REQUIREMENTS
FOR
ELECTRIC SERVICE
AND
METER INSTALLATIONS

NORTH CAROLINA
AND
SOUTH CAROLINA

APRIL 2025

TABLE OF CONTENTS

THE FOLLOWING POLICIES AND RULES WERE THE COMPANY REQUIREMENTS AT THE DATE OF PUBLICATION AND ARE SUBJECT TO CHANGE. THIS PUBLICATION IS REVISED PERIODICALLY, AND BULK PRINTED FOR DISTRIBUTION AND MADE AVAILABLE AT NO COST TO ELECTRICAL CONTRACTORS, ELECTRICAL INSPECTORS, AND OTHER INTERESTED PARTIES EVERY YEAR.

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ENGLISH VERSION

EN ESPANOL

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REQUIREMENTS FOR ELECTRIC SERVICE AND METER INSTALLATION BOOK REVIEW COMMITTEE MEMBERS

FLORENCE COUNTY, SC	SHAWN BRASHEAR
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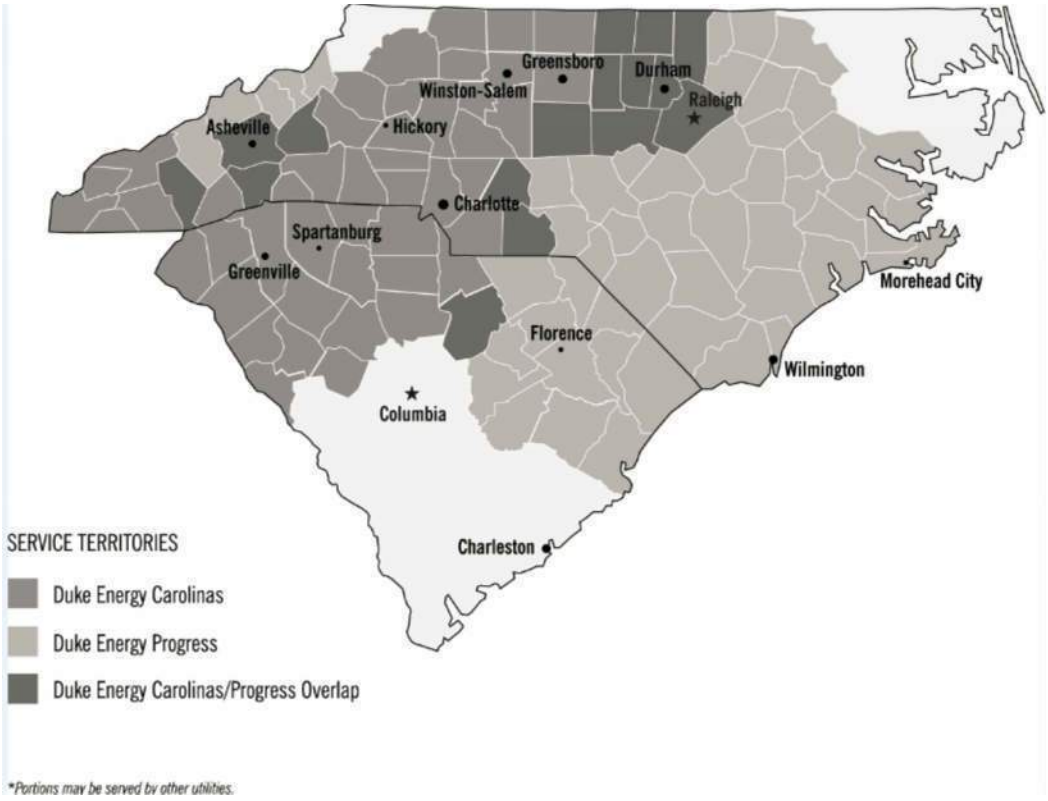
NC DISASTER RECOVERY	JAY DAUNOY

SERVICE TERRITORY MAP



DUKE ENERGY PROGRESS (DEP) CUSTOMER CARE CENTER

TO APPLY FOR SERVICE
919.508.5400
1.800.452.2777
OR VISIT OUR WEBSITE

TO REPORT POWER OUTAGES
1.800.419.6356

DUKE ENERGY CAROLINAS (DEC) CUSTOMER CARE CENTER

TO APPLY FOR SERVICE
1.800.777.9898
OR VISIT OUR WEBSITE

TO REPORT POWER OUTAGES
1.800.769.3766

METER SOCKET GUIDELINES
CUSTOMER-OWNED EQUIPMENT SPECIFICATIONS

DUKE ENERGY IS A MEMBER OF THE METER EQUIPMENT GROUP (MEG), WHICH IS AN ORGANIZATION COMPRISED OF ELECTRICAL UTILITIES THAT SPECIFIES THE REQUIREMENTS FOR CUSTOMER-OWNED, SELF-CONTAINED METER SOCKETS AND ENCLOSURES AND MAINTAINS AN APPROVED LIST OF THOSE SOCKETS AND ENCLOSURES. ONLY SELF-CONTAINED METER BASES INCLUDING INDIVIDUAL METER BASES, GANGED METER BASES OR MULTI-POSITION METER CENTERS THAT ARE ON THE MEG-APPROVED LIST MAY BE USED. THE COMPANY RESERVES THE RIGHT TO REFUSE CONNECTION OF SERVICES ON ANY EQUIPMENT NOT COMPLYING WITH MEG REQUIREMENTS. IN ADDITION, ALL BASES AND METER CENTERS MUST COMPLY WITH THE MOUNTING HEIGHTS SPECIFIED IN THIS MANUAL.

INCLUSION ON THE MEG LIST ENSURES THAT A METER SOCKET MEETS THE REQUIREMENTS SET FORTH BY THE MEG GROUP. THIS INCLUDES BUT IS NOT LIMITED TO UL LISTING, RINGLESS SEALING REQUIREMENTS FOR ALL SOCKETS, AND A LEVER BYPASS FOR ALL INSTANCES WHERE A BYPASS IS REQUIRED (ALL COMMERCIAL OR THREE-PHASE INSTALLATIONS AND ALL RESIDENTIAL INSTALLATIONS GREATER THAN 200 AMPS).

THE MEG MAKES NO CLAIMS REGARDING NAMEPLATE RATINGS OR LOAD SIDE ATTACHMENTS BEYOND THE SEALED PORTION OF THE METER SOCKET. THE COMPANY RECOMMENDS THAT ALL UNITS BE USED AS INTENDED BY THE MANUFACTURER.

THESE METER BASES CAN BE PURCHASED FROM LOCAL ELECTRICAL SUPPLY COMPANIES. MULTIPLE OPTIONS FROM ALL MAJOR SUPPLIERS ARE ON THE LIST.

CONTACT YOUR DUKE ENERGY REPRESENTATIVE TO DISCUSS THE LOCATION OF THIS METER BASE ON YOUR BUILDING.

THE CUSTOMER SHALL BE RESPONSIBLE FOR ALL MAINTENANCE OF SELF-CONTAINED METER BASES.

CLICK OR SCAN BELOW FOR ADDITIONAL INFORMATION ON THE MEG GROUP AND FOR A CURRENT LIST OF APPROVED SELF-CONTAINED METER SOCKETS, GANGED METER BASES AND MULTI-POSITION METER CENTERS.

NOTE: EXISTING TEMPORARY CONSTRUCTION SERVICE STRUCTURES (TCSS) MOVED FROM SITE TO SITE WERE EXEMPTED FROM MEG COMPLIANCE WHEN USE OF MEG-APPROVED METER BASES BECAME MANDATORY IN 2016. STARTING IN 2016, NEW TCSS AND TCSS METER BASE REPLACEMENTS WERE REQUIRED TO USE AN MEG-APPROVED BASE. EFFECTIVE 1/1/2025, DUKE ENERGY WILL NO LONGER CONNECT ANY TCSS THAT DOES NOT USE AN MEG-APPROVED METER BASE.

LIST OF REVISIONS

PAGE NO.	REVISION
PAGE 1	LANGUAGE ADDED TO CLARIFY THAT EMAIL CONTACTS ARE ONLY FOR QUESTIONS REGARDING MANUAL CONTENT.
PAGE 2	ADDED DEFINITIONS FOR BATTERY ENERGY STORAGE SYSTEM, CLOSED TRANSITION, CLARIFIED EMERGENCY AND STANDBY DEFINITION
PAGE 3	ADDED DEFINITIONS FOR NET METERING, OPEN TRANSITION, AND SELL ALL GENERATION
PAGE 4	NEW LANGUAGE REFERENCING USER TO SECTION VII FOR GRID CONNECTION AND GENERATING YOUR OWN ENERGY.
PAGE 6	NEW REFERENCE TO SECTION VII ADDED FOR GRID CONNECTION AND GENERATING YOUR OWN ENERGY.
PAGE 9	NEW LANGUAGE ADDED TO ELECTRICAL CONTRACTOR SEALING POLICY.
PAGE 11	LANGUAGE ADDED TO NOTE 2 FOR RESIDENTIAL POD'S AND TO NOTE 8 FOR CUSTOMER CONDUCTOR LABELING.
PAGE 14	NOTE A.4.(A), CONNECTION POINT A CHANGED TO CONNECTION POINT D
PAGE 17	NEW LANGUAGE ADDED TO NOTE 11, REFERENCING METERS ON THE LOAD SIDE OF A CUSTOMER BREAKER.
PAGE 18	ADDED LANGUAGE TO D.1., INSTRUMENT TRANSFORMERS CANNOT BE INSTALLED TO ADDRESS SUPPLY ISSUES WITH OTHER MATERIAL.
SECTION VII	FORMERLY 'FAULT CURRENT AND ARC FLASH' NOW RENAMED 'GRID INTERCONNECTIONS - RENEWABLE ENERGY SOURCES, STANDBY GENERATION, AND BATTERY STORAGE INSTALLATIONS'. REPLACES SECTION VI, D. GENERATORS.
SECTION VIII	NEW SECTION NUMBERING FOR 'FAULT CURRENT AND ARC FLASH', FORMERLY SECTION VII.
PAGE 26	MINOR CHANGE TO VOLTAGE NOMENCLATURE, CERTAIN X/R VALUES, NEW TABLE FOR SINGLE PHASE, 480/240V PADMOUNTS.
PAGE 29	MINOR CHANGE TO VOLTAGE NOMENCLATURE.
PAGE 30	1500 KVA THREE PHASE TRANSFORMER ADDED, 500 KVA SINGLE PHASE UNIT REMOVED FROM TABLE.
FIG 1	ADDED LANGUAGE TO NOTE 2 FURTHER DESCRIBING APPROPRIATE CONDUCTORS.
FIG 2	NOTE 7, ADDED LANGUAGE TO CLARIFY THAT 6"X6" POST MUST BE SOLID, ONE PIECE.
FIG 6	RENUMBERED TO FIG 6A.
FIG 6C	NEW DRAWING FOR INDIVIDUAL SERVICE CONNECTIONS FOR RESIDENTIAL SERVICES.
FIG 7	RENUMBERED TO FIG 6B, NEW NOTE 4 ADDED FOR CLEARANCES TO SEPTIC FIELDS.
FIG 18	3-WIRE DRAWING IDENTIFIED AS PREFERRED METHOD, NEW NOTES 1 AND 2 INSERTED
FIG 28	NEW LANGUAGE ADDED TO NOTE 3 TO ALLOW FOR COMPANY LIGHTING IN PADMOUNTS WITH CUSTOMER CONDUCTORS.
FIG 47A	REFERENCE TO SPECIFIC NEC RULE REMOVED AND REPLACED WITH GENERIC NEC NOTATION IN NOTES 2 AND 4.
FIG 47B	REFERENCE TO SPECIFIC NEC RULE REMOVED AND REPLACED WITH GENERIC NEC NOTATION IN NOTES 7 AND 8.
FIG 47C	REFERENCE TO SPECIFIC NEC RULE REMOVED AND REPLACED WITH GENERIC NEC NOTATION IN NOTES 7 AND 8.
FIG 47D	REFERENCE TO SPECIFIC NEC RULE REMOVED AND REPLACED WITH GENERIC NEC NOTATION IN NOTE 6, DIMENSION ADDED TO BOTTOM OF CT CABINET. LANGUAGE ADDED TO NOTE 1 TO CLARIFY SERVICES ALLOWED OUT OF TROUGH.
FIG 47E	REFERENCE TO SPECIFIC NEC RULE REMOVED AND REPLACED WITH GENERIC NEC NOTATION IN NOTE 7. LANGUAGE ADDED TO NOTE 1 TO CLARIFY SERVICES ALLOWED OUT OF TROUGH.
FIG 47F	NEW NOTE 7 REGARDING SERVICE DISCONNECTS INSTALLED ON LOAD SIDE OF CT CABINET.
FIG 48	RISER CURRENTLY SHOWN AS THRU-THE-ROOF REPLACED WITH ONE THAT STOPS BELOW THE ROOF AWNING.
FIG 54	CORRECTION MADE IN ENGLISH VERSION TO REPLACE SPANISH VERBIAGE
FIG 71A	CL FUSES ADDED TO PRIMARY METERING PT'S.
FIG 72C	CLARIFY UTILITY DISCONNECT REQUIREMENTS FOR ENERGY STORAGE SYSTEMS - BATTERY/SOLAR COMBINATIONS
FIG 72H	FIGURE UPDATED FOR WHOLE HOME AND PARTIAL HOME BACKUP SYSTEMS
FIG 73B	ADDED IEEE 1547-2018 AND REMOVED REFERENCE TO IEEE 1547-2003
FIG 73C	RENUMBERED FROM FIG 74 TO ALIGN WITH 73 SERIES FIGURES. ADDED IEEE 1547-2018 AND REMOVED REFERENCE TO IEEE 1547-2003.
FIG 74	FIGURE DELETED
FIG 75A	ADDED NEGATIVE SEQUENCE OVERVOLTAGE STATEMENT
FIG 75B	TEXT EDITS TO MATCH WITHIN SIGHT OF METER DEFINITION
FIG 76	CONDUIT REROUTED TO ENTER CABINET FROM DIRECTLY BELOW, VERSUS ROUTING ALONG STRUCTURE SUPPORTS.
APPENDIX D	EMAIL AND FAX NUMBER FOR ARC FLASH REQUESTS REPLACED WITH ALTERNATE METHODS.

SECTION I

INTRODUCTION

THE COMPANY CONSTANTLY STRIVES TO MAINTAIN A HIGH STANDARD OF SERVICE FOR ALL CUSTOMERS. THIS BOOK HAS BEEN PREPARED FOR USE BY CUSTOMERS, ARCHITECTS, ENGINEERS, ELECTRICAL CONTRACTORS AND LOCAL INSPECTION AUTHORITIES SO THEY MAY RECEIVE FULL BENEFIT FROM THE COMPANY'S SERVICE. THE PRIMARY PURPOSE OF THIS BOOK IS TO BE OF ASSISTANCE WHEN PLANNING NEW ELECTRICAL INSTALLATIONS FROM THE COMPANY'S DISTRIBUTION SYSTEM. IT CAN ALSO BE USED FOR SERVICE UPGRADES OR WHEN ADDING ADDITIONAL EQUIPMENT. IT IS RECOGNIZED, HOWEVER, THAT FOR CHANGES MADE TO EXISTING SERVICES, THE POLICIES AND GUIDELINES OF THIS MANUAL MAY NOT ADEQUATELY ADDRESS EACH AND EVERY UNIQUE SITUATION PRESENT. CONTACT YOUR COMPANY REPRESENTATIVE BEFORE ASSUMING ANY PROPOSED ALTERATIONS OR DESIGNS ARE ACCEPTABLE.

ALL USERS OF "**REQUIREMENTS FOR ELECTRIC SERVICE AND METER INSTALLATIONS**" BOOKS ARE ENCOURAGED TO SUBMIT PROPOSALS TO AID IN FUTURE REVISIONS. PLEASE SUBMIT PROPOSALS AS FOLLOWS:

1. GIVE SECTION, PARAGRAPH AND PAGE NUMBER TO WHICH PROPOSAL PERTAINS.

2. SUBMIT PROPOSAL IN WRITING. INCLUDE DETAILS, SKETCHES, DRAWINGS AND ALL PERTINENT SUPPORTING INFORMATION.

3. QUESTIONS OR COMMENTS REGARDING THE CONTENT OF THIS MANUAL CAN BE SENT TO:

SCOTT.DARGAN@DUKE-ENERGY.COM	DEP METERING
CARRIE.DAVIN@DUKE-ENERGY.COM	DEC METERING
ASHLEY.EANES@DUKE-ENERGY.COM	STANDARDS

QUESTIONS DEALING WITH SCHEDULING OR SPECIFIC JOBS CAN BE DIRECTED TO YOUR DUKE ENERGY REPRESENTATIVE OR TO THE TOLL-FREE NUMBERS FOR THE CUSTOMER SERVICE CENTER ON PAGE II.

EXCEPT FOR THE INSTALLATION AND MAINTENANCE OF ITS OWN PROPERTY, THE COMPANY DOES NOT INSTALL OR REPAIR WIRING ON THE CUSTOMER'S PREMISES AND, THEREFORE, IS NOT RESPONSIBLE FOR THE ELECTRICITY BEYOND THE POD AND DOES NOT ASSUME ANY RESPONSIBILITY FOR, OR LIABILITY ARISING BECAUSE OF THE CONDITION OF WIRES OR APPARATUSES ON THE PREMISES OF ANY CUSTOMER BEYOND THIS POINT.

SECTION II

GENERAL INFORMATION

A. DEFINITIONS

THE FOLLOWING DEFINITIONS SHALL APPLY FOR TERMS USED IN THIS BOOK.

ANSI - AMERICAN NATIONAL STANDARDS INSTITUTE.

AUTHORITY HAVING JURISDICTION (AHJ) - A PERSON OR AGENCY AUTHORIZED BY A GOVERNMENTAL BODY TO INSPECT AND APPROVE CUSTOMER ELECTRICAL INSTALLATIONS.

AVAILABLE FAULT CURRENT - THE MAXIMUM CURRENT THAT WOULD FLOW DUE TO A DIRECT SHORT FROM ONE CONDUCTOR TO GROUND OR BETWEEN CONDUCTORS AT THE POINT OF CALCULATION.

BESS - BATTERY ENERGY STORAGE SYSTEM

CLOSED TRANSITION - THE TRANSFER SWITCH CONNECTS TO AND PARALLELS WITH A SECOND POWER SOURCE BEFORE BREAKING THE CONNECTION WITH THE FIRST. THIS CREATES A PERIOD OF TIME WHEN BOTH POWER SOURCES ARE PROVIDING ELECTRICITY. A.K.A. "MAKE BEFORE BREAK".

COGENERATION - SEE INTERCONNECTION.

COMPANY - DUKE ENERGY

CONTRIBUTION-IN-AID OF CONSTRUCTION (CIAC) - THE ADDED COST PAID BY A CUSTOMER OR DEVELOPER TO HAVE THE COMPANY INSTALL SERVICE FACILITIES COSTING MORE THAN THAT NORMALLY RECOVERED THROUGH THE MONTHLY ENERGY AND DEMAND CHARGES.

CUSTOMER - USER OF THE COMPANY'S ELECTRIC SERVICE OR THE USER'S AUTHORIZED REPRESENTATIVE (ARCHITECT, ENGINEER, LICENSED ELECTRICAL CONTRACTORS, ETC.).

DEMAND - THE AVERAGE RATE AT WHICH ELECTRIC ENERGY IN KW, KVA OR KVAR IS CONSUMED PER TIME INTERVAL.

DEMAND AMPERE - AVERAGE CURRENT FLOWING DURING THE PEAK DEMAND INTERVAL.

EMERGENCY AND STANDBY GENERATION - A GENERATING FACILITY INSTALLED AS BACKUP POWER WHEN THE COMPANY'S ELECTRIC SERVICE IS UNAVAILABLE. THERE IS NO INTENT TO SELL ENERGY BACK TO THE UTILITY. THE TRANSITION TO AND FROM THE UTILITY MAY BE AN OPEN OR CLOSED TRANSITION.

ESS - ENERGY STORAGE SYSTEM

IEEE - INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS, INC.

INSTRUMENT TRANSFORMER - CURRENT TRANSFORMER (CT) OR VOLTAGE TRANSFORMER (VT) USED TO OBTAIN CURRENT OR VOLTAGE LEVELS REQUIRED FOR METERING CIRCUITS.

INTERCONNECTION (COGENERATION AND SMALL POWER PRODUCERS) - AN ELECTRIC SERVICE WHERE COGENERATORS AND SMALL POWER PRODUCERS OPERATE IN PARALLEL WITH THE COMPANY'S ELECTRIC SYSTEM. ENERGY MAY FLOW IN EITHER DIRECTION THROUGH AN INTERCONNECTION.

METER ENCLOSURE - A DEVICE THAT HOUSES A METER SOCKET WITH LINE AND LOAD TERMINALS.

METER SOCKET - A DEVICE THAT PROVIDES SUPPORT AND MEANS OF ELECTRICAL CONNECTION TO A WATT-HOUR METER

NRTL - NATIONALLY RECOGNIZED TESTING LABORATORIES SUCH AS UL, MET LABS, ETL, TUV, ETC.

NATIONAL ELECTRICAL CODE (NEC) - A CODE SPONSORED BY THE NATIONAL FIRE PROTECTION ASSOCIATION FOR THE PURPOSE OF SAFEGUARDING PERSONS AND PROPERTY FROM HAZARDS ARISING FROM THE USE OF ELECTRICITY. REFERENCES TO THE NEC WITHIN THIS MANUAL ARE FOR INFORMATION ONLY. ACTUAL CODE COMPLIANCE SHALL BE BASED UPON THE EDITION OF THE NEC RECOGNIZED BY THE AUTHORITY HAVING JURISDICTION (AHJ) AND ITS INTERPRETATIONS OF THAT VERSION.

NATIONAL ELECTRICAL SAFETY CODE (NESC) - A CODE SPONSORED BY THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC. UNDER THE AUSPICES OF THE AMERICAN NATIONAL STANDARDS INSTITUTE FOR THE PURPOSE OF THE PRACTICAL SAFEGUARDING OF PERSONS DURING THE INSTALLATION, OPERATION OR MAINTENANCE OF ELECTRIC SUPPLY AND COMMUNICATION LINES AND ASSOCIATED EQUIPMENT.

NET METERING GENERATION - A GENERATING FACILITY CO-LOCATED WITH ONSITE LOAD WITH THE INTENT TO OFFSET THE ENERGY PROVIDED BY THE UTILITY. ANY EXCESS ENERGY IS DELIVERED BACK TO THE UTILITY.

OPEN TRANSITION - THE TRANSFER SWITCH BREAKS CONTACT WITH ONE POWER SOURCE BEFORE IT MAKES CONTACT WITH ANOTHER. THIS CREATES A BRIEF OUTAGE WHEN NEITHER POWER SOURCE IS PROVIDING ELECTRICITY. A.K.A. "BREAK BEFORE MAKE".

POINT OF DELIVERY (POD) OR DELIVERY POINT - THE POINT, AS DESIGNATED BY THE COMPANY, WHERE THE COMPANY'S OVERHEAD SERVICE DROP, UNDERGROUND SERVICE LATERAL, OR TRANSFORMER SECONDARY BUSHINGS CONNECT TO THE CUSTOMER'S SERVICE ENTRANCE CONDUCTORS.

POWER LEG (HIGH-LEG) - THE CONDUCTOR IN A THREE-PHASE, FOUR-WIRE DELTA SECONDARY CONNECTION THAT HAS A HIGHER VOLTAGE-TO-GROUND POTENTIAL THAN THE OTHER CONDUCTORS.

PREMISE - THE STREET ADDRESS (PHYSICAL LOCATION) TO WHICH THE COMPANY PROVIDES ELECTRIC SERVICE: A HOUSE, APARTMENT, BUSINESS, AREA LIGHT, OR STREET LIGHT. EVERY ELECTRIC SERVICE ACCOUNT IS ASSOCIATED WITH A PREMISE, ALTHOUGH A PREMISE MAY HAVE MORE THAN ONE ACCOUNT ASSOCIATED WITH IT. FOR EXAMPLE, IF A CUSTOMER HAS A SEPARATELY METERED SHOP BEHIND HIS HOUSE, THE SHOP AND HOUSE MUST BE ON SEPARATE ACCOUNTS, BUT THEY ARE ASSOCIATED WITH THE SAME PREMISE.

SELL ALL GENERATION - A GENERATING FACILITY CONFIGURED WITH THE INTENT TO SELL ALL ENERGY GENERATED BACK TO THE UTILITY MINUS AUXILARY LOAD NEEDED TO SUPPORT FACILITY OPERATIONS.

SERVICE - THE SUPPLY OF ELECTRICITY FROM THE COMPANY TO THE CUSTOMER, INCLUDING THE READINESS AND AVAILABILITY OF ELECTRICAL ENERGY AT THE POINT OF DELIVERY AT THE STANDARD AVAILABLE VOLTAGE AND FREQUENCY WHETHER OR NOT UTILIZED BY THE CUSTOMER.

SERVICE DROP - THE OVERHEAD SERVICE CONDUCTORS BETWEEN THE COMPANY'S FACILITIES (LAST SERVICE POLE) AND THE POINT OF DELIVERY TO THE CUSTOMER'S PROPERTY.

SERVICE ENTRANCE - NORMALLY, CUSTOMER-OWNED WIRE AND/OR ENCLOSURES, CONNECTING THE CUSTOMER'S SERVICE EQUIPMENT TO THE COMPANY'S SERVICE DROP, SERVICE LATERAL, TRANSFORMER BUSHINGS OR OTHER SOURCE OF SUPPLY.

SERVICE LATERAL - THE UNDERGROUND SERVICE CONDUCTORS BETWEEN THE COMPANY'S SECONDARY CONDUCTORS OR TRANSFORMERS, INCLUDING ANY RISERS AT A POLE OR OTHER STRUCTURE AND THE POINT OF DELIVERY.

SOLAR PHOTOVOLTAIC (PV) SYSTEM - THE TOTAL COMPONENTS AND SUBSYSTEMS THAT, IN COMBINATION CONVERT SOLAR ENERGY INTO ELECTRIC ENERGY SUITABLE FOR CONNECTION TO A UTILIZATION LOAD.

TARIFFS - THE APPLICABLE RATES AND ELECTRIC SERVICE RULES AND REGULATIONS UNDER WHICH ALL ENERGY IS DELIVERED AND ALL SERVICE IS RENDERED BY THE COMPANY.

TEMPORARY CONSTRUCTION SERVICE - ELECTRICAL SERVICE PROVIDED TEMPORARILY FOR THE PURPOSES OF PROVIDING ELECTRICITY TO AID IN THE CONSTRUCTION OF A PERMANENT FACILITY.

TEMPORARY SERVICE - SERVICE TO NON-PERMANENT LOCATIONS SUCH AS FAIRS, DISPLAYS, EXHIBITS, AND SIMILAR TEMPORARY PURPOSES.

VISIBLE OPEN - A DISCONNECT WITH AN EXTERNALLY OPERABLE AND LOCKABLE HANDLE THAT PROVIDES A CLEAR VISIBLE BREAK IN A CIRCUIT AND CAN BE SEEN FROM THE POSITION OF THE HANDLE. A VISIBLE BREAK IS USED TO ENSURE THE ELECTRICAL CIRCUIT IS COMPLETELY ISOLATED FOR SERVICE AND MAINTENANCE.

WITHIN SIGHT OF - WHERE IT IS SPECIFIED THAT ONE EQUIPMENT SHALL BE "WITHIN SIGHT OF", OR "WITHIN SIGHT FROM", OR "IN SIGHT FROM", AND SO FORTH, ANOTHER EQUIPMENT, THE SPECIFIED EQUIPMENT IS TO BE VISIBLE AND NOT MORE THAN 50 FEET FROM THE OTHER.

B. AVAILABILITY AND LOCATION OF SERVICE

1. INFORMATION CONCERNING THE AVAILABILITY OF SERVICE FOR A DESIRED LOCATION SHALL BE PROVIDED BY THE COMPANY. **THE COMPANY, IN ALL CASES, SHALL DESIGNATE THE NORMAL POD**. THE COMPANY SHALL MAKE EXTENSIONS TO ITS EXISTING FACILITIES AS NEEDED, AND A CUSTOMER CIAC MAY BE REQUIRED. THESE EXTENSIONS SHALL BE TO THE POINT THAT ALLOWS THE COMPANY TO PROVIDE SERVICE IN THE MOST ECONOMICAL AND PRACTICAL MEANS. SHOULD ADDITIONAL FACILITIES BE REQUESTED BY THE CUSTOMER, ADDITIONAL FEES SHALL BE REQUIRED TO COVER THE ADDED COST.

2. TO ENSURE THAT THE SERVICE CONNECTION SHALL BE MADE PROMPTLY, AND THAT COMPANY EQUIPMENT HAS ADEQUATE CAPACITY TO PROVIDE SATISFACTORY SERVICE TO THE CUSTOMER, COOPERATION BETWEEN THE CUSTOMER AND THE COMPANY IS NECESSARY. THE CUSTOMER SHALL SUBMIT APPROPRIATE LOAD DATA TO THE COMPANY. CONTACT YOUR LOCAL DUKE ENERGY ENGINEER TO DETERMINE THE REQUIRED LOAD DATA AND NECESSARY FORMS. **BEFORE CONSTRUCTION IS STARTED, THE CUSTOMER SHALL REQUEST THE COMPANY TO DESIGNATE A NORMAL POD.** THE REQUEST FOR POD LOCATION IS NOT AN APPLICATION FOR SERVICE TO THE PERMANENT BUILDING.

3. **IT IS IMPERATIVE THAT THE COMPANY AND THE CUSTOMER BE IN AGREEMENT WITH THE PLANNED LOCATION OF ALL SERVICE-RELATED EQUIPMENT BEFORE CONSTRUCTION IS STARTED. HOWEVER, THE COMPANY SHALL HAVE THE FINAL AUTHORITY TO DETERMINE THE LOCATION. THIS EQUIPMENT INCLUDES METERS, RISERS, PEDESTALS, PULL BOXES, CT/VT CABINETS, TRANSFORMERS, ETC.** THE SELECTED SERVICE EQUIPMENT LOCATION SHALL MEET THE CURRENT NEC AND ALL LOCAL ORDINANCES, INCLUDING ANY FLOOD ELEVATION REQUIREMENTS. ADEQUATE PASSAGEWAYS (UP TO AND INCLUDING A MAINTAINED GRAVEL ACCESS ROAD) TO ACCOMMODATE CRANES, LINE TRUCKS, OR OTHER NECESSARY LIFTING AND HAULING EQUIPMENT SHALL BEPROVIDED FOR MAINTENANCE, OPERATION, OR REPLACEMENT OF COMPANY FACILITIES.

C. APPLICATION FOR SERVICE
DUKE ENERGY PROGRESS (DEP)

TO OBTAIN SERVICE AT THE DESIRED TIME, AN APPLICATION FOR SERVICE SHALL BE MADE BY THE CUSTOMER OR OWNER DURING CONSTRUCTION OR AS FAR IN ADVANCE OF THE OCCUPANCY OF THE BUILDING AS POSSIBLE. SERVICE CONTRACTS AND/OR DEPOSITS MAY BE REQUIRED PRIOR TO SERVICE CONNECTION.

TO APPLY FOR SERVICE:

AT OUR WEBSITE: LOOK FOR 'APPLY FOR SERVICE' AT OUR BUILDERS, DEVELOPERS AND CONTRACTORS PAGE.

- TO APPLY FOR SERVICE
- TO CHECK YOUR WORK REQUEST STATUS: BUILDER/CUSTOMER NUMBER REQUIRED
- FOR GRID CONNECTION OR TO GENERATE YOUR OWN ENERGY, PLEASE REFER TO SECTION VII OF THIS DOCUMENT

BY FAX: BUILDER FAX LINE
1.800.706.7488
24 HOURS A DAY - 7 DAYS A WEEK
COMPANY WILL FAX A CONFIRMATION TO YOU WITHIN TWO TO THREE BUSINESS DAYS. USE THE BUILDER REQUEST FORM.

BY PHONE: BUILDER EXPRESS LINE
1.800.636.0581
MONDAY - FRIDAY, 7 A.M. - 6 P.M.
COMPANY'S BUSIEST DAYS ARE MONDAYS AND DAYS AFTER HOLIDAYS.
HAVE YOUR BUILDER/CUSTOMER NUMBER READY.

ESTABLISHING TEMPORARY CONSTRUCTION SERVICE

1. BUILDER ARRANGES FOR ELECTRICIAN TO SET THE TEMPORARY METER BASE. SEE **FIGURE 1 (UG)** AND **FIGURE 2 (OH)**.

2. BUILDER CONTACTS THE COMPANY BY WEBSITE, FAX, OR PHONE WITH BUILDER/CUSTOMER NUMBER AND SPECIFIES WHETHER SERVICE TO BE INSTALLED NEEDS TO BE UNDERGROUND OR OVERHEAD. A COMPANY REPRESENTATIVE ENTERS APPLICATION FOR SERVICE AND HOLDS FOR INSPECTION AND/OR CONSTRUCTION IF NEEDED. REPRESENTATIVE ISSUES PREMISE NUMBER FOR USE DURING ALL TRANSACTIONS AT THIS LOCATION.

3. IF IT IS NECESSARY, THE COMPANY BEGINS LINE CONSTRUCTION PROCESS (REQUIRES A MINIMUM OF 10 BUSINESS DAYS).

4. BUILDER ARRANGES FOR INSPECTION OF TEMPORARY METER BASE BY THE AUTHORITY HAVING JURISDICTION AND SUPPLIES INSPECTOR WITH ASSIGNED ADDRESS/ PREMISE NUMBER.

5. CITY/COUNTY PERFORMS INSPECTION AND NOTIFIES THE COMPANY OF RESULTS PRIOR TO METER BEING INSTALLED. (PROCESS MAY VARY FROM COUNTY TO COUNTY.)

6. COMPANY SETS METER WITHIN ONE TO FOUR BUSINESS DAYS ONCE INSPECTION IS RECEIVED AND CONSTRUCTION IS COMPLETE, IF NEEDED.

ESTABLISHING PERMANENT SERVICE FOR A NEWLY CONSTRUCTED RESIDENCE

1. BUILDER COMPLETES FINAL GRADE OF PROPERTY, CLEARS RIGHT OF WAY, AND HAS METER BASE SET ON HOUSE. IF PERMANENT SERVICE IS TO BE IN OWNER'S NAME, BUILDER SHOULD GIVE PREMISE NUMBER TO OWNER.

2. BUILDER CONTACTS THE COMPANY BY WEBSITE, FAX, OR PHONE TO REQUEST PERMANENT SERVICE, PROVIDES PREMISE NUMBER AND THE FOLLOWING INFORMATION: LENGTH OF UNDERGROUND SERVICE TO BE INSTALLED, IF NEEDED; DEMOGRAPHICS OF CONSTRUCTION (HEAT TYPE, SQUARE FOOTAGE, ETC); AND WHETHER TEMPORARY SERVICE NEEDS TO BE REMOVED WHEN PERMANENT METER IS SET. A CUSTOMER CARE SPECIALIST ENTERS APPLICATION FOR SERVICE AND HOLDS FOR INSPECTION AND/OR CONSTRUCTION IF NEEDED. IF IT IS NECESSARY, THE COMPANY BEGINS LINE CONSTRUCTION PROCESS.

3. BUILDER ARRANGES FOR INSPECTION OF METER BASE AND SUPPLIES INSPECTOR WITH PREMISE NUMBER.

4. AHJ PERFORMS INSPECTION AND NOTIFIES THE COMPANY OF RESULTS PRIOR TO METER BEING INSTALLED. PROCESS MAY VARY FROM COUNTY TO COUNTY.

5. COMPANY SETS METER ON PERMANENT METER BASE ONCE INSPECTION IS RECEIVED AND CONSTRUCTION IS COMPLETE, IF NEEDED. SEE **FIGURES 4A, 4B, 5, 6, 7, 8, 9A, 9B, 10** AND **11.**

ESTABLISHING SERVICE FOR A NEW MANUFACTURED HOME

1. UPON FINAL GRADE OF PROPERTY, HOMEOWNER CONFIRMS THAT METER BASE IS SET AND RIGHT OF WAY IS CLEARED. SEE **FIGURES 4A, 4B, 9A** AND **9B**.

2. HOMEOWNER CONTACTS THE COMPANY BY PHONE OR FAX TO REQUEST PERMANENT SERVICE AND PROVIDES THE FOLLOWING INFORMATION: DEMOGRAPHICS OF CONSTRUCTION (HEAT TYPE, SQUARE FOOTAGE, ETC.).

3. A CUSTOMER CARE SPECIALIST ENTERS APPLICATION FOR SERVICE AND HOLDS FOR INSPECTION AND/OR CONSTRUCTION IF NEEDED. SPECIALIST ISSUES PREMISE NUMBER FOR USE DURING ALL TRANSACTIONS AT THIS LOCATION. IF LINE CONSTRUCTION IS NECESSARY, THE COMPANY BEGINS LINE CONSTRUCTION PROCESS.

4. HOMEOWNER ARRANGES FOR INSPECTION OF PERMANENT ELECTRICAL INSTALLATION AND METER BASE AND ADVISES AUTHORITY HAVING JURISDICTION OF PREMISE NUMBER.

5. AUTHORITY HAVING JURISDICTION PERFORMS INSPECTION AND NOTIFIES COMPANY OF RESULTS PRIOR TO METER BEING INSTALLED. PROCESS MAY VARY FROM COUNTY TO COUNTY.

6. COMPANY SETS METER ON PERMANENT METER BASE ONCE INSPECTION IS RECEIVED AND CONSTRUCTION IS COMPLETE, IF NEEDED.

ESTABLISHING PERMANENT SERVICE FOR A NEWLY CONSTRUCTED COMMERCIAL BUSINESS

1. BUILDER CONTACTS THE COMPANY BY WEBSITE, FAX, OR PHONE TO REQUEST PERMANENT SERVICE. SEE **FIGURES 20, 21, 25** THRU **28, 47A** THRU **48** AND **52A.**

2. THE COMPANY REPRESENTATIVE PROVIDES THE PREMISE NUMBER. THE BUILDER PROVIDES THE FOLLOWING INFORMATION: LENGTH OF UNDERGROUND SERVICE TO BE INSTALLED, IF NEEDED; DEMOGRAPHICS OF CONSTRUCTION (HEAT TYPE, SQUARE FOOTAGE, ETC.); AND WHETHER TEMPORARY SERVICE NEEDS TO BE REMOVED WHEN PERMANENT METER IS SET. COMPANY REPRESENTATIVE ENTERS APPLICATION FOR SERVICE AND HOLDS FOR INSPECTION AND/OR CONSTRUCTION IF NEEDED. IF IT IS NECESSARY, THE COMPANY BEGINS LINE CONSTRUCTION PROCESS.

3. BUILDER COMPLETES FINAL GRADE OF PROPERTY AND CLEARS RIGHT OF WAY. IF PERMANENT SERVICE IS TO BE IN OWNER'S NAME, BUILDER SHOULD GIVE PREMISE NUMBER TO OWNER.

4. COMPANY REPRESENTATIVE CREATES ORDER AND INFORMS ENGINEERING OF NEW COMMERCIAL JOB AND CREATES NEW ACCOUNT NUMBER.

5. IF THE CUSTOMER REQUIRES TRANSFORMER-RATED METERING, THE COMPANY REPRESENTATIVE COMMUNICATES METER INFORMATION TO METER TECHNICIAN AND CREATES A METER ORDER. OTHERWISE, A SELF-CONTAINED METER IS REQUIRED. (SEE **SECTION IV**).

6. COMPANY INSTALLS TRANSFORMER-RATED METERING EQUIPMENT.

7. BUILDER ARRANGES FOR INSPECTION OF THEIR ELECTRICAL SERVICE AND SUPPLIES INSPECTOR WITH PREMISE NUMBER.

8. CITY/COUNTY PERFORMS INSPECTION AND NOTIFIES THE COMPANY OF RESULTS PRIOR TO METER BEING INSTALLED. PROCESS MAY VARY FROM COUNTY TO COUNTY.

9. COMPANY ENERGIZES NEW ACCOUNT ONCE INSPECTION IS RECEIVED AND CONSTRUCTION IS COMPLETE, INSTALLS A SELF-CONTAINED METER (IF REQUIRED), AND COMPLETES CONNECT SET ORDER.

D. APPLICATION FOR SERVICE
DUKE ENERGY CAROLINAS (DEC)

TO OBTAIN SERVICE AT THE DESIRED TIME, AN APPLICATION FOR SERVICE SHALL BE MADE BY THE CUSTOMER OR OWNER DURING CONSTRUCTION OR AS FAR IN ADVANCE OF THE OCCUPANCY OF THE BUILDING AS POSSIBLE. SERVICE CONTRACTS AND/OR DEPOSITS MAY BE REQUIRED PRIOR TO SERVICE CONNECTION. CONTACT COMPANY AS EARLY IN THE PLANNING STAGE AS POSSIBLE. THIS ALLOWS ADEQUATE TIME TO SECURE ANY RIGHTS OF WAY, PLAN AND BUILD ANY LINES NEEDED, SPOT METER LOCATION AND COMPLETE ANY OTHER WORK REQUIRED TO INSTALL ELECTRIC SERVICE.

APPLICATIONS ARE AVAILABLE FOR BOTH TEMPORARY AND PERMANENT SERVICE ONLINE OR BY FAX. TO REQUEST AN APPLICATION, CALL **800.454.3853** OR VISIT OUR BUILDERS, DEVELOPERS AND CONTRACTORS PAGE. FOR GRID CONNECTION OR TO GENERATE YOUR OWN ENERGY, PLEASE REFER TO SECTION VII OF THIS DOCUMENT.

TEMPORARY CONSTRUCTION SERVICE
PRIOR TO BEGINNING CONSTRUCTION, CUSTOMER WILL COMPLETE AN APPLICATION FOR ELECTRIC SERVICE. THIS APPLICATION FOR TEMPORARY CONSTRUCTION SERVICE ALERTS COMPANY OF THE NEED FOR CONSTRUCTION SITE POWER AND ALSO ENABLES COMPANY TO SET UP THE ACCOUNT USING THE APPROPRIATE RATE. STANDARD FOR TEMPORARY SERVICES ARE FOUND IN **FIGURE 1 (UG)** AND **FIGURE 2 (OH).**

CHARGES WILL BE APPLIED TO ANY TEMPORARY CONSTRUCTION SERVICE REQUIRING FACILITIES FROM AN EXISTING 240/120V SOURCE IN EXCESS OF THOSE SHOWN IN **FIGURES 1** AND **2**.

METER BASE READY POLICY
DUKE ENERGY WILL INSTALL UNDERGROUND ELECTRIC SERVICE CONDUCTORS FROM THE TRANSFORMER (OR PEDESTAL) TO AN APPROVED METER BASE AFTER THE METER BASE IS PERMANENTLY INSTALLED. A PERMANENTLY INSTALLED METER BASE INCLUDES, AT A MINIMUM, AN APPROVED BASE/ ENCLOSURE THAT IS PERMANENTLY AFFIXED TO THE BUILDING OR METERING STRUCTURE.

IF THERE IS A NEED TO LANDSCAPE OR PERFORM OTHER WORK ON THE SITE WHICH WILL PREVENT THE COMPANY FROM TRENCHING AFTER THE METER BASE IS READY, THE CUSTOMER SHALL INSTALL CONDUIT FROM THE POWER SOURCE (PAD-MOUNTED TRANSFORMER, POLE, OR SERVICE RADIAL/PEDESTAL) TO A POINT DIRECTLY BELOW THE METER BASE. SEE **SECTION II, L** OF THIS MANUAL FOR THE CONDUIT SPECIFICATIONS. THE COMPANY'S ENGINEERING REPRESENTATIVE WILL PROVIDE THE CONDUIT SIZE AND INSTALLATION REQUIREMENTS. THE CUSTOMER SHALL BE RESPONSIBLE FOR ANY ADDITIONAL COSTS INCURRED BY THE COMPANY IF THE CONDUIT DOES NOT CORRECTLY ALIGN WITH THE METER BASE OR IS NOT USEABLE.

RESIDENTIAL SERVICE: PERMANENT OVERHEAD
(SITE-BUILT, MANUFACTURED AND MODULAR HOMES, TOWNHOUSES AND DUPLEXES)

SERVICE TO A MANUFACTURED HOME GENERALLY FOLLOWS THE SAME GUIDELINES AS PERMANENT RESIDENTIAL SERVICE TO A SITE-BUILT HOUSE. SINGLE-WIDE MANUFACTURED HOMES NORMALLY HAVE THE METER ENCLOSURE MOUNTED ON A SERVICE POLE OR STRUCTURE. SEE **FIGURES 4A, 4B, 5, 6, 7, 8, 9A, 9B, 10** AND **11**. CUSTOMER'S SERVICE POLE SHALL BE PLACED SO THAT COMPANY'S PRIMARY, SECONDARY AND SERVICE CONDUCTORS DO NOT CROSS OVER THE MANUFACTURED HOME.

NOTE FOR SINGLE-FAMILY HOMES: THE ELECTRIC METER ON A SINGLE-FAMILY RESIDENCE SHOULD BE LOCATED ON THE EXTERIOR OF THE STRUCTURE ON THE SIDE CLOSEST TO COMPANY'S EQUIPMENT (POLE, PAD-MOUNTED TRANSFORMER OR SERVICE RADIAL).

IMPORTANT NOTE FOR MANUFACTURED HOMES: SINCE A MANUFACTURED HOME CAN BE SET UP ON-SITE WITHIN 24 HOURS, CUSTOMER SHALL NOTIFY COMPANY AS SOON AS A SITE IS CHOSEN. THIS WILL ALLOW ADEQUATE TIME TO COORDINATE A METHOD OF SERVICE INCLUDING PRIMARY LINE WORK, IF NECESSARY, AND ENABLE COMPANY TO PLAN ACCORDINGLY.

RESIDENTIAL SERVICES: PERMANENT UNDERGROUND
(SITE-BUILT, MANUFACTURED AND MODULAR HOMES, TOWNHOUSES AND DUPLEXES)

AFTER REVIEWING CUSTOMER APPLICATION FOR SERVICE, COMPANY MAY CONTACT CUSTOMER TO OBTAIN ADDITIONAL INFORMATION. COMPANY WILL NEED TO DETERMINE AT THIS MEETING WHETHER COMPANY'S CONDUCTORS WILL LIE UNDER ANY CONCRETE OR STRUCTURE (DRIVEWAY, DECK, PATIO, ETC.). IF SO, ARRANGEMENTS WILL NEED TO BE MADE TO AVOID ANY FUTURE DAMAGE TO CUSTOMER'S PROPERTY SHOULD THE CABLE REQUIRE REPAIR OR REPLACEMENT.

NOTE: THE ELECTRIC METER ON A RESIDENCE IS LOCATED WHERE THE COMPANY CAN INSTALL THE SERVICE USING STANDARD MECHANICAL EQUIPMENT. A CLEAR ROUTE CONSISTING OF A MINIMUM 10-FOOT WIDTH FROM THE POWER SOURCE TO THE METER ENCLOSURE IS REQUIRED. IF A DRIVEWAY IS TO BE PLACED IN THIS ROUTE AND NEEDS TO BE INSTALLED BEFORE THE UNDERGROUND SERVICE IS INSTALLED, THE CUSTOMER WILL NEED TO INSTALL A SCHEDULE 40 ELECTRICAL GRAY CONDUIT PER THE REQUIREMENTS OF **FIGURE 51**.

COMMERCIAL SERVICES

TO OBTAIN COMMERCIAL SERVICE, CUSTOMER WILL CALL DUKE ENERGY AT **800.653.5307**. A COMPANY SPECIALIST WILL RECEIVE THE NECESSARY BUSINESS AND ELECTRICAL LOAD INFORMATION FROM CUSTOMER. IF ELECTRICAL LOAD INFORMATION IS UNKNOWN, COMPANY CAN MAIL OR FAX AN ELECTRICAL LOAD INFORMATION FORM AND CUSTOMER ELECTRICAL CONTRACTOR OR OTHER ELECTRICAL CONSULTANT CAN DETERMINE ELECTRICAL NEEDS (LOAD, CONDUCTOR SIZE, DELIVERY VOLTAGE, ETC.).

DUKE ENERGY WILL NEED TIME TO SECURE ANY RIGHTS OF WAY, PLAN AND BUILD ANY LINES NEEDED AND COMPLETE OTHER LINE WORK REQUIRED TO INSTALL THE ELECTRICAL SERVICE.

REFER TO **FIGURE 15** FOR STANDARD METERED SERVICE VOLTAGES.

COMMERCIAL SERVICES: PERMANENT OVERHEAD

FOR COMMERCIAL SELF-CONTAINED SERVICES, THE FOLLOWING REQUIREMENTS SHALL BE MET:
(SEE **SECTION IV, A, 4**)

CUSTOMER FURNISHES AND INSTALLS:

- RISER, WEATHERHEAD, GROUND ROD AND GROUNDING CONDUCTOR AND METER ENCLOSURE.
- REFER TO CUSTOMER-PURCHASED EQUIPMENT IN **SECTION IV (B)**. REFER TO **FIGURES 47A** THROUGH **48** FOR METER TROUGH INSTALLATIONS. THE DUKE ENERGY-APPROVED METER ENCLOSURE IS AVAILABLE FROM YOUR LOCAL EQUIPMENT SUPPLIER.
- FINAL INSPECTION BEFORE THE METER IS INSTALLED.
- ATTACHMENT POINT - SHALL BE LOCATED BELOW THE WEATHERHEAD EXCEPT WHERE IT IS IMPRACTICAL TO DO SO BECAUSE OF CLEARANCE REQUIREMENTS. THE HEIGHT OF THE ATTACHMENT POINT IS DICTATED BY THE CURRENT NEC. IN THOSE CASES WHERE IT IS IMPRACTICAL, THE WEATHERHEAD SHALL BE WITHIN 24 INCHES OF THE POINT OF ATTACHMENT. SEE **FIGURES 9A, 9B, 10, 11, 12, 13** AND **48**.

COMPANY FURNISHES AND INSTALLS:

- SERVICE CABLE
- CONNECTORS AND CONNECTIONS

NOTE: FOR COMMERCIAL TRANSFORMER-RATED SERVICE, CALL **800.653.5307.**

COMMERCIAL SERVICE: PERMANENT UNDERGROUND

CUSTOMER WILL NEED TO IDENTIFY ALL EXISTING AND PROPOSED UNDERGROUND FACILITIES SO TO PREVENT DAMAGE DURING INSTALLATION OF UNDERGROUND ELECTRICAL FACILITIES.

FOR COMMERCIAL SELF-CONTAINED SERVICE, THE FOLLOWING REQUIREMENTS SHALL BE MET:
(SEE CHART IN **SECTION IV, A**)

CUSTOMER FURNISHES AND INSTALLS:

- SERVICE POLE, IF REQUIRED
- GROUND ROD AND GROUND WIRE
- METER ENCLOSURE - POSITION THE METER ENCLOSURE SO THE METER IS A MINIMUM OF 3 FEET OR A MAXIMUM OF 6 FEET FROM FINAL GRADE. REFER TO **FIGURES 4A** AND **4B**. METER TROUGH INSTALLATION REQUIREMENTS ARE CONTAINED ON **FIGURES 47A** THROUGH **48**. THE DUKE ENERGY-APPROVED METER ENCLOSURE IS AVAILABLE FROM YOUR LOCAL EQUIPMENT SUPPLIER. A 200-AMP METER ENCLOSURE MINIMUM IS REQUIRED.
- FINAL INSPECTION BEFORE THE METER IS INSTALLED

DUKE ENERGY FURNISHES AND INSTALLS:

- CONDUIT INTO METER ENCLOSURE
- UNDERGROUND SERVICE CONDUCTOR TO THE CUSTOMER'S METER BOX

NOTE: FOR COMMERCIAL TRANSFORMER-RATED SERVICE, CALL **800.653.5307**. (SEE **FIGURE 43**.)

E. TYPE OF SERVICE

1. **IT IS ESSENTIAL THAT THE CUSTOMER CONTACT THE CUSTOMER CONTACT CENTER REGARDING TYPE OF SERVICE THAT CAN BE FURNISHED AT A PARTICULAR LOCATION BEFORE PROCEEDING WITH PURCHASE OF EQUIPMENT OR INSTALLATION OF WIRING.**

2. SERVICE IS PROVIDED WITH ALTERNATING CURRENT AT A NORMAL FREQUENCY OF SIXTY (60) HERTZ (CYCLES PER SECOND).

3. THE VOLTAGE AND/OR NUMBER OF PHASES TO BE SUPPLIED SHALL DEPEND ON THE TYPE, SIZE AND LOCATION OF THE LOAD AND EXISTING COMPANY FACILITIES. SINGLE-PHASE SERVICE OR THREE-PHASE SERVICE SHALL BE PROVIDED ACCORDING TO THE FOLLOWING:

   (A) RESIDENTIAL CUSTOMERS AND COMMERCIAL CUSTOMERS LOCATED IN PREDOMINANTLY RESIDENTIAL AREAS SHALL NORMALLY BE PROVIDED WITH ONLY 120/240 VOLT, 3-WIRE, SINGLE-PHASE SERVICE. THREE-PHASE SERVICE TO SUCH CUSTOMERS MAY BE SUPPLIED IF LOADS WARRANT SUCH SERVICE AND THE REQUIRED COMPANY FACILITIES ARE READILY ACCESSIBLE. THE CUSTOMER MAY BE CHARGED A CIAC.

   (B) IN MULTI-OCCUPANCY BUILDINGS OR COMPLEXES SERVED BY 208Y/120 VOLT THREE-PHASE FACILITIES, NORMAL SERVICE TO INDIVIDUAL OCCUPANCIES SHALL BE 120/208 VOLT 3-WIRE SINGLE-PHASE (A FIVE-TERMINAL METER ENCLOSURE IS REQUIRED).

   (C) COMMERCIAL CUSTOMERS LOCATED IN COMMERCIAL/INDUSTRIAL AREAS SHALL BE PROVIDED THREE-PHASE SERVICE IF IT IS CURRENTLY AVAILABLE AT THE LOCATION AND IF LOADS WARRANT SUCH SERVICE. IF THREE-PHASE SERVICE IS REQUESTED AND THE ABOVE CONDITIONS ARE NOT SATISFIED, THE CUSTOMER MAY BE CHARGED A CIAC.

4. THE MANNER IN WHICH SINGLE-PHASE LOAD IS CONNECTED BY THE CUSTOMER IS CRITICAL WITH THREE-PHASE SERVICE. ON 208Y/120 VOLT OR 480Y/277 VOLT "WYE" THREE-PHASE SERVICES, ALL SINGLE-PHASE LOADS SHOULD SPLIT EVENLY AMONG THE THREE PHASES. ON 240/120 VOLT "DELTA" THREE-PHASE 4-WIRE SERVICES, ALL SINGLE-PHASE 120 VOLT LOADS SHALL BE CONNECTED ONLY TO THE 120 VOLT-TO-GROUND LEGS. **NO SINGLE-PHASE LOAD SHALL BE CONNECTED PHASE TO GROUND TO THE HIGH LEG**. CONNECTIONS MADE OTHERWISE MAY RESULT IN DAMAGE TO THE CUSTOMER'S EQUIPMENT.

5. SEE **FIGURE 15** FOR STANDARD METERED SERVICES VOLTAGES.

F. INSPECTION

1. THE CUSTOMER'S ELECTRIC SERVICE INSTALLATION INCLUDING WIRING AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT EDITION OF THE NEC AND LOCAL ORDINANCES.

2. ALL SERVICE INSTALLATIONS SHALL BE INSPECTED AND APPROVED BY THE AHJ AS REQUIRED BY LAW. THE COMPANY CANNOT CONNECT ANY TEMPORARY OR PERMANENT ELECTRIC SERVICE AND SET A METER UNTIL THE COMPANY HAS BEEN NOTIFIED BY THE AHJ THAT THE PROPER INSPECTIONS HAVE BEEN COMPLETED AND APPROVED. TO AVOID DELAY IN GETTING SERVICE, PLEASE APPLY TO DUKE ENERGY FOR PERMANENT SERVICE BEFORE THE FINAL INSPECTION HAS BEEN COMPLETED.

3. THE COMPANY SHALL MAKE AN INSPECTION OF THE SERVICE INSTALLATION TO VERIFY COMPLIANCE WITH REQUIREMENTS OF THIS BOOK. IF THE SERVICE INSTALLATION DOES NOT MEET THESE REQUIREMENTS, THE COMPANY WILL REFUSE TO CONNECT THE SERVICE. A REASONABLE EFFORT WILL BE MADE TO NOTIFY THE CUSTOMER OF ANY CHANGES REQUIRED.

4. THE COMPANY MAY REFUSE TO CONNECT SERVICE TO ANY NEW OR ALTERED INSTALLATION, WHICH THE COMPANY OR THE AHJ CONSIDERS UNSAFE. THE COMPANY MAY ALSO DISCONNECT SERVICE AT ANY LOCATION THAT IS UNSAFE OR SHOWS EVIDENCE OF TAMPERING OR CURRENT DIVERSION.

5. TEMPORARY EMERGENCY RESTORATION OF SERVICE TO AN EXISTING CUSTOMER SERVICE INSTALLATION SHALL BE MADE IN ACCORDANCE WITH THE COMPANY'S RULES AND REGULATIONS AND THE AHJ.

G. ALTERATIONS AND ADDITIONS

FOR CHANGES IN PERMANENT OVERHEAD OR UNDERGROUND SERVICE

IF THE CUSTOMER'S ELECTRICAL SERVICE NEEDS CHANGING, ADDITIONAL LOAD IS BEING ADDED, OR ELECTRICAL FACILITIES NEED RELOCATING, THE CUSTOMER WILL NEED TO UPDATE THEIR SERVICE APPLICATION INFORMATION BY CONTACTING THE COMPANY AS EARLY IN THE PLANNING PROCESS AS POSSIBLE. THIS ALLOWS THE COMPANY TIME TO SECURE ANY ADDITIONAL RIGHTS OF WAY, MODIFY OR BUILD ANY NEEDED LINES AND COMPLETE ANY OTHER WORK REQUIRED TO MEET THE NEW ELECTRICAL NEEDS.

REQUIREMENTS

1. SERVICE CONNECTIONS, COMPANY-OWNED METERS OR METERING EQUIPMENT, BY LAW, SHALL NOT BE REMOVED OR RELOCATED EXCEPT BY EMPLOYEES OR DULY AUTHORIZED REPRESENTATIVES OF THE COMPANY.

2. CONNECTION TO THE CUSTOMER'S PREMISES IS MADE WITH FACILITIES DESIGNED TO PROPERLY SUPPLY ADEQUATE ELECTRIC SERVICE USING INFORMATION PROVIDED ON THE APPLICATION FOR SERVICE. THEREFORE NO ADDITIONS OF MAJOR LOAD OR ALTERATIONS OF THE CUSTOMER'S INSTALLATION SHALL BE MADE WITHOUT FIRST NOTIFYING THE COMPANY. FAILURE TO PROVIDE SUCH NOTIFICATION MAY AFFECT THE QUALITY AND RELIABILITY OF THE CUSTOMER'S SERVICE AND ALSO THAT OF OTHER CUSTOMERS SUPPLIED FROM THE SAME FACILITIES. ALSO, FAILURE TO PROVIDE ADEQUATE NOTICE TO THE COMPANY COULD SUBJECT THE CUSTOMER TO CHARGES FOR ANY LOSS OF OR DAMAGE TO THE COMPANY'S FACILITIES.

3. AN APPLICATION FOR CHANGES IN THE SERVICE PROVIDED BY THE COMPANY SHALL BE MADE BY THE CUSTOMER IN THE SAME MANNER AS APPLICATION FOR NEW SERVICE.

4. WHEN THE CUSTOMER REQUESTS A CHANGE IN THE EXISTING SERVICE CHARACTERISTICS, THE REQUIREMENTS OUTLINED IN **FIGURE 15** SHALL APPLY.

5. WHEN ALTERATIONS REQUIRE THE RELOCATION OF ANY SERVICE EQUIPMENT, THE CUSTOMER SHALL MAKE APPROPRIATE ADVANCE ARRANGEMENTS WITH THE COMPANY. WHEN THE CUSTOMER'S PART OF THE ALTERATIONS HAVE BEEN SATISFACTORILY COMPLETED AND THE NECESSARY INSPECTION APPROVALS HAVE BEEN OBTAINED, THE COMPANY SHALL MAKE THE CONNECTIONS TO PROVIDE SERVICE. THE CUSTOMER MAY INCUR A CIAC CHARGE.

H. RIGHTS AND RESPONSIBILITIES

1. THE COMPANY SHALL HAVE THE RIGHT OF INGRESS TO AND EGRESS FROM THE CUSTOMER'S PREMISES FOR ANY AND ALL PURPOSES ASSOCIATED WITH THE DELIVERY OF SERVICE INCLUDING INSTALLING, REMOVING, TESTING OR REPLACING EQUIPMENT AND FOR READING METERS.

2. ALL REASONABLE CARE SHALL BE EXERCISED BY THE CUSTOMER TO PREVENT LOSS OR DAMAGE TO ALL PROPERTY OF THE COMPANY INSTALLED ON THE CUSTOMER'S PREMISES USED IN SUPPLYING SERVICE.

3. THE CUSTOMER SHALL FURNISH THE COMPANY A SATISFACTORY AND LAWFUL RIGHT OF WAY OVER THE PREMISES FOR THE COMPANY'S LINES AND APPARATUS NECESSARY OR INCIDENTAL TO THE FURNISHING OF SERVICE.

4. THE CUSTOMER SHALL BE HELD RESPONSIBLE FOR BREAKING THE SEALS, TAMPERING OR INTERFERING WITH THE COMPANY'S METER(S) OR OTHER EQUIPMENT INSTALLED ON THE CUSTOMER'S PREMISES. NO ONE EXCEPT AUTHORIZED EMPLOYEES/AGENTS OF THE COMPANY SHALL BE ALLOWED TO MAKE ANY REPAIRS OR ADJUSTMENTS TO ANY METER OR OTHER PIECE OF EQUIPMENT BELONGING TO THE COMPANY.

I. ELECTRICAL CONTRACTOR SEALING POLICY

A LICENSED ELECTRICAL CONTRACTOR SHALL NOTIFY THE COMPANY BEFORE BREAKING AND REMOVING THE METER SEAL TO PERFORM WORK. CONTRACTOR SHALL REPLACE THE SEAL WITH A TIE WRAP TYPE WITH A TAB DISPLAYING THE CONTRACTOR'S NAME, DATE, AND TELEPHONE NUMBER AND SHALL NOTIFY THE COMPANY IMMEDIATELY FOLLOWING ANY WORK SO THAT COMPANY CAN RE-INSPECT THE FACILITIES AND REPLACE A COMPANY SEAL.

FOR ANY WORK PERFORMED BY THE CUSTOMER REQUIRING THE OPERATION OF A CUSTOMER-OWNED DISCONNECT AHEAD OF THE COMPANY'S METER, THEREBY REMOVING POWER TO THE METER, THE CUSTOMER SHALL MAKE EVERY REASONABLE ATTEMPT TO NOTIFY THE COMPANY PRIOR TO THE WORK BEGINNING.

J. REFUSAL OR DISCONTINUANCE OF SERVICE BY THE COMPANY

THE COMPANY MAY REFUSE OR DISCONTINUE SERVICE FOR CERTAIN REASONS. SEVERAL OF THESE REASONS ARE LISTED BELOW.

1. NON PAYMENT OF BILLS FOR ELECTRIC SERVICE.

2. REFUSAL OR FAILURE TO MAKE A DEPOSIT WHEN REQUESTED.

3. FAILURE TO RECTIFY A DEFICIENCY OR DEFECT IN THE CUSTOMER'S WIRING OR OTHER FACILITIES AFTER RECEIVING NOTICE FROM THE COMPANY THAT SUCH CONDITION EXISTS.

4. UNAUTHORIZED USE OF ELECTRIC ENERGY.

5. OPERATION OF EQUIPMENT THAT CAUSES VOLTAGE FLICKER OR OBJECTIONABLE SERVICE CHARACTERISTICS TO OTHER CUSTOMERS.

6. NEGLECT OR REFUSAL TO PROVIDE SAFE AND REASONABLE ACCESS TO THE COMPANY.

7. TAMPERING WITH METERS OR OTHER FACILITIES FURNISHED AND OWNED BY THE COMPANY.

8. A HAZARDOUS CONDITION IS FOUND BY THE COMPANY.

K. USE OF COMPANY RIGHTS OF WAY

DISTRIBUTION LINE RIGHTS OF WAY (LESS THAN 44KV)

THE COMPANY'S DISTRIBUTION EASEMENTS COVER OVERHEAD AND UNDERGROUND FACILITIES. THE OVERHEAD FACILITIES HAVE A MINIMUM WIDTH REQUIREMENT OF THIRTY (30) FEET WIDE, EXTENDING FIFTEEN (15) FEET ON EACH SIDE OF THE CENTER LINE OF THE ELECTRIC FACILITIES. THE UNDERGROUND FACILITIES HAVE A MINIMUM WIDTH REQUIREMENT OF TWENTY (20) FEET WIDE, EXTENDING TEN (10) FEET ON EACH SIDE OF THE CENTER LINE AND TEN (10) FEET ON EACH SIDE OF AN ELECTRICAL ENCLOSURE. GREATER RIGHT OF WAY WIDTHS MAY BE REQUIRED BY COMPANY ENGINEERING PERSONNEL UNDER CERTAIN CIRCUMSTANCES AND WILL BE STATED ON THE EASEMENT FORM. FOR UNDERGROUND RIGHTS OF WAY ONLY, A LESSER WIDTH MAY BE ALLOWED IN CERTAIN CIRCUMSTANCES WITH THE APPROVAL OF THE COMPANY.

THE PROPERTY OWNER MAY USE THE RIGHT OF WAY FOR OTHER PURPOSES, NOT IN CONFLICT WITH THE EASEMENT RIGHTS GRANTED OR IN VIOLATION OF APPLICABLE SAFETY CODES. THE COMPANY'S EASEMENT GRANTS THE COMPANY THE RIGHT TO CONSTRUCT/INSTALL, OPERATE, MAINTAIN, UPGRADE, CLEAR, AND ACCESS ITS FACILITIES AT ALL TIMES.

BEFORE CONSTRUCTING OR PLACING STRUCTURES NEAR COMPANY LINES, THE CUSTOMER MUST CALL THE CUSTOMER CALL CENTER TO DISCUSS THE PROPOSED PLANS WITH A COMPANY REPRESENTATIVE TO ENSURE THAT THE CUSTOMER IS NOT ENCROACHING UPON COMPANY EASEMENT RIGHTS. SOME ENCROACHMENTS MAY BE ALLOWED WITHIN THE RIGHTS OF WAY BUT MUST HAVE PROPER COMPANY APPROVAL PRIOR TO CONSTRUCTION.

CALL 811 OR NC ONE CALL **800.632.4949** OR SC PUPS **888.721.7877** TO ENSURE ANY ELECTRIC LINE IS LOCATED PRIOR TO DIGGING OR EXCAVATING.

TRANSMISSION LINE RIGHTS OF WAY (VOLTAGES 44KV & HIGHER)

THE COMPANY'S TRANSMISSION LINES HAVE VARYING RIGHTS OF WAY WIDTHS RANGING FROM APPROXIMATELY 70 FEET TO OVER 300 FEET IN WIDTH AND EASEMENT RIGHTS THAT CANNOT BE ENCROACHED UPON BY OTHERS. BEFORE ANY USE OF THE TRANSMISSION RIGHTS OF WAY CAN BE APPROVED, THE CUSTOMER MUST CONTACT AN ASSET PROTECTION SPECIALIST THROUGH THE CUSTOMER SERVICE CENTER. PROPOSED PLANS MUST BE REVIEWED, APPROVED AND MEET ALL APPLICABLE TRANSMISSION GUIDELINES AND RESTRICTIONS. THIS DOCUMENT CAN BE ACCESSED VIA THE DUKE ENERGY WEBSITE AT:

HTTP://WWW.DUKE-ENERGY.COM/-/MEDIA/PDFS/COMMUNITY/ROW-GUIDELINES-ALL-JURISDICTIONS.PDF

THE GUIDELINES AND RESTRICTIONS HAVE BEEN DEVELOPED TO ANSWER THE MOST FREQUENTLY ASKED QUESTIONS ABOUT PROPERTY OWNER USE OF DUKE ENERGY'S ELECTRIC TRANSMISSION RIGHTS OF WAY. CONSTRUCTION TRAILERS, METER BASES, PAD-MOUNTED TRANSFORMERS, TEMPORARY SERVICES, TELEPHONE AND CABLE PEDESTALS ARE A FEW EXAMPLES THAT ARE NOT PERMITTED WITHIN THE TRANSMISSION RIGHTS OF WAYS. THIS LIST DOES NOT COVER ALL RESTRICTIONS OR ALL POSSIBLE SITUATIONS. THESE RESTRICTIONS ARE SUBJECT TO CHANGE AT ANY TIME AND WITHOUT NOTICE. DUKE ENERGY RESERVES ALL RIGHTS CONVEYED TO IT BY THE RIGHT OF WAY AGREEMENT APPLICABLE TO THE SUBJECT PROPERTY. ENGINEERING PLANS MAY BE REQUIRED.

THE COMPANY'S EASEMENT GRANTS THE COMPANY THE RIGHT TO CONSTRUCT/INSTALL, OPERATE, MAINTAIN, UPGRADE, CLEAR, AND ACCESS ITS FACILITIES AT ALL TIMES. IF THE COMPANY APPROVES ANY USE OF THE

RIGHTS OF WAY, IT WILL BE DONE IN THE FORM OF A WRITTEN AGREEMENT OR A LETTER OF "NO OBJECTION" VIA THE LOCAL TRANSMISSION ASSET PROTECTION SPECIALIST.

IF YOU HAVE ANY ADDITIONAL QUESTIONS OR PLAN ANY ACTIVITY WITHIN THE TRANSMISSION RIGHTS OF WAY, CALL THE DUKE ENERGY CUSTOMER CARE CENTER AT **800.777.9898**.

L. CUSTOMER INSTALLATION OF CONDUITS

IN ORDER TO FACILITATE THE INSTALLATION OF COMPANY FACILITIES, IT MAY BE NECESSARY OR ADVANTAGEOUS FOR THE CUSTOMER TO INSTALL CONDUITS AT THE DIRECTION OF THE COMPANY'S ENGINEERING REPRESENTATIVE. CONDUITS INSTALLED FOR THESE PURPOSES SHALL MEET THE CRITERIA FOUND IN APPENDIX E OF THIS MANUAL.

ALLOWABLE CONDUIT SCHEDULES, SDR'S AND COLORS CAN BE FOUND IN APPENDIX E. PAGE 5.

INSTANCES REQUIRING CONDUIT INCLUDE BUT ARE NOT LIMITED TO:

- AREAS OF ADVERSE CONDITIONS ABOVE OR BELOW GROUND SUCH AS ROCKY SOIL, CONSTRUCTION DEBRIS, UNEVEN TERRAIN, CREEK CROSSINGS, ETC.
- WHEN STANDARD CONSTRUCTION EQUIPMENT CANNOT BE USED DUE TO INSUFFICIENT RIGHT OF WAY, RESTRICTIONS PREVENTING OPEN CUT TRENCH, ETC.
- WHEN STANDARD CONSTRUCTION EQUIPMENT CAN BE USED, HOWEVER REPEATED UTILITY LOCATES, EXCESSIVE HAND DIGGING, OR BORING IS REQUIRED TO CROSS MULTIPLE CONFLICTS (OTHER UNDERGROUND UTILITY FACILITIES, PAVED ROADS/DRIVEWAYS/SIDEWALKS).
- AREAS WHERE THE INSTALLATION OF HARD SURFACES OR SIGNIFICANT LANDSCAPING WILL PREVENT FUTURE ACCESS TO UNDERGROUND CABLES USING STANDARD CONSTRUCTION EQUIPMENT

NOTE: CONDUIT WILL NO LONGER BE SUPPLIED AS A CONVENIENCE BY DUKE ENERGY FOR ROAD CROSSINGS, PARKING LOTS, ETC. EFFECTIVE JANUARY 1, 2021.

SECTION III

SERVICES

A. GENERAL INFORMATION

1. NORMALLY, THERE SHALL ONLY BE ONE SERVICE VOLTAGE AVAILABLE AT A LOCATION AND ONLY ONE POD FOR EACH BUILDING. EXCEPTIONS MAY BE ALLOWED AS NOTED IN NEC 230.2 AND IF AGREED UPON BY THE COMPANY.

2. **POD:** FOR SERVICE TO EACH CUSTOMER, THERE IS A DEFINITE POD AT WHICH THE RESPONSIBILITY OF COMPANY ENDS AND THE RESPONSIBILITY OF THE CUSTOMER BEGINS. COMPANY WILL INSTALL, OWN, OPERATE, AND MAINTAIN ALL FACILITIES ON ITS SIDE OF THE POINT OF DELIVERY AND WILL HAVE EXCLUSIVE CONTROL OF ALL ELECTRICITY BEFORE IT PASSES SUCH POD. THE CUSTOMER WILL NORMALLY INSTALL, OWN, OPERATE, AND MAINTAIN ALL FACILITIES (EXCLUSIVE OF METERING EQUIPMENT) ON THE CUSTOMER'S SIDE OF THE POD AND WILL HAVE EXCLUSIVE RESPONSIBILITY FOR ALL ELECTRICITY AFTER IT PASSES THE POD. THE CUSTOMER WILL NOT OWN, INSTALL, OPERATE OR MAINTAIN ANY FACILITIES ON THE COMPANY'S SIDE OF THE POD. THE POD WILL BE DESIGNATED BY THE COMPANY. REFER TO FIG 6C FOR ADDITIONAL INFORMATION SPECIFIC TO RESIDENTIAL SERVICES.

3. ALL SERVICE ENTRANCE FACILITIES, INCLUDING METER ENCLOSURES, SHALL BE LOCATED IN AN EXPOSED OR READILY ACCESSIBLE AREA.

4. THE CUSTOMER'S METERED LOAD WIRES SHALL NOT BE INSTALLED IN RACEWAYS THAT CONTAIN NON-METERED WIRES.

5. DISCONNECTS INSTALLED ON RESIDENTIAL SERVICES TO MEET THE NEC'S REQUIREMENTS FOR EMERGENCY DISCONNECTS SHALL BE LOCATED AFTER (DOWNSTREAM FROM) THE COMPANY'S METER.

6. GROUNDS SHALL BE ESTABLISHED AS REQUIRED BY THE CURRENT NEC, AHJ AND THE COMPANY.

7. CONDUCTOR MARKING.

   A. ANY LABELING OR MARKING OF CONDUCTORS SHALL BE 1 FOOT FROM THE EXIT OF A WEATHERHEAD OR CONDUIT TO ENSURE THEY WILL NOT BE CUT OFF.

   B. THE "208 VOLT PHASE-TO-GROUND" (HIGH LEG - RIGHT HAND SIDE, C POSITION IN THE METER BASE) OF EACH 240/120 VOLT FOUR-WIRE THREE-PHASE SERVICE SHALL BE CLEARLY MARKED WITH AN ORANGE MARKING AT THE POINT OF DELIVERY AND AT THE METER LOCATION OR CT CABINET.

   C. PHASE CONDUCTORS OTHER THAN THE "HIGH LEG" PHASE SHALL BE CLEARLY MARKED WITH COLOR MARKERS AT THE POD AND AT THE METER LOCATION IF MORE THAN ONE CONDUCTOR PER PHASE IS USED. **COLORS USED FOR THIS PURPOSE SHALL BE THE OPTION OF THE ELECTRICIAN BUT SHALL BE THE SAME COLOR FOR EACH CONDUCTOR OF THE SAME PHASE. PHASES TO BE MARKED A, B, C ON CT INSTALLATIONS.**

NOTE: THE COMPANY USES THE FOLLOWING COLOR NOTATION FOR A, B AND C PHASE MARKING.

PHASE	DEC/DEP
208Y/120V THREE-PHASE	RED-YELLOW-BLUE
240/120V THREE-PHASE	RED-YELLOW-ORANGE
480Y/277V THREE-PHASE	RED-YELLOW-BLUE

8. CUSTOMER CONDUCTOR LABELING WITHIN PAD-MOUNTED TRANSFORMERS:

   BOTH ENDS OF **ALL** CUSTOMER CABLES SHALL BE CLEARLY AND SPECIFICALLY MARKED FOR PHASE **AND** LABELED WITH AN APPROPRIATE TAG (NO CARDBOARD, SCRAP PIECES OF WOOD, ETC) TO IDENTIFY THE LOCATION OF THE SOURCE AND LOAD ENDS OF THE CABLE. THE LOAD END OF EACH CABLE SHALL BE LABELED TO IDENTIFY THE SOURCE. EACH SOURCE END SHALL BE LABELED TO IDENTIFY THE LOCATION OF THE LOAD END OF THE CABLE (TROUGH NUMBER, SWITCH PANEL NUMBER, ETC.).

9. WHERE THREE-PHASE SERVICE IS PROVIDED, THE COMPANY WILL PROVIDE EITHER CLOCKWISE OR COUNTERCLOCKWISE ROTATION, DEPENDENT UPON LOCAL CIRCUIT CONFIGURATION. WHERE PRACTICAL, THE COMPANY WILL MODIFY PHASE ROTATION AT THE CUSTOMER'S REQUEST AT THE TIME OF INITIAL INSTALLATION. MODIFICATIONS ARE LIMITED TO THE SIMPLE SWAPPING OF CONDUCTORS AND IT WILL NOT INVOLVE SPLICING, ADJUSTING THE LENGTH OF, OR RE-TERMINATING CONDUCTORS. WHEN ADJUSTMENTS CANNOT BE MADE PRACTICALLY BY DUKE ENERGY, THE CUSTOMER IS RESPONSIBLE FOR MAKING PHASE ROTATION ADJUSTMENTS. CUSTOMER SHALL CONFIRM ROTATION AND MAKE ANY FINAL ADJUSTMENTS.

10. FOR CERTAIN INSTALLATIONS, A SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN (SPCC) MAY BE NECESSARY. THE COMPANY WILL IDENTIFY THESE INSTALLATIONS, PROVIDE THE SPCC PLAN, AND INSTALL ANY PROPOSED COUNTERMEASURES ON A CASE-BY-CASE BASIS. THIS DOES NOT INCLUDE THE ABSORPTION BEDS DESCRIBED IN **APPENDIX C, PAGE 7,** WHICH ARE INSTALLED BY THE CUSTOMER AT THE COMPANY'S DIRECTION.

B. TEMPORARY SERVICE/TEMPORARY CONSTRUCTION SERVICE

1. **TEMPORARY SERVICE** IS USED WHEN A CUSTOMER REQUESTS A SERVICE THAT IS NOT USED FOR CONSTRUCTION OF A PERMANENT STRUCTURE THAT WILL RECEIVE PERMANENT SERVICE AFTER CONSTRUCTION IS COMPLETE. AN EXAMPLE WOULD BE A TEMPORARY SALES LOT USED AS A CHRISTMAS TREE SALES LOT. CONTACT THE LOCAL COMPANY REPRESENTATIVE FOR DETAILS AND CHARGES.

2. **TEMPORARY CONSTRUCTION SERVICE** IS USED TO PROVIDE POWER TO A PERMANENT STRUCTURE UNDER CONSTRUCTION WITH THE UNDERSTANDING THAT UPON COMPLETION OF THAT STRUCTURE, PERMANENT SERVICE WILL BE PROVIDED. FOR ELECTRIC SERVICE OF 120/240 VOLTS, SINGLE PHASE, 200 AMPS OR LESS, THERE ARE NO CHARGES TO THE CUSTOMER IF THE OVERHEAD CONSTRUCTION SERVICE DROP IS 100 FEET OR LESS, OR NO MORE THAN 2 FEET OF UNDERGROUND SERVICE LATERAL. TEMPORARY SERVICE FOR CONSTRUCTION PURPOSES (TEMPORARY CONSTRUCTION SERVICE) MAY BE EITHER OVERHEAD OR UNDERGROUND DEPENDING UPON AVAILABILITY. ARRANGEMENTS FOR PROVIDING TEMPORARY SERVICE/TEMPORARY CONSTRUCTION SERVICE ARE SHOWN IN **FIGURE 1** AND **FIGURE 2**.

C. OVERHEAD (OH) SERVICES

1. IT IS THE CUSTOMER'S RESPONSIBILITY TO PROVIDE A SUITABLE SUPPORT FOR ATTACHMENT OF THE SERVICE DROP CONDUCTORS. **SEE FIGURES 8, 9A** AND **9B, 10, 11, 12, 13** AND **48**. CUSTOMER IS RESPONSIBLE FOR PROVIDING AND INSTALLING AN ATTACHMENT POINT FOR THE SERVICE DROP CONDUCTORS.

2. A MINIMUM OF TWO (2) FEET OF SERVICE ENTRANCE WIRE SHALL BE LEFT PROJECTING FROM THE WEATHERHEAD FOR CONNECTION TO THE SERVICE DROP. THE CONDUCTORS SHALL BE MARKED FOR PHASE IDENTIFICATION AT A POINT ONE (1) FOOT OUTSIDE OF THE WEATHERHEAD.

3. FOR SERVICE TO MOBILE HOMES AND OTHER INSTALLATIONS REQUIRING OVERHEAD SERVICE EQUIPMENT POLES, REFER TO **FIGURES 9A** AND **9B**.

4. THRU-THE-ROOF RISERS SHALL BE ACCESSIBLE TO A COMPANY BUCKET TRUCK OR COMPANY EXTENSION LADDER. RISERS IN EXCESS OF 72 INCHES ABOVE ROOFLINES SHALL BE ACCESSIBLE TO COMPANY BUCKET TRUCKS. SEE **FIGURES 8** AND **48**.

5. THE CUSTOMER MAY BE CHARGED A CIAC FOR ANY COST INCURRED BY THE COMPANY AS A RESULT OF RELOCATION OR REPAIR OF COMPANY FACILITIES NECESSITATED BY GRADE CHANGES, ADDITIONS, SWIMMING POOLS, ETC.

D. UNDERGROUND (UG) SERVICES

1. IN CERTAIN AREAS WHERE THE COMPANY HAS UG DISTRIBUTION, UG SERVICE SHALL BE USED, AND OH SERVICE SHALL NOT BE AVAILABLE TO THE CUSTOMER.

2. FOR SERVICE TO MOBILE HOMES AND OTHER INSTALLATIONS REQUIRING UNDERGROUND SERVICE EQUIPMENT POLES, REFER TO **FIGURES 4A** AND **4B**.

3. THE CUSTOMER MAY BE CHARGED A "CONTRIBUTION-IN-AID OF CONSTRUCTION" FOR ANY COST INCURRED BY THE COMPANY AS A RESULT OF RELOCATION OR REPAIR OF COMPANY FACILITIES NECESSITATED BY GRADE CHANGES, ADDITIONS, SWIMMING POOLS, ETC.

4. THE CUSTOMER IS RESPONSIBLE FOR ALL NECESSARY GRASS RESEEDING OR APPLICATION OF SOD OR STRAW NECESSITATED BY THE COMPANY'S INITIAL INSTALLATION OF FACILITIES.

5. THE CUSTOMER IS RESPONSIBLE FOR ANY ABNORMAL CONSTRUCTION COSTS SUCH AS, BUT NOT LIMITED TO, MECHANICAL TAMPING, EXCESSIVE HAND DIGGING, ROCK REMOVAL, SIDEWALK BORING, DRIVEWAY AND STREET BORING, ETC. ALSO, CUSTOMER IS RESPONSIBLE FOR PROVIDING PROTECTION BARRIERS FOR PAD-MOUNTED TRANSFORMERS WHENEVER THEY ARE SUBJECT TO VEHICULAR TRAFFIC. SEE (**FIGURE 61**)

6. THE CUSTOMER IS RESPONSIBLE FOR PROVIDING AND INSTALLING A CONCRETE FOUNDATION WHERE THREE-PHASE PAD-MOUNTED TRANSFORMERS ARE REQUIRED FOR SERVICE. REFER TO **SECTION III-G** AND **APPENDIX C** FOR FURTHER DETAILS AND REQUIREMENTS FOR THREE-PHASE PAD-MOUNTED TRANSFORMER PADS.

7. CUSTOMER SERVICE CONDUCTORS RUN TO COMPANY-OWNED PAD-MOUNTED TRANSFORMERS SHALL BE STUBBED OUT WITHIN THE ALLOTTED SPACE. REFER TO **APPENDIX C** FOR STUB-OUT DETAILS. REFER TO **FIGURE 58** FOR THE MAXIMUM NUMBER AND SIZE OF CUSTOMER CONDUCTORS ALLOWED IN PAD-MOUNTED TRANSFORMERS. A SECONDARY BUSS ENCLOSURE AS DEFINED BY COMPANY REPRESENTATIVE WILL BE REQUIRED IF THE CUSTOMER CONDUCTOR COUNT EXCEEDS THE MAXIMUM.

8. CUSTOMER SERVICE CONDUCTORS RUN TO COMPANY-OWNED PAD-MOUNTED TRANSFORMER TERMINALS WILL BE TERMINATED BY COMPANY PERSONNEL. EACH PHASE OF PARALLEL CONDUCTORS WILL BE CUT THE SAME LENGTH PER NEC ARTICLE 310.10 (H)(2). MARKING OF CONDUCTORS SHALL BE PLACED ON EACH CONDUCTOR 1 FOOT ABOVE THE CONDUIT EXIT TO ENSURE THE MARKING IS NOT CUT OFF.

9. ANY OBSTRUCTION (ON THE WALL, FOOTER, ETC.) THAT PREVENTS INSTALLATION OF THE COMPANY'S CONDUIT SHALL BE REMOVED BY THE CUSTOMER.

10. COMPANY'S LINE EXTENSIONS, INCLUDING SERVICES, SHALL BE INSTALLED UNDER THE TERMS OF THE COMPANY'S FILED RATES AND TARIFFS.

11. THE CUSTOMER SHALL REQUEST THE COMPANY TO DESIGNATE THE POD FOR EACH SERVICE LOCATION BEFORE CONSTRUCTION IS STARTED.

12. SPECIAL ROUTING MAY INCUR ADDITIONAL COST TO THE CUSTOMER.

13. IT IS IMPORTANT THAT THE CUSTOMER CONTACT THE COMPANY TO DETERMINE THE VOLTAGE THAT IS AVAILABLE AT A DESIRED SERVICE LOCATION BEFORE CONSTRUCTION IS STARTED.

14. WHEN CONVERTING RESIDENTIAL OVERHEAD SERVICE DROP TO UNDERGROUND, PROVISIONS OF THE COMPANY'S FILED RATES AND TARIFFS WILL APPLY. ADDITIONAL COSTS MAY BE REQUIRED FOR BORING SIDEWALKS, DRIVEWAYS, ROADS/STREETS AND OTHER ADVERSE CONDITIONS.

E. LIGHTING SERVICES

A VARIETY OF LIGHTING OPTIONS, INCLUDING STANDARD, DECORATIVE AND FLOOD, ARE OFFERED BY THE COMPANY FOR BOTH RESIDENTIAL AND COMMERCIAL/INDUSTRIAL APPLICATIONS. CONTACT THE CUSTOMER CARE CENTER AT **866.769.6417** FOR FURTHER INFORMATION AND TO TALK TO A COMPANY REPRESENTATIVE.

F. CUSTOMER CONDUCTORS AND PARALLEL SERVICES

SERVICES THAT REQUIRE MULTIPLE CONDUCTORS PER PHASE (PARALLEL SERVICES), WHEN INSTALLED BY THE CUSTOMER, SHALL MEET THE PROVISIONS OF THE CURRENT NEC AND LOCAL AUTHORITY HAVING JURISDICTION. THIS MEANS THAT PARALLEL CUSTOMER WIRES PULLED INTO EQUIPMENT SUCH AS PAD-MOUNTED TRANSFORMERS, CT CABINETS, SECONDARY BUSS ENCLOSURES, ETC., WHICH WILL LATER BE TERMINATED BY THE COMPANY SHALL BE OF THE SAME LENGTH FOR EACH INDIVIDUAL PHASE (ALL A-PHASE WIRES THE SAME, ALL B-PHASE WIRES THE SAME, ETC). IT IS THE COMPANY PRACTICE TO REMOVE AN EQUAL LENGTH FROM ALL CONDUCTORS ON EACH INDIVIDUAL PHASE. SECONDARY COMPARTMENTS AND CABINETS ARE NOT DESIGNED TO HANDLE EXCESSIVE LENGTH OF CABLE THAT ARE LEFT AS A RESULT OF PHASE WIRES THAT ARE SIGNIFICANTLY DIFFERENT IN LENGTH. EXCESSIVE WIRE LENGTHS CAN ALSO CREATE A HAZARDOUS SITUATION DUE TO DOORS OR PANELS NOT CLOSING PROPERLY OR WITH WIRE INSULATION BEING RUBBED, ABRADED, PINCHED OR OTHERWISE COMPROMISED WITHIN THE ENCLOSURE. IT IS THE RESPONSIBILITY OF THE CUSTOMER TO ENSURE THAT WIRE LENGTHS ARE THE SAME FOR PARALLEL CONDUCTORS IN EACH INDIVIDUAL PHASE AND THAT EXCESSIVE LENGTHS ARE NOT LEFT FOR THE COMPANY TO ACCOMMODATE AS THEY ARE TERMINATED.

G. THREE-PHASE PAD-MOUNTED TRANSFORMER FOUNDATIONS

THE CUSTOMER IS RESPONSIBLE FOR PROVIDING AND INSTALLING A CONCRETE THREE-PHASE PAD-MOUNTED TRANSFORMER FOUNDATION ACCORDING TO THE SPECIFICATIONS REFERENCED IN APPENDIX C. THE CUSTOMER MAY CHOOSE TO CONSTRUCT (FORM AND POUR) THE PAD ON-SITE OR PURCHASE AND INSTALL A PRE-FABRICATED PAD FROM AN APPROVED SUPPLIER. THE CUSTOMER MUST PROVIDE AND INSTALL THE PRIMARY AND SECONDARY CONDUITS INTO WINDOW OPENING OF THE PAD ACCORDING TO THE SPECIFICATIONS OUTLINED. THE CUSTOMER IS RESPONSIBLE FOR CONTACTING A DUKE ENERGY REPRESENTATIVE TO INSPECT AND APPROVE THE PAD TO BE USED. IF USING A PRECAST PAD, CONTACT THE DUKE ENERGY REPRESENTATIVE AFTER INSTALLATION SO THAT THE CORRECT PAD CAN BE CONFIRMED AND VERIFIED THAT IT IS IN THE CORRECT LOCATION AND LEVEL. IF CONSTRUCTING THE PAD ON-SITE, THE DUKE ENERGY REPRESENTATIVE MUST BE CONTACTED TO INSPECT THE FORM OF THE PAD, INCLUDING REBAR, PRIOR TO POURING THE CONCRETE. THE CUSTOMER IS ALSO RESPONSIBLE FOR INFORMING THE DUKE ENERGY REPRESENTATIVE THE NUMBER, SIZE, AND TYPE OF SECONDARY CONDUCTORS THAT WILL BE INSTALLED. (EXAMPLE: 500 MCM COPPER, 600V INSULATED, 90°C RATED, FOUR (4) CONDUCTORS PER PHASE).

A 'PIT PAD' MUST BE INSTALLED IN ALL NON-COASTAL AREAS OF THE CAROLINAS SERVICE TERRITORY. PIT PADS HAVE A 36-INCH DEEP PIT IN THE WINDOW OPENING OF THE PAD FOR CABLE ENTRANCE. HAVING A PIT ALLOWS THE CABLES TO EXIT THE CONDUIT AT A LOWER POINT, REDUCING THE BEND ANGLE OF THE CABLE, WHICH PUTS LESS STRESS ON THE TRANSFORMER BUSHINGS AND ACCESSORIES, THUS IMPROVING RELIABILITY AND PREVENTING ENVIRONMENTAL EVENTS. IN THE COASTAL AREAS OF THE CAROLINAS SERVICE TERRITORY, A FLAT PAD MUST BE USED, DUE TO THE HIGHER WATER TABLE IN THESE AREAS.

