

INDEX - SECONDARIES AND SERVICES

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BURLINGTON ELECTRIC DEPT.

DISTRIBUTION STANDARDS

SECONDARIES AND
SERVICES

DATE: 04/10/20 DWG. NO.: 200000

DWN BY: CC APP. BY:

SCALE: NONE SHEET 1 OF 1

DEFINITIONS

1. SERVICE VOLTAGE IS THE VOLTAGE AT THE INTERCONNECTING POINT OF SUPPLIER (BED) AND THE CUSTOMER. PRACTICAL CONSIDERATION OFTEN REQUIRES VOLTAGE CHECKS TO BE TAKEN AT THE MAIN DISCONNECT SWITCH, BUT BED IS RESPONSIBLE ONLY TO THE INTERCONNECTION POINT. SERVICE VOLTAGE IS A SUSTAINED VOLTAGE LEVEL WHICH DOES NOT INCLUDE MOMENTARY FLUCTUATIONS DUE TO SWITCHING, MOTOR STARTING, ETC.
2. RANGE A: SPECIFIES THE VOLTAGE LIMITS WITHIN WHICH ELECTRICITY SUPPLY SYSTEMS SHALL BE DESIGNED AND OPERATED. SEE TABLE 1.
3. RANGE B: SPECIFIES THE VOLTAGE LIMITS, ABOVE AND BELOW RANGE A, THAT NECESSARILY RESULT FROM PRACTICAL DESIGN AND OPERATING CONDITIONS. SEE TABLE 1. INSTANCES OF RANGE B VOLTAGES SHALL BE LIMITED IN EXTENT, FREQUENCY, AND DURATION. FREQUENT RANGE B VOLTAGES OF DURATION EXCEEDING 5 MINUTES SHALL BE CAUSE FOR CORRECTIVE ACTION TO RESTORE RANGE A VOLTAGES. VOLTAGE OF RANGE B LIMITS REQUIRE PROMPT CORRECTIVE ACTION.

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
VOLTAGE STANDARDS	
DATE: 05/20/98	DWG. NO.: 200101
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SCALE: NONE	SHEET 1 OF 4

TABLE 1 - SERVICE VOLTAGE
BED

<u>RESIDENTIAL</u>	<u>RANGE A*</u>	<u>RANGE B*</u>
<u>120/240</u>		
MINIMUM	114/228	110/220
MAXIMUM	126/252	127/254
<u>POWER</u>		
<u>208Y/120 (4 WIRE)</u>		
MINIMUM	197Y/114	191Y/110
MAXIMUM	218Y/126	220Y/127
<u>240/120 (4 WIRE)</u>		
MINIMUM	228/114	220/110
MAXIMUM	252/126	254/127
<u>240 (3 WIRE)</u>		
MINIMUM	228	220
MAXIMUM	252	254
<u>480Y/277 (4 WIRE)</u>		
MINIMUM	456Y/263	440Y/254
MAXIMUM	504Y/291	508Y/293
<u>480 (3 WIRE)</u>		
MINIMUM	456	440
MAXIMUM	504	508

*LIMITS DEFINED BY ANSI C84.1

BURLINGTON ELECTRIC DEPT.

DISTRIBUTION STANDARDS

**VOLTAGE
STANDARDS**

DATE: 05/13/98

DWG. NO.: 200102

DWN BY: RG

APP. BY:

SCALE: NONE

SHEET 2 OF 4

RESIDENTIAL**120/240 VOLTS (THREE WIRE)**

THIS IS THE NOMINAL RESIDENTIAL VOLTAGE. REFER TO SECTION 1300 FOR TRANSFORMER SECONDARY CONNECTIONS.

POWER**120/208V WYE (FOUR WIRE)**

THIS VOLTAGE IS AVAILABLE FROM A THREE PHASE BANK IN WHICH EACH TRANSFORMER SECONDARY IS PARALLELED FOR 120 VOLTS. REFER TO SECTION 1300 AND TRANSFORMER NAME PLATE FOR TRANSFORMER CONNECTION. EQUIPMENT RATED FOR 230 VOLT OPERATION SHOULD NOT BE APPLIED TO 208Y/120 VOLT SYSTEMS.

120/240V DELTA (FOUR WIRE)

THIS IS PRIMARILY WHERE A SMALL AMOUNT OF THREE PHASE POWER IS REQUIRED. A TRANSFORMER WOULD BE BANKED OPEN WYE WITH THE LARGER LIGHTING TRANSFORMER AS IN SECTION 1300. IT IS ALSO USED FOR LOAD WHERE THE SINGLE PHASE 120/240 VOLT LOAD IS SMALL IN RELATION TO THE TOTAL LOAD AND WILL THEREFORE CAUSE LITTLE LOAD IMBALANCE.

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277/480V WYE (FOUR WIRE)

HEAVY INDUSTRIAL POWER REQUIREMENTS ARE USUALLY SERVED AT THIS VOLTAGE. REFER TO SECTION 1300 FOR TRANSFORMER CONNECTIONS. NOTE THAT 277 VOLT SECONDARY TRANSFORMERS HAVE TWO SECONDARY BUSHINGS.

BURLINGTON ELECTRIC DEPT.	
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VOLTAGE STANDARDS	
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A CUSTOMER MAY NOT UTILIZE ELECTRIC SERVICE IN A MANNER THAT CAUSES UNACCEPTABLE FLUCTUATION IN BED'S SUPPLY SYSTEM.

FLICKER CAN BE DEFINED AS A PERCEPTIBLE CHANGE IN LAMP OUTPUT PRODUCED BY A SUDDEN CHANGE IN SUPPLY VOLTAGE. THE COMMON CAUSE OF VOLTAGE FLICKER IS THE STARTING OF LARGE MOTORS. THE HIGH IN-RUSH CURRENT AND LOW POWER FACTOR OF STARTING MOTORS CREATE VOLTAGE FLICKER. PUMPS, COMPRESSORS, AIR CONDITIONERS, ETC ARE INCLUDED UNDER THIS CATEGORY. THE OPERATION OF INTERMITTENT LOADS SUCH AS WELDERS AND ARC FURNACES AS WELL AS THE SWITCHING OF CAPACITORS ON THE DISTRIBUTION SYSTEM CAN ALSO CAUSE VOLTAGE FLICKER.

FLICKER CAN BE A PROBLEM NOT ONLY AT THE MOTOR LOCATION, BUT BOTH UP AND DOWN STREAM OF THE MOTOR LOCATION ON THE FEEDER. IF FLICKER IS FOUND TO BE A PROBLEM, THE CUSTOMER MUST REDUCE THE VOLTAGE FLICKER TO BED'S ACCEPTABLE LIMITS AND WITHIN THE CURVE SHOWN IN FIGURE 1.

MOTORS

1. FLICKER DUE TO A MOTOR STARTING CAN BE REDUCED BY ONE OF THE FOLLOWING REMEDIES:

- USING A MOTOR THAT REQUIRES LESS KILOVOLTAMPERES (kVA) PER HORSEPOWER (HP) TO START.
- USING A LOW STARTING TORQUE MOTOR IF THE MOTOR STARTS UNDER LIGHT LOAD.
- REPLACING THE LARGE-SIZED MOTOR WITH A SMALLER SIZED MOTOR.
- USING A MOTOR STARTER TO REDUCE THE MOTOR IN-RUSH CURRENT AT THE START.
- USING A CAPACITOR TO CORRECT THE POWER FACTOR.
- USING A LARGER CONDUCTOR OR TRANSFORMER.
- REDUCING THE CONDUCTOR DISTANCE BETWEEN THE MOTOR AND THE TRANSFORMER.
- USING A VARIABLE SPEED DRIVE TO BRING THE MOTOR TO FULL SPEED SLOWLY.

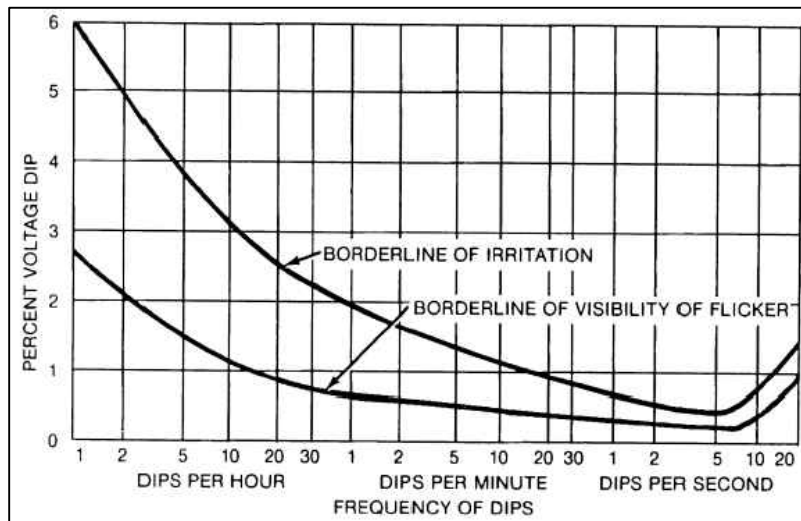


FIGURE 1

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
FLICKER STANDARD	
DATE: 04/09/20	DWG. NO.: 200201
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 1 OF 5

2. LIMITATION OF SIZE:

A) BED RESERVES THE RIGHT TO REFUSE SERVICE IN THE FOLLOWING SITUATIONS:

- I. SINGLE PHASE MOTORS LARGER THAN 5 HORSEPOWER. BED MAY AUTHORIZE THE USE OF SINGLE PHASE MOTORS LARGER THAN 5 HORSEPOWER IF IT CONCLUDES THAT THE QUALITY OF SERVICE TO OTHERS WILL NOT BE IMPAIRED. WRITTEN APPROVAL FROM BED'S ENGINEERING DEPARTMENT IS REQUIRED.
- II. POLYPHASE MOTORS LARGER THAN 5 HORSEPOWER OPERATED FROM A SINGLE PHASE SERVICE BY USE OF A PHASE CONVERTER.
- III. POLYPHASE MOTORS TOTALING GREATER THAN 5 HORSEPOWER. SPECIFIC PERMISSION FROM BED'S ENGINEERING DEPARTMENT IS REQUIRED FOR ALL CASES INVOLVING POLYPHASE MOTOR INSTALLATION OF THIS SIZE. A SPECIAL EQUIPMENT CHARGE TO COVER THE COST OF POLYPHASE TRANSFORMATION MAY BE REQUIRED.
- IV. BED RESERVES THE RIGHT TO LIMIT THE SIZE OF THE LARGEST MOTOR WHICH MAY BE STARTED ACROSS-THE-LINE ON ANY PART OF ITS SYSTEM. BASED ON THE DISTRIBUTION SYSTEM CAPABILITIES, BED MAY LIMIT THE MAXIMUM HORSEPOWER RATING, THE STARTING METHOD, AND THE NUMBER OF STARTS PER DAY.

B) SINGLE PHASE MOTORS:

- I. SINGLE PHASE MOTORS WITH A RATING OF 1/2 HORSEPOWER OR LESS MAY BE CONNECTED TO A 120V SUPPLY. MOTORS WITH A RATING OF LARGER THAN 1/2 HORSEPOWER SHOULD BE CONNECTED TO A 208V OR ABOVE SUPPLY.
- II. SINGLE PHASE MOTORS WITH A RATING LARGER THAN 1/2 HORSEPOWER BUT LESS THAN 5 HORSEPOWER WILL BE CONNECTED TO A 208V OR 240V SUPPLY. IN RESIDENTIAL AREAS AND FOR SMALL COMMERCIAL INSTALLATIONS, BED SHOULD BE CONSULTED BEFORE INSTALLING ANY MOTOR LARGER THAN 2 HORSEPOWER.
- III. 208V IS AVAILABLE FOR SINGLE PHASE MOTORS ONLY WHERE BED PROVIDES A FULL 3-PHASE 208/120V SUPPLY.
- IV. SINGLE PHASE MOTORS SUPPLIED FROM A THREE PHASE SERVICE SHALL BE PROPERLY BALANCED ACROSS THE THREE PHASES.

BURLINGTON ELECTRIC DEPT.

DISTRIBUTION STANDARDS

FLICKER
STANDARD

DATE: 04/09/20

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APP. BY:

SCALE: NONE

SHEET 2 OF 5

C) THREE PHASE MOTORS:

- I. THREE PHASE MOTORS RATED 10 HORSEPOWER OR LESS WITH LOCKED ROTOR CODES OF "A" THROUGH "G" MAY BE CONNECTED TO BED'S SYSTEM WITHOUT STARTING COMPENSATORS.
- II. FOR THREE PHASE MOTORS WITH LOCKED ROTOR CODES OTHER THAN "A" THROUGH "G" AND THREE PHASE MOTORS LARGER THAN 10 HORSEPOWER, REDUCED VOLTAGE STARTERS OR OTHER ACCEPTABLE STARTING MEANS ARE NORMALLY REQUIRED. A "MOTOR-START" ANALYSIS SHALL BE CONDUCTED TO DETERMINE IF THE MOTOR'S LOAD CAN BE SERVED BY BED.
- III. MOTORS RATED 230V OR 208-230V MAY OR MAY NOT OPERATE PROPERLY ON A 208V SYSTEM. MOTORS SHOULD BE RATED 200V OR 208V TO OPERATE ON A 208V SYSTEM. BED IS NOT RESPONSIBLE FOR THE OPERATION OF MOTORS.

3. MOTOR EVALUATION:

BED'S ENGINEERING DEPARTMENT MUST DETERMINE THE MOTOR'S IN-RUSH kVA LIMITATIONS. THE CUSTOMER APPLYING FOR SERVICE MUST SUBMIT THE FOLLOWING:

- MOTOR RATED kVA, RATED VOLTAGE, AND RATED CURRENT.
- STARTING (LOCKED ROTOR) KILOVOLTAMPERES PER HORSEPOWER OF MOTOR (kVA/HP) OR LOCKED ROTOR CODE LETTER.
- NEMA DESIGN LETTER OF MOTOR.
- MOTOR STARTING POWER FACTOR.
- STARTING INTERVAL (DUTY CYCLE); ONCE PER HOUR, TWICE PER HOUR, CONTINUOUS, ETC.
- SECONDARY/SERVICE LINE TYPE, NUMBER OF CONDUCTORS PER PHASE, AND SIZE.
- STARTING kVA FOR ANY PROPOSED REDUCED VOLTAGE STARTER.

