

# ELECTRICAL CONTRACTOR'S MANUAL

## Newnan Utilities Electrical

**Newnan Utilities Engineering Department** would like to take this opportunity to thank you for allowing us to serve you. As you know, utility's requirements can vary greatly from Utility to Utility. To prevent any unnecessary delays or confusion, we have provided this manual of **Newnan Utilities** specifications. We wish to thank you in advance for your cooperation.

### INTRODUCTION

Below is a list of phone numbers that may be useful:

- Sewer Service..... (770) 683-6210
- Electric Service..... (770) 683-6199
- Electric Construction..... (770) 683-6359
- Water Service..... (770) 683-6198
- Building Inspector..... (770) 254-2362

- This book represents the policies and objectives of Newnan Utilities concerning service installations and revenue metering and is intended to provide general guidance regarding design and installation of electric services and metering equipment on Newnan Utilities distribution system.
- Project pre-construction meetings must be arranged by the customer or a representative of the customer and can include all utilities offered by Newnan Utilities. At this meeting we can resolve any foreseen installation problems or conflicts. Most site issues can and should be addressed at this time, well in advance of any site preparation.
- Prior to installation of customer equipment, Newnan Utilities and the customer or customer representative, should thoroughly discuss the method of service, type and voltage of service required, location of service and any other relevant topics so that any problems can be eliminated before service is needed.
- There are specific requirements, which must be met before any service will be installed. There must be a final electrical inspection made by the governing authority (City of Newnan) and an application for electric service must be made with Newnan Utilities and all fees may be addressed at this time.
- The following guidelines should be incorporated into design and construction of services and wiring systems.

## Guidelines

- 1) Customer, customer representative, or contractor shall submit (3) three sets of site plans and (1) one digital site plan in dwg. or dxf. format.
- 2) Customer shall make an appointment with Newnan Utilities personnel to review site plans, point of service, metering requirements, temporary services, transformer requirements and locations, etc.
 

***Note: Newnan Utilities engineering, shall approve any changes in construction or design.***
- 3) After required inspections have been obtained, Newnan Utilities shall be notified as soon as possible to avoid unnecessary delays. Newnan Utilities is required under Georgia law to contact the Utilities Protection Center (UPC) 48 hours prior to any digging.
- 4) Site shall be within 2" of final grade and free of any and all debris. The customer

shall mark lot lines and driveways on the curb. This will insure that transformers, streetlights and secondary boxes designed and installed by Newnan Utilities are installed in their proper locations. Curbs shall be poured and cured for a minimum of seventy-two (72) hours before Newnan Utilities will begin installation. Road crossing must be installed after curb is down and cured but before asphalt or concrete is installed which would prevent trenching. Final grades will be videoed by Newnan Utilities before and after construction for future reference.

- 5) Any transformers subject to vehicular traffic shall have six-inch (6") protective barriers or bollards filled with concrete four feet (4') above final grade installed by customer / contractor around each transformer and approximately three feet (3') from transformer corners and shall not impede the opening of the transformer doors.
- 6) Developer, Builder or Property owner will be asked to sign a **Customer Service Agreement** in acknowledgement of final grade and several other issues covered in this manual.

## General Information

### 1) Availability and Class of Service

A) To ensure prompt service, the customer or his representative shall obtain from Newnan Utilities the following characteristics, such as voltage, single phase or three phase, and availability of service desired, overhead or underground, well in advance of the required service date.

***Note: In order for the customer to obtain a three-phase service, the customer may have to meet a minimum demand.***

B) Normal distribution voltages provided are 120/240 V single phase, 120/240 V three phase (may be available for small loads constructed overhead only) 120/208 V three phase, and 277/480 V three phase. Any other voltage must be approved by the Newnan Utilities engineering well in advance of service date. ***A Newnan Utilities load sheet shall be thoroughly completed for all subdivisions, town homes, condos, commercial and industrial sites well in advance of required service date.*** This sheet contains all information concerning class and type of service desired, and is necessary for proper sizing of transformers, services, and metering equipment. ***No service shall be connected until a properly completed load sheet has been submitted to Newnan Utilities.***

C) All commercial services single phase, three phase, overhead or underground may be required to meet a minimum kW requirement. If cost of service is (3) three times anticipated annual revenue customer may be required to

contribute in construction costs. Newnan Utilities reserves the right to make any adjustments to this calculation where special circumstances exist.

