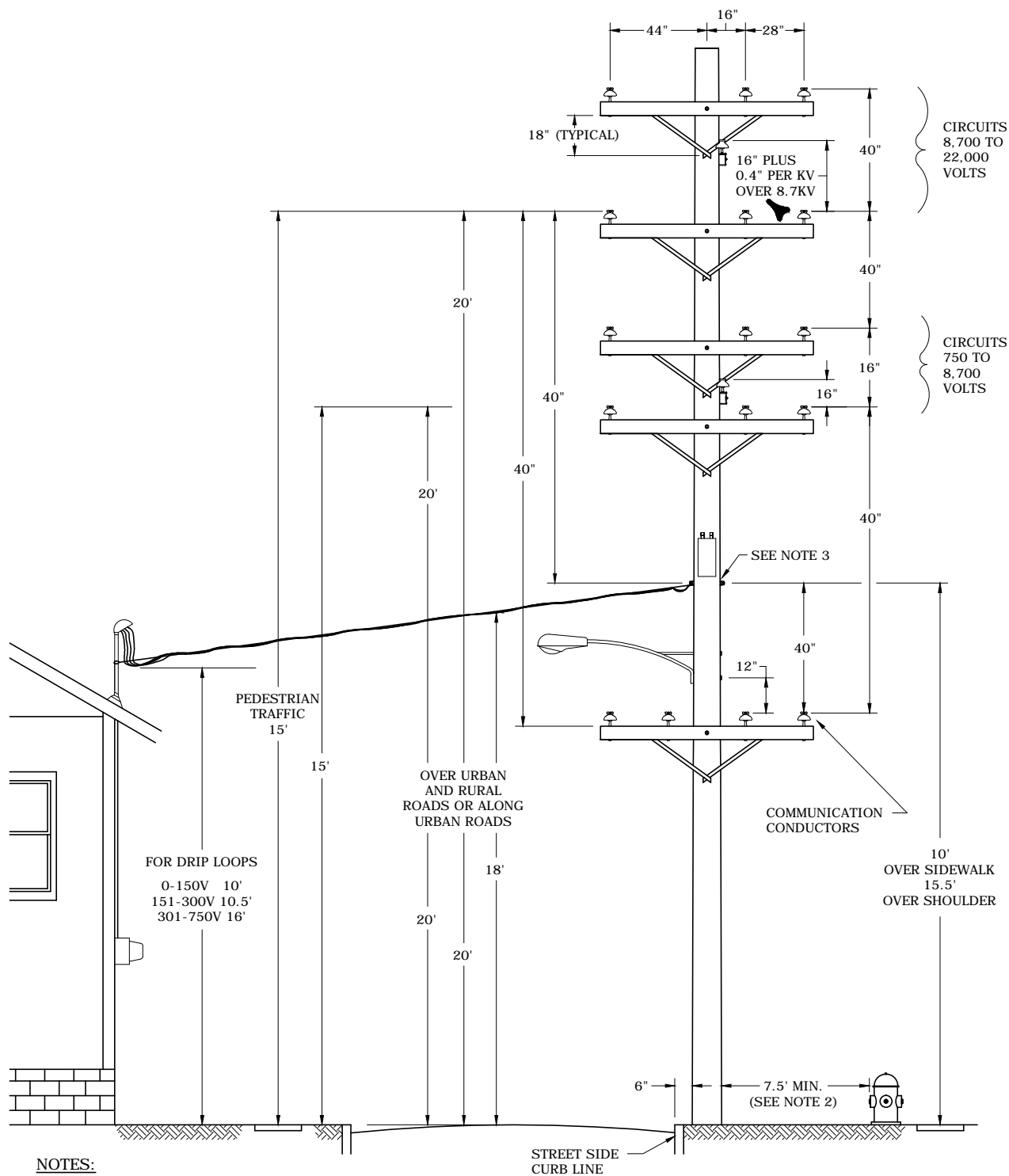
*TRANSMISSION

WORKING ON RAILROAD RIGHT-OF-WAY
 PGN FACILITIES (POLES, GUYS, TRUCKS ETC.)
 MUST BE 25' MINIMUM FROM THE CLOSEST RAIL.

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

RAILROAD RIGHTS-OF-WAY CONSTRUCTION

PGN DWG. 09.02-02B



CIRCUITS
8,700 TO
22,000
VOLTS

CIRCUITS
750 TO
8,700
VOLTS

NOTES:

1. ALL VOLTAGES ARE MAXIMUM TO GROUND ON GROUNDED SYSTEMS, AND PHASE TO PHASE ON DELTA SYSTEMS.
2. THIS CLEARANCE CAN BE REDUCED TO 3' WHERE CONDITIONS DO NOT PERMIT 7.5'.
3. THE NEUTRAL POSITION SHOWN INDICATES THERE IS ONLY ONE NEUTRAL ON THE POLE SHARED BY ALL CIRCUITS. IF MULTIPLE NEUTRALS ARE USED, ADDITIONAL CLEARANCES ARE REQUIRED TO ACCOMMODATE ADDITIONAL NEUTRALS. SEE DWG. 09.03-01.
4. THE SPACE REQUIREMENT BETWEEN CIRCUITS ABOVE ARE NESC MINIMUM SPACING FOR DIFFERENT UTILITIES. THIS SPACING ALSO APPLIES TO CIRCUITS OWNED BY THE COMPANY. ALL CIRCUIT CLEARANCES AT THE POLE MAY NEED TO BE INCREASED DUE TO SAG TO OBTAIN PROPER MID SPAN CLEARANCES.

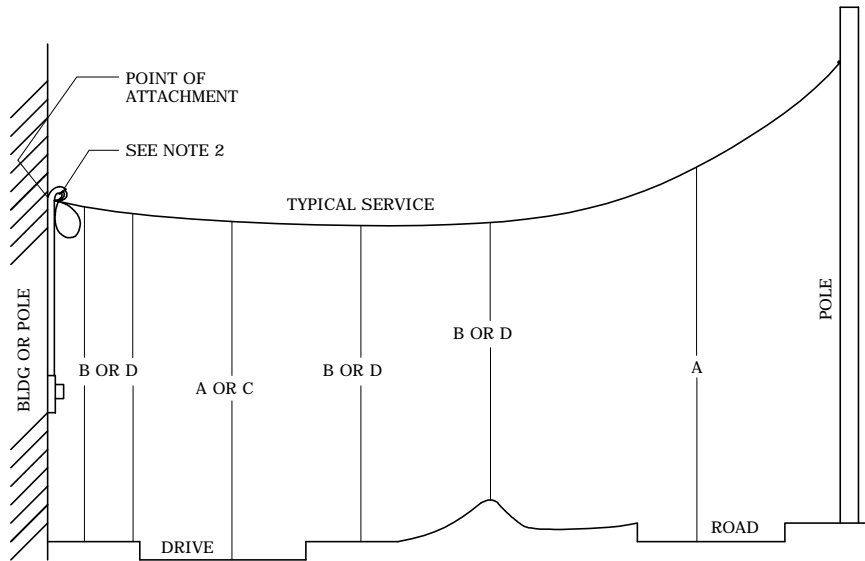
3				
2				
1	9/14/12	KATIGBAK	BURLISON	ADCOCK
0	7/11/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

MINIMUM FINAL SAG CLEARANCES FOR CONDUCTOR

Duke Energy

CAR DWG. 09.02-03

MINIMUM REQUIRED HEIGHTS FOR NEW SERVICES



CONDITION	MINIMUM REQUIRED HEIGHT
A. OVER STREETS, ROADS, <u>NON-RESIDENTIAL</u> DRIVES, COMMERCIAL AREAS, AND PARKING LOTS <u>SUBJECT TO TRUCK TRAFFIC.</u>	18.0'
B. OVER OTHER LAND TRAVERSED BY VEHICLES SUCH AS FARM, GRAZING, FOREST, ETC.	18.0'
C. OVER <u>RESIDENTIAL DRIVEWAYS.</u> (SEE NOTES 4 AND 6)	16.0'
D. OVER FINISHED GRADE, PLATFORMS, AND/OR OTHER SPACES IF NOT NORMALLY TRAVERSED BY VEHICLES.	12.0'

NOTES:

1. THE ABOVE TABLE GIVES REQUIRED MINIMUM INSTALLATION HEIGHTS. THESE INSTALLATION HEIGHTS ARE APPLICABLE TO SERVICE DROP MULTIPLEX CABLES INSTALLED USING THE STANDARD SAGS FOR NORMAL STRINGING TEMPERATURES.
2. POINT OF ATTACHMENT OF SERVICE DROP AT BOTH BUILDING AND POLE MUST BE AT A HEIGHT SUFFICIENT TO ACHIEVE NESC REQUIRED MINIMUM CLEARANCES. REFER TO NESC RULE 232 FOR MINOR EXCEPTIONS AND REFINEMENTS.
3. SERVICE HEAD SHALL BE LOCATED ABOVE THE POINT OF ATTACHMENT OF THE SERVICE DROP CONDUCTORS TO THE STRUCTURE. EXCEPTION: WHEN THIS IS NOT PRACTICABLE, IT MAY BE LOCATED NOT OVER 24" FROM POINT OF ATTACHMENT. [SEE N.E.C. 230.54 (C AND F)].
4. REQUIRED GROUND CLEARANCE FOR INSULATED DRIP LOOPS IS 10 FT. FOR UP TO 150V SERVICES, AND 10.5 FT. FOR UP TO 300V SERVICES AND 16' FOR SERVICES 301-750V.
5. THIS TABLE IS FOR MULTIPLEX (TRIPLEX AND QUADRUPLX - I.E. "CABLED") SERVICE DROPS. FOR "OPEN WIRE" (UNINSULATED) SERVICE CONDUCTOR CLEARANCES, REFER TO DWG. 09.02-01.
6. WHERE HEIGHT OF ATTACHMENT TO BUILDING WILL NOT PERMIT THIS HEIGHT FOR TRIPLEX SERVICES, THIS HEIGHT MAY BE REDUCED TO 12.5 FT.

3				
2				
1	4/1/11	SIMPSON	SIMPSON	ELKINS
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

SERVICE DROP MINIMUM
FINAL SAG CLEARANCES
ABOVE GROUND

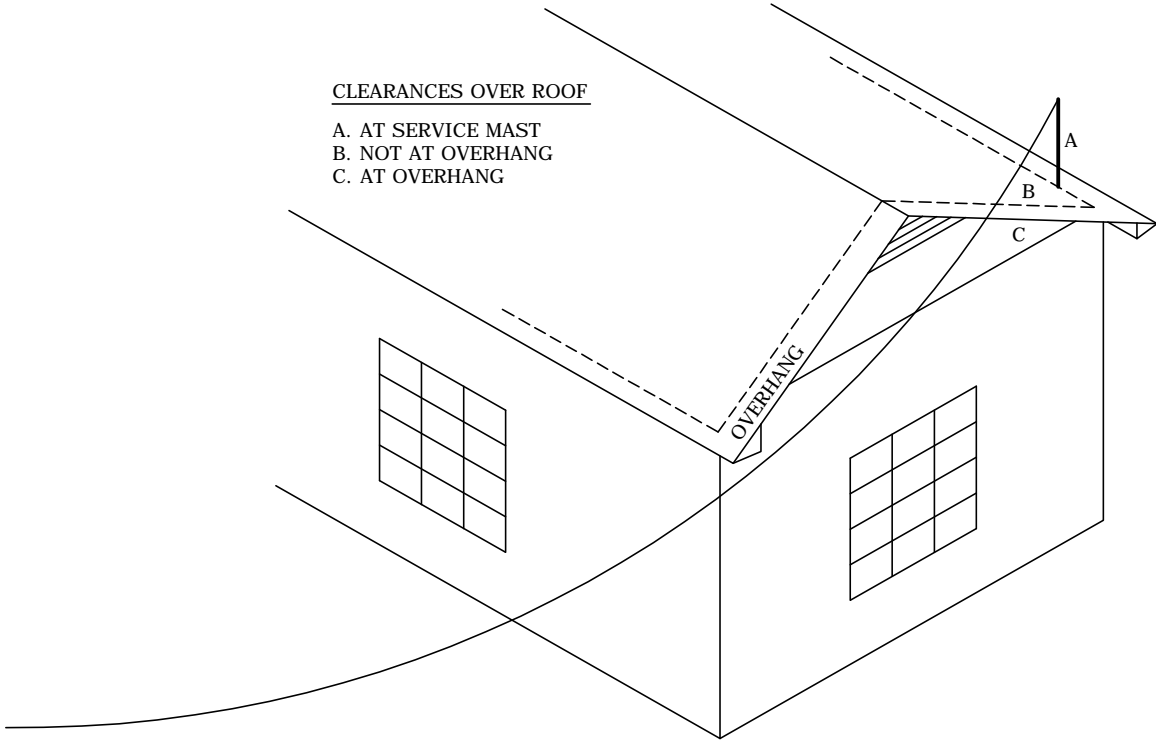


PGN

DWG.
09.02-04

CLEARANCES OVER ROOF

- A. AT SERVICE MAST
- B. NOT AT OVERHANG
- C. AT OVERHANG



1. VERTICAL CLEARANCES OF NEW SERVICES TO BUILDINGS AT LOCATIONS A, B, AND C AS SHOWN ABOVE MUST MEET THE FOLLOWING MINIMUM CLEARANCES FOR THE HIGHEST VOLTAGE BETWEEN ANY TWO CONDUCTORS.

CLEARANCES	LOCATION	MIN. AT 60° FINAL SAG	
		0-300V	300-600V
A OR B	OVER FLAT OR READILY ACCESSIBLE ROOF	8'	8'
A OR B	OVER SLOPED ROOF WHICH IS NOT READILY ACCESSIBLE	36"	8'
C	OVER OVERHANG PORTION OF ROOF (NO MORE THAN 4' OF CABLE)	18"	8'

- 2. A ROOF IS CONSIDERED READILY ACCESSIBLE WHEN ACCESS IS THRU A DOORWAY, RAMP, STAIRWAY, OR PERMANENTLY MOUNTED LADDER. A SLOPED ROOF IS ONE WHERE ROOF RISES 4" OR MORE IN 12" OF HORIZONTAL DISTANCE.
- 3. SERVICES MUST NOT BE INSTALLED WITHOUT SPECIFICATION CLEARANCES. FOR INSTALLATIONS SIMILAR TO SKETCH, SERVICE MAST SHOULD BE TALLER AND STRONGER, OR LOCATED NEAR CORNER. IF PRACTICAL, SERVICE SHOULD BE ATTACHED ON SIDE OF BUILDING WHERE IT DOES NOT CROSS THE ROOF. METER MAY BE ON SIDE OF BUILDING OR MAY BE PUT JUST AROUND THE CORNER BY CUSTOMER EXTENDING CONDUIT AROUND THE CORNER. SERVICES OF ALL VOLTAGES MAY BE ATTACHED TO THE SIDE OF BUILDINGS.
- 4. SERVICES SHALL ALSO HAVE 3' CLEARANCE IN ANY DIRECTION FROM WINDOWS, DOORS, PORCHES, OR SIMILAR LOCATIONS, EXCEPT THIS DOES NOT APPLY TO MULTIPLEX CONDUCTORS ABOVE THE TOP LEVEL OF A WINDOW OR TO WINDOWS NOT DESIGNED TO OPEN. PER N.E.S.C. 234C3d(2)
- 5. POINT OF ATTACHMENT OF SERVICE TO BUILDING SHALL BE HIGH ENOUGH TO PROVIDE THE GROUND CLEARANCES OF DWG. 09.02-04, BUT SHALL NOT EXCEED 25' ABOVE GRADE AT TIME OF INSTALLATION AND SHALL NOT REQUIRE THE USE OF A LADDER ON CARPORT OR OTHER ROOF.

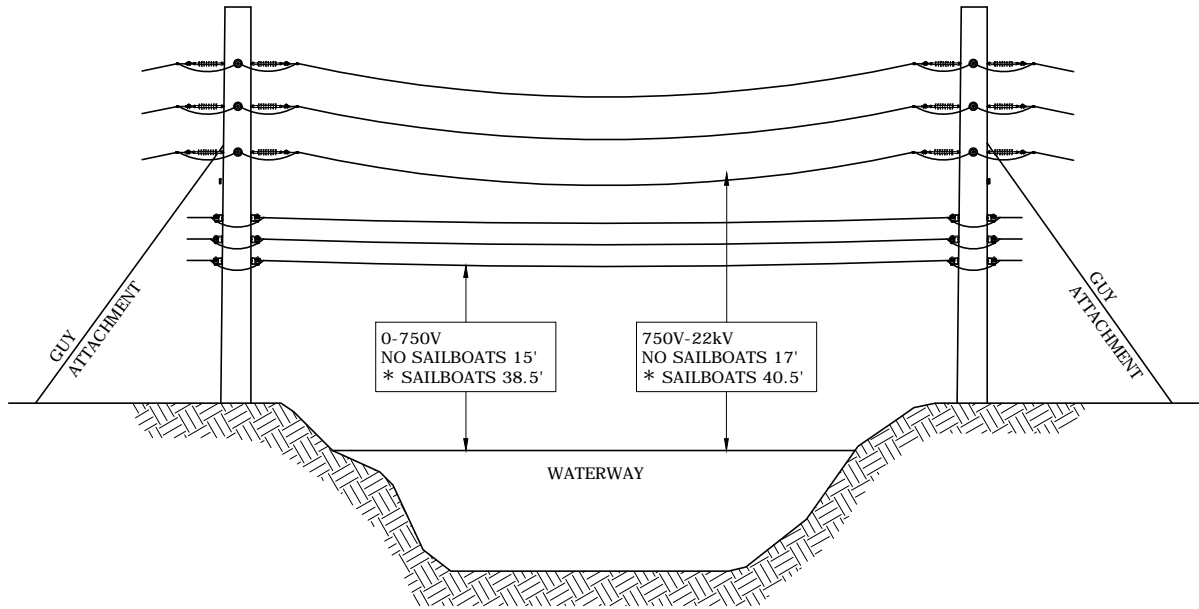
3				
2				
1	4/1/11	SIMPSON	SIMPSON	ELKINS
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

DETAILS OF SERVICE FINAL SAG CLEARANCES



PGN

DWG.
09.02-05



DOUBLE DEADENDS ARE REQUIRED FOR ANY WATERWAY CROSSING.

SPECIAL CROSSING PERMIT CLEARANCES SHALL TAKE PRECEDENCE OVER THESE CLEARANCES.

* WHERE THE US ARMY CORPS OF ENGINEERS, OR THE STATE, OR SURROGATE THEREOF HAS ISSUED A CROSSING PERMIT, CLEARANCES OF THAT PERMIT SHALL GOVERN.

* THESE SAILBOAT CLEARANCES OVER NAVIGABLE WATERS PROVIDED NO BRIDGE CROSSINGS ARE ALSO INVOLVED. WHERE THERE IS ALSO A BRIDGE CROSSING, THESE CORPS OF ENGINEERS' CLEARANCES MUST BE MAINTAINED OVER THE BRIDGE RATHER THAN WATER.

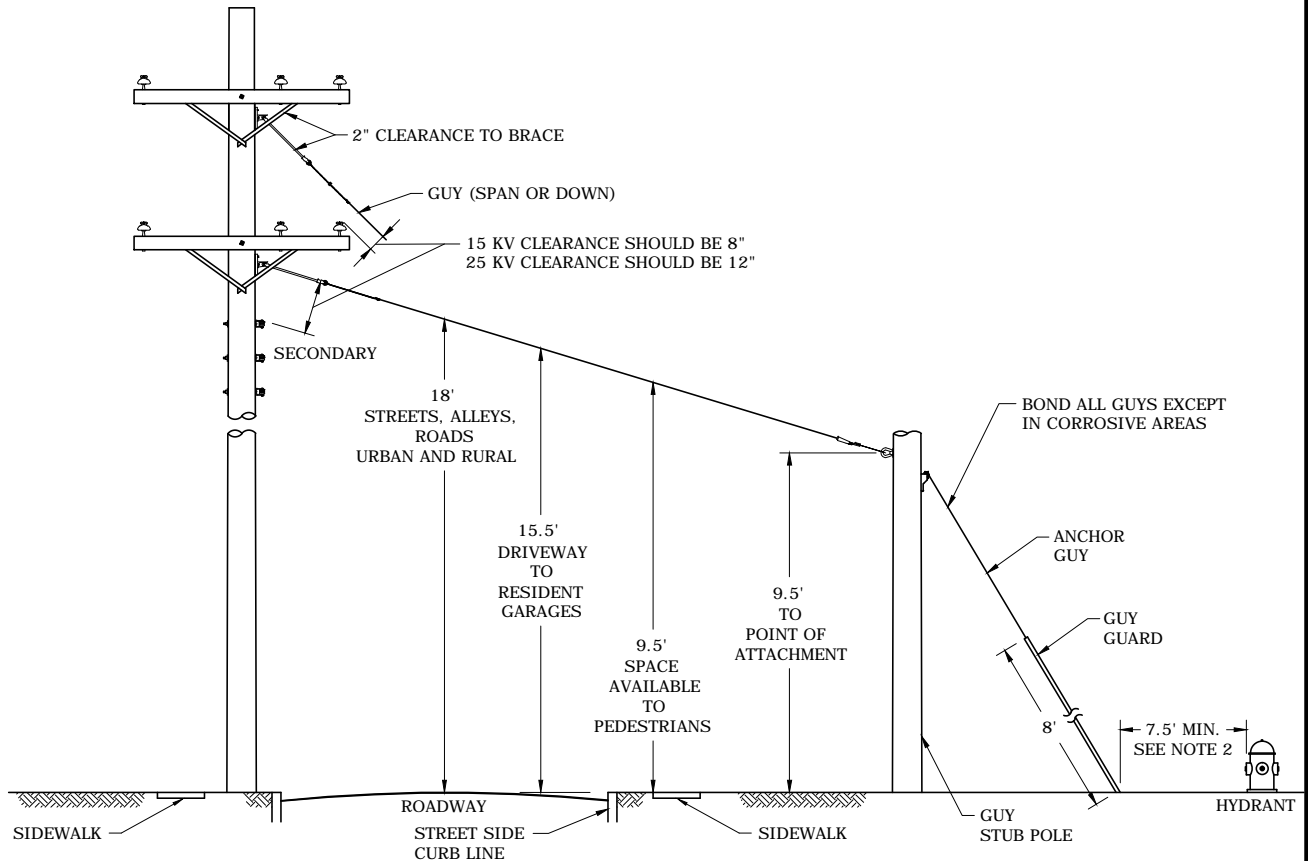
NOTE: CONSULT ENGINEERING FOR MANUAL GUYING REQUIREMENTS.

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

MINIMUM FINAL SAG CLEARANCES OVER WATERWAYS

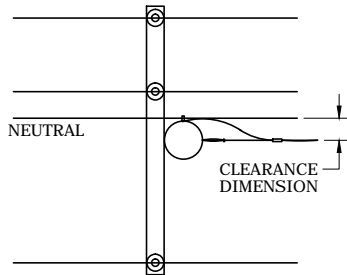


PGN DWG. 09.02-06



MINIMUM CLEARANCE SPECIFICATION FOR THE INSTALLATION OF GUYS ON THE COMPANY'S DISTRIBUTION SYSTEM

1. GUY CLEARANCES FROM SUPPLY CONDUCTORS ATTACHED TO THE SAME STRUCTURE



TYPE OF GUY	** MINIMUM CLEARANCES IN ALL DIRECTIONS TO CONDUCTORS		
	TO SECONDARY	15 kV	25 kV
SPAN GUY PARALLEL TO SUPPLY CONDUCTORS	12"	15"	18"
ANCHOR GUYS PARALLEL TO SUPPLY CONDUCTORS	6"***	8"	12"
OTHER GUYS (i.e. SPAN GUY NOT PARALLEL)	6"	9"	12"

** USE OF A GUY INSULATOR DOES NOT REDUCE THIS MINIMUM CLEARANCE REQUIREMENT EXCEPT WHERE DOWN GUYS ARE INSULATED FROM SECONDARIES USING SECONDARY SPOOLS.

*** 6" CLEARANCE FROM MULTIPLEX TO ANCHOR GUYS IF PRACTICAL. IN NO CASE SHALL IT BE LESS THAN 3".

NOTE: THE ABOVE CLEARANCES ARE BETWEEN THE CONDUCTOR AND THE GUY. DOWN GUYS ATTACHED DIRECTLY TO THRU BOLTS ON OPPOSITE SIDE OF POLE FROM DEAD END OR VERTICAL ANGLE ASSEMBLIES WILL MEET THE ABOVE CLEARANCE REQUIREMENTS.

2. GUY CLEARANCES TO BUILDINGS AND OTHER STRUCTURES, VERTICAL GROUND CLEARANCES, CROSSING CLEARANCES, AND CLEARANCES TO CONDUCTORS ON DIFFERENT SUPPORTS ARE COVERED IN SECTION 02.

3. FOR MINOR EXCEPTIONS, SEE TABLES 232-1, 235-6, AND 239-2 OF THE NESC.

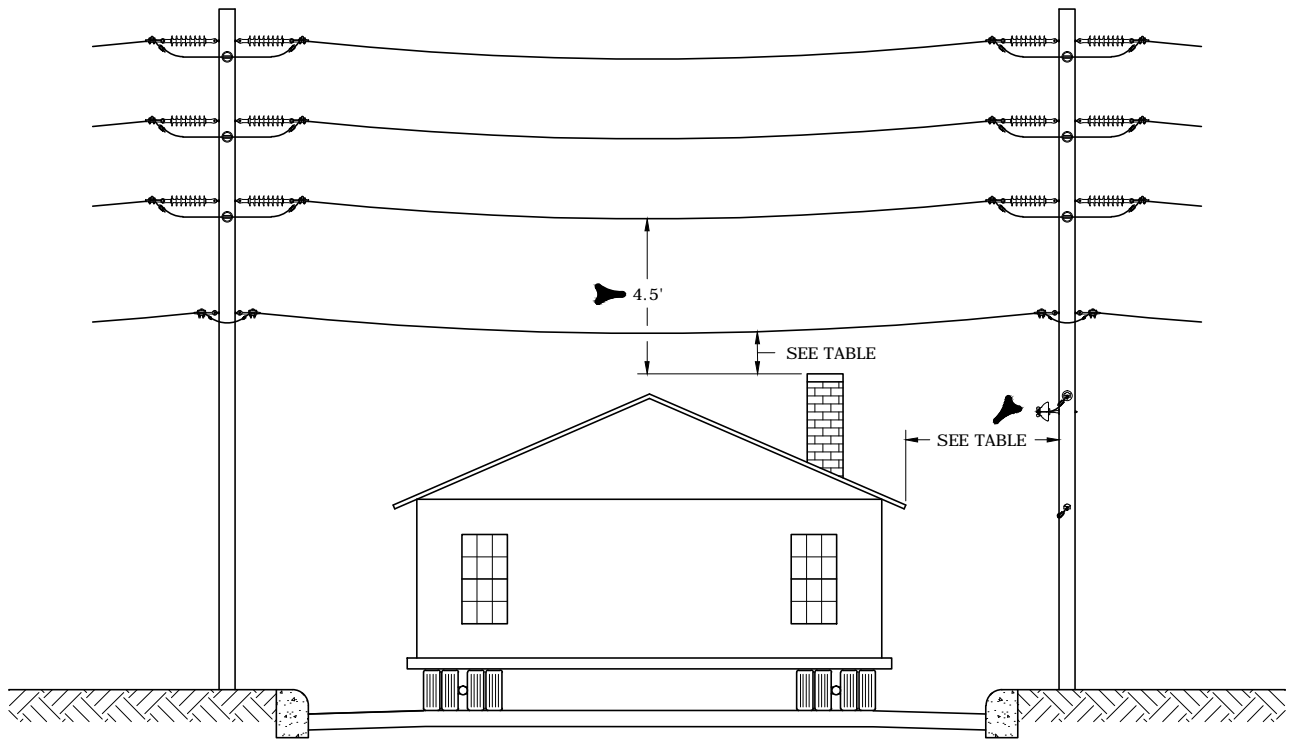
NOTES:

1. THE USE OF GUY INSULATORS DOES NOT NEGATE OR REDUCE ANY OF THE DIMENSIONS ON THIS PAGE.
2. THIS CLEARANCE CAN BE REDUCED TO 3' WHERE CONDITIONS DO NOT PERMIT 7.5'.