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
FLICKER STANDARD	
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IF THE CUSTOMER'S MOTOR STARTING kVA IS HIGHER THAN THE ACCEPTABLE STARTING kVA, THEN THE APPLICATION FOR THE MOTOR IS DENIED AND THE MOTOR CANNOT BE CONNECTED TO BED'S DISTRIBUTION SYSTEM. IN ORDER TO BE CONNECTED TO BED'S DISTRIBUTION SYSTEM, THE CUSTOMER MUST REDUCE THE STARTING kVA TO A LEVEL AT OR BELOW THE CALCULATED ACCEPTABLE STARTING kVA.

THIS EVALUATION SHALL OCCUR WHEN THE MOTOR IS PROPOSED TO BE CONNECTED TO BED'S DISTRIBUTION SYSTEM. THIS METHOD OF EVALUATION IS BASED ON THE FAULT CURRENT AVAILABLE ON THE PRIMARY SIDE OF THE DISTRIBUTION TRANSFORMER IF THE TRANSFORMER IS OWNED BY THE CUSTOMER. IF THE DISTRIBUTION TRANSFORMER IS OWNED BY BED, THEN THE EVALUATION IS BASED ON THE FAULT CURRENT AVAILABLE AT THE POINT WHERE THE SUPPLY IS SOLELY USED TO SERVE THE REQUESTING CUSTOMER.

BURLINGTON ELECTRIC DEPT.

DISTRIBUTION STANDARDS

**FLICKER
STANDARD**

DATE: 06/05/98

DWG. NO.: 200204

DWN BY: LDL

APP. BY:

SCALE: NONE

SHEET 4 OF 5

BED'S VOLTAGE FLICKER STANDARD REQUIRES NO VOLTAGE CHANGE DUE TO ANY SUDDEN LOAD SHIFT OVER 3% OF NOMINAL VOLTAGE ANYWHERE ON THE PRIMARY FEEDER, OR AT THE POINT WHERE THE SUPPLY IS SOLELY USED TO SERVE THE REQUESTING CUSTOMER IF THE DISTRIBUTION TRANSFORMER IS OWNED BY BED. THE FLICKER LIMIT IS 3% OF 120V OR 3.6V FOR EQUIPMENT THAT STARTS ONCE PER HOUR. FOR EQUIPMENT THAT STARTS MORE FREQUENTLY, THE FLICKER LIMIT IS GIVEN IN FIGURE 1 BELOW. FOR MULTIPLE MOTORS, THE FREQUENCY OF STARTING WILL BE ADDED FOR ALL MOTORS AT THE LOCATION TO DETERMINE THE FLICKER LIMIT.

FIGURE 1 SHOWS THE CURVE OF THE MAXIMUM PERMISSIBLE PERCENTAGE VOLTAGE FLICKER VERSUS FREQUENCY OF OCCURRENCE ON BED'S DISTRIBUTION SYSTEM. EQUIPMENT THAT STARTS ONCE PER HOUR AND CAUSES A 3% VOLTAGE DIP WOULD BE ACCEPTABLE. HOWEVER, EQUIPMENT THAT CAUSES A 3% VOLTAGE DIP OCCURRING 5 TIMES PER HOUR WOULD NOT BE WITHIN BED'S VOLTAGE STANDARD.

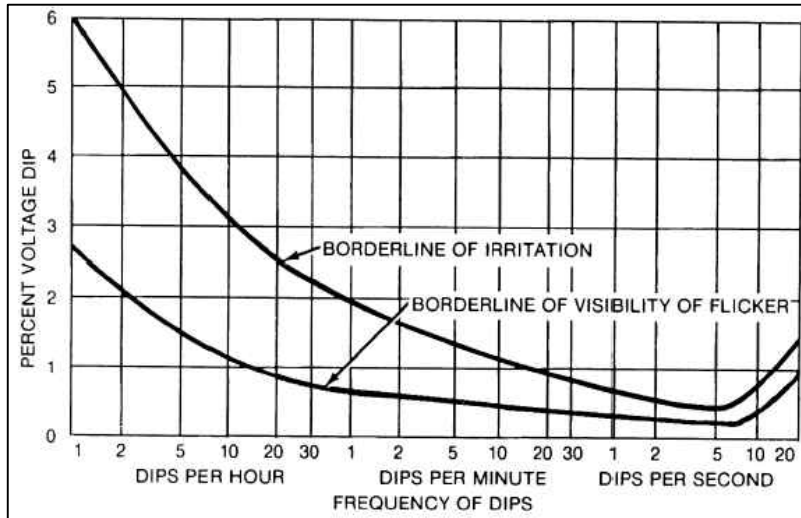


FIGURE 1

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
FLICKER STANDARD	
DATE: 04/09/20	DWG. NO.: 200205
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SCALE: NONE	SHEET 5 OF 5

SERVICES - GENERAL

1.0 SCOPE:

- 1.1 THIS STANDARD DESCRIBES THE GENERAL REQUIREMENTS NEEDED FOR THE CONSTRUCTION AND/OR PLACEMENT OF EQUIPMENT USED TO METER ELECTRICAL SERVICE.

THE BURLINGTON ELECTRIC DEPARTMENT SHALL HAVE FINAL DETERMINATION AS TO THE TYPE OF METERING TO BE PROVIDED. BED SHOULD BE CONSULTED PRIOR TO IMPLEMENTING ANY OF THE REQUIREMENTS LISTED IN THIS STANDARD.

2.0 GENERAL:

- 2.1 ALL REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE, AND OF LOCAL WIRING CODES, SHALL BE COMPLIED WITH.
- 2.2 ALL METER LOCATIONS SHALL BE LOCATED ON THE EXTERIOR OF THE BUILDING OR UNIT TO BE SERVICED. THE ACTUAL LOCATION MUST BE DETERMINED BY BED. METERS WILL NOT BE INSTALLED WHERE SUBJECT TO VIBRATION, MECHANICAL INJURY, NOR IN DANGEROUS OR INACCESSIBLE LOCATIONS.
EXCEPTIONS: INDOOR LOCATIONS MAY BE APPROVED ONLY IF BED DETERMINES IT TO BE OTHERWISE IMPRACTICAL. ALL EXCEPTIONS MUST BE PROVIDED IN WRITING.
- 2.3 A MINIMUM OF 4' SHALL BE KEPT CLEAR FROM THE FRONT OF THE METER AT ALL TIMES. ACCESS TO THE METER SHALL BE AVAILABLE AT ALL TIMES TO BED PERSONNEL.
- 2.4 THE TOP OF ALL METER CHANNELS SHALL BE MOUNTED AT AN ELEVATION BETWEEN 4' AND 5'-6" OF FINAL GRADE, 5' BEING PROVIDED IF POSSIBLE.
EXCEPTION: UNLESS OTHERWISE SPECIFIED BY BED.
- 2.5 METER CHANNELS SHALL BE ATTACHED TO THE STRUCTURE WITH AT LEAST (4) NO. 12 ROUND HEAD SCREWS OF SUFFICIENT LENGTH (TYPICALLY 1.5" LONG) TO REACH THROUGH THE EXTERIOR SHEATHING OF WOODEN STRUCTURES. APPROVED EXPANSION BOLTS OR ANCHORS SHALL BE USED FOR MASONRY BUILDINGS. ALL CHANNELS SHALL BE PLUMB.
- 2.6 IF MORE THAN ONE METER IS TO BE INSTALLED, THEY SHALL BE GROUPED AT ONE LOCATION, AND EACH SOCKET SHALL BE CLEARLY AND PERMANENTLY IDENTIFIED AS TO THE SPACE OR APARTMENT IT SERVES.
EXCEPTION: IN BUILDINGS OVER 4 FLOORS IN HEIGHT, THE METERS MAY BE GROUPED IN SUITABLE SPACES PROVIDED ON EACH FLOOR. OTHER EXCEPTIONS, WITH CAUSE, MAY BE ALLOWED BY BED. ALL EXCEPTIONS SHALL BE PROVIDED IN WRITING.
- 2.7 METER SOCKETS, CABINETS, CONNECTING CONDUITS AND SIMILAR DEVICES SHALL NOT CONTAIN ANY WIRES OR CONNECTIONS OTHER THAN THOSE REQUIRED FOR METERING OR FOR THE CONNECTION OF THE METERING TO THE LINE OR PANEL.
EXCEPTION: WIRES NECESSARY FOR CARRYING APPROVED CONTROL SIGNALS FROM THE METER.
- 2.8 ALL METERS AND POINTS OF ACCESS TO UNMETERED WIRING WITHIN A BUILDING (I.E., CT CABINETS, CABLE TRAYS, ETC.) WILL BE INSPECTED AND SEALED BY BED, AND SHALL BE MADE SEALABLE BY THE CUSTOMER BEFORE SERVICE IS SUPPLIED.
- 2.9 ALL METERS OR METERING INSTRUMENT TRANSFORMERS SHALL BE LOCATED BEFORE ANY SERVICE DISCONNECT DEVICES UNLESS BED FINDS IT TO BE IMPRACTICAL AND PROVIDES WRITTEN APPROVAL TO THE CONTRARY.

BURLINGTON ELECTRIC DEPT.

DISTRIBUTION STANDARDS

**SERVICES
GENERAL**

DATE: 01/04/13

DWG. NO.: 200301

DWN BY: RG

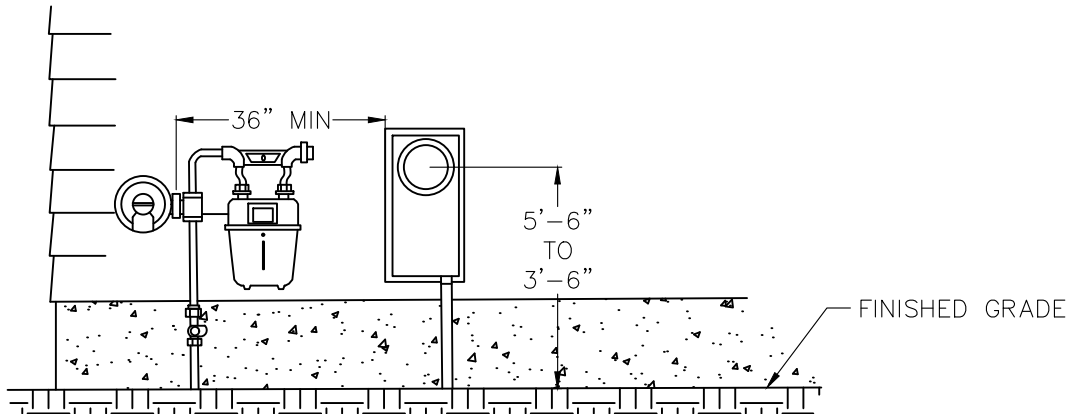
APP. BY:

SCALE: NONE

SHEET 1 OF 6

2.10 ELECTRIC AND GAS CLEARANCES:

NEWLY INSTALLED OUTDOOR ELECTRIC METERS SHALL NOT BE LOCATED ABOVE OR BELOW GAS REGULATING VENTS AND MUST MAINTAIN A MINIMUM 36" HORIZONTAL DISTANCE FROM A GAS REGULATING VENT. IN ALL CASES, THE GAS SERVICE PROVIDER SHALL BE CONSULTED REGARDING THE LOCATION OF GAS METERS NEAR ELECTRIC METERS OR ELECTRICAL EQUIPMENT.



3.0 SECONDARY METERING (BELOW 600V):

3.1 ON SERVICES OF 200A* OR BELOW, SINGLE OR MULTI-PHASE, THE CUSTOMER SHALL SUPPLY AND INSTALL A SELF-CONTAINED METER SOCKET(S) MEETING THE REQUIREMENTS OF BED SELF-CONTAINED METERING ON STANDARD PAGE 200303.

*SELF-CONTAINED METER SOCKET(S) MEETING THE REQUIREMENTS OF BED SELF-CONTAINED METERING SPECIFICATIONS A.1. AND A.4. MAY ACCOMMODATE SERVICE(S) UP TO 400A.

3.2 ON SERVICES OVER 200A, SINGLE OR MULTI-PHASE, THE CUSTOMER SHALL SUPPLY AND INSTALL A SUITABLE CURRENT TRANSFORMER CABINET(S) AND A 1.25" RIGID CONDUIT BETWEEN THE CABINET AND METER SOCKET. BED SHALL PROVIDE AND THE CUSTOMER SHALL INSTALL THE METER CHANNEL AND CURRENT TRANSFORMERS. THE CURRENT TRANSFORMERS SHALL BE INSTALLED AS DIRECTED BY BED. ALL WIRING TO THE SECONDARY TERMINALS OF THE CURRENT TRANSFORMERS AND TO THE METER SOCKET WILL BE DONE BY BED PERSONNEL. UNDER NO CONDITION SHALL THE CUSTOMER MAKE OR CHANGE ANY CONNECTION TO THE CURRENT TRANSFORMER OR METER SOCKET.

WHERE CUSTOMER OWNED SWITCHGEAR IS INVOLVED, THE CUSTOMER SHALL SUPPLY THE NAME AND ADDRESS OF THE VENDOR ALONG WITH ANY OTHER PERTINENT INFORMATION TO BED. BED SHALL SPECIFY THE SIZE AND TYPE OF THE CURRENT TRANSFORMER AND WHENEVER POSSIBLE, SHALL ORDER AND ARRANGE TO SHIP THESE DEVICES TO THE SWITCHGEAR MANUFACTURER FOR FACTORY INSTALLATION.

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4.0 PRIMARY METERING (OVER 600V):

4.1 ALL CURRENT TRANSFORMERS, POTENTIAL TRANSFORMERS, AND WIRING TO THESE DEVICES SHALL BE SUPPLIED AND INSTALLED BY BED. THE METER CHANNEL SHALL BE SUPPLIED BY BED AND INSTALLED BY THE CUSTOMER. THE CUSTOMER SHALL SUPPLY A 1.25" CONDUIT BETWEEN THE INSTRUMENT TRANSFORMERS AND THE METER CHANNEL.

EXCEPTION: WHERE CONDUIT INSTALLATION REQUIRES WORK CLOSE TO ENERGIZED HIGH VOLTAGE LINES, THAT PORTION OF THE WORK MAY BE DONE BY BED PERSONNEL.

4.2 WHERE CUSTOMER OWNED SWITCHGEAR IS INVOLVED, THE CUSTOMER SHALL SUPPLY THE NAME AND ADDRESS OF THE VENDOR ALONG WITH ANY OTHER PERTINENT INFORMATION TO BED. BED SHALL SPECIFY THE SIZE AND TYPE OF THE INSTRUMENT TRANSFORMERS AND WHENEVER POSSIBLE SHALL ORDER AND ARRANGE TO SHIP THESE DEVICES TO THE SWITCHGEAR MANUFACTURER FOR FACTORY INSTALLATION.