THERE ARE TWO DIFFERENT SIZE PADS FOR THREE-PHASE PAD-MOUNTED TRANSFORMERS.
THE PAD SIZE SHALL BE DETERMINED BASED ON THE PARAMETERS SPECIFIED IN THE TABLE BELOW:

TRANSFORMER SIZE RANGE	TRANSFORMER PRIMARY VOLTAGE CLASS	PAD SIZE	PIT PAD DWG.	FLAT PAD DWG.
300KVA AND BELOW	25KV AND BELOW	SMALL	APPENDIX C PAGE 1 AND 3	APPENDIX C PAGE 4
500KVA - 5000KVA	25KV AND BELOW	LARGE	APPENDIX C PAGE 2 AND 3	APPENDIX C PAGE 5
ALL	35KV	LARGE	APPENDIX C PAGE 2 AND 3	APPENDIX C PAGE 5

SECTION IV

METERING INSTALLATIONS

A. GENERAL REQUIREMENTS

1. **JURISDICTIONAL DIFFERENCES**
   DEC: THE COMPANY SHALL FURNISH, OWN, AND MAINTAIN ALL METERS AND TRANSFORMER RATED METER SOCKETS. THE CUSTOMER SHALL FURNISH, INSTALL, OWN AND MAINTAIN ALL SELF-CONTAINED METER SOCKETS, CT CABINETS, TRANSOCKETS AND METERING TROUGHS.

   DEP: THE COMPANY SHALL FURNISH, OWN, AND MAINTAIN ALL METERS, TRANSFORMER RATED METER SOCKETS, AND SOME CT CABINETS (SEE **FIGURE 43** FOR DETAILS). THE CUSTOMER SHALL FURNISH, INSTALL, OWN AND MAINTAIN ALL SELF-CONTAINED METER SOCKETS AND METERING TROUGHS.

2. IT IS THE CUSTOMER'S RESPONSIBILITY TO FURNISH TO THE COMPANY OR LOCAL COMPANY REPRESENTATIVE, SPECIFIC INFORMATION ON THE TYPE OF SERVICE REQUIRED SUCH AS OVERHEAD OR UNDERGROUND, SERVICE VOLTAGE(S), MAIN LINE SWITCH AMPS, MAXIMUM DEMAND AMPS AND THE NUMBER AND SIZE OF THE CUSTOMER'S SERVICE ENTRANCE CONDUCTORS. FOR NONRESIDENTIAL SERVICE THE CUSTOMER MUST PROVIDE THIS INFORMATION ON A LOAD SHEET FORM. A COPY OF THE LOAD SHEET IS SHOWN IN **APPENDIX A.**

3. THE COMPANY SHALL NOT COMPLETE INSTALLATION UNLESS THE ASSIGNED SERVICE ADDRESS NUMBERS ARE BOTH:

   (A) CLEARLY VISIBLE FROM THE FRONT OF THE BUILDING, RESIDENCE OR STRUCTURE.

   (B) THE SAME AS THE PERMITTED ELECTRICAL ADDRESS OF THE FACILITY. IDENTIFICATION SUCH AS LOT NUMBERS, PLAT NUMBERS OR PARCEL ID'S ARE NOT SUFFICIENT.

4. METER ENCLOSURES SHALL NOT BE USED AS A WIRING RACEWAY OR TROUGH. THE ONLY EXCEPTIONS TO THIS ARE AS FOLLOWS:

   (A) AS SHOWN IN FIG 72A, CONNECTION POINT D, FOR NET GENERATION METERING IN A SELF-CONTAINED METER BASE.

   (B) WHEN USED TO ACCESS AN INTERIOR ELECTRICAL PANEL WITH FEED-THROUGH FEEDER CONDUCTORS SUPPLIED FROM A GENERATOR TRANSFER SWITCH. IN THESE CASES, THE FEEDER CONDUCTORS MUST MAINTAIN A MINIMUM CLEARANCE OF 1" FROM THE COMPANY'S CONDUCTORS, CANNOT CROSS IN FRONT OF OR BLOCK THE COMPANY'S CONDUCTORS, AND CANNOT CONTAIN SPLICES OF ANY KIND. THIS CONNECTION IS ONLY ALLOWED IN SINGLE-POSITION METER ENCLOSURES RATED 200 AMPS OR GREATER. THIS EXCEPTION IS IN LINE WITH THE NC DEPARTMENT OF INSURANCE INTERPRETATION OF METER ENCLOSURES WITH GENERATOR FEED-THROUGH FEEDERS, DATED AUGUST 12, 2019.

5. A TRANSFORMER-RATED SERVICE FROM A THREE-PHASE PAD-MOUNTED TRANSFORMER SERVING A SINGLE CUSTOMER WILL BE METERED AT THE PAD-MOUNTED TRANSFORMER. THE CUSTOMER WILL PULL SERVICE CONDUCTORS TO THE TRANSFORMER (SEE **FIGURE 28**).

6. A TRANSFORMER-RATED SERVICE FROM A SINGLE-PHASE PAD-MOUNTED TRANSFORMER SERVING A SINGLE CUSTOMER WILL BE METERED ON THE BUILDING WALL (SEE **FIGURE 21**) OR ON AN APPROVED METER STRUCTURE. SERVICE CONDUCTORS WILL BE INSTALLED BY THE COMPANY, OR BY THE CUSTOMER, DEPENDING ON THE ESTABLISHED POD AS SPECIFIED BY COMPANY REPRESENTATIVE. INSTRUMENT TRANSFORMERS WILL NOT BE MOUNTED WITHIN A SINGLE-PHASE PAD-MOUNTED TRANSFORMER.

7. FOR NONRESIDENTIAL SELF-CONTAINED METERED SERVICES THE COMPANY PROVIDES THE UNDERGROUND SERVICE CONDUCTORS TO THE POD FOR TROUGH INSTALLATIONS, THE COMPANY GENERALLY PROVIDES THE UNDERGROUND SERVICE CONDUCTORS FROM THE PAD-MOUNTED TRANSFORMER TO THE POD (SEE **FIGURES 28** AND **47A** THROUGH **48**).

8. THE INFORMATION BELOW AND IN THE CHART IN **SECTION IV, A, 8** INDICATES THE TYPE OF METERING REQUIRED FOR DIFFERENT SERVICE CONFIGURATIONS. COMPANY REPRESENTATIVE WILL ANSWER ANY QUESTIONS ABOUT THE TYPE OF SERVICE REQUIRED FOR THE INSTALLATION.

   (A) ON INSTALLATIONS WHERE THE NOMINAL VOLTAGE DOES NOT EXCEED 240 VOLTS AND THE ANTICIPATED DEMAND CURRENT DOES NOT EXCEED 200 AMPERES, AN APPROVED 200 AMPERE SELF-CONTAINED METER ENCLOSURE SHALL BE USED. SEE CHART IN **SECTION IV, A, 8**.

   (B) ON INSTALLATIONS WHERE THE NOMINAL VOLTAGE DOES NOT EXCEED 240 VOLTS AND THE ANTICIPATED DEMAND CURRENT IS GREATER THAN 200 AMPERES BUT DOES NOT EXCEED 320 AMPERES CONTINUOUS OR 400 AMPERES MAXIMUM, AN APPROVED 400 AMPERE SELF-CONTAINED METER ENCLOSURE SHALL BE USED. A CLASS 320 METER SHALL BE INSTALLED BY THE COMPANY. SEE CHART IN **SECTION IV, A, 8**.

   (C) ON INSTALLATIONS WHERE THE SERVICE VOLTAGE EXCEEDS 240 VOLTS OR THE COMPANY DETERMINES THE DEMAND WILL EXCEED 320 AMPERES CONTINUOUS OR 400 AMPERES MAXIMUM FOR SINGLE-PHASE OR THREE-PHASE SERVICES, INSTRUMENT TRANSFORMER METERING SHALL BE REQUIRED. SEE CHART IN **SECTION IV, A, 8**. NO NEW 600 AMP K-BASE INSTALLATIONS WILL BE CONNECTED.

(D) SEE **SECTION IV**, **D** FOR MORE INFORMATION ON INSTRUMENT TRANSFORMER RATED SERVICE INSTALLATIONS

(E) REFER TO **FIGURE 21** FOR TYPICAL FIELD APPLICATIONS OF TRANSFORMER-RATED METERING VERSUS SELF-CONTAINED METERING, SINGLE AND THREE PHASE.

9. DUKE ENERGY STANDARD METERING REQUIREMENTS FOR VARIOUS SERVICE VOLTAGES

SERVICE CONFIGURATION	**METER SERVICE TYPE**		
	0 - 200 AMPS	201 - 400 AMPS	> 400 AMPS
THREE-WIRE, 120/240V SINGLE PHASE	SELF-CONTAINED, 200 AMP FOUR TERMINAL FORM 2S	SELF-CONTAINED, 320 AMP FOUR TERMINAL FORM 2S (SEE NOTE 1)	TRANSFORMER RATED FIVE TERMINAL FORM 3S
THREE-WIRE, 120/208V NETWORK	SELF-CONTAINED, 200 AMP FIVE TERMINAL FORM 12S	SELF-CONTAINED, 320 AMP FIVE TERMINAL FORM 12S (SEE NOTE 1)	TRANSFORMER RATED EIGHT TERMINAL FORM 5S (45S)
THREE-WIRE, 240V DELTA THREE PHASE	DEC - SELF-CONTAINED, FORM 12S FIVE TERMINAL 200 AMP	DEC - SELF-CONTAINED, 320 AMP FIVE TERMINAL FORM 12S (SEE NOTE 1)	TRANSFORMER RATED EIGHT TERMINAL FORM 5S (45S)
	DEP - SELF-CONTAINED, FORM 16S SEVEN TERMINAL 200 AMP	DEP - SELF-CONTAINED, FORM 16S SEVEN TERMINAL 320 AMP (SEE NOTE 1)	
THREE-WIRE, 480V DELTA THREE PHASE	TRANSFORMER RATED EIGHT TERMINAL FORM 5S (45S)	TRANSFORMER RATED EIGHT TERMINAL FORM 5S (45S)	TRANSFORMER RATED EIGHT TERMINAL FORM 5S (45S)
FOUR-WIRE, 240V HIGH-LEG DELTA THREE PHASE	SELF-CONTAINED, 200 AMP SEVEN TERMINAL FORM 16S	SELF-CONTAINED, 320 AMP SEVEN TERMINAL FORM 16S (SEE NOTE 1)	TRANSFORMER RATED THIRTEEN TERMINAL FORM 9S
FOUR-WIRE, 120/208V WYE THREE PHASE	SELF-CONTAINED, 200 AMP SEVEN TERMINAL FORM 16S	SELF-CONTAINED, 320 AMP SEVEN TERMINAL FORM 16S (SEE NOTE 1)	TRANSFORMER RATED THIRTEEN TERMINAL FORM 9S DEC - SEE NOTE 2
FOUR-WIRE, 277/480V WYE THREE PHASE	TRANSFORMER RATED THIRTEEN TERMINAL FORM 9S DEC - SEE NOTE 2	TRANSFORMER RATED THIRTEEN TERMINAL FORM 9S DEC - SEE NOTE 2	TRANSFORMER RATED THIRTEEN TERMINAL FORM 9S DEC - SEE NOTE 2

NOTES:

1. METERS AND SOCKETS RATED FOR 400 AMPS MAXIMUM, 320 AMPS CONTINUOUS.
2. FOR DEC SERVICES UP TO 600 AMPS WHERE LIMITED SPACE PREVENTS THE INSTALLATION OF A CT CABINET AND METER SOCKET, A DEC-APPROVED TRANSOCKET MAY BE USED. SEE DEC TRANSOCKET SPECIFICATIONS IN **SECTION IV, B**.
3. ALL METER JAWS SHALL BE FACTORY INSTALLED OR IN THE CASE OF A FIFTH TERMINAL MUST BE INCLUDED WITH THE SOCKET FROM THE SAME MANUFACTURER. THE SOCKET IN WHICH THE FIFTH TERMINAL IS INSTALLED MUST BE LISTED FOR A FIVE-TERMINAL APPLICATION ON THE METER EQUIPMENT ENCLOSURE (MEG) LIST.
4. ON INSTALLATIONS, REPAIRS, REPLACEMENT OR UPGRADE OF ENCLOSURES INVOLVING MORE THAN ONE METER ON A SINGLE PREMISE, THE FOLLOWING GUIDELINES APPLY:
   (A) THE CUSTOMER SHALL PURCHASE AND USE EITHER INDIVIDUAL METER SOCKETS (SINGLE OR THREE PHASE) FOR TROUGH INSTALLATIONS AS SHOWN IN **FIGURES 47A** THROUGH **48** OR GANGED METER SOCKETS AS DESCRIBED IN SECTION IV-B AND SHOWN IN **FIGURES 25**, **26** AND **27**.
   (B) EACH METER SOCKET WILL BE LABELED ON THE OUTSIDE FRONT AND ON THE INSIDE AS SHOWN IN **FIGURE 3** CORRECTLY IDENTIFYING THE CUSTOMER SERVED. VERIFICATION OF CORRECT LABELING IS THE RESPONSIBILITY OF THE CUSTOMER.
   (C) ON INSTALLATIONS WHERE THE SERVICE VOLTAGE EXCEEDS 240 VOLTS OR THE COMPANY DETERMINES THE DEMAND WILL EXCEED 320 AMPERES CONTINUOUS OR 400 AMPERES MAXIMUM FOR SINGLE-PHASE OR THREE-PHASE SERVICES, INSTRUMENT TRANSFORMER METERING SHALL BE REQUIRED. SEE CHART ABOVE. NO NEW 600 AMP K-BASE INSTALLATIONS WILL BE CONNECTED.
   (D) **SEE SECTION IV**, **D** FOR MORE INFORMATION ON INSTRUMENT TRANSFORMER RATED SERVICE INSTALLATIONS.
   (E) REFER TO **FIGURE 21** FOR TYPICAL FIELD APPLICATIONS OF TRANSFORMER METERING VERSUS SELF-CONTAINED METERING, SINGLE AND THREE PHASE.
5. APPROVED SOCKETS ON THE METER EQUIPMENT ENCLOSURE (MEG) LIST THAT ARE LISTED FOR MULTIPLE SELF-CONTAINED CONFIGURATIONS CAN BE USED FOR THE FULL RANGE OF APPLICATIONS SHOWN.
6. TRANSFORMER RATED METERING SHALL NOT BE INSTALLED SOLELY AS A MEANS FOR THE CUSTOMER TO MEET ANY FAULT CURRENT REQUIREMENTS.

B. EQUIPMENT PURCHASED AND/OR INSTALLED BY CUSTOMER

1. ONLY SELF-CONTAINED METER SOCKETS INCLUDING INDIVIDUAL METER SOCKETS, GANGED METER SOCKETS, OR MULTI-POSITION METER CENTERS THAT ARE ON THE METER EQUIPMENT GROUP (MEG) APPROVED LIST MAY BE USED (SEE ADDITIONAL INFORMATION ON PAGE III). A SELF-CONTAINED METER BASE OR METER BASE PACK SHALL NOT BE MODIFIED IN ANY WAY BEYOND WHAT WAS INTENDED AS SPECIFIED BY THE MANUFACTURER, INCLUDING THE ADDITION OF BLOCKS OR CONNECTORS TO INCREASE CAPACITY OR CHANGE THE SOCKET CONFIGURATION. THE INSTALLED BASE(S) MUST REMAIN CONSISTENT TO THE MEG PRODUCT APPROVAL LIST. IN ADDITION, ALL SOCKETS AND METER CENTERS SHALL COMPLY WITH THE MOUNTING HEIGHTS SPECIFIED IN THIS MANUAL. AESTHETIC WRAPS AND PAINTING OF METER SOCKETS FOR AESTHETIC PURPOSES IS NOT ALLOWED.

2. CUSTOMER-OWNED EQUIPMENT SUCH AS INSTRUMENT TRANSFORMERS IS NOT ALLOWED WITHIN THE METER SOCKET.

3. THE CUSTOMER SHALL BE RESPONSIBLE FOR PURCHASE AND MAINTENANCE OF SELF-CONTAINED METER SOCKETS.

4. CT CABINET AND TRANSOCKET GUIDELINES AND GENERAL SPECIFICATIONS:

GUIDELINES:

(A) CUSTOMER IS RESPONSIBLE FOR INSTALLING THE CT CABINET. SEE FIGURE 43 FOR CABINET SIZE AND MOUNTING GUIDELINES.

(B) CT CABINETS SHALL BE INSTALLED IN THE CORRECT ORIENTATION FOR WHICH THEY ARE DESIGNED. CABINETS MOUNTED INCORRECTLY CAN ALLOW WATER TO ENTER.

(C) ADDITIONAL SPACE SHALL BE PLANNED FOR THE INSTALLATION OF THE METER SOCKET. CENTER OF METER SHALL BE BETWEEN 4' AND 5'-6" ABOVE FINAL GRADE. **DEC** - COMPANY PROVIDES AND INSTALLS METER BASE; **DEP** - COMPANY PROVIDES AND CUSTOMER INSTALLS METER BASE.

(D) SEE **FIGURE 14B** FOR GROUNDING REQUIREMENTS.

(E) CUSTOMER SHALL CUT HOLE IN THE CT CABINET FOR DUKE ENERGY'S RISER FOR UNDERGROUND SERVICE. HOLE SHALL BE POSITIONED AT OPPOSITE END OF CABINET FROM CUSTOMER CONDUCTORS AND BE SIZED PER CHART IN FIGURE 43.

(F) CUSTOMER LOAD-SIDE CONDUCTORS SHALL ENTER THE CABINET FROM ONE SIDE ONLY.

(G) AESTHETIC WRAPS AND PAINTING OF CT CABINETS FOR AESTHETIC PURPOSES IS NOT ALLOWED.

(H) PLEASE CONSULT DUKE ENERGY FIELD METERING PRIOR TO CONSTRUCTION FOR ANY QUESTIONS OR UNUSUAL CIRCUMSTANCES.

GENERAL CT CABINET SPECIFICATIONS (PHASED-IN FOR BOTH **DEP** AND **DEC** BY JANUARY 1, 2022)

(A) ALL CT CABINETS:

(1) CUSTOMER OWNED CT CABINETS INSTALLED ON OR AFTER JANUARY 1, 2022 MUST BE LISTED ON THE APPROVED CT CABINET DOCUMENT LOCATED ON THE DUKE ENERGY WEB SITE.

(2) APPROVED CABINETS ARE UL LISTED.

(B) CT CABINET 1:

(1) DIMENSIONS: 32"W X 34"H X 12"D, ALUMINUM, PAINTED GALVANIZED STEEL OR STAINLESS STEEL.

(2) MAXIMUM SERVICE EQUIPMENT SIZE = 600 AMPS.

(3) SEE FIGURE 43 FOR CONDUCTOR SIZE AND QUANTITY LIMITS.

(4) **DEC:** PROVIDED AND INSTALLED BY CUSTOMER.

(5) **DEP:** PROVIDED BY COMPANY, INSTALLED BY CUSTOMER.

(C) CT CABINET 2:

(1) DIMENSIONS: 40"W X 40"H X 14"D, ALUMINUM, PAINTED GALVANIZED STEEL OR STAINLESS STEEL.

(2) MAXIMUM SERVICE EQUIPMENT SIZE = 1200 AMPS.

(3) SEE FIGURE 43 FOR CONDUCTOR SIZE AND QUANTITY LIMITS.

(4) **DEC:** PROVIDED AND INSTALLED BY CUSTOMER.

(5) **DEP:** PROVIDED BY COMPANY, INSTALLED BY CUSTOMER.

BUS-BAR CABINETS

WHEN THE SERVICE EXCEEDS 1200 AMPS OR THE NUMBER/SIZE OF CONDUCTORS EXCEEDS THE LIMITS OF CT CABINET 2, THE CUSTOMER SHALL, AT HIS EXPENSE, PROVIDE AND INSTALL A BUS BAR CABINET OF SUITABLE SIZE, MATERIAL, AND CONSTRUCTION APPROVED BY COMPANY REPRESENTATIVE. SEE **FIGURES 49** AND **50** FOR BUS BAR CABINET REQUIREMENTS.

TRANSOCKET SPECIFICATION (**DEC** ONLY)

(A) TRANSOCKETS SHALL BE 13 TERMINAL SOCKETS FOR FOUR-WIRE WYE SERVICES, 208/120 VOLT OR 480/277 VOLT, 600 AMP MAXIMUM. TRANSOCKETS SHALL BE PREAPPROVED FOR USE ON THE DEC SYSTEM. TRANSOCKETS APPROVED FOR USE ARE:
- BROOKS UTILITY PRODUCTS CAT# 683U3690-T092
- MILBANK CAT# U6569-XT-21-HSP

(B) DIMENSIONS: MINIMUM 25"W X 33"H X 12"D

(C) CUSTOMER CONDUCTOR LIMITED TO:

A. SINGLE CONDUCTOR PER PHASE UP TO AND INCLUDING 600 KCM.

B. TWO CONDUCTORS PER PHASE UP TO AND INCLUDING 350 KCM.

C. METER LOCATION

1. THE LOCATION OF METERS IS AN IMPORTANT CONSIDERATION TO BOTH THE COMPANY AND THE CUSTOMER. THE COMPANY SHALL ALWAYS BE CONSULTED AND SHALL ENDEAVOR TO SELECT A LOCATION THAT SHALL BE THE MOST SUITABLE TO BOTH PARTIES.

2. METERS SHALL BE LOCATED IN A PLACE WHERE THEY SHALL BE PROTECTED FROM MECHANICAL DAMAGE. THE CUSTOMER SHALL BE RESPONSIBLE FOR PROVIDING THIS PROTECTION.

3. METER SOCKETS AND ENCLOSURES SHALL BE SECURELY MOUNTED IN A PLUMB AND LEVEL POSITION ON A SOLID WALL OR STRUCTURE. THE CUSTOMER SHALL BE RESPONSIBLE FOR SECURELY FASTENING THE METER ENCLOSURE IN ORDER TO WITHSTAND THE NORMAL FORCES REQUIRED TO ROUTINELY REMOVE AND INSTALL THE METER.

4. METER ENCLOSURES SHALL NOT BE RECESSED OR FRAMED IN ANY WAY THAT BLOCKS ACCESS, KNOCKOUTS OR DRAINAGE AND SHALL NOT BE MOUNTED ON RECESSED WALLS THAT REQUIRE ALTERATIONS TO THE COMPANY'S RISER.

5. THE CENTERLINE OF THE METER SHALL NOT BE MORE THAN 5'-6" OR LESS THAN 4 FEET FROM THE GROUND (FINAL GRADE) OR FLOOR. FOR METER CENTERS, THE HEIGHT OF THE BOTTOM METER SOCKET SHALL NOT BE LESS THAN 22 INCHES. (SEE ***FIGURE 27*** *).*

   EXCEPTION : IN FLOOD ZONES WHERE THE REQUIREMENTS MANDATE THAT THE METER BE LOCATED ABOVE 6 FEET FROM GRADE, READY AND PERMANENT ACCESSIBILITY TO THE METER (INCLUDING THE WORKING SPACE DESCRIBED IN ITEM NO. 6 IN THIS SECTION) SHALL BE PROVIDED FOR READING AND TESTING. SEE ***FIGURE 5*** .

6. A CLEAR SPACE (MEASURED IN FRONT OF THE METER ENCLOSURE) AT LEAST 36 INCHES WIDE (18 INCHES ON EACH SIDE OF CENTER LINE OF METER, OR EQUIPMENT WIDTH, WHICHEVER IS GREATER) BY 48 INCHES DEEP BY 84 INCHES HIGH FROM FINAL GRADE SHALL BE PROVIDED AND ALWAYS BE AVAILABLE AROUND EVERY METER FOR READING, INSPECTING, TESTING AND MAINTENANCE OPERATIONS. CLEAR SPACE FOR SAFE ACCESS TO AND EGRESS FROM THE WORKING SPACE SHALL BE MAINTAINED. CLEAR SPACE SHALL ALLOW FOR THE FULL 90-DEGREE OPENING OF ANY HINGED DOORS OR PANELS.

7. A 3-FOOT RADIAL CLEARANCE IS REQUIRED FROM A GAS METER.

8. METERS SHALL BE INSTALLED OUTDOORS. METERS MAY BE LOCATED INDOORS AS DESCRIBED IN NO. 12 WITH THE APPROVAL OF COMPANY REPRESENTATIVE PRIOR TO INSTALLATION.

9. METERS FOR SINGLE-FAMILY RESIDENCES SHALL ALWAYS BE LOCATED OUTDOORS. METERS SHALL NOT BE LOCATED IN AREAS SUCH AS CARPORTS, OPEN PORCHES, SWIMMING POOLS, ETC., WHICH ARE SUSCEPTIBLE TO SUBSEQUENT ENCLOSURES BY WALLS OR SCREENS. ANY DEVIATION SHALL BE APPROVED IN WRITING BY AN AUTHORIZED COMPANY REPRESENTATIVE.

10. IN THE EVENT A METER IS LATER ENCLOSED OR OTHERWISE MADE INACCESSIBLE OR UNSAFE, THE CUSTOMER SHALL, AT THE CUSTOMER'S EXPENSE, HAVE THE METER FACILITIES MOVED TO A READILY ACCESSIBLE OUTSIDE LOCATION.

11. METERING SHALL NOT BE INSTALLED ON THE LOAD SIDE OF CUSTOMER TRANSFORMATION OR ON THE LOAD SIDE OF A CUSTOMER OWNED BREAKER, OTHER THAN A MAIN DISCONNECT AS REQUIRED BY THE NEC AND SHOWN IN FIG 47E.

12. METERS MAY BE GROUPED TOGETHER IN A METER ROOM FURNISHED BY THE CUSTOMER PROVIDED THE FOLLOWING REQUIREMENTS ARE MET:

(A) A SINGLE METER ROOM SHOULD NORMALLY BE LOCATED ON THE FIRST FLOOR. FOR BUILDINGS ABOVE THREE FLOORS, A SINGLE METER ROOM MAY BE LOCATED ON VARIOUS FLOORS AT MUTUALLY AGREEABLE LOCATIONS. ANY EXCEPTIONS TO THIS DUE TO UNUSUAL DISTANCES, ETC., SHALL BE APPROVED BY YOUR DUKE ENERGY PROJECT ENGINEER.
(B) THE COMPANY SHALL HAVE ACCESS TO THE METER ROOMS FOR READING, TESTING AND SERVICING THE EQUIPMENT. WHEN METERS ARE LOCATED IN AREAS THAT CAN BE LOCKED, THE CUSTOMER SHALL MAKE ARRANGEMENTS TO PROVIDE THE COMPANY ACCESS TO THE METERS. THE CUSTOMER SHALL PROVIDE A LOCK BOX TO ACCOMMODATE A STANDARD KEY OR A MAGNETIC ACCESS CARD. THE LOCK BOX WILL BE INSTALLED BY THE CUSTOMER.
(C) METERS INSTALLED INSIDE SHALL BE IN A CLEAN, DRY, LIGHTED, SAFE PLACE AND BE EASILY ACCESSIBLE AT ALL TIMES. THEY SHALL NOT BE LOCATED IN RESTROOMS, DRESSING ROOMS, BEDROOMS, KITCHENS, VENTILATING OR ELEVATOR SHAFTS, BOILER ROOMS, LAUNDRY ROOMS, HALLWAYS, ETC. THEY SHALL NOT BE INSTALLED NEAR BELTS OR OTHER MOVING MACHINERY, ENDANGERING THE SAFETY OF THOSE DOING WORK NEAR THE METER.
(D) ADEQUATE SPACE, LIGHTING AND ACCESS SHALL BE PROVIDED AS DEFINED IN CONSULTATION WITH THE COMPANY AS THE FACILITIES ARE PLANNED. USING METER ROOMS FOR STORAGE OR OTHER PURPOSES THAT PROHIBIT SAFE ACCESS OR ADEQUACY OF WORKSPACE SHALL NOT BE ALLOWED.
(E) FAILURE TO MAINTAIN A SAFE, ACCESSIBLE LOCATION FOR METERS SHALL REQUIRE THAT THEY BE RELOCATED TO AN APPROPRIATE LOCATION AT THE CUSTOMER'S EXPENSE.

D. INSTRUMENT TRANSFORMER INSTALLATIONS

1. THE USE OF INSTRUMENT TRANSFORMERS SHALL BE DETERMINED BY THE COMPANY AS DESCRIBED IN **SECTION IV, A.** INSTRUMENT TRANSFORMERS SHALL NOT BE INSTALLED AS A MEANS OF ACCOMODATING SUPPLY ISSUES WITH SELF-CONTAINED METER SOCKETS.

2. IT IS VERY IMPORTANT TO BOTH THE COMPANY AND THE CUSTOMER THAT THE INSTRUCTIONS AND CONSTRUCTION DETAILS SHOWN IN **FIGURES 14B**, **21**, AND **43** ARE FOLLOWED CLOSELY ON ALL INSTRUMENT TRANSFORMER INSTALLATIONS.

3. THE FACILITIES NECESSARY FOR INSTRUMENT TRANSFORMER INSTALLATIONS SHALL BE PROVIDED AND INSTALLED AS DESCRIBED BELOW:

(A) THE COMPANY SHALL PROVIDE THE INSTRUMENT TRANSFORMERS, INSTRUMENT TRANSFORMER SECONDARY WIRING, METER ENCLOSURE AND METER.
(B) DEC - THE CUSTOMER SHALL PROVIDE AND INSTALL THE CT CABINETS.
DEP - THE CUSTOMER SHALL INSTALL THE CT CABINETS PROVIDED.

4. INSTRUMENT TRANSFORMER INSTALLATIONS ARE USUALLY MADE BY ONE OF THE MEANS LISTED BELOW, EACH OF WHICH REQUIRES COORDINATION BETWEEN THE CUSTOMER AND THE COMPANY.

(A) INDOOR/OUTDOOR CT ENCLOSURES ARE NORMALLY USED WHEN THE CUSTOMER RECEIVES EITHER OVERHEAD OR UNDERGROUND SERVICE.
(B) INSTRUMENT TRANSFORMER INSTALLATIONS IN TRANSFORMER VAULTS AND PAD-MOUNTED TRANSFORMERS ARE APPLICABLE ONLY WHERE THE VAULT OR TRANSFORMER PROVIDES SERVICE FOR A SINGLE CUSTOMER AT A SINGLE RATE. IN THESE CASES, THE FOLLOWING REQUIREMENTS APPLY:
(1) METERS SHALL NOT BE LOCATED INSIDE THE TRANSFORMER VAULT.
(2) NECESSARY METER WIRING SHALL BE INSTALLED AND CONNECTED BY THE COMPANY'S METER TECHNICIAN.
(C) SERVICES MAY HAVE WALL-MOUNTED OR RISER-MOUNTED OVERHEAD CTS.

5. A CLEAR SPACE (MEASURED IN FRONT OF THE METER ENCLOSURE) AT LEAST 36 INCHES WIDE (18 INCHES ON EACH SIDE OF CENTER LINE OF METER, OR EQUIPMENT WIDTH, WHICHEVER IS GREATER) BY 48 INCHES DEEP BY 84 INCHES HIGH FROM FINAL GRADE SHALL BE PROVIDED AND ALWAYS BE AVAILABLE AROUND EVERY METER FOR READING, INSPECTING, TESTING AND MAINTENANCE OPERATIONS. CLEAR SPACE FOR SAFE ACCESS TO AND EGRESS FROM THE WORKING SPACE SHALL BE MAINTAINED. CLEAR SPACE SHALL ALLOW FOR THE FULL 90-DEGREE OPENING OF ANY HINGED DOORS OR PANELS.

6. INSTRUMENT TRANSFORMERS REQUIRE THEIR OWN ENCLOSURE AND ARE NOT ALLOWED TO BE PLACED WITHIN A CUSTOMER'S SWITCHGEAR. CUSTOMER-OWNED EQUIPMENT IS NOT ALLOWED WITHIN THE INSTRUMENT TRANSFORMER ENCLOSURE.

7. WITHIN THE CT CABINET, THE CUSTOMER SERVICE TYPE SHALL MATCH THAT PROVIDED BY THE COMPANY (NUMBER OF WIRES, GROUNDED VS UNGROUNDED). TRANSITIONS MUST BE MADE AT CUSTOMER-OWNED EQUIPMENT BEYOND THE POINT OF DELIVERY. THIS DOES NOT APPLY TO CONDUCTOR SIZE, MATERIAL, (ALUMINUM VS COPPER), OR NUMBER OF CONDUCTORS PER PHASE.

SECTION V

EQUIPMENT VAULTS

A. GENERAL REQUIREMENTS

1. IN A FEW SITUATIONS, IT MAY BE NECESSARY OR CONVENIENT TO INSTALL COMPANY-OWNED TRANSFORMERS AND/OR RELATED EQUIPMENT IN A VAULT INSIDE A CUSTOMER'S BUILDING. IN SUCH CASES, **THE CUSTOMER SHALL CONSULT WITH THE COMPANY BEFORE PLANS ARE MADE CONCERNING THE VAULT.**

2. THE VAULT SHALL BE CONSTRUCTED IN COMPLIANCE WITH COMPANY REQUIREMENTS, THE CURRENT NEC AND SUCH LOCAL REQUIREMENTS AS MAY BE IN FORCE.

3. THE VAULT SHALL NOT CONTAIN ANY CUSTOMER-OWNED EQUIPMENT FOR BUILDING SERVICE FACILITIES SUCH AS: SECONDARY FUSES, SWITCHES, METERS, LOAD CONTROL EQUIPMENT, GAS, OIL, STEAM OR WATER PIPES, OR VENTILATION DUCTS OTHER THAN THOSE REQUIRED BY THE COMPANY.

4. THE COMPANY'S REVENUE METER LOCATION SHALL BE ABOVE GRADE AND WITHIN 25 FEET OF THE INSTRUMENT TRANSFORMERS ON THE SAME FLOOR LEVEL.

5. FIRE SUPPRESSION SYSTEMS SHALL NOT BE INSTALLED IN COMPANY EQUIPMENT VAULTS UNLESS SPECIFICALLY REQUIRED BY LOCAL AUTHORITIES AND THEN SHALL BE APPROVED BY THE COMPANY. LIQUID SPRINKLER SYSTEMS OF ANY KIND ARE NOT ALLOWED.

6. THE VAULT AND ITS CONTENTS SHALL BE UNDER THE SUPERVISION OF THE COMPANY, AND SHALL HAVE PROVISIONS FOR LOCKING AND SECURITY SEALING BY THE COMPANY. UNAUTHORIZED PERSONS SHALL NOT BE PERMITTED TO ENTER VAULTS.

B. CUSTOMER RESPONSIBILITIES

1. THE CUSTOMER SHALL PROVIDE AND OWN THE FOLLOWING FACILITIES FOR USE BY THE COMPANY:

   (A) EQUIPMENT VAULT SIZED AND BUILT IN ACCORDANCE WITH COMPANY REQUIREMENTS.

   (B) ALL FACILITIES REQUIRED TO PROVIDE NATURAL OR FORCED VENTILATION DETERMINED NECESSARY BY THE COMPANY.

   (C) ALL CONDUITS WITHIN THE BUILDING FOR COMPANY'S FACILITIES, INCLUDING PRIMARY AND/OR SECONDARY CONDUCTORS. SUCH CONDUITS SHALL EXTEND BEYOND THE OUTSIDE BUILDING WALL TO A POINT DESIGNATED BY THE COMPANY.

   (D) ACCESS MEANS INCLUDING ELEVATORS AND/OR HOISTS WHERE NECESSARY, SUCH THAT TRANSFORMERS AND EQUIPMENT CAN BE MOVED FROM THE STREET OR SIDEWALK DIRECTLY TO AND FROM THE VAULT.

2. THE CUSTOMER SHALL ALSO PROVIDE PROPERLY EXECUTED EASEMENTS ON THE COMPANY'S FORMS FOR ALL FACILITIES INSTALLED ON THE CUSTOMER'S PROPERTY.

C. COMPANY RESPONSIBILITIES

1. THE COMPANY SHALL DETERMINE THE PHYSICAL REQUIREMENTS FOR EACH VAULT, INCLUDING MINIMUM SIZE, VENTILATION, LIGHTING AND CONDUITS. THE COMPANY SHALL ENDEAVOR TO WORK CLOSELY WITH THE CUSTOMER SO THAT THE NEEDS OF THE COMPANY AND THE DESIRES OF THE CUSTOMER ARE CONSIDERED IN THE DESIGN AND CONSTRUCTION OF THE VAULT(S).

2. THE COMPANY SHALL PROVIDE AND OWN THE FOLLOWING:

   (A) TRANSFORMER(S) AND/OR ADDITIONAL NECESSARY EQUIPMENT

   (B) PRIMARY CABLE(S) AND RELATED CONNECTIONS

   (C) CONNECTIONS TO CUSTOMER-OWNED SERVICE CABLE OR BUS

SECTION VI

CUSTOMER UTILIZATION EQUIPMENT

A. GENERAL

1. THE COMPANY BUILDS AND MAINTAINS ADEQUATE LINES TO SUPPLY PROPER SERVICE TO ALL CUSTOMERS USING NORMAL EQUIPMENT. HOWEVER, SINCE EQUIPMENT INSTALLED BY ONE CUSTOMER MAY MATERIALLY AFFECT THE ADEQUACY AND CONTINUITY OF SERVICE TO OTHER CUSTOMERS, AND BECAUSE THE MISUSE OF SOME EQUIPMENT MIGHT CONSTITUTE A FIRE HAZARD OR ENDANGER LIFE, THE COMPANY HAS ESTABLISHED REGULATIONS COVERING THE MORE COMMON INSTALLATIONS OF UTILIZATION EQUIPMENT.

2. THE COMPANY SPECIFIES ONLY SUCH REQUIREMENTS AS ARE NECESSARY TO SAFEGUARD BOTH THE CUSTOMER AND THE COMPANY SO THAT SERVICE MAY BE RENDERED WITH A MAXIMUM OF SAFETY AND WITH A MINIMUM OF INTERRUPTION OR DISTURBANCE. THE CUSTOMER SHALL CONSULT THE COMPANY FOR ADDITIONAL DETAILS ON SPECIAL EQUIPMENT, WHICH MAY NOT BE COVERED IN THIS BOOK.

3. AVAILABLE FAULT CURRENT SHALL BE TAKEN INTO CONSIDERATION WHEN SPECIFYING SERVICE ENTRANCE EQUIPMENT (SEE **SECTION VII**).

4. **PROTECTION OF EQUIPMENT AGAINST LOSS OF VOLTAGE, UNDERVOLTAGE, TRANSIENT OR SUSTAINED OVERVOLTAGE, VOLTAGE UNBALANCE, OVERCURRENT, PHASE FAILURE, PHASE REVERSAL, LOSS OF SYNCHRONISM, HARMONICS AND SHORT CIRCUIT IS THE RESPONSIBILITY OF THE CUSTOMER.**

B. MOTORS

WHEN A CUSTOMER'S MOTOR STARTING CAUSES OBJECTIONABLE FLICKER TO OTHER CUSTOMERS, THE COMPANY SHALL REQUIRE INSTALLATION OF DEVICES SUCH AS REDUCED VOLTAGE OR PART WINDING STARTERS TO LIMIT STARTING INRUSH CURRENTS TO VALUES THAT SHALL REDUCE FLICKER TO ACCEPTABLE LEVELS.

WHERE LARGE MOTORS USING A CONVERTER-INVERTER ARE INSTALLED ON SINGLE-PHASE DISTRIBUTION SYSTEMS TO PROVIDE THREE-PHASE POWER FOR THE MOTOR, HARMONIC FILTERS WILL NEED TO BE INSTALLED. THESE LARGE SINGLE-PHASE NON-LINEAR LOADS WILL CAUSE EXCESSIVE THIRD HARMONIC CURRENT FLOWS ON THE UTILITY SYSTEM WITHOUT SUCH FILTERS. NOTE THAT ITEM **C 2**. IN THE FOLLOWING SECTION ALSO APPLIES TO LARGE MOTOR LOADS.

C. SPECIAL EQUIPMENT

1. DUE TO THE VERY SEVERE OPERATING CHARACTERISTICS OF SUCH EQUIPMENT AS ELECTRIC WELDERS (PARTICULARLY OF THE TRANSFORMER TYPE), FURNACES, TANKLESS WATER HEATERS, X-RAY MACHINES, AND RADIO AND TELEVISION BROADCASTING STATIONS, THE CUSTOMER SHALL CONSULT WITH THE COMPANY BEFORE INSTALLATION IS MADE.

2. WHEN THE OPERATION OF ANY EQUIPMENT IS DETRIMENTAL TO SATISFACTORY OPERATION OF THE COMPANY'S DISTRIBUTION SYSTEM, THE COMPANY SHALL REQUIRE THE INSTALLATION OF SPECIAL EQUIPMENT SUCH AS LINES AND TRANSFORMERS AT THE EXPENSE OF THE CUSTOMER.

3. WHEN A CUSTOMER GENERATES AN UNACCEPTABLE LEVEL OF HARMONIC DISTORTION, THE CUSTOMER SHALL, AT THE CUSTOMER'S EXPENSE, BE REQUIRED TO INSTALL EQUIPMENT NECESSARY TO REDUCE THIS DISTORTION. IF A SINGLE NON-LINEAR LOAD IS GREATER THAN 500 KVA, OR IF AN AGGREGATE LOAD IS GREATER THAN 85% NON-LINEAR, CONTACT COMPANY FOR SPECIFIC REQUIREMENTS PRIOR TO PLACING THESE LOADS IN SERVICE. CUSTOMER COMPLIANCE WITH THE IEEE 519 RECOMMENDED PRACTICE IS REQUIRED. EXAMPLES OF NON-LINEAR LOADS INCLUDE: SILICON-CONTROLLED RECTIFIERS, ROTARY PHASE CONVERTERS, SWITCH MODE POWER SUPPLIES, VARIABLE SPEED DRIVES, COMPUTERS, LASER PRINTERS, ETC.

4. UPON REQUEST, THE COMPANY CAN PROVIDE ENERGY DEMAND AND CONSUMPTION INFORMATION. THIS CAN BE IN THE FORM OF METER PULSE INFORMATION (ALSO KNOWN AS DRY CONTACTS) OR THROUGH SOFTWARE BASED PROGRAMS SUCH AS ENERGY PROFILER ONLINE. DEPENDING UPON THE CUSTOMER'S LOCATION AND THE SPECIFICS OF THEIR DELIVERY, THERE MAY BE A CHARGE FOR THIS INFORMATION THAT COVERS THE ADDITIONAL EQUIPMENT NEEDED TO PROVIDE THE DATA. FOR FURTHER INFORMATION, CONTACT THE CUSTOMER CARE CENTER IN YOUR AREA (EITHER DUKE ENERGY CAROLINAS OR DUKE ENERGY PROGRESS).

5. CUSTOMER-OWNED INSTRUMENT TRANSFORMERS SHALL NOT BE PERMITTED TO BE INSTALLED ON OR CONNECTED TO COMPANY FACILITIES, INCLUDING THE INSTRUMENT TRANSFORMERS, PAD-MOUNTED TRANSFORMER, OR COMPANY METERING ENCLOSURE.

SECTION VII

GRID INTERCONNECTIONS - RENEWABLE ENERGY SOURCES, STANDBY GENERATION, AND BATTERY STORAGE INSTALLATIONS

A. GENERAL

1. DISTRIBUTED ENERGY RESOURCES (DER) THAT OPERATE IN PARALLEL WITH DUKE ENERGY'S GRID FOR ANY AMOUNT OF TIME SHALL SUBMIT AN INTERCONNECTION REQUEST APPLICATION AND UNDERGO THE APPLICABLE STUDY PROCESS PRIOR TO ENERGIZATION.

2. INTERCONNECTION REQUIREMENTS ARE SEPARATED INTO TWO MAJOR CATEGORIES BASED ON THE DURATION OF PARALLEL OPERATIONS WITH THE GRID. THIS DURATION IMPACTS THE LEVEL OF STUDY REQUIRED, INVERTER SETTINGS, AND COMPANY AND CUSTOMER SUPPLIED EQUIPMENT REQUIREMENTS. THESE WILL BE DEFINED DURING THE APPLICATION PROCESS.

B. APPLICATION REQUIREMENTS

1. TO LEARN MORE ABOUT GRID INTERCONNECTIONS, PLEASE REFERENCE THE DUKE ENERGY WEB SITE AT: HTTPS://WWW.DUKE-ENERGY.COM/BUSINESS/PRODUCTS/RENEWABLES/GENERATE-YOUR-OWN

2. DURING THE APPLICATION PROCESS, THE DER APPLICANT WILL RECEIVE ADDITIONAL GUIDANCE AND DOCUMENTATION RELATED TO EQUIPMENT, PROTECTION SETTINGS AND/OR COMMUNICATION REQUIREMENTS. THE APPLICATION REQUIREMENTS MUST BE USED IN CONJUNCTION WITH THESE FIGURES. IF ANY CONFLICT OCCURS BETWEEN THE APPLICATION REQUIREMENTS AND THESE FIGURES, THE APPLICATION REQUIREMENTS SHALL TAKE PRECEDENCE.

C. APPLICABLE FIGURES IN THE SERVICE REQUIREMENTS MANUAL

1. THE FLOWCHART BELOW WAS CREATED FOR ILLUSTRATIVE PURPOSES TO DIRECT CUSTOMERS TO THE FIGURES THAT MAY BE APPLICABLE DEPENDING ON THE TYPE OF INTERCONNECTION. PLEASE NOTE THAT THIS MAY NOT BE REPRESENTATIVE OF ALL DER CONFIGURATIONS. SPECIFIC REQUIREMENTS WILL BE COMMUNICATED DURING THE INTERCONNECTION REVIEW AND DOCUMENTED IN THE INTERCONNECTION AGREEMENT.

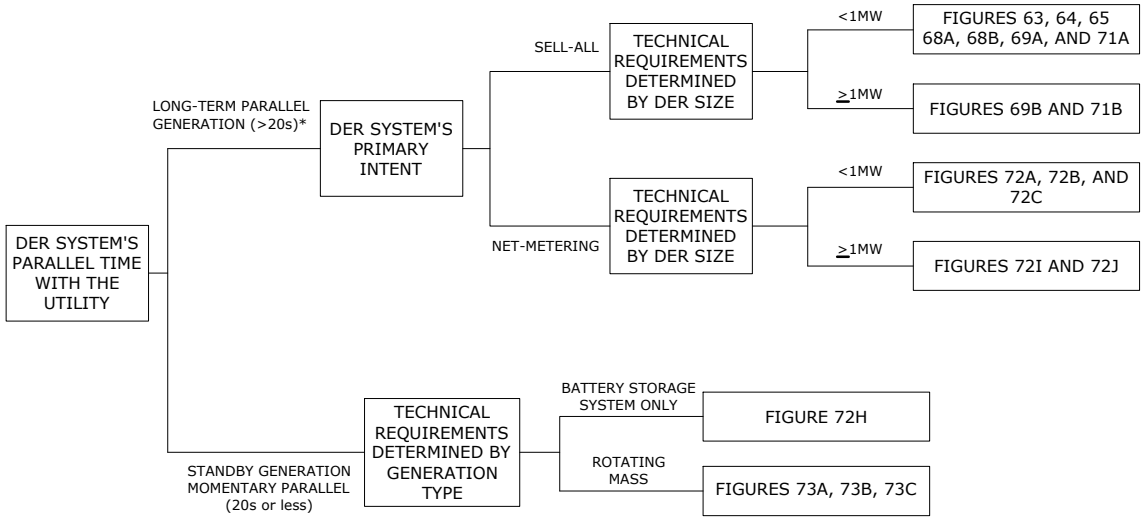


FIGURE 1 – DUKE SCHEMATIC DETERMINATION FLOW CHART

*FOR ADDITIONAL LONG-TERM PARALLEL (>20S) PROTECTION REQUIREMENTS, IN ADDITION TO THE FIGURES ABOVE, PLEASE SEE FIGURES 75A-F AND 76

2. THE REQUIREMENTS ARE FURTHER DEFINED AS:

(A) LONG TERM PARALLEL - DEFINED AS GENERATION PARALLELED WITH THE UTILITY FOR GREATER THAN 20 SECONDS.

(1) CATEGORIZED AS EITHER NET METERING OR SELL ALL GENERATION.

(2) NET METERING AND SELL ALL EACH HAVE DIFFERENT REQUIREMENTS DETERMINED BY THE SIZE OF THE DER. THREE NOTEWORTHY SIZE RANGES THAT DETERMINE REQUIREMENTS ARE LESS THAN 250KW, GREATER THAN OR EQUAL TO 250KW BUT LESS THAN 1MW, AND GREATER THAN OR EQUAL TO 1MW.

(3) DER INTERCONNECTING WITH DUKE ENERGY'S GRID SHALL BE CERTIFIED TO PREVENT BACKFEED INTO THE COMPANY'S LINES WHEN THE COMPANY SERVICE TO THE INTERCONNECTION IS INTERRUPTED. DER SITES THAT ARE GREATER THAN OR EQUAL TO 250KW ARE REQUIRED TO PROVIDE TELEMETRY AND CONTROL OF CUSTOMER GENERATION THAT IS CRITICAL FOR PROPER OPERATION OF THE GRID.

(4) DER SITES THAT ARE GREATER THAN OR EQUAL TO 1MW REQUIRE UTILITY OWNED INTERCONNECTION PROTECTION EQUIPMENT

(5) ADDITIONALLY, DER SITES THAT ARE CO-LOCATED WITH LOAD MAY REQUIRE FIBER OPTIC AND COMMUNICATION EQUIPMENT. THIS MAY INCLUDE A RUN PERMISSIVE SCHEME WHICH REQUIRES AN ELECTRONICALLY RESETABLE DER BREAKER TO PROVIDE STATUS AND ALLOW REMOTE TRIP THROUGH A LOCAL NETWORK WITH LITTLE TO NO CUSTOMER LOAD IMPACT WHEN OPERATED. THIS IS OWNED, INSTALLED, AND MAINTAINED BY THE DER CUSTOMER. DETAILS WILL BE PROVIDED DURING THE APPLICATION PROCESS.

(B) STANDBY OR EMERGENCY GENERATION/MOMENTARY PARALLEL - DEFINED AS GENERATION PARALLELED WITH THE UTILITY FOR LESS THAN OR EQUAL TO 20 SECONDS.

(1) REQUIREMENTS ARE FURTHER CATEGORIZED BY GENERATION TYPE, EITHER BATTERY STORAGE SYSTEM OR ROTATING MASS.

(2) OPEN VS CLOSED TRANSITION REQUIREMENTS -

(a) IF THE DER IS INTENDED TO OPERATE EXCLUSIVELY AS A STANDBY/BACKUP GENERATION SOURCE, THE METHOD IN WHICH IT TRANSITIONS TO/FROM AN ISLANDED STATE MAY REQUIRE AN INTERCONNECTION APPLICATION TO BE SUBMITTED TO THE COMPANY.

(b) CLOSED TRANSITION TO/FROM AN ISLANDED STATE MUST APPLY FOR INTERCONNECTION AND SUBMIT AN APPLICATION. APPROVAL TO OPERATE MUST BE GRANTED PRIOR TO INSTALLATION. PLEASE CONTACT CUSTOMEROWNEDGENERATION@DUKE-ENERGY.COM FOR ADDITIONAL INFORMATION ON SUBMITTING AN APPLICATION.

(c) OPEN TRANSITION TO/FROM AN ISLANDED STATE CREATES A BRIEF OUTAGE AND DOES NOT OPERATE IN PARALLEL WITH THE UTILITY FOR ANY AMOUNT OF TIME. OPEN TRANSITION DOES NOT REQUIRE AN INTERCONNECTION AGREEMENT WITH THE COMPANY.

(d) INCLUDES BATTERY ONLY AND PARTIAL OR WHOLE HOUSE BACK UP SYSTEMS. DISCONNECT REQUIREMENTS ARE REQUIRED FOR THE SAFETY OF DUKE ENERGY PERSONNEL AND THE PUBLIC.

(C) BATTERY ENERGY STORAGE SYSTEMS

(1) WHEN BATTERY ENERGY STORAGE IS UTILIZED AS A BACKUP GENERATION SOURCE IN THE EVENT OF A UTILITY OUTAGE, WHETHER STAND-ALONE (SEE FIGURE 72H) OR PAIRED WITH SOLAR FOR LONG-TERM PARALLEL GENERATION (SEE FIGURE 72C), THE PROJECT MUST ADHERE TO THE FOLLOWING REQUIREMENTS:

(a) WHEN RECONNECTING TO THE COMPANY DISTRIBUTION SYSTEM, THE ENERGY STORAGE UNIT(S) SHALL AUTOMATICALLY SWITCH TO AN OPERATIONAL MODE THAT CONSIDERS THE GRID AS THE PRIMARY SOURCE (GRID FOLLOWING). THE CONNECTION MAY BE CLOSED-TRANSITION OR OPEN-TRANSITION.

(b) IF MAKING A CLOSED TRANSITION FROM AN ISLANDED STATE BACK TO THE GRID, THE DER MUST ADHERE TO THE SYNCHRONIZATION PARAMETERS FROM TABLE 5 OF IEEE 1547-2018:

TABLE 5 - IEEE 1547-2018 SYNCHRONIZATION PARAMETER LIMITS FOR SYNCHRONOUS INTERCONNECTION TO AN EPS, OR AN ENERGIZED LOCAL EPS TO AN ENERGIZED AREA EPS

AGGREGATE RATING OF DER (kVA)	FREQUENCY DIFFERENCE (Hz)	VOLTAGE DIFFERENCE (%)	PHASE ANGLE DIFFERENCE (DEGREES, °)
0-500	0.3	10	20
>500-1500	0.2	5	15
>1500	0.1	3	10

SECTION VIII

FAULT CURRENT (FOR EQUIPMENT SIZING ONLY)

THE COMPANY HAS CALCULATED AND PROVIDED THE MAXIMUM FAULT CURRENT THAT CAN BE DELIVERED TO THE SECONDARY TERMINALS OF STANDARD TRANSFORMERS (UTILIZING THE INFINITE BUSS METHODOLOGY) AS SHOWN IN THE FOLLOWING TABLES. CONTACT YOUR LOCAL COMPANY REPRESENTATIVE, WHO WILL DETERMINE THE SIZE AND VOLTAGE OF THE PAD-MOUNTED TRANSFORMER. FROM THERE, SELECT THE FAULT CURRENT VALUE FROM THE TABLES.

FOR INSTALLATIONS INVOLVING OVERHEAD POLE-MOUNTED TRANSFORMERS OR UNDERGROUND INSTALLATIONS WITH DUKE ENERGY-PROVIDED SECONDARY SERVICE CONDUCTORS, CONTACT YOUR LOCAL COMPANY REPRESENTATIVE FOR SPECIFIC FAULT CURRENT DATA AT THE ACTUAL POINT OF DELIVERY.

ARC FLASH

THE FOLLOWING FAULT CURRENT TABLES **SHALL NOT** BE UTILIZED IN ARC FLASH ANALYSIS. IN ORDER TO PROVIDE OUR CUSTOMERS WITH ELECTRICAL DATA TO PERFORM ARC FLASH STUDIES, DUKE ENERGY MUST RECEIVE SUCH REQUESTS, IN WRITING, DIRECTLY FROM AN AUTHORIZED EMPLOYEE OF THE CUSTOMER'S COMPANY OR GOVERNMENTAL ENTITY. IN ORDER TO PROTECT THE CONFIDENTIALITY OF CUSTOMER ELECTRIC SERVICE DELIVERIES, DUKE ENERGY WILL NOT ACCEPT REQUESTS DIRECTLY FROM CONSULTING ENGINEERS OR ELECTRICIANS.

A FEE WILL APPLY TO ALL SUBSEQUENT ARC FLASH HAZARD DATA REQUESTS FOR AN UNCHANGED DELIVERY FROM THE SAME CUSTOMER.

REFER TO **APPENDIX D** FOR AN EXAMPLE OF A SAMPLE LETTER TO BE USED FOR SUCH REQUESTS. REQUESTS CAN BE RECEIVED IN ELECTRONIC OR WRITTEN FORMAT, BUT EITHER SHALL CONTAIN AT A MINIMUM THE SERVICE INFORMATION SHOWN IN **APPENDIX D.** CONTACT THE DUKE ENERGY CUSTOMER CARE CENTER AT **800.777.9898** FOR ASSISTANCE IN BEGINNING THIS PROCESS.

FAULT CURRENT TABLES

MAXIMUM FAULT CURRENT - THREE-PHASE - 208Y/120V PAD-MOUNTED TRANSFORMERS				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
75	208Y/120	1.60	1.40	13,010
150	208Y/120	2.00	2.00	20,820
225 (DEC ONLY)	208Y/120	3.00	2.60	20,820
300	208Y/120	3.50	5.10	23,800
500	208Y/120	2.80	4.80	49,570
750	208Y/120	5.32	6.50	39,130
1000	208Y/120	5.32	6.80	52,180

MAXIMUM FAULT CURRENT - THREE-PHASE - 4160Y/2400V PAD-MOUNTED TRANSFORMERS				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
1000	4160Y/2400	5.32	6.70	2,611
2500 (DEP ONLY)	4160Y/2400	5.32	10.70	6,520
3750	4160Y/2400	5.32	13.69	9,790
5000	4160Y/2400	5.55	10.25	12,513

MAXIMUM FAULT CURRENT - THREE-PHASE - 600Y/346V PAD-MOUNTED TRANSFORMERS				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
1500 (DEP ONLY)	600Y/346V	5.32	7.90	27,140
3750 (DEP ONLY)	600Y/346V	5.32	8.00	67,830

MAXIMUM FAULT CURRENT - THREE-PHASE - 480Y/277V PAD-MOUNTED TRANSFORMERS				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
75	480Y/277	1.60	1.70	5,640
150	480Y/277	2.00	2.30	9,020
225 (DEC ONLY)	480Y/277	3.00	3.50	9,020
300	480Y/277	3.50	5.30	10,310
500	480Y/277	2.80	3.50	21,480
750	480Y/277	5.32	7.10	16,960
1000	480Y/277	5.32	7.30	22,610
1500	480Y/277	5.32	7.90	33,910
2000 (DEC ONLY)	480Y/277	5.32	8.60	45,220
2500	480Y/277	5.32	9.40	56,520
3000	480Y/277	5.32	9.90	67,859
3750	480Y/277	5.32	8.00	84,780

MAXIMUM FAULT CURRENT - THREE-PHASE - 208Y/120V VAULT STYLE TRANSFORMERS - DEP ONLY				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
500	208Y/120	2.23	2.40	62,240
750	208Y/120	5.83	7.10	35,710
1000	208Y/120	5.60	6.80	49,570

MAXIMUM FAULT CURRENT - THREE-PHASE - 480Y/277V VAULT STYLE TRANSFORMERS - DEP ONLY				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
500	480Y/277	3.22	3.30	18,680
750	480Y/277	5.94	7.40	15,190
1000	480Y/277	6.06	7.70	19,850
1500	480Y/277	5.70	8.50	31,650
2500	480Y/277	5.81	9.30	51,760

MAXIMUM FAULT CURRENT - SINGLE-PHASE - 120/240V OVERHEAD TRANSFORMERS					
KVA	VOLTAGE	MIN Z%	X/R	240 VOLT FAULT	120 VOLT FAULT
10	240/120	1.50	0.90	2,800	4,200
15	240/120	1.50	1.13	4,200	6,300
25	240/120	1.50	1.26	6,900	10,400
37.5	240/120	1.50	1.71	10,400	15,600
50	240/120	1.50	1.83	13,900	20,800
75	240/120	1.50	2.10	20,800	31,300
100	240/120	1.70	2.37	27,800	41,700
167	240/120	1.70	2.70	40,900	61,400
250	240/120	2.00	4.67	52,083	78,125
333	240/120	2.50	2.68	55,500	83,250
500	240/120	3.96	5.06	52,609	78,914

MAXIMUM FAULT CURRENT - SINGLE-PHASE - 240/480V OVERHEAD TRANSFORMERS					
KVA	VOLTAGE	MIN Z%	X/R	480 VOLT FAULT	240 VOLT FAULT
10	480/240	1.50		1,389	2,083
15	480/240	1.50		2,083	3,125
25	480/240	1.50	1.15	3,472	5,208
37.5	480/240	1.50	1.75	5,208	7,813
50	480/240	1.50	1.68	6,944	10,417
75	480/240	1.50	2.02	10,417	15,625
100	480/240	1.70	2.09	12,255	18,382
167	480/240	1.70	2.51	20,466	30,699
250	480/240	2.00	3.09	26,042	39,063
333	480/240	2.50	2.68	27,750	41,625

MAXIMUM FAULT CURRENT - SINGLE-PHASE - 240/120V PAD-MOUNTED TRANSFORMERS					
KVA	VOLTAGE	MIN Z%	X/R	240 VOLT FAULT	120 VOLT FAULT
25	240/120	1.50	1.54	6,900	10,400
50	240/120	1.50	1.90	13,900	20,800
75	240/120	1.50	2.25	20,800	31,300
100	240/120	1.50	2.74	27,800	41,700
167	240/120	1.70	2.94	40,900	61,400
250	240/120	2.00	3.02	52,100	78,100

MAXIMUM FAULT CURRENT - SINGLE-PHASE - 480/240V PAD-MOUNTED TRANSFORMERS					
KVA	VOLTAGE	MIN Z%	X/R	480 VOLT FAULT	240 VOLT FAULT
50	480/240	1.5	1.48	6,944	10,416
100	480/240	1.7	2.24	12,254	18,381
167	480/240	1.7	2.57	20,465	30,698

MAXIMUM FAULT CURRENT - THREE-PHASE - OVERHEAD BANKING UNITS - 3 TRANSFORMERS (SAME SIZE) 240/120V 4-WIRE - DEP ONLY				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
30 (3 - 10 KVA)	240/120	1.50	0.90	4,800
45 (3 - 15 KVA)	240/120	1.50	1.13	7,200
75 (3 - 25 KVA)	240/120	1.50	1.26	12,000
112.5 (3 - 37.5 KVA)	240/120	1.50	1.71	18,000
150 (3 - 50 KVA)	240/120	1.50	1.83	24,100
225 (3 - 75 KVA)	240/120	1.50	2.10	36,100
300 (3 - 100 KVA)	240/120	1.70	2.37	42,500
500 (3 - 167 KVA)	240/120	1.70	2.70	70,900

MAXIMUM FAULT CURRENT - THREE-PHASE - OVERHEAD BANKING UNITS - 3 TRANSFORMERS (LARGER LIGHTING TRANSFORMER) 240/120V 4-WIRE - DEP ONLY				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
15-10-10	240/120	1.50	1.13	6,100
25-15-15	240/120	1.50	1.26	9,400
37.5-25-25	240/120	1.50	1.71	15,100
50-37.5-37.5	240/120	1.50	1.83	20,800
75-50-50	240/120	1.50	2.10	29,800
100-75-75	240/120	1.70	2.37	39,500
167-100-100	240/120	1.70	2.70	56,100

MAXIMUM FAULT CURRENT - THREE-PHASE - OVERHEAD BANKING UNITS - 2 TRANSFORMERS 240/120V 4-WIRE - DEP ONLY				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
20 (2 - 10 KVA)	240/120	1.50	0.90	4,800
30 (2 - 15 KVA)	240/120	1.50	1.13	7,200
50 (2 - 25 KVA)	240/120	1.50	1.26	12,000
75 (2 - 37.5 KVA)	240/120	1.50	1.71	18,000
100 (2 - 50 KVA)	240/120	1.50	1.83	24,100
150 (2 - 75 KVA)	240/120	1.50	2.10	36,100
200 (2 - 100 KVA)	240/120	1.70	2.37	42,500
334 (2 - 167 KVA)	240/120	1.70	2.70	70,900

MAXIMUM FAULT CURRENT - THREE-PHASE - OVERHEAD BANKING UNITS - 3 TRANSFORMERS - 208Y/120V 4-WIRE				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
30 (3 - 10 KVA)	208Y/120	1.50	0.90	5,600
45 (3 - 15 KVA)	208Y/120	1.50	1.13	8,300
75 (3 - 25 KVA)	208Y/120	1.50	1.26	13,900
112.5 (3 - 37.5 KVA)	208Y/120	1.50	1.71	20,800
150 (3 - 50 KVA)	208Y/120	1.50	1.83	27,800
225 (3 - 75 KVA)	208Y/120	1.50	2.10	41,700
300 (3 - 100 KVA)	208Y/120	1.70	2.37	55,600
500 (3 - 167 KVA)	208Y/120	1.70	2.70	81,900
1000 (3 - 333 KVA)	208Y/120	2.50	2.68	111,111

MAXIMUM FAULT CURRENT - THREE-PHASE - OVERHEAD BANKING UNITS - 3 TRANSFORMERS 7200/12470YV 4-WIRE				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
1500	7200/12470YV	3.96	3.95	1,754

MAXIMUM FAULT CURRENT - THREE-PHASE - OVERHEAD BANKING UNITS - 3 TRANSFORMERS 480Y/277V 4-WIRE & 480V 3-WIRE				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
75 (3 - 25 KVA)	480	1.50	1.26	6,000
150 (3 - 50 KVA)	480	1.50	1.83	12,000
225 (3 - 75 KVA)	480	1.50	2.10	18,100
300 (3 - 100 KVA)	480	1.70	2.37	21,300
500 (3 - 167 KVA)	480	1.70	2.70	35,500
750 (3 - 250 KVA)	480	2.00	2.45	45,100
1000 (3 - 333 KVA)	480	2.50	2.69	48,100
1500 (3 - 500 KVA)	480	3.96	5.06	45,600

MAXIMUM FAULT CURRENT - THREE-PHASE - 480Y/277V STATION STYLE TRANSFORMERS				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
2500	480Y/277	5.95	11.44	50,562
3750	480Y/277	5.94	8.87	75,970

MAXIMUM FAULT CURRENT - THREE-PHASE - 4160Y/2400V STATION STYLE TRANSFORMERS				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
1500	4160Y/2400	3.61	5.45	5,771
2500	4160Y/2400	5.78	8.37	6,007
3750	4160Y/2400	5.38	11.46	9,681

MAXIMUM FAULT CURRENT - SINGLE-PHASE - 4160Y/2400V STATION STYLE TRANSFORMERS				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
833	4160Y/2400	7.10	16.06	4,888
1667	4160Y/2400			

MAXIMUM FAULT CURRENT - SINGLE-PHASE - 13090Y/7560V STATION STYLE TRANSFORMERS				
KVA	VOLTAGE	MIN Z%	X/R	THREE-PHASE FAULT
1250	13090Y/7560V	5.39	12.88	3,068
1667	13090Y/7560V	5.90	12.00	3,737
2500	13090Y/7560V	5.59	15.03	5,916

DUKE ENERGY.

REVISED	BY	CHK'D	APPR.
9 2/28/25	EANES	FLETCHER	GRAHAM
8 2/28/23	EANES	FLETCHER	GRAHAM
7 3/3/22	EANES	FLETCHER	GRAHAM
0 1/19/16	SIMPSON	SIMPSON	ADCOCK

SERVICE REQUIREMENTS FIGURES

TABLE OF CONTENTS

DEC	DEM	DEP	DEF
X		X	

TOC A

DUKE ENERGY.

REVISED	BY	CHK'D	APPR.
10 2/28/25	SHAFFER	EANES	GRAHAM
9 2/29/24	SHAFFER	EANES	GRAHAM
8 3/3/22	EANES	FLETCHER	GRAHAM
0 2/22/17	EANES	EANES	ADCOCK

SERVICE REQUIREMENTS FIGURES

TABLE OF CONTENTS

DEC	DEM	DEP	DEF
X		X	

TOC B

REVISED	BY	CHK'D	APPR.
8 2/29/24	SHAFFER	EANES	GRAHAM
7 2/23/23	EANES	FLETCHER	GRAHAM
6 3/7/22	EANES	FLETCHER	GRAHAM
0 2/28/18	EANES	EANES	ADCOCK

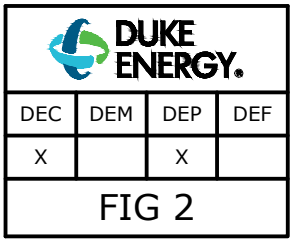
DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

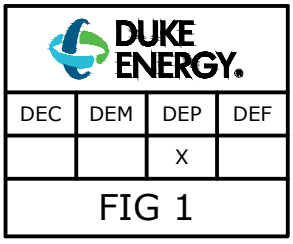
SERVICE REQUIREMENTS FIGURES

TABLE OF CONTENTS

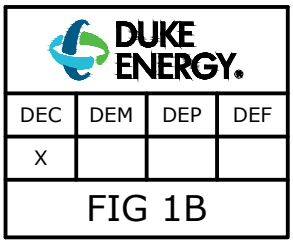
TOC C



THE INFORMATION IN THIS FIGURE WOULD BE APPLICABLE TO BOTH THE DEC AND DEP AREAS.



THE INFORMATION IN THIS FIGURE WOULD BE APPLICABLE TO THE DEP AREA ONLY.



THE INFORMATION IN THIS FIGURE WOULD BE APPLICABLE TO THE DEC AREA ONLY.

NOTES:

1. THE IMAGES SHOWN ABOVE APPEAR IN THE LOWER RIGHT-HAND CORNER OF ALL FIGURES IN THIS MANUAL.

2. THE ACRONYMS ARE AS FOLLOWS:

   - DEC - DUKE ENERGY CAROLINAS (THE FORMER DUKE ENERGY SERVICE TERRITORY IN THE CAROLINAS)
   - DEM - DUKE ENERGY MIDWEST (NOT USED IN THIS MANUAL)
   - DEP - DUKE ENERGY PROGRESS (THE FORMER PROGRESS ENERGY SERVICE TERRITORY IN THE CAROLINAS)
   - DEF - DUKE ENERGY FLORIDA (NOT USED IN THIS MANUAL)

3. REFER TO PAGE II OF THIS DOCUMENT FOR A SERVICE TERRITORY MAP TO DETERMINE THE APPLICABLE AREA IN WHICH THE WORK IS BEING DONE (DEC OR DEP). IF THE APPROPRIATE JURISDICTION CANNOT BE DETERMINED FROM THE MAP, CALL THE CUSTOMER CARE CENTER AT THE NUMBERS PROVIDED.

4. AN 'X' BELOW THE JURISDICTION'S ACRONYM IN THE LEGEND INDICATES THAT THE DRAWING IN QUESTION IS APPLICABLE FOR THAT PARTICULAR AREA. SEE THE IMAGES ABOVE FOR FURTHER EXAMPLES.

REVISED	BY	CHK'D	APPR.
3 2/28/23	EANES	FLETCHER	GRAHAM
2 3/3/22	EANES	FLETCHER	GRAHAM
1 10/21/19	EANES	EANES	ADCOCK
0 2/28/18	EANES	EANES	ADCOCK

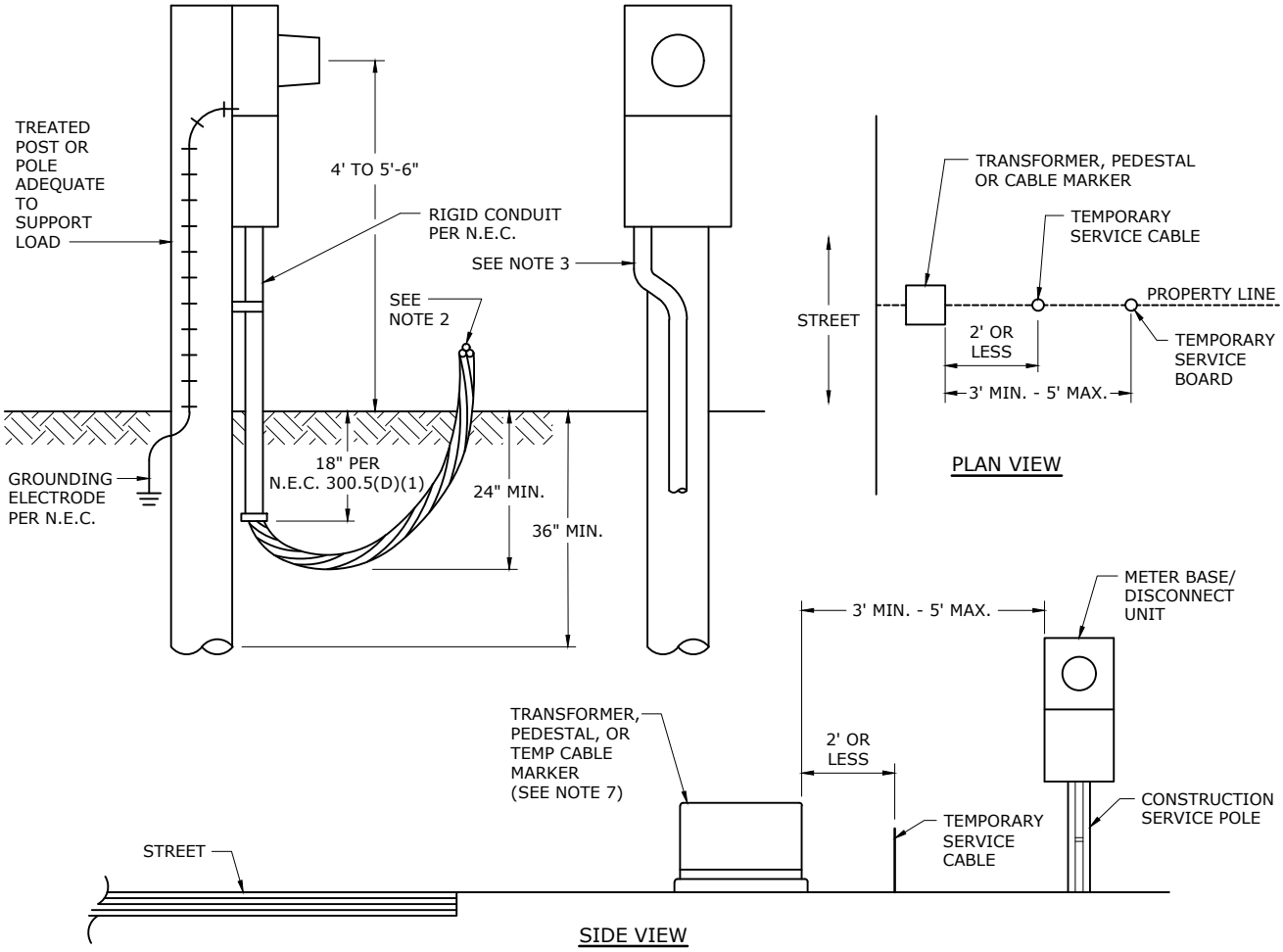
SERVICE REQUIREMENTS FIGURES

HOW TO APPLY THESE DRAWINGS

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

TOC D



NOTES:

1. CUSTOMER FURNISHES AND INSTALLS ALL ITEMS EXCEPT METER. INSTALLATION IS TO BE MADE BY ELECTRICIAN TO MEET N.E.C. AND LOCAL ORDINANCES.
2. CUSTOMER'S ELECTRICIAN TO SUPPLY SUITABLE CONDUCTORS (SUITABLE CONDUCTORS SHALL BE SEPARATE, INSULATED AND INTENDED FOR UNDERGROUND INSTALLATION. NO SHEATHED OR BARE CABLES ALLOWED) FROM SOURCE SIDE LUGS OF METER BASE TO 10' MINIMUM BEYOND END OF CONDUIT RISER. OVERALL, A TOTAL OF APPROXIMATELY 20' OF CONDUCTOR IS NEEDED FROM THE METER BASE LUGS TO THE SOURCE (TRANSFORMER SPADES, PEDESTAL CONNECTOR, ETC.). CONDUCTOR ENDS TO BE CAPPED TO PREVENT WATER ENTRY.
3. CONDUIT TO BE INSTALLED IN DESIGNATED SPACE IN PANEL AS REQUIRED BY N.E.C. 230.6.
4. TYPICAL SERVICE IS 120/240V SINGLE-PHASE 10KW MAXIMUM.
5. CUSTOMERS WILL BE ALLOWED TO HAVE THE FOLLOWING NUMBER OF STANDARD TEMPORARY CONSTRUCTION SERVICES (OVERHEAD OR UNDERGROUND) AT NO CHARGE:
   - HOUSES - ONE PER HOUSE
   - CONDOMINIUM, TOWNHOUSE, OR APARTMENT COMPLEX - ONE PER BUILDING
   - MALLS - ONE TO EACH MAJOR TENANT AND ONE TO THE MALL
   - INDUSTRIAL OR OTHER COMMERCIAL STRUCTURES - ONE PER BUILDING
6. CHARGES WILL APPLY TO ANY NON-STANDARD TEMPORARY SERVICE. PLEASE CONSULT YOUR LOCAL DUKE ENERGY ENGINEERING DEPARTMENT FOR INSTALLATION DETAILS AND CHARGES.
7. IN INSTANCES WHERE MORE THAN ONE POWER SOURCE IS AVAILABLE (SUCH AS A PAD-MOUNTED TRANSFORMER OR ABOVE-GROUND PEDESTAL AND A TEMPORARY CABLE MARKER), THE SERVICE POST SHALL BE INSTALLED BESIDE OF THE TRANSFORMER OR PEDESTAL AND NOT BESIDE OF THE TEMPORARY CABLE MARKER. TEMPORARY CABLE MARKERS CAN BE UTILIZED FOR TEMPORARY SERVICE ONLY IF THERE IS NO OTHER SOURCE AVAILABLE.
8. IN THOSE CASES WHERE THE SOURCE IS A PAD-MOUNTED TRANSFORMER, THE SERVICE POST SHALL BE INSTALLED TO EITHER SIDE OF THE TRANSFORMER, NOT IN FRONT OF OR DIRECTLY BEHIND IT. THE FRONT OF THE TRANSFORMER IS THE SIDE WITH THE COMPANY PADLOCK.

REVISED		BY	CHK'D	APPR.
3				
2				
1	2/28/25	EANES	EANES	GRAHAM
0	2/28/23	EANES	FLETCHER	GRAHAM

DUKE ENERGY.

UNDERGROUND TEMPORARY SERVICE

CONSTRUCTION POST

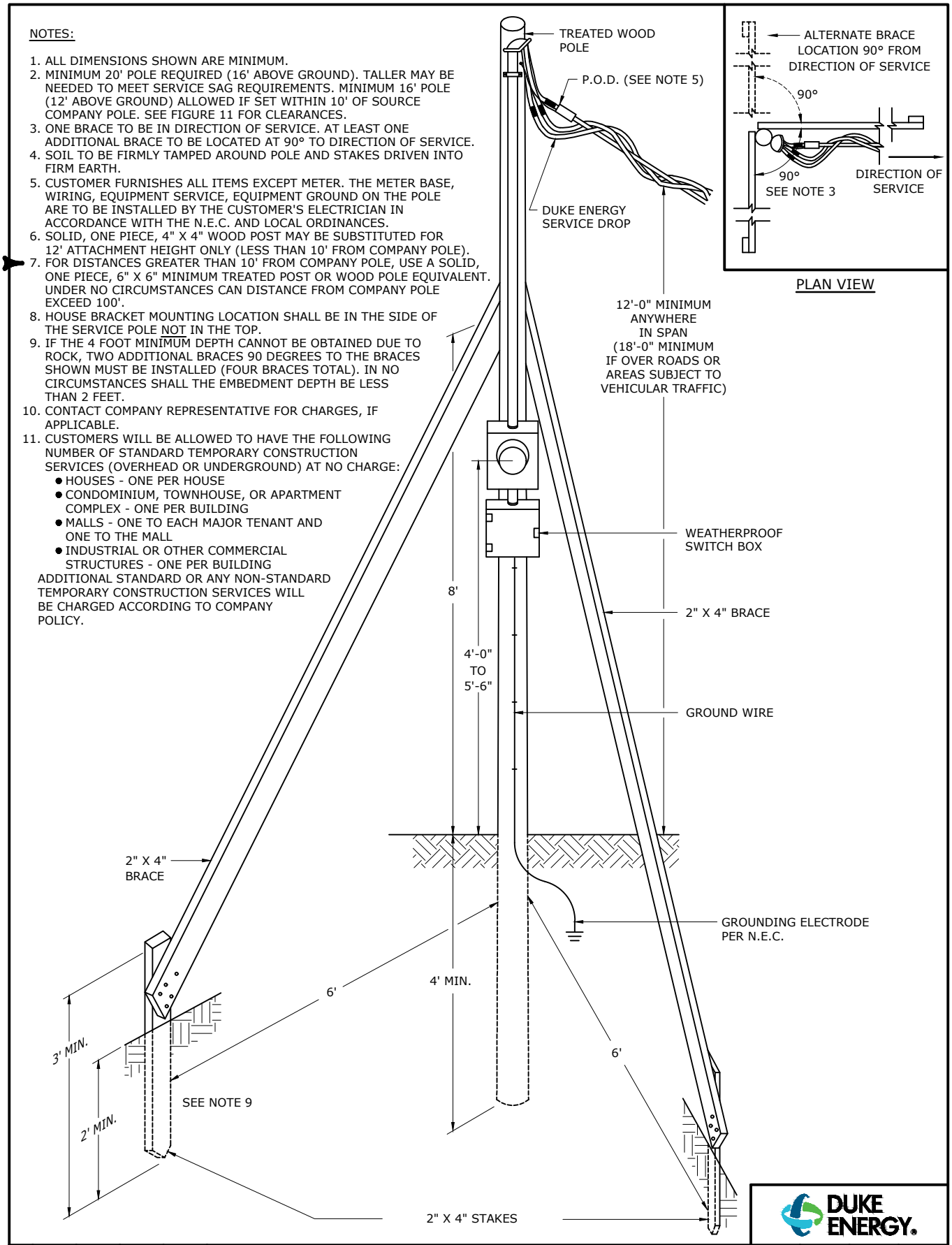
DEC	DEM	DEP	DEF
X		X	

FIG 1

NOTES:

1. ALL DIMENSIONS SHOWN ARE MINIMUM.
2. MINIMUM 20' POLE REQUIRED (16' ABOVE GROUND). TALLER MAY BE NEEDED TO MEET SERVICE SAG REQUIREMENTS. MINIMUM 16' POLE (12' ABOVE GROUND) ALLOWED IF SET WITHIN 10' OF SOURCE COMPANY POLE. SEE FIGURE 11 FOR CLEARANCES.
3. ONE BRACE TO BE IN DIRECTION OF SERVICE. AT LEAST ONE ADDITIONAL BRACE TO BE LOCATED AT 90° TO DIRECTION OF SERVICE.
4. SOIL TO BE FIRMLY TAMPED AROUND POLE AND STAKES DRIVEN INTO FIRM EARTH.
5. CUSTOMER FURNISHES ALL ITEMS EXCEPT METER. THE METER BASE, WIRING, EQUIPMENT SERVICE, EQUIPMENT GROUND ON THE POLE ARE TO BE INSTALLED BY THE CUSTOMER'S ELECTRICIAN IN ACCORDANCE WITH THE N.E.C. AND LOCAL ORDINANCES.
6. SOLID, ONE PIECE, 4" X 4" WOOD POST MAY BE SUBSTITUTED FOR 12' ATTACHMENT HEIGHT ONLY (LESS THAN 10' FROM COMPANY POLE).
7. FOR DISTANCES GREATER THAN 10' FROM COMPANY POLE, USE A SOLID, ONE PIECE, 6" X 6" MINIMUM TREATED POST OR WOOD POLE EQUIVALENT. UNDER NO CIRCUMSTANCES CAN DISTANCE FROM COMPANY POLE EXCEED 100'.
8. HOUSE BRACKET MOUNTING LOCATION SHALL BE IN THE SIDE OF THE SERVICE POLE NOT IN THE TOP.
9. IF THE 4 FOOT MINIMUM DEPTH CANNOT BE OBTAINED DUE TO ROCK, TWO ADDITIONAL BRACES 90 DEGREES TO THE BRACES SHOWN MUST BE INSTALLED (FOUR BRACES TOTAL). IN NO CIRCUMSTANCES SHALL THE EMBEDMENT DEPTH BE LESS THAN 2 FEET.
10. CONTACT COMPANY REPRESENTATIVE FOR CHARGES, IF APPLICABLE.
11. CUSTOMERS WILL BE ALLOWED TO HAVE THE FOLLOWING NUMBER OF STANDARD TEMPORARY CONSTRUCTION SERVICES (OVERHEAD OR UNDERGROUND) AT NO CHARGE:
    - HOUSES - ONE PER HOUSE
    - CONDOMINIUM, TOWNHOUSE, OR APARTMENT COMPLEX - ONE PER BUILDING
    - MALLS - ONE TO EACH MAJOR TENANT AND ONE TO THE MALL
    - INDUSTRIAL OR OTHER COMMERCIAL STRUCTURES - ONE PER BUILDING

ADDITIONAL STANDARD OR ANY NON-STANDARD TEMPORARY CONSTRUCTION SERVICES WILL BE CHARGED ACCORDING TO COMPANY POLICY.



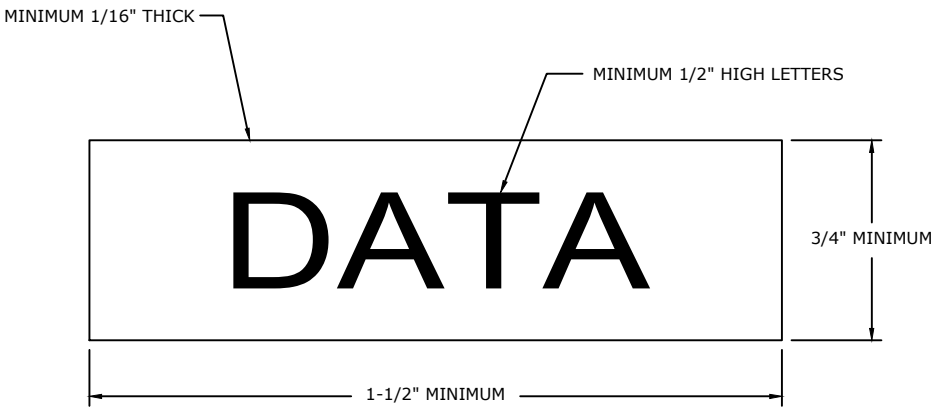
PLAN VIEW

4	2/28/25	EANES	EANES	GRAHAM
3	2/28/23	EANES	FLETCHER	GRAHAM
2	2/28/20	EANES	FLETCHER	GRAHAM
0	11/20/15	SIMPSON	EANES	ADCOCK
REVISED		BY	CHK'D	APPR.

OVERHEAD TEMPORARY CONSTRUCTION SERVICE POLE

DEC	DEM	DEP	DEF
X		X	

FIG 2



NOTES:

1. ON INSTALLATIONS, REPAIRS, REPLACEMENTS OR UPGRADES OF ENCLOSURES INVOLVING MORE THAN ONE METER ON A SINGLE PREMISE, THE CUSTOMER SHALL CORRECTLY IDENTIFY EACH METER ENCLOSURE ON THE OUTSIDE BY A NONFERROUS METAL OR PLASTIC PLATE ENGRAVED OR STAMPED WITH THE APARTMENT NUMBER, OFFICE SUITE, LOT NUMBER, ETC.

2. THE SAME PLATE DESCRIBED IN NOTE 1 SHALL BE ATTACHED TO ANY INSTRUMENT TRANSFORMER ENCLOSURE (CT CABINET) WHEN MULTIPLE ENCLOSURES ARE USED TO SERVICE A SINGLE PREMISE.

3. THE PLATE SHALL BE PERMANENTLY ATTACHED TO THE ENCLOSURE UTILIZING AN INDUSTRIAL-STRENGTH ADHESIVE SUITABLE FOR EXTERIOR USE. TWO-SIDED TAPE IS NOT ACCEPTABLE.

4. THE INSIDE OF EACH ENCLOSURE SHALL BE CORRECTLY IDENTIFIED WITH A PLATE DESCRIBED ABOVE OR WITH A PERMANENT MARKER.

5. CUSTOMER CABLES USED IN MULTI-TENANT APPLICATIONS (APARTMENT COMPLEXES, TOWNHOMES, ETC) AND TERMINATING IN COMPANY EQUIPMENT SUCH AS TRANSFORMERS, PEDESTALS, OR CT CABINETS OR IN CUSTOMER EQUIPMENT SUCH AS TROUGHS, METER CENTERS ETC, SHALL BE CLEARLY AND SPECIFICALLY MARKED FOR PHASE AND LABELED WITH A TAG TO IDENTIFY THE LOCATION OF THE SOURCE AND LOAD ENDS OF THE CABLE. THE LOAD END OF EACH CABLE SHALL BE LABELED TO IDENTIFY THE SOURCE. EACH SOURCE END SHALL BE LABELED TO IDENTIFY THE LOCATION OF THE LOAD END OF THE CABLE (TROUGH NUMBER, PANEL NUMBER, ETC).

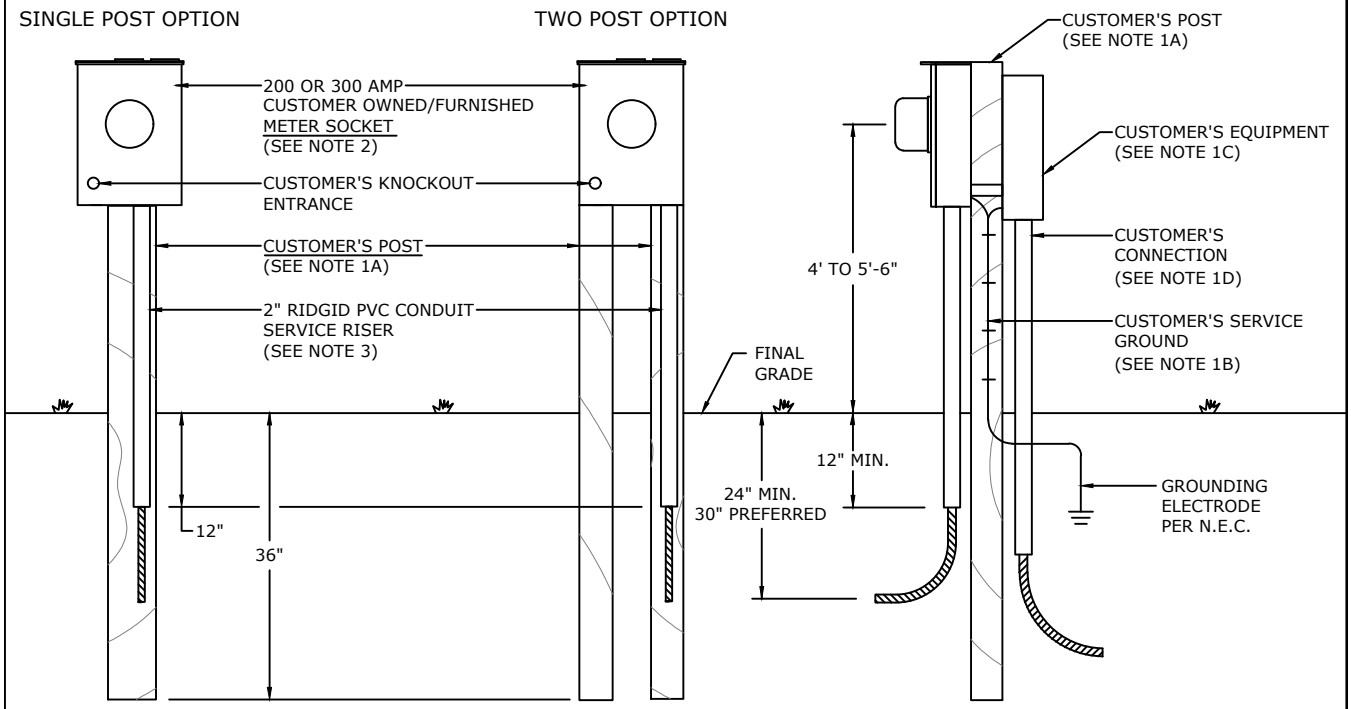
DUKE ENERGY.