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

MINIMUM GUY CLEARANCE

CAR DWG.
09.02-07



THE CLEARANCE OF A BUILDING BEING TRANSPORTED UNDER DISTRIBUTION LINES IS TREATED THE SAME AS A MOVING VEHICLE PER THE NESC UNIFORM SYSTEM OF CLEARANCES. THE VERTICAL CLEARANCE ABOVE GROUND CONSISTS OF A REFERENCE COMPONENT WHICH IN THIS CASE WOULD BE THE HEIGHT OF THE BUILDING ON THE TRANSPORT VEHICLE, PLUS A MECHANICAL AND ELECTRICAL COMPONENT AS FOLLOWS:

CLEARANCE REQUIREMENTS		
CATEGORY	VERTICAL CLEARANCE REQUIRED (FT)	HORIZONTAL CLEARANCE REQUIRED (FT)
INSULATED COMMUNICATIONS: GROUNDED NEUTRALS GROUNDED GUYS AND SPAN GUY	1.5	3
TRIPLEX OR QUADRUPLIX	2	3.5
OPEN SECONDARY	2.5	5.5
PRIMARY (750-22 KV PHASE TO GROUND)	4.5	7

▶ **NOTES:**

1. DISCONNECTING LINES:

NO CONDUCTOR IS PERMITTED TO BE TAKEN DOWN (INCLUDING THE NEUTRAL) UNLESS A PROPER CLEARANCE IS OBTAINED FOR THE LINE, IN ACCORDANCE WITH STANDARD CLEARANCE PROCEDURES.

2. TEMPORARY LIFTING OR PUSHING CONDUCTORS/CABLES UP WITH INSULATED STICKS, BOOMS OR HOT JACKS:

TEMPORARILY LIFTING IS NOT PERMITTED.

CONDUCTORS/CABLES MAY BE TEMPORARILY RAISED/RELOCATED BY RAISING SUPPORTS AT THE POLES.

3. DURING TRANSPORT OF THE BUILDING:

NO ONE IS PERMITTED ON TOP OF THE BUILDING.

ROAD AND OTHER CONDITIONS CAN CHANGE FROM THE TIME LINE CLEARANCES ARE CHECKED TO THE DAY OF THE MOVE. IT IS REQUIRED THAT A DUKE ENERGY EMPLOYEE ACCOMPANY THE MOVING BUILDING AND RE-CHECK CLEARANCES AS THE BUILDING APPROACHES EACH LINE.

3				
2				
1	3/22/13	GUINN	GUINN	ADCOCK
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

LINE CLEARANCES FOR MOVING STRUCTURE/HOUSE



PGN

DWG.
09.02-08

LOWER LEVEL	UPPER LEVEL				
	COMMUNICATION GUYS, SPAN WIRES AND MESSENGERS, COMMUNICATION CONDUCTORS AND CABLES (FT.)	EFFECTIVELY GROUNDED GUYS, SPAN WIRES, NEUTRAL CONDUCTORS AND LIGHTNING PROTECTION WIRES (FT.)	MULTIPLEX SECONDARY AND ALL SERVICES	OPEN WIRE SECONDARY, 0-750V	OPEN SUPPLY CONDUCTORS OVER 750V TO 22 kV (FT.)
EFFECTIVELY GROUNDED GUYS, SPAN WIRES, NEUTRAL CONDUCTORS AND LIGHTNING PROTECTION WIRES	2	2	2	2	4 SEE NOTE 5
COMMUNICATION GUYS, SPAN WIRES AND MESSENGERS; COMMUNICATION CONDUCTORS AND CABLES	2	2	2	4	5 SEE NOTE 3
MULTIPLEX SECONDARY AND ALL SERVICES	2	2	2	4 SEE NOTE 5	4 SEE NOTE 5
OPEN WIRE SECONDARY, 0-750 V	4	2	2	2	4 SEE NOTE 5
OPEN SUPPLY CONDUCTORS, 750 V TO 22 kV	6 SEE NOTE 3, 6	2	4 SEE NOTE 6	4 SEE NOTE 5	4 SEE NOTE 5

NOTES:

1. NO VERTICAL CLEARANCE IS REQUIRED BETWEEN WIRES ELECTRICALLY INTERCONNECTED AT THE CROSSING.
2. THE ABOVE CLEARANCES ARE FOR ANY LOCATION WHERE THE SUBJECT WIRES CROSS OR COULD BE CLOSEST TOGETHER, REGARDLESS OF SPAN LENGTHS. REFER TO NESC RULE 233.A.1 FOR APPLICABLE WIRE LOADING CONDITIONS TO USE IN DETERMINING WIRE POSITIONS AT CROSSING OR CLOSEST POINT.
3. MAY BE 4 FT. WHERE CROSSING IS MORE THAN 6 FT. HORIZONTALLY FROM A COMMUNICATION STRUCTURE AND VOLTAGE IS LESS THAN 8.7 kV PHASE-TO-GROUND.
4. VOLTAGES ARE PHASE-TO-GROUND FOR EFFECTIVELY GROUNDED WYE AND SINGLE-PHASE SYSTEMS, AND PHASE-TO-PHASE FOR ALL OTHER SYSTEMS.
5. PROGRESS ENERGY PREFERRED CLEARANCES ARE SHOWN.
6. IN GENERAL, CROSSINGS OF LOWER VOLTAGE WIRES ABOVE HIGHER VOLTAGE WIRES IS NOT RECOMMENDED. HIGHER VOLTAGE WIRES SHOULD BE POSITIONED ABOVE LOWER VOLTAGE WIRES WHENEVER POSSIBLE.
7. WHEN CONTEMPLATING UNDERBUILDING BENEATH PROGRESS ENERGY TRANSMISSION LINES, CONTACT THE TRANSMISSION LINE ENGINEERING UNIT.
8. FOR EXCEPTIONS AND REFINEMENTS, REFER TO NATIONAL ELECTRICAL SAFETY CODE RULE 233.
9. THE AREA BETWEEN THE NEUTRAL AND PRIMARY ON THE POLE AND IN THE SPAN IS NOT TO BE VIOLATED BY FOREIGN CONDUCTORS OR CABLES.
10. CROSSINGS SHOULD BE MADE ON A COMMON SUPPORTING STRUCTURE, WHERE PRACTICAL.

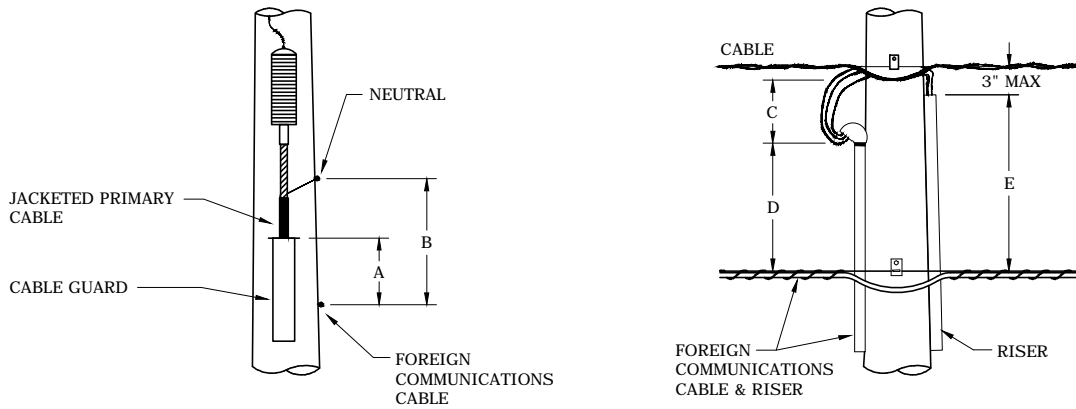
3				
2				
1				
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

MINIMUM FINAL SAG WIRE CROSSING CLEARANCES,
VERTICAL



PGN

DWG.
09.03-01



DIMENSION (LETTER)	PREFERRED MINIMUM
A	* 40 INCHES
B	40 INCHES
C	16 INCHES
D	40 INCHES
E	40 INCHES

* 40 INCH CLEARANCE REQUIRED. ONLY FOR METALLIC CONDUCTOR OR U-GUARD NOT BONDED TO COMMUNICATIONS MESSENGER. SEE OH-UG TRANSITION SECTION FOR NON-METALLIC CONDUIT OR U-GUARD CLEARANCE.

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

SEPARATION AT POLE
UNDERGROUND RISERS



PGN

DWG.
09.03-02

STANDARD PROCEDURES BULLETIN

THIS BULLETIN SETS FORTH THE BASIC REQUIREMENTS CATV COMPANIES MUST MEET WHEN INSTALLING THEIR EQUIPMENT ON PROGRESS ENERGY DISTRIBUTION POLES.

CATV CABLE ATTACHMENTS ON POLES - THE CLEARANCES SHOWN ON DWGS. 09.04-03 AND 09.04-10 ARE MINIMUM CLEARANCES AT THE POLE. IT IS THE RESPONSIBILITY OF THE CATV COMPANY TO ENSURE THEIR CABLE AND EQUIPMENT IS INSTALLED TO THE NESC AND LOCAL REQUIREMENTS.

CATV EQUIPMENT ON PROGRESS ENERGY POLE

I. EXISTING INSTALLATIONS (PRIOR TO 7/20/82)

THESE INSTALLATIONS MAY REMAIN ON COMPANY-OWNED POLES UNDER CONDITIONS STATED IN SECTION 12 OF THE STANDARD PRACTICES AND COMPANY DWG. 09.04-03.

II. NEW INSTALLATION (AFTER 7/20/82)

ALL NEW POINTS OF DELIVERY WILL RECEIVE ELECTRIC SERVICE ON A METERED BASIS WITH THE CATV COMPANY'S POWER SUPPLY AND ASSOCIATED EQUIPMENT BEING INSTALLED ON A POLE OR STRUCTURE OWNED BY THE CATV COMPANY PER DWG. 09.04-10 FOR OVERHEAD SERVICE AND DWGS. 09.04-12 AND 09.04-13 FOR UNDERGROUND SERVICE.

THE ABOVE STATEMENTS ARE REQUIREMENTS OF PROGRESS ENERGY. THE COMPANY IS COMMITTED TO OVERHEAD DESIGNS AND CONFIGURATIONS THAT HAVE LESS IMPACT ON THE PUBLIC ENVIRONMENT. IT ALSO RECOGNIZES THAT LAYOUT, LOCATION AND WORKMANSHIP INFLUENCE THE APPEARANCE OF THE DISTRIBUTION SYSTEM. THE COMPANY ALSO EXPECTS THIS SAME COMMITMENT FROM JOINT-USE COMPANIES.

CATV METERING

CATV POWER SUPPLY LOADS HISTORICALLY START SMALL AND INCREASE AS THE "SYSTEM EXPANDS" AND ADDITIONAL AMPLIFIERS ARE ADDED. TO SIMPLIFY THE METERING OF THESE INSTALLATIONS, THE 15 AMP, 2 WIRE, 120 VOLT, FORM 1S, SINGLE-PHASE, SELF-CONTAINED METER SHOULD BE USED IN THE STANDARD 100 AMP METER BASE FOR ALL INSTALLATIONS.

BUYING OR SELLING JOINT USE POLES

A. BUYING


WHENEVER ANOTHER UTILITY POLE IS TO BE PURCHASED FOR USE ON THE PROGRESS ENERGY DISTRIBUTION SYSTEM, THE OTHER UTILITY'S BIRTH MARK SHALL BE CUT OFF THE OTHER UTILITY'S POLE AND A PROGRESS ENERGY LOCID TAG INSTALLED. THE LETTERS "PEC" SHALL ALSO BE INSTALLED.

B. SELLING PROGRESS ENERGY POLES

WHENEVER ANOTHER UTILITY PURCHASES A PROGRESS ENERGY POLE, THE PROGRESS ENERGY BIRTH MARK SHALL BE CUTOFF THE POLE.

3				
2				
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0	7/11/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

CATV JOINT USE CONSTRUCTION

 Progress Energy
CAR DWG. 09.04-00

GENERAL

1. ANYONE REQUESTING AUTHORIZATION TO INSTALL AND MAINTAIN ATTACHMENTS ON PROGRESS ENERGY POLES SHALL SUBMIT THE APPROPRIATE EXHIBIT (PERMIT) AND/OR WRITTEN NOTIFICATION TO THE JOINT USE UNIT BEFORE ANY FACILITIES CHANGES ARE MADE. A PERMIT IS REQUIRED IN ORDER TO MAINTAIN ACCURATE ATTACHMENT INVENTORIES AND TO OBTAIN TECHNICAL DATA NECESSARY TO REVIEW THE ADEQUACY OF EXISTING DISTRIBUTION AND/OR TRANSMISSION SYSTEM FACILITIES. POLE UTILIZATION REQUIRING PERMITS INCLUDE: INSTALLATION OF NEW ATTACHMENTS, REMOVAL OF EXISTING ATTACHMENTS, UPGRADE TO LARGER CABLE, LASHING OF NEW CABLES TO EXISTING MESSENGERS, REBUILDS OF CABLE SYSTEMS, LARGE SCALE RELOCATIONS FOR ROAD WIDENING, ETC. AND INSTALLATION OF SERVICE DROPS ON LIFT POLES. SERVICE DROPS MAY BE PERMITTED MONTHLY ON ONE "AFTER THE FACT" PERMIT. MODIFICATIONS TO EXISTING FACILITIES WHICH REQUIRE ONLY NOTIFICATION IN WRITING INCLUDE: RELOCATION/REARRANGEMENT OF CABLES ON EXISTING POLES.
2. ALL PERMITTED ATTACHMENTS SHALL BE ON THE SAME SIDE OF THE POLE AS THE SECONDARY OR NEUTRAL, EXCEPT WHEN APPROVED IN WRITING BY PROGRESS ENERGY. PROGRESS ENERGY SHALL MAKE EVERY ATTEMPT TO INSTALL REPLACEMENT POLES ON THE FIELD SIDE OF EXISTING FOREIGN ATTACHMENTS.
3. NO PERMANENT CLIMBING AIDS ARE ALLOWED ON PROGRESS ENERGY POLES.
4. MESSENGER CABLE(S) SHALL BE BONDED WITH APPROPRIATE ELECTRICALLY RATED CONNECTORS TO THE ELECTRIC COMPANY'S VERTICAL GROUND WIRE, WHERE ONE EXISTS. PROTECTIVE MOLDING IF IN PLACE MAY BE CUT TO FACILITATE BONDING; HOWEVER, UNDER NO CIRCUMSTANCE, SHALL THE VERTICAL GROUND VERTICAL GROUND WIRE BE CUT. RUBBER GLOVES THAT ARE RATED FOR THE EXISTING PRIMARY VOLTAGE SHOULD BE USED WHEN MAKING THE BONDING CONNECTION.
5. ALL POWER SUPPLY INSTALLATIONS MUST HAVE APPROPRIATE DISCONNECT DEVICES. NEW STRAND MOUNTED POWER SUPPLIES WILL BE BILLED ON A METERED ACCOUNT BASIS. ALL NEW POWER SUPPLIES AND NEW METERING EQUIPMENT SHALL BE MOUNTED ONLY ON CUSTOMER OWNED FACILITIES.
6. AIR DRYERS, NITROGEN BOTTLES, CABINETS, LOAD COILS, ETC. SHALL NOT BE ATTACHED TO PROGRESS ENERGY POLES.
7. GENERALLY, ATTACHMENTS AND/OR SUPPORTS SHALL NOT EXTEND MORE THAN 4" FROM THE CLOSEST SURFACE OF THE POLE, UNLESS PRIOR APPROVAL IS OBTAINED FROM THE LOCAL PROGRESS ENERGY ENGINEERING DEPARTMENT.
8. CLEARANCES FROM GROUND AND OTHER FACILITIES SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NESC, OR THE REQUIREMENTS SHOWN IN THIS MANUAL, WHICHEVER IS GREATER. EXISTING INSTALLATIONS WHICH WERE IN COMPLIANCE WITH THE NESC AT THE TIME OF THEIR ORIGINAL CONSTRUCTION NEED NOT BE MODIFIED UNLESS SPECIFIED BY LATEST EDITION OF NESC CODE HANDBOOK OR PROGRESS ENERGY SPECIFICATIONS.
9. ATTACHMENT LOCATIONS MAY BE ASSIGNED BY PROGRESS ENERGY AT SPECIFIC HEIGHTS. UNDER NO CIRCUMSTANCES WILL PROPER CLEARANCES FROM PROGRESS ENERGY FACILITIES BE VIOLATED.
10. ALL ATTACHMENTS ON PROGRESS ENERGY POLES SHALL BE TAGGED IN ACCORDANCE WITH THE LATEST PROGRESS ENERGY REQUIREMENTS.
11. REQUESTS FOR EXCEPTIONS TO THIS DESIGN GUIDE SHALL BE REFERRED TO THE JOINT USE UNIT. ANY EXCEPTIONS APPROVED WILL BE DISTRIBUTED TO THE REGIONS FOR UNIFORM APPLICATION ON A SYSTEM-WIDE BASIS.

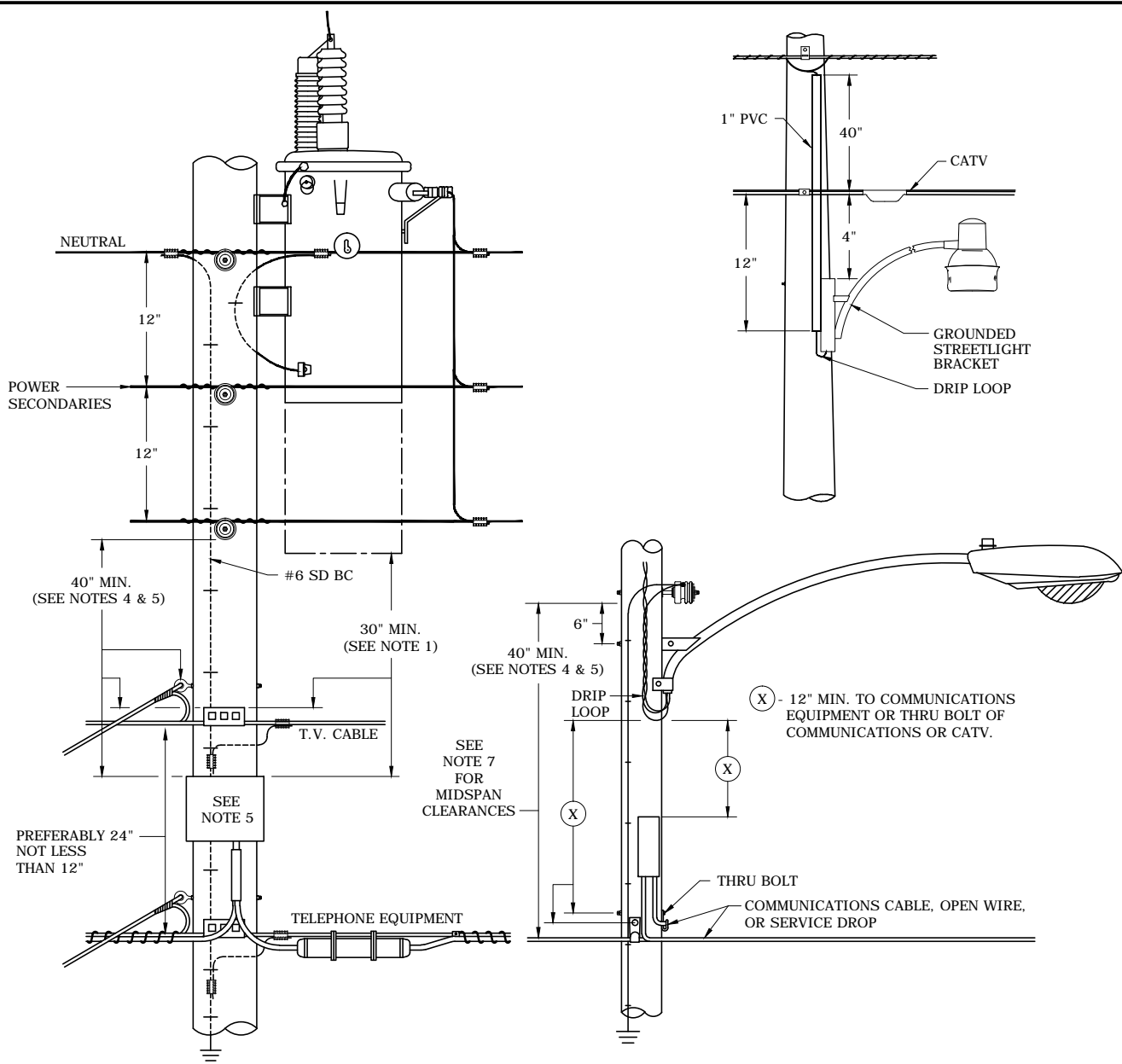
3				
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0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

FOREIGN ATTACHMENTS & CLEARANCES



PGN

DWG.
09.04-01




NOTES:

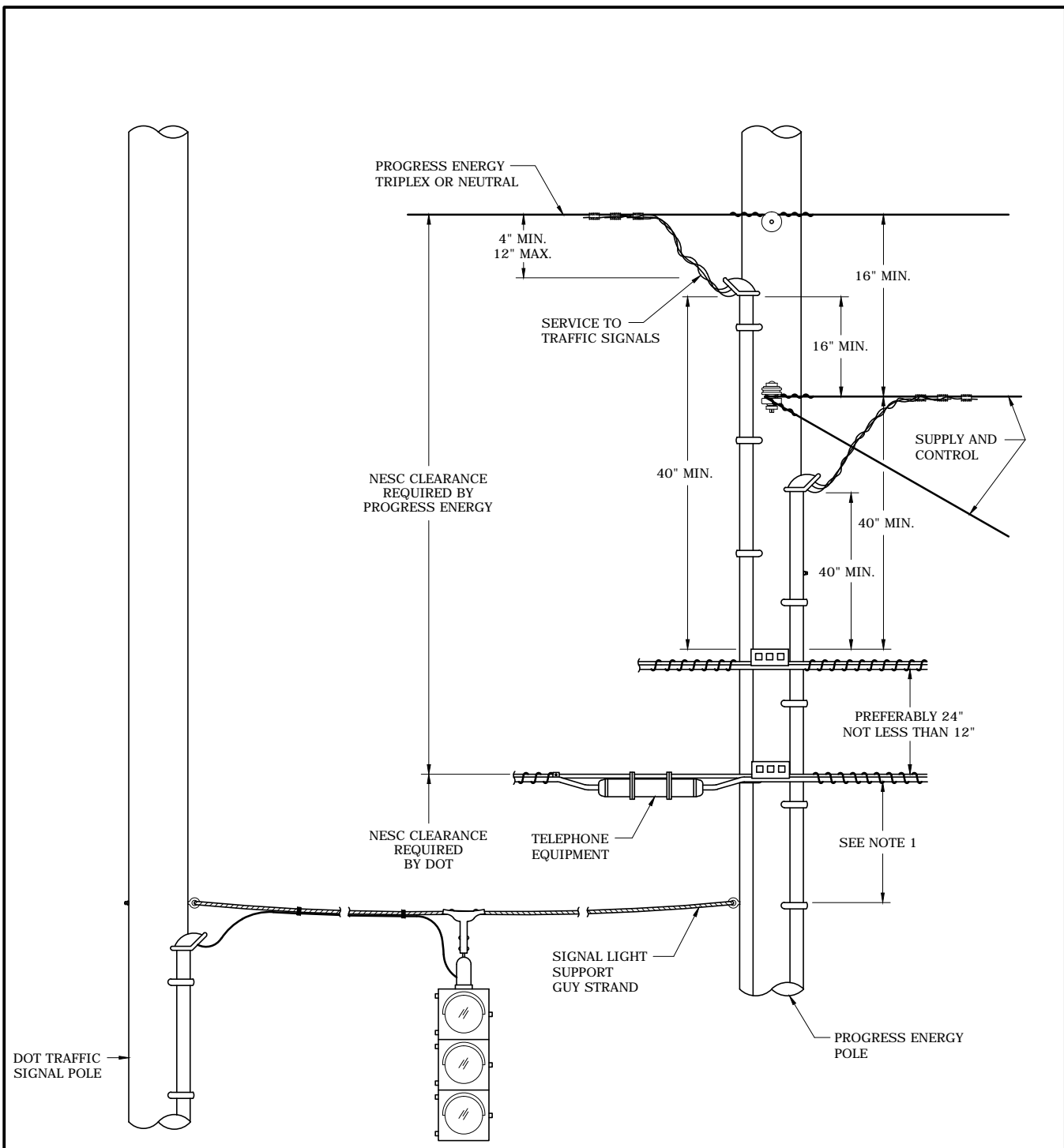
1. THIS DIMENSION OF NOT LESS THAN 30" APPLIES BETWEEN CONDUCTORS AND NON-CURRENT CARRYING PARTS OF EQUIPMENT THAT ARE EFFECTIVELY GROUNDED.
2. WHERE T.V. CABLE DOES NOT EXIST, MINIMUM DIMENSIONS APPLY TO TELEPHONE EQUIPMENT.
3. WHERE POWER AND COMMUNICATION LINES ARE BETWEEN THE SAME POLES, THESE CLEARANCES MAY BE INCREASED IF THE COMMUNICATION CONDUCTOR HAS LESS SAG THAN THE POWER CONDUCTORS SO AS TO PROVIDE A MINIMUM OF 30" SEPARATION IN THE SPAN.
4. A 40" MINIMUM CLEARANCE IS REQUIRED BETWEEN CLOSEST METAL PARTS OF COMMUNICATION AND UNGROUNDED POWER EQUIPMENT.
5. ONLY TELEPHONE TERMINAL BOXES AND AMPLIFIERS PERMITTED ABOVE COMMUNICATION CABLES.
6. THE CLEARANCES ON THIS DRAWING APPLY TO BOTH GROUNDED METALLIC COMMUNICATION CABLES AND DIELECTRIC FIBER OPTIC CABLES.
7. MIDSPAN CLEARANCE BETWEEN COMMUNICATION AND SUPPLY CONDUCTORS (INCLUDING THE NEUTRAL) IS TO BE 30".
8. JOINT USER SHALL BOND MESSENGER WIRES TO PE GROUNDWIRE PER NESC REQUIREMENTS.
9. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.

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0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

JOINT USE CONSTRUCTION



PGN DWG. 09.04-02




FRONT VIEW

NOTES:

- 1. DOT REQUIREMENTS:
FOR EFFECTIVELY BONDED SPAN WIRES, THIS CLEARANCE MAY BE 4" (12" PREFERRED). FOR UNBONDED SPAN WIRES, THE CLEARANCE MUST BE 20".

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0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

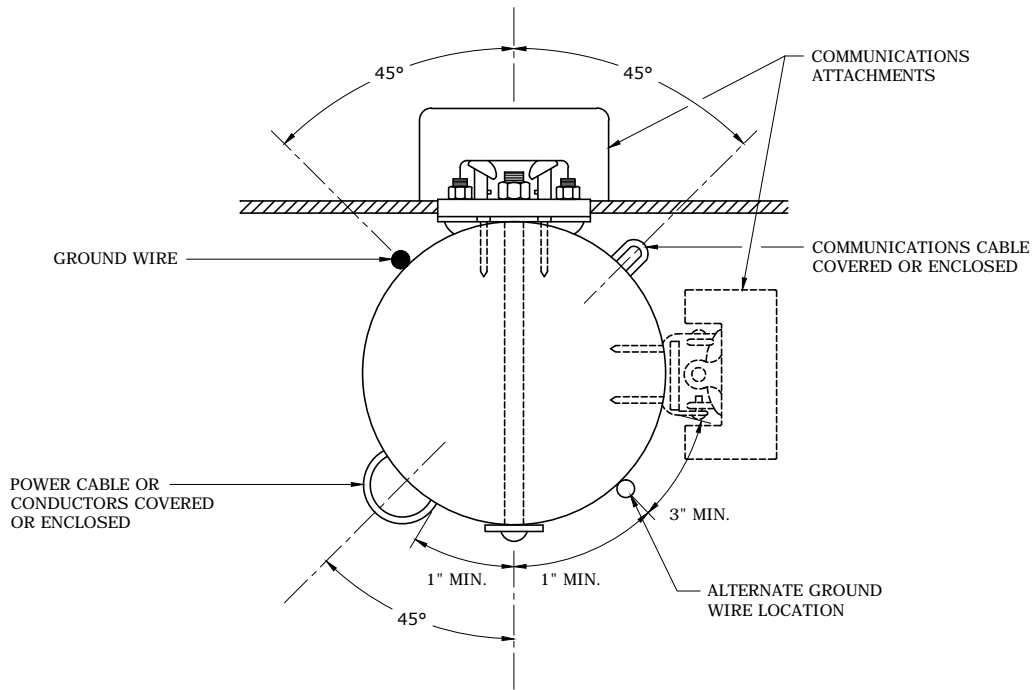
JOINT USE CONSTRUCTION
TRAFFIC SIGNAL SUPPORT AND
POWER OPERATING CIRCUIT CLEARANCES



Duke Energy[®]

PGN DWG. 09.04-03

LOCATION OF VERTICAL RUNS

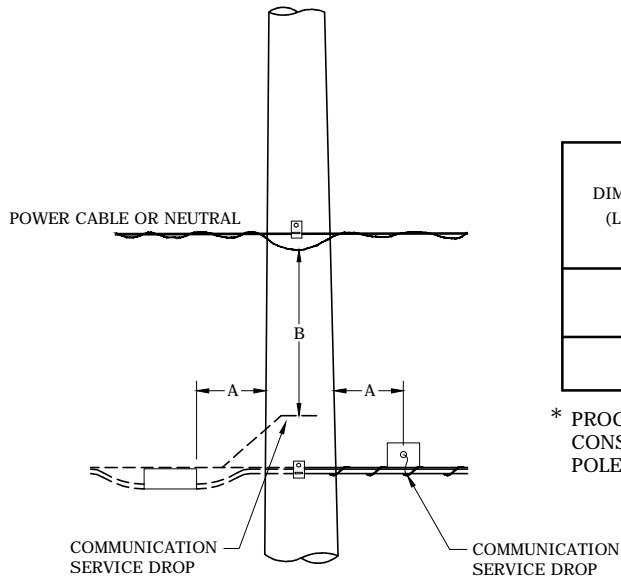


STREET SIDE

NOTES:

1. DO NOT LOCATE GROUNDED EQUIPMENT LESS THAN 1" FROM A BOLT OR STAPLE.
2. LOCATE U-GUARD ON SIDE OF POLE AWAY FROM TRAFFIC.