METER SOCKET SPECIFICATIONS

TRANSFORMER RATED METERING:

BED SHALL SUPPLY ALL THE NECESSARY METER MOUNTING DEVICES FOR TRANSFORMER RATED METERING. TRANSFORMER RATED METERING SHALL BE USED ONLY WHEN BED DETERMINES THAT SELF-CONTAINED METERING IS IMPRACTICAL (SEE BELOW). IN ALL CASES, BED SHALL SPECIFY THE TYPE OF METERING TO BE INSTALLED.

SELF-CONTAINED METERING:

SELF-CONTAINED METERING IS STANDARD WHERE THE LOAD BEING SERVED OR EXPECTED TO BE SERVED IS NOT MORE THAN 200A*, AND WHERE, ON GROUNDED SYSTEMS THE LINE TO GROUND VOLTAGE DOES NOT EXCEED 300V. ON UNGROUNDED SYSTEMS THE LINE TO LINE VOLTAGE CANNOT EXCEED 300V. IN ALL CASES BED SHALL SPECIFY THE TYPE OF METERING THAT IS TO BE INSTALLED.

*SELF-CONTAINED METER SOCKET(S) MEETING THE REQUIREMENTS OF BED SELF-CONTAINED METERING SPECIFICATIONS A.1. AND A.4. MAY ACCOMMODATE SERVICE(S) UP TO 400A.

THE CUSTOMER SHALL FURNISH AND INSTALL A METER SOCKET WHICH MEETS THE APPROPRIATE SECTION(S) OF THIS STANDARD.

A) TYPE OF SERVICES:

1) OVERHEAD SINGLE PHASE, THREE WIRE 120/240V SERVICES:

- a) RESIDENTIAL: THE CUSTOMER SHALL SUPPLY A SOCKET MEETING PART B OF THIS STANDARD, "GENERAL SOCKET SPECIFICATIONS". MANUAL BYPASSES ARE NOT REQUIRED BUT ARE PERMISSIBLE FOR 200A SOCKETS IF THEY MEET PART C OF THIS STANDARD, "MANUAL BYPASSES". FOR SOCKETS RATED GREATER THAN 200A, MANUAL BYPASSES ARE REQUIRED AND MUST MEET PART C OF THIS STANDARD, "MANUAL BYPASSES".
- b) COMMERCIAL AND INDUSTRIAL: THE CUSTOMER SHALL SUPPLY A SOCKET WITH A MANUAL BYPASS THAT MEETS BOTH SECTIONS B & C OF THIS STANDARD, "GENERAL SOCKET SPECIFICATIONS" AND "MANUAL BYPASSES".

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
SERVICES GENERAL	
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- 2) OVERHEAD SINGLE PHASE, THREE WIRE 120/208V (NETWORK) SERVICES:
 - a) RESIDENTIAL: THE CUSTOMER SHALL SUPPLY A METER SOCKET WITH A FIFTH TERMINAL AT THE 9 O’CLOCK POSITION. IT SHALL MEET PART B OF THIS STANDARD, "GENERAL SOCKET SPECIFICATIONS". MANUAL BYPASSES ARE NOT REQUIRED BUT ARE PERMISSIBLE IF THEY MEET PART C OF THIS STANDARD, "MANUAL BYPASSES".
 - b) COMMERCIAL AND INDUSTRIAL: THE CUSTOMER SHALL SUPPLY A METER SOCKET WITH A FIFTH TERMINAL AT THE 9 O’CLOCK POSITION, A MANUAL BYPASS, AND TERMINAL SHIELDS. THE SOCKET SHALL MEET SECTIONS B & C OF THIS STANDARD, "GENERAL SOCKET SPECIFICATIONS" AND "MANUAL BYPASSES".
- 3) OVERHEAD THREE PHASE SERVICES:
 - a) ALL CUSTOMERS: THE CUSTOMER SHALL SUPPLY A (7) TERMINAL METER SOCKET FOR 3–PHASE FOUR WIRE SERVICES, AND A (5) TERMINAL METER SOCKET FOR 3–PHASE THREE WIRE SERVICES. THE SOCKET SHALL HAVE A MANUAL BYPASS AND COMPLY WITH SECTIONS B & C OF THIS STANDARD, "GENERAL SOCKET SPECIFICATIONS" AND "MANUAL BYPASSES". FOR MULTIPLE SOCKET INSTALLATIONS, BED MUST BE CONSULTED TO DETERMINE THE SPECIAL REQUIREMENTS FOR THIS TYPE OF INSTALLATION.
- 4) UNDERGROUND SINGLE PHASE, THREE WIRE SERVICES:
 - a) RESIDENTIAL: THE CUSTOMER SHALL SUPPLY A MINIMUM OF A 200A RATED SOCKET. THE MINIMUM DIMENSIONS SHALL BE 14”H X 12”W X 4.375”D WITH KNOCKOUTS FOR A MINIMUM OF 2.5” CONDUIT. THE LINE AND LOAD LUGS SHALL BE CAPABLE OF ACCEPTING 350 MCM CU/AL. THE SOCKET SHALL MEET PART B OF THIS STANDARD, "GENERAL SOCKET SPECIFICATIONS". MANUAL BYPASSES ARE NOT REQUIRED FOR 200A SOCKETS BUT ARE PERMISSIBLE IF THEY MEET PART C OF THIS STANDARD, "MANUAL BYPASSES". FOR SOCKETS RATED GREATER THAN 200A, MANUAL BYPASSES ARE REQUIRED AND MUST MEET PART C OF THIS STANDARD, "MANUAL BYPASSES".
 - b) COMMERCIAL AND INDUSTRIAL: THE CUSTOMER SHALL SUPPLY A MINIMUM OF A 200A RATED SOCKET. THE MINIMUM DIMENSIONS SHALL BE 14”H X 12”W X 4.375”D WITH KNOCKOUTS FOR A MINIMUM OF 2.5” CONDUIT. THE LINE AND LOAD LUGS SHALL BE CAPABLE OF ACCEPTING 350 MCM CU/AL. THE SOCKET SHALL HAVE A MANUAL BYPASS AND SHALL MEET PARTS B & C OF THIS STANDARD, "GENERAL SOCKET SPECIFICATIONS" AND "MANUAL BYPASSES".
- 5) UNDERGROUND SINGLE PHASE, THREE WIRE 120/208V (NETWORK) SERVICES:
 - a) RESIDENTIAL: THE CUSTOMER SHALL SUPPLY A MINIMUM OF A 200A RATED SOCKET. THE MINIMUM DIMENSIONS SHALL BE 14”H X 12”W X 4.375”D WITH KNOCKOUTS FOR A MINIMUM OF 2.5” CONDUIT. THE LINE AND LOAD LUGS SHALL BE CAPABLE OF ACCEPTING 350 MCM CU/AL. THE SOCKET SHALL HAVE A FIFTH TERMINAL AT THE 9 O’CLOCK POSITION. THE SOCKET SHALL ALSO MEET PART B OF THIS STANDARD, "GENERAL SOCKET SPECIFICATIONS". MANUAL BYPASSES ARE NOT REQUIRED BUT ARE PERMISSIBLE IF THEY MEET PART C OF THIS STANDARD, "MANUAL BYPASSES".

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
SERVICES	
GENERAL	
DATE: 05/22/23	DWG. NO.: 200304
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 4 OF 6

- b) COMMERCIAL AND INDUSTRIAL: THE CUSTOMER SHALL SUPPLY A MINIMUM OF A 200A RATED SOCKET. THE MINIMUM DIMENSIONS SHALL BE 14"H X 12"W X 4.375"D WITH KNOCKOUTS FOR A MINIMUM OF 2.5" CONDUIT. THE LINE AND LOAD LUGS SHALL BE CAPABLE OF ACCEPTING 350 MCM CU/AL. THE SOCKET SHALL HAVE A FIFTH TERMINAL AT THE 9 O'CLOCK POSITION, A MANUAL BYPASS, AND TERMINAL SHIELDS. IT SHALL COMPLY WITH BOTH PARTS B & C OF THIS STANDARD, "GENERAL SOCKET SPECIFICATIONS" AND "MANUAL BYPASSES".
- 6) UNDERGROUND THREE PHASE, THREE AND FOUR WIRE SERVICES ONLY:
 - a) ALL CUSTOMERS: THE CUSTOMER SHALL SUPPLY A MINIMUM OF A 200A RATED SOCKET. THE LINE AND LOAD LUGS SHALL BE CAPABLE OF ACCEPTING 350 MCM CU/AL. THE SOCKET SHALL HAVE A MANUAL BYPASS AND MEET BOTH SECTIONS B & C OF THIS STANDARD, "GENERAL SOCKET SPECIFICATIONS" AND "MANUAL BYPASSES". FOR MULTIPLE SOCKET INSTALLATIONS, BED MUST BE CONSULTED TO DETERMINE ITS REQUIREMENTS FOR THIS TYPE OF INSTALLATION.
- B) GENERAL SOCKET SPECIFICATIONS:
 1. SOCKETS SHALL BE "UL" APPROVED FOR THEIR LOCATION AND USE.
 2. SOCKETS SHALL BE OF THE RECTANGULAR SHEET METAL TYPE. ROUND TYPE SOCKETS OR CAST METAL SOCKETS ARE NOT PERMITTED.
 3. THE SOCKET RATING SHALL EQUAL OR EXCEED THE CAPACITY OF THE SERVICE ENTRANCE EQUIPMENT AND CONDUCTORS.
 4. SOCKETS MAY BE THE RING TYPE OR RINGLESS.
 5. AUTOMATIC BYPASSES ARE NOT PERMITTED UNDER ANY CIRCUMSTANCES. SOCKETS WITH A MANUAL BYPASS MAY BE USED IF THE SOCKETS MEET THE ADDITIONAL REQUIREMENTS OF PART C OF THIS STANDARD, "MANUAL BYPASSES".
 6. THERE SHALL NOT BE MORE THAN (3) VERTICAL POSITIONS AT ANY MULTIPLE SOCKET INSTALLATIONS.
 7. ALL FOUR TERMINAL SOCKETS SHALL HAVE THE CAPABILITY OF ADDING A FIFTH AND SIXTH TERMINAL BETWEEN THE UPPER AND LOWER TERMINALS (3 AND 9 O'CLOCK POSITIONS) WITHOUT REMOVING THE TERMINAL BLOCKS.
 8. COVER PLATES SHALL BE THE APPROVED CLEAR PLASTIC TYPE. BED WILL SUPPLY THEM. THEY WILL BE USED AFTER THE WIRING IS COMPLETED TO PROTECT THE INTERIOR UNTIL A METER IS SET.
 9. SEALING RINGS, IF REQUIRED, SHALL BE SUPPLIED BY THE CUSTOMER.
- C) MANUAL BYPASSES:
 1. AUTOMATIC BYPASSES ARE PROHIBITED.
 2. BYPASSES SHALL HAVE A SINGLE, INDEPENDENT, HAND-OPERATED MECHANISM.
 3. THE NON-BYPASSED, IN SERVICE POSITION OF THE OPERATING MECHANISM MUST BE VISIBLE WHEN THE METER IS INSTALLED WITHOUT THE SOCKET COVER FOR TEST PURPOSES.
 4. IT MUST NOT BE POSSIBLE TO REPLACE THE SOCKET COVER WHEN THE OPERATING MECHANISM HANDLE IS IN THE BYPASSED POSITION.
 5. BYPASSES MUST NOT BE USED AS LOAD BREAKING DEVICES.
 6. BYPASSES WHICH REQUIRE AUXILIARY EQUIPMENT, SUCH AS JUMPERS, ARE NOT PERMITTED.
 7. ALL THREE PHASE SOCKETS WITH BYPASSES MUST HAVE A MECHANISM WHICH LOCKS THE METER BLADES IN THE SOCKET JAWS WHEN IN THE NON-BYPASSED (IN SERVICE) POSITION, AND WHICH WILL RELEASE THE BLADES IN THE BYPASSED POSITION.

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
SERVICES GENERAL	
DATE: 01/04/13	DWG. NO.: 200305
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 5 OF 6

SERVICES SHALL BE DESIGNED SO THAT VOLTAGE DROP FROM THE SECONDARY TERMINALS TO THE METER DOES NOT EXCEED 1.0 VOLTS. OVERHEAD RESIDENTIAL SERVICES SHALL BE LIMITED TO 100'. UNDERGROUND SERVICE SIZES AND LENGTHS ARE DESCRIBED IN SECTION 1600.

MIDSPAN SERVICE ATTACHMENTS MAY BE MADE ONLY WHEN NECESSARY.

REFER TO SECTION 0400 FOR OVERHEAD SERVICE CLEARANCES.

ALUMINUM WIRE SHALL NOT BE CONNECTED DIRECTLY TO TRANSFORMER TERMINALS. REFER TO SECTION 1300 FOR TRANSFORMER CONNECTIONS.

THE METER LOCATION SHALL BE:

1. WHERE SNOW AND RAIN WILL NOT FALL FROM ROOFS ONTO THE METER.
2. ACCESSIBLE TO THE METER READER AT ALL TIMES.

DISTRIBUTION SHALL DETERMINE THE BEST LOCATION FOR THE SERVICE.

LINE-TO-NEUTRAL, LINE-TO-LINE, AND LINE-TO-LOAD VOLTAGE TESTS SHALL BE MADE ON ALL NEW SERVICES. READINGS SHALL BE TAKEN AT THE METER SOCKET. READINGS AND TIME ARE TO BE RECORDED.

BURLINGTON ELECTRIC DEPT.

DISTRIBUTION STANDARDS

**SERVICES
GENERAL**

DATE: 01/04/13

DWG. NO.: 200306

DWN BY: RG

APP. BY:

SCALE: NONE

SHEET 6 OF 6

STANDARD MATERIALS TO BE USED FOR SERVICES

1. TRIPLEX CABLE, #2 ALUMINUM, TRADE NAME "SHRIMP"/XLPE

DEADENDS: WEDGE CLAMP AT POLE AND DEADEND BASKET AT HOUSE.

USE: FOR SINGLE PHASE SERVICES TO SINGLE OR TWO FAMILY HOUSES WHERE LOAD WILL NOT EXCEED 145A.

2. TRIPLEX CABLE, 1/0 ALUMINUM, TRADE NAME "GAMMARUS"/XLPE

DEADENDS: WEDGE CLAMP AT POLE AND DEADEND BASKET AT HOUSE.