REVISED		BY	CHK'D	APPR.
3				
2	9/10/20	EANES	FLETCHER	GRAHAM
1	10/30/17	EANES	EANES	ADCOCK
0	10/28/15	SIMPSON	EANES	CHANDLER

METERING/ INSTRUMENT TRANSFORMER ENCLOSURE LABELING ON A SINGLE PREMISE

DEC	DEM	DEP	DEF
X		X	X

FIG 3



CUSTOMER INSTALLATION

1. CUSTOMER WILL FURNISH AND INSTALL:

   (A) ONE 4" X 6", 6" X 6" OR TWO 4" X 4" TREATED POSTS SUITABLE TO COMPANY.*
   (B) SERVICE GROUND IN ACCORDANCE WITH N.E.C.
   (C) ALL EQUIPMENT, MOUNTING HEIGHTS, AND CLEARANCES BEYOND THE METER SOCKET IN ACCORDANCE WITH N.E.C.
   (D) ALL CONNECTIONS IN ACCORDANCE WITH N.E.C.
   (E) MOBILE HOME SERVICES - POST SHALL BE INSTALLED 18" MIN. FROM THE MOBILE HOME FOR MOUNTING THE SERVICE RISER, METER SOCKET, AND SERVICE EQUIPMENT. METERING EQUIPMENT SHALL FACE AWAY FROM MOBILE HOME SUCH THAT METER IS EASILY READABLE AND ACCESSIBLE. OTHER CONSTRUCTION IS PERMISSIBLE WITH LOCAL ENGINEER'S APPROVAL.

2. CUSTOMER WILL FURNISH, INSTALL, AND OWN METER SOCKET. TOP OF SOCKET MUST BE LEVEL FRONT TO BACK AND SIDE TO SIDE.

COMPANY INSTALLATION

3. COMPANY WILL PROVIDE AND INSTALL THE UNDERGROUND SERVICE LATERAL ACCORDING TO COMPANY'S STANDARD PRACTICES.

4. BOTTOM OF TRENCH MUST BE FIRMLY TAMPED NEAR H-FRAME. CABLE MUST BE POSITIONED FIRMLY AGAINST TAMPED EARTH DURING BACKFILLING. BEFORE CABLE IS CUT AFTER BACK-FILLING, PUSH CABLE DOWN IN CONDUIT TO PROVIDE AS MUCH SLACK AS POSSIBLE. THIS IS NECESSARY TO PREVENT SETTLING OF EARTH FROM PULLING ON CABLE AND DAMAGING METER BASE TERMINALS.

5. POINT OF DELIVERY IS WHERE COMPANY'S CONDUCTORS ATTACH TO METER SOCKET.

*SOME COUNTIES WITHIN COMPANY'S SERVICE AREA REQUIRE THE USE OF (ONE) SINGLE 4" X 6" OR 6" X 6" POST.

DUKE ENERGY.

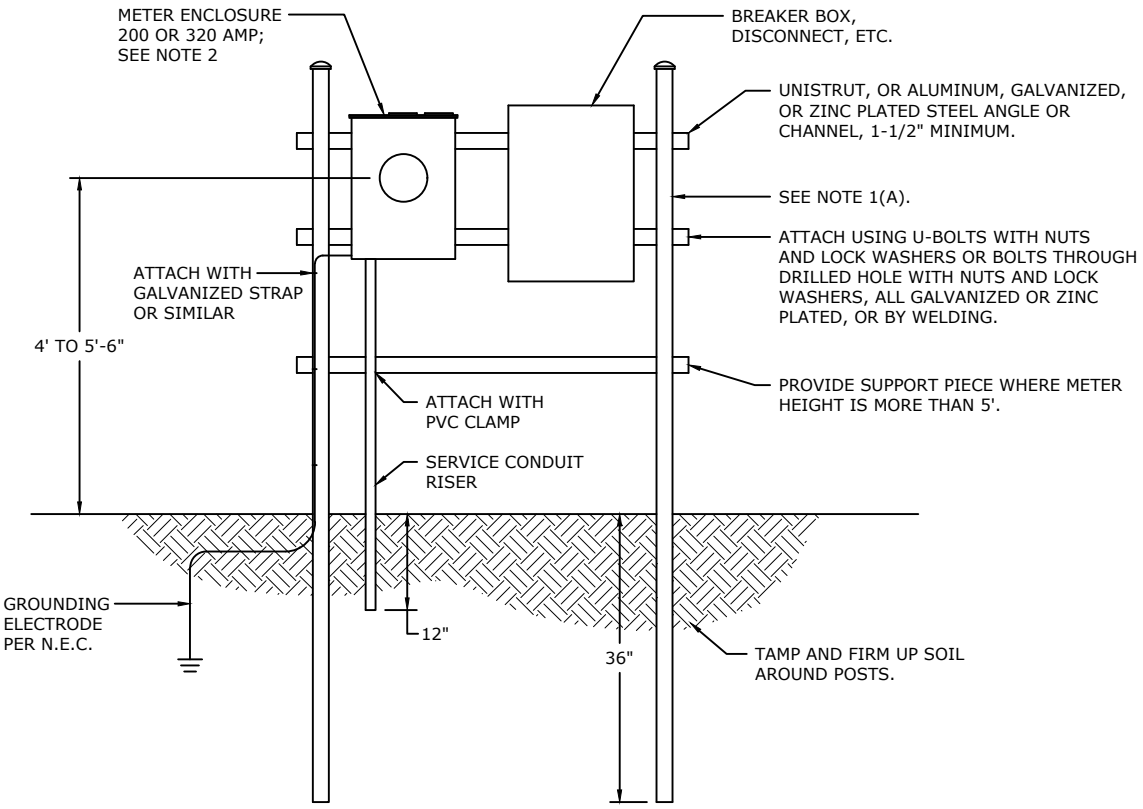
REVISED	BY	CHK'D	APPR.
4 9/10/20	EANES	FLETCHER	GRAHAM
3 2/28/20	EANES	FLETCHER	GRAHAM
2 10/30/17	EANES	EANES	ADCOCK
0 10/6/15	SIMPSON	MEDLIN	CHANDLER

UNDERGROUND PERMANENT SERVICE

POST MOUNTED

DEC	DEM	DEP	DEF
X		X	

FIG 4A



CUSTOMER INSTALLATION

1. CUSTOMER WILL FURNISH AND INSTALL:

   (A) H FRAME POSTS SHALL BE 2-3/8" PIPE OR LARGER WITH END CAPS, 2" (OD) OR LARGER TUBING WITH END CAPS, OR 2" OR LARGER CHANNEL, OR EQUIVALENT, ALL GALVANIZED, ZINC PLATED, OR ALUMINUM.
   (B) SERVICE GROUND IN ACCORDANCE WITH N.E.C.
   (C) ALL EQUIPMENT, MOUNTING HEIGHTS, AND CLEARANCES BEYOND THE METER SOCKET IN ACCORDANCE WITH N.E.C.
   (D) ALL CONNECTIONS IN ACCORDANCE WITH N.E.C.
   (E) MOBILE HOME SERVICES - H FRAME SHALL BE INSTALLED 18" MIN. FROM THE MOBILE HOME FOR MOUNTING THE SERVICE RISER, METER SOCKET, AND SERVICE EQUIPMENT. METERING EQUIPMENT SHALL FACE AWAY FROM MOBILE HOME SUCH THAT METER IS EASILY READABLE AND ACCESSIBLE. OTHER CONSTRUCTION IS PERMISSIBLE WITH LOCAL ENGINEER'S APPROVAL.

2. CUSTOMER WILL FURNISH, INSTALL, AND OWN METER SOCKET. TOP OF SOCKET MUST BE LEVEL FRONT TO FRONT TO BACK AND SIDE TO SIDE.

COMPANY INSTALLATION

3. COMPANY WILL PROVIDE AND INSTALL THE UNDERGROUND SERVICE LATERAL ACCORDING TO COMPANY'S STANDARD PRACTICES.

4. BOTTOM OF TRENCH MUST BE FIRMLY TAMPED NEAR H-FRAME. CABLE MUST BE POSITIONED FIRMLY AGAINST TAMPED EARTH DURING BACKFILLING. BEFORE CABLE IS CUT AFTER BACK-FILLING, PUSH CABLE DOWN IN CONDUIT TO PROVIDE AS MUCH SLACK AS POSSIBLE. THIS IS NECESSARY TO PREVENT SETTLING OF EARTH FROM PULLING ON CABLE AND DAMAGING METER BASE TERMINALS.

5. POINT OF DELIVERY IS WHERE COMPANY'S CONDUCTORS ATTACH TO METER SOCKET.

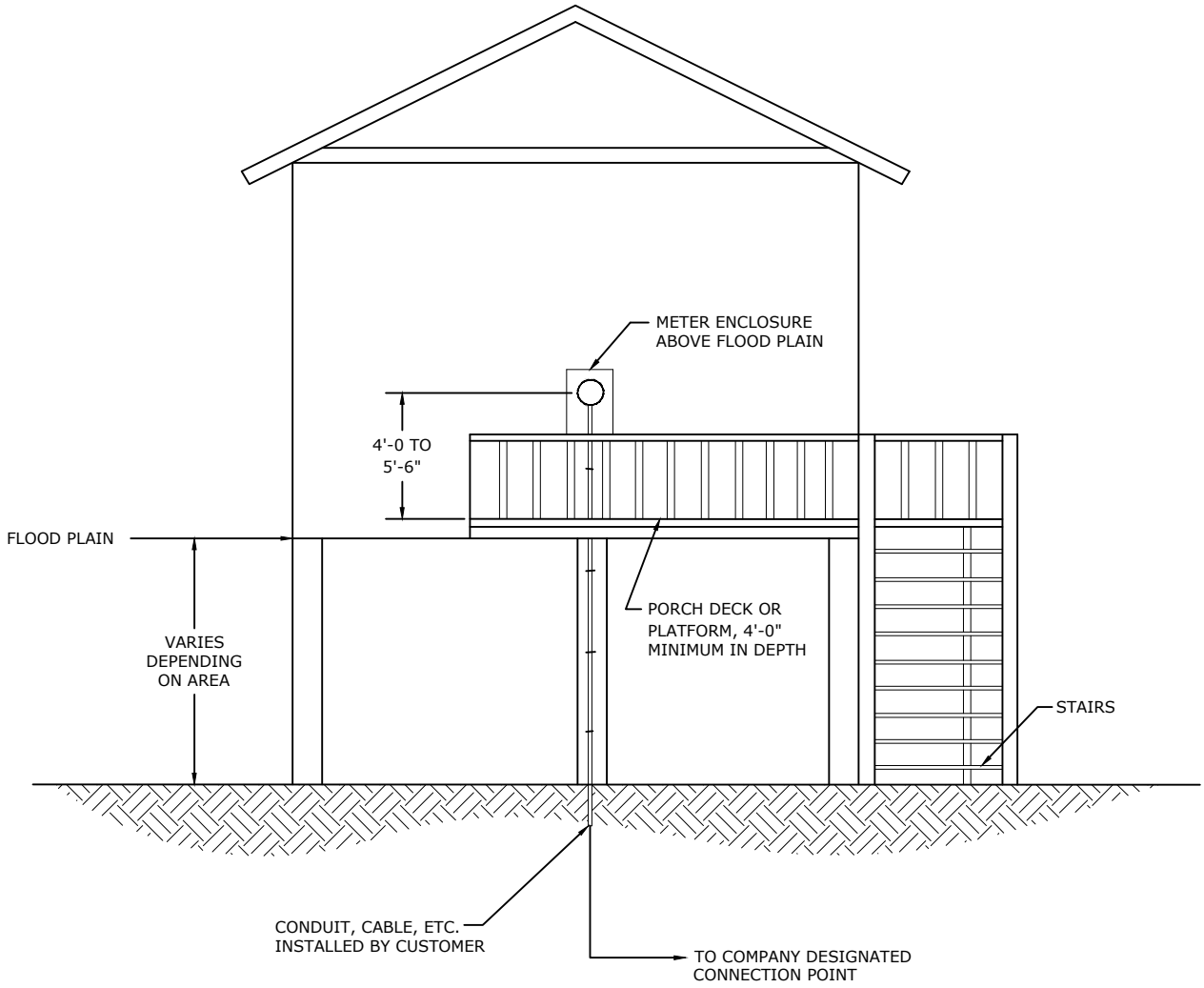
REVISED		BY	CHK'D	APPR.
3	9/10/20	EANES	FLETCHER	GRAHAM
2	2/28/20	EANES	FLETCHER	GRAHAM
1	10/30/17	EANES	EANES	ADCOCK
0	10/6/15	SIMPSON	MEDLIN	CHANDLER

UNDERGROUND PERMANENT SERVICE

H FRAME STRUCTURE MOUNTED

DEC	DEM	DEP	DEF
X		X	

FIG 4B



NOTES:

1. ELECTRICAL SERVICES IN FLOOD ZONES MUST BE ELEVATED ABOVE THE FLOOD PLAIN ELEVATION, AND ACCESS AND WORKING CLEARANCES MUST COMPLY WITH N.E.C. ARTICLE 110.

2. ALL PLATFORM AND STAIR CONSTRUCTION SHALL BE PROVIDED BY THE CUSTOMER AS REQUIRED BY COMPANY AND MUST MEET ALL APPLICABLE BUILDING CODES.

3. NO SHIPS LADDERS OR HOMEMADE LADDERS WILL BE APPROVED.

4. CONDUIT (SCHEDULE 40), SERVICE RISER, ATTACHMENT MEANS AND SERVICE CONDUCTORS ARE TO BE PROVIDED AND INSTALLED BY CUSTOMER.

REVISED		BY	CHK'D	APPR.
3				
2				
1	2/28/20	EANES	FLETCHER	GRAHAM
0	1/13/16	SIMPSON	EANES	CHANDLER

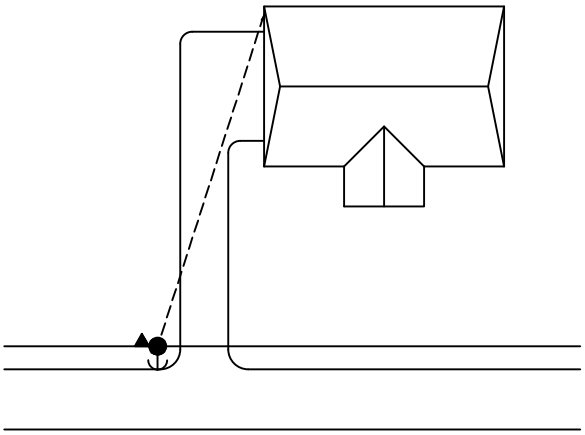
DUKE ENERGY.

METER ENCLOSURE INSTALLATIONS
IN FLOOD ZONES

DEC	DEM	DEP	DEF
X		X	

FIG 5

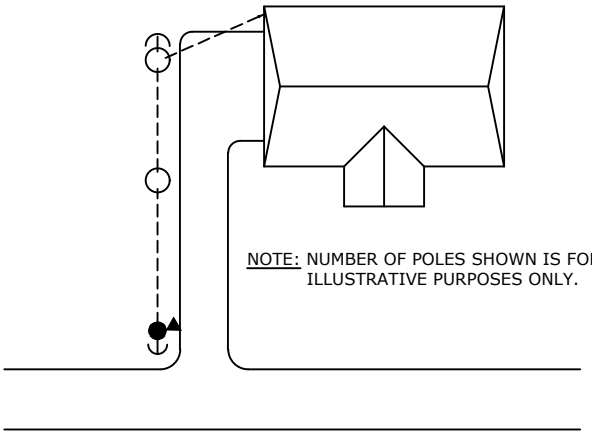
NORMAL POINT OF DELIVERY



NORMAL P.O.D.
NO CHARGE

NORMAL P.O.D. IS ON THE END OF THE BUILDING NEAREST THE OVERHEAD SOURCE.

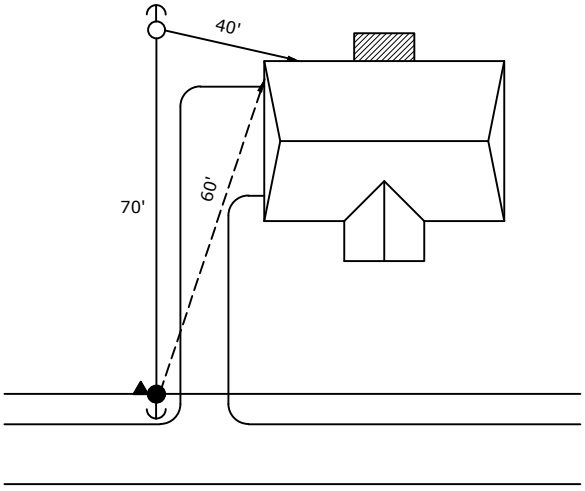
NORMAL POINT OF DELIVERY



NOTE: NUMBER OF POLES SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY.

NO EXTRA POLE CHARGE TO NORMAL P.O.D. USING OH SECONDARY LIFT POLES

WIRING BEYOND NORMAL POINT OF DELIVERY



NOTE: DIMENSIONS SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY.

CUSTOMER WILL BE RESPONSIBLE FOR THE COST OF THE POLE AND THE ADDITIONAL CABLE COSTS. CONTACT THE COMPANY'S REPRESENTATIVE FOR COSTS.

3				
2				
1	3/31/25	EANES	FLETCHER	GRAHAM
0	2/21/17	EANES	EANES	ADCOCK
REVISED		BY	CHK'D	APPR.

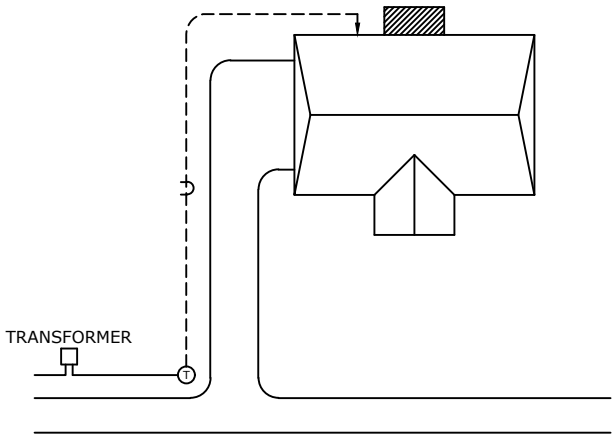
INDIVIDUAL 1 PHASE SECONDARY
OVERHEAD LINE EXTENSIONS

DUKE ENERGY.

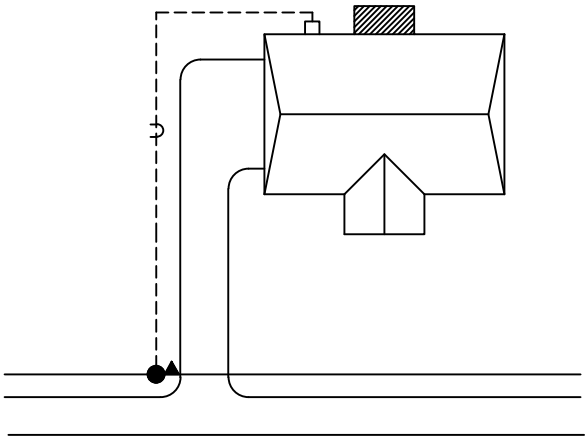
DEC	DEM	DEP	DEF
X		X	

FIG 6A

EXTENSIONS FROM AN UNDERGROUND SOURCE



EXTENSIONS FROM AN OVERHEAD SOURCE



NOTES:

1. THE COMPANY WILL ACCEPT ANY LOCATION ON THE BUILDING AS THE NORMAL P.O.D. AS LONG AS THE COMPANY CAN INSTALL AND MAINTAIN THE COMPANY'S SERVICE UTILIZING STANDARD MECHANICAL EQUIPMENT EXCLUDING BORES UNDER PAVED AREAS. STANDARD MECHANICAL EQUIPMENT REQUIRES A MINIMUM 10-FOOT WIDE CLEARANCE FROM THE SOURCE TO THE METER BASE.
2. IF THE P.O.D. IS LOCATED SUCH THAT THE STANDARD MECHANICAL EQUIPMENT CANNOT BE USED TO INSTALL AND MAINTAIN THE COMPANY'S SERVICE, THE METER BASE MUST EITHER BE RELOCATED OR THE CUSTOMER MUST PROVIDE AND INSTALL A CONDUIT SYSTEM TO THE COMPANY'S SPECIFICATIONS TO A LOCATION DESIGNATED BY THE COMPANY'S REPRESENTATIVE.
3. THE CUSTOMER IS RESPONSIBLE FOR ANY CHARGES ASSOCIATED WITH BORING UNDER PAVED AREAS. FOR CHARGES CONTACT THE COMPANY REPRESENTATIVE.
4. THE COMPANY'S UNDERGROUND FACILITIES SHOULD BE DESIGNED AND ROUTED TO AVOID ANY SEPTIC DRAIN FIELD. A MINIMUM SETBACK OF 5' MUST BE MAINTAINED BETWEEN A SEPTIC FIELD AND ANY UNDERGROUND LINES OR SURFACE MOUNTED EQUIPMENT.

DUKE ENERGY.

3				
2				
1	3/31/25	EANES	FLETCHER	GRAHAM
0	2/21/17	EANES	EANES	ADCOCK
REVISED		BY	CHK'D	APPR.

INDIVIDUAL RESIDENTIAL SINGLE-PHASE
U.G. SECONDARY LINE EXTENSIONS

DEC	DEM	DEP	DEF
X		X	

FIG 6B

NOTES:

1. IN ALL CASES THE COMPANY SHALL DETERMINE THE LOCATION OF THE POINT OF DELIVERY (POD). THE NEED FOR MULTIPLE POD'S WILL BE AT THE SOLE DISCRETION OF THE COMPANY BASED ON THE LOAD REQUIREMENTS AND NOT FOR AESTHETIC PURPOSES.

2. THE NUMBER OF POD'S INSTALLED WILL BE AS FOLLOWS:
   A. FOR INDIVIDUAL RESIDENTIAL HOUSES: 1 PER HOUSE, LOCATED ON AN EXTERIOR WALL.
   B. FOR MANUFACTURED HOMES: 1 PER HOME, LOCATED ON A METERING STRUCTURE AS DESCRIBED IN FIGS 4A, 4B, 9A, AND 9B.
   C. FOR DUPLEXES AND TOWNHOMES: WHEN PERMITTED AS SINGLE FAMILY REAL ESTATE UNITS (THE CUSTOMER OWNS THEIR PORTION OF THE STRUCTURE), AN INDIVIDUAL SERVICE IS RUN TO EACH UNIT OR TOWNHOME TO A SELF-CONTAINED METER SOCKET.
   D. FOR DUPLEXES AND TOWNHOMES: WHEN PERMITTED AS RENTAL UNITS, SERVICE IS RUN TO A GANGED METER CENTER INSTALLATION AS SHOWN IN FIGS 25, 26, AND 27.
   E. FOR APARTMENTS: 1 PER BUILDING UNLESS THE CALCULATED DEMAND OR VOLTAGE/LOAD CHARACTERISTICS WARRANT AN ADDITIONAL DELIVERY OR DELIVERIES AS SHOWN IN FIGS 25, 26, AND 27. MULTIPLE POD'S SHALL NOT BE USED AS A MEANS OF AVOIDING THE NEED FOR A MAIN DISCONNECT AS REQUIRED BY THE NEC.

3. THE GUIDELINES ABOVE CANNOT ACCOUNT FOR EVERY POSSIBLE SCENARIO, NOR CAN THEY ACCOUNT FOR DIFFERENCES IN THE INTERPRETATION OF THE LOCAL AHJ. IT IS IMPERATIVE THE CUSTOMER VERIFY WITH THE COMPANY THE LOCATION AND NUMBER OF THE POD'S EARLY IN THE SUBMITTAL PROCESS, TO AVOID CHANGES IN THEIR INITIAL DESIGN.

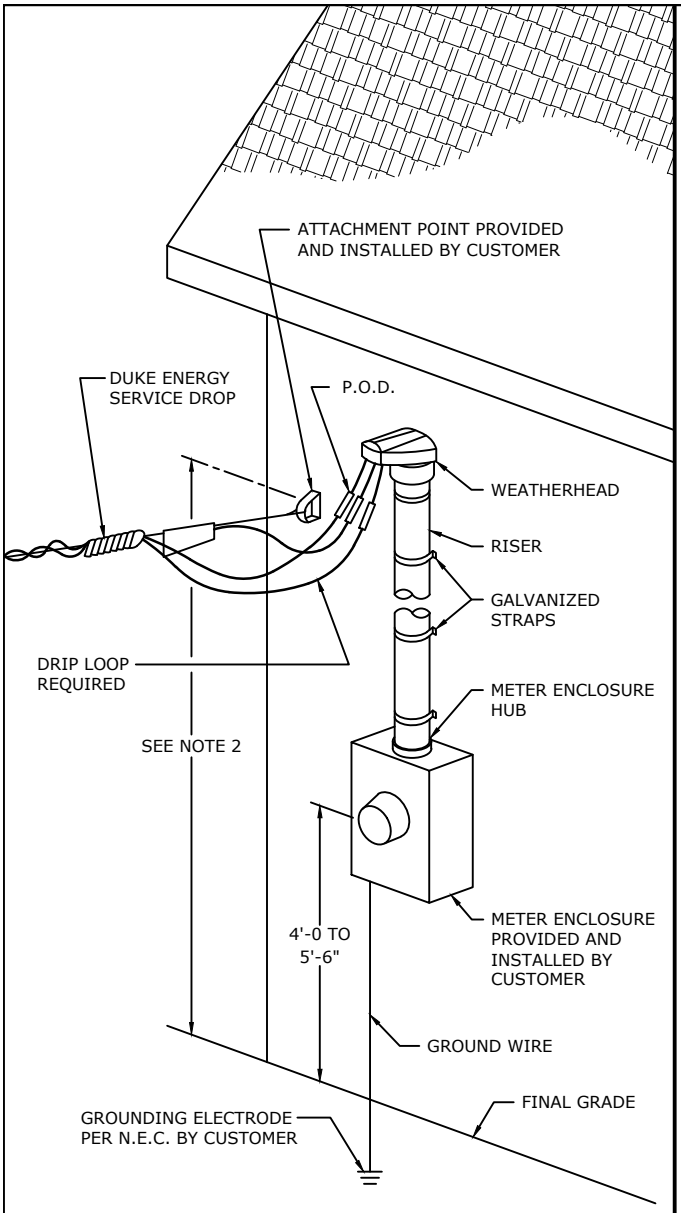
DUKE ENERGY.

3				
2				
1				
0	3/31/25	EANES	FLETCHER	GRAHAM
REVISED		BY	CHK'D	APPR.

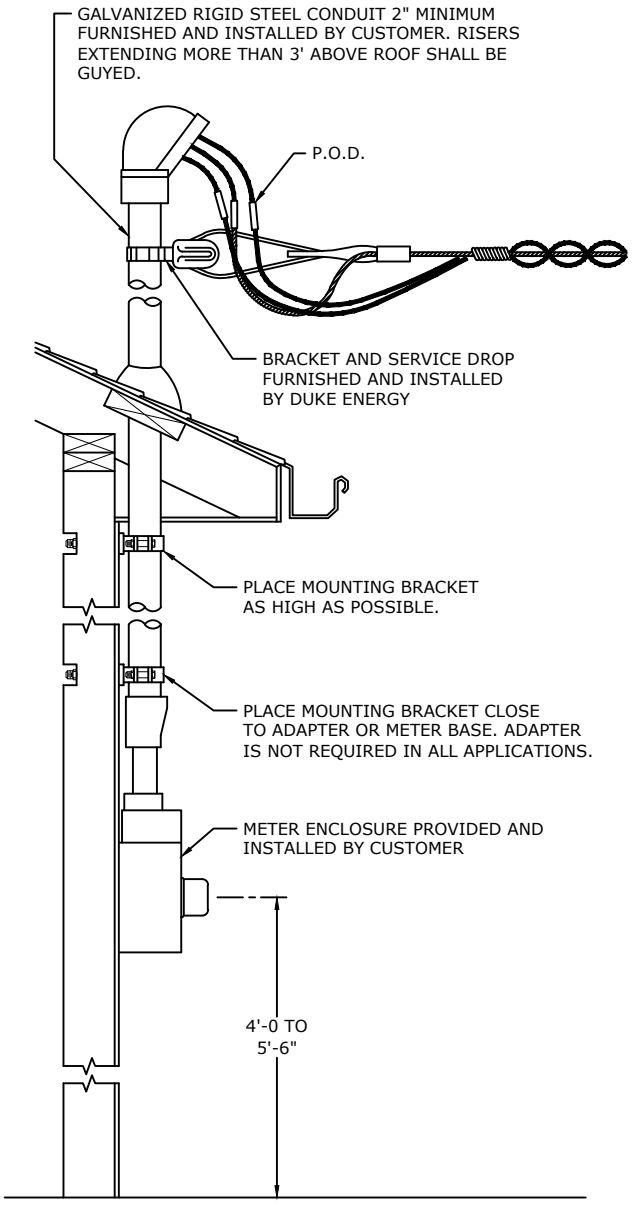
INDIVIDUAL SERVICE CONNECTIONS
FOR RESIDENTIAL SERVICES

DEC	DEM	DEP	DEF
X		X	

FIG 6C



RISER ON WALL INSTALLATION



THRU-THE-ROOF MAST INSTALLATION

NOTES:

1. SEE FIGURE 14A FOR METER ENCLOSURE GROUNDING DETAILS.
2. SEE FIGURES 10 AND 11 FOR SERVICE DROP CLEARANCES.
3. CUSTOMER PROVIDES AND INSTALLS ALL ITEMS EXCEPT METER AND SERVICE DROP, EXCEPT AS NOTED ABOVE.
4. THRU-THE-ROOF RISERS MUST BE ACCESSIBLE TO A COMPANY BUCKET TRUCK OR A COMPANY EMPLOYEE ON AN EXTENSION LADDER NOT TO EXCEED 25' ABOVE GRADE.
5. RISERS IN EXCESS OF 72" ABOVE ROOF LINES SHALL BE ACCESSIBLE TO A COMPANY BUCKET TRUCK.
6. DISCONNECTS INSTALLED ON RESIDENTIAL SERVICES TO MEET THE NEC'S REQUIREMENTS FOR EMERGENCY DISCONNECTS SHALL BE LOCATED AFTER (DOWNSTREAM FROM) THE COMPANY'S METER.
7. METER ENCLOSURES SHALL NOT BE RECESSED IN ANY WAY THAT BLOCKS ACCESS, KNOCKOUTS OR DRAINAGE AND SHALL NOT BE MOUNTED ON RECESSED WALLS THAT REQUIRE ALTERATIONS TO THE COMPANY RISER.

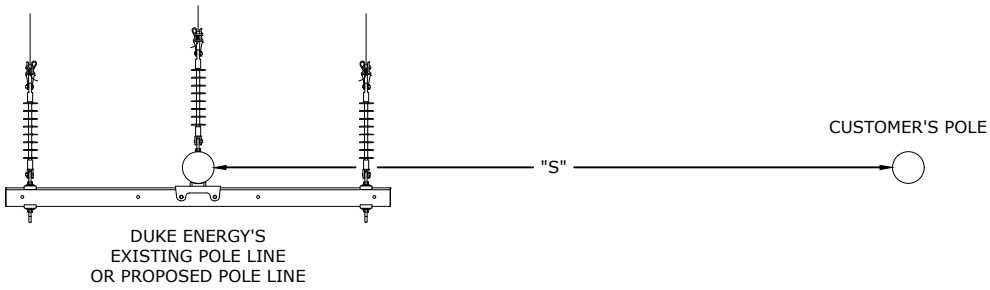
DUKE ENERGY.

REVISED	BY	CHK'D	APPR.
6 3/3/22	EANES	FLETCHER	GRAHAM
5 2/28/20	EANES	FLETCHER	GRAHAM
4 10/21/19	EANES	EANES	ADCOCK
0 1/19/16	SIMPSON	EANES	ADCOCK

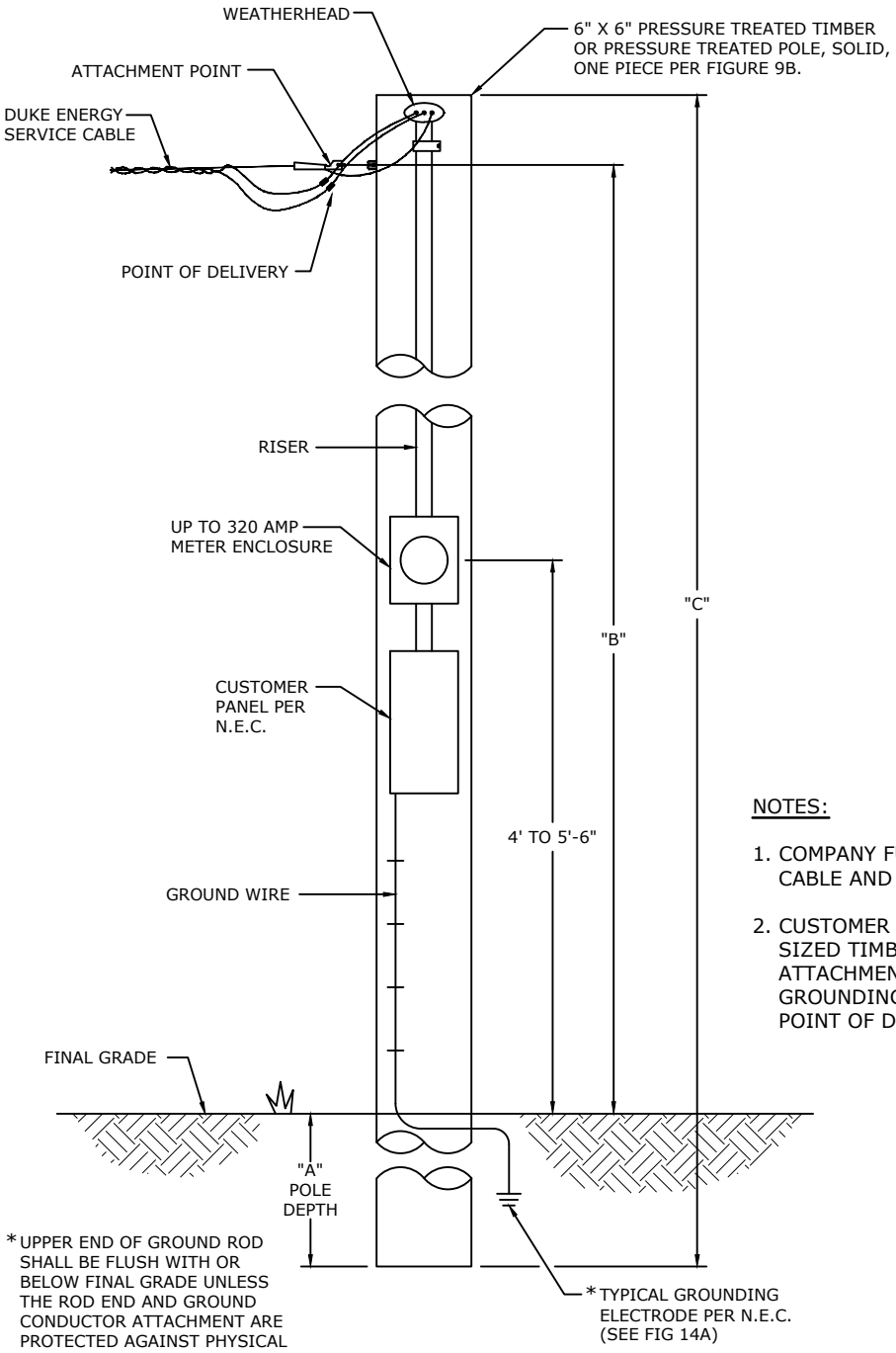
RESIDENTIAL PERMANENT OVERHEAD

DEC	DEM	DEP	DEF
X		X	

FIG 8



PLAN VIEW



NOTES:

1. COMPANY FURNISHES AND INSTALLS SERVICE CABLE AND APPROPRIATE METER.
2. CUSTOMER FURNISHES AND INSTALLS PROPERLY SIZED TIMBER/POLE, RISER, WEATHERHEAD, ATTACHMENT POINT, METER ENCLOSURE, GROUNDING AND ALL OTHER ITEMS BEYOND POINT OF DELIVERY.

*UPPER END OF GROUND ROD SHALL BE FLUSH WITH OR BELOW FINAL GRADE UNLESS THE ROD END AND GROUND CONDUCTOR ATTACHMENT ARE PROTECTED AGAINST PHYSICAL DAMAGE.

REVISED	BY	CHK'D	APPR.
4 9/10/20	EANES	FLETCHER	GRAHAM
3 2/28/20	EANES	FLETCHER	GRAHAM
2 9/30/18	EANES	EANES	ADCOCK
0 2/1/16	SIMPSON	EANES	ADCOCK

PERMANENT OVERHEAD SERVICE POLE

DEC	DEM	DEP	DEF
X		X	

FIG 9A

TABLE 1 - CLEARANCES					
"S" AREA FROM THE CUSTOMER'S POLE TO THE DUKE ENERGY LINE	NESC CLEARANCES	"A" MINIMUM BURIAL DEPTH IN AVERAGE OR GOOD SOIL	"A" MINIMUM BURIAL DEPTH IN AVERAGE POOR SOIL	"B" MINIMUM ATTACHMENT HEIGHT ABOVE GROUND TO DUKE ENERGY'S SERVICE CABLE	"C" MINIMUM POLE HEIGHT
SPACES OR WAYS SUBJECT TO PEDESTRIANS ONLY	12'	4'-0"	5'-0"	14'	20' C10
DRIVEWAYS, PARKING LOTS AND ALLEYS FOR THE STATES OF NORTH CAROLINA AND SOUTH CAROLINA	16'	4'-6"	5'-6"	20'	25' C9
ROADS, STREETS AND OTHER AREAS SUBJECT TO TRUCK TRAFFIC FOR STATE OF SOUTH CAROLINA	16'	4'-6"	5'-6"	20'	25' C9
ROADS, STREETS AND OTHER AREAS SUBJECT TO TRUCK TRAFFIC FOR STATE OF NORTH CAROLINA PER DOT REQUIREMENTS	18'	4'-6"	5'-6"	23'	30' C9

NOTES:

1. THE MINIMUM BURIAL DEPTH IS BASED ON WELL-TAMPED AND COMPACTED BACKFILL. AVERAGE OR GOOD SOIL IS FIRM SAND, CLAY OR GRAVEL-TYPE SOIL. POOR SOIL IS SOFT OR WET CLAY, LOOSE SANDS OR SOFT CLAYISH SILT-TYPE SOIL.

2. THE 12', 16' AND 18' CLEARANCES AND POLE HEIGHTS, SIZES AND DEPTH ARE BASED ON THE NATIONAL ELECTRICAL SAFETY CODE (NESC) AND DEPARTMENT OF TRANSPORTATION (DOT). (SEE FIGURE 11.)

3. MAXIMUM SERVICE LENGTH TO BE DETERMINED BY COMPANY REPRESENTATIVE.

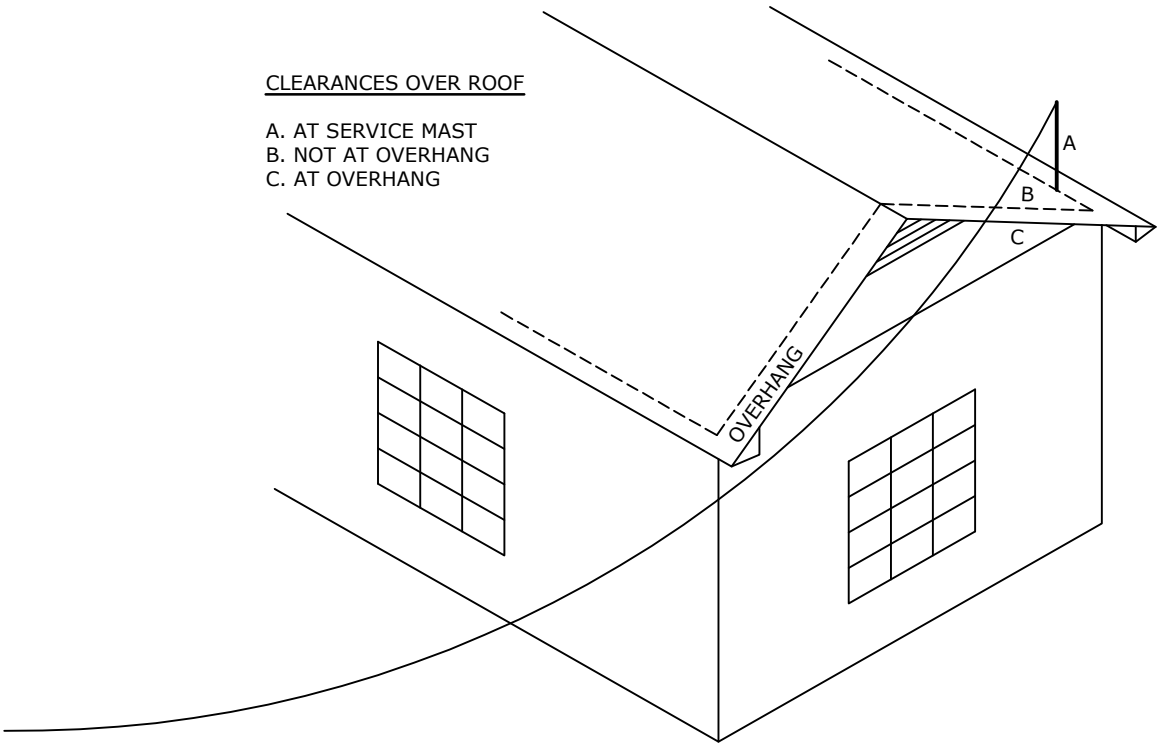
DUKE ENERGY.

3					
2					
1					
0	10/29/15	SIMPSON	EANES	ADCOCK	
REVISED		BY	CHK'D	APPR.	

PERMANENT OVERHEAD SERVICE POLE

DEC	DEM	DEP	DEF
X		X	

FIG 9B



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	
		0-300 V	300-600 V
A OR B	OVER FLAT OR READILY ACCESSIBLE ROOF	10'	10'
A OR B	OVER SLOPED ROOF WHICH IS NOT READILY ACCESSIBLE	36"	10'
C	OVER OVERHANG PORTION OF ROOF (NO MORE THAN 4' OF CABLE)	18"	10'

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.

4. SERVICES SHALL ALSO HAVE 3' CLEARANCE IN ANY DIRECTION FROM WINDOWS, DOORS, PORCHES, OR SIMILAR LOCATIONS. 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. RULE 234.

5. POINT OF ATTACHMENT OF SERVICE TO BUILDING SHALL BE HIGH ENOUGH TO PROVIDE THE GROUND CLEARANCES PER FIGURE 11, 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.

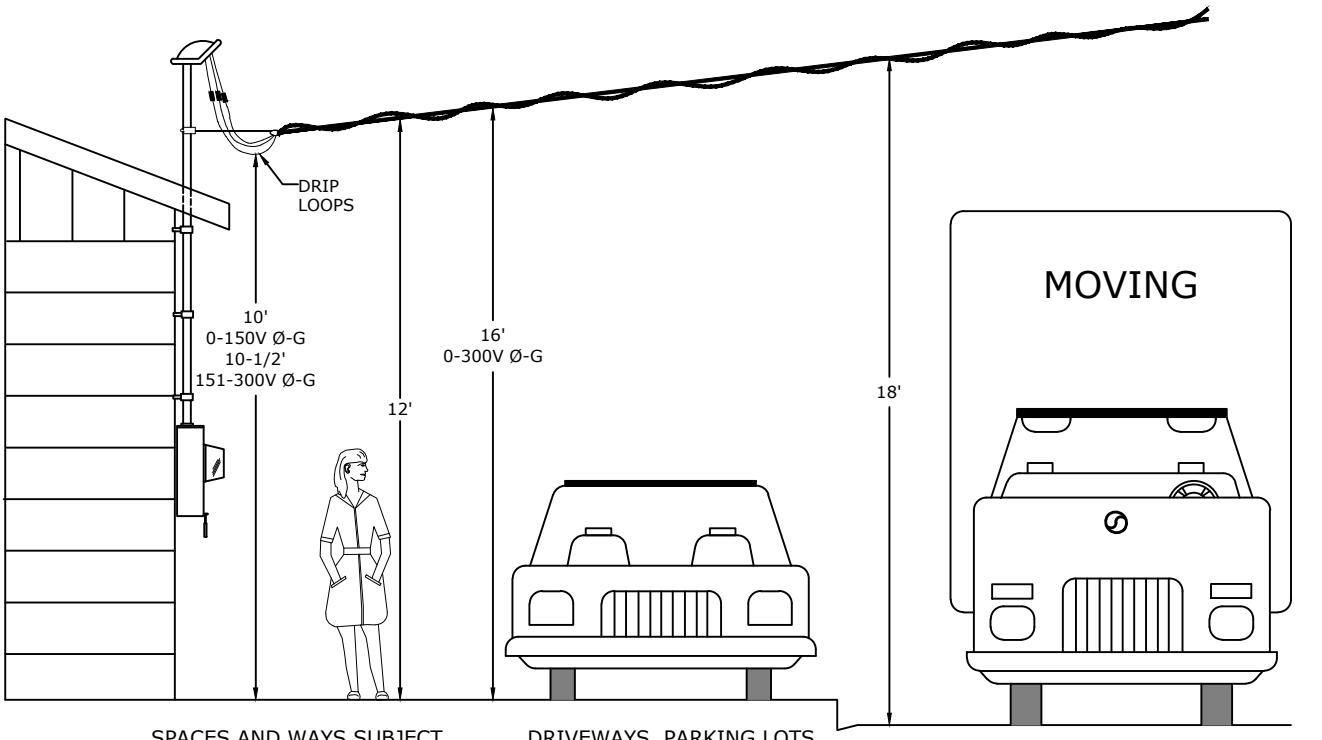
DUKE ENERGY.

REVISED		BY	CHK'D	APPR.
3				
2				
1				
0	10/28/15	SIMPSON	EANES	ADCOCK

SERVICE DROP MINIMUM CLEARANCE -
THRU-THE-ROOF SERVICE MAST

DEC	DEM	DEP	DEF
X		X	

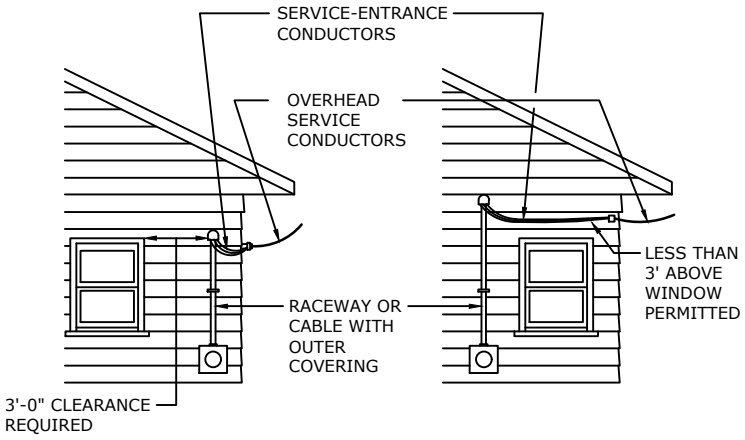
FIG 10



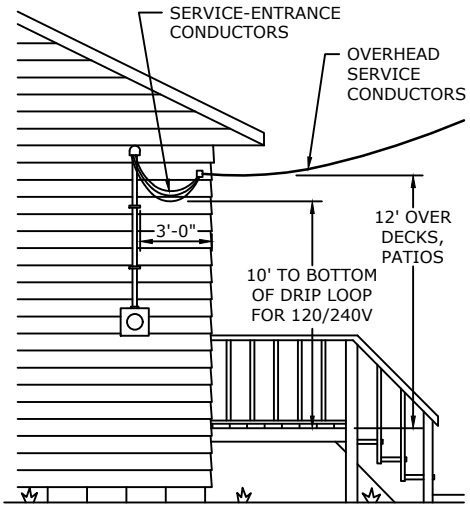
SPACES AND WAYS SUBJECT TO PEDESTRIANS OR RESTRICTED TRAFFIC ONLY.

DRIVEWAYS, PARKING LOTS AND ALLEYS

ROADS, STREETS AND OTHER AREAS SUBJECT TO TRUCK TRAFFIC (EXCLUDING LIMITED ACCESS HIGHWAYS).



N.E.C. ARTICLE 230



NOTES:

1. THE ABOVE ILLUSTRATIONS GIVE REQUIRED MINIMUM INSTALLATION HEIGHTS. THESE INSTALLATION HEIGHTS ARE APPLICABLE TO SERVICE DROP MULTIPLEX CABLES.
2. POINT OF ATTACHMENT OF SERVICE DROP AT BOTH BUILDING AND POLE MUST BE AT A HEIGHT SUFFICIENT TO ACHIEVE N.E.S.C. REQUIRED MINIMUM CLEARANCES.
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. ARTICLE 230.54].
4. CUSTOMER WILL PROVIDE POINT OF ATTACHMENT AND OTHER ITEMS PER FIGURE 8.

DUKE ENERGY.

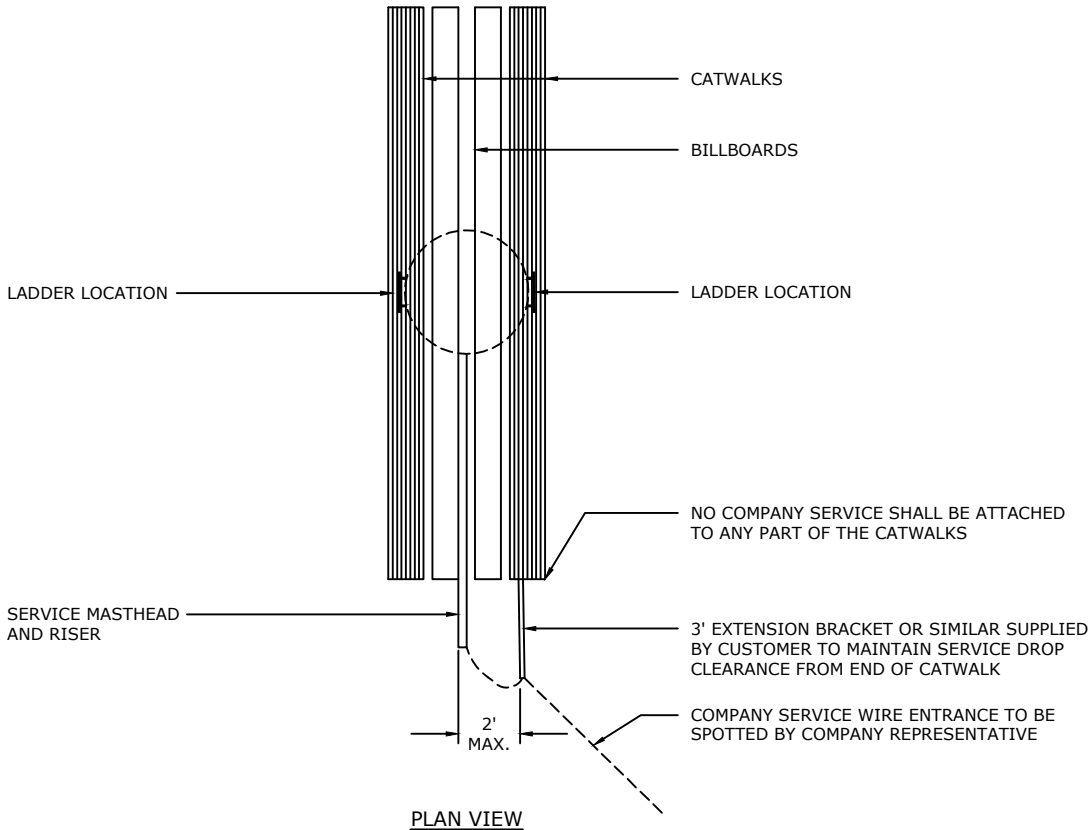
REVISED		BY	CHK'D	APPR.
3				
2	10/30/17	EANES	EANES	ADCOCK
1	2/21/17	EANES	EANES	ADCOCK
0	10/28/15	SIMPSON	EANES	ADCOCK

SERVICE DROP MINIMUM CLEARANCES

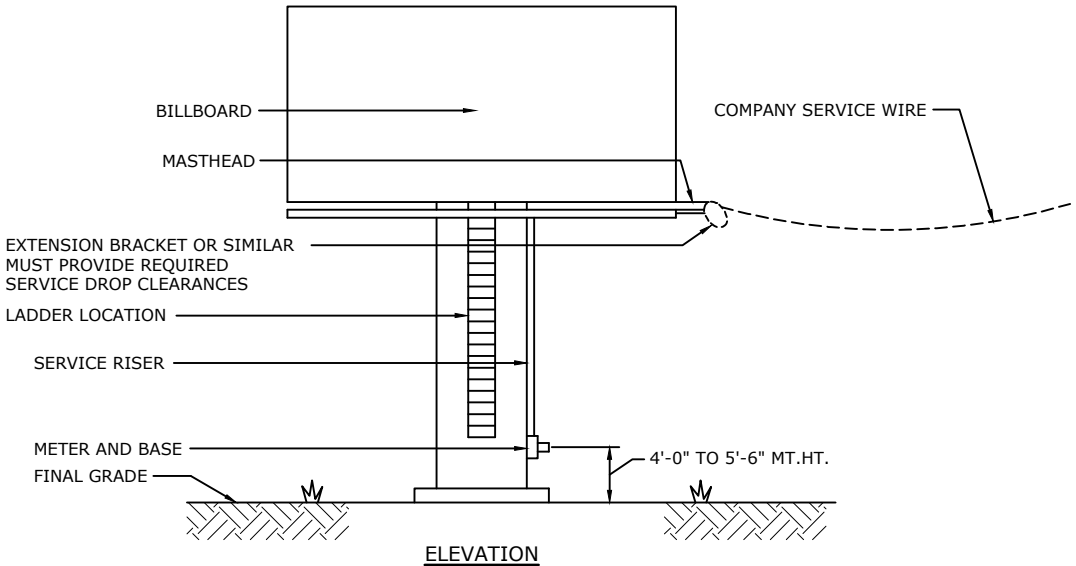
MAST ON BUILDING WALL

DEC	DEM	DEP	DEF
X		X	

FIG 11



PLAN VIEW



ELEVATION

NOTE:

1. DO NOT PROVIDE SERVICE TO SIGN WHICH DOES NOT HAVE CLEARANCES FROM ADJACENT OVERHEAD CONDUCTORS AS REQUIRED BY N.E.S.C. AND ANY ADDITIONAL COMPANY SPECIFICATIONS.

REVISED		BY	CHK'D	APPR.
3				
2	3/1/21	EANES	FLETCHER	GRAHAM
1	2/28/20	EANES	FLETCHER	GRAHAM
0	10/28/15	SIMPSON	SIMPSON	CHANDLER

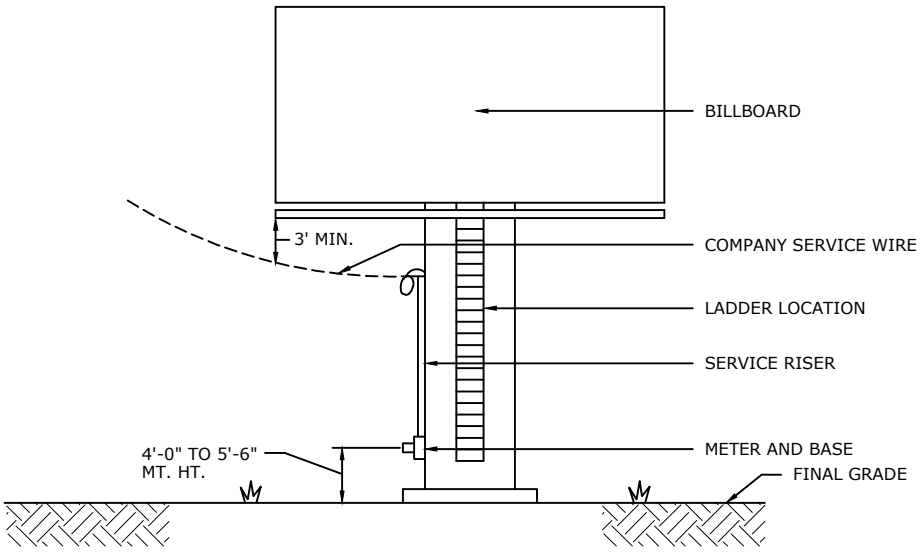
DUKE ENERGY.

BILLBOARD SERVICE ENTRANCE REQUIREMENTS

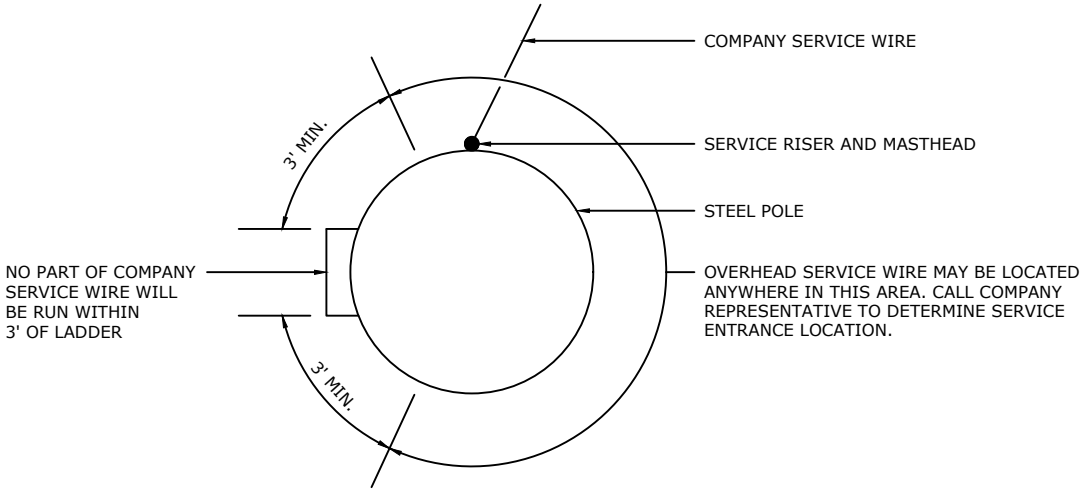
METHOD "A"

DEC	DEM	DEP	DEF
X		X	

FIG 12



ELEVATION



PLAN

3				
2				
1	2/28/20	EANES	FLETCHER	GRAHAM
0	10/26/15	SIMPSON	EANES	ADCOCK
REVISED		BY	CHK'D	APPR.

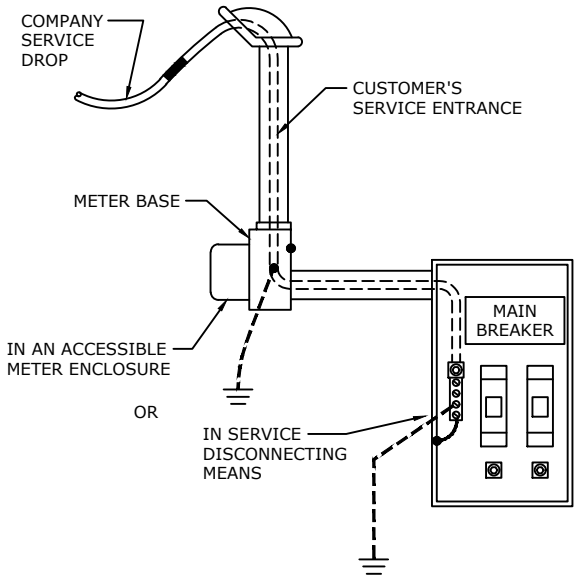
BILLBOARD SERVICE ENTRANCE REQUIREMENTS

METHOD "B"

DEC	DEM	DEP	DEF
X		X	

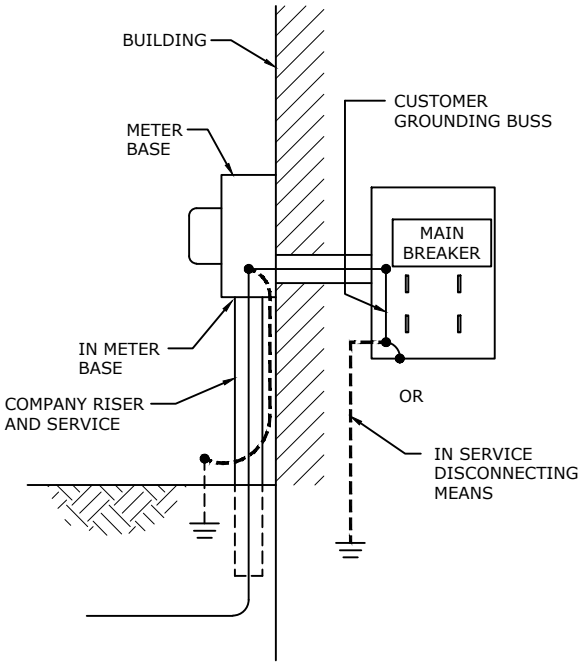
FIG 13

OVERHEAD - SELF-CONTAINED METER BASE
OR GANG BASE



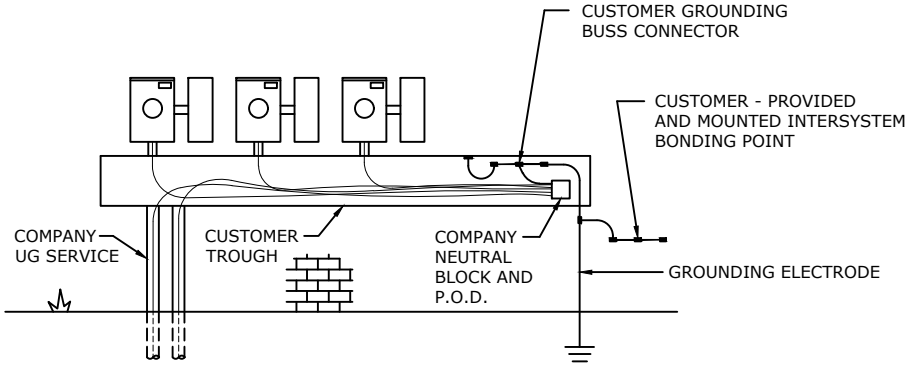
TWO OPTIONS FOR GROUNDING ELECTRODE LOCATION

UNDERGROUND - SELF-CONTAINED METER BASE
OR GANG BASE



TWO OPTIONS FOR GROUNDING ELECTRODE LOCATION

UNDERGROUND - TROUGH



NOTES:

1. CUSTOMER TO INSTALL METER SOCKETS AS SPECIFIED BY THE COMPANY. DISCONNECTS MUST BE GROUPED PER N.E.C. ARTICLES 230.71 AND 72 AND APPROVED BY THE LOCAL AHJ.

REFERENCE: N.E.C. ARTICLE 250

NOTE: ONLY NEUTRAL CONDUCTOR SHOWN FOR CLARITY.

REVISED		BY	CHK'D	APPR.
3				
2				
1	2/21/17	EANES	EANES	ADCOCK
0	1/22/16	SIMPSON	EANES	CHANDLER

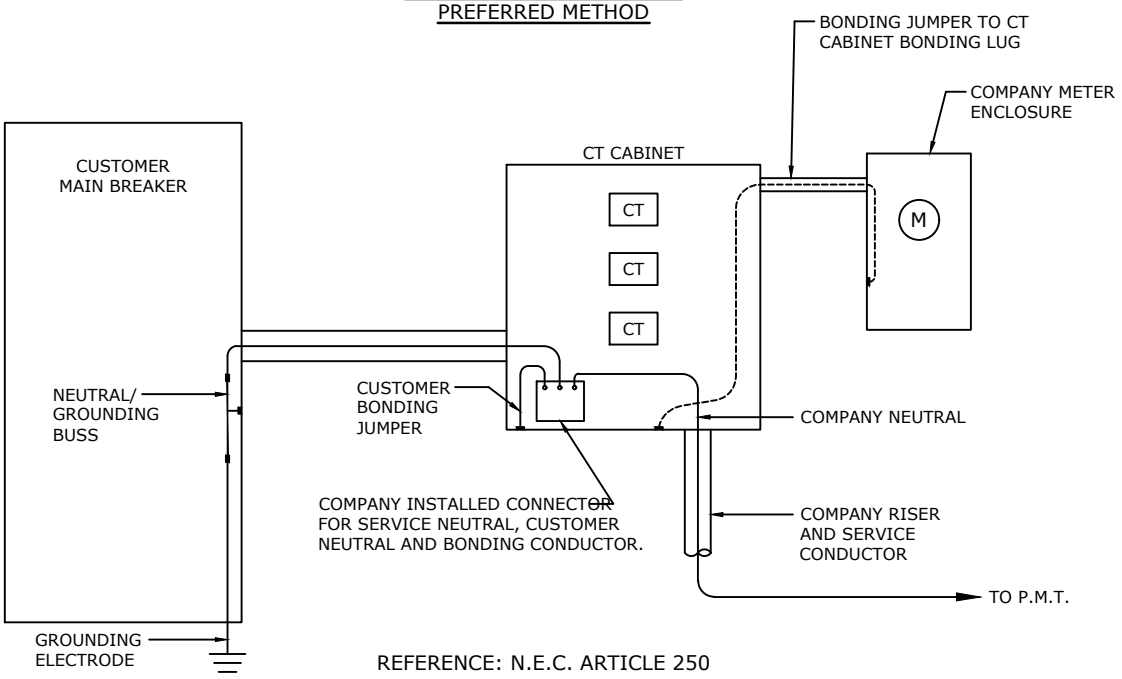
ALLOWABLE LOCATIONS OF CONNECTIONS OF GROUNDED (NEUTRAL) CONDUCTOR AND GROUNDING ELECTRODE CONDUCTOR

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 14A

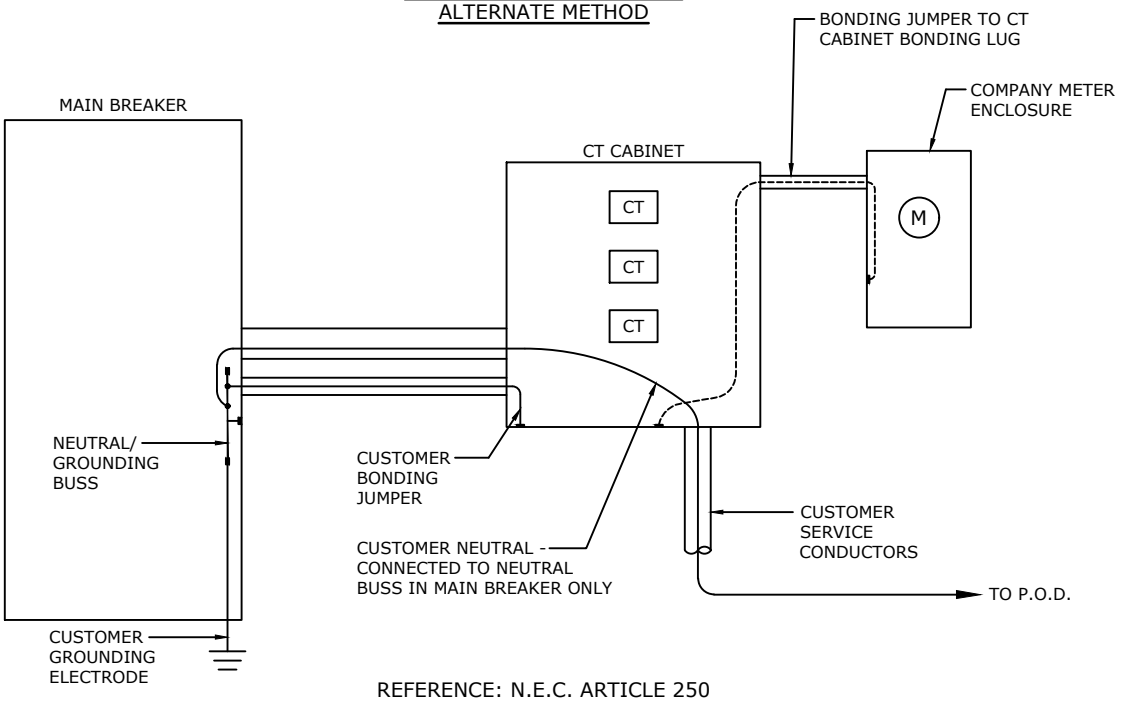
CT CABINET INSTALLATION
PREFERRED METHOD



REFERENCE: N.E.C. ARTICLE 250

NOTE: ONLY NEUTRAL CONDUCTOR SHOWN FOR CLARITY.

CT CABINET INSTALLATION
ALTERNATE METHOD



REFERENCE: N.E.C. ARTICLE 250

NOTES:

1. CT CABINET MUST BE BONDED TO THE CUSTOMER'S SERVICE EQUIPMENT BY THE GROUNDED NEUTRAL CONDUCTOR (PREFERRED) OR A DEDICATED BONDING CONDUCTOR (ALTERNATE). CUSTOMER IS RESPONSIBLE FOR PROVIDING/INSTALLING THE BONDING CONDUCTOR/JUMPER SIZED PER NEC ARTICLE 250 IN BOTH CASES. IF THE CT CABINET IS NOT FURNISHED WITH A BONDING LUG, THE CUSTOMER IS RESPONSIBLE FOR PROVIDING/ INSTALLING. NEUTRAL CONNECTION BLOCK PROVIDED/INSTALLED BY COMPANY IF P.O.D. IS IN CT CABINET.

DUKE ENERGY.

REVISED		BY	CHK'D	APPR.
3				
2	9/10/20	EANES	FLETCHER	GRAHAM
1	2/21/17	EANES	EANES	ADCOCK
0	10/29/15	SIMPSON	EANES	CHANDLER

ALLOWABLE LOCATIONS OF CONNECTIONS OF GROUNDED (NEUTRAL) CONDUCTOR AND GROUNDING ELECTRODE CONDUCTOR

DEC	DEM	DEP	DEF
X		X	

FIG 14B

DEP
METERED SERVICE VOLTAGES
SINGLE-PHASE
120V, 2-WIRE
120/208V, 3-WIRE*
120/240V, 3-WIRE
240/480V, 3WIRE *
2400V, 2-WIRE*
7200V, 2-WIRE
13200V, 2-WIRE
THREE-PHASE
208Y/120V, 4WIRE
240/120V, 4-WIRE
240V, 3-WIRE *
480V, 3-WIRE *
480Y/277V, 4-WIRE
480/240V, 4-WIRE *
600V, 3WIRE **
2400V, 3-WIRE*
4160Y/2400V, 4-WIRE
12470V, 3-WIRE*
12470Y/7200V, 4-WIRE
22860V, 3-WIRE*
22860Y/13200V, 4-WIRE

DEC
METERED SERVICE VOLTAGES
SINGLE-PHASE
120/208V, 3-WIRE*
120/240V, 3-WIRE
240/480V, 3-WIRE
7200V, 2-WIRE*
13800V, 2-WIRE *
14400V, 2-WIRE *
THREE-PHASE
208Y/120V, 4-WIRE
240/120V, 4-WIRE
240V, 3-WIRE
460V, 3-WIRE
460Y/265V, 4-WIRE
480V, 3-WIRE
480Y/277V, 4-WIRE
575V, 3-WIRE
2300V, 3-WIRE
4160Y/2400V, 4-WIRE
12470Y/7200V, 4-WIRE
23900Y/13800V, 4-WIRE
24940Y/14400V, 4-WIRE

* NON-STANDARD VOLTAGES THAT MAY BE SUPPLIED UNDER CERTAIN CIRCUMSTANCES
** FROM OVERHEAD TRANSFORMER BANK ONLY

NOTES:

1. SEE FIGURE 59 FOR CONNECTING ALL 4-WIRE Y-CONNECTED SERVICES.

2. SEE FIGURE 60 FOR CONNECTING ALL 3-WIRE DELTA-CONNECTED SERVICES

3				
2				
1	3/3/22	EANES	FLETCHER	GRAHAM
0	10/29/15	SIMPSON	EANES	ADCOCK
REVISED		BY	CHK'D	APPR.

METERED SERVICE VOLTAGES

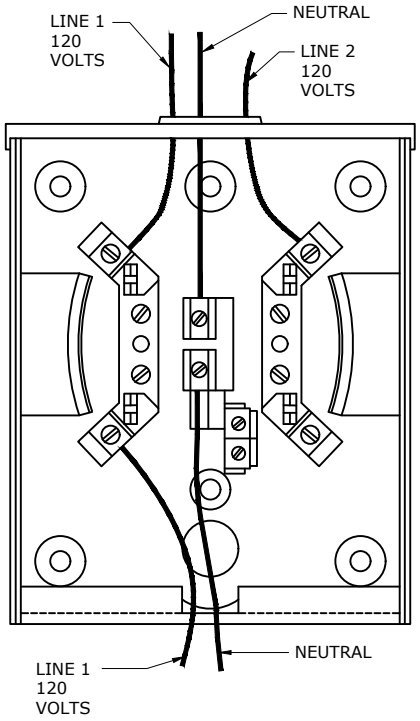
DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 15

3 WIRE 120/240 VOLT SOURCE

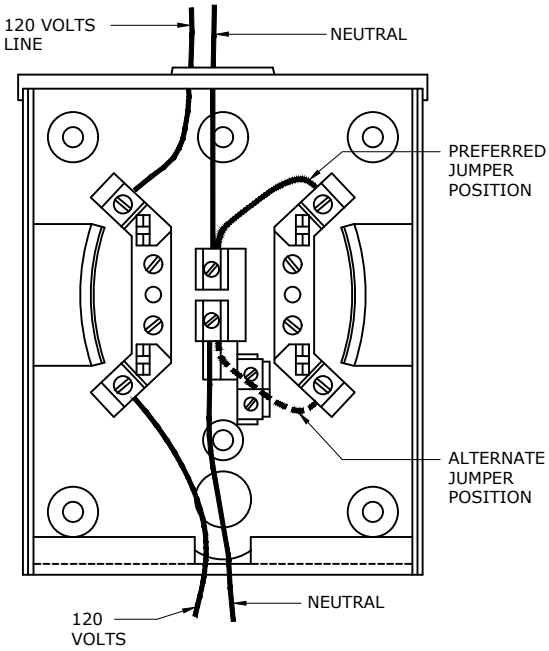
PREFERRED METHOD



REQUIRES FORM 2S METER

STANDARD 240-VOLT
"HOUSE-TYPE" METER

2 WIRE 120 VOLT SOURCE



REQUIRES FORM 1S METER

STANDARD 120-VOLT METER
(SEE NOTE 3)

NOTES:

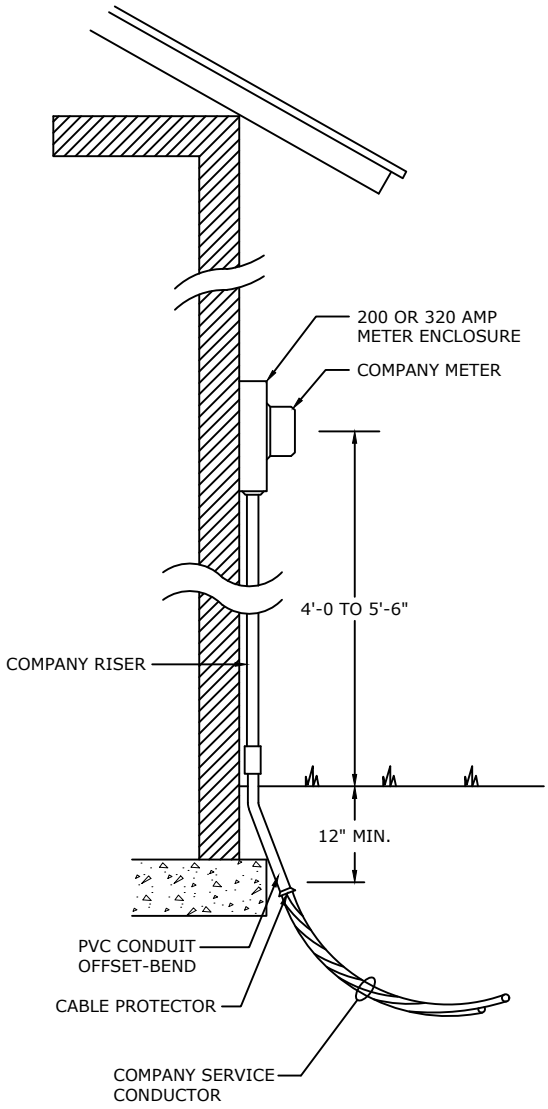
1. 2-WIRE SERVICE FROM THE COMPANY IS ONLY AN OPTION IF A 3-WIRE SOURCE IS NOT AVAILABLE.
2. IF A 2-WIRE SOURCE IS REQUIRED, IT MUST BE WIRED AS SHOWN (HOT LEG MUST BE INSTALLED ON LEFT-HAND LUGS WITH THE NEUTRAL JUMPER IN PLACE).
3. INSTALLING A 2S METER IN A SOCKET WIRED FOR A 1S METER WILL RESULT IN APPROXIMATELY 50% METER REGISTRATION.
4. SEE FIG. 14A FOR GROUNDING DETAILS.

REVISED	BY	CHK'D	APPR.
3			
2	3/31/25	EANES	FLETCHER	GRAHAM
1	3/4/19	EANES	EANES	ADCOCK
0	10/28/15	SIMPSON	SIMPSON	CHANDLER

METERING, SINGLE-PHASE, 120 VOLTS, 2 WIRE

DEC	DEM	DEP	DEF
X		X	

FIG 18



NOTES:

1. BOTTOM OF TRENCH MUST BE FIRMLY TAMPED NEAR BUILDING TO REDUCE SETTLING. CABLE MUST BE POSITIONED FIRMLY AGAINST BOTTOM OF TRENCH DURING BACKFILLING.

2. GROUND PER FIGURE 14A. UPPER END OF GROUND ROD SHALL BE FLUSH WITH OR BELOW FINAL GRADE, UNLESS THE ROD END AND GROUNDING CONDUCTOR ATTACHMENT ARE PROTECTED.

3. METERS MUST NOT BE LOCATED IN CARPORTS OR AREAS PLANNED FOR FUTURE EXPANSION.

4. POINT OF DELIVERY IS WHERE COMPANY RISER CONDUCTORS CONNECT TO THE LINE SIDE LUGS OF THE CUSTOMER OWNED METER BASE.

5. DISCONNECTS INSTALLED ON RESIDENTIAL SERVICES TO MEET THE NEC'S REQUIREMENTS FOR EMERGENCY DISCONNECTS SHALL BE LOCATED AFTER (DOWNSTREAM FROM) THE COMPANY'S METER.

6. METER ENCLOSURES SHALL NOT BE RECESSED IN ANY WAY THAT BLOCKS ACCESS, KNOCKOUTS OR DRAINAGE AND SHALL NOT BE MOUNTED ON RECESSED WALLS THAT REQUIRE ALTERATIONS TO THE COMPANY'S RISER.

DUKE ENERGY.

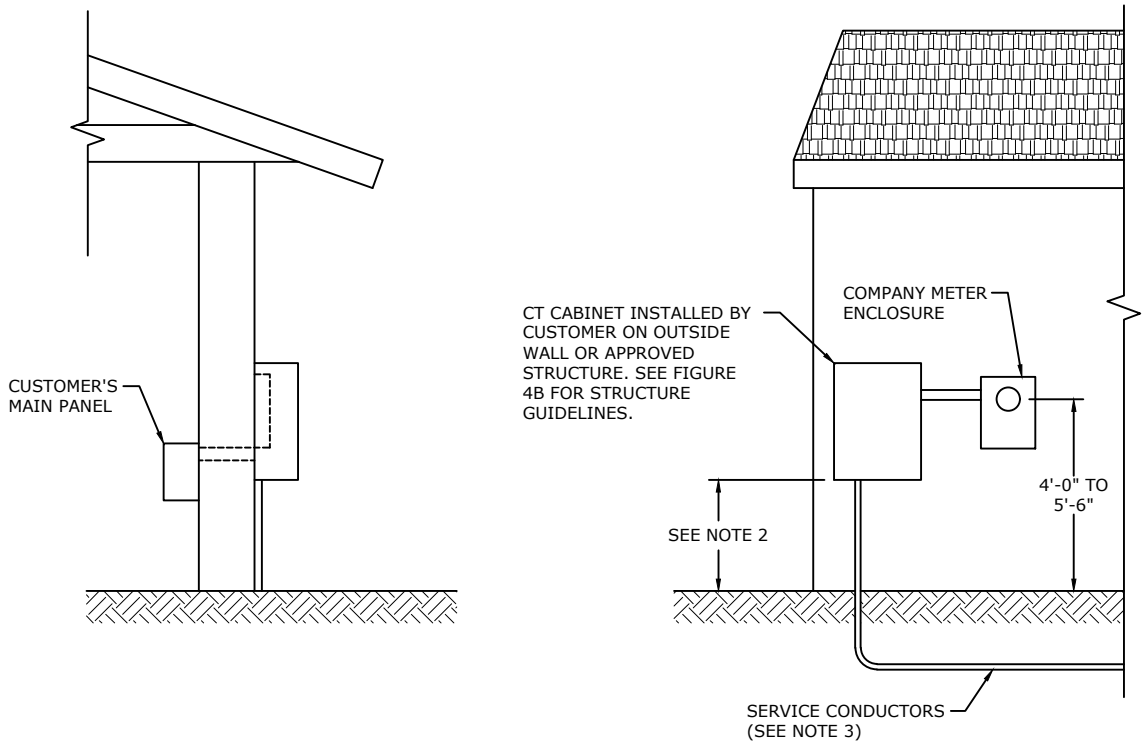
REVISED		BY	CHK'D	APPR.
3	3/3/22	EANES	FLETCHER	GRAHAM
2	2/28/20	EANES	FLETCHER	GRAHAM
1	10/21/19	EANES	EANES	ADCOCK
0	11/20/15	SIMPSON	EANES	ADCOCK

TYPICAL UNDERGROUND SELF-CONTAINED SERVICE

SINGLE AND THREE-PHASE

DEC	DEM	DEP	DEF
X		X	

FIG 20



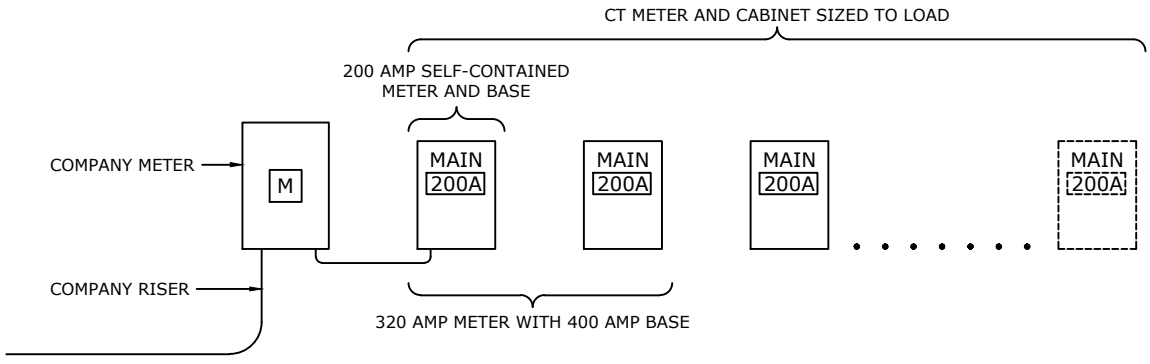
NOTES:

1. METER ENCLOSURE OWNED BY COMPANY.

2. CT CABINET
   DEC: OWNED AND INSTALLED BY CUSTOMER. SEE FIGURE 43.
   DEP: OWNED BY COMPANY; INSTALLED BY CUSTOMER. SEE FIGURE 43.

3. SERVICE CONDUCTORS WILL BE INSTALLED BY THE COMPANY OR CUSTOMER DEPENDING ON THE ESTABLISHED POINT OF DELIVERY AS SPECIFIED BY COMPANY REPRESENTATIVE.

TYPICAL FIELD APPLICATION OF SELF-CONTAINED VS. CT METERING SINGLE-PHASE AND THREE-PHASE

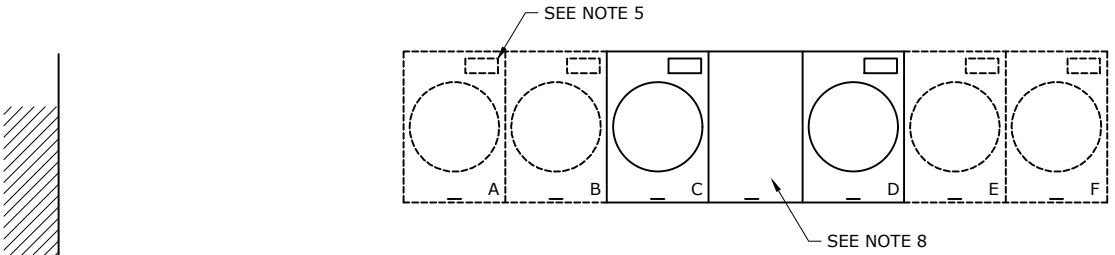


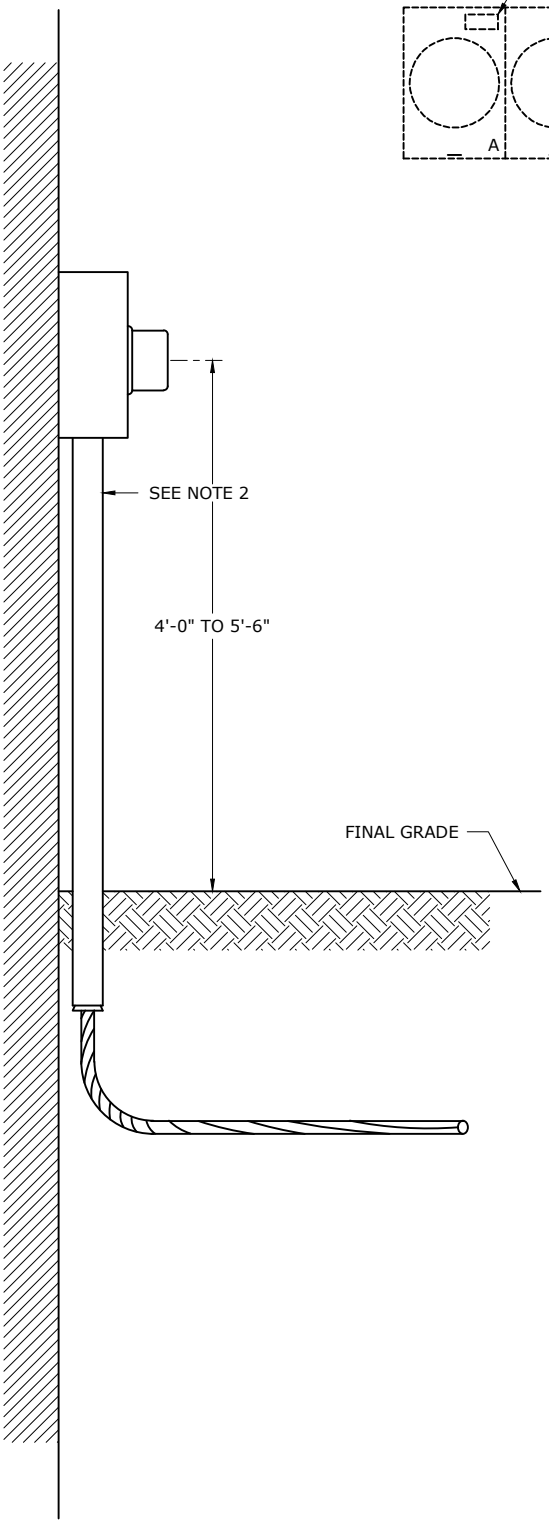
3	3/3/22	EANES	FLETCHER	GRAHAM
2	2/28/20	EANES	FLETCHER	GRAHAM
1	2/21/17	EANES	EANES	ADCOCK
0	10/28/15	SIMPSON	MEDLIN	CHANDLER
REVISED		BY	CHK'D	APPR.

TYPICAL CURRENT TRANSFORMER CABINET AND METER ENCLOSURE INSTALLATION FOR UNDERGROUND SERVICES (SINGLE-PHASE AND THREE-PHASE)

DEC	DEM	DEP	DEF
X		X	

FIG 21





NOTES:

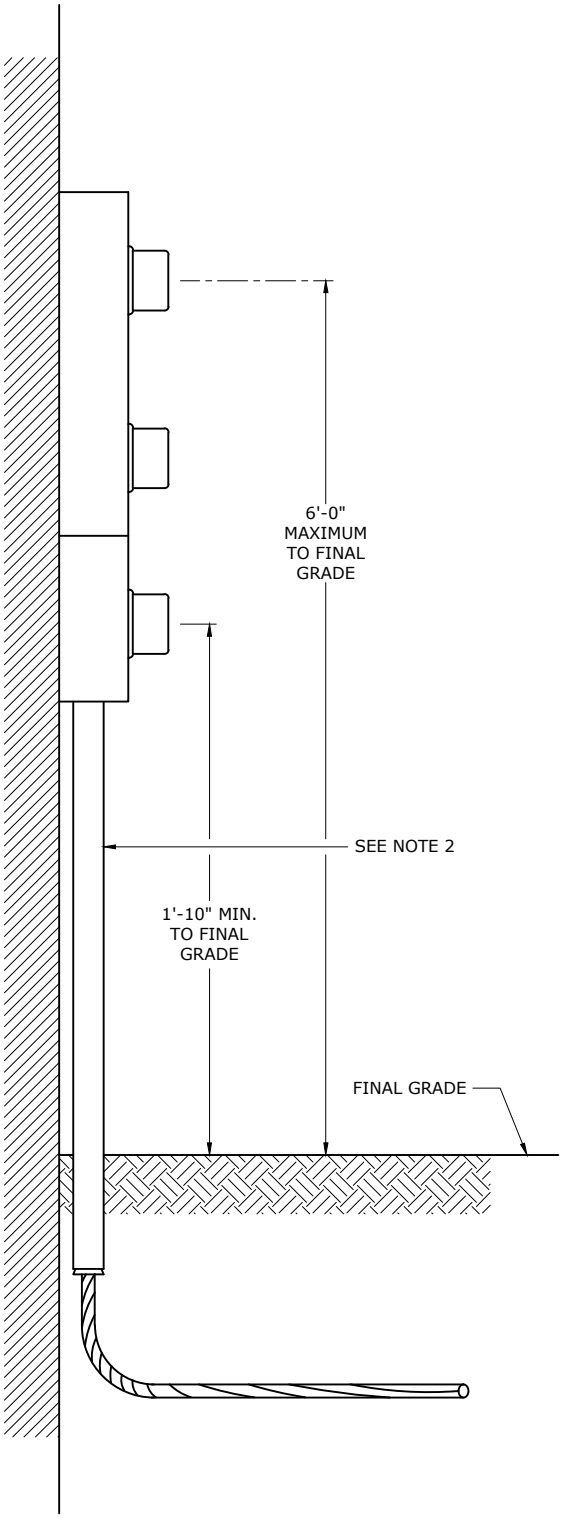
1. APPROVED GANGED METER SOCKETS TO BE FURNISHED AND OWNED BY CUSTOMER. ELECTRICAL CONTRACTOR TO INSTALL ON OUTSIDE OF BUILDING WALL AND TO BOND TO NEUTRAL.
2. COMPANY TO INSTALL SERVICE RISER. KNOCKOUTS FOR RISER CONDUITS SHALL BE PROVIDED BY CUSTOMER.
3. POINT OF DELIVERY IS WHERE COMPANY CONDUCTORS ATTACH TO GANGED TERMINAL LUGS.
4. IF ANY OF THE INDIVIDUAL SERVICES REQUIRE A METER SOCKET GREATER THAN 200 AMP. CAPACITY, THEN A GANGED PANEL OF GREATER AMPACITY MUST BE USED.
5. LABELING OF EACH METER ENCLOSURE SHALL MEET THE REQUIREMENTS OF FIGURE 3.
6. SEE FIG. 14A FOR GROUNDING DETAILS.
7. METER ENCLOSURES SHALL NOT BE RECESSED IN ANY WAY THAT BLOCKS ACCESS, KNOCKOUTS OR DRAINAGE AND SHALL NOT BE MOUNTED ON RECESSED WALLS THAT REQUIRE ALTERATIONS TO THE COMPANY'S RISER.
8. IMAGES OF GANGED METER SOCKETS OR PANELS ARE REPRESENTATIVE ONLY AND SHALL NOT BE USED AS A BASIS FOR ORDERING MATERIAL. CONSULT WITH THE LOCAL AHJ FOR REQUIREMENTS REGARDING DISCONNECTS AND THEIR REQUIRED LOCATIONS.