2) Temporary Service

A) Where possible, overhead temporary service poles should be placed so that Newnan Utilities temporary service wires may be relocated to the permanent service location without splicing the wires. Underground temporary services should be located within five feet (5') of the pad mount transformer or other location designated by a qualified Newnan Utilities employee.

***Temporary service installations should be constructed with the same care as permanent service installations and in accordance with all applicable electric or building codes.***

3) Number of Services and Meters

A) Newnan Utilities will connect only one service drop to a building or structure for each class of service except as permitted by the National Electric Code (NEC) or other applicable codes.

B) Newnan Utilities will install only one revenue meter per customer per class of service except as necessitated by NEC. Meter readings of two or more meters will not be combined for billing purposes except for certain applications as approved by a qualified Newnan Utilities employee.

4) Additions to Electric Services

A) Electric services and metering equipment are designed by Newnan Utilities to serve customer's load as it exists when connected to the distribution system; it is the customer's responsibility to notify Newnan Utilities in advance of any significant load additions.

5) Use of Electric Service by Customer

A) The customer's wiring and equipment should be maintained in condition required by relevant authorities and codes. Services will be used only in such a manner so as not to disturb Newnan Utilities service to other customers.

B) The customer must balance the load connected across each phase of the service or service buss as close as practical.

6) Liability for Service Interruption

A) Newnan Utilities will always strive to provide continuous, reliable service; however, Newnan Utilities does not guarantee that electric service will be free

from temporary interruptions and outages. These temporary interruptions of service shall not constitute breach of service obligations, and neither the customer nor Newnan Utilities shall be liable to the other for damages resulting from such temporary interruptions. Newnan Utilities will restore service as soon as it can reasonably do so.

In the event an interruption is caused by conditions on the customer's premises, Newnan Utilities will allow a reasonable period for those conditions to be corrected; ***Newnan Utilities reserves the right to disconnect the customer until conditions are corrected.***

B) The customer is advised to install appropriate protective equipment in situations where single-phasing, phase reversal, or temporary interruptions might cause damage to electrical equipment or shut down processes or product lines.

7) Connections Between Newnan Utilities and Customer

A) All connections between Newnan Utilities service and customer service entrance conductors and all connections at the secondary terminals of Newnan Utilities distribution equipment shall be made by Newnan Utilities.

## Inspection

Newnan Utilities is prohibited from making the final connection between the Newnan Utilities distribution system and the customer's wiring system until approval has been received from the City of Newnan. A five working day period for final connection should be expected once final approval and application for electric service has been received by Newnan Utilities.

**Note that the final inspection by the governing authority does not constitute acceptance by Newnan Utilities**; the final inspection assures that customer wiring meets pertinent provisions of the NEC or other applicable codes. Newnan Utilities uses the National Electric Safety Code (NESC) as a guide for service installations.

## Services

1) Overhead Services

A) Availability of types of service should be confirmed with Newnan Utilities Engineering before construction begins.

B) The point of connection between Newnan Utilities service drop and customer wiring should be located at a point convenient to both parties; however,

Newnan Utilities reserves the right to specify the point of connection. To prevent problems and delays, service points should be coordinated with Newnan Utilities engineering well in advance of service date.

- C) The point of connection must provide clearances as shown on the appropriate sheets in this book. The point of connection should not be more than twenty-five feet (25') above final grade unless necessary to provide required clearances.
- D) Customer shall provide the hardware necessary for attaching the service drop to the building. The customer is responsible for installing hardware in a secure manner.
- E) The grounded conductor of service entrance conductors shall be plainly marked, unless it is white, neutral gray, or bare.