USE: FOR SINGLE PHASE SERVICE TO CUSTOMERS WHERE EXPECTED LOAD IS BETWEEN 145A AND 200A.

3. TRIPLEX CABLE, 4/0 ALUMINUM, TRADE NAME "LEPAS"/XLPE

DEADENDS: DEADEND BASKET AT POLE AND BUILDING.

USE: FOR SINGLE PHASE SERVICE TO CUSTOMERS WHERE EXPECTED LOAD IS BETWEEN 200A AND 310A.

4. TRIPLEX CABLE, 336 ALUMINUM, TRADE NAME "LIMPET"/XLPE

DEADENDS: DEADEND BASKET AT POLE AND BUILDING.

USE: FOR SINGLE PHASE SERVICE TO CUSTOMERS WHERE EXPECTED LOAD IS BETWEEN 310A AND 380A.

BURLINGTON ELECTRIC DEPT.

DISTRIBUTION STANDARDS

**SERVICE
MATERIALS**

DATE: 01/25/12

DWG. NO.: 200401

DWN BY: RG

APP. BY:

SCALE: NONE

SHEET 1 OF 2

5. QUADRUPLEX CABLE, 1/0 ALUMINUM, TRADE NAME "SHETLAND"/XLPE

DEADENDS: WEDGE CLAMP AT POLE AND DEADEND BASKET AT BUILDING.

USE: FOR THREE PHASE SERVICES TO CUSTOMERS WHERE EXPECTED LOAD IS LESS THAN 175A.

6. QUADRUPLEX CABLE, 4/0 ALUMINUM, TRADE NAME "WALKING"/XLPE

DEADENDS: DEADEND BASKET AT POLE AND BUILDING.

USE: FOR THREE PHASE SERVICES TO CUSTOMERS WHERE EXPECTED LOAD IS BETWEEN 175A AND 270A.

7. QUADRUPLEX CABLE, 336 ALUMINUM, TRADE NAME "EXMOOR"/XLPE

DEADENDS: DEADEND BASKET AT POLE AND BUILDING.

USE: FOR THREE PHASE SERVICES TO CUSTOMERS WHERE EXPECTED LOAD IS BETWEEN 270A AND 330A.

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
SERVICE MATERIALS	
DATE: 01/25/12	DWG. NO.: 200402
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 2 OF 2

DESIGN

SECONDARY CABLE SHALL BE INSTALLED TO SERVICE CUSTOMERS UP TO 350' ON EITHER SIDE OF A TRANSFORMER. SPANS SHOULD NOT EXCEED 225'. LINE EXTENSIONS SHALL BE DESIGNED FOR SECONDARY CABLE WHERE THERE IS POTENTIAL FOR ONE SERVICE PER POLE. RECONSTRUCTION PROJECTS WITH A SECONDARY LAYOUT SHALL BE REVIEWED BY ENGINEERING FOR VOLTAGE DROP AND CONSTRUCTION CONSIDERATIONS. VOLTAGE DROP ON THE SECONDARY WIRE SHALL BE LESS THAN 2.0 VOLTS. SEE SECTION 1801 FOR AMPACITY RATING FOR EACH SECONDARY WIRE SIZE.

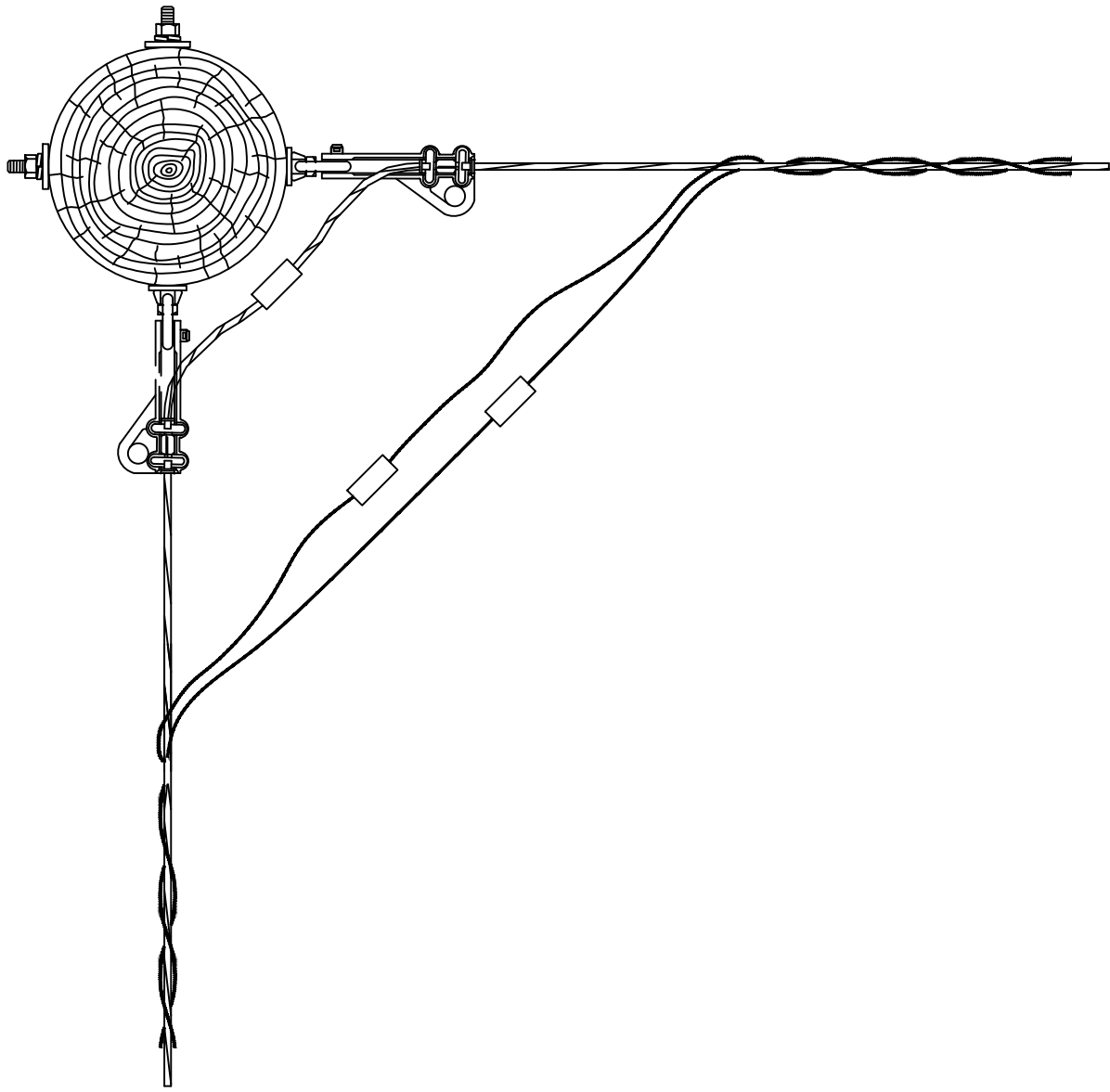
TRANSFORMERS PRESENTLY INSTALLED SHALL NOT BE REMOVED SOLELY TO REPLACE THEM WITH A SECONDARY SYSTEM.

SECONDARY SHOULD BE INSTALLED IN A CONTINUOUS RUN. SECTIONALIZING IS DONE BY OPENING THE INSULATED CONDUCTORS AT THE DESIRED LOCATIONS. CABLE SHALL BE INSTALLED BELOW THE NEUTRAL WIRE POSITION, ATTACHED VIA HENDRIX BRACKET. SAG OF SECONDARY IS ACCORDING TO SECTION 1900.

OPEN WIRE SECONDARY SHALL BE REPLACED WITH TRIPLEX/QUADRUPLEX CABLE.

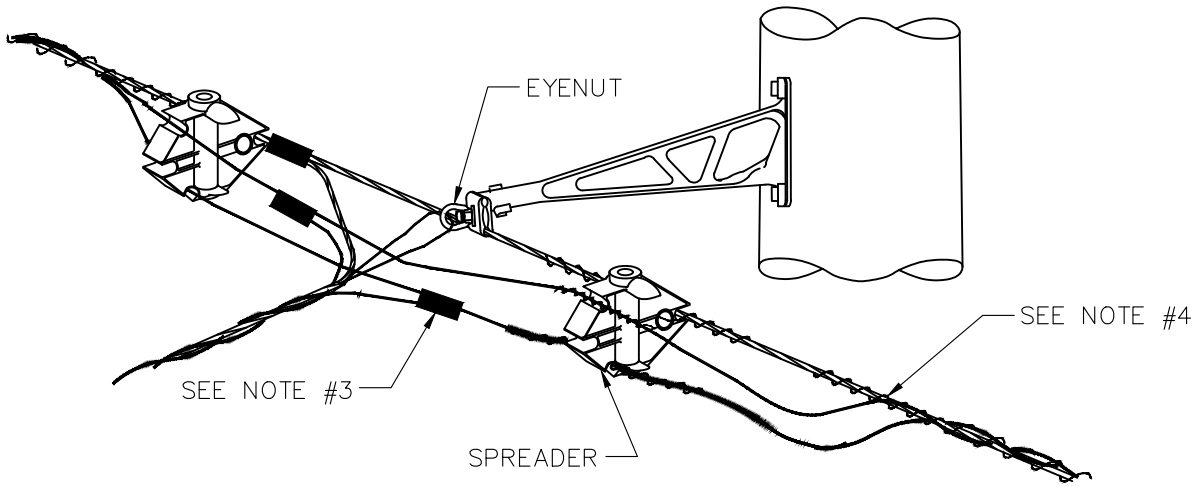
ENERGIZED SECONDARY CONNECTIONS ON A POLE SHALL BE LEFT BARE. ENERGIZED SECONDARY CONNECTIONS IN A UTILITY HOLE, HAND HOLE, OR PEDESTAL SHALL BE REINSULATED.

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
SECONDARY INSTALLATION	
DATE: 04/09/20	DWG. NO.: 200501
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 1 OF 4



BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
SECONDARY INSTALLATION	

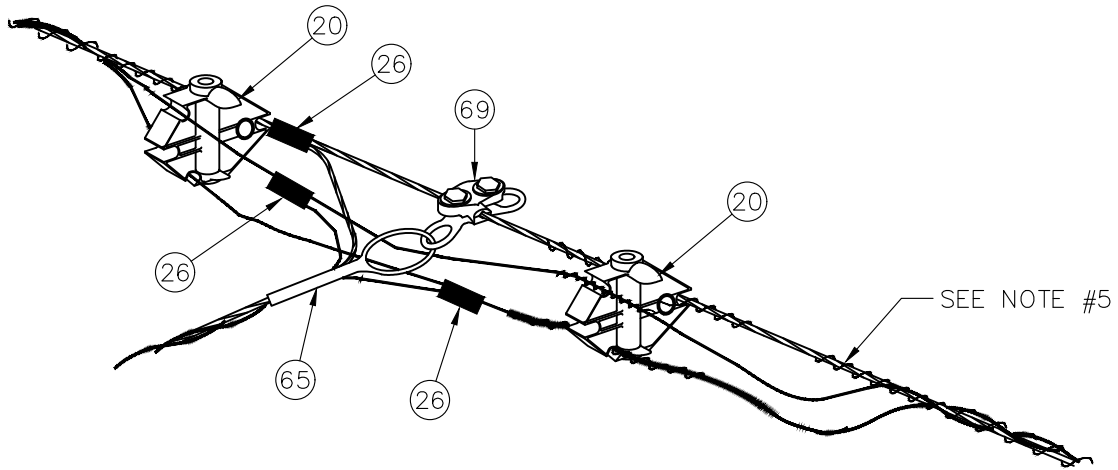
DATE: 05/20/98	DWG. NO.: 200502
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 2 OF 4



NOTES

- 1. USE HENDRIX BRACKET 0°-30°. USE SUSPENSION ANGLE CLAMP 30°-60°.
- 2. TAPE SPREADER IN PLACE.
- 3. SECONDARY CONNECTIONS SHALL BE STAGGERED.
- 4. BUNDLE WRAP WIRE MINIMUM OF FOUR TURNS.

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
SECONDARY INSTALLATION	
DATE: 05/18/98	DWG. NO.: 200503
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 3 OF 4



NOTES

1. MIDSPAN CONSTRUCTION SHALL BE USED ONLY WHEN ALL OTHER ALTERNATIVES FAIL.
2. SECONDARY CONNECTIONS SHALL BE STAGEGREGD.
3. THIS CONSTRUCTION IS SUITABLE FOR A SINGLE #2 ALUMINUM SERVICE, OR OPPOSITE 1/0 ALUMINUM SERVICES OF EQUAL LENGTH. FOR SINGLE 1/0 SERVICE REFER TO ENGINEERING.
4. SERVICES NOT TO EXCEED 100 FEET IN LENGTH.
5. BUNDLE WRAP WIRE MINIMUM OF FOUR TURNS.
6. TAPE SPREADERS IN PLACE.