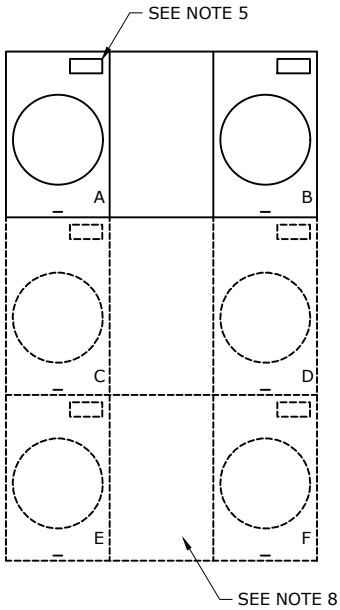
REVISED		BY	CHK'D	APPR.
5				
4	2/29/24	EANES	FLETCHER	GRAHAM
3	3/3/22	EANES	FLETCHER	GRAHAM
0	1/5/15	SIMPSON	EANES	CHANDLER

HORIZONTAL GANGED METERING INSTALLATION
(2 - 6 METERS)
SINGLE-PHASE

DEC	DEM	DEP	DEF
X		X	

FIG 25





NOTES:

1. APPROVED METER SOCKETS TO BE FURNISHED AND OWNED BY THE CUSTOMER. ELECTRICAL CONTRACTOR TO INSTALL ON THE THE OUTSIDE OF THE BUILDING WALL AND TO BOND TO NEUTRAL.
2. COMPANY TO INSTALL SERVICE RISER. KNOCKOUTS FOR RISER CONDUITS SHALL BE PROVIDED BY CUSTOMER.
3. POINT OF DELIVERY IS WHERE COMPANY CONDUCTORS ATTACHED TO GANGED TERMINAL LUGS.
4. IF ANY OF THE INDIVIDUAL SERVICES REQUIRE A METER SOCKET GREATER THAN 200 AMP. CAPACITY, THEN A GANGED PANEL OF GREATER AMPACITY MUST BE USED.
5. LABELING OF EACH METER ENCLOSURE SHALL MEET THE REQUIREMENTS OF FIGURE 3.
6. SEE FIG. 14A FOR GROUNDING DETAILS.
7. METER ENCLOSURES SHALL NOT BE RECESSED IN ANY WAY THAT BLOCKS ACCESS, KNOCKOUTS OR DRAINAGE AND SHALL NOT BE MOUNTED ON RECESSED WALLS THAT REQUIRE ALTERATIONS TO THE COMPANY'S RISER.
8. IMAGES OF GANGED METER SOCKETS OR PANELS ARE REPRESENTATIVE ONLY AND SHALL NOT BE USED AS A BASIS FOR ORDERING MATERIAL. CONSULT WITH THE LOCAL AHJ FOR REQUIREMENTS REGARDING DISCONNECTS AND THEIR REQUIRED LOCATIONS.

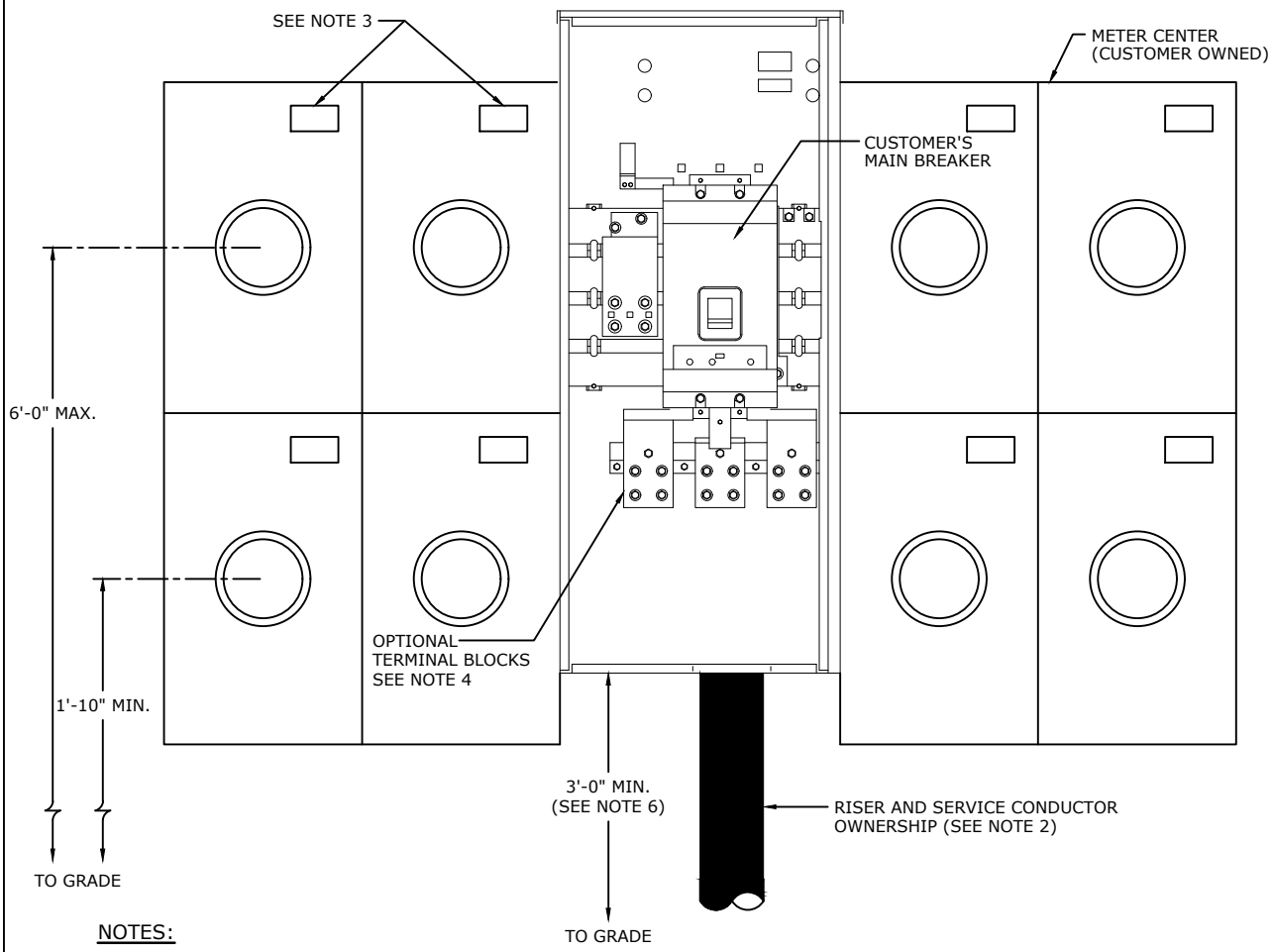
USE THIS PANEL ONLY WHEN MOUNTING SPACE PROHIBITS USE OF HORIZONTAL TYPE

REVISED	BY	CHK'D	APPR.
5			
4	2/29/24	EANES	FLETCHER	GRAHAM
3	3/3/22	EANES	FLETCHER	GRAHAM
0	1/5/16	SIMPSON	EANES	CHANDLER

VERTICAL GANGED METERING INSTALLATION (2 - 6 METERS) SINGLE-PHASE

DEC	DEM	DEP	DEF
X		X	

FIG 26



NOTES:

1. U.L. LISTED METER CENTER TO BE FURNISHED AND OWNED BY THE CUSTOMER. ELECTRICAL CONTRACTOR TO INSTALL ON THE OUTSIDE OF THE BUILDING WALL AND TO BOND TO NEUTRAL. CUSTOMER MUST ENSURE THE TYPE OF METER CENTER (SINGLE OR THREE-PHASE, THREE OR FOUR WIRE) MATCHES THE SERVICE AVAILABLE FROM THE COMPANY. SINGLE-PHASE SERVICES SERVED FROM A THREE-PHASE SOURCE MUST UTILIZE A THREE-PHASE IN, SINGLE-PHASE OUT CONFIGURATION.

2. SERVICE RISER AND CONDUCTOR OWNERSHIP:

   A. SINGLE-PHASE SERVICES: THE COMPANY
   B. THREE-PHASE SERVICES: CONTACT THE COMPANY REPRESENTATIVE FOR SERVICE RISER AND CONDUCTOR OWNERSHIP.

3. LABEL EACH SOCKET COVER AS SHOWN IN FIGURE 3.

4. POINT OF DELIVERY (P.O.D.):

   A. SINGLE-PHASE SERVICES: POINT OF DELIVERY WILL BE WHERE COMPANY CONDUCTORS ATTACH TO MAIN DISCONNECT. IF LOCAL INSPECTION AUTHORITY OBJECTS TO COMPANY CABLES IN UL RATED TERMINALS OF MAIN BREAKER, THE CUSTOMER WILL PROVIDE THE APPROPRIATE TERMINAL BLOCKS OFF THE BREAKER TO ATTACH COMPANY CABLES. TERMINAL BLOCKS MUST BE SIZED 3/0-500 KCMIL AL OR CU MINIMUM, DOUBLE LUGGED IF NECESSARY TO ACCOMMODATE COMPANY SERVICE.
   B. THREE-PHASE SERVICES: FOR THE POINT OF DELIVERY, CONTACT THE COMPANY REPRESENTATIVE.

5. SEE FIG. 14A FOR GROUNDING DETAILS.

6. IF MINIMUM HEIGHT ABOVE GRADE CANNOT BE OBTAINED, LOWER HEIGHTS WILL BE ALLOWED WITH CERTAIN PROVISIONS. CUSTOMER MUST PROVIDE AND INSTALL SCHEDULE 40 PVC BENDS WITH A MINIMUM 36" RADIUS (QUANTITY AND SIZE DETERMINED BY COMPANY REPRESENTATIVE) AND A PULL STRING. APPROPRIATE METER HEIGHTS MUST STILL BE MAINTAINED IN ALL CASES. CONDUCTOR TERMINAL BLOCKS OR MAIN BREAKER MUST BE OF SUFFICIENT HEIGHT TO ALLOW FOR PROPER TRAINING OF CABLE.

7. METER ENCLOSURES SHALL NOT BE RECESSED IN ANY WAY THAT BLOCKS ACCESS, KNOCKOUTS OR DRAINAGE AND SHALL NOT BE MOUNTED ON RECESSED WALLS THAT REQUIRE ALTERATIONS TO THE COMPANY'S RISER.

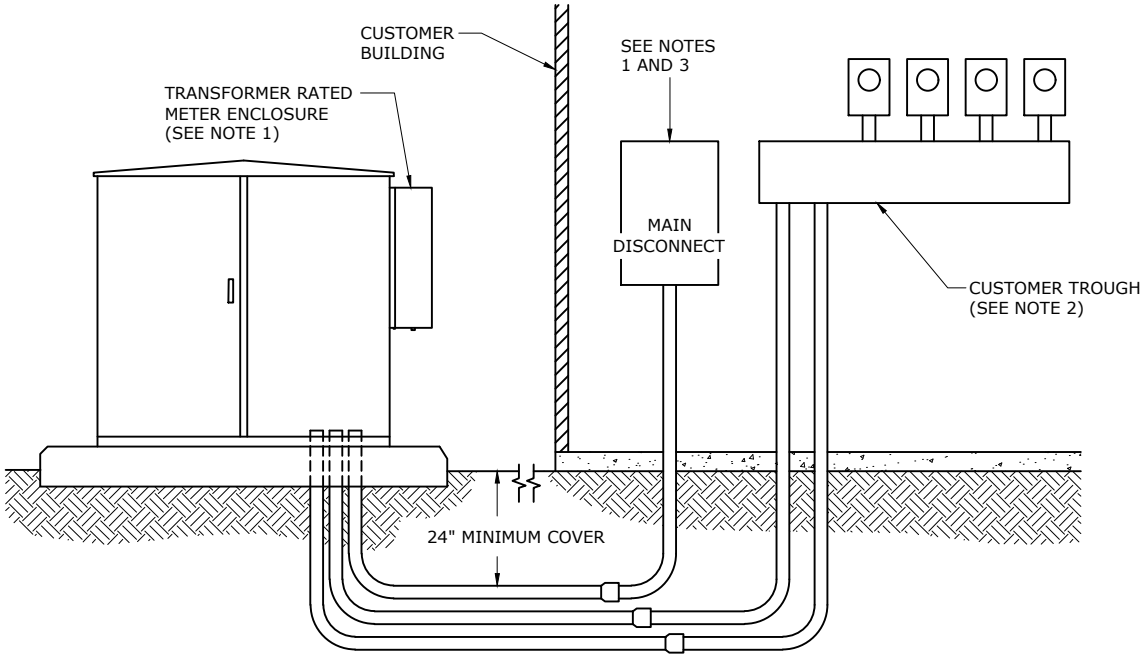
DUKE ENERGY.

REVISED	BY	CHK'D	APPR.
4 2/28/23	EANES	FLETCHER	GRAHAM
3 3/3/22	EANES	FLETCHER	GRAHAM
2 2/28/20	EANES	FLETCHER	GRAHAM
0 1/5/16	SIMPSON	EANES	CHANDLER

METER CENTER INSTALLATION
(MAIN DISCONNECT - GREATER THAN 6 METERS)
SINGLE AND THREE-PHASE

DEC	DEM	DEP	DEF
X		X	

FIG 27



NOTES:

1. SINGLE CUSTOMER:
   METER ON TRANSFORMER: IF ONLY ONE DELIVERY WILL BE SERVED FROM A PAD-MOUNTED TRANSFORMER AND THE LOAD REQUIRES TRANSFORMER RATED METERING, THE METERING EQUIPMENT WILL BE LOCATED AT THE PAD-MOUNTED TRANSFORMER WITH THE CUSTOMER'S WIRES BROUGHT TO THE SECONDARY TERMINALS OF THE TRANSFORMER OR SECONDARY BUS ENCLOSURE (JUNCTION BOX). COMPANY ENGINEER SHALL APPROVE THE NUMBER AND SIZE OF CUSTOMER'S SERVICE CONDUITS AND CABLES (SEE FIGURE 58).

2. MULTIPLE CUSTOMERS:
   METER ON OUTSIDE WALL: COMPANY OWNS AND INSTALLS UNDERGROUND SERVICE (SEE NOTE 5). POINT OF DELIVERY IS WHERE COMPANY'S CONDUCTORS CONNECT TO CUSTOMER'S CONDUCTORS IN CUSTOMER PROVIDED TROUGH OR OTHER DESIGNATED POINT OF DELIVERY (SEE FIGURES 47A THROUGH 47E).

3. EXISTING CT METER ON PMT: ADDING ADDITIONAL CUSTOMERS (MULTI-TENANT METERING):
   ONE SERVICE IS C.T. METERED ON THE PAD-MOUNTED TRANSFORMER **AND** OTHER CUSTOMER OWNED OWNED SERVICES ARE RUN TO THE **SAME** TRANSFORMER **BUT** ARE METERED ELSEWHERE (BUILDING WALL OR METER ROOM). BOTH ENDS OF ALL CUSTOMER CABLES MUST BE CLEARLY AND SPECIFICALLY MARKED FOR PHASE AND LABELED WITH A TAG TO IDENTIFY THE LOCATION OF THE SOURCE AND LOAD ENDS OF THE CONDUCTOR. THE LOAD END OF EACH CABLE SHALL BE LABELED TO IDENTIFY THE SOURCE. EACH SOURCE END SHALL BE LABELED TO IDENTIFY THE LOCATION OF THE LOAD END OF THE CABLE (TROUGH NUMBER, SWITCH PANEL NUMBER, ETC.). SEE FIGURE 3 FOR METER ENCLOSURE LABELING AND CUSTOMER CONDUCTOR MARKING AND LABELING. SEE FIGURES 47A AND 47B FOR TROUGH WIRING DETAIL.

   ADDING CUSTOMERS TO A PAD-MOUNTED TRANSFORMER WITH AN EXISTING CT METER IS CONTINGENT UPON AVAILABLE SPACE TO SHIFT THE CT'S AND THE TOTAL NUMBER OF CONDUCTORS IN THE TRANSFORMER. THE PRACTICE OF "SNAKING" NEW CUSTOMER CONDUCTORS THRU THE CT IS NOT ALLOWED. COMPANY WIRE SHOULD NOT BE INSTALLED IN A PAD-MOUNTED TRANSFORMER CONTAINING CUSTOMER WIRE, AND VICE VERSA.

   IN THREE-PHASE INSTALLATIONS THAT DO NOT CONTAIN CT METERING, AND IF THERE IS AVAILABLE SPACE, A MAXIMUM OF TWO CONDUCTORS PER PHASE FOR COMPANY LIGHTING ONLY MAY BE INSTALLED ALONG WITH CUSTOMER OWNED CONDUCTORS.

4. EACH CONDUIT SHALL CONTAIN ONE SET OF SERVICE ENTRANCE CONDUCTORS: THREE-PHASE CONDUCTORS AND ONE NEUTRAL CONDUCTOR (IF APPLICABLE).
5. IF A SERVICE REQUIRES MORE THAN THREE STANDARD COMPANY ALUMINUM CONDUCTORS PER PHASE, THE CUSTOMER WILL BRING THEIR CONDUCTOR TO THE SECONDARY SPADES OF THE TRANSFORMER. IN CERTAIN CASES TRANSFORMER LOCATION AND ACCESSIBILITY (SUCH AS SUB-SURFACE VAULTS) MAY REQUIRE ALTERNATE DESIGNS. THE COMPANY REPRESENTATIVE MUST APPROVE THESE PRIOR TO ANY INSTALLATION.

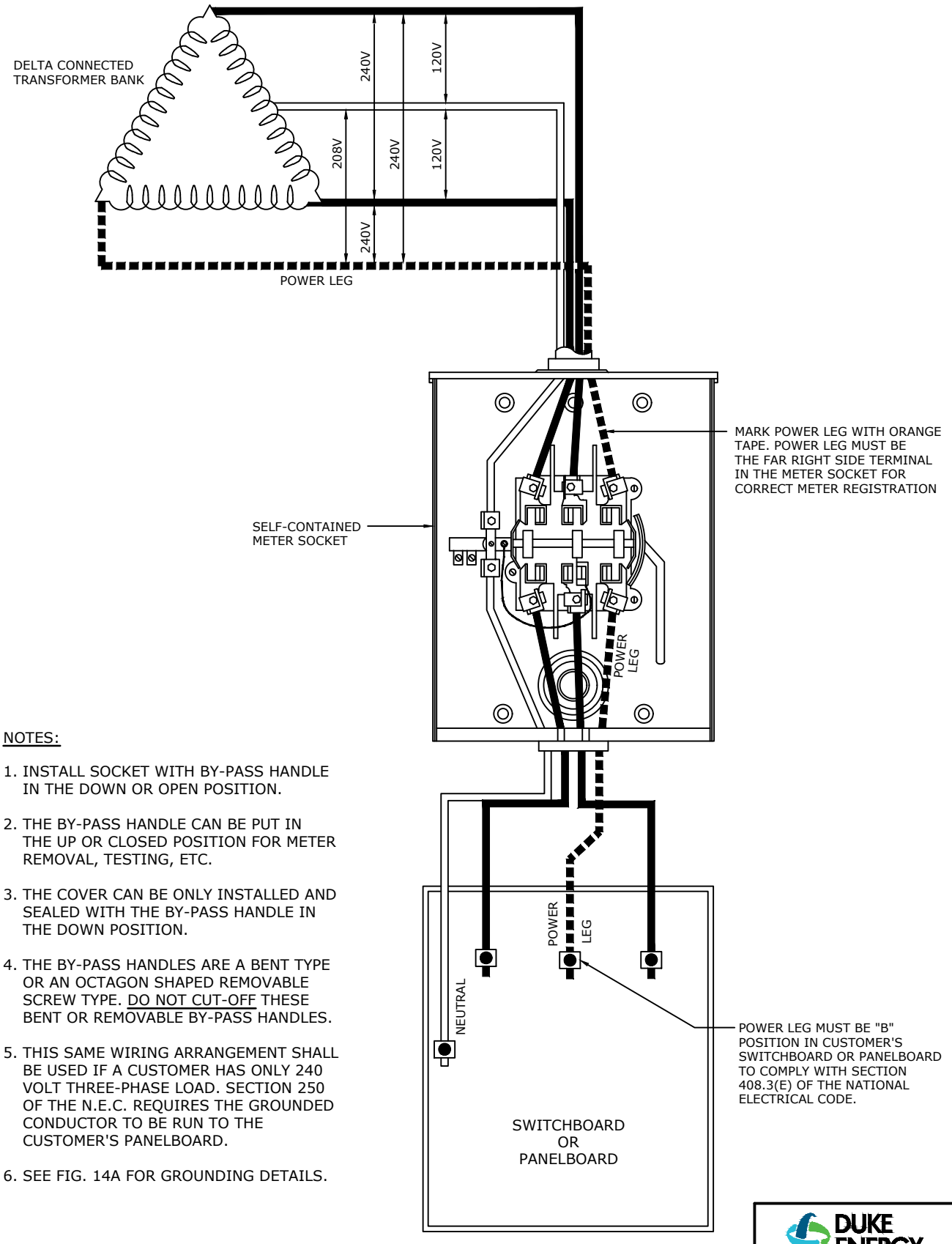
REVISED	BY	CHK'D	APPR.
5 3/31/25	EANES	FLETCHER	GRAHAM
4 2/28/23	EANES	FLETCHER	GRAHAM
3 3/3/22	EANES	FLETCHER	GRAHAM
2 9/30/18	EANES	EANES	ADCOCK

TYPICAL UNDERGROUND THREE-PHASE SERVICE ARRANGEMENTS NON-RESIDENTIAL

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 28



NOTES:

1. INSTALL SOCKET WITH BY-PASS HANDLE IN THE DOWN OR OPEN POSITION.
2. THE BY-PASS HANDLE CAN BE PUT IN THE UP OR CLOSED POSITION FOR METER REMOVAL, TESTING, ETC.
3. THE COVER CAN BE ONLY INSTALLED AND SEALED WITH THE BY-PASS HANDLE IN THE DOWN POSITION.
4. THE BY-PASS HANDLES ARE A BENT TYPE OR AN OCTAGON SHAPED REMOVABLE SCREW TYPE. DO NOT CUT-OFF THESE BENT OR REMOVABLE BY-PASS HANDLES.
5. THIS SAME WIRING ARRANGEMENT SHALL BE USED IF A CUSTOMER HAS ONLY 240 VOLT THREE-PHASE LOAD. SECTION 250 OF THE N.E.C. REQUIRES THE GROUNDED CONDUCTOR TO BE RUN TO THE CUSTOMER'S PANELBOARD.
6. SEE FIG. 14A FOR GROUNDING DETAILS.

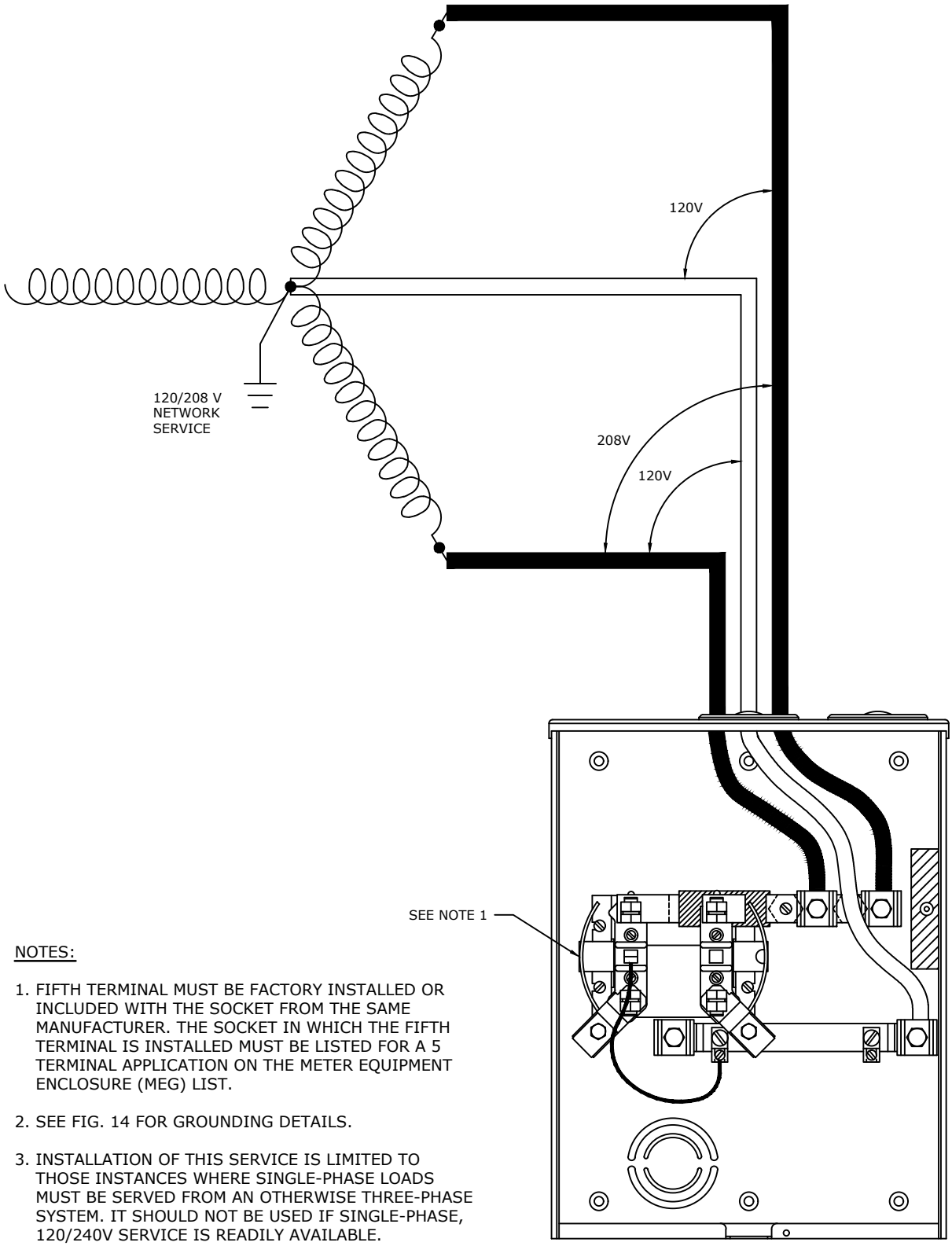
REVISED		BY	CHK'D	APPR.
3				
2				
1				
0	3/3/22	EANES	FLETCHER	GRAHAM

240/120 VOLT THREE-PHASE 4 WIRE
SELF-CONTAINED DELTA METERING

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 32



NOTES:

1. FIFTH TERMINAL MUST BE FACTORY INSTALLED OR INCLUDED WITH THE SOCKET FROM THE SAME MANUFACTURER. THE SOCKET IN WHICH THE FIFTH TERMINAL IS INSTALLED MUST BE LISTED FOR A 5 TERMINAL APPLICATION ON THE METER EQUIPMENT ENCLOSURE (MEG) LIST.

2. SEE FIG. 14 FOR GROUNDING DETAILS.

3. INSTALLATION OF THIS SERVICE IS LIMITED TO THOSE INSTANCES WHERE SINGLE-PHASE LOADS MUST BE SERVED FROM AN OTHERWISE THREE-PHASE SYSTEM. IT SHOULD NOT BE USED IF SINGLE-PHASE, 120/240V SERVICE IS READILY AVAILABLE.

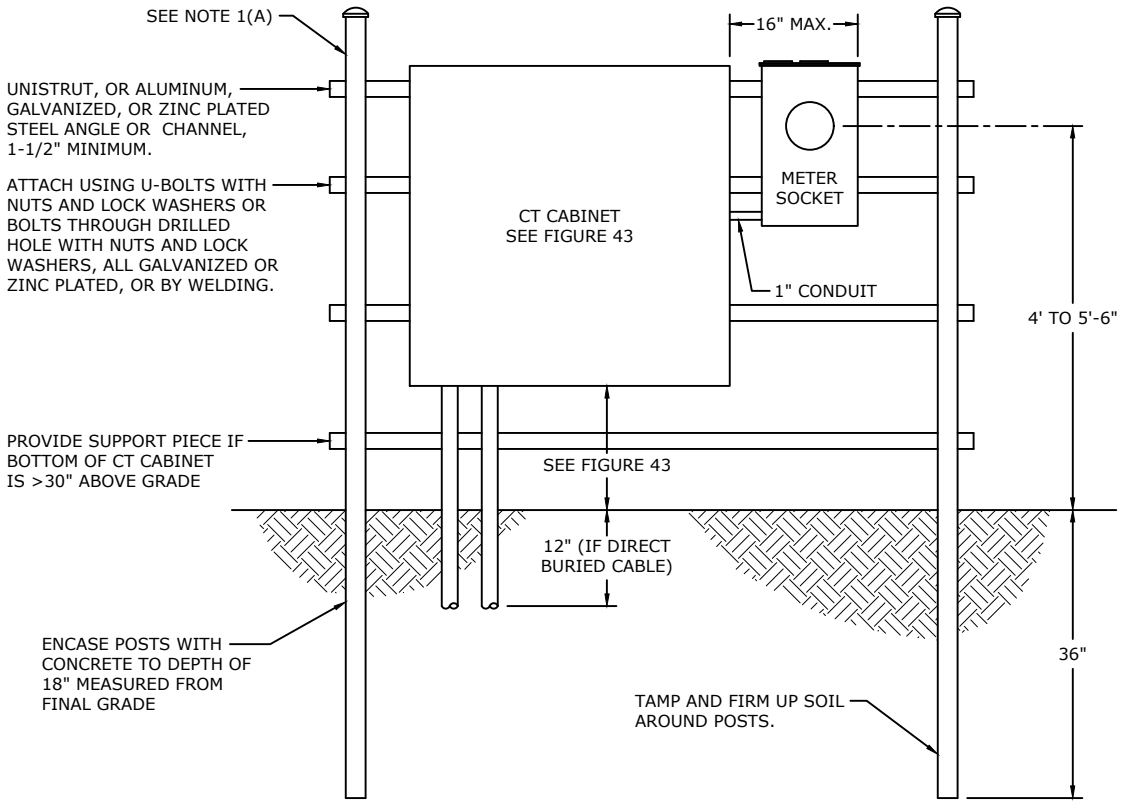
REVISED		BY	CHK'D	APPR.
3				
2	3/3/22	EANES	FLETCHER	GRAHAM
1	9/30/18	EANES	EANES	ADCOCK
0	2/28/18	EANES	EANES	ADCOCK

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

208/120 VOLT 3 WIRE NETWORK
SELF-CONTAINED METERING

FIG 34



NOTES:

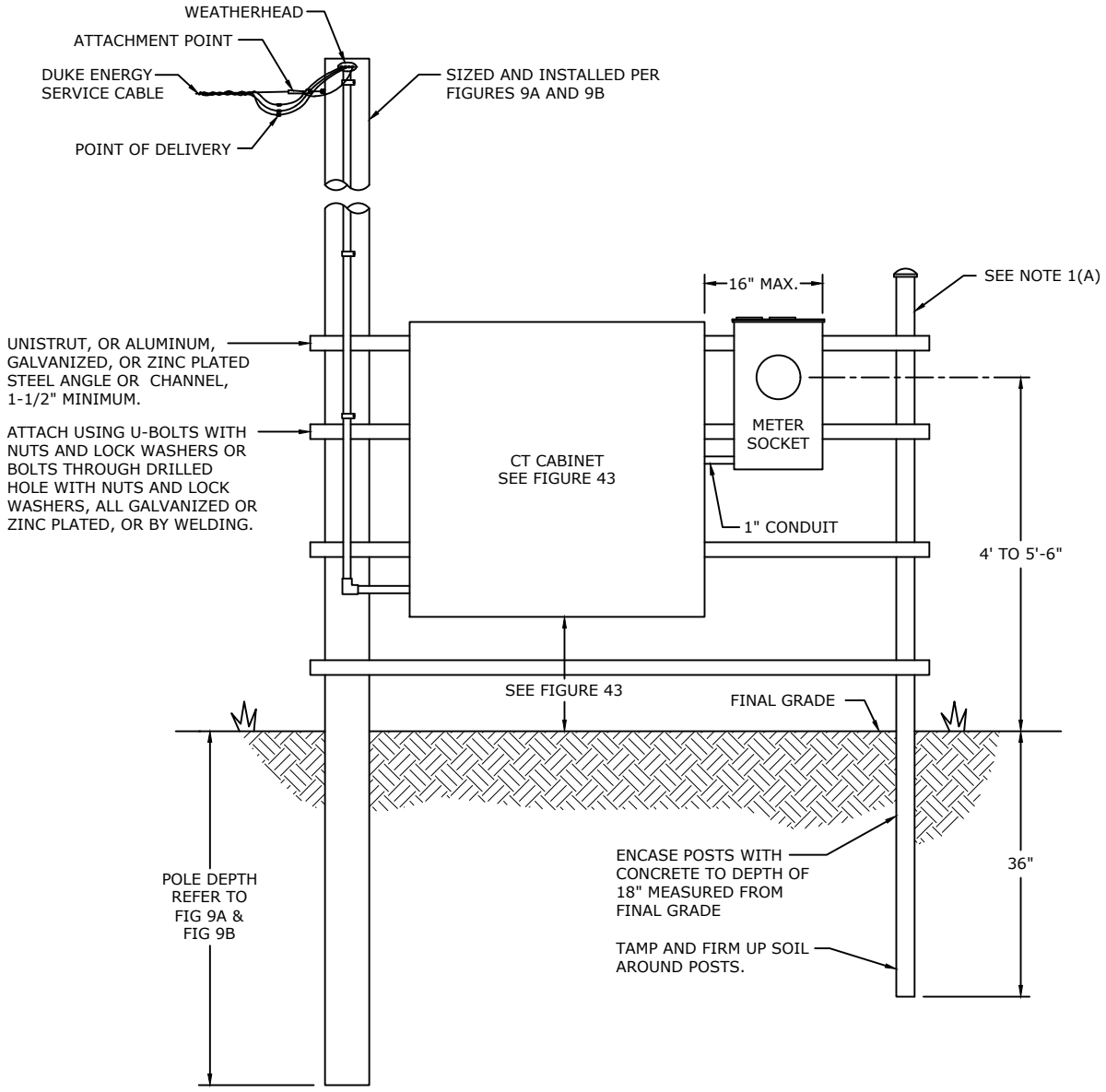
1. H FRAME STRUCTURE PROVIDED AND INSTALLED BY CUSTOMER. POSTS SHALL BE 2-3/8" PIPE OR LARGER WITH END CAPS, 2" (OD) OR LARGER TUBING WITH END CAPS, OR 2" OR LARGER CHANNEL, OR EQUIVALENT, ALL GALVANIZED, ZINC PLATED, OR ALUMINUM.
2. CT CABINET SIZING AND MOUNTING HEIGHT DETERMINED BY **FIGURE 43**.
3. METER SOCKET PROVIDED BY COMPANY AND INSTALLED BY CUSTOMER IN BOTH **DEC** AND **DEP**.
4. **DEC** ONLY - CT CABINET PROVIDED AND INSTALLED BY CUSTOMER.
5. **DEP** ONLY - CT CABINET PROVIDED BY COMPANY AND INSTALLED BY CUSTOMER.
6. GROUND IN ACCORDANCE WITH **FIGURE 14B**.
7. COMPANY WILL TYPICALLY PROVIDE AND INSTALL THE UNDERGROUND SERVICE LATERAL ACCORDING TO ITS STANDARD PRACTICES. EXCEPTIONS TO THIS MUST BE APPROVED BY THE COMPANY ENGINEERING REPRESENTATIVE.
8. COMPANY WILL PROVIDE AND INSTALL ALL INSTRUMENT TRANSFORMERS AND WIRING.

REVISED		BY	CHK'D	APPR.
3				
2				
1	3/3/22	EANES	FLETCHER	GRAHAM
0	3/3/21	EANES	FLETCHER	GRAHAM

CT CABINET INSTALLATION
UNDERGROUND SERVICE
NOT ATTACHED TO A PERMANENT STRUCTURE

DEC	DEM	DEP	DEF
X		X	

FIG 40



NOTES:

1. H FRAME STRUCTURE PROVIDED AND INSTALLED BY CUSTOMER. POSTS SHALL BE 2-3/8" PIPE OR LARGER WITH DEAD END CAPS, 2" (OD) OR LARGER TUBING WITH END CAPS, OR 2" OR LARGER CHANNEL, OR EQUIVALENT, ALL GALVANIZED, ZINC PLATED, OR ALUMINUM.
2. WOOD POLE SIZED AND INSTALLED PER FIGURES 9A AND 9B.
3. CT CABINET SIZING AND MOUNTING HEIGHT DETERMINED BY FIGURE 43.
4. METER SOCKET PROVIDED BY COMPANY AND INSTALLED BY CUSTOMER IN BOTH DEC AND DEP.
5. DEC ONLY - CT CABINET PROVIDED AND INSTALLED BY CUSTOMER.
6. DEP ONLY - CT CABINET PROVIDED BY COMPANY AND INSTALLED BY CUSTOMER.
7. GROUND IN ACCORDANCE WITH FIGURE 14B.
8. COMPANY WILL PROVIDE AND INSTALL SERVICE CABLE IN ACCORDANCE WITH ITS STANDARD PRACTICES.
9. CONDUCTORS WITHIN CT CABINET AND WITHIN RISER UP TO POINT OF DELIVERY PROVIDED AND INSTALLED BY CUSTOMER.
10. CUSTOMER SHALL ENSURE THAT LIKE PHASES FROM EACH CONDUCTOR SET GO THROUGH EACH INDIVIDUAL CT. CONDUCTORS AND CONNECTIONS MUST BE ARRANGED SO AS NOT TO CREATE A HAZARD WHEN CABINET IS OPENED IN THE FUTURE. EITHER OF THE FOLLOWING ARE ACCEPTABLE:
    - CONTINUOUS UNSPLICED RUNS FROM PANEL THROUGH CT'S IN CABINET TO WEATHERHEAD. CUSTOMER SHALL MAKE ARRANGEMENTS WITH COMPANY TO HAVE CT'S INSTALLED IN CABINET BEFORE WIRE IS PULLED.
    - SEPARATE RUNS INSTALLED FROM PANEL TO CABINET AND CABINET TO WEATHERHEAD. THE CUSTOMER IS RESPONSIBLE FOR MAKING CONNECTIONS IN THE CABINET.

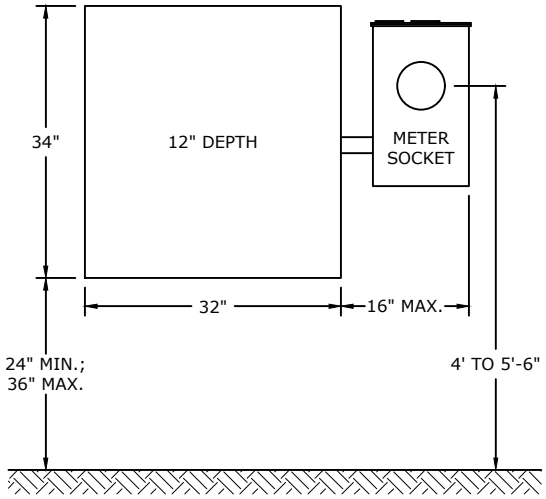
REVISED		BY	CHK'D	APPR.
3				
2				
1	3/3/22	EANES	FLETCHER	GRAHAM
0	3/3/21	EANES	FLETCHER	GRAHAM

CT CABINET INSTALLATION
OVERHEAD SERVICE
NOT ATTACHED TO A PERMANENT STRUCTURE

DEC	DEM	DEP	DEF
X		X	

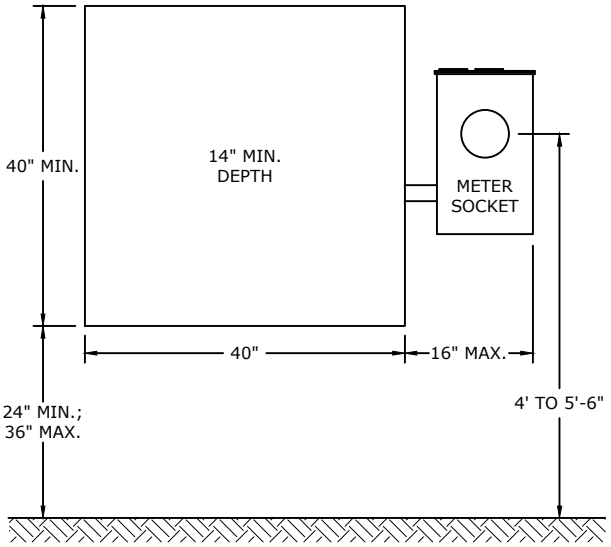
FIG 41

CT CABINET 1



WIRE SIZE LIMITS MAXIMUM SERVICE EQUIPMENT SIZE = 600 AMP		
CUSTOMER WIRE SIZE	MAX. NUMBER OF CUSTOMER CONDUCTORS PER PHASE	MAX. TOTAL CONDUCTORS DUKE AND CUSTOMER
500 AND SMALLER	2	16
600	1	12

CT CABINET 2



WIRE SIZE LIMITS MAXIMUM SERVICE EQUIPMENT SIZE = 1200 AMP		
CUSTOMER WIRE SIZE	MAX. NUMBER OF CUSTOMER CONDUCTORS PER PHASE	MAX. TOTAL CONDUCTORS DUKE AND CUSTOMER
350 AND SMALLER	4	24
400 - 600	3	20
700 - 750	2	16

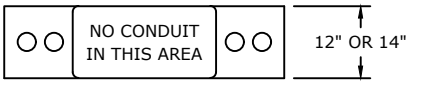
CLICK OR SCAN FOR A CURRENT LIST OF
APPROVED CT METERING CABINET ENCLOSURES

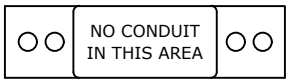
NOTES:

1. CUSTOMER SHALL CUT HOLE FOR DUKE ENERGY RISER FOR UNDERGROUND SERVICE. HOLE SHALL BE POSITIONED AT OPPOSITE END OF CABINET FROM CUSTOMER CONDUCTORS AND SIZED PER CHART.

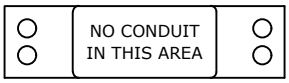
CONDUIT RISER SIZING	
CONDUCTOR SIZE	CONDUIT RISER SIZE
2/0	2"
4/0 OR 350	2.5"
2 - 4/0	4"
2 - 350	6"
1 - 500	4"
2 - 500	6"

BOTTOM VIEW POSSIBLE CONDUIT CONFIGURATIONS





PREFERRED IF USING 2 CONDUITS



2. REAR ENTRY ALLOWED IN BOTTOM 5.5" OF REAR PANEL, CT CABINET 2 ONLY.
3. SIDE ENTRY ALLOWED IN LOWER 1/3 OF SIDES.
4. CUSTOMER LOAD-SIDE CONDUCTORS SHALL ENTER THE CT CABINET THROUGH ONE SIDE ONLY.
5. DUKE ENERGY WILL COMPLETE ALL CONNECTIONS BETWEEN CUSTOMER AND DUKE CONDUCTORS.
6. **FOR INSTALLATIONS WITHIN DEP: CT CABINET AND METER SOCKET PROVIDED BY COMPANY, INSTALLED BY CUSTOMER.**
7. **FOR INSTALLATIONS WITHIN DEC: CT CABINET PROVIDED AND INSTALLED BY CUSTOMER. METER SOCKET PROVIDED AND INSTALLED BY COMPANY UNLESS OTHERWISE NOTED.**
8. A CT CABINET SHALL NOT BE USED AS A JUNCTION BOX TO SERVE MULTIPLE ACCOUNTS.
9. WHEN THE SERVICE EXCEEDS 1200 AMPS OR THE NUMBER/SIZE OF CONDUCTORS EXCEEDS THE LIMITS OF CT CABINET 2, THE CUSTOMER SHALL, AT HIS EXPENSE, PROVIDE AND INSTALL A BUS BAR CABINET OF SUITABLE SIZE, MATERIAL, AND CONSTRUCTION APPROVED BY COMPANY REPRESENTATIVE. SEE FIGURES 49 AND 50 FOR BUS BAR CABINET REQUIREMENTS.
10. SEE FIGURE 3, NOTE 2 FOR LABELING REQUIREMENTS.
11. CUSTOMER-OWNED EQUIPMENT, OTHER THAN CONDUCTOR, IS NOT ALLOWED WITHIN THE CT CABINET.

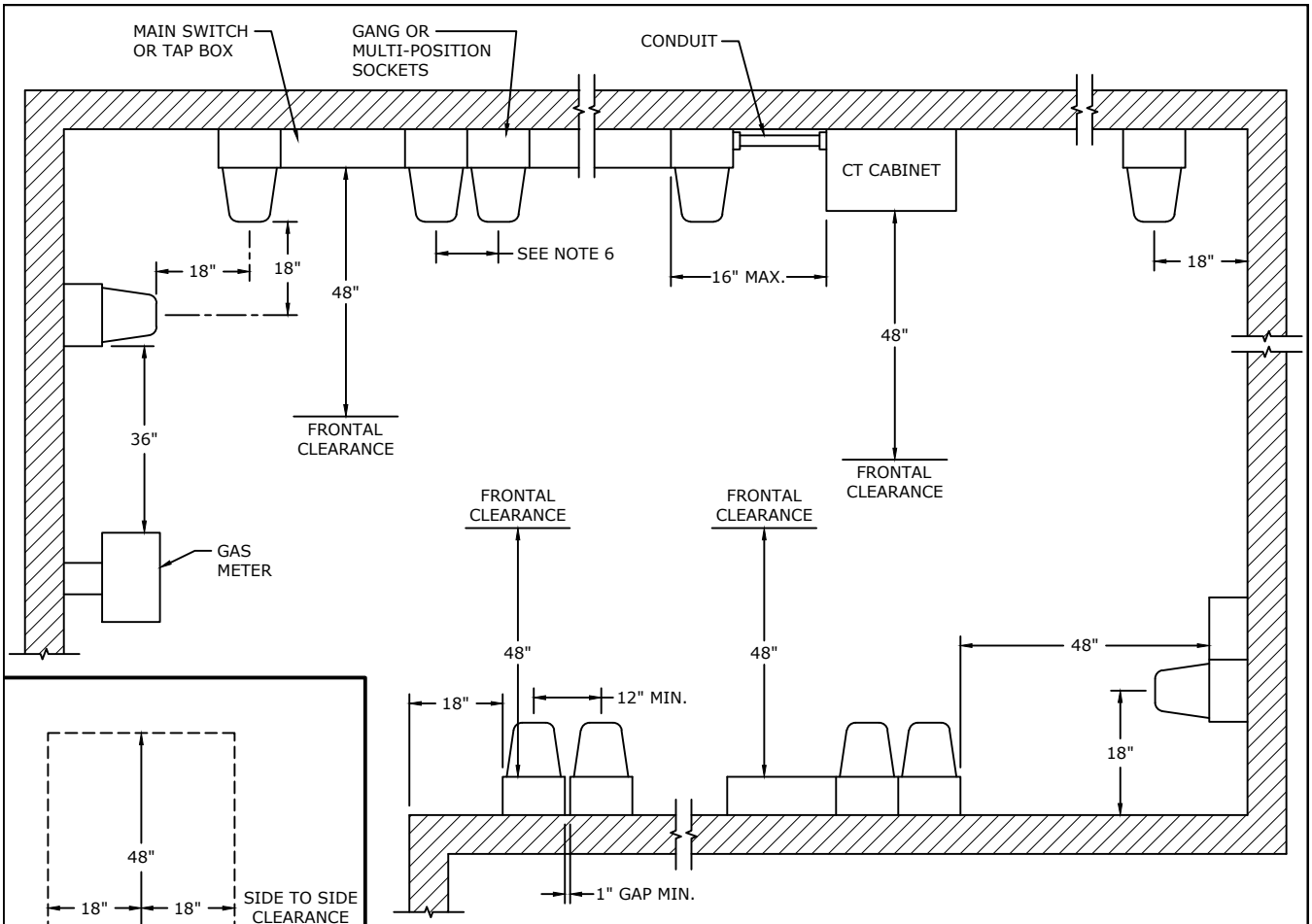
DUKE ENERGY.

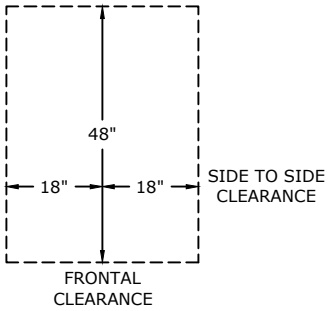
REVISED		BY	CHK'D	APPR.
3				
2				
1	2/28/23	EANES	FLETCHER	GRAHAM
0	3/3/22	EANES	FLETCHER	GRAHAM

CT CABINET SELECTION AND INSTALLATION

DEC	DEM	DEP	DEF
X		X	

FIG 43





WORKING SPACE

NOTES:

1. ALL DIMENSIONS SHOWN ARE MINIMUM DIMENSIONS.
2. METER CONNECTION DEVICE APPROVAL IS NOT A LOCATION OR SPACE APPROVAL. LOCATION OF EQUIPMENT MUST COMPLY WITH DIMENSIONS SHOWN ON THIS SKETCH AND MUST BE AT APPROVED METER MOUNTING HEIGHT DIMENSIONS.
3. THESE DIMENSIONS APPLY WHEN METER STACKS ARE MOUNTED ON ADJACENT CORNER WALLS.
4. METERS ARE NOT TO BE INSTALLED OVER A SIDEWALK, DRIVEWAY OR PAVED AREAS WITHOUT PROTECTIVE BARRIERS. METERS ARE NOT TO BE INSTALLED IN LOCATIONS SUSCEPTIBLE TO DAMAGE.
5. METER ENCLOSURES SHALL NOT BE RECESSED OR FRAMED IN ANY WAY THAT BLOCKS ACCESS, KNOCKOUTS OR DRAINAGE AND SHALL NOT BE MOUNTED ON RECESSED WALLS THAT REQUIRE ALTERATIONS TO THE COMPANY RISER.
6. A CLEAR SPACE (MEASURED IN FRONT OF THE METER ENCLOSURE) AT LEAST 36" WIDE (18" ON EACH SIDE OF CENTER LINE OF METER, OR EQUIPMENT WIDTH, WHICHEVER IS GREATER) BY 48" DEEP BY 84" HIGH FROM FINAL GRADE MUST BE PROVIDED AND ALWAYS BE AVAILABLE AROUND EVERY METER FOR READING, INSPECTING, TESTING AND MAINTENANCE OPERATIONS. CLEAR SPACE FOR SAFE ACCESS TO AND EGRESS FROM THE WORKING SPACE MUST BE MAINTAINED. CLEAR SPACE MUST ALLOW FOR THE FULL 90 DEGREE OPENING OF ANY HINGED DOORS OR PANELS.
7. APPROVED MULTI-POSITION OR GANG SOCKET EQUIPMENT MAY VARY FROM 12" MINIMUM SEPARATION THAT IS REQUIRED BETWEEN CENTER LINE OF METERS.

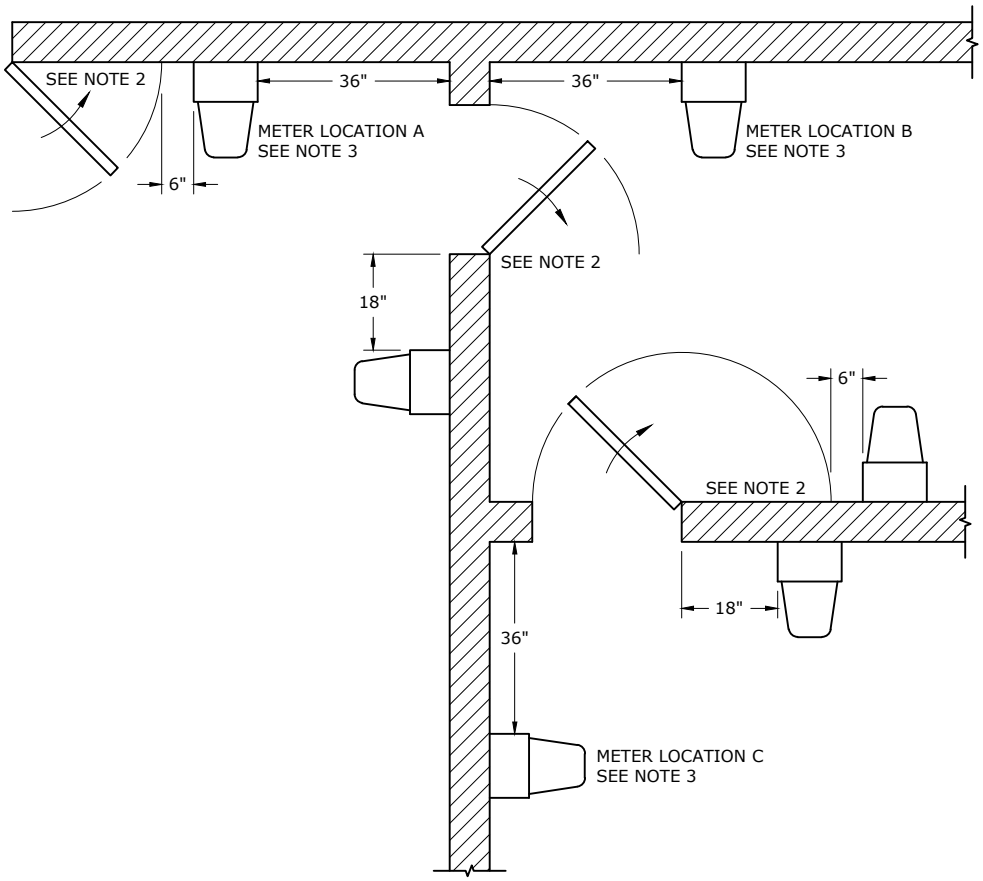
DUKE ENERGY.

3				
2				
1	3/3/22	EANES	FLETCHER	GRAHAM
0	2/28/18	EANES	EANES	ADCOCK
REVISED		BY	CHK'D	APPR.

FRONTAL AND SIDE CLEARANCES FOR METER INSTALLATIONS

DEC	DEM	DEP	DEF
X		X	

FIG 44A



NOTES:

1. ALL DIMENSIONS SHOWN ARE MINIMUM DIMENSIONS.
2. METERS AND CT CABINETS ARE NOT TO BE INSTALLED ON WALLS WHERE THEY WILL BE BEHIND AN OPEN SWINGING DOOR.
3. METERS AND CT CABINETS IN LOCATIONS A, B, AND C MAY REQUIRE PROTECTIVE BARRIERS IF TRAFFIC THROUGH DOORWAY COULD CAUSE EQUIPMENT DAMAGE. A MINIMUM CLEARANCE OF 6" IS REQUIRED FROM THE NEAREST EDGE OF THE METER ENCLOSURE OR CT CABINET TO THE BARRIER.
4. METER ENCLOSURES SHALL NOT BE RECESSED OR FRAMED IN ANY WAY THAT BLOCKS ACCESS, KNOCKOUTS OR DRAINAGE AND SHALL NOT BE MOUNTED ON RECESSED WALLS THAT REQUIRE ALTERATIONS TO THE COMPANY RISER.

REVISED		BY	CHK'D	APPR.
4				
3	2/29/24	EANES	FLETCHER	GRAHAM
2	3/3/22	EANES	FLETCHER	GRAHAM
0	2/28/18	EANES	EANES	ADCOCK

DUKE ENERGY.

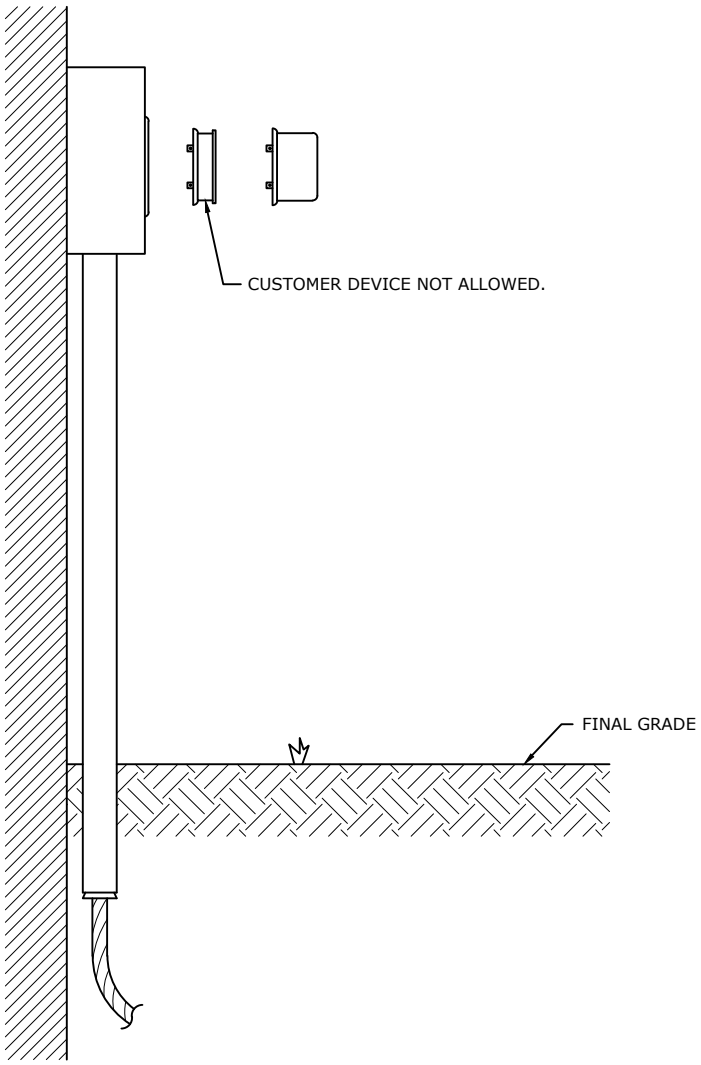
DEC	DEM	DEP	DEF
X		X	

FRONTAL AND SIDE CLEARANCES
FOR METER INSTALLATIONS

FIG 44B

NOTES:

1. CUSTOMER OWNED DEVICES OF ANY KIND ARE NOT ALLOWED BETWEEN THE COMPANY'S METER AND THE METER SOCKET.



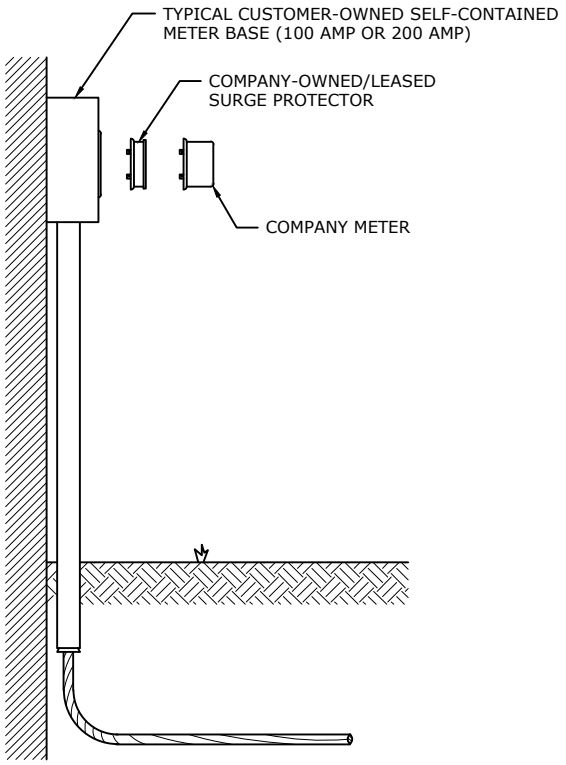
REVISED	BY	CHK'D	APPR.
3 9/10/20	EANES	FLETCHER	GRAHAM
2 2/28/20	EANES	FLETCHER	GRAHAM
1 2/21/17	EANES	EANES	ADCOCK
0 11/20/15	SIMPSON	SIMPSON	ADCOCK

DEVICES INSTALLED BETWEEN
THE METER AND THE METER SOCKET

DEC	DEM	DEP	DEF
X		X	

FIG 45

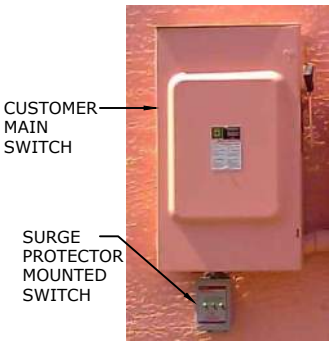
SINGLE-PHASE SELF-CONTAINED



NOTES:

1. TO BE USED ON 100 AMP AND 200 AMP METER BASES.
2. COMPANY-OWNED/LEASED SURGE PROTECTOR TO BE INSTALLED BETWEEN METER BASE AND METER BY COMPANY-APPROVED LICENSED ELECTRICIAN.
3. OUTAGE SCHEDULED BY ELECTRICIAN WITH CUSTOMER THROUGH THE CUSTOMER SERVICE CENTER.
4. ELECTRICIAN RESPONSIBLE FOR OBTAINING ELECTRICAL INSPECTION, IF REQUIRED.

THREE-PHASE

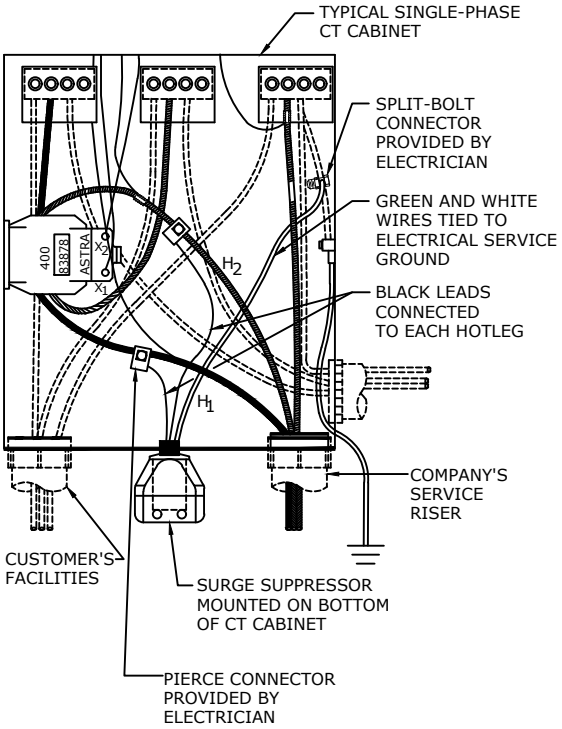


PEMCO MODEL # EXT50C

NOTES:

1. COMPANY-OWNED/LEASED SURGE PROTECTORS TO BE INSTALLED **ONLY** IN CUSTOMER MAIN DISCONNECT PANEL BY COMPANY-APPROVED LICENSED ELECTRICIAN.
2. SURGE PROTECTORS SHALL **NOT** BE INSTALLED IN PAD-MOUNTED TRANSFORMERS OR CT CABINETS.
3. OUTAGE, IF REQUIRED, SCHEDULED BY ELECTRICIAN WITH CUSTOMER THROUGH THE CUSTOMER SERVICE CENTER.
4. ELECTRICIAN RESPONSIBLE FOR OBTAINING ELECTRICAL INSPECTION, IF REQUIRED.

SINGLE-PHASE T-RATED



PEMCO MODEL # SS400HW

NOTES:

1. COMPANY-OWNED/LEASED SURGE PROTECTOR TO BE INSTALLED IN CT CABINET (SINGLE-PHASE INSTALLATIONS ONLY) BY COMPANY-APPROVED LICENSED ELECTRICIAN.
2. CT CABINET TO BE SECURED BY ELECTRICIAN FOLLOWING WORK COMPLETION.

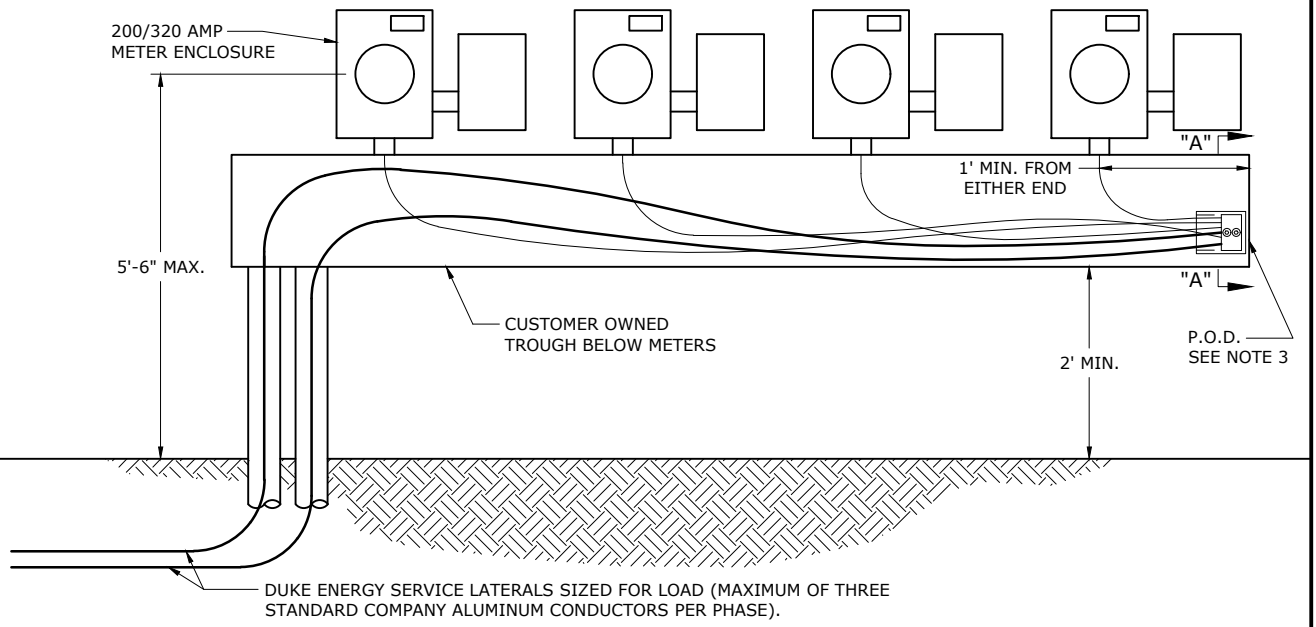
3				
2				
1	3/4/19	EANES	EANES	ADCOCK
0	11/30/10	SIMPSON	SIMPSON	ELKINS
REVISED		BY	CHK'D	APPR.

SINGLE OR THREE-PHASE COMPANY OWNED/LEASED SURGE PROTECTOR INSTALLATIONS

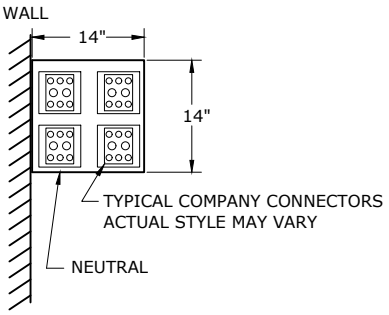
DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 46



MINIMUM TROUGH DIMENSIONS
REQUIRED BY COMPANY.
THE NATIONAL ELECTRICAL
CODE MAY REQUIRE A LARGER
TROUGH. SEE NOTE 1.



SECTION "A"-"A"

NOTES:

1. CUSTOMER TO OWN, INSTALL, AND MAINTAIN TROUGH (GUTTER) TO REQUIREMENTS OF NATIONAL ELECTRICAL CODE AND COMPANY REQUIREMENTS. THE MINIMUM DIMENSIONS MUST BE 14" HIGH X 14" DEEP. THE LENGTH WILL VARY ACCORDING TO THE NUMBER OF METERS. TO ALLOW FOR GOOD WIRING METHODS, THE COMBINED NUMBER OF CUSTOMER CABLES SHALL NOT EXCEED SIX (6) PER PHASE WHICH INCLUDES THE SERVICE ENTRANCE GROUNDING CONDUCTOR. CUSTOMER CABLE SIZE SHALL NOT EXCEED 600 KCMIL.
2. CUSTOMER TO INSTALL METER SOCKETS AS SPECIFIED BY THE COMPANY. DISCONNECTS MUST BE GROUPED PER THE N.E.C. AND APPROVED BY THE LOCAL AHJ.
3. POINT OF DELIVERY WILL BE WHERE CUSTOMER'S CONDUCTORS ATTACH TO COMPANY'S CONDUCTORS IN CUSTOMER'S TROUGH. SEE FIGURE 14A FOR TROUGH GROUNDING DETAILS. IF THE TROUGH SERVICE REQUIRES GREATER THAN THREE STANDARD COMPANY ALUMINUM CONDUCTORS PER PHASE AND IS SERVED FROM A PAD-MOUNTED TRANSFORMER, THE POINT OF DELIVERY IS THE SECONDARY SPADES OF THE PAD-MOUNTED TRANSFORMER.
4. PER THE N.E.C., UP TO 6 CIRCUITS CAN BE INSTALLED AT A LOCATION AS LONG AS ALL CIRCUITS ARE FED FROM THE SAME TRANSFORMER (TRANSFORMER BANK) AND ALL CIRCUITS ARE TIED TOGETHER ONLY AT THE TRANSFORMER. A CIRCUIT CAN CONSIST OF PARALLEL CONDUCTORS. CUSTOMER PROVIDES HOLES IN TROUGH FOR COMPANY RISERS UNLESS OTHERWISE DIRECTED BY COMPANY REPRESENTATIVE.
5. LABELING OF EACH METER ENCLOSURE SHALL MEET THE REQUIREMENTS ON FIGURE 3.
6. SINGLE CONDUCTOR SHOWN FOR CLARITY.

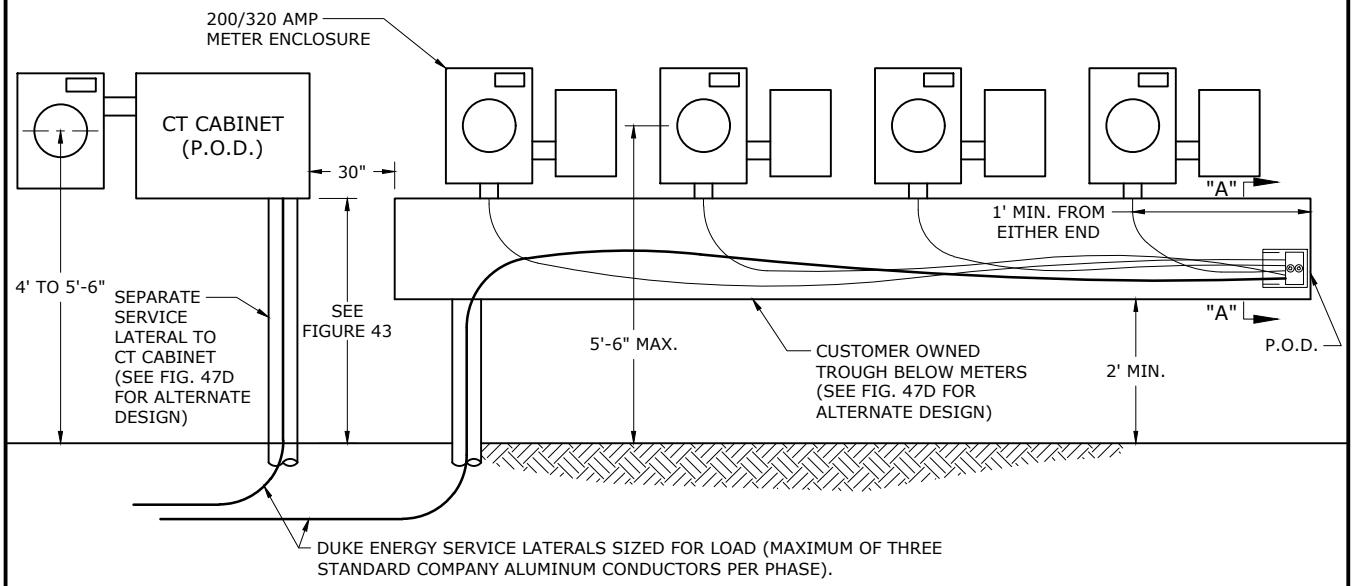
REVISED	BY	CHK'D	APPR.
7 3/31/25	EANES	FLETCHER	GRAHAM
6 2/28/23	EANES	FLETCHER	GRAHAM
5 2/28/20	EANES	FLETCHER	GRAHAM
0 1/22/16	SIMPSON	MEDLIN	CHANDLER

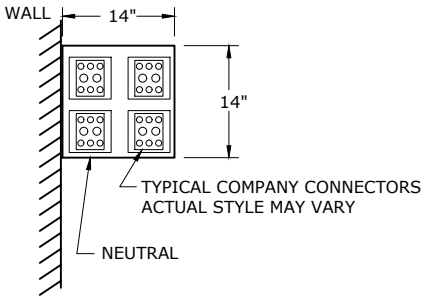
TROUGH INSTALLATIONS
(ALL SELF-CONTAINED METERS)

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 47A





SECTION "A"-"A"
SEE NOTE 1

NOTES:

1. MINIMUM TROUGH DIMENSIONS REQUIRED BY COMPANY. THE NATIONAL ELECTRICAL CODE MAY REQUIRE A LARGER TROUGH. SEE FIGURE 47A FOR TROUGH SPECIFICATIONS AND CONDUCTOR CONNECTION DETAILS.
2. SEE FIGURES 14A AND 14B FOR GROUNDING DETAILS.
3. SINGLE CONDUCTOR SHOWN FOR CLARITY.
4. CUSTOMER PROVIDES HOLES IN TROUGH FOR COMPANY RISERS UNLESS OTHERWISE DIRECTED BY COMPANY REPRESENTATIVE.
5. SEE FIGURE 43 FOR CT CABINET DETAILS AND MOUNTING HEIGHTS.
6. COMPANY PROVIDES SEPARATE SERVICE LATERAL TO CT CABINET, UNLESS THE SERVICE TO BOTH THE CT CABINET AND TROUGH ARE SERVED FROM THE SAME PAD-MOUNTED TRANSFORMER AND THE TROUGH SERVICE REQUIRES GREATER THAN THREE STANDARD COMPANY ALUMINUM CONDUCTORS PER PHASE. WHEN THIS OCCURS, THE POINT OF DELIVERY FOR BOTH THE CT CABINET AND TROUGH IS THE SECONDARY SPADE OF THE PAD-MOUNTED TRANSFORMER.
7. PER THE N.E.C., UP TO 6 CIRCUITS CAN BE INSTALLED AT A LOCATION AS LONG AS ALL CIRCUITS ARE FED FROM THE SAME TRANSFORMER (TRANSFORMER BANK) AND ALL CIRCUITS ARE TIED TOGETHER ONLY AT THE TRANSFORMER. A CIRCUIT CAN CONSIST OF PARALLEL CONDUCTORS.
8. CUSTOMER TO INSTALL METER SOCKETS AS SPECIFIED BY THE COMPANY. DISCONNECTS MUST BE GROUPED PER THE N.E.C. AND APPROVED BY THE LOCAL AHJ.

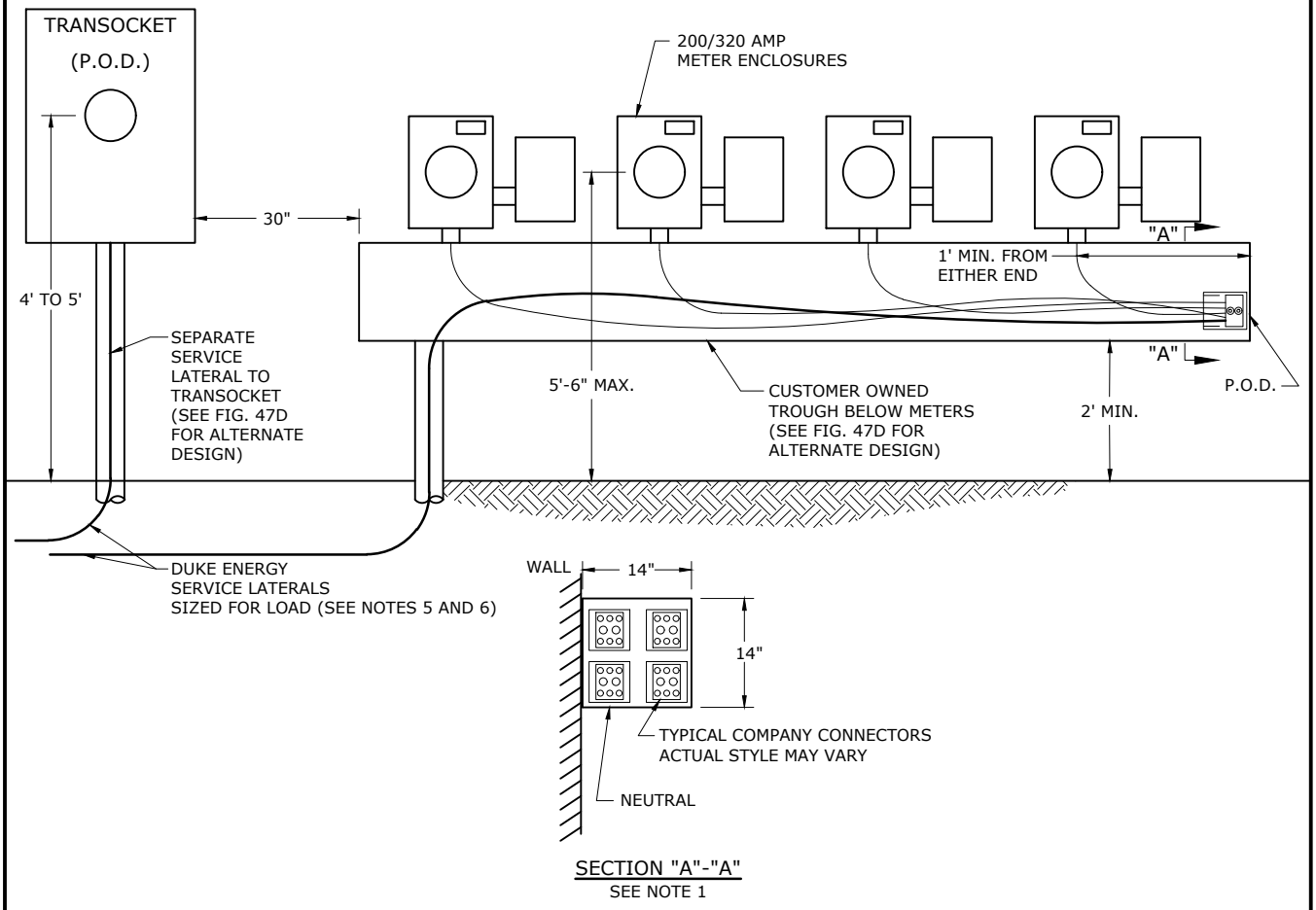
REVISED	BY	CHK'D	APPR.
9 3/31/25	EANES	FLETCHER	GRAHAM
8 2/28/23	EANES	FLETCHER	GRAHAM
7 3/3/22	EANES	FLETCHER	GRAHAM
0 1/22/16	SIMPSON	MEDLIN	CHANDLER

TROUGH INSTALLATIONS

CT CABINETS

DEC	DEM	DEP	DEF
X		X	

FIG 47B



SECTION "A"-"A"
SEE NOTE 1

NOTES:

1. MINIMUM TROUGH DIMENSIONS REQUIRED BY COMPANY. THE NATIONAL ELECTRICAL CODE MAY REQUIRE A LARGER TROUGH. SEE FIGURE 47A FOR TROUGH SPECIFICATIONS AND CONDUCTOR CONNECTION DETAILS.
2. SEE FIGURES 14A AND 14B FOR GROUNDING DETAILS.
3. SINGLE CONDUCTOR SHOWN FOR CLARITY.
4. CUSTOMER PROVIDES HOLES IN TROUGH FOR COMPANY RISERS UNLESS OTHERWISE DIRECTED BY COMPANY REPRESENTATIVE.
5. TRANSOCKET MAX SERVICE IS 600 AMPS; MAX CUSTOMER WIRE IS 500 KCMIL SINGLE CONDUCTOR, OR 350 KCMIL TWO CONDUCTORS PER PHASE.
6. COMPANY PROVIDES SEPARATE SERVICE LATERAL TO TRANSOCKET. UNLESS THE SERVICE TO BOTH THE TRANSOCKET AND TROUGH ARE SERVED FROM THE SAME PAD-MOUNTED TRANSFORMER AND THE TROUGH SERVICE REQUIRES GREATER THAN THREE STANDARD COMPANY ALUMINUM CONDUCTORS PER PHASE. WHEN THIS OCCURS THE POINT OF DELIVERY FOR BOTH THE TRANSOCKET AND TROUGH IS THE SECONDARY SPADE OF THE PAD-MOUNTED TRANSFORMER.
7. PER THE N.E.C., UP TO 6 CIRCUITS CAN BE INSTALLED AT A LOCATION AS LONG AS ALL CIRCUITS ARE FED FROM THE SAME TRANSFORMER (TRANSFORMER BANK) AND ALL CIRCUITS ARE TIED TOGETHER ONLY AT THE TRANSFORMER. A CIRCUIT CAN CONSIST OF PARALLEL CONDUCTORS.
8. CUSTOMER TO INSTALL METER SOCKETS AS SPECIFIED BY THE COMPANY. DISCONNECTS MUST BE GROUPED PER THE N.E.C. AND APPROVED BY THE LOCAL AHJ.

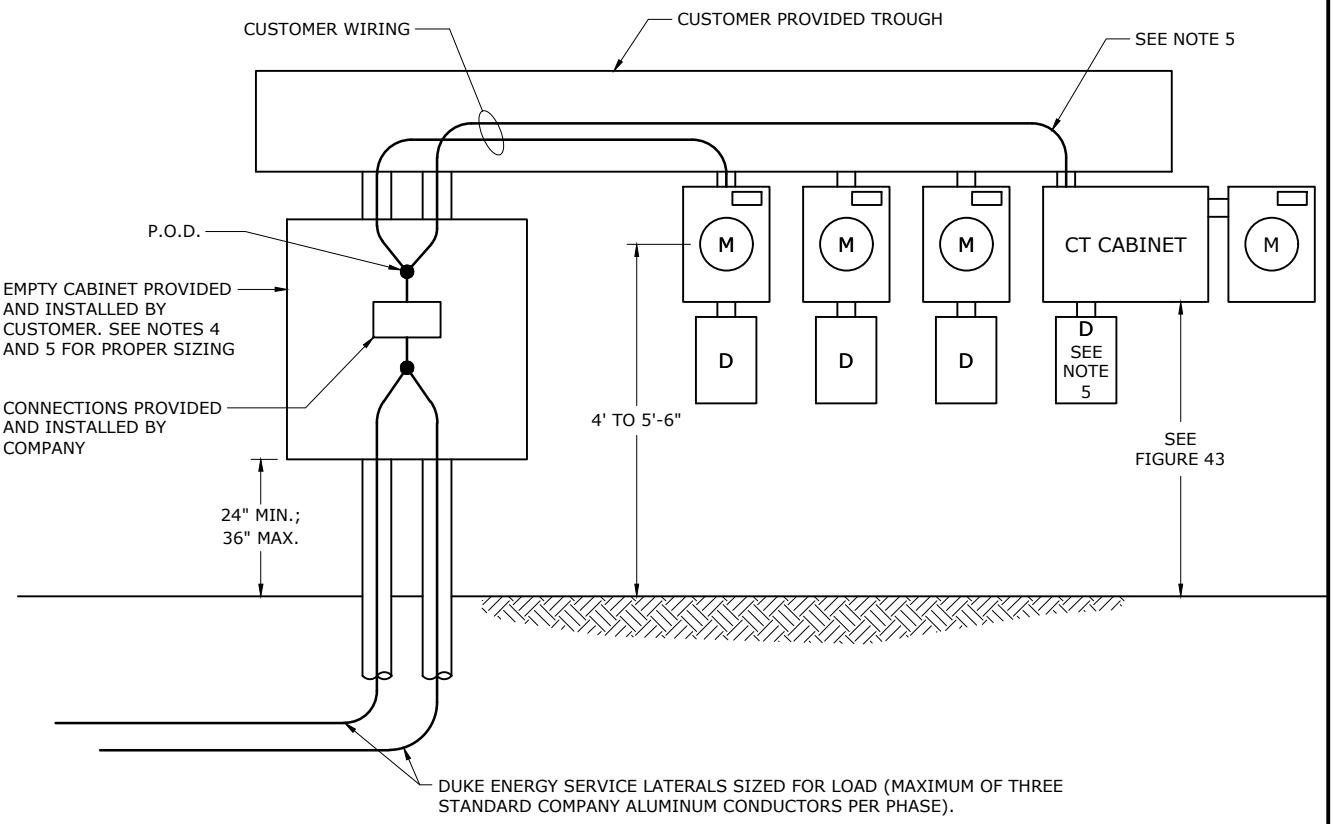
REVISED	BY	CHK'D	APPR.
7 3/31/25	EANES	FLETCHER	GRAHAM
6 2/28/23	EANES	FLETCHER	GRAHAM
5 9/10/20	EANES	FLETCHER	GRAHAM
0 1/22/16	SIMPSON	MEDLIN	CHANDLER

TROUGH INSTALLATIONS

TRANSOCKETS

DEC	DEM	DEP	DEF
X			

FIG 47C



NOTES:

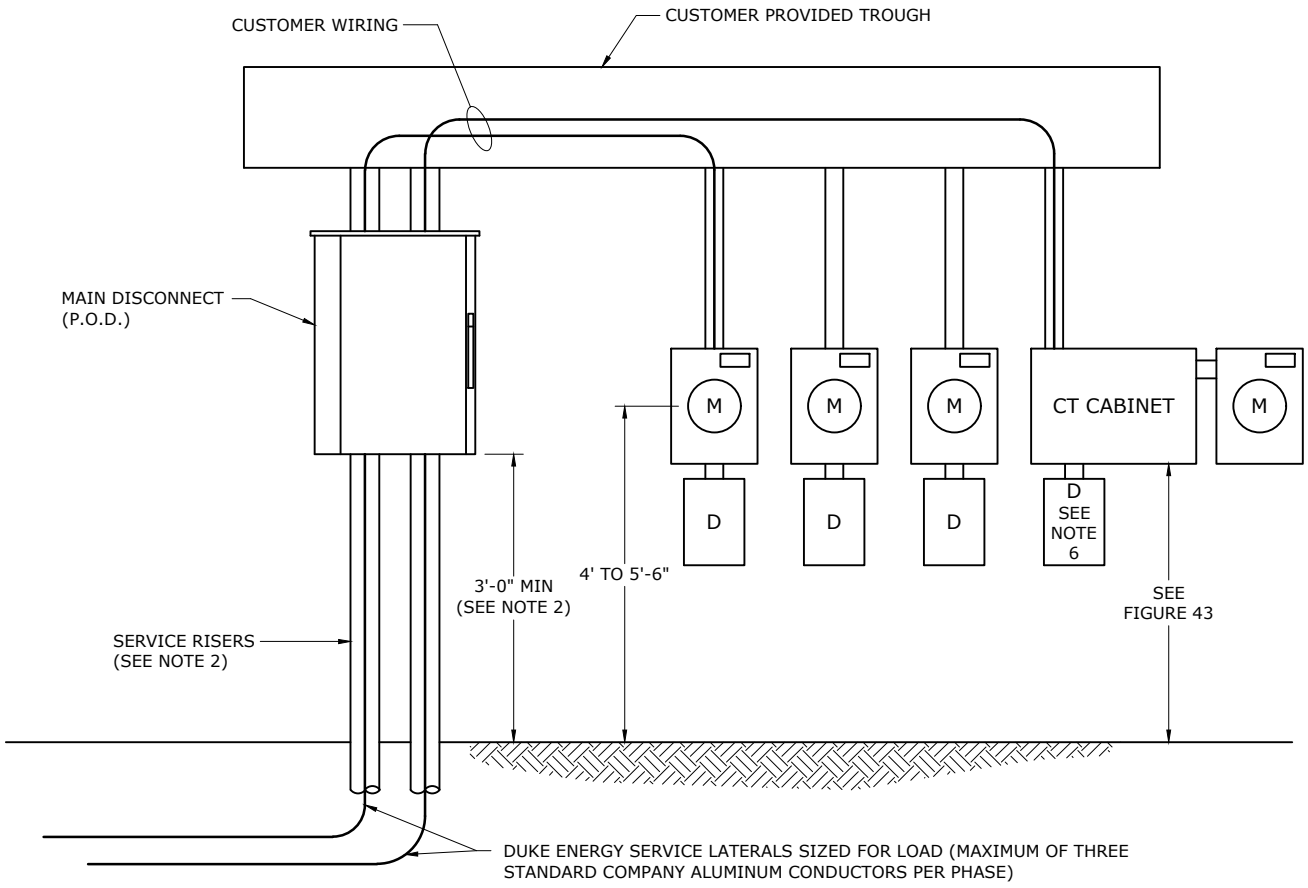
1. EMPTY CABINET PROVIDED AND INSTALLED BY CUSTOMER IN CASES WHERE CUSTOMER DESIRES TROUGH LOCATION ABOVE COMPANY'S METERS, OR IN CASES WHERE SPACE CONSTRAINTS DO NOT ALLOW FOR A SEPARATE SERVICE LATERAL TO A CT CABINET OR TRANSOCKET. METERING MAY BE ALL SELF-CONTAINED, ALL TRANSFORMER-RATED OR MIXED. SEE SECTION IV, A, 9 FOR METERING REQUIREMENTS BASED ON VOLTAGE AND SERVICE SIZE.
2. CUSTOMER CUTS HOLE IN CABINET AND TROUGH. CONDUITS ENTERING CABINET MUST BE TOGETHER, NOT IN SEPARATE CORNERS OR SIDES.
3. SEE FIGURES 14A AND 14B FOR GROUNDING DETAILS.
4. SEE FIGURE 43 FOR CUSTOMER WIRE SIZE GUIDELINES AND CABINET SIZING.
5. CT CABINETS INSTALLED FROM CUSTOMER OWNED TROUGHS SHALL HAVE THE SERVICE WIRES INSTALLED THE ENTIRE LENGTH BACK TO THE P.O.D AS SHOWN. IN LIEU OF THIS, AN EXTERNALLY OPERABLE, LOCKABLE DISCONNECT ACCESSIBLE TO COMPANY PERSONNEL CAN BE INSTALLED ON THE LOAD SIDE OF THE CT CABINET TO PROVIDE A MEANS OF DISCONNECTING SERVICE.
6. CUSTOMER TO INSTALL SELF-CONTAINED METER SOCKETS AS SPECIFIED BY THE COMPANY. DISCONNECTS MUST BE GROUPED PER THE N.E.C. AND APPROVED BY THE LOCAL AHJ.