FOREIGN SERVICE DROPS



DIMENSION (LETTER)	NESC REQUIREMENT MINIMUM	PROGRESS ENERGY PREFERRED MINIMUM	NESC APPLICABLE REFERENCE SECTION
A	ALLOWED ON POLE	* 12 INCHES	239 F2
B	40 INCHES	40 INCHES	239 F2

* PROGRESS ENERGY REQUIREMENT - NOT OPTIONAL ON NEW CONSTRUCTION - THIS CLEARANCE TO FACILITATE FUTURE POLE CHANGE OUT AND CLIMBING SPACE.

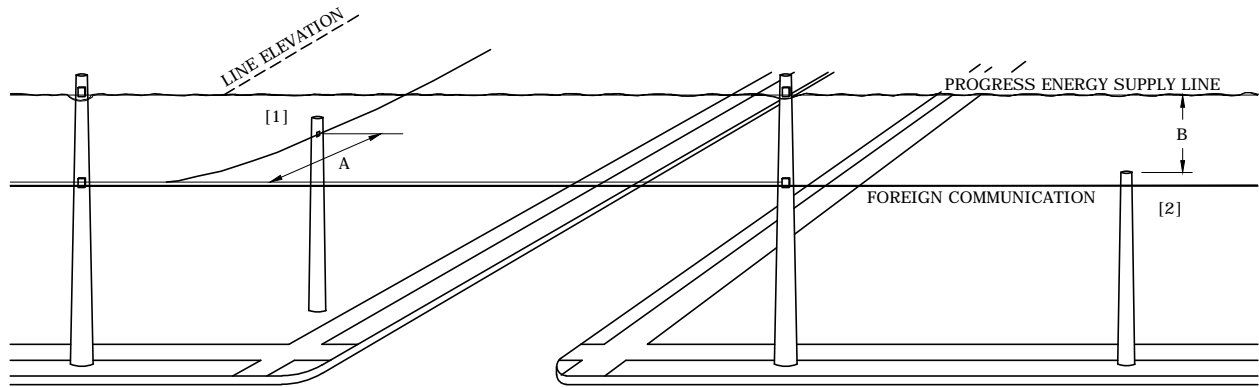
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0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

LOCATION OF VERTICAL RUNS &
FOREIGN SERVICE DROPS



PGN

DWG.
09.04-04



DIMENSION (LETTER)	SITUATION	NEC REQUIRED MINIMUM
A	VERTICAL DISTANCE FROM TOP OF POLE [1] TO LEVEL OF PRIMARY OR OPEN WIRE SECONDARY IS 5 FEET OR LESS	5 FEET
	VERTICAL DISTANCE FROM TOP OF POLE [1] TO LEVEL OF THE PRIMARY OR OPEN WIRE SECONDARY IS MORE THAN 5 FEET	3 FEET
B	POLE [2] FOREIGN OWNED AND PROGRESS ENERGY SUPPLY LINE VOLTAGE OVER 22kV Ø-N	5.5 FEET
	POLE [2] FOREIGN OWNED AND PROGRESS ENERGY SUPPLY LINE VOLTAGE UNDER 22kV Ø-N	4.5 FEET
	POLE [2] OWNED BY PROGRESS ENERGY VOLTAGE < 22kV	2.5 FEET
	POLE [2] FOREIGN OR PROGRESS ENERGY OWNED AND PROGRESS ENERGY SUPPLY LINE CLASSIFIED GUY, NEUTRAL OR SECONDARY CABLE, < 300V TO GROUND	2 FEET

NOTE: CHART BASED ON CLEARANCES DEFINED IN SECTION 234 OF NESC.

3				
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0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

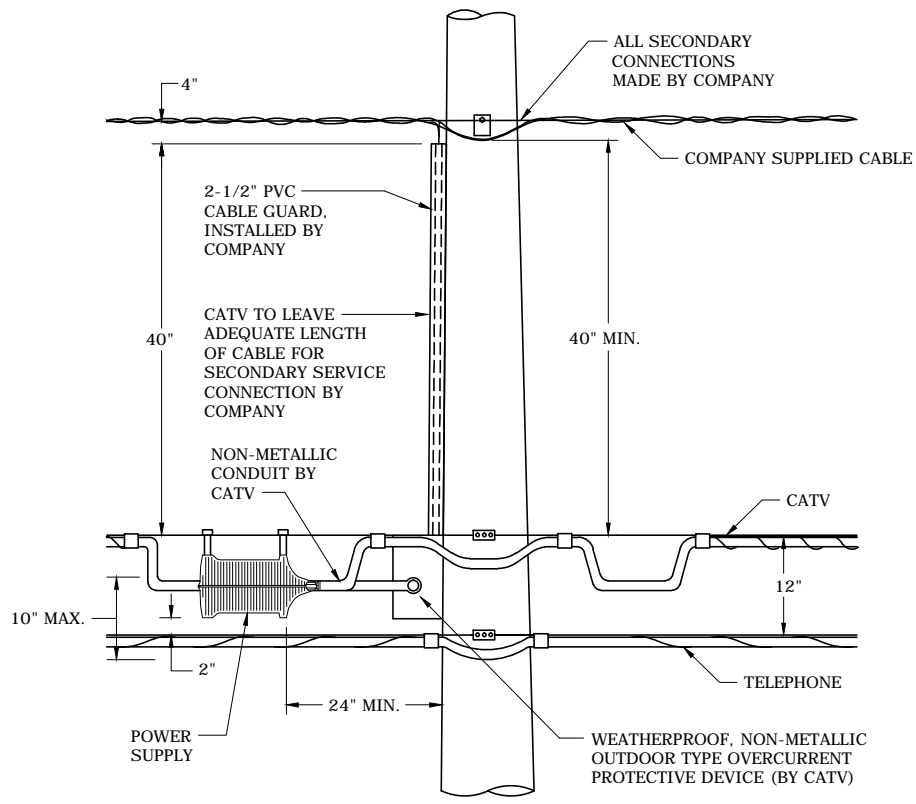
FOREIGN POLE CLEARANCE AT FINAL SAG



PGN

DWG.
09.04-05

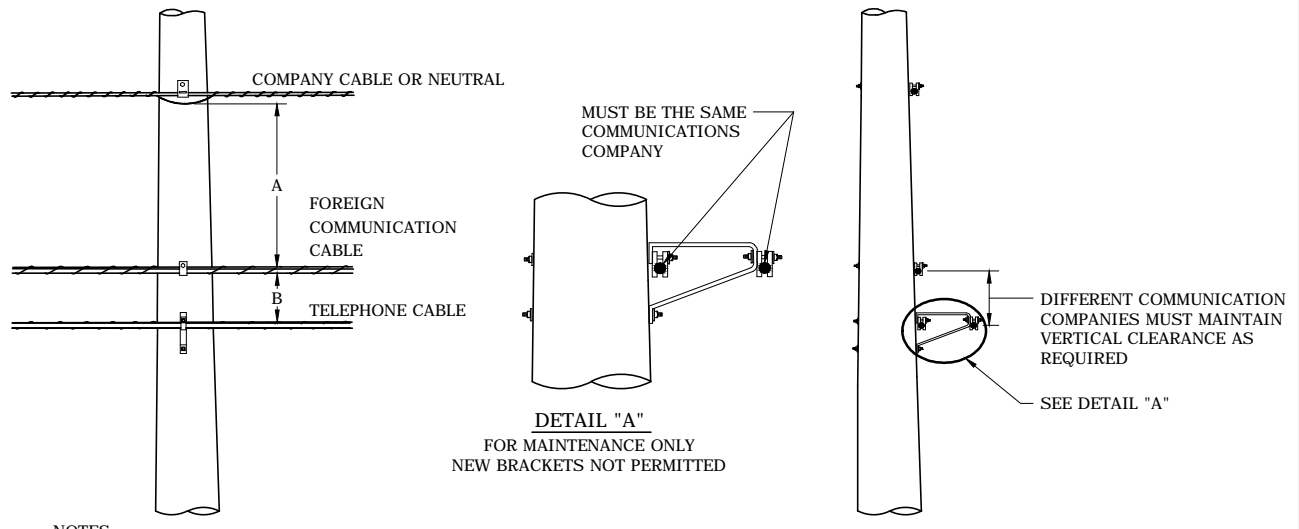
STRAND MOUNTED POWER SUPPLY



MTNC ONLY

DIMENSION (LETTER)	NESC REQUIREMENT MINIMUM	COMPANY PREFERRED MINIMUM	NESC APPLICABLE REFERENCE SECTION
A	40 INCHES	40 INCHES	235 C1
B	3 INCHES	* 12 INCHES	239 F1

* COMPANY REQUIREMENT - NOT OPTIONAL



NOTES:

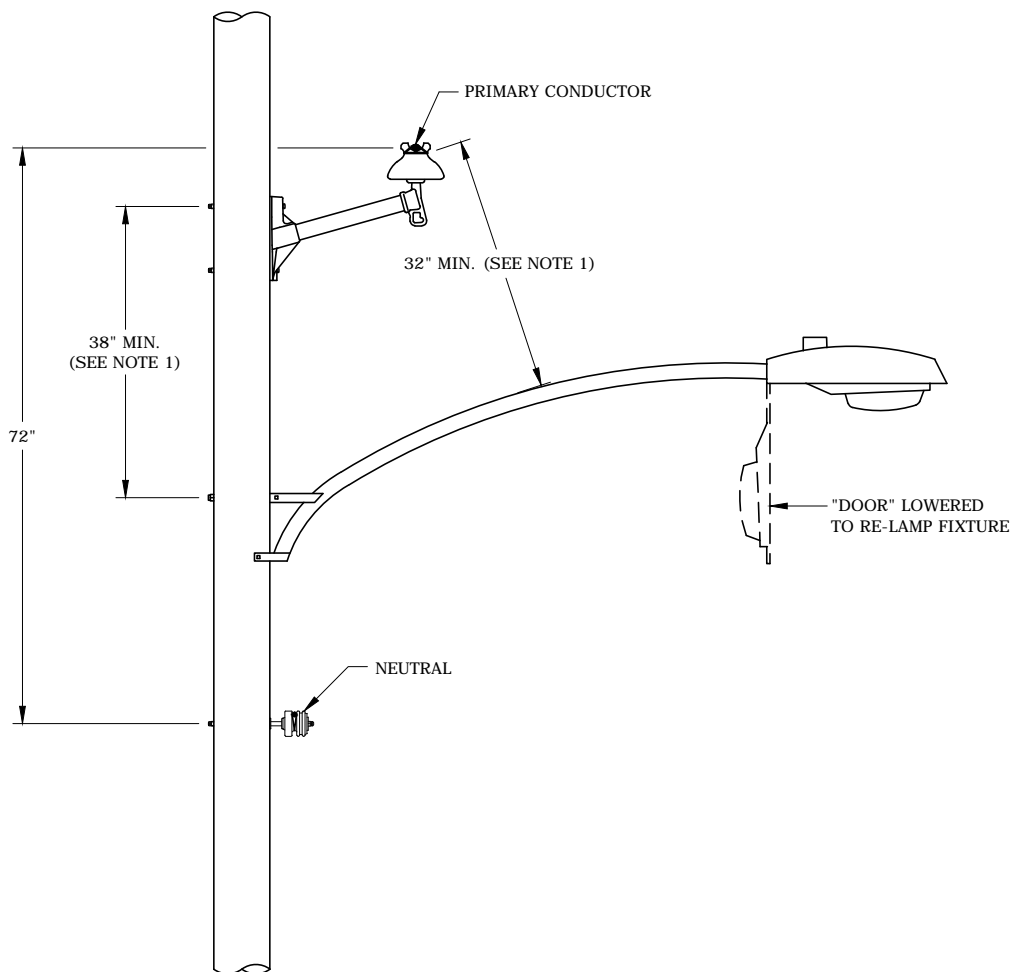
- EXTENSION BRACKET MUST BE MOUNTED ON EXISTING CABLE SIDE ONLY.
- EXTENSION BRACKET MAY BE UTILIZED IN TANGENT SITUATIONS ONLY. NOT APPROVED FOR DEAD-END POLES.
- EXTENSION BRACKET MANUFACTURER'S SPECIFICATIONS MUST RECEIVE COMPANY APPROVAL PRIOR TO UTILIZATION.

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0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

**STRAND MOUNTED POWER SUPPLY &
FOREIGN COMMUNICATION CABLE
EXTENSION BRACKET**

PGN DWG.
09.04-06

POLE TOP FRAMING
AS REQUIRED




LIGHTING UNIT ABOVE NEUTRAL

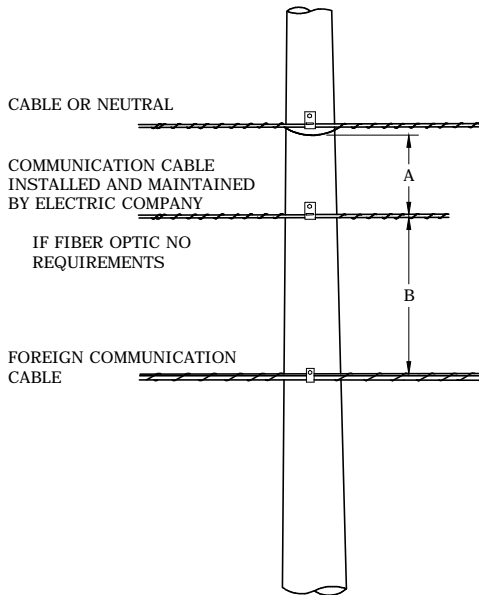
NOTES:

1. THIS DRAWING SHOWS MINIMUM CLEARANCE, PRIMARY CONDUCTOR TO BRACKET, FOR ONE TYPE OF BRACKET. THIS CLEARANCE SHALL BE MAINTAINED FOR ALL STYLES OF BRACKETS, OR ANY PART OF THE BRACKET. SEE OTHER DRAWINGS AND/OR ENGINEER'S INSTRUCTIONS FOR ACTUAL MOUNTING HEIGHTS.
2. FOR CLEARANCES - LIGHTING UNITS BELOW SECONDARY AND ABOVE COMMUNICATION CIRCUITS OR EQUIPMENT, SEE DWG. 09.04-02.
3. SEE DWG. 09.04-02 IF TELECOM IS ATTACHED.

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0	7/11/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

CLEARANCES - LIGHTING UNITS
TO POWER CIRCUITS OR EQUIPMENT


CAR DWG. 09.04-07



DIMENSION (LETTER)	NESC REQUIREMENT MINIMUM
A	* 16 INCHES
B	40 INCHES

* NO CLEARANCE IS SPECIFIED BETWEEN NEUTRAL CONDUCTORS AND INSULATED COMMUNICATION CABLES LOCATED IN THE SUPPLY SPACE AND SUPPORTED BY AN EFFECTIVELY GROUNDED MESSENGER.

NO CLEARANCE IS SPECIFIED BETWEEN SUPPLY CONDUCTORS AND FIBER-OPTIC SUPPLY CABLES THAT ARE COMPLETELY DIELECTRIC (INCLUDING THE MESSENGER).

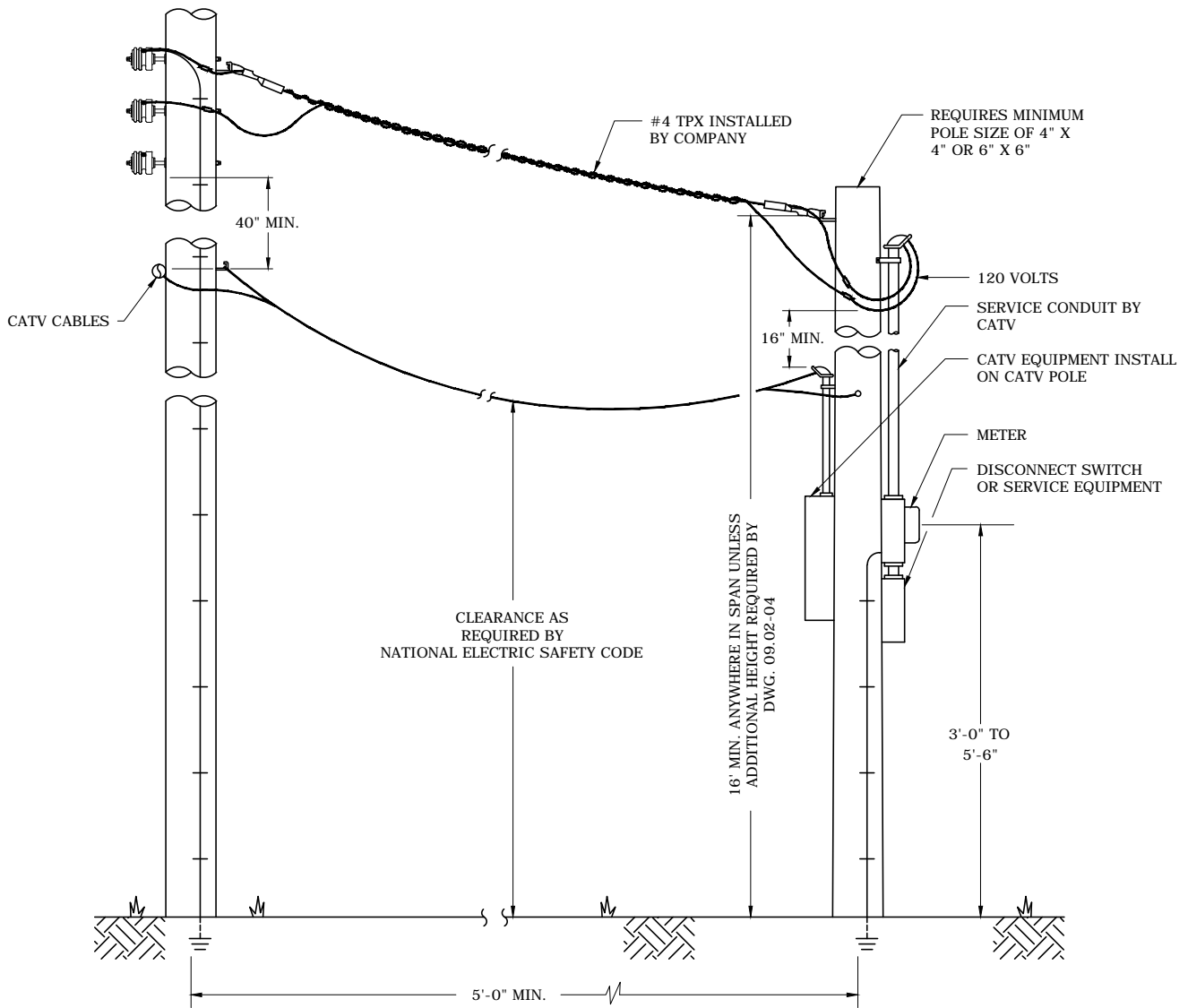
3				
2				
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0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

COMMUNICATION CABLE INSTALLED AND
MAINTAINED BY ELECTRIC COMPANY



PGN

DWG.
09.04-09



NOTES:

1. SEE DWG. 09.04-13 FOR PREFERRED INSTALLATION.
2. COMPANY PROVIDE AND INSTALL:
 - A. SERVICE AND CONNECTION OF WEATHERHEAD.
 - B. 15 AMP, 120V, FORM 1S METER PER DWG. 11.02-11.
3. CATV COMPANY INSTALL:
 - A. METER SOCKET, 100 AMP.
4. CATV COMPANY PROVIDE AND INSTALL:
 - A. METER POLE, 120 VOLT RISER AND WEATHERHEAD.
 - B. SERVICE EQUIPMENT BEYOND METER (AS REQUIRED).
 - C. SERVICE EQUIPMENT GROUNDS PER APPLICABLE CODES.
5. ALL CATV EQUIPMENT AND ATTACHMENTS MUST BE EFFECTIVELY GROUNDED.
6. CATV STRUCTURE IS NOT ALLOWED UNDER COMPANY LINES.

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0	7/11/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

CATV INSTALLATION - 120V OVERHEAD SERVICE



CAR DWG. 09.04-10

METER SOCKET MOUNTED INSIDE
CATV PEDESTAL

METER READ THRU
VIEWING WINDOW

3" MIN. EDGE ALL AROUND

3'-0" TO
5'-6"

DUAL LOCKABLE
ACCESS

3" MIN. CONCRETE PAD

2'-0" MIN.
EMBEDMENT

1'-9" MIN.
EMBEDMENT

3/4" MIN. GALVANIZED
CHANNEL STRUT

2" SCH 40 PVC
SERVICE RISER

5'-0" MIN. TO POLE

NOTES:

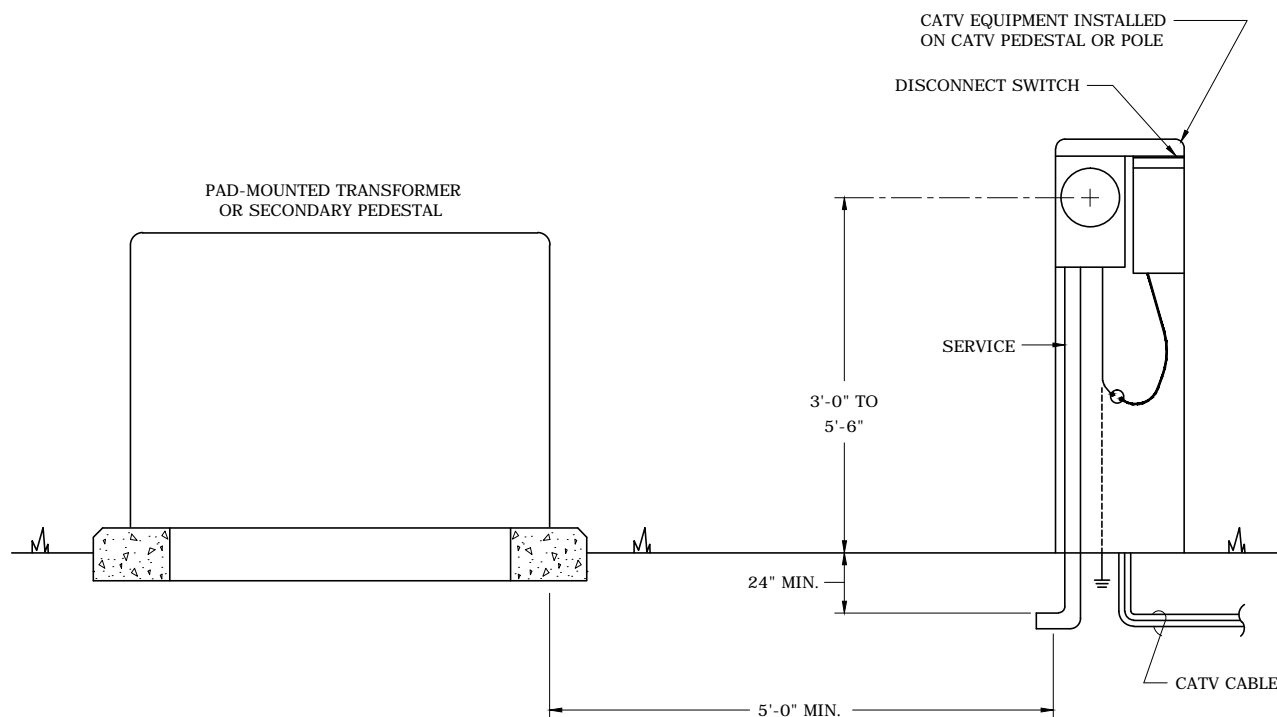
1. COMPANY TO PROVIDE AND INSTALL:
 - A. SERVICE CONNECTION IF AT A POLE (SEE COASTAL SPECIFICATIONS SECTION 12 AND DWG. 09.04-13.
 - B. 120 VOLT METER
2. CATV COMPANY PROVIDE AND INSTALL:
 - A. METER SOCKET, 100 AMP
 - B. CATV/METER PEDESTAL WITH CATV LOCK IN PLACE.
 - C. 120 VOLT SERVICE RISER (2" SCH 40 PVC IF SERVICE PROVIDED BY COMPANY).
 - D. SERVICE EQUIPMENT BEYOND METER (IF REQUIRED)
 - E. SERVICE EQUIPMENT GROUNDS PER APPLICABLE CODES.
3. ALL CATV EQUIPMENT AND ATTACHMENTS MUST BE EFFECTIVELY GROUNDED.
4. PEDESTAL SHOULD BE LABELED TO IDENTIFY IT AS PROPERTY OF CABLE VISION.
5. PEDESTAL SHOULD BE ORIENTED TO MINIMIZE THE METER READERS' EXPOSURE TO TRAFFIC.
6. PEDESTAL SHOULD ACCOMMODATE DUAL LOCKABLE ACCESS. COMPANY WILL INSTALL A METER PAD LOCK ON ONE SIDE AFTER SERVICE IS INSTALLED.
7. BONDING SHOULD BE PROVIDED BETWEEN ALL ABOVE GROUND METALLIC POWER AND COMMUNICATIONS APPARATUS (PEDESTALS, TERMINALS, APPARATUS CASES, TRANSFORMER CASES, ETC.) THAT ARE SEPARATED BY A DISTANCE OF 6' OR LESS.

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0	7/11/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

POWER GUARD OR SIMILAR
CATV PEDESTAL



CAR DWG.
09.04-11



NOTES:

1. COMPANY PROVIDE AND INSTALL:

- A. UNDERGROUND SERVICE FROM TRANSFORMER OR PEDESTAL TO METER SOCKET.
- B. METER

EXCEPTION:

THE NORMAL POD IS AT THE SOURCE LUGS OF CATV METER SOCKET. THEREFORE, COMPANY WILL PROVIDE THE SERVICE. HOWEVER, IF CATV COMPANY DESIRES TO INSTALL A SERVICE TO THE EDGE OF THE PAD-MOUNT OR SECONDARY PEDESTAL, AND LEAVE ENOUGH CABLE TO MAKE THE CONNECTION INSIDE THE PAD-MOUNT OR PEDESTAL, WE WILL RING IT OUT AND MAKE THE CONNECTION. CATV CABLES SHALL BE TAGGED IN THE METER BASE AND AT THE SOURCE END AS CATV OWNED BY THE CATV COMPANY. THE TAGS SHALL REMAIN WITH THE CABLE WHEN CONNECTED. IT WILL ALSO GENERALLY BE A DIFFERENT CABLE THAN WE NORMALLY SO IT SHOULD BE EASY TO IDENTIFY.