ASSEMBLIES: MATERIAL LIST

CON-MID-SPACER

<u>ITEM</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
20	2	CABLE SPACERS
69	1	MIDSPAN CLAMP

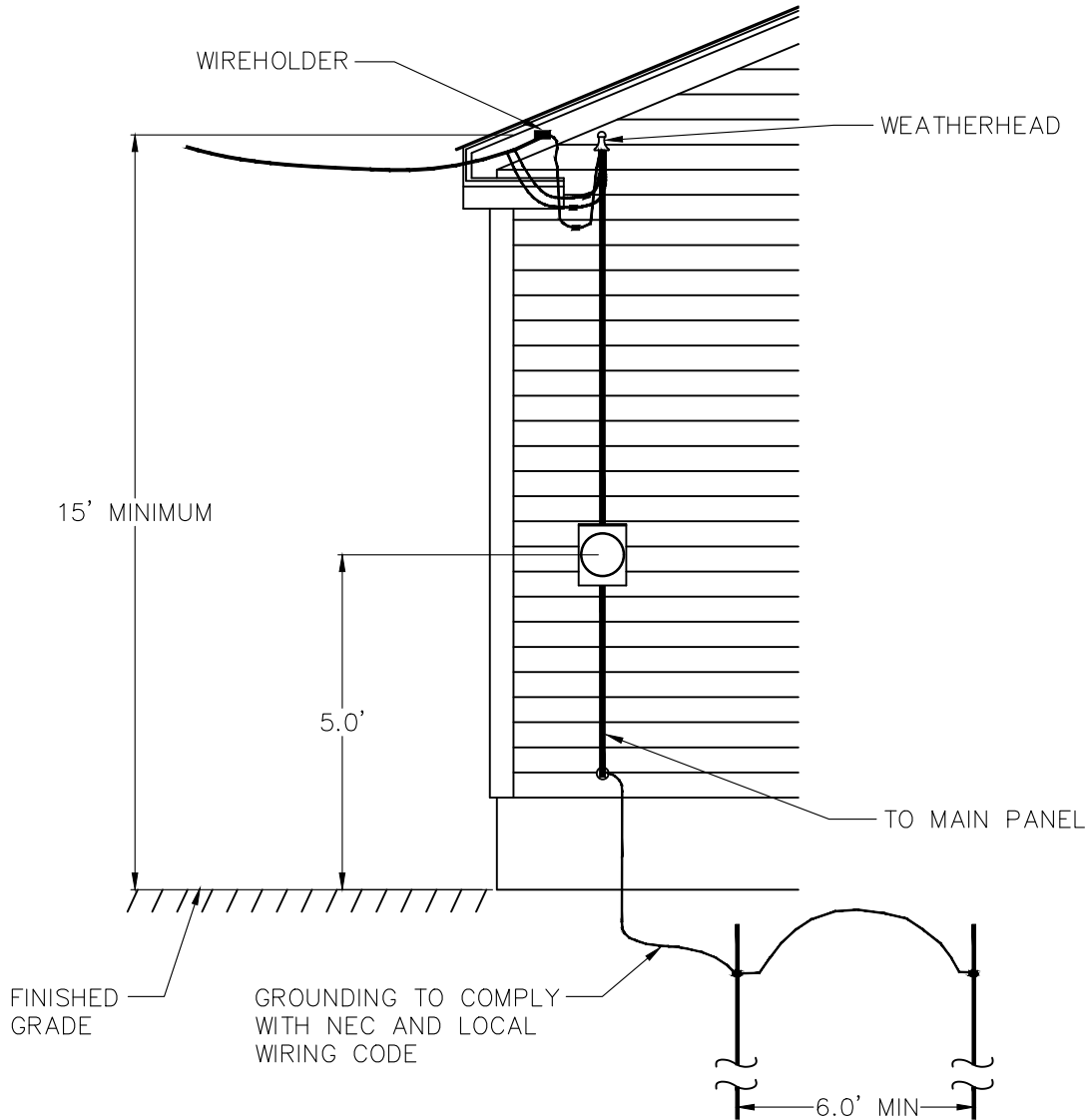
CON-MID-CONNECT

<u>ITEM</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
26	3	PARALLEL GROOVE CONNECTORS
65	1	WEDGE CLAMP

CON-POA

<u>ITEM</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
65	1	WEDGE CLAMP
66	3	INSULINK CONNECTORS
67	1	3" WIRE HOLDER

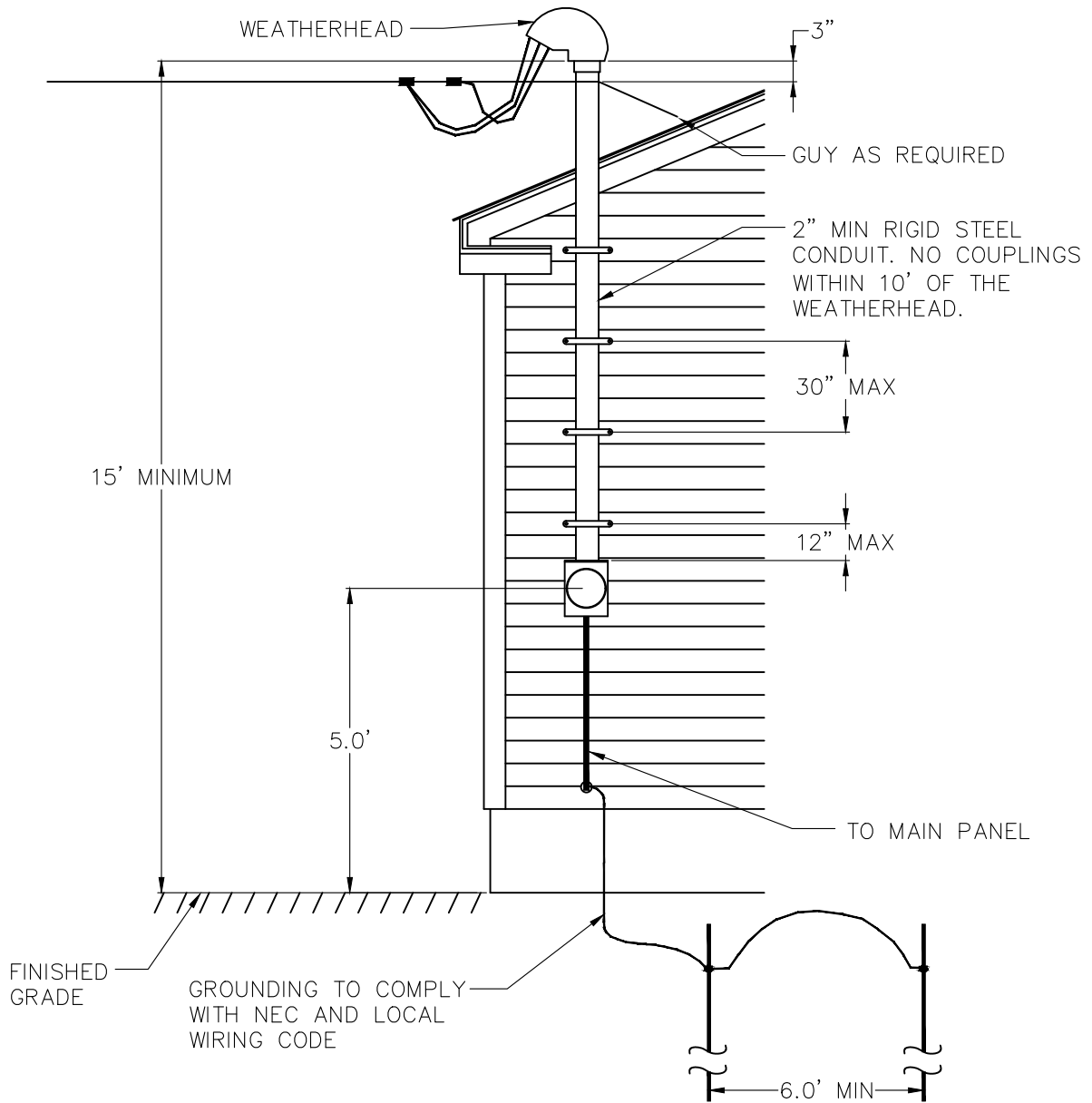
BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
SECONDARY INSTALLATION	
DATE: 02/13/14	DWG. NO.: 200504
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 4 OF 4



NOTES

1. METER LOCATION AND POINT OF ATTACHMENT TO BE APPROVED BY BED REPRESENTATIVE.
2. WEATHERHEAD SHALL BE ABOVE THE POINT OF ATTACHMENT IF POSSIBLE, BUT MUST ALWAYS BE WITHIN 24" OF ATTACHMENT POINT.
3. ALL SPLICES BETWEEN WEATHERHEAD AND BUILDING ATTACHMENT SHALL BE MADE BELOW THE LEVEL OF THE WEATHERHEAD.
4. METER SOCKETS 200A AND ABOVE SHALL COMPLY WITH BED STANDARD 3.2 UNDER SECTION 200302.
5. MAIN BREAKER SHALL BE WITHIN 10' OF SERVICE CABLE ENTRANCE.
6. THREE FEET OF SERVICE ENTRANCE CABLE SHALL BE LEFT ON THE LINE SIDE OF THE WEATHERHEAD.
7. BUILDINGS WITH MASONRY OR MASONRY LIKE EXTERIORS, THE CUSTOMER SHALL PROVIDE A BUILDING ATTACHMENT ANCHOR OF ADEQUATE STRENGTH, ABLE TO SUPPORT THE STRAIN OF THE SERVICE DROP.

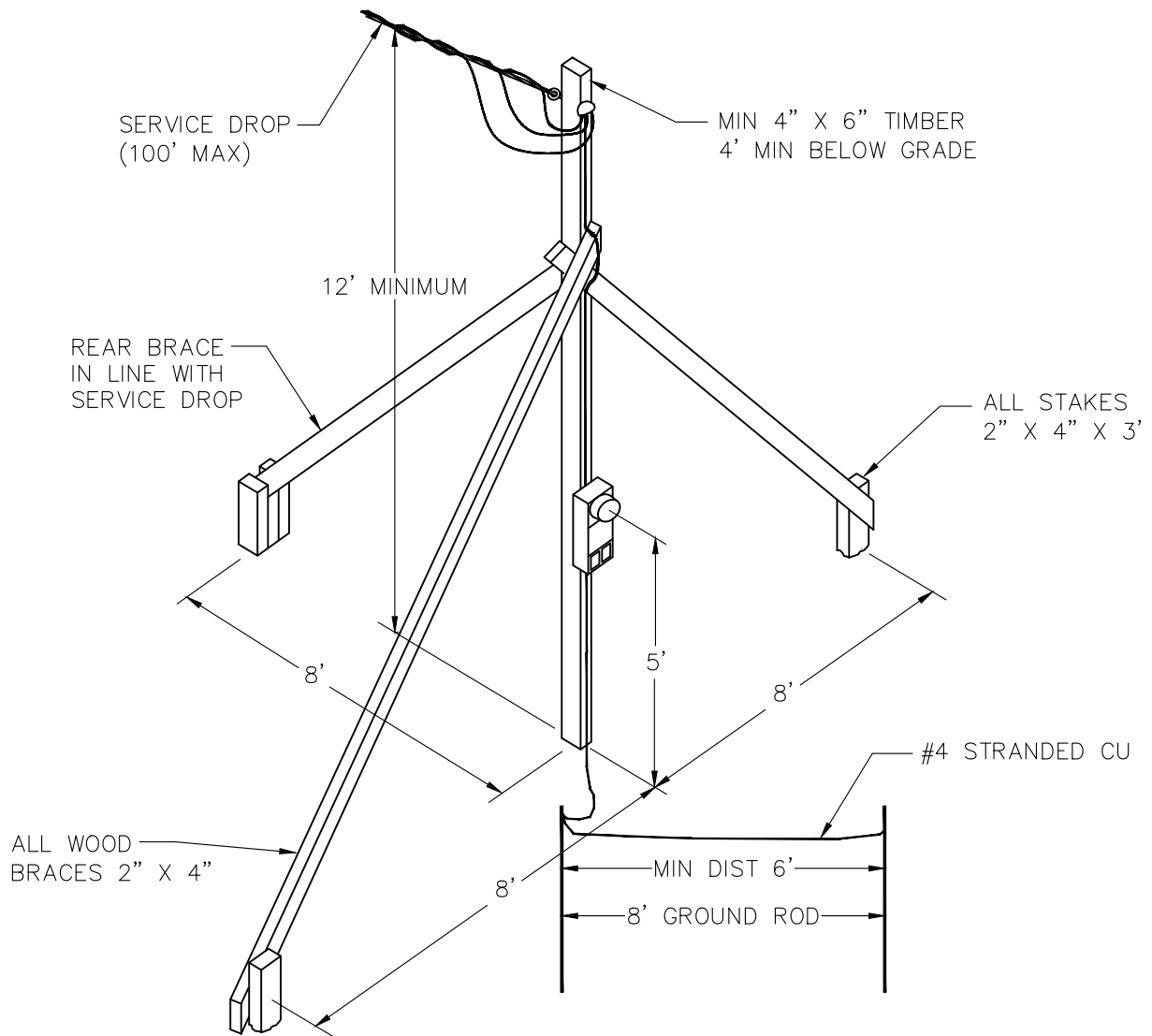
BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
OVERHEAD RESIDENTIAL SERVICE	
DATE: 10/30/24	DWG. NO.: 200601
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 1 OF 2



NOTES

1. NO OTHER EQUIPMENT SHALL BE INSTALLED TO THE MAST.
2. METER LOCATION AND REQUIREMENT OF GUY WIRE FOR MAST SHALL BE APPROVED BY BED REPRESENTATIVE.
3. CUSTOMER ASSUMES RESPONSIBILITY THAT THE MAST IS OF ADEQUATE STRENGTH AND ABLE TO SUPPORT THE STRAIN OF THE SERVICE DROP.
4. METER SOCKETS 200A AND ABOVE SHALL COMPLY WITH BED STANDARD 3.2 UNDER SECTION 200302.
5. THREE FEET OF SERVICE ENTRANCE CABLE SHALL BE LEFT ON THE LINE SIDE OF THE WEATHERHEAD.

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
OVERHEAD MAST SERVICE	
DATE: 01/28/13	DWG. NO.: 200602
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 2 OF 2



NOTES

1. RAIN TIGHT SERVICE EQUIPMENT, WITH GROUND FAULT PROTECTION AND PROVISION FOR LOCKING, AND ALL OTHER MATERIALS AND EQUIPMENT TO BE OWNED AND INSTALLED BY CUSTOMER, BED TO INSTALL METER, SERVICE DROP AND CONNECT SERVICE DROP AT WEATHERHEAD.
2. SERVICE LOCATION AND TYPE OF CONSTRUCTION MUST BE APPROVED IN ADVANCE BY BED. INSTALLATION ON STRUCTURES OTHER THAN SHOWN ABOVE WILL BE PERMITTED ONLY WITH ADVANCE APPROVAL OF BED.
3. ELECTRICAL INSPECTION MUST BE MADE PRIOR TO ENERGIZING.
4. ADDITIONAL HEIGHT MAY BE REQUIRED FOR PROPER CLEARANCE WHEN TEMPORARY SERVICE STRUCTURE IS ON OPPOSITE SIDE OF ROAD FROM BED SERVICE POLE, OR WHERE CLEARANCE IS NEEDED OVER AREAS SUBJECT TO HEAVY TRUCK TRAFFIC.

BURLINGTON ELECTRIC DEPT.

DISTRIBUTION STANDARDS

**OVERHEAD
SERVICE**

DATE: 06/25/98

DWG. NO.: 200701

DWN BY: RG

APP. BY:

SCALE: NONE

SHEET 1 OF 1

POTENTIAL HARMONIC RESONANCE

BASED ON THE FORMULA:

$$H_R = \text{SQRT}(kVA_{SC}/kVAR_C)$$

WHERE:

H_R = RESONANT FREQUENCY AS A MULTIPLE OF THE FUNDAMENTAL FREQUENCY

kVA_{SC} = SHORT CIRCUIT kVA AT POINT OF STUDY (FOR CAPACITORS AT METER;
TRANSFORMER < 500kVA, $kVA_{SC}=kVA/0.016$, TRANSFORMER 500kVA OR HIGHER,
 $kVA_{SC}=kVA/0.0575$ METER SHALL BE ACCEPTABLE. FOR LOCATIONS BEYOND THE
METER, BED SHALL WORK WITH THE OWNER TO DETERMINE kVA_{SC}).

