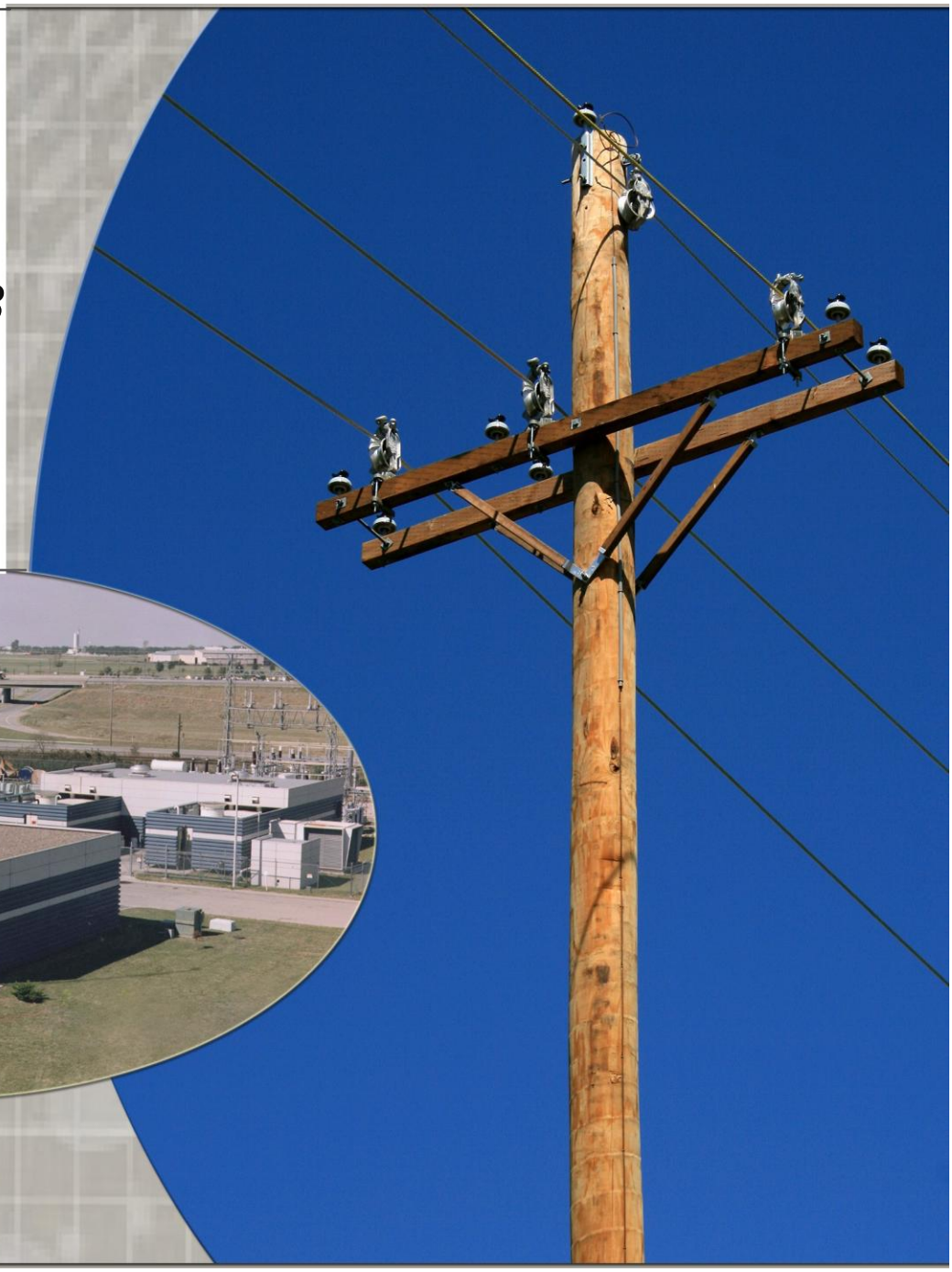
Electric Service Standards

Issued May 2013



GARDNER
KANSAS
Blazing New Trails

City of Gardner Mission Statement

City of Gardner will provide safe and reliable energy to our community at a competitive price while responding promptly to customer needs in a professional and courteous manner.

Electric Service Standards*

Information for use by customers, architects, engineers, contractors, electricians, employees, and those engaged in planning and construction of electric service and meter installations.

Revised: May 2013

For information on new or pending electric service connections, service alterations, electric energy pricing or electric service standards contact:

City of Gardner Utilities Department
1150 E. Santa Fe
Gardner, Kansas 66030
Phone: 913-856-0980
Fax: 913-856-7325

City of Gardner, Electric Distribution
1450 E. Santa Fe
Gardner, Kansas 66030
Phone: 913-856-0980
Fax: 913-856-0237

To report electric service interruptions	……	913-856-6802
To report emergencies	……	911
For utility billing, including start/stop service	……	913-856-7535
For permitting/planning	……	913-856-0913
For Public Works/Engineering	……	913-856-0959

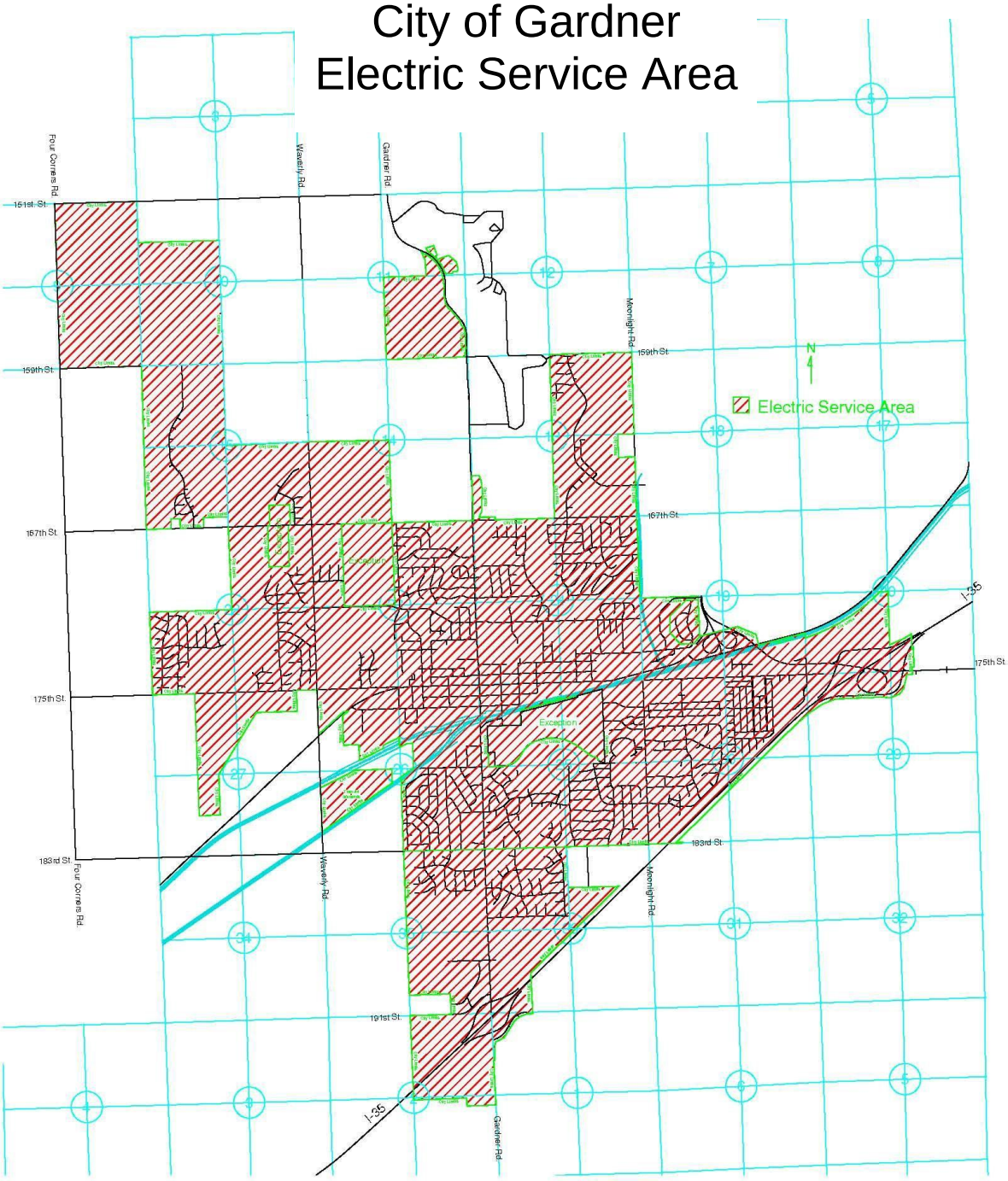
UTILITY ONE CALL SYSTEMS:

Pursuant to Kansas Statute 66-1801 all excavators must call in their own locates

Kansas
Call from within state……. 1-800-DIG-SAFE
Call from outside state…… 1-800-445-7802

*****This book is available on the web at *www.gardnerkansas.gov*

City of Gardner
Electric Service Area



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FOREWORD:

The City of Gardner, herein after referred to as the City, is a municipal public power provider.
The City is dedicated to helping its customers realize optimum value and utility from their electrical service. The City is committed to being responsive to both public input, and questions concerning power availability, and reliability.

To accomplish this, the City must effectively utilize its production and supply capabilities, while ensuring safe, reliable, and consistent service to all its customers. Experience has shown that uniform standards for installation, wiring, and system design are the best way to accomplish this goal. These Electric Service Standards (herein after referred to as "Standards") and its requirements are not intended to be restrictive or burdensome, but have been developed to assist in expediting service connections and establishing appropriate customer classifications for service and billing, while maintaining both system quality and safety.

These Standards have been reviewed and/or approved by the Gardner Utilities Advisory Commission.

It is, therefore, required that customers' wiring and installations intended for connection to the City's system comply with these Standards and the most current National Electrical Code. This booklet is offered to assist customers, architects, engineers, contractors, electricians, and inspectors in planning electric service installations. It is not intended to ensure adequacy and safety of the customer's own wiring and equipment or for safety and reliability to serve when customer load substantially increases subsequent to service origination. Such responsibility remains with the customer. The City of Gardner inspects the customer's wiring for compliance with requirements of electrical codes or regulations established by public entities.

Due to constant progress in the development of materials and methods, some procedures, outlined herein, may occasionally be modified. Upon request, information will be supplied concerning changes and revisions. Persons making regular use of this booklet should maintain contact with the City.

The City should be contacted about each installation as early as possible to provide time for necessary job inspections, scheduling, and proper coordination.

Where new electrical installations, additions, or alterations are contemplated, inquiry should be made in advance of design or purchase of equipment relative to current, voltage, location of point of delivery, and any necessary extension of the electric distribution system.

The customer is responsible for installing their service entrance equipment and meter socket at a location designated by the City. Failure to do so may result in unnecessary costs to the customer for service relocations and possible delay in providing service.

The impression generally prevails that compliance with the most current Electrical Code and state, county, or city ordinances or statutes guarantees to the customer a wiring installation complete and adequate for the full use of electric service now and in the future. Unfortunately, this is not always the case; the Code, ordinances, and statutes are designed to provide only the minimum requirements considered necessary for safety. The Code itself states, "This Code contains provisions considered necessary for safety. Compliance therewith and proper maintenance will result in an installation essentially free from hazard but not necessarily efficient, convenient, or adequate for good service or future expansion of electrical use."

Installation of wiring capacity should provide for the long range projected electrical needs of the customer. Complete adequate wiring provides the comfort of electric service, and also protects the customer's investment by minimizing obsolescence resulting from an inadequate wiring system.

SECTION I

GENERAL INFORMATION

100. This booklet is issued by the City as a guide for obtaining electric service and to set forth the services available, conditions for service, and the standards for materials and construction in the customer's entrance installation. It is not the purpose of the City to specify or limit the design of the customer's wiring or equipment in this booklet. The standards for materials and construction are necessary to safeguard all customers and to secure maximum use of the City's service and are the minimum under which the City will supply service. Nothing contained in the Standards shall require the City to install area feeder circuits underground or require existing facilities to be put underground.

101. The term "customer," when used herein, shall mean any person or business applying for, receiving, using, or agreeing to take a class of electric service supplied by the City under one rate schedule at a single point of delivery and for use within the premises.

A new subdivision customer is defined as a customer taking electric service who uses such electric service for single family, duplex, and multifamily dwellings which have been platted and recorded. It is the responsibility of the Developer to work thru the City of Gardner Community Development Department and the City Engineering Staff to ensure appropriate development of the area.

Other definitions:

- AWG . . . . . American Wire Gauge
- CONC . . . . . Concentric
- CT . . . . . Current Transformer
- GALV . . . . . Galvanized
- GFCI . . . . . Ground Fault Circuit Interrupter
- ID . . . . . Inside diameter
- IRC . . . . . International Residential Code
- KO . . . . . Knockout
- MCM, KCM, KCMIL . . . . . Thousand circular mils wire size
- NEC . . . . . National Electric Code
- NEMA . . . . . National Electrical Manufacturers Association
- NESC . . . . . National Electrical Safety Code
- OD . . . . . Outside Diameter
- P/L . . . . . Property line
- PVC . . . . . Polyvinyl Chloride
- RES . . . . . Residence
- USE . . . . . Underground Service Entrance

102. These standards are supplementary to and are not intended to conflict with the General Rules and Regulations on file with the Kansas Department of Health and Environment, the latest version of the National Electrical Code ANSI/NFPA 70, which has been adopted by the City of Gardner, the International Residential Code for One and Two Family Dwellings, the National Electrical Safety Code ANSI C2, and such state, county, and municipal laws, ordinances, and statutes as may be in force within the areas in which the City furnishes electric service. In the absence of appropriate regulation, industry standards, i.e., those of Underwriters' Laboratories, Inc. may be invoked.

103. These standards supersede all previous publications of Electric Service Standards issued by the City prior to this date and are subject to change without notice.

104. The City has representatives whose services are available to customers normally without charge. They endeavor to keep abreast of developments in safe and adequate practices in wiring which pertain to the most efficient use of electricity.

The City will consider requests for further information or to investigate difficulties arising from utilization. Customers should call upon the City any time they believe their knowledge and experience may be of assistance.

105. The customer shall give duly authorized agents and employees of the City, when properly identified, full and free access to the premises of the customer at all reasonable hours. This access shall be for the purpose of installing, reading, inspecting, adjusting, repairing, maintaining, replacing, or removing any of the City's facilities on the premises of the customer or for any other purpose incidental to the electric service supplied by the City. The cost to repair damage to customer property/facilities, as a result of necessary access by the City to its facilities, is the responsibility of the customer.

106. Each City employee whose duty requires access to the premises of a customer, is furnished clothing that displays the Utility's logo. The customer should deny admittance to anyone claiming to be an employee who is not wearing clothing with a City logo. Any uncertainty of identity or purpose should be reported to the City immediately at 913-856-0980.

107. The breaking of seals, tampering with meters, wires, or any other property of the City is prohibited and may be punishable by law.

108. The customer at all times shall protect the property of the City on the premises of the customer and shall permit no persons other than the employees and agents of the City. and other persons authorized by law to inspect, work on, open, or otherwise handle the wires, meters, or other facilities of the City. In case of loss or damage to the property of the City. due to carelessness, neglect, or misuse by the customer, their family, agents, servants, or employees, the customer shall, at the request of the City, pay to the City. the cost of any necessary repairs or replacements of such facilities or the value of such facilities.

109. The customer shall **NOT** use any other electric power or lighting source, including stand-by or portable generators, in conjunction with the City installed service without advising the City of such use. To prevent operation of the customer's stand-by generating facilities in parallel with the City installed service, the customer will be required to install and maintain, at customer's expense, such devices as designated by the City as suitable for the safe and reliable operation of the City's distribution system, while preventing such parallel operation. The City, at its sole discretion, may disconnect the service if the generator causes a safety hazard to the City employees or other persons.

110. Devices or attachments shall not be connected to the City facilities in such a manner as to permit the use of un-metered energy except with prior written consent of the City.

111. Electric service supplied by the City is for the exclusive use of the customer on the premises to which such service is delivered. Without an approved exception to PURPA 1978, the City will not supply electric service to a customer for resale or redistribution by the customer.

112. The City does not design, plan, install, or maintain the customer's wiring or electric equipment.

113. Customers may contact the City of Gardner Utility Billing Division at 913-856-7535 to obtain information relative to new electric service connections or changes in existing service. In order to obtain service at the time desired, application should be made well in advance and the customer should keep the City informed as to the progress of their installation and when they anticipate they will be ready for service.

114. All City customers should call 913-856-6802 to report electric service problems, including interruptions. For all other inquiries concerning electric service, customers should call 913-856-0980.

115. Attachments of any kind or nature shall not be permitted on the City poles without previous execution of a City Pole Attachment Agreement, which can be obtained from the City Utilities Department.

116. The customer shall provide for the City such rights-of-way and easements as are satisfactory to the City across property owned or otherwise controlled by the customer, for the construction, operation, and maintenance by the City of facilities necessary or incidental to the supply of electric service. Certain installations will require the customer to sign an indemnification agreement.

117. Trees pose an ever present threat to electric service reliability and public safety. For that reason, the City has developed an active and aggressive Line Clearance Policy. The customer shall permit the Utility to trim or remove trees that may interfere with the safe operation of the City facilities. The Utility trims all trees to a minimum of ten feet laterally from the primary (top) conductors. This results in a typical ground-to-sky right-of-way between 20' and 30' depending on whether the power distribution line is single or three-

phase. Trees in the utility easement are generally removed except for ornamental or low-profile trees that are slow growing and are not a threat to the power system. **To avoid future problems and inconvenience, it is strongly recommended that customers contact the Community Development Department prior to planting to determine appropriate tree species and setbacks from easements.** In addition the customer is responsible for clearing/trimming limbs from secondary service conductors and for trimming per the City standards on their property for any line extension and secondary conductors required to provide service to that customer.

118. The City will use reasonable diligence to supply continuous electric service to the customer but does not guarantee the supply of electric service against irregularities or interruptions. The City shall not be considered in default of its service agreement with the customer and shall not otherwise be liable for any damages occasioned by any irregularity or interruption of electric service.

119. The City shall not be considered in default of its service agreement and shall not otherwise be liable on account of any failure by the City to perform any obligation if prevented from fulfilling such obligation by reason of delivery delays, breakdowns of or damage to facilities, acts of God, or public enemy, strikes or other labor disturbances involving the City or the customer, actions of civil, military, or governmental authority, or any other cause beyond the control of the City.

120. The developer or property owner will reimburse the City for the cost of relocating, replacing, repairing, re-leveling, and/or raising transformers, secondary pedestals or other the City equipment that are damaged, destroyed, or buried during the construction process. For a period of 12 months following the City energizing facilities, the developer or property owner will be held responsible for the structural integrity of all facilities installed by the developer or the developer's contractor.

121. Developer/owner shall be responsible for planning, planting, and maintaining any landscaping required by any local ordinances around the City facilities.

122. All requests for service should be made in person at the City of Gardner, Utility Billing office, located at City Hall, 120 E. Main St., Gardner, KS 66030. All requests for new development permits or inspections should be made in person at the City of Gardner, Community Development Department office at the same address.

123. The Customer is responsible for all of the cost that the City incurs for providing the electrical facilities required to serve the Customer. The City may, at its option, offset a portion of these costs. All changes made by the customer in the service specifications, which results in additional material, labor, and/or equipment, will require payment by the customer of those additional charges (see Section IX-Exhibits). All applicable service fees and charges related to any service must be paid in advance before the service will be energized.