2) Underground Services

- A) Availability of underground service should be confirmed with Newnan Utilities before construction begins.
- B) To prevent delays, underground fees and facilities charges should be paid well in advance of the required service date.
- C) A qualified Newnan Utilities employee shall determine the point of connection between Newnan Utilities service lateral and customer wiring.
- D) Pad mount transformers shall be located a minimum of ten feet (10') from the building and a minimum of eight feet (8') from any obstruction unless special permission is given by Newnan Utilities engineering. A ten feet (10') clear zone is required in front of the transformer to allow switching and maintenance by Newnan Utilities personnel.
- E) Before new electrical equipment is energized, all final inspections shall be obtained and application for permanent service shall be made at Newnan Utilities.
- F) The largest three-phase pad mount transformer that Newnan Utilities carries in inventory is a 2500 kVA. Special engineering and transformer ordering time must be considered for larger loads.
- G) Metering equipment shall be located on the outside of the customer's building or on an approved pedestal adjacent to the Newnan Utilities pad mount transformer. For multiple services, meters may be installed in an unlocked, fully accessible equipment room.

Meters and meter sockets **shall not** be installed on pad mount transformers.

- H) Instrument transformers shall be located outdoors, except for certain three-phase pad mount services as approved by Newnan Utilities engineering.
- I) For three phase underground services, the customer shall provide the secondary cable, conduit, metering conduit and bollards per Newnan Utilities specifications.
  - A) Newnan Utilities engineering shall be notified of secondary size and number of runs.
- J) Newnan Utilities will install underground single-phase services up to and including 400-amp services. Newnan Utilities installation of above 400-amp underground services will be governed by the appropriate reimbursement or facilities policy of Newnan Utilities.

### Provision of Meter Tampering

It is unlawful for any person without authority to intentionally damage or destroy any meter or metering equipment, or to prevent any meter from properly registering the service supplied by Newnan Utilities, or to divert or otherwise use without authority any service supplied by Newnan Utilities. Violators are subject to prosecution.

### Meter Installations at Secondary Distribution Voltages

- 1) General
  - A) Newnan Utilities will furnish, install, test and maintain adequate metering equipment to accurately measure the customer's use of electrical energy.
  - B) Metering equipment furnished by Newnan Utilities to be installed by the customer (meter sockets, etc.) will be supplied as complete units in good operating condition. This equipment is the property of Newnan Utilities, and shall be used only for metering Newnan Utilities customers.
  - C) Connections to all meters, instrument transformers or metering equipment which affects the accuracy of these devices shall be made by a qualified Newnan Utilities employee.
  - D) Non-current carrying metal parts of meter sockets and instrument transformer

cabinets shall be bonded to the service grounded conductor (neutral) in the enclosure. Grounding electrode conductors shall not originate in, pass through, or be attached to meter sockets or instrument transformer cabinets.

- E) Newnan Utilities owned meter sockets and instrument transformer cabinets shall not be used as junction boxes for the connection of branch circuit or feeder conductors, or for the connection of sub-sets of service conductors supplying separate service locations for the same or different premises.
- F) Where aluminum conductors are terminated in meter sockets or other Newnan Utilities owned equipment, inhibitor of the non-grit type shall be used in each conductor terminal and around the circumference of each conductor, including the grounded conductor (neutral).

2) Mounting and Labeling of Meter Sockets and Metering Equipment Cabinets

- A) Meter sockets furnished by Newnan Utilities are listed as surface mounted equipment and must be installed as such. No other method will be approved.
- B) To insure safety, accuracy, and reliability of service it is necessary that meter sockets and metering equipment cabinets be securely installed in level and plumb position.
- C) Meter sockets, instrument transformer cabinets, and conduit straps for underground service laterals shall be installed with:
  - 1) Lead anchors - in brick or solid concrete
  - 2) Toggle bolts - in other masonry or wood siding
  - 3) Wood screws - in 2" x 4" studs

All screws and bolts shall be 1/4" (minimum) stainless steel. A minimum of four (4) fasteners shall be installed on any socket or cabinet.