REVISED	BY	CHK'D	APPR.
10 3/31/25	EANES	FLETCHER	GRAHAM
9 2/29/24	EANES	FLETCHER	GRAHAM
8 2/28/23	EANES	FLETCHER	GRAHAM
0 1/22/16	SIMPSON	MEDLIN	CHANDLER

TROUGH INSTALLATIONS
TROUGH LOCATED ABOVE COMPANY'S METERS
WITH JUNCTION BOX

DEC	DEM	DEP	DEF
X		X	

FIG 47D



NOTES:

1. UTILIZE THIS METHOD IF MORE THAN 6 METERS ARE CONNECTED AT A SINGLE LOCATION, OR IF SPACE CONSTRAINTS WILL NOT ALLOW THE JUNCTION CABINET IN FIGURE 47D. CUSTOMER WILL PROVIDE DISCONNECT SWITCH, TROUGH, CONNECTORS, AND ALL WIRING FROM THE LOAD SIDE OF THE DISCONNECT. METERING MAY BE ALL SELF-CONTAINED, ALL TRANSFORMER-RATED OR MIXED. SEE SECTION IV, A, 9 FOR METERING REQUIREMENTS BASED ON VOLTAGE AND SERVICE SIZE.
2. CUSTOMER TO CUT HOLES OR PROVIDE KNOCKOUTS IN DISCONNECT ENCLOSURE. IF MINIMUM HEIGHT ABOVE GRADE CANNOT BE OBTAINED, LOWER HEIGHTS WILL BE ALLOWED WITH CERTAIN PROVISIONS. CUSTOMER MUST PROVIDE AND INSTALL SCHEDULE 40 PVC BENDS WITH A MINIMUM 36" RADIUS (QUANTITY AND SIZE DETERMINED BY COMPANY REPRESENTATIVE) AND A PULL STRING. APPROPRIATE METER HEIGHTS MUST STILL BE MAINTAINED IN ALL CASES. CONDUCTOR TERMINAL BLOCKS OR MAIN BREAKER MUST BE OF SUFFICIENT HEIGHT TO ALLOW FOR PROPER TRAINING OF CABLE.
3. DISCONNECT SWITCH MUST BE LOCKABLE/ SEALABLE.
4. IF THE LOCAL AUTHORITY HAVING JURISDICTION OBJECTS TO COMPANY CABLES IN UL RATED TERMINALS OF MAIN DISCONNECT BREAKER, THE CUSTOMER WILL PROVIDE THE APPROPRIATE TERMINAL BLOCKS OFF THE BREAKER TO ATTACH COMPANY CABLES.
5. SEE FIGURES 14A AND 14B FOR GROUNDING DETAILS.
6. CT CABINETS INSTALLED FROM CUSTOMER OWNED TROUGHS SHALL HAVE AN EXTERNALLY OPERABLE, LOCKABLE DISCONNECT ACCESSIBLE TO COMPANY PERSONNEL INSTALLED ON THE LOAD SIDE OF THE CT CABINET TO PROVIDE A MEANS OF DISCONNECTING SERVICE.
7. CUSTOMER TO INSTALL SELF-CONTAINED METER SOCKETS AS SPECIFIED BY THE COMPANY. DISCONNECTS MUST BE GROUPED PER THE N.E.C. AND APPROVED BY THE LOCAL AHJ.
8. FOR ANY WORK PERFORMED BY THE CUSTOMER REQUIRING THE OPERATION OF A CUSTOMER-OWNED DISCONNECT AHEAD OF THE COMPANY'S METER, THEREBY REMOVING POWER TO THE METER, THE CUSTOMER SHALL MAKE EVERY REASONABLE ATTEMPT TO NOTIFY THE COMPANY PRIOR TO THE WORK BEGINNING.

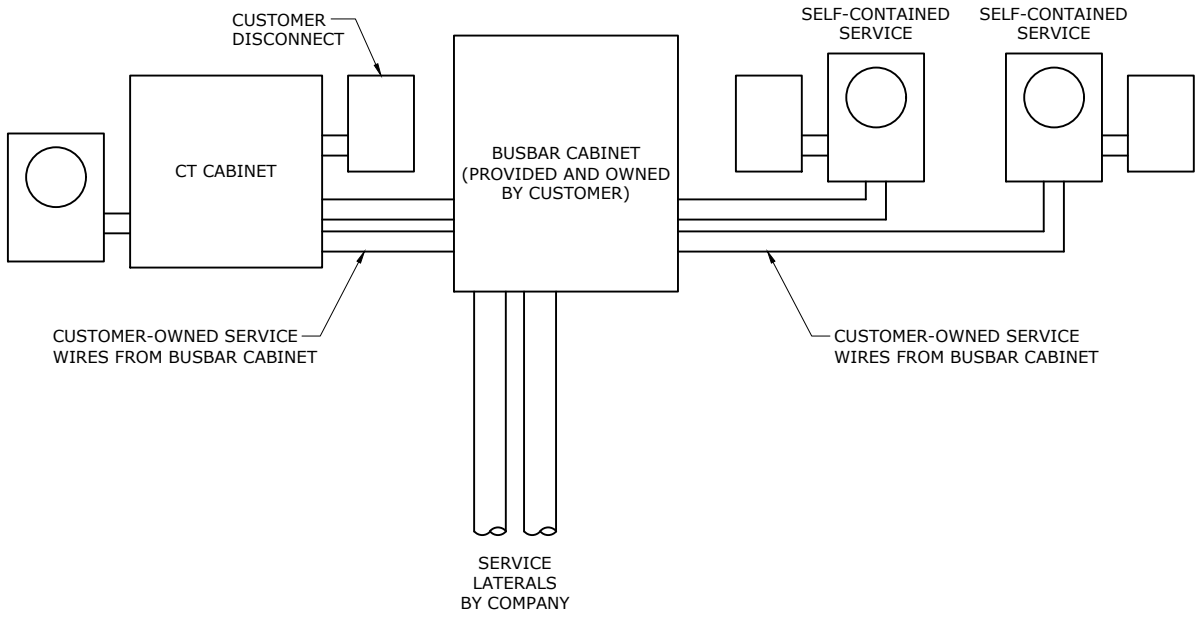
REVISED	BY	CHK'D	APPR.
7 3/31/25	EANES	FLETCHER	GRAHAM
6 2/28/23	EANES	FLETCHER	GRAHAM
5 3/3/22	EANES	FLETCHER	GRAHAM
0 10/30/17	EANES	EANES	ADCOCK

TROUGH INSTALLATIONS
TROUGH LOCATED ABOVE COMPANY'S METERS WITH MAIN DISCONNECT

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 47E



NOTES:

1. THIS CONFIGURATION IS USED IN MUCH THE SAME MANNER AS THE TROUGHS IN FIGS 47A THROUGH 47E, ESPECIALLY WHEN SPACE LIMITATIONS MAKE A TROUGH UNDESIRABLE.
2. BUSBAR CABINET IS CUSTOMER OWNED AND INSTALLED. BUSBAR SHALL BE DUAL-RATED FOR BOTH COPPER AND ALUMINUM CONDUCTOR, WITH DOUBLE SET SCREW CONNECTIONS.
3. WHEN USED AS A JUNCTION FOR MULTIPLE SERVICES, CT METERING IS NOT ALLOWED WITHIN THE BUSBAR CABINET.
4. LINE AND LOAD MUST ENTER/EXIT FROM THE BOTTOM OF THE BUSBAR CABINET (4" MAX).
5. WIRE SIZE LIMITED TO EITHER 500 KCMIL OR 750 KCMIL, WHICHEVER THE CABINET ACCEPTS.
6. INSTALLATION LOCATION AND MOUNTING HEIGHT SHOULD FOLLOW CT CABINET REQUIREMENTS. SEE FIG 43.
7. CT CABINETS INSTALLED FROM CUSTOMER OWNED BUS BAR CABINETS SHALL HAVE AN EXTERNALLY OPERABLE, LOCKABLE DISCONNECT ACCESSIBLE TO COMPANY PERSONNEL INSTALLED ON THE LOAD SIDE OF THE CT CABINET TO PROVIDE A MEANS OF DISCONNECTING SERVICE.
8. CUSTOMER-OWNED EQUIPMENT, OTHER THAN CONDUCTOR, IS NOT ALLOWED WITHIN THE BUSBAR CABINET.
9. CLICK THE LINK OR SCAN THE QR CODE ON FIG 49 FOR A CURRENT LIST OF APPROVED BUSBAR CABINETS. ONLY THOSE CABINETS WITH A HORIZONTAL BUS CONFIGURATION AND DOUBLE SET SCREW CONNECTIONS CAN BE USED FOR THIS PARTICULAR APPLICATION.

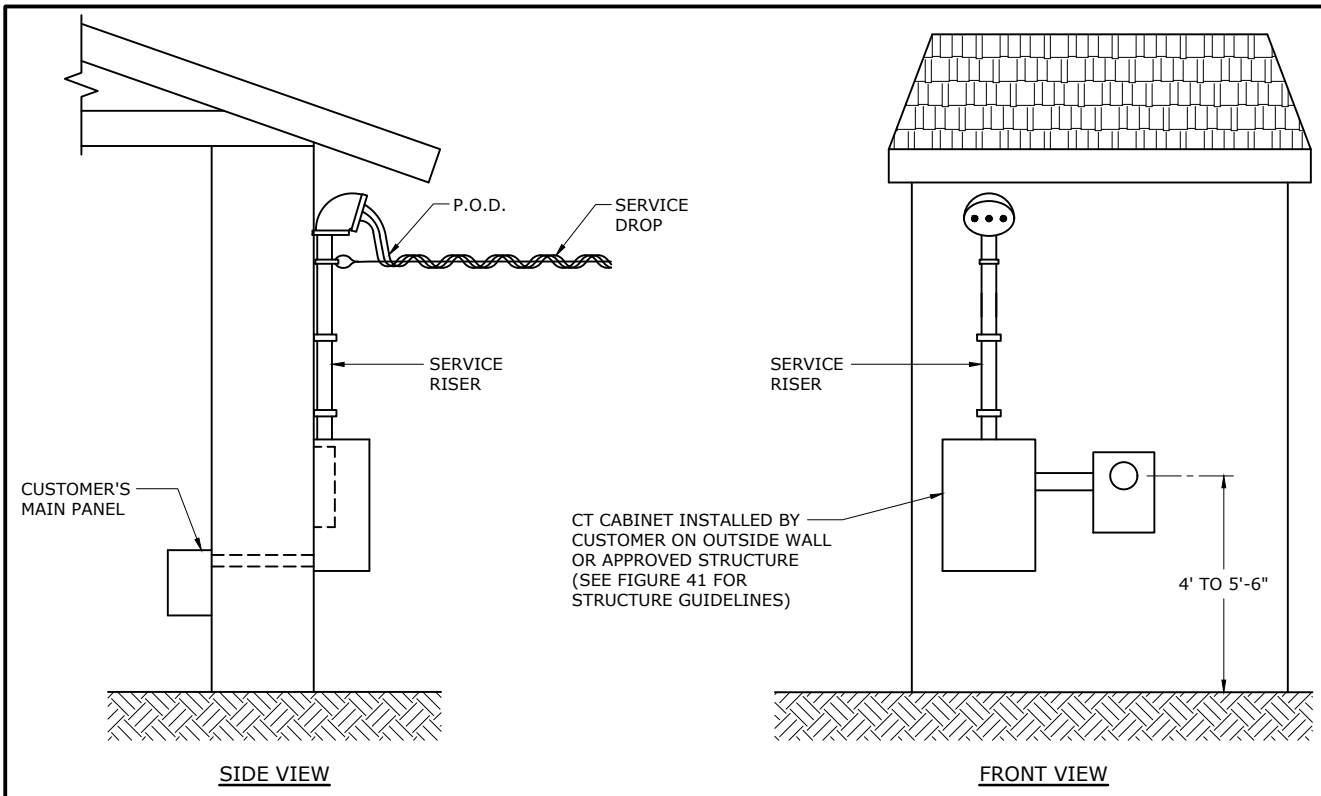
DUKE ENERGY.

REVISED		BY	CHK'D	APPR.
3				
2				
1	2/28/25	EANES	EANES	GRAHAM
0	2/28/23	EANES	FLETCHER	GRAHAM

HORIZONTAL BUSBAR CABINET INSTALLATION
WHEN CABINET IS USED AS A JUNCTION
FOR MULTIPLE SERVICES

DEC	DEM	DEP	DEF
X		X	

FIG 47F



SIDE VIEW

FRONT VIEW

NOTES:

1. FOR INSTALLATIONS WITHIN DEC, CUSTOMER PROVIDES AND INSTALLS WEATHERHEAD, ATTACHMENT POINT, RISER, CONDUCTOR WITHIN RISER AND CT CABINET. COMPANY PROVIDES SERVICE DROP, INSTRUMENT TRANSFORMERS, METER AND METER ENCLOSURE. REFER TO FIGURE 43 FOR CUSTOMER WIRE SIZE GUIDELINES AND CABINET SIZING.

2. FOR INSTALLATIONS WITHIN DEP, CUSTOMER PROVIDES AND INSTALLS WEATHERHEAD, ATTACHMENT POINT, RISER AND CONDUCTOR WITHIN RISER. COMPANY PROVIDES SERVICE DROP, CT CABINET (THAT CUSTOMER INSTALLS), INSTRUMENT TRANSFORMERS, METER AND METER ENCLOSURE (CUSTOMER ALSO INSTALLS ENCLOSURE). REFER TO FIGURE 43 FOR CUSTOMER WIRE SIZE GUIDELINES AND CABINET SIZING.

3. WEATHERHEAD SHOULD BE OF SUFFICIENT HEIGHT TO MAINTAIN SERVICE DROP CLEARANCES IN FIGURES 10 AND 11.

4. IF USED, THRU-THE-ROOF RISERS MUST BE ACCESSIBLE TO A COMPANY BUCKET TRUCK OR A COMPANY EMPLOYEE ON AN EXTENSION LADDER NOT TO EXCEED 25' ABOVE GRADE. RISERS EXTENDING MORE THAN 3' ABOVE ROOF SHALL BE GUYED.

5. RISERS IN EXCESS OF 72" ABOVE ROOF LINES SHALL BE ACCESSIBLE TO A COMPANY BUCKET TRUCK.

6. SERVICE RISER CONDUIT MAY ENTER THE CT CABINET ON TOP OR SIDE OF CABINET. USE WATERTIGHT SEALING METHOD.

7. METER ENCLOSURE AND CT CABINET SHALL BE BONDED TO GROUND AS REQUIRED BY THE NEC AND THE COMPANY. SEE FIGURE 14B.

8. CUSTOMER SHALL ENSURE THAT LIKE PHASES FROM EACH CONDUCTOR SET GO THROUGH EACH INDIVIDUAL CT. CONDUCTORS AND CONNECTIONS MUST BE ARRANGED SO AS NOT TO CREATE A HAZARD WHEN CABINET IS OPENED IN THE FUTURE. EITHER OF THE FOLLOWING ARE ACCEPTABLE:

   - CONTINUOUS UNSPLICED RUNS FROM PANEL THROUGH CT'S IN CABINET TO WEATHERHEAD. CUSTOMER SHALL MAKE ARRANGEMENTS WITH COMPANY TO HAVE CT'S INSTALLED IN CABINET BEFORE WIRE IS PULLED.

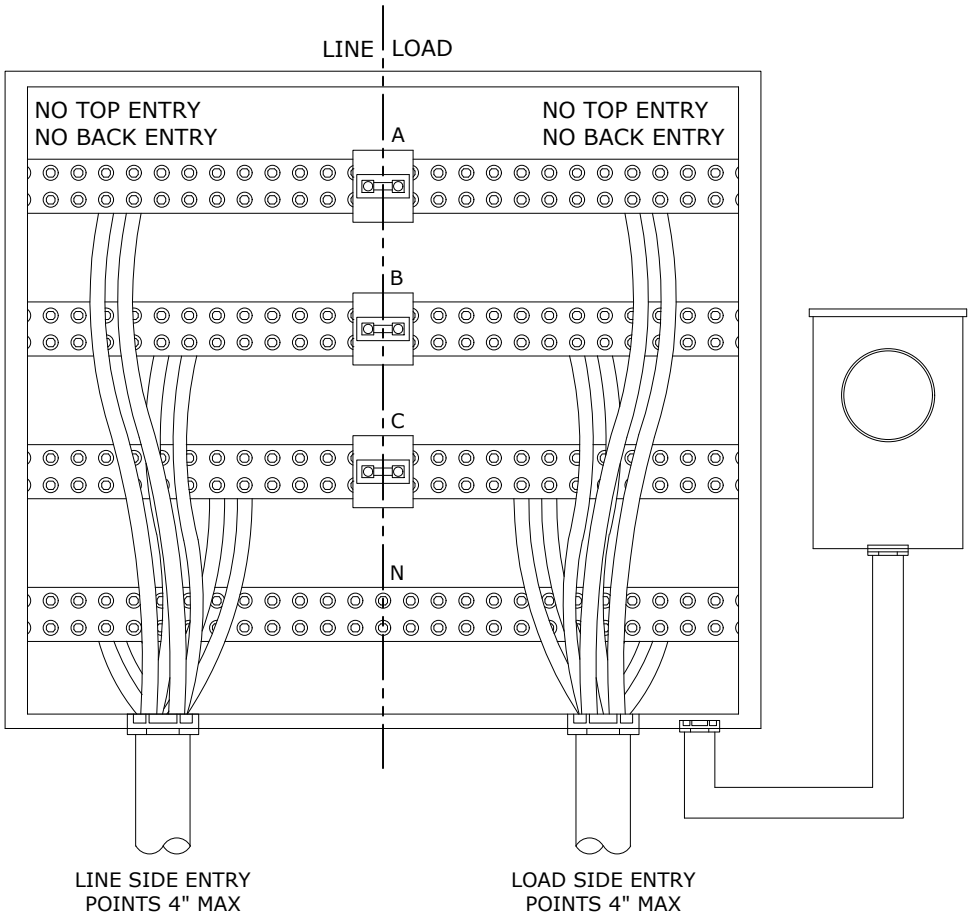
   - SEPARATE RUNS INSTALLED FROM PANEL TO CABINET AND CABINET TO WEATHERHEAD. THE CUSTOMER IS RESPONSIBLE FOR MAKING CONNECTIONS IN THE CABINET.

REVISED	BY	CHK'D	APPR.
7 3/31/25	EANES	FLETCHER	GRAHAM
6 2/29/24	EANES	FLETCHER	GRAHAM
5 3/3/22	EANES	FLETCHER	GRAHAM
0 3/4/19	EANES	EANES	ADCOCK

TYPICAL CURRENT TRANSFORMER CABINET AND METER ENCLOSURE INSTALLATION FOR OVERHEAD SERVICES

DEC	DEM	DEP	DEF
X		X	

FIG 48



NOTES:

1. ALL LINE AND LOAD SIDE CONNECTIONS MADE AFTER CT IS INSTALLED UNLESS REMOVABLE LINKS ARE PROVIDED IN THE CABINET BAR. DRAWING ABOVE IS SHOWN WITHOUT REMOVABLE LINKS.
2. INSTALLATION OF THE METER BASE CAN BE TO THE RIGHT OR LEFT OF BUSBAR CABINET.
3. BUSBAR CABINET IS CUSTOMER OWNED AND INSTALLED. BUSBAR SHALL BE DUAL-RATED FOR BOTH COPPER AND ALUMINUM CONDUCTOR, WITH DOUBLE SET SCREW CONNECTIONS.
4. LINE AND LOAD MUST ENTER/EXIT FROM THE BOTTOM OF BUSBAR CABINET (4" MAX).
5. WIRE SIZE LIMITED TO 500 KCMIL OR 750 KCMIL, WHICHEVER THE CABINET ACCEPTS.
6. ONLY ONE CUSTOMER CAN BE METERED PER BUSBAR CABINET. WHEN USED FOR METERING PURPOSES, THE BUSBAR CABINET SHALL NOT BE USED AS A JUNCTION BOX TO SERVE MULTIPLE ACCOUNTS.
7. INSTALLATION LOCATION AND HEIGHT SHOULD FOLLOW CT CABINET REQUIREMENTS.
8. BUSBAR CABINET IS REQUIRED WHEN NUMBER OF CONDUCTORS EXCEEDS THE LIMITS SPECIFIED FOR ALLOWABLE CONDUCTORS IN A CT CABINET.
9. CUSTOMER-OWNED EQUIPMENT, OTHER THAN CONDUCTOR, IS NOT ALLOWED WITHIN THE BUSBAR CABINET.
10. CLICK OR SCAN FOR A CURRENT LIST OF APPROVED BUSBAR CABINETS.

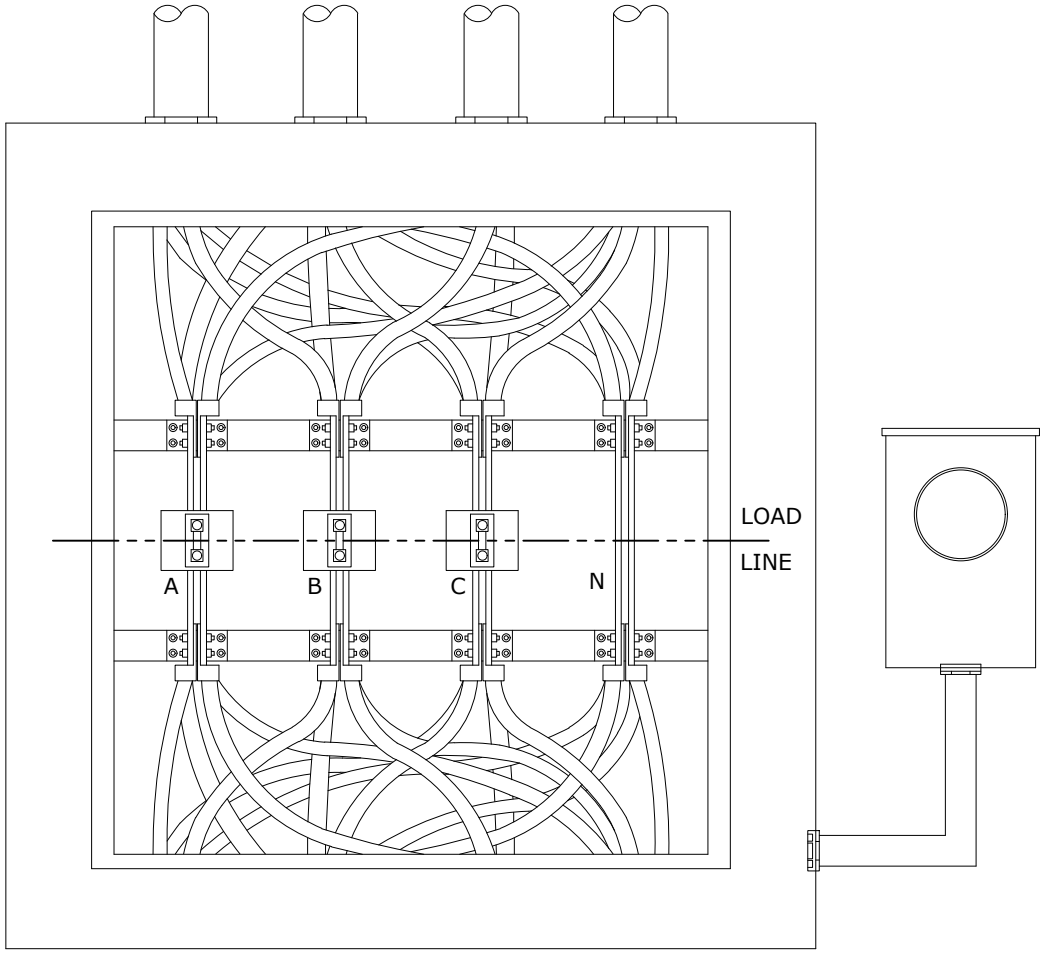
3				
2	2/28/23	EANES	FLETCHER	GRAHAM
1	3/3/22	EANES	FLETCHER	GRAHAM
0	3/1/21	EANES	FLETCHER	GRAHAM
REVISED		BY	CHK'D	APPR.

HORIZONTAL BUSBAR CABINET INSTALLATION WITH ACCEPTABLE LOCATION FOR SERVICE ENTRY/EXIT AND CT/METER BASE INSTALL

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 49



NOTES:

1. ALL LINE AND LOAD SIDE CONNECTIONS MADE AFTER CT IS INSTALLED UNLESS REMOVABLE LINKS ARE PROVIDED IN THE CABINET BAR. DRAWING ABOVE IS SHOWN WITH REMOVABLE LINKS.
2. INSTALLATION OF THE METER BASE CAN BE TO THE RIGHT OR LEFT OF BUSBAR CABINET.
3. BUSBAR CABINET IS CUSTOMER OWNED AND INSTALLED.
4. AVAILABLE IN BOTTOM ENTRY-BOTTOM EXIT AND BOTTOM ENTRY-TOP EXIT CONFIGURATIONS.
5. WIRE SIZE LIMITED TO 500 KCMIL OR 750 KCMIL, WHICHEVER THE CABINET ACCEPTS. CABINET MUST ACCOMMODATE BOTH COPPER AND ALUMINUM CONDUCTOR.
6. ONLY ONE CUSTOMER CAN BE METERED PER BUSBAR CABINET. WHEN USED FOR METERING PURPOSES, THE BUSBAR CABINET SHALL NOT BE USED AS A JUNCTION BOX TO SERVE MULTIPLE ACCOUNTS.
7. INSTALLATION LOCATION AND HEIGHT SHOULD FOLLOW CT CABINET REQUIREMENTS.
8. BUSBAR CABINET IS REQUIRED WHEN NUMBER OF CONDUCTORS EXCEEDS THE LIMITS SPECIFIED FOR ALLOWABLE CONDUCTORS IN A CT CABINET.
9. CUSTOMER-OWNED EQUIPMENT, OTHER THAN CONDUCTOR, IS NOT ALLOWED WITHIN THE BUSBAR CABINET.
10. CLICK OR SCAN FOR A CURRENT LIST OF APPROVED BUSBAR CABINETS.

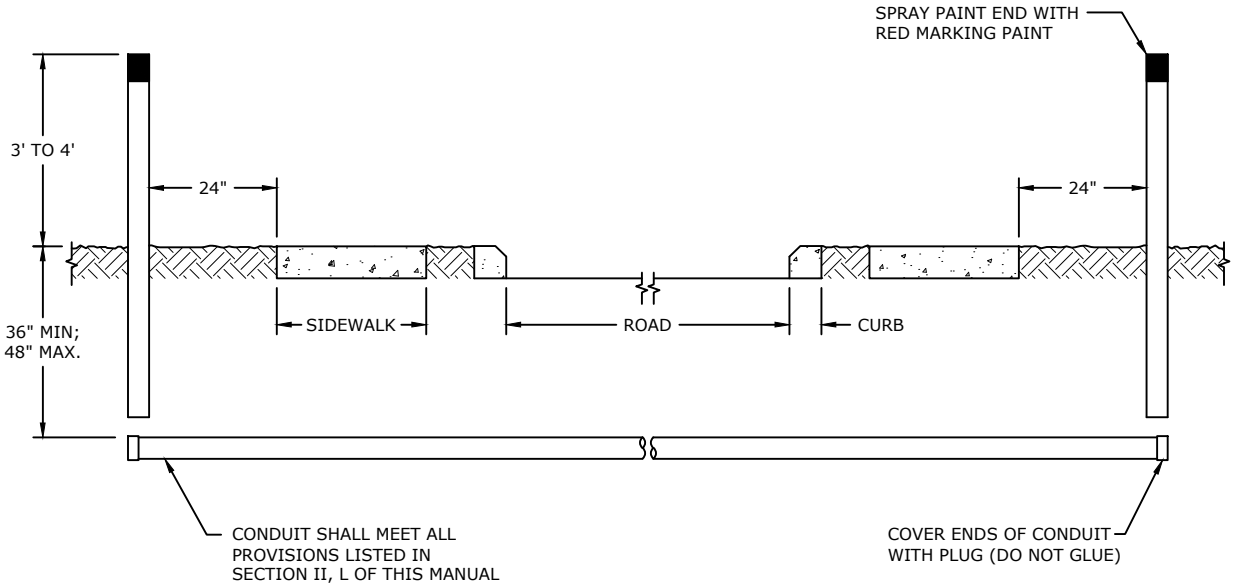
REVISED	BY	CHK'D	APPR.
3			
2	2/28/23	EANES	FLETCHER	GRAHAM
1	3/3/22	EANES	FLETCHER	GRAHAM
0	3/1/21	EANES	FLETCHER	GRAHAM

VERTICAL BUSBAR CABINET INSTALLATION WITH ACCEPTABLE LOCATION FOR SERVICE ENTRY/EXIT AND CT/METER BASE INSTALL

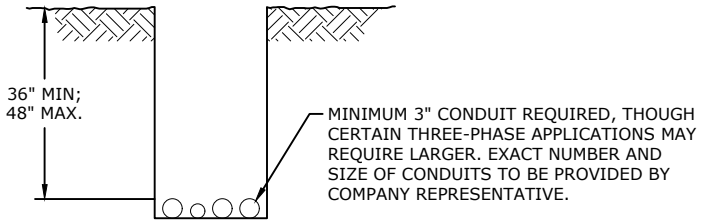
DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 50



SIDE VIEW



END VIEW

NOTES:

1. MINIMUM COVER IS MEASURED TO TOP OF CONDUIT.
2. EXTEND CONDUIT BEYOND EDGES OF ROAD, SIDEWALK, CURB, ETC. BY MINIMUM OF 24" ON EITHER END. CONDUITS SHALL BE INSTALLED WITH PULL STRING INSIDE THE FULL LENGTH.
3. ALL CONDUIT SECTIONS INSTALLED FOR WIRE SHOULD BE GLUED.
4. PLUG/SEAL BOTH CONDUIT ENDS (DO NOT GLUE).
5. MARK CONDUIT ENDS BY VERTICALLY PLACING A SCRAP PIECE OF CONDUIT OR 2" X 4" WOOD STUD AT EACH SEALED END FOR VISUAL IDENTIFICATION ABOVE GROUND. SPRAY PAINT THE END OF THESE WITH RED MARKING PAINT.

3				
2				
1	2/28/20	EANES	FLETCHER	GRAHAM
0	10/21/19	EANES	EANES	ADCOCK
REVISED		BY	CHK'D	APPR.

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

CUSTOMER INSTALLED CONDUIT CROSSINGS

FIG 51

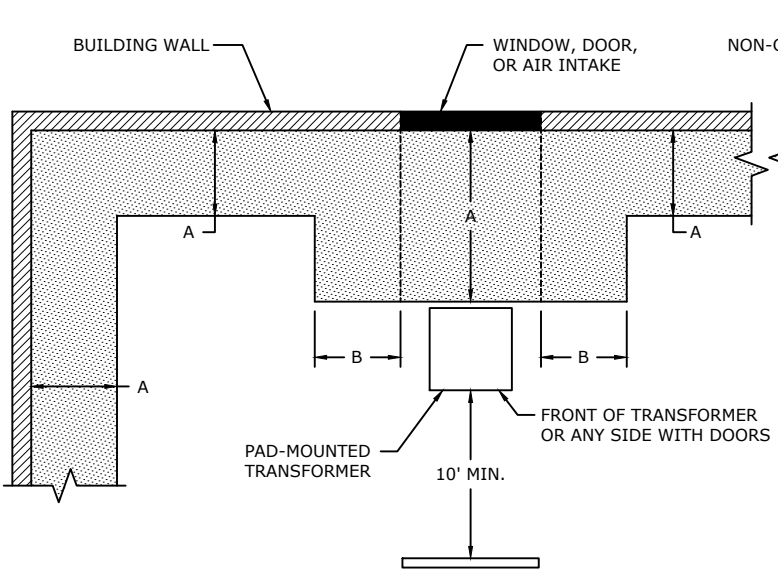


FIGURE 1
ALLOWABLE CLEARANCES

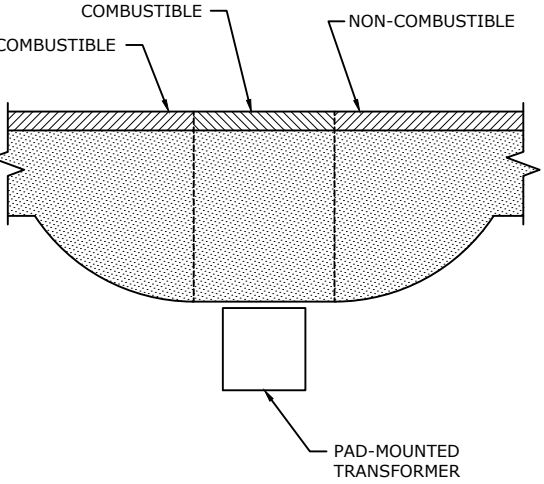


FIGURE 2
BUILDING CONSTRUCTION WITH COMBUSTIBLE AND NON-COMBUSTIBLE MATERIAL (SEE NOTE 5, FIG 52B)

TYPE OF CONSTRUCTION	DIMENSION A: CLEARANCE EXTENDING OUT FROM BUILDING (FT)	DIMENSION B: SIDE CLEARANCE MEASURED FROM EDGE OF WINDOW, DOOR, ETC. (FT)
NON-COMBUSTIBLE WALLS	3*	N/A
COMBUSTIBLE WALLS	10	N/A
DOORS	20	10
WINDOWS (FIRST STORY)	10	10
WINDOWS (SECOND STORY)	REFER TO WALL TYPE	REFER TO WALL TYPE
AIR INTAKES	10	10
FIRE ESCAPES	20	20

*SEE NOTE 2, FIG 52B

NOTES:

1. REFER TO FIG 52B FOR ADDITIONAL NOTES REGARDING TRANSFORMER CLEARANCES.

3				
2				
1	2/28/23	EANES	FLETCHER	GRAHAM
0	3/3/22	EANES	FLETCHER	GRAHAM
REVISED		BY	CHK'D	APPR.

PAD-MOUNTED TRANSFORMER CLEARANCES FROM BUILDINGS

DEC	DEM	DEP	DEF
X		X	

FIG 52A

NOTES:

1. ADEQUATE PASSAGEWAYS (UP TO AND INCLUDING A MAINTAINED GRAVEL ACCESS ROAD) TO ACCOMMODATE CRANES, LINE TRUCKS, OR OTHER NECESSARY LIFTING AND HAULING EQUIPMENT SHALL BE PROVIDED TO ALLOW FOR MAINTENANCE, OPERATION, OR REPLACEMENT.

2. DISTANCES ARE FROM THE PAD OR TRANSFORMER CASING, WHICHEVER IS CLOSER TO THE BUILDING OR OPENING. THIS DIMENSION MUST BE 6' FOR ANY 3750 KVA OR LARGER TRANSFORMER.

3. IF THE BUILDING HAS AN OVERHANG, THE DISTANCE IS MEASURED FROM THE OUTSIDE EDGE OF THE OVERHANG.

4. OUTSIDE WALKWAYS OR STAIRS ATTACHED TO THE BUILDING SHALL BE CONSIDERED AS PART OF THE BUILDING.

5. IF A BUILDING IS CONSTRUCTED OF BOTH COMBUSTIBLE AND NON-COMBUSTIBLE MATERIALS, NO PART OF THE PAD-MOUNTED TRANSFORMER CAN BE WITHIN THE ALLOWABLE DISTANCE FOR THE COMBUSTIBLE MATERIALS IN ANY DIRECTION.

6. DISTANCES LESS THAN THOSE SPECIFIED MAY BE ALLOWED IF APPROVED BY THE APPROPRIATE CODE ENFORCEMENT AUTHORITY, BUT IN NO CASE SHALL DISTANCES TO A BUILDING BE LESS THAN 3 FT. THIS MAY REQUIRE ALTERNATE MEANS OF FIRE PROTECTION INCLUDING FIRE BARRIERS, FIRE RATED WALLS, OIL CONTAINMENT MEANS, OR OTHER APPROVED MEASURES.

7. FIRE-RATED WALLS AROUND TRANSFORMERS MUST BE A MINIMUM OF 1'-0" ABOVE THE ANTICIPATED HEIGHT OF THE INSTALLED TRANSFORMER. NO WALL, WHETHER FOR FIRE PROTECTION OR AESTHETIC PURPOSES, CAN BE HIGH ENOUGH TO PREVENT DUKE ENERGY'S INSTALLATION AND FUTURE MAINTENANCE OF THE TRANSFORMER WITH STANDARD EQUIPMENT AND LIFTING DEVICES AS DETERMINED BY DUKE ENERGY.

8. FINAL GRADE AT THE LOCATION OF THE PAD-MOUNTED TRANSFORMER SHALL PROVIDE FOR MINERAL OIL TO DRAIN FROM THE BUILDING. OTHERWISE, AN OIL CONTAINMENT MEANS IS REQUIRED.

9. CLEARANCES LISTED ARE DUKE ENERGY MINIMUM REQUIREMENTS. THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) MAY HAVE REQUIREMENTS THAT ARE MORE STRINGENT. IT SHALL BE THE CUSTOMER'S RESPONSIBILITY TO CONFORM TO ALL LOCAL BUILDING CODES, INSURANCE REGULATIONS, OR ORDINANCES AFFECTING THE TRANSFORMER LOCATION.

10. ANY FENCING OR SCREENING (INCLUDING SHRUBBERY OR OTHER PLANTINGS) PLACED AROUND PAD-MOUNTED SURFACE EQUIPMENT MUST MAINTAIN THE PROPER CLEARANCES STATED ON FIG 52A AND AT MINIMUM MUST MAINTAIN VISIBILITY OF THE EQUIPMENT FROM THE SIDE MOST CONDUCIVE TO THE COMPANY FOR MAINTENANCE AND RESTORATION ACTIVITIES.

11. AESTHETIC WRAPS ARE NOT ALLOWED ON PAD-MOUNTED TRANSFORMERS.

12. REPAINTING OF PAD-MOUNTED TRANSFORMERS, OTHER THAN ITS ORIGINAL COLOR, IS NOT ALLOWED.

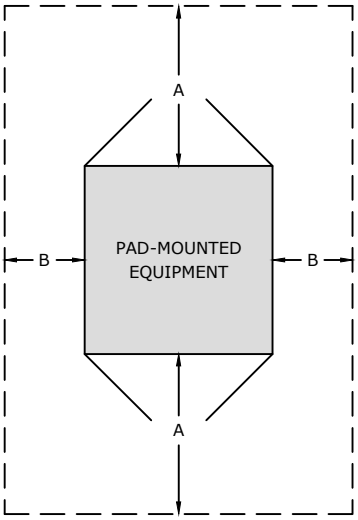
DUKE ENERGY.

REVISED		BY	CHK'D	APPR.
3				
2				
1	2/28/23	EANES	FLETCHER	GRAHAM
0	3/3/22	EANES	FLETCHER	GRAHAM

PAD-MOUNTED TRANSFORMER CLEARANCES FROM BUILDINGS

DEC	DEM	DEP	DEF
X		X	

FIG 52B



MINIMUM CLEAR WORKING SPACE AROUND PAD-MOUNTED EQUIPMENT		
TYPE OF PAD-MOUNTED EQUIPMENT	DIMENSION A: DOOR SIDES (FT)	DIMENSION B: (FT)
TRANSFORMERS (SEE NOTE 4)	10	3
SWITCHGEAR (SEE NOTE 3)	10	5
RECLOSERS, PRIMARY METERS, ETC.	10	3

MISCELLANEOUS CLEARANCES	
TYPE OF EQUIPMENT	CLEARANCE IN ANY DIRECTION (FT)
FUEL OR GAS DISPENSERS	20
CONTAINERS STORING FLAMMABLE LIQUID OR GAS	10
CUSTOMER-OWNED GENERATORS OR TRANSFORMERS	10
FIRE HYDRANTS	(SEE NOTE 7)
NATURAL GAS METERS	3

NOTES:

1. ADEQUATE PASSAGEWAYS (UP TO AND INCLUDING A MAINTAINED GRAVEL ACCESS ROAD) TO ACCOMMODATE CRANES, LINE TRUCKS, OR OTHER NECESSARY LIFTING AND HAULING EQUIPMENT SHALL BE PROVIDED TO ALLOW FOR MAINTENANCE, OPERATION, OR REPLACEMENT.
2. DISTANCES ARE FROM THE PAD OR SURFACE MOUNTED EQUIPMENT, WHICHEVER IS CLOSER TO THE OBJECT IN QUESTION.
3. A MINIMUM CLEAR WORKING SPACE OF 5 FT MUST BE MAINTAINED FROM EACH NON-DOOR SIDE OF THE EQUIPMENT (TO ACCOMMODATE CONTROL CABINETS, ETC.).
4. WHERE A METER IS MOUNTED TO A TRANSFORMER, A CLEAR SPACE AROUND THE METER OF AT LEAST 3 FT WIDE, 4 FT DEEP, AND 8 FT HIGH MUST BE PROVIDED AND ALWAYS AVAILABLE FOR READING, INSPECTING, TESTING, AND MAINTENANCE OPERATIONS.
5. DISTANCES LESS THAN THOSE SPECIFIED MAY BE ALLOWED IF APPROVED BY THE APPROPRIATE CODE ENFORCEMENT AUTHORITY. THIS MAY REQUIRE ALTERNATE MEANS OF FIRE PROTECTION INCLUDING FIRE BARRIERS, FIRE RATED WALLS, SPRINKLER SYSTEMS, OIL CONTAINMENT MEANS, OR OTHER APPROVED MEASURES.
6. IT SHALL BE THE CUSTOMER'S RESPONSIBILITY TO CONFORM TO ALL LOCAL BUILDING CODES, INSURANCE REGULATIONS, OR ORDINANCES AFFECTING THE EQUIPMENT LOCATION.
7. 4 FT, MAY BE REDUCED TO 3 FT BY AGREEMENT WITH LOCAL FIRE AUTHORITY.
8. ANY FENCING OR SCREENING (INCLUDING SHRUBBERY OR OTHER PLANTINGS) PLACED AROUND PAD-MOUNTED SURFACE EQUIPMENT MUST MAINTAIN THE PROPER CLEARANCES STATED ABOVE AND AT MINIMUM MUST MAINTAIN VISIBILITY OF THE EQUIPMENT FROM THE SIDE MOST CONDUCIVE TO THE COMPANY FOR MAINTENANCE AND RESTORATION ACTIVITIES.
9. AESTHETIC WRAPS ARE NOT ALLOWED ON ANY PAD-MOUNTED EQUIPMENT.
10. REPAINTING OF PAD-MOUNTED EQUIPMENT, OTHER THAN ITS ORIGINAL COLOR, IS NOT ALLOWED.

DUKE ENERGY.

REVISED	BY	CHK'D	APPR.
3			
2	2/28/23	EANES	FLETCHER	GRAHAM
1	3/3/22	EANES	FLETCHER	GRAHAM
0	1/18/16	EANES	EANES	ADCOCK

PAD-MOUNTED EQUIPMENT WORKING SPACE AND MISCELLANEOUS CLEARANCES

DEC	DEM	DEP	DEF
X		X	

FIG 53

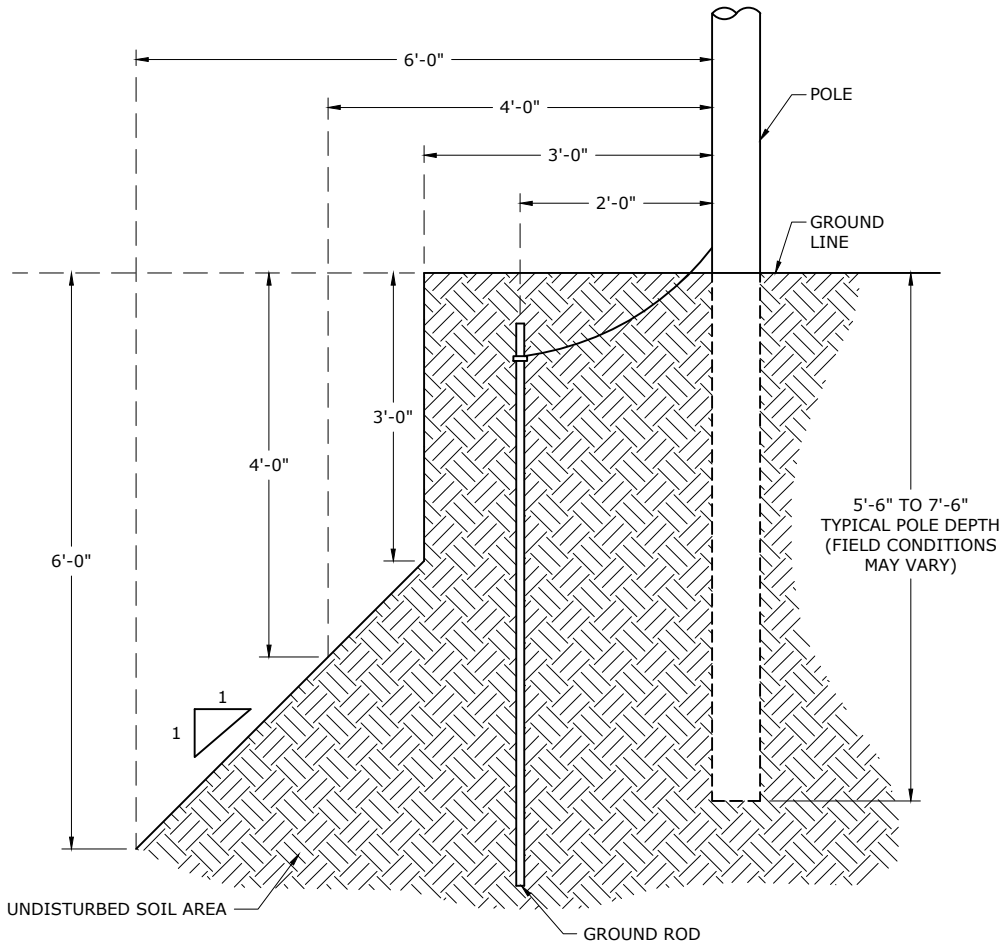


FIGURE 1

TABLE 1	
DEPTH OF TRENCH	MINIMUM CLEARANCE FROM NEAR EDGE OF TRENCH TO POLE
3'-0" OR LESS	3'-0"
4'-0"	4'-0"
5'-0"	5'-0"
6'-0"	6'-0"

NOTES:

1. **THE SCOPE OF THIS GUIDELINE APPLIES ONLY TO DISTRIBUTION POWER POLES (VOLTAGES UP TO 35KV).** CONTACT DUKE ENERGY TO DETERMINE LINE VOLTAGE. IF TRANSMISSION VOLTAGES (> 35KV) ARE PRESENT ON THE POLE OR WITHIN THE WORK AREA, DUKE ENERGY TRANSMISSION DEPARTMENT WILL ADVISE REQUIREMENTS FOR EXCAVATION AND MINIMUM WORKING CLEARANCES.
2. CONTACT DUKE ENERGY TO EVALUATE POLE SUPPORT IF PLANNED EXCAVATION ENCROACHES THE 'UNDISTURBED SOIL AREA' SHOWN IN FIG. 1, AND/OR IF ANCHORS WITH DOWN GUYS OR PUSH BRACE POLES ARE PRESENT ON THE SIDE OF THE POLE THAT FACES THE PLANNED EXCAVATION. DUKE ENERGY MAY NEED TO DEEP SET A TALLER POLE TO ALLOW TRENCHING IN SOME SITUATIONS.
3. MINIMUM CLEARANCES SHOWN ARE FOR 3RD PARTY EXCAVATIONS BESIDE DISTRIBUTION POWER POLES. CONSULT DUKE ENERGY IF TRENCHING FOR FACILITIES TO BE LOCATED ON POLE, I.E. CONDUIT. OR FOR SHALLOW EXCAVATION, I.E. SIDEWALKS, BESIDE THE POLE.
4. EXCAVATION EQUIPMENT MUST MAINTAIN AT MINIMUM A 10 FT. CLEARANCE TO OVERHEAD DISTRIBUTION LINES.
5. EXCAVATOR IS RESPONSIBLE FOR HAVING UTILITY LOCATES COMPLETED.
6. BACKFILL SHOULD BE COMPACTED IN 6" LIFTS.
7. EXCAVATOR IS RESPONSIBLE TO EMPLOY PROPER MECHANICAL MEANS, SUCH AS SHORING, TO MAINTAIN THE STABILITY OF THE TRENCH WALL AND THE DUKE ENERGY POLE STRUCTURE. IF CAVE-IN OCCURS, EXCAVATOR WILL BE RESPONSIBLE FOR THE COSTS INCURRED BY DUKE ENERGY TO REPLACE AND RECOMPACT THE SOIL AROUND THE POLE.
8. IF UNEXPECTED FIELD CONDITIONS ARE ENCOUNTERED THAT COULD AFFECT THE STABILITY OF THE SOIL IN THE 'UNDISTURBED SOIL AREA' SHOWN IN FIG. 1, I.E. WATER, CAVITIES, ETC., STOP WORK AND CONTACT DUKE ENERGY IMMEDIATELY.
9. THIS GUIDELINE DOES NOT PREVENT THE EXCAVATOR FROM HIRING A LICENSED PROFESSIONAL ENGINEER TO PREPARE AN EXCAVATION PLAN BASED ON ACTUAL FIELD SOIL CONDITIONS. IN SUCH CASES, THE ENGINEERED EXCAVATION PLAN MUST BE SUBMITTED TO DUKE ENERGY FOR REVIEW PRIOR TO ANY EXCAVATION WORK BEING PERFORMED.

DUKE ENERGY.

REVISED		BY	CHK'D	APPR.
3				
2				
1	2/29/24	EANES	FLETCHER	GRAHAM
0	3/3/22	EANES	FLETCHER	GRAHAM

GUIDELINES FOR THIRD PARTY EXCAVATION AND TRENCHING BESIDE DISTRIBUTION POWER POLES

DEC	DEM	DEP	DEF
X		X	

FIG 54

PAD-MOUNTED TRANSFORMER SIZE (KVA)	**DEP ONLY** MAXIMUM NUMBER OF CUSTOMER CONDUCTORS PER PHASE IN PAD-MOUNTED TRANSFORMERS		**DEC ONLY** MAXIMUM NUMBER OF CONDUCTORS PER PHASE IN PAD-MOUNTED TRANSFORMERS
	480Y/277	208Y/120	CONDUCTOR SIZES 750MCM AND SMALLER
75	12	12	12
150	12	12	12
225*	N/A	N/A	12
300	12	12	12
500	16	16	12
750	16	16	12
1000	16	16	12
1500	16	N/A	12
2000*	N/A	N/A	12
2500	16	N/A	12
3000	16	N/A	12
3750	16	N/A	12

* DEC ONLY

NOTES:

1. IF THE RECOMMENDED CONDUCTOR LIMITS ABOVE ARE EXCEEDED, A SECONDARY BUSS ENCLOSURE WILL BE REQUIRED. CONTACT COMPANY REPRESENTATIVE FOR DETAILS.
2. MAXIMUM CUSTOMER CONDUCTOR SIZE IS 750 KCMIL CU/AL.
3. PARALLELED CUSTOMER CONDUCTORS MUST BE "RUNG OUT" (OHMED OUT) PRIOR TO ENERGIZING TO PREVENT CROSS PHASING.
4. ALL NEW THREE-PHASE PAD-MOUNTED TRANSFORMERS WITH A 4160Y/2400 VOLT SECONDARY HAVE SECONDARY LIVE-FRONT BUSHINGS WITH A 4-HOLE SPADE (0.56" DIAMETER BOLT HOLES ON 1.75" CENTERS).
5. 208Y/120V SECONDARY VOLTAGE NOT AVAILABLE IN EITHER AREA FOR SIZES GREATER THAN 1000 KVA.

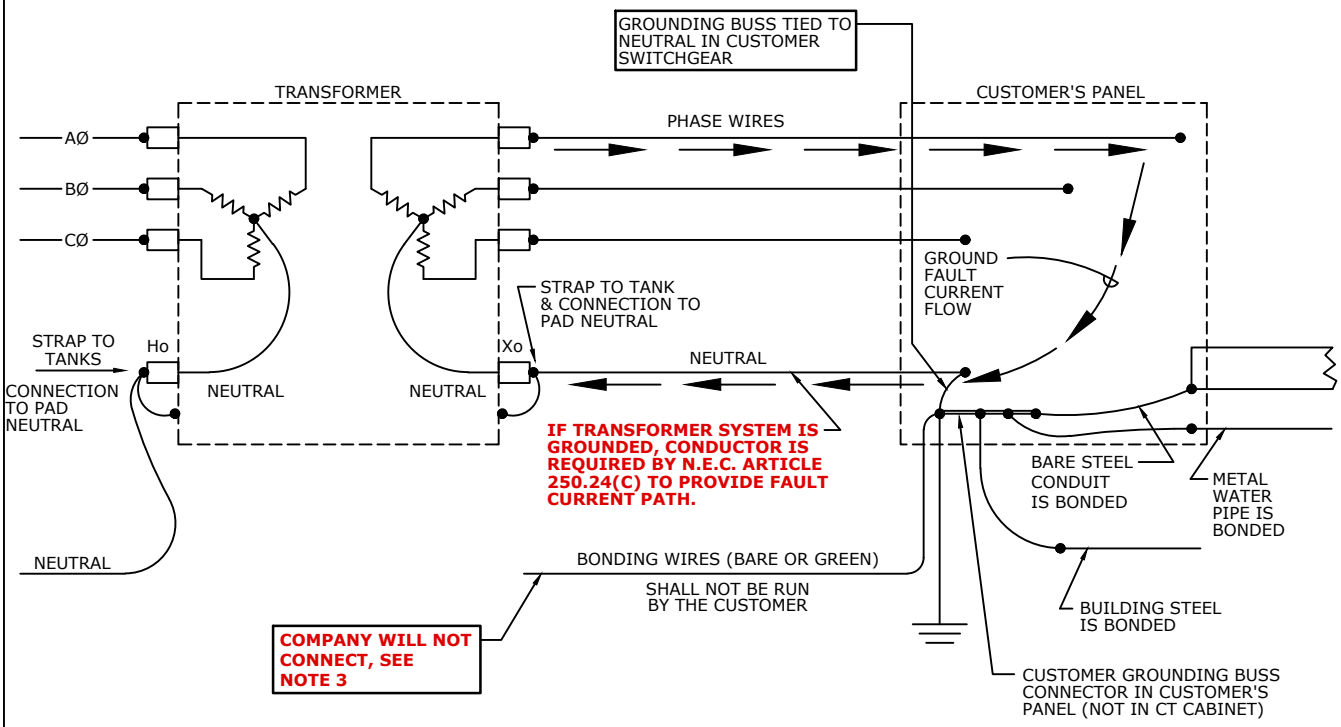
DUKE ENERGY.

REVISED		BY	CHK'D	APPR.
4	6/25/19	MORGAN	VALENTIN	ADCOCK
3	3/4/19	EANES	EANES	ADCOCK
2	2/21/17	EANES	EANES	ADCOCK
0	2/1/16	SIMPSON	EANES	ADCOCK

MAXIMUM NUMBER OF CUSTOMER CONDUCTORS IN SECONDARY COMPARTMENT OF THREE-PHASE PAD-MOUNTED TRANSFORMERS

DEC	DEM	DEP	DEF
X		X	

FIG 58



NOTES:

1. IF THE TRANSFORMER SECONDARY NEUTRAL IS GROUNDED, THE CUSTOMER MUST CONNECT A CONDUCTOR FROM THEIR PANEL TO THE TRANSFORMER. THIS NEUTRAL CONDUCTOR PROVIDES A PATH FOR GROUND FAULT CURRENT TO FLOW.

2. A TRANSFORMER CONNECTED FOR FOUR WIRE SERVICE (GROUNDED NEUTRAL) CANNOT SUPPLY THREE WIRE SERVICES.

3. **A SEPARATE BONDING CONDUCTOR OR CONDUCTORS ARE NOT NECESSARY. ELECTRICIANS SHOULD BE ADVISED NOT TO RUN BONDING CONDUCTORS. IF THEY INSIST ON RUNNING BONDING CONDUCTORS, DUKE ENERGY WILL NOT CONNECT THEM TO ANY COMPANY EQUIPMENT.**

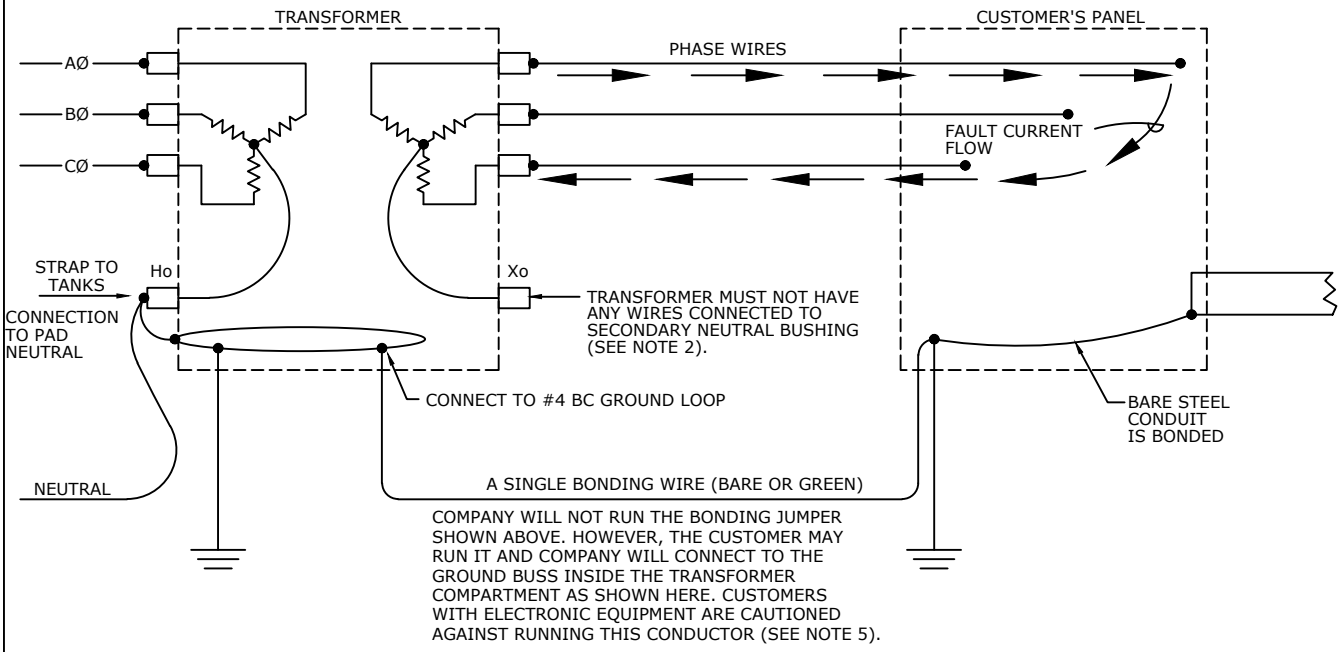
REVISED		BY	CHK'D	APPR.
3				
2	2/28/23	EANES	FLETCHER	GRAHAM
1	3/4/19	EANES	EANES	ADCOCK
0	11/2/15	SIMPSON	SIMPSON	ADCOCK

FOUR WIRE SERVICES,

GROUNDED WYE CONNECTION

DEC	DEM	DEP	DEF
X		X	

FIG 59



NOTES:

1. BONDING WIRE SHALL BE ONE CONDUCTOR ONLY, TYPICALLY A SMALL CONDUCTOR EASY TO ATTACH TO #4 BC GROUND LOOP IN PAD-MOUNT.

2. IF THE TRANSFORMER IS CONNECTED FOR THREE WIRE SERVICE, THE SECONDARY IS CONNECTED FLOATING WYE. THE SECONDARY NEUTRAL BUSHING MUST BE CLEAR OF ALL CONNECTIONS, INCLUDING THE SECONDARY BUSHING GROUND STRAP. THE SECONDARY NEUTRAL BUSHING MUST BE UNGROUNDED SO FAULT CURRENT WILL ONLY FLOW IN THE PHASE WIRES.

   ONE EXCEPTION:
   IF CUSTOMER HAS A HIGH RESISTANCE GROUND DETECTION SYSTEM, THEY WILL WANT TO RUN ONE SMALL CONDUCTOR (EX. #12) TO ATTACH TO XO. THIS IS PERMITTED. GROUND STRAP IS STILL NOT CONNECTED IN THIS CASE. IF THERE ARE ANY QUESTIONS ABOUT THIS, CONTACT DISTRIBUTION STANDARDS.

3. A TRANSFORMER CONNECTED FOR THREE WIRE SERVICE (NO NEUTRAL) **CANNOT** SUPPLY FOUR WIRE SERVICES.

4. DUKE ENERGY SHALL RUN A BONDING CONDUCTOR (#4 BC) FROM THE GROUND LOOP TO THE METERING LOCATION TO BOND THE METER BOX MOUNTED ON THE WALL OF THE TRANSFORMER TANK. IF THE METER BOX IS MOUNTED TO THE CUSTOMER'S WALL, THE BONDING CONDUCTOR SHALL BE ATTACHED TO THE CUSTOMER'S GROUND.

5. CUSTOMER SHOULD BE AWARE THAT A THREE WIRE SERVICE SHOULD ONLY BE USED IN SPECIAL CASES. CUSTOMER MUST HAVE A GROUND DETECTION SYSTEM INSTALLED N.E.C. ARTICLE 250.21(B). CUSTOMER HAVING ELECTRONIC LOADS SUCH AS VARIABLE SPEED DRIVES OR LIGHTNING CONCERNS SHOULD CONSIDER A GROUNDED WYE CONNECTION.

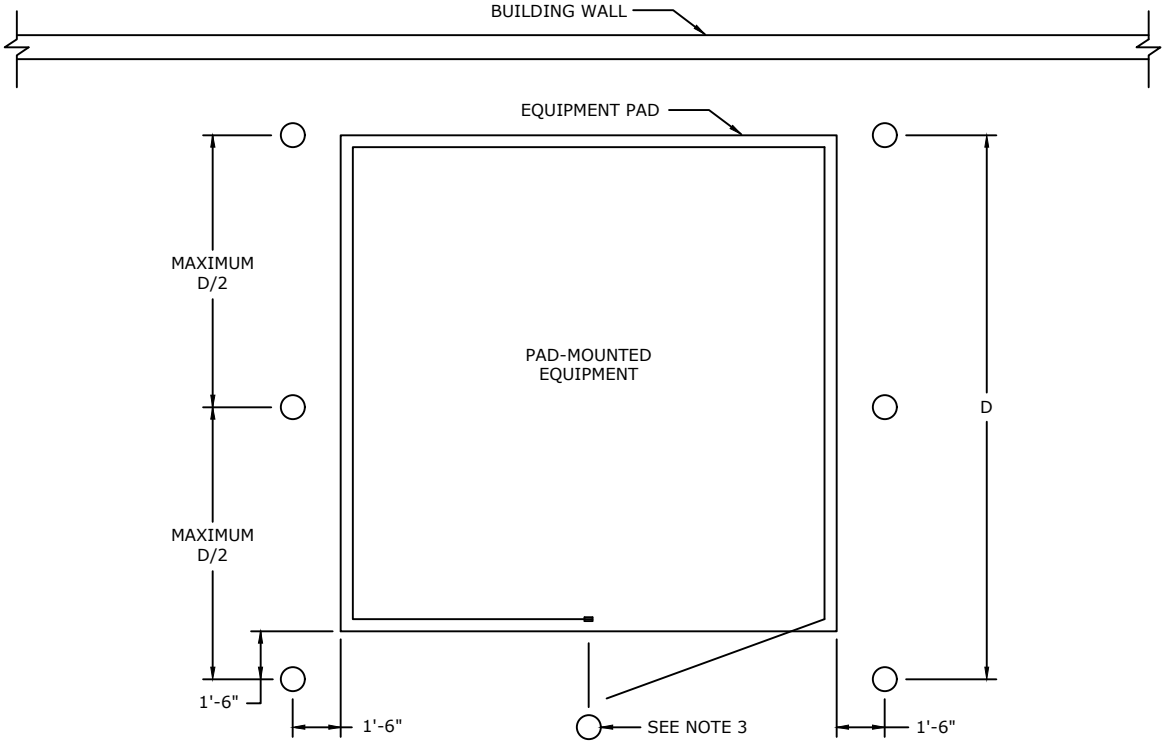
REVISED		BY	CHK'D	APPR.
3				
2				
1	2/28/23	EANES	FLETCHER	GRAHAM
0	11/2/15	SIMPSON	SIMPSON	ADCOCK

THREE WIRE SERVICES,

FLOATING WYE CONNECTION

DEC	DEM	DEP	DEF
X		X	

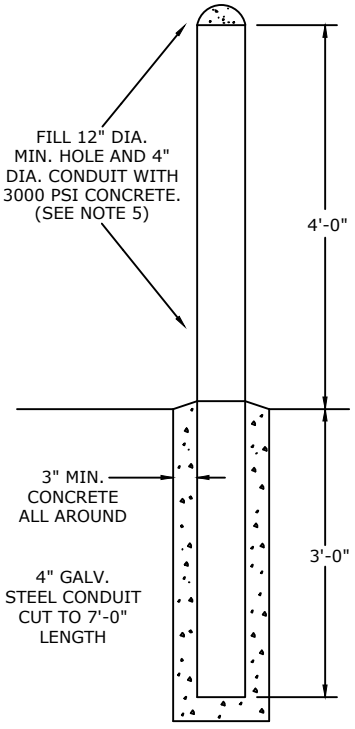
FIG 60



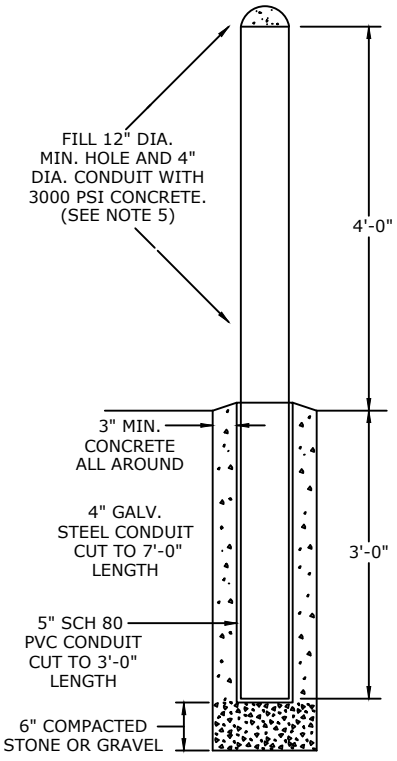
PLAN VIEW

NOTES:

1. PROTECTIVE POLES CAN BE INSTALLED ON ALL SIDES OF PAD-MOUNTED EQUIPMENT THAT ARE SUBJECT TO REGULAR VEHICLE TRAFFIC. THEIR USE IS AT THE DISCRETION OF LOCAL ENGINEERING AND WILL BE THE CUSTOMER'S RESPONSIBILITY TO PROVIDE AND INSTALL AFTER ALL REASONABLE EFFORTS TO LOCATE THE PAD-MOUNTED EQUIPMENT ELSEWHERE HAVE BEEN EXHAUSTED.
2. POLES SHALL BE EVENLY SPACED ALONG THE SIDES OF THE PAD-MOUNTED EQUIPMENT, NO WIDER THAN HALF THE DIMENSION OF THE SIDE THEY ARE PROTECTING. EXCEPTIONS TO THIS ALONG SIDES WITH DOORS ARE ALLOWED IN ORDER TO ACCOMMODATE NOTE 3.
3. ON ANY SIDE OF PAD-MOUNTED EQUIPMENT WITH DOORS, THIS POLE SHALL BE CENTRALLY LOCATED BETWEEN THE DOORS AND MUST ACCOMMODATE THE DOOR SWING OF THE EQUIPMENT. IT SHALL BE EITHER REMOVABLE OR COLLAPSIBLE. REMOVABLE OR COLLAPSIBLE DESIGNS OTHER THAN WHAT ARE SHOWN MUST BE APPROVED BY LOCAL ENGINEERING.
4. POLES LOCATED ON ANY SIDE OF PAD-MOUNTED EQUIPMENT SHALL NOT INTERFERE WITH THE SAFE OPERATION AND EXPECTED MAINTENANCE OR REPLACEMENT OF THAT EQUIPMENT.
5. POLES SHALL BE PAINTED YELLOW OR OUTFITTED WITH A YELLOW BOLLARD COVER OR POST SLEEVE.
6. ALL POLES SHALL HAVE A 2" REFLECTIVE TAPE APPLIED EITHER AROUND THE TOP OF THE BOLLARD OR EXTENDING VERTICALLY DOWN THE LENGTH OF THE BOLLARD FOR 24". VERTICAL APPLICATIONS MUST BE ON THE SIDE FACING ANY ANTICIPATED TRAFFIC.



STANDARD POLE



REMOVABLE POLE

REVISED	BY	CHK'D	APPR.
3			
2	10/21/19	EANES	EANES	ADCOCK
1	3/4/19	EANES	EANES	ADCOCK
0	10/28/15	SIMPSON	EANES	ADCOCK

PROTECTIVE POLES FOR PAD-MOUNTED EQUIPMENT

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 61

DELIVERY VOLTAGE (SEE NOTE 1)	NUMBER OF SERVICE WIRES	MINIMUM LOAD (KW)	MAXIMUM LOAD (KW)	TYPE OF METER
120	2	1	12	SELF-CONTAINED CL 320 AMP
120/240	3	1	24/48/77 (SEE NOTE 2)	SELF-CONTAINED CL 320 AMP
240/120	4	10	40/80/133 (SEE NOTE 2)	SELF-CONTAINED CL 320 AMP
120/208	3 (NETWORK)	1	12 (SEE NOTE 3)	SELF-CONTAINED CL 320 AMP
120/240	3	78	182	T-RATED CL 20
208/120	4	10	36/72/115 (SEE NOTE 2)	SELF-CONTAINED CL 320 AMP
208/120	4	116	650	T-RATED CL 20
480/277 (SEE NOTE 4)	4	75	3200	T-RATED CL 20
480	3	NOT AVAILABLE	NOT AVAILABLE	NOT AVAILABLE
>600 VOLTS (SEE NOTE 4)	4 WIRE WYE	BASED ON CT SIZE	BASED ON CT SIZE	T-RATED CL 20
>600 VOLTS	ALL THREE-PHASE DELTAS	NOT AVAILABLE	NOT AVAILABLE	NOT AVAILABLE

NOTES:

1. COMPANY PROVIDES SERVICE TRANSFORMATION ON ALL VOLTAGES BELOW 600 VOLTS. CUSTOMER PROVIDES SERVICE TRANSFORMATION ON VOLTAGES GREATER THAN 600 VOLTS.

2. MAXIMUM LOAD RATINGS ARE BASED ON AMPERE RATING OF METER SOCKET: 100 AMP/ 200 AMP/ 320 AMP. FOR INSTANCE, MAXIMUM LOAD ON 320 AMP RATED METER SOCKET (400 AMP METER SOCKET WITH 320 AMP METER IS DERATED TO MATCH THE METER) AT UNITY POWER FACTOR, IS 320 AMPS FOR CONTINUOUS LOAD, OR 77 KW AT SINGLE-PHASE OR 115 KW AT THREE-PHASE. ALL SELF-CONTAINED METERS ARE CL 320 AMP.

3. LIMIT OF 12 KW MAXIMUM FOR INDIVIDUAL METER INSTALLATIONS THAT ARE SERVED FROM THREE-PHASE SYSTEMS IN ORDER TO KEEP SYSTEM BALANCED. HIGHER LOADS (21/42/67 KW) MAY BE PERMITTED IF BALANCED ACROSS THREE-PHASE SYSTEM.

4. WILL BE METERED USING POTENTIAL TRANSFORMERS TO STEP THE VOLTAGE DOWN TO 120 VOLTS FOR THE METER, AND IF REQUIRED, CURRENT TRANSFORMERS TO REDUCE THE CURRENT GOING THROUGH THE METER.

5. 120/240V 3 WIRE SINGLE-PHASE LOADS SERVED FROM 240/120 VOLT THREE-PHASE BANKS MUST BE CONNECTED PER FIGURE 32.

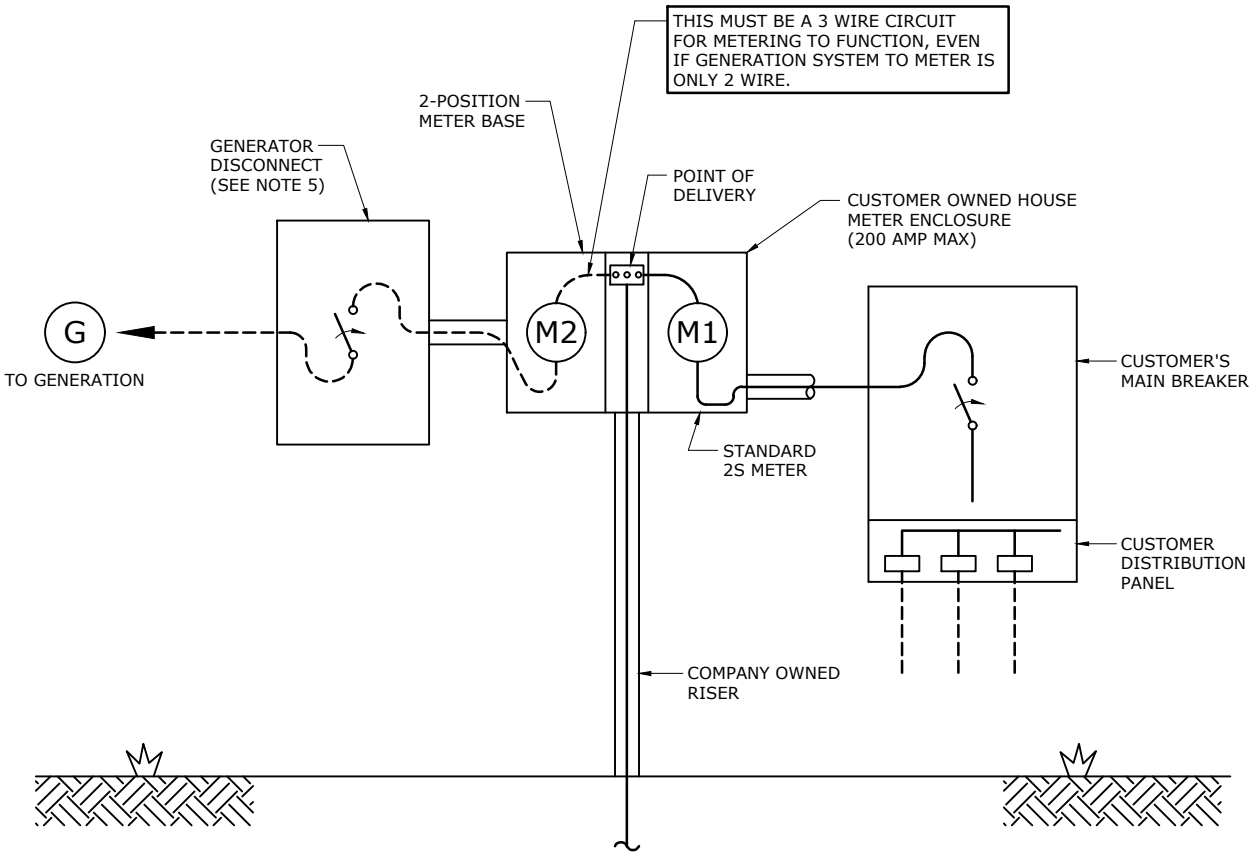
DUKE ENERGY.

3				
2				
1				
0	10/28/15	SIMPSON	SIMPSON	ADCOCK
REVISED		BY	CHK'D	APPR.

SELL ALL AND INDEPENDENT GENERATION
SERVICE AND METER STANDARDS

DEC	DEM	DEP	DEF
		X	

FIG 62



NOTES:

1. USE THIS WIRING METHOD FOR A SMALL POWER PRODUCER (USUALLY A PHOTOVOLTAIC SYSTEM) WHO SELLS ENTIRE OUTPUT OF GENERATION TO DUKE ENERGY.

2. PREFERRED CONFIGURATION FOR 200 AMP HOUSE SERVICE IS A 2-POSITION METER BASE AS SHOWN ABOVE. IF THE HOUSE SERVICE REQUIRES A 320 AMP METER, THEN A SEPARATE WIRING TROUGH AND TWO SEPARATE METER BASES ARE REQUIRED (SEE FIGURE 64). THE HOUSE METER BASE SHALL BE RATED 320 AMPS AND THE GENERATION SYSTEM METER BASE SHALL BE RATED 200 AMPS. COMPANY TO CONNECT CONDUCTORS IN TROUGH USING CONNECTOR BLOCKS.

3. FOR SELL ALL METERS, METERING WILL INSTALL A BI-DIRECTIONAL METER.

4. ALL SMALL POWER PRODUCER INSTALLATIONS SHALL HAVE WARNING LABELS PLACED AT METER AND AT GENERATOR DISCONNECT.

5. CUSTOMER OWNED DISCONNECT MUST BE WITHIN SIGHT OF METER (SEE DEFINITIONS, SECTION II, A), LOAD-BREAK RATED, LOCKABLE IN **OPEN** POSITION AND PROVIDE A "VISIBLE OPEN". DISCONNECT MUST BE READILY ACCESSIBLE TO COMPANY PERSONNEL.

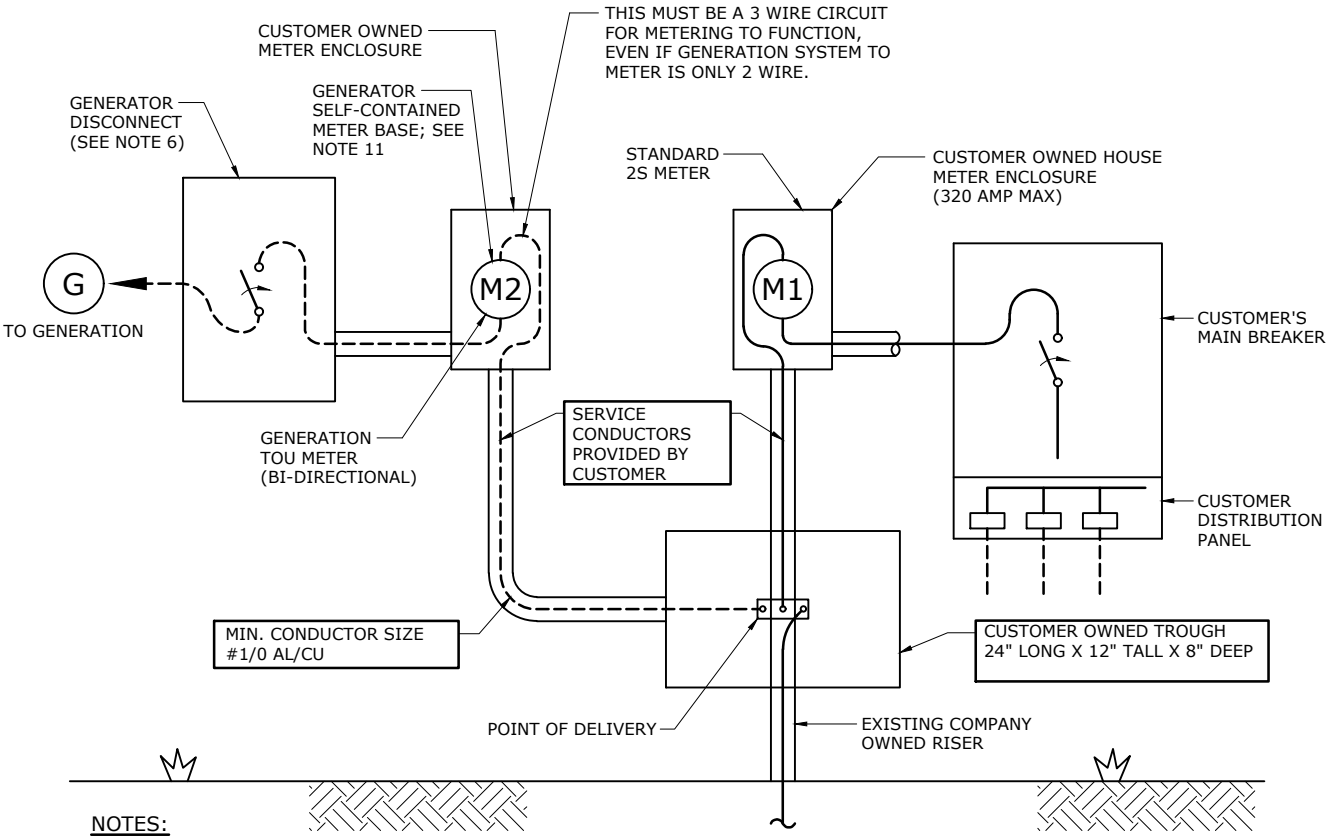
6. EXCEPTIONS TO THESE REQUIREMENTS MUST HAVE PRIOR WRITTEN CONSENT FROM THE COMPANY.

REVISED		BY	CHK'D	APPR.
6				
5	2/29/24	SHAFFER	EANES	GRAHAM
4	2/28/23	EANES	FLETCHER	GRAHAM
0	10/28/15	SIMPSON	MEDLIN	CHANDLER

SELL ALL GENERATION - SINGLE-PHASE
SELF-CONTAINED PREFERRED CONFIGURATION SERVICE
ADDING GENERATION METER, SELF-CONTAINED
NC AND SC

DEC	DEM	DEP	DEF
X		X	

FIG 63



NOTES:

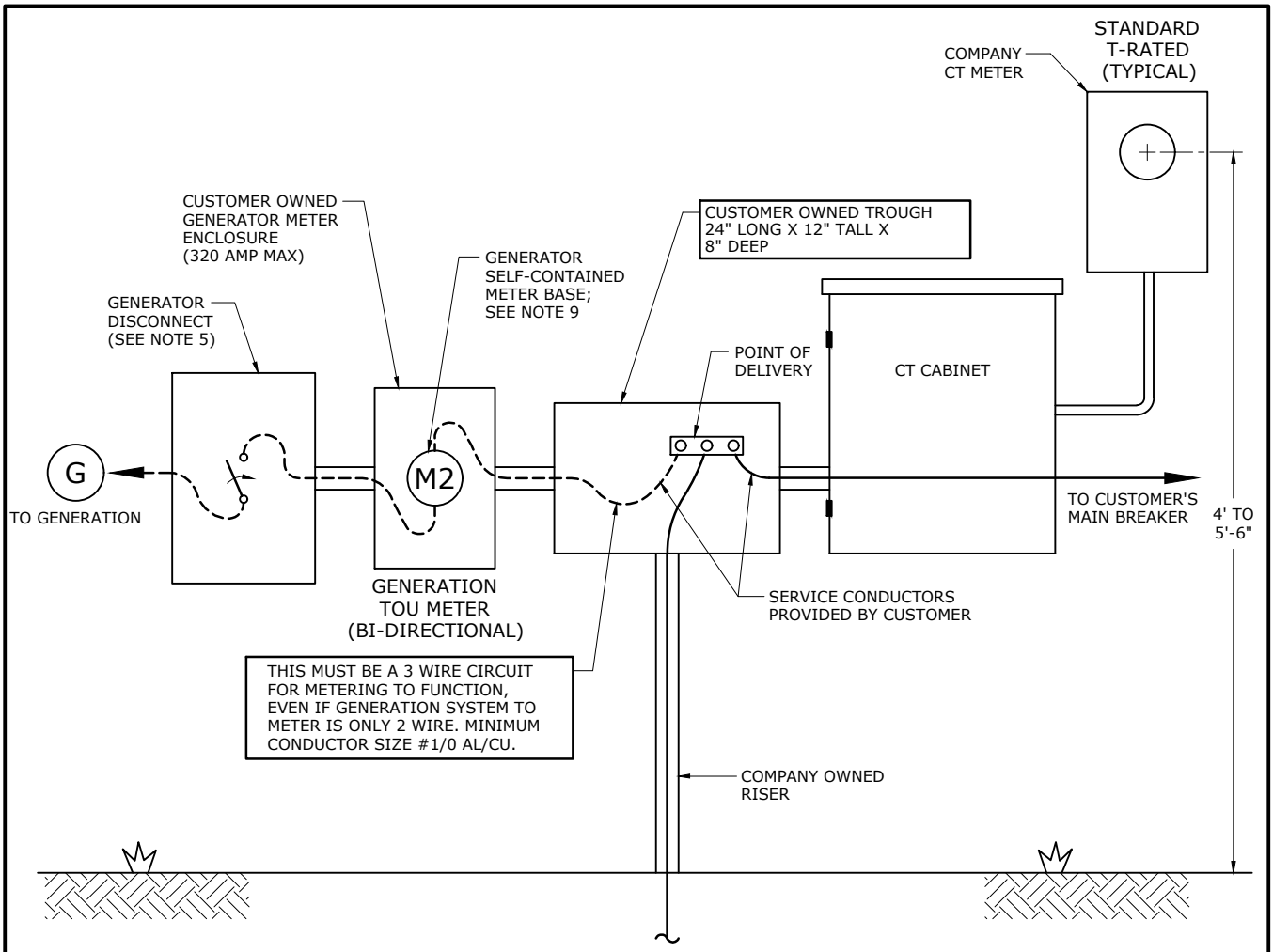
1. USE THIS WIRING METHOD FOR A SMALL POWER PRODUCER (USUALLY A PHOTOVOLTAIC SYSTEM) WHO SELLS ENTIRE OUTPUT OF GENERATION TO COMPANY.
2. FOR SELL ALL CONFIGURATIONS, A BI-DIRECTIONAL METER WILL BE INSTALLED.
3. ALL SMALL POWER PRODUCER INSTALLATIONS SHALL HAVE WARNING LABELS PLACED AT METER AND AT GENERATOR DISCONNECT.
4. CUSTOMER'S ELECTRICIAN MUST MAKE ARRANGEMENTS WITH COMPANY FOR A CLEARANCE ON EXISTING SERVICE, REMOVE COMPANY-OWNED RISER, INSTALL TROUGH AND RECONNECT RISER ABOVE AND BELOW TROUGH.
5. COMPANY TO CONNECT CONDUCTORS IN TROUGH USING CONNECTOR BLOCKS.
6. CUSTOMER OWNED DISCONNECT MUST BE WITHIN SIGHT OF METER (SEE DEFINITIONS, SECTION II, A), LOAD-BREAK RATED, LOCKABLE IN **OPEN** POSITION AND PROVIDE A "VISIBLE OPEN". DISCONNECT MUST BE READILY ACCESSIBLE TO COMPANY PERSONNEL.
7. PREFERRED CONFIGURATION FOR 200 AMP HOUSE SERVICE AND 200 AMP PV LOAD IS A 2-GANG METER ENCLOSURE AS SHOWN IN FIGURE 63, BUT CUSTOMER MAY USE THIS ALTERNATE CONFIGURATION AS AN OPTION. IF HOUSE SERVICE IS 320 AMP, THEN THIS ALTERNATE CONFIGURATION MUST BE UTILIZED FOR GENERATION CONNECTION.
8. FOR VERY CONFINED SPACES (NO ROOM FOR TROUGH), CUSTOMER CAN INSTALL DOUBLE LUGS ON SOURCE SIDE OF METER ENCLOSURE (SIZE #4 - 500 KCMIL) FOR COMPANY CONDUCTORS AND SIZED TO FIT GENERATOR CONDUCTORS.
9. A GENERATOR SELF-CONTAINED METER BASE IS REQUIRED WHEN THE LARGEST SIZED GENERATION PROTECTION DEVICE DOES NOT EXCEED 400 AMPS. LOCATE ADJACENT TO ELECTRIC SERVICE METER.
10. EXCEPTIONS TO THESE REQUIREMENTS MUST HAVE PRIOR WRITTEN CONSENT FROM THE COMPANY.

REVISED	BY	CHK'D	APPR.
5			
4	2/29/24	SHAFFER	EANES	GRAHAM
3	2/28/20	EANES	FLETCHER	GRAHAM
0	2/1/16	SIMPSON	MEDLIN	CHANDLER

SELL ALL GENERATION - SINGLE-PHASE
SELF-CONTAINED ALTERNATE CONFIGURATION SERVICE
ADDING GENERATION METER, SELF-CONTAINED
NC AND SC

DEC	DEM	DEP	DEF
X		X	

FIG 64



NOTES:

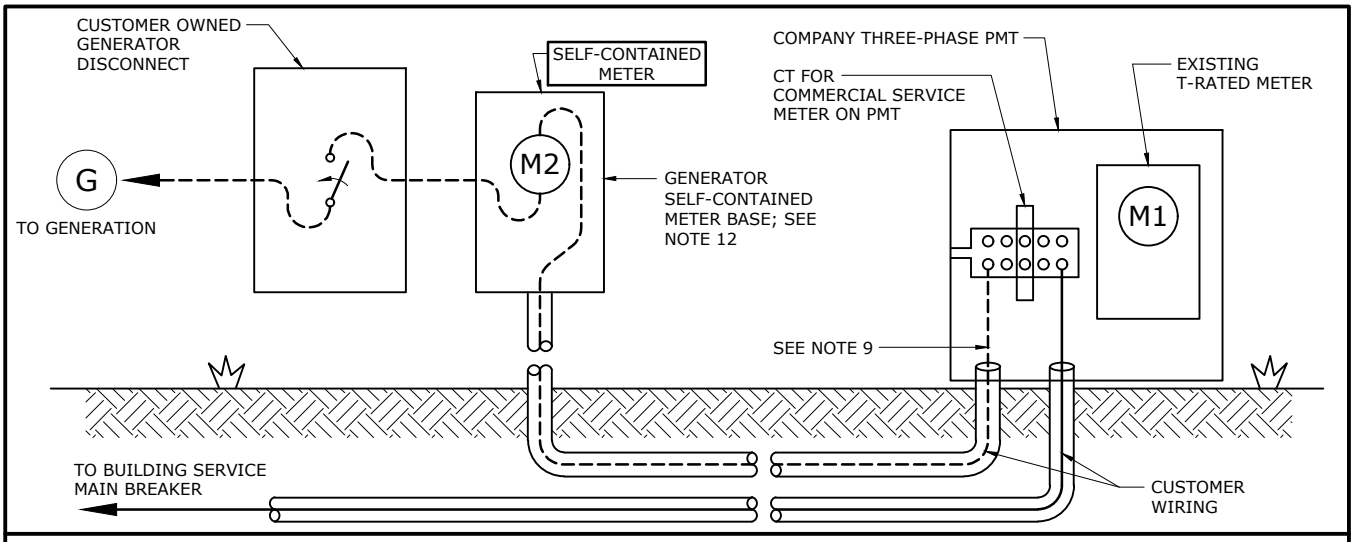
1. USE THIS WIRING METHOD FOR A SMALL POWER PRODUCER (USUALLY A PHOTOVOLTAIC SYSTEM) WHO SELLS ENTIRE OUTPUT OF GENERATION TO COMPANY.
2. COMPANY TO CONNECT CONDUCTORS IN TROUGH USING CONNECTOR BLOCKS SHOWN ON FIGURE 21.
3. FOR SELL ALL METERS, METERING WILL INSTALL A STANDARD METER PROGRAMMED FOR SGS-TOU WITH ALL DATA REGISTERED AS RECEIVED.
4. ALL SMALL POWER PRODUCER INSTALLATIONS SHALL HAVE WARNING LABELS PLACED AT METER AND AT GENERATOR DISCONNECT.
5. CUSTOMER OWNED DISCONNECT MUST BE WITHIN SIGHT OF METER (SEE DEFINITIONS, SECTION II, A), LOAD-BREAK RATED, LOCKABLE IN **OPEN** POSITION AND PROVIDE A "VISIBLE OPEN". DISCONNECT MUST BE READILY ACCESSIBLE TO COMPANY PERSONNEL.
6. FOR EXISTING UG T-RATED SERVICE, CUSTOMER'S ELECTRICIAN MUST MAKE ARRANGEMENTS WITH COMPANY FOR A CLEARANCE ON EXISTING SERVICE, REMOVE COMPANY SERVICE RISER, INSTALL TROUGH AND RISER TO CT CABINET. POD IN TROUGH.
7. A GENERATOR SELF-CONTAINED METER BASE IS REQUIRED WHEN THE LARGEST SIZED GENERATION PROTECTION DEVICE DOES NOT EXCEED 400 AMPS. LOCATE ADJACENT TO ELECTRIC SERVICE METER.
8. EXCEPTIONS TO THESE REQUIREMENTS MUST HAVE PRIOR WRITTEN CONSENT FROM THE COMPANY.