$kVAR_C$ = CAPACITOR RATING AT THE SYSTEM VOLTAGE

IF H_R EQUALS, OR IS CLOSE TO 3, 5, 7, 11, OR 13, BED SHALL NOTIFY THE CUSTOMER THAT THE IMPLEMENTATION OF FILTERING AT THE CAPACITOR, INCLUDING THE USE OF REACTORS, TUNED TRAPS, OR ISOLATION TRANSFORMERS, SHALL BE REQUIRED.

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
HARMONIC RESONANCE	
DATE: 05/18/98	DWG. NO.: 200901
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 1 OF 2

HARMONIC DISTORTION

BED RECOGNIZES THE GROWING INCIDENCE OF CUSTOMERS ADDING LOADS SUCH AS COMPUTER POWER SUPPLIES, COMPACT FLUORESCENT LIGHTS, AND VARIABLE SPEED DRIVES THAT RESULT IN HARMONIC DISTORTION. THESE DEVICES DRAW A DISTORTED CURRENT BECAUSE THEY INCLUDE SOLID-STATE ELECTRONICS THAT TURN OFF CURRENT FLOW FOR PART OF EVERY VOLTAGE CYCLE. THIS IS OFTEN REFERRED TO AS A NON-LINEAR LOAD. THIS DISTORTED CURRENT FLOWS BACK THROUGH THE ELECTRIC SYSTEM CAUSING A VOLTAGE DROP WHICH RESULTS IN ALL CUSTOMERS ALONG THE ELECTRIC SYSTEM RECEIVING A DISTORTED VOLTAGE. SOME DEGREE OF VOLTAGE DISTORTION IS CONSIDERED ACCEPTABLE BECAUSE IT HAD LIMITED CONSEQUENCES. THE ACCEPTED MEASURE OF ACCEPTABLE HARMONIC VOLTAGE DISTORTION IS 3% OF THE FUNDAMENTAL 60HZ VOLTAGE FOR ANY INDIVIDUAL HARMONIC FREQUENCY AND 5% TOTAL HARMONIC DISTORTION (THD) PER TABLE 11.1 IEEE STD. 519-1992⁽¹⁾. IN ORDER TO AVOID A CUSTOMER WITH SUCH NON-LINEAR LOADS INTERFERING WITH THE OPERATION OF OTHER CUSTOMERS, BED ADOPTS THE CURRENT DISTORTION LIMITATION AS STATED IN INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE) STD. 519-1992 IN TABLE 10.3

THIS TABLE DEFINES AN ACCEPTABLE LEVEL OF DISTORTED CURRENT AS A PERCENTAGE OF THE 60HZ CURRENT. THE PERCENTAGE OF ACCEPTABLE DISTORTED CURRENT IS BASED ON THE HARMONIC FREQUENCY, THE NOMINAL SUPPLY VOLTAGE, AND THE RATIO OF SHORT CIRCUIT CURRENT TO LOAD CURRENT (I_{sc}/I_L). THE POINT AT WHICH THE I_{sc}/I_L RATIO IS CALCULATED IS USUALLY THE POINT OF COMMON COUPLING (PCC). THE PCC IS THE LOCATION IN THE ELECTRIC SYSTEM WHERE THE NON-LINEAR LOAD ADDS WITH LOADS FROM OTHER CUSTOMERS.

BED IS ADOPTING THIS STANDARD TO REDUCE TO AN ACCEPTABLE LEVEL THE NEGATIVE EFFECTS THAT NON-LINEAR LOADS HAVE UPON OUR CUSTOMERS.

⁽¹⁾IEEE RECOMMENDED PRACTICES AND REQUIREMENTS FOR HARMONIC CONTROL IN ELECTRICAL POWER SYSTEMS.

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
HARMONIC DISTORTION	
DATE: 06/25/98	DWG. NO.: 201001
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 1 OF 2

HARMONIC DISTORTION**TABLE 10.3**

**CURRENT DISTORTION LIMITS FOR GENERAL DISTRIBUTION SYSTEMS
(120V THROUGH 69000V)
MAXIMUM HARMONIC CURRENT DISTORTION
IN PERCENT OF I_L
INDIVIDUAL HARMONIC ORDER (ODD HARMONICS)**

I_{sc}/I_L	<11	$11 \leq H < 17$	$17 \leq H < 23$	$23 \leq H < 35$	$35 \leq H$	TDD
<20*	4.0	2.0	1.5	0.6	0.3	5.0
20<50	7.0	3.5	2.5	1.0	0.5	8.0
50<100	10.0	4.5	4.0	1.5	0.7	12.0
100<1000	12.0	5.5	5.0	2.0	1.0	15.0
>1000	15.0	7.0	6.0	2.5	1.4	20.0

EVEN HARMONICS ARE LIMITED TO 25% OF THE ODD HARMONIC LIMITS ABOVE.

CURRENT DISTORTIONS THAT RESULT IN A DC OFFSET, E.G. HALF-WAVE CONVERTERS,
ARE NOT ALLOWED

*ALL POWER GENERAL EQUIPMENT IS LIMITED TO THESE VALUES OF CURRENT DISTORTION,
REGARDLESS OF ACTUAL I_{sc}/I_L .

WHERE:

I_{sc} = MAXIMUM SHORT CIRCUIT CURRENT AT PCC

I_L = MAXIMUM DEMAND LOAD CURRENT (FUNDAMENTAL FREQUENCY COMPONENT) AT PCC

TDD = TOTAL DEMAND DISTORTION

BURLINGTON ELECTRIC DEPT.

DISTRIBUTION STANDARDS

**HARMONIC
DISTORTION**

DATE: 06/25/98

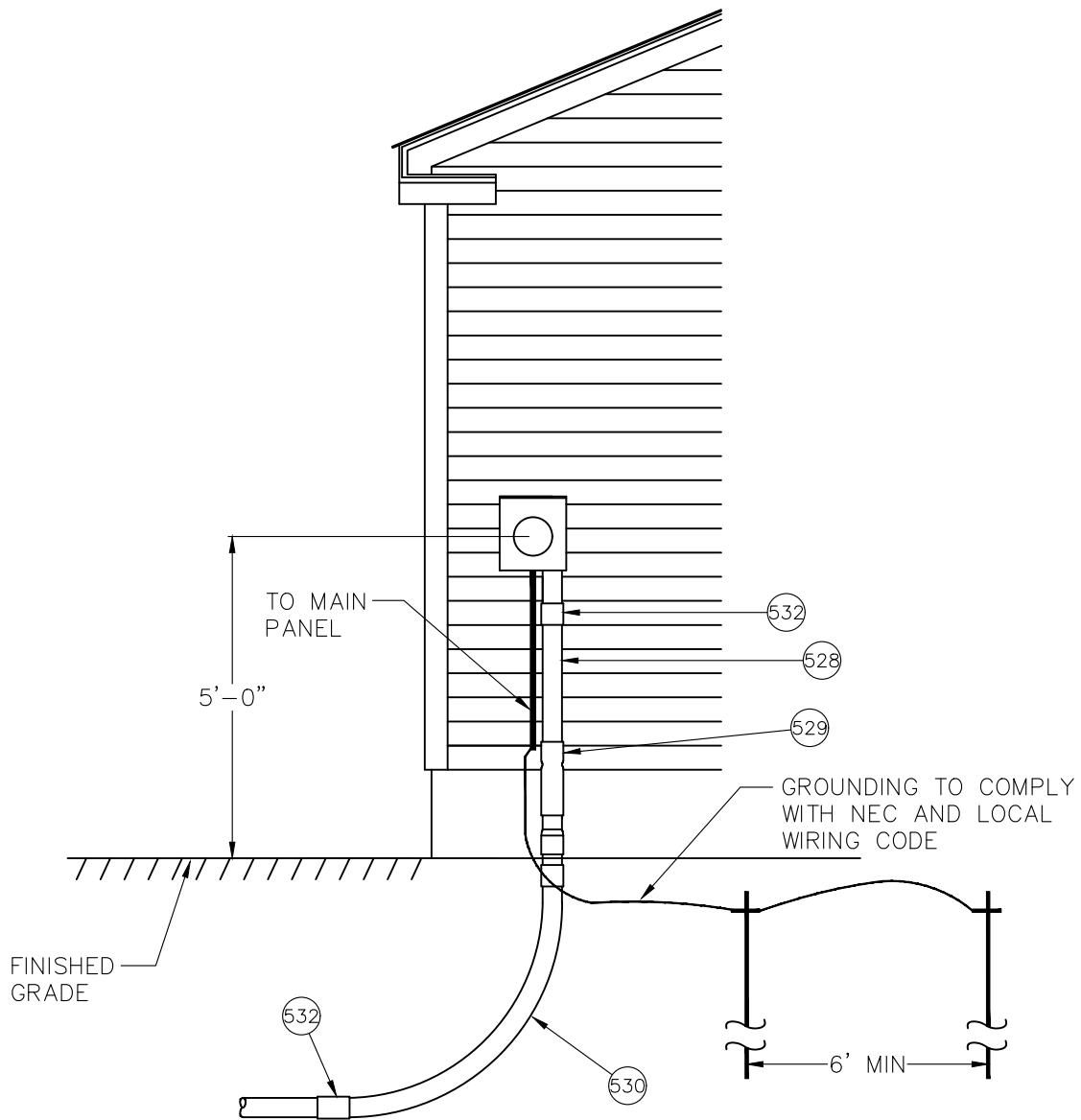
DWG. NO.: 201002

DWN BY: RG

APP. BY:

SCALE: NONE

SHEET 2 OF 2



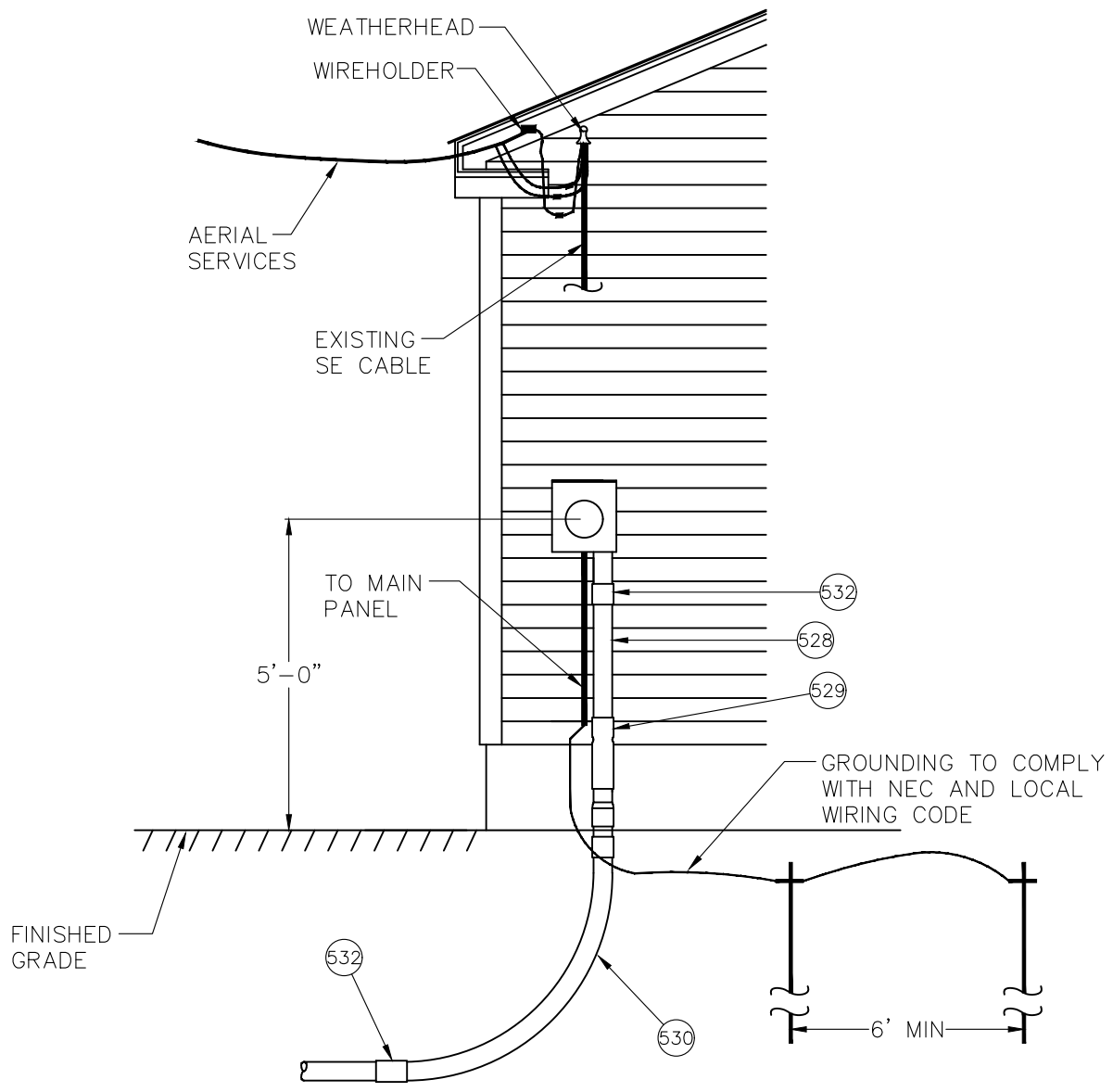
NOTES

1. METER LOCATION TO BE APPROVED BY A BED REPRESENTATIVE.
2. REFER TO CONDUIT USAGE CHART FOR CONDUIT REQUIREMENTS.
3. METER SOCKETS 200 AMPS AND ABOVE SHALL COMPLY WITH BED STANDARD 3.2 UNDER SECTION 200302.
4. MAIN BREAKER SHALL BE WITHIN 10' OF SERVICE CABLE ENTRANCE.