- D) The customer is responsible for furnishing and installing all boards necessary for mounting metering equipment on indoor installations. Such boards must be 3/4" exterior grade plywood.
- E) In order to avoid delays in providing service, for meter sockets installed on multi-unit buildings (apartments, condominiums, or commercial) **both the building and the building unit served must be accurately, clearly, and permanently labeled before meters are installed. Each meter socket position must be labeled on both the inside and outside surfaces with letters or numbers at least one inch (1") in height of a contrasting color.**



3) Metering Equipment Locations

- A) The preferred location for metering equipment is outdoors. For indoor installations, special permission must be obtained from Newnan Utilities engineering.
- B) Meter sockets and instrument transformer cabinets shall be located where they are readily accessible to Newnan Utilities employees.  
Meter sockets and instrument transformer cabinets shall not be located in coal or wood bins, sheds, attics, bedrooms, bathrooms, toilet rooms, kitchens, stairways, carports, patios, furnace rooms, basements where the only entrance is through a trap door, or in any location where there is less than six feet, six inches (6' 6") of headroom.
- C) Meter sockets and instrument transformer cabinets shall be located so the center will be between five feet, (5') and six feet, (6') above final grade level. These dimensions also apply with respect to the floor where special permission is obtained to locate the metering equipment indoors.
- D) For safety reasons, metering equipment shall be located so that Newnan Utilities and other electrical personnel are provided level, unobstructed working space. The width of the working space in front of all metering equipment shall be the width of the equipment or 30" whichever is greater. In all cases, the workspace shall permit at least a 90° degree opening of equipment doors or hinged panels. The depth of the working space in the direction of live parts shall not be less than 3' for 120/240V equipment and 3'6" for 240/480V and above. The height of this dedicated electrical space extends from ground/floor level to a height 3' above the metering equipment. No piping, ducts, or equipment foreign to the electrical installation, such as gas meters, water meters, Phone/CATV attachments, etc., shall be located above or below the metering equipment. (This does not prohibit grounding and bonding connections for Phone/CATV.)
- E) A clearance of at least six feet (6') shall be provided from machinery or devices having moving parts that are not physically isolated.
- F) Where special permission is obtained to locate metering equipment indoors, adequate lighting shall be provided to allow for safe installation, operation, and testing.
- G) Metering equipment shall not be installed in an enclosure within six feet (6') of the gas meter(s) unless separated by partition and separate entrances are provided for access to metering equipment and the gas meter(s).
- H) If it is necessary to locate metering equipment adjacent to a driveway,

walkway, parking lot or any location that will subject the meter to damage, special permission must be obtained from Newnan Utilities engineering, which will have the option to require the customer to furnish and install protective barriers or enclosures to prevent damage to the equipment.

- l) Metering accuracy is of utmost importance to Newnan Utilities and its customers. Therefore, Newnan Utilities engineering shall have the option to disallow any meter location Newnan Utilities determines may cause erroneous registration.

4) Metering Installations Where the Rating of Service is 400 Amperes or Less for Each Individual Position

- A) A standard self-contained meter socket shall be furnished by Newnan Utilities to be installed by the customer. In most cases an outside disconnect is required, this is provided by the customer. Only one conductor shall be permitted in each terminal of Newnan Utilities owned meter sockets.
- B) When more than one metering position is needed, as in apartments, gang meter bases shall be provided by the customer.
- C) These units must be installed to the following specifications:
  - 1) Six feet (6') maximum height above final grade level. Five feet (5') minimum height above final grade level.
  - 2) Two single-position meter sockets shall be used (rather than one two-position) whenever either of the following conditions exists:
    - A) The combined two-position load exceeds 200 amperes on an underground service location; or
    - B) Any of the service entrance conductors (line-side) are larger than 350 MCM aluminum or copper on an overhead service location.
  - C) Conduit for underground service laterals shall be two- and one-half inch (2 1/2") trade size.
- 3) Conduit for underground service laterals shall extend vertically downward twenty-four inches (24") below final grade level. The customer must extend the conduit below or beyond the concrete footing to provide a minimum of six inches (6") of clearance between the concrete and the conduit end.