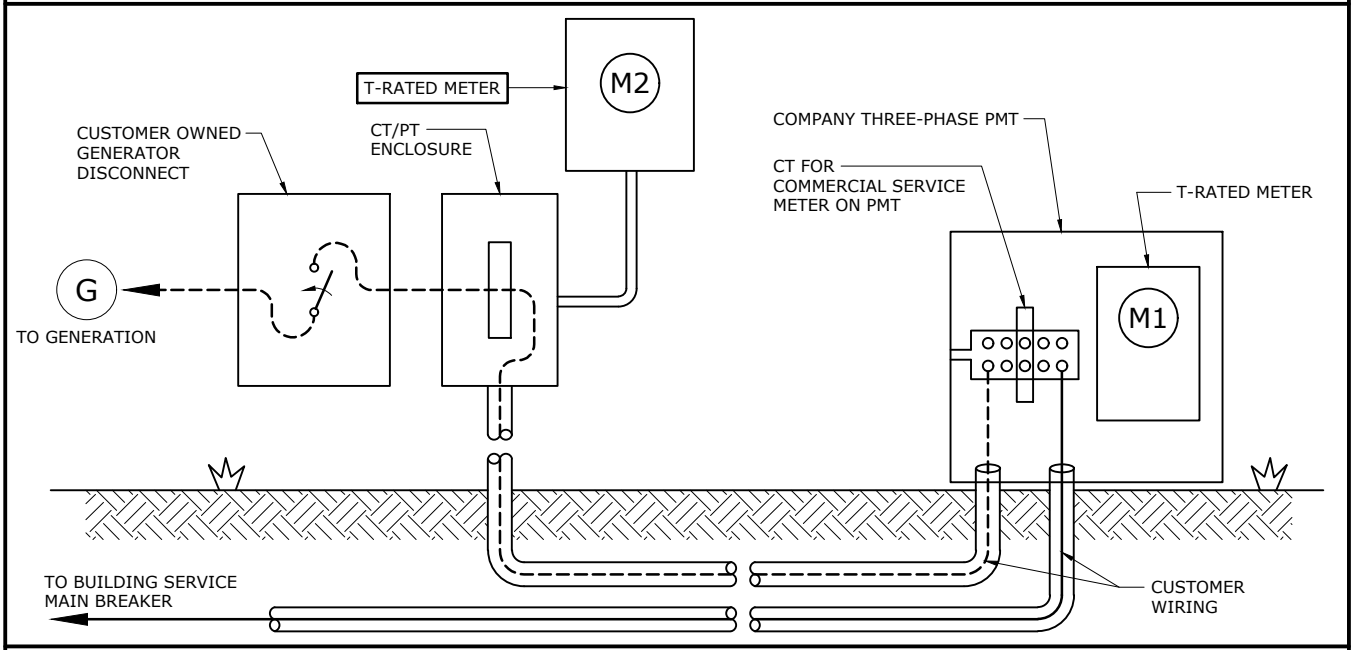
REVISED	BY	CHK'D	APPR.
5			
4	2/29/24	SHAFFER	EANES	GRAHAM
3	9/10/20	EANES	FLETCHER	GRAHAM
0	10/28/15	SIMPSON	MEDLIN	CHANDLER

SELL ALL GENERATION
SINGLE-PHASE T-RATED SERVICE
ADDING GENERATION METER, SELF-CONTAINED
NC AND SC

DEC	DEM	DEP	DEF
X		X	

FIG 65





NOTES:

1. CUSTOMER MAIN SERVICE IS METERED ON PMT. GENERATION SERVICE IS METERED ON BUILDING AND WIRING PULLED TO PMT AND CONNECTED ON SOURCE SIDE OF C.T.'S IN PMT AS SHOWN.
2. TOTAL NUMBER OF CONDUCTORS (COMPANY AND CUSTOMER) CANNOT EXCEED THE NUMBER SHOWN IN FIGURE 58.
3. MAXIMUM CUSTOMER CONDUCTOR SIZE IS 750 KCM AL/CU.
4. CUSTOMER CONDUCTORS MUST BE LABELED PER FIGURE 28. METER ENCLOSURE MUST BE LABELED PER FIGURE 3.
5. GENERATOR KVA CAPACITY CANNOT EXCEED KVA RATING OF PMT FOR T-RATED SERVICE OR 12KW FOR NETWORK SELF-CONTAINED METER. SEE FIGURE 62 FOR ALLOWABLE GENERATOR LOADS AND METERING.
6. WARNING LABEL TO BE PLACE AT METER AND CUSTOMER DISCONNECT.
7. SINGLE LINE CONDUCTOR SHOWN FOR CLARITY.
8. CUSTOMER OWNED DISCONNECT MUST BE WITHIN SIGHT OF METER (SEE DEFINITIONS, SECTION II, A), LOAD-BREAK RATED, LOCKABLE IN OPEN POSITION AND PROVIDE A "VISIBLE OPEN". EXCEPTION: FOR FEEDER DISCONNECT RATED ≥1000 AMPS AT 480Y/277 VOLTS, NO VISIBLE OPEN IS REQUIRED, BUT ALL OTHER PROVISIONS MUST BE MET. DISCONNECTS MUST BE READILY ACCESSIBLE TO COMPANY PERSONNEL.
9. "SNAKING" OF CUSTOMER WIRING THRU EXISTING CT'S IS NOT ALLOWED.
10. A GENERATOR SELF-CONTAINED METER BASE IS REQUIRED WHEN THE LARGEST SIZED GENERATION PROTECTION DEVICE DOES NOT EXCEED 400 AMPS. LOCATE WITHIN SIGHT OF ELECTRIC SERVICE METER.
11. EXCEPTIONS TO THESE REQUIREMENTS MUST HAVE PRIOR WRITTEN CONSENT FROM THE COMPANY.

DUKE ENERGY.

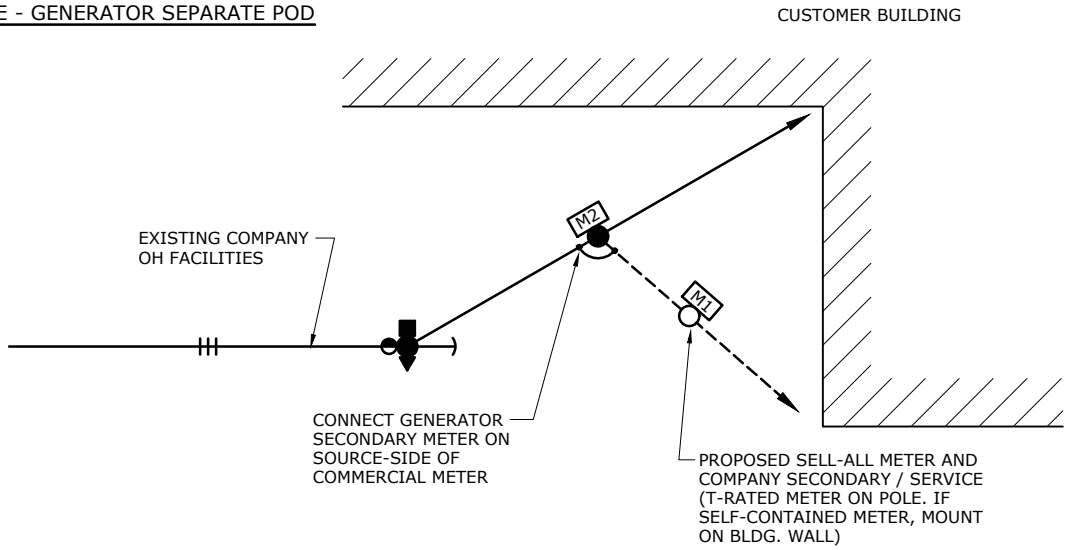
REVISED		BY	CHK'D	APPR.
6				
5	2/29/24	SHAFFER	EANES	GRAHAM
4	2/28/20	EANES	FLETCHER	GRAHAM
0	10/28/15	SIMPSON	MEDLIN	CHANDLER

SELL ALL GENERATION
THREE-PHASE LARGE T-RATED EXISTING UG SERVICE ADDING GENERATION METER, T-RATED OR SELF-CONTAINED NC AND SC

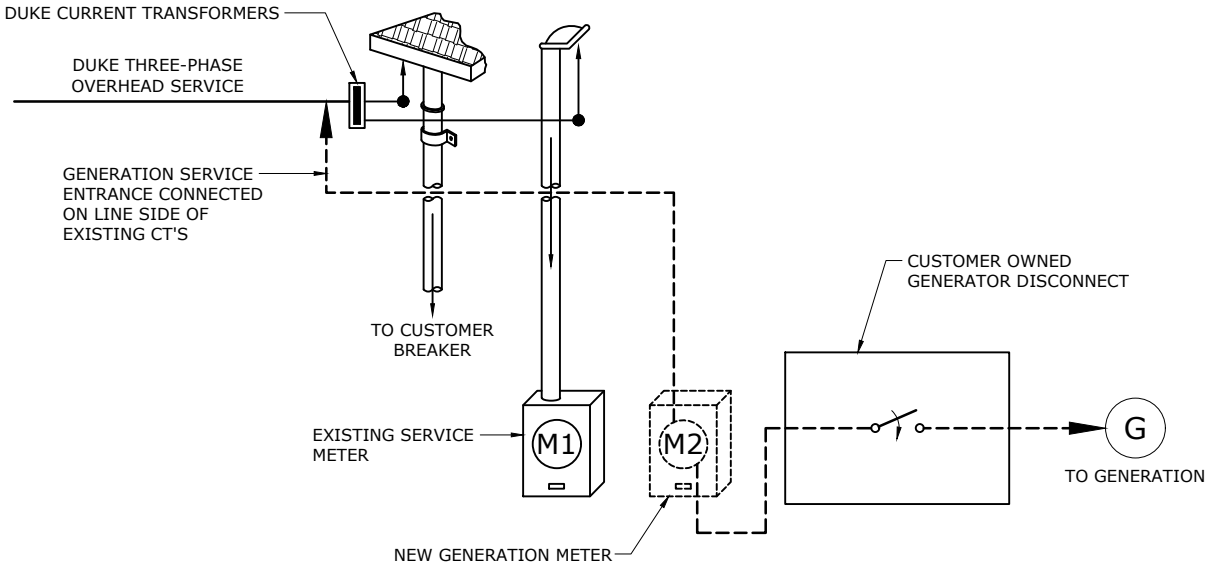
DEC	DEM	DEP	DEF
X		X	

FIG 68A

OH SERVICE - GENERATOR SEPARATE POD



OH SERVICE - GENERATOR RISER AT EXISTING RISER



NOTES:

1. GENERATOR KVA CAPACITY CANNOT EXCEED KVA RATING OF OH BANK OR PLATFORM. REFER TO FIGURE 62 FOR METER VOLTAGE STANDARD AND DEMAND LIMITS.
2. WARNING LABELS TO BE PLACED AT METER, CUSTOMER DISCONNECT AND TRANSFORMER POLE.
3. SINGLE LINE CONDUCTOR SHOWN FOR CLARITY.
4. CUSTOMER-OWNED DISCONNECT MUST BE WITHIN SIGHT OF METER (SEE DEFINITIONS, SECTION II, A), **READILY ACCESSIBLE TO COMPANY PERSONNEL**, LOAD-BREAK RATED, LOCKABLE IN THE OPEN POSITION AND PROVIDE A "VISIBLE OPEN".
5. IF GENERATOR IS BEING ADDED WITHIN A SERVICE THAT UTILIZES SUBSTATION-STYLE TRANSFORMERS, CONTACT DISTRIBUTION STANDARDS FOR GUIDANCE ON CONNECTION.
6. SERVICE LATERAL CLEARANCE MUST MEET FIG. 11 REQUIREMENTS.
7. EXCEPTIONS TO THESE REQUIREMENTS MUST HAVE PRIOR WRITTEN CONSENT FROM THE COMPANY.

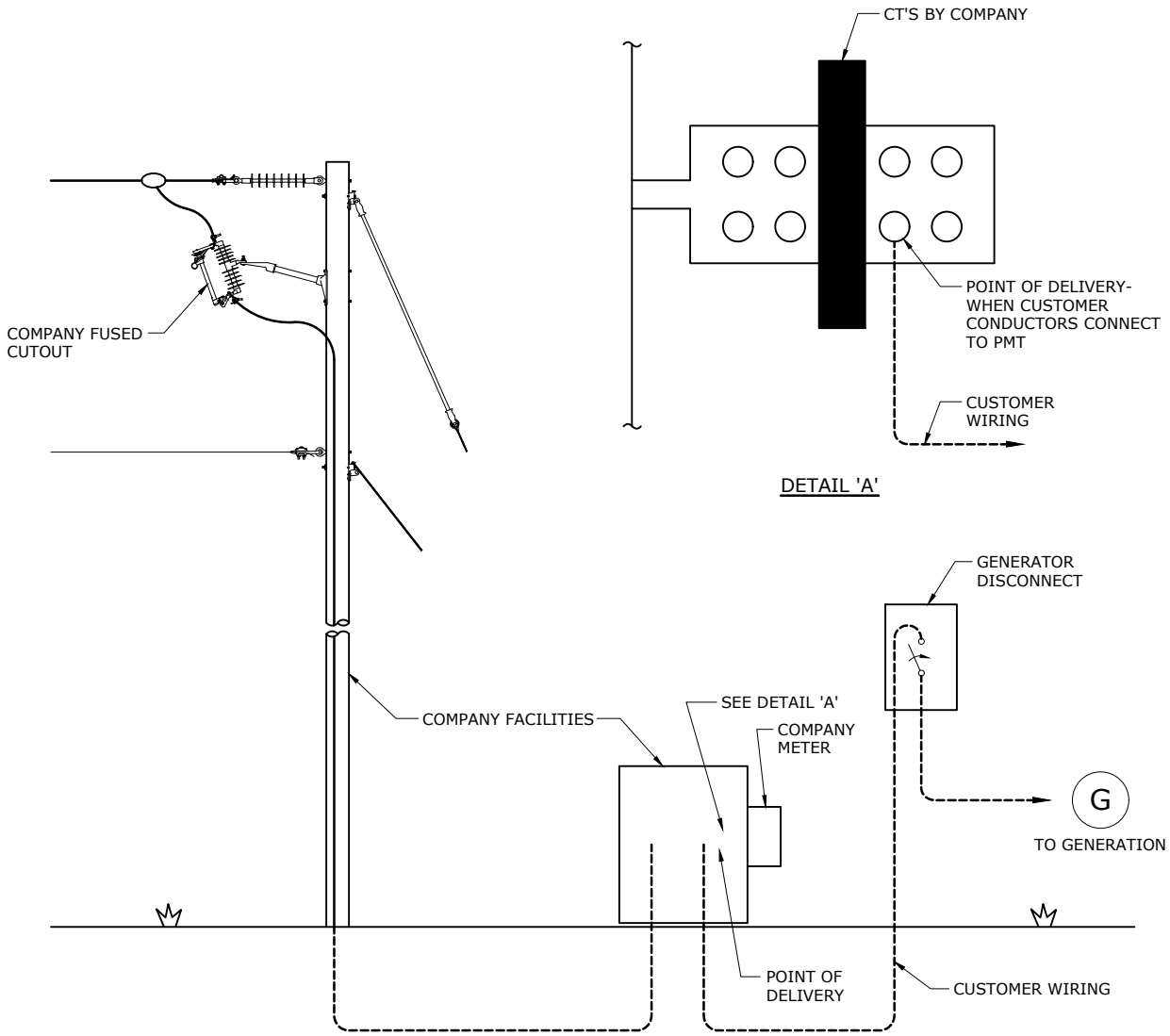
DUKE ENERGY.

REVISED	BY	CHK'D	APPR.
5			
4	2/29/24	SHAFFER	EANES	GRAHAM
3	2/28/20	EANES	FLETCHER	GRAHAM
0	11/20/15	SIMPSON	MEDLIN	CHANDLER

SELL ALL GENERATION
THREE-PHASE LARGE T-RATED EXISTING OH SERVICE
ADDING GENERATION METER, T-RATED OR
SELF-CONTAINED NC AND SC

DEC	DEM	DEP	DEF
X		X	

FIG 68B



NOTES:

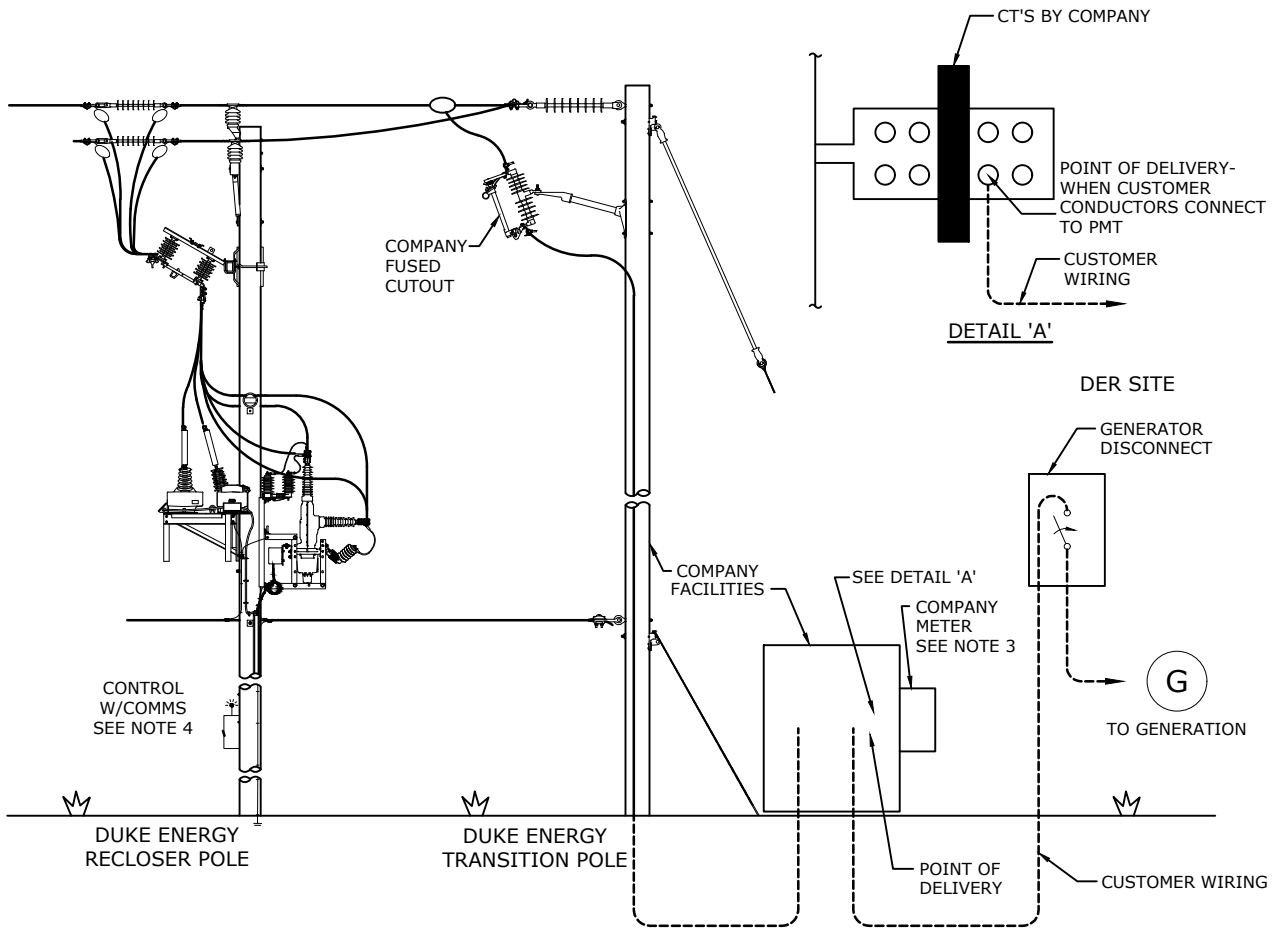
1. THIS SERVICE ARRANGEMENT IS USED TO CONNECT TO A STANDALONE, INVERTER BASED (NON-ROTATING), POWER PRODUCING SYSTEM LESS THAN 1 MW, WHERE THE COMPANY PROVIDES TRANSFORMATION.
2. CUSTOMER SHALL PLACE WARNING LABEL AT A CONSPICUOUS LOCATION ALERTING PERSONNEL OF ON SITE GENERATION PER NEC.
3. GENERATOR DISCONNECT MUST BE WITHIN SIGHT OF METER (SEE DEFINITIONS, SECTION II, A), READILY ACCESSIBLE TO COMPANY PERSONNEL, LOAD-BREAK RATED, LOCKABLE IN **OPEN** POSITION AND PROVIDE A "VISIBLE OPEN". **EXCEPTION:** FOR FEEDER DISCONNECTS RATED ≥1000 AMPS AT 480Y/277 VOLTS, NO VISIBLE OPEN IS REQUIRED, BUT ALL OTHER PROVISIONS MUST BE MET.
4. TOTAL CUSTOMER CONDUCTORS CANNOT EXCEED THAT SHOWN IN FIGURE 58.
5. MAXIMUM CUSTOMER CONDUCTOR SIZE IS 750 KCMIL AL/CU.
6. SINGLE LINE DIAGRAM SHOWN FOR CLARITY.
7. EXCEPTIONS TO THESE REQUIREMENTS MUST HAVE PRIOR WRITTEN CONSENT FROM THE COMPANY.

REVISED		BY	CHK'D	APPR.
6				
5	2/29/24	SHAFFER	EANES	GRAHAM
4	2/28/20	EANES	FLETCHER	GRAHAM
0	10/28/15	SIMPSON	MEDLIN	CHANDLER

SELL ALL GENERATION
STANDALONE SYSTEM - INVERTER BASED GENERATION
LESS THAN 1 MW
THREE-PHASE SECONDARY METERING

DEC	DEM	DEP	DEF
X		X	

FIG 69A



NOTES:

1. THIS SERVICE ARRANGEMENT IS USED TO CONNECT CUSTOMERS WITH POWER PRODUCING SYSTEM GREATER THAN OR EQUAL TO 1MW, WHERE THE COMPANY PROVIDES TRANSFORMATION. THIS DOES NOT APPLY TO CUSTOMERS WITH STANDBY GENERATION WITH SHORT-TERM OR MOMENTARY PARALLEL GENERATION.

2. THE RECLOSER SHOWN IS INTENDED TO HELP SAFEGUARD DUKE ENERGY'S DISTRIBUTION AND TRANSMISSION SYSTEMS AND NOT THE GENERATING FACILITY. THE GENERATING FACILITY IS RESPONSIBLE FOR PROTECTING THEIR ASSETS, HOWEVER THOSE PROTECTIVE FUNCTIONS SHALL NOT INTEFERE WITH DUKE ENERGY'S ABILITY TO SAFELY AND RELIABLY OPERATE ITS SYSTEM.

3. CUSTOMER SHALL PLACE WARNING LABEL AT A CONSPICUOUS LOCATION ALERTING PERSONNEL OF ON SITE GENERATION.

4. METERING, DISCONNECT, AND CONSTRUCTION/EQUIPMENT REQUIREMENTS ARE DOCUMENTED ELSEWHERE IN THE ELECTRIC SERVICE AND METER INSTALLATION REQUIREMENTS MANUAL AND ARE SHOWN HERE FOR REFERENCE ONLY. THE REQUIREMENTS DO NOT SUPERSEDE OR REPLACE ANY OTHER REQUIREMENTS IN THE SERVICE REQUIREMENTS MANUAL.

5. SINGLE LINE DIAGRAM SHOWN FOR CLARITY. THIS DRAWING IS A GENERIC REPRESENTATION OF THE DUKE ENERGY PROTECTIVE AND METERING PACKAGE FOR GENERATION SITES.

3				
2				
1				
0	2/29/24	SHAFFER	EANES	GRAHAM
REVISED		BY	CHK'D	APPR.

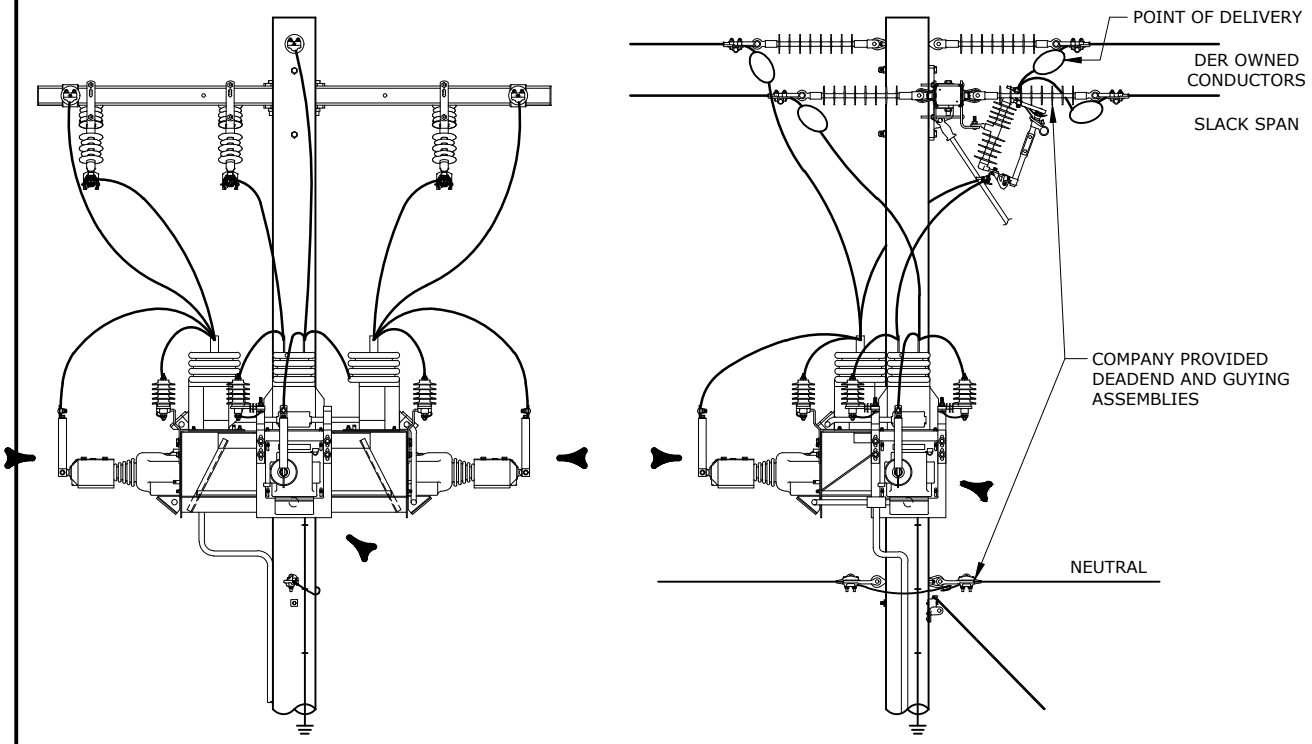
SELL ALL GENERATION
STANDALONE SYSTEM-INVERTER BASED GENERATION
GREATER THAN OR EQUAL TO 1MW
THREE-PHASE SECONDARY METERING

DEC	DEM	DEP	DEF
X		X	

FIG 69B

DUKE ENERGY SOURCE

TO CUSTOMER DER



FRONT VIEW
(DUKE ENERGY SOURCE SIDE)

SIDE VIEW

DUKE ENERGY PRIMARY METER POLE

NOTES:

1. THIS SERVICE ARRANGEMENT IS USED TO CONNECT TO A LARGE IPP STANDALONE SYSTEM WHEN COMPANY PROVIDES FUSING FOR PROTECTION. CUSTOMER RECEIVES PRIMARY VOLTAGE AND PROVIDES THEIR OWN TRANSFORMATION AND OH FACILITIES.

2. CUSTOMER SHALL PLACE WARNING LABEL AT A CONSPICUOUS LOCATION ALERTING PERSONNEL OF ON SITE GENERATION PER NEC.

3. CUSTOMER PROVIDES ALL WIRING, DISCONNECTS AND TRANSFORMATION BEYOND POINT OF DELIVERY.

4. SINGLE LINE DIAGRAM SHOWN FOR CLARITY.

5. COMPANY PROVIDES ALL FACILITIES TO P.O.D. CUSTOMER TO PROVIDE A LOCATION FOR COMPANY FACILITIES THAT MUST:
   - BE LOCATED OUT OF WETLANDS AND OTHER AREAS SUBJECT TO FLOODING.
   - HAVE MAINTAINED ACCESS ROADS, PREFERABLY WITH GRAVEL BED AND ADEQUATE DRAINAGE FOR ACCESS BY STANDARD COMPANY EQUIPMENT DURING ALL ADVERSE WEATHER CONDITIONS.
   - BE FREE OF VEGETATION FOR BUCKET TRUCK ACCESS (15 FOOT CLEARANCE, 360 DEGREE RADIUS).
   - BE LOCATED OUTSIDE A LOCKED GATE OR FACILITY FENCE. IF THIS CANNOT BE ACCOMPLISHED, ANY GATES OR ACCESS POINTS MUST ACCOMMODATE A COMPANY LOCK AND BE ACCESSIBLE AT ANY AND ALL TIMES.

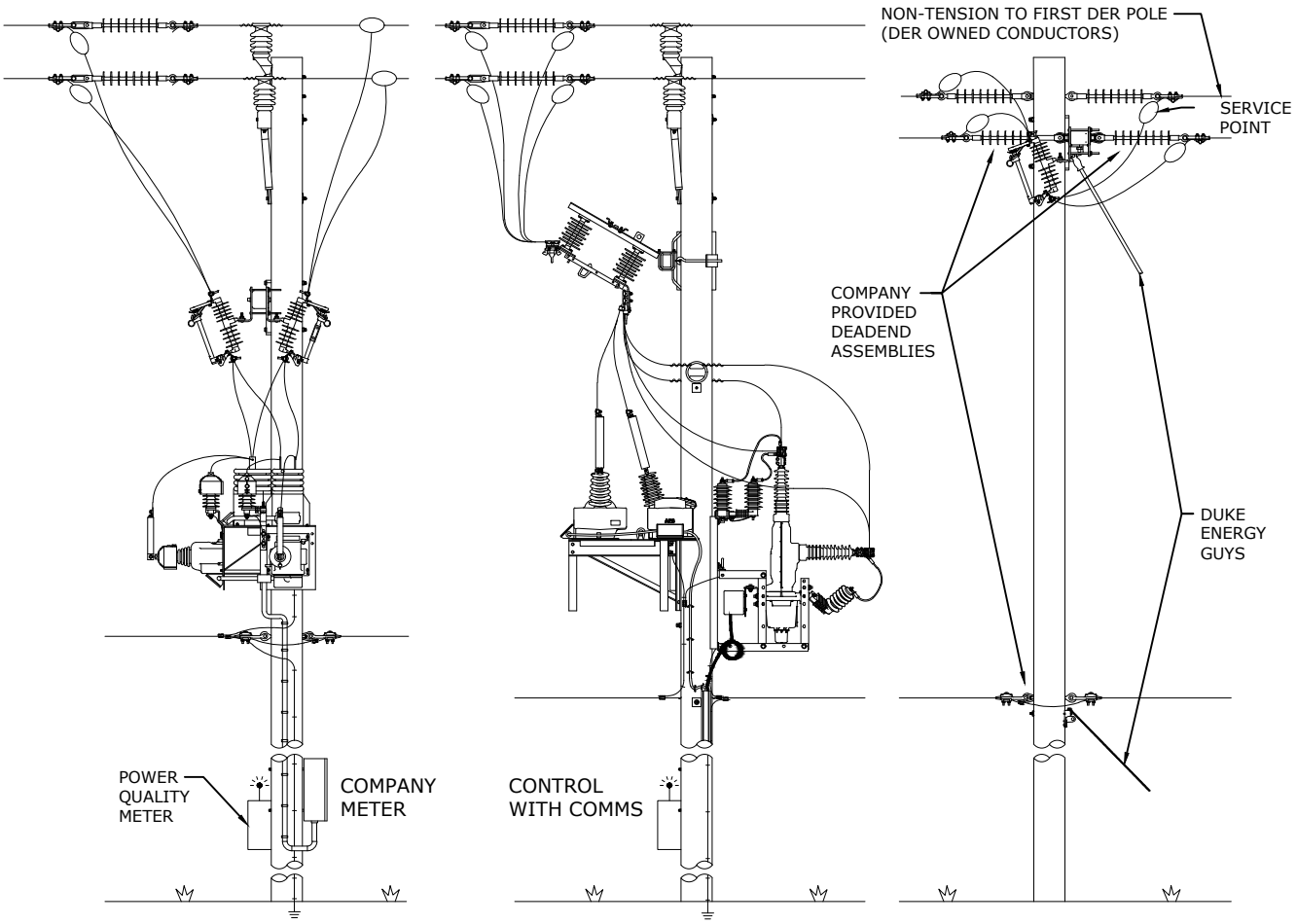
REVISED		BY	CHK'D	APPR.
6	3/31/25	SHAFFER	FLETCHER	GRAHAM
5	2/29/24	SHAFFER	EANES	GRAHAM
4	9/10/20	ROBBINS	FLETCHER	GRAHAM
0	10/28/15	SIMPSON	SIMPSON	ADCOCK

SELL ALL GENERATION
THREE-PHASE PRIMARY METERING
FUSED INSTALLATION - CUSTOMER OH CONNECTION

DEC	DEM	DEP	DEF
X		X	

FIG 71A

DUKE ENERGY



NOTES:

1. THIS SERVICE ARRANGEMENT IS USED TO CONNECT TO A LARGE IPP STANDALONE SYSTEM WHERE COMPANY PROVIDES A RECLOSER FOR PROTECTION. CUSTOMER RECEIVES PRIMARY VOLTAGE AND PROVIDES THEIR OWN TRANSFORMATION AND OH FACILITIES. RECLOSER SHALL BE LOCATED ON THE PROPERTY OF THE IPP OR AT A PRE-APPROVED LOCATION THAT MINIMIZES POTENTIAL IMPACTS TO OTHER CUSTOMERS.

2. WARNING LABEL TO BE PLACED AT METER ON POLE ADVISING OF CUSTOMER GENERATION ON SITE.

3. CUSTOMER PROVIDES ALL WIRING, DISCONNECTS AND TRANSFORMATION BEYOND POINT OF DELIVERY.

4. SINGLE LINE DIAGRAM SHOWN FOR CLARITY. THIS DRAWING IS A GENERIC REPRESENTATION OF THE DUKE ENERGY PROTECTIVE AND METERING PACKAGE FOR GENERATION SITES.

5. COMPANY PROVIDES ALL FACILITIES TO P.O.D. CUSTOMER TO PROVIDE A LOCATION FOR COMPANY FACILITIES THAT MUST:

   - BE LOCATED OUT OF WETLANDS AND OTHER AREAS SUBJECT TO FLOODING.
   - HAVE MAINTAINED ACCESS ROADS, PREFERABLY WITH GRAVEL BED AND ADEQUATE DRAINAGE FOR ACCESS BY STANDARD COMPANY EQUIPMENT DURING ALL ADVERSE WEATHER CONDITIONS.
   - BE FREE OF VEGETATION FOR BUCKET TRUCK ACCESS (15 FOOT CLEARANCE, 360 DEGREE RADIUS).

   - BE LOCATED OUTSIDE A LOCKED GATE OR FACILITY FENCE. IF THIS CANNOT BE ACCOMPLISHED, ANY GATES OR ACCESS POINTS MUST ACCOMMODATE A COMPANY LOCK AND BE ACCESSIBLE AT ANY AND ALL TIMES.

6. ALL BYPASS BLADES WILL BE REMOVED FOLLOWING THE COMMISSIONING OF THE RECLOSER AT THESE IPP SITES.

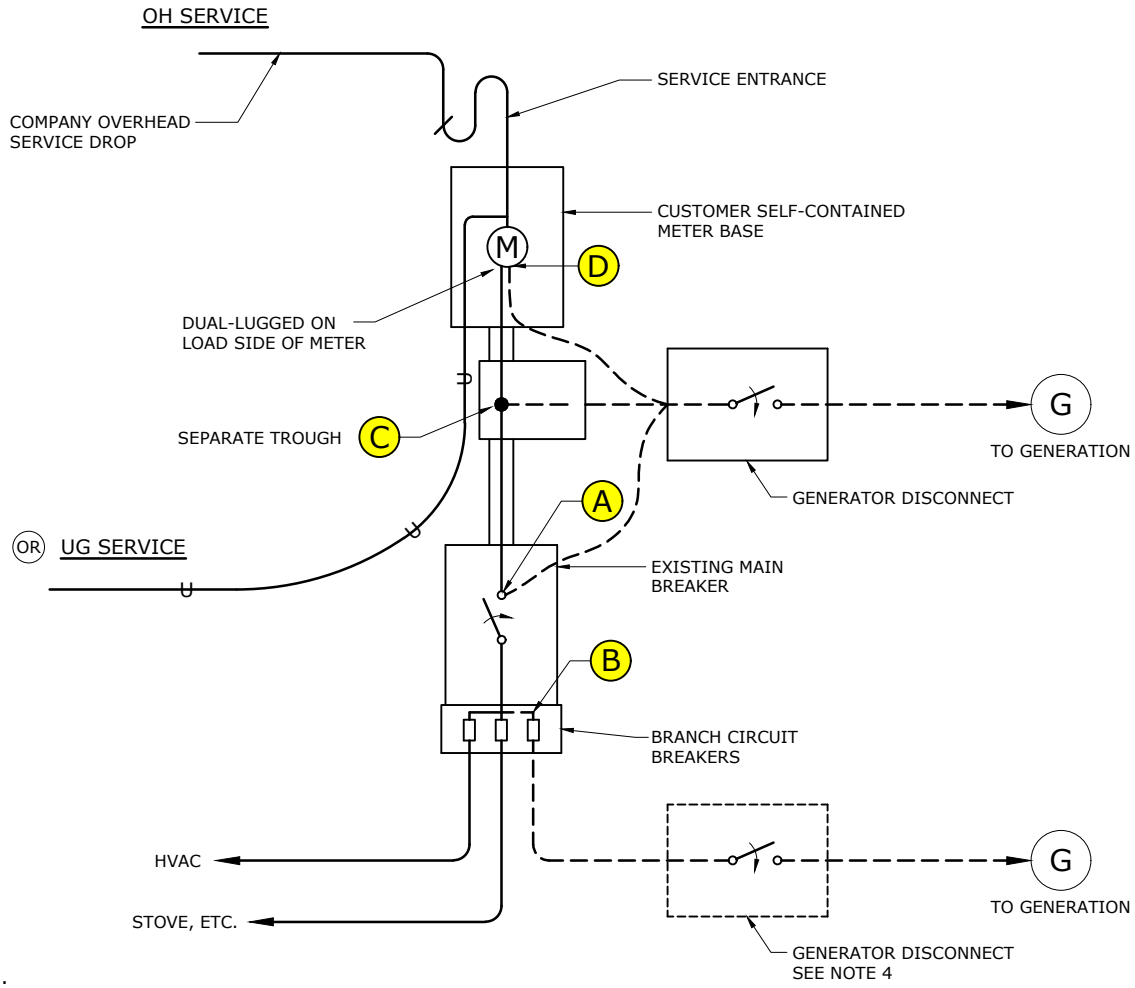
7. COMPANY TO INSTALL DER OWNER-SUPPLIED CONDUCTOR INTO DEADEND CLAMPS TO CREATE A NON-TENSION SLACK SPAN. COMPANY TO MAKE THE FINAL CONNECTION BETWEEN THE BLADED CUTOUT AND DER-OWNED PRIMARY. SERVICE POINT WILL BE WHERE SWITCH LEAD CONNECTS TO THE DER PRIMARY CONDUCTOR.

REVISED		BY	CHK'D	APPR.
8	2/28/23	EANES	FLETCHER	GRAHAM
7	3/3/22	EANES	FLETCHER	GRAHAM
6	9/10/20	ROBBINS	FLETCHER	GRAHAM
0	10/28/15	SIMPSON	SIMPSON	ADCOCK

SELL-ALL GENERATION
THREE-PHASE PRIMARY METERING WITH
DER RECLOSER - OVERHEAD SERVICE

DEC	DEM	DEP	DEF
X		X	

FIG 71B



NOTES:

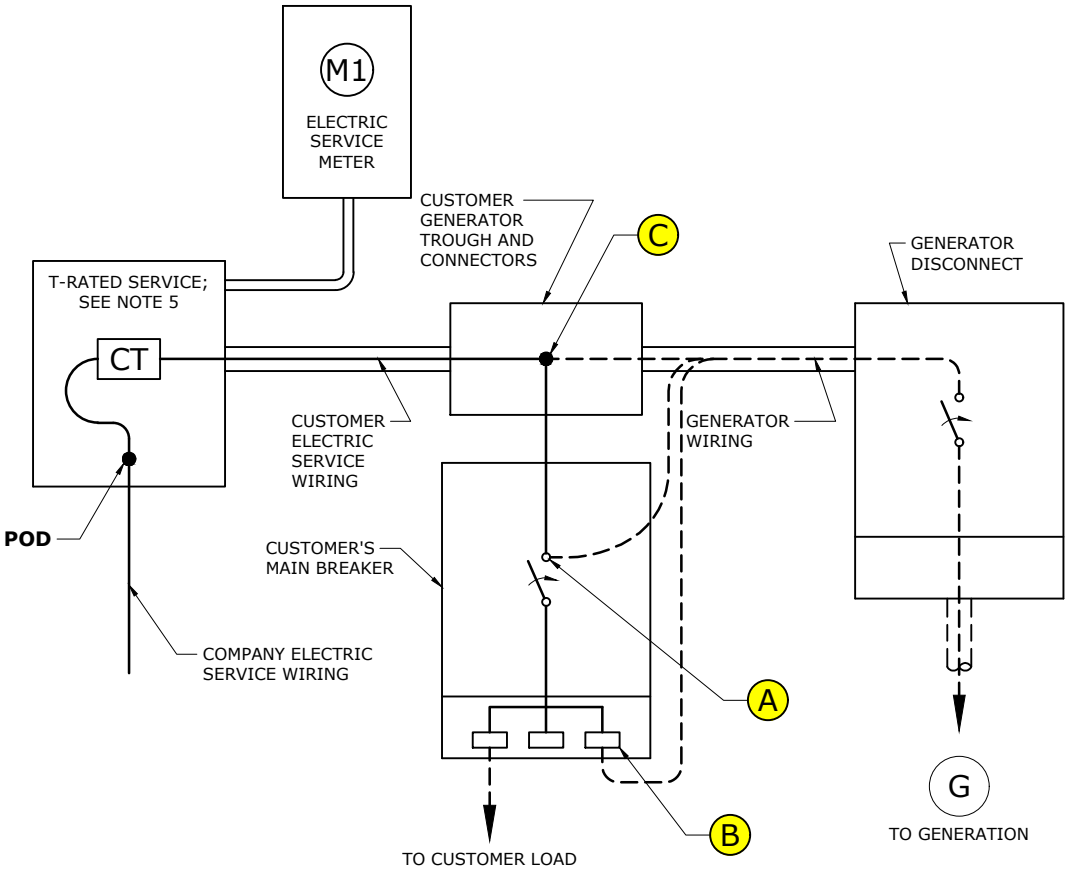
1. GENERATION POINT OF INTERCONNECTION CAN BE CONNECTED AT EITHER (A), (B), (C), OR (D).
2. GENERATOR DISCONNECT MUST BE LOAD-BREAK RATED, LOCKABLE OPEN POSITION, PROVIDE VISIBLE OPEN AND LOCATED WITHIN SIGHT OF METER (SEE DEFINITIONS, SECTION II, A). DISCONNECT MUST BE READILY ACCESSIBLE TO COMPANY PERSONNEL.
3. EXISTING METER MUST BE PROGRAMMED OR REPLACED FOR BI-DIRECTIONAL ENERGY REGISTRATION.
4. CUSTOMER SHALL PLACE WARNING LABEL AT A CONSPICUOUS LOCATION ALERTING PERSONNEL OF ON SITE GENERATION PER NEC.
5. FOR OPTION (D), A METER BASE WITH EITHER FACTORY-INSTALLED DUAL LUGS OR FACTORY-INSTALLED STUDS WITH CUSTOMER-INSTALLED DUAL LUGS IS REQUIRED. FIELD RETROFITTING OF A METER BASE THAT WAS NOT INTENDED FOR USE WITH DUAL LUGS IS PROHIBITED. THE USE OF PIERCING, POLARIS-STYLE OR OTHER TAP CONNECTORS ON CONDUCTORS IN THE METER BASE IS PROHIBITED. IF THESE REQUIREMENTS CANNOT BE MET, REPLACE METER SOCKET OR INSTALL A TROUGH AS IN OPTION (C).
6. CUSTOMER-OWNED EQUIPMENT SUCH AS INSTRUMENT TRANSFORMERS ARE NOT ALLOWED WITHIN THE METER ENCLOSURE.
7. EXCEPTIONS TO THESE REQUIREMENTS MUST HAVE PRIOR WRITTEN CONSENT FROM THE COMPANY.

REVISED	BY	CHK'D	APPR.
7			
6	2/29/24	SHAFFER	EANES	GRAHAM
5	3/3/22	EANES	FLETCHER	GRAHAM
0	10/28/15	SIMPSON	MEDLIN	CHANDLER

"NET" GENERATION METERING SINGLE OR THREE-PHASE SELF-CONTAINED METERED SERVICE

DEC	DEM	DEP	DEF
X		X	

FIG 72A



NOTES:

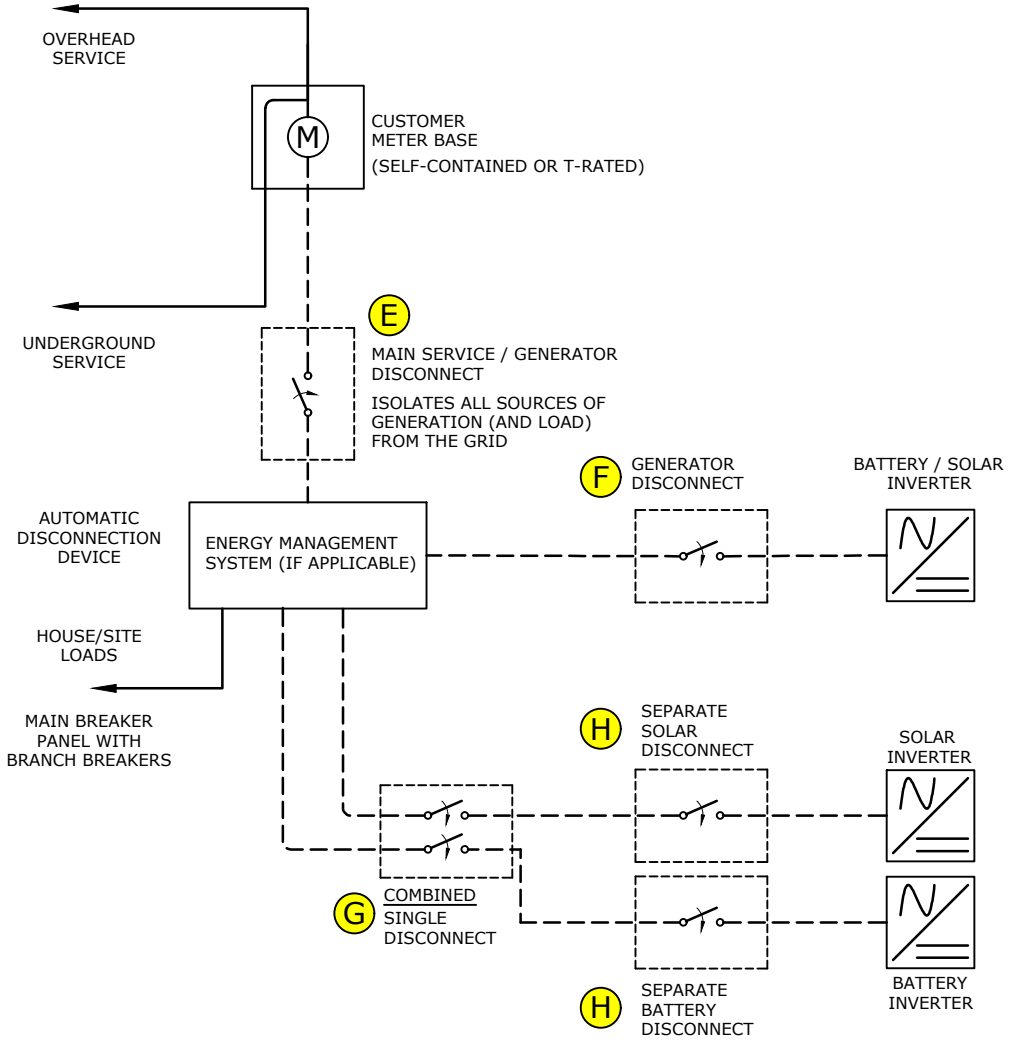
1. GENERATOR POINT OF INTERCONNECTION CAN BE CONNECTED AT EITHER (A), (B), OR (C). FOR INTERCONNECTION POINT (C), IF SERVICE IS PROVIDED BY A 3-PHASE PADMOUNT TRANSFORMER, THE GENERATOR WIRING MAY BE CONNECTED WITHIN THE SECONDARY COMPARTMENT OF THE TRANSFORMER IF THERE IS ADEQUATE SPACE AVAILABLE ON THE TRANSFORMER SPADES AND THE CRITERIA PER FIGURE 58 IS NOT EXCEEDED. THIS EXCEPTION MUST BE VERIFIED IN THE FIELD PRIOR TO ANY FINAL DESIGN APPROVAL.
2. GENERATOR DISCONNECT MUST: BE LOAD-BREAK RATED, LOCKABLE OPEN POSITION, PROVIDE VISIBLE OPEN AND LOCATED WITHIN SIGHT OF METER (SEE DEFINITIONS, SECTION II, A). DISCONNECT MUST BE READILY ACCESSIBLE TO COMPANY PERSONNEL.
3. EXISTING METER MUST BE PROGRAMMED OR REPLACED FOR BI-DIRECTIONAL ENERGY REGISTRATION.
4. CUSTOMER SHALL PLACE WARNING LABEL AT A CONSPICUOUS LOCATION ALERTING PERSONNEL OF ON SITE GENERATION PER NEC.
5. COMPANY ELECTRIC SERVICE CT'S MAY BE IN A PADMOUNT TRANSFORMER, CT CABINET MOUNTED ON THE BUILDING, A MAST, OR UTILITY POLE.
6. DER INTERCONNECTIONS AND CUSTOMER-OWNED EQUIPMENT SUCH AS INSTRUMENT TRANSFORMERS AND GENERATION WIRING ARE NOT ALLOWED WITHIN THE CT CABINET.
7. EXCEPTIONS TO THESE REQUIREMENTS MUST HAVE PRIOR WRITTEN CONSENT FROM THE COMPANY.

REVISED		BY	CHK'D	APPR.
7				
6	2/29/24	SHAFFER	EANES	GRAHAM
5	3/3/22	EANES	FLETCHER	GRAHAM
0	10/28/15	SIMPSON	MEDLIN	CHANDLER

"NET" GENERATION METERING
SINGLE OR THREE-PHASE T-RATED SERVICES

DEC	DEM	DEP	DEF
X		X	

FIG 72B



NOTES:

1. ALL SOURCES OF GENERATION, INCLUDING ENERGY STORAGE SYSTEMS, MUST BE CONNECTED BEHIND UTILITY REQUIRED DISCONNECT
2. GENERATOR DISCONNECT CAN BE CONNECTED AT EITHER (E), (F), (G), OR (H).
3. GENERATION DISCONNECT MUST BE LOAD-BREAK RATED, LOCKABLE OPEN POSITION, PROVIDE VISIBLE OPEN AND LOCATED WITHIN SIGHT OF METER (SEE DEFINITIONS, SECTION II, A). DISCONNECT MUST BE READILY ACCESSIBLE TO COMPANY PERSONNEL.
4. FOR GENERATOR DISCONNECT LOCATION (H), DISCONNECTS MUST BE ADJACENT TO EACH OTHER AND MEET THE REQUIREMENTS STATED ABOVE IN NOTE 3. ADDITIONALLY, THE CUSTOMER MUST INSTALL SIGNAGE AT EACH DISCONNECT LABELED "UTILITY GENERATOR DISCONNECT 1 OF 2" AND "UTILITY GENERATOR DISCONNECT 2 OF 2"
5. EXCEPTIONS TO THESE REQUIREMENTS MUST HAVE PRIOR WRITTEN CONSENT FROM THE COMPANY

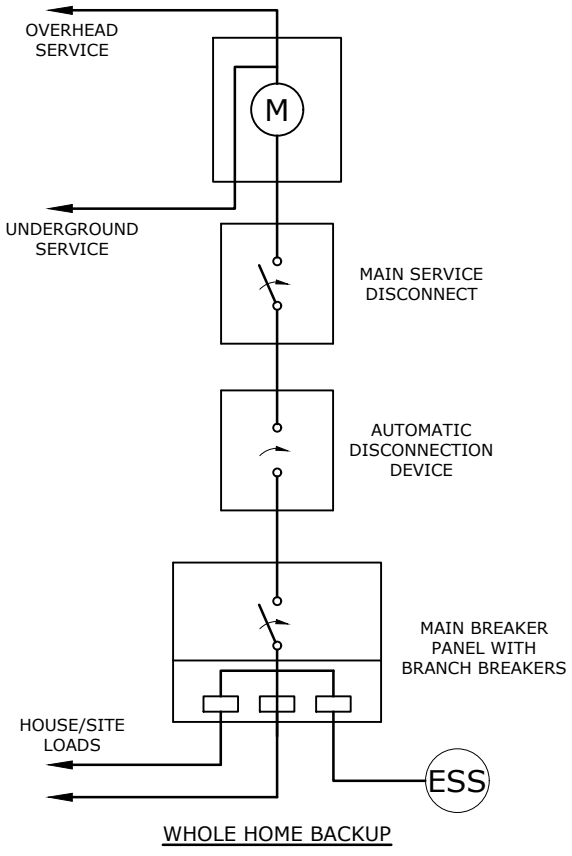
3				
2				
1				
0	3/31/25	SHAFFER	EANES	GRAHAM
REVISED		BY	CHK'D	APPR.

ADDITIONAL CLARIFICATION ON UTILITY DISCONNECT LOCATIONS FOR ENERGY STORAGE SYSTEMS

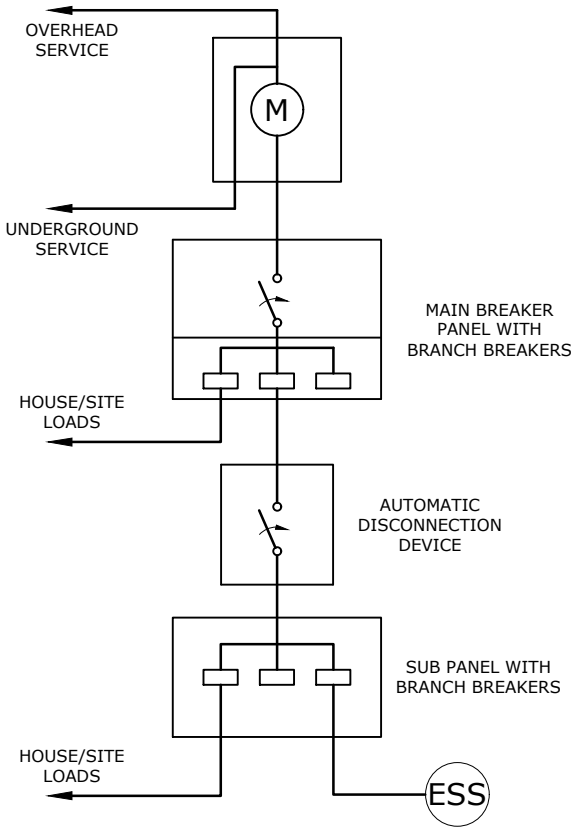
DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 72C



WHOLE HOME BACKUP



PARTIAL HOME BACKUP

NOTES:

1. EXISTING METER MUST BE REPLACED WITH A BI-DIRECTIONAL METER (SEE FIGURE 62).
2. ENERGY STORAGE WARNING LABEL MUST BE PLACED AT THE METER BY THE CUSTOMER.
3. THIS CONFIGURATION IS LIMITED TO BATTERY TOTAL POWER OUTPUT ≤ 20 KW FOR THREE-PHASE OR SINGLE-PHASE, THREE-WIRE CONNECTIONS (120/240V) AND LIMITED TO ≤ 6 KW FOR SINGLE-PHASE, TWO WIRE CONNECTIONS (120V).
4. IF THE ENERGY STORAGE PROVIDES AUTOMATIC BACKUP POWER DURING DISTRIBUTION SYSTEM OUTAGES, THE BATTERY-BACKED PORTIONS OF THE SITE ELECTRICAL SYSTEM SHALL AUTOMATICALLY SEPARATE FROM THE DE-ENERGIZED COMPANY DISTRIBUTION SYSTEM USING AN AUTOMATIC DISCONNECT DEVICE. ADDITIONAL INFORMATION AND TECHNICAL REQUIREMENTS CAN BE FOUND IN SECTION VII.
5. INSTALLATIONS WITH ONLY ENERGY STORAGE SHALL NOT BACKFEED THE UTILITY SYSTEM (INTENDED OR UNINTENDED) UNLESS ACTIVELY ENROLLED IN A DEMAND RESPONSE PROGRAM AND INITIATED BY THE UTILITY. A NET ZERO EXPORT SHALL BE MAINTAINED AT THE METER OUTSIDE OF DEMAND RESPONSE EVENTS.
6. ALL ENERGY STORAGE SYSTEMS MUST BE LOCATED DOWNSTREAM OF A CUSTOMER-OWNED AC DISCONNECT. PLEASE REFER TO FIGURE 72C FOR ADDITIONAL REQUIREMENTS.
7. CUSTOMER MUST PROVIDE VERIFICATION THAT THE ENERGY STORAGE UNIT(S) WERE INSTALLED BY A LICENSED ELECTRICAL CONTRACTOR (LICENSED IN THE STATE OF REQUESTED INTERCONNECTION) AND TESTED IN ACCORDANCE WITH DUKE ENERGY REQUIREMENTS.
8. EXCEPTIONS TO THESE REQUIREMENTS MUST HAVE PRIOR WRITTEN CONSENT FROM THE COMPANY

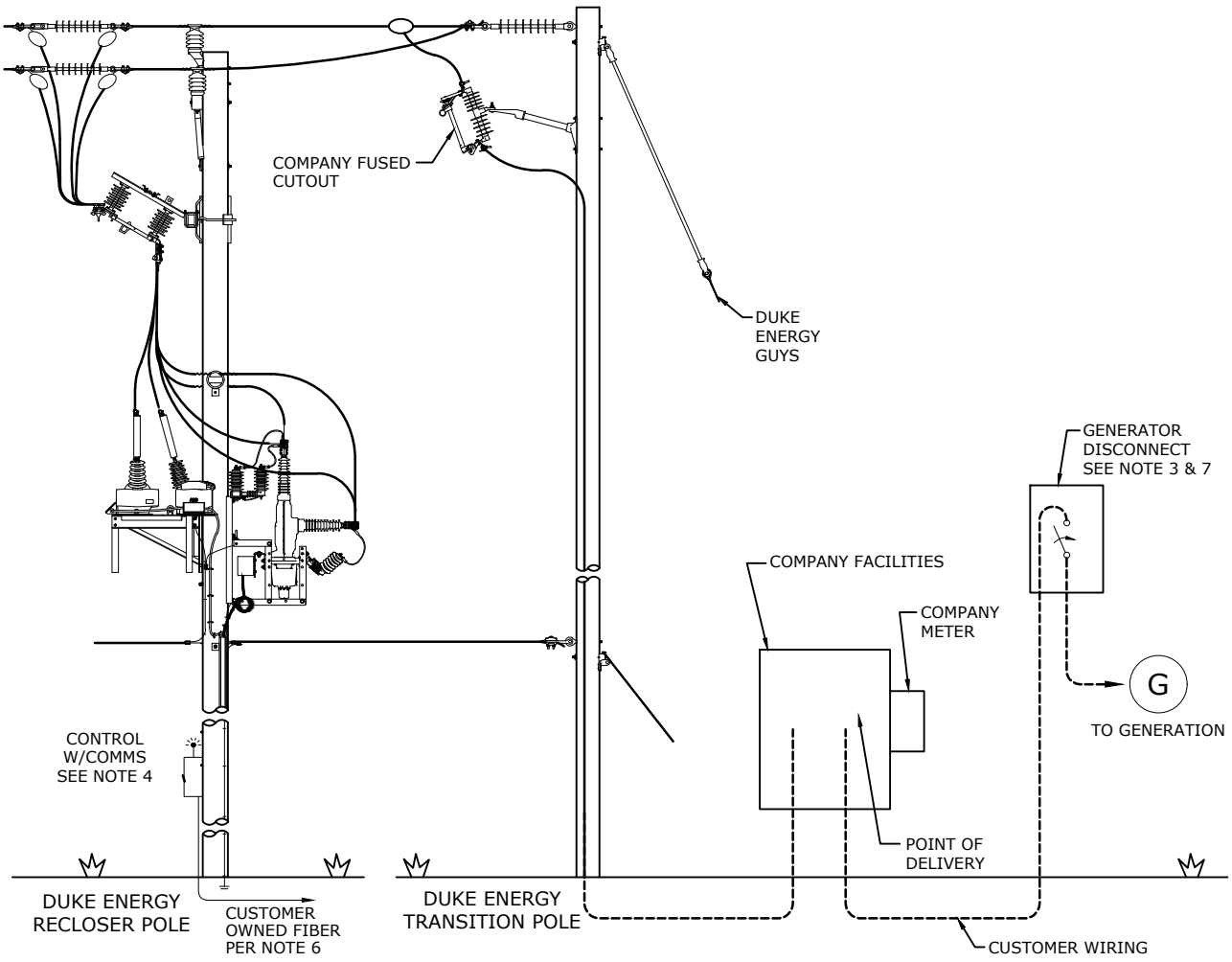
REVISED	BY	CHK'D	APPR.
3			
2			
1	3/31/25	SHAFFER	FLETCHER	GRAHAM
0	3/3/22	EANES	FLETCHER	GRAHAM

STANDBY GENERATION

ENERGY STORAGE SYSTEM INSTALLATIONS ONLY

DEC	DEM	DEP	DEF
X		X	

FIG 72H



NOTES:

1. THIS SERVICE ARRANGEMENT IS USED TO CONNECT NET-METERING CUSTOMERS WITH POWER PRODUCING SYSTEM GREATER THAN OR EQUAL TO 1MW, WHERE THE COMPANY PROVIDES TRANSFORMATION. THIS DOES NOT APPLY TO CUSTOMERS WITH STANDBY GENERATION WITH SHORT-TERM OR MOMENTARY PARALLEL GENERATION.
2. THE RECLOSER SHOWN IS INTENDED TO HELP SAFEGUARD DUKE ENERGY'S DISTRIBUTION AND TRANSMISSION SYSTEMS AND NOT THE GENERATING FACILITY. THE GENERATING FACILITY IS RESPONSIBLE FOR PROTECTING THEIR ASSETS, HOWEVER THOSE PROTECTIVE FUNCTIONS SHALL NOT INTEFERE WITH DUKE ENERGY'S ABILITY TO SAFELY AND RELIABLY OPERATE ITS SYSTEM.
3. CUSTOMER SHALL PLACE WARNING LABEL AT A CONSPICUOUS LOCATION ALERTING PERSONNEL OF ON SITE GENERATION PER NEC.
4. METERING, DISCONNECT, AND CONSTRUCTION/EQUIPMENT REQUIREMENTS ARE DOCUMENTED ELSEWHERE IN THE ELECTRIC SERVICE AND METER INSTALLATION REQUIREMENTS MANUAL AND ARE SHOWN HERE FOR REFERENCE ONLY. THE REQUIREMENTS DO NOT SUPERSEDE OR REPLACE ANY OTHER REQUIREMENTS IN THE SERVICE REQUIREMENTS MANUAL.
5. SINGLE LINE DIAGRAM SHOWN FOR CLARITY. THIS DRAWING IS A GENERIC REPRESENTATION OF THE DUKE ENERGY PROTECTIVE AND METERING PACKAGE FOR GENERATION SITES.
6. CUSTOMER SHALL INSTALL FIBER CONNECTION FROM RECLOSER CONTROL TO THE GENERATION BREAKER AND DIRECT TRIP/PERMISSIVE RUN EQUIPMENT (NOT SHOWN). ADDITIONAL INFORMATION TO BE PROVIDED TO CUSTOMER DURING INTERCONNECTION PROCESS.
7. THE GENERATION POINT OF INTERCONNECTION CAN BE CONNECTED IN ACCORDANCE WITH OPTIONS (A), (B), OR (C) AS DEPICTED IN FIGURE 72B.

3				
2				
1				
0	2/29/24	SHAFFER	EANES	GRAHAM
REVISED		BY	CHK'D	APPR.

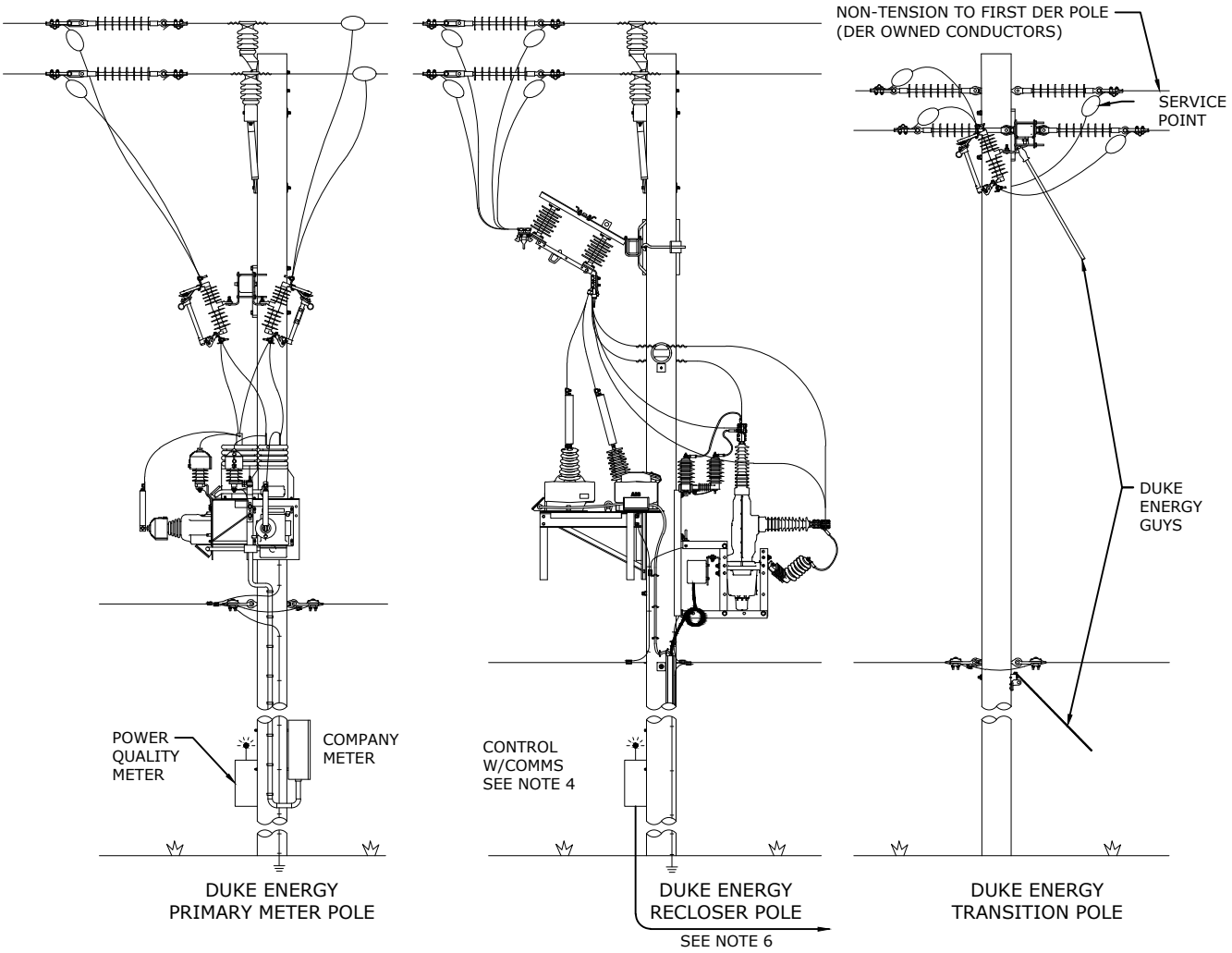
NET-METERING GENERATION
THREE-PHASE SECONDARY METERING
WITH DER RECLOSER

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 72I

DUKE ENERGY



NOTES:

1. THIS SERVICE ARRANGEMENT IS USED TO CONNECT NET-METERING CUSTOMERS WITH POWER PRODUCING SYSTEM GREATER THAN OR EQUAL TO 1MW, WHERE THE CUSTOMER PROVIDES TRANSFORMATION. THIS DOES NOT APPLY TO CUSTOMERS WITH STANDBY GENERATION WITH SHORT-TERM OR MOMENTARY PARALLEL GENERATION.

2. THE RECLOSER SHOWN IS INTENDED TO HELP SAFEGUARD DUKE ENERGY'S DISTRIBUTION AND TRANSMISSION SYSTEMS AND NOT THE GENERATING FACILITY. THE GENERATING FACILITY IS RESPONSIBLE FOR PROTECTING THEIR ASSETS, HOWEVER THOSE PROTECTIVE FUNCTIONS SHALL NOT INTEFERE WITH DUKE ENERGY'S ABILITY TO SAFELY AND RELIABLE OPERATE IT'S SYSTEM.

3. CUSTOMER SHALL PLACE WARNING LABEL AT A CONSPICUOUS LOCATION ALERTING PERSONNEL OF ON SITE GENERATION PER NEC.

4. METERING, DISCONNECT, AND CONSTRUCTION/EQUIPMENT REQUIREMENTS ARE DOCUMENTED ELSE WHERE IN THE ELECTRIC SERVICE AND METER INSTALLATION REQUIREMENTS MANUAL AND ARE SHOWN HERE FOR REFERENCE ONLY. THE REQUIREMENTS DO NOT SUPERSEDE OR REPLACE ANY OTHER REQUIREMENTS IN THE SERVICE REQUIREMENTS MANUAL.

5. SINGLE LINE DIAGRAM SHOWN FOR CLARITY. THIS DRAWING IS A GENERIC REPRESENTATION OF THE DUKE ENERGY PROTECTIVE AND METERING PACKAGE FOR GENERATION SITES.

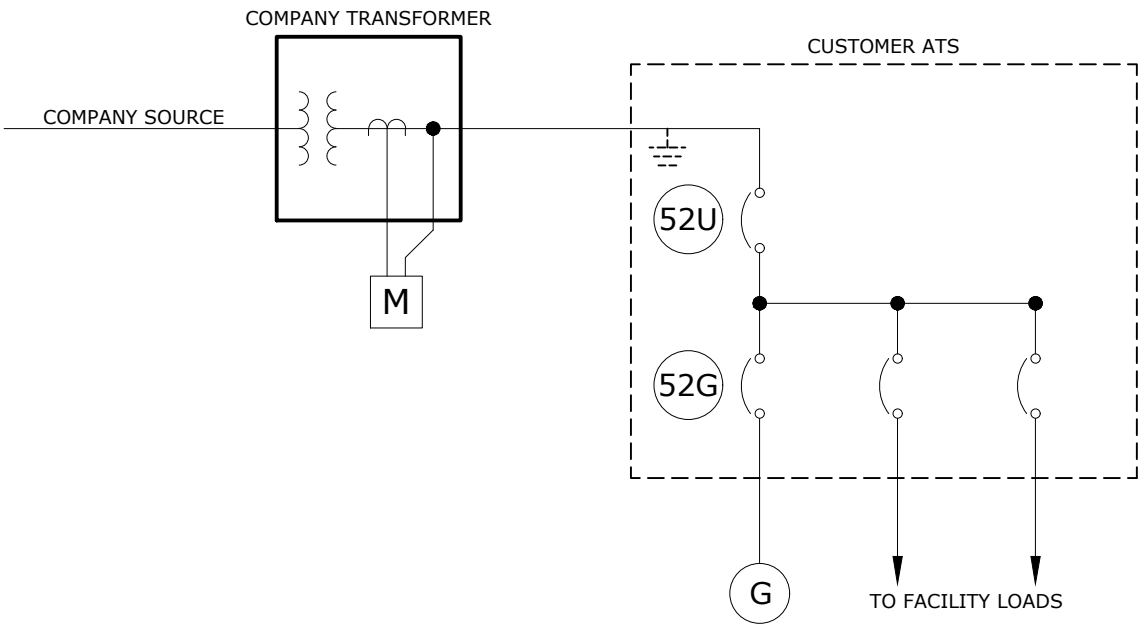
6. CUSTOMER SHALL INSTALL FIBER CONNECTIVITY FROM RECLOSER CONTROL TO THE GENERATION BREAKER AND DIRECT TRANSFER TRIP/ PERMISSIVE RUN EQUIPMENT (NOT SHOWN). ADDITIONAL INFORMATION TO BE PROVIDED TO CUSTOMER DURING INTERCONNECTION PROCESS.

3				
2				
1				
0	2/29/24	SHAFFER	EANES	GRAHAM
REVISED		BY	CHK'D	APPR.

NET-METERING GENERATION
PRIMARY METERING
WITH DER RECLOSER

DEC	DEM	DEP	DEF
X	X	X	

FIG 72J



LEGEND:

G	GENERATOR
M	METER
ATS	AUTO-TRANSFER SWITCH
52U	UTILITY-SIDE BREAKER WITH LOCKABLE OPEN FEATURE
52G	GENERATOR-SIDE BREAKER

GROUNDING PROVISION PROVIDED BY CUSTOMER TO MEET THE FOLLOWING SPECIFICATIONS:

A. ACCESSIBLE TO COMPANY PERSONNEL

B. 10' CLEARANCE

C. GROUND BALL STUD(S) ON EACH PHASE AND NEUTRAL

1. MOUNTED IN HORIZONTAL POSITION
2. 25MM OR 30MM DIAMETER
3. 4" MIN. LENGTH, INCLUDING BALL
4. FAULT CURRENT RATED FOR GEAR BUSS.
5. MULTIPLE GROUND BALL STUDS MAY BE NEEDED TO MEET AVAILABLE FAULT CURRENT.

3				
2				
1	2/29/24	SHAFFER	EANES	GRAHAM
0	10/28/15	SIMPSON	SIMPSON	ADCOCK
REVISED		BY	CHK'D	APPR.

SERVICE WITH STANDBY GENERATION
AUTO TRANSFER SWITCH
PARALLEL (>100 MILLISECONDS)
TOTAL FACILITY LOAD

DUKE ENERGY.

DEC	DEM	DEP	DEF
X	X	X	

FIG 73A

INTERCONNECTION EVALUATION

SYSTEMS IN THIS CATEGORY REQUIRE APPROVAL IN WRITING FROM DUKE ENERGY BEFORE BEING CONNECTED. SPECIFICALLY, INTERCONNECTION OF GENERATING FACILITIES IN THIS CATEGORY MUST BE EVALUATED AND APPROVED BY THE DISTRIBUTION PROTECTION AUTOMATION AND CONTROL GROUP WITHIN DUKE ENERGY.

INTERCONNECTION PROTECTION (RELAYING) REQUIREMENTS

FOR INTERCONNECTION PROTECTION, THE GENERATING FACILITY'S INTERCONNECTION EQUIPMENT MUST EITHER BE LISTED AS FULLY COMPLIANT WITH UL1741 (FOR INVERTER-BASED EQUIPMENT) OR MUST BE COMPLIANT WITH IEEE 1547 SECTION 4 (INTERCONNECTION TECHNICAL SPECIFICATIONS AND REQUIREMENTS. ADDITIONAL REQUIREMENTS ARE LISTED BELOW:

1. THE DER (DISTRIBUTED ENERGY RESOURCE) UNIT SHALL PARALLEL WITH THE AREA COMPANY DISTRIBUTION SYSTEM WITHOUT CAUSING A VOLTAGE FLUCTUATION AT THE POD GREATER THAN +/-5% OF THE PREVAILING VOLTAGE LEVEL OF THE COMPANY DISTRIBUTION SYSTEM AT THE POD. (IEEE 1547-2018 SECTION 4.1.3 SYNCHRONIZATION)
2. THE DER UNIT SHALL NOT ENERGIZE THE COMPANY DISTRIBUTION SYSTEM WHEN THE AREA COMPANY DISTRIBUTION SYSTEM IS DE-ENERGIZED. (IEEE 1547-2018 SECTION 4.1.5 INADVERTENT ENERGIZATION OF THE AREA COMPANY DISTRIBUTION SYSTEM)
3. INTERCONNECTION PROTECTION RELAYING MUST MEASURE VOLTAGES ON THE "UTILITY" SIDE OF 52U. RELAY VOLTAGE INPUTS MUST BE FROM THREE SEPARATE PHASE-TO-GROUND VOLTAGES (FOR 4-WIRE SERVICES) OR FROM THREE SEPARATE PHASE-TO-PHASE VOLTAGES (FOR 3-WIRE SERVICES). REVERSE POWER RELAY (32R) MUST MEASURE CURRENT AT THE 52U BREAKER.
4. INTERCONNECTION PROTECTION RELAYING MUST HAVE FIVE PROTECTIVE ELEMENTS LISTED BELOW WITH SETTINGS AS SPECIFIED:
   A. 27 (UNDER VOLTAGE): 0.88 PER UNIT, 10 CYCLE TIME DELAY
   B. 59 (OVER VOLTAGE): 1.10 PER UNIT, 10 CYCLE TIME DELAY
   C. 81U (UNDER FREQUENCY): 59.5 HZ, 10 CYCLE TIME DELAY
   D. 81O (OVER FREQUENCY): 60.5 HZ, 10 CYCLE TIME DELAY
   E. 32R (REVERSE POWER): WATTS SET AT 5% OF TOTAL GENERATING CAPACITY, WITH A 1.0 SECOND TIME DELAY
5. INTERCONNECTION PROTECTION RELAY TRIP FUNCTIONS MUST CAUSE SEPARATION OF THE GENERATION FROM THE UTILITY, EITHER BY (1) TRIPPING ALL GENERATORS [52G] BREAKERS OR BY (2) TRIPPING ALL UTILITY MAIN [52U] BREAKERS.
6. SERVICE ENTRANCE DISCONNECTING EQUIPMENT WITH VISIBLE OPEN CAPABILITY AND GROUNDING PROVISIONS. THIS INCLUDES THE ABILITY TO LOCK OPEN OR "RACK-OUT" THEIR UTILITY BREAKER OR SERVICE ENTRANCE DISCONNECT.
7. THE INTERCONNECTION PROTECTION EQUIPMENT MUST HAVE A SYNCHRONIZATION CHECK FUNCTION (25 RELAY).
8. CUSTOMER MUST PROVIDE A DOCUMENT STAMPED BY A LICENSED PROFESSIONAL ENGINEER (LICENSED IN THE STATE WHERE THE GENERATING FACILITY IS TO BE LOCATED) SHOWING APPROVAL OF CUSTOMER'S DESIGN AND TESTING OF SYSTEM OPERATION MEETS DUKE ENERGY REQUIREMENTS FOR MOMENTARY PARALLEL OPERATION.
9. CUSTOMER MUST SIGN AN INTERCONNECTION AGREEMENT BEFORE MOMENTARY PARALLEL OPERATION IS ALLOWED.
10. MAXIMUM PARALLEL TIME SHALL NOT EXCEED 20 SECONDS.
11. INSTRUMENT TRANSFORMERS (CT'S AND PT'S) SHALL COMPLY WITH ANSI/ IEEE C57.13 (LATEST REVISION).

DUKE ENERGY.

REVISED		BY	CHK'D	APPR.
3	3/31/25	SHAFFER	FLETCHER	GRAHAM
2	2/29/24	SHAFFER	EANES	GRAHAM
1	10/30/17	EANES	EANES	ADCOCK
0	10/28/15	VALENTIN	SIMPSON	ADCOCK

STANDBY GENERATION - PROTECTION REQUIREMENTS
(SOFT LOAD TRANSITION
>100 MILLISECONDS PARALLEL TIME)

DEC	DEM	DEP	DEF
X	X	X	

FIG 73B

INTERCONNECTION EVALUATION

SYSTEMS IN THIS CATEGORY REQUIRE APPROVAL IN WRITING FROM DUKE ENERGY BEFORE BEING CONNECTED. SPECIFICALLY, INTERCONNECTION OF GENERATING FACILITIES IN THIS CATEGORY MUST BE EVALUATED AND APPROVED BY THE DISTRIBUTION PROTECTION AUTOMATION AND CONTROL GROUP WITHIN DUKE ENERGY.

INTERCONNECTION PROTECTION (RELAYING) REQUIREMENTS

FOR INTERCONNECTION PROTECTION, THE GENERATING FACILITY'S INTERCONNECTION EQUIPMENT MUST EITHER BE LISTED AS FULLY COMPLIANT WITH UL1741 (FOR INVERTER-BASED EQUIPMENT) OR MUST BE COMPLIANT WITH IEEE 1547 SECTION 4 (INTERCONNECTION TECHNICAL SPECIFICATIONS AND REQUIREMENTS); VOLTAGE AND FREQUENCY SET-POINTS MUST BE SAME AS "DEFAULT" UNLESS OTHERWISE APPROVED BY DUKE ENERGY. ADDITIONAL REQUIREMENTS ARE LISTED BELOW:

1. THE DER UNIT SHALL PARALLEL WITH THE COMPANY DISTRIBUTION SYSTEM WITHOUT CAUSING A VOLTAGE FLUCTUATION AT THE POD GREATER THAN +/-5% OF THE PREVAILING VOLTAGE LEVEL OF THE COMPANY DISTRIBUTION SYSTEM AT THE POD. (IEEE 1547-2018 SECTION 4.1.3 SYNCHRONIZATION)
2. THE DER UNIT SHALL NOT ENERGIZE THE COMPANY DISTRIBUTION SYSTEM WHEN THE COMPANY DISTRIBUTION SYSTEM IS DE-ENERGIZED. (IEEE 1547-2018 SECTION 4.1.5 INADVERTENT ENERGIZATION OF THE COMPANY DISTRIBUTION SYSTEM)
3. SERVICE ENTRANCE DISCONNECTING EQUIPMENT WITH VISIBLE OPEN CAPABILITY AND GROUNDING PROVISIONS. THIS INCLUDES THE ABILITY TO LOCK OPEN OR "RACK-OUT" THEIR UTILITY BREAKER OR SERVICE ENTRANCE DISCONNECT.
4. THE INTERCONNECTION EQUIPMENT MUST HAVE A SYNCHRONIZATION CHECK FUNCTION (25 RELAY).
5. THE INTERCONNECTION EQUIPMENT MUST HAVE A SEPARATE TIMER THAT WILL INITIATE THE SEPARATION OF THE GENERATOR AND THE UTILITY IF THE PARALLELING TIME EXCEEDS 100MS.
6. THE DER UNIT SHALL NOT BACK FEED (INTENDED OR NON-INTENDED) THE UTILITY SYSTEM.
7. CUSTOMER MUST PROVIDE A DOCUMENT STAMPED BY A LICENSED PROFESSIONAL ENGINEER (LICENSED IN THE STATE WHERE THE GENERATING FACILITY IS TO BE LOCATED) SHOWING APPROVAL OF CUSTOMER'S DESIGN AND TESTING OF SYSTEM OPERATION MEETS DUKE ENERGY REQUIREMENTS FOR MOMENTARY PARALLEL OPERATION.
8. CUSTOMER MUST SIGN AN INTERCONNECTION AGREEMENT BEFORE MOMENTARY PARALLEL OPERATION IS ALLOWED.

DUKE ENERGY.

REVISED		BY	CHK'D	APPR.
3				
2	2/28/25	SHAFFER	EANES	GRAHAM
1	2/29/24	SHAFFER	EANES	GRAHAM
0	7/2/15	VALENTIN	SIMPSON	ADCOCK

STANDBY GENERATION - PROTECTION REQUIREMENTS
MOMENTARY PARALLEL GENERATION
(FAST TRANSITION ≤100 MILLISECONDS PARALLEL TIME)

DEC	DEM	DEP	DEF
X	X	X	

FIG 73C

GENERAL REQUIREMENTS APPLICABLE TO ALL PARALLELING GENERATION

1. THE INTERCONNECTION OF ANY DISTRIBUTED ENERGY RESOURCE (DER) UNIT ON THE DUKE ENERGY SYSTEM WILL NOT BE PERMITTED IF IT DEGRADES SERVICE TO OTHER CUSTOMERS. INTERCONNECTION CUSTOMERS ARE RESPONSIBLE FOR THE COST OF ANY NECESSARY CHANGES OR UPGRADES TO THE DUKE ENERGY DISTRIBUTION AND/OR TRANSMISSION SYSTEM REQUIRED TO PROPERLY INTEGRATE THE GENERATION SO AS TO MAINTAIN APPROPRIATE SERVICE TO DUKE ENERGY CUSTOMERS.

2. THE INTERCONNECTION CUSTOMER IS SOLELY RESPONSIBLE FOR THE ELECTRICAL PROTECTION OF THEIR FACILITIES. DUKE ENERGY EQUIPMENT MAY INADVERTENTLY PROVIDE SOME PROTECTION TO THE DER CUSTOMER'S FACILITY AS IT OPERATES TO PROTECT THE UTILITY SYSTEM, HOWEVER, NO LIABILITY IS ASSUMED BY DUKE ENERGY.

3. DUKE ENERGY OWNED INTERCONNECTION PROTECTION EQUIPMENT (WHEN PROVIDED), IS FOR THE PROTECTION OF THE DISTRIBUTION SYSTEM FROM MALFUNCTION OR MISOPERATION OF THE DER UNIT.

4. DUKE ENERGY MAY DISCONNECT A DER FACILITY FROM THE DISTRIBUTION SYSTEM AT ANY TIME PURSUANT TO, BUT NOT LIMITED TO, THE FOLLOWING CONDITIONS:
   - EXPIRATION, TERMINATION, OR LACK OF INTERCONNECTION AGREEMENT (IF ORIGINALLY APPLICABLE)
   - NON-COMPLIANCE WITH TECHNICAL REQUIREMENTS
   - CASES WHERE CONTINUED INTERCONNECTION WILL ENDANGER PERSONS OR PROPERTY
   - A FORCED OR PLANNED OUTAGE OF THE DISTRIBUTION SYSTEM FOR REPAIRS OR MAINTENANCE
   - UNDER HOT LINE TAG CONDITIONS (UTILITY REPAIR OR MAINTENANCE WORK ON FACILITIES WHILE ENERGIZED)
   - ANY OTHER SYSTEM EMERGENCY

5. DER FACILITIES MUST COMPLY WITH THE NATIONAL ELECTRIC CODE AND MUST PASS A SUCCESSFUL INSPECTION BY LOCAL JURISDICTIONAL AUTHORITIES. IF THE GOVERNING ELECTRICAL INSPECTOR INDICATES THAT THE INSTALLATION IS EXEMPT FROM INSPECTION, A WRITTEN, SIGNED STATEMENT FROM THE GOVERNING ELECTRICAL INSPECTOR FOR THE SPECIFIC INSTALLATION WILL BE REQUIRED BEFORE DUKE ENERGY WILL INSTALL A METER.

6. NEGATIVE SEQUENCE OVERVOLTAGE
   NEGATIVE SEQUENCE OVERVOLTAGE 59Q PROTECTION ELEMENTS HAVE THE ABILITY TO DETECT PHASE IMBALANCES IN POWER SYSTEMS. WHILE THIS CAN BE UTILIZED FOR VARIOUS LOGIC SCHEMES, IT MUST BE UNDERSTOOD THAT DISTRIBUTION AND TRANSMISSION DISTURBANCES CAN BE REFLECTED AS IMBALANCE TO THE DER SITE AND IT IS DESIRABLE TO RIDE THROUGH FOR GRID EVENTS THAT ARE NOT WITHIN THE LOCAL OR AREA ELECTRIC POWER SYSTEM (EPS).

   WITH THIS GOAL IDENTIFIED, NEGATIVE SEQUENCE OVERVOLTAGE (59Q) PROTECTION ELEMENTS SHOULD NOT TRIP FOR GRID EVENTS IN LESS THAN 20 CYCLES. THIS IS TO ALLOW TRANSMISSION OR DISTRIBUTION PROTECTION SCHEMES TO OPERATE AND CLEAR GRID DISTURBANCES. THIS REQUIREMENT DOES NOT ALLEVIATE THE DER GENERATION SITE FROM MAINTAINING ADEQUATE PROTECTION FOR THEIR EQUIPMENT. IF THIS REQUIREMENT CANNOT BE ACHIEVED, CONTACT DUKE ENERGY FOR ADDITIONAL GUIDANCE. THE GENERATOR OWNER SHALL COMMUNICATE THE DOCUMENTED DER PLANT OR EQUIPMENT LIMITATIONS IN THE APPLICATION.

INTERCONNECTION PROTECTION OWNERSHIP BASED ON GENERATOR TYPE AND SIZE

IN GENERAL, DISTRIBUTED GENERATION SYSTEMS ARE CLASSIFIED IN TWO MAIN CATEGORIES: INVERTER BASED SYSTEMS AND ROTATING MACHINE BASED SYSTEMS.

DG CATEGORY AND SIZE	INTERCONNECTION PROTECTION OWNERSHIP
INVERTER BASED < 250KW	CUSTOMER OWNED
INVERTER BASED ≥ 250KW TO <1MW	OPTIONAL, CUSTOMER OWNED OR UTILITY OWNED
INVERTER BASED ≥ 1MW AND ALL ROTATING BASED	UTILITY OWNED

REVISED		BY	CHK'D	APPR.
3				
2	3/31/25	SHAFFER	FLETCHER	GRAHAM
1	10/30/17	EANES	EANES	ADCOCK
0	7/2/15	VALENTIN	SIMPSON	ADCOCK

LONG TERM PARALLEL GENERATION (>20 SECONDS)
INTERCONNECTION PROTECTION OWNERSHIP
BASED ON GENERATOR TYPE AND SIZE

DEC	DEM	DEP	DEF
X	X	X	X

FIG 75A

INTERCONNECTION PROTECTION REQUIREMENTS

SETTINGS IN THIS DOCUMENT ARE FOR REFERENCE AND ARE NOT INTENDED TO SUPERSEDE THE SETTINGS DOCUMENTED IN THE DER CONFIGURATION AND FUNCTION PARAMETER SETTINGS (SETTINGS SHEET).

INVERTER BASED SYSTEMS <250KW

FOR GENERATING FACILITIES IN THIS CATEGORY, INTERCONNECTION PROTECTION WILL BE OWNED AND OPERATED BY THE INTERCONNECTION CUSTOMER. DUKE ENERGY'S MINIMUM REQUIREMENTS FOR CUSTOMER OWNED INTERCONNECTION PROTECTION IN THIS CATEGORY IS AS FOLLOWS:

1. INVERTERS HAVE TO BE TESTED AND LISTED FOR COMPLIANCE WITH THE LATEST PUBLISHED EDITION OF UNDERWRITER LABORATORIES INC., UL 1741 FOR UTILITY INTERACTIVE INVERTERS.
2. INTERCONNECTION PROTECTION EQUIPMENT SHALL COMPLY WITH THE LATEST EDITION OF IEEE 1547 AND APPLICABLE SERIES STANDARDS.
3. THE INVERTER DER PERFORMANCE SHALL BE CAPABLE OF IEEE 1547-2018:
   -NORMAL OPERATION CATEGORY B
   -ABNORMAL OPERATION CATEGORY III
4. INVERTER PROTECTIVE SETTINGS SHALL BE SET PER THE FOLLOWING:

UNDER VOLTAGE SETPOINT #1 (27-1)	0.88 PER UNIT, 2.00 SECOND DELAY
UNDER VOLTAGE SETPOINT #2 (27-2)	0.50 PER UNIT, 0.75 SECOND DELAY
OVER VOLTAGE SETPOINT #1 (59-1)	1.10 PER UNIT, 2.00 SECOND DELAY
OVER VOLTAGE SETPOINT #2 (59-2)	1.20 PER UNIT, 0.16 SECOND DELAY
UNDER FREQUENCY SETPOINT #1 (81U-1)	58.0 Hz, 300 SECOND DELAY
UNDER FREQUENCY SETPOINT #2 (81U-2)	57.0 Hz, 1.00 SECOND DELAY
OVER FREQUENCY SETPOINT #1 (81O-1)	61.4 Hz, 300 SECOND DELAY
OVER FREQUENCY SETPOINT #2 (81O-2)	62.0 Hz, 1.00 SECOND DELAY

5. CUSTOMER SHALL PROVIDE A MANUAL LOAD-BREAK RATED DISCONNECT SWITCH TO SERVE AS A CLEAR VISIBLE INDICATION OF SWITCH POSITION BETWEEN THE UTILITY AND THE INTERCONNECTION CUSTOMER. THE SWITCH MUST BE LOCKABLE IN THE OPEN POSITION, WITHIN SIGHT OF THE METER, AND READILY ACCESSIBLE TO UTILITY PERSONNEL. (SEE FIGURE 69.)