MATERIAL LIST

ITEM	QUANTITY	DESCRIPTION
528	AS REQUIRED	CONDUIT
529	AS REQUIRED	EXPANSION COUPLING
530	AS REQUIRED	CONDUIT SWEEP, 36" RADIUS
532	AS REQUIRED	COUPLING, PVC

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
UNDERGROUND RESIDENTIAL SERVICE	
DATE: 01/28/13	DWG. NO.: 201101
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 1 OF 1



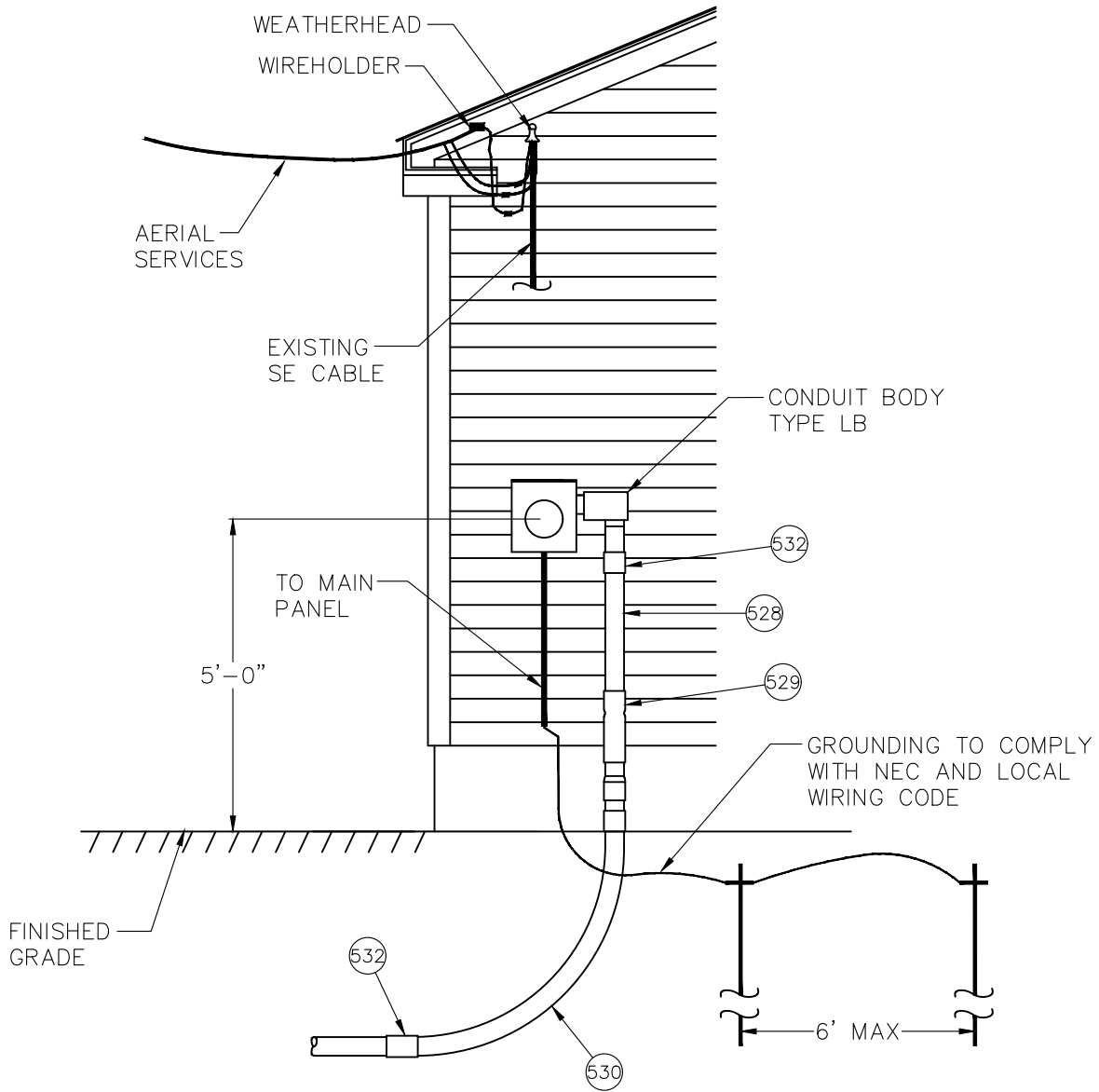
NOTES

1. REFER TO CONDUIT USAGE CHART FOR CONDUIT REQUIREMENTS.

MATERIAL LIST

ITEM	QUANTITY	DESCRIPTION
528	AS REQUIRED	CONDUIT
529	AS REQUIRED	EXPANSION COUPLING
530	AS REQUIRED	CONDUIT SWEEP, 36" RADIUS
532	AS REQUIRED	COUPLING, PVC

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
CONVERSION OF OVERHEAD SERVICE TO UNDERGROUND SERVICE - OPTION 1	
DATE: 01/28/13	DWG. NO.: 201201
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 1 OF 3



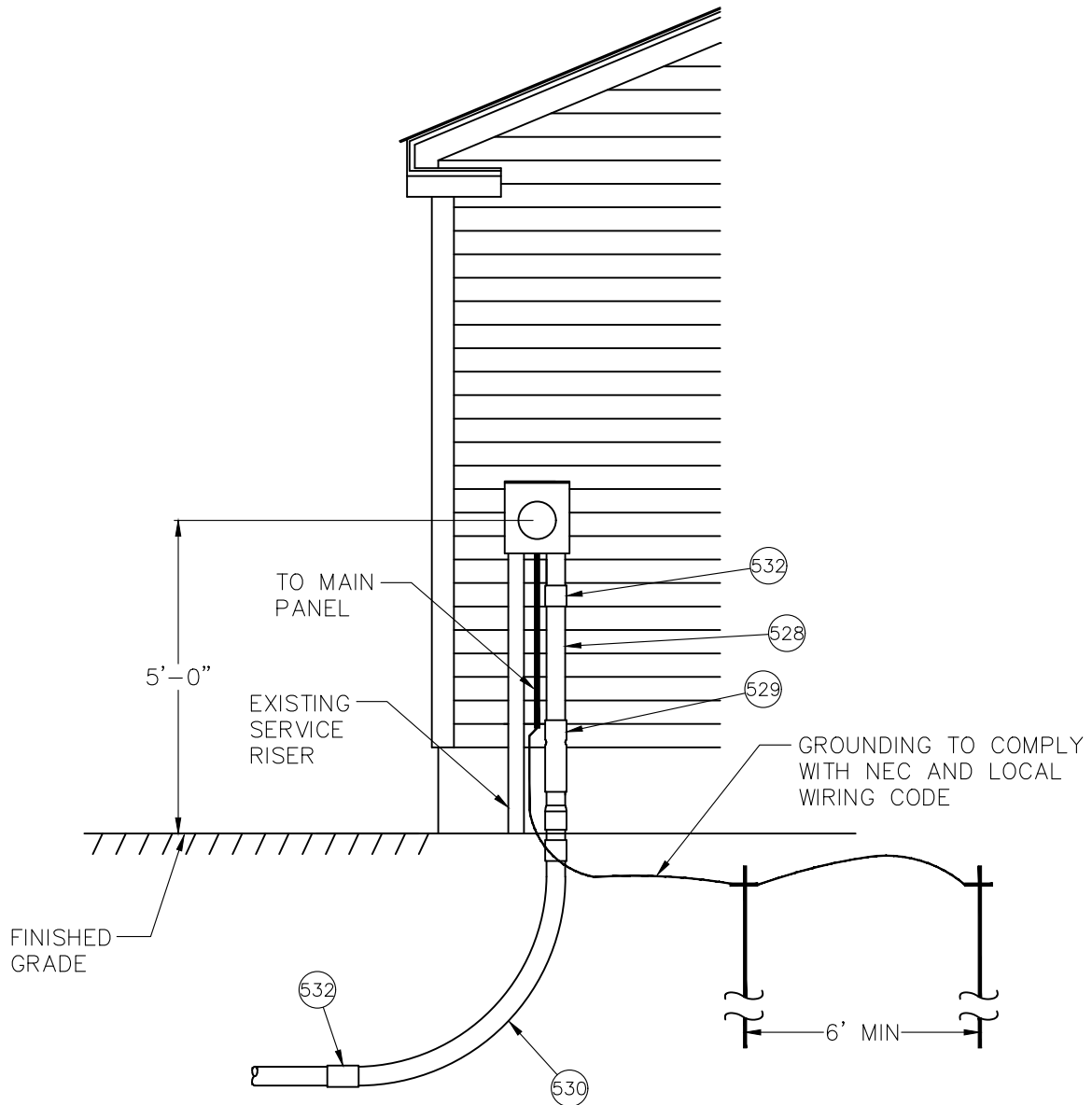
NOTES

1. REFER TO CONDUIT USAGE CHART FOR CONDUIT REQUIREMENTS.

MATERIAL LIST

ITEM	QUANTITY	DESCRIPTION
528	AS REQUIRED	CONDUIT
529	AS REQUIRED	EXPANSION COUPLING
530	AS REQUIRED	CONDUIT SWEEP, 36" RADIUS
532	AS REQUIRED	COUPLING, PVC

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
CONVERSION OF OVERHEAD SERVICE TO UNDERGROUND SERVICE - OPTION 2	
DATE: 01/28/13	DWG. NO.: 201202
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 2 OF 3



NOTES

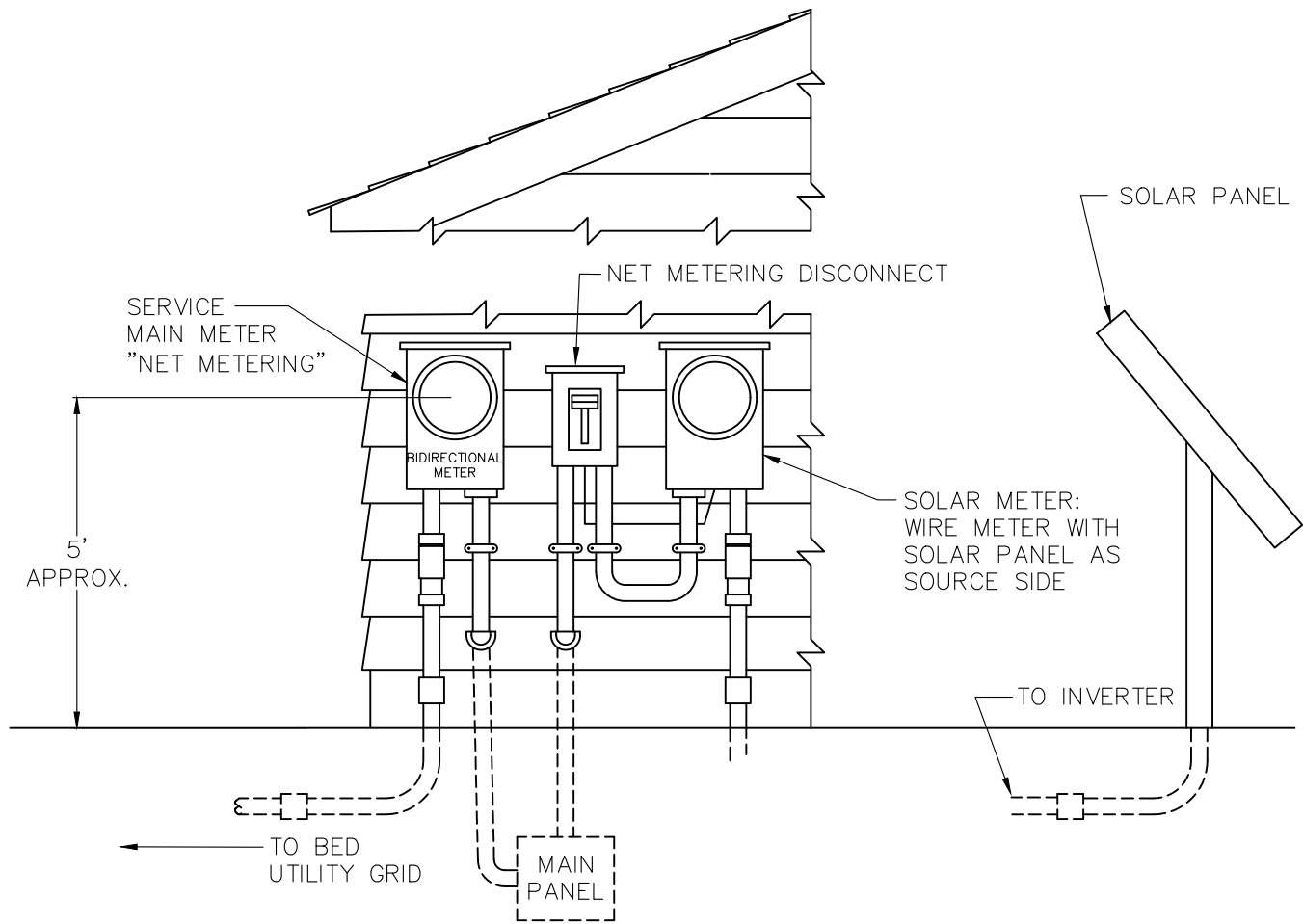
1. REFER TO CONDUIT USAGE CHART FOR CONDUIT REQUIREMENTS.

MATERIAL LIST

ITEM	QUANTITY	DESCRIPTION
528	AS REQUIRED	CONDUIT
529	AS REQUIRED	EXPANSION COUPLING
530	AS REQUIRED	CONDUIT SWEEP, 36" RADIUS
532	AS REQUIRED	COUPLING, PVC

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
REPLACEMENT OF EXISTING UNDERGROUND SERVICE	
DATE: 01/28/13	DWG. NO.: 201203
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 3 OF 3

THIS SPECIFICATION SHOWS AN UNDERGROUND SERVICE WITH THE SOLAR METER LOCATED NEXT TO THE MAIN SERVICE METER. OTHER CONFIGURATIONS ARE POSSIBLE, BUT THE SOLAR METER MUST BE ELECTRICALLY CONNECTED ON THE UTILITY GRID SIDE OF THE INVERTER WITH THE SOLAR PANEL AS ITS SOURCE. PLEASE CALL BURLINGTON ELECTRIC (802) 658-0300 WITH QUESTIONS.