- 4) Surface mounted conduit must be securely fastened to the wall within twelve inches (12") of the meter socket and six inches (6") of the final grade level. Conduit straps shall be fastened to walls with the same type fasteners as meter sockets.
  - 5) Inhibitor of the non-grit type must be applied to conductor terminals when aluminum conductors are used.
  - 6) For safety reasons, all meter positions shall be properly covered before the unit is energized.
- D) If a customer uses meter sockets not furnished by Newnan Utilities, they shall comply with the following specifications:
- 1) Customer purchased equipment shall be listed, and the label, symbol, or other identifying mark used by the testing laboratory shall be affixed to the unit.
  - 2) Each meter socket position shall be rated not less than the rating of the service equipment when used on single-family dwellings. When multi-position meter sockets are used on multi-family dwellings, each meter socket position shall be rated not less than the ampacity of the service or feeder conductors connected to the load-side of the socket position.
  - 3) Line-side connectors of meter-socket assemblies to be connected to Newnan Utilities owned underground service laterals shall be of the type approved by Newnan Utilities. The main buss of assemblies shall be rated not less than 100 amperes multiplied by the number of meter positions in the assembly and not more than 1000 amperes.
  - 4) Line-side connectors shall be designed, tested, and listed (UL486B) for the conductors (size and number) utilized in the assembly. Recommended torque values for all connectors shall be clearly marked in the compartment where the terminal is located. All conductors' strands shall be contained beneath the connector pressure device (set screw, pad, etc.).
  - 5) All meter socket jaws shall be spring reinforced.
  - 6) Ring type sockets must be equipped with Newnan Utilities approved screw-type sealing rings.
  - 7) Terminals for more than one conductor and terminals used to connect aluminum conductors must be of a type approved for that purpose.

Inhibitor of the non-grit type must be used on all aluminum wire terminations. Newnan Utilities will not terminate more than one conductor (Newnan Utilities owned underground service lateral) under one pressure device (set screw, pad, etc.)

- 8) Conductors carrying un-metered energy shall not be contained in the same compartment or raceway with conductors carrying metered energy.
  - 9) Units installed outdoors must be of weatherproof (NEMA Type 3R) construction. A unit is considered to be outdoors unless it is installed within the confines of the main structure of the building and totally protected from the weather. Units installed in metering rooms attached to a building will be considered outside unless the metering room is tied to the main structure of the building (as with T bars), has the same roofing as the building and roof flashing is installed.
  - 10) Multi-position customer owned meter sockets shall be constructed such that the line-side wiring compartment is separate from compartments housing service equipment or meter sockets and is accessible without having to remove any meter(s). Each individual meter position's cover shall be removable without having to remove any other meter(s) if the ring-less style covers are utilized in the assembly. The customer shall be responsible for all maintenance of meter sockets.
  - 11) All 400-amp meter bases shall have a load by-pass handle for installation and removal of meters.
- 5) Meter Installations Where the Rating of Service is Greater than 400 Amperes for an Individual Meter Position
- A) When the service entrance conductor ampacity is greater than 400 amperes, instrument transformers furnished by Newnan Utilities shall be used.
  - B) Instrument transformers may be issued to the customer for installation or installed by Newnan Utilities employees. When installed by Newnan Utilities employees, the customer may be required to install a device for the purpose of mounting the instrument transformer. A transformer rated meter socket shall be furnished by Newnan Utilities and installed by the customer.
  - C) The customer shall furnish and install a one-inch (1") trade size conduit from a point within two feet (2') of the instrument transformers into the meter socket or test switch cabinet.