INVERTER BASED SYSTEMS ≥250KW TO <1MW

FOR GENERATING FACILITIES IN THIS CATEGORY, INTERCONNECTION PROTECTION OWNERSHIP WILL BE OPTIONAL. INTERCONNECTION PROTECTION EQUIPMENT MAY BE OWNED AND OPERATED BY THE INTERCONNECTION CUSTOMER OR BY DUKE ENERGY.

CUSTOMER OWNED INTERCONNECTION PROTECTION EQUIPMENT AND SETTINGS FOR GENERATING FACILITIES IN THIS CATEGORY MUST BE EVALUATED AND APPROVED BY THE DISTRIBUTION PROTECTION AUTOMATION AND CONTROL GROUP WITHIN DUKE ENERGY. DUKE ENERGY'S MINIMUM REQUIREMENTS FOR CUSTOMER OWNED INTERCONNECTION PROTECTION IN THIS CATEGORY IS AS FOLLOWS:

1. REQUIREMENTS 1, 2 AND 3 FROM SECTION ABOVE (INVERTERS <250KW).
2. INVERTER PROTECTIVE SETTINGS SHALL BE SET PER THE FOLLOWING:

UNDER VOLTAGE SETPOINT #1 (27-1)	0.88 PER UNIT, 2.00 SECOND DELAY
UNDER VOLTAGE SETPOINT #2 (27-2)	0.50 PER UNIT, 0.75 SECOND DELAY
OVER VOLTAGE SETPOINT #1 (59-1)	1.10 PER UNIT, 2.00 SECOND DELAY
OVER VOLTAGE SETPOINT #2 (59-2)	1.20 PER UNIT, 0.16 SECOND DELAY
UNDER FREQUENCY SETPOINT #1 (81U-1)	58.0 Hz, 300 SECOND DELAY
UNDER FREQUENCY SETPOINT #2 (81U-2)	57.0 Hz, 1.00 SECOND DELAY
OVER FREQUENCY SETPOINT #1 (81O-1)	61.4 Hz, 300 SECOND DELAY
OVER FREQUENCY SETPOINT #2 (81O-2)	62.0 Hz, 1.00 SECOND DELAY

3. INVERTER PROTECTIVE SETTINGS SHALL BE DOCUMENTED IN A COMMISSIONING TEST REPORT SUBMITTED TO DUKE ENERGY.
4. CUSTOMER SHALL PROVIDE A MANUAL LOAD-BREAK RATED DISCONNECT SWITCH TO SERVE AS A CLEAR VISIBLE INDICATION OF SWITCH POSITION BETWEEN THE UTILITY AND THE INTERCONNECTION CUSTOMER. THE SWITCH MUST BE LOCKABLE IN THE OPEN POSITION, WITHIN SIGHT OF THE METER, AND READILY ACCESSIBLE TO UTILITY PERSONNEL. (SEE FIGURE 69.)
5. CUSTOMER MUST PROVIDE A REPORT STAMPED BY A LICENSED PROFESSIONAL ENGINEER (LICENSED IN THE STATE WHERE THE GENERATING FACILITY IS TO BE LOCATED) DOCUMENTING CUSTOMER'S EQUIPMENT, SYSTEM DESIGN AND INTERCONNECTION PROTECTION MEETS DUKE ENERGY'S REQUIREMENTS, IEEE 1547 AND UL 1741.

DUKE ENERGY.

REVISED	BY	CHK'D	APPR.
3 3/31/25	EANES	FLETCHER	GRAHAM
2 2/29/24	SHAFFER	EANES	GRAHAM
1 10/30/17	EANES	EANES	ADCOCK
0 10/28/15	VALENTIN	SIMPSON	ADCOCK

LONG TERM PARALLEL GENERATION (>20 SECONDS)
INVERTER BASED SYSTEMS <1MW
INTERCONNECTION PROTECTION REQUIREMENTS

DEC	DEM	DEP	DEF
X		X	

FIG 75B

INVERTER BASED SYSTEMS ≥1MW AND ALL ROTATING MACHINE BASED GENERATORS

FOR GENERATING FACILITIES IN THIS CATEGORY, INTERCONNECTION PROTECTION EQUIPMENT WILL BE OWNED AND OPERATED BY DUKE ENERGY. INTERCONNECTION PROTECTION EQUIPMENT SETTINGS WILL BE EVALUATED AND APPROVED BY THE DISTRIBUTION PROTECTION AUTOMATION AND CONTROL GROUP WITHIN DUKE ENERGY. THE SETTINGS FOR THE GENERATING FACIILTY ARE DOCUMENTED IN THE DER CONFIGURATION AND FUNCTION PARAMETER SETTINGS (SETTINGS SHEET) AND WILL BE PROVIDED AS NORMAL PART OF THE INTERCONNECTION PROCESS.

DUKE ENERGY'S MINIMUM REQUIREMENTS FOR INTERCONNECTION PROTECTION IN THIS CATEGORY IS AS FOLLOWS:

1. DUKE ENERGY'S PROTECTION EQUIPMENT WILL INCLUDE A RECLOSER OR BREAKER, RELAYING (CONTROL), AND REMOTE COMMUNICATIONS FOR MONITORING AND OPERATIONS.
2. DUKE ENERGY'S PROTECTION EQUIPMENT SHALL INCLUDE OVER CURRENT, OVER/UNDER VOLTAGE AND OVER/UNDER FREQUENCY RELAYING.
3. INVERTERS HAVE TO BE TESTED AND LISTED FOR COMPLIANCE WITH THE LATEST PUBLISHED EDITION OF UNDERWRITER LABORATORIES INC., UL 1741 FOR UTILITY INTERACTIVE INVERTERS.
4. CUSTOMER'S INTERCONNECTION SYSTEM SHALL COMPLY WITH THE LATEST EDITION OF IEEE 1547 AND APPLICABLE SERIES STANDARDS.
5. DUKE ENERGY SHALL PROVIDE A MANUAL LOAD-BREAK RATED DISCONNECT SWITCH TO SERVE AS A CLEAR VISIBLE INDICATION OF SWITCH POSITION BETWEEN THE UTILITY AND THE INTERCONNECTION CUSTOMER. THE SWITCH MUST BE READILY ACCESSIBLE TO UTILITY PERSONNEL.
6. DUKE ENERGY MAY PROVIDE A PERMISSIVE RUN INTERFACE FOR ENERGY STORAGE GENERATION FACILITIES, DETAILS AVAILABLE UPON REQUEST OR AS NORMAL PART OF THE INTERCONNECTION REQUEST AND EVALUATION PROCESS, WHEN APPLICABLE.

THE REMOTE COMMUNICATIONS FOR MONITORING AND OPERATIONS INCLUDES THE RELAYING AS WELL AS THE DISTRIBUTED GENERATION (DG) INTERCONNECTING INTERFACE. THE DG INTERCONNECTION INTERFACE CONSISTS OF A UTILITY-PROVIDED INTERFACE DEVICE WITH PRE-DESIGNED INTERCONNECTION WIRING TO SUPPORT THE INTERFACE TO THE CUSTOMER'S FACILITIES. THE CUSTOMER MUST PROVIDE DATA AND CONTROL CAPABILITY FOR THE GENERATOR TO THE DUKE ENERGY INTERFACE DEVICE. DUKE ENERGY WILL MAKE THE DG INTERCONNECTION INTERFACE DETAILS AVAILABLE UPON REQUEST OR AS NORMAL PART OF THE INTERCONNECTION REQUEST AND EVALUATION PROCESS, WHEN APPLICABLE.

DUKE ENERGY.

REVISED		BY	CHK'D	APPR.
3				
2	2/29/24	SHAFFER	EANES	GRAHAM
1	10/30/17	EANES	EANES	ADCOCK
0	7/2/15	VALENTIN	SIMPSON	ADCOCK

LONG TERM PARALLEL GENERATION (>20 SECONDS)
INVERTER BASED SYSTEMS ≥1MW AND
ALL ROTATING MACHINE BASED GENERATORS

DEC	DEM	DEP	DEF
X		X	

FIG 75C

TELEMETRY AND CONTROL REQUIREMENTS:

1. DISTRIBUTED ENERGY RESOURCES (DER) HAVE A SIGNIFICANT IMPACT ON THE DUKE ENERGY GENERATION, TRANSMISSION, AND DISTRIBUTION SYSTEM, EVEN AFTER INTERCONNECTION STUDIES HAVE ACCOUNTED FOR THEIR PRESENCE. DUKE ENERGY REQUIRES, FOR DER FACILITIES 250 KW AND LARGER, INSTALLATION OF TELEMETRY AND CONTROL EQUIPMENT IN ORDER TO MANAGE THE OPERATION OF DER ON DUKE ENERGY SYSTEM. REAL-TIME TELEMETRY OF CERTAIN DER ELECTRICAL VALUES AND ENABLE/ DISABLE CONTROL OF DER FACILITIES IS CRITICAL FOR REAL-TIME DISTRIBUTION MANAGEMENT SYSTEM OPERATING FUNCTIONS, AND IS ALSO CRITICAL FOR GENERATION/ TRANSMISSION AND BALANCING AUTHORITY OPERATIONS. USE OF THE ENABLE/ DISABLE CONTROL FUNCTION IS INTENDED FOR ATYPICAL SYSTEM OPERATING SITUATIONS ONLY.

2. THE POINT OF MEASUREMENT AND CONTROL IS GENERALLY AT THE POINT OF INTERCONNECTION FOR EXPORTING GENERATING FACILITIES AND AT THE POINT OF GENERATION FOR "NET METERING" OR "SELL ALL" FACILITIES. THERE MAY BE SPECIAL CASES DEPENDING UPON THE NATURE OF THE FACILITY.

3. FOR FACILITIES 1 MW AND LARGER, REQUIRED TELEMETRY & CONTROL FUNCTIONALITY IS TYPICALLY ACCOMPLISHED AS PART OF THE REQUIRED INTERCONNECTION PROTECTION FACILITIES AS DESCRIBED IN FIGURE 75C AND AS SHOWN IN FIGURE 71B. FOR DER FACILITIES ≥250 KW AND <1 MW, SEE THE FOLLOWING TABLE FOR TELEMETRY & CONTROL REQUIREMENTS:

REQUESTED INTERCONNECTION VOLTAGE	TYPE OF FACILITY	REQUIREMENTS FOR TELEMETRY AND CONTROL
PRIMARY DISTRIBUTION VOLTAGE (>600V)	EXPORTING GENERATING FACILITY	DEFAULT: INTERCONNECTION RECLOSER (REFERENCE FIGURES 75C AND 71B) AND: SMALL DG INTERCONNECTION INTERFACE (SEE NOTE 1)
PRIMARY DISTRIBUTION VOLTAGE (>600V)	NET METERING/ SELL EXCESS FACILITY	DEFAULT: SMALL DG INTERCONNECTION INTERFACE (SEE NOTE 1) OPTION: INTERCONNECTION RECLOSER OR OTHER SPECIAL DESIGN IF APPROPRIATE (SEE NOTE 2)
SECONDARY DISTRIBUTION VOLTAGE (≤ 600V)	EXPORTING GENERATING FACILITY	DEFAULT: SMALL DG INTERCONNECTION INTERFACE (SEE NOTE 1) OPTION: INTERCONNECTION RECLOSER (REFERENCE FIGURES 75C AND 71B) OPTION: OTHER SPECIAL DESIGN IF APPROPRIATE (SEE NOTE 2)
SECONDARY DISTRIBUTION VOLTAGE (≤ 600V)	NET METERING/SELL EXCESS FACILITY	DEFAULT: SMALL DG INTERCONNECTION INTERFACE (SEE NOTE 1) OPTION: OTHER SPECIAL DESIGN IF APPROPRIATE (SEE NOTE 2)

NOTES:

1. THE SMALL DG INTERCONNECTION INTERFACE CONSISTS OF A UTILITY-PROVIDED INTERFACE DEVICE AND CABINET WITH PRE-DESIGNED INTERCONNECTION WIRING TO SUPPORT THE INTERFACE TO THE CUSTOMER'S FACILITIES. THE CUSTOMER MUST PROVIDE DATA AND CONTROL CAPABILITY FOR THE GENERATOR TO THE DUKE ENERGY INTERFACE DEVICE. DUKE ENERGY WILL MAKE THE SMALL DG INTERCONNECTION INTERFACE DETAILS AVAILABLE UPON REQUEST OR AS NORMAL PART OF THE INTERCONNECTION REQUEST AND EVALUATION PROCESS, WHEN APPLICABLE.

2. IN MOST SITUATIONS DUKE ENERGY EXPECTS TELEMETRY AND CONTROL REQUIREMENTS TO BE MET WITH ITS STANDARD DESIGN INTERCONNECTION RECLOSER AND/OR THE SMALL DG INTERCONNECTION INTERFACE. UTILIZING THESE STANDARDS DESIGNS HELPS DUKE ENERGY MINIMIZE COST TO THE INTERCONNECTION CUSTOMER AND TO MAXIMIZE EFFECTIVE TECHNICAL SUPPORT OF INTERCONNECTION FACILITIES. DUKE ENERGY RECOGNIZES THAT OCCASIONALLY UNIQUE CUSTOMER SITUATIONS MAY CALL FOR AN ALTERNATIVE DESIGN WHICH STILL MEETS THE TELEMETRY AND CONTROL REQUIREMENTS, AND SUCH SITUATIONS WILL BE HANDLED ON A CASE-BY-CASE BASIS.

DUKE ENERGY.

REVISED		BY	CHK'D	APPR.
3				
2	2/29/20	EANES	FLETCHER	GRAHAM
1	12/26/18	EANES	EANES	ADCOCK
0	10/30/17	GADJA	EASON	ADCOCK

LONG TERM PARALLEL GENERATION
TELEMETRY AND CONTROL REQUIREMENTS

DEC	DEM	DEP	DEF
X		X	

FIG 75D

SMART INVERTER FUNCTIONS & REQUIREMENTS

THIS SECTION IS INTENDED TO BE CONSISTENT WITH IEEE 1547-2018, AND PROVIDE SUPPLEMENTAL REQUIREMENTS FOR SMART INVERTER INTERCONNECTION TO THE DISTRIBUTION SYSTEM. THE REQUIREMENTS DO NOT SUPERSEDE OR REPLACE ANY OTHER REQUIREMENTS IN THE SERVICE REQUIREMENTS MANUAL. THE FUNCTIONS ENABLED IN THIS SECTION ARE INTENDED TO HELP SAFEGUARD DUKE ENERGY'S DISTRIBUTION AND TRANSMISSION SYSTEMS AND NOT THE GENERATING FACILITY. THE GENERATING FACILITY IS RESPONSIBLE FOR PROTECTING THEIR ASSETS, HOWEVER THOSE PROTECTIVE FUNCTIONS SHALL NOT INTERFERE WITH DUKE ENERGY'S ABILITY TO SAFELY AND RELIABLE OPERATED ITS SYSTEM OR PROVIDE SERVICE TO ITS CUSTOMERS.

SETTINGS IN THIS DOCUMENT ARE FOR REFERENCE AND ARE NOT INTENDED TO SUPERSEDE THE SETTINGS DOCUMENTED IN THE DER CONFIGURATION AND FUNCTION PARAMETER SETTINGS (SETTINGS SHEET).

INVERTER BASED SYSTEMS <250KW

FOR GENERATING FACILITIES IN THIS CATEGORY THE DEFAULT SMART INVERTER FUNCTIONS ALLOWED ARE AS FOLLOWS:

FUNCTION	STATE
ANTI-ISLANDING	ENABLED
VOLTAGE-REACTIVE POWER MODE "VOLT-VAR"	DISABLED (1)
ACTIVE POWER - REACTIVE POWER MODE "WATT-VAR"	DISABLED
CONSTANT REACTIVE POWER MODE	DISABLED
VOLTAGE - ACTIVE POWER MODE "VOLT-WATT"	DISABLED (1)

NOTES:

1) VOLT-VAR AND VOLT-WATT FUNCTIONS ARE CURRENTLY UNDER EVALUATION FOR INVERTERS 100KW AND SMALLER
2) THESE DEFAULT ACTIVATION STATES MAY BE MODIFIED BY MUTUAL AGREEMENT BETWEEN DUKE ENERGY AND CUSTOMER. FUNCTIONS NOT SPECIFIC ON THIS DOCUMENT OR THE SETTINGS SHEET ARE TO BE APPROVED BY DUKE ENERGY PRIOR TO ACTIVATION.

INVERTER BASED SYSTEMS ≥250KW <1MW

FOR GENERATING FACILITIES IN THIS CATEGORY THE DEFAULT SMART INVERTER FUNCTIONS ALLOWED ARE AS FOLLOWS:

FUNCTION	STATE
ANTI-ISLANDING	ENABLED
VOLTAGE-REACTIVE POWER MODE "VOLT-VAR"	DISABLED
ACTIVE POWER - REACTIVE POWER MODE "WATT-VAR"	DISABLED
CONSTANT REACTIVE POWER MODE	DISABLED
VOLTAGE - ACTIVE POWER MODE "VOLT-WATT"	DISABLED

NOTES:

1) THESE DEFAULT ACTIVATION STATES MAY BE MODIFIED BY MUTUAL AGREEMENT BETWEEN DUKE ENERGY AND CUSTOMER. FUNCTIONS NOT SPECIFIC ON THIS DOCUMENT OR THE SETTINGS SHEET ARE TO BE APPROVED BY DUKE ENERGY PRIOR TO ACTIVATION.

DUKE ENERGY.

3				
2				
1				
0	2/29/24	SHAFFER	EANES	GRAHAM
REVISADO		POR	VERIF.	APRO.

LONG TERM PARALLEL GENTERATION (>20 SECONDS)
INVERTER BASED SYSTEMS <1MW
SMART INVERTER REQUIREMENTS

DEC	DEM	DEP	DEF
X		X	

FIG 75E

SMART INVERTER FUNCTIONS & REQUIREMENTS

INVERTER BASED SYSTEMS ≥ 1MW

FOR GENERATING FACILITIES IN THIS CATEGORY THE DEFAULT SMART INVERTER FUNCTIONS ALLOWED ARE AS FOLLOWS:

FUNCTION	STATE
ANTI-ISLANDING	ENABLED
VOLTAGE-REACTIVE POWER MODE "VOLT-VAR"	DISABLED
ACTIVE POWER - REACTIVE POWER MODE "WATT-VAR"	DISABLED
CONSTANT REACTIVE POWER MODE	DISABLED
VOLTAGE - ACTIVE POWER MODE "VOLT-WATT"	DISABLED

NOTES:

1. THESE DEFAULT ACTIVATION STATES MAY BE MODIFIED BY MUTUAL AGREEMENT BETWEEN DUKE ENERGY AND CUSTOMER. FUNCTIONS NOT SPECIFIC ON THIS DOCUMENT OR THE SETTINGS SHEET ARE TO BE APPROVED BY DUKE ENERGY PRIOR TO ACTIVATION.

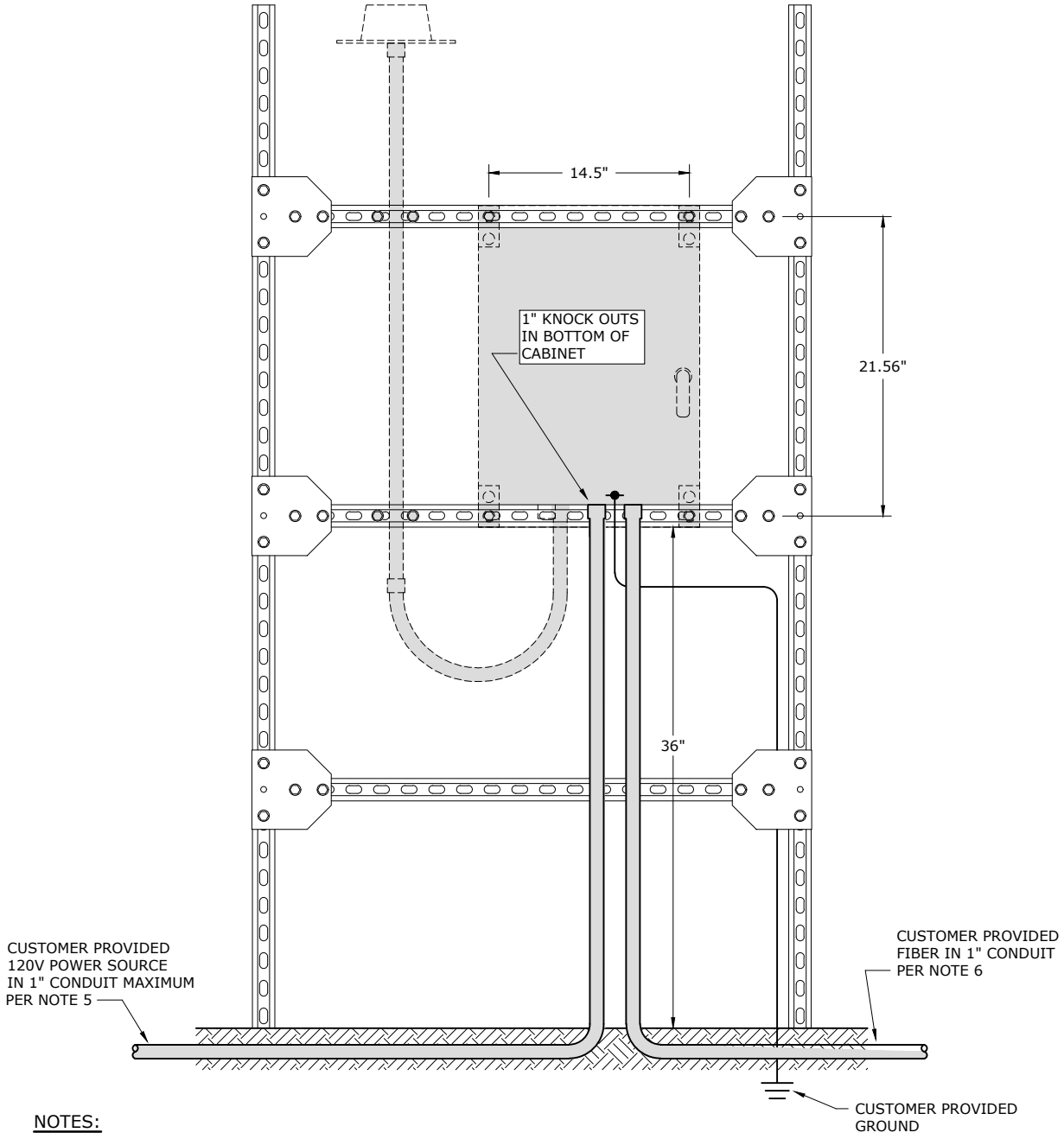
3				
2				
1				
0	2/29/24	SHAFFER	EANES	GRAHAM
REVISED		BY	CHK'D	APPR.

LONG TERM PARALLEL GENTERATION (>20 SECONDS)
INVERTER BASED SYSTEMS ≥ 1MW
SMART INVERTER REQUIREMENTS

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 75F



NOTES:

1. CUSTOMER EQUIPMENT NOT SHOWN FOR CLARITY. TYPICAL STRUCTURE ABOVE SHOWN WITH FREESTANDING SLOTTED CHANNELS. OTHER MOUNTING OPTIONS ALLOWED AS LONG AS MOUNTING CAN SUPPORT A COMBINED WEIGHT OF 100 LBS.
2. INITIAL DUKE SITE VISIT REQUIRED TO VERIFY ADEQUATE CELLULAR RECEPTION.
3. THE STRUCTURE IS INSTALLED IN THE CUSTOMER'S PREMISES. DUKE REQUIRES PERIODIC PHYSICAL ACCESS TO THIS SITE TO INSTALL AND MAINTAIN THE EQUIPMENT INSIDE THE CABINET.
4. CUSTOMER INSTALLS MOUNTING STRUCTURE, GROUNDING CONDUCTOR, AND GROUND ROD. DUKE INSTALLS THE CABINET, MODEM, ANTENNA PIPE MOUNT, AND ANTENNA.
5. CUSTOMER TO PROVIDE 120VAC THREE WIRE ELECTRIC SERVICE IN CONDUIT FROM CUSTOMER'S POWER SOURCE TO CABINET.
6. CUSTOMER TO PROVIDE FIBER PAIR WITH LC CONNECTOR IN CONDUIT FROM CUSTOMER'S PLANT/AUTOMATION CONTROLLER TO CABINET.
7. BOTTOM OF ENCLOSURE SHOULD BE MOUNTED 36" FROM GROUND.

REVISED		BY	CHK'D	APPR.
3				
2				
1	2/29/24	SHAFFER	EANES	GRAHAM
0	2/28/23	EANES	FLETCHER	GRAHAM

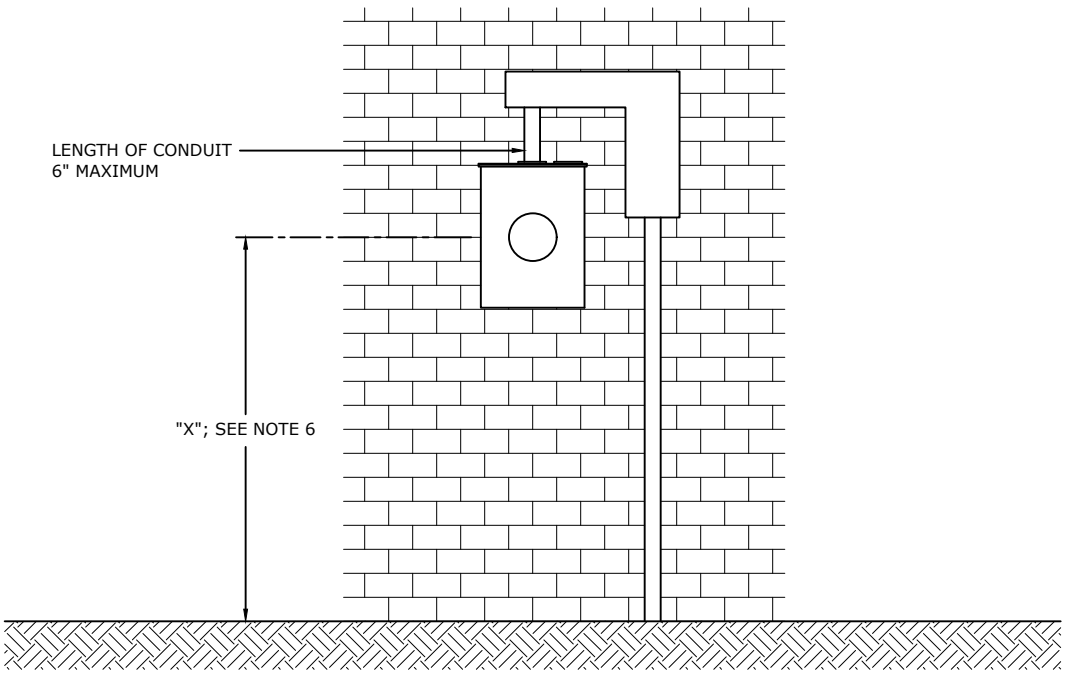
SMALL DG INTERFACE STRUCTURE 250KW-999KW

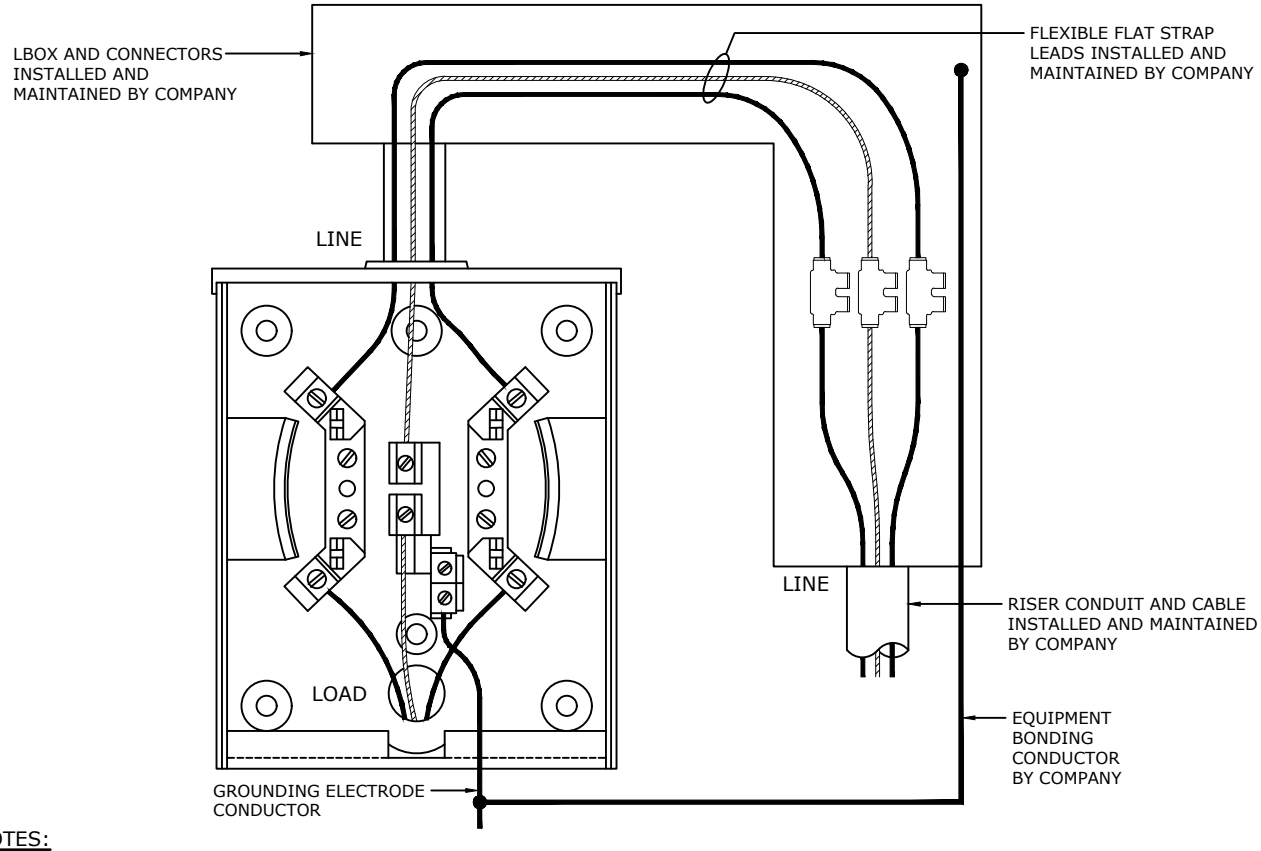
INVERTER-BASED GENERATION

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 76





NOTES:

1. THIS DESIGN IS FOR OVERHEAD TO UNDERGROUND CONVERSIONS ONLY AND NOT FOR NEW CONSTRUCTION.
2. METER ENCLOSURE SHALL BE BONDED TO GROUND AS REQUIRED BY THE N.E.C. OR AUTHORITY HAVING JURISDICTION.
3. METER ENCLOSURE PROVIDED AND INSTALLED BY CUSTOMER PER COMPANY APPROVED METER ENCLOSURE LIST.
4. MINIMUM WIRE SIZE #6.
5. JUNCTION BOX SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.S.C.
6. SEE LOCAL REQUIREMENTS FOR RULES GOVERNING METER MOUNTING HEIGHT.

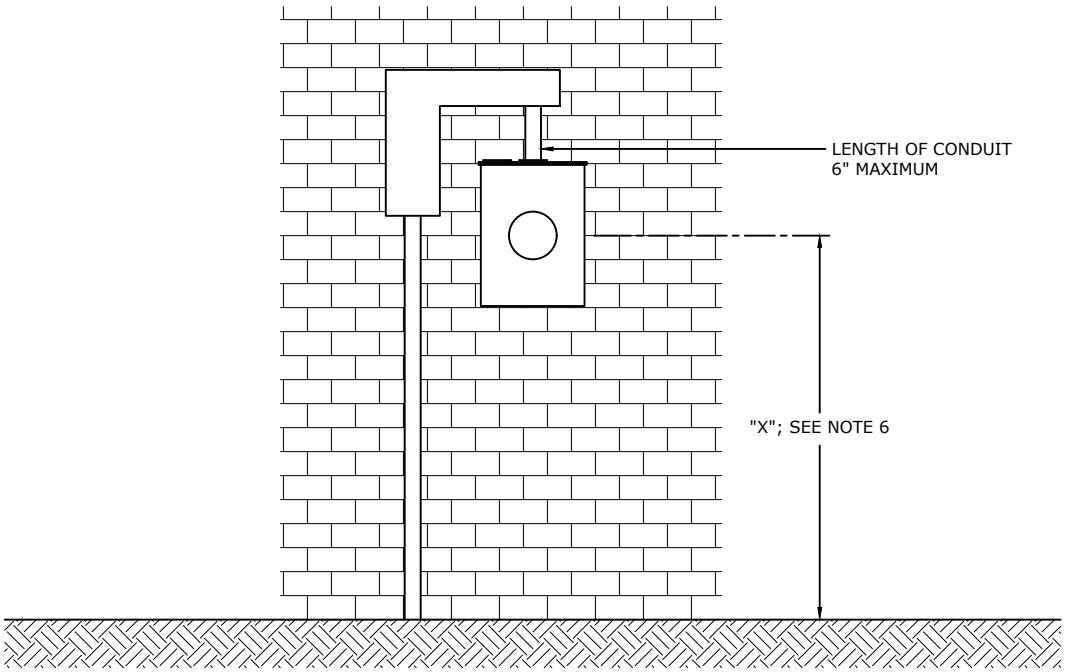
REVISED		BY	CHK'D	APPR.
3				
2				
1	3/4/19	EANES	EANES	ADCOCK
0	2/28/18	DANNA	EANES	ADCOCK

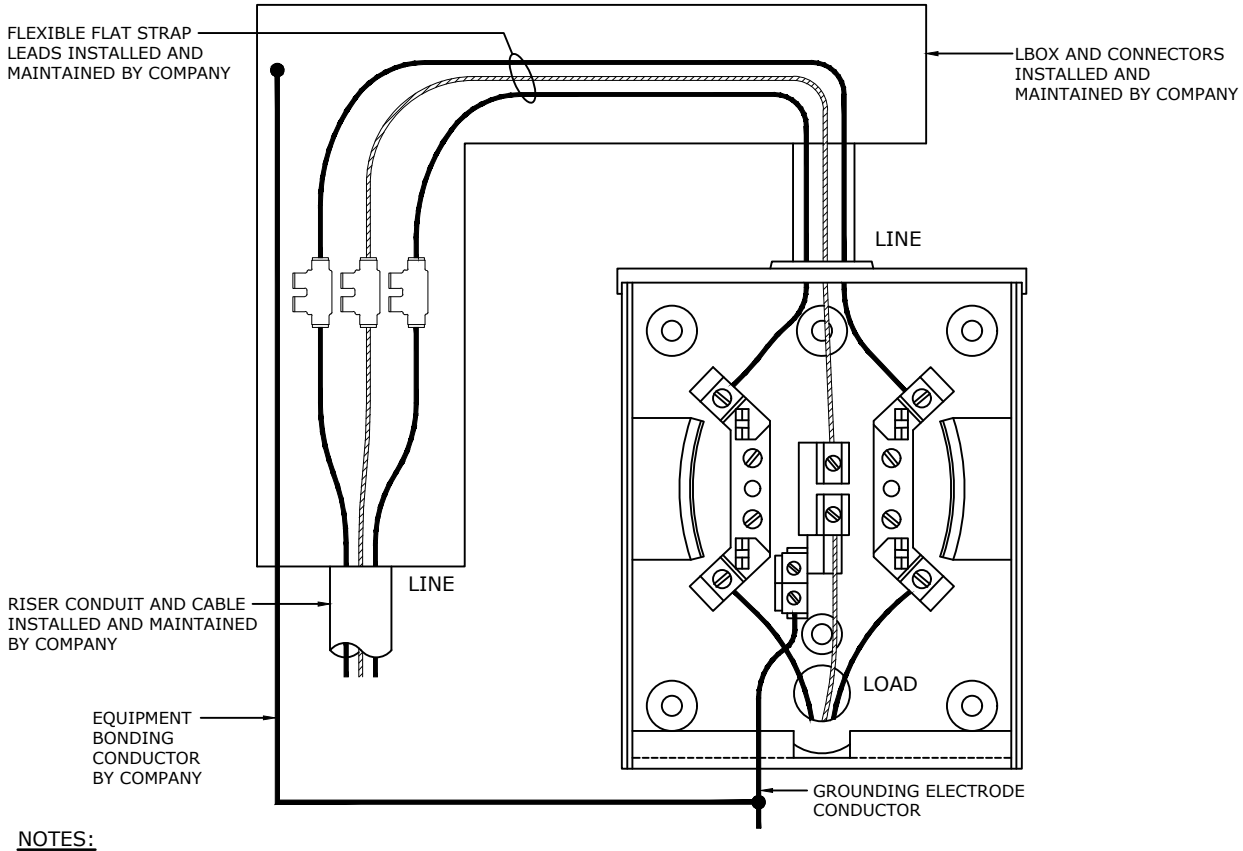
UNDERGROUND CONFIGURATION
LBOX RIGHT DESIGN
200 AMP METER BASE MAXIMUM

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 80





NOTES:

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3. METER ENCLOSURE PROVIDED AND INSTALLED BY CUSTOMER PER COMPANY APPROVED METER ENCLOSURE LIST.
4. MINIMUM WIRE SIZE #6.
5. JUNCTION BOX SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.S.C.
6. SEE LOCAL REQUIREMENTS FOR RULES GOVERNING METER MOUNTING HEIGHT.

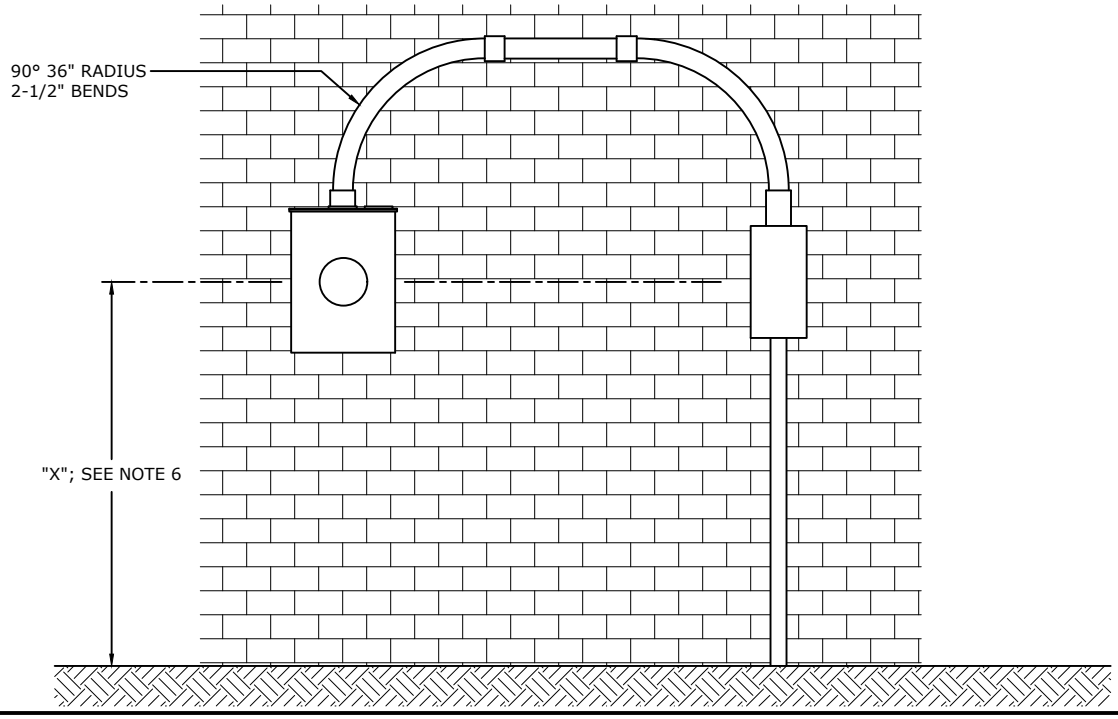
REVISED		BY	CHK'D	APPR.
3				
2				
1	3/4/19	EANES	EANES	ADCOCK
0	2/28/18	DANNA	EANES	ADCOCK

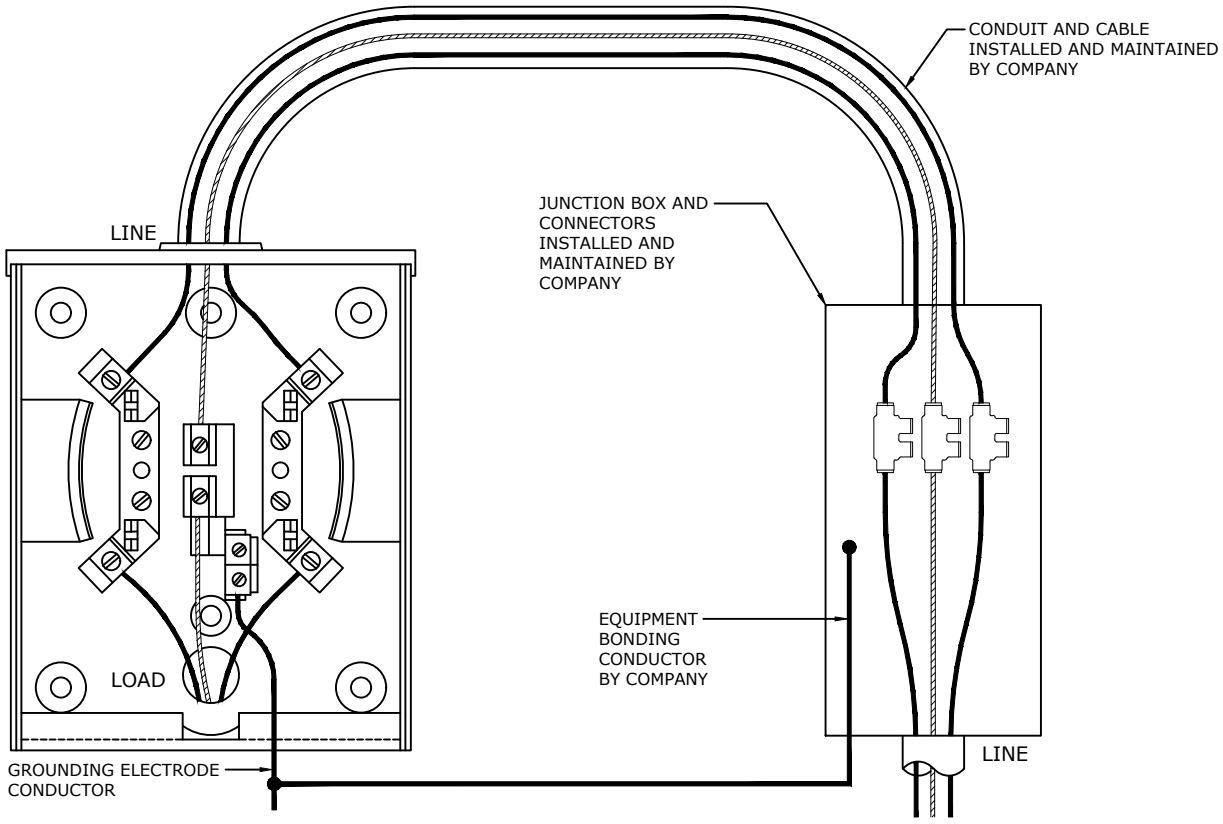
UNDERGROUND CONFIGURATION
LBOX LEFT DESIGN
200 AMP METER BASE MAXIMUM

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 81





NOTES:

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3. METER ENCLOSURE PROVIDED AND INSTALLED BY CUSTOMER PER COMPANY APPROVED METER ENCLOSURE LIST.
4. MINIMUM WIRE SIZE #6.
5. JUNCTION BOX SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.S.C.
6. SEE LOCAL REQUIREMENTS FOR RULES GOVERNING METER MOUNTING HEIGHT.

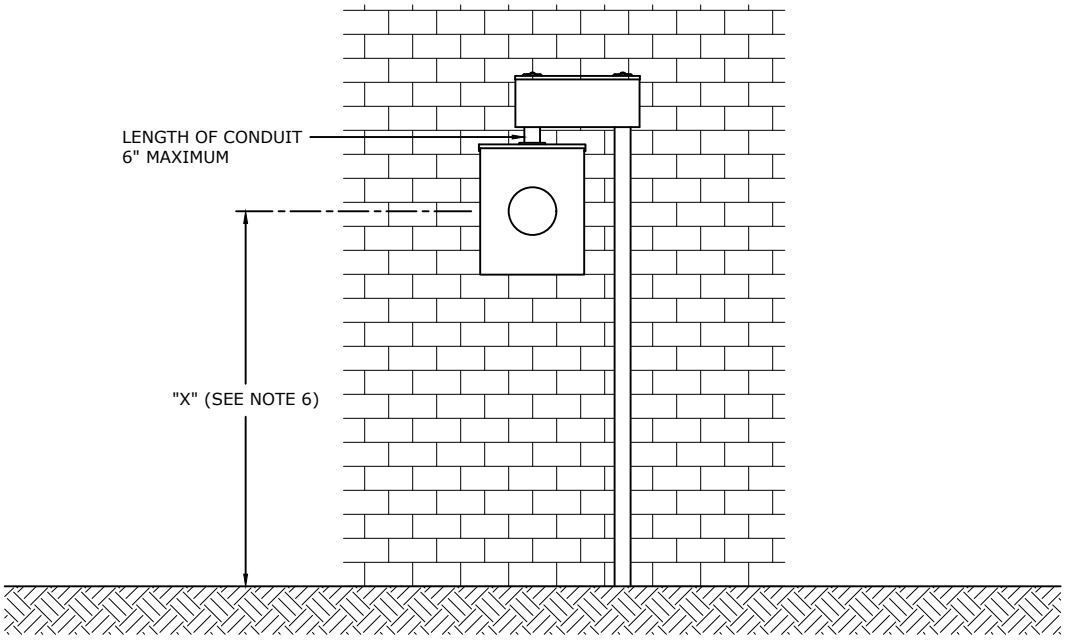
DUKE ENERGY.

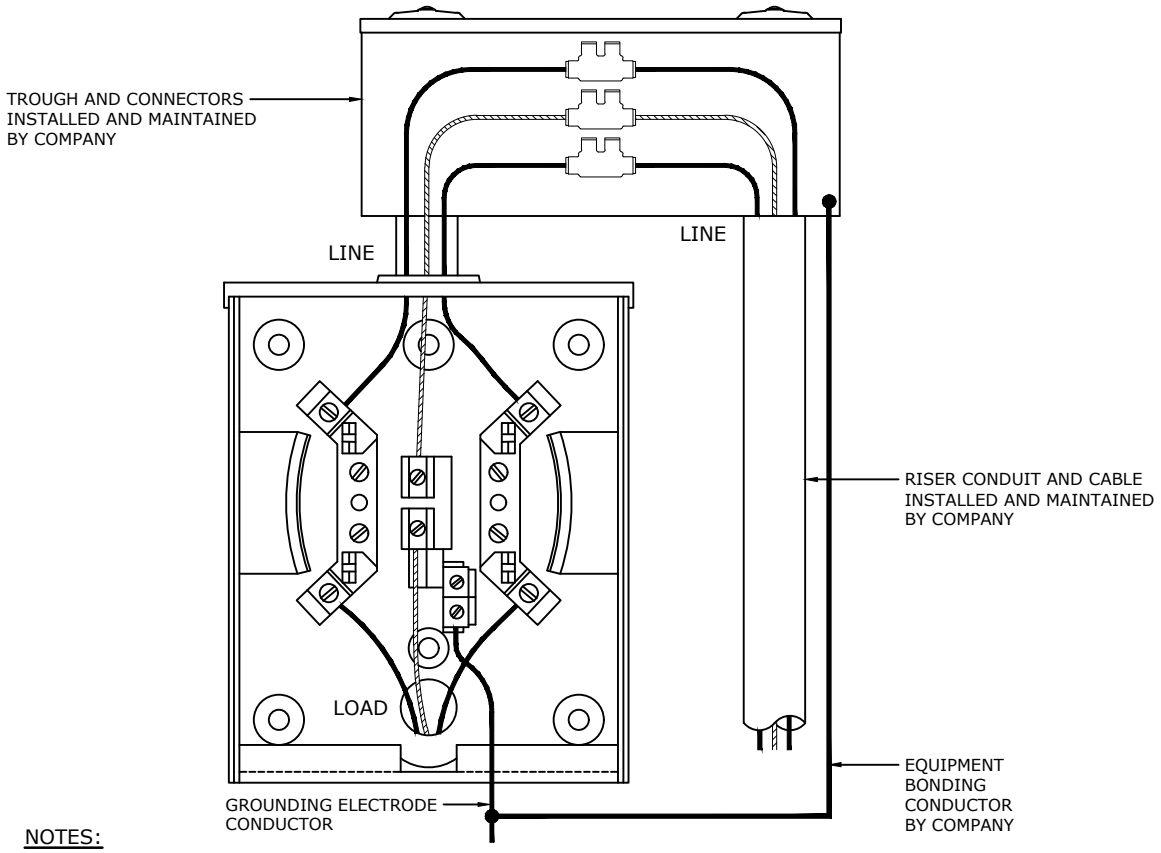
REVISED		BY	CHK'D	APPR.
3				
2				
1	3/4/19	EANES	EANES	ADCOCK
0	2/28/18	DANNA	EANES	ADCOCK

UNDERGROUND CONFIGURATION
JUNCTION BOX
200 AMP METER BASE MAXIMUM

DEC	DEM	DEP	DEF
X		X	

FIG 82





NOTES:

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2. METER ENCLOSURE SHALL BE BONDED TO GROUND AS REQUIRED BY THE N.E.C. OR AUTHORITY HAVING JURISDICTION.
3. METER ENCLOSURE PROVIDED AND INSTALLED BY CUSTOMER PER COMPANY APPROVED METER ENCLOSURE LIST.
4. MINIMUM WIRE SIZE #6.
5. TROUGH SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.S.C.
6. SEE LOCAL REQUIREMENTS FOR RULES GOVERNING METER MOUNTING HEIGHT.

3				
2				
1				
0	3/4/19	EANES	EANES	ADCOCK
REVISED		BY	CHK'D	APPR.

UNDERGROUND CONFIGURATION - TROUGH ABOVE METER DESIGN 200 AMP METER BASE MAXIMUM

DUKE ENERGY.

DEC	DEM	DEP	DEF
X		X	

FIG 83

COMMERCIAL / INDUSTRIAL SERVICE INFORMATION FORM

Before Duke Energy can proceed with your design, application for new construction service is required. Please provide the necessary billing and design information on this form and contact the Builders Line to apply for service. For any questions, please visit duke-energy.com/builders-developers.

LOGISTICAL CUSTOMER INFORMATION

◯ New ◯ Existing If existing, please provide Duke Energy account number: _____

_____
Service address where work is being performed

_____
Type of business to be served

Hours of Operation Per Day: _____ Days of Operation Per Week: _____ Months of Operation Per Year: _____

Property Owner Contact Info (the owner listed on the Deed to the Property)

_____
Property owner name (company name or customer name)

_____
Property owner address

_____
Property owner phone number Property owner email address

Customer Who Will Receive Invoice for Construction Charges (if applicable) ☐ **Check if same as Property Owner**

_____
Customer's name (company name or customer name)

_____
Customer's address

_____
Customer's phone number Customer's email Address

Customer Who Will Receive the Monthly Bill for Electric Service ☐ **Check if same as Property Owner**

_____
Customer's name (company name or customer name) Federal Tax ID

_____
Customer's address

_____
Customer's phone number Customer's email address

_____
Previous service address

_____
General Contractor's name

_____
General Contractor's phone number

_____
General Contractor's email address

_____
Electrician's name

_____
Electrician's phone number

_____
Electrician's email address

REVISED	BY	CHK'D	APPR.
3			
2	2/28/23	EANES	FLETCHER	GRAHAM
1	3/4/19	EANES	EANES	ADCOCK
0	9/30/18	EANES	EANES	ADCOCK

COMMERCIAL/INDUSTRIAL
SERVICE INFORMATION FORM

DEC	DEM	DEP	DEF
X		X	

LOAD SIZING INFORMATION

IMPORTANT! Site plan with legal description, civil plans, mechanical and electrical panel schedules may be required by engineering.

Duke Energy Exterior Area Lighting Proposal Requested: ◯ Yes ◯ No

Voltage Requirements and Load Information:

☐ 120/240 volt – 3 wire, single phase ☐ 480/277 volt – 4 wire, 3 phase

☐ 208/120 volt – 4 wire, 3 phase ☐ Other(PleaseSpecify): _____

Note: Customer will design and operate its electrical system based on the power quality guidelines outlined in IEEE 519 and IEEE 1453 and will adhere to the Duke Energy Service Regulations and Requirements. Customer will be responsible for events that are attributable to its equipment operation, such as harmonics, long- and short-term voltage change (flicker), and frequent re-energization of customer-owned transformers, and will also be responsible for any mitigation measures, should they be required.

Please remember to list any other phase or voltage requirements such as elevators, lift station, pumps.

	Largest	1 Phase	3 Phase	Total kW (Tons/HP)	Total Demand kW (Internal Use Only)
*A/C or Heat Pump (Tons)					
Heat Strip					
Lighting					
Refrigeration					
Water Heating					
Cooking					
Miscellaneous					
Receptacles					
	Manufacturer	**Charger Level/Type**	**Number of Chargers**	**Largest (kW)**	**Total Demand (kW)**
Electric Vehicle Charging					

Will the Electric Vehicle charging site have a load management system limiting the total peak demand kW? ◯ Yes ◯ No

List of all Computer Servers: Total Count of Servers: _____ Total Demand kW: _____

Future Plans for Expansion: ◯ Yes ◯ No Cooling Type for Server Room: ◯ AC ◯ Fans ◯ Both

Server Room Cooling Total Demand kW: _____

List of Motors (Horsepower and Description): Larger motors may require starting compensation

Largest Motor (Horsepower): _____ Full Load Amps: _____

Voltage: _____ Locked Rotor Amps: _____ No. Times Start per Hour: ____ per Day: _____

Total Three Phase Motor Horsepower: _____ Total Single-Phase Motor Horsepower: _____

(Remarks/List of all motors. Attach separate list if needed.) _____

Building Load:

Total Connected kW: _____ Total Demand kW: _____

Building Sq Ft: _____ No. of Units: _____ Perm Power Date: _____

Size of Main (Panel Size): _____ No. of Meters: _____ No. of Stories: _____

Secondary Conductor Size: _____ AL _____ CU _____ Bldg. Service Entrance: OH ____ UG____

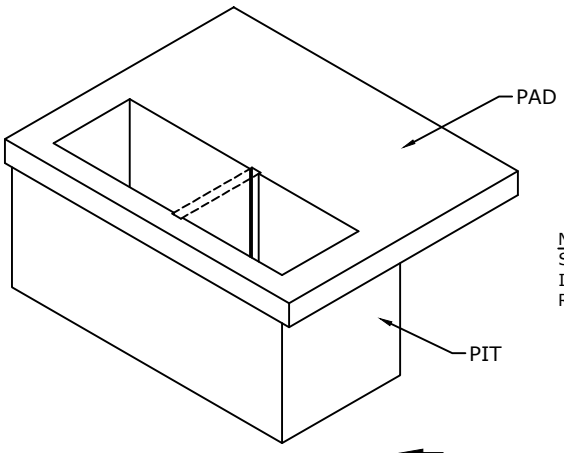
Neutral Conductor Size: _____ AL _____ CU _____ No. of Conductors per phase (Sets/Runs): _____

Customer-Owned Generation such as Solar Panels? Please provide information:

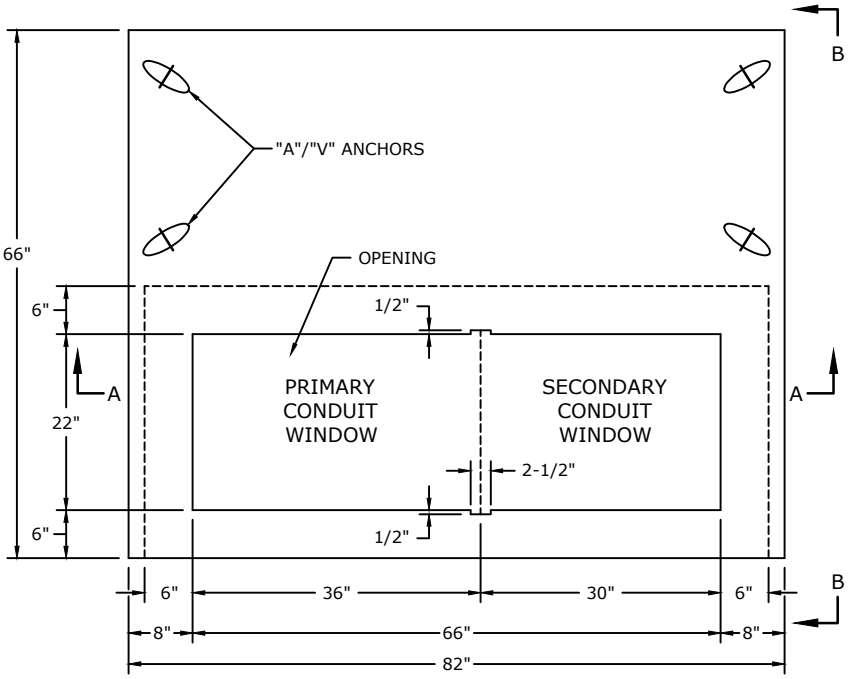
_____

_____

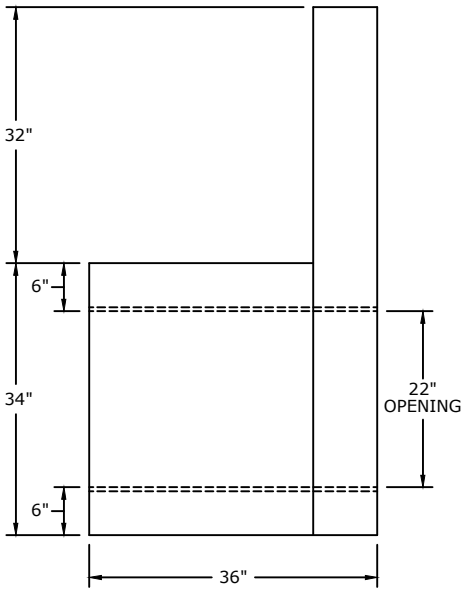
_____



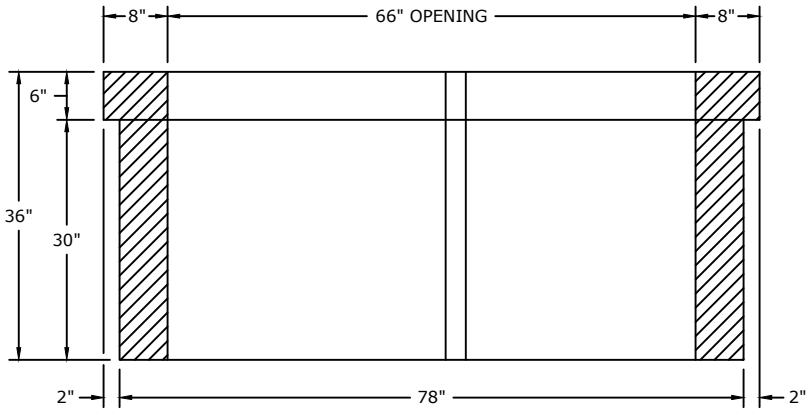
NOTE:
SEE REFERENCED DOCUMENT IN APPENDIX C-PAGE 6 FOR REBAR REQUIREMENTS.



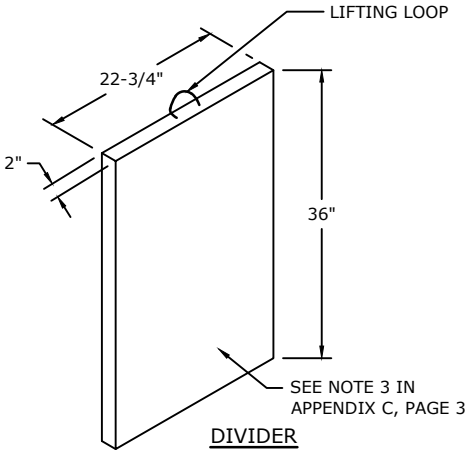
PLAN VIEW



SECTION B-B



SECTION A-A



DIVIDER

NOTES:

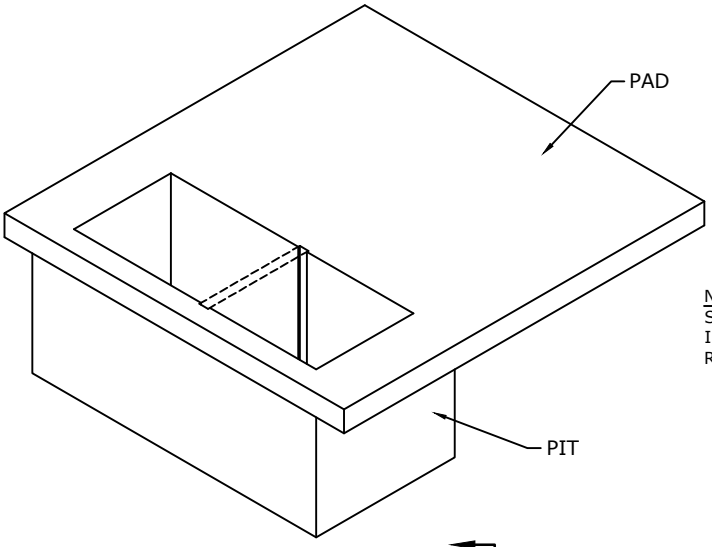
1. SEE APPENDIX C, PAGE 3 FOR NOTES.

3				
2				
1	6/25/19	MORGAN	VALENTIN	ADCOCK
0	3/4/19	EANES	EANES	ADCOCK
REVISED		BY	CHK'D	APPR.

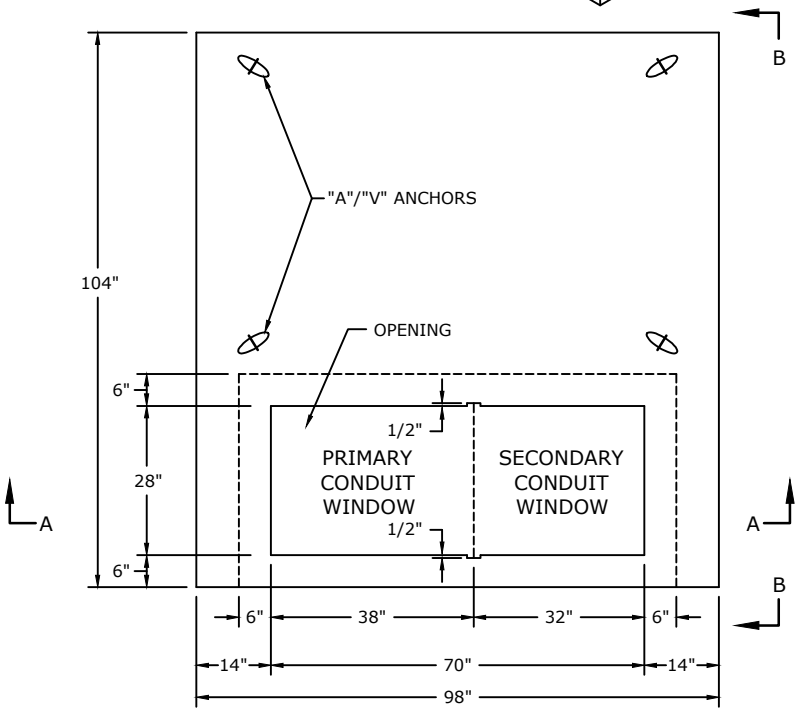
SMALL PIT PAD FOR THREE-PHASE PAD-MOUNTED TRANSFORMERS

DEC	DEM	DEP	DEF
X		X	

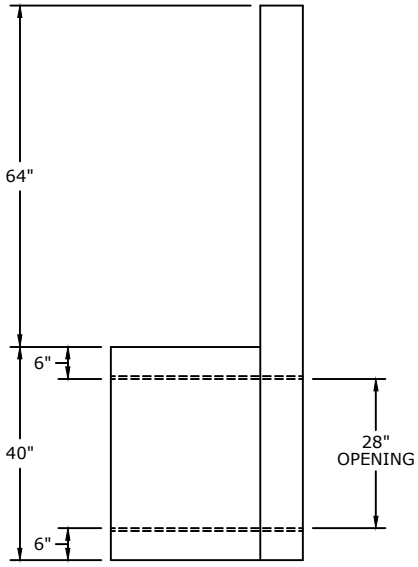
APPENDIX C - PAGE 1



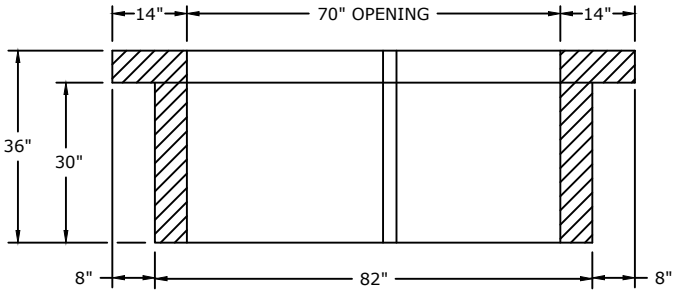
NOTE:
SEE REFERENCED DOCUMENT IN APPENDIX C-PAGE 6 FOR REBAR REQUIREMENTS.



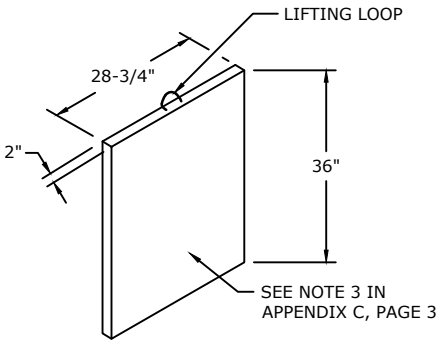
PLAN VIEW



SECTION B-B



SECTION A-A



DIVIDER

NOTES:

1. SEE APPENDIX C, PAGE 3 FOR NOTES.

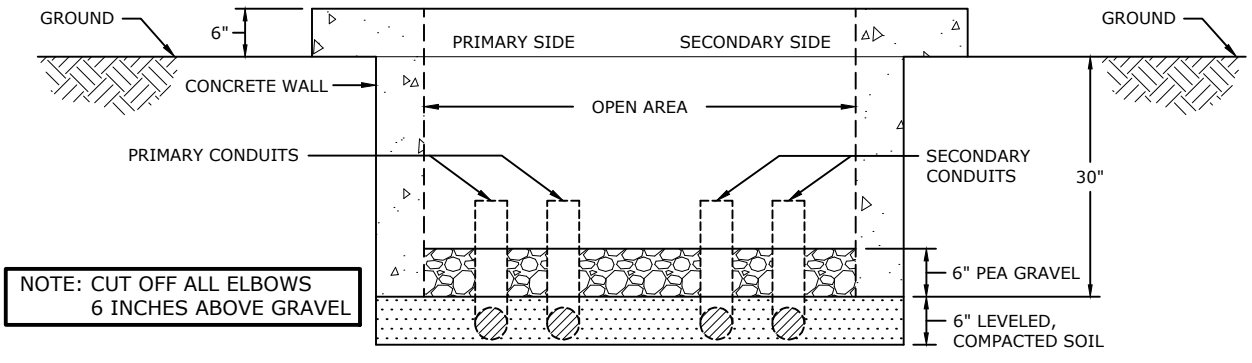
3				
2				
1	6/25/19	MORGAN	VALENTIN	ADCOCK
0	3/4/19	EANES	EANES	ADCOCK
REVISED		BY	CHK'D	APPR.

LARGE PIT PAD FOR THREE-PHASE PAD-MOUNTED TRANSFORMERS

DEC	DEM	DEP	DEF
X		X	

NOTES:

1. THIS STANDARD APPLIES TO DUKE ENERGY CAROLINAS AND THE NON-COASTAL REGIONS OF DUKE ENERGY PROGRESS.
2. CUSTOMER TO PROVIDE AND INSTALL TRANSFORMER PAD PER REFERENCED DOCUMENT IN APPENDIX C - PAGE 6.
3. FOR PIT PAD INSTALLATIONS ONLY, MECKLENBURG COUNTY, NC REQUIRES A 2" THICK CONCRETE DIVIDER TO BE INSTALLED BETWEEN THE PRIMARY AND SECONDARY COMPARTMENTS OF THE PAD.
4. THE COMPANY RESERVES THE RIGHT TO REFUSE SERVICE TO NEW INSTALLATIONS THAT DO NOT MEET DUKE ENERGY REQUIREMENTS.
5. PROTECTIVE POLES ARE REQUIRED WHEN TRANSFORMERS ARE EXPOSED TO VEHICLE TRAFFIC. SEE FIGURE 61 FOR PROTECTIVE POLE DETAILS.
6. THERE SHALL BE MINIMUM CLEARANCES OF 10' IN FRONT OF THE TRANSFORMER AND 3' ON ALL OTHER SIDES OF THE TRANSFORMER. SEE FIGURES 52 AND 53 FOR MORE DETAILS ON CLEARANCES.
7. TRANSFORMER MUST BE LOCATED IN AN AREA THAT ALLOWS SAFE ACCESS BY DUKE ENERGY CONSTRUCTION AND MAINTENANCE EQUIPMENT IN WET OR DRY WEATHER.
8. CONSIDER FROST ACTION, DRAINAGE, AND LOCAL SOIL CONDITIONS WHEN PREPARING SITE FOR PAD. SOIL UNDERNEATH PADS SHALL BE LEVELED AND COMPACTED. SOIL SHALL ALSO BE FREE OF ROOTS AND OTHER ORGANIC MATERIALS TO PREVENT SETTLING AND EROSION. SOD MAY BE REQUIRED AROUND PAD TO PREVENT SOIL EROSION.
9. ALL CONDUITS IN A PIT PAD SHALL BE CUT 6” ABOVE THE GRAVEL BED IN THE PIT. SEE FIGURE BELOW.
10. CUSTOMER SHALL INSTALL THE CONDUIT FOR THE PRIMARY CONDUCTORS AS CLOSE TO THE CENTER OF THE PRIMARY AREA AS PRACTICAL. THE SECONDARY CONDUITS SHALL BE INSTALLED TO THE RIGHT INSIDE THE SECONDARY AREA. SEE APPENDIX C, PAGE 6 FOR PAD INSTALLATION DETAILS AND SPECIFICATIONS.
11. OTHER UTILITIES SHALL NOT BE INSTALLED UNDER TRANSFORMER PAD.
12. PRECAST PAD SUPPLIERS ARE REQUIRED TO PROVIDE THE PADS AND PITS WITH RECESSED "A/V" ANCHORS, TO BE USED FOR LIFTING.
13. IF THE PAD-MOUNTED TRANSFORMER WILL ALSO BE USED TO PROVIDE TEMPORARY SERVICE, AN ADDITIONAL CONDUIT(S) SHOULD BE INSTALLED AND EXTENDED JUST BEYOND THE WALL OF THE PIT PAD, PRIOR TO THE TRANSFORMER BEING SET.

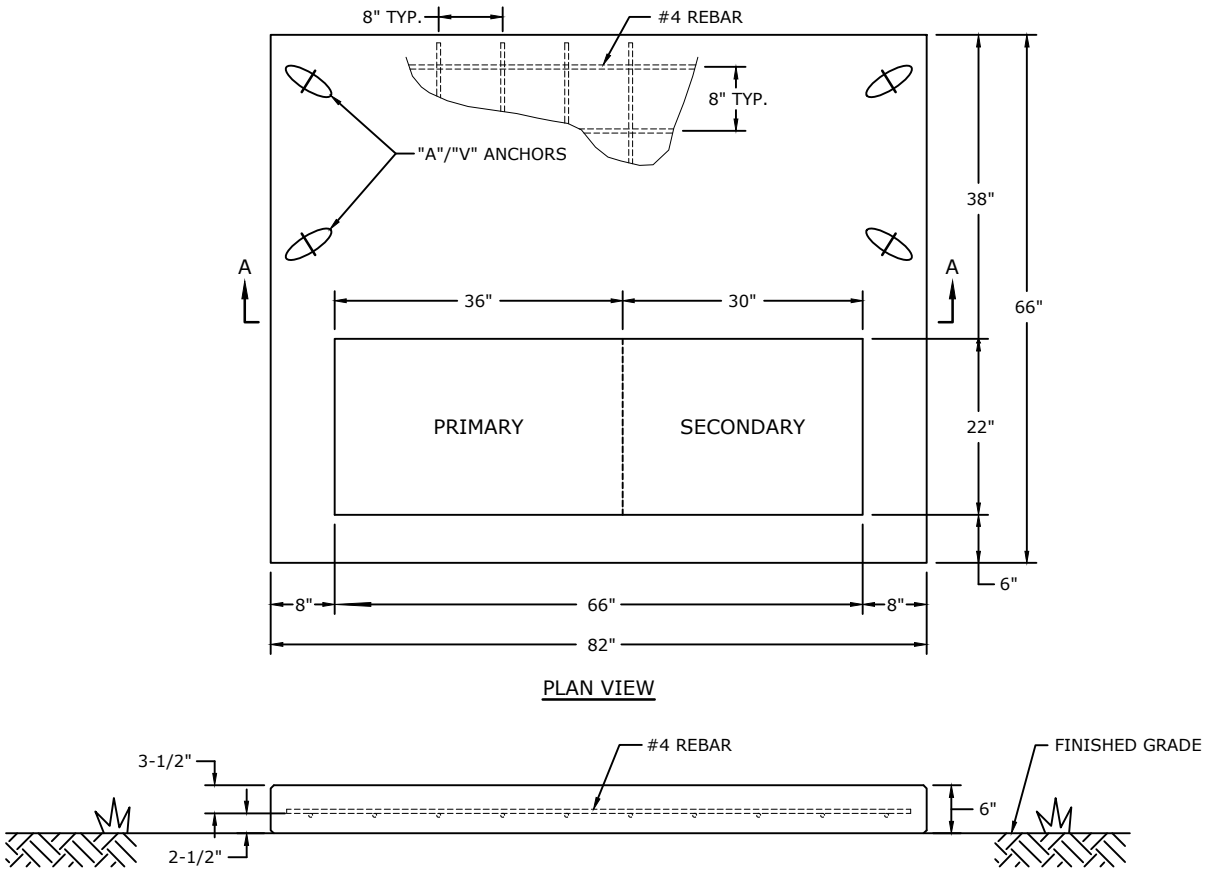


PIT PAD FRONT VIEW

REVISED	BY	CHK'D	APPR.
3			
2	2/28/23	EANES	FLETCHER	GRAHAM
1	2/28/20	EANES	FLETCHER	GRAHAM
0	3/4/19	EANES	EANES	ADCOCK

PIT PAD INFORMATION FOR THREE-PHASE TRANSFORMERS

DEC	DEM	DEP	DEF
X		X	



PLAN VIEW

SECTION 'A-A'

NOTES:

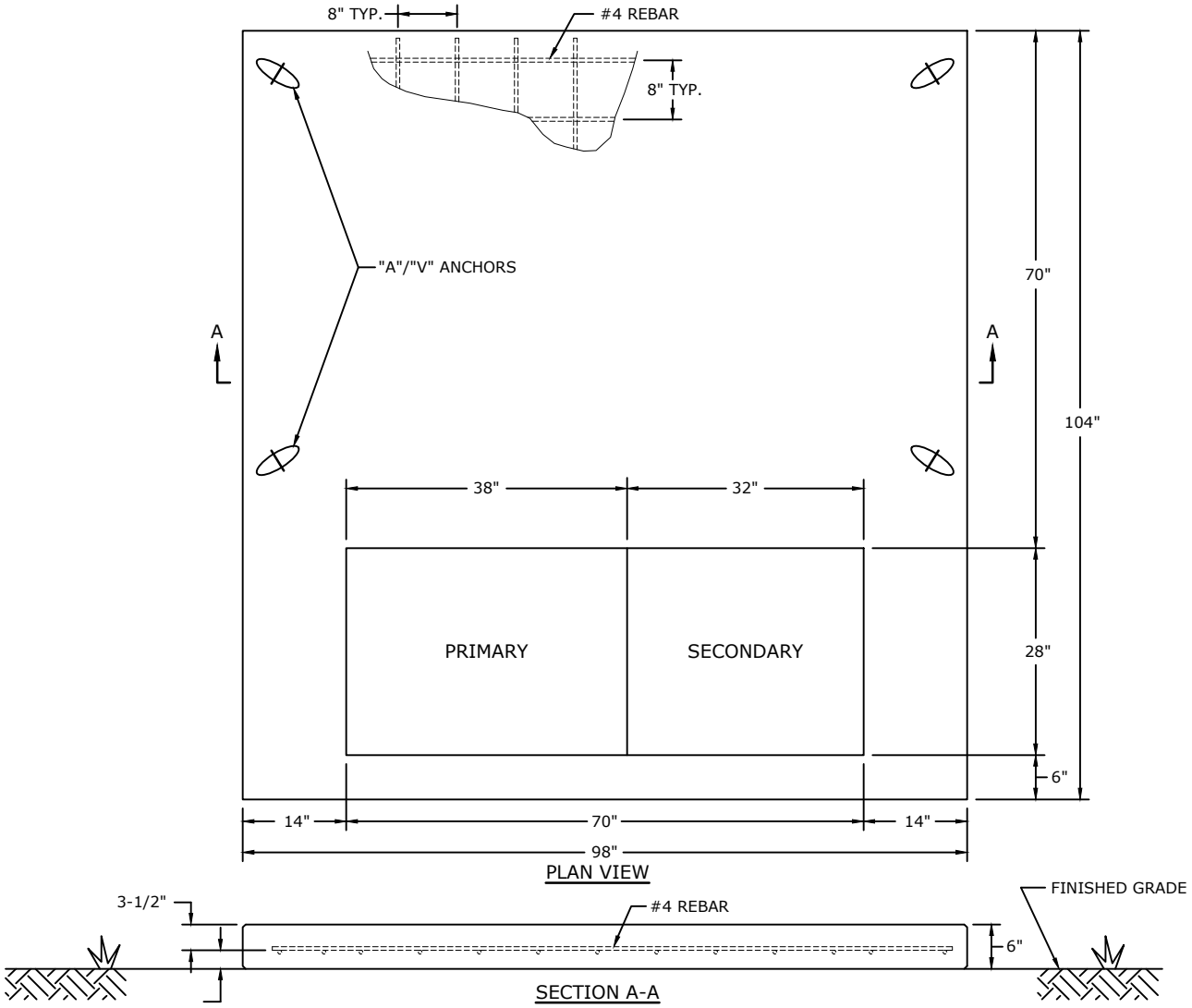
1. THIS STANDARD PRACTICE APPLIES TO THE COASTAL AREA ONLY OF DUKE ENERGY PROGRESS. COMPANY REPRESENTATIVE WILL IDENTIFY 'COASTAL AREA' AS DEFINED BY DUKE ENERGY.
2. CUSTOMER TO PROVIDE AND INSTALL TRANSFORMER PAD PER REFERENCED DOCUMENT IN APPENDIX C PAGE 6.
3. THE COMPANY RESERVES THE RIGHT TO REFUSE SERVICE TO NEW INSTALLATIONS THAT DO NOT MEET DUKE ENERGY REQUIREMENTS.
4. REFERENCE APPENDIX C, PAGE 7 TO DETERMINE IF CURBING AND ABSORPTION BED IS REQUIRED.
5. PROTECTIVE POLES ARE REQUIRED WHEN TRANSFORMERS ARE EXPOSED TO VEHICLE TRAFFIC. SEE FIGURE 61 FOR PROTECTIVE POLE DETAILS.
6. THERE SHALL BE MINIMUM CLEARANCES OF 10' IN FRONT OF THE TRANSFORMER AND 3' ON ALL OTHER SIDES OF THE TRANSFORMER. SEE FIGURES 52 AND 53 FOR MORE DETAILS ON CLEARANCES.
7. TRANSFORMER MUST BE LOCATED IN AN AREA THAT ALLOWS SAFE ACCESS BY DUKE ENERGY CONSTRUCTION AND MAINTENANCE EQUIPMENT IN WET OR DRY WEATHER.
8. CONSIDER FROST ACTION, DRAINAGE, AND LOCAL SOIL CONDITIONS WHEN PREPARING SITE FOR PAD. SOIL UNDERNEATH PADS SHALL BE LEVELED AND COMPACTED. SOIL SHALL ALSO BE FREE OF ROOTS AND OTHER ORGANIC MATERIALS TO PREVENT SETTLING AND EROSION. SOD MAY BE REQUIRED AROUND PAD TO PREVENT SOIL EROSION.
9. CUSTOMER SHALL INSTALL THE CONDUIT FOR THE PRIMARY CONDUCTORS AS CLOSE TO THE CENTER OF THE PRIMARY AREA AS PRACTICAL. THE SECONDARY CONDUITS SHALL BE INSTALLED TO THE RIGHT INSIDE OF THE SECONDARY AREA. SEE APPENDIX C, PAGE 6 FOR PAD INSTALLATION DETAILS AND SPECIFICATIONS.
10. ALL CONDUITS SHALL BE CUT SO THAT THE TOP OF THE CONDUIT IS FLUSH WITH THE PAD.
11. PRECAST PAD SUPPLIERS ARE REQUIRED TO PROVIDE THE PADS WITH RECESSED "A/V" ANCHORS, TO BE USED FOR LIFTING THE PADS.

3				
2	2/28/20	EANES	FLETCHER	GRAHAM
1	6/25/19	MORGAN	VALENTIN	ADCOCK
0	3/4/19	EANES	EANES	ADCOCK
REVISED		BY	CHK'D	APPR.

SMALL FLAT PADS FOR THREE-PHASE
PAD-MOUNTED TRANSFORMERS

DUKE ENERGY.

DEC	DEM	DEP	DEF
		X	



NOTES:

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3. THE COMPANY RESERVES THE RIGHT TO REFUSE SERVICE TO NEW INSTALLATIONS THAT DO NOT MEET DUKE ENERGY REQUIREMENTS.
4. REFERENCE APPENDIX C, PAGE 7 TO DETERMINE IF CURBING AND ABSORPTION BED IS REQUIRED.
5. PROTECTIVE POLES ARE REQUIRED WHEN TRANSFORMERS ARE EXPOSED TO VEHICLE TRAFFIC. SEE FIGURE 61 FOR PROTECTIVE POLE DETAILS.
6. THERE SHALL BE MINIMUM CLEARANCES OF 10' IN FRONT OF THE TRANSFORMER AND 3' ON ALL OTHER SIDES OF THE TRANSFORMER. SEE FIGURES 52 AND 53 FOR MORE DETAILS ON CLEARANCES.
7. TRANSFORMER MUST BE LOCATED IN AN AREA THAT ALLOWS SAFE ACCESS BY DUKE ENERGY CONSTRUCTION AND MAINTENANCE EQUIPMENT IN WET OR DRY WEATHER.
8. CONSIDER FROST ACTION, DRAINAGE, AND LOCAL SOIL CONDITIONS WHEN PREPARING SITE FOR PAD. SOIL UNDERNEATH PADS SHALL BE LEVELED AND COMPACTED. SOIL SHALL ALSO BE FREE OF ROOTS AND OTHER ORGANIC MATERIALS TO PREVENT SETTLING AND EROSION. SOD MAY BE REQUIRED AROUND PAD TO PREVENT SOIL EROSION.
9. CUSTOMER SHALL INSTALL THE CONDUIT FOR THE PRIMARY CONDUCTORS AS CLOSE TO THE CENTER OF THE PRIMARY AREA AS PRACTICAL. THE SECONDARY CONDUITS SHALL BE INSTALLED TO THE RIGHT INSIDE OF THE SECONDARY AREA. SEE APPENDIX C, PAGE 6 FOR PAD INSTALLATION DETAILS AND SPECIFICATIONS.
10. ALL CONDUITS SHALL BE CUT SO THAT THE TOP OF THE CONDUIT IS FLUSH WITH THE PAD.
11. PRECAST PAD SUPPLIERS ARE REQUIRED TO PROVIDE THE PADS WITH RECESSED "A/V" ANCHORS, TO BE USED FOR LIFTING THE PADS.

REVISED	BY	CHK'D	APPR.
4 2/28/20	EANES	FLETCHER	GRAHAM
3 6/25/19	MORGAN	VALENTIN	ADCOCK
2 3/4/19	EANES	EANES	ADCOCK
0 11/20/15	SIMPSON	EANES	ADCOCK

LARGE FLAT PADS FOR THREE-PHASE PAD-MOUNTED TRANSFORMERS

DUKE ENERGY.

DEC	DEM	DEP	DEF
		X	

THE LINK BELOW WILL REFERENCE THE USER TO A DOCUMENT THAT DESCRIBES THE VARIOUS TYPES OF CONCRETE THREE-PHASE TRANSFORMER PADS USED, WHICH TRANSFORMER SIZES THEY ARE USED FOR, AND THE STYLE (FLAT OR PIT PAD) THAT IS APPROPRIATE FOR THE SIZE OF SERVICE.

FOR DEC AND DEP SERVICE AREAS:
HTTPS://WWW.DUKE-ENERGY.COM/_/MEDIA/PDFS/PARTNER-WITH-US/PADTRANSFORMERCONCRETEFOUNDSPECS.PDF

FOR MECKLENBURG COUNTY, NC ONLY:
HTTPS://WWW.DUKE-ENERGY.COM/_/MEDIA/PDFS/PARTNER-WITH-US/PADTRANSFORMERCONCRETEFOUNDSPECSMECK.PDF

CERTAIN PROVIDERS OF PRE-CAST CONCRETE PRODUCTS PROVIDE PRE-CAST VERSIONS OF THE FLAT AND PIT PAD DESIGNS DESCRIBED IN THESE DOCUMENTS. DUKE ENERGY DOES NOT ENDORSE ANY SPECIFIC VENDOR VERSUS ANOTHER, BUT HAS APPROVED THE FOLLOWING PRE-CAST CONCRETE PAD SUPPLIERS FOR USE ON THE DUKE ENERGY SYSTEM. A DUKE ENERGY REPRESENTATIVE WILL INSPECT THESE INSTALLATIONS FOR THE SAME CONSTRUCTION STANDARDS AS A PAD POURED IN PLACE. PRIOR TO THE INSTALLATION OF THE TRANSFORMER, THE CUSTOMER MUST CONTACT THE DUKE ENERGY REPRESENTATIVE TO INSPECT THE PAD WHEN IT IS READY FOR THE TRANSFORMER TO BE INSTALLED.

APPROVED SUPPLIERS OF PRE-FABRICATED CONCRETE PADS

ENCORE PRECAST
CONTACT: JIM MALONEY
PHONE: 513.726.5678 EXT. 103
EMAIL: JMALONEY@ENCOREPRECASTLLC.COM
WEBSITE: ENCOREPRECASTLLC.COM

OLDCASTLE PRECAST
CONTACT: MARTIN SANDS
PHONE: 704.305.3280
E-MAIL: MARTIN.SANDS@OLDCASTLE.COM
WEBSITE: WWW.OLDCASTLEINFRASTRUCTURE.COM

PBC PRECAST
CONTACT: JEREMY ADKINS
PHONE: 910.260.1820
EMAIL: JADKINS@HOGSLAT.COM
WEBSITE: WWW.PBCPRECAST.COM

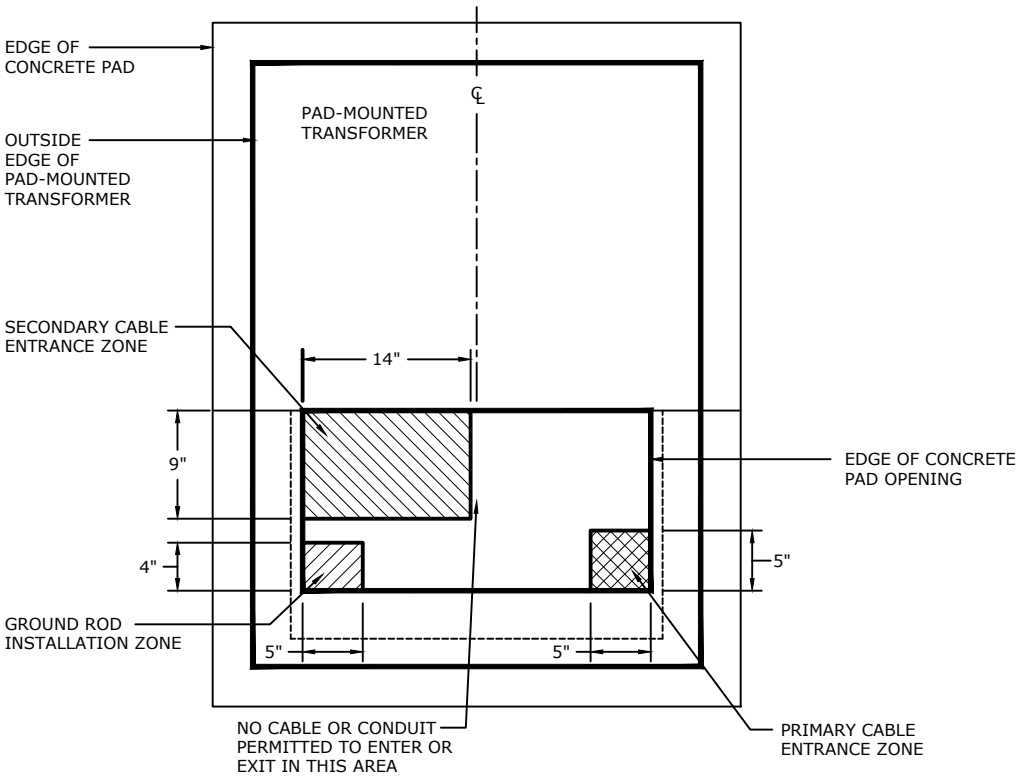
TRENWA
CONTACT: ELLIOTT SCHURR
PHONE: 859.781.0831 EXT. 17
EMAIL: DUKEORDERS@TRENWA.COM
WEBSITE: WWW.TRENWA.COM/REQUEST-QUOTE/

UTILITY PRECAST
CONTACT: LARINDA BUESCH
PHONE: 704.721.0106
EMAIL: LARINDA@UTILITYPRECASTINC.COM
WEBSITE: UTILITYPRECASTINC.COM

FOR DEC AND DEP SERVICE AREAS:

FOR MECKLENBURG COUNTY, NC ONLY:

PRE-CAST CONCRETE PADS					
PAD TYPE	SUPPLIER PART NUMBER				
	ENCORE PRECAST	OLDCASTLE PRECAST	PBC PRECAST	TRENWA	UTILITY PRECAST
SMALL FLAT PAD	TRPAD082066	SEE CONTACT ABOVE	FP82666	PAD-82x66	FTP8120
LARGE FLAT PAD	TRPAD098104	SEE CONTACT ABOVE	FP981046	PAD-104x98	FTP8130
SMALL PIT	TRPIT082066	SEE CONTACT ABOVE	PIT783430	PIT-78x34	FTP8121
LARGE PIT	TRPIT098104	SEE CONTACT ABOVE	PIT824030	PIT-82x40	FTP8131
SMALL DIVIDER	TRDV036023	SEE CONTACT ABOVE	DESMDIV	PITDIV-36x23	FTP8122
LARGE DIVIDER	TRDV036030	SEE CONTACT ABOVE	DELGDIV	PITDIV-36x29	FTP8132



NOTES:

1. ALL CONDUITS SHALL STUB-UP A MINIMUM DISTANCE OF ONE INCH (BUT SHALL NOT EXCEED 2" ABOVE THE TOP OF THE CONCRETE PAD.

3					CUSTOMER/SECONDARY CABLE AND CONDUIT ENTRANCE SINGLE-PHASE PAD-MOUNTED TRANSFORMER INSTALLATION (CONCRETE PADS ONLY)
2					
1					
0	2/28/23	EANES	FLETCHER	GRAHAM	
REVISED		BY	CHK'D	APPR.	