2. CATV COMPANY PROVIDE AND INSTALL:

- A. METER POLE OR PEDESTAL
- B. SERVICE EQUIPMENT BEYOND METER (IF REQUIRED)
- C. SERVICE EQUIPMENT GROUND
- D. METER SOCKET

3. ALL EQUIPMENT AND ATTACHMENTS MUST BE EFFECTIVELY GROUNDED.

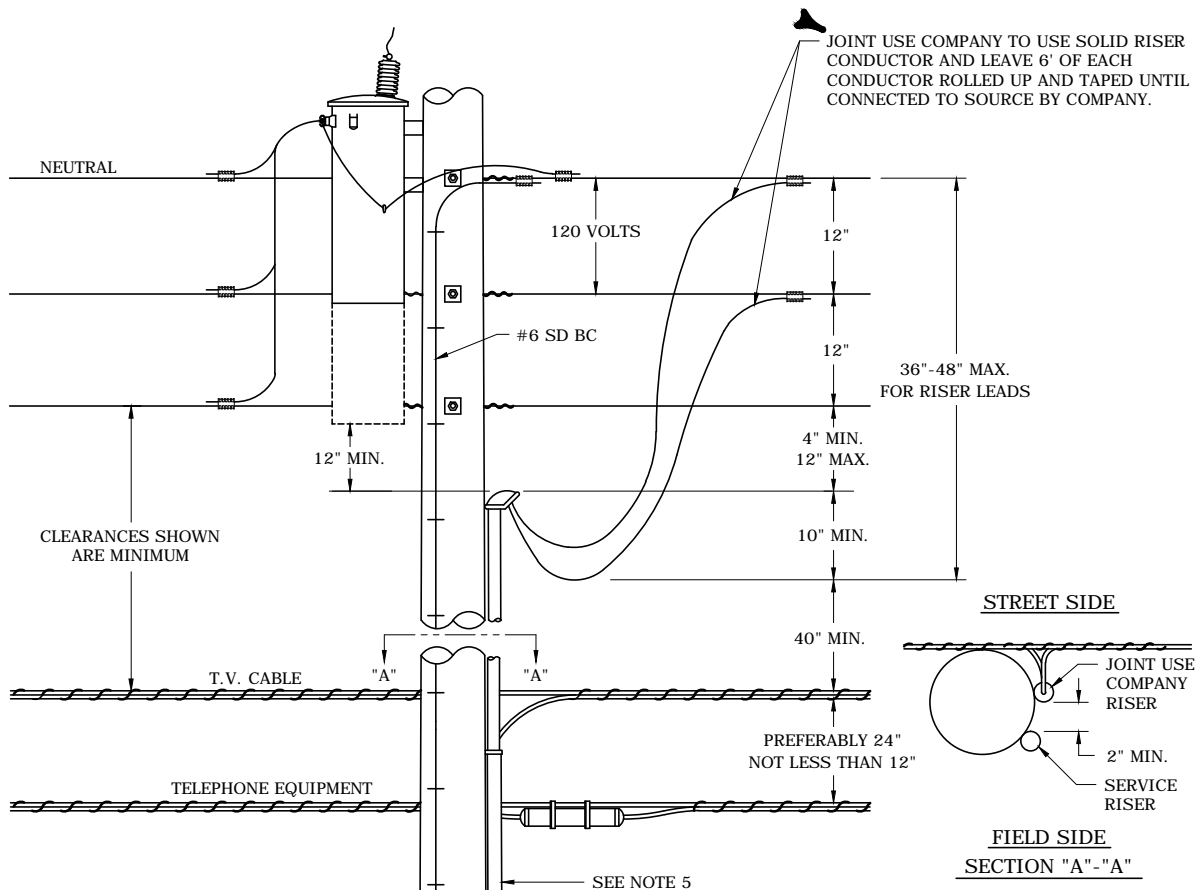
4. BONDING SHOULD BE PROVIDED BETWEEN ALL ABOVE GROUND METALLIC POWER AND COMMUNICATIONS APPARATUS (PEDESTALS, TERMINALS, APPARATUS CASES, TRANSFORMER CASES, ETC.) THAT ARE SEPARATED BY A DISTANCE OF 6' OR LESS.

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0	7/11/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

**UNDERGROUND SERVICE-CATV
(PAD-MOUNTED TRANSFORMER OR
SECONDARY PEDESTAL)**



CAR DWG.
09.04-12



JOINT USE COMPANY TO USE SOLID RISER CONDUCTOR AND LEAVE 6" OF EACH CONDUCTOR ROLLED UP AND TAPED UNTIL CONNECTED TO SOURCE BY COMPANY.

CLEARANCES SHOWN ARE MINIMUM

STREET SIDE

FIELD SIDE SECTION "A"- "A"

NOTES:

1. COMPANY PROVIDE AND INSTALL:
 - A. SERVICE CONNECTION
 - B. 15 AMP, 120 VOLT METER
2. JOINT USE COMPANY COMPANY PROVIDE AND INSTALL:
 - A. METER POLE OR PEDESTAL
 - B. 120 VOLT SERVICE RISER, U-GUARD
 - C. SERVICE EQUIPMENT BEYOND METER (IF REQUIRED)
 - D. SERVICE EQUIPMENT GROUNDS PER APPLICABLE CODES.
 - E. METER SOCKET, 100 AMP
3. ALL JOINT USE COMPANY WIRING MUST BE IN STEEL U-GUARD, METALLIC CONDUIT OR SCHEDULE 40 PVC CONDUIT, AND SECURELY FASTENED TO POLE. WHEN CONDUIT IS USED, INSTALL ONE STRAP AT EACH JOINT AND AT 5'-0" INTERVALS.
4. ALL JOINT USE COMPANY EQUIPMENT AND ATTACHMENTS MUST BE EFFECTIVELY GROUNDED.
5. BONDING SHOULD BE PROVIDED BETWEEN ALL ABOVE GROUND METALLIC POWER AND COMMUNICATIONS APPARATUS (PEDESTALS, TERMINALS, APPARATUS CASES, TRANSFORMER CASES, ETC. THAT ARE SEPARATED BY A DISTANCE OF 6'-0" OR LESS.
6. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.

JOINT USE COMPANY EQUIPMENT INSTALLED ON JOINT USE COMPANY PEDESTAL OR POLE

DISCONNECT SWITCH

METER 120 VOLTS, 15 AMPS, INSTALLED BY COMPANY


SERVICE CONDUIT

3'-0" TO 5'-6"

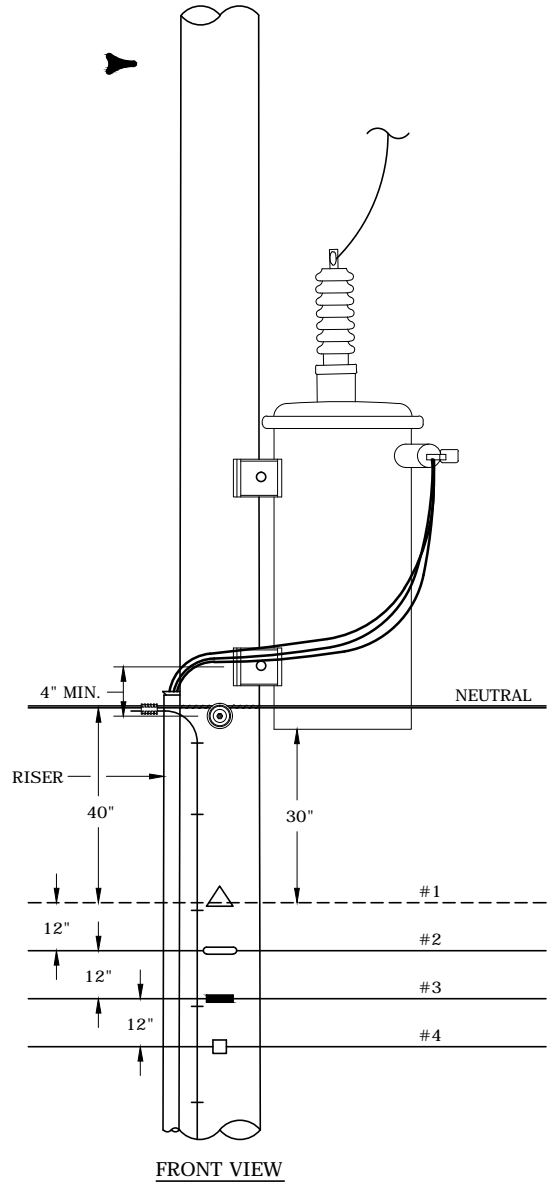
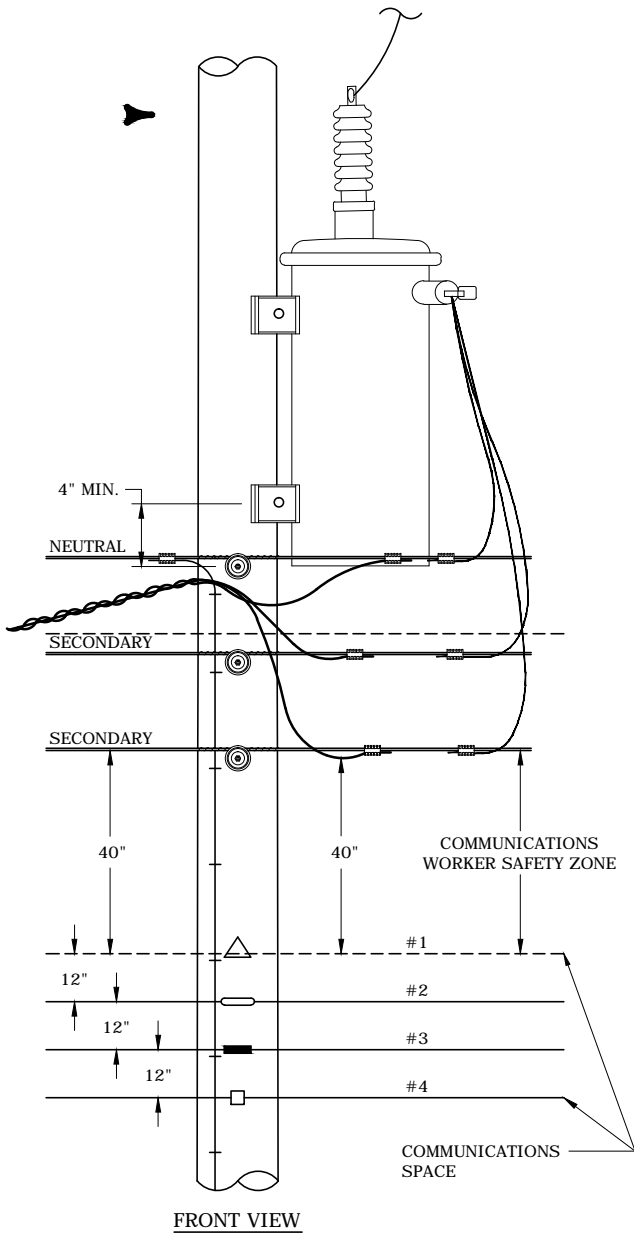
JOINT USE COMPANY CABLES

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

**JOINT USE COMPANY INSTALLATION
120 VOLT UNDERGROUND SERVICE
(PREFERRED INSTALLATION)**



CAR DWG. 09.04-13



ADDITIONAL MIN. CLEARANCES AT THE POLE	
LIGHT BRACKET	12"
SPAN GUY	12"
DOWN GUY	12"

MINIMUM CLEARANCES MIDSPAN	
PRIMARY	30"
NEUTRAL	30"
SECONDARY	30"
SERVICE DROP	30"
SPAN GUY	12"

NOTES:

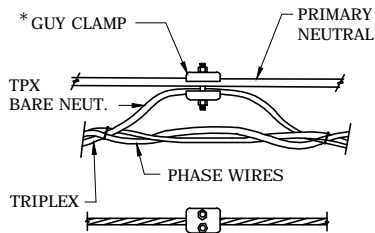
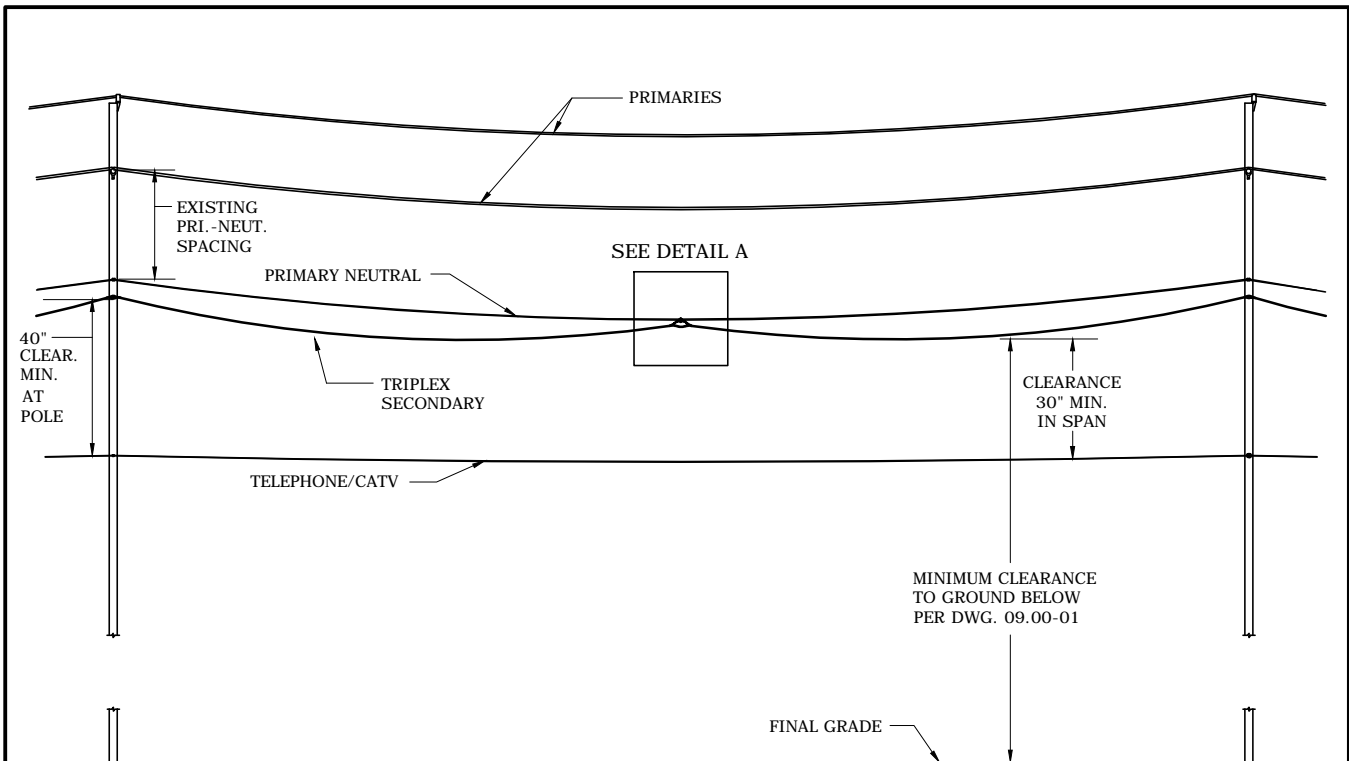
- 1. DUKE ENERGY FIBER OPTIC CABLE LOCATED AT THE BOTTOM OF THE SUPPLY SPACE (i.e. LESS THAN 40" FROM POWER) MUST HAVE A MINIMUM CLEARANCE OF 40" BETWEEN THE FIBER OPTIC CABLE AND THE TOP COMMUNICATIONS CABLE TO ENSURE THE 40" COMMUNICATION WORKER SAFETY ZONE IS NOT VIOLATED.

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2				
1	11/30/12	GUINN	GUINN	ADCOCK
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

JOINT USE CLEARANCE REQUIREMENTS



CAR DWG. 09.04-14



DETAIL "A"
(SEE CHART FOR SIZE & CN)

PRIMARY NEUT. SIZE	GUY CLAMP CN
4/0 AL	10045714
#4 - #1/0 AL	11159001

NOTES:

1. THE PREFERRED METHOD IS TO INSTALL THE TRIPLEX BENEATH THE PRIMARY NEUTRAL, CLEAR-SPANNING FROM POLE TO POLE.
2. THE TRIPLEX AT ITS LOWEST POINT MUST BE AT LEAST 30" ABOVE THE TELEPHONE/CATV LINES BELOW. IF THERE ARE NO TELEPHONE/CATV LINES, THE TRIPLEX AT ITS LOWEST POINT MUST HAVE THE APPROPRIATE MINIMUM GROUND CLEARANCE GIVEN BY DWG. 09.00-01.
3. IF THE SAG OF THE TRIPLEX ENCROACHES THE MINIMUM CLEARANCE TO THE TELEPHONE/CATV LINES OR GROUND BELOW, THE TRIPLEX SHOULD BE ATTACHED TO THE PRIMARY NEUTRAL, AS SHOWN IN DETAIL A ABOVE, AS OFTEN AS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM CLEARANCES.
4. ONLY #2 AND #4 TRIPLEX (OR DUPLEX) MAY BE ATTACHED TO THE PRIMARY NEUTRAL FOR ITS SUPPORT. THE LARGER SIZE TRIPLEXES MUST BE CLEAR-SPANNED BETWEEN POLES AND NOT SUPPORTED BY THE PRIMARY NEUTRAL.

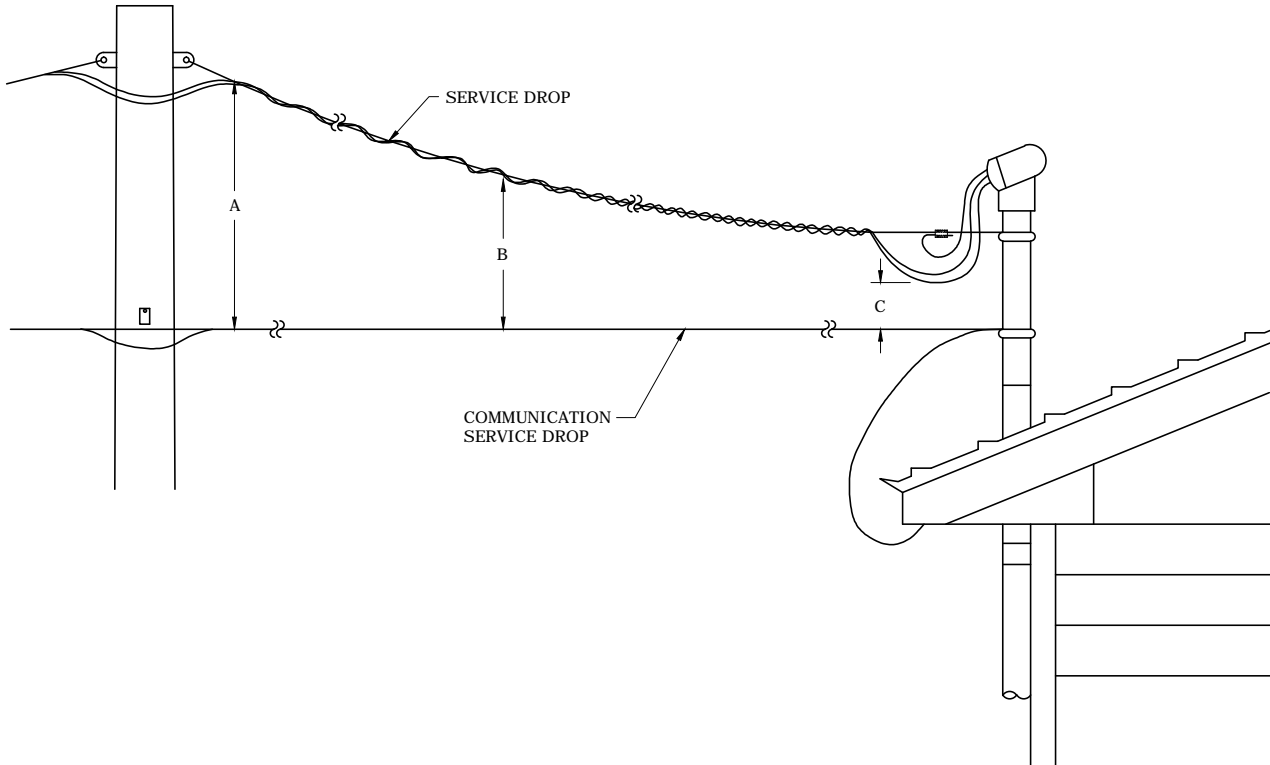
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0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

JOINT USE CLEARANCE REQUIREMENTS



CAR

DWG.
09.04-15



DIMENSION (LETTER)	* NESC MINIMUM REQUIREMENT	PROGRESS ENERGY PREFERRED MINIMUM REQUIREMENT	NESC APPLICABLE REFERENCE SECTION
A	40"	40"	235-5
B	12"	12"	235 C1 EXCEPTION 3
C	12"	12"	235 C1 EXCEPTION 3

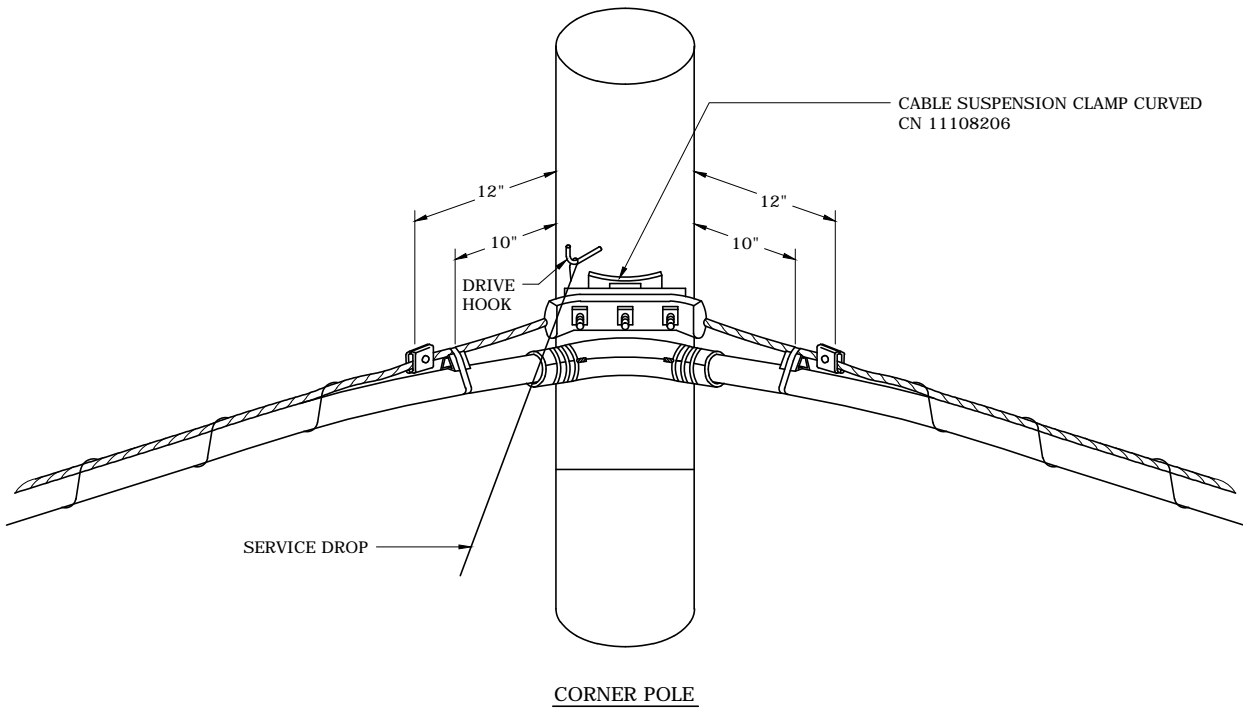
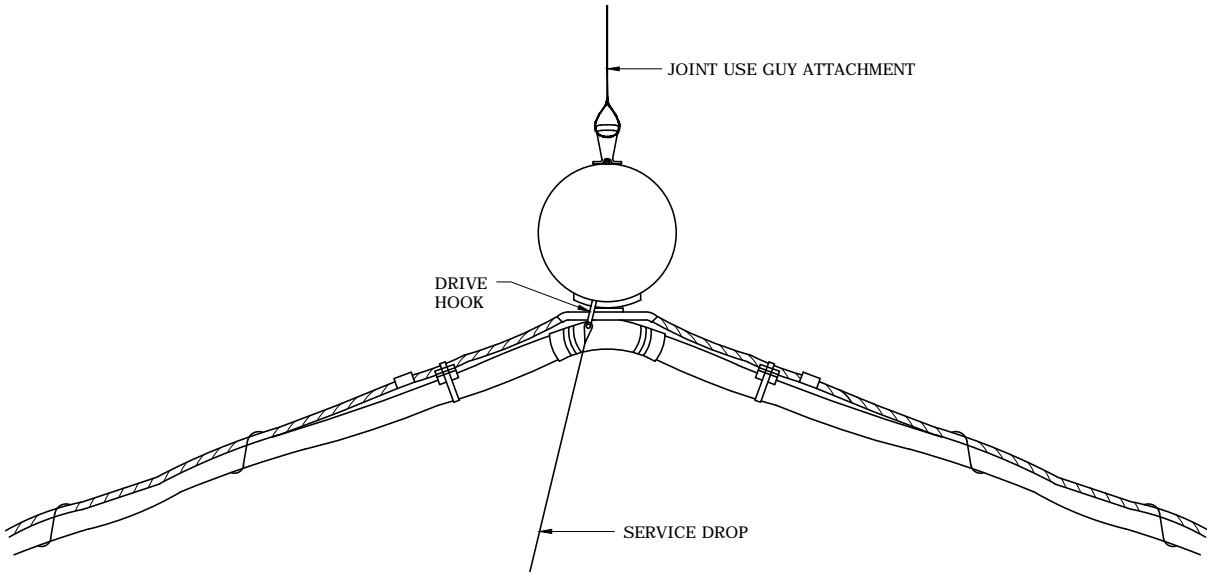
3				
2				
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0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

SERVICE DROP CLEARANCE
TO COMMUNICATION CABLES



PGN

DWG.
09.04-16



NOTES:

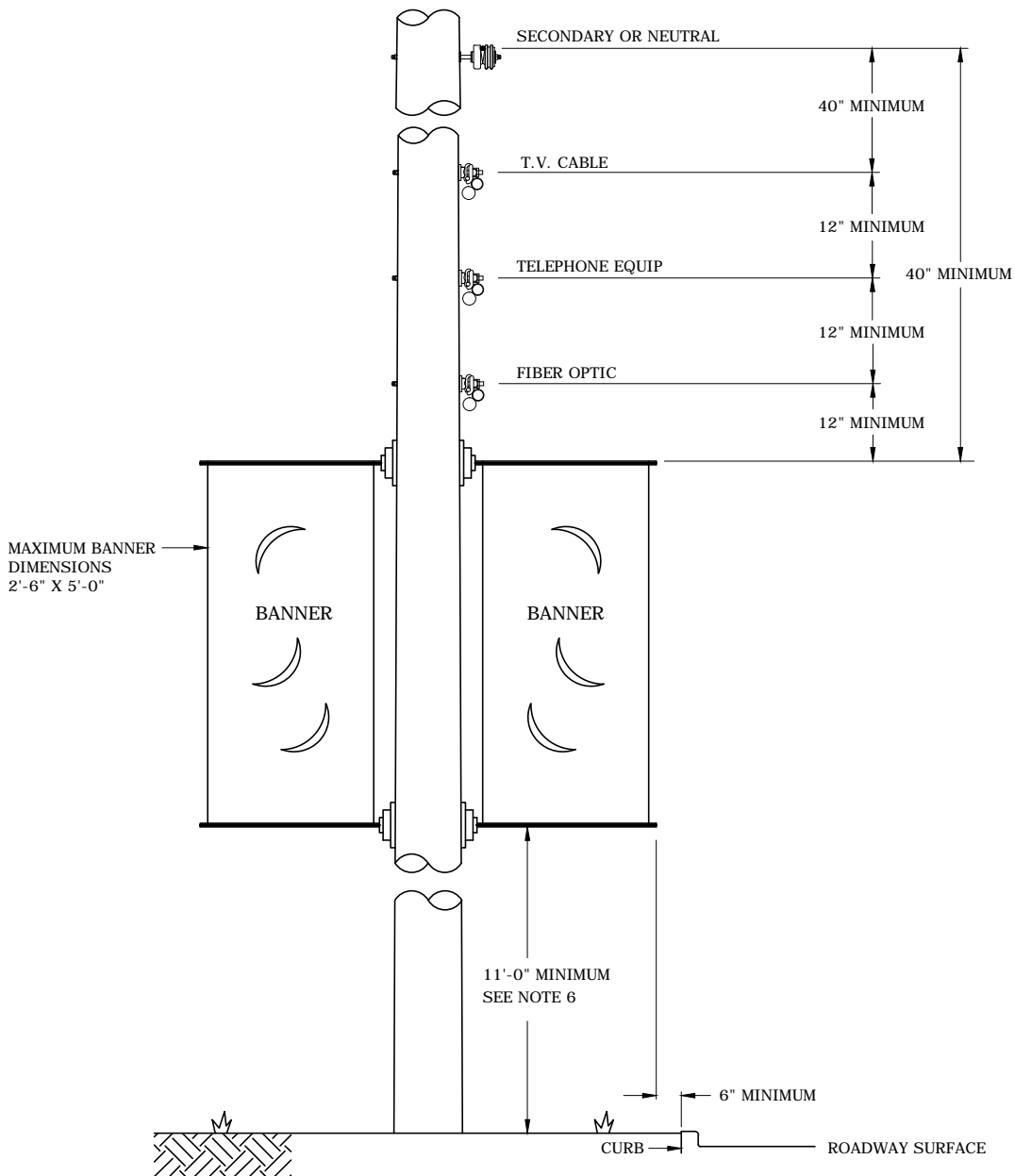
1. DIMENSIONS AND HARDWARE MAY VARY BETWEEN COMPANIES.
2. SPACING OF CONNECTIONS, CLAMPS, AND STRAPS SHOULD BE AS CLOSE TO EXISTING AS FIELD CONDITIONS ALLOW.
3. SECURE LASHING WIRE PRIOR TO REPOSITIONING CLAMPS.
4. MAINTAIN EXISTING SAG ON CABLE AND DROPS.
5. BOTTOM FLANGE ON 3-BOLT CLAMP MUST BE TOWARDS POLE.
6. SEE DWG. 01.02-12 FOR DROP ATTACHMENTS.