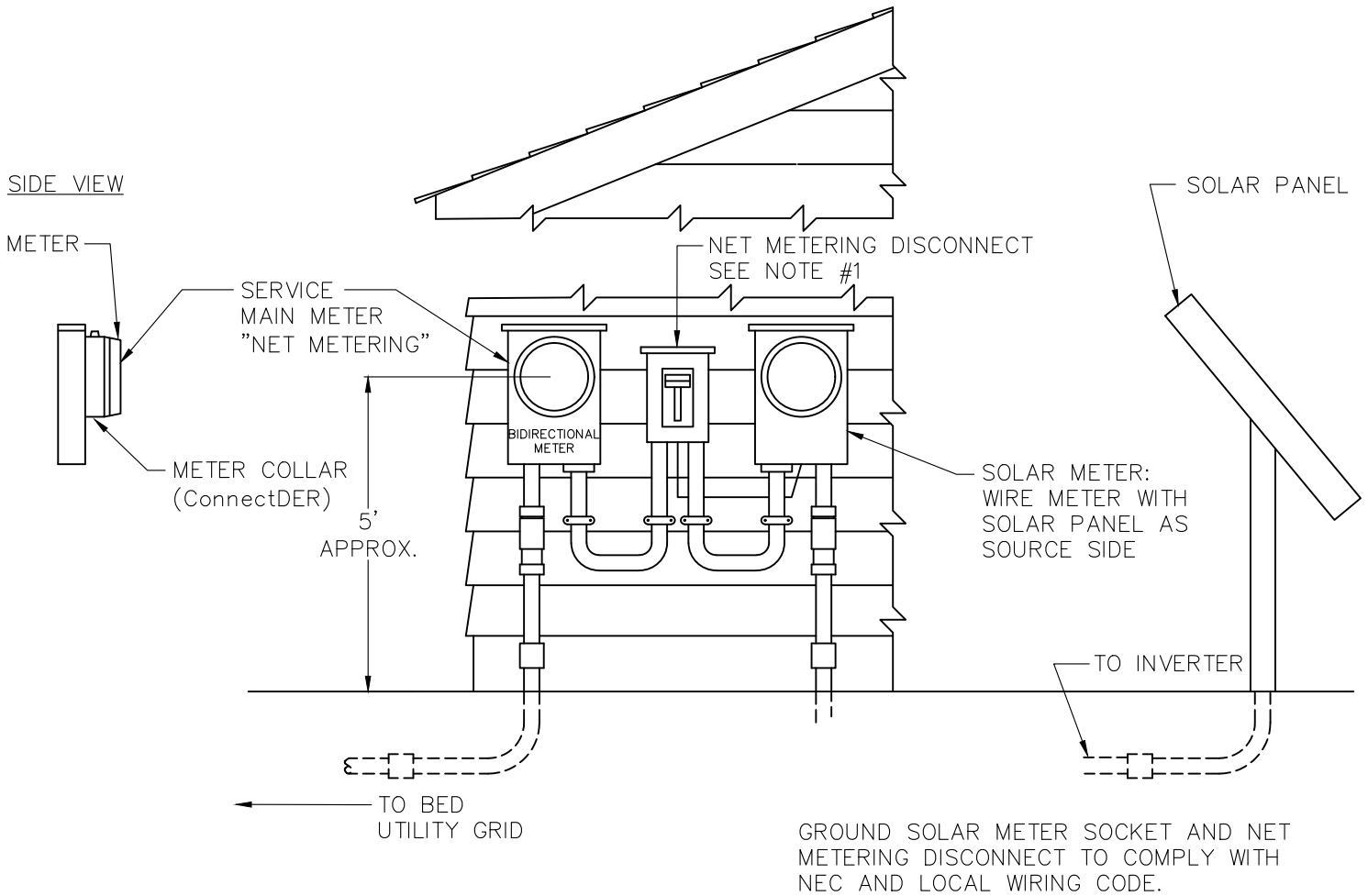


GROUND SOLAR METER SOCKET AND NET METERING DISCONNECT TO COMPLY WITH NEC AND LOCAL WIRING CODE.

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
STANDARD	
NET METERING	

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DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 1 OF 2

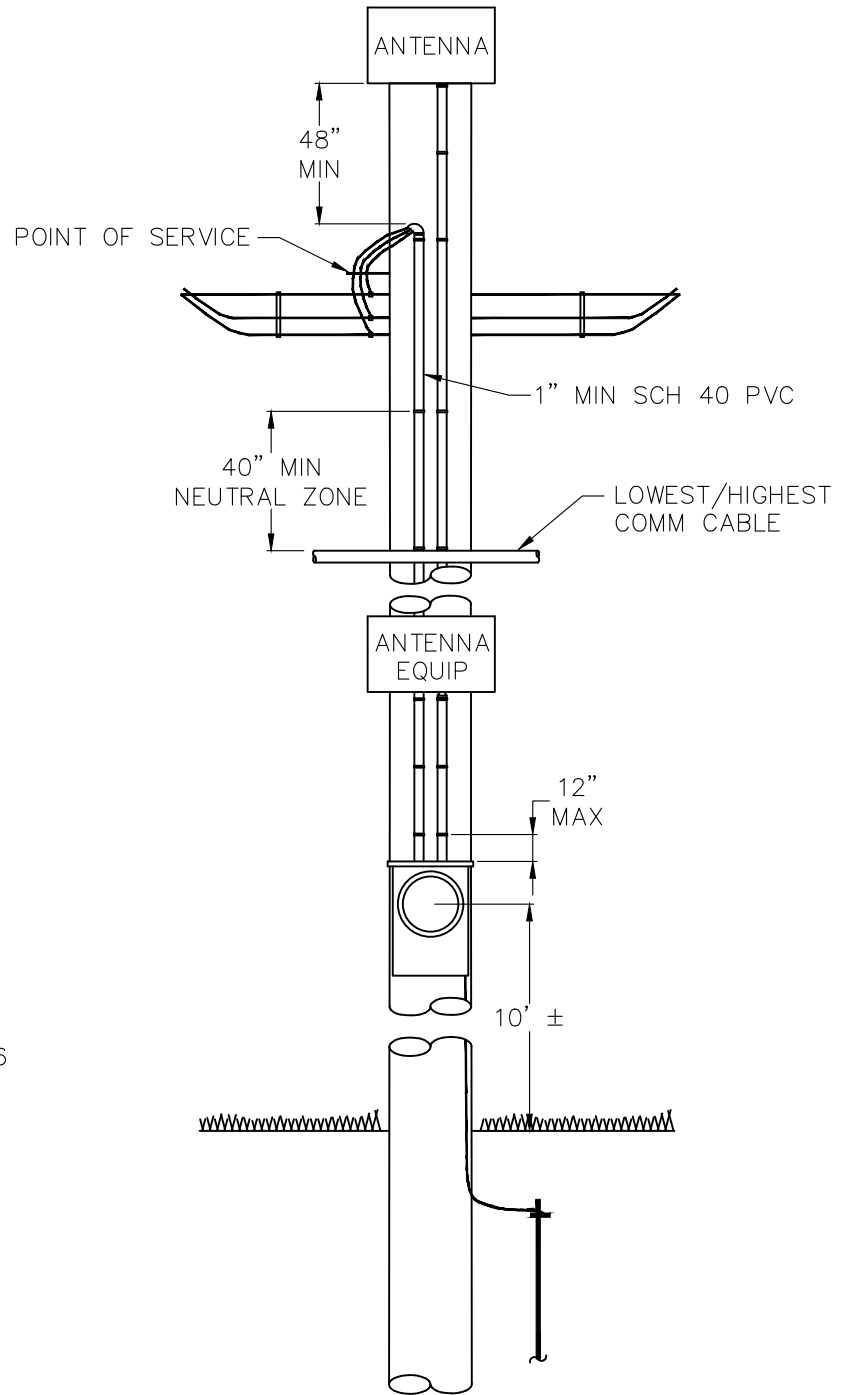
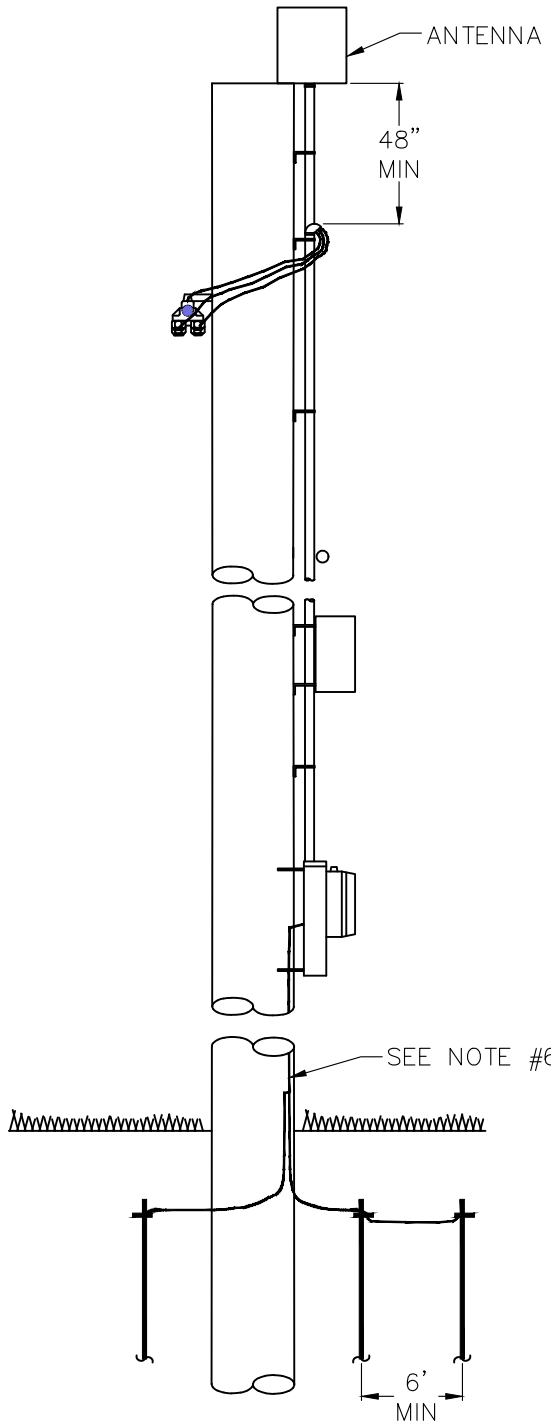
THIS SPECIFICATION SHOWS AN UNDERGROUND SERVICE WITH THE SOLAR METER LOCATED NEXT TO THE MAIN SERVICE METER. OTHER CONFIGURATIONS ARE POSSIBLE, BUT THE SOLAR METER MUST BE ELECTRICALLY CONNECTED ON THE UTILITY GRID SIDE OF THE INVERTER WITH THE SOLAR PANEL AS ITS SOURCE. PLEASE CALL BURLINGTON ELECTRIC (802) 658-0300 WITH QUESTIONS.



1. FOR SERVICES USING A METER COLLAR TO BYPASS FEED DIRECTLY TO MAIN PANEL, A SEPARATE NET METERING DISCONNECT IS STILL REQUIRED.
2. THIS SPECIFICATION ALLOWS CUSTOMERS TO INSTALL A METER COLLAR. BECAUSE THE METER COLLAR (ConnectDER OR SIMILAR DEVICE) IS NOT EQUIPMENT PROVIDED BY BED, BED HAS NO RESPONSIBILITY FOR MAINTAINING, REPAIRING, OR SOLVING ISSUES WITH OR CAUSED BY THE DEVICE AND IS NOT LIABLE FOR ANY DAMAGE TO THE DEVICE. FURTHER, BED PERSONNEL WILL NOT HANDLE THE ConnectDER OR SIMILAR DEVICE WHEN MAKING A SERVICE CALL. IF BED PERSONNEL MUST ACCESS THE METER CHANNEL, AT THE CUSTOMER'S REQUEST OR BED'S, IT IS THE CUSTOMER'S SOLE FINANCIAL RESPONSIBILITY TO HIRE A LICENSED ELECTRICIAN TO REMOVE THE METER COLLAR (ConnectDER OR SIMILAR DEVICE) SO THAT BED PERSONNEL CAN OBTAIN ACCESS TO THE METER CHANNEL, AS WELL AS TO RE-INSTALL THE ConnectDER OR SIMILAR DEVICE WHEN BED'S WORK IS COMPLETE. IF THE DEVICE IS NOT REMOVED WHEN BED ARRIVES, BED MAY NOT BE ABLE TO COMPLETE THE SERVICE CALL AND SERVICE MAY BE DELAYED.

BURLINGTON ELECTRIC DEPT.
DISTRIBUTION STANDARDS
NET METERING WITH
METER COLLAR

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**BURLINGTON ELECTRIC DEPT.
DISTRIBUTION STANDARDS
ANTENNA METERING
SERVICE**

DATE: 10/06/16	DWG. NO.: 201401
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 1 OF 2

NOTES

1. METERS SHALL BE ALLOWED TO ATTACH TO POLES FOR UTILITY SERVICES AND DPW PURPOSES ONLY. COMMERCIAL AND RESIDENTIAL SERVICE METERS SHALL NOT BE ATTACHED TO POLES.
2. PLANS FOR PLACEMENT OF RADIO EQUIPMENT AND METER SOCKETS ARE TO BE SUBMITTED TO BED PERSONNEL PRIOR TO INSTALLATION SHOWING DISTANCES OF EQUIPMENT AND CLEARANCES PER POLE LOCATION. PLANS ARE TO BE REVIEWED AND ACCEPTED BY BED ENGINEERING.
3. ALL MATERIALS TO THE POINT OF SERVICE SHALL BE SUPPLIED BY THE CUSTOMER. CONNECTIONS TO BED'S SECONDARY WILL BE SUPPLIED BY BED AT THE CUSTOMER'S COST. CONDUCTOR FROM THE SOURCE SIDE OF THE METER TO THE POINT OF SERVICE SHALL BE #6 CONDUCTOR OR LARGER.
4. METER CHANNEL SHALL BE SUPPLIED BY CUSTOMER WITH A BREAKER ON THE LOAD SIDE OF THE METER IN ACCORDANCE WITH NEC STANDARDS.
5. ALL EQUIPMENT BELOW THE COMMUNICATIONS ATTACHMENT ZONE AND THE RISER TO THE ANTENNA SHALL BE INSTALLED ON STANDOFF BRACKETS THAT MEET BED STANDARDS. METER CHANNEL, RISERS, AND RADIO EQUIPMENT TO BE PLACED ON THE POLE SHALL BE VERTICALLY IN-LINE TO PREVENT CROWDING OF THE POLE.
6. POLE GROUNDS TO BE INSTALLED BY CUSTOMER AND TO BE BONDED TO NEUTRAL CUSTOMER EQUIPMENT PER NEC STANDARDS.

BURLINGTON ELECTRIC DEPT.	
DISTRIBUTION STANDARDS	
ANTENNA METERING	
SERVICE NOTES	
DATE: 10/06/16	DWG. NO.: 201402
DWN BY: RG	APP. BY:
SCALE: NONE	SHEET 2 OF 2