



LAKE WORTH UTILITY (LWU)

1900 2ND Ave. N.

Lake Worth, FL 33461

Phone: 561-586-1665

"Your Hometown Service People"

ELECTRIC SERVICE HANDBOOK

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CONTACTS

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Review Areas: Electric Testing, Conversions, Installations

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Review Areas: Water and Sewer Installations

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Utilities - Customer Service

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Visit to: Apply for a new electric meter installation, water meter installation, or temporary construction hydrant meter

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Building Department

Building Permit Submittals 561-586-1644

DEFINITION

CIAC (Contribution in Aid of Construction) – If specific electrical service is required, the Lake Worth Utility (LWU), at the consumer’s request, will provide such service based on the estimated cost of installing such additional electrical equipment. This estimated cost will be payable in advance by the consumer to LWU. All services shall be subject to the applicable rules, regulations, and tariff charges of LWU, including service charges.

Commercial Service – For purposes of these Electric Service Standards, any electric service used for non-residential purposes.

Customer – Any present or prospective user of LWU’s electric service, or any person or entity representing him, such as the architect, engineer, electrical contractor, land developer, builder, etc.

Ground – A conducting connection between an electrical circuit or piece of equipment and the earth, or to a conducting body that serves in place of the earth.

LWU – Lake Worth Utility or an employee qualified to represent Lake Worth Utility

Meter Socket – A meter socket is a device which provides support and means of electrical connection to a watt-hour meter. It has a wiring chamber, with provisions for conduit entrances and exits, and a means of sealing the meter in place. The word “socket” in these Standards refers to meter socket.

Mobile Home – A mobile home is a factory assembled structure designed to be used as a living unit, and readily movable on its own running gear. It has no permanent foundation.

Multiple Occupancy Building – A unified structure containing five (5) or more individual dwelling units.

Point of Service – The location where LWU-owned conductors are connected to customer-owned conductors. Typical points of delivery include weather heads, meter sockets, service junction boxes, handholes, pad-mounted transformers. The point of delivery shall be determined by LWU. The point of delivery for an LWU owned and maintained underground residential service lateral is the line side of the meter socket, for an LWU owned and maintained overhead service drop the point of delivery is the attachment to the customer’s weatherhead.

Residential Service – Electric service supplied exclusively for domestic purposes in individually metered dwelling units, where permanent residency is established, including the separately metered non-commercial-use facilities of a residential customer (e.g. garages, water pumps, etc.).

Recreational Vehicle (RV) – A vehicle designated for temporary living quarters for camping, traveling, or recreational use. It may have its own motive power, or be mounted on or pulled by another vehicle.

Recreational Vehicle Park or Campground – An accommodation for recreational vehicles or other camping outfits where an individual site is rented, and the intent of the park or campground is not to establish permanent residencies.

Service – The conductors and equipment that deliver energy from LWU’s system to the wiring system of the premise being served. It also means maintenance of voltage and frequency (within acceptable tolerances) by LWU at the point of delivery.

Service Drop – The overhead conductors from LWU’s last pole or other aerial support to and including the splices, if any, connecting the Customer’s service entrance conductors at the building or other structure.

Service Entrance – The Customer’s installation from the service drop or service lateral connection to and including the service equipment.

Service Entrance Conductors – The Customer’s conductors from point of connection at the service drop or service lateral to the service equipment.

Service Lateral – The underground service conductors connecting LWU’s distribution system to the Customer’s service entrance conductors.

Temporary Service – Limited term electric service to operations such as: Exhibitions, Construction Projects, Fairs, Holiday Lighting, etc.

Underground Distribution – A distribution system where the conductors are buried with or without enclosing ducts. Newer systems are in conduit. Transformers, switches, and other equipment are normally above ground, or enclosed in vaults or other enclosures.

URD – (Underground Residential Distribution) – An underground distribution system, primarily supplying single phase, three (3) wire service laterals to residential dwelling units. Most conductors are buried and new systems are in conduit. Transformers and primary switches are contained in above ground pad-mounted enclosures.

-CALL BEFORE YOU DIG-

SUNSHINE 811

GENERAL INFORMATION

SCOPE

The scope of these electric service standards is to provide information to assist in the design and construction of electric service installations. Information is provided to address the responsibilities for ownership, installation and maintenance of service equipment to accommodate installation of utility owned overhead service drops, underground service laterals and the installation of Customer termination and metering facilities.

WORD APPLICATION

- A. **“Shall”** denotes a rule or mandatory requirement which shall be followed.
- B. **“Should”** recommends a desirable practice for a specific condition.
- C. **“May”** indicates a possible option.

CONTINUITY OF SERVICE

LWU’s goal is to provide continuous electric service, restore service promptly, and maintain its facilities with minimal inconvenience to Customers. LWU does not guarantee continuous service, standard voltage, or frequency at all times.

CODES AND RULES

LWU requires that all customer wiring installations meet the minimum requirements of the National Electrical Code, National Electrical Safety Code, DOT regulations, and/or state and local codes when their requirements are more restrictive.

- A. LWU reserves the right to refuse to extend service where a Customer’s installation does not comply with these provisions and requirements as stated. In case of service refusal, LWU shall inform the Customer of the reason for refusal to render service within one business day.
- B. LWU shall de-energize any service when that service is found to be in an unsafe condition.
- C. LWU reserves the right to refuse to extend service where a Customer’s installation does not comply with all the requirements of the Electric Service Standards Book.

ELECTRIC UTILITY FEE SCHEDULE

Temporary Electric Service Meter:	\$525.00 Non Refundable Fee
	\$230.00 Deposit
	\$35.00 Activation Fee
	\$17.00 Application Fee
Permanent Electric Service Meter:	\$230.00 Deposit per Account – Residential
	\$275.00 Deposit per Account – Commercial
	\$35.00 Activation Fee per Meter M-F 8:00 am – 5:00 pm
	\$17.00 Application Fee per Account

OTHER FEES

Service Pole Installation:	\$700.00 – Commercial, Residential ¹
Service upgrade / Relocation:	Fees are contingent upon the type of job to be performed, especially where additional materials and excessive man-hour are employed

¹ Residential customers are not required to pay the installation cost except where changes made contradict the normal route of the service drop.

APPLICATION FOR UTILITY SERVICE

All customers must make application for service.

Before proceeding with work or design which requires the installation or relocation of LWU meters and/service connections, Customers or representatives must contact LWU business office or Utility representative. The following information is needed:

1. Service Address
2. Construction plans/prints if available
3. Wiring permits

RESIDENTIAL CUSTOMERS

CHECKLIST TO SET UP NEW SERVICE

- COMPLETED APPLICATION
- LEASE / CLOSING PAPERS / DEED
- DRIVER'S LICENSE / LEGAL PHOTO ID
- FEES **(See p. 4)**

COMMERCIAL CUSTOMERS

CHECKLIST TO SET UP NEW SERVICE

- COMPLETED APPLICATION
- LEASE / CLOSING PAPERS / DEED / ARTICLES OF INCORPORATION TO INCLUDE AUTHORIZED CONTACTS
- DRIVER'S LICENCE / LEGAL ID
- FEES **(See p. 4)**

APPLYING FOR TEMPORARY ELECTRIC METER

- A. The contractor or property owner must complete an application for utility services at the Utility Customer Service (**See p. 2**). All utility services may be applied for on the same form. The meter request form may be obtained at the Utility Customer Service.
- B. Temporary services for Construction shall be set within 2 feet on the back of the electric pedestal.
- C. Call the Utility Customer Service (561-533-7300) when ready to have the meter set and the service connected. In most cases, service can be obtained the same day.
- D. The Electric Meter Department will set the temporary meter and will connect the service.

APPLYING FOR PERMANENT ELECTRIC METER

- A. Obtain an electrical permit and meter request form from the Utility Customer Service. The electrical permit must have the signature of the electrical inspector before you proceed.
- B. The Electric Engineering Department will determine the socket location on the building.
- C. For residential homes and duplexes, provide at least 24 inch deep trench from the location of the meter socket to the transformer/secondary pedestal and 2 inch PVC conduits. For commercial buildings, please refer to the electric meter standards available from the Electric Engineering Department. You must have the covers on the entrance panel and approval of the electrical inspector or the meter will not be set.
- D. Services above 200 Amps shall be referred to the Electric Engineering Department.

CONTRIBUTION BY CUSTOMER

Throughout these standards, references are made to customer Contribution In Aid of Construction (CIAC), whereby the customer pays for an estimate of the requested service. All final costs will be billed at the actual operating cost incurred during the design, material procurement, scheduling, and construction necessitated to complete the work. In all cases, ownership of the requested facility remains with LWU, and payments are required of LWU's construction, allowing for proper scheduling. Contact LWU Engineering Department concerning the "timing" of the payment. Withholding payment until the latter stages of a project's development may cause unnecessary delays and added expense to the Customer.

RIGHTS OF WAY AND EASEMENTS

The customer shall furnish and record satisfactory rights of way and easements, including legal descriptions of such easements and all survey work associated with producing legal descriptions of such easements, as required by and at no cost to LWU before LWU commences construction. Before LWU starts construction, these rights of way and easements shall be cleared by the customer of trees, tree stumps and other obstructions that conflict with construction, staked to show property corners and survey control points, graded to within six inches of final grade, with soil stabilized. In addition, the customer shall provide stakes showing final grade along the easement. Such clearing and grading shall be maintained by the customer during construction by LWU. When building additions to existing structures, care shall be taken not to encroach upon LWU's easements. Violation of LWU's granted

easements may result in legal consequences to the building owner. LWU should be contacted early in the design and planning stage in order to determine if changes to LWU’s existing easement are required.

SERVICE VOLTAGES AND MAXIMUM AMPERAGE (600 VOLTS OR LESS)

Standard (600 Volts or less) service voltages provided by Lake Worth Utility (LWU) are listed below. (Not every voltage is available at every location).

MAXIMUM SERVICE ENTRANCE AMPERAGE			
TRANSFORMER	POLE-MOUNT	POLE-MOUNT	PAD-MOUNT
SERVICE	OH	UG	UG
120/240V-1Phase	400 ¹	400 ³	400 ¹
120/208V-3Phase	1200 ^{2,4}	400 ³	3000 ^{2,4}
277/480V-3Phase	400 ¹	400 ³	3000 ^{2,4}

SUPERSCRIPTS:

1. 400 Amp Continuous Duty service or 600 Amp Intermittent Duty Service, limited by loading on 75 kVA transformer.
2. Continuous Duty Service
Service entrance equipment listed as “Continuous Duty” may be operated at its full load for 3 hours or more. Those listed as “Intermittent Duty” may only be operated at 80% of its full load for long periods, and 100% of full load for short periods, depending upon its design.
3. Limited by loading on 3-75 kVA transformers. Maximum size overhead bank built.
4. Limited by loading on the largest available Pad-Mounted Transformer for the service voltage being utilized”, in that case 1500 kVA...

Alternating current, 60 Hertz, single phase, 3-wire service at approximately 120/240 volts is normally available for general use. Single-phase 2-wire service at approximately 120 volts or 240 volts is available for service to traffic signal, billboards, etc.

LWU will provide one voltage to each service location.

The following voltages may be available or may be furnished where load conditions warrant. The selected service voltage will be mutually agreed upon by the Customer and the Electric Utility.

- Single-Phase, 120/240 volts Overhead or Underground Three-Phase, 3-wire Delta, 240 volts line-to-line, Overhead only.

- Three-Phase, 4-wire Delta, 240 volts line-to-line, 120 volts, line-to-neutral, Overhead only
- Three-Phase, 4-wire Wye, 208 volts line-to-line, 120 volts line-to-neutral, Overhead and Underground
- Three-Phase, 3-wire Delta, 480 volts line-to-line, Overhead only
- Three-Phase, 4-wire Wye, 480 volts line-to-line, 277 volts line-to-neutral, Overhead and Underground

Voltages higher than those listed above may be available where load and supply conditions warrant.

The above items are generally standard, but not all voltages are available at all areas within the operating areas. For information regarding the availability in a given area the customer should contact the Electric Utility Engineering Department.

NOTES:

1. All services are intermittent duty unless stated otherwise.
2. All services have grounded neutral conductor.

TYPES OF ELECTRIC SERVICE AVAILABLE

- Overhead service available ONLY from overhead facilities
- Underground service taken from overhead facilities (may not be available in all areas)
- Underground service taken from underground facilities

Primary and Secondary services will be installed in accordance to Lake Worth City Ordinance Article VII, Utilities to be underground.

The customer should contact the Electric Utility Engineering Department concerning availability and applicable costs of service.

NUMBER OF SERVICES

LWU provides each parcel of land or property with only one service supplied by one overhead service drop or underground service lateral to a building, or structure located on a non-contiguous parcel of land or property.

Additional services may be permitted with approval from the Electric Engineering Department and if the following exception requirements have been met. **(See p. 10)**

Customers adding electric load in an existing building shall connect this load to the existing service entrance. This may require the customer to increase the capacity of the existing service entrance. LWU will increase its service capacity if necessary.

A. Primary Service

1. When a property is served at a primary distribution, the single service to the parcel of land rule applies. A second service at a transformed secondary voltage is not allowed with the exception of a fire pump service.
2. **Primary Service Exception (For Existing Primary Service Customers ONLY)**
A separate secondary voltage service may be provided for supplying fire pumps, or emergency systems, when the general service is at primary voltage.

B. Secondary Service

1. Definitions

- a. **“Building”** is defined, “a structure which stands alone or which is separated from adjoining structures by fire walls. Check with local building inspector when there are questions as to whether the building in question is a single building or classified as more than one building.
- b. **“Structure”** other than a building is defined as a substation, pole, pedestal, vault, pad-mounted switchgear, or other structure specifically approved by LWU.

2. EXCEPTIONS

LWU engineering shall specifically approve any exceptions for multiple services.

a. Distance Exceptions:

1) Buildings

A building or other structure shall be supplied by only one electrical service.

For buildings of large area, a second building or remote structure, a second service may be provided at any available secondary voltage. The new service shall be located 150 ft. from the existing 120/240 Volt service, or 120/208 Volt 3-phase service. If either the existing or the new service is 277/480 Volt, 3-phase, a 300ft. separation shall be maintained.

2) Structures

Service may be installed on multiple structures provided that they are no closer than 300 ft. apart, (measured in a straight line) and provided that all electrical wiring supplied by each service has no common connection with any other service.

CUSTOMER ENTRANCE FACILITIES

The Customer shall furnish, install, and maintain the entrance and entrance equipment including service switches, fuses, breakers, cabinets, necessary wiring, etc. The Customer shall install a LWU approved meter mounting panel or LWU 3-Phase furnished meter socket. The Customer shall not use the meter socket or cabinet as a junction box for the wiring.

INCREASE IN LOAD

It is essential that the Customer or Customer's representative notify LWU of any pending sizeable increases in electric load. Upon notification the Utility will inspect its electrical system to ensure that adequate capacity is available to service the increased load.

RELOCATING EXISTING FACILITIES

The Customer or Customer's representative shall notify LWU Engineering Department in advance of any work that requires the relocation of LWU equipment. The Customer will be advised of the cost of their relocation. Relocation costs will be paid in advance of LWU work.

WIRING ADEQUACY

Installation by the Customer of wiring capacity greater than the minimum National Electrical Code requirements is strongly recommended. Not only does adequate wiring provide all the comforts of electric service, it also protects the building investment.

INSPECTIONS AND MAINTENANCE

In areas where electrical inspectors are provided, the inspector is the Authority having Jurisdiction (AHJ) on all issues dealing with Customer owned electrical wiring facilities.

In the cities or county which have an ordinance requiring inspection of the wiring on the Customer's premises, written approval of the wiring will be received from the City of County Electrical Inspector before the final connection will be made by LWU.

ELECTRICAL INSPECTIONS AND CONNECTION OF SERVICE

When a Customer's electrical installation has been completed, it shall be inspected by the local electrical inspector to ensure compliance with the National Electrical Code and such local rules that may apply. LWU cannot energize new service installations until such inspection has been made, and until formal notice from the inspecting authority has been received by LWU.

SERVICE CONNECTIONS

LWU will make all service connections to its electric distribution system. Connection to or alteration of LWU service facilities or other equipment is prohibited and is subject to immediate disconnection.

IDENTIFICATION OF CONDUCTORS

- A. The neutral or grounded conductor of a service entrance (480 V and under) shall be identified by a white or gray color/tape, or by three continuous white stripes on other than green insulation along its entire length.
- B. On 4-wire, delta connected secondary, where the midpoint of one phase winding is grounded to supply lighting and similar loads, the phase conductor having the higher voltage to ground shall be identified by an outer finish that is orange in color, by tagging, or other effective means. Such identification shall be placed at each location where a connection is made if the grounded conductor is also present.

CAPACITY

- A. The customer shall give LWU reasonable notice of substantial load increases (permanent or temporary) which may require LWU to increase the capacity of its facilities. Customers who fail to notify LWU will be charged for the replacement cost of the damaged LWU equipment.
- B. The rating of the service disconnect is to be not less than the calculated load to be carried and not the actual load carried.

CHANGES TO CUSTOMER'S EXISTING SERVICE ENTRANCE EQUIPMENT

- A. When the Customer is changing the ampacity of their service disconnect(s), they must meet the current version of the NEC Book.
- B. When the Customer modifies their service in any way that requires them to adhere to the current NEC Book.

LWU EQUIPMENT ON CUSTOMER PREMISES

- A. The customer shall grant LWU the right to install its equipment on the Customer's premises to supply service. All such equipment shall remain LWU property and may be removed when service is no longer required.
- B. LWU shall have the right of access to its equipment located on customer premises for inspection, maintenance, restoration and removal of service. The Customer shall provide without cost to LWU the necessary easements and /or right-of-way for LWU personnel to install, maintain, and access to electric facilities on the Customers property, that provide electric service to the Customer. This will include permission to trim and/or remove trees and brush that may interfere with the installation and operation of LWU facilities.
- C. Customers are expected to take reasonable care of LWU equipment located on their property. Customers will be responsible for all damages to or loss of LWU property located on their premises unless damage is by causes beyond their control. The Customer shall not grant authority to anyone who is not an employee of LWU to open or operate LWU equipment.

CUSTOMER INSTALLATION

- A. The customer installs, owns and maintains the service entrance equipment, and provides a secure location for holding service wires and service entrance equipment to the building or structure. All service entrances shall include a service disconnecting means, over-current protection and LWU approved metering equipment located in the vicinity of where electric service is supplied to the building or structure. The conductors will extend a minimum of 36 inches beyond the service weather-head to permit connection to LWU's service drop wires (**See Fig. 3**). LWU limits the number of customer conductors per service to three per phase (i.e. – 4 weather-heads with one conductor per phase; or 2 weather-heads – one with parallel conductors and one with single conductors; or 1 weather-head with three conductors per phase where allowed by code).
- B. The service entrance weather-head shall be above the service drop attachment. If this is impractical, the weather-head shall not be farther than 24" from the point of attachment.
- C. The National Electric Code (NEC) states where the service disconnects may be located.

TEMPORARY SERVICE (See Fig. 11)

GENERAL

Temporary service is usually a limited term service to installations such as fairs, exhibitions, construction projects, displays and similar projects. Contact LWU regarding availability and applicable installation and removal charges before installing the temporary facility. These nonrefundable charges are paid **in advance** of LWU's construction.

- A. A service application is required for all temporary services. LWU will approve the location of all temporary service requests.
- B. Temporary services will have an active duration of no more than 1 year.
- C. When the customer no longer requires the temporary service LWU shall be notified to disconnect from the customer's facilities.
- D. When a temporary service is furnished the entire expense for installation and removal will be done at the customer's cost, in addition to the energy usage costs.
- E. Customer-owned temporary service entrances are not permitted on LWU owned poles.
- F. For large capacity, three phase, and primary temporary services, the customer shall submit specific proposals for LWU approval. These proposals will be submitted to Electric Engineering Department.