124. The developer is responsible for installing the street lighting system within a platted subdivision or commercial development. Contact the City of Gardner Public Works Engineering Division at 913-856-0959 for additional information.

SECTION II

GENERAL SERVICE ENTRANCE POLICIES AND REQUIREMENTS

A. INSPECTION AND CERTIFICATION OF CUSTOMER'S WIRING

200. New wiring and alterations in wiring are required by law to be approved. The City cannot render service until a representative of the City of Gardner Community Development Department has inspected and approved the equipment. It is the intention of the City that the requirements of applicable codes will be adhered to in all installations whether work is performed by the City crew(s) or approved contractor(s).

B. GENERAL PROVISIONS

201. The City will typically make only one service connection for each type of electric service to a customer's premises except where required by the customer's load being of such size and character and so located as to make it advisable, in the opinion of the City, to install more than one service connection. The standard type of service for the City territory is that served from overhead lines. Not all service types and voltages are available at all locations within the City service territory. It is, therefore, important that the customer contact the City before proceeding with the purchase of equipment and installation of wiring.

202. In serving any customer, the City will provide the following, subject to these Standards:

a) Determine the point and character of electric service from which it will supply a customer.

b) Approve the location of the customer's entrance and the design of the electric system to this location from the City's supply point.

c) Develop a detailed plan to modify the City's facilities to suit the customer's desires, if practicable. The customer will be required to make a capital contribution for the cost to provide the service.

d) If revisions in plans (see c above) are required after they have been presented to the customer, any costs incurred by the City required to revise those plans will be charged to the customer (see Section IX-Exhibits).

203. Commercial or Industrial customers are to balance the load on their systems. This is advantageous to the customer as well as to the City because it will give the customer better voltage regulation and maximum use of service entrance equipment.

204. The address of premises where new service is required shall be plainly displayed. Contractors and others installing electrical work are to place the address on each installation. In a new development or other area where permanent street signs have not yet been installed, developer or contractor shall identify streets so as to facilitate location of addresses.

205. The customer shall furnish and install Underwriters' Laboratories, Inc., listed disconnecting devices in accordance with the provisions of the most current National Electric Code (NEC) and local ordinances. Service entrance conductors shall be sized in accordance with the most current NEC.

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206. Where a fused or circuit-breaker type switch is used, the customer shall furnish fuses or circuit breakers of a type listed by Underwriters' Laboratories, Inc., and install them in accordance with the most current NEC. The customer should maintain a stock of replacement fuses.

207. The delivery point is the point where the City delivers electrical energy to the customer. This delivery point can be a meter socket, pad-mounted transformer, secondary pedestal, or an overhead weather head. In order to provide service, the customer and the City must agree on the location of the delivery point and all metering-related equipment prior to construction. For all service installations, the City will furnish a meter location diagram after the application for service has been made. It will then be the customer's responsibility to verify the meter location with the City prior to installation of the service facilities.

208. A fuse or circuit breaker shall not be installed in the neutral or the ground conductor of the service entrance. Exposed conductive material enclosing electric wiring and equipment is to be grounded by the customer on their premises in accordance with the provisions of the most current NEC.

C. METERING

209. The meter installation and entrance shall be located on the outside of the customer's structure at a suitable place as approved by the City. The City will size the service and meter installation to the customer's load. Access for the City personnel must be maintained to assure proper maintenance of the service. Clear space in front of the meter shall not be less than 36". Self- contained metering is intended for single-phase service up to 400A and 3-phase service up to 200A. For larger services, current transformers that are remote from the meter are required. The use of a device that combines the meter socket with the customer's distribution panel will not be accepted for any class of service, except for temporary service.

210. The customer must furnish a City approved meter socket (see Section IX-Exhibits) for all self contained installations (see paragraph 209). Service shall be denied if an unapproved meter socket is installed. The use of combination meter socket panels will not be acceptable for any class service. The customer shall furnish and install all multiplex meter base assemblies with a main disconnect for all multiple meter installations.

The following govern the location of meters:

a) Meters shall be located outside and where not subject to vibration, jarring, gasses, dust, fluids, etc., that may affect the accuracy of the meter.

b) Meters for new single-family houses shall be located on the side nearest to the City facilities, on the furthest outside wall, within 10 feet of the front of the house. Meters shall be located on the exterior face of the structure. Access to the meter must not be restricted by any fence (see Section IX-Exhibits) or an area that could be fenced in the future. Meter sockets are the customer's responsibility.

c) For ease of maintenance and operation of meters, the center of the meter where no walk or driveway exists shall be not less than 42" nor more than 60" (see Section IX-Exhibits).

d) One 2x6 shall be nailed between studs at the meter location to provide a strong structural support into which meter socket mounting screws shall be driven at the top and bottom of the meter socket (see Section IX-Exhibits).

e) Call the City of Gardner Community Development Department at 913-856-0913 to verify correct meter location. Service shall be denied if meter is installed at an unapproved location.

211. Under no circumstances shall any meters be removed or relocated, whether temporarily or permanently, except by representatives of the City authorized to do such work. The City will cooperate in relocating its metering equipment and service attachment when required for modification of the customer's building or service entrance at the customers expense and meeting the approval of a representative of the City of Gardner Community Development Department.

212. For all CT installations greater than 200 amps (except for 400 amp, 120/240 volt), the City will own and maintain the meter socket, billing meter, metering current transformers and metering control cable. In most cases this will be installed at a City owned facility. If it is installed on the customer's property, it is to be installed as shown in Section IX- Exhibits. The customer will be responsible to furnish and install all other equipment.

213. In general, only one meter will be installed per electrical service except for buildings where there is more than one occupant. Article 230 of the National Electric Code identifies requirements regarding the number of services that can be supplied to a building or structure, identification requirements, and the Code regarding the number of service entrance conductor sets. Exceptions, as identified in Article 230 of the National Electrical Code regarding the number of services to a building, allow for more than one service when each service will be used for a different purpose such as for different rate schedules.

D. OVERHEAD SERVICE

214. Normally, the customer will be served through a meter attached to the outside of the building. Service entrance conductors shall be installed in accordance with the latest edition of the National Electrical Code (NEC).

215. The length of the overhead service cable from the last City pole to the customer's premises must be limited by the ground clearance attainable at tensions appropriate to the strength of the cable and its two supports. The customer is to provide, in the construction of their building, a suitable service attachment of sufficient strength to withstand the stress of the overhead service cable under the most current National Electrical Safety Code heavy loading conditions (see Section IX-Exhibits).

216. The point of attachment of the City overhead service cable to the customer's building or mast must be of proper height and location to provide at all points in the span the minimum clearances above ground and from other wires and obstructions required by the most current National Electrical Safety Code and other applicable rules. In general, the clearances given below are to be maintained with the wires at their maximum operating temperature and also when covered with 1/2 inch of ice. The National Electrical Code states in Article 230-9 that service conductors up to 600 volts attached to buildings "shall have a clearance of not less than three feet from operable windows, doors, porches, fire escapes, or similar locations," and that "Conductors run above the top level of a window shall be considered out of reach from that window." The nature of the ground under the cable, determines the required vertical clearance required.

Minimum Ground Clearances Applicable to Standard City of Gardner Service Drops up to 480 Volts:

a) Track rails of railroads 26.5 feet

b) Streets, alleys, roads, parking areas subject to vehicles higher than 8 feet, and farm and other land traversed by vehicles up to 14 feet high, 18 feet

c) Residential driveways and commercial areas not subject to vehicles higher than 8 feet, and spaces or ways accessible only to pedestrians: 120/240 volts, single phase, 12 feet

d) 120/208 volts, three phase, 12 feet

e) 277/480 volts, three phase, 12 feet

f) Swimming Pool - See NEC

217. Single phase electric meter installation up to 200 amps

All electrical service connections shall be installed by the City from the source to the attachment point above the meter socket on the outside of the building or residence. The customer shall furnish and install a City approved meter socket, and conductors from their service entrance device and equipment to the meter socket; a conduit mast and weather head; conduit, service attachment point; and service entrance conductors to attach to the overhead service cable. The customer's service conductors shall run from the meter socket through the service mast with at least 24" of conductor extending from the weather head to provide for connection to the overhead service cable with an

adequate drip loop. The City will furnish and install the overhead service cable (125 feet maximum length). The customer will be charged for the excess costs which the City incurs to provide services longer than 125 feet. The City will make the connections to the customer's service conductors and install the meter. See Section IX-Exhibits for the charge for this service.

218. Single phase greater than 200 amps and three phase 400 amp electric installations
The customer will provide and install the service entrance equipment, the service conduit riser mast, weather head, service attachment point on the building, and service lateral conductors of a length sufficient to reach the source pole, to the City specifications. The service attachment point shall be of a strength that is adequate for the span tension and of sufficient height to provide proper clearance to ground or to the roofline as called for in the most current National Electric Code (see paragraph 216). The City shall connect the service lateral conductors at the pole and install the metering current transformers, control cable, meter socket and billing meter. For single phase service, the City shall calculate, in a fair and equitable manner, the installation costs for this service using, as a basis, the same costs included in determining other user connection fees (see Section IX- Exhibits). See Section IX-Exhibits for the charge for three phase service. Multiplex meter base assemblies (duplex, triplex, or four-plex) shall be supplied by the customer and must be approved for use by the City. Multiplex meter base assemblies must be supplied with a main disconnect. The Customer shall provide the service lateral conductors from the metering assembly to the pole. The City shall make the connection of the service lateral conductors at the pole and at the weather head. The City shall calculate, in a fair and equitable manner, the service installation costs for multi-family dwellings and multi-occupancy commercial buildings using, as a basis, the same costs included in determining other user connection fees (see Section IX-Exhibits).

E. UNDERGROUND SERVICE

219. Service lateral conductors installed on a customer's property for the purpose of serving that customer, installed at the City's expense, remain the responsibility of the City Electric facilities installed at customer expense (except for metering equipment) remain the responsibility of the customer. Wherever underground service cables are installed by the customer, they will be terminated by the City at the first point of connection with the City system and this point will be the dividing line of responsibility between the customer and the City.

220. Residential Single phase electric meter installation up to 400 amps
The customer shall provide and install the meter socket and service conduit from the meter socket to the transformer, secondary pedestal, or pole to the City's specifications (see Section IX-Exhibits). The Customer shall install the meter socket on the outside of the residence on the furthest outside wall, nearest the City's facilities, within 10 feet of the front of the house. This is to help insure that the meter socket will NOT be fenced in at a later date. The City shall provide the service lateral conductor (125 feet maximum) and the meter and make all necessary connections from the transformer, secondary pedestal, or pole to the meter socket. The customer will be charged for the excess costs which the City incurs to

provide services longer than 125 feet. See Section IX-Exhibits for the charge for this service.

221. Commercial electric meter installations up to 200 amps

The Customer shall install the meter socket on the outside of the building. The customer shall provide and install the meter socket and service conduit and service lateral conductors from the meter to the transformer, secondary pedestal, or pole, to the City specifications (see Section IX-Exhibits). The City shall provide the meter and make all necessary connections at the transformer, secondary pedestal, or pole. See Section IX-Exhibits for the charge for this service. Multiplex meter base assemblies (duplex, triplex, or four-plex) shall be supplied by the customer and must be approved for use by the City Multiplex meter base assemblies must be supplied with a main disconnect. The Customer shall install the service conduit and the service lateral conductors from the metering assembly to the transformer, service pedestal, or pole. The City shall make the connection of the service lateral conductors at this facility. The City shall calculate, in a fair and equitable manner, the service installation costs for multi-family dwellings and multi-occupancy commercial buildings using, as a basis, the same costs included in determining other user connection fees (see Section IX-Exhibits).

222. Commercial Three phase electric meter installation up to 1000 amps

The customer shall provide and install the transformer pad, the service conduit, and service lateral conductors from the building to the transformer or agreed upon delivery point, to the City specifications. For a single customer, the City shall provide the current transformers, metering control cable, and meter and make all necessary connections at the transformer or agreed upon delivery point. For multi-occupancy commercial buildings, the metering will be located on the building adjacent to the service main disconnect (the type of metering will vary, depending on occupant use). See Section IX-Exhibits for the charge for this service.

223. Three phase electric installation-1000 KVA or over

All electrical service, which requires a transformer rated at 1000 KVA or greater, will be considered on an individual basis. The customer shall provide and install the transformer pad, service conduit, and service lateral conductors from the building to the transformer, to the City specifications. The City shall install the transformer and make the connections of the service lateral conductors at the transformer. The City shall install all metering facilities and make all necessary metering connections. The installation cost to the customer shall be determined by the City and shall include the total cost of all enclosures or switchgear, all primary cable, the transformer and its related hardware, and the metering enclosure and meter supplies (see Section IX-Exhibits).

224. Underground Distribution

Development of a residential, commercial, or industrial area may necessitate the installation of an underground distribution system for the entire area. The developer of such an area should contact the City as early as possible when planning such an area. Necessary information required from the developer will include, but not be limited to:

1. Exact location of premises to be served; i.e., site plan, street addresses, lots, block numbers, and legal descriptions of the property. The site plan must locate proposed structures and foreign underground obstacles to property lines. Site plans should show proposed water, gas, and sewer utilities.

2. Commercial and industrial customers must provide one full set of plans, to scale, to the City. Said plans must provide specific electric load information (i.e. size of air conditioning, heating, water heating, cooking, and other major loads, number of phases and voltage, street lighting, traffic lights, etc.). Commercial and industrial customers must provide additional information such as mechanical plans, electrical plans, elevations, etc.

3. Any special or unusual requirements - the City will review plans submitted and will identify locations for distribution apparatus (transformers, sectionalizers, service pedestals) with respect to other utilities facilities and determine conduit requirements (for a fee payable to City of Gardner) when the final plat is submitted to City of Gardner for approval (see Section IX-Exhibits).

In residential developments with underground distribution, the developer will prepay the City a per lot charge for the installation related to the underground distribution system. See Section IX-Exhibits for the charge for this service. In commercial installations and industrial parks with underground distribution, the developer will prepay the City. the cost for the installation of the distribution system. The cost for feeder extensions to feed commercial or residential developments will be negotiated with the City.

225. Fences installed on the customer's premises must be located at least five feet from the sides of distribution transformers, sectionalizers and service pedestals. A 10 foot operational space is required on the front (door side) of all equipment. Meter sockets shall NOT be enclosed by fences and must maintain open clearances of 3 feet on each side and 10 feet in the front. Additional clearances may be required at the option of the City.

F. TEMPORARY SERVICE - THE CUSTOMER SHALL ALLOW CITY OF GARDNER SUFFICIENT LEAD-TIME WHEN TEMPORARY FACILITIES ARE NEEDED

226. At locations where overhead secondaries exist (on a pole), the customer is to install a meter support within 15 feet of City pole and of adequate height to satisfy NESC code clearances. At the meter support pole, the customer shall furnish and install a City approved meter socket, conduit, and conductors from their service entrance and equipment to the meter socket; a conduit mast and weather head; service dead-end support; down guy (if needed); and service entrance conductors to attach to the service drop. The customer's service conductors shall run from the meter socket through the service mast with at least 24" of conductor extending from the weather head to provide for connection to the service drop with an adequate drip loop (see Section IX-Exhibits). The City will furnish and install the service drop. The City will make the connections to the customer's service conductors and install the meter. The customer shall identify in the field each temporary service by name, address, and lot number. The charge for this temporary service is shown in Section IX-Exhibits. One temporary

service is required for

each permanent address that the City will serve. The temporary service will be disconnected when the permanent service is connected.

227. At locations where underground secondary's exist (at a transformer or pedestal), the customer will furnish and install a City approved residential disconnect with a 100 amp (maximum) service entrance, within 5 feet of the existing facility and provide 8 feet of 3 #4 cu Type SEOOW Cable coiled (see Section IX-Exhibits). The customer shall identify in the field, each temporary service by name, address, and lot number. The charge for this temporary service is shown in Section IX-Exhibits. One temporary service is required for each permanent address that the City will serve. The temporary service will be disconnected when the permanent service is connected.

228. Where a secondary voltage source does not exist, or the above does not satisfy the customer's needs, other types of temporary service can be furnished. The customer is to pay to the City the cost of the installation and removal of its temporary lines, transformers, services, and switching and metering equipment as required (see Section IX-Exhibits).

SECTION III

UTILIZATION EQUIPMENT

A. GENERAL

300. In order to assure uniform and satisfactory service to all customers, it is important that the customer follow the requirements contained herein for the customer's loads. These requirements are not meant to be unduly restrictive and can be met by commercially available equipment. The customer shall use the electric service supplied by the City with due regard to the effect of such service on other customers and on the City's facilities and equipment. The City may refuse to supply electric service or may suspend electric service to a customer without notice if the customer's installation is in an unsafe or dangerous condition, or is so designed or operated as to disturb the electric service supplied by the City to other customers. Equipment with excessive starting currents or that has intermittent or rapidly fluctuating load characteristics, shall not be connected to City of Gardner's system without prior arrangement with City of Gardner (see Section C). If the customer's use of such equipment requires an upgrade or additional transformer capacity, the City shall, upon request from the customer, furnish and maintain such upgrades or additional transformer capacity at an additional cost to the customer. In order for the City distribution lines and equipment to be checked for adequacy, the customer must notify the City. whenever single-phase motors larger than seven and one half horsepower, heating or cooking appliances greater than ten kilowatts, or any special or unusual equipment is to be installed.

301. Electric service is subject to occasional rapid voltage variations, which may adversely affect the operations of sensitive controls on a customer's electrical equipment. Devices are available for use with most electric equipment that will minimize the effect of such disturbances. Upon request, the City will suggest appropriate devices for specific applications and will advise on their correct adjustment and setting. The City will not assume liability for damage to the customer's equipment nor for disturbances in any customer processes arising from such variations. Many computer installations require special consideration; the City will assist the customer with the planning of such special service requirements.

302. Surge arresters installed by the customer, must be of the ground lead disconnecting type.

B. MOTORS-STARTING LIMITATIONS

Single-Phase, 120/240 Volts

303. Starting inrush current for single or multiple motors shall be limited at any instant to 50 amperes at 120 volts or 150 amperes at 240 volts. This applies to air conditioning units.

Three-Phase

304. For three-phase motors, the permissible starting inrush current is limited by the effect on lighting, other motors, and on the distribution systems of the customer and the City.

The customer must notify the City of the maximum size and type of motor to be served, as well as the aggregate of all motor loads, so the City may assure proper service to all customers on its affected distribution system. A limitation on the motor inrush current may be necessary and this can be accomplished with appropriate starting devices.

Motor Protection

305. The City uses single-pole switches and single-phase fuses in its distribution system. Accordingly, the customer must protect all three-phase motors and equipment from a single-phase operating condition. In accordance with the most current National Electrical Code, suitable protection must be provided by the customer for all motors in order to protect the motor and equipment from improper or dangerous operation due to motor overloads or the failure to start.

(a) All motors shall be protected against overload by the installation of adequate over-current and/or, thermal protective devices on all phases.

(b) Three-phase motors that operate apparatus that may be subjected to damage due to a reversal of rotation shall be protected with reverse-phase relays.

306. The City shall not be responsible for any damage to the customer's equipment due to improper protective devices or the improper functioning of protective devices.

C. OTHER TYPES OF EQUIPMENT

Welding

307. The customer must notify the City, prior to installation, of all the characteristics of each individual welder, including what it is to be used for and the timing of its welding operations, so that the City can assure delivery of proper voltage at the welder and prevent objectionable voltage variations to other customers.