- D) The maximum allowable distance from the meter location to the instrument transformers is one hundred feet (100'). A maximum of two (2) 90-degree bends or equivalent is allowed in each run of conduit. All conduit ends must be reamed to protect the meter control cable.
- E) Where Newnan Utilities metering instrument transformers are to be in the customer's switchgear, the switchgear manufacturer at the customer's expense shall install them. Such instrument transformers shall be installed ahead of all load and be in a separate compartment of the switchgear of each service. Each compartment shall be equipped with a hinged and sealable door and each compartment shall be located such that Newnan Utilities metering personnel will have clear and unobstructed access to the instrument transformers.
- F) On multi-unit buildings where a wiring trough is utilized in feeding several customers, and one or more of these customers is metered with instrument transformers, Newnan Utilities requires that a disconnect switch be installed by the customer and readily accessible to Newnan Utilities and on the load side of the instrument transformer cabinet(s). The disconnect device shall accept a Newnan Utilities lock. The purpose of this switch is to enable Newnan Utilities to disconnect and reconnect service to such customers without interruption of other customers fed from the same trough.
- G) Electrical services up to 400-amp may be self-contained and no instrument transformers will be used.

#### Meter Installations at Primary Distribution Voltage

1. Service at voltages greater than 600 volts is subject to special negotiations between the customer and Newnan Utilities. The meter and service installations for this type of service require special engineering consideration. Newnan Utilities engineering should be consulted well in advance of the time such service will be required so that necessary design and construction work may be properly coordinated, and equipment is available.

#### Motors

- 1) Single-phase, 115 V motors having a locked-rotor current less than 40 amps, and single-phase 230 V motors having a locked-rotor current less than 100 amps, may normally be started at line voltage without problems.
2. Single-phase motors having locked-rotor currents exceeding the limits in paragraph one 1) may require special service consideration, and Newnan Utilities engineering shall be consulted before purchasing or connecting such motors.

- 3) Because allowable locked-rotor currents vary at different locations, a qualified Newnan Utilities employee shall be consulted before connecting poly-phase motors to Newnan Utilities distribution system.

## **NOTES**

## Customer Service Agreement

Prior to installation of customer equipment, Newnan Utilities and the customer or customer representative, should thoroughly discuss the method of service, type and voltage of service required, location of service and any other relevant topics so that any problems can be eliminated before service is needed.

The following guidelines should be incorporated into design and construction of services and wiring systems.

### Guidelines

- 1) Customer, customer representative, or contractor shall submit (3) Three sets of site plans and digital site plan in dwg. or dxf. format.
- 2) Customer shall make an appointment with Newnan Utilities personnel to review site plans, point of service, metering requirements, temporary services, transformer requirements and locations, etc.

**Note: Newnan Utilities engineering department, shall approve any changes in construction or design.**

- 3) After required inspections have been completed, Newnan Utilities must be notified as soon as possible to avoid unnecessary delays. Newnan Utilities is required under Georgia law, to contact the Utilities Protection Center (UPC) 48 hours prior to any digging.
- 4) The site must be within 2" of final grade and free of any and all debris. The customer shall mark lot lines and driveways on the curb. This will insure that transformers, streetlights and secondary boxes designed and installed by Newnan Utilities are installed in their proper locations. Three phase transformer pads and curbs shall be poured and cured for a minimum of seventy-two (72) hours before Newnan Utilities will begin installation. Road crossing must be installed after curb is down and cured but before asphalt or concrete is installed which would prevent trenching.
- 5) In the event that more than 6" of dirt is removed from final grade Newnan Utilities must be notified. If it is determined that conduits, poles, wires, transformers, or junction boxes must be lowered or raised, the developer, builder or owner of the property will be responsible for all costs.

\_\_\_\_\_  
Developer, Builder or Property Owner

\_\_\_\_\_  
Date