DEC	DEM	DEP	DEF
X		X	

NOTES:

1. THE IMAGE ABOVE IS NOT AN EXACT REPRESENTATION OF THE DUKE ENERGY SERVICE TERRITORY AND SHOULD NOT BE USED TO DETERMINE THE UTILITY PROVIDER.

2. THE BOUNDARY SHOWN ON THIS MAP IS AN APPROXIMATION. THE EXACT TYPE OF INSTALLATION NEEDED SHOULD ALWAYS BE VERIFIED WITH A DUKE ENERGY REPRESENTATIVE.

3. DUKE ENERGY CUSTOMERS IN AREAS TO THE EAST AND SOUTH OF THE WHITE LINE WILL UTILIZE FLAT PADS.

4. DUKE ENERGY CUSTOMERS IN AREAS TO THE WEST AND NORTH OF THE WHITE LINE WILL UTILIZE PIT PADS.

5. APPROXIMATE DESCRIPTIONS ARE AS FOLLOWS:

   A) THROUGH NEW BERN, TO THE SOUTH AND EAST OF US HWY 17 OR STATE ROAD 43.
   B) ALL OF THE MOREHEAD CITY AREA.
   C) THROUGH JACKSONVILLE, TO THE SOUTH AND EAST OF US HWY 17.
   D) THROUGH WILMINGTON, GENERALLY TO THE SOUTH AND EAST OF US HWY 17 AND EAST OF I-40, WITH DEVIATIONS AS SHOWN. VERIFY EXACT REQUIREMENTS WITH A DUKE ENERGY REPRESENTATIVE.

DUKE ENERGY.

3				
2				
1				
0	2/28/23	EANES	FLETCHER	GRAHAM
REVISED		BY	CHK'D	APPR.

FLAT PAD/ PIT PAD GEOGRAPHIC BOUNDARY

DEC	DEM	DEP	DEF
		X	

<Date>
Duke Energy
ATTN: Business & Industry
9700 David Taylor Dr
Charlotte, NC 28262-2363

Subject: Information Request for Arc-Flash Hazard Analysis

Dear <Duke Energy Contact>:

<Customer Name> would like to request that Duke Energy provide distribution protective device information for the purpose of performing an arc-flash hazard analysis. We would like the information provided for the following location(s):

Business Name:	**Address:**	**Meter/Account Number:**
<XXXXX>	<XX Street Name, City, State, ZIP>	<XXXXXX>

When the analysis has been completed, the information should be sent to
<Name>
<Address>

If you have any questions or need any additional information, please don't hesitate to contact me at <your office number> or via email at <your email address>.

Sincerely,

<Name>
<Title>

ALTERNATE WAYS OF REQUESTING ...
- CONTACT THE APPROPRIATE CUSTOMER SERVICE CENTER ON PAGE II OF THIS MANUAL
- FOR MANAGED ACCOUNTS, CONTACT YOUR DUKE ENERGY ACCOUNT EXECUTIVE
- FOR NEW CONSTRUCTION IN PROCESS, CONTACT THE DUKE ENERGY ENGINEERING OR PROJECT MANAGEMENT REPRESENTATIVE ASSIGNED TO YOUR PROJECT

TABLE OF CONTENTS

PURPOSE OF THIS DOCUMENT

THIS DOCUMENT PROVIDES INFORMATION AND REQUIREMENTS A CUSTOMER WILL NEED TO PROPERLY INSTALL CONDUIT IN BOTH RESIDENTIAL AND COMMERCIAL APPLICATIONS.

DEFINITIONS

SERVICE: 600-VOLT RATED UNDERGROUND CONDUCTORS BETWEEN THE UTILITY ELECTRIC SYSTEM AND THE CUSTOMERS ELECTRIC SYSTEM.

SERVICE POINT (POINT OF DELIVERY): THE POINT OF CONNECTION BETWEEN THE FACILITIES OF THE SERVING UTILITY AND THE PREMISE WIRING.

SECONDARY: 600-VOLT RATED CONDUCTOR BETWEEN PAD-MOUNTED TRANSFORMERS AND SECONDARY PEDESTALS OR BETWEEN SECONDARY PEDESTALS.

SECONDARY PEDESTAL (ALSO LISTED AS "PEDESTAL" IN THIS DOCUMENT): ABOVE-GROUND ENCLOSURE THAT ACTS AS A JUNCTION POINT FOR SECONDARY CONDUCTORS OR SECONDARY CONDUCTORS AND SERVICES.

PULL BOX: FLUSH-MOUNTED ENCLOSURE THAT ACTS AS A JUNCTION POINT FOR SECONDARY OR PRIMARY CONDUCTORS.

PAD-MOUNTED TRANSFORMER (ALSO LISTED AS "TRANSFORMER" IN THIS DOCUMENT): PAD-MOUNTED ABOVE-GROUND STYLE TRANSFORMER MOUNTED IN A STEEL ENCLOSURE FOR CONVERTING MEDIUM VOLTAGE TO SERVICE/SECONDARY VOLTAGE LEVELS.

GROUND ROD: GROUNDING ELECTRODE FOR USE AS A DIRECT CONNECTION TO EARTH.

MINIMUM COVER: THE MINIMUM ALLOWABLE DISTANCE BETWEEN THE TOP OF A BURIED CONDUIT TO FINAL GRADE.

SWITCHGEAR: AN ABOVE-GROUND PAD-MOUNTED STEEL ENCLOSURE CONTAINING MEDIUM VOLTAGE SWITCHING EQUIPMENT.

RISER OR RISER POLE: THE POINT OF CONNECTION BETWEEN THE UTILITY OVERHEAD POWER SYSTEM AND AN UNDERGROUND SYSTEM.

THREE-PHASE (REFERENCE FOR PRIMARY VOLTAGE IN THIS DOCUMENT): A MULTI-PHASE SYSTEM CONSISTING OF THREE SEPARATE PHASE CONDUCTORS IN A BUNDLED OR TRIPLEXED CONFIGURATION.

SINGLE-PHASE (REFERENCE FOR PRIMARY VOLTAGE IN THIS DOCUMENT): A PRIMARY VOLTAGE SYSTEM CONSISTING OF ONE CONDUCTOR.

LIGHTING CABLE: 600-VOLT RATED CONDUCTORS SERVING A STREET LIGHT.

CABLE ENTRANCE ZONES: AREAS DEFINED WITHIN A PROPOSED TRANSFORMER, SWITCHGEAR, AND PEDESTAL FOR USE IN STUBBING UP ELECTRICAL CONDUITS.

PRIMARY: MEDIUM VOLTAGE CABLE TYPICALLY NOT EXCEEDING 1/0 AWG IN SIZE (TYPICALLY 7.2 KV TO 14.4 KV PHASE TO GROUND). CAN BE SINGLE-PHASE OR THREE-PHASE.

FEEDER: MEDIUM VOLTAGE CABLE GREATER THAN 1/0 AWG IN SIZE (TYPICALLY 7.2 KV TO 14.4 KV PHASE TO GROUND), THREE-PHASE ONLY.

LOOP: REFERS TO A CIRCUIT THAT CAN BE FED FROM REDUNDANT (2) SOURCES. IT IS CRITICAL FOR EACH CABLE ON THE SAME LOOP TO BE SEPARATED WITHIN A TRENCH.

MANDREL: CYLINDRICAL OBJECT PULLED THROUGH A CONDUIT SYSTEM TO VERIFY THE INTEGRITY OF THE SYSTEM AND THAT CABLE CAN BE SUCCESSFULLY PULLED THROUGH THE SYSTEM.

CUSTOMER RESPONSIBILITIES

- THE CONDUIT DESIGN WILL BE PROVIDED BY THE DUKE ENERGY DESIGNER. THE DESIGN WILL SHOW THE LOCATION WHERE ALL FACILITIES (CONDUIT, PULL BOXES/MANHOLES, PEDESTALS, TRANSFORMERS, SWITCHGEAR, POLES, ETC.) WILL BE INSTALLED. ANY PROPOSED CHANGES IN THE CONDUIT DESIGN MUST BE REVIEWED AND APPROVED BY THE DUKE ENERGY DESIGNER PRIOR TO INSTALLATION.
- PROVIDE ALL MATERIAL RELATED TO THE CONDUIT SYSTEM AND THE LABOR TO INSTALL THIS MATERIAL.
- COMPLY WITH ALL REQUIREMENTS LISTED IN THIS DOCUMENT.
- INSPECT THE CONDUIT SYSTEM AND CORRECT ALL INSTANCES OF NON-COMPIANCE WITH THE REQUIREMENTS LISTED IN THIS DOCUMENT.
- CUSTOMER IS RESPONSIBLE FOR INSTALLING CONDUIT AND CABLE UP TO THE POINT OF DELIVERY AS DEFINED IN THE SERVICE REQUIREMENTS MANUAL.

DUKE ENERGY RESPONSIBILITIES

- THE CONDUIT DESIGN WILL BE PROVIDED BY THE DUKE ENERGY DESIGNER. THE DESIGN WILL SHOW THE LOCATION WHERE ALL FACILITIES (CONDUIT, PULL BOXES/MANHOLES, PEDESTALS, TRANSFORMERS, SWITCHGEAR, POLES, ETC.) WILL BE INSTALLED. ANY PROPOSED CHANGES IN THE CONDUIT DESIGN MUST BE REVIEWED AND APPROVED BY THE DUKE ENERGY DESIGNER PRIOR TO INSTALLATION.
- PROVIDE ALL CABLE AND ASSOCIATED MATERIALS ALONG WITH THE LABOR TO INSTALL THESE MATERIALS UP TO THE POINT OF DELIVERY.
- COORDINATE WITH THE CUSTOMER TO DETERMINE THE BEST METHOD OF MARKING THE ROUTE OF ALL APPLICABLE PRIMARY AND SECONDARY CABLE, AND THE LOCATION OF ALL EQUIPMENT (TRANSFORMERS, SWITCHGEAR, ETC.), PEDESTALS, PULL BOXES, RISERS AND STREET LIGHT POLES. EQUIPMENT WILL NORMALLY BE PLACED DIRECTLY ON TOP OF THE CABLE ROUTE TO REDUCE THE NUMBER OF 90-DEGREE BENDS.
- SPECIFY THE SIZE, NUMBER AND POSITION OF CONDUITS THAT WILL BE INSTALLED IN EACH PIECE OF EQUIPMENT (TRANSFORMER, PEDESTAL, ETC.).
- INSPECT THE CONDUIT SYSTEM PRIOR TO THE INSTALLATION OF CABLE.
- DUKE ENERGY RESERVES THE RIGHT TO REFUSE ACCEPTANCE OF ANY PORTION OF A CONDUIT SYSTEM THAT DOES NOT MEET ALL THE REQUIREMENTS LISTED IN THIS DOCUMENT. IT WILL BE THE CUSTOMER'S RESPONSIBILITY TO CORRECT ALL INSTANCES OF NON-COMPLIANCE.
- ONCE THE CONDUIT SYSTEM HAS BEEN INSPECTED BY DUKE ENERGY AND ALL CABLE AND EQUIPMENT HAVE BEEN INSTALLED, DUKE ENERGY WILL MAKE ANY NECESSARY FUTURE REPAIRS OR ALTERATIONS TO THE CONDUIT SYSTEM AT ITS EXPENSE.

TRENCH REQUIREMENTS

- THE UNDERGROUND TRENCH CONTAINING ELECTRIC CABLES IS FOR THE SOLE USE OF DUKE ENERGY. NO OTHER UTILITIES OR FACILITIES FOR IRRIGATION, LIGHTING, SECURITY, PLUMBING, OR ANY OTHER PURPOSE MAY BE INSTALLED IN THE TRENCH WITHOUT THE EXPRESS PERMISSION OF DUKE ENERGY.
- THE BOTTOM OF THE TRENCH MUST BE SMOOTH AND FREE OF ROCKS, ROOTS, CONSTRUCTION DEBRIS OR ANY OTHER HARD OR SHARP OBJECT. IF NECESSARY, INSTALL A FEW INCHES OF CLEAN BACKFILL TO COVER ANY OF THESE ITEMS THAT CANNOT BE REMOVED.
- ALL CONDUIT MUST BE INSTALLED AT THE PROPER DEPTH AND WITH PROPER SEPARATION AS SHOWN ON THE TABLES IN APPENDIX E - PAGE 4.
- THE MAXIMUM TRENCH DEPTH MUST NOT EXCEED FOUR (4) FEET, EXCEPT WHERE REQUIRED AT ENTRANCE POINTS FOR CONDUIT BENDS INTO PIT PADS OR PULL BOXES.
- THE CUSTOMER MUST BACKFILL ALL TRENCHES WHERE CUSTOMER-INSTALLED CONDUIT WAS PROVIDED.
- ALL BACKFILL MUST BE FREE OF ROCKS, CONSTRUCTION DEBRIS, OR ANY OTHER HARD OBJECTS.
- ALL BACKFILL MUST BE COMPACTED TO THE FIRMNESS OF UNDISTURBED SOIL.
- THE CUSTOMER WILL BE RESPONSIBLE FOR ANY SETTLING OR WASHOUT OF THE TRENCH.

ALL CONDUIT MUST BE INSTALLED AT THE PROPER DEPTH AND WITH PROPER SEPARATION AS SHOWN BELOW.

TABLE 1: MINIMUM CONDUIT COVER		
CABLE OR APPLICATION	MINIMUM COVER (X)	SPECIFIC NOTES
SECONDARY / SERVICE	30"	SEE NOTE 2
PRIMARY (1Ø OR 3Ø)	36"	SEE NOTE 2
ROAD CROSSINGS (ANY VOLTAGE)	36"	-
PARKING LOT CROSSINGS (ANY VOLTAGE)	36"	SEE NOTE 2

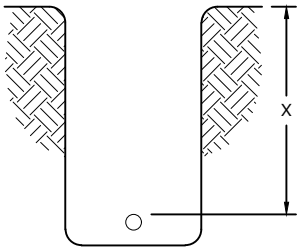
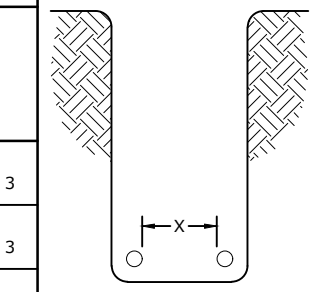


TABLE 2: REQUIRED MINIMUM HORIZONTAL SEPARATION BETWEEN CONDUITS.					
COLUMN 1	MINIMUM HORIZONTAL SEPARATION FROM CABLES IN COLUMN 1 (X)				
CABLE	SECONDARY/ SERVICE	PRIMARY, 200A (1Ø OR 3Ø)	PRIMARY, 200A (1Ø OR 3Ø) WHEN BOTH CABLES **ARE NOT** PART OF THE SAME LOOP	PRIMARY, 200A (1Ø OR 3Ø) WHEN BOTH CABLES **ARE** PART OF THE SAME LOOP	FEEDER (>200A)
SECONDARY / SERVICE	NO REQUIRED SEPARATION SEE FIGURE 1	NO REQUIRED SEPARATION SEE FIGURE 1			36" SEE FIGURE 3
PRIMARY, 200A (1Ø OR 3Ø)	NO REQUIRED SEPARATION SEE FIGURE 1		NO REQUIRED SEPARATION SEE FIGURE 1	36" SEE FIGURE 2	36" SEE FIGURE 3
FEEDER (>200A)	36" SEE FIGURE 3	36" SEE FIGURE 3			36" SEE FIGURE 3



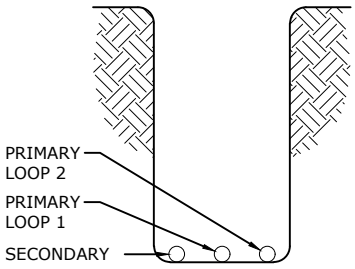


FIGURE 1
NO SEPARATION BETWEEN CONDUITS

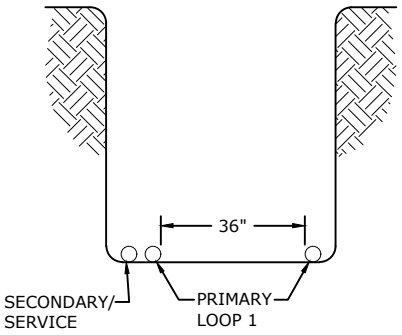


FIGURE 2
36" SPACING BETWEEN CONDUITS OF SAME PRIMARY LOOP

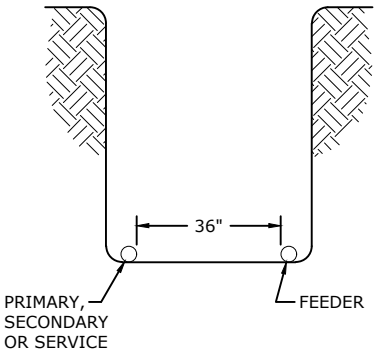


FIGURE 3
36" SPACING BETWEEN FEEDER CONDUITS AND THOSE CONTAINING ANY OTHER TYPE OF CABLE

NOTES:

1. DISTANCES ARE MEASURED TO THE SURFACE OF THE CABLE OR CONDUIT.
2. PRIMARY CABLES LESS THAN 30" DEEP OR SECONDARY CABLES LESS THAN 24" DEEP MUST BE INSTALLED IN MINIMUM SCHEDULE 40 CONDUIT WITH A MINIMUM OF TWO (2) INCHES OF CONCRETE ABOVE AND BESIDE THE CONDUIT AND A MINIMUM OF SIX (6) INCHES OF COVER.
3. FEEDER (>200A) CONDUITS MUST BE SEPARATED HORIZONTALLY FROM CONDUITS CONTAINING ANY OTHER TYPE OF CABLE BY 36".
4. EITHER ONE WIDE TRENCH OR TWO NARROW TRENCHES MAY BE USED, BASED ON ECONOMICS, TO OBTAIN REQUIRED HORIZONTAL SEPARATION.

DUKE ENERGY.

3				
2				
1				
0	5/24/21	EANES	FLETCHER	GRAHAM
REVISED		BY	CHK'D	APPR.

CUSTOMER GUIDE FOR INSTALLING CONDUIT

DEC	DEM	DEP	DEF
X		X	

MATERIAL REQUIREMENTS

- PVC CONDUIT AND CONDUIT FITTINGS MUST BE SCHEDULE 40 OR GREATER, RATED FOR USE WITH 90° C ELECTRICAL CABLE, UL LISTED AND GRAY IN COLOR. NO WATER, SEWER, GAS OR TELECOMMUNICATION PIPE MAY BE USED. EACH LENGTH OF CONDUIT AND EACH BEND MUST HAVE AN INTEGRAL BELL ON ONE END. THE CONDUIT MANUFACTURER'S NAME, CONDUIT SIZE, TYPE AND DATE CODE MUST BE PRINTED ON THE SURFACE OF THE CONDUIT.

- HDPE CONDUIT MUST BE SDR 13.5 OR GREATER, RATED FOR USE WITH 90°C ELECTRICAL CABLE, AND BLACK WITH EITHER 3 OR 4 RED STRIPES OR TOTALLY RED. THE CONDUIT MANUFACTURER'S NAME, CONDUIT SIZE, TYPE AND DATE CODE MUST BE PRINTED ON THE SURFACE OF THE CONDUIT.

  CONDUIT SIZE WILL BE AS FOLLOWS.

APPLICATION	CONDUIT SIZE
SINGLE-PHASE 25KV 1/0 AWG PRIMARY	2"
SINGLE-PHASE 35KV 1/0 AWG PRIMARY	3"
THREE-PHASE 25KV 1/0 AWG PRIMARY	4"
THREE-PHASE 35KV 1/0 AWG PRIMARY	6"
THREE-PHASE PRIMARY (GREATER THAN 1/0 AWG)	6"
600V SECONDARY (TX TO PEDESTAL)	3"
600V SERVICES (RESIDENTIAL) (SEE NOTE 1)	2-1/2"
LIGHTING CABLE	2"

NOTE 1: DUKE ENERGY WILL PROVIDE THE REQUIRED CONDUIT SIZE FOR RESIDENTIAL BUILDINGS WHERE THE SERVICE CABLE WILL FEED GANGED METER PANELS.
NOTE 2: OTHER FACTORS SUCH AS LENGTH OF PULL, NUMBER OF BENDS, AVAILABILITY OF MATERIAL, ETC. MAY JUSTIFY OR REQUIRE LARGER SIZES THAN THOSE SHOWN IN THIS TABLE.

- WHEN HDPE CONDUIT IS USED, PVC BENDS MUST BE ATTACHED TO ALLOW THE CONDUIT SYSTEM TO ENTER TRANSFORMERS, SWITCHGEAR, PEDESTALS, ETC. THE FOLLOWING OPTIONS ARE THE ONLY APPROVED METHODS TO CONNECT HDPE CONDUIT TO PVC CONDUIT OR FITTINGS. THESE OPTIONS MAY ALSO BE USED TO JOIN TWO PIECES OF HDPE CONDUIT, EXCEPT WHEN ONE OF THE PIECES WILL BE USED TO PULL THE OTHER INTO POSITION THROUGH A DIRECTIONAL BORE.

  A. SHUR LOCK II COUPLINGS: THESE ARE PLASTIC, SLIP-ON COUPLINGS, WITH STAINLESS STEEL BANDS MADE BY DURALINE.

  B. BONDUIT ADHESIVE: THIS ADHESIVE IS FORMULATED TO BOND TO BOTH HDPE AND PVC.

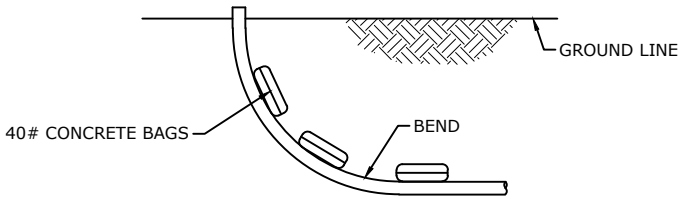
  C. MOR CLAMP COUPLINGS: THESE ARE BOLTED, STAINLESS STEEL, SLIP-ON COUPLINGS MADE BY DURALINE. THESE COUPLINGS ARE EXPENSIVE, SO THEY WILL TYPICALLY BE USED ONLY ON LARGE CONDUIT AND ONLY WHEN NECESSARY BECAUSE THE CONDUIT IS OUT-OF-ROUND.

  THESE METHODS ALSO ALLOW HDPE CONDUIT PIECES TO BE JOINED TOGETHER OR FOR HDPE CONDUIT TO BE JOINED TO PVC CONDUIT.

- ALL PVC COUPLINGS MUST HAVE A CENTER STOP.
- ALL 6" BENDS MUST HAVE A 48" MINIMUM RADIUS AND ALL OTHER BENDS MUST HAVE A 36" MINIMUM RADIUS. ALL BENDS MUST HAVE AN INTEGRAL BELL ON ONE END.
- PULL STRINGS MUST BE MADE OF A MATERIAL THAT WILL NOT ROT, (I.E., NYLON).

CONDUIT AND FITTING INSTALLATION

- EXAMINE ALL CONDUIT AND CONDUIT ACCESSORIES BEFORE THEY ARE INSTALLED FOR SHARP EDGES, OUT-OF-ROUND SHAPE, CRACKS, CHIPS, BURRS, AND INSIDE PROTRUSIONS THAT WOULD DAMAGE THE CABLE WHEN IT IS PULLED INTO POSITION. SUCH PIECES SHALL NOT BE INSTALLED.
- REMOVE ANY SHARP EDGES THAT ARE CREATED ON THE INSIDE OR OUTSIDE OF CONDUIT WHEN IT IS CUT.
- ALL SECTIONS OF PVC CONDUIT AND ALL FITTINGS MUST BE CEMENTED TOGETHER USING A PVC CONDUIT SOLVENT CEMENT RATED FOR USE WITH ELECTRICAL PVC CONDUIT THAT CHEMICALLY BONDS THE TWO PVC PARTS TOGETHER. DO NOT USE CEMENT DESIGNED FOR USE WITH PLUMBING PVC PIPE. THE MATING SURFACES MUST BE 1) PROPERLY CLEANED; 2) A THIN, UNIFORM COATING OF CEMENT APPLIED OVER THE ENTIRE MATING SURFACES (THE OUTER SURFACE OF A PLAIN END AND THE INNER SURFACE OF A BELL END); 3) FULLY SEAT BOTH PIECES; AND 4) TWIST THE PIECES ONE QUARTER TURN TO THEIR REQUIRED POSITION.
- CONDUIT MUST LIE FLAT ON THE BOTTOM OF THE TRENCH.
- A CONTINUOUS PULL STRING, WITH NO KNOTS OR SPLICES, MUST BE PROVIDED THROUGHOUT THE LENGTH OF EACH INDIVIDUAL CONDUIT SEGMENT AND EXTEND AT LEAST THREE FEET OUTSIDE OF EACH STUB-UP. FOR EXAMPLE, A SINGLE PULL STRING MUST EXTEND FROM A TRANSFORMER, PASS THROUGH ALL BENDS AND CONDUIT PIECES, AND THEN EXIT AT A PEDESTAL.
- PULL STRINGS MUST BE TESTED TO VERIFY THEY WERE NOT INADVERTENTLY GLUED TO A PIECE OF CONDUIT OR A FITTING. THE CUSTOMER WILL BE REQUIRED TO INSTALL NEW PULL STRINGS IN ANY CONDUIT SEGMENT WHERE THE INITIAL PULL STRINGS ARE NOT USABLE.
- EACH CONDUIT SEGMENT (TRANSFORMER TO TRANSFORMER, TRANSFORMER TO PEDESTAL, PEDESTAL TO SERVICE RISER, ETC.) MUST BE COLOR CODED ON EACH END WITH THE SAME COLOR OF VINYL TAPE OR SPRAY PAINT OR, WEATHER-RESISTANT, NON-FADABLE ADHESIVE LABELS MAY BE APPLIED. WHEN MULTIPLE BENDS OR CONDUITS ARE BANDED TOGETHER, SUCH AS IN A TRANSFORMER, THE COLOR CODING OR LABELS ON EACH BEND OR CONDUIT MUST BE READILY VISIBLE.
- CUSTOMER SHALL PULL A SOLID MANDREL, NO MORE THAN 1/2 INCH SMALLER THAN THE INSIDE DIAMETER OF THE CONDUIT, THROUGH ALL CONDUIT SEGMENTS TO VERIFY THEY ARE IN GOOD CONDITION AND FREE OF OBSTACLES.
- CONDUITS MUST BE PLUGGED TO PREVENT DEBRIS, RAIN, ETC. FROM ENTERING THE CONDUIT. TAPE OR RAGS ARE NOT SUFFICIENT. THESE PLUGS MUST **NOT** BE CEMENTED ONTO THE CONDUIT OR FITTING.
- NO WIRES, CABLES, CONDUITS, INNER-DUCTS, OR ANY OTHER ITEMS MAY BE INSTALLED IN THE CONDUITS INSTALLED FOR DUKE ENERGY. THIS INCLUDES FACILITIES FOR LIGHTING, SECURITY, LANDSCAPING, COMMUNICATION, OTHER UTILITIES OR THE CUSTOMER. THE CUSTOMER WILL BE REQUIRED TO REMOVE ANY SUCH FACILITIES THAT ARE FOUND.
- WHEN MULTIPLE DEVELOPERS ARE INSTALLING CONDUIT FOR DUKE ENERGY ALONG A SINGLE CONDUIT SEGMENT (ONE TRANSFORMER TO ANOTHER TRANSFORMER, A TRANSFORMER TO A PEDESTAL, ETC.), THE DEVELOPERS ARE REQUIRED TO JOIN THEIR CONDUIT SECTIONS TOGETHER, INSTALL A SINGLE PULL STRING FROM ONE END OF THE CONDUIT SEGMENT (THE TRANSFORMER, PEDESTAL, ETC.) TO THE OTHER END OF THE CONDUIT SEGMENT, AND TO PROPERLY LABEL BOTH ENDS OF THE CONDUIT SEGMENT.
- MULTIPLE BENDS/CONDUITS MUST BE FIRMLY BANDED TOGETHER IN THE PROPER CONFIGURATION AND WITHIN THE REQUIRED DIMENSIONS PROVIDED IN THIS DOCUMENT WHEN INSTALLED IN TRANSFORMERS, SWITCHGEAR, PEDESTALS, ETC.
- ALL CONDUITS MUST BE FREE OF WATER, MUD, DIRT OR ANY OTHER FOREIGN MATTER. THE CUSTOMER MUST INSPECT, CLEAN AND REPAIR ANY CONDUITS THAT CONTAIN FOREIGN MATTER.
- PLACE TWO, FORTY (40) POUND BAGS OF CONCRETE AGAINST EACH 90° BEND CONTAINING SECONDARY/ SERVICE CABLE AND THREE, FORTY (40) POUND BAGS AGAINST BENDS CONTAINING PRIMARY CABLE TO PREVENT MOVEMENT DURING CABLE PULLING. DO NOT OPEN THE BAGS, JUST MAKE THREE CUTS ACROSS THE FRONT OF THE BAG TO ALLOW MOISTURE TO ENTER, AND PLACE THEM AGAINST THE BEND.
- IT IS NOT NECESSARY TO DOUBLE THE REQUIRED NUMBER OF CONCRETE BAGS WHEN TWO BENDS ARE INSTALLED SIDE-BY-SIDE. USE THE NUMBER OF BAGS REQUIRED FOR A SINGLE BEND AND POSITION THE BAGS SO THEY WILL COVER BOTH BENDS.



SECURING BENDS WITH BAGS OF CONCRETE

REVISED		BY	CHK'D	APPR.
3				
2				
1	2/2/22	EANES	FLETCHER	GRAHAM
0	5/24/21	EANES	FLETCHER	GRAHAM

CUSTOMER GUIDE FOR INSTALLING CONDUIT

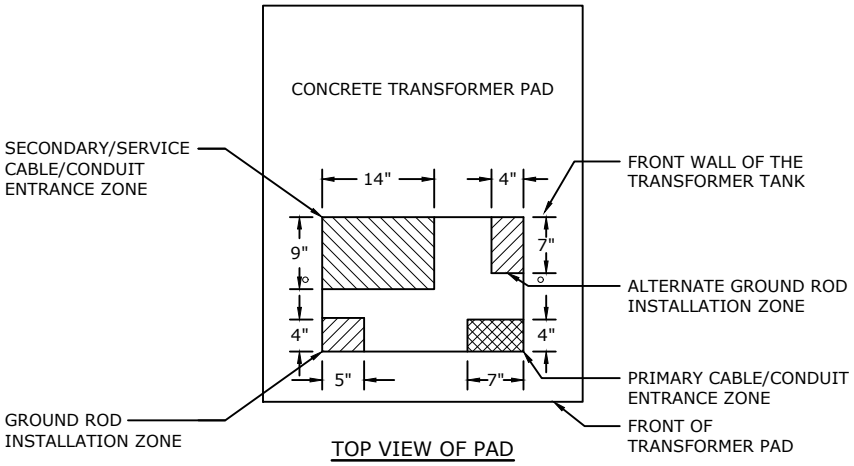
DEC	DEM	DEP	DEF
X		X	

CONDUIT POSITIONING IN TRANSFORMERS

1. SINGLE-PHASE PAD-MOUNTED TRANSFORMERS

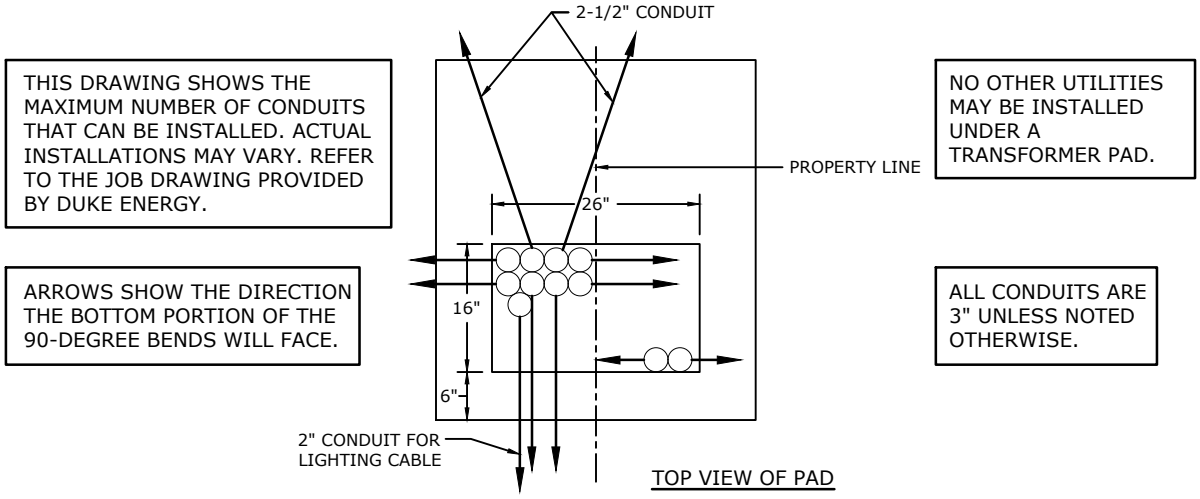
- CONDUITS SHALL NOT BE INSTALLED OUTSIDE THE DESIGNATED ZONES SHOWN IN THE DRAWING BELOW. THE PAD CANNOT BE INSTALLED IF THESE DIMENSIONS ARE EXCEEDED. DUKE ENERGY RECOMMENDS THAT A TEMPLATE BE CONSTRUCTED AND USED TO VERIFY PROPER LOCATION OF THESE CONDUITS. THE OPENING ON THE CONCRETE PAD IS 26" X 16".

SINGLE-PHASE TRANSFORMER CABLE ENTRANCE ZONES



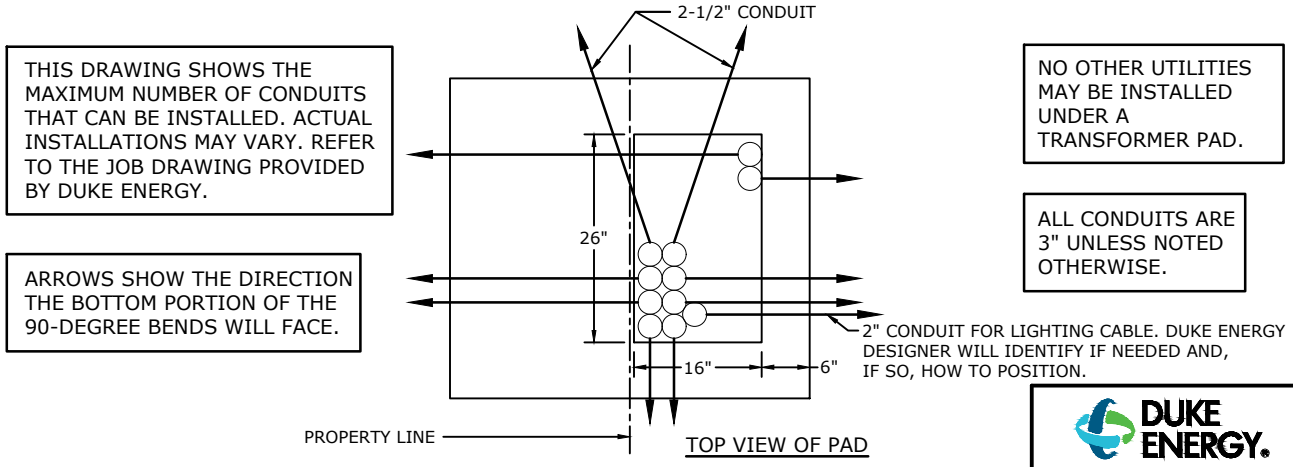
TOP VIEW OF PAD

CONDUIT CONFIGURATIONS IN DEC SINGLE-PHASE PAD-MOUNTED TRANSFORMER PADS



TOP VIEW OF PAD

CONDUIT CONFIGURATIONS IN DEP SINGLE-PHASE PAD-MOUNTED TRANSFORMER PADS



TOP VIEW OF PAD

DUKE ENERGY.

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1				
0	5/24/21	EANES	FLETCHER	GRAHAM
REVISED		BY	CHK'D	APPR.

CUSTOMER GUIDE FOR INSTALLING CONDUIT

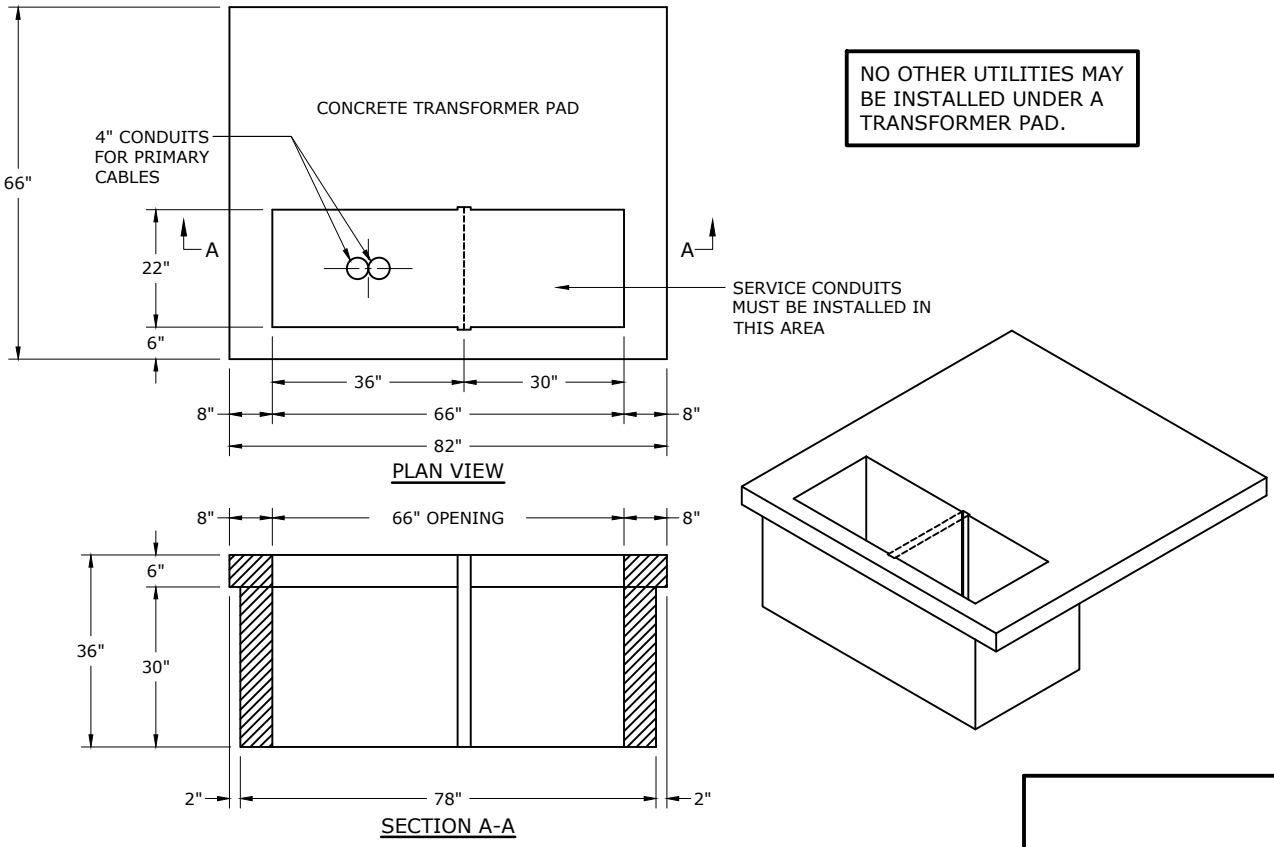
DEC	DEM	DEP	DEF
X		X	

- INSTALL EQUIPMENT ABOVE THE TRENCH TO ELIMINATE THE NUMBER OF REQUIRED CONDUIT BENDS.
- A MAXIMUM OF EIGHT (8) SECONDARY/SERVICE CONDUITS, TWO (2) PRIMARY CABLE CONDUITS, AND ONE (1) LIGHTING CABLE CONDUIT CAN BE INSTALLED IN SINGLE-PHASE TRANSFORMERS; HOWEVER, QUITE OFTEN, FEWER CONDUITS WILL BE REQUIRED. WHEN FEWER THAN EIGHT (8) SECONDARY/SERVICE CONDUITS WILL BE INSTALLED, KEEP THE CONDUITS AS FAR TO THE LEFT SIDE OF THE 9" X 14" SECONDARY/SERVICE CONDUIT ENTRANCE ZONE AS POSSIBLE. NO PART OF ANY CONDUIT MAY EXTEND OUTSIDE OF THIS ZONE.
- BE CERTAIN TO LEAVE A SPACE BESIDE THE CONDUITS FOR THE INSTALLATION OF THE GROUND ROD.
- THE TRANSFORMER PAD MUST BE POSITIONED SO THE FRONT OF THE TRANSFORMER WILL FACE THE STREET IN DEC LOCATIONS AND BE TURNED TO THE RIGHT IN DEP LOCATIONS.
- THERE SHALL BE NO ABOVE-GROUND OBSTRUCTIONS WITHIN TEN (10) FEET OF THE FRONT OF THE TRANSFORMER OR WITHIN THREE (3) FEET OF THE SIDES AND BACK.
- THE GROUND UNDER THE PAD SHALL BE LEVEL AND THOROUGHLY COMPACTED.
- EXTEND CONDUITS THREE (3) INCHES ABOVE THE SOIL.
- PLACE TWO (2), FORTY (40) POUND BAGS OF CONCRETE AGAINST EACH BEND CONTAINING SECONDARY/SERVICE CABLE AND THREE (3), FORTY (40) POUND BAGS AGAINST BENDS CONTAINING PRIMARY CABLE AS SHOWN IN APPENDIX E - PAGE 6 TO PREVENT MOVEMENT DURING CABLE PULLING. DO NOT OPEN THE BAGS, JUST MAKE THREE CUTS ACROSS THE FRONT OF THE BAG TO ALLOW MOISTURE TO ENTER, AND PLACE THEM AGAINST THE BEND.
- INSTALL PLUGS IN EACH CONDUIT TO KEEP SAND, RAIN, ETC. OUT OF THE CONDUITS. DO **NOT** GLUE THE PLUGS ONTO THE CONDUIT.

2. THREE-PHASE PAD-MOUNTED TRANSFORMERS 75KVA THROUGH 300KVA

- CONDUITS FOR PRIMARY AND SERVICE CABLES SHALL BE INSTALLED AS SHOWN IN THE DRAWING BELOW.

CONDUIT POSITIONS IN SMALL THREE-PHASE PAD-MOUNTED TRANSFORMER PADS



NO OTHER UTILITIES MAY BE INSTALLED UNDER A TRANSFORMER PAD.

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CUSTOMER GUIDE FOR INSTALLING CONDUIT

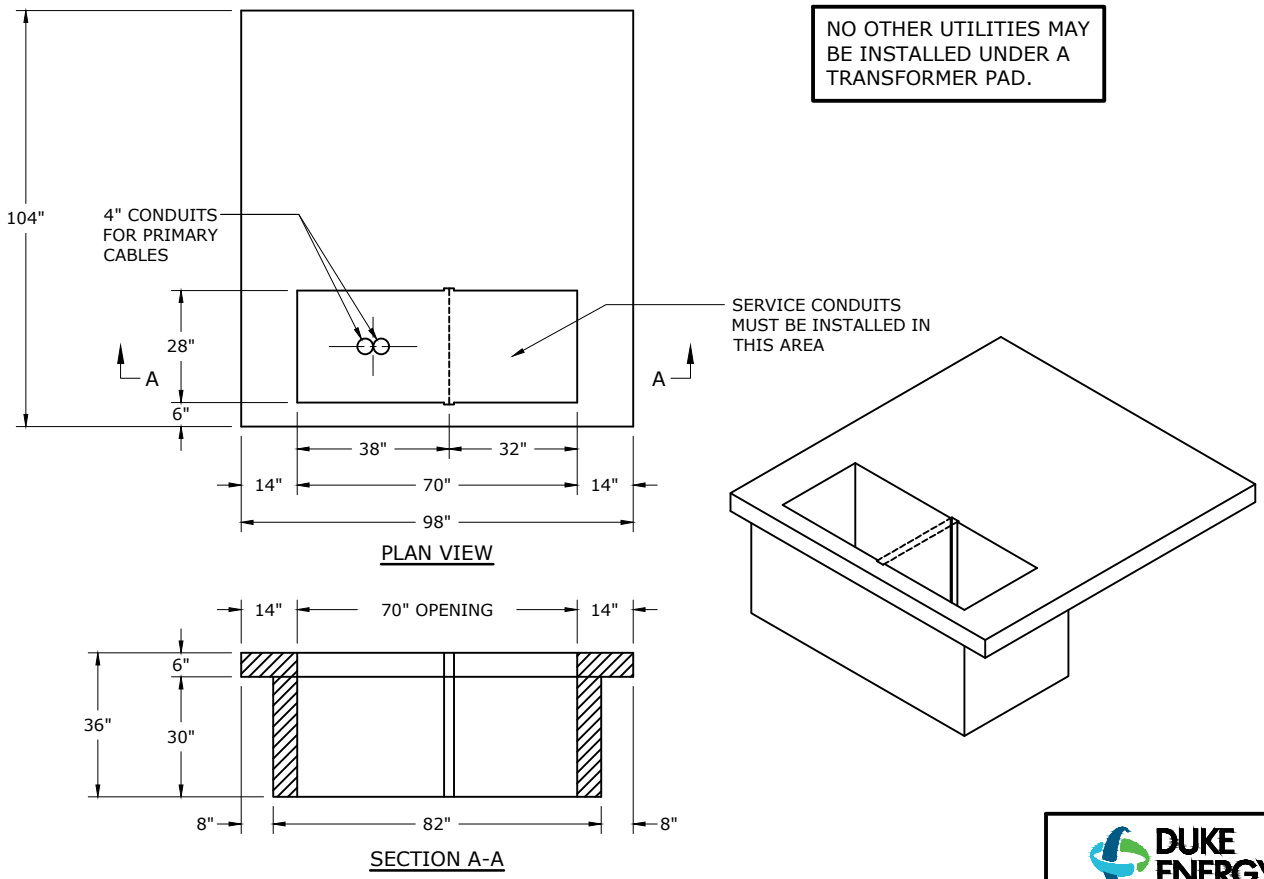
DEC	DEM	DEP	DEF
X		X	

- THERE SHALL BE NO ABOVE-GROUND OBSTRUCTIONS WITHIN TEN (10) FEET OF THE FRONT OF THE TRANSFORMER OR WITHIN THREE (3) FEET OF THE SIDES AND BACK. IF A METER IS INSTALLED ON THE TRANSFORMER, NO OBSTRUCTIONS MAY BE WITHIN FOUR (4) FEET OF THAT SIDE.
- SIDE VENTILATION MAY BE REQUIRED IF A WALL IS TO BE CONSTRUCTED AROUND THE TRANSFORMER. CONTACT DUKE ENERGY TO OBTAIN THE REQUIRED SEPARATION BETWEEN THE TRANSFORMER AND A WALL.
- THE GROUND UNDER THE PAD SHALL BE LEVEL AND THOROUGHLY COMPACTED.
- INSTALL BENDS FOR THE PRIMARY CABLE IN THE CENTER OF THE DESIGNATED PRIMARY CABLE AREA AS SHOWN IN APPENDIX E - PAGE 8.
- CONDUITS FOR SECONDARY/SERVICE CABLES ARE TO BE CENTERED IN THE AREA SHOWN IN APPENDIX E -PAGE 8. NO PART OF ANY CONDUIT MAY EXTEND OUTSIDE OF THE DIMENSIONS SHOWN.
- PLACE THREE, FORTY (40) POUND BAGS OF CONCRETE AGAINST EACH 90° BEND CONTAINING PRIMARY CABLE AS SHOWN IN APPENDIX E - PAGE 6 TO PREVENT MOVEMENT DURING CABLE PULLING. DO NOT OPEN THE BAGS, JUST MAKE THREE CUTS ACROSS THE FRONT OF THE BAG TO ALLOW MOISTURE TO ENTER, AND PLACE THEM AGAINST THE BEND.
- ALL CONDUITS IN A PIT PAD SHALL EXTEND 6” ABOVE THE GRAVEL BED IN THE PIT.
- INSTALL PLUGS IN EACH CONDUIT TO KEEP SAND, RAIN, ETC. OUT OF THE CONDUITS. DO NOT GLUE THE PLUGS ONTO THE CONDUIT.

3. THREE-PHASE PAD-MOUNTED TRANSFORMERS 500KVA THROUGH 5000KVA

- CONDUITS FOR PRIMARY AND SERVICE CABLES SHALL BE INSTALLED AS SHOWN IN THE DRAWING BELOW.

CONDUIT POSITIONS IN LARGE THREE-PHASE PAD-MOUNTED TRANSFORMER PADS



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1	2/29/24	EANES	FLETCHER	GRAHAM
0	5/24/21	EANES	FLETCHER	GRAHAM
REVISED		BY	CHK'D	APPR.

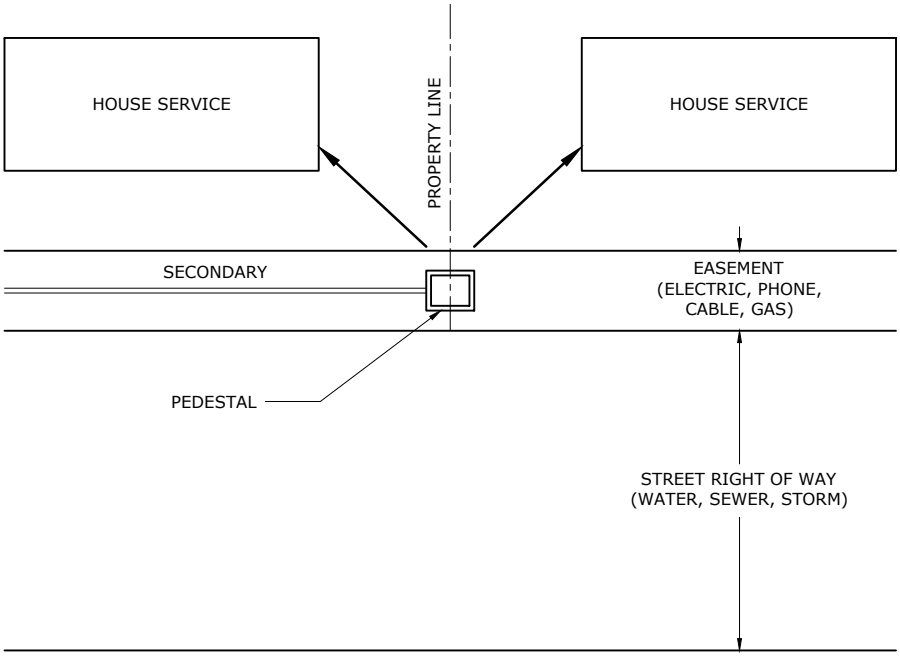
CUSTOMER GUIDE FOR INSTALLING CONDUIT

DEC	DEM	DEP	DEF
X		X	

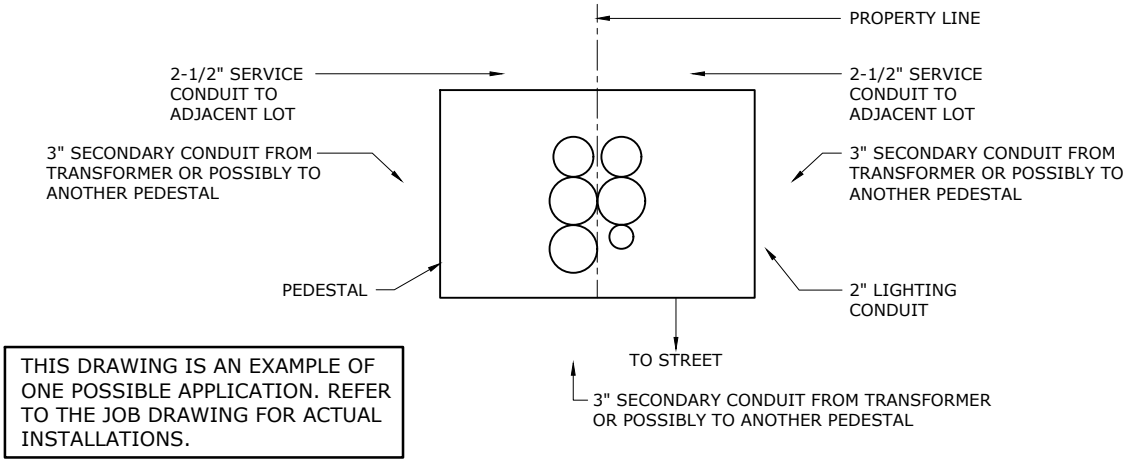
- THERE SHALL BE NO ABOVE-GROUND OBSTRUCTIONS WITHIN TEN (10) FEET OF THE FRONT OF THE TRANSFORMER OR WITHIN THREE (3) FEET OF THE SIDES AND BACK. IF A METER IS INSTALLED ON THE TRANSFORMER, NO OBSTRUCTIONS MAY BE WITHIN FOUR (4) FEET OF THAT SIDE.
- SIDE VENTILATION MAY BE REQUIRED IF A WALL IS TO BE CONSTRUCTED AROUND THE TRANSFORMER. CONTACT DUKE ENERGY TO OBTAIN THE REQUIRED SEPARATION BETWEEN THE TRANSFORMER AND A WALL.
- THE GROUND UNDER THE PAD SHALL BE LEVEL AND THOROUGHLY COMPACTED.
- INSTALL CONDUITS FOR THE PRIMARY CABLE IN THE CENTER OF THE DESIGNATED PRIMARY CABLE AREA AS SHOWN IN APPENDIX E - PAGE 9.
- CONDUITS FOR SECONDARY/SERVICE CABLES ARE TO BE CENTERED IN THE AREA SHOWN IN APPENDIX E - PAGE 9. NO PART OF ANY CONDUIT MAY EXTEND OUTSIDE OF THE DIMENSIONS SHOWN.
- PLACE THREE (3), FORTY (40) POUND BAGS OF CONCRETE AGAINST EACH 90° BEND CONTAINING PRIMARY CABLE AS SHOWN IN APPENDIX E - PAGE 6 TO PREVENT MOVEMENT DURING CABLE PULLING. DO NOT OPEN THE BAGS, JUST MAKE THREE CUTS ACROSS THE FRONT OF THE BAG TO ALLOW MOISTURE TO ENTER, AND PLACE THEM AGAINST THE BEND.
- ALL CONDUITS IN A PIT PAD SHALL EXTEND 6” ABOVE THE GRAVEL BED IN THE PIT.
- INSTALL PLUGS IN EACH CONDUIT TO KEEP SAND, RAIN, ETC. OUT OF THE CONDUITS. DO **NOT** GLUE THE PLUGS ONTO THE CONDUIT.

CONDUIT POSITIONING IN ABOVE-GRADE PEDESTALS

LOCATION OF ABOVE-GRADE PEDESTALS

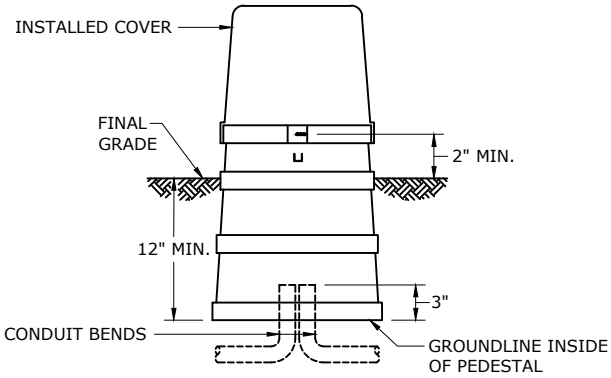


POSITIONING CONDUIT IN ABOVE-GRADE PEDESTALS



THIS DRAWING IS AN EXAMPLE OF ONE POSSIBLE APPLICATION. REFER TO THE JOB DRAWING FOR ACTUAL INSTALLATIONS.

- SERVICE CONDUIT WILL BE 2-1/2" SCHEDULE 40 PVC OR SDR 13.5 HDPE. SECONDARY CONDUIT WILL BE 3" SCHEDULE 40 PVC OR SDR 13.5 HDPE.
- A MAXIMUM OF FOUR (4) CONDUIT BENDS MAY BE INSTALLED IN THE SMALL PEDESTAL, SIX (6) CONDUIT BENDS MAY BE INSTALLED IN THE MEDIUM PEDESTAL, AND EIGHT (8) CONDUIT BENDS MAY BE INSTALLED IN THE LARGE PEDESTAL. FOR ALL APPLICATIONS, THE TOP OF THE BENDS MUST BE BANDED TOGETHER, POSITIONED IN THE CENTER OF THE PEDESTAL AND ORIENTED AS SHOWN IN THE ABOVE DRAWINGS.
- PLACE TWO (2), FORTY (40) POUND BAGS OF CONCRETE AGAINST EACH BEND AS SHOWN IN APPENDIX E - PAGE 6 TO PREVENT MOVEMENT DURING CABLE PULLING. DO NOT OPEN THE BAGS, JUST MAKE THREE CUTS ACROSS THE FRONT OF THE BAG TO ALLOW MOISTURE TO ENTER, AND PLACE THEM AGAINST THE BEND.
- EXTEND CONDUITS THREE (3) INCHES ABOVE THE GROUNDLINE OF THE PEDESTAL BASE. SEE DRAWING BELOW.



- NO ABOVE-GROUND OBSTRUCTION SHALL BE PLACED WITHIN 3 FEET OF A PEDESTAL.
- SOIL BENEATH THE PEDESTAL BASE SHALL BE COMPACTED TO THE FIRMNESS OF UNDISTURBED EARTH AND SHALL BE FREE OF ROOTS AND OTHER ORGANIC MATERIALS.
- INSTALL PLUGS IN EACH CONDUIT TO KEEP SAND, RAIN, ETC. OUT OF THE CONDUITS. DO **NOT** GLUE THE PLUGS ONTO THE CONDUIT.

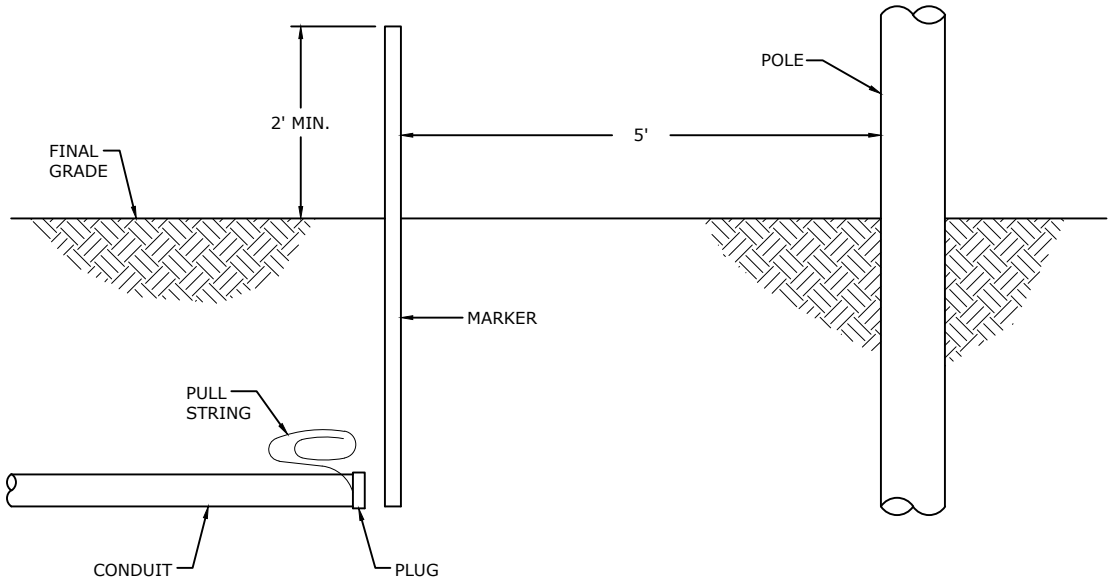
CONDUIT POSITIONING IN SWITCHGEAR

- THERE ARE TOO MANY DIFFERENT TYPES AND CONFIGURATIONS OF PAD-MOUNTED SWITCHGEAR TO LIST IN THIS DOCUMENT. DUKE ENERGY WILL PROVIDE CONDUIT PLACEMENT INFORMATION FOR THE SPECIFIC SWITCHGEAR THAT IS TO BE INSTALLED WHEN IT IS REQUIRED. NOT ALL SUBDIVISIONS WILL REQUIRE SWITCHGEAR.
- THERE SHALL BE NO ABOVE-GROUND OBSTRUCTIONS WITHIN TEN (10) FEET OF THE FRONT AND BACK OF THE SWITCHGEAR OR WITHIN THREE (3) FEET OF EACH SIDE. IF THE SWITCHGEAR HAS A CONTROL CABINET, FIVE (5) FEET OF SPACE MUST BE PROVIDED ON THE SIDE WHERE THE CABINET IS LOCATED.
- THE GROUND UNDER THE PAD SHALL BE LEVEL AND THOROUGHLY COMPACTED.
- POSITION AND ORIENT ALL CONDUIT BENDS AS DIRECTED BY DUKE ENERGY. PLACE THREE (3), FORTY (40) POUND BAGS OF CONCRETE AGAINST EACH 90° BEND AS SHOWN IN APPENDIX E - PAGE 6 TO PREVENT MOVEMENT DURING CABLE PULLING. DO NOT OPEN THE BAGS, JUST MAKE THREE CUTS ACROSS THE FRONT OF THE BAG TO ALLOW MOISTURE TO ENTER, AND PLACE THEM AGAINST THE BEND.
- EXTEND CONDUITS SIX (6) INCHES ABOVE THE LEVEL OF THE SOIL IN THE BOTTOM OF THE PIT PAD.
- INSTALL PLUGS IN EACH CONDUIT TO KEEP SAND, RAIN, ETC. OUT OF THE CONDUITS. DO **NOT** GLUE THE PLUGS ONTO THE CONDUIT.

CONDUIT POSITIONING AT RISERS

- DUKE ENERGY WILL STAKE THE EXACT LOCATION OF THE POLE RISER.
- STOP THE CONDUIT FIVE (5) FEET FROM THE POLE.
- A MINIMUM OF FIVE (5) FEET OF PULL STRING MUST EXTEND OUT OF THE CONDUIT AND BE PLACED IN A COIL AT THE END OF THE CONDUIT.
- PLACE A PLUG ON THE END OF THE CONDUIT BUT DO NOT CEMENT THIS PLUG TO THE BEND.
- PLACE A MARKER (A PIECE OF CONDUIT FOR EXAMPLE) AT THE END OF THE CONDUIT THAT WILL EXTEND ABOVE FINAL GRADE A MINIMUM OF TWO (2) FEET.

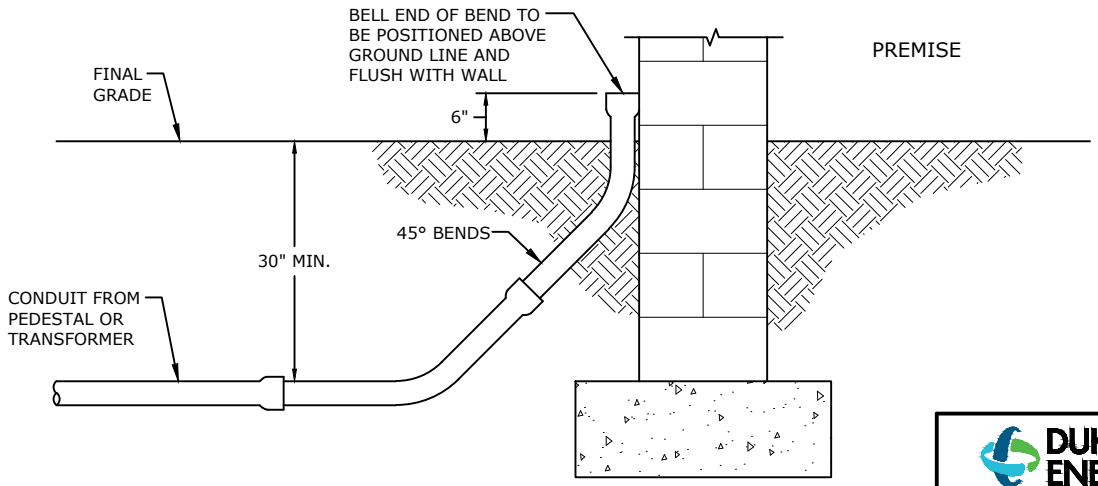
RISER POLE INSTALLATION



CONDUIT POSITIONING AT PREMISE RISERS

- THE TOP OF THE CONDUIT BEND MUST BE IN CONTACT WITH THE PREMISE.
- EXTEND CONDUIT SIX (6) INCHES ABOVE FINAL GRADE OF THE SOIL.
- THE PULL STRING MUST EXTEND A MINIMUM OF FOUR (4) FEET OUTSIDE OF THE CONDUIT.
- INSTALL A PLUG ON THE CONDUIT TO KEEP DIRT, RAIN, ETC. OUT OF THE CONDUIT. DO NOT GLUE THE PLUG ONTO THE CONDUIT.

PREMISE SERVICE RISER



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1	3/3/22	EANES	FLETCHER	GRAHAM
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CUSTOMER GUIDE FOR INSTALLING CONDUIT

DEC	DEM	DEP	DEF
X		X	

CONDUIT POSITIONING IN PULLBOXES

PULLBOXES ARE BELOW-GRADE ENCLOSURES USED TO FACILITATE THE INSTALLATION OF CABLE IN CONDUIT SYSTEMS.

DUKE ENERGY WILL:

A. PROVIDE AND INSTALL ALL REQUIRED PULLBOXES.
B. STAKE THE LOCATION WHERE ALL PULLBOXES ARE TO BE INSTALLED.
C. PROVIDE THE DIMENSIONS OF ALL PULLBOXES.
D. IDENTIFY THE NUMBER, SIZE, LOCATION AND ORIENTATION OF ALL CONDUIT/BENDS ENTERING OR EXITING EACH PULLBOX.

1. NON-CONCRETE PULLBOXES

DUKE ENERGY USES SEVERAL SIZES OF NON-CONCRETE PULLBOXES AS LISTED IN THE TABLES BELOW. LARGER SIZES, SUCH AS 4' X 8', ARE OCCASIONALLY ORDERED FOR PRIMARY CABLE APPLICATIONS. DUKE ENERGY WILL PROVIDE AND INSTALL ALL NON-CONCRETE PULLBOXES. THE CUSTOMER WILL TERMINATE THE CONDUIT SYSTEM AS REQUIRED BELOW SO DUKE ENERGY WILL BE ABLE TO INSTALL THESE PULLBOXES.

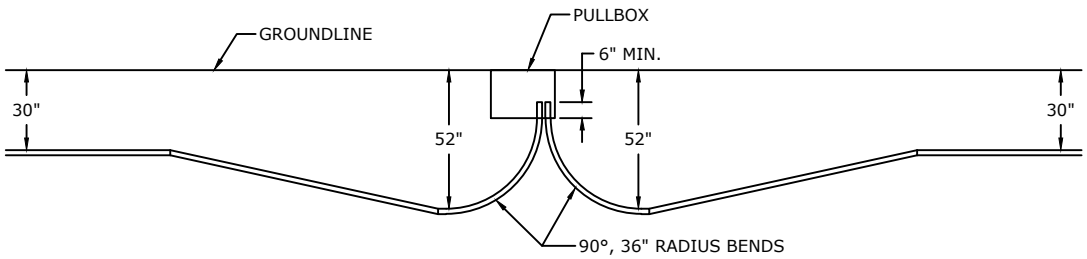
DUKE ENERGY CAROLINAS NON-CONCRETE PULLBOXES		
WIDTH (W)	LENGTH (L)	DEPTH (D)
11" ROUND	-	18"
13"	24"	18"
17"	30"	18"
24"	36"	18"
30"	60"	30"

DUKE ENERGY PROGRESS NON-CONCRETE PULLBOXES		
WIDTH (W)	LENGTH (L)	DEPTH (D)
11" ROUND	-	18"
13"	23"	15"
30"	48"	18"

- DUKE ENERGY WILL STAKE THE LOCATION OF EACH PULLBOX, IDENTIFY THE PULLBOX SIZE THAT WILL BE USED, AND PROVIDE THE NUMBER, SIZE, POSITION AND ORIENTATION OF EACH BEND THAT WILL BE INSTALLED IN THE PULLBOX.

- EXCAVATE AN AREA APPROXIMATELY TEN (10) INCHES GREATER THAN THE OUTSIDE LENGTH AND WIDTH OF THE PULLBOX BEING INSTALLED AND TO THE DEPTH OF THE PULLBOX. THE GROUND UNDER THE PULLBOX SHALL BE PARALLEL TO THE GROUNDLINE OUTSIDE THE PULLBOX AND THOROUGHLY COMPACTED.

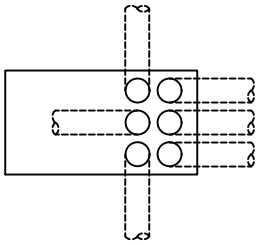
- SLOPE THE DEPTH OF EACH CONDUIT CONTAINING SECONDARY/SERVICE CABLE THAT WILL ENTER OR LEAVE THE PULLBOX FROM THE NORMAL BURIAL DEPTH OF 30" TO A DEPTH OF 52" TO ALLOW BENDS TO BE PROPERLY POSITIONED BELOW THE PULLBOX. THIS SLOPE SHOULD BEGIN ABOUT TEN (10) FEET AWAY FROM THE PULLBOX. THE CONDUIT DOES NOT HAVE TO BE SLOPED WHEN INSTALLING PRIMARY CABLE IN THE 30" X 60" X 30" PULLBOX.



- INSTALL THE CONDUIT AND ALL REQUIRED BENDS WITH THE BENDS POSITIONED AND ORIENTED AS DESCRIBED BY THE DUKE ENERGY DESIGNER. THE TOP OF ALL BENDS MUST EXTEND SIX (6) INCHES ABOVE THE GROUNDLINE INSIDE THE PULLBOX. BENDS FOR SECONDARY/SERVICE CABLE WILL ALL BE POSITIONED ON ONE END OF THE PULLBOX. BENDS FOR PRIAMRY CABLE WILL BE POSITIONED ON OPPOSITE ENDS OF ONE SIDE OF THE PULLOBOX. 90° BENDS WILL BE USED FOR SECONDARY/SERVICE CABLES AND 45° BENDS WILL BE USED FOR PRIMARY CABLE.

POSITION OF BENDS FOR
SECONDARY/SERVICE CABLES

90° BENDS ONLY



PLAN VIEW

BEND POSITION FOR
PRIMARY CABLES
30" X 60" PULLBOX ONLY

45° BENDS ONLY

PLAN VIEW

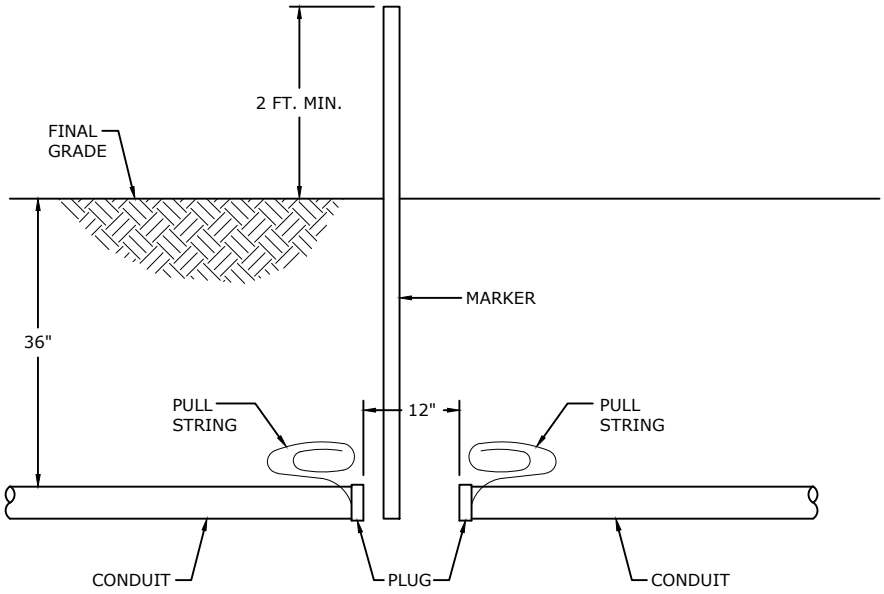
THESE DRAWINGS ARE EXAMPLES OF ONE POSSIBLE APPLICATION.
REFER TO THE JOB DRAWING FOR ACTUAL INSTALLATIONS.

- WHEN MULTIPLE BENDS ARE POSITIONED TOGETHER, THEIR TOPS MUST BE FIRMLY BANDED TOGETHER IN THE PROPER CONFIGURATION.
- THE TOP OF EACH BEND IN THE PULLBOX MUST BE COLOR CODED AS DESCRIBED IN APPENDIX E - PAGE 6.
- PLACE TWO, FORTY (40) POUND BAGS OF CONCRETE AGAINST EACH 90° BEND CONTAINING SECONDARY/ SERVICE CABLE AND THREE, FORTY (40) POUND BAGS AGAINST EACH 90° BEND CONTAINING PRIMARY CABLE AS SHOWN IN APPENDIX E - PAGE 6 TO PREVENT MOVEMENT DURING CABLE PULLING. DO NOT OPEN THE BAGS, JUST MAKE THREE CUTS ACROSS THE FRONT OF THE BAG TO ALLOW MOISTURE TO ENTER.
- A SHORT PIECE OF CONDUIT, LONG ENOUGH TO REACH ONE (1) FOOT ABOVE GROUND, MUST BE ATTACHED TO EACH BEND IN THE PULLBOX. THESE PIECES OF CONDUIT MUST NOT BE CEMENTED TO THE BENDS. THE PULL STRING FOR EACH CONDUIT SEGMENT (TRANSFORMER TO PEDESTAL, PEDESTAL TO SERVICE RISER, ETC.) MUST PASS THROUGH THESE CONDUIT PIECES AND EXTEND A MINIMUM OF 36" BEYOND THEIR END. INSTALL A PLUG IN EACH CONDUIT TO KEEP SAND, RAIN, ETC. OUT OF THE CONDUIT. DO NOT CEMENT THESE PLUGS INTO THE CONDUIT.
- FILL THE HOLE WITH SOIL TO PREVENT THIS FROM BEING A SAFETY HAZARD. DUKE ENERGY WILL REMOVE THE SOIL WHEN THE PULLBOX IS INSTALLED.

1. LARGE CONCRETE PULLBOXES

DUKE ENERGY USES A 56" X 96" X 44" CONCRETE PULLBOX.

- DUKE ENERGY WILL STAKE THE EXACT LOCATION OF THE PULLBOX.
- CREATE A ONE (1) FOOT GAP IN THE CONDUIT IN THE CENTER OF THE PULLBOX LOCATION AS SHOWN BELOW.
- A MINIMUM OF FIVE (5) FEET OF PULL STRING MUST EXTEND OUT OF THE CONDUIT AND BE PLACED IN A COIL AT THE END OF THE CONDUIT.
- PLACE A PLUG ON THE END OF THE CONDUIT BUT DO NOT CEMENT THIS PLUG TO THE CONDUIT.
- PLACE A MARKER (A PIECE OF CONDUIT FOR EXAMPLE) AT THE GAP BETWEEN THE ENDS OF THE CONDUIT THAT WILL EXTEND A MINIMUM OF TWO (2) FEET ABOVE GRADE.



CLEARANCES

SEPARATION MUST BE MAINTAINED BETWEEN CONDUITS INSTALLED FOR DUKE ENERGY AND OTHER CABLES, PIPES OR STRUCTURES AS SHOWN IN THE FOLLOWING TABLE AND DRAWINGS.

PRIMARY OR SECONDARY CABLES IN A CONDUIT SYSTEM			
PARALLELING	HORIZONTAL SEPARATION (IN)	CROSSING	VERTICAL SEPARATION (IN) (SEE NOTE 2)
COMMUNICATION LINES	12	COMMUNICATION LINES	12
WATER LINES	36	WATER LINES	12
SEWER LINES	36	SEWER LINES	12
FUEL LINES	36	FUEL LINES	12
STEAM LINES	60	STEAM LINES	36
CUSTOMER-OWNED CABLES	36	CUSTOMER-OWNED CABLES	12
IN-GROUND SWIMMING POOL	60	IN-GROUND SWIMMING POOL	N/A

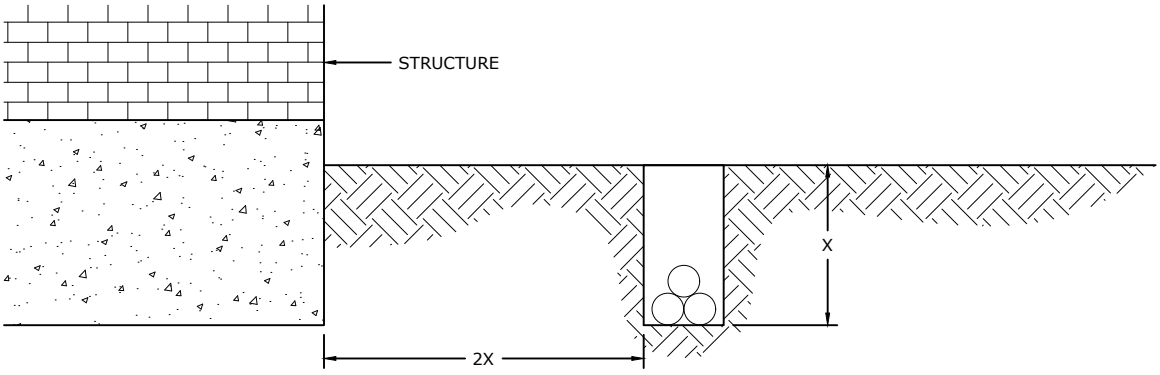
NOTES:

1. THE HORIZONTAL AND VERTICAL SEPARATION SHOULD BE ADEQUATE TO PERMIT ACCESS AND MAINTENANCE OF EITHER FACILITY TO LIMIT DAMAGE TO THE OTHER. THE DISTANCES SHOWN IN THE TABLE ABOVE HAVE BEEN FOUND TO MEET THESE CRITERIA.

2. VERTICAL SEPARATION MUST BE SUFFICIENT TO LIMIT THE LIKELIHOOD OF DETRIMENTAL LOAD BEING TRANSFERRED TO EITHER OF THE UTILITIES OR STRUCTURES INVOLVED. THE DISTANCES SHOWN IN THE ABOVE TABLE HAVE BEEN FOUND TO MEET THESE CRITERIA.

3. CONTACT DUKE ENERGY WHEN DIMENSIONAL VARIANCES ARE REQUIRED.

INSTALLING UNDERGROUND CABLES PARALLEL TO STRUCTURES



NOTES:

1. WHEN INSTALLING UNDERGROUND CABLE PARALLEL TO EXISTING STRUCTURES, OR THOSE THAT ARE UNDER CONSTRUCTION, IT IS NECESSARY TO MAINTAIN ADEQUATE CLEARANCE FROM THOSE STRUCTURES. THIS CLEARANCE IS NECESSARY TO MAINTAIN THE INTEGRITY OF THE SOIL, AND THE SUPPORT PROVIDED BY THE SOIL, UNDER THE FOUNDATION OF THE STRUCTURE.

2. UNDERGROUND FACILITIES INSTALLED PARALLEL TO A STRUCTURE SHOULD BE LOCATED AT LEAST TWICE AS FAR AWAY FROM THE STRUCTURE AS THE DEPTH OF THE TRENCH THAT IS DUG. FOR EXAMPLE, IF A TRENCH IS TO BE TWO (2) FEET DEEP, THEN THE TRENCH MUST BE LOCATED AT LEAST FOUR (4) FEET AWAY FROM THE STRUCTURE.

3. THIS REQUIREMENT DOES NOT APPLY TO CABLE THAT IS NOT INSTALLED PARALLEL TO A STRUCTURE.

4. ON INSTALLATIONS WHERE THE CABLE CANNOT BE INSTALLED TWICE AS FAR FROM THE FOUNDATION AS THE CABLE IS DEEP, THE SOIL MUST BE COMPACTED THROUGHOUT THE ENTIRE TRENCH DEPTH TO 100% OF THE ORIGINAL SOIL DENSITY IN ALL AREAS WHERE ADEQUATE SEPARATION CANNOT BE OBTAINED FROM THE FOUNDATION.

CHECKLIST FOR CUSTOMER-INSTALLED CONDUIT SYSTEMS

THIS CHECKLIST IS TO BE USED BY CUSTOMERS WHO INSTALL CONDUIT SYSTEMS FOR DUKE ENERGY. PLEASE ENSURE ALL ITEMS HAVE BEEN FULLY VERIFIED. AFTER VERIFICATION, SEND A COPY OF THE COMPLETED CHECKLIST, ALONG WITH THE DUKE ENERGY SITE READINESS CHECKLIST TO THE DUKE DESIGNER/CUSTOMER PROJECT COORDINATOR/CONSTRUCTION COORDINATOR BY EMAIL.

PROJECT DETAILS:

PROJECT NAME:_____ TYPE OF PROJECT:_____

DEVELOPER NAME/COMPANY:_____ DUKE DESIGNER'S NAME:_____

CONDUIT INSTALLER'S NAME:_____ WORK ORDER #:_____

COMPANY INSTALLER WORKS FOR:_____

- ☐ A PRE-CONSTRUCTION MEETING WITH THE CUSTOMER'S CONTRACTOR AND A DUKE ENERGY REPRESENTATIVE WAS HELD PRIOR TO BEGINNING THE CONDUIT INSTALLATION.
- ☐ ALL CONDUIT SEGMENTS ARE INSTALLED WITHIN THE MIDDLE THIRD OF THE WIDTH OF THE DUKE ENERGY RIGHT-OF-WAY EASEMENT.
- ☐ ALL STUB-UPS FOR TRANSFORMERS, PEDESTALS, PULLBOXES, SWITCHGEAR, RISERS, ETC. ARE INSTALLED WHERE INDICATED BY DUKE ENERGY.
- ☐ PROPER SEPARATION, AS INDICATED IN THIS DOCUMENT, BETWEEN DUKE ENERGY CONDUITS AND WATER LINES, COMMUNICATION LINES, SEWER LINES, CUSTOMER-OWNED CABLES, SWIMMING POOLS, STRUCTURES, ETC. HAVE BEEN PROVIDED.
- ☐ THE TRENCH DEPTHS AND CONDUIT SEPARATION THROUGHOUT THE ENTIRE PROJECT COMPLY WITH THE REQUIREMENTS PROVIDED IN THIS DOCUMENT.
- ☐ NO OTHER UTILITIES OR FACILITIES OF ANY TYPE ARE INSTALLED IN THE SAME TRENCH, AND PARALLEL TO THE CONDUIT FOR DUKE ENERGY, EXCEPT WHEN DUKE ENERGY AND OTHER UTILITIES HAVE AGREED TO USE A COMMON INSTALLER AND SPECIFIED SEPARATION IS MAINTAINED BETWEEN THE CONDUITS.
- ☐ THE BOTTOM OF THE TRENCH IS SMOOTH AND FREE OF ROCKS, CONSTRUCTION DEBRIS OR ANY OTHER HARD OBJECT, OR SIX (6) INCHES OF CLEAN BACKFILL WAS APPLIED TO COVER ANY ITEMS THAT COULD NOT BE REMOVED.
- ☐ TRENCH WAS BACKFILLED WITH SOIL THAT IS FREE OF ROCKS, CONSTRUCTION DEBRIS OR OTHER HARD OBJECTS AND BACKFILL IS COMPACTED TO THE FIRMNESS OF UNDISTURBED SOIL.
- ☐ TRENCH HAS NOT SETTLED OR WASHED OUT.
- ☐ PVC CONDUIT AND CONDUIT FITTINGS ARE SCHEDULE 40 OR GREATER, RATED FOR 90°C ELECTRICAL CABLE, UL LISTED, GRAY IN COLOR WITH AN INTEGRAL BELL ON ONE END.
- ☐ HDPE CONDUIT IS SDR 13.5 OR GREATER, RATED FOR USE WITH 90°C ELECTRICAL CABLE, AND BLACK WITH EITHER 3 OR 4 RED STRIPES OR TOTALLY RED.
- ☐ HDPE CONDUIT IS CONNECTED TO PVC FITTINGS OR ITSELF WITH SHUR LOCK II COUPLINGS, BONDUIT ADHESIVE OR MOR CLAMP COUPLINGS.
- ☐ ALL 6" BENDS HAVE A 48" MINIMUM RADIUS AND ALL OTHER BENDS HAVE A 36" MINIMUM RADIUS. ALL BENDS HAVE AN INTEGRAL BEND ON ONE END.
- ☐ ALL COUPLINGS HAVE A CENTER STOP.
- ☐ ALL CONDUITS ARE PROPERLY SIZED ACCORDING TO THE REQUIREMENTS PROVIDED IN THIS DOCUMENT AND AS SPECIFIED BY THE CONDUIT DESIGN PROVIDED BY DUKE ENERGY.
- ☐ ALL CONDUIT PIECES AND FITTINGS WERE EXAMINED FOR SHARP EDGES, OUT-OF-ROUND SHAPE, CRACKS, CHIPS, BURRS OR ANY DEFECT THAT WOULD DAMAGE THE CABLE WHEN IT IS PULLED INTO POSITION. NO PIECES WITH DEFECTS WERE INSTALLED AND ALL SHARP EDGES WERE REMOVED.
- ☐ ALL MATING SURFACES OF CONDUIT AND CONDUIT FITTINGS WERE PROPERLY CLEANED, FULLY SEATED AND CEMENTED TOGETHER.
- ☐ ALL CONDUIT IS LAYING FLAT ON THE BOTTOM OF THE TRENCH.
- ☐ STUB-UPS ARE BANDED TOGETHER WHEN MULTIPLE STUB-UPS ARE INSTALLED IN THE SAME ZONE WHERE TRANSFORMERS, PEDESTALS, PULLBOXES, SWITCHGEAR, ETC. WILL BE PLACED.
- ☐ MULTIPLE STUB-UPS WERE INSTALLED IN THE PROPER CONFIGURATION AND WITHIN THE MAXIMUM DIMENSIONS PROVIDED IN THIS DOCUMENT.
- ☐ ALL STUB-UPS ARE PROPERLY POSITIONED WITHIN TRANSFORMERS, PEDESTALS, PULLBOXES, SWITCHGEAR, ETC. AS SHOWN IN THIS DOCUMENT.
- ☐ STUB-UPS ARE POSITIONED WITHIN TRANSFORMERS, PEDESTALS, PULLBOXES, SWITCHGEAR, ETC. TO ALLOW THE EQUIPMENT TO FACE THE DIRECTION SPECIFIED BY DUKE ENERGY.
- ☐ ALL STUB-UPS WITHIN TRANSFORMERS, PEDESTALS, PULLBOXES, SWITCHGEAR, RISERS, ETC. ARE INSTALLED TO THE PROPER HEIGHT ABOVE GROUND LEVEL AS IDENTIFIED IN THIS DOCUMENT.

CHECKLIST FOR CUSTOMER-INSTALLED CONDUIT SYSTEMS (CONTINUED)

WORK ORDER #:_____

- ☐ ALL SERVICE RISERS ARE IN CONTACT WITH THE STRUCTURE/WALL.
- ☐ ALL CONDUITS FOR POLE RISERS STOP AT THE DESIGNATED DISTANCE FROM THE POLE AND ARE TERMINATED IN ACCORDANCE WITH APPENDIX E - PAGE 11
- ☐ BAGS OF CONCRETE WERE PROPERLY PLACED AGAINST ALL BENDS.
- ☐ ALL CONDUITS WERE JOINED TOGETHER AND A SINGLE PULL STRING INSTALLED THROUGHOUT EVERY CONDUIT SEGMENT (TRANSFORMER TO TRANSFORMER, TRANSFORMER TO PEDESTAL, SWITCHGEAR TO TRANSFORMER, ETC.) AND PULL STRINGS EXTEND AT LEAST 36" OUTSIDE OF EACH STUB-UP.
- ☐ THE CUSTOMER CONTACTED DUKE ENERGY FOR INSPECTION DURING THE MANDREL TEST(S).
- ☐ A SOLID MANDREL, NO MORE THAN 1/2" SMALLER THAN THE INSIDE DIAMETER OF THE CONDUIT, WAS PULLED THROUGH EVERY CABLE SEGMENT AND ALL NECESSARY REPAIRS WERE MADE.
- ☐ PULL STRINGS ARE MADE FROM A MATERIAL THAT WILL NOT ROT.
- ☐ PULL STRINGS ARE PLACED IN ALL CONDUIT SEGMENTS (TRANSFORMER TO TRANSFORMER, TRANSFORMER TO PEDESTAL, PEDESTAL TO PREMISE, ETC.) AND THE PULL STRING EXTENDS AT LEAST TWELVE (12) INCHES OUTSIDE OF THE STUB-UP.
- ☐ ALL PULL STRINGS WERE TESTED TO VERIFY THEY WERE NOT GLUED TO ANY SECTIONS OF CONDUIT OR CONDUIT FITTINGS. WHEN ISSUES WERE FOUND, THE ORIGINAL PULL STRINGS WERE CUT OFF SLIGHTLY BELOW THE TOP OF THE STUB-UPS AND NEW PULL STRINGS WERE INSTALLED.
- ☐ EVERY CONDUIT SEGMENT IS COLOR CODED OR LABELED ON BOTH ENDS.
- ☐ THE ENDS OF ALL CONDUIT SEGMENTS ARE CAPPED AND THE CAPS ARE NOT GLUED TO THE CONDUIT OR BENDS.
- ☐ NO DIRT, DEBRIS, WATER OR OTHER FOREIGN MATTER IS PRESENT IN ANY CONDUIT SEGMENT.
- ☐ NO OTHER UTILITY OR FACILITIES OF ANY TYPE ARE INSTALLED IN THE CONDUIT SEGMENTS INSTALLED FOR DUKE ENERGY.
- ☐ THERE ARE NO ABOVE-GROUND OBSTRUCTIONS AROUND TRANSFORMERS, SWITCHGEAR, PEDESTALS, ETC. AS SPECIFIED IN THIS DOCUMENT.
- ☐ PROPER VENTILATION AND CLEARANCE IS PROVIDED FOR TRANSFORMERS WHEN A WALL WILL BE INSTALLED AROUND A TRANSFORMER.
- ☐ THE MANDREL TEST DESCRIBED IN APPENDIX E - PAGE 6 WAS PERFORMED ON ALL CONDUIT SEGMENTS. DUKE ENERGY WAS NOTIFIED PRIOR TO THIS TEST TO ALLOW THEM TO OBSERVE THE TEST.
- ☐ THE ENTIRE CONDUIT SYSTEM HAS BEEN INSPECTED AND ALL INSTANCES OF NON-COMPLIANCE WITH THIS DOCUMENT HAVE BEEN CORRECTED.

DATE OF INSPECTION: _____

INSPECTOR FOR CUSTOMER (NAME & CELL PHONE): _____

DUKE ENERGY INSPECTOR (NAME & CELL PHONE): _____

DATE OF FOLLOW-UP INSPECTION (IF APPLICABLE): _____

LIST OF ISSUES/CONCERNS: (DOCUMENT ALL ISSUES THAT MUST BE RESOLVED AND THE OWNER OF EACH ISSUE.)