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

ANGLE POLE ATTACHMENTS



CAR DWG. 09.04-20



NOTES:

1. POLE MUST BE INSPECTED FOR STRUCTURAL INTEGRITY PRIOR TO BANNER ATTACHMENT.
2. BANNERS SHOULD NOT BE ATTACHED TO POLES WITH YELLOW OR WHITE INSPECTION TAGS.
3. BANNER AGREEMENT MUST BE COMPLETED PRIOR TO BANNER ATTACHMENT TO COMPANY DISTRIBUTION POLES.
4. BANNERS ATTACHED TO POLES SHOULD BE PERPENDICULAR TO POWER LINES.
5. SEE SECTION 09 FOR ADDITIONAL CLEARANCES.
6. BANNERS THAT EXTEND OVER ROADWAY SHOULD HAVE 18'-0" VERTICAL CLEARANCE FROM ROAD SURFACE.
7. THE BANNERS MUST HAVE HALF CIRCLE AIR POCKETS CUT INTO THEM.
8. COMPANY SHALL NOT BE RESPONSIBLE FOR REMOVING AND/OR REBANDING TOWN'S BANNERS WHENEVER THE POLES ARE REPLACED.
9. CUSTOMER AGREES TO INDEMNIFY, DEFEND, AND SAVE HARMLESS COMPANY FROM ALL CLAIMS, LOSSES, INJURIES, DAMAGED AND OTHER DEMANDS MADE AGAINST IT AND ALL COSTS AND EXPENSES INCURRED BY COMPANY ARISING OUT OF THIS AGREEMENT UNLESS SAME SHALL HAVE RESULTED FROM SOLE NEGLIGENCE OF COMPANY.
10. SEE DWGS. 30.01-04 AND 30.01-05 FOR BANNER ATTACHMENTS TO STREET LIGHT POLES.

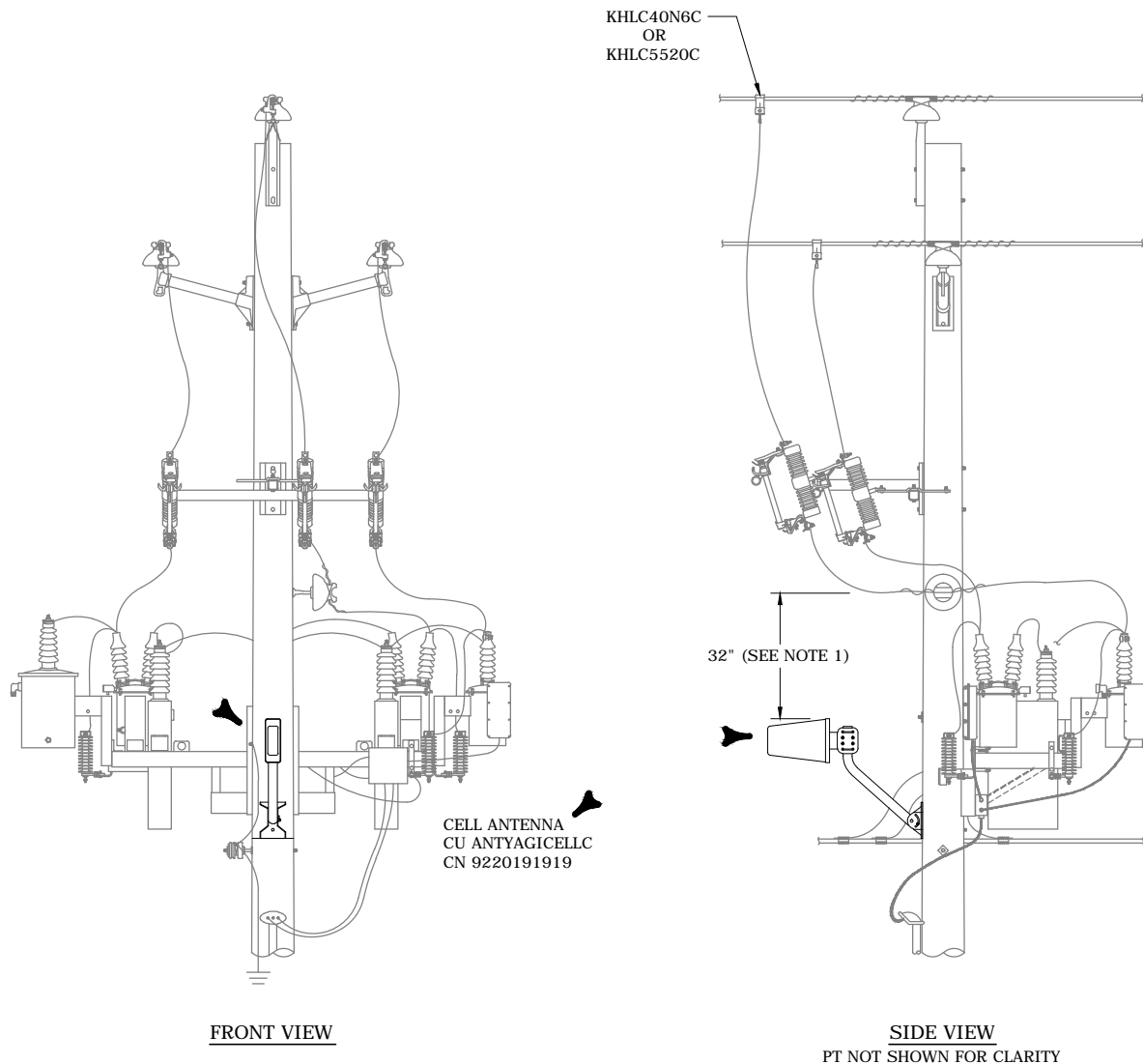
3				
2				
1				
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

**BANNER INSTALLATION
ON DISTRIBUTION POLES**



CAR

DWG.
09.04-25



THIS IS A TYPICAL CELLULAR ANTENNA INSTALLATION DRAWING. THE INSTALLATION COULD BE FOR SINGLE-PHASE LINE REGULATORS, MV SENSORS, CAPACITOR BANKS OR THREE-PHASE RECLOSERS

NOTES:

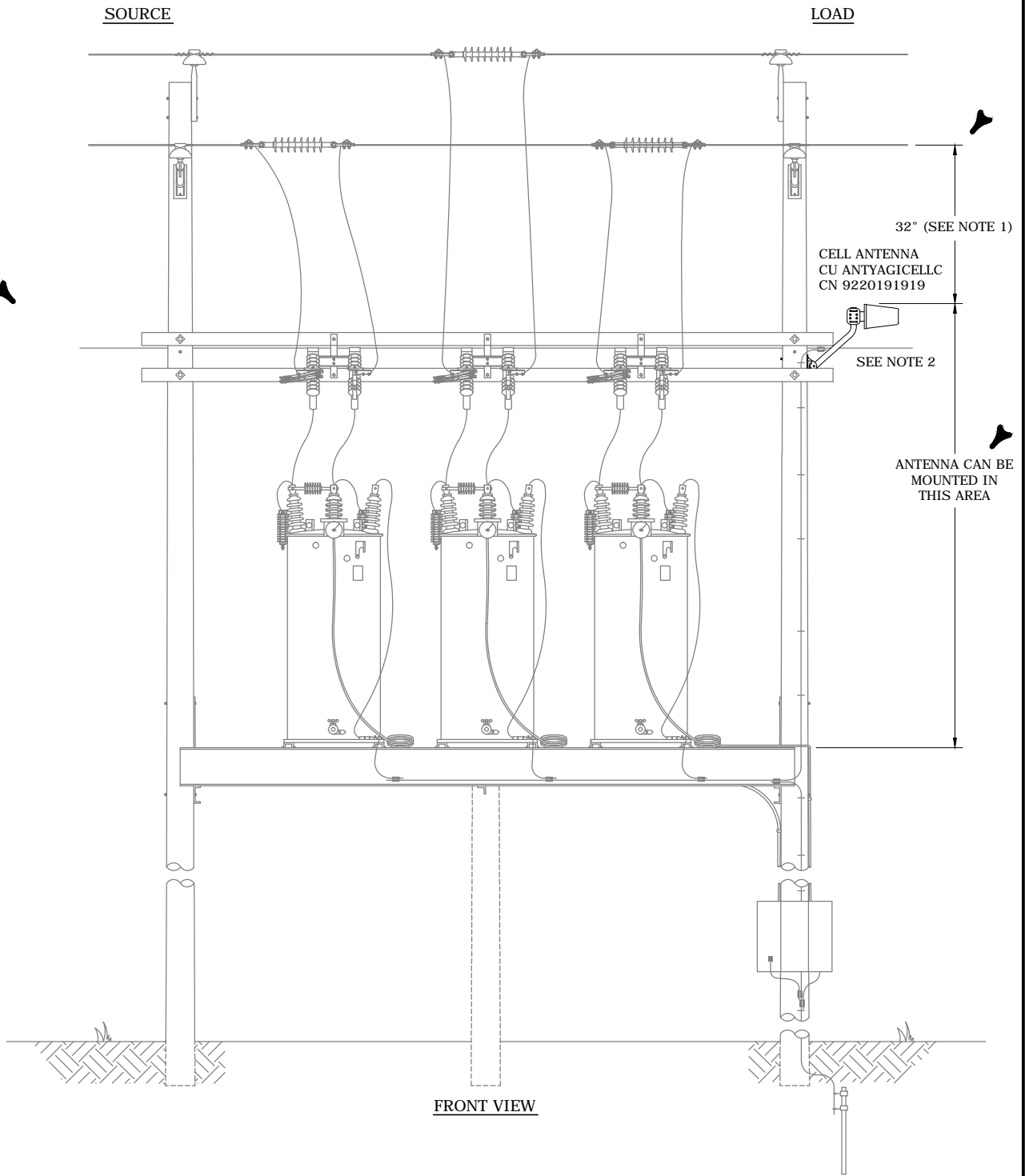
1. THE 32 INCH CLEARANCE IS PREFERRED TO MEET THE MAD. THE NESG PERMITS THE ANTENNA TO BE AS CLOSE AS 12 INCHES TO A PRIMARY ENERGIZED PART.
2. THE LOCATION OF THE ANTENNA SHOWN IS FOR ILLUSTRATION PURPOSES. SINCE THE ANTENNA IS A DIRECTIONAL ANTENNA, THE MOUNTING POSITION AROUND THE POLE MAY VARY. CLEARANCES TO THE PRIMARY CONDUCTOR, CLEARANCES TO ALLOW THE CUTOUT BARRELS TO DROP OPEN, AND CLEARANCES TO PERMIT MAINTENANCE OF THE CAPACITOR BANK MUST BE MAINTAINED.

3				
2	5/25/12	ROBESON	BURLISON	ELKINS
1	8/10/11	BURLISON	BURLISON	ELKINS
0	7/26/10	ROBESON	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

CAPACITOR BANK ANTENNA INSTALLATION -
UTILITY OWNED FOR THE OPERATION OF
THE SUPPLY SYSTEM

Progress Energy

CAR DWG.
09.04-26



NOTES:

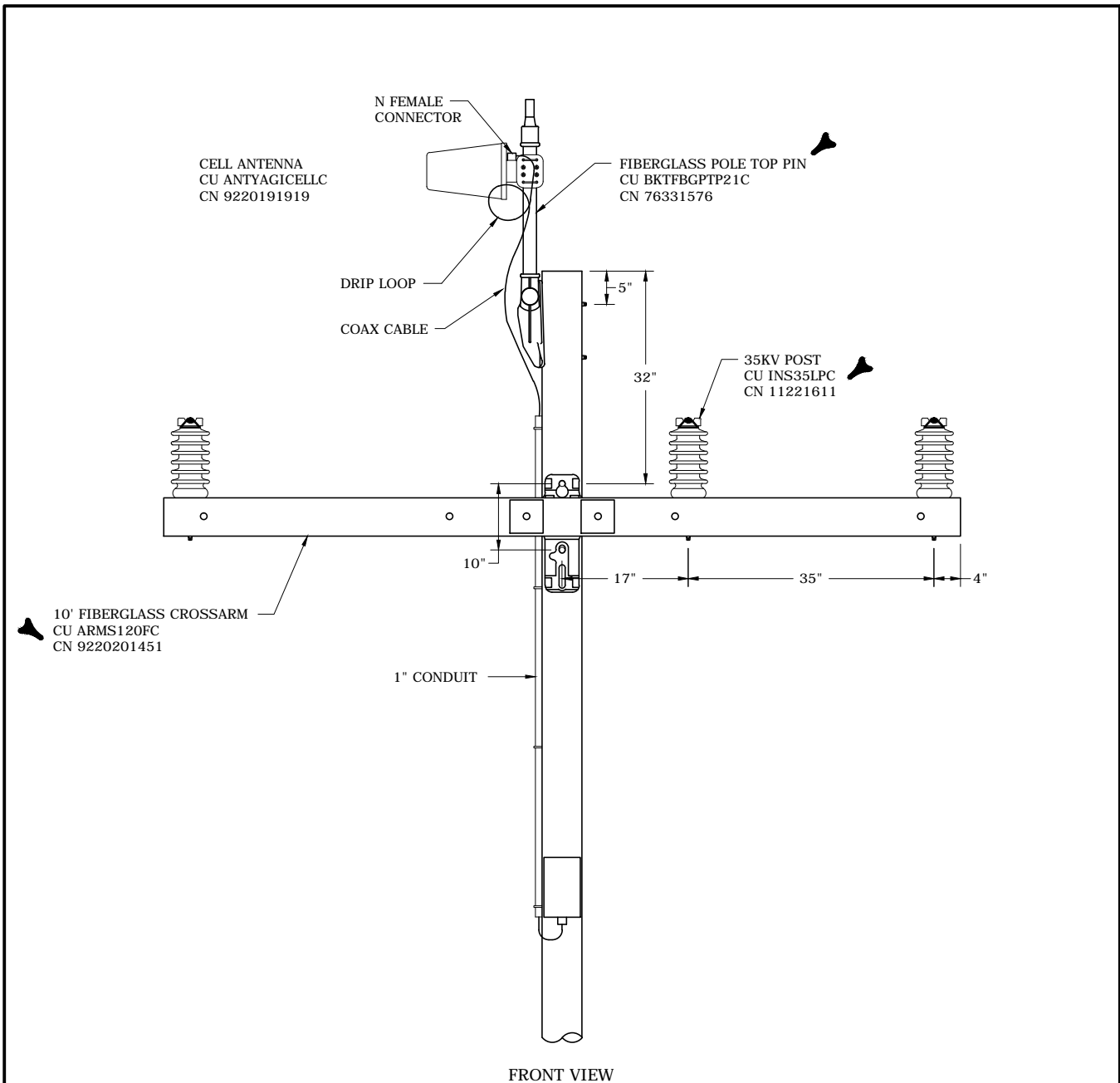
1. THE 32 INCH CLEARANCE IS PREFERRED TO MEET THE MAD. THE NESG PERMITS THE ANTENNA TO BE AS CLOSE AS 12 INCHES TO A PRIMARY ENERGIZED PART.
2. THE LOCATION OF THE ANTENNA SHOWN IS FOR ILLUSTRATION PURPOSES. SINCE THE ANTENNA IS A DIRECTIONAL ANTENNA, THE MOUNTING POSITION AROUND THE POLE AND HEIGHT ON THE POLE MAY VARY. CLEARANCES TO THE PRIMARY CONDUCTOR AND CLEARANCES TO PERMIT MAINTENANCE OF THE REGULATOR BANK MUST BE MAINTAINED.

3				
2				
1	3/6/12	ROBESON	BURLISON	ELKINS
0	7/26/10	ROBESON	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

REGULATOR PLATFORM ANTENNA INSTALLATION -
UTILITY OWNED FOR THE OPERATION OF
THE SUPPLY SYSTEM

Progress Energy

CAR DWG.
09.04-27



FRONT VIEW


THIS IS A TYPICAL CELLULAR ANTENNA INSTALLATION DRAWING. THE INSTALLATION COULD BE FOR SINGLE-PHASE LINE REGULATORS, MV SENSORS, CAPACITOR BANKS OR THREE-PHASE RECLOSERS

NOTES:

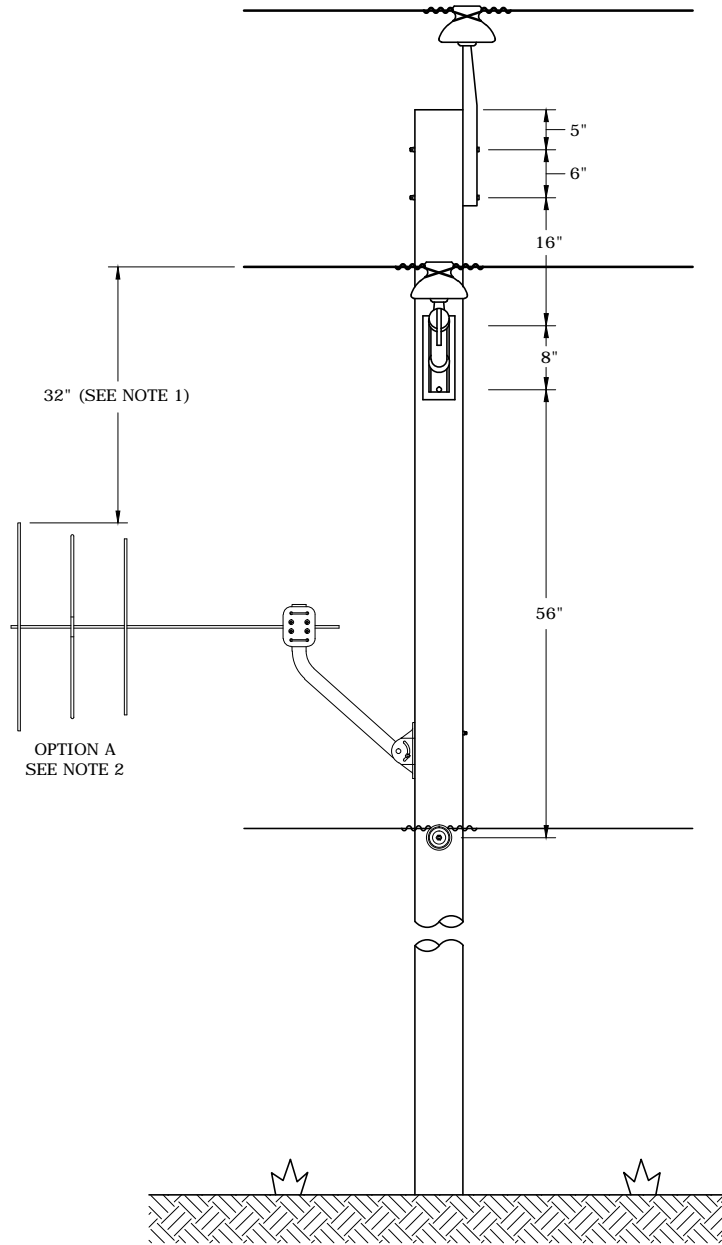
1. TO FACILITATE THE INSTALLATION OF THE ANTENNA ABOVE PRIMARY CONDUCTOR ON THREE-PHASE ARMLESS DELTA CONSTRUCTION, THE POLE TOP PIN AND SIDE BRACKET ARE REMOVED AND THE FIBERGLASS ARM IS INSTALLED AT THE POSITION OF THE SIDE BRACKETS TO MAINTAIN CLEARANCES.
2. THE 35 KV POST INSULATORS MAY BE REPLACED WITH LINE SENSORS WHERE REQUIRED.
3. THIS CONSTRUCTION MAY BE USED AT CAPACITOR BANK AND REGULATOR INSTALLATION (NOT SHOWN) WHERE ADDITIONAL ANTENNA HEIGHT IS REQUIRED.
4. A SPECIAL CUSTOM LENGTH ANTENNA CABLE WILL BE REQUIRED DUE TO THIS TOP OF THE POLE INSTALLATION.

3				
2	7/10/13	GUINN	GUINN	ELKINS
1	5/25/12	ROBESON	BURLISON	ELKINS
0	9/29/11	ROBESON	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

UTILITY OWNED ANTENNA INSTALLATION
ABOVE PRIMARY CONDUCTORS
FOR THE OPERATION OF THE SUPPLY SYSTEM

	
CAR	DWG. 09.04-28

SOURCE




FRONT VIEW

NOTES:

1. THE 32 INCH CLEARANCE IS PREFERRED TO MEET THE MAD. THE NESG PERMITS THE ANTENNA TO BE AS CLOSE AS 12 INCHES TO A PRIMARY ENERGIZED PART.
2. THE LOCATION OF THE ANTENNA SHOWN IS FOR ILLUSTRATION PURPOSES. SINCE THE ANTENNA IS A DIRECTIONAL ANTENNA, THE MOUNTING POSITION AROUND THE POLE MAY VARY. CLEARANCES TO THE PRIMARY CONDUCTORS MUST BE MAINTAINED.

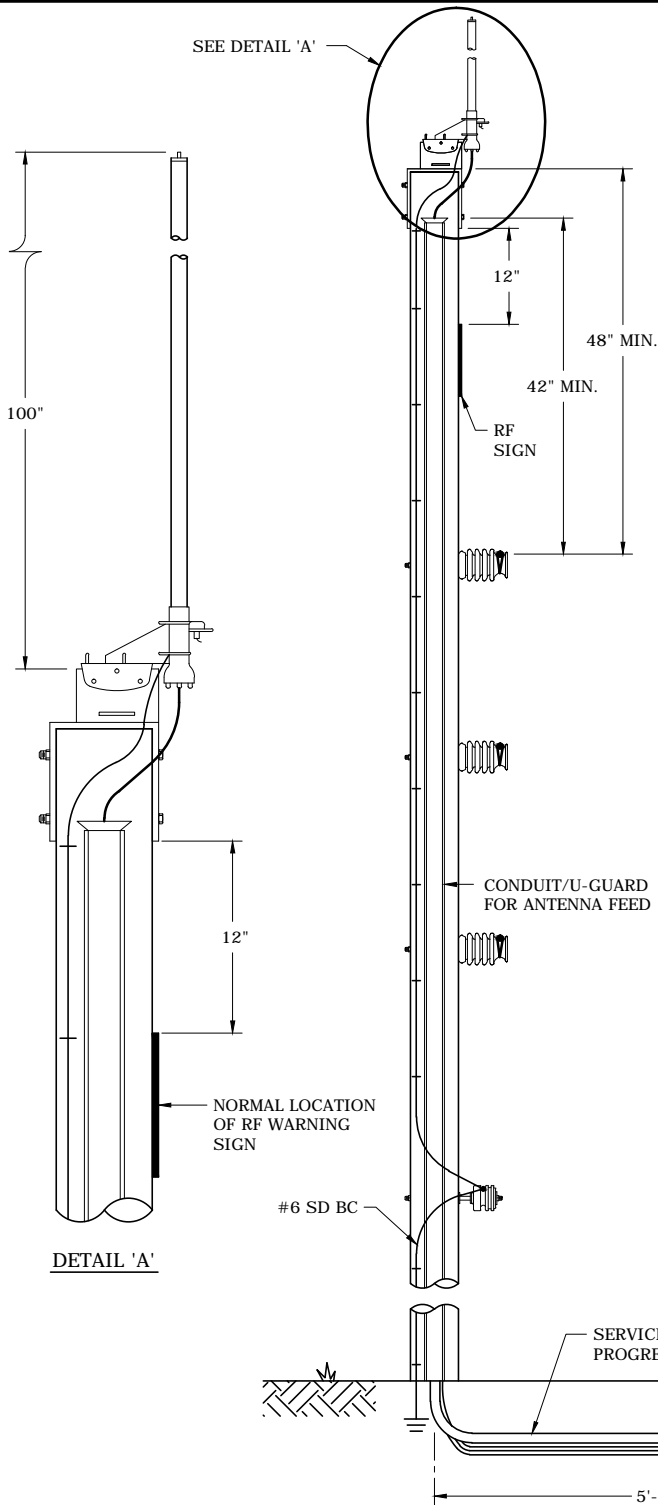
3				
2				
1				
0	9/29/11	ROBESON	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

PRIVATE RADIO AND CELLULAR COMMUNICATIONS -
UTILITY OWNED FOR THE OPERATION OF
THE SUPPLY SYSTEM



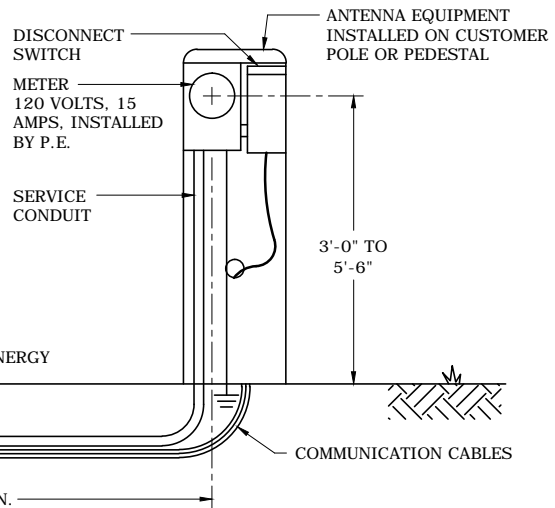
CAR DWG.
09.04-29

SEE DETAIL 'A'



NOTES:

1. ANTENNA MUST BE INSTALLED BY AN APPROVED CONTRACTOR QUALIFIED TO WORK IN THE SUPPLY SPACE.
2. POLE LOCATIONS APPROVED BY PROGRESS ENERGY. DO NOT INSTALL ANTENNA ON EQUIPMENT POLES SUCH AS CAPACITOR BANKS, RECLOSERS, SWITCHES, U.G. DIP, ETC.
3. ONLY ONE ANTENNA PER POLE ALLOWED.
4. **CAUTION:** DISCONNECT POWER TO ANTENNA BEFORE WORKING ON POLE IN AREA ABOVE RF WARNING SIGN. CALL PGN JOINT USE UNIT TO COORDINATE DISCONNECTION WITH TELECOM COMPANY, EXCEPT IN CASE OF EMERGENCY.
5. A MINIMUM CLASS 3 POLE IS REQUIRED. IF POLE EXCEEDS 60' ABOVE GROUND, CONTACT DISTRIBUTION STANDARDS FOR STRENGTH AND LOADING ANALYSIS.
6. ANTENNA OWNER MUST INSTALL AN RF WARNING SIGN ON THE POLE AT THE LEVEL WHERE THE SAFE APPROACH DISTANCE ENDS FOR FCC OCCUPATIONAL/CONTROLLED CLASS LIMITS. WARNING SIGN - "WARNING - ANTENNA RADIATION. MINIMUM APPROACH DISTANCE IS X FT."
7. ALL ANTENNA DESIGNS MUST BE APPROVED BY P.E. DISTRIBUTION.
8. THE ONLY ANTENNA EQUIPMENT PERMITTED ON THE PROGRESS ENERGY POLE IS THE ANTENNA, THE CABLE FEEDING THE ANTENNA AND THE CABLE FEEDING THE AMPLIFIER IN THE PEDESTAL.
9. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.



LINE INSULATION:

BECAUSE POLE GROUND GOES TO TOP OF POLE, EXISTING LINE INSULATORS MUST BE HIGHER VOLTAGE THAN NORMAL.