Special or Unusual Equipment

308. Power factor correction equipment, flashing signs, high frequency equipment, uninterruptible power supplies, spark discharge devices, radio transmitters, X-ray machines, experimental devices, or any other equipment which could cause abnormal voltage fluctuations or harmonic distortion, shall be designed and operated so as not to adversely disturb the City's electrical distribution system. Customers must inform the City of the characteristics of any such equipment prior to placing it in service. If a customer uses its building wiring as a carrier system for communication or signaling purposes, the customer shall furnish and install suitable electrical filtering equipment to keep the City distribution facilities free from carrier frequency currents.

D. BACK-UP SUPPLIES AND GENERATION

309. Any customer contemplating the operation of generating equipment, including a renewable energy generation source (see Section VIII), must contact the City for information regarding terms, conditions, and requirements for interconnection with the City facilities. The customer must submit to the City detailed plans, specifications, equipment description, and other details pertinent to the proposed installation. The City must approve the installation before generation operation will be allowed.

310. Where the customer desires a back-up generator for supplying electricity to consumer's loads in the event of the City electrical outage, an automatic double throw transfer switch must be provided by the customer which disconnects the customers service equipment from the City electrical distribution system before connecting it to the stand-by generator. This is necessary to prevent a dangerous back feed of energy into the City lines and equipment, which might create a hazard to equipment and personnel and could seriously damage the customer's wiring and generator. The City must review and approve the specific automatic transfer switch application.

SECTION IV

RESIDENTIAL (SINGLE FAMILY, MULTI-FAMILY, SINGLE MOBILE HOME)

A. ELECTRIC SERVICE AVAILABLE

400. The City provides overhead or underground single-phase, 60 hertz, 120/240 volts, three-wire to residential customers.

401. The term "Residential Service," when used herein, shall mean any single family building, duplex or townhome which is used exclusively for long-term (greater than one month), permanent domestic living. Each single family building, duplex or townhome shall be complete with independent and separate areas for living, sleeping, cooking, dining, and sanitation.

402. A single mobile home customer is defined as a customer taking electric service to a single permanent pre-manufactured dwelling located in a district which has not been platted and recorded.

SECTION V

RESIDENTIAL SERVICE ENTRANCE POLICIES AND REQUIREMENTS

A. GENERAL PROVISIONS

501. Architects, engineers, contractors, builders, etc., are required to consult in advance with the City of Gardner Community Development Department to obtain any special specifications and directions for the proposed service entrance. This may avoid delay and expense if carefully observed and followed.

502. To avoid expensive alterations later, the service entrance should be adequate for future growth as well as for present requirements. The most current National Electrical Code requires that all new service entrances have a minimum capacity of 100 amperes and it is the customer's responsibility to meet these requirements. Service equipment shall be suitable for the short circuit current available at its supply terminals. So that architects, engineers, and wiring contractors may select proper service equipment to meet the above requirement, the following information will apply to new installations.

503. Residential buildings requiring three phase service for loads such as elevators or large central cooling units, will be served as a commercial customer (@ 120/208 volt) and in accordance with Service Standards for that type of customer (see Section IX-Exhibits).

B. OVERHEAD SERVICE

504. For self-contained metering, the customer shall furnish and install a City approved meter socket, conduit, and conductors from their service entrance and equipment to the meter socket; a conduit mast and weather head; service dead-end, and service entrance conductors to attach to the service drop. The service conduit mast or service hook shall be of a strength that is adequate for the span tension and of sufficient height to provide proper clearances for the City service drop. The customer's service conductors shall run from the meter socket through the service mast with at least 24" of conductor extending from the weather head to provide for connection to the service drop with an adequate drip loop. The City will furnish and install the service drop (125 feet maximum). The City will make the connections to the customer's service conductors and install the meter.

505. The customer is to provide, in the construction of their building, a suitable service attachment of sufficient strength to withstand the stress of the City service drop under the most current National Electrical Code heavy loading conditions.

506. The City owned overhead service connectors can accommodate up to four customer conductors per phase and 800A total rating. If customer's conductors might exceed these restrictions, a City representative must be contacted for approval.

507. Single phase electric meter installation up to 400 amps. All electrical service connections shall be installed by the City from the source to the meter socket on the outside

of the residence. The customer shall provide and install the meter socket, service riser, weather head, and service dead-end to the City specifications (see Section IX-Exhibits). The City shall provide the service lateral conductors (125 feet maximum) and the meter and make all necessary connections from the pole to the customer's service conductors. See Section IX-Exhibits for the charge for this service.

C. UNDERGROUND SERVICE

508. Residential Service (single family buildings, duplex and townhomes) - Single phase electric meter installation up to 400 amps

Customer shall provide electrical plastic conduit (Schedule 40 PVC) from the electric source to the meter location. The City will perform an acceptance inspection as appropriate to ensure the raceway system has been constructed in accordance with the City drawings and specifications. The City will continue to provide and install the secondary conductors.

The home owner or builder is responsible for extending the conduit system from the point where the City has ended or stubbed the service conduit from the point outside of the utility's easement to the meter socket enclosure (see Section IX-Exhibits). The minimum depth to the top of the conduit shall be 30". The homeowner or builder must backfill the trench to cover the service conduit before the City will install the service cable. Backfilling shall be pneumatically tamped and compacted to 90%. The home owner or builder is required to provide and install a conduit riser on the building for the service entrance, a City approved meter socket, and any other conduits necessary to complete the entrance, in accordance with the Service Standards. All conduit installed by the customer shall have a nylon pull string inside for the City to install its cable pulling rope.

The meter socket must be installed at the location designated by the City, which is generally on the furthest outside wall, nearest the City's facilities, within 10 feet of the front of the house. Meter sockets shall NOT be enclosed by fences and must maintain open clearances of 3 feet on each side and 10 feet in the front. Additional clearances may be required at the option of the City. (see Section IX-Exhibits).

The City shall provide, install, and maintain the service cables (125 feet maximum). The customer shall provide and install City approved meter sockets as required. In multi- family dwellings, no more than one point of service will be provided between firewalls. See Section IX-Exhibits for the charge for Underground Residential Service.

D. NEW SUBDIVISION RESIDENTIAL SERVICE

509. The Developer will be required to pay City of Gardner an aggregated cost for URD (underground residential development) construction, engineering and service connections (see Section IX-Exhibits).

510. It is preferred that a "front of lot" electric distribution system be the specified design, determined by the size of development and costs associated with materials and developer requests for special handling. Upon written application, by an owner, builder, or developer, as an alternative to "front of lot" distribution, and in areas where terrain

will lend itself to such construction, the City will consider "rear of lot" underground distribution within a development with 12 or more contiguous individual lots.

The developer will provide a preliminary plat to the City showing the proposed electrical source for the development and distribution conduit layout. The City will red line and make any appropriate changes to the preliminary plat layout and electric feed source information. Two copies of a filed plat must be furnished to the City, along with an electronic version in AutoCAD format.

In addition to any lot charges that must be paid, a developer must also reimburse the City for the cost of installing an electric feeder extension to serve the new development/load as required. The proposed electrical loading estimate must be submitted to the City by a certified electrical engineer prior to the construction/planning stage. The City will review all plans.

The City will require a fee for installation of underground electrical facilities in a development and will require the fee to be paid prior to any construction. See Section IX-Exhibits for the charge for this service.

The developer shall provide and install, all primary, secondary and streetlight conduits that are necessary to contain electric service conductors for a single lot or an entire development. The City will perform an acceptance inspection as appropriate to ensure the raceway system has been constructed in accordance with the City's drawings and specifications. The City will provide and install all primary and secondary conductors.

Conduits need to be (Schedule 40 PVC), sized as required, under all driveways, paved area, culverts, creeks, extensively landscaped areas, etc. The depth shall be 42-48" to the top for primary and secondary conduits. A nylon pull string shall be provided in the conduit. Any conduit installed by the customer for use by the City, shall have the ends sealed and located by a t-post extending 3' above the ground identifying the conduit as electric conduit by painting the t-post red.

The City will install, own and maintain primary and secondary service cables (125 feet maximum); transformers; enclosures; switchgears; and secondary pedestals required to serve the customer and will make the termination of the service cables in the meter socket on the outside of the building.

The address of premises where new service is required shall be plainly displayed. Contractors and others installing electrical work are to place their names and addresses on each installation. In a new development or other area where permanent street signs have not yet been installed, the developer or contractor shall identify streets so as to facilitate location of addresses.

The developer is responsible for installing the conduits for the electric distribution facilities within the easements or rights-of-way designated for the use by the City and in accordance with service standard specifications. Generally, primary and secondary

conduits will be located five feet from the center-line of sewer, or storm lines, or at the center-line of the specified utility easements.

511. The developer will reimburse the City for the cost of replacing, repairing, and/or raising transformers, secondary pedestals or other City equipment that is damaged, destroyed, or buried during the construction process (see Section IX-Exhibits).

E. NEW SUBDIVISION MOBILE HOME SERVICE

512. New Permanent Mobile Home Development

A new permanent mobile home development is comparable to a single-family residential development as defined by local zoning. To qualify, the development must have such facilities as permanent paved roadways, underground sewer and water connections, and must be finish-graded.

513. Underground Service

The requirements of paragraph 510 apply to underground service for permanent mobile home developments except for provisions described by this paragraph. The customer shall furnish and install a City approved mounting pedestal for the meter and main disconnect with protective device and install a ground and grounding electrode (see Section IX-Exhibits). The customer shall install, own, and maintain a continuous, rigid electrical plastic conduit (Schedule 40 PVC conduits and fittings) without sharp bends or indentations from the meter pedestal to a designated City service point. The minimum depth to the top of the conduit shall be 30". A nylon pull string shall be provided in the conduit. The customer shall install the necessary service entrance conductors and conduit from the main disconnect to the mobile home. It is recommended that 200 amperes capacity be provided for each unit due to the frequent use of electric heating in mobile homes (see Section IX-Exhibits). The City will install all primary and secondary conductors and will furnish and install the service lateral conductors to each meter position, make the meter socket connections, and install the meter. See Section IX-Exhibits for the charge for this service.

In all cases the City will own and maintain all electrical facilities and the service conductors to the meter but will not take title to, own, or maintain the meter pedestal or any customer related wiring beyond the meter.

The developer shall maintain a supply of spare parts consisting of a minimum of one pair of meter terminals and blocks for each 12 meters of fraction thereof for each size socket. These are to be kept in a marked, enclosed container at a central point agreed to in advance with the City.

514. Transient Mobile Home Development

A transient mobile home development is one without one or more of the requisites for a permanent mobile home development. City of Gardner may, at its option, serve individual mobile homes in a transient mobile home development in the same manner as those in a permanent mobile home development. In that case those standards and policies appropriate to a permanent mobile home apply.

F. SERVICE ALTERATIONS

515. It is the intent of the City to utilize as much of its existing facilities as practical. The City will charge the customer for service alterations required solely for the customer's convenience, i.e., relocating existing the City facilities to clear sundecks, room additions, swimming pools, etc. For most relocations, the customer will be required to update his service as set forth in the Service Standards.

516. The City has a standard for converting to Underground Electric Service in an Existing Overhead Service Area. Underground Service will be made available provided that the City deems such service to be feasible and charges for the cost of converting from overhead to underground electrical service, as determined by the City, shall be paid to the City prior to the start of underground construction (see Section IX-Exhibits). The requirements of paragraph 508 apply to this conversion.

517. The charges for residential service alterations or relocations are shown in Section IX-Exhibits. All customer requirements for new service apply to alterations as well.

518. When a customer alters existing service and a new meter socket is to be installed, the City will make this switchover on an appointment basis. The City will disconnect the old service. The customer will install a new meter socket, riser, weather head, and service attachment point in accordance with paragraph 504 and make any alterations to the internal house wiring that is required. The City will then install a new service drop and make the connection at the weather head and at the pole and install the meter. Site power required during this transfer between meter sockets is the responsibility of the customer.

SECTION VI

COMMERCIAL & INDUSTRIAL

A. ELECTRIC SERVICE AVAILABLE

600. Upon the customer's request, the City will specify the type of electric service available at any given location for use by the customer.

601. Commercial and Industrial:

Single-phase, 60 Hertz, 120/240 volts, three-wire
Three-phase, 60 Hertz, 120/208 volts or 277/480 volts, four-wire

Three-phase, 60 Hertz, 7,200/12,470Y volts, four-wire primary service is available as required by contacting the City.

An existing customer, who alters his service entrance to supply added load, must install equipment to accept the same voltage system, which would be available to a new customer.

SECTION VII

COMMERCIAL & INDUSTRIAL SERVICE ENTRANCE POLICIES AND REQUIREMENTS

A. GENERAL PROVISIONS

700. Architects, engineers, contractors, builders, etc., are requested to consult in advance with the City to obtain any special specifications and directions for the proposed service entrance. This may avoid delay and expense.

701. The City recommends that all new service entrances have a minimum capacity of 200 amperes. It is the customer's responsibility to install service equipment in accordance with the provisions of the most current National Electrical Code as a minimum. An important provision of the current edition of the National Electrical Code is contained in Section 230-6 requiring that "Service equipment shall be suitable for the short circuit current available at its supply terminals." So that architects, engineers, and wiring contractors may select proper service equipment to meet the above requirement, the following information will apply to new installations. Available fault currents will vary with each installation. Inquiry for a particular location should be directed to the City.

B. METERING

702. The customer shall furnish the City an approved meter socket in all cases except where a current transformer rated meter socket is required. See Section IX-Exhibits for a list of approved meter sockets. Service shall be denied if an unapproved meter socket is installed. Customer-furnished meter sockets shall have a nationally recognized testing laboratory seal. The use of combination meter socket panels will not be acceptable for any class of service.

703. Except as allowed by law, regulation, or order, in multiple-occupancy buildings, each of the premises shall be individually metered, as well as the facilities used in common if applicable. All meters shall be at the same location and properly marked in agreement with the corresponding service switch markings. The customer may purchase and install a prefabricated device that includes the meter socket. The customer shall obtain approval by the City of such installation and equipment prior to purchase of equipment. In this case the customer will own and maintain the meter socket and enclosure and the City will own and maintain the meter. The building owner or his agent shall maintain a supply of spare parts consisting of a minimum of one pair of meter blocks or four terminal clips for each 12 meters of fraction thereof for each size socket in each building. These are to be kept in a marked enclosure at each metering location in each building. All pulling space provided in the customer's equipment for termination of customer owned service conductors shall conform to the size requirements set forth in the most current National Electrical Code covering pull boxes.

704. In commercial buildings where a number of meters are installed, each service switch and meter enclosure is to be plainly marked by the building owner, the customer, or his agent with a permanent identification of the unit or space that it serves. General services

and electric heat services must be similarly distinguished. The identification shall also be permanently inscribed on the inside back of each meter enclosure near the meter socket clips. Each individual commercial unit doorway shall be identified to allow the City to test for correct connections. It is the responsibility of the building owner, the customer, or his agent to see that wiring in such locations is connected to the proper meter or meters. The City will not render service until all switches, meters, and entrance panels are properly marked. The City reserves the right to collect from the developer all expenses incurred due to improper labeling of this equipment (see Section IX-Exhibits).

705. For services larger than 400 AMP and voltages greater than 120/208 (see Section IX-Exhibits), the installation requires a C.T. rated meter, in which case the City will provide the meter socket and the C.T.'s. Typically, the meter socket and C.T.'s will be mounted in/on the transformer by the City, but in certain situations, if this is not feasible, the customer will be responsible for the purchase and installation of the C.T. enclosure.

The size of the C.T. enclosure required will vary with the size of the entrance conductors and their routing through the enclosure. The following table gives the minimum size enclosures but larger enclosures may be required. The customer shall furnish the enclosure.

Entrance Size (Amperes)	**C.T. Enclosure Inside Dimensions (Minimum) (HxWxD)**
800 or less	30" x 36" x 10"
Greater than 800	36" x 48" x 12"

The C.T. cabinet must be installed on an outside wall or a meter stand shall be installed. The C.T. cabinet must be readily accessible to the City personnel only and shall be a separate NEMA 3R enclosure with hasp for the City lock. The two types of C.T. cabinets that are acceptable are removable front type and cabinets that pivot on two fixed pins. Hinged types are not acceptable. The C.T. cabinet shall not be used as splice boxes or raceways.

The C.T.'s shall be securely attached to either a piece of treated plywood, aluminum, or galvanized steel that is mounted to the back of the C.T. cabinet with mounting studs that are permanently attached to the cabinet. Attaching the C.T.'s through the back of the cabinet to the wall is not acceptable.

All C.T. meter installations require a ½" x 8' copper clad steel ground rod as near as possible to the location of the meter socket. The upper end of the rod shall be flush with or just below grade. The meter socket shall be grounded to the rod using a solid bare copper wire at least #6 AWG. The use of combination meter socket panels is not acceptable. Meter socket must be adjacent to CT cabinet with no more than a 2' lateral separation (see Section IX-Exhibits).

The customer shall furnish and install 1-1/4" rigid metallic conduit with sufficient pull boxes from the metering transformer location to the meter socket. This conduit shall not exceed 65' in total length without prior approval from the City.

C. OVERHEAD SERVICE

706. Individual commercial buildings up to 200 amps, with a nominal voltage of 208V and below

For self-contained metering, the customer shall furnish and install a City approved meter socket, conduit, and conductors from their service entrance equipment to the meter socket; a conduit riser mast and weather head, service dead-end on the building, and service lateral conductors of a length sufficient to reach the source pole, to the City specifications (see Section IX-Exhibits). The service dead-end shall be of a strength that is adequate for the span tension and of sufficient height to provide proper clearance to ground or to the roofline as called for in the most current National Electric Code (see paragraph 216). The City shall connect the customer's service lateral conductors at the pole and install the meter. See Section IX-Exhibits for the charge for this service.

707. Single phase greater than 200 amps and three phase 400 amp electric installations

The customer will provide and install the service entrance equipment, the service conduit riser mast, weather head, service dead-end on the building, and service lateral conductors of a length sufficient to reach the source pole, to the City specifications (see Section IX- Exhibits). The service dead-end shall be of a strength that is adequate for the span tension and of sufficient height to provide proper clearance to ground or to the roofline as called for in the most current National Electric Code (see paragraph 216). The City shall connect the service lateral conductors at the pole and install the metering current transformers, control cable, meter socket, and billing meter. For single phase service, the City shall calculate, in a fair and equitable manner, the installation costs for this service. See Section IX-Exhibits for the charge for three phase service. Multiplex meter base assemblies (duplex, triplex, or four-plex) for multiple occupancy commercial buildings shall be supplied by the customer and must be approved for use by the City Multiplex meter base assemblies must be supplied with a main disconnect. The Customer shall install the service lateral conductors from the metering assembly to a service riser mast and weather head, a service dead-end, and service lateral conductors of a length sufficient to reach the source pole, to the City specifications. The service dead-end shall be of a strength that is adequate for the span tension and of sufficient height to provide proper clearance to ground or to the roofline as called for in the most current National Electric Code (see paragraph 216). The City will make the connection of the service lateral conductors at the pole and install the meters. The City shall calculate, in a fair and equitable manner, the installation costs for multiple occupancy commercial buildings.

708. New three phase services and alterations larger than 400 amps, must be installed underground, as determined by the City.