Temporary service is defined as a single-phase electric service supplied to a construction site. Construction of residential homes, apartment complexes, commercial and small industrial business would normally require a single-phase temporary service. The temporary service may be outside or within the corporate limits of a city. Three-phase services are also available where required.

The location of the meter for temporary service will be such that the service drop conductors to the meter location do not cross adjoining property.

LWU will refuse connection to any temporary service structure that fails to be in a proper location, have the proper height, strength or grounding.

For a temporary overhead service, the Electric Utility will provide one span of service drop conductor and the meter. The Customer or contractor will provide a pole, pedestal, the meter socket or other approved support with proper anchoring. The pole or pedestal will also contain service entrance conductors, fuse/breaker protection, grounding conductors and devices. All installations will be weather-tight and all circuits will have ground fault interrupters (GFI).

For a temporary underground service LWU will provide the service drop conductors and meter. The Customer will provide a meter socket, temporary pedestal at the property line near a transformer or secondary distribution source. LWU will provide a temporary service at the permanent structure if the underground service can be installed permanently. The temporary service pedestal will be located within 10 feet of the final meter location.

NOTES:

1. Customer pole shall maintain minimum 10' horizontal separation from LWU facilities.
2. Attachment point 6" – 12" below weather-head.
3. Services shall not be installed across public streets, roads, railroad tracks, or driveways.
4. Panel boards shall be marked as suitable for use as service entrance equipment. Panel boards with more than two single pole breaker positions require a main disconnect (breaker).
5. Panel boards and installed breakers shall be rated for a minimum of 22,000 amperes of fault current if located within 35 feet of a 50 Kva transformer or 100 feet of a 100 Kva transformer.

POWER QUALITY

LWU provides electric service to its customers that meets or exceeds all industry standards. In some instances such as major storms where lighting, high winds or other adverse conditions occur, LWU electrical system may experience momentary outages and/or voltage spikes. In such cases where electrical service is interrupted and /or voltage spikes occur whether for fraction of a second or for hours, it is the customer's responsibility to install the necessary protective device on equipment such as computers, motor controller and electronic type equipment.

GROUNDING

LWU requires that all wiring systems connected to the Electric Utilities line be effectively grounded accordance with the requirements of the NEC and the applicable state and local codes.

Metallic Grounding is required as follows:

- A. A grounding electrode shall be installed consisting of a driven copper-weld rod (1/2" X 8' minimum). The grounding electrode should be sized according to code and located a minimum of 3' to either side of an underground services conduit to avoid being damaged by digging. This grounding electrode shall be connected to the meter socket.
- B. If a metallic underground water piping system exists, either local or supplying a community, it shall be bonded to the main fuse or breaker box. A jumper must be installed around the water meter to insure continuity of the ground system.
- C. *Grounding to a gas system is prohibited.*

STANDBY ELECTRIC ENERGY SOURCE

LWU will permit the use of standby electric energy sources. Transfer equipment for shifting load from one source to the other shall open all ungrounded conductors or the main source before connection is made to the standby source. This is necessary to prevent damage of injury to LWU property or personnel.

ALTERNATE POWER PRODUCTION FACILITIES

Refer to Net Metering Policy as applicable

OVERHEAD SECONDARY SERVICE

ATTACHMENT OF SERVICE DROPS

- A. The customer's structure shall be strong enough to support the service drop and high enough to provide code clearance for the service drop and drip loops above the ground, buildings, driveways, roads and other facilities.
- B. For connection to LWU service drop wires, the customer's service entrance conductors shall project at least 36" beyond the weather-head for a single service riser **(See Fig. 2)**.
- C. Neutral conductors are to be identified as Per the NEC.
- D. A maximum of three (3) conduit risers will be allowed at the building or structure.
- E. The maximum height LWU will attach a service drop to a building is 21 feet above the ground. If a greater attachment height is required, prior approval shall be obtained from the Electric Engineering Department **(See Fig. 3)**.

SERVICE MAST CONSTRUCTION

- A. Service masts for support (through the roof) shall be constructed of rigid galvanized steel (RGS) conduit with an inside diameter of no less than two inches. Immediate Metal Conduit (IMC) is not acceptable for galvanized steel conduit through the roof.
- B. The portion of the mast above the uppermost conduit support (roof line) shall be continuous in length without couplings **(See Fig. 1)**.
- C. Service masts shall not extend more than 6 feet above any sloped roof. This height is measured from the point where the conduit exists in the enclosed portion roof to the top of the weather-head. They can however extend to more than 6 feet above a flat roof where a ladder can be safely used.
- D. Only power service-drop conductors shall be permitted to be attached to a service mast.

NOTES:

1. The customer shall consult LWU before such an installation is planned or started.
2. The customer shall install, own and maintain the installation except for LWU service drop, connectors and cable dead-end.
3. The customer shall consult with LWU for the service cable tensions and provide a structure of adequate strength. The installation shall provide adequate clearances for the LWU's overhead service drop.

MAXIMUM HEIGHT OF WEATHERHEAD ABOVE SUPPORT ON AN UNGUYED SERVICE MAST

Type of Conduit Material	Conductor Size	SERVICE DROP LENGTH	2" Conduit	2 ½" * Conduit	3" * Conduit
Rigid Galvanized Steel (RGS) Conduit	#2 Aluminum Triplex	30'	6'-0"	8'-0"	8'-0"
		40'	6'-0"	8'-0"	8'-0"
		50'	5'-10"	8'-0"	8'-0"
		60'	5'-1"	8'-0"	8'-0"
		70'	4'-7"	7'-6"	8'-0"
		80'	4'-1"	6'-8"	8'-0"
		1/0 Aluminum Triplex	30'	6'-0"	8'-0"
	40'		6'-0"	8'-0"	8'-0"
	50'		5'-0"	8'-0"	8'-0"
	60'		4'-4"	7'-2"	8'-0"
	70'		3'-11"	6'-4"	8'-0"
	80'		3'-7"	5'-8"	8'-0"

***Service masts cannot extend more than 6 ft above any sloped roof regardless of the slope. They can however extend to more than 6 ft above a flat roof where a ladder can be safely used.**

UNDERGROUND SECONDARY SERVICE

GENERAL

- A. The underground service lateral is defined as underground (single phase services only, 120/240 volt) service conductors from the last pole, pedestal, transformer or other structure, connecting to the customer's metering point, termination equipment or disconnecting device. LWU will install, own, and maintain the underground service laterals in accordance with LWU applicable tariffs and extension rules.
- B. LWU will not terminate service lateral conductors inside the customer's building or in customer owned switchgear. The termination point shall be outside the customer's building in either free standing or wall mounted equipment, (self contained meters, Ct cabinets, or a termination box). LWU will not terminate on a customer's circuit breaker.
- C. The customer shall make application to LWU for underground service and obtain approval for the service location before installing service entrance equipment. The customer shall install, own and maintain all service entrance facilities other than the service lateral, meters, instrument transformers, and instrument transformer wiring.
- D. LWU will install a service lateral when the proposed cable route is clear of all obstructions and within 6 inches of final grade. The customer shall clear a 10 foot wide cable route of trees and other obstructions at their own expense.
- E. The customer will furnish and install trench and conduit from meter location to pole, pad-mount transformer or secondary service pedestal. For all service where conduit runs are greater in length than 20 feet the customer shall install a pulling string in the conduit at the time of the conduit installation. The conduit shall end at the base of the pole except in areas where utility trucks are not accessible, then a clearance of 9 inches maximum is permitted **(See Fig. 4 and Fig. 13)**
- F. The conduit shall be a minimum of 2 inches in diameter (*2 ½ inches preferred*) and a minimum depth of 24 inches to top of conduit. All conduits shall be gray in color, a minimum of Schedule 40, (Schedule 80 conduit required under all vehicle traffic areas).
- G. LWU will connect line side at meter and pole after approval by the Electrical Inspection Department.

LOCATION OF LWU SECONDARY VOLTAGE CABLES

A. Buildings and pools

LWU's cables shall not be located under buildings or pools. Inform LWU of plans for future buildings, pools etc.

B. Sidewalks, Hard Surfaced Parking Lots, Driveways, Patios and Decks

1. With approval from LWU, buried cables may be installed in conduit through these areas, if no other acceptable route exists.
2. With approval from LWU, a hard surface may be installed over the existing direct buried cable, provided a conduit with capped ends and tracer/pull wire(s), is/are installed 18-24 inches away and parallel to the existing cable, at a 24 to 36 inch depth.
3. Conduit is to be installed by the Customer. Conduits installed under concrete shall extend to 4 feet beyond edge.

SECONDARY METERING

METERING FACILITIES

- A. All residential meter sockets shall be a ringless type, have individual covers and LWU approved.
- B. Commercial meter sockets shall be ringless, equipped with a lever bypass, locking jaw, have individual covers, and LWU approved.
- C. All outdoor service cable connections to meter socket bases, meter enclosures or switches, shall be rain-tight. Service conductor termination fittings in metering equipment shall be screw-tightened construction.
- D. Meter sockets are required on all services with the exception of municipal street lighting and area lighting where LWU installs and maintains these facilities.

LOCATION OF METERS

- A. LWU shall approve the location of all meters and metering equipment. The metering equipment shall be accessible at all times to LWU representatives.
- B. All Residential, Commercial, and Industrial meter sockets, enclosures or cabinets shall be installed outdoors on a substantial building or structure. Any variance on this prerequisite requires pre-installation approval from the LWU Meter Department.
- C. All proposed metering locations must be approved by LWU prior to the start of the customer's construction. Metering for multiple occupancy buildings will be grouped in a location acceptable by LWU. When multiple locations are appropriate, the number of locations will be kept to a minimum.

METERING INSTALLATIONS

- A. The Customer furnishes and installs all meter sockets, ganged meter sets, instrument transformer cabinets, troughs, and other related metering equipment. LWU will provide all meters, instrument transformers, meter wiring, and secondary instrument transformer brackets for overhead services. The Customer will install the secondary instrument transformer brackets and the 1" galvanized rigid steel conduit for the meter wiring. The contractor shall coordinate the installation so the instrument transformers can be mounted on the bracket prior to the bracket being installed on the meter pole.
- B. Meter mounting devices shall be securely fastened to the supporting building or structure with rust-resistant fasteners. Certain structures may require the addition of a rust resistant reinforced mounting surface. Conduits and cables shall not be used to support wall mounted devices. In no case may sockets be installed where they will be exposed to mechanical injury, excessive dust, excessive moisture, corrosive vapors, or vibrations.
- C. Customer owned equipment shall not be installed in meter-sockets, instrument transformers and termination cabinets that are sealed by LWU.

CURRENT TRANSFORMER (CT) METERING

Installation of CTs in customer's switch cabinets is discouraged and will only be approved if no other location for the CTs is practical.

- A. The installation must be approved by LWU prior to the purchase of the customer's equipment.
- B. The CT compartment of the customer's switch cabinet must comply with LWU's specification for Customer Owned Instrument Transformer Cabinets, Equipment Enclosures and Junction Boxes.
- C. **All single phase services, 400 Amp or more/All 3-phase services, 200 Amp or more will require a CT**
- D. LWU will always provide and install the CTs used in metering the customer.
- E. Only LWU approved metering CTs will be used in metering applications.

MOBILE HOME AND RECREATIONAL VEHICLE (RV) PARKS

Individual electric metering by the utility is required for each separate occupancy unit (where the intent is to establish permanent residency) in trailer, mobile home and recreational vehicle (RV) parks for which construction was commenced after January 1, 1981.

LWU will supply service to these individual units provided the service entrances are properly wired and grounded in accordance with the National Electrical Code and local building codes, and the wiring is approved by the local inspector.

LWU's overhead service drop or buried service lateral may not terminate directly on a mobile home or recreational vehicle, but shall run to a pole or pedestal mounted service entrance provided by the Customer. The customer's service equipment is to be mounted on the load side of the meter socket. The wiring from the pole or pedestal to the Mobile Home or RV is also provided and installed by the customer.

For overhead service, a treated pole or equivalent shall be furnished to provide adequate support and elevation for LWU's service drop. Overhead service drops shall have 16 feet of clearance crossing over areas subject to mobile home or recreational vehicle movement.

If service is underground, an approved pedestal shall be furnished to support and protect LWU's cable and meter. If the Customer wishes to furnish and use a pedestal which combines the service equipment and the meter socket, he may do so only if he uses LWU's equipments. It shall be the Customer's responsibility to obtain authorization from LWU before any commitments are made to use this equipment at a particular location. There will be no charge to LWU.

Where individual electric metering is required, it is often advantageous for the Customer to group multiple meter sockets and service equipment on a single pole or pedestal **(See Figs. 7, 8)**.

The pedestal at grade line shall have a minimum cross-sectional dimension of 4" X 8". The fixed panel for the final grade and concrete pours shall extend 2" to 6" above grade and a minimum of 18" below grade. The pedestal shall extend 24" below grade. The Customer shall be responsible for the final grade of the meter pedestal concrete slab and the included meter pedestal. The minimum meter height shall be 42" (See Fig. 12).

CLEARANCES

MINIMUM CLEARANCES FOR SERVICES 300 VOLTS AND BELOW (See Fig. 9)

- A. 10-feet minimum to drip loops of triplex, if voltage to ground is less than 150 Volts.
- B. 1-foot minimum and 2-feet maximum horizontal, 6 to 12 inch vertical above or below service head and attachment.
- C. Exposed conductors shall be no less than 4-feet from window, doors, porches, fire escapes, awnings, signs and similar construction, when service is attached to building. The exposed service conductors shall be 4-feet from all sides except top of window. When the service conductors are attached above a window the drip loop shall not sag below the top of the window.
- D. 5-feet when wires pass opposite a window, where the service is attached.
- E. 2-feet from communication wires.
- F. 12-feet. If the height of building does not permit 12-feet, it can be reduced to 10.5 feet. If the voltage to ground is less than 150 Volts, it can be reduced to 10-feet.
- G. Center of meter 4 – 5 feet above finished grade.
- H. On buildings where service attaches, the vertical clearance over a porch or balcony shall be a minimum of 10 feet if the area is accessible. For inaccessible areas it may be reduced.
- I. When a door opens outward, mount the meter socket a door's width plus 6-inches on the hinged side away from the door opening. Don't mount the meter along high traffic passageways.
- J. A minimum horizontal separation of 4-feet shall be maintained between natural gas service equipment (vented regulators) and electric metering or termination equipment. Transformers shall have a minimum separation of 5-feet from natural gas service equipment. A minimum separation of 5-feet shall be maintained between electric metering or termination equipment and liquid petroleum facilities on site but not filled on site. If the liquid petroleum facilities are filled on site the minimum separation is 10-feet.
- K. 16-feet over a driveway may be reduced on residential only drives to 12.5-feet for insulated drops limited to 300 Volts to ground or 12.0-feet for triplex service drops limited to 150 Volts to ground.
- L. The horizontal clearance to buildings, signs etc. where services (at rest) pass but are not attached to the building at this location is 4.5-feet. If the drop meets the clearance may be reduced to 2-feet if the building is maintenance free. If the drop is subject to wind movement, then the horizontal clearance is 3.5-feet at blow out position.

- M. The clearances in **Fig. 10** apply except for triplex cables meeting which are 10-feet or more horizontally from the edge of the pool, diving platform or diving tower.

**MINIMUM CLEARANCES FOR SERVICES 300 VOLTS AND BELOW, OVER SWIMMING POOLS.
(See Fig. 10)**

LWU accepts a minimum horizontal clearance of 10 feet from its facilities to swimming pool edges or pool enclosures. However if certain conditions are met, including minimum vertical clearances, the National Electrical Safety Code (NESC) provides for less than 10 feet of horizontal separation. Costly relocations of existing services may become necessary if the Customer builds a pool too near LWU's electric facilities. Should there be any question of conflict between the location of a new swimming pool or pool enclosure and LWU's facilities; the Customer is to contact LWU before construction of the pool facilities to ensure required NESC clearances are met..

MINIMUM CLEARANCES FOR BUILDINGS NEAR POWER LINES.

For aerial distribution lines (66 Kv or lower), the minimum safety clearance distances depend on:

- The voltage
- Whether the conductor (power line wire) is bare or insulated
- Swing or sag of the power line due to wind, temperature and distance between poles
- Type of building or structure

In Lake Worth, the highest distribution voltage is 26 Kv. 10 feet Horizontally from parts of a building or structure normally accessible to people.

TELEVISION AND RADIO ANTENNAS, TOWER, ETC.

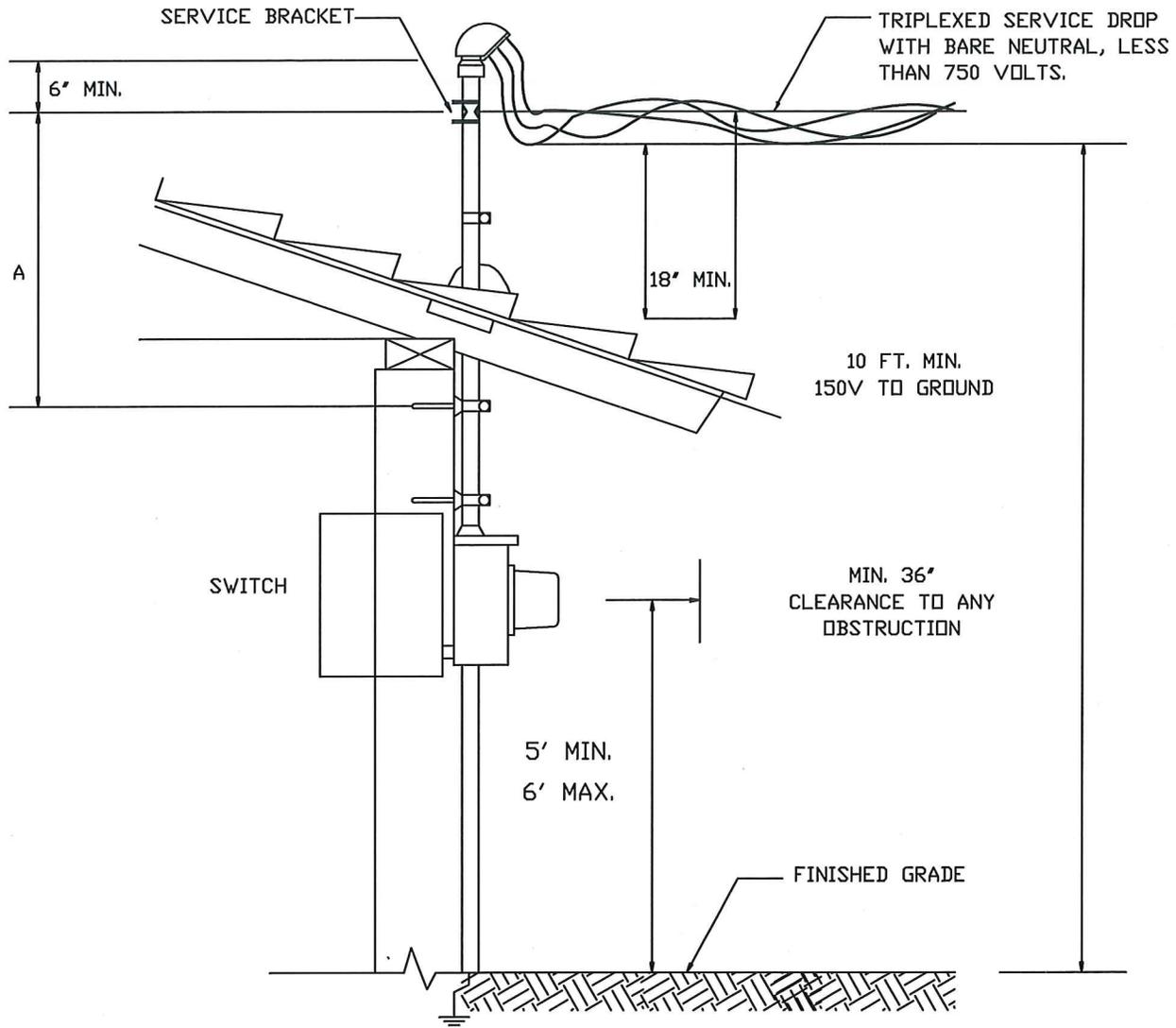
Television and radio antennas or other equipment owned or operated by the Customer shall not be attached to LWU poles, cross arms, lines, or other facilities.

When locating television and radio antennas, tower, flag poles or other structures, code clearances shall be followed to maintain proper distance from existing electrical facilities.

ILLUSTRATIONS

The following illustrations contain pertinent information regarding the installation and connection of overhead and underground services.

FIG. 1

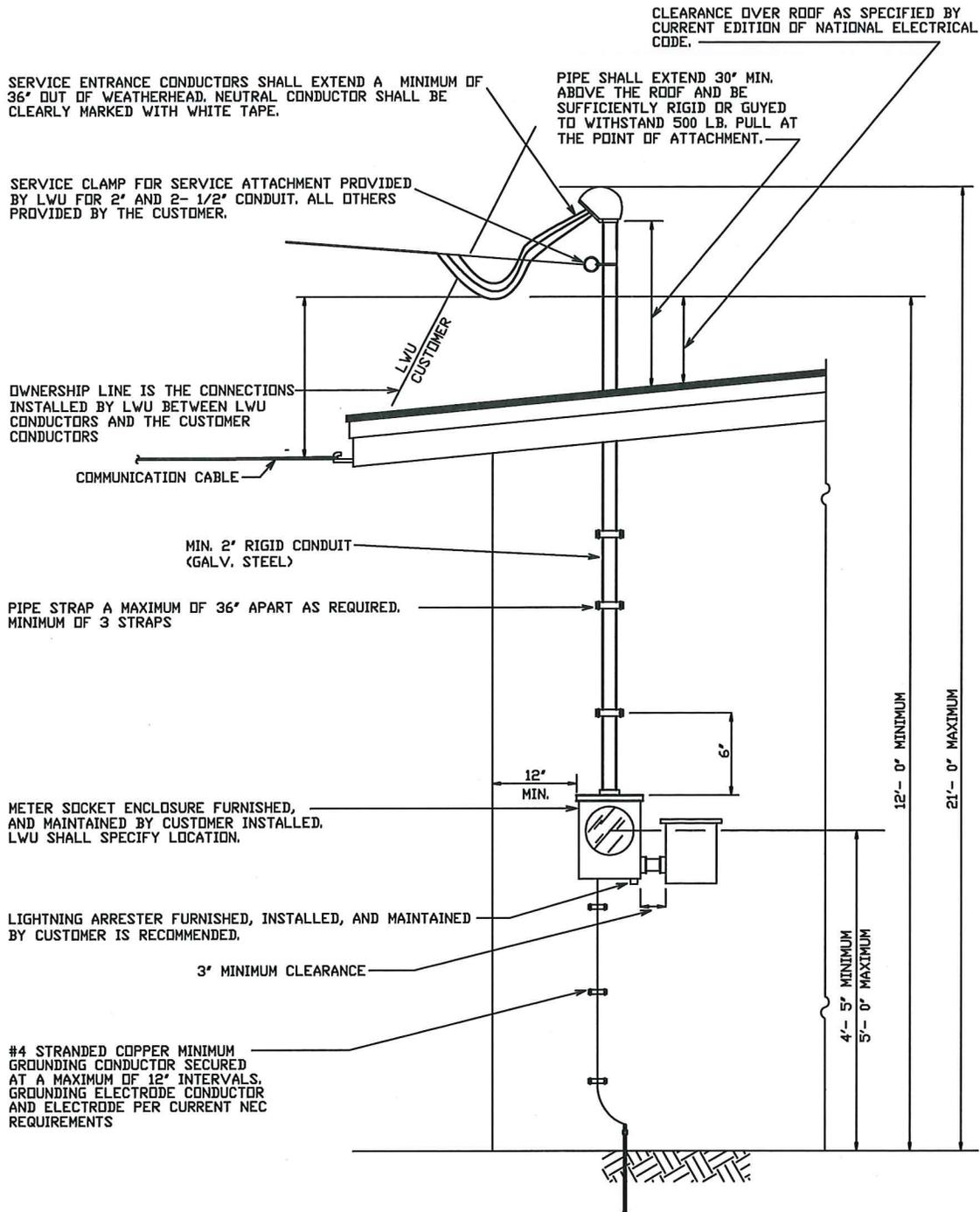


GROUNDING ELECTRODE PER CURRENT NEC REQUIREMENTS

MAXIMUM SERVICE BRACKET ATTACHMENT HEIGHT ABOVE LAST FIRM SUPPORT (A)	
DIA. (IN.)	RIGID METALLIC OR IMC (FT.)
2	2.5
2-1/2	4.75
3	7.66
3-1/2	10.66

*RIGID METALLIC SHALL BE PER ANSI C-80.1 AND SHALL BE HOT DIPPED GALVANIZED INSIDE AND OUT.

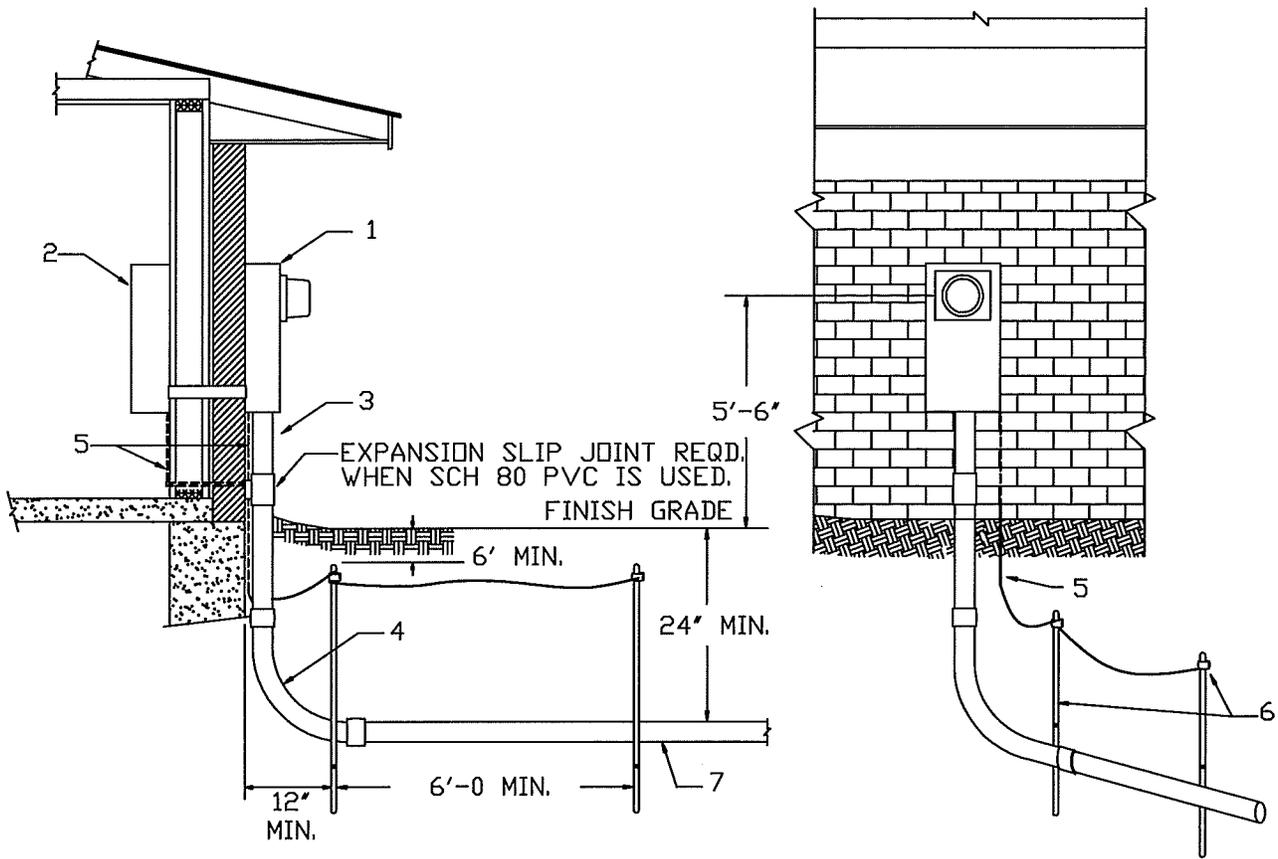
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- NOTES:
1. ALL NON RESIDENTIAL METER SOCKETS WILL BE BY-PASS TYPE.
 2. FOR WEATHERHEADS ABOVE 21 FEET, CONTACT LWU
 3. THE WORKING SPACE DESCRIBED IN ARTICLE 110.26 IN THE NEC SHALL BE PROVIDED FOR THE METER SOCKET ENCLOSURE.
 4. COMMUNICATION CABLES SHALL HAVE A MINIMUM CLEARANCE OF 12' TO THE NONGROUNDED POWER SUPPLY CONDUCTORS AT ANY POINT IN THE SPAN INCLUDING THE POINT OF ATTACHMENT. COMMUNICATION CABLES SHALL NOT BE ATTACHED TO THE SERVICE MAST. (2007 NESC 235 C 2 b. 1 a).
 5. A REDUCED CLEARANCE FOR INSTALLATIONS MEETING CERTAIN CONDITIONS MAY BE ALLOWED BY NATIONAL ELECTRICAL CODE.

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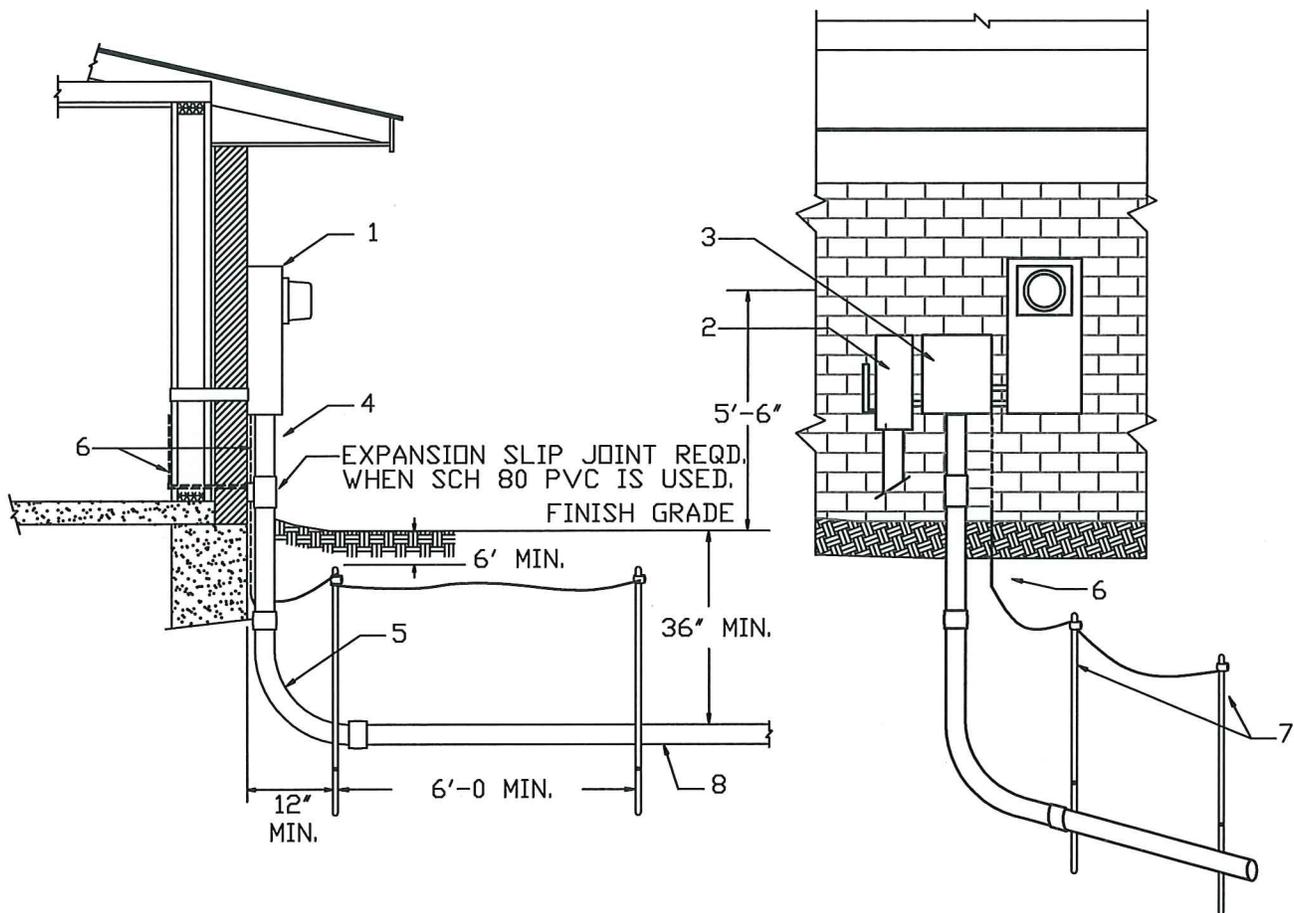
FIG. 4



ITEM	QTY.	MATERIAL
1	1	METER BASE PROVIDED BY CUSTOMER
2	1	MAIN DISCONNECT SWITCH
3	AS REQ'D.	2.5" SCH 40 OR 80 CONDUIT ABOVE GRADE
4	AS REQ'D.	SCH 40 OR 80 ELBOW (24" MIN. RADIUS)
5	1	NON METALLIC CONDUIT FOR GROUND WIRE
6	2	GROUND ROD, 5/8" X 8'-0 MIN. PER NEC.
7	AS REQ'D.	2.5" SCH 40 PVC TO ELECTRIC UTILITY SOURCE
8		

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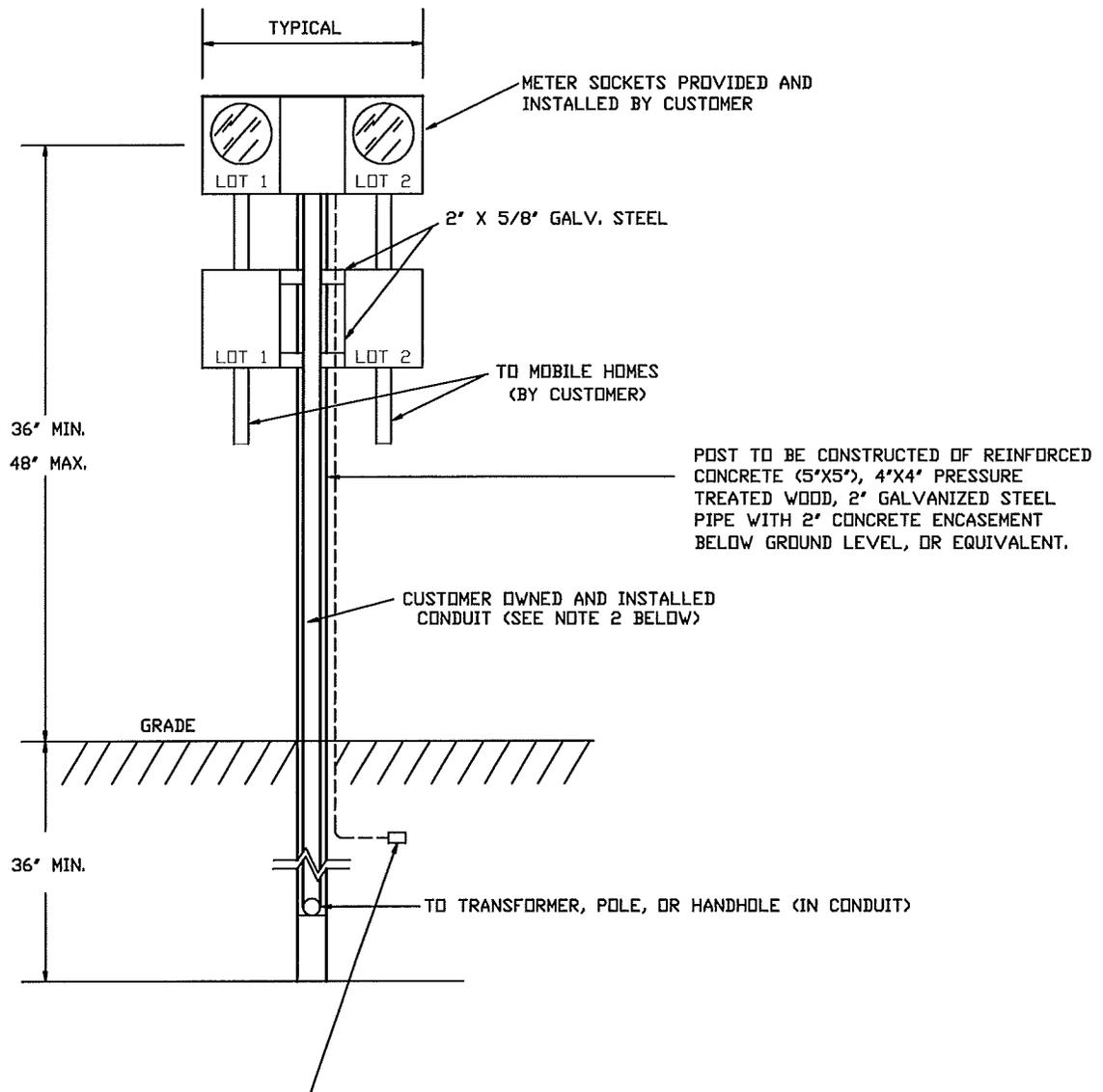
FIG. 5



ITEM	QTY.	MATERIAL
1	1	METER BASE PROVIDED AND INSTALLED BY CUSTOMER
2	1	MAIN DISCONNECT SWITCH
3	1	CT METER CABINET
4	AS REQ'D.	4" SCH 80 PVC OR GALV. RIGID STEEL CONDUIT ABOVE GRADE.
5	AS REQ'D.	4" SCH 80 PVC OR GALV. RIGID STEEL ELBOW. (24" MIN. RADIUS)
6	1	NONMETALLIC CONDUIT FOR GROUND WIRE.
7	2	GROUND ROD, 5/8" X 8'-0 MIN. PER NEC.
8	AS REQ'D.	4" SCH 40 PVC TO ELECTRIC UTILITY SOURCE

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FIG. 7



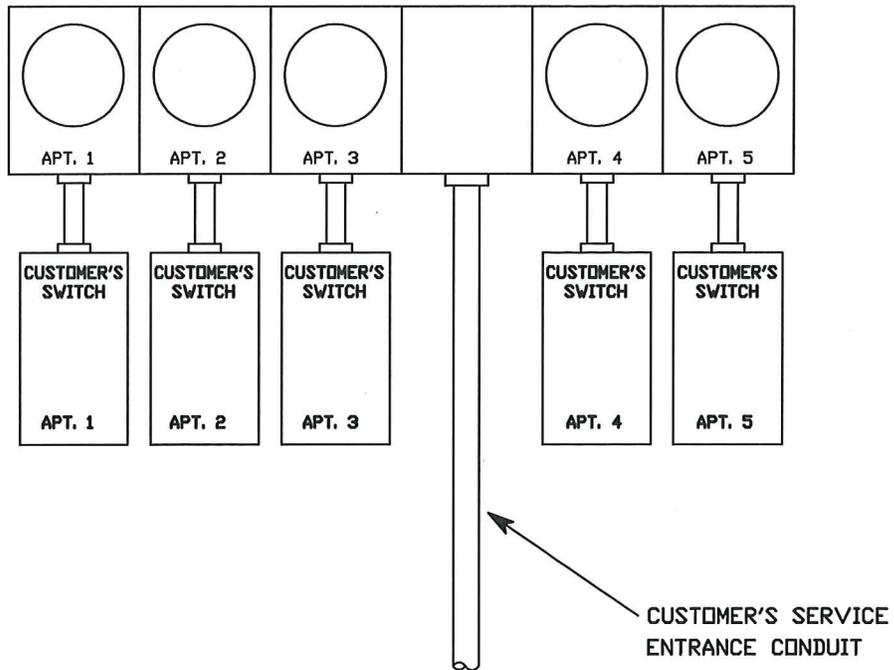
THE CUSTOMER MUST GROUND FACILITIES AS REQUIRED BY THE NATIONAL ELECTRICAL CODE AND APPLICABLE LOCAL CODES.

NOTES:

1. CUSTOMER MUST PERMANENTLY MARK METER SOCKET AND SWITCH TO INDICATE WHICH UNIT THEY SERVE.
2. WHERE LWU IS PROVIDING THE SERVICE LATERAL TO THE PEDESTAL.
3. WHERE LWU IS PROVIDING THE SERVICE LATERAL TO THE PEDESTAL, A MAXIMUM OF 4 UNITS IS ALLOWED PER PEDESTAL.
4. WHERE LWU IS PROVIDING THE SERVICE LATERAL TO THE PEDESTAL, LWU CONDUCTORS WILL TERMINATE IN CUSTOMER OWNED PEDESTAL (THEY'LL NOT BE LOOPED IN AND OUT OF PEDESTAL)

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REVISION RECORD										V.D. NO. FERC		SCALE: NTS													

IDENTIFICATION OF MULTIPLE METER SOCKETS.

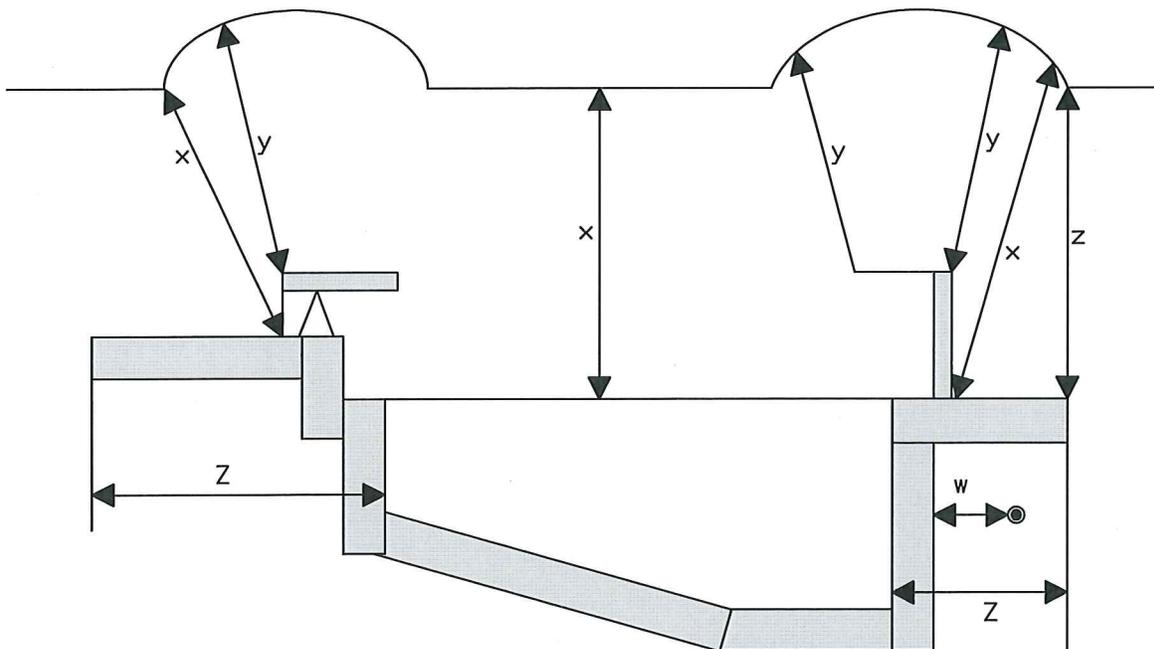


CUSTOMER TO MARK METER SOCKET AND SWITCH COVERS WITH PAINT OR OTHER PERMANENT DURABLE MARKER TO IDENTIFY PREMISES SERVED. MARKINGS SHOULD ALSO BE PUT INSIDE METER SOCKET (TO PREVENT CONFUSION IF COVERS ARE INTERCHANGED BEFORE SERVICE IS CONNECTED). IF LIVING UNITS HAVE DIFFERENT HOUSE NUMBERS, THESE SHOULD BE SHOWN IN PLACE OF APARTMENT NUMBERS. IT RATED METER SOCKETS (NOT ILLUSTRATED) SHOULD BE MARKED SIMILARLY.

5 4 3 2 1	•	•	•	•	•	•	•	•	•	TICKET NUMBERS	CITY OF LAKE WORTH UTILITIES		
	•	•	•	•	•	•	•	•	•	000000000	LAKE WORTH, FLORIDA		
	•	•	•	•	•	•	•	•	•	ISSUED 00/00/00	METERING EQUIPMENT MULTIPLE METER SOCKETS		
	•	•	•	•	•	•	•	•	•	EXPIRED 00/00/00			
	•	•	•	•	•	•	•	•	•	DESIGNED 04/25/10 JV			
•	•	•	•	•	•	•	•	•	APP'D 04/25/10 JS	DWG. NO.	DL	SHT. NO. 1 OF	
•	•	•	•	•	•	•	•	•	APP'D 04/25/10 JS	ENG. RECORD	W.D. NO.	FERC	SCALE NTS

FIG. 10

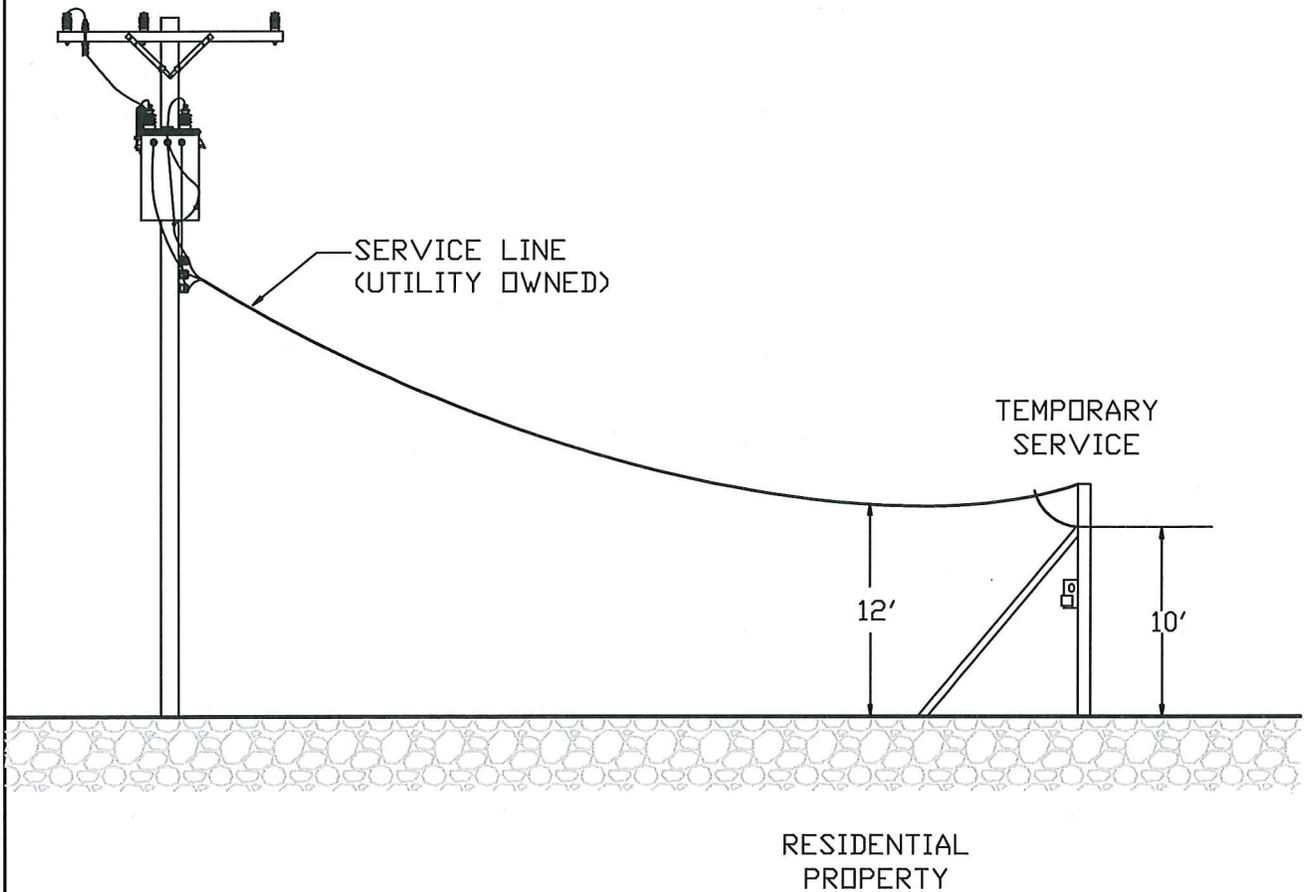
MIN. CLEARANCES FOR SERVICES 300 VOLTS AND BELOW, OVER POOLS.



	Insulated supply or service cables, 0 to 750V to ground supported on and cabled together with an effective grounded bare messenger or effectively grounded neutral conductor	All other supply or service drop conductors	Underground conductors
X- Clearances in any direction to the water level, edge or water surface, base of diving platform or permanently anchored raft bare messenger or	22.5-ft	25-ft	
Y- Clearance in any direction to the diving platform or tower	14.5-ft	17-ft	
Z- Horizontal limit of clearance measured from the inside wall of the pool	This limit shall extend to the outer edge of the structures and not less than 10-feet	This limit shall extend to the outer edge of the structures and not less than 10-feet	
W- Clearance from all underground conductors from the outside edge of the pool			5-ft

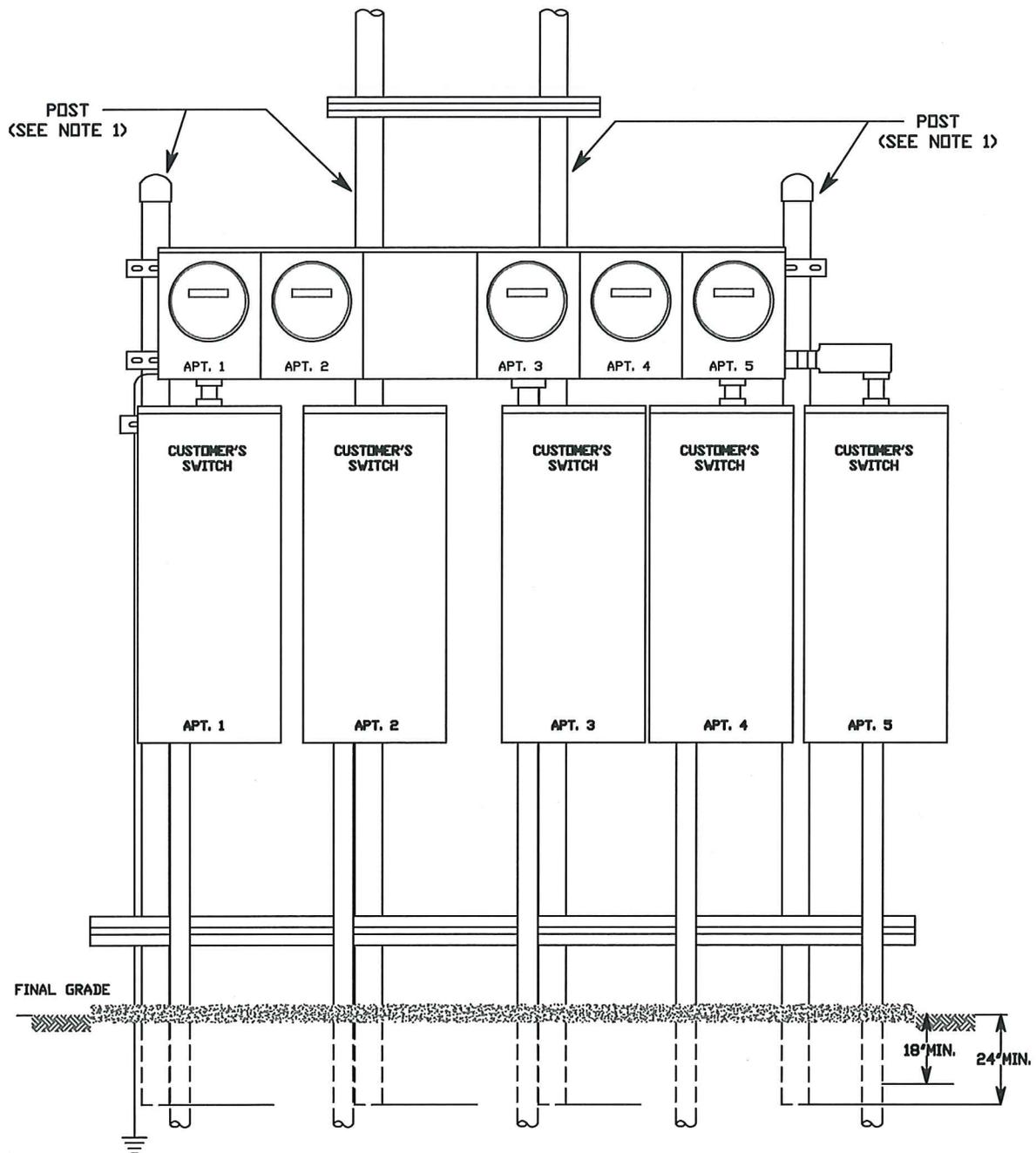
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FIG. 11



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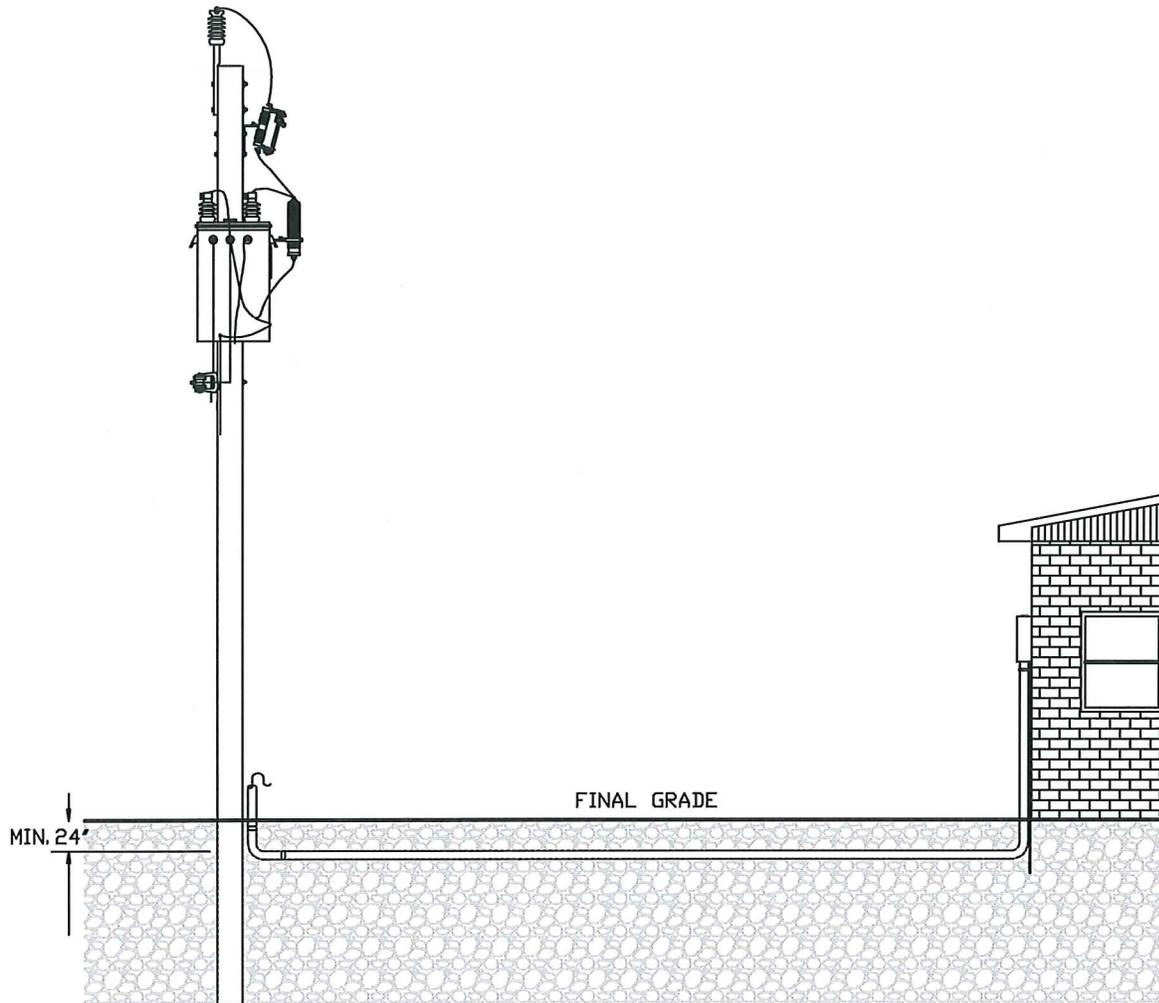
FIG. 12



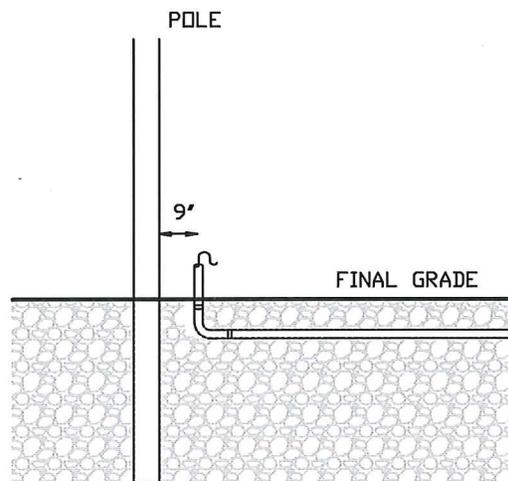
NOTES:

1. POST TO BE CONSTRUCTED OF REINFORCED CONCRETE (5' X 5'), 4' X 4' PRESSURE TREATED WOOD, 2' MIN. GALVANIZED STEEL PIPE WITH 2' CONCRETE ENCASEMENT BELOW GROUND LEVEL OR EQUIVALENT.
2. THE CUSTOMER MUST GROUND FACILITIES AS REQUIRED BY THE NATIONAL ELECTRIC CODE AND APPLICABLE LOCAL CODES.
3. CUSTOMER WILL INSTALL A SUFFICIENT NUMBER OF CONDUIT STRAPS TO PROPERLY SECURE CONDUIT TO POLE

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										APP'D	04/25/10	JS	
1	APP'D	04/25/10	JS	
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DRAWING "A"



DRAWING "B"

STOP CONDUIT WITHIN 9" OF POLE WHEN AREA IS INACCESSIBLE BY TRUCKS.

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