12KV SYSTEM:

USE 35KV INSULATOR

23KV SYSTEM:

USE 45KV INSULATOR

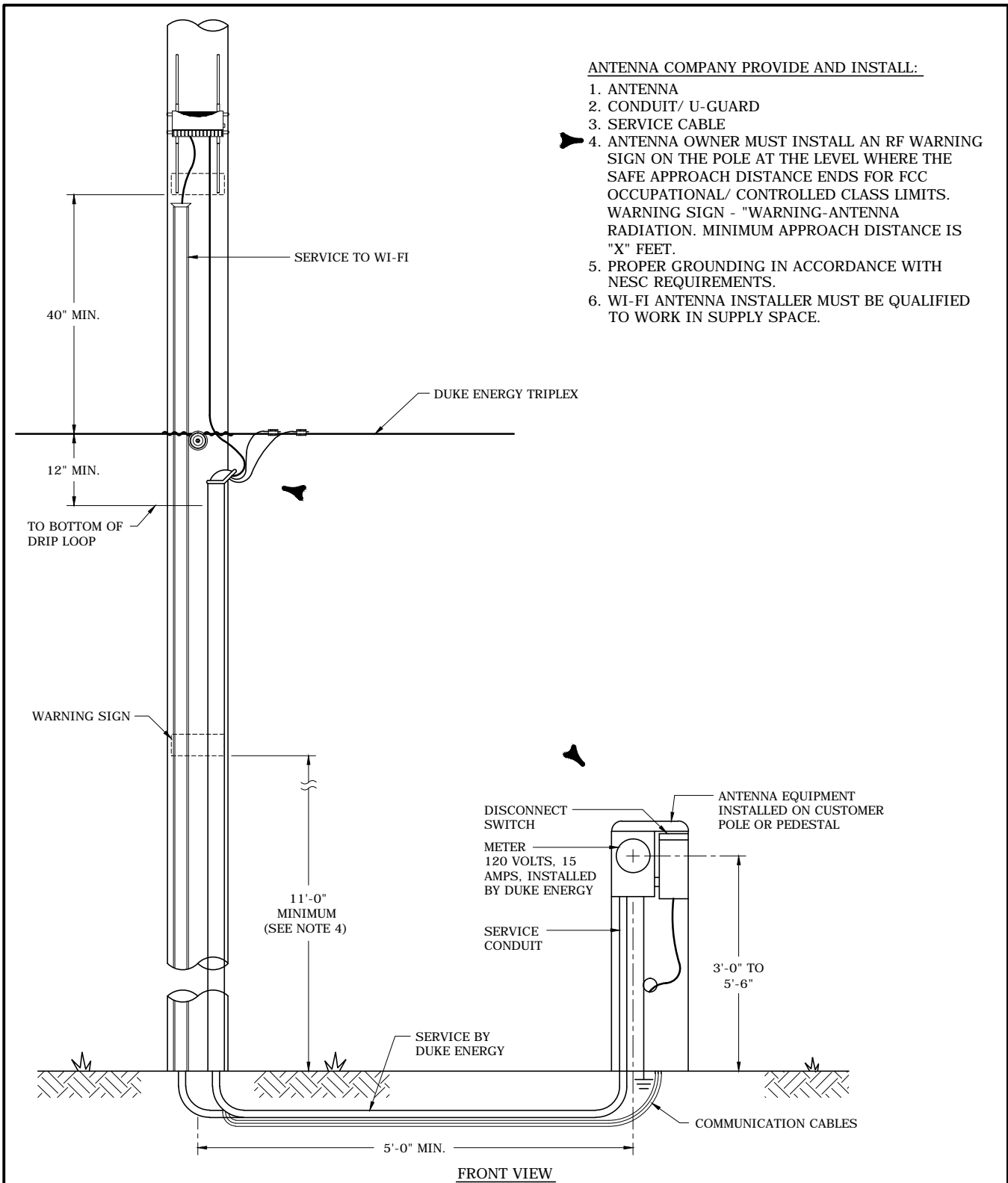
3				
2				
1				
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

JOINT USE CONSTRUCTION
(DAS) DISTRIBUTED ANTENNA SYSTEMS



PGN

DWG.
09.04-30



ANTENNA COMPANY PROVIDE AND INSTALL:

1. ANTENNA
2. CONDUIT/ U-GUARD
3. SERVICE CABLE
- ▶ 4. ANTENNA OWNER MUST INSTALL AN RF WARNING SIGN ON THE POLE AT THE LEVEL WHERE THE SAFE APPROACH DISTANCE ENDS FOR FCC OCCUPATIONAL/ CONTROLLED CLASS LIMITS. WARNING SIGN - "WARNING-ANTENNA RADIATION. MINIMUM APPROACH DISTANCE IS "X" FEET.
5. PROPER GROUNDING IN ACCORDANCE WITH NESC REQUIREMENTS.
6. WI-FI ANTENNA INSTALLER MUST BE QUALIFIED TO WORK IN SUPPLY SPACE.

FRONT VIEW

NOTES:

1. DO NOT INSTALL ANTENNAS ON EQUIPMENT POLES SUCH AS CAPACITOR BANKS, RECLOSERS, REGULATOR, SWITCHES, U.G. DIP, ETC.
2. ALL ANTENNA LOCATIONS MUST BE APPROVED BY A DUKE ENERGY DISTRIBUTION ENGINEER.
3. ONLY ONE ANTENNA PER POLE ALLOWED.
4. MINIMUM CLEARANCE IS BASED ON NESC TABLE 232-2(1)d.

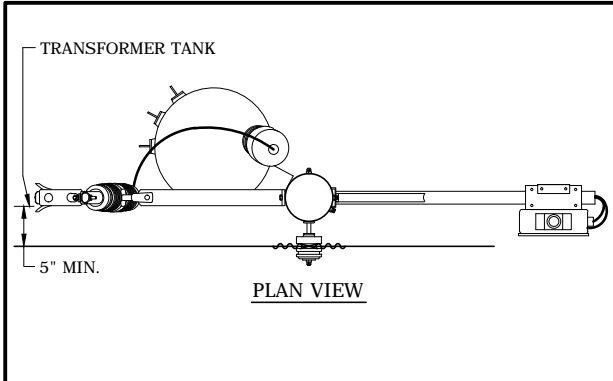
3				
2				
1	8/5/13	ROBESON	GUINN	ADCOCK
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

JOINT USE CONSTRUCTION
WI-FI ANTENNA INSTALLATION
ON SERVICE POLE



CAR

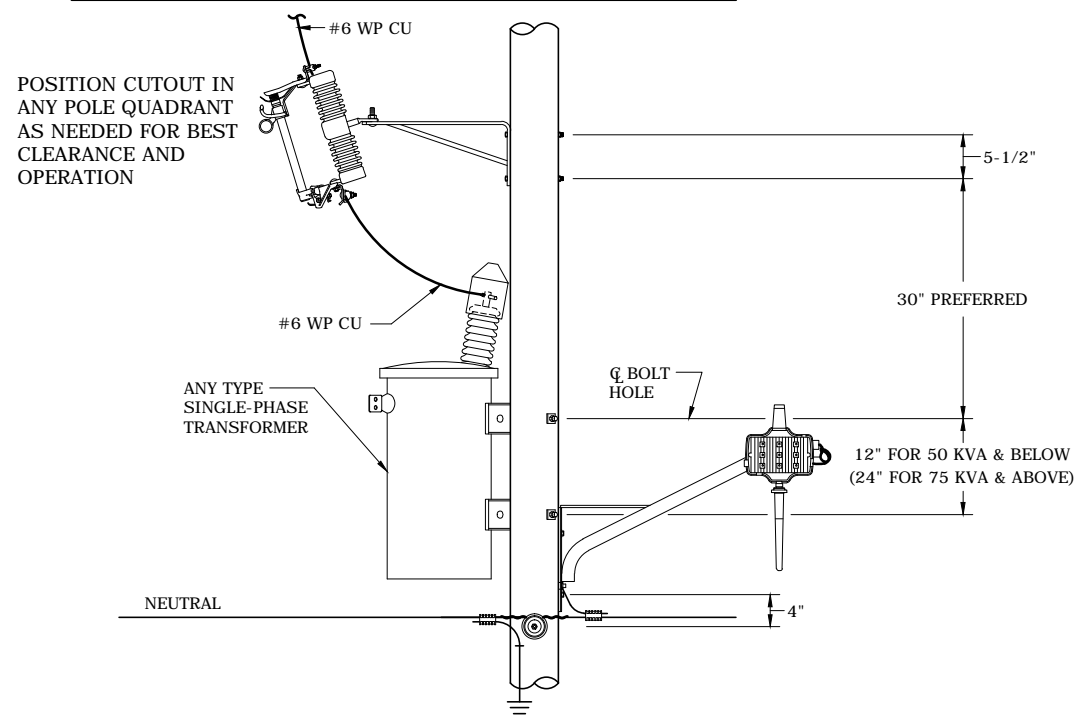
DWG.
09.04-32



WHAT SHOULD LINE RESOURCES DO IF THEY ENCOUNTER ONE OF THESE DEVICES DURING A RESTORATION EFFORT?

- RECOGNIZE THAT THE DEVICE IS COMPANY EQUIPMENT.
- IF THE DEVICE CAN REMAIN ON THE POLE AND CAN BE RE-ENERGIZED AFTER YOU FINISH YOUR POLE WORK, LEAVE THE DEVICE MOUNTED, FINISH YOUR WORK ON THE POLE AND RECONNECT THE POWER TO THE UNIT.
- IF THE DEVICE IS DAMAGED, GATHER UP THE PARTS IN A BAG AND TAG IT WITH THE NEAREST ADDRESS, AND TAKE IT TO THE OPS CENTER OR STAGING AREA YOU ARE ASSIGNED.
- IF THE DEVICE MUST BE REMOVED FROM THE POLE AND CANNOT BE REMOUNTED DUE TO THE WORK YOU ARE PERFORMING OR THE CONDITION OF THE DEVICE, DISCONNECT THE DEVICE, TAG IT WITH THE NEAREST ADDRESS, AND TAKE IT TO THE OPS CENTER OR STAGING AREA YOU ARE ASSIGNED.

LOWEST PRIMARY WIRE



POSITION CUTOUT IN ANY POLE QUADRANT AS NEEDED FOR BEST CLEARANCE AND OPERATION

NOTES:

1. TYPICAL INSTALLATION. THE ANTENNA DOES NOT HAVE TO BE LOCATED ON A TRANSFORMER POLE; HOWEVER, 120V POWER IS REQUIRED AT THE POLE. ANTENNA MAY NOT BE INSTALLED ON AN EXISTING BRACKET WITH A LIGHT OR ON A POLE DESIGNATED AS A "STREET LIGHT POLE". IT MAY BE INSTALLED ON A "DISTRIBUTION POLE" THAT ALSO HAS A LIGHT AS LONG AS SITE CONDITIONS PERMIT AND THE ANTENNA IS ON ITS OWN BRACKET.
2. THE QUADRANT FOR THE INSTALLING THE TRANSFORMER, CUTOUT, ANTENNA AND OTHER EQUIPMENT MAY VARY FROM LOCATION TO LOCATION. STANDARD TRANSFORMER/CUTOUT SPACING SHOULD BE FOLLOWED FOR NEW CONSTRUCTION PER SECTION 06 OF THE DISTRIBUTION CONSTRUCTION SPECIFICATIONS. SECTION 06 PERMITS EXISTING LINES WITH 60" NEUTRAL SPACING TO REMAIN AT 60" IF 72" CANNOT BE OBTAINED WITHOUT CHANGING POLE.
3. THE ANTENNA BRACKET MUST BE BONDED TO THE NEUTRAL OR POLE GROUND.
4. WHEN SITE CONDITIONS PERMIT, ORIENT THE ANTENNA BRACKET SO IT EXTENDS OVER ROADWAY TO MAXIMIZE ANTENNA EFFICIENCY.
5. WHEN BRACKET CAN BE INSTALLED PERPENDICULAR TO PRIMARY LINE AND OPPOSITE THE TRANSFORMER AND CUTOUT, A 72" BRACKET CAN BE USED TO MAXIMIZE ANTENNA EFFICIENCY.
6. THE ANTENNA BRACKET SHALL BE INSTALLED WITH THROUGH BOLTS ON WOOD POLES. SQUARE CONCRETE DISTRIBUTION POLES MAY BE DRILLED OR BANDED. THE BRACKET MAY BE MOVED VERTICALLY A FEW INCHES TO AVOID CONFLICT WITH TRANSFORMER BOLTS; HOWEVER, THE ANTENNA MUST REMAIN ABOVE THE NEUTRAL. NO HOLES SHOULD BE DRILLED CLOSER THAN 4" VERTICALLY.
7. WEATHERPROOF THE EXPOSED NAN ANTENNA CONNECTION ON THE BOTTOM OF THE ACCESS POINT AND RELAY UNITS TO DECREASE RISK OF NETWORK COMMUNICATIONS DEGRADATION AND FAILURE. THE SEQUENTIAL ORDER FOR PROPER WEATHERPROOFING OF EACH CONNECTION IS TO:
 1. PLACE THE FIRST LAYER OF ELECTRICAL TAPE ON THE CONNECTION.
 2. PLACE AQUASEAL OVER THE ELECTRICAL TAPE.
 3. PLACE THE LAST LAYER OF ELECTRICAL TAPE OVER THE AQUASEAL. THIS PROCEDURE ALLOWS FOR EASY REMOVAL OF THE WEATHERPROOFING OVER THE CONNECTION IN THE FUTURE, IF NEEDED.
 SEAL BOTH ENDS OF THE BRACKET WITH AQUASEAL TO PREVENT ANIMALS FROM USING AS HOME AND TO KEEP THE POWER CABLE ENTERING AND EXITING THE PIPE FROM DAMAGE.
- ENSURE ALL POWER AND BATTERY CABLE CONNECTORS ARE PROPERLY TIGHTENED/LOCKED. THE CABLE CONNECTORS ARE LISTED BELOW:
 1. PRIMARY POWER CABLE CONNECTOR ON ACCESS POINT AND RELAY UNITS, NOT THE CONNECTIONS AT THE DISTRIBUTION SOURCE.
 2. BATTERY POWER CABLE CONNECTOR ON THE ACCESS POWER UNITS.
 3. POWER CABLE CONNECTOR ON BACKUP BATTERY UNIT.
8. SEE DWG. 09.04-33B FOR DEVICE COMPATIBLE UNITS, CATALOG NUMBERS AND DESCRIPTIONS.

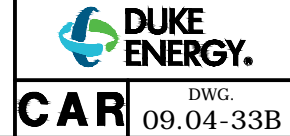
3				
2				
1	7/9/13	BURLISON	GUINN	ADCOCK
0	5/2/13	BURLISON	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

TYPICAL NGDR AMI TELECOM NAN ATTACHMENT

CAR DWG. 09.04-33A

3				
2				
1				
0	5/2/13	BURLISON	GUINN	ADCOCK
REVISED	BY	CK'D	APPR.	

TYPICAL NGDR AMI TELECOM NAN ATTACHMENT



GENERATION 3.0 DEVICES

	COMPATIBLE UNIT	COMPATIBLE UNIT DESCRIPTION	CATALOG NUMBER	DESCRIPTION	QTY
ATT ACCESS POINT	NANAPAT1C	NAN ACCESS POINT DEVICE ATT G3.0	9220253057	NETWORK ACCESS POINT. AT&T. 900MHZ. SSN. GENERATION 3.0	1
			9220253045	CABLE. POWER. 3-PIN . SSN RELAY AND ACCESS POINT GENERATION 3.0	1
			9220253039	MOUNTING KIT. SSN RELAY AND ACCESS POINTS. FOR HRZTL BRACKET	1
VERIZON ACCESS POINT	NANAPVZ1C	NAN ACCESS POINT DEVICE VZN G3.0	9220253055	NETWORK ACCESS POINT. VERIZON. 900MHZ. SSN. GENERATION 3.0	1
			9220253045	CABLE. POWER. 3-PIN . SSN RELAY AND ACCESS POINT GENERATION 3.0	1
			9220253039	MOUNTING KIT. SSN RELAY AND ACCESS POINTS. FOR HRZTL BRACKET	1
RELAY	NANRELAY1C	NAN RELAY POINT DEVICE G3.0 NAN	9220253051	NETWORK RELAY. 900MHZ. SSN. GENERATION 3.0	1
			9220253045	CABLE. POWER. 3-PIN . SSN RELAY AND ACCESS POINT GENERATION 3.0	1
			9220253039	MOUNTING KIT. SSN RELAY AND ACCESS POINTS. FOR HRZTL BRACKET	1
BATTERY	NANBATC	BATTERY FOR POINT DEVICE GEN 3.0	9220253030	BATTERY. BACKUP FOR SSN NETWORK ACCESS POINT GENERATION 3.0	1
			9220253044	CABLE. BATTERY. BATTERY BACKUP FOR SSN NETWORK ACCESS POINT GEN3.0	1

GENERATION 4.5 DEVICES

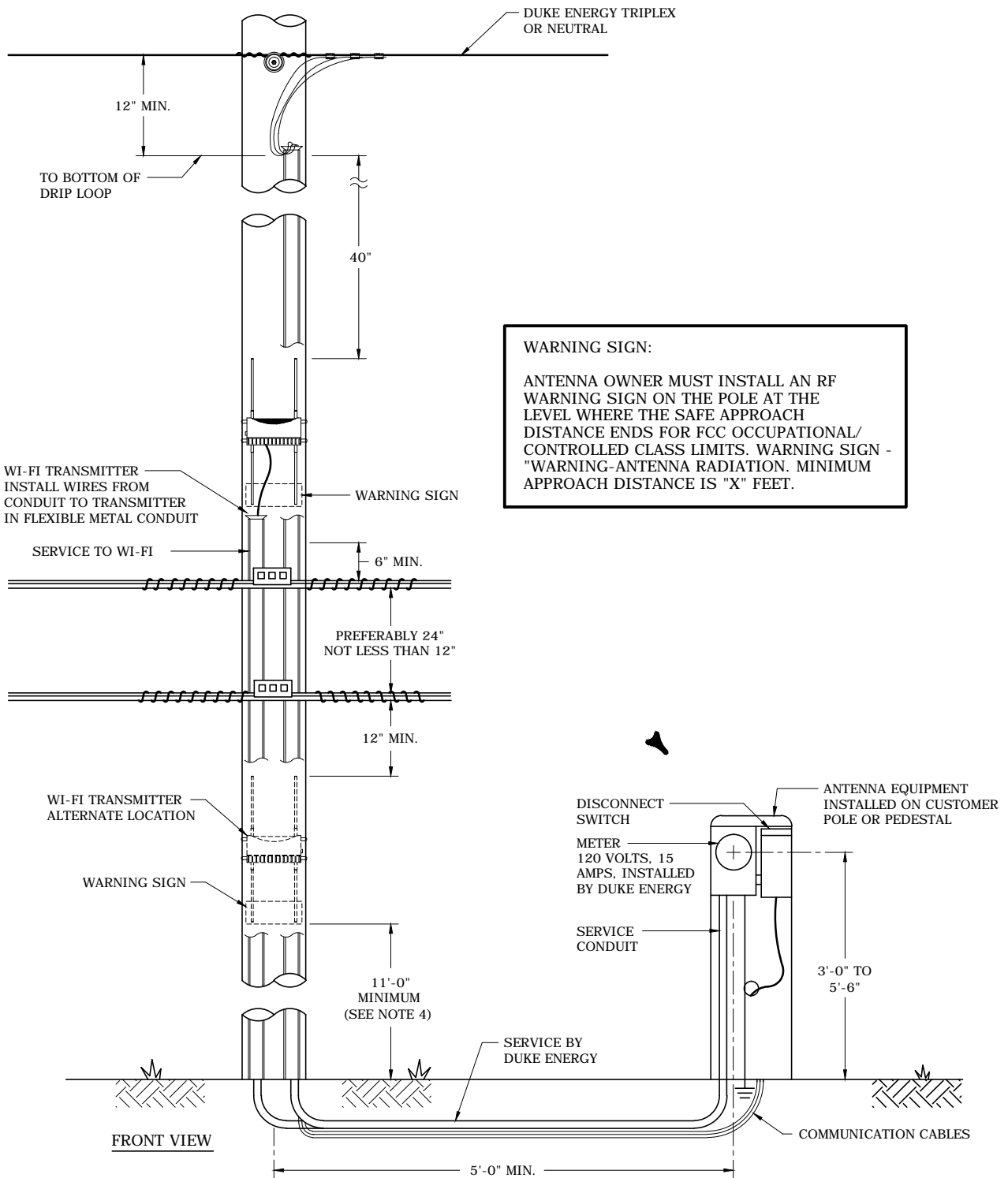
	COMPATIBLE UNIT	COMPATIBLE UNIT DESCRIPTION	CATALOG NUMBER	DESCRIPTION	QTY
ATT ACCESS POINT	NANAPAT4C	NAN ACCESS POINT DEVICE ATT G4.5	9220253060	NETWORK ACCESS POINT. AT&T. 900MHZ. SSN. GENERATION 4.5	1
			9220253049	CABLE. POWER. 3-PIN . SSN RELAY AND ACCESS POINT GENERATION 4.5	1
			9220253039	MOUNTING KIT. SSN RELAY AND ACCESS POINTS. FOR HRZTL BRACKET	1
VERIZON ACCESS POINT	NANAPVZ4C	NAN ACCESS POINT DEVICE VZN G4.5	9220253063	NETWORK ACCESS POINT. VERIZON. 900MHZ. SSN. GENERATION 4.5	1
			9220253049	CABLE. POWER. 3-PIN . SSN RELAY AND ACCESS POINT GENERATION 4.5	1
			9220253039	MOUNTING KIT. SSN RELAY AND ACCESS POINTS. FOR HRZTL BRACKET	1
RELAY	NANRELAY4C	NAN RELAY POINT DEVICE G4.5	9220253053	NETWORK RELAY. 900MHZ. SSN. GENERATION 4.5	1
			9220253049	CABLE. POWER. 3-PIN . SSN RELAY AND ACCESS POINT GENERATION 4.5	1
			9220253039	MOUNTING KIT. SSN RELAY AND ACCESS POINTS. FOR HRZTL BRACKET	1
BATTERY	NANBATG4C	NAN BATTERY FOR POINT DEVICE GEN 4.5	9220253041	BATTERY. BACKUP FOR SSN NETWORK ACCESS POINT GENERATION 4.5	1
			9220253047	CABLE. BATTERY. BATTERY BACKUP FOR SSN NETWORK ACCESS POINT GEN 4.5	1

BRACKETS FOR BOTH 3.0 AND 4.5 DEVICES

	COMPATIBLE UNIT	COMPATIBLE UNIT DESCRIPTION	CATALOG NUMBER	DESCRIPTION	QTY
	BKTANNEUSC	BRACKET NAN ANTENNA. NEUTRAL MOUNT. SHORT	13333505	BRACKET. STREET LIGHT. UPS. 1.25"X27". AL 27-INCH ALUM BKT. W/17-INCH	1
	BKTANNEULC	BRACKET NAN ANTENNA. NETURAL MOUNT. LONG	13321005	BRACKET. STREET LIGHT. UPS. 1.25"X8". S. GLV 6-FOOT X 1.25 GLV.	1

NOTES:

1. SEE DWG. 09.04-33A FOR DEVICE INSTALLATION SPECIFICATIONS.



WARNING SIGN:
 ANTENNA OWNER MUST INSTALL AN RF WARNING SIGN ON THE POLE AT THE LEVEL WHERE THE SAFE APPROACH DISTANCE ENDS FOR FCC OCCUPATIONAL/CONTROLLED CLASS LIMITS. WARNING SIGN - "WARNING-ANTENNA RADIATION. MINIMUM APPROACH DISTANCE IS "X" FEET.

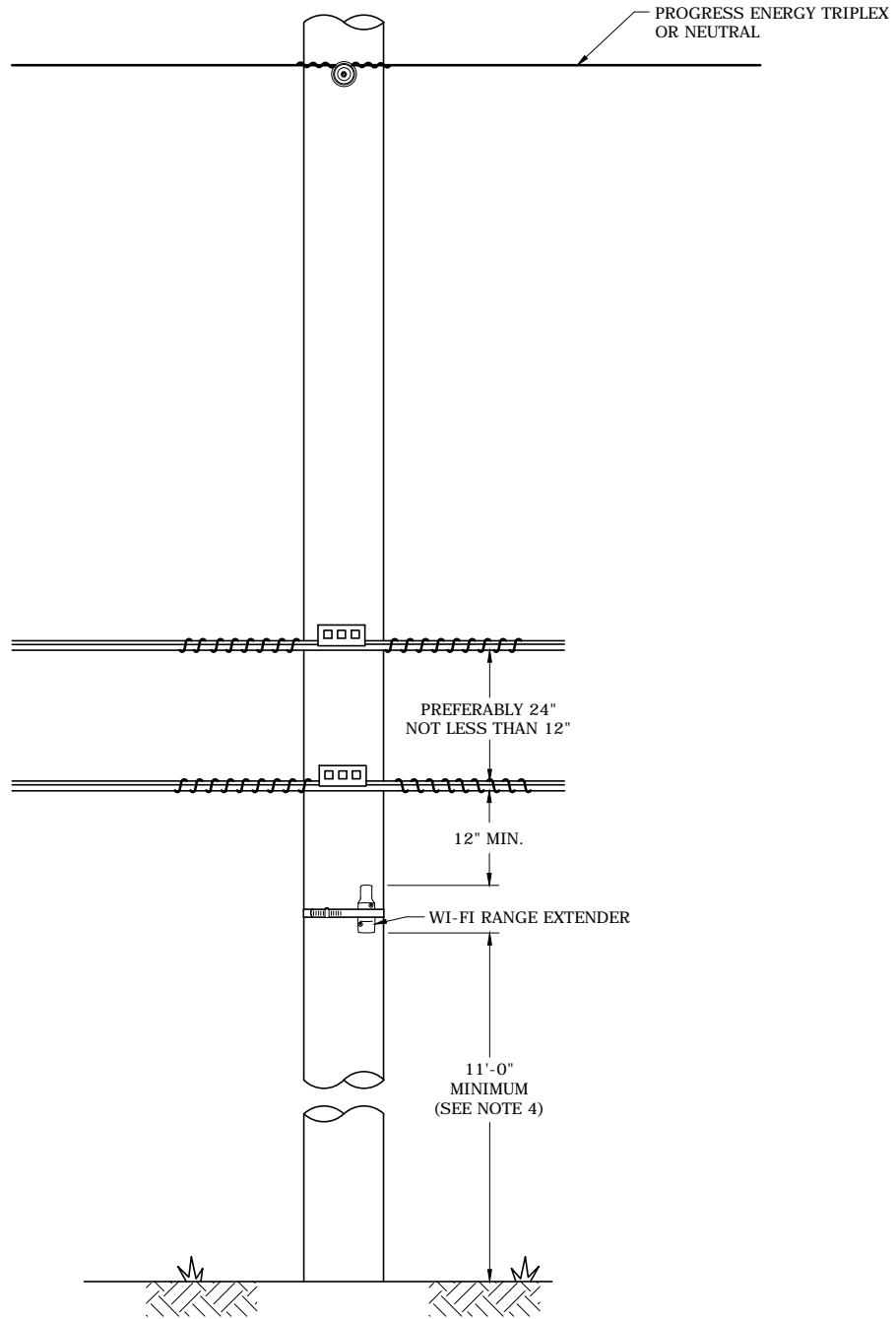
NOTES:

1. DO NOT INSTALL ANTENNAS ON EQUIPMENT POLES SUCH AS CAPACITOR BANKS, RECLOSERS, REGULATOR, SWITCHES, U.G. DIP, ETC.
2. ALL ANTENNA LOCATIONS MUST BE APPROVED BY A DUKE ENERGY DISTRIBUTION ENGINEER.
3. ONLY ONE ANTENNA PER POLE ALLOWED.
4. MINIMUM CLEARANCE IS BASED ON NESC TABLE 232-2(1)d.

3				
2				
1	8/5/13	ROBESON	GUINN	ADCOCK
0	7/13/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

**JOINT USE CONSTRUCTION
 WI-FI ANTENNA INSTALLATION**

	DUKE ENERGY
	DWG. CAR 09.04-35



FRONT VIEW

NOTES:

1. DO NOT INSTALL ANTENNAS ON EQUIPMENT POLES SUCH AS CAPACITOR BANKS, RECLOSERS, REGULATOR, SWITCHES, U.G. DIP, ETC.
2. ALL ANTENNA LOCATIONS MUST BE APPROVED BE BY A PROGRESS ENERGY DISTRIBUTION ENGINEER.
3. ONLY ONE ANTENNA PER POLE ALLOWED.
4. MINIMUM CLEARANCE IS BASED ON NESC TABLE 232-2(1)d.