D. UNDERGROUND SERVICE

709. The City is responsible for the design of the electric distribution facilities which are to be located within the easements or right-of-ways designated for use by the City and in accordance with standard the City specifications. Primary and secondary conduits will be located five feet from the center-line of sewer lines or at the center-line of ten foot utility

easements. The customer shall provide and install (for the City installed primary and secondary cables) electrical plastic conduit (Schedule 40 PVC), sized as specified by the City. The depth shall be 42"- 48" to the top of the conduit. A nylon pull string shall be provided in the conduit. All conduit installed by the customer for use by the City, shall have the ends sealed and located by a t-post extending 3' above the ground identifying the conduit as electric conduit by painting the t-post red. The customer shall install, according to the City specifications, the concrete pads, concrete pull boxes, and the concrete bases as required for the transformer and other equipment which is located on the customer's property. The City shall own and install all primary conductors, transformers, and primary switchgear and make all terminations in the transformer.

710. The City requires service lateral conductors installed by the customer to be in conduit. The minimum depth to the top of the conduit shall be 30". It is required that the Customer's service lateral conductors be limited to 500 kcmil copper, with multiple conductors being installed for larger capacity. Larger conductors will be considered on an individual basis by the City. The City will not take title to, own, or maintain underground commercial or industrial service facilities.

Since metering methods vary considerably, for multiple occupancy commercial buildings, the customer is to contact the City prior to construction and work out the details of meter location and equipment requirements (See paragraphs 702 through 705).

711. Commercial and Industrial Service Laterals for services 400 amps or less, single phase or three phase in an existing overhead service area

If the City service pole is on the customer's property or at the property line, the customer shall extend the service conduit and underground service lateral conductors to within six inches of the base of the designated pole. An added, continuous length of conductors shall be provided at the service pole as specified by the City to allow connection to the City distribution system. The City shall complete the installation of conduit up the service pole, connect the service lateral conductors at the pole, and install the meter. See Section IX- Exhibits for the charge for this service.

Commercial, Industrial, and High Rise Multi-Family Dwellings with services from 400 amps to 1000 amps, single phase or three phase

The customer shall extend the service conduit and underground service lateral conductors to the low voltage compartment of the pad-mounted transformer on the property or at the property line. The transformer location shall be located within 10' of a paved area and accessible by vehicle for maintenance. For a single customer, the City shall provide the current transformers, metering control cable, and meter and make all necessary connections at the transformer or agreed upon delivery point. See Section IX-Exhibits for the charge for this service.

712. Multi-Family Dwellings (not to exceed 3 floors)

The customer is to obtain and/or grant, all right-of-ways and easements, required on the premises for the City installed primary, secondary, and service cables; pad-mounted transformers; and any other facilities that may be required to serve the customer. The

areas to be served must be platted and the plats filed and graded to within six inches of final grade before the customer/developer begins construction. Ingress for City of Gardner vehicles must be maintained to all structures involved prior to installing sod, landscaping, and fencing. The customer/developer shall install property line stakes, curb chips, and easement markers prior to the construction of electric infrastructure. The City shall install, own, and maintain primary and secondary cables (pulled through customer/developer provided conduit infrastructure); transformers; enclosures; switchgears; and secondary pedestals required to serve the customer/developer and make the termination of the primary and secondary cables. Customer/developer will own secondary cables from transformer or secondary pedestal to building structure. The customer shall provide and install, electrical plastic conduit (Schedule 40 PVC), for the City installed primary and secondary cables, sized as required, under all driveways, paved area, culverts, creeks, extensively landscaped areas, etc. The depth shall be 42"-48" to the top of the conduit. A nylon pull string shall be provided in the conduit. Any conduit installed by the customer for use by the City, shall have the ends sealed and located by a t- post extending 3' above the ground identifying the conduit as electric conduit by painting the t-post red. The customer or developer is to provide and install all conduit risers for services to the meter or main disconnect location on the outside of the building(s) being served and City approved meter sockets in accordance with Service Standards. Meter sockets shall all be at one location (the portion of a building between approved fire walls is considered one location).

In apartments, multiplexes, and other buildings where a number of meters are installed, each service switch and meter enclosure is to be plainly marked by the building owner, the customer, or his agent with a permanent identification of the apartment or space which it serves. General services and electric heat services must be similarly distinguished. The identification shall also be permanently inscribed on the inside back of each meter enclosure near the meter socket clips and inside the door of the entrance panel for each apartment. It is the responsibility of the building owner, the customer, or their agent to see that wiring in such locations is connected to the proper meter or meters. The City will not render service until all switches, meters, and entrance panels are properly marked. The City reserves the right to collect from the developer all expenses incurred due to improper labeling of this equipment (see Section IX-Exhibits).

The City shall calculate in a fair and equitable manner the installation costs for multi-family dwellings using, as a basis, the same costs included in determining other user connection fees (see Section IX-Exhibits).

713. Three phase electric installation-1000 KVA or over

All electrical service, which requires a transformer rated at 1000 KVA or greater, will be considered on an individual basis. The customer shall provide and install the transformer pad, service conduit, and service lateral conductors from the building to the transformer, to the City specifications. The City shall install the transformer and make the connections of the service lateral conductors at the transformer. The City shall install a primary meter on the transformer and provide and install all metering facilities and make all necessary metering connections. The installation cost to the customer shall be determined by the City.

and shall include the total cost of all enclosures or switchgear, all primary cable, the transformer and its related hardware (see Section IX-Exhibits).

E. PRIMARY SERVICE - (**Not Available for residential class use**)

714. Due to the variety of methods by which a customer can take primary service, it is difficult to generalize as to specific requirements. The City representatives will work closely with the customer's architect and engineer to develop a mutually acceptable and economical design within the framework of the General Rules and Regulations and the City specifications. In general however, the customer is to provide, install, and maintain all necessary lines, switches, transformers, secondary distribution facilities, and protective equipment on his premises. Primary protective equipment must be approved by the City to ensure coordination with the City's distribution system.

The customer shall provide space and facilities for the City to terminate its primary lines. Each primary customer will be required to install a main disconnect switch and protective device at the property line. The customer shall also provide space and provisions for the installation of the City owned primary metering equipment.

The customer shall supply the City two copies of the equipment specifications and construction drawings well in advance of the start of construction and before equipment is ordered.

At the time of construction, the customer owned facilities shall comply with all current editions of the City specifications. The installation cost to the customer shall be determined by the City and shall include the total cost of all electrical facilities required to provide primary service, including metering (see Section IX-Exhibits).

SECTION VIII

RENEWABLE ENERGY SOURCES

The City has developed standards and a process for handling all requests to interconnect a customer-owned generating facility to the distribution system. The process protects the City employees and the public, and also provides the customer/generator with fair and equitable compensation for energy delivered to the City's system. These standards, Interconnection Standards For Parallel Installation Of Customer-Owned Electric Generation Facilities, are available at the City of Gardner's Administrative Office or on the webpage at http://www.gardnerkansas.gov/electric_rates_service_rules/

SECTION IX

EXHIBITS

THIS SECTION CONTAINS DRAWINGS OF TYPICAL SERVICE ENTRANCE INSTALLATIONS AND OTHER REQUIREMENTS

EXHIBIT A

City of Gardner Approved Residential Meter Sockets

120/240V or 120/208V Single Phase

Socket Size/Type	Milbank	Durham	Landis & Gyr
1 gang, 100A, 3-wire	U7043-XL-TG-KK-IL-5T9W	1010291	-
1 gang, 200A, 3	U7043-XL-TG-KK-IL-5T9W	1010291	-
1 gang, 400A, 3	U4702-X-5T9-K3-K2-IL	UG-H4300U-KC	484101-02

120V/240V Horizontal Gang Sockets (No Breakers)

Socket Size/Type	Milbank	Durham	Landis & Gyr
2 gang, 100A, 3-wire	U1232-X-K1539-5T24	UG-2R5332C-KC	UA2311-XB
3 gang, 100A, 3-wire	U1232-X-K1539-5T24	UG-3R1131C-KC	UA3311-XB
4 gang, 100A, 3-wire	U1232-X-K1539-5T24	80	UA4311-XB
2 gang, 200A, 3-wire	U1232-X-K1539-5T24	UG-2R2332U-KC	UA2716-ZB
3 gang, 200A, 3-wire	U1253-X-K1	-	-
4 gang, 200A, 3-wire	U1254-X-5T-K3	-	-
5 gang, 200A, 3-wire	U1255-X-5T-K4	-	-
6 gang, 200A, 3-wire	U1256-X-5T-K4	-	-

Meter Packs-120/240V Condominium/Apartment Sockets (For Applications of 6 or LESS)

Socket Size/Type	Milbank	Cutler Hammer	Square D	GE
2 gang, 125A, 3-wire	U2852-X-KK-5T	1MP3124RRL w/1-1MMPCP	MRP33125 w/Closing Plate	TMPR8312R w/1-TMCP
3 gang, 125A, 3-wire	U2853-X-KK-5T	1MP4124RRL w/1-1MMPCP	MPR33125	TMPR8412R w/1-TMCP
4 gang, 125A, 3-wire	U2854-X-KK-5T	1MP5126RRL w/1-1MMPCP	MPR55125	TMPR8512R w/1-TMCP
5 gang, 125A, 3-wire	U2855-X-KK-5T	1MP5126RRL w/1-1MMPCP	MPR55125 w/Closing Plate	TMPR8512R
6 gang, 125A, 3-wire	U2856-X-KK-5T	1MP6126RRL	MPR66125	TMPR8612R
2 gang, 200A, 3-wire	U2862-X-KK-5T	1MP3206RRL w/Closing Plate	MPR42200	TMPR8320R w/1-TMCP
3 gang, 200A, 3-wire	U2863-X-KK-5T	1MP4206RRL w/1-1MMPCP	MPR43200	TMPR8430R w/1-TMCP
4 gang, 200A, 3-wire	U2864-X-KK-5T	1MP5126RRL w/1-1MMPCP	MPR85200 w/Closing Plate	TMPR8520R w/1-TMCP
5 gang, 200A, 3-wire	U2865-X-KK-5T	1MP5206RRL	MPR85200	TMPR8520R
6 gang, 200A, 3-wire	U2866-X-KK-5T	1MP6206RRL	MPR86200	TMPR8620R

Modular Meter Sockets**-120/240V Condominium/Apartment Sockets (For Applications of 6 or MORE)

Socket Size/Type	Cutler Hammer	Square D	GE
2 gang 125A, 3-wire	3MM212RRL	EZMR113125 w/Closing Plate	TMMR2212R
3 gang 125A, 3 wire	3MM312RRL	EZMR113125	TMMR2212R
4 gang 125A, 3 wire	3MM412RRL	EZMR114125	TMMR2212R
2 gang 125A, 3 wire	3MM220RRL	EZMR112225	TMMR2212R
3 gang 200A, 3 wire	3MM320RRL	EZMR113225	TMMR2212R
4 gang 200A, 3-wire	3MM420RRL	EZMR114225	TMMR2212R

All other meter sockets need to be submitted to Standards Engineering for approval.

*****Durham also manufactures these meter sockets branded for Square D Company, Cutler Hammer, Inc., and Midwest Electric Products. For these brands, add "SOD", "CH", GE or "MEP", respectively, as a suffix to the listed Durham catalog number. Except for the additional suffix, all other numbers must match what is in the Durham column, as these are the only approved sockets by these manufacturers.

******Meter Centers require a main disconnect ahead of the socket gangs.

City of Gardner Approved Commercial Meter Sockets

120/240V Single Phase or 240/480V 3 Phase		
Socket Size/Type	**Milbank**	**Durham**
1 gang, 100A, 3-wire	U7043-XL-TG-KK-IL-5T9W	1010291
1 gang, 200A, 3-wire	U7043-XL-TG-KK-IL-5T9W	1010291

120/208V or 277/480V Commercial Self-Contained Socket (Three Phase)

Socket Size/Type	Milbank	Durham*	Landis and Gyr
1 gang, 200A, 4-wire	U8107-XL-IL	U-H7213C-KC	40607-025

Modular Meter Sockets** - 120/208 Commercial Self-Contained Socket

Socket Size/Type	Cutler Hammer	Square D	GE
1 gang, 200A, 4-wire	37MM120R12	EZML331225	TMPR31212
2 gang, 200A, 4-wire	37MM220R12	EZML332225	TMPR31222
3 gang, 200A, 4 wire	37MM320R12	EZML333225	TMPR31232
4 gang, 200A, 4 wire	37MM420R12	EZML334225	TMPR31242

All other meter sockets need to be submitted to Standards Engineering for approval.

*****Durham also manufactures these meter sockets branded for Square D Company, Cutler Hammer, Inc., and Midwest Electric Products. For these brands, add "SOD", "CH", GE or "MEP", respectively, as a suffix to the listed Durham catalog number. Except for the additional suffix, all other numbers must match what is in the Durham column, as these are the only approved sockets by these manufacturers.

******Meter Centers require a main disconnect ahead of the socket gangs.

HDLB Heavy Duty Lever Bypass

***** Extension kit K3923 required for OH use

******* Breakers for Condo Sockets
125A and less: Milbank – MQP, CH/West – QP/BR, Murry/CH – MP, GE – Qline, SQ-D Homeline, Siemens/ITE - QP
125-200A: CH/West – BR?BJ, Murry/CH – MD, GE-Qline

******** Use connector kits on line side only

1 Max. line side conductor size is (1) or (2) 250 kcmil

2 Single 350 kcmil max. line side connector only

3 Single or twin 350 kcmil line side connector only

4 Twin 350 kcmil line side connectors only

5 Twin 600 kcmil line side connectors only

Service Entrance

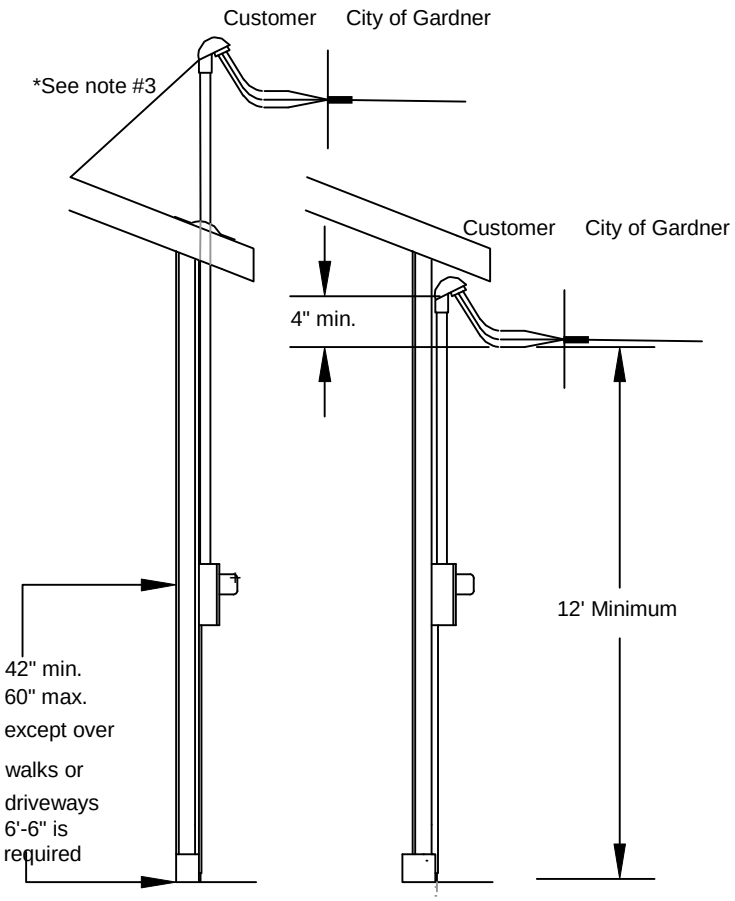
Pedestal

- Midwest Products # R281E1P6H034
- Milbank # U5136-0-200S

EXHIBIT B

Notes:

1. Customer to own and install service entrance conductors with 24" beyond weatherhead.
2. Service drop and connections by City of Gardner.
3. Customer to own and install the service attachment, such as service hook, wire holder or bracket on mast capable of supporting a 900lb. force. Customer to own and install service mast head. if the mast extends above the eave of the building, the service will be attached to the mast and the mast must be 2"(min.) ridged galvanized conduit. If the mast extends 36" above the roof line, it must be guyed or braced to support the service. If the service attachment is on the building, the mast may be rigid metal, EMT or Schedule 80 electrical PVC. The height of the attachment must provide the clearance to ground or to the roof line as called for in the National Electric Code.
4. Install meter socket at least 36" away from windows and doors.
5. Customer will furnish and install meter socket and hub.
6. Customer's service entrance conductors and conduit are to be sized in accordance with the NEC.
7. Customer shall not use meter enclosure to terminate or enclose their system ground.
8. Provide some slack ahead of terminations in the meter socket to allow for future maintenance.
9. Color code conductors according to NEC.

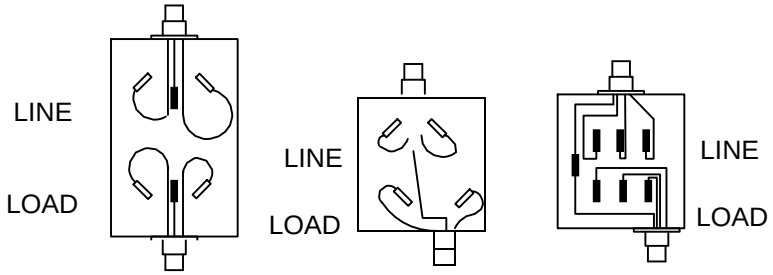


*Required if mast is 36" above roof.

Customer furnished and owned material:

DESCRIPTION
HUB
METER SOCKET
ENTRANCE HEAD
CONDUIT STRAPS
CONDUCTOR
SERVICE MAST
#6 CU GROUND WIRE
5/8" X 8' GROUND ROD

Typical Connections by Customer



120/240V
1-PH 3-WIRE
400A MAX.

120/240V
1-PH 3-WIRE
200A MAX.

120/208V
3-PH 4-WIRE
200A MAX.
(COMMERCIAL)

ELECTRIC DETAILS

OVERHEAD SERVICES
SELF-CONTAINED METERS

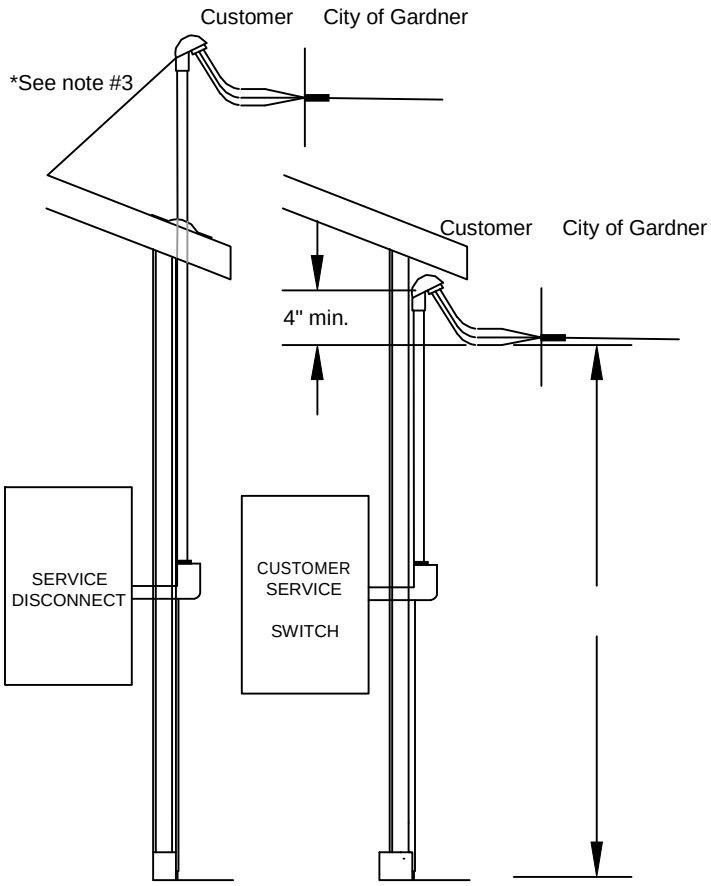
DRAWING BY: M. SULLIVAN | REV. DATE: 3/1/13

SCALE: NTS | ELECTRIC SERVICE STANDARDS

EXHIBIT C

Notes:

1. Customer to own and provide service lateral conductors from pole to building.
2. City of Gardner to install service entrance conductors and make connections at pole and building.
3. Customer to own and install the service attachment, such as service hook, wire holder or bracket on mast capable of supporting a 900lb. force. Customer to own and install service mast head. If the mast extends above the eave of the building, the service will be attached to the mast and the mast must be 2"(min.) ridged galvanized conduit. If the mast extends 36" above the roof line, it must be guyed or braced to support the service. If the service attachment is on the building, the mast may be rigid metal, EMT or Schedule 80 electrical plastic conduit. The height of the attachment must provide the clearance to ground or to the roof line as called for in the National Electric Code.
4. Meter will be installed on pole. (Unless multi-occupancy)
5. Customer's service entrance conductors and conduit are to be sized in accordance with the NEC.
6. Color code conductors according to NEC.



Customer furnished and owned material:

DESCRIPTION
HUB
ENTRANCE HEAD
CONDUIT STRAPS
CONDUCTOR
SERVICE MAST
#6 CU GROUND WIRE
5/8" X 8' GROUND ROD

ELECTRIC DETAILS

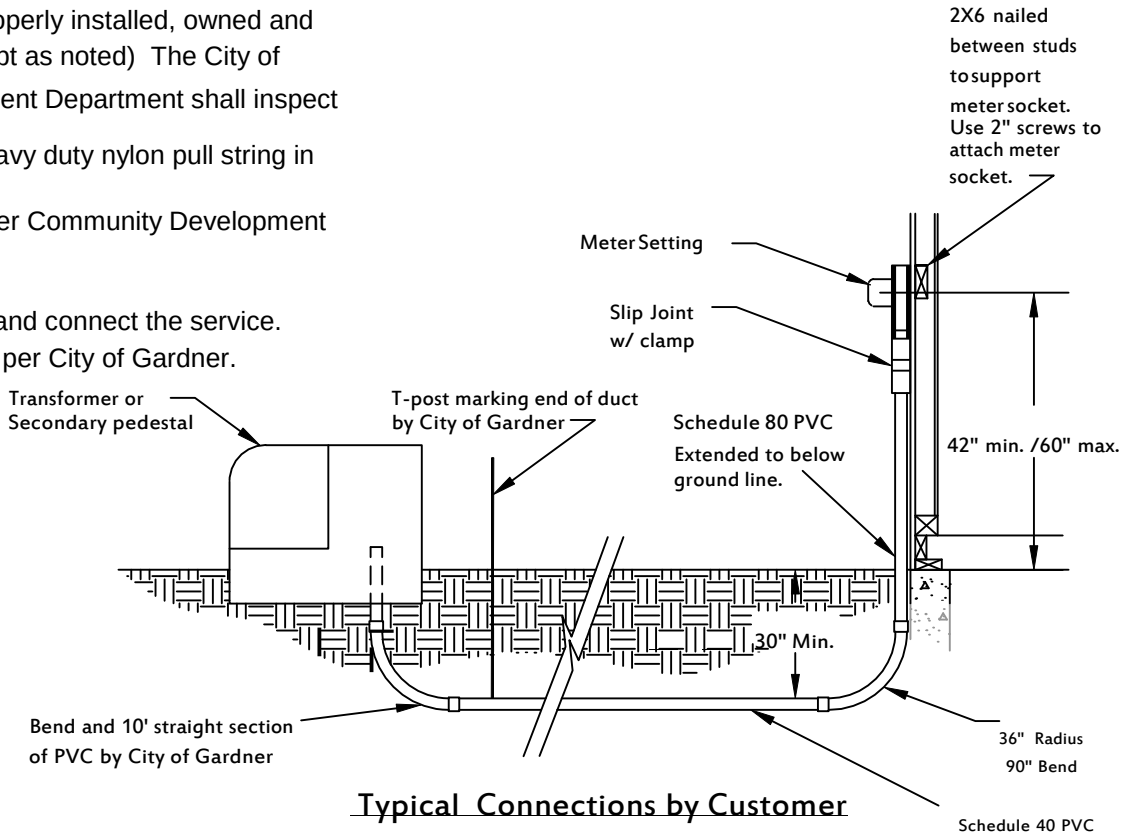
COMMERCIAL OVERHEAD SERVICES
400 AMP, SINGLE PHASE OR THREE PHASE

DRAWING BY: M. SULLIVAN	REV. DATE: 3/1/13
SCALE: NTS	ELECTRIC SERVICE STANDARDS

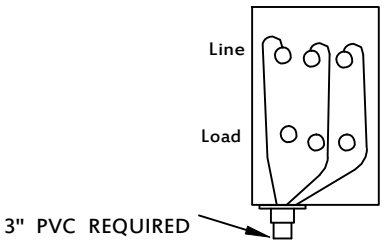
EXHIBIT D

Notes:

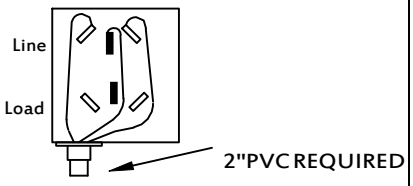
1. Meter socket furnished and installed by customer.
2. Customer shall not use meter socket to enclose or terminate their system ground.
3. Insulated bushing furnished and installed by customer. Do not use center knockout for incoming conduit. (See diagram below)
4. Slip joint to compensate for soil settling. Leave sufficient slack in service conductors to allow joint to work.
5. All conduit to be electrical PVC whole inch size conduit (see table below) furnished, properly installed, owned and maintained by customer. (except as noted) The City of Gardner Community Development Department shall inspect before backfilling.
6. Customer shall provide heavy duty nylon pull string in conduit.
7. Contact The City of Gardner Community Development Department when ready.
8. Install clamp on slip joint.
9. City of Gardner will install and connect the service.
10. Conduit depth shall be 30" per City of Gardner.



Typical Connections by Customer



120/240V
1-PH 3-WIRE
SELF-CONTAINED
ONLY USE LEFT KNOCKOUT FOR INCOMING CONDUIT
400A MAX.



120/240V
SELF-CONTAINED
200A MAX.

Typical Service Entrance

Backfill shall consist of dirt or sand only. No frozen material, rocks, clods or debris shall be used.

Service Size	Required Conduit
200 AMP	2"PVC
2-200 AMP	3" PVC
400 AMP	3" PVC

ELECTRIC DETAILS

SINGLE FAMILY OR DUPLEX
RESIDENTIAL UNDERGROUND SERVICE
400 AMP OR LESS UNDERGROUND SECONDARIES

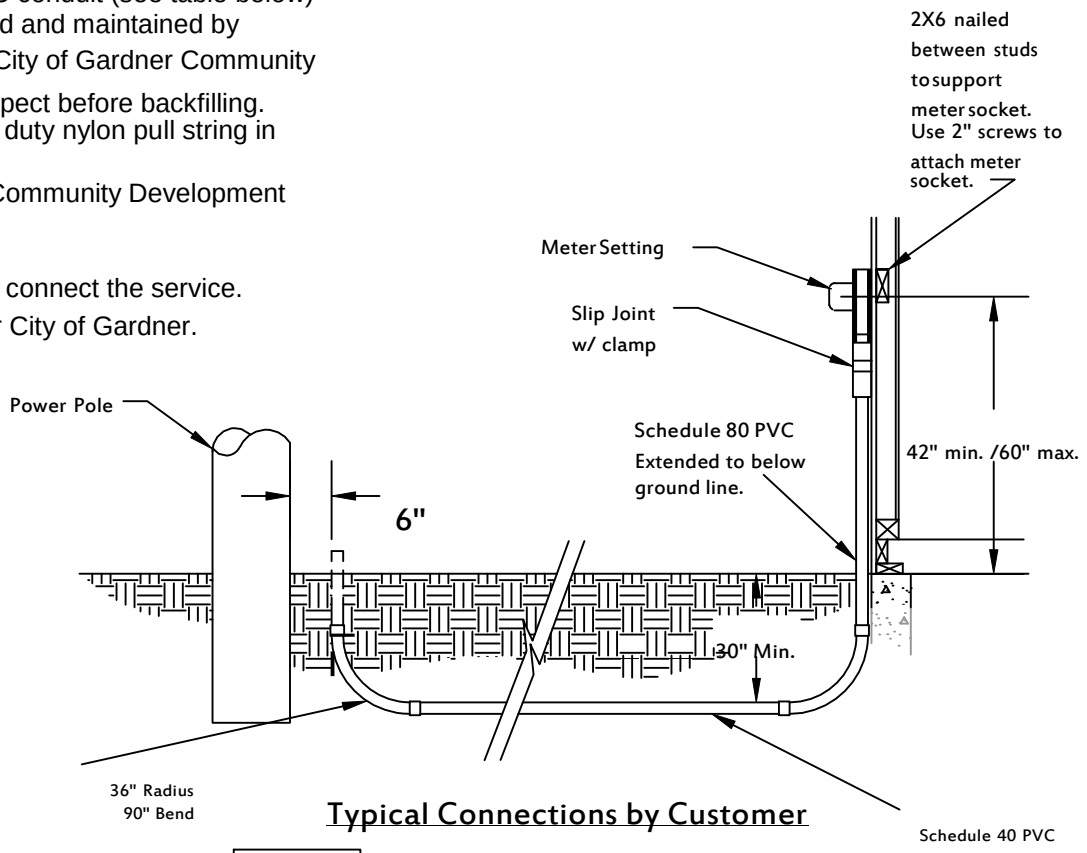
DRAWING BY: M. SULLIVAN | REV. DATE: 3/1/13

SCALE: NTS | ELECTRIC SERVICE STANDARDS

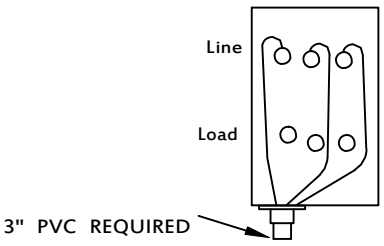
EXHIBIT E

Notes:

1. Meter socket furnished and installed by customer.
2. Customer shall not use meter socket to enclose or terminate their system ground.
3. Insulated bushing furnished and installed by customer. Do not use center knockout for incoming conduit.(See diagram below)
4. Slip joint to compensate for soil settling. Leave sufficient slack in service conductors to allow joint to work.
5. All conduit to be electrical PVC conduit (see table below) furnished, properly installed, owned and maintained by customer. (except as noted) The City of Gardner Community Development Department shall inspect before backfilling.
6. Customer shall provide heavy duty nylon pull string in conduit.
7. Contact The City of Gardner Community Development Department when ready.
8. Install clamp on slip joint.
9. City of Gardner will install and connect the service.
10. Conduit depth shall be 30" per City of Gardner.

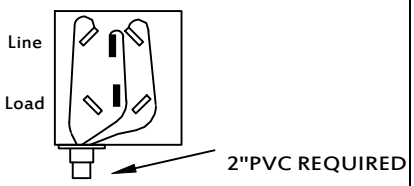


Typical Connections by Customer



120/240V

1-PH 3-WIRE
SELF-CONTAINED
ONLY USE LEFT KNOCKOUT FOR INCOMING CONDUIT
400A MAX.



120/240V

1-PH 3-WIRE

200A MAX.

~~Typical Service Entrance~~

Backfill shall consist of dirt or sand only. No frozen material, rocks, clods or debris shall be used.

Service Size	Required Conduit
200 AMP	2"PVC
2-200 AMP	3" PVC
400 AMP	3" PVC

ELECTRIC DETAILS

SINGLE FAMILY OR DUPLEX
RESIDENTIAL UNDERGROUND SERVICE
400 AMP OR LESS OVERHEAD SECONDARIES

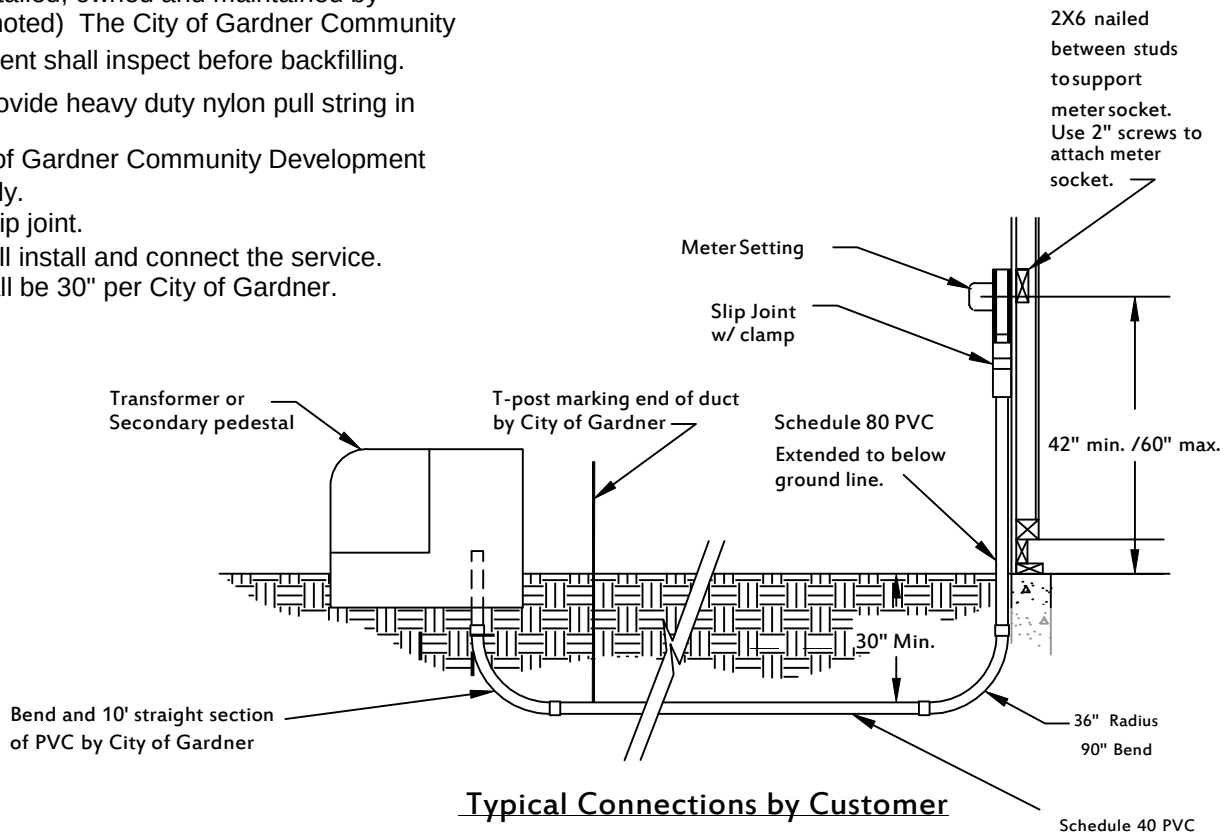
DRAWING BY: M. SULLIVAN | REV. DATE: 3/1/13

SCALE: NTS | ELECTRIC SERVICE STANDARDS

EXHIBIT F

Notes:

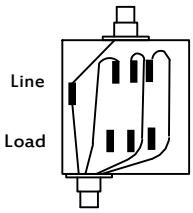
1. Meter socket furnished and installed by customer.
2. Customer shall not use meter socket to enclose or terminate their system ground.
3. Insulated bushing furnished and installed by customer. Do not use center knockout for incoming conduit.
4. Slip joint to compensate for soil settling. Leave sufficient slack in service conductors to allow joint to work.
5. All conduit to be electrical PVC conduit (see table) furnished, properly installed, owned and maintained by customer. (except as noted) The City of Gardner Community Development Department shall inspect before backfilling.
6. Customer shall provide heavy duty nylon pull string in conduit.
7. Contact The City of Gardner Community Development Department when ready.
8. Install clamp on slip joint.
9. City of Gardner will install and connect the service.
10. Conduit depth shall be 30" per City of Gardner.



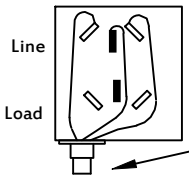
Typical Connections by Customer

Typical Service Entrance

Backfill shall consist of dirt or sand only. No frozen material, rocks, clods or debris shall be used.



120/208 Y
200A MAX.



120/240V
1-PH 3-WIRE
SELF-CONTAINED
200A MAX.

Service Size	Required Conduit
200 AMP	2"PVC
2-200 AMP	3" PVC
400 AMP	3" PVC

ELECTRIC DETAILS

UNDERGROUND SERVICES TO 3-PHASE 120/208V Y
1 PHASE 120/240V SELF-CONTAINED METERING
UNDERGROUND SECONDARIES

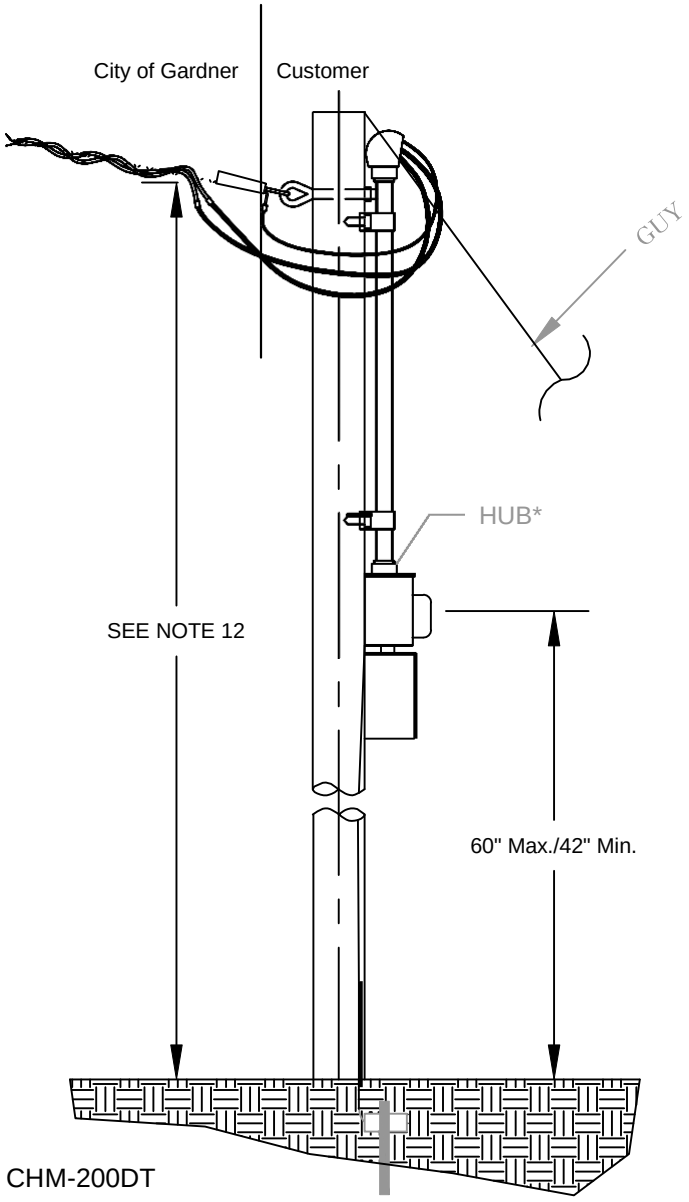
DRAWING BY: M. SULLIVAN | REV. DATE: 3/1/13

SCALE: NTS | ELECTRIC SERVICE STANDARDS

EXHIBIT G

Notes:

1. Customer to own and install 1/4" min. guy and anchor (as required), as approved by City of Gardner.
2. Customer to own and install service entrance conductors with 24" beyond weatherhead.
3. Customer to own and install the service attachment, such as service hook, wire holder or bracket on mast capable of supporting a 900lb. force.
4. Customer to own and install service mast head.
5. Service drop and connections by City of Gardner.
6. Customer will furnish and install meter socket (Exhibit A) and hub.
7. Clearances for service drop shown are the minimum without other attachments to pole. If Communications wires are attached, service pole shall be tall enough to maintain these clearances to bottom wire on pole and permit 40" minimum spacing below City of Gardner's service drop conductor.
8. Customer shall own and install main fused disconnect with protective devices and outlets as required(must be outdoor weather tight 600V box). A fuse or circuit breaker shall not be installed in the neutral or the ground conductor of the service entrance.
9. Customer shall own and install 5/8" X 8' ground rod and the #6 copper ground wire from their main disconnect to the ground rod.
10. Customer shall own and install service pole, minimum size class 7 or equal(4"x4" or 6"x6" CCA treated post) and tall enough to provide the clearances as shown. Minimum pole setting depth is 10% of the length of the pole plus 24" with a minimum depth of 60". Pole butt must be preservative treated to at least 12" above ground line.
11. Color code conductors according to NEC.
12. Minimum ground clearance at lowest point. See NESC or contact City of Gardner



Customer furnished and owned material:

DESCRIPTION
DISCONNECTS
SERVICE HOOK
HUB
NEMA TYPE 3R BOX
METER SOCKET (SEE EXHIBIT A)
ENTRANCE HEAD
CONDUIT STRAPS
CONDUCTOR
SERVICE MAST METALLIC CONDUIT NIPPLES
#6 CU GROUND WIRE
5/8" X 8' GROUND ROD

*Meyers Hub for Riser
O.Z. Gedney, Part No. CHM-200DT

ELECTRIC DETAILS

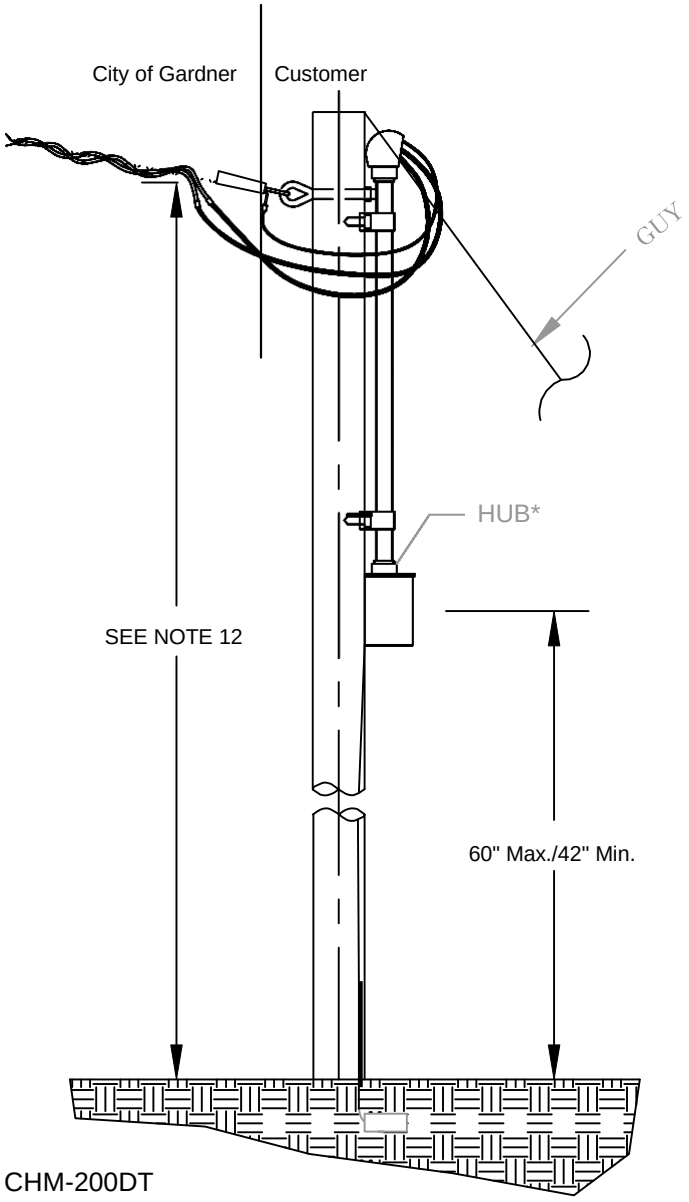
COMMERCIAL
1-PHASE 120/240V OR 120/208V 3 WIRE
TEMPORARY SERVICE FROM OVERHEAD SOURCE

DRAWING BY: M. SULLIVAN	REV. DATE: 3/1/13
SCALE: NTS	ELECTRIC SERVICE STANDARDS

EXHIBIT H

Notes:

1. Customer to own and install 1/4" min. guy and anchor (as required), as approved by City of Gardner.
2. Customer to own and install service entrance conductors with 24" beyond weatherhead.
3. Customer to own and install the service attachment, such as service hook, wire holder or bracket on mast capable of supporting a 900lb. force.
4. Customer to own and install service mast head.
5. Service drop and connections by City of Gardner.
6. Customer will furnish and install rain tight box and hub.
7. Clearances for service drop shown are the minimum without other attachments to pole. If Communications wires are attached, service pole shall be tall enough to maintain these clearances to bottom wire on pole and permit 40" minimum spacing below City of Gardner's drop conductor.
8. Customer shall own and install main fused disconnect with protective devices and outlets as required(must be outdoor weather tight 600V box). A fuse or circuit breaker shall not be installed in the neutral or the ground conductor of the service entrance.
9. Customer shall own and install 5/8" X 8' ground rod and the #6 copper ground wire from their main disconnect to the ground rod.
10. Customer shall own and install service pole, minimum size class 7 or equal(4"x4" or 6"x6" CCA treated post) and tall enough to provide the clearances as shown. Minimum pole setting depth is 10% of the length of the pole plus 24" with a minimum depth of 60". Pole butt must be preservative treated to at least 12" above ground line.
11. Color code conductors according to NEC.
12. Minimum ground clearance at lowest point. See NESC or contact the City of Gardner.



Customer furnished and owned material:

DESCRIPTION
DISCONNECTS
SERVICE HOOK
HUB
NEMA TYPE 3R BOX
ENTRANCE HEAD
CONDUIT STRAPS
CONDUCTOR
SERVICE MAST METALLIC CONDUIT NIPPLES
#6 CU GROUND WIRE
5/8" X 8' GROUND ROD

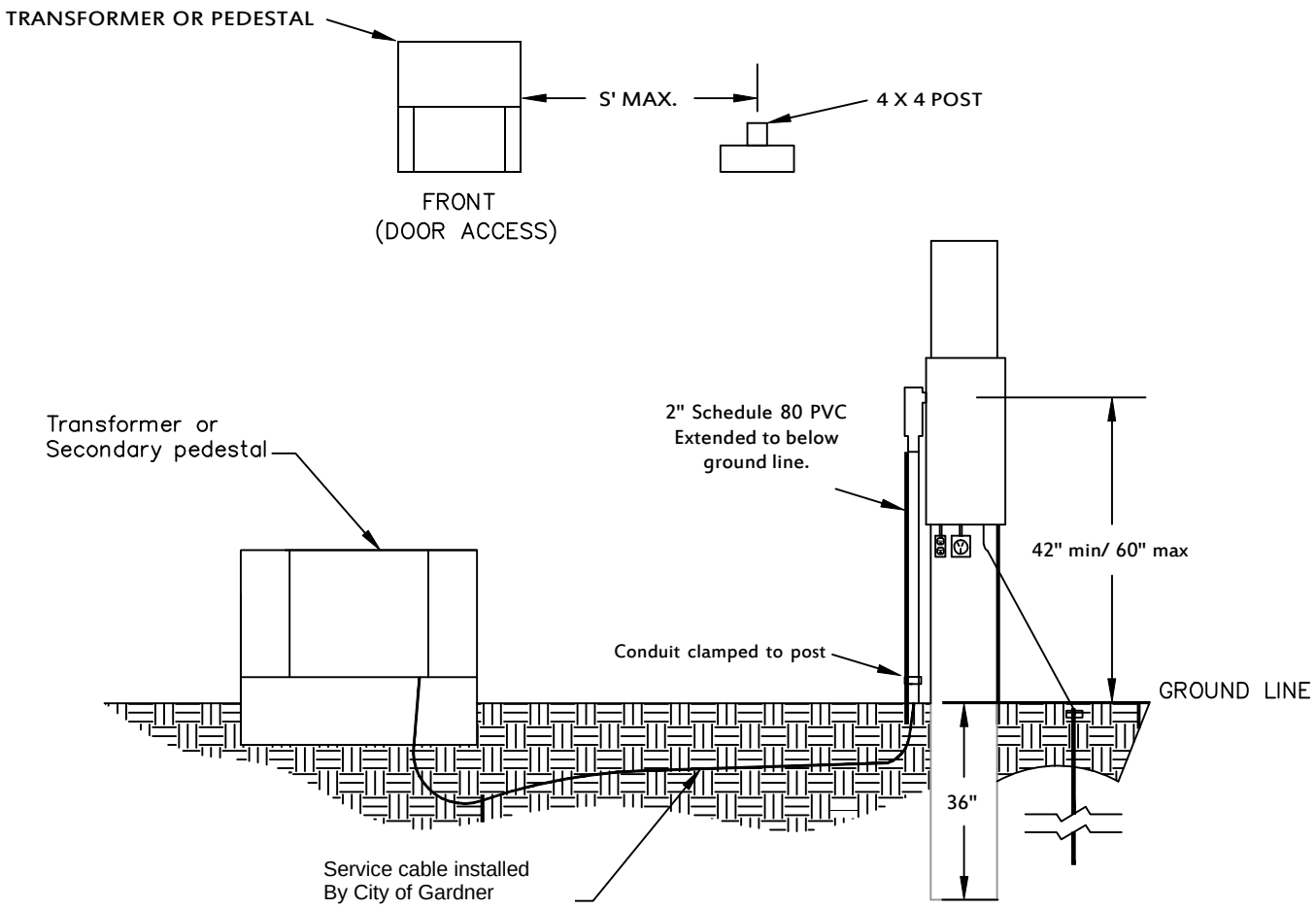
*Meyers Hub for Riser
O.Z. Gedney, Part No. CHM-200DT

ELECTRIC DETAILS

RESIDENTIAL
1-PHASE 120/240V OR 120/208V 3 WIRE
TEMPORARY SERVICE FROM OVERHEAD SOURCE

DRAWING BY: M. SULLIVAN	REV. DATE: 3/1/13
SCALE: NTS	ELECTRIC SERVICE STANDARDS

EXHIBIT I



Notes:

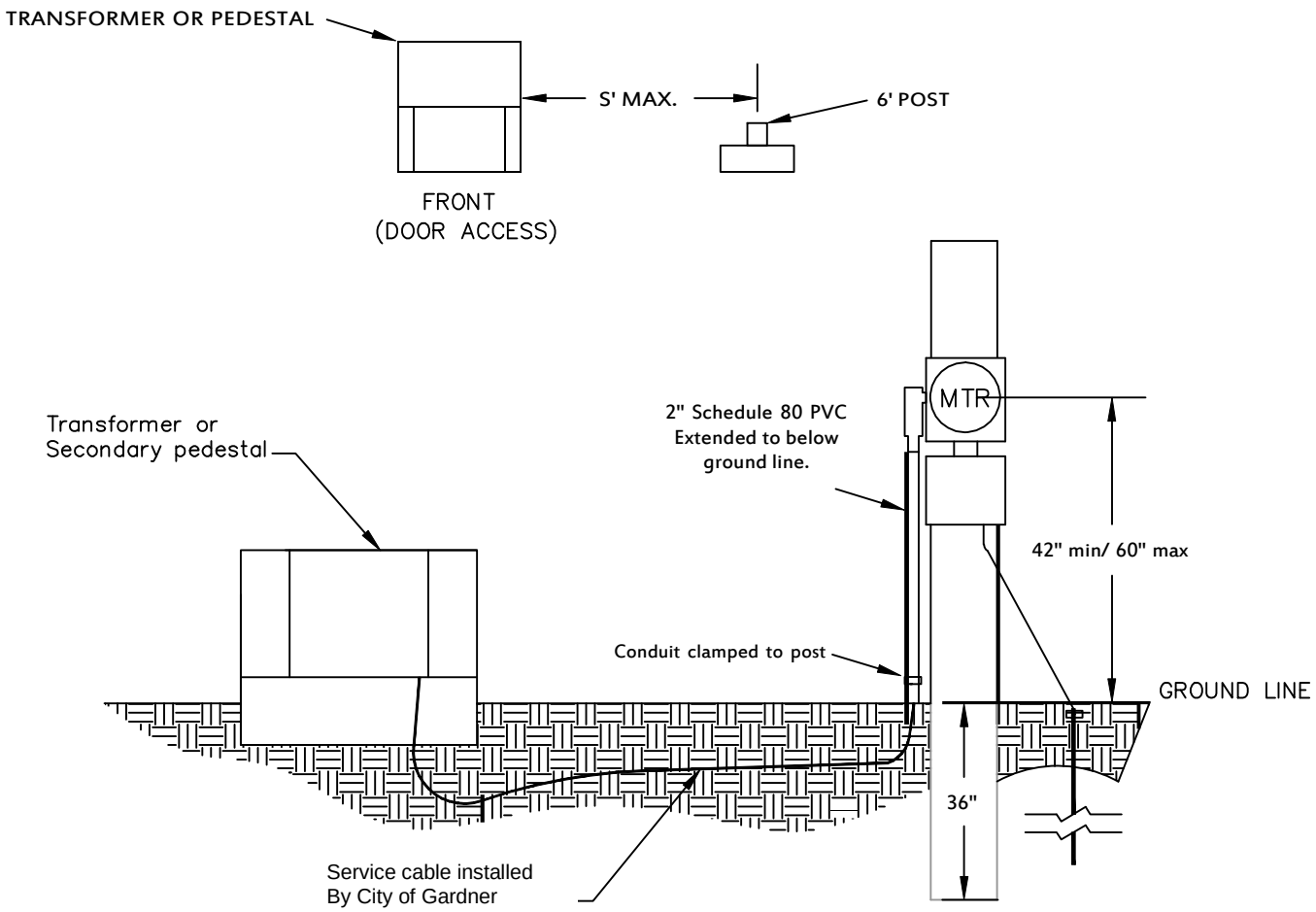
1. 8' post, 4"X4" minimum provided and installed by customer next to pad mount transformer(secondary side -right front) or service pedestal.
2. Customer shall furnish and install a meter socket w/hub (See Exhibit A) and NEMA Type R3 box with disconnect.
3. Customer shall own and install a 5/8" X 8' ground rod with a #6 (min) bare copper lead.
4. Service address shall be marked in highly visible manner.
5. A minimum of 8' of 3-#4 CU cable (Southwire Type SEOOW) coiled at base of meter support for installation by City of Gardner.

ELECTRIC DETAILS

RESIDENTIAL
1-PHASE 120/240V OR 120/208V 3 WIRE
TEMPORARY SERVICE FROM UNDERGROUND SOURCE

DRAWING BY: M. SULLIVAN	REV. DATE: 3/1/13
SCALE: NTS	ELECTRIC SERVICE STANDARDS

EXHIBIT J



Notes:

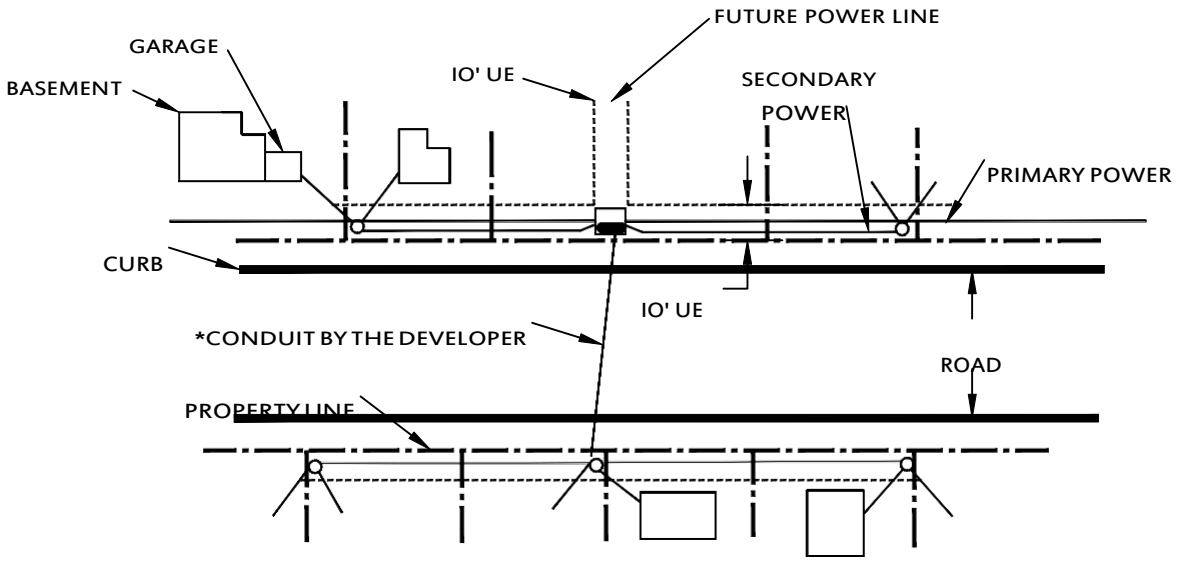
1. 6' post minimum provided and installed by customer next to pad mount transformer (secondary side -right front) or service pedestal.
2. Customer shall furnish and install a meter socket w/hub (see EXHIBIT A) and NEMA Type 3R box with disconnect.
3. Customer shall own and install a 5/8" X 8' ground rod with a #6 (min) bare copper lead.
4. Service address shall be marked in highly visible manner.
5. A minimum of 8' of 3-#4 CU cable (Southwire Type SEOOW) coiled at base of meter support for installation by City of Gardner.

ELECTRIC DETAILS

COMMERCIAL
1-PHASE 120/240V OR 120/208V 3 WIRE
TEMPORARY SERVICE FROM UNDERGROUND SOURCE

DRAWING BY: M. SULLIVAN	REV. DATE: 3/1/13
SCALE: NTS	ELECTRIC SERVICE STANDARDS

EXHIBIT K



~~CABLE AND EQUIPMENT LOCATIONS~~

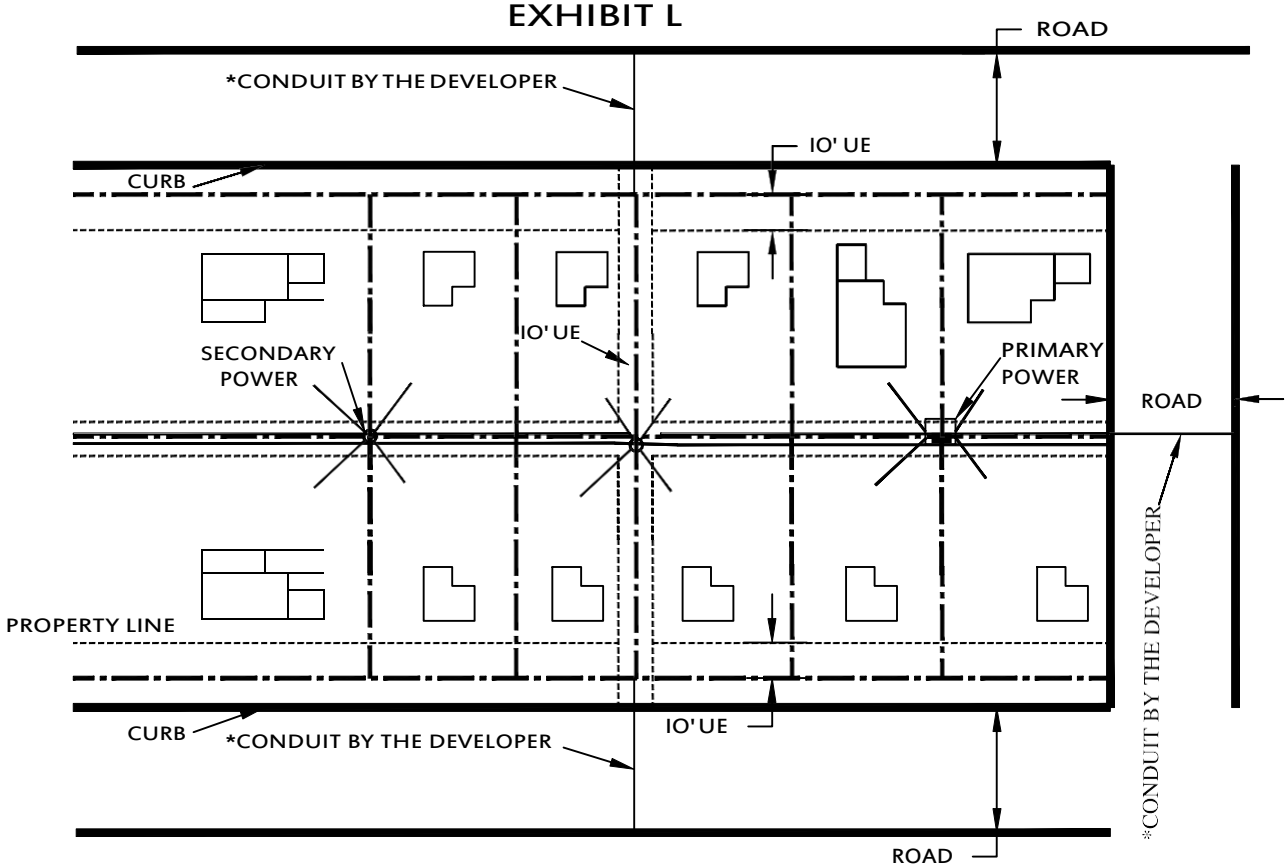
The services will extend from the secondary power pedestals or the transformers.
The above shows a typical arrangement. The service locations for the buildings on the same side of the street as the transformer are determined by the pedestal and transformer locations. On the opposite side of the street, the service locations for the buildings are determined by the pedestal locations. The customer will install a straight run of Schedule 40 electrical plastic conduit, per City of Gardner standards, between the entrance and the secondary pedestal or the transformer as shown on the City of Gardner's drawing. Contact the City of Gardner for job print.

NOTE: SERVICES SHALL BE LOCATED AT ALTERNATE ENDS OF HOUSES AS SHOWN, NOT ON BACKS.

***Developer to provide Schedule 40 electrical PVC conduit (size to be specified) from property line with heavy duty nylon pull string staked at both ends with T-post.**

ELECTRIC DETAILS	
FRONT OF LOT INSTALLATION RESIDENTIAL UNDERGROUND SERVICES SINGLE FAMILY & DUPLEX	
DRAWING BY: M. SULLIVAN	REV. DATE: 3/1/13
SCALE: NTS	ELECTRIC SERVICE STANDARDS

EXHIBIT L



CABLE AND EQUIPMENT LOCATIONS

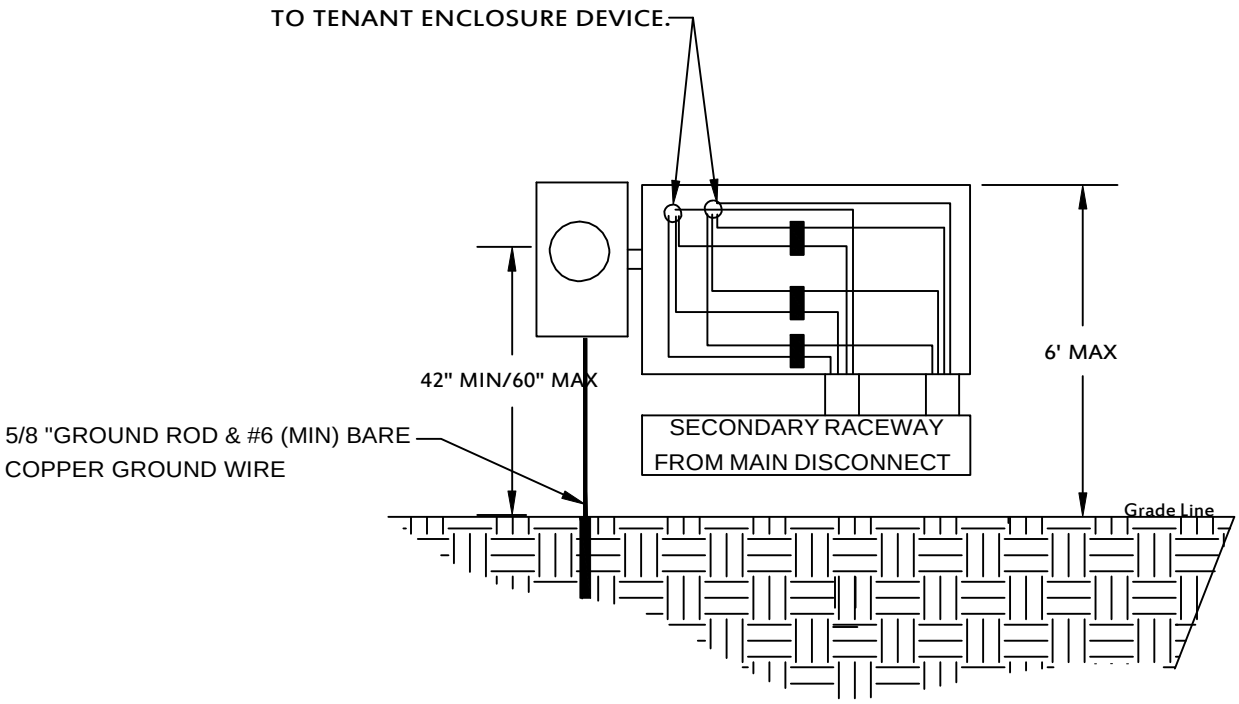
The services will extend from the secondary power pedestals or the transformers.
The above shows a typical arrangement. The service locations for the buildings on the same side of the street as the transformer are determined by the pedestal and transformer locations. The customer will install a straight run of Schedule 40 electrical plastic conduit, per the City of Gardner standards, between the entrance and the secondary pedestal or the transformer as shown on the City of Gardner's drawing. Contact the City of Gardner for job print.

NOTE: SERVICES SHALL BE LOCATED AT ALTERNATE ENDS OF HOUSES AS SHOWN, NOT ON BACKS.

***Developer to provide Schedule 40 electrical PVC conduit (size to be specified) from property line with heavy duty nylon pull string staked at both ends with T-post.**

ELECTRIC DETAILS	
REAR OF LOT INSTALLATION RESIDENTIAL UNDERGROUND SERVICES SINGLE FAMILY & DUPLEX	
DRAWING BY: M. SULLIVAN	REV. DATE: 3/1/13
SCALE: NTS	ELECTRIC SERVICE STANDARDS

EXHIBIT M



NOTES:

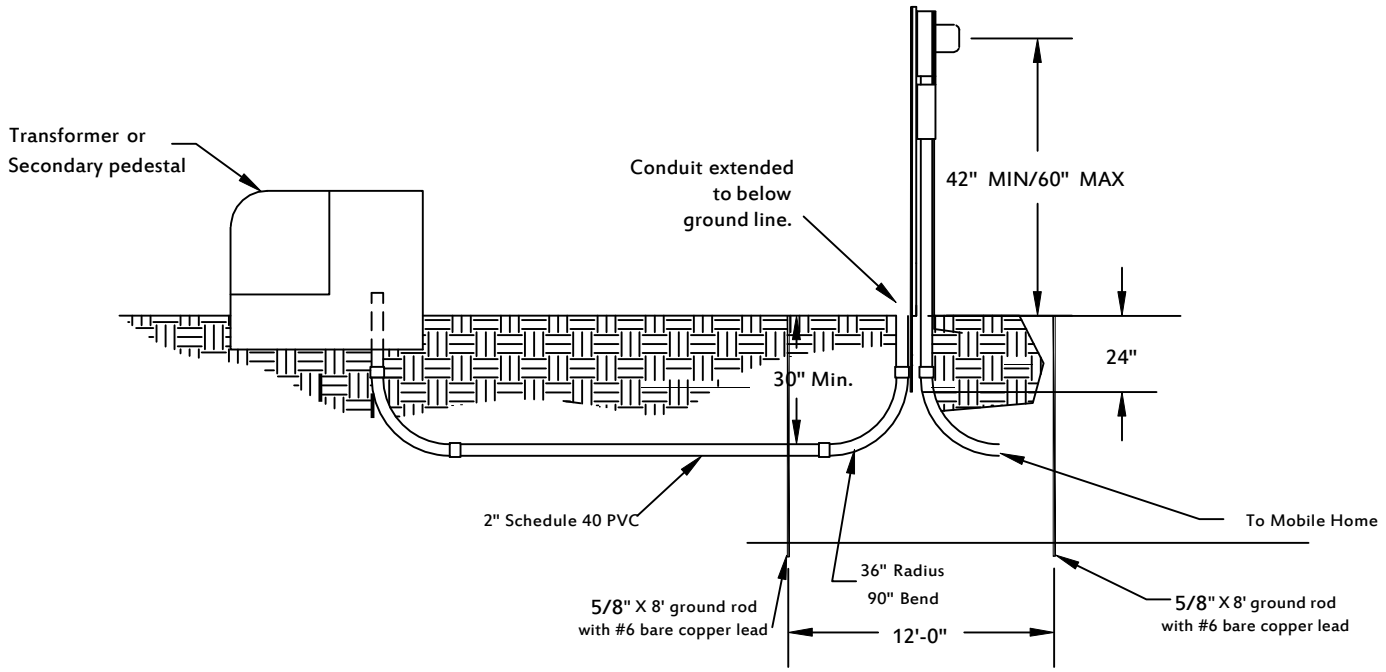
1. CT meter socket (locate center of socket 42" to 60" above grade).
2. 30" X 36" X 10" CT cabinet (800A or less). 36" X 48" X 12" CT cabinet (greater than 800A). CT cabinet furnished and installed by customer on outside of building.
3. 1 1/4" Rigid metallic conduit to ensure electrical bonding between CT cabinet and meter socket.
4. Ground shall not pass through CT cabinet.
5. Customer to furnish and install main disconnect and raceway for multiple tenants.
6. Customer to install all wiring in accordance with NEC.
7. Meter socket and CT's furnished by City of Gardner, but installed by customer on outside of building.
8. Customer shall furnish and install conductor from tenant disconnect to raceway.
9. Customer shall furnish and install a hasp for CT cabinet.
10. CT's shall be mounted securely to back of cabinet by customer in such a manner as to allow proper installation of all conductors.(See Section 705 for approved mounting of CT's)

ELECTRIC DETAILS	
COMMERCIAL SERVICE CT METERING/ENCLOSURE INSTALLATION	
DRAWING BY: M. SULLIVAN	REV. DATE: 3/1/13
SCALE: NTS	ELECTRIC SERVICE STANDARDS

EXHIBIT N

Notes:

1. Meter socket and disconnect enclosure furnished and installed by customer.
2. All conduit- electrical 2" PVC, schedule 40 conduit furnished, properly installed, owned and maintained by customer. Call the City of Gardner Community Development Department for an inspection before backfilling.
3. Minimum depth below grade for conduit is 30".
4. Two ground rods, 5/8" X 8', furnished and installed by customer must be driven at least 12" away from mounting pedestal and or concrete base with 12' separation.
5. Conduit and service conductors to mobile home furnished and installed by customer.
6. Conduit shall be buried min 30" below surface per the City of Gardner standards.

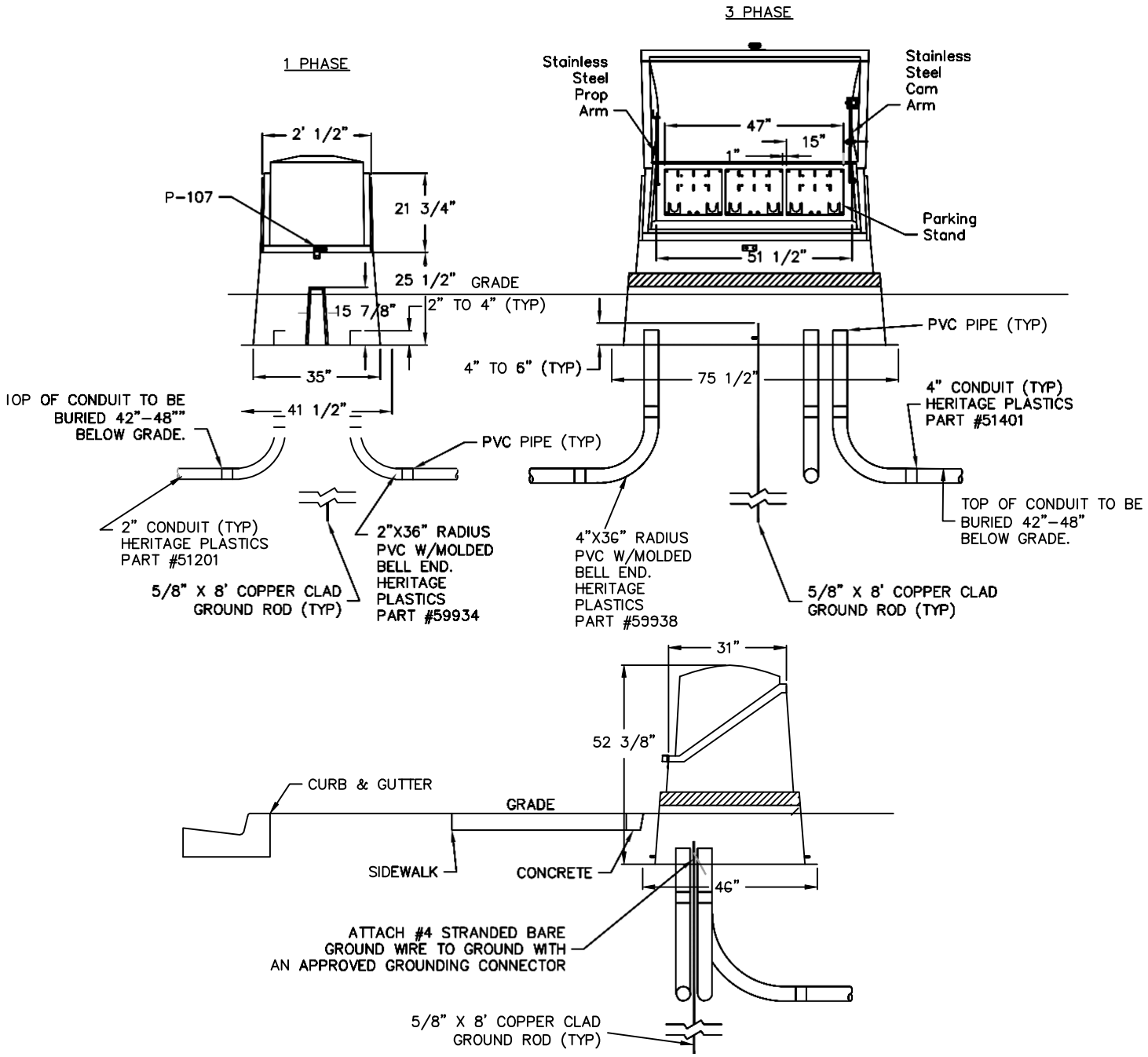


ELECTRIC DETAILS

200A UNDERGROUND
MOBILE HOME PEDESTAL

DRAWING BY: M. SULLIVAN	REV. DATE: 3/1/13
SCALE: NTS	ELECTRIC SERVICE STANDARDS

EXHIBIT O



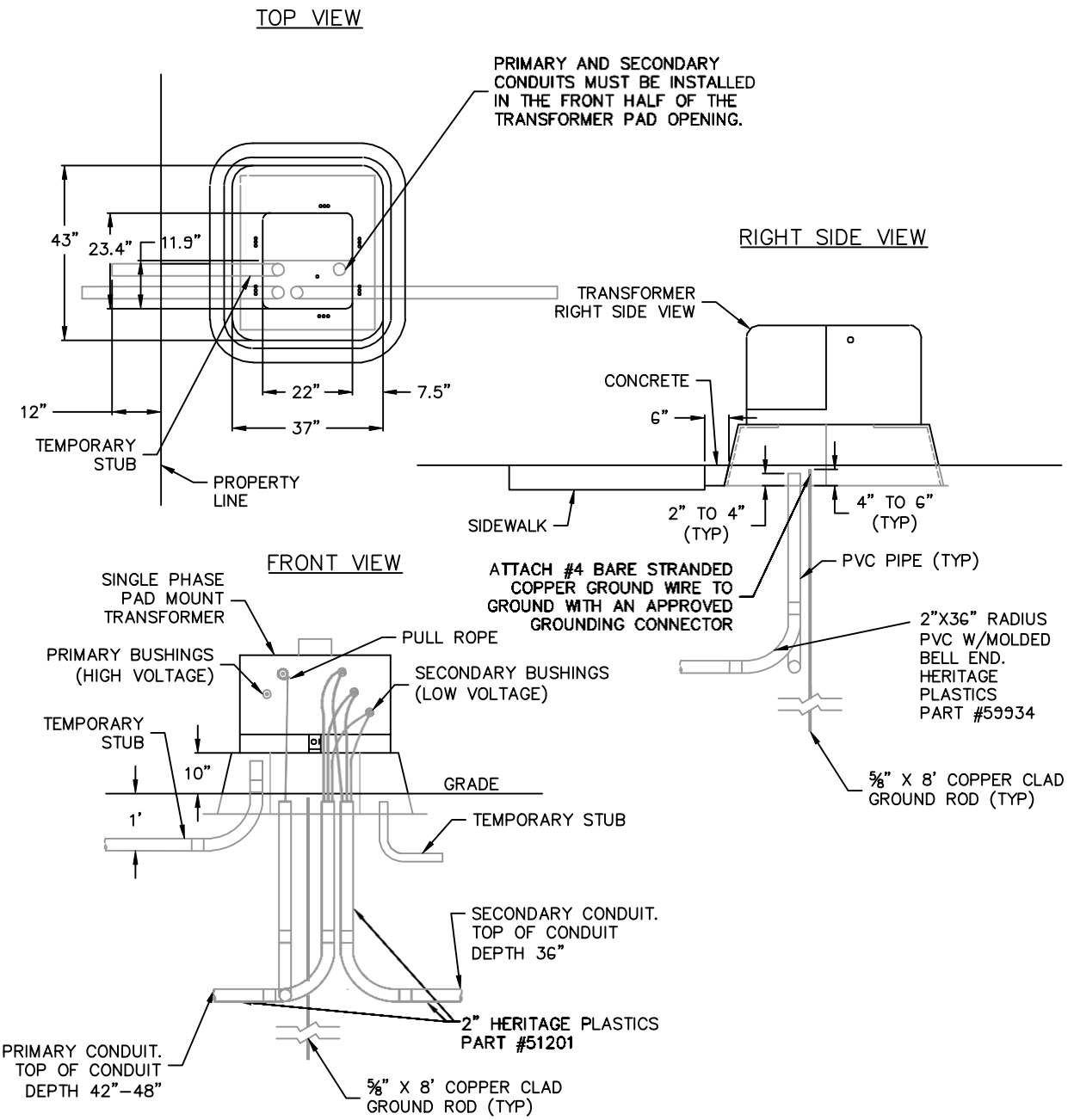
NOTES:
1. SECTIONALIZER CABINET UNITS FOR 200 AMP 1 PHASE AND 3 PHASE ARE TO BE FABRICATED FROM FIBERGLASS COMPOSITE.
2. BLOW IN 1/4" POLY ROPE AND TIE SECURELY TO 4 POINT MOUNTING PLATE.
3. 200 AMP 1 PHASE SECTIONALIZER P/N: HIGHLINE FSC-3353RDGB412W.
4. 200 AMP 3 PHASE SECTIONALIZER P/N: HIGHLINE FSC-6553RDGB412W.
5. TOP OF CONDUIT DEPTH SHALL BE 42"-48" BELOW GRADE.

ELECTRIC DETAILS

RESIDENTIAL UNDERGROUND SERVICES
200 AMP 1 AND 3 PHASE SECTIONALIZER

DRAWING BY: M. SULLIVAN	REV. DATE: 3/1/13
SCALE: NA	ELECTRIC SERVICE STANDARDS

EXHIBIT P



NOTES:

1. CONDUIT COMING INTO ANY TRANSFORMER MUST BE PVC.
2. TRANSFORMER PAD FOR 167.5 KVA TRANSFORMER OR LESS SHALL BE HIGHLINE PART #HL374315-2224 .
3. GROUND LEVEL INSIDE THE TRANSFORMER PAD IS THE BOTTOM OF THE TRANSFORMER PAD.
4. ALL SECONDARY CABLE TO BE URD SELF-HEALING TYPE.
5. PULL ROPE MUST BE SECURELY TIED TO THE TRANSFORMER PAD OR CONDUIT.
6. TOP OF CONDUIT DEPTH: SECONDARY 36" BELOW GRADE, PRIMARY 42"-48" BELOW GRADE.

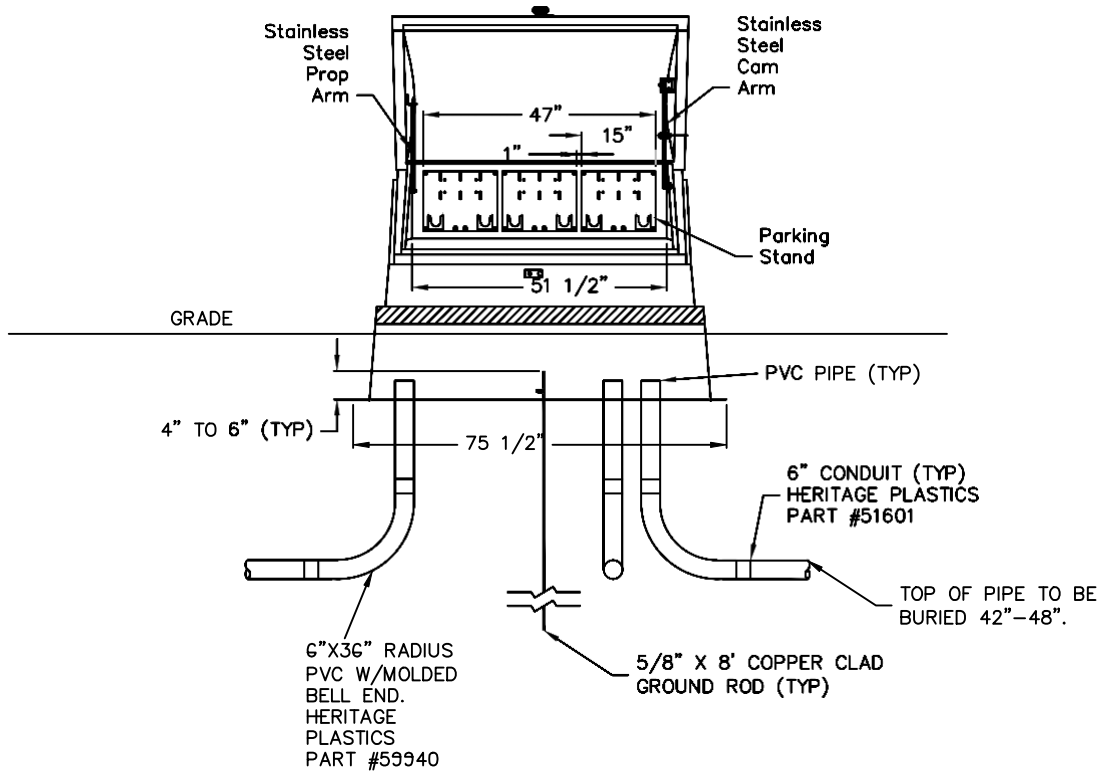
ELECTRIC DETAILS

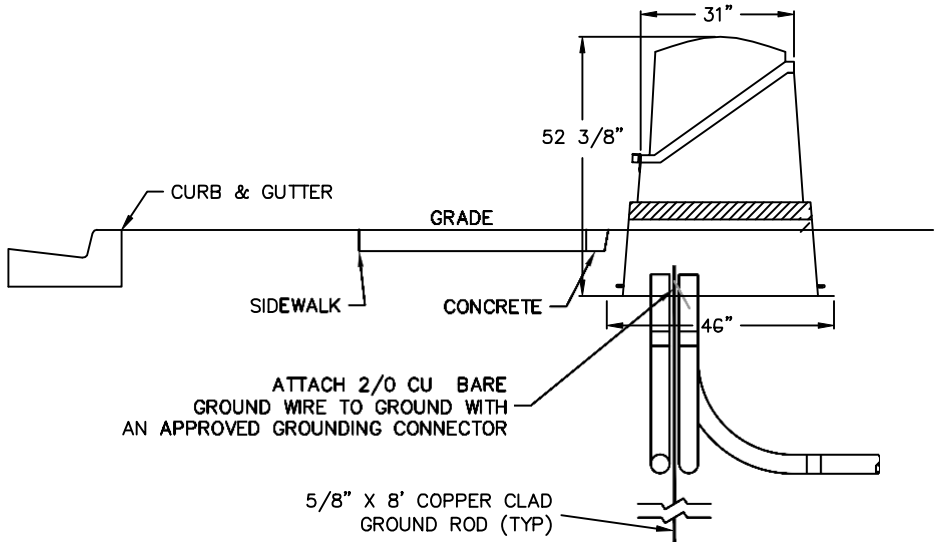
RESIDENTIAL UNDERGROUND SERVICES
SINGLE PHASE PAD MOUNT TRANSFORMER

DRAWING BY: M. SULLIVAN	REV. DATE: 3/1/13
SCALE: NA	ELECTRIC SERVICE STANDARDS

EXHIBIT Q

3 PHASE



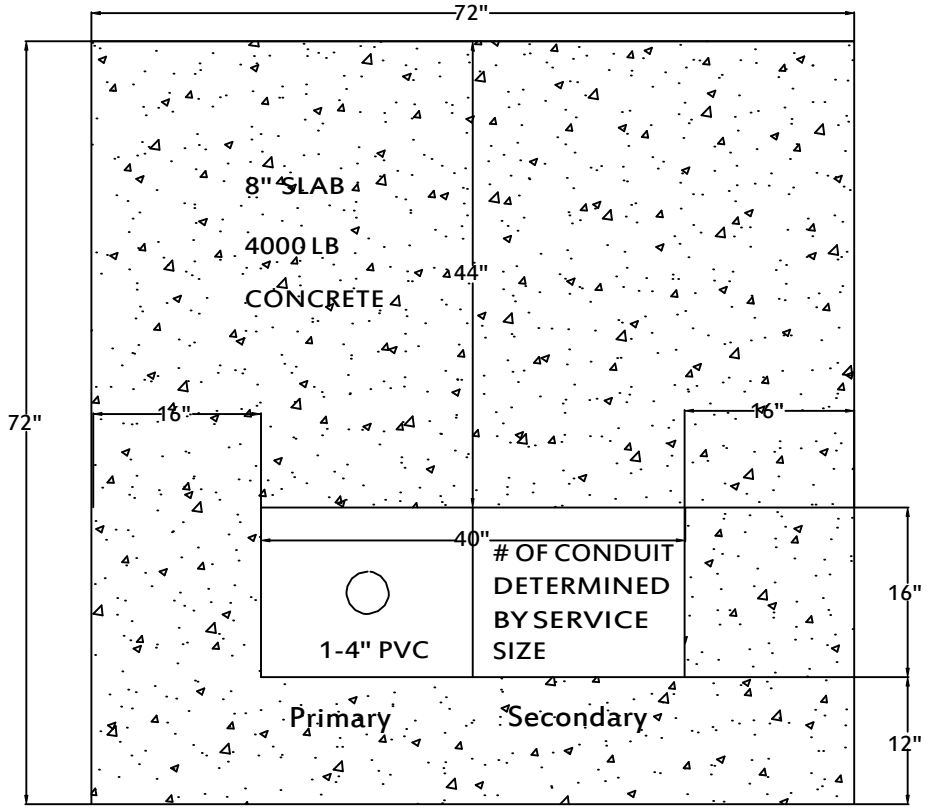


NOTES:
1. SECTIONALIZER CABINET UNIT FOR 600 AMP 3 PHASE ARE TO BE FABRICATED FROM FIBERGLASS COMPOSITE.
2. BLOW IN 1/4" POLY ROPE AND TIE SECURELY TO 4 POINT MOUNTING PLATE.
3. 600 AMP 3 PHASE SECTIONALIZER P/N: HIGHLINE FSC-7953RDGB316W.
4. TOP OF CONDUIT TO BE BURIED 42"-48" BELOW GRADE.

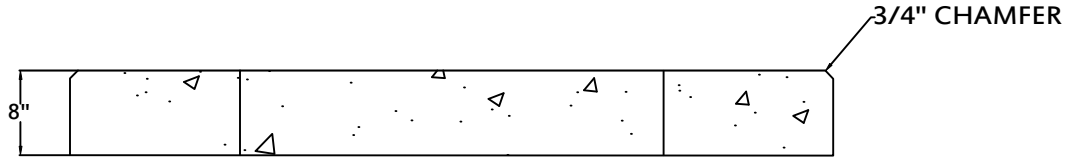
	ELECTRIC DETAILS
	RESIDENTIAL UNDERGROUND SERVICES 600 AMP 3 PHASE SECTIONALIZER
	DRAWING BY: M. SULLIVAN | REV. DATE: 3/1/13
	SCALE: NA | ELECTRIC SERVICE STANDARDS

EXHIBIT R

BACK



FRONT



SIDE

TRANSFORMER PAD

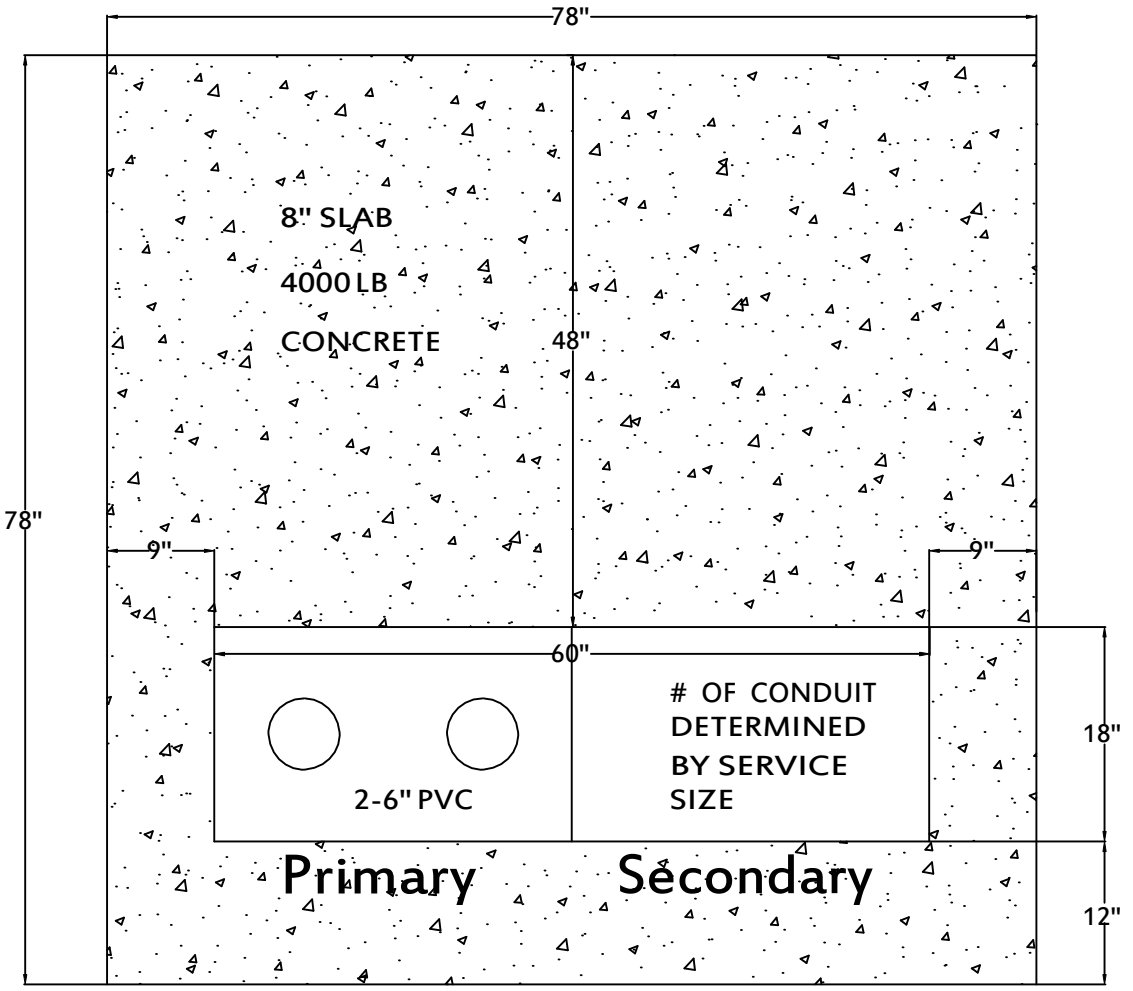
45-300 KVA

BARBOUR CONCRETE REFERENCE #GE7272

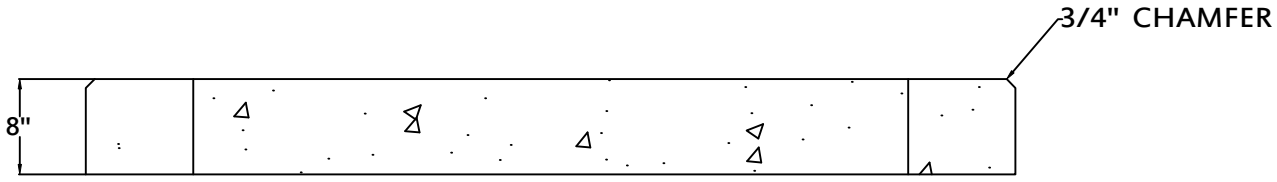
3 PHASE PAD DESIGN

Drafter: SULLIVAN		Date: 3-1-13	Scale 3/4"=1'

EXHIBIT S



FRONT



TRANSFORMER PAD 500-1500 KVA			
	BARBOUR CONCRETE REFERENCE #GE7878		
3 PHASE PAD DESIGN			
Drafter: SULLIVAN		Date: 3-1-13	Scale 3/4"=1'

EXHIBIT T – CITY OF GARDNER SERVICE CHARGES:

General

Damage to Electrical Equipment-paragraph 120	. . . .	***Actual cost plus 15%***
Design Time for Revisions to Jobs-paragraph 202	. . . .	***$50/hour***

Temporary Services

Customer provided temporary service, from existing overhead secondary (120/240 volt)-paragraph 226	. . . .	***$350***
Customer provided temporary service, from existing secondary pedestal or pad-mounted transformer (120/240 volt-underground)-paragraph 227	. . . .	***$350***
Customer provided temporary service, where no adequate facilities exist (120/240 volt-overhead or underground)-paragraph 228	. . . .	***Actual cost***

Residential Service Connections: Overhead

New Permanent Service: (up to 400 Amp), 125' service drop maximum-paragraph 507	. . . .	***No Charge***

Residential Service Connections: Underground

New Permanent Underground Service: (up to 400 ampere) from overhead distribution, 125 ' service lateral maximum-paragraph 508	. . . .	***$500***
New Permanent Underground Construction: (Single family or Duplex) in a platted subdivision; **Developer** installed conduit for distribution system by City of Gardner qualified electric contractor - paragraph 509 and 510	. . . .	***$1400/lot***
Lot charge supplement: when average lot in a development exceeds 100' in width for the type of distribution construction that is built (front or rear lot)	. . . .	***$6.00/ft (for each foot in excess of 100 feet times the number of lots in development***
Mobile Home Underground Service-paragraph 513	. . . .	***Actual cost***

Service Associated Charges

Residential Alterations – paragraph 516		
Upgrade Overhead Service Drop	. . . .	***$350***
Overhead Service to Underground Service	. . . .	***$550***
Upgrade or relocation of Underground Service	. . . .	***Actual cost***

EXHIBIT T (Continued)

Commercial Service Connections: Overhead

Single Phase Service (up to 200 Amps)-paragraph 706	. . . . ***Actual cost***
Single Phase Service (greater than 200 Amps)-paragraph 707	. . . . ***Actual cost***
Three Phase Service (200 Amps)-paragraph 706	. . . . ***Actual cost***
Three Phase Service (400 Amps)-paragraph 707	. . . . ***Actual cost***
Three Phase Primary Service (12.47kV)-paragraph 714	. . . . ***Actual cost***

Commercial Service Connections: Underground

New Permanent Underground Service for Multi-family dwellings-paragraph 712	. . . . ***Actual cost***
Single Phase Service (up to 400 Amps)-paragraph 711	. . . . ***Actual cost***
Single Phase Service (greater than 400 Amps)-paragraph 711	. . . . ***Actual cost***
Three Phase Service (200 Amps)-paragraph 711	. . . . ***Actual cost***
Three Phase Service (400 Amps)-paragraph 711	. . . . ***Actual cost***
Three Phase Service (600 Amps)-paragraph 711	. . . . ***Actual cost***
Three Phase Service (800 Amps)-paragraph 711	. . . . ***Actual cost***
Three Phase Service (1000 Amps)-paragraph 713	. . . . ***Actual cost***
Three Phase Service (greater than 1000 KVA)-paragraph 713	. . . . ***Actual cost***
Three Phase Primary Service (12.47KV)-paragraph 714	. . . . ***Actual cost***

Miscellaneous Charges

Rock Excavation	. . . . ***$15/Linear ft of Trench***
All increase in material, labor, and equipment due to changes made by customer-paragraph 123	. . . . ***Actual cost***
All charges necessary to correct billing arrangements in multi-tenant buildings (Residential or Commercial) due to mislabeling of meters and switches-paragraph 704 and 712	. . . . ***Actual cost***