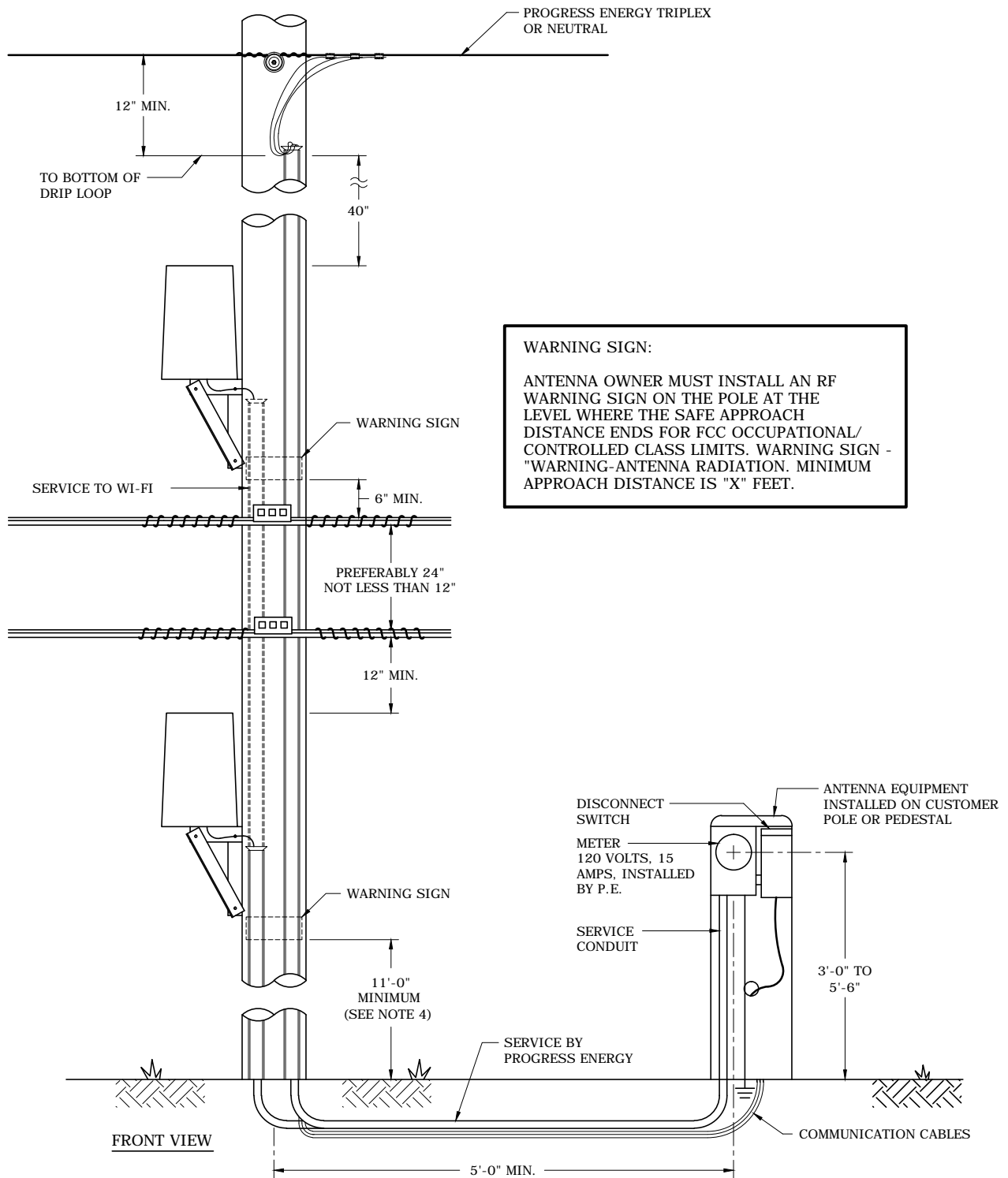
3				
2				
1				
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

JOINT USE CONSTRUCTION
WI-FI ANTENNA INSTALLATION



PGN

DWG.
09.04-36



WARNING SIGN:
 ANTENNA OWNER MUST INSTALL AN RF WARNING SIGN ON THE POLE AT THE LEVEL WHERE THE SAFE APPROACH DISTANCE ENDS FOR FCC OCCUPATIONAL/CONTROLLED CLASS LIMITS. WARNING SIGN - "WARNING-ANTENNA RADIATION. MINIMUM APPROACH DISTANCE IS "X" FEET.

NOTES:

1. DO NOT INSTALL ANTENNAS ON EQUIPMENT POLES SUCH AS CAPACITOR BANKS, RECLOSERS, REGULATOR, SWITCHES, U.G. DIP, ETC.
2. ALL ANTENNA LOCATIONS MUST BE APPROVED BY A PROGRESS ENERGY DISTRIBUTION ENGINEER.
3. ONLY ONE ANTENNA PER POLE ALLOWED.
4. MINIMUM CLEARANCE IS BASED ON NESC TABLE 232-2(1)d.

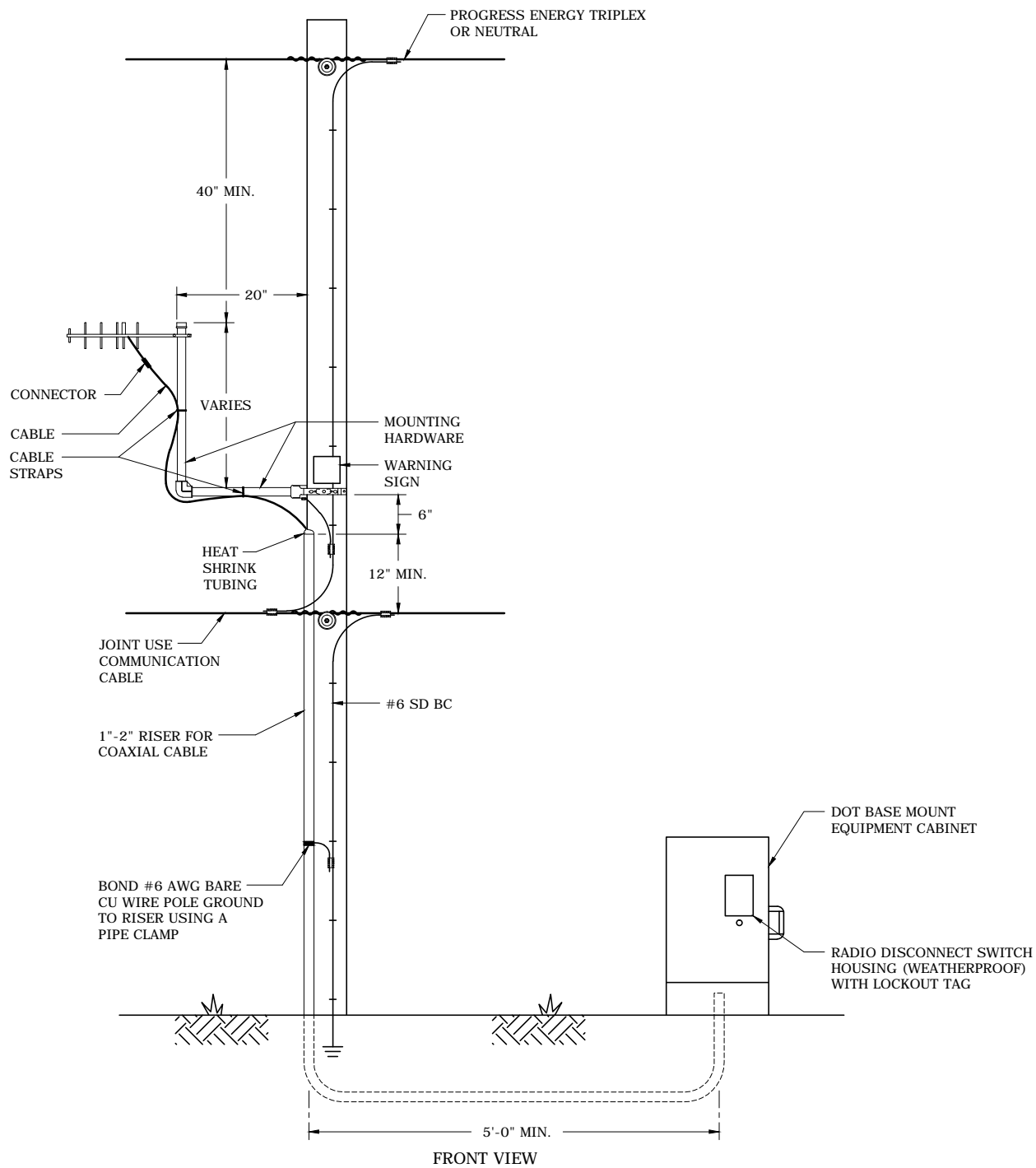
3				
2				
1				
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

JOINT USE CONSTRUCTION
 DAS ANTENNA INSTALLATION



PGN

DWG.
 09.04-37



FRONT VIEW

NOTES:

1. POLE LOCATIONS APPROVED BY PROGRESS ENERGY. DO NOT INSTALL ANTENNA ON EQUIPMENT POLE SUCH AS CAPACITOR BANKS, RECLOSERS, SWITCHES, U.G. DIP, ETC.
2. ONLY ONE ANTENNA PER POLE ALLOWED.
3. ALL ANTENNA DESIGNS MUST BE APPROVED BY P.E. DISTRIBUTION.
4. THE ONLY JOINT USE EQUIPMENT PERMITTED ON THE POLE IS THE ANTENNA AND CABLE RISER.
5. DOT TO MOUNT WARNING SIGN ON POLE: "WARNING - TURN OFF ANTENNA AT DOT EQUIPMENT CABINET BEFORE WORKING ON POLE".
6. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.

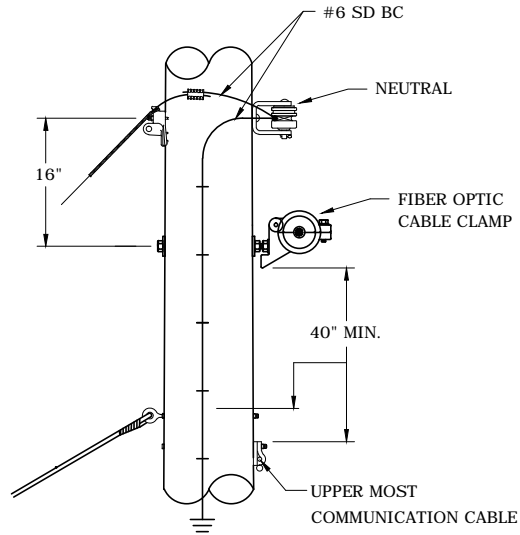
3				
2				
1				
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

JOINT USE CONSTRUCTION
TRAFFIC SIGNAL ANTENNA



PGN DWG. 09.04-40

TANGENT AND ANGLES TO 20°



BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
-	1	BKTTANSUPFOCC	1	22008502	1	SUPPORT, TANGENT, CABLE, FOPT, ADSS
				10033512	1	BOLT, MACH, 5/8"

NOTES:

1. NEUTRAL GUYS NOT SHOWN FOR CLARITY.
2. CLEARANCES SHOWN TO NEUTRAL ALSO APPLY TO LOWEST OPEN-WIRE SECONDARY AND TRIPLEX.
3. USE 5/8" BOLTS FOR FIBER OPTIC CABLE SUPPORTS.
4. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.

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

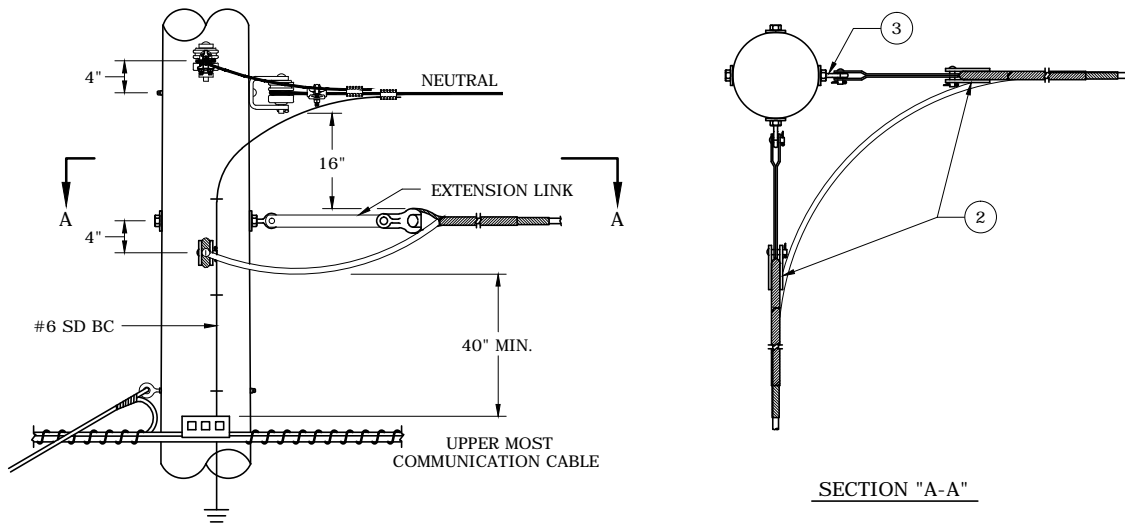
PROGRESS ENERGY FIBER OPTIC CABLE INSTALLED IN SUPPLY SPACE - INSTALLATION DETAILS



CAR

DWG.
09.04-42

ANGLES GREATER THAN 20°



BILL OF MATERIALS						
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	1	BKT18UPSSUSPC	2	13334800	1	BKT, 18", FBG, UPS, DE, FOPT, ADSS
				13013013	1	LINK, EXTENSION
				11156106	1	ASSEMBLY, DE, FOPT, ADSS
				10033512	1	BOLT, MACH, 5/8
	2	BKT18STFODEC	2	11156106	1	ASSEMBLY, DE, FOPT, ADSS
13013013				1	LINK, EXTENSION	
3	ISEYEBOLT5812C		2	10026011	1	BOLT, EYE, 5/8"

NOTES:

1. NEUTRAL GUYS NOT SHOWN FOR CLARITY.
2. CLEARANCES SHOWN TO NEUTRAL ALSO APPLY TO LOWEST OPEN-WIRE SECONDARY AND TRIPLEX.
3. USE 5/8" BOLTS FOR FIBER OPTIC CABLE SUPPORTS.
4. 30" IF BASE OF FIBERGLASS STANDOFF BRACKET IS BONDED TO POLE GROUND AND THE COMMUNICATION CABLE IS BONDED TO POLE GROUND, 40" IF NOT.
5. NEW FOPT REINFORCING RODS MUST BE USED WHEN TRANSFERRING DEADENDS.
6. SEE SECTION O1 FOR ADDITIONAL GROUNDING DETAILS.

3				
2				
1	6/30/11	ROBESON	BURLISON	ELKINS
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

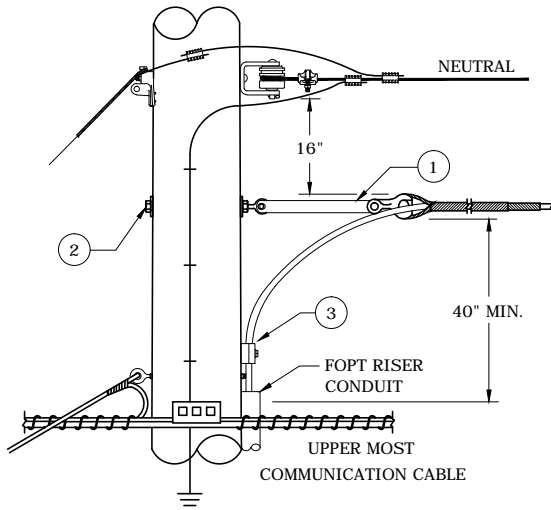
PROGRESS ENERGY FIBER OPTIC CABLE
 INSTALLED IN SUPPLY SPACE -
 INSTALLATION DETAILS



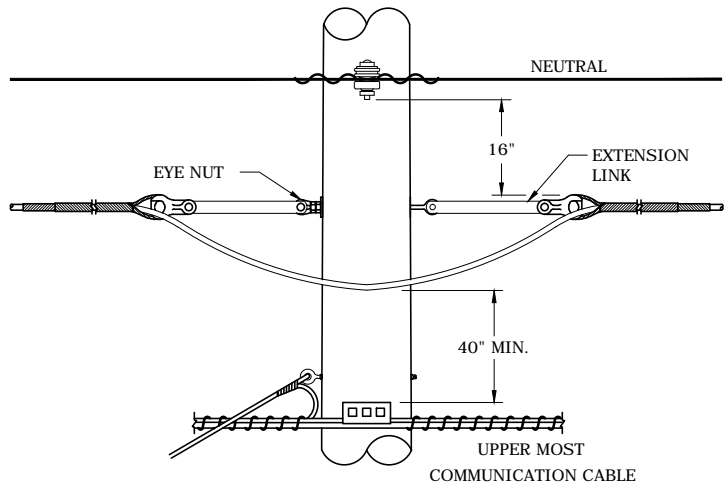
CAR

DWG.
09.04-46

DEAD-END AND FOPT DOWNLOAD



DOUBLE DEAD-END



BILL OF MATERIALS

MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
-	1	BKT18STFODEC	1	11156106	1	ASSEMBLY, DE, FOPT, ADSS
				13013013	1	LINK, EXTENSION
	2	ISEYEBOLT5812C	1	10026011	1	BOLT, EYE, 5/8"
	3	FOPTDOWNCLAMPC	1	11108008	1	CLAMP, DOWNLOAD, FOPT
				10312007	1	SCREW, LAG, HX, 1/2" X 4", GLV

NOTES:

- CLEARANCES SHOWN TO NEUTRAL ALSO APPLY TO LOWEST OPEN-WIRE SECONDARY AND TRIPLEX.
- USE 5/8" BOLTS FOR FIBER OPTIC CABLE SUPPORTS.
- MINIMUM BEND RADIUS OF THIS ADSS FIBEROPTIC CABLE IS 16".
- SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.

3				
2				
1				
0	7/13/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

PROGRESS ENERGY FIBER OPTIC CABLE INSTALLED IN SUPPLY SPACE - INSTALLATION DETAILS



CAR

DWG.
09.04-52

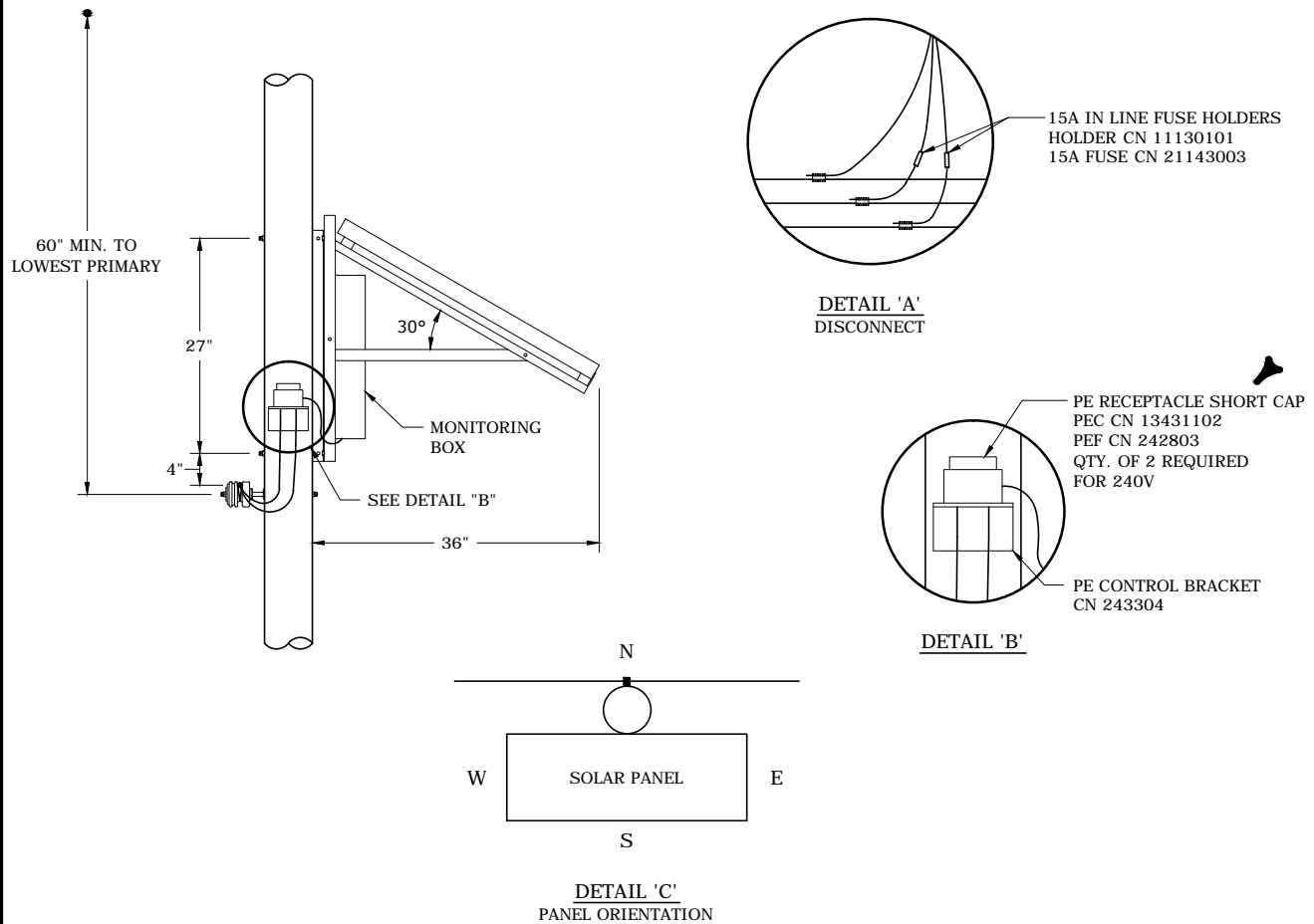


TABLE 1
SOLAR PANEL CLEARANCE TO GROUND LEVEL

NATURE OF SURFACE BELOW SOLAR PANEL	CLEARANCE TO GROUND LEVEL (FT)
1. WHERE SOLAR PANEL PARTS OVERHANG:	
A. ROADS, STREETS AND OTHER AREAS SUBJECT TO TRUCK TRAFFIC	15
B. DRIVEWAYS, PARKING LOTS AND ALLEYS	15
C. OTHER LANDS TRAVERSED BY VEHICLES SUCH AS CULTIVATED LAND, GRAZING LAND, FOREST, ORCHARD ETC.	15
D. SPACES AND WAYS SUBJECT TO PEDESTRIANS OR RESTRICTED TRAFFIC ONLY.	11
2. WHERE SOLAR PANEL PARTS ARE ALONG AND WITHIN THE LIMITS OF HIGHWAYS OR OTHER ROAD RIGHTS-OF-WAY BUT DO NOT OVERHANG THE ROADWAY:	
A. ROADS, STREETS AND ALLEYS	15
B. ROADS WHERE IT IS UNLIKELY THAT VEHICLES WILL BE CROSSING UNDER THE LINE	13

NOTES:

1. INSTALL ONLY ON POLES THAT CAN BE READILY ACCESSIBLE BY BUCKET TRUCK AND NOT ON POLES THAT MUST BE CLIMBED.
2. DRAWING SHOWING RELATIVE MOUNTING HEIGHTS WITH RESPECT TO THE NEUTRAL. SOLAR PANEL MUST BE MOUNTED FACING SOUTH AND INSTALLED WITH A 30° ANGLE AS SHOWN.
3. PRIMARY CONDUCTORS SHOULD RUN EAST-WEST AND MOUNTED ON THE NORTH SIDE OF POLE TO AVOID CASTING SHADOW ON SOLAR PANEL.
4. SEE TABLE 1 FOR GROUND LEVEL CLEARANCE REQUIREMENTS.

3				
2				
1	12/1/11	BURLISON	BURLISON	ELKINS
0	9/27/11	BURLISON	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

PE - STUDY
SOLAR PANEL INSTALLATION
ABOVE THE NEUTRAL

PGN DWG.
09.04-53

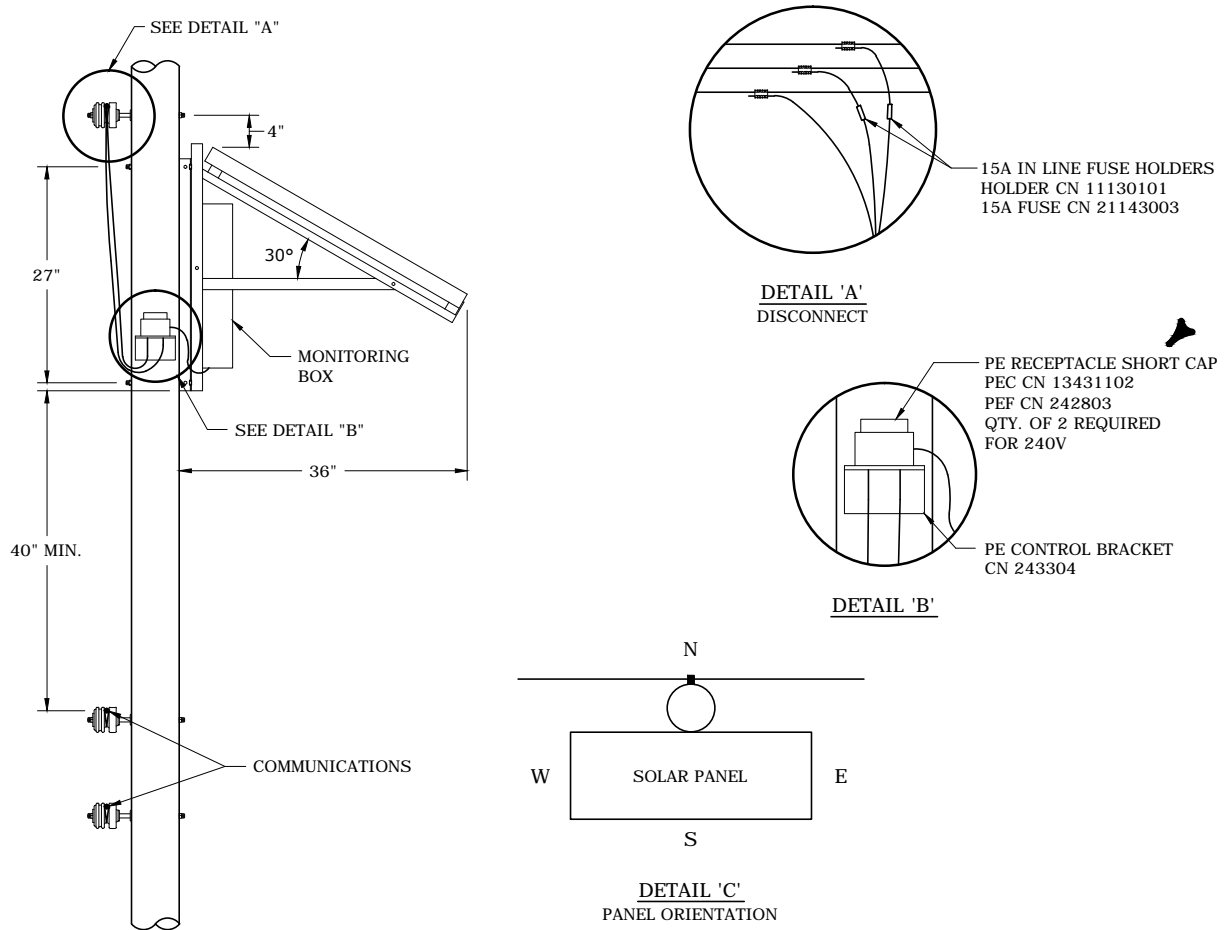


TABLE 1 SOLAR PANEL CLEARANCE TO GROUND LEVEL	
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2. DRAWING SHOWING RELATIVE MOUNTING HEIGHTS WITH RESPECT TO THE NEUTRAL. SOLAR PANEL MUST BE MOUNTED FACING SOUTH AND INSTALLED WITH A 30° ANGLE AS SHOWN.
3. PRIMARY CONDUCTORS SHOULD RUN EAST-WEST AND MOUNTED ON THE NORTH SIDE OF POLE TO AVOID CASTING SHADOW ON SOLAR PANEL.
4. SEE TABLE 1 FOR GROUND LEVEL CLEARANCE REQUIREMENTS.

3				
2				
1	12/1/11	BURLISON	BURLISON	ELKINS
0	9/27/11	BURLISON	BURLISON	ELKINS
REVISED	BY	CK'D	APPR.	

PE - STUDY
SOLAR PANEL INSTALLATION
BELOW THE NEUTRAL

PGN DWG.
09.04-54

PROGRESS ENERGY CAROLINAS
STANDARD PROCEDURES BULLETIN

THE LARGE NUMBER OF TREES AND TREE SPECIES PREVAILING IN OUR SERVICE TERRITORY HAS A DIRECT BEARING UPON THE DESIGN, MAINTENANCE, AND CONSTRUCTION OF OUR OVERHEAD DISTRIBUTION SYSTEM.

THE PURPOSE OF THESE SPECIFICATIONS IS TO PROVIDE METHODS, PROCEDURES, AND DATA TO GUIDE COMPANY PERSONNEL AND ITS CONTRACTORS ENGAGED IN SUPERVISION OF LINE CLEARANCE WORK ALONG OUR OVERHEAD DISTRIBUTION SYSTEM. DISTRIBUTION CONTRACT PROJECT SUPERVISOR HAS PRIMARY RESPONSIBILITY FOR ENSURING THAT LINES ARE MAINTAINED IN ACCORDANCE WITH THESE SPECIFICATIONS.

▶ THESE SPECIFICATIONS HAVE TWO SECTIONS: NEW CONSTRUCTION AND VEGETATION MAINTENANCE.

NEW CONSTRUCTION

IT IS THE COMPANY'S PRACTICE WHEN INSTALLING NEW OVERHEAD LINES TO CLEAR THE ENTIRE WIDTH PERMITTED BY THE RIGHT-OF-WAY EASEMENT, AND SAID EASEMENTS MUST INDICATE THE TREE CLEARING AND PRUNING REQUIRED BY THESE SPECIFICATIONS. ALL TREES ON THE RIGHT-OF-WAY WHICH MAY INTERFERE WITH LINE OPERATION MUST BE CUT. NO TREES MAY BE CUT ON HIGHWAY RIGHT-OF-WAY WITHOUT PERMISSION OF THE LANDSCAPE ENGINEER OF THE DEPARTMENT OF TRANSPORTATION.

WHEN A POWER LINE MUST BE CONSTRUCTED CLOSE TO TREES, ITS DESIGN IS DIRECTLY INFLUENCED BY THE SHAPE, GROWTH RATE, AND ANTICIPATED NORMAL MATURE HEIGHT OF THE TREE TYPE ENCOUNTERED. CAREFUL OBSERVATION OF THE FOLLOWING POINTS SHOULD PROVIDE LESS COSTLY PROTECTION FROM TREES, AND ENHANCE THE COMPANY'S VEGETATION MAINTENANCE PROGRAM.

- ▶ 1. THE NEED TO PRUNE OR CUT FRUIT AND NUT TREES SHOULD BE AVOIDED. IN BUILDING OVER DOMESTIC FRUIT TREES, WHICH RARELY REACH A MATURE HEIGHT OF OVER 30' UNDER CULTIVATION, POLES OF 40'-45' SHOULD MINIMIZE INITIAL AND OFTEN ALL FUTURE TREE PRUNING WORK. POLE LINES WITHIN ORCHARDS SHALL BE PLACED IN TREE ROW ALLEYS WHENEVER POSSIBLE.
- ▶ 2. CONSTRUCTION THROUGH TREE CROWNS SHOULD BE AVOIDED. AS A RULE, ADEQUATE CLEARANCE CANNOT BE OBTAINED AND BRANCHES MAY REMAIN IN CLOSE PROXIMITY TO CONDUCTORS ON ALL SIDES. IN SUCH SITUATIONS TREE REMOVAL, LINE REDESIGN, OR RELOCATION SHOULD BE SERIOUSLY CONSIDERED.
- 3. SPECIFIC ATTENTION SHALL BE GIVEN TO ADEQUATE POLE HEIGHTS AND LOCATIONS THAT ARE THE MOST COMPATIBLE WITH THE MAJOR SPECIES OF TREES INVOLVED. WHERE PROBLEM TREES SHOULD BE ELIMINATED, PERMISSION FOR THEIR REMOVAL SHALL BE OBTAINED FROM THE PROPERTY OWNER.
- 4. IN CASES WHERE THE LONG-TERM MAINTENANCE COST OF AN OVERHEAD LINE MAY PROVE TO BE PROHIBITIVE, AN ECONOMIC ANALYSIS (INSTALLATION AND MAINTENANCE) SHALL BE PERFORMED TO DETERMINE IF THE NEW CONSTRUCTION SHOULD BE INSTALLED OVERHEAD OR UNDERGROUND. THE LEAST COST OF NEW CONSTRUCTION SHALL THEN BE THE METHOD SELECTED FOR THE INSTALLATION OF THE NEW LINE.

PRIMARY (DWG. 09.05-05)

▶ TREES MUST BE PRUNED OR CUT TO HAVE 15' MINIMUM HORIZONTAL CLEARANCE MEASURED FROM THE CENTER OF POLE TO THE TREE TRUNK, LIMBS, AND BRANCHES.

OPEN-WIRE SECONDARY

▶ TREES MUST BE PRUNED OR CUT TO HAVE 10' MINIMUM HORIZONTAL CLEARANCE MEASURED FROM CENTER OF POLE TO THE TREE TRUNK, LIMBS, OR BRANCHES.


MULTIPLEX CABLES (HOUSE SERVICES)

TREES WILL BE PRUNED ONLY ENOUGH TO CLEAR INITIAL INSTALLATIONS WITH NO RUB OF TREE BRANCHES ON MULTIPLEX.

▶

3				
2				
1	4/27/12	JOHNSON	BURLISON	ELKINS
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TREE CLEARANCE AND PRUNING SPECIFICATIONS
(NEW CONSTRUCTION)



CAR DWG.
09.05-01

PROGRESS ENERGY CAROLINAS
STANDARD PROCEDURES BULLETIN

➤ VEGETATION MAINTENANCE

IT IS AN ESTABLISHED POLICY OF THE COMPANY TO MAINTAIN OVERHEAD LINES IN ORDER TO PROVIDE ESSENTIAL SERVICE OF DEPENDABLE QUALITY WITH MINIMAL INTERRUPTIONS IN A MANNER CAREFULLY CORRELATED WITH OTHER PUBLIC SERVICE FACILITIES.

COMPANY'S DISTRIBUTION EASEMENT AUTHORIZES COMPANY TO CLEAR AND KEEP CLEAR OF THE LINE ALL TREES AND OTHER OBSTRUCTIONS THAT MAY ENDANGER THE PROPER OPERATION AND MAINTENANCE OF THE OVERHEAD LINE. IF IT BECOMES IMPOSSIBLE TO MAINTAIN THE CLEARANCES SPECIFIED HEREIN, AN ECONOMIC ANALYSIS SHALL BE PERFORMED TO DETERMINE THE FEASIBILITY OF CONVERTING THE LINE UNDERGROUND IN ACCORDANCE WITH THE PROCEDURES FOR "UNDERGROUND INSTALLATION FOR COMPANY'S CONVENIENCE" AS STATED IN SECTION 9 OF THE STANDARD PRACTICES MANUAL.

LEANING TREES, WEAK OR DEFECTIVE TREES, AND DEAD LIMBS AND TREES THAT ARE OFF THE RIGHT-OF-WAY BUT HAZARDOUS TO LINE OPERATION SHOULD BE CUT OR PRUNED. WHERE REQUIRED, PERMISSION MUST BE OBTAINED FROM MUNICIPAL AUTHORITIES WHEN PRUNING TREES LOCATED ON CITY STREETS OR ALLEYS.

MAINTENANCE CYCLES

- THE COMPANY HAS ESTABLISHED A CYCLE-BASED STRATEGY TO PRIORITIZE ITS CIRCUITS FOR TRIMMING MEANING THAT LINES WILL BE MAINTAINED AT REGULAR, ESTABLISHED INTERVALS. THE STANDARD CYCLE FOR AN OVERHEAD DISTRIBUTION PRIMARY LINE IS 6 YEARS WHERE THE FULL 30 FOOT ROW CAN BE MAINTAINED USING ALL ELEMENTS OF THE DISTRIBUTION VEGETATION MAINTENANCE PROGRAM (DVMP). A SHORTER DURATION CYCLE GENERALLY 3 YEARS, WILL BE ESTABLISHED WHERE LOCAL ORDINANCES OR PERMITTING REQUIREMENTS DO NOT ALLOW MAINTENANCE OF THE FULL 30 FOOT ROW.
- IN ADDITION TO THE PLANNED MAINTENANCE CYCLES, REQUESTS FOR VEGETATION MAINTENANCE BY COMPANY EMPLOYEES AND CUSTOMERS WILL BE GENERATED IN THE WORK MANAGEMENT INFORMATION SYSTEM (WMIS) VIA A "REQUEST FOR TREE TRIMMING". THE VM REPRESENTATIVE FOR THE AREA WILL REVIEW THE REQUEST TO DETERMINE IF CORRECTIVE ACTIONS ARE NECESSARY.

PRIMARY (DWG. 09.05-05)

- SPECIFICATIONS FOR CLEARANCE WILL BE BASED ON THE DISTANCE FROM CONDUCTORS, INCLUDING THE NEUTRAL, TO THE BRANCH TIPS OF ENCROACHING LIMBS. TREES WITH LIMBS THAT ENCROACH WITHIN EIGHT FEET (8') OF THE CLOSEST PRIMARY OR OPEN WIRE SECONDARY CONDUCTOR WILL BE PRUNED, WITH FEW EXCEPTIONS. EXCEPTIONS INCLUDE BUT ARE NOT LIMITED TO CITY ORDINANCES AND SLOW GROWING SPECIES. SLOW GROWING TREE SPECIES THAT ARE WITHIN EIGHT FEET BUT ARE NOT EXPECTED TO COME IN CONTACT WITH CONDUCTOR BEFORE THE NEXT TRIMMING DO NOT HAVE TO BE PRUNED. TREES WILL BE PRUNED BACK TO THE FULL WIDTH OF THE ESTABLISHED ROW, TYPICALLY FIFTEEN FEET (15') ON EITHER SIDE OF THE PRIMARY LINE UNLESS LIMITED BY LOCAL ORDINANCE OR SPECIAL CIRCUMSTANCES.

➤ OPEN-WIRE SECONDARY

VEGETATION NEAR OPEN-WIRE SECONDARY VOLTAGE LINES (GENERALLY, 120 TO 600 VOLTS) WILL BE PRUNED BASED ON THE DISTANCE FROM THE CONDUCTOR, INCLUDING THE NEUTRAL, TO THE TIPS OF ENCROACHING LIMBS. TREES WITH LIMBS WITHIN EIGHT FEET (8') OF THE CONDUCTOR WILL BE PRUNED. ONCE A DECISION HAS BEEN MADE TO PRUNE THE TREE, THE TREE WILL BE PRUNED BACK TO TYPICALLY TEN FEET (10') ON EITHER SIDE OF THE LINE. PROPER PRUNING TECHNIQUES SHALL BE USED WHEN OBTAINING CLEARANCE.

MULTIPLEX CABLES (HOUSE SERVICES)


VEGETATION NEAR MULTIPLEX CABLES AND GUY WIRES SHALL BE PRUNED IF LIMBS ARE IN DIRECT CONTACT AND ARE LOAD BEARING ON THE CONDUCTORS. LOAD BEARING IS DEFINED AS LIMB(S) THAT ARE IN CONTACT WITH CONDUCTORS AND CONSIST OF SIZE AND WEIGHT CAUSING TENSION ON THE CONDUCTOR OR INTERFERENCE WITH THE NORMAL SAG OR ALIGNMENT OF THE CONDUCTOR. SPECIAL CONSIDERATION SHOULD BE MADE DURING THE WINTER MONTHS WHEN THE WEIGHT OF THE LEAVES MAY BE OFF THE LIMBS RESULTING IN ONLY A SLIGHT CLEARANCE BETWEEN THE LIMB TO THE CONDUCTOR.

STREET/AREA LIGHTING ILLUMINATION

NORMALLY THE COMPANY DOES NOT PERFORM ANY TREE TRIMMING TO IMPROVE STREET/AREA LIGHT ILLUMINATION PATTERNS. IF TREE TRIMMING MUST BE DONE TO RETAIN THE LIGHT LEASE, SUCH TREE TRIMMING SHOULD BE MINIMAL AND COST EFFECTIVE.

3				
2				
1	4/27/12	JOHNSON	BURLISON	ELKINS
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TREE CLEARANCE AND PRUNING SPECIFICATIONS
(MAINTENANCE)



CAR DWG.
09.05-02

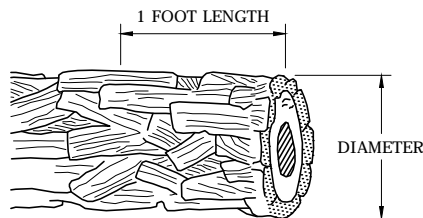
TREE PRUNING SPECIFICATIONS

1. MAINTENANCE PRUNING SHALL BE TO THE MAXIMUM REACH OF THE BUCKET, OR TO THE HINGE POINT, WHICHEVER IS HIGHER IN ACCORDANCE WITH ESTABLISHED MAINTENANCE TRIM CYCLES.
2. DIRECTIONAL PRUNING SHALL BE USED FOR ALL PRUNING ON YARDS AND STREETS TREES AS SHOWN ON DWG. 09.05-05 TO MAINTAIN THE CLEARANCE REQUIREMENTS IN THESE SPECIFICATIONS. DIRECTIONAL PRUNING TENDS TO GUIDE THE GROWTH IN OF THE TREE AWAY FROM THE CONDUCTORS AND LIMITS RAPID SPROUT GROWTH. IF SPROUTS DO FORM IN THE CONDUCTOR AREA, THEY SHALL BE REMOVED UNTIL THEY FAIL TO DEVELOP. THIS WILL SHAPE THE TREE AND DIRECT GROWTH INTO BRANCHES SELECTED TO REMAIN.
3. THE GENERAL APPEARANCE AND WELFARE OF THE TREE SHOULD ALWAYS BE CONSIDERED. SOME SELECTIVE CUTS MAY NEED TO BE MADE AWAY FROM THE AREA OF THE CONDUCTORS IN THE INTEREST OF NATURAL PRUNING.
4. LARGE BRANCHES SHALL BE REMOVED TO LATERALS AT LEAST ONE-THIRD THE DIAMETER OF THE BRANCH BEING REMOVED IF POSSIBLE. SMALL BRANCHES SHALL BE CUT AT A SUITABLE PARENT LIMB TOWARD CENTER OF THE TREE.
5. UNDER THE FOLLOWING CIRCUMSTANCES CONSIDERATION SHOULD BE GIVEN TO REMOVING TREES RATHER THAN PRUNING THEM:
 - A. DISEASED OR DYING TREES.
 - B. RAPID GROWING TREES THAT WOULD REQUIRE FREQUENT PRUNING, ESPECIALLY IF DIRECTLY UNDER THE CONDUCTORS.
 - C. TREES THAT ARE APT TO LEAN ON CONDUCTORS.
 - D. PARTIALLY UPROOTED TREES.
 - E. TREES THAT WOULD REQUIRE EXTENSIVE PRUNING BEYOND SURVIVAL.

WHEN CUTTING A TREE, IT IS NECESSARY TO TAKE PRECAUTIONS TO PREVENT THE TREE FROM INTERFERING WITH TRAFFIC OR DAMAGING ANY PROPERTY WHEN IT FALLS.


6. ANY VINES GROWING ON POLES, GUY WIRES, OR CONDUCTORS SHALL BE CUT AT GROUND LEVEL AND MAY BE SPRAYED WITH AN APPROVED HERBICIDE.
7. NO LIMBS, TRUNKS, BRUSH OR OTHER DEBRIS RESULTING FROM ROW MAINTENANCE OPERATIONS WILL BE LEFT IN SUCH A MANNER AS TO OBSTRUCT ANY DITCHES, STREAMS OR OTHER WATERWAYS.
8. TREES CUT DURING ROW MAINTENANCE OPERATIONS MUST BE LIMBED SO THAT THE TRUNKS LIE ON THE GROUND.

AVERAGE WEIGHT OF 1 FOOT SECTION OF TREE									
DIAMETER									
10"	12"	14"	16"	20"	24"	28"	32"	34"	36"
WEIGHT IN POUNDS PER FOOT OF TREE WORST CASE FOR HARDWOODS									
41	60	81	106	166	238	324	424	478	536
WEIGHT IN POUNDS PER FOOT OF TREE WORST CASE FOR SOFTWOODS									
20	28	38	50	78	113	154	201	227	254



3				
2				
1	4/27/12	JOHNSON	BURLISON	ELKINS
0	4/21/10	SIMPSON	SIMPSON	ELKINS
REVISED	BY	CK'D	APPR.	

TREE CLEARANCE AND PRUNING SPECIFICATIONS

 **Progress Energy**
CAR DWG. 09.05-03

STARTING, STOPPING, SAFETY

TO START

1. BE SURE CHAIN IS CLEAR OF ALL OBSTACLES
2. TURN IGNITION SWITCH "ON".
3. CHOKE THE ENGINE (A HOT ENGINE DOES NOT REQUIRE CHOKING).
4. HOLDING SAW FIRMLY ON THE GROUND, PULL STARTER.

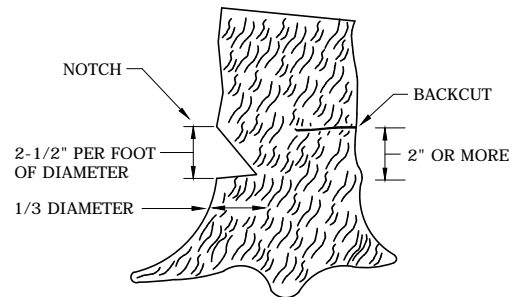
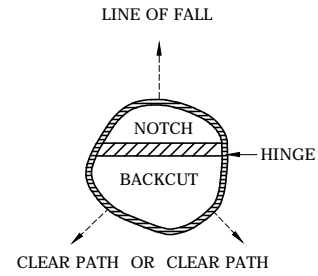
TO STOP

1. TURN IGNITION SWITCH "OFF"
2. IN FREEZING WEATHER WHEN SAW IS NOT TO BE USED RIGHT AWAY, CHOKE THE ENGINE TO A STOP.

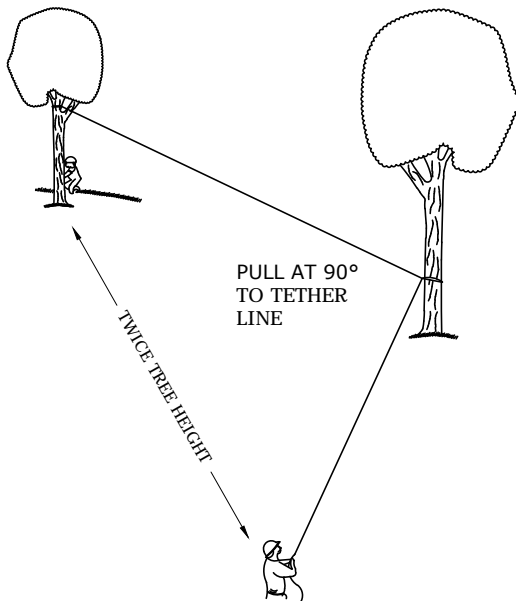
SAFETY

1. ALWAYS GRIP SAW FIRMLY WITH BOTH HANDS.
2. DO NOT START SAW AT FUELING SPOT.
3. CLEAR WORKING AREA OF UNDERBRUSH.
4. PREPARE PATH OF RETREAT FROM LINE OF FALL.
5. HARD HAT, SAFETY GOGGLES, GLOVES, EAR PROTECTION, CHAPS AND FOOT PROTECTION SHALL ALWAYS BE WORN WHILE CUTTING.

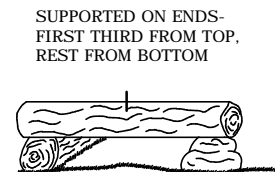
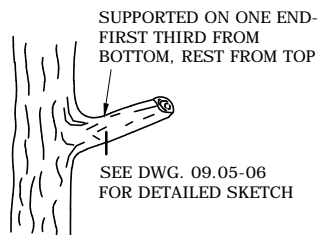
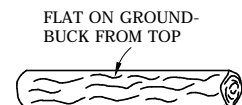
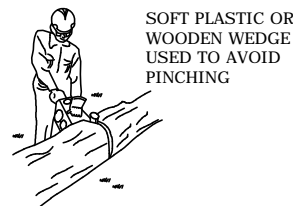
NOTCHING AND FELLING



SUGGESTED WAY OF GUIDING TREE FALL DIRECTION



BUCKING AND LIMBING

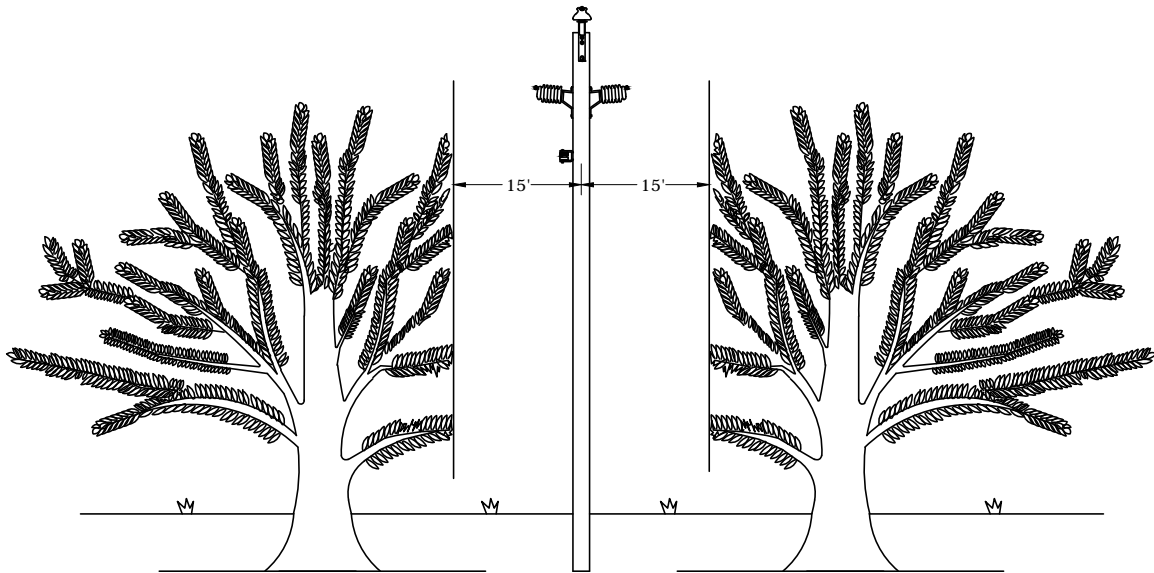


3				
2				
1	4/27/12	JOHNSON	BURLISON	ELKINS
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

USING CHAIN SAWS

Progress Energy
CAR DWG. 09.05-04

PRUNING FOR PRIMARY CLEARANCE



▶ NOTES:

1. SPECIFICATIONS FOR CLEARANCE WILL BE BASED ON THE DISTANCE FROM CONDUCTORS, INCLUDING THE NEUTRAL, TO THE BRANCH TIPS OF ENCROACHING LIMBS. TREES WITH LIMBS THAT ENCROACH WITHIN EIGHT FEET (8') OF THE CLOSEST PRIMARY OR OPEN WIRE SECONDARY CONDUCTOR WILL BE PRUNED, WITH FEW EXCEPTIONS. EXCEPTIONS INCLUDE BUT ARE NOT LIMITED TO CITY ORDINANCES AND SLOW GROWING SPECIES. SLOW GROWING TREE SPECIES THAT ARE WITHIN EIGHT FEET BUT ARE NOT EXPECTED TO COME IN CONTACT WITH CONDUCTOR BEFORE THE NEXT TRIMMING DO NOT HAVE TO BE PRUNED. TREES WILL BE PRUNED BACK TO THE FULL WIDTH OF THE ESTABLISHED ROW, TYPICALLY FIFTEEN FEET (15') ON EITHER SIDE OF THE PRIMARY LINE UNLESS LIMITED BY LOCAL ORDINANCE OR SPECIAL CIRCUMSTANCES.
2. OPEN WIRE SECONDARY CLEARANCE TO BE 10' EACH SIDE OF LINE.
3. ALL WORK PERFORMED SHOULD BE IN ACCORDANCE WITH ANSI, OSHA AND OTHER APPLICABLE SAFETY REQUIREMENTS, LAWS AND PROGRESS ENERGY GUIDELINES.

3				
2				
1	4/27/12	GUINN	BURLISON	ELKINS
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TREE CLEARANCE AND PRUNING SPECIFICATIONS
FOR PRIMARY AND OPEN WIRE SECONDARY LINES


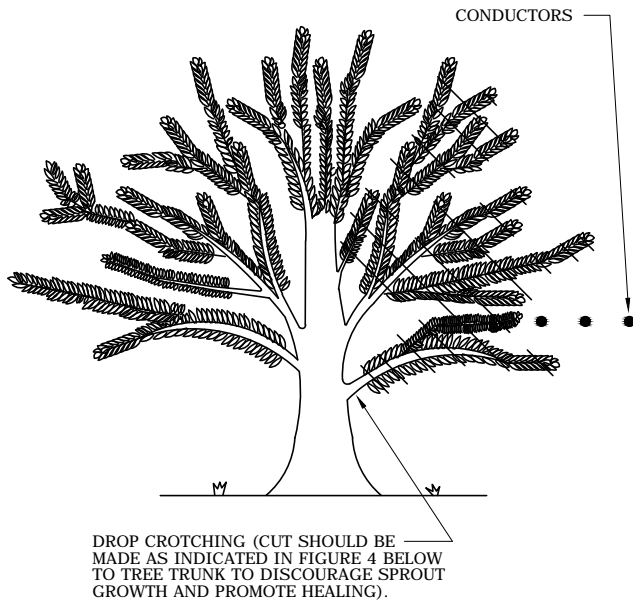
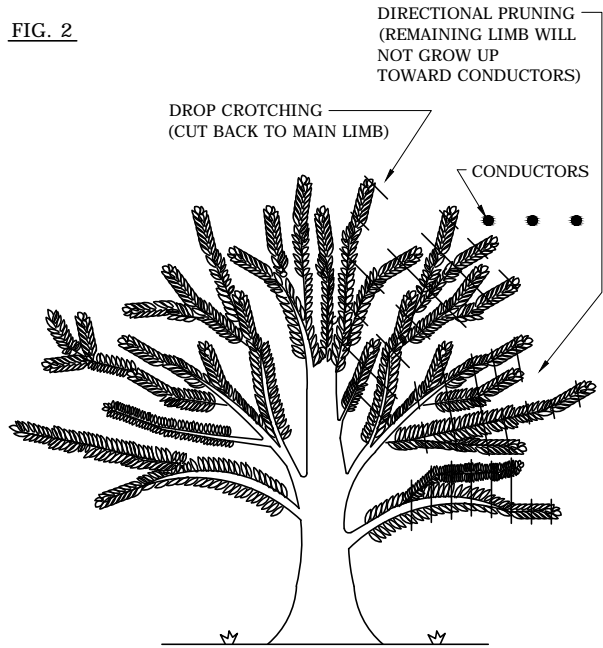

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FIG. 1



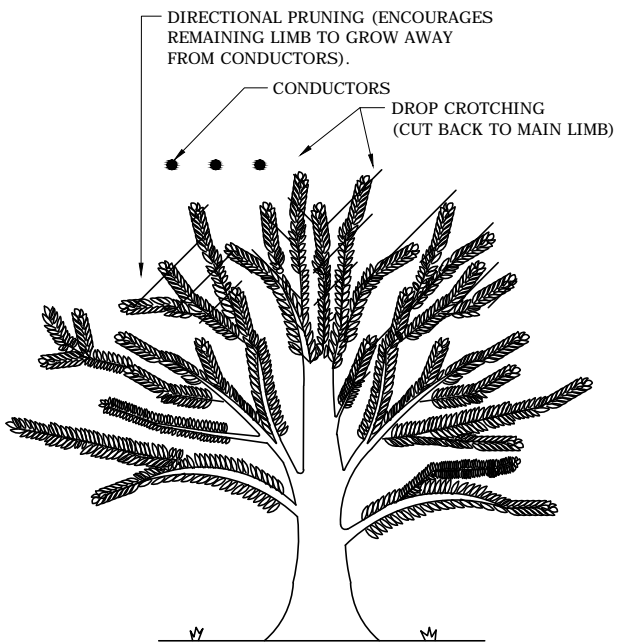
MOST OF TREE ABOVE CONDUCTORS

FIG. 2



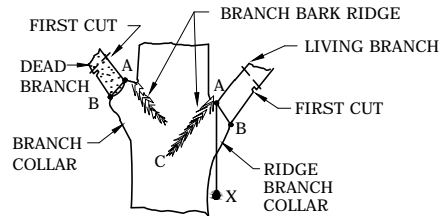
CONDUCTOR NEAR TOP OF TREE

FIG. 3



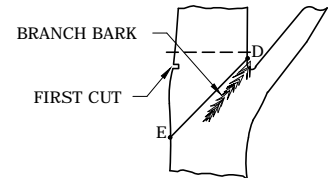
TREE UNDER CONDUCTORS

FIG. 4



CORRECT METHOD OF PRUNING

1. LOCATE THE BRANCH BARK RIDGE.
2. FIND TARGET A - OUTSIDE OF BRANCH BARK RIDGE
3. FIND TARGET B - SWELLING WHERE BRANCH MEETS BRANCH COLLAR
4. IF B IS HARD TO FIND - DROP A LINE AT AX. ANGLE XAC = TO ANGLE XAB.
5. STUB BRANCH TO BE PRUNED
6. MAKE CUT AT LINE AB



TOPPING

TO REMOVE TOP, CUT LINE DE AT AN ANGLE APPROXIMATELY THE SAME ANGLE AS THE ANGLE OF THE BRANCH BARK RIDGE.



NEVER LEAVE STUB LIKE THIS. IT WILL DECAY & INJURE TREE TRUNK.

INCORRECT METHOD OF PRUNING

- DO NOT:
1. CUT BEHIND THE BRANCH BARK RIDGE.
 2. CUT BRANCH COLLAR.
 3. TOP TREES
 4. PAINT CUTS UNLESS SPECIFIED BY THE FORESTER FOR COSMETIC PURPOSES.

REMOVING BRANCHES

3				
2				
1	4/27/12	GUINN	BURLISON	ELKINS
0	7/12/10	GUINN	GUINN	ELKINS
REVISED	BY	CK'D	APPR.	

TREE CLEARANCE AND PRUNING SPECIFICATIONS



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09